# Oracle Financial Services Analytical Applications Infrastructure

User Guide

Release 8.0.5.0.0

ORACLE
FINANCIAL SERVICES

# DOCUMENT CONTROL

| Version Number | Revision Date | Changes Done |
|---|---|---|
| 1.0 | Created July 2017 | The following are the changes in this guide for 8.0.5.0.0:<br>▪ Added instructions for Questionnaire Review functionality.<br>▪ Updated Questionnaire data for Objects Supported for Command Line Migration.<br>▪ Documented Model Upload enhancements<br>▪ Added Resaving Data Quality Rule section<br>▪ Documented about new task status called Indeterminate<br>▪ Documented about enhancements in Command line utility for Object Migration |
| 2.0 | Revised Sep 2017 | ▪ Updated the document for Bug 26584226.<br>▪ Updated the document for Bug 26781298. |
| 3.0 | Revised Oct 2017 | ▪ Modified the user guide based on Bugs 26847778, 26725819 and 26835634.<br>▪ Documented about the enhancements done as part of 8.0.5.0.1 one-off patch.<br>▪ Updated the document for JIRA OFSAAAAI-9798. |
| 4.0 | Revised Nov 2017 | Updated the document for JIRA OFSAAAAI-10628. |
| 5.0 | Revised Jan 2018 | Added 8.0.5.1.0 ML changes. |
| 6.0 | Revised Feb 2018 | Updated for JIRA OFSAAAAI-12376. |
| 7.0 | Revised Mar 2018 | Updated the document for the changes done as part of 8.0.5.2.0 ML. |
| 8.0 | Revised Feb 2019 | Added a note based on Bug 29272413. |
| 9.0 | Revised Oct 2021 | Updated the Define Data Mapping to Table (T2T, H2H, T2H, H2T, L2H) section (Doc 27806511) |
| 9.1 | Revised Feb 2022 | Updated the Passing Runtime Parameters in Data Mapping/ Data File Mapping Section (Doc 33684371). |

**Executive Summary:**

All the module contents have been integrated, standardized, and restructured as per 8.0.5.0.0 enhancements. You can access the OHC Documentation Library for the latest copy of this document with all the recent revisions.

# TABLE OF CONTENTS


**GETTING STARTED ..... 14**

About this Manual ..... 14

Audience ..... 14

Recommended Skills ..... 15

Recommended Environment ..... 15

Prerequisites ..... 15

Conventions and Acronyms ..... 15

**OFSAAI - AN OVERVIEW ..... 19**

Components of OFSAAI ..... 19

Access OFSAA Applications ..... 20

Browser Settings ..... 20

OFSAA Login ..... 21

OFSAAI Splash Window ..... 24

Common Landing Page and Application Context ..... 26

Modules in OFSAAI ..... 27

Enabling an Additional Product License Post Installation of Application Pack ..... 28

**1 DATA MODEL MANAGEMENT ..... 30**

1.1 Upload Business Model ..... 32

1.1.1 Model Upload Using Erwin ..... 34

1.1.2 Model Upload Using DB Catalog ..... 36

1.1.3 Model Upload Using OFSAA Data Model Descriptor (Database.XML) File ..... 37

1.2 Sequence of Execution of Scripts ..... 39

1.3 Configuring Session Parameters and Hints ..... 41

1.3.1 Specify Database Session Level Parameters ..... 42

1.3.2 Specify Database Hints For Object Registration Tables ..... 43

1.4 Registering Partition Information ..... 45

1.5 Model Versioning ..... 45

1.6 Viewing Log Details ..... 45

1.7 Log File Download ..... 46

**2 DATA MANAGEMENT TOOLS ..... 47**

2.1 Navigating to Data Management Tools ..... 48

2.2 Components of Data Management Tools ..... 48
2.3 Data Sources ..... 48
2.3.1 Defining Data Source Application ..... 50
2.3.2 Defining Data Sources ..... 51
2.3.3 Mapping Data Sources to Applications ..... 53
2.3.4 Generating Source Models ..... 54
2.4 Data Mapping ..... 61
2.4.2 Defining Data Mapping to File (T2F, H2F) ..... 74
2.5 Data File Mapping ..... 78
2.5.1 File to Hive Mapping (F2H) ..... 78
2.5.2 Defining Data File Mapping (F2T, F2H) ..... 79
2.5.3 Flat File Types ..... 83
2.6 Post Load Changes ..... 84
2.6.1 Insert/Update Transformation ..... 85
2.6.2 Stored Procedure Transformation ..... 86
2.6.3 External Library ..... 87
2.7 Data Quality Framework ..... 89
2.7.1 Data Quality Rules ..... 89
2.7.2 Data Quality Groups ..... 110
2.7.3 Configure Dynamic Degree of Parallelism (DOP) in DQ Framework ..... 118
2.8 User Defined Functions ..... 119
2.8.1 Creating User Defined Functions (UDFs) ..... 120
2.8.2 Modifying the User Defined Functions ..... 121
2.8.3 Deleting the User Defined Functions ..... 121
2.9 References ..... 123
**3 UNIFIED ANALYTICAL METADATA ..... 129**
3.1 Alias ..... 130
3.1.1 Adding Alias ..... 131
3.1.2 Viewing Alias ..... 131
3.1.3 Deleting Alias ..... 132
3.2 Derived Entity ..... 132
3.2.1 Creating Derived Entity ..... 133
3.2.2 Copying Derived Entity ..... 136
3.2.3 Viewing Derived Entity Properties ..... 136
3.2.4 Modifying Derived Entity ..... 136

3.2.5 Deleting Derived Entity ... 137
3.3 Data Sets ... 138
3.3.1 Creating Data Set ... 139
3.3.2 Viewing Data Set Details ... 142
3.3.3 Modifying Data Set Details ... 142
3.3.4 Copying Data Set Details ... 142
3.3.5 Deleting a Data Set ... 143
3.4 Dimension Management ... 143
3.4.1 Components of Dimension Management ... 144
3.4.2 Attributes ... 145
3.4.3 Members ... 150
3.4.4 Build Hierarchy ... 155
3.4.5 Hierarchy Maintenance ... 161
3.5 Measure ... 168
3.6 Business Processor ... 174
3.7 Expression ... 181
3.7.1 Navigate to Expressions ... 181
3.7.2 Adding Expression Definition ... 182
3.7.3 Viewing Expression ... 184
3.7.4 Modifying Expression ... 184
3.7.5 Copying Expression ... 184
3.7.6 Checking Dependencies ... 185
3.7.7 Deleting Expression ... 185
3.8 Filter ... 185
3.8.1 Navigating to Filters ... 185
3.8.2 Viewing Filter Definition ... 194
3.8.3 Modifying Filter Definition ... 195
3.8.4 Copying Filter Definition ... 195
3.8.5 Checking Dependencies ... 195
3.8.6 Viewing SQL of Filter ... 196
3.8.7 Deleting Filter Definition ... 196
3.9 Map Maintenance ... 196
3.9.1 Creating a Mapper Definition ... 197
3.9.2 Mapper Maintenance ... 200
3.9.3 Default Secure Map ... 202
3.9.4 Modifying Mapper Definition ... 203

3.9.5 Copying Mapper Definition ..... 204
3.9.6 Deleting Mapper Definition ..... 205
3.9.7 Non Dynamic Mapper definitions ..... 205
3.10 Analytics Metadata ..... 205
3.10.1 Dimension ..... 205
3.10.2 Cubes ..... 210
3.10.3 Catalog ..... 224
3.11 Cube Migration ..... 232
3.11.1 Migrating Cube ..... 234
3.12 References ..... 236
3.12.1 Scenario to Understand Data Set Functionality ..... 236
3.12.2 Operator Types ..... 236
3.12.3 Function Types and Functions ..... 237
3.12.4 Creating Expression ..... 243
3.12.5 Base and Computed Measures ..... 244
3.12.6 Business Hierarchy Types ..... 245
3.12.7 Measure Types ..... 254
3.12.8 Read Only Selected in Mapper Window ..... 258
3.12.9 Accessing Applets Screen ..... 258
**4 DATA ENTRIES FORMS AND QUERIES ..... 260**
4.1 Excel Upload (Atomic) ..... 260
4.1.1 Navigating to Excel Upload (Atomic) ..... 260
4.1.2 Excel-Entity Mappings ..... 261
4.1.3 Adding Excel-Entity Mappings ..... 261
4.1.4 Excel Upload ..... 263
4.2 Forms Designer ..... 265
4.3 Forms Authorization ..... 274
4.4 Data Entry ..... 276
4.4.2 References ..... 285
**5 RULE RUN FRAMEWORK ..... 289**
5.1 Navigating to Rules Run Framework ..... 291
5.2 Components of Rules Run Framework ..... 291
5.3 Rule ..... 292
5.3.1 Components of Rule Definition ..... 293
5.3.2 Create Rule ..... 294

5.3.3 View Rule Definition ... 309
5.3.4 Edit Rule Definition ... 309
5.3.5 Copy Rule Definition ... 310
5.3.6 Authorize Rule Definition ... 311
5.3.7 Export Rule to PDF ... 311
5.3.8 Trace Rule Definition Details ... 312
5.3.9 Delete Rule Definition ... 312
5.4 Process ... 313
5.4.1 Create Process ... 316
5.4.2 View Process Definition ... 323
5.4.3 Edit Process Definition ... 323
5.4.4 Copy Process Definition ... 324
5.4.5 Authorize Process Definition ... 325
5.4.6 Export Process to PDF ... 325
5.4.7 Trace Process Definition Details ... 327
5.4.8 Delete Process Definition ... 327
5.5 Run ... 328
5.5.1 Create Run ... 329
5.5.2 View Run Definition ... 338
5.5.3 Edit Run Definition ... 338
5.5.4 Copy Run Definition ... 339
5.5.5 Authorize Run Definition ... 340
5.5.6 Export Run to PDF ... 340
5.5.7 Fire Run ... 342
5.5.8 Delete Run Definition ... 343
5.6 Manage Run Execution ... 344
5.6.1 Creating Manage Run Definition ... 345
5.6.2 Viewing Manage Run Definition ... 347
5.6.3 Editing Manage Run Definition ... 347
5.7 Utilities ... 349
5.7.1 Component Registration ... 349
5.8 References ... 351
5.8.1 How Run Rule Framework is used in LLFP Application ... 351
5.8.2 How Run Rule Framework is used in LRM Application ... 352
5.8.3 Process Hierarchy Members ... 354
5.8.4 Hierarchical Member Selection Modes ... 356

5.8.5 Significance of Pre-Built Flag ..... 357
5.8.6 Seeded Component Parameters in RRF ..... 358

**6 OPERATION ..... 367**

6.1 Batch Maintenance ..... 368
6.1.1 Adding Batch Definition ..... 369
6.1.2 Specify Task Details ..... 370
6.2 Batch Execution ..... 374
6.2.1 Executing Batch ..... 374
6.2.2 Modifying Task Definitions of a Batch ..... 377
6.3 Batch Scheduler ..... 379
6.3.1 Creating Batch Schedule ..... 380
6.3.2 Updating Existing Batch Schedule ..... 382
6.4 Batch Monitor ..... 384
6.4.1 Crash Handling of Backend Servers ..... 384
6.4.2 Monitoring Batch ..... 385
6.5 Processing Report ..... 387
6.6 Batch Cancellation ..... 388
6.6.1 Cancelling Batch ..... 389
6.6.2 Aborting Batch ..... 390
6.7 View Log ..... 390
6.7.1 Search and View Task ID Log ..... 391
6.8 References ..... 393
6.8.1 Task Component Parameters ..... 393
6.8.2 Batch Search ..... 404

**7 METADATA BROWSER ..... 405**

7.1 Metadata Browser (Object and Application View) ..... 405
7.1.1 Object View ..... 405
7.1.2 Searching Metadata ..... 406
7.1.3 Exporting Metadata Details ..... 407
7.1.4 Browsing/ Viewing Linked Metadata ..... 407
7.1.5 Data Foundation Metadata ..... 409
7.1.6 Business Metadata ..... 414
7.1.7 Process Metadata ..... 421

**8 QUESTIONNAIRE ..... 424**

8.1 Knowing Questionnaire - Summary with Flowchart ..... 424
8.2 Knowing the Types of Questionnaires ..... 425
8.3 Configuring Questionnaire Attributes ..... 426
8.3.1 Adding Questionnaire Attributes ..... 427
8.3.2 Editing Questionnaire Attributes ..... 431
8.3.3 Deleting Questionnaire Attributes ..... 432
8.4 Defining Questions ..... 432
8.4.1 Creating Questions in the Library ..... 434
8.4.2 Editing Questions from the Library ..... 441
8.4.3 Creating Questions by Copying Existing Questions ..... 441
8.4.4 Deleting Questions from the Library ..... 442
8.4.5 Viewing Associated Questionnaires ..... 442
8.4.6 Wrapping and Unwrapping Questions from the Library ..... 443
8.5 Defining Questionnaires ..... 443
8.5.1 Creating Questionnaire in the Library ..... 444
8.5.2 Approving Questionnaires ..... 453
8.5.3 Editing Questionnaire from the Library ..... 454
8.5.4 Creating Questionnaire by Copying Existing Questionnaire ..... 455
8.5.5 Deleting Questionnaire from the Library ..... 455
8.5.6 Wrapping and Unwrapping Questionnaire from the Library ..... 455
8.6 Using Search in Questionnaire ..... 456
8.6.1 Using Basic Search ..... 456
8.6.2 Using Advanced Search ..... 456
8.6.3 Describing Search Fields ..... 456

**9 SYSTEM CONFIGURATION AND IDENTITY MANAGEMENT ..... 458**

9.1 System Configuration ..... 458
9.1.1 Navigating to System Configuration ..... 458
9.1.2 Components of System Configuration ..... 458
9.1.3 Database Server ..... 459
9.1.4 Application Server ..... 463
9.1.5 Web Server ..... 465
9.1.6 Database Details ..... 468
9.1.7 OLAP Details ..... 474
9.1.8 Information Domain ..... 477
9.1.9 Configuration ..... 481

9.1.10 Application ... 497
9.2 Identity Management ... 500
9.2.1 Navigating to Identity Management ... 500
9.2.2 Components of Identity Management ... 500
9.2.3 Mappings in Identity Management ... 500
9.2.4 User Administrator ... 501
9.2.5 System Administrator ... 521
9.2.6 Audit Trail Report ... 533
9.2.7 User Activity Report ... 535
9.2.8 User Profile Report ... 536
9.2.9 Enable User ... 538
9.3 Process Modelling Framework ... 539
Key Features of Process Modelling Framework ... 539
Architecture ... 539
Application Development Life Cycle ... 540
9.3.1 Navigating to Process Modelling Framework ... 540
9.3.2 Process Modeller ... 541
9.3.3 Process Monitor ... 588
9.3.4 Delegation ... 591
9.3.5 My Inbox ... 595
9.4 References ... 596
9.4.1 List of Objects Created in Information Domain ... 596
9.4.2 Authentication and Logging ... 596
9.4.3 Populating Execution Statistics ... 596
Scenario ... 597
9.4.4 SMS Auto Authorization ... 597
**10 OBJECT ADMINISTRATION ... 598**
10.1 Object Security Concept in OFSAAI ... 598
10.1.1 User Group Authorization ... 599
10.1.2 User Group Scope ... 599
10.1.3 User Group Access Right ... 600
10.1.4 Object Access Type ... 600
10.2 OFSAA Seeded Security ... 601
10.2.1 OFSAA Seeded User Groups ... 601
10.2.2 OFSAA Seeded Roles ... 603

10.2.3 OFSAA Seeded Actions and Functions ..... 604
10.3 Object Security ..... 606
10.3.1 Metadata Segment Mapping ..... 606
10.3.2 Map Segment Mapping ..... 607
10.3.3 Batch Execution Rights ..... 609
10.3.4 Object to Application Mapping ..... 610
10.4 Object Migration ..... 612
10.4.1 Object Migration (UI Based) ..... 612
10.4.2 Metadata Restore/Archive ..... 622
10.5 Translation Tools ..... 628
10.5.1 Config Schema Download ..... 628
10.5.2 Config Schema Upload ..... 629
10.6 Utilities ..... 630
10.6.1 Metadata Authorization ..... 631
10.6.2 Save Metadata ..... 632
10.6.3 Write-Protected Batch ..... 633
10.6.4 Metadata Difference ..... 633
10.6.5 Patch Information ..... 634
10.6.6 Transfer Documents Ownership ..... 634
10.6.7 Business Restructure ..... 638
10.6.8 Key Business Dimension Preference ..... 650
10.7 References ..... 653
10.7.1 Scenario to Understand Hierarchy Security ..... 653
10.7.2 Role Mapping Codes ..... 654
10.7.3 Function Role Mapping ..... 655
**11 REFERENCES ..... 662**
11.1 Workspace Options ..... 662
11.1.1 Search and Filter ..... 662
11.1.2 Pagination ..... 662
11.1.3 Customize work area ..... 663
11.1.4 Calendar ..... 663
11.2 Function Mapping Codes ..... 663
11.3 External Scheduler Interface Component ..... 676
11.3.1 Architecture ..... 677
11.3.2 Scope of Integration ..... 677

11.3.3 ESIC Invocation ..... 678
11.3.4 Batch Execution Mechanism ..... 680
11.3.5 External Scheduler Batch Run ID ..... 685
11.3.6 Batch Monitoring ..... 685
11.3.7 Advantages of ES ..... 685
11.3.8 OFSAAI Standard XML ..... 686
11.3.9 Exit Status Specifications ..... 687
11.3.10 ESIC Operations using Wrapper Scripts ..... 688
11.3.11 ESIC Operations Using Command Line Parameters and Job Types ..... 690
11.3.12 Additional Information on ESIC ..... 694
11.4 Command Line Utilities ..... 696
11.4.1 Command Line Utility to Migrate Objects ..... 696
11.4.2 Command Line Utilities to Execute RRF Definitions ..... 723
11.4.3 Command Line Utility to Publish Metadata in Metadata Browser ..... 727
11.4.4 Command Line Utility for Object Application Mapping in Metadata Browser ..... 728
11.4.5 Command Line Utility for Resaving UAM Hierarchy Objects ..... 729
11.4.6 Command Line Utility for Resaving Derived Entities ..... 731
11.4.7 Command Line Utility for OBIEE Publish ..... 731
11.4.8 Command Line Utility for Mapper Pushdown ..... 733
11.4.9 Command Line Utility for Object Registration ..... 734
11.4.10 Command Line Utility for Source Model Generation ..... 735
11.4.11 Command Line Utility for LDAP Migration ..... 737
11.5 Configuration for Model Upload Utility ..... 738
11.5.1 Run the Model Upload Utility ..... 738
11.5.2 Model Upload Details ..... 741
**12 PREFERENCES ..... 743**
**APPENDIX A: USER GROUPS AND USER ROLES ..... 744**
User Groups and Entitlements ..... 744
Financial Services Analytical Applications Infrastructure User Group – Role Mapping ..... 744
Financial Services Analytical Applications Infrastructure Role- Function Mapping: ..... 764
Financial Services Analytical Applications Infrastructure Roles: ..... 787
**APPENDIX B: FREQUENTLY ASKED QUESTIONS ..... 796**

# Getting Started

Oracle Financial Services Analytical Applications Infrastructure (OFSAAI) is a general purpose Analytics Applications infrastructure that provides the tooling platform necessary to rapidly configure and develop analytic applications for the financial services domain. It is built with Open-Systems Compliant architecture providing interfaces to support business definitions at various levels of granularity.

Applications are built using OFSAAI by assembling business definitions or business metadata starting from data-model to lower grain objects like Dimensions, Metrics, Security Maps, and User Profile to higher order objects like Rules, Models, and Analytic Query Templates which are assembled using the lower grain ones. In addition to application definition tools, it provides the entire gamut of services required for Application Management including Security Service, Workflow Service, Metadata Management, Operations, Life-cycle Management, public API's and Web Services that are exposed to extend and enrich the tooling capabilities within the applications.

OFSAAI provides the framework for building, running, and managing applications along with out of the box support for various Deployment Models, Compliance to Technology standards, and supporting a host of OS, Middleware, Database, and Integration with enterprise standard infrastructure.

The information contained in this document is intended to give you an exposure and an understanding of the features in Oracle Financial Services Analytical Applications Infrastructure.

## About this Manual

This manual explains the functionality of Oracle Financial Services Analytical Applications Infrastructure (OFSAAI) in a procedural approach. OFSAAI is integrated with multiple modules which cover areas like data extraction and transformation, definition and execution of rules and processes for molding a set of data, and application of different techniques on raw data for model design purpose.

It also encompasses of modules which are inevitable to make the Infrastructure Application flexible according to the user requirements. These modules perform administration, definition of servers, database, and Information Domain along with the other configuration processes such as segment and metadata mapping, hierarchy security, and designing of the Infrastructure Menu functions. The last section of this document consists of references and feedback information pertaining to any issues noticed within the document.

## Audience

This guide is intended for:

- Business Analysts who are instrumental in solution designing and creation of statistical models using historical data.
- System Administrators (SA) who are instrumental in maintaining and executing batches, making the Infrastructure Application secure and operational, and configuring the users and security of Infrastructure.

## Recommended Skills

- System Administrators should be aware of the database concepts and underlying the database structure of the Infrastructure Application from an operational perspective. System Administrators also need to be technically sound in configuring the databases for data extraction procedures.
- Business analysts must have an in-depth knowledge of the underlying data sources that stores organizations data, the ETL concept of data warehousing and associated terminologies along with the statistical techniques for model designing and execution.

## Recommended Environment

Infrastructure application has been tested with Microsoft Internet Explorer™ browser IE 11. For best viewing of Infrastructure pages, set the window resolution to a minimum resolution of 1024 x 768 pixels.

## Prerequisites

- Successful installation of Infrastructure and related software.
- Good understanding of business needs and administration responsibilities.
- In-depth working knowledge of business statistics.

## Conventions and Acronyms

| Conventions | Description |
|---|---|
| Window Names are *italicized*. | |
| Window actions are indicated in **Bold** | |
| ALM | Asset Liability Management |
| AMHM | Attributes Members Hierarchies Module |
| ANSI | American National Standards Institute |
| API | Application Programming Interface |
| ARIMA | Auto Regressive Integrated Moving Average |

| Conventions | Description |
|---|---|
| ASCII | American Standard Code for Information Interchange |
| AW | Analytical Workspace |
| BA | Business Analysts |
| BI | Business Intelligence |
| BMM | Business Metadata Management |
| BP | Business Processor |
| CF | Cash Flow |
| CSV | Comma Separated Values |
| DBA | Database Administrator |
| DEFQ | Data Entry Forms and Queries |
| DMP | Window or Memory Dump |
| DQ | Data Quality |
| DSN | Data Source Name |
| ELT | Extract Load Transform |
| EPM | Enterprise Performance Management |
| ES | External Scheduler |
| ESIC | External Scheduler Interface Component |
| ETL | Extract Transform Load |
| EWMA | Exponentially Weighted Moving Average |
| FTP | File Transfer Protocol |
| GARCH | Generalized Auto Regressive Conditional Heteroskedasticity |
| GMV | General Market Variable |
| HTML | Hyper Text Markup Language |
| HTTP | Hypertext Transfer Protocol |
| Infodom | Information Domain |
| IP | Internet Protocol |
| JDBC | Java Database Connectivity |

| Conventions | Description |
|---|---|
| JSON | JavaScript Object Notation |
| JVM | Java Virtual Machine |
| LDAP | Lightweight Directory Access Protocol |
| LHS menu | Left hand side menu |
| MDB | Microsoft Access Database |
| MOLAP | Multidimensional Online Analytical Processing |
| NE | Non Editable |
| OBIEE | Oracle Business Intelligence Enterprise Edition |
| ODBC | Open Database Connectivity |
| OFSAAI | Oracle Financial Services Analytical Applications Infrastructure |
| OHC | Oracle Help Centre |
| OLAP | Online Analytical Processing |
| PDF | Portable Data Format |
| PFT | Profitability Management |
| PR2 | Process Run Rule framework |
| RAC | Real Application Cluster |
| RDBMS | Relational Database Management System |
| RHS | Right Hand Side |
| RRF | Run Rule Framework |
| SA | System Administrator |
| SFTP | Secret File Transfer Protocol |
| SID | System ID |
| SMS | Security Management System |
| SQL | Structured Query Language |
| T2T | Table to Table |
| TBD | To be Deleted |
| TFM | Technical File Maintenance |

| Conventions | Description |
|---|---|
| TNS Name | Transparent Network Substrate Name |
| TP | Transfer Pricing |
| URL | Uniform Resource Locator |
| VaR | Value at Risk |
| XML | Extensible Markup Language |

# OFSAAI - An Overview

Oracle Financial Services Analytical Applications Infrastructure is the complete end-to-end Business Intelligence solution that is easily accessible via your desktop. A single interface lets you tap your company's vast store of operational data to track and respond to business trends. It also facilitates analysis of the processed data. Using OFSAAI you can query and analyze data that is complete, correct, and consistently stored at a single place. It has the prowess to filter data that you are viewing and using for analysis.

It allows you to personalize information access to the users based on their role within the organization. It also provides a complete view of your enterprise along with the following benefits:

- Track enterprise performance across information data store.
- Use one interface to access all enterprise databases.
- Create consistent business dimensions and measures across business applications.
- Automate the creation of coordinated data marts.
- Use your own business language to get fast and accurate answers from all your databases.
- Deploy an open XML and web- based solution against all major relational or multi-dimensional databases on Microsoft Windows and UNIX servers.

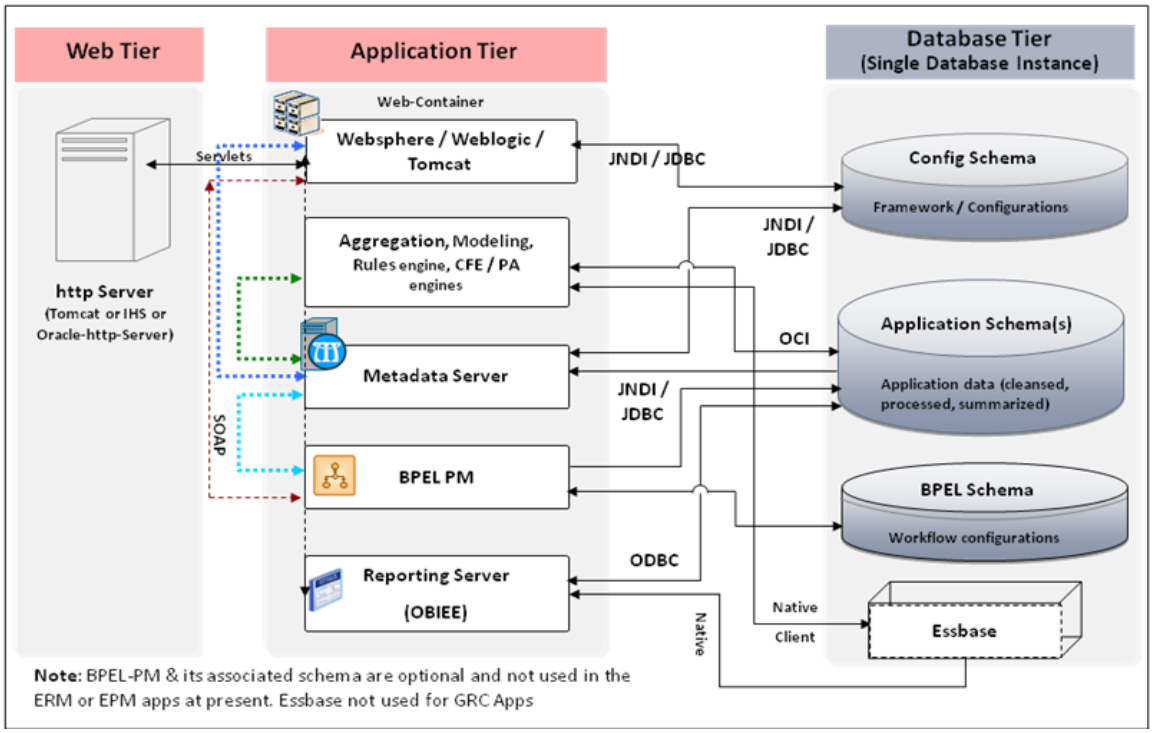
This chapter provides an overview of Infrastructure, its components, and explains how these components are organized in the Splash window with the user login process.

## Components of OFSAAI

The OFSAA Infrastructure consists of below components / Modules that are used to deploy an analytical solution.

- Data Model Management
- Data Management Tools
- Unified Analytical Metadata
- Rules Run Framework
- Metadata Browser
- Operations
- System Configuration & Identity Management
- Object Administration
- Forms Framework

All components are encapsulated within a common Security and Operational framework as shown in the figure below.




Infrastructure also supports many business analytical solution(s) like Operational Risk, PFT, and Basel, which are licensed separately to the organization. This manual provides an overview of only the technological components.

For a detailed overview of OFSAAI modules, refer to Infrastructure Modules section.

## Access OFSAA Applications

OFSAA can be accessed through your web-browser as soon as the System Administrator (SA) installs and configures Oracle Financial Services Analytical Applications.

The SA will provide you with a link through which you can access Oracle Financial Services Analytical Applications. You can access the login window through your web-browser using the URL http(s): *<IP Address of the Web Server > :<servlet port>/<context name>/login.jsp*.

You can also login to the application with the host name instead of the IP address.

### Browser Settings

Below setting should be enabled in Internet Explorer browser if IE version is greater than 10.

- Go to **Tools** -> **Compatibility View Settings.**
- Select the **Display intranet sites in Compatibility View** checkbox.
  Or

Enter the OFSAA setup URL in the **Add this website** field and click **Add**. Ensure the URL is listed under **Websites you've added to Compatibility View**.

## OFSAA Login

On entering the URL (*<IP Address/hostname of the Web Server > :<servlet port>/<context name>/login.jsp* ) in your Internet Explorer window, the Splash *window* is displayed:

You can select the required language from the **Language** drop-down list. The language options displayed in the drop-down list are based on the language packs installed for the OFSAA infrastructure.. Based on the selection of Language, the appropriate language login window is displayed.

Enter the **User ID** and **Password** provided by the System Administrator and click **Login**. You will be prompted to change your password on your first login. For details on how to change password, see Changing Password section.

In case the OFSAA setup has been configured for OFSAA native Security Management System (SMS) Authentication, the password to be entered will be as per the password set in the OFSAA SMS repository.

### Login as System Administrator

Post installation, the first login into Infrastructure is possible only for a System Administrator through user id “sysadmn”. This ID is created at the time of installation with default password as “password0”.

Enter User ID as “sysadmn” and password as “password0”. Click **Login**.

### Login as System Authorizer

System Authorizer ID is also created at time of installation with default password as “password0”. This ID is required to authorize the users created by the system administrator.

Enter login id as “**sysauth**” and password as “password0”. Click **Login**.

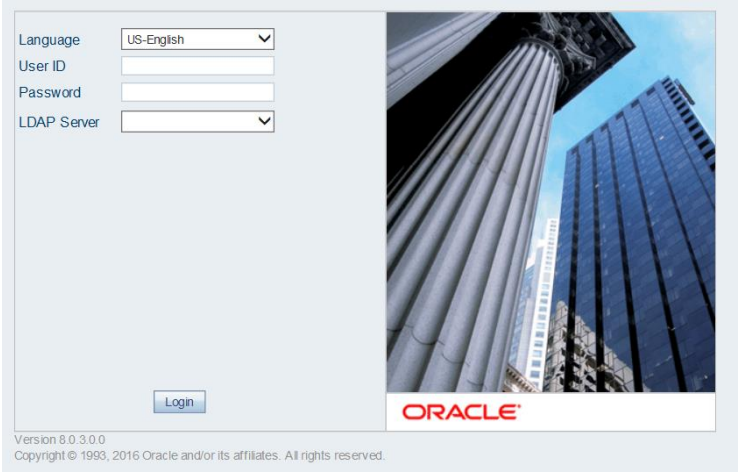
### Login as Business User

The Business users will be created by System Administrator and will be authorized by the System Authorizer.

Enter User ID and Password provided by the System Administrator and click **Login**.

### OFSAA Login if LDAP Servers are configured

If the OFSAA setup has been configured for LDAP Authentication, the login page is displayed as shown:




1. Enter your **User ID** and **Password (as in LDAP store)** in the respective fields.
2. Select the appropriate **LDAP Server** from the drop-down list, against which you want to get authenticated. This is optional. If you do not select any server, you will be authenticated against the appropriate LDAP server.

**NOTE:** For SYSADMN/ SYSAUTH/ GUEST users, no need to select any LDAP server as they are always authenticated against SMS store. Additionally, in case a specific user has been marked as “SMS Auth Only” in the User Maintenance window even though the OFSAA instance is configured for LDAP authentication, then that user will also be authenticated against SMS store instead of LDAP store. The user has to enter password as per SMS store.

### Changing Password

You can choose to change your password any time by clicking your username appearing on the right top corner and selecting **Change Password**.

Note that this option is available:

- If **SMS Authentication & Authorization is configured as Authentication Type** from the *Configuration* window**.**
- If **LDAP Authentication & SMS Authorization** is **configured as Authentication Type** from the Configuration window and the **SMS Auth Only** checkbox is selected for the user in the *User Maintenance* window**.**
- If **SSO Authentication & SMS Authorization** is **configured as Authentication Type** from the Configuration window and the **SMS Auth Only** checkbox is selected for the user in the *User Maintenance* window**.**

In the *Change Password* window, enter a new password, confirm it and click **OK** to view the Splash window. Refer to the following guidelines for Password Creation:

- Passwords are displayed as asterisks (stars) while you enter. This is to ensure that the password is not revealed to other users.
- Ensure that the entered password is at least six characters long.
- The password must be alphanumeric with a combination of numbers and characters.
- The password must not have more than two consecutive repeating characters. For example, if the password is ‘Oraaacle123’, ‘a’ repeats thrice consecutively in it, which is not valid.
- The password should not contain spaces.
- Passwords are case sensitive and ensure that the Caps Lock is not turned ON.
- By default, the currently used password is checked for validity if password history is not set.
- New password should be different from previously used passwords based on the password history, which can be configured. For more information, refer Configuration section in System Configuration chapter.

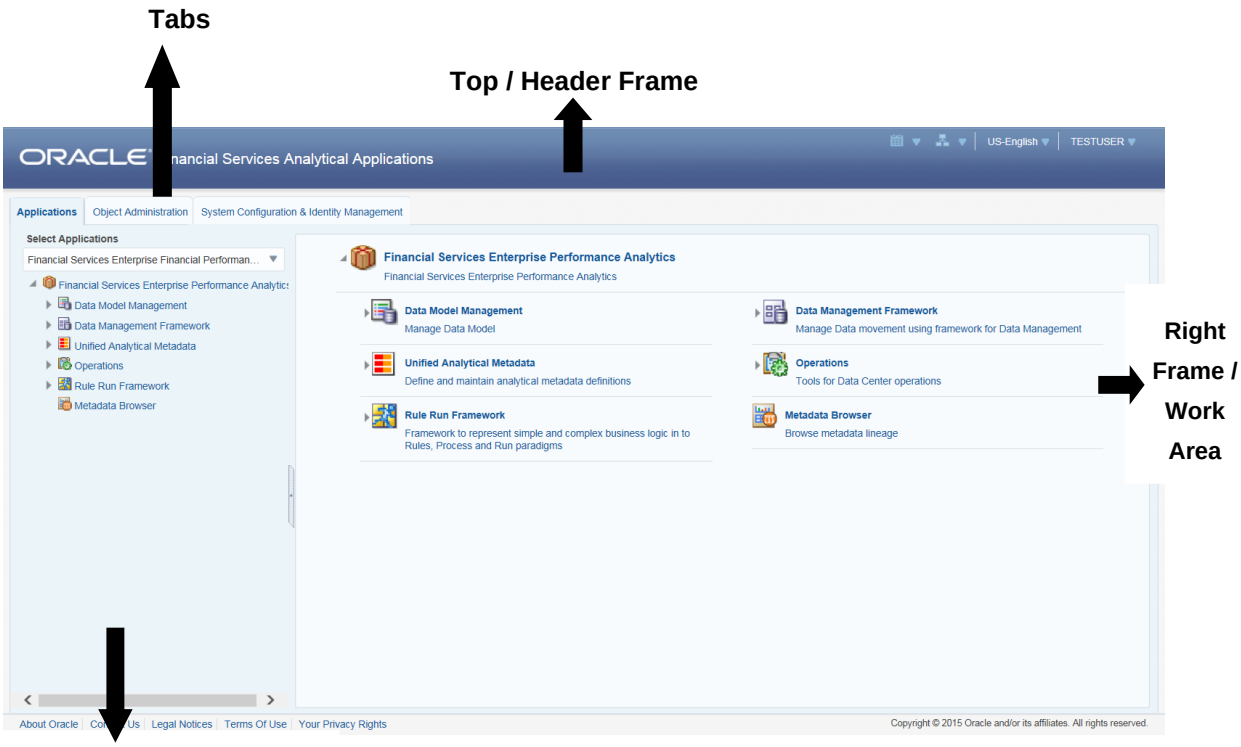
If you encounter any of the following problems, contact the System Administrator:

- Your user ID and password are not recognized.
- Your user ID is locked after three consecutive unsuccessful attempts.
- Your user ID has been disabled.
- Guest user cannot change the password.

## OFSAAI Splash Window

On successful login, the Infrastructure splash window is displayed. The splash window is divided into three frames:

- The Top or Header frame
- The Left or Function Menu frame
- The Right frame or Work Area

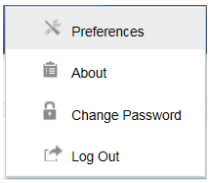



The **Header** frame displays the user details along with the Language in the right hand corner in top frame of the window.

Click to view the last login details. It displays the last login date and time as well as the last failed login date and time.

Click to view the Information Domain to which you are connected. It also displays the setup details.

Click the logged in user name and sub menu is displayed as shown:




Click **Preferences** to set the Home Page.

Click **Change Password** to change your password. For more information, see Change Password section. This option is available only if SMS Authorization is configured.

Click **Log Out** to exit Oracle Financial Services Analytical Applications Infrastructure. The built-in security system of Infrastructure ensures restricted access to the respective windows based on the user's role. This is based on the functions that you as a user are required to perform.

## Common Landing Page and Application Context

A common landing page is available for all users until a preferred application landing page has been set. The landing page is divided into multiple tabs and each tab has specific links to OFSAA Infrastructure and/ or Application modules. Depending on the OFSAA Application being accessed and the access roles mapped to the logged in User, the Tabs and links are displayed.

**Applications Tab:**

This tab lists the various OFSAA Applications that are installed in the OFSAA setup. The **Select Application** drop-down list displays the OFSAA Applications, based on the logged in user and mapped OFSAA Application User Group(s). Links to related modules within Applications and Infrastructure are grouped appropriately to maintain a unified experience.

**Sandbox Tab:**

This tab lists the various OFSAA Sandboxes created in the OFSAA setup and the **Select Sandbox** drop-down list displays the OFSAA Sandboxes based on the logged in User and mapped OFSAA Application User Group(s). Links to modules that operate only on Sandbox features are grouped in this tab.

**Object Administration Tab:**

This tab lists the various OFSAA Information Domains created in the OFSAA setup. The **Select Information Domain** drop-down list displays the OFSAA Information Domains based on the logged in User and mapped OFSAA Application User Group(s). Links to modules that enable object traceability and migration of objects are grouped in this tab.

**System Configuration & Identity Management Tab:**

This tab lists the OFSAA Infrastructure System Configuration and Identity Management modules. These modules work across Applications/ Information Domains and hence there are no Application and Information Domain drop-down lists in this tab. Links to modules that allow the maintenance of setup installation and identity management tasks are grouped together in this tab.

When you are in a particular tab, the available menus are displayed in the Left Hand Side (LHS) as well as in the Work Area or Right Frame. You can drill-down through menus from both places and navigate to the required screen.

**NOTE:** The navigation path differs from Application to Application. That is, based on the selected Application, the navigation varies.

## Modules in OFSAAI

- **Data Model Management** is intended for uploading the warehouse data from the operational systems to database schema using ERwin xml file.
- **Data Management Framework** is a comprehensive data integration platform that facilitates all the data integration requirements from high-volume and high-performance batch loads to event-driven integration processes and SOA-enabled data services. This module is used for managing Data movement. This includes sub modules like Data Sources, Data Mapping, Data File Mapping, Post Load Changes *and* Data Quality Framework.
- **Data Entry Forms and Queries** module facilitates you to design web based user-friendly Data Entry windows with a choice of layouts for easy data view and data manipulation. This module has sub modules like Forms Designer, Data Entry, and Excel Upload.
- **Unified Analytical Metadata** is intended for the Information and Business Analysts who are instrumental in supporting and affecting analytical decisions. This module is used to define and maintain analytical metadata definitions. This module has sub modules like Alias, Derived Entity, Dataset, Dimension Management, Business Measure, Business Processor, Build Hierarchy, Business Dimension, Catalog, Essbase Cube, Oracle Cube, Filters, Expression, Map Maintenance, and Cube Migration.
- **Rule Run Framework** facilitates you to define a set of rules, reporting objects, and processes that are required to transform data in a warehouse. This module has sub modules like Rule, Process, Run, and Manage Run Execution.
- **Metadata Browser** module provides extensive browsing capabilities of metadata, helps in tracking the impact of changes to metadata, and trace through to the source of originating data. The metadata in Metadata Browser window is organized into different categories like Data Foundation Metadata, Business Metadata, and Process Metadata.
- **Operations** module facilitates you in administration and processing of business data to create the highest level of efficiency within the system and to derive results based on a specified rule. It includes sections like Batch Maintenance, Batch Execution, Batch Scheduler, Batch Monitor, Batch Processing Report, Batch Cancellation, and View Log.
- **System Configuration & Identity Management** module facilitates System Administrators to provide security and operational frame work required for Infrastructure. It includes sections like Server Details, Database Details, OLAP Details, Information Domain, Configuration, Segment/Metadata Mapping, and Segment Map Security.
- **Object Administration** facilitates System Administrators to define the security framework with the capacity to restrict access to the data and metadata in the warehouse, based on a flexible, fine-grained access control mechanism. These activities are mainly done at the initial stage and then on need basis. It includes sections like Object Security, Object

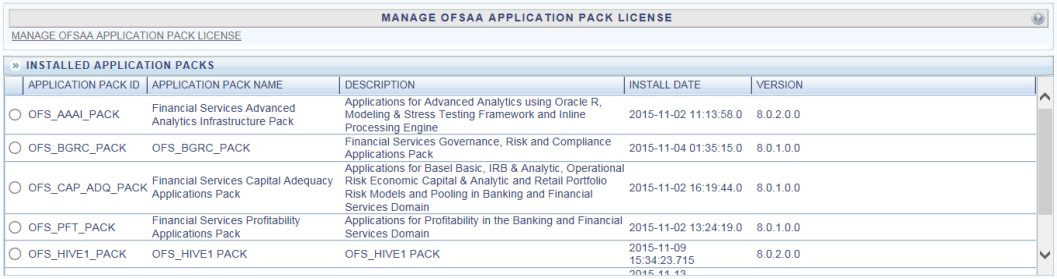
Migration, Translation Tools, and Utilities *(consisting of Metadata Difference, Metadata Authorization*, *Save Metadata*, *Write-Protected Batch, Component Registration, Transfer Document Ownership, Patch Information)*.

## Enabling an Additional Product License Post Installation of Application Pack

You can also enable an application product license within an application pack post installation at any point of time.

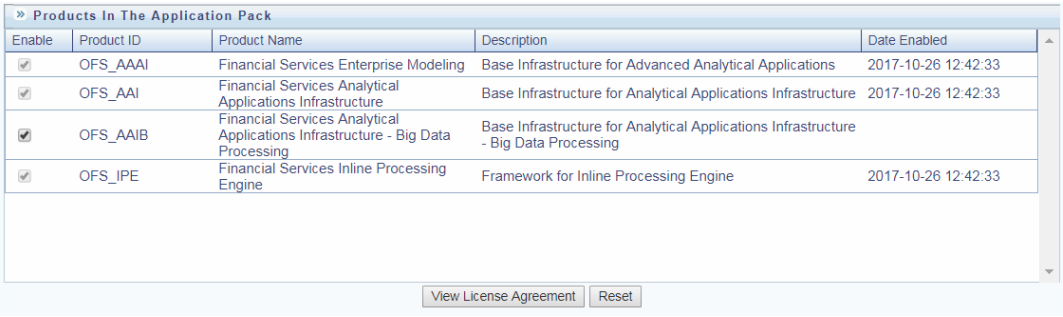
To enable a product license through the application UI

1. Login to the application as SYSADMN user or any user with System Administrator privileges.
2. Navigate to the System Configurations & Identity Management tab, expand Administration and Configuration and select System Configuration.
3. Click **Manage OFSAA Product License(s).** The *Manage OFSAA Application Pack License* window is displayed.




| APPLICATION PACK ID | APPLICATION PACK NAME | DESCRIPTION | INSTALL DATE | VERSION |
|---|---|---|---|---|
| OFS_AAAI_PACK | Financial Services Advanced Analytics Infrastructure Pack | Applications for Advanced Analytics using Oracle R, Modeling & Stress Testing Framework and Inline Processing Engine | 2015-11-02 11:13:58.0 | 8.0.2.0.0 |
| OFS_BGRC_PACK | OFS_BGRC_PACK | Financial Services Governance, Risk and Compliance Applications Pack | 2015-11-04 01:35:15.0 | 8.0.1.0.0 |
| OFS_CAP_ADQ_PACK | Financial Services Capital Adequacy Applications Pack | Applications for Basel Basic, IRB & Analytic, Operational Risk Economic Capital & Analytic and Retail Portfolio Risk Models and Pooling in Banking and Financial Services Domain | 2015-11-02 16:19:44.0 | 8.0.1.0.0 |
| OFS_PFT_PACK | Financial Services Profitability Applications Pack | Applications for Profitability in the Banking and Financial Services Domain | 2015-11-02 13:24:19.0 | 8.0.1.0.0 |
| OFS_HIVE1_PACK | OFS_HIVE1 PACK | OFS_HIVE1 PACK | 2015-11-09 15:34:23.715 | 8.0.2.0.0 |

4. Select an Application pack to view the products in it. The products are displayed in the *Products in the Application Pack* grid.




| Enable | Product ID | Product Name | Description | Date Enabled |
|---|---|---|---|---|
| ☑ | OFS_AAAI | Financial Services Enterprise Modeling | Base Infrastructure for Advanced Analytical Applications | 2017-10-26 12:42:33 |
| ☑ | OFS_AAI | Financial Services Analytical Applications Infrastructure | Base Infrastructure for Analytical Applications Infrastructure | 2017-10-26 12:42:33 |
| ☑ | OFS_AAIB | Financial Services Analytical Applications Infrastructure - Big Data Processing | Base Infrastructure for Analytical Applications Infrastructure - Big Data Processing | |
| ☑ | OFS_IPE | Financial Services Inline Processing Engine | Framework for Inline Processing Engine | 2017-10-26 12:42:33 |

5. Select the checkbox to enable a product within the Application Pack which is not enabled during installation.
6. Click **View License Agreement** to view the license information. The *License Agreement* section is displayed.

7. Select the option **I Accept The License Agreement** and click **Enable**. A pop-up message confirmation is displayed showing that the product is enabled for the pack.

**NOTE:** To use the newly enabled product, you need to map your users to the appropriate product specific User Groups and authorize the actions by logging in as System Authorizer. For more information, see Mapping/Unmapping users section. To identify the newly enabled product specific User Groups/ Application Pack specific User Groups, refer to the respective Application Pack specific Installation and Configuration Guide. After enabling a new product, perform the required configurations explained in OFSAAI Administration Guide.

# 1 Data Model Management

Model refers to a data structure which consists of well-organized business data for analysis. Data Model explicitly determines the structured data which stores persistent information in a relational database and is specified in a data modeling language.

Data Model Maintenance within the Infrastructure system facilitates you to upload the warehouse data from the operational systems to database schema using ERwin xml file or Database Catalog.

An ERwin xml file is a standard tagged xml file based on the Object Property Model which can create the required data models. You can upload the XML file and customize the update process while uploading a Business Model.

Database Catalog feature is used to generate business model out of the database catalog information. This can be used when a database physically exists and the business model has to be reverse-generated for OFSAA metadata references. The reverse model generation feature can be extended to RDBMS based Infodoms as well. This populates the following:

- OFSAA logical model abstraction layer, that is, the `DATABASE.xml` file for the Infodom.
- Object registration repository

Following are the pre-requisites while working with Business Model upload:

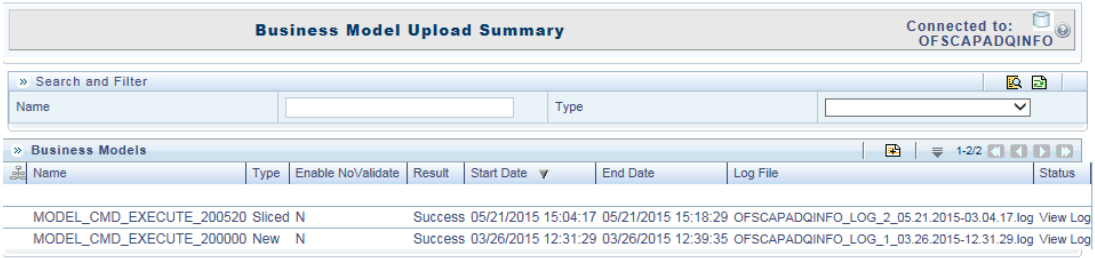
- Buffer pool has to be available to cache table and index data.
- The page size for the Table space has to be created appropriately.

Following are the Upload Modes available in the *Business Model Upload* window:

| Field | Description |
|---|---|
| New | You can upload a new business model only when you are uploading a model for the first time for the selected Information Domain. This option is not available for subsequent model uploads.<br>Erwin XML and DB Catalog options are available for New model upload. |

| Field | Description |
|---|---|
| Incremental | Supported incremental changes include:<br>▪ Add tables<br>▪ Drop tables<br>▪ Alter table to add column<br>▪ Alter table to change/remove existing column<br>The existing model details are extracted and uploaded along with the specific incremental updates. This option is available only with the subsequent model uploads and captures all the metadata pertaining to the changes in the database schema. The same can be tracked to assess the impact.<br>Incremental is not supported if DB Catalog is selected for Model Upload option. |
| Rebuild | You can re-build a model upon the existing model in the database. The existing model is replaced with the current model details. This option is available with the subsequent model uploads and the current model uploaded is considered as the latest model for the selected Information Domain.<br>Any incremental changes are considered as a 'Rebuild' while DB catalog option is used for Model Upload. |
| Sliced | You can quickly upload the Sliced model with only the incremental changes, without merging the tables or columns of an existing model. In a Sliced Model Upload you can incrementally add new tables, add/update columns in the existing tables, and add/update primary/foreign keys in the existing model. You can also drop a column or primary/foreign key. However, dropping a table is not supported. This option is available only with the subsequent model uploads.<br>Sliced Model Upload is faster compared to other upload types as it optimizes the system memory usage and reduces the file size of ERwin.xml.<br>Sliced is not supported if DB Catalog is selected for Model Upload option.<br>In sliced model upload, if the version of the Base model existing in the environment is higher than the Sliced model getting uploaded, then the columns (which are not present in the Sliced model) are not dropped. For more information, refer Model Versioning section. |

You (Business Analysts) need to have **IBMADD** (Import Business Model) function role mapped to access the Import Model framework within the Infrastructure system. You can access *Business Model Upload Summary* window by expanding **Data Model Management** and selecting **Data Model Maintenance** within the tree structure of LHS menu.




The *Business Model Upload Summary* window facilitates to upload the required Business Model and displays the summary of previously uploaded Business Models with their Name, Type (New / Incremental / Rebuild / Sliced), Enable NoValidate status (Y or N), Result of upload (Success/Failed/Running), Start Date, End Date, Log File path, and Status. You can click on "View Log" in the *Status* column corresponding to the required Model to view the Model Upload details of selected Model in the *View Log Details* window.

**NOTE:** To display the Summary of previous Model Uploads, you need to have a connection pool established to access data from the database. For more information on connection pooling, see *OFS AAAI Application Pack Installation & Configuration Guide* available in the OHC Documentation Library.

You can also make use of Search and Pagination options to search for a specific Model based on the Name or Type (New / Incremental / Rebuild / Sliced) existing within the system. For more information, refer Search and Filter and Pagination sections.

## 1.1 Upload Business Model

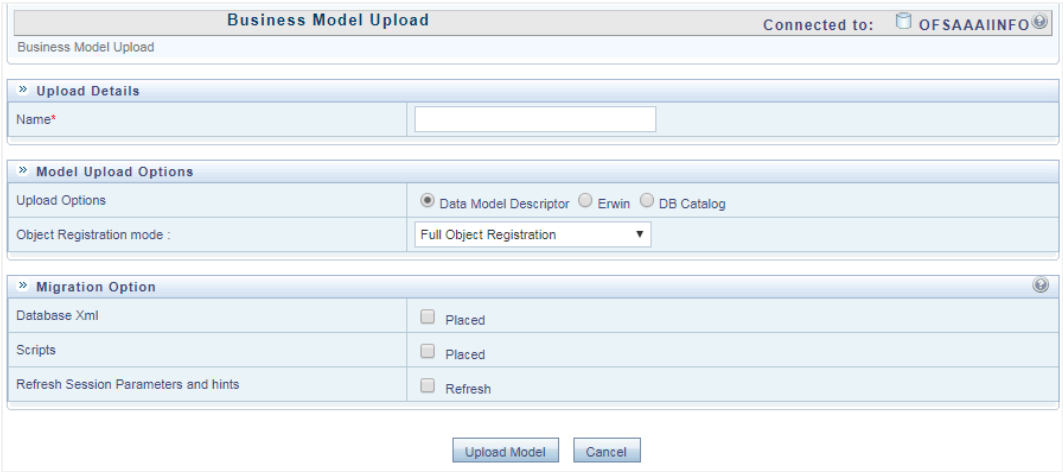
You can upload a new model or update/re-build an existing model to the database schema. The option to upload a business model is available based on the existing model in the selected Information Domain.

Note the following:

- OFSAAI supports ERwin version 9.7 generated XMLs in Model Upload process in addition to ERwin 9.6, ERwin 9.5, ERwin 9.2, ERwin 4.1, ERwin 7.1, and ERwin 7.3 generated XML files.
- By default, OFSAAI supports Data Model up to 2 GB. To configure the permissible size specific to requirements, see the *Frequently Asked Questions* section in *OFS AAAI Application Pack Installation & Configuration Guide* available in the OHC Documentation Library.
- Ensure that the XML file to be uploaded is saved in "All Fusion Repository Format".
- Datatypes of `TIMESTAMP WITH TIME ZONE` and `TIMESTAMP WITH LOCAL TIME ZONE` are supported for model upload. However, the processing of these datatypes are not supported in OFSAAI.

To upload a Business Model:

1. Click **Add** button in the *Business Models* tool bar. The *Business Model Upload* window is displayed.




2. Enter a **Name** for the model being uploaded (mandatory). Ensure that the name specified does not exceed more than 30 characters in length and does not have special characters such as #, %, &, ‘, and “.

3. Select the **Upload Mode** from the drop-down list. You can select only **New** if it is the first upload. For subsequent uploads, you can select **Incremental**, **Rebuild**, or **Sliced** upload mode. For more information, see the Upload Modes section. This field is not displayed if you have selected **Data Model Descriptor** as the **Upload Option**.

4. Select the required **Model Upload Option.** The options are **Erwin**, **Data Model Descriptor** and **DB Catalog**. For more information on each model upload option, see the corresponding sections:

   - Model Upload Using Erwin
   - Model Upload Using DB Catalog
   - Model Upload Using OFSAA Data Model Descriptor

   **NOTE:** For subsequent model uploads, you should select the same “Model Upload Option” as used in the first model upload. That is, if you did “New” model upload using Erwin, then the subsequent model uploads should be done using Erwin option only.

5. Click **Upload Model**. The model upload execution is triggered and you are re-directed to the *Model Upload Summary* window with the upload details in the summary grid. The “Status” of current upload is indicated as *Running* and once the process completes, the status is updated as either *Success* or *Failed* depending on the execution.

**NOTE:** To display the current upload status, you need to have a connection pool established to access data from the database. For more information on connection pooling, see *OFS AAAI Application Pack Installation & Configuration Guide* available in the OHC Documentation Library.

You can click View Log to view the model upload details and also Download Log File to a location for reference.

**NOTE:** Model upload will be successful even if object registration fails. In such case, you should manually do the object registration by running the Command line utility for Object Registration since object registration is mandatory for subsequent model upload to be successful.

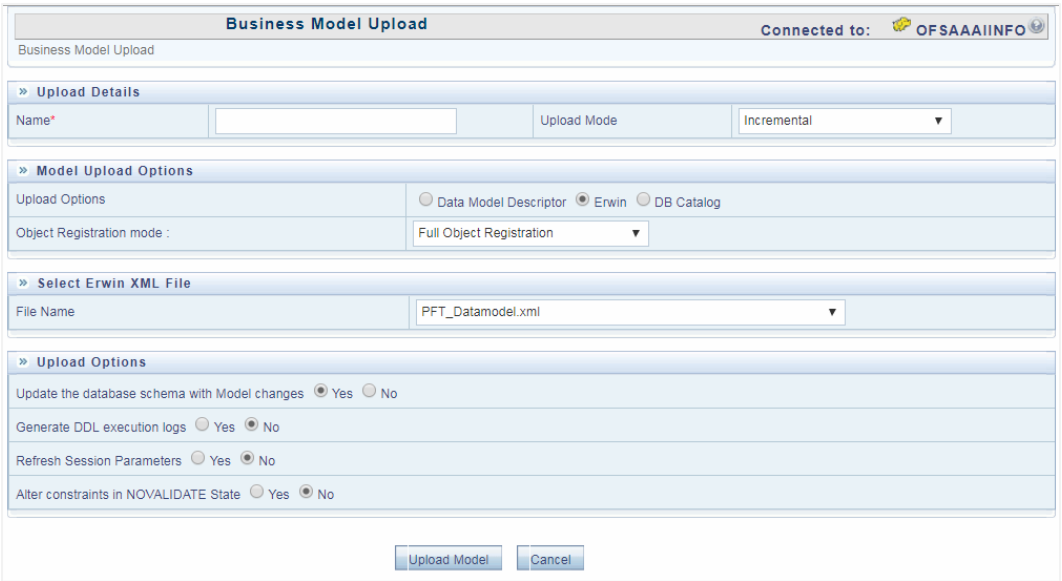
**NOTE:** During model upload if any error occurs, model upload process will be stopped. It will not proceed till end to capture all the errors.

### 1.1.1 Model Upload Using Erwin

You can upload the warehouse data from the operational systems to database schema using ERwin xml file. An ERwin xml file is a standard tagged xml file based on the Object Property Model which can create the required data models. You can upload the xml file by hosting it on the server and customize the update process while uploading a Business Model.

To do model upload using the **Erwin** option:

1. From the *Business Model Upload* window, select **Upload Options** as **Erwin**.




2. Select the **Object Registration Mode** from the drop-down list as **Full Object Registration** or **Incremental Object Registration**. You can select Incremental Object

Registration for the **Upload Mode** as Incremental and Sliced. It is recommended to select incremental only if the changes are minimal.

3. Select the ERwin XML File for upload from the **File Name** drop-down list. The list displays the ERwin files that reside in the default server path (that is, `ftpshare(Application layer/<infodom>/erwin/erwinXML)`).

   **NOTE:** There are functional changes in Erwin XML file upload after applying 8.0.5.1.0 /8.0.5.2.0 ML. See Frequently Asked Questions section.

4. In the *Upload Options* grid, select either **Yes** / **No** to directly **Update the database schema with Model changes**.

   - If you select **Yes**, the generated SQL scripts are executed at runtime to update the Model changes in the database.
   - If you select **No**, it restricts the system from updating the database automatically with Model changes and only the model scripts will be created. Later you should execute the SQL scripts in a correct sequence, in order to make the Infodom Schema to be consistent with the DATABASE.xml. For more information, see Sequence of Execution of Scripts section.

   Also when you select **No**, ensure the following:

   - You have a third party tool or ETL tool to manage the schema updates.
   - Database consistency and schema updates are maintained manually by the database administrator.

   **NOTE:** The table scripts are only created and needs to be updated manually. If you choose this option for the first time and later perform an Incremental / Sliced / Complete Model Re-build, you need to manually synchronize the schema with the database schema.

5. In the *Upload Options* grid, select **Yes** for the **Generate DDL Execution Logs** option if you want execution audit information such as execution start time, end time, and status of each SQL statements run as part of the model upload process. The execution log file will be available under `ftpshare/<INFODOM>/Erwin/executionlogs` folder.

6. Select **Yes** for **Refresh Session Parameters and Hints** option to use Database session parameters and hints during model upload process. For more information, see Configuring Session Parameters and Hints section.

7. In the Upload Options grid, select either **Yes** / **No** to directly update the **Alter constraints in NOVALIDATE state**. During incremental or sliced model upload, alterations to constraints consumes a lot of time as the constraints need to be validated.

- If you select **Yes**, an option to alter the constraints in NOVALIDATE state is enabled and it will not check the existing data for the integrity constraint violation. It is quite useful in cases where it is known that the existing data is clean. So, NOVALIDATE can potentially reduce the additional overhead of the constraint validation and it would enhance the performance.
- By default the option is selected as **No.** If you select **No,** then the option to alter the constraints is not enabled and it will check the existing data for the integrity constraint violation.

Note the following points about NOVALIDATE option.

- Constraints in NOVALIDATE state are supported only in incremental and sliced modes.
- Model upload process irrespective of the status of success or failure will bring the constraints into NOVALIDATE state. Hence, ENABLE VALIDATE should be done as a post-model upload activity. That is, Rollback does not validate the constraints which are non-validated during the upload activity.
- NOVALIDATE option is not relevant for HDFS systems.

### 1.1.2 Model Upload Using DB Catalog

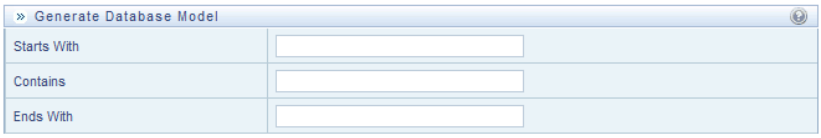
Database Catalog feature is used to generate business model out of the database catalog information. This can be used when a database physically exists and the business model has to be reverse-generated for OFSAA metadata references. The reverse model generation feature can be extended to RDBMS based Infodoms as well. This populates the following:

- OFSAA logical model abstraction layer, that is, the `DATABASE.xml` file for the Infodom.
- Object registration repository

**NOTE:** Erwin is the primary & boot-strap mode to register the data-model with the OFSAA ecosystem. DB Catalog option does not take care of the logical artifacts. So you should not to consider DB Catalog as a replacement for Erwin.

To do model upload using DB Catalog option:

1. From the *Business Model Upload* window, select **Upload Option** as **DB Catalog**.




You can specify the Filter criteria for selection. Filters are patterns for entity names in the Database and can restrict the Database Model generation to a specific set of entities.

2. Specify the Filter entries by entering details in the **Starts with**, **Contains**, and **Ends with** fields. The Database Model is generated even if one of the specified filter conditions matches.
3. You can also specify multiple conditions for a single filter type using comma-separated values. For example, tables starting with TB and TM can be specified as “TB, TM”.

### 1.1.3 Model Upload Using OFSAA Data Model Descriptor (Database.XML) File

This feature allows you to resume data model upload from the logical data model in the form of OFSAA Data Model Descriptor file (Database.XML) that is generated in a base environment. This helps in speeding up the model upload process, by skipping the XSL transformation in the primary environment. This feature can be used in case the same model in the development environment needs to be uploaded to multiple OFSAA instances in the production environment. In such scenarios, you can copy the model definition (database.XML) files and scripts to the target environment and run the command line utility CopyUpload.sh, to integrate those files in the target environment. You can choose to resume model upload process from script generation or script execution.

Following are the steps involved:

1. Copy the required files from source to the target environment, based on from where you want to resume the model upload process.
2. Execute the CopyUpload utility.
3. Perform the model upload.

#### 1.1.3.1 Copying the Required Files

Based on the selection of your start point, copy the required files from your source environment to the desired location.

1. If the start point is script generation, copy the `<INFODOM>_DATABASE.XML` file from `/ftpshare/<INFODOM>/erwin/fipxml/` folder on the source.
2. If the start point is script execution, copy the `<INFODOM>_DATABASE.XML` from `/ftpshare/<INFODOM>/erwin/fipxml/` folder as well as the DB scripts from `/ftpshare/<INFODOM>/erwin/scripts` and `/ftpshare/<INFODOM>/scripts` folders.

| Start point | Required Files |
|---|---|
| Script generation | `/ftpshare/<INFODOM>/erwin/fipxml/<INFODOM>_DATABASE.xml` |
| Script Execution | /`ftpshare/<INFODOM>/erwin/fipxml/<INFODOM>_DATABASE.xml` |
| | DB Scripts from `/ftpshare/<INFODOM>/erwin/scripts` and `/ftpshare/<INFODOM>/scripts` folders |

#### 1.1.3.2 Executing CopyUpload Utility

The command line utility CopyUpload is used to prepare the target OFSAA instance to resume the model upload process from script generation or script execution. This utility is available in the `$FIC_HOME/ficapp/common/FICServer/bin/` folder.

Following are the prerequisites for executing the utility:

- CopyUpload.sh should have Execute permissions.
- Appropriate permissions should be granted on the source folders.
- All the required files should have been copied to the target environment. For details, see Copying the Required Files.

To run the utility from the console:

1. Navigate to $FIC_HOME/ficapp/common/FICServer/bin.
2. Execute the utility using the command:

   ```
   ./CopyUpload.sh
   ```

3. Enter the following when prompted:
   - `Enter ftpshare location`- the path of the ftpshare location
   - `Enter dsnname` – the information domain name
   - `Enter absolute filepath of database xml` - the {, llc;x' path of the folder in which the `<INFODOM>_DATABASE.XML` file is available
   - `Continue with scripts transfer? [y,n]`– Enter 'y' if you want to copy scripts also, else enter 'n'.
   - `Enter absolute path for table folder`– the path of the folder in which the table is available.
   - `Enter absolute path for alter table`– the path of the folder in which the alter table file is available
   - `Enter absolute path for scripts`– the path of the folder in which the DB scripts are available
4. Once the utility is executed successfully, the files are copied to the following locations:
   - `//ftpshare/archive/<INFODOM>/Erwin/fipxml/<INFODOM>_DATABASE.xml`
   - `//ftpshare/archive/<INFODOM>/Erwin/scripts/`
   - `//ftpshare/archive/<INFODOM>/scripts`

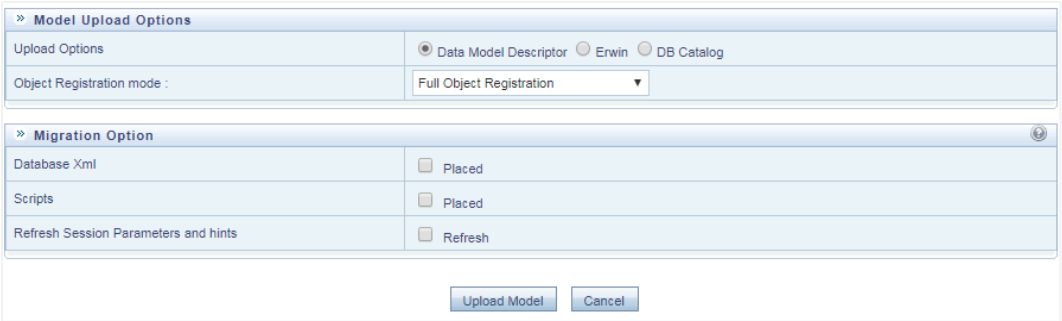
#### 1.1.3.3 Triggering Model Upload

Trigger the model upload process either through command line or through UI. For information on triggering the model upload through command line utility, see Configuration for Model Upload Utility section.

**NOTE:** CopyUpload.sh should have been executed successfully.

To perform model upload using Data Model Descriptor:

1. From the *Business Model Upload* window, select **Upload Option** as **Data Model Descriptor**.




2. Select the **Object Registration Mode** from the drop-down list as **Full Object Registration** or **Incremental Object Registration**. It is recommended to select incremental only if the changes are minimal.

   **NOTE:** Incremental Object Registration should be opted only if the object registration on the base environment was incremental. Full Object Registration can be performed irrespective of mode opted in the base environment.

3. Select the **Database Xml** check box.
4. Select the **Scripts** check box if the starting point of model upload process is from script execution. That is, if you have copied the DB scripts to the target environment. Otherwise, deselect the check box.
5. Select the **Refresh Session Parameters and Hints** checkbox to use Database session parameters and hints during model upload process. For more information, see Configuring Session Parameters and Hints section.
6. Click **Upload Model**.

## 1.2 Sequence of Execution of Scripts

When the model upload is done with the option **Update the database schema with Model changes** as **No** or `<runscriptsFlag>` set as `FALSE`, you should execute the SQL scripts

generated as part of OFSAAI model upload process in a correct sequence, in order to make the Infodom Schema to be consistent with the DATABASE.xml. The sequence is explained in the following table:

The folders are available at `ftpshare/<INFODOM>/erwin/scripts/altertable`.

| Sequence | Action | Folder name | Rollback folder name |
|---|---|---|---|
| 1. | Drop Indexes | droppedindex | r_droppedindex |
| 2. | Drop foreign keys | alterdropfkey | r_ alterdropfkey |
| 3. | Drop primary keys | droppkey | r_droppkey |
| 4. | Drop tables | dropoldtable | r_dropoldtable |
| 5. | Create new tables | newtables | Droptable |
| 6. | Alter columns | altercolumn | r_altercolumn |
| 7. | Add primary keys | addpkey | r_addpkey |
| 8. | Add foreign keys | addfkey | r_addfkey |
| 9. | Add foreign keys for new tables | newfkeys | dropfkey |
| 10. | Create indexes | createdindexes | r_createdindexes |

Roll back scripts should be executed in case of failures in the reverse order. That is, if 4th step has caused rollback then roll back scripts from 4 to 1 has to be executed in sequence. Rollback scripts is available in the same path with the file name prefixed with r_.

#### 1.2.1.1 Rollback

Rollback of the model upload will happen to the state till before the CopyUpload.sh process. The migrated files will be preserved under `ftpshare/<INFODOM>/archive` path.

1. Automatic Rollback will occur in the following cases:
   a) When your start point is script generation:
      - Failure during parsing of Database XML file.
      - Parsing of Database XML file is successful, but generation of scripts failed.
      - Parsing of Database XML file is successful, generation of scripts is also successful, but execution of scripts failed.
   b) When your start point is script execution:
      - Execution of scripts failed.

2. In case of failure, for troubleshooting, check the following log files:
   - `$FIC_HOME/ficapp/common/FICServer/bin/nohup.out`
   - `$FIC_HOME/ficapp/common/FICServer/logs/ETLService.log`
   - `$FIC_HOME/ficapp/common/FICServer/logs/SMSService.log`
   - `$FIC_HOME/ficapp/common/FICServer/logs/UMMService.log`
   - `ftpshare/logs/`
   - `ftpshare/executelogs`

   Contact Oracle Support services for further information.
3. You can trigger the model upload again, if required, using the files available in the aforementioned path: `ftpshare/archive/<INFODOM>/path`. It is not required to execute the CopyUpload utility again.

## 1.3 Configuring Session Parameters and Hints

Model upload is relatively time consuming as the data and model size grows. This enhancement allows you to set database session parameters, according to individual database environment, thus improves the performance of the model upload process.

The configuration files `Session_Parameters.conf` and `Oracle_hints.properties` are available in the `$FIC_HOME/conf/dmm` folder.

Following are the steps involved:

1. Specify database session level parameter settings in the `Session_Parameters.conf` file.
2. Specify database hints for object registration tables in the `Oracle_hints.properties` file.
3. Set the option to refresh session parameters and oracle hints from configuration files to TRUE, either through command line or UI.

### 1.3.1 Specify Database Session Level Parameters

The `Session_Parameters.conf` file contains ALTER SESSION statements to be set while connection is established. Any valid oracle session setting can be specified. It is a single file which contains parameter specification for different Infodoms separated by an `INFODOM` parameter. The first parameter in the file is the `INFODOM` parameter which identifies the DB parameters for that particular Infodom. Followed by that, the session settings for second Infodom comes, which again starts with the `INFODOM` parameter.

```
# The file specifies the database session level parameter settings for better performance

# of model upload process. The db session will be set with the following statements mentioned.


# Parameter settings for Infodom 1

INFODOM = <INFODOM_NAME1>

#<alter session statement1;>

#<alter session statement2;>

#For example,

#<alter session set db_cache_size=200G;>

#<ALTER SESSION FORCE PARALLEL DML PARALLEL 49;>


# Parameter settings for Infodom 2

INFODOM = <INFODOM_NAME2>

#<alter session statement1;>

#<alter session statement2;>

#For example,

#<alter session set db_cache_size=200G;>

#<ALTER SESSION FORCE PARALLEL DML PARALLEL 49;>

#End of Parameter settings for Infodom 2
```

When the database session for model upload is initiated, the particular database session is initialized with the specified settings. The settings are valid till the session ends.

**Note the following points:**

- The alter session statements mentioned in the `Session_Parameters.conf` file should adhere to the privileges of the respective OFSAA users.
- Every ALTER SESSION statement should start in a new line and need not end with a semicolon (;); component will take care of it.
- The syntax of the ALTER SESSION statements is validated against the syntax tree of Oracle to ensure the credibility and to protect from any vulnerability. If the syntax fails, model upload operation will fail.
- RESUMABLE, SYNC and CLOSE DB LINK are not supported.

### 1.3.2 Specify Database Hints For Object Registration Tables

The `Oracle_hints.properties` file contains the Oracle Database Hints for improving the object registration process. The file identifies the hints for each of the object registration (OR) tables with an identifier. These hints will be appended to the respective OR table during runtime. This properties file contains Oracle Hints for each infodom segregated with an INFODOM parameter.

```
# The file contains db hints for object registration tables.


# Database Hints specifications for Infodom 1

INFODOM = <INFODOM_NAME>

#Database hints for entities, Base

ENTITY_DETAILS=

#Database hints for entities, Description

ENTITY_DESCRIPTION=

#Database hints for attributes, Base

ATTRIBUTE_DETAILS=

#Database hints for attributes, Description

ATTRIBUTE_DESCRIPTION=

#Database hints for constraints, FKs

REFERENTIAL_CONSTRAINTS=

#Database hints for constraints, unique constraints
```

```
UNIQUE_CONSTRAINTS=
#Database hints for constraints, Constraint column mapping
CONSTRAINT_COLUMNS=
#Database hints for Column classifications/ column level UDPs
ATTRIBUTE_LEVEL_PROPERTIES=

#Database hints for table classifications/ table level UDPs
TABLE_UDPS=
#Database hints for table logical classifications/ table level logical
UDPs
LOGICAL_TABLE_UDPS=
#Database hints for indexes
INDEXES=
# End of Database Hints specifications for Infodom 1
```

**Mapping of Hints and Tables**

| Hint Identifier | OR Table |
|---|---|
| ENTITY_DETAILS | REV_TABLES_B |
| ENTITY_DESCRIPTION | REV_TABLES_TL |
| ATTRIBUTE_DETAILS | REV_TAB_COLUMNS |
| ATTRIBUTE_LEVEL_PROPERTIES | REV_COLUMN_PROPERTIES |
| ATTRIBUTE_DESCRIPTION | REV_TAB_COLUMNS_MLS |
| CONSTRAINT_COLUMNS | REV_TAB_CONSTRAINT_COLUMNS |
| UNIQUE_CONSTRAINTS | REV_TAB_CONSTRAINTS |
| REFERENTIAL_CONSTRAINTS | REV_TAB_REF_CONSTRAINTS |
| INDEXES | REV_TAB_INDEXES |
| TABLE_UDPS | REV_TABLE_CLASS_ASSIGNMENT |
| LOGICAL_TABLE_UDPS | REV_TABLE_LOG_CLASS_ASMNT |

**NOTE:** Once you have done the settings to use Database session parameters and hints, all subsequent model uploads will also use the same settings, irrespective of whether the **Refresh Session Parameters and Hints** check box is selected or not.

If you want to change any parameter, you should change it in the `Session_Parameters.conf` file or `Oracle_hints.properties` file and select the **Refresh Session Parameters and Hints** check box.

## 1.4 Registering Partition Information

Partition information can be registered only during DB Catalog option of model upload on Hive Information Domains. During model upload, partition information for tables are retrieved and registered into OFSAAI object registration table `REV_TAB_PARTITIONS`.

Partition table name and column names will be added to `V_TABLE_NAME` and `V_COLUMN_NAME` respectively. Partition Sequence is stored in `N_PARTITION_SEQUENCE`. The sequence will start from 1 for major partition column and maximum sequence number will be equal to number of partitioned columns. `V_PARTITION_VALUE` holds the value for a particular partition to be considered for any executions. Data into this column can be populated with the help of any OFSAAI table data load options or manually.

Hive supports static and dynamic partitions. Values for static partition are known in the query, whereas dynamic partition values are known at the time of run. If V_PARTITION_VALUE is null in REV_TAB_PARTITIONS, the table is considered as dynamic partitioned. AAI executions run on static and dynamic partitions.

## 1.5 Model Versioning

A model level UDP known as “VERSION” is available with every model. 5 digits OFSA version numbering is followed for model versions. Each table will inherit the model version into Table version as Table level UDPs. Model upload registers the version against each entity during the model upload process.

Sliced model upload checks the model version to decide if columns should be dropped or not. When the SLICE and BASE models have common tables and if BASE entity version is higher than SLICE, then entity in the BASE is retained unchanged. If SLICE entity version is higher than or equal to BASE version, entity in the SLICE will replace the BASE. Once the entity is brought into BASE model, the version of it is stamped against it. Any models/ tables prior to OFSAAI version 80100 is defaulted to version 80000.

## 1.6 Viewing Log Details

Log details of all the Model Uploads done till date to the current information domain, can be viewed in the *Model Upload Summary* window. You can click on “View Log” in the Status column corresponding to the required Model, to view the Model Upload details of selected Model in the *View Log Details* (*Log Information*) window. The *View Log Details* window also displays other details such as Task ID, Sequence of upload, Severity, Message Description, Message Date, and Message Time.

You can also access the *View Log* window through LHS menu (*Operations* > *View Log*) to find the log details of all the Model Uploads done till date. You can make use of Search option to find the required Model Upload details by selecting “Model Upload” as the Component Type from the drop-down list.

## 1.7 Log File Download

In the *Model Upload Summary* window, you can download the log file of the listed Model Uploads by clicking on the log file name in *Log File* column corresponding to the required Model.

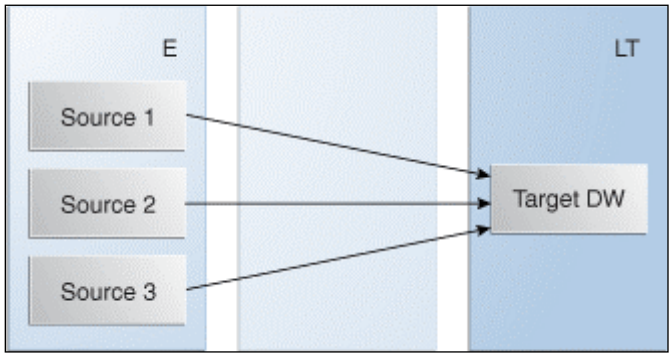
In the *File Download* dialog, you can either open the file directly or s*ave* a copy for future reference. The Log file contains the following information:

- Log File Name
- Model Upload Started At
- Source ERwin XML File
- Model Upload Mode
- Using ERwin.xsl File at
- Target XML File
- Information Domain
- Current Version Is
- Model Upload Completed at
- Object Registration Started as part of Model Upload at
- Object Registration Completed at

# 2 Data Management Tools

Data Management Tools framework within the Infrastructure system is a comprehensive data integration platform that facilitates all the data integration requirements from high-volume and high-performance batch loads to event-driven integration processes and SOA-enabled data services.

Data Management Tools is a software application based on ETL (extract-transform-load) structure, which is used for data transformation and merging. The E-LT (extract-load, transform) structure in Data Management Tools eliminates the need for a separate ETL server, and the analytical rules facilitate to optimized performance, efficiency, and scalability.




The Data Management Tools module is equipped with a set of automated tools and a tested data integration methodologies which allows you to position the advanced N-tier web-based architecture and integrate the enterprise data sources from the mainframe to the desktop.

In Data Management Tools, you can standardize and integrate the various source system data into a single standard format for data analysis. You can also populate the warehouse in a defined period using the ETL process, for data extraction, transformation, and loading.

Following are the pre-requisites while working with Data Management Tools:

- You can transform data using the options - Before load, While load or After Load.
- For source system information, filenames can be either fixed or delimited in length.
- The source types which can be loaded into the system are RDBMS and Flat-Files. For an RDBMS source type ensure that the appropriate drivers are installed.
- Ensure that you are aware of the process flow before you start with the extraction, transformation, and loading process.

## 2.1 Navigating to Data Management Tools

Data Management Tools module is available within the Data Model Management module of Infrastructure system.

In the **Applications** tab, under **Common Frameworks**, expand **Data Management Framework** and select **Data Management Tools**.

The Roles mapped for DI are: 'DI_Access', 'DI_Read', 'DI_Write'. The functions which are mapped with these roles are ETLDEF and ETLUSER. You should be mapped to one of the above mentioned roles to access the following screens:

- Data Source
- Data Mapping
- Data File Mapping

## 2.2 Components of Data Management Tools

Data Management Tools consists of the following sections. Click on the links to view the sections in detail.

- Data Sources
- Data Mapping
- Data File Mapping
- Post Load Changes
- Data Quality Framework

## 2.3 Data Sources

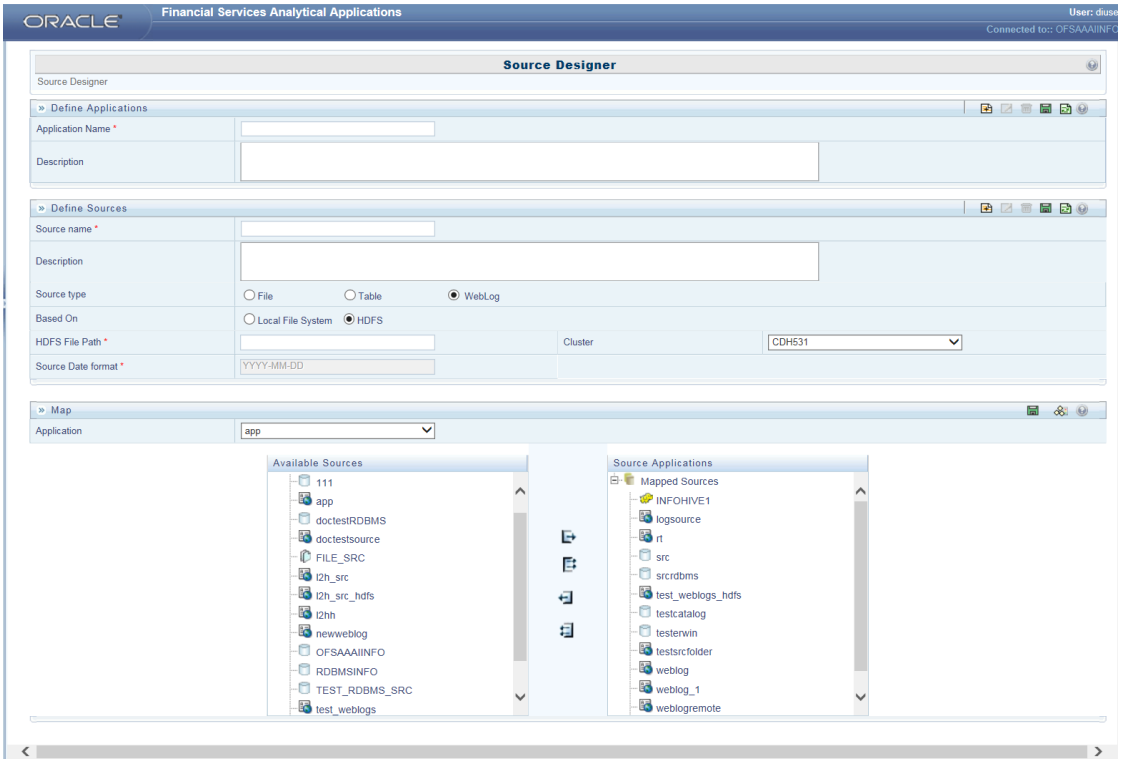
Data Sources within the Data Management Tools of Infrastructure system facilitates you to generate data models of source systems by defining and mapping the required applications and data sources. Data source type is classified as:

- File based
  - HDFS
  - Flat File (Local to OFSAA or on a Remote Machine)
- Table based
  - HDFS (HIVE)
  - RDBMS (Oracle, MSSQL, DB2)
- WebLog based

- Local File System
- HDFS

**NOTE:** HDFS and WebLog based options will be displayed only if the Big Data Processing license is enabled.

You can access the *Source Designer* window by expanding **Data Management Tools** within the tree structure of LHS menu and selecting **Data Sources**.




The *Source Designer* window displays the list of pre-defined Applications, Data Sources, and Mapped Sources in the LHS menu. It consists of three sections namely, Define Applications, Define Sources, and Map. Data sources based on Flat File is indicated as , based on RDBMS is indicated as , based on HDFS is indicated as and based on WebLog type is indicated as .

In the *Source Designer* window you can:

- Define Data Source Applications
- Define Data Sources
- Map Data Sources to Applications
- Generate Data Models for each Application

### 2.3.1 Defining Data Source Application

A data source application is a logical group of data sources. You can define data source applications and also modify or remove the application details in the *Source Designer* window.

To define data source applications in the *Define Applications* gird:

1. Enter the **Application Name** by which you can identify the application.
2. Enter a description or related information about the application.
3. The application details should contain the name and information pertaining to the source data required. For example, *ABC Corporate* can be the source application, *ABC Corporate sales* can be the description and data can be extracted from Oracle, which has RDBMS Source Type.
4. Click button in the *Define Applications* tool bar to save the application details.
5. You can also click button to define another application or click button to clear the specified details.

To edit the data source applications description:

1. Select the required application from the LHS menu. The application details are displayed in the Define Applications grid.
2. Click button in the Define Applications tool bar and modify the application description as required.
3. Click button to save the application details.

To delete data source applications:

Ensure that the application is not mapped to any data sources. You cannot delete the mapped applications. If a model is generated using the application, you cannot unmap the data sources and hence you cannot delete it.

1. Select the required application from the LHS menu. The application details are displayed in the Define Applications grid.
2. Click button in the Define Applications tool bar and click OK in the information dialog to confirm deletion.

### 2.3.2 Defining Data Sources

Data Source refers to the physical structure or location of the source file. Data source can be a file, a table or WebLogs. In case of File, it can be a flat file which can be local to OFSAA or remote to OFSAA, or a file on HDFS. In case of table, it can be an RDBMS table or HDFS table. In case of WebLogs, it can be in local file system or in an HDFS cluster. For tables, the connection and authentication details are defined in the *System Configuration > Database Details* section. Applications access the data source using an FTP connection. You can define data sources and also modify or remove the Data Source details in the *Source Designer* window.

To define a data source:

1. Enter the Source Name of the data source.
2. Enter a description or related information about the data source.
3. Select the Source Type as **File** (default), **Table,** or **WebLog**.
   - If **File** is selected as **Source Type** and **Local File System** is selected as **Based on**, enter the details as tabulated:

| Field | Description |
|---|---|
| Fields marked in red asterisk (*) are mandatory. | |
| Type | Select **Local** or **Remote** from the drop-down list. |
| Local | Specify the **Source Date Format** to be used as default date format for source data extraction and mapping, which is unless modified in the *Define Extracts* window. |
| Remote | ▪ **Server Name**: Enter the Server Name or IP address where the Data Source exists.<br>▪ **User ID**: Enter the FTP User ID required to connect to the server.<br>▪ **Server Port**: Enter the active server port number which contains the flat files.<br>▪ **Password**: Enter the FTP user password required to connect to the server.<br>▪ **FTP Drive**: Enter the FTP server path. In case of Unix Servers, the home directory path is taken by default.<br>▪ **Source Date Format**: Enter the Source Date Format which will be used as the default date format for source data extraction and mapping, and which is unless modified in the *Define Extracts* window. The date format you enter is validated against the supported |

| Field | Description |
|---|---|
| | date formats of the database to which the Config Schema points.<br>▪ **FTP Share**: Enter the ASCII files location for loading if it is located in the staging area other than the default staging area of Infrastructure Database Server. |

- If **File** is selected as **Source Type** and **HDFS** is selected as **Based on**:
  - Enter the folder path present within the HDFS System in the **HDFS File path** field. All files present inside this folder will be loaded.
- If **WebLog** is selected as **Source Type** and **Local File System** is selected as **Based on**:
  - **Local** is selected as **Type**.
  - The **Source Date Format** field is not editable. The supported source date format is YYYY-MM-DD.
- If **WebLog** is selected as **Source Type** and **HDFS** is selected as **Based on**:
  - Enter the folder path present within the HDFS System in the **HDFS File path** field. All files present inside this folder will be loaded.
  - Select the HDFS cluster in which the file/folder is present, from the **Cluster** drop-down list. This list displays the clusters which are present in the `Clusters.XML` file present in `$FIC_HOME/conf` folder. For more information on its configuration, see *Cluster Configuration* section in the OFSAAI Administration Guide.
- If **Table** is selected as **Source Type** and **RDBMS** or **HDFS** is selected as **Based on**:
  - Select the server from the **Server Name** drop-down list.
  - Select the required database from the **Database name** drop-down list. If RDBMS is selected, the drop-down list displays the available RDBMS tables. If HDFS is selected, it displays the available HDFS table based sources (HIVE).
  - Click to view the *Database Master* window of the selected database.
  - Enter the schema name in case of Oracle database in the **Table Owner** field**.**

4. Click button in *Define Sources* tool bar to save the data source details. Once the data sources are saved successfully, a folder with the source name will be created under `ftpshare/STAGE` path.

5. You can also click button to define another Data Source or click button to clear the specified details.

To edit a data source:

1. Select the required Data Source from the LHS menu. The data source details are displayed in the Define Sources grid.
2. Click button in the Define Sources tool bar and edit the Data Source details as required. You can update all the details except the Source Name and Source Type. For more information, refer Define Data Sources.

**NOTE:** For Remote files, you can edit the password by clicking button provided in the **Password** field. For modifying Data Source details, go to **System Configuration** > **Database Details** window.

To delete a data source:

Ensure that the data source is not mapped to any applications. You cannot delete a mapped data source. If a model is generated using the data sources, you cannot unmap it and hence you cannot delete it.

1. Select the required Data Source from the LHS menu. The data source details are displayed in the Define Sources grid.
2. Click button in the Define Sources tool bar. Click OK in the information dialog to confirm deletion.

### 2.3.3 Mapping Data Sources to Applications

You can associate the defined data sources to the required applications using the Map functionality. You can map one or more data source to serve multiple applications and load separate source of data into the warehouse. When mapped, the application and all the associated data sources are grouped. You can identify the source data with reference to the source business application. Data sources based on Flat File is indicated as , based on RDBMS is indicated as , based on HDFS is indicated as and based on WebLog type is indicated as .

To map data sources to application:

1. Select the required **Application** to map the Data Sources from the *Map* grid. Do one of the following:
   - Select the Application from the **Mapped Sources** list in the LHS menu.
   - Select the Application from the **Application** drop-down list in the Map grid.

On selection, the mapping details for the selected Application are displayed in the *Available Sources (available)* and *Source Applications (mapped)* list.

2. To map the Data Source to the selected Application, do one of the following:
   - Select the required data source from the *Available Sources* list and click button. You can press **Ctrl** key for multiple selections.
   - To map all the listed data sources to the application, click button.

   You can also remove a data source mapping by selecting the data source from the *Source Applications* list and clicking button. To remove all selected Data Sources mapping, click button.

3. Click button and save the mapping details.

### 2.3.4 Generating Source Models

Once you have defined and mapped the Data Sources to the required Application, you can generate the Source Models and extract the application data sources to populate data into the warehouse. The Source Models for each application-source combination are imported into the Infrastructure metadata repository.

Source Model generation can be performed for:

- RDBMS and Hive
- WebLog

#### 2.3.4.1 Source Model Generation for RDBMS and Hive

Source model generation for RDBMS and HIVE is done using the following options:

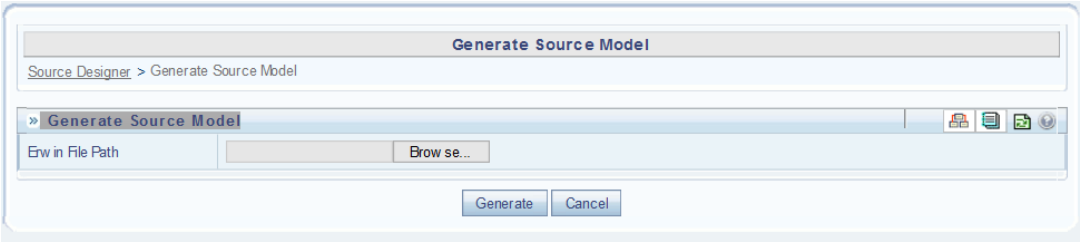
- Generate using the Erwin option- The working of this mode is the same for RDBMS and HIVE. The erwin.xml file is read and an XSLT converts it into the SOURCE_DATABASE.xml.
- Generate using the Catalog option- In this option the database catalog (HIVE metastore or RDBMS) is directly queried to get the list of Tables and Columns. This metadata information is then saved into the SOURCE_DATABASE.xml file. This component captures the Logical Names of the Tables and Columns in addition to the Physical names. This option can be used for both RDBMS and HIVE.

To generate Source Model in the *Source Designer* window:

1. Select the required **Application**. Do one of the following:
   - Select the Application from the **Mapped Sources** list in the LHS menu.
   - Select the Application from the **Application** drop-down list in the *Map* grid.

On selection, you can view the Sources which are already mapped to the selected Application in the *Source Applications* list.

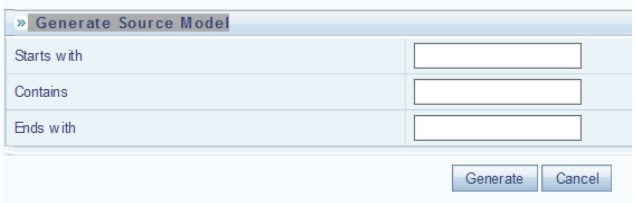
2. Select the Data Source from the Source Applications list.
3. Click button from the *Map* tool bar. The *Generate Source Model* window is displayed.




4. Click **Browse** and select the Erwin file from which you want to generate the source model.

   Or

   Click to generate Source Model using Data Catalogs. You can specify the Filter criteria for selection. Filters are patterns for entity names in the Database and can restrict the source model generation to a specific set of entities.




5. Specify the Filter entries by entering details in the **Starts with**, **Contains**, and **Ends with** fields. The Source Model is generated even if one of the specified filter conditions matches. You can also specify multiple conditions for a single filter type using comma-separated values. For example, tables starting with TB and TM can be specified as “TB, TM”.
6. Click Generate. The Source Model is generated and the status is displayed in a confirmation dialog. Click **OK**.

| | |
|---|---|
| **NOTE:** | If the Source Model has already been generated, a confirmation dialog is displayed to replace the existing model. Click **OK** or **Cancel**. |

The Source Model is generated in the specified directory which has to be extracted or transferred to the Business Data Model.

### 2.3.4.2 Source Model Generation for WebLog

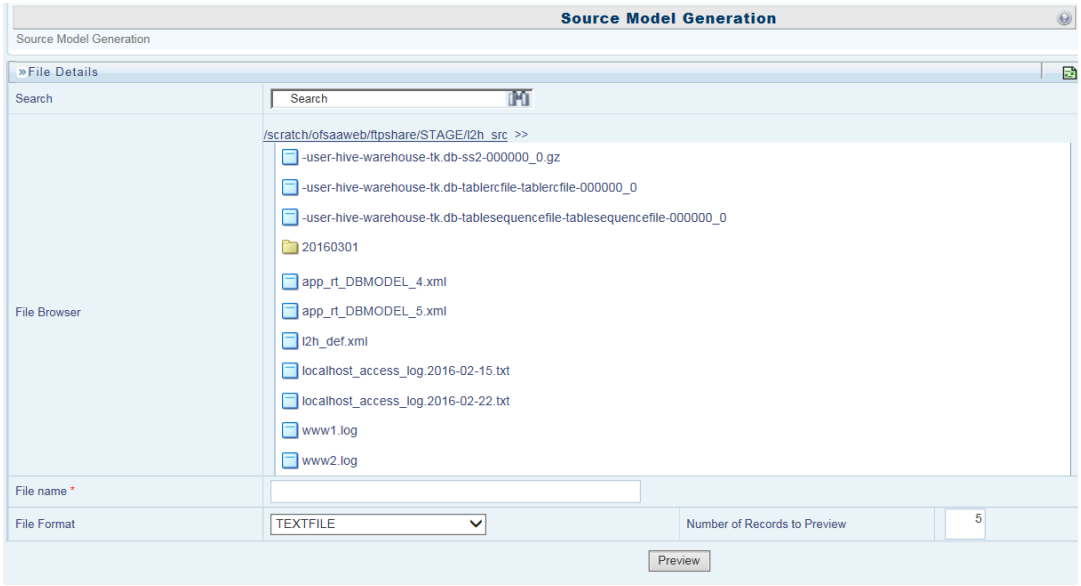
Source model generation (SMG) for Weblog files is done by reverse-generation of the data model from WebLog files. That is, you can choose a sample file from the source base folder and SMG process tries to fit the data file to a known log type, or to a custom log model. Then it validates the data model against few records from the file, and publishes them to you. If you find the model satisfactory, you can save the model. Else, you can edit the model and submit it.

To generate Source Model in the *Source Designer* window:

1. Select the required **Application**. Do one of the following:
   - Select the Application from the **Mapped Sources** list in the LHS menu.
   - Select the Application from the **Application** drop-down list in the *Map* grid.

   On selection, you can view the Sources which are already mapped to the selected Application in the *Source Applications* list.

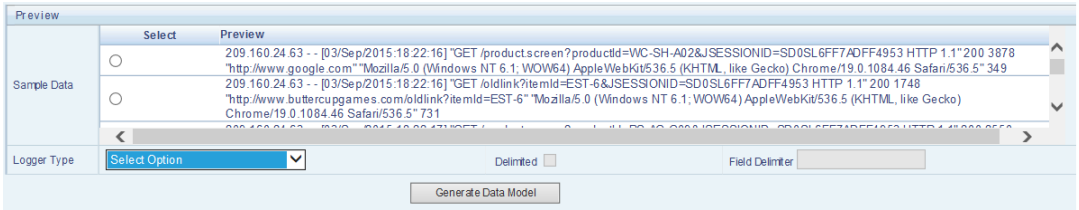
2. Select the Data Source from the *Source Applications* list for which you want to generate model and click button from the *Map* tool bar. The *Generate Source Model* window is displayed.




3. Select the file from the **File Browser** pane. All the files/folders from the base folder of the WebLog source are listed in the File Browser pane.

   You can search for a particular file by entering the filename in the **Search** field. All special characters except +, \, #, ~, %, &, *, ? , ( ,), [, ],\\ and ,. The selected file will be used to generate the data model for the whole of weblog source.

4. Select the format of the selected file from the **File Format** drop-down list. The supported file formats are Text File, Sequence File, and RC File.
5. Enter the number of records (n) to be fetched from the selected file for preview. By default, 5 is displayed. These records will be finally used to validate the data model.
6. Click **Preview**.

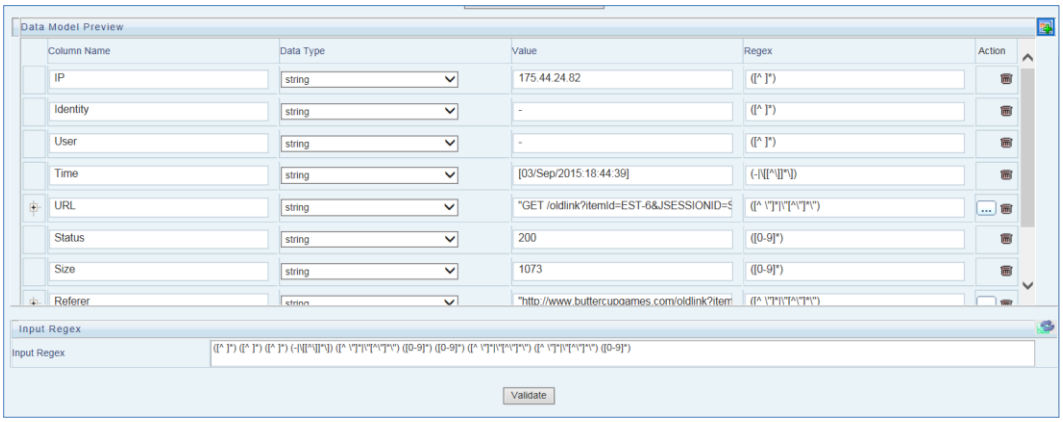



You can view the “n” number of records displayed in the *Sample Data* pane.

7. Select a record from the Sample Data based on which you want to generate data model. By default, last record is selected.
8. Select the appropriate **Logger Type** from the drop-down list. The available options are**:**
   - **APACHE - Sample** - Select this if you know the log format of your data is in Apache log format.
   - **MICROSOFT-IIS - Sample** - Select this if you know the log format of your data is in Microsoft log format.
   - **Custom**- Select this option if you are not sure about the log format. It will intelligently try to fit data to a standard log format, or generate a custom log model. Select the **Delimited** checkbox if the data is separated by a delimiter and enter it in the **Field Delimiter** field.

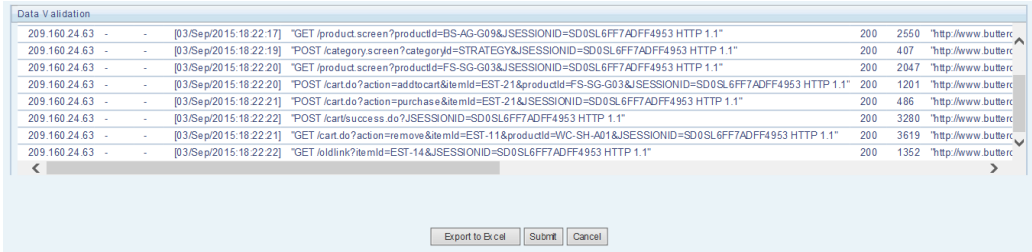
**NOTE:** Standard logger types and their details are seeded in AAI_DMT_WEBLOG_TYPES table. By default, details for Apache and Microsoft-IIS logs are pre-populated. You can add other logger methods to the table to make them visible in the UI. For more information, see *Logger Type Seeded Table* section in OFSAAI Administration Guide.

9. Click **Generate Data Model**. If the model generation is successful, you can view *Data Model Preview* pane. Model is generated based on the selected record in the *Sample Data* pane.




- If you have selected standard **Logger Type**, standard column names are displayed. If **Custom** is selected, column names are set as fld_0, fld_1, fld_2, and so on.
- The supported Data Types are **String** and **Int**.
- If **Custom** is selected as **Logger Type** and the **Delimited** checkbox is selected, the **Regex** field will be non-editable and the **Input Regex** field will not be displayed.
- The data model is based on the generated **Input Regex** value. For the standard logger types, this value is hard-coded. The regex is fuzzy-logically computed in case of Custom **Logger Type**.
- For more information on tweaking the data model, see Model Customization section.

10. Click **Validate** to validate the "n" number of records against the model.




If there are any records, which do not conform to the model, an alert with the number of invalid records is displayed. You can scroll the grid to check the erroneous data marked in red, or optionally click the **Invalid Data** button in the *Data Validation* grid.

In case of invalid records, you can tweak the Input Regex (Regular Expression) and re-validate the model. For more details, see Model Customization section.

11. Click **Submit** once you are satisfied with the model.

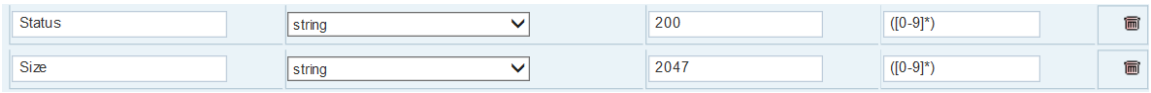
Even if there are erroneous records, you can still save the model. Then, during the final load, those records will result in erroneous data being loaded in the final table. In such cases, you can separately apply data corrections rules to weed out those records.

**Model Customizations**

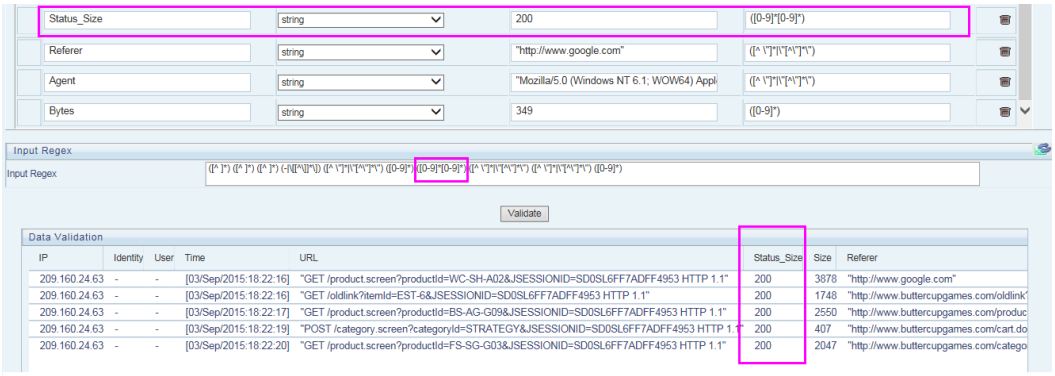
*Clubbing Columns*

Consider a scenario in which you want to club columns appearing in the *Data Model Preview* pane. You can do it by deleting any one of the columns and then update the column name and the Input Regex of the retained column appropriately.

Suppose you want to combine Status and Size columns, as shown in the following figure.



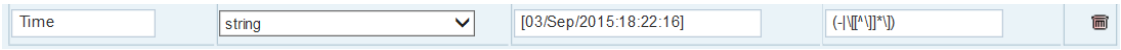

- Rename Status column to “Status + Size”.
- Change the Regex of the renamed column by combining the value within brackets(). For example, in this case the Regex should be ([0-9]* [0-9]*).
- Click corresponding to the Size column.
- Click to refresh/ reset the **Input Regex** based on the modifications you did.
- Click **Validate** to generate the model again.




*Adding New Columns*

Consider a scenario where you want to split a single column appearing in the *Data Model Preview* pane to appear as multiple columns. This can be done by clicking **Add** and tweaking **Input Regex** appropriately.

For example, if you want to split the Time column into Date and Time columns as shown in the following figure.

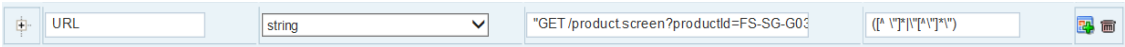


- Click to add a new column. A new record is added in the last.
- Enter the Regex appropriately for both columns.
- If you want to add a column in between, change the **Input Regex** field appropriately. That is, Regex of the newly added column should be added after the Regex of the column where you want to insert the new column. Even though in the *Data Model Preview* pane, it does not get reflected, it is displayed properly in the *Data Validation* pane.

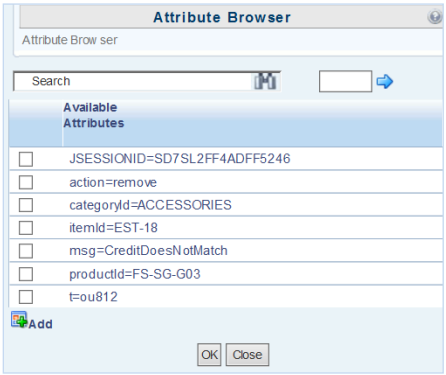
*URI and Referer Parsing*

URI and Referer fields are considered complex attributes since apart from the hierarchical part (scheme://example.com:123/path/data), there is a query part to it (?key1=value1&key2=value2). The query part by convention is mostly a sequence of attribute-value pairs. SMG process identifies these keys as potential attributes of interest, and hence an option to keep them in the data model is provided.

Both in Standard and Custom logger methods, URI and Referer fields will show up with a link to Attribute Browser , only if the selected record's URI or Referer field has a query part to it. You can choose a different record with a query part instead.




- Click **Attribute Browser.** The *Attribute Browser* window is displayed.




- Enter the number of records you want to look up beyond the previously selected *n* records for attributes and click . The Available Attributes column will get refreshed.
- Select the required attributes which you want to add as columns in your data model and click **OK**.
- Click **Add** to add attribute which is not part of the data file.
- Click **OK**.

**NOTE:** The selected attributes might become a sparse column after data load. Also, these attributes will not be available separately in the data validation grid.

## 2.4 Data Mapping

Data Mapping refers to the process of retrieving unstructured data from data sources for further data processing, storage, or migration. The intermediate extraction process can be followed by data transformation and metadata addition before exporting it to the staging area or to the Business Data Model.

Data Mapping within the Data Management Tools framework of Infrastructure system are defined as a subset of the source model which can have one or more source entities.

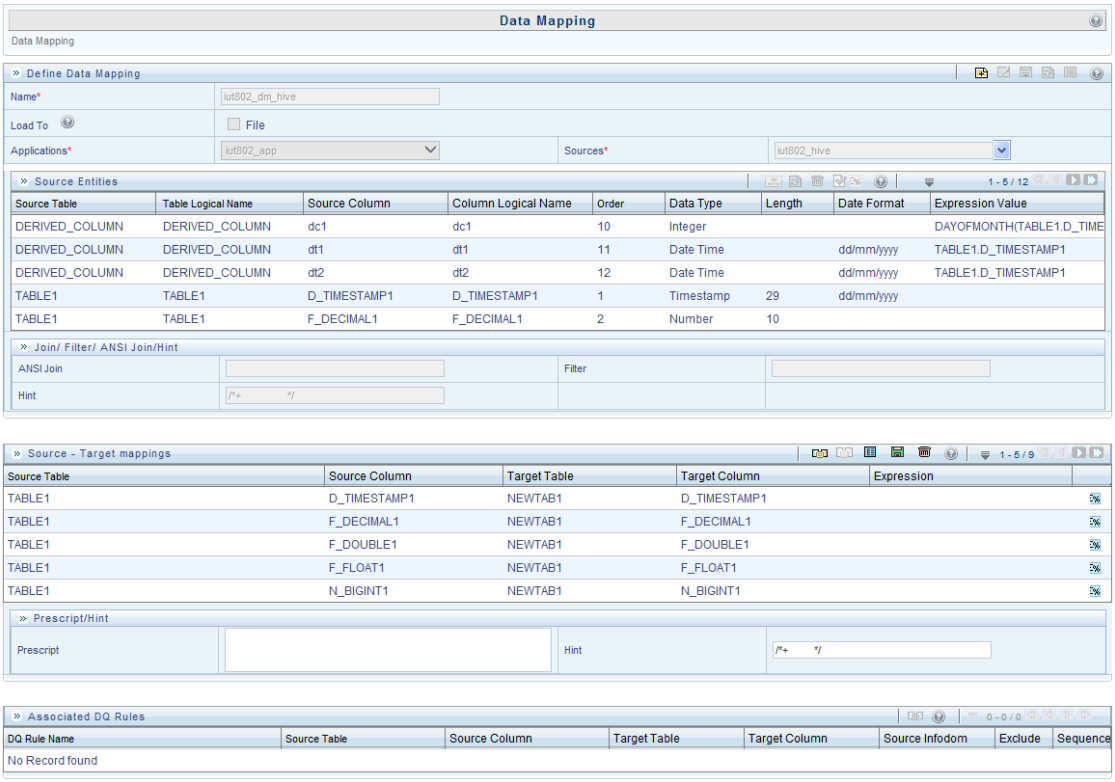
Data movement can be from:

- RDBMS source to RDBMS target (T2T)
- RDBMS source to Flat File target(T2F)
- HDFS-Hive source to RDBMS target(H2T)
- HDFS-Hive source to HDFS target (H2H)
- RDBMS source to HDFS-Hive target (T2H)
- HDFS-Hive source to Flat File target (H2F)
- HDFS/Local-WebLog Source to HDFS Target (L2H)

Data movement between Hive and RDBMS can be enhanced using third party tools like SQOOP and OLH (Oracle Loader for Hadoop).You need to set parameters in `ETLLoader.properties` file. For details on the configurations for SQOOP and OLH, see OFSAAI Administration Guide.

For the configurations required to support Weblog ingestion (L2H), refer *Data Movement of WebLog Source to HDFS target* section in OFSAAI Administration Guide.

You can access *Data Mapping* window by expanding **Data Management Tools** Framework within the tree structure of LHS menu and selecting **Data Mapping**.




**NOTE:** In this window, grids are not re-sizeable. If you cannot see the full value of any column, hover over the column to view its full value.

The *Data Mapping* window displays the list of pre-defined Data Mappings in the LHS menu. You can:

- Define data mapping, source entities, and related Properties
- Map the Source to Target model (table or file)
- Associate DQ Rules

#### 2.4.1.1 Define Data Mapping to Table (T2T, H2H, T2H, H2T, L2H)

This option facilitates you to extract data sources to a table. The data source and target can be RDBMS table or HDFS-HIVE table. It can also be a WebLog source and HDFS-Hive target. You can **Load** data incrementally from any data source to a table based on certain criteria.

**NOTE:** If DB2 is selected as the source database, map data from Table to File (T2F) and then File to Table (F2T).

**NOTE:** Processing on Datatypes `TIMESTAMP WITH TIME ZONE` and `TIMESTAMP WITH LOCAL TIME ZONE` is not supported, even though source model generation is supported for those datatypes.

Defining Data Mapping involves the following steps:

- Specifying Data Mapping Details
- Selecting Source Entities
- Defining Expressions, Join conditions, Filters, and Hints on Source
- Mapping Source to Target
- Defining Mapping Properties
- Associating DQ rules to the Data Mapping Definition

Specify the Data Mapping details in the *Define Data Mapping* grid:

1. Enter the Extract Name. Special characters or extra spaces are not allowed.
2. De-select the **Load To File** checkbox.
3. Select the required data source from the **Application** drop-down list.
4. Select the mapped **Sources** from the drop-down list.

Select the required Entities in the *Source Entities* grid:

1. Click button in the Source Entities tool bar.
2. In the *Choose Entity* window, do the following:
   - Select the required source entity from the *Members* list and click .

     You can view the Entity details by clicking button in the *Members* pane. You can search for a specific entity by entering the keywords and clicking button. You can also deselect an entity by selecting from the *Selected Members* list and clicking button.
   - Click **OK**. The selected source entities are displayed in the *Source Entities* grid.

Define an expression (optional) in the *Source Entities* grid:

If you have defined more than one Source Table in the *Choose Entity* window, you need to define an expression to join the column data corresponding to each table. You can pass Runtime Parameters through Expressions, Joins and Filter conditions. For more information, refer *Passing Runtime Parameters in Data Mapping* section.

1. Click button in the Source Entities tool bar.
2. In the *Specify Expression* window, do the following:
   - Enter the Expression Name.
   - Select the **Data Type** from the drop-down list. The available options are String, Date Time, Number, Integer, and Timestamp. If you have selected Date Time as

**Data Type**, you need to set the Date Format by double clicking the attribute/field from the *Source Entities* pane.

3. Define an expression by doing the following:
   - Select the **Table** in the *Entities* section.
   - Select the **Function**. You can select Transformations, Database Functions, or Extraction Functions. Extract functions are populated from the "*DATABASE_ABSTRACT_LAYER*" table which resides in config schema.
   - Define the **Operators** by selecting Arithmetic, Concatenation, Comparison, Logical or others operators.
   - Specify the ANSI Join or Join to map the table columns and enter the filter criteria to include during extraction. For example, "$MISDATE" can be a filter for run-time substitution of the MIS Date.

**NOTE:** If the defined expression uses function that has a placeholder or calls a stored procedure that has a placeholder for String data type, enclose the placeholder in single quotes. Using double-quotes would generate error during extract definition or batch execution. Also expressions with Date/Timestamp data type placeholders are not supported.

4. In the Expressions tool bar, you can also:
   - Click button to view the Expression details.
   - Click button to view the ANSI Join details. UNION keyword cannot be used in the ANSI join in T2T framework.
   - Click button to view the Joins.
   - Click button to view the Filters.
   - Click button to clear the details.
5. Select **Show Advanced Options** in the Expression tool bar, and do the following:
   - Click button to and specify hints (Rules), if any. Oracle hints follow (/*+ RULE */) format. For example, /*+ FIRST_ROWS(2) */

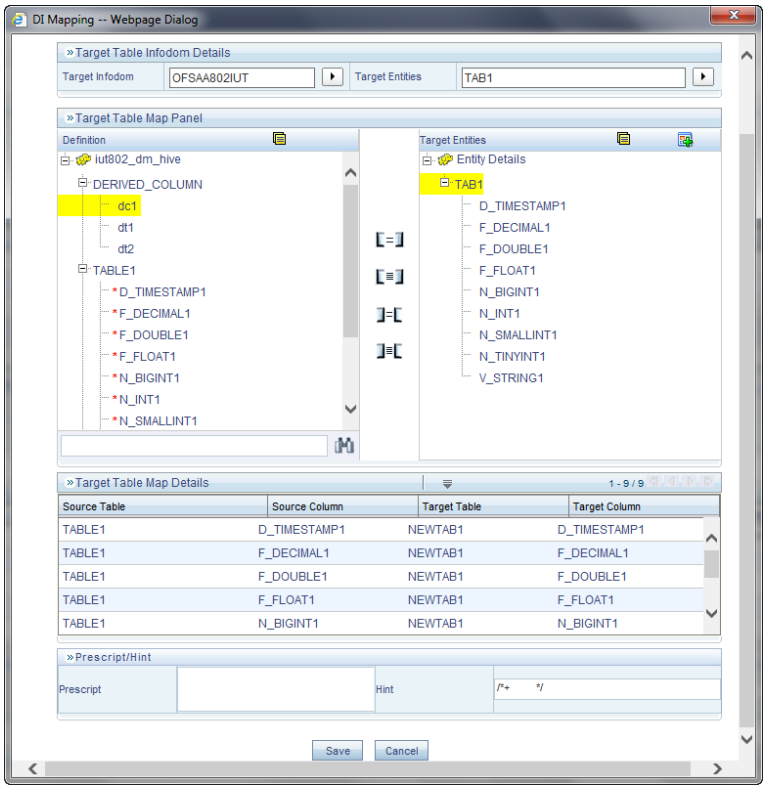
**NOTE:** After applying 8.0.5.1.0/8.0.5.2.0 ML, there are some functional changes. For more details, see Frequently Asked Questions section.

6. Click **OK**. The defined Expression is displayed in the *Source Entities* grid as *Derived Column*. The specified ANSI Join or Joins, Filter, and Hints are also displayed and can be edited.

7. Click button in the *Define Data Mapping* tool bar and save the details. The Definition Query in case of RDBMS will be validated. However the SQL errors if any will not be displayed.

Map Source to Target Table in the *Source-Target Mappings* grid:

1. Click button in the *Source-Target Mapping* tool bar. The *DI Mapping* window is displayed.




The selected source table attributes are displayed in the *Definition* pane of *Target Table Map Panel*. If the Target column is a partitioned column, it is indicated using a superscript ***P*** and if it has a static value, mouse over the column displays the partition value.

**NOTE:** For H2H, if the source and target are pointing to two different Hive Schemas, it is mandatory to prefix the schema name to the source tables. Otherwise, the execution will fail.

You can select an entity and click button to view the Entity details.

2. Click and select the **Target Infodom** form the drop-down list.
3. Click and select the target table from **Target Entities** drop-down list. The selected entities are displayed in the *Target Entities* pane of *Target Table Map Panel*.

**NOTE:** You can create a new table by clicking if the target information domain is based on HDFS database. The newly created table will be part of the OFSAAI data model and it is made visible and available to all other modules. For more information, see Dynamic Creation of Table.

4. To map source to target, do one of the following:

   - Select the required attribute from the *Definition* pane and select an attribute from the Target Entities pane and click button.
   - Click button to automatically map between source attribute and target attribute. Automapping happens if both source and target attributes have the same name.

     You can remove a mapping by selecting the target column and clicking button or remove all mappings by clicking button. You can also search for a specific definition by entering the keywords and clicking button.

**NOTE:** For a single DI Mapping, you can use different target tables. That is, after mapping a source column to a column in a Target Entity, you can select another Target Entity and start mapping source columns to that target table columns. Also the same source column can be mapped to different target columns of different target entities.

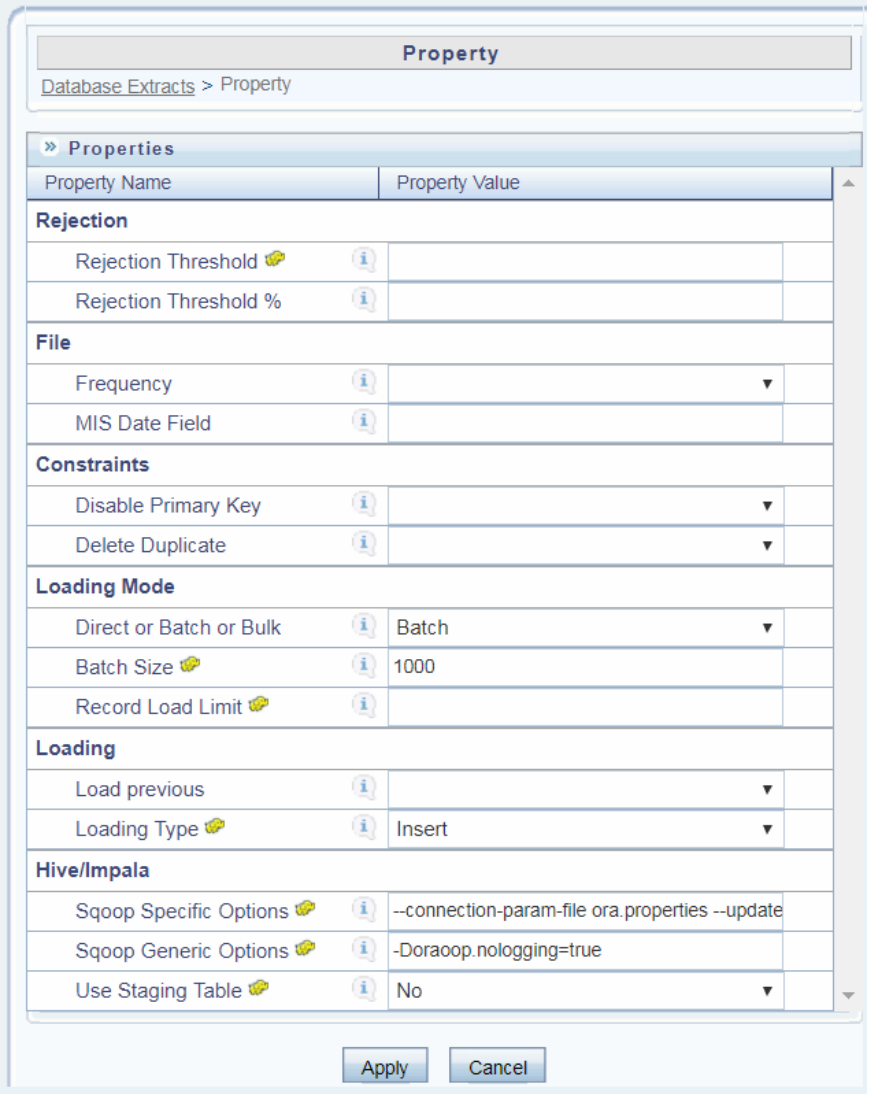
   - In the **Prescript** field, specify the Prescripts if any. Prescripts are supported for all HIVE based target Infodoms, that is, H2H and T2H. In case of H2T the prescripts are fired on the source. For more information, see Prescripts.
   - In the **Hint** field, specify Hints (if any), for faster loading. Oracle hints follow (/*+ HINT */) format. The mapping level hint is applicable for T2T, H2T, and H2H only.

     For example, /*+ PARALLEL */.
   - Click **Save** and save the mapping details.

**NOTE:** If a partitioned column is not mapped and the static value is not set for the partitioned column, an alert is displayed. The saving of mapping definition does not fail. You can set a static value at any time before execution.

Specify the Properties in the *Source-Target Mappings* grid:

5. Click button in the Source-Target Mappings toolbar. The *Properties* window is displayed.




**NOTE:** The Properties marked with are supported for RDBMS and Hive (H2H, T2H, H2T and T2T). Click button to view the related information in a pop-up. The only property supported for L2H is **Loading Type**.
The DMT error logging and Rejection Threshold features are supported in H2T only in Default mode, that is, if you have set `H2TMode= default` in the `ETLLoader.properties` file.

| Property Name | Property Value |
|---|---|
| Rejection Threshold | Enter the rejection threshold in absolute value.<br>Once the erroneous record count exceeds the **Rejection Threshold** value, the data loading task will fail and the inserted values will be rolled back for that table. Inserts for the previous tables won't be reverted. Rejection Threshold will be applied to each of the target table individually in a batch. |
| Rejection Threshold % | Set Rejection Threshold as a percentage of the number of rows in the Data file. |
| Frequency | Select the frequency of loading the data file. This property can be used to schedule Batch operations.<br>The options are Daily, Weekly, Monthly, Quarterly, Yearly, and One Time Load. |
| MIS Data Field | Specify the MIS Date if you want to add MISDATE() function in the mapping screen to add MIS Date to the table automatically. |
| Disable Primary Key | Select **Yes** to disable Primary Key while loading the data.<br>In **Batch** and **Bulk** modes if any of the foreign keys are in Disabled state before loading the data using T2T or the property **Disable Primary Key** is set to **Yes**, then all the Primary Keys and corresponding Foreign Keys are disabled before loading and are enabled back after loading. Hence the initial status of foreign and primary keys can be changed from Disabled to Enabled.<br>In **Direct** mode, if the **Disable Primary Key** property is not set (selected as **No**), then the **Delete Duplicate** property is set to **Yes** automatically, which in turn reports all the duplicate records in the error log table. |
| Delete Duplicate | Select **Yes** if you want to delete the duplicate records after insertion if Primary Keys are disabled. |

| Property Name | Property Value |
|---|---|
| Loading Mode | Specify the Loading Mode as **Direct**, **Batch**, or **Bulk**.<br>Specify the **Batch Size** if you want to load the records in batches. The ideal values for batch sizes are 1024, 2048, 10000, or 20000. Huge batch sizes may result in failure if the required system resources are not available.<br>If the number of records in the source table exceeds **Record Load Limit** value, the data loading will not happen. If the value is set as 0 or not specified, record count check is skipped.<br>In Bulk Mode of loading, note that:<br>▪ Loading is possible only when the target database and the data source created for the definition are in the same database.<br>▪ If the schema used for source and target is different but the database is same, then the target schema should be granted Select access for the source table.<br>▪ You cannot specify the Batch Size and commit happens at the end of batch load.<br>Batch loading is faster for lesser records as compared to larger number of records, which sometimes lead to loss of data while loading. |
| Load Previous | Set to Yes if you want to load the data of the previous period if current period data is not available. |
| Loading Type | Select the loading type from the drop-down list. The options are:<br>**Insert**- The records will be overwritten.<br>**Append**- The records will be appended to the target table.<br>Only this property is supported for L2H. |
| **Hive/Impala**<br>The following properties are applicable only in Sqoop SSH mode. The values set for these properties here will have precedence over the values set in the `ETLLoader.properties` file. | |
| Sqoop Specific Options | Specify any tool specific arguments, which will be appended at the end of the Sqoop command. For example, `--connection-param-file ora.properties --update-mode allowinsert --update-key <COLUMN_NAME>` |
| Sqoop Generic Options | Specify the generic arguments which will be appended before all the tool specific arguments. This is supported only in Sqoop 1.44SSH mode.<br>For example, `-Doraoop.nologging=true` |

| Property Name | Property Value |
|---|---|
| Use Staging Table | Select **Yes** if you want to create a temporary staging table before inserting into the destination table for Sqoop export. |

6. Click **Apply**.
7. Click button in the *Source Target mappings* toolbar and save the defined Data Mapping details. An information dialog is displayed on completion. Click **OK**.

**Associating DQ Rules to a Data Mapping definition:**

Data Quality rules can be associated to Data Mapping definitions so that Data Quality(DQ) checks are done on the source and Data Correction (DC) is done while loading to the target table. Thus DC is segregated from DQ checks. This is supported for both RDBMS and HIVE based Data Mapping definitions. However, DC on DQ Generic Check is not supported in T2H, H2T, and H2H. Also, associating DQ Rules to Data Mapping is not supported for H2T OLH (Oracle Loader for Hadoop) mode.

If we associate DQ Rules with T2T and execute the batch, both T2T and all the DQ rules defined on the Source table are executed. You have an option to include or exclude the Associated DQ rules. If we exclude a DQ check and execute the batch, then only T2T operation is performed and not the DQ.

**Prerequisites**

- De-select the **Allow Correction on DI Source** checkbox from the Configuration window. For more information, see the *Updating Others Tab* section.
- The DI Source should exist as an information domain.

To associate DQ rules to Data Mapping definition:

1. Click button in the *Associated DQ Rules* toolbar. The *Data Quality Rule Association* window is displayed.

   All DQ Rules defined on the source table are displayed.
2. Select the **Exclude** checkboxes corresponding to the DQ rules to exclude them being executed along with the T2T operation.
3. Enter the sequence in which the selected DQ Rules should get executed in the Sequence column.
4. Click **Save**.

**NOTE:** When a DQ rule is associated with a T2T mapping and the **Allow Correction on DI Source** checkbox is not selected in the **System**

**Configuration**> **Configuration** > **Others** tab, DQ rule checking is done on source, but data correction is done while loading to the target table.

### Replacing Source or Target of Data Mapping Definition during Execution

You can replace the source of the Data Mapping definition during execution by using the run time parameter EXEC_ENV_SOURCE. Thus you can convert a T2T definition into H2T or T2H into H2H or H2H into T2H. But the resultant definition should not be T2T, which is not supported.

Similarly, you can replace the target of the Data Mapping definition during execution by using the run time parameter EXEC_ENV_TARGET. Thus you can convert a T2T definition into T2H or H2T into H2H or H2H into H2T. But the resultant definition should not be T2T, which is not supported.

If you are executing the Data Mapping definition through RRF module, you should pass the parameter with double quotes.

For example,

```
"EXEC_ENV_SOURCE","newSourceName"
"EXEC_ENV_TARGET","newTargetName"
```

If you are executing the Data Mapping definition through ICC module, you should pass the parameter with square brackets. For more information, see Component: LOAD DATA section.

For example,

```
[EXEC_ENV_SOURCE]=newSourceName
[EXEC_ENV_TARGET]=newTargetName
```

**NOTE:** Ensure the structure of the source/target in the mapping definition is same as that of the replacing source/target.
Note that you can use both EXEC_ENV_SOURCE and EXEC_ENV_TARGET together as well. Only limitation is the resultant definition should not be T2T.

### Dynamic Table Creation

This option allows you to create a new table on the fly if the target Information Domain of the Data Mapping or Data File Mapping definition is based on HDFS database. You can use the newly created table for mapping. The newly created table will be part of the OFSAAI data model and it is made visible and available to all other modules.

You cannot create a table with partition.

To dynamically create a table

1. From the DI Mapping window, click in the *Target Entities* pane. The Create Table window is displayed.
2. Enter a table name and click **Generate**. The new table name is displayed on the *Target Entities* pane.
3. Select the required attributes from the *Definition* pane and map them to the new Table in the *Target Entities* pane by clicking button.
4. After defining all mappings, click **Save**. The table will be created in the HDFS/ HIVE system, with the structure/data types of the mapped columns and it will be added to the metadata repository (both database xml and the object registration tables). The newly created table will be available for use in other metadata like Datasets, Hierarchies, and so on.

**Prescripts**

Prescripts are fired on a Hive connection, before firing a select from or insert into a hive table. While defining Prescript, note the following:

- Prescripts should mandatorily begin with the keyword "SET".
- Multiple Prescripts should be semi-colon separated.
- Prescripts are validated for SQL Injection. The following key words are blocklisted:

  "DROP","TRUNCATE","ALTER","DELETE","INSERT","UPDATE","CREATE", "SELECT"

All validations applicable in the UI are checked on execution also. If a prescript fails any of the validations or if there is an error in firing the pre-script, the load operation is exited.

**NOTE:** For H2T, the Prescript is fired on the source.

### Handling Partitioned Target Tables

Data loading into a partitioned Hive target table is supported. The partitioned columns are indicated using a superscript ***P*** in the *DI Mapping* window.

You can set a static value to a partitioned column from the REV_TAB_PARTITIONS table. If it is set, you can view it from the *DI Mapping* window by pointing the mouse over the column name. You need not to map the target column to any source column. If you map a source column to a target partitioned column which already has a static value, the static value will get precedence.

If no static value is set to a partitioned column, you can pass a dynamic partitioned valued. You should map a source column to the target partitioned column. If there is no mapping and static value is not set, the empty or blank is passed as the partition value. Hive defaults the partition to _HIVE_DEFAULT_PARTITON_. There is no loss of data in the non-partitioned columns.

**NOTE:** If you need to enable dynamic partition in non-strict mode, set the below property as a Prescript in the Data Mapping window:

```
set hive.exec.dynamic.partition.mode=nonstrict
```

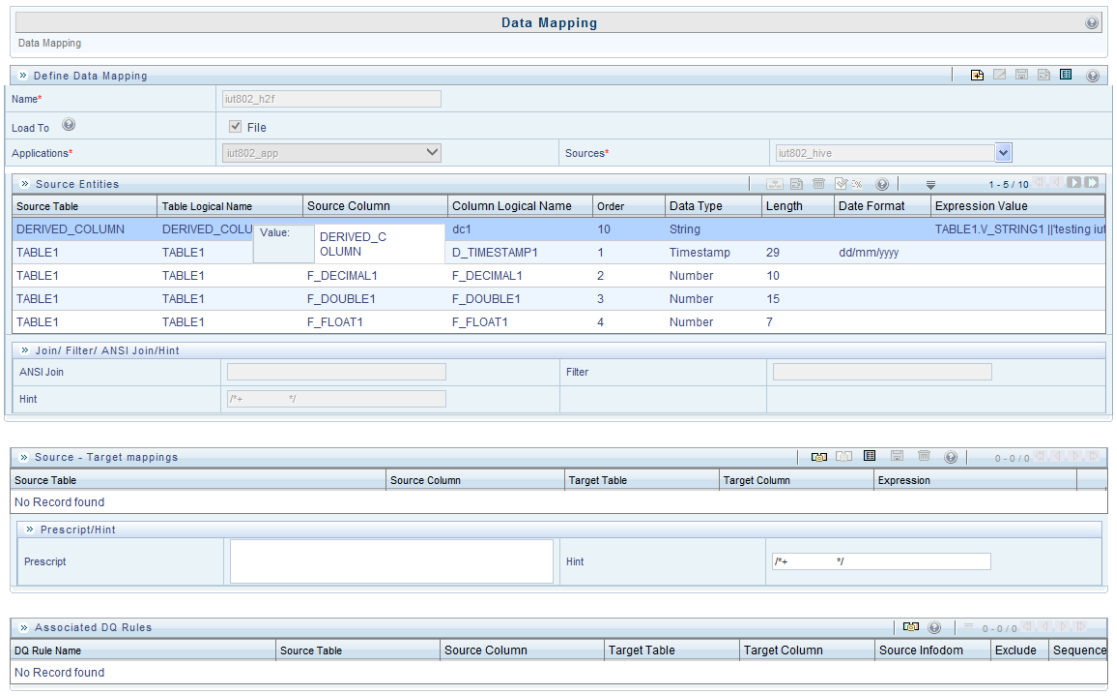
Static partition value can also be set with placeholders. The placeholders supported in Data Mapping are $RUNID, $PHID, $EXEID, $RUNSK, $SYSDATE, $TASKID, and $MISDATE. Additionally, partition value can be provided as a parameter within square brackets. For example, [PARAM1]. Passing the parameter values at runtime from RRF/ Operations module is same as for the other run time parameters in Data Management Framework. Value for the placeholders/ additional parameters will be substituted as the static partition values during the run time. For more information, see Passing Runtime parameters in Data Mapping.

### 2.4.2 Defining Data Mapping to File (T2F, H2F)

You can map data from source table to the specified file in the *Data Mapping* window. The source can be RDBMS table or HDFS source. To load data to a file along with other sources, you need to define the Data Mapping and specify the Source Entities. Source-Target mapping is not required since the table structure is completely extracted to the specified file. However, if you want to do a F2T after T2F, source- target mapping is required. For example, for DB2 you cannot directly load data from DB2 to RDBMS, so you need to map data from Table to File (T2F) and then File to Table (F2T).

After execution of T2F or H2F definition, the extracted file will be present in `STAGE/<SOURCENAME>/<DATEFOLDER>` with filename as `<Definition name>.dat`. The column names in the table will not be present in the extracted file.

To define data mapping to file, do the following:




Specify the Data Mapping details in the *Define Data Mapping* grid:

1. Enter the **Extract Name**. Ensure that there are no special characters or extra spaces in the name specified.
2. Select **Load To File** checkbox.
3. Select the required data source **Application** from the drop-down list.
4. Select the mapped **Sources** from the drop-down list.

Specify the Data Mapping Properties from the Define Data Mapping grid:

1. Click button in the *Define Data Mapping* toolbar. The *Properties* window is displayed.
2. Specify the properties by entering the required value or selecting an option from the drop-down list.

   You can click button to view the related information in a pop-up dialog pertaining to a field.

   **NOTE:** The Properties marked with are applicable for both H2F and T2F. **Field Delimiter** and **Data File Locale** are mandatory fields. You need to set the **Data File Locale** property to **UTF-8** encoding by specifying the numeric value as **000-000-0002** for US English.

Select the required Entities in the Source *Entities* grid:

1. Click button in the *Source Entities* tool bar.
2. In the *Choose* Entity window, do the following:
   - Select the required source entity from the *Members* list and click button.
   - You can select the entity and click button to view the entity details. You can search for a specific entity by entering the keywords and clicking button.
   - You can also deselect an entity by selecting from the Selected Members list and clicking button.
3. Click **OK**. The attributes of the selected source entities are displayed in the *Source Entities* grid.
4. Perform the following actions if required:
   - Double-click the order number and update if you want to change the order in which columns should appear in the target file.
   - Double-click the Data Type and select the required option from the drop-down list to change the Data Type of the target column. The available Data types are Number, String, Date Time, Integer, and Timestamp.
   - Double-click the Date Format and modify the date format, if required, for the target column.
   - Select an attribute and click if you do not want that attribute in the target file.
   - Click to validate grid data.

Define an expression (optional) in the *Source Entities* grid:

If you have defined more than one Source Table in the *Choose Entity* window, you need to define an expression to join the column data corresponding to the table.

1. Click button in the *Source Entities* toolbar.
2. In the Specify *Expression* window, do the following:
   - Enter the Expression Name.
   - Select the **Data Type** from the drop-down list. The available options are String, Date Time, Number, Integer, and Timestamp. If you have selected Date Time as **Data Type**, you need to set the Date Format by double clicking the attribute/field from the *Source Entities* pane.
3. Define an expression by doing the following:
   - Select the **Table** in the Entities section.
   - Select the **Function**. You can select Transformations, Database Functions, or Extraction Functions. Extract functions are populated from the "*DATABASE_ABSTRACT_LAYER*" table which resides in config schema.
   - Define the **Operators** by selecting Arithmetic, Concatenation, Comparison, Logical or others operators.
   - Specify the ANSI Join or Join to map the table columns and enter the filter criteria to include the same during extraction. For example, "$MISDATE" can be a filter for run-time substitution of the MIS Date.

   **NOTE:** For expression that has a placeholder for String data type, enclose the placeholder in single quotes. Expressions with Date/Timestamp data type placeholders are not supported.

4. In the Expressions tool bar, you can also:
   - Click button to view the Expression details.
   - Click button to view the ANSI Join details.
   - Click button to view the Joins.
   - Click button to view the Filters.
   - Click button to clear the details.
5. Select **Show** Advanced **Options** in the Expression tool bar, and do the following:
   - Click button to specify hints (Rules), if any. Oracle hints follow (/*+ RULE */) format. For example, /*+ FIRST_ROWS(2) */

**NOTE:** After applying 8.0.5.1.0/8.0.5.2.0 ML, there are some functional changes. For more details, see Frequently Asked Questions section.

6. Click **OK**. The defined Expression is displayed in the *Source Entities* grid as *Derived Column*. The specified ANSI Join or Joins, Filter, and Hints are also displayed and can be edited.
7. Click button in the *Define Data Mapping* toolbar and save the details.

   **NOTE:** While saving the Data Mapping details, the system alerts you if the mandatory properties are not specified or if the grid data is not validated.

   An information dialog is displayed on completion. Click **OK**.

Map source to target table in the *Source-Target Mappings* grid:

**NOTE:** A T2F definition saved with the Source to Target mappings can be used to perform F2T operations.

1. Click button in the *Source-Target Mapping* toolbar. The *DI Mapping* window is displayed. The selected source table attributes are displayed in the *Definition* pane of *Target Table Map Panel*.
2. Click and select the **Target Infodom** form the drop-down list.
3. Click and select the target table from **Target Entities** drop-down list. The selected entities are displayed in the *Target Entities* pane of *Target Table Map Panel*. You can select an entity and click button to view the entity details.
4. Select the target table from the **Target Entities** drop-down list. The selected entities are displayed in the *Target Entities* pane of *Target Table Map Panel*.
5. To map source to target, do one of the following:
   - Select the required column from the *Definition* pane and select a column from the *Target Entities* pane and click button.
   - Click button to automatically map between source attribute and target attribute. Auto mapping happens if both source and target attributes have the same name.

     You can remove a mapping by selecting the target attribute and clicking button or remove all mappings by clicking button. You can also search for a specific definition by entering the keywords and clicking button.
   - Click **Save** and save the mapping details.

Specify the Properties in the *Source-Target Mappings* grid:

1. Click button in the *Source-Target Mappings* tool bar. The *Properties* window is displayed.
2. Specify the properties by entering a value or selecting an option from the drop-down list.

   You can click button to view the related information in a pop-up.
3. Click button and save the defined Database Mapping details. An information dialog is displayed on completion. Click **OK**.

## 2.5 Data File Mapping

Data File Mapping refers to the process of extracting unstructured data from a Flat File or HDFS file for further data processing and storage. The extraction process can be followed by data transformation and metadata addition before exporting it to the staging area or to the Business Data Model.

Data movement can be from:

- Flat File to RDBMS target (F2T)
- Flat File present in Local File System (LFS) to HDFS target or HDFS file to HDFS target(F2H)

**NOTE:** File present in HDFS system cannot be loaded into RDBMS target Infodom.

You can access Data File Mapping by expanding Data Management Framework and Data Management Tools within the tree structure of LHS menu and selecting Data File Mapping.

The Data File Mapping window displays the list of pre-defined Mappings in the LHS menu and the options to define and map the required Flat File to populate the required Database Table.

### 2.5.1 File to Hive Mapping (F2H)

The Flat file can be local or remote with respect to OFSAA or can be present in HIVE server or remote to HIVE server.

Following are the supported HDFS file formats:

- Text File
- Sequence File
- Parquet File
- RC File

**NOTE:** Fixed Width file cannot be loaded into HDFS system.

**Flat File Present in the Local File System (LFS)**

Before proceeding with defining Data File Mapping, you need to configure the `ETLLoader.properties` file, which is present in `$FICDB_HOME/conf` folder. For more information, see OFSAAI Administration Guide.

Following scenarios are possible:

1. Flat File is local to OFSAA (`OFSAAI/STAGE/<ASCII SOURCE>/<MISDATE>` folder)
2. Flat File is remote to OFSAA
   a) File is local to the VM where HIVE Server is running (with respect to Target Infodom). In this case, you should select **Yes** for the Target Property "**Is File local to Hive Server".**
   b) File is not local to the VM where HIVE Server is running. In this case, you should select **No** for the Target Property "**Is File local to Hive Server".**

**Flat File Present within the HDFS System (HFS)**

Here the folder path present within the HDFS System is captured from the Data Source Creation window.

- The folder can have a single file or multiple files. All files present inside the folder will be loaded into the target table.
- If a file name is given instead of the Folder Path, the F2H will fail.
- Passing a file name like in case of the regular F2T, by setting the Definition Property or ICC parameter is not valid in this case and will be ignored.

### 2.5.2 Defining Data File Mapping (F2T, F2H)

This feature allows you define data file mapping to *load* file data incrementally from any RDBMS data source to a table based on certain criteria. Ensure that the ASCII file types are not loaded into the staging area using FTP which can corrupt the file causing load failure.

**NOTE:** SQL*Loader leaves indexes in an Index Unusable state when the data segment being loaded becomes more up-to-date than the index segments that index it. Two tasks cannot be executed in parallel (without setting precedence), if both the tasks are pointing to the same Destination table.

You can define mapping of Delimited File or Fixed Width File to the required database Table. By default, the Delimited File mapping is selected.

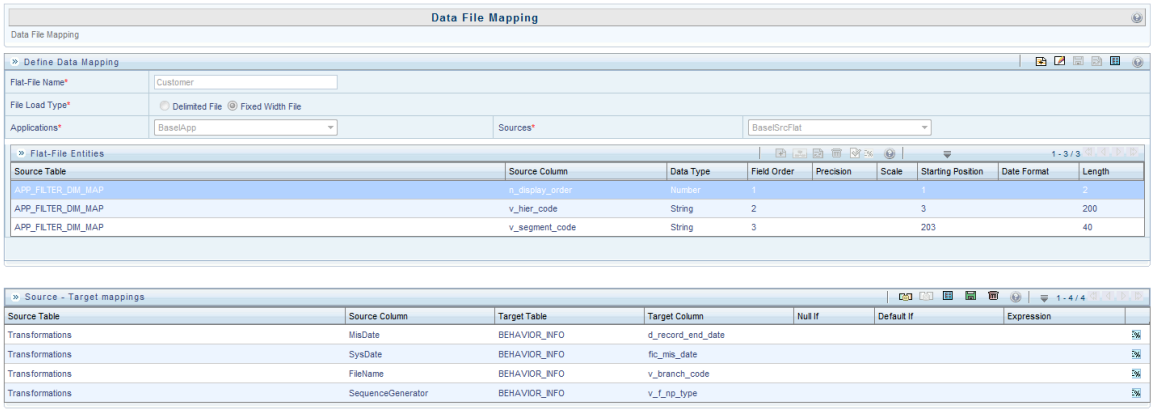
The following steps are involved in defining Data File Mapping:

- Create Data File Mapping Definition
- Define Flat File Properties
  - Definition (Source) properties: Specified while defining the Data File Mapping.

- Loading (Target) properties: Specified while mapping the source to target.

- Map the Flat File to the Target Model

To define data file mapping, do the following:




Specify the Data File Mapping details in the *Define Data Mapping* grid:

1. Enter the **Flat-File Name**. Ensure that there are no special characters or extra spaces in the name specified.
2. Select the File Load Type as **Delimited File** or **Fixed Width File**.
3. Select the required data source Application from the drop-down list.
4. Select the mapped Sources from the drop-down list.

Select the required Entities in the *Flat-File Entities* grid. You can define the column data in either of the following ways:

- Click button. Select or specify the required number of columns in the drop-down list and click button. Double-click on any row to update the details.
- Click button in the *Flat- File Entities* tool bar. The *Choose Entity* window is displayed.
  - Select the entity from Members list by clicking the required node, and click button.

    You can search for a specific entity by entering the keywords and clicking button. You can also deselect an entity by selecting from the Selected Members list and clicking button.
  - Click **OK**. The selected source entities are displayed in the *Flat File Entities* grid.

  The available columns in Delimited File are Source Table, Source Column, Data Type, Field Order, and Date Format. The available columns in Fixed Width File are Source Table, Source Column, Data Type, Field Order, Precision, Scale, Starting Position, Date Format, and Length.

Specify the Source Properties in the *Define Data Mapping* grid:

1. Click button in the *Define Data Mapping* tool bar. The *Properties* window is displayed.
2. Specify the properties by entering the required value or selecting an option from the drop-down list.

   You can click button to view the related information in a pop-up dialog pertaining to a field.

   **NOTE:** It is mandatory to set the **Data File Locale** property for both *Delimited File* and *Fixed Width File* load types to **UTF-8** encoding, by specifying the numeric value as **000-000-0002**.
   **Field Delimiter** is mandatory for *Delimited File* load type.
   For HIVE sources, specify the file format in the **Data File Format** field.
   For **Record Delimiter** property field**,** setting **\r\n** as the record delimiter value is not supported if your Operating System is Solaris x86.

3. Click button in the *Define Data Mapping* tool bar and save the details.

Map Source to Target Table in the *Source-Target Mappings* grid:

1. Click **Define Mapping** button in the Source-Target Mapping tool bar. The *DI Mapping* window is displayed.
2. Select the **Target Infodom** from the drop-down list.

   Select the **Target Table** from Target Entities drop-down list. The selected entities are displayed in the *Target Entities* pane of *Target Table Map Panel*. You can select an entity and click button to view the entity details.

   **NOTE:** You can create a new table by clicking if the target information domain is based on HDFS database. The newly created table will be part of the OFSAAI data model and it is made visible and available to all other modules. For more information, see Dynamic Creation of Table.

   The columns in the selected flat file and the source entities are displayed in the *Definition* pane of *Target Table Map Panel*.

3. To map source to target, do one of the following:
   - Select a source column from the *Definition* pane and target column from the *Target Entities* pane and click button.

**NOTE:** The same source column can be mapped to different target columns of different target entities. An HDFS file cannot be loaded into RDBMS target Infodom.

- Click button to auto-map source columns to target columns provided the source column names are same as target columns.

  You can unmap a definition from a target entity by clicking button or unmap all definitions by clicking button. You can click button to create an expression to join column data in the *Specify Expression* window.

4. To map Row Level Transformation (RLT) functions, that is, SysDate() and Constant values:

   - Click **SysDate()** from the *Definition* pane and target column from the *Target Entities* pane and click button. The target column should be a Date column.
   - Click **Constant Value** from the *Definition* pane and target column from the *Target Entities* pane and click button.

     The Constant Values supported are #DEFINITIONNAME, #SOURCENAME, #APPLICATIONNAME, #MISDATE, #FILENAME, and SQL Expression. Ensure the Data Type of the target column is matching with the constant value Data Type.

**NOTE:** Row Level Transformation is not supported for F2H.

5. Click **Save** to save the mapping details. The mappings are displayed in the *Source-Target mappings* pane.

   - If you have used Constant Value in the mapping, specify the value of the Constant by clicking button corresponding to the required mapping. The Expression window is displayed.

     The valid values for Constants are:

     - #DEFINITIONNAME- The name of the Data File Mapping Definition will be transformed at Row level and loaded into mapped target column.
     - #SOURCENAME- The name of the Source on which Data File Mapping is defined will be transformed at Row level & loaded into mapped target column.
     - #APPLICATIONNAME- The name of the Application on which Data File Mapping is defined will be transformed at Row Level and loaded into mapped target column.

- #MISDATE- Execution date of the Data File Mapping will be transformed at Row Level and loaded into mapped target column.
- #FILENAME- The name of the file used for loading will be transformed at Row Level and loaded into mapped target column.
- SQL Expression- Result of SQL Expression specified will be transformed at Row level and loaded into mapped target column. The result should not exceed the target column length.

Specify the Target Properties in the *Source-Target Mappings* grid:

1. Click button in the Source-Target Mappings tool bar. The *Properties* window is displayed.
2. Specify the properties by entering the required value or selecting an option from the drop-down list.

   The Properties marked with are applicable for both F2H and F2T. You can click button to view the related information in a pop-up dialog pertaining to a field.

   **NOTE:** For data file mapping from a Delimited File, when you map the same source column to different target columns, it is mandatory to set the **Trailing Null Columns** field to **Yes**. Select **Yes** for the **Is File local to Hive Server** drop-down list if the Flat file is present on the VM where Hive Server is running.

3. Click button and save the details.

### 2.5.3 Flat File Types

A Flat File is a text and binary file which contains data in a single line, i.e. one physical record per line. For example, a list of names, addresses, and phone numbers. Flat Files are of two types namely, Delimited File and Fixed Width File.

- **Delimited File** refers to a Flat File in which the data is organized in rows and columns and are separated by delimiters (commas). Each row has a set of data, and each column has a type of data. For example, a csv (comma separated values) file.
- **Fixed Width** or Fixed Position File refers to a Flat File in which the data is defined by the character position (tab space). The data is formulated in such a way that the data fields are of same size and the file is compact in size. For example, the character spacing of a Birth date data column is known and hence the extra spaces between the Birth date column and other column can be eliminated.

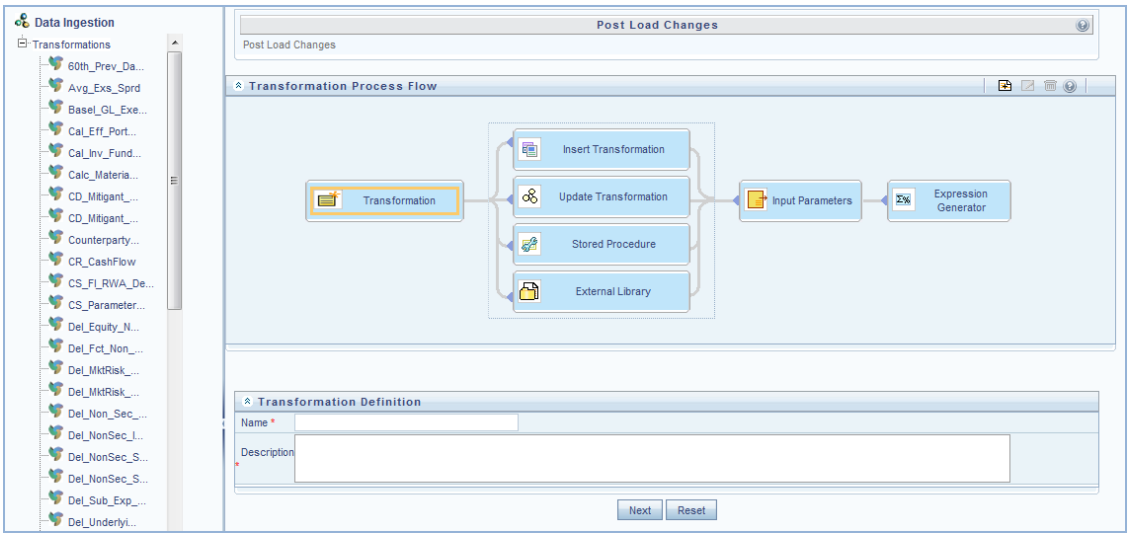
## 2.6 Post Load Changes

Post Load Changes refers to a rule describing the conversion of data from sources to Staging or from Staging to Processing (destination) tables. During the data extraction, a Post Load Changes rule facilitates in structuring the required data from sources to the target or an intermediate systems for further processing. Based on the selected mode, Post Load Changes can be applied to execute the process successfully.

Post Load Changes within the Data Management Tools framework of Infrastructure system facilitates you to define transformations to the source data before extracting/loading it to Target database to populate the data warehouse.

The Roles mapped for DT are: DT_Access, DT_Read, DT_Write, and DT_Phantom. The functions which are mapped with these roles are ETLDTQ and ETLUSR. You should be mapped to one of the above mentioned roles to access the Post Load Changes Screen.

You can access Post Load Changes by expanding the Data Management Tools Framework within the Data Model Management section in tree structure of LHS menu.




The *Transformation Process Flow* section helps you to navigate and define Post Load Changes.

- Insert/Update Transformation
- Stored Procedure Transformation
- External Library

### 2.6.1 Insert/Update Transformation

Insert/Update Transformation facilitates you to define transformation parameters, create expression with source, destination, and join/filter conditions, add transformation logic, and query the SQL Rule generated.

To insert or update a transformation:

1. Click button in the *Transformation Process Flow* tool bar.
2. In the Transformation Definition grid:
   - Enter the **Transformation Name**. Ensure that there are no special characters or extra spaces in the name specified.
   - Enter a **Description** for the transformation.
   - Click **Next** and save the details. You are automatically navigated to the Insert Transformation section. For Update Transformation, click **Update Transformation** in the *Transformation Process Flow* grid.
3. Click button in the *Parameter Definition* tool bar. A new row is inserted and allows you to define the run-time parameters to the transformation.
   - Double-click on the **Parameter Name** and enter the details.
   - Double-click and select the required **Data Type** from the list.
   - Double-click on the **Default Value** and enter the details.
   - Click **Next** and save the parameter details.
4. In the Expression *Generator* grid, specify the Source and Destination Entity by doing the following:
   - Click button. The *Choose Entity* window is displayed.
   - Select the entity from the **Members** list by clicking on the required node, and click .

     You can search for a specific entity by entering the keywords and clicking button. You can also deselect an entity by selecting from the **Selected Members** list and clicking .
   - Click **OK**. The selected source entities are displayed in the Define Entities grid.
5. Specify the Join/Filter Condition. Click button and define the expression in the *Specify Expression* window. Click **OK**.
6. You can also:

- Click button and include the Transformation parameter conditions in the *Transformation Logic* grid or click button to define an expression.

**NOTE:** After applying 8.0.5.1.0/8.0.5.2.0 ML, there are some functional changes. For more details, see Frequently Asked Questions section.

7. Click **Finish** and save the Insert or Update Transformation details.

   The Transformation details are added to the list in LHS menu and a confirmation dialog is displayed. Click **OK**. You can load the transformation by double-clicking in LHS menu to view or edit.

### 2.6.2 Stored Procedure Transformation

Stored Procedure Transformation facilitates you to define complex transformations involving multiple tables which are contained in a pre-defined stored procedure.

To define a Stored Procedure Transformation:

1. Click button in the Transformation *Process Flow* tool bar.
2. In the Transformation Definition grid:
   - Enter the **Transformation Name**. Ensure that there are no special characters or extra spaces in the name specified.
   - Enter a **Description** for the transformation.
   - Click **Next** and save the details. You are automatically navigated to the *Insert Transformation* section.
3. Click **Stored Procedure** in the *Transformation Process Flow* grid.
4. Click button in the *Parameter Definition* tool bar. A new row is inserted and allows you to define the run-time parameters to the transformation.
   - Double-click on the **Parameter Name** and enter the details.
   - Double-click and select the required **Data Type** from the list.
   - Double-click on the **Default Value** and enter the details.
5. Click **Browse** in the Stored Procedure Editor tool bar and navigate to the file path containing the stored procedure. You can select either a text file or HTML file.
6. (Optional) You can click button in the Stored Procedure Editor tool bar to **Check Syntax** of the stored procedure.
7. (Optional) You can upload a *Business Process Flow* diagram corresponding to the selected Stored Procedure Transformations in jpg, png, gif, or vsd format.

- In the Business Process Flow grid, click **Browse** and locate the file path.
- Click button in the Business Process Flow tool bar and upload the file.

Once uploaded, the Upload Status changes to “Yes” and a hyperlinked image icon is displayed to view the Business Process Flow diagram in the *Post Load Changes* window. You can also view the uploaded Business Process Flow diagram from the *Metadata Browser (Applet)* > *Data Transformations* window.

8. Click **Finish** and save the Stored Procedure Transformation details.

   The Transformation details are added to the list in LHS menu and a confirmation dialog is displayed. Click **OK**. You can load the transformation by double-clicking in LHS menu to view or edit.

### 2.6.3 External Library

External Library consists of built-in functions/procedures and facilitates you to define complex SQL Rule Transformations which are compiled and stored as an executable file. You can load the External Library procedures and functions using the transformation wizard.

To define External Library Transformation:

1. Click button in the Transformation *Process Flow* tool bar.
2. In the Transformation Definition grid:
   - Enter the **Transformation Name**. Ensure that there are no special characters or extra spaces in the name specified.
   - Enter a **Description** for the transformation.
   - Click **Next** and save the details. You are automatically navigated to the Insert Transformation section.
3. Click **External Library** in the Transformation *Process* Flow grid.
4. Click button in the *Parameter* Definition tool bar. A new row is inserted and allows you to define the run-time parameters to the transformation.
   - Double-click on the **Parameter Name** and enter the details.
   - Double-click and select the required **Data Type** from the list.
   - Double-click on the **Default Value** and enter the details.
5. In the *External Library Details* grid, enter the **Name** of executable library file (**.sh file**) located in default ficdb/bin path. You can also specify the path till the file name.
6. Click **Finish** and save the External Library Transformation details.

The Transformation details are added to the list in LHS menu and a confirmation dialog is displayed. Click **OK**. You can load the transformation by double-clicking in LHS menu to view or edit.

## 2.7 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 Information Domain.

You can access Data Quality Framework by expanding **Data Management Framework** within the tree structure of LHS menu and selecting **Data Quality Framework**. Data Quality Framework consists of the following sections. Click on the following links to view the section in detail.

- Data Quality Rules
- Data Quality Groups

### 2.7.1 Data Quality Rules

Data Quality Rules facilitates you to create a DQ (Data Quality) definition and define nine specific validation checks based on Range, Data Length, Column Reference/Specific Value, List of Value/Code, Null Value, Blank Value, Referential Integrity, Duplicity, and Custom Check/Business. You can also correct data for range, column reference, list of values, null value, and blank value parameters. The defined Data Quality Rule checks can be logically grouped and executed together.

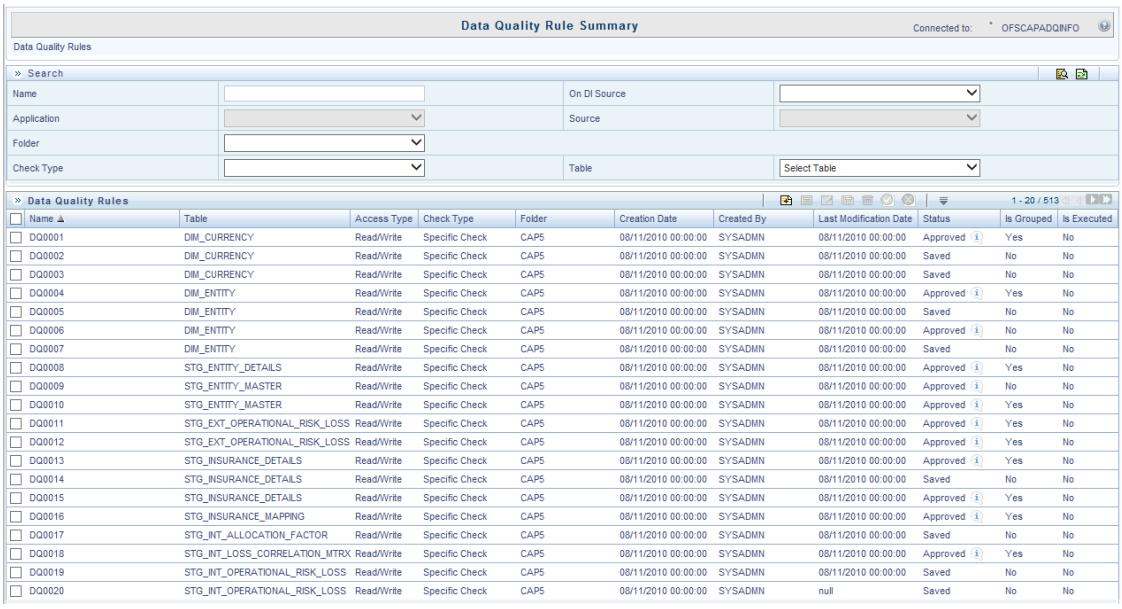
***Control Total Check***

Data Quality Rules supported by OFSAA, integral to OFSAA eco-system and domain specific are largely technical checks. Result of these checks lead to corrections to the data. Enterprise Data Quality tools also support only technical checks. Business semantic driven checks are not typically seeded rule-type.

OFSAAI is provided with a comprehensive business semantic rich and FSI domain centric Data Quality Rule Type. This type of quality check allows configuration of entity-attributes (multiple ones) checked against a reference entity with its set of attributes. The attributes on both sides need not match (though the data-type will match). Both LHS (subject entity) and RHS (reference entity) should permit tagging aggregate functions to attributes, adding dimension-filters to the where-clause and support of group-by predicates (that are also dimensional filters or attributes specific to LHS and RHS entity respectively). The group-by columns need not match the filter criteria columns in the where clause of LHS and RHS.

Note that the result of the check is to log if the check failed/succeeded, along with criteria used with the subject and reference. If there is group-by, against every row of the result on LHS (subject) and RHS (reference), failure or success will be recorded respectively.

You can access Data Quality Rules by expanding Data Management Framework > Data Quality Framework within the tree structure of the LHS menu. See Appendix A for the functions and roles required to access the framework.




| Name | Table | Access Type | Check Type | Folder | Creation Date | Created By | Last Modification Date | Status | Is Grouped | Is Executed |
|---|---|---|---|---|---|---|---|---|---|---|
| DQ0001 | DIM_CURRENCY | Read/Write | Specific Check | CAP5 | 08/11/2010 00:00:00 | SYSADMN | 08/11/2010 00:00:00 | Approved | Yes | No |
| DQ0002 | DIM_CURRENCY | Read/Write | Specific Check | CAP5 | 08/11/2010 00:00:00 | SYSADMN | 08/11/2010 00:00:00 | Saved | No | No |
| DQ0003 | DIM_CURRENCY | Read/Write | Specific Check | CAP5 | 08/11/2010 00:00:00 | SYSADMN | 08/11/2010 00:00:00 | Saved | No | No |
| DQ0004 | DIM_ENTITY | Read/Write | Specific Check | CAP5 | 08/11/2010 00:00:00 | SYSADMN | 08/11/2010 00:00:00 | Approved | Yes | No |
| DQ0005 | DIM_ENTITY | Read/Write | Specific Check | CAP5 | 08/11/2010 00:00:00 | SYSADMN | 08/11/2010 00:00:00 | Saved | No | No |
| DQ0006 | DIM_ENTITY | Read/Write | Specific Check | CAP5 | 08/11/2010 00:00:00 | SYSADMN | 08/11/2010 00:00:00 | Approved | No | No |
| DQ0007 | DIM_ENTITY | Read/Write | Specific Check | CAP5 | 08/11/2010 00:00:00 | SYSADMN | 08/11/2010 00:00:00 | Saved | No | No |
| DQ0008 | STG_ENTITY_DETAILS | Read/Write | Specific Check | CAP5 | 08/11/2010 00:00:00 | SYSADMN | 08/11/2010 00:00:00 | Approved | Yes | No |
| DQ0009 | STG_ENTITY_MASTER | Read/Write | Specific Check | CAP5 | 08/11/2010 00:00:00 | SYSADMN | 08/11/2010 00:00:00 | Approved | No | No |
| DQ0010 | STG_ENTITY_MASTER | Read/Write | Specific Check | CAP5 | 08/11/2010 00:00:00 | SYSADMN | 08/11/2010 00:00:00 | Approved | Yes | No |
| DQ0011 | STG_EXT_OPERATIONAL_RISK_LOSS | Read/Write | Specific Check | CAP5 | 08/11/2010 00:00:00 | SYSADMN | 08/11/2010 00:00:00 | Approved | Yes | No |
| DQ0012 | STG_EXT_OPERATIONAL_RISK_LOSS | Read/Write | Specific Check | CAP5 | 08/11/2010 00:00:00 | SYSADMN | 08/11/2010 00:00:00 | Approved | Yes | No |
| DQ0013 | STG_INSURANCE_DETAILS | Read/Write | Specific Check | CAP5 | 08/11/2010 00:00:00 | SYSADMN | 08/11/2010 00:00:00 | Approved | Yes | No |
| DQ0014 | STG_INSURANCE_DETAILS | Read/Write | Specific Check | CAP5 | 08/11/2010 00:00:00 | SYSADMN | 08/11/2010 00:00:00 | Saved | No | No |
| DQ0015 | STG_INSURANCE_DETAILS | Read/Write | Specific Check | CAP5 | 08/11/2010 00:00:00 | SYSADMN | 08/11/2010 00:00:00 | Approved | Yes | No |
| DQ0016 | STG_INSURANCE_MAPPING | Read/Write | Specific Check | CAP5 | 08/11/2010 00:00:00 | SYSADMN | 08/11/2010 00:00:00 | Approved | Yes | No |
| DQ0017 | STG_INT_ALLOCATION_FACTOR | Read/Write | Specific Check | CAP5 | 08/11/2010 00:00:00 | SYSADMN | 08/11/2010 00:00:00 | Saved | No | No |
| DQ0018 | STG_INT_LOSS_CORRELATION_MTRX | Read/Write | Specific Check | CAP5 | 08/11/2010 00:00:00 | SYSADMN | 08/11/2010 00:00:00 | Approved | Yes | No |
| DQ0019 | STG_INT_OPERATIONAL_RISK_LOSS | Read/Write | Specific Check | CAP5 | 08/11/2010 00:00:00 | SYSADMN | 08/11/2010 00:00:00 | Saved | No | No |
| DQ0020 | STG_INT_OPERATIONAL_RISK_LOSS | Read/Write | Specific Check | CAP5 | 08/11/2010 00:00:00 | SYSADMN | null | Saved | No | No |

The *Data Quality Rule Summary* window displays the list of pre-defined Data Quality Rules with the other details such as Name, Table, Access Type, Check Type, Folder, Creation Date, Created By, Last Modification Date, Status, Is Grouped, and Is Executed. A defined rule is displayed in **Saved** status, until it is Approved/Rejected by the approver. An Approved rule can be grouped in order for execution and a Rejected rule is sent back to the user with the Approver comments.

You can add, view, modify, copy, approve/reject, resave, or delete Data Quality Rules within the *Data Quality Rule Summary* window. You can also make use of Search and Pagination options to search for a Data Quality Rule based on Name, On DI Source, Application, Source, Folder, Table, or Check Type and view the existing Data Quality Rules within the system. For more information, refer Search & Filter and Pagination options.

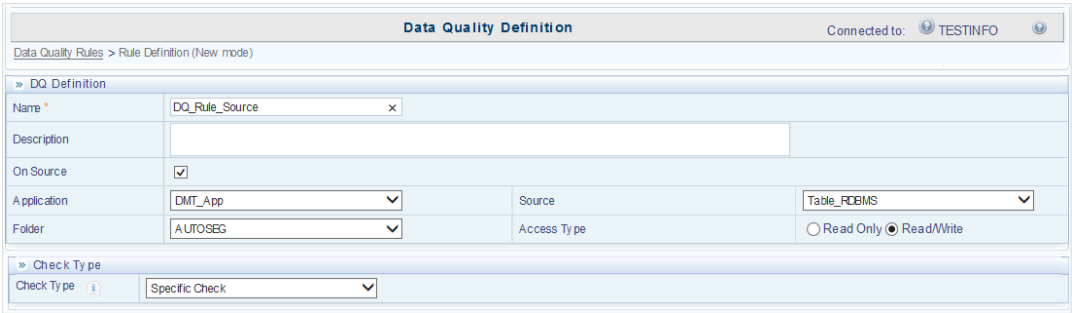
#### 2.7.1.1 Creating Data Quality Rule

You can create a Data Quality Rule definition by specifying the DQ Definition details along with the type of validation check on the required table and defining the required validation conditions to query and correct the transformed data. Data Quality Rules can be defined on entities of Infodom as well as on Data sources which are defined from the *Data Sources* window. Before defining DQ Rule on a Data Source, the Source Model generation should have been done.

**NOTE:** Data Quality Rules can be defined only on the DI Sources whose underlying schema resides in the same database, where OFSAAI METADOM or atomic schema exists.
If you are defining Data Quality check on a Data Management Source, only quality check will be done; data correction will not be done since it is an external source.

To create Data Quality Rule in the *Data Quality Rule Summary* window:

1. Click button in the Data Quality Rules tool bar. **Add** button is disabled if you have selected any checkbox in the grid. The *New - DQ Definition* window is displayed.




2. In the DQ definition section, do the following:
   - Enter the **Name** by which you can identify the DQ definition.
   - Enter a **Description** or related information about the definition.
   - Select the **On DI Source** checkbox if you want to define data quality check on a Data Source. This is optional.
     - Select the required **Application** and the corresponding Data **Source** from the respective drop-down lists. The **Source** drop-down list displays sources created on Oracle DB and Hive DB if it is RDBMS Information Domain or sources created on Hive DB if it is Hive Information Domain.
   - Select the **Folder** (available for selected Information Domain) from the drop-down list.
   - Select the **Access Type** as either *Read Only* or *Read/Write*. Read Only enables only the creator to modify the rule details, other users can only view. Read/Write

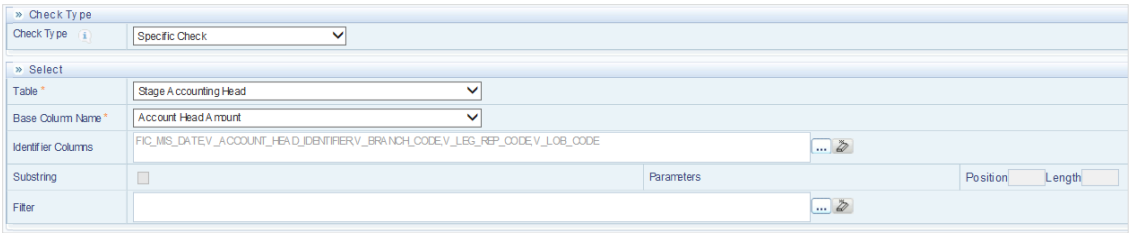
enables all users to view, modify any field (including Access Type), and delete the DQ rule.

3. Select the **Check Type** from the drop-down list. The options are Specific Check, Generic Check, and Control Total Check.

   You can mouse-over button for information.

**Specific Check**

This check is used to define conditions based on individual checks on a single column.




If **Specific Check** is selected, do the following:

1. Select **Table Name** and **Base Column Name** from the drop-down list. The list displays all the tables which are marked for Data Quality Rule in a data model; that is, based on ENABLE_CLASSIFICATION parameter. For more information, refer Table Classification section.

2. Click button and select the Identifier Columns from the *Column Selection* window. The list displays all PK columns of the selected base table.
   This feature allows you to view the DQ results report based on the selected identifier columns apart from the PK columns. You can select up to 8 Identifier columns including the PK columns. It is mandatory to select the PK Columns.

3. If you have selected Base Column of type Varchar/Char, select the **Substring** checkbox and enter numeric values in Parameters **Position** and **Length** characters fields.

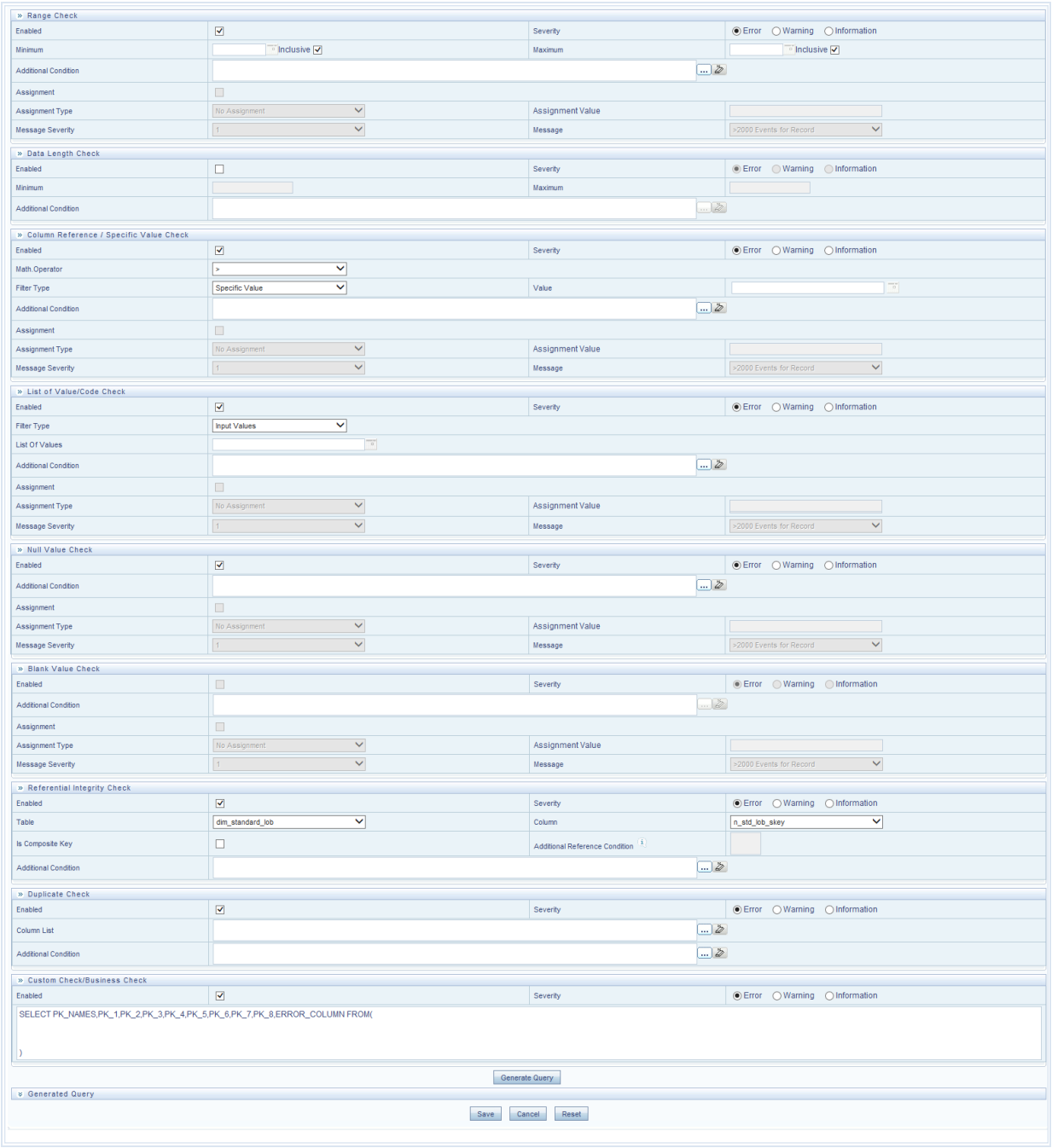
4. Click button and define the **Filter** condition using the *Specify Expression* window. For more information, refer Define Expression.

   **NOTE:** While defining the filter condition, you can also include the Runtime Parameter name which you would be specifying in Additional Parameters condition while executing the DQ Rule.

5. Define the required *Validation Checks* by selecting the appropriate grid and specify the details. You can define nine specific validation checks based on Range, Data Length, Column Reference/Specific Value, List of Value/Code, Null Value, Blank Value, Referential Integrity, Duplicity, and Custom Check/Business.

**NOTE:** A minimum of one Validation check must be defined to generate a query.

- Ensure that you select **Enable** checkbox for every check to be applied as a part of rule.
- While defining any of the validation checks, you need to specify the Severity as Error or Warning or Information. You can add an Assignment only when the Severity is selected as **Warning** or **Information**. Assignments are added when you want to correct or update record(s) in base column data / selected column data. However, selecting severity as **Error** indicates there are no corrections and only facilitates in reporting the quantity of bad records.




| Check Type | Description |
|---|---|
| Range Check | Range Check identifies if the base column data falls outside a specified range of Minimum and Maximum value.<br>**Example**: If the Base Table is STG_CASA, Base Column is N_MIN_BALANCE_YTD, Minimum value is 9, and Maximum value is 99, then the check with the **Inclusive** checkbox enabled (by default) is defined as, |

| Check Type | Description |
|---|---|
| | '*STG_CASA.N_MIN_BALANCE_YTD < 9 and STG_CASA.N_MIN_BALANCE_YTD > 99'.* Here the base column data **less than 9** and **greater than 99** are identified as invalid.<br>If the **Inclusive** checkbox is not selected for Minimum and Maximum, then the check is defined as, '*If STG_CASA.N_MIN_BALANCE_YTD <= 9 and STG_CASA.N_MIN_BALANCE_YTD >= 99'.* Here the base column data **less than 10** and **greater than 98** are identified as invalid, where 9 and 99 are also included in the validation and considered as invalid.<br>▪ Select **Enabled** checkbox. This option is available only if the selected Base Column is either of Date or Number data type.<br>▪ Select the **Severity** as Error, Warning, or Information.<br>▪ If the selected Base Column is of "Date" type, select **Minimum** and **Maximum** date range using the Calendar. 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. The **Inclusive** checkbox is selected by default and you can deselect the same to include the specified date/value during the validation check.<br>▪ Click ... button and specify an expression for **Additional Condition** using *Specify Expression* window. For more information, refer Define Expression.<br>(Optional) If the *Severity* is set to **Warning/Information**:<br>▪ Select the **Assignment** checkbox.<br>▪ Select the **Assignment Type** from the drop-down list. For more information, refer Populating Assignment Type Details in the *References* section.<br>▪ Specify the Assignment Value.<br>▪ Select the **Message Severity** from the drop-down list.<br>▪ Select the **Message** from the drop-down list. |

| Check Type | Description |
|---|---|
| Data Length Check | Data Length Check checks for the length of the base column data using a min and max value, and identifies if it falls outside the specified range.<br>**Example**: If the Base Table is STG_CASA, Base Column is N_MIN_BALANCE_YTD, Minimum value is 9 and Maximum value is 12, then the check is defined as, '*If length of STG_CASA.N_MIN_BALANCE_YTD < 9 and length of STG_CASA.N_MIN_BALANCE_YTD > 12'.* Here the base column data with characters **less than 9** and **greater than 12** are identified as invalid.<br>▪ Select **Enabled** checkbox.<br>▪ Select the **Severity** as Error, Warning, or Information.<br>▪ Specify the **Minimum** data length characters.<br>▪ Specify the **Maximum** data length characters.<br>▪ Click button and specify an expression for **Additional Condition** using *Specify Expression* window. For more information, refer Define Expression. |
| 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.<br>**Example**: If the Base Table is STG_CASA, Base Column is N_MIN_BALANCE_YTD, and if Column Reference check is defined against a specific value '100' with the operator '**>=**' then the check is defined as, '*If STG_CASA.N_MIN_BALANCE_YTD < 100'.* Here the base column data with value **less than 100** are considered as invalid.<br>**Or**, if Column Reference check is defined against another column N_MIN_BALANCE_MTD with the operator '**=**' then the check is defined as, '*If STG_CASA.N_MIN_BALANCE_YTD <> STG_CASA.N_MIN_BALANCE_MTD'.* Here the reference column data **not equal** to the base column data is considered as invalid.<br>▪ Select **Enabled** checkbox. This option is available only if the selected Base Column is either of Date or Number data type.<br>▪ Select the **Severity** as Error, Warning, or Information.<br>▪ Select the **Mathematical Operator** from the drop-down list.<br>▪ Select the **Filter Type** as one of the following:<br>Select **Specific Value** and specify the **Value**. You can specify numeric, decimal, and negative values for number Data type.<br>Select **Another Column** and select **Column Name** form the drop-down list.<br>▪ Click button and specify an expression for **Additional Condition** using |

| Check Type | Description |
|---|---|
| | *Specify Expression* window. For more information, refer Define Expression.<br>(Optional) If the *Severity* is set to **Warning/Information**:<br>▪ Select the **Assignment** checkbox.<br>▪ Select the **Assignment Type** from the drop-down list. For more information, refer Populating Assignment Type Details in Reference section.<br>▪ Specify the Assignment Value.<br>▪ Select the **Message Severity** from the drop-down list.<br>▪ Select the **Message** from the drop-down list. |
| List of Value / Code Check | List of Value / Code Check can be used to verify values where a dimension / master table is not present. This check identifies if the base column data does not matches with any value or code specified in a list of values.<br>**Example**: If the Base Table is STG_CASA, Base Column is N_MIN_BALANCE_YTD, and the list of values is mentioned are "100, 101, 102, 103, 104", then the check is defined as, '*If STG_CASA.N_MIN_BALANCE_YTD is NOT IN ('100, 101, 102, 103, 104)'.* Here the base column data **apart** from the one specified (i.e. *100, 101, 102, 103, 104*) are considered as invalid.<br>**Or**, for Code Check,<br>If the Base Table is CURRENCY_MASTER, Base Column is COUNTRY_CODE, and the list of values is mentioned are 'IN', 'US', 'JP', then the check is defined as, '*If CURRENCY_MASTER.COUNTRY_CODE is NOT IN ('IN', 'US', 'JP')'. Here the b*ase column data **apart** from the one specified (i.e. 'IN', 'US', 'JP') are considered as invalid.<br>▪ Select **Enabled** checkbox.<br>▪ Select the **Severity** as Error, Warning, or Information.<br>▪ Select the **Filter Type** as one of the following:<br>▪ Select **Input Values** and specify the **List of Values**. You can specify numeric, decimal, string (Varchar /char), and negative values.<br>▪ Select **Code** and click button in the *List of Values* column. The *Code Selection* window is displayed. Select the required code and click . You can also click to select all the available codes. Click **OK**.<br>▪ Click button and specify an expression for **Additional Condition** using *Specify Expression* window. For more information, refer Define Expression.<br>(Optional) If the *Severity* is set to **Warning** or **Information**:<br>▪ Select the **Assignment** checkbox.<br>▪ Select the **Assignment Type** from the drop-down list. For more information, |

| Check Type | Description |
|---|---|
| | refer Populating Assignment Type Details in the *References* section.<br>▪ Specify the Assignment Value.<br>▪ Select the **Message Severity** from the drop-down list.<br>▪ Select the **Message** from the drop-down list. |
| Null Value Check | Null Value Check identifies if "**NULL**" is specified in the base column.<br>**Example**: If the Base Table is STG_CASA and the Base Column is N_MIN_BALANCE_YTD, then the check is defined as, '*If STG_CASA.N_MIN_BALANCE_YTD is NULL'*. Here the base column data, which is **null**, are considered as invalid.<br>▪ Select **Enabled** checkbox.<br>▪ Select the **Severity** as Error, Warning, or Information.<br>▪ Click button and specify an expression for **Additional Condition** using *Specify Expression* window. For more information, refer Define Expression.<br>(Optional) If the *Severity* is set to **Warning** or **Information**:<br>▪ Select the **Assignment** checkbox.<br>▪ Select the **Assignment Type** from the drop-down list. For more information, refer Populating Assignment Type Details in the *References* section.<br>▪ Specify the Assignment Value.<br>▪ Select the **Message Severity** from the drop-down list.<br>▪ Select the **Message** from the drop-down list. |
| Blank Value Check | Blank Value Check identifies if the base column is blank without any values considering the blank space.<br>**Example**: If the Base Table is STG_CASA and Base Column is N_MIN_BALANCE_YTD, then the check is defined as, '*If Length of data of STG_CASA.N_MIN_BALANCE_YTD after trim is null'*. Here the base column data that is **blank/empty** are considered as invalid.<br>▪ Select **Enabled** checkbox.<br>▪ Select the **Severity** as Error, Warning, or Information.<br>▪ Click button and specify an expression for **Additional Condition** using *Specify Expression* window. For more information, refer Define Expression.<br>(Optional) If the *Severity* is set to **Warning** or **Information**:<br>▪ Select the **Assignment** checkbox.<br>▪ Select the **Assignment Type** from the drop-down list. For more information, refer Populating Assignment Type Details in the *References* section. |

| Check Type | Description |
|---|---|
| | ▪ Specify the Assignment Value.<br>▪ Select the **Message Severity** from the drop-down list.<br>▪ Select the **Message** from the drop-down list. |
| 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.<br>**Example**: If the Base Table is STG_CASA, Base Column is N_MIN_BALANCE_YTD, Reference table is STG_CASA_TXNS, and reference column is N_TXN_AMOUNT_NCY, then the check is defined as, '*(not exists (select STG_CASA_TXNS.N_TXN_AMOUNT_NCY from STG_CASA_TXNS where STG_CASA_TXNS.N_TXN_AMOUNT_NCY=STG_CASA.n_min_ balance_ytd))*'. Here, if the STG_CASA. N_MIN_BALANCE_YTD column value **does not match** with STG_CASA_TXNS. N_TXN_AMOUNT_NCY, then those base table records are considered as invalid.<br>This check can be used to validate attributes like Geography dimension, currency dimension, and so on.<br>▪ Select **Enabled** checkbox.<br>▪ Select the **Severity** as Error, Warning, or Information.<br>▪ Select the **Table** (Referential Integrity Check dimension table) from the drop-down list.<br>The base table selected under the *Select* grid is excluded from the drop-down list.<br>▪ Select the **Column** from the drop-down list.<br>The list displays those columns that have the same Data Type as that of the **Base Column** selected under *Select* grid.<br>▪ Select the **Is Composite Key** checkbox if the base column is part of a Composite Key.<br>▪ Enter the **Additional Reference Condition** for the Composite Key. For example, baseTable.column2=refTable.column2 and baseTable.column3=refTable.column3 etc where column1, column2, column3 are part of the Composite Keys, baseTable.column1 is the base column and refTable.column1 is the reference column.<br>▪ Click ... button and specify an expression for **Additional Condition** using *Specify Expression* window. For more information, refer Define Expression.<br>**Note**: SELECT privilege should be granted to METADOM (atomic schema) user on Base Table and Reference Table for all DQ rules which are defined on "Data |

| Check Type | Description |
|---|---|
| | Management Sources". |
| 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.<br>**Example**: If the Base Table is STG_CASA, base column is N_MIN_BALANCE_YTD, and duplicity columns are selected as N_MIN_BALANCE_MTD and N_MIN_BALANCE_ITD, then the check is defined as, '*If there are **duplicate values** for the combination of columns STG_CASA.* N_MIN_BALANCE_YTD, *STG_CASA.N_MIN_BALANCE_MTD, and STG_CASA. N_MIN_BALANCE_ITD are considered as invalid*'.<br>▪ Select **Enabled** checkbox.<br>▪ Select the **Severity** as Error, Warning, or Information.<br>▪ Click button in **Column list** and select the required column.<br>▪ Click button and specify an expression for **Additional Condition** using *Specify Expression* window. For more information, refer Define Expression. |
| 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.<br>**Example**: When you want all the bad records based on two column selection from same table, such as - Identify all the error records from Investments table where the account number is not null and account group code is null:<br>select PK_NAMES,PK_1,PK_2,PK_3,PK_4,PK_5,PK_6,PK_7,PK_8,ERROR_COLUMN from (SELECT NULL PK_NAMES, NULL PK_1,NULL PK_2,NULL PK_3,NULL PK_4,NULL PK_5,NULL PK_6,ACCOUNT_NUMBER PK_7, ACCOUNT_GROUP_CD PK_8, CASE WHEN ACCOUNT_GROUP_CD IS NULL AND ACCOUNT_NUMBER IS NOT NULL THEN 1 ELSE 0 END ERROR_COLUMN FROM FSI_D_INVESTMENTS)<br>▪ Select **Enabled** checkbox.<br>▪ Select the **Severity** as Error, Warning, or Information.<br>▪ Enter the **Custom/Business Check** parameters within the brackets. Ensure that each parameter is separated by a comma. |

**NOTE:** After applying 8.0.5.1.0 /8.0.5.2.0 ML, there are some functional changes. For more details, see Frequently Asked Questions section.

6. Click **Save**. The details are validated and the status is displayed in a pop-up. The defined Data Quality Rule definition is displayed in the *Data Quality Rule Summary* window with the status as “Saved”.

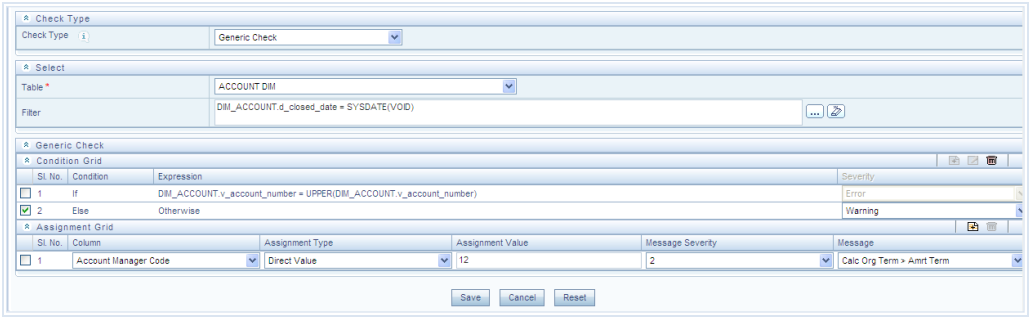
   Additional conditions would be appended to the RI check criteria, that is, to the NOT EXISTS clause in conjunction with an AND.

   **NOTE:** For all checks except Referential Integrity Check, the additional condition is expected to be defined on the base table; whereas for RI check, it can be done on the base table as well as the reference table.

### Generic Check

Generic Check is used to 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.

If **Generic Check** is selected, do the following:




1. Select **Table Name** from the drop-down list. The list displays all the tables which are marked for Data Quality Rule in a data model; that is, based on ENABLE_CLASSIFICATION parameter. For more information, refer Table Classification section.

2. Click button and define the **Filter** condition using the *Specify Expression* window. For more information, refer Define Expression.

   **NOTE:** While defining the filter condition, you can also include the Runtime Parameter name which you would be specifying in Additional Parameters condition while executing the DQ Rule.

3. Click button in the *Condition* grid. The *Specify Expression* window is displayed. Define the Condition expression. For more information, refer Define Expression.

   **NOTE:** The length of the condition is restricted to 4000 characters.

   The Expression is displayed with the “IF” and “Else” conditions along with the *Severity* status as **Error** or **Warning or Information**.

You can change the *Severity* by selecting the checkbox corresponding to the condition and selecting the Severity as **Warning or Information** from the drop-down list.

**NOTE:** You can add an Assignment only when the Severity is selected as **Warning or Information**. Assignments are added when you want to correct or update record(s) in base column data / selected column data. There can be one or more assignments tagged to a single condition. However, selecting severity as **Error** indicates there are no corrections and only facilitates in reporting the quantity of bad records.

4. Select the checkbox adjacent to the required Condition expression and click button in the *Assignment* grid. The assignment details are populated.

**NOTE:** You can add an Assignment only if the *Severity* is **Warning or Information**. There can be one or more assignments tagged to a single condition.

5. Specify the Assignment details as tabulated.

| Field | Description |
|---|---|
| Column Name | Select the **Column Name** from the drop-down list. |
| Assignment Type | Select the **Assignment Type** from the drop-down list. For more information, refer Populating Assignment Type Details in the *References* section. |
| Assignment Value | Select the Assignment Value from the drop-down list according to the Assignment Type selected. |
| Message Severity | Select the **Message Severity** as either **1** or **2** from the drop-down list. |
| Message | Select the required **Message** for the *Severity* from the drop-down list. |

You can also add multiple assignments by clicking button in *Assignment* grid.

**NOTE:** Minimum of one condition needs to be defined to save the Rule.

6. Click **Save**. The defined Data Quality Rule definition is displayed in the *Data Quality Rule Summary* window with the status as “Saved”.

### Control Total Check

Using Control Total check, you can compare a constant reference value or reference entity against single or multiple values obtained by applying aggregate functions on the columns of a master/main table, with supporting dimensional filters. The dimensional filters can be time, currency, geography or so on.

There is no data correction configurable for the Control Total check. This check provides summary level information on the entity used, attributes used, aggregate function applied, dimension-filters, group-by columns/predicates selected, number of records subject to the check and so on.

**NOTE:** Control Total Check is not supported in Hive Information Domain.

Example of Control Total check based on Constant/Direct Value

Consider an example where you want to check the sum of loan amount for currency code 'INR' is greater than or equal to a Constant Value. In the LHS, select Table as "stg_loan_transactions", Dimensional Filter as "dim_currency.n_currency_code='INR'" and Group By as "dim_legal_entities.le_code, lob.lob_code, dim_branch.branch_code, dim_prodcut.product_id". In this case, the query for LHS Criteria will be

```
Select sum(end_of_period_balance)

from stg_loan_transactions SLT, dim_currency DC

where SLT.n_currency_skey=DC.n_currency_skey and
DC.n_currency_code = 'INR' and fic_mis_date = '12/12/2015'

group by dim_legal_entities.le_code, lob.lob_code,
dim_branch.branch_code, dim_prodcut.product_id"
```

If the result of the aggregate function is greater than or equal to the specified constant value, it will be marked as Success, else Failure. After execution, the results can be viewed in DQ reports.

Example of Control Total check based on Reference Entity

Consider an example where you want to compare the sum of loan amount for currency code 'INR' with the sum of transaction amount for currency code 'INR' for a period with MIS DATE as 12/12/2015. In the LHS, select Table as "stg_loan_transactions", Dimensional Filter as "dim_currency.n_currency_code='INR'" and Group By as "dim_legal_entities.le_code, lob.lob_code, dim_branch.branch_code, dim_prodcut.product_id". In the RHS, select Table as "gl_master", Dimensional Filters as "dim_currency.n_currency_code='INR'" and fic_mis_date = 12/12/2015, and Group By as "dim_legal_entities.le_code, lob.lob_code, dim_branch.branch_code, dim_prodcut.product_id". In this case, the query for LHS criteria will be same as given in the previous example and the query for RHS criteria will be:

```
select sum(end_of_period_balance)
```

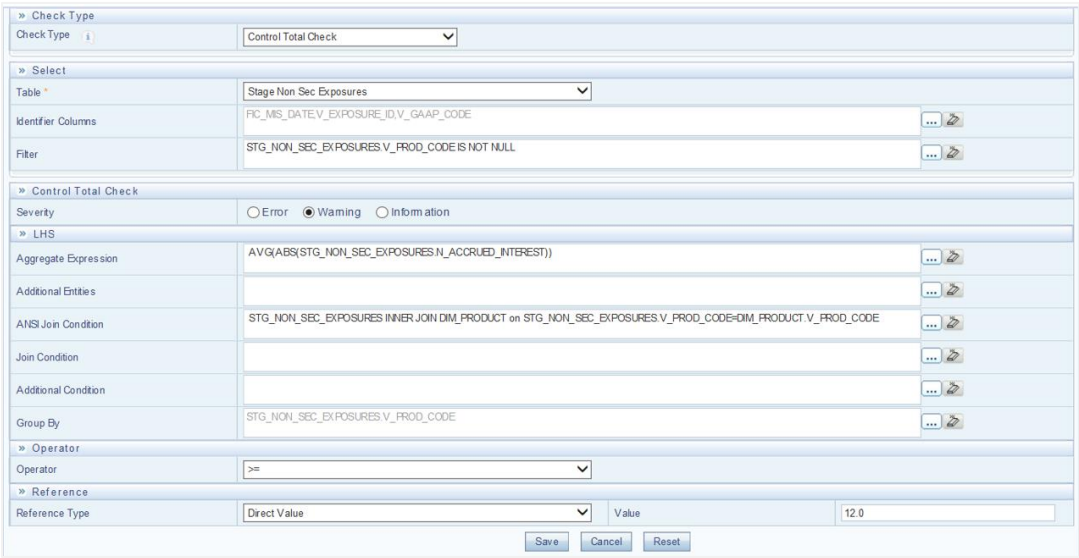
```
from gl_master GM, dim_currency DC, dim_time_date DTD

where GM.n_currency_skey = DC.n_currency_skey  and GM.gl_code =
'LES_001' and DTD.fic_mis_date = '12/12/2015' and
DC.n_currency_skey = 'INR'

group by dim_legal_entities.le_code, dim_lob.lob_code,
dim_branch.branch_code, dim_prodcut.product_id
```

Consider you have selected the Operator as “>=”. Then, if the result of the aggregate function in the LHS is greater than or equal to the result of the aggregate function in the RHS, it will be marked as Success, else Failure. After execution, the results can be viewed in DQ reports.

If **Control Total Check** is selected, do the following:




1. Select **Table Name** from the drop-down list. The list displays all the tables which are marked for Data Quality Rule in a data model; that is, based on ENABLE_CLASSIFICATION parameter. For more information, refer Table Classification section.

2. Click button and select the Identifier Columns from the *Column Selection* window. The list displays all PK columns of the selected base table.
   This feature allows you to view the DQ results report based on the selected identifier columns apart from the PK columns. You can select up to 8 Identifier columns including the PK columns. It is mandatory to select the PK Columns.

3. Click button and define the **Filter** condition using the *Specify Expression* window. For more information, refer Define Expression.

**NOTE:** While defining the filter condition, you can also include the Runtime Parameter name which you would be specifying in Additional Parameters condition while executing the DQ Rule.

4. Select the Severity as **Error**, **Warning** or **Information**.
5. Enter the details in the *LHS* grid as tabulated:

| Field | Description |
|---|---|
| Aggregate Expression | Click button and define the **Aggregate Expression** using the *Specify Expression* window. For more information, refer Define Expression. |
| Additional Entities | Click button and add additional entities if required from the *Additional Entities Selection* window. This is optional. |
| ANSI Join Condition | Specify ANSI Join condition if you have added Additional Entities.<br>For DQ rules defined on source, prefix the table names with "$SOURCE$" if you are directly entering the ANSI Join Condition in the *Expression* editor. |
| Join Condition | Specify Join condition if you have added Additional Entities. |
| Additional Condition | Specify additional condition if any. |
| Group By | Specify the group by predicates/ columns by clicking button and selecting **Table** and **Column** from the respective drop-down lists.<br>**Note**: The group-by columns need not match the filter criteria columns in the where clause of LHS. If Group By columns are not selected on LHS and RHS, a single row on LHS will be compared with a single row on RHS. |

| Field | Description |
|---|---|
| Group By Join Condition | Specify the Group By Join condition in the form LHS.GRPBY_COL1 = RHS.GRPBY_COL1 AND LHS.GRPBY_COL2 = RHS.GRPBY_COL2 and so on. LHS and RHS will be joined based on this.<br>If the number of Group By columns on LHS does not match with the number of Group By columns on RHS, it is mandatory to enter **Group By Join Condition**.<br>If Group By Join Condition is not specified and the number of Group By columns on LHS and RHS are equal, Group By Join Condition will be automatically generated in the form "LHS.GRPBY_COL1 = RHS.GRPBY_COL1 AND LHS.GRPBY_COL2 = RHS.GRPBY_COL2".<br>If Group By columns are present only on LHS, every row on LHS will be compared against the single row on RHS. Group By Join Condition will be generated in the form "RHS.R_ID=1".<br>If Group By columns are present only on RHS, the single row in LHS will be compared against every row on RHS. Group By Join Condition will be generated in the form "LHS.L_ID=1". |

6. Select the appropriate **Operator** from the drop-down list. The available operators are **>**, **<**, **=, <>**, **<=**, and **>=**. Evaluation is done based on the selected numeric operator.

7. Select the **Reference Type** as:

   a) **Direct Value-** Enter the reference value in the **Value** field.

   b) **Another Entity**- This is used when you want to compare LHS with a different entity with its set of attributes. Enter the details as follows:

      - **Reference Base Table**- Select the reference table from the drop-down list.
      - Specify **Aggregate Expression**, **Additional Entities**, **ANSI Join Condition**, **Join Condition, Additional Condition** and **Group By** in the respective fields. For more information, refer the preceding table.

   c) **Relative Reference**- Here Reference value is the same aggregate function on the subject entity itself, but dimensional filters can vary. **Reference Base Table** and **Aggregate Expression** are pre-seeded as in the LHS grid. You cannot modify them. Enter the other details as follows:

      - Specify **Additional Entities, ANSI Join Condition, Join Condition, Additional Condition** and **Group By** in the respective fields. For more information, refer the preceding table.

**NOTE:** Control Total check is allowed only on numeric columns.
Group By clauses on LHS and RHS should be defined in such a way that output of RHS and LHS are semantically correct to be compared. That is, RHS and LHS should not result in two different sets that cannot be compared against. Hence, ensure the rule definitions are technically validated to meet this.

**NOTE:** After applying 8.0.5.1.0 /8.0.5.2.0 ML, there are some functional changes. For more details, see Frequently Asked Questions section.

8. Click **Save**. The details are validated and the status is displayed in a pop-up. The defined Data Quality Rule definition is displayed in the *Data Quality Rule Summary* window with the status as “Saved”.

**NOTE:** No corrections or assignments are done by the framework for Control Total check.

### Table Classification

DQ rules whether can be defined on a table is decided by a new Servlet parameter ENABLE_CLASSIFICATION, which is present in the web.xml file.

If ENABLE_CLASSIFICATION is set to Y, any tables with classification code 340 can be selected as base table for DQ rule definition. This is the old behavior.

If ENABLE_CLASSIFICATION is set to N, then irrespective of the classification any table can be selected as base table for DQ rule definition.

### Defining Data Quality Rules on Partitioned Tables

Data correction on partitioned table is accomplished by overwriting the particular partition specified. At run time, DQ engine look for partition information from OFSAAI object registration table REV_TAB_PARTITION. If base table is partitioned, REV_TAB_PARTITIONS table will have partition column, value and sequence registered in it.

If PARTITION_VALUE does not present in REV_TAB_PARTITIONS table for a TABLE_NAME.COLUMN_NAME, it is considered as a dynamic partition.

Hive allows operations on dynamic partition only in non-strict mode. Non-strict mode is set by DQ engine while it identifies REV_TAB_PARTITION.V_PARTITION_VALUE as null.

Static partition value can also be set with placeholders. For example, $PARAM1, $PARAM2 and the same can be mentioned as ‘Additional Parameters’ while DQ batch execution. Value for the placeholders/ additional parameters will be substituted as the static partition values during DQ run time.

#### 2.7.1.2 Viewing Data Quality Rule

You can view individual Data Quality Rule definition details at any given point. To view the existing Data Quality Rule definition in the *Data Quality Rule Summary* window:

1. Select the checkbox adjacent to the required DQ Name.
2. Click button from the Data Quality Rules tool bar.

   The *DQ Definition* window displays the details of the selected Data Quality definition. The *Audit Trail* section at the bottom of *View - DQ Definition* window displays metadata information about the Data Quality Rule defined.

#### 2.7.1.3 Modifying Data Quality Rule

You can modify the saved Data Quality Rule definition(s) which are not grouped in the Data Quality framework. A grouped Data Quality Rule definition can still be edited by unmapping the same from the associated group(s).

**NOTE:** An approved rule irrespective of whether it is mapped to group(s) or it has been executed, cannot be edited if the configuration of Data Quality Approval parameter is set to '**N**'.

You can update all the definition details except for the Definition Name, Check Type, Table, and the Base Column selected. To update the required Data Quality Rule definition details in the *Data Quality Rule Summary* window:

1. Select the checkbox adjacent to the required DQ Name.

   **NOTE:** You can only edit those rules, which has the status as **Saved** or **Rejected** and which are Approved (but **not mapped** with any group). If you want to edit an Executed rule, you need to unmap the rule from the group.

2. Click button from the Data Quality Rules tool bar. The Edit button is disabled if you have selected multiple DQ Names.

   The *Edit - DQ Definition* window is displayed.

3. Update the details as required. For more information, refer Create Data Quality Rule.
4. Click **Save** and update the changes. The **Status** is changed to **Saved** and the rule should undergo authorization.

#### 2.7.1.4 Copying Data Quality Rule

You can copy the existing Data Quality Rule to quickly create a new DQ definition based on the existing rule details or by updating the required parameters. To copy an existing Data Quality Rule definition in the *Data Quality Rule Summary* window:

1. Select the checkbox adjacent to the required DQ Name in the list whose details are to be duplicated.
2. Click button from the Data Quality Rules tool bar. **Copy** button is disabled if you have selected multiple checkboxes. The *Copy - DQ Definition* window is displayed.
3. Edit the DQ definition Name and other details as required. For more information, refer Create Data Quality Rule.
4. Click **Save**. The defined Data Quality Rule definition is displayed in the *Data Quality Rule Summary* window with the status as "Saved".

#### 2.7.1.5 Approving/ Rejecting Data Quality Rule

You (Authorizer) can approve a pre-defined Data Quality Rule definition for further execution or Reject an inappropriate DQ definition listed within the *Data Quality Rule Summary* window. You should be mapped to DQ Authorizer function role to approve or Reject a DQ definition.

To approve/ reject Data Quality Rule in the *Data Quality Rule Summary* window:

1. Select the checkbox adjacent to the required DQ Name. Ensure that you select the "Saved" DQ definition based on the *Status* indicated in the Data Quality Rules grid.
2. Do one of the following:
   - To **Approve** the DQ definition, click button. The *User Comments* window is displayed. Enter the notes or additional information to the user and click **OK**. The selected DQ definition is approved and a confirmation dialog is displayed.
   - To **Reject** the DQ definition, click button. The *User Comments* window is displayed. Enter the notes or additional information to the user and click **OK**. The selected DQ definition is rejected and a confirmation dialog is displayed.

**NOTE:** The authorizer can approve/reject only one definition at a time.

The Approved/Rejected status of the DQ definition is indicated in the Status column of the *Data Quality Rule Summary* window. You can mouse-over button to view the Approver comments in a pop-up.

#### 2.7.1.6 Resaving Data Quality Rule

The DQ rule definition undergoes changes when the OFSAA data model alters the base tables attributes (columns, primary keys) as a part of model versioning. The Resave option allows you to select multiple DQs and save at once, instead of re-generating and re-saving the rules one by one. For DQ Rules defined on infodom tables, resave persists the default PK columns as identifier columns and regenerate the query. So the custom identifier columns selected at the time of rule definition will not be considered when you resave the DQ rule. For DQ rules defined on Source, as the PK columns of source tables are not identifiable, resave just re-generates the query and resave the query; it does not update the identifier columns.

To resave data quality rule:

1. From the Data Quality Rules window, select the DQ Rules which you want to resave and click **Resave**.
2. A status message is displayed showing whether the Resave was successful or failed.

#### 2.7.1.7 Deleting Data Quality Rule

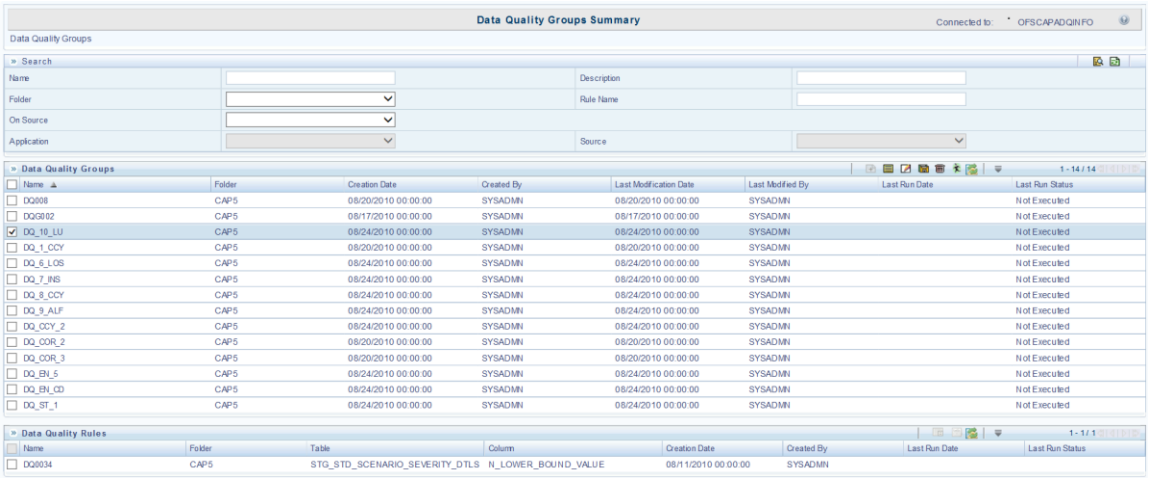
You can remove the Data Quality Rule definition(s) which are not grouped in the Data Quality framework. A grouped and non executed Data Quality Rule definition can still be deleted by unmapping the same from all the associated group(s).

1. Select the checkbox adjacent to the required DQ Name whose details are to be removed.
2. Click button from the Data Quality Rules tool bar.
3. Click **OK** in the information dialog to confirm deletion.

### 2.7.2 Data Quality Groups

Data Quality Groups facilitates you to logically group the defined DQ definitions and schedule for execution. DQ definitions can be executed either through *Data Quality Groups Summary* window of Data Management Tools framework or in *Batch Execution* window of Operations module.

You (Business Analysts) need to have DQADMN (DQ Rule Admin) function role mapped to access the Data Quality Groups within the Infrastructure system. You can access Data Quality Groups Summary by expanding Data Management Framework > Data Quality Framework within the tree structure of the LHS menu.




The *Data Quality Groups Summary* window displays the list of pre-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 c*reate* and e*xecute* DQ Group definitions and view, modify, copy, refresh, or delete DQ Group definitions within the *Data Quality Groups Summary* window.

Note the following:

- The “Last Run Status” column in the Data Quality Groups Summary grid displays the Group execution status as *Not Executed*, *Ongoing*, *Interrupted*, *Successful*, and *Failed*.
- Those Data Quality groups created in Operations module with the execution status as *Held*, *Excluded*, or *Cancelled* are displayed as *Not Executed* in the Data Quality Groups Summary grid. However, the same can be viewed in *Operations* > *Batch Monitor* window.
- The “Last Run Status” column in Data Quality Rules summary grid displays the Rule execution status as *Ongoing*, *Successful*, or *Failed*. You can click on the status to view additional details in *View Log* window.

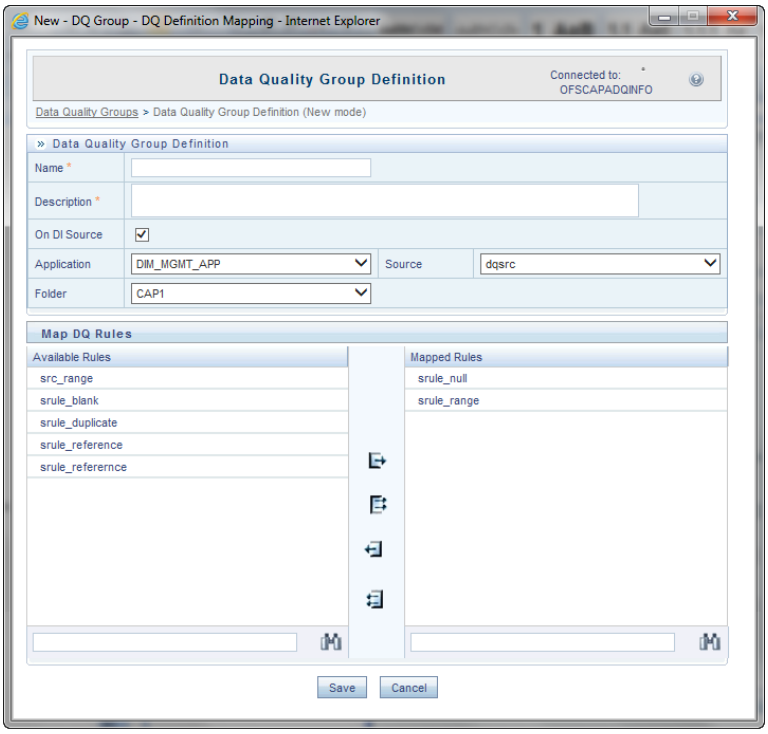
You can also make use of Search and Pagination options to search for a DQ Group definition based on Name, Description, Folder, Rule Name, On Source, Application, or Source. For more information, refer Search & Filter and Pagination options.

#### 2.7.2.1 Creating Data Quality Group

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.

To create DQ Group in the *Data Quality Groups Summary* window:

1. From the *Data Quality Groups Summary* window, click button in the *Data Quality Groups* tool bar. **Add** button is disabled if you have selected any checkbox in the grid. The *New - DQ Group - DQ Definition Mapping* window is displayed.




2. In the Data Quality Group Definition section, do the following:

   - Enter the **Name** by which you can identify the DQ Group.
   - Enter a description or related information about the DQ Group.
   - Select the **On DI Source** checkbox if you want to group DQ Rules defined on DI Sources.
   - Select the **Application** and **Source** from the respective drop-down lists.

   **NOTE:** DQ rule defined on a particular application- source mapping cannot be grouped together with DQ rules defined on another application- source mapping.

   - Select the **Folder** (available for selected Information Domain) from the drop-down list.

3. In the Map DQ Rules section, do the following:

   - Select the required DQ Rule from the *Available Rules* list and click . You can also search to select a specific DQ Rule by entering the required keyword and clicking button.

**NOTE:** If a DQ group has interdependent rules, such rules would not give the expected result.

- To select all the listed DQ Rules, click .

  You can also deselect a DQ Rule by selecting from the Mapped Rules list and clicking  or deselect all the mapped rules by clicking . You can search to deselect a specific DQ Rule by entering the keyword and clicking  button.

4. Click **Save**. The defined DQ group is listed in the *Data Quality Rule Summary* window and can be executed for processing. For more information, refer, Execute DQ Group.

#### 2.7.2.2 Executing Data Quality Group

You can execute a defined DQ Group Definitions along with the mapped Rules and validation checks in the *Data Quality Group Summary* window. This in turn creates a Batch in Operations module. You can also create and execute a DQ Group in the *Batch Execution* window of Operations module. When a Data Quality Group is executed for processing, the execution details can be viewed in View Data Quality Group Summary Log.

**NOTE:** Ensure **Allow Correction on DI Source** checkbox is selected in the **System Configuration**> **Configuration** > **Others** tab if you want to do the Data Quality check and correction simultaneously through DCDQ framework.

Note that the results of execution of Data Quality Rules are stored in the table DQ_RESULT_DETL_MASTER of respective METADOM schema. During OFSAAI installation ensure the Oracle database tablespace in which this table resides is configured to AUTOEXTEND ON. Otherwise, the DQ Rule executions might result in error due to insufficient storage space available (ORA-01653 - Unable to extend tablespace by 1024). To mitigate this error, ensure sufficient storage for the tablespace has been allocated. For a single check (DQ) on a row of data, the table DQ_RESULT_DETL_MASTER stores the results in 1 row. Thus, for 2 checks on a row, the table would store results in 2 rows and so on.

To execute a DQ Group in the *Data Quality Group Summary* window:

1. From the *Data Quality* Groups *Summary* window, select the checkbox adjacent to the required Group Name.
2. Click  button from the Data Quality Groups tool bar. The **Run** button is disabled if you have selected multiple checkboxes. The *Group Execution* window is displayed.
3. In the Batch details section, do the following:
   - Select the **MIS Date** using the Calendar. MIS Date is mandatory and 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” in *View Log* window.

**NOTE:** If there is an As_Of_Date column in the table, it looks for As_Of_Date matching the specified MIS Date.
The **DQ Batch ID** is auto populated and is not editable.

- Specify the percentage of **Threshold (%)** limit in numeric value. This refers to the maximum percentage of records that can be rejected in a job. If the percentage of failed records exceeds the Rejection Threshold, the job will fail. If the field is left blank, the default value is set to 100%.
- Specify the **Additional Parameters** as filtering criteria for execution in the pattern Key#Data type#Value; Key#Data type#Value;…etc.

  Here the Datatype of the value should be "**V**" for Varchar/Char, or "**D**"' for Date with "MM/DD/YYYY" format, or "**N**" for numeric data. For example, if you want to filter some specific region codes, you can specify the Additional Parameters value as
  $REGION_CODE#V#US;$CREATION_DATE#D#07/06/1983;$ACCOUNT_BAL#N#10000.50;

  You can mouse-over for information.

**NOTE:** In case the Additional Parameters are not specified, the default value is taken as NULL. Except the standard place holders $MISDATE and $RUNSKEY, all additional parameters for DQ execution should be mentioned in single quotes. For example, STG_EMPLOYEE.EMP_CODE = '$EMPCODE'.

- Select **Yes** or **No** from the **Fail if Threshold Breaches** drop-down list. If **Yes** is selected, execution of the task fails if the threshold value is breached. If **No** is selected**,** execution of the task continues.

4. Click **Execute**. A confirmation message is displayed and the DQ Group is scheduled for execution.

   Once the DQ Group is executed, you can view the details of the execution along with the log information in the *View Log* window. For more information, refer View Data Quality Group Summary Log.

#### 2.7.2.3 Viewing Data Quality Group

You can view individual Data Quality Group definition details at any given point. To view the existing DQ Group definition in the *Data Quality Group Summary* window:

1. From the *Data Quality Groups Summary* window, select the checkbox adjacent to the required DQ Group Name. The mapped DQ Rules are displayed in the *Data Quality Rules* grid.

2. Click button from the *Data Quality Groups* tool bar or double-click Data Quality Group Name.

   The *Data Quality Group Definition* window displays the DQ Group definition details and the mapped DQ rules.

#### 2.7.2.4 Modifying Data Quality Group

You can update the existing DQ Group definition details except for the Group Name. To update the required DQ Group definition details in the *Data Quality Groups Summary* window:

1. From the *Data Quality Groups Summary* window, select the checkbox adjacent to the required Group Name.
2. Click button from the Data Quality Groups tool bar. The *Edit - DQ Group - DQ Definition Mapping* window is displayed.
3. Update the details as required. For more information, refer Create Data Quality Group.
4. Click **Save** and update the changes.

#### 2.7.2.5 Copying Data Quality Group

You can copy the existing DQ Group details to quickly create a new DQ definition based on the existing details or by updating the required parameters. To copy an existing DQ Group definition in the *Data Quality Groups Summary* window:

1. From the *Data Quality Groups Summary* window, select the checkbox adjacent to the required Group Name in the list whose details are to be duplicated.
2. Click button from the Data Quality Groups tool bar. **Copy** button is disabled if you have selected multiple checkboxes. The *Copy - DQ Group - DQ Definition Mapping* window is displayed.
3. Edit the DQ Group Name and other details as required. For more information, refer Create Data Quality Group.
4. Click **Save**. The new DQ Group definition is displayed in the *Data Quality Groups Summary* window.

#### 2.7.2.6 Viewing Data Quality Group Summary Log

You can view the execution log details of Data Quality Rules in the *View Log* window. The *View Log* window displays the details such as Check Name, Log Message, Message Date, Message Time, Total Rows, Rows Impacted, Assignment Type, Assignment Severity, and Severity Message of the executed Data Quality Rules.

To view the Data Quality Rule execution log details in the *Data Quality Groups Summary* window:

1. From the *Data Quality* Groups *Summary* window, select the checkbox adjacent to the Group Name in the *Data Quality Groups* grid.

   The Data Quality Rules associated with the selected Group are displayed in the *Data Quality Rules* grid.

2. Click the link in *Last Run Status* column corresponding to the required Data Quality Rule. The *View Log* window is displayed with the latest execution data pertaining to Data Quality Rule selected.

   You can also view the execution details of Data Quality Rule by selecting the checkbox adjacent to the Data Quality Rule Name and clicking button in the Data Quality Rules grid. The *View Log* window is displayed.

   - Select the **Information Date** from the drop-down list. Based on selection, you can select the **Group Run ID** and **Iteration ID** from the corresponding drop-down lists.
   - Click button from the *Group Execution Details* toolbar. The *Data Quality Rule Log* grid displays the execution details of the selected Data Quality Rule. You can also click button in the *Group Execution Details* toolbar to reset the selection.

#### 2.7.2.7 Viewing Data Quality Report

You can view the execution summary report of Data Quality Rules in the *Data Quality Reports* window. The *Data Quality Summary Report* grid displays the details such as Group Name, Description, Category, Table, Column, Total Rows, and Rows Impacted. By clicking the corresponding DQ check link under *Category*, you can view the *Data Quality Detailed Report* grid, which displays details of the record which has a data correction such as Primary Key Columns, Error Value, and Assignment value.

**NOTE:** If you have opted to run T2T with data correction, then the data quality checking is done in the source and the Data Quality Report generated is only a preview report of the actual execution. That is, though the execution may have failed, you can view Data Quality report.

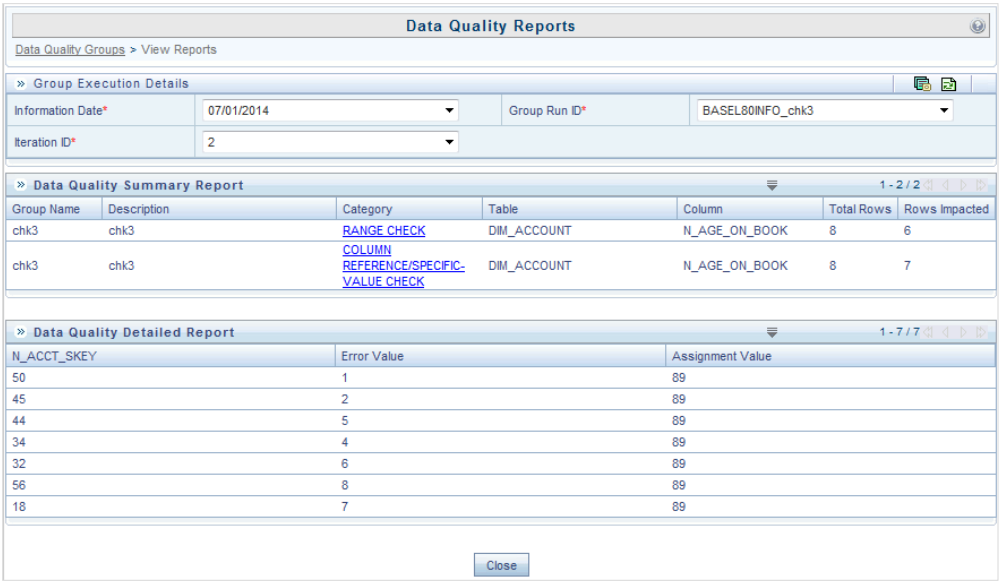
To view the *Data Quality Reports* window:

1. From the *Data Quality Groups* Summary window, select the checkbox adjacent to the Group Name in the *Data Quality Groups* grid.

   The Data Quality Rules associated with the selected Group are displayed in the *Data Quality Rules* grid.

2. Select the checkbox corresponding to the DQ rule and click button in the *Data Quality Rules* grid. The *Data Quality Reports* window is displayed.

3. Select the **Information Date** from the drop-down list. Based on selection, you can select the **Group Run ID** and **Iteration ID** from the corresponding drop-down lists.
4. Click button from the *Group Execution Details* toolbar. The *Data Quality Summary Report* grid is displayed.
5. Click the DQ check link under the *Category* column. The *Data Quality Detailed Report* grid is displayed.




For Control Total Check type, the Data Quality Detailed Report displays Subject Reference Value, Operator, Aggregate Reference Value, Group By columns, Aggregate Row Status and Rows Impacted.

#### 2.7.2.8 Deleting Data Quality Group

You can remove the DQ Group definition(s) which are created by you and which are no longer required in the system by deleting from *Data Quality Groups Summary* window.

1. From the *Data Quality Groups Summary* window, select the checkbox adjacent to the required Group Name whose details are to be removed.
2. Click button from the Data Quality Groups tool bar.
3. Click **OK** in the information dialog to confirm deletion.

### 2.7.3 Configure Dynamic Degree of Parallelism (DOP) in DQ Framework

This feature allows you to achieve Oracle parallelism or any setting's change before executing DQ component. You can add scripts in the `preScriptDQDC.conf` file located at `$FIC_DB_HOME/conf/` folder. These scripts will be executed before executing DQ task. These are generic scripts and are common for all the DCDQ tasks.

**NOTE:** This is applicable only on Oracle based Information domain.

You can define any optimization statement inside the `preScriptDQDC.conf` file as stated below:

1. Statement starting with #, will be ignored as it is considered as comments.
2. Statement with Key Words like CREATE, TRUNCATE, DROP, SELECT, and UPDATE will be ignored.
3. Different statements should be separated either by ; or new line.
4. Accepted/Filtered statements will be executed and can be seen in the log with execution status as SUCCESS/FAILURE.
5. If unable to execute optimization statements or if file is not present in the respective path, log will show the message, *but DCDQ will not fail*. It will continue with the execution.

## 2.8 User Defined Functions

This feature allows you to register Hive user defined functions in OFSSAI. You can also validate the user defined functions.

Hive supports a lot of built-in SQL-like functions in HiveQL. However, a few functions that are available in Oracle are not yet supported in Hive. A Java implementation for such functions has been provided as custom Hive UDFs by OFSAAI.

- TO_NUMBER(String input [, String format])

  The TO_NUMBER function converts String input to a value of NUMBER datatype.

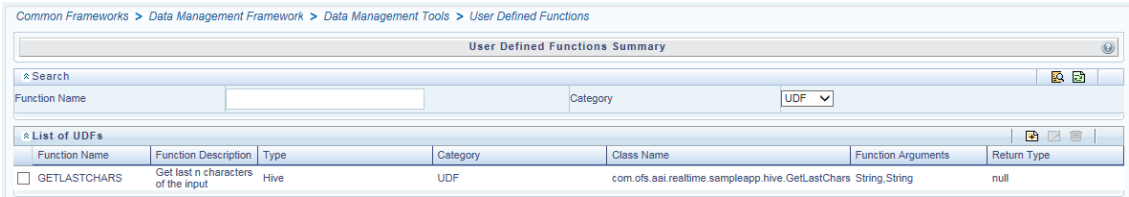
- TO_DATE(String input, String format)
  - The TO_DATE function converts input to a value of DATE datatype in the specified format.
  - Native Hive to_date(String) function when format is not specified works as is, and expects the input to be specified in yyyy-MM-dd [HH:mm:ss] format.
- TO_CHAR(Number/Date input [, String format])
  - The TO_CHAR function converts a Date, Number, or String input to a String expression in a specified format.

  **NOTE:** The 'yyyy' pattern can be used to identify ordinary calendar year and 'YYYY' pattern can be used to identify week-based calendar year. For all the working needs, it is recommended to use 'yyyy' pattern. Also note that, Oracle does not distinguish between ‘yyyy’ and ‘YYYY’, and returns ordinary calendar year in both the cases.

- NVL2(T Input1, T Input2, T Input3)
  - NVL2 lets you determine the value returned by a query based on whether a specified expression is null or not null. If Input1 is not null, then NVL2 returns Input2. If expr1 is null, then NVL2 returns Input3.

These functions are registered in OFSAAI and are available in the *User Defined Functions Summary* window for use in metadata definitions. However, you should register the OFSAAI Hive UDF jar in the Hive server. The Hive UDF classes are present in `$OFSAA_HOME/utility/DMT/UDF/lib/ofsaa-hive-udf.jar`. Copy the Jar to `$HIVE_AUX_LIB` path on the Hive server and restart Hive services, to start using the functions in HiveQL.

The *User Defined Functions Summary* window can be accessed by expanding **Data Management Framework> Data Management Tools** within the tree structure of LHS menu.




The *User Defined Functions Summary* window displays the available UDFs with details such as Function Name, Function Description, Type, Category, Class Name, Function Arguments, and Return Type. You can add new UDFs, modify and delete existing UDFs.

### 2.8.1 Creating User Defined Functions (UDFs)

This option allows you to create HIVE User Defined Functions. After validating UDFS, they can be used in expression builders in OFSAAI (Data Mapping, Data Quality Rules and Business Processor/ Measure/ Hierarchy/Dataset).

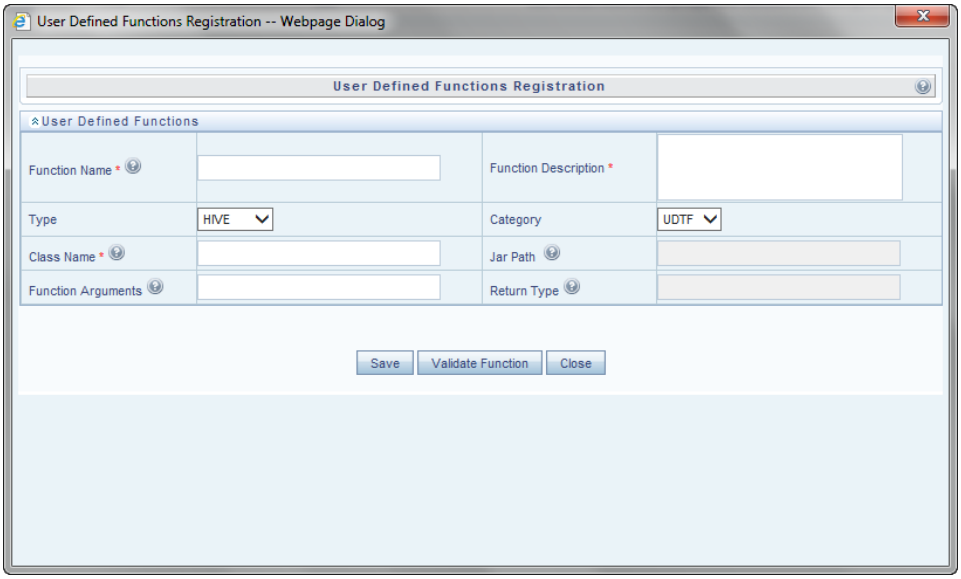
**Prerequisites**

For HIVE

- The UDF JAR must be present in the Hive Auxiliary JARs Path. To create an Auxiliary JAR path, see *Cloudera Documentation* on *Creating Temporary Functions* (http://www.cloudera.com/content/cloudera/en/documentation/core/latest/topics/cm_mc_hive_udf.html#concept_wsd_nms_lr_unique_2)
- Check if the UDF can be accessed through Hive Console.

To register User Defined Functions

1. From the *User Defined Functions Summary* window, click from the toolbar. The *User Defined Functions Registration* window is displayed.



2. Enter the details as tabulated:

| Field | Description |
|---|---|
| Fields marked in red asterisk (*) are mandatory. | |
| Function Name | Enter the function name. |
| Function Description | Enter a description of the function. |
| Type | Select the function type from the drop-down list. Only **HIVE** is supported now. |
| Category | Select the category of the function from the drop-down list.<br>For HIVE, the categories available are, **UDF UDAF**, and **UDTF**. |
| Class Name | Enter the class name of the function. |
| Jar Path | This field is not application for HIVE UDFs.<br>**Note**: For HIVE, the jars should be present in the Hive Auxiliary JARs directory. |
| Function Arguments | Enter the arguments to be passed for the function.<br>For example, STRING and INT. |
| Return Type | This field is not application for HIVE UDFs. |

3. Click **Validate Function** to validate the UDF. If it is a valid function, “Function registration test successful” message is displayed.
4. Click **Save**.

### 2.8.2 Modifying the User Defined Functions

This option allows you to modify the user defined functions.

To modify the User Defined Functions:

1. From the *User Defined Functions Summary* window, select the UDF and click from the toolbar. The *User Defined Functions Registration* window is displayed.
2. Modify the required details. You cannot modify the Function Name. For more information, see Creating User Defined Functions (UDFs).

### 2.8.3 Deleting the User Defined Functions

This option allows you to delete the user defined functions.

To delete the User Defined Functions:

1. From the *User Defined Functions Summary* window, select the UDF and click from the toolbar.
2. Click **OK** in the Warning dialog to confirm deletion.

   The selected User Defined Functions are removed.

## 2.9 References

This section of the document consists of information related to intermediate actions that needs to be performed while completing a task. The procedures are common to all the sections and are referenced where ever required. You can refer to the following sections based on your need.

#### 2.9.1.1 Flat file

Flat files are data files that store records with no structured relationships. You can define the data source of a flat file present locally or on a remote server.

Flat-File present in local data source resides in the staging area of the Infrastructure Database Server. Additional metadata information such as file format properties is required to interpret these files. Flat-File present on a remote server can be accessed through FTP connection to load the remote data-file into the Staging area of the Infrastructure Database Server.

The Data Source for a Flat-File serves the purpose of logically grouping a set of Flat-Files getting loaded into the Warehouse from a defined source application.

#### 2.9.1.2 RDBMS

RDBMS or relational database management system stores data in the form of tables along with the relationships of each data component. The data can be accessed or reassembled in many different ways without having to change the table forms.

RDBMS data source lets you define the RDBMS engine present locally or on a remote server using the FTP access. RDBMS can be defined to connect to any of the RDBMS such as Oracle, Sybase, IBM DB2, MS SQL Server, and any RDBMS through native connectivity drivers.

A separate license is required for third party jars and the client has to procure it.

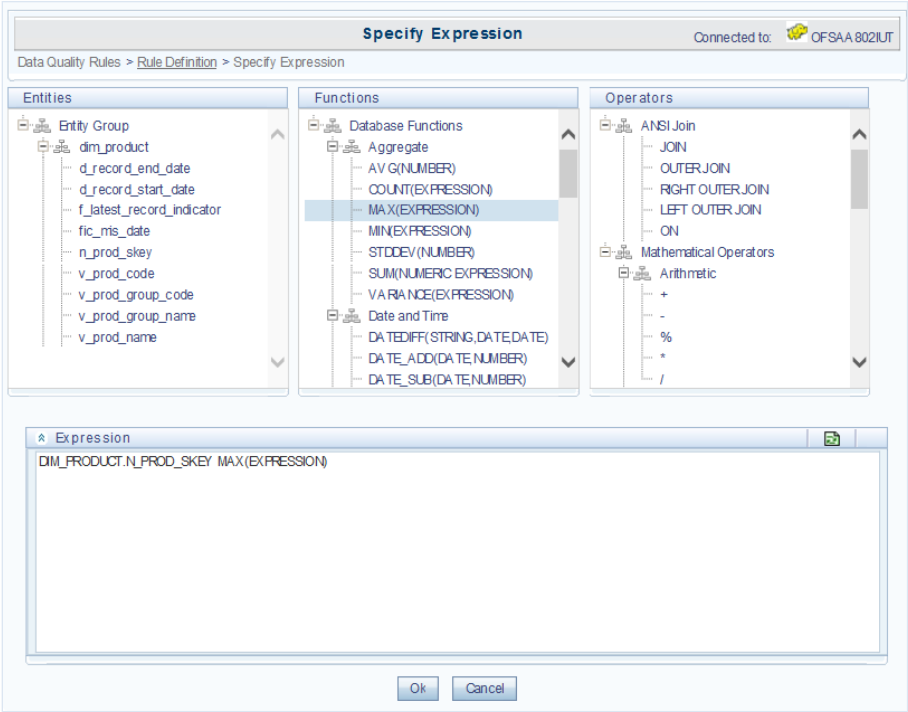
#### 2.9.1.3 RAC

Real Application Clusters (RAC) allows multiple computers to run RDBMS software simultaneously while accessing a single database and providing a clustered database.

In an Oracle RAC environment, two or more computers (each with an instance) concurrently access a single database. This allows an application or user to connect to either of the computer and have access to a single coordinated set of data. RAC addresses areas such as fault tolerance, load balancing, and scalability.

### 2.9.1.4 Defining Expression

You can define an expression in the *Specify Expression* window to join two selected tables. Click ... button. The *Specify Expression* window is displayed.




The *Specify Expression* window consists of 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** – This is divided as Database Functions and User Defined Functions. Database Functions consists of functions that are specific to databases like Oracle and MS SQL Server. You can use these functions along with Operators to specify the join condition. The Functions categories are displayed based on the database types as tabulated.

| Database | Functions |
|---|---|
| Transact SQL | Specific to MS SQL server which consists of Date & Time, Math, and System functions. |
| SQL OLAP | Specific to Microsoft OLAP which consists of Array, Dimension, Hierarchy, Logical, Member, Number, Set, and String functions. |
| SQL | Specific to Oracle which consists of String, Aggregate, Date and Time, and Mathematical functions. |

**NOTE:** It is not mandatory to specify a Function for a join condition.

- **Operators** - consists of the function operators categorized into folders as tabulated.

| Operator | Types |
|---|---|
| Arithmetic | +, -, %, * and / |
| Comparison | '=', '!=', '< >', '>', '<', >=, <=,'IN', 'NOT IN', 'ANY', 'BETWEEN', 'LIKE', 'IS NULL', and 'IS NOT NULL'. |
| Logical | 'NOT', 'AND' and 'OR' |
| Set | UNION, UNION ALL, INTERSECT and MINUS |
| Others | The Other operators are 'PRIOR', '(+)', '(' and ')'. |
| Concatenation | \|\| |

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** which 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 dimension table and link to the fact table.

   The defined expression is displayed in the Expression section. You can click button to reset the values or click .button to erase the specific value.
5. Click **OK**. The defined expression is validated as per the selected table and entity definition and on successful validation, is displayed in the main window.

### 2.9.1.5 Passing Runtime Parameters in Data Mapping/ Data File Mapping

The following Parameters are supported in Expressions, Joins and Filters used in the Data Mapping definition.

- $RUNID
- $PHID
- $EXEID
- $RUNSK
- $SYSDATE
- $TASKID

- $MISDATE
- $BATCHRUNID

Apart from the above $Parameters, any other parameter can be passed within Square-Brackets. For example, [PARAM1], [PARAM2], [XYZ], [ABCD].

Apart from these, L2H/H2H/T2H/H2T/F2H mappings also support following additional default parameters. Values for these are implicitly passed from ICC/RRF.

- $MISDT_YYYY-MM-DD - Data type is String and can be mapped to VARCHAR2. Value will be the MISDATE in ‘yyyy-MM-dd‘ format.
- $MISYEAR_YYYY - Data type is String and can be mapped to VARCHAR2. Value will be the year value in ‘yyyy‘ format from MISDATE.
- $MISMONTH_MM - Data type is String and can be mapped to VARCHAR2. Value will be the month value in ‘MM‘ format from MISDATE.
- $MISDAY_DD - Data type is String and can be mapped to VARCHAR2. Value will be the date value in ‘dd‘ format from MISDATE.
- $SYSDT_YYYY-MM-DD- Data type is String and can be mapped to VARCHAR2. Value will be the System date in ‘yyyy-MM-dd‘ format.
- $SYSHOUR_HH24 - Data type is String and can be mapped to VARCHAR2. Value will be the hour value in ‘HH24‘ format from System date.

**NOTE:** The aforementioned parameters are not supported for T2T and F2T.

Two additional parameters are also supported for L2H mappings:

- [INCREMENTALLOAD] – Specify the value as TRUE/FALSE. If set to TRUE, historically loaded data files will not be loaded again (load history is checked against the definition name, source name, target infodom, target table name and the file name combination). If set to FALSE, the execution is similar to a snapshot load, and everything from the source folder/file will be loaded irrespective of load history.
- [FOLDERNAME] – Value provided will be used to pick up the data folder to be loaded.
  - For HDFS based Weblog source: Value will be suffixed to HDFS File Path specified during the source creation.
  - For Local File System based Weblog source: By default the system will look for execution date folder (MISDATE: yyyymmdd) under STAGE/<source name>. If the user has specified the FOLDERNAME for this source, system will ignore the MISDATE folder and look for the directory provided as [FOLDERNAME].

**Passing values to the Runtime Parameters from the RRF module**

- Values for $Parameters are implicitly passed through RRF

- Values for dynamic parameters (given in Square Brackets) need to be passed explicitly as: "PARAM1","param1Value", “PARAM2”, “param2Value"

**Passing values to the Runtime Parameters from the Operations module**

- Value for $MISDATE is passed implicitly from ICC
- Value for other $parameters and dynamic parameters (given in Square Brackets) is passed as: [PARAM] = param1VALUE , $RUNSK = VALUE

**NOTE:** If the Runtime parameter is a string or involves string comparison, ensure that appropriate single quotes are given in the DI UI. For example, Filter Condition can be DIM_COUNTRY.CountryName = ‘[PARAMCNTRY]’.

#### 2.9.1.6 Populating Assignment Type Details

To populate the Assignment Type details, select any of the below Assignment Type option from the drop-down 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 numeric, decimal, string (Varchar /char), and negative values as required. If the specified Assigned Value characters length exceeds the base column length, then a system alert message is displayed.
- **Another Column**: Select the required Column as **Assigned Value** from the drop-down list.
- **Code**: If any code / leaf values exist for the selected base column, select the required Code as **Assigned Value** from the drop-down list. If not, you are alerted with a message indicating that *No Code values exist for the selected base column*.
- **Expression**: Click ... button in the Assignment Value column and specify an expression using *Specify Expression* window. For more information, refer Specify Expression.

  Note the following:

  The Expression you define in an *Assignment Type* field basically derives the Assignment value and is not a filter condition as defined for *Additional Condition* field. Hence, you need to specify an expression to derive only the resultant value, which needs to be updated into the base column.

  For example, the expression "*STG_NON_SEC_EXPOSURES.n_accrued_interest * 1.34*" on validation, will update the base column with the derived value after multiplying "n_accrued_interest" value by 1.34. Therefore, expressions such as "STG_NON_SEC_EXPOSURES.n_accrued_interest = 1.34" are considered as invalid.

# 3 Unified Analytical Metadata

The Unified Analytical Metadata transforms your ability to manage your enterprise by distributing a consistent view of the business dimensions and key measures to every decision maker and application developer. Oracle Financial Services Analytical Applications Infrastructure's unique technology allows your enterprise to define a consistent set of business terms and securely deploy them across the entire range of analytic applications from your data warehouses and data marts to your business intelligence and alerting tools to your data distribution and portal applications.

The Unified Analytical Metadata is intended for the Information and Business Analysts who are instrumental in supporting and affecting analytical decisions. This section includes the following topics:

Alias

Derived Entity

Datasets

Dimension Management

Measure

Business Processor

Expression

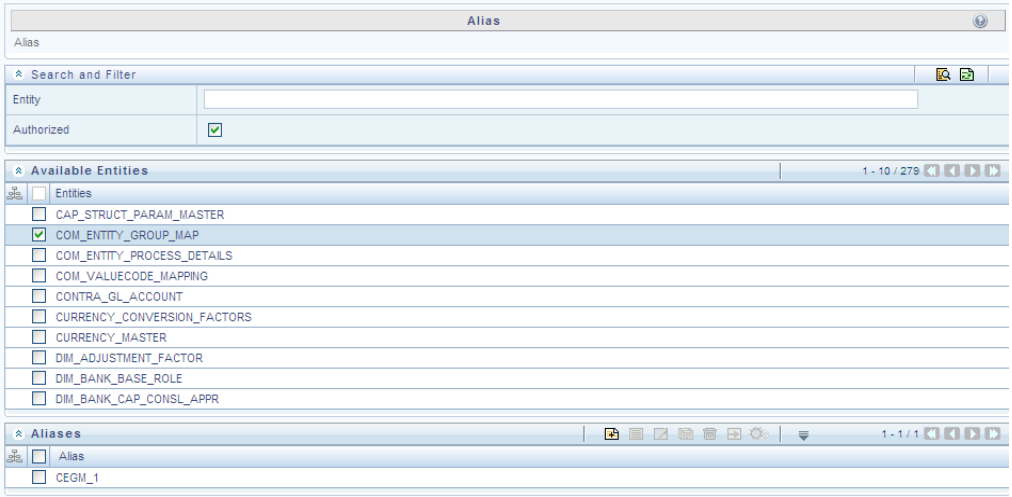
Filter

Map Maintenance

Analytics Metadata

## 3.1 Alias

Alias refers to an assumed name or pseudonym. **Alias** section within the Infrastructure system facilitates you to define an Alias for a table and specify the join condition between fact and dimension table. Alias defined to a table help you to query data for varied analytical requirements.




You can access Aliases by expanding United Analytical Metadata section within the tree structure of LHS menu.

Based on the role that you are mapped to, you can access, read, modify, or authorize alias. For all the roles and descriptions refer to Appendix A. The roles mapped to Alias are as follows:

- Alias Access
- Alias Advanced
- Alias Authorize
- Alias Phantom
- Alias Read Only
- Alias Write

You can make use of Search and Filter option to search for specific Aliases based on Entity name or Authorized status. The Pagination option helps you to manage the view of existing Aliases within the system.

### 3.1.1 Adding Alias

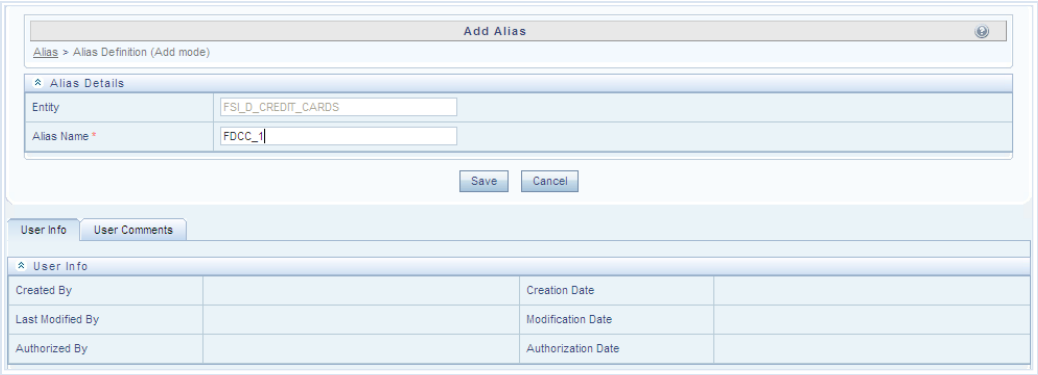
You need to be mapped to the role Alias Write for adding alias.

To create an Alias from the *Alias* window:

1. Select an entity from the *Available Entities* list for which you need to create an Alias.

   The *Aliases* grid displays the available aliases for the selected entity.

2. Click button in the *Aliases* grid. The *Add Alias* window is displayed.




   The *Alias Details* grid in the *Add Alias* window displays the entity name you have selected in a non-editable field.

3. Enter the Alias name you wish to provide for the selected entity in the **Alias Name** field.

4. Click **Save**. The Alias name is listed under the *Aliases* grid for the selected entity.

The *User Info* section at the bottom of *Add Alias* window displays metadata information about the Alias Name created. The *User Comments* section facilitates you to add or update additional information as comments.

### 3.1.2 Viewing Alias

You need to be mapped to the role Alias Read Only to View Alias.

You can view individual Alias definition details at any given point. To view the existing Alias definition in the *Alias* window:

1. Select the checkbox adjacent to the required Alias name.

2. Click button from the Aliases tool bar.

   The *View Alias* window displays the details of the selected Alias definition. The *User Info* grid at the bottom of the window displays the metadata information about the Alias definition along with the option to add comments.

### 3.1.3 Deleting Alias

You need to be mapped to the role Alias Write to Delete Alias.

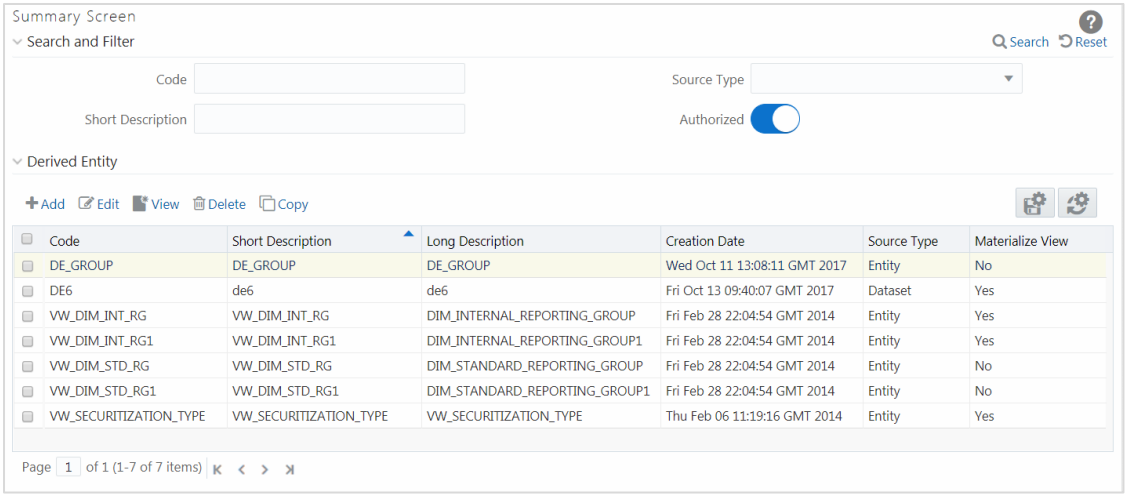
You can remove Aliases which are assigned for an entity by deleting from *Alias* window.

1. Select the checkbox(s) adjacent to the Alias names whose details are to be removed.
2. Click button from the *Aliases* tool bar.
3. Click **OK** in the Warning dialog to confirm deletion.

   The selected Alias names are removed.

## 3.2 Derived Entity

Entity refers to a table in which data is stored. Derived Entity within the Infrastructure system facilitates you to define entities which are populated through a series of data transformation processes resulting from an existing Data Set or a Source Application. A Derived Entity can be used to define other Business Metadata such as measures, hierarchies, dimensions, data sets, and cubes.




| Code | Short Description | Long Description | Creation Date | Source Type | Materialize View |
|---|---|---|---|---|---|
| DE_GROUP | DE_GROUP | DE_GROUP | Wed Oct 11 13:08:11 GMT 2017 | Entity | No |
| DE6 | de6 | de6 | Fri Oct 13 09:40:07 GMT 2017 | Dataset | Yes |
| VW_DIM_INT_RG | VW_DIM_INT_RG | DIM_INTERNAL_REPORTING_GROUP | Fri Feb 28 22:04:54 GMT 2014 | Entity | Yes |
| VW_DIM_INT_RG1 | VW_DIM_INT_RG1 | DIM_INTERNAL_REPORTING_GROUP1 | Fri Feb 28 22:04:54 GMT 2014 | Entity | Yes |
| VW_DIM_STD_RG | VW_DIM_STD_RG | DIM_STANDARD_REPORTING_GROUP | Fri Feb 28 22:04:54 GMT 2014 | Entity | No |
| VW_DIM_STD_RG1 | VW_DIM_STD_RG1 | DIM_STANDARD_REPORTING_GROUP1 | Fri Feb 28 22:04:54 GMT 2014 | Entity | No |
| VW_SECURITIZATION_TYPE | VW_SECURITIZATION_TYPE | VW_SECURITIZATION_TYPE | Thu Feb 06 11:19:16 GMT 2014 | Entity | Yes |

You can access Derived Entity by expanding **Unified Analytical Metadata** section within the tree structure of LHS menu. The *Derived Entity Summary* window displays the list of pre-defined Derived Entities with their Code, Short Description, Long Description, Creation Date, Source Type, and Materialize View status. By clicking the Column header names, you can sort the column names in ascending or descending order. Click if you want to retain your user preferences so that when you login next time, the column names will be sorted in the same way. To reset the user preferences click .

You can add, view, edit, copy, and delete a Derived Entity. You can search for a specific Derived Entity based on the Code, Short Description, Source Type, and Authorization status.

Based on the role that you are mapped to, you can access, read, modify or authorize Derived Entity. For all the roles and descriptions, refer to Appendix A. The roles mapped to Derived Entity are as follows:

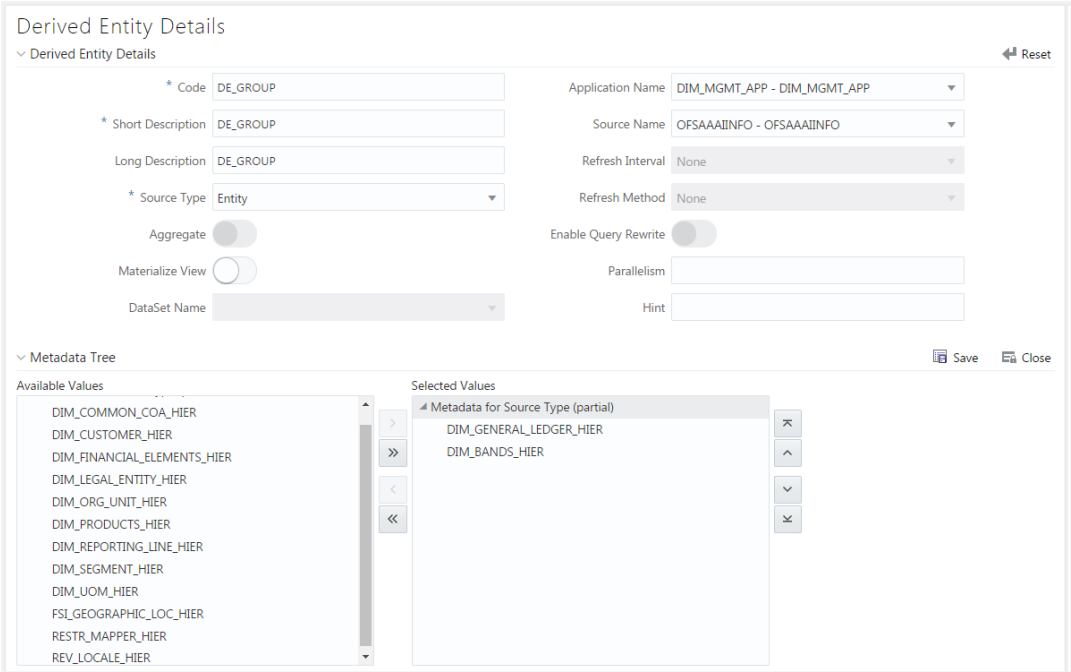
- Derived Entity Access
- Derived Entity Advanced
- Derived Entity Authorize
- Derived Entity Phantom
- Derived Entity Read Only
- Derived Entity Write

### 3.2.1 Creating Derived Entity

You can create a Derived Entity based on Data Set or Entity. To define a Derived Entity based on Source Application, you need to have defined permissions for the particular Source Application in the Atomic schema. You can also authorize a Derived Entity created by other users if you have the authorizer rights. You need to be mapped to the role Derived Entity Write to add or create a derived entity.

To create a Derived Entity:

1. Click **Add** from the *Derived Entity* toolbar. The *Derived Entity Details* window is displayed.




2. Enter the details as tabulated.

| Field | Description |
|---|---|
| Code | Enter a distinct code to identify the Derived Entity. Ensure that the code is alphanumeric with a maximum of 8 characters in length and there are no special characters except underscore "_".<br>Note the following:<br>▪ The code can be indicative of the type of Derived Entity being created.<br>▪ A pre-defined Code and Short Description cannot be changed.<br>▪ Same Code or Short Description cannot be used for Essbase installation: "$$$UNIVERSE$$$", "#MISSING", "#MI", "CALC", "DIM", "ALL", "FIX", "ENDFIX", "HISTORY", "YEAR", "SEASON", "PERIOD", "QUARTER", "MONTH", "WEEK", "DAY". |
| Short Description | Enter a Short Description based on the defined code. Ensure that the description is of a maximum of 80 characters in length and does not contain any special characters except "_, ( ), -, $". |
| Long Description | Enter the Long Description if you are creating subject-oriented Derived Entity to help users for whom the Derived Entity is being created or other details about the type/subject. Ensure that the description is of a maximum of 100 characters in length. |
| Source Type | Select either **Data Set** or **Entity** from the drop-down list. |
| Aggregate | Turn ON the **Aggregate** toggle button to collate the information for the Derived Entity. |
| Materialize View | Turn ON the **Materialize View** toggle button if you are using Oracle database to create a Materialized View with the Derived Entity Name and short description.<br>**Note**: You cannot enable the Materialize View option if you are using IBM DB2 database. |
| Dataset Name | This field is enabled only if the Source Type is selected as **Dataset**.<br>Select the **Dataset Name** from the drop-down list. The Short Description for the Data Sets is available in the drop-down list to select. |
| Application Name | This field is enabled only if the Source Type is selected as **Entity**.<br>Select the **Application Name** from the drop-down list. |
| Source Name | This field is enabled only if the Source Type is selected as **Entity**.<br>Based on the Application selected the related Sources are listed. Select the **Source Name** from the drop-down list. |

| Field | Description |
|---|---|
| Refresh Interval | This field is enabled only if the **Materialize View** checkbox is selected.<br>Select the appropriate refresh interval from the drop-down list, The options are:<br>▪ None- Only materialized view will be created. If you select None for **Refresh Interval**, it is mandatory to select None for **Refresh Method**.<br>▪ Demand- The refresh of the Materialized View is initiated by a manual request or a scheduled task.<br>▪ Commit- The refresh is triggered by a committed data change in one of the dependent tables. |
| Refresh Method | This field is enabled only if the **Materialize View** checkbox is selected.<br>Select the appropriate refresh method from the drop-down list, The options are:<br>▪ None- Only materialized view will be created. If you have selected None for **Refresh Interval**, it is mandatory to select None for **Refresh Method**.<br>▪ Complete- This recreates the materialized view replacing the existing data. This can be a very time-consuming process, especially if there are huge amounts of data to be read and processed.<br>▪ Fast- Applies the incremental changes to refresh the materialized view. If materialized view logs are not present against the source tables in advance, the creation fails.<br>▪ Force- A fast refresh is attempted. If it is not possible, it applies Complete refresh.<br>**Note**: Refresh Methods Fast and Commit do not work if the query has some ANSI Join conditions. |
| Enable Query Rewrite | This toggle button is enabled only if the **Materialize View** toggle button is turned ON.<br>Turn ON the toggle button if you want to create materialized view with the query rewrite option. |
| Hint | Specify Hints (if any), for optimized execution of query. The specified hints are appended to the underlying query of the derived entity.<br>Oracle hints follow (/*+ HINT */) format.<br>For example, /*+ PARALLEL */. |

On selecting the Dataset Name or Source Application Name, the respective fields are displayed in the **Metadata for Source Type** list.

3. Double-click **Metadata for Source Type**. The list of Metadata defined on the selected Dataset or Application Source is displayed.

4. Click ▸ to expand the folders. Select the required metadata and click ›. Click » to select all metadata. You can select a metadata and click ‹ to remove that metadata or click « to remove all selected metadata.
5. Click **Save**. A confirmation dialog is displayed.

   The details are displayed in the *Derived Entity Summary* window.

### 3.2.2 Copying Derived Entity

You can copy the pre-defined Derived Entity details to create another entity. You should have the Derived Entity Write role mapped to your user group to copy a derived entity.

To copy a Derived Entity:

1. From the *Derived Entity Summary* window, select the derived entity you want to copy and click **Copy.** The *Derived Entity Details* window is displayed.
2. Enter the required details. For more information, see Creating Derived Entity section.
3. Click **Save**.

### 3.2.3 Viewing Derived Entity Properties

You can view the metadata of the selected Derived Entity.

To view the existing Derived Entity definition details

1. From the *Derived Entity Summary* window, select the derived entity you want to view and click **View.** The *Derived Entity Details* window is displayed.

   The *View Derived Entity Details* window displays the details of the selected Derived Entity definition. The *User Info* grid at the bottom of the window displays the metadata information about the Derived Entity definition created along with the option to add comments.
2. Click **Close**.

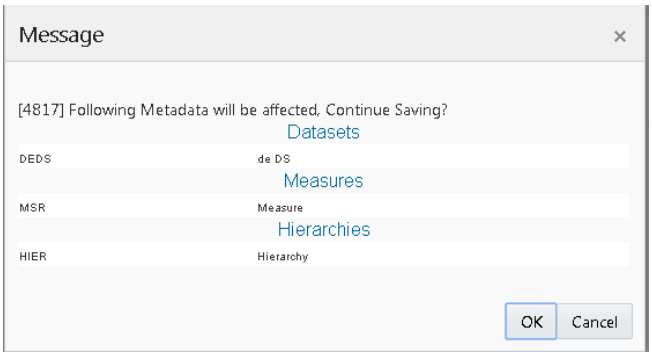
### 3.2.4 Modifying Derived Entity

You can modify a Derived Entity definition as required. A Derived Entity definition in the un-authorized state (modified by other users) cannot be modified. You can modify Derived Entity if you have Derived Entity Write role mapped to your user group.

1. From the *Derived Entity Summary* window, select the derived entity you want to modify and click **Edit.** The *Derived Entity Details* window is displayed.
2. Modify the required details such as Short Description, Long Description and the metadata to be associated with the Derived Entity. For more information, refer Create Derived Entity.

3. Click **Save** and update the details.

   When you modify a Derived Entity which is mapped to other metadata definition, the *Affected Metadata* Dialog is displayed with the list of mapped Data Sets, Measures, and Hierarchies which gets auto updated. Click **OK** to confirm, else click **Cancel**.




### 3.2.5 Deleting Derived Entity

You can delete a Derived Entity that you have created or if you are authorized to do so. A Derived Entity in **Unauthorized** state (modified by other users) cannot be deleted. You can delete Derived Entity if you have the Derived Entity Write role mapped to your user group.

Delete function permanently removes the Derived Entity from the database. Ensure that you have verified the details as indicated below:

- A Derived Entity definition marked for deletion is not accessible for other users.
- Every delete action has to be **Authorized/Rejected** by the authorizer.
  - On Authorization, the Derived Entity details are removed.
  - On Rejection, the Derived Entity details are reverted back to authorized state.
- You cannot update Derived Entity details before authorizing/rejecting the deletion.
- An un-authorized Derived Entity definition can be deleted.

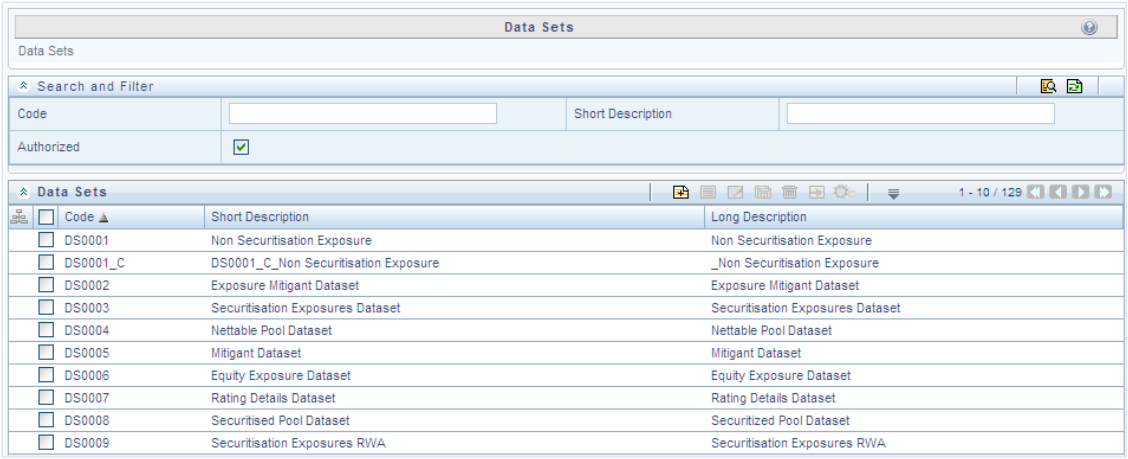
To delete a Derived Entity in the *Derived Entity* window:

1. From the *Derived Entity Summary* window, select the derived entity you want to delete and click **Delete.**
2. Click **OK** in the confirmation dialog.

## 3.3 Data Sets

Data Set refers to a group of tables whose inter-relationship is defined by specifying a join condition between the various tables. It is a basic building block to create a query and execute on a data warehouse for a large number of functions and to generate reports.

Data Set function within the Infrastructure system facilitates you to create data sets and specify rules that fine-tune the information for querying, reporting, and analysis. Data Sets enhances query time by pre-defining the names of tables required for an operation (such as aggregation), and also provides the ability to optimize the execution of multiple queries on the same table set. For more information, see Scenario to Understand the Data Set Functionality.




The *Data Sets* window displays the list of pre-defined Data Sets with their code and description. You can add, view, edit, copy, and delete the required Data Set. You can also make use of Search and Pagination options to search for a specific dataset based on the code, description, and Authorization status or view the list of existing datasets within the system. For more information, refer Search and Filter and Pagination sections.

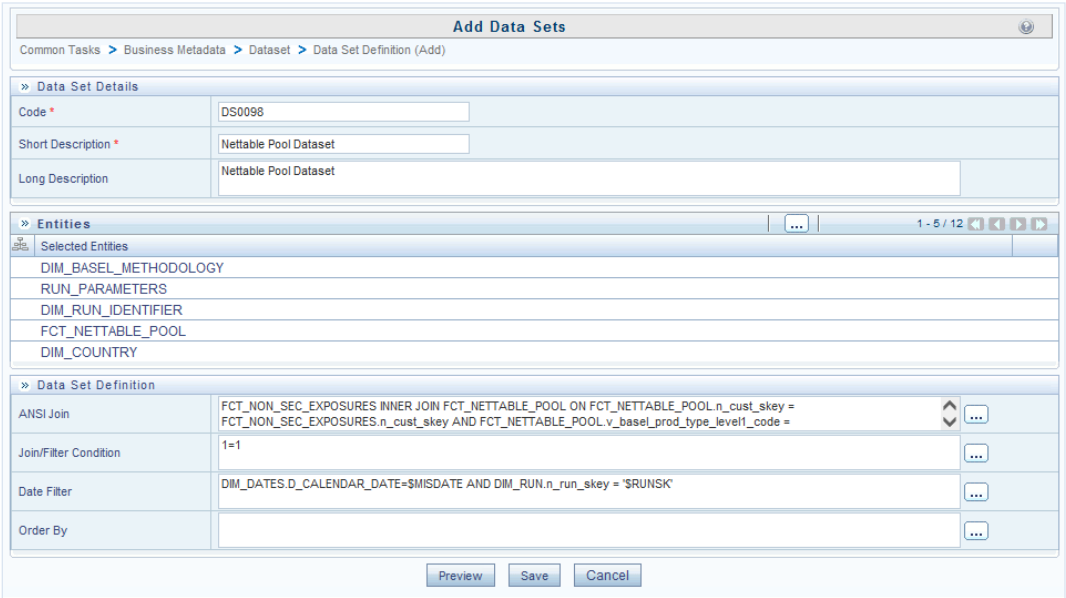
Based on the role that you are mapped to, you can access read, modify or authorize Data Sets. For all the roles and descriptions refer to Appendix A. The roles mapped to Datasets are as follows:

- Dataset Access
- Dataset Advanced
- Dataset Authorize
- Dataset Phantom
- Dataset Read Only
- Dataset Write

### 3.3.1 Creating Data Set

You can create Data Set by defining the Data Set Details, Entities, and Data Set Definition. You need to have **Dataset Write** role mapped to create Data Sets. To create Data Set in the Data Sets window:

1. Click button from the Data Sets tool bar. **Add** button is disabled if you have selected a Data Set checkbox in the grid. The *Add Data Sets* window is displayed.




2. Enter the details in the Data Set Details section as tabulated.

| Field | Description |
|---|---|
| Fields marked in red asterisk (*) are mandatory. | |
| Code | Enter a distinct code to identify the Data Set. Ensure that the code is alphanumeric with a maximum of 8 characters in length and there are no special characters except underscore "_".<br>Note the following:<br>▪ The code can be indicative of the type of Data Set being created.<br>▪ A pre-defined Code and Short Description cannot be changed.<br>▪ Same Code or Short Description cannot be used for Essbase installation: "$$$UNIVERSE$$$", "#MISSING", "#MI", "CALC", "DIM", "ALL", "FIX", "ENDFIX", "HISTORY", "YEAR", "SEASON", "PERIOD", "QUARTER", "MONTH", "WEEK", "DAY".<br>▪ In Unauthorized state, the users having Authorize Rights can view all the unauthorized Metadata. |

| Field | Description |
|---|---|
| Short Description | Enter a Short Description based on the defined code. Ensure that the description is of a maximum of 8 characters in length and does not contain any special characters except underscore "_". |
| Long Description | Enter the Long Description if you are creating subject-oriented Data Set to help users for whom the Data Set is being created or other details about the type/subject. Ensure that the description is of a maximum of 100 characters in length. |

3. Select the Entities by doing the following:
   - Click button from the Entities tool bar.

     The *Entity and Attribute* window is displayed.
   - Select the checkbox adjacent to the required fact table(s)/entities from the **Available Entities** list and click button.

     You can select multiple dimension tables and link each other and with a join condition. You can also Search for the required entity using the Search field.

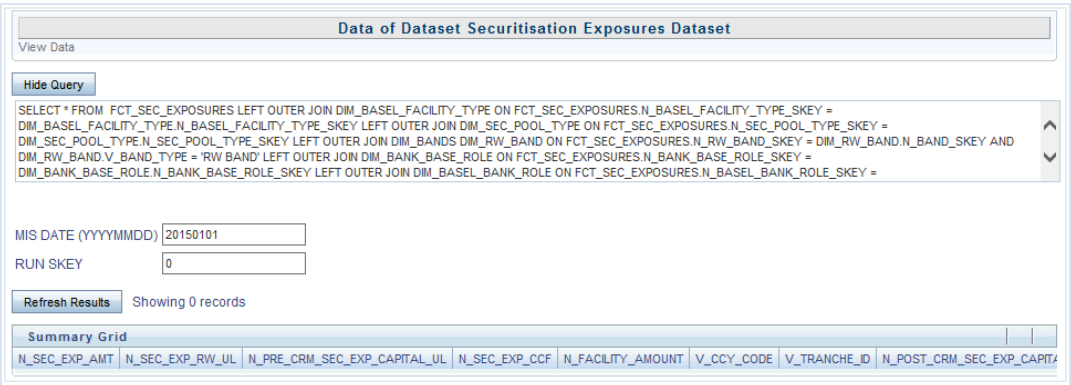
     The selected Entities are displayed in the Selected Entities grid. To delete a selected entity, select the Entity checkbox and click button.
   - Click **Save**. The details are populated in the *Add Data set* window.
4. Specify the required table-join condition in the Data Set Definition grid as tabulated.

| Field | Description |
|---|---|
| ANSI Join | The ANSI Join condition defines which set of data have been joined along with the type of join condition. It also describes the exact operations to be performed while joining the Data Sets. In ANSI join, the join logic is clearly separated from the filtering criteria. |

| Field | Description |
|---|---|
| Join/Filter Condition | The Join/Filter Condition facilitates the objective of creating Data Sets. Data Sets with linked tables using the join conditions help in reducing the query time. There are two ways of defining the join condition:<br>▪ JOIN condition for SQL Server/SQL OLAP combination should contain only EQUI JOIN condition as required by SQL OLAP.<br>▪ In case of SQL Server/Essbase and Oracle/Essbase, data set must be defined. Multiple cubes can be built with a single pass and the underlying data set definition should be the same for all the cubes mapped which reduces the aggregation time considerably. |
| Date Filter | The Date Filter condition enables you to cascade the cubes that are using the data set with the defined Date Filter. |
| Order By | The Order By condition enables you to sort the dimension data in order. The order of the Dimension nodes will be maintained only for Business Intelligence enabled hierarchies. The Order By condition is specific to the Essbase database. |

Enter the required expression or click button to define an expression using the Expression window. For more information, refer Create Expression.

5. Click **Preview**. The *Data of Preview Dataset Query* window is displayed.




This window displays an error message if the Query execution fails. Up to 400 records of data is displayed in the *Summary Grid*.

6. Click **Show Query** to view the query.
7. Enter the values for $MISDATE and $RUNSK parameters.
8. Click **Save** and save the Data Set Definition details.

### 3.3.2 Viewing Data Set Details

You can view individual Data Set details at any given point. You need to have **Dataset Read Only** role mapped to view the Data Sets. To view the existing Data Set definition details in the *Data Sets* window:

1. Select the checkbox adjacent to the required Data Set code.
2. Click button from the Data Sets tool bar.

   The *View Data Sets* window displays the details of the selected Data Set definition. The *User Info* grid at the bottom of the window displays the metadata information about the Data Set definition created along with the option to add comments.

### 3.3.3 Modifying Data Set Details

You can update the existing Data Set definition details except for the Code and Short Description. You need to have **Dataset Write** role mapped to modify the Data Sets. To update the required Data Set details in the *Data Sets* window:

1. Select the checkbox adjacent to the required Data Set code.
2. Click button from the Datasets tool bar. The *Edit Data Sets* window is displayed.
3. Update the required details. For more information, refer Create Data Set.
4. Click **Save** and update the changes.

### 3.3.4 Copying Data Set Details

You can copy the existing Data Set details to quickly create a new Data Set. You can later modify the Data Set Code or Short Description, add/remove tables, and also define the join conditions. You need to have **Dataset Write** role mapped to copy the Data Set definitions. To copy an existing Data Set definition in the *Data Sets* window:

1. Select the checkbox adjacent to the required Data Set code.
2. Click button from the Data Sets tool bar.

   The Data Set definition details are copied and a confirmation message is displayed.

### 3.3.5 Deleting a Data Set

You can remove the Data Set definition(s) which are created by you and which are no longer required in the system by deleting from the *Data Sets* window. You need to have **Dataset Write** role mapped to delete a Data Set. Delete function permanently removes the Data set details from the database. Ensure that you have verified the details as indicated below:

- A Data Set definition marked for deletion is not accessible for other users.
- Every delete action has to be **Authorized/Rejected** by the authorizer.
  - On Authorization, the Data Set details are removed.
  - On Rejection, the Data Set details are reverted back to authorized state.
- You cannot update Data Set details before authorizing/rejecting the deletion.
- An un-authorized Data Set definition can be deleted.

To delete an existing Data Set in the *Data Sets* window:

1. Select the checkbox adjacent to the required Data Set code.
2. Click button from the Data Sets tool bar. A confirmation dialog is displayed.
3. Click **OK**. The Data Set details are marked for delete authorization.

## 3.4 Dimension Management

Dimension Management within the Infrastructure system 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.

You can access Dimension Management module by expanding **Unified Analytical Metadata** section within the tree structure of LHS menu.

Dimension Management is a licensed module and is accessible to those users who are mapped with the Business Analyst role in the Oracle Financial Services Analytical Application Infrastructure system.

**Object Security**

- This is implemented for Hierarchy, Filter, and Expressions objects.
- There are some seeded user groups and seeded user roles mapped to those user groups. If you are using the seeded user groups, the restriction on accessing objects based on user groups is explained in the OFSAA Seeded Security section.
- For creating/editing/copying/removing an object in Dimension Management module, your user group should have been mapped to the folder in case of public or shared folder, or you should have been the owner of the folder in case of private folder. Additionally, the WRITE

role should be mapped to your user group. For more information, see Object Security in OFSAAI section.

- To access the link and the Summary window, your user group should have ACCESS role mapped. 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. For more information, see the Object Security in OFSAAI section.
- The *Folder selector* window behavior and consumption of higher objects are explained in User Scope section.

**Hierarchy Member Security**

- This is implemented for Hierarchy and Filter objects.
- For each information domain, a mapper definition can be set as the default Security mapper. Based on this mapper definition, the usage of hierarchy members are restricted.
- The nodes/members in a Hierarchy/ Filter which are mapped to your user group will be enabled and can be used. Those which are not mapped can be viewed, but you cannot use it since they are in disabled state.
- If a child hierarchy is mapped and the parent is not mapped to your user group, the parent will be displayed as a disabled node.
- You should have separate roles/functions mapped to add a leaf, sibling, or child to your hierarchy.

### 3.4.1 Components of Dimension Management

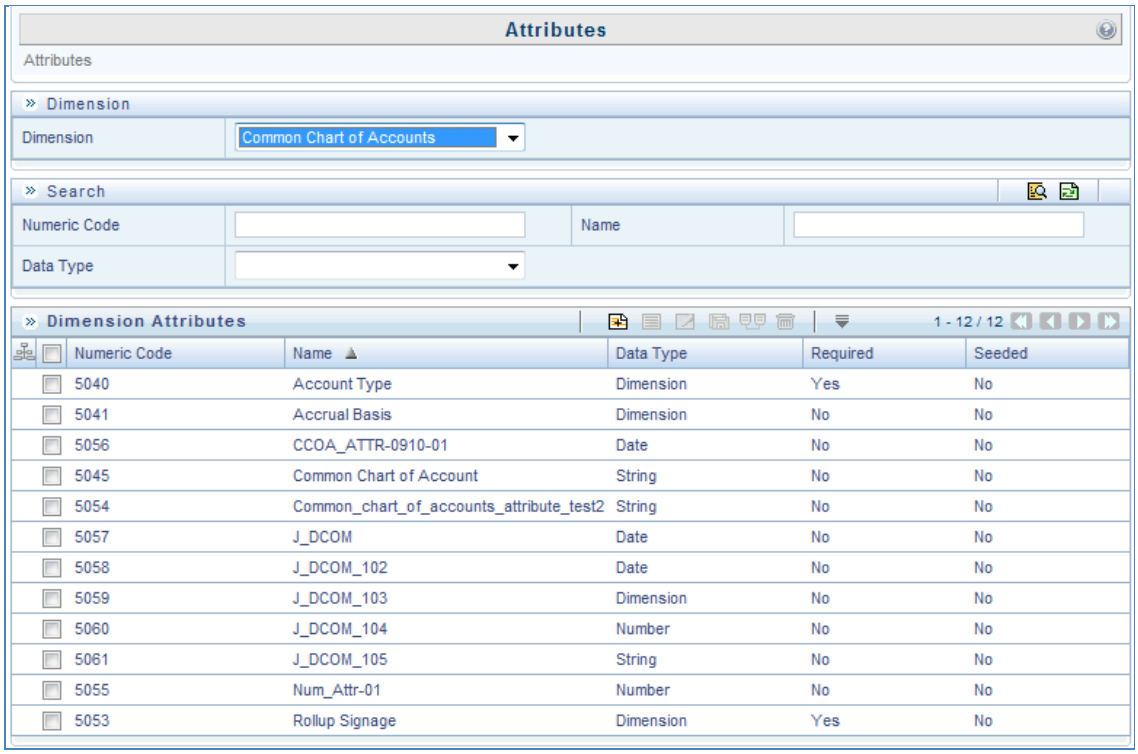
Dimension Management consists of the following sections. Click on the links to view the sections in detail.

- Attributes
- Members
- Build Hierarchy
- Hierarchy Maintenance

### 3.4.2 Attributes

Attributes refers to the distinguished properties or qualifiers that describes a dimension member. Attributes may or may not exist for a simple dimension. Attributes section is available within the Dimension Management section of Financial Services Applications module.

You can access Attributes window by expanding **Unified Analytical Metadata** and **Dimension Management** within the tree structure of LHS menu and selecting **Attribute**.



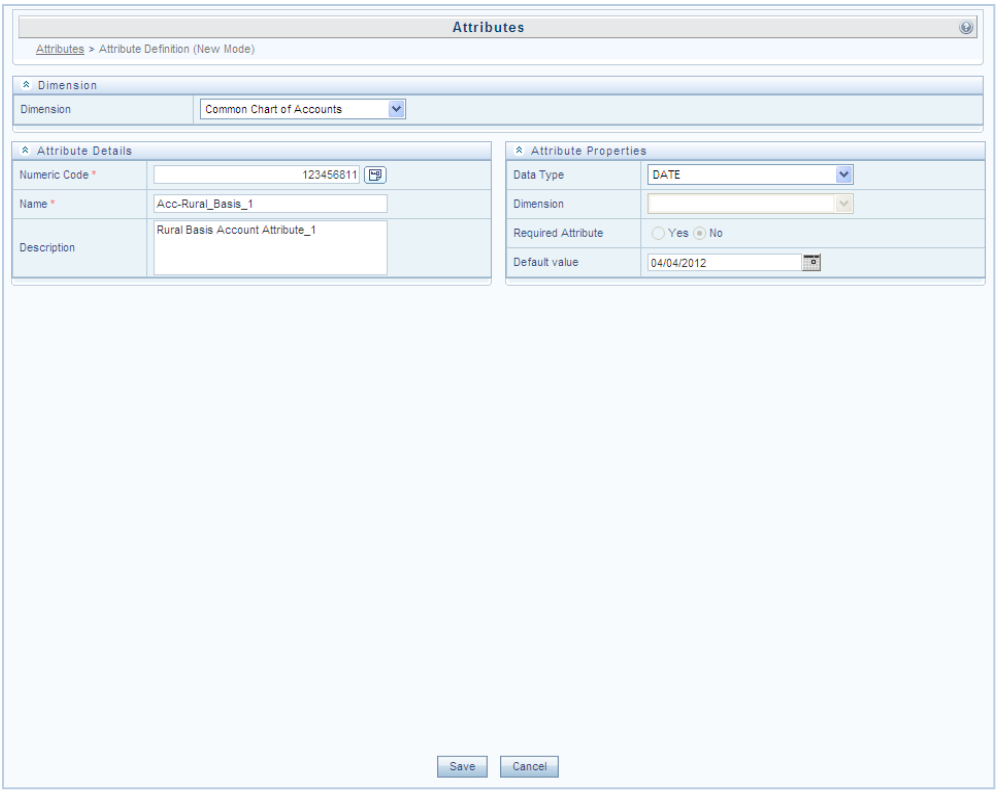

The *Attributes* window displays the list of pre-defined Dimension Attributes with the other details such as the Numeric Code, Name, Data Type, Required, and Seeded. You can also make use of Search and Pagination options to search for a specific Attribute based on Numeric Code, Name, or Data Type and view the list of existing definitions within the system. For more information, refer Pagination and Search and Filter.

#### 3.4.2.1 Adding Attribute Definition

Attributes facilitates you to define the properties or qualifiers for the Dimension members. The Write role should be mapped to your user group, from the *User Group Role Map* window.

To create an Attribute definition in the *Attributes* window:

1. Select the button in the Dimension Attributes toolbar. **Add** button is disabled if you have selected any checkbox in the grid. The *New - Attributes* window is displayed.




2. In the Dimension section, select the required dimension from the drop-down list.
3. Click button in the Numeric Code field. A unique code is auto generated.

   You can also manually enter the code in the **Numeric Code** field.
4. Enter the **Name** and required **Description** for the Attribute.

> **NOTE:** Name: The characters &' " are restricted in the name field.
> Description: The characters ~&+' "@ are restricted in the description field.

5. Enter the Attribute Properties as tabulated:

| Field | Description |
|---|---|
| Fields marked in red asterisk (*) are mandatory. | |
| Type | ▪ Select the **Data Type** as DATE, DIMENSION, NUMBER, or STRING from the drop-down list.<br>If **NUMBER** is selected as the Data Type:<br>The **Scale** field is enabled with "0" as default value.<br>Enter a Scale value >= 0. If it is left as 0, values for this attribute will be limited to Integers. If you wish to enable decimal entries for this attribute, the |

| Field | Description |
|---|---|
| | maximum Scale value must be > 0 and <= the scale defined for NUMBER_ASSIGN_VALUE in the dimension's underlying attribute table. Please refer to the Data Model Utilities Guide for further details on the attribute table. |
| Required Attribute | ▪ Select **Yes** or **No**. If this is set to No, an attribute value is optional for the associated dimension members.<br>**Note**: This field is disabled in Add and Edit modes if any members already exist for the Dimension upon which this attribute is defined. |
| Default Value | If **Required Attribute** is set to **Yes**, a Default Value must be entered, otherwise it is optional.<br>If **DIMENSION** is selected as the **Data Type**:<br>▪ Select the required Dimension from the drop-down list in the Dimension field.<br>▪ Select the **Default Value** from the drop-down list of members mapped to the selected Dimension. If the required Member is not listed in the drop-down then select **--More—**and the *Member Search* window is displayed. For more information refer search.<br>If **NUMBER** is selected as the **Data Type**:<br>▪ Enter a numeric value in the Default Value field, and it must be consistent with the Scale you have defined.<br>If **DATE** is selected as the **Data Type**:<br>▪ Click button to select a valid date as the Default Value from the calendar.<br>If **STRING** is selected as the **Data Type**:<br>▪ Enter alphanumeric value in the **Default Value** field.<br>▪ The Maximum characters allowed in Default value field for String Data Type is 1000. |

6. Click **Save**. The entries are validated and the defined Attribute is captured.

#### 3.4.2.2 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* window:

1. Select the checkbox adjacent to the Numeric Code of the Attribute, whose details are to be viewed.
2. Click button in the Dimension Attributes tool bar.

   The *View – Attributes* window is displayed with the details such as Dimension, Numeric Code, Name, Description, and Attribute Properties.

#### 3.4.2.3 Modifying Attribute Definition

You can 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* window:

1. Select the checkbox adjacent to the Numeric Code of the Attribute, whose details are to be updated.
2. Click button in the Dimension Attribute tool bar. **Edit** button is disabled if you have selected multiple Attributes. The *Edit - Attributes* window is displayed.
3. Edit the Attribute details such as Name, Description, or Default value. For more information, refer Add Attribute Definition.
4. Click **Save** to save the changes.

#### 3.4.2.4 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. The Write role should be mapped to your user group.

To copy an existing Attribute Definition in the *Attributes* window:

1. Select the checkbox adjacent to the Numeric Code of the Attribute, whose details are to be duplicated.
2. Click button in the Dimension Attributes toolbar to copy a selected Attribute definition. **Copy** button is disabled if you have selected multiple Attributes.
3. In the *Copy – Attributes* window you can:

- Create new attribute definition with existing variables. Specify new **Numeric Code** and **Attribute Name**. Click **Save**.
- Create new attribute definition by updating the required variables. Specify new **Numeric Code** and **Attribute Name**. Update the required details. For more information, refer Add Attribute Definition. Click **Save**.

The new attribute definition details are displayed in the *Attributes* window.

#### 3.4.2.5 Attribute Definition Dependencies

You can view the dependencies of Attributes. The Read only role should be mapped to your user group.

To view the dependency of attribute in the *Attributes* window:

1. Select the checkbox adjacent to the Numeric Code of the Attribute whose dependency is to be checked.
2. Click button in the Dimension Attributes toolbar. The **Check Dependencies** button is disabled if you have selected multiple attributes. The *Attributes Dependency Information* window is displayed with the dependency details.

#### 3.4.2.6 Deleting Attribute Definition

You can remove the Attribute Definitions which are not required in the system by deleting from the *Attributes* window. The Write role should be mapped to your user group.

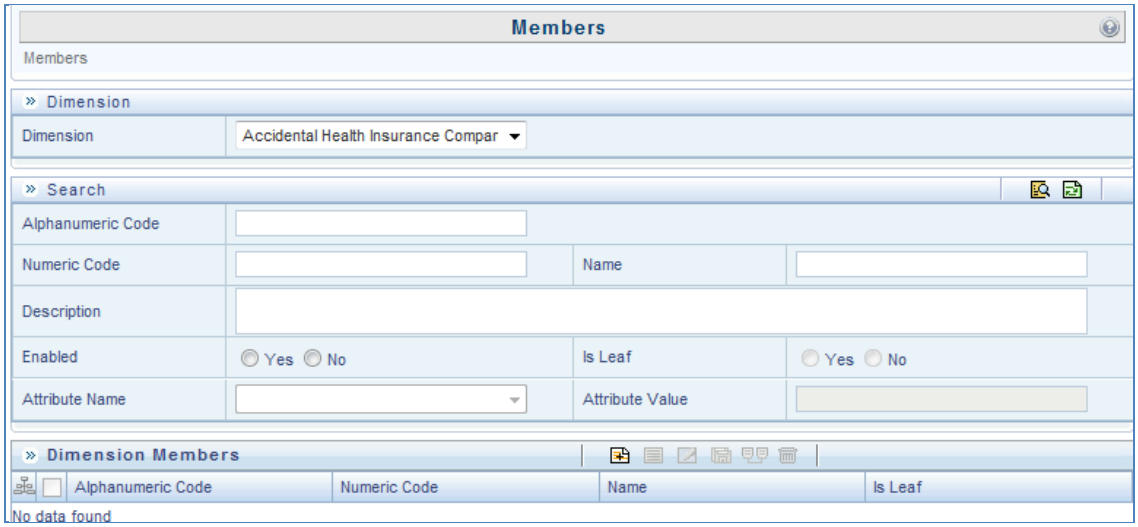
1. Select the checkbox adjacent to the Numeric Code(s) of the Attributes whose details are to be removed.
2. Click button in the Dimension Attributes tool bar.
3. Click **OK** in the information dialog to confirm deletion.

### 3.4.3 Members

Dimension Members refer to the individual items that constitute a dimension when data is categorized into a single object. Example, Product, Organization, Time, and so on. Members are available within Dimension Management section of the Infrastructure system.

For more information on how to set up alphanumeric and numeric codes, see *Configurations to use Alphanumeric and Numeric Codes for Dimension Members* section in OFSAAI Administration Guide.

You can access Members window by expanding **Unified Analytical Metadata** and **Dimension Management** within the tree structure of LHS menu and selecting **Member**.



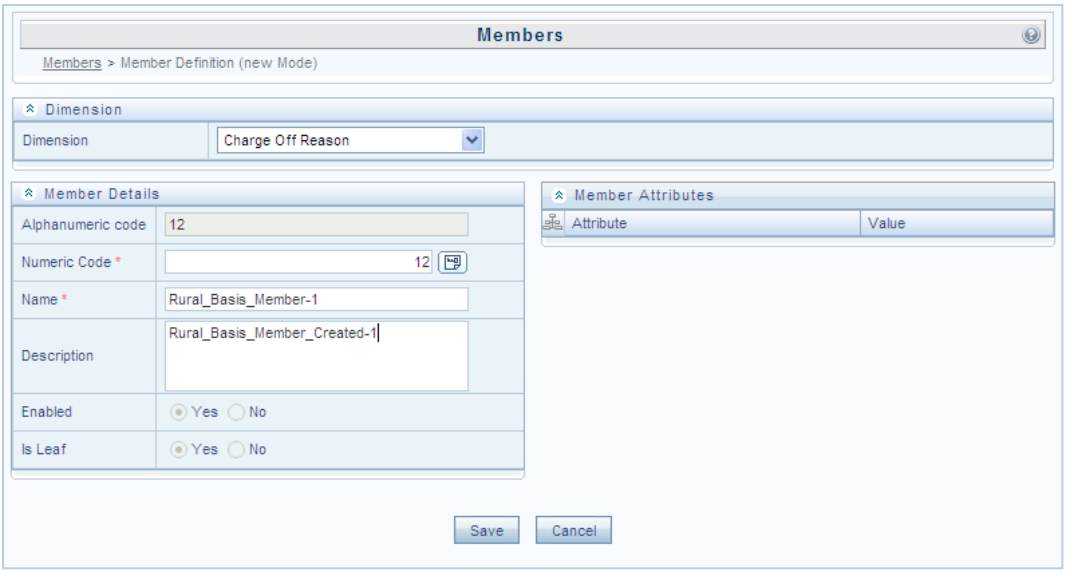

The *Members* window displays the list of pre-defined Dimension Members with the other details such as the Alphanumeric Code, Numeric Code, Name, and Is Leaf. You can also make use of Search and Pagination options to search for a specific Member based on Alphanumeric / Numeric Code (irrespective of whether dimension is configured to be numeric or alphanumeric), Name, Description, Enabled status, Is Leaf status, Attribute Name, or Attribute Value and view the list of existing definitions within the system. For more information, refer Pagination and Search and Filter.

#### 3.4.3.1 Adding Member Definition

This option allows you to add member definition. The Write role should be mapped to your user group.

To create an Attribute definition in the *Attributes* window:

1. Select the button in the Dimension Members toolbar. **Add** button is disabled if you have selected any checkbox in the grid. The *New – Member Details* window is displayed.



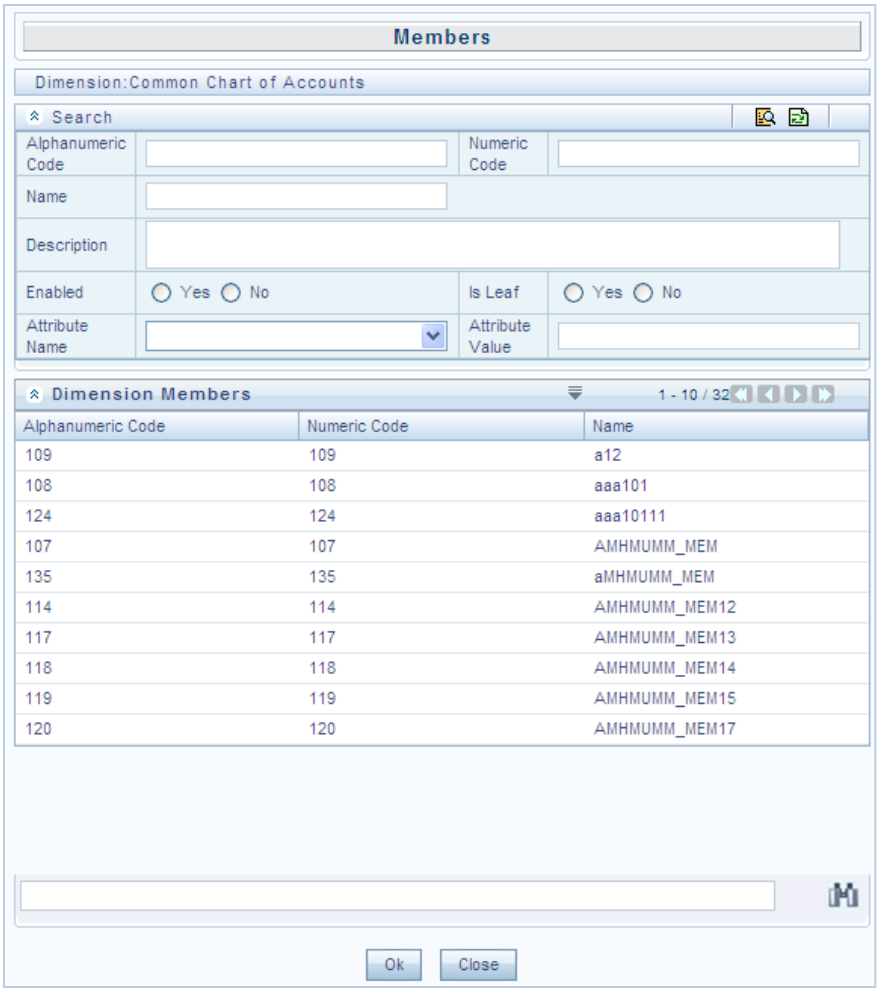

2. In the Dimensions section, select the required dimension from the drop-down list.
3. Enter the Member Details as tabulated:

| Field | Description |
|---|---|
| Fields marked in red asterisk (*) are mandatory. | |
| Alphanumeric Code | The **Alphanumeric Code** field is editable only if the selected Dimension accepts Alphanumeric Code. For example, **Billing Method** Dimension. Else, the field is Read Only and the value is fetched from the **Numeric Code** field entered.<br>Enter the required Alphanumeric Code. Ensure that the code has a maximum of 14 characters and there are no special characters like & ' ~ " @ + included. |
| Numeric Code | Enter the Numeric Code by doing any of the following:<br>▪ To auto-generate a Numeric Code, click button. A system generated code is displayed.<br>▪ Manually enter the required code which is auto validated for uniqueness. A maximum of 14 numeric characters can be specified.<br>**Note**: if the selected Dimension accepts only Numeric Code, then the specified, the Numeric Code is auto populated to the **Alphanumeric Code** field also. |
| Name | Enter the **Name** of the Member.<br>**Note**: The characters &' " are restricted |

| Field | Description |
|---|---|
| Description | Enter the required Description for the Member.<br>**Note**: The characters ~&+' "@ are restricted. |
| Enabled | This field is set to **Yes** by default and is editable only in **Edit** window.<br>**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 UIs which are based on Hierarchies, such as Hierarchy Filters and hierarchical assumption browsers used in applications. |
| Is Leaf | This field is set to **Yes** by default.<br>If **Yes**, the particular member can be used as a leaf node in any hierarchy and child cannot be added to this node.<br>If **No**, the node becomes a non leaf and can have child nodes.<br>**Note**: A member created as Non Leaf having child nodes to it in any hierarchy cannot be made Leaf. |

**NOTE:** If the Dimension is selected as “Common Chart of Accounts”, proceed further. Else, jump to step 5.

4. Click button in **Copy Attribute Assignment From** field. The *Member Browser Properties* window is displayed. (Optional) This field can be left blank so that the Member Attributes panel can be filled in without considering the values already assigned.




- Select the required Member from the *Dimension Members* list.

  Click button in the *Search* grid to search for a specific Member based on Alphanumeric Code, Numeric Code, Name, Description, Enabled status, Is Leaf status, Attribute Name, or Attribute Value. You can also click button to find a member present in the *Dimension Members* grid using key words.

- Click **OK**. The selected Member is displayed in the **Copy Attribute Assignment From** field in *New – Member Details* window and the details of selected Attribute are displayed in the *Member Attributes* section. You can edit the Attribute details as indicated:

  - Edit Attribute based on date by clicking the (Calendar) icon.
  - Edit Attribute based on Dimension Value by selecting from the drop-down list.
  - Edit Attribute based on Number Value by entering the valid numerical value.
  - Edit Attribute based on String Value by specifying alphanumerical value.

5. Click **Save** and the defined Member Definition is captured after validating the entries.

#### 3.4.3.2 Viewing Member Definition

You can view individual Member Definition details at any given point. To view the existing Member Definition details in the *Members* window:

1. Select the checkbox adjacent to the Alphanumeric Code of the Member, whose details are to be viewed.
2. Click button in the Dimension Members tool bar.

   The *View – Member Details* window is displayed with the details such as Dimension, Member Details, and Member Attributes details.

#### 3.4.3.3 Modifying Member Definition

You can Modify the Name, Description, or Enabled fields of a Member definition.

To modify an existing Member Definition in the *Members* window:

1. Select the checkbox adjacent to the Alphanumeric Code of the Member, whose details are to be updated.
2. Click button in the Dimension Member tool bar. **Edit** button is disabled if you have selected multiple Members. The *Edit – Member Details* window is displayed.
3. Edit the Member details as required. For more information, refer Add Member Definition.
4. Click **Save** to save the changes.

#### 3.4.3.4 Copying Member Definition

The Copy Member Definition facilitates you to quickly create a new Member Definition based on the existing attributes or by updating the values of the required members.

To copy an existing Member Definition in the *Members* window:

1. Select the checkbox adjacent to the Alphanumeric Code of the Member, whose details are to be duplicated.
2. Click button in the Dimension Members toolbar to copy a selected Member definition. **Copy** button is disabled if you have selected multiple Members.
3. In the *Copy – Member Details* window you can:
   - Create new Member with existing variables. Specify the **Numeric Code** and new **Member Name**.

- Create new Member definition by updating the required variables. Specify the **Numeric Code** and new **Member Name**. Update the required details. For more information, refer Add Member Definition. Click **Save**.

The new member definition details are displayed in the *Members* window.

#### 3.4.3.5 Member Definition Dependencies

You can view the dependencies of Members. To view the dependency of member in the *Members* window:

1. Select the checkbox adjacent to the Alphanumeric Code of the Member, whose dependency is to be viewed.
2. Click button in the Dimension Members toolbar. The **Check Dependencies** button is disabled if you have selected multiple members. The *Members Dependency Information* window is displayed with the dependency details.

#### 3.4.3.6 Deleting Member Definition

You cannot delete predefined members or the members which are the Nodes for a hierarchy.

To delete a Member in the *Members* window.

1. Select the checkbox adjacent to the Alphanumeric Code(s) of the Members, whose details are to be removed.
2. Click button in the Dimension Members tool bar.
3. Click **OK** in the information dialog to confirm deletion.

### 3.4.4 Build Hierarchy

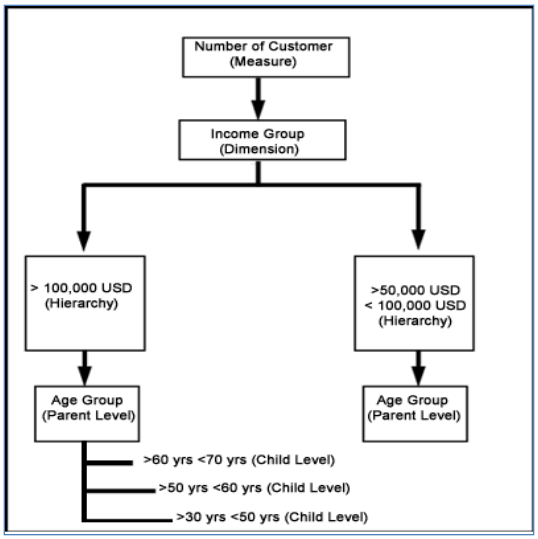
Business Hierarchy refers to *Organizing Data* into logical tree structure to represent the groups and relations among various levels at which measure can be viewed. A measure can be viewed at different levels depending upon the hierarchy breakdown of the dimension category.

Based on the role that you are mapped to, you can access read, modify or authorize Build Hierarchy. For all the roles and descriptions refer to Appendix A. The roles mapped to Business Hierarchy are as follows:

- BMM Hierarchy Access
- BMM Hierarchy Advanced
- BMM Hierarchy Authorize
- BMM Hierarchy Phantom
- BMM Hierarchy Read Only

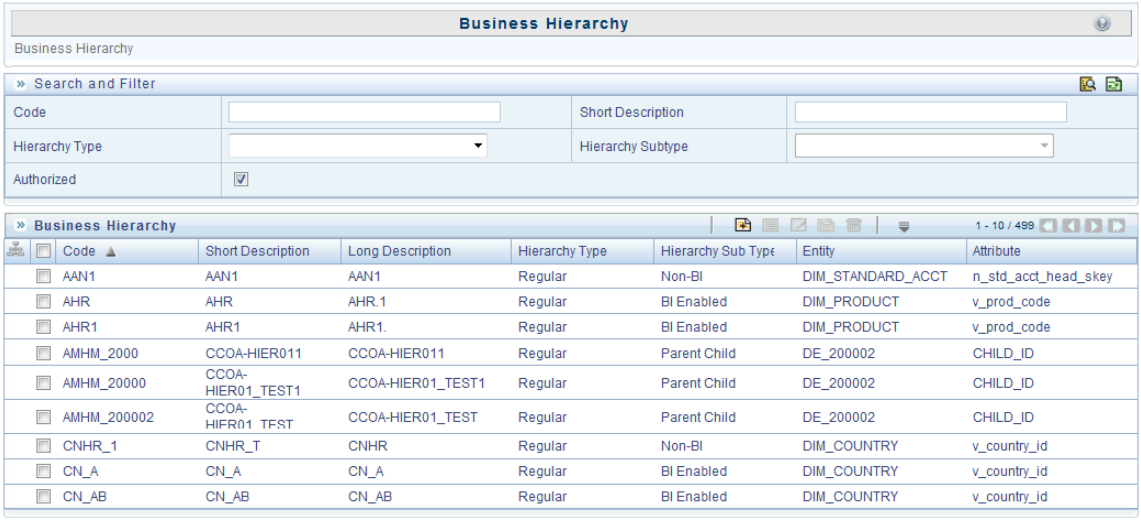
- BMM Hierarchy Write

For example, consider the following structure.




You can view the Number of Customers (Measure) across Income Group (Dimension), which is further broken down by different age groups (Hierarchy). While number of customers is a metric, it is useful when viewed based on some categorization such as customer income profile or customers having an annual income of over USD 100,000 per annum, to provide better quality of information.

You can access Business Hierarchy expanding **Unified Analytical Metadata** and **Dimension Management** within the tree structure of LHS menu and selecting **Build Hierarchy**.




| Code | Short Description | Long Description | Hierarchy Type | Hierarchy Sub Type | Entity | Attribute |
|---|---|---|---|---|---|---|
| AAN1 | AAN1 | AAN1 | Regular | Non-BI | DIM_STANDARD_ACCT | n_std_acct_head_skey |
| AHR | AHR | AHR.1 | Regular | BI Enabled | DIM_PRODUCT | v_prod_code |
| AHR1 | AHR1 | AHR1. | Regular | BI Enabled | DIM_PRODUCT | v_prod_code |
| AMHM_2000 | CCOA-HIER011 | CCOA-HIER011 | Regular | Parent Child | DE_200002 | CHILD_ID |
| AMHM_20000 | CCOA-HIER01_TEST1 | CCOA-HIER01_TEST1 | Regular | Parent Child | DE_200002 | CHILD_ID |
| AMHM_200002 | CCOA-HIER01_TEST | CCOA-HIER01_TEST | Regular | Parent Child | DE_200002 | CHILD_ID |
| CNHR_1 | CNHR_T | CNHR | Regular | Non-BI | DIM_COUNTRY | v_country_id |
| CN_A | CN_A | CN_A | Regular | BI Enabled | DIM_COUNTRY | v_country_id |
| CN_AB | CN_AB | CN_AB | Regular | BI Enabled | DIM_COUNTRY | v_country_id |

The *Business Hierarchy* window displays the list of pre-defined Business Hierarchies with their Code, Short Description, Long Description, Hierarchy Type, Hierarchy Sub Type, Entity, and Attribute. You can create Business Hierarchies for measure(s), and view, edit, copy, or delete

the required Business Hierarchies. For more information on the Business Hierarchy Types and Sub-types, refer Business Hierarchy Types.

**NOTE:** When an AMHM hierarchy is created, implicitly a UAM Business hierarchy also gets created and will be listed in the *Summary* window of Business Hierarchy. The Code of Implicitly populated UAM Hierarchy is system generated with length of 11 characters and prefixed with AMHM.

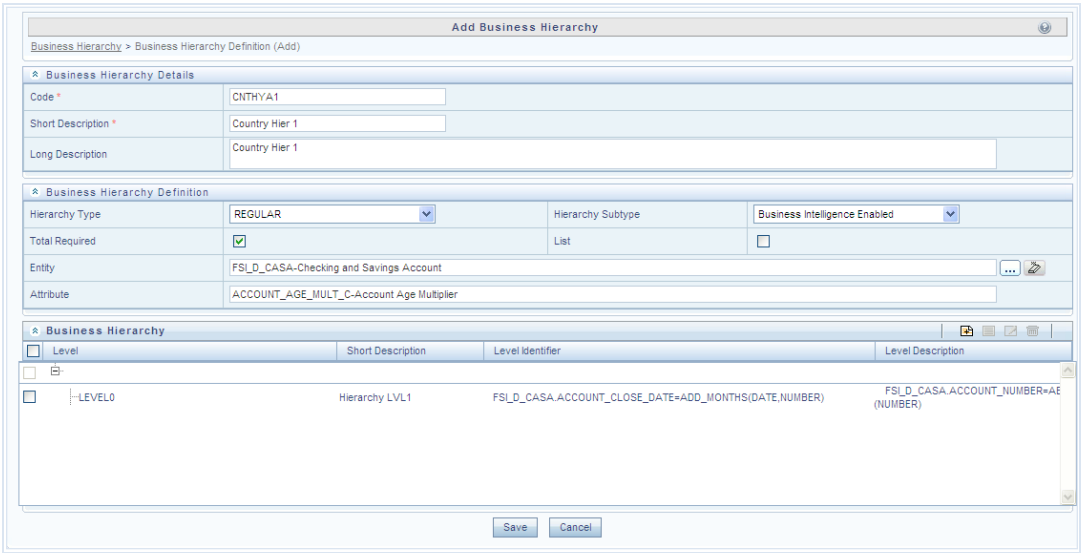
You can also make use of Search and Pagination options to search for a specific Business Hierarchy based on the Code, Short Description, Hierarchy Type, Hierarchy Sub Type, and Authorization status, or view the list of existing Business Hierarchies within the system. For more information, refer Search and Filter and Pagination sections.

### 3.4.4.1 Creating Business Hierarchy

You can create a Business Hierarchy by specifying the Hierarchy definition details and defining the required Hierarchies. You need to be mapped to the role BMM Hierarchy Write to add or create a business hierarchy.

To create a Business Hierarchy in the *Business Hierarchy* window:

1. Click button from the Business Hierarchy toolbar. The *Add Business Hierarchy* window is displayed.




2. Enter the details in Business Hierarchy Details section as tabulated.

| Field | Description |
|---|---|
| Code | Enter a distinct code to identify the Hierarchy. Ensure that the code is alphanumeric with a maximum of 8 characters in length and there are no special |

| Field | Description |
|---|---|
| | characters except underscore "_".<br>▪ Note the following:<br>▪ The code can be indicative of the type of Hierarchy being created.<br>▪ A pre-defined Code and Short Description cannot be changed.<br>▪ Same Code or Short Description cannot be used for Essbase installation: "$$$UNIVERSE$$$", "#MISSING", "#MI", "CALC", "DIM", "ALL", "FIX", "ENDFIX", "HISTORY", "YEAR", "SEASON", "PERIOD", "QUARTER", "MONTH", "WEEK", "DAY".<br>▪ In Unauthorized state, the users having Authorize Rights can view all the unauthorized Metadata. |
| Short Description | Enter a Short Description based on the defined code. Ensure that the description is of a maximum of 8 characters in length and does not contain any special characters except underscore "_". |
| Long Description | Enter the Long Description if you are creating subject-oriented Hierarchy to help users for whom the Hierarchy is being created or other details about the type/subject. Ensure that description is of a maximum of 100 characters in length. |

3. In the Business Hierarchy Definition section, select the **Hierarchy Type** from the drop-down list.

**NOTE:** Hierarchy Type is the basic differentiator and based on your selection, the other options to define the Business Hierarchy are available.

You can select the following Hierarchy Type/Sub-Type. Click on the links to navigate to the respective sections and define the required Hierarchy. For detailed information on all the Hierarchy Types, refer Business Hierarchy Types.

**NOTE:** When you click button in the **Entity** field, it displays the entities that come with model upload, Aliases created in the Infodom and the Derived Entities created in the Infodom. If you want to create a Business Hierarchy on a new table, you need to create a DI source and application on the schema where the new table was created. Then a source based Derived entity needs to be created on that table.

| Hierarchy Type | Description / Hierarchy Sub Type |
|---|---|
| Regular | In a Regular Hierarchy Type, you can define the following Hierarchy Sub Types:<br>▪ Non Business Intelligence Enabled<br>In a non Business Intelligence Enabled Hierarchy, you need to manually add |

<table>
<tr><th>Hierarchy Type</th><th>Description / Hierarchy Sub Type</th></tr>
<tr><td></td><td>
the required levels. The levels defined will form the Hierarchy.
<ul><li>Business Intelligence Enabled</li></ul>
You can Enable Business Intelligence hierarchy when you are not sure of the Hierarchy structure leaf values or the information is volatile and also when the Hierarchy structure can be directly selected from RDBMS columns. The system will automatically detect the values based on the actual data.
<br>
In a BI enabled Hierarchy, you will be prompted to specify if a Total node is required (not mandatory) and system auto-detects the values based on actual data. For example, you can define three levels in BI Enabled hierarchies like, Region (1), State (2), and Place (3). The auto generated Hierarchies are:
<table>
<tr><td>Region (1)</td><td>State (2)</td><td>Place (3)</td></tr>
<tr><td>South</td><td>Tamil Nadu<br>Karnataka<br>Andhra Pradesh</td><td>Madras<br>Bangalore<br>Hyderabad</td></tr>
<tr><td>North</td><td>Punjab</td><td>Chandigarh</td></tr>
</table>
<ul><li>Parent Child</li></ul>
This option can be selected to define a Parent Child Type hierarchy.
</td></tr>
<tr><td>Measure</td><td><ul><li>A Measure Hierarchy consists of the defined measure as nodes and has only the Non Business Intelligence Enabled as Hierarchy Sub Type.</li></ul></td></tr>
<tr><td>Time</td><td>A Time Hierarchy consists of the levels/nodes of high time granularity and has only the Business Intelligence Enabled as Hierarchy Sub Type.</td></tr>
</table>

**NOTE:** When the defined Hierarchy consists of more than 100 leaf levels, the system treats it as a Large Hierarchy in order to provide efficient and optimized hierarchy handling. For more information on modify the default value, refer Large Hierarchy.

Once you have populated the required details in Business Hierarchy Definition and Hierarchy details section, save the details.

4. Click **Save** in *Add* Business *Hierarchy* window and save the details.

#### 3.4.4.2 Viewing Business Hierarchy

You can view individual Business Hierarchy at any given point. To view the existing Business Hierarchy definition details in the *Business Hierarchy* window: You need to be mapped with the role BMM Hierarchy Read Only to view Business Hierarchy.

1. Select the checkbox adjacent to the required Business Hierarchy code.
2. Click button from the Business Hierarchy tool bar.

   The *View Business Hierarchy* window displays the details of the selected Business Hierarchy definition. The *User Info* grid at the bottom of the window displays metadata information about Business Hierarchy created along with the option to add comments.

#### 3.4.4.3 Modifying Business Hierarchy

You can update the existing Business Hierarchy definition details except for the Code and Hierarchy Type/Sub-Type. You need to be mapped with the role BMM Hierarchy Write to modify Business Hierarchy.

**NOTE:** You cannot modify the implicitly created Business Hierarchies for AMHM Hierarchies.

To update the required Business Hierarchy details in the *Business Hierarchy* window:

1. Select the checkbox adjacent to the required Business Hierarchy code.
2. Click button from the Business Hierarchy tool bar. The *Edit Business Hierarchy* window is displayed.
3. Update the required details. For more information, refer Create Business Hierarchy.
4. Click **Save** and update the changes.

#### 3.4.4.4 Copying Business Hierarchy

You can copy the existing Business Hierarchy details to quickly create a new Business Hierarchy. You need to be mapped to the role BMM Hierarchy Write to copy Business Hierarchy. To copy an existing Business Hierarchy definition in the *Business Hierarchy* window:

1. Select the checkbox adjacent to the required Business Hierarchy code.
2. Click button from the Business Hierarchy tool bar.

   The Business Hierarchy definition details are copied and a confirmation message is displayed.

#### 3.4.4.5 Deleting Business Hierarchy

You can remove the Business Hierarchy definition(s) which are created by you and which are no longer required in the system by deleting from the *Business Hierarchy* window. Delete function permanently removes the Business Hierarchy details from the database. You need to be mapped with the role BMM Hierarchy Write to delete Business Hierarchy. Ensure that you have verified the details as indicated below:

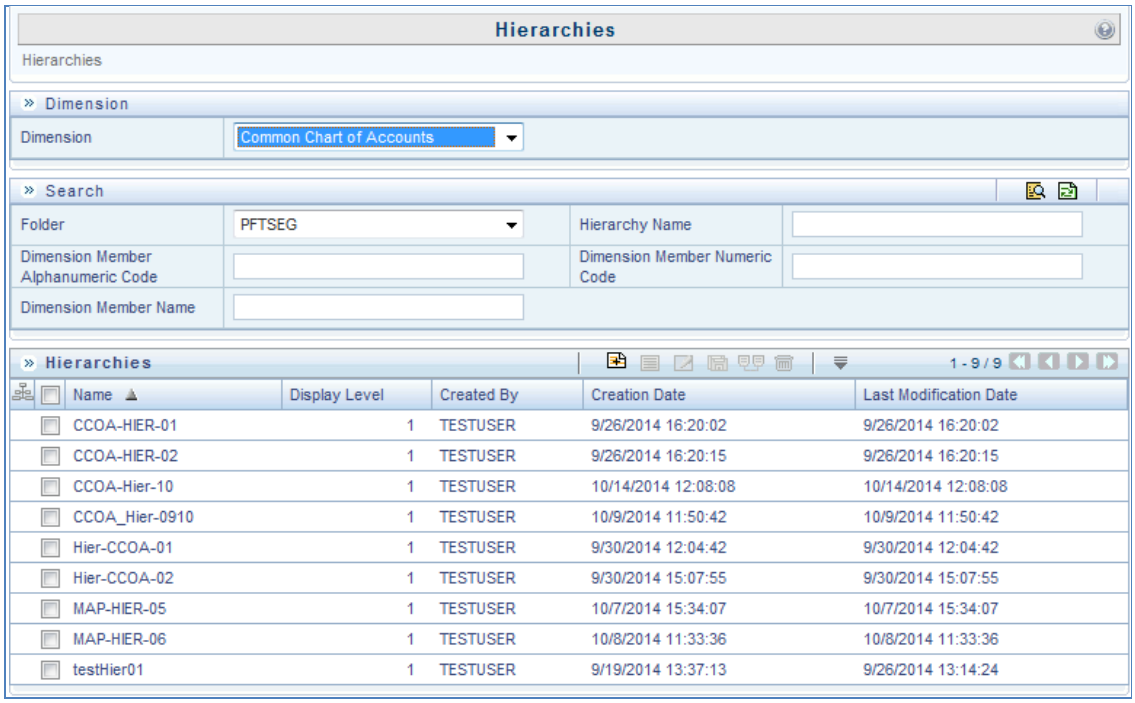
- A Business Hierarchy definition marked for deletion is not accessible for other users.
- Every delete action has to be **Authorized/Rejected** by the authorizer.
  - On Authorization, the Business Hierarchy details are removed.
  - On Rejection, the Business Hierarchy details are reverted back to authorized state.
- An un-authorized Business Hierarchy definition can be deleted.

You can delete an implicitly created Business Hierarchy for an AMHM hierarchy, if it is not used in any higher objects. Once the Business Hierarchy is deleted, it will not be re-created if you resave AMHM hierarchy.

### 3.4.5 Hierarchy Maintenance

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 of Infrastructure system.

You can access Hierarchies window by expanding **Unified Analytical Metadata** and **Dimension Management** within the tree structure of LHS menu and selecting **Hierarchy Maintenance**.




The *Hierarchies* window displays the list of Hierarchies created in all public folders, shared folders to which you are mapped and private folders for which you are the owner, along with other details such as the Name, Display level, Created By, Creation Date, and Last Modification

Date. For more information on how object access is restricted, see Object Security in AMHM module section.

You can also make use of Search and Pagination options to search for a specific Hierarchy definition based on Folder, Hierarchy Name, Dimension Member Alphanumeric Code, Dimension Member Numeric Code, or Dimension Member Name and view the existing definitions within the system. For more information, refer Pagination and Search and Filter.

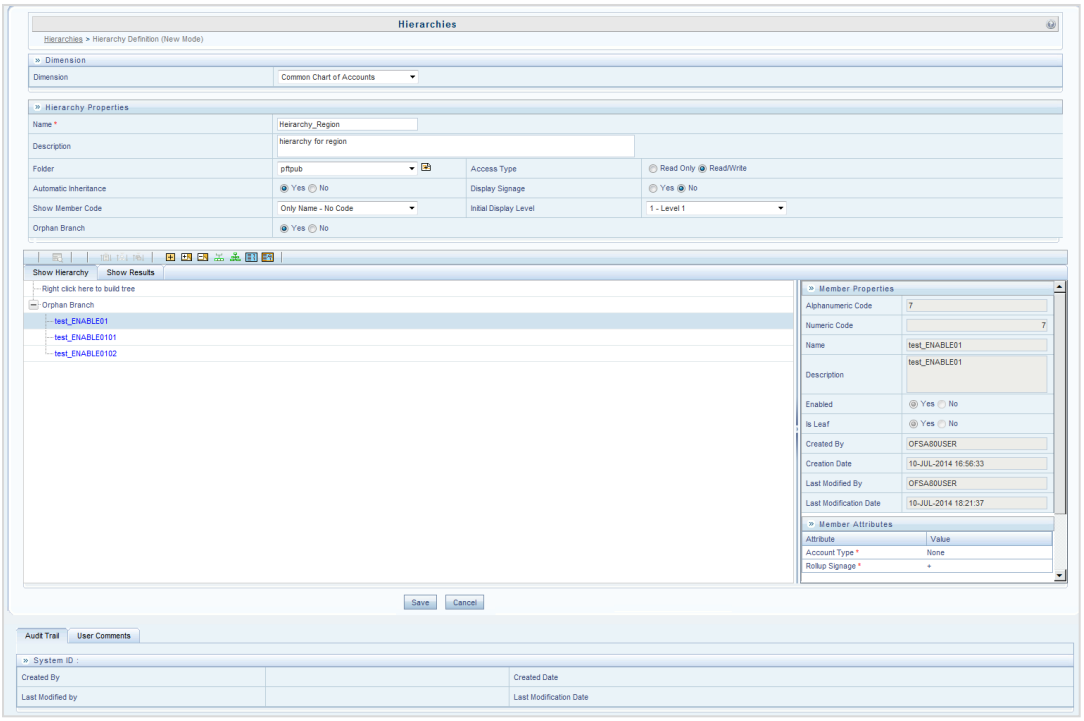
### 3.4.5.1 Adding Hierarchy Definition

In the *Hierarchies* window, you can create Hierarchy Definition up to 15 levels by default. The maximum permissible levels are up to 58 Hierarchies. To create a hierarchy, the Write role should be mapped to your user group.

**NOTE:** When an AMHM hierarchy is created, implicitly a UAM Business hierarchy also gets created and will be listed in the *Summary* window of Business Hierarchy.

To create a Hierarchy definition in the *Hierarchies* window:

1. Select the button in the Hierarchies toolbar. **Add** button is disabled if you have selected any checkbox in the grid. The *New – Hierarchy Details* window is displayed.




2. Select **Dimension** from the drop-down list. The selected Dimension from the *New* – Hierarchy *Details* window is displayed as the default dimension for which member has to be defined. Enter the Hierarchy Properties as tabulated:

| Field | Description |
|---|---|
| Fields marked in red asterisk (*) are mandatory. | |
| Name | Enter the **Name** of the Hierarchy.<br>**Note**: The characters &' " are restricted. |
| Description | Enter the required **Description** for the Hierarchy.<br>**Note**: The characters ~&+' " @ are restricted. |
| Folder | Select the folder where the hierarchy is to be stored from the drop-down list.<br>The *Folder selector* window behavior is explained in User Scope section.<br>Click to create a new private folder. The Segment Maintenance window is displayed. For more information, see Segment Maintenance.<br>**Note**: You can select **Segment/Folder Type** as Private and the **Owner Code** as your user code only. |
| Access Type | Select the Access Type as **Read Only** or **Read/Write**.<br>▪ **Read-Only**: Select this option to give other users access to only view the hierarchy definition.<br>**Note**: A user with Phantom and Write role can modify or delete the hierarchy even though the access type is selected as Read-only.<br>▪ **Read/Write**: Select this option to give all users the access to view, modify (including Access Type), and delete the hierarchy definition. |
| Automatic Inheritance | ▪ Click **Yes** to inherit the hierarchy properties of the parent to the child.<br>▪ Click **No** if you want to define a new hierarchy. |
| Display Signage | Click **Yes** to display the Signage to the right hand side of the member in the Show hierarchy panel. Else, click **No**. |
| Show Member Code | Select from the drop-down list as one of the following:<br>▪ **Alphanumeric Code to Left of Name**: Displays Alphanumeric Code on the Left side of Member name.<br>▪ **Alphanumeric Code to Right of Name**: Displays Alphanumeric Code on the Right side of Member name.<br>▪ **Only Name - No Code**: Displays only the Member Name.<br>▪ **Numeric Code to Left of Name**: Displays the Numeric Code on the Left side of Member name.<br>▪ **Numeric Code to Right of Name**: Displays the Numeric Code on the Right side of Member name. |

| Field | Description |
|---|---|
| Initial Display Level | Select the Initial Display level from the drop-down list. |
| Orphan Branch | Click **Yes** to display the Orphan Branch in the Show Hierarchy panel. Else, click **No**. |

To add Child under the **Show Hierarchy** tab:

- Right-click in the *Show Hierarchy* tab.
- Select **Add Child** option and the *Add Member* window are displayed.
- Select the required Member and click . The Member is displayed in the **Selected Members** panel. Click to select all Members which are shown in the *Show Members* pane. Click to select all nodes/ members in the server.

  You can click to deselect a Member or click to deselect all the Members.

  You can click to search for the required member using Alphanumeric code, Numeric Code, Name, Description, Attribute Name, or Attribute Value.

  You can also click button to toggle the display of Numeric Code left, right, or name and click button to display Alphanumeric Code left, right, or name.
- Click **OK**. The selected Member is displayed as Child under **Show Hierarchy** panel in the *New – Hierarchy Details* window.

To add Sibling:

- Right-click on the Child and select the option **Add Sibling**. The *Add Member* window is displayed.
- Select the required Member and click . The Member is displayed in the **Selected Members** panel. You can click to select all Members which are shown in the *Show Members* pane. Click to select all nodes/ members in the server.

  You can click to deselect a Member or click to deselect all the Members. You can also Click to search for the required member.
- Click **Apply**. The selected Member is displayed as **Sibling** below the **Parent** under Show Hierarchy panel in the *New – Hierarchy Details* window.

To add Leaf under a Parent, Child, or Sibling:

- Right-click the Parent or Child and select **Add Leaf**. The *Add Member* window is displayed.
- Select the required Member and click . The Member is displayed in the **Selected Members** panel. You can click to select all Members which are shown in the *Show Members* pane. Click to select all nodes/ members in the server.

  You can click to deselect a Member or click to deselect all the Members. You can also Click to search for the required member.
- Click **Apply**. The selected Member is displayed as Leaf below the Parent or Sibling under **Show Hierarchy** panel in the *New – Hierarchy Details* window.

To define Level Properties:

- Select **Level Properties** from the options under Parent, Child, Sibling or Leaf and the *Level Properties* window is displayed.
- Enter the valid **Name** and **Description** in the respective fields.
- Click **OK** and the Levels defined are displayed in the drop-down in **Initial Level Display** field in **Hierarchy Properties** grid in *New – Hierarchy Details* window.

To cut and paste Child or Sibling:

- Right-click on any node and select **Cut**.
- Right-click on any node and **Paste as Child** or **Paste as Sibling**.

To Delete and Undelete:

- Right-click on the node to be deleted and select **Delete Node**.

  The node deleted is stroked out.
- Right-click and select **UnDelete** to cancel deletion of the node.

To add Child / Sibling / leaf:

- Right-click on any node and select **Create and add Child**. The *New - Member Details* window is displayed. For more information, refer Add Member Definition.
- Right-click on any node and select **Create and add Sibling**.
- Right-click on any node and select **Create and add leaf**.

To View the Member Properties and Member Attributes of a node in the Show Hierarchy panel:

- Click **<** button and the Member Property grid is displayed.
- 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* window you can also:

- Click or to expand or collapse the members under a node.
- Click or to expand a branch or collapse a branch.
- Click or to focus or unfocus a selected node except the root node.
- Click or to toggle the display of Numeric Code or Alphanumeric code at left of the nodes, right of the nodes or to hide.
- Click button to view the Advanced Properties of the nodes.

3. Click **Save** in the *New – Hierarchy Details* window to validate and capture the entries.

   The *Audit Trail* section at the bottom of the window displays the metadata about the Hierarchy with the option to add additional information as comments. The *User Comments* section facilitates you to add or update additional information as comments.

#### 3.4.5.2 Viewing Hierarchy Definition

You can view individual Hierarchy Definition details at any given point. To view the existing hierarchy Definition details in the *Hierarchies* window:

1. Select the checkbox adjacent to the Hierarchy Name.
2. Click button in the Hierarchies tool bar. The **View** button is disabled if you have selected multiple Hierarchies.

   The *View – Hierarchy Details* window is displayed with all the hierarchy details.

   In the *View – Hierarchy Details* window you can click button to search for a member using the Alphanumeric Code, Numeric Code, or Member Name in the *Search* dialog.

| | |
|---|---|
| **NOTE:** | The search functionality of this button will not return any values if you search for a node in the Orphan Branch of the hierarchy. |

#### 3.4.5.3 Modifying Hierarchy Definition

You can modify the Name, Description, Folder, Access Type, Automatic inheritance, Display Signage, Show Member Code, Initial Display level, Orphan branch, Show hierarchy details in *Edit – Hierarchy Details* window.

**NOTE:** When you modify a Hierarchy, the implicitly created UAM Business Hierarchy will also get updated.

1. Select the checkbox adjacent to the Hierarchy Name whose details are to be updated.
2. Click button in the Hierarchies tool bar. **Edit** button is disabled if you have selected multiple Members. The *Edit – Hierarchy Details* window is displayed.

   In the *Edit – Hierarchy Details* window you can click button to search for a member using the Alphanumeric Code, Numeric Code, or Member Name in the *Search* dialog. Edit the Hierarchy details as required. For more information, refer Add Hierarchy Definition.
3. Click **Save** and save the changes.

#### 3.4.5.4 Copying Hierarchy Definition

The Copy Hierarchy Definition facilitates you to quickly create a new Hierarchy Definition based on the existing attributes or by updating the values of the required hierarchies.

To copy an existing Hierarchy Definition in the *Hierarchies* window:

1. Select the checkbox adjacent to the Hierarchy name whose details are to be duplicated.
2. Click button in the Hierarchies toolbar to copy a selected Hierarchy definition. **Copy** button is disabled if you have selected multiple Hierarchies. The *Copy – Hierarchy Details* window is displayed.

   In the *Copy – Hierarchy Details* window you can click button to search for a member using the Alphanumeric Code, Numeric Code, or Member Name in the *Search* dialog.
3. In the *Copy* – Hierarchy *Details* window you can:
   - Create new hierarchy definition with existing variables. Specify a new **Hierarchy Name**. Click **Save**.
   - Create new hierarchy definition by updating the required variables. Specify a new Hierarchy Name and update the required details. For more information, refer Add Hierarchy Definition. Click **Save**.

   The new Hierarchy definition details are displayed in the *Hierarchies* window.

#### 3.4.5.5 Hierarchy Definition Dependencies

You can view the dependencies of Hierarchies. To view the dependency of hierarchy in the *Hierarchies* window:

1. Select the checkbox adjacent to the Hierarchy Name.
2. Click button in the Hierarchies toolbar. The **Check Dependencies** button is disabled if you have selected Hierarchy definitions. The *Hierarchies Dependency Information* window is displayed.

#### 3.4.5.6 Deleting Hierarchy Definition

You can remove the Hierarchy Definitions which are not required in the system by deleting from the *Hierarchies* window.

**NOTE:** When you delete an AMHM Hierarchy, the implicitly created UAM Business Hierarchy will also get deleted, if it is not used in higher objects.

1. Select the checkbox adjacent to Hierarchy Name(s) whose details are to be removed.
2. Click button in the Hierarchies tool bar.
3. Click **OK** in the information dialog to confirm deletion.

To delete an existing Business Hierarchy in the *Business Hierarchy* window:

1. Select the checkbox adjacent to the required Business Hierarchy code.
2. Click button from the Business Hierarchy tool bar. A confirmation dialog is displayed.
3. Click **OK**. The Business Hierarchy details are marked for delete authorization.

## 3.5 Measure

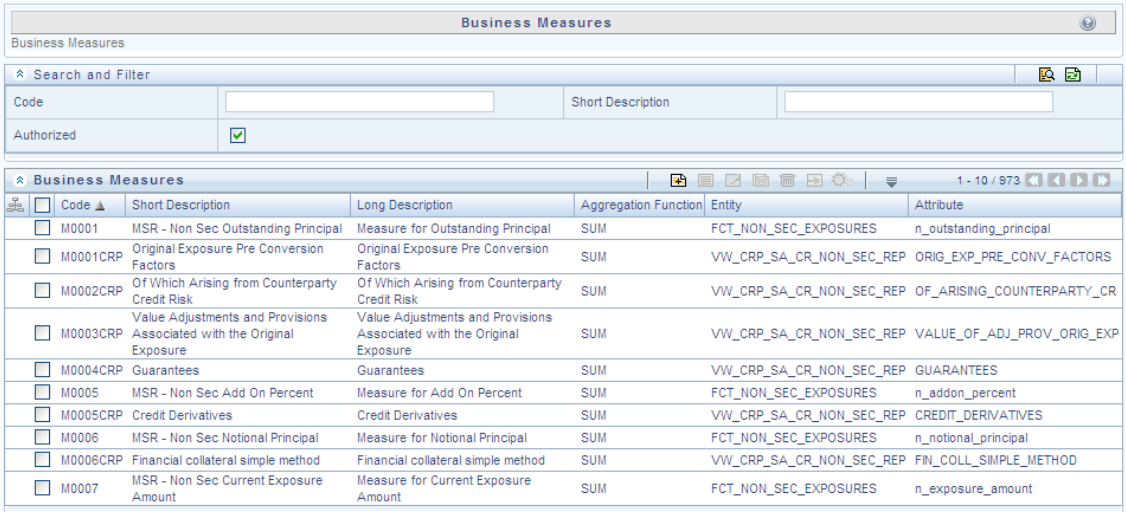
Business Measure refers to a uniquely named data element of relevance which can be used to define views within the data warehouse. It typically implies aggregated information as opposed to information at a detailed granular level that is available before adequate transformations.

Based on the role that you are mapped to, you can access read, modify or authorize Measure. For all the roles and descriptions refer to Appendix A. The roles mapped to Measure are as follows:

- Measure Access
- Measure Advanced
- Measure Authorize
- Measure Phantom

- Measure Read Only
- Measure Write

Business Measure function within the Infrastructure system facilitates you to create measures based on the area of analysis. While creating a measure, you can choose the aggregation type and apply business exclusion rules based on your query/area of analysis. Business Measures can be stored as Base and Computed measures and can also be reused in defining other multi dimensional stores and query data using the various modules of Oracle Analytical Application Infrastructure. You can access Business Measures window by expanding **Unified Analytical Metadata** section within the tree structure of LHS menu and selecting **Measure**.




| Code | Short Description | Long Description | Aggregation Function | Entity | Attribute |
|---|---|---|---|---|---|
| M0001 | MSR - Non Sec Outstanding Principal | Measure for Outstanding Principal | SUM | FCT_NON_SEC_EXPOSURES | n_outstanding_principal |
| M0001CRP | Original Exposure Pre Conversion Factors | Original Exposure Pre Conversion Factors | SUM | VW_CRP_SA_CR_NON_SEC_REP | ORIG_EXP_PRE_CONV_FACTORS |
| M0002CRP | Of Which Arising from Counterparty Credit Risk | Of Which Arising from Counterparty Credit Risk | SUM | VW_CRP_SA_CR_NON_SEC_REP | OF_ARISING_COUNTERPARTY_CR |
| M0003CRP | Value Adjustments and Provisions Associated with the Original Exposure | Value Adjustments and Provisions Associated with the Original Exposure | SUM | VW_CRP_SA_CR_NON_SEC_REP | VALUE_OF_ADJ_PROV_ORIG_EXP |
| M0004CRP | Guarantees | Guarantees | SUM | VW_CRP_SA_CR_NON_SEC_REP | GUARANTEES |
| M0005 | MSR - Non Sec Add On Percent | Measure for Add On Percent | SUM | FCT_NON_SEC_EXPOSURES | n_addon_percent |
| M0005CRP | Credit Derivatives | Credit Derivatives | SUM | VW_CRP_SA_CR_NON_SEC_REP | CREDIT_DERIVATIVES |
| M0006 | MSR - Non Sec Notional Principal | Measure for Notional Principal | SUM | FCT_NON_SEC_EXPOSURES | n_notional_principal |
| M0006CRP | Financial collateral simple method | Financial collateral simple method | SUM | VW_CRP_SA_CR_NON_SEC_REP | FIN_COLL_SIMPLE_METHOD |
| M0007 | MSR - Non Sec Current Exposure Amount | Measure for Current Exposure Amount | SUM | FCT_NON_SEC_EXPOSURES | n_exposure_amount |

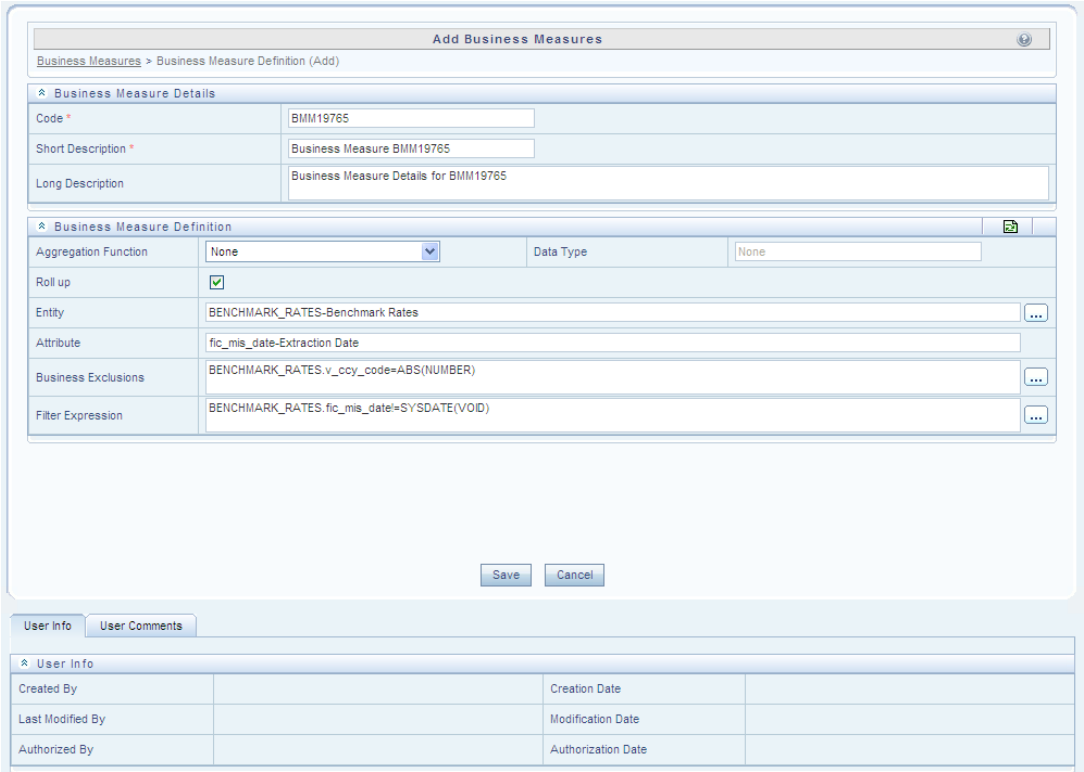
The *Business Measures* window displays the list of pre-defined Business Measures with their Code, Short Description, Long Description, Aggregation Function, Entity, and Attribute. You can add, view, edit, copy, and delete the required Business Measures. You can also make use of Search and Pagination options to search for a specific Business Measure based on the Code, Short Description, and Authorization status or view the list of existing Business Measures within the system. For more information, refer Search and Filter and Pagination sections.

#### 3.5.1.1 Creating Business Measure

You can create a Business Measure by specifying the Business Measure Details and defining the Business Measure Definition. You can create a business measure if you mapped with the role Measure Write with the user group.

To create a measure in the *Business Measures* window:

1. Click button from the Business Measures tool bar. The *Add Business Measures* window is displayed.




2. Enter the details in the Business Measure Details section as tabulated.

| Field | Description |
|---|---|
| ▪ Fields marked in red asterisk (*) are mandatory. | |
| Code | Enter a distinct code to identify the Measure. Ensure that the code is alphanumeric with a maximum of 8 characters in length and there are no special characters except underscore "_".<br>Note the following:<br>▪ The code can be indicative of the type of Measure being created.<br>▪ A pre-defined Code and Short Description cannot be changed.<br>▪ Same Code or Short Description cannot be used for Essbase installation: "$$$UNIVERSE$$$", "#MISSING", "#MI", "CALC", "DIM", "ALL", "FIX", "ENDFIX", "HISTORY", "YEAR", "SEASON", "PERIOD", "QUARTER", "MONTH", "WEEK", "DAY".<br>▪ In Unauthorized state, the users having Authorize Rights can view all the unauthorized Metadata. |
| Short Description | Enter a Short Description based on the defined code. Ensure that the description is of a maximum of 8 characters in length and does not contain any special characters except underscore "_". |

| Field | Description |
|---|---|
| Long Description | Enter the Long Description if you are creating subject-oriented Measure to help users for whom the Measure is being created or other details about the type/subject. Ensure that the description is of a maximum of 100 characters in length. |

Enter the details in the Business Measure Definition section.

3. Select the required **Aggregation Function** from the drop-down list.

   The list consists of various metrics based on which a Measure can be aggregated. The available aggregation functions are as tabulated.

| Aggregator | Description |
|---|---|
| SUM | Adds the actual value of attribute or data element to get the measure value. |
| COUNT | Counts the records for the data element to get the measure value or counts the number of occurrences |
| MAXIMUM | This function acquires the maximum of the data element to get the measure value. |
| MINIMUM | This function obtains the minimum of the data element to get the measure value. |
| COUNT DISTINCT | This function is different from a simple count aggregation function. The peculiarity of these measures is that they are linked to the dimensions and they vary across the hierarchies of these dimensions. In a Count Distinct aggregation function a simple roll cannot determine the values at the intermediate nodes in the hierarchies up of their leaf level values. |

   - Based on the selected Aggregation Function the **Data Type** is auto populated.
   - Selecting **Roll Up** checkbox calculates the measure values and displays the nodes at the total level. By default, the checkbox is selected if the Aggregation Type is Maximum, Minimum, Count, or Sum. Roll Up option, when selected with Percentage Measures results in wrong values at intermediate/total levels.

4. Select the Entity to load the data for the Measure. Click button, The *Entity and Attribute* window is displayed.

   - Select the checkbox adjacent to the required Entities from the **Available Entities** list. The corresponding attributes are displayed in the **Available Attributes** list. Select the checkbox adjacent to the required Attribute.

**NOTE:** The Entity list is dependent on the imported Data Model.

You can also search for an Entity using the Search option.

- Click **Save**. The selected Entity and Attributes are displayed in the Entity field of the *Add Business Measures* window.

5. Define the **Business Exclusions** rules for the base Measure. You can enter the expression or click button to define using the *Expression* window.
6. Define **Filter Expression** to filter the aggregation process. You can enter the expression or click button to define using the *Expression* window.
7. Click **Save** and save the Business Measure details.

#### 3.5.1.2 Viewing Business Measure

You can view individual Business Measure at any given point. To view the existing Business Measure definition details in the *Business Measures* window: You can view the Business Measure if you are mapped with the role Measure Read Only with the user group.

1. Select the checkbox adjacent to the required Business Measure code.
2. Click button from the Business Measure tool bar.

   The *View Business Measures* window displays the details of the selected Business Measure definition. The User Info grid at the bottom of the window displays the metadata information about the Business Measure created along with the option to add comments.

#### 3.5.1.3 Modifying Business Measure

You can modify the Business Measure if you are mapped with the role Measure Write with the user group.

You can update the existing Business Measure definition details except for the Code and Short Description. To update the required Business Measure details in the *Business Measure* window:

1. Select the checkbox adjacent to the required Business Measure code.
2. Click button from the Business Measures tool bar. The *Edit Business Measure* window is displayed.
3. Update the required details. For more information, refer Create Business Measure.
4. Click **Save** and update the changes.

#### 3.5.1.4 Copying Business Measure

You can copy the existing Business Measure details to quickly create a new Business Measure. You can later modify the Code or Short Description, add/remove Entities and Attributes, and also define the join/filter conditions. You can copy Business Measure if you are mapped with the role Measure Write with the user group.

To copy an existing Business Measure definition in the *Business Measure* window:

1. Select the checkbox adjacent to the required Business Measure code.
2. Click button from the Business Measures tool bar.

   The Business Measure definition details are copied and a confirmation message is displayed.

#### 3.5.1.5 Deleting Business Measure

You can remove the Business Measure definition(s) which are created by you and which are no longer required in the system by deleting from the Business Measures window. To delete a Business Measure, you need to be mapped with the role Measure Write. Delete function permanently removes the Business Measure details from the database. Ensure that you have verified the details as indicated below:

- A Business Measure definition marked for deletion is not accessible for other users.
- Every delete action has to be **Authorized/Rejected** by the authorizer.
  - On Authorization, the Business Measure details are removed.
  - On Rejection, the Business Measure details are reverted back to authorized state.
- You cannot update Business Measure details before authorizing/rejecting the deletion.
- An un-authorized Business Measure definition can be deleted.

To delete an existing Business Measure in the *Business Measure* window:

1. Select the checkbox adjacent to the required Business Measure code.
2. Click button from the Business Measure tool bar. A confirmation dialog is displayed.
3. Click **OK**. The Business Measure details are marked for delete authorization.

## 3.6 Business Processor

Business Processor refers to a uniquely named data element of relevance which can be used to define views within the data warehouse. It typically implies aggregated information as opposed to information at a detailed granular level that is available before adequate transformations.

A Business Processor encapsulates a business logic for assigning a value to a measure as a function of observed values for other measures. Business Processors are required Measurements that require complex transformations that entail transforming data based on a function of available base measures.

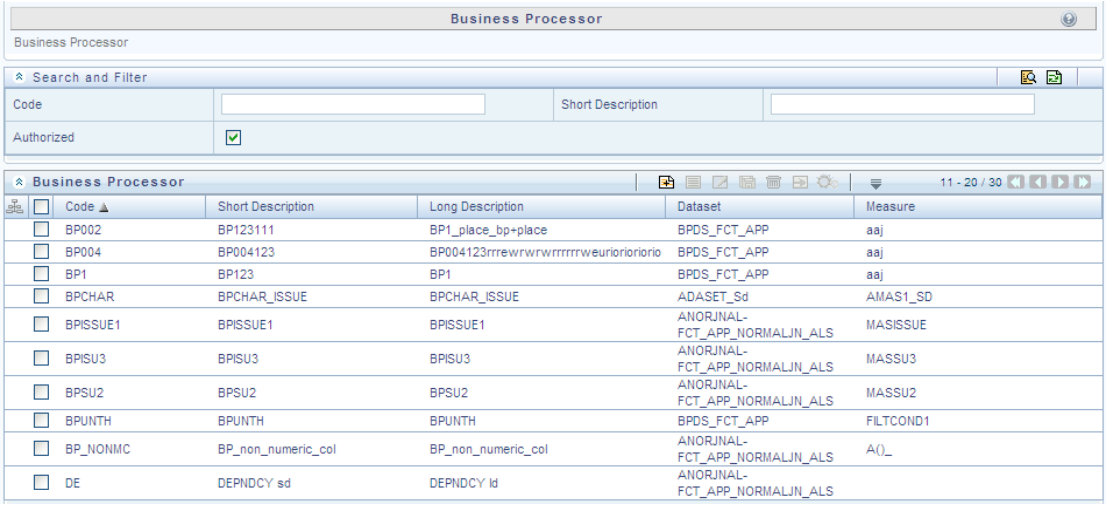
Measurements that require complex transformations that entail transforming data based on a function of available base measures require Business Processors. A supervisory requirement necessitates the definition of such complex transformations with available metadata constructs.

Business Processors are metadata constructs that are used in the definition of such complex rules. Business Processors are designed to update a measure with another computed value. When a rule that is defined with a Business Processor is processed, the newly computed value is updated on the defined target.

Based on the role that you are mapped to, you can access read, modify or authorize Business Processor. For all the roles and descriptions refer to Appendix A. The roles mapped to Business Processor are as follows:

- BMM Processor Access
- BMM Processor Advanced
- BMM Processor Authorize
- BMM Processor Phantom
- BMM Processor Read Only
- BMM Processor Write

You can access Business Processor window by expanding **Unified Analytical Metadata** within the tree structure of LHS menu and selecting **Business Processor**.



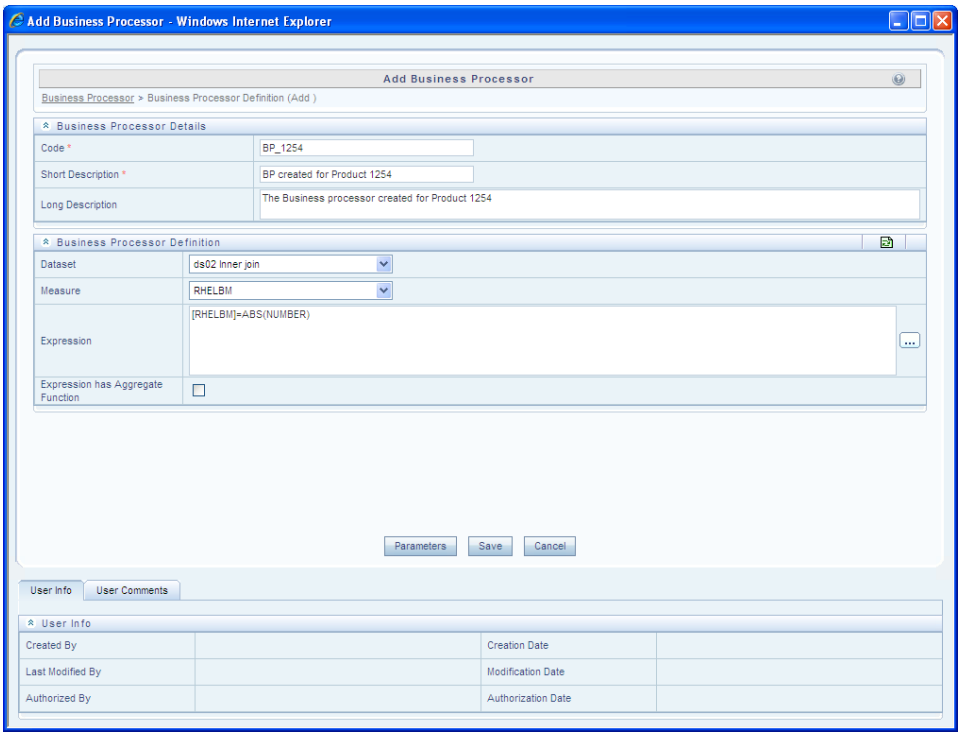

The *Business Processor* window displays the list of pre-defined Business Processors with their Code, Short Description, Long Description, Dataset, and Measure. The *Business Processor* window allows you to generate values that are functions of base measure values. Using the metadata abstraction of a business processor, power users have the ability to design rule-based transformation to the underlying data within the data warehouse / store. You can make use of Search and Filter option to search for specific Business Processors based on Code, Short Description, or Authorized status. The Pagination option helps you to manage the view of existing Business Processors within the system.

#### 3.6.1.1 Adding Business Processor

You need to be mapped to the role group BMM Processor Write to add a Business Processor.

To create a Business Processor from the *Business Processor* window:

1. Click button. The *Add Business Processor* window is displayed.




2. Enter the details as tabulated:

| Field | Description |
|---|---|
| Code | While creating a new Business Processor, you need to define a distinct identifier/Code. It is recommended that you define a code that is descriptive or indicative of the type of Business Processor being created. This will help in identifying it while creating rules.<br>Note the following:<br>▪ It is mandatory to enter a Code.<br>▪ The Code should be minimum eight characters in length; it can be alphabetical, numerical (only 0-9) or alphanumerical characters.<br>▪ The Code should start with an Alphabet.<br>▪ The Code cannot contain special characters with the exception of the underscore symbol (_).<br>▪ The saved Code or Short Description cannot be changed. |

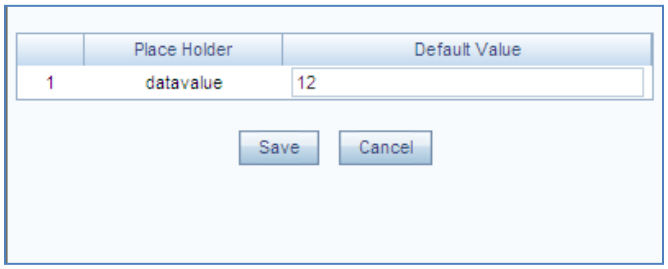
| Field | Description |
|---|---|
| Short Description | Short description is useful in understanding the content of the Business Processor you are creating. It would help to enter a description based on the code.<br>Note the following:<br>▪ It is mandatory to enter a Short Description.<br>▪ The Short Description should be of minimum one character and maximum of 80 characters in length.<br>▪ Only Alphanumeric, non-English, and Special characters such as “<blank space>”, “.”, “$”, “&”, “%”, “<”, “>”, “)”, “(“, “_”, and “-” are permitted to be entered in the Short Description field. |
| Long Description | The long description gives an in-depth understanding of the Business process you are creating. It would help you to enter a Long Description based on the code.<br>The Long Description should be of minimum one character and maximum 100 characters in length. |
| Data Set | Select the Data Set from the drop-down list. The list of available Data Sets for the selected Information Domain will appear in the drop-down.<br>The Short Description of the Data Sets as entered in the *Data Sets* window under **Business Metadata Management** will be reflected in the drop-down. |
| Measure | Select the Measure from the drop-down list. All base measures that are defined on any of the tables present in the selected Data Set will appear in the drop-down.<br>If the underlying measure is deleted after the Business Processor definition, then the corresponding **Business Processor** definition will automatically be invalidated. |

| Field | Description |
|---|---|
| Expression | Click button. The *Expression* window is displayed.<br>For more details on creating an expression using entities, functions and operators, refer *Create Expression* section.<br>The placeholder option enables the user to provide values for the constants in the expression. The user can specify values to the business processor expression during the run time rather than at definition time through the place holders defined while specifying the expression. The user can specify the expression in the "**Expression**" field.<br>Note the following:<br>▪ The values for the placeholders can be alphanumeric.<br>▪ The process of specifying place holders enables the user to execute the same business processor definition with different values during the run time. |
| Expression has Aggregate Function | The expression may require an aggregation function depending on the business logic. The aggregation functions have to be entered in the expression field per acceptable syntax. IF an aggregation function is used in the expressions, the checkbox "**Expression has Aggregate Function**" must be enabled. Leave the checkbox "**Expression has Aggregate Function**" blank if your expression does not contain an aggregation function. |

You can also:

- Click button in the *Business Processor Definition* grid to refresh the entries.
- Click **Parameters** button to specify default values for any of the placeholders defined.

The Business Processor Expression Parameters dialog is displayed.




Enter a default value for the place holders defined along with the expression in the **Default Value** box.

Click **Save** to save the default value for a Place Holder.

The *User Info* grid at the bottom of the window displays the metadata information about the Business Processor definition created along with the option to add comments.

3. Click **Save**. The Business Processor is saved and listed in the *Business Processor* window after validating the entries.

#### 3.6.1.2 Viewing Business Processor

You need to be mapped with the role group BMM Processor Read Only to view a Business Processor.

You can view individual Business Processor definition details at any given point. To view the existing Business Processor definition in the *Business Processor* window:

1. Select the checkbox adjacent to the required Business Processor code.
2. Click button from the *Business Processor* tool bar.

   The *View Business Processor* window displays the details of the selected Business Processor definition. The *User Info* grid at the bottom of the window displays the metadata information about the Business Processor definition along with the option to add comments.

#### 3.6.1.3 Editing Business Processor

You need to be mapped with the role group BMM Processor Write to edit Business Processor.

You can update the existing Business Processor definition details except for the Business Processor Code and Short Description. To update the required Business Processor definition details in the *Business Processor* window:

1. Select the checkbox adjacent to the required Business Processor code.
2. Click button from the *Business Processor* tool bar. The *Edit Business Processor* window is displayed.
3. Update the details as required. For more information refer Add Business Processor.
4. Click **Save** and update the changes.

#### 3.6.1.4 Copying Business Processor

You need to be mapped with the role group BMM Processor Write to copy business processor.

You can copy the existing Business Processor to quickly create a new Business Processor definition based on the existing rule details or by updating the required parameters. To copy an existing Business Processor definition in the *Business Processor* window:

1. Select the checkbox adjacent to the required Business Processor code in the list whose details are to be duplicated.
2. Click button from the Business Processor tool bar. **Copy** button is disabled if you have selected multiple checkboxes. The *Copy Business Processor* window is displayed.
3. Edit the Business Processor details as required. It is mandatory that you change the **Code** and **Short Description** values. For more information refer Add Business Processor.
4. Click **Save**. The defined Business Processor is displayed in the *Business Processor* window.

#### 3.6.1.5 Deleting Business Processor

You need to be mapped with BMM Processor Write to delete business processor.

You can remove Business Processor definition(s) which are no longer required in the system by deleting from *Business Processor* window.

1. Select the checkbox(s) adjacent to the Business Processor codes whose details are to be removed.
2. Click button from the *Business Processor* tool bar.
3. Click **OK** in the *Warning* dialog to confirm deletion.

   The selected Business Processor definitions are removed.

## 3.7 Expression

An Expression is a user-defined tool that supplements other IDs and enables to manipulate data flexibly. Expression has three different uses:

- To specify a calculated column that the Oracle Financial Services Analytical Application derivatives from other columns in the database.
- To calculate assignments in data correction.
- To create calculated conditions in data and relationship filters.

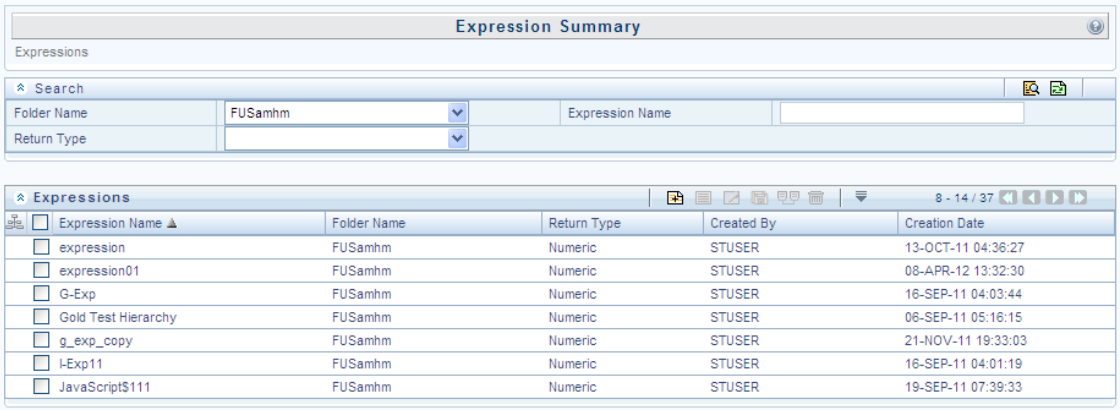
**Example**:- Calculations like average daily balances, current net book balance, average current net book balance, and weighted average current net rate can be created through Expressions.

### 3.7.1 Navigate to Expressions

You can access *Expression Summary* window by expanding **United Analytical Metadata** section within the tree structure of LHS menu and selecting **Expression**.

Based on the role that you are mapped to, you can access read, modify or authorize Expression window. For all the roles and descriptions refer to Appendix A. The roles mapped to Expression are as follows:

- Expression Access
- Expression Advanced
- Expression Authorize
- Expression Phantom
- Expression Read Only
- Expression Write




The *Expression Summary* window displays the list of pre-defined Expressions with other details such as the Expression Name, Folder Name, Return Type, Created By, and Creation Date. For

more information on how object access is restricted, see Object Security in Dimension Management module section.

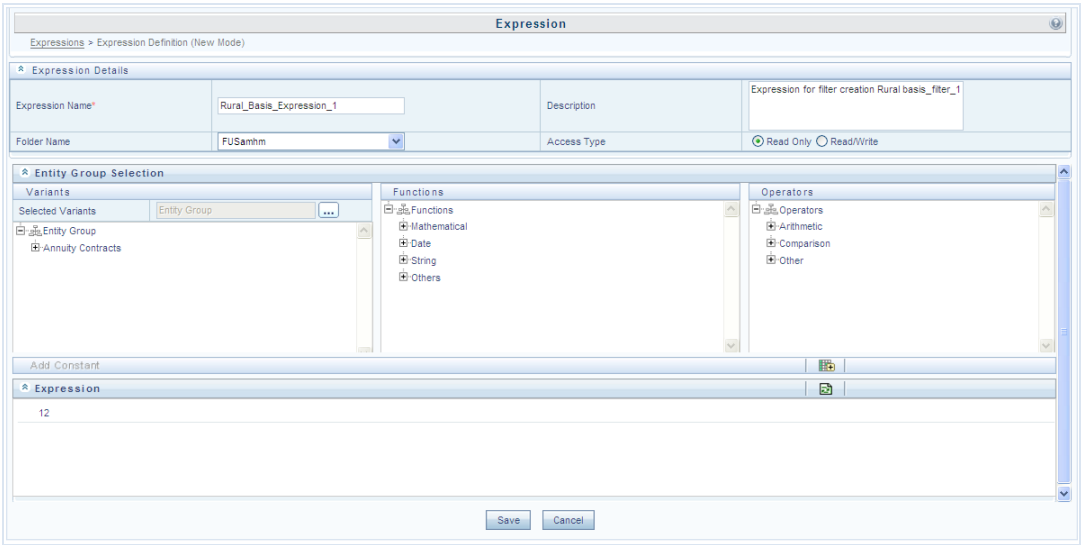
You can also make use of Search and Pagination options to search for a specific Expression definition based on Folder Name, Expression Name, or Return Type and view the list of existing definitions within the system. For more information, refer Pagination and Search and Filter.

### 3.7.2 Adding Expression Definition

This option allows you to add an expression definition using variables, functions, and operators. The Write role should be mapped to your user group.

To create a new Expression from the *Expressions Summary* window:

1. Click button in the Expressions Toolbar. The *New - Expression* window is displayed.




In the Expression Details grid:

- Enter the **Expression Name** and the required **Description**.

**NOTE:** Expression Name: The characters &' " are restricted in the name field. Description: The characters ~&+' "@ are restricted in the description field.

- Select the **Folder Name** from the drop-down list.
  - The *Folder selector* window behavior is explained in User Scope section.
  - Click to create a new private folder. The *Segment Maintenance* window is displayed. For more information, see Segment Maintenance.

**NOTE:** You can select **Segment/Folder Type** as Private and the **Owner Code** as your user code *only*.

- Select the **Access Type** as *Read Only* or *Read/Write*.
  - **Read-Only**: Select this option to give other users the access to only view the expression.

**NOTE:** A user with Phantom and Write role can modify or delete the expression even though the access type is selected as Read-only.

  - **Read/Write**: Select this option to give all users the access to view, modify (including Access Type) and delete the expression.

In the Entity Group Selection grid:

- In the Variants section, click button The *Variant Selection* window is displayed.
  - Select the **Entity Type** and **Entity Name** from the drop-down lists.
  - Select the required member and click . The member is displayed *Selected Members* list. Click to select all the Members.

    You can also click to deselect a Member or click to deselect all Members.
  - Click **OK**. The selected Entity Name and Members are displayed in the Variants section in the *New Expression* window.
- In the Variant s section, click "**+**" to expand Entity Group and double-click to select the required Entity. The selected Entity is displayed in the Expression grid.
- In the Function section, click "**+**" to expand Functions and select a function such as Mathematical, Date, String, or Others options. The selected Function is displayed in the Expression grid. For more information refer Function Types and Functions.
- In the Operators section, click "**+**" to expand Operators and select an operator such as Arithmetic, Comparison, or Others. The selected Operator is displayed in the Expression grid. For more information refer Operator Types.
- You can click button from the Add Constant grid to specify a Constant Value. Enter the numerical value and click .

  In the *Expression* grid, you can right-click on the expression and do the following:
  - Click **Replace Expression** ( ) to replace the expression with a new one.
  - Click **Insert Expression After** ( ) to insert a new expression after the selected expression.

- Click **Delete** ( ) to delete a selected expression.

  You can also click button in the *Expression* grid to clear the Expression.

2. Click **Save** to validate the entries and save the new Expression.

### 3.7.3 Viewing Expression

You can view individual Expression details at any given point. To view the existing Expression details the *Expression Summary* window:

1. Select the checkbox adjacent to the Expression Name.
2. Click button in the Expressions tool bar.

   The *View Expression* window is displayed with the Expression details.

### 3.7.4 Modifying Expression

You can modify the Expression details as required in the *Edit – Expression* screen.

1. Select the checkbox adjacent to the Expression Name whose details are to be updated.
2. Click button and the *Edit – Expression* window is displayed. Modify the required changes. For more information refer Add Expression Definition.
3. Click **Save** and upload the changes.

### 3.7.5 Copying Expression

The Copy Expression facilitates you to quickly create a new Expression based on the existing parameters or by updating the values. To copy an existing Expression in the *Expression Summary* window:

1. Select the checkbox adjacent to the Expression Name which you want to create a copy.
2. Click button in the Expressions tool bar. **Copy** button is disabled if you have selected multiple checkboxes. The *Copy – Expression* window is displayed.
3. In the Copy – *Expression* window you can:
   - Create new Expression with existing variables. Specify a new **Filter Name** and click **Save**.
   - Create new Expression by updating the required variables. Specify a new Expression Name and update the required details. For more information refer Add Expression Definition. Click **Save.**

   The new Expression details are displayed in the *Expression Summary* window.

### 3.7.6 Checking Dependencies

You can view the dependencies of a defined Expression in the *Expression Summary* screen:

1. Select the checkbox adjacent to the required Expression Name.
2. Click button in the Expressions tool bar. The **Check Dependencies** button is disabled if you have selected multiple expressions.

   The *Dependent Objects* window is displayed with Object id, Name, and id type of the dependant Objects.

### 3.7.7 Deleting Expression

You can delete an expression which has Read/Write Access Type. To delete an expression from the *Expression Summary* window:

1. Select the checkbox adjacent to the Expression Name(s) whose details are to be removed.
2. Click button in the Expressions tool bar.
3. Click **OK** in the information dialog to confirm deletion.

## 3.8 Filter

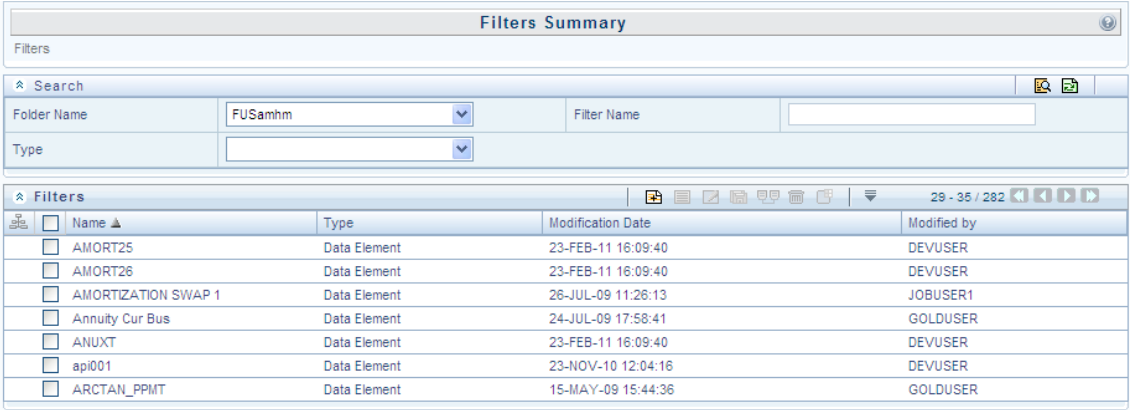
Filters in the Infrastructure system allows you to filter metadata using the defined expressions.

### 3.8.1 Navigating to Filters

You can access Filters by expanding **United Analytical Metadata** section within the tree structure of LHS menu and selecting **Filter**.

Based on the role that you are mapped to, you can access read, modify or authorize Filters window. For all the roles and descriptions refer to Appendix A. The roles mapped to Filters are as follows:

- Filter Access
- Filter Advanced
- Filter Authorize
- Filter Phantom
- Filter Read Only
- Filter Write




The *Filters Summary* window displays the list of Filters created in all public folders, shared folders to which you are mapped and private folders for which you are the owner, along with the other details such as the Name, Type, Modification Date, and Modified By. For more information on how object access is restricted, see Object Security in Dimension Management module section.

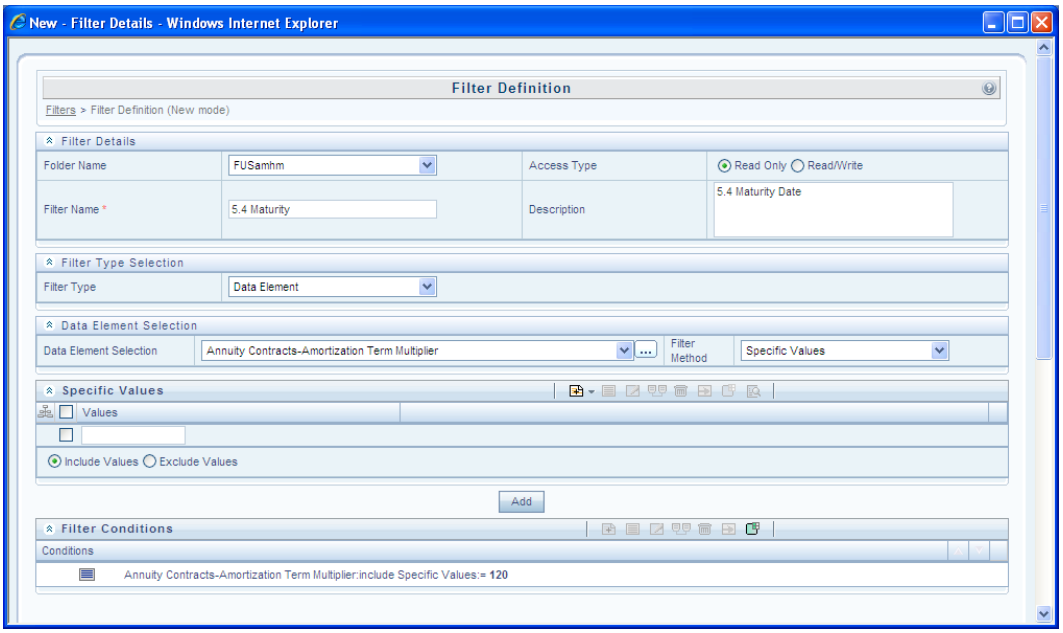
You can also make use of Search and Pagination options to search for a specific Filter definition based on Folder Name, Filter Name, or Type and view the list of existing definitions within the system. If you have selected Hierarchy filter type, the Dimension drop-down list is also displayed. For more information, refer Pagination and Search and Filter.

#### 3.8.1.1 Adding Filter Definition

This option allows you to add a filter. Filter can be of 4 types namely, Data Element, Hierarchy, Group, and Attribute. To create filter definition, the Write role should be mapped to your user group.

To create a new filter from the *Filters Summary* window:

1. Select the button in the Filters toolbar. **Add** button is disabled if you have selected any checkbox in the grid. The *New - Filter Details* window is displayed.




2. Enter the Filter Details section details as tabulated:

| Field | Description |
|---|---|
| Folder Name | Select the Folder Name where the Filter is to be stored from the drop-down list.<br>The *Folder selector* window behavior is explained in User Scope section.<br>Click to create a new private folder. The *Segment Maintenance* window is displayed. For more information, see Segment Maintenance.<br>**Note**: You can select **Segment/Folder Type** as Private and the **Owner Code** as your user code *only*. |
| Access Type | Select the Access Type as **Read Only** or **Read/Write.**<br>▪ **Read-Only**: Select this option to give other users the access to only view the filter definition.<br>**Note**: A user with Phantom and Write role can modify or delete the filter even though the access type is selected as Read-only.<br>▪ **Read/Write**: Select this option to give all users the access to view, modify (including Access Type) and delete the filter definition. |
| Filter Name | Enter the filter name in the **Filter Name** field.<br>**Note**: The characters &' " are restricted. |
| Description | Enter the description of the filter in the **Description** field.<br>**Note**: The characters ~&+' " @ are restricted. |

3. In the *Filter Type Selection* select the **Filter Type** from the drop-down list.

The *Filter Details* grid fields remain the same despite the Filter Type selected. There are four different Filter Types available in the *Filter Type Selection* grid as tabulated. Click on the links to navigate to the appropriate sections.

| Filter | Description |
|---|---|
| Data Element | **Data Element Filter** is a stored rule that expresses a set of constraints. Only columns that match the data type of your Data Element selection are offered in the Data Element drop-down list box.<br>**Example**: Balances between 10,000 and 20,000 Accounts opened in the current month Loans with amortization terms greater than 20 years.<br>Data Element Filters can access most instrument columns and most columns in the Management Ledger. Data Element Filters are used within other OFSAA rule types<br>(e.g., Allocation rules, Transfer Pricing rules, Asset \| Liability Management rules, etc) |
| Hierarchy | **Hierarchy Filter** allows you to utilize rollup nodes within a Hierarchy to help you exclude (filter out) or include data within an OFSAA rule.<br>**Example**: You might want to process data for a specific set of divisions or lines of business where you have a Hierarchy rule that expresses those divisions or lines of business as rollup nodes. A Hierarchy Filter could be constructed to "enable" the Commercial and Retail lines of business while NOT enabling the Wealth Management line of business. Each of these lines of business might include a handful or even thousands of cost centers. When incorporated into an OFSAA processing rule, this Hierarchy Filter would include every cost center in the Commercial and Retail lines of business. |
| Group | **Group Filters** can be used to combine multiple Data Element Filters with a logical "AND".<br>**Example**: If Data Element Filter #1 filtered on mortgage balances greater than 100,000 and Data Element Filter #2 filtered on current mortgage interest rates greater than 6%, you could construct a Group Filter to utilize both Data Filters. In this case, the resulting Group Filter would constrain your data selection to mortgage balances greater than 100,000 AND current mortgage interest. |
| Attribute | **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.<br>**Example**: Consider a filter that selects all records where the dimension *Common Chart of Account member* represents an attribute value *Expense account*, i.e., the attribute **"Account Type" = Expense**. |

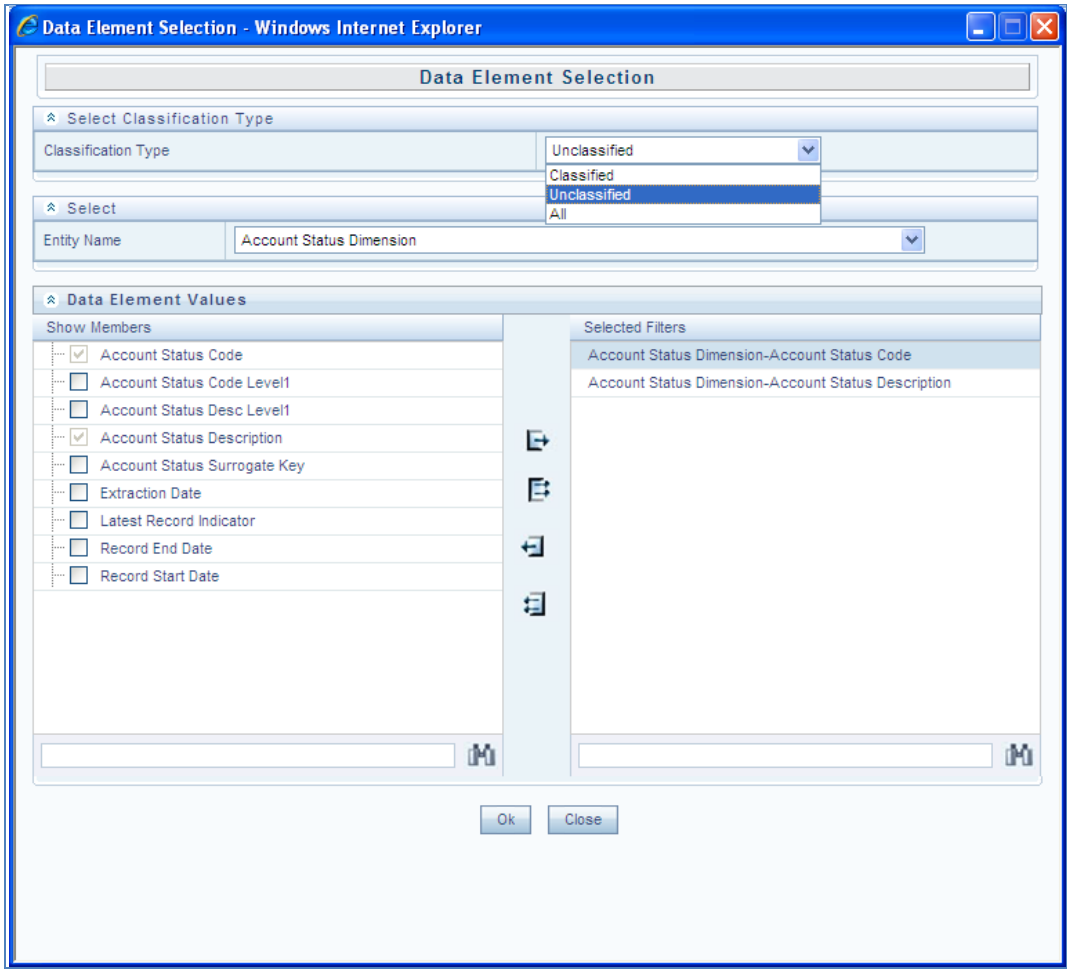
| Filter | Description |
|---|---|
| | Now, using Attribute Filters, you can specify complex criteria as given below:<br>Common Chart of Accounts where the Account Type attribute is Earning Assets or Interest-bearing Liabilities, and the Accrual Basis attribute is Actual/Actual<br>Also, You could further refine the filter by adding another condition for:<br>Organizational Unit where the Offset Org ID is a specific Org member<br>The Filter then saves these criteria rather than the member codes which meet the criteria at the time the Filter is saved. During execution, the engine dynamically selects all records from your processing table (e.g. Mortgages, Ledger, etc.), which meet the specified member attribute criteria. |

Once the required filter conditions are defined, save the Filter definition.

#### 3.8.1.2 Define Data Element Filter

When you have selected the Filter Type as Data Element, define the Filter conditions by doing the following in the *Data Element Selection* section:

1. In the *Data Element Selection* section, click button. The *Data Element Selection* window is displayed.




- Select any of the following Filter Classification Type from the drop-down list:
  - **Classified** - This is the default selection and displays all the classified EPM specific entities. If you are an EPM user, you need to select this option while defining Data Element Filter to list all the related entities.
  - **Unclassified** - This option displays all the non-classified i.e. non EPM specific entities. If you are a non EPM user, you need to select this option while defining Data Element Filter to list all the related entities.
  - **All** - This option will select all the tables available in the selected Information Domain irrespective of whether an entity has its table is classified or not.
- In the **Entity Name** drop-down list select a database table. The associated members are displayed in the *Show Members* section.
- Select the required member and click . The member is listed in the *Selected Members* panel. Click to move all Members.

  You can click to deselect a Member or click to deselect all Members.

- Click **OK**. The selected Data Elements are displayed in the **Data Element Selection** field.

2. Select the **Filter Method** from the drop-down list.

   For each column you wish to include in your Data Filter definition, you must specify one of the following Filter Method:

| Filter | Description |
|---|---|
| Specific Values | **Specific Values** are used to match a selected database column to a specific value or values that you provide. You may either include or exclude Specific Values.<br>You can add additional values by clicking on the button, and reduce the number of Specific Values by clicking on the checkbox to the left of a value and then clicking on the button.<br>▪ When comparing Specific Values for a character type column, you must provide Specific Values that are character strings.<br>▪ When comparing Specific Values for a date type column, you must provide Specific Values that are dates (the application displays a Calendar control).<br>▪ When comparing Specific Values for a numeric column, you must provide Specific Values that are numbers.<br>Select **Include Values** or **Exclude Values** to include or exclude the selected values. |
| Ranges | **Ranges** are used to match a selected database column to a range of values or to ranges of values that you provide. You may either include or exclude Range values.<br>Range Type is available for OFSA Datatype Term, Frequency, Leaf, Code, and Identity and Column Datatype Date, Numeric and Varchar.<br>You can add additional values by clicking button and you can reduce the number of Ranges by clicking the checkbox to the left of a value and then clicking button.<br>▪ If the Column Datatype is VARCHAR, provide Specific Values (alphanumeric) that are character strings.<br>▪ If the Column Datatype is DATE, provide Specific Values that are dates (the application displays a Calendar control).<br>▪ If the Column Datatype is Numeric, provide Specific Values that are numbers.<br>▪ If OFSA Datatype is LEAF, provide either numeric values or click to select the numeric member ids.<br>▪ If OFSA Datatype is CODE, provide either numeric values or click to select the numeric member ids.<br>▪ If OFSA Datatype is IDENTITY, provide specific numeric values. However, no validation is done during save to validate the input value for a valid identity |

| Filter | Description |
|---|---|
| | code.<br>Select **Include Values** or **Exclude Values** to include or exclude the selected values |
| Another Data Element | **Another Data Element** is used to match a selected database column to another database column. When constructing 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).<br>You may use any of the following operators when choosing the Another Data Element Filter Method:<br>=, <> (meaning "not equal to"), <, >, <=, or >=. |
| Expression | **Expression** is used to match a selected database column to the results of an OFSAAI Expression rule.<br>You may any of the following operators when choosing the Expression Filter Method:<br>=, <> (meaning "not equal to"), <, >, <=, or >=. |

- Click **Add** to list the completed filter conditions in the *Filter Conditions* grid.
- Click **Update** after modifying a filter condition to update in the *Filter Condition*s grid.
- Click ▲ or ▼ buttons to move a selected Filter Condition up or down.
- Click button to delete selected individual Filter Conditions records.

3. Click **Add/Update** in the *Filter Definition* window if you are creating a new or updating an existing Filter definition.
4. Click **Save** to validate the entries and save the filter details.

#### 3.8.1.3 Define Hierarchy Filter

When you have selected the Filter Type as Hierarchy, define the Filter conditions by doing the following in the *Hierarchy Selection* section:

1. Select the required **Dimension** from the drop-down list.
2. Select the associated **Hierarchy** from the drop-down list. You can select **More** to search for a specific Hierarchy in the *Hierarchy more* dialog.
3. Select any combination of rollup points and leaf (last descendent child) values.

   In the *New – Filter Details* window you can:

   - Click button to search for a hierarchy member using Dimension Member Alphanumeric Code, Dimension Member Numeric Code, Dimension Member Name, or Attribute and by keying in Matching Values in the *Search* dialog.
   - Click or to expand or collapse the members under a node.
   - Click or to expand a branch or collapse a branch.
   - Click or to focus or unfocus a selected node except the root node.
   - Click or to toggle the display of Numeric Code or Alphanumeric code at left of the nodes, right of the nodes, or to hide.

   You can also click button to find a member present in the nodes list using key words. For large tree (nodes>5000), this search will not return any value if the tree is not expanded.
4. Click **Save** to validate the entries and save the filter details.

#### 3.8.1.4 Define Group Filter

When you have selected the Filter Type as Group, define the Filter conditions by doing the following in the *Data Element Filters* grid:

1. Select the checkbox(s) adjacent to the required member names in the *Available Filters* section and click . The selected members are displayed in the *Selected Filters* section. Click to select all the Members.

   You can click to deselect a Member or click to deselect all the Members.

   You can also click button to search for a member in the *Data Element Filter Search* dialog using **Folder Name** and **Filter Name**.
2. Click **Save** to validate the entries and save the filter details.

#### 3.8.1.5 Define Attribute Filter

When you have selected the Filter Type as Attribute, define the Filter conditions by doing the following in the *Attribute Selection* section:

1. Select the required **Dimension** from the drop-down list.
2. Select the associated **Attribute** from the drop-down list. The list consists of only *Dimension Type* attributes for selection.
3. Click button in the *Attribute Values* grid. The *Attribute Values* window is displayed.

   In the *Attribute Values* window, the **Dimension** field under *Dimension* grid is auto populated with the Dimension name with which the selected Attribute is defined and is non-editable. In the *Search* grid you can search for Attribute Values depending on Alphanumeric Code, Numeric Code, or Name.
4. Select the checkbox(s) adjacent to the Alphanumeric Codes of the required Attribute Values in the *Attribute Values* grid and click **OK**. The *Attribute Values* grid displays the selected attribute values.

   Select Attribute Value(s) in the *Attribute Values* grid and click button to delete it.

   You can use the Attribute Values present in the *Attribute Values* grid to generate conditions.
5. Click **Add** button in the *Attribute Values* grid. The *Filter Conditions* grid is populated with the filter condition using all the Attribute values.

   **NOTE:** You cannot define two conditions using the same attributes. Because conditions are joined with a logical 'AND' and this will make the query invalid.

   In the *Filter Conditions* grid, you can select a condition to view the Attribute Values used to generate it and can update the condition.

   You can also click button to view the SQL statement in *View SQL* window. Click button to view a long filter condition in *View Condition* dialog.
6. Click **Save**. The Attribute Filter definition is saved.

### 3.8.2 Viewing Filter Definition

You can view individual Filter details at any given point.

To view the existing Filter Definition details in the *Filters Summary* window:

1. Select the checkbox adjacent to the Filter Name.
2. Click button in the Filter tool bar.

The *View – Filter Details* window is displayed with the filter details.

### 3.8.3 Modifying Filter Definition

This option allows you to modify the details of Filters.

1. Select the checkbox adjacent to the Filter Name whose details are to be updated.
2. Click button and the *Edit – Filter Details* window is displayed. Modify the required changes. For more information refer Add Filter Definition.
3. Click **Save** to save the changes.

### 3.8.4 Copying Filter Definition

The Copy Filter Definition facilitates you to quickly create a new Filter Definition based on the existing parameters or by updating the values.

To copy an existing Filter Definition in the *Filters* window:

1. Select the checkbox adjacent to the Filter Name which you want to create a copy.
2. Click button in the Filters tool bar. **Copy** button is disabled if you have selected multiple checkboxes. The *Copy – Filter Details* window is displayed.
3. In the Copy – *Filter Details* window you can:
   - Create new filter definition with existing variables. Specify a new **Filter Name** and click **Save**.
   - Create new filter definition by updating the required variables. Specify a new Filter Name and update the required details. For more information refer Add Filter Definition. Click **Save.**

   The new filter definition details are displayed in the *Filters Summary* window.

### 3.8.5 Checking Dependencies

You can view the dependencies of a defined Filter. You can use filter in a Run definition. However, the Run definitions are not shown as dependent objects when you check dependency for a filter. This is a limitation.

To check the dependencies of a filter from the Filters Summary window:

1. Select the checkbox adjacent to the Filter Name.
2. Click button in the Filters tool bar. The **Check Dependencies** button is disabled if you have selected multiple members.

   The *Dependent Objects* window is displayed with Object ID, Name, and ID Type of the dependant Objects.

### 3.8.6 Viewing SQL of Filter

You can view the corresponding SQL of a defined filter.

To view the SQL of a filter from the *Filters Summary* window:

1. Select the checkbox adjacent to the filter to view the SQL.
2. Click button. The SQL equivalent of the selected filter is displayed in the *View SQL* window

### 3.8.7 Deleting Filter Definition

You can remove the Filter Definitions which are not required in the system by deleting from the *Filters Summary* window.

**NOTE:** A filter definition with dependency cannot be deleted. However, if the dependent object is a Run Definition, you are able to delete the filter definition. This is a limitation.

1. Select the checkbox adjacent to the Filter Name whose details are to be removed.
2. Click button in the Filters tool bar.
3. Click **OK** in the information dialog to confirm deletion.

## 3.9 Map Maintenance

The *Map* Maintenance window facilitates to control how dimension members are shared among users within an information domain. You can map multiple hierarchies to user groups available in OFSAAI so that the mapped members only can be viewed by the users belonging to that user group. You can set a mapper definition as the default Security mapper for an information domain. Based on the members mapped in a security mapper, the hierarchy browser window in OFSAAI framework displays the members of the hierarchy along with its descendants.

**NOTE:** Since a hierarchy's member security is maintained at user group level, the member maintenance related functions like add, edit, copy, and delete will be the same for all users across all the enabled members in the hierarchy maintenance window.

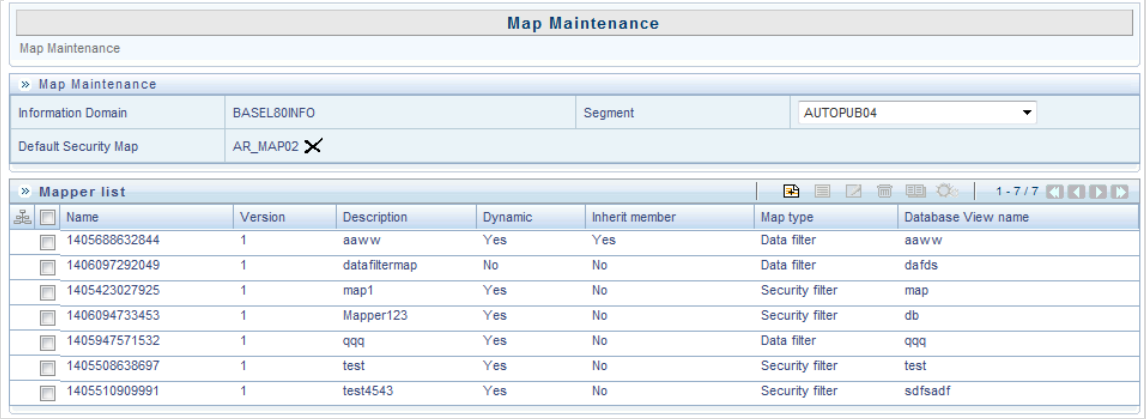
For understanding the Hierarchy Security feature, see Scenario to Understand Hierarchy Security section.

To access the *Map Maintenance* window, you should be mapped to Access role. To create, modify, and delete a mapper, you should be mapped to Write role.

Based on the role that you are mapped to, you can access, read, modify, or authorize Map Maintenance. For all the roles and descriptions, refer to Appendix A. The roles mapped to Map Maintenance are as follows:

- Mapper Access
- Mapper Advanced
- Mapper Authorize
- Mapper Phantom
- Mapper Read Only
- Mapper Write

You can access the *Map Maintenance* window by expanding **Unified Analytical Metadata** from the LHS menu and clicking **Map Maintenance**.



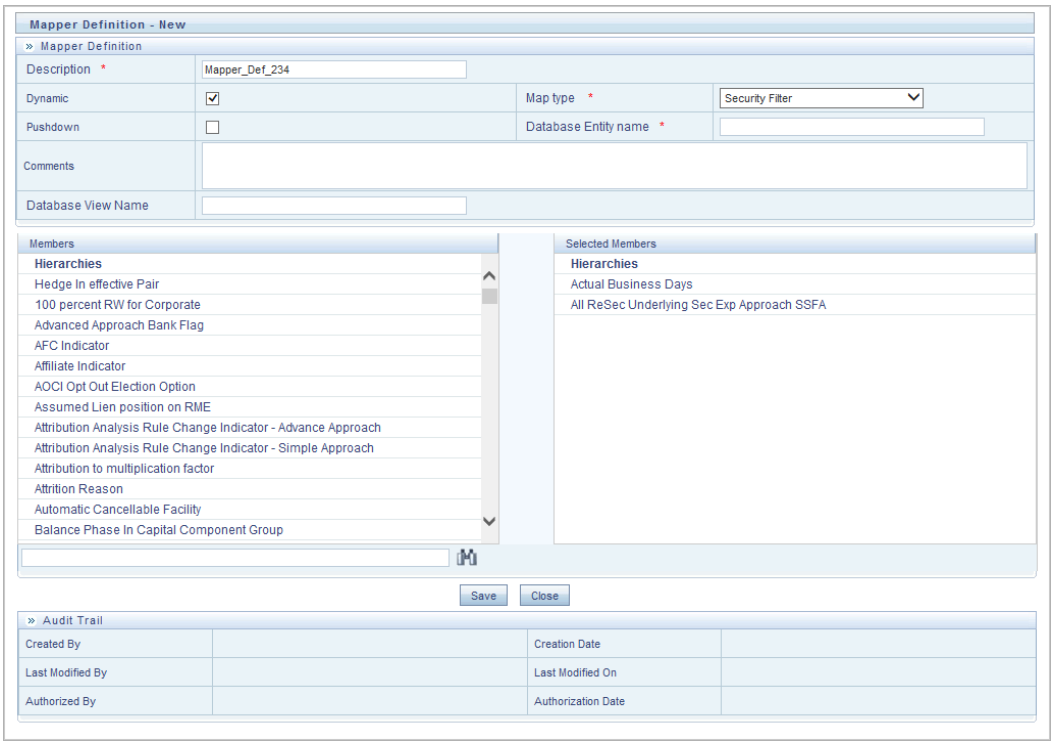

The *Map Maintenance* window displays the Name, Version, Description, Dynamic, Inherit Member, Map Type, and Database View name for the available mapper definitions created in the selected **Segment** and Infodom. Segments facilitate the classification of related metadata in a single segment. You have access to only those metadata objects that are mapped to the same segment to which you are mapped.

### 3.9.1 Creating a Mapper Definition

This option allows you to create a mapper definition by selecting the required hierarchies. You can create a data filter or security filter type mapper definition. For a security filter mapping, you should select the default user group hierarchy present in OFSAAI as a hierarchy. You can select up to 9 hierarchies in a mapper definition. You need to be mapped to the role Mapper Write to create mapper definition.

To create a new mapper definition from the *Map Maintenance* window:

1. Click from the Mapper List tool bar. The *Mapper Definition* window is displayed.




All Hierarchies including the default user group hierarchy for the selected infodom are listed under the *Members* pane.

2. Enter the mapper definition details as tabulated:

| Field | Description |
|---|---|
| Fields marked in red asterisk (*) are mandatory. | |
| Description | Enter a description for the map definition. |
| Dynamic | By default, the checkbox is selected and you do not have the option to deselect this. The dynamic attribute is associated with a mapper definition which facilitates the accommodation of latest members of a slowly changing dimension by leveraging the push down functionality. |

| Field | Description |
|---|---|
| Map Type | This drop-down list is enabled only if the **Dynamic** checkbox is selected. Otherwise, data filter is selected and this field is disabled.<br>Select the Map type. The available options are:<br>▪ **Data Filter**: Select this option to define a data filter type mapping, which does not require a user group hierarchy to be selected among the participating hierarchies.<br>▪ **Security Filter**: Select this option to define a security filter type mapping, which can be used to restrict access to members of a hierarchy based on user groups. For a security filter, the user group hierarchy should be attached with the definition. You can add other hierarchies to this definition and will not have the option of saving the mapper definition without using a User Group hierarchy. |
| Pushdown | Select the checkbox if you want implicit push down of the mappings whenever mappings are modified and saved through the *Mapper Maintenance* window. |
| Database Entity Name | Enter the name for the table/entity to be created in the atomic schema that will be used to store the exploded mappings. The database entity name can be alpha numeric, however should not start with a numeric character. |
| Comments | Enter any additional information about the mapper definition. |
| Database View Name | Enter the Database View name to be created for the selected database entity. The View will be created in the atomic schema with Hierarchy code as the column name. |

3. Click the required hierarchies from the *Members* pane. The selected hierarchies are displayed under the *Selected Members* pane.

   Note the following:

   - User group hierarchy should be selected for a security mapper definition. If not selected then a validation message providing information about the User Group hierarchy to be selected is displayed back to the user during the save operation.
   - The Hierarchies selected in the *Mapper Definition* window should not contain special characters “~” (Tilde) and “$” (Dollar) in their node descriptions.

4. Click **Save** to save the mapper definition details.

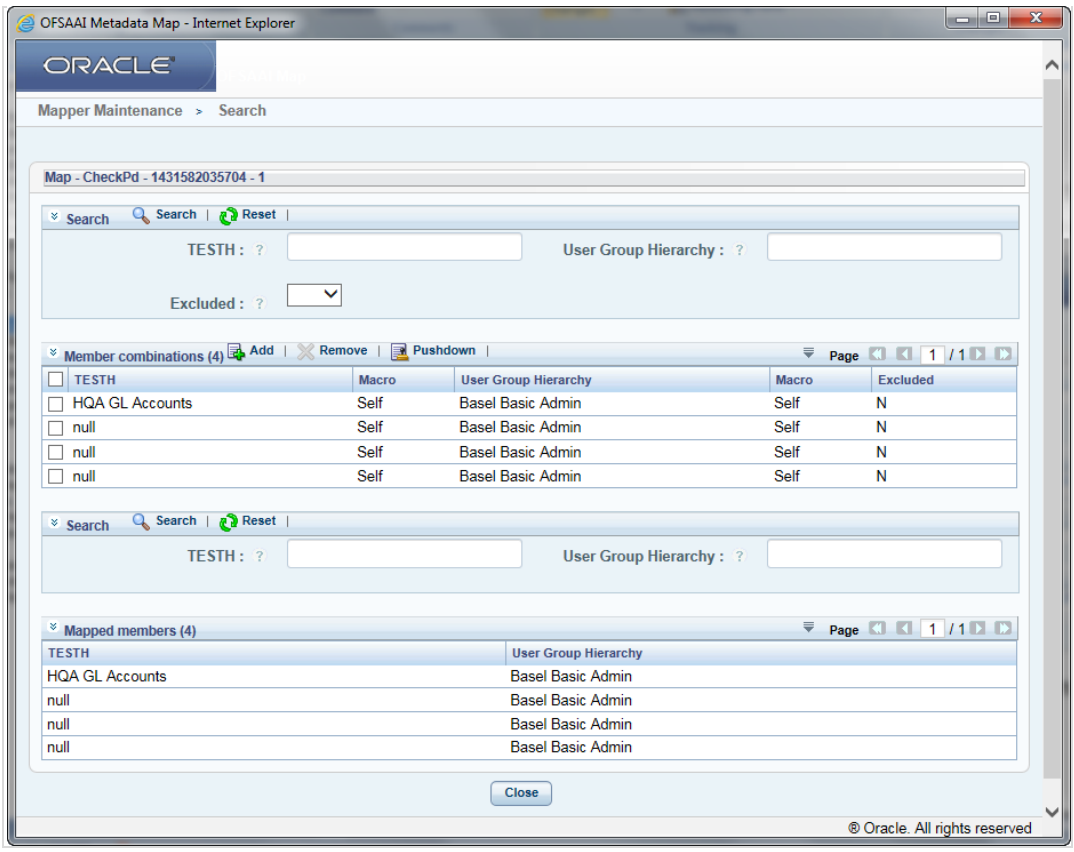
   The Mapper definition is saved with the version number as 1 in the authorized state and the same is displayed in the refreshed *Mapper List* grid in *Map Maintenance* window.

### 3.9.2 Mapper Maintenance

The Mapper Maintenance feature allows you to define the mappings among the participating hierarchies in the *Mapper Definition* window. You should select at least one member from each hierarchy to define a mapping. You can add multiple mappings among the hierarchies. The mappings will be stored in the database entity/table you have created during the mapper definition for further processing i.e. push down operation. After defining all mappings, you can push down the mappings to be effective in the system (The push down will be implicit if the same was opted at the mapper definition time). You need to be mapped to the role Mapper Access to access the Mapper Maintenance feature.

To define the mappings:

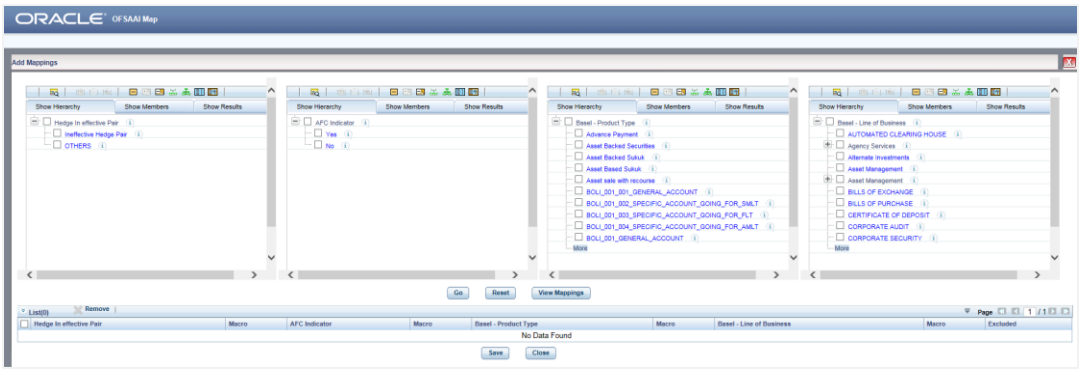
1. From the *Map Maintenance* window, select the mapper definition and click button on the *Mapper List* tool bar. The *Map* window is displayed.



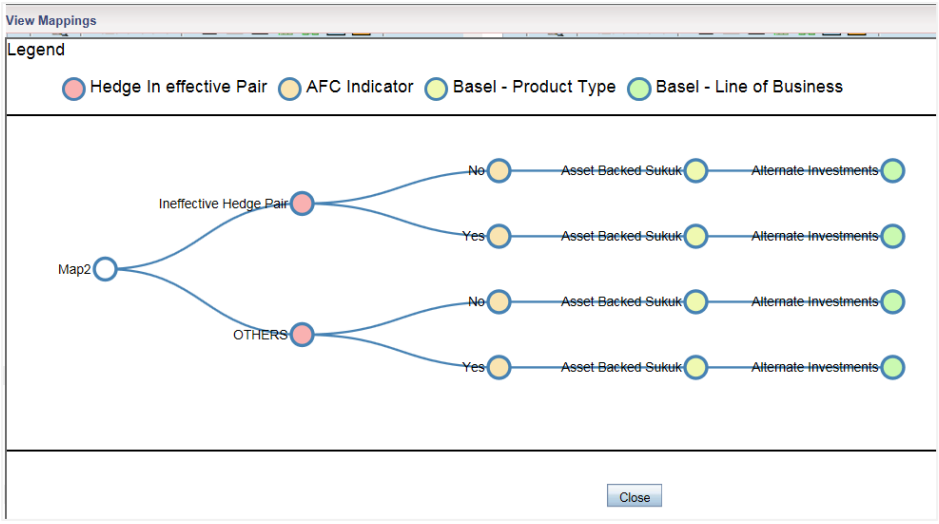

Based on the hierarchies participating in the mapper definition, the search fields will be displayed.

2. Click **Add** on the *Member Combinations* toolbar.

The hierarchies that were selected in the *Mapper Definition* window appear in the *Add Mappings* pane, along with their members.




3. Select the required hierarchy members from each hierarchy and click **View Mappings** to view the already available mapping combinations with the selected hierarchy members. The *View Mappings* window is displayed.




4. Click **Close** to close the *View Mappings* window.

5. To add a new mapping from the *Add Mappings* window, select the required hierarchy members from each hierarchy and the corresponding user group to which you want to map in case of security mapper and click **Go**. Each mapping definition gets listed in the below grid. You should select at least one member from each hierarchy to obtain a complete mapping.

| | |
|---|---|
| **NOTE:** | If a child is mapped and parent is not mapped, the parent will be displayed as disabled in the hierarchy browser window. |

6. Enter the mapping details as tabulated:

| Field | Description |
|---|---|
| Macro | This drop-down list allows you to define conditions based on which the members will be mapped. The options are:<br>▪ **Self Only**: Select this option if you want only the selected member to be mapped. If this option is selected, the hierarchy browser will display the selected member in enabled mode. If it has any descendants, those will be displayed in disabled mode.<br>▪ **Self & Desc**: Select this option if you want the selected members along its descendants to be mapped. |
| Exclude | Select **Yes** if you want to exclude certain members from being mapped.<br>For example, if you want to map a hierarchy to all user groups except one user group say UG1, then map the hierarchy to UG1 and select the **Exclude** option as **Yes**. This will ensure that all users belonging to user groups except UG1 can access all the members of the hierarchy. |

7. Click **Save**. All the mappings will be listed in the *Member Combinations* pane.
8. Click **Pushdown** to refresh the mapping of participating hierarchies available in the system. A service will push down the mappings based on config schema data (used combinations having macros) in to the atomic schema (exploded mappings). The pushed down mapping i.e. the exploded mappings will be displayed in the *Mapped members* pane.
9. Select a mapping from the first panel and click **Remove** if you want to remove the mapping from the mapper. You should click **Pushdown** to effect these changes in the system.

### 3.9.3 Default Secure Map

This option allows you to set a mapper definition as the default security mapper at infodom level. You can have different security filter type mapper definitions but in OFSAAI platform, the default security mapper is used to provide hierarchy member security. If a mapper is not set as a default security mapper, hierarchy browser will display all the members of the hierarchy in enabled mode and hierarchy member security will not be available under such circumstances.

Click on the *Mapper List* toolbar to set a mapper as a default secure mapper. Once selected, this information will be displayed in the mapper summary window. A delete icon will also be available adjacent to it to remove the default security map from the system.

**NOTE:** A Security Filter type mapper definition having the user group hierarchy (seeded by OFSAAI) in its definition can only be identified as a default security mapper and

this validation will be performed by the application. When a mapper is set as the default security map in an information domain, it overrides the existing default security map if present in the infodom.

### 3.9.4 Modifying Mapper Definition

You can update only the **Comments** field and the pushdown option. You need to have Mapper Write role mapped to your user group to modify a Mapper definition.

To update the Map Maintenance details in the *Map Maintenance* window:

1. Select the checkbox adjacent to the required Mapper code.
2. Click button from the *Mapper* List tool bar. The *Mapper Definition* window is displayed.
3. Update the **Comments** field or the push down option as desired (The push down option will be available for edit only in case of dynamic mapper definitions and this option will be disabled in case of non dynamic mapper definitions).
4. Click **Save** and update the changes.

### 3.9.5 Copying Mapper Definition

The Copy Mapper Definition allows you to quickly create a new Mapper Definition based on the existing hierarchies and mappings. You can then add more hierarchies and mappings as required.

Note the following points:

- When you copy a Mapper definition, all the existing hierarchies and mappings get preselected and copied to the new Mapper definition.
- You cannot remove the existing hierarchies from the new Mapper definition.
- You can add up to 9 hierarchies (including the existing ones) to the new Mapper definition.
- If you are copying a Mapper definition which has mappings (done through the *Mapper Maintenance* window), then
  - The parent node /default node of the new hierarchy will get mapped with existing hierarchy member combinations
  - You need to select a hierarchy that has default data. Otherwise, an alert message is displayed prompting you to select a hierarchy with default data.
- You cannot edit the fields **Dynamic** and **Map Type**.
- Pushdown will not happen automatically. You need to do the Pushdown operation of the new Mapper definition explicitly.

To copy an existing Mapper Definition in the *Map Maintenance* window:

1. Select the checkbox adjacent to the Mapper Name which you want to copy.
2. Click button in the *Mapper list* tool bar. The **Copy** button is disabled if you have selected multiple checkboxes. The *Mapper Definition- Copy* window is displayed.
3. Enter the required details in the **Description, Database Entity Name, Database View Name** and **Comments fields**. For more information, refer to Creating a Mapper Definition.
4. Select the **Pushdown** checkbox if you want implicit push down of the mappings whenever mappings are modified.
5. Select the required hierarchies from the *Members* pane. The selected hierarchies are displayed under the *Selected Members* pane. Click **Save.**

The new Mapper definition details are displayed in the *Map Maintenance* window. Select the new Mapper and click button on the *Mapper List* tool bar to add mappings to the newly added hierarchies.

### 3.9.6 Deleting Mapper Definition

You can remove the Mapper definition(s) which are created by you and which are no longer required in the system by deleting from the *Map Maintenance* window. You need to have Mapper Write role mapped to your user group to delete a Mapper definition.

To delete a Mapper definition from the *Map Maintenance* window:

1. Select the checkbox adjacent to the required Mapper definition code.
2. Click button from the Mapper List tool bar. A confirmation dialog is displayed. If a default security map was selected for deletion, then the same will be indicated in the confirmation dialog. The mapper code will be followed by '(D)' to indicate that the default security map has also been selected for deletion.
3. Click **OK**. The Mapper definition details are deleted.

### 3.9.7 Non Dynamic Mapper definitions

The existing mapper definitions available in the system will be treated as non dynamic mapper definitions. You can continue to use such mapper definitions, that is, all functionalities supposed to be applicable for an existing mapper definition will be available to you.

## 3.10 Analytics Metadata

Analytics Metadata section consists of the following sections:

Dimension

Essbase Cube

OLAP Cube

Catalog

### 3.10.1 Dimension

Business Dimension within the Infrastructure system facilitates you to create a logical connection with measures. It gives you various options across which you can view measures. A Business Dimension is a structure of one or more logical grouping (hierarchies) that classifies data. It is the categorization across which measures are viewed. A dimension can have one or more hierarchies.

You can access *Business Dimension* window by expanding **Unified Analytical Metadata** and **Analytics Metadata** within the tree structure of the LHS menu and selecting **Dimension**.

The dimension specific details are explained in the following table:

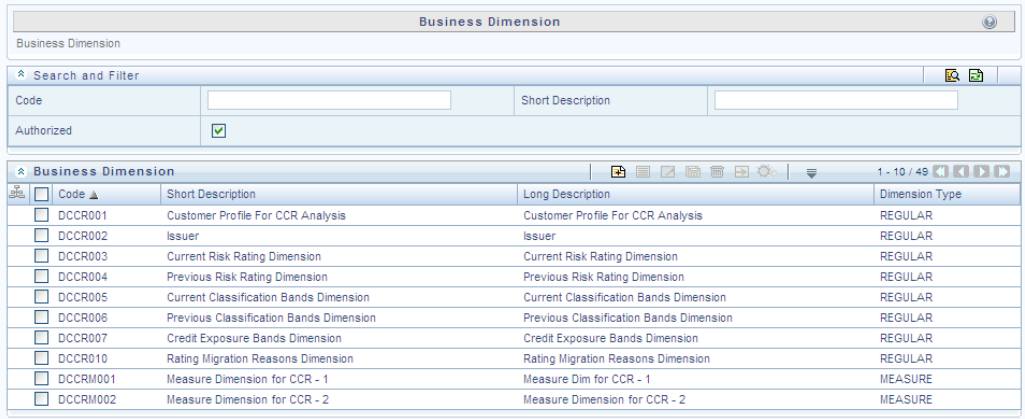
| Field | Description |
|---|---|

| Field | Description |
|---|---|
| Dimension Properties | Displays the Dimension Type and Data Type of the selected dimension object. |
| Depends on | Displays the Hierarchy object which is used in creating the dimension.<br>Click the object link to drill down for more details. |
| Used In | Displays the Essbase cube object in which the dimension is used.<br>Click the object link to drill down for more details. |
| Applications | Displays the applications in which the dimension is used. |

Based on the role that you are mapped to, you can access read, modify or authorize Dimension. For all the roles and descriptions refer to Appendix A. The roles mapped to Business Dimension are as follows:

- Dimension Access
- Dimension Advanced
- Dimension Authorize
- Dimension Phantom
- Dimension Read Only
- Dimension Write

Based on the user requirements you can define different dimensions as Regular, Time, or Measure. A Dimension combined with measures helps in business query. Since dimension data is collected at the lowest level of detail and then aggregated into higher-level totals, it is useful for analysis.




The *Business Dimension* window displays the list of pre-defined Business Dimensions with their Code, Short Description, Long Description, and Dimension Type. In the *Business Dimension* window, the user is required to enter the Dimension code and a description when the user is

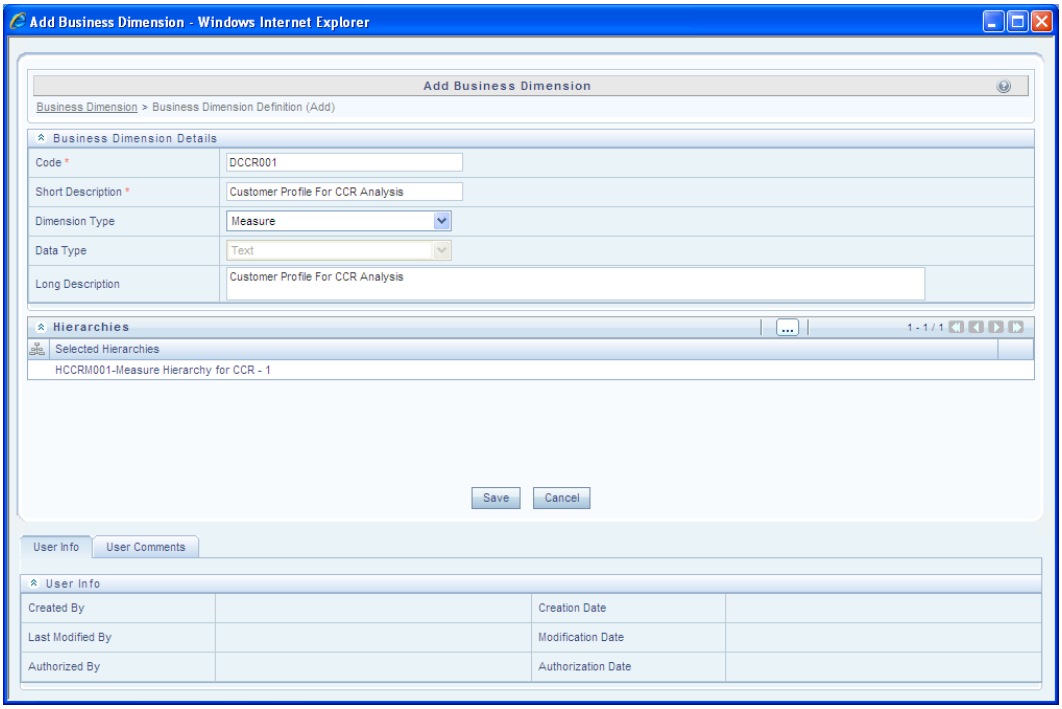
defining it for the first time. The user is required to select the dimension type, data type, and map available hierarchies to a dimension. You can also make use of Search and Pagination options to search for a specific business dimension based on the Code, Short Description, and Authorization status or view the list of existing business dimensions within the system. For more information, refer Search and Filter and Pagination sections.

#### 3.10.1.1 Creating Business Dimension

You can create a Business Dimension by specifying the Dimension definition details and defining the required Dimension. You can define a Business Dimension only if you have Dimension Write role mapped in the Infrastructure system.

To create a new Business Dimension from the *Business Dimension* window:

1. Click button from the Business Dimensions toolbar. The *Add Business Dimension* window is displayed.




2. Enter the details in the Business Dimension Details section as tabulated:

| Field | Description |
|---|---|
| Code | Enter a distinct code to identify the Dimension. Ensure that the code is alphanumeric with a maximum of eight characters in length and there are no special characters except underscore "_".<br>Note the following: |

| Field | Description |
|---|---|
| | ▪ The code can be indicative of the type of Dimension being created.<br>▪ A pre-defined Code and Short Description cannot be changed.<br>▪ Same Code or Short Description cannot be used for Essbase installation: "$$$UNIVERSE$$$", "#MISSING", "#MI", "CALC", "DIM", "ALL", "FIX", "ENDFIX", "HISTORY", "YEAR", "SEASON", "PERIOD", "QUARTER", "MONTH", "WEEK", "DAY".<br>▪ In Unauthorized state, the users having Authorize Rights can view all the unauthorized Metadata. |
| Short Description | Enter a Short Description based on the defined code. Ensure that the description is of a maximum of eight characters in length and does not contain any special characters except underscore "_". |
| Dimension Type | Select the Dimension Type from the drop-down list. The available options are:<br>▪ **Regular**: A regular dimension can have more than one hierarchy mapped to it. The option of mapping multiple hierarchies is available only for a non-SQLOLAP environment.<br>▪ **Time**: In a time dimension, the hierarchy defined has leaves/nodes of high time granularity.<br>▪ **Measure**: A measure dimension can have hierarchies of only type measure mapped to them it. The Measure hierarchy type is specific to Essbase MOLAP. |
| Data Type | The Data Type is automatically selected based on the dimension type selected. The default data type for the Business Dimension definition is **Text**. |
| Long Description | Enter the Long Description if you are creating subject-oriented Dimension to help users for whom the Dimension is being created or other details about the type/subject. Ensure that description is of a maximum of 100 characters in length. |

3. Click button in the Hierarchies grid. The *Hierarchy Browser* window is displayed.

   Based on the dimension type, the hierarchies are displayed in the **Members** pane. You can expand and view the members under the Hierarchies by clicking "**+**" button.

   - Select the hierarchies from the **Members** pane and click . The selected hierarchies are moved to the **Selected Members** pane.
   - If you want to map all the available hierarchies, click .
   - If you want to remove a selected hierarchy, select it from the Selected Members pane and click . To deselect all the selected hierarchies, click .

- Click **OK** and the selected hierarchies are listed in the Hierarchies grid.

The *User Info* grid at the bottom of the window displays the metadata information about the Business Dimension created along with the option to add comments.

4. Click **Save** in the Add *Business Dimension* window and save the details.

#### 3.10.1.2 Viewing Business Dimension

You can view details of an individual Business Dimension at any given point. To view the existing Business Dimension definition details in the *Business Dimension* window: You need to be mapped to the role Dimension Read Only to view Business Dimension.

1. Select the checkbox adjacent to the required Business Dimension code.
2. Click button from the Business Dimension tool bar.

   The *View Business Dimension* window displays the details of the selected Business Dimension definition. The *User Info* grid at the bottom of the window displays metadata information about Business Dimension created along with the option to add comments.

#### 3.10.1.3 Modifying Business Dimension

You can update the existing Business Dimension definition details except for the Code, Short Description, Dimension Type, and Data Type. You need to have Modify Dimension function role mapped to modify the Business Dimension definitions.

You need to be mapped to Dimension Write to modify Business Dimension.

To update the required Business Dimension details in the *Business Dimension* window:

1. Select the checkbox adjacent to the required Business Dimension code.
2. Click button from the Business Dimension tool bar. The *Edit Business Dimension* window is displayed.
3. Update the required details. For more information, refer Create Business Dimension.
4. Click **Save** and update the changes.

#### 3.10.1.4 Copying Business Dimension

You can copy an existing Business Dimension details to quickly create a new Business Dimension. You need to have Dimension Writerole mapped to copy the Business Dimension definitions. To copy an existing Business Dimension definition in the *Business Dimension* window:

1. Select the checkbox adjacent to the required Business Dimension code.
2. Click button from the Business Dimension tool bar.

3. The Business Dimension definition details are copied and a confirmation message is displayed.

#### 3.10.1.5 Deleting Business Dimension

You can remove the Business Dimension definition(s) you have created and are no longer required in the system, by deleting from the *Business Dimension* window. You need to have Dimension Write role mapped to delete a Business Dimension. Delete function permanently removes the Business Dimension details from the database. Ensure that you have verified the details as indicated below:

- A Business Dimension definition marked for deletion is not accessible for other users.
- Every delete action has to be **Authorized/Rejected** by the authorizer.
  - On Authorization, the Business Dimension details are removed.
  - On Rejection, the Business Dimension details are reverted back to authorized state.
- You cannot update Business Dimension details before authorizing/rejecting the deletion.
- An un-authorized Business Dimension definition can be deleted.

To delete an existing Business Dimension in the *Business Dimension* window:

1. Select the checkbox adjacent to the required Business Dimension code.
2. Click button from the Business Dimension tool bar. A confirmation dialog is displayed.
3. Click **OK**. The Business Dimension details are marked for delete authorization.

### 3.10.2 Cubes

Cube represents a multi-dimensional view of data which is vital in business analytics. It gives you the flexibility of defining rules that fine-tune the information required to reflect in the hierarchy. Cube enhances query time and provides a decision support for Business Analysts.

A cube is a combination of measures and dimensions, i.e. measures represented along multiple dimensions and at different logical levels within each dimension. For example, in a cube, you can view Number of Customers, Number of Accounts, and Number of Relationships by Product, Time, and Organization.

**Essbase Cubes and Oracle Cubes**

With the acquisition of Hyperion Solutions Corporation in 2007, Oracle supports Essbase Cubes and Oracle Cubes. While both products are categorized to the OLAP category, they have some similar capabilities and are also different in significant ways. This section intends to guide you with each OLAP capabilities so that you can choose the solution that best suits your environment.

| Similarities | Differences |
|---|---|
| Both Oracle OLAP and Essbase have the capability of storing data in OLAP cubes with the following capabilities:<br>▪ Excellent performance for queries that require summary-level data.<br>▪ Fast, incremental update of data sets, which is required to facilitate frequent data updates.<br>▪ Rich calculation models that may be used to enrich analytic content.<br>▪ A dimensional model that presents data in a form that is easy for business users to query and define analytic content. | The differences between Essbase and Oracle OLAP is that, each solution focuses on delivering OLAP capabilities into different types of applications and for different classes of users.<br>Most of the differences between Essbase and Oracle OLAP are derived from the fact that Essbase is a *Separate Process*, while Oracle OLAP is an option to the *Oracle Database Enterprise Edition*. |

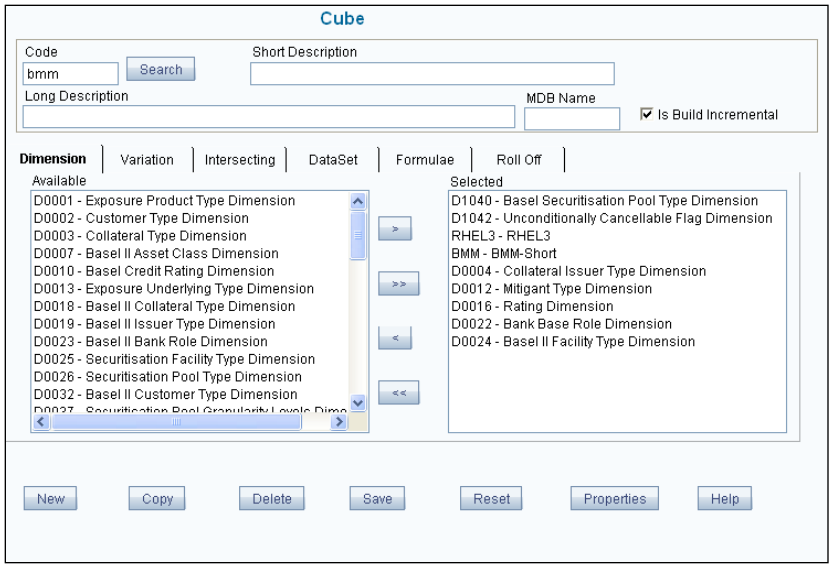
Cubes consist of the following sections. Click on the links to view the section in detail.

- Essbase Cubes
- Oracle Cubes

#### 3.10.2.1 Essbase Cubes

Essbase has been derived from a history of OLAP applications based in the middle tier. The strategy of Essbase is mainly on custom analytics and Business Intelligence applications with a focus on EPM. This strategy addresses the what-if, modeling, and future-oriented questions that companies need answers today in order to see into the future.

Typically, Essbase applications are started and maintained by Business Analysts who are usually in the line of business. The typical end users are analysts in the finance, marketing, and sales departments, who query and create data with Essbase tools and Oracle Hyperion applications. The line of business typically has a large degree of uncertainty and needs to understand a dynamic and changing environment.




**Essbase - A Separate-Server OLAP**: Essbase is the OLAP server that provides an environment for rapidly developing custom analytic and EPM applications. The data management strategy allows Essbase to easily combine data from a wide variety of data sources, including the Oracle Database. Essbase is part of the Oracle Fusion Middleware architecture.

From the **Unified Analytical Metadata** section in the LHS menu, expand **Analytics Metadata** and select **Essbase Cube**.

Based on the role that you are mapped to, you can access read, modify or authorize Essbase Cube. For all the roles and descriptions refer to Appendix A. The roles mapped to Essbase cubes are as follows:

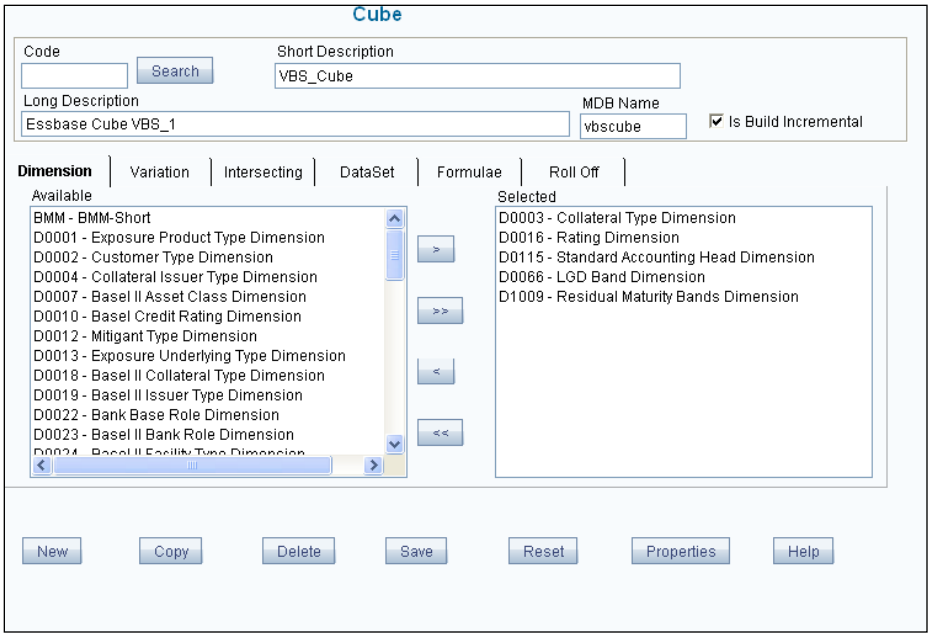
- Essbase Cube Access
- Essbase Cube Advanced
- Essbase Cube Authorize
- Essbase Cube Phantom
- Essbase Cube Read Only
- Essbase Cube Write

**Creating Essbase Cube**

You can define an Essbase Cube in the *Cube* window only if you are mapped to Add Cube function role. When you are defining Essbase cube for the first time, you need to specify the Cube definition details and the Cube-Building components such as Dimension, Variation, Intersecting details, DataSet, Formulae, and Roll Off period details. You need to be mapped with the role group Essbase Cube Write to create or add an Essbase Cube.

Note the following:

- Cube Build with OLAP type as Essbase – If there is a Business Intelligence (BI) hierarchy in the cube definition, cube build is supported only if the data length for BI Hierarchy processing is less than **50**.You must define at least two Business Dimensions. Else, an alert message is displayed. To create an Essbase Cube in the *Cube* window:




1. Click **New**. The window is refreshed and displays the editable fields.
2. Enter the Cube definition details as tabulated.

| Field | Description |
|---|---|
| Code | Enter a distinct code to identify the Cube. Ensure that the code is alphanumeric with a maximum of 8 characters in length and there are no special characters except underscore "_".<br>▪ Note the following:<br>▪ The code can be indicative of the type of Cube being created.<br>▪ A pre-defined Code and Short Description cannot be changed.<br>▪ Same Code or Short Description cannot be used for Essbase installation: "$$$UNIVERSE$$$", "#MISSING", "#MI", "CALC", "DIM", "ALL", "FIX", "ENDFIX", "HISTORY", "YEAR", "SEASON", "PERIOD", "QUARTER", "MONTH", "WEEK", "DAY".<br>▪ In Unauthorized state, the users having Authorize Rights can view all the unauthorized Metadata. |

| Field | Description |
|---|---|
| Short Description | Enter a Short Description based on the defined code. Ensure that the description is of a maximum of 8 characters in length and does not contain any special characters except underscore "_". |
| Long Description | Entering the Long Description is helpful when creating Cube. It could indicate the contents of the cube or any other useful information that would help an analyst.<br>You can enter a Long Description with a minimum of one character and a maximum of 100 characters in length. |
| MDB Name | Enter the name by which you want to identify the cube while saving it in a multi-dimensional database.<br>Saving a cube to a multi-dimensional database is different from saving the Cube definition wherein the definition (like all other metadata definitions) is stored in the repository. When saved, the cube details are updated by the cube name that you have attributed to it. Ex: NoofProd (Number of Products)<br>**Note**: Ensure that the name is within 1 to 8 characters in length and can contain alphabetical, numerical (only 0-9), or alphanumerical characters without special characters and extra spaces. |
| Is Build Incremental | Select **Is Build Incremental** checkbox if you wish to capture all incremental changes made to the database. The cube definitions with the Is Build Incremental checkbox selected can be executed with different MIS dates. |

3. Enter the Cube Components in each of the tabs as tabulated.

| Field | Description |
|---|---|
| Dimension (default) | In the Dimension tab, the *Available* list consists of the pre-defined Dimensions.<br>▪ Select the required Dimension for the cube and click > button.<br>▪ You can click >> button to select all the listed Dimensions.<br>You can also click < button to deselect a Dimension or click << button to deselect all the selected Dimensions.<br>**Note**: It is mandatory to select at least two dimensions and only one dimension of the type measure can be selected. |

| Field | Description |
|---|---|
| Variation | In the Variation tab, you can define the Variation by mapping the Dimension against the defined Measure.<br>▪ Select the required Dimension from the *Selected Dimensions* list. In the Measure Mapping list click "**+**" to expand the required Measure folder and click > button. You can click >> button to select all the listed Dimensions.<br>▪ You can also deselect a mapping by selecting the Dimension in the Measure Mapping list and clicking < button or clicking << button to deselect all the Dimension mappings. |
| Intersecting | Note that the Intersection option is specific to Count Distinct Measures. The Count Distinct Measures should be intersected only across those dimensions on which a duplicate is expected for that measure.<br>For example, there can be no customer who has both gender as Male and Female. Thus intersecting the Count distinct measures across a Gender dimension will not make sense. Similarly, the Count Distinct measures will have duplicates across Products or Regions. Thus, the intersecting can be across those dimensions (Product/Region). For more information, refer to "Selecting Aggregation Function" in Business Measures section.<br>▪ Select the required Dimension from the *Selected Dimensions* list. In the Measure Mapping list click "**+**" to expand the required Measure folder and click > button. You can click >> button to select all the listed Dimensions.<br>▪ You can also deselect a mapping by selecting the Dimension in the Measure Mapping list and clicking < button or clicking << button to deselect all the Dimension mappings. |
| Data Set | In the Data Set tab you can select the **DataSet** for the cube along with the additional filters like the **Date Filter** and **Business Exclusions**.<br>▪ Select the required DataSet from the list and click >> button. The selected *From Clause* and *Join Condition* for the selected DataSet are displayed.<br>▪ To define the **Date Filter**, click ... button. The *Specify Expression* window is displayed. Define the required expression by selecting the appropriate Entities, Functions, and Operator. Click **OK**.<br>▪ To define the **Business Exclusion**, click ... button. The *Specify Expression* window is displayed. Define the required expression by selecting the appropriate Entities, Functions, and Operator. Click **OK**. |

| Field | Description |
|---|---|
| Formulae | Note that the Formulae tab is specific to Essbase MOLAP. In the Formulae tab, you can apply filters to a hierarchy node.<br>The *Selected Dimensions vs. Mapped Hierarchies* list displays the Selected Dimensions folder. Double-click a folder to view the dimension-hierarchy mapping.<br>▪ Select the Hierarchy for which you want to apply the node formula and click >> button. The Hierarchy is displayed in the *Parentage Hierarchy* list.<br>▪ Click ... button adjacent to Node Formula. The *Specify Expression* window is displayed. Define the required expression by selecting the appropriate Entities, Functions, and Operator. Click **OK**. |
| Roll Off | In the Roll Off tab, you can define the start date of the cube to specify the history of the data which is to be picked up during aggregation. The maximum period of data history that can be specified is 24 months. The Roll Off option is enabled only to BI enabled hierarchies.<br>▪ Select the **Roll Off Required** checkbox.<br>▪ Enter the **Roll Off Period** value (in integer) to specify the period for which the data should be maintained in the system. The data will be automatically rolled off with the addition of new nodes to the cube.<br>▪ Select the **Dimension** for which you want to specify the roll off period from the drop-down list.<br>▪ Select the **Level** from the drop-down list. The list contains the hierarchy levels of the selected Dimension. |

4. Click **Save** and save the Cube Definition details. A confirmation dialog is displayed.

   The Cube definitions are stored in repository and accessed for query. Once saved, the cube details are displayed with non-editable Code and Short Description fields.

### Viewing Essbase Cube Properties

You can view the metadata of the selected Cube definition. In the *Cube* window click **Properties** and open the properties dialog. You need to be mapped with the role group Essbase Cube Read Only to view the Essbase Cube Properties.

- The *Properties tab* displays the metadata properties such as Created By, Creation Date, Last Modified By, Modified Date, Authorized By, and Authorized Date.
- The *Comments tab* has a text field to enter additional information as comments about the created Cube definition.
- Click **OK** and **Save** the definition with the comments (if any).

### Copying Essbase Cube Details

The Copy function is similar to “Save As” functionality and helps you to copy the pre-defined Cube details to quickly create another Cube. You need to be mapped to Essbase Cube Write role to copy the Cube details.

To copy Cube details in the *Cube* window:

1. Search for the required Cube and Click **Copy**. A confirmation dialog with “Copy Successful” message is displayed.
2. Modify the Cube **Code** and **Short Description**. You can also modify the cube components as required. For more information, refer Create Essbase Cube.
3. Click **Save** and save the updated details. A confirmation dialog is displayed.

### Modifying Essbase Cube Details

You can search for the required Essbase Cube definition and modify the details. You need to be mapped to Essbase Cube Write role to modify an Essbase Cube definition. You cannot modify a cube definition which is in the un-authorized state i.e. modified by another user.

1. Click **Search**. The *Search* dialog is displayed with the list of authorized Essbase Cubes by default.

   (Optionally) you can select **List Un Authorized** checkbox to view all the un authorized cube definitions.
2. Modify the Essbase Cube definition with the cube components details as required. For more information, refer Create Essbase Cube.
3. Click **Save** and save the updated details. A confirmation dialog is displayed.

### Deleting Essbase Cube Details

You can remove Essbase Cube definition(s) which are created by you and which are no longer required in the system by deleting from the *Cube* window. You need to have Essbase Cube Write role mapped to delete an Essbase Cube. Delete function permanently removes the Essbase Cube details from the database. Ensure that you have verified the details as indicated below:

- An Essbase Cube definition marked for deletion is not accessible for other users.
- Every delete action has to be **Authorized**/**Rejected** by the authorizer.
  - On Authorization, the Essbase Cube details are removed.
  - On Rejection, the Essbase Cube details are reverted back to authorized state.
- You cannot update Essbase Cube details before authorizing/rejecting the deletion.
- An un-authorized Essbase Cube definition can be deleted.

To delete an existing Essbase Cube in the *Cube* window:

1. Click **Delete**. A confirmation dialog is displayed.
2. Click **OK**. The Cube details are marked for delete authorization.

#### 3.10.2.2 OLAP Cube

**Oracle OLAP - A Database-Centric OLAP**: Oracle OLAP is available as an option to the Oracle Database Enterprise Edition. As an embedded component of the Oracle Database, Oracle OLAP benefits from the scalability, high availability, job scheduling, parallel processing, and security features inherent in the Oracle Database. With Oracle OLAP, all of the data resides in an Oracle database, governed by centralized data security and calculation rules.

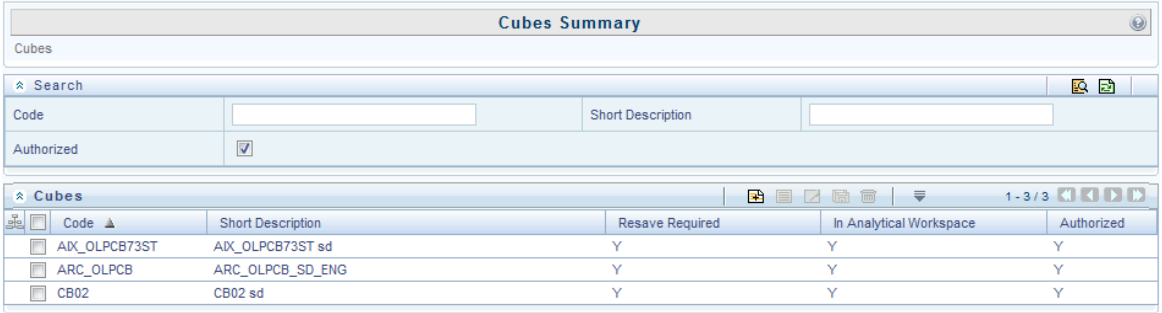
An SQL interface to OLAP cubes allows SQL-based applications to query cubes within an Oracle database, and benefit from the performance and analytic content of the OLAP option. The primary data-access language for Oracle OLAP is SQL, making Oracle OLAP a natural choice for enhancing the performance and calculation capabilities of an existing Oracle data warehouse.

Oracle Cube within the Infrastructure system facilitates you to define the cubes using the Business Metadata objects such as Dimensions, Hierarchies, and Measures. The Rule files and data files generated can be used to load data and build the cubes. Oracle Cube consists of OLAP Servlet, Server, OLAP API's, and Oracle database integrated into a module.

Based on the role that you are mapped to, you can access read, modify or authorize OLAP Cube. For all the roles and descriptions refer to Appendix A. The roles mapped to OLAP cubes are as follows:

- Oracle Cube Access
- Oracle Cube Advanced
- Oracle Cube Authorize
- Oracle Cube Phantom
- Oracle Cube Read Only
- Oracle Cube Write

You can access Oracle Cubes by expanding Cube section within the Analytics Metadata section in LHS menu of Infrastructure home page.




The Cubes Summary window facilitates you to do the following:

| Field | Description |
|---|---|
| Cube Search | You can search for cubes based on **Code**, **Short Description** and **Authorized** check box.<br>▪ **Unauthorized cubes**: These are definitions which are yet to be authorized by the metadata authorizer. These definitions are not used by the Analytical Workspace unless authorized.<br>▪ **Authorized cubes**: These are definitions which are authorized by the metadata authorizer.<br>Select **Authorized** check box to display the authorized cubes. By default, the check box is selected. |
| Resave Required column | This column displays the status as "**Y**" if resave is required; else "**N**" is displayed.<br>Resave is required when an authorized change is made to the underlying metadata such as datasets, measures, dimensions, or hierarchies used in the cubes. |
| In Analytical Workspace column | This column displays the status as "**Y**" if the definition is saved in the Analytical Workspace; else "**N**" is displayed. |
| Authorized column | This column displays the status as "**Y**" if the cube has been authorized; else "**N**" is displayed. |

You can make use of Search and Pagination options to search for a specific Oracle Cube details or view the list of existing Oracle Cubes within the system. For more information, refer Search & Filter and Pagination sections.

Following are the pre-requisites while working with Oracle Cubes:

- Oracle Database 11g with the OLAP option (Patch level 11.1.0.7 or higher) is required.
- Only those Business Dimensions which have Business Intelligence Hierarchies can be selected for Cube creation.

- For Non BI Hierarchies, Dimension tables need to be created with possible values and the surrogate key column should be updated to fact table.
- Cube validation is done in both Client side and Server side. The client side validation involves the basic validation of values such as “not null”, “not number” while the server side validation involves validating data with respect to database. All the validation errors are recorded in the log file.
- OLAP Cube definitions, which are migrated using Metadata Restore and Archive functionality, have to be resaved in *Cube Summary* window.
- If a filter is defined on a Dataset, then the respective dimension should be part of **Selected Dimension** of Oracle Cube.

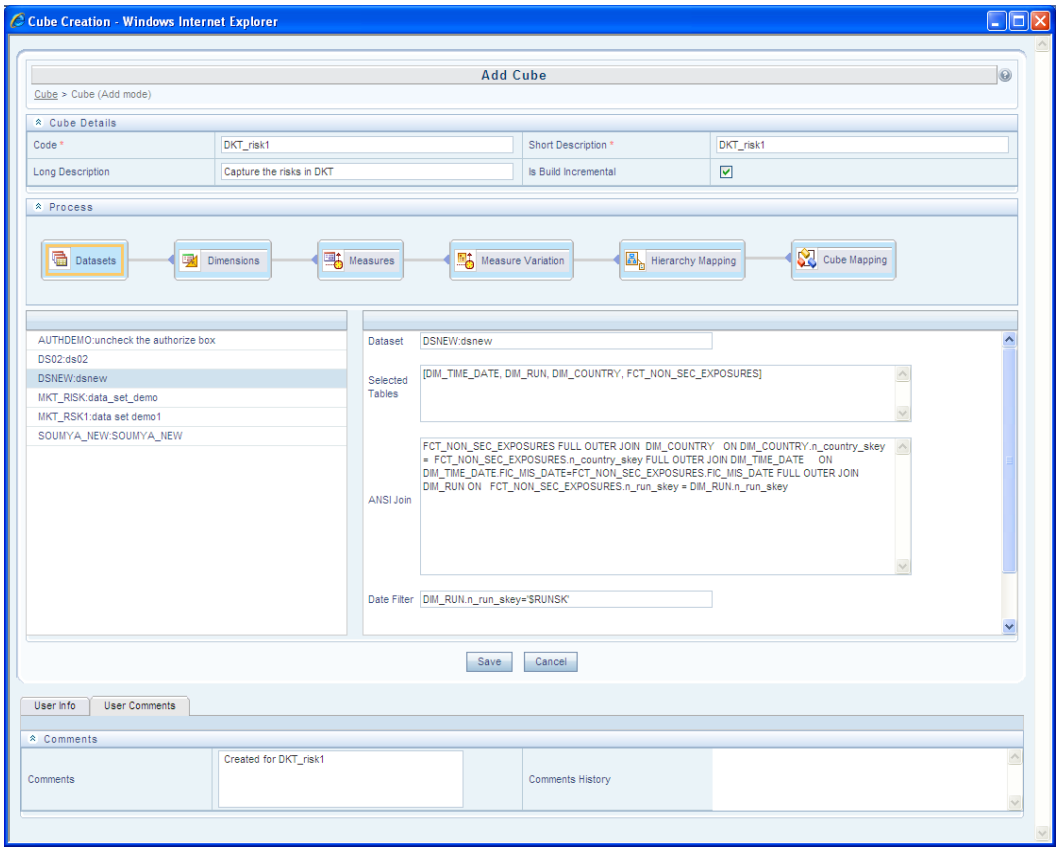
For details of AAI and OLAP limitations, refer to OLAP Cube Limitations section.

**Creating Oracle Cube**

You need to be mapped to the role Oracle Cube Write to add or create Oracle Cube.

To create an Oracle Cube in the *Cubes Summary* window:

1. Click button from the Cubes toolbar. The *Cube Creation* window is displayed.




2. In the *Code Details* section, enter the details as tabulated.

| Field | Description |
|---|---|
| Fields marked in red asterisk (*) are mandatory. | |
| Code | Enter a distinct code to identify the Cube. Ensure that the code is alphanumeric with a maximum of 23 characters in length and there are no special characters except underscore "_".<br>▪ Note the following:<br>▪ The code can be indicative of the type of Cube being created.<br>▪ A pre-defined Code and Short Description cannot be changed.<br>▪ Same Code or Short Description cannot be used for Essbase installation: "$$$UNIVERSE$$$", "#MISSING", "#MI", "CALC", "DIM", "ALL", "FIX", "ENDFIX", "HISTORY", "YEAR", "SEASON", "PERIOD", "QUARTER", "MONTH", "WEEK", "DAY".<br>▪ In Unauthorized state, the users having Authorize Rights can view all the unauthorized Metadata. |
| Short Description | Enter a Short Description based on the defined code. Ensure that the description is of a maximum of 80 characters in length and does not contain any special characters except underscore "_". |
| Long Description | Entering the Long Description is helpful when creating Cube. It could indicate the contents of the cube or any other useful information that would help an analyst.<br>You can enter a Long Description with a minimum of one character and a maximum of 256 characters in length. |
| Is Build Incremental | Select **Is Build Incremental** checkbox if you wish to capture all incremental changes made to the database. The cube definitions with the Is Build Incremental checkbox selected can be executed with different MIS dates. |

Once you have specified the Cube details, you can define the different Process which involves selecting the pre-defined Datasets, Dimensions, Measures, and associating the required Measure Variation, Hierarchy, and defining Cube Mapping details.

3. In the Datasets section (default selected), select the pre-defined **Dataset** from the list. The selected Dataset details such as Dataset Name, Selected Tables, ANSI Join, Date Filter, and Join/Filter Condition are populated in the right panel.

4. Select **Dimension** tab:- The list of the pre-defined Business Dimensions with all the Parent-child and Business Intelligence Dimensions associated with the selected Dataset are displayed. Select the required Business Dimension from *Select Dimensions* list and click button, or click button to select all dimensions.

5. Select **Measures** tab:- The list of pre-defined Business Measures associated with the selected Dataset is displayed. Select the required Business Measure from the *Select Measures* list and click button, or click button to select all measures.
6. Select **Measure Variation** tab. Select the Measure from the drop-down list. The list consists of the related Business Measures. Select the checkbox adjacent to the listed Measure Variation.
7. Select **Hierarchy Mapping** tab. The Hierarchy tables mapped to the *Member* and *Parent Code* of the selected Measure Variation is displayed along with the description.
8. Select **Cube Mapping** tab. The section below displays the mapping between the Fact table of the Dataset and its mapping with the Dimensions selected along with the defined conditions for *Oracle Cube Creation*. You can review the details and if required, revisit any of the appropriate tabs in Process section to modify the details.
9. Click **Save** and save the defined cube details.

**Viewing Oracle Cube Details**

You can view individual Oracle Cube details at any given point. To view the existing Cube definition details in the *Cube Summary* window:

1. Select the checkbox adjacent to the required Cube Code.
2. Click button from the Cubes tool bar.

   The *View Cube* window displays the details of the selected Oracle Cube definition. The *User Info* grid at the bottom of the window displays the metadata information about the Oracle Cube definition created along with the option to add additional information as comments. You need to be mapped to the role Oracle Cube Read Only to view oracle cube details,

**Modifying Oracle Cube Details**

You can update the existing Oracle Cube definition details except for the Code and Short Description. You need to be mapped with the role Oracle Cube Write to modify Oracle Cube Details. To update the required Oracle Cube details in the *Cube Summary* window:

1. Select the checkbox adjacent to the required Cube Code.
2. Click button from the Cubes tool bar. The *Edit Cube* window is displayed.
3. Update the required details. For more information, refer Create Oracle Cube.
4. Click **Save** and update the changes.

**Copying Oracle Cube Details**

You can copy the existing Oracle Cube details to quickly create a new Cube with the existing details or by modifying the required details. You need to have Oracle Cube Write role mapped

to copy the Cube definition. To copy an existing Oracle Cube definition in *Cube Summary* window:

1. Select the checkbox adjacent to the required Cube Code.
2. Click button from the Cubes tool bar. The *Copy Cube* window is displayed.

   The Oracle Cube definition details are copied and a confirmation message is displayed.

**Deleting Oracle Cube Details**

You can remove Oracle Cube definition(s) which are created by you and which are no longer required in the system by deleting from the *Cube Summary* window. You need to have Oracle Cube Write role mapped to delete an Oracle Cube. Delete function permanently removes the Oracle Cube details from the database. Ensure that you have verified the details as indicated below:

- An Oracle Cube definition marked for deletion is not accessible for other users.
- Every delete action has to be **Authorized**/**Rejected** by the authorizer.
  - On Authorization, the Oracle Cube details are removed.
  - On Rejection, the Oracle Cube details are reverted back to authorized state.
- You cannot update Oracle Cube details before authorizing/rejecting the deletion.
- An un-authorized Oracle Cube definition can be deleted.

To delete an existing Oracle Cube in the *Cube Summary* window:

1. Select the checkbox adjacent to the required Cube Code.
2. Click button from the Cubes tool bar. A confirmation dialog is displayed.
3. Click **OK**. The Cube details are marked for delete authorization.

**OLAP Cube Limitations**

Following are the limitations of Oracle Cube with respect to migration/creation.

**Limitations from OFSAA Infrastructure:**

- Oracle Cube cannot be defined on a Dataset, which is defined on a Derived Entity.
- Oracle Cube cannot be defined on a Computed Measure.
- Oracle cube cannot be defined on Dataset having complex joins.
- For Oracle Cube, the joins are automatically derived (meaning standard equi-joins). For joins that are defined using AAI Dataset interface, as it requires parsing is not supported.
- Old MDB does not support Oracle Cube.
- Migration of Essbase Cube does not consider the Roll Off.

- Migration of Essbase Cube does not consider the intersection.
- Does not consider any parameter which are part of Dataset other than $MISDATE while building.
- If a Dataset, having RUNSK as part of its filter condition, is used in Essbase Cube definition and you want to migrate it to Oracle Cube with the **Build** option selected, from the *Cube Migration* page, it will fail. The cube should be built through RRF.
- Migration of Essbase Cube does not consider the formula.

**Limitation From Oracle OLAP:**

- Oracle Cube cannot be defined on a Non-BI Hierarchy.
- Dimensions cannot have more than one Hierarchy.
- Hierarchies must have more than one level if total required is not selected.

### 3.10.3 Catalog

OFSAAI provides a consistent approach across applications for assigning business assumptions and accessing shared data for computations underlying OFSAA.

OFSAAI tools assist with loading, validating, categorizing, selection, and processing of data. The metadata defined by these tools, which are used in applications and analytics, can be extended to be used to publish OBIEE reports. The metadata used are:

- Data Model Entities, Datasets, Alias, and Derived Entities
- Hierarchy and Measure
- Under Unified Analytical Metadata, expand Analytics Metadata and select Catalog.

**OBIEE Repository**

Oracle BI Enterprise Edition (OBIEE) is a tool for larger institutions to manage query/reporting needs, pixel perfect reporting, template based regulatory reports and for building/delivering senior management dashboards. OBIEE metadata required for reporting is stored in a file with extension “rpd”. It has primarily 3 layers:

- Physical Layer
- Business Layer
- Presentation Layer

**Physical Layer**

Physical layer is built out of entities and its attributes with their relationship in data model. Joins are derived based on the foreign key relationship available in the database schema.

Metadata details that contribute to this layer are:

- Data Model: Entity available in the data model of the information domain.
- Dataset: Entity associated to construct this dataset.
- Alias: Alias (synonym) available in OFSAAI.
- Derived Entity: Database view/materialized view available in the schema defined on OFSAAI.

**Business Layer**

All entities available in the Physical layer will be carried to the Business layer. You can either publish all metadata associated to the physical layer entity or select particular metadata available from the default list as listed:

- **Default**: All Business Hierarchies and Business Measures that are associated to the entities selected in the physical layer.
- **Selective**: You can choose Business Hierarchies and Business Measures from the default list available.

Hierarchy/Dimension and Measure details:

- **Hierarchy**: All leaf level nodes expression will be derived based on the primary key defined in the entity, to identify all leaf level nodes as unique in the system.
  - BI: Node expression and description will be derived from the expression defined in the OFSAAI. Additional derived attributes will be added to the logically derived entity in business layer of the repository.
  - PC: Parent attribute will be taken from the AAI and child columns will be derived from the PK.

    PC Entity: New entity will be required to flatten the PC hierarchy data into the OBIEE required format. This entity will have Ancestor, Member, Distance from root and is leaf node information.

    The script will be provided along with the RPD and user has to execute in the specific schema with the help of DBA. The same entity will be included into Physical layer.

    Data Population: Data population procedure is available in database schema. User has to run the script to load the data into it with the help of DBA.
  - Time: All nodes of the time hierarchy will be taken from the AAI, but expressions/description for it will be defined based on OBIEE.

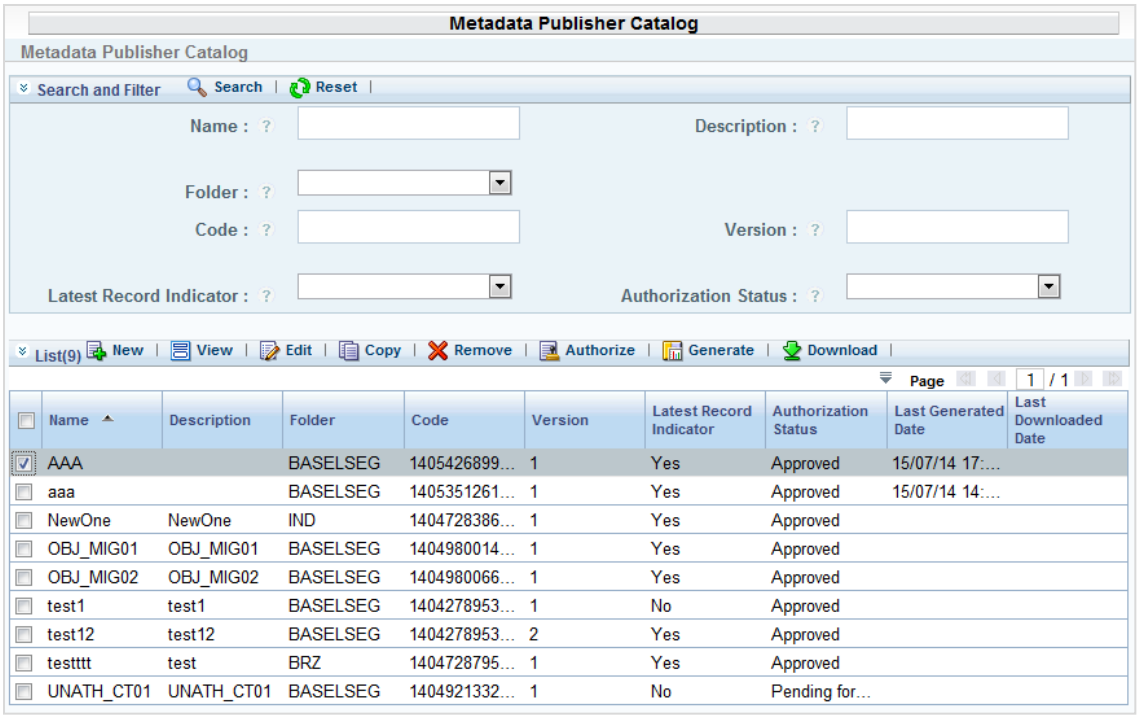
    The base attributes data type defined in the AAI must be of DATE type else system will consider it as a Regular BI hierarchy.
- **Measure**: Measures attribute will be derived from the actual physical attribute to support user defined expression/conditional aggregation.

**Presentation Layer**

All entities available in the business layer and metadata (Hierarchies/Measures) will be available in the presentation layer.

### 3.10.3.1 Navigating to Catalog

You can access *Metadata Publisher Catalog* window by expanding **Unified Analytical Metadata** and **Analytics Metadata** within the tree structure of the LHS menu and selecting **Catalog**.




You need to have **CATACC** function role mapped to access the LHS menu and Summary window.

Using the *Search and Filter* grid, you can look for a specific catalog based on the catalog Name, Description, Folder, Code, Version, Latest Record Indicator, and Authorization Status.

The *Metadata Publisher Catalog* window displays the list of available catalogs with details such as Name, Description, Folder, Code, Version, Latest Record Indicator, Authorization Status, Last Generated Date, and Last Downloaded Date. From this window, you can create a new catalog definition; view, edit, copy, delete, and authorize an existing catalog definition; generate the OBIEE repository based on the catalog definition and download successfully generated repository.

**Object Security**

Object security has been implemented in Catalog module. For information, see Object Security in OFSAAI section.

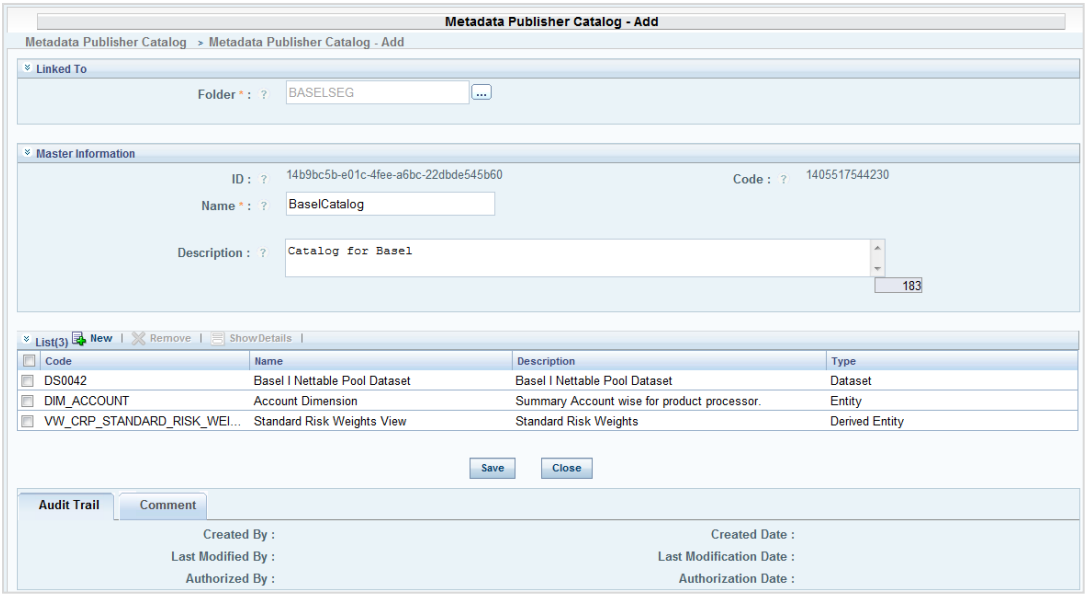
### 3.10.3.2 Creating a Catalog Definition

Catalog is a metadata object in OFSAAI where user can define the catalog definition and attach single or multiple dataset or data model entities to it.

You should have **CATADD** or **CATWRITE** function role mapped, to define a catalog definition.

To create a catalog definition

1. From the Metadata Publisher Catalog window, click **New.** The Metadata Publisher Catalog- Add window is displayed.




2. Enter the details as tabulated:

| Field | Description |
|---|---|
| Folder | Click ... and select the folder for which you want to create a catalog from the *Folder Selection Browser* window. Click **Save**. |
| ID | Displays the system generated ID of the catalog definition. |
| Code | Displays the system generated code of the catalog definition. |
| Name | Enter the name of the catalog. |
| Description | Enter a description of the catalog. |

3. Click **New**. The *Metadata Publisher Catalog Selection* Browser window is displayed.

The available Datasets, Entities, Aliases, and Derived Entities are displayed in the *Available Members* pane. Select the **Metadata Type** from the drop-down list and click **Search** to display the objects of the selected metadata type in the *Available Members* pane. You can also search for a particular metadata object by giving its **Name** and clicking **Search.**

4. Select the required metadata object and click or click to select all objects.

   Click to remove all selected objects or select the object and click to remove it.

5. Click **Save**. The catalog definition is saved.
6. Click **OK** to go back to the Summary window or click **Generate** to go to *Generate Repository* window.

#### 3.10.3.3 Authorizing Catalog Definition

This option allows authorizer to approve or reject a catalog definition. After saving a catalog definition, it will be auto approved if you have authorization rights or the information domain does not require metadata authorization. Otherwise, an authorizer needs to approve the definition. The Catalog Authorize role should be mapped to your user group to authorize catalog definitions.

To approve a catalog definition

1. From the *Metadata Publisher Catalog* window, select the catalog definition and click **Authorize**.
2. Click **Approve** or **Reject** to approve/ reject the definition.

#### 3.10.3.4 Generating Repository

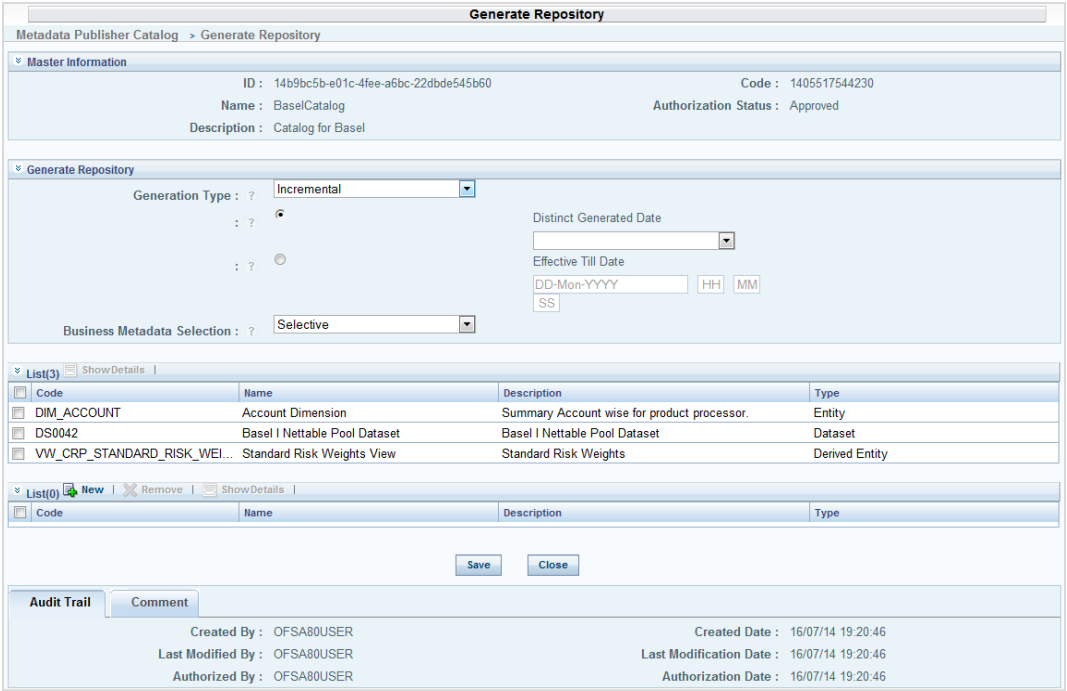
This feature allows you to publish the authorized catalog definitions to OBIEE and generate repository out of it. You can choose the business metadata required for Business layer from the authorized metadata available in the BMM and these metadata are associated to the entities selected in the physical layer. You need to provide the token/password for the repository while generating it.

You can publish the same catalog multiple times. The repository generation process is asynchronous and no need to wait for its completion in the system. You have to provide the Connection String (Datasource) for the Information Domain in the Database Details page to generate an XML.

You should have Catalog Write role mapped, to generate repository of the catalog definition.

To generate repository

1. From the *Metadata Publisher Catalog* window, select the catalog definition and click **Generate**. The *Generate Repository* window is displayed.



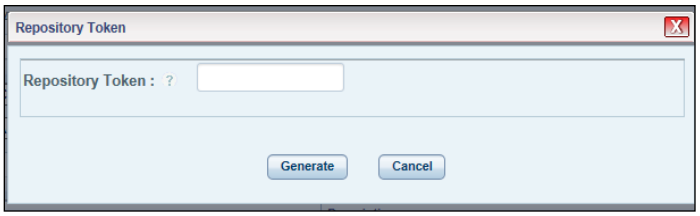

2. Enter the details as tabulated:

| Field | Description |
|---|---|
| Generation Type | Select the generation type from the drop-down list. The options are:<br>▪ **Complete**- All entities and its associated hierarchies and measures will be published to the OBIEE to generate the repository (RPD). For the first time publish, it is always generated in the complete mode.<br>▪ **Incremental**- The repository will be generated only for the business metadata which have incremental changes.<br>  ▪ **Distinct Generated Date**- The repository will be generated for the business metadata which have incremental changes from the repository generation date, selected from the **Distinct Generated Date** drop-down list.<br>  ▪ **Effective Till Date**- The repository will be generated for the business metadata which have incremental changes from the selected **Effective Till Date**. |
| Business Metadata Selection | ▪ **All**- Select this option to generate repository for all Hierarchies and Measures that are associated to the entities selected in the physical layer.<br>▪ **Selective**- Select this option to generate repository for selected Hierarchies and Measures.<br>Click New. The *Metadata Publisher Catalog Selection Browser* window is displayed. The available Hierarchies and Measures are displayed in the |

| Field | Description |
|---|---|
| | *Available Members* pane.<br>▪ Select the required metadata object and click or click to select all objects.<br>▪ Click to remove all selected objects or select the object and click to remove it.<br>▪ Click **Save**. |

3. Click **Save**.
4. Enter the password to connect to the OBIEE repository in the **Repository Token** field.

**NOTE:** The entered password should be as per OBIEE standards.




5. Click Generate.
6. Execute the OFSAAGenerateRepository utility. For information on how to run the utility, see Command Line Utility for OBIEE Publish section.

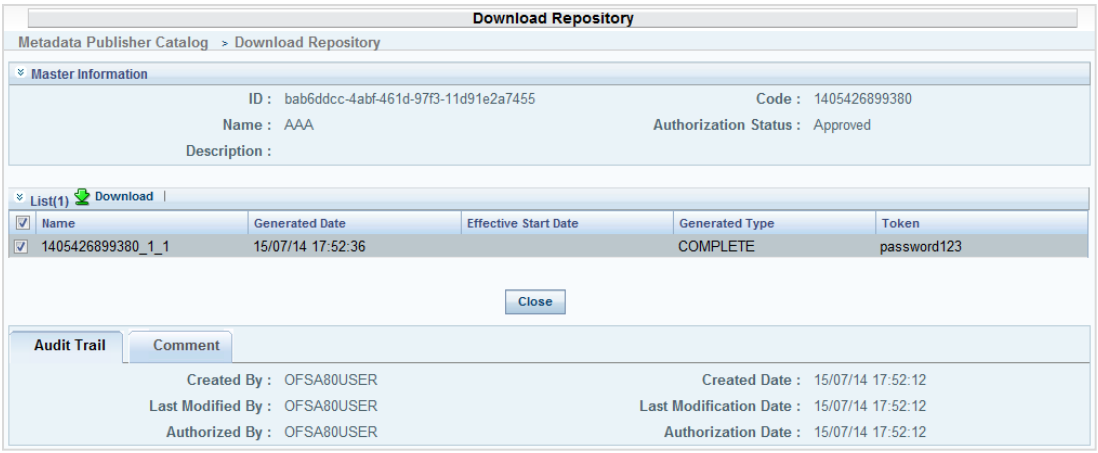
### 3.10.3.5 Downloading Repository

This feature allows you to download the successfully generated repository (RPD) files to your local system. You can download the repository file multiple times. You should have Catalog Write role mapped, to download a repository.

The repository files will be available for download only if you have run OFSAAGenerateRepository utility after generating the repository file. For information on how to run the utility, see Command Line Utility for OBIEE Publish section.

To download repository

1. From the Metadata *Publisher Catalog* window, select the catalog definition and click **Download**. The *Download Repository* window is displayed.




2. Select the catalog definition and click **Download.** You are prompted to specify the location where you want to save the RPD file.

**NOTE:** You can view the password which was used to generate the repository if the CATTOKEN function or Catalog Advanced role is mapped to you. Otherwise, you should remember the password since you will be prompted to enter the password for opening the downloaded RPD file.

### 3.10.3.6 Modifying Catalog Definition

You can modify the Folder, Name, and Description. You can also add or remove Datasets, Entities, or Derived Entities to the catalog definition. The Catalog Write role should be mapped to your user group to modify catalog definitions.

To modify catalog definition

1. From the *Metadata Publisher Catalog* window, select the catalog definition you want to modify and click **Edit**. The *Metadata Publisher Catalog-Edit* window is displayed.
2. Modify the required detail. For more information, see Creating a Catalog Definition.
3. Click **Save** and update the changes.

### 3.10.3.7 Deleting Catalog Definition

You can remove Catalog definition(s) which are no longer required in the system by deleting from *Metadata Publisher Catalog* window. The Write role should be mapped to your user group to delete catalog definitions.

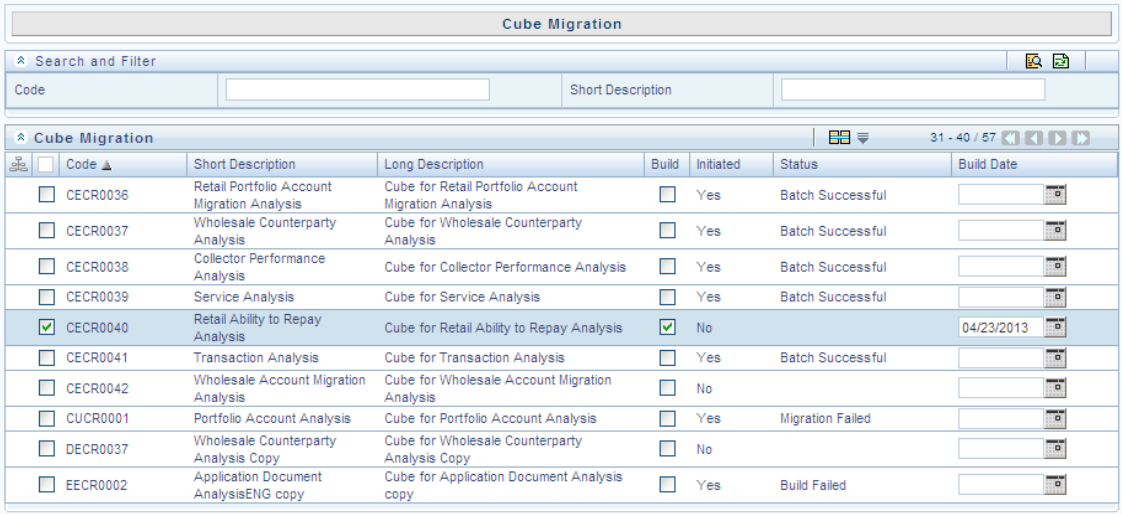
1. Select the catalog definition you want to delete and click **Remove** button.
2. Click **Yes** to confirm deletion.

   The selected Catalog definitions are removed.

## 3.11 Cube Migration

Cube Migration within the Infrastructure system helps you to migrate Essbase Cube definition to Oracle OLAP Cube. You can convert the Cubes defined in Essbase to Oracle Cube definition and either build the Cube or create a Batch for later execution of the build.

You (Business Analysts) need to have **ORACBADD** function role mapped to access Cube Migration within the Infrastructure system. You can access Cube Migration by expanding *Data Model Management* module > *Business Metadata Management* section within the tree structure of LHS menu.

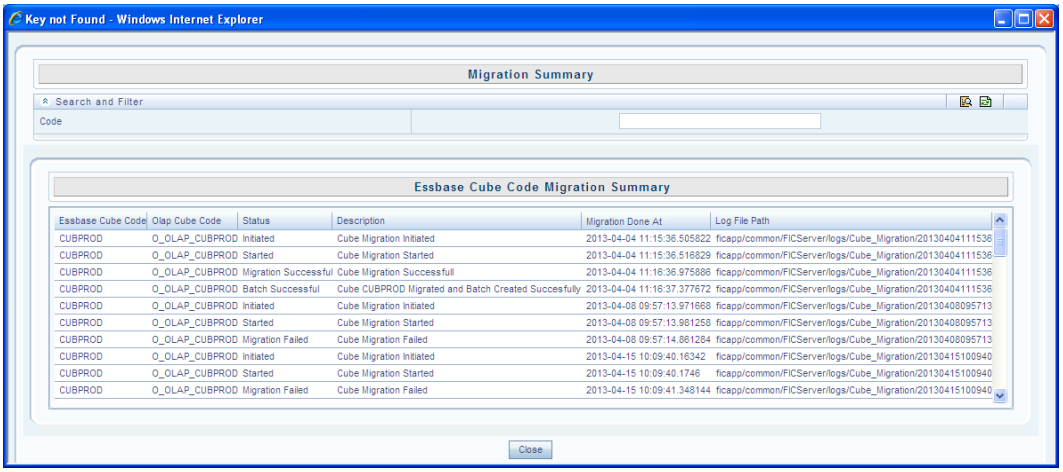



| Code | Short Description | Long Description | Build | Initiated | Status | Build Date |
|---|---|---|---|---|---|---|
| CECR0036 | Retail Portfolio Account Migration Analysis | Cube for Retail Portfolio Account Migration Analysis | | Yes | Batch Successful | |
| CECR0037 | Wholesale Counterparty Analysis | Cube for Wholesale Counterparty Analysis | | Yes | Batch Successful | |
| CECR0038 | Collector Performance Analysis | Cube for Collector Performance Analysis | | Yes | Batch Successful | |
| CECR0039 | Service Analysis | Cube for Service Analysis | | Yes | Batch Successful | |
| CECR0040 | Retail Ability to Repay Analysis | Cube for Retail Ability to Repay Analysis | ✓ | No | | 04/23/2013 |
| CECR0041 | Transaction Analysis | Cube for Transaction Analysis | | Yes | Batch Successful | |
| CECR0042 | Wholesale Account Migration Analysis | Cube for Wholesale Account Migration Analysis | | No | | |
| CUCR0001 | Portfolio Account Analysis | Cube for Portfolio Account Analysis | | Yes | Migration Failed | |
| DECR0037 | Wholesale Counterparty Analysis Copy | Cube for Wholesale Counterparty Analysis Copy | | No | | |
| EECR0002 | Application Document AnalysisENG copy | Cube for Application Document Analysis copy | | Yes | Build Failed | |

The *Cube Migration* window displays the list of existing Essbase Cubes with their Code, Short Description, Long Description, Build, Initiated status, Status of migration, and Build Date.

The Status column indicates the status of migration of a particular Cube as *Batch Successful*, *Build Successful*, *Build Failed*, and *Migration Failed*.

The Initiated column indicates the status of migration as either **Yes** / **No** of a particular Cube. By clicking on the “Yes” status, you can view the migration history of selected Cube along with the following details in the *Migration Summary* window.




| Essbase Cube Code | Olap Cube Code | Status | Description | Migration Done At | Log File Path |
|---|---|---|---|---|---|
| CUBPROD | O_OLAP_CUBPROD | Initiated | Cube Migration Initiated | 2013-04-04 11:15:36.505822 | ficapp/common/FICServer/logs/Cube_Migration/20130404111536 |
| CUBPROD | O_OLAP_CUBPROD | Started | Cube Migration Started | 2013-04-04 11:15:36.516829 | ficapp/common/FICServer/logs/Cube_Migration/20130404111536 |
| CUBPROD | O_OLAP_CUBPROD | Migration Successful | Cube Migration Successfull | 2013-04-04 11:16:36.975886 | ficapp/common/FICServer/logs/Cube_Migration/20130404111536 |
| CUBPROD | O_OLAP_CUBPROD | Batch Successful | Cube CUBPROD Migrated and Batch Created Succesfully | 2013-04-04 11:16:37.377672 | ficapp/common/FICServer/logs/Cube_Migration/20130404111536 |
| CUBPROD | O_OLAP_CUBPROD | Initiated | Cube Migration Initiated | 2013-04-08 09:57:13.971668 | ficapp/common/FICServer/logs/Cube_Migration/20130408095713 |
| CUBPROD | O_OLAP_CUBPROD | Started | Cube Migration Started | 2013-04-08 09:57:13.981258 | ficapp/common/FICServer/logs/Cube_Migration/20130408095713 |
| CUBPROD | O_OLAP_CUBPROD | Migration Failed | Cube Migration Failed | 2013-04-08 09:57:14.861284 | ficapp/common/FICServer/logs/Cube_Migration/20130408095713 |
| CUBPROD | O_OLAP_CUBPROD | Initiated | Cube Migration Initiated | 2013-04-15 10:09:40.16342 | ficapp/common/FICServer/logs/Cube_Migration/20130415100940 |
| CUBPROD | O_OLAP_CUBPROD | Started | Cube Migration Started | 2013-04-15 10:09:40.1746 | ficapp/common/FICServer/logs/Cube_Migration/20130415100940 |
| CUBPROD | O_OLAP_CUBPROD | Migration Failed | Cube Migration Failed | 2013-04-15 10:09:41.348144 | ficapp/common/FICServer/logs/Cube_Migration/20130415100940 |

<table>
<tr><th>Column Name</th><th colspan="2">Description</th></tr>
<tr><td>Essbase Cube Code</td><td colspan="2">Refers to the code defined for Essbase Cube.</td></tr>
<tr><td>Olap Cube Code</td><td colspan="2">Refers to the new auto assigned OLAP Cube code in the format O_OLAP_(Essbase_Cube_code). For example, CECR0032=O_OLAP_CECR0032.</td></tr>
<tr><td>Status</td><td colspan="2">Refers to the status of migration. The following status are displayed:<br>▪ Initiated<br>▪ Started<br>▪ Migration Successful<br>▪ Build Failed<br>▪ Build Successful<br>▪ Batch Successful<br>▪ Migration Failed</td></tr>
<tr><td rowspan="7">Description</td><td colspan="2">Refers to additional details of execution based on status, as indicated below.</td></tr>
<tr><td>Initiated</td><td>Cube Migration Initiated</td></tr>
<tr><td>Started</td><td>Cube Migration Started</td></tr>
<tr><td>Migration Successful</td><td>Cube Migration Successful</td></tr>
<tr><td>Build Failed</td><td>Cube (Code) Migrated Successfully Build Failed</td></tr>
<tr><td>Build Successful</td><td>Cube (Code) Migrated and Build Successfully</td></tr>
<tr><td>Batch Successful</td><td>Cube (Code) Migrated and Batch Created Successfully</td></tr>
<tr><td>Migration Failed</td><td>Failed to Migrate as Cube definition is not valid<br>Failed To Save In Analytical Workspace</td></tr>
</table>

| Column Name | Description |
|---|---|
| Migration Done At | Refers to the date and time stamp of migration in the below format.<br>YYYY-MM-DD HH:MM:SS.Milliseconds. Example, 2013-03-25 18:18:40.516972 |
| Log File Path | Refers to the path where migration log file resides for debugging. For example, ficapp/common/FICServer/logs/Cube_Migration/20130327080907. The number "20130327080907" indicates the date and time stamp. |

In the *Migration Summary* window, you can search for a Cube by specifying the Code and clicking button in Search and Filter tool bar. You can also click button to reset the Code field.

The *Cube Migration* window, you can also make use of Search and Pagination options to search for a specific Cube within the system based on Code and Short Description. For more information, refer Search and Filter and Pagination sections.

### 3.11.1 Migrating Cube

Before migrating Essbase to Oracle Cubes, ensure the following:

- The "atomic schema" of the database is of version 11.2.0 or greater, since OFSAAI does not support building Cube(s) for lower versions of Oracle Database.
- Dimensions present in the Essbase Cube should not have multiple Hierarchies.
- The Essbase Cube definition should not have any derived entities.
- Essbase Cube to be migrated should have only simple join condition.
- If a filter is defined on a Dataset, then the respective dimension should be part of **Selected Dimension** of Oracle Cube.

  For details of AAI and OLAP limitations, refer to OLAP Cube Limitations section.

In the *Cube Migration* window, you can either build the Cube or create a Batch for later execution of the build. In both the options, the selected Essbase cube is migrated to Oracle Cube and will be displayed in *Oracle Cube summary* window.

To migrate Essbase Cube(s) to Oracle Cube(s), do the following:

1. Select the checkbox adjacent to the required Code (Essbase). You can also select multiple checkboxes for group migration.
2. Do one of the following:
   - To start the migration through *Operation* > *Batch execution* process by creating a Batch, click button from the Cube Migration tool bar.

- To directly Build the Cube, select the *Build* column checkbox of the Cube selected.

  (Optional) Select the **Build Date** (MIS Date) in the *Build Date* column, by clicking on the (calendar) icon to start the Cube Build for the particular date. However, Build Date is not mandatory and if not specified, the last quarter date is considered. Click button from the Cube Migration tool bar.

An information dialog is displayed indicating “Migration Triggered Successfully”. Click **OK**, the *Migration Summary* window is displayed with the initial status.

You can click **Refresh** to fetch the latest status or click **Close** to exit the window.

**NOTE:** When multiple Cubes are selected for migration, the status *Initiated* indicates that migration is triggered for all the selected Cube(s) and *Started* indicates the status of those Cubes, which are currently being migrated.

## 3.12 References

### 3.12.1 Scenario to Understand Data Set Functionality

Consider the scenario, where you want to analyze the Customer Relationship Management through various profiles of a customer against the various transactions and the channels of transaction through which the actual transactions have happened.

This information is maintained in relational tables. In a typical Star Schema implementation of the relations, Customer profiles like Age, Gender, Sex, Residence, and Region are maintained in Individual Dimension tables. Similarly, the Transaction Types and Channels would be maintained in a separate Dimension tables. The actual transaction performed by the Customers will be stored in a Fact table.

A Data Set allows you to collate all the tables with a valid join condition. The tables defined in the data set would form the FROM clause while aggregating for the Cube.

### 3.12.2 Operator Types

The operators available are of three types:

- Arithmetic
- Comparison
- Other

| Type | Operator | Example |
|---|---|---|
| Arithmetic | + | CUR_BOOK_BAL = CUR_PAR_BAL + DEFERRED_CUR_BAL |
| | - | AS_OF_DATE = MATURITY_DATE – REMAIN_TERM_C |
| | * | Remaining Balance after Offset = Opening balance – (Expected balance on every payment date * Mortgage offset %) |
| | / | CUR_PAYMENT = ORG_BOOK_BAL/ (ORG_TERM/ PMT_FREQ [in months]) |
| Comparison | = | CUR_PAYMENT = principal + interest |
| | <> | If ADJUSTABLE_TYPE_CD <> 0, INTEREST_RATE_CD = 001 to 99999. |
| | > | If ORIGINATION_DATE > AS_OF_DATE, LAST_PAYMENT_DATE = ORIGINATION_DATE. |
| | >= | AS_OF_DATE >= ORIGINATION_DATE |
| | < | AS_OF_DATE < NEXT_REPRICE_DATE |

| Type | Operator | Example |
|---|---|---|
| | <= | If ORIGINATION_DATE <= AS_OF_DATE, LAST_PAYMENT_DATE >= ORIGINATION_DATE |
| Other | ( | Parentheses group segments of an expression to make logical sense. |
| | ) | MATURITY_DATE <= NEXT_PAYMENT_DATE + (REMAIN_NO_PMTS_C * PMT_FREQ) |
| | , | The comma separates statements of a function. |

### 3.12.3 Function Types and Functions

You select the type of function for your expression from the Type list.

The choices are:

- Mathematical Functions
- Date Functions
- String Functions
- Other Functions

The type of function you select determines the choices available in the Function box. These unique functions in the Functions Sub-container enable you to perform various operations on the data. The following table lists each available function and Detail on the operations of each function in which it appears.

| Function Type | Function Name | Notation | Description | Syntax | Example |
|---|---|---|---|---|---|
| Mathematical | Absolute | ABS(a) | Returns the positive value of the database column | {ABS( } followed by {EXPR1 without any embedded or outermost left-right parentheses pair} followed by { )} | ABS (-3.5) = 3.5.ABS(F), ABS(F + C), ABS(F + C * R + F) are possible. However, ABS((F + C + R)), ABS((F + (MAX * CEILING))) are not possible. |
| | Ceiling | Ceiling (a) | Rounds a value to the next highest integer | Ceiling(column or expression) | 3.1 becomes 4.0, 3.0 stays the same |

| Function Type | Function Name | Notation | Description | Syntax | Example |
|---|---|---|---|---|---|
| | Greatest | Greatest(a,b)<br>GREATEST(column or expression, column or expression) | Returns the greater of 2 numbers, formulas, or columns | Greatest(column or expression, column, or expression | Greatest(1.9,2.1) = 2.1 |
| | Least | Least (a,b)<br>LEAST(column or expression, column or expression) | Returns the lesser of 2 numbers, formulas, or columns | Least(column or expression, column or expression | Least(1.9,2.1) = 1.9 |
| | Natural Log | LN(number)<br>LN(a) | Returns the natural logarithm of a number. Natural logarithms are based on the constant e (2.71828182845904). | LN(number) where number is the positive real number for which you want the natural logarithm | LN(86) equals 4.454347<br>LN(2.7182818) equals 1 |
| | Minimum | Min(a) | Returns the minimum value of a -database column | Max(Column) | |
| | Maximum | Max(a) | Returns the maximum value of a -database column | Max(Column) | |

| Function Type | Function Name | Notation | Description | Syntax | Example |
|---|---|---|---|---|---|
| | Power | Power(a,b)<br>POWER(coefficient, exponent) | Raises one value to the power of a second | {POWER(} followed by {EXPR1 without any embedded or outermost left-right parentheses pair followed by {,} followed by {EXPR1 without any embedded or outermost left-right parentheses pair} followed by { )} | Valid examples:<br>POWER(F, R)<br>POWER(F + C * R, F / R)<br>Invalid examples:<br>POWER((F/R), F + R)<br>POWER((F + C), (C * R))<br>POWER(F + POWER, R)<br>POWER( MAX, C) |
| | Round | Round(a,b)<br>ROUND (number, precision) | Rounds a value to a number of decimal places | Round(x, n) returns x rounded to n decimal places | Round(10.52354,2)=10.52 |
| | Sum | Sum(a) | Sums the total value of a database column. Sum is a multi-row function, in contrast to +, which adds 2 or more values in a given row (not column) | Sum(Column) | |

| Function Type | Function Name | Notation | Description | Syntax | Example |
|---|---|---|---|---|---|
| | Weighted Average | WAvg(a,b)<br>WAvg (column being averaged, weight column) | Takes a weighted average of one database column by a second Column.<br>WAvg cannot appear in any expression.<br>If you have two formulas called F1 and F2, both of which are WAvg functions,<br>then you can form a third formula F3 as F1 + F2. If F3 is chosen as a calculated column, then an error message appears and the SQL code is not generated for that column. This is similar for nested WAvg functions if F3 is WAvg and it has F1 or F2 or both as its parameters. | WAvg(Column A, Column B) | WAvg(DEPOSITS.CUR_NET_RATE,DEPOSITS.CUR_BOOK_BAL) |
| **Note** : You cannot use the Maximum and Minimum functions as calculated columns or in Data Correction Rules. The Maximum, Minimum, Sum, and Weighted Average functions are multi-row formulas. They use multiple rows in calculating the results. | | | | | |
| Date | Build Date | BuildDate(year, month,days) | Requires three parameters, (CCYY,MM,DD) (century and year, month, day). It returns a valid data and enables you to build a date from components.<br>**CAUTION**: If the parameters are entered incorrectly, the date is invalid. | BUILDDATE(CCYY,MM,DD) | BuildDate(95,11,30) is invalid (invalid century).<br>BuildDate(1995,11,30) is valid. |

| Function Type | Function Name | Notation | Description | Syntax | Example |
|---|---|---|---|---|---|
| | Go Month | GoMonth(date,months) | Advances a date by x number of months. Go Month does not know the calendar. For example, it cannot predict the last day of a month. Typical functionality is illustrated in the following table: | GOMONTH(Date column, Number of months to advance) | GOMONTH(DEPOSITS.ORIGINATION_DATE,DEPOSITS.ORG_TERM)<br>Valid examples:<br>GOMONTH(F, F + R + C)<br>GOMONTH(F, R)<br>Invalid examples:<br>GOMONTH(F + (R + C), MAX)<br>GOMONTH((F * C), F) |

For Example:

| Date Column | No of Months | GOMONTH | Comment |
|---|---|---|---|
| 1/31/94 | 1 | 2/28/94 | Because 2/31/94 does not exist |
| 1/15/94 | 2 | 3/15/94 | Exactly 2 months:15th to 15th |
| 2/28/94 | 3 | 5/28/94 | Goes 28th to 28th: does not know that 31st is the end of May |
| 6/30/94 | -1 | 5/30/94 | Goes back 30th to 30th: does not know that 31st is end of May |

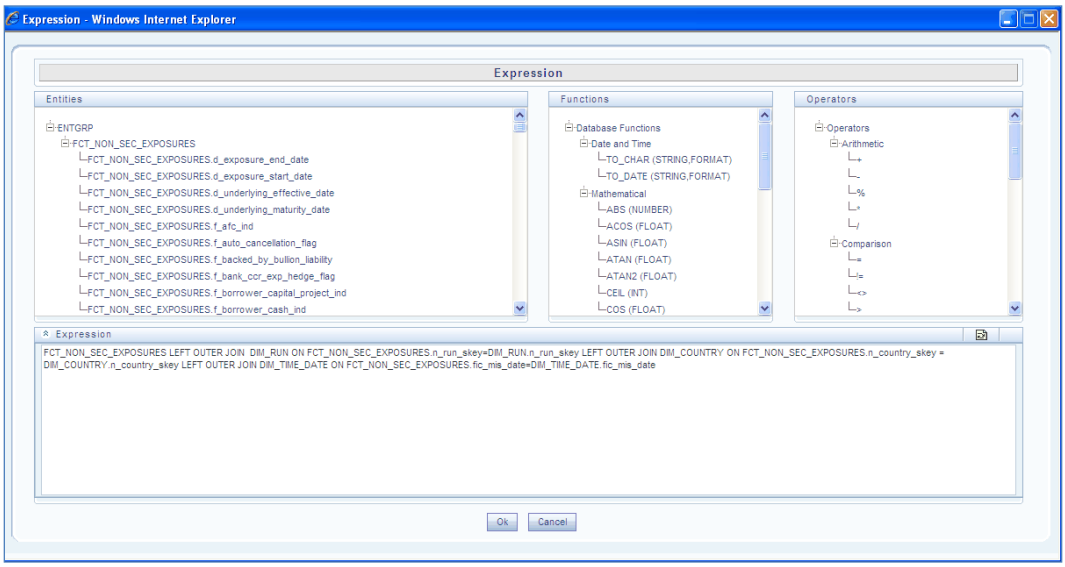
| | | | | | |
|---|---|---|---|---|---|
| | Year | Year(date) | Year(x) returns the data for year x. | Year(Column) returns the year in the column, where the column is a date column. | Year(Origination Date) returns the year of the origination date. |
| | Month | Month(date) | Month(x) returns the month in x, where x is a numbered month. | Month(Column) returns the month in the column, where the column is a date column. | Month(9) returns September.<br>Month(Origination Date) returns the month of the origination date. |

| Function Type | Function Name | Notation | Description | Syntax | Example |
|---|---|---|---|---|---|
| String | Trim All | AllTrim(a) | | Trims leading and following spaces, enabling the software to recognize numbers (entered in<br>All Trim) as a numeric value, which can then be used in calculating | |
| Other | If statement | If(a=b,c,d) | The IF function should always have odd number of parameters separated by commas. The first parameter is an expression followed by a relational operator, which is in turn followed by an expression.<br>Note: Avoid embedding multiple individual formulas in subsequent formulas. This can create an invalid formula. | If(Condition, Value if True, Value if False).<br><br>{IF( } followed by EXPR2 followed by {> \| < \| <> \| = \| >= \| <=} followed by EXPR2 followed by {{,} followed by EXPR followed by ),} followed by EXPR}n followed by {)} where n = 1, 2, 3, ..... | If(LEDGER_STAT.Financial= 110, LEDGER_STAT.Month 1 Entry,0)<br>IF(((MAX + SUM) >= 30), F, POWER) is valid. |

| Function Type | Function Name | Notation | Description | Syntax | Example |
|---|---|---|---|---|---|
| | Lookup | Lookup(OrigCol, LookupCol,…,ReturnedCol) | Enables you to assign values equal to values in another table for data correction.<br>LOOKUP function should always have an odd number of parameters separated by commas and with a minimum of 3 parameters.<br>Note: Lookup is used exclusively for data correction. | Lookup(O1,L1,O2,L2,...On,Ln,R) where O=Column from Original table<br>L=Column from Lookup table<br>R=Column to be Returned<br>So the previous statement would read:<br>where O1=L1 and O2=L2... Returned value R | Valid examples:<br>LOOKUP(F, R, R)<br>LOOKUP(F, R, F, F, F)<br>Invalid examples:<br>LOOKUP(F)<br>LOOKUP(F, R)<br>LOOKUP(F + R, (F + R), MAX) |

### 3.12.4 Creating Expression

You can define an expression in the *Expression* window to join two selected tables. Click ... button. The *Expression* window is displayed.




The *Expression* window consists of 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** - consists of functions that are specific to databases like Oracle and MS SQL Server. You can use these functions along with Operators to specify the join condition. The Functions categories are displayed based on the database types as tabulated.

| Database | Functions |
|---|---|
| Transact SQL | Specific to MS SQL server which consists of Date & Time, Math, and System functions. |
| SQL OLAP | Specific to Microsoft OLAP which consists of Array, Dimension, Hierarchy, Logical, Member, Number, Set, and String functions. |
| SQL | Specific to Oracle which consists of Character, Conversion, Date and Numeric functions. |

**NOTE:** It is not mandatory to specify a Function for a join condition.

- **Operators** - consists of the function operators categorized into folders as tabulated.

| Operator | Types |
|---|---|
| Arithmetic | +, -, %, * and / |
| Comparison | '=', '!=', '< >', '>', '<', 'IN', 'NOT IN, 'ANY', 'SOME', 'LIKE' and 'ALL'. |
| Logical | 'NOT', 'AND' and 'OR' |
| Set | UNION, UNION ALL, INTERSECT and MINUS |
| Others | 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** which 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 dimension table and link to the fact table.
5. Click **OK** and save the join condition details.

### 3.12.5 Base and Computed Measures

A **Base Measure** refers to a measure where the aggregation is done directly on the raw data from the database. It represents some operation on the actual data available in the warehouse

and its storage in its aggregated form in another data store. This is different from metrics that is not stored in physical form, but as functions that can be operated on other measures at viewing time. The choice of base or computed measure is based on the user's requirement of a design issue on storage optimality as it is on query response speeds desired. These functions defined on other measures are called **Computed Measures** and dealt separately. It is the metric definition like amount of sales or count of customers.

### 3.12.6 Business Hierarchy Types

The available Business Hierarchies are as tabulated.

| Hierarchy Type | Description / Hierarchy Sub Type |
|---|---|
| Regular | In a Regular Hierarchy Type, you can define the following Hierarchy Sub Types:<br>▪ Non Business Intelligence Enabled<br>In a non Business Intelligence Enabled Hierarchy, you need to manually add the required levels. The levels defined will form the Hierarchy.<br>▪ Business Intelligence Enabled<br>You can Enable Business Intelligence hierarchy when you are not sure of the Hierarchy structure leaf values or the information is volatile and also when the Hierarchy structure can be directly selected from RDBMS columns. The system will automatically detect the values based on the actual data.<br>▪ Parent Child<br>This option can be selected to define a Parent Child Type hierarchy. |
| Measure | ▪ A Measure Hierarchy consists of the defined measure as nodes and has only the *Non Business Intelligence Enabled* as Hierarchy Sub Type. |
| Time | A Time Hierarchy consists of the levels/nodes of high time granularity and has only the *Business Intelligence Enabled* as Hierarchy Sub Type. |

You can select the required Business Hierarchy from the drop-down list and specify the Hierarchy Sub Type details. The window options differ on selecting each particular Hierarchy type. Click on the following links to view the section in detail.

- Regular Hierarchy
- Measure Hierarchy
- Time Hierarchy

#### 3.12.6.1 Regular Hierarchy

When you select Regular Hierarchy, you can define the Hierarchy Sub Type for Non Business Intelligence Enabled, Business Intelligence Enabled, and Parent Child Hierarchy. Select the

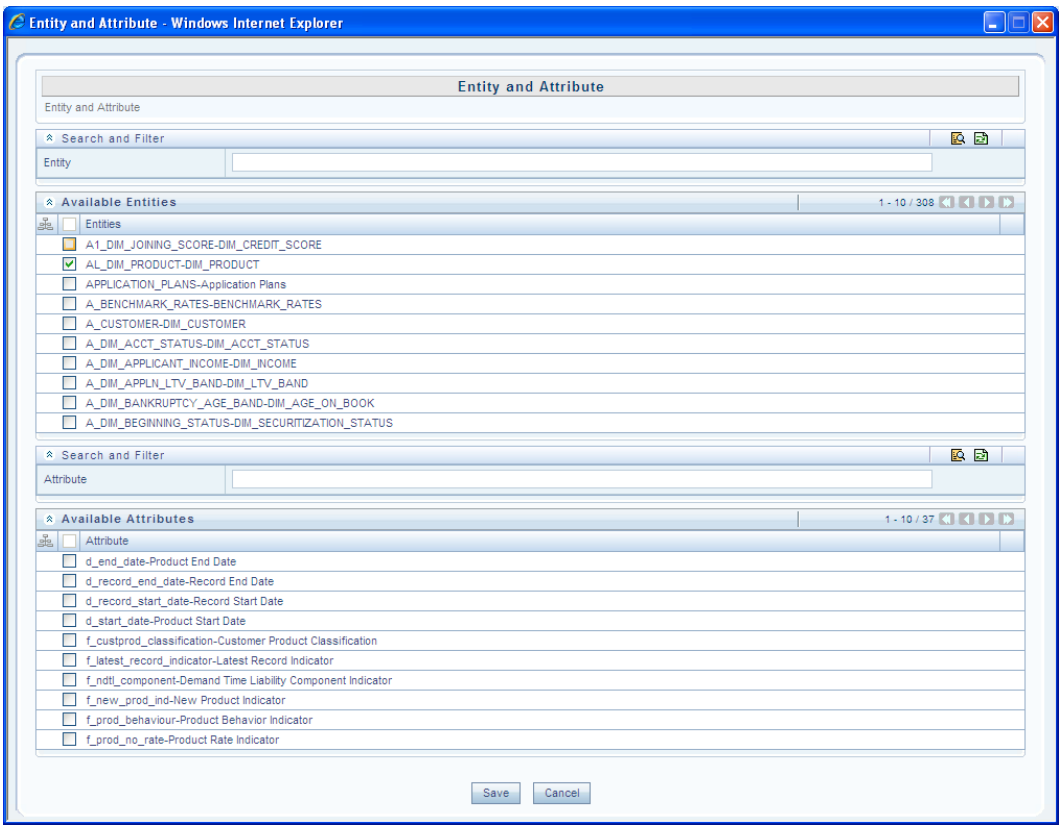
required Hierarchy Sub Type from the drop-down list. Click on the following links to view the section in detail.

- Non Business Intelligence Enabled Hierarchy
- Business Intelligence Enabled Hierarchy
- Parent Child Hierarchy

### 3.12.6.2 Non Business Intelligence Enabled Hierarchy

When you have selected *Regular - Non Business Intelligence Enabled Hierarchy* option, do the following:

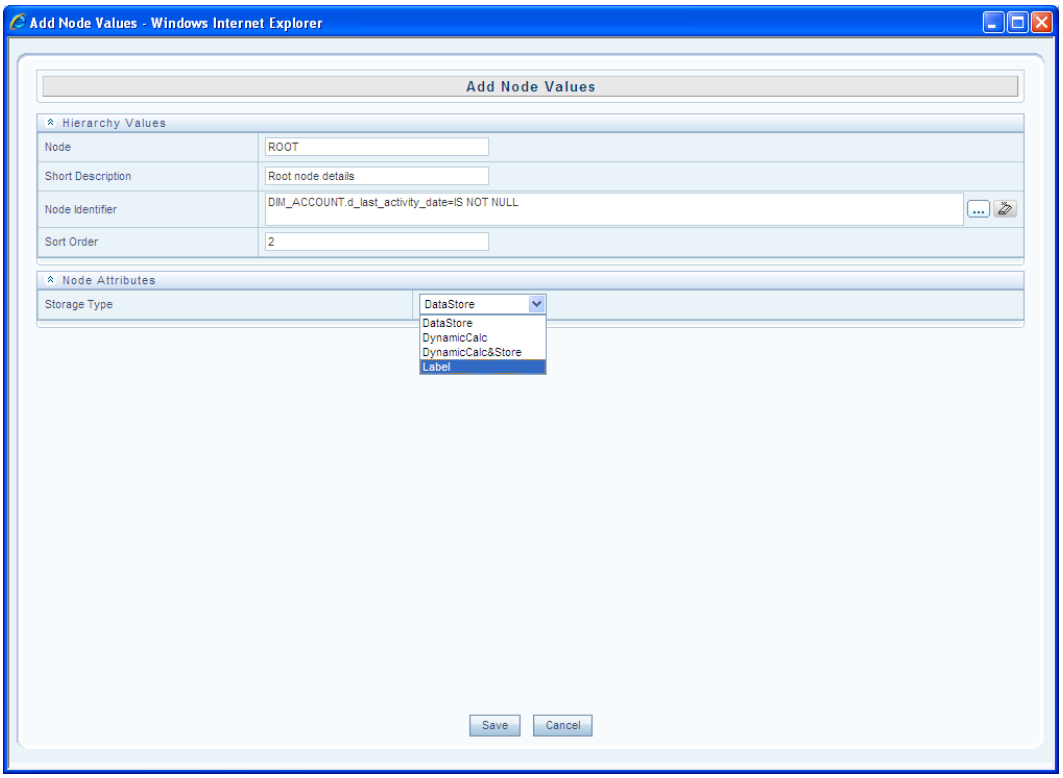
1. Click ... button in the **Entity** field. The Entity *and Attribute* window is displayed.




- You can either search for a specific **Entity** using the Search field or select the checkbox adjacent to the required **Entity** in the *Available Entities* list. The list of defined Attributes for the selected entity is displayed *Available Attributes* list.
- You can either search for a specific **Attribute** using the Search field or select the checkbox adjacent to the required **Attribute** in the *Available Attributes* list.
- Click **Save**. The selected Entity and Attribute is displayed in the *Add Business Hierarchy* window.

**NOTE:** Ensure that the values present in Attribute column do not contain new line characters. Because the hierarchy node descriptions in the hierarchy browser are considered as text fields and do not permit new line characters.

2. Click button from the Business Hierarchy tool bar. The *Add Node Values* window is displayed.




- Enter the details in Hierarchy Values section as tabulated.

| Field | Description |
|---|---|
| Node | ▪ The Node value is auto-populated and is editable. |
| Short Description | Enter the required short description for the node. |
| Node Identifier | Click button and define an expression in the *Expression* window for the Node Identifier. For more information, refer Create Expression. |
| Sort Order | Enter the Sort order in numeric value.<br>**Note**: The sort order of the default (OTHERS) node should be greater than the rest of the nodes if this hierarchy is used in RRF Filter condition. |

- In the *Node Attributes* section, select **Storage type** from the drop-down list.

There are four Storage Types as tabulated.

| Field | Description |
|---|---|
| Data Store | ▪ This storage type allocates a data cell for the information to be stored in the database. The consolidated value of the data is stored in this cell. The consolidation for the node occurs during the normal process of rollup. |
| Dynamic Calc | In this storage type, no cell is allocated and the consolidation is done when the data is viewed. The consolidation for the node is ignored during the normal process of rollup. The consolidation of node occurs when you use the OLAP tool for viewing data. |
| Dynamic Calc & Store | In this storage type, a cell is allocated but the data is stored only when the data is consolidated when viewed, for the first time. The consolidation for the node is ignored during the normal process of rollup. It occurs only when you first retrieve the data from the database. |
| Label | In this storage type, a cell is not allocated nor is the data consolidated. It is only viewed.<br>**Note**: The Label storage type is specific to Essbase MOLAP. Storage type is applicable only for the Regular hierarchy type and Measure. If the user wants to specify a dynamic calc option at level members in a multi-level time hierarchy, the same is provided through OLAP execution utility. |

- Click **Save**. The Node values are displayed in *Add Business Hierarchy* window.

3. Click **Save** in the *Add Business Hierarchy* window and save the details.

In the Business Hierarchy tool bar, you can also do the following:

- Click button to **Add** subsequent node(s). For the second node or subsequent node, you can define the *Hierarchy Tree* and *Node Attributes* details as explained below.

| Field | Description |
|---|---|
| Add Hierarchy Node | Click button adjacent to **Child of** field and select the required Member in the *Hierarchy Browser* window. Click **OK**. |
| Consolidation Type | Consolidation Type option is available to Essbase MOLAP. There are six consolidation types such as Addition, Subtraction, Product, Division, Percent, and Ignore. Select the required option from the drop-down list. |

- Click button by selecting the required Node level checkbox to edit the Node details.
- Click button to delete the defined Node details.

### Business Intelligence Enabled Hierarchy

When you have selected *Regular - Business Intelligence Enabled Hierarchy* option, do the following:

1. (Optional) Select **Total Required** checkbox, if you want the total of all the nodes.
2. (Optional) Select **List** checkbox to retrieve information from database when queried.

**NOTE:** List hierarchy can have only one level and you cannot select List option if the Total Required option has been selected. Refer List hierarchy.

3. Click button in the **Entity** field. The *Entity and Attribute* window is displayed.
   - You can either search for a specific **Entity** using the Search field or select the checkbox adjacent to the required **Entity** in the *Available Entities* list. The list of defined Attributes for the selected entity is displayed *Available Attributes* list.
   - You can either search for a specific **Attribute** using the Search field or select the checkbox adjacent to the required **Attribute** in the *Available Attributes* list.
   - Click **Save**. The selected Entity and Attribute is displayed in the *Add Business Hierarchy* window.

**NOTE:** Ensure that the values present in Attribute column do not contain new line characters. Because the hierarchy node descriptions in the hierarchy browser are considered as text fields and do not permit new line characters.

4. Click button from the Business Hierarchy tool bar. The *Add Hierarchy levels* window is displayed.
   - Enter the details in Level Details section as tabulated.

| Field | Description |
|---|---|
| Level | ▪ The Level value is auto-populated and is editable. |
| Short Description | Enter the required short description for the level. |
| Level Identifier | Click button and define an expression in the *Expression* window for the Level Identifier. For more information, refer Create Expression. |
| Level Description | Click button and define an expression in the *Expression* window for the Level Description. For more information, refer Create Expression. |

   - Click **Save**. The Level details are displayed in *Add Business Hierarchy* window.

**NOTE:** BI Hierarchy value refresh on **On Load** property is not functional for data loads performed through Excel Upload. It is applicable only for data loads which run through a batch process.

5. Click **Save** in the *Add Business Hierarchy* window and save the details.

In the Business Hierarchy tool bar, you can also do the following:

- Click button to **Add** subsequent Levels. For the second or subsequent levels, the levels are incremented.
- Click button by selecting the required level checkbox to edit the Level details.
- Click button to delete the defined Level details.

**Parent Child Hierarchy**

When you have selected *Regular - Parent Child Hierarchy* option, do the following:

1. Click button in the **Entity** field. The Entity *and Attribute* window is displayed.
   - You can either search for a specific **Entity** using the Search field or select the checkbox adjacent to the required **Entity** in the *Available Entities* list. The list of defined Attributes for the selected entity is displayed *Available Attributes* list.
   - You can either search for a specific **Attribute** using the Search field or select the checkbox adjacent to the required **Attribute** in the *Available Attributes* list.
   - Click **Save**. The selected Entity and Attribute is displayed in the *Add Business Hierarchy* window.

   **NOTE:** Ensure that the values present in Attribute column do not contain new line characters. Because the hierarchy node descriptions in the hierarchy browser are considered as text fields and do not permit new line characters.

2. The Business Hierarchy section displays the pre-defined nodes such as Child code, Parent Code, Description, Storage Type, Consolidation Type, and Formula. You can modify the node values by doing the following:
   - Click button from the Business Hierarchy tool bar. The *Edit Hierarchy Values* window is displayed.
   - Click button adjacent to the required node field and define the expression in the *Expression* window. For more information, refer Create Expression.
   - Click **Save**. The node details are displayed in *Add Business Hierarchy* window.
3. Click **Save** in the *Add Business Hierarchy* window and save the details.

Note the following:

- When the size of the hierarchy is large, Parent Child Hierarchy can be configured to be treated as a Business Intelligence enabled hierarchy for optimal performance. The hierarchy behaves like a non-Business Intelligence hierarchy till a limit of the number of nodes is reached. This limit (default value is 2048) which decides a hierarchy as BI or non-BI is configurable and can be given a value considering the system and JVM capabilities.
- Creating Parent Child Hierarchy with **Roll-up Option** - It is possible to roll up the values of child nodes in Parent child hierarchy to the parent level. If the parent node itself has some value and the child nodes of it also have associated values, it is possible for the value of the parent node to be displayed as the sum of its value and child values.

  For using the Roll-up option, it is required to specify parameters in the **Consolidation Type** for the node field. Based on the column that is specified in the Consolidation Type field, the values of the child nodes will be rolled up i.e. added to the parent level. This can then be viewed using the OBIEE reporting server. However, when Consolidation type is not selected, then it is referred to as Parent Child Hierarchy with Rollup option.

#### 3.12.6.3 Measure Hierarchy

When you select Measure Hierarchy, the Hierarchy Sub Type is selected as Non Business Intelligence Enabled by default. To define a Measure Hierarchy in the *Add Business Hierarchy* window, do the following:

1. Click ... button in the **Entity** field. The *Entity and* Attribute window is displayed.
   - You can either search for a specific **Entity** using the Search field or select the checkbox adjacent to the required **Entity** in the *Available Entities* list. The list of defined Attributes for the selected entity is displayed *Available Attributes* list.
   - You can either search for a specific **Attribute** using the Search field or select the checkbox adjacent to the required **Attribute** in the *Available Attributes* list.
   - Click **Save**. The selected Entity and Attribute is displayed in the *Add Business Hierarchy* window.

   **NOTE:** Ensure that the values present in Attribute column do not contain new line characters. Because the hierarchy node descriptions in the hierarchy browser are considered as text fields and do not permit new line characters.

2. In the *Add Business* Hierarchy window, select the Hierarchy Type as **Measure**.
3. Click ... button in the **Entity** field. The *Entity and Attribute* window opens.

- A list of all the available entities will be listed under **Available Entities**. Select the required entity. The attributes for that entity will be listed under **Available Attributes**.
- Select the required Attribute and click **Save**. Click **Cancel** to quit the window without saving. After saving, the Entity and Attribute will be displayed in their respective fields.

4. Click button from the Business Hierarchy tool bar. The *Add Node Values* window is displayed. Enter the details in the Node Details section as tabulated.

| Field | Description |
|---|---|
| Node | ▪ The Node value is auto-populated and is editable. |
| Short Description | Enter the required short description for the node. |

- In the *Node Attributes* section, do the following:
  - Select **Storage type** from the drop-down list. For more information, refer Storage Types section.
  - Select the **TB Type** as First, Average, or Last from the drop-down list.
- Click **Save**. The Node values are displayed in *Add Business Hierarchy* window.

5. Click **Save** in the *Add Business Hierarchy* window and save the details.

In the Business Hierarchy tool bar, you can also do the following:

- Click button to **Add** subsequent Node/Measures. For the second node or subsequent node, you can also define the *Hierarchy Tree* and *Consolidation Type* details as explained below.

| Field | Description |
|---|---|
| Select Hierarchy Node | Click button adjacent to **Child of** field and select the required Member in the *Hierarchy Browser* window. Click **OK**. |
| Consolidation Type | Consolidation Type option is available to Essbase MOLAP. There are six consolidation types such as Addition, Subtraction, Product, Division, Percent, and Ignore. Select the required option from the drop-down list. |

- Click button by selecting the required Node level checkbox to edit the Node details.
- Click button to delete the defined Node details.

#### 3.12.6.4 Time Hierarchy

When you select Time Hierarchy, the Hierarchy Sub Type is selected as Business Intelligence Enabled and the “Total Required” checkbox is selected by default.

To define a Time Hierarchy in the *Add Business Hierarchy* window, do the following:

1. Click button in the **Entity** field. The *Entity and Attribute* window is displayed.
   - You can either search for a specific **Entity** using the Search field or select the checkbox adjacent to the required **Entity** in the *Available Entities* list. The list of defined Attributes for the selected entity is displayed *Available Attributes* list.
   - You can either search for a specific **Attribute** using the Search field or select the checkbox adjacent to the required **Attribute** in the *Available Attributes* list.
   - Click **Save**. The selected Entity and Attribute is displayed in the *Add Business Hierarchy* window.

   **NOTE:** Ensure that the values present in Attribute column do not contain new line characters. Because the hierarchy node descriptions in the hierarchy browser are considered as text fields and do not permit new line characters.

2. Select the **Time Hierarchy Type** from the drop-down list. Depending on the selection, the *Hierarchy Levels* are displayed in the Business Hierarchy section.

   You can also **Edit** the required Hierarchy Level. Select the checkbox adjacent to the required Level and click button. The *Edit Hierarchy Levels* window is displayed. You can update *Short Description*, *Level Identifier*, and *Level Description* details.

3. Specify **Hierarchy Start Date** by selecting *Month* and *Day* from the drop-down list.
4. Click **Save** and save the Time Hierarchy details.

#### 3.12.6.5 Large Hierarchy Type

A large hierarchy refers to a hierarchy having large number of leaf levels. In order to provide an efficient and optimized hierarchy handling, a hierarchy is defined as Large in Oracle Infrastructure. A default value is set to accommodate the number of hierarchy nodes that a hierarchy can contain, for example, 100. If a hierarchy exceeds the default value specified, then the system treats it as a large hierarchy.

Note the following:

- The maximum hierarchy node limit can be configured to a higher number in the FIC_HOME / CONFIG file. However, the recommended, default value, is 100.
- A large hierarchy is possible only when you are defining a Time or BI enabled hierarchy.

- A large hierarchy cannot be user-defined it is handled automatically by the system.

#### 3.12.6.6 List Hierarchy Type

A list hierarchy is a flat hierarchy i.e. with only one level. In a list hierarchy, all the nodes are displayed unlike the large hierarchy. You can create hierarchy based on business terms like, Customer, Product, Geography, and so on. The information for this hierarchy is generated from the metadata framework, which encapsulates these business terms. This enables the user to generate a report in OBIEE reporting server based on these business terms.

The advantage of defining a list hierarchy is that you need not know technical terminology or have technical knowledge. It also allows the user to specify a range of values. You can also define a summary or group total and perform a sort on the list hierarchy based on the hierarchy member value or attribute value; these two features are available only for the fact-less view.

Ensure that when you save a **BI enabled hierarchy**, the defined hierarchy structure is formed (in the back-end process) and stored in an xml format (as Hierarchycode.xml) in the application server. However, when you save a **BI-enabled List hierarchy**, the hierarchy structure is not formed and hence there will be no BIHIER.XML formed. Whenever this hierarchy is queried, the data is fetched from the atomic database.

### 3.12.7 Measure Types

You can choose the type of computed measure you want. The type options available are as follows:

- Simple Relationship
- Growth Function
- Time-series Function
- Other –referring to the advanced mode where you can define measures to suit your requirements.

Each of the computed measure types has sub-types. Each of these sub-options is explained below to help you choose the right computed measure type.

#### 3.12.7.1.1 Simple Relationship

The Simple Relationship type computed measure is of five types. They are:

- Ratio
- Ratio as Percentage
- Difference
- Addition

- Percentage Difference

  1. When you select the Ratio option, the window displays a simple ratio of two measures. To define the relationship as a ratio, double click the first <<Select Measure>> option to open the Select Measure pop-up.
  2. The pop-up displays will display the Measure folder. Double-click the folder to expand the list of measures under it. Depending on the Information Domain you are logged in to, the measures for that domain are displayed.
  3. Select the measure for which you want to compute the ratio and click OK. To close the pop-up without saving the selected measure option, click Cancel. Repeat the same procedure to choose the second measure.

     **NOTE:** The method of selecting the Measures is common to all the sub-options of the Simple Relationship type.

     When you select the Ratio as Percentage option, the window displays the ratio percentage of the selected measures. When you select the Difference option, the value displayed will be the difference between two selected measures. When you select the Addition option, the summated value of the selected measures will be displayed. When you select the Percentage Difference option, the percentage value of the selected measures is computed.

#### 3.12.7.1.2 Growth Function

**Growth** type computed measures are used to calculate the growth of a measure over a certain time period. The Growth type measures are of two types:

- **Absolute** – where the growth of a measure can be calculated either in absolute terms i.e. a simple difference
- **Percentage** – where the growth of a measure is calculated on a percentage basis.

Absolute Growth Option

1. Select the **Absolute Growth** option and enter the details as tabulated.

| Field | Description |
|---|---|
| Select the base on which to calculate the growth | ▪ Select it from the drop-down list. The available option is Consecutive Period. |
| Select the period | ▪ Select the period from the drop-down list for which you want the growth to be monitored. The available options are Year, Quarter or month. |

**NOTE:** If the time Dimension period specified in the cube is Year, Quarter and Month, it takes the previous period of the Time Level.

2. Select the measure from the **Select the Measure** pane. Depending on the Information Domain you are logged in to, the measures for that domain are displayed in the pane. Select the measure from the pane. On selecting the measure, the growth of the measure will be calculated for the consecutive period for a year.

Percentage Growth Option

3. Select the Percentage Growth option and enter the details as tabulated.

| Field | Description |
|---|---|
| Select the base on which to calculate the growth | ▪ Select it from the drop-down list. The available option is Consecutive Period. |
| Select the period | ▪ Select the period from the drop-down list for which you want the growth to be monitored. The available options are Year, Quarter or month. |

4. Select the measure from the **Select the Measure** pane. Depending on the Information Domain you are logged in to, the measures for that domain are displayed in the pane. Select the measure from the pane. On selecting the measure, the growth of the measure will be calculated for the consecutive period for a year.

#### 3.12.7.1.3 Time-Series Function

The Time Series type measures are time dependent. The Time Series types are:

- **Aggregation type** – This option computes the estimate of the periodical performance on a period-to-date basis.
- **Rolling Average** – This option computes the average for the previous N values based on the given dynamic value (N).This dynamic range could vary from a period of three months to any number of months.

Aggregation Type Option

1. Select the **Aggregate** option.
2. Select the measure from the **Select the Measure** pane. Depending on the Information Domain you are logged in to, the measures for that domain are displayed in the pane.

**Rolling Average Option**

1. Select the **Rolling Average** option.

2. Enter the rolling average in the Select the number of periods for which to calculate the rolling average field.

**NOTE:** The duration/period refers to the number of periods with respect to the current level in the time dimension of the chosen cube i.e. if the Current Value of the time dimension + the previous X values (where 'x' is 10 as you have specified) / 10 +1.

3. Select the measure from the **Select the Measure** pane. Depending on the Information Domain you are logged in to, the measures for that domain are displayed in the pane.

#### 3.12.7.1.4 Other (Advanced Mode) Type

The **Advanced** computed measures option allows you to specify a formula for computation of the measure. In order to enter the formula, it is assumed that the user is familiar with MDB specific OLAP functions.

There are two ways that you can enter a formula.

You can define the function/condition for a measure and/or dimension by entering the expression in the pane. It is not essential that you select the measure/dimension and the function in the order displayed. You can select the function and then proceed to specify the parameters, which can be either a measure or dimension or both.

You can define it by following the procedure mentioned below:

**Selecting the Measure**

1. Click **Insert Measure** to open the **Select Measure** pop-up. The pop-up displays will display the **Measure** folder. Double-click the folder to expand the list of measures under it. Depending on the Information Domain you are logged in to, the measures for that domain are displayed.
2. Click **OK** to select the measure selection. To close the pop-up without saving the selected measure option, click **Cancel**.

**Selecting the Dimension**

1. Click **Insert Dimension** to open the **Select Dimension** pop-up. The pop-up displays will display the **Dimension** folder. Double-click the folder to expand the list of dimensions under it. Depending on the Information Domain you are logged in to, the dimensions for that domain are displayed.
2. Click **OK** to select the dimension selection. To close the pop-up without saving the selected dimension option, click **Cancel**.

**Selecting the Function**

1. Click **Insert Function** to open the **Select Function** pop-up. Double-click the **Functions** folder to expand the list of functions within in it. The functions available are those specific to Essbase. The parameters for the function are displayed in the **Parameters** pane.

   **NOTE:** The functions displayed are based on the OLAP type and therefore, vary for SQL OLAP and Essbase.

2. Click **OK** to select the function. To close the pop-up without saving the selected function option, click **Cancel**.

### 3.12.8 Read Only Selected in Mapper Window

1. After selecting the **Read Only** option in the Mapper window (New), click **Save**.
2. In the Mapper *List* window, the Read Only option against the created Map would appear as **Y**. Now select the defined Map and click button. The *Mapper* window is displayed.
3. The **Save Mapping** and **Delete Mapping** options are disabled.
4. Select the Node and click on **View Mapping**. The *View mapping* window is displayed. The **Delete** button is inactive.
5. Click **Close** to exit the window.

### 3.12.9 Accessing Applets Screen

If you are using Java 7, perform the following configurations to access Applet screen:

1. Go to Control Panel and click **Java**.
2. Select the **Security** tab.
3. Select **Medium** (Least Secure Setting) for **Security Level**.
4. Click **Apply**.
5. Click the applet screen link (such as Derived Entity, Archive /Restore Metadata). A Security Warning is displayed.
6. Click **Continue**. A Security Warning with message “Block potentially unsafe components from being run?” is displayed.
7. Click “**Don’t Block**”. A Security Warning with message “Do you want to run this application?” is displayed.
8. Click **Run**.

If you are using Java 8, perform the following configurations to access Applet screen:

1. Go to Control Panel and click **Java**.
2. Select the **Security** tab.
3. Click **Edit Site List**. The *Exception Site List* window is displayed.
4. Click **Add** and enter the OFSAAI Application URL (for example, URL https://10.123.456.789:1234/).
5. Click **Ok**.

# 4 Data Entries Forms and Queries

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

## 4.1 Excel Upload (Atomic)

The *Atomic Schema Upload* window consists of Excel Utilities such as *Excel-Entity Mappings* and *Excel Upload*. The Excel Entity Mappings and Upload utilities have the restricted access depending on the following function roles mapped:

- Users with XLADMIN and XLUSER function roles can perform both mapping and upload operations.
- Users with XLADMIN function role can only define mapping and authorize, but cannot upload the file.
- User with XLUSER function can only retrieve mapping definition (pre-defined by XLADMIN user) and can upload the file based on retrieved mapping.

Click on the below links to view the section in detail.

- Excel-Entity Mappings
- Excel Upload

### 4.1.1 Navigating to Excel Upload (Atomic)

You can access Excel Upload window by expanding **Data Management Framework** and **Data entry Forms and Queries** within the tree structure of LHS menu and selecting **Excel Upload (Atomic).**

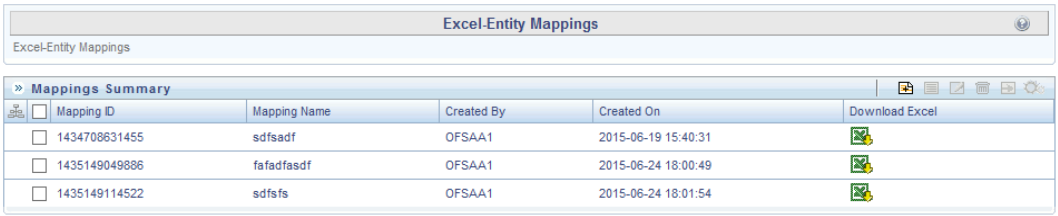
### 4.1.2 Excel-Entity Mappings

Excel-Entity Mapping helps you to map Excel Data to the destination table in the database. Excel-Entity Mapping supports excel files created in Microsoft 2007 and earlier versions along with the option to map and upload multiple sheets created within a single excel file. You need to have XLADMIN function role mapped in order to define mapping.

### 4.1.3 Adding Excel-Entity Mappings

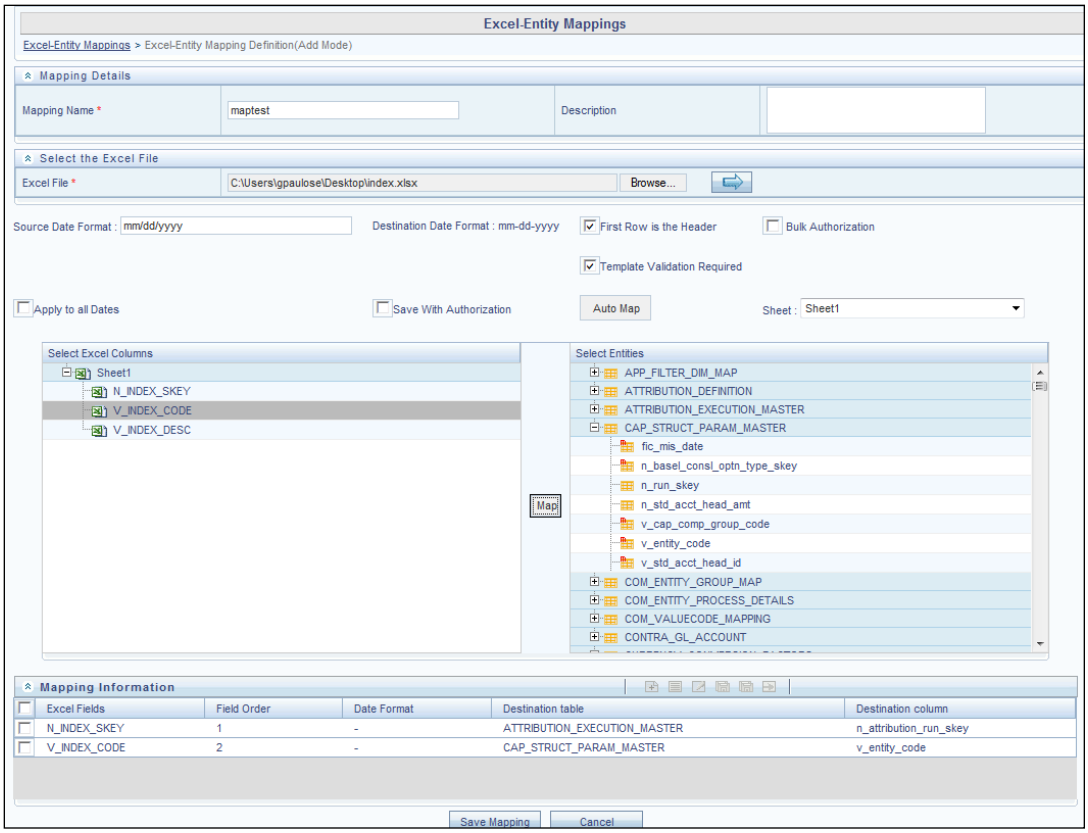
To define mapping in the *Excel-Entity Mappings* window:

6. From the LHS menu of *DEFQ- Excel Upload* window, click **Excel-Entity Mappings**. The *Excel-Entity Mappings* window is displayed.




7. Click button in the *Mappings Summary* toolbar. The *Add Excel-Entity Mappings* window is displayed.
8. Enter the **Mapping Name** and a brief **Description**.
9. Click **Browse**. The *Choose File to Upload* dialog is displayed.
10. Select the required Excel file to be used as the template and click button.

    The columns in the selected Excel template are listed in the *Select Excel Columns* grid and the database tables are listed in the *Select Entities* grid.




11. Enter the format in which the dates are stored in the excel sheet in the **Source Date Format** field.

12. Select the **Apply to all Dates** checkbox if you want to apply the source date format to all date fields in the excel sheet.

13. Select the **First Row is the Header** checkbox, if your Excel template has a header row.

14. Select the **Template Validation Required** checkbox to validate whether the Excel template you use is same as the Excel sheet you use during the *Excel Upload* window. The validation is done when you upload the excel sheet. Error will be displayed if there is any mismatch between the Excel template you use to map and the actual Excel sheet you upload.
    This field is displayed only if you have selected the **First Row is the Header** checkbox.

15. Select the **Bulk Authorization** checkbox to assign the "Excel_Name" across the selected column. For example, the selected column "v_fic_description" will have the Excel Name assigned.

| | |
|---|---|
| **NOTE:** | Ensure that the selected "**Varchar2**" column contains the required length to hold the Excel Name. In order to select Bulk Authorization, you need to have **Save with Authorization** checkbox selected. |

16. Select **Save with Authorization** checkbox to authorize the data upon successful data load. The three mandatory fields namely Maker ID, System Date, and Authorization Status are displayed in the *Select Excel Columns* grid.
    You need to map these fields to the corresponding columns in the *Select Entities* grid. The value for Maker ID column is updated with the User ID of the user who is performing the Excel Upload. The value for Maker Date is updated with the current System Date during which the upload is performed and the value for Authorization Status is updated with flag 'U'. See Save with Authorization to create a Form where the uploaded data can be authorized.
17. Select a column from the *Select Excel Columns* grid and select an attribute or column from the required table from the *Select Entities* grid. Click **Map**.
18. Click **Automap**. The respective columns with the similar names in the Excel sheet and the database are mapped. You need to manually map the other columns. The mapping details are displayed in the *Mapping Information* grid which facilitates you to edit the details as required.
19. Click **Save Mapping**. The *Excel-Entity Mapping* window displays the excel-database table mapping details.

In the *Excel-Entity Mappings* window, you can also do the following:

- Click button in the Mappings Summary tool bar to **View** the mapping details.
- Click button in the Mappings Summary tool bar to **Edit** the mapping details.
- Click button in the Mappings Summary tool bar to **Delete** the mapping details.
- Click button to download the Excel template used in the mapping.

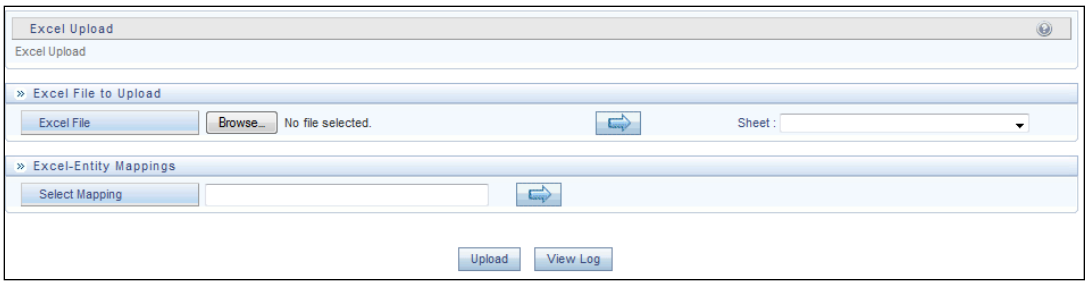
### 4.1.4 Excel Upload

Excel Upload helps you to upload Excel Data to destination table in the database. You need to have “XLUSER” function role mapped to access *Excel Upload* window and retrieve mapping definition (pre-defined by XLADMIN user) to upload excel data. Excel Upload supports excel files created in Microsoft 2007 and earlier versions along with the option to map and upload multiple sheets created within a single excel file. You need to ensure that the excel data contains the dates in the format as defined in Add Excel-Entity Mapping definition.

To upload excel data in the *Excel Upload* window:

1. Click **Browse** in the *Excel File to Upload* grid. The *Choose File to Upload* dialog is displayed.
2. Select the required Excel file and click button.

Select the required sheet in the Excel file from the **Sheet** drop-down list and the *Preview* grid displays the data of the selected sheet of the Excel file.




3. Click in the *Excel-Entity Mappings* grid. The *Mapping Selector* dialog is displayed with the pre-defined mapping details.

4. Select the checkbox adjacent to the required mapping definition and click **OK**.

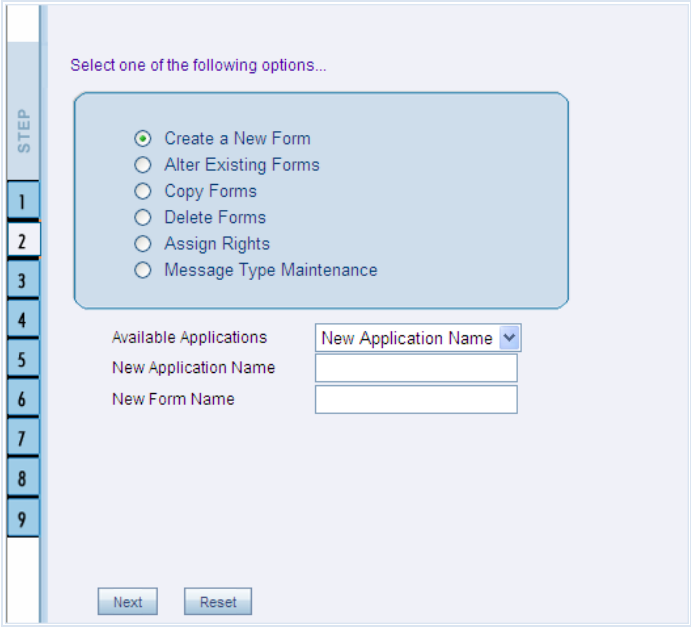
**NOTE:** You can download the Excel template used in the mapping by clicking button.

5. Click **Upload**. A confirmation dialog is displayed on successful upload and the excel data is uploaded to the database table. You can click on **View Log** to view the log file for errors and upload status.

## 4.2 Forms Designer

**NOTE:** 1. This functionality doesn't work when CSRF is enabled. To disable CSRF, see the section Update General Details.
2. This functionality displays only on Microsoft Internet Explorer™ browser.

Forms Designer within the Data Entry Forms and Queries section facilitates you to design web based user-friendly Forms using the pre-defined layouts. You can access DEFQ - Forms Designer by expanding **Data Management Framework** and **Data Entry Forms and Queries** within the tree structure of LHS menu and selecting **Forms Designer**.



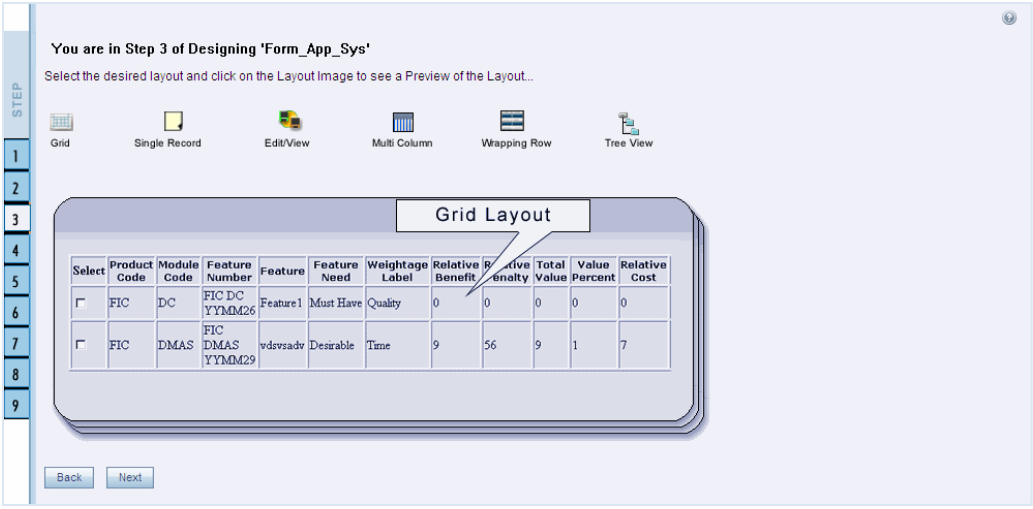

The *DEFQ - Forms Designer* window displays a list of pre-defined options to create, modify, and delete Forms. You can also assign rights and define messages. By default, the option to *Create a New Form* is selected and the left pane indicates the total steps involved in the process. The available options are as indicated below. Click on the links to view the section in detail.

- Creating a New Form
- Altering Existing Forms
- Copying Forms
- Deleting Forms
- Assigning Rights
- Message Type Maintenance

#### 4.2.1.1 Creating a New Form

To design a new Form in the *DEFQ - Forms Designer* window:

1. Ensure that **Create a New Form** option is selected and do the following:
   - Specify the application name by either entering the **New Application Name** or selecting **Available Applications** from the drop-down list.
   - Enter the **New Form Name**.
2. Click **Next**. The *DEFQ - Layout Window* is displayed with the range of pre-defined layouts for you to choose.




Refer to the following table for information.

| Layout | Description |
|---|---|
| Grid Layout | It is the default layout which displays the records in the Form of a table/grid with multiple rows of data. |
| Single Record Layout | It displays a single record at a time. |
| Edit/View Layout | It is a combination of the Single Record and Grid layout. By selecting a record in the grid, the record is displayed in a single record format, which is editable. By default the first record will be displayed in the editable grid.<br>**Note**: The column names are editable only during altering the created Form. |
| Multi Column Layout | It displays a single record with its column in a grid format. You can view a multi column layout Form without having to scroll or with minimum scrolling to view all the columns. |

| Layout | Description |
|---|---|
| Wrapping Row Layout | It displays rows of a single record in a wrapped manner in a grid format. You can view a wrapping row layout Form easily without having to scroll horizontally to view all the data. |
| Tree View Layout | It displays the Hierarchical dimensional table with the selected dimension details. You can select the following options:<br>▪ Dimensional Table Tree<br>▪ Parent Child Tree<br>**Note**: The process to create a Form using the Tree View Layout differs from the procedure explained below. For more information, refer Create Tree View Form in the References section. |

3. Select the required layout and click **Next**. The *List of Available Tables* is displayed.
4. Select the required Table from the list on which the Form is to be created.

**NOTE:** You should use tables with names not longer than 25 characters. This is a limitation.

For multiple selections, you can either press **Ctrl** key for nonadjacent selection or **SHIFT** key for adjacent selections. Click **Next**, the *Fields Selection w*indow is displayed.

**NOTE:** If multiple tables are selected, you need to specify Join Conditions. Select the *Table* from the drop-down list and select the *Available Fields*. Specify the **Join Condition**. Click **Next**, the join conditions are validated and *Fields Selection* window is displayed.

5. Select the fields to be joined from the **Available Fields** list and click >. You can press **Ctrl** key for multiple selections and also click >> to select all the listed fields. All mandatory fields are auto selected and are indicated on the window with an asterisk (*****).

**NOTE:** You can click ∧ or ∨ buttons to arrange the fields in the required order as intended to display in the Data Entry Form. The fields order need not be similar to the arrangement in the underlying table.

**NOTE:** Ensure the fields selected are not of CLOB data type since it is not supported in DEFQ.

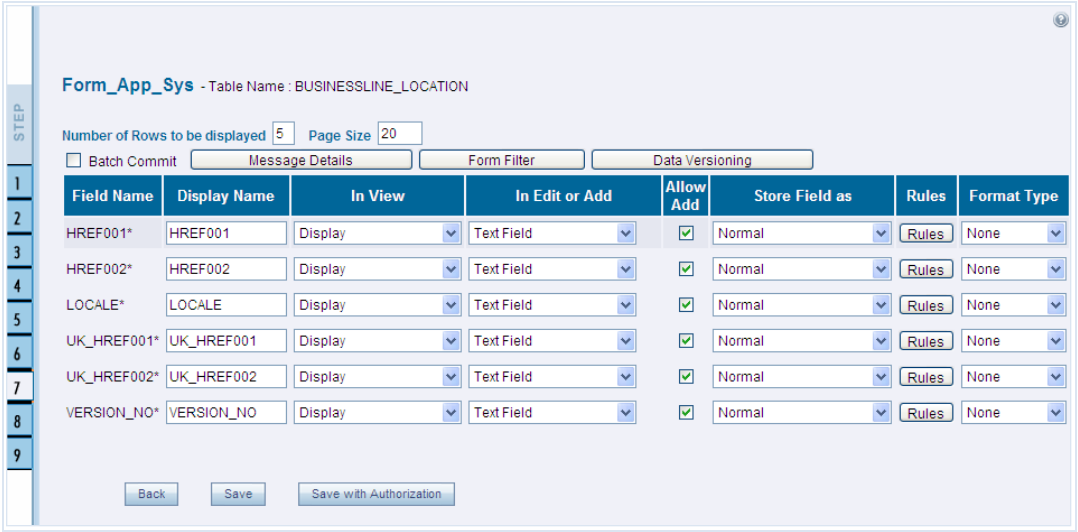
6. Click **Next**. The *Sort Fields Selection* window is displayed.

You can sort the fields in required order as intended to display in the Data Entry Form. Also the mandatory fields which needs user inputs are indicated in '*****' symbol and are auto selected in the Selected Fields pane.

- Select the field from the **Available Fields** list and click [>]. You can press **Ctrl** key for multiple selections and also click [>>] to select all the listed fields.
- (Optional) To arrange multiple fields, select **Sort by Descending** checkbox.
- (Optional) Select the **Excel Map** checkbox to enable *Bulk Authorization*.

**NOTE:** In case you have selected **Excel Map** checkbox, you need to select "Excel Name" from the **Store Field As** list in the *DEFQ Field Properties* window. Only on selection, the "SelectExcelSheetName" list is displayed for authorizer in the *DEFQ - Data Entry* window.

7. Click **Next**. The *DEFQ Field Properties* window is displayed with the Form details such as Field Name, Display Name, In View, In Edit/Add, Allow Add, Store Field as, Rules, and Format Type.




Specify the parameters for each field as tabulated.

| Field | Description |
|---|---|

| Field | Description |
|---|---|
| Display Name | Edit the default Display Name if required. |
| In View | Select either Display or Do not Display to display the field in the Form.<br>If the field is a foreign key field or if more than one table is selected, then the following options are available in the drop-down list;<br>▪ Same Field<br>▪ Alternate Display Field<br>▪ Do not Display options |
| In Edit/Add | Specify the edit parameters by selecting from the drop-down list. The available options depend on the type of field selected.<br>▪ For normal fields you can select Text Field, Text Area, Select List, Protected Field, Read Only, and Do Not Show.<br>▪ For foreign key field s you can select Read Only, Select List, and Do Not Show.<br>▪ For primary key fields you can select Read Only and Do Not Show.<br>▪ For calendar fields you can select Calendar and Do Not Show.<br>**Note**: If you choose **Select List** option, you need to define the values. For more information, refer Define List of Values. |
| Allow Add | Select the checkbox to permit users to add new record.<br>**Note**: An alert message is displayed if you are trying to save a Form with add option disabled for the mandatory fields. |
| Store field as | Select the required option from the drop-down list. You can select the store format as Normal, Sequence Generator, Maker Date, Checker Date, Created Date, Modified Date Auth Flag, Maker id, Maker Date, Checker id, Checker Date, Checker Remarks, Maker Remarks, and Excel Name (If Excel Map is selected in *Sort Fields Selection* window). |
| Rules | Click **Rules** and specify Rules and Expressions for the selected field in the *Specifying Rules and Expressions for Data - Validations* window.<br>For more information, refer Applying Rules section in References. |
| Format Type | Select the required Format type from the drop-down list depending on the field type selected.<br>CLOB data type is not supported. |

| Field | Description |
|---|---|
| Batch Commit | Select the checkbox to group all the set of table Forms to a batch.<br>All the Form tables are executed along with the batch execution and if in case, a Form in the table fails to execute, the entire set of Forms are returned. |
| Message Details | Click **Message Details** to define the message type for Creator and Authorizer in the *Messaging Details for a Form* window. For more information, refer Define Message Details. |
| Form Filter | Click Form Filter to define an expression for Form-level filter condition in the Filter for Form window. |
| Data Versioning | Click **Data Versioning** to perform data versioning on an authorized Form. For more information, refer Form Data Versioning. |

8. Click either **Save** to only save the Form details or click **Save for Authorization** to save the changes with authorization. For more details, refer Save for Authorization section.

**NOTE:** Sometimes, on clicking **Save**, the form does not get saved. This is because the Java heap size setting for OFSAAI service is set too high and web server memory setting is too low. Contact System Administrator to modify it to the appropriate setting by viewing the log file created in the path: $FIC_APP_HOME/common/FICServer/logs/.

While saving, the *User for Mapping - DEFQ* window is displayed which facilitates you to assign user rights to the Form. For more information, refer Assign Rights.

#### 4.2.1.2 Altering Existing Forms

To alter the field details of an existing Form in the *DEFQ - Forms Designer* window:

1. Select **Alter Existing Forms** from the available options and do the following:
   - Select the **Available Applications** from the drop-down list.
   - Select the **Available Forms** from the drop-down list. The listed Forms are dependent on the DSN (Data Source Name) that you have specified.
2. Click **Next**. The *Fields Selection Window* is displayed.

   **Add** or **remove** the selected fields as required to be displayed in the Form. You can choose a field from the **Available Fields** list and click > to add, or choose the selected field from the **Fields to Display** list and click < to de-select. You can press **Ctrl** key for multiple selections and also click >> or << buttons to select/de-select all the listed fields.
3. Click **Next**. The *Sort Fields Selection Window* is displayed.

- Sort the fields in required order as intended to display in the Form. You can choose a field from the list and click > or < buttons to select/deselect. You can also click >> or << buttons to select/de-select all the listed fields.
- Select a field and click ∧ or ∨ buttons to arrange fields in the required order.
- (Optional) To arrange multiple fields, select **Sort by Descending** checkbox.
- (Optional) Select the **Excel Map** checkbox to enable *Bulk Authorization*.

**NOTE:** In case you have selected **Excel Map** checkbox, you need to select "Excel Name" from the **Store Field As** list in the *DEFQ Field Properties* window. Only on selection, the "SelectExcelSheetName" list is displayed for authorizer in the *DEFQ - Data Entry* window.

4. Click **Next**. The *DEFQ Field Properties* window is displayed.

   Modify the parameters for each field as required. Refer *DEFQ Field Properties* details.

5. Click either **Save** to save the Form details or click **Save for Authorization** to save the changes with authorization.

   While saving, the *User for Mapping - DEFQ* window is displayed which facilitates you to assign user rights to the Form. For more information, refer Assign Rights.

#### 4.2.1.3 Copying Forms

You can duplicate and recreate a Form with the required variants from an existing Form. You can also change user rights or display options and other subtle variations for the selected layout.

To Copy a Form in the *DEFQ - Forms Designer* window:

1. Select **Copy Forms** from the available options and do the following:
   - Select the application from the **From Application** drop-down list which consist of the required Form which you want to copy.
   - Select the application from the **To Application** drop-down list for which you want to copy the Form.
   - Select the required Form from the **Save Form** drop-down list.
   - Enter a name for the Form in the **As Form** field.
2. Click **Next**. The specified Form is duplicated as a new Form and a confirmation dialog is displayed with the status.

#### 4.2.1.4 Deleting Forms

You can remove the forms which are not required in the system by deleting from the *DEFQ - Forms Designer* window.

1. Select **Delete Forms** from the available options and do the following:
   - Select the application from the **Available Application** drop-down list which consist of the required Form which you want to delete.
   - Select the Form from the **Available Forms** drop-down list which you want to delete.
2. Click **Next**. An information dialog is displayed for confirmation. Click **OK**.

#### 4.2.1.5 Assigning Rights

You can assign user permissions to view, add, edit, and delete the Form details in the *User for Mapping - DEFQ* window.

1. Select **Assign Rights** from the available options and do the following:
   - Select the required application from the **Available Applications** drop-down list.
   - Select the required form for which you want to assign rights to a user from the **Available Forms** drop-down list.
2. Click **Next**. The *DEFQ- Assign Rights* window is displayed.
3. Select the required user from **Available User List**. You can also click < or > buttons to reload previous/next set of users in the list.
4. Select the checkbox corresponding to the user permissions such as **View**, **Add**, **Edit**, **Delete**, or **All Above**. You must give View permission in order to allow users to Edit or Delete a Form.
5. Select **Authorize** or **Auto-Authorize** checkbox as required.

   The **Authorize** and **Auto-Authorize** options are applicable for all the forms that have been saved with the Authorize option. The **Auto-Authorize** feature for records is applicable in scenarios where the Creator and Authorizer are the same. If a user has **Add** and **Auto-Authorize** permissions, the data entered by the user is auto authorized and the data will be in **Authorized** status. In case of normal Authorization, the Record added by the creator has to be authorized by a different user who has **Authorize** permissions.

   **NOTE:** The **Auto-Authorize** feature in Forms Designer is applicable only for data entered through *Data Entry* window and not through *Excel Upload* window.

6. Select the **Show Data Created by Current Users Only** checkbox if you want the current user to view data created by him only.
7. Click **User Value Map** to map users to the form based on data filter.
8. Click **Save Access Rights**. A confirmation dialog is displayed after saving and the user is added to the **Assigned User List**.

**User Value Map**

This feature allows you to create a data filter based on any field/column of the table you selected for designing the Form. When a user tries to access the form in the *DataEntry* window, data will be filtered and displayed based on the selected field ,to the users associated with that column .

**NOTE:** The data type of field/column you select to define filter should be NUMBER or VARCHAR. The users mapped to the DEFQ form whose assign rights are authorized through “Forms Authorization” can save the filter.

There are two types of filters, Global Data Filter and Custom Data Filter.

**Global Data Filter**: In this filter, the value will be fetched from the DEFQ_GLOBAL_VALUES table of the Atomic schema, which is automatically created during information domain creation. The table needs to be populated manually through excel upload. The table contains all the entities and the users mapped to them.

**Custom Data Filter**: This filter enables the user to provide a custom filter for the form you design. In this filter, you should enter values for all the users mapped to the form manually.

To set a Data Filter:

1. Click **User Value Map** in the *DEFQ- Assign Rights* window.

   `The *User Value Map* window is displayed.

2. Select the **Global Data Filter** option to filter the data globally.
   - Select the field based on which the data should be filtered and displayed for the user, from the *Fields to Display* section.

   **NOTE:** Normally the user can access all the data from the table whenever the DEFQ form is created. Based on this filter, the user will be displayed only the data which is mapped to him.

3. Select the **Custom Data Filter** to provide a custom filter for a specific DEFQ Form.
   - Select **User ID** from the drop-down list and enter **Values** for that user. It is mandatory
4. Click **Save.**

#### 4.2.1.6 Message Type Maintenance

You can manage the Message Type details which alert the Creator of the Form or to an Authorizer in the *DEFQ Message Type Maintenance* window. Message Type details can be defined while creating a Form. For more information, refer Define Messaging Details.

In the In the *DEFQ - Forms Designer* window, do the following:

1. Select **Message Type Maintenance** from the available options and click **Next**.

   The DEFQ - Message Type Maintenance window is displayed.

2. Select the message category from the **Message Type** drop-down list.
3. Edit the message details by doing the following:
   - The defined **Message Subject** and **Message Content** is auto populated. Edit the details as required.
   - Add or remove the defined recipients. Double-click on the required member to toggle between **Available** and **Mapped Recipients** list.

   **NOTE:** Selecting Authorizer alerts all the selected authorizers for authorization.

4. Click **Save**. A confirmation is displayed on updating the *Message Type* details.

## 4.3 Forms Authorization

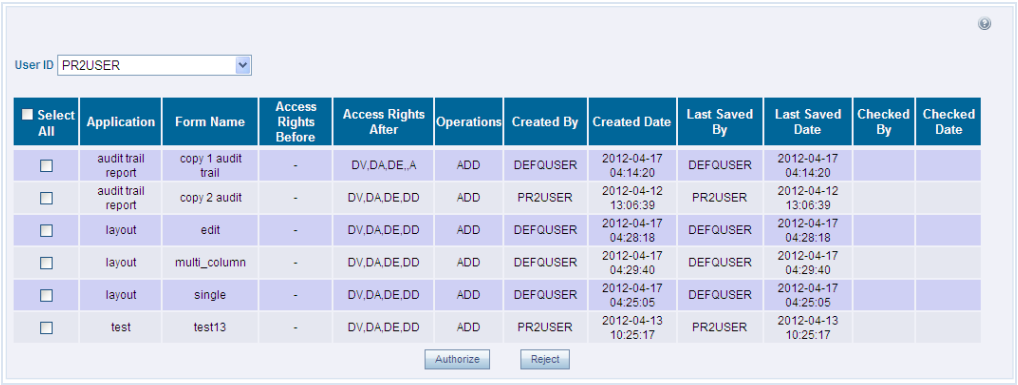
**NOTE:** 1. This functionality doesn't work when CSRF is enabled. To disable CSRF, see the section Update General Details.
2. This functionality displays only on Microsoft Internet Explorer™ browser.

Forms Authorization within the Data Entry Forms and Queries section of Infrastructure system facilitates you to view and authorize / approve any changes that are made to the privileges assigned to a user in a particular Form.

You need to have **FRMAUTH** function role mapped to access *Forms Authorization* window.

**NOTE:** You cannot authorize or reject a right request created by you, even if you have **FRMAUTH** function role mapped.

You can access *Forms Authorization* window from the left hand side (LHS) menu of Infrastructure home page. Click "+" and expand the Data Model Management and select **Data Entry Forms and Queries**.



User ID PR2USER

| Select All | Application | Form Name | Access Rights Before | Access Rights After | Operations | Created By | Created Date | Last Saved By | Last Saved Date | Checked By | Checked Date |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ☐ | audit trail report | copy 1 audit trail | - | DV,DA,DE,,A | ADD | DEFQUSER | 2012-04-17 04:14:20 | DEFQUSER | 2012-04-17 04:14:20 | | |
| ☐ | audit trail report | copy 2 audit | - | DV,DA,DE,DD | ADD | PR2USER | 2012-04-12 13:06:39 | PR2USER | 2012-04-12 13:06:39 | | |
| ☐ | layout | edit | - | DV,DA,DE,DD | ADD | DEFQUSER | 2012-04-17 04:28:18 | DEFQUSER | 2012-04-17 04:28:18 | | |
| ☐ | layout | multi_column | - | DV,DA,DE,DD | ADD | DEFQUSER | 2012-04-17 04:29:40 | DEFQUSER | 2012-04-17 04:29:40 | | |
| ☐ | layout | single | - | DV,DA,DE,DD | ADD | DEFQUSER | 2012-04-17 04:25:05 | DEFQUSER | 2012-04-17 04:25:05 | | |
| ☐ | test | test13 | - | DV,DA,DE,DD | ADD | PR2USER | 2012-04-13 10:25:17 | PR2USER | 2012-04-13 10:25:17 | | |

Authorize Reject

The *Forms Authorization* window displays the list of privileges assigned to a user in different Forms. These privileges include create, view, modify, delete, authorize, and auto-authorize records. The *Forms Authorization* window allows you to select a user from the drop-down list adjacent to **User ID** field. This field displays the User ID's associated with the selected Information Domain.

On selecting a user from the **User ID** field, the columns in *Forms Authorization* window lists the grants requested for that user on different Forms as listed below.

| Column Name | Description |
|---|---|
| Application | Lists the specific application to which the Form has been assigned. |
| Form Name | Displays the Form Name. |
| Access Rights Before | Displays the available Right Requests for the selected user in the Form.<br>**Note**: For new Form, the column remains blank. |
| Access Rights After | Displays the Right Requests raised for authorization.<br>**DV** - DEFQ VIEW<br>**DA** - DEFQ ADD<br>**DE** - DEFQ EDIT<br>**DD** - DEFQ DELETE<br>**A** - AUTHORIZE<br>**DU** - AUTO AUTHORIZE<br>**S** - SHOW DATA CREATED BY CURRENT USER ONLY |
| Operations | Displays the operation carried out in the Form.<br>For example, "**ADD**" indicates a new form is created and specific roles are assigned. |
| Created By | Displays the USER ID from which the Right Request has been created. |
| Created Date | Displays the Date on which the Right Request has been created. |

| Column Name | Description |
|---|---|
| Last Saved By | Displays the USER ID from which the previous Right Request change has been saved. |
| Last Saved Date | Displays the Date on which the previous Right Request change has been saved. |
| Checked By | Displays the USER ID from which the Right Request has been authorized. |
| Checked Date | Displays the Date on which the Right Request has been authorized. |

To authorize or Reject a form in the *Forms Authorization* window:

1. Select the **User ID** from the drop-down box. The Right Requests submitted on various forms are displayed.
2. Select the checkbox(s) adjacent to the requests to authorize / reject.

   You can also select all the requests at once for a user, by clicking **Select All** checkbox.
3. Click **Authorize / Reject** to authorize or reject the selected Right Requests.

   Once Form action privileges are authorized for a user, those actions can be performed on the Form. For an existing Form with certain rights, the rights remain the same until the changes are authorized / rejected by an authorizer.

**NOTE:** Special chars are not allowed in DEFQ definitions except underscore (_).

## 4.4 Data Entry

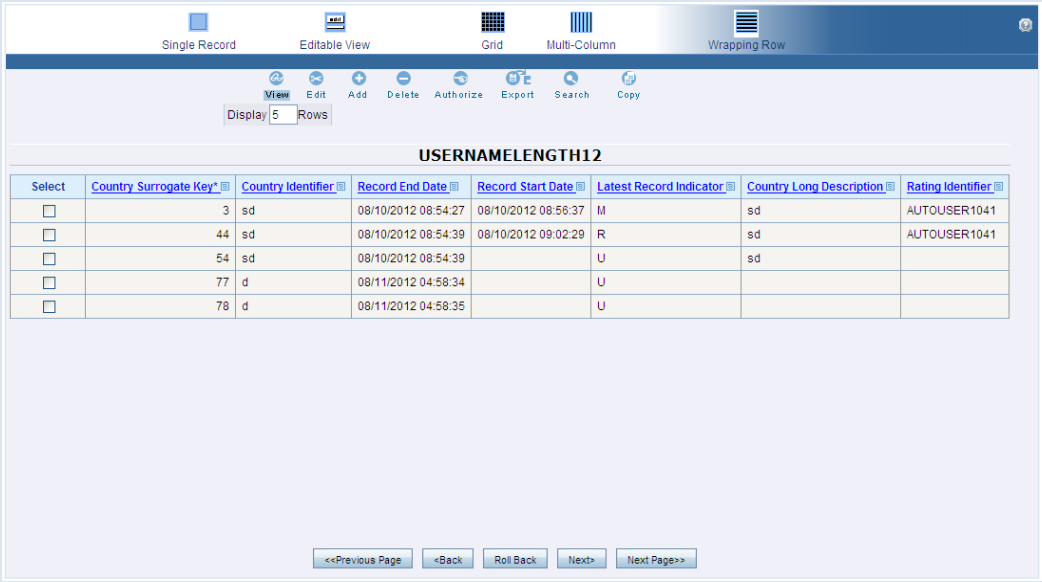
**NOTE:** 1. This functionality doesn't work when CSRF is enabled. To disable CSRF, see the section Update General Details.
2. This functionality displays only on Microsoft Internet Explorer™ browser.

Data Entry within the Data Entry Forms and Queries section of Infrastructure system facilitates you to view, add, edit, copy, and delete data using the various layout formats and Authorize/Re-authorize data records based on the permissions defined during the Form creation.

You can use the Search option to query the records for specific data and also export the data in Microsoft Excel format for reference. You can launch multiple instances of Data Entry window using the URL to search and update records simultaneously.

You can access DEFQ - Data Entry by expanding Data Entry Forms and Queries section of Data Model Management module within the tree structure of LHS menu.

**NOTE:** An alert message is displayed if you are not mapped to any Forms in the system.




The *DEFQ - Data Entry* window displays the list of Data Entry Forms and Query Forms mapped to the logged-in user in the LHS menu. You can select the required Form to view the details. In the *DEFQ - Data Entry* window, you can do the following:

- Viewing Form Details
- Editing Form Details
- Adding Form Data
- Authorizing Records
- Exporting Form Data
- Copying Form Data
- Deleting Form Details

#### 4.4.1.1 Viewing Form Details

The *DEFQ - Data Entry* window displays the selected Form Data in the View mode by default. The Forms are displayed based on the application names in the LHS menu. There are various layouts available to customize the view and by default, the Form details are displayed in the layout in which it was designed.

In the *DEFQ - Data Entry* window, the following layout types are available. You can click on any of the following layouts to view the Form details. The buttons i.e. **Previous Page**, **Back**, **Next**, and **Next Page** helps you to navigate through the records. However, the customized header sorting does not apply when you have navigate to *Previous* or *Next* pages.

**NOTE:** The **Roll Back** option can be used only for authorized records i.e. after the records are edited and saved, you can roll back/undo the changes in view mode.

| Layout | Description |
|---|---|
| Single Record | To view a single record details at any given point. You can use the navigation buttons to view the next record in the table. |
| Editable View | To view and edit a single record. A list of five rows/records is displayed by default, and the same can be changed by entering the required number in **Display Rows**. You need to select the required record from the list to view/edit and click **Save** to update the changes. |
| Grid (Default) | To view all the records in a list. A list of five rows/records is displayed by default, and the same can be changed by entering the required number in **Display Rows**. You can click on the column header to alphabetically sort the list of records in the table. |
| Multi column | To view all the columns of a selected record. This layout enables you to view a record without having to scroll or with minimum scrolling to view all the columns. |
| Wrapped rows | To view all the rows of a selected record. This layout enables you to view a wrapping row easily without having to scroll horizontally to view the columns. |

#### 4.4.1.2 Searching Records

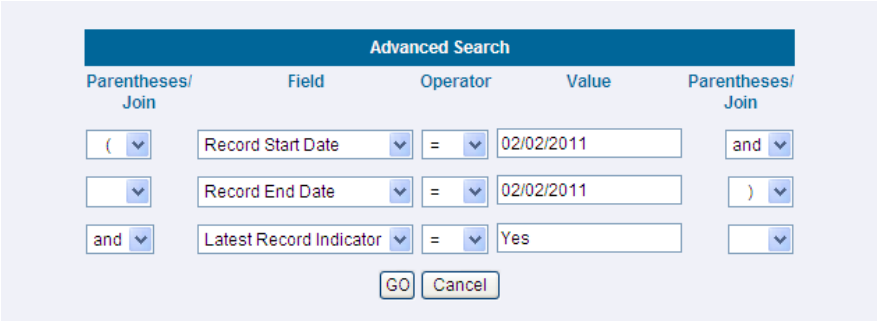
In the *DEFQ - Data Entry* window, you can Search for a record in the View, Edit, and Authorize modes. You can perform a quick **Search** to find a specific record or run an **Advanced Search** to further query the record for the required details.

To search for a record in the *DEFQ - Data Entry* window:

1. Click Search. The search fields are displayed.
2. Select **Field Name** from the drop-down list.
3. Enter the **value/data** in the Search field.
4. Click **Go**. The search results are displayed in the list.

To perform an **Advanced search** in the *DEFQ - Data Entry* window:

1. Click within the Search fields. The *Advanced Search Window* is displayed.



2. Select the required Parentheses/Join, Field, Operator from the drop-down list and enter the **Value** as required to query the Form data.
3. Click **GO**. The results are displayed with the field names containing the searched data.

#### 4.4.1.3 Editing Form Details

You can edit the permitted Form field values in the *DEFQ - Data Entry* window. However, you cannot modify the primary key fields which are displayed in non editable format.

To edit Form Details in the *DEFQ - Data Entry* window:

1. Open the required Form in view mode and click Edit. The editable fields are enabled.
2. Enter/update the required details.
3. Click **Save** and update the changes.
4. If required, you can click **Reset** to undo the changes and return to original field values.

   If you have edited an Authorized record, the same is again marked for authorization. Once the record is updated, a modified status flag is set, and only these record changes can be rolled back. The Roll Back option is supported in view mode only for authorized records, i.e. records which are updated and saved.

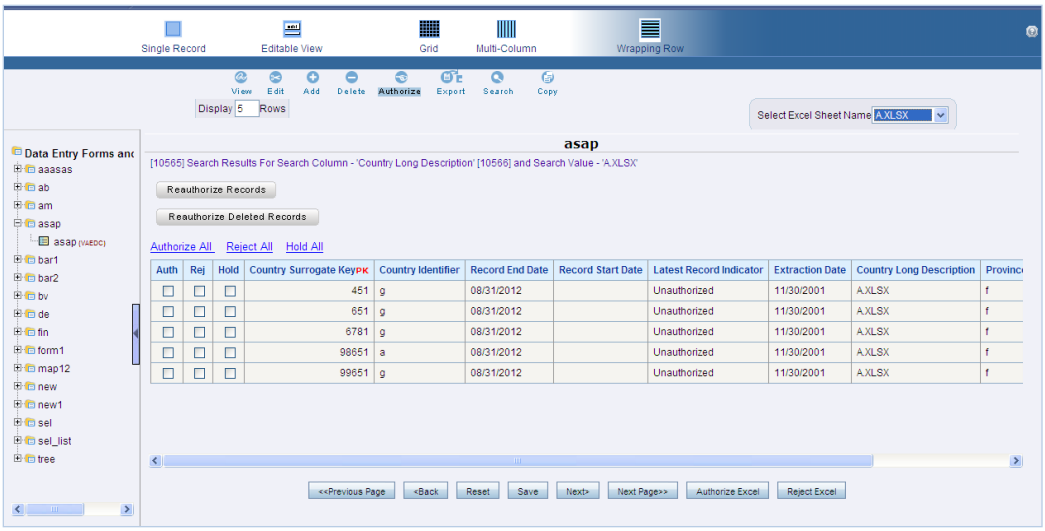
#### 4.4.1.4 Adding Form Data

You can add a row to the required table and enter the field details. To Add Form Data in the *DEFQ - Data Entry* window:

1. Open the required Form in view mode and click Add.
2. By default, five rows are displayed. You can modify by specifying the number of required rows in **Display Rows** field and clicking **Reset**.
3. Enter the required numeric data in the new fields. If you want to view the numeric data separated by commas, enter the details accordingly.
4. Click **Save** and update the data to the selected table.

#### 4.4.1.5 Authorizing Record

You need to have DEFQMAN and SYSAUTH function roles mapped to access and authorize Forms in the DEFQ framework. You can Authorize a single record or all the records of a selected Form with the in the *DEFQ - Data Entry* window. You can Authorize record in a table which has a primary key field. A primary key field in the record is indicated by “PK”. You need to have the authorization rights defined by the user who has created the record. You can also Reject or Hold inappropriate records in the table.




The status of each record in the table is indicated with an “AuthFlag” as indicated below:

- **Unauthorized** records are displayed with the status flag “**U**”
- **Authorized** records are displayed with the status flag “**A**”.
- **Rejected** records are displayed with the status flag “**R**”.
- **Modified** records are displayed with the status flag “**M**”.
- **Deleted** records are displayed with the status flag “**D**”.
- If an **Unauthorized** record is on **Hold**, the status flag is displayed as “**H**”.
- If a **Modified** record is on **Hold**, the status flag is displayed as “**X**”.
- If a **Deleted** record is on **Hold**, the status flag is displayed as “**Z**”.

To Authorize Data in the *DEFQ - Data Entry* window:

1. Open the required Form in view mode and click .

   The list of available records for Authorization is displayed. If there are “no records” for Authorization in the selected Information Domain, an alert message is displayed.

2. Select the “Auth” checkbox adjacent to the required record with the status flag “**Unauthorized / Put On Hold**” and click **Save**. A confirmation dialog is displayed. Click **OK**.

   You can also do a **Bulk Authorization** if Excel Map is selected in the *Sort Fields Selection* window. Select the mapped Excel Name from the “SelectExcelSheetName” drop-down list. The *DEFQ - Data Entry* window displays only those records which are uploaded though the selected Excel sheet. Click **Authorize Excel**. A confirmation dialog is displayed. Click **OK**.

You can Reject / Hold a record by doing the following:

- To **Reject** a record, select the checkbox in the "**Rej**" column adjacent to the required record and click **Save**. A confirmation dialog is displayed. Click **OK**.

  You can also Reject records in Bulk Mode if Excel Map is selected in the *Sort Fields Selection* window. Select the mapped Excel Name from the "SelectExcelSheetName" drop-down list. The *DEFQ - Data Entry* window displays only those records which are uploaded though the selected Excel sheet. Click **Reject Excel**. A confirmation dialog is displayed. Click **OK**.

- To **Hold** a record and to authorize or reject at a later point, select the checkbox in the "**Hold**" column adjacent to the required record and click **Save**.

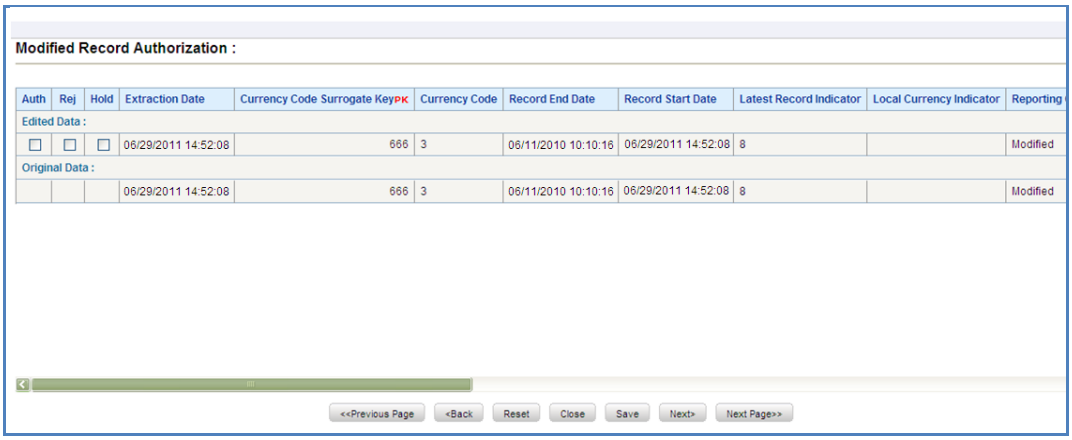
In the *DEFQ - Data Entry* window, you can also do the following:

- Click **Authorize All** and click on **Save** to authorize all the records displayed in current page.
- Click **Reject All** and click on **Save** to reject all the records displayed in current page.
- Click **Hold All** and click on **Save** to hold all the records displayed in current page.

  If you have enabled the option to send alerts to the Creator of the Form in *Message Type Maintenance* window, a message is sent indicating that the records are authorized/rejected/put-on-hold.

#### 4.4.1.5.1 Re-authorizing Records

You can re-authorize an authorized record which has been updated by other users. When an authorized record is updated, the status flag (AuthFlag) is set to “M” indicating that the record has been modified and needs re-authorization.



Modified Record Authorization :

| Auth | Rej | Hold | Extraction Date | Currency Code Surrogate Key PK | Currency Code | Record End Date | Record Start Date | Latest Record Indicator | Local Currency Indicator | Reporting |
|---|---|---|---|---|---|---|---|---|---|---|
| Edited Data : | | | | | | | | | | |
| ☐ | ☐ | ☐ | 06/29/2011 14:52:08 | 666 | 3 | 06/11/2010 10:10:16 | 06/29/2011 14:52:08 | 8 | | Modified |
| Original Data : | | | | | | | | | | |
| | | | 06/29/2011 14:52:08 | 666 | 3 | 06/11/2010 10:10:16 | 06/29/2011 14:52:08 | 8 | | Modified |

<<Previous Page | <Back | Reset | Close | Save | Next> | Next Page>>

To re-authorize modified records in the *DEFQ - Data Entry* window:

1. Open the required Form in view mode and click .

   The list of available records with the Authorization status is displayed. If there are “no records” for Authorization in the selected Information Domain, an alert message is displayed.

2. Click **Reauthorize Records**. The *DEFQ Authorization Window* is displayed.

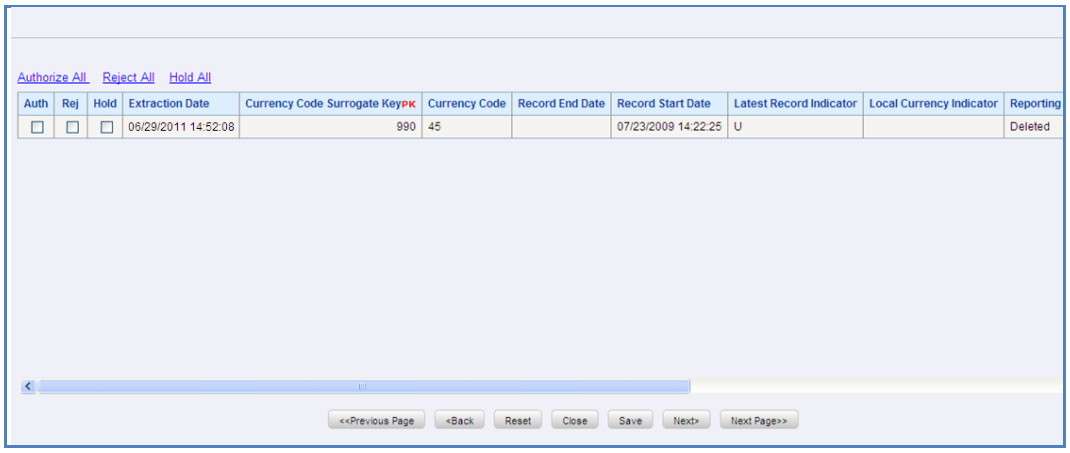
3. Select the “Auth” checkbox adjacent to the required record.

4. Click **Save**. On re-authorization, a confirmation message is displayed.

   You can also select the checkbox adjacent to “Rej” to reject the record, or “Hold” to re-authorize or reject at a later point. A message is sent to the Form creator indicating that records are authorized/rejected/put-on-hold.

#### 4.4.1.5.2 Re-authorizing Deleted Records

You can re-authorize the delete action when an authorized record has been deleted by other users. When an authorized record is deleted, the status flag (AuthFlag) is set to “D” indicating that the record has been deleted and needs re-authorization.




To re-authorize deleted records in the *DEFQ - Data Entry* window:

1. Open the required Form in view mode and click Authorize.

   The list of available records with the Authorization status is displayed. If there are “no records” for Authorization in the selected Information Domain, an alert message is displayed.

2. Click **Reauthorize Deleted Records**. The *DEFQ Authorization Window* is displayed.
3. Select the “Auth” checkbox adjacent to the required record.
4. Click **Save**. On re-authorization, a confirmation message is displayed.

   You can also select the checkbox adjacent to “Rej” to reject the record, or “Hold” to re-authorize or reject at a later point. A message is sent to the Form creator indicating that records are authorized/rejected/put-on-hold.

#### 4.4.1.6 Exporting Form Data

You can export the required record(s) to a selected location in CSV format. To Export Form Data in the *DEFQ - Data Entry* window:

In the View mode, select the checkbox adjacent to the record(s) which you want export.

1. Click Export. The *File* Download dialog is displayed.
2. Click **Save**. The *Save As* dialog is displayed.
3. Select the location and click **Save**. The selected record is exported.

#### 4.4.1.7 Copying Form Data

You can copy the existing fields and create new fields in a record. When you copy a field, the primary key values are incremented from the pre-defined value to the next acceptable value. However, the other fields can be modified as required.

To copy fields in the *DEFQ - Data Entry* window:

1. Open the required Form in view mode and click .

   The list of available records is displayed. All the primary field data (indicated by *) is incremented by default.

2. Click **Save**. The field values are added to the record.

   You can click **Edit** to modify the values or click **Next** to copy the next set of fields.

#### 4.4.1.8 Deleting Form Details

You can remove a Form details which are no longer required by deleting from the *DEFQ - Data Entry* window.

1. In the View mode, select the checkbox adjacent to the record which you want to delete.
2. Click . An information dialog is displayed.
3. Click **OK** to confirm and delete the record.

### 4.4.2 References

This section of the document consists of information related to intermediate actions that needs to be performed while completing a task. The procedures are common to all the sections and are referenced where ever required. You can refer to the following sections based on your need.

#### 4.4.2.1 Creating Tree View Form

The process to create a Form using the Tree View Layout differs from the procedure as explained for other layouts. You can create a Form using the Tree View Layout, by selecting either Dimensional Table Tree or Parent Child Tree.

#### 4.4.2.2 Dimensional Table Tree

If you want to create a Form using the Dimension table Tree, select **Tree view** > **Dimension Table Tree** option in the *DEFQ - Layout* window. On clicking **Next**, you need to provide the required details in the following windows:

1. **Dimension Table Selection**: Enter the **Root Name** and select the Table. Click **Next**.
2. **Fields Selection**: Select required *Fields to Display* from *Available fields* and click **Next**.
3. **Dimension Node Selection**: Select Field Nodes from *Available fields* and click **Next**.
4. Select Dimensional Tree Nodes for the selected fields and click **Next**.
5. **DEFQ Field Properties** window: Specify the required details. For more information, refer *DEFQ Field Properties*.

#### 4.4.2.3 Parent Child Tree

If you want to create a Form using the Parent Child Tree, select **Tree view** > **Parent Child Tree** option in the *DEFQ - Layout* window. On clicking **Next**, you need to provide the required details in the following windows:

1. **Hierarchy Table** Selection: Enter the **Root Name** and select the Table. Click **Next**.
2. **Parent-Child Node Selection**: Select Parent Node, Child Node, and Node Description from the drop-down list.
3. **Fields Selection**: Select required *Fields to Display* from *Available fields* and click **Next**.
4. **DEFQ Field Properties window**: Specify the required details. For more information, refer *DEFQ Field Properties*.

#### 4.4.2.4 Applying Rules

You can apply rules to Validate Form Data to specific fields such as Text Field, Text Area, or Protected Field. To specify rules for a field in the DEFQ - Forms Designer *DEFQ Field Properties* window:

1. Click **Rule** adjacent to the required field. The *Specifying Rules and Expressions for Data Validations* window is displayed.
2. Select the required Fields, Operators, and Functions from the list.
3. Enter the Rule Expression in the Expression Viewer field.
4. Depending on the data type of the selected field, the following column constraints are displayed. Select the required checkbox.
   - No Spaces
   - Characters Only
   - Alpha Numeric
   - Not Null
   - Non Negative
5. Select the **Alignment** type from the drop-down list.
6. Click **OK** and save the details.

#### 4.4.2.5 Defining List of Values

While creating a Form, if you choose the **Select List** field parameter option in the *In Edit/Add* column in the *DEFQ Field Properties* window, you need to define the list of values in the *Select List* window. However, you do not need to define the values for foreign key fields and primary key fields.

In the *Select List Window*, select the required Field Type from the following options:

- **Comma Separated Values**: Supports only the user specified values while creating a Form.
- **Dynamic List of Values**: Supports fieldname from a table and stores it in the database. The same can be used during Data Entry.

If **Comma Separated Values** is selected:

1. Enter the **List of Values** to be displayed.
2. Specify **Alternate Display Values** to be displayed.
3. Click **OK** and save the specified list of values.

If **Dynamic List of Values** is selected:

1. Select Table Value, List Value and Display Value field.
2. Select the Field, Operator, and Functions from the list.
3. Define a filter condition for the selected values.
4. Click **OK** and save the specified list of values.

#### 4.4.2.6 Defining Messaging Details

While creating a Form, you can click **Message Details** in the *DEFQ Field Properties* window to define the messaging details. You can specify an alert message which is sent to the Creator of the Form or to an Authorizer.

In the *Messaging Details for a Form* window:

1. Select **Messaging Required** checkbox to activate the Messenger feature.

   **NOTE:** If the option is not selected, a single mail is sent for the entire batch. Message details such as recipients, subject, and contents are fetched from the metadata.

2. Select the required **Available Message Types** from the list and click >.
3. Select the **Message Type** from the drop-down list based on specific action.
4. Select **Specific Messages Required** to add a specific message.
5. Select Available Fields for **Subject**, **Content**, & **Recipients** from the list and click >.
6. Click **Save** and save the messaging details. You also need to select **Save with Authorization** in the *DEFQ Field Properties* window for the messages to be functional.

#### 4.4.2.7 Form Data Versioning

You can perform data versioning on an authorized Form. The modifications made to the particular Form is tracked and displayed as per date versioning. In the *Data Versioning for Form* window, do the following:

1. Select **Enable Data Versioning** checkbox to ensure that the version is tracked.
2. Select the **Table** and **Version Identifier** from the drop-down list.
3. Click **OK** and save the versioning details.

#### 4.4.2.8 Save with Authorization

The **Save with Authorization** feature in Forms Designer (*Sort Fields Selection* window) allows you to authorize the uploaded data. Authorization serves as a checkpoint for validation of uploaded data.

To authorize the uploaded data, you need to create a Form in DEFQ with the **Save with Authorization** checkbox selected.

1. Before any DEFQ Form is created to authorize the data, the underlying table in the data model needs to have below columns added to its table structure. You need to perform a data model upload to have the new structures reflected in the application.

   Columns required:

   ```
   V_MAKER_ID VARCHAR2(20),
   V_CHECKER_ID VARCHAR2(20),
   D_MAKER_DATE DATE,
   D_CHECKER_DATE DATE,
   F_AUTHFLAG VARCHAR2(1),
   V_MAKER_REMARKS VARCHAR2(1000),
   V_CHECKER_REMARKS VARCHAR2(1000)
   ```

2. Navigate to Create a New Form in the Forms Designer section and complete the design steps up to Step 6. From the *DEFQ Field Properties* window explained in step 7, select the appropriate values as listed below for **Store Field As** depending on the columns selected:

   `V_MAKER_ID` - MakerID

   `V_CHECKER_ID` - CheckerID

   `D_MAKER_DATE` - Maker Date

   `D_CHECKER_DATE` - Checker Date

   `F_AUTHFLAG` - AuthFlag

   `V_MAKER_REMARKS` - Maker Remarks

   `V_CHECKER_REMARKS` - Checker Remarks

3. Click **Save with Authorization**. Once data is loaded into the table, you can login as 'Authorizer' and navigate to the *Data Entry* window. Select the Form to open and authorize the records loaded.

# 5 Rule Run Framework

Financial institutions require constant monitoring and measurement of risk in order to conform to prevalent regulatory and supervisory standards. Such measurement often entails significant computations and validations with an organization's data. Data must be transformed to support such measurements and calculations. The data transformation is achieved through a set of defined Rules.

Rules Run Framework within the infrastructure system facilitates you to define a set of rules, reporting objects, and processes that are required to transform data in a warehouse. You can execute Rules and Process and manage the pre-define rules within the system.

The Rules Run Framework is used for following three main purposes:

- To design a set of rules, processes and structuring execution flow of processes that are required to transform data in a data warehouse or data store.
- To design reporting objects based on previously transformed data that is stored as aggregated data in multidimensional databases.
- To design reporting objects based on the atomic information stored in the data warehouse or data store.

See How Run Rule Framework is used in LLFP Application and How Run Rule Framework is used in LRM Application sections to know how RRF module is used in other applications.

Before you begin, do the following:

- Select the required **Application**: An Application is mapped to an Information Domain, which refers to a logical grouping of specific information and defines the underlying data warehouse or data store in which the physical data model has been implemented. When you login to the Infrastructure system, you can access only those Applications to which your user ID is mapped. Contact System Administrator for permissions to access a specific Application.
- Select the associated **Segment**: Segments are defined through the Administration module. A Segment facilitates you to classify all the related metadata in the selected Information Domain. You are authorized to access only those metadata objects to which the segment and user roles have been mapped.

**Object Security in RRF framework**

- There are some seeded user groups and seeded user roles mapped to those user groups. If you are using the seeded user groups, the restriction on accessing objects based on user groups is explained in the OFSAA Seeded Security section.
- For creating/editing/copying/removing an object in RRF framework, you should be mapped to the folder in case of public or shared folder, or you should be the owner of the folder in case

of private folder. Additionally, the WRITE role should be mapped to your user group. For more information, see Object Security in OFSAAI section.

- To access the link and the Summary window, your user group should have ACCESS role mapped. 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.
- In the *Component Selector* window, you can view the RRF objects like Rule and Process created in Public or Shared folders to which you are mapped and Private folders for which you are the owner.
- The *Folder selector* window behavior is explained in User Scope section.

**Hierarchy Member Security**

- For each information domain, a default security mapper can be set. Based on this mapper definition, the *Hierarchy Browser* window will be displayed.
- In the *Hierarchy Browser* window, the members which are mapped to your user group are enabled and can be used. Those which are not mapped can be viewed, but you cannot use it since they are in disabled state.
- If a child hierarchy is mapped and the parent is not mapped to your user group, the parent will be displayed as a disabled node.
- For all AMHM hierarchies, corresponding Business Hierarchy is created implicitly. Thus you can view and use AMHM hierarchies in RRF framework, provided they are mapped to your user group.
- Hierarchy member security is applied only for Source hierarchies. No security is used for Target hierarchies, Rule Condition, Run Condition, and Process Condition.

## 5.1 Navigating to Rules Run Framework

Go to the **Applications** tab. Under **Common Frameworks**, click **Rule Run Framework**.

The navigation may change based on the Application you have selected.

## 5.2 Components of Rules Run Framework

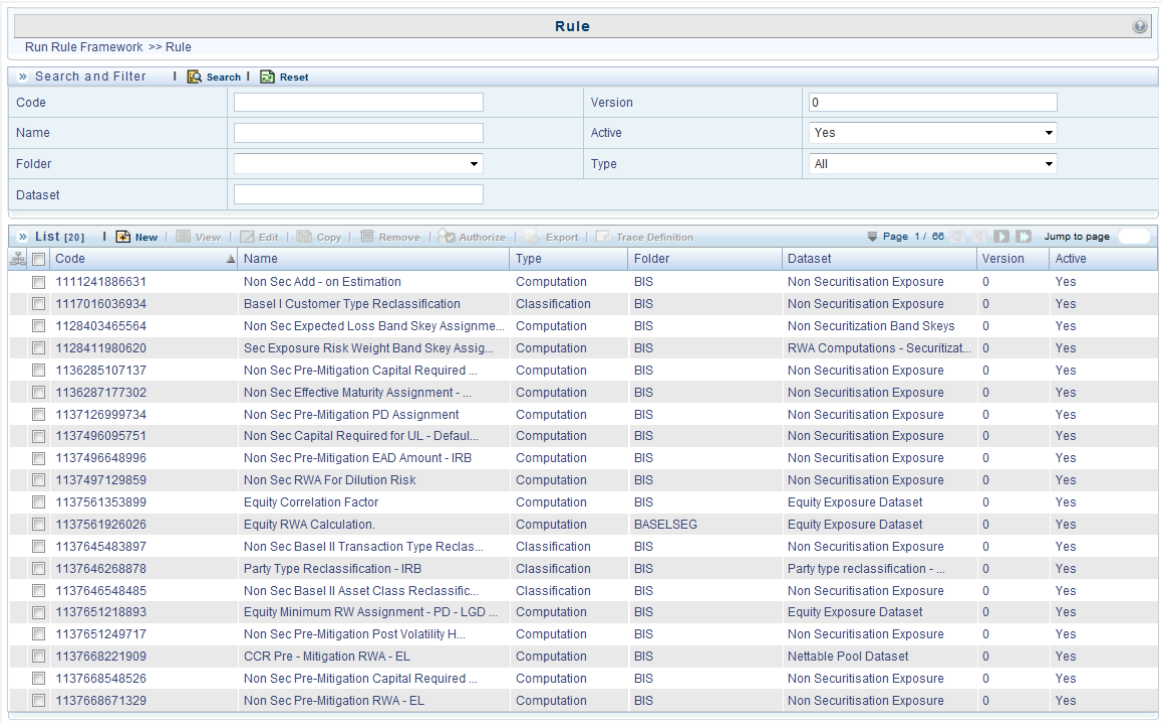
Rules Run Framework consists of the following sections. Click on the links to view the section details.

- Rule
- Process
- Run
- Manage Run
- Utilities

## 5.3 Rule

Financial institutions require constant monitoring and measurement of risk in order to conform to prevalent regulatory & supervisory standards. Such measurement often entails significant computations and validations with an organization's data. Data must be transformed to support such measurements and calculations. The data transformation is achieved through a set of defined Rules.

You can access Rule window by expanding **Rule Run Framework** within the LHS menu and selecting **Rule**.




The Rules option in the Rules Run Framework provides a framework that facilitates the definition and maintenance of a transformation. The metadata abstraction layer is used in the definition of rules where the user is permitted to re-classify the attributes in the data warehouse model thus transforming the data. The underlying metadata objects such as Hierarchies that are non-large or non-list, Datasets and Business Processors drive the Rule functionality. The definition, modification, copy, and deletion of a Rule must be approved by an authorizer for the action to be effective.

The *Rule* window displays the rules created in the current Information Domain with the metadata details such as Code, Name, Description, Type, Folder, Dataset, Version, and Active status. For more information on how object access is restricted, see Object Security section.

You can make use of Search and Filter option to search for specific Rules based on Code, Name, Folder, Dataset, Version, Active status, or Type. The **Folder** drop-down list displays all Public

folders, shared folders to which your user group is mapped and Private folders for which you are the owner. The Pagination option helps you to manage the view of existing Rules within the system. For more information, refer Pagination section. You can also click Code, Name, Description, Type, Folder, Dataset, Version, or Active tabs to sort the Rules in the *List* grid either in ascending or in descending order.

The Roles mapped for Rule module are: Rule Access, Rule Advanced, Rule Authorize, Rule Read Only, Rule Write and Rule Phantom. Based on the roles mapped to your user group, you can access various screens in Rule module. For more information, see Appendix A.

### 5.3.1 Components of Rule Definition

A Rule is defined using existing metadata objects. The various components of a rule definition are as tabulated.

| Component | Description |
|---|---|
| Dataset | This is a set of tables that are joined together by keys. A dataset must have at least one FACT table. The values in one or more columns of the FACT tables within a dataset are transformed with a new value. |
| Source | This component determines the basis on which a record set within the dataset is classified. The classification is driven by a combination of members of one or more hierarchies. A hierarchy is based on a specific column of an underlying table in the data warehouse model. The table on which the hierarchy is defined must be a part of the dataset selected. One or more hierarchies can participate as a source so long as the underlying tables on which they are defined belong to the dataset selected. |
| Target | This component determines the column in the data warehouse model that will be impacted with an update. It also encapsulates the business logic for the update. The identification of the business logic can vary depending on the type of rule that is being defined. |
| Mapping | This operation classifies the final record set of the target that is to be updated into multiple sections. It also encapsulates the update logic for each section. The logic for the update can vary depending on the hierarchy member / business processor used. The logic is defined through the selection of members from an intersection of a combination of source members with target members. |

| Component | Description |
|---|---|
| Node Identifier | This is a property of a hierarchy member. In a Rule definition the members of a hierarchy that cannot participate in a mapping operation are target members, whose node identifiers identify them to be an 'Others' node, 'Non-Leaf' node or those defined with a range expression. Source members, whose node identifiers identify them to be 'Non-Leaf' nodes, can also be mapped.<br>For more information on Hierarchy properties, refer Defining Business Hierarchies in the Data Model Managementsection. |

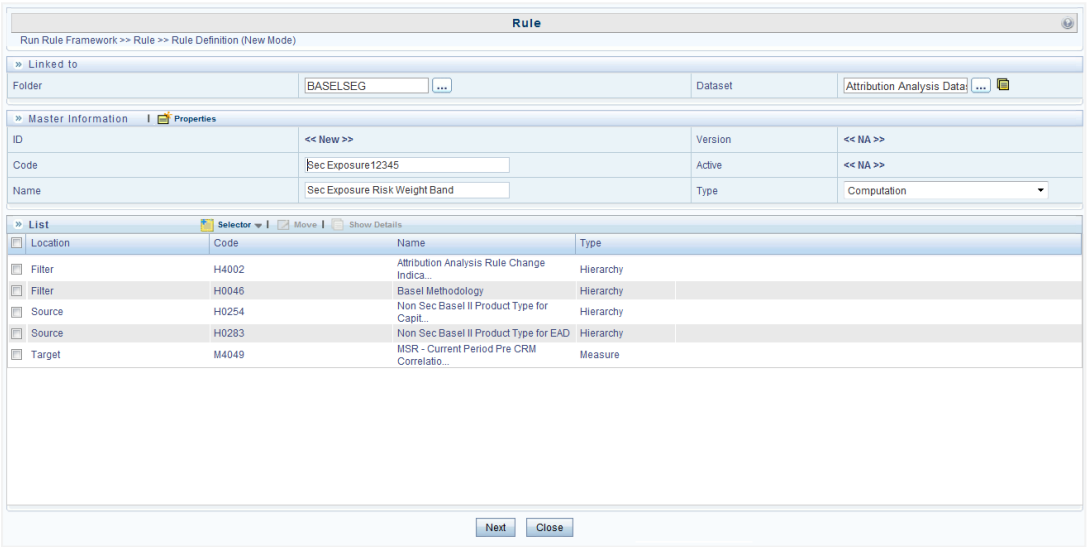
**NOTE:** The hierarchies and their nodes/members which are displayed in the *Hierarchy Browser* window depend on the security mapper definition for the selected information domain. For more information, see Map Maintenance section.

### 5.3.2 Create Rule

You can create rule definitions using the existing metadata objects. The Write role should be mapped to your user group, from the *User Group Role Map* window.

To create a Rule definition:

1. Click **New** button from the *List* toolbar in the *Rule* window. The *Rule Definition (New Mode)* window is displayed.




2. Click button adjacent to **Folder** in the *Linked to* grid. The *Folder Selector* dialog is displayed. The folders to which your user group is mapped are displayed.

3. Select the checkbox adjacent to the required folder. Click **OK**.

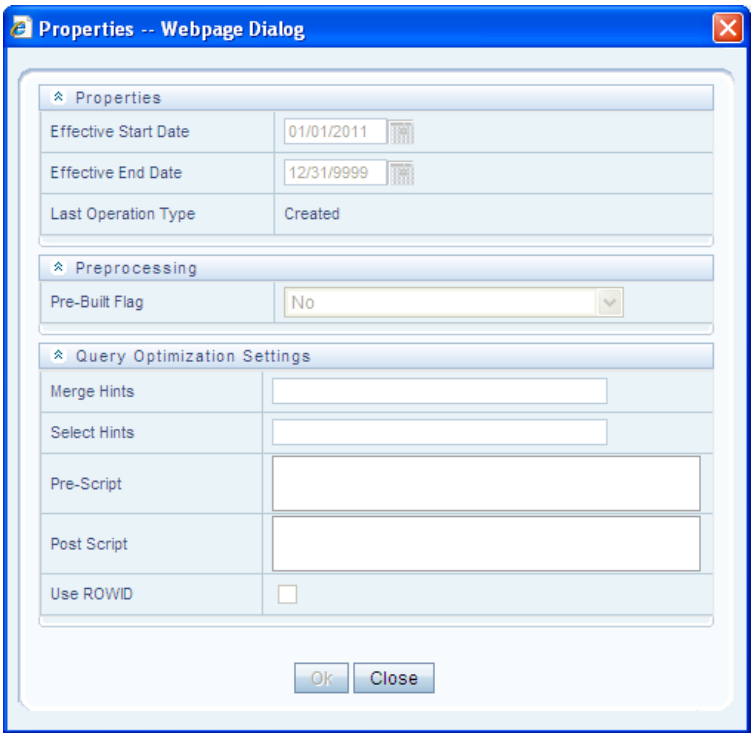
4. Click button adjacent to **Dataset** in the *Linked to* grid. The *Dataset Selector* dialog is displayed with the list of datasets available under the selected information domain.
5. Select the checkbox adjacent to the required Dataset name. Click **OK**.

   In the *Dataset Selector* dialog, you can also do the following:

   - Search for a particular folder by specifying keyword and clicking button.
   - View properties of the selected Dataset by clicking button.
   - Make use of Pagination option to manage the view of existing Datasets within the system. For more information, refer Pagination section.
6. Enter the details in the *Master information* grid as tabulated below:

| Field Name | Description |
|---|---|
| ID | Refers to the default ID of a newly created rule and is **<<New >>.** |
| Code | Enter a valid code for the rule. Ensure that the rule code is alphanumeric with a maximum of 30 characters in length and there are no special characters except underscore "_". |
| Name | Enter a valid name for the rule. Ensure that Rule Name is alphanumeric and does not contain any of the following special characters: #, %, &, +, ", and ~. |
| Version | By default the version field is displayed as **<<NA>>** for the new rule being created. Once the rule definition is saved, an appropriate version is assigned as either **-1** or **0** depending on the authorization permissions. For more information, refer Rule Definition Versioning. |
| Active | By default, the Active field is displayed as **<<NA>>** for the new rule being created. Once the rule definition is saved, the status is set to **Yes** if you are an Authorizer creating the rule or **No** if the created rule needs to be authorized by an Authorizer. |
| Type | Select the **Type** based on which you would like to create the rule from the drop-down list. The options are **Computation** and **Classification**.<br>Note: |

7. Click button in the *Master information* grid. The *Properties* dialog is displayed.




The *Properties* dialog lists the Rule Properties, PreProcessing status, and Query Optimization Settings as tabulated below. The data in *Query Optimization Settings* are derived from the global properties (if defined) in the *Optimization tab* of *System Configuration* > *Configuration* window. However, some options defined in Global Preferences precede the Rule level properties that you define here.

| Field Name | Description |
|---|---|
| Properties | |
| Effective Start Date,<br>Effective End Date | Effective Dating is not implemented for Rule definition. |
| Last operation type | By default, this field displays the last change done to the Rule definition.<br>While creating a Rule, the field displays the operation type as **Created**. |
| Pre processing | |

| Field Name | Description |
|---|---|
| Pre Built Flag | This field refers to the pre-compiled rules, which are executed with the query stored in database. While defining a rule, you can make use of Pre Built Flag to fasten the rule execution process by making use of existing technical metadata details wherein the rule query is not rebuilt again during Rule execution.<br>Select the required option from the drop-down list.<br>By default, Pre Built Flag status is set to **No**. This indicates that the query statement is formed dynamically retrieving the technical metadata details. If the Pre Built Flag status is set to **Yes** then the relevant metadata details required to form the rule query is stored in database on saving the rule definition. When this rule is executed, database is accessed to form the rule query based on stored metadata details, thus ensuring performance enhancement during rule execution. For more information, refer Significance of Pre-Built Flag. |
| Query Optimization Settings | |
| Merge Hints | Specify the SQL Hint that can be used to optimize Merge Query.<br>For example, "/*+ ALL_ROWS */"<br>In a Rule Execution, Merge Query formed using definition level Merge Hint precede over the Global Merge Hint Parameters defined in the *Optimization* tab of *System Configuration* > *Configuration* window. In case the definition level Merge Hint is empty/ null, Global Merge Hint (if defined) is included in the query. |
| Select Hints | Specify the SQL Hint that can be used to optimize Merge Query by selecting the specified query.<br>For example, "SELECT /*+ IS_PARALLEL */"<br>In a Rule Execution, Merge Query formed using definition level Select Hint precede over the Global Select Hint Parameters defined in the *Optimization* tab of *System Configuration* > *Configuration* window. In case the definition level Select Hint is empty / null, Global Select Hint (if defined) is included in the query. |

| Field Name | Description |
|---|---|
| Pre Script | Refers to a set of semicolon (;) separated statements which are to be executed **before** Merge Query on the same connection object.<br>In a Rule Execution, Global Pre Script Parameters (defined in the Optimization tab of the *Configuration* window) are added to a Batch followed by Rule definition level Pre Script statements if the same has been provided during rule definition. However, it is not mandatory to have a Pre Script either at Global or definition level. |
| Post Script | Refers to a set of semicolon (;) separated statements which are to be executed **after** Merge Query on the same connection object.<br>In a Rule Execution, Global Post Script Parameters (defined in the Optimization tab of the *Configuration* window) are added to a Batch followed by Rule definition level Post Script statements if the same has been provided during rule definition. However, it is not mandatory to have a Post Script either at Global or definition level. |
| Use ROWID | You can select the ROWID checkbox to create a Merge Statement based on ROWID instead of Primary Keys.<br>In a Rule Execution, ROWID is considered while creating Merge Statement if **Use ROWID** checkbox is selected in either Global Parameters (*Configuration* window) or Rule definition properties.<br>If **Use ROWID** checkbox is not selected in either Global Parameters (defined in the Optimization tab of the *Configuration* window) or Rule definition properties, then the flag is set to "**N**" and Primary Keys are considered while creating in Merge Statements. |

8. Click **OK**. The properties are saved for the current Rule definition.

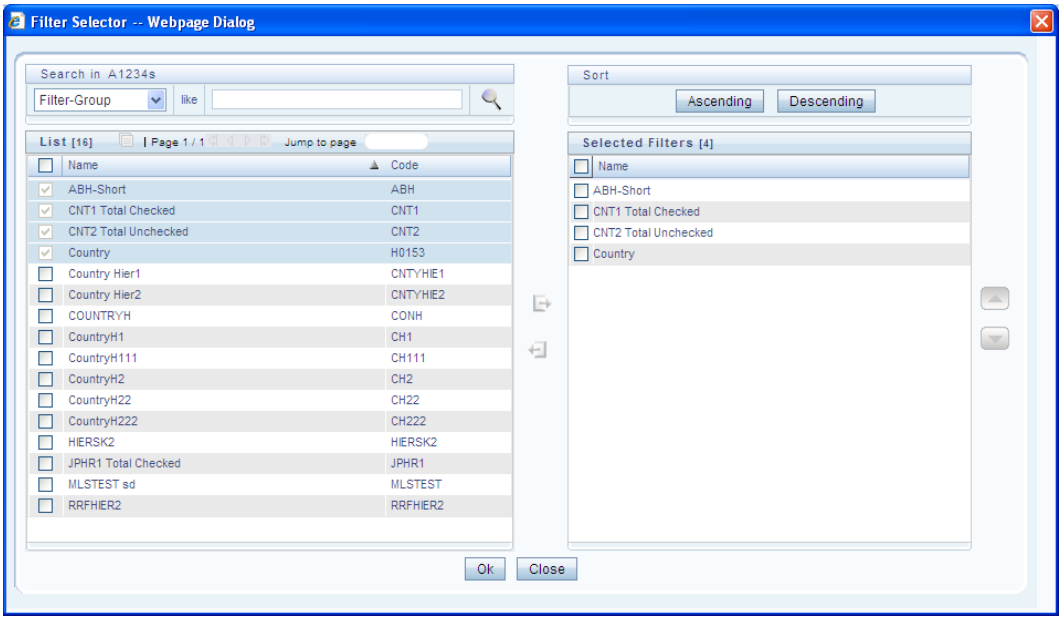
#### 5.3.2.1 Add Members to Filter

You can define filters for a rule definition such as Hierarchy, Filter-Data Element, Filter-Hierarchy, or Filter Group.

**NOTE:** In order to access *Filter Selector* window and to select the pre-defined filters, you need to have **FILTERRULE** function mapped to your role.

To create a filter for a rule in the *Rule Definition (New Mode)* window:

1. Click **Selector** button from the *List* grid and select Filter ( ). The *Filter Selector* window is displayed.




The LHS pane of the *Filter Selector* window displays the available members under the selected Information Domain and Dataset.

2. Select any of the following filters from the drop-down list in the *Search in* pane:

| Member Type | Description |
|---|---|
| Hierarchy | **Hierarchy** refers to the defined Business Hierarchies and will list all the UAM Hierarchies (can be implicitly created UAM hierarchies for AMHM hierarchy) pertaining to the selected dataset. |
| Filter-Data Element | **Data Element Filter** is a stored rule that expresses a set of constraints. Only columns that match the data type of your Data Element selection are offered in the Data Element drop-down list box. |
| Filter-Hierarchy | **Hierarchy Filter** allows you to utilize rollup nodes within a Hierarchy to help you exclude (filter out) or include data within an OFSAA rule. |
| Filter-Group | **Group Filters** can be used to combine multiple Data Element Filters with a logical "AND". |

3. Select the checkbox adjacent to the members you want to select.

4. Click to move the selected members to the **Selected Filters** pane.

**NOTE:** You can select maximum of nine Filters for a Rule.

In *Filter Selector* window you can:

- You can search for a specific member type by selecting from the drop-down list and clicking button. You can also modify your search criteria specifying the nearest keyword in the **like** field.
- The Pagination option helps you to manage the view of existing Hierarchies within the system. For more information, refer Pagination section.
- Click button to view the details of a selected member.
- Click **Ascending** or **Descending** button to sort the selected components in Ascending or Descending order.
- Click or button to re-arrange the selected list of members.

**NOTE:** The re-ordering of hierarchies does not affect the resulting SQL query.

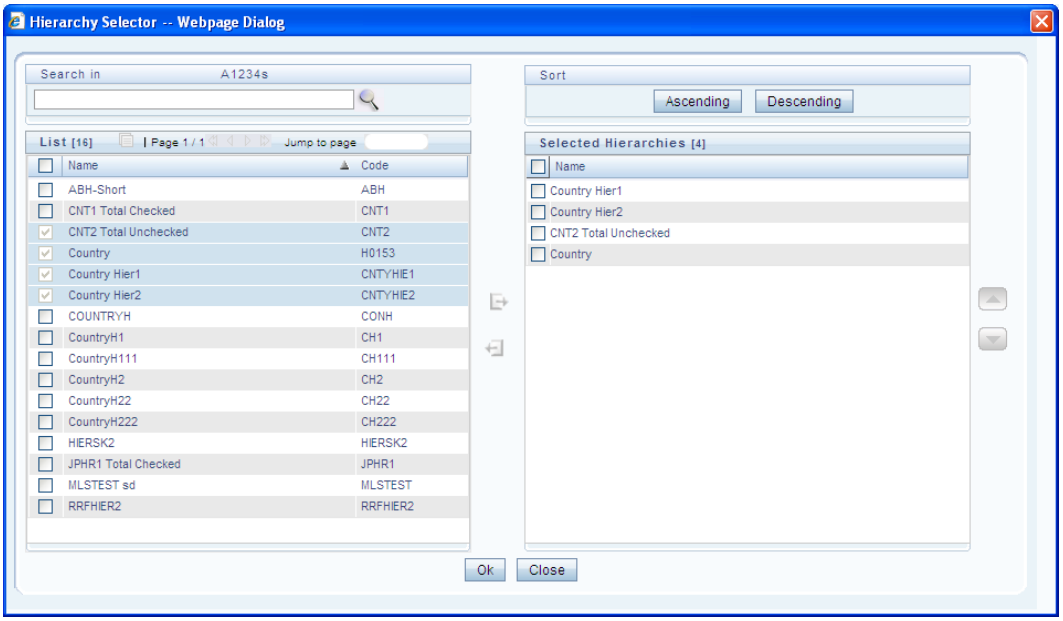
- Click button to remove selected members from the Selected Filters pane.

5. Click **OK**. The selected filters are listed in the *Rule Definition (New Mode)* window.

#### 5.3.2.2 Add Hierarchies to Source

The Source and Target can be selected from the *List* grid. To select the Source for a Rule in the *Rule Definition (New Mode)* window:

1. Click **Selector** button from the *List* grid and select **Source**. The *Hierarchy Selector* window is displayed.




The LHS pane of the *Hierarchy Selector* window displays the available hierarchies under the selected Information Domain and Dataset.

2. Select the checkbox adjacent to the Hierarchies you want to select as Source.
3. Click to move the selected hierarchies to the **Selected Hierarchies** pane.

**NOTE:** You can select maximum of nine Sources for a Rule.

In *Hierarchy Selector* window you can:

- Search for a member by specifying the nearest keyword and clicking button.
- The Pagination option helps you to manage the view of existing Hierarchies within the system. For more information, refer Pagination section.
- Click button to view the details of a selected hierarchy.
- Click **Ascending** or **Descending** button to sort the selected components in Ascending or Descending order.
- Click or button to re-arrange the selected list of hierarchies.
- Click button to remove selected hierarchies from the Selected Hierarchies pane.

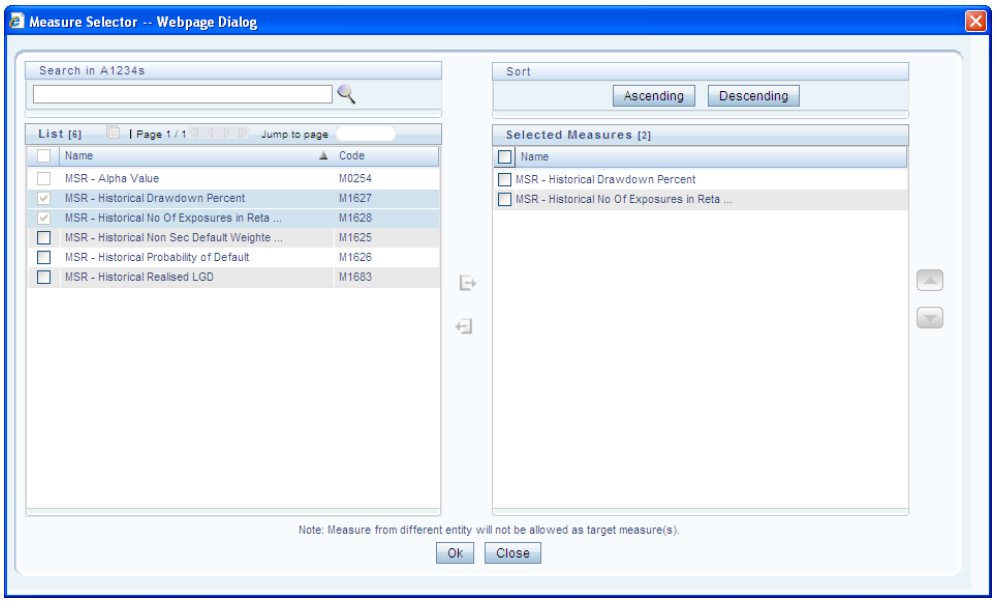
4. Click **OK**. The selected hierarchies are listed in the *Rule Definition (New Mode)* window.

#### 5.3.2.3 Add Measures / Hierarchies to Target

To select the Target for a Rule in the *Rule Definition (New Mode)* window:

1. Click button from the *List* grid and select **Target** ( ). The *Measure Selector / Hierarchy Selector* window is displayed.

   The *Measure Selector* and *Hierarchy Selector* windows are displayed depending on the Type of the Rule you have selected, i.e. the Computation Rule and Classification Rule respectively.




The LHS pane of the *Measure Selector* / *Hierarchy Selector* window displays the available Measures / Hierarchies under the selected Information Domain and Dataset.

2. Select the checkbox(s) adjacent to the members you want to select as Target.
3. Click to move the selected measures to the Selected Measures / Selected Hierarchies pane.

| | |
|---|---|
| **NOTE:** | Measures from different entities are not allowed as target measures. You can select maximum of five measures and a single Hierarchy to the target. |

In Measure Selector / Hierarchy Selector window you can:

- Search for a member by specifying the nearest keyword and clicking button.
- The Pagination option helps you to manage the view of existing members within the system. For more information, refer Pagination section.
- Click button to view the details of a selected member.
- Click **Ascending** or **Descending** button to sort the selected components in Ascending or Descending order.
- Click or button to re-arrange the selected list of members.
- Click button to remove selected measures from the Selected Measures / Selected Hierarchies pane.

4. Click **OK**. The selected members are listed in the *Rule Definition (New Mode)* window.

In the List grid you can also:

- Click button to move a selected member between **Filter**, **Source**, or **Target**.

- Click button to view the selected member details.

Once all the necessary information in the first window of the *Rule Definition (New Mode)* is populated, click **Next** button to navigate to the concurrent procedures of defining a Rule.

#### 5.3.2.4 Hierarchical Member Selection

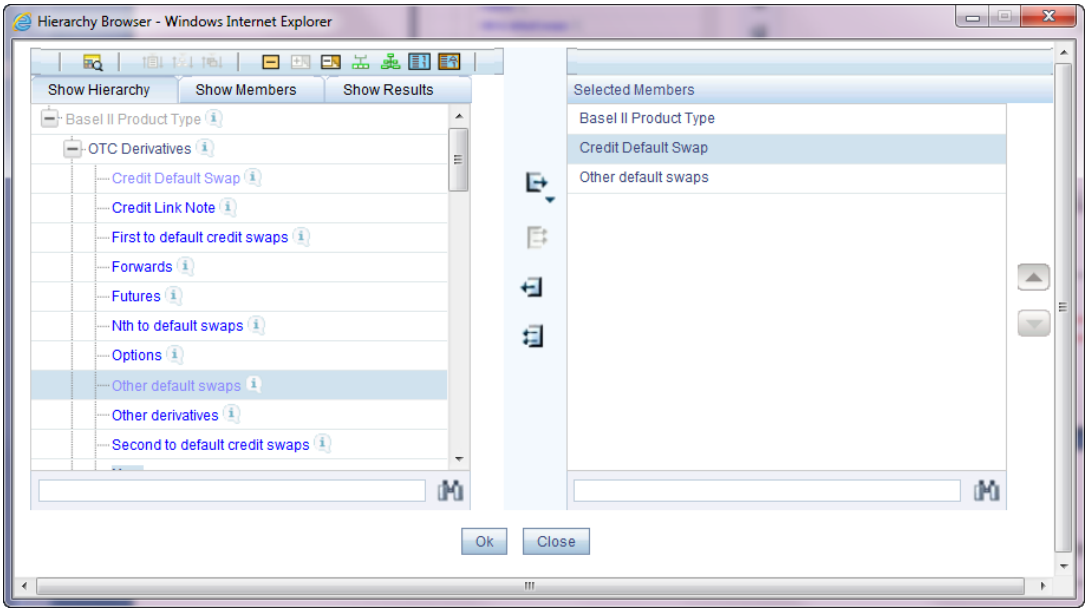
The second window of *Rule Definition (New Mode)* window displays all the information you have provided in the *Linked to* and *Master info* grids. You can view the filters you have selected in the *Rule Condition* grid.

In the Rule Condition grid, you can apply conditions for each of the BMM hierarchy filters.

**NOTE:** In case of Data Element, Group, or Hierarchy filters, you can only view the SQL query.

To apply condition for a BMM hierarchy filter and view the SQL query in the *Rule Condition* grid:

1. Click button adjacent to the filter details. The *Hierarchy Browser* window is displayed.




2. Click and expand the members of the selected hierarchy.

3. Select a member / node and click to select the same. Click the to select the member as Self or Parent. For more information, see Hierarchical Member Selection Modes.

   In the *Hierarchy Browser* window you can also:

   - Click or to sort the members by Code or Name.
   - Click or to expand or collapse the members under a node.

- Click or to expand a branch or collapse a branch.
- Click or to view the code values of members right or left.
- Click or to show code or show name of the members.
- Click or to re-arrange the members in the Selected Members pane. However, the rearranged members are not displayed on the *Combination Mapper* grid based on the reordering.
- Click to search for a particular member by entering Code or any part of the Name and clicking **Search**. You can also find a member in the grid using button.

**NOTE:** You can add up to 1000 members or nodes in the *Selected Members* pane under the target hierarchy.

4. Click button adjacent to a filter details. The *Preview SQL Query* window is displayed with the resultant SQL query.

#### 5.3.2.5 Select Hierarchy Members of Source Hierarchy and Move Source to Slicer

The selected Source and Target Hierarchies are displayed under *Combination Mapper* grid. You can move the source Hierarchies from *Combination Mapper* grid to Slicer.

To move a source Hierarchy from *Combination Mapper* grid to *Slicer* grid:

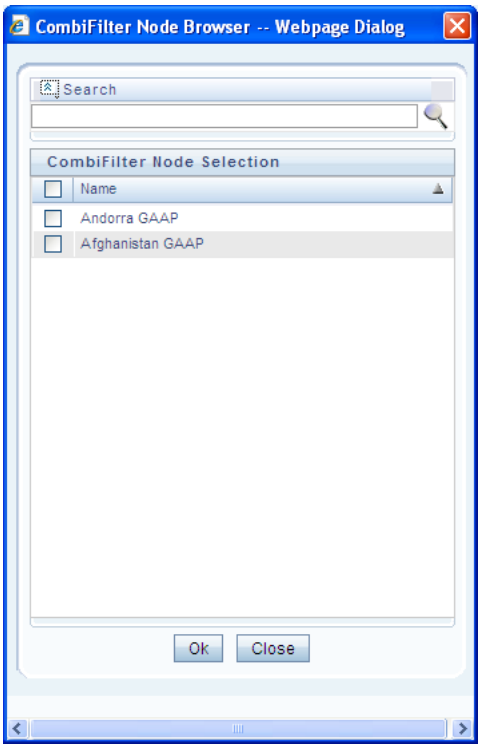
1. Click the Hierarchy member and drag it to the *Slicer* grid. The member is displayed under *Slicer* grid.
2. Click button to select the members of a Hierarchy. The *Hierarchy Browser* window is displayed.

Whenever a Source/ Target hierarchy is selected, by default the root node will appear in the *Selected Members* pane without checking hierarchy member security.

**NOTE:** The Hierarchy members which are mapped to your user group are in enabled state and can be used; those which are not mapped will be in disabled state.

For more information, refer Hierarchy Browser.

3. Click button. The *CombiFilter Node Browser* window is displayed.




4. Select the checkbox adjacent to the member name and click **OK**.

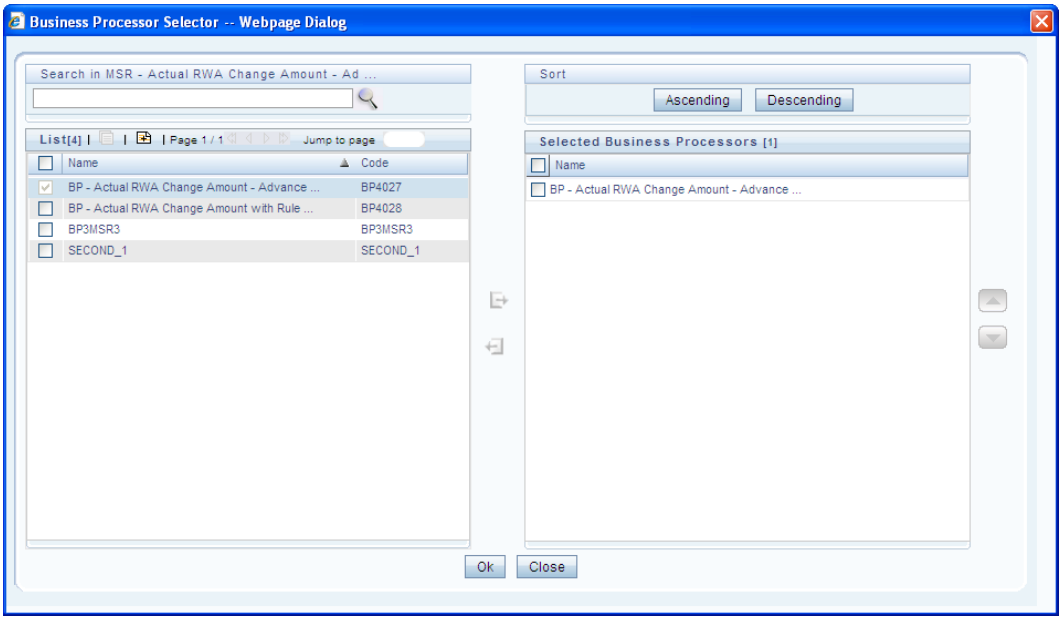
#### 5.3.2.6 Select Business Processor as Target

The Measures selected as target are displayed under Target page in the *Combination Mapper* grid. You can select the Business Processors (BP) from these Measures.

**NOTE:** If you are not able to view the *Combination Mapper* pane properly due to resolution issues, click **Collapse View** in *Map* tool bar.

To select the Business Processors form a Measure:

1. Click button in the Measure displayed under Target page. The *Business Processor Selector* window is displayed.




2. Select the checkbox adjacent to the Business Processor name and click .

   In Business Processor Selector window you can:

   - Search for a Business Processor by specifying the nearest keyword and clicking button.
   - The Pagination option helps you to manage the view of existing Business Processors within the system. For more information, refer Pagination section.
   - Click button to view the details of a selected Business Processor.
   - Click button to define a new Business Processor. For more information refer Create Business Processor.
   - Click **Ascending** or **Descending** button to sort the selected components in Ascending or Descending order.
   - Click or button to re-arrange the selected list of Business Processors.
   - Click button to remove the selected Business Processors from **Selected Business Processors** pane.

3. Click **OK**. The selected Business Processors are listed under the *Combination Mapper* grid along with the **Source** and **Filer** definition details.

   (Optional) After selecting Business Processor(s) in the *Combination Mapper* grid, you can set the Default Target member, specify Parameters, and exclude child nodes for the Rule definition.

- You can set the selected Target member as default by clicking button on the header bar of required Business Processor and selecting **Default Member** checkbox.

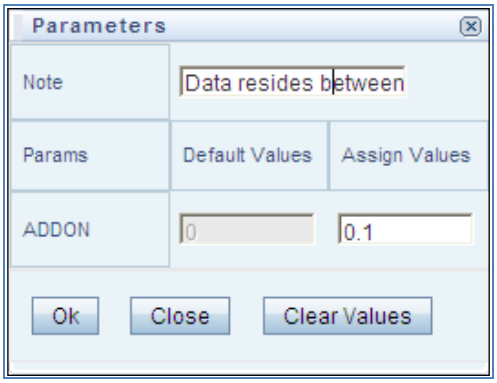
  When a Target member is selected as default, all the unmapped Source member combinations for that Target object will be logically mapped to the default member and the corresponding target appears disabled. Run time parameters cannot be applied for such defaulted target BP's. However, the logical mappings will not overwrite the physical mapping.

- You can specify parameters for the selected Business Processor. Select the checkbox(s) adjacent to the required Business Processor and click button adjacent to a checkbox selected. The *Parameters* pop-up is displayed.

**NOTE:** A physical mapping is established when mapping is explicitly done upon a combination of source and target members.

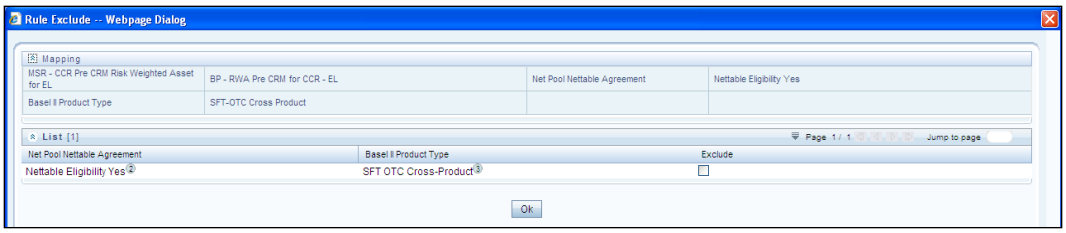
- For a Classification Rule and Computation Rule with non-parameterized BP, the Parameters pop-up is as displayed. Enter the required note in the text field and click **OK**.

- For a Computation Rule with parameterized BP, the Parameters pop-up is as displayed. Enter the required note in the text field. The *Parameter Default Value* is fetched from the *Business Processor* definition and the *Assign Value* can be entered manually which is considered during Rule execution at Runtime. You can also clear the *Assign Value* field by clicking the **Clear Values** button. Click **OK**.




- You can exclude child node(s) in the *Combination Mapper* grid, if they are not required in the Rule execution. Click ... (Exclude) button. The *Rule Exclude* window is displayed.

**NOTE:** The exclude icon is available only for the combinations with physical mappings. When a default member is removed from the target member, all logical mappings would be removed retaining only physical mappings.




The *Rule exclude* window displays only the child nodes associated to a Parent node. Ensure that the selected parent has associated child nodes and is not the default member in the target.

- Select the checkbox adjacent to Rule code that you want to exclude and click **OK**.

Once all the necessary details are entered, click **Save**. The Rule definition is saved with the provided details and is displayed in the *Rule* window.

Note that, the default version of a new Rule definition created by an Authorizer is **0** and the one created by non-authorizer is **-1**. For more details on Versioning, refer Rule Definition Versioning section.

The *Audit Trail* section at the bottom of *Rule Definition (New Mode)* window displays metadata information about the Rule definition created. The *User Comments* section facilitates you to add or update additional information as comments.

### 5.3.3 View Rule Definition

You can view individual rule definition details at any given point.

To view the existing rule definition details in the *Rule* window:

1. Select the checkbox adjacent to the rule **Code** whose details are to be viewed.
2. Click button in the List tool bar.

   The *Rule Definition (View Mode)* window is displayed with all the details of the selected Rule. Click **Next** and **Back** buttons to navigate back and forth in the *Rule Definition (View Mode)* window.

### 5.3.4 Edit Rule Definition

You can modify all the details except ID, Code, Version, Active, and Type of a rule definition. An authorizer needs to approve the modified rule. Otherwise, it will be in Inactive state.

**NOTE:** When a hierarchy which is part of the default security mapper is used as a Source in a Rule definition, you must open the *Hierarchy* Browser window (from the second window of *Rule Definition*) and resave the selection of nodes based on the latest accessible members in accordance with default security mapper definition. This will ensure that the rule definition is executed based on latest hierarchy member security available.

To modify an existing rule definition in the *Rule* window:

1. From the Rule window, select the checkbox adjacent to the Rule Code whose details are to be updated.
2. Click button in the *List* tool bar. The Edit button is disabled if you have selected multiple rules. The *Rule Definition (Edit Mode)* window is displayed.
3. Edit the rule details as required. For more information, refer Create Rule.
4. Click **Save** to save the changes.

#### 5.3.4.1 Rule Definition Versioning

For an authorizer:

When you create a new rule, its version will be **0.** When you edit an existing rule and try to save, you are prompted whether to save it as a new version or not. If you click **Yes**, a new rule is created with version as **0** and the rule having version as **0** will be saved with version as maximum version +1. If you click **No**, the existing rule is overwritten and the version will be as it is.

For a non-authorizer:

When you create a new rule, its version will be **-1**. Once the rule is approved by an authorizer, the version becomes **0**. When you edit an existing rule and try to save, you are prompted whether to save it as a new version or not. If you click **Yes**, a new rule is created with version as **-1**. Once the rule is approved, its version becomes **0** and the rule having version as **0** will be saved with version as maximum version +1. If you click **No**, the existing rule is overwritten and the **Active** flag of the rule becomes **N** (which you can view from the *Summary* window). The version remains the same. Once the rule gets approved, its **Active** flag changes to **Y**.

**Note** the following:

- The rule with version 0 is the latest one and it can have many versions say 1 to n, where 1 is the oldest rule and n is the next to latest.
- A rule with version -1 will always be in Inactive state.

You can view all the versions of a particular rule by providing the rule's name or code and clicking **Search** in the *Search and Filter* grid. (Ensure the **Version** field is cleared since it is auto populated with **0**).

### 5.3.5 Copy Rule Definition

This feature facilitates you to quickly create a new rule definition based on an existing rule or by updating the values of the required rule.

To copy an existing rule definition:

1. From the *Rule* window, select the checkbox adjacent to the Rule Code whose details are to be duplicated.
2. Click button in the *List* toolbar. The *Rule Definition (Copy Mode)* window is displayed. Copy button is disabled if you have selected multiple Rules.

   In the Rule Definition (Copy Mode) window you can:

   - Create new Rule definition with existing variables. Specify a new **Rule Code** and **Folder**. Click **Save**.
   - Create new Rule definition by updating the required variables. Specify new **Rule Code**, **Folder**, and update other required details. For more information, refer Create Rule. Click **Save**.

   The new Rule definition details are displayed in the *Rule* window. By default, version "0" is set if you have authorization rights, else the version is set to "-1".

### 5.3.6 Authorize Rule Definition

A rule definition when created/modified should be approved by an authorizer. An authorizer can approve/ reject a pre-defined rule definition listed within the *Rule* window. To approve/ reject a rule in the *Rule* window, you need to have Authorize role mapped to your user group.

If you are an authorizer, then all the Rule definitions created/ modified by you are auto approved and the **Active** status is set to **Yes**. Otherwise, the **Active** status is set to **No** and an authorizer needs to approve it to change the **Active** status to **Yes**.

To approve or reject a rule definition:

1. Select the checkbox(s) adjacent to the required Rule Code(s).
2. Do one of the following:
   - To approve the selected rule definitions, click button.
   - To reject the selected rule definitions, click button.

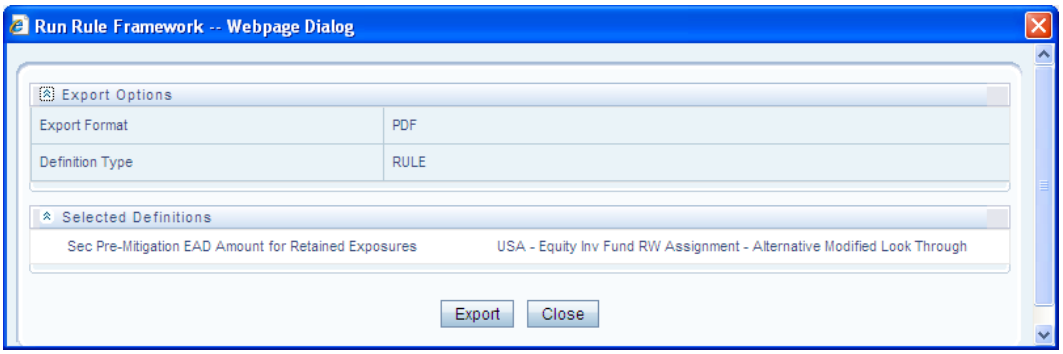
   A rule is made available for use only after the approval. For a rejected definition a comment with the rejection details will be added.

### 5.3.7 Export Rule to PDF

You can export single/multiple rule definition details to a PDF file.

To export the rule definition details in the *Rule* window:

1. Select the checkbox(s) adjacent to the Rule Code(s) you want to export.
2. Click button in the *List* toolbar.
3. Click the button in the popup. The *Export* dialog is displayed.




The *Export* dialog displays the Export Format, Definition Type, and the names of the Selected Definitions.

4. Click **Export**. The process is initiated and is displayed in a pop-up specific to the current download. Once the PDF is generated, you can open / save the file from the *File Download* dialog box.

   You can either save the file on the local machine or view the file contents in a PDF viewer. The downloaded PDF displays all the details such as Linked to, Properties, Master information, Audit Trail, List, Mapping Details, and Comments of all the Rule definitions selected.

### 5.3.8 Trace Rule Definition Details

You can trace the metadata details of individual rule definitions.

To trace the underlying metadata details of a rule definition in the *Rule* window:

1. Select the checkbox adjacent to the Rule Code whose details are to be traced.
2. Click button from the *List* toolbar.

   The *Trace Definition* window is displayed with the details such as Traced Object (Name and definition type) and Processes and Runs in which the selected Rule is used. In the *Trace Definition* window you can also select individual Process or Run and click button to view the definition details.

### 5.3.9 Delete Rule Definition

You can remove rule definition(s) which are no longer required in the system by deleting from *Rule* window. However, it is a soft deletion only.

To delete rule definition:

1. Select the checkbox(s) adjacent to the Rule Code(s) which you want to delete.
2. Click button from the *List* tool bar.
3. Click **OK** in the information dialog to confirm deletion.

An information dialog is displayed confirming the deletion of the rule definition(s) and asking the authorization.

## 5.4 Process

A set of rules collectively form a Process. A process definition is represented as a Process Tree. The Process option in the Rules Run Framework provides a framework that facilitates the definition and maintenance of a process. By defining a process, you can logically group a collection of rules that pertain to a functional process.

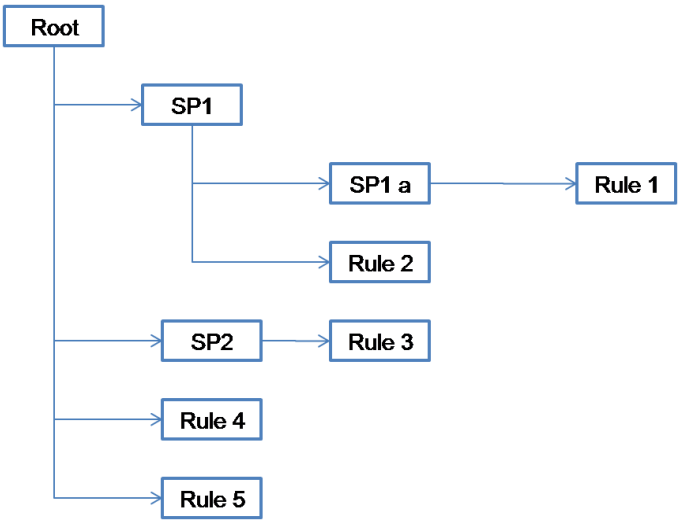
You can define a process with the existing metadata objects using a hierarchical structure which facilitates the construction of a process tree. Process tree can have many levels and one or many nodes within each level. Sub-processes are defined at level members and process hierarchy members form the leaf members of the tree. Refer Process Hierarchy Members for more information.

Note the following:

- Precedence defined to each process determines the Process Initiation Sequence.
- If precedence is defined, the process execution (along with the associated Rules) happens based on the precedence defined to each component.
- If no precedence is defined, all the processes within the process tree are initiated together in its natural hierarchical sequence.

Consider the following illustration:

- If natural precedence is defined to the sub process **SP1**, process execution is triggered in the sequence Rule 1 > SP1a > Rule 2 > SP1.
- If no precedence is defined, all the sub processes SP1, SP2, Rule 4, and Rule 5 are executed in parallel.




Further, the business may require simulating conditions under different business scenarios and evaluate the resultant calculations with respect to the baseline calculation. Such simulations are

done through the construction of Processes and Process trees. Underlying metadata objects such as Rules, T2T Definitions, Processes, and Database Stored Procedures drive the process functionality.

**Concurrent Rule Execution**

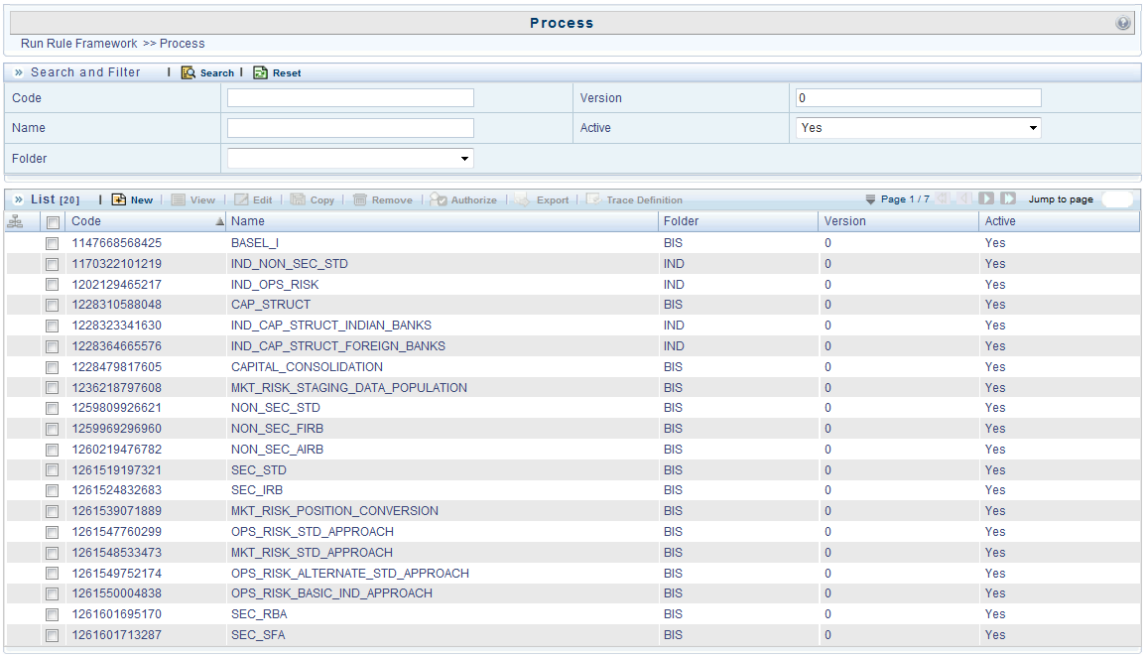
You can define a process to combine different computation/ classification rules for concurrent execution by marking the process or sub process as executable.

Conditions for execution

- Rules defined on different datasets cannot be combined together
- The executable process or sub process should update the same FACT table
- Aggregation rules will be merged as separate rules for execution

The Roles mapped for Process module are: Process Access, Process Advanced, Process Authorize, Process Read Only, Process Write and Process Phantom. Based on the roles mapped to your user group, you can access various screens in Process module. For more information on functions mapped to these roles, see Appendix A.

You can access Process window by expanding **Rule Run Framework** within the LHS menu and selecting **Process**.




| Code | Name | Folder | Version | Active |
|---|---|---|---|---|
| 1147668568425 | BASEL_I | BIS | 0 | Yes |
| 1170322101219 | IND_NON_SEC_STD | IND | 0 | Yes |
| 1202129465217 | IND_OPS_RISK | IND | 0 | Yes |
| 1228310588048 | CAP_STRUCT | BIS | 0 | Yes |
| 1228323341630 | IND_CAP_STRUCT_INDIAN_BANKS | IND | 0 | Yes |
| 1228364665576 | IND_CAP_STRUCT_FOREIGN_BANKS | IND | 0 | Yes |
| 1228479817605 | CAPITAL_CONSOLIDATION | BIS | 0 | Yes |
| 1236218797608 | MKT_RISK_STAGING_DATA_POPULATION | BIS | 0 | Yes |
| 1259809926621 | NON_SEC_STD | BIS | 0 | Yes |
| 1259969296960 | NON_SEC_FIRB | BIS | 0 | Yes |
| 1260219476782 | NON_SEC_AIRB | BIS | 0 | Yes |
| 1261519197321 | SEC_STD | BIS | 0 | Yes |
| 1261524832683 | SEC_IRB | BIS | 0 | Yes |
| 1261539071889 | MKT_RISK_POSITION_CONVERSION | BIS | 0 | Yes |
| 1261547760299 | OPS_RISK_STD_APPROACH | BIS | 0 | Yes |
| 1261548533473 | MKT_RISK_STD_APPROACH | BIS | 0 | Yes |
| 1261549752174 | OPS_RISK_ALTERNATE_STD_APPROACH | BIS | 0 | Yes |
| 1261550004838 | OPS_RISK_BASIC_IND_APPROACH | BIS | 0 | Yes |
| 1261601695170 | SEC_RBA | BIS | 0 | Yes |
| 1261601713287 | SEC_SFA | BIS | 0 | Yes |

The *Process* window displays the processes created in the current Information Domain with the metadata details such as Code, Name, Folder, Version, and Active. For more information on how object access is restricted, see Object Security section.

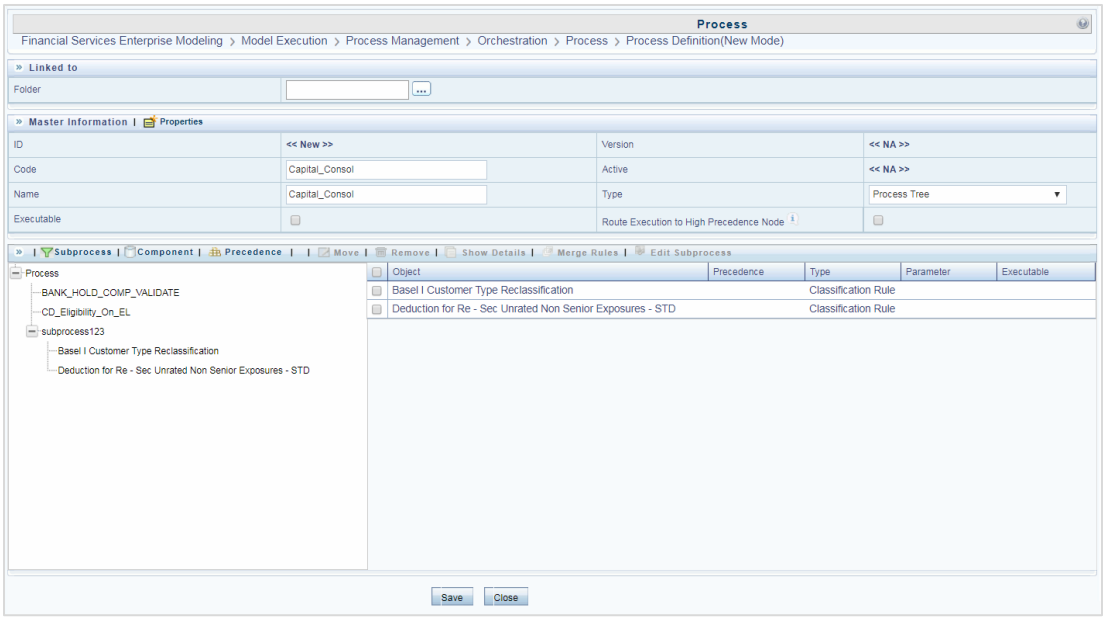
You can make use of Search and Filter option to search for specific Processes based on Code, Name, Folder, Version, or Active. The **Folder** drop-down list displays all Public folders, shared folders to which your user group is mapped and Private folders for which you are the owner. The Pagination option helps you to manage the view of existing Processes within the system.

### 5.4.1 Create Process

You can build a process by adding one or more members called Process Nodes. If there are Predecessor Tasks associated with any member, the tasks defined as predecessors precede the execution of that member. The Write role should be mapped to your user group, from the *User Group Role Map* window.

To define a process in the *Process* window:

1. Click button from the List toolbar. The *Process Definition (New Mode)* window is displayed.




2. Click button adjacent to the **Folder** field in the *Linked to* grid. The *Folder Selector* dialog is displayed. The folders to which your user group is mapped are displayed.

3. Select the checkbox adjacent to the required folder. Click **OK**.

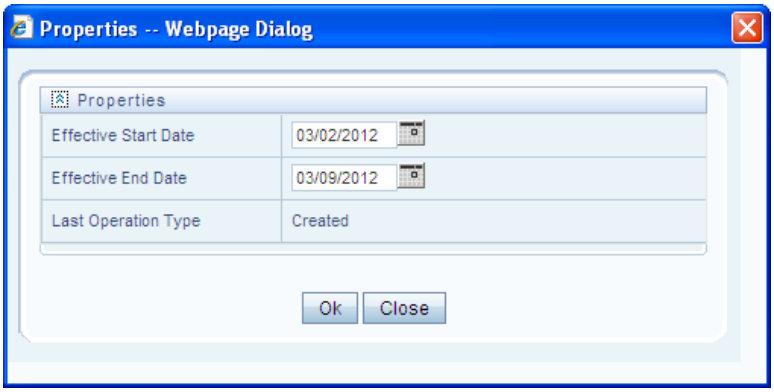
   You can also enter a keyword and click button in the Search field of *Folder Selector* dialog to locate a particular folder.

4. Enter the details of the Master *information* grid as tabulated below:

| Field Name | Description |
|---|---|
| ID | Refers to the default ID of a newly created process and is **<<New>>.** |
| Code | Enter a valid code for the process. Ensure that the code is alphanumeric with a maximum of 30 characters in length and there are no special characters except underscore "_". |

| Field Name | Description |
|---|---|
| Name | Enter a valid name for the process. Ensure that process name is alphanumeric and does not contain any of the following special characters: #, %, &, +, ", and ~. |
| Version | By default the version field is displayed as **<<NA>>** for the new process being created. Once the process definition is saved, an appropriate version is assigned as either **-1** or **0** depending on the authorization permissions. For more information, see Process Definition Versioning. |
| Active | By default, the Active field is displayed as **<<NA>>** for the new process being created. Once the process definition is saved, the status is set to "**Yes**" if you are an authorizer or **No** if the created process needs to be authorized by an authorizer. |
| Type | Select the process type based on which you would like to create the rule from the drop-down list. |
| Executable | Select the checkbox if you want to bunch rule executions for concurrency.<br>If you are selecting the checkbox, you can add only Computation or Classification Rules as Components. For more information, see Concurrent Rule Execution section. |
| Route Execution to High Precedence Node | Select the checkbox if you want to route the execution of this Process definition to the high precedence node set up in the AM server. |

5. Click button in the *Master info* grid. The Properties dialog is displayed.




You can edit the below tabulated details in the *Properties* dialog:

| Field Name | Description |
|---|---|
| Effective Start Date, Effective End Date | Effective Dating is not implemented for Rule definition. |

| Field Name | Description |
|---|---|
| Last Operation Type | By default, this field displays the last change done to the process definition.<br>While creating a process, the field displays the operation type as **Created**. |

6. Click **OK**. The properties are saved for the current process definition.

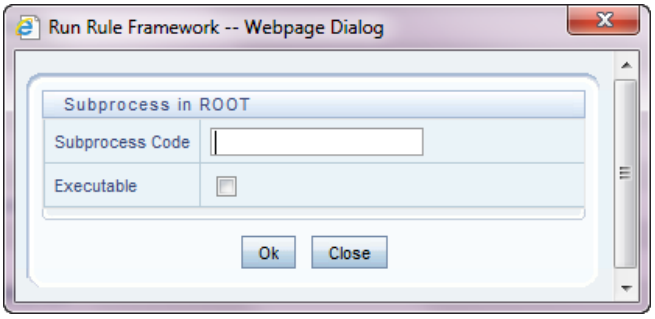
#### 5.4.1.1 Define Sub Process to Root

You can define sub processes to the base process being created or for a pre-defined sub process under a base process.

This option will not be available if you have selected the base process as executable. A process can have multiple executable sub processes; however an executable sub process cannot have sub process within it. It can have only computation/ classification rule as components.

To create a sub process in the *Process Definition (New Mode)* window:

1. Click (Subprocess) button. The *Sub Process in ROOT* dialog is displayed.




2. Enter the Sub Process Code. You cannot enter any special characters except underscore "_".
3. Select the **Executable** checkbox to club the rules for concurrent execution. Executable sub process can have only Classification/ Computation Rules.
4. Click **OK**.

   The sub process is listed under the root process as a branch.

> **NOTE:** You can further create sub processes for the existing processes or for the base process by selecting the process and following the above procedure; however an executable sub process cannot have sub process within it.

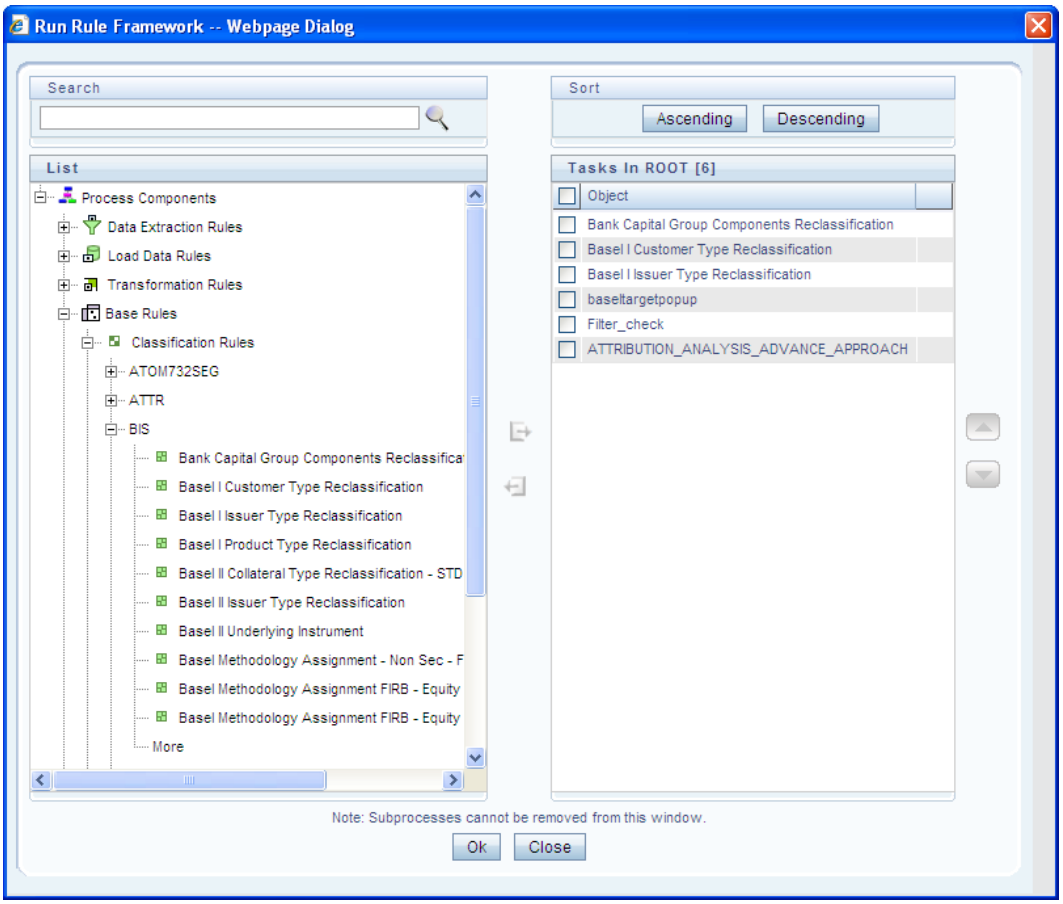
#### 5.4.1.2 Add Component to Base Process / Sub Process

You can add process components to the base process as well as the sub processes. For concurrent rule execution, you should select only rules, which comes under *Base Rules* node. See Concurrent Rule Execution section for the conditions to select the rules.

To add the process components from the *Process Definition (New Mode)* window:

1. Select the process for which you want to add the component.
2. Click (Component) button.

   The *Component Selector* window is displayed.




   On the List pane, click button to expand the members and view the process components. For more information, refer Process Hierarchy Members.

3. Select a Process Component and click to move the component to the *Tasks In <Process Name>* pane.

   In *Component Selector* window you can also:

   - Search for a component by specifying the nearest keyword and clicking button.
   - Click **Ascending** or **Descending** button to sort the selected components in Ascending or Descending alphabetical order.
   - Click or button to move up or move down the selected components.
   - Click button to add parameters for the selected components.

The parameters must be specified in double quotes and in case of multiple parameters, specify the values separated by commas. E.g.: "value 1", "value 2".

- Click button to remove the selected components from the *Tasks In <Process Name>* pane.

**NOTE:** Sub processes listed in *Tasks In <Process Name>* pane cannot be removed.

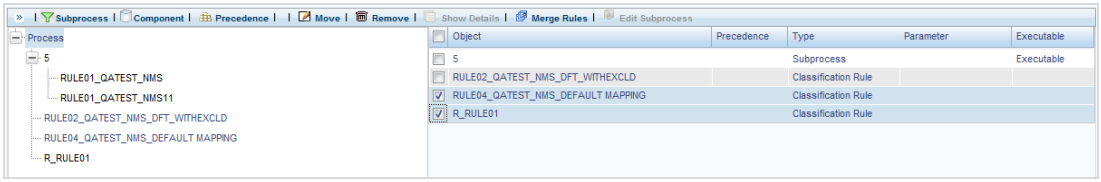
4. Click **OK**. The components are listed under the selected process.

#### 5.4.1.3 Merging Rules for Concurrent Execution

After selecting Rules as components for concurrent execution, you can merge rules in a sub process to define that as a logical single rule.

To merge rules in a sub process:

1. From the Component Selector window, select the required rules.




1. Select the rules to be merged and click **Merge Rules**.

**NOTE:** You can merge only rules which are part of the same dataset.

2. Specify the sub process code. The Executable checkbox will be selected. You cannot modify it.
3. Click **Ok**. The merged rules will be placed under the new sub process.

#### 5.4.1.4 Add Precedence for Selected Components

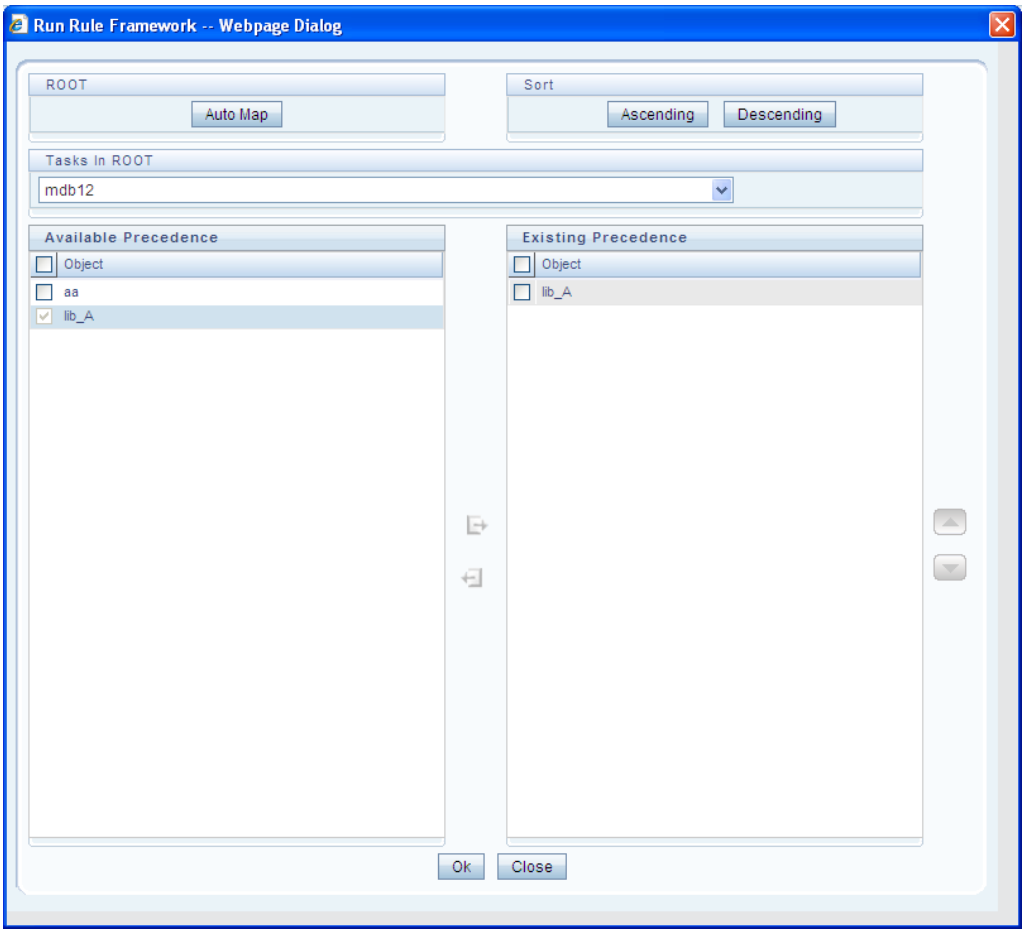
You can add precedence for the selected components in the *Process Definition (New Mode)* window. Precedence can be defined to peer processes in a selected parent process.

**NOTE:** Precedence cannot be set for the executable sub processes.

To add precedence for a selected component:

1. Select the process for whose components you want to select precedence.
2. Click (Precedence) button.

   The *Precedence Selector* window is displayed.




3. Select **Auto Map** to override the predefined precedence and to set predecessor tasks as precedence.

4. To manually select predecessor tasks for a task:

   - Select a task from **Tasks In <Process Name>** drop-down list. The other tasks are listed in the Available Precedence pane.
   - Select the tasks to set as predecessor tasks and click button.
   - The selected tasks are listed in the **Existing Precedence** pane.

   **NOTE:** You cannot select tasks as predecessor tasks if they have cyclic dependencies with the selected task.

   In the *Precedence Selector* window you can also:

   - Click **Ascending** or **Descending** button to sort the selected tasks in Ascending or Descending order.
   - Click or button to move up or move down the selected tasks.

- Click button to remove selected tasks from the **Existing Precedence** pane.

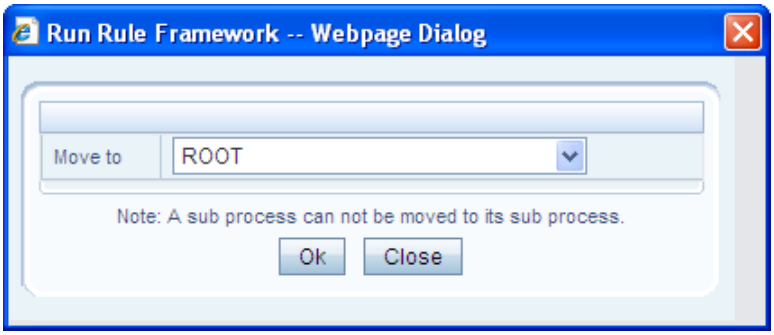
5. Click **OK**. The precedence is set for the tasks in the selected process.

#### 5.4.1.5 Move Tasks among Processes

You can move the tasks which have no dependency, among different processes in the *Process Definition (New/ Edit Mode)* window.

To move tasks:

1. Select the task to be moved or the sub process under which the task to be moved comes. On the right pane, the task or sub process details are displayed.
2. Select the checkbox(s) adjacent to the tasks to be moved to a different process.
3. Click **Move** button. The *Move to* dialog is displayed.




4. Select the process/ sub process to which you want to move the task.
5. Click OK. The window is refreshed and the task is displayed under the selected process.

#### 5.4.1.6 Remove Tasks from a Process

You can remove/ delete the tasks which have no dependency, from the *Process Definition (New/ Edit Mode)* window.

To remove tasks:

1. Select the task to be removed or the sub process under which the task to be removed comes. On the right pane, the task or sub process details are displayed.
2. Select the checkbox(s) adjacent to the tasks you want to remove.
3. Click **Remove** button. The Warning dialog is displayed.
4. Click **OK**. The selected tasks are removed from the process.

In the *Process Definition (New/ Edit Mode)* window, you can also view the details of a selected task by clicking button.

Click **Save**. The process definition is saved with the provided details and is displayed in the *Process* window.

Note that, the default version of a new process definition created by an authorizer is **0** and the one created by a non authorizer is **-1**. For more details on versioning, see Process Definition Versioning.

The *Audit Trail* section at the bottom of *Process Definition (New Mode)* window displays metadata information about the Process definition created. The *User Comments* section facilitates you to add or update additional information as comments.

### 5.4.2 View Process Definition

You can view individual process definition details at any given point.

To view the existing process definition details in the *Process* window:

1. Select the checkbox adjacent to the Process Code whose details are to be viewed.
2. Click button in the List tool bar.

   The *Process Definition (View Mode)* window is displayed with all the details of the selected Process.

### 5.4.3 Edit Process Definition

You can modify all the details except ID, Code, Version, Active status, Executable flag, and Type of a Process definition. An authorizer needs to approve the modified rule. Otherwise, it will be in Inactive state.

To modify an existing process definition in the *Process* window:

1. Select the checkbox adjacent to the Process Code whose details are to be updated.
2. Click button in the *List* tool bar. The Edit button is disabled if you have selected multiple Processes. The *Process Definition (Edit Mode)* window is displayed.
3. Modify the process details as required. For more information, see Create Process.
4. Click **Save** to save the changes.

#### 5.4.3.1 Process Definition Versioning

For an authorizer:

When you create a new process, its version will be **0.** When you edit an existing process and try to save, you are prompted whether to save it as a new version or not. If you click **Yes**, a new process is created with version as **0** and the process having version as **0** will be saved with version as maximum version +1. If you click **No**, the existing process is overwritten and the version will be as it is.

For a non-authorizer:

When you create a new process, its version will be **-1**. Once the process is approved by an authorizer, the version becomes **0**. When you edit an existing process and try to save, you are prompted whether to save it as a new version or not. If you click **Yes**, a new process is created with version as **-1**. Once the process is approved, its version becomes **0** and the process having version as **0** will be saved with version as maximum version +1. If you click **No**, the existing process is overwritten, and the **Active** flag of the process becomes **N** (which you can view from the *Summary* window). The version remains the same. Once the process gets approved, its **Active** flag changes to **Y**.

**Note** the following:

- The process with version 0 is the latest one and it can have many versions say 1 to n, where 1 is the oldest process and n is the next to latest.
- A rule with version -1 will always be in Inactive state.

You can view all the versions of a particular process by providing the process's name or code and clicking **Search** in the *Search and Filter* grid. (Ensure the **Version** field is cleared since it is auto populated with **0**).

### 5.4.4 Copy Process Definition

The Copy Process Definition facilitates you to quickly create a new process definition based on an existing process or by updating the values of the required process.

To copy an existing process definition in the *Process* window:

1. Select the checkbox adjacent to the Process Code whose details are to be duplicated.
2. Click button in the *List* toolbar to copy a selected process definition. The *Process Definition (Copy Mode)* window is displayed. The **Copy** button is disabled if you have selected multiple processes.

   In the Process Definition (Copy Mode) window you can:

   - Create new process definition with existing variables. Specify a new **Process Code** and **Folder**. Click **Save**.
   - Create new process definition by updating the required variables. Specify a new **Process Code**, **Folder**, and update other required details. For more information, refer Create Process. Click **Save**.

   The new process definition details are displayed in the *Process* window. By default, version **0** is set if you have authorization rights, else the version is set to **-1**.

### 5.4.5 Authorize Process Definition

A process definition when created/modified should be approved by an authorizer. An authorizer can approve/ reject a pre-defined process definition listed within the *Process* window. To approve/ reject process(s) in the *Process* window, you need to have the Authorize role mapped to your user group. If you are an authorizer, then all the process definitions created/ modified by you are auto approved and the **Active** status is set to **Yes**. Otherwise, the **Active** status is set to **No** and an authorizer needs to approve it to change the **Active** status to **Yes**.

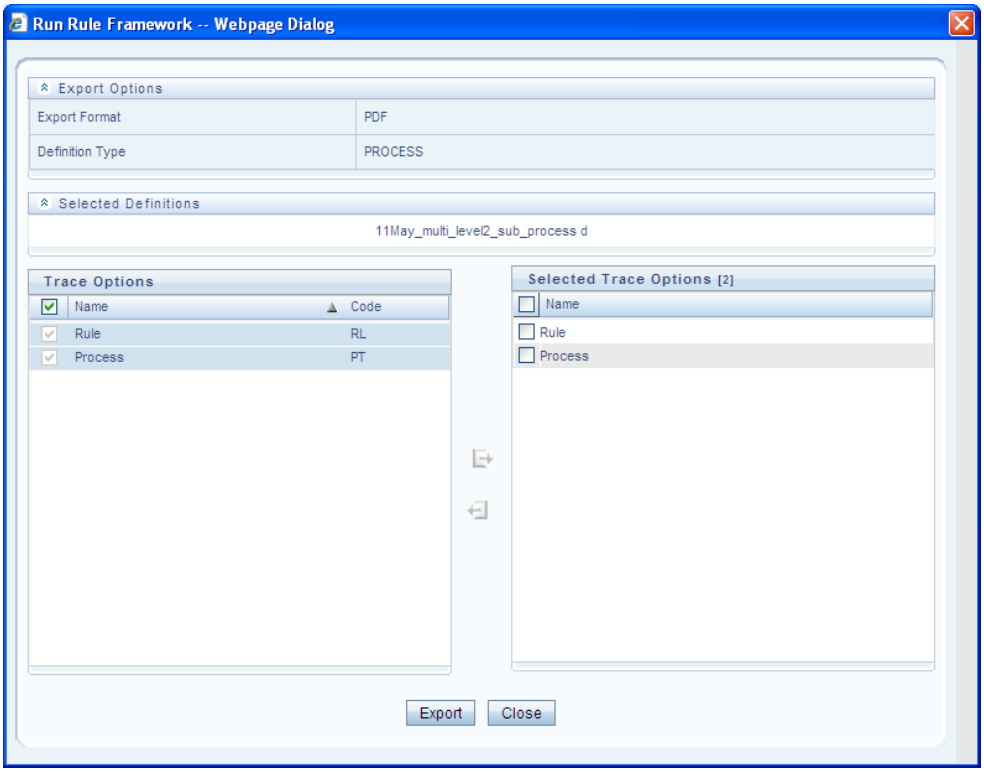
1. Select the checkbox(s) adjacent to the required Process Code(s).
2. Do one of the following:
   - To approve the selected process definitions, click button.
   - To reject the selected process definitions, click button.

   A process is made available for use only after the approval. For a rejected definition a comment with the rejection details will be added.

### 5.4.6 Export Process to PDF

You can export single/multiple process definition details to a PDF file. To export the process definition details in the *Process* window:

1. Select the checkbox(s) adjacent to the required Process Codes.
2. Click button in the *List* toolbar.
3. Click the button in the popup. The *Export* dialog is displayed.




The *Export* dialog displays the Export Format, Definition Type, the names of the Selected Definitions, and the Trace Options.

To select the Trace Options in the Trace Options grid:

- Select the checkbox(s) adjacent to the available options.
- Click button. The selected options are displayed in the **Selected Trace Options** pane. You can also select a trace option and click button to deselect it from the *Selected Trace Options* pane.

4. Click **Export**. The process is initiated and is displayed in a pop-up specific to the current download. Once the PDF file is generated, you can open/ save the file from the *File Download* window.

   You can either save the file on the local machine or view the file contents in a PDF viewer. The downloaded PDF displays all the details such as Linked to, Properties, Master info, Audit Trail, List, Mapping Details, and Comments of all the Process definitions selected.

### 5.4.7 Trace Process Definition Details

You can trace the metadata details of individual process definitions. To trace the underlying metadata details of a process definition in the *Process* window:

1. Select the checkbox adjacent to the Process Code whose details are to be traced.
2. Click button from the List toolbar.

   The *Process Definition* window is displayed with the details such as Traced Object (Name and Definition Type), other Processes and Runs in which the selected Process is used. In the *Trace Definition* window you can also select individual Process or Run and click button to view the definition details.

### 5.4.8 Delete Process Definition

You can remove process definition(s) which are no longer required in the system by deleting from *Process* window. However, it is a soft deletion only.

To delete process definition

1. Select the checkbox(s) adjacent to the Process Code(s) whose details are to be removed.
2. Click button from the *List* tool bar.
3. Click **OK** in the information dialog to confirm deletion.

   An information dialog is displayed confirming the deletion of the Process definition(s) and asking the authorization of the same.

## 5.5 Run

The Run feature in the Rules Run Framework helps you to combine various components and/or processes together and execute them with different underlying approaches. Further, run conditions and/or job conditions can be specified while defining a run.

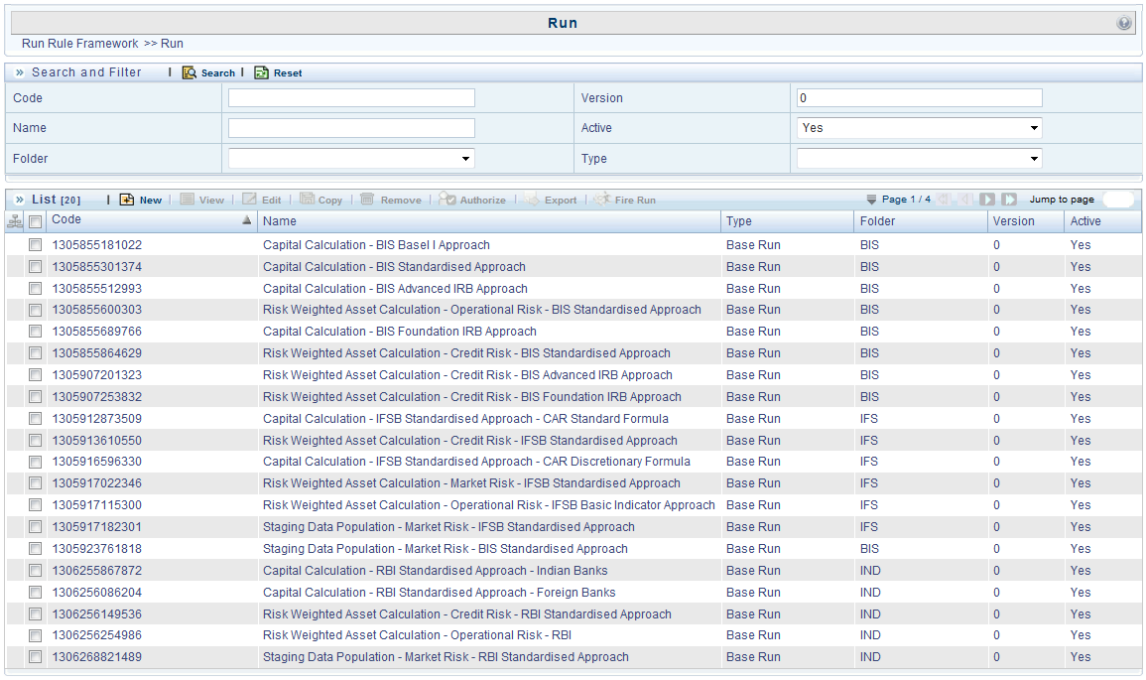
Two types of runs can be defined namely Base Run and Simulation Run.

**Base Run** allows you to combine different rules and processes together as jobs and apply run conditions and job conditions.

**Simulation Run** allows you to compare the resultant performance/ calculations with respect to the baseline runs by replacing an existing job with a simulation job (a job can be a rule or a process). This comparison will provide useful insights on the effect of anticipated changes to the business.

The Roles mapped for Run module are: Run Access, Run Advanced, Run Authorize, Run Read Only, Run Write and Run Phantom. Based on the roles mapped to your user group, you can access various screens in Run module. For more information on functions mapped to these roles, see Appendix A.

You can access Run window by expanding **Rule Run Framework** within the LHS menu and selecting **Run**.




| Code | Name | Type | Folder | Version | Active |
|---|---|---|---|---|---|
| 1305855181022 | Capital Calculation - BIS Basel I Approach | Base Run | BIS | 0 | Yes |
| 1305855301374 | Capital Calculation - BIS Standardised Approach | Base Run | BIS | 0 | Yes |
| 1305855512993 | Capital Calculation - BIS Advanced IRB Approach | Base Run | BIS | 0 | Yes |
| 1305855600303 | Risk Weighted Asset Calculation - Operational Risk - BIS Standardised Approach | Base Run | BIS | 0 | Yes |
| 1305855689766 | Capital Calculation - BIS Foundation IRB Approach | Base Run | BIS | 0 | Yes |
| 1305855864629 | Risk Weighted Asset Calculation - Credit Risk - BIS Standardised Approach | Base Run | BIS | 0 | Yes |
| 1305907201323 | Risk Weighted Asset Calculation - Credit Risk - BIS Advanced IRB Approach | Base Run | BIS | 0 | Yes |
| 1305907253832 | Risk Weighted Asset Calculation - Credit Risk - BIS Foundation IRB Approach | Base Run | BIS | 0 | Yes |
| 1305912873509 | Capital Calculation - IFSB Standardised Approach - CAR Standard Formula | Base Run | IFS | 0 | Yes |
| 1305913610550 | Risk Weighted Asset Calculation - Credit Risk - IFSB Standardised Approach | Base Run | IFS | 0 | Yes |
| 1305916596330 | Capital Calculation - IFSB Standardised Approach - CAR Discretionary Formula | Base Run | IFS | 0 | Yes |
| 1305917022346 | Risk Weighted Asset Calculation - Market Risk - IFSB Standardised Approach | Base Run | IFS | 0 | Yes |
| 1305917115300 | Risk Weighted Asset Calculation - Operational Risk - IFSB Basic Indicator Approach | Base Run | IFS | 0 | Yes |
| 1305917182301 | Staging Data Population - Market Risk - IFSB Standardised Approach | Base Run | IFS | 0 | Yes |
| 1305923761818 | Staging Data Population - Market Risk - BIS Standardised Approach | Base Run | BIS | 0 | Yes |
| 1306255867872 | Capital Calculation - RBI Standardised Approach - Indian Banks | Base Run | IND | 0 | Yes |
| 1306256086204 | Capital Calculation - RBI Standardised Approach - Foreign Banks | Base Run | IND | 0 | Yes |
| 1306256149536 | Risk Weighted Asset Calculation - Credit Risk - RBI Standardised Approach | Base Run | IND | 0 | Yes |
| 1306256254986 | Risk Weighted Asset Calculation - Operational Risk - RBI | Base Run | IND | 0 | Yes |
| 1306268821489 | Staging Data Population - Market Risk - RBI Standardised Approach | Base Run | IND | 0 | Yes |

The *Run* window displays the runs created in the current Information Domain with the metadata details such as Code, Name, Type, Folder, Version, and Active status. For more information on how object access is restricted, see Object Security section.

You can make use of Search and Filter option to search for specific runs based on Code, Name, Folder, Version, Active status, or Type. The **Folder** drop-down list displays all Public folders, shared folders to which your user group is mapped, and Private folders for which you are the owner. The Pagination option helps you to manage the view of existing runs within the system. For more information, refer to the Pagination section.

### 5.5.1 Create Run

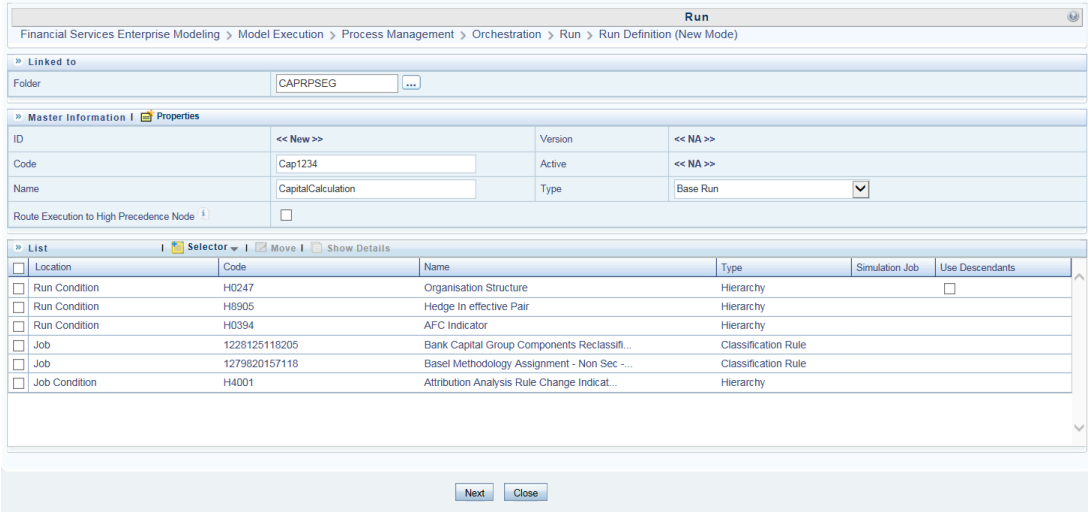
You can create run definitions using the existing metadata objects. The various components that can be used to form run definitions are mentioned in Process Hierarchy Members. The Write role should be mapped to your user group, from the *User Group Role Map* window.

The following filter conditions can also be applied to a run definition:

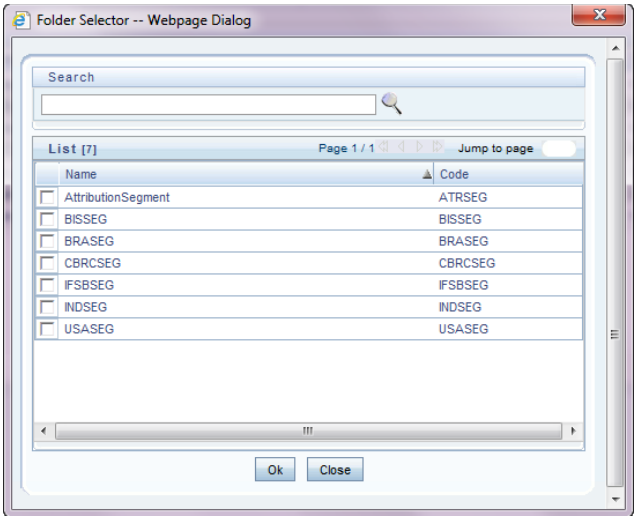
| Condition Type | Description |
|---|---|
| Run Condition | ▪ A Run Condition is defined as a filter and all hierarchies (defined in the current information domain) are available for selection.<br>▪ You can select up to 9 run conditions.<br>▪ A Run condition is defined for all Jobs. But it will be applied to a Job only if the underlying target/destination entities of both Job and Hierarchy are common. |
| Job Condition | ▪ A Job Condition is a further level of filter that can be applied at the component level. This is achieved through a mapping process by which you can apply a job condition to the required job.<br>▪ You can select only one job condition and the hierarchy which you have already selected as a run condition cannot be selected as job condition again. |

To create a run definition in the *Run* window:

1. Click New button from the *List* toolbar. The *Run* Definition *(New Mode)* window is displayed.




2. Click button adjacent to the **Folder** field in the Linked *to* grid. The *Folder Selector* window is displayed.




The folders to which your user group is mapped are displayed.

3. Select the checkbox adjacent to the required folder. Click **OK**.

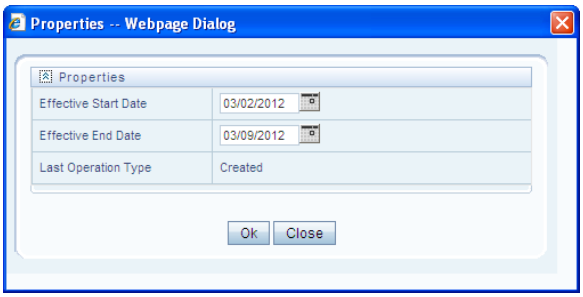
   You can also enter a keyword and click button in the **Search** field of *Folder Selector* window to locate a particular folder.

4. Enter the details of the *Master information* grid as tabulated below:

| Field Name | Description |
|---|---|
| ID | Refers to system generated ID for a newly created run. When you create a rule, it is displayed as **<<New >>.** |

| Field Name | Description |
|---|---|
| Code | Enter a valid code for the run. Ensure that the code value specified is of maximum 30 characters in length and does not contain any special characters except "_".<br>The code is unique and case sensitive. It is used to identify a run definition during execution.<br>**Note**: You cannot use the same code of a rule which has been deleted from the UI. |
| Name | Enter a valid name for the run. Ensure that Run Name is alphanumeric and does not contain any of the following special characters: #, %, &, +, ", and ~.<br>Note that the name needs not be unique. |
| Version | By default the version field is displayed as **<<NA>>** for the new run being created. Once the run definition is saved, an appropriate version is assigned as either **-1** or **0** depending on the authorization permissions. For more information, refer Run Definition Versioning. |
| Active | By default, the Active field is displayed as **<<NA>>** for the new run being created. Once the run definition is saved, the status becomes **Yes** if you are an authorizer or **No** if the created Run needs to be authorized by an authorizer. |
| Type | Select the type of the run from the drop-down list. The available types are **Base Run** and **Simulation Run.** |
| Route Execution to High Precedence Node | Select the checkbox if you want to route the execution of this Run definition to the high precedence node set up in the AM server. |

5. Click button in the *Master information* grid. The Properties window is displayed.




You can edit the below tabulated details in the *Properties* window:

| Field Name | Description |
|---|---|

| Field Name | Description |
|---|---|
| Effective Start Date, Effective End Date | Effective Dating is not implemented for Rule definition. |
| Last operation Type | By default, this field displays the last change done to the run definition. While creating a run, the field displays the operation type as **Created**. |

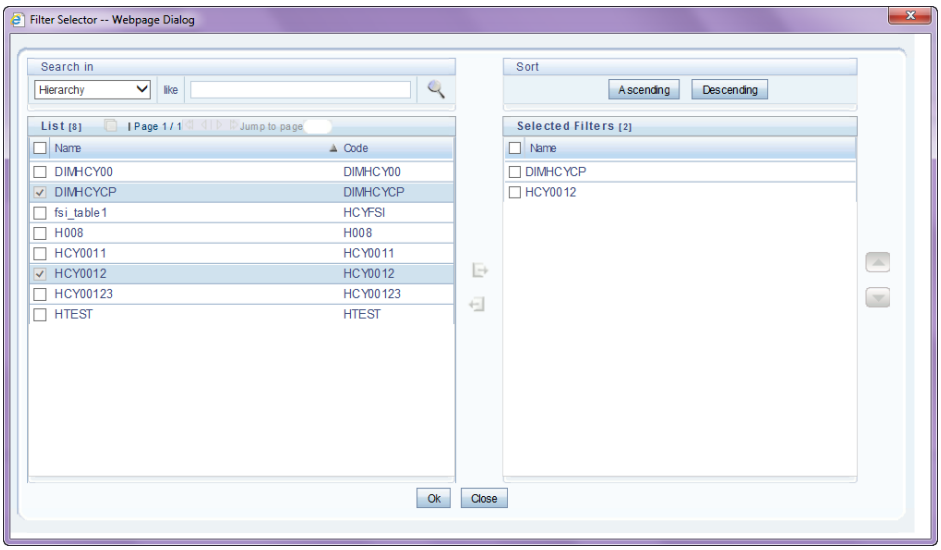
6. Click **OK**. The properties are saved for the current Run definition.

#### 5.5.1.1 Select Run Condition for Run

You can select conditions to preset the initialization mechanism of a run definition.

To select a condition for a run in the *Run Definition (New Mode)* window:

1. Click **Selector** button from the List grid and select Run Condition ( ). The *Filter Selector* window is displayed.




The *List* pane displays Hierarchies or Filters based on the option selected in the drop-down list in the *Search in* pane. The options are:

- Hierarchy- Displays all Business Hierarchies defined in the information domain.
- Filter-Data Element- Displays all Data Element Filters defined in the information domain.
- Filter-Hierarchy - Displays all Hierarchy Filters defined in the information domain.
- Filter-Group - Displays all Group Filters defined in the information domain.
- Filter-Attribute - Displays all Attribute Filters defined in the information domain.

2. Select the checkbox adjacent to the Hierarchy or Filter that you want to select as Run condition and click .

   To know about the operations you can do in this window, refer to Filter Selector Hierarchy_Selectorwindow.

3. Click **OK**. The selected Hierarchies are listed in the *Run Definition (New Mode)* window.

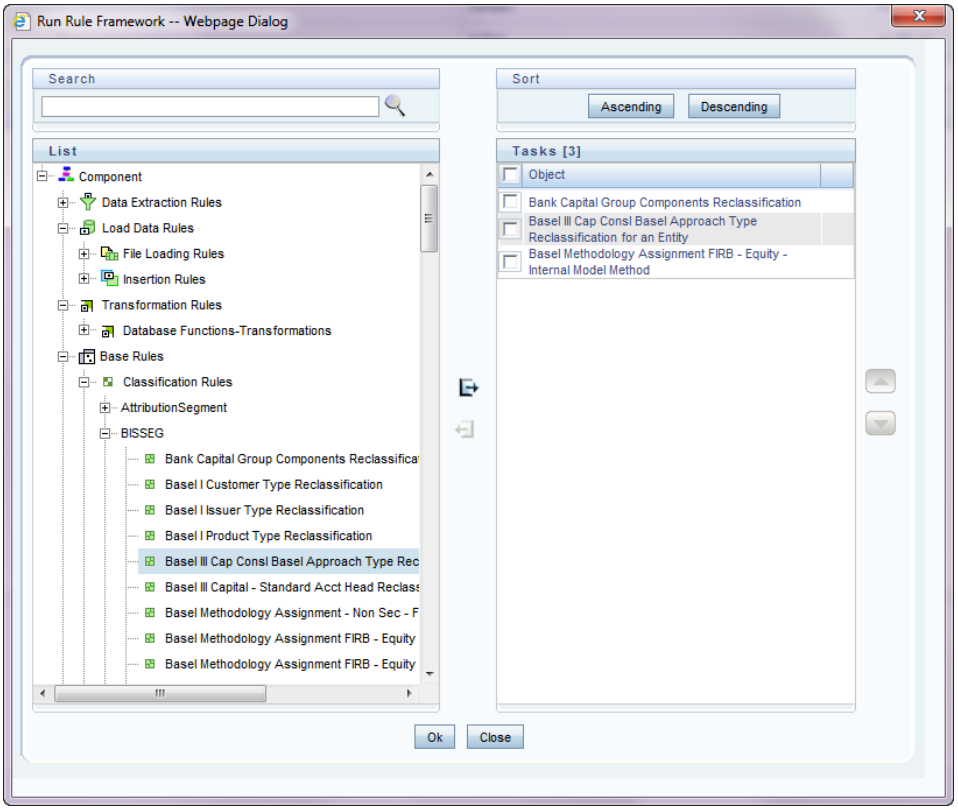
4. If the selected Run condition is a Parent Child hierarchy, the **Use Descendants** checkbox is displayed. If the checkbox is selected for a hierarchy, the descendants will be automatically applied and need not be selected in node selection from hierarchy browser window.

### 5.5.1.2 Select Jobs for Run

You can select the required jobs for the run definition being created.

To select jobs for a run:

1. Click **Add** button from the *List* grid and select **Job** ( ). The *Job Selector* window is displayed.




   On the **List** pane, you can click button to expand the members and view the job components. For more information, refer to Process Hierarchy Members.

2. Select a job component and click to move the component to the *Tasks* pane.

| | |
|---|---|
| **NOTE:** | You cannot select jobs with the same unique code in a run definition. Wherever jobs have same unique code, the jobs should be added to a process and the process should be added to the run definition. |

In *Job Selector* window you can also:

- Search for a component by specifying the nearest keyword and clicking button. It may not display search results if the branch of that component has not been expanded.
- Click **Ascending** or **Descending** button to sort the selected components in ascending or descending alphabetical order.
- Click or button to re-order the selected components.
- Click button to add parameters for the selected components.

| | |
|---|---|
| **NOTE:** | Parameters can be given in the format "param1","param1VALUE" or "$PARAM2","param2VALUE". Single quotes should not be used. |

- Click button to remove the selected components from the *Tasks* pane.

3. Click **OK**. The components are listed under the List pane in the *Run Definition* window.

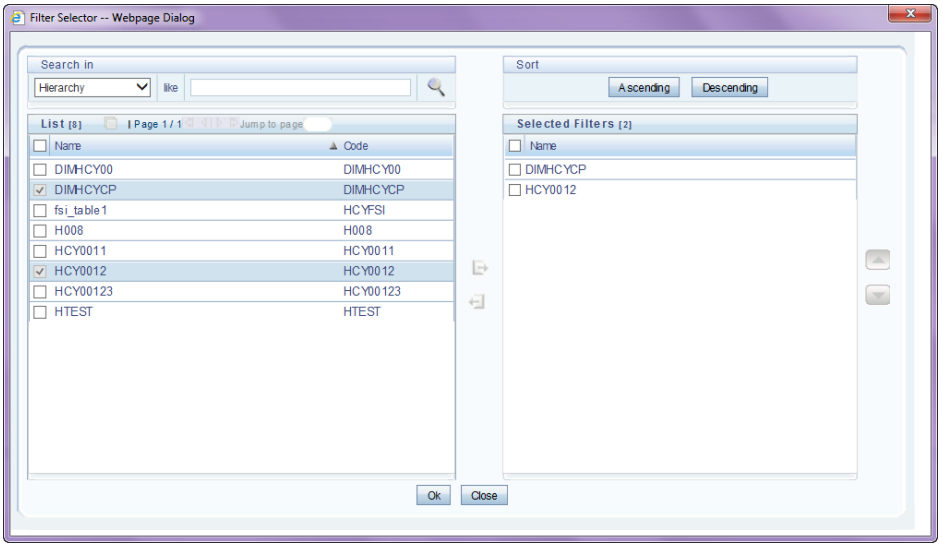
#### 5.5.1.3 Select Job Condition for Run

You can select only a single job condition for the execution of predefined jobs in a run. A hierarchy which is already selected as a run condition cannot be selected as a job condition.

| | |
|---|---|
| **NOTE:** | The Cumulative Node Expression for Hierarchy Nodes used as Job Condition in a Run definition should not cross 4000 characters. If it is exceeded, you will get error while executing the Run definition. |

To select the job condition for a run:

1. Click **Add** button from the *List* grid and select **Job Condition** ( ). The *Filter Selector* window is displayed.




The *List* pane displays Hierarchies or Filters based on the option selected in the drop-down list in the *Search in* pane. The options are:

- Hierarchy- Displays all Business Hierarchies defined in the information domain.
- Filter-Data Element- Displays all Data Element Filters defined in the information domain.
- Filter-Hierarchy - Displays all Hierarchy Filters defined in the information domain.
- Filter-Group - Displays all Group Filters defined in the information domain.
- Filter-Attribute - Displays all Attribute Filters defined in the information domain.

2. Select the checkbox adjacent to the hierarchy that you want to select as job condition and click .

   To know about the operations you can do in this window, refer to Filter Selector Hierarchy_Selectorwindow.

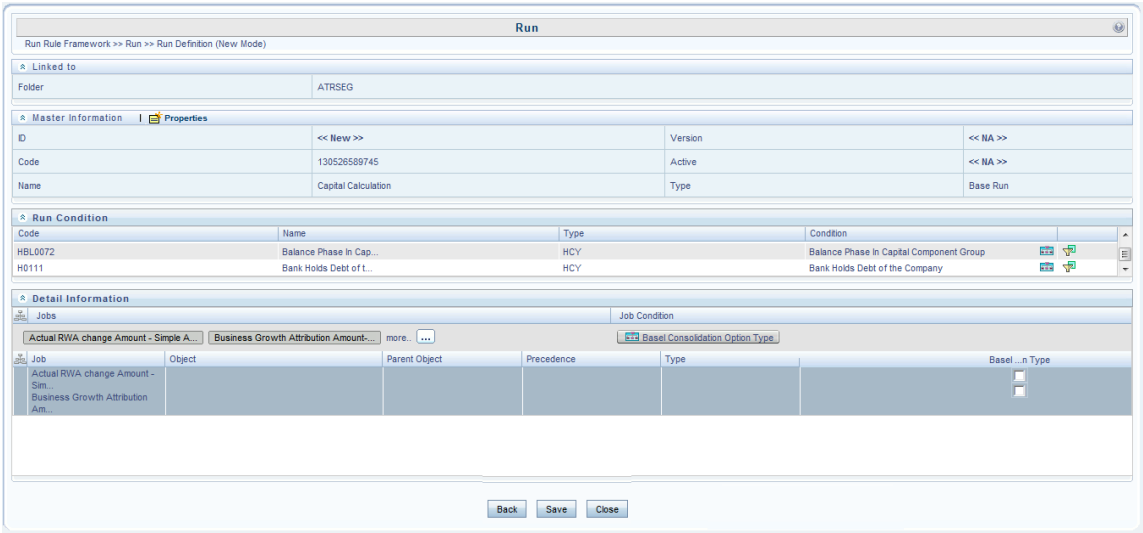
   **NOTE:** Ensure that you have selected only one Job Condition and the same hierarchy is not selected as both Run & Job conditions.

3. Click **OK**.

From the *List* grid in the *Run Definition (New Mode)* window, you can also:

- Click **Move** button to change a selected run condition to job condition and conversely.
- Click **Show Details** button to view the metadata information of the selected member.
- If the selected Job condition is a Parent Child hierarchy, the **Use Descendants** checkbox is displayed. If the checkbox is selected for a hierarchy, the descendants will be automatically applied and need not be selected in node selection from hierarchy browser window.

Once all the necessary information in the first window of the *Run Definition (New Mode)* is populated, click the **Next** button to navigate to the concurrent procedures of defining a Rule.




The second window of *Run Definition (New Mode)* window displays all the information you have provided in the *Linked to* and *Master information* grids. You can view the selected filters in the *Run Condition* grid and selected jobs along with the job condition in the *Detail Information* grid

Expand a job which is a process, then the Object, Parent Object, Precedence and Type columns are populated.

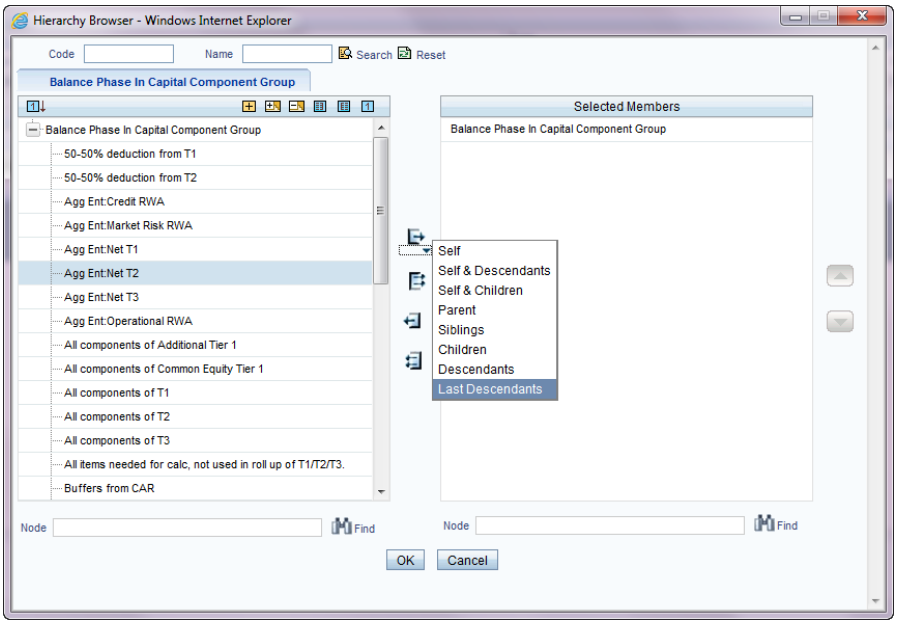
### 5.5.1.4 Hierarchical Member Selection

In the *Run Condition* grid, you can modify the run conditions by including hierarchical members.

**NOTE:** This option will be available only if you have selected Hierarchy as run condition.

To modify a run condition:

1. Click button corresponding to the run condition you want to modify. The *Hierarchy Browser* window is displayed.




The *Search* grid allows you to search for a particular member by entering Code or any part of the Name and clicking **Search** button. You can click **Reset** button to refresh the Code or name fields. You can also find a member in the grid using **Find** button.

2. Click and expand the members of the selected hierarchy.
3. Select a member / node and click to select the same. Click the to select the member as Self, Self & Descendants, Self & Children, Parent, Siblings, Children, Descendants, or Last Descendants. For more information, refer to [Hierarchical Member Selection Modes](#).

   In the *Hierarchy Browser* window you can also:

   - Click or to sort the members by code or name.
   - Click or to expand or collapse the members under a node.
   - Click or to expand a branch or collapse a branch.
   - Click or to view the code values of members right or left.
   - Click or to show code or show name of the members.
   - Click or to move the members up or down in the *Selected Members* pane.
4. Click button corresponding to the run condition to view the SQL query. The SQL query is formed based on the hierarchical member selection mode. The *Preview SQL Query* window is displayed with the resultant SQL equivalent of the run condition.

The *Detail Information* grid displays the jobs and job condition defined for the run definition.

- Click button adjacent to the job names to re-order the selected jobs.
- Click button beside the job condition to launch the *Hierarchy Browser* window. This option will be available only if Hierarchy is selected as Job condition.
- Select the checkbox corresponding to the job if you want to apply the Job condition to that job.
- Click a job to view its definition details. For example, if it is a Rule, the *Show Details* window displays the *Rule Definition (View Mode)* window.

You can click **Back** button to navigate back to the first page of the *Run Definition (New Mode)* window to modify any details.

Once all the necessary details are entered, click **Save**. If you are an authorizer, the version of the run definition will be **0**, else it will be **-1**.

The *Audit Trail* section at the bottom of *Run Definition (New Mode)* window displays metadata information about the Run definition created. The *User Comments* section facilitates you to add or update additional information as comments.

### 5.5.2 View Run Definition

You can view individual run definition details at any given point. To view the existing Run definition details in the *Run* window:

1. Select the checkbox adjacent to the Run Code whose details are to be viewed.
2. Click button in the List tool bar.

   The *Run Definition (View Mode)* window is displayed with all the details of the selected Run. Click **Next** and **Back** buttons to navigate back and forth in the *Run Definition (View Mode)* window.

### 5.5.3 Edit Run Definition

You can modify all the details except ID, Code, Version, Active status, and Type of a run definition. To modify an existing run definition in the *Run* window:

1. Select the checkbox adjacent to the Run Code whose details are to be updated.
2. Click button in the *List* tool bar. Edit button is disabled if you have selected multiple Runs. The *Run Definition (Edit Mode)* window is displayed.
3. Edit the Run details as required. For more information, refer Create Run.
4. Click **Save** to save the changes.

#### 5.5.3.1 Run Definition Versioning

For an authorizer:

When you create a new run, its version will be **0.** When you edit an existing run and try to save, you are prompted whether to save it as a new version or not. If you click **Yes**, a new run is created with version as **0** and the run having version as **0** will be saved with version as maximum version +1. If you click **No**, the existing run is overwritten and the version will be as it is.

For a non-authorizer:

When you create a new run, its version will be **-1**. Once the run is approved by an authorizer, the version becomes **0**. When you edit an existing run and try to save, you are prompted whether to save it as a new version or not. If you click **Yes**, a new run is created with version as **-1**. Once the run is approved, its version becomes **0** and the run having version as **0** will be saved with version as maximum version +1. If you click **No**, the existing run is overwritten, and the **Active** flag of the run becomes **N** (which you can view from the *Summary* window). The version remains the same. Once the run gets approved, its **Active** flag changes to **Y**.

**Note** the following:

- The run with version 0 is the latest one and it can have many versions say 1 to n, where 1 is the oldest run and n is the next to latest.
- A run with version -1 will always be in Inactive state.

You can view all the versions of a particular rule by providing the run's name or code and clicking **Search** in the *Search and Filter* grid. (Ensure the **Version** field is cleared since it is auto populated with **0**).

### 5.5.4 Copy Run Definition

This option facilitates you to quickly create a new run definition based on an existing run by updating the values of the required fields.

To copy an existing Run Definition in the *Run* window:

1. Select the checkbox adjacent to the Run Code whose details are to be duplicated.
2. Click button in the List toolbar to copy a selected Run definition. The *Run Definition (Copy Mode)* window is displayed. Copy button is disabled if you have selected multiple Runs.

   In the Run Definition (Copy Mode) window you can:

   - Create new Run definition with existing variables. Specify a new **Run Code** and **Folder**. Click **Save**.
   - Create new Run definition by updating the required variables. Specify a new **Run Code**, **Folder**, and update other required details. For more information, refer Create Run. Click **Save**.

   The new Run definition details are displayed in the *Run* window. By default, version **0** is set if you have authorization rights, else the version is set to **-1**.

### 5.5.5 Authorize Run Definition

All the actions in a run definition should be approved by an authorizer. An authorizer can approve a pre-defined run definition for further execution or reject an inappropriate run definition listed within the *Run* window. To approve/ reject run definitions in the *Process* window, you need to have the Authorize role mapped to your user group.

If you are an authorizer, the run definition is auto approved as you save it and the **Active** status is set to **Yes**. Otherwise, the **Active** status is set to **No** and an authorizer needs to approve it to change the **Active** status to **Yes**.

To approve/reject runs:

1. Select the checkbox(s) adjacent to the required Run Codes.
2. Do one of the following:
   - To approve the selected run definitions, click button.
   - To reject the selected run definitions, click button.

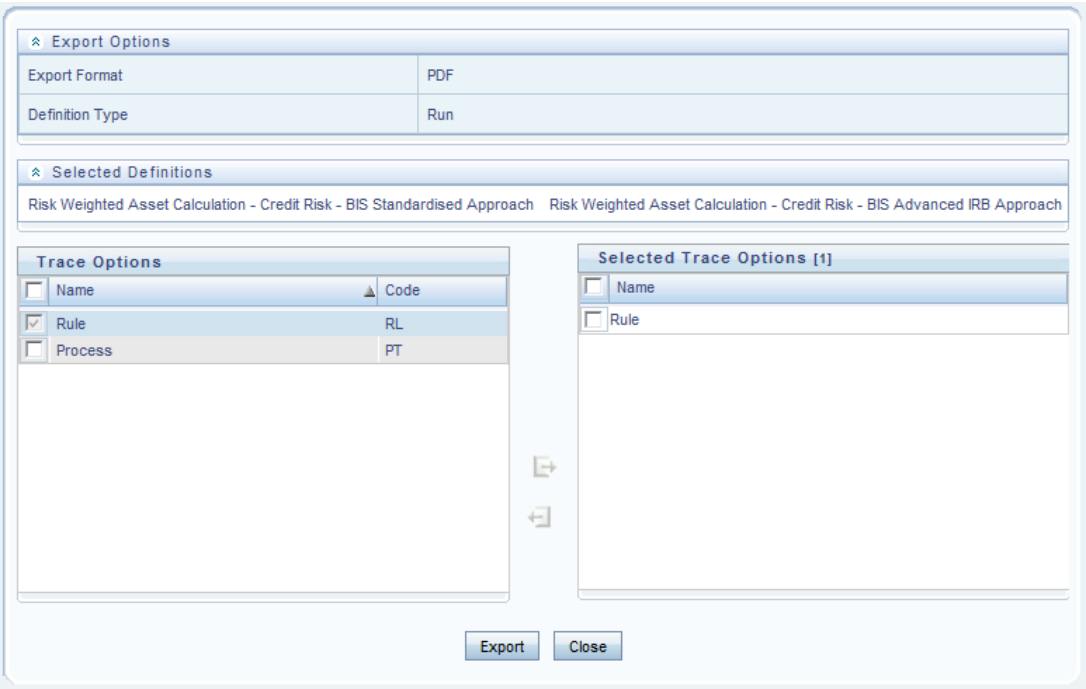
   A run is made available for use only after the approval. For a rejected definition a comment with the rejection details will be added.

### 5.5.6 Export Run to PDF

This option allows you to export multiple run definitions to a PDF file. You have the option to export only the rules or processes in the run definition to PDF by selecting the required Trace Options.

To export the run definitions in the *Run* window:

1. Select the checkbox(s) adjacent to the required Run Codes.
2. Click Export button in the *List* toolbar and click the PDF button in the pop*up.* The *Export* dialog is displayed.




The *Export* dialog *displ*ays the Export Format, Definition Type, the names of the Selected Definitions, and the Trace Options.

- Select the checkbox adjacent to Rule or Process if you want to export only the rule details or Process details respectively. If you do not select any checkbox, all details of the selected run definitions will be exported.
- Click button. The selected options are displayed in the *Selected Trace Options* pane. You can also select a trace option and click button to deselect it from the *Selected Trace Options* pane.

3. Click **Export**. The process is initiated and is displayed in a pop-up specific to the current download. Once the PDF is generated, you can open / save the file from the *File Download* dialog.

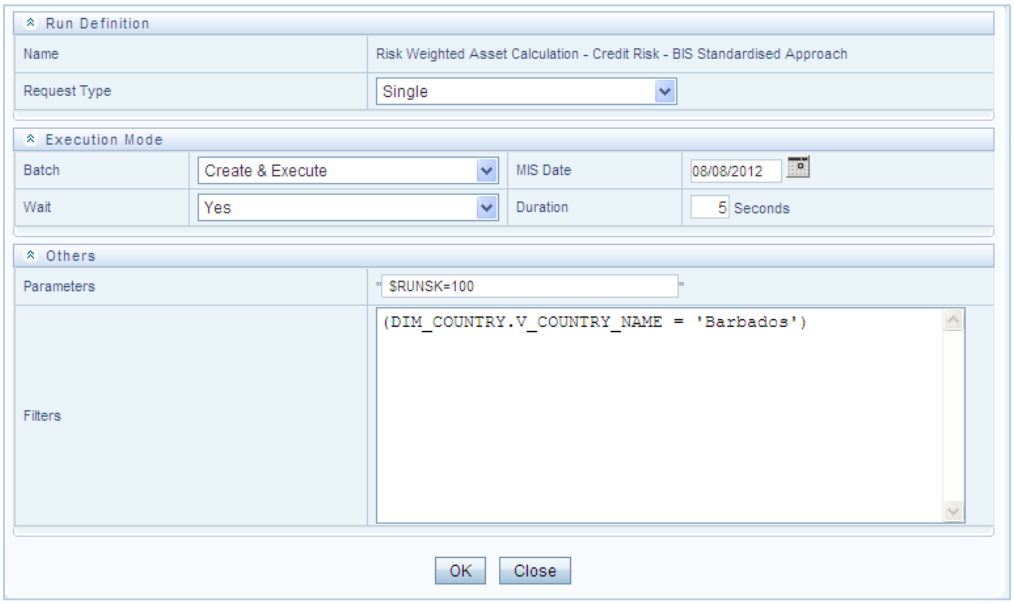
   You can either save the file on the local machine or view the file contents in a PDF viewer. The downloaded PDF displays all the details such as Linked to, Properties, Master info, Audit Trail, List, and Comments of all the Run definitions selected.

### 5.5.7 Fire Run

This feature facilitates you to execute a previously created Run. You can execute the run definition as a batch from the Operations module.

To execute a run definition:

1. Select the checkbox adjacent to the Run Code which you want to execute and click button in the *List* toolbar. The *Fire Run* window is displayed.




2. Enter the field details as tabulated below:

| Field Name | Description |
|---|---|
| Name | This field displays the name of the selected run. |
| Request Type | Select the request type either as **Single** or as **Multiple** from the drop-down list.<br>▪ Single Request - You need to provide the MIS Date during Batch execution from the Operations module.<br>▪ Multiple Request - You can run the batch with the same MIS date multiple times from the Operations module. |

| Field Name | Description |
|---|---|
| Batch | Select the Batch either as Create or as Create & Execute from the drop-down list<br>▪ **Create**- The batch will be created and needs to be executed from the *Operations* module.<br>▪ **Create & Execute**- The batch will be created and executed. You can monitor it from the *Operations* module. |
| MIS Date | Click button and the Calendar is displayed. Select the MIS Date from the calendar.<br>This field is displayed only if you have selected Request Type as **Multiple** with any of the Batch mode or Request Type as **Single** with Batch mode as **Create & Execute**. |
| Wait | ▪ Select **Yes** and provide the **Duration** in seconds after which the run definition should be executed.<br>▪ Select **No** to execute it immediately. |
| Parameters | Enter the required parameters in the field provided.<br>The parameter provided in this field is considered for Run execution. |
| Filters | Enter the filter details in the field provided.<br>The filters provided in this field are considered for Run execution. |

3. Click **OK**. For information on runtime parameters supported during run execution, see Passing Runtime Parameters section.
4. The details are saved and the run definition is executed as per the Fire Run details.

### 5.5.8 Delete Run Definition

You can remove Run definition(s) which are no longer required in the system by deleting from *Run* window. However, it is a soft deletion only. An authorizer has to approve the deletion.

1. Select the checkbox(s) adjacent to the Run Codes whose details are to be removed.
2. Click button from the List tool bar.
3. Click **OK** in the information dialog to confirm deletion.

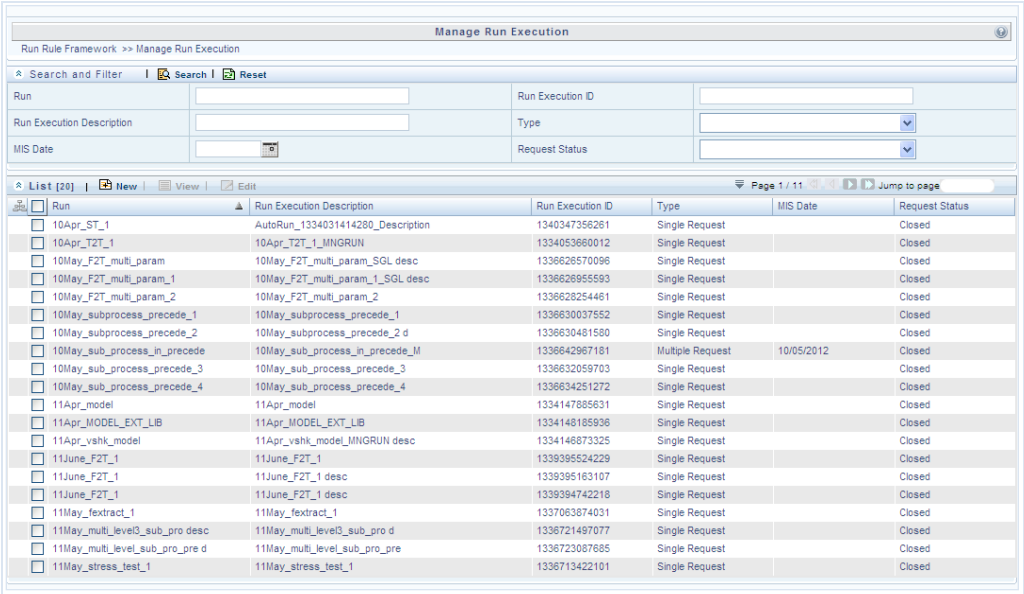
   An information dialog is displayed confirming the deletion of the Run definitions and asking the authorization of the same.

## 5.6 Manage Run Execution

Manage Run execution enables you to have a work flow for Run execution. The pre defined Run definitions can be executed in a unique batch depending on the Type of the Manage Run Execution defined. These batches can then be executed from the *Operations* module.

The Roles mapped for Mange Run Execution module are: Manage Run Access, Manage Run Advanced, Manage Run Authorize, Manage Run Read Only, Manage Run Write and Manage Run Phantom. Based on the roles mapped to your user group, you can access various screens in Mange Run Execution module. For more information on functions mapped to these roles, see Appendix A.

You can access Manage Run Execution window by expanding **Rule Run Framework** within the LHS menu and selecting **Manage Run Execution**.




| Run | Run Execution Description | Run Execution ID | Type | MIS Date | Request Status |
|---|---|---|---|---|---|
| 10Apr_ST_1 | AutoRun_1334031414280_Description | 1340347356261 | Single Request | | Closed |
| 10Apr_T2T_1 | 10Apr_T2T_1_MNGRUN | 1334053660012 | Single Request | | Closed |
| 10May_F2T_multi_param | 10May_F2T_multi_param_SGL desc | 1336626570096 | Single Request | | Closed |
| 10May_F2T_multi_param_1 | 10May_F2T_multi_param_1_SGL desc | 1336626955593 | Single Request | | Closed |
| 10May_F2T_multi_param_2 | 10May_F2T_multi_param_2 | 1336628254461 | Single Request | | Closed |
| 10May_subprocess_precede_1 | 10May_subprocess_precede_1 | 1336630037552 | Single Request | | Closed |
| 10May_subprocess_precede_2 | 10May_subprocess_precede_2 d | 1336630481580 | Single Request | | Closed |
| 10May_sub_process_in_precede | 10May_sub_process_in_precede_M | 1336642967181 | Multiple Request | 10/05/2012 | Closed |
| 10May_sub_process_precede_3 | 10May_sub_process_precede_3 | 1336632059703 | Single Request | | Closed |
| 10May_sub_process_precede_4 | 10May_sub_process_precede_4 | 1336634251272 | Single Request | | Closed |
| 11Apr_model | 11Apr_model | 1334147685631 | Single Request | | Closed |
| 11Apr_MODEL_EXT_LIB | 11Apr_MODEL_EXT_LIB | 1334148185936 | Single Request | | Closed |
| 11Apr_vshk_model | 11Apr_vshk_model_MNGRUN desc | 1334146873325 | Single Request | | Closed |
| 11June_F2T_1 | 11June_F2T_1 | 1339395524229 | Single Request | | Closed |
| 11June_F2T_1 | 11June_F2T_1 desc | 1339395163107 | Single Request | | Closed |
| 11June_F2T_1 | 11June_F2T_1 desc | 1339394742218 | Single Request | | Closed |
| 11May_fextract_1 | 11May_fextract_1 | 1337063874031 | Single Request | | Closed |
| 11May_multi_level3_sub_pro desc | 11May_multi_level3_sub_pro d | 1336721497077 | Single Request | | Closed |
| 11May_multi_level_sub_pro_pre d | 11May_multi_level_sub_pro_pre | 1336723087685 | Single Request | | Closed |
| 11May_stress_test_1 | 11May_stress_test_1 | 1336713422101 | Single Request | | Closed |

The *Manage Run Execution* window displays the Run Execution requests created in the current Information Domain with the metadata details such as Run name, Run Execution Description, Run Execution ID, Type, MIS Date, and Request Status. If Object Security is implemented, see Object Security section to understand the behavior.

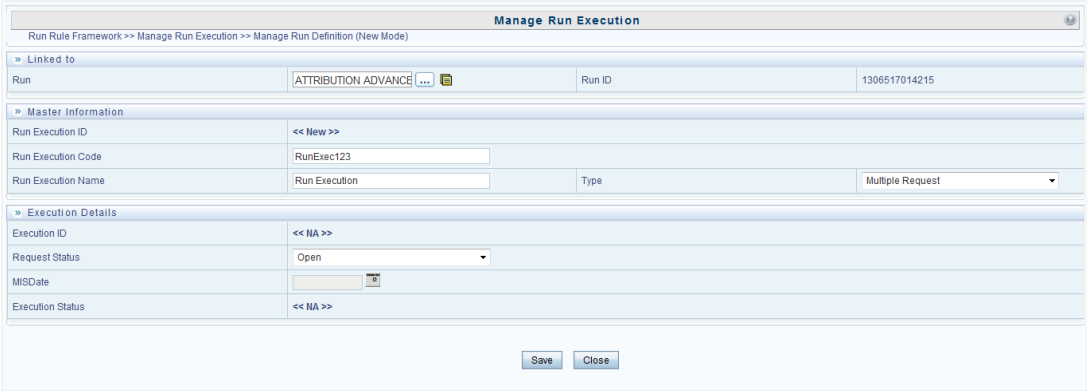
You can also make use of Search and Filter option to search for specific Runs based on Run Name, Run Execution Description, MIS Date, Run Execution ID, Type, or Request Status. The Pagination option helps you to manage the view of existing Rules within the system. For more information, refer Pagination section.

### 5.6.1 Creating Manage Run Definition

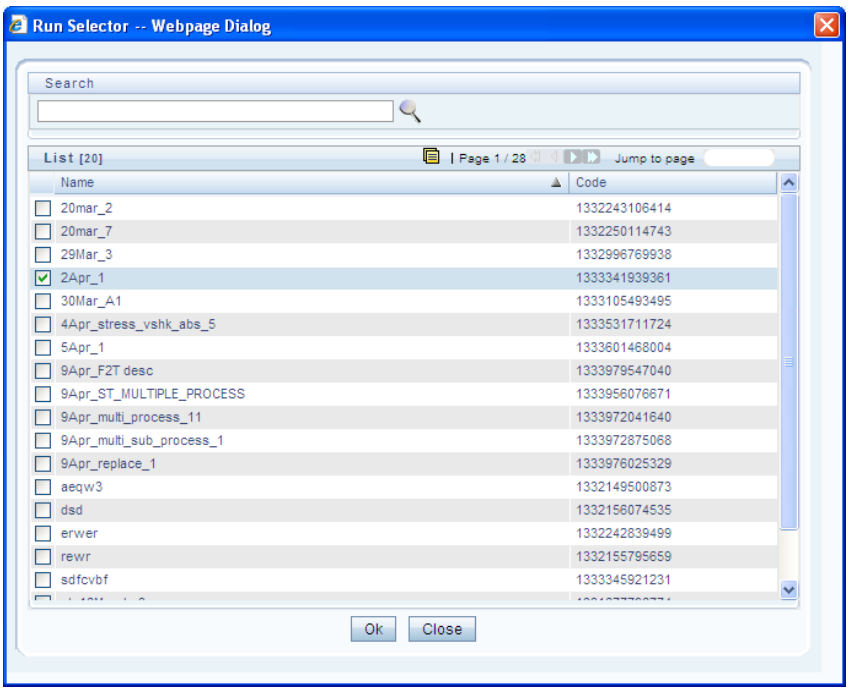
You can create the Manage Run Definitions from the *Manage Run Execution* window. The Write role should be mapped to your user group, from the *User Group Role Map* window.

To create a Manage Run Definition:

1. Click button from the List toolbar. The *Manage Run Definition (New Mode)* window is displayed.




2. Click button in the Run field. The *Run Selector* window is displayed.




In the *Run Selector* window click button to view the details of the selected Run.

The Pagination option helps you to manage the view of existing Runs within the system. For more information, refer Pagination section.

3. Click **OK**. The selected Run is displayed in the Run field, along with the Run ID.
4. Click button displayed adjacent to the button to view the details of the selected Run.
5. Enter the details in the *Master Info* and *Execution Details* grids as tabulated:

| Field Name | Description |
|---|---|
| Master Information grid | |
| Run Execution ID | The default ID of a newly created Run Execution is **<<New >>** |
| Run Execution Code | Enter a valid Run Execution Code. Ensure that the Run Execution Code specified is of maximum 30 characters in length and does not contain any special characters except "_". |
| Run Execution Name | Enter the Name of the Run Execution. Ensure that Run Execution Name is alphanumeric and does not contain any of the following special characters: #, %, &, +, ", ~, and '. |
| Type | Select the type of the Run Execution either as **Single Request** or as **Multiple Request**.<br>▪ Single Request - You need to provide the MIS Date during Batch execution from the Operations module.<br>▪ Multiple Request - You can run the batch with the same MIS date multiple times from the Operations module. |
| Execution Details grid | |
| Execution ID | The default Execution ID of a newly created Run Execution is **<<NA>>** |
| Request Status | Select the request status either as **Open** or as **Closed**.<br>▪ Status **Open** creates a Manage Run definition.<br>▪ Status **Closed** creates a Manage Run definition along with a Batch. |
| MISDate | MIS Date refers to the date with which the data for the execution would be filtered. Click button and the Calendar is displayed. You can select the MIS Date from the calendar. This field is displayed only if you have selected Type as **Multiple Request**. |
| Execution Status | The default Execution status of a newly created Run Execution is **<<NA >>** |

6. Click **Save**. For information on runtime parameters supported during Manage Run Execution, see Passing Runtime Parameters section. The Run Execution is saved and a confirmation dialog is appeared.

The *Audit Trail* section at the bottom of *Manage Run Definition (New Mode)* window displays metadata information about the Manage Run definition created. The *User Comments* section facilitates you to add or update additional information as comments.

#### 5.6.1.1 Passing Runtime Parameters

The following runtime parameters are supported during run execution:

- $RUNID
- $PHID
- $EXEID
- $RUNSK
- $MISDATE
- $BATCHRUNID

Values for the runtime parameters are implicitly passed while executing the Run definition.

### 5.6.2 Viewing Manage Run Definition

You can view individual Manage Run definition details at any given point. To view the existing Manage Run definition details in the *Manage Run Execution* window:

1. Select the checkbox adjacent to the Run Name whose details are to be viewed.
2. Click button in the List tool bar.

   The *Manage Run Execution Definition (View Mode)* window is displayed with all the details of the selected Manage Run Definition.

### 5.6.3 Editing Manage Run Definition

You can modify the Run Execution Description and Request Status details of a Manage Run definition. To modify an existing Manage Run definition in the *Manage Run Execution* window:

1. Select the checkbox adjacent to the Manage Run Definition name whose details are to be updated.
2. Click button in the *List* tool bar. Edit button is disabled if you have selected multiple Manage Run Definitions. The *Manage Run Definition (Edit Mode)* window is displayed.
3. Edit the Manage Run definition details as required. For more information, refer Manage Run Definition.

You can select the Request Status as **Open**, **Closed**, **To be Deleted**, or **Final** depending on the current status of the definition:

- Status **Open** creates/updates a Manage Run definition.
- Status **Closed** creates a Manage Run definition along with a Batch.
- Status **To be Deleted** indicates the Manage Run definition is marked for deletion.
- Status **Final** indicates the Manage Run definition is successfully executed with expected results.

The **Execution Status** field displays the current execution status of a triggered Run as *Success*, *Failure*, or *Ongoing* and <<*NA*>> for a non-executed Run.

4. Click **Save** to save the changes.

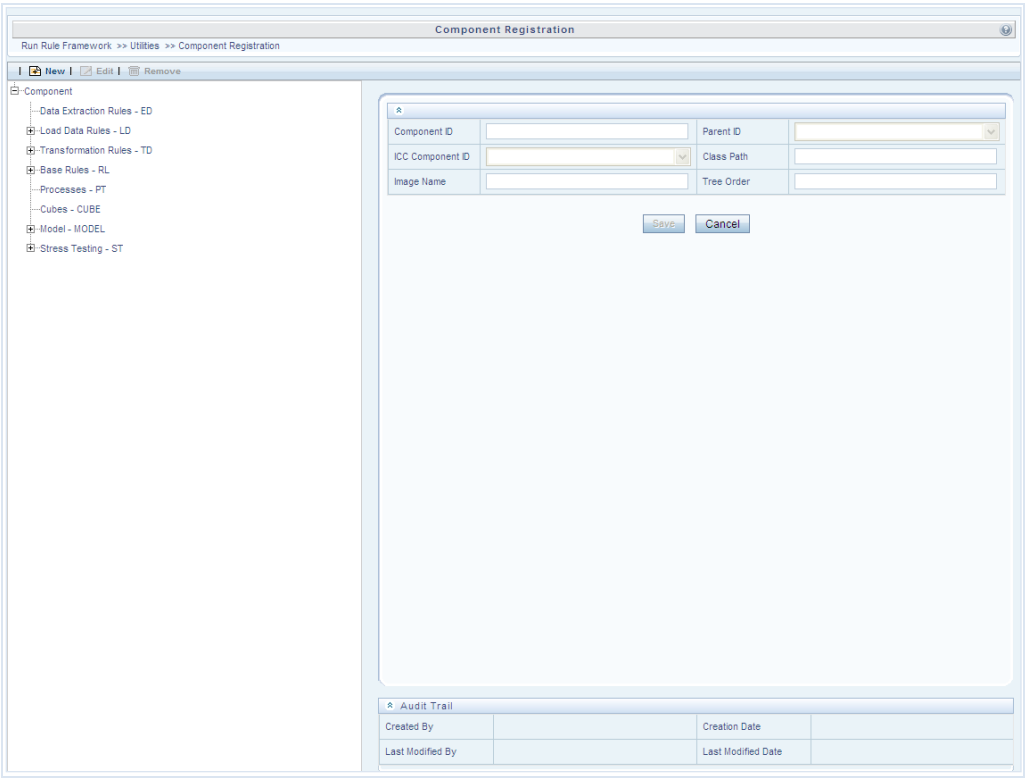
## 5.7 Utilities

This section consists of information related to the utilities available in Rules Run Framework module of OFSAAI.

### 5.7.1 Component Registration

The Component Registration section allows you to add components by defining certain parameters in the *Component Registration* window.

**NOTE:** Before you begin, ensure that you have registered all the required components within the Run Rule Framework (RRF). For detailed information, see OFSAAI Administration Guide.




The *Component Registration* window displays the current components in the left pane and the field values of the selected component in the right pane. The parameters described for a component in this window are Component ID, ICC Component ID, Image Name, Parent ID, Class Path, and Tree Order.

The *Audit Trail* section at the bottom of *Component Registration* window displays metadata information about the Component selected / created.

#### 5.7.1.1 Creating Components

You can create new components from the *Component Registration* window.

To create a new component:

1. Click button. The fields in the right pane of the *Component Registration* window are reset.
2. Enter the details as tabulated below:

| Field Name | Description |
|---|---|
| Component ID | Enter the Component ID. |
| ICC Component ID | Select the ICC Component ID from the drop-down list. |
| Image Name | Key in the image name which is allocated for the component. |
| Parent ID | Select the Parent ID from the drop-down list. |
| Class Path | Key in the class path. |
| Tree Order | Enter the tree order as numeric value. |

3. Click **Save**. The fields are validated and the component is saved.

#### 5.7.1.2 Editing Component Definition

You can modify all the details except the Component ID of a Component. To modify an existing component in the *Component Registration* window:

**NOTE:** Seeded Components cannot be modified.

- Select the Component from the left pane tree structure, whose details are to be updated.

4. Click button. The fields of the selected component are editable.
5. Edit the Component details as required. For more information, refer Create Component.
6. Click **Save** to save the changes.

#### 5.7.1.3 Removing Component Definition

You can remove individual Component definitions which are no longer required in the system by deleting from *Component Registration* window.

**NOTE:** Seeded Components cannot be deleted.

1. Select the Component whose details are to be removed.
2. Click button.
3. Click **OK** in the warning dialog to confirm deletion.

   The *Component Registration* window confirms the deletion of the component definition.

## 5.8 References

This section of the document consists of information related to intermediate actions that needs to be performed while completing a task. The procedures are common to all the sections and are referenced where ever required. You can refer to the following sections based on your need.

### 5.8.1 How Run Rule Framework is used in LLFP Application

#### 5.8.1.1 Rules

The following two types of Rules are available in Run Rule Framework for Oracle Financial Services Loan Loss Forecasting and Provisioning (LLFP) Application:

- Classification Rules
- Computation Rules

**Classification Rules**

This type of Rules re-classify table records in the data model based on the criteria that include complex Group by Clauses and Sub Queries within the tables.

In LLFP, various methods are used for calculations (for example, provision matrix method, cash flow method, and so on). To determine a set of bank accounts that use one of these methods, you can use Run Rule Framework (RRF).

**Example:**

Consider a scenario to determine the required methods for Product Type and Customer Type and move data from Staging to FACT_ACCOUNT_DETAILS table using a T2T.

Here, two source and target hierarchies, one each for Product Type and Customer Type is used. Based on the values of this combination of Product Type and Customer Type, the target hierarchies are assigned. This target hierarchy represents the method such as provision matrix method and cash flow method.

That is, based on the satisfied combinations from source hierarchies (Product Type and Customer Type), the method SKey in the FACT_ACCOUNT_DETAILS table is updated.

**Computation Rules**

These Rules compute new values/matrices based on Simple Measures and update an identified set of records within the data model.

**For example:**

In LLFP, Expected Credit Loss (ECL) is calculated by creating Rules using the following formula:

***ECL = Outstanding Amount x Probability of Default (PD) X Loss Given Default (LGD)***

To calculate this, a DT is created using RRF, where necessary expressions are defined. The instructions to multiply values of all these three columns are encapsulated in the Rule.

#### 5.8.1.2 Process and Run

After a Rule is created, it is assigned to a Process (which is a Batch in AAI). Multiple Rules can be assigned to a Process with pre-determined order of execution. Later these Batches are executed as Runs.

### 5.8.2 How Run Rule Framework is used in LRM Application

The process “LRM – BIS – Determining Revised Maturity for calculating the revised maturity dates” is created for the BIS regularizations requirement in LRM. This process is used to select assets and liabilities used for LCR computation.

This process is bifurcated into below five Computational Rules:

#### 5.8.2.1 LRM - BIS Conservative Approach for Outflows

1. This Rule is created to update the revised maturity date for the outflows as First Call Date of the liability and the derivative products, with embedded options flag ‘Y’.
2. The source hierarchies related to standard product type and the embedded options flag are considered.
3. The destination Measure of revised maturity date SKey is defined as the target in the Rule.
4. The Business Processor containing the First Call Date column is mapped with the destination Measure.
5. The relevant dataset LRM - Conservative Approach for Outflows is updated to fetch the relevant data from where the selection occurs based on the criteria. The Revised Maturity Date for Derivatives and liabilities for which embedded option flag is Y is updated with First Call Date.

#### 5.8.2.2 LRM - BIS Conservative Approach for Inflows

1. This Rule is created to update the revised maturity date for the inflows of the asset and the derivative products based on the BIS regulations.
2. The source hierarchies related to standard product type, embedded options flag, and re-hypothecated flag are considered.
3. The destination Measure of revised maturity date SKey is defined as the target in the Rule.
4. The Business Processor containing the expression based on the BIS requirement is mapped to the destination Measure.
5. The relevant dataset LRM - Conservative Approach for Inflows is updated to fetch the relevant data from where the selection based on the criteria happens.

#### 5.8.2.3 LRM - Updating Revised Maturity Date Surrogate Key With Maturity Date Surrogate Key

1. This Rule is created to update the revised maturity date for the assets and liability accounts, when the revised maturity date is absent.
2. The source hierarchies related to Date and Run are considered.
3. The destination Measure of revised maturity date SKey is defined as the target in the Rule.
4. The Business Processor containing the original maturity date associated with the account is mapped to the destination Measure.
5. The relevant dataset LRM - Updating the Revised Maturity Date Surrogate Key is updated to fetch the relevant data and match the Business Processor, hierarchies, Measures, and tables used in processing this Rule.

#### 5.8.2.4 LRM - Updating Columns Using Revised Maturity Date

1. This Rule is created to update the respective residual maturity band SKeys (obtained from the preceding Rules) and the effective residual maturity band SKeys .
2. The source hierarchies related to Date and Run are considered.
3. The destination Measures of the residual maturity band SKey and effective residual maturity band maturity date SKey with the relevant time bucket SKeys are defined as the target in the Rule.
4. The Business Processors related to the destination Measures (Effective Residual Maturity Date SKey, Residual Maturity Band SKey, Residual Maturity Time Bucket SKey and Revised Maturity Time Bucket SKey) are mapped to the physical columns.

5. The relevant dataset LRM - Updating columns using Revised Maturity Date is updated to fetch the relevant data and match the Business Processor, hierarchies, Measures, and tables used in processing this Rule.

#### 5.8.2.5 LRM - Residual Maturity Less Than Liquidity Horizon Flag Update

1. This Rule is created to update the accounts as 'Y', where the residual maturity date falls within the liquidity horizon.
2. The source hierarchy related to Run is considered.
3. The destination Measure is a flag which indicates if the residual maturity is less than the liquidity horizon, and is defined as the target in the Rule.
4. The business process containing the flag related to the residual maturity that is less than the liquidity horizon is mapped to the destination Measure.
5. The relevant dataset LRM - Residual Maturity Less Than Liquidity Horizon Flag Update is created and updated to fetch the relevant data and match the Business Processor, hierarchies, Measures, and tables used in processing this Rule.

After these Rules are created, they are added to the process 'LRM – BIS – Determining Revised Maturity', in the order mentioned above. This process is stitched to a Run which is used to process the LCR calculation related to the BIS regularizations in LRM.

### 5.8.3 Process Hierarchy Members

The Process Hierarchy Members and their description are as tabulated.

| Component | Description |
|---|---|
| Data Extraction Rules | Display all the Extract definitions defined through OFSAAI Data Management Tools. |
| Load Data Rules | Display the following two sub types of definitions:<br>▪ **File Loading Rules** display the entire File to Table definitions defined through OFSAAI Data Management Tools.<br>▪ **Insertion Rules** (Type1 Rules) display all the Table to Table definitions defined through OFSAAI Data Management Tools. |
| Transformation Rules | Displays the following definition sub type:<br>▪ **Database Functions-Transformations** display all the DT definitions defined in OFSAAI Data Management Tools. |

| Component | Description |
|---|---|
| Base Rules | Display the following two sub types of definitions:<br>▪ **Classification Rules** (type 2 rule) display all the type 2 rules defined in the Rules Run Framework which have Active status as "**Yes**" and Version "**0**".<br>▪ **Computation Rules** (type 3 rule) display all the type 3 rules defined in the Rules Run Framework which have Active status as "**Yes**" and Version "**0**". |
| Processes | Display all the existing processes defined through Process Framework which have Active status as "**Yes**" and Version "**0**". |
| Essbase Cubes | Display all the Essbase cubes defined for the selected Information Domain in OFSAAI Data Model Management.<br>**Note**: The cubes under the segment to which the user is mapped only will be displayed. |
| Oracle Cubes | Displays all the Oracle cubes defined for the selected Information Domain.<br>**Note**: The cubes under the segment to which the user is mapped only will be displayed. |
| Model | Display all the existing model definitions defined in the Modeling framework windows. |
| Stress Testing | Display all the existing stress testing definitions defined in the Variable Shock Library, Scenario Management, and Stress Definition windows. |
| Data Quality | Displays all data quality groups defined from the OFSAAI Data quality Framework.<br>The DQ Rule framework has been registered with RRF. While passing additional parameters during RRF execution, the additional parameters are passed differently (when compared to DQGroup execution). For example, if the additional parameters to be passed are : $REGION_CODE#V#US;$CREATION_DATE#D#07/06/1983;$ACCOUNT_BAL#N#10000.50, then they are passed as: "REGION_CODE","V","US","CREATION_DATE","D","07/06/1983", "ACCOUNT_BAL","N","100 00.50". In case the user wants to input threshold percentage (for example,: 50%), then the parameter string passed is as follows: "50","REGION_CODE","V","US","CREATION_DATE","D","07/06/1983","ACCOUNT_BAL","N", "10000.50". In the absence of the threshold parameter, it is assumed to be 100%, by default. |

The parameters needed to execute all the listed components are explained in *References* > *Seeded Component Parameters* section.

### 5.8.4 Hierarchical Member Selection Modes

To aid the selection process, certain standard modes are offered through a drop-down. The available modes are **Self**, **Self & Descendants**, **Self & Children**, **Parent**, **Siblings**, **Children**, **Descendants**, and **Last Descendants**.

Based on the hierarchy member security applied, the nodes/members of the hierarchy are displayed in enabled or disabled mode. The members which are in enabled mode only can be selected. That is, the members which are mapped to your user group only can be selected. For example, if you choose Self & Children, the immediate children of the selected hierarchy, which are mapped to your user group only will be moved to the RHS pane.

- The **Self** mode is the default mode displayed. In this mode, only the specific member selected in the LHS pane will be selected onto the RHS pane.
- Choose the **Self & Descendent** mode when you want a specific member and all its descendants right up to the end of its branch to be selected onto the RHS pane.
- Choose the **Self & Children** mode when you want a specific member and only its immediate children to be selected onto the RHS pane.
- Choose the **Parent** mode when you want to select only the parent member of a selected member onto the RHS pane.
- Choose the **Siblings** mode when you want to select only the sibling members from the same parent of the selected member onto the RHS pane.
- Choose the **Children** mode when you want only the immediate children of a specific member to be selected onto the RHS pane mode.
- Choose the **Descendants** mode when you want to select only the descendant members of selected member onto the RHS pane.
- Choose the **Last Descendants** mode when you want to select only the last descendant members of selected member onto the RHS pane.

You can also click to select all the members to the Selected Members pane. Click to deselect a selected member from the Selected Members pane or click to deselect all the members.

### 5.8.5 Significance of Pre-Built Flag

While defining a Rule, you can make use of Pre Built Flag to fasten the Rule execution process by making use of pre compiled technical metadata details. The purpose of Pre Built Flag is to enhance the Rule execution process bypassing the need to search for the required technical metadata within multiple database tables.

| Condition | Process flow |
|---|---|
| Creating Rule: | Rule definition with Pre-Built Flag set to "**Y**" > Build the Rule query. |
| | Rule definition with Pre-Built Flag set to "**N**" > Do not build the Rule query during Rule Save. |
| Executing Rule: | Pre-Built Flag set to "**Y**" > Retrieve the rule query from appropriate table and execute. |
| | Pre-Built Flag set to "**N**" > Build the Rule query by referencing the related metadata tables and then execute. |

For example, consider a scenario where **Rule 1** (RWA calculation), using a Dataset **DS1** is to be executed. If the Pre-Built Flag condition is set to "**N**", then the metadata details of From Clause and Filter Clause of **DS1** are searched through the database to form the query. Whereas, when the Pre-Built Flag condition is set to "**Y**", then the From Clause and Filter Clause details are retrieved from appropriate table to form the query and thereby triggered for execution.

Like Dataset, pre-compiled rules also exist for other Business Metadata objects such as *Measures*, *Business Processors*, *Hierarchies*, and so on.

*Note the following:*

*When you are sure that the Rule definition is not modified in a specific environment (production), you can set the flag for all Rule definitions as "**Y**". This would in turn help in performance improvement during Rule execution. However, if the Rule is migrated to a different environment and if there is a change in query, change the status back to "**N**" and also may need to resave the Rule, since there could be a change in metadata.*

### 5.8.6 Seeded Component Parameters in RRF

Following are the seeded component parameters available within OFSAAI.

#### 5.8.6.1 Cube Aggregate Data (CubeAggregateData)

| Parameter Name / (Type) | Description | Default Value |
|---|---|---|
| **IP Address** (System Defined) | Refers to the IP Address of the server where the OFSAAI Database components for the particular information domain have been installed. This IP Address also specifies the location (server hostname / IP Address) where the component is to be executed. | |
| **Datastore Type** (System Defined) | Enterprise Data Warehouse (EDW) | EDW |
| **Datastore Name** (System Defined) | Information Domain Name | |
| **Cube Parameter** (System Defined) | Unique Name of the component definition | |
| Optional Parameters (System Defined) | It is a set of different parameters like Run ID, Process ID, Exe ID, and Run Surrogate Key. For example, $RUNID=123,$PHID=234,$EXEID=345,$RUNSK=456 | |
| **Operation** (User Defined) | It is a drop-down list with the following optional values - "ALL", "GENDATAFILES", and "GENPRNFILES" to generate Data files or PRN files or both, during Cube build. | ALL |

#### 5.8.6.2 Create Cube (CubeCreateCube)

| Parameter Name / (Type) | Description | Default Value |
|---|---|---|
| **IP Address** (System Defined) | Refers to the IP Address of the server where the OFSAAI Database components for the particular information domain have been installed. This IP Address also specifies the location (server hostname / IP Address) where the component is to be executed. | |
| **Datastore Type** (System Defined) | Enterprise Data Warehouse (EDW) | EDW |
| **Datastore Name** (System Defined) | Information Domain Name | |
| **Cube Parameter** (System Defined) | Unique Name of the component definition | |

| Parameter Name / (Type) | Description | Default Value |
|---|---|---|
| **Operation** (User Defined) | It is a drop-down list with the following optional values - "ALL", "BUILDDB", "TUNEDB", "PROCESSDB", "DLRU", "ROLLUP", "VALIDATE", "DELDB", "OPTSTORE" | ALL |

#### 5.8.6.3 Data Extraction Rules (ExtractT2F)

| Parameter Name / (Type) | Description | Default Value |
|---|---|---|
| **IP Address** (System Defined) | Refers to the IP Address of the server where the OFSAAI Database components for the particular information domain have been installed. This IP Address also specifies the location (server hostname / IP Address) where the component is to be executed. | |
| **Datastore Type** (System Defined) | Enterprise Data Warehouse (EDW) | EDW |
| **Datastore Name** (System Defined) | Information Domain Name | |
| **Extract Name** (System Defined) | Unique Name of the component definition | |
| **Source Name** (System Defined) | The scope of T2F is limited to the Source of the tables and this gives the name of the source. | |

#### 5.8.6.4 Load Data Rules (LoadF2T)

| Parameter Name / (Type) | Description | Default Value |
|---|---|---|
| **IP Address** (System Defined) | Refers to the IP Address of the server where the OFSAAI Database components for the particular information domain have been installed. This IP Address also specifies the location (server hostname / IP Address) where the component is to be executed. | |
| **Datastore Type** (System Defined) | Enterprise Data Warehouse (EDW) | EDW |
| **Datastore Name** (System Defined) | Information Domain Name | |
| **File Name** (System Defined) | Unique Name of the component definition | |
| **Source Name** (System Defined) | The scope of this component is limited to the source and it gives the name of the source file. | |
| **Load Mode** (System Defined) | Additional parameter to differentiate between F2T and T2T | File To Table |

| Parameter Name / (Type) | Description | Default Value |
|---|---|---|
| **Data File Name** (User Defined) | Name of the source file. If not specified, the source name provided in the definition will be used. | |

### 5.8.6.5 Load Data Rules (LoadT2T)

| Parameter Name / (Type) | Description | Default Value |
|---|---|---|
| **IP Address** (System Defined) | Refers to the IP Address of the server where the OFSAAI Database components for the particular information domain have been installed. This IP Address also specifies the location (server hostname / IP Address) where the component is to be executed. | |
| **Datastore Type** (System Defined) | Enterprise Data Warehouse (EDW) | EDW |
| **Datastore Name** (System Defined) | Information Domain Name | |
| **File Name** (System Defined) | Unique Name of the component definition | |
| **Source Name** (System Defined) | The scope of this component is limited to the source and it gives the name of the source table. | |
| **Load Mode** (System Defined) | Additional parameter to differentiate between F2T and T2T | Table To Table |
| **Default Value** (System Defined) | It is a set of different parameters like Run ID, Process ID, Exe ID, and run surrogate key. For example, $RUNID=123,$PHID=234,$EXEID=345,$RUNSK=456 | |
| **Data File Name** (User Defined) | Not Applicable since this parameter is only used for F2T not T2T | |

### 5.8.6.6 Modeling Framework - Model (MFModel)

| Parameter Name / (Type) | Description | Default Value |
|---|---|---|
| **IP Address** (System Defined) | Refers to the IP Address of the server where the OFSAAI Database components for the particular information domain have been installed. This IP Address also specifies the location (server hostname / IP Address) where the component is to be executed. | |
| **Datastore Type** (System Defined) | Enterprise Data Warehouse (EDW) | EDW |

| Parameter Name / (Type) | Description | Default Value |
|---|---|---|
| **Datastore Name** (System Defined) | Information Domain Name | |
| **Operation** (System Defined) | Refers to the operation to be performed. You can click the drop-down list to select additional parameters to direct the engine behavior. | ALL |
| **Model Code** (System Defined) | Unique Name of the component definition | |
| Optional Parameters (System Defined) | It is a set of different parameters like Run ID, Process ID, Exe ID, and Run Surrogate Key. For example, $RUNID=123,$PHID=234,$EXEID=345,$RUNSK=456 | |

#### 5.8.6.7 Modeling Framework - Optimizer (MFOptimizer)

| Parameter Name / (Type) | Description | Default Value |
|---|---|---|
| **IP Address** (System Defined) | Refers to the IP Address of the server where the OFSAAI Database components for the particular information domain have been installed. This IP Address also specifies the location (server hostname / IP Address) where the component is to be executed. | |
| **Datastore Type** (System Defined) | Enterprise Data Warehouse (EDW) | EDW |
| **Datastore Name** (System Defined) | Information Domain Name | |
| **Operation** (System Defined) | Refers to the operation to be performed. You can click the drop-down list to select additional parameters to direct the engine behavior. | ALL |
| **Model Code** (System Defined) | Unique Name of the component definition | |
| Optional Parameters (System Defined) | It is a set of different parameters like Run ID, Process ID, Exe ID, and run surrogate key. For example, $RUNID=123,$PHID=234,$EXEID=345,$RUNSK=456 | |

#### 5.8.6.8 Modeling Framework - Pooling (MFPoolling)

| Parameter Name / (Type) | Description | Default Value |
|---|---|---|
| **IP Address** (System Defined) | Refers to the IP Address of the server where the OFSAAI Database components for the particular information domain have been installed. This IP Address also specifies the location (server hostname / IP Address) where the component is to be executed. | |
| **Datastore Type** (System Defined) | Enterprise Data Warehouse (EDW) | EDW |
| **Datastore Name** (System Defined) | Information Domain Name | |
| **Operation** (System Defined) | Refers to the operation to be performed. You can click the drop-down list to select additional parameters to direct the engine behavior. | ALL |
| **Model Code** (System Defined) | Unique Name of the component definition | |
| Optional Parameters (System Defined) | It is a set of different parameters like Run ID, Process ID, Exe ID, and run surrogate key. For example, $RUNID=123,$PHID=234,$EXEID=345,$RUNSK=456 | |

#### 5.8.6.9 Process

Process component does not have any seeded parameters and are the same defined in the *Process* window.

#### 5.8.6.10 Base Rules - Classification Rule (RuleType2)

| Parameter Name / (Type) | Description | Default Value |
|---|---|---|
| **IP Address** (System Defined) | Refers to the IP Address of the server where the OFSAAI Database components for the particular information domain have been installed. This IP Address also specifies the location (server hostname / IP Address) where the component is to be executed. | |
| **Datastore Type** (System Defined) | Enterprise Data Warehouse (EDW) | EDW |
| **Datastore Name** (System Defined) | Information Domain Name | |
| **Rule Code** (System Defined) | This is the rule ID | |

| Parameter Name / (Type) | Description | Default Value |
|---|---|---|
| **Build Flag** (System Defined) | The status Y - yes or N - no indicates if the rule query has to be re-built before execution or not. | N |
| Optional Parameters (System Defined) | It is a set of different parameters like Run ID, Process ID, Exe ID, and run surrogate key. For example, $RUNID=123,$PHID=234,$EXEID=345,$RUNSK=456 | |

### 5.8.6.11 Base Rules - Computation Rule (RuleType3)

| Parameter Name / (Type) | Description | Default Value |
|---|---|---|
| **IP Address** (System Defined) | Refers to the IP Address of the server where the OFSAAI Database components for the particular information domain have been installed. This IP Address also specifies the location (server hostname / IP Address) where the component is to be executed. | |
| **Datastore Type** (System Defined) | Enterprise Data Warehouse (EDW) | EDW |
| **Datastore Name** (System Defined) | Information Domain Name | |
| **Rule Code** (System Defined) | Rule ID. | |
| **Build Flag** (System Defined) | The status Y - yes or N - no indicates if the rule query has to be re-built before execution or not. | N |
| Optional Parameters (System Defined) | It is a set of different parameters like Run ID, Process ID, Exe ID, and run surrogate key. For example, $RUNID=123,$PHID=234,$EXEID=345,$RUNSK=456 | |

### 5.8.6.12 Run Executable (RunExecutable)

| Parameter Name / (Type) | Description | Default Value |
|---|---|---|
| **IP Address** (System Defined) | Refers to the IP Address of the server where the OFSAAI Database components for the particular information domain have been installed. This IP Address also specifies the location (server hostname / IP Address) where the component is to be executed. | |
| **Datastore Type** (System Defined) | Enterprise Data Warehouse (EDW) | EDW |
| **Datastore Name** (System Defined) | Information Domain Name | |

| Parameter Name / (Type) | Description | Default Value |
|---|---|---|
| **Wait** (System Defined) | This determines if the executable is Synchronous (Y) / Asynchronous (N) | Y |
| **Batch Parameter** (System Defined) | This determines if the implicit system parameters like batch ID, MIS date, and so on are to be passed or not. | Y |
| **Executable** (User Defined) | It is name of the ".sh" file that has to be executed through this run executable component. | |

### 5.8.6.13 Stress Testing -Variable Shocks (SSTVariableShock)

| Parameter Name / (Type) | Description | Default Value |
|---|---|---|
| **IP Address** (System Defined) | Refers to the IP Address of the server where the OFSAAI Database components for the particular information domain have been installed. This IP Address also specifies the location (server hostname / IP Address) where the component is to be executed. | |
| **Datastore Type** (System Defined) | Enterprise Data Warehouse (EDW) | EDW |
| **Datastore Name** (System Defined) | Information Domain Name | |
| Variable Shock Code (System Defined) | Unique Name of the component definition | |
| **Operation** (System Defined) | Refers to the operation to be performed. You can click the drop-down list to select additional parameters to direct the engine behavior. | ALL |
| Optional Parameters (System Defined) | This consists of Run Surrogate Key. | |

### 5.8.6.14 Transformation Rules (TransformDQ)

| Parameter Name / (Type) | Description | Default Value |
|---|---|---|
| **IP Address** (System Defined) | Refers to the IP Address of the server where the OFSAAI Database components for the particular information domain have been installed. This IP Address also specifies the location (server hostname / IP Address) where the component is to be executed. | |
| **Datastore Type** (System Defined) | Enterprise Data Warehouse (EDW) | EDW |

| | | |
|---|---|---|
| **Datastore Name** (System Defined) | Information Domain Name | |
| **Rule Name** (System Defined) | Unique Name of the component definition | |
| **Parameter List** (User Defined) | It is a user defined parameter list along with different system defined parameters like Run ID, Process ID, Exe ID, and Run Surrogate Key only if the subtype is SP (Stored Procedure) or EXT (External).<br>For example,<br><<ParameterList>>,"$RUNID=123","$PHID=234","$EXEID=345","$RUNSK=456" otherwise it will be only "$RUNID=123","$PHID=234","$EXEID=345","$RUNSK=456" | |

### 5.8.6.15 Transformation Rules (TransformDT)

| Parameter Name / (Type) | Description | Default Value |
|---|---|---|
| **IP Address** (System Defined) | Refers to the IP Address of the server where the OFSAAI Database components for the particular information domain have been installed. This IP Address also specifies the location (server hostname / IP Address) where the component is to be executed. | |
| **Datastore Type** (System Defined) | Enterprise Data Warehouse (EDW) | EDW |
| **Datastore Name** (System Defined) | Information Domain Name | |
| **Rule Name** (System Defined) | Unique Name of the component definition | |
| **Parameter List** (User Defined) | It is a user defined parameter list along with different system defined parameters like Run ID, Process ID, Exe ID, and Run Surrogate Key only if the subtype is SP (Stored Procedure).<br>For example,<br><<ParameterList>>,"$RUNID=123","$PHID=234","$EXEID=345","$RUNSK=456" otherwise it will be only "$RUNID=123","$PHID=234","$EXEID=345","$RUNSK=456" | |

#### 5.8.6.16 Data Quality Groups (Run DQ)

| Parameter Name / (Type) | Description | Default Value |
|---|---|---|
| **IP Address** (System Defined) | Refers to the IP Address of the server where the OFSAAI Database components for the particular information domain have been installed. This IP Address also specifies the location (server hostname / IP Address) where the component is to be executed. | |
| **Datastore Type** (System Defined) | Enterprise Data Warehouse (EDW) | EDW |
| **Datastore Name** (System Defined) | Information Domain Name | |
| Data Quality Group Name | Name of the DQ group to be executed. | |
| **Parameters** | Comma separated parameters where first value is considered as the threshold percentage, followed by additional parameter which is a combination of three tokens. Example, “90”,”PARAM1”,”D”,”VALUE1”,”PARAM2”,”V”,”VALUE2”.<br>**Note:** Parameter ‘Fail if threshold is breached” is defaulted to “Yes” for RRF executions. | |
| **Optional Parameter** | You can pass Run Surrogate Key (RUNSK) as filter.<br>For example, $RUNSK=456 | |

**NOTE:** If you want to configure components other than the seeded components, see *Component Registration* section in OFSAAI Administration Guide.

.

# 6 Operation

Operation refers to administration and processing of business data to create the highest level of efficiency within the system and to derive results based on a specified rule. Operations framework within the Infrastructure system facilitates you (system administrator) to:

- Configure and operate the business processes effectively.
- Maintain the Operator Console by Defining and Executing Batches through the Operations menu.
- Monitor the Batches scheduled for execution.

To access the Operations framework, you must be mapped to the Data Centre Manager function role within the Infrastructure system. For more details on various function roles, refer Appendix A.

The operation section discusses the following sections:

Batch Maintenance

Batch Execution

Batch Scheduler

Batch Monitor

Processing Report

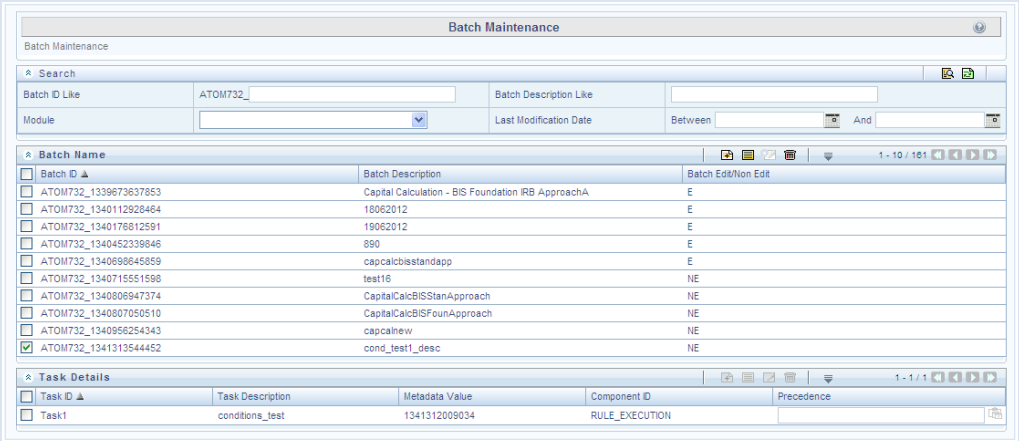
Batch Cancellation

View Log

## 6.1 Batch Maintenance

Batch refers to a set of executable processes based on a specified rule. Batch Maintenance framework within the Infrastructure system facilitates you to create and maintain the Batch Definitions. You can process the Batch scheduled for execution from Batch Maintenance and also from other modules and applications such as Rules Run Framework and Enterprise Modeling respectively.

You (System Administrator) need to have Data Centre Manager function role mapped to access the Operations framework within the Infrastructure system. You can access the Batch Maintenance window by expanding **Operations** within the LHS menu and selecting **Batch Maintenance**. The *Batch Maintenance* window displays a list of Batches scheduled for maintenance with the other details such as Batch ID, Batch Description, and the editable state of the Batch.




In the *Batch Maintenance* window of Operations framework, you can do the following:

- Create Batch Definitions and assign task details to a Batch. You can also set the task precedence, specify component, and define the dynamic parameters based on the component.
- View the Batch Definition details.
- Change the Batch Definition Status as Non Editable (NE).
- Delete Batch Definition details.

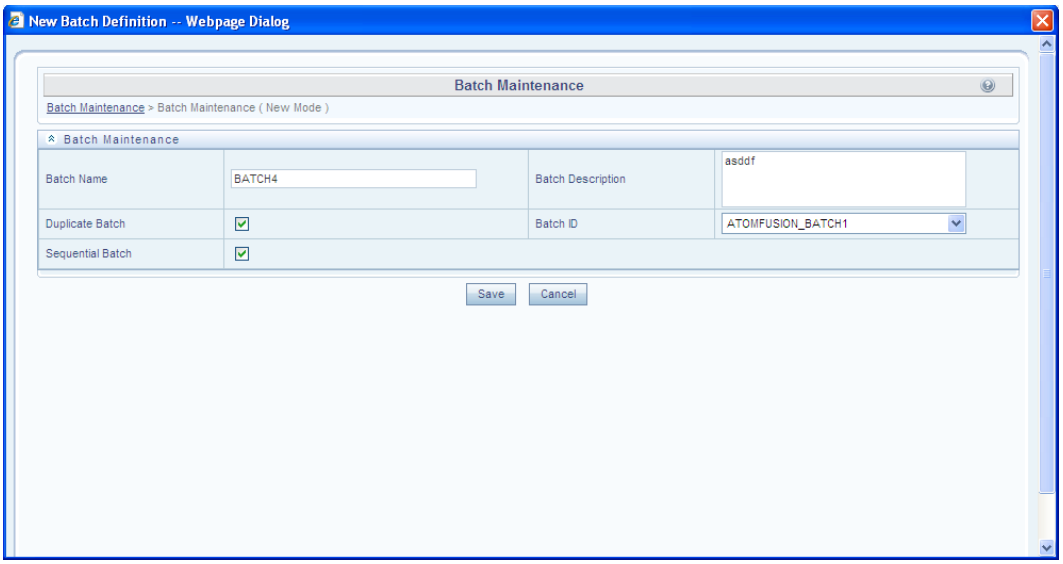
You can also make use of Batch Search option to search for a specific Batch based on the Batch ID, Batch Description, Module, or Last Modified Date. The pagination option helps you to view the list of existing Batches within the system. For more information, refer Pagination section.

You can transfer batch ownership from one user to another user. For details, see Transferring Batch Ownership section in the OFSAAI Administration Guide.

### 6.1.1 Adding Batch Definition

You can either define an empty Batch or duplicate an existing Batch and specify the task details. To add Batch definition in the *Batch Maintenance* window:

1. Select button from the Batch Name tool bar. The *New Batch Definition* window is displayed.




2. Enter the Batch details as tabulated.

| Field | Description |
|---|---|
| Batch Name | The Batch Name is auto generated by the system. You can edit to specify a Batch name based on the following conditions:<br>▪ The Batch Name should be unique across the Information Domain.<br>▪ The Batch Name must be alphanumeric and should not start with a number.<br>▪ The Batch Name should not exceed 41 characters in length.<br>▪ The Batch Name should not contain any special characters except "_". |
| Batch Description | Enter a description for the Batch based on the Batch Name.<br>Batch description should be alphanumeric. The allowed special characters are "_", "-", ":", ".", and "<blank space>". |
| Duplicate Batch | (Optional) Select the checkbox to create a new Batch by duplicating the existing Batch details.<br>On selection, the Batch ID field is enabled. |
| Batch ID (If duplicate Batch is selected) | It is mandatory to specify the Batch ID if Duplicate Batch option is selected.<br>Select the required Batch ID from the list. |

| Field | Description |
|---|---|
| Sequential Batch | Select the checkbox if the Batch has to be created sequentially based on the task specified. For example, if there are 3 tasks defined in a Batch, task 3 should have precedence as task 2, and task 2 should have precedence as task 1. |

3. Click **Save** to save the Batch definition details. The new Batch definition details are displayed in the Batch Name section of *Batch Maintenance* window with the specified Batch ID.

   In the Batch Name tool bar of *Batch Maintenance* window you can select the Batch ID and do the following:

   - Click button and view the Batch Definition details.
   - Click button to change the status of the Batch as **Non Editable (NE)**.

   **NOTE:** Non Editable batch status cannot be reverted to Editable status later.

   By default the new Batch created will have the status set as **Editable (E)**.

   - Click button to delete the Batch definition details.

### 6.1.2 Specify Task Details

The Tasks Details section of *Batch Maintenance* window displays the list of tasks associated with a specific Batch definition. In the Task Details section you can do the following:

- Update the pre-defined task and assign new tasks.
- Specify the Task Precedence.
- Update the pre-defined Component or specify new component.
- Specify the Dynamic Parameters based on the component selected.

#### 6.1.2.1 Adding Task Details

To specify the task details in the *Batch Maintenance* window:

1. Click from the Task Details tool bar. The *New Task Definition* window is displayed.
2. Enter the task details as tabulated.

| Field | Description |
|---|---|
| Task ID | The task ID is auto generated by the system depending on the precedence level and is not editable. |

| Field | Description |
|---|---|
| Description | Enter the task description. No special characters are allowed in Task Description.<br>The words like Select From or Delete From (identified as potential SQL injection vulnerable strings) should not be entered in the Description. |
| Components | Components refers to individual functional units that are put together to form a process. A component triggers its own set of processes in the back-end to achieve the final output. For more information on each component Property and Value Description, refer Task Component Parameters.<br>▪ Select the required component from the drop-down list. |
| Dynamic Parameters List | On selecting a task component, a list of dynamic parameters is displayed. It is mandatory to select the parameter values based on the component.<br>▪ Specify the value for each parameter by selecting from the drop-down list. Click the following links to view the component parameter details.<br>AGGREGATE DATA<br>Allocation Engine<br>CREATE CUBE<br>EXTRACT DATA<br>FIRE RUN<br>LOAD DATA<br>MODEL<br>ORACLECUBEBUILD<br>RULE_EXECUTION<br>RUN DQ RULE<br>RUN EXECUTABLE<br>RUN RULE<br>SQL RULE<br>TRANSFORM DATA<br>VARIABLE SHOCK<br>WORKFLOW EXECUTION |

| Field | Description |
|---|---|
| Datastore Type | Refers to the type of data store such as Enterprise Data Warehouse (EDW) which refers to the Multi-dimensional Database/Cubes. |
| Datastore Name | Refers to the name of the Information Domain. By default the Information Domain to which the selected Application is mapped, is selected.<br>The unique combination of the Datastore Name and the Datastore Type determine the physical machine on which the task will be executed. It is assumed that the user gives the correct information else task invocations may fail at runtime. |
| Primary IP For Runtime Processes | Refers to the IP Address of the primary machine for runtime processes. Select the IP address of the machine on which you want to execute the task, from the drop-down list. |

3. Click **Save** to save the task definition details. The new task details are displayed in the Task Details of the *Batch Maintenance* window with the Task ID.

   In the Task Details tool bar of *Batch Maintenance* window you can select the Task ID and do the following:

   - Click button to add another Task.
   - Click button and view the selected Task details.
   - Click to modify the selected Task details.
   - Click button to delete the selected Task details.

#### 6.1.2.2 Defining Task Precedence

Task Precedence indicates the execution-flow of a Batch. Task Precedence value in the Task Details facilitates you to determine the order in which the specific Tasks of a Batch are executed.

For example, consider a Batch consisting of 4 Tasks. First 3 Tasks does not have a precedence defined and hence will be executed simultaneously during the Batch execution. But, Task 4 has precedence value as task 1 which indicates that, Task 4 is executed only after Task 1 has been successfully executed.

You can set Task precedence between Tasks, or schedule a Task to run after another Task, or even define to run a Task after a set of other tasks. However, multiple tasks can be executed simultaneously and cyclical execution of tasks is not permitted. If the precedence for a Task is not set, the Task it is executed immediately on Batch execution.

To define the task precedence in the *Batch Maintenance* window:

1. Select the button adjacent to Component ID of the required Task. The *Task Precedence Mapping* browser is displayed.

   **NOTE:** Task Precedence option is disabled if a batch has only one task associated.

   - Select the required Task from the Task List and click . You can press **Ctrl** key for multiple selections.
   - To select all the listed Tasks, click .
   - To remove a Task, select the task from Select Tasks pane and click .
   - To remove all the selected Tasks, click .

2. Click **OK** and update Task Precedence definition.

## 6.2 Batch Execution

Batch Execution refers to the process of initiating a Batch for current processing. When a Batch is submitted for execution, a series of commands are sent to the database with respect to the defined component parameters. This in turn returns an array of update counts (required value definitions) when the commands are executed successfully.

You (System Administrator) need to have Data Centre Manager function role mapped to access the Operations framework within the Infrastructure system. You can access the Batch Maintenance window by expanding **Operations** within the LHS menu and selecting **Batch Execution**.

The *Batch Execution* window displays the list of only those Batches which have at least one task associated, with the other details such as Batch ID and Batch Description. When you select a Batch ID in the list, the Task Details sections displays all the defined Tasks associated with the Batch.

The Batch Details section in the *Batch Execution* window lists the Batches depending on the Batch Mode selected.

- The **Run** mode displays the Batch definitions which are newly defined and which have been scheduled for execution.
- The **Restart** Mode displays the Batch definitions which are not executed successfully or either has been interrupted during the previous Batch execution.
- The **Rerun** mode displays the Batch definitions which have been successfully executed, failed, cancelled, or even interrupted during the previous Batch execution.

You can also make use of Batch Search option to search for a specific Batch based on the Batch ID, Batch Description, Module, or Last Modified Date. The pagination option helps you to view the list of existing Batches within the system. For more information, refer Pagination section.

### 6.2.1 Executing Batch

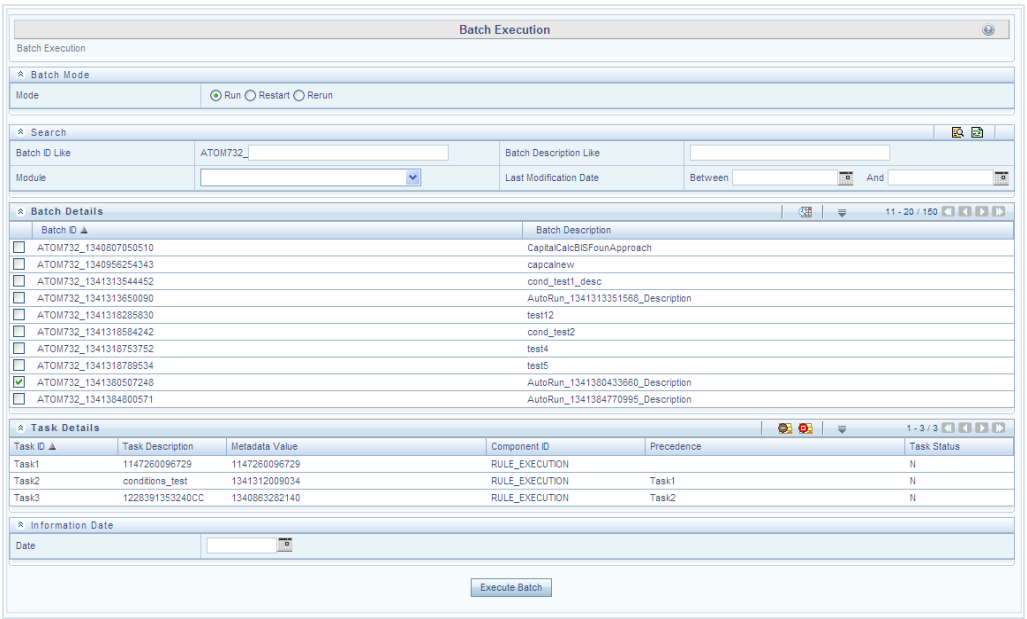
You can Run/Execute the Batches which are scheduled for execution in the *Batch Execution* window. You can also modify the pre-defined Batch schedule or define a new schedule using the Batch Scheduler. In the *Batch Execution* window you can execute a Batch in Run, Restart, or Rerun modes.

#### 6.2.1.1 Run/Execute Batch

You can Run/Execute Batch(s) which have been scheduled for execution in the *Batch Execution* window. You can also Run/Execute a Batch using the External Scheduler (ES) which has the “External Scheduler Interface Component” (ESIC) integrated with Infrastructure system. For more information, refer External Scheduler Interface Component.

To Execute a Batch in the *Batch Execution* window:

1. Select **Run** in the *Batch Mode* section. The list of Batches scheduled for execution is displayed in the *Batch Details* section.




2. Select the checkbox adjacent to the Batch ID which has to be executed. The specified task(s) defined to the selected Batch are displayed in the *Task Details* section.
   - (Optional) In the Batch Details tool bar, click button to define new or modify the pre-defined Batch Schedule. For more information, refer Batch Scheduler.
   - (Optional) In the Task Details tool bar, click button to Exclude/Include a task, or click button to Hold/Release a task before executing the Batch. For more information, refer Modify Task Definitions of a Batch.
3. Specify the **Information Date** (mandatory) by clicking (calendar) button. The specified date is recorded for reference.

   **NOTE:** You can also modify the required task parameters of the selected Batch and include the changes during the Batch rerun. For more information, refer Specify Task Details.

4. Click **Execute Batch** button and select **OK** in the information dialog to confirm Batch Execution.

   An information dialog is displayed indicating that Batch Execution is triggered successfully.

#### 6.2.1.2 Restart Batch

You can Restart a Batch which has not been executed successfully or which has been explicitly interrupted, or cancelled, or put on hold during the execution process. These Batches are categorized separately and listed in the **Restart** mode within the *Batch Execution* window. By restarting a Batch, you can continue Batch execution directly from the point of interruption or failure and complete executing the remaining tasks.

To Restart a Batch in the *Batch Execution* window:

1. Select **Restart** in the *Batch Mode* section. The list of interrupted/failed Batches during execution is displayed in the *Batch Details* section.
2. Select the checkbox adjacent to the Batch ID which has to be executed. The specified Task(s) defined to the selected Batch are displayed in the *Task Details* section.
   - (Optional) In the Batch Details tool bar, click button to define new or modify the pre-defined Batch Schedule. For more information, refer Batch Scheduler.
3. Select the **Information Date** (mandatory) from the drop-down list.
4. Select the **Batch Run ID** (mandatory) from the drop-down list.
   - (Optional) In the Task Details tool bar, click button to Exclude/Include a task, or click button to Hold/Release a task before executing the Batch. For more information, refer Modify Task Definitions of a Batch.

   **NOTE:** The Tasks in a Batch which have failed during the execution process are indicated in Red in the Task Details section. You can modify the required task parameters in *Specify Task Details* window and include the changes during the Batch restart. Else, the tasks fail again during the Batch **Restart**.

5. Click **Execute Batch** button and select **OK** in the information dialog to confirm Batch Execution.

   An information dialog is displayed indicating that Batch Execution is triggered successfully.

#### 6.2.1.3 Rerun Batch

You can Rerun a Batch which has previously been executed. Rerun Batch facilitates you to run the Batch irrespective of the previous execution state. A new Batch Run ID is generated during the Rerun process and the Batch is executed as similar to the new Batch Run.

To Rerun a Batch in the *Batch Execution* window:

1. Select **Rerun** in the *Batch Mode* section. The list of executed Batches is displayed in the *Batch Details* section.
2. Select the checkbox adjacent to the Batch ID which has to be executed. The specified Task(s) defined to the selected Batch are displayed in the *Task Details* section.
   - (Optional) In the Batch Details tool bar, click button to define new or modify the pre-defined Batch Schedule. For more information, refer Batch Scheduler.
3. Select the **Information Date** (mandatory) from the drop-down list.
4. Select the **Batch Run ID** (mandatory) from the drop-down list.
   - (Optional) In the Task Details tool bar, click button to Exclude/Include a task, or click button to Hold/Release a task before executing the Batch. For more information, refer Modify Task Definitions of a Batch.

   **NOTE:** You can also modify the required task parameters of the selected Batch and include the changes during the Batch rerun. For more information, refer Specify Task Details.

5. Click **Execute Batch** button and select **OK** in the information dialog to confirm Batch Execution.

   An information dialog is displayed indicating that Batch Execution is triggered successfully.

### 6.2.2 Modifying Task Definitions of a Batch

You can modify the task definition state in the *Batch Execution* window to exclude or hold the defined task in a Batch from execution. The excluded tasks are therefore assumed to have completed execution and get excluded during the Batch Run.

While executing a Batch in the *Batch Execution* window, you can:

- Exclude a task or Include the excluded task.
- Hold a task and Release the held task.

When you modify the task definition(s) in the Task Details section:

- The Excluded task(s) are displayed in "Grey" with the Task Status set to "**K**".

- The task(s) on Hold are displayed in "Red" with the Task Status set to "**H**".

**NOTE:** In the combination, you are not permitted to Hold/Release an Excluded task or Exclude/Include a task which is on Hold.

#### 6.2.2.1 Exclude Task Definitions

You can Exclude Task(s) definition or Include the Excluded task(s) during Batch Execution. The excluded task components are therefore executed in the normal process assuming that the Excluded Task(s) have completed execution.

To Exclude Task(s) in the in the *Batch Execution* window:

1. Click button in the Task Details tool bar.
2. In the *Task Mapping* window, do one of the following:
   - To exclude a task, select the required task from the Available Tasks list and click . You can press **Ctrl** key for multiple selections.
   - To exclude all tasks in the Available Tasks list, click .
3. Click **OK** and return to the *Batch Execution* window.

   The Excluded Task(s) in the task details section are marked in "Grey" with the Task Status set to "**K**".

#### 6.2.2.2 Include Excluded Task Definitions

To Include an Excluded Task(s) in the in the *Batch Execution* window:

1. Click button in the Task Details tool bar.
2. In the *Task Mapping* window, do one of the following:
   - To include an excluded task, select the required task from the Set Tasks list and click . You can press **Ctrl** key for multiple selections.
   - To exclude all tasks in the Set Tasks list, click .
3. Click **OK** and return to the *Batch Execution* window.

#### 6.2.2.3 Hold Task Definitions

You can Hold task(s) definition or Release the held task(s) during Batch Execution. In the Batch Run, the task(s) which are on Hold along with the defined components are skipped during execution. However, at least one task should be available in a Batch without being held/excluded for Batch execution.

To Hold Task(s) in the in the *Batch Execution* window:

1. Click button in the Task Details tool bar.
2. In the Task *Mapping* window, do one of the following:
   - To Hold a task, select the required task from the Available Tasks list and click . You can press **Ctrl** key for multiple selections.
   - To Hold all tasks in the Available Tasks list, click .
3. Click **OK** and return to the *Batch Execution* window.

   The Task(s) on Hold in the task details section are marked in "**Red**" with the Task Status set to "**H**".

#### 6.2.2.4 Release Held Task Definitions

To Release Task(s) on Hold in the in the *Batch Execution* window:

1. Click button in the Task Details tool bar.
2. In the *Task Mapping* window, do one of the following:
   - To release a held task, select the required task from the Set Tasks list and click . You can press **Ctrl** key for multiple selections.
   - To release all tasks in the Set Tasks list, click .
3. Click **OK** and return to the *Batch Execution* window.

## 6.3 Batch Scheduler

Batch Scheduler in the Infrastructure system facilitates you to schedule a Batch for later processing. You can define a new Batch schedule or update a previously defined Batch schedule for processing.

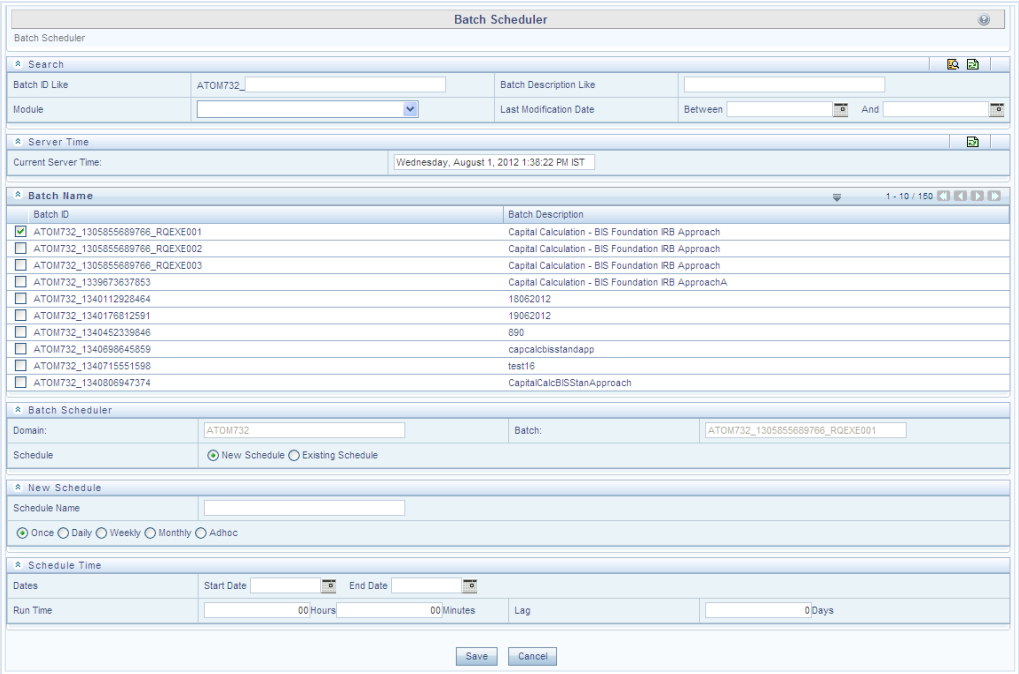
You (System Administrator) need to have Data Centre Manager function role mapped to access the Operations framework within the Infrastructure system. You can access Batch Scheduler window by expanding **Operations** within the tree structure of LHS menu and selecting **Batch Scheduler**. The *Batch Scheduler* window displays the list of Batches scheduled for execution with the other details such as Batch ID and Batch Description. When you select a Batch in the list, the Batch Scheduler options are displayed.

You can click button in the Server Time section to view the Current Sever Time while defining a Batch schedule. You can also make use of Batch Search option to search for a specific Batch based on the Batch ID Like, Batch Description Like, Module, or Last Modified Date. The pagination option helps you to view the list of existing Batches within the system. For more information, refer Pagination section.

### 6.3.1 Creating Batch Schedule

You can define a new schedule for processing Batch by specifying the required day(s) and time intervals. The Batch is executed when the server time synchronizes with the scheduled time.

**NOTE:** Any change made to the Server Time to accommodate for Daylight Savings Time will not be reflected automatically in the Batch Scheduler. All OFSAA services have to be restarted after the time has been changed in the server to reflect the change in time in the Batch Scheduler.




To create a schedule for Batch processing in the *Batch Scheduler* window:

1. Select the checkbox adjacent to the Batch ID whose details are to be updated.

   The options to schedule a new Batch are displayed. By default, the Schedule type is selected as **New Schedule** in the *Batch Scheduler* section.

2. In the New Schedule section, enter the **Schedule Name** to identify the task.

3. Select the **Schedule** option as one of the following, and specify the related details as tabulated:

| Schedule Option | Schedule Task Details |
|---|---|

| Schedule Option | Schedule Task Details |
|---|---|
| Once (default option) | ▪ Specify the **Date** on which the Batch has to be scheduled for processing using the Calendar.<br>▪ Enter the **Run Time** during which the Batch Scheduling should be run, in hours (hh) and minutes (mm) format.<br>▪ Enter the number of **Lag** days which signifies the misdate when the Batch is currently run. For the schedule type “Once” lag days is optional. |
| Daily | ▪ Specify the **Dates**, Start and End dates during which the Batch has to be scheduled for processing using the Calendar.<br>▪ Enter the **Run Time** during which the Batch Scheduling should be run, in hours (hh) and minutes (mm) format.<br>▪ Enter the number of **Lag** days which signifies the misdate when the Batch is currently run.<br>▪ Enter the frequency of Batch Run in the **Every** field as per the defined schedule type. For example, Every **2** day(s) |
| Weekly | ▪ Specify the **Dates**, Start and End dates during which the Batch has to be scheduled for processing using the Calendar.<br>▪ Enter the **Run Time** during which the Batch Scheduling should be run, in hours (hh) and minutes (mm) format.<br>▪ Enter the number of **Lag** days which signifies the misdate when the Batch is currently run.<br>▪ Enter the frequency of Batch Run in the **Every** field as per the defined schedule type. For example, Every **2** week(s).<br>▪ Select the checkbox adjacent to the **Days of the Week** to specify the days on which you need to run the Batch schedule. |

| Schedule Option | Schedule Task Details |
|---|---|
| Monthly | ▪ Specify the **Dates**, Start and End dates during which the Batch has to be scheduled for processing using the Calendar.<br>▪ Enter the **Run Time** during which the Batch Scheduling should be run, in hours (hh) and minutes (mm) format.<br>▪ Enter the number of **Lag** days which signifies the misdate when the Batch is currently run.<br>▪ Select **Interval** option to enter the frequency of Batch Run in the **Every** field or select **Random** to select the checkbox adjacent to Months on which you need to run the Batch schedule.<br>▪ Do one of the following:<br>Select **Dates** (default) option and enter the **Dates of the Month** on which you need to run the Batch schedule. Also select the checkbox **Include Month's Last Date** to do so.<br>-Or-<br>Select **Occurrence** and specify the day **of the week days** and select the specific weekday by clicking on the drop-down list. |
| Adhoc | ▪ Specify the **Information Date** of Batch schedule using the Calendar.<br>▪ Specify the **Run Date** of Batch schedule using the Calendar.<br>▪ Enter the **Run Time** of Batch schedule in hours (hh) and minutes (mm) format.<br>▪ You can also click to add another row or click to delete the row in the Schedule Task tool bar. |

4. Click **Save** to save the new Batch schedule details.

### 6.3.2 Updating Existing Batch Schedule

You can modify the required details and later schedule the previously defined Batch for processing. To update existing Batch schedule in the *Batch Scheduler* window:

1. Select the checkbox adjacent to the Batch ID whose details are to be updated. The various Batch schedule options are displayed.
2. In the *Batch Scheduler* section, select **Existing Schedule** as the Schedule type. The window is refreshed and displays the *Existing Schedule* options.
3. In the Scheduled Task Name, select the task from the drop-down list.
4. Click button in the Existing Schedule tool bar. The details of the scheduled Batch are displayed.

5. In the Schedule Task section, update the required details. You can modify the Start and End dates, Run Time, Lag days, and other details depending on the Schedule Type selected. For more information, refer Create Batch Schedule.
6. Click **Save** to save the modified details of an existing Batch schedule.

   You can also do the following in the Existing Schedule section of the *Batch Scheduler* window:

   - Click button to view details of the selected Batch schedule.
   - Click button to delete the selected Batch schedule.
   - Click button to view the specified Log details in the grid.
   - Click button to view all the log details for the selected Batch in the grid.
   - Click button to reset the Batch scheduler details.

## 6.4 Batch Monitor

Batch Monitor in the Infrastructure system facilitates you to view the status of executed Batch definitions along with the tasks details. You can track the issues if any, on regular intervals and ensure smoother Batch execution. An event log provides you the real time status of the executed Batches.

You (System Administrator) need to have Data Centre Manager function role mapped to access the Operations framework within the Infrastructure system. You can access Batch Monitor window by expanding **Operations** within the tree structure of LHS menu and selecting **Batch Monitor**. The *Batch Monitor* window displays a list of Batches with the other details such as Batch ID and Batch Description.

You can also make use of Search option to search for a specific Batch based on Date range, Module, Status, and Batch Description. The Batches listed in the Batch Details section can be sorted based on the current state as Successful, Failed, Held, or New. The pagination option helps you to view the list of existing Batches within the system. For more information, refer Pagination section.

### 6.4.1 Crash Handling of Backend Servers

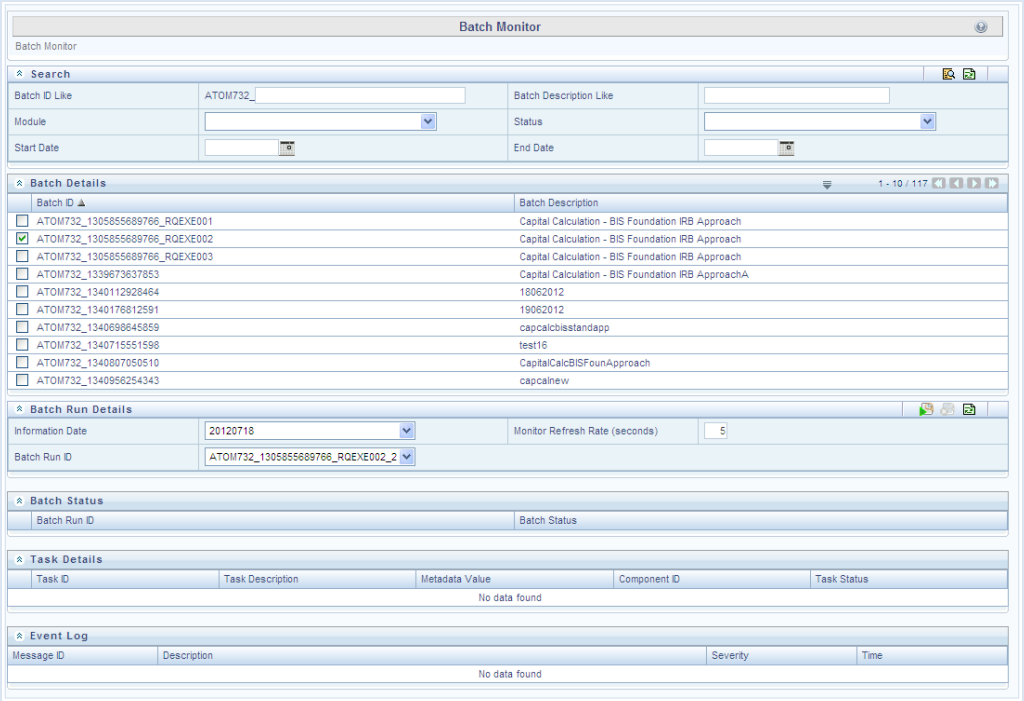
There are 3 different servers to execute a specific executable such as ICC, Router and Activation Manager (AM). Request from ICC goes to Router and get forwarded to Activation Manager (AM). Then AM executes the task and sends result back to Router which further gets forwarded to ICC.

If any of the server crashes while executing the batch and when recovery happens, the status is sent back to ICC server.

- **Router goes down**: When router goes down, the Task Status will become indeterminate and the Batch Status will become **Failed**.
- **AM goes down:** If AM goes down while executing a task, as soon as AM comes up, status of all tasks in the Batch will change to Indeterminate and the Batch Status will become **Failed**.
- **ICC goes down**: When ICC goes down, the status of the task will become interrupted and the Batch Status will become **Failed**.
    - ICC will mark all the task status as interrupted even though some of the tasks might have executed successfully.
    - You have to manually validate the data before you re-trigger the batch again.

### 6.4.2 Monitoring Batch

The Batch Details section in the *Batch Monitor* window lists all the Batches which are schedule or executed within the Infrastructure system.




You can view and monitor the required Batch definitions and the corresponding task details. You can also export the values in Microsoft Excel format for reference.

To monitor a Batch in the *Batch Monitor* window:

1. Select the checkbox adjacent to the Batch ID whose details are to be monitored.

   You can also search for a specific Batch by using the Search option and filter the search results by selecting the required Status as Successful, Failed, Held, or Not Started in the drop-down list.

2. Enter the Batch Run Details as tabulated.

| Field | Description |
|---|---|
| Information Date | Select the information date from the drop-down list which consists of recently executed Batch Information dates. |
| Monitor Refresh Rate | Specify the refresh rate at which the latest Batch status details have to be fetched in seconds. You can enter a value between 5 to 999 seconds. |

| Field | Description |
|---|---|
| Batch Run ID | Select the Batch Run ID from the drop-down list which consists of Batch ID's form which the Batch has been executed. |

3. Click button in the Batch Run Details tool bar.

   The state of the selected Batch is monitored and status is displayed in the following order:

   - The **Batch Status** section displays the Batch Run ID with the Batch Status as Successful, Failed, Held, or Not Started.
     - Successful- Batch execution is successful.
     - Failed- Batch execution failed.
     - Held- Batch execution is put on hold.
     - Not Started- Batch execution has not started.
   - The **Task Details** section displays the executed task details such as Task ID, Component ID, and Task Status. You can select the checkbox adjacent to the Task ID to view the task component execution details in Event Log section.

   **NOTE:** If the component used in the task is Data Transformation, the status will be **Successful** or **Failed** based on the invocation of function/procedure is successful or failure. The errors produced by PL/SQL will not have impact on task status unless it throws an oracle exception.

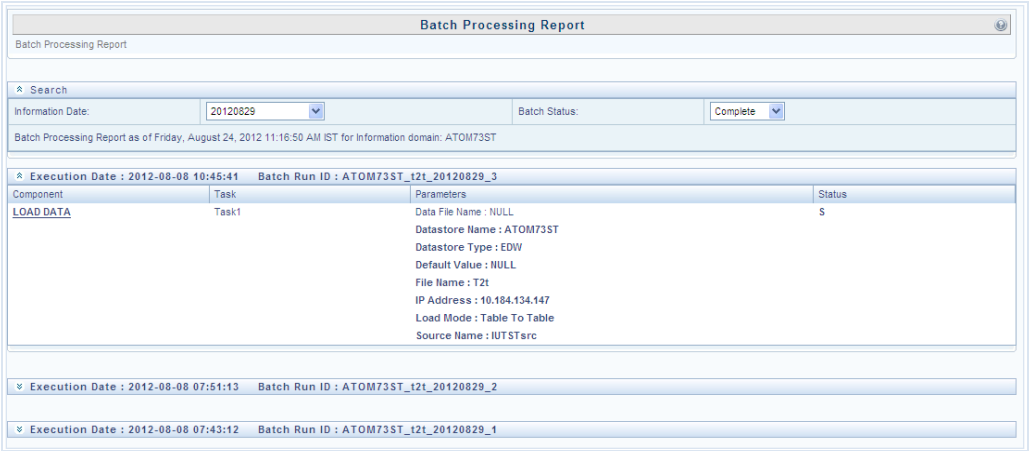
   - The **Event Log** section displays the list of errors and events of the Batch being executed. The events are displayed in the ascending order with the latest event being displayed at the top. The Event log consists of:
     - Message ID, which is auto generated.
     - Description, which has the error details.
     - Severity, which can be Fatal, Inform, or Successful.
     - Time, which indicates the time of the event.

4. In the Batch Run Details tool bar, you can do the following:
   - Click button to **Stop** the Batch monitoring process.
   - Click button to reset Batch Run Details.

5. In the Event Log tool bar, you can click button to export the event log details to Microsoft Excel file for reference.

## 6.5 Processing Report

Batch Processing Report in the Infrastructure system facilitates you to view the execution status of each task component defined in a Batch. You can access Batch Processing Report window by expanding **Operations** within the tree structure of LHS menu and selecting **Processing Report**. The *Batch Processing Report* window displays the Batch execution details such as Component, Task, Parameters, and Status. By default, the details of the Latest Batch Run are displayed.




To view the status of the required Batch, in the *Batch Processing Report* window:

1. Select the **Information Date** from the drop-down list. The list consists of executed Batch Information dates in the descending order with the latest Batch Run details being displayed at the top.
2. Select the required **Batch Status** from the drop-down list. The available batch statuses are:
   - ALL
   - Not Started
   - Ongoing
   - Complete
   - Failed
   - Cancelled

   The window is refreshed and displays the status of each executed component of the selected Batch with the Task ID, defined Parameters, and the Status.

   Refer to the following table to know the available Status Codes of the task and their description.

| Status Code | Description |
|---|---|
| N | Not Run - Task has not been executed. |
| F | Failed- Task execution failed due to some error. |
| S | Success- Task has been successfully executed. |
| O | Ongoing - Task is being executed. |
| C | Completed – Task execution completed. |
| R | Restart - Task restarted. |
| H | Held- Task is on Hold. |
| K | Excluded - Task has been excluded. |
| I | Interrupted - Task has been interrupted since ICC server was down. |
| Q | Task Cancelled - Task has been manually cancelled during execution. |
| D | Indeterminate – When Router or AM server goes down and is up again during task execution, the task status becomes Indeterminate. |

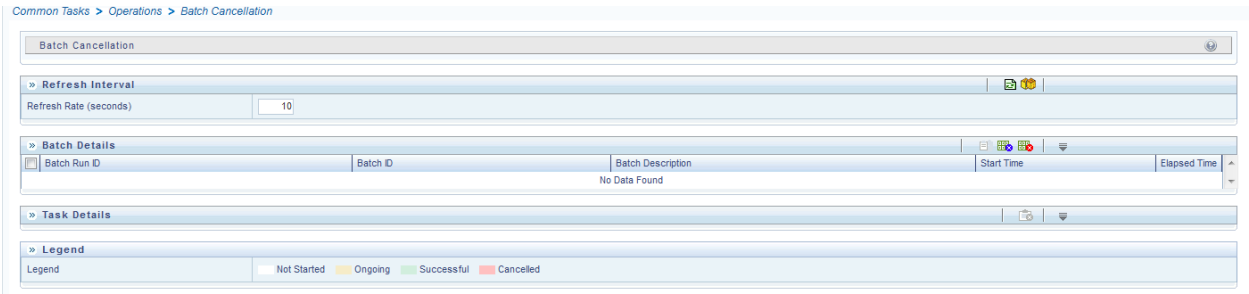
## 6.6 Batch Cancellation

Batch Cancellation in the Infrastructure system facilitates you to cancel or abort a Batch, or a specific Task, which is either scheduled or is in the process of execution.

In the Batch Cancellation,

- When a Batch is **aborted**, the Task which is in the process of execution will be interrupted and a scheduled task is cancelled from execution.
- When a Batch is **cancelled**, the Task which is in the process of execution will be executed completely and a scheduled task is cancelled from execution.
- When a Task is **cancelled**, all the dependent Tasks are also cancelled automatically.

You (System Administrator) need to have Data Centre Manager function role mapped to access the Operations framework within the Infrastructure system. You can access Batch Cancellation window by expanding **Operations** within the tree structure of LHS menu and selecting **Batch Cancellation**. The *Batch Cancellation* window displays a list of scheduled and current processing Batches with the other details such as Batch Run ID, Batch ID, Batch Description, Start Time, and Elapsed Time.




In the *Batch Cancellation* window, you can do the following before cancelling a Batch/Task:

- In the Refresh Interval section, you can define the required **Refresh Rate** in seconds to fetch the current status of Batches being executed.

  Click button to refresh the window and fetch the current status of Batches being executed.

  Click button to select the required Refresh Rate and click button.

- In the Legend section, you can refer to know the specific defined colors which are used to indicate a particular state of a Task during Batch execution.

  Indicates - Not Started

  Indicates - On Going

  Indicates - Successful

  Indicates - Cancelled

## 6.6.1 Cancelling Batch

You can **Cancel** a Batch or a specific Task within the Batch, when you want to postpone or reschedule the Batch for later execution. To cancel a Batch in the *Batch Cancellation* window:

1. Select the checkbox adjacent to the Batch Run ID which has to be cancelled.
2. Click button in the Batch Details tool bar. The selected Batch is **Cancelled** from processing and the results are displayed in a confirmation dialog. Click **OK**.

   The Tasks associated with the cancelled Batch are also cancelled excluding the ongoing Tasks. The cancelled Batch can be viewed in Restart and Rerun Batch list, within the *Batch Execution* window.

### 6.6.1.1 Cancel Task Details

To **Cancel** the specific Task(s) in a Batch from processing:

1. Select the checkbox adjacent to the Batch Run ID.

2. Click button in the Batch Details tool bar to Fetch Task Details. The defined Task(s) are displayed in the Task Details section.

3. Click button in the Task Details tool bar.

**NOTE:** The **Cancel Task** button is disabled if you are not mapped to *TASKCANCEL* function role.

The selected Task is **Cancelled** from processing and the results are displayed in a confirmation dialog. Click **OK**.

### 6.6.2 Aborting Batch

You can **Abort** a Batch when you want to terminate the Batch execution before completion. To abort a Batch in the *Batch Cancellation* window:

1. Select the checkbox adjacent to the Batch Run ID which has to be aborted.

2. Click button in the Batch Details tool bar. The selected Batch is **Aborted** from processing and the results are displayed in a confirmation dialog. Click **OK**.

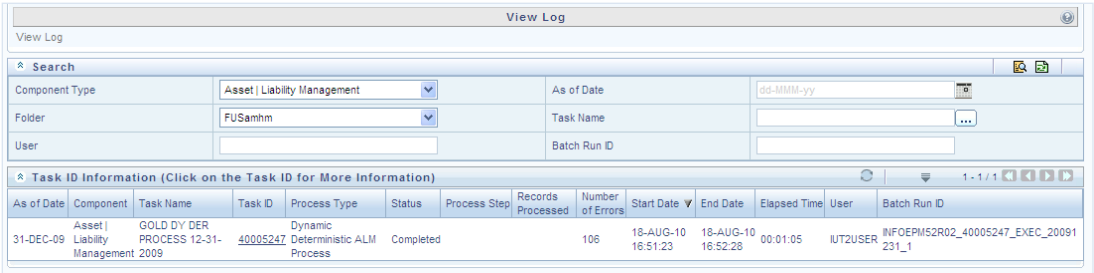
**NOTE:** The **Abort Batch** button is disabled if you are not mapped to *OPRABORT* function role.

The Tasks associated with the cancelled Batch are also cancelled including the ongoing Tasks. The cancelled Batch can be viewed in Restart and Rerun Batch list within the *Batch Execution* window.

## 6.7 View Log

View Log in the Infrastructure system facilitates you to view the execution status of each task component defined in a Batch. You can access View Log by expanding Operations section within the tree structure of LHS menu.

**NOTE:** Currently only limited number of Component Types are supported for viewing log. The supported component types can be viewed from the **Component Type** drop-down list in the *Search* grid.



The *View Log* window displays Task ID's Information such as Component, Task Name, Task ID, Process Type, Status, Start Date, End Date, Elapsed Time, User, Batch Run ID, As of Date, Process Step, Records Processed, and Number of Errors for the respective Component Type selected.

### 6.7.1 Search and View Task ID Log

To search for a Task ID and view the log information:

1. Specify the details in any or all of the following parameters:

| Field | Description |
|---|---|
| Component Type | Select the Component Type from the drop-down list. The available component types are listed and based on the component type selected, the Task ID details are displayed.<br>For example, if the component type is selected as Object Validation, then the Task ID Information section displays the Date, Component, Batch Run ID, and Task ID. |
| As Of Date | Select the date using the Calendar. This field is not applicable for some component types. |
| Folder | Select the folder from the drop-down list. This field is not applicable for some component types. |
| Task Name | Click button, the *Task Name* window is displayed.<br>▪ Search for the required Task by entering the keyword in the search field and click .<br>▪ Select the required task from Available Task list and click .<br>You can also click button to deselect a Task from the selected list.<br>▪ Click **OK**. |
| User | Enter the user details. |
| Batch Run ID | Enter the Batch Run ID which has a unique ID (timestamp) and a short description for identification. |

2. Click button. The Task ID Information section displays the search results based on the specified parameters.

   You can click button to **Reset** the search fields.

3. In the Task ID Information section, click the Task ID of the required component. The *View Log Details* window is displayed with additional information.

**NOTE:** There are differences in time stamp between View Log and FSI_MESSAGE_LOG.

## 6.8 References

This section of the document consists of information related to intermediate actions that needs to be performed while completing a task. The procedures are common to all the sections and are referenced where ever required. You can refer to the following sections based on your need.

### 6.8.1 Task Component Parameters

Components are individual functional units that are put together to form a process. Task Component Parameters reflect the parameters that are being applied to the selected task. Each component triggers its own set of processes in the back-end to achieve the final output.

The parameters required for each of the component ID's are as tabulated.

**NOTE:** The FIRERUN Component in ICC is not supported.

#### 6.8.1.1 Component: AGGREGATE DATA

| Property | Description |
|---|---|
| Cube Parameter | Refers to the cube identifier as defined through the Business Metadata (Cube) menu option. Select the cube code from the drop-down list. |
| Operation | Select the operation to be performed from the drop-down list. The available options are **ALL**, **GENDATAFILES**, and **GENPRNFILES**. |
| Optional parameters | Refers to the additional parameter that has to be processed during runtime. You can specify the runsk value that should be processed as a runtime parameter during execution. By default, the value is set to "null". |

#### 6.8.1.2 Component: Allocation Engine

| Property | Description |
|---|---|
| Folder | Refers to the location where the Process definition resides. Select the desired Folder from the drop-down list. |
| Process Type | Refers to the type of PFT Process defined. For example Allocation or Allocation Model. Select the desired Process Type from the drop-down list. |
| Process Name | Enter the name of the Process as defined by the user. Key in the process name and the matching results are displayed. |

| Property | Description |
|---|---|
| Optional parameters | Refers to the set of parameters specific to the model that has to be processed. This set of parameters is automatically generated by the system at the time of definition.<br>You must NOT define a Model using the Define mode under Batch Scheduling. You must define all models using the Modeling framework menu. |

#### 6.8.1.3 Component: CREATE CUBE

| Field | Description |
|---|---|
| Cube Parameter | Refers to the cube identifier as defined through the Business Metadata (Cube) menu option. Select the cube code from the drop-down list. |
| Operation | Refers to the operation to be performed. Select the required Operation from the drop-down list. The options are:<br>▪ **ALL** – This option will execute BUILDDB and DLRU.<br>▪ **BUILDDB** – This option should be used to build the outline in Essbase Cube. The outline is built based on the parentage file(s) contents.<br>▪ **TUNEDB** – This option should be used to analyze data and optimize cube settings. For example, if you are trying to achieve the best block size, where 64K bytes is the ideal size.<br>▪ **PROCESSDB** – This option will execute BUILDDB and DLRU, and is same as All option. Selecting this option will internally assign as ALL.<br>▪ **DLRU** – This option should be used to Load Data in the Essbase Cube and trigger a Rollup.<br>▪ **ROLLUP** – ROLLUP refers to populating data in parent nodes based on calculations (E.g. Addition). This option should be used to trigger just the ROLLUP option where in the CALC scripts are executed. The same is applicable for DLRU option also.<br>▪ **VALIDATE** – This option will validate the outline.<br>▪ **DELDB** – This option will delete the Essbase cube.<br>▪ **OPTSTORE** – This option will create the Optimized outline for the cube. |

#### 6.8.1.4 Component: EXTRACT DATA

| Field | Description |
|---|---|
| Source Name | Select the source from which the extract you want to execute is derived, from the drop-down list.<br>Sources defined from the *Source Designer* window of Data Management Tools are displayed in the drop-down list. |
| Extract Name | Select the required extract name from the drop-down list. The list displays the Data Mapping definitions (T2F and H2F) defined on the selected source, from the *Data Mapping* window. |
| Default Value | |

#### 6.8.1.5 Component: LOAD DATA

| Field | Description |
|---|---|
| Load Mode | Select the load mode from the drop-down list. The options are **Table to Table** and **File to Table**.<br>**Table to Table** should be selected for Data Mapping definitions, that is, T2T, T2H, H2T, H2H and L2H definitions.<br>**File to Table** should be selected for Data File Mapping definitions, that is, F2T and F2H definitions. |
| Source Name | Select the required source on which the Data Mapping or Data File Mapping definition you want to execute is defined, from the drop-down list.<br>Based on the selection of Load Mode, the list displays the corresponding sources. |
| File Name | Select the Data Mapping or Data File Mapping definition you want to execute, from the drop-down list. Based on the selected **Load Mode** and **Source Name,** the list displays the corresponding definitions. |
| Data File Name | The data filename refers to the .dat file that exists in the database. Specifying Data File Name is mandatory for **Load Mode** selected as **File to Table** and optional for **Load Mode** selected as **File to Table**. If the file name or the .dat file name is incorrect, the task fails during execution.<br>In case of L2H, you can specify the WebLog name. |
| Default Value | Used to pass values to the parameters defined in Load Data Definition.<br>You can pass multiple runtime parameters while defining a batch by specifying the values separated by ‘comma’. |

| Field | Description |
|---|---|
| | For example, $MIS_DATE=value,$RUNSKEY=value,[DLCY]=value and so on.<br>Note the following:<br>▪ The parameters can either be specified with **$** or within **[ ]**. For example, $RUNSKEY=value or [RUNSKEY]=value. When the definition is saved from the UI, no value is assigned to these parameters and these are just passed for syntax correctness only. Actual values will be passed to these parameters while defining an ICC batch or a RUN.<br>▪ The list of valid Default Parameters are:<br>▪ RUNID- Data type is String and can be mapped to VARCHAR2<br>▪ PHID- Data type is String and can be mapped to VARCHAR2<br>▪ EXEID- Data type is String and can be mapped to VARCHAR2<br>▪ RUNSK- Data type is Integer and can be mapped to VARCHAR2 or INTEGER.<br>▪ SYSDATE- Data type is Date and can be mapped to DATE, VARCHAR2.<br>▪ TASKID- Data type is String and can be mapped to VARCHAR2<br>▪ MISDATE- Data type is Date and can be mapped to DATE, VARCHAR2.<br>**Note**: RUNID, PHID, EXEID, RUNSK, MISDATE are implicitly passed through RRF. Rest must be explicitly passed.<br>▪ EXEC_ENV_SOURCE- This parameter is used to replace the source of the T2T, T2H, H2T or H2H definition during run time, provided the structure of the source in the mapping definition is same as that of the replacing source. Thus you can convert a T2T definition into H2T or T2H into H2H or H2H into T2H. But the resultant definition should not be T2T, which is not supported.<br>For example, [EXEC_ENV_SOURCE]=newSourceName<br>▪ EXEC_ENV_TARGET- This parameter is used to replace the target of the T2T, T2H, H2T or H2H definition during run time, provided the structure of the target in the mapping definition is same as that of the replacing target. Thus you can convert a T2T definition into T2H or H2T into H2H or H2H into H2T. But the resultant definition should not be T2T, which is not supported.<br>For example, [EXEC_ENV_TARGET]=newTargetName<br>Note that you can use both EXEC_ENV_SOURCE and EXEC_ENV_TARGET together as well. Only limitation is the resultant definition should not be T2T.<br>Apart from these, L2H/H2H/T2H/H2T/F2H data mappings also support following additional default parameters. Values for these are implicitly passed from |

| Field | Description |
|---|---|
| | ICC/RRF.<br>▪ $MISDT_YYYY-MM-DD - Data type is String and can be mapped to VARCHAR2. Value will be the MISDATE in ‘yyyy-MM-dd‘ format.<br>▪ $MISYEAR_YYYY - Data type is String and can be mapped to VARCHAR2. Value will be the year value in ‘yyyy‘ format from MISDATE.<br>▪ $MISMONTH_MM - Data type is String and can be mapped to VARCHAR2. Value will be the month value in ‘MM‘ format from MISDATE.<br>▪ $MISDAY_DD - Data type is String and can be mapped to VARCHAR2. Value will be the date value in ‘dd‘ format from MISDATE.<br>▪ $SYSDT_YYYY-MM-DD- Data type is String and can be mapped to VARCHAR2. Value will be the System date in ‘yyyy-MM-dd‘ format.<br>▪ $SYSHOUR_HH24 - Data type is String and can be mapped to VARCHAR2. Value will be the hour value in ‘HH24‘ format from System date.<br>**Note**: The aforementioned parameters are not supported for T2T and F2T.<br>▪ Only those variable which start with $ or [, will be replaced at run time and the value of this variable will be equal to anything starting after “=” and ending before comma “,”.<br>For example, if $DCCY/[DCCY] =’USD’, $RUNSKEY=1, then the replaced value in query for $DCCY will be ‘USD’ and for $RUNSKEY will be 1.<br>▪ If you are using “RUNSKEY” parameter in ICC Batch, then ensure that you specify the value of it instead of specifying $RUNSKEY / [RUNSKEY]. For example, FCT_STANDARD_ACCT_HEAD.N_RUN_SKEY=’$RUNSKEY’. Since the value of RUNSKEY will not be replaced during runtime.<br>▪ If there are quotes specified in parameter name, then ensure not to use quotes while defining the expression or vice versa to avoid SQL errors. For example, if the parameter name is $DCCY=’USD’ and the expression is defined using ‘$DCCY’ instead of $DCCY, then the final value will be ‘ ‘USD’ ’.<br>▪ When you execute a RUN, the run is always tagged with a RUNSK value (a unique value for each run fired directly from the RRF). You might have a DERIVED COLUMN in your T2T with expression like $RUNSK. If you execute this T2T through a RUN, a unique RUNSK value is passed implicitly to the T2T engine, which then assigns that value wherever $RUNSK is found. But if you try to execute the T2T through ICC, then you need to explicitly pass a $RUNSK as a parameter so that the T2T engine can use it. |

| Field | Description |
|---|---|
| | Two additional parameters are now supported for L2H mappings:<br>▪ [INCREMENTALLOAD] – Specify the value as TRUE/FALSE. If set to TRUE, historically loaded data files will not be loaded again (load history is checked against the definition name, source name, target infodom, target table name and the file name combination). If set to FALSE, the execution is similar to a snapshot load, and everything from the source folder/file will be loaded irrespective of load history.<br>▪ [FOLDERNAME] – Value provided will be used to pick up the data folder to be loaded.<br>  ▪ For HDFS based Weblog source: Value will be suffixed to HDFS File Path specified during the source creation.<br>  ▪ For Local File System based Weblog source: By default the system will look for execution date folder (MISDATE: yyyymmdd) under STAGE/<source name>. If the user has specified the FOLDERNAME for this source, system will ignore the MISDATE folder and look for the directory provided as [FOLDERNAME]. |

#### 6.8.1.6 Component: MODEL

| Field | Description |
|---|---|
| Rule Name | Refers to the model that has to be processed. This is a system generated code that is assigned at the time of model definition. |
| Operation | The All definition for the Operation field conveys the process of extracting the data from the flat files and applying the run regression on the data extracted.<br>For Batches that are being built for the first time the data will be extracted from the flat files and the run regression will be applied on it. |
| Optional Parameters | Refers to the set of parameters specific to the model that has to be processed. This set of parameters is automatically generated by the system at the time of definition.<br>You must NOT define a Model using the Define mode under Batch Scheduling. You must define all models using the Modeling framework menu. |

#### 6.8.1.7 Component: ORACLECUBEBUILD

| Field | Description |
|---|---|
| Cube Parameter | Refers to the cube identifier as defined through the Business Metadata (Cube) menu option. Click the field provided in the Value column to select the cube code. |
| Optional parameters | Refers to the additional parameter that has to be processed during runtime. You can specify the runsk value that should be processed as a runtime parameter during execution. By default, the value is set to “null”. |

#### 6.8.1.8 Component: PROCESS_EXECUTION

This component will combine all the rules to create single or multiple merge queries. Only rules defined on the same dataset can be merged. For creation of queries the current order of the rules inside the process or sub-process will be taken into consideration. Following validations are performed to determine single or multiple DMLs for merging Rules that is, validation on subsequent rules.

- For classification-classification or classification-computation rule combination, the target column of the prior classification rule must not be used in any of the subsequent rules as source hierarchies in the executable process or sub-process. Also the same target hierarchy must not be used as a target in the subsequent rule.
- For computation-computation rule combination, the target measures of the prior computation rule must not be used in any of the subsequent computation rules in the executable process or sub-process.

All the merge queries created after satisfying all the conditions will be executed in a single transaction.

**Note** the following:

- RRF framework cannot validate the semantic correctness of the rules grouped for merge. It is left to the application developer/user to make a conscious choice.
- If the merge results in an ill-formed or runaway SQL, the framework will not be able to detect it at design time. This is again left to application developer/user to design the grouping that is syntactically valid.

| Field | Description |
|---|---|
| Process Code | Display the codes of the RRF Processes defined under the selected Infodom. Select the required Process from the drop-down list. |

| Field | Description |
|---|---|
| Sub Process Code | Display the codes of the Sub Processes available under the selected Process. Select the required Sub Process from the drop-down list. |
| Build Flag | Select the required option from the drop-down list as "**Yes**" or "**No**".<br>Build Flag refers to the pre-compiled rules, which are executed with the query stored in database. While defining a Rule, you can make use of Build Flag to fasten the Rule execution process by making use of existing technical metadata details wherein the rule query is not rebuilt again during Rule execution.<br>Built Flag status set to "**No**" indicates that the query statement is formed dynamically retrieving the technical metadata details. If the Build Flag status is set to "**Yes**" then the relevant metadata details required to form the rule query is stored in database on "Save" of a Rule definition. When this rule is executed, database is accessed to form the rule query based on stored metadata details, thus ensuring performance enhancement during Rule execution. For more information, refer Significance of Pre-Built Flag. |
| Optional Parameters | Refers to the set of parameters which would behave as filter criteria for the merge query. |

#### 6.8.1.9 Component: RULE_EXECUTION

| Field | Description |
|---|---|
| Rule Code | Display the codes of the RRF Rules defined under the selected Infodom. |
| Build Flag | Select the required option from the drop-down list as "**Yes**" or "**No**".<br>Build Flag refers to the pre-compiled rules, which are executed with the query stored in database. While defining a Rule, you can make use of Build Flag to fasten the Rule execution process by making use of existing technical metadata details wherein the rule query is not rebuilt again during Rule execution.<br>Built Flag status set to "**No**" indicates that the query statement is formed dynamically retrieving the technical metadata details. If the Build Flag status is set to "**Yes**" then the relevant metadata details required to form the rule query is stored in database on "Save" of a Rule definition. When this rule is executed, database is accessed to form the rule query based on stored metadata details, thus ensuring performance enhancement during Rule execution. For more information, refer Significance of Pre-Built Flag. |
| Optional Parameters | Refers to the set of parameters which would behave as filter criteria for the merge query. |

#### 6.8.1.10 Component: RUN DQ RULE

| Property | Description |
|---|---|
| DQ Group Name | Refers to the Data Quality Groups consisting of associated Data Quality Rule definition(s). Select the required DQ Group from the drop-down list. |
| Rejection Threshold | Specify the percentage of Rejection Threshold (%) limit in numeric value. This refers to the maximum percentage of records that can be rejected in a job. If the percentage of failed records exceeds the Rejection Threshold, the job will fail. If the field is left blank, the default the value is set to 100%. |
| Additional Parameters | Specify the Additional Parameters as filtering criteria for execution in the pattern Key#Data type#Value; Key#Data type#Value;…etc.<br>Here the Data type of the value should be "**V**" for Varchar/Char, or "**D**" for Date with "MM/DD/YYYY" format, or "**N**" for numeric data. For example, if you want to filter some specific region codes, you can specify the Additional Parameters value as $REGION_CODE#V#US;$CREATION_DATE#D#07/06/1983;$ACCOUNT _BAL#N#10000.50;<br>**Note**: In case the Additional Parameters are not specified, the default value is fetched from the corresponding table in configuration schema for execution. |
| Parameters | Comma separated parameters where first value is considered as the threshold percentage, followed by additional parameters which are a combination of three tokens. Example, "90","PARAM1","D","VALUE1","PARAM2","V","VALUE2".<br>**Note**: Parameter 'Fail if threshold is breached" is defaulted to "Yes" for RRF executions. |
| Optional Parameter | This is not applicable. |

### 6.8.1.11 Component: RUN EXECUTABLE

| Field | Description |
|---|---|
| Executable | Refers to the executable path on the DB Server. The Executable parameter contains the executable name as well as the parameters to the executable. These executable parameters have to be specified as they are specified at a command line. In other words, the Executable parameter is the exact command line required to execute the executable file.<br>The path to the executable has been entered in quotes. Quotes have to be used if the exe name has a space included in it. In other words, the details entered here should look exactly as you would enter it in the command window while calling your executable. The parameter value is case-sensitive. So, ensure that you take care of the spaces, quotes, and case. Also, commas are not allowed while defining the parameter value for executable. |
| Wait | When the file is being executed you have the choice to either wait till the execution is completed or proceed with the next task.<br>Select **Y** (Yes) or **N** (No) from the drop-down list.<br>▪ **Y-** Select this if you want to wait for the execution to be completed<br>▪ **N**- Select this if you wish to proceed.<br>If the task is using FICGEN/RUN EXECUTABLE component and there is no precedence set for this task, then the **WAIT** should always be set to **'N'**. |
| Batch Parameter | **Y**- Select **Yes** if you want to pass the Batch parameters to the shell script file being executed.<br>▪ If **Wait** is selected as **Y** and **Batch Parameter** is selected as **Y**, following parameters are passed to the executable:<br>`NIL <BatchExeRunID> <ComponentId> <Task> <Infodate> <Infodom> <DatstoreType> <IPAddress>`<br>▪ If **Wait** is selected as **N** and **Batch Parameter** is selected as **Y**, following parameters are passed to the executable:<br>`<BatchExeRunID> <ComponentId> <Task> <Infodate> <Infodom> <DatstoreType> <IPAddress>`<br>**N**- Select **No** if the Batch parameters should not be passed to the shell script. |

#### 6.8.1.12 Component: SQLRULE

| Field | Description |
|---|---|
| Folder | Refers to the location where the SQL Rule definition resides. Click the drop-down list box in the Value column to select the desired Folder. |
| SQL Rule Name | Refers to the defined SQL rule. Click the drop-down list in the Value column to select the SQL Rule. |

#### 6.8.1.13 Component: TRANSFORM DATA

| Field | Description |
|---|---|
| Rule Name | Refers to the Data transformation name that was defined in the *Post Load Changes* window of Data Management Tools framework. Select the rule name from the drop-down list. |
| Parameter List | Is the list of parameters defined in Data Transformation check in which the parameters must be in the same order as in the definition and must be separated by a comma (“,”). Irrespective of the data type of the parameter defined in the procedure. The parameter specified through the front-end does not require to be specified within quotes (' ').<br>**Note**: Commas are used as delimiters for parameter values internally by the ICC Batch component. Ensure that commas are not used in any of the parameter values, that is, “a, b, c” should not be a parameter value in the list of parameter values being passed to the TRANSFORM DATA task. For example, if the parameter values to this task are required to be passed as (val1, val2, (a, b, c), val4), the correct way would be to pass these values as (val1, val2, (a*b*c), val4). You can use any other character as a separator. |

#### 6.8.1.14 Component: VARIABLE SHOCK

| Field | Description |
|---|---|
| Variable Shock Code | Refers to the variable shock that has to be processed. This is a system generated code that is assigned at the time of variable shock definition. |
| Operation | Refers to the operation to be performed. Click the drop-down list in the Value field to select the Operation. The available options are **ALL**, **GENDATAFILES**, and **GENPRNFILES**. |

| Field | Description |
|---|---|
| Optional Parameters | Refers to Process ID and the User ID. Click in the text box adjacent to the Optional Parameters field and enter the Process ID and User ID. |

#### 6.8.1.15 Component: Workflow Execution

| Field | Description |
|---|---|
| Object ID | Enter an object ID of your choice. This ID will appear as Entity ID in the Process Monitor window. |
| Workflow | Select the workflow you want to execute from the drop-down list. It displays all the workflows defined in the Process Modeller window. |
| Optional Parameters | Enter the value you want to pass to the Dynamic Parameters of the Run Task during the execution of the workflow. |

### 6.8.2 Batch Search

The Search option in the user interface helps you to quickly retrieve the required Batch information depending on the framework on which the Batches have been defined. You can search for a Batch based on the following parameters:

- Module Name, by selecting the required module.
- Last Modified Date, by specifying the modified date range using Calendar.
- Batch ID, by specifying the nearest matching keyword to the Batch ID.

You can click to start a search and to reset the search fields.

# 7 Metadata Browser

This chapter helps you to navigate through Metadata Browser and guides you in tracing the source of the metadata. The Metadata Browser function allows you to view and analyze all aspects of the metadata used in the OFSAAI. It provides extensive browsing capabilities of metadata, helps in tracking the impact of changes to metadata, and trace through to the source of originating data.

## 7.1 Metadata Browser (Object and Application View)

Metadata Browser (Object and Application View) provides common repository of metadata objects created in OFSAAI and applications hosted in OFSAAI. Using this view, you can identify the usage of base objects in higher level objects and the mapping of Objects to Application. It enables traceability and impact analysis. It also allows you to view the data flow and the work flow of the application and understand the usage of objects within the application.

The new visualization of Metadata Browser (MDB) supports Application view and Object view. In Application view, you can browse through the metadata created using the applications hosted in OFSAAI. In object view, you can view the metadata created in OFSAAI.

To access the Metadata Browser (Object and Application View), your role Business Analyst (SYSBAU) must be mapped to the **SCR_MDB** function. For more information on mapping functions to a role, see Function - Role Map.

**NOTE:** To view the Meta data in the new metadata browser, we have to publish the metadata first. Publishing the metadata should be done through Command Line Utility to Publish Metadata.

### 7.1.1 Object View

The Object view will provide the following details:

- Object basic details
- Object specific details
- Mapping across objects for certain objects like T2T and Rules
- Dependency details of the Child objects
- Usage of the current Object in the higher order objects
- Object usage in the various Applications

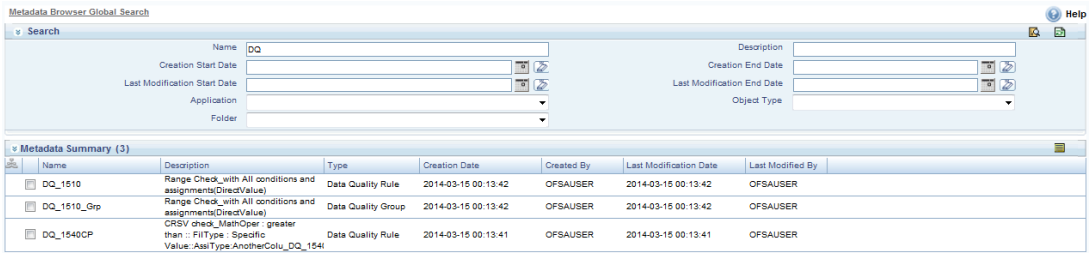
## 7.1.2 Searching Metadata

### 7.1.2.1 Global Search

You can search for metadata based on name, description, creation start and end dates, last modified start and end date, application, object type or folder.

To run global search:

1. Click the **Global Search** link on the menu bar of the *Metadata Browser* window. The *Metadata Browser Global Search* window is displayed.




2. Enter details in the required fields based on which the search results will be displayed.

| Field | Description |
|---|---|
| Name | Enter the name of the object which you want to search. |
| Description | Enter the description of the object which you want to search. |
| Creation Start Date/ Creation End Date | Click and specify the dates if you want to search metadata objects created between those dates. |
| Last Modified Start Date / Last Modified End Date | Click and specify the dates if you want to search metadata objects which are modified between those dates. |
| Application | Select the application from the drop-down list. All objects used in the selected application will be displayed. |
| Object Type | Select the object type from the drop-down list. All objects of the selected Object Type will be displayed. |
| Folder | Select the folder from the drop-down list. All objects used in the selected folder will be displayed. |

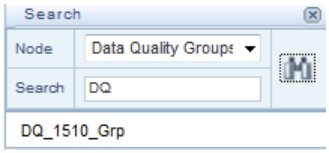
3. Click . The search results are displayed in the *Metadata Summary* grid.
4. Select an object and click to view the metadata details of the selected object. The details are displayed below the *Metadata Summary* grid.

**NOTE:** You can sort the columns in ascending or descending order by right-clicking the column heading and selecting **Sort Ascending** or **Sort Descending**.

#### 7.1.2.2 Simple Search

You can quickly search for an object based on the object type and object name.

1. Click in the *Object* tab. The *Search* pane is displayed.




2. Select the metadata object type from the **Node** drop-down list.
3. Enter the name of the metadata object in the **Search** field.
4. Click to display the search results.
5. Click the metadata object link to view the details.

### 7.1.3 Exporting Metadata Details

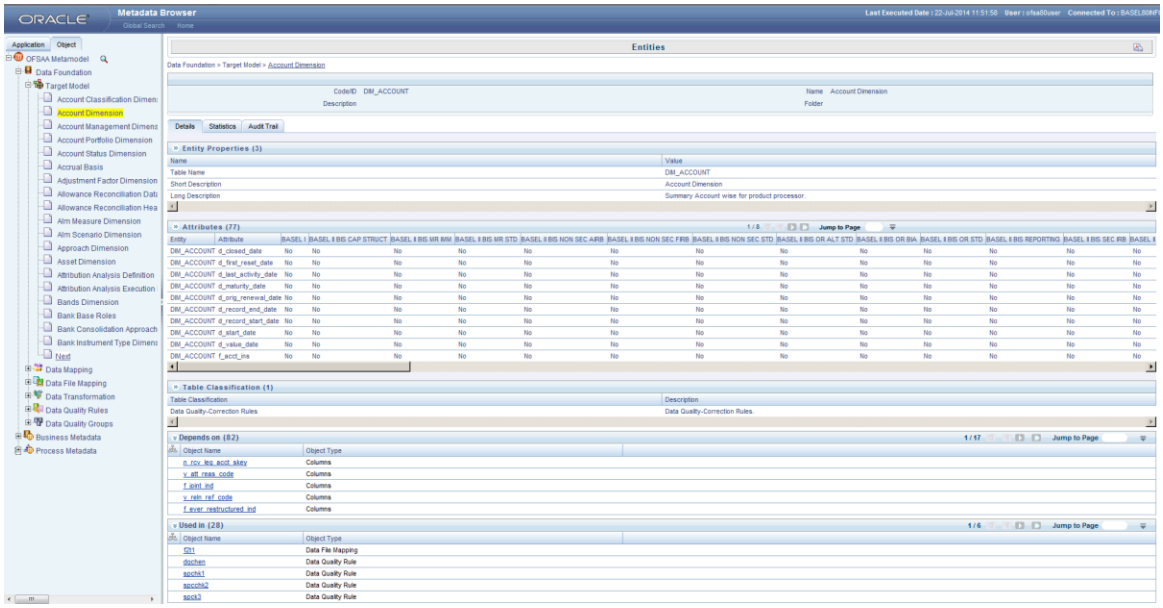
You can export metadata details to a PDF file. To export metadata details of a particular object, select the object from the *Object* tab and click on the top right corner. You will be prompted whether to open or save the file.

Limitation:

The Export to PDF option is not available for Variables, Variable Shocks, Scenarios, and Stress Definitions.

### 7.1.4 Browsing/ Viewing Linked Metadata

To browse and access the underlying metadata in a particular module, click **+** button to drill down to the object whose details you want to view. Each module in the metadata browser is arranged in a hierarchical structure.




When you click any of the metadata objects, it displays the basic object properties as described in the following table:

| Field | Description |
|---|---|
| Code ID | The code used to denote the object.<br>**Note**: This field is not applicable for objects such as Data Mapping, Data File Mapping, and Data Transformation. |
| Name | Name of the object. |
| Description | A brief description of the object. |
| Folder | Name of the folder in which the object is present. |

There are three tabs displayed such as Details, Statistics, and Audit Trail.

Details Tab View

This tab displays the specific properties based on the type of object you selected. It also displays the dependency details (**Depends on**) of any child object, usage of the selected object in parent/ higher objects (**Used in**) and the applications in which the object is used (**Applications**).

Statistics Tab View

This tab displays the statistics of the selected object such as number of mappings, expressions, entities, hierarchies, or measures used in the object.

Audit Trail Tab View

This tab displays the selected object's audit information as described in the following table:

| Field | Description |
|---|---|
| Created By | The name of the user who created the object. |
| Creation Date | The date on which the object is created. |
| Last Modified By | The name of the user who modified the object for the last time. |
| Last Modification Date | The date on which the object is modified for the last time. |
| Authorized By | The name of the user who authorized the object. |
| Authorization Date | The date on which the object is authorized. |

### 7.1.5 Data Foundation Metadata

In Data Foundation, there are various metadata like Target Model, Source, Source Entity, Data Mapping, Data File Mapping, Data Transformation, Data Quality Rules, and Data Quality Groups.

#### 7.1.5.1 Entity Metadata

From the *Metadata Browser Object* tab, expand **Data Foundation**> **Target Model** and click the required object.

The entity specific details are explained in the following table:

| Field | Description |
|---|---|
| Entity Properties | Displays the table name, its short description, and long description. |
| Attributes | Displays the columns present in the entity. |
| Table Classification | Displays the classification of the entity and its description. |
| Depends on | Displays the columns used in the entity/ table.<br>Click the column link to drill down for more details. |
| Used In | Displays the objects and object types in which the entity is used. An entity can be used in a Dataset, Measure, Business Processor, Hierarchy, Data Mapping, Data File Mapping and so on.<br>Click the object link to drill down for more details. |
| Applications | Displays the applications in which the entity is used. |

#### 7.1.5.2 Source Metadata

From the *Metadata Browser Object* tab, expand **Data Foundation**> **Source** and click the required object.

The Source specific details are explained in the following table:

| Field | Description |
|---|---|
| Source Properties | Displays the properties of the source such as Type, JDBC URL, Schema name, RAC status, Date Format and Database name. |
| Depends on | NA |
| Used In | Displays the objects and object types in which the Source is used. A source can be used in a Source Entity, Data Mapping, Data File Mapping, and Data Quality Rule.<br>Click the object link to drill down for more details. |
| Applications | Displays the applications in which the Source is used. |

#### 7.1.5.3 Source Entity Metadata

From the *Metadata Browser Object* tab, expand **Data Foundation**> **Source Entity** and click the required object.

The Source Entity specific details are explained in the following table:

| Field | Description |
|---|---|
| Properties | Displays the properties of the Source Entity such as Short Description and Long Description. |
| Source | Displays the name of the Database Source to which it belongs. |
| Attribute Details | Displays the attribute details of the Source Entity. |
| Depends on | Displays the name of the Database Source to which it belongs. |
| Used in | NA |
| Applications | Displays the applications in which the Source Entity is used. |

#### 7.1.5.4 Data Mapping Metadata

From the *Metadata Browser Object* tab, expand **Data Foundation** and then expand **Data Mapping** for T2T and T2F definitions. Click the required Data Mapping definition.

**NOTE:** If the properties of T2T/ T2F definition have null values, then it will not be displayed in Metadata Browser.

The T2T/ T2F specific details are explained in the following table:

| Field | Description |
|---|---|

| Field | Description |
|---|---|
| Definition Details | Displays the Application Name and the Definition Load Type (T2T or T2F). |
| Properties | Displays various parameters and their value such as Batch size, Direct Batch, Rejection Absolute, Rejection Percentage, Duplicate Row Checks, Remove Duplicate, Disable Primary Key, Edit Reload, Field Delimiter, Load Empty File and so on. |
| Join Conditions and Filters | Displays the ANSI Join, Joins, and Filters that have been used in creating the Data Mapping definition. |
| Mapping Details | Displays the source table, source column, target table, target column and the User Defined Properties (UDPs) in case of T2T definition.<br>▪ You can select the UDPs which need to be displayed in the Mapping Details table.<br>▪ Click and select the checkboxes corresponding to the UDPs you want to choose.<br>▪ Click . Only the selected UDPs will be displayed.<br>▪ You can export the Data Mapping details along with the UDPs to Excel by clicking button. Note that all UDPs will be exported. |
| Depends on | Displays the object and its type that is used in creating the Data Mapping definition. The objects can be Entity, Columns, Data Source, Source Entity, and so on.<br>For Data Mapping definition with associated DQ rules, it displays the DQ Rules also under this grid.<br>Click the object link to drill down for more details. |
| Used In | Displays the object name and object type in which the Data Mapping definition is used. It can be used in Run or Process.<br>For Data Mapping definition with associated DQ rules, it displays the DQ Rules also under this grid.<br>Click the object link to drill down for more details. |
| Applications | Displays the applications in which the Data Mapping definition is used. |

#### 7.1.5.5 Data File Mapping Metadata

From the *Metadata Browser Object* tab, expand **Data Foundation** and then expand **Data File Mapping**. Click the required Data File Mapping definition.

**NOTE:** If the properties of Data File Mapping definition have null values, then it will not be displayed in Metadata Browser.

The Data File Mapping specific details are explained in the following table:

| Field | Description |
|---|---|
| Definition Details | Displays the Application Name and the Definition Load Type (F2T). |
| Properties | Displays various parameters and their value such as Data File, Edit Reload, Basis of Check Sum, Data File RevLocale, Information Date, and so on. |
| Join Conditions and Filters | Displays the ANSI Join, Joins, and Filters that have been used in creating the T2T/ T2F/ F2T definition. |
| Mapping Details | Displays the source table, source column, target table, target column and the User Defined Properties (UDPs).<br>▪ You can select the UDPs which need to be displayed in the Mapping Details table.<br>▪ Click and select the checkboxes corresponding to the UDPs you want to choose.<br>▪ Click . Only the selected UDPs will be displayed.<br>You can export the Data File Mapping details along with the UDPs to Excel by clicking button. Note that all UDPs will be exported. |
| Depends on | Displays the entity/ table and the columns that are used in creating the Data File Mapping definition.<br>Click the entity or column link to drill down for more details. |
| Used In | Displays the object name and object type in which the Data File Mapping definition is used. It can be used in a Run or Process.<br>Click the object link to drill down for more details. |
| Applications | Displays the applications in which the Data File Mapping definition is used. |

### 7.1.5.6 Data Transformation Metadata

From the *Metadata Browser Object* tab, expand **Data Foundation**> **Data Transformation** and click the required data transformation definition.

The Data Transformation specific details are explained in the following table:

| Field | Description |
|---|---|
| Transformation Details | Displays the transformation type and its value. The transformation type can be SQL Procedure or External Library.<br>If the image of the flowchart is available, it is displayed. |

| Field | Description |
|---|---|
| Depends on | Displays the Entity that is used in creating the Data Transformation.<br>Click the object link to drill down for more details. |
| Used In | Displays the object and its type in which the data transformation is used.<br>A data transformation can be used in a Rule or Process.<br>Click the object link to drill down for more details. |
| Applications | Displays the applications in which the data transformation is used. |

#### 7.1.5.7 Data Quality Rule Metadata

From the *Metadata Browser Object* tab, expand **Data Foundation**> **Data Quality Rules** and click the required data quality rule definition.

The Data Quality Rule specific details are explained in the following table:

| Field | Description |
|---|---|
| Specific Properties | Displays the specific properties of the data quality rule definition such as Check Type, Table, Column, Substring, Position, Length, and Filter. |
| Check Type | Displays the details of different checks used in the data quality rule definition such as Range Check, Date Length Check, Specific Value Check, List of Value/Code Check, Null Value Check, Referential Check, Duplicate Check and so on. |
| Depends on | Displays the object and its type that is used in creating the data quality rule. The objects can be Entity and Column.<br>Click the object link to drill down for more details. |
| Used In | Displays the data quality group in which the data quality rule is used. If the DQ rule is used in a Data Mapping definition, it displays the Data Mapping object under this grid.<br>Click the object link to drill down for more details. |
| Applications | Displays the applications in which the data quality rule is used. |

#### 7.1.5.8 Data Quality Group Metadata

From the *Metadata Browser Object* tab, expand **Data Foundation**> **Data Quality Group** and click the required data quality group definition.

The Data Quality Group specific details are explained in the following table:

| Field | Description |
|---|---|
| Depends on | Displays the data quality rule that is used in creating the data quality group.<br>Click the object link to drill down for more details. |
| Used In | The data quality group object cannot be used in any higher objects. So this field will be blank. |
| Applications | Displays the applications in which the data quality group is used. |

### 7.1.6 Business Metadata

The Business Metadata is logically classified into Base Metadata and Derived Metadata. The Base metadata comprises of metadata like Datasets, Alias, Hierarchies, Measures, Variables, Techniques, Variable Shocks, Scenarios, and Stress Definitions. The Derived metadata comprises of metadata like Dimensions, Business Processor, Derived Entities, Filters, Expressions, Catalogs, and Cubes.

#### 7.1.6.1 Dataset Metadata

From the *Metadata Browser Object* tab, expand **Business Metadata**> **Base Metadata** and **Datasets**. Then click the required dataset to view its metadata.

The Dataset specific details are explained in the following table:

| Field | Description |
|---|---|
| Dataset Properties | Displays the Join condition, Filter condition Data filter, and Order By used to create the dataset. |
| Depends on | Displays the Entities and Aliases used in the dataset.<br>Click the object link to drill down for more details. |
| Used In | Displays the objects and object types in which the dataset is used. A dataset can be used in a Rule, Process, Business Processor, Cube, and Derived Entity.<br>Click the object link to drill down for more details. |
| Applications | Displays the applications in which the dataset is used. |

#### 7.1.6.2 Alias Metadata

From the *Metadata Browser Object* tab, expand **Business Metadata**> **Base Metadata** and **Alias**. Then click the required alias to view its metadata.

The Alias specific details are explained in the following table:

| Field | Description |
|---|---|
| Depends on | Displays the entity corresponding to the alias.<br>Click the object link to drill down for more details. |
| Used In | Displays the objects and object types in which the alias is used. An alias can be used in a Dataset, Measure, Business Processor, and Hierarchy.<br>Click the object link to drill down for more details. |
| Applications | Displays the applications in which the alias is used. |

#### 7.1.6.3 Hierarchy Metadata

From the *Metadata Browser Object* tab, expand **Business Metadata**> **Base Metadata** and **Hierarchies**. Then click the required hierarchy to view its metadata.

The Hierarchy specific details are explained in the following table:

| Field | Description |
|---|---|
| Hierarchy Properties | Displays the Hierarchy type, Multi-dimensional property (Regular/ Time), and Total Required. |
| Depends on | Displays the Entity and Alias used in the hierarchy definition.<br>Click the object link to drill down for more details. |
| Used In | Displays the objects and object types in which the hierarchy is used. A hierarchy can be used in a Dimension, Rule, or Derived Entity.<br>Click the object link to drill down for more details. |
| Applications | Displays the applications in which the hierarchy is used. |

#### 7.1.6.4 Business Measure Metadata

From the *Metadata Browser Object* tab, expand **Business Metadata**> **Base Metadata** and **Measures**. Then click the required measure to view its metadata.

The Measure specific details are explained in the following table:

| Field | Description |
|---|---|
| Measure Properties | Displays the Aggregation Function, Measure Data type, Business Exclusion, Filter, and Rollup Type. |
| Depends on | Displays the object and its type which are used in creating the business measure. The objects can be Entity, Alias, and Attributes.<br>Click the object link to drill down for more details. |
| Used In | Displays the objects and object types in which the measure is used. A measure can be used in a Cube, Hierarchy, Rule, or Business Processor.<br>Click the object link to drill down for more details. |
| Applications | Displays the applications in which the business measure is used. |

#### 7.1.6.5 Variables Metadata

From the *Metadata Browser Object* tab, expand **Business Metadata**> **Base Metadata** and **Variables**. Then click the required variable to view its metadata.

The Variable specific details are explained in the following table:

| Field | Description |
|---|---|
| Variable Properties | Displays the Type, Structure, Classification, Based on, and Variable property. |
| Depends on | Displays the object and its type which are used in creating the variable. The objects can be Entity, Business Measure, Business Processor, and Hierarchy. In case of Term Structure Variable, the dependent object will be Single Value Variables.<br>Click the object link to drill down for more details. |
| Used In | Displays the objects and object types in which the variable is used. A variable can be used in Variable Shock, or Model. In case of Single Value Variable, the used in object can be Term Structure Variable.<br>Click the object link to drill down for more details. |
| Applications | Displays the applications in which the variable is used. |

#### 7.1.6.6 Techniques Metadata

From the *Metadata Browser Object* tab, expand **Business Metadata**> **Base Metadata** and **Techniques**. Then click the required technique to view its metadata.

**NOTE:** NAG techniques will not be displayed.

The Technique specific details are explained in the following table:

| Field | Description |
|---|---|
| Technique Properties | Displays the Technique Class, and Based On (for Script based techniques and External Library based techniques). Additional properties like Provider Name and External Library Name are displayed for External Library based techniques. |
| Technique Inputs | This is displayed only for techniques based on Script.<br>Displays the name and the type of Input Parameters used in the technique. The parameter types can be a variable or single value parameter. |
| Algorithm Details | This is displayed only for techniques based on External Library.<br>Displays the Function Name, Return Type and Function Definition. |
| Technique Outputs | Displays the name of the configured outputs. |
| Script | Displays the R script of the technique. |
| Depends on | NA. |
| Used In | Displays the Model in which the technique is used.<br>Click the object link to drill down for more details. |
| Applications | Displays the applications in which the technique is used. |

#### 7.1.6.7 Variable Shocks

From the *Metadata Browser Object* tab, expand **Business Metadata**> **Base Metadata** and **Variable Shocks**. Then click the required variable shock to view its metadata.

The Variable Shock specific details are explained in the following table:

| Field | Description |
|---|---|
| Variable Shock Properties | Displays the Shock Type, Shock in Reference to, Shock Unit and Shock Curve. |

| Field | Description |
|---|---|
| Depends on | Displays the object and its type which are used in creating the variable shock. The objects can be Variable and Dataset.<br>Click the object link to drill down for more details. |
| Used In | Displays the Scenario in which the variable shock is used.<br>Click the object link to drill down for more details. |
| Applications | Displays the applications in which the variable shock is used. |

#### 7.1.6.8 Scenarios

From the *Metadata Browser Object* tab, expand **Business Metadata**> **Base Metadata** and **Scenarios**. Then click the required scenario to view its metadata.

The Scenario specific details are explained in the following table:

| Field | Description |
|---|---|
| Depends on | Displays the Variable Shock used in creating the scenario.<br>Click the object link to drill down for more details. |
| Used In | Displays the Stress Testing objects in which the scenario is used.<br>Click the object link to drill down for more details. |
| Applications | Displays the applications in which the scenario is used. |

#### 7.1.6.9 Stress Definitions

From the *Metadata Browser Object* tab, expand **Business Metadata**> **Base Metadata** and **Stress Definitions**. Then click the required stress definition to view its metadata.

The Stress Definition specific details are explained in the following table:

| Field | Description |
|---|---|
| Stress Testing Properties | Displays the Segment in which the stress definition object is defined. |
| Depends on | Displays the Scenario used in creating the stress definition.<br>Click the object link to drill down for more details. |
| Used In | Displays the Models in which the stress definition is used.<br>Click the object link to drill down for more details. |

| Field | Description |
| --- | --- |
| Applications | Displays the applications in which the stress definition is used. |

#### 7.1.6.10 Business Processor Metadata

From the *Metadata Browser Object* tab, expand **Business Metadata**> **Derived Metadata** and **Business Processor**. Then click the required business processor object to view its metadata.

The Business Processor specific details are explained in the following table:

| Field | Description |
|---|---|
| Business Processor Properties | Displays the Source Expression and the status whether the Expression has Aggregate Function. |
| Placeholders | Displays the parameter names and their values for the selected business processor object. This field is displayed only if the parameters are defined for the BP. |
| Depends on | Displays the object and its type which are used in creating the business processor. The objects can be Dataset and Measure.<br>Click the object link to drill down for more details. |
| Used In | Displays the objects and object types in which the business processor is used. A business processor can be used in a Rule.<br>Click the object link to drill down for more details. |
| Applications | Displays the applications in which the business processor is used. |

#### 7.1.6.11 Derived Entity Metadata

From the *Metadata Browser Object* tab, expand **Business Metadata**> **Derived Metadata** and **Derived Entity**. Then click the required derived entity object to view its metadata.

The Derived Entity specific details are explained in the following table:

| Field | Description |
|---|---|
| Derived Entity Properties | Displays the Source Type, Aggregate Flag, Materialized View, Application Name, and Source Name. |
| Depends on | Displays the object and its type which are used in creating the derived entity. The objects can be Entity, Dataset, Hierarchy, or Measure.<br>Click the object link to drill down for more details. |
| Used In | Displays the objects and object types in which the derived entity is used. A derived entity can be used in a Rule.<br>Click the object link to drill down for more details. |
| Applications | Displays the applications in which the derived entity is used. |

#### 7.1.6.12 Filter Metadata

From the *Metadata Browser Object* tab, expand **Business Metadata**> **Derived Metadata** and **Filters**. Then click the required filter object to view its metadata. There are four types of filters such as Data Element Filter, Hierarchy Filter, Group Filter, and Attribute Filter.

The Filter specific details are explained in the following table:

| Field | Description |
|---|---|
| Filter Properties | Displays the Access Code, Filter Type, and SQL query of the selected filter. |
| Depends on | Displays the object and its type which are used in creating the filter.<br>For Data Element filter, the objects can be Columns and Expressions.<br>For Hierarchy filter, the object can be Hierarchy.<br>For Group filter, the object can be Data Element filter.<br>For Attribute filter, the object can be Dimension.<br>Click the object link to drill down for more details. |
| Used In | Displays the objects and object types in which the filter is used.<br>For Data Element filter, the object can be Group Filter.<br>For Hierarchy filter, the object can be Rules.<br>The Group filter and Attribute filter are used in applications.<br>Click the object link to drill down for more details. |
| Applications | Displays the applications in which the filter is used. |

### 7.1.7 Process Metadata

The Process Metadata is classified into Process, Rules, and Models. The Rules metadata is again classified into Classification Rules and Computation Rules.

#### 7.1.7.1 Process Metadata

From the *Metadata Browser Object* tab, expand **Process Metadata** and **Process**. Then click the required process object to view its metadata.

The Process specific details are explained in the following table:

| Field | Description |
|---|---|
| Process Specific Property | Displays the Effective Start Date, Effective End Date, and Last Operation Type.<br>An additional grid is displayed to show the tree structure of the process. That is, it displays the sub processes and rules present in the process. Expand a sub process to view the rules present in it. The rule can be Computation Rule, Data Transformation, or Model. |
| Depends on | Displays the object and its type which are used in creating the process. The objects can be Data Extraction, File Load, Table Load, Data Quality Check, Data Transformation, RRF Rule, RRF Process, Aggregate Data, Essbase Cube, Pooling, Optimizer, Model, or Variable Shock.<br>Click the object link to drill down for more details. |
| Used In | Displays the objects and object types in which the process is used. A process can be used in another Process or Run.<br>Click the object link to drill down for more details. |
| Applications | Displays the applications in which the process is used. |

#### 7.1.7.2 Rules Metadata

A rule can be classification rule or computation rule.

From the *Metadata Browser Object* tab, expand **Process Metadata** and **Rules**. Then click the required rule object to view its metadata.

The Rule specific details are explained in the following table:

| Field | Description |
|---|---|
| Rule Specific Properties | Displays Pre Build Flag, Use ROWID, Merge Hint, Effective Start Date, Effective End Date, and Last Operation Type. |
| Mapping | Displays the mapping details of the rule. |
| Depends on | Displays the object and its type which are used in creating the rule. The objects can be Dataset, Hierarchy, Measure, Business Processor, Data Filter, Group Filter, Hierarchy Filter, and Attribute Filter.<br>Click the object link to drill down for more details. |
| Used In | Displays the objects and object types in which the rule is used. A rule can be used in another Process or Run.<br>Click the object link to drill down for more details. |
| Applications | Displays the applications in which the rule is used. |

#### 7.1.7.3 Models Metadata

From the *Metadata Browser Object* tab, expand **Process Metadata** and **Models**. Expand the required sandbox and click the model object to view its metadata.

The Model specific details are explained in the following table:

| Field | Description |
|---|---|
| Model Properties | Displays the model properties such as model objective and the technique used in creating the model if the model is based on technique.<br>**Note**: Technique will not be displayed for models based on NAG techniques and R script. |
| Model Inputs | Displays the configured script variables and the selected variables. |
| Output Structures | Displays the Output Structure of the R based models (script based or R technique based). |
| Input/ Output Parameters | This grid is displayed only for NAG technique based models.<br>Displays the input and output parameters defined for the NAG technique based models. |
| Model Parameters | This grid is displayed only for models based on External Library techniques.<br>Displays the Configured Script Parameters and the Parameter values. |
| Script | Displays the script of the model for R based models (script based or R technique based). |
| Depends on | Displays the object and its type which are used in creating the model. The objects can be Variable, Dataset, and Technique.<br>**Note**: Technique will be displayed only for models based on R techniques or External Library based techniques.<br>Click the object link to drill down for more details. |
| Used In | Displays the objects and object types in which the model is used. A model can be used in Run, Process, or Stress Definition.<br>Click the object link to drill down for more details. |
| Applications | Displays the applications in which the model is used. |

# 8 Questionnaire

Questionnaire is an assessment tool, which presents a set of questions to users, and collects the answers for analysis and conclusion. It can be interfaced or plugged into OFSAA application packs. For example, Enterprise Modeling Framework (EMF) application pack. It is role and permission based, and you can create a library of questions and use the library to create a questionnaire.

**NOTE:** In the examples mentioned in this topic, we have assumed that the Questionnaire window is configured to appear in the **Application Builder Component** in **Common Task**s.

The topics discussed in this guide are specific to end-users. However, if you are looking for information on configuring Questionnaire, see the Oracle Financial Services Analytical Applications Infrastructure Administration User Guide.

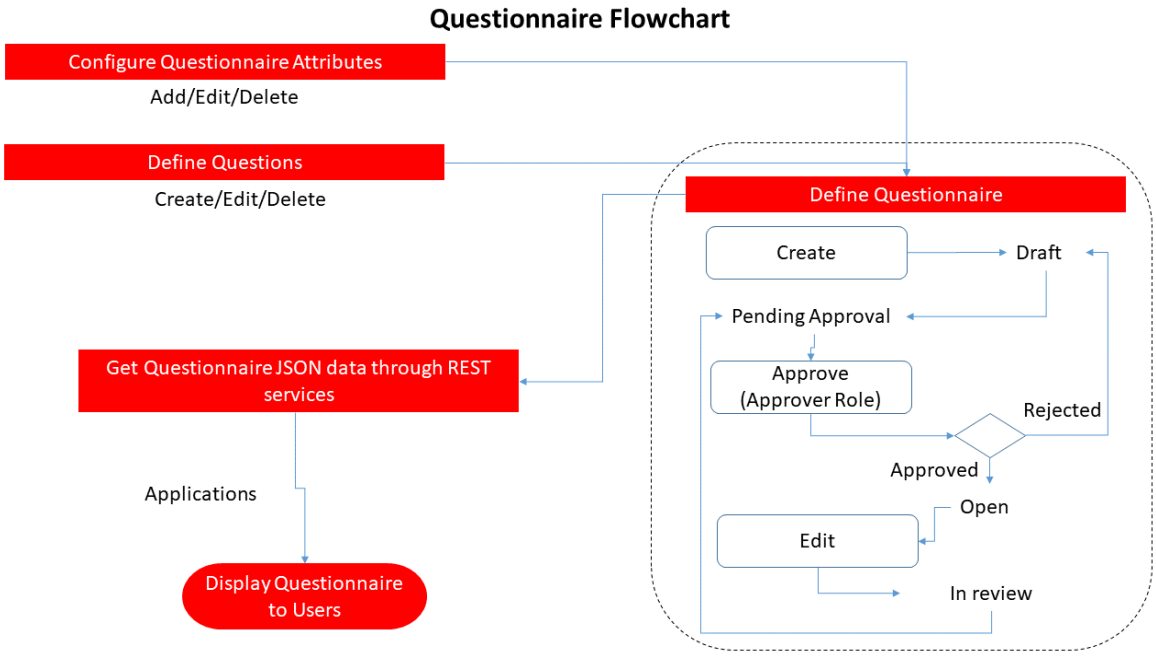
## 8.1 Knowing Questionnaire - Summary with Flowchart

Questionnaire provides the following three functions on the OFSAA user-interface:

- Configuring Questionnaire Attributes
- Defining Questions
- Defining Questionnaires

The flow of questionnaire starts with the configuration of questionnaire attributes. You must have the required user roles and permissions assigned to your user profile to configure questionnaire attributes. After you or a user with the requisite access has configured the attributes, you can define and include questions in the questions library. You can then map questions and questionnaire attributes to create Questionnaires.

**NOTE:** Access to the *Questionnaire* menus is based on roles and permissions.




## 8.2 Knowing the Types of Questionnaires

You can create the following types of Questionnaires in OFSAA to suit your requirement:

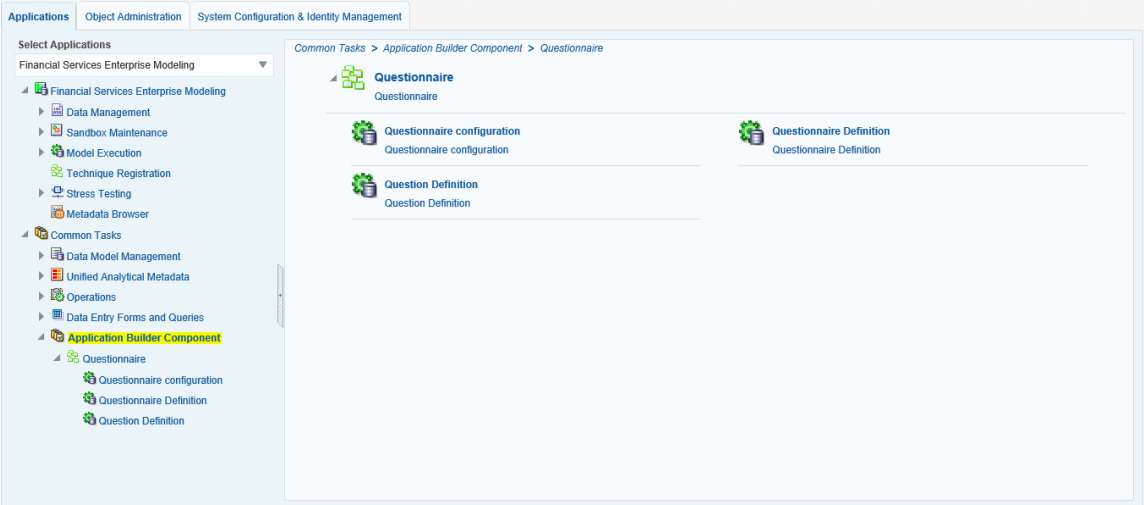
1. Basic – This Questionnaire type follows a linear sequence in the flow. For example, if there are 20 questions in the questionnaire, the questions start from 1 and end at 20.
2. Decisions Tree (DT) – This Questionnaire type displays the next question based on the answer selected for the current question. For example, a question, “Are you living in the US?”, might display the answer options “Yes” or “No”. If you select “Yes”, the next question displayed might be “Which State are you from?”. The list might display states in the US in a drop down selection. However, if you answer “No”, the next question displayed might be “Which Country are you from?”. For this question, the list might display countries in a drop down selection.
3. Score Based – In this Questionnaire type you assign a number value to a question for it to be considered in the set of questions. This could be used as a percentage of the set that the question adds value. For example, a question could be given a score of 20 out of 100, and this question would contribute to 20% of the score of the questionnaire. Score based questionnaires, by default, are of the type Basic. However, you can select branching logic on the UI and make a score based questionnaire of the type Decision Tree.

## 8.3 Configuring Questionnaire Attributes

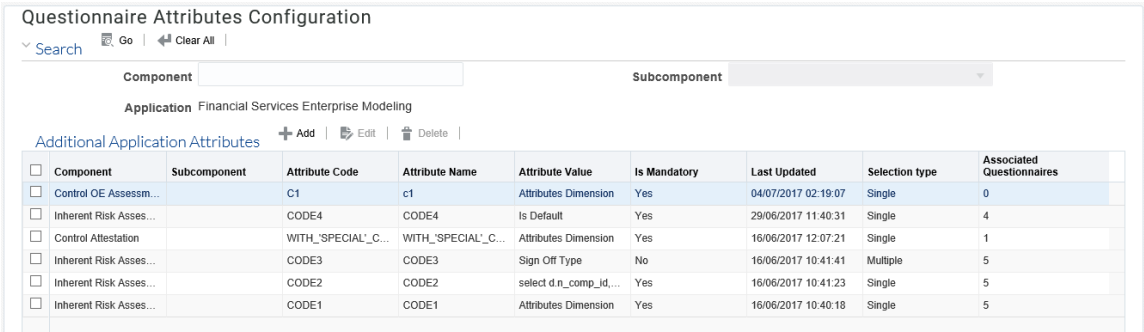
This feature allows you to configure Questionnaire Attributes, which uniquely identifies the Questionnaire that users use.

To access the *Questionnaire Configuration* window, expand the menu in the left pane where Questionnaire is configured and click **Questionnaire**. From the *Questionnaire* window, click **Questionnaire Configuration**.

**NOTE:** You can configure the Questionnaire to appear in the menu of your choice based on your application's requirement. For information on how to configure Questionnaire menus, see the Oracle Financial Services Advanced Analytical Applications Infrastructure Application Pack Administration and Configuration Guide.




The window displays the list of defined Attributes. It also displays the OFSAA Application that is interfaced to the Questionnaire module. For example, Financial Services Enterprise Modeling. You can create, modify or delete Questionnaire Attributes from this window.




| Component | Subcomponent | Attribute Code | Attribute Name | Attribute Value | Is Mandatory | Last Updated | Selection type | Associated Questionnaires |
|---|---|---|---|---|---|---|---|---|
| Control OE Assessm... | | C1 | c1 | Attributes Dimension | Yes | 04/07/2017 02:19:07 | Single | 0 |
| Inherent Risk Asses... | | CODE4 | CODE4 | Is Default | Yes | 29/06/2017 11:40:31 | Single | 4 |
| Control Attestation | | WITH_'SPECIAL'_C... | WITH_'SPECIAL'_C... | Attributes Dimension | Yes | 16/06/2017 12:07:21 | Single | 1 |
| Inherent Risk Asses... | | CODE3 | CODE3 | Sign Off Type | No | 16/06/2017 10:41:41 | Multiple | 5 |
| Inherent Risk Asses... | | CODE2 | CODE2 | select d.n_comp_id,... | Yes | 16/06/2017 10:41:23 | Single | 5 |
| Inherent Risk Asses... | | CODE1 | CODE1 | Attributes Dimension | Yes | 16/06/2017 10:40:18 | Single | 5 |

The following table provides description for the fields displayed on the Questionnaire Attributes Configuration window:

| Field | Description |
|---|---|
| Component | Displays the type of questionnaire component configured in the system.<br>Note: For information on configuring components, see the Oracle Financial Services Advanced Analytical Applications Infrastructure Application Pack Administration and Configuration Guide. |
| Subcomponent | Displays the subcomponent for the selected Component. |
| Attribute Code | Displays the code of the attribute as entered in the add attribute window. Once defined, this code cannot be edited. |
| Attribute Name | Displays the name of the attribute as entered in the add attribute window. |
| Attribute Value | Displays the condition executed at run time to display attribute values used on the Create Questionnaire window. |
| Is Mandatory | Displays whether the attribute is mandatory or not. The values are Yes and No. |
| Last Updated | Displays the last updated date and time details for the attribute. |
| Selection Type | Displays the Attribute Selection Type as entered in the add attribute window. |
| Associated Questionnaires | Displays the number of Questionnaires that are linked to the Attribute, and are in Open and Pending Approval status. |

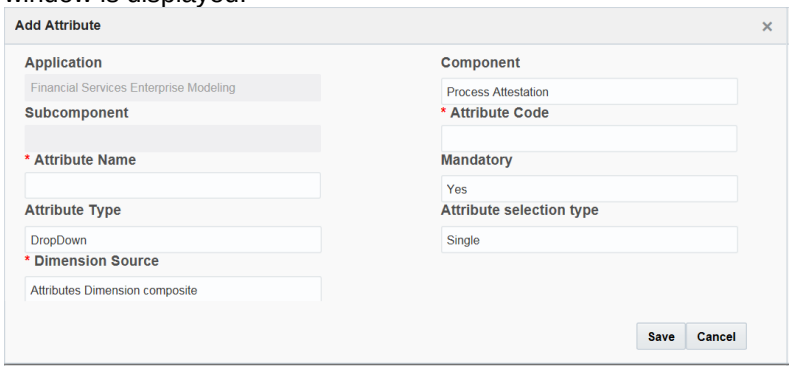
You can search for existing questionnaire attributes based on Component. For more information, see Using Search in Questionnaire section.

### 8.3.1 Adding Questionnaire Attributes

Use this option to create Questionnaire Attributes.

To add a Questionnaire Attribute:

1. Click the **Add** button from the *Questionnaire Configuration* window. The *Add Attribute* window is displayed.



2. Enter the details for the fields in the *Add Attribute* window as described in the following table:

| Field | Description |
|---|---|
| Fields marked in red asterisk (*) are mandatory. | |
| Application | Displays the OFSAA name of the application that is interfaced to the Questionnaire module. For example, Financial Services Enterprise Modeling. This is a read-only field and is not editable. |
| Component | Select the Component from the drop-down list.<br>Note: For information on configuring components, see the Oracle Financial Services Advanced Analytical Applications Infrastructure Application Pack Administration and Configuration Guide. |
| Subcomponent | Select the Subcomponent for the selected Component from the drop-down list. This field is enabled only if the selected Component is configured to have subcomponent(s). |
| Attribute Code | Enter the attribute code for the questionnaire attribute. This is a unique value. If the code exists in the system, a message displays “The Attribute Code exists in the system, enter another value”. |
| Attribute Name | Enter a name for the questionnaire attribute. This is a unique value. |
| Mandatory | Select whether the attribute is mandatory or optional from the drop-down list. The options are **Yes** and **No**. |

| Field | Description |
|---|---|
| Attribute Type | Type of attribute that is displayed on the Questionnaire Definition window. For example, selecting drop-down displays a drop down questionnaire in the Questionnaire Definition window. Similarly, SQL Query displays data fetched from the query on the Questionnaire Definition window.<br>Select the type of attribute from the drop-down list. The options are:<br>▪ DropDown- Select this if you want a drop-down list in the Questionnaire Definition window.<br>▪ SQL Query<br>▪ Hierarchy<br>▪ External<br>▪ Static<br>Note: Selecting any of the above options results in the display of different headings for the field right below the Attribute Type field. The fields are also of different types based on the Attribute Type selection. For example, selecting DropDown results in display of a drop down in the field below and selecting SQL Query results in the display of a text field. The row '(Headings for the field below Attribute Type field.)' provides details for the different fields that appear on Attribute Type selection. |
| Attribute Selection Type | Select whether you want the attribute type to be a single-selection or multiple-selection type attribute. |

| Field | Description |
|---|---|
| (Headings for the field below Attribute Type field.) | Options displayed on the field below the attribute type field are dynamic and vary based on the selection of the attribute type. You can find the details in the following list.<br>Select from the options displayed below:<br>▪ DropDown - selecting this attribute type displays a drop-down Dimension Source with options that list dimension tables acting as a source for the attribute being created. Select from the following options:<br>  ▪ Attr Dim Single<br>  ▪ Attributes Dimension Composite<br>Note: The preceding drop down is displayed on selection of drop down as dimension and it is configurable. For information on configuring dimension tables, see the Oracle Financial Services Advanced Analytical Applications Infrastructure Application Pack Administration and Configuration Guide.<br>▪ SQL Query - selecting this attribute type displays a text field SQL Query where you have to enter a SQL Query to fetch the data for the attribute being created. Format for SQL queries has to be given here with an example.<br>▪ Hierarchy- selecting this attribute type displays a drop down Hierarchy Source with options that list hierarchy code acting as a data source for the attribute being created.<br>▪ External - selecting this attribute type displays a text field Web-Service URL where you have to enter a Web-Service URL to fetch data for the attribute being created.<br>▪ Static - selecting this attribute type displays a drop down Static Type with options that list static types to fetch data for the attribute being created. Select from the following options:<br>  ▪ Is Default<br>  ▪ Sign Off Type<br>  ▪ Reassign Required<br>  ▪ Is Confidential<br>Note: The preceding drop down is displayed on selection of Attribute Type as static and it is configurable. For information on how to configure it, see the Oracle Financial Services Advanced Analytical Applications Infrastructure Application Pack Administration and Configuration Guide. |

| Field | Description |
|---|---|
| Source Options | Additional options for the values selected in the Static Type drop down. This field is displayed when you select any of the following options from the Static Type drop down:<br>▪ Sign Off Type<br>▪ Reassign Required<br>▪ Is Confidential<br>Select the following options from the drop down:<br>▪ Sign Off Type - details for the source options for this type is given below.<br>  ▪ Two Level Sign Off<br>  ▪ Single Sign Off<br>  ▪ No Sign Off<br>▪ Reassign Required - details for the source options for this type is given below.<br>  ▪ No<br>  ▪ Yes<br>▪ Is Confidential - details for the source options for this type is given below.<br>  ▪ No<br>  ▪ Yes |

3. Click **Save** to save the questionnaire attribute or click **Cancel** to discard the changes and close the window.

### 8.3.2 Editing Questionnaire Attributes

**NOTE:** Attributes, which are linked to Questionnaires that are in Open or Pending Approval status and display a count greater than zero in the Associated Questionnaires column on the Questionnaire Attributes Configuration window, cannot be modified.

You can edit questionnaire attributes from this window. The following is the procedure to edit a questionnaire attribute:

1. Select an Attribute from the *Questionnaire Configuration* window that you want to edit.
2. Click the **Edit** button to display the *Edit Attribute* window.
3. Modify the details for the fields in the *Edit Attribute* window. You can refer to the field description table in Adding Questionnaire Attributes section for field details.

**NOTE:** The Application, Component, Subcomponent and Attribute Code fields are not editable.

4. Click **Save** to save the edited questionnaire attribute or click **Cancel** to discard the changes and close the window.

### 8.3.3 Deleting Questionnaire Attributes

You can delete questionnaire attributes from this window. However, you can delete only Questionnaire Attributes that do not have any Questionnaires linked to it.

You have to remove the Questionnaires linked to the Questionnaire Attributes before you can delete it. For more information on how to remove Associated Questionnaires, see Editing Questionnaire from the Library, where the field Component corresponds to Questionnaire Attributes. For information on how to delete a Questionnaire, see Deleting Questionnaire from the Library.

To delete a questionnaire attribute:

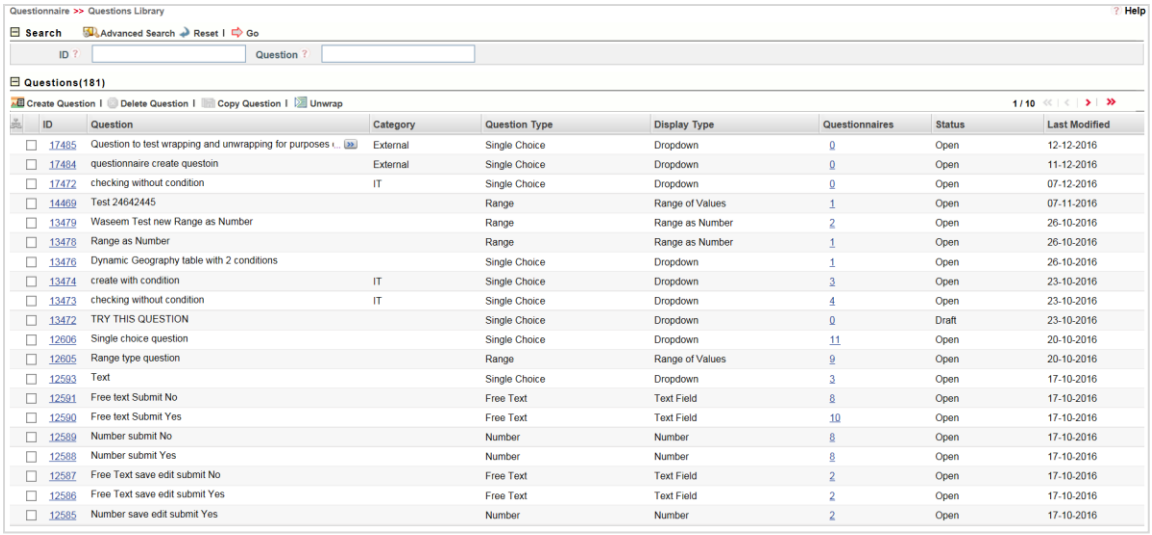
1. From the *Questionnaire Attributes Configuration* window, select the check box adjacent to the Attribute that you want to delete and click the **Delete** button. You can also select multiple rows to delete. A confirmation message is displayed.
2. Click **Delete** to delete the selected attribute(s) or click **Cancel** to discard the changes and close the window.

## 8.4 Defining Questions

You can define a library of questions from the *Questions Library* window that you can link to create a Questionnaire.

To access the *Questions Library* window, expand the menu in the left pane where Questionnaire is configured and click **Questionnaire**. From the *Questionnaire* window, click **Question Definition**.

**NOTE:** You can configure the Questionnaire to appear in the menu of your choice based on your application's requirement. For information on how to configure Questionnaire menus, see the Oracle Financial Services Advanced Analytical Applications Infrastructure Application Pack Administration and Configuration Guide.




| ID | Question | Category | Question Type | Display Type | Questionnaires | Status | Last Modified |
|---|---|---|---|---|---|---|---|
| 17485 | Question to test wrapping and unwrapping for purposes | External | Single Choice | Dropdown | 0 | Open | 12-12-2016 |
| 17484 | questionnaire create questoin | External | Single Choice | Dropdown | 0 | Open | 11-12-2016 |
| 17472 | checking without condition | IT | Single Choice | Dropdown | 0 | Open | 07-12-2016 |
| 14469 | Test 24642445 | | Range | Range of Values | 1 | Open | 07-11-2016 |
| 13479 | Waseem Test new Range as Number | | Range | Range as Number | 2 | Open | 26-10-2016 |
| 13478 | Range as Number | | Range | Range as Number | 1 | Open | 26-10-2016 |
| 13476 | Dynamic Geography table with 2 conditions | | Single Choice | Dropdown | 1 | Open | 26-10-2016 |
| 13474 | create with condition | IT | Single Choice | Dropdown | 3 | Open | 23-10-2016 |
| 13473 | checking without condition | IT | Single Choice | Dropdown | 4 | Open | 23-10-2016 |
| 13472 | TRY THIS QUESTION | | Single Choice | Dropdown | 0 | Draft | 23-10-2016 |
| 12606 | Single choice question | | Single Choice | Dropdown | 11 | Open | 20-10-2016 |
| 12605 | Range type question | | Range | Range of Values | 9 | Open | 20-10-2016 |
| 12593 | Text | | Single Choice | Dropdown | 3 | Open | 17-10-2016 |
| 12591 | Free text Submit No | | Free Text | Text Field | 8 | Open | 17-10-2016 |
| 12590 | Free text Submit Yes | | Free Text | Text Field | 10 | Open | 17-10-2016 |
| 12589 | Number submit No | | Number | Number | 8 | Open | 17-10-2016 |
| 12588 | Number submit Yes | | Number | Number | 8 | Open | 17-10-2016 |
| 12587 | Free Text save edit submit No | | Free Text | Text Field | 2 | Open | 17-10-2016 |
| 12586 | Free Text save edit submit Yes | | Free Text | Text Field | 2 | Open | 17-10-2016 |
| 12585 | Number save edit submit Yes | | Number | Number | 2 | Open | 17-10-2016 |

The window displays a list of defined Questions. You can create, modify, copy and delete Questions from this window.

The following table provides description for the fields displayed on the Questions Library window:

| Field | Description |
|---|---|
| ID | Displays the system generated identifier for the question. This is a unique value. |
| Question | Displays the title of the question. |
| Category | Displays the category of classification for the question from the options: External, IT and Infrastructure. |
| Question Type | Displays the type of question from the options: Single Choice, Multiple Choice, Free Text, Number and Range. |
| Display Type | Displays the type of user-interface element that is displayed. For example, drop down, text field and so on. The options are available based on the Question Type selected. |
| Questionnaires | Displays the number of questionnaires associated to the question. For example, 7 indicates that there are seven questionnaires linked to the question. You can click the link to display the list of questionnaires linked in the Associated Questionnaires window. |
| Status | Displays the status of the question. For example, Draft, Open and so on. |
| Last Modified | Displays the date and time for the last update on the question. |

You can search for existing questions based on ID and Question. For more information, see Using Search in Questionnaire section.

### 8.4.1 Creating Questions in the Library

You can create questions from this window. The following is the procedure to create a question:

1. Click the **Create Question** button from the *Questions Library* window to display the *Question Details* window.
2. Enter the details for the fields in the *Question Details* window as described in the following table:

| Field | Description |
|---|---|
| ID | Displays the identification number of the question. This value is generated by the system during question creation and is unique. |
| Question | Enter the question in this field. |
| Description | Enter more details in the description for the question that you are creating. |
| Category | Select from the drop down the category of classification for the question that you are creating from the options:<br>▪ External – the question is of external category.<br>▪ IT – the question is under the IT category.<br>▪ Infrastructure – the question is in the infrastructure category.<br>Note: This field is optional and the above is an example from OR application. This field can be configured in the table AAI_ABC_DIM_QTN_CATEGORY and its MLS table. |

| Field | Description |
|---|---|
| Question Type | Select the type of user-interface elements for the question that you are creating from the following options:<br>▪ Single Choice – select to create a single choice type of question.<br>▪ Multiple Choice – select to create a multiple choice type of question.<br>▪ Free Text – select to create a free text type of question.<br>▪ Number – select to create a type of question which requires a number input.<br>▪ Range – select to create a type of question which requires an input in a defined range or a number input.<br>Note: When you select a Question Type option, details for the question type is displayed on the window. The instructions to enter the details is described in the following subsections (scroll down to the subsections or click the links to jump to the subsections):<br>▪ Selecting Question Type – Single Choice<br>▪ Selecting Question Type – Multiple Choice<br>▪ Selecting Question Type – Free Text<br>▪ Selecting Question Type – Number<br>▪ Selecting Question Type – Range |

3. Click **Save Draft** to save the details, or click **Submit** if you have entered all details and are ready to submit. Click **Close** to discard the changes and close the window.

#### 8.4.1.1 Selecting Question Type – Single Choice

Select Single Choice to create a question with a single-choice answer option. After you select this option, you can add details for the list of answers that would be available to users as either a drop down or a radio button. Users can select only one from the list configured by you. The following list shows the procedure to add the details:

1. Click the **Single Choice** button from *Questions Type* to display the Single Choice section in the *Question Details* window.
2. Enter the details for the fields in the *Question Details* window as described in the following table:

| Field | Description |
|---|---|
| Display as Drop down | Select this option to display the answer choices in a drop down.<br>Note: This option is selected by default. |
| Display as Radio Buttons | Select this option to display the answer choices in radio buttons. |

| Field | Description |
|---|---|
| Static | Select this option to make either the drop down or radio buttons display static answer choices.<br>After you select this option, you have to enter the values that appear in the static fields. Enter these values in the Response Options form appearing below it. The following steps show the procedure to enter response options:<br>1. Click the **Add Option** button and enter the answer choice in the text field. To delete an option, select the check box on the option row that you want to delete and click the **Delete Option** button.<br>2. Similarly, you can add more options. These options will appear in the choice of answers in either a drop down or radio button format as selected by you. |

| Field | Description |
|---|---|
| Dynamic | Select this option to make either the drop down or radio buttons display dynamic answer choices.<br>After you select this option, you are presented with various text fields and conditions options. Enter these values as described in the following steps:<br>1. Enter the Primary Column from the database to fetch the answer from. This could be the key.<br>2. Enter the Display Column from the database to display the answer in the check box list or combo box.<br>3. Enter the table name where the Primary Column and the Display Column exist in Reference Table.<br>4. Enter the filter criteria to apply to the table data being fetched to display in Filter Condition. This step is optional.<br>5. Click the Validate button to validate the query formed by the above steps. On validation, the Preview Options drop down appears.<br>6. Enter the Option Type Column name in the Advanced section. The value entered here appears in the Option Type Column in the Conditions section.<br>7. Click the **Add** button in the Conditions section and enter a name for the answer choice in the Name text field. Select a condition from the Condition drop down. For example, Not Equal To. Enter required data in Option Value Type. Select either Static or Dynamic from the Scope drop down. If you select Dynamic, then you must enter a subquery to filter the options further. To delete a condition, select the check box on the condition row that you want to delete and click the **Delete** button.<br>8. Similarly, you can add more conditions. These conditions will appear in the choice of answers in either a check box list or combo box as selected by you. |

3. Click **Save Draft** to save the details or click **Submit** if you have entered all details and are ready to submit. Click **Close** to discard the changes and close the window.

#### 8.4.1.2 Selecting Question Type – Multiple Choice

Select Multiple Choice to create a question with the option to choose multiple answers. After you select this option, you can details for the list of answers that would be available to users either as a check box or combo box. Users can select multiple answers from the list configured by you. The following list shows the procedure to add the details:

1. Click the **Multiple Choice** button from *Questions Type* to display the Multiple Choice section in the *Question Details* window.
2. Enter the details for the fields in the *Question Details* window as described in the following table:

| Field | Description |
|---|---|
| Display as Check box List | Select this option to display the multiple choice answers in a list of check boxes.<br>Note: This option is selected by default. |
| Display as a Combo Box | Select this option to display the multiple choice answers in a combo box list. |
| Static | Select this option to make either the check box list or combo box display static answer choices.<br>After you select this option, you have to enter the values that appear in the static fields. Enter these values in the Response Options form appearing below it. The following steps show the procedure to enter response options:<br>1. Click the **Add Option** button and enter the answer choice in the text field. To delete an option, select the check box on the option row that you want to delete and click the **Delete Option** button.<br>2. Similarly, you can add more options. These options will appear in the choice of answers in either a check box list or check box format as selected by you. |

| Field | Description |
|---|---|
| Dynamic | Select this option to make the check box list or combo box display dynamic answer choices.<br>After you select this option, you are presented with various text fields and conditions options. Enter these values as described in the following steps:<br>1. Enter the Primary Column from the database to fetch the answer from. This could be the key.<br>2. Enter the Display Column from the database to display the answer in the check box list or combo box.<br>3. Enter the table name where the Primary Column and the Display Column exist in Reference Table.<br>4. Enter the filter criteria to apply to the table data being fetched to display in Filter Condition. This step is optional.<br>5. Click the Validate button to validate the query formed by the above steps. On validation, the Preview Options drop down appears.<br>6. Enter the Option Type Column name in the Advanced section. The value entered here appears in the Option Type Column in the Conditions section.<br>7. Click the **Add** button in the Conditions section and enter a name for the answer choice in the Name text field. Select a condition from the Condition drop down. For example, Not Equal To. Enter required data in Option Value Type. Select either Static or Dynamic from the Scope drop down. . If you select Dynamic, then you must enter a subquery to filter the options further. To delete a condition, select the check box on the condition row that you want to delete and click the **Delete** button.<br>8. Similarly, you can add more conditions. These conditions will appear in the choice of answers in either the check box list or combo box format as selected by you. |

3. Click **Save Draft** to save the details or click **Submit** if you have entered all details and are ready to submit. Click **Close** to discard the changes and close the window.

#### 8.4.1.3 Selecting Question Type – Free Text

Select Free Text to create a question with either a text field or text area as the answer input option for users. The following list shows the procedure to add the details:

1. Click the **Free Text** button from *Questions Type* to display the **Free Text** section in the *Question Details* window.

2. Enter the details for the fields in the *Free Text* section as described in the following table:

| Field | Description |
|---|---|
| Display as Text Field | Select this option to input the answer in a text field.<br>Note: This option is selected by default. |
| Display as Text Area | Select this option to input the answer in a text area. |
| Question to be used while defining DT Logic? | Select Yes or No to apply Decision Tree logic to the question. |

3. Click **Save Draft** to save the details or click **Submit** if you have entered all details and are ready to submit. Click **Close** to discard the changes and close the window.

#### 8.4.1.4 Selecting Question Type – Number

Select Number to create a question where users can input a numeric value as the response to the question. The following list shows the procedure to add the details:

1. Click the **Number** button from Questions Type to display the Number section in the *Question Details* window.
2. Enter the details for the fields in the *Number* section. For the **Question to be used while defining DT Logic?** field, select **Yes** or **No** to apply Decision Tree logic to the question.
3. Click **Save Draft** to save the details or click **Submit** if you have entered all details and are ready to submit. Click **Close** to discard the changes and close the window.

#### 8.4.1.5 Selecting Question Type – Range

Select Range to define an upper limit and a lower limit numeric value, which is the range that users will use to respond to the question. After you select this option, you can add rows of upper and lower limit values for the user to select using either a drop down or a number field.

The rows of ranges defined need not be continuous, however, they shouldn't overlap. For example, you can define Range 1 from 0 to 100 and Range 2 from 200 to 300. This is an example of a non-continuous range, since Range 2 didn't start from 101. However, you cannot define Range 1 from 0 to 100 and Range 2 from 100 to 200, since the upper limit of Range 1 (100) overlaps with the lower limit of Range 2 (100).

The following list shows the procedure to add the details:

1. Click the **Range** button from *Questions Type* to display the **Range** section in the *Question Details* window.
2. Enter the details for the fields in the *Range* section as described in the following table:

| Field | Description |
|---|---|
| Display as Range of Values | Select this option to display a drop down list of range values for the answer. Define the range in the Add Option Delete Option section.<br>Note: This option is selected by default. |
| Display as a Number | Select this option to input the answer in number format. |
| Add Option/Delete Option for Range of Values | Add options in this section for the Range of Values that you want to be available as the list of answers for the question.<br>The following steps show the procedure to enter range values:<br>1. Click the **Add Option** button and enter the range in the Lower Limit and Upper Limit fields. To delete an option, select the check box on the option row that you want to delete and click the **Delete Option** button.<br>2. Similarly, you can add more range value options. These options will appear in the choice of answers in a list of range values. |

3. Click **Save Draft** to save the details or click **Submit** if you have entered all details and are ready to submit. Click **Close** to discard the changes and close the window.

### 8.4.2 Editing Questions from the Library

You can edit questions from the *Questions Library* window. The following steps describe the procedure to edit a question:

1. Click the **Question ID** hyperlink in the ID column in the *Questions Library* window to display the *Questions Details* window.
2. Click the **Edit** button to enable editing the question in the *Questions Details* window.
3. Enter the details for the fields in the *Question Details* window. You can refer to the field description table in Creating Questions in the Library section for field details.

   **NOTE:** The ID field is read-only and is not editable.

4. Click the **Update** button to save the modified question. Click **Submit** button after you are ready to submit the edited question. Click **Close** to discard the changes and close the window.

### 8.4.3 Creating Questions by Copying Existing Questions

You can copy an existing question from the library and create a new question. All the contents of the question are carried forward to the new question with a new ID. You can copy a question from the *Questions Library* window.

**NOTE:** Associated Questionnaires are not copied over to the newly created question. You have to associate questionnaires separately.

The following steps describe the procedure to copy a question and to create a new question from the *Questions Library* window:

1. Click the **Select** ☑ check box to select a Question from the *Questions Library* window.
2. Click the **Copy Question** button. A message is displayed on successful execution of the copy operation.

### 8.4.4 Deleting Questions from the Library

You can delete questions from the Question Library window. The following is the procedure to delete a question:

1. Click the **Select** ☑ check box to select a Question in the *Questions Library* window that you want to delete.
2. Click the **Delete Question** button to display the delete confirmation popup.
3. Click **OK** to delete the question or click **Cancel** to discard and close the popup.

**NOTE:** You can delete a question only if it is in **Draft** status.

### 8.4.5 Viewing Associated Questionnaires

Questions are linked in Questionnaires (for more information, see Linking a Question to a Questionnaire) and you can view the details for the same on this window. The following is the procedure to view associated questionnaires:

1. Click the **Question ID** hyperlink on the ID column in *the Questions Library* window to display the *Questions Details* window.
2. Click the **Associated Questionnaires** tab to display the *Associated Questionnaires* window. You can view the associated Questionnaire details in this window. The following table provides description for the columns:

| Field | Description |
|---|---|
| ID | Displays the unique identifier number for the questionnaire. |
| Name | Displays the title of the questionnaire. |
| Application | Displays the application interfaced to the questionnaire. |
| Component | Displays the purpose of use of the questionnaire. |

| Field | Description |
|---|---|
| Type | Displays the type of questionnaire from the options: Basic, Decision Tree and Score Based. |
| No of Questions | Displays the number of questions linked to the questionnaire. |
| Status | Displays the status of the questionnaire. For example, Draft, Open and so on. |
| Last Modified | Displays the date and time for the last modified action on the questionnaire. |
| Note: For more details on Questionnaire, see the section Defining Questionnaires. | |

3. Click the **Details** tab to go back to the *Question Details* window.
4. Click **Close** to go back to the Questions Library.

### 8.4.6 Wrapping and Unwrapping Questions from the Library

You can wrap and unwrap questions from the library to collapse or expand the details entered in the fields.

The following steps describe the procedure to wrap and unwrap a question:

1. Click the **Select** check box to select a Question from the *Questions Library* window.
2. Click the **Unwrap** button to unwrap a question. If the question is unwrapped, you can click the **Wrap** button.

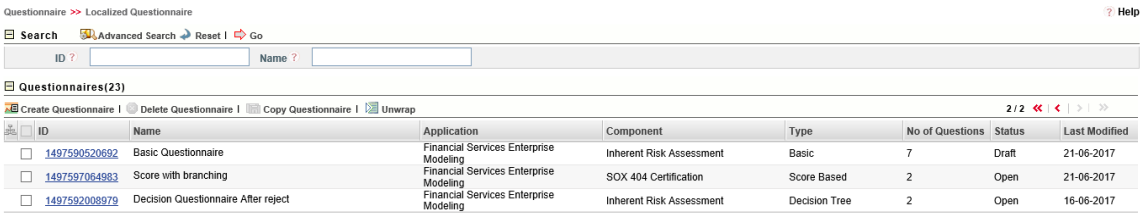
## 8.5 Defining Questionnaires

You can define Questionnaires from this window by combining defined attributes and questions.

To access the *Questionnaires Library* window, expand the menu in the left pane where Questionnaire is configured and click **Questionnaire**. From the *Questionnaire* window, click **Questionnaire Definition**.

**NOTE:** You can configure the Questionnaire to appear in the menu of your choice based on your application's requirement. For information on how to configure Questionnaire menus, see the Oracle Financial Services Advanced Analytical Applications Infrastructure Application Pack Administration and Configuration Guide.

This window displays a list of existing Questionnaires. You can create, modify, copy and delete Questionnaires from this window.




The following table provides description for the fields displayed on the Questionnaire Attributes Configuration window:

| Field | Description |
|---|---|
| ID | Displays the system generated identifier for the questionnaire. This is a unique value. |
| Name | Displays the name of the questionnaire. |
| Application | Displays the OFSAA application that is interfaced to the Questionnaire module. For example, Financial Services Enterprise Modeling. |
| Component | Displays the type of questionnaire component configured in the system.<br>Note: For information on configuring components, see the Oracle Financial Services Advanced Analytical Applications Infrastructure Application Pack Administration and Configuration Guide. |
| Type | Displays the type of questionnaire from the options: Basic, Decision Tree and Score Based. |
| No. of Questions | Displays the number of questions linked at the time of creation of the questionnaire. |
| Status | Displays the status of the questionnaire. For example, Draft, Open, Pending and In Review. |
| Last Modified | Displays the date and time for the last update on the questionnaire. |

You can search for existing questionnaires based on ID and Name. For more information, see Using Search in Questionnaire section.

### 8.5.1 Creating Questionnaire in the Library

You can create questionnaires from this window. The following is the procedure to create a questionnaire:

1. Click the **Create Questionnaire** button from the *Questionnaire Library* window to display the *Questionnaire Details* window.

**NOTE:** To edit a Questionnaire, see section Editing Questionnaire from the Library.

2. Enter the details for the fields in the *Questionnaire Details* window as described in the following table:

| Field | Description |
|---|---|
| Name | Enter a relevant name for the questionnaire in this field. |
| ID | Displays the identification number of the questionnaire. This value is generated by the system during questionnaire creation and is unique. |
| Description | Enter a description for the questionnaire that you are creating. |
| Application | Displays the OFSAA application that is interfaced to the Questionnaire. For example, Financial Services Enterprise Modeling. |
| Type | Select from the drop down the type of questionnaire from the options:<br>▪ Basic – select to create a questionnaire with questions that are arranged sequentially.<br>▪ Decision Tree – select to create a questionnaire that would display the next set of questions based on the answer selected.<br>Note: Selecting this field displays the Result Categories drop down.<br>▪ Score Based – select to create a questionnaire that can apply scores based on the answer selected.<br>Note: Selecting this field displays the Enable Branching Logic check box. |
| Enable Branching Logic | Select this check box to enable a score based questionnaire to display the next set of questions based on the answer to the current question.<br>Note: This field is displayed when you select Score Based from the Type drop down. |
| Component | Select the required type of questionnaire component from the drop down.<br>Note: For information on configuring components, see the Oracle Financial Services Advanced Analytical Applications Infrastructure Application Pack Administration and Configuration Guide. |
| User defined attributes | Select User defined attribute values from the drop down.<br>Note: For more information, see Adding Questionnaire Attributes. |

3. Click **Save Draft** to create the Questionnaire and save the details.
4. After you have entered the details discussed in the preceding table, you must create sections and link questions to the sections. For simplicity, the topic is discussed in subsections within this section. Click **Edit** and see the following sections for instructions:
   - Creating a Section in a Questionnaire
   - Linking a Question to a Questionnaire

- Configuring Questions in a Section
- Rearranging the Sequence of Sections and Questions
- Delinking a Question to a Questionnaire
- Attaching URLs to a Questionnaire Section
- Viewing Workflow History
- Editing a Section in a Questionnaire
- Deleting a Section in a Questionnaire
- Wrapping and Unwrapping Sections in a Questionnaire

5. Click **Submit** after you have entered all details and are ready to submit. Click **Close** to discard the changes and to close the window. The Questionnaire moves from **Draft** to **Pending Approval** status, and an approver has to approve to move it to **Open** status. For more information, see Approving Questionnaires.

#### 8.5.1.1 Creating a Section in a Questionnaire

You can create a section for your questionnaire and this section appears in the heading when the questionnaire is displayed to users. For example, when you create sections “Your Profile” and “Your Education”, the user of the questionnaire is displayed the headings: “Your Profile” and “Your Education”, which will contain the relevant questions linked by you to these sections. The following is the description to create a section:

1. Enter a name for the section in the **Section Name** field.
2. Click the **Add** button. The section appears in the *Sections and Questions* section with subsections for **URL** and **Workflow History**. Similarly, you can add more sections to your questionnaire. You have to follow section creation with linking of questions. See the section, Linking a Question to a Questionnaire.

#### 8.5.1.2 Linking a Question to a Questionnaire

You can link questions that you need to appear in the questionnaire from the *Questionnaire Details* window.

**NOTE:** You can link only Questions that are in Open status.

The following is the procedure to link a question:

1. Click the **Edit** button to enable editing the questionnaire in the *Questionnaire Details* window.

2. Click the **Link Question** button to display the Link Questions window. For more information on the fields displayed on this window, refer to the section Defining Questions.
3. Click the **Select** check box to select a Question from the *Link Questions* window.
4. Click the **Link Question** button to display a message popup. Click **OK** to link the question to the questionnaire. Click **Close** button to close the window.

#### 8.5.1.3 Configuring Questions in a Section

On linking a question, the section displays the question. You can link as many number of questions to different sections that you have created and create a questionnaire. After you have linked a question to a section, you can change the question configuration.

1. Open the section on the *Questionnaire Details* window to view linked questions. Expand the section if it is collapsed, you can view the questions in line with the section name heading. The following table describes the various fields in the question linked to a section:

| Field | Description |
|---|---|
| □ (check box) | Select and click the **Edit Linked Question** button to view and edit the **Response Options** in a linked question. |
| ID | Displays the system generated unique identifier for the question. |
| Question | Displays the title of the question. |
| Question Type | Displays the type of user-interface elements for the question from the following options:<br>▪ Single Choice<br>▪ Multiple Choice<br>▪ Free Text<br>▪ Number<br>▪ Range<br>**Note**: For more information, see the section Creating Questions in the Library. |
| Status | Displays the status of the question. For example, Open. |
| Last Modified | Displays the last modified date of the question. |

| Field | Description |
|---|---|
| Weightage | Enter the comparative value to apply weight function to the question. The sum of all the weight values should be 100. For example, if you have three questions A, B and C. You assign question 'A' a weight value of 35 and question 'B' a weight value of 45, then you will have to assign weight value of 20 to question 'C'.<br>Note: This field is displayed if you have selected the Type as Score Based. This field cannot be edited if you have linked Questions where the Question Type is either Free Text or Number. |
| Is Question Mandatory? | Displays whether the question is mandatory. The default value is mandatory. However, you can disable it if required. Note: Removing the mandatory condition disables the Weightage field and removes values entered in it.<br>Note: This field is not displayed if the Questionnaire Type is Decision Tree. |
| Is Comment Required? | Displays whether the question requires a comment for the answer. The default value is selected as required. You can remove the selection if required.<br>Note: This field is not displayed if the Questionnaire Type is Decision Tree. |
| Is Document Required? | Displays whether the question requires any supporting documents. The default value is selected as not required. |

2. Click the **Edit Linked Question** button to view and edit the **Response Options** for a question. The following table provides details for the fields:

| Field | Description |
|---|---|
| □ (check box) | Select a response option from the list to perform various actions. |
| Response Options | |
| From | Enter the valid from range for the response.<br>Note: This field is displayed only for Question Type – Range. |
| To | Enter the valid to range for the response.<br>Note: This field is displayed only for Question Type – Range. |
| Score | Enter the score for the response.<br>Note: This field is displayed only for Score Based questions. |
| Selected Logic | Click the button to display the Show Logic window. |
| Selected Result | Select from the options: Hard Stop and Soft Stop.<br>Note: This field is displayed only for Score Based questions with branching and Decision Tree type questionnaires. |

| Field | Description |
|---|---|
| Comment Mandatory? | Select if you want a make it mandatory to enter a comment.<br><br>Note: This field is not displayed for Decision Tree questions. |
| Legend | Select to enable a legend. |

3. Click the **Save Draft** button to save the entries, click **Update** to update the entries, or click **Close** to close the response options section.

#### 8.5.1.4 Rearranging the Sequence of Sections and Questions

You can rearrange the sequence of appearance of the questions in each section and also rearrange the sequence of sections in a Questionnaire. This allows you to restructure the sections in a questionnaire and the questions in the sections after you have linked them.

**NOTE:** To perform this function, the Questionnaire must be in draft status.

The following is the procedure to sequence sections and questions:

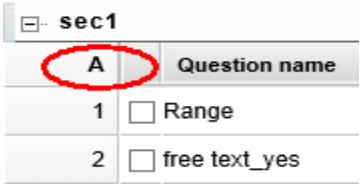
1. Click **Sequence Questions** to display the *Sequence Sections & Questions* window. You can change the sequence of sections and the sequence of questions in the sections from this window.

   To move the questions in a section, click **Move Question**. The **Change Question Number** field appears. In the **From** field, enter the number of the question that you want to move. In the **To** field, enter the number where you want to move the question to. Click **Change** to move the question or click **Close** to discard the change. Another option is to use the **Up** and **Down** buttons in the *Sequence* column. Click the buttons for the row that you want to move up or down.

   Also, you can move questions between sections. Select a question or a set of questions from a section that you want to move to another section. Click the **Move to Section** button. The **Move Selected Questions to** drop-down appears. Select the section from the drop-down where you want to move the questions to. Click **Change** to move the questions to the selected section or click **Cancel** to discard the change.

   To move sections, click **Move Section**. The **Change Section Number** field appears. In the **From** field, enter the number of the section that you want to move. In the **To** field, enter the number where you want to move the section to. Click **Change** to move the section or click **Close** to discard the change.

   **Note:** The section numbers are in the header rows below the section names as shown in the following illustration:




Another option is to use the **Up** and **Down** buttons in the *Sequence* column. Click the buttons for the section that you want to move up or down.

2. Click **Save Sequence** to save the sequence rearrangement or click **Close** to discard and close the window.

#### 8.5.1.5 Delinking a Question from a Questionnaire

You can delink a question from a questionnaire from the *Questionnaire Details* window. The following is the procedure to delink a question:

1. Click the **Edit** button to enable editing the questionnaire in the *Questionnaire Details* window.
2. Click the **Select** check box to select a Question from the section.
3. Click the **Delink Question** button to display the delink confirmation popup. Expand the section if it is collapsed, you can view the **Delink Question** button at the top.
4. Click **OK** to delink the question or click **Cancel** to discard and close the popup.

#### 8.5.1.6 Attaching URLs to a Questionnaire Section

You can add or attach URLs using two options in the Questionnaire: from the top bar on the *Sections & Questions* section and from the *URL* section. Use the top bar in a section to add URLs to the *Section and Questions* section, and use the *URL* section to attach URLs to the Questionnaire.

The following is the procedure to add a URL to the *Sections & Questions* section using the *Add URL* button from the top bar:

1. Click the **Edit** button to enable editing the questionnaire in the *Questionnaire Details* window.
2. Click the **Add URL** button to display the *Add URL* popup. Expand the section if it is collapsed, you can view the **Add URL** button at the top.
3. Enter the details for the fields in the popup as described in the following table:

| Field | Description |
|---|---|
| Section | Displays the name of the section. This is a read-only field. |

| Field | Description |
|---|---|
| Entity Type | Select the type of entity that the URL is being linked to. The options are:<br>▪ Section<br>▪ Questions |
| Question | Select the Question that the URL is to be linked to. This drop down is enabled on selecting Question for Entity Type. |
| URL Name | Enter a common name for the URL. |
| URL | Enter the URL. For example, www.oracle.com. |
| URL Description | Enter a description for the URL. |

4. Click **Save** to add the URL and repeat the process to add another URL. Click **Close** when done. The added URLs are displayed in the URL section. You can attach URLs to the questionnaire here. Click the **Attach URL(s)** button to attach URLs to the Questionnaire. To delete a URL, select a URL check box and click the **Delete** button.

The following is the procedure to attach a URL to a Questionnaire using the **Attach URLs** button from the URL section:

1. Click the **Attach URL(s)** button from the URL section in the *Questionnaire Details* window. The *Attach URL* popup is displayed.
2. Enter the details for the fields in the popup as described in the following table:

| Field | Description |
|---|---|
| Questionnaire Name | Displays the name of the questionnaire. This is a read-only field. |
| URL Name | Enter a common name for the URL. |
| URL | Enter the URL. For example, www.oracle.com. |
| URL Description | Enter a description for the URL. |

3. Click **Save** to attach the URL and repeat the process to attach another URL. Click **Close** when done. The added URLs are displayed in the URL section in the *Questionnaire Details* window. To delete a URL, select a URL check box and click the **Delete** button.

#### 8.5.1.7 Viewing Workflow History

You can view and compare the differences between the various modified versions of the Questionnaire from the Workflow History section. The following is the procedure to view workflow history of a questionnaire:

1. Click the **Select** check box to select versions of the Questionnaire from *Workflow History* section on the *Questionnaire Details* window.
2. Click the **Difference** button to display the workflow history popup. You can view and compare the differences between the selected versions of the Questionnaire.
3. Click **Close** to close the popup.

#### 8.5.1.8 Editing a Section in a Questionnaire

You can edit sections in questionnaires from the *Questionnaire Details* window. The following steps describe the procedure to edit a questionnaire section:

1. Click the **Edit** button to enable editing the questionnaire in the *Questionnaire Details* window.
2. Click the **Edit Section** button. The section name field is active. Expand the section if it is collapsed, you can view the **Edit Section** button at the top.
3. Enter the change in the **Section Name** field and click the **Save Section** button to save the details.
4. Click the **Update** button to save the modified questionnaire. Click the **Submit** button after you are ready to submit the edited questionnaire. Click the **Close** button to discard the changes and close the window.

#### 8.5.1.9 Deleting a Section in a Questionnaire

You can delete sections in a questionnaire from the *Questionnaire Details* window. The following is the procedure to delete a section:

1. Click the **Edit** button to enable editing the questionnaire in the *Questionnaire Details* window.
2. Click the **Delete Section** button to display the delete confirmation popup. Expand the section if it is collapsed, you can view the **Delete Section** button at the top.
3. Click **OK** to delete the question or click **Cancel** to discard and close the popup.

**NOTE:** You can delete a section only if the questionnaire is in **Draft** or in **In Review** status. If you choose to delete a section, any question that you have linked to the section is also deleted.

#### 8.5.1.10 Wrapping and Unwrapping Sections in a Questionnaire

You can wrap and unwrap questionnaire from the library to collapse or expand the details entered in the fields.

The following steps describe the procedure to wrap and unwrap a questionnaire section:

1. Select the section to wrap or unwrap. Expand the section if it is collapsed, you can view the Wrap or Unwrap button at the top.
2. Click the **Unwrap** button to unwrap a questionnaire section. If the section is unwrapped, you can click the **Wrap** button.

### 8.5.2 Approving Questionnaires

Questionnaire is configured with an n-eyes system that enables the process of submission of a Questionnaire to be reviewed and approved by one or more level of supervisors or approvers. After approval, the Questionnaire moves into Open status and is active. However, before it can move into Open status, the Questionnaire can be moved through stages of reviews until the approver is satisfied with the Questionnaire and approves it.

The following is a description of the various statuses when the n-eyes functionality is enabled:

- Draft – Questionnaire created by user and not yet submitted.
- Pending Approval – Questionnaire submitted for approval to a supervisor.
- Open – Questionnaire approved and ready for use.
- In Review – Questionnaire in Open status that is edited by a user is moved to In Review. After the changes are done, the submitted Questionnaire moves to Pending Approval status again for the supervisor's approval. For related topics, see Editing Questionnaires in Open Status – Review Questionnaire.

You (the approver) can approve Questionnaires that users have submitted and which are now in Pending Approval status. If there are changes to be made to the Questionnaire before you approve it, you can reject it after entering relevant comments. It moves back to Draft or In Review status and is assigned to the user for editing. The user can update for your comments and submit the Questionnaire again and move it to the Pending Approval status.

**NOTE:** You must be mapped to QLOCAUTHRL role to approve Questionnaires. For more information, see the Oracle Financial Services Advanced Analytical Applications Infrastructure Application Pack Administration and Configuration Guide.

The following steps describe the procedure to approve a questionnaire:

1. Log in to the system with approver role user ID.
2. Click **My Inbox** tab and then click **My Task** to display a list of tasks assigned to you.

3. Search Questionnaire in **Entity Type** to display the list of Questionnaires that are in **Pending Approval** status or search by the Questionnaire ID in **Entity Name**.
4. Click **Task ID** to open the Questionnaire and to review.
5. Click **Edit** and update the Questionnaire, if required. Click **Approve** to approve and move the Questionnaire to **Open** status. Click **Reject** if you have to recommend changes. The Questionnaire moves into **Draft** or **In Review** status and goes back to the user's view in the *Questionnaire Library*.

### 8.5.3 Editing Questionnaire from the Library

You can edit questionnaires in Draft and In Review statuses from the *Questionnaire Library* window.

#### 8.5.3.1 Editing Questionnaires in Draft Status

The following steps describe the procedure to edit a Questionnaire in Draft status:

1. Click the **Questionnaire ID** hyperlink on the ID column in the *Questionnaires Library* window to display the *Questionnaire Details* window.
2. Click the **Edit** button to enable editing the questionnaire in the *Questionnaire Details* window.
3. Enter the details for the fields in the *Questionnaire Details* window. You can refer to the field description table in Creating Questionnaire in the Library section for field details.

   **NOTE:** The ID field is read-only and is not editable.

4. Click the **Update** button to save the modified questionnaire. Click the **Submit** button after you are ready to submit the edited questionnaire. Click the **Close** button to discard the changes and close the window.

#### 8.5.3.2 Editing Questionnaires in Open Status – Review Questionnaire

Questionnaires that are in Open status can only be edited using the Review Questionnaire feature.

The following steps describe the procedure to edit a Questionnaire in Open status:

1. Click the **Questionnaire ID** hyperlink on the ID column in the *Questionnaires Library* window to display the Questionnaire Details window.
2. Click **Review Questionnaire** to edit the Questionnaire in the *Questionnaire Details* window.
3. Edit the details as required. You can refer to the field description table in Creating Questionnaire in the Library section for field details.

**NOTE:** The ID field is read-only and is not editable.

4. Click the **Update** button to save the modified questionnaire. Click the **Submit** button after you are ready to submit the edited questionnaire. The Questionnaire moves to the Open status if there's no approval required. However, if approval is required, then the Questionnaire moves to Pending Approval status. See Approving Questionnaires for more details. Click the **Close** button to discard the changes and close the window.

### 8.5.4 Creating Questionnaire by Copying Existing Questionnaire

You can copy an existing questionnaire from the library and create a new questionnaire. All the contents of the questionnaire are carried forward to the new questionnaire with a new ID. You can copy a question from the *Questionnaire Library* window.

The following steps describe the procedure to copy a questionnaire and to create a new questionnaire from the *Questionnaire Library* window:

1. Click the **Select** check box to select a Questionnaire from the *Questionnaire Library* window.
2. Click the **Copy Questionnaire** button. A message is displayed on successful execution of the copy operation.

### 8.5.5 Deleting Questionnaire from the Library

You can delete questionnaires from the Questionnaire Library window. The following is the procedure to delete a questionnaire:

1. Click the **Select** check box to select a Questionnaire in the *Questionnaire Library* window that you want to delete.
2. Click the **Delete Questionnaire** button to display the delete confirmation popup.
3. Click **OK** to delete the question or click **Cancel** to discard and close the popup.

**NOTE:** You can delete a questionnaire only if it is in **Draft** status.

### 8.5.6 Wrapping and Unwrapping Questionnaire from the Library

You can wrap and unwrap questionnaires from the library to collapse or expand the details entered in the fields.

The following steps describe the procedure to wrap and unwrap a questionnaire:

1. Click the **Select** check box to select a Questionnaire from the *Questionnaire Library* window.
2. Click the **Unwrap** button to unwrap a questionnaire. If the question is unwrapped, you can click the **Wrap** button.

## 8.6 Using Search in Questionnaire

You can search for existing questionnaire attributes from the *Questionnaire Attributes Configuration* window, search for existing questions from the *Questions Library* window, and search for existing questionnaires from the *Questionnaire Library* window. The respective windows display a Search section at the top. There are two types of search:

1. **Basic Search** – a simple form of search.
2. **Advanced Search** – a complex form of search with combinations to filter results.

### 8.6.1 Using Basic Search

The basic search is the default search. Enter the nearest matching keywords to search, and filter the results by entering information in the additional fields.

Click **Go** to start a search and click **Reset** to clear the Search fields.

### 8.6.2 Using Advanced Search

The Advanced Search option helps you find information faster and for specific combinations. Click **Advanced Search** from the Search toolbar to display the Advanced Search fields.

Click **Go** to start a search and click **Reset** to clear the Search fields.

### 8.6.3 Describing Search Fields

The search section provides fields to enter details and filter search results. The following table provides descriptions for the fields (both Basic and Advanced Search) on the various windows in Questionnaire:

| Field | Description |
|---|---|
| **Questionnaire Attributes Configuration** | |
| Component | Select from the drop down the type of questionnaire component configured in the system. |
| Subcomponent | Select the subcomponent for the selected Component. |
| **Questions Library** | |
| ID | Enter the system generated identifier for the question. This is a unique value. |
| Question | Enter the title of the question. |
| Category | Select the category of classification for the question from the options: External, IT and Infrastructure. |

| Field | Description |
|---|---|
| Question Type | Select the type of question from the options: Single Choice, Multiple Choice, Free Text, Number and Range. |
| Display Type | Select the type of user-interface element that is displayed. For example, drop down, text field and so on. The options are available based on the Question Type selected. |
| Status | Select the status of the question. For example, Draft, Open and so on. |
| Last Modified From | Select the From date for the last update on the question to search in a date range. |
| Last Modified To | Select the To date for the last update on the question to search in a date range. |
| **Questionnaire Library** | |
| ID | Enter the system generated identifier for the questionnaire. This is a unique value. |
| Name | Enter the name of the questionnaire. |
| Component | Select the type of questionnaire component configured in the system. |
| Type | Select the type of questionnaire from the options: Basic, Decision Tree and Score Based. |
| Status | Select the status of the questionnaire. For example, Draft, Open, Pending and In Review. |
| Last Modified From | Select the From date for the last update on the questionnaire to search in a date range. |
| Last Modified To | Select the To date for the last update on the questionnaire to search in a date range. |

# 9 System Configuration and Identity Management

System Configuration and Identity Management module is an integral part of Infrastructure administration process. It facilitates the System Administrators to provide security and operational framework required for Infrastructure.

System Configuration and Identity Management activities should be performed by the infrastructure administrator using the admin credentials.

This section consists of the following topics:

- System Configuration
- Identity Management
- Processing Modeling Framework

## 9.1 System Configuration

The Administration and Configuration section allows the System Administrators to configure the Server details, Database details, OLAP details, and Information Domain along with the other Configuration process such as segment and metadata mapping, and mapping segment to security. System Configuration is mostly a onetime activity which helps System administrator to make the Infrastructure system operational for usage.

### 9.1.1 Navigating to System Configuration

Go to the *System Configuration & Identity Management* tab and click *Administration and Configuration*. You can view the sub menus under *System Configuration* in the LHS menu.

You (System Administrator) need to have full access rights to ftpshare folder with appropriate User ID and password to add and modify the server details.

### 9.1.2 Components of System Configuration

System Configuration consists of the following sections. Click on the links to view the sections in detail.

- Database Server
- Application Server
- Web Server
- Database Details
- OLAP Details
- Information Domain

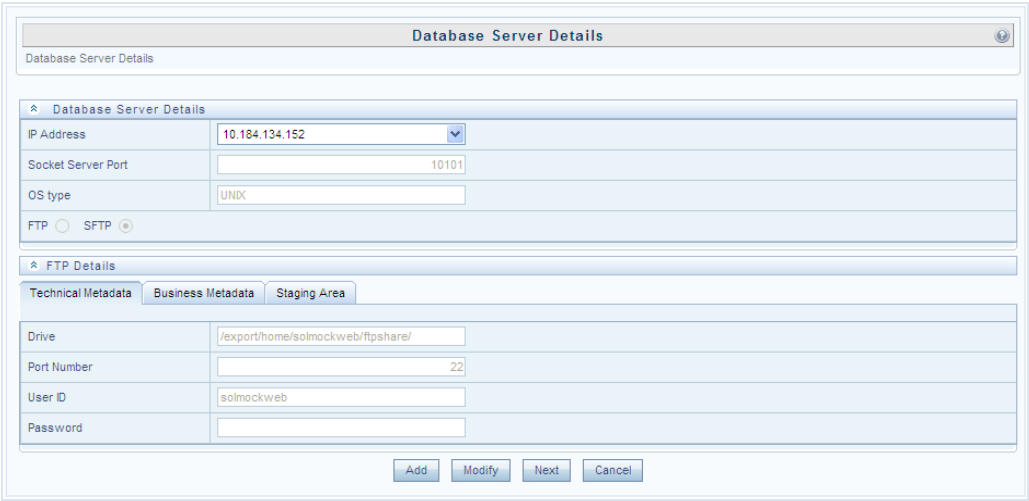
- Configuration
- Create Application

### 9.1.3 Database Server

Database server refers to a computer in network which is dedicated to support database storage and retrieval. The database layer of Infrastructure system can be represented by a single database server.

The *Database Server* window within the System Configuration section of Infrastructure system facilitates you to add and modify the database server details on which the Infrastructure Database, Application, and Web components have been installed. A database server can support multiple Information Domains, but however, one Information Domain can be mapped to only one database layer.

From the *System Configuration & Identity Management* tab, you can access *Database Server Details* window by expanding **Administration and Configuration** and **System Configuration** within the tree structure of LHS menu and selecting **Database Server**.




By default the *Database Server Details* window displays the pre-configured database server details. In order to add or modify the database server details, you need to ensure that:

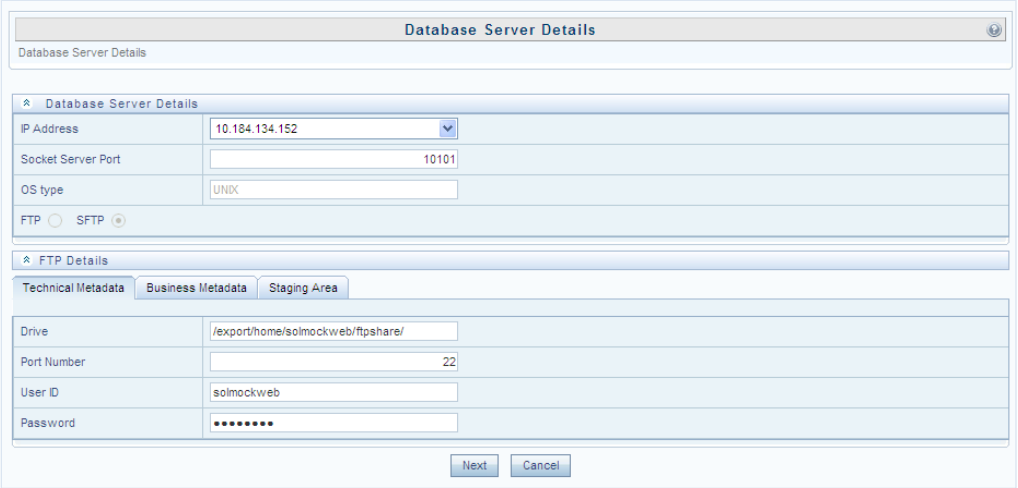
- The FTP/SFTP service should be installed on the Web/Application and DB Server.
- The FTP/SFTP ID for Web/App and DB server has to be created through the Computer Management option under Administrative Tools for all the installations other than UNIX installations.
- This user should belong to the administrator group.
- The FTP/SFTP password for Web/App and DB server needs to be specified in the Computer Management option under Administrative Tools. Also the Password Never Expires option has to be checked.

**NOTE:** The *Database Server Details* window displays the pre-configured Database Server Details specified during OFSAA Infrastructure Installation.

#### 9.1.3.1 Adding Database Sever Details

You can add a database server by specifying the Database Server Details, FTP Details, and Security Details. To add database server details:

1. Select **Add** button from the Database *Server Details* window. The window is refreshed and enables you to populate the required data in the fields.




2. Enter the Database **Server Details** as tabulated.

**NOTE:** Few of the fields in Database Server details are auto populated based on the options specified during application installation and are not editable.

| Field | Description |
|---|---|
| IP Address | If the IP address of the Infrastructure configuration servers is specified during setup, the same is auto populated and cannot be modified.<br>If not, select the IP address by clicking on the drop-down list. |
| Socket Server Port | The socket server port is auto populated from dynamicservices.xml file in the ficserver/configuration path, and should not be edited.<br>By default the port number is 10101. |
| OS Type | The OS type (Operating System) of the database is auto detected by the Infrastructure Application and cannot be edited.<br>The system supports only similar OS types in a single implementation and does not support UNIX with NT combination. |

| Field | Description |
|---|---|
| FTP / SFTP | FTP refers to the transfer of files such as metadata and staging files from one server to another. SFTP refers to secure FTP for transfer of files from one server to another.<br>Note the following:<br>▪ The FTP / SFTP option specified during setup is auto populated and is not editable.<br>▪ The FTP/SFTP information should be created manually, prior to entering the details. The application validates the information ensuring that the value in FTP/SFTP and Host DB is not blank.<br>▪ When there is a change to the FTP/SFTP path, the old files should be physically moved to the new path. The system ensures that all new files are generated /transferred into the new path. |

The FTP Details consists of:

- **Technical Metadata** tab, which consists of the path to ERwin file which in turn stores TFM, Database Model XML files, and Table Creation scripts.
- **Business Metadata** tab, which consists of path to the business logic XMLs such as Cube Configuration files and Hierarchy Parentage files.
- **Staging Area** tab, which stores the path to FLAT files (data files) which can be loaded through Data Management Tools. This is the only path that is not tagged to any Information Domain.

3. Enter the FTP details in the technical Metadata, Business Metadata, and Staging Area tabs as tabulated. The *Technical Metadata* tab is selected by default and the details specified here are replicated as default values to *Business Metadata*, and *Staging Area* tabs.

**NOTE:** It is recommended to define the same FTP share directory for Technical Metadata, Business Metadata, and Staging Area.

| Field | Description |
|---|---|
| Drive | Specify the physical path of the FTP/SFTP shared directory/Drive.<br>For example: e:\dbftp\ |
| Port Number | Specify the database FTP/SFTP port number.<br>By default the SFTP port number is 22 and can be changed if the port is enabled. |

| Field | Description |
|---|---|
| User ID | Specify the user ID that is used to perform an FTP/SFTP in the machine where the database server is located. It is mandatory to specify the FTP/SFTP User ID. |
| Password | Enter the password which is same as the specified password for FTP/SFTP user ID by the administrator.<br>**Note**: The password is represented by asterisk (*) for security reasons. |

4. Click **Next** and enter the Security Details as tabulated:

| Field | Description |
|---|---|
| Security User ID | Enter the user ID which has the same user rights as the user who installed Infrastructure.<br>The Application server validates the database user Id / Password to the database server(s) for connection purposes. |
| Security Password | Specify the password for the user who would be accessing the security share name. The password is represented by asterisk (*) for security reasons. |
| Security Share Name | Enter the path locating the DB components installation folder which has been specified by the user who has installed the infrastructure system. For example: D:\Infrastructure |

5. Click **Save** to save the Database Server details.

#### 9.1.3.2 Modifying Database Server Details

To update the existing database server details:

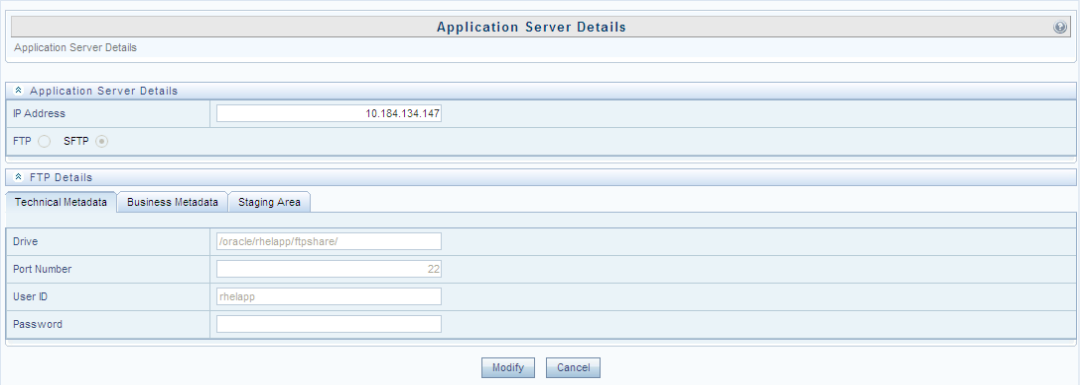
1. Select **Modify** button from the *Database Server Details* window. The window is refreshed and enables you to edit the required data in the fields.
2. Update the Database Server details as required.

   Except for the auto populated OS type, you can edit all other details including IP Address, Server Socket Port, and FTP details in Technical Metadata, Business Metadata, and Staging Area tabs. For more info refer Add Database Server Details.
3. Click **Save** to save the changes.

### 9.1.4 Application Server

Application Server refers to a computer in a distributed network which provides the business logic for an application program. The Application Server in the Infrastructure system maintains the application layer which in turn consists of shared services, sub system services, and ICC server to manage the warehouse operations.

Application Sever within the System Configuration section of Infrastructure system facilitates you (System Administrator) to maintain the Application Server set-up details. From the *System Configuration & Identity Management* tab, you can access *Application Server Details* window by expanding **Administration and Configuration** and **System Configuration** within the tree structure of LHS menu and selecting **Application Server**.




By default the *Application Server (Server Master)* window displays the pre-configured application server details in the **View** mode.

The *Application Server* window is displayed in the **Add** mode when accessed for the first time during the installation process to enter the application server setup details. Subsequently the window is displayed in **View** mode providing option to only update the defined application server details.

#### 9.1.4.1 Modifying Application Server Details

You can update the pre-defined Application Server details and FTP/SFTP details in the *Server Master* window. To update the existing application server details:

1. Select **Modify** button from the *Server Master* window. The window is refreshed and enables you to edit the required data in the fields.
2. Update the Application Server details as tabulated.

**NOTE:** The data in some of the fields are auto populated with the pre-defined Application Server details. Ensure that you edit only the required fields.

| Field | Description |
|---|---|
| IP Address | Enter the new IP address of the application server.<br>Note the following:<br>In case the IP Address of Application server is changed in any of the following two scenarios, contact Infrastructure Support for help:<br>▪ Change in IP Address of the Application server machine in use.<br>▪ Application server is physically moved from one machine to another. |
| FTP / SFTP | Select the option as either FTP or SFTP.<br>FTP refers to the transfer of files such as metadata and staging files from one server to another. SFTP refers to secure FTP for transfer of files from one server to another.<br>Note the following:<br>▪ The FTP / SFTP option specified during setup is auto populated.<br>▪ The FTP/SFTP information should be created manually, prior to entering the details. The application validates the information ensuring that the value in FTP/SFTP and Host DB is not blank.<br>▪ When there is a change to the FTP/SFTP path, the old files should be physically moved to the new path. The system ensures that all new files are generated /transferred into the new path. |

3. Enter the FTP details in the Technical Metadata, Business Metadata, and Staging Area tabs as tabulated. The *Technical Metadata* tab is selected by default and the details specified here are replicated as default values to Business *Metadata*, and *Staging Area* tabs.

**NOTE:** It is recommended to define the same FTP share directory for Technical Metadata, Business Metadata, and Staging Area.

| Field | Description |
|---|---|
| Drive | Specify the new physical path of the FTP/SFTP shared directory/Drive. For example: e:\dbftp\ |
| Port Number | Specify the database FTP/SFTP port number.<br>By default the SFTP port number is 22 and can be changed if the port is enabled. |
| User ID | Specify the user ID that is used to perform an FTP/SFTP in the machine where the database server is located. It is mandatory to specify the FTP/SFTP User ID. |

| Field | Description |
|---|---|
| Password | Enter the password which is same as the specified password for FTP/SFTP user ID by the administrator.<br>The password is represented by asterisk (*) for security reasons. |

4. Click **Save** to save the changes.

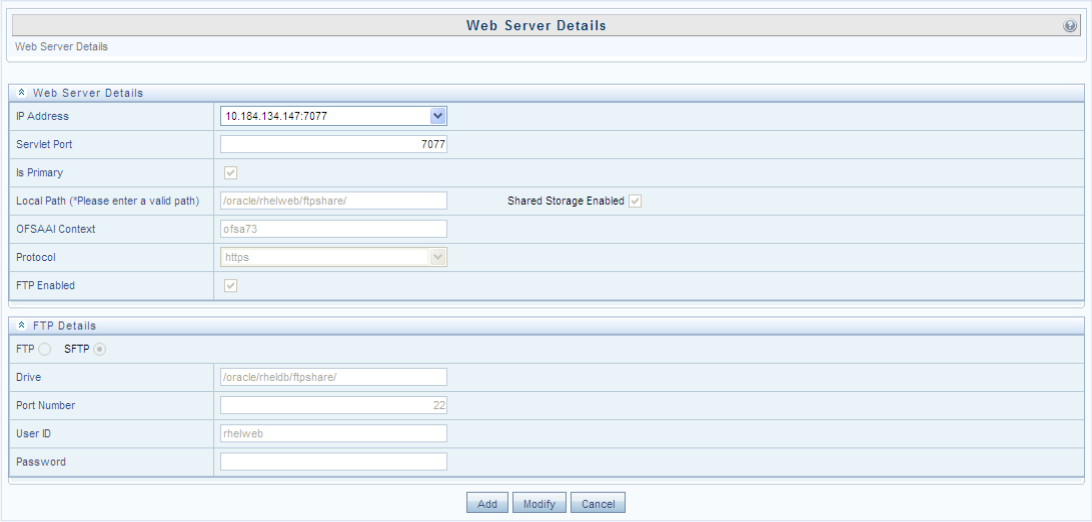
### 9.1.5 Web Server

Web server refers to a computer program that delivers (serves) content, such as Web pages using the Hypertext Transfer Protocol (HTTP) over the World Wide Web. The Web Server in the Infrastructure system constitutes the presentation layer.

The Infrastructure Web Server (presentation layer) can be implemented in the following two ways:

- Installation of Single Web Server.
- Installation of Primary Web Server and a Secondary Server.

Web Sever within the System Configuration section of Infrastructure system facilitates you (System Administrator) to add and modify the Web Server set-up details. From the *System Configuration & Identity Management* tab, you can access *Web Server Details* window by expanding **Administration and Configuration** and **System Configuration** within the tree structure of LHS menu and selecting **Web Server**.

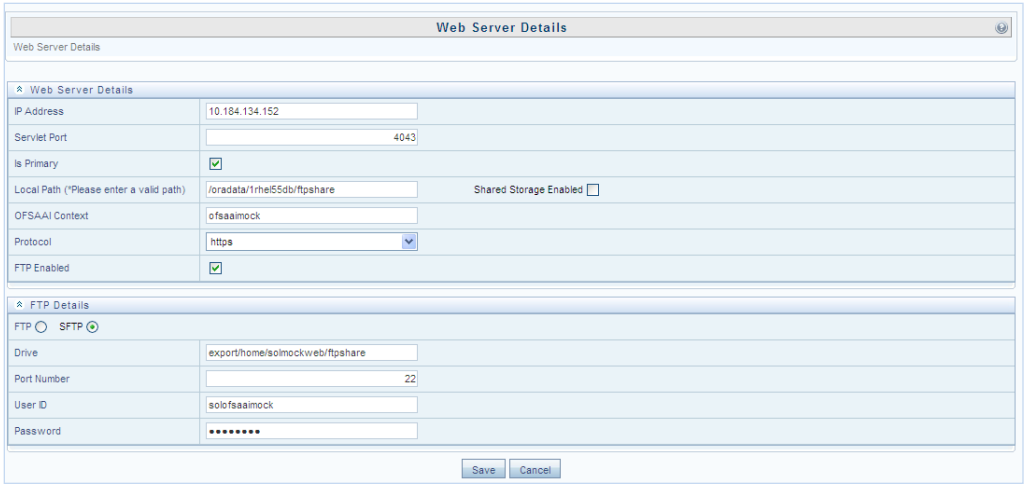



By default the *Web Server (Server Master)* window displays the pre-configured web server details in the **View** mode.

### 9.1.5.1 Adding Web Server Details

In the Infrastructure system you can create multiple web servers to route users through different web servers. For example, you can route internal and external users through different web servers. However, one of the Web Server has to be defined as primary server.

You can add a web server by specifying the Web Server details and FTP/SFTP Details in the *Server Master* window.




To add web server details:

1. Select **Add** button from the *Server Master* window. The window is refreshed and enables you to populate the required data in the fields.
2. Enter the Web Server details as tabulated.

| Field | Description |
|---|---|
| IP Address | Enter the IP address of the web server. |
| Servlet Port | Specify the web server port number. For example: 21 |
| Is Primary | Select the check box if you are defining a primary web server.<br>All the static files will be copied to the defined web server. You can also configure a web server which is installed in other machine as primary web server by selecting the check box. |
| Local Path | Specify the local path (location) where the static files need to be copied in the primary server. For example: e:\revftp\<br>The static files such as Infrastructure OBIEE reporting server pages are copied to the specified location.<br>**Note**: The web server Unix user must have read/write privileges on the Local Path directory. If not, contact your system administrator. |

| Field | Description |
|---|---|
| Shared Storage Enabled | Select Shared Storage Enabled checkbox to access the static files or folders shared in another web server within the network. The files are read from the specified directory instead of copying to the primary web server. |
| OFSAAI Context | Enter the context in the OFSAAI Context field. |
| Protocol | Select the protocol as either HTTP or HTTPS from the drop-down list.<br>Infrastructure supports FTP/SFTP into Web Server and streaming of files. In case, FTP/SFTP is not allowed in a Web Server due to security reasons, system can stream the data across Web Servers so that the Client need not compromise on their Security policy. |
| FTP Enabled | Select FTP enabled checkbox to configure Web Server FTP details and to create FIV path automatically. |

3. (Optional) If you have selected the **FTP Enabled** checkbox, you can specify the Drive, Port Number, and user details in the FTP details section. Select the option as either FTP or SFTP and enter the other details as tabulated.

| Field | Description |
|---|---|
| Drive | Specify the physical path of the FTP/SFTP shared directory/Drive.<br>For example: e:\ftpshare\ |
| Port Number | Specify the database FTP/SFTP port number.<br>By default the SFTP port number is 22 and can be changed if the port is enabled. |
| User ID | Specify the user ID that is used to perform an FTP/SFTP in the machine where the database server is located. It is mandatory to specify the FTP/SFTP User ID. |
| Password | Enter the password which is same as the specified password for FTP/SFTP user ID by the administrator.<br>The password is represented by asterisk (*) for security reasons. |

4. Click **Save** to save the Web Server details.

#### 9.1.5.2 Modifying Web Server Details

You can update the pre-defined Web Server details and FTP/SFTP Details in the *Server Master* window. To update the existing web server details:

1. Select **Modify** button from the *Server Master* window. The window is refreshed and enables you to edit the required data in the fields.
2. Update the Web Server details as required.

You can edit all the Web Server Details and FTP details in the *Server Master* window. For more information, refer Add Web Server Details.

3. Click **Save** to save the changes.

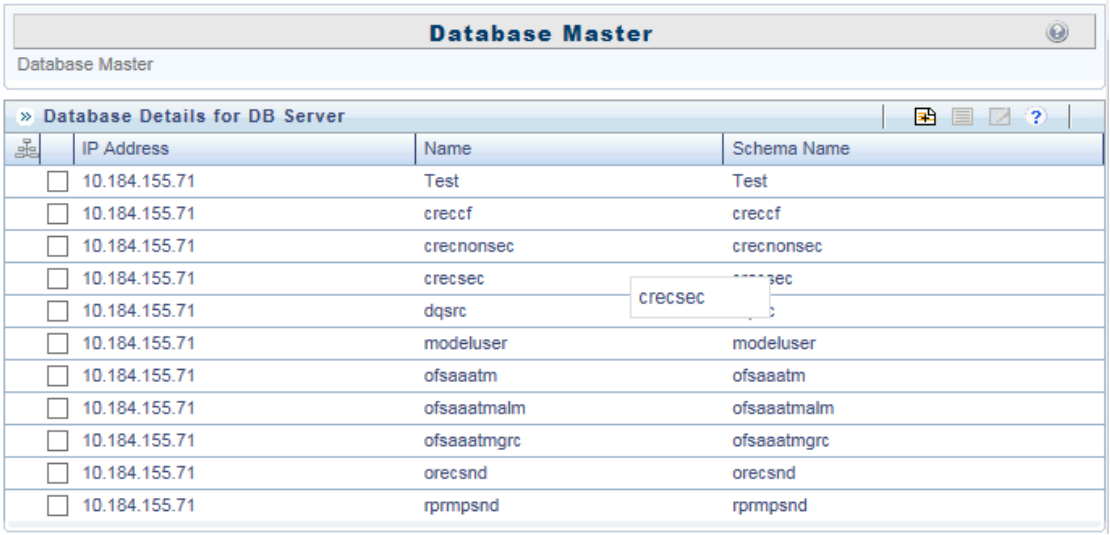
### 9.1.6 Database Details

Database Details in the System Configuration section facilitates you to define the database setup details after you have configured the database server within the Infrastructure System. The Infrastructure Database server for which you need to specify the database setup details could have been installed in any of the following ways:

- Single tier with multiple Information Domains hosted across machines.
- Multi-tier with Multiple Information Domains hosted across machines.
- Single tier with single Information Domain on the same machine.
- Multi tier with single Information Domain on the same machine as Infrastructure DB Server.

OFSAAI supports heterogeneous databases such as Oracle and HDFS. Database authentication details are stored separately for each connection for reusability.

You (System Administrator) need to have SYSADM function role mapped to your role to access and modify the database details. You can access *Database Details* window in LHS menu of System Configuration.




You can view the various databases defined for the database server. The Database Master window allows you to add a new database and modify the existing ones.

### 9.1.6.1 Adding Database Details for DB Server

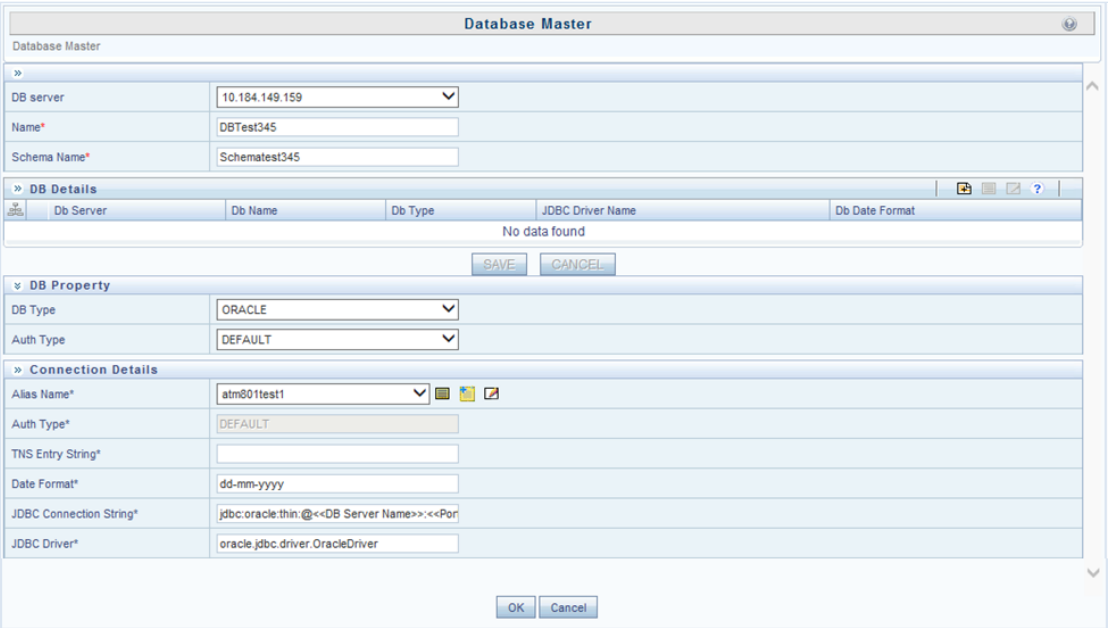
You can add a new database by specifying the name, Schema name, DB properties and connection details. Ensure that the Server Details are specified and the database is created before adding the database details.

You should not create Database details with Hive Server1 and Hive Server2 in the same setup since Hive Server 1 and Hive Server 2 drivers cannot run at the same time in the same JVM. Loading both drivers at the same time causes Hive Server 2 connection failure. This issue will be addressed in a future release of the Hive driver.

You cannot configure multiple Database details using different Hive Drivers in a single OFSAA setup. That is, multiple Data Sources using different Hive Drivers is not supported.

To add a new database:

1. Click button from the toolbar in the *Database Master* window.




2. Enter the Database details as tabulated.

| Field | Description |
|---|---|
| DB Server | Select the Database IP Address from the drop-down list.<br>This list displays the database server IP address defined during the set-up. |

| Field | Description |
|---|---|
| Name | Enter the database Name. Ensure that there are no special characters and extra spaces.<br>Note that, for Oracle database, the TNS (Transparent Network Substrate) database name should be same as SID.<br>The Name should not exceed 20 characters. |
| Schema Name | Enter the Schema name for the database. |
| DB Type | The available options are ORACLE, MSSQL,DB2UDB, and HIVE.<br>For Information Domain creation, only Oracle and Hive Database types are supported. For DI source creation, MSSQL and DB2UDB are also supported.<br>You can create Hive Database instance for a single Hive server/ CDH. Multiple data sources pointing to different Hive servers are not supported. |
| Auth Type | Select the authentication type from the drop-down list. Based on the Database you have selected, the drop-down list displays the supported authentication mechanisms.<br>Select **Default** for DB2UDB, ORACLE, and MSSQL databases.<br>If DB Type is HIVE, then KERBEROS, KERBEROS_WITH_KEYTAB, LDAP, and Default are supported.<br>If the Auth Type is configured as KERBEROS_WITH_KEYTAB for the Hive database, then you must use the Keytab file to login to Kerberos. The Keytab and Kerberos files should be copied to `$FIC_HOME/conf` and `$FIC_WEB_HOME/webroot/conf` of OFS AAAI Installation Directory. |
| **Connection Details** | |

| Field | Description |
|---|---|
| Alias Name | This field is not applicable for HIVE DB with Auth Type as Default.<br>Select the Alias name (connection) used to access the database from the drop-down list.<br>Click to add a new database connection/atomic schema user. The *Alias Details* window is displayed.<br>▪ **Auth Alias**- Enter a name for the database connection.<br>▪ **User/Principal Name**- Enter the atomic schema User ID to access the database. The system authenticates the specified User ID before providing access.<br>▪ **Auth String**- Enter the password required to access the database/schema. The system authenticates the specified password before providing access. The maximum length allowed is 30 characters. Special characters are not allowed.<br>**Note**: If Authentication type is KERBEROS_WITH_KEYTAB, Auth String (Password) is not required. Since the Auth String is set as mandatory field, enter a dummy password. |
| Auth Type | Displays the Authentication Type. This field is read-only. |
| TNS Entry String | This field is applicable only for ORACLE DB with Auth Type as Default.<br>TNS is the SQL*Net configuration file that defines database address to establish connection.<br>Enter the TNSNAME created for the Information Domain. |
| Date Format | Enter the date format used in the Database server. You can find this in nls_date_format entry for the database. This date format will be used in all the applications using date fields. |

| Field | Description |
|---|---|
| JDBC Connection String | The default JDBC Connection String is auto populated based on the database type selected. This is the JDBC (Java Database Connectivity) URL configured by the administrator to connect to the database.<br>▪ For ORACLE DB type it is jdbc:oracle:thin:@<<DB Server Name>>:<<Port Number>>:<<Oracle SID>><br>▪ For MSSQL DB type it is jdbc:microsoft:sqlserver://<<DB Server Name>>:<<Port Number>><br>▪ For DB2 DB type it is jdbc:db2://<<DB Server Name>>:<<Port Number>>/<<Database Name>><br>▪ For HIVE DB type, it is jdbc:hive2://<<DB Server Name>>:10000/default<br>You need to specify the appropriate details corresponding to the information suggested in brackets. For example, in ORACLE DB you can specify the Port number as 1521 and the SID as ORCL. |
| JDBC Driver Name | The default JDBC Driver Name is auto populated based on the database type selected.<br>▪ For ORACLE DB type it is oracle.jdbc.driver.OracleDriver.<br>▪ For MSSQL DB type it is com.microsoft.jdbc.sqlserver.SQLServerDriver.<br>▪ For DB2 DB type, it is com.ibm.db2.jcc.DB2Driver.<br>▪ For Hive with Auth type as Kerberos with Keytab, it is com.cloudera.hive.jdbc4.HS2Driver.<br>In case of modification, ensure that the specified driver name is valid since the system does not validate the Driver Name.<br>Multiple data sources pointing to different Hive servers are not supported. |
| JNDI Name | This field is applicable and mandatory for ORACLE DB.<br>Enter the JNDI Name.<br>JNDI name should be entered if you want to create information domain for this DB schema. If the DB schema is for Data Sources, you can use any dummy data for this field. |
| Key Tab File Name | This field is applicable for Authentication Type selected as KERBEROS WITH KEYTAB.<br>Enter the name of the Key Tab file. |
| REALM File Name | This field is applicable for Authentication Type selected as KERBEROS and KERBEROS WITH KEYTAB.<br>Enter the name of the Kerberos Realm file. |

| Field | Description |
|---|---|
| KERBEROS KDC Name | This field is applicable for Authentication Type selected as KERBEROS.<br>Enter the name of Kerberos Key Distribution Center (KDC). |
| KERBEROS REALM Name | This field is applicable for Authentication Type selected as KERBEROS.<br>Enter the name of the Kerberos Realm file. |
| JAAS File Name | This field is applicable for Authentication Type selected as KERBEROS.<br>Enter the name of the Java Authentication and Authorization Service (JAAS) file. |

3. Click **Save** to save the Database Details for DB Server.

#### 9.1.6.2 Modifying Database Details

You can modify the database details by selecting the required Database schema from the *Database Master* window. The fields like Name, Schema Name, DB Type and Auth Type are not editable. You can add a new Alias (database connection) or modify the details of the existing Alias. For example, the password for the database connection can be modified by clicking in the **Alias Name** field and entering new password in the **Auth String** field in the *Alias Details* window. For more information, refer Add Database Details for DB server.

**NOTE:** The database date when modified does not get auto updated. You need to manually update the date in the database parameters of NLS_DATE_FORMAT file and restart the DB. Also the to_date function translation is not performed during the data load.

Once you have updated all the required information, click **Save** to save the Database Details.

### 9.1.7 OLAP Details

OLAP or Online Analytical Processing is an approach to swiftly answer multi-dimensional analytical queries. Any database configured for OLAP uses a multidimensional data model, allowing for complex analytical and ad-hoc queries with a rapid execution time.

OLAP Details in the System Configuration section facilitates you to define the OLAP details after you have configured the OLAP server within the Infrastructure System. The Infrastructure design makes it mandatory for the System Administrators to define the OLAP details which is usually a onetime activity. Once defined the details cannot be modified except for the user credentials.

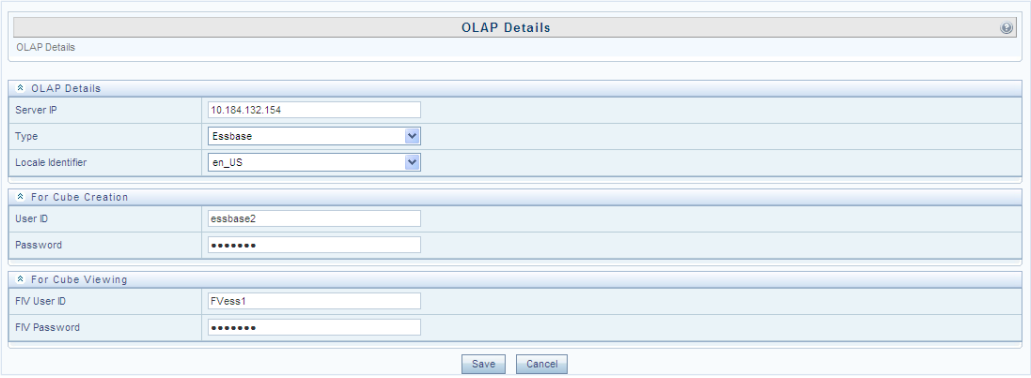
You (System Administrator) need to have SYSADM function role mapped to your role to access and modify the OLAP details. From the *System Configuration & Identity Management* tab, you can access *OLAP Details* window by expanding **Administration and Configuration** and **System Configuration** within the tree structure of LHS menu and selecting **OLAP Details**.

By default the *OLAP Details* window displays the pre-configured server details specified during the installation.

#### 9.1.7.1 Adding OLAP Details

You can add OLAP details by specifying the server IP, database type, and locale. Ensure that the OLAP server is configured before adding the OLAP details. To add OLAP details:

1. Select **Add** button from the *OLAP Details* window. The window is refreshed and enables you to populate the required data in the fields.




2. Enter the OLAP details as tabulated.

| Field | Description |
|---|---|
| Server IP | Enter or select the OLAP server IP from the drop-down list.<br>The OLAP Server IP address is the IP address of the machine on which OLAP server is running. |
| Type | Select the OLAP database type from the drop-down list. The available options:<br>▪ SQLOLAP<br>▪ ESSBASE<br>▪ EXPRESS<br>▪ DB2OLAP<br>▪ ORACLE<br>Note the following while selecting the OLAP DB type:<br>▪ By selecting ESSBASE and DB2OLAP, you need to specify different user id and password for Cube Creation and Cube Viewing to avoid locking of the cube when the cube is being built.<br>▪ By selecting SQLOLAP and EXPRESS, you need to specify one set of user id and password common for both Cube Creation and Cube Viewing.<br>▪ By selecting ORACLE, you need not specify user id and password for Cube |

| Field | Description |
|---|---|
| | Creation and Cube Viewing.<br>In the same server, Multiple OLAP types can be installed in the same server and configured in OFSAAI. |
| Locale Identifier | Select the locale from the drop-down list.<br>The specified locale is identified at the time localization set-up. |

3. Specify the User ID and Password in the **For Cube Creation** section, based on the selected OLAP DB Type. Ensure that User ID should not have any special characters or extra spaces and it should not exceed 16 characters.
   - For SQLOLAP, the User ID should be created in Microsoft Windows with appropriate privileges for cube creation.
   - For EXPRESS, the User ID should be created in EXPRESS with appropriate privileges for cube creation.
4. Specify the User ID and Password For **Cube Viewing**, based on the selected OLAP DB Type. Ensure that there are no special characters and extra spaces.
   - Enter the FIV User ID to view the cube. If ESSBASE is selected as the database type, the cube can be viewed in OBIEE reporting server.
5. Click **Save** to save the OLAP Details.

#### 9.1.7.2 Modifying OLAP Details

By default, the *OLAP Details* window displays the OLAP details specified during the installation. The defined OLAP details are not editable and you can only modify the user privileges for Cube Creation and Viewing based on the selected OLAP DB Type. For more information, refer Add OLAP Details.

Once you have updated all the required information, click **Save** to save the OLAP Details.

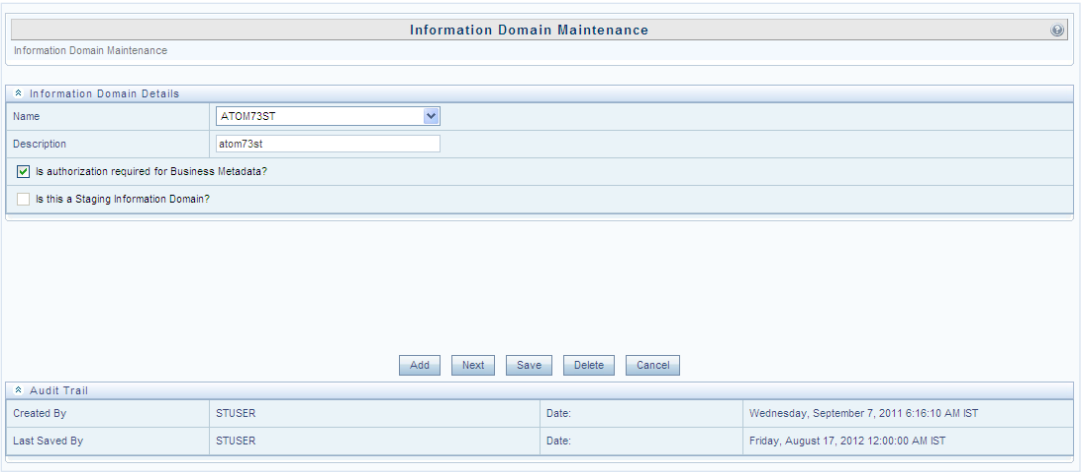
### 9.1.8 Information Domain

Information Domain within the Infrastructure system refers to a specific area of analysis which consists of stored data models with the related Technical and Business data definitions for processing. An Information Domain forms the backbone for all the data analysis. Information domain comprises of Metadom Schema and Datadom Schema. Metadom Schema holds all the Business data definitions and Datadom Schema consists of stored data models. For RDBMS infodom, Metadom and Datadom schemas can be pointed to the same database schema. For HDFS database, Metadom should mandatorily point to an RDBMS schema and Datadom schema should point to the Hive schema.

Information Domain in the System Configuration section facilitates you to define and maintain the Information Domain Details within the Infrastructure system.

- The *Information Domain Maintenance* window can be accessed only if the Server details are defined and at least one database has been created.
- One Information Domain can be mapped to only one database and one database can be mapped to only one Information Domain.
- You need to execute the file **privileges_config_user.sql** which is available under $FIC_HOME directory by logging into database as **sysdba** user, to grant privileges to the database schema.
- The Information Domain schema makes use the tables from the configuration schema and to facilitate that you need to execute the file “<Infrastructure Database Layer Install Directory>/config_table_privileges_for_atomic_user.sql” from the Infrastructure config database before the Information Domain is created.

You (System Administrator) need to have SYSADM function role mapped to your role to access and modify the Information Domain details. From the *System Configuration & Identity Management* tab, you can access *Information Domain Maintenance* window by expanding **Administration and Configuration** and **System Configuration** within the tree structure of LHS menu and selecting **Information Domain**.

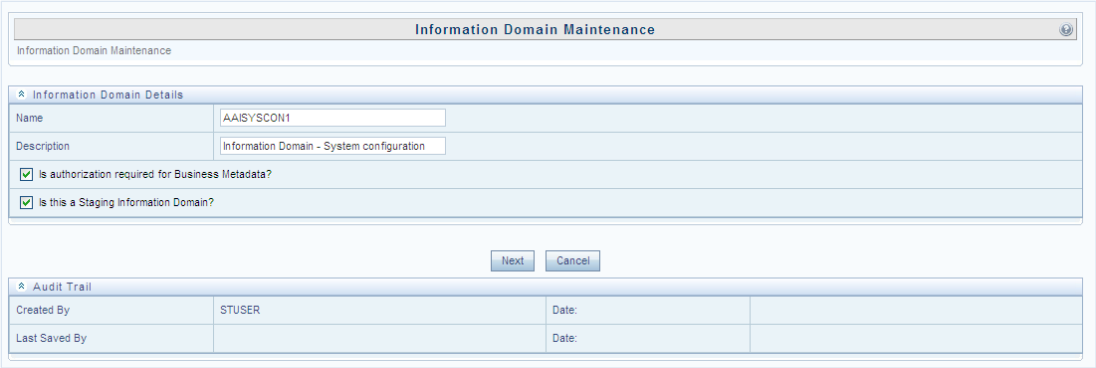



By default the *Information Domain Maintenance* window displays the pre-configured Information Domain details and allows you to add, modify, and delete Information Domains.

### 9.1.8.1 Creating Information Domain

You can create Information Domain only when you have a defined database which has not been mapped to any Information Domain. To add Information Domain details:

1. Select **Add** button from the *Information Domain Maintenance* window. The window is refreshed and enables you to populate the required data in the fields.




2. Enter the Information Domain details as tabulated:

| Field | Description |
|---|---|
| Name | Enter the name of the Information Domain. Ensure that the name specified is of minimum 6 characters long and does not contain any special characters or extra spaces. |
| Description | Enter the description of the Information Domain. Ensure the description field is neither empty nor exceeds 50 characters. |

| Field | Description |
|---|---|
| Is authorization required for Business Metadata? | Select the checkbox if user authorization is required to access Business Metadata. |
| Is this Staging Information Domain? | Select the checkbox if you are creating a Staging/Temporary Information Domain. |

3. Click **Next** and enter the database details as tabulated:

| Field | Description |
|---|---|
| Database Server | Select the database server from the drop-down list. The list contains all the defined database servers. |
| Database Name | Select the database name from the drop-down list. The list contains all the database names contained within the server. |
| OLAP Server | Select the OLAP server from the drop-down list. The list contains all the servers defined in OLAP Details. |
| OLAP Type | Select OLAP Type from the drop-down list. The available options are:<br>▪ ESSBASE<br>▪ ORACLE<br>▪ SQAOLAP |
| Generate BI hierarchy | Select the required option to re-generate all the Business Intelligence Hierarchies either upon Data Load or upon Transformation or both. By default, None option is selected. |

4. Click **Next**.
5. Specify the file location path of **ERwin**, **Log**, and **Scripts** file on the application server. For example, an ERwin file path could be /oracle/app73/ftpshare/<infodom>/Erwin.
   - ERwin file stores TFM and Database Model XML files.
   - Log file stores the Log data for all the Backend and Front-end components.
   - Script file stores Table Creation scripts.
6. Specify the file location path of **ERwin**, **Log**, and **Scripts** file on the database server.

   For example, an ERwin file path could be /home/db73/ftpshare/<infodom>/Erwin.

   The specified details provided for the database and application server details will be mapped to the Information Domain. A consolidated data would be stored in the **DSNMASTER** table in the **config schema** database.

7. Select the **Meta Database Server** from the drop-down list. This is the database server of the Metadom Schema.
8. Enter the Database Name of the Metadata Schema.
9. Click **Save** to save the Information Domain details.

   After creating Information Domain successfully, add persistence unit entry and replace the `$JNDI_KEY_FOR_SERVER_TYPE` in **GRCpersistence.xml** file present under `$FIC_WEB_HOME/webroot/WEB-INF/classes/META-INF` folder.

   The value for `JNDI_KEY_FOR_SERVER_TYPE` will vary based on the webserver type.

   Similarly add persistence unit entry to **persistence.xml** file present under `$FIC_DB_HOME/conf/META-INF` folder.

On creating an Information Domain a list of objects are created using the script files.

#### 9.1.8.2 Modifying Information Domain

By default, the *Information Domain Maintenance* window displays the details of the selected Information Domain. Select the required Information Domain by clicking on the Name drop-down list. You can edit only the specific information as indicated below:

- In **Information Domain Details** section you can update the Information Domain Description and change the option to specify “Is authorization required for Business Metadata?”
- In **Generate BI hierarchy** section, you can change the option to re-generate all the Business Intelligence Hierarchies either upon Data Load or upon Transformation or both. By default, “None” option is selected.
- In **Paths on the APP and DB Server**, you can update only the Log File Path. The ERwin and Scripts file path is updated automatically by the system when there is a change in the Server Details. The change in path of Log and MDB files has to be updated manually by moving the files to the new path.

Once you have updated the required information, click **Save** to save the Information Details. For more information, refer Create Information Domain.

#### 9.1.8.3 Deleting Information Domain

You can remove an Information Domain in the Infrastructure system only when there are no users mapped to it. Select the required Information Domain by clicking the **Name** drop-down list and click **Delete**.

**NOTE:** You need to manually drop the Atomic Schema/ objects in the schema upon deletion of INFODOM.

Perform the following actions:

1. Login to the Websphere/ Weblogic Admin console.
2. Delete any Data Sources/ Connection Pool entries configured to the Atomic Schema of the INFODOM being deleted. For more information, see Appendix B in the *OFS AAAI Application Pack Installation and Configuration Guide* available in the OHC Documentation Library.
3. Navigate to `$FIC_HOME/ficweb/webroot/WEB-INF/` folder.
4. Edit the `web.xml` file and delete any <resource-ref> entries pointing to the same ATOMIC schema.
5. Navigate to the folder on your OFSAA instance identified as FTPSHARE.
6. Delete the folder with same name as the INFODOM being deleted.

### 9.1.9 Configuration

Configuration refers to a process of defining all the system accessibility components of an information system. Configuration in the System Configuration section facilitates you (System Administrator) to define and maintain the user accessibility details within the Infrastructure system.

You (System Administrator) need to have SYSADM function role mapped to your role to access and modify the Configuration details. You can access *Configuration* in LHS menu of System Configuration.

**Configuration**

Configuration

» **Environment Details**

| | |
|---|---|
| Database - ORACLE | Server - Unix |

General Details | Guest Login | Optimization | Others

| | |
|---|---|
| Number of invalid logins | 10 |
| Path for Application Packaging | |
| Session Timeout Value(in minutes) | 50 |
| Session Timeout Popup Interval(in minutes) | 5 |
| Environment Details | aayi |
| SSO Enabled | ☐ |
| Authentication Type | SMS Authentication and Authorization |
| Allow user to log in from multiple machines | ☐ |
| Encrypt Login Password | ☐ |
| CSRF Enabled | ☐ |
| Hierarchy Security Type | User Based Hierarchy Security |
| Dormant Days | |
| Inactive Days | |
| Working Hours From | To |
| Frequency of Password Change | 30 |
| Password History | 1 |
| Password Restriction | ◉ Restricted ○ Un Restricted |
| Disclaimer Text | |
| Password Length | 6 Minimum 20 Maximum |
| Numbers | Minimum Maximum |
| Upper Case | Minimum Maximum |
| Lower Case | Minimum Maximum |
| Special Characters Occurrence Allowed | ☑ |
| Special Character | Minimum Maximum |
| Special character occurrence Frequency | |
| Disallowed Special Characters | |
| Running Alphabets | ☑ |
| Sequence Of Running Alphabets | |
| Running Numbers | ☑ |
| Sequence Of Running Numbers | |
| Security Question Enable | ☑ |
| QUESTION 1 : | ANSWER 1 : |
| QUESTION 2 : | ANSWER 2 : |
| QUESTION 3 : | ANSWER 3 : |

Save Cancel

The *Configuration* window consists of four sections namely General Details, Guest Login Details, Optimization, and Others. By default the *General Details* window is displayed with the pre-configured details of the Server and Database that you are currently working on and allows you to modify the required information.

#### 9.1.9.1 Update General Details

OFSAAI supports four types of authentications:

- **SMS Authentication & Authorization**- By default, this is selected.
- **LDAP Authentication & SMS Authorization**- Ensure that the LDAP servers are up and running if you are selecting this option. You can configure multiple LDAP servers. While logging in to OFSAA instance, you can select the appropriate LDAP Server to be authenticated against.
- **SSO Authentication & SMS Authorization**- Ensure SSO server is configured if you are selecting this option.
- **SSO Authentication (SAML) and SMS Authorization**

Specify the configuration details as tabulated:

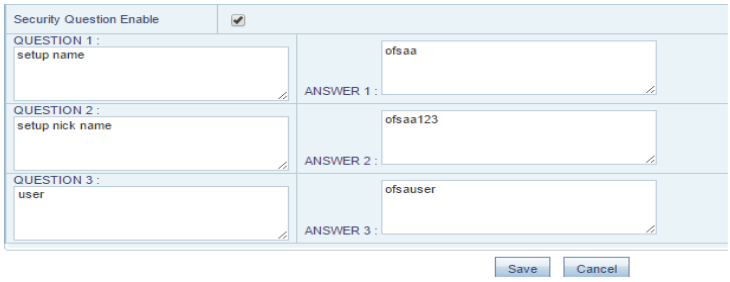
| Field | Description |
|---|---|
| Number of invalid logins | This field is not applicable if you are selecting **SSO Enabled** check box.<br>Enter the number of attempts permitted for the user to enter wrong passwords, after which the user account will be disabled. |
| Path for Application Packaging | Enter the Application Packaging path where the JSP's generated through DEFQ is saved. |
| Session Timeout Value (in minutes) | Enter the permitted duration of inactivity after which the session will be automatically timed out and the user will be requested to login again.<br>Note the following:<br>▪ The session time out depends on the specified **Session Timeout Value** and web server internal session maintenance. It may vary for different web servers.<br>▪ If SSO authentication is selected, ensure you set the **Session Timeout Value** equivalent to the configured server session time to avoid improper application behavior after session expired. |
| Session Timeout Popup Interval (in minutes) | Enter the time left in the session timeout at which a popup should appear and display a timer that shows time remaining for the session to end.<br>For example, if you enter 50 minutes to the Session Timeout Value and enter 5 minutes to the Session Timeout Popup Interval, the popup appears on the screen |

| Field | Description | |
|---|---|---|
| | after 45 minutes of inactivity and displays the timer (starts from 5 minutes and ends at 0) for the session timeout. | |
| Environment Details | Enter the system environment details such as Development, UAT, Production, and so on which are displayed in the application top banner as the “In Setup” info. | |
| SSO Enabled | Select this check box to enable SSO Authentication & SMS Authorization. | |
| If **SSO Enabled** checkbox is selected: | Authentication Type | The options displayed for **Authentication Type** are:<br>▪ SSO Authentication & SMS Authorization<br>▪ SSO Authentication(SAML) and SMS Authorization |
| | SSO Method | This field is displayed only if you have selected Authentication Type as **SSO Authentication and SMS Authorization**.<br>Select the required SSO method. These methods are to specify how the user id should be passed from the SSO engine.<br>▪ **HTTP Request Header** - Returns the value of the specified request header as a string from the server. If selected, you need to specify the header value in **SSO Header Value** field. For example, SM_USER and iv-user header values are supported in OAM.<br>▪ **HTTP Request Remote User** - Returns the login details of the user who is requesting access to the application remotely.<br>▪ **HTTP Request User Principal** - Returns a “java.security.Principal” object containing the name of the current authenticated user. |
| | SSO Logout URL | This field is displayed only if you have selected Authentication Type as **SSO Authentication and SMS Authorization**.<br>Enter the URL of the page to invalidate SSO session. |
| | SSO Redirect URL | This field is displayed only if you have selected Authentication Type as **SSO Authentication and SMS Authorization**.<br>Enter the URL of the page to which the user should be redirected after SSO session is invalidated. |

| Field | Description | |
|---|---|---|
| | OFSAA as Service Provider | This field is displayed only if you have selected Authentication Type as **SSO Authentication (SAML) and SMS Authorization.**<br>Select this checkbox if you want to register OFSAA as service provider. If the checkbox is not selected, OFSAA will act as Oneway SAML Authentication. That is, OFSAA will only assert the identity.<br>For more details on how to register OFSAA as Service Provider, see *SSO Authentication (SAML) Configuration* section in OFSAAI Administration Guide. |
| | Identity Provider URL | This field is displayed only if you have selected the **OFSAA as Service Provider** checkbox.<br>Enter the IdP SingleSignOnService URL in the **Identity Provider URL** field.<br>**Note**: Enter the fully qualified domain URL used to access the **Identity Provider.** |
| | SAML User Attribute | This field is displayed only if you have selected Authentication Type as **SSO Authentication (SAML) and SMS Authorization.**<br>Enter the user attribute name, which is used to pass User Id in SAMLResponse. If this parameter is not set, user will be retrieved from attribute “Subject” by default. |
| | SAML Certificate Absolute Path | This field is displayed only if you have selected Authentication Type as **SSO Authentication (SAML) and SMS Authorization.**<br>Enter the absolute path where the SAML Certificate from Identity Provider is stored, which is required for SAML Assertion. If this parameter is not set, signature from SAMLResponse will not be verified. |
| | SAML Logout URL | This field is displayed only if you have selected Authentication Type as **SSO Authentication (SAML) and SMS Authorization.**<br>Enter the URL of the SAML logout page to be called on logout operation. |
| Authentication Type | Select the required authentication type from the drop-down list. The options are : | |

| Field | Description |
|---|---|
| | ▪ SMS Authentication & Authorization<br>▪ LDAP Authentication & SMS Authorization<br>When you select Authentication Type as **LDAP Authentication & SMS Authorization,** the *LDAP Server Details* popup is displayed. For more details, see LDAP Server Details. |
| Allow user to login from multiple machines | Select the checkbox to allow concurrent user login. |
| Encrypt Login Password | This field is not applicable if you have selected **SSO Enabled** check box.<br>Select the checkbox to encrypt the login password for more protection.<br>**Note**:<br>1. For LDAP Authentication & SMS Authorization, do not select this checkbox.<br>2 .Do not enable this field for REST API authorization to function for OFSAA deployed on WebLogic. |
| CSRF Enabled | Select this checkbox to enable protection for Cross Site Request Forgery (CSRF) in the application. |
| Hierarchy Security Type | Select the hierarchy security node type from the drop-down list. The available options are:<br>▪ **Group Based Hierarchy Security**<br>▪ **User Based Hierarchy Security**<br>Depending on the selection, the user/ group details are displayed in the Hierarchy Security window. |
| Dormant Days | This field is not applicable if you have selected **SSO Enabled** check box.<br>Enter the number of inactive days permitted after which the user is denied to access the system. |
| Inactive Days | This field is not applicable if you have selected **SSO Enabled** check box.<br>Enter the number of inactive days permitted after which the user access permissions are removed and the delete flag status is set as “Y”.<br>Ensure that the number of Inactive days is greater than or equal to Dormant days.<br>Note that, the user details still exist in the database and can be revoked by changing the status flag. |
| Working Hours | This field is not applicable if you have selected **SSO Enabled** check box.<br>Enter the working hours (From and To) to restrict the user to login to the system within the specified time range. The time is accounted in 24 hours and hh:mm |

| Field | Description |
|---|---|
| | format. |
| Frequency of Password Change | This field is not applicable if you have selected **SSO Enabled** check box.<br>Enter the number of days after which the login password will be expired and the user is navigated directly to the *Change Password* window. |
| Password History | This field is not applicable if you have selected **SSO Enabled** check box.<br>Enter the number of instances the old passwords need to be maintained and the user will be restricted not to use the same password again. A maximum of last 10 passwords can be recorded. |
| Password Restriction | This field is not applicable if you have selected **SSO Enabled** check box.<br>Select one of the following options:<br>▪ **Restricted** - To impose additional rules and parameters for users while defining a password.<br>▪ **Un Restricted** - To allow users to define any password of their choice ensuring that the password is alphanumeric without any special characters. |
| Disclaimer Text | Enter any disclaimer information that you want to make available for the users of the application on the login window. |
| These fields are displayed only if you select **Restricted** option for **Password Restriction**. | Specify the following password restriction parameters:<br>▪ **Password Length** - Enter the minimum and maximum characters permitted for setting a password. The default range is between 6 and 20 characters.<br>▪ **Numbers** - Enter the minimum and maximum numeric characters permitted.<br>▪ **Upper Case** - Enter the minimum and maximum numbers of upper case characters are permitted.<br>▪ **Lower Case** - Enter the minimum and maximum numbers of lower case characters are permitted.<br>▪ **Special Characters Occurrence Allowed** - Select the checkbox if special characters are allowed in passwords.<br>▪ **Special Character** - Enter the minimum and maximum numbers of special characters are permitted.<br>▪ **Special character occurrence Frequency** - Enter the number of times the same special character can occur in the password.<br>▪ **Disallowed Special Characters** - Enter the special characters (without spaces) which are not permitted in a password.<br>▪ **Running Alphabets** - Select the checkbox to allow running alphabets in a |

| Field | Description |
|---|---|
| | password. For example, abc, xyz, AbC and so on.<br>▪ **Sequence Of Running Alphabets**- Enter the number of times the sequence is permitted.<br>▪ **Running Numbers** - Select the checkbox to allow running numbers in a password. For example, 123, 456, and so on.<br>▪ **Sequence Of Running Numbers**- Enter the number of times the sequence is permitted. |
| Security Question Enable | Select to enable security questions that users would have to answer before they can reset their passwords. This feature enhances user authenticity validation. Enter information for the following fields:<br>▪ Question 1 – Enter the first question to be displayed on the password reset page.<br>▪ Answer 1 – Enter the answer to the first question.<br>▪ Question 2 - Enter the second question to be displayed on the password reset page.<br>▪ Answer 2 – Enter the answer to the second question.<br>▪ Question 3 - Enter the third question to be displayed on the password reset page.<br>▪ Answer 3 – Enter the answer to the third question.<br>The following illustration is an example:<br>  |

Click **Save** and save the general tab details.

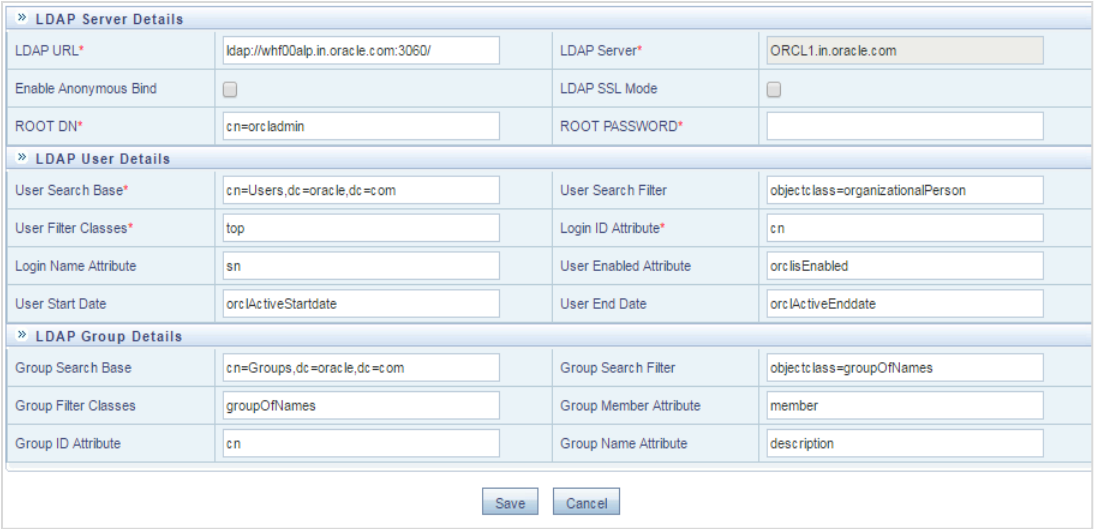
### LDAP Server Details

This feature allows you to configure and maintain multiple LDAP servers in the OFSAA instance. You can add a new LDAP server, modify/ view LDAP server details, and delete an existing LDAP server.

The LDAP Server Details window displays the details such as ROOT Context, ROOT DN, LDAP URL, LDAP SSL Mode, and LDAP Server name.

To add a new LDAP Server

1. Select **LDAP Authentication & SMS Authorization** from the Authentication Type drop-down list in the *General Details* tab, the *LDAP Server Details* window is displayed.
2. Click button in the toolbar. The *LDAP Server Details* window is displayed.




3. Enter the details as tabulated:

| Field | Description |
|---|---|
| Fields market with * are mandatory. | |
| LDAP Server Details | |
| LDAP URL | Enter the LDAP URL from which the system authenticates the user.<br>For example, ldap://hostname:3060/. |
| LDAP Server | Enter the LDAP Server name.<br>For example, ORCL1.in.oracle.com. |
| Enable Anonymous Bind | Select this option to login to the database anonymously and perform functions. This is useful when you are searching for a user in the system and cannot find the user. For example, you cannot find a cn due to a name change and you have to map the user to the correct dn. You can use a property such as email to search for the dn and map it correctly.<br>**Note**: Selecting this field disables ROOT DN and ROOT Password fields. |
| LDAP SSL Mode | Select the checkbox to enable LDAP over SSL to ensure encryption of user credentials when transferred over a network. |
| ROOT DN | Enter the ROOT Distinguished Name. |

| Field | Description |
|---|---|
| | For example, cn=orcladmin,cn=Users,dc=oracle,dc=com. |
| ROOT Password | Enter the LDAP server root password for authentication. |
| LDAP User Details | |
| User Search Base | Enter the full path of the location of the active directory in the LDAP server from which to start the user search. This is a comma-delimited parameter. For example, cn=User,dc=oracle,dc=com |
| User Search Filter | Enter search filters to limit the user search for the results obtained from 'User Search Base'. For example, objectclass=organizationalPerson. |
| User Filter Classes | Enter a user search filter to include specific user groups. For example, enter 'top' for the search to access groups up to the top-level in the directory. |
| Login ID Attribute | Specify the login ID attribute (user name) to be used in the system for users. For example, enter 'cn' to use the common name as the login id attribute. |
| Login Name Attribute | Specify the attribute that maps to the Login ID. This is used for authentication purposes. For example, 'sn' maps to 'cn'. |
| User Enabled Attribute | Enter the attribute to enable or disable a user. For example, 'orclisEnabled' is to enable a user account in the LDAP server. |
| User Start Date | Enter the attribute that stores the user-account start-date information. For example, 'orcActiveStartdate' contains start dates of all users. |
| User End Date | Enter the attribute that stores the user-account end-date information. For example, 'orclActiveEndDate' contains start dates of all users. |
| LDAP Group Details | |
| Group Search Base | Enter the full path of the location of the active directory in the LDAP server from which to start the group search. This is a comma-delimited parameter. For example, cn=Groups,dc=oracle,dc=com |
| Group Search Filter | Enter search filters to limit the group search for the results obtained from 'Group Search Base'. For example, objectclass=groupOfNames. |
| Group Filter Classes | Enter a group search filter to include specific groups. For example, groupOfNames. |
| Group Member Attribute | Enter a member attribute listed for the Groups. For example, 'member'. |
| Group ID Attribute | Enter the attribute that identifies the group name. For example, 'cn'. |
| Group Name Attribute | Enter the attribute that specifies the full name of the group. For example, description |

4. Click **Save**.

When a business user accesses OFSAA login window where multiple LDAP servers are configured in the OFSAA instance, the **LDAP Server** drop-down list is displayed. If the user selects an LDAP server, he will be authenticated only against the selected LDAP server. If the user does not select any LDAP server, he will be authenticated against the appropriate LDAP server.

**NOTE:** SYSADMN/ SYSAUTH/ GUEST users need not select any LDAP server as they are always authenticated against SMS store. Additionally, if a specific user is marked as "SMS Auth Only" in the *User Maintenance* window, then that user is authenticated against the SMS store instead of the LDAP store even though the OFSAA instance is configured for LDAP authentication. The user has to enter password as per SMS store.

### SSO Authentication and SMS Authorization

Before you configure SSO authentication, ensure that:

- You have configured OAM (Oracle Access Manager) or equivalent server for SSO user authentication.
- The configured SSO server is up and running and an SSO login page is displayed for users to provide the authentication details.
- The configuration fields are updated correctly before saving the details.
- `/<context-name>/login.jsp` should be the only resource that is protected.
- The following URLs are there in the excluded URL list in SSO server:

1. `MAP_WSDL_LOCATION=$PROTOCOL$://$WEBSERVERHOST$:$WEBSERVERPORT$/$CONTEXT$/mdbObjAppMap?wsdl`
2. `MDBPUBLISH_EXECUTION_WSDL_LOCATION=$PROTOCOL$://$WEBSERVERHOST$:$WEBSERVERPORT$/$CONTEXT$/mdbPublishExecution?wsdl`
3. `MIGRATION_OFFLINE_WSDL_LOCATION=$PROTOCOL$://$WEBSERVERHOST$:$WEBSERVERPORT$/$CONTEXT$/offlineMigration?wsdl`
4. `RULE_EXECUTION_WSDL_LOCATION=$PROTOCOL$://$WEBSERVERHOST$:$WEBSERVERPORT$/$CONTEXT$/ruleExecution?wsdl`
5. `MRE_WSDL_LOCATION=$PROTOCOL$://$WEBSERVERHOST$:$WEBSERVERPORT$/$CONTEXT$/manageRunExecution?wsdl`
6. `MODEL_EXECUTION_WSDL_LOCATION=$PROTOCOL$://$WEBSERVERHOST$:$WEBSERVERPORT$/$CONTEXT$/modelExecution?wsdl`

7. `MIGRATION_OFFLINE_WSDL_LOCATION=$PROTOCOL$://$WEBSERVERHOST$:$WEBSERVERPORT$/$CONTEXT$/offlineMigration?wsdl`
8. `$PROTOCOL$://$WEBSERVERHOST$:$WEBSERVERPORT$/$CONTEXT$/servlet/com.iflex.fic.ficml.FICMaster`
9. `$PROTOCOL$://$WEBSERVERHOST$:$WEBSERVERPORT$/$CONTEXT$/servlet/com.iflex.fic.icc.iccwl.ICCComm`
10. `$PROTOCOL$://$WEBSERVERHOST$:$WEBSERVERPORT$/$CONTEXT$/help.jsp`
11. `$PROTOCOL$://$WEBSERVERHOST$:$WEBSERVERPORT$/$CONTEXT$/help/*`

**NOTE:** The place holders such as `$PROTOCOL$, $WEBSERVERHOST$, $WEBSERVERPORT$,` and `$CONTEXT$` in the URLs should be updated appropriately.

In case of any errors, the mapped users will not be able to login to the application and you may need to correct the details by logging to the system as **sysadmn**.

For System Users:

- You can access OFSAAI Application using <Protocol (http/https)>://<IP/HOSTNAME>:<SERVLET PORT>/<CONTEXT NAME>/direct_login.jsp.
- You have to select the appropriate user id from the drop-down list.

For Application Users:

- The login page will be their respective SSO Authentication page.
- After successful login, you can change your locale from the **Select Language** link in the application header of the landing page. Move the pointer over the link and select the appropriate language from the listed languages. Based on the locales installed in the application, languages will be displayed.
- The **Change Password** link will not be available in the application header.

#### 9.1.9.2 Update Guest Login Details

You (System Administrator) can facilitate Guest Users to login to the Infrastructure system by configuring the Guest Login Details. If a password is defined, then the guest users are required to enter the password during logon and would then be navigated to the specific modules based on the mapped Roles and Functions.

Ensure the following before configuring the guest user details:

- Functions and Roles should be mapped appropriately for tracking the guest user activities on the system.

For example, when a guest user is permitted to modify Metadata, the change done cannot be tracked since the system recognizes Guest User as Modifier.

- When there is a provision for Guest User to access the Infrastructure system from an external machine, a specific set of .jsp's (web pages) has to be defined to the Guest User and maintained in the "urllist.cfg" in ficweb/conf folder.

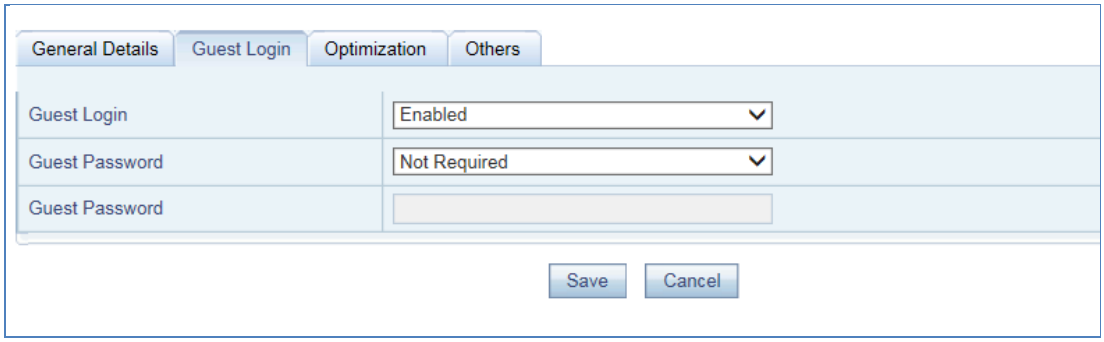
  For example, if the "urllist.cfg" contains "ficportal/**Testing**.jsp" and "fiv/**OpenView**.jsp's", Guest users can view and execute Testing and OpenView.jsp's from ficportal and fiv contexts.

  - Any number of pages can be defined within the "urllist.cfg" file
  - The additions into the CFG file will be done manually.
  - Only the links specified in the urllist.cfg file can be accessed through the guest login.

- You can also specify access based on wild card entries. A wildcard character can be applied at the main folder level only and not to a subset of files within a folder.

  For example, if access is provided to ficportal/testing/*, then all the pages under ficportal/testing folder are accessible from Guest login.

1. Select Guest Login tab and update the details as tabulated:



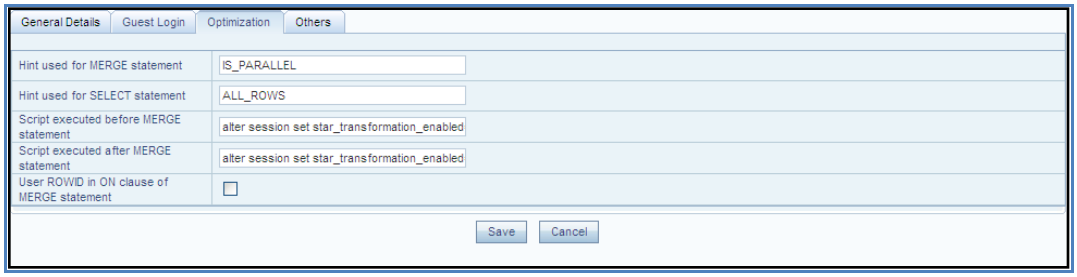

| Field | Description |
|---|---|
| Guest Login | Select one of the following option from the drop-down list:<br>▪ ENABLED - To enable guest users and allow them to login to the system.<br>▪ DISABLED - To restrict access to guest users. |
| Guest Password | You can select the Guest Password as one of the following from the drop-down list only if you have ENABLED guest Login:<br>▪ Required - Guest users need to specify a password to logon.<br>▪ Not Required - Guest users can logon directly. |

| Field | Description |
|---|---|
| Guest Password | You can specify the Guest Password only if you have selected the previous Guest Password field option as **Required**.<br>Enter the Guest Password as indicated:<br>▪ If Password Restrictions is set in the General Details tab, the specified password must satisfy all the defined parameters. However Guest Users do not comply to change password, invalid login attempts, or logging from multiple workstations,<br>▪ If no Password Restrictions is set, ensure that the specified password is alphanumeric without any extra spaces. |

2. Click **Save** and save the guest login configuration details.

### 9.1.9.3 Update Optimization Details

1. Select Optimization Details tab and update the details as tabulated:




The Optimization details such as Hints, Scripts, and Using ROWID instead of Primary Keys can be specified to optimize Merge statements. The defined configurations are also fetched as Query Optimization Settings while defining Rule definition properties.

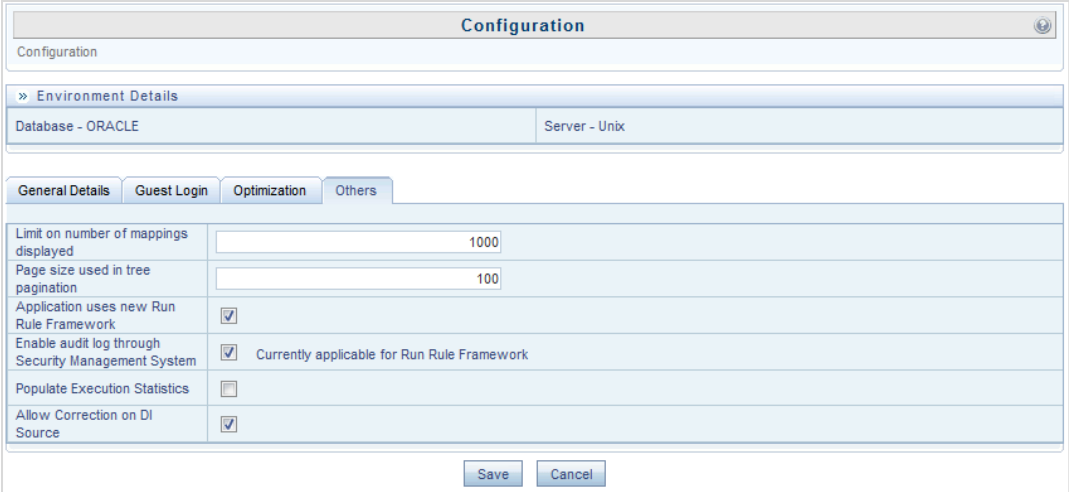
| Field | Description |
|---|---|
| Hint used for MERGE statement | Specify the SQL Hint that can be used to optimize Merge Query.<br>For example, "/*+ ALL_ROWS */"<br>In a Rule Execution, Merge Query formed using definition level Merge Hint precede over the Global Merge Hint Parameters defined here. In case the definition level Merge Hint is empty / null, Global Merge Hint (if defined here) is included in the query. |

| Field | Description |
|---|---|
| Hint used for SELECT statement | Specify the SQL Hint that can be used to optimize Merge Query by selecting the specified query.<br>For example, “SELECT /*+ IS_PARALLEL */”<br>In a Rule Execution, Merge Query formed using definition level Select Hint precede over the Global Select Hint Parameters defined here. In case the definition level Select Hint is empty / null, Global Select Hint (if defined here) is included in the query. |
| Script executed before MERGE statement | Refers to a set of semicolon (;) separated statements which are to be executed **before** Merge Query on the same connection object.<br>In a Rule Execution, Global Pre Script Parameters defined here are added to a Batch followed by Rule definition level Pre Script statements if the same has been provided during rule definition. However, it is not mandatory to have a Pre Script either at Global or definition level. |
| Script executed after MERGE statement | Refers to a set of semicolon (;) separated statements which are to be executed **after** Merge Query on the same connection object.<br>In a Rule Execution, Global Post Script Parameters defined here are added to a Batch followed by Rule definition level Post Script statements if the same has been provided during rule definition. However, it is not mandatory to have a Post Script either at Global or definition level. |
| User ROWID in ON clause of MERGE statement | You can select the ROWID checkbox to create a Merge Statement based on specified ROWID instead of Primary Keys.<br>In a Rule Execution, ROWID is considered while creating Merge Statement if **Use ROWID** checkbox is selected in either Global Parameters defined here or Rule definition properties.<br>If **Use ROWID** checkbox is not selected in either Global Parameters defined here or Rule definition properties, then the flag is set to “**N**” and Primary Keys are considered while creating in Merge Statements. |

2. Click **Save** and save the Optimization details.

### 9.1.9.4 Updating *Others* Tab

1. Select the *Others* tab and update the details as tabulated:




You can modify the *Others* tab details as tabulated below:

| Field | Description |
|---|---|
| Limit on number of mappings displayed | Specify the number of mappings which are to be displayed in *Rule Definition* window. A maximum of 9999 records can be displayed. |
| Page size used in tree pagination | Specify the number of subcomponents that can be displayed in each Component from the *Process Component Selector* window. A maximum of 9999 records can be displayed. |
| Application uses new Run Rule Framework | Selecting this option will display only the new Run Rule Framework links in *Metadata Browser* and *Enterprise Modeling* windows. |
| Enable audit log through Security Management System | You can select this checkbox to enable Infrastructure system to log all the usage and activity reports. A System Administrator can to generate Audit Trail Reports in HTML format to monitor user activity on regular intervals.<br>**Note**: This is currently applicable for Run Rule Framework only. |
| Populate Execution Statistics | This feature is disabled by default.<br>Select the check box to determine which case statement of a rule has updated how many corresponding records. Though there is no impact in Rule execution, an insert query is used in the back-end to list the number of records processed by each condition in the rule.<br>For more information, refer to Populate Execution Statistics in References section. |

| Field | Description |
|---|---|
| Allow Correction on DI Source | Select the checkbox to allow data correction on the data source. This enables the data correction to be executed along with data quality checks.<br>If the checkbox is not selected, data corrections will be done with T2T (LOAD DATA) executions, that is while loading the data to the target table.<br>By default, the checkbox is selected. |

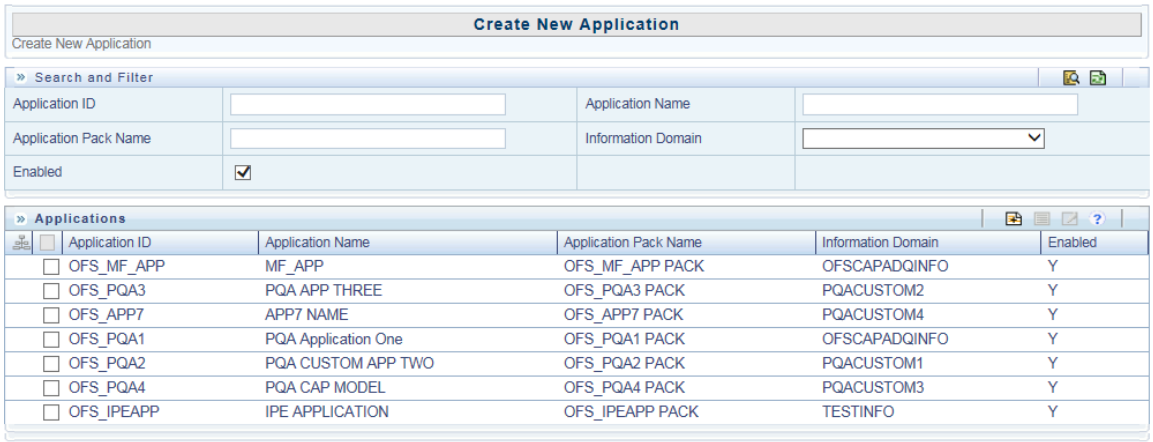
2. Click **Save** and save the *Others* tab changes.

### 9.1.10 Application

Once an application pack is installed, you can use only the Production or Sandbox information domain, created during the installation process. Though there is an option to create a new Information Domain, there is no menu to work with the frameworks on the newly created information domain. This information domain then created acts only as a Sandbox Infodom.

The Create New Application feature allows you (System Administrator) to create a new Application other than the standard OFSAA Applications and associate the standard/default platform framework menu with it, thereby enabling the new application for usage. The standard platform framework menu is seeded and rendered.

After you create an Application, a new Role is created as <APP_CODE>ACC. This role needs to be mapped to the user group and the users mapped to that user group will get the new Application listed in the **Select Applications** drop-down from the *Applications* tab. Only *Enabled* applications are listed in the drop-down list.




The *Create New Application* window displays the existing Applications with the metadata details such as Application ID, Application Name, Application Pack Name, Information Domain, and Enabled status.

You can make use of Search and Filter option to search for specific Application based on ID, Name, Application Pack Name, Information Domain, and Enabled status.

### 9.1.10.1 Creating a New Application

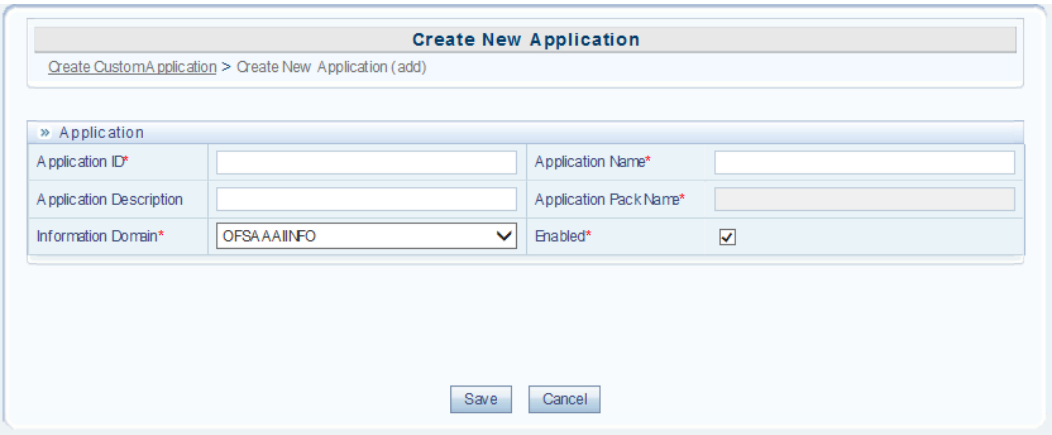
This option allows you (System Administrator) to create a new Application by providing ID, Name, and Description. You need to select the information domain which you want to map to the newly created Application. You also have an option to enable or disable the Application.

Note the following points:

- At least one Information domain should be present. For more information on creating an Information Domain, see the Creating Information Domain section.
- Mapping the same information domain to different Applications is allowed.
- The menu to the new Application will be the complete set of platform framework menus including Enterprise Modeling and Inline Processing Engine menus that work on DATADOM schema. Access to the menus is controlled using the User Group-Role mappings.

To create an Application

1. From the *System Configuration and Identity Management* tab, click **Create New Application** on the LHS menu. The *Create New Application* window is displayed.
2. Click from the *Applications* toolbar. The *Create New Application* window is displayed.




3. Enter the details as tabulated:

| Field | Description |
|---|---|
| Application ID | Enter the Application ID. |
| Application Name | Enter the name of the Application. Maximum of six characters is supported. |
| Application Description | Enter the description of the Application. |
| Application Pack Name | This field is automatically populated after you enter the Application ID. The Application pack name will be <Application ID>PACK. |

| Field | Description |
|---|---|
| Information Domain | Select the Information Domain which you want to map to the Application from the drop-down list. The information domains to which your user group is mapped are displayed in the list. |
| Enabled | Select the checkbox to enable the Application for usage. |

4. Click **Save.**

   The new Application gets created and it appears in the Summary window. A new User Role is created as <APP_CODE>ACC. You need to map this User Role to the required User Groups from the User Group Role Map window. Once the System Authorizer authorizes the User Group- Role Map, the new Application will be listed in the **Select Applications** drop-down from the *Applications* tab for the User Group.

#### 9.1.10.2 Modifying an Application

This option allows you to edit an existing Application. Only Application Name and Description can be modified.

To modify an Application

1. From the *System Configuration and Identity Management* tab, click **Create New Application** on the LHS menu. The *Create New Application* window is displayed.
2. Click from the *Applications* toolbar. The *Create New Application (Edit)* window is displayed.
3. Modify the required fields. You can edit the Application Name and Application Description.
4. Click **Save**.

## 9.2 Identity Management

Identity Management in the Infrastructure administration process facilitates System Administrators to provide access, monitor, and administer users along with the Infrastructure metadata operations.

The SMS component is incorporated with Password Encryption, Single Logon, Role and Data Based Security, Access Control and Audit Trail features to provide a highly flexible security envelope.

System Administrators can create, map, and authorize users defining a security framework which has the ability to restrict access to the data and meta-data in the warehouse, based on fine-grained access control mechanism. These activities are mainly done at the initial stage and then on need basis.

### 9.2.1 Navigating to Identity Management

Go to the *System Configuration & Identity Management* tab and click **Identity Management**. You can view the sub menus under *Security Management* in the LHS menu.

### 9.2.2 Components of Identity Management

Security Management consists of the following sections. Click on the links to view the sections in detail.

- User Administrator
- System Administrator
- Audit Trail Report
- User Activity Report
- User Profile Report
- Enable User

### 9.2.3 Mappings in Identity Management

User- User Group Mappings

- A user is mapped to a single or multiple user groups
- A user group can have multiple users
- User to user group mapping is many to many

Function- Role Mappings

- A function is mapped to multiple roles

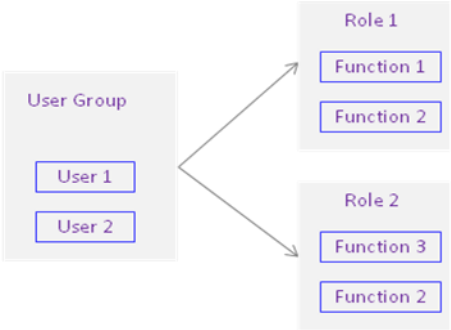
- A role can have many functions
- Function to role mapping is many to many

Folder/Segment- Domain Mappings

- A folder/segment is mapped to an information domain
- An information domain can have many folders/segments
- Folder/segment to information domain mapping is one to one, that is, a folder can be mapped to a single domain

User Group Role Mapping

- A user group is mapped to multiple roles and each role will have multiple functions mapped to it.
- All users belonging to a user group can do all functions associated with the roles to which the user group is mapped.




### 9.2.4 User Administrator

User Administration is one of the core functions of Security Management which involves administrators to create user definitions, user groups, maintain profiles, authorize users and user groups, and map users to groups, domains and roles.

User Administration refers to a process of controlling the user privileges in accessing the Infrastructure resources and is based on business requirements to provide access to view, create, edit, or delete confidential data. It also involves the administrator tasks to grant permissions based on user roles and requirements.

You (System Administrator) need to have SYSADM and METAAUTH function roles mapped to access User Administrator in LHS menu of Security Management. The options available under User Administrator are:

- User Maintenance
- User Group Maintenance
- User User Group Map

- Profile Maintenance
- User Authorization
- User Group Authorization
- User Group Folder Authorization
- User Group Domain Map
- User Group Role Map
- User Group Folder Role Map
- Reinstating Deleted Users

#### 9.2.4.1 User Maintenance

User Maintenance facilitates you to create user definitions, view, manage, modify, and delete user information. You can access User Maintenance by expanding **User Administrator** section within the tree structure of LHS menu.

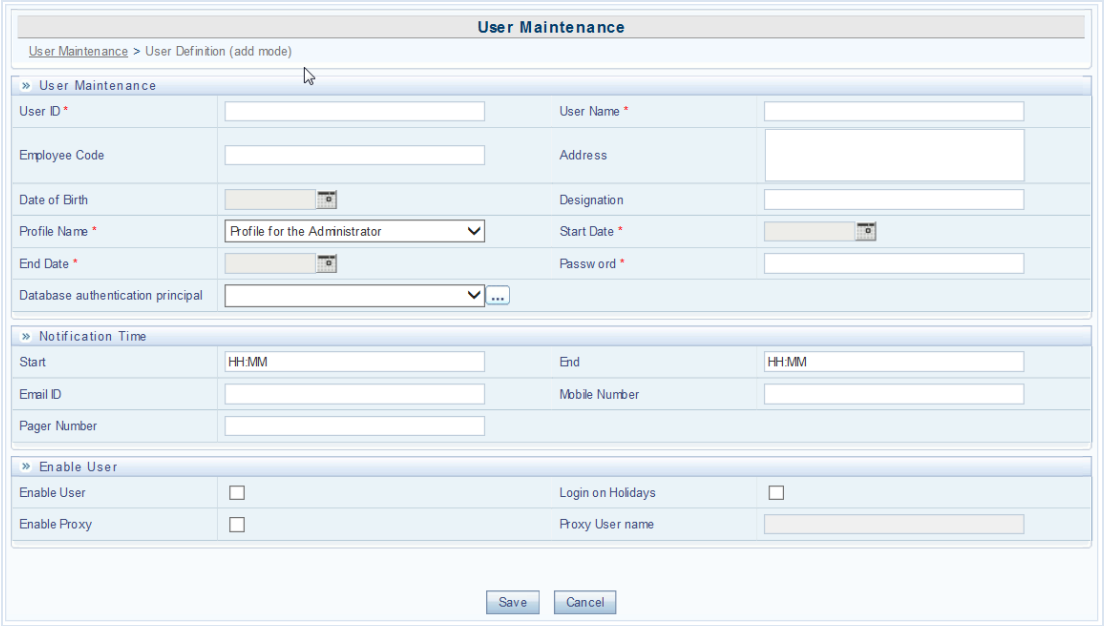
The *User Maintenance* window displays user details such as User ID, Name, Profile Name, Start, and End dates. You can also identify the user status if enabled to access the Infrastructure system.

You can also make use of Search and Pagination options to search for a specific user or view list of existing users within the system. For more information, refer Pagination and Search & Filter.

##### 9.2.4.1.1 Adding User

To add a user definition in the *User Maintenance* window:

1. Select button from the User Maintenance tool bar. **Add** button is disabled if you have selected any User ID in the grid. The *New User* window is displayed.




2. Enter the user details as tabulated.

| Field | Description |
|---|---|
| Fields marked in red asterisk (*) are mandatory. | |
| User ID | Enter a unique user id. Ensure that the User ID does not contain any special characters or spaces except “.”, “@”, “-”, and “_”. |
| User Name | Enter the user name. The user name specified here will be displayed on the Infrastructure splash window. Ensure that the User Name does not contain any special characters except “–”, “” and “.”. |
| Employee Code | Enter the employee code. Ensure that the Employee Code does not contain any special characters or spaces except “.”, “@”, “-”, and “_”.<br>If employee code is not provided, user ID will be taken as employee code. |
| Address | Enter the contact address of the user. It can be the physical location from where the user is accessing the system. Ensure that Contact Address does not contain any special characters except ".", "#", "-", ",". |
| Date Of Birth | Specify the date of birth. You can use the popup calendar to enter the date. |
| Designation | Enter the user designation. Ensure that Designation does not contain any special characters except “_, “:” and "-". |
| Profile Name | Select the profile name by clicking on the drop-down list. |

| Field | Description |
|---|---|
| Start Date | Specify the user start date based on the day slot the user is enabled to access the system. Ensure that User Start Date is greater than today's date. You can use the popup calendar to enter the date. |
| End Date | Specify the user end date based on month and year when the user Id expires. Ensure that user End Date is greater than User Start Date. You can use the popup calendar to enter the date. |
| Password | Enter the default password for the user for the initial login. User needs to change the default password during the first login.<br>A user is denied access in case the user has forgotten the password or enters the wrong password for the specified number of attempts (as defined in the *Configuration* window). To enable access, enter a new password here. |
| Database Authentication Principal | Select the Database Principal name from the drop-down list. The list displays the Principal names for HDFS Kerberos connection.<br>Click ... to create a new Database Principal by entering the Principal name and password in the **DbAuth Principal** and **DbAuth String** fields respectively. |
| Notification Time | (Optional) Specify the notification start and end time within which the user can be notified with alerts. |
| E-mail ID | Enter the e-mail address of the user. |
| Mobile No | (Optional) Enter the mobile number of the user. |
| Pager No | (Optional) Enter the pager number of the user. |
| Enable User | Select the checkbox to allow user to access the system.<br>A deselected checkbox denies access to the user. |
| Login on Holidays | Select the checkbox to allow users to access the system on holidays.<br>A deselected checkbox denies access to the user on holidays. |
| SMS Auth Only | This field is displayed only if the **LDAP Authentication & SMS Authorization** or **SSO Authentication & SMS Authorization** is selected from the *Configuration* window.<br>Select the checkbox to authenticate the user through SMS even though the LDAP Authentication or SSO Authentication is enabled.<br>This feature can be used to bypass LDAP or SSO authentication for selected users. |
| Enable Proxy | Select the checkbox if you want to enable proxy user for database connection. |

| Field | Description |
|---|---|
| Proxy User name | Enter the Proxy user name for the OFSAAI user, which will be used for database connection. |

3. Click **Save** to upload the user details.

   The new User details are populated in the User Authorization window which has to be authorized by System Authorizers. Once authorized, the **User** details are displayed in *User Maintenance* window and can then be mapped to the required user group in the User - User Group Map window.

#### 9.2.4.1.2 Viewing User Details

You can view individual user details at any given point. To view the existing function details in the *User Maintenance* window:

1. Select the checkbox adjacent to the User ID.
2. Click button in the User Maintenance tool bar.

   The *View User Details* window is displayed with the details such as User ID, User Name, Address, Date of Birth, Designation, Profile Description, Start, and End Date in which the user can access Infrastructure system. The *View User Details* window also displays the notifications details and status if enable to access the system on holidays.

#### 9.2.4.1.3 Modifying User Details

To update the existing user details in the *User Maintenance* window:

1. Select the checkbox adjacent to the User ID whose details are to be updated.
2. Click button in the User Maintenance tool bar.

   The *Edit User Details* window is displayed.
3. Update the required information. *For more details, refer Add User*.

   **NOTE:** You cannot edit the User ID. You can view the modifications once the changes are authorized. Also a new password must be provided during the user details modification.
4. Click **Save** to save the changes.

#### 9.2.4.1.4 Deleting User Details

You can remove the user definition(s) which are created by you and which are no longer required in the system, by deleting from the *User Maintenance* window.

1. Select the checkbox adjacent to the user ID whose details are to be removed.
2. Click button in the User Maintenance tool bar.
3. Click **OK** in the information dialog to confirm deletion.

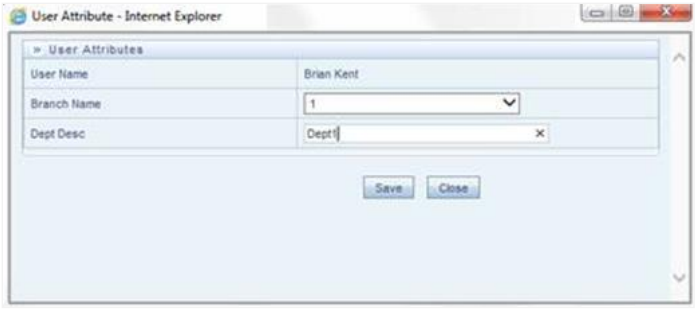
   **NOTE:** User can access the application until the delete request is authorized.

#### 9.2.4.1.5 Adding User Attributes

This option allows you to input additional user attributes that are configured for a user. Ensure that the required user attributes are present in the `CSSMS_ATTRIB_MAST` table. For more information about how to add additional user attributes, see Setting up User Attribute Master section.

To add attributes to a user in the *User Maintenance* window:

1. Select the checkbox adjacent to the User ID for whom you wish to add additional attributes.
2. Click button in the User Maintenance tool bar. The *User Attribute* window is displayed.




The user attributes present in the `CSSMS_ATTRIB_MAST` table are displayed in this window.

3. Enter appropriate information or select the required value from the drop-down list, for the displayed user attributes.
4. Click **Save** to upload the changes.

#### 9.2.4.2 Setting up User Attribute Master

OFSAAI captures some of the common user attributes such as Address, Designation, Date of Birth, Employee Code and so on. Additionally if you want to capture user details such as Branch Code or Department Name, you can capture them by configuring User Attribute Master (`CSSMS_ATTRIB_MAST`) table.

You have to upload the `CSSMS_ATTRIB_MAST` table after entering the required information on the table. You should have **Config Excel Advanced** user role mapped to your user group. Note that this role is not available to SYSADMN user.

1. Download the `CSSMS_ATTRIB_MAST` table. For more information on how to download a table from Config Schema, see Config Schema Download section. You need to select `CSSMS_ATTRIB_MAST` from the **Select the table** drop-down list.
2. Open the downloaded file in MS Excel 2003/ 2007. The excel file will have columns `ATTRIBUTE_ID, ATTRIBUTE_DESC, ALLOWED_VALUES`, and `TYPE`.
3. Add data as shown in the following table:

| ATTRIBUTE_ID | ATTRIBUTE_DESC | ALLOWED_VALUES | TYPE |
|---|---|---|---|
| BRANCH_CODE | Branch Code | | 0 |
| BRANCH_NAME | Branch Name | New York, Dallas | 1 |
| DEPT_CODE | Department Code | | 0 |
| DEPT_NAME | Department Name | | 0 |

TYPE – Enter **Type** as 1 if you want to give a list of values from which the user has to select the attribute value. In the `ALLOWED_VALUES` column, give the required values for the attribute. Enter Type as 0 if the attribute value has to be entered in a text field.

4. Save the file.

5. Upload the modified `CSSMS_ATTRIB_MAST` table. For more information on how to upload a table to Config Schema, see Config Schema Upload section. Note that you need to select CSSMS_ATTRIB_MAST from the **Select the table** drop-down list and **Upload Type** as **Complete**.

An appropriate message based on the success or failure status is displayed.

### 9.2.4.3 User Group Maintenance

User Group Maintenance facilitates you to create, view, edit, and delete user groups. You can maintain and modify the user group information within the *User Group Maintenance* window.

You can access User Group Maintenance by expanding **User Administrator** section within the tree structure of LHS menu.

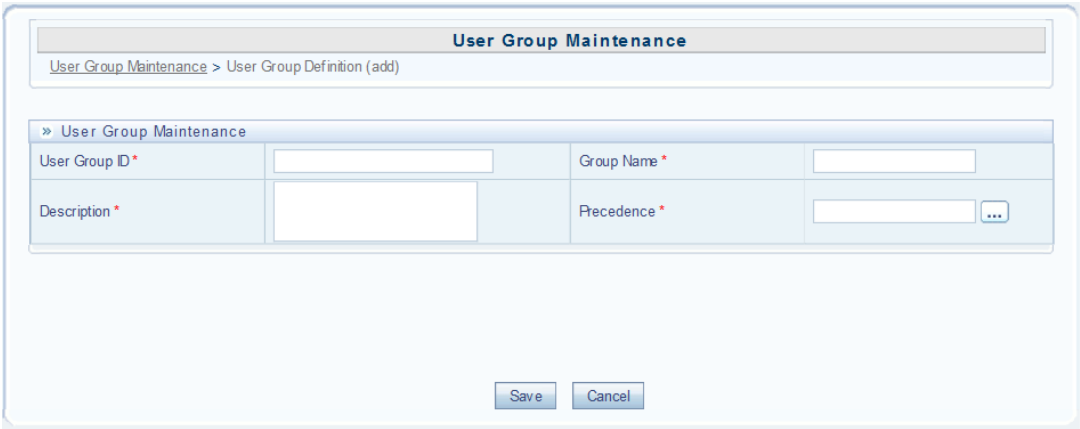
*User Group Maintenance* window displays details such as User Group ID, Group Name, Description, Precedence, and the number of Mapped Users.

You can search for a user group based on User Group ID, Group Name, and Description. For more information, refer Pagination and Search & Filter.

#### 9.2.4.3.1 Adding User Group

To add a User Group in the *User Group Maintenance* window:

1. Select from the User Group tool bar. **Add** button is disabled if you have selected any User Group ID in the grid. The *User Group Maintenance* window is displayed.




2. Enter the details as tabulated.

| Field | Description |
|---|---|
| User Group ID | Specify a unique id for the user group. Ensure that there are no special characters and extra spaces in the id entered. |

| Field | Description |
|---|---|
| Group Name | Enter a name for the user group. |
| Description | Enter a description for the user group. |
| Precedence | Enter the Precedence value. You can click button to Lookup for the existing precedence values applied to the various user groups. |

**NOTE:** The lower the value in the precedence column, the higher is precedence. A user may be mapped to multiple user groups and hence the precedence value is required if Group Based Hierarchy Security setting is selected in the *Configuration* window.

3. Click **Save** to upload the user group details. The new User Group details need to be authorized before associating users to the user group created. Before user group authorization, you need to map an information domain and role to the user group.

#### 9.2.4.3.2 Viewing User Group Details

You can view individual user group details at any given point. To view the existing user group details in the *User Group Maintenance* window:

1. Select the checkbox adjacent to the User Group ID.
2. Click button in the User Group tool bar.

   The *View User Group Details* window is displayed with the details such as User Group ID, Group Name, Description, and Precedence value.

#### 9.2.4.3.3 Modifying User Group

To update the existing user group details in the *User Group Maintenance* window:

1. Select the user group whose details are to be updated by clicking on the checkbox adjacent to the User Group ID.
2. Click button in the User Group tool bar. Edit button is disabled if you have selected multiple groups.
3. Edit the required User Group details except for User Group ID which is not editable. For more information refer Add User Group.
4. Click **Save** to upload changes.

#### 9.2.4.3.4 Deleting User Group

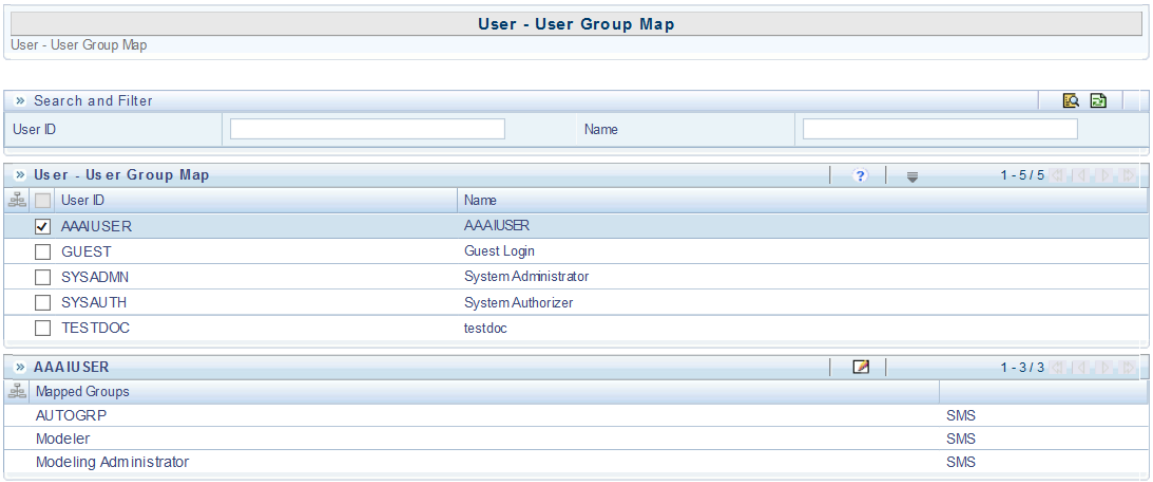
You can remove user group definition(s) which are created by you, which do not have any mapped users, and which are no longer required, by deleting from the *User Group Maintenance* window.

1. Select the checkbox adjacent to the user group ID(s) whose details are to be removed.
2. Click button in the User Group tool bar.
3. Click **OK** in the information dialog to confirm deletion.

**NOTE:** User Groups cannot be deleted if any requests (Domain map/unmap and Role map/unmap) are pending for authorization or any users are mapped to it.

### 9.2.4.4 User - User Group Map

User - User Group Map facilitates you to map user(s) to specific user group which in turn is mapped to a specific Information Domain and role. Every User - User Group mapping needs to be authorized by the System authorizer. If you have enabled auto authorization, then the user-user group mapping gets authorized automatically. To enable auto authorization, see the SMS Auto Authorization section.




*User - User Group Map* window displays details such as User ID, Name, and the corresponding Mapped Groups. You can view and modify the existing mappings within the *User - User Group Map* window.

You can access User - User Group Map window by expanding User Administrator section within the tree structure of LHS menu.

You can also search for specific users based on User ID and Name. For more information, refer Pagination and Search & Filter.

#### 9.2.4.4.1 Viewing Mapped Groups

This option allows you to view the user groups mapped to a user.

To view the mapped User Groups of a user

From the *User-User Group Map* window, select the checkbox adjacent to the User ID. The list of user group(s) to which the selected user has been mapped is displayed under *Mapped Groups* grid.

#### 9.2.4.4.2 Mapping/Unmapping Users

This option facilitates you to map a user to specific user groups.

To map/unmap user in *User-User Group Map* window:

1. Select the checkbox adjacent to the User ID.
2. Click button in the *Mapped Groups* grid. The *User - User Group Mapping* window is displayed.
   - To map a user group, select the User Group and click . You can press **Ctrl** key for multiple selections.
   - To map all the User Groups to a user, click .
   - To remove a User Group mapping for a user, select the User Group from Select Members pane and click .
   - To remove all the group mappings of a user, click .

   In the *User - User Group Mapping* window, you can search for a User Group using the **Search** field.
3. Click **OK** to save the mappings and return to *User-User Group Map* window.

**NOTE:** The newly created user- user group mapping needs to be authorized by the system authorizer. Once it is authorized, it will be visible in the *User - User Group Mapping* window. If you have enabled auto authorization, then the user- user group mapping gets authorized automatically.
User Group is displayed in the *User - User Group Mapping* window only if it is mapped to at least one Domain and Role.

### 9.2.4.5 Profile Maintenance

**NOTE:** This feature will not be available if **Authentication Type** is selected as **SSO Authentication and SMS Authorization** from the *Configuration* window.

Profile Maintenance facilitates you to create profiles, specify the time zones, specify the working days of the week and map holiday's schedule. *Profile Maintenance* window displays the existing profiles with details such as the Profile Code, Profile Name, Time Zone, Workdays of Week, Holiday Time Zone, and mapped Holidays. In the *Profile Maintenance* window you can add, view, edit, and delete user profile definitions.

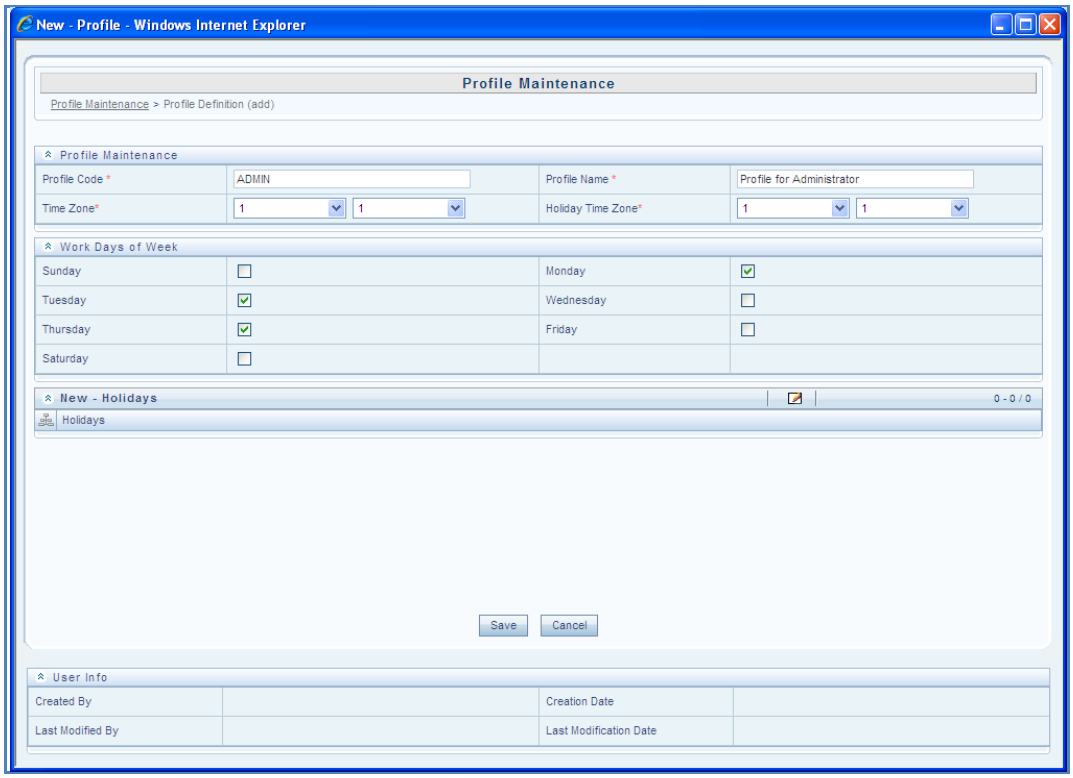
You can access Profile Maintenance by expanding **User Administrator** section within the tree structure of LHS menu.

You can also make use of Search and Pagination options to search for specific profile or view the list of existing profiles within the system. For more information, refer Pagination and Search & Filter.

#### 9.2.4.5.1 Adding Profile

To add a profile in the *Profile Maintenance* window:

1. Select from the Profile Maintenance tool bar. **Add** button is disabled if you have selected any Profile Code checkbox in the grid.



2. The *New Profile* window is displayed. Enter the details as tabulated.

| Field | Description |
|---|---|
| Profile Code | Enter a unique profile code based on the functions that the user executes. For example, specify AUTH if you are creating an authorizer profile. |
| Profile Name | Enter a unique profile name. Ensure that Profile Name does not contain any special characters except ".", "(","(")", "_", "-". |
| Time Zone | Select the **Start** and **End** time zone from the drop-down list. Time zones are hourly based and indicate the time at which the user can access the system. |
| Holiday Time Zone | Select the Holiday **Start** and **End** time zone from the drop-down list. Time zones are hourly based and indicate the time at which the user can access the system on holidays. |
| Work Days of Week | Select the work days of a week by clicking on the checkbox adjacent to week days. The specified time zones will be applicable to the selected days. |

3. Click **Save** to save the profile.

#### 9.2.4.5.2 Mapping Holidays

To enable user to access the Infrastructure system during holidays, map the profile to the holiday's schedule. For the user to access the system on holidays, the **Login on Holidays** checkbox in the *User Maintenance* window must be checked.

1. Click button in the *New Holidays* grid. *Holiday Mapping* window is displayed.

   The *Holiday Mapping* window displays the holidays that are added through the **Holiday Maintenance** section.

2. To map a holiday, you can do the following:

   - To map holiday to the user profile, select from the list and click .
   - To map all the listed holidays to the user profile, click .
   - To remove holiday mapping to user profile, select from the list and click .
   - To remove entire holiday mapping for the user profile, click .

3. Click **OK** to save the mapping.

#### 9.2.4.5.3 Viewing Profile

You can view the profile of a particular user at any given point. To view the existing user profile details in the *Profile Maintenance* window:

1. Select the checkbox adjacent to the Profile Code.
2. Click button in the Profile Maintenance tool bar.

   The *Profile Maintenance* window displays profile of the user with the holiday mapping details.

#### 9.2.4.5.4 Modifying Profile

You can modify all the details except **Profile Code** and **Profile Name** of individual profiles at any given point of time.

To edit a user profile in the *Profile Maintenance* window:

1. Select the checkbox adjacent to the Profile Code.
2. Click button in the Profile Maintenance tool bar.
3. Edit the user profile as required. For more information refer Add Profile.
4. Click **Save** to upload changes.

#### 9.2.4.5.5 Deleting Profile

You can remove user profile definition(s) which are created by you and which are no longer required in the system, by deleting from the *Profile Maintenance* window.

1. Select the checkbox adjacent to the Profile Code(s) whose details are to be removed.
2. Click button in the Profile Maintenance tool bar.
3. Click **OK** in the information dialog to confirm deletion.

### 9.2.4.6 User Authorization

User Authorization function facilitates system authorizers to authorize and allow user(s) created or modified by system administrator to access the Infrastructure system. Whenever a new user is created or an authorized user details are updated, the user has to be authorized by the system authorizers to allow access to the Infrastructure system.

- As a system authorizer, you can:
  - View the available user ID's which are to be authorized.
  - Authorize or reject users to access the system.

- Authorize or reject modification request of Users.
- View the current updated and previous user details for authorization.
- Authorize based on the user ID's created by Systems Administrator.

- As a user, you can login to the Infrastructure system only if authorized by the system Authorizer.

You can access *User Authorization* window by expanding **User Administrator** and selecting **User Authorization** within the tree structure of LHS menu.

The *User Authorization* window displays a list of available users for Authorization. By default, the users will be displayed in alphabetical order of the User IDs with the other details such as User ID, Name, User Start Date, and User Expiration Date.

You can also make use of Search and Pagination options to search for specific users. For more information, refer Pagination and Search & Filter.

#### 9.2.4.6.1 Authorizing or Rejecting User(s)

In the *User Authorization* window, do the following:

1. Select User ID which has to be authorized. The window is refreshed and the user details are displayed below.
2. In the User Authorization tool bar,
   - Click (authorize) button to authorize a user(s).
   - Click (reject) button to reject a user(s).
3. Click **OK** in the information dialog to confirm authorization or rejection. On processing, a system message is displayed.

### 9.2.4.7 User Group Authorization

User Group Authorization function facilitates system authorizers to authorize or reject the user groups mapped to a user. This authorization is required if user groups are mapped to Public folders.

- As a system Authorizer, you can:
  - View the list of mapped/unmapped user(s) to be authorized
  - View the list of mapped/ unmapped roles to be authorized
  - View the list of mapped/ unmapped domains to be authorized
  - Authorize or reject mapping/unmapping of user group(s) to a role or a domain

You can access *User Group Authorization* window by expanding **User Administrator** section within the tree structure of LHS menu and selecting **User Group Authorization**.

The *User Group Authorization* window displays a list of available user groups for authorization. When you select a user group, the details such as Mapped/Unmapped Users, Mapped/Unmapped Roles, and Mapped/Unmapped Domains are displayed.

**NOTE:** After creating a user group, you need to map an information domain and role to the user group. Then only the user group will be visible for authorization in the *User Group Authorization* window.

You can search for specific user group based on Group Code and Group Name. For more information, refer Pagination and Search & Filter.

#### 9.2.4.7.1 Authorizing or Rejecting User Group(s)

In the *User Group Authorization* window, do the following:

1. Select the required **User Group ID** for authorization.

   The Mapped/Unmapped Users, Mapped/Unmapped Roles, and Mapped/Unmapped Domains corresponding to the selected User Group are displayed in the respective grids.

2. Select the checkbox adjacent to the mapped or unmapped group/user/role/domain and
   - Click (authorize) button to authorize it.
   - Click (reject) button to reject it.
3. Click **OK** in the information dialog to confirm authorization or rejection. On processing, a system message is displayed.

### 9.2.4.8 Authorization for User Group Folder Mapping

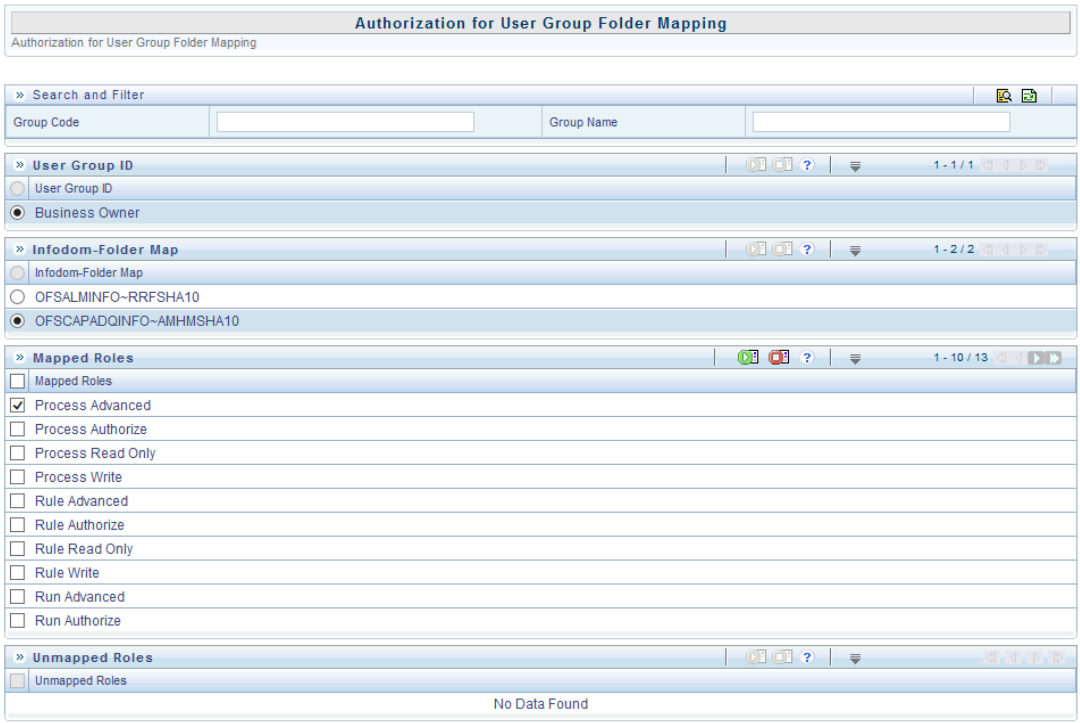
User Group Folder Mapping Authorization facilitates system authorizers to authorize or reject mapping and unmapping of roles to folders, done from the *User Group Role Map* window. This authorization is required for mapping of user groups to Shared folders.

As a system authorizer, you can view the list of mapped/unmapped user roles to be authorized for a selected user group. Once the mapping/unmapping is authorized, then the changes will be in effective.

You can access *Authorization for User Group Folder Mapping* window by expanding **User Administrator** section within the tree structure of LHS menu and clicking **Authorization for User Group Folder Mapping**.

To authorize mapping of roles to folder

4. Click **Authorization for User Group Folder Mapping** under **User Administrator** in the **Security Management** menu. The *Authorization for User Group Folder Mapping* window is displayed.




5. Select the user group and the folder. The Mapped/Unmapped Roles corresponding to the selected User Group which requires authorization are displayed in the respective grids.
6. Select the checkbox adjacent to the mapped or unmapped roles and
   - Click (authorize) button to authorize it.
   - Click (reject) button to reject it.
7. Click **OK** in the information dialog to confirm authorization or rejection. On processing, a system message is displayed.

### 9.2.4.9 User Group Domain Map

User Group Domain Map facilitates System Administrators to view the available user groups and map the required Domain to User Group(s). System Administrators can also remove user group mapping for specific domain or map additional domains to a specific user group to ensure confidentiality of restricted Information Domains.

You can access *User Group Domain Map* window by expanding **User Administrator** section within the tree structure of LHS menu.

The *User Group Domain Map* window displays a list of available user groups in alphabetical order with the User Group ID, Group Name, and Description. On selecting a user group, the list of available mapped domains are displayed.

**NOTE:** It is mandatory to map at least one information domain to a user group.

You can search for specific user group based on User Group ID, Group Name, and Description. For more information, refer Pagination and Search & Filter.

To map a user group to a domain, do the following:

1. Select the checkbox adjacent to the required User Group ID. The *User Group Domain Map* window is refreshed to display the existing mapped domains.
2. Click button in the *Mapped Domains* section tool bar. The *User Group Domain Map* window is displayed.
   - To map Domains to a User Group, select the Domain from the Members list and click . You can press **Ctrl** key for multiple selections.
   - To map all the Domains to a User Group, click .
   - To remove mapping for a user group, select the Domain from Select Members list and click .
   - To remove all Domains mapped to User Group, click .

   In the *User Group Domain Map* window, you can search for a Domain using the **Search** field.
3. Click **OK** to save the mappings and return to *User Group Domain Map* window.

Mapping/unmapping of User Groups to Domain should be authorized by the System Authorizer. If you have enabled auto authorization, then the User Group-Domain mapping/unmapping gets authorized automatically. To enable auto authorization, see the SMS Auto Authorization section.

#### 9.2.4.10 User Group Role Map

User Group Role Map facilitates System Administrators to map Role(s) to specific User Group(s). Each role has a defined function and any user(s) mapped to the role has to perform only those functions.

For example, the table below lists the user group mapped to a specific role.

| GROUP CODE | ROLE CODE |
|---|---|

| GROUP CODE | ROLE CODE |
|---|---|
| ADMIN | SYSADM |
| AUTH | SYSATH |
| CWSADM | CWSADMIN |

You can access *User Group Role Map* window by expanding **User Administrator** section within the tree structure of LHS menu.

The *User Group Role Map* window displays a list of available user groups in alphabetical order with the User Group ID and Description. On selecting a user group, the list of available mapped roles are displayed.

You can also make use of Search and Pagination options to search for specific user group or view the list of existing user groups within the system. For more information, refer Pagination and Search & Filter.

To map a Role to User Group, do the following:

1. Select the checkbox adjacent to the required User Group ID. The *User Group Role Map* window is refreshed to display the existing mapped roles.
2. Click button in the Mapped Roles section tool bar. The *User Group Role Map* window is displayed.
3. In the *User Group Role Map* window, you can search for a Role using the Search field and edit the mapping.
   - To map Role to a User Group, select the Role from the Members list and click . You can press **Ctrl** key for multiple selections.
   - To map all the Roles to a specific User Group, click .
   - To remove mapping for a user group, select the Role from Select Members list and click .
   - To remove all Roles mapped to a User Group, click .
4. Click **OK** to save the mappings and return to *User Group Role Map* window.

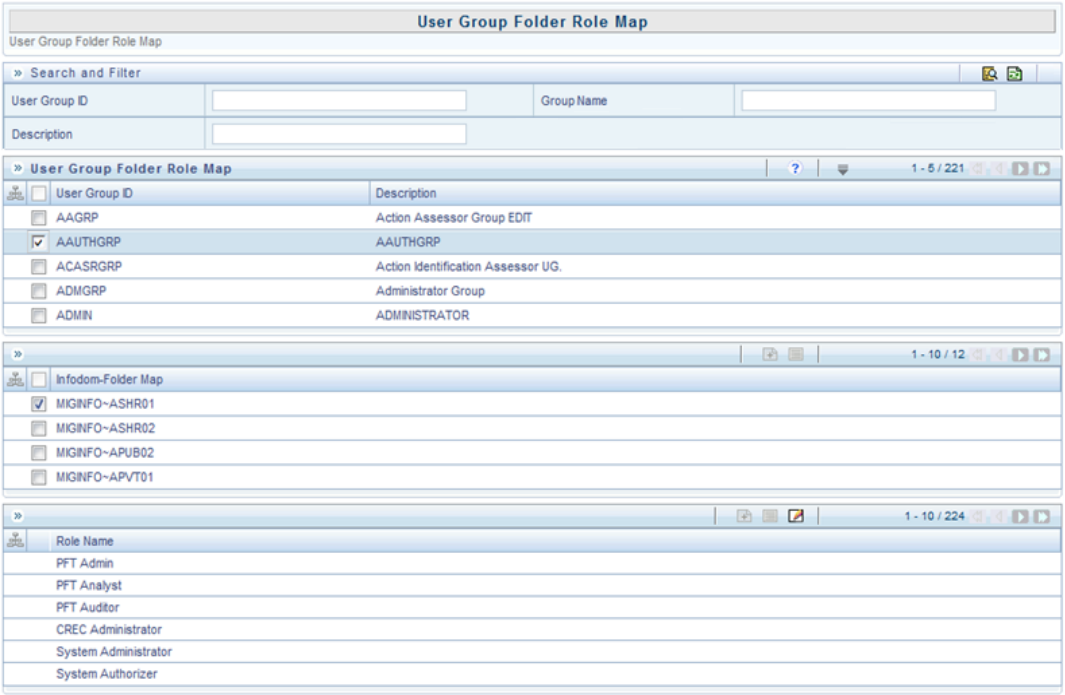
Mapping/unmapping of User Roles to a User Group should be authorized by the System Authorizer. If you have enabled auto authorization, then the User Group-Role mapping/unmapping gets authorized automatically. To enable auto authorization, see the SMS Auto Authorization section.

### 9.2.4.11 User Group Folder Role Map

User Group Folder Role Map facilitates System Administrators to map role(s) to specific user group(s), which are mapped to shared folders. This mapping is used to give access rights to a user on objects belonging to Shared folder/segment.

To map user group-folder-role

1. Click **User Group Folder Role Map** under **User Administrator** in the **Security Management** menu. The *User Group Folder Role Map* window is displayed.




2. Select the user group from the *User Group Folder Role Map* grid. All shared folders are displayed in the *Infodom-Folder Map* grid.
3. Select the shared folder to which you want to map roles and click .
4. Select the required roles and click  or click  to map all the roles. To remove mapping of a role, select the role and click . To remove all mapped roles, click .
5. Click **Ok**.

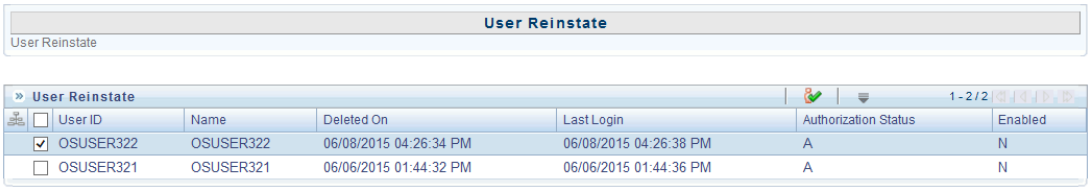
User Group-Folder-Role mapping/unmapping should be authorized by the System Authorizer. If you have enabled auto authorization, then the mapping/unmapping gets authorized automatically. To enable auto authorization, see the SMS Auto Authorization section.

#### 9.2.4.12 Reinstating Deleted Users

User Reinstate feature allows the System Administrators to reinstate deleted users. After reinstating, you should map the users to the required user groups.

To reinstate deleted users

1. Click **Reinstate User** under **User Administrator** in the **Security Management** menu. The *User Reinstate* window is displayed.




All deleted users are displayed in the *User Reinstate* grid.

2. Select the user you want to reinstate and click . A confirmation message is displayed.
3. Click **Ok**.

The reinstated user(s) will have the same user id and the password will be reset as “password0”.

### 9.2.5 System Administrator

System Administration refers to a process of managing, configuring, and maintaining confidential data in a multi-user computing environment. System Administration in Security Management involves creating functions, roles, and mapping functions to specific roles. System Administration also involves maintaining segment information, holiday list, and restricted passwords to ensure security within the Infrastructure system.

You can access System Administrator in LHS menu of Security Management. The options available under System Administrator are:

- Function Maintenance
- Role Maintenance
- Function - Role Map
- Segment Maintenance
- Holiday Maintenance
- Restricted Passwords

### 9.2.5.1 Function Maintenance

A function in the Infrastructure system defines the privileges to access modules or components and to define or modify metadata information associated. Function Maintenance allows you to create functions for users to ensure only those functions are executed which are specific to the user's role.

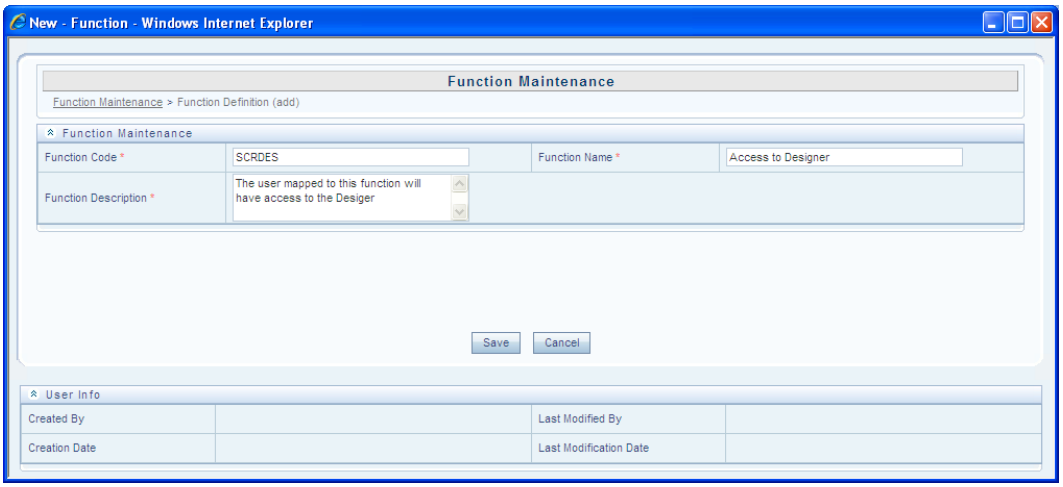
You can access Function Maintenance by expanding **System Administrator** section within the tree structure of LHS menu. The *Function Maintenance* window displays the function details such as Function Code, Function Name, Description, and the number of Roles Mapped to the function. The *Function Maintenance* window also facilitates you to view, create, modify, and delete functions within the system.

You can also make use of Search and Pagination options to search for a specific function or view the list of existing functions within the system. For more information, refer Pagination and Search & Filter.

#### 9.2.5.1.1 Creating Function

To create function in the *Function Maintenance* window:

1. Select from the Function Maintenance tool bar. **Add** button is disabled if you have selected any function in the grid. The *New Function* window is displayed.




2. Enter the function details as tabulated. You can also refer to pre-defined Function Codes for reference.

| Field | Description |
|---|---|
| Fields marked in red asterisk (*) are mandatory. | |

| Field | Description |
|---|---|
| Function Code | Enter a unique function code. Ensure that there are no special characters and extra spaces in the code entered. For example, DATADD to add dataset. |
| Function Name | Enter a unique name for the function. Ensure that the Function Name does not contain any special characters except “(“, “)”, “ _ ”, “-“, “ .” |
| Function Description | Enter the function description. Ensure that the Function Description does not contain any special characters except “(“, “)”, “ _ ”, “-“, “ .” |

3. Click **Save** to upload the function details.

   The User Info grid at the bottom of *Function Maintenance* window display metadata information about the function created.

#### 9.2.5.1.2 Viewing Function

You can view individual function details at any given point. To view the existing user details in the *Function Maintenance* window:

1. Select the checkbox adjacent to the Function Code.
2. Click button in the Function Maintenance tool bar.

   The *View Function Details* window is displayed with the details such as Function Code, Function Name, and Function Description.

#### 9.2.5.1.3 Modifying Function

To update the existing function details (other than system generated functions) in the *Function Maintenance* window:

1. Select the checkbox adjacent to the required Function Code.
2. Click button in the Function Maintenance tool bar. The *Edit Function Details* window is displayed.
3. Update the required information. For more details, refer Create Function.

   **NOTE:** Function Code cannot be edited.

4. Click **Save** to upload the changes.

#### 9.2.5.1.4 Deleting Function

You can remove only those function(s) created by you and which are no longer required in the system, by deleting from the *Function Maintenance* window.

1. Select the checkbox adjacent to the Function Code whose details are to be removed.
2. Click button in the Function Maintenance tool bar.
3. Click **OK** in the information dialog to confirm deletion.

### 9.2.5.2 Role Maintenance

A role in the Infrastructure system is a collection of functions defined for a set of users to execute a specific task. You can create roles based on the group of functions to which users are mapped.

You can access Role Maintenance by expanding **System Administrator** section within the tree structure of LHS menu. The *Role Maintenance* window displays the role details such as Role Code, Role Name, Role Description, and the number of Users Mapped to the role. The *Role Maintenance* window also facilitates you to view, create, modify, and delete roles within the system.

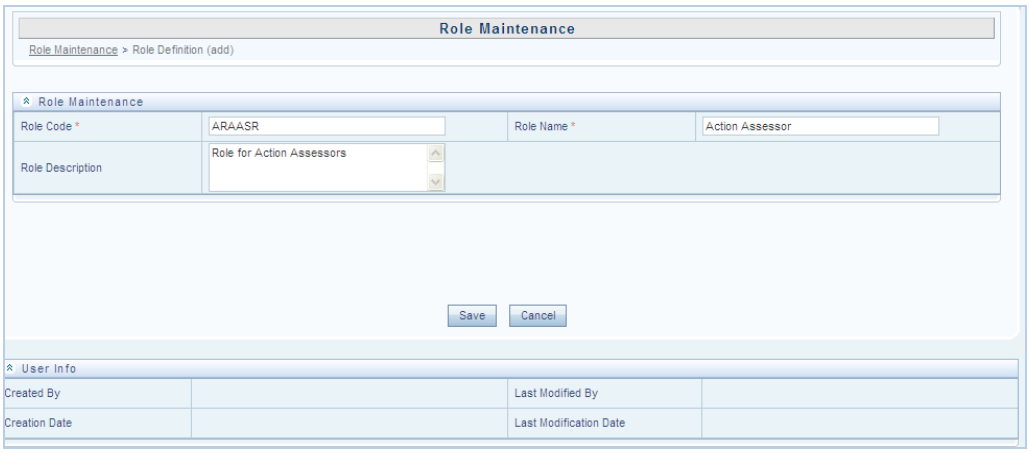
You can also make use of Search and Pagination options to search for a specific role or view the list of existing roles within the system. For more information, refer Pagination and Search & Filter.

To view the default roles defined within the Infrastructure application, refer Role Mapping Codes.

#### 9.2.5.2.1 Creating Role

To create role in the *Role Maintenance* window:

1. Select from the Role Maintenance tool bar. **Add** button is disabled if you have selected any role in the grid. The *New Role* window is displayed.




2. Enter the role details as tabulated. You can also refer to pre-defined Codes for reference.

| Field | Description |
|---|---|
| Fields marked in red asterisk (*) are mandatory. | |
| Role Code | Enter a unique role code. Ensure that there are no special characters and extra spaces in the code entered. For example, ACTASR to create Action Assessor. |

| Field | Description |
|---|---|
| Role Name | Enter a unique name for the role. Ensure that the Role Name does not contain any special characters except space. |
| Role Description | Enter the role description. Ensure that the Role Description does not contain any special characters except space. |

3. Click **Save** to upload the role details. The User Info grid at the bottom of *Role Maintenance* window display metadata information about the role created.

#### 9.2.5.2.2 Viewing Role

You can view individual role details at any given point. To view the existing role details in the *Role Maintenance* window:

1. Select the checkbox adjacent to the Role Code.
2. Click button in the Role Maintenance tool bar.

   The *View Role Details* window is displayed with the details such as Role Code, Role Name, and Role Description.

#### 9.2.5.2.3 Modifying Role

To update the existing role details in the *Role Maintenance* window:

1. Select the checkbox adjacent to the required Role Code.
2. Click button in the Role Maintenance tool bar. The *Edit Role Details* window is displayed.
3. Update the required information. For more details, refer Create Role.

   **NOTE:** Role Code and Role Name cannot be edited.

4. Click **Save** to upload the changes.

#### 9.2.5.2.4 Deleting Role

You can remove only those role(s) which are created by you, which does not have any users mapped, and which are no longer required in the system by deleting from the *Role Maintenance* window.

5. Select the checkbox adjacent to the Role Code whose details are to be removed.
6. Click button in the Role Maintenance tool bar.
7. Click **OK** in the information dialog to confirm deletion.

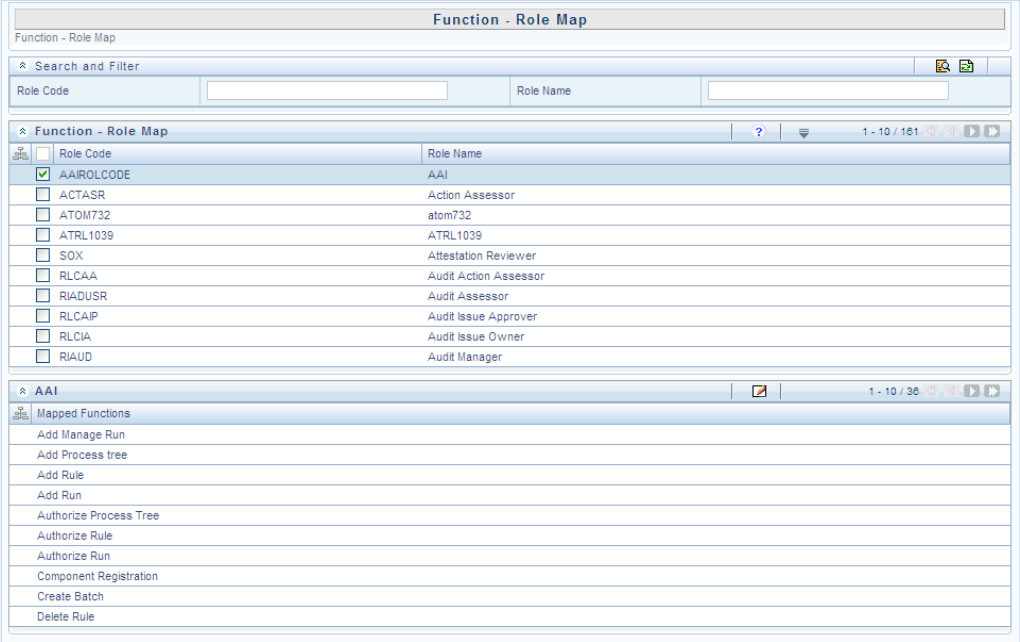
### 9.2.5.3 Function - Role Map

Function Role Map facilitates you to view and map a set of function(s) to a specific role within the Infrastructure system. Functions can only be mapped to a defined set of roles to ensure effective Infrastructure system security.

You can access Function – Role Map by expanding **System Administrator** section within the tree structure of LHS menu. The *Function – Role Map* window displays a list of available Role Codes in alphabetical order with the Role Name. On selecting a particular Role Code, the Mapped Functions are listed in the *Mapped Functions* grid of *Function – Role Map* window.

You can also make use of Search and Pagination options to search for a specific role or view the list of existing roles within the system. For more information, refer Pagination and Search & Filter.

To view the default Function – Role mapping defined within the Infrastructure application, refer Function Role Mapping.




To map a role to a function in the *Function – Role Map* window, do the following:

1. Select the checkbox adjacent to the required Role Code. The *Function – Role Map* window is refreshed to display the existing mapped functions.
2. Click button in the Mapped Functions section tool bar. The *Function Role Mapping* window is displayed.
3. In the *Function Role Mapping* window, you can search for a function using the Search field and edit the mapping.

- To map a function to a role, select the function from the Members list and click . You can press **Ctrl** key for multiple selections.
- To map all the functions to the selected role, click .
- To remove function mapping for a specific role, select the function from Select Members pane and click .
- To remove all function mapping for a role, click .

4. Click **OK** to save the mappings and return to *Function – Role Map* window.

#### 9.2.5.4 Segment Maintenance

Segment is used to control access rights on a defined list of objects. It is mapped to an information domain.

Segment Maintenance in the Infrastructure system facilitates you to create segments and assign access rights. You can have different segments for different Information Domains or same segments for different Information Domains.

User scope is controlled by segment/ folder types with which the object is associated.

- Objects contained in a public folder will be displayed irrespective of any user.
- Objects contained in a shared folder will be displayed if user belongs to a user group which is mapped to an access type role with the corresponding folder.
- Objects contained in a private folder will be displayed only to the associated owner.

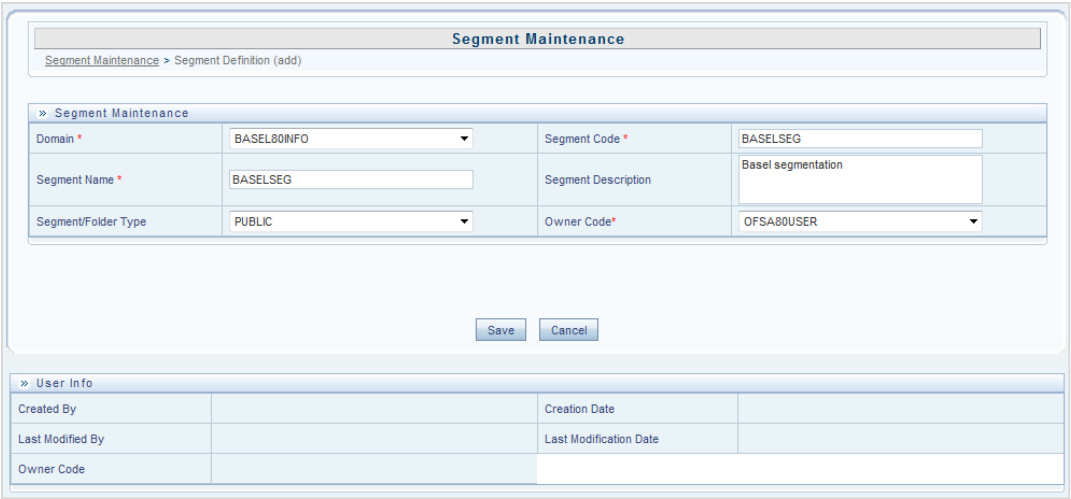
You can access Segment Maintenance by expanding System Administrator section within the tree structure of LHS menu. The *Segment Maintenance* window displays a list of available segments with details such Domain, Segment Code, Segment Name, Segment Description, Segment/Folder Type, Owner Code, and the number of Users Mapped to the segment. You can view, create, modify, and delete segments within the *Segment Maintenance* window.

You can also make use of Search and Pagination options to search for a specific role or view the list of existing roles within the system. For more information, refer Pagination and Search & Filter.

##### 9.2.5.4.1 Creating Segment

To create segment in the *Segment Maintenance* window:

1. Select  button from the *Segment Maintenance* tool bar. **Add** button is disabled if you have selected any checkbox in the grid. The *New Segment* window is displayed.




2. Enter the segment details as tabulated.

| Field | Description |
|---|---|
| Fields marked in red asterisk (*) are mandatory. | |
| Domain | Select the required domain for which you are creating a segment, from the drop-down list. |
| Segment Code | Enter a unique segment code. Ensure that the segment code does not exceed more than 10 characters and there are no special characters except underscore or extra spaces. |
| Segment Name | Enter a unique name for the segment. Ensure that there are no special characters in the name entered. |
| Segment Description | Enter the segment description. Ensure that there are no special characters in the description entered except spaces, “(“, “)”, “_”, “-“, and “.”. |
| Segment/Folder Type | Select the type of the segment/folder from the drop-down list. The options are Public, Private, and Shared. |
| Owner Code | Select the owner code from the drop-down list. |

3. Click **Save** to upload the segment details.

   The User Info grid at the bottom of *Segment Maintenance* window displays metadata information about the segment created.

#### 9.2.5.4.2 Viewing Segment

You can view individual segment information at any given point. To view the existing segment details in the *Segment Maintenance* window:

1. Select the checkbox adjacent to the required segment.
2. Click button in the Segment Maintenance tool bar.

   The *View Segment Details* window is displayed with the details such Domain, Segment Code, Segment Name, Segment Description, Segment /Folder Type, and Owner Code.

#### 9.2.5.4.3 Modifying Segment

To update the existing segment details in the *Segment Maintenance* window:

1. Select the checkbox adjacent to the segment.
2. Click button in the Segment Maintenance tool bar. The *Edit Segment Details* window is displayed.
3. Update the Segment Description, Segment/Folder Type, and Owner Code. The others fields are view only and are not editable. For more details, refer Create Segment.
4. Click **Save** to upload the changes.

#### 9.2.5.4.4 Deleting Segment

You can remove only those segment(s) which are created by you, which does not have any users mapped, and which are no longer required in the system by deleting from the *Segment Maintenance* window.

1. Select the checkbox adjacent to the segment whose details are to be removed.
2. Click button in the Segment Maintenance tool bar.
3. Click **OK** in the information dialog to confirm deletion.

### 9.2.5.5 Holiday Maintenance

**NOTE:** This feature will not be available if Authentication is configured to **SSO Authentication and SMS Authorization**.

Holiday Maintenance facilitates you to create and maintain a schedule of holidays or non-working days within the Infrastructure system. On a holiday, you can provide access to the required users and restrict all others from accessing the system from the *User Maintenance* window.

You can access Holiday Maintenance by expanding **System Administrator** section within the tree structure of LHS menu. The *Holiday Maintenance* window displays a list of holidays in ascending order. In the *Holiday Maintenance* window you can create and delete holidays.

#### 9.2.5.5.1 Adding Holiday

To add holiday date in the *Holiday Maintenance* window:

1. Select from the Holiday Maintenance tool bar. Add button is disabled if you have selected any checkbox in the grid. The *New Holiday* window is displayed.
2. Click button and specify date using the calendar.

   For more information on selecting a date, refer Calendar section.
3. Click **Save** to upload changes.

#### 9.2.5.5.2 Deleting Holiday(s)

You can remove a holiday entry by deleting from the *Holiday Maintenance* window.

1. Select the checkbox adjacent to the holiday which has to be removed.
2. Click button in the Holiday Maintenance tool bar.
3. Click **OK** in the information dialog to confirm deletion.

### 9.2.5.6 Restricted Passwords

**NOTE:** This feature will not be available if Authentication Type is selected as SSO Authentication and SMS Authorization from System Configuration> Configuration.

Restricted Passwords facilitates you to add and store a list of passwords using which users are not permitted to access the Infrastructure system.

You can access Restricted Passwords by expanding **System Administrator** section within the tree structure of LHS menu. The *Restricted Passwords* window displays a list of restricted passwords and allows you to add and delete passwords from the list.

You can also make use of Search and Pagination options to search for a specific password or view the list of existing passwords within the system. For more information, refer Pagination and Search & Filter.

**NOTE:** While searching for any pre defined restricted password, you have to key in the entire password.

#### 9.2.5.6.1 Adding Restricted Password

To add restricted password in the *Restricted Passwords* window:

1. Select from the Restricted Passwords tool bar. **Add** button is disabled if you have selected any checkbox in the grid.

   The Add Restricted Passwords window is displayed.

2. Enter the password in the **New – Password** field. Ensure that the password is alphanumeric, without any spaces, and the length should be between six and 20.characters.
3. Click **Save** to upload new password.

#### 9.2.5.6.2 Deleting Restricted Password(s)

You can de-restrict a password by deleting from the *Restrict Passwords* window.

1. Select the checkbox adjacent to the password which has to be removed.
2. Click button in the Restricted Passwords tool bar.
3. Click **OK** in the information dialog to confirm deletion.

### 9.2.6 Audit Trail Report

Audit trail is a chronological sequence of records which contain information resulting from the execution of a business process or system function. Audit records typically contain activity data of users resulting from operational transactions.

In the Infrastructure system, a System Administrator can generate Audit Trail reports to monitor the usage and activities of users within the system on regular intervals. For example, you can create reports on daily/weekly/monthly/quarterly basis. Audit Trail report also facilitates to extract the report in HTML format for reference.

**NOTE:** Audit Trail report is also available for users, however, with a few restrictions applied to features available to System Administrators. On the *Audit Trail Report* window, System Administrators can delete the reports by clicking the **Purge** button. For business users, the purge functionality is not available and the **Purge** button is not displayed.
To make the **Purge** button available to System Administrators, ACCPURGE function should be mapped to the Audit Role and the role assigned to System Administrators.

#### 9.2.6.1 Generating Audit Trail Report

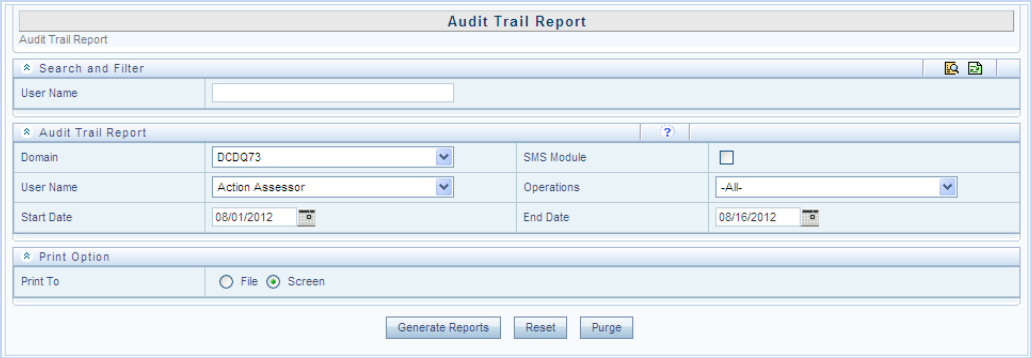
You can access Audit Trail Report on the LHS menu of Security Management. The *Audit Trail Report* window facilitates you to generate audit trail reports based on Domain, SMS Module, User Name, Operations, Start Date, and End Date. You can search for a specific user using the Search field. The *Audit Trail Report* window displays the report on window by default, and you can also print the report as a HTML file. You can generate Audit Trail Report in the following ways.

##### 9.2.6.1.1 Generating consolidated Audit Trail Report

In the *Audit Trail Report* window select **Generate Reports**. The window is refreshed and a consolidated report with details of all the modules, user IDS, function types, function codes, with the user operations and time corresponding to the current logged in date is displayed.

##### 9.2.6.1.2 Generating Sorted Audit Trail Report

You can sort the Audit Trail report by filtering the consolidated data with the options available in the *Audit Trail Report* window.




Choose the following options from the drop-down list.

| Field | Description |
|---|---|
| Domain | Select the required domain to generate the report based on domain specific activities. |
| SMS Module | Select the checkbox if the report has to be generated for the domain independent activities. |
| User name | Select the user name to filter activity data based on the user. |
| Operations | Select the required operation to generate the report based on the operations performed by the user. |
| Start and End Date | Specify the date range using Calendar. By default the current date is selected. |
| Print Option | Select **File** to generate HTML output. If not, **Window** is selected by default. |

Select **Generate Reports** to create the Audit Trail Report.

**NOTE:** If you have selected **File** as the print option, a HTML report is created and the access link is displayed at the bottom of *Audit Trail Report* window.

You can also select **Reset** to default the field values and **Purge** to delete records of a selected domain, module, and user id for the specified time duration.

### 9.2.7 User Activity Report

User Activity Report facilitates System Administrator to view and generate user activity reports to track and ensure security within the infrastructure system.

You can access User Activity Report from the LHS menu of Security Management. The *User Activity Report* window facilitates you to generate reports of the currently logged in users, disabled users, deleted users, unauthorized users, and idle users. Additionally, you can generate Role Master report, User ID Population report and UAM Admin Activity report.

The table below lists each user type within the *User Activity Report* window with other details.

| Report Type | Description |
|---|---|
| Currently logged in users | This window displays the list of current users accessing the Infrastructure system with details such as; User ID, User Name, and Last Login Date information. |
| Disabled Users | This window displays the list of users who are authorized but are currently disabled to access the Infrastructure system with their details such as; User ID, User Name, and Disabled On date. |
| Deleted Users | This window displays the list of users who are removed from the system with the status as authorized to access the Infrastructure system. The list also displays the details such as; User ID, User Name, Last Login, Authorization Status, and the Deleted On date. |
| Unauthorized Users | This window displays the User ID, and User Name of all the users which are not authorized. |
| Idle Users | This window displays the list of users who have not logged in to the Infrastructure system for a certain period, with details such as; User ID and User Name.<br>The default number of idle days accounted is 10 and the value can be modified by entering the required number of days in the Idle Users (No of Days) field located in Search and Filter grid. |
| Role Master Report | This window displays all OFSAA Roles and the corresponding Functions/ rights mapped to the role. That is, if a Function/Right is assigned to a particular role, then the corresponding check box will be in selected state. |

| Report Type | Description |
|---|---|
| User ID Population Report | To generate this report, enter the User ID of the user whose report you want to generate and click . The report displays various user details such as User ID, User Name, Employee Code, Profiles, Status of the Profiles, Creation Date, Last Password Changed Date, Last log in Date, Maker ID, Maker Date, Checker ID, Checker Date, and Profile End Date. |
| UAM Admin Activity Report | To generate this report, enter the User ID of the user whose report you want to generate and the duration and then click . The report displays the new and old values for User ID, User Name, Employee Code, Profile Name, Activity, Maker ID, Checker ID, Marker Date, and Checker Date. It also displays the list of Admin activities performed on the User within the specified duration such as User Details modified, User Access rights modified, User Mappings modified, and so on. |

For User Activity Reports such as Currently logged in users, Disabled users, Deleted users, Unauthorized users, and Idle users, you can:

- Click **Save to File** to generate a HTML format of the report. The *File Download* window is displayed.
  - Click **Open** in the *File Download* window to view the report in your browser.
  - Click **Save** in the *File Download* window to save a local copy of the report.

For User Activity Reports such as Role Master Report, User ID Population Report and UAM Admin Activity Report, you can:

- Click to save or open report in Excel format.
- Click to save or open report in PDF format.

## 9.2.8 User Profile Report

User Profile Reports in the Infrastructure system provides information about the Segment Name, User Group Name, Role Name, and Function Name to which a user is mapped.

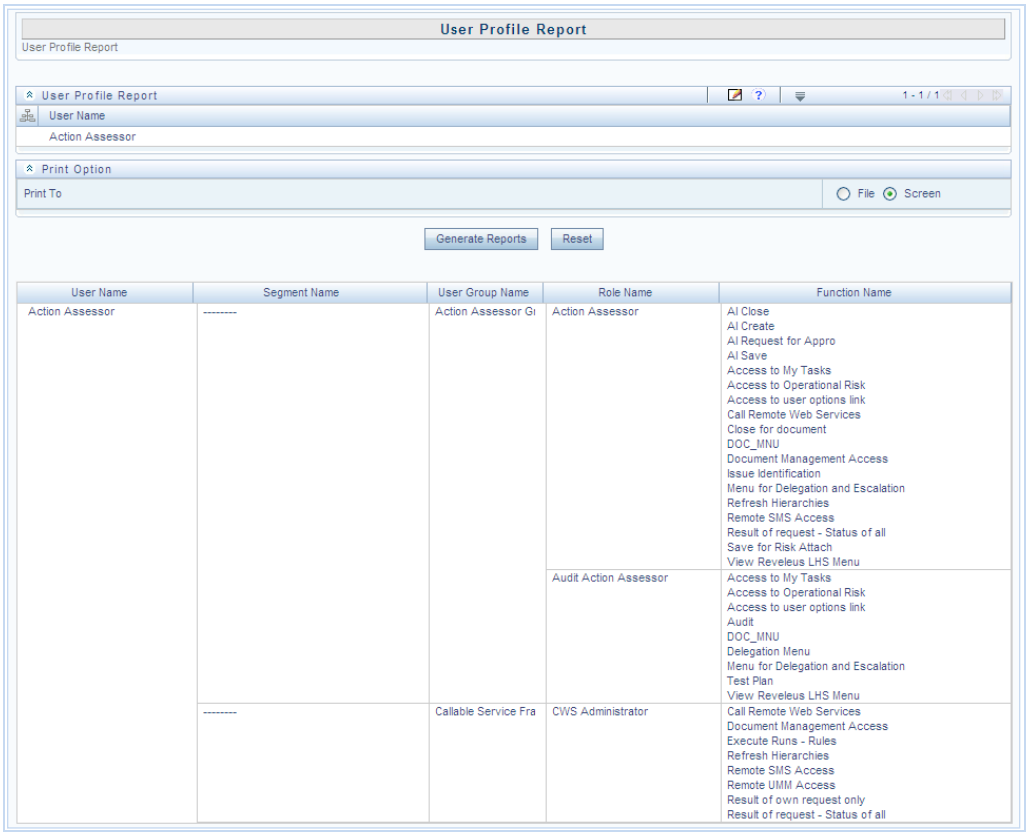
You can access User Profile Report in LHS menu of Security Management. The *User Profile Report* window facilitates you to generate user profile reports. You can make use of Pagination option to view the list of users within the system. For more information, refer Pagination section.

### 9.2.8.1 Generate User Profile Report

1. Select in the User Profile Report tool bar. The *User Mapping* window is displayed.
2. In the *User* Mapping window, do the following:

- Select the user names from the Members list and click . You can press **Ctrl** key for multiple selections.
- To select all users to Selected Members pane, click .
- To remove a selected user, select the user from Select Members pane and click .
- To remove all the selected users from Select Members pane, click .

3. Click **OK** to save the mappings and return to *User Profile Report* window.
4. Select **Generate Reports** in the *User* Profile *Report* window and view the report.




**NOTE:** You can select **File** as the print option, to generate a HTML report. The access link to the report is displayed at the bottom of *User Profile Report* window.

You can also select **Reset** to refresh the selections in the *User Profile Report* window.

### 9.2.9 Enable User

Enable User facilitates you to search and select the required user and re-define the access to the Infrastructure system. In the *Enabling User* window, you can permit user access and clear the workstation information based on the following conditions:

- When user access is locked due to exceeding the number of invalid login attempts
- When user access is locked due to an abnormal exit from the system

You (System Administrator) need to have SYSADM function role mapped to access the Enable User within the Utilities section of the Infrastructure system. The *Enabling User* window displays the details of a selected user such as User Name, User Start and End Date, Last Disabled, Enabled, and Login Date, IP Address, along with Enable Login and Clear Station status.

To Enable User in the *Enabling User* window:

1. Select the **User ID** for whom you need to enable access, from the drop-down list.

   You can also use search to filter the list and find the required ID. Click **Search** and enter the keyword in *Search For* field. Click **OK**, the list is sorted based on the specified keyword.

2. Enable access to the selected user on any or both the conditions:

   - Select **Enable Login** checkbox, if the user access is denied due to invalid login attempts.
   - Select **Clear Station** checkbox, if the user access is denied due to an abnormal exit from the system.

3. Click **Save** and update the changes.

   The Info grid at the bottom of the window displays the metadata about the changes.

## 9.3 Process Modelling Framework

*In OFSAAI 8.0.2.0.0 version, this module was called Workflow and Process Orchestration.*

This module facilitates built-in tooling for orchestration of human and automatic workflow interfaces as well as various OFSAA Processes. This enables process developers to create process-based applications. It also enables process analysts and developers to model business processes.

This section comprises of the following topics:

- Process Modeller
- Process Monitor
- Delegation
- My Inbox

### Key Features of Process Modelling Framework

- Support for visual modeling of the Workflow and Processes.
- Support for registration of Process /Activity/ Transition Logic implementation, separated from the modeling process itself.
- Built-in orchestration engine (included within OFSAAI's runtime) for workflow execution (interactive model as opposed to the batch model supported through Rule Run Framework).
- Published interface for abstraction of workflow task implementation.
- Representation of the workflow-routing rule logic in Java/ PL-SQL / Web-service.
- Process Monitoring Admin Tool to view the Execution Process Instances.

### Architecture

- Process - A business process is defined as a sequence of tasks which when performed result in a well-defined outcome.
- Activity - A Process Definition is composed of various Process Activities. An Activity refers to the unit of work/job to be performed. An activity can be of type Manual or Automatic.
    - Manual - This is the human task, which requires human intervention to move to next Activity.
    - Automatic - An automatic activity typically invoke an application component (for example, activity to invoke a business rule to calculate certain threshold).
    - Sub Process - A Sub Process is used if you want to call another Process/ Workflow from your current workflow.

- OFSAA Widgets - Widgets are used to execute OFSAA components like T2T definitions, PLC definitions (DT), Rules (Classification Rule and Computation Rule), Run, and Models from EMF through Process Modeller.
- Transition - Activities are connected together to form a control flow via transitions. Transition connects two activities and the flow is determined based on conditional expression or rule.
- Gateways - Split refers to a condition where an incoming transition is split to multiple transitions. In Merge, multiple incoming transitions are merged to a single transition. The Splitting and Merging of Activity is modeled through Gateways. Gateway can be Sequential Parallel, or Multi Choice. In case of Sequential gateways, multiple transitions are executed in the sequence order given in each transition whereas in parallel gateways, all transitions are executed in parallel. A Multi Choice gateway is used when you want to execute multiple transitions/flows based on a decision rule.
- Application Rules - Application Rules is the interface through which Process Engine executes the Application Business Logic and other Conditional logic.
- Data Fields - Data Fields are Process variables which hold the data information required to be passed between Applications and Process Engine.

### Application Development Life Cycle

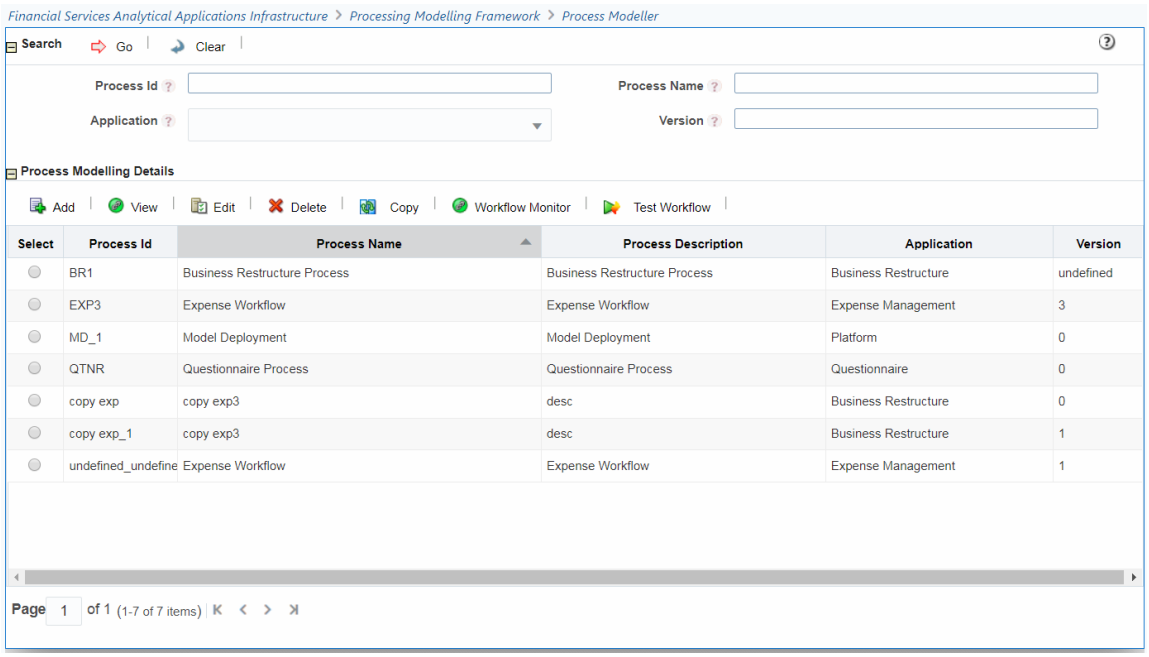
A Workflow typically follows various stages in the development lifecycle:

- Modeling - Where a Process Developer / Process analyst models the workflow in line with the application requirement.
- Implementation - Where a Process Developer implements the required service and application resources.
- Deployment - Where the Process is integrated to the respective application and deployed for execution by Process Developer / Process Administrator.
- Monitor - Once the Process is executed, the current state of the Process can be monitored by the Process Administrator / Process Owner.

## 9.3.1 Navigating to Process Modelling Framework

Go to the **Systems Configuration & Identity Management** tab and expand the **Processing Modelling Framework** link from the LHS menu. Click **Process Modeller**.

## 9.3.2 Process Modeller




The *Process Modeller* window displays the existing Processes with the details such as Process ID, Process Name, Process Description, Application, and Version. This window allows you to add a new Process, view, modify, and delete the existing Processes, and monitor the Workflow of the Processes. You can also test a Process flow/Workflow. For more information, see Testing a Workflow section.

Using the *Search* grid, you can search for a specific process based on the Process ID, Process Name, Application or Version.

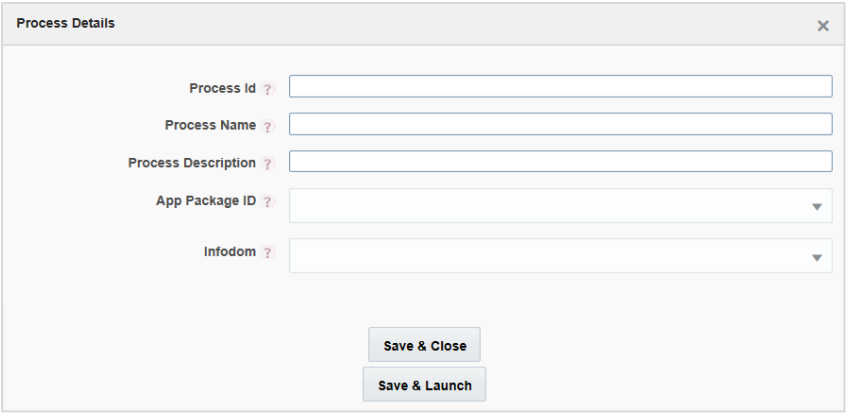
### 9.3.2.1 Creating a Business Process

A business process can be generally defined as a sequence of tasks which when performed result in a well-defined outcome.

Business processes are generally created by process analysts who determine the business requirements that must be addressed and define the corresponding process flow. This flow is defined by using various flow objects in the component toolbar.

To create a new Business Process

1. From the *Process Modeller* window, click **Add**. The *Process Details* window is displayed.

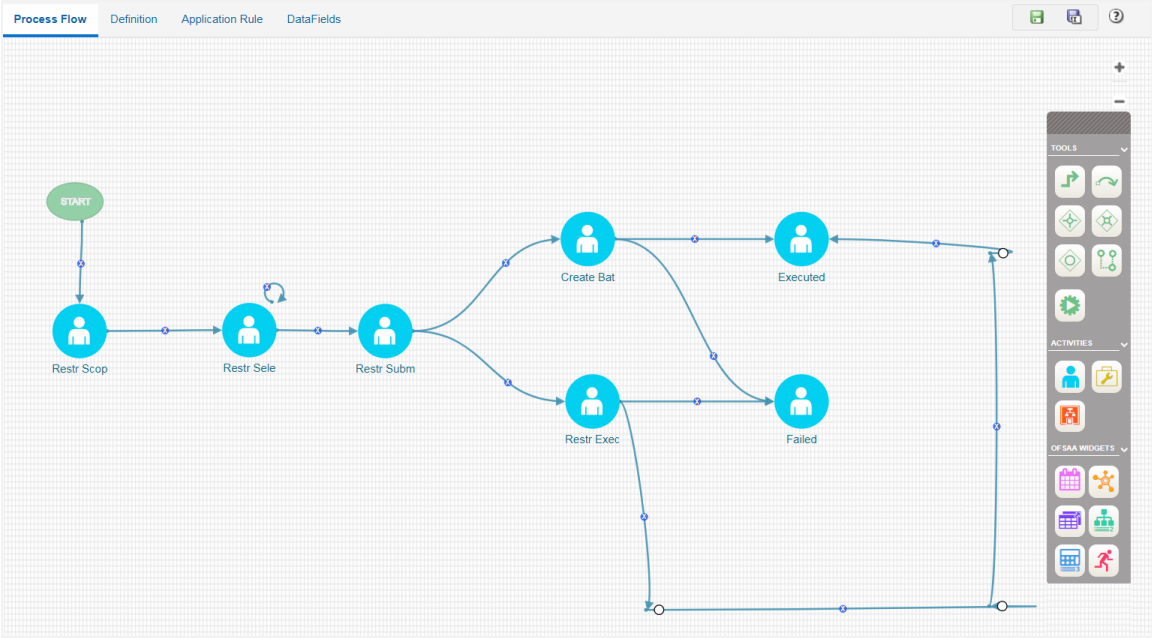



2. Enter the details as given in the table:

| Field Name | Description |
|---|---|
| Process ID | Enter the Process ID. |
| Process Name | Enter the Process name. |
| Process Description | Enter a brief description of the Process. |
| App Package ID | Select the Application Package from the drop-down list. The package IDs are seeded from backend. |
| Infodom | Select the information domain in which you want to create the business process, from the drop-down list. The list displays all the infodoms mapped to the applications configured in your OFSAA instance. |

3. Click **Save & Close** to save the definition and go back to *Process Modeller Summary* window or **Save & Launch** to save the definition and open the *Process Modeller Editor* window.

### 9.3.2.2 Working with Process Modeller




From the *Process Modeller* window, select the required Process for which you want to create workflow and click **Edit**. The *Process Flow* tab is displayed.

The *Process Flow* window contains four tabs:

- **Process Flow**: This tab has a floating toolbar and a drawing canvas. Drawing canvas is used to design the Process flow with the Tools, Activities, and OFSAA Widgets available in the floating toolbar.

  The available tools are:

  - **Transition**: This tool is used to draw a transition from one Activity to another. Two types of transition tools are available- Transition Line and Transition Curve.
  - **Parallel Gateway**: This tool is used to draw a Parallel Gateway. A Parallel gateway is used when you want to have multiple transit○ions/flows which should be executed parallel.
  - **Sequential Gateway**: This tool is used to draw a Sequential Gateway. A Sequential gateway is used when you want to have multiple transitions/flows which should be run sequential.
  - **Multi Choice Gateway**: This tool is used to draw a Multi Choice Gateway. A Multi Choice gateway is used when you want to execute multiple transitions/flows based on decision rule.

- **Start**: This tool is used to draw a Start Activity which basically indicates the first Activity to be executed in the Process.
- **Connector**: This tool helps to connect two activities with different path (other than the default), in case if the default path is overlapping some existing flow.

The available activities are:

- **Human Task**: This is used to draw a Manual activity, which requires human intervention to move to next Activity.
- **Service Task**: This is used to draw an Automatic task.
- **Sub Process**- This is used if you want to call another Process/ Workflow from your workflow.

The available OFSAA Widgets are:

- LoadT2T: This is used to execute T2T definitions through PMF.
- TransformDT: This is used to execute PLC definitions through PMF.
- RuleType2: This is used to execute Classification Rules through PMF.
- RuleType3: This is used to execute Computation Rules through PMF.
- MFModel: This is used to execute Models from Enterprise Modelling Framework through PMF. This option is available only if your Big Data Processing license is enabled in your OFSAA environment.
- Run: This is used to stitch a Base Run or Simulation Run from the Rule Run Framework with your workflow. The Run gets executed once the workflow is invoked.

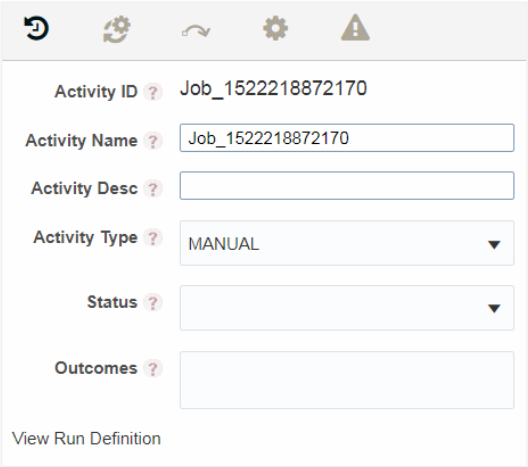
- **Definition**: This tab contains general Process related details such as Name, Description, Created By, and so on. You can also set the Display Height and Width to change the size of the Designer window according to your choice.
- **Application Rule**: This tab helps to add, edit, and delete Application Rules associated with the Process. For details on Application Rule, see Working with Application Rule.
- **Data Fields**: This tab helps to view, add, edit, and delete Data Fields associated with the Process. For details on Data Fields, see Working with Data Fields.

### 9.3.2.3 Adding an Activity

A Process Definition is composed of Process Activities. An Activity refers to the unit of work or job to be performed. An activity can be Human Task, Service Task, or Sub Process.

To add an activity

1. From the *Process Flow* tab, click **Start** from the *Tools* section in the left pane and then click the canvas where you want to draw the activity. This Start activity indicates the first activity to be executed in the Process.
2. Click an activity under **Activities** section in the left pane and then click the canvas where you want to draw the activity. The options are **Human Task**, **Service Task,** and **Sub Process**. For more information on how to create a Sub Process, see Adding a Sub Process.
3. Double-click the icon. On the Right Pane, the *Activity* tab is displayed.

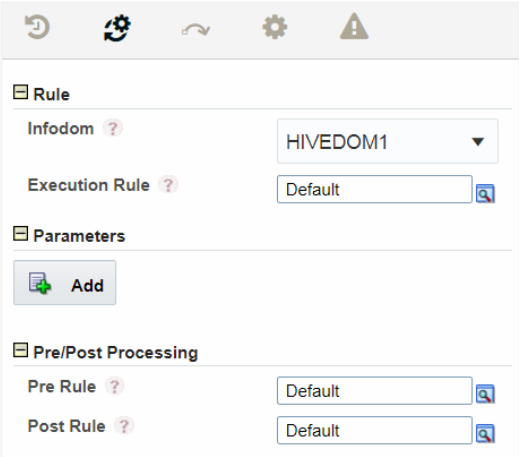



4. Enter the details as given in the table:

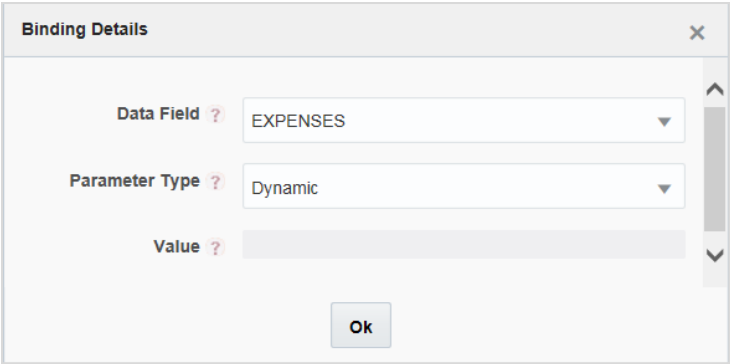
| Field Name | Description |
|---|---|
| Activity ID | Displays the automatically generated Activity ID. |
| Activity Name | The activity name is displayed automatically same as the Activity ID. Modify the activity name if required. |
| Activity Desc | Enter the description of the Activity. |

| Field Name | Description |
|---|---|
| Activity Type | By default, the activity type of the selected activity is displayed.<br>To change the activity type, you can select the required activity type from the drop-down list. The options are Manual, Automatic, Start, Parallel, Sequential, Connector, Run Task, Multi Choice, and Sub Process. |
| Status | This is not applicable if the Activity is a Run Task.<br>Select the status of the activity from the drop-down list.<br>The list displays the seeded values in the AAI_WF_STATUS_B table. |
| Outcomes | This is not applicable if the Activity is a Service Task or Run Task.<br>Select the required Outcomes from the drop-down list.<br>The list displays the seeded values in the AAI_WF_OUTCOMES_B table. |

5. Click . The *Implementation* tab is displayed.




6. Select the required information domain from the **Infodom** drop-down list. The list displays all the Infodoms mapped to the applications configured in your OFSAA instance.
7. Select the execution rule which needs to be executed for this activity.
   - For Service Task and Human Task:
     - Click . The *Rule Details* window is displayed.
     - Select the required Application rule and click **Ok**. For more information, see Application Rule.
8. Click **Add** under **Parameters.** The *Binding Details* window is displayed.




This window allows you to add parameters to the selected run definition in case of Run Task.

9. Select the required parameter from the **Data Field** drop-down list. The list displays the defined Data Fields for the current process or package.
10. Select the **Parameter Type** as Dynamic or Static.
    - If Static is selected, enter the **Value**.
    - If Dynamic is selected, the **Value** field is disabled. The value needs to be entered during execution of the workflow. In case of Run widget, the value can be passed as **Optional Parameters** under *Dynamic Parameters List* in the Task Definition window or can be passed through application code.

    The added parameters are displayed under *Parameters* pane. You can click corresponding to a parameter to edit it or click to delete it.
11. Click corresponding to **Pre Rule** and select the API which needs to be run before the activity.
12. Click corresponding to **Post Rule** and select the API which needs to be run after the activity.
13. Click to select **Transitions** tab to add transitions for the activity. For more information, see Transition section.
14. Click to select **Actions** tab to add tasks for the activity. For more information, see Tasks section. Click **Group Approval** to configure parallel or sequential group approval. For more information, see Group Approval section.
15. Click to select **Notifications** tab to add notifications for the activity. For more information, see Notifications section**.**
16. Click **Save** in the top right corner of the canvas to save the workflow. You can click **Save as New Version** if you do not want to overwrite the existing Process with changes.

#### 9.3.2.4 Adding an OFSAA Widget

OFSAA widgets are used to execute OFSAA components like T2T definitions, PLC definitions (DT), Rules (Classification Rule and Computation Rule) and Run through Process Modeller.

To add an OFSAA Widget

1. From the *Process Flow* tab, click the required widget under **OFSAA Widget** toolbar in the left pane and click the canvas. The available OFSAA Widgets are LoadT2T, TransformDT, RuleType2, RuleType3, MFModel, and Run.
2. Double-click the widget and select the *Imp* tab.
3. Select the required information domain from the **Infodom** drop-down list. The list displays all the Infodoms mapped to the applications configured in your OFSAA instance.
4. Click corresponding to Execution Rule and select the execution rule which needs to be executed. The *Run Component Details* window is displayed.

   Based on the selected OFSAA widget, it displays the components.

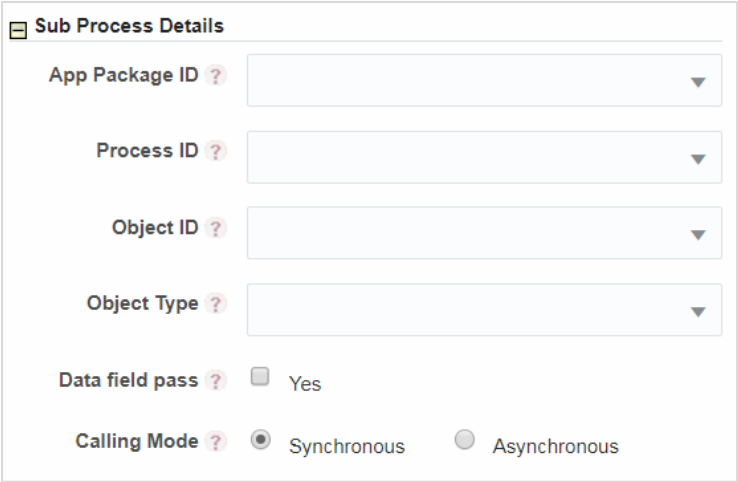
   - For LoadT2T widget, all T2T definitions in the selected Infodom are displayed. Select the required T2T definition.
   - For TransformDT widget, all PLC definitions in the selected Infodom are displayed. Select the required PLC definition.
   - For RuleType2 widget, all Classification Rules in the selected Infodom are displayed. Select the required Classification Rule from the Segment.
   - For RuleType3 widget, all Computation Rules in the selected Infodom are displayed. Select the required Computation Rule from the Segment.
   - For MFModel widget, all deployed Models in the selected Infodom are displayed. Select the required model.
   - For Run widget, all Run definitions in the selected Infodom are displayed. Expand Base Run or Simulation Run and select the required Run definition from the Segment.
5. For more information on other fields, see Adding an Activity section.

#### 9.3.2.5 Adding a Sub Process

Sub Process is used if you want to call another Process/ Workflow from your workflow.

To add a sub process

1. From the *Process Flow* tab, click **Sub Process** under **Activities** toolbar in the left pane.
2. Double-click the icon. The *Sub Process Details* window is displayed.




3. Enter the details as given in the table:

| Field Name | Description |
|---|---|
| App Package ID | Select the Application Package from which you want to call a process, from the drop-down list. The package IDs that are seeded from backend are displayed in the list. |
| Process ID | Select the Process which you want to call within your workflow, from the drop-down list. The list displays all processes defined for the selected Application Package. |
| Object ID | Select the Object ID from the drop-down list. Object ID is the entity ID used to identify if a workflow needs to be started from the beginning or from the current stage.<br>Object ID drop-down list is populated from the Data Fields.. |
| Object Type | Select the object type from the drop-down list. Object Type is used to identify a workflow that is passed by the application. |
| Data field pass | Select **Yes** to pass the parameters passed to the parent workflow to be passed to the selected sub process. |
| Calling Mode | ▪ **Synchronous** – Select this option if you want the sub process to complete before the flow moves to the next activity.<br>▪ **Asynchronous** – Select this option if you do not want to wait for the sub process to complete. And the parent workflow proceeds to the next activity. |

**Deleting an Activity/Sub Process/ OFSAA Widget**

You cannot delete an Activity/Sub Process/OFSAA Widget which has incoming transitions from it.

1. From the *Process Flow* tab, mouse over the Activity/Sub Process/OFSAA Widget icon and click . A confirmation message is displayed.
2. Click **Ok** to delete. If any connecting Activity is there, you will be prompted to delete it first.

### 9.3.2.6 Transition

Transition is used to indicate the transition from one activity to another activity. Activities are related together to form a control flow via transitions. Transition connects two activities and the flow is determined based on condition expression or decision rule. You can select Transition Line if you want to use straight line to connect the activities or Transition Curve if you want to use curved lines based on your requirement.

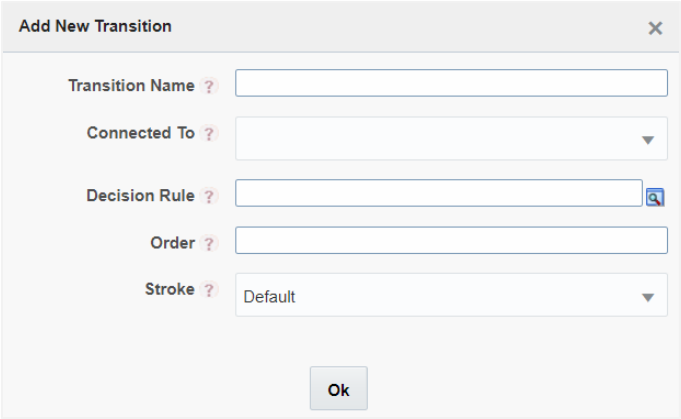
**Adding a Transition**

1. From the *Process Flow* tab, click or from the *Tools* section in the left pane. Click the activity from which you want to start the transition. Again click the activity to which you want to connect the transition. Default Transition details get populated.

   To modify the details, double-click the Transition and enter the required details in the *Edit Transition* window.

   Or

   Double click the Activity for which you want to add a transition. On the floating toolbar, click . The *Transitions* tab is displayed.
   Click **Add**. The *Add New Transition* window is displayed.




2. Enter the **Transition Name**.

3. Select the activity to which you want to connect the current activity, from the **Connected To** drop-down list. All defined activities in the current Business Process are displayed.
4. Select the appropriate **Decision Rule** by clicking button.

   This rule is validated during Process execution. If the output value is 'True' which indicates Success, the process has to flow through this transition to go the next activity. In case of output value 'False' which indicates failure, the current transition is ignored and the next transition is taken for evaluation if available. In case if all transition rule fails (that is evaluated to value 'False'), then the Process will remain in the current State.
5. Enter the Precedence value based on which the transition Decision rules need to be executed in case of multiple transitions, in the **Order** field. This has effect in case of transitions from a Sequential gateway only.
6. Select **.(Dot)** if you want the transition line as dotted line or **–(Dash)** if you want the transition line as dashed line, from the **Stroke** drop-down list.

**Modifying a Transition**

This option allows you to modify a transition. You cannot edit the **Connected to** field.

1. From the *Process Editor* window, double click the Activity whose transition you want to edit.
2. On the Right Pane, click . The *Transitions* tab is displayed. Select the transition and click **Edit.**
   Or
   Double click the transition. The *Edit Transition* window is displayed.
3. Modify the required fields. For more information, see Adding a Transition.

**Deleting a Transition**

This option allows you to delete a transition.

1. From the *Process Editor* window, double click the Activity whose transition you want to delete.
2. On the Right Pane, click . The *Transitions* tab is displayed. Select the transition and click **Delete**.
   Or
   Click on the Transition icon.

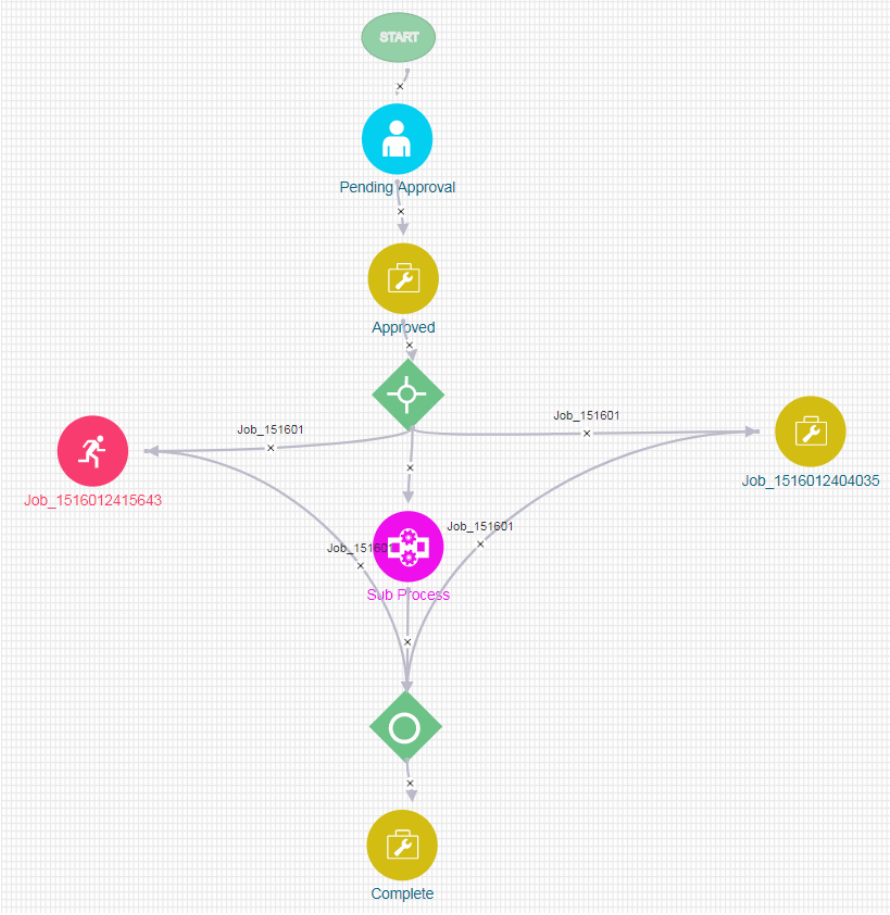
### 9.3.2.7 Adding Gateways

Split refers to a condition where an incoming transition is split to multiple transitions. In Merge, multiple incoming transitions are merged to a single transition. The Splitting and Merging of Activities is modeled through gateways. Gateway can be Sequential, Parallel, or Multi Choice.

Sequential Gateways are used when you want to execute multiple activities in a predefined sequence. Parallel Gateways are used when you want to execute multiple activities in parallel. Multi Choice Gateways are used when you want to execute multiple activities based on decision rule or condition expression.

To add a Gateway

From the *Process Flow* tab, click the required Gateway from the *Tools* section in the floating toolbar. The options available are **Sequential Gateway, Parallel Gateway** or **Multi Choice Gateway**.

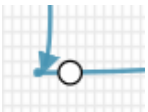



### 9.3.2.8 Adding a Connector

A Connector is used to connect two activities with different paths, in case if the default path is overlapping some existing flow.

To add a Connector

From the *Process Flow* tab, click in the floating toolbar and then click the canvas where you want to add a connector.



### 9.3.2.9 Tasks/ Actions

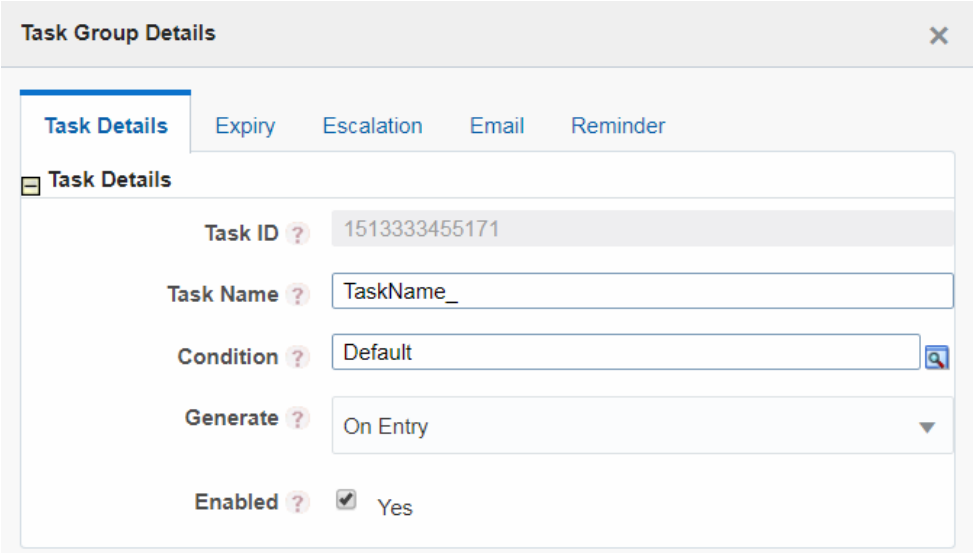
Task is used to inform the assigned user about an action to be completed in the current stage of Workflow. You can add multiple tasks for an activity. Task can be assigned to a user, user group, users having a particular role or users selected by an application rule. Task is sent to the Application Inbox of the assigned users.

**Creating a Task**

This feature allows you to create a task for an activity. Task is sent to the assigned users. You can set the task as expired after specified number of days or hours. If the task is not completed within a period of time, you have the option to escalate it. Additionally, you can send reminders to the assigned users.

To create a Task/Action

1. From the *Process Flow* tab, double-click the Activity for which you want to create task. The *Activity* tab is displayed by default.
2. Click . The *Actions* tab is displayed.
3. Click **Add** from the toolbar to add a new Task. The *Task Group Details* window is displayed.

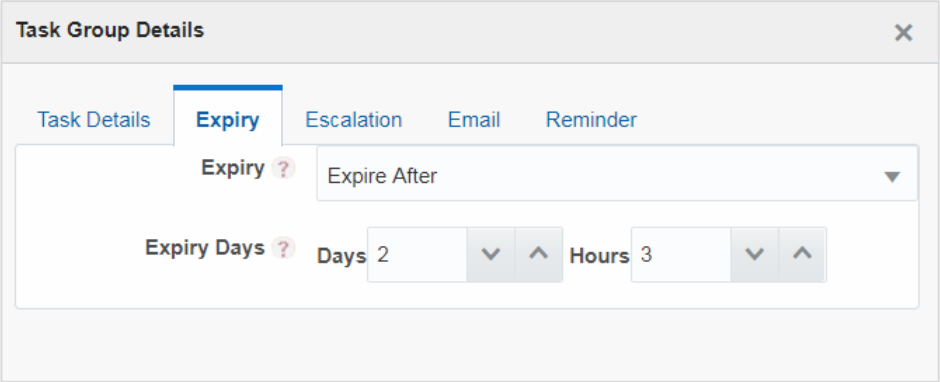



4. Enter the details as tabulated:

| Field Name | Description |
|---|---|

| Field Name | Description |
|---|---|
| Task ID | Displays the automatically generated Task ID. |
| Task Name | Enter a task name. By default, task name is prefixed with “TaskName_”. |
| Condition | Select the decision rule so that when the condition is satisfied the Task will be sent to the users associated to this task. |
| Generate | Select the required option:<br>▪ **On Entry**- Task is sent before executing the activity business logic.<br>▪ **On Exit**- Task is sent before leaving the activity and moving to next activity.<br>▪ **On Stage**- When there is a transition where the target and source is the same activity, and if that transition happens, then OnStage tasks are triggered. |
| Enabled | Select the **Yes** checkbox to enable the Task. |

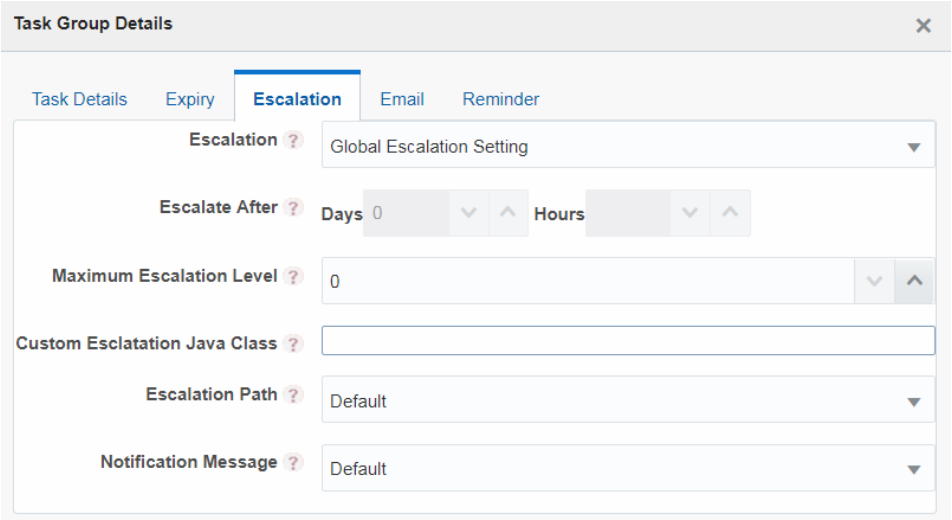
5. Select the **Expiry** tab.




| Field Name | Description |
|---|---|

| Field Name | Description |
|---|---|
| Expiry | Select the required option:<br>▪ **Global Expiry Setting**- Select this option to set the task expiry based on global setting. Global setting can be set from backend.<br>▪ **Never Expire-** Select this option if the task should not expire.<br>▪ **Expire After-** Select this option if you want to set the task expiry after some days and/or hours.<br>▪ **Dynamic Value** – Select this option if you want the user assigned to the task to set the task expiry date and time dynamically. This value needs to be entered in the code. |
| Expiry Days | This option is applicable if **Expire After** is selected for **Expiry**.<br>Enter the number of days and/or hours after which the task should be expired. |

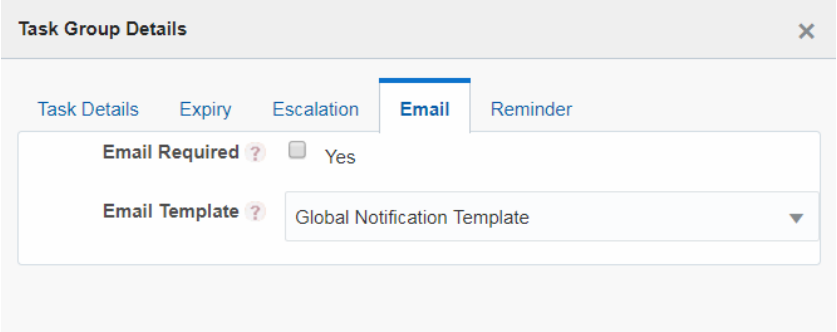
6. Select the **Escalation** tab.




| Field Name | Description |
|---|---|

| Field Name | Description |
|---|---|
| Escalation | Select the required option:<br>▪ **Global Escalation Setting**- Select this option to set the task escalation based on global setting. Global setting can be set from backend.<br>▪ **Never Escalate -** Select this option if escalation is not required for the task.<br>▪ **Escalate After-** Select this option if you want to escalate if the task is not addressed after some days and/or hours.<br>**Note**: Escalation should be set after expiry of the task. If you have selected **Never Expire** option for **Expiry**, you cannot set escalation. |
| Escalate After | This option is applicable if **Escalate After** is selected for **Escalation**.<br>Enter the number of days and/or hours after which the escalation should be triggered. |
| Maximum Escalation Level | Enter the maximum number of escalation level. 1 indicates escalation to the immediate manager. 2 indicates escalation to manager's manager and so on. |
| Custom Escalation Java Class | Enter the custom escalation Java Class which you want to call. |
| Escalation Path | Select the escalation path from the drop-down list. The options are Default, People Hierarchy and Custom Rule. |
| Notification Message | Select the type of notification message from the drop-down list. Notification messages are populated from `AAI_WF_Templates` table. |

7. Select the **Email** tab.

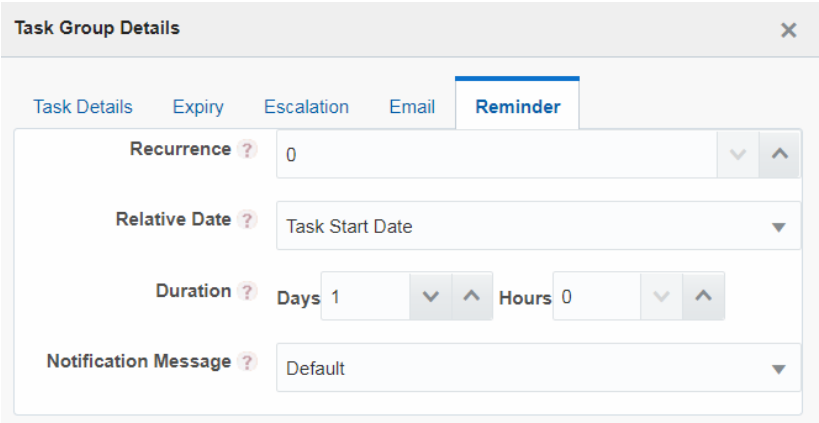



| Field Name | Description |
|---|---|

| Field Name | Description |
|---|---|
| Email Required | Select the **Yes** checkbox if an email needs to be sent for the task. |
| Email Template | Select the email template to be used from the drop-down list. Templates are populated from `AAI_WF_Email_Template` table. |

8. Select the **Reminder** tab.

> **NOTE:** Reminders set will be sent to the assigned user as an open task in their inbox.




| Field Name | Description |
|---|---|
| Recurrence | Enter the number of times you want to set the reminder. |
| Relative Date | Select **Task Start Date** if you want to send reminder after the defined number of days and/or hours, from the start date of the task.<br>Select **Task Expiration Date** if you want to send reminder before the defined number of days and/or hours from the end date/expiry date of the task. |
| Duration | Select the number of days and/or hours from the **Relative Date** after/before which you want to set the reminder. |
| Notification Message | Select the notification message you want to send, from the drop-down list. Notification messages are populated from `AAI_WF_Templates` table. |

9. Click **OK**.

### Modifying a Task

This option allows you to modify a task. You cannot edit the **Task ID** field.

1. From the *Process Flow* tab, double-click the Activity whose task you want to modify.
2. Click . The *Actions* tab is displayed.
3. Select the task and click **Edit**. The *Task Details* window is displayed.
4. Modify the required fields. For more information, see Creating a Task.

**Deleting a Task**

This option allows you to delete a task.

1. From the *Process Flow* tab, double-click the Activity whose task you want to delete.
2. Click . The *Actions* tab is displayed.
3. Select the task and click **Delete**.

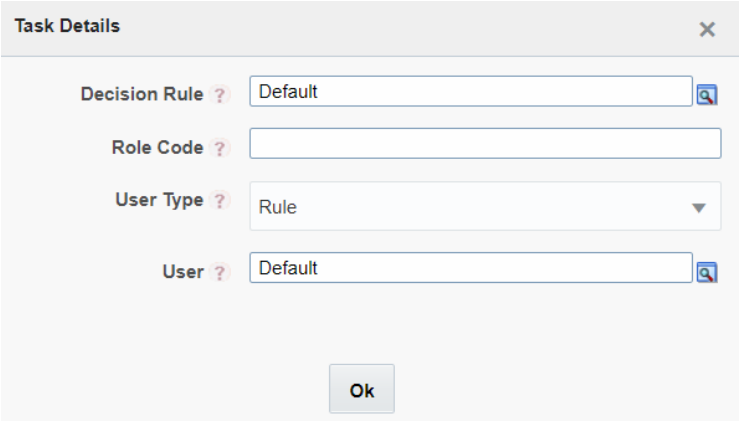
### 9.3.2.10 Creating a Task Group

You can create task group by selecting individual users, user groups, or users selected by a particular rule. You can also create a task group based on a user role. That is, if user role is provided and a user or user group is selected, then task group is created with those users or user groups that are mapped to the same user role.

All users in the Task Group are able to view the pending /open tasks in their Application inbox. They can navigate to **My Inbox**> **My Task** and click the link provided under **Entity Name**, to directly open the application and complete their tasks.

To create task group

1. From the *Process Flow* tab, double-click the Activity for which you want to create task group.
2. On the right pane, click . The *Actions* tab is displayed.
3. Select the task for which you want to create task group. The *Participants* grid is displayed
4. Click **Add** in the *Participants* grid. The *Task Details* window is displayed.




| Field Name | Description |
|---|---|
| Decision Rule | Select the condition to send the task to the users.<br>Click . From the Browser, select the required decision rule and click OK. |
| Role Code | Enter the role code if you want to send the task to users assigned with the role. This field is optional. If this is not provided, then the check to verify whether the user is mapped to the role is not performed. |

| Field Name | Description |
|---|---|
| User Type | Select the appropriate options from the drop-down list. The options are:<br>▪ User<br>▪ Rule<br>▪ User Group<br>▪ None- This can be selected if you have entered the Role Code and you want to assign the task to users having that role. |
| User | ▪ For **User Type** selected as **User**- Click . The *User Details* window is displayed. Select the appropriate user and click **OK**. During execution, if the condition is met as indicated in the **Decision Rule** field and the user is mapped to the role code, then task will be generated to the selected user.<br>▪ For User Type selected as **User Group**- Click . The *User Group Details* window is displayed. Select the appropriate user group and click **OK**. During execution, if the condition is met as indicated in the **Decision Rule** field and the user group is mapped to the role code, then task will be generated to all users in the user group.<br>▪ For User Type selected as **Rule**- Click . The *Rule Details* window is displayed. Select the appropriate selection rule and click **OK**. During Execution, if the condition is met as indicated in the **Decision Rule** field, and user IDs returned from the Selected Rule are mapped to the role code, then task will be generated to those users. |

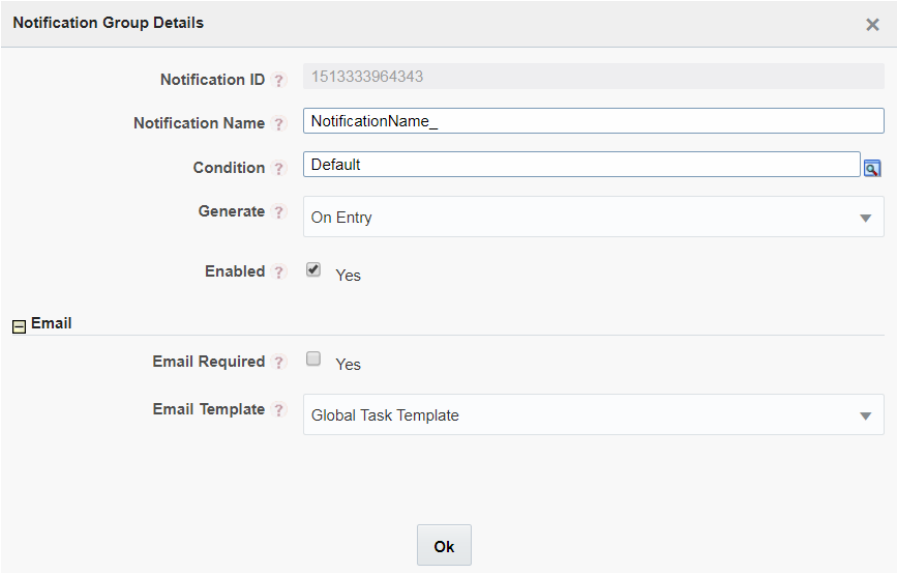
5. Click **OK**.

#### 9.3.2.11 Adding Notifications

Notifications are used to alert the users about the workflow progress. It will be sent as an Inbox item.

To add notifications

1. From the *Process Flow* tab, double-click the Activity for which you want to create notification.
2. On the right pane, click . The *Notifications* tab is displayed.
3. Click **Add** from the toolbar to add a new notification. The *Notification Group Details* window is displayed.




4. Enter the details as tabulated:

| Field Name | Description |
|---|---|
| Notification ID | Displays the automatically generated Notification ID. |
| Notification Name | Enter the Notification name. By default, Notification name is prefixed with “NotificationName_”. |
| Condition | Select the decision rule so that when the condition is satisfied the Notification will be sent to the users associated to this Activity. |
| Generate | Select the required option:<br>▪ **On Entry**- Notification is sent just before executing the activity business logic.<br>▪ **On Exit**- Notification is sent just before leaving the activity and moving to next activity.<br>▪ **On Stage**- When there is a transition where the target and source is the same activity, and if that transition happens, then OnStage tasks are triggered.<br>▪ **On Escalation**- Notification is sent when the task is escalated. This needs to be selected if you have set escalation of the task.<br>▪ **On Reminder**- Notification is sent at the time of the reminder set for the task. |
| Enabled | Select the **Yes** checkbox to enable the Notification. |

| Field Name | Description |
|---|---|
| Email | |
| Email Required | Select the **Yes** checkbox if an email needs to be sent as notification. |
| Email Template | Select the email template to be used from the drop-down list. Templates are populated from `AAI_WF_Email_Template` table. |

5. Click **Ok**.

#### 9.3.2.12 Group Approval/Group Consensus

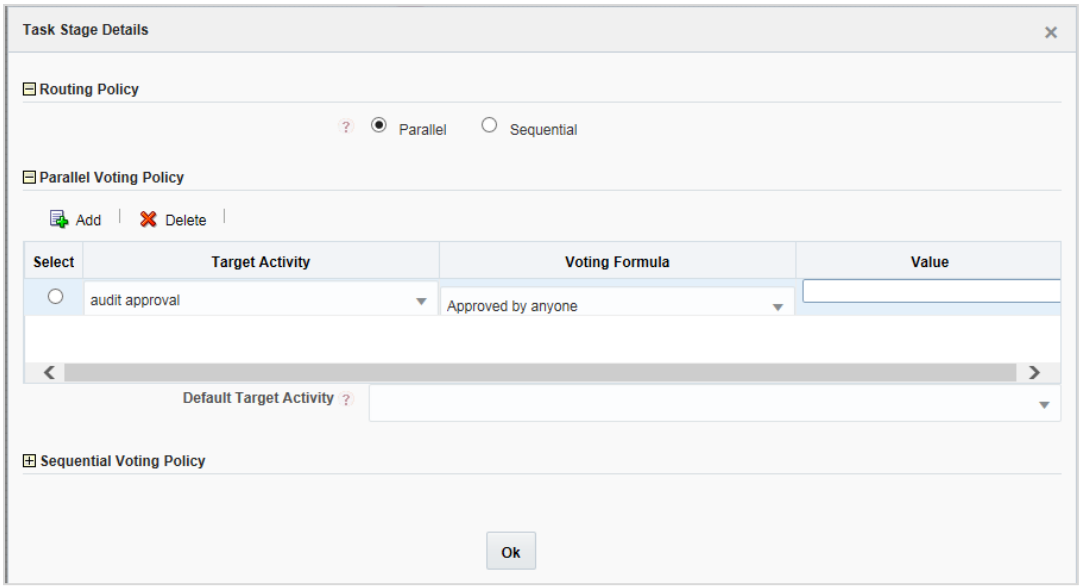
Group approval/Group Consensus can be used to decide whether the flow has to move to a particular activity based on the response of a single member, majority of members of the group, or all members of the group. If more than one group is present, then you can design to move the flow to a particular activity based on the response of a single group, all groups or the majority of groups.

**Configuring Parallel Group Approval**

Parallel group approval is used when you want to send the task to all users in the task group simultaneously.

To configure parallel group approval:

1. From the *Process Modeller* window, select the required Process and click **Edit**. The *Process Flow* tab is displayed.
2. Double-click the Activity for which you want to configure user approval.
3. On the right pane, click . The *Actions* tab is displayed.
4. Click **Group Approval** to configure group approval. The *Task Stage Details* window is displayed.




5. Select **Parallel** to configure parallel group approval.
6. Click **Add**. A row is added to define the voting formula for target activity.

**NOTE:** It is recommended that you define voting formula for all activities. If voting formula is not defined for an activity and if someone in a task group selects that activity, the workflow moves to that activity.

7. Select the required **Target Activity** from the drop-down list.
8. Select the required option from the **Voting Formula** drop-down list. The options are:
   - **Approved by anyone**- If any one of the users from any task group chooses the selected **Target Activity**, the flow moves to the selected activity. If no one chose it, it checks for the voting formula defined for the next Target Activity.
   - **Approved by anyone from every Group**- If at least one user from every task group chooses the selected **Target Activity**, the flow moves to that activity.
   - **Approved by overall majority**- If majority of the users from all task groups choose the selected **Target Activity**, the flow moves to that activity. For example, if there are 2 task groups and 15 users in each group, then at least 16 users (majority of 30 users) should choose the selected **Target Activity**, for the flow to proceed to that activity.
   - **Approved by majority from each Group**- If majority of the users from each task group choose the selected **Target Activity,** the flow moves to that activity. For example, consider there are 3 task groups and each group has 15 users, then from each group at least 8 users should favour the Target Activity to move the flow to that activity.

- **Approved by everyone**- All the users in all the task group should choose the selected **Target Activity** for the flow to move to that activity.
- **Approved by overall percentage-** If the specified percentage of users in the task group chooses the selected **Target Activity**, the flow moves to that activity. Enter the percentage in the **Value** field.

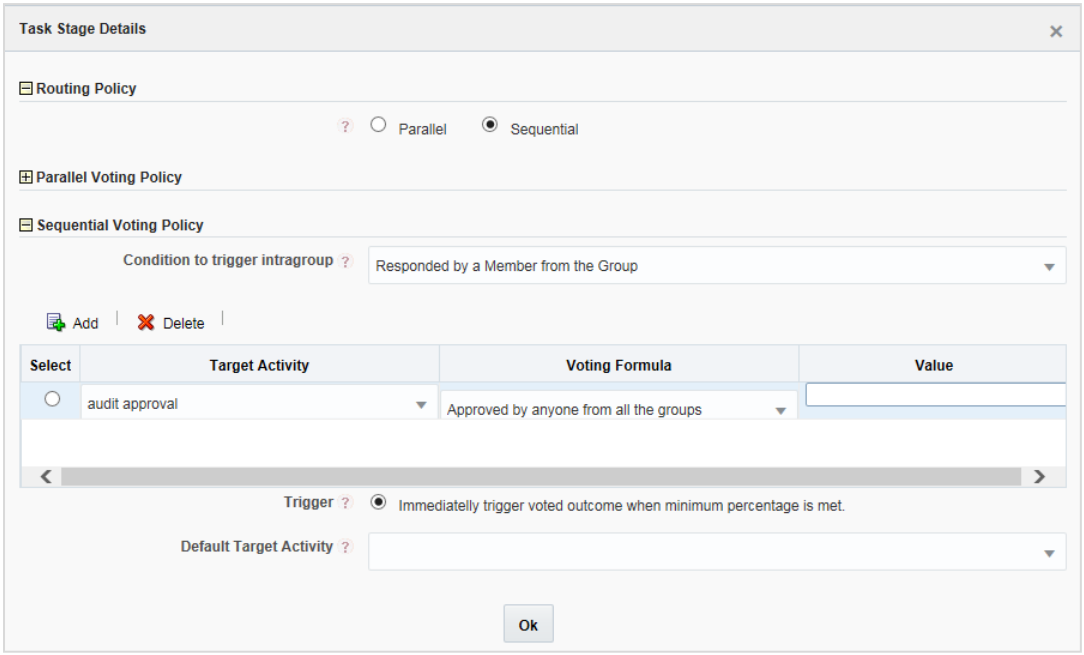
9. Select the **Default Target Activity** from the drop-down list. This is the activity which will be executed if none of the condition is satisfied.
10. Click **Ok**.

**Configuring Sequential Group Approval**

Sequential Group approval is used when you have multiple tasks for an activity.

To configure sequential group approval:

1. From the *Workflow & Process Orchestration* window, select the required Process and click **Edit**. The *Process Editor* window is displayed.
2. Double-click the Activity for which you want to configure user approval.
3. On the right pane, click . The *Actions* tab is displayed.
4. Click **Group Approval** to configure group approval. The *Task Stage Details* window is displayed.




5. Select **Sequential** to configure sequential group approval.
6. Select the **Condition to trigger intragroup** from the drop-down list. Intragroup is the task group of each task in a particular activity. The sequence in which each intragroup

will be considered for voting is based on the sequence in which the tasks are added in the *Task Stage* pane in the *Actions* tab. The options are:

- **Responded by a Member from the Group-** If anyone from the task group of the first task responds, it goes to the next task group and wait till someone from that task group respond and so on.
- **Responded by Overall Majority-** If majority of users in the task group of the first task respond, it goes to the next task group and wait till majority of users in the task group of the second task respond and so on.
- **Responded by Everyone in each Group-** Once all users in the task group of the first task have responded, it moves to the next task group. Then it waits till everyone in the second task group respond and so on.

7. Click **Add**. A row is added to define the voting formula for target activity.

**NOTE:** It is recommended that you define voting formula for all activities. If voting formula is not defined for an activity and if someone in a task group selects that activity, the workflow moves to that activity.

8. Select the required **Default Target Activity** from the drop-down list. This is the activity which will be executed if none of the condition is satisfied.
9. Select the required option from the **Voting Formula** drop-down list. The options are:
   - **Approved by anyone from all the groups-** If anyone selects the **Target Activity,** the flow moves to that activity.
   - **Approved by Overall Majority-** If majority of the users select the **Target Activity,** the flow moves to that activity.
   - **Approved by Everyone in each group-** If everyone in the group selects the **Target Activity,** the flow moves to that activity.
   - **Approved by Overall Percentage-** Provide the percentage in the **Value** field. If the specified percentage of the users select the **Target Activity,** the flow moves to that activity.
10. Select the activity which needs to be executed if the condition fails, from the **Default Target Activity** drop-down list.

### Scenarios

Based on the **Condition to trigger Intragroup** and **Voting Formula,** the flow decides which activity needs to be triggered.

Consider **Condition to trigger Intragroup** is selected as **Responded by a Member from the Group** and **Voting Formula** is selected as **Approved by anyone from all the groups.** It waits for someone in the first task group to respond. If the first response is the selected **Target Activity**, the flow moves to that activity. Otherwise, it waits for the response in the second task group. If the second group's response is the selected **Target Activity**, the flow moves to that activity, else the process continues to the next task group. If no response from all the task groups favours the selected **Target Activity**, it checks the voting formula for the next Target Activity if it is defined. If no condition is satisfied, it moves to the **Default Target Activity**.

Consider **Condition to trigger Intragroup** is selected as **Responded by Overall Majority** and **Voting Formula** is selected as **Approved by anyone from all the groups.** It waits till either majority of the users in the task group responds or anyone selects the **Target Activity**. For example, consider there are 5 users in the first task group. Then if the first person selects the **Target Activity,** it moves to that activity. Else, it checks the second user's response. If that response is the selected **Target Activity,** it moves to that activity. Else, it checks the third user's response. If that response is the selected **Target Activity,** it moves to that activity. Else, it goes to the next task group since the majority of users in the task group responded and the process continues. If no condition is satisfied, it checks the voting formula for the next Activity. If no condition is satisfied, it moves to the **Default Target Activity**.

Consider **Condition to trigger Intragroup** is selected as **Approved by Overall Majority** and **Voting Formula** is selected as **Responded by Overall Majority.** It waits till the majority of the users from the first task group respond. Then it moves to the next task group and waits till majority responds and so on. Once majority of users in all task groups respond, it checks whether the majority of the responses favour the selected Target Activity. Then it moves to that activity. Else it checks the voting formula for the next Target Activity if it is defined. If no condition is satisfied, it moves to the **Default Target Activity**.

Consider **Condition to trigger Intragroup** is selected as **Responded by Everyone in each group** and **Voting Formula** is selected as **Approved by Overall Majority.** It waits till everyone in the first task group responds. Then it moves to the next task group and waits for the response by everyone in that group and the process continues till everyone from all task group responds. If the majority of the users of all groups selected **Target Activity,** the flow moves to that activity. Else it checks the voting formula for the next Target Activity if it is defined. If no condition is satisfied, it moves to the **Default Target Activity**.

#### 9.3.2.13 Outcomes

Outcomes are used to have user defined buttons such as Approve or Reject, that will be available while execution to let approver decide which one to click. This helps in deciding the flow of Workflow and execution of transitions.

Outcome based approach helps in:

- Automatically displaying the Actionable Buttons in the Application based on the stage (avoiding the development effort required in application to stitch action button for each stage of workflow)
- Simplifying the Transition rules implementation by using Outcome Based Type rules ( there by SQL Script based rules can be avoided which has security risk)
- Making customization in workflow process easy, as any change in process flow and stages will have less impact on application.

**Configuring Outcomes**

**Step 1: Configure the required Outcomes to the Activity.**

1. From the *Process Modeller* window, select the required Process and click **Edit**. The *Process Flow* tab is displayed.
2. Double-click the Activity for which you want to configure outcomes. On the Right Pane, the *Activity* tab is displayed.
3. Select the required **Outcomes** from the drop-down list. The options are **Approve**, **Reject** and **Submit**. These values are pre-seeded. You can add more values in the database.

**Step 2: Define Outcome Rule for each Outcome.**

1. Go to the **Application Rule** tab.
2. Click **Add** and select **Outcome Rules**. The **Rule Details** window is displayed. For more details, see Creating Outcome Rule. You should add Outcome Rule to every values of outcome (Approve, Reject and Submit).

**Step 3: Map transition for each Outcome.**

The outcome rule needs to be mapped to a particular transition so that it gets executed and moves to next stage.

1. Double-click the Activity and click to go to *Transitions* tab.
2. Click **Add** to add transition for each Outcome. That is, select the Outcome rule as the **Decision Rule** in the Transition Details window. For more details, see Adding a Transition.

During execution of the workflow, user can see Outcomes as buttons, for example, Approve or Reject button. When approver clicks the Approve button, transition associated with the Approve

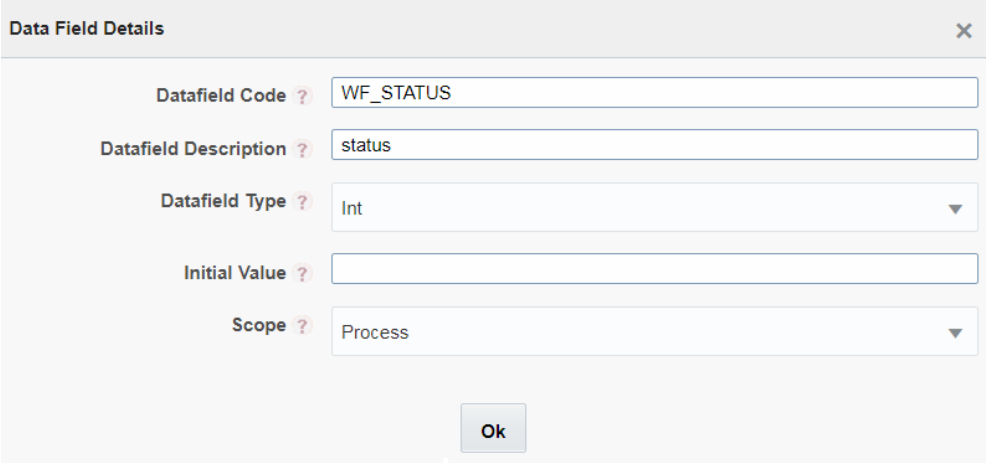
outcome gets executed and the workflow proceeds to the **Connected to** activity of that transition.

#### 9.3.2.14 Working with Data Field

Data Field which is also known as Process Variable helps Processes to access and store information from outside application. Often the process flow is based on the value of this information. In other cases this information is the result of running the tasks in the process.

**Adding Data Field**

1. From the *Process Modeller* window, select the required Process and click **Edit**. The *Process Flow* window is displayed.
2. Select the *DataFields* tab.
3. Click **Add**. The *Data Field Details* window is displayed.




4. Enter the details as given in the table:

| Field Name | Description |
|---|---|
| Data field Code | Enter the Variable Name/Code, which needs to be used by application to read or write in to this variable. This field is non translatable. |
| Data field Description | Enter a brief description of the Data field. |
| Data field Type | Enter the Data Field type. The supported types are String, Integer, Int, Float, and Boolean. |
| Initial Value | Enter the default value for the Data. |

| Field Name | Description |
|---|---|
| Scope | Select the scope of the Data Field from the drop-down list. The options are:<br>▪ **Process**- Select Process if you want to use the Data Field only in the current process.<br>▪ **Package**- Select Package if you want to use the Data Field across all the processes in the package. |

5. Click **OK**.

### System Data Fields

Some data are tracked internally by the System using a predefined set of Data Fields such as Status of Process. You can access these activity instance attributes in the same way you access regular data objects, but you cannot assign them new values.

| System Data Field | Description |
|---|---|
| WF_RUNSK | Holds the Runsk value. |
| WF_MISDATE | Holds the MIS date. |
| WF_INFODOM_CODE | Holds the Information domain code. |
| WF_USERID | Holds the UserId who invoked the Workflow. |
| WF_LOCALE | Holds the locale. |
| WF_OBJECT_NAME | Holds the Object name. |
| WF_INSTANCE | Holds the Process Instance Id. |
| WF_SEGMENT_CODE | Holds the Segment Code. |
| WF_PROCESS_ID | Holds the Process Id. |
| WF_OUTCOME_ID | Holds the Outcome Id. |
| WF_OBJECT_ID | Holds the Object Id. |
| WF_ENTITY_ID | Holds the Entity Id. |

| System Data Field | Description |
|---|---|
| WF_OBJECT_TYPE | Holds the Object Type. |
| WF_TASK_STATUS | Holds the Task status. |
| WF_TASK_RESPONSE | Holds the Task response. |
| WF_CALLBACK_TASK_STATUS | Holds the callback Task status. |
| WF_STATUS | Holds the current state of the Workflow.<br>For example, Draft, PendingApproval and so on. |

**Viewing Data Fields**

This option allows you to view the defined Data Fields.

To view a Data Field

- From the *Data Field*s tab, select the Data Field you want to view and click **View**. The *Data Field Details* window is displayed.

**Modifying Data Fields**

This option allows you to modify existing Data Fields except System Data Fields.

To modify Data Field

1. From the *Data Field*s tab, select the Data Field you want to modify and click **Edit**. The *Data Field Details* window is displayed.
2. Modify the required information. You cannot modify Data field Code. For more information, see Adding Data Field section.

**Deleting Data Fields**

This option allows you to delete Data Fields except System Data Fields.

To delete a Data Field

1. From the *Data Field* tab, select the Data Field you want to delete and click **Delete**. A confirmation message is displayed.
2. Click **Ok**.

### 9.3.2.15 Working with Application Rule

The Application or API Rule is the interface between the process engine and the application, including any parameters to be passed. The supported Application rule types are SQL, JAVA, Stored Procedure, Function, Java External API, Webservices, Outcome Rules, Expressions, Attribute Expression, Advanced Attribute Expression, and JSON Path Expression.

Based on their usage these are categorized into three types.

- **Execution Rule**: These are Business Logic executed as Task by an Activity.
- **Decision Rule**: This rule returns Boolean value “True/False”, used in decision making during split/branching of transition.
- **Selection Rule**: This rule fetches some value, useful to get value dynamically from a table or other source.

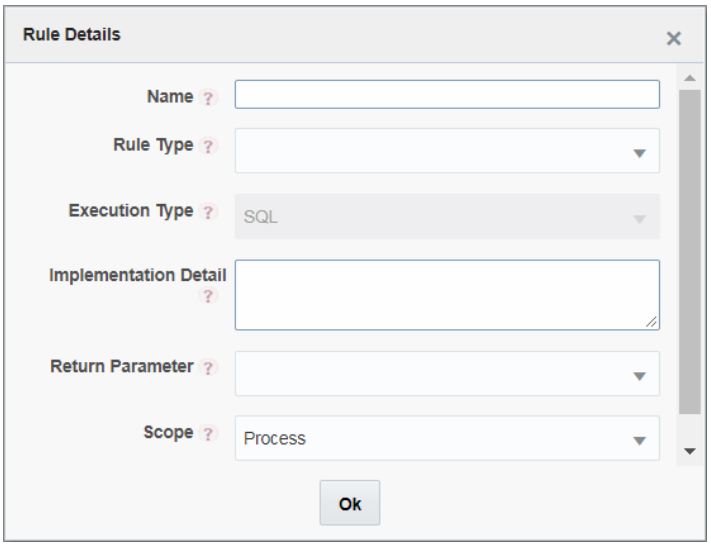
  For example, `select v_created_by from fct_expenses where id=101`

To add Application Rule

1. From the *Process Modeller* window, select the required Process and click **Edit**. The *Process Editor* window is displayed.
2. Select the *Application Rule* tab.
3. Click **Add** and select the appropriate Application Execution type from the drop-down list. The options are SQL, JAVA, Stored Procedure, Function, Java External API, Webservices, Attribute Expression, Outcome Rules and Expressions. The *Rule Details* window is displayed.

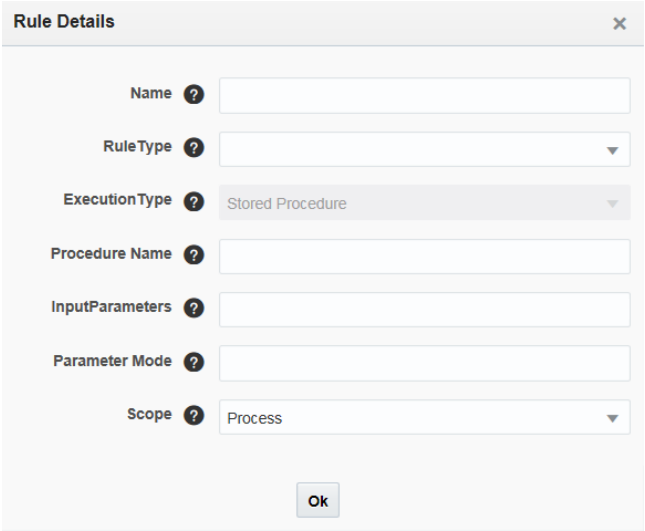
Based on the type of the Application Rule, enter the details as tabulated:

**For SQL Application Rule:**



| Field Name | Description |
|---|---|
| Name | Enter a unique name for the SQL Application Rule. |
| Rule Type | Select the rule type from the drop-down list. The available rule types are Decision Rule, Execution Rule and Selection Rule. |
| Execution Type | Displays the Application Execution Type as SQL. |
| Implementation Detail | **Decision Rule-** For Decision Rule the SQL Statement should return 'PASS' for success condition.<br>For example, `select 'PASS' from dual where {EXPENSES} <= {THRESHOLD}`<br>**Note**: `{EXPENSES}, {THRESHOLD}` are user defined Data Fields.<br>**Execution Rule**- For Execution Rule the SQL Statement can be any DML statement.<br>For example, `update fct_expenses set expenses={EXPENSES} where id = {WF_ENTITYID}`<br>**Selection Rule**- For Selection Rule the SQL Statement should be a Select statement which returns a list of values.<br>For example, `select v_created_by from fct_expenses id = {WF_ENTITYID}` |
| Return Parameter | Select the Data Field which will receive the return parameter of the SQL Rule, from the drop-down list.<br>For ExecutionRule type, the business logic is implemented in the method and the parameter value returned from the SQL Rule is saved in the mapped Data Field.<br>In case of SelectionRule type, the Java method should be a String value.<br>In case of DecisionRule type, the Java method should return Boolean values "True/False". |
| Scope | Select the scope of the Application Rule from the drop-down list. The options are:<br>▪ **Process**- Select Process if you want to use the Application Rule only in the current process.<br>▪ **Package**- Select Package if you want to use the Application Rule across all the processes in the package. |

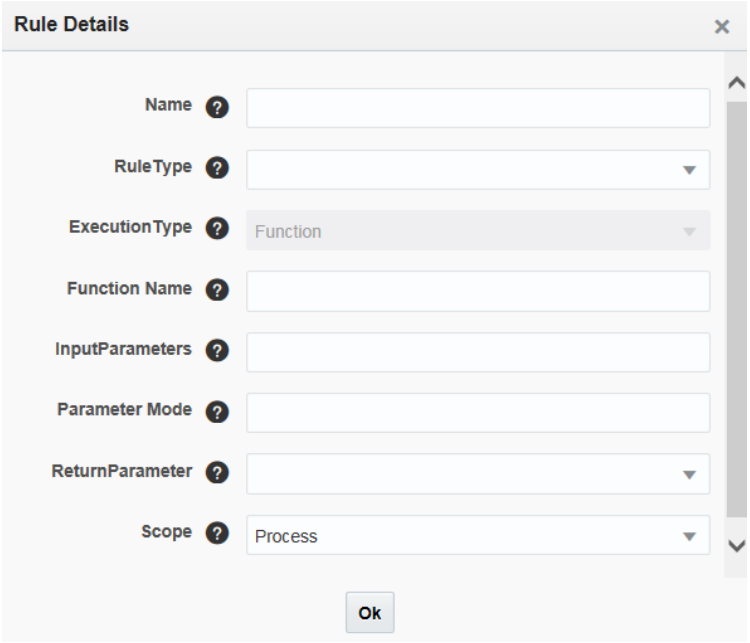
### For Stored Procedure Application Rule:




| Field Name | Description |
|---|---|
| Name | Enter a unique name for the Application Rule. |
| Rule Type | Select the rule type from the drop-down list. The available rule types are Decision Rule, Execution Rule, and Selection Rule. |
| Execution Type | Displays the Application Execution Type as Stored Procedure. |
| Procedure Name | Enter the Stored Procedure Name. |
| Input Parameters | Select the list of Data Fields which will be passed as input parameters, from the drop-down list. |
| Parameter Mode | Enter the Parameter Mode in JSON format. For example, suppose you have given 3 parameters as input parameters, enter parameter mode as [“IN”,”IN”,”OUT”].During Execution of Stored Procedure,<br>▪ In case of Decision Rule type, the first return parameter should return value ‘PASS’ for success evaluation.<br>▪ In case of Selection Rule type, the first return parameter value is taken as Selection data.<br>▪ In case of Execution Rule, the procedure return OUT parameter value overwrites the current value of respective mapped Data Field. |

| Field Name | Description |
|---|---|
| Scope | Select the scope of the Application Rule from the drop-down list. The options are:<br>▪ **Process**- Select Process if you want to use the Application Rule only in the current process.<br>▪ **Package**- Select Package if you want to use the Application Rule across all the processes in the Application Package. |

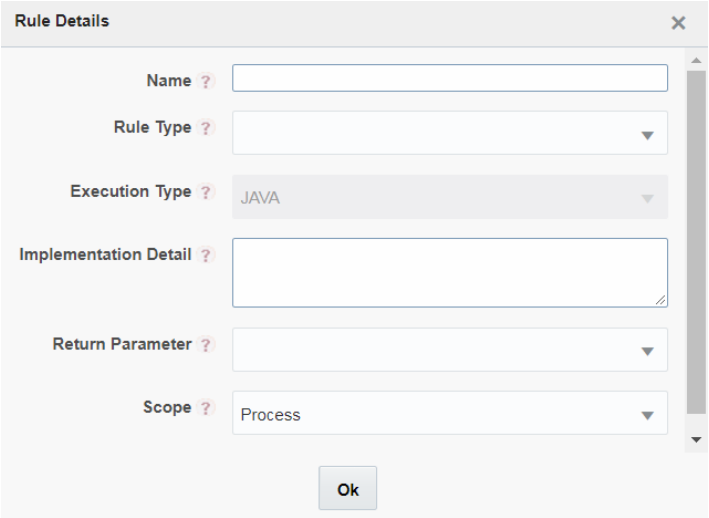
### For Function Application Rule:




| Field Name | Description |
|---|---|
| Name | Enter a unique name for the Application Rule. |
| Rule Type | Select the rule type from the drop-down list. The available rule types are Decision Rule, Execution Rule and Selection Rule. |
| Execution Type | Displays the Application Execution Type as Function. |
| Function Name | Enter the Function Name. |
| Input Parameters | Select the list of Data Fields which will be passed as input parameters, from the drop-down list. |

| Field Name | Description |
|---|---|
| Parameter Mode | Enter the Parameter Mode in JSON format. For example, suppose you have given 3 parameters as input parameters, enter parameter mode as [“IN”,”IN”,”OUT”].<br>During Execution of Function,<br>▪ In case of Decision Rule type, the first return parameter should return value ‘PASS’ for success evaluation.<br>▪ In case of Selection Rule type, the first return parameter value is taken as Selection data.<br>▪ In case of Execution Rule, the procedure return OUT parameter value overwrites the current value of respective mapped Data Field. |
| Return Parameter | Select the Data Field which will receive the return parameter of the Java function, from the drop-down list.<br>For ExecutionRule type, the business logic is implemented in the method and the parameter value returned from the Java method is saved in the mapped Data Field.<br>In case of SelectionRule type, the Java method should be a String value.<br>In case of DecisionRule type, the Java method should return Boolean values “True/False”. |
| Scope | Select the scope of the Application Rule from the drop-down list. The options are:<br>▪ **Process**- Select Process if you want to use the Application Rule only in the current process.<br>▪ **Package**- Select Package if you want to use the Application Rule across all the processes in the Application package. |

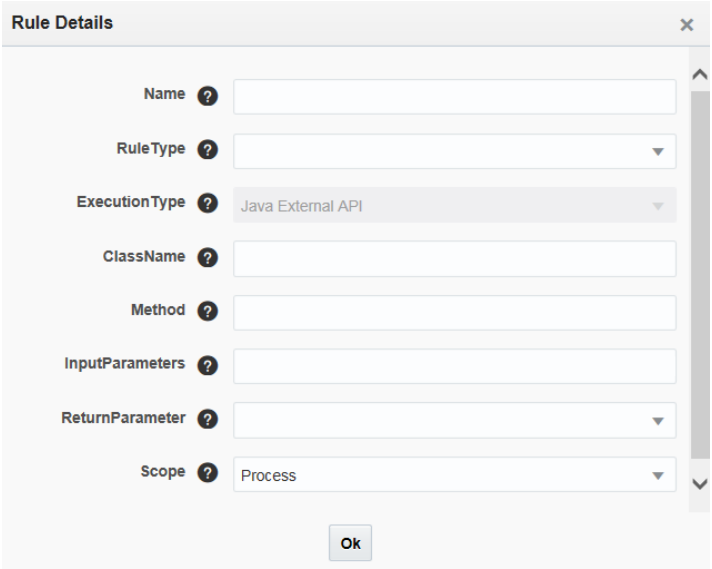
### For Java Application Rule:




| Field Name | Description |
|---|---|
| Name | Enter a unique name for the Application Rule. |
| Rule Type | Select the rule type from the drop-down list. This Rule Execution type supports only ExecutionRule type. |
| Execution Type | Displays the Application Execution Type as Java. |
| Implementation Detail | Enter the complete java class name which implements the Interface :<br>com.ofs.aai.service.wf.external.base.Activity.<br>The implementation class has to override the method with the Business Logic.<br>`executeTask(List<Data Field> Data Fields)`<br>The Data Fields are passed by reference, so changes can be made in Data Fields value directly by the implementation class, which will be recognized by the WorkflowEngine. |
| Return Parameter | Select the Data Field which will receive the return parameter of the Java function, from the drop-down list.<br>For ExecutionRule type, the business logic is implemented in the method and the parameter value returned from the Java method is saved in the mapped Data Field.<br>In case of SelectionRule type, the Java method should be a String value.<br>In case of DecisionRule type, the Java method should return Boolean values “True/False”. |

| Field Name | Description |
|---|---|
| Scope | Select the scope of the Application Rule from the drop-down list. The options are:<br>▪ **Process**- Select Process if you want to use the Application Rule only in the current process.<br>▪ **Package**- Select Package if you want to use the Application Rule across all the processes in the package. |

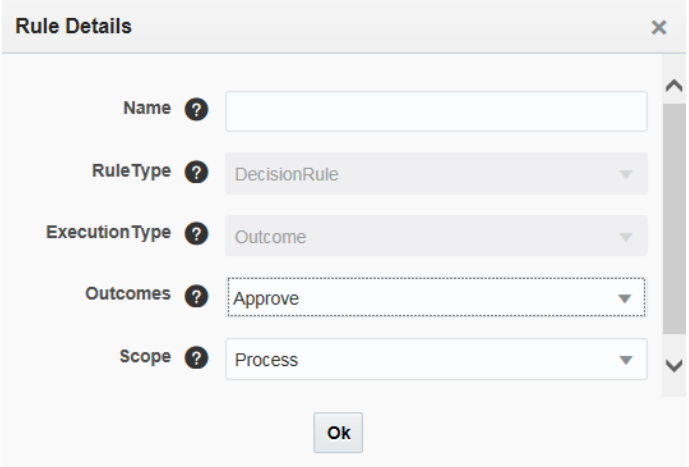
### For Java External API Application Rule:




| Field Name | Description |
|---|---|
| Name | Enter a unique name for the Application Rule. |
| Rule Type | Select the rule type from the drop-down list. The available rule types are Decision Rule, Execution Rule and Selection Rule. |
| Execution Type | Displays the Application Execution Type as Java External API. |
| Class Name | Enter the complete java class name which implements the Business Logic. |
| Method | Enter the method which implements the Business Logic. |
| Input Parameters | Select the list of Data Fields which will be passed as input parameters, from the drop-down list. |

| Field Name | Description |
|---|---|
| Return Parameters | Select the Data Field which will receive the return parameter of the Java function, from the drop-down list.<br>For Execution Rule type, the business logic is implemented in the method and the parameter value returned from the Java method is saved in the mapped Data Field.<br>In case of Selection Rule type, the Java method should be a String value.<br>In case of Decision Rule type, the Java method should return Boolean values “True/False”. |
| Scope | Select the scope of the Application Rule from the drop-down list. The options are:<br>▪ **Process**- Select Process if you want to use the Application Rule only in the current process.<br>▪ **Package**- Select Package if you want to use the Application Rule across all the processes in the Application package. |

### For Outcome Rules Application Rule

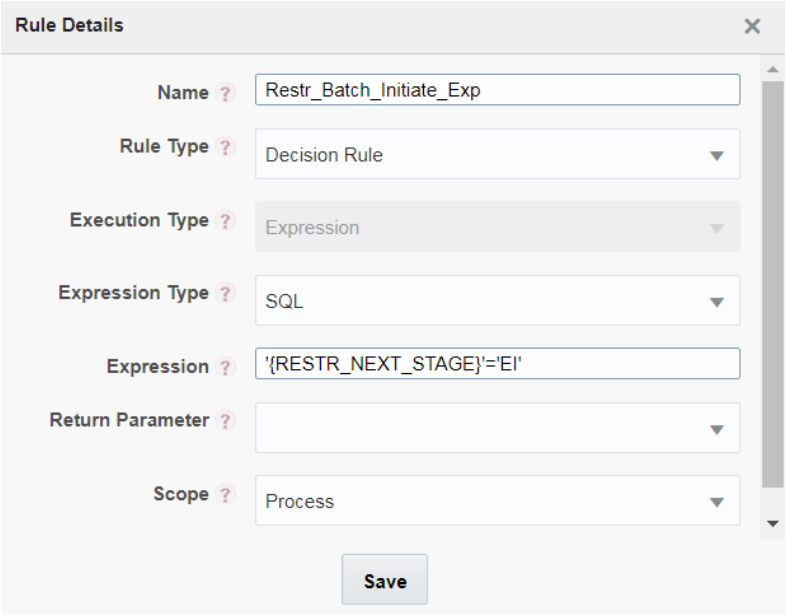



| Field Name | Description |
|---|---|
| Name | Enter a unique name for the Application Rule. |
| Rule Type | Displays the rule type as DecisionRule. This Rule Execution type supports only DecisionRule type. |
| Execution Type | Displays the Application Execution Type as Outcome. |

| Field Name | Description |
|---|---|
| Outcomes | Select the outcome for which you want to add the rule.<br>For more information on Outcome based Decision Rule, see Outcomes. |
| Scope | Select the scope of the Application Rule from the drop-down list. The options are:<br>▪ **Process**- Select Process if you want to use the Application Rule only in the current process.<br>▪ **Package**- Select Package if you want to use the Application Rule across all the processes in the package. |

### For Expression Application Rule

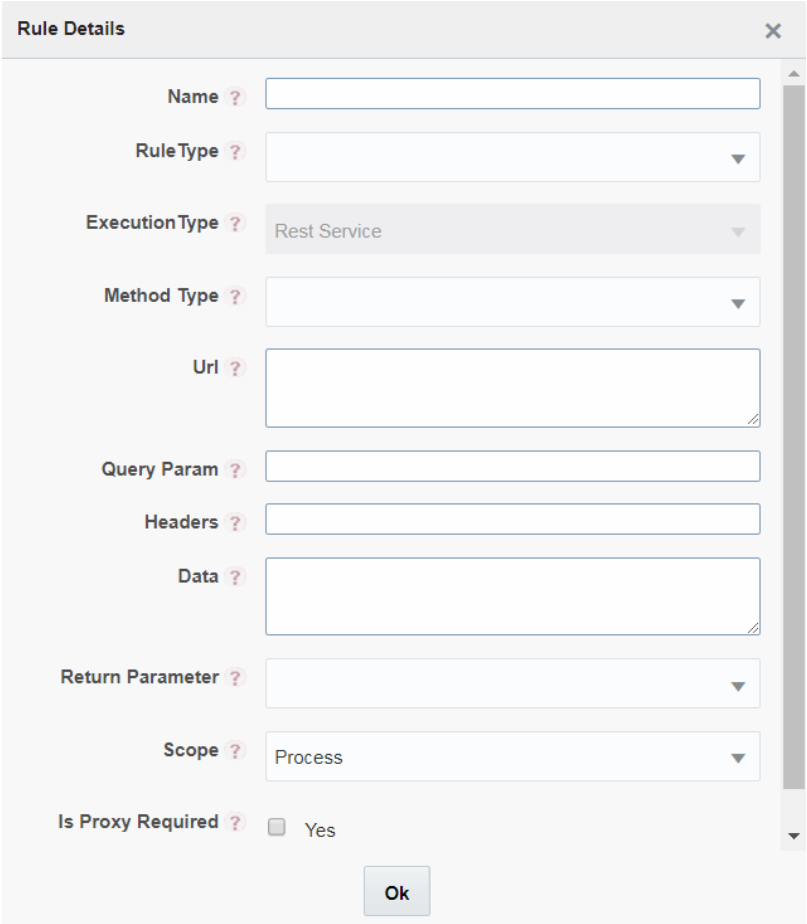
This is same as SQL execution type. You need to specify only the where clause in the Expression field.




| Field Name | Description |
|---|---|
| Name | Enter a unique name for the Application Rule. |
| Rule Type | Select the rule type from the drop-down list. The available rule types are Decision Rule, Execution Rule and Selection Rule. |
| Execution Type | Displays the Application Execution Type as Expression. |

| Field Name | Description |
|---|---|
| Expression Type | Select the Expression Type from the drop-down list. The options are SQL and JSON. |
| Expression | Enter the expression. |
| Return Parameter | Select the Data Field which will receive the return parameter of the Expression Rule, from the drop-down list.<br>For ExecutionRule type, the business logic is implemented in the method and the parameter value returned from the Application Rule is saved in the mapped Data Field.<br>In case of SelectionRule type, the Application Rule should be a String value.<br>In case of DecisionRule type, the Application Rule should return Boolean values “True/False”. |
| Scope | Select the scope of the Application Rule from the drop-down list. The options are:<br>▪ **Process**- Select Process if you want to use the Application Rule only in the current process.<br>▪ **Package**- Select Package if you want to use the Application Rule across all the processes in the Application package. |

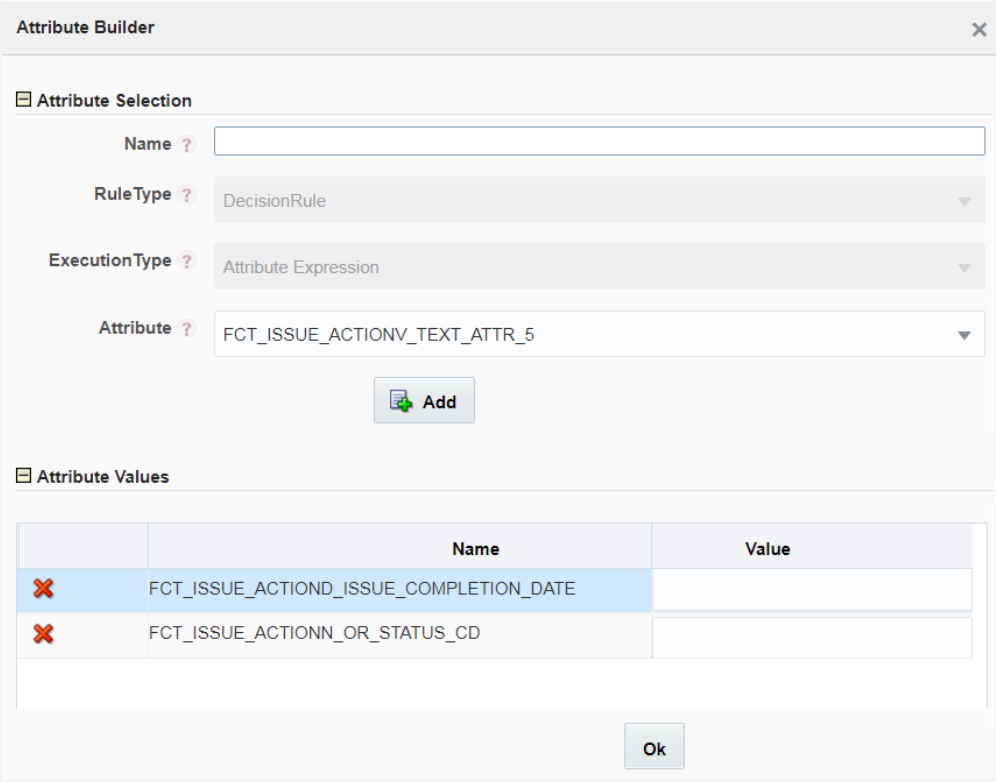
### For Webservices Application Rule




| Field Name | Description |
|---|---|
| Name | Enter a unique name for the Application Rule. |
| Rule Type | Select the rule type from the drop-down list. The available rule types are Decision Rule, Execution Rule and Selection Rule. |
| Execution Type | Displays the Application Execution Type as Rest Service. |
| Method Type | Select the method type from the drop-down list. The options are **GET** and **POST**. |
| URL | Enter the REST URL that needs to be called.<br>For example, `<IP Address/hostname of the Web Server >:<servlet port>/<context name>/restPMF/PMFService/startWorkflowProcess` ( A rest URL to start the workflow) |

| Field Name | Description |
|---|---|
| Query Param | Enter the Query parameters that needs to be passed to the rest API.<br>For example, http://example.com/foo?bar |
| Headers | Enter any headers that needs to be passed to the rest API.<br>For example, `"content-type": "application/json"` |
| Data | Enter if any actual data that needs to be passed to the rest API. Data can be of type RAW, JSON, Form Data and so on.<br>For example, `"{\n \"objectid\":\"912\",\n \"objecttype\":\"1000\",\n \"infodom\":\"OFSCAPADQINFO\",\n \"segment\":\"OFSCAPADQINFO\",\n \"userid\":\"ORMUSER\",\n \"locale\":\"en_US\",\n \"securityMap\" :{},\n \"applicationParams\" :{\n \"testparam\":\"value1\",\n \"testparam2\":\"value2\"\n }\n \n}` |
| Return Parameter | Select the Data Field which will receive the return parameter of the Webservices Rule, from the drop-down list.<br>For ExecutionRule type, the business logic is implemented in the method and the parameter value returned from the Application Rule is saved in the mapped Data Field.<br>In case of SelectionRule type, the Application Rule should be a String value.<br>In case of DecisionRule type, the Application Rule should return Boolean values “True/False”. |
| Scope | Select the scope of the Application Rule from the drop-down list. The options are:<br>▪ **Process**- Select Process if you want to use the Application Rule only in the current process.<br>▪ **Package**- Select Package if you want to use the Application Rule across all the processes in the Application package. |
| Is Proxy Required | Select **Yes** if proxy is required for the webservice. That is, if the Rest API is outside OFSAA. For information on how to enable proxy, see *Enabling Proxy Settings* in the OFS AAI Administration Guide. |

### For Attribute Expression Application Rule

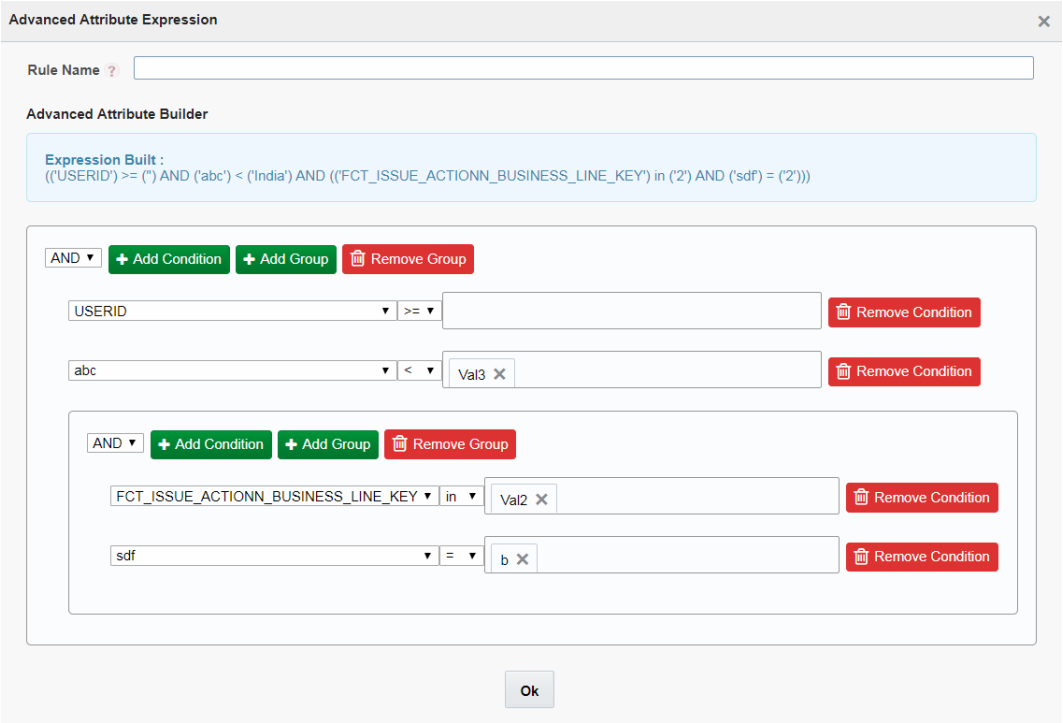



| Field Name | Description |
|---|---|
| Name | Enter a unique name for the Application Rule. |
| Rule Type | Displays the rule type as DecisionRule. This Rule Execution type supports only DecisionRule type. |
| Execution Type | Displays the Application Execution Type as Attribute Expression. |
| Attribute | Select the attribute for which you want to define the application rule, from the drop-down list. The list displays the attributes configured for the selected application and component. For more information on configuring attributes, see OFSAAI Administration Guide.<br>Click **Add** to add values to the selected attributes. A row is added in the *Attribute Values* pane. Click the **Value** column to select the values for the attribute from the drop-down. You can select one or more values.<br>You can delete a row by clicking button.<br>You can select multiple attributes and click **Add** to assign values to those attributes. |

### For Advanced Attribute Expression Application Rule

This is an advanced version of Attribute Expression Application Rule with additional logical conditions and assignment operators. The expression can be dynamically built and will return True or False value after evaluation. This is used as a DecisionRule in transitions.

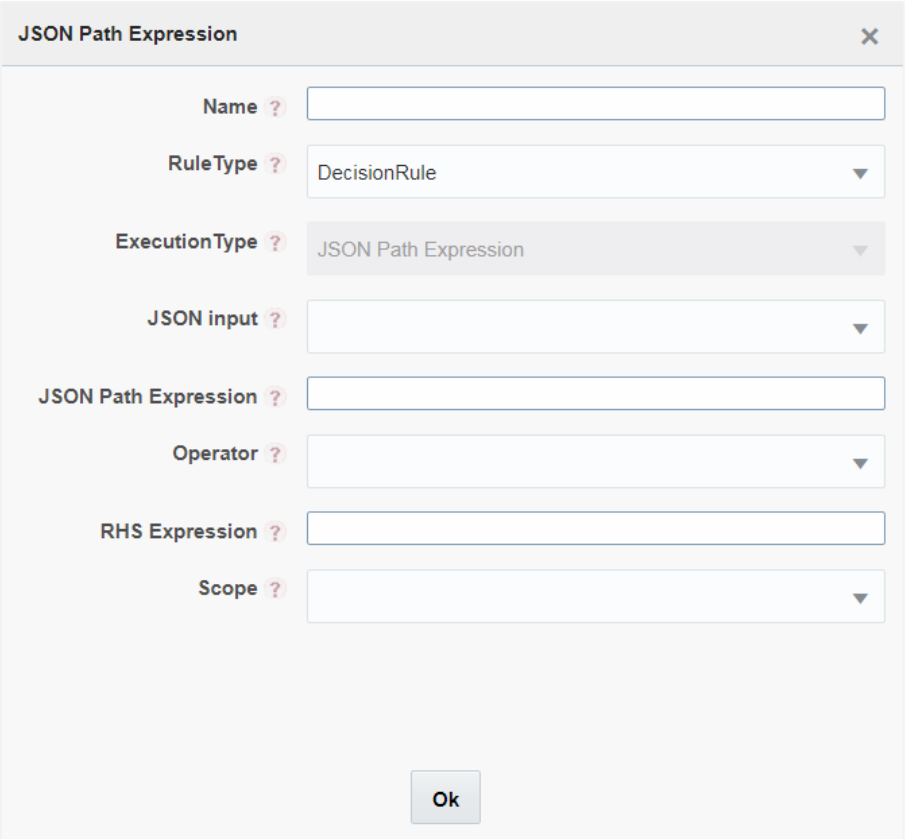
You can define this application rule with multiple conditions and nested groups.




| Field Name | Description |
|---|---|
| Rule Name | Enter a unique name for the Application Rule. |
| AND/ OR | Select the logical operator to be used for the conditions in a group. |

| Field Name | Description |
|---|---|
| Add Condition | When you click **Add Condition,** a new row gets added. To define a condition, select the attribute, the operator and the value from the drop-down lists. Multiple values can be selected for each attribute.<br>▪ Attribute- The drop-down list displays the attributes configured for the selected application and component. For more information on configuring attributes, see OFSAAI Administration Guide.<br>▪ Operator- Available options are in,=,<>,<,<=,>,>=.<br>▪ Value- Displays the values configured for the selected attributes. Select the required value.<br>Click **Remove Condition** to delete already added condition. |
| Add Group | Click **Add Group** if you want to have nested conditions. For each group, select the required logical operator as AND or OR.<br>Click **Remove Group** to delete a group of conditions. |

### For JSON Path Expression Application Rule



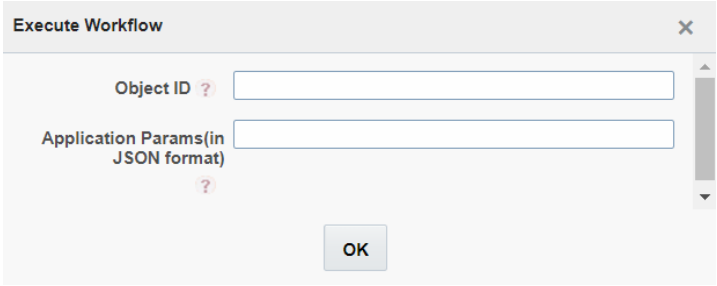
| Field Name | Description |
|---|---|
| Name | Enter a unique name for the Application Rule. |
| Rule Type | Select the rule type from the drop-down list. The available rule types are Decision Rule and Execution Rule.<br>For Decision Rule, output of JSON Path Expression will be compared with RHS expression and rule will return either true or false accordingly.<br>For execution rule, JSON Path Expression is evaluated and the output is returned to the DataField selected as **Output DataField**. |
| Execution Type | Displays the Application Execution Type as JSON Path Expression. |
| JSON Input | Select the JSON Input from the drop-down list. The list displays the DataFields. The selected DataField should have JSON as its value. |
| JSON Path Expression | Enter the JSON path expression. |
| Operator | This field is displayed only if **Rule Type** is selected as **Decision Rule**.<br>Select the required operator for comparison from the drop-down list. The options are =,<,>,>= and <=. |
| RHS Expression | This field is displayed only if **Rule Type** is selected as **Decision Rule**.<br>Enter the expression to which you want to compare the JSON path expression. |
| Output DataField | This field is displayed only if **Rule Type** is selected as **Execution Rule**.<br>Select the DataField to which you want to return the value of JSON Path Expression, from the drop-down list. |
| Scope | Select the scope of the Application Rule from the drop-down list. The options are:<br>▪ **Process**- Select Process if you want to use the Application Rule only in the current process.<br>▪ **Package**- Select Package if you want to use the Application Rule across all the processes in the Application package. |

#### 9.3.2.16 Testing a Workflow

This option allows you to check whether the Process flow you designed works as expected.

To test a Process flow

1. From the *Process Modeller* window, select the required Process and click **Test Workflow**. The *Execute Workflow* window is displayed.




2. Enter an **Object ID** to identify the Process flow. This will be displayed as Entity ID in the Process Monitor window.
3. Enter the **Application Parameters** which are required in the Process flow that you are testing. Specify parameters in JSON format. This is an optional field.

   For example, `{"WF_RUNSK":"15","WF_MISDATE":"12/31/1999"}`
4. Click **Ok**.

#### 9.3.2.17 Viewing a Business Process

This option allows you to view the workflow of an already existing Business Process. From the *Process Modeller* window, select the required Process and click **View**. You can view the workflow.

#### 9.3.2.18 Copying a Business Process

This option facilitates you to quickly create a new Business Process based on an existing Process by updating the Process flow or other required details.

To copy a Business Process

1. From the *Process Modeller* window, select the required Process which you want to copy and click **Copy**. The *Process Details* window is displayed.
2. Enter the details as mentioned in the Creating a Business Process section. If you select the same **App Package ID**, then Data Fields and Application Rules also will be copied.
3. Select the newly created Process and click **Edit**. Modify the Process flow and other details if required. For more information, see Working with Process Modeller section.

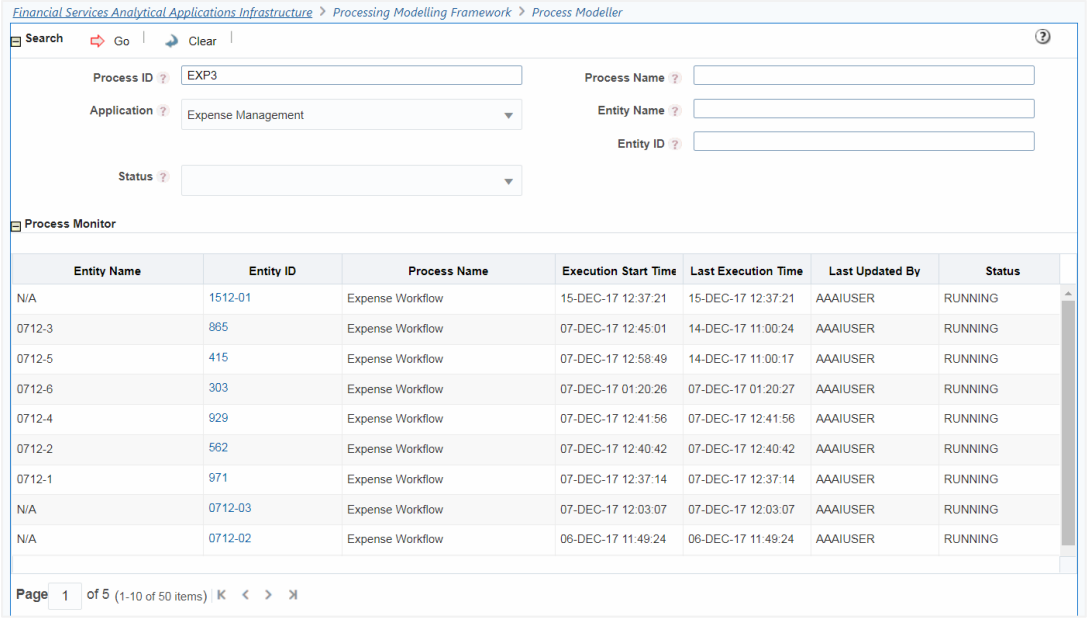
## 9.3.3 Process Monitor

The Process Monitor is used to monitor current stage of the Process for different instances. After integration with an Application the workflow can be invoked. After invoking it goes through all the stages defined. Process Monitor shows all the stages finished, current stage and stages to come if any. Your user group should be mapped to the function role WFMACC (Workflow Monitor Access) to access Process Monitor window.

### 9.3.3.1 Launching Process Monitor

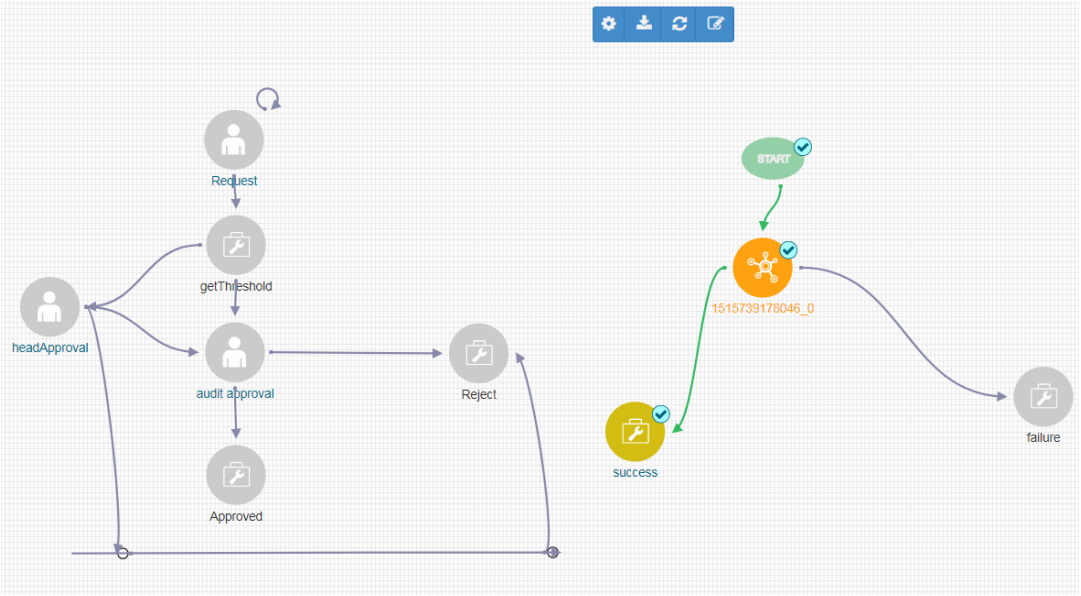
To launch Process Monitor

1. From the **Systems Configuration & Identity Management** tab, expand the **Processing Modeling Framework** link in the LHS menu and select **Process Monitor**.
   Or
   From the *Process Modeller* window, select the Process you want to monitor and click **Workflow Monitor**. The *Process Monitor* window is displayed.



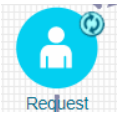

This window displays all the Workflows which are invoked from the Application with details such as Entity Name, Entity ID, Process Name, Execution Start Time, Last Execution Time, Last Updated By and Status. Using the *Search* grid, you can search for a Process/Workflow based on Process ID, Process Name, Application, Entity Name, Entity ID and Status.

2. Click the Entity ID link corresponding to the process you want to monitor.




In the *Process Monitor* window, status of activity is represented as given below:

- This indicates that the execution of activity has been finished.

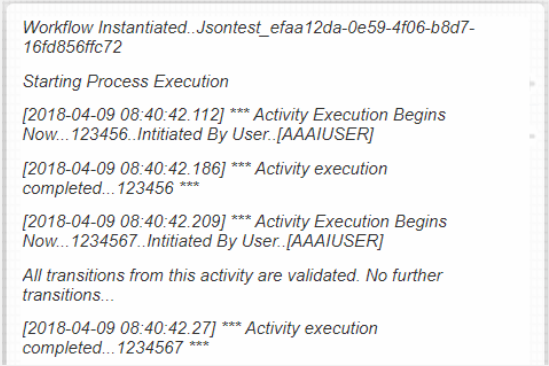



- This indicates that the activity is currently running or waiting for user's input to proceed.



- This indicates that the activity is yet to be executed.

3. Click to refresh the pane. Click to view the *Process Logs* pane.



*Workflow Instantiated..Jsontest_efaa12da-0e59-4f06-b8d7-16fd856ffc72*

*Starting Process Execution*

*[2018-04-09 08:40:42.112] *** Activity Execution Begins Now...123456..Intitiated By User..[AAAIUSER]*

*[2018-04-09 08:40:42.186] *** Activity execution completed...123456 ****

*[2018-04-09 08:40:42.209] *** Activity Execution Begins Now...1234567..Intitiated By User..[AAAIUSER]*

*All transitions from this activity are validated. No further transitions...*

*[2018-04-09 08:40:42.27] *** Activity execution completed...1234567 ****

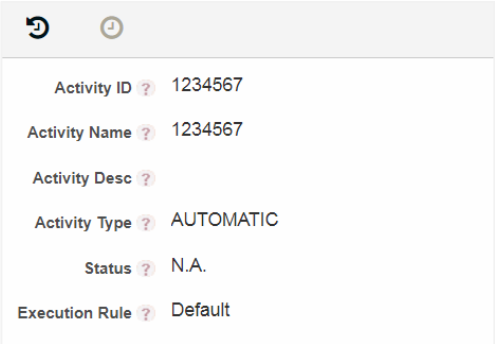
The *Process Logs* pane shows all the execution stages of the process. Click the Process Monitor pane to close the *Process Logs* pane.

### 9.3.3.2 Viewing Activity Logs

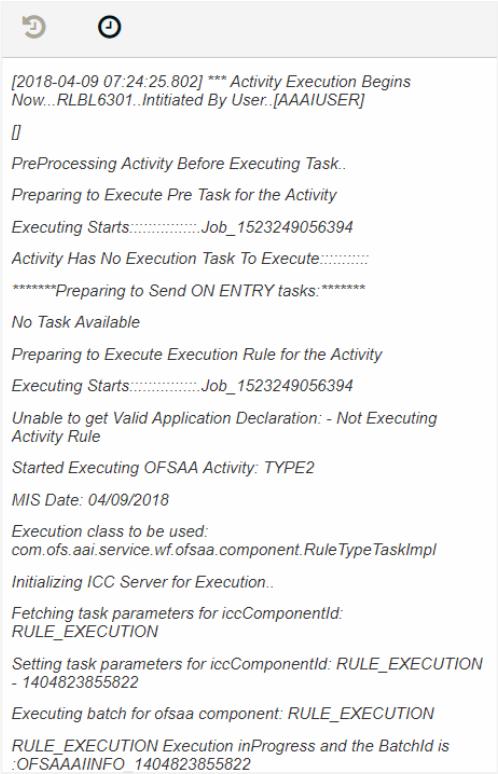
This feature allows you to view execution logs of each activity from the Process Monitor window.

To view Activity logs

1. Double-click on the activity icon whose logs you want to view. The Activity Definition details are displayed.




2. Click to view the Activity Logs.




The log shows all the execution stages of the selected Activity, if it is already executed. Otherwise, it will be blank.

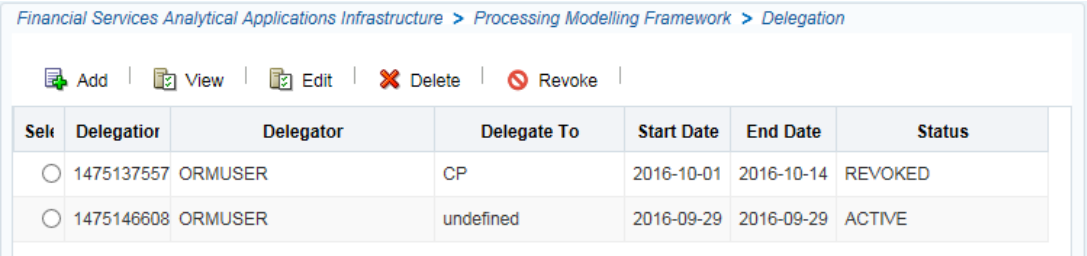
## 9.3.4 Delegation

This feature facilitates you to delegate the tasks/notifications assigned to you to another user. The delegate can be your peer, someone from your immediate subordinate or someone from your all subordinates. Additionally, you can revoke active delegations whenever required. Your user group should be mapped to the function role WFDELACC (Process Delegation User) if you want to define delegation.

### 9.3.4.1 Adding a Delegate

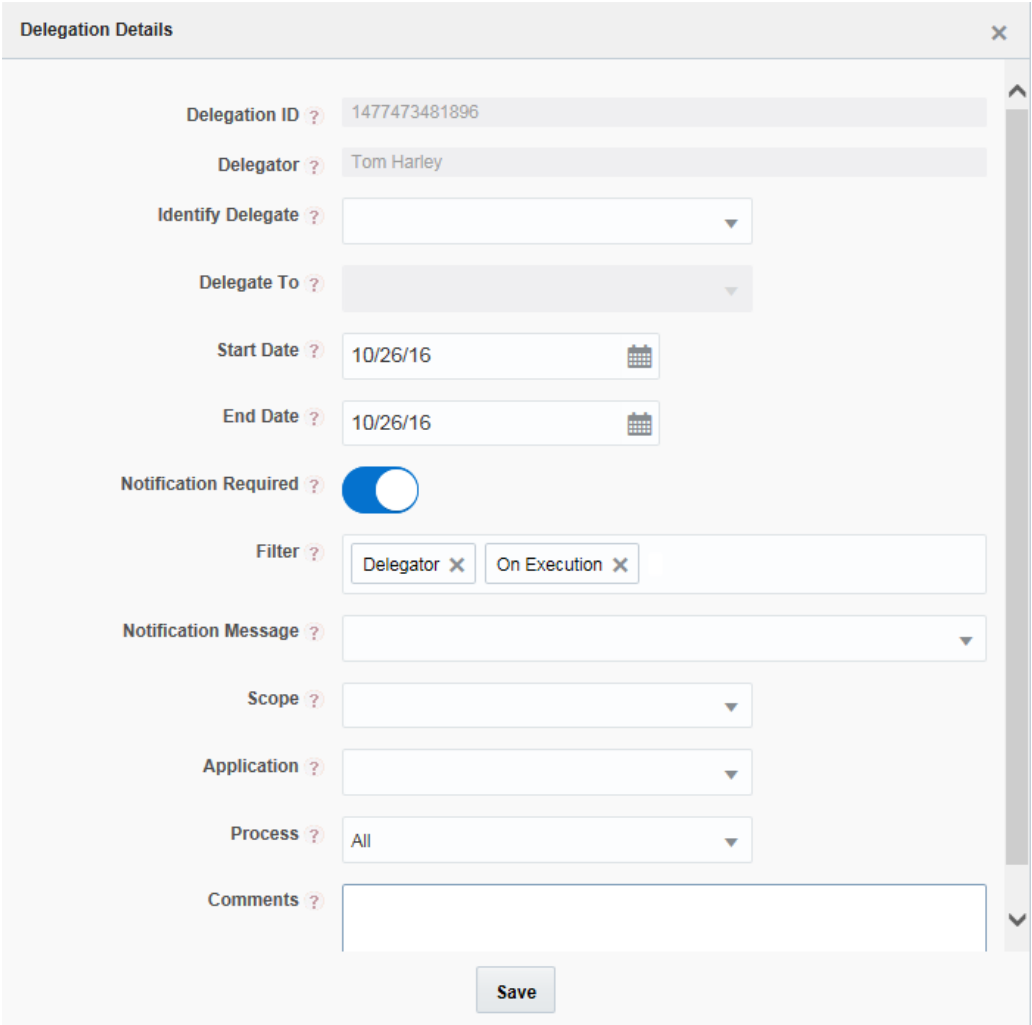
To add a delegate

1. Go to the *Systems Configuration & Identity Management* tab and expand the Processing Modeling Framework link from the LHS menu.
2. Select **Delegation**. The *Delegation* window is displayed.




| Sel | Delegatior | Delegator | Delegate To | Start Date | End Date | Status |
|---|---|---|---|---|---|---|
| ○ | 1475137557 | ORMUSER | CP | 2016-10-01 | 2016-10-14 | REVOKED |
| ○ | 1475146608 | ORMUSER | undefined | 2016-09-29 | 2016-09-29 | ACTIVE |

3. Click **Add**. The *Delegation Details* window is displayed.




4. Enter the details as tabulated:

| Field Name | Description |
|---|---|
| Delegation ID | Displays the auto generated Delegation ID. |
| Delegator | Displays the User ID of the logged-in user.<br>If your user group is mapped to the function role WFDELGADM, you can select the delegator from the drop-down list. |

| Field Name | Description |
|---|---|
| Identify Delegate | Select the required option from the drop-down list. The options are:<br>▪ **Peers** – Select this option if you want to delegate your tasks to your peer, who reports to your own manager.<br>▪ **Subordinates**- Select this option if you want to delegate your tasks to your immediate subordinates.<br>▪ **All subordinates** – Select this option if you want to delegate your tasks to someone who comes under you in your organization. |
| Delegate To | Select the user to whom you want to delegate your tasks from the drop-down list. Based on the selected option from the **Identify Delegate** drop-down list, the users are displayed in this drop-down list. For example, if Peers is selected as Identify Delegate, this drop-drown list displays all the peers in your organization. The data is fetched from `AAI_EMPLOYEE_MASTER` table. |
| Start Date and End Date | Specify the duration for which you want to delegate your tasks by selecting the Start Date and End Date from the calendar. |
| Notification Required | Turn ON the toggle button if you want to send a notification to the delegate or delegator. |
| Filter | This field is enabled only if the **Notification Required** toggle button is turned ON.<br>Select to whom you want to send the notification. You can set to send notification to **Delegator** and **Delegate**.<br>Select when you want to send the notification. The options are **On Defining** and **On Execution**. |
| Notification Message | This field is enabled only if the **Notification Required** toggle button is turned ON.<br>Select the notification message you want to send to the delegate or delegator. |
| Scope | Select the scope of the delegation from the drop-down lists. The options are:<br>▪ All- Select this option to delegate all your tasks.<br>▪ Application- Select this option if you want to delegate all your tasks for a particular Application only.<br>▪ Process- Select this option if you want to delegate all your tasks for a particular Process only. |

| Field Name | Description |
|---|---|
| Application | This field is enabled only if **Application** or **Process** is selected as **Scope**.<br>Select the required Application from the drop-down list. All your tasks related to the selected application will be delegated to the selected user. |
| Process | This field is enabled only if **Process** is selected as **Scope**.<br>Select the required Process from the drop-down list. The list displays all processes related to the selected **Application**. All your tasks related to the selected process will be delegated to the selected user. |
| Comments | Enter if you want to add any comments for the delegation. |

5. Click **Save**.

#### 9.3.4.2 Modifying Delegate Details

To modify delegate details

1. From the *Delegation* window, select the delegation you want to modify and click **Edit**. The Delegation Details window is displayed.
2. Modify the required details. For more information, see Adding a Delegate section.

#### 9.3.4.3 Revoking Delegation

You can revoke only active delegations.

To revoke delegation

1. From the *Delegation* window, select the delegation you want to revoke and click **Revoke.**
2. Click **OK** in the confirmation message box.

#### 9.3.4.4 Deleting Delegation

You cannot delete active delegations.

To delete a delegation

1. From the *Delegation* window, select the delegation you want to delete and click **Delete**.
2. Click **OK** in the confirmation message box.

### 9.3.5 My Inbox

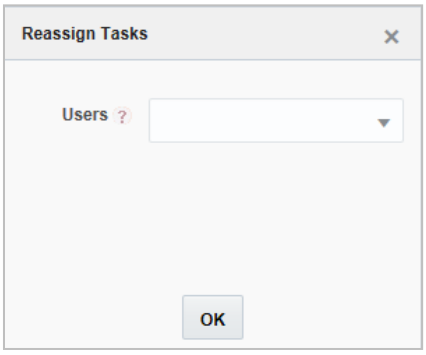
My Inbox is a single place notification centre for all the tasks that are sent to you. My Inbox window shows details of all the Open tasks, Completed tasks, Notifications, and Reassigned tasks. If you want to filter and view only a particular category of tasks, for example, only Notifications, select the checkbox adjacent to Notifications.

You should have been mapped to the user role *Inbox Access* to view your inbox. You can access the Inbox by selecting the *My Inbox* tab from the Home page. Select **My Task**.

You can search for a task by entering Task ID, Task Name, Entity Type, or Entity Name. Click the Task ID link to directly open the invoking application to complete the Task.

#### 9.3.5.1 Reassigning Tasks

1. From the *My Inbox* window, select the Tasks you want to reassign and click **Reassign**. The *Reassign Tasks* window is displayed.




2. Select the user to whom you want to reassign the task and click OK.

#### 9.3.5.2 Configuring Actionable Inbox

For each Application and its defined Workflow Process, to show task entries in Inbox, an entry should be made in the table AAI_WF_APP_PACKAGE_B table with the definition page URL. This will create a link in Inbox task, which will directly open the application page.

## 9.4 References

This section of the document consists of information related to intermediate actions that needs to be performed while completing a task. The procedures are common to all the sections and are referenced where ever required. You can refer to the following sections based on your need.

### 9.4.1 List of Objects Created in Information Domain

On saving an Information Domain a list of objects will be created in the atomic database, mapped to this Information Domain. You can view the list in *My Oracle Support Portal* by clicking the Document ID: 1566694.1

If the required objects have not been created, there could be a problem in connecting to the database, or required privileges are not set to the database users, or there may not be enough space in the database. Ensure to rectify any of the above noted issues and then save the Information Domain.

### 9.4.2 Authentication and Logging

During the Oracle Financial Services Analytical Applications Infrastructure installation you will be provided the options of selecting the authentication type required for OFSAAI Users. You can select either SMS authentication and authorization or the Lightweight Directory Access Protocol (LDAP) authentication for OFSAAI login.

LDAP is a standalone access directory that provides for a logon and requires only one user name and password, while accessing different Software. During installation, if you have selected the LDAP Users option in the *User Configuration* window the same will be configured for authentication.

For example, ldap://iflexop-241:389

### 9.4.3 Populating Execution Statistics

This feature allows you to determine which case statement of a rule has updated how many corresponding records.

On selecting this checkbox in **Others** tab of *System Configuration* > *Configuration* window, an insert query is generated and executed just before the merge statement of the rule is executed. This in turn lists the number of records processed by all mappings and also stores information about *Run ID, Rule ID, Task ID, Run Skey, MIS Date, number of records fetched by each mapping, order of evaluation of each mapping*, and so on, in configuration table (EXE_STAT).

Typically, the insert query lists the number of records processed by each condition in the rule and is done just before the task gets executed and not after the batch execution is completed (since the state of source data might change). This insert query works on all types of query formation including Computation Rules with and without Aggregation, Classification Rules, Rules with

multiple targets, Rules with default nodes, Rules with Parameters in BPs, and Rules with exclusions.

### Scenario

Consider the following scenario where, a typical rule would contain a series of Hierarchy Nodes (BI/Non BI) as **Source** and one or more BPs or BI Hierarchy Leaf Nodes in the **Target**.

Rule 1 consists of the following:

| SOURCE | TARGET |
|---|---|
| Condition 1 | Target 1 |
| Condition 2 | Target 1 |
| Condition 3 | Target 1 |
| Condition 4 | Target 2 |

The insert query execution populates execution statistics based on the following:

- Each rule has processed at least one record.
- Each target in the rule has processed at least one record through *Condition 1 / Condition 2 / Condition 3* and *Condition 4*.
- Each source in the rule has processed at least one record through *Condition 1 / Condition 2 / Condition 3* and *Condition 4*.

## 9.4.4 SMS Auto Authorization

If auto authorization is enabled, the system authorizer needs not to manually authorize the user-user group mapping, user group-domain mapping, user group-role mapping and user group-role-folder mapping. The mappings get authorized automatically.

To enable auto authorization

1. Execute the following query in the Configuration Schema:

   ```
   UPDATE CONFIGURATION SET PARAMVALUE ='TRUE' WHERE
   PARAMNAME='SMS_AUTOAUTH_REQD'
   ```

2. Restart the OFSAA server.

# 10 Object Administration

Object Administration is an integral part of the Infrastructure system and facilitates system administrators to define the security framework with the capacity to restrict access to the data and metadata in the warehouse, based on a flexible, fine-grained access control mechanism. These activities are mainly done at the initial stage and then on need basis.

The document deals with the information related to the workflow of Infrastructure Administration process with related procedures to assist, configure, and manage the administrative tasks effectively.

You (System Administrator/System Authorizer) need to have SYSATH, SYSADM, and METAAUTH function roles mapped to access the Object Administration framework within the Infrastructure system.

Object Administration consists of the following sections. Click the links to view the sections in detail.

- Object Security
- Object Migration
- Translation Tools
- Utilities

## 10.1 Object Security Concept in OFSAAI

Object Security framework is based on a waterfall model for determining user's rights to perform an action on an object in the system. That is, if you do not haves the top level of object access type, there is no need to check the second level, whereas if you have the top level, then the next level down is checked. The security levels are as follows:

- User Group Authorization
- User Group Scope
- User Group Access Right
- Object Access Type

For Segment/Folder based objects, security will be impacted by the type of the object's associated folder.

### 10.1.1 User Group Authorization

User authorization is derived by the user being mapped to the User Group, having a Role with access rights for the module for a specific information domain. Mapping between User Group-Role(s) and mapping between User Group-Domain (Infodom/Folder) in the system is used to achieve this. The Access role enables access to the module/object's main menu link and visibility of the object summary page.

**NOTE:** Objects to be displayed in the Summary window for a specific user will be decided by the type of the folder to which the object belongs.

### 10.1.2 User Group Scope

This is applicable to Folder-based object types. It governs visibility of object definitions in Summary pages and in selectable object definitions within parent objects. For Folder-based object types, user scope is controlled by segment/ folder types with which the object is associated. Folder types are Public, Shared, and Private:

- Objects contained in a Public folder will be displayed in Summary window and in object selection lists to all users, irrespective of user group mapping. No mapping is required.
- Objects contained in a Shared folder will be displayed in Summary window and in object selection lists, to users belonging to the user groups, which are mapped to the corresponding folder. The mapping is done from the *User Group Folder Role Map* window.
- Objects contained in a Private folder will be displayed only to the associated owner (an individual user).

**Consumption within Higher Objects**

- A user can consume objects associated to Public Folders in another higher object provided the Read Only role is mapped to the user group in that folder. This mapping is done through User Group Role Map window. For objects in shared folders also, the Read Only role should be mapped. This mapping is done through the *User Group Folder Role Map* window.

  For example, consider a Run definition in which a Classification Rule is used. Suppose the classification rule, say X is created in a Public folder called Y and the user belongs to user group UG. Then for the user to use X rule in the Run definition, the user group UG should have mapped to the "Rule Read Only" role. But if X rule is created in a Shared folder Z, the user group UG should have mapped to the folder Z and to the "Rule Read Only" role.

**Folder Selector Behavior**

The folders displayed in the *Folder Selector* window launched from the Object definition window are:

- All Public and Shared folders which are mapped to the user group and on which the user group has Write role. Mappings should be done for Public folders through the User Group

Role Map window and User Group Domain Map window. Mappings should be done for Shared folders through *User Group Folder Role Map* window.

- All Private folders for which you are the owner.

### 10.1.3 User Group Access Right

This governs actions that can be performed on an object type. For objects which do not have Folder concept, User Group–Role mappings govern object access and actions that can be performed on the object.

For objects having Folder concept, the actions that you can do depend on the type of the folder/ segment with which the object definition is associated. Folder types are Public, Shared, and Private:

- For an object contained in a Public folder, the actions which can be performed by the user depend on the mapping between user group and folder-infodom and mapping between user group and function- roles. For visibility in selection lists in parent objects, the User Group must have at least Read access for the selected object type. For mapping a user group to domain, see User Group Domain Map and for mapping a user group to a role, see User Group Role Map.
- For an object contained in a Shared folder, the actions which can be performed by the user depend on User Group Folder Role mapping, which is done from the *User Group Folder Role Map* window.
- For an object contained in a Private folder, the user who has been assigned as the owner of the folder can do all actions except Add action.

### 10.1.4 Object Access Type

Object Access Type derives the special functionalities which can be performed on object definitions by a user. It determines whether a user can do operations such as create, view, update, or delete for an object definition.

OFSAAI supports two access types:

1. Read only

   User who creates the object sets this property at object definition level, which will restrict other users to perform Create/Update/Delete operations on the object. Other users can only view the object details.

2. Read/Write

   User who creates the object set this property at object level, which will allow other users to perform Create/Read/Update/Delete operations on the object.

Since single user maintenance of an object is too restrictive, an override option is provided through Phantom role type. If the user group to which the user belongs is mapped to the Phantom role type, then the user will be able to perform CRUD operations irrespective of the object access type. Both Phantom and Write roles should be mapped to the user group.

Phantom role can be applied at 2 different levels.

- User Group-Infodom level (applicable to Public Folders)

  Map the user group to infodom-folder from *User Group Domain Map* window and map the user group to the Phantom role for the required function from the *User Group Role Map* window. For example, for a user to override object access type, his user group should be mapped to the folder in which the object is created and should have been mapped to the Phantom role, provided the folder in which the object is created is a Public folder. For information on how to do the mapping, see User Group Domain Map and User Group Role Map sections.

- User Group-Folder-Role level (applicable to Shared Folders)

  Map the user group to infodom-folder and then map it to the Phantom role for the required function from the *User Group Folder Role Map* window if the folder in which the object is created is a Shared folder. For information on how to do the mapping, see User Group Folder Role Map section.

## 10.2 OFSAA Seeded Security

OFSAA provides various predefined security data such as seeded User Groups, Roles, and the Functions mapped to those Roles.

### 10.2.1 OFSAA Seeded User Groups

OFSAA provides the following predefined User Groups and associated Roles for use with various Infrastructure modules. Users mapped to these User Groups will have access as described below, for objects in Public folders:

| Seeded User Group Name | Description | Mapped Roles |
|---|---|---|
| Guest | Users belonging to this user group will have access to the LHS menu and the associated summary pages. | Access |
| Business User | Users belonging to this user group will have access to LHS menu and associated Summary page, and view object definitions. | Access |
| | | Read Only |
| Business Owner | Users belonging to this user group will have | Access |

| Seeded User Group Name | Description | Mapped Roles |
|---|---|---|
| | access to LHS menu and associated Summary page, and do CRUD (Create/ Read/ Update/ Delete) operations on the objects. | Read Only |
| | | Write |
| Business Authorizer | Users belonging to this user group will have access to LHS menu and associated Summary page; and authorize the CRUD operations (authority to Approve or Reject objects which require authorization). | Access |
| | | Read Only |
| | | Authorize |
| Business Administrator | Users belonging to this user group will have access to LHS menu and associated Summary page; do and authorize the CRUD operations; execute and export definition. | Access |
| | | Read Only |
| | | Write |
| | | Authorize |
| | | Advanced |
| Administrator | Users belonging to this group will have full access to the system. | Access |
| | | Read Only |
| | | Write |
| | | Authorize |
| | | Advanced |
| | | Phantom |

Note the following:

- The behavior is relevant for Public folders only.
- For shared folders, irrespective of OFSAAI seeded user groups to which you are mapped, your user group should be mapped to the corresponding roles through the *User Group Folder Role Map* window to do particular actions.

For example, consider a user belongs to Business Owner user group. As per the above table, he has Access, Read Only, and Write roles mapped to him by default. That means, he is assigned the functions such as Link, Summary, View, Add, Edit, Copy, Remove and so on. For a Public folder, he can do all the mentioned functions. However for a Shared folder, he cannot do an action such as Add or Edit unless he is mapped to Write role from the *User Group Folder Role Map* window.

- It is mandatory to do the required mapping of Roles to the folder and user group from the *User Group Folder Role Map* window in case of Shared folders.

### 10.2.2 OFSAA Seeded Roles

OFSAAI seeds the following predefined Roles for each object types, which are mapped to the corresponding Functions as described below:

| Seeded Role Name | Role Type | Mapped Functions |
|---|---|---|
| Access | Access | Link |
| | | Summary |
| Read Only | Action | Summary |
| | | View |
| | | Trace |
| | | Compare |
| | | Publish |
| Write | Action | Add |
| | | Edit |
| | | Copy |
| | | Remove |
| | | MAKE_LATEST |
| Authorize | Action | Authorize |
| Advanced | Action | Execute |
| | | Export |
| | | Archive |
| | | Restore |
| | | Advanced |
| Phantom | Phantom | Ignore Access Type |

For Administrative type of roles, additional roles are seeded from Security Management Systems (SMS) module.

### 10.2.3 OFSAA Seeded Actions and Functions

Action is derived as a user event which triggers a function for a specific object type. Each action and object type combination will give a function.

OFSAA will seed the following actions which shall be used by different object types to define its functions.

| Seeded Action Name | Description of behavior for resulting function |
|---|---|
| LINK | Access to the LHS menu link |
| SUMMARY | Access to Summary page |
| VIEW | Access to view definition page of the object |
| TRACE | Access to trace definition page of the object. |
| ADD | Privilege to create an object. |
| EDIT | Privilege to edit the definition page of the object. |
| COPY | Privilege to Copy the object definition. |
| REMOVE | Privilege to remove the object from the system. |
| PURGE | Privilege to purge the object data from the system. |
| APPROVE | Privilege to authorize an object by approving the same after any action has been performed. |
| REJECT | Privilege to authorize an object by rejecting the same after any action has been performed. |
| EXECUTE | Privilege to execute the object definition. |

| Seeded Action Name | Description of behavior for resulting function |
|---|---|
| EXPORT | Privilege to export definition out of the system. |
| ARCHIVE | Privilege to archive a definition. |
| RESTORE | Privilege to restore any archived definition. |
| COMPARE | Privilege to compare any definition with another. |
| PUBLISH | Privilege to publish any definition to MDB. |
| LATEST | Privilege to make any authorized version definition of the definition latest. |
| IGNOREACCESS | Privilege to ignore the access right given by a user. |
| ADVANCED | Access to object specific special functionality. |

## 10.3 Object Security

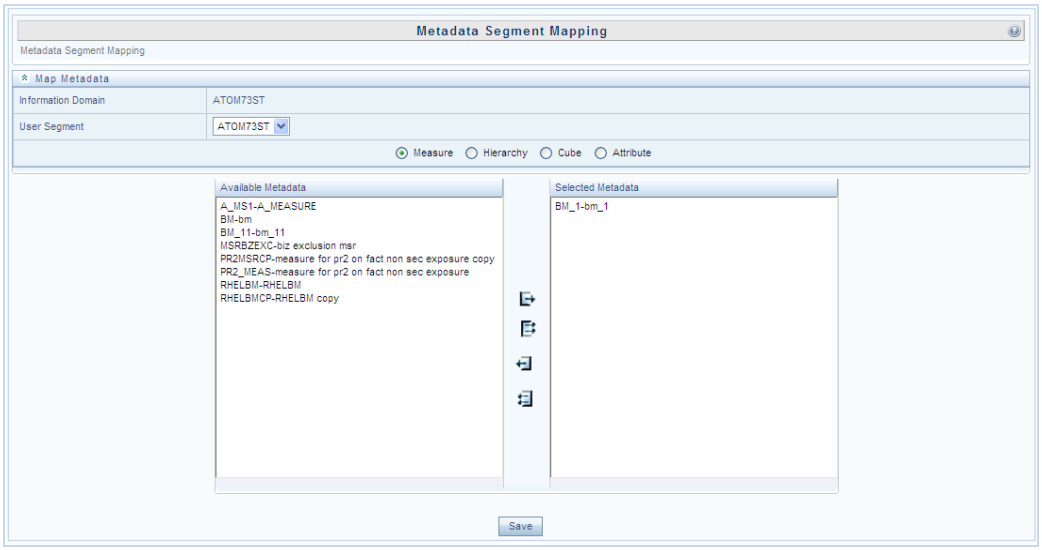
Object Security sub module consists of the following sections. Click the links to view the sections in detail.

- Metadata Segment Mapping
- Map Segment Mapping
- Batch Execution Rights
- Object to Application Mapping

### 10.3.1 Metadata Segment Mapping

Segment refers to a logically divided part of the whole object based on specific requirement. Metadata Segment Mapping facilitates you to map/unmap the required business metadata definitions such as measures, hierarchies, cubes, and attributes to the selected segment within a specific Information Domain. Based on the mapping, users mapped to the segment are restricted to access only the relevant metadata to view and edit during metadata maintenance and information security.

To access *Metadata Segment Mapping* window, select the **Object Administration** tab and expand **Object Security** from the LHS menu and select **Metadata Segment Mapping**.




You (System Administrator) need to have SYSADM function role mapped to your role to access *Metadata Segment Mapping* window. By default this window displays the Information Domain Name to which you are connected along with the metadata details of Measure.

#### 10.3.1.1 Mapping Metadata Definitions

You can map/unmap the required business metadata definitions to a segment available within the selected Information Domain. To map the required metadata definitions, do the following:

1. Select the required **User Segment** from the drop-down list.
2. Select the required metadata definition as Measure, Hierarchy, Cube, or Attribute. The defined metadata are listed in the Available Metadata pane.
3. Map/Unmap the required metadata by doing the following:
   - To map a metadata, select the metadata from the *Available Metadata* list and click button. The metadata is added to the *Selected Metadata* pane. You can press **Ctrl** key for multiple selections.
   - To map all the listed metadata definitions, click button.
   - To remove a metadata mapping, select the metadata from the Selected Metadata list and click button.
   - To remove the entire metadata mapping, click button.
4. Click **Save** to save the metadata mapping details. The window is refreshed displaying the mapping results.
5. Click **Show Details** to view the results in detail.

   You can modify the mapping at any point and the mapping table is updated only on saving the mapping details. When a metadata definition such as measures, hierarchies, cubes, and attributes are removed from the Information Domain, the same is updated in the mappings table.

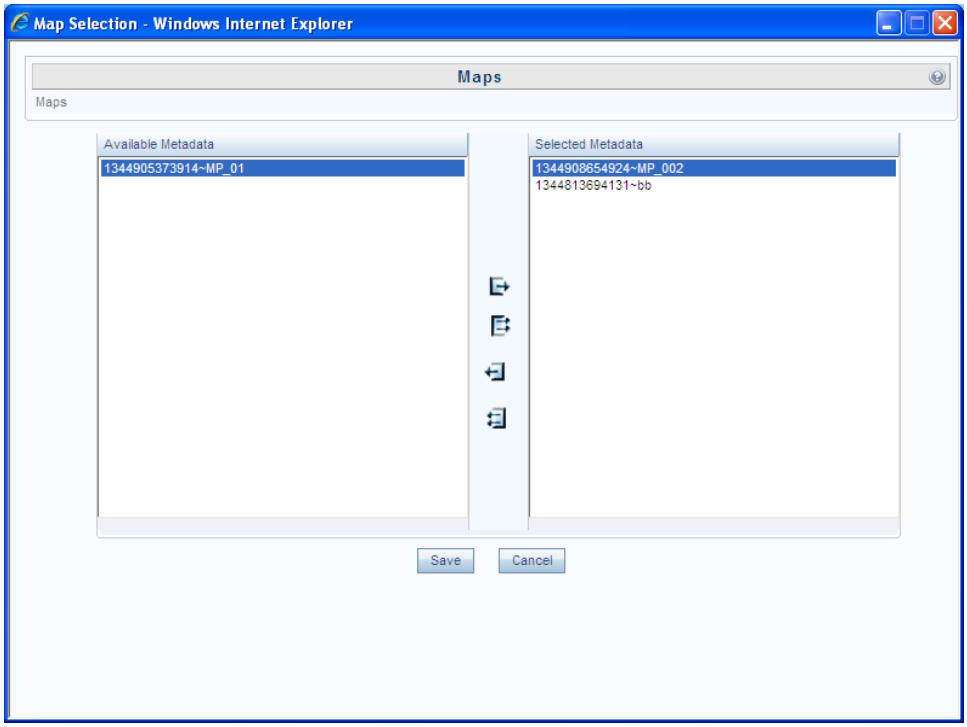
### 10.3.2 Map Segment Mapping

Segment refers to a logically divided part of the whole object based on specific requirement. Segment Map Security in the System Configuration section facilitates you to map/unmap the required Map definitions of an Information Domain to a Segment defined in another Information Domain. Based on the mapping, users can view and edit the relevant metadata across Information Domains.

You (System Administrator) need to have SYSADM function role mapped to your role to access Segment Map Security section. To access *Segment Map Security* window, go to **Object Administration** tab, expand **object Security** in the LHS menu and select **Map Segment Mapping**. In this window, select the required **Information Domain** and the associated **Segment**.

To associate a Map definition to a Segment of another Information Domain in the *Segment Map Security* window, do the following:

1. Select the required **Information Domain** from the drop-down list. The list of associated segments is available in the *Segment* list.
2. Select the **Segment** form the drop-down list to which the Map definition needs to be mapped.
3. Click **Maps**. The *Map Selection* window is displayed with Available and Selected Map definitions for the selected Information Domain.



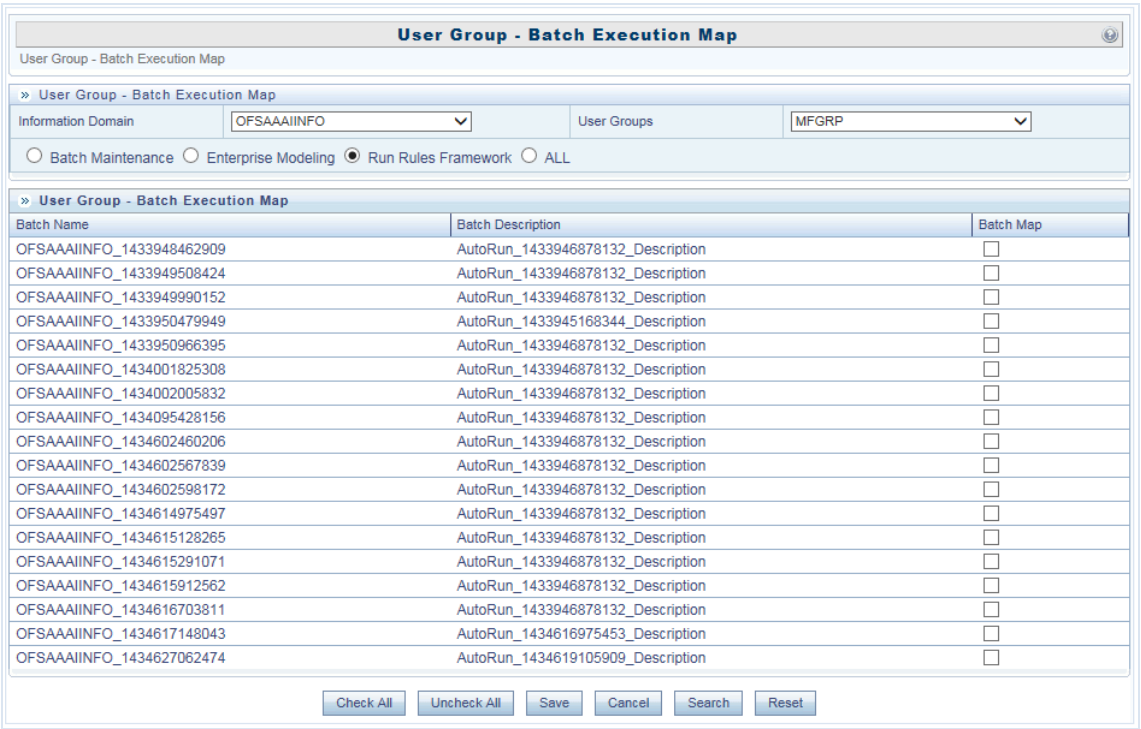

4. Map/Unmap the required map definitions by doing the following:
   - To map a map definition, select the required map from the Available Metadata list and click button. The metadata is added to the Selected Metadata pane. You can press **Ctrl** key for multiple selections.
   - To map all the map definitions, click button.
   - To remove a map definition mapping, select the metadata from the Selected Metadata list and click button.
   - To remove the entire map definition mapping, click button.
5. Click **Save** to save the Map definition mapping details. The window is refreshed displaying the mapping results.
6. Click **Show Details** to view the results in detail.

### 10.3.3 Batch Execution Rights

Batch Execution Rights facilitates you to map the required User Group to the defined Batch(s) before you execute them from *Batch Execution* or *Batch Scheduler* window. You can map multiple user groups in an Information Domain to different batches. If a user is mapped to multiple User Groups, the combined list of batches mapped to these user groups is available in the *Batch Execution* or *Batch Scheduler* window for execution.

The default User Group of a user who has created the batch has the maximum *Precedence Value* among the other User Groups and is automatically mapped for execution. An explicit mapping of this User Group to the Batch is not required.

You (System Administrator) need to have SYSADM function role mapped to access the User Group-Batch Execution Map. To access *User Group-Batch Execution Map* window, go to **Object Administration** tab, expand **object Security** in the LHS menu and select **Batch Execution Rights**.




The *User Group-Batch Execution Map* window displays the list of defined Batches for the selected Information Domain along with the other details such as Batch Name and Batch Description. You can filter the list of defined batches which are created in Batch Maintenance, Enterprise Modeling, or in Rules Run Framework. By default the list displays the batches defined in the *Batch Maintenance* window.

To map User Group to the required Batch in the *User Group-Batch Execution Map* window:

1. Select the Information **Domain** from the drop-down list. By default, the window displays the Information Domain to which you are connected.
2. Select the **User Group** to which you want to map the Batches, from the drop-down list. The list consists of all the User Groups mapped to the selected Information Domain. The window is refreshed and the list of defined batches is populated.

   You can also search for a specific user group by clicking **Search** and specifying the User Group Name in the *Search for Group* window. Click **OK**.
3. Select **Batch Maintenance** *(default)*, **Enterprise Modeling**, or **Run Rules Framework** and filter the list of batches. You can also select **ALL** to list all the defined batches for the selected Information Domain.
4. Map User Group to Batch(s) by doing the following:
   - To map batch(s) to the selected User Group, select **Batch Map** checkbox.
   - To map all the batches to the selected User Group, click **CheckAll**.

     You can also click **UnCheckAll** to remove all the mapping.
5. Click **Save** to save the User Group-Batch mapping details.

### 10.3.4 Object to Application Mapping

The Object To Application Mapping feature helps you to map the metadata objects to applications. You need to map metadata objects to required applications to view the usage of metadata across all applications where it is being used.

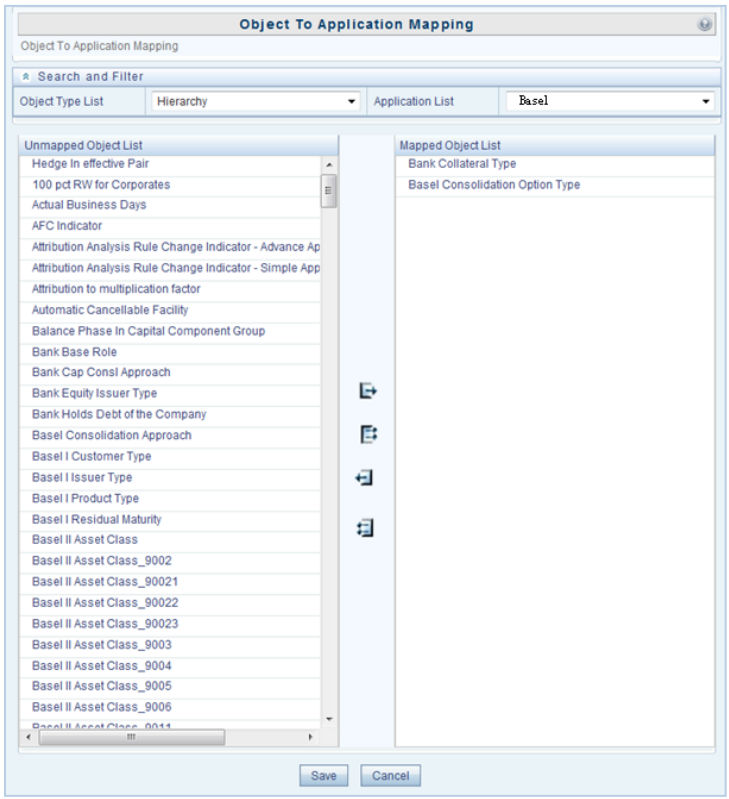
Mapping of metadata object will implicitly map its dependent objects to the selected application recursively. You can also remove the mapping of objects from applications. However, it will not remove the mapping of its dependent objects.

To view and use this feature, you must be mapped to the role METADMN (Publish Metadata), which is mapped to the function **Map Metadata** (METMAP). For more information on mapping functions to a role, refer to Function - Role Map.

You have a command line utility for object application mapping. For more information, refer to Command Line Utility for Object Application mapping.

To add or remove the object application mapping:

1. From the **Object Administration** tab, expand **object Security** in the LHS menu and select **Object To Application Mapping**. The *Object To Application* Mapping window is displayed.




2. Select the object type and the application to which you want to map the objects from the drop-down lists. In Unmapped Object List section, all objects of the selected object type are displayed.

   **NOTE:** The objects and object types displayed are based on the Infodom selected.

3. For mapping:
   - Select the required object and click to map the object to the selected application.
   - Click to map all the objects to the selected application.
4. For removing the mapping:
   - Select the required object and click to unmap the object from the selected application.
   - Click to unmap all the objects from the selected application.
5. Click **Save**. All the dependent metadata objects get mapped to the selected application recursively.

## 10.4 Object Migration

There are three approaches available for object migration namely Command Line Object Migration Utility, Object Migration (UI based), and Metadata Archive/Restore. You can choose an approach based on whether the objects you intend to migrate are supported in that approach. Command Line Object Migration is the common integrated approach and is recommended over other methods.

This module consists of the following sections:

- Object Migration
- Archive Metadata
- Restore Metadata

### 10.4.1 Object Migration (UI Based)

Objects refer to the various definitions defined in the Infrastructure and Financial Services applications. Object Migration framework within the Infrastructure facilitates you to define a set of objects to migrate across Information Domains within the same setup or across different setups.

You can select one or more objects within an object type or within multiple object types and migrate same along with the dependencies of the selected object automatically. For example, if you explicitly select a Group Filter, the migration will automatically happen for the Data Element Filters which are the dependents referenced within that Group Filter.

The following object types are available:

- Infrastructure UAM Objects such as Alias, Business Processor, Essbase Cube, Datasets, Business Measures, Business Hierarchy, Business Dimension, Data Quality Rule and Data Quality Group.
- Financial Services Applications infrastructure objects such as Dimension, Hierarchy, Filter, and Expression Rule.
- You can also migrate objects which are specific to applications such as Asset Liability Management, Funds Transfer Pricing, or Profitability Management, if you have installed those applications.

**NOTE:** Apart from this method, you can migrate objects through Command Line Utility to Migrate Objects or Data Model Management- Metadata Restore/ Metadata Archive process based on whether the objects you want to migrate are supported in that approach.

Following are the pre-requisites while working with Object Migration:

- Both the Source and Target should have the same OFSAA version number.

- Folders (Segments) that are present in the Source should also be present in the Target.
- The Source and Target environment should have the same installed locales for migration.
- Users in Source should be the same in Target. (At least for users associated with objects migrated).
- Users should have access to Folders in Target similar to the access in Source.
- Tables accessible to users in Source should also exist in Target.

  For example, if you want to migrate a Data Element Filter based on "Table A" and "Table B" in the Source, those two tables should exist in the Target.
- The key processing Dimensions should be the same in both the Source and Target environments.
- For member migration, the dimension type should have the same Attributes in both Source and Target environments.
- Numeric dimension member IDs should be the same in both the Source and Target environments, to ensure the integrity of any member-based assumptions you want to migrate.

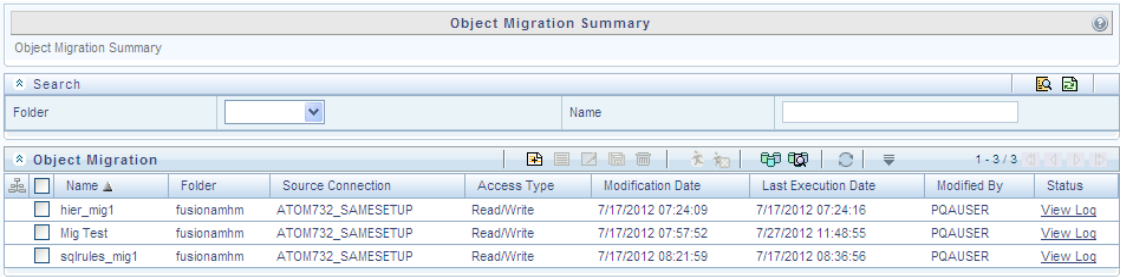
**NOTE:** If you have used the Master Table approach for loading dimension data and set it up to generate surrogate keys for members, this results in different IDs between the Source and Target. So it may cause error if you try to migrate objects which depend on these IDs.

- Migration of Infrastructure UAM Objects happens over a secure Java Socket based communication channel. To facilitate effective communication between the Source and Target systems and also to display the UAM objects from the source, you need to import the SSL certificate of Source in to the Target. For information on importing SSL certificate, refer to *How to Import SSL Certificate for Object Migration (Doc ID 1623116.1)*.
- For Object migration across setups, migration process should always be triggered from the target setup. You need to login to the target setup and select the required information domain. Object Migration works more like an IMPORT into the Target. Thus, in case of migrating objects within the same setup across Information Domains, you need to have logged into the Target Information Domain in order to migrate the objects.
- The following object types will not be migrated with their parent objects even though they are registered as dependencies:
  - Currencies registered as dependents of Interest Rate Codes (IRCs).
  - Dimension Members registered as dependents.

  Ensure that these dependencies exist in the target environment prior to the migration of parent object.

You (AAI System Administrator) need to have FU_MIG_HP function role mapped to access the Object Migration framework within Infrastructure. To access *Object Migration Summary* window, select the **Object Administration** tab and expand **Object Administration > Object Migration** from the LHS menu and select **Object Migration**.

Ensure that you have logged in to the Target setup and have selected the required Information Domain from the **Select Information Domain** drop-down list in the LHS pane, to which you need to migrate the objects from Source setup.




The *Object Migration Summary* window displays the list of pre-defined Object Migration rules with the other details such as Name, Folder, Source Infodom, Access Type, Modification Date, Last Execution Date, Modified By, and Status. You can use the Search option to search for a required Object Migration rule based on the Name or Folder in which it exists. The pagination option helps you to view the list of existing Object Migration rules within the system. For more information, refer Pagination section.

In the *Object Migration Summary* window you can do the following:

- Defining Source Configuration
- Creating Object Migration Definition
- Viewing Object Migration Definition
- Modifying Object Migration Definition
- Copying Migration Rules
- Migrating Stored Object Rules
- Viewing Migration Execution Log

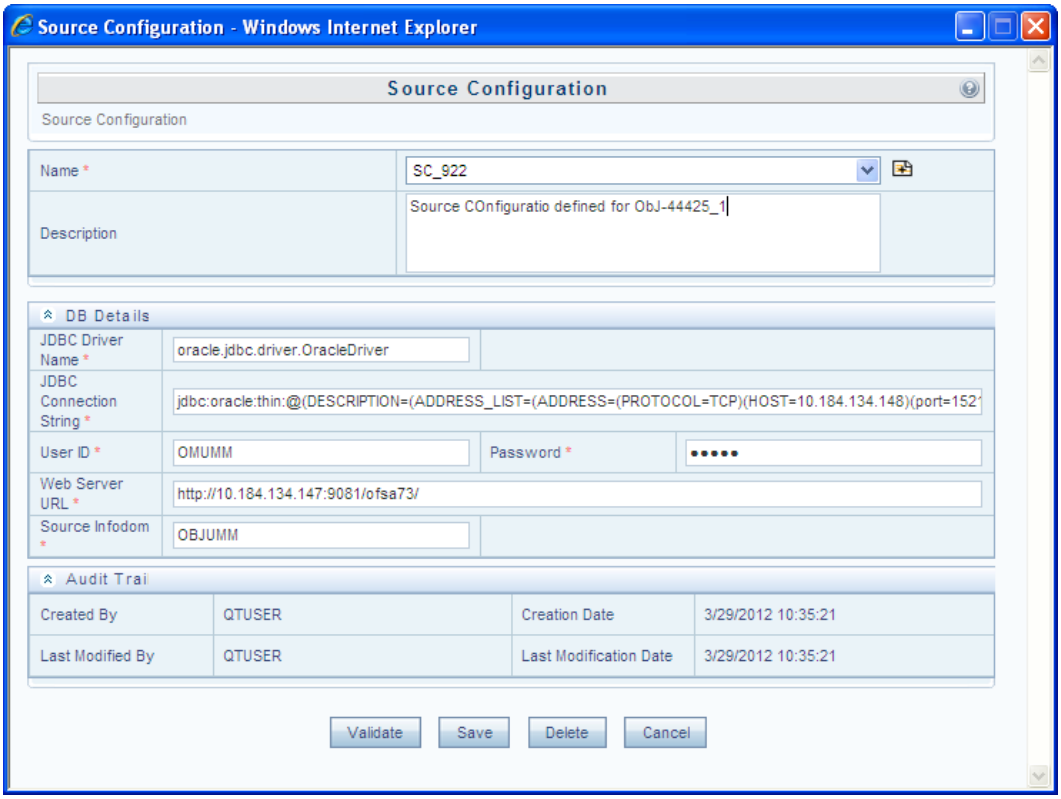
#### 10.4.1.1 Defining Source Configuration

You can define a source configuration by specifying the database connection details and user credentials to access the database. You can also edit a pre-defined Source configuration.

To define a Source Configuration in the *Object Migration Summary* window:

1. Click button from the Object Migration tool bar. The *Source Configuration* window is displayed with the pre-configured database details.

   You can also click button to view the pre-configured database details.




2. Click button adjacent to the Name field. The window is refreshed and enables you to enter the required details.

3. Enter a **Name** for the source connection and add a brief **Description**.

4. Enter the Source Database details as tabulated:

| Field | Description |
|---|---|
| Fields marked in red asterisk (*) are mandatory. | |
| JDBC Driver Name | Enter the JDBC (Java Database Connectivity) URL configured by the administrator to connect to the database. For example, oracle.jdbc.driver.OracleDriver |
| JDBC Connection String | Enter the connection string in the following format. “jdbc:oracle:thin:@<hostname:port>:<servicename>” |
| User ID | Enter the user ID required to access the database. |
| Password | Enter the password required for authentication. |
| Web Server URL | Enter the web server URL in the format “https://<hostname>:<port>/<domain>” |
| Source Infodom | Enter the source Information Domain on which the database exists. |

5. Click **Validate** to validate the specified configuration details.

6. Click **Save** to save the Source Definition details.

   The *Audit Trail* section at the bottom of *Source Configuration* window displays the metadata information about the source definition created.

   You can also edit a pre-defined Source Definition by selecting the required source definition from **Name** drop-down list. Edit the details, and click **Save**.

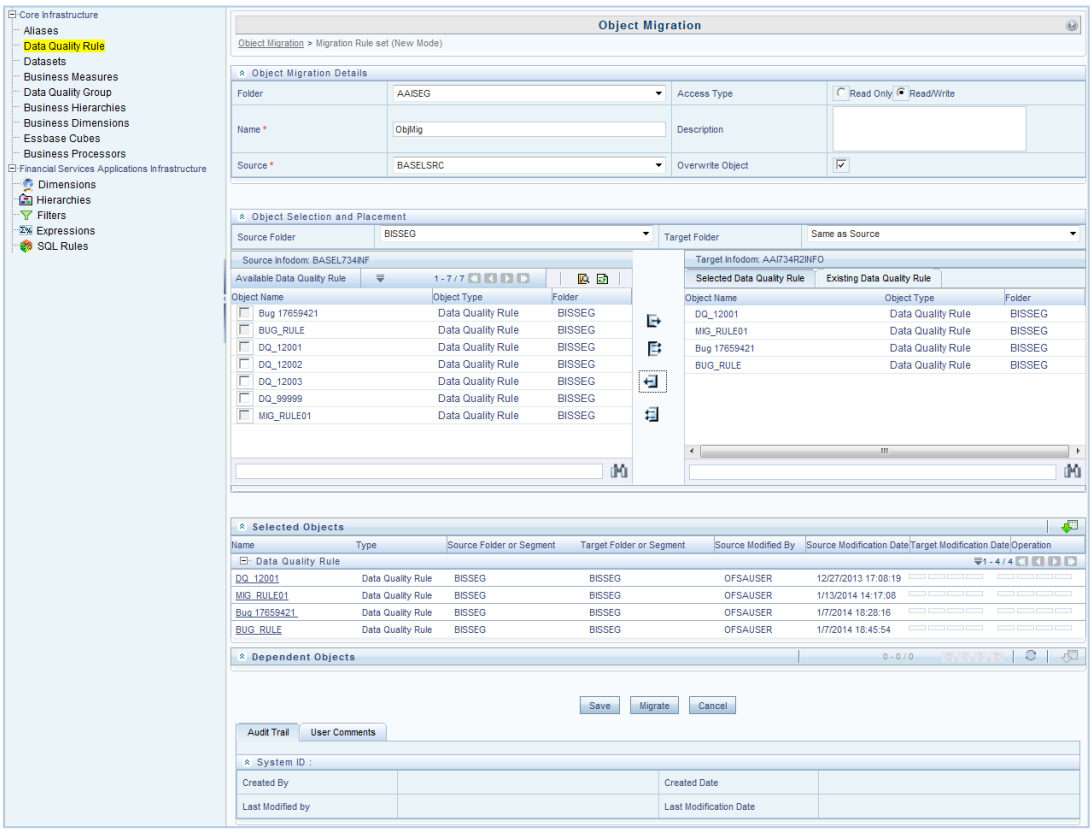
### 10.4.1.2 Creating Object Migration Definition

You can create an Object Migration definition in the target setup and launch the migration from the definition, or save the definition details and execute the migration process at a later point.

- If source objects exist in the target setup, the objects are migrated only on selection of **Overwrite Object** option in *Object Migration definition* window.
- If source objects do not exist in the target setup, then the objects are created in the target setup. The dependent objects are migrated first and then the parent objects.

To create an Object Migration definition:

1. Click button from the *Object Migration* tool bar. The *New - Object Migration* window is displayed.




2. Enter the Object Migration details as tabulated:

| Field | Description |
|---|---|
| Fields marked in red asterisk (*) are mandatory. | |
| Folder | Select the required folder from the drop-down list. This folder refers to the folder associated with the Object Migration rule. |
| Access Type | Select one of the following options:<br>▪ **Read-Only**: Select this option to give other users the access to only view the Object Migration definitions.<br>▪ **Read/Write**: Select this option to give other users the access to object to view, modify (including Access Type) and delete the Object Migration definitions. |
| Name | Enter a name for the Object Migration definition. Ensure that there are no special characters or extra spaces in the name specified. |
| Description | Enter a brief description about the definition. |
| Source | Select the required source configuration from the drop-down list. The list displays the available source configurations that are created from the *Configuration* window. |
| Overwrite Object | Select this checkbox to overwrite the target data, if source objects exist in the target setup. |
| Object Selection and Placement<br>After you select an object type from the Migration rule's LHS menu, the Object Selection and Placement section will display the following options related to that object type: | |
| Source Segment/Folder | This field is displayed if you have selected a segment /folder-based object type.<br>Select the required source segment/folder from the drop-down list.<br>All the registered objects for the selected source segment/folder are displayed in the Source Infodom table.<br>**Note**: If you leave Source Folder blank, the Source Infodom table displays all objects in all the folders to which you have access in the source environment. |
| Object-type specific selections, such as<br>Filter Type | For some object types, there are additional selections. For example, if you select the object type as **Filters**, you can select the required Filter Type from the drop-down list. The Source Infodom table displays all objects belonging to the selected Filter Type. If you leave Filter Type blank, all filters will be displayed. |

| Field | Description |
|---|---|
| Target Folder | This field is displayed if you have selected a segment /folder-based object type. Target folder is the folder to which the selected objects are migrated.<br>Select **Same as Source** option to migrate the objects to the same folder as source folder. By default, **Same as Source** is selected.<br>Select the required folder from the drop-down list if you want a folder other than source folder.<br>Consider the following scenarios to know how the Parent and Dependent objects are migrated to the selected Target Folder.<br>▪ Dependent objects are migrated either implicitly or explicitly.<br>▪ **Implicit Migration**: This occurs when the dependents are not explicitly selected. The dependent will be migrated automatically if its parent is selected (this occurs regardless of whether it is folder-based). For folder-based objects, the dependent migration uses “Same as Source” logic: It uses a Target Folder matching the dependent’s Source Folder.<br>▪ **Explicit Migration**: When you need to migrate the dependent objects to a specific folder (different than the dependent’s Source Folder), explicitly select the dependent object and the desired Target Folder for it.<br>**Note**: Explicit selection takes precedence over implicit migration for a dependent.<br>For folder-based objects: A dependent object will not inherit the parent’s Target Folder. This logic avoids the potential for unintended duplicates; that is, an object could be a dependent of multiple parent objects, and those parents each could be targeted for a different folder.<br>An auto validation is done to check if the Target Folder exists. If it does not exist,<br>▪ The object will not be migrated.<br>▪ Objects’ parents (if any) will not be migrated, regardless of whether the child is implicitly or explicitly selected for migration.<br>▪ If the object has children whose migration could be valid (i.e. a valid Target Folder and valid dependents, if any) then migration is done by migrating a child prior to its parent to ensure integrity of parent. |

| Field | Description |
|---|---|
| Source Infodom Table | All available objects are displayed based on your selection of object type and (if applicable) source segment/folder.<br>▪ Select the checkbox corresponding to the required object and click to migrate the object to the target folder. You can also double click to select the required object.<br>▪ Click to select all the listed objects for migration.<br>▪ (Optional) You can use the Search and pagination options to find the required object. Click the Search button and enter the name or description in the Search window. Use Reset button to clear the search criteria.<br>▪ Use the Find button to find an object displayed on the current page. |
| Target Infodom Table | All objects which you have selected for migration are displayed.<br>▪ Select the checkbox corresponding to the required object and click to remove the object from migration. You can also double click to remove the required object.<br>▪ Click to remove all the selected objects from migration. |

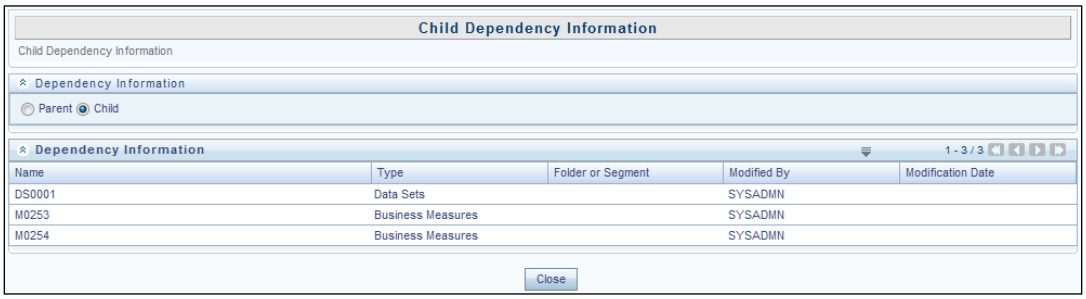
3. The Selected Objects grid shows all objects you have explicitly selected, for all object types.

   (Optional) Click button from the Selected Objects tool bar to populate the complete object details such as Target Modification Date (if object exists in target Infodom) and Operation (Add/Update) that can be performed during migration.

4. The Dependent Objects grid shows all objects which are automatically migrated due to a dependency in a parent object.

   (Optional) Click button from the Dependent Objects tool bar to display the dependencies of the selected objects.

   To view the dependencies of a specific object, click on the object **Name** in either the Selected Objects grid or the Dependent Objects grid. The parent / child dependencies are displayed in the *Parent / Child Dependency Information* window.



You can also toggle the view of Parent / Child dependency information by selecting **Parent** or **Child** in the *Dependency Information* grid.

5. The Audit Trail section will display details about Object Migration Rule creation and modification, after it is saved. You can add comments from the *User Comments* tab.
6. Click **Migrate** to save and migrate the selected source objects to target setup or click **Save** to save the Object Migration definition for future migration. You can later run the saved object migration rule. For more information, refer to Migrate Stored Object Definition section.

   Once the migration starts, the source objects are migrated to target setup and the Migration details such as status, start, and end time are recorded. You can click **View Log** in the *Object Migration Summary* window to view the details.

   **NOTE:** In case of an error during migration of any dependent objects, the specific parent object is excluded from migration. You can view the Migration Execution Log for details.

#### 10.4.1.3 Viewing Object Migration Definition

You can view individual Object details at any given point.

To view the existing Object Migration definition details:

1. Select the checkbox adjacent to the Object Migration Definition **Name**.
2. Click button in the *Object* Migration tool bar. The *View - Object Migration* window is displayed.
3. Click button from the Selected Objects tool bar to populate the complete object details such as Target Modification Date (if object exists in target Infodom) and Operation (Add/Update) that can be performed during migration.
4. Click button from the Dependent Objects tool bar to display the dependencies of the selected Object.
5. The *Audit Trail* section displays the details about Object Migration Rule creation and modification. You can add comments from the *User Comments* tab.

#### 10.4.1.4 Modifying Object Migration Definition

To update the existing Object migration definition details:

1. Select the checkbox adjacent to the Object Migration Definition **Name**.
2. Click button in the Object *Migration* tool bar. The *Edit - Object Migration* window is displayed.

3. Edit the required details. For more information, refer Create Object Migration Definition.

   **NOTE:** You cannot edit the Source details.

4. Click **Save** and save the changes.

   In the *Object Migration Summary* window, you can also click button to delete the Object Migration Definition details.

#### 10.4.1.5 Copying Migration Rules

The Copy Migration Rules facilitates you to quickly create a new Migration Rule Definition based on the existing Source-Target Object mappings or by updating the required mapping details.

To copy an existing Migration Definition:

1. Select the checkbox adjacent to the Rule Name whose details are to be duplicated.
2. Click button in the Object Migration tool bar. Copy button is disabled if you have selected multiple migration rules.
3. Edit the Migration Rule Definition as required. You can modify the details such as Folder, Name, Description, Access Type, Overwrite option, and also view the dependencies of the selected objects. For more information, refer Create Object Migration Definition.

   **NOTE:** You cannot edit the Source details.

4. Click **Migrate** to migrate the selected source objects to the target setup or click **Save** to save the Object Migration definition for future migration.

#### 10.4.1.6 Migrating Stored Object Definition

You can execute a stored Object Migration Definition and migrate the mapped objects to the target setup. You can also interrupt the ongoing migration process at any given point.

To execute migration from a Stored Object Rules:

1. Select the checkbox adjacent to the Object Migration Definition **Name**.
2. Click button in the Object Migration tool bar.

   The migration process is triggered and the source objects are migrated to target setup. The details can be viewed by clicking **View Log** in the *Object Migration Summary* window.

   You can also interrupt the ongoing migration process by selecting the object rule definition and clicking button.

#### 10.4.1.7 Viewing Migration Execution Log

You can view the status of an executed migration rule definition with the log details of each migrated object (parent) with the dependencies (child objects) indicated as components, along with its sequence and severity.

To view the log details of an executed migration rule definition:

1. Click **View Log** in the Status column corresponding to the required Object Migration Definition. The *View Log* window is displayed with the list of all the executed Object Migration Rule definitions.
2. Click on the **Task** ID of the required Object Migration Rule and view the migration status such as Task ID, Sequence, Severity, Message Description as Successful, Started, or Failed, Message Date, and Message Time.

### 10.4.2 Metadata Restore/Archive

Metadata Restore/Archive within the infrastructure system facilitates you to archive metadata present in different modules of the OFSAAI application and restore it when required. You need to be mapped with the Export Metadata and Import Metadata functions to access the Metadata Restore/Archive utility. Apart from this method, you can migrate objects through Command Line Utility or Object Migration rules based on whether the objects you want to migrate are supported in that approach.

**NOTE:** When you want to restore/ archive a Data Mapping definition with associated DQ Rules, make sure the DQ Rules are restored/ archived from the *Object Migration* window or using command line utility. If the associated DQ rule is not present in the target environment, Data Mapping definition will get migrated without the DQ rule.

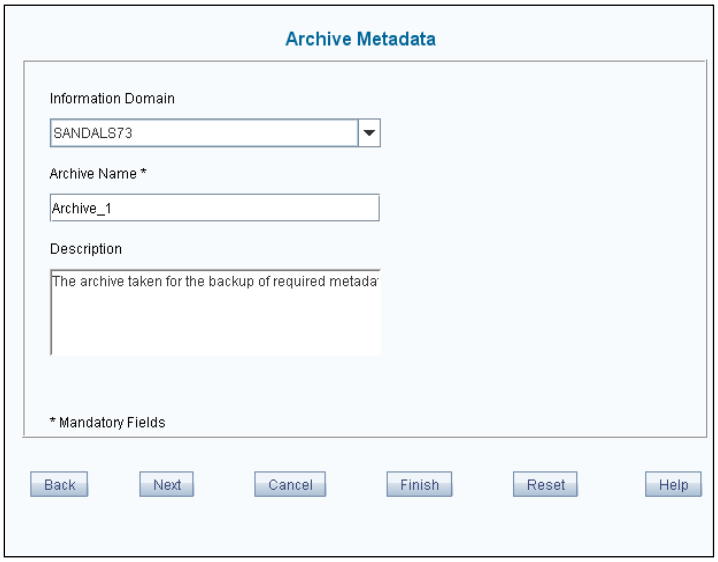
Metadata Restore/Archive consists of the following sections. Click on the links to view the section in detail.

- Restoring Metadata
- Archiving Metadata

#### 10.4.2.1 Archiving Metadata

For migrating metadata from a source setup to a target setup, you need to first archive the metadata and create the dump file.

To access *Archive Metadata* window, select the **Object Administration** tab and expand **Object Administration > Object Migration** from the LHS menu and select **Archive Metadata**. Your user group should have been mapped with the Export Metadata function to access Archive Metadata window.

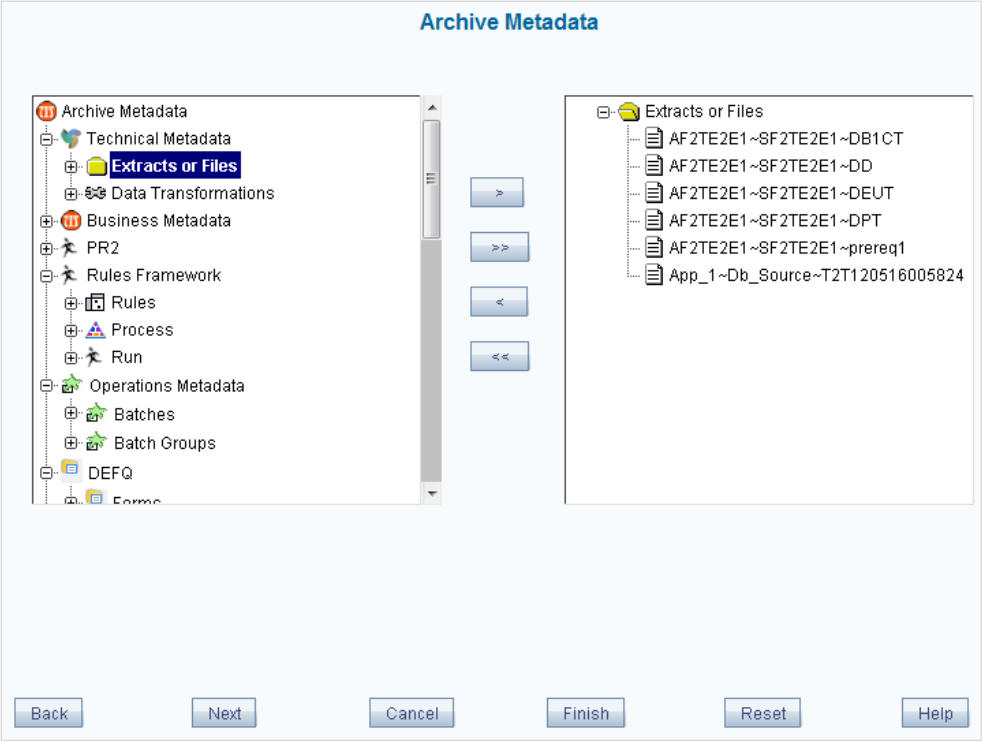



To archive metadata

1. Select the **Information Domain** from which you want to archive the metadata, from the drop-down list. By default, the information domain selected from the **Select Information Domain** drop-down list is displayed.
2. Enter the **Archive Name** for the metadata archive operation.

   **NOTE:** There can be more than one instance of archival process running at the same time but the archive name and the information domain combination should be different.

3. Enter the required **Description** for the metadata archive operation.
4. Click **Next**. The *Archive Metadata* window is refreshed and lists the metadata information in the selected information domain.




This window lists only the authorized metadata. Unauthorized metadata cannot be archived. The *Archive Metadata* window has two panes; the left pane lists the available metadata and the right pane displays the selected metadata. The available metadata pane lists all the Metadata available in the selected information domain in a tree structure. The list includes Technical Metadata, Business Metadata, Rules Framework, Operations Metadata, DEFQ, and Forms Framework. You can click **+** button on each section to view the underlying metadata definitions.

**NOTE:** Data Transformations (Post Load Changes definitions) based on Stored Procedures only are supported for migration.

5. Select the required metadata from the left pane and click [>]. The selected metadata is displayed in the right pane.

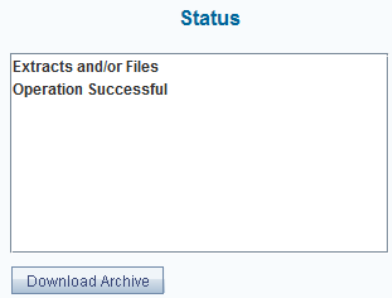
**NOTE:** When you select a parent node and click [>], all child nodes are selected and moved to the right pane.

6. Click [>>] to select all the available metadata in the left pane.

   You can also click [<] to remove a selected metadata from the selected metadata pane or click [<<] to remove all the selected metadata from the selected metadata pane.

**NOTE:** The dependent metadata does not get automatically selected. You need to ensure that all dependent metadata is also explicitly selected for archival purposes.

7. Click **Finish** and start the metadata archival process.




Once the execution is completed, a status message is displayed in the *Status* window. The *Status* window of the Metadata Archive wizard displays the status of the archival operation of all the metadata that are selected as **Success** or **Failed**. All the archived data is mapped to the selected Segment in the selected Information Domain.

8. Click the **Download Archive** button to download the archived metadata. The *File Download* dialog is displayed.

9. Click **Save**. The file will be downloaded to the default Downloads folder. Click Save as to specify the location where you want to save the file.

   The file is saved with an extension .DMP.

**NOTE:** Ensure that you do not rename the Archive (.DMP) file after saving into your locale machine. Doing so will prevent the archive from restoring.

10. In the *Archive Metadata* window you can also:

    - Click **Back** button to go back to the previous window.
    - Click **Reset** to go to the first window of the *Archive Metadata* window.
    - Click **Cancel** button at any point during the operation to discard the metadata archival process.

### 10.4.2.2 Restoring Metadata

After successfully archiving the metadata, using the Restore Metadata feature, you can import the archived metadata to the required target setup.

To access *Restore Metadata* window, select the **Object Administration** tab and expand **Object Administration > Object Migration** from the LHS menu and select **Restore Metadata**. Your user group should have been mapped with the Import Metadata function to access *Restore Metadata* window.

To restore metadata

1. By default, the information domain selected from the **Select Information Domain** drop-down list in the LHS is displayed.
2. Select the **Segment** to which the metadata is to be restored from the drop-down list. It displays the segments mapped to the selected information domain.
3. Select the file to restore by clicking **Browse** and select the .DMP file. To restore the metadata from a file, the source database/OLAP type and the destination database/OLAP type should be matching for the selected information domain and the selected metadata file.

   **NOTE:** If the local copy of the archive (.DMP) file has been renamed, you might notice an error during restoration.

4. Select the **Overwrite Existing Metadata** checkbox if you want to allow overwriting the existing metadata that is being selected to restore.

5. Select the **On Error Cancel Restoration** checkbox if you want to cancel the restore process in case of an error.
6. Click **Next** to continue the metadata restore process. The window is refreshed to list the metadata information in the selected Information Domain and Segment.

The *Restore Metadata* window displays two panes, the left pane lists the metadata present in the .DMP file and the right pane to display the metadata selected from those available in the left pane. The available metadata pane lists all the Metadata available in the file selected to be restored in a tree structure. The list includes Technical Metadata, Business Metadata, Rules Run Framework, Operations Metadata, DEFQ, and Forms Framework. You can click **+** button on each section to view the underlying metadata definitions.

**NOTE:** Data Transformations (Post Load Changes definitions) based on Stored Procedures only are supported for migration.

7. Select the required metadata from the left pane and click . The selected metadata is displayed in the right pane.

**NOTE:** When you select a parent node and click , all child nodes are selected and moved to the right pane.

8. Click to move all the available metadata from the left pane to the selected metadata pane.

   You can also click to remove a selected metadata from the selected metadata pane or click  to remove all the selected metadata from the selected metadata pane.

**NOTE:** The dependent metadata does not get automatically selected. The user has to ensure that all dependent metadata is also explicitly selected for restoration purposes.

9. Click **Finish** to start the metadata restoration process.

   Once the execution is finished, a status message is displayed in the *Status* window. The *Status* window of the Metadata Restore wizard displays the status of the restoration operation of the metadata file selected as **Success** or **Failed**. All the Restored data is mapped to the selected Segment in the selected Information Domain.

10. In the *Restore Metadata* window you can also:
    - Click **Back** button to go back to the previous window.
    - Click **Reset** to go to the first window of the *Restore Metadata* window.
    - Click **Cancel** button at any point during the operation to discard the metadata restoration process.

## 10.5 Translation Tools

### 10.5.1 Config Schema Download

Configuration schema refers to the database schema that is referred by all information domains to access data related to Metadata, System Configuration, Administration Security, and so on. Configuration schema stores the user security information and metadata used within the applications which are deployed on OFSAA Infrastructure.

The *Config Schema Download* window facilitates you download data from configuration schema tables along with the option to filter data during download, in Microsoft Excel 2003/2007 format. The *Config Schema Download* window has restricted access and you should have **Config Excel Advanced** user role mapped to your user group to download configuration schema data.

To navigate to this screen, go to the **Objects Administration** tab, expand **Translation Tools** and click **Config Schema Download** from the LHS menu.

To download config schema data:

1. **Select the table** from the drop-down list. The list consists of those database objects (tables) which are mapped to configuration schema based on a specific configuration.
2. Select the **Format to download** from the drop-down list. You can either select Microsoft Excel 2003 or 2007.
3. (Optional) If you want to download only the required data instead of complete table data, specify a filter condition in **Filter(where clause)** field.

   For example, if you want to download *Group Code* details from the table “cssms_group_mast”, you can specify the filter condition as:

```
select * from cssms_group_mast where v_group_code in ('AUTH')
```

4. Select **Download**. The *File download* dialog box is displayed providing you with options to Open or Save a copy of the file in selected excel format.

### 10.5.2 Config Schema Upload

Configuration schema refers to the database schema that is referred by all information domains to access data related to Metadata, System Configuration, Administration Security, and so on. Configuration schema stores the user security information and metadata used within the applications which are deployed on OFSAA Infrastructure.

To navigate to this screen, go to the **Objects Administration** tab, expand **Translation Tools** and click **Config Schema Upload** from the LHS menu.

The *Config Schema Upload* window facilitates you to upload data to the configuration schema table either by appending incrementally or complete re-load on the existing data, in Microsoft Excel 2003/2007 format. During upload, all the referential Constraints (Foreign Key Constraints) enabled on the selected database object (table) are disabled and enabled back post upload. In case of any errors while enabling the referential constraints or inserting the new data, the selected database object (table) will be reverted back to its original state.

The *Config Schema Upload* window has restricted access and you should have **Config Excel Advanced** user role mapped to your user group to upload configuration schema data.

To upload config schema data:

1. **Select the table** from the drop-down list. The list consists of those database objects (tables) which are mapped to configuration schema based on a specific configuration.
2. In *Select the File to Upload* field, click **Browse**. In *Choose File to Upload* dialog box, navigate and specify the path of the data file (Microsoft Excel 2003/2007) which you want to upload.

   If the excel contains multiple sheets, you can select the sheet from which data is to be uploaded. Else, by default the first sheet data is selected for upload.
3. In *Select the Sheet* field click button, the *Sheet Selector* pop-up window is displayed. Select the required sheet from the drop-down list and click **OK**.
4. In the *Upload Type* options, select one of the following:
   - **Incremental** - In this type of upload, the data in Excel sheet is inserted / appended to the target database object. The upload operation is successful only when all the data in the selected Excel Sheet is uploaded. In case of any error, the uploaded data will be rolled back.

- **Complete** - In this type of upload, the data present in the selected database object is overwritten with the data in selected Excel sheet. In case of an error, data in the selected database object will be reverted back to its original state.

5. In *Source Date Format* field, specify the date format used in the data that you are uploading. An insert query is formed based on the date format specified.
6. Select **Upload**. If you have selected *Complete* upload type, you will need to confirm to overwrite data in the confirmation dialog.

   An information dialog is displayed with the status of upload. You can click on **View Log** to view the log file for errors and upload status. The log file contains the following information:

   - Database object (table) to which the data is uploaded.
   - Name of the excel file from which the data is uploaded.
   - Number of records uploaded successfully.
   - Number of records failed during upload and reason of failure.
   - Upload Status (Success/Fail).

## 10.6 Utilities

Utilities refer to a set of additional tools which helps you to fine tune a defined process or maximize and ensure the security of a database based on your need. The Utilities within the Administration framework of Infrastructure system facilitates you to maintain the data in the Oracle database using the various administrative tools. You can define the user access permissions, batch securities, upload attributes, find metadata difference, and migrate source objects to target database.

You (System Administrator) need to have SYSADM function role mapped to access the Utilities section within the Infrastructure system. You can access Utilities section within the Administration framework under the tree structure of LHS menu.

To access various utilities, go to the *Object Administration* tab and click **Utilities**.

Administration Utilities consists of the following sections. Click on the links to view the sections in detail.

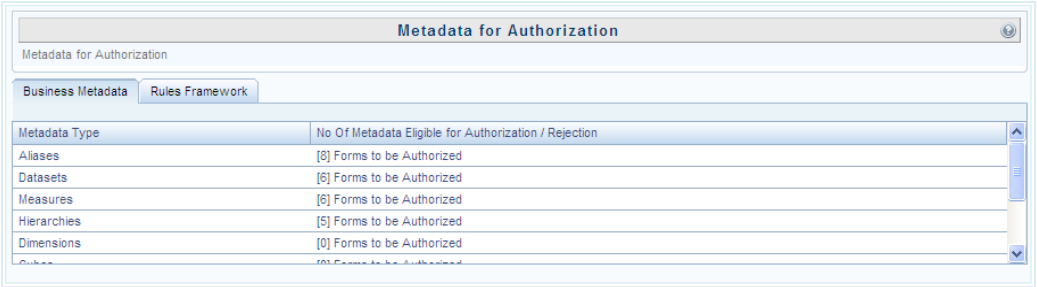
- Metadata Authorization
- Metadata Difference
- Save Metadata
- Write-Protected Batch
- Component Registration

- Transfer Document Ownership
- Object Migration
- Patch Information
- Restructure

### 10.6.1 Metadata Authorization

Metadata Authorization within the Infrastructure system facilitates you to authorize or reject the metadata version(s) created as a result of an update to the existing business definitions. The modifications done to the higher level metadata or business definitions are recorded as a new version of the same metadata which needs to be accepted or rejected, to reflect the changes. On Authorization, the existing metadata is replaced with the current version. In case of Rejection, that selected version of the metadata is removed from the system.

You need to have SYSADM and METAAUTH function roles mapped to access the Metadata Authorization within the Administration framework of the Infrastructure system. The *Metadata for Authorization* window displays the list of modified Metadata Type and the total number of eligible metadata for authorization in the Business Metadata tab (Default).




#### 10.6.1.1.1 Authorize / Reject Metadata

To Authorize or Reject Metadata Types in the *Metadata for Authorization* window:

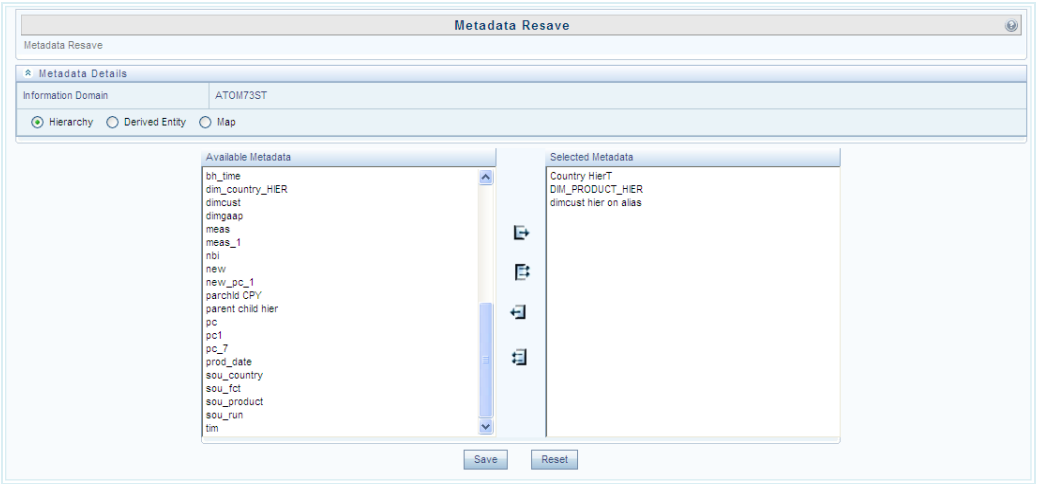
1. Select the *Module tab* as Business Metadata (default) or Rules Run Framework. The list of Metadata Type eligible for authorization is displayed.
2. Select the required **Metadata Type** by clicking on *(n) Forms to be Authorized* link.

   A list of the metadata versions is displayed along with the other details such as Code, Short Description, Action Performed, and Performed By details for the selected metadata definition.
3. Select the checkbox adjacent to the required version of the selected metadata and do one of the following:
   - Click **Authorize** to accept the metadata changes of the selected version.
   - Click **Reject** to ignore the metadata changes and delete the selected version.

The window is refreshed on every action and the updates are displayed in the respective tab of the *Metadata for Authorization* window.

### 10.6.2 Save Metadata

Save Metadata within the Infrastructure system facilitates you to resave the changes done to an authorized metadata for the selected Information Domain. When you resave metadata, all the existing metadata definitions are updated with the current changes along with the current modified date.




You (System Administrator) need to have SYSADM function role mapped to access the Metadata Authorization within the Administration framework of the Infrastructure system. The *Metadata Resave* window displays the list of Available Metadata for Hierarchy (default) for the selected Information Domain.

To resave metadata in the *Metadata Resave* window:

1. Filter the metadata type be selecting Hierarchy, Derived Entity, or Map. The list of Available Metadata is populated. Do one of the following:

   - Select the required metadata from the Available Metadata list and click button. You can press **Ctrl** key form multiple selection.

   - To select all the Available Metadata, click button.

     You can also deselect a metadata by selecting from the *Selected Metadata* list and clicking button or deselect all the selected metadata by clicking button.

2. Click **Save** and update the metadata changes.

   Once the details are updated, you can click **Show Details** to view the status. You can also click **Reset** to clear the selection.

Additional Hierarchy USERGROUP was created upon click of SAVE METADATA in administration link (LHS) of OFSAAI. The hierarchy is visible in all the infodoms.

```
H_GROUP User Groups User Groups Regular BI Enabled DE_GROUP
V_GROUP_CODE
```

### 10.6.3 Write-Protected Batch

Write-Protected Batch facilitates you to change the Editable State of Batches defined in the *Batch Maintenance* window of the Infrastructure system. You can either restrict a Batch from being edited, or remove the restrictions and allow users to modify the Batch Definition details.

You (System Administrator) need to have SYSADM function role mapped to access the Write-Protected Batch within the Utilities section of the Infrastructure system. The *Write-Protected Batch* window displays the list of defined Batches for the selected Information Domain along with the other details such as Batch Name, Batch Description, and Write-Protection status. By default, the Batch list is sorted in ascending order of the Batch Name and can be changed by clicking ▲ and ▼ buttons respectively.

To change the Editable State of Batch in the *Write-Protected Batch* window, do the following:

- To change the Batch state as “Non Editable”, select the Write-Protected Batch checkbox of the required Batch in the list and click **Save**. The Batch details are restricted from being edited in the *Batch Maintenance/Scheduler* window.
- To change the Batch state as “Editable”, deselect the Write-Protected Batch checkbox of the required Batch in the list and click **Save**. The Batch details can be modified as required in the *Batch Maintenance/Scheduler* window.
- You can also click **Check All** to write-protect (restrict editing) all the batches in the list or click **Uncheck All** to remove the restriction and allow editing of all the Batches.

### 10.6.4 Metadata Difference

Metadata Difference within the Infrastructure system facilitates you to view the difference between two versions of a Metadata within the selected Information Domain. You (System Administrator) need to have SYSADM function role mapped to access the Metadata Difference within the Utilities section of the Infrastructure system.

To view the Metadata Difference, do the following:

1. Click ... button adjacent to **Select Metadata**.

   The *Metadata Tree* dialog is displayed with a list of metadata available within the Data Model Management and Rules Run Framework modules of the selected Information Domain.

**NOTE:** Metadata Difference feature is not supported for RRF metadata.

2. Select the required metadata by expanding the required node. Click **OK**.
3. Click ... button adjacent to **Between Version**.

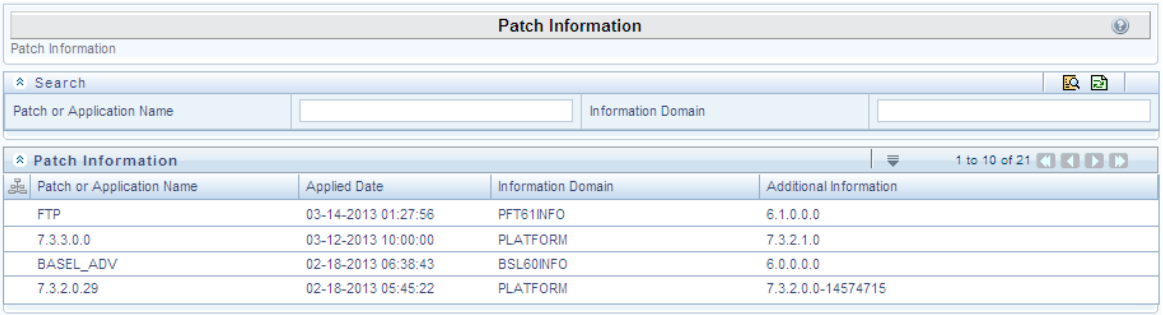
   The *Version Tree* dialog is displayed with the list of available version for the selected metadata.
4. Select the required version by expanding the required node. Click **OK**.
5. Click ... button adjacent to **And Version**. The *Version Tree* dialog is displayed.
6. Select the required version by expanding the required node. Click **OK**.
7. Click button from the Metadata Difference tool bar.

   The difference of the selected two metadata versions is displayed.

   You can also click button to clear the metadata and version selections.

### 10.6.5 Patch Information

The *Patch Information* window within the Infrastructure facilitates you to view the list of patches applied and applications installed till date. You (application user) need to have **SYSADM** function mapped to your role to access the *Patch Information* window within the **Utilities** section of the Infrastructure.




The *Patch Information* window dynamically displays a list of applied patches & applications installed along with the Patch or Application Name, Information Domain on which the patch/application has been installed, and Additional Information (if any). These records are fetched from the corresponding tables in the database and are sorted in the ascending order of **Applied Date** by default.

You can make use of Search option in the *Patch Information* window to search for a specific patch/application installation based on Patch/Application Name or Information Domain. You can also use the Pagination option to modify the page display as required.

### 10.6.6 Transfer Documents Ownership

This feature allows you to transfer the ownership of the uploaded documents to another user or user group. When a user or user group is deleted, the uploaded documents will be orphaned.

This feature can be used to transfer the ownership of the documents before a user or user group is deleted.

The Transfer Document Ownership link is displayed when the user is mapped to any one of the following roles:

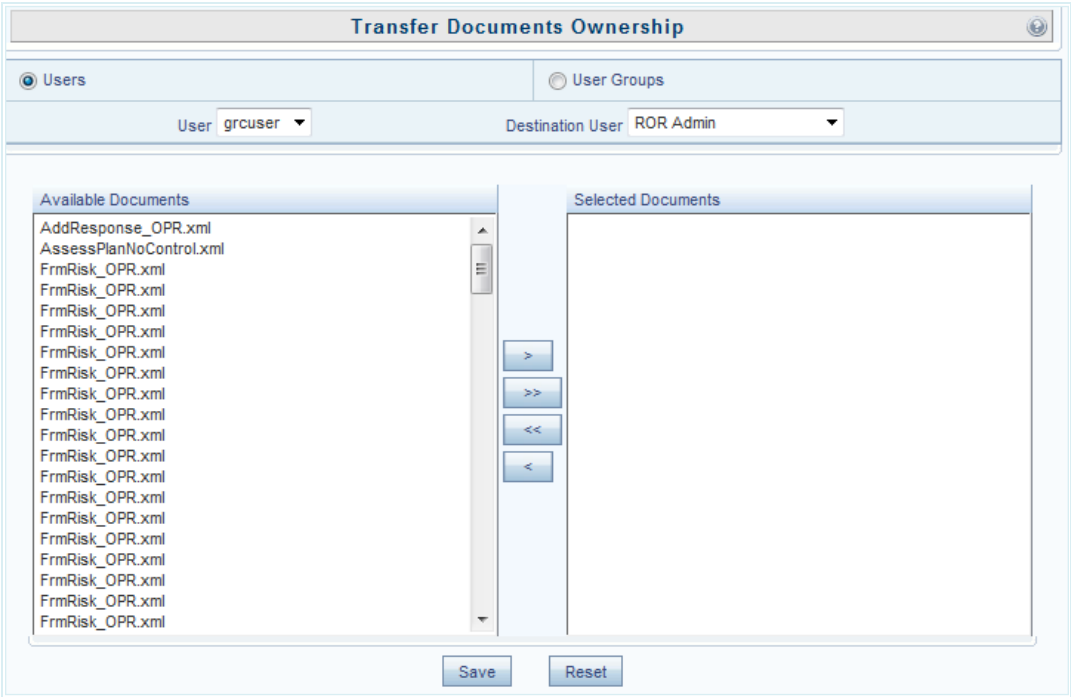
- Document MGMT advanced
- Document MGMT authorize
- Document MGMT phantom
- Document MGMT write

For more details regarding Role and Functions refer to Appedix A

#### 10.6.6.1 Transferring Document Ownership to User

To transfer document ownership to user:

1. From the **Object Administration** Tab, expand **Utilities** and click **Transfer Document Ownership**. The *Transfer Documents Ownership* window is displayed.
2. Select the user whose document ownership you want to transfer from the **User** drop-down list.



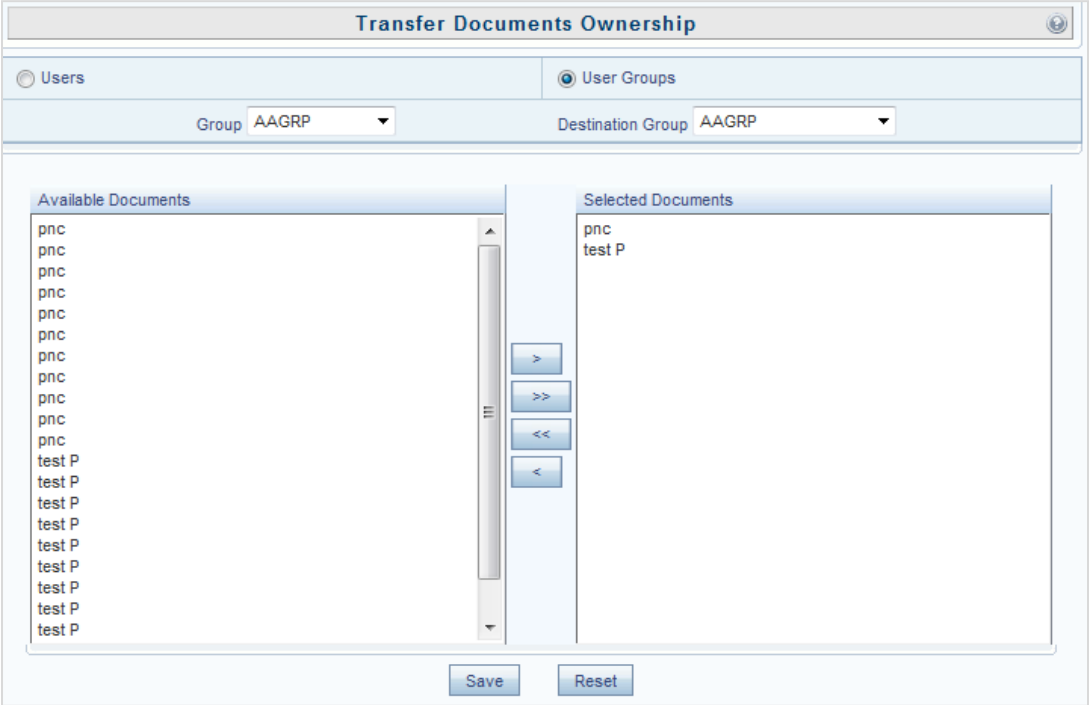

The uploaded documents by the selected user are displayed under the *Available Documents* pane.

3. Select the user to whom you want to transfer the document ownership from the **Destination User** drop-down list.
4. Select the documents from *Available Documents* whose ownership you want to transfer by clicking button. The documents will be moved to the *Selected Documents* pane. You can click to select all documents.
5. Click **Save**.

### 10.6.6.2 Transferring Document Ownership to User Group

To transfer document ownership to user group

1. From the **Object Administration** Tab, expand **Utilities** and click **Transfer Doc Ownership**. The *Transfer Documents Ownership* window is displayed.
2. Select the **User Groups** option.
3. Select the user group whose document ownership you want to transfer, from the **Group** drop-down list.




The uploaded documents by the selected user group are displayed under the *Available Documents* pane.

4. Select the group to which you want to transfer the document ownership from the Destination **Group** drop-down list.

5. Select the documents from Available Documents whose ownership you want to transfer by clicking button. The documents will be moved to the *Selected Documents* pane. You can click to select all documents.
6. Click **Save**.

### 10.6.7 Business Restructure

Business Re-structuring in the corporate management is the act of reorganizing Ownership, Operational or other structures of the company for making it more profitable or better organized for its present needs. Other reason for restructuring is demerger or a response to major change in the business such as repositioning or buyout.

Business restructuring operations can be:

- **Merge**- Two dimension nodes are merging into one. Here the source nodes are many and the target node will be one. The entities can be copied from the source to target or else can be moved to the target without retaining them in the source. In this scenario, the existing source mapping needs to be deleted and the new mappings should be created for the target.
- **Split**- A dimension node is splitting into two. Here the source node will be one and the target node will be many. The entities can be copied from the source to target or can be moved to the target without retaining them in the source. In this scenario, the existing source mapping needs to be deleted and the new mappings should be created for the target.
- **Add**- A new dimension node is getting added. Here the source node can be many and the target node will be one. The entities are copied from the source to the target. In this scenario, new mappings should be created for the target. Workflow will be called only for the target.
- **Close**- A dimension node is getting closed. In this scenario, the existing mappings should be deleted. The source node can be many or one. Workflow will be called only for the source.

Based on the role that you are mapped to, you can access, read, modify, or authorize the Business Restructure definitions. For all the roles and descriptions refer to Appendix A. The roles mapped to Business Restructure are as follows:

- RESTRACC- Restructure Access
- RESTRMOD- Restructure Edit
- RESTREXEC- Restructure Execute
- RESTRREAD- Restructure Read
- RESTRSUMM- Restructure Summary
- RESTRWRITE- Restructure Write

To access Business Restructure, navigate to *Object Administration* tab and click **Utilities**. In the *Utilities* window, click **Restructure**.

#### 10.6.7.1 Metadata Reload

For the first time when you use this utility, you need to do Restructure Metadata Reload. Afterwards when a change in model or map definitions happens, then only you have to reload the metadata.

Navigate to the *Restructure* window and click **Metadata Reload**. From the Metadata Reload window, click **Initiate Reload**. A message is displayed indicating the status of the metadata reload.

### 10.6.7.2 Configuration

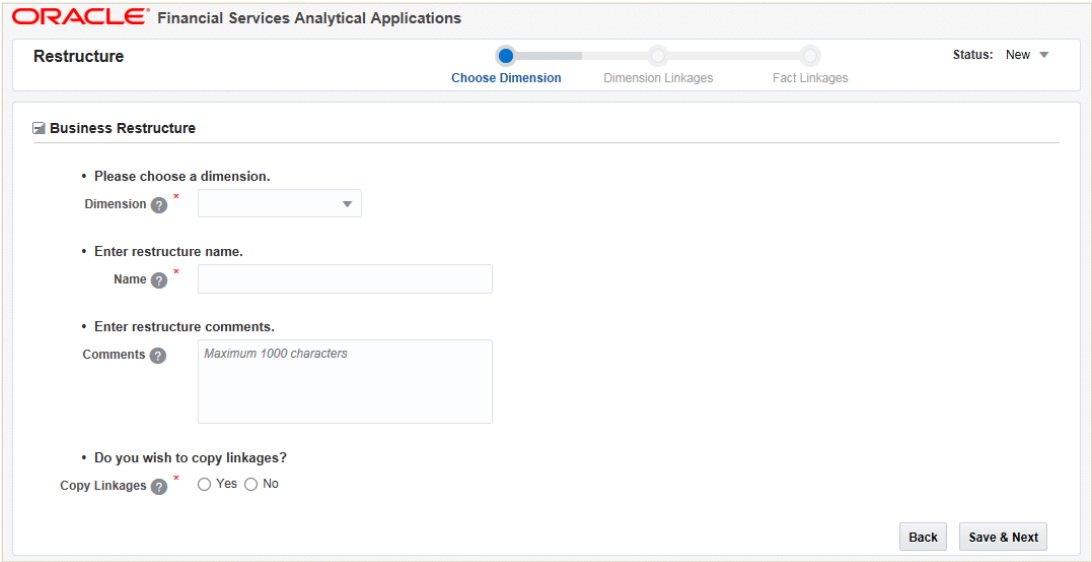
This feature allows you to define and manage the Dimension for which you are doing the business restructuring. In the Configuration, you need to select the Dimension and Fact tables which will be participating in the restructuring process. Additionally, you have to specify what kind of entity operation you want to do, that is, Move or Copy operation.

**Creating a new Configuration**

This option allows the administrators to create a new configuration for business restructuring. You should be mapped to the role RESTRWRITE to create configuration.

To create a new configuration

1. From the *Restructure* window, click **Configuration**. The *Configuration Summary* window is displayed.
2. Click **Create** from the *Restructure Configuration Summary* toolbar. The *Business Restructure* window is displayed.



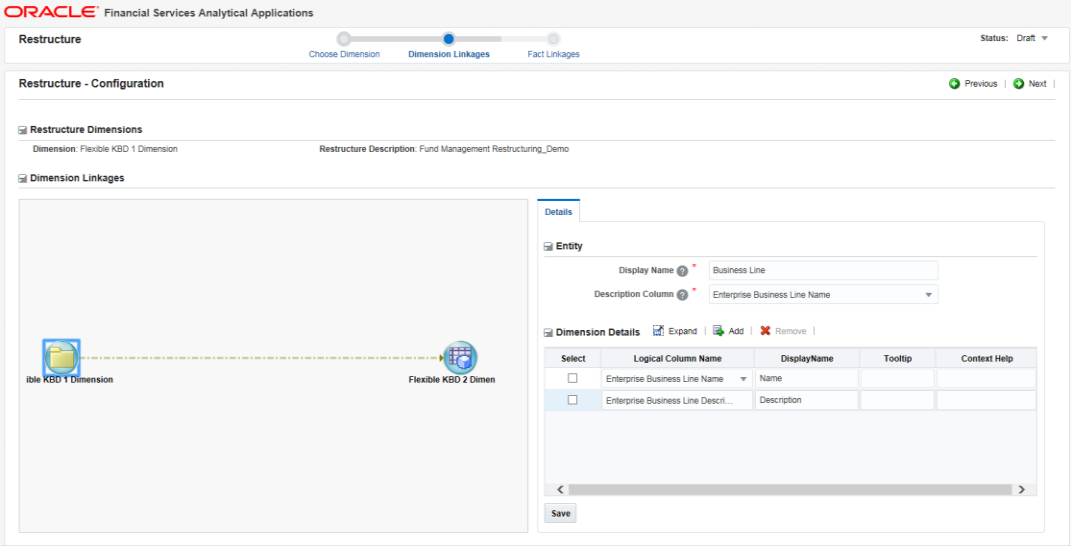

Enter the details as shown in the following table:

| Field | Description |
|---|---|
| Fields marked in red asterisk (*) are mandatory. | |
| Dimension | Select the dimension to be configured for the business restructure, from the drop-down list. The list displays all the Business Dimensions scoped for restructuring. |

| Field | Description |
|---|---|
| Name | Enter the name of the configuration. |
| Comments | Enter any additional information if any. |
| Copy Linkages | Select **Yes** to copy the linkages of the Fact tables related to the selected dimensions. |

3. Click **Save & Next**. The “Save Successful” message is displayed and the status is changed to Draft.

4. Click **OK**. The *Restructure Configuration* window is displayed.




The *Dimension Linkages* pane shows the linkages of the selected dimension to other dimensions. The Dimension names displayed are the logical names used in the Data Model.

You can right-click a node from the *Dimension Linkages* pane and click **Delete** to remove it. Click **Reset** to undo the delete operation(s). If you have deleted 2 nodes and then click **Reset**, both nodes will be reverted back. You need to enter the Entity details again.

**NOTE:** You can do Delete and Reset of nodes if the Configuration is in the *Draft* status.

5. Click the Dimension whose details you want to add/ edit, from the *Dimension Linkage* pane. The Entity and Dimension details are displayed in the *Details* pane.

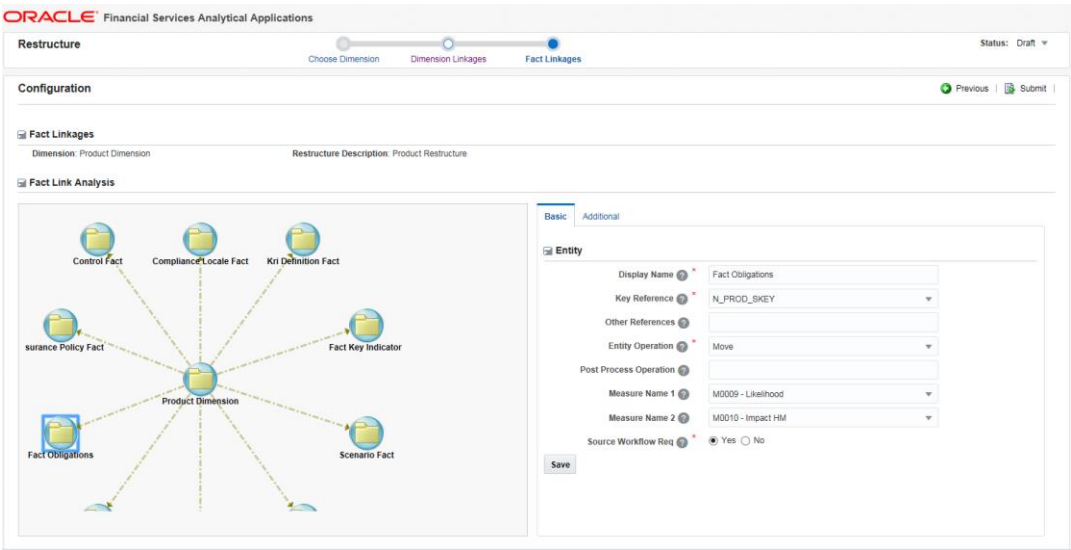
6. Enter a **Display Name** for the Dimension. This name will be displayed instead of the actual Dimension name in the *Manage Restructure* screens.

7. Select the **Description Column** of the Dimension, from the drop-down list. The list displays all columns in the Dimension table.

8. Click **Add** in the *Dimension Details* grid.
9. Select a column from the **Logical Column Name** drop-down list and enter a Display Name, Tooltip and Context Help for the selected column. The drop-down list displays the logical name given to the columns present in the selected Dimension table.
10. Click **Save**.

> **NOTE:** You need to complete the details for all the dimension nodes in the *Dimension Linkages* pane to move to the next step.

11. Click **Next**. The *Configuration* window is displayed.




The *Fact Link Analysis* pane shows various Fact tables related to the selected dimension.

Right-click a Fact table and click **View Mapping** to view the linkages of the selected Fact table to other Fact tables.

You can right-click a node from the *Fact Link Analysis* pane and click **Delete** to remove it from participating in restructuring. Click **Reset** to undo the delete operation(s). If you have deleted 2 nodes and then click **Reset**, both nodes will be reverted back. You need to enter the Entity details again.

12. Click a Fact table. The *Basic* tab displays the details of the selected Fact table.
13. Enter the details in the *Entity* pane as given below:

| Field | Description |
|---|---|
| Fields marked in red asterisk (*) are mandatory. | |
| Display Name | Specify a name for the selected Fact table which will be displayed in the Managing screens. |

| Field | Description |
|---|---|
| Key Reference | Select the key reference column for the selected Fact table, from the drop-down list. |
| Other References | Click the field. All reference columns of the selected entity (Fact table) are displayed. Select the required references. |
| Entity Operation | Select the entity operation you want to do for the selected Fact table. The options are **Move** and **Copy**. |
| Post Process Operation | Specify the Class that implements the Post Processing Operation for the entity. |
| Measure Name 1 | Select the first Measure Name that will be calculated and summarized in the manage restructure list of the entity. |
| Measure Name 2 | Specify the second Measure Name that will be calculated and summarized in the manage restructure list of the entity. |
| Source Workflow Req | Click **Yes** if source workflow call is required. |

14. Click the **Additional** tab. You can provide additional details for the columns of the selected Fact table.
15. Click **Add** and a row is displayed inside the *Entity Details* grid.
16. Select a column from the **Logical Column Name** drop-down list. The list displays all the columns of the selected Fact table. The already added columns are disabled.
    - Enter a Display Name.
    - Set whether it is a **User Column** or not.
    - Select the **Default User** if it is a user column, from the drop-down list.
    - Select the **Hierarchy Description** of the column from the drop-down list. This is required if the selected Dimension is a part of the security mapper definition.
    - Enter the **Tooltip** and **Context Help** displayed for the selected column.
17. Click **Submit**. If it is submitted successfully, the status is changed to *Submit*. You cannot modify any fields once it is submitted.

**Modifying a Configuration**

This option allows you to modify configurations which are in Draft status.

To modify a configuration

1. From the *Restructure* window, click **Configuration**. The *Configuration Summary* window is displayed.
2. Click the configuration ID. The *Restructure- Configuration* window is displayed. For more information, see Creating a new Configuration.

**Closing a Configuration**

This option allows you to close a configuration which is in the *Submit* status and is no more in use. You cannot close a configuration which is in *Draft* status; you will be prompted to delete it.

To close a configuration

1. From the *Restructure* window, click **Configuration**. The *Configuration Summary* window is displayed.
2. Select the checkbox corresponding to the configuration you want to close and click **Close**. The status of the configuration will be changed to *Closed*.

**Deleting a Configuration**

This option allows you to delete a configuration which is in the *Draft* status. Once deleted, it is removed from the Summary grid.

To delete a configuration

1. From the *Restructure* window, click **Configuration**. The *Configuration Summary* window is displayed.
2. Select the checkbox corresponding to the configuration you want to delete and click **Delete**.

### 10.6.7.3 Managing Business Restructure

This feature allows the business users to manage and execute business restructuring. The stages involved are:

- Creating a new Business Restructure
- Defining Scope
- Submitting the Business Restructure
- Executing Business Restructure

**Creating a new Business Restructure**

This option allows you to create a new business restructure based on a selected configuration. You can select only those configurations which are in the *Submit* status. You should be mapped to the role RESTRWRITE to create Business Restructure.

To create Business Restructure

1. From the *Restructure* window, click **Management**. The *Manage Restructure Summary* window is displayed.
2. Click **Create** from the *Manage Restructure Summary* toolbar. The *Business Restructure* window is displayed.

Enter the details as shown in the following table:

| Field | Description |
|---|---|
| Fields marked in red asterisk (*) are mandatory. | |
| Configuration Name | Select the configuration defined for the business restructure, from the drop-down list. The list displays all the Configurations in the *Submit* status. |
| Restructure Operation | Select the required restructure operation. The options are **Add**, **Close**, **Merge** and **Split**. For more information, see Restructuring Operations. |
| Copy Entitlement | This option is enabled if the selected dimension is part of the Security Mapper definition.<br>Click **Yes**, then the source mappings will be done based on the Restructure Operation.<br>If **No** is selected, no mappings will be copied. Then you need to do the mappings freshly after executing the Restructure operation. |

3. Click **Next**. The “Save Successful” message is displayed and the status is changed to Draft. The *Business Restructure- Scope* window is displayed.

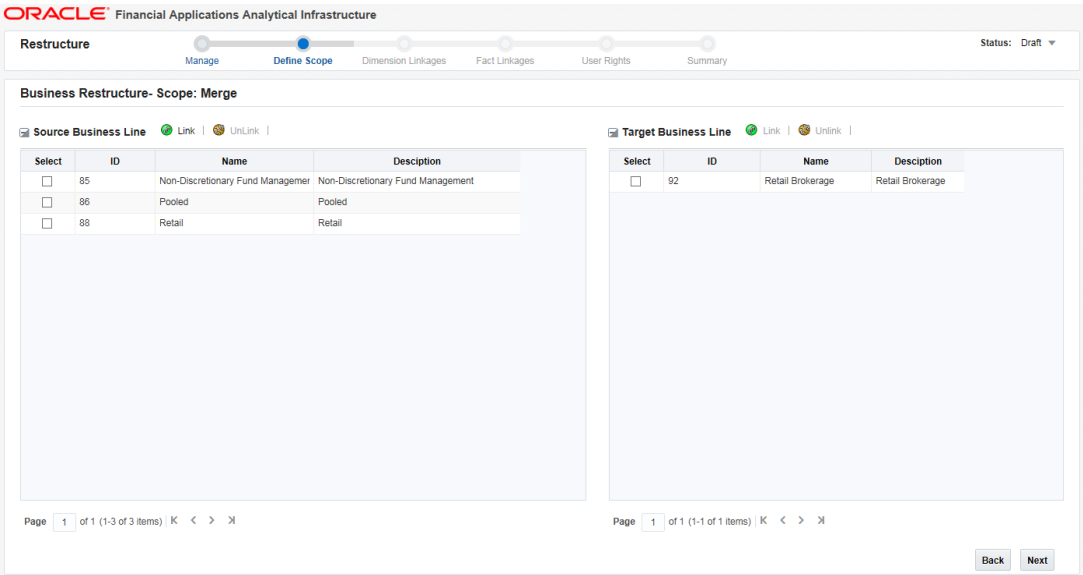
### Defining Scope

This option allows you to select the required nodes in the source Dimension which will be copied/ moved to the target node(s). The behavior is explained for each restructure operation:

- **Merge** – You can select multiple source nodes, but you are restricted to select only one target node, since you are merging multiple nodes into a single one. It performs copy/move operation based on the selected configuration.
- **Split** – You are restricted to select only one source node, but allowed to select multiple target nodes, since you are splitting a single node into multiple. It performs copy/move operations based on the selected configuration.
- **Add** – You can select multiple source nodes, but allowed to select only a single target. It performs only copy operation.
- **Close** – You can select single or multiple source nodes. The target node will be same as the source node. No provision will be provided to select target.

To define scope of the Business Restructure:

1. From the *Restructure* window, click **Define Scope** from the path. The *Business Restructure- Scope* window is displayed.




The names of the source and target dimensions and their nodes are displayed as per the Display Names given in the Configuration.

2. Click **Link** from the *Source* pane.
3. Select the required nodes in the source Dimension(s) for which the restructuring is done and click **Ok**.

**NOTE:** You can select a linked node and click **Unlink** to remove it.

4. Click **Link** from the *Target* pane and select the required target node(s).
5. Click **Next**. The status will become *In Progress*. The workflow tasks will be sent to the App business users.

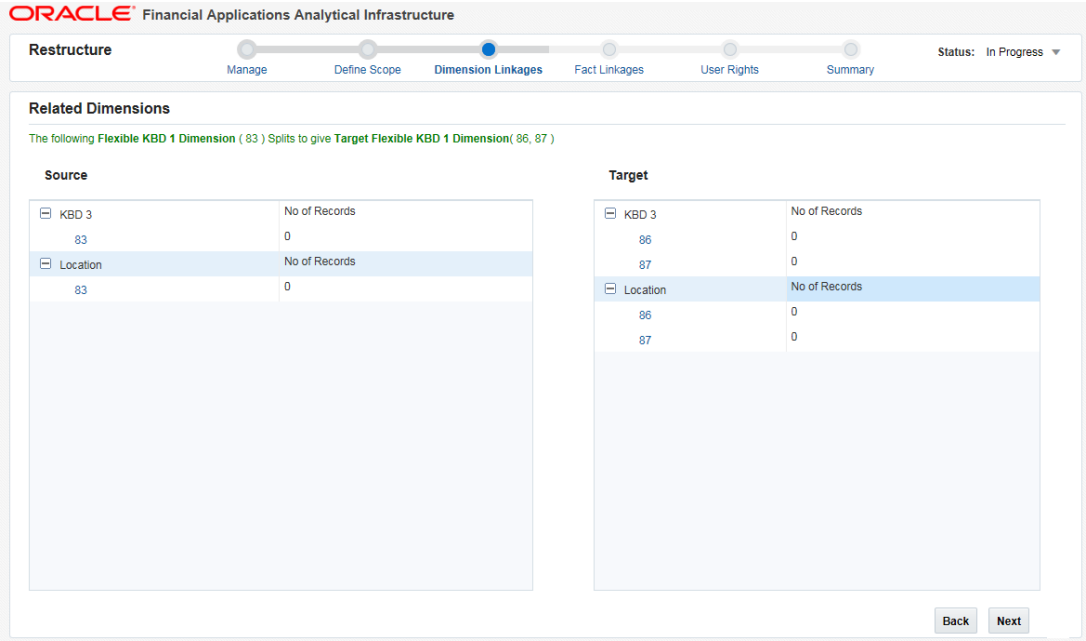
### Submitting the Business Restructure

This option allows you to view and analyze the dimension and fact tables which are affected by the business restructure. After reviewing, you need to submit it. If multiple applications are using the selected Dimension, one of the users from each application needs to submit the Restructure.

Once the restructure scope is defined, all app users will get a task in their Inbox. Click the hyperlink under the *EntityName* column. The *Manage Restructure Summary* window is displayed. You need to select the Business Restructure which is in the *In Progress* status.

To submit the Business Restructure

1. From the *Restructure* window, click **Dimension Linkages** from the path. The *Business Restructure- Related Dimensions* window is displayed.

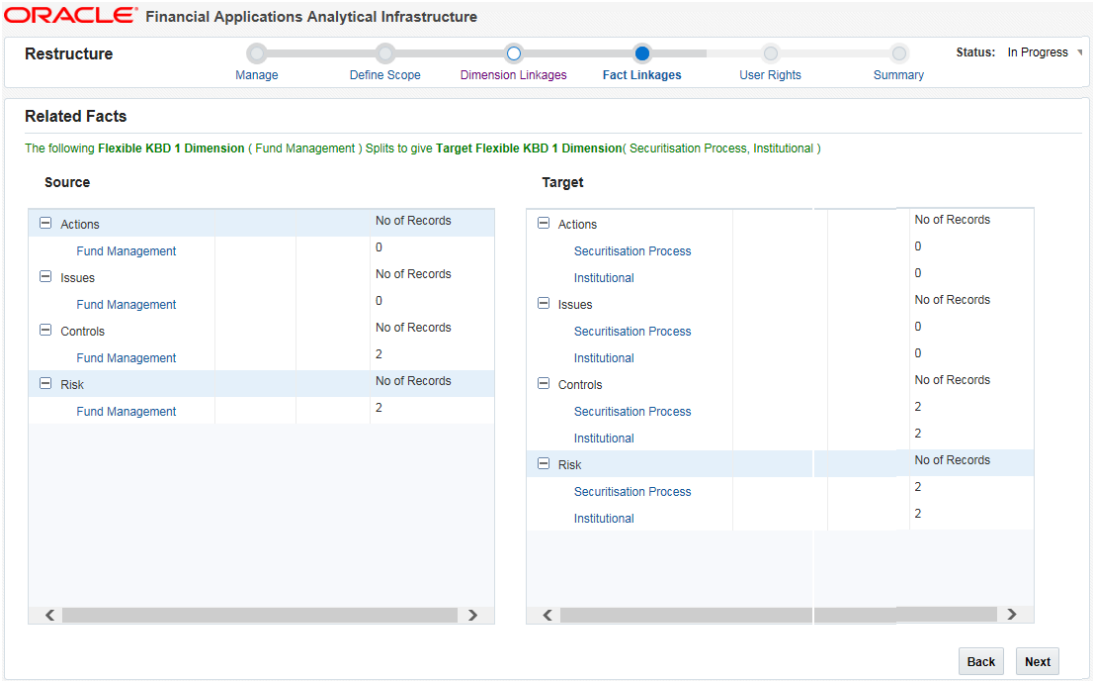



You can view the source and the target Dimensions along with their nodes, which are getting affected by the restructuring under the *Source* and the *Target* pane respectively. On expanding the source dimension, you can view the count of nodes getting impacted.

2. Click the node hyperlink in the *Source* pane. The *Source Records* grid displays the records in the node entity.
3. Review the details and click **Ok**.
4. Similarly, expand the Target dimension and click the node hyperlink in the *Target* pane. The *Target <Dimension Name>-<Node Name>* window is displayed.

   The Linked Records grid displays the records which are linked to the Target dimension.
5. Select a record and click **Unlink** to remove it.
6. From the *Unlinked Records* grid, select a record and click **Link** to link it to the target dimension.

   **NOTE:** You can only link or unlink the existing/ system generated nodes; you cannot add a new link.
7. Click **Next**. The *Related Facts* window is displayed.

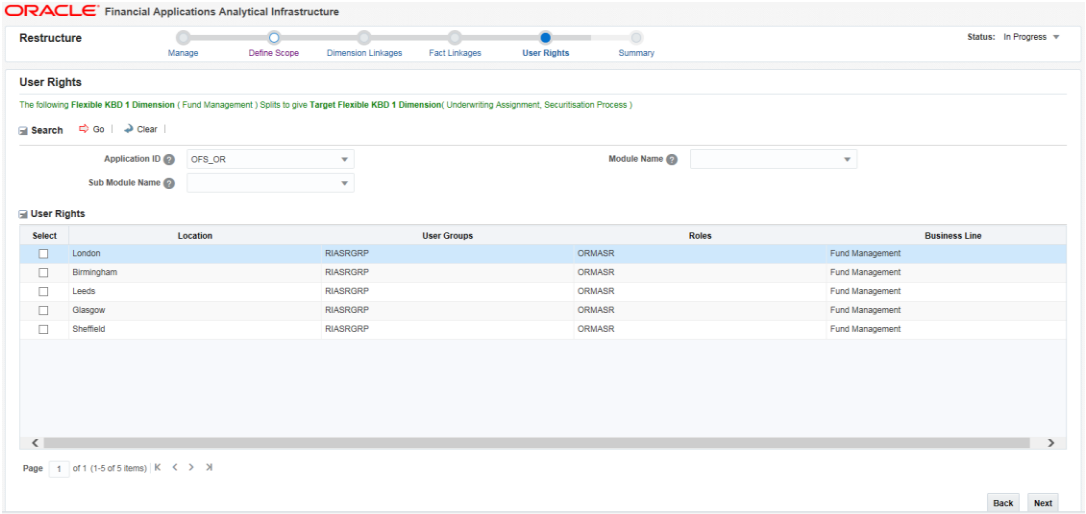



You can view the number of records getting impacted by restructuring, for the selected Fact tables.

8. Click the node hyperlink in the *Source* pane to display the impacted records. Review the details and click OK.
9. Similarly, click the node hyperlink in the *Target* pane. You can view the linked and unlinked records.
10. Select a record and click **Unlink** to remove it.
11. From the *Unlinked Records* grid, select a record and click **Link** to link it to the target dimension.

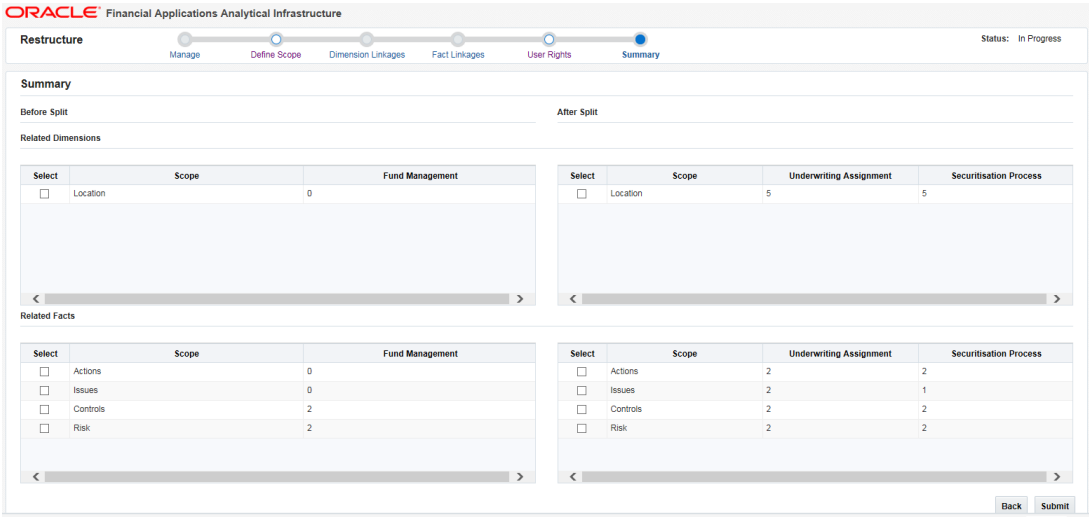
> **NOTE:** You can only link or unlink the existing/ system generated nodes; you cannot add a new link.

12. Click **Next**. The *User Rights* window is displayed.




You can view the user roles and user groups mapped to the source dimension(s).

13. Click **Next**. The *Summary* page is displayed.




You can view the summary of Source/ Target Dimensions and Facts/entities before and after the Business restructuring.

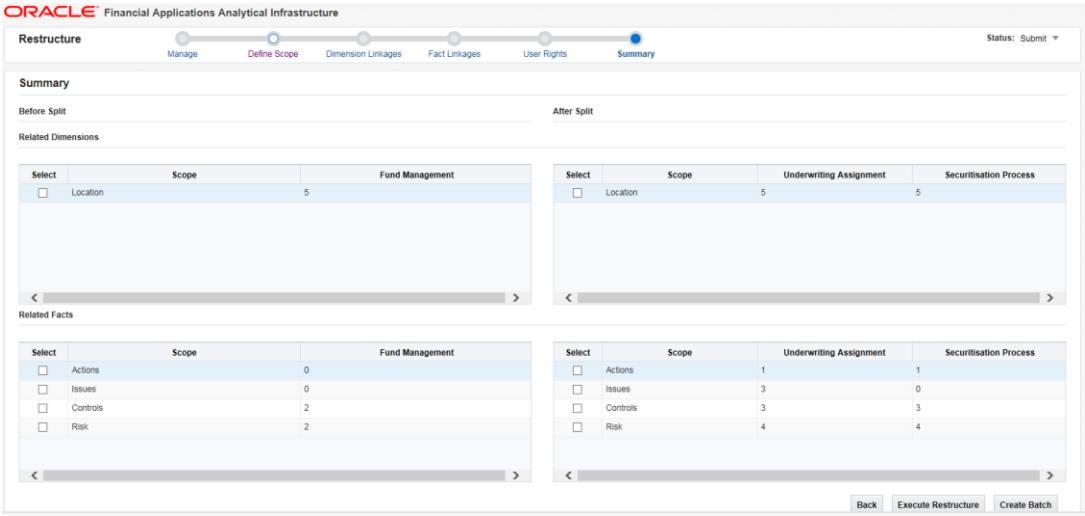
14. Click **Submit**. If multiple applications are using the selected Dimension, a user from each application needs to submit the Restructure. Then only the status will be changed to *Submit*.

### Executing Business Restructure

You can execute a Business Restructure if it is in the *Submit* status. You should be mapped to the user role RESTREXEC (Restructure Execute) to do the execution. You can either execute it from the utility itself or create a batch and execute it later from the Operations module.

To execute the Business Restructure:

1. From the *Restructure* window, click **Summary** from the path.




2. Click **Execute Restructure** to create a batch and fire execution immediately. The status will be changed to *Execution Initiated*. After execution, the status will be changed to *Executed* if it is successful or *Failed* if execution is failed.

3. Click **Create Batch** to create a batch and execute it later from the *Operations* module. The status will be changed to *Batch Created*.

### Deleting Business Restructure

This option allows you to delete a Business Restructure which is in Draft status.

To delete a Business Restructure

1. From the *Restructure* window, click **Management**. The *Manage Restructure Summary* window is displayed.

2. Select the checkbox corresponding to the Business Restructure you want to delete and click **Delete**.

## 10.6.8 Key Business Dimension Preference

Key Business Dimension (KBD) Preference facilitates you to configure/map Key Business Dimensions to an application flexibly. The Key Business Dimensions, that are part of the Mapper definitions in your application, can be configured to be visible/ available in your application in module/Submodule level.

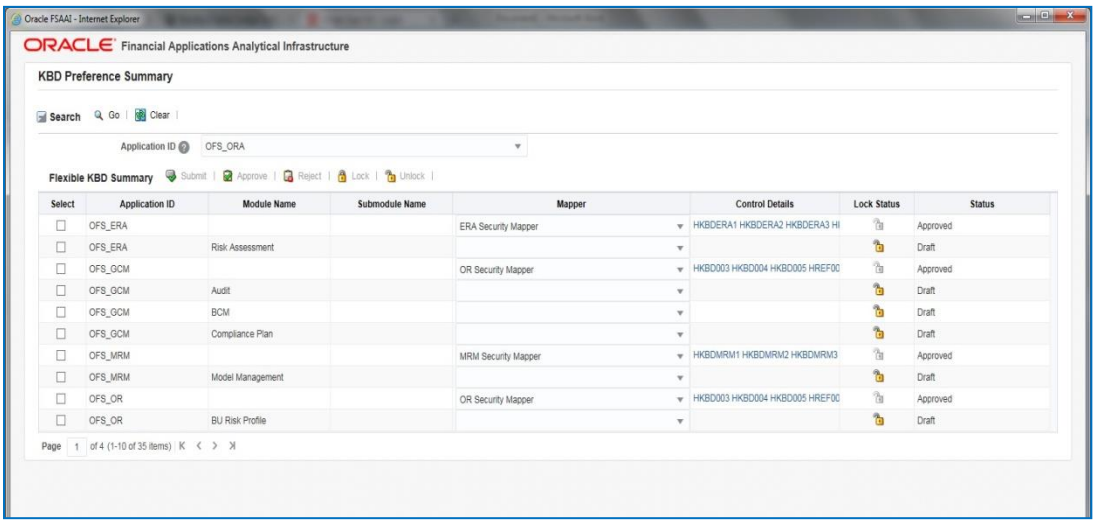
### 10.6.8.1 Prerequisites

- The table `flexkbd_config_params` should have been seeded with the application specific data. This table contains the columns `config_params_id`, `group_hierarchy_code`, `role_hierarchy_code`, and `application_code`. Mappers should have been created for the same group_hierarchy_code and role_hierarchy_code by the application team.
- Configuration to enable Key Business Dimension Preference link should have been done. For more information, see *Flexible KBD Configurations* section in OFSAAI Administration Guide.

### 10.6.8.2 Adding KBD Preference

To add KBDs to your application, follow these steps:

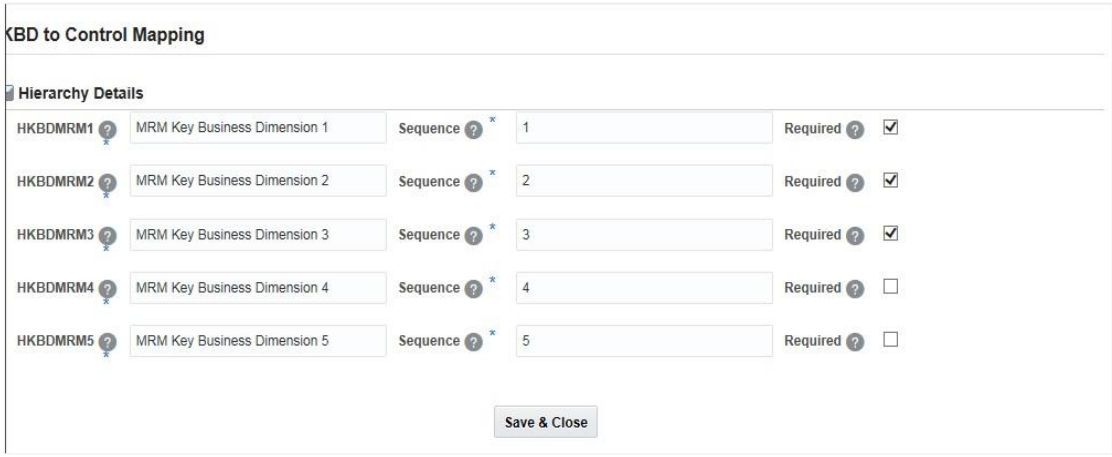
1. From the **Object Administration** tab, expand **Utilities** and click **Key Business Dimension Preference**. The *KBD Preference Summary* window is displayed.




2. Select the Application for that you want to configure KBDs, from the **Application ID** drop-down list. This list displays the Application IDs of all the enabled applications. Click **Go** from the *Search* toolbar. The Modules and Submodules related to that particular Application get listed in the Flexible KBD Summary table. You can configure KBDs in application, module or Submodule level.

3. Select the checkbox corresponding to the record that has the Module/ Submodule for which you want to configure Flexible KBDs.
4. Select the Mapper definition that you want to map to the application, from the **Mapper** drop-down list.

   This list displays all the Security Mapper definitions that have the same User Group Hierarchy or User Role Hierarchy as seeded in the group_hierarchy_code column of `flexkbd_config_params` table. For more information on Mappers, see Map Maintenance section. The KBDs that are part of the selected Mapper definition are displayed in the **Control Details** column.
5. Click the **Control Details** column. The *KBD to Control Mapping* window is displayed.




6. In the *Hierarchy Details* list, select the **Required** checkbox corresponding to the KBDs that you want to make visible in your Application/ Module/ Sub module.
7. Enter the order in which you want to display the selected KBDs, in the **Sequence** text box.
8. Click **Save & Close.** The details are saved and the status will be *Draft*.

### 10.6.8.3 Submitting KBD Preference

This option allows you to submit the KBD Preference for approval. Only records in *Draft* status can be submitted.

To submit KBD preference, follow this step:

1. From the *KBD Preference Summary* window, select the record that you want to submit and click **Submit**. The status changes to *Pending Approval*.

| | |
|---|---|
| **NOTE:** | Users with Approval rights can directly click **Approve** without clicking **Submit**. In this case, the status changes to *Approved*. |

#### 10.6.8.4 Approving/Rejecting KBD Preference

This option allows the approver to approve or reject the KBD preference. The records that are in *Pending Approval* status can only be approved. Your user group should be mapped to Flex KBD Authorize (F_KBDAUTH) role to have the approval rights.

To approve or reject KBD preference, follow this step:

2. From the *KBD Preference Summary* window, select the record that you want to approve and click **Approve**. The status changes to Approved.
   Or
   From the *KBD Preference Summary* window, select the record that you want to approve and click **Reject** if you want to reject the KBD preference. The status changes to *Draft*.

#### 10.6.8.5 Lock/Unlock KBD Preference

This option allows you to lock/unlock the configured flexible KBDs for a particular module/ Submodule to restrict altering the KBDs by other users. To lock/unlock, your user group should be mapped to LCK_F_KBD function role.

To lock KBD preference, follow this step:

From the *KBD Preference Summary* window, select the record that you want to lock and click **Lock**. The Lock status column of the corresponding record changes to .

To unlock KBD preference, follow this step:

From the *KBD Preference Summary* window, select the record that you want to unlock and click **Unlock**. The Lock Status column of the corresponding record changes to .

## 10.7 References

This section of the document consists of information related to intermediate actions that needs to be performed while completing a task. The procedures are common to all the sections and are referenced where ever required. You can refer to the following sections based on your need.

### 10.7.1 Scenario to Understand Hierarchy Security

Consider a bank “ABC” which has presence across the country and has split their business based on regions. Each region is being managed by a Relationship manager reporting the Chief Executive Officer. The Hierarchy is as indicated below.

**Retail Assets Sales Head**

- Sales Manager Personal Loans
  - Sales Officer 1
  - Sales Officer 2
- Sales Manager Mortgages
  - Sales Officer 3
  - Sales Officer 4
- Sales Manager Credit Cards
  - Sales Officer 5
  - Sales Officer 6
- Sales Manager Auto Loans
  - Sales Officer 7
  - Sales Officer 8

**Products**

- Personal Loans
- Mortgages
- Credit Cards
- Auto Loans

Each product is marketed by a separate team and which is headed by a Sales Manager who reports to the Sales Head. Each Sales Manager in turn has two Sales Officers who are responsible for sales and profitability of the product.

The Sales Head has decided that the Sales Officer of each product will not have access to the information of other products. However, each Sales Manager will have access to Sales figures of the other products.

Using the Oracle Infrastructure Security Hierarchy feature Administrator can provide information security at hierarchy level by defining security options for each hierarchy node. Thus, the Bank can control access of information at a node level and not increase the overheads.

This is how it is done in Oracle Infrastructure:

- First, the users are created in Oracle Infrastructure and then, a business hierarchy (as defined above) is created.
- Now, the bank can restrict access of certain information to certain people in the Hierarchy Security configuration.
- In this window, the administrator can control security by mapping the users to various nodes in hierarchy.

  For example, the administrator maps Sales Officer 1 and Sales Officer 2 to only the Personal Loans Node in the Product hierarchy. This restricts Sales Officer 1 and 2 to only viewing and maintaining their particular node in the hierarchy.

  By default, all the users mapped to a domain can access all the hierarchy levels to which they are mapped. This function allows the administrator to restrict or exclude a user/s from accessing restricted nodes.

### 10.7.2 Role Mapping Codes

By default, the following roles are defined within the Infrastructure application. Refer to Appendix A.

| Role Code | Role Name | Role Description |
|---|---|---|
| CWSADMIN | CWS Administrator | CWS Administrator Role |
| DEFQMAN | DEFQ Manager | Data Entry Forma and Query Manager Role |
| DQADMN | DQ Rule Admin | Data Quality Rule Admin Role |
| ETLADM | ETL Analyst | ETL Analyst Role |
| METAAUTH | Metadata Authorizer | Metadata Authorizer Role |
| ORACUB | Oracle Cube Administrator | Oracle Cube Administrator Role |

| Role Code | Role Name | Role Description |
|---|---|---|
| PR2ADM | PR2 Administrator | PR2 Administrator Role |
| SYSADM | System Administrator | System Administrator Role |
| SYSAMHM | Fusion AMHM Admin | Fusion Dimension Maintenance Admin Role |
| SYSAMHMUAM | Fusion AMHM UAM Map Admin | Fusion UAM Maintenance Admin Role |
| SYSATH | System Authorizer | System Authorizer Role |
| SYSBAU | Business Analyst | Business Analyst Role |
| SYSEXPN | Fusion Expressions Admin | Fusion Expressions Admin Role |
| SYSFILTERS | Fusion Filters Admin | Fusion Filters Admin Role |
| SYSOBJMIG | Object Migration Admin | Object Migration Maintenance Admin Role |
| SYSOPC | Data Centre Manager | Operator Console Role |
| SYSSQLRULE | SQL Rule Admin | SQL Rule Administrator Role |

### 10.7.3 Function Role Mapping

The default roles are mapped to the following functions within the Infrastructure application.

| Roles | Function Mappings | |
|---|---|---|
| Business Analyst | Add Alias | MDB Window |
| | Add Attributes | Model Calibration |
| | Add Business Processor | Model Definition |
| | Add Computed Measure | Model Deployment |
| | Add Cube | Model Execution |
| | Add Dataset | Model Make Champion |
| | Add Derived Entities | Model Outputs |
| | Add Dimension | Modify Alias |
| | Add Hierarchy | Modify Attributes |
| | Add Measure | Modify Business Processor |

| Roles | Function Mappings | |
|---|---|---|
| | Add RDM | Modify Computed Measure |
| | Alias Admin | Modify Cube |
| | Authorize Hierarchy | Modify Dataset |
| | Authorize Attributes | Modify Derived Entities |
| | Authorize Dataset | Modify Dimension |
| | Authorize Dimension | Modify Hierarchy |
| | Authorize Measure | Modify Measure |
| | Business Analyst User Window | Modify RDM |
| | Call Remote Web Services | Optimizer Add |
| | Cash Flow Equation Definition | Optimizer Delete |
| | Computed Measure Advanced | Pooling Add |
| | Defi Administrator | Pooling Delete |
| | Defi User | Refresh Hierarchies |
| | Defq Administrator | Remote SMS Access |
| | Defq User | Result of own request only |
| | Delete Alias | Result of Request and Status of all |
| | Delete Attributes | Rule Shock Definition |
| | Delete Business Processor | Sandbox Creation |
| | Delete Computed Measure | Sandbox Maintenance |
| | Delete Cube | Scenario Definition |
| | Delete Dataset | Stress Definition |
| | Delete Derived Entities | Variable Definition |
| | Delete Dimension | Variable Shock Definition |
| | Delete Hierarchy | View Alias |
| | Delete Measure | View Attributes |
| | Delete RDM | View Business Processor |
| | Design RDM | View Computed Measures |
| | Document management Access | View Cube |
| | Excel Admin | View Dataset |
| | Excel User | View Derived Entities |
| | Execute Runs and Rules | View Dimension |
| | Export Metadata | View Hierarchy |
| | GMV Definition | View Measure |

| Roles | Function Mappings | |
|---|---|---|
| | Hierarchy Attributes<br>Import Business Model<br>Import Metadata | View Metadata<br>View RDM |
| CWS Administrator | Call Remote Web Services<br>Document Management Access<br>Execute Runs - Rules<br>Refresh Hierarchies | Remote SMS Access<br>Remote UAM Access<br>Result of own request only<br>Result of request - Status of all |
| Data Centre Manager | Batch Cancellation<br>Batch Processing<br>Create Batch<br>Delete Batch | Execute Batch<br>Operator Console<br>View log |
| DEFQ Manager | DeFi Excel<br>Defq User<br>Defq Administrator | Excel Admin<br>Excel User |
| DQ Rule Admin | Data Quality Authorization Rule<br>Data Quality Add Rule<br>Data Quality Add Rule Group<br>Data Quality Copy Rule<br>Data Quality Copy Rule Group<br>Data Quality Delete Rule | Data Quality Delete Rule Group<br>Data Quality Edit Rule<br>Data Quality Edit Rule Group Data Quality Execute Rule Group Data Quality View Rule Group<br>Data Quality View Rule |
| ETL Analyst | DI Designer<br>DTDQ | Data Quality Add<br>DI User |
| Fusion AMHM Admin | Fusion Add Attributes<br>Fusion Add Hierarchies<br>Fusion Add Members<br>Fusion Attribute Home Page<br>Fusion Attributes - View Dependent Data<br>Fusion Copy Attributes<br>Fusion Copy Hierarchies<br>Fusion Copy Members<br>Fusion Delete Attributes | Fusion Edit Attributes<br>Fusion Edit Hierarchies<br>Fusion Edit Members<br>Fusion Hierarchies - View Dependent Data<br>Fusion Hierarchy Home Page<br>Fusion Member Home Page<br>Fusion Members - View Dependent Data<br>Fusion View Attributes<br>Fusion View Hierarchies<br>Fusion View Members |

| Roles | Function Mappings | |
|---|---|---|
| | Fusion Delete Hierarchies<br>Fusion Delete Members | |
| Fusion AMHM UAM Map Admin | Fusion Hierarchies to UAM Mapping | |
| Fusion Expressions Admin | Fusion Add Expressions<br>Fusion Copy Expressions<br>Fusion Delete Expressions<br>Fusion Edit Expressions | Fusion Expressions Home Page<br>Fusion View Dependency Expressions<br>Fusion View Expressions |
| Fusion Filters Admin | Fusion Add Filters<br>Fusion Copy Filters<br>Fusion Delete Filters<br>Fusion Edit Filters | Fusion Filters - View Dependent Data<br>Fusion Filters - View SQL<br>Fusion Filters Home Page<br>Fusion View Filters |
| Infrastructure Administrator | Configuration<br>Database Details<br>Database Server<br>Hierarchy Security<br>Information Domain | Metadata Segment Map<br>Operator Console<br>Infrastructure Administrator<br>Infrastructure Administrator Window |
| Metadata Authorizer | Authorize Alias<br>Authorize Attributes<br>Authorize BBs<br>Authorize Business Processor<br>Authorize Computed Measure<br>Authorize Cube<br>Authorize Dataset<br>Authorize DBs<br>Authorize Derived Entities<br>Authorize Dimension<br>Authorize Hierarchy<br>Authorize KPIs<br>Authorize Measure<br>Authorize Nested Views<br>Authorize Oracle Cube | Authorize Technique<br>Authorize Templates<br>Authorize Views<br>Metadata Authorize Window<br>Model Authorize<br>Sandbox Authorize<br>View Alias<br>View Attributes<br>View Business Processor<br>View Computed Measures<br>View Cube<br>View Dataset<br>View Derived Entities<br>View Dimension<br>View Hierarchy |

| Roles | Function Mappings | |
|---|---|---|
| | Authorize Pages<br>Authorize Process Tree<br>Authorize RDM<br>Authorize Reports<br>Authorize Rule<br>Authorize Run | View Measure<br>View Oracle Cube<br>View Process<br>View RDM<br>View Rule<br>View Run |
| Object Migration Admin | Cancel Migration Execution<br>Execute/Run Migration Process<br>Object Migration Copy Migration Ruleset<br>Object Migration Create Migration Ruleset<br>Object Migration Home Page | Object Migration Delete Migration Ruleset<br>Object Migration Edit Migration Ruleset<br>Object Migration Source Configuration<br>Object Migration View Migration Ruleset<br>Object Migration ViewSource Configuration |
| Oracle Cube Administrator | Add Dataset<br>Add Dimension<br>Add Hierarchy<br>Add Measure<br>Add Oracle Cube<br>Authorize Oracle Cube<br>Business Analyst User Window<br>Delete Oracle Cube<br>Modify Dataset | Modify Dimension<br>Modify Hierarchy<br>Modify Measure<br>Modify Oracle Cube<br>View Alias<br>View Dataset<br>View Dimension<br>View Hierarchy<br>View Measure<br>View Oracle Cube |
| PR2 Administrator | Access to Process<br>Access to Rule<br>Access to Run<br>Add Process tree<br>Add Rule<br>Add Run<br>Delete Process<br>Delete Rule | Delete Run<br>Modify Process Tree<br>Modify Rule<br>Modify Run<br>PR2 Windows<br>View Process<br>View Rule<br>View Run |
| SQL Rule Admin | SQL Rule Edit<br>SQL Rule View | |

| Roles | Function Mappings | |
|---|---|---|
| | SQL Rule Add<br>SQL Rule Run<br>SQL Rule Delete<br>SQL Rule Copy | |
| System Administrator | Administration Window<br>Application Server Window<br>Audit Trail Report Window<br>Batch Cancellation<br>Batch Monitor<br>Configuration<br>Database Details<br>Database Server<br>Design OFSAAI Menu Window<br>Enable User Window<br>Function Maintenance Window<br>Function Role Map Window<br>Global Preferences View<br>Hierarchy Security<br>Holiday Maintenance Window<br>Information Domain<br>Locale Desc Upload Window<br>Metadata Difference Window<br>Metadata Segment Map<br>OLAP Details Window<br>Operator Console | Restricted Passwords Window<br>Role Maintenance Window<br>Rules Setup Configuration Window<br>Save Metadata Window<br>Segment Maintenance Window<br>System Administrator<br>System Administrator Window<br>User Activity Reports Window<br>User Attribute Upload Window<br>User Group Domain Map Window<br>User Group Maintenance Window<br>User Group Role Map Window<br>User Group User Map Window<br>User Maintenance Window<br>User Profile Report Window<br>User-Batch Execution Mapping Window<br>View log<br>Web Server Window<br>Write-Protected Batch Window |
| System Authorizer | Administration Window<br>Infrastructure Administrator Window<br>Profile Maintenance Window<br>System Administrator Window<br>System Authorizer<br>User Authorization Window | |

**NOTE:** To access an object, the respective Group or Role needs to be mapped instead of functions. Refer Appendix A.

# 11 References

This section of the document consists of information related to intermediate actions that needs to be performed while completing a task. The procedures are common to all the sections and are referenced where ever required. You can refer to the following sections based on your need.

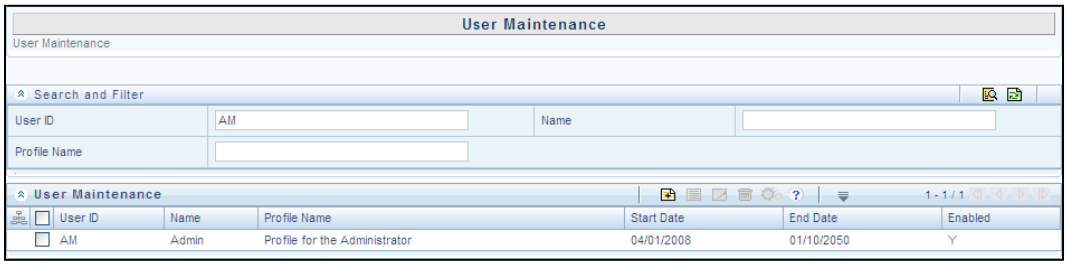
## 11.1 Workspace Options

The workspace option consists of the various elements available in the user interface to help you in selecting an option or to navigate to a specific location on the page. The available workspace options are discussed in detail.

### 11.1.1 Search and Filter

The Search and Filter option in the user interface helps you to find the required information. You can enter the nearest matching keywords to search, and filter the results by entering information in the additional fields.

For example, if you are in the *User Maintenance* window and need to search for administrator details, enter the **User ID** and filter the results by specifying either the **Name** or **Profile Description** or both. The search results are always filtered based on the additional information you provide.




You can click button to start a search and button to reset the search fields.

### 11.1.2 Pagination

The Pagination toolbar as indicated below is available in the user interface window and helps you to navigate through the display grid. The toolbar displays the total number of available list items and the number of list items displayed in the current view.

In the pagination toolbar, you can do the following:

- Click button to open a drop-down list and specify the number of rows to be displayed at any given time.
- Click or navigation buttons to view the previous or next set of list items.

- Click or navigation buttons to view the first or last set of list items.

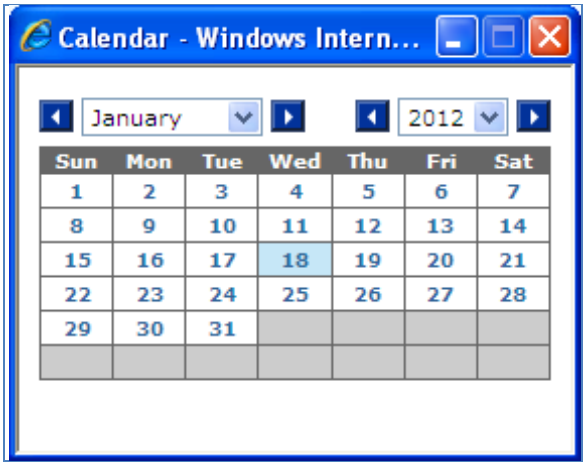
### 11.1.3 Customize work area

You can use the interface options to customize and auto adjusted the work area.

- To View or Hide the left hand side (LHS) menu, click the collapsible icon.
- To Expand/Collapse a grid or section, click or icons.

### 11.1.4 Calendar

Calendar icon in the user interface helps you to specify a date in the DD/MM/YYYY format by selecting from the pop-up calendar. You can navigate to the specific month or year by using the arrow buttons or select using the drop-down list. When you click on the required date the details are auto updated in the date field.




## 11.2 Function Mapping Codes

The following table lists the function codes with their description to help you identify the user functions who needs to access the Infrastructure system and map roles appropriately. Refer Appendix A.

| Function Code | Function Name | Function Description |
|---|---|---|
| ADAPTERS | Run Adapters | The user mapped to this function will have rights to run OFSAAI Infrastructure adapters |
| ADDPROCESS | Add Process tree | The user mapped to this function can add the process tree |
| ADDRULE | Add Rule | The user mapped to this function can add the rules |
| ADDRUN | Add Run | The user mapped to this function can add the run |

| Function Code | Function Name | Function Description |
|---|---|---|
| ADMINSCR | Administration Window | The user mapped to this function can access the Administration Window |
| ADVDRLTHR | Access to Advanced drill thru | The User mapped to this function will have access to Advanced Drill thru |
| ALDADD | Add Cube | The user mapped to this function can add cubes |
| ALDATH | Authorize Cube | The user mapped to this function can authorize cubes |
| ALDDEL | Delete Cube | The user mapped to this function will have rights to delete cubes |
| ALDMOD | Modify Cube | The user mapped to this function can modify cubes |
| ALDVIW | View Cube | The user mapped to this function can view cubes |
| ALSADD | Add Alias | The user mapped to this function can add Alias |
| ALSATH | Authorize Alias | The user mapped to this function can authorize Alias |
| ALSDEL | Delete Alias | The user mapped to this function will have rights to delete Alias |
| ALSMOD | Modify Alias | The user mapped to this function can modify Alias |
| ALSVIW | View Alias | The user mapped to this function can view Alias |
| APPSRVR | Application Server Window | The user mapped to this function can access the Application Server Window |
| ATHPROCESS | Authorize Process Tree | The user mapped to this function can authorize Process Tree |
| ATHRDM | Authorize RDM | The user mapped to this function can authorize RDM |
| ATHRULE | Authorize Rule | The user mapped to this function can authorize the rule |
| ATHRUN | Authorize Run | The user mapped to this function can authorize run |
| ATTADD | Add Attributes | The user mapped to this function can add Hierarchy Attributes |
| ATTATH | Authorize Attributes | The user mapped to this function can authorize Hierarchy Attributes |
| ATTDEL | Delete Attributes | The user mapped to this function can delete Hierarchy Attributes |

| Function Code | Function Name | Function Description |
|---|---|---|
| ATTMOD | Modify Attributes | The user mapped to this function can add Hierarchy Attributes |
| ATTVIW | View Attributes | The user mapped to this function can view Hierarchy Attributes |
| AUD_TRL | Audit Trail Report Window | The user mapped to this function can access the Audit Trail Report Window |
| AUTH_MAP | Authorize Map(s) | The user mapped to this function can AUTHORIZE Map definitions |
| AUTH_SCR | Metadata Authorize Window | The user mapped to this function can see Authorization Window |
| BATPRO | Batch Processing | The user mapped to this function will have rights to process batch |
| BBATH | Authorize BBs | The user mapped to this function can authorize BBs |
| BPROCADD | Add Business Processor | The user mapped to this function can add business processors |
| BPROCATH | Authorize Business Processor | The user mapped to this function can authorize business processors |
| BPROCDEL | Delete Business Processor | The user mapped to this function can delete business processors |
| BPROCMOD | Modify Business Processor | The user mapped to this function can modify business processors |
| BPROCVIW | View Business Processor | The user mapped to this function can view business processors |
| CFEDEF | Cash Flow Equation Definition | The user mapped to this function can view/add the Cash Flow Equation definitions |
| CFG | Configuration | The user mapped to this function will have access to configuration details |
| COMADD | Add Computed Measure | The user mapped to this function can add computed measures |
| COMADV | Computed Measure Advanced | The user mapped to this function will have rights to the advanced options of computed measure |
| COMATH | Authorize Computed Measure | The user mapped to this function can authorize computed measures |
| COMDEL | Delete Computed Measure | The user mapped to this function will have rights to delete computed measures |
| COMMOD | Modify Computed Measure | The user mapped to this function can modify computed measures |
| COMVIW | View Computed Measures | The user mapped to this function can view computed measures |

| Function Code | Function Name | Function Description |
|---|---|---|
| CRTRDM | Add RDM | The user mapped to this function can Add RDM |
| CRT_MAP | Create Map | The user mapped to this function can CREATE/SAVEAS Map definitions |
| CWSDOCMGMT | Document Management Access | The user mapped to this function can use Document Management APIS via Callable Services Framework |
| CWSEXTWSAS | Call Remote Web Services | The user mapped to this function can call web services configured in the Callable Services Framework |
| CWSHIERRFR | Refresh Hierarchies | The user mapped to this function can refresh hierarchies through the Callable Services Framework |
| CWSPR2ACCS | Execute Runs - Rules | The user mapped to this function can execute runs and rules through the Callable Services Framework |
| CWSSMSACCS | Remote SMS Access | The user mapped to this function can access SMS APIS through the Callable Services Framework |
| CWSUAMACCS | Remote UAM Access | The user mapped to this function can access UAM APIS through the Callable Services Framework |
| CWS_STATUS | Result of request - Status of all | The user mapped to this function can access requests status through the Callable Services Framework |
| CWS_TRAN | Result of own request only | The user mapped to the function can access own requests status using Callable Services Framework |
| DATADD | Add Dataset | The user mapped to this function can add datasets |
| DATATH | Authorize Dataset | The user mapped to this function can authorize datasets |
| DATDEL | Delete Dataset | The user mapped to this function will have rights to delete datasets |
| DATMOD | Modify Dataset | The user mapped to this function can modify datasets |
| DATVIW | View Dataset | The user mapped to this function can view datasets |
| DBATH | Authorize DBs | The user mapped to this function can authorize DBs |
| DBD | Database Details | The user mapped to this function will have access to database details |
| DBS | Database Server | The user mapped to this function will have access to Database Server details |
| DEEADD | Add Derived Entities | The user mapped to this function can add derived entities |
| DEEATH | Authorize Derived Entities | The user mapped to this function can authorize derived entities |

| Function Code | Function Name | Function Description |
|---|---|---|
| DEEDEL | Delete Derived Entities | The user mapped to this function can delete derived entities |
| DEEMOD | Modify Derived Entities | The user mapped to this function can modify derived entities |
| DEEVIW | View Derived Entities | The user mapped to this function can view derived entities |
| DEFEXL | DeFi Excel | DeFi Excel |
| DEFQADM | Defq Administrator | The user mapped to this function will have Defi Administration rights |
| .DEFQUSR | Defi User | The user mapped to this function will have Defi user rights |
| DELPROCESS | Delete Process | The user mapped to this function can the process |
| DELRDM | Delete RDM | The user mapped to this function can delete RDM |
| DELRULE | Delete Rule | The user mapped to this function can delete the rules |
| DELRUN | Delete Run | The user mapped to this function can delete the run |
| DEL_MAP | Delete Map | The user mapped to this function can DELETE Map definitions |
| DESRDM | Design RDM | The user mapped to this function can design RDM |
| DESREV | Design OFSAAI Menu Window | The user mapped to this function can access the Design OFSAAI Menu Window |
| DIMADD | Add Dimension | The user mapped to this function can add dimensions |
| DIMATH | Authorize Dimension | The user mapped to this function can authorize dimensions |
| DIMDEL | Delete Dimension | The user mapped to this function will have rights to delete dimensions |
| DIMMOD | Modify Dimension | The user mapped to this function can modify dimensions |
| DIMVIW | View Dimension | The user mapped to this function can view dimensions |
| DQLADD | Data Quality Add | This function is for Data Quality Map applet |
| DQ_ADD | Data Quality Add Rule | The user mapped to this function can add DQ Rule |

| Function Code | Function Name | Function Description |
|---|---|---|
| DQ_AUTH | Data Quality Authorization Rule | The user mapped to this function can authorize DQ Rule |
| DQ_CPY | Data Quality Copy Rule | The user mapped to this function can copy DQ Rule |
| DQ_DEL | Data Quality Delete Rule | The user mapped to this function can delete DQ Rule |
| DQ_EDT | Data Quality Edit Rule | The user mapped to this function can edit DQ Rule |
| DQ_GP_ADD | Data Quality Add Rule Group | The user mapped to this function can add DQ Rule Group |
| DQ_GP_CPY | Data Quality Copy Rule Group | The user mapped to this function can copy DQ Rule Group |
| DQ_GP_DEL | Data Quality Delete Rule Group | The user mapped to this function can delete DQ Rule Group |
| DQ_GP_EDT | Data Quality Edit Rule Group | The user mapped to this function can edit DQ Rule Group |
| DQ_GP_EXEC | Data Quality Execute Rule Group | The user mapped to this function can execute DQ Rule Group |
| DQ_GP_VIW | Data Quality View Rule Group | The user mapped to this function can view DQ Rule Group |
| DQ_VIW | Data Quality View Rule | The user mapped to this function can view DQ Rule |
| ENABLEUSR | Enable User Window | The user mapped to this function can access the Enable User Window |
| ETLDEF | DI Designer | Defining Application, Extract, Flat-File, Mapping |
| ETLDTQ | DTDQ | Data Quality Rules and Data Transformation |
| ETLUSR | DI User | The user mapped to this function will be a Data Management Tools user |
| EXPMD | Export Metadata | The user mapped to this function can Export Metadata |
| FIFADMIN | Alerts Administrator | The user mapped to this function can define admin mode rules |
| FIFUSR | Alerts User | The user mapped to this function will be an Alerts user |
| FUNCMAINT | Function Maintenance Window | The user mapped to this function can access the Function Maintenance Window |
| FUNCROLE | Function Role Map Window | The user mapped to this function can access the Function Role Map Window |

| Function Code | Function Name | Function Description |
|---|---|---|
| FU_ATR_ADD | Fusion Add Attributes | The user mapped to this function can Create New Attributes |
| FU_ATR_CPY | Fusion Copy Attributes | The user mapped to this function can Copy Attributes |
| FU_ATR_DD | Fusion Attributes - View Dependent Data | The user mapped to this function can View Dependent Data for Attributes |
| FU_ATR_DEL | Fusion Delete Attributes | The user mapped to this function can Delete Attributes |
| FU_ATR_EDT | Fusion Edit Attributes | The user mapped to this function can Edit Attributes |
| FU_ATR_HP | Fusion Attribute Home Page | The user mapped to this function can view Attribute Home Page |
| FU_ATR_VIW | Fusion View Attributes | The user mapped to this function can View Attributes |
| FU_EXP_ADD | Fusion Add Expressions | The user mapped to this function can Create New Expressions |
| FU_EXP_CPY | Fusion Copy Expressions | The user mapped to this function can Copy Expressions |
| FU_EXP_DD | Fusion View Dependency Expressions | The user mapped to this function can View Dependent Data for Expressions |
| FU_EXP_DEL | Fusion Delete Expressions | The user mapped to this function can Delete Expressions |
| FU_EXP_EDT | Fusion Edit Expressions | The user mapped to this function can Edit Expressions |
| FU_EXP_HP | Fusion Expressions Home Page | The user mapped to this function can view Expressions Home Page |
| FU_EXP_VIW | Fusion View Expressions | The user mapped to this function can View Expressions |
| FU_FIL_ADD | Fusion Add Filters | The user mapped to this function can Create New Filters |
| FU_FIL_CPY | Fusion Copy Filters | The user mapped to this function can Copy Filters |
| FU_FIL_DD | Fusion Filters - View Dependent Data | The user mapped to this function can View Dependent Data for Filters |
| FU_FIL_DEL | Fusion Delete Filters | The user mapped to this function can Delete Filters |
| FU_FIL_EDT | Fusion Edit Filters | The user mapped to this function can Edit Filters |
| FU_FIL_HP | Fusion Filters Home Page | The user mapped to this function can view Filters Home Page |

| Function Code | Function Name | Function Description |
|---|---|---|
| FU_FIL_SQL | Fusion Filters - View SQL | The user mapped to this function can view SQL for Filters |
| FU_FIL_VIW | Fusion View Filters | The user mapped to this function can View Filters |
| FU_HIE_ADD | Fusion Add Hierarchies | The user mapped to this function can Create New Hierarchies |
| FU_HIE_CPY | Fusion Copy Hierarchies | The user mapped to this function can Copy Hierarchies |
| FU_HIE_DD | Fusion Hierarchies - View Dependent Data | The user mapped to this function can View Dependent Data for Hierarchies |
| FU_HIE_DEL | Fusion Delete Hierarchies | The user mapped to this function can Delete Hierarchies |
| FU_HIE_EDT | Fusion Edit Hierarchies | The user mapped to this function can Edit Hierarchies |
| FU_HIE_HP | Fusion Hierarchy Home Page | The user mapped to this function can view Hierarchy Home Page |
| FU_HIE_UAM | Fusion Hierarchies to UAM Mapping | The user mapped to this function can Map Fusion Hierarchies to UAM Hierarchies |
| FU_HIE_VIW | Fusion View Hierarchies | The user mapped to this function can View Hierarchies |
| FU_MEM_ADD | Fusion Add Members | The user mapped to this function can Create New Members |
| FU_MEM_CPY | Fusion Copy Members | The user mapped to this function can Copy Members |
| FU_MEM_DD | Fusion Members - View Dependent Data | The user mapped to this function can View Dependent Data for Members |
| FU_MEM_DEL | Fusion Delete Members | The user mapped to this function can Delete Members |
| FU_MEM_EDT | Fusion Edit Members | The user mapped to this function can Edit Members |
| FU_MEM_HP | Fusion Member Home Page | The user mapped to this function can view Member Home Page |
| FU_MEM_VIW | Fusion View Members | The user mapped to this function can View Members |
| FU_MIG_ADD | Object Migration Create Migration Ruleset | The user mapped to this function can Create Migration Ruleset |
| FU_MIG_CFG | Object Migration Source Configuration | The user mapped to this function can manipulate Source Configuration |
| FU_MIG_CPY | Object Migration Copy Migration Ruleset | The user mapped to this function can Object Migration Edit Migration Ruleset, Copy Migration Ruleset |

| Function Code | Function Name | Function Description |
|---|---|---|
| FU_MIG_CRN | Cancel Migration Execution | The user mapped to this function can Cancel migration execution |
| FU_MIG_DEL | Object Migration Delete Migration Ruleset | The user mapped to this function can Delete Migration Ruleset |
| FU_MIG_EDT | Object Migration Edit Migration Ruleset | The user mapped to this function can Edit Migration Ruleset |
| FU_MIG_HP | Object Migration Home Page | The user mapped to this function can Object Migration Link |
| FU_MIG_RUN | Execute/Run Migration Process | The user mapped to this function can Run the migration process |
| FU_MIG_VCF | Object Migration ViewSource Configuration | The user mapped to this function can view Source Configuration |
| FU_MIG_VIW | Object Migration View Migration Ruleset | The user mapped to this function can View Migration Ruleset |
| FU_SQL_ADD | SQL Rule Add | This function is for SQL Rule Add |
| FU_SQL_CPY | SQL Rule Copy | This function is for SQL Rule Copy |
| FU_SQL_DEL | SQL Rule Delete | This function is for SQL Rule Delete |
| FU_SQL_EDT | SQL Rule Edit | This function is for SQL Rule Edit |
| FU_SQL_RUN | SQL Rule Run | This function is for SQL Rule Run |
| FU_SQL_VIW | SQL Rule View | This function is for SQL Rule View |
| GMVDEF | GMV Definition | The user mapped to this function can view/add the General Market Variable definitions |
| GSTMNU | Menu for Guest User | Menu for Guest User |
| HCYADD | Add Hierarchy | The user mapped to this function can add hierarchies |
| HCYATH | Authorize Hierarchy | The user mapped to this function can authorize hierarchies |
| HCYDEL | Delete Hierarchy | The user mapped to this function will have rights to delete hierarchies |
| HCYMOD | Modify Hierarchy | The user mapped to this function can modify hierarchies |
| HCYVIW | View Hierarchy | The user mapped to this function can view hierarchies |

| Function Code | Function Name | Function Description |
|---|---|---|
| HOLMAINT | Holiday Maintenance Window | The user mapped to this function can access the Holiday Maintenance Window |
| HSEC | Hierarchy Security | The user mapped to this function will have access to hierarchy security settings |
| IBMADD | Import Business Model | The user mapped to this function can import business models |
| IMPMD | Import Metadata | The user mapped to this function can Import Metadata |
| IND | Information Domain | The user mapped to this function will have access to Information Domain details |
| KPIATH | Authorize KPIs | The user mapped to this function can authorize KPIs |
| LOCDESC | Locale Desc Upload Window | The user mapped to this function can access the Locale Desc Upload Window |
| MDDIFF | Metadata Difference Window | The user mapped to this function can access the Metadata Difference Window |
| MDLAUTH | Model Authorize | The user mapped to this function can Authorize Model Maintenance |
| MDLCALIB | Model Calibration | The user mapped to this function can view/add the Model Calibration window |
| MDLCHAMP | Model Make Champion | The user mapped to this function can view the Champion Challenger window |
| MDLDEF | Model Definition | The user mapped to this function can view/add the Model definitions |
| MDLDEPLOY | Model Deployment | The user mapped to this function can access the Model Deployment window |
| MDLEXEC | Model Execution | The user mapped to this function can access the Model Execution window |
| MDLOUTPUT | Model Outputs | The user mapped to this function can view the Model Outputs |
| MDMP | Metadata Segment Map | The user mapped to this function will have rights to perform metadata segment mapping |
| METVIW | View Metadata | The user mapped to this function can access metadata browser |
| MODPROCESS | Modify Process Tree | The user mapped to this function can modify Process Tree |
| MODRDM | Modify RDM | The user mapped to this function can Modify RDM |
| MODRULE | Modify Rule | The user mapped to this function can modify the rules |

| Function Code | Function Name | Function Description |
|---|---|---|
| MODRUN | Modify Run | The user mapped to this function can modify run |
| MOD_MAP | Modify Map | The user mapped to this function can SAVE Map definitions |
| MSRADD | Add Measure | The user mapped to this function can add measures |
| MSRATH | Authorize Measure | The user mapped to this function can authorize measures |
| MSRDEL | Delete Measure | The user mapped to this function will have rights to delete measures |
| MSRMOD | Modify Measure | The user mapped to this function can modify measures |
| MSRVIW | View Measure | The user mapped to this function can view measures |
| NVATH | Authorize Nested Views | The user mapped to this function can authorize Nested Views |
| OLAPDETS | OLAP Details Window | The user mapped to this function can access the OLAP Details Window |
| OPRADD | Create Batch | The user mapped to this function will have rights to define batches |
| OPRCANCEL | Batch Cancellation | The user mapped to this function can Cancel Batch |
| OPRDEL | Delete Batch | The user mapped to this function will have rights to delete batches |
| OPREXEC | Execute Batch | The user mapped to this function will have rights to run, restart and rerun batches |
| OPRMON | Batch Monitor | The user mapped to this function will have rights to monitor batches |
| OPTDEF | Optimizer Add | The user mapped to this function can view/add the Optimizer definitions |
| OPTDEL | Optimizer Delete | The user mapped to this function can delete the Optimizer definitions |
| ORACBADD | Add Oracle Cube | The user mapped to this function can add Oracle cubes |
| ORACBATH | Authorize Oracle Cube | The user mapped to this function can authorize Oracle cubes |
| ORACBDEL | Delete Oracle Cube | The user mapped to this function will have rights to delete Oracle cubes |
| ORACBMOD | Modify Oracle Cube | The user mapped to this function can modify Oracle cubes |

| Function Code | Function Name | Function Description |
|---|---|---|
| ORACBVIW | View Oracle Cube | The user mapped to this function can view Oracle cubes |
| PGATH | Authorize Pages | The user mapped to this function can authorize Pages |
| POOLDEF | Pooling Add | The user mapped to this function can view/add the Pooling definitions |
| POOLDEL | Pooling Delete | The user mapped to this function can delete the Pooling definitions |
| PR2WINDOW | PR2 Windows | The user mapped to this function can access PR2 windows |
| PROFMAINT | Profile Maintenance Window | The user mapped to this function can access the Profile Maintenance Window |
| REPATH | Authorize Reports | The user mapped to this function can authorize Reports |
| RESTPASS | Restricted Passwords Window | The user mapped to this function can access the Restricted Passwords Window |
| ROLEMAINT | Role Maintenance Window | The user mapped to this function can access the Role Maintenance Window |
| RULESHKDEF | Rule Shock Definition | The user mapped to this function can define the rule shocks |
| SANDBXAUTH | Sandbox Authorize | The user mapped to this function can Authorize a Sandbox Maintenance |
| SANDBXCR | Sandbox Creation | The user mapped to this function can view/add the Sandbox definitions |
| SANDBXMOD | Sandbox Maintenance | The user mapped to this function can view the Sandbox Maintenance |
| SAVEMD | Save Metadata Window | The user mapped to this function can access the Save Metadata Window |
| SCNDEF | Scenario Definition | The user mapped to this function can define the scenarios |
| SCRBAU | Business Analyst User Window | The user mapped to this function can access the business analyst user window |
| SCRDES | Access to Designer | The User mapped to this function will have access to Designer |
| SCROPC | Operator Console | The user mapped to this function will have access to the operator console |
| SCRPRT | Portal User | The user mapped to this function will be a portal user |
| SCRRUN | Access to Runner | The User mapped to this function will have access to Runner |

| Function Code | Function Name | Function Description |
|---|---|---|
| SCRSAU | System Administrator Window | The user mapped to this function can access system administrator windows |
| SCRVIEW | Access to Viewer | The User mapped to this function will have access to Viewer |
| SCR_ROR | Access to Operational Risk | The user mapped to this function can access Operational Risk |
| SEGMAINT | Segment Maintenance Window | The user mapped to this function can access the Segment Maintenance Window |
| STRESSDEF | Stress Definition | The user mapped to this function can define the stress |
| SYSADM | System Administrator | The user mapped to this function will be a system administrator |
| SYSATH | System Authorizer | The user mapped to this function will be a system authorizer |
| TEMPATH | Authorize Templates | The user mapped to this function can authorize Templates |
| TRANS_OWNR | Access to Transfer Ownership | The User mapped to this function will have access to Transfer Portal Objects |
| TSK_MNU | Access to My Tasks | The user mapped to this function can access My Tasks |
| UGDOMMAP | User Group Domain Map Window | The user mapped to this function can access the User Group Domain Map Window |
| UGMAINT | User Group Maintenance Window | The user mapped to this function can access the User Group Maintenance Window |
| UGMAP | User Group User Map Window | The user mapped to this function can access the User Group User Map Window |
| UGROLMAP | User Group Role Map Window | The user mapped to this function can access the User Group Role Map Window |
| USRACTREP | User Activity Reports Window | The user mapped to this function can access the User Activity Reports Window |
| USRATH | User Authorization Window | The user mapped to this function can access the User Authorization Window |
| USRATTUP | User Attribute Upload Window | The user mapped to this function can access the User Attribute Upload Window |
| USRBATMAP | User-Batch Execution Mapping Window | The user mapped to this function can access the User-Batch Execution Mapping Window |
| USRMAINT | User Maintenance Window | The user mapped to this function can access the User Maintenance Window |
| USRPROFREP | User Profile Report Window | The user mapped to this function can access the User Profile Report Window |

| Function Code | Function Name | Function Description |
|---|---|---|
| VARDEF | Variable Definition | The user mapped to this function can view/add the Variable definitions. |
| VARSHKDEF | Variable Shock Definition | The user mapped to this function can define the variable shocks |
| VARTRANS | Variable Transformation | The user mapped to this function can view and add the Variable Transformation window |
| VIEWLOG | View log | The user mapped to this function will have rights to view log |
| VIEWPROC | View Process | The user mapped to this function can view the process tree definitions |
| VIEWRULE | View Rule | The user mapped to this function can view the rules definitions |
| VIEWRUN | View Run | The user mapped to this function can view the run definitions |
| VIEW_HOME | View OFSAAI LHS Menu | The user mapped to this function can view main LHS menu |
| VIWATH | Authorize Views | The user mapped to this function can authorize Views |
| VIWRDM | View RDM | The user mapped to this function can view RDM |
| VSDEF | VariableSet Definition | The user mapped to this function can define the variablesets |
| WEBSRVR | Web Server Window | The user mapped to this function can access the Web Server Window |
| WRTPR_BAT | Write-Protected Batch Window | The user mapped to this function can access the Write-Protected Batch Window |
| XLADMIN | Excel Admin | The user mapped to this function can define Excel Mapping |
| XLUSER | Excel User | The user mapped to this function can Upload Excel Data |

## 11.3 External Scheduler Interface Component

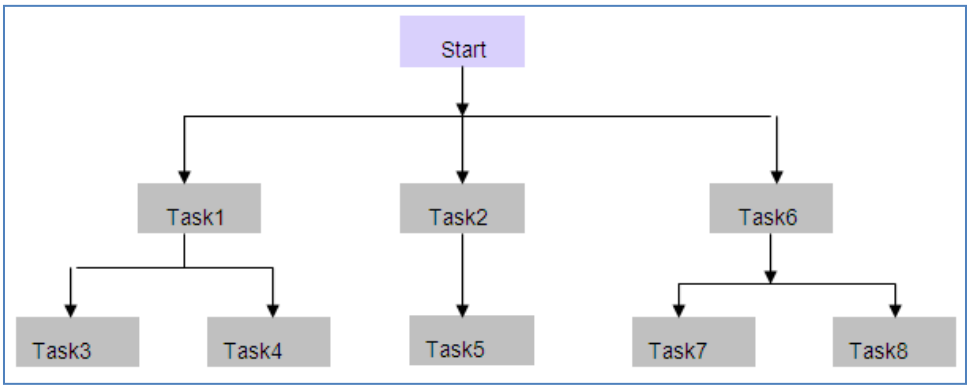
ESIC (External Scheduler Interface Component) is an external command line executable which integrates with the Infrastructure system to run or execute a Batch definition. This integration is achieved by the Run Executable component.

The Operations module (ICC - Information Command Center) within the infrastructure system manages the execution of all components within OFSAAI. This reports the status of tasks, which are inseparable unit of work that must be executed as one single piece during a batch run. It also prompts for subsequent course of action depending on success/failure of execution.

A task may have many subtasks and their execution mechanism is handled by the component internally. Collection of tasks with defined precedence results in a Batch. There can be precedence set for tasks which enforce the relative order of execution. The task precedence is responsible for the parallelism achieved during the execution of a batch. Thus it is essential to take into account the performance implications, while defining task precedence in a batch apart from the logical or functional reasons that primarily define the relative order in which they may be executed.

For example, consider a batch comprising of tasks in the following figure. The arrows show the precedence involved. The way these tasks are selected for execution is as follows:

- Pick up all the tasks that have START as their parent. It essentially means that these tasks (Task1, Task2, and Task6) can be run independently.
- Subsequently pick all tasks for execution (at that instance of time) which has successful parent tasks.
- A Batch is marked as successful only if all the executable tasks are successful.




### 11.3.1 Architecture

The ES executes a component named "External Scheduler Interface Component" (ESIC) and passes the suitable parameters. For more information about these parameters refer ESIC Command Line Parameters and Job Types. The ESIC in turn passes these requests to OFSAAI to fetch the Exit status and interpret as per the Exit Status Specifications.

### 11.3.2 Scope of Integration

The Integration of External Scheduler (ES) with OFSAAI facilitates with the following capabilities:

**Run New Batch**

- Initialize Batch, will create an instance of current definition to be executed against the provided MIS Date.
- Execute complete Batch.

- De-initialize Batch, will update the status of instance.
- Restart Failed Batch
- On failure of Batch, Execute Batch in Restart mode after making necessary corrections

**Rerun Batch**

- Initialize Batch, will create an instance of current definition to be executed against the provided MIS Date.
- Execute complete Batch.
- De-initialize Batch, will update the status of instance.

**Execution of Tasks in a Batch**

- Initialize Batch of which the task is a member, will create an instance of current definition to be executed against the provided MIS Date.
- Execute individual Task of the Batch one after the other.
- Provided option to exclude the precedence specified in AAI for the tasks while executing through ESIC.
- De-initialize Batch, will update the status of instance.

**Restart of Failed Task**

- On failure of Task, Re-execute Tasks after making necessary corrections.
- De-initialize Batch, will update the status of instance

**NOTE:** Explicit initialization is not required for restart of a failed Batch or Task if it is not de-initialized.

**Export Batch**

- To export a Batch definition from OFSAAI to a specified location in an OFSAAI standard XML format. Also, an ES can add other ES specific details after importing the Batch definition to utilize its capability.

### 11.3.3 ESIC Invocation

The ESIC commands can be invoked from anywhere in the machine where Infrastructure is installed only if *$FIC_APP_HOME/icc/bin* is added to $PATH variable. Alternatively, you can navigate to that directory where ESIC component is installed ($FIC_APP_HOME/icc/bin) and Execute.

The log files are generated in *$FIC_APP_HOME/icc/log*. ESIC handles all exceptions generated during its execution.

The log file name for ESIC for each instance would be as follows:

ESIC_<Date>_<Time>_<PID>_< External Unique ID>.log

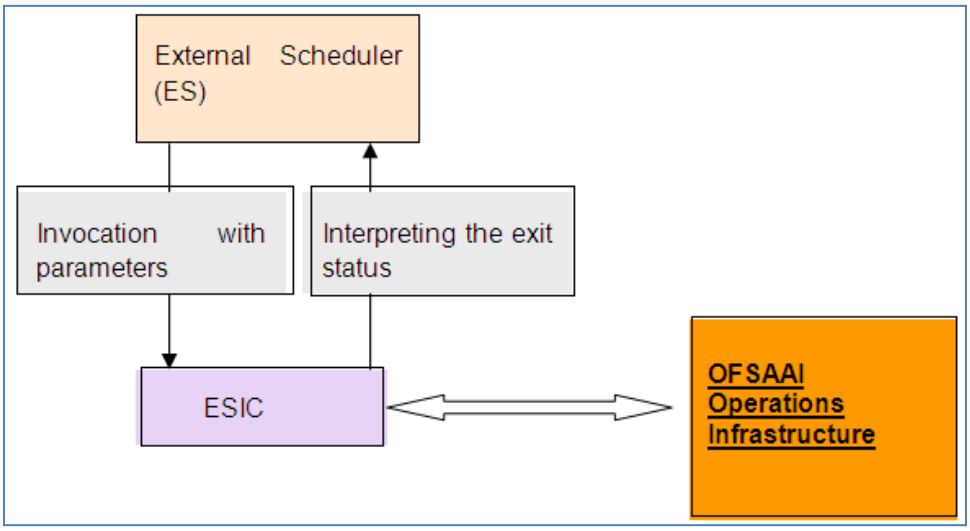
ESIC_<Date>_<Time>_<PID>_< External Unique ID>_<TaskId>.log

In case of an exception, ESIC logs appropriately and exits with an appropriate exit status that can be used by the ES.

Ensure the following:

- ES should execute Initialization and De-Initialization tasks which are invocations of ESIC with specific parameters.
- ES invokes ESIC as a command line executable for each task that are to be executed which includes the initialization and de-initialization tasks.
- Optionally, ESIC can wait for an executed task to complete. Once done, ESIC exits with an appropriate exit status that is fetched by the ES.
- Once an execution has started, the instance of ESIC will exist till the request is completed.
- ESIC handles all exceptions generated and in case of an exception, ESIC logs it appropriately and exits with an appropriate exit status that can be fetched by the ES.

**NOTE:** When a Batch is initialized for execution through ES, ESIC captures the OFSAAI user ID and password as parameters and authenticates the same. If the user is already logged in through UI, and **Allow user to log in from multiple machines** checkbox from the *Configuration* window is not selected, it will show the error message "User Already Logged in". Hence initialization of batch will fail.




For more details of ESIC exit status, refer Exit Status Specifications section. and for other miscellaneous information of ESIC, refer Additional Information on ESIC section.

### 11.3.4 Batch Execution Mechanism

The recommendation for Batch Execution with an External Scheduler is as follows:

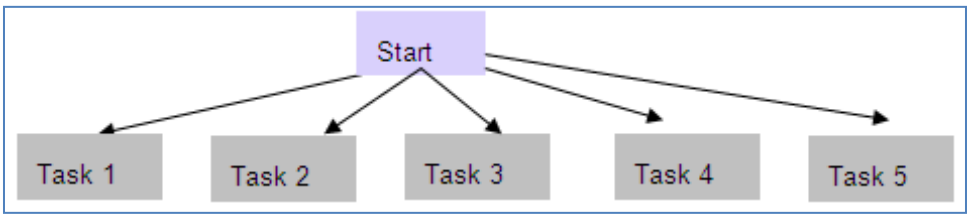
During the definition of a batch using the *Batch Definition* window of Operations module, the Batch is called as **EXTBATCH** and the Information Domain in which this Batch is defined is called as **INFODOM**. Hence **INFODOM_EXTBATCH** becomes the Batch ID.

Consider a scenario, to run the following tasks in this Batch.

- The first task 'Task1' loads data in a warehouse table **FCT_CUSTOMER**.
- The second task 'Task2' loads data in a warehouse table **DIM_GEOGRAPHY**.
- The third task 'Task3' is a Data Transformation, uses both the Tables mentioned above. Hence this can run only if both the above tasks, Task1 and Task2 are complete.
- If either Task1 or Task2 fails, a new task namely Task 4 can be executed with the Data Transformation which uses the data of the previous load.
- The final task is a task namely Task5 which is a Cube building task. This takes several hours as it builds a Cube with many dimensions and hierarchies and holds large number of combinations.

The parameters for the Tasks are chosen from the drop-down choices provided. OFSAAI provides the choices through its **Data Model Management**.

Since, the Task 3 or Task 5 is executed based on conditional success / failure of previous tasks, the conditionality needs to be simulated in the ES. If the External Scheduler wants to control the order/conditionality for tasks then it needs to be defined in such a way that they have the same precedence. Here it would be ideal to define it as follows. The arrows in the following figure, shows the precedence involved.




The export of such a Batch from OFSAAI would look like the following. For more information, refer OFSAAI Standard XML.

```
<BATCH BATCHID="INFODOM_EXTBATCH" NOOFTASKS="5" SYSTEMLOCALE="+5:30
GMT" INFODOMAIN="INFODOM" REVUSER="OPERADMIN" DEFTYPE="DEF">

 <RUNINFO REVUID="" EXTUID="" BATCHSTATUS="" INFODATE="" LAG=""/>
 <TASK TASKID="Task1" COMPONENTID="LOAD DATA" TASKSTATUS="N"
 FILTER="N">

    <PRECEDENCE>
```

```
      <ONSUCCESSOF>
          <TASKID/>
      </ONSUCCESSOF>
      <ONFAILUREOF>
          <TASKID/>
      </ONFAILUREOF>
   </PRECEDENCE>
</TASK>
<TASK   TASKID="Task2"   COMPONENTID="CUBE   CREATE"   TASKSTATUS="N"
FILTER="N">
   <PRECEDENCE>
      <ONSUCCESSOF>
          <TASKID/>
      </ONSUCCESSOF>
      <ONFAILUREOF>
          <TASKID/>
      </ONFAILUREOF>
   </PRECEDENCE>
</TASK>
<TASK   TASKID="Task3"   COMPONENTID="RUN   EXECUTABLE"   TASKSTATUS="N"
FILTER="N">

   <PRECEDENCE>
      <ONSUCCESSOF>
          <TASKID/>
      </ONSUCCESSOF>
      <ONFAILUREOF>
          <TASKID/>
      </ONFAILUREOF>
   </PRECEDENCE>
</TASK>
```

```
<TASK TASKID="Task4" COMPONENTID="EXTRACT DATA" TASKSTATUS="N"
FILTER="N">
  <PRECEDENCE>
    <ONSUCCESSOF>
        <TASKID/>
    </ONSUCCESSOF>
    <ONFAILUREOF>
        <TASKID/>
    </ONFAILUREOF>
  </PRECEDENCE>
</TASK>
<TASK TASKID="Task5" COMPONENTID=" TRANSFORM DATA" TASKSTATUS="N"
FILTER="N">


  <PRECEDENCE>
    <ONSUCCESSOF>
        <TASKID/>
    </ONSUCCESSOF>
    <ONFAILUREOF>
        <TASKID/>
    </ONFAILUREOF>
  </PRECEDENCE>
</TASK>
</BATCH>
```

Valid Values for Task Status are:

| Task Status | Value |
|---|---|
| N | Not Started |
| O | On Going |
| F | Failure |
| S | Success |

Valid Values for Batch Status are:

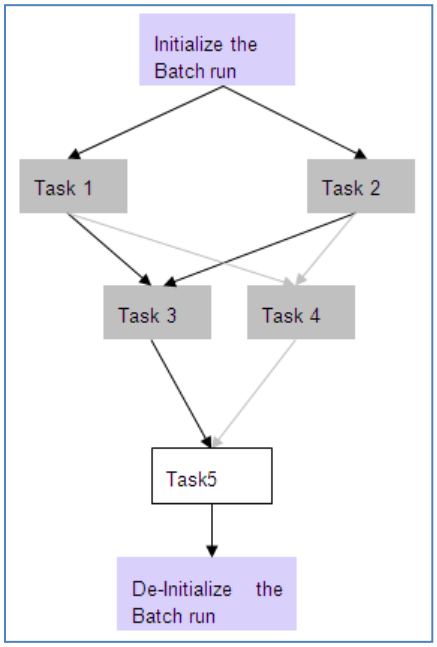
| Batch Status | Value |
|---|---|
| N | Not Started |
| O | On Going |
| R | For Restart |
| C | Complete |

Valid values for FILTER are:

| Filter Status | Value |
|---|---|
| H | Hold |
| K | Exclude/Skip |
| N | No Filter |

When the definition of a Batch is exported and imported in ES, the Task Status, the Batch Status, and the Filter become irrelevant. This happens if you export a specific run of a Batch, which is not currently supported by OFSAAI. This should be included as a part of the XML for completeness.

After importing it in the ES, the Administrators can decide the order in which the tasks must be executed and alter the order of execution without violating the precedence set in OFSAAI. For example, the Administrator might configure it as in the following figure.



The invocation of ESIC by the ES and the command line parameters passed for each task for the above configuration is as follows. For more information about command line parameters refer ESIC Command Line Parameters and Job Types.

The ES needs to provide the **'Ext Unique ID'**. In this case it is **MAESTRO_INFODOM_EXTBATCH _20031001_1**.

**To Initialize the Batch Run:**

*esic -JI -Urevuser –Ppassword -RMAESTRO_INFODOM_EXTBATCH _20031001_1 -IINFODOM –BEXTBATCH -D20031001 -F/tmp/INFODOM*

**Task 1:**

*esic -JXT -Urevuser –Ppassword -RMAESTRO_ INFODOM_EXTBATCH_20031001_1 -IINFODOM -WC –TTask1*

**Task 2:**

*esic -JXT -Urevuser –Ppassword -RMAESTRO_ INFODOM_EXTBATCH_20031001_1 -IINFODOM -WC –TTask2*

**Task 3:**

*esic -JXT -Urevuser –Ppassword -RMAESTRO_ INFODOM_EXTBATCH_20031001_1 -IINFODOM -WC –TTask3*

**Task 4:**

*esic -JXT -Urevuser –Ppassword -RMAESTRO_ INFODOM_EXTBATCH_20031001_1 -IINFODOM -WC –TTask4*

**Task 5:**

*esic -JXT -Urevuser –Ppassword -RMAESTRO_ INFODOM_EXTBATCH_20031001_1 -IINFODOM -WC –TTask5*

**De-initialize:**

*esic -JD -Urevuser –Ppassword -RMAESTRO_ INFODOM_EXTBATCH_20031001_1 -IINFODOM -BINFODOM_EXTBATCH -D20031001*

Ensure the following scenarios while executing an ES Batch:

- Every Task executed in ES must have an equivalent task defined in a Batch within the Operations module, except for specific tasks such as Initialization, De-initialization, and Status Query / Alter Tasks.
- If ES requests to alter the status of a task that has already been requested for execution, an error value is returned specific to such a case. The same hold good for Batch Run as well.
- Task Execution must follow the precedence as defined in OFSAAI. Else, the task execution would result in failure.

- Re executing a task of a Batch run, which was successfully executed will result in failure.
- Execution of a Batch whose definition does not exist or deleted will result in failure. An error value is returned specific to such a case.
- Execution of a task before the initialization of Batch will result in failure.
- Simultaneous execution of the same Task of a Batch Run will result in failure. The same holds good for a Batch Run as well.

### 11.3.5 External Scheduler Batch Run ID

**Batch Run ID** is a unique identifier used to identify a particular Batch Run in the following format:

**Infodom_Batchname_Infodate_Run**

The **Batch Run ID** consists of the following components:

| Component | Description |
|---|---|
| Infodom | The Information Domain for which the batch is being run. |
| Batchname | The name of the Batch as assigned by the user. |
| Infodate | The date on which the batch is run. |
| Run | This indicates the number of times the Batch has been executed.<br>This value is incremented if the Batch is re run for the same **MISDATE**. |

### 11.3.6 Batch Monitoring

The *Batch Monitoring* window in Operations module facilitates with the static and real time monitoring of a Batch. On choosing a particular batch definition, an **Infodate** and a **Batch Run ID** displays the status of the tasks inside the selected batch.

### 11.3.7 Advantages of ES

Following are the advantages of ES component:

- ES is capable of importing a Batch definition, which was previously exported in OFSAAI Standard XML format. This eliminates the necessity to manually re-define the batch as per the OFSAAI format.
- ES is capable of passing a unique id for a Batch Run to Operations module through an initialization mechanism. For more information, refer Batch Execution Mechanism.
- Every Batch run can be uniquely identified in both ES and Operations module, when tasks are executed under the scope of a particular Batch Run.

- ES is capable of executing and passing the desired parameters to a Batch. Further it can fetch an Exit status and interpret as per the Exit Status Specifications.

### 11.3.8 OFSAAI Standard XML

<BATCH BATCHNAME="Name of the Batch" NOOFTASKS="Total no of tasks in the Batch" SYSTEMLOCALE="The locale of the system where the batch is defined " INFODOMAIN="The Information domain where the batch is defined" REVUSER="User who defined the batch" DEFTYPE="To Identify whether the XML file describes a batch definition or run (can take values 'D' in case of definition and 'R' in case of run)">

<RUNINFO REVUID="Batch Run ID" EXTUID="External Unique ID for the Batch Run" BATCHSTATUS="Status of the Batch Run" INFODATE="The info Date for the system" LAG="Defines the Lag for the Batch"/>

```
<TASK TASKID="Task1" COMPONENTID="LOAD DATA" TASKSTATUS="O" FILTER="H">
<PRECEDENCE>
<ONSUCCESSOF>
<TASKID></TASKID>
</ONSUCCESSOF>
<ONFAILUREOF>
<TASKID/>
</ONFAILUREOF>
</PRECEDENCE>
</TASK>
<TASK TASKID="Task2" COMPONENTID="RUN EXECUTABLE" TASKSTATUS="O" FILTER="H">
<PRECEDENCE>
<ONSUCCESSOF>
<TASKID></TASKID>
</ONSUCCESSOF>
<ONFAILUREOF>
<TASKID></TASKID>
</ONFAILUREOF>
</PRECEDENCE>
```

```
</TASK>
<TASK TASKID="Task3" COMPONENTID="EXTRACT DATA" TASKSTATUS="O"
FILTER="N">

<PRECEDENCE>
<ONSUCCESSOF>
<TASKID>TASK1</TASKID>
</ONSUCCESSOF>
<ONFAILUREOF>
<TASKID>Task2</TASKID>
</ONFAILUREOF>
</PRECEDENCE>
</TASK>
</BATCH>
```

The valid values for **FILTER** are:

| Filter Status | Value |
|---|---|
| H | Hold |
| R | Released |
| E | Excluded/Skipped |
| I | Included |

### 11.3.9 Exit Status Specifications

The following table contains the list of Exit Statuses of the ESIC and their interpretations.

| Exit Status | Interpretation |
|---|---|
| 0 | Success |
| -1 | Failure |
| -2 | Unable to contact OFSAAI |
| -3 | Unable to query OFSAAI Metadata |
| -4 | Unable to Initialize Batch |

| Exit Status | Interpretation |
|---|---|
| -5 | Unable to De-Initialize Batch |
| -6 | Failed to Execute a Task because of incorrect parameters passed to the task |
| -7 | Failed to Execute a Task/Batch |
| -8 | Failed to Wait for Task/Batch |
| -9 | Failed to Set Batch as Complete |
| -10 | Failed to Add Filter to Task |
| -11 | Failed to Purge Batch |
| -12 | Failed to Export Batch Definition |
| -14 | Invalid Configuration File |
| -15 | Supplied Parameters Incorrect for Task Execution |
| -16 | Failed to Export Batch Logs |
| -13, -16 to –31 | Reserved |
| 1 | Successful Poll of the Task – Task/Batch Ongoing (O) |
| 2 | Successful Poll of the Task – Task Excluded (K) |
| 3 | Successful Poll of the Task – Task/Batch Held (H) |
| 4 | Successful Poll of the Task – Task/Batch Not Started (N) |
| 5-8 | Reserved |

### 11.3.10 ESIC Operations using Wrapper Scripts

OFSAAI has been enhanced to provide standardized wrapper scripts to perform ESIC batch operations.

#### 11.3.10.1 Prerequisites

- JAVA_HOME (Required) must point at JAVA bin installation directory.
- ES_HOME (Required) must point to the ES Home folder.
- Copy the ES folder and the following jars should be present in ES/lib folder:
  - FICServer.jar
  - AESCryptor.jar
  - aai-client.jar

- Update ES/conf/<Infodom>.ini file and specify the proper values.
  - MISDATE=Information Date in format mm-dd-yyyy (For example: MISDATE=01-31-2010)
  - USERNAME=OFSAAI Login user (For example: USERNAME=BASELUSER)

#### 11.3.10.2 Initialize a Batch for Execution

1. Navigate to the $ES_HOME > bin folder.
2. Run InitializeBatch.sh by passing the following arguments
   - Infodom: Information Domain name.
   - Runid: RRF run code / ICC batch name
   - BatchType: RRF/ICC

Example: ksh InitializeBatch.sh BASELINFO TESTBATCH ICC

#### 11.3.10.3 Execute a Batch

1. Navigate to the $ES_HOME > bin folder.
2. Run ExecuteBatch.sh by passing the following arguments
   - Infodom: Information Domain name.
   - Runid: RRF run code / ICC batch name
   - Mode:run/restart [optional]

Example: ksh ExecuteBatch.sh BASELINFO TESTBATCH run

#### 11.3.10.4 Execute a Task

1. Navigate to the $ES_HOME > bin folder.
2. Run ExecuteTask.sh by passing the following arguments
   - Infodom: Information Domain name.
   - Runid: RRF run code / ICC batch name
   - TaskName: Individual Task in a batch
   - TaskPrecedenceCheck: Y/N [optional]

Example: ksh ExecuteTask.sh BASELINFO TESTBATCH Task1 Y

#### 11.3.10.5 De-initializing a Batch

1. Navigate to the $ES_HOME > bin folder.

2. Run DeinitializeBatch.sh by passing the following arguments
   - Infodom: Information Domain name.
   - Runid: RRF run code / ICC batch name

Example: ksh DeinitializeBatch.sh BASELINFO TESTBATCH

#### 11.3.10.6 View Logs for Individual Batch Run

$ES_HOME/log/ESIC_<batchrunid>.log

### 11.3.11 ESIC Operations Using Command Line Parameters and Job Types

ESIC Command Line Parameters can be invoked using the following command:

***esic -J<Job Type> <Parameters>***

The type of the Parameters depends on the value of the Job Type. The various Job types are provided below:

#### 11.3.11.1 I - Initialize a Batch for Execution

This command prepares all the run tables and initialize the run of a batch. This should be executed before any other external API for execution of a batch, as it registers the <External Unique ID> against the Batch Run ID.

***-JI –U<User ID> -P<Password> -R<Ext Unique ID> -I<Info Dom> -B<Batch Name> -D<Info Date>-F<Temp Directory Name>***

The components of the above command are tabulated below:

| Exit Status | Interpretation |
|---|---|
| User ID | Enter the User ID used for initializing the Batch execution. |
| Password | This is supplied to ESIC as encrypted and the encrypted password is stored in the column **v_password** in the table **CSSMS_USR_PROFILE**. |
| Ext Unique ID | Enter a unique ID against a batch execution. It is the responsibility of the External Scheduler/calling program to supply the unique id to ESIC.<br>The value of this against OFSAAI batch execution id mapping is stored in the table **EXT_BATCH_RUN_ID_MAPPING**. |
| Info Dom | Enter the information domain against which the batch is getting executed. |
| Batch Name | Enter the Batch name. |
| Info Date | Enter the MIS Date for Batch execution. |
| Temp Directory Name | This can be any value chosen by the user. |

#### 11.3.11.2 D - DeInitialize/Clean up temporary files created for a Batch Execution

This command DeInitializes the run of a Batch. All temporary resources allocated for that run of a Batch will be reclaimed. An attempt to call an API for a batch for which DeInitialize has been called will return an error. If DeInitialize is called for an ongoing Batch which has no ongoing tasks, the batch status will be in accordance to the status of the Tasks under this Batch. If any of the Tasks are Ongoing, then this command will return a failure "batch cannot be de-initialized".

***JD –U<User ID> -P<Password> -R<Ext Unique ID> -I<Info Dom> -B<Batch Name> -D<Info Date>***

#### 11.3.11.3 X - Execute a Task/Batch or Restart of Batch

These options can be used to execute a Batch or Task of a Batch in OFSAAI. In the case of a batch, the Batch must have been initialized. In the case of a Task, the batch, of which the task is a member, must have been initialized, by calling the Initialize API.

When a Batch is defined in OFSAAI, each task will be assigned with unique id like Task1, Task2 and so on. This task id has to be supplied for <Task ID>. This command would execute the batch/task as in current system; the return value would depend on the wait mode specified. If the wait mode were 'S', then a call would return success if the task was successfully triggered.

***-JXB –U<ID> -P<Password> -R<Ext Unique ID> -I<Info Dom> -W<Wait Mode>***

***-JXT –U<User ID> -P<Password> -R<Ext Unique ID> -I<Info Dom> -W<Wait Mode>-T<Task ID>***

***-JXRB –U<User ID> -P<Password> -R<Ext Unique ID> -I<Info Dom> -W<Wait Mode>***

**Wait Modes:**

C - Wait Completion of a Task/Batch

S - Successful Trigger/Relay of Task to OFSAAI

If the wait mode were 'C', then the command would wait for completion of the task/batch and returns the task/batch execution return values. Only Task/Batch marked as 'N' (not started) can be executed using this API. A task can only be executed if it does not violate the precedence set in OFSAAI batch definition.

#### 11.3.11.4 W - Get Task/Batch Status

***-JWB –U<User ID> -P<Password> -R<Ext Unique ID> -W<Wait Mode> -I<Info Dom>***

***-JWT –U<User ID> -P<Password> -R<Ext Unique ID> -W<Wait Mode> -I<Info Dom>-T<Task ID>***

#### 11.3.11.5 S – Finalize the Batch execution – primarily mark the Batch run as complete

***-JSB –U<User ID> -P<Password> -R<Ext Unique ID> -I<Info Dom> -V<Batch Status>***

Valid Values for Batch Status are:

**C** - Complete

#### 11.3.11.6 F - Adding filter to a Task

***-JFT –U<User ID> -P<Password> -R<Ext Unique ID> -I<Info Dom> -T<Task ID> -V<Task Filter>***

Valid values for filter are:

**H** - Hold

**R** - Release

**E** - Exclude/Skip

**I** - Include

#### 11.3.11.7 P - Purge Batch Run data between two info dates

***-JP –U<User ID> -P<Password> -I<Info Dom> [-B<Batch Name>] -S<Start Date> -E<End Date>***

The Start and End Dates must be in the following format: YYYYMMDD.

***-JP –U<User ID> -P<Password> -I<Info Dom> -B<Batch Name> -S<Start Date> -E<End Date> [<Y>]***

<Y>- Additional parameter introduced to purge the data from the View Logs table. You need to specify **-B<Batch Name>** along with <Y> to purge the data from the View Logs table for the specified start and end date.

#### 11.3.11.8 E - Export a Batch Definition

***-JE –U<User ID> -P<Password> -I<Info Dom> -B<Batch Name> -F<File Name>***

<File Name> contains the complete file name that would be created overwriting any file that exists with the same name.

#### 11.3.11.9 BL – View messages logged for a batch run

***-JBL–U<User ID> -P<Password> -R<Ext Unique ID> -I<Info Dom> -F<File Name>***

***[-V<Message Format String>]***

***<File Name>*** contains the complete file name that would be created overwriting any file that exists with the same name.

***<Message Format String>*** specifies the information that needs to be logged.

Format string can contain parameters that will be replaced with actual values from logs.

Valid values for message parameter are *msgid*, *brid*, *taskid*, *component*, *tstatus*, *severity*, *tstamp*, and *sysmsg*.

Each parameter, when passed in a message format string should be enclosed within {}.

**Example**:

A typical message format string would look like:

**{msgid}\t{brid}\t{taskid}\t{component}\t{tstatus}\t{severity}\t{tstamp}\t{sysmsg}**

If no message format string is supplied, then the log generated will be in the above format, with each value separated by a tab.

#### 11.3.11.10 Restart / Rerun Batches on Failure of a Task using JXRB Command

You can Restart and Rerun the batches in the event of failure of any task/batch during execution. Ensure that batch execution which is being restarted is not De-Initialized.

To restart the batch, run the following command:

**–JXRB –U<User ID> -P<Password> -R<Ext Unique ID> -I<Info Dom> -W<Wait Mode>**

To Rerun a batch follow the below steps:

1. Initialize the batch.
2. Run the following command:

   -JXRB –U<User ID> -P<Password> -R< Ext Unique ID > -I<Info Dom> -W<Wait Mode>
3. De-Initialize batch.

The wait modes that can be used in both the above commands are:

- **C** - Wait Completion of a Task/Batch.
- **S** - Successful Trigger/Relay of Task to OFSAAI.

The entire batch must be initialized when:

- The batch is failed.
- Task in a Batch is failed. (The batch in which the task is a member must be initialized).

This initializations can be performed from the **Initialize API**.

The parameter name/value pairs override the parameters provided to the task during batch definition in OFSAAI. This command executes the batch/task as in the current system.

The return value entirely depends on the wait mode specified.

- If the wait mode chosen as **S**, the execution returns a Success post the successful triggering of the task.

- If the wait mode is selected as **C**, the command waits for the completion of the task/batch execution and returns the values.

**NOTE:** Only Task/Batch marked as '**N**' (not started) can be executed using this API. A task can be executed only when it does not violate the precedence set in batch definition.

### 11.3.12 Additional Information on ESIC

This section includes the information regarding the miscellaneous details, dependencies, and error logging details for ESIC.

#### 11.3.12.1 Miscellaneous Details and Dependencies

- ESIC resides on App Layer of OFSAAI.
- ESIC expect the environment variable **FIC_APP_HOME** to be defined for configuration and log paths.
- In case the environment variable **FIC_APP_HOME** is not defined, ESIC will exit with an error message on console.
- ESIC and ICC Server share a single configuration file, which resides in *FIC_APP_HOME/icc/conf*.
- ESIC resides in *FIC_APP_HOME/icc/bin* and paths to dependencies (ICC API library in this case) need to be set to *FIC_APP_HOME/icc/lib*.
- The following processes are Java processes in platform, which contains environment variables as JVM parameters.
  - FIC Server
  - ICC Server
  - Model Upload
  - Rule Execution

  Only these processes can be tracked using JVM commands like jcmd and jps.

#### 11.3.12.2 Error Logging for ESIC

ESIC opens a file in *$FIC_APP_HOME/icc/log* for logging and the file descriptor for that file is passed to the ICC API library for logging. The log file name for ESIC for each instance are as follows:

```
ESIC_<Date>_<Time>_<External Unique ID>_<TaskID>.log
```

ESIC log messages into a file only if the exit status values are -2, -12, -14, and –15. For more information refer Exit Status Specifications. In all other cases, ICC Server logs the errors and the causes and ESIC only return the error value as an exit status.

**NOTE:** <*External Unique ID*> and <*Task ID*> can be used wherever applicable.

## 11.4 Command Line Utilities

The following command line utilities are introduced in OFSAAI.

- Command Line Utility to Migrate Objects
- Command Line Utilities to Execute RRF Definitions
- Command Line Utility to publish Metadata in Metadata Browser
- Command Line Utility for Object Application mapping in new Metadata Browser
- Command Line Utility for Resaving UAM Hierarchy Objects
- Command Line Utility for Resaving Derived Entities
- Command Line Utility for OBIEE Publish
- Command Line Utility for Mapper Pushdown
- Command Line Utility for Object Registration
- Command Line Utility for Source Model Generation
- Command Line Utility for LDAP Migration

### 11.4.1 Command Line Utility to Migrate Objects

Using the command line utility, you can migrate (export/ import) Infrastructure metadata objects across different information domains or setups. You can specify one or more objects within an object type or within multiple object types.

You can choose from where the object migration utility reads the data, that is, from CSV files or `OBJECTMIGRATION.xml` file. For migrating objects using CSV files, see Migrating Objects using CSV Files. For migrating objects using `OBJECTMIGRATION.xml` file, see Migrating Objects using `OBJECTMIGRATION.xml` File.

For the list of objects that can be migrated through command line approach, see the Objects Supported for Command Line Migration section. However, currently some objects are not supported. You need to migrate them separately from *Metadata Restore*/ *Metadata Archive* process, Object Migration UI, or manually recreate them in the target environment.

#### 11.4.1.1 Prerequisites

- You must have access and execution rights in the `$FIC_HOME/utility/Migration/` directory in both the source and target environment.
- Folders (segments) and user groups that are designated for the import should be present in the target.
- The source and target environment should have the same installed locales.

- OFSAA users in source should be the same in target (at least for users associated with objects being migrated).
- OFSAA users should have access to folders in target as well as source.
- Underlying tables of the objects being migrated should exist in target.
  For example, if you want to migrate a Data Element Filter based on "Table A" and "Table B" in the source, those two tables should exist in the target.
- Before migrating a DQ Group, ensure the DQ Rules present in that DQ Group are unmapped from all other groups in the target. That is, if a DQ Rule is mapped to one or more DQ Groups in the target, then it has to be unmapped from all the groups before migration.
- For AMHM Dimensions and Hierarchies:
  - The key processing Dimensions should be the same in both the source and target environments.
  - For Member migration, the Dimension type should have the same attributes in both source and target environments.
  - Numeric Dimension Member IDs should be the same in both the source and target environments, to ensure the integrity of any Member-based objects.

  **NOTE:** If you have used the Master Table approach for loading Dimension data and set it up to generate surrogate keys for Members, this results in different IDs between the source and target, so it may cause errors if you have objects which depend on these IDs.

- All objects that generate new ID after migrating to a different information domain and all components which are registered through the *Component Registration* window, which will be used in the RRF, must be manually entered in `AAI_OBJ_REF_UPDATE` table in the Configuration Schema. The implicit migration of dependent objects is not supported. They should be migrated explicitly. The attributes present in the table are:
  - `V_OBJECT_TYPE`- EPM Object Type
  - `V_RRF_OBJECT_TYPE`- RRF object Type. The ID can be referred from pr2_component_master table
  - `V_ICC_OBJECT_TYPE`- ICC object type, can be referred from component_master table.
  - `F_IS_FILTER`- Is the object to be migrated as a filter/not?
  - `N_BATCH_PARAMETER_ORDER`- the order of parameter in task (if used in a batch).

#### 11.4.1.2 Migrating Objects Using `OBJECTMIGRATION.xml` File

This section explains how to migrate objects using `OBJECTMIGRATION.xml` file. In this case, you have to populate `migration.properties` file and `OBJECTMIGRATION.xml` file. These files are present in the `$FIC_HOME/utility/Migration/conf` folder. You do not have to make any entries in the `export_input.csv` and `import_input.csv` files, present in the same folder.

To migrate objects using `OBJECTMIGRATION.xml` file, perform the following steps:

1. Navigate to the `$FIC_HOME/utility/Migration/conf` folder.
2. Populate the `migration.properties` file with appropriate values as explained in the following table.

**NOTE:** The values in the properties file are updated by the installer. If you want to run this utility from another location, the values should be specified accordingly.

| Name | Description |
|---|---|
| EXPORTIMPORT_BASEPATH | Absolute path of the directory where the metadata/ archive and metadata/ restore folders are created.<br>For example:<br>`EXPORTIMPORT_BASEPATH= /oracle/rhelapp/ofs73app/utility/Migration` |
| FIC_HOME | OFSAAI installation directory.<br>For example: `FIC_HOME=/oracle/rhelapp/ofs73app` |
| READ_FROM_CSV | Set this as **N**. Then the utility reads from `OBJECTMIGRATION.xml` file. |

**NOTE:** The remaining entries in the `migration.properties` file is not required when you migrate objects using `OBJECTMIGRATION.xml` file.

3. Update the `OBJECTMIGRATION.xml` file as explained below based on whether you want to import or export objects:

**NOTE:** The `OBJECTMIGRATION.xml` file is available with the installer. The Tag name, Attribute and the entries to be made in the XML file are case sensitive.

**NOTE:** Any updates done are available in the `OBJECTMIGRATION_template.xml`. Before invoking the command line utility, ensure that the updates available in the `OBJECTMIGRATION_template.xml` file is available in the `OBJECTMIGRATION.xml` file.

### For Exporting Objects

| Tag Name | Attribute | Description |
|---|---|---|
| USERID | | Specify the user ID of the OFSAAI user who will be running the migration utility. Ensure the user is mapped to the specific source Information Domain / Segment.<br>The user id should be provided in capital letters. |
| LOCALE | | Set this as en_US. |
| INFODOM | | Specify the Information Domain from where objects need to be exported.<br>The information domain name should be provided in capital letters. |
| FOLDER | | Not Applicable, only used for importing. |
| MODE | | Set the mode of the operation as **EXPORT**. |
| FILE | | Specify the name of the file to be exported which will be created under `$FIC_HOME/utility/Migration/metadata/archive` folder as a .DMP file. |
| FAILONERROR | | Not Applicable, only used for importing. |
| OVERWRITE | | Not Applicable, only used for importing. |
| RETAIN_IDS | | Not Applicable, only used for importing. |
| MIGRATION_CODE | | Enter the unique migration code to identify the status of the migration process.<br>For example: **8860** |
| OBJECT | Code | Specify the object **Code** which should be a unique identifier of the definition according to the **Type** of the object in the Information Domain. **Code** should be either system generated or user defined unique code. See the Objects Supported for Command Line Migration section to know for a particular object whether it is user defined or system |

| Tag Name | Attribute | Description |
|---|---|---|
| | | generated.<br>▪ You can specify the **Code** value as wildcard "*" if you are migrating all objects of that **Type**.<br>For example, to export all Rules from RRF:<br>`<OBJECTS>`<br>`<OBJECT Code="*" Type="112" />`<br>`</OBJECTS>`<br>▪ To export multiple objects of a particular object type, multiple entries with each object code should be made in the `OBJECTMIGRATION.xml` file.<br>For example, if you want to export three different rules, the entries should be made as given below:<br>`<OBJECT Code="Rule Code_1" Type="112" INCLUDEDEPENDENCY="Y"/>`<br>`<OBJECT Code="Rule Code_2" Type="112" INCLUDEDEPENDENCY="Y" />`<br>`<OBJECT Code="Rule Code_3" Type="112" INCLUDEDEPENDENCY="Y" />`<br>▪ To export ETL objects, the format is app name followed by tilde, source name followed by tilde and then extract name.<br>For example,<br>`<OBJECT Code="AppName~SourceName~ExtractName" Type="122" INCLUDEDEPENDENCY="Y" />`<br>▪ To export Enterprise Modeling Objects which supports versioning, the version of the object should be a part of the Code attribute.<br>`<OBJECTS>`<br>`<OBJECT Code="ModelID_Version" Type="1305" INCLUDEDEPENDENCY="Y" />`<br>`</OBJECTS>` |
| Object | Type | Specify the Type ID of the required metadata objects to be exported. Refer to the Objects Supported for Command Line Migration section. |

| Tag Name | Attribute | Description |
|---|---|---|
| | SubType | SubType is available for Filters and AMHM hierarchy only. This is a mandatory field.<br>For filters, **SubType** indicates the type of the filter. For hierarchies, this indicates the Dimension ID.<br>See the table for filter SubTypes.<br>Example: For Group Filter,<br>`<OBJECTS>`<br>`<OBJECT Code=”200265" Type="1"`<br>`SubType=”21” INCLUDEDEPENDENCY="Y" />`<br>`</OBJECTS>` |
| Object | INCLUDEDEPENDENCY | Specify **Y** if you want to export all dependent objects along with the base objects.<br>Specify **N** if you want to export only the mentioned object.<br>**Note**: If nothing is specified, all the dependent objects are exported. |
| | SANDBOXINFODOM | Specify the Sandbox Information Domain name to export Sandbox. |
| | WITHMODELS | This is applicable only for exporting Sandbox.<br>Specify **Y** if you want to export all models present in the Sandbox Infodom along with the Sandbox.<br>Specify **N** if you want to export only the Sandbox.<br>For example,<br>`<OBJECT Code="0" Type="1300"`<br>`SANDBOXINFODOM="<INFODOM NAME>"`<br>`WITHMODELS="Y" INCLUDEDEPENDENCY="Y" />` |
| Object | IncludeInstances | This is applicable only for PMF Process migration.<br>Specify **Y** if you want to export instance data along with the PMF Process.<br>For example,<br>`<OBJECT Code="*" Type="8000"`<br>`INCLUDEDEPENDENCY="Y" includeInstances="Y"/>` |

| Tag Name | Attribute | Description |
|---|---|---|
| | IsResponseDataRequired | This is applicable only for Questionnaire migration.<br>Specify **Y** if you want to export the responses for Questionnaire.<br>Specify **N** if you want to skip it. |
| | ApplicationCode | This is applicable only for Questionnaire migration.<br>Specify the application code for which you want to export the Questionnaire data. For example, to migrate KYC related Questionnaire data, specify the application code **OFS_KYC**. Similarly, you can specify the application code for other applications and migrate the related Questionnaire data.<br>For example,<br>`<OBJECT Code="*" Type="8001" INCLUDEDEPENDENCY="Y" ApplicationCode="sampleApp" IsResponseDataRequired="Y" />` |

4. Once you have updated the files with required information in the source environment, navigate to `$FIC_HOME/utility/Migration/bin` path and execute `ObjectMigration.sh`. The dump file will be created.
5. Once executed, you can view the related log files from the `$FIC_HOME/utility/Migration/logs` location.

### For Importing Objects

| Tag Name | Attribute | Description |
|---|---|---|
| USERID | | Specify the user ID of the OFSAAI user who will be running the migration utility. Ensure that the user is mapped to the specific target Information Domain / Segment.<br>The user id should be provided in capital letters. |
| LOCALE | | Set this as en_US. |
| INFODOM | | Specify the Information Domain where objects need to be imported.<br>The information domain name should be provided in capital letters. |

| Tag Name | Attribute | Description |
|---|---|---|
| FOLDER | | Specify the Code of the folder /segment to which you need to import objects.<br>This field is optional. The folder value should be provided in capital letters.<br>**Note**: This is the default target folder if object specific **TargetFolder** is not provided. However, if both **FOLDER** and **TargetFolder** are not specified, then source folder available in the exported dump file will be considered as target folder.<br>For behavior in this release, see Limitations section. |
| MODE | | Set the Mode of the operation as **IMPORT**. |
| FILE | | Specify the name of the file to be imported, which is present under `$FIC_HOME/utility/Migration/metadata/restore` folder. |
| IMPORTALL | | **Y** indicates that all exported objects in the .DMP file (dump) will be imported (regardless of any specific OBJECT entries in the `OBJECTMIGRATION.XML` file).<br>Example:<br><IMPORTALL TARGETFOLDER="BASEG">Y</IMPORTALL><br>**N** indicates that only objects explicitly specified in the `OBJECTMIGRATION.XML` file will be imported (provided they are already exported and available in the dump file).<br>**Note:** When migrating Sandbox, IMPORTALL should be **N**. |
| FAILONERROR | | Specify whether to fail operation on any error.<br>**Y** - Stops the import process if there is any error.<br>**N** - Continues with the next object in the import process even if there is an error. |
| OVERWRITE | | Specify whether to overwrite any existing metadata.<br>**Y** - Overwrites metadata even if the metadata already exists.<br>**N** - Will not overwrite the object if it already exists and continue migrating the next object. |

| Tag Name | Attribute | Description |
|---|---|---|
| RETAIN_IDS | | Specify whether to retain the source AMHM objects after migration.<br>**Y** – Retain the Source AMHM objects.<br>**N** – Will not retain the Source AMHM objects.<br>If you have chosen the value '**Y**' for RETAIN_ID and the Target system does not consume the object ID of the Source object, the ID will be retained while migration. If the object in the Target system consumes the object ID of the Source, the ID will not be retained while migration. Instead, it will generate a new ID. |
| MIGRATION_CODE | | Enter the unique migration code to identify the status of the migration process.<br>For example: **8860** |
| OBJECTS | Code | Specify the object **Code** which should be a unique identifier of the definition according to the **Type** of the object in the Information Domain. **Code** should be either system generated or user defined unique code. See the Objects Supported for Command Line Migration section to know for a particular object whether it is user defined or system generated.<br>▪ You can specify the **Code** value as wildcard "*" if you are importing all objects of that **Type**.<br>For example:<br>`<OBJECTS>`<br>`<OBJECT Code="*" Type="112" />`<br>`</OBJECTS>`<br>▪ To import multiple objects of a particular metadata type, multiple entries with each metadata code should be made in the `OBJECTMIGRATION.XML` file.<br>For example, if you want to import three different rules, the entries should be made as given below:<br>`<OBJECTS>`<br>`<OBJECT Code="Rule Code_1" Type="112" INCLUDEDEPENDENCY="Y"/>`<br>`<OBJECT Code="Rule Code_2" Type="112" INCLUDEDEPENDENCY="Y"/>`<br>`<OBJECT Code="Rule Code_3" Type="112"` |

| Tag Name | Attribute | Description |
|---|---|---|
| | | INCLUDEDEPENDENCY="Y"/><br></OBJECTS><br>**Note**: Specify only those Codes that are present in the exported dump file.<br>▪ To import ETL objects, the format is app name followed by tilde, source name followed by tilde and then extract name.<br>For example,<br><OBJECT Code="ETLAPP1~ETLSRC1~ACCOUNT_RATINGS" Type="122" INCLUDEDEPENDENCY="Y" /><br>▪ To import Enterprise Modeling Objects which supports versioning, the version of the object should be a part of the Code attribute.<br><OBJECTS><br><OBJECT Code="ModelID_Version" Type="1305" INCLUDEDEPENDENCY="Y" /><br></OBJECTS>. |
| | Type | Specify the Type ID of the required metadata objects to be imported. Refer to the Objects Supported for Command Line Migration section.<br>**Note**: You need to specify only those Types, which are present in the exported dump file. |
| | SubType | **SubType** is available for Filters and AMHM hierarchy only. This is a mandatory field.<br>For filters, **SubType** indicates the type of the filter. For hierarchies, this indicates the Dimension ID.<br>See the table for filter SubTypes.<br>Example: For Group Filter,<br><OBJECTS><br><OBJECT Code= "200265" Type="1" SubType="21" INCLUDEDEPENDENCY="Y" /><br></OBJECTS> |

| Tag Name | Attribute | Description |
|---|---|---|
| | INCLUDEDEPENDENCY | Specify **Y** if you want to import all dependent objects along with the base objects.<br>Specify **N** if you want to import only the mentioned object.<br>**Note**: If nothing is specified, all the dependent objects are imported if they are present in the dump file. |
| OBJECTS | SANDBOXINFODOM | Specify the Sandbox Information Domain name to import Sandbox. |
| | WITHMODELS | This is applicable only for importing Sandbox.<br>Specify **Y** if you want to import all models present in the Sandbox Infodom along with the Sandbox.<br>Specify **N** if you want to import only the Sandbox.<br>For example,<br>`<OBJECT Code="0" Type="1300" SANDBOXINFODOM="<INFODOM NAME>" WITHMODELS="Y" INCLUDEDEPENDENCY="Y" />` |
| OBJECTS | IncludeInstances | This is applicable only for PMF Process migration.<br>Specify **Y** if you want to import instance data along with the PMF Process.<br>For example,<br>`<OBJECT Code="*" Type="8000" INCLUDEDEPENDENCY="Y" includeInstances="Y"/>` |
| | IsResponseDataRequired | This is applicable only for Questionnaire migration.<br>Specify **Y** if you want to import the responses for Questionnaire.<br>Specify **N** if you want to skip it. |

| Tag Name | Attribute | Description |
|---|---|---|
| OBJECTS | ApplicationCode | This is applicable only for Questionnaire migration.<br>Specify the application code for which you want to import the Questionnaire data. For example, to migrate KYC related Questionnaire data, specify the application code **OFS_KYC**. Similarly, you can specify the application code for other applications and migrate the related Questionnaire data.<br>For example,<br>`<OBJECT Code="*" Type="8001" INCLUDEDEPENDENCY="Y" ApplicationCode="sampleApp" IsResponseDataRequired="Y" />` |
| OBJECTS | TargetFolder | Specify an optional attribute **TargetFolder** in <OBJECTS> tag to import objects to a specific folder. Objects can be migrated individually or in groups.<br>Example:<br>`<OBJECTS TargetFolder="FSGBSEG">`<br>`<OBJECT Code="200143" Type="14"/ INCLUDEDEPENDENCY="Y" >`<br>`</OBJECTS>`<br>`<OBJECTS TargetFolder="BASEG">`<br>`<OBJECT Code="M0001NW" Type="101" INCLUDEDEPENDENCY="Y" />`<br>`<OBJECT Code="H0002CRP" Type="103" INCLUDEDEPENDENCY="Y" />`<br>`</OBJECTS>`<br>Note the following:<br>▪ If you have not specified the **TargetFolder**, the objects will be imported to the folder specified in **FOLDER** tag.<br>▪ If you have not provided the default **FOLDER** value also, then the source folder value in the dump file will be taken as target folder.<br>▪ For Catalog Publish object, the TargetFolder is mandatory. |

| Tag Name | Attribute | Description |
|---|---|---|
| | | For behavior in this release, see Limitations section. |

6. Once you have updated the files with required information in the target environment:
   - Create **metadata/ restore** folder under `$FIC_HOME/utility/Migration` directory (if not present).
   - Copy the exported **.DMP** file that needs to be imported to `$FIC_HOME/utility/Migration/metadata/restore` folder.
   - Navigate to `$FIC_HOME/utility/Migration/bin` path and execute `ObjectMigration.sh`.
7. Once executed, you can view the related log files from the `$FIC_HOME/utility/Migration/logs` location.

#### 11.4.1.3 Migrating Objects Using CSV Files

This section explains how to migrate objects using `export_input.csv` file and `import_input.csv` file. These files are present in `$FIC_HOME/utility/Migration/conf` folder. This folder also contains `migration.properties` file and `OBJECTMIGRATION.xml` file. You need not make any entry in the `OBJECTMIGRATION.xml` file.

To migrate objects, perform the following steps:

1. Navigate to the `$FIC_HOME/utility/Migration/conf` folder
2. Populate the `migration.properties` file with appropriate values as explained in the following table.

**NOTE:** The values in the properties file are updated by the installer. If you want to run this utility from another location, the values should be specified accordingly.

| Name | Description |
|---|---|
| EXPORTIMPORT_BASEPATH | Absolute path of the directory where the metadata/ archive and metadata/ restore folders are created.<br>For example:<br>`EXPORTIMPORT_BASEPATH= /scratch/ofsaaweb/OFSAAI/utility/Migration` |
| FIC_HOME | OFSAAI installation directory.<br>For example: `FIC_HOME /scratch/ofsaaweb/OFSAAI` |

| Name | Description |
|---|---|
| READ_FROM_CSV | Specify whether to read the inputs from CSV files or `OBJECTMIGRATION.xml` file.<br>Set this as **N**. Then the utility reads from `export_input.csv` file for exporting objects or from `import_input.csv` file for importing objects. |
| USERID | Specify the user ID of the OFSAAI user who will be running the migration utility. Ensure the user is mapped to the specific source Information Domain / Segment.<br>The user id should be provided in capital letters. |
| LOCALE | Set this as en_US. |
| INFODOM | Specify the Information Domain from where objects need to be exported/ imported.<br>The information domain name should be provided in capital letters. |
| FOLDER | This is applicable only for importing.<br>Specify the Code of the folder /segment to which you need to import objects. The folder value should be provided in capital letters.<br>If IMPORTALL_TARGET_FOLDER is not specified in case of IMPORTALL=Y, then the objects are imported to this FOLDER. |
| MODE | Set the mode of the operation as:<br>**EXPORT -** for exporting objects<br>**IMPORT** for importing objects |
| DUMP_FILE_NAME | For exporting, specify the name of the file to be exported which will be created under `$FIC_HOME/utility/Migration/metadata/archive` folder as a .DMP file.<br>For importing, specify the name of the file to be imported, which is present under `$FIC_HOME/utility/Migration/metadata/restore` folder. |

| Name | Description |
|---|---|
| IMPORTALL | **Y** indicates that all exported objects in the .DMP file (dump) will be imported (regardless of any specific OBJECT entries in the import_input.csv or `OBJECTMIGRATION.XML` file).<br>**N** indicates that only objects explicitly specified in the import_input.csv or `OBJECTMIGRATION.XML` file will be imported (provided they are already exported and available in the dump file).<br>**Note:** When migrating Sandbox, IMPORTALL should be **N**. |
| IMPORTALL_TARGET_FOLDER | Specify the target folder to which you want to import objects when you specify **IMPORTALL** as **Y**. If this is not specified, it imports the objects to FOLDER. |
| FAILONERROR | Specify whether to fail operation on any error.<br>**Y** - Stops the import process if there is any error.<br>**N** - Continues with the next object in the import process even if there is an error. |
| OVERWRITE | Specify whether to overwrite any existing metadata.<br>**Y** - Overwrites metadata even if the metadata already exists.<br>**N** - Will not overwrite the object if it already exists and continue migrating the next object. |
| RETAIN_IDS | Specify whether to retain the source AMHM objects after migration.<br>**Y** – Retain the Source AMHM object IDs.<br>**N** – Will not retain the Source AMHM object IDs.<br>If you have chosen the value '**Y**' for RETAIN_ID and the Target system does not consume the object ID of the Source object, the ID will be retained while migration. If the object in the Target system consumes the object ID of the Source, the ID will not be retained while migration. Instead, it will generate a new ID. |
| MIGRATION_CODE | Enter the unique migration code to identify the status of the migration process.<br>For example: **8860** |

3. Update `import_input.csv` or `export_input.csv` files based on whether you want to import or export objects as explained in the following tables:

**NOTE:** Any updates done are available in the `export_input_template.csv and import_input_template.csv` files. Before invoking the command line utility,

ensure that the updates available in the templates files are available in the `export_input.csv and import_input.csv` files.

### For Exporting Objects

Following are the entries in the `export_input.csv file:`

| Column Name | Description |
|---|---|
| Object Code | Specify the object Code which should be a unique identifier of the definition based on the Object Type. It should be either system generated or user defined unique code. See the Objects Supported for Command Line Migration section to know for a particular object whether the code is user defined or system generated.<br>You can specify the object Code value as wildcard "*" if you are migrating all objects of that Object Type. |
| Object Type | Specify the Type ID of the required metadata objects to be exported. Refer to the Objects Supported for Command Line Migration section. |
| Object Sub Type | SubType is available for Filters and AMHM hierarchy only. This is a mandatory field.<br>For filters, **SubType** indicates the type of the filter. For hierarchies, this indicates the Dimension ID.<br>See the table for filter SubTypes. |
| Sandbox Infodom | Specify the Sandbox Information Domain name to export Sandbox. |
| With Models | Specify **Y** if you want to export all models present in the Sandbox Infodom along with the Sandbox.<br>Specify **N** if you want to export only the Sandbox. |
| Include Dependency | Specify **Y** if you want to export all dependent objects along with the base objects.<br>Specify **N** if you want to export only the mentioned object.<br>**Note**: If nothing is specified, all the dependent objects are exported. |
| Include Instances | This is applicable only for PMF Process migration.<br>Specify **Y** if you want to export instance data along with the PMF Process. |
| Is Response Data Required | This is applicable only for Questionnaire migration.<br>Specify **Y** if you want to export the responses for Questionnaire.<br>Specify **N** if you want to skip it. |

| Column Name | Description |
|---|---|
| Application Code | This is applicable only for Questionnaire migration.<br>Specify the application code for which you want to export the Questionnaire data. For example, to migrate KYC related Questionnaire data, specify the application code **OFS_KYC**. Similarly, you can specify the application code for other applications and migrate the related Questionnaire data. |

4. After entering the required details of the objects you want to export in the `export_input.csv` file, navigate to `$FIC_HOME/utility/Migration/bin` path and execute `ObjectMigration.sh`. The dump file will be created, which will have an `import_input.csv` with list of all objects (including dependent ones) that are being exported.
5. Once executed, you can view the related log files from the `$FIC_HOME/utility/Migration/logs` location.

### For Importing Objects

Following are the entries in the `import_input.csv file:`

| Column Name | Description |
|---|---|
| Object Code | Specify the object Code which should be a unique identifier of the definition based on the Object Type. It should be either system generated or user defined unique code. See the Objects Supported for Command Line Migration section to know for a particular object whether the code is user defined or system generated.<br>You can specify the Object Code value as wildcard "*" if you are importing all objects of that Object Type.<br>**Note**: Specify only those Codes that are present in the exported dump file. |
| Object Type | Specify the Type ID of the required metadata objects to be imported. See the Objects Supported for Command Line Migration section for Object Type IDs. |
| Object Sub Type | SubType is available for Filters and AMHM hierarchy only. This is a mandatory field.<br>For filters, **SubType** indicates the type of the filter. For hierarchies, this indicates the Dimension ID.<br>See the table for filter SubTypes. |

| Column Name | Description |
|---|---|
| Sandbox Infodom | Specify the Sandbox Information Domain name to import Sandbox. |
| With Models | Specify **Y** if you want to import all models present in the Sandbox Infodom along with the Sandbox.<br>Specify **N** if you want to import only the Sandbox. |
| Include Dependency | Specify **Y** if you want to import all dependent objects along with the base objects.<br>Specify **N** if you want to import only the mentioned object.<br>**Note**: If nothing is specified, all the dependent objects are imported. |
| Is Base Object | This attribute is for information and is not read while processing the input. This will be set as **Y** if the exported object is a base object and will be **N** for all the exported dependent objects. |
| Object Group and Object Group Target Folder | Specify a unique ID to the **Object Group** and the folder to which you want to import all the objects in that Object Group.<br>▪ If Object Group is not specified, by default it takes the object group ID of the preceding entry with Object Group. If the object group ID for the first entry is not explicitly entered, it is assigned the value as '1'.<br>▪ If object Group ID is specified and Object Group Target Folder is kept blank, the objects of that Object Group will be imported to the folder mentioned in the FOLDER tag in the `migration.properties` file. If that is also not mentioned, it will be imported to the source folder mentioned in the dump file.<br>Note: An object with an Object Group ID different from the preceding object will go to a new group. Hence, enter all the objects which you want to import to the same folder successively. |
| Include Instances | This is applicable only for PMF Process migration.<br>Specify **Y** if you want to import instance data along with the PMF Process. |

6. Once you have updated the files with required information in the target environment:
   - Create **metadata/ restore** folder under `$FIC_HOME/utility/Migration` directory (if not present).
   - Copy the exported **.DMP** file that needs to be imported to `$FIC_HOME/utility/Migration/metadata/restore` folder.

- Navigate to `$FIC_HOME/utility/Migration/bin` path and execute `ObjectMigration.sh`.

7. Once executed, you can view the related log files from the `$FIC_HOME/utility/Migration/logs` location.

**Sample import_input.csv**

| Object Code | Object Type | Object Sub Type | Sandbox Infodom | With Models | Include Dependency | Is Base Object | Object Group | Object Group Target Folder | Include Instances | ApplicationCode | IsResponseDataRequired |
|---|---|---|---|---|---|---|---|---|---|---|---|
| mig_group_001 | 1003 | | | | Y | Y | 1 | EMFLD | | | |
| mig_group_002 | 1003 | | | | Y | Y | | | | | |
| mig_group_003 | 1003 | | | | Y | Y | 2 | IPEFLD | | | |
| mig_group_004 | 1003 | | | | Y | Y | 2 | | | | |
| mig_group_005 | 1003 | | | | Y | Y | 3 | | | | |
| mig_group_006 | 1003 | | | | Y | Y | 1 | | | | |

mig_group_001 and mig_group_002 belong to Group 1 and they will be imported to folder EMFLD.

mig_group_003 and mig_group_004 belong to group 2 and they will be imported to folder IPEFLD.

mig_group_005 will be imported to the default folder set under `<FOLDER>` tag.

mig_group_006 will be imported to the default folder set under `<FOLDER>` tag even though the Object Group ID is same as that of mig_group_001. If you want mig_group_006 to be imported to the same folder (EMFLD), then either you have to explicitly give the Object Group Target Folder along with Object Group or mig_group_006 entry should be inserted before a change in the User Group ID. That is, in the previous example, before the entry for mig_group_003.

**NOTE:** If nothing is specified for **Include Dependency** column, all the dependent objects are exported.

#### 11.4.1.4 Limitations

- For AMHM objects, irrespective of values specified in **TargetFolder** or **FOLDER** tags, the objects are migrated to the source folder available in the exported dump file. Hence, ensure folder with same name as it is in the dump file is present in target environment.
- Ensure the specified **Folder** is present in the target environment during **IMPORT** operation. Currently validation is not done.

#### 11.4.1.5 Objects Supported for Command Line Migration

| Object Name | Object Type ID | Support for Wildcard Select ALL Option | Object Code |
|---|---|---|---|
| DATA QUALITY RULE | 120 | Yes | System generated code |
| DATA QUALITY GROUP | 1003 | Yes | User defined unique code |
| DATA TRANSFORMATION[2] | 121 | No | User defined unique code |
| ETL | 122 | No | User defined unique code |

| Object Name | Object Type ID | Support for Wildcard Select ALL Option | Object Code |
|---|---|---|---|
| DATA ENTRY FORMS AND QUERIES (DEFQ) | 124 | Yes | User defined unique code |
| ALIAS | 54 | Yes | User defined unique code |
| DERIVED ENTITY | 128 | Yes | User defined unique code |
| BUSINESS MEASURE | 101 | Yes | User defined unique code |
| BUSINESS DIMENSION | 102 | Yes | User defined unique code |
| BUSINESS HIERARCHY | 103 | Yes | User defined unique code |
| DATASET | 104 | Yes | User defined unique code |
| BUSINESS PROCESSOR | 105 | Yes | User defined unique code |
| ESSBASE CUBE | 106 | Yes | User defined unique code |
| ORACLE CUBE | 133 | Yes | User defined unique code |
| MAPPER | 136 | Yes | System generated code |
| FORMS FRAMEWORK | 126 | Yes | User defined unique code |
| FORMS MENU | 125 | Yes | User defined unique code |
| FORMS TAB | 36494 | | User defined unique code |
| FORMS PAGE | 1127 | Yes | User defined unique code |
| RULE | 112 | Yes | System generated code |
| PROCESS | 111 | Yes | System generated code |
| RUN | 110 | Yes | System generated code |
| BATCH | 123 | Yes | System generated code |
| DIMENSION | 12 | Yes | System generated code |
| FILTER | 1 | Yes | System generated code |
| EXPRESSION | 14 | Yes | System generated code |
| AMHM HIERARCHY | 5 | Yes | System generated code |
| SANDBOX [1] | 1300 | No | System generated code |
| VARIABLE | 1301 | Yes | System generated code |

| Object Name | Object Type ID | Support for Wildcard Select ALL Option | Object Code |
|---|---|---|---|
| TECHNIQUE | 1302 | Yes | System generated code |
| VARIABLE SHOCK | 1303 | Yes | System generated code with '_' and Version number |
| SCENARIO | 1304 | Yes | System generated code with '_' and Version number |
| MODEL | 1305 | Yes | System generated code with '_' and Version number |
| STRESS | 1306 | Yes | System generated code |
| CATALOG PUBLISH | 1307 | Yes | System generated code |
| User | 2000 | Yes | User defined unique code |
| User Group | 2001 | Yes | User defined unique code |
| Role | 2002 | Yes | User defined unique code |
| Function | 2003 | Yes | User defined unique code |
| Profile | 2004 | Yes | User defined unique code |
| PMF Process | 8000 | Yes | User defined unique code |
| Questionnaire Configuration Attributes | 8001 | Yes | User defined code |
| Question Definitions | 8002 | Yes | System generated code |
| Questionnaire Definitions | 8003 | Yes | System generated code |

[1] You can specify the name of the sandbox infodom which you want to migrate for SANDBOXINFODOM attribute and Y for WITHMODELS attribute to migrate the models along with the sandbox.

[2] Data Transformation objects, that is, Post Load Changes definitions based on Stored Procedures only are supported for migration.

### Filter SubTypes

| Object Name | Object SubType ID |
|---|---|
| DataElement Filter | 4 |

| Object Name | Object SubType ID |
|---|---|
| Hierarchy Filter | 8 |
| Group Filter | 21 |
| Attribute Filter | 25 |

#### 11.4.1.6 Dependent Objects

The following table lists the objects that are supported for implicit dependency and the dependent objects:

| Base Object Name | Base Object Type ID | Dependent Objects | Dependent Object Type ID |
|---|---|---|---|
| DATA QUALITY RULE | 120 | DERIVED ENTITY | 128 |
| DATA QUALITY GROUP | 1003 | DATA QUALITY RULE | 120 |
| DATA TRANSFORMATION | 121 | NA | NA |
| ETL | 122 | DATA QUALITY RULE- This is not implemented. | |
| DATA ENTRY FORMS AND QUERIES (DEFQ) | 124 | NA | NA |
| ALIAS | 54 | NA | NA |
| DERIVED ENTITY | 128 | DATASET | 104 |
| | | BUSINESS MEASURE | 101 |
| | | BUSINESS HIERARCHY | 103 |
| | | BUSINESS PROCESSOR | 105 |
| BUSINESS MEASURE | 101 | ALIAS | 54 |
| | | DERIVED ENTITY | 128 |
| BUSINESS DIMENSION | 102 | BUSINESS HIERARCHY | 103 |
| BUSINESS HIERARCHY | 103 | DERIVED ENTITY | 128 |
| | | BUSINESS MEASURE | 101 |
| DATASET | 104 | ALIAS | 54 |
| | | DERIVED ENTITY | 128 |
| BUSINESS PROCESSOR | 105 | DATASET | 104 |

| Base Object Name | Base Object Type ID | Dependent Objects | Dependent Object Type ID |
|---|---|---|---|
| | | BUSINESS MEASURE | 101 |
| | | BUSINESS PROCESSOR | 105 |
| ESSBASE CUBE | 106 | DATASET | 104 |
| | | BUSINESS MEASURE | 101 |
| | | BUSINESS DIMENSION | 102 |
| ORACLE CUBE | 133 | NA | |
| MAPPER | 136 | Hierarchies | 103 |
| FORMS FRAMEWORK | 126 | Child Forms | 126 |
| FORMS MENU | 125 | FORMS and LAYOUTS | |
| FORMS LAYOUT | 1126 | Forms | 126 |
| FORMS TAB | 36494 | NA | NA |
| FORMS PAGE | 1127 | FORMS and LAYOUTS | 126, 1126 |
| RULE | 112 | DATASET | 104 |
| | | MEASURE | 101 |
| | | HIERARCHY | 103 |
| | | BUSINESS PROCESSOR | 105 |
| | | DATA ELEMENT FILTER | 4 |
| | | GROUP FILTER | 21 |
| | | ATTRIBUTE FILTER | 25 |
| | | HIERARCHY FILTER | 8 |
| PROCESS | 111 | EXTRACT DATA | 122 |
| | | LOAD DATA | 122 |
| | | TRANFORM DATA | 121 |
| | | RULE | 112 |
| | | PROCESS | 111 |
| | | CUBE | 106 |
| | | DATA QUALITY GROUP | 1003 |

| Base Object Name | Base Object Type ID | Dependent Objects | Dependent Object Type ID |
|---|---|---|---|
| | | VARIABLE SHOCK | 1303 |
| | | MODEL | 1305 |
| RUN | 110 | EXTRACT DATA | 122 |
| | | LOAD DATA | 122 |
| | | TRANFORM DATA | 121 |
| | | RULE | 112 |
| | | PROCESS | 111 |
| | | RUN | 110 |
| | | CUBE | 106 |
| | | DATA QUALITY GROUP | 1003 |
| | | VARIABLE SHOCK | 1303 |
| | | MODEL | 1305 |
| | | DATA ELEMENT FILTER | 4 |
| | | GROUP FILTER | 21 |
| | | ATTRIBUTE FILTER | 25 |
| | | HIERARCHY FILTER | 8 |
| BATCH | 123 | Not implemented | |
| DIMENSION | 12 | MEMBERS | NA |
| | | ATTRIBUTES | NA |
| FILTER | 1 | BUSINESS HIERARCHY | 103 |
| | | ATTRIBUTES | NA |
| | | FILTER | 1 |
| EXPRESSION | 14 | EXPRESSION | 14 |
| AMHM HIERARCHY | 5 | Members | NA |
| SANDBOX [2] | 1300 | NA | NA |
| VARIABLE | 1301 | BUSINESS HIERARCHY | 103 |
| | | BUSINESS MEASURE | 101 |

| Base Object Name | Base Object Type ID | Dependent Objects | Dependent Object Type ID |
|---|---|---|---|
| | | BUSINESS PROCESSOR | 105 |
| | | DATASET | 104 |
| TECHNIQUE | 1302 | NA | NA |
| VARIABLE SHOCK | 1303 | VARIABLE | 1301 |
| | | DATASET | 104 |
| | | BUSINESS HIERARCHY | 103 |
| SCENARIO | 1304 | VARIABLE SHOCK | 1303 |
| MODEL | 1305 | TECHNIQUE | 1302 |
| | | VARIABLE | 1301 |
| | | DATASET | 104 |
| | | BUSINESS HIERARCHY | 103 |
| | | DataElement Filter | 4 |
| STRESS | 1306 | RUN | 110 |
| | | SCENARIO | 1304 |
| CATALOG PUBLISH | 1307 | NA | NA |
| USER | 2000 | PROFILE | 2004 |
| USER GROUP | 2001 | USER | 2000 |
| ROLE | 2002 | FUNCTION | 2003 |
| FUNCTION | 2003 | NA | NA |
| PROFILE | 2004 | NA | NA |
| PMF PROCESS | 8000 | NA | NA |
| Questionnaire Configuration Attributes | 8001 | NA | NA |
| Question Definitions | 8002 | NA | NA |
| Questionnaire Definitions | 8003 | Questionnaire Configuration Attributes | 8001 |
| | | Question Definitions | 8002 |

#### 11.4.1.7 Migrating Security Management System (SMS) Objects

The Security Management System (Administration) objects such as Users, User Groups, Roles, Functions, and Profiles can be migrated using Command Line Utility.

The Command Line Utility enables migration of following SMS objects along with the mappings:

- Users along with the User-User Group Mapping, User-Profile Mapping, and User-Attribute Mapping
- User Groups along with the User Group-Role Mapping and User Group-Folder-Role Mapping
- Roles along with the Role-Function Mapping
- Functions
- Profiles along with the Profile-Holiday Mapping

**Pre-requisites**

To ensure successful migration of all mappings, you must import the SMS objects in the following order:

- Functions
- Roles
- User Group
- User
- For example: If you want to import User-User Group mapping, then you must migrate the User Group first followed by User.

For more information on migrating object, refer Migrating Objects section.

**Object specific Migration**

This section provides the information about the Prerequisites, Object Type IDs, Dependent Objects, Limitations, Dependencies, and so on about the object specific migration.

This section includes the following topics:

- Object Name: USERS
- Object Name: USERGROUP
- Object Name: ROLES
- Object Name: FUNCTION
- Object Name: PROFILE

**Object Name: USERS**

- Type ID: 2000
- **Dependency**: The dependent objects should be migrated to the Target system, before migration of the object. If the dependent objects are not available in the Target system, then only the objects definitions are migrated and not the mappings.
- **Dependent Objects**: User Group, Profile

**Object Name: USERGROUP**

- Type ID: 2001
- Dependency:
  - The dependent objects should be migrated to the Target system, before migration of the object. If the dependent objects are not available in the Target system, then only the objects definitions are migrated and not the mappings.
  - For User Group-Folder-Role mapping, the shared folder type should be available in the Target system with the same name as in the Source and should be mapped to a domain in the Target with the same name as in the Source. Also, the roles should be available in the Target.
- Dependent Objects: Roles

**Object Name: ROLES**

- Type ID: 2002
- **Dependency**: The dependent objects should be migrated to the Target system, before migration of the object. If the dependent objects are not available in the Target system, then only the objects definitions are migrated and not the mappings.
- Dependent Objects: Function

**Object Name: FUNCTION**

- Type ID: 2003

**Object Name: PROFILE**

- Type ID: 2004

**NOTE:** While importing Profile-Holiday mapping, if the holiday is not defined in the target system; a new holiday is created.

### 11.4.2 Command Line Utilities to Execute RRF Definitions

RRF Rule definitions can be executed through the following command line utilities:

- Command Line Utility for Rule Execution

- Command Line Utility for Rule Execution through web services
- Command Line Utility for Run Execution

#### 11.4.2.1 Command Line Utility for Rule Execution

You can execute RRF Rule definitions through command line utility.

To execute Rule definitions, do the following:

Navigate to $FIC_HOME/utility/RuleExecution/bin of OFSAAI APP tier.

1. Execute **RuleExecution.sh** (UNIX) or **RuleExecution.bat** (Windows) along with the required arguments i.e. <BatchRunExeID> <ComponentID> <TaskID> <MisDate> <DataStoreType> <INFODOM> <IPaddress> <RuleID> <BuildFlag> <OptionalParameters> in the same order.

| Arguments | Description |
|---|---|
| BatchRunExeID | Refers to the Execution ID of the Batch being executed. |
| ComponentID | Refers to The Type of component to be executed. |
| TaskID | Refers to the Task ID. |
| MisDate | Refers to the date with which the data for the execution would be filtered. |
| DataStoreType | Refers to the type of data store such as Enterprise Data Warehouse (EDW) which refers to the Multi-dimensional Database/Cubes. |
| INFODOM | Refers to the Information Domain mapped. |
| IPaddress | Refers to the IP Address of the machine on which Infrastructure Database Components have been installed. |
| RuleID | Refers to the Rule definition to be executed. |
| BuildFlag | Build Flag refers to the pre-compiled rules, which are executed with the query stored in database.<br>Built Flag status set to "**No**" indicates that the query statement is formed dynamically retrieving the technical metadata details.<br>If the Build Flag status is set to "**Yes**" then the relevant metadata details required to form the rule query is re-compiled in database. |
| OptionalParameters | Refers to the set of parameters which would behave as filter criteria for the merge query. |

For example,

ksh RuleExecution.sh RRFATOM_exec_rule_20120904_1 RULE_EXECUTION Task1 20120906 EDW RRFATOM A.B.C.D 1344397138549 N '$RUNID=,$PHID=,$EXEID=,$RUNSK='

2. You can access the location *$FIC_HOME/utility/RuleExecution/logs* to view the related log files. Also the component specific logs can be accessed in the location *$FIC_DB_HOME/logs.*

#### 11.4.2.2 Command Line Utility for Rule Execution through web services

You can execute RRF Rule definitions through Web Services using command line utility.

To execute Rule definitions through web services, do the following:

Navigate to $FIC_HOME/utility/ WSExecution/bin of OFSAAI APP tier.

1. Update the following parameters in **WSExecution.sh** file with the required values.

   i.e. you need the replace "***$6 $8 $9 $4 $3 ${10} $1***" *with* <INFODOM> <RULECODE> <BUILDFLAG> <MISDATE> <TaskID> <OptionalParameters> <BATCHID> details.

| Arguments | Description |
|---|---|
| INFODOM | Refers to the Information Domain mapped. |
| RULECODE | Refers to the Rule definition to be executed. |
| BUILDFLAG | Build Flag refers to the pre-compiled rules, which are executed with the query stored in database.<br>Built Flag status set to "**No**" indicates that the query statement is formed dynamically retrieving the technical metadata details.<br>If the Build Flag status is set to "**Yes**" then the relevant metadata details required to form the rule query is re-compiled in database. |
| MISDATE | Refers to the date with which the data for the execution would be filtered. |
| TaskID | Refers to the Task ID |
| OptionalParameters | Refers to the set of parameters which would behave as filter criteria for the merge query. |
| BATCHID | Refers to the Execution ID of the Batch being executed. |

   For example, "RORSTSOL" "1345163118421" "Y" "20110407" "Task1" '$EXEID=1345819753253,$RUNSK=2' "1345819753253"

2. Execute **WSExecution.sh** (UNIX) or **WSExecution.bat** (Windows).

   For example, ./WSExecution.sh

3. You can access the location *$FIC_HOME/utility/WSExecution/logs* to view the related log files. Also the component specific logs can be accessed in the location *<OFSAAI deployed path>/logs.*

#### 11.4.2.3 Command Line Utility for Fire Run Service\ Manage Run Execution

Manage Run Execution utility can be used to execute Run definitions through Web Services call or locally by setting **isCommandLine** parameter to **N** or **Y** respectively.

**NOTE:** If there are any Applications installed and the Run definitions have Application specific components, then the utility cannot be run locally; it should be run through Web Services call since this is not taken up by the Applications.

Following are the pre-requisites before executing this utility:

1. Ensure that JAVA_HOME is pointing to JAVA bin installation directory.
2. Ensure FIC_HOME is pointing to application installation directory.
3. Ensure the file ficapp\icc\conf\WSMREService.properties has been updated to point to the desired serviceURL. Also ensure the file path for MRE batches are created.

   MRE_WSDL_LOCATION = URL of WebService

   For example:
   MRE_WSDL_LOCATION=http://10.184.230.116:4572/7.2reveleus/manageRunExecution?wsdl

   MRE_FILE_PATH = $ICC_HOME/mre/

   For example, MRE_FILE_PATH = /export/home/aaiapp/ofsaaiapp/ficapp/icc/mre/
4. Set the PATH variable as $ICC_HOME/bin.

To execute this utility, do the following:

1. Navigate to *$FIC_HOME/ficapp/icc/bin* of OFSAAI APP tier.
2. Provide the following parameters in the command line.

| Arguments | Description |
|---|---|
| RUNCODE | Refers to Run Code to be executed. |
| INFODOM | Refers to the mapped Information Domain. |
| SEGMENT/FOLDER | Refers to the Folder / Segment name to which run is getting executed. |
| Run Execution Description | Refers to the batch description.<br>**Note**: In case the Run Execution description has space, the same can be passed using double quotes. |

| Arguments | Description |
|---|---|
| USERNAME | Refers to the user name who is executing. |
| MISDATE | Refers to the date with which the data for the execution would be filtered. |
| isCommandLine | Set this to **Y** if you want to run this utility locally. If it is set to **N**, the utility is run through web service call.<br>This field is not mandatory. If no value is given, it will be taken as **N**. |

3. Execute **WSMRERequest.sh** <Run Code> <Infodom> <Segment/Folder Code> <Run Execution Description> <Username> <MIS Date <yyyyMMdd>> <isCommandLine <Y/N>>.

   For example, ./WSMRERequest.sh "1305855689766" "APP" "APPSEG" "App approach" "APPUSER" "20001231" "Y"

4. You can access the location *$FIC_HOME/ficapp/icc/log/WSMRERequest.log* to view the related log files. Also the component specific logs can be accessed in the location *<OFSAAI deployed path>/logs*.

   Every execution of Fire Run Service creates a text file in the properties file path (ficapp/icc/conf/WSMREService.properties) which contains the Batch ID created for that particular Run.

### 11.4.3 Command Line Utility to Publish Metadata in Metadata Browser

The following command line utility is introduced to publish Metadata in Metadata Browser.

Following are the pre-requisites before executing this utility:

1. If the FICSERVER is configured to cache the metadata at the start up of the server, you need to wait till the caching of metadata is completed to invoke this utility.
2. Ensure that JAVA_HOME is pointing to JAVA bin installation directory.
3. Ensure that the following jar file is present in *$FIC_DB_HOM/lib* directory.

   aai-wsclient-mdbpublish.jar,aai-wsmdbpublishservice.jar

4. Ensure that the following properties file is present in *$FIC_DB_HOME/conf* folder.

   **MDBPublishExecution.properties**

   You can also manually update the properties file in the path *$FIC_DB_HOME/conf/MDBPublishExecution.properties* to point to the required ServiceURL.

   MDBPUBLISH_EXECUTION_WSDL_LOCATION = URL of WebService (For example, http://<<IP ADDRESS>>/OFSAAI/mdbPublishExecution?wsdl)

5. Metadata should be present.

To run the utility through the **Operations** module:

1. Navigate to the Operations module and define a batch.
2. Add a task by selecting the component as RUN EXECUTABLE and
3. Enter Metadata Value as mentioned in the example.

For Example:
Component ID: RUN EXECUTABLE
Metadata Value (Executable) like:

```
 MDBPublishExecution.sh,LANG611INFO
(where LANG611INFO is the Infodom)
 Batch = Y
```

To execute Metadata Browser publish utility:

1. Navigate to *$FIC_DB_HOME/bin* of OFSAAI FIC DB tier.
2. Execute MDBPublishExecution.sh (UNIX)

   For example, ./MDBPublishExecution.sh

3. While executing, provide any of the following parameter as required:
   - ALL - To publish metadata to all the available information domains.
   - INFODM1 - To publish metadata to only one (specified) information domain.
   - INFODOM1~INFODOM2~INFODOM3 - To publish metadata to multiple (specified) information domains separated by tilde "**~**".

**NOTE:** If no parameter is specified, by default "ALL" option is considered.

4. You can access the location $FIC_DB_HOME\log\MDBPublishExecution.log to view the related log files.
5. The publish execution specific logs will be generated in format "MDB_<timestamp>" in the path $LOG_HOME/logs/ mentioned in **MDBLogger.xml** file available under MDB appender.

You can change the log file creation path by modifying the **$LOG_HOME** variable with the desired path. For example, the $LOG_HOME can be replaced with */user1/ofsaa/webserver/logs/*. However, the default path set by the installer will be */<<web-application-server>>/webapps/ofsaai733/logs/DynamicFilename*.

### 11.4.4 Command Line Utility for Object Application Mapping in Metadata Browser

The following command line utility is introduced to perform Object Application mapping

Following are the pre-requisites before executing this utility:

1. Ensure that JAVA_HOME is pointing to JAVA bin installation directory.
2. Ensure that the following jar file is present in $FIC_DB_HOM/lib directory.

   aai-wsclient-mdbpublish.jar, aai-wsmdbpublishservice.jar
3. Ensure that the following properties file is present in $FIC_DB_HOME/conf folder.

   ObjAppMap.properties

   You can also manually update the properties file in the path *$FIC_DB_HOME/conf/ ObjAppMap.properties* to point to the required ServiceURL.

   MAP_WSDL_LOCATION= URL of WebService (For example, https://<<IP ADDRESS>>/OFSAAI/ mdbObjAppMap?wsdl)

To execute Metadata Object Application Mapping utility:

1. Navigate to *$FIC_DB_HOME/bin* of OFSAAI FIC DB tier.
2. Execute MDBObjAppMap**.sh** (UNIX)

   For example, ./MDBObjAppMap.sh
3. While executing, provide any of the following parameter as required:
   - ALL - To do object application mapping in all the available information domains.
   - INFODM1 - To do object application mapping in only one (specified) information domain.
   - INFODOM1~INFODOM2~INFODOM3 - To do object application mapping in multiple (specified) information domains separated by tilde “~”.

   **NOTE:** If no parameter is specified, by default “ALL” option is considered.
4. You can access the location *$FIC_DB_HOME\log\MDBObjAppMap.log* to view the related log files.

### 11.4.5 Command Line Utility for Resaving UAM Hierarchy Objects

OFSAAI has facilitated a utility called RUNIT.sh to resave UAM Hierarchy Objects. This file resides under ficdb/bin area.

To run the utility directly from the console:

1. Navigate to *$FIC*_DB_*HOME/bin* of OFSAAI FIC DB tier.
2. Execute **RUNIT.sh** (UNIX).

   For example, `./RUNIT.sh`

   This will resave all the available hierarchy objects.

3. Provide the following parameters if you want to resave particularly some hierarchy objects:
   - INFODOM- Specify the information domain name.
   - USERID- Specify the user id.
   - HIERARCHY Code- Specify the hierarchy codes separated by tilde "~" to resave only those hierarchies. Specify the hierarchy codes separated by exclamation mark "!" to exclude those hierarchies from resaving.
   - Asynchronous Mode- Specify whether you want to save the hierarchy in synchronous manner or not. No indicates saving of hierarchies will happen only after the population of the REV_BIHIER and REV_LOCALE_HIER tables in the atomic schema. This is an optional parameter and if it is not mentioned, it will be in asynchronous mode.

   ```
   ./RUNIT.sh,INFODOM,USERID,HIERARCHY code1~HIERARCHY code2,No
   ./RUNIT.sh,INFODOM,USERID,HIERARCHY CODE1!HIERARCHY CODE2,No
   ```

   For example,

   ```
   ./RUNIT.sh,OFSAAINFO,USERID,HIE001~HIE002
   ```

   This will resave the hierarchies HIE001 and HIE002 in the OFSAAINFO information domain.

   ```
   ./RUNIT.sh,OFSAAINFO,USERID,HIE001!HIE002
   ```

   This will resave all the hierarchies in the OFSAAINFO information domain except the hierarchies HIE001 and HIE002.

   **NOTE:** If you want to exclude only one hierarchy, it should be preceded with "!".

To run the utility through the **Operations** module:

1. Navigate to the **Operations** module and define a batch.
2. Add a task by selecting the component as RUN EXECUTABLE.
3. Under Dynamic Parameter List panel, as mentioned in the **Executable** field.

   ./RUNIT.sh

   Or

   ./RUNIT.sh,INFODOM,USERID,HIERARCHY code1!Hierarchy Code2,NO- to resave all hierarchies except Hierachy Code1 and Hierarchy Code2

After saving the Batch Definition, execute the batch to resave the UAM Hierarchy Objects.

### 11.4.6 Command Line Utility for Resaving Derived Entities

OFSAAI has facilitated a utility called MetadataReSave.sh to resave Derived Entity objects. This file resides under ficdb/bin area.

To run the utility directly from the console:

1. Navigate to *$FIC*_DB_*HOME/bin* of OFSAAI FIC DB tier.
2. Execute MetadataReSave.sh (UNIX).

   For example, `./MetadataReSave.sh`

   This will resave all the available Derived Entity objects.
3. Provide the following parameters if you want to resave particularly some derived entity objects:
   - INFODOM- Specify the information domain name.
   - USERID- Specify the user id.
   - METADATA SERVICE TYPE – 856 for Derived Entity
   - Derived Entity Code- Specify the derived entity codes separated by tilde "**~**".

   For example, `./MetadataReSave.sh,INFODOM,USERID,856,Derived Entity code1~ Derived Entity code2`

To run the utility through the **Operations** module:

1. Navigate to the **Operations** module and define a batch.
2. Add a task by selecting the component as RUN EXECUTABLE.
3. Under Dynamic Parameter List panel, specify `./MetadataReSave.sh` or `./MetadataReSave.sh,INFODOM,USERID,856,Derived Entity code1~ Derived Entity code2` in the **Executable** field.
4. Select Yes or No for the **Wait** and **Batch Parameter** drop-down lists. For more information, see *Component: RUN EXECUTABLE section*.

After saving the Batch Definition, execute the batch to resave the Derived Entity Objects.

You can find the logs in `$FIC_DB_HOME/log/MetadataReSave.log`.

### 11.4.7 Command Line Utility for OBIEE Publish

OFSAAI has facilitated a utility called OFSAAGenerateRepository to:

- Copy the XML file present in *ftpshare/<infodom>/RPD/<Foldername>* in the App tier to the *OFSAAGenerateRepository/Output* folder in OBIEE server.
- Convert the XML generated from the Catalog definition to RPD file.

- Copy the generated RPD file from the *Output* folder of OBIEE server to *ftpshare/<infodom>/RPD/<Foldername>.*

You can download the RPD file using the *Download Repository* feature under **Catalog** menu (Unified Analytical Metadata>Analytics Metadata>Catalog) after running this utility. Additionally, you can view the RPD file using the OBIEE administrative tool.

Following are the pre-requisites before executing this utility:

1. Ensure that JAVA_HOME in the `.profile` of the OBIEE tier is pointing to JAVA bin installation directory.
2. Set GEN_REP_HOME in the `.profile` of the OBIEE tier to the *OFSAA Generate Repository Home* folder.
3. Ensure known_hosts file of OBIEE server has an entry for OFSAA APP server.

To run the utility from the console:

1. Navigate to `$FIC_HOME/utility/OFSAAGenerateRepository` and copy the folder to OBIEE server.
2. Configure the log paths in `OFSAALogger.xml` and `RevLog4jConfig.xml` to `$GEN_REP_HOME/logs/`.
3. Configure `OFSAAGenerateRepository.properties` file available under `$GEN_REP_HOME/conf` folder.
   - INFODOM- Specify the information domain name where user has created the Catalog definition.
   - FOLDER_NAME- Specify the folder name as <Catalog_Code>_<Version Number>_<Generated_Sequence>.
   - OBIEE_UTILITY_PATH- Specify the absolute path of the OBIEE utility where "biserverxmlexec" executable is available..
   - OBIEE_HOME- Specify the absolute path where OBIEE is installed.

   For example,

   ```
   INFODOM=BASEL
   FOLDER_NAME=1405437502536_1_1
   OBIEE_UTILITY_PATH=/export/home/obieuser/OBIEE11g/Oracle_BI1/bifoundation/server/bin/
   OBIEE_HOME=/export/home/obieuser/OBIEE11g/Oracle_BI1
   ```
4. Navigate to `$GEN_REP_HOME/bin` of OBIEE layer where you have copied the utility.
5. Execute `OFSAAGenerateRepository.sh` (UNIX).

For example, `./OFSAAGenerateRepository.sh`

**NOTE:** Ensure you have 755 permission set for `OFSAAGenerateRepository.sh` file.

6. Enter an option 1, 2 or 3 when you are prompted:
   - **1**- Enter 1 to copy the XML file present in `ftpshare/<infodom>/RPD/<Foldername>` to the `Output` folder in OBIEE server.
   - **2-** Enter 2 to convert the XML file to RPD. Specify the password/repository token which you have set while generating repository from *Catalog>Generate Repository* window. The generated RPD file will be put under the *Output* folder.
   - **3**- Enter 3 to copy the generated RPD file from the *Output* folder to `ftpshare/<infodom>/RPD/<Foldername>`.

**NOTE:** The <Foldername> is the "FOLDER_NAME" you have set in the `OFSAAGenerateRepository.properties` file. To view the log file, go to `$GEN_REP_HOME/logs/`.

### 11.4.8 Command Line Utility for Mapper Pushdown

OFSAAI has facilitated a utility called MapPushDown which is used for push down operation of mapper definitions. This utility is meant to refresh the mapping maintained in the atomic table based on the latest members available in the hierarchy and the available macros already defined for the mapper definition. This utility resides under ficdb/bin area.

To run the utility directly from the console:

1. Navigate to *$FIC_DB_HOME/bin* of OFSAAI FIC DB tier, where the utility is present.
2. Execute the following command:

   ```
   ./MapPushDown.sh <INFODOM>
   ```

   where `<INFODOM>` is a mandatory parameter which represents the information domain in which the utility will be run.

   This command will push down all the mapper definitions in the specified infodom.
3. Provide the Mapper Codes separated by tilde "~" if you want to pushdown specifically some mapper definitions:

   Command:

   ```
   ./MapPushDown.sh <INFODOM> <Mapper code1~ Mapper code2>
   ```

   For example,

```
./MapPushDown.sh BASEL 1099999999~1099999998~1099999997
```

To run the utility as an executable component from RRF:

1. Navigate to the **RRF** module.
   - Define a Process definition with component as Executable.
   - Pass parameters as required and add the Process into a Run to be fired.

   Or

   - Define a Run definition with component as Executable.
   - Pass parameters as required and fire the Run definition.

   Sample data for creating a Process with Executable component: "MapPushDown.sh","BASEL","1099999998"

To run the utility through the **Operations** module:

1. Navigate to the **Operations** module and define a batch.
2. Add a task by selecting the component as RUN EXECUTABLE.
3. Pass parameters as required.
4. Under Dynamic Parameter List panel, specify ./MapPushDown.sh <INFODOM> or ./MapPushDown.sh <INFODOM> <Mapper code1~ Mapper code2> in the **Executable** field.

Sample Data for executing through ICC: `./MapPushDown.sh BASEL 1099999998`

### 11.4.9 Command Line Utility for Object Registration

The RegisterObjects Utility is used to do the object registration separately if it failed during model upload process. You can execute the shell script file *RegisterObjects.sh* from the command line. This utility is present at `$FIC_HOME/ficapp/common/FICServer/bin location`.

To run the utility directly from the console:

1. Navigate to `$FIC_HOME/ficapp/common/FICServer/bin`.
2. Open `RegisterObjects.sh` and enter the following arguments in the file:
   - `<infodom>` – Refers to the DSN name.
3. Execute the script using the command:

   ```
   ./ RegisterObjects.sh
   ```

   **NOTE:** Ensure that you are provided with the execute permission.

### 11.4.10 Command Line Utility for Source Model Generation

Source Model Generation (SMG) utility is a standalone utility that can be used to generate source models for both RDBMS and HDFS based sources. After creating an Application and a Data Source (using the Data Management Framework), this utility can be invoked to generate Source Model. If the source is not mapped to the application, the utility will do the mapping before proceeding with model generation. SMG utility can be executed as a Scheduled ICC Batch or Stand Alone Executable. Both Catalog and Erwin type source model generation are supported.

This utility is present at `$FIC_DB_HOME/bin location`.

**NOTE:** SMG utility is not supported for source model generation for WebLog source systems.

Following are the pre-requisites before executing this utility:

1. Application and Data Source should already have been created from the Data Management Framework.
2. FIC Server should be running.
3. For Erwin Type
   - Erwin file in the .xml format must be present in `$FIC_DB_HOME/<any location under this folder>`.
   - An XSLT file called `Erwin.xsl` must be present in the `$FIC_APP_HOME/common/FICServer/conf` folder. The XSL file corresponding to the version of the Erwin file can be picked from the `Erwin<version>` folder present in the same path.

   For instance, if your Erwin XML is of the version 95, then pick the `Erwin.xsl` file from `$FIC_APP_HOME/common/FICServer/conf/Erwin95` folder and copy it to the `$FIC_APP_HOME/common/FICServer/conf` folder.

To run the utility directly from the console:

1. Navigate to `$FIC_DB_HOME/bin`.
2. Execute `smgutility.sh` with the following arguments:
   - Option1: CATALOG
     - With Filters:

       ```
       ./smgutility.sh c appName sourceName user startswith contains endswith dummy dummy dummy dummy infodom
       ```

     - Without Filters:

       ```
       ./smgutility.sh c appName sourceName user null null null dummy dummy dummy dummy infodom
       ```

- Option 2: ERWIN (Filters are not applicable in this option)

  ```
  ./smgutility.sh c appName sourceName user erwinPath dummy dummy dummy dummy infodom
  ```

  where Erwin Path is the complete file path including the name of the Erwin XML file. This must be present in the DB layer.

**NOTE:** The parameters *must* be separated by space.

To run the utility through the Operations module:

1. Navigate to the **Operations** module and define a batch.
2. Add a task by selecting the component as RUN EXECUTABLE.

- **Option1: CATALOG**

  a) Enter the following parameters in the Executable field:

  - With Filters:

    ```
    smgutility.sh,c,appName,sourceName,user,startswith,contains,endswith
    ```

  - Without Filters:

    ```
    smgutility.sh,c,appName,sourceName,user,null,null,null
    ```

  b) Set Batch Parameter as ‘Y’. This is preferred. However, if Batch Parameter is set to ‘N’, INFODOM name is mandatory in the Executable field as shown below:

  ```
  smgutility.sh,c,appName,sourceName,user,startswith,contains,endswith, dummy,dummy,dummy,dummy,infodom
  ```

- **Option 2: ERWIN** (Filters are not applicable in this option)

  a) Enter the following parameters in the Executable field:

  ```
  smgutility.sh,e,appName,sourceName,user,<Erwin path>
  ```

  where Erwin Path is the complete file path including the name of the Erwin XML file. This must be present in the DB layer.

  b) Set Batch Parameter as ‘Y’. This is preferred. However, if Batch Parameter is set to ‘N’, INFODOM name is mandatory in the Executable field as shown below:

  ```
  smgutility.sh,e,appName,sourceName,user,erwinPath,dummy,dummy,dummy,dummy,infodom
  ```

**NOTE:** No space should be given between the parameters.

Logs can be found at:

- $FIC_HOME/ficdb/log/ETLSourceModelGeneration/<appname_sourcename>.log
- ftpshare/STAGE/<sourcename>/<appname_sourcename>.log

### 11.4.11 Command Line Utility for LDAP Migration

OFSAAI has facilitated a command line utility called LDAP Migration utility to migrate:

- users registered in LDAP server to OFSAA
- users in LDAP to a user group mapping in OFSAA
- user groups in OFSAA to LDAP server

This utility is present at `$FIC_DB_HOME/bin` folder.

To run the utility directly from the console:

1. Navigate to `$FIC_DB_HOME/bin` of OFSAAI FIC DB tier, where the utility is present.
2. To migrate users from LDAP server to OFSAA, execute the following command:

```
ldapmigration.sh <user> <password> LDAPTOSMS user <ldap_server>
<user_search_filter> <user_base>
```

3. To migrate users in a particular user group in LDAP server to OFSAA, execute the following command:

```
ldapmigration.sh <user> <password> LDAPTOSMS groupmember
<ldap_server> <group_search_filter> <group_base>
```

**NOTE:** This migration assumes the same user group exists in OFSAA.

4. To migrate only user-user group mapping from LDAP server to OFSAA, execute the following command:

```
ldapmigration.sh <user> <password> LDAPTOSMS usergroupmap
<ldap_server> <group_search_filter> <group_base>
```

**NOTE:** This migration assumes the same user group exists in OFSAA.

5. To migrate user groups from OFSAA to LDAP server, execute the following command:

```
ldapmigration.sh <user> <password> SMSTOLDAP group <ldap_server>
<group_search_filter>
```

where

`<user>`- Specify SYSADMN as the user name.

`<password>`- Specify SYSADMN password.

`<ldap_server>`- Specify the LDAP server name. For example, ORCL1.in.oracle.com.

`<user_search_filter>-` Specify filter condition for user search.

`<user_base>-` Specify user context base.

`<group_search_filter>-` Specify filter condition for user group search.

`<group_base>-` Specify group context base.

For example,

```
ldapmigration.sh SYSADMN password1 SMSTOLDAP group
ORCL1.in.oracle.com  OFSAAGRP
```

```
ldapmigration.sh SYSADMN password1 LDAPTOSMS user
ORCL1.in.oracle.com objectclass=organizationalPerson
cn=Users,dc=oracle,dc=com
```

## 11.5 Configuration for Model Upload Utility

The Model Upload Utility uploads the Data Model through the command line parameter by executing a shell script file. It is used to upload Models that are huge in size. The ERwin file that contains the Data Model information must be placed at `<ftpshare>/<infodom>/erwin/erwinXML`. The `Upload.sh` file is a shell script which is required to run the utility, and it is present at `$FIC_HOME/ficapp/common/FICServer/bin` location.

Following are the pre-requisites before executing this utility:

1. Ensure that JAVA_HOME in the .profile is pointing to JAVA bin installation directory.
2. Set the `FIC_HOME` path in the user .profile.
3. Ensure that the following jar file is present in `$FIC_HOME/ficapp/common/FICServer/lib` directory
   - UploadModelUtil.jar
   - FICServer.jar
   - dateent.jar

### 11.5.1 Run the Model Upload Utility

1. Navigate to `$FIC_HOME/ficapp/common/FICServer/bin` location.
2. Open `Upload.sh` and enter the following arguments in the file:
   - `<infodom>` – Refers to the DSN name. The information domain to where the model upload to be done.
   - `<entire file path>` - Refers to the entire file path of the Erwin XML. For example, `$FTP_SHARE/$INFODOM/erwin/erwinXML/PFT_model.xml`. Set this as Null for DB Catalog and Data Model Descriptor options.

- `<username>` - Refers to the username of the OFSAA application.
- `<uploadmode N/R/AM/AP>` - Refers to the Upload Choice Code.
  - N - Refers to the New Model Upload.
  - R - Refers to the Complete Model Rebuild Upload.
  - AM - Refers to the Incremental Model Upload.
  - AP - Refers to the Sliced Model Upload.
- `<modelUploadType E/C>` - Refers to the Model Upload type.
  - `E` - Erwin upload
  - `C` - Catalog Generation
  - Set this as `Null` for Data Model Descriptor option.
- `<startsFilter>` - This argument should be given only for Catalog generation.

  For example,

  For Catalog - `dim_test`

  For Erwin and Data Model Descriptor options- `Null`
- `<constainsFilter>` - This argument should be given only for Catalog generation.

  For example,

  For Catalog - `dim_test`

  For Erwin and Data Model Descriptor options– `null`
- `<endsFilter>` - This argument should be given only for Catalog generation.

  For example,

  For Catalog - `dim_test`

  For Erwin and Data Model Descriptor options - `Null`

**NOTE:** Do not alter the filter conditions startsFilter, constainsFilter and endsFilter.

- `<runscriptsFlag>` - Set this as `TRUE` or `FALSE`.
  - `TRUE` - Updates the database/schema with the Model changes.
  - `FALSE` - Does not update the database/schema with Model changes. If this is set to FALSE, you should execute the SQL scripts generated as part of OFSAAI model upload process in a correct sequence, in order to make the Infodom Schema to be consistent with the DATABASE.xml. For more information, see Sequence of Execution of Scripts section.

- `<constraintNOVALIDATEFlag>` - Refers to give an option to enable or disable constraints in to alter constraint in NOVALIDATE state. During Incremental and Sliced Model upload, the constraint validation is based on the value provided to this flag.
  - `TRUE` - Enables constraints in NOVALIDATE state and does not check the existing data for the integrity constraint violation.
  - `FALSE` - Does not enable constraints in NOVALIDATE state and checks the existing data for the integrity constraint violation.
- `considerCustomization` - If customization is allowed on columns, set it as `TRUE`, else set it as `FALSE`.
- `DatabaseXMLflag`- Set this as `TRUE` if model upload option is selected as Data Model Descriptor, else set this as `FALSE`.
- `ScriptsMigratedFlag`- Set this as `TRUE` or `FALSE`.
  - `FALSE` - To resume the model upload process from script generation. That is, if you have copied only database xml file to your target environment, set this as `FALSE`.
  - `TRUE` - To resume the model upload process from script execution. That is, if you have copied only database xml file and DB scripts to your target environment, set this as `TRUE`.
- `DDL Logs Flag`- Set this as `TRUE` to print execution audit logs for Scripts. The logs can be found at `ftpshare/<infodom>/executelogs/<infodom>_DDLLOG_<last data model version>_<MM.DD.YYYY>-<HH.MM.SS>.log.`
- `Refresh Params` – Set this as `TRUE` to use Database session parameters and hints during model upload process, else set this as `FALSE`.
- `Object Registration Mode` – Set it as `F` for full Object Registration or `I` for incremental object registration.

**NOTE:** Incremental object registration should be opted only if the object registration on the base environment was incremental. Full Object Registration can be performed irrespective of mode opted in the base environment.

The various parameters to be passed for different modes are shown in the following matrix:

| Start point | Object Registration status | DatabaseXMLFlag | ScriptsMigratedFlag | ObjectRegistrationflag |
|---|---|---|---|---|
| Script | Full Object | True | False | F |

| | | | | |
|---|---|---|---|---|
| generation | Registration | | | |
| | Incremental Object registration | True | False | I |
| Script Execution | Full Object Registration | True | True | F |
| | Incremental Object registration | True | True | I |

3. Execute the script using the command:

```
./upload.sh
```

**NOTE:** Ensure that you are provided with the execute permission.

Logs are updated in regular Model Upload log at
`ftpshare/<infodom>/logs/<infodom>_LOG_<last data model version>_<MM.DD.YYYY>-<HH.MM.SS>.log`

**NOTE:** During incremental model upload, when the uploadmode is set as AM, some of mappings done in Data Integrator may get invalidated.
You are required to save these mappings again.

### 11.5.2 Model Upload Details

Some Java settings need to be configured while uploading the data model with various sizes of xml files. This can be done by:

- Picking from the server
- Model Upload Utility
- Browsing the file in the local computer.

These Java settings differ depending on the availability of RAM. You have to ensure that the Default and Temporary table-space assigned to Oracle user is allocated with required space. The below table consists of the Java settings done on both client and server machines:

**Table 1: optimized memory settings required for "New" model upload**

| Model Upload Options | Size of Data Model XML File | X_ARGS_APP ENV Variable in OFSAAI APP Layer |
|---|---|---|
| Pick from Server | 106 MB | "-Xms1024m -Xmx1024m |

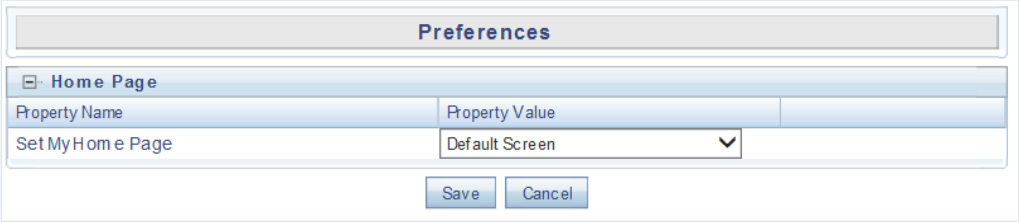
| Model Upload Options | Size of Data Model XML File | X_ARGS_APP ENV Variable in OFSAAI APP Layer |
|---|---|---|
| | 36 MB | "-Xms2048m -Xmx2048m |
| | 815 MB | "-Xms4096m -Xmx4096m |
| | 1243 MB | "-Xms6144m -Xmx6144m |
| Model Upload Utility | 106 MB | "-Xms1024m -Xmx1024m |
| | 336 MB | "-Xms2048m -Xmx2048m |
| | 815 MB | "-Xms4096m -Xmx4096m |
| | 1243 MB | "-Xms6144m -Xmx6144m |
| Save New Erwin File In Server | 106 MB | "-Xms1024m -Xmx1024m |
| | 336 MB | "-Xms2048m -Xmx2048m |
| | 815 MB | "-Xms4096m -Xmx4096m |
| | 1243 MB | "-Xms6144m -Xmx6144m |

# 12 Preferences

The preferences section enables you to set your OFSAA Home Page.

To set the Home page,

1. Click the logged in user name and select **Preferences** from the drop-down menu. The *Preferences* window is displayed.




2. Select the application which you want to set as the Home Page from the **Set My Home Page** drop-down list.

**NOTE:** Whenever you install a new application, the related value for that application is found in the drop-down list.

3. Click **Save** to save your preference.

# Appendix A: User Groups and User Roles

## User Groups and Entitlements

Below User Groups and Entitlements is part of the OFSAA 8.0 AAAI Application Pack release.

| User Group Name | User Group Description |
|---|---|
| Business Administrator | User mapped to this group will have access to all the menu items and actions for advanced operations of metadata objects. |
| Business Authorizer | User mapped to this group will have access to all the menu items and actions for authorization of changes to metadata objects. |
| Business Owner | User mapped to this group will have access to all the menu items and actions for read and write of metadata objects |
| Business User | User mapped to this group will have access to all the menu items and actions for access and read of metadata objects. |
| Guest | User mapped to this group will have access to certain menu items with only access privileges. |
| Identity Administrator | User mapped to this group will have access to all the menu items for managing User entitlements, User Group Entitlements and Access Management configurations. |
| Identity Authorizer | User mapped to this group will have access to all the menu items for authorizing User entitlements, User Group Entitlements and Access Management configurations. |
| Object Administrator | User mapped to this group will have access to all menu items for managing object migration and metadata traceability using metadata browser. |
| System Administrator | User mapped to this group will have access to all menu items for managing the setup configurations. |

## Financial Services Analytical Applications Infrastructure User Group – Role Mapping

| Group Name | Role Name |
|---|---|
| Business Administrator | Alias Access |
| Business Administrator | Alias Advanced |
| Business Administrator | Alias Authorize |
| Business Administrator | Alias Read Only |

| | |
|---|---|
| Business Administrator | Alias Write |
| Business Administrator | Atomic excel access |
| Business Administrator | Atomic excel upload read |
| Business Administrator | Atomic excel upload write |
| Business Administrator | BMM Hierarchy Access |
| Business Administrator | BMM Hierarchy Advanced |
| Business Administrator | BMM Hierarchy Authorize |
| Business Administrator | BMM Hierarchy Read Only |
| Business Administrator | BMM Hierarchy Write |
| Business Administrator | BMM Processor Access |
| Business Administrator | BMM Processor Advanced |
| Business Administrator | BMM Processor Authorize |
| Business Administrator | BMM Processor Read Only |
| Business Administrator | BMM Processor Write |
| Business Administrator | Batch Access |
| Business Administrator | Batch Advanced |
| Business Administrator | Batch Authorize |
| Business Administrator | Batch Read Only |
| Business Administrator | Batch Write |
| Business Administrator | Catalog Access |
| Business Administrator | Catalog Advanced |
| Business Administrator | Catalog Authorize |
| Business Administrator | Catalog Read Only |
| Business Administrator | Catalog Write |
| Business Administrator | Config excel advanced |
| Business Administrator | DEFQ access |
| Business Administrator | DEFQ read |
| Business Administrator | DEFQ write |
| Business Administrator | DI Access |

| | |
|---|---|
| Business Administrator | DI Read |
| Business Administrator | DI Write |
| Business Administrator | DMM Access |
| Business Administrator | DMM Advanced |
| Business Administrator | DMM Authorize |
| Business Administrator | DMM Read |
| Business Administrator | DMM Write |
| Business Administrator | DQ Access |
| Business Administrator | DQ Advanced |
| Business Administrator | DQ Authorize |
| Business Administrator | DQ Read |
| Business Administrator | DQ Write |
| Business Administrator | DT Access |
| Business Administrator | DT Read |
| Business Administrator | DT Write |
| Business Administrator | Dataset Access |
| Business Administrator | Dataset Advanced |
| Business Administrator | Dataset Authorize |
| Business Administrator | Dataset Read Only |
| Business Administrator | Dataset Write |
| Business Administrator | Derived Entity Access |
| Business Administrator | Derived Entity Advanced |
| Business Administrator | Derived Entity Authorize |
| Business Administrator | Derived Entity Read Only |
| Business Administrator | Derived Entity Write |
| Business Administrator | Dimension Access |
| Business Administrator | Dimension Advanced |
| Business Administrator | Dimension Authorize |
| Business Administrator | Dimension Read Only |

| | |
|---|---|
| Business Administrator | Dimension Write |
| Business Administrator | Document MGMT access |
| Business Administrator | Document MGMT advanced |
| Business Administrator | Document MGMT read |
| Business Administrator | Document MGMT write |
| Business Administrator | Essbase Cube Access |
| Business Administrator | Essbase Cube Advanced |
| Business Administrator | Essbase Cube Authorize |
| Business Administrator | Essbase Cube Read Only |
| Business Administrator | Essbase Cube Write |
| Business Administrator | Expression Access |
| Business Administrator | Expression Read Only |
| Business Administrator | Expression Write |
| Business Administrator | Filter Access |
| Business Administrator | Filter Read Only |
| Business Administrator | Filter Write |
| Business Administrator | Forms Conf access |
| Business Administrator | Forms Configuration read |
| Business Administrator | Forms Configuration write |
| Business Administrator | Forms Renderer access |
| Business Administrator | Forms Renderer read |
| Business Administrator | Forms Renderer write |
| Business Administrator | Hier Browser Access |
| Business Administrator | Hier Browser Read Only |
| Business Administrator | Hier Browser Write |
| Business Administrator | Hierarchy Access |
| Business Administrator | Hierarchy Read Only |
| Business Administrator | Hierarchy Write |
| Business Administrator | MDB Access |

| | |
|---|---|
| Business Administrator | MDB Read |
| Business Administrator | MDB Write |
| Business Administrator | Manage Run Access |
| Business Administrator | Manage Run Advanced |
| Business Administrator | Manage Run Authorize |
| Business Administrator | Manage Run Read Only |
| Business Administrator | Manage Run Write |
| Business Administrator | Mapper Access |
| Business Administrator | Mapper Advanced |
| Business Administrator | Mapper Authorize |
| Business Administrator | Mapper Read Only |
| Business Administrator | Mapper Write |
| Business Administrator | Measure Access |
| Business Administrator | Measure Advanced |
| Business Administrator | Measure Authorize |
| Business Administrator | Measure Read Only |
| Business Administrator | Measure Write |
| Business Administrator | Obj Migration Access |
| Business Administrator | Obj Migration Advanced |
| Business Administrator | Obj Migration Authorize |
| Business Administrator | Obj Migration Read |
| Business Administrator | Obj Migration Write |
| Business Administrator | Oracle Cube Access |
| Business Administrator | Oracle Cube Advanced |
| Business Administrator | Oracle Cube Authorize |
| Business Administrator | Oracle Cube Read Only |
| Business Administrator | Oracle Cube Write |
| Business Administrator | Process Access |
| Business Administrator | Process Advanced |

| | |
|---|---|
| Business Administrator | Process Authorize |
| Business Administrator | Process Read Only |
| Business Administrator | Process Write |
| Business Administrator | Rule Access |
| Business Administrator | Rule Advanced |
| Business Administrator | Rule Authorize |
| Business Administrator | Rule Read Only |
| Business Administrator | Rule Write |
| Business Administrator | Run Access |
| Business Administrator | Run Advanced |
| Business Administrator | Run Authorize |
| Business Administrator | Run Read Only |
| Business Administrator | Run Write |
| Business Authorizer | Alias Access |
| Business Authorizer | Alias Authorize |
| Business Authorizer | Alias Read Only |
| Business Authorizer | Atomic excel authorize |
| Business Authorizer | BMM Hierarchy Access |
| Business Authorizer | BMM Hierarchy Authorize |
| Business Authorizer | BMM Hierarchy Read Only |
| Business Authorizer | BMM Processor Access |
| Business Authorizer | BMM Processor Authorize |
| Business Authorizer | BMM Processor Read Only |
| Business Authorizer | Batch Access |
| Business Authorizer | Batch Authorize |
| Business Authorizer | Batch Read Only |
| Business Authorizer | Catalog Access |
| Business Authorizer | Catalog Authorize |
| Business Authorizer | Catalog Read Only |

| | |
|---|---|
| Business Authorizer | DEFQ authorize |
| Business Authorizer | DI Access |
| Business Authorizer | DI Read |
| Business Authorizer | DMM Access |
| Business Authorizer | DMM Authorize |
| Business Authorizer | DMM Read |
| Business Authorizer | DQ Access |
| Business Authorizer | DQ Authorize |
| Business Authorizer | DQ Read |
| Business Authorizer | DT Access |
| Business Authorizer | DT Read |
| Business Authorizer | Dataset Access |
| Business Authorizer | Dataset Authorize |
| Business Authorizer | Dataset Read Only |
| Business Authorizer | Derived Entity Access |
| Business Authorizer | Derived Entity Authorize |
| Business Authorizer | Derived Entity Read Only |
| Business Authorizer | Dimension Access |
| Business Authorizer | Dimension Authorize |
| Business Authorizer | Dimension Read Only |
| Business Authorizer | Document MGMT authorize |
| Business Authorizer | Essbase Cube Access |
| Business Authorizer | Essbase Cube Authorize |
| Business Authorizer | Essbase Cube Read Only |
| Business Authorizer | Expression Access |
| Business Authorizer | Expression Read Only |
| Business Authorizer | Filter Access |
| Business Authorizer | Filter Read Only |
| Business Authorizer | Forms Conf authorize |

| | |
|---|---|
| Business Authorizer | Forms Renderer authorize |
| Business Authorizer | Hier Browser Access |
| Business Authorizer | Hier Browser Read Only |
| Business Authorizer | Hierarchy Access |
| Business Authorizer | Hierarchy Read Only |
| Business Authorizer | Manage Run Access |
| Business Authorizer | Manage Run Authorize |
| Business Authorizer | Manage Run Read Only |
| Business Authorizer | Mapper Access |
| Business Authorizer | Mapper Authorize |
| Business Authorizer | Mapper Read Only |
| Business Authorizer | Measure Access |
| Business Authorizer | Measure Authorize |
| Business Authorizer | Measure Read Only |
| Business Authorizer | Obj Migration Access |
| Business Authorizer | Obj Migration Authorize |
| Business Authorizer | Obj Migration Read |
| Business Authorizer | Oracle Cube Access |
| Business Authorizer | Oracle Cube Authorize |
| Business Authorizer | Oracle Cube Read Only |
| Business Authorizer | Process Access |
| Business Authorizer | Process Authorize |
| Business Authorizer | Process Read Only |
| Business Authorizer | Rule Access |
| Business Authorizer | Rule Authorize |
| Business Authorizer | Rule Read Only |
| Business Authorizer | Run Access |
| Business Authorizer | Run Authorize |
| Business Authorizer | Run Read Only |

| | |
|---|---|
| Business Owner | Alias Access |
| Business Owner | Alias Read Only |
| Business Owner | Alias Write |
| Business Owner | Atomic excel access |
| Business Owner | Atomic excel upload read |
| Business Owner | Atomic excel upload write |
| Business Owner | BMM Hierarchy Access |
| Business Owner | BMM Hierarchy Read Only |
| Business Owner | BMM Hierarchy Write |
| Business Owner | BMM Processor Access |
| Business Owner | BMM Processor Read Only |
| Business Owner | BMM Processor Write |
| Business Owner | Batch Access |
| Business Owner | Batch Read Only |
| Business Owner | Batch Write |
| Business Owner | Catalog Access |
| Business Owner | Catalog Read Only |
| Business Owner | Catalog Write |
| Business Owner | Config excel advanced |
| Business Owner | DEFQ access |
| Business Owner | DEFQ read |
| Business Owner | DEFQ write |
| Business Owner | DI Access |
| Business Owner | DI Read |
| Business Owner | DI Write |
| Business Owner | DMM Access |
| Business Owner | DMM Read |
| Business Owner | DMM Write |
| Business Owner | DQ Access |

| | |
|---|---|
| Business Owner | DQ Read |
| Business Owner | DQ Write |
| Business Owner | DT Access |
| Business Owner | DT Read |
| Business Owner | DT Write |
| Business Owner | Dataset Access |
| Business Owner | Dataset Read Only |
| Business Owner | Dataset Write |
| Business Owner | Derived Entity Access |
| Business Owner | Derived Entity Read Only |
| Business Owner | Derived Entity Write |
| Business Owner | Dimension Access |
| Business Owner | Dimension Read Only |
| Business Owner | Dimension Write |
| Business Owner | Document MGMT access |
| Business Owner | Document MGMT read |
| Business Owner | Document MGMT write |
| Business Owner | Essbase Cube Access |
| Business Owner | Essbase Cube Read Only |
| Business Owner | Essbase Cube Write |
| Business Owner | Expression Access |
| Business Owner | Expression Read Only |
| Business Owner | Expression Write |
| Business Owner | Filter Access |
| Business Owner | Filter Read Only |
| Business Owner | Filter Write |
| Business Owner | Forms Conf access |
| Business Owner | Forms Configuration read |
| Business Owner | Forms Configuration write |

| | |
|---|---|
| Business Owner | Forms Renderer access |
| Business Owner | Forms Renderer read |
| Business Owner | Forms Renderer write |
| Business Owner | Hier Browser Access |
| Business Owner | Hier Browser Read Only |
| Business Owner | Hier Browser Write |
| Business Owner | Hierarchy Access |
| Business Owner | Hierarchy Read Only |
| Business Owner | Hierarchy Write |
| Business Owner | MDB Access |
| Business Owner | MDB Read |
| Business Owner | MDB Write |
| Business Owner | Manage Run Access |
| Business Owner | Manage Run Read Only |
| Business Owner | Manage Run Write |
| Business Owner | Mapper Access |
| Business Owner | Mapper Read Only |
| Business Owner | Mapper Write |
| Business Owner | Measure Access |
| Business Owner | Measure Read Only |
| Business Owner | Measure Write |
| Business Owner | Obj Migration Access |
| Business Owner | Obj Migration Read |
| Business Owner | Obj Migration Write |
| Business Owner | Oracle Cube Access |
| Business Owner | Oracle Cube Read Only |
| Business Owner | Oracle Cube Write |
| Business Owner | Process Access |
| Business Owner | Process Read Only |

| | |
|---|---|
| Business Owner | Process Write |
| Business Owner | Rule Access |
| Business Owner | Rule Read Only |
| Business Owner | Rule Write |
| Business Owner | Run Access |
| Business Owner | Run Read Only |
| Business Owner | Run Write |
| Business User | Alias Access |
| Business User | Alias Read Only |
| Business User | Atomic excel access |
| Business User | Atomic excel upload read |
| Business User | BMM Hierarchy Access |
| Business User | BMM Hierarchy Read Only |
| Business User | BMM Processor Access |
| Business User | BMM Processor Read Only |
| Business User | Batch Access |
| Business User | Batch Read Only |
| Business User | Catalog Access |
| Business User | Catalog Read Only |
| Business User | DEFQ access |
| Business User | DEFQ read |
| Business User | DI Access |
| Business User | DI Read |
| Business User | DMM Access |
| Business User | DMM Read |
| Business User | DQ Access |
| Business User | DQ Read |
| Business User | DT Access |
| Business User | DT Read |

| | |
|---|---|
| Business User | Dataset Access |
| Business User | Dataset Read Only |
| Business User | Derived Entity Access |
| Business User | Derived Entity Read Only |
| Business User | Dimension Access |
| Business User | Dimension Read Only |
| Business User | Document MGMT access |
| Business User | Document MGMT read |
| Business User | Essbase Cube Access |
| Business User | Essbase Cube Read Only |
| Business User | Expression Access |
| Business User | Expression Read Only |
| Business User | Filter Access |
| Business User | Filter Read Only |
| Business User | Forms Conf access |
| Business User | Forms Configuration read |
| Business User | Forms Renderer access |
| Business User | Forms Renderer read |
| Business User | Hier Browser Access |
| Business User | Hier Browser Read Only |
| Business User | Hierarchy Access |
| Business User | Hierarchy Read Only |
| Business User | MDB Access |
| Business User | MDB Read |
| Business User | Manage Run Access |
| Business User | Manage Run Read Only |
| Business User | Mapper Access |
| Business User | Mapper Read Only |
| Business User | Measure Access |

| | |
|---|---|
| Business User | Measure Read Only |
| Business User | Obj Migration Access |
| Business User | Obj Migration Read |
| Business User | Oracle Cube Access |
| Business User | Oracle Cube Read Only |
| Business User | Process Access |
| Business User | Process Read Only |
| Business User | Rule Access |
| Business User | Rule Read Only |
| Business User | Run Access |
| Business User | Run Read Only |
| Guest | Alias Access |
| Guest | Atomic excel access |
| Guest | BMM Hierarchy Access |
| Guest | BMM Processor Access |
| Guest | Batch Access |
| Guest | Catalog Access |
| Guest | DEFQ access |
| Guest | DI Access |
| Guest | DMM Access |
| Guest | DQ Access |
| Guest | DT Access |
| Guest | Dataset Access |
| Guest | Derived Entity Access |
| Guest | Dimension Access |
| Guest | Document MGMT access |
| Guest | Essbase Cube Access |
| Guest | Expression Access |
| Guest | Filter Access |

| | |
|---|---|
| Guest | Forms Conf access |
| Guest | Forms Renderer access |
| Guest | Hier Browser Access |
| Guest | Hierarchy Access |
| Guest | MDB Access |
| Guest | Manage Run Access |
| Guest | Mapper Access |
| Guest | Measure Access |
| Guest | Obj Migration Access |
| Guest | Oracle Cube Access |
| Guest | Process Access |
| Guest | Rule Access |
| Guest | Run Access |
| Identity Administrator | Identity MGMT access |
| Identity Administrator | Identity MGMT advanced |
| Identity Administrator | Identity MGMT phantom |
| Identity Administrator | Identity MGMT read |
| Identity Administrator | Identity MGMT write |
| Identity Authorizer | Identity MGMT authorize |
| Object Administrator | Alias Access |
| Object Administrator | Alias Advanced |
| Object Administrator | Alias Authorize |
| Object Administrator | Alias Phantom |
| Object Administrator | Alias Read Only |
| Object Administrator | Alias Write |
| Object Administrator | Atomic excel access |
| Object Administrator | Atomic excel advanced |
| Object Administrator | Atomic excel phantom |
| Object Administrator | Atomic excel upload read |

| | |
|---|---|
| Object Administrator | Atomic excel upload write |
| Object Administrator | BMM Hierarchy Access |
| Object Administrator | BMM Hierarchy Advanced |
| Object Administrator | BMM Hierarchy Authorize |
| Object Administrator | BMM Hierarchy Phantom |
| Object Administrator | BMM Hierarchy Read Only |
| Object Administrator | BMM Hierarchy Write |
| Object Administrator | BMM Processor Access |
| Object Administrator | BMM Processor Advanced |
| Object Administrator | BMM Processor Authorize |
| Object Administrator | BMM Processor Phantom |
| Object Administrator | BMM Processor Read Only |
| Object Administrator | BMM Processor Write |
| Object Administrator | Batch Access |
| Object Administrator | Batch Authorize |
| Object Administrator | Batch Phantom |
| Object Administrator | Batch Read Only |
| Object Administrator | Batch Write |
| Object Administrator | Catalog Access |
| Object Administrator | Catalog Advanced |
| Object Administrator | Catalog Authorize |
| Object Administrator | Catalog Phantom |
| Object Administrator | Catalog Read Only |
| Object Administrator | Catalog Write |
| Object Administrator | Config excel advanced |
| Object Administrator | DEFQ access |
| Object Administrator | DEFQ advanced |
| Object Administrator | DEFQ phantom |
| Object Administrator | DEFQ read |

| | |
|---|---|
| Object Administrator | DEFQ write |
| Object Administrator | DI Access |
| Object Administrator | DI Phantom |
| Object Administrator | DI Read |
| Object Administrator | DI Write |
| Object Administrator | DMM Access |
| Object Administrator | DMM Advanced |
| Object Administrator | DMM Authorize |
| Object Administrator | DMM Phantom |
| Object Administrator | DMM Read |
| Object Administrator | DMM Write |
| Object Administrator | DQ Access |
| Object Administrator | DQ Advanced |
| Object Administrator | DQ Authorize |
| Object Administrator | DQ Phantom |
| Object Administrator | DQ Read |
| Object Administrator | DQ Write |
| Object Administrator | DT Access |
| Object Administrator | DT Phantom |
| Object Administrator | DT Read |
| Object Administrator | DT Write |
| Object Administrator | Dataset Access |
| Object Administrator | Dataset Advanced |
| Object Administrator | Dataset Authorize |
| Object Administrator | Dataset Phantom |
| Object Administrator | Dataset Read Only |
| Object Administrator | Dataset Write |
| Object Administrator | Derived Entity Access |
| Object Administrator | Derived Entity Advanced |

| | |
|---|---|
| Object Administrator | Derived Entity Authorize |
| Object Administrator | Derived Entity Phantom |
| Object Administrator | Derived Entity Read Only |
| Object Administrator | Derived Entity Write |
| Object Administrator | Dimension Access |
| Object Administrator | Dimension Advanced |
| Object Administrator | Dimension Authorize |
| Object Administrator | Dimension Phantom |
| Object Administrator | Dimension Read Only |
| Object Administrator | Dimension Write |
| Object Administrator | Document MGMT access |
| Object Administrator | Document MGMT advanced |
| Object Administrator | Document MGMT phantom |
| Object Administrator | Document MGMT read |
| Object Administrator | Document MGMT write |
| Object Administrator | Essbase Cube Access |
| Object Administrator | Essbase Cube Advanced |
| Object Administrator | Essbase Cube Authorize |
| Object Administrator | Essbase Cube Phantom |
| Object Administrator | Essbase Cube Read Only |
| Object Administrator | Essbase Cube Write |
| Object Administrator | Expression Access |
| Object Administrator | Expression Phantom |
| Object Administrator | Expression Read Only |
| Object Administrator | Expression Write |
| Object Administrator | Filter Access |
| Object Administrator | Filter Phantom |
| Object Administrator | Filter Read Only |
| Object Administrator | Filter Write |

| | |
|---|---|
| Object Administrator | Forms Conf access |
| Object Administrator | Forms Conf advanced |
| Object Administrator | Forms Conf phantom |
| Object Administrator | Forms Configuration read |
| Object Administrator | Forms Configuration write |
| Object Administrator | Forms Renderer access |
| Object Administrator | Forms Renderer advanced |
| Object Administrator | Forms Renderer phantom |
| Object Administrator | Forms Renderer read |
| Object Administrator | Forms Renderer write |
| Object Administrator | Hier Browser Access |
| Object Administrator | Hier Browser Read Only |
| Object Administrator | Hier Browser Write |
| Object Administrator | Hierarchy Access |
| Object Administrator | Hierarchy Phantom |
| Object Administrator | Hierarchy Read Only |
| Object Administrator | Hierarchy Write |
| Object Administrator | MDB Access |
| Object Administrator | MDB Read |
| Object Administrator | MDB Write |
| Object Administrator | Manage Run Access |
| Object Administrator | Manage Run Advanced |
| Object Administrator | Manage Run Authorize |
| Object Administrator | Manage Run Phantom |
| Object Administrator | Manage Run Read Only |
| Object Administrator | Manage Run Write |
| Object Administrator | Mapper Access |
| Object Administrator | Mapper Advanced |
| Object Administrator | Mapper Authorize |

| | |
|---|---|
| Object Administrator | Mapper Phantom |
| Object Administrator | Mapper Read Only |
| Object Administrator | Mapper Write |
| Object Administrator | Measure Access |
| Object Administrator | Measure Advanced |
| Object Administrator | Measure Authorize |
| Object Administrator | Measure Phantom |
| Object Administrator | Measure Read Only |
| Object Administrator | Measure Write |
| Object Administrator | Obj Migration Access |
| Object Administrator | Obj Migration Advanced |
| Object Administrator | Obj Migration Authorize |
| Object Administrator | Obj Migration Phantom |
| Object Administrator | Obj Migration Read |
| Object Administrator | Obj Migration Write |
| Object Administrator | ObjectAdmin advanced |
| Object Administrator | Oracle Cube Access |
| Object Administrator | Oracle Cube Advanced |
| Object Administrator | Oracle Cube Authorize |
| Object Administrator | Oracle Cube Phantom |
| Object Administrator | Oracle Cube Read Only |
| Object Administrator | Oracle Cube Write |
| Object Administrator | Process Access |
| Object Administrator | Process Advanced |
| Object Administrator | Process Authorize |
| Object Administrator | Process Phantom |
| Object Administrator | Process Read Only |
| Object Administrator | Process Write |
| Object Administrator | Rule Access |

| | |
|---|---|
| Object Administrator | Rule Advanced |
| Object Administrator | Rule Authorize |
| Object Administrator | Rule Phantom |
| Object Administrator | Rule Read Only |
| Object Administrator | Rule Write |
| Object Administrator | Run Access |
| Object Administrator | Run Advanced |
| Object Administrator | Run Authorize |
| Object Administrator | Run Phantom |
| Object Administrator | Run Read Only |
| Object Administrator | Run Write |
| System Administrator | System admin access |
| System Administrator | System admin advanced |
| System Administrator | System admin authorize |
| System Administrator | System admin phantom |
| System Administrator | System admin read |
| System Administrator | System admin write |

## Financial Services Analytical Applications Infrastructure Role- Function Mapping:

| V_ROLE_NAME | V_FUNCTION_NAME |
|---|---|
| Alias Access | Alias Link |
| Alias Access | Alias Summary |
| Alias Authorize | Authorize Alias |
| Alias Read Only | Alias Summary |
| Alias Read Only | View Alias |
| Alias Write | Add Alias |
| Alias Write | Delete Alias |
| Alias Write | Modify Alias |
| Atomic excel access | Excel User |

| V_ROLE_NAME | V_FUNCTION_NAME |
|---|---|
| Atomic excel advanced | Excel Admin |
| Atomic excel advanced | Excel User |
| Atomic excel authorize | Excel Admin |
| Atomic excel authorize | Excel User |
| Atomic excel phantom | Excel Admin |
| Atomic excel phantom | Excel User |
| Atomic excel upload read | Excel User |
| Atomic excel upload write | Excel User |
| BMM Hierarchy Access | Business Hierarchy Link |
| BMM Hierarchy Access | Business Hierarchy Summary |
| BMM Hierarchy Authorize | Authorize Hierarchy |
| BMM Hierarchy Read Only | Business Hierarchy Summary |
| BMM Hierarchy Read Only | View Hierarchy |
| BMM Hierarchy Write | Add Hierarchy |
| BMM Hierarchy Write | Delete Hierarchy |
| BMM Hierarchy Write | Modify Hierarchy |
| BMM Processor Access | Business Processor Link |
| BMM Processor Access | Business Processor Summary |
| BMM Processor Authorize | Authorize Business Processor |
| BMM Processor Read Only | Business Processor Summary |
| BMM Processor Read Only | View Business Processor |
| BMM Processor Write | Add Business Processor |
| BMM Processor Write | Delete Business Processor |
| BMM Processor Write | Modify Business Processor |
| Batch Access | Batch Link |
| Batch Access | Operator Console |
| Batch Advanced | Batch Abort |

| V_ROLE_NAME | V_FUNCTION_NAME |
|---|---|
| Batch Advanced | Batch Cancellation |
| Batch Advanced | Cancel Task |
| Batch Advanced | Execute Batch |
| Batch Phantom | User-Batch Execution Mapping Screen |
| Batch Phantom | Write-Protected Batch Screen |
| Batch Read Only | Batch Monitor |
| Batch Read Only | Batch Processing |
| Batch Read Only | Operator Console |
| Batch Read Only | View log |
| Batch Write | Create Batch |
| Batch Write | Delete Batch |
| Catalog Access | Catalog Link |
| Catalog Access | Catalog Summary |
| Catalog Access | Rules Framework Screens |
| Catalog Advanced | Catalog Token |
| Catalog Advanced | Export Catalog |
| Catalog Authorize | Authorize Catalog |
| Catalog Phantom | Ignore Catalog Access |
| Catalog Phantom | Ignore Catalog Lock |
| Catalog Read Only | Catalog Summary |
| Catalog Read Only | Compare Catalog |
| Catalog Read Only | Publish Catalog |
| Catalog Read Only | Trace Catalog |
| Catalog Read Only | View Catalog |
| Catalog Write | Add Catalog |
| Catalog Write | Archive Catalog |
| Catalog Write | Copy Catalog |

| V_ROLE_NAME | V_FUNCTION_NAME |
|---|---|
| Catalog Write | Download Catalog |
| Catalog Write | Edit Catalog |
| Catalog Write | Generate Catalog |
| Catalog Write | Latest Catalog |
| Catalog Write | Lock Catalog |
| Catalog Write | Purge Catalog |
| Catalog Write | Remove Catalog |
| Catalog Write | Restore Catalog |
| Config excel advanced | Config Excel Upload |
| DEFQ Manager | DeFi Excel |
| DEFQ Manager | Defq Administrator |
| DEFQ Manager | Defq User |
| DEFQ Manager | Excel Admin |
| DEFQ Manager | Excel User |
| DEFQ access | Defi User |
| DEFQ access | Defq User |
| DEFQ advanced | Defi Administrator |
| DEFQ advanced | Defi User |
| DEFQ advanced | Defq Administrator |
| DEFQ advanced | Defq User |
| DEFQ authorize | Defi Administrator |
| DEFQ authorize | Defi User |
| DEFQ authorize | Defq Administrator |
| DEFQ authorize | Defq User |
| DEFQ authorize | Forms Authorization |
| DEFQ phantom | Defi Administrator |
| DEFQ phantom | Defi User |

| V_ROLE_NAME | V_FUNCTION_NAME |
|---|---|
| DEFQ phantom | Defq Administrator |
| DEFQ phantom | Defq User |
| DEFQ read | Defi User |
| DEFQ read | Defq User |
| DEFQ write | Defi User |
| DEFQ write | Defq User |
| DI Access | DI Designer |
| DI Access | DI User |
| DI Phantom | DI Designer |
| DI Phantom | DI User |
| DI Read | DI Designer |
| DI Read | DI User |
| DI Write | DI Designer |
| DI Write | DI User |
| DMM Access | Import Business Model |
| DMM Advanced | Import Business Model |
| DMM Authorize | Import Business Model |
| DMM Phantom | Import Business Model |
| DMM Read | Import Business Model |
| DMM Write | Import Business Model |
| DQ Access | Data Quality Link Access, Data Quality Summary Access |
| DQ Advanced | Data Quality Execute Rule Group |
| DQ Authorize | Data Quality Authorization Rule |
| DQ Read | Data Quality View Rule, Data Quality View Rule Group |
| DQ Write | Data Quality Add Rule |
| | Data Quality Add Rule Group |

| V_ROLE_NAME | V_FUNCTION_NAME |
|---|---|
| | Data Quality Copy Rule |
| | Data Quality Copy Rule Group |
| | Data Quality Delete Rule |
| | Data Quality Delete Rule Group |
| | Data Quality Edit Rule |
| | Data Quality Edit Rule Group |
| DT Access | DI User |
| | DTDQ |
| DT Phantom | DI User |
| | DTDQ |
| DT Read | DI User |
| | DTDQ |
| DT Write | DI User |
| | DTDQ |
| Dataset Access | Dataset Link |
| | Dataset Summary |
| Dataset Authorize | Authorize Dataset |
| Dataset Read Only | Dataset Summary |
| | View Dataset |
| Dataset Write | Add Dataset |
| | Delete Dataset |
| | Modify Dataset |
| Derived Entity Access | Derived Entity Link |
| Derived Entity Access | Derived Entity Summary |
| Derived Entity Authorize | Authorize Derived Entities |
| Derived Entity Read Only | Derived Entity Summary |
| Derived Entity Read Only | View Derived Entities |

| V_ROLE_NAME | V_FUNCTION_NAME |
|---|---|
| Derived Entity Write | Add Derived Entities |
| Derived Entity Write | Delete Derived Entities |
| Derived Entity Write | Modify Derived Entities |
| Dimension Access | Business Dimension Link |
| Dimension Access | Business Dimension Summary |
| Dimension Authorize | Authorize Dimension |
| Dimension Read Only | Business Dimension Summary |
| Dimension Read Only | View Dimension |
| Dimension Write | Add Dimension |
| Dimension Write | Delete Dimension |
| Dimension Write | Modify Dimension |
| Document MGMT access | Call Remote Web Services |
| Document MGMT access | Document Management Access |
| Document MGMT access | Execute Runs - Rules |
| Document MGMT access | Refresh Hierarchies |
| Document MGMT access | Remote SMS Access |
| Document MGMT access | Remote UMM Access |
| Document MGMT access | Result of request - Status of all |
| Document MGMT advanced | Access to Transfer Documents Ownership |
| Document MGMT advanced | Call Remote Web Services |
| Document MGMT advanced | Document Management Access |
| Document MGMT advanced | Execute Runs - Rules |
| Document MGMT advanced | Refresh Hierarchies |
| Document MGMT advanced | Remote SMS Access |
| Document MGMT advanced | Remote UMM Access |
| Document MGMT advanced | Result of own request only |
| Document MGMT advanced | Result of request - Status of all |

| V_ROLE_NAME | V_FUNCTION_NAME |
|---|---|
| Document MGMT authorize | Access to Transfer Documents Ownership |
| Document MGMT authorize | Call Remote Web Services |
| Document MGMT authorize | Document Management Access |
| Document MGMT authorize | Execute Runs - Rules |
| Document MGMT authorize | Refresh Hierarchies |
| Document MGMT authorize | Remote SMS Access |
| Document MGMT authorize | Remote UMM Access |
| Document MGMT authorize | Result of own request only |
| Document MGMT authorize | Result of request - Status of all |
| Document MGMT phantom | Access to Transfer Documents Ownership |
| Document MGMT phantom | Call Remote Web Services |
| Document MGMT phantom | Document Management Access |
| Document MGMT phantom | Execute Runs - Rules |
| Document MGMT phantom | Refresh Hierarchies |
| Document MGMT phantom | Remote SMS Access |
| Document MGMT phantom | Remote UMM Access |
| Document MGMT phantom | Result of own request only |
| Document MGMT phantom | Result of request - Status of all |
| Document MGMT read | Call Remote Web Services |
| Document MGMT read | Document Management Access |
| Document MGMT read | Execute Runs - Rules |
| Document MGMT read | Refresh Hierarchies |
| Document MGMT read | Remote SMS Access |
| Document MGMT read | Remote UMM Access |
| Document MGMT read | Result of request - Status of all |
| Document MGMT write | Access to Transfer Documents Ownership |
| Document MGMT write | Call Remote Web Services |

| V_ROLE_NAME | V_FUNCTION_NAME |
|---|---|
| Document MGMT write | Document Management Access |
| Document MGMT write | Execute Runs - Rules |
| Document MGMT write | Refresh Hierarchies |
| Document MGMT write | Remote SMS Access |
| Document MGMT write | Remote UMM Access |
| Document MGMT write | Result of own request only |
| Document MGMT write | Result of request - Status of all |
| ETL Analyst | DI Designer |
| ETL Analyst | DI User |
| ETL Analyst | DTDQ |
| ETL Analyst | Data Quality Add |
| Essbase Cube Access | Essbase Cube Link |
| Essbase Cube Access | Essbase Cube Summary |
| Essbase Cube Authorize | Authorize Cube |
| Essbase Cube Read Only | Essbase Cube Summary |
| Essbase Cube Read Only | View Cube |
| Essbase Cube Write | Add Cube |
| Essbase Cube Write | Delete Cube |
| Essbase Cube Write | Modify Cube |
| Expression Access | Fusion Expns Home Page |
| Expression Access | Fusion Expressions Link |
| Expression Phantom | Fusion Expression Ignore Access |
| Expression Read Only | Fusion Expns Home Page |
| Expression Read Only | Fusion Expressions Link |
| Expression Read Only | Fusion View Dependency Expressions |
| Expression Read Only | Fusion View Expressions |
| Expression Write | Fusion Add Expressions |

| V_ROLE_NAME | V_FUNCTION_NAME |
|---|---|
| Expression Write | Fusion Copy Expressions |
| Expression Write | Fusion Delete Expressions |
| Expression Write | Fusion Edit Expressions |
| Filter Access | Fusion Filters Home Page |
| Filter Access | Fusion Filters Link |
| Filter Phantom | Fusion Filters Ignore Access |
| Filter Read Only | Fusion Filters - View Dependent Data |
| Filter Read Only | Fusion Filters Home Page |
| Filter Read Only | Fusion Filters Link |
| Filter Read Only | Fusion View Filters |
| Filter Write | Fusion Add Filters |
| Filter Write | Fusion Copy Filters |
| Filter Write | Fusion Delete Filters |
| Filter Write | Fusion Edit Filters |
| Forms Conf access | Forms Manager |
| Forms Conf advanced | Forms Manager |
| Forms Conf authorize | Forms Manager |
| Forms Conf phantom | Forms Manager |
| Forms Configuration read | Forms Manager |
| Forms Configuration write | Forms Manager |
| Forms Renderer access | Forms Renderer Screen |
| Forms Renderer access | View APP landing home screen from Forms Framework |
| Forms Renderer advanced | Forms Renderer Screen |
| Forms Renderer advanced | View APP landing home screen from Forms Framework |
| Forms Renderer authorize | Forms Renderer Screen |
| Forms Renderer authorize | View APP landing home screen from Forms |

| V_ROLE_NAME | V_FUNCTION_NAME |
|---|---|
| | Framework |
| Forms Renderer phantom | Forms Renderer Screen |
| Forms Renderer phantom | View APP landing home screen from Forms Framework |
| Forms Renderer read | Forms Renderer Screen |
| Forms Renderer read | View APP landing home screen from Forms Framework |
| Forms Renderer write | Forms Renderer Screen |
| Forms Renderer write | View APP landing home screen from Forms Framework |
| Fusion AMHM Admin | Fusion Add Attributes |
| Fusion AMHM Admin | Fusion Add Hierarchies |
| Fusion AMHM Admin | Fusion Add Members |
| Fusion AMHM Admin | Fusion Attribute Home Page |
| Fusion AMHM Admin | Fusion Attributes - View Dependent Data |
| Fusion AMHM Admin | Fusion Copy Attributes |
| Fusion AMHM Admin | Fusion Copy Hierarchies |
| Fusion AMHM Admin | Fusion Copy Members |
| Fusion AMHM Admin | Fusion Delete Attributes |
| Fusion AMHM Admin | Fusion Delete Hierarchies |
| Fusion AMHM Admin | Fusion Delete Members |
| Fusion AMHM Admin | Fusion Edit Attributes |
| Fusion AMHM Admin | Fusion Edit Hierarchies |
| Fusion AMHM Admin | Fusion Edit Members |
| Fusion AMHM Admin | Fusion Hier Browser Add |
| Fusion AMHM Admin | Fusion Hier Browser Delete |
| Fusion AMHM Admin | Fusion Hier Browser Edit |
| Fusion AMHM Admin | Fusion Hier Browser Summary |
| Fusion AMHM Admin | Fusion Hierarchies - View Dependent Data |

| V_ROLE_NAME | V_FUNCTION_NAME |
|---|---|
| Fusion AMHM Admin | Fusion Hierarchy Home Page |
| Fusion AMHM Admin | Fusion Hierarchy Ignore Access |
| Fusion AMHM Admin | Fusion Hierarchy Link |
| Fusion AMHM Admin | Fusion Member Home Page |
| Fusion AMHM Admin | Fusion Members - View Dependent Data |
| Fusion AMHM Admin | Fusion View Attributes |
| Fusion AMHM Admin | Fusion View Hierarchies |
| Fusion AMHM Admin | Fusion View Members |
| Fusion AMHM UMM Map Admin | Fusion Hierarchies to UMM Mapping |
| Fusion Expressions Admin | Fusion Add Expressions |
| Fusion Expressions Admin | Fusion Copy Expressions |
| Fusion Expressions Admin | Fusion Delete Expressions |
| Fusion Expressions Admin | Fusion Edit Expressions |
| Fusion Expressions Admin | Fusion Expns Home Page |
| Fusion Expressions Admin | Fusion Expression Ignore Access |
| Fusion Expressions Admin | Fusion Expressions Link |
| Fusion Expressions Admin | Fusion View Dependency Expressions |
| Fusion Expressions Admin | Fusion View Expressions |
| Fusion Filters Admin | Fusion Add Filters |
| Fusion Filters Admin | Fusion Copy Filters |
| Fusion Filters Admin | Fusion Delete Filters |
| Fusion Filters Admin | Fusion Edit Filters |
| Fusion Filters Admin | Fusion Filters - View Dependent Data |
| Fusion Filters Admin | Fusion Filters - View SQL |
| Fusion Filters Admin | Fusion Filters Home Page |
| Fusion Filters Admin | Fusion Filters Ignore Access |
| Fusion Filters Admin | Fusion Filters Link |

| V_ROLE_NAME | V_FUNCTION_NAME |
|---|---|
| Fusion Filters Admin | Fusion View Filters |
| Hier Browser Read Only | Fusion Heir Browser Summary |
| Hier Browser Write | Fusion Heir Browser Add |
| Hier Browser Write | Fusion Heir Browser Delete |
| Hier Browser Write | Fusion Heir Browser Edit |
| Hierarchy Access | Fusion Hierarchy Home Page |
| Hierarchy Access | Fusion Hierarchy Link |
| Hierarchy Phantom | Fusion Hierarchy Ignore Access |
| Hierarchy Read Only | Fusion Hierarchies - View Dependent Data |
| Hierarchy Read Only | Fusion Hierarchy Home Page |
| Hierarchy Read Only | Fusion Hierarchy Link |
| Hierarchy Read Only | Fusion View Hierarchies |
| Hierarchy Write | Fusion Add Hierarchies |
| Hierarchy Write | Fusion Copy Hierarchies |
| Hierarchy Write | Fusion Delete Hierarchies |
| Hierarchy Write | Fusion Edit Hierarchies |
| IPE Am Advanced | FS Inline Processing Engine Access Code |
| IPE Am Advanced | Real Time Assessment Access |
| IPE Am Advanced | Real Time Evaluation Access |
| IPE Am Advanced | Real Time Infrastructure Function |
| IPE Am Advanced | Real Time Profile Access |
| IPE Am Advanced | View Patch Information |
| IPE Moniter | FS Inline Processing Engine Access Code |
| IPE Moniter | Real Time Assessment Access |
| IPE Moniter | Real Time Evaluation Access |
| IPE Moniter | Real Time Infrastructure Function |
| IPE Moniter | Real Time Profile Access |

| V_ROLE_NAME | V_FUNCTION_NAME |
|---|---|
| IPE Write | FS Inline Processing Engine Access Code |
| IPE Write | Real Time Assessment Access |
| IPE Write | Real Time Evaluation Access |
| IPE Write | Real Time Infrastructure Function |
| IPE Write | Real Time Profile Access |
| IPE Write | View Patch Information |
| Identity MGMT access | Administration Screen |
| Identity MGMT access | System Administrator Screen |
| Identity MGMT advanced | Administration Screen |
| Identity MGMT advanced | Audit Trail Report Screen |
| Identity MGMT advanced | Enable User Screen |
| Identity MGMT advanced | Function Maintenance Screen |
| Identity MGMT advanced | Function Role Map Screen |
| Identity MGMT advanced | Holiday Maintenance Screen |
| Identity MGMT advanced | Locale Desc Upload Screen |
| Identity MGMT advanced | Restricted Passwords Screen |
| Identity MGMT advanced | Role Maintenance Screen |
| Identity MGMT advanced | Segment Maintenance Screen |
| Identity MGMT advanced | System Administrator Screen |
| Identity MGMT advanced | User Activity Reports Screen |
| Identity MGMT advanced | User Attribute Upload Screen |
| Identity MGMT advanced | User Group Domain Map Screen |
| Identity MGMT advanced | User Group Folder Role Map Screen |
| Identity MGMT advanced | User Group Maintenance Screen |
| Identity MGMT advanced | User Group Role Map Screen |
| Identity MGMT advanced | User Group User Map Screen |
| Identity MGMT advanced | User Maintenance Screen |

| V_ROLE_NAME | V_FUNCTION_NAME |
|---|---|
| Identity MGMT advanced | User Profile Report Screen |
| Identity MGMT authorize | Administration Screen |
| Identity MGMT authorize | Profile Maintenance Screen |
| Identity MGMT authorize | System Administrator Screen |
| Identity MGMT authorize | System Authorizer |
| Identity MGMT authorize | User Authorization Screen |
| Identity MGMT phantom | Administration Screen |
| Identity MGMT phantom | Enable User Screen |
| Identity MGMT phantom | System Administrator Screen |
| Identity MGMT phantom | User Attribute Upload Screen |
| Identity MGMT read | Administration Screen |
| Identity MGMT read | System Administrator Screen |
| Identity MGMT write | Administration Screen |
| Identity MGMT write | Audit Trail Report Screen |
| Identity MGMT write | Enable User Screen |
| Identity MGMT write | Function Maintenance Screen |
| Identity MGMT write | Function Role Map Screen |
| Identity MGMT write | Holiday Maintenance Screen |
| Identity MGMT write | Locale Desc Upload Screen |
| Identity MGMT write | Restricted Passwords Screen |
| Identity MGMT write | Role Maintenance Screen |
| Identity MGMT write | Segment Maintenance Screen |
| Identity MGMT write | System Administrator Screen |
| Identity MGMT write | User Activity Reports Screen |
| Identity MGMT write | User Attribute Upload Screen |
| Identity MGMT write | User Group Domain Map Screen |
| Identity MGMT write | User Group Folder Role Map Screen |

| V_ROLE_NAME | V_FUNCTION_NAME |
|---|---|
| Identity MGMT write | User Group Maintenance Screen |
| Identity MGMT write | User Group Role Map Screen |
| Identity MGMT write | User Group User Map Screen |
| Identity MGMT write | User Maintenance Screen |
| Identity MGMT write | User Profile Report Screen |
| MDB Access | MDB Screen |
| MDB Read | MDB Screen |
| MDB Write | MDB Screen |
| MDB Write | Map Metadata |
| MF Access | Add Technique |
| MF Access | Cash Flow Equation Definition |
| MF Access | GMV Definition |
| MF Access | Model Calibration |
| MF Access | Model Definition |
| MF Access | Model Deployment |
| MF Access | Model Execution |
| MF Access | Model Make Champion |
| MF Access | Model Outputs |
| MF Access | Sandbox Creation |
| MF Access | Sandbox Maintenance |
| MF Access | Variable Definition |
| MF Advanced | Add Technique |
| MF Advanced | Cash Flow Equation Definition |
| MF Advanced | GMV Definition |
| MF Advanced | Model Calibration |
| MF Advanced | Model Definition |
| MF Advanced | Model Deployment |

| V_ROLE_NAME | V_FUNCTION_NAME |
|---|---|
| MF Advanced | Model Execution |
| MF Advanced | Model Make Champion |
| MF Advanced | Model Outputs |
| MF Advanced | Sandbox Creation |
| MF Advanced | Sandbox Maintenance |
| MF Advanced | Variable Definition |
| MF Authorize | Authorize Technique |
| MF Authorize | Model Authorize |
| MF Authorize | Sandbox Authorize |
| MF Read | Add Technique |
| MF Read | Cash Flow Equation Definition |
| MF Read | FS Enterprise Modeling Access Code |
| MF Read | GMV Definition |
| MF Read | Model Calibration |
| MF Read | Model Definition |
| MF Read | Model Deployment |
| MF Read | Model Execution |
| MF Read | Model Make Champion |
| MF Read | Model Outputs |
| MF Read | Sandbox Creation |
| MF Read | Sandbox Maintenance |
| MF Read | Variable Definition |
| MF Write | Add Technique |
| MF Write | Cash Flow Equation Definition |
| MF Write | GMV Definition |
| MF Write | Model Calibration |
| MF Write | Model Definition |

| V_ROLE_NAME | V_FUNCTION_NAME |
|---|---|
| MF Write | Model Deployment |
| MF Write | Model Execution |
| MF Write | Model Make Champion |
| MF Write | Model Outputs |
| MF Write | Sandbox Creation |
| MF Write | Sandbox Maintenance |
| MF Write | Variable Definition |
| Manage Run Access | Manage Run Link |
| Manage Run Access | Manage Run Summary |
| Manage Run Access | Rules Framework Screens |
| Manage Run Read Only | View Manage Run |
| Manage Run Write | Add Manage Run |
| Manage Run Write | Modify Manage Run |
| Mapper Access | Map Maintenance Link |
| Mapper Access | Map Maintenance Summary |
| Mapper Authorize | Authorize Map(s) |
| Mapper Read Only | Map Maintenance Summary |
| Mapper Read Only | View Map |
| Mapper Write | Create Map |
| Mapper Write | Delete Map |
| Mapper Write | Modify Map |
| Measure Access | Business Measure Link |
| Measure Access | Business Measure Summary |
| Measure Authorize | Authorize Measure |
| Measure Read Only | Business Measure Summary |
| Measure Read Only | View Measure |
| Measure Write | Add Measure |

| V_ROLE_NAME | V_FUNCTION_NAME |
|---|---|
| Measure Write | Delete Measure |
| Measure Write | Modify Measure |
| Obj Migration Access | Object Migration Home Page |
| Obj Migration Access | Object Migration Summary Page |
| Obj Migration Advanced | Cancel Migration Execution |
| Obj Migration Advanced | Execute/Run Migration Process |
| Obj Migration Advanced | Object Migration Source Configuration |
| Obj Migration Read | Object Migration View Migration Ruleset |
| Obj Migration Read | Object Migration ViewSource Configuration |
| Obj Migration Write | Object Migration Copy Migration Ruleset |
| Obj Migration Write | Object Migration Create Migration Ruleset |
| Obj Migration Write | Object Migration Delete Migration Ruleset |
| Obj Migration Write | Object Migration Edit Migration Ruleset |
| ObjectAdmin advanced | Component Registration |
| ObjectAdmin advanced | Export Metadata |
| ObjectAdmin advanced | Import Metadata |
| ObjectAdmin advanced | Metadata Authorize Screen |
| ObjectAdmin advanced | Metadata Difference Screen |
| ObjectAdmin advanced | Metadata Publish |
| ObjectAdmin advanced | Metadata Segment Map |
| ObjectAdmin advanced | Save Metadata Screen |
| ObjectAdmin advanced | View Patch Information |
| ObjectAdmin advanced | Write-Protected Batch Screen |
| Oracle Cube Access | Oracle Cube Link |
| Oracle Cube Access | Oracle Cube Summary |
| Oracle Cube Authorize | Authorize Oracle Cube |
| Oracle Cube Read Only | Oracle Cube Summary |

| V_ROLE_NAME | V_FUNCTION_NAME |
|---|---|
| Oracle Cube Read Only | View Oracle Cube |
| Oracle Cube Write | Add Oracle Cube |
| Oracle Cube Write | Delete Oracle Cube |
| Oracle Cube Write | Modify Oracle Cube |
| PR2 Administrator | Add Manage Run |
| PR2 Administrator | Component Registration |
| PR2 Administrator | Modify Manage Run |
| PR2 Administrator | Rules Framework Screens |
| PR2 Administrator | View Manage Run |
| Process Access | Process Link |
| Process Access | Process Summary |
| Process Access | Rules Framework Screens |
| Process Advanced | Archive Process |
| Process Advanced | Component Registration |
| Process Advanced | Execute Process |
| Process Advanced | Export Process |
| Process Advanced | Restore Process |
| Process Authorize | Authorize Process Tree |
| Process Phantom | Process Ignore Access |
| Process Phantom | Process Ignore Lock |
| Process Read Only | Compare Process |
| Process Read Only | Process Summary |
| Process Read Only | Publish Process |
| Process Read Only | Trace Process |
| Process Read Only | View Process |
| Process Write | Add Process tree |
| Process Write | Copy Process Tree |

| V_ROLE_NAME | V_FUNCTION_NAME |
|---|---|
| Process Write | Delete Process |
| Process Write | Lock Process |
| Process Write | Make Latest Process |
| Process Write | Modify Process Tree |
| Publish Metadata | Map Metadata |
| Restructure Access | Restructure Link |
| Restructure Edit | Edit Restructure |
| Restructure Execute | Execute Restructure |
| Restructure Read | View Restructure |
| Restructure Summary | Restructure Summary |
| Restructure Write | Add Restructure |
| Rule Access | Rule Link |
| Rule Access | Rule Summary |
| Rule Access | Rules Framework Screens |
| Rule Advanced | Archive Rule |
| Rule Advanced | Exexute Rule |
| Rule Advanced | Export Rule |
| Rule Advanced | Restore Rule |
| Rule Authorize | Authorize Rule |
| Rule Phantom | Rule Ignore Access |
| Rule Phantom | Rule Ignore Lock |
| Rule Read Only | Compare Rule |
| Rule Read Only | Publish Rule |
| Rule Read Only | Rule Summary |
| Rule Read Only | Trace Rule |
| Rule Read Only | View Rule |
| Rule Write | Add Rule |

| V_ROLE_NAME | V_FUNCTION_NAME |
|---|---|
| Rule Write | Copy Rule |
| Rule Write | Delete Rule |
| Rule Write | Lock Rule |
| Rule Write | Make Latest Rule |
| Rule Write | Modify Rule |
| Run Access | Rules Framework Screens |
| Run Access | Run Link |
| Run Access | Run Summary |
| Run Advanced | Archive Run |
| Run Advanced | Component Registration |
| Run Advanced | Execute Run |
| Run Advanced | Export Run |
| Run Advanced | Restore Run |
| Run Authorize | Authorize Run |
| Run Phantom | Run Ignore Access |
| Run Phantom | Run Ignore Lock |
| Run Read Only | Compare Run |
| Run Read Only | Publish Run |
| Run Read Only | Run Summary |
| Run Read Only | Trace Run |
| Run Read Only | View Run |
| Run Write | Add Run |
| Run Write | Copy Run |
| Run Write | Delete Run |
| Run Write | Lock Run |
| Run Write | Make Latest Run |
| Run Write | Modify Run |

| V_ROLE_NAME | V_FUNCTION_NAME |
|---|---|
| STF Access | Scenario Definition |
| STF Access | Stress Definition |
| STF Access | Variable Shock Definition |
| STF Advanced | Scenario Definition |
| STF Advanced | Stress Definition |
| STF Advanced | Variable Shock Definition |
| STF Read | Scenario Definition |
| STF Read | Stress Definition |
| STF Read | Variable Shock Definition |
| STF Write | Scenario Definition |
| STF Write | Stress Definition |
| STF Write | Variable Shock Definition |
| System admin access | Application Server Screen |
| System admin access | Configuration |
| System admin access | Database Details |
| System admin access | Database Server |
| System admin access | Information Domain |
| System admin access | OLAP Details Screen |
| System admin access | System Administrator |
| System admin access | System Administrator Screen |
| System admin access | Web Server Screen |
| System admin advanced | Application Server Screen |
| System admin advanced | Configuration |
| System admin advanced | Database Details |
| System admin advanced | Database Server |
| System admin advanced | Global Preferences View |
| System admin advanced | Information Domain |

| V_ROLE_NAME | V_FUNCTION_NAME |
|---|---|
| System admin advanced | OLAP Details Screen |
| System admin advanced | System Administrator |
| System admin advanced | System Administrator Screen |
| System admin advanced | Web Server Screen |
| System admin authorize | System Administrator |
| System admin authorize | System Administrator Screen |
| System admin phantom | System Administrator |
| System admin phantom | System Administrator Screen |
| System admin read | System Administrator |
| System admin read | System Administrator Screen |
| System admin write | System Administrator |
| System admin write | System Administrator Screen |

## Financial Services Analytical Applications Infrastructure Roles:

| Role Name | Role Description |
|---|---|
| Alias Access | Alias Access |
| Alias Advanced | Alias Advanced |
| Alias Authorize | Alias Authorize |
| Alias Phantom | Alias Phantom |
| Alias Read Only | Alias Read Only |
| Alias Write | Alias Write |
| Batch Access | Batch Access |
| Batch Advanced | Batch Advanced |
| Batch Authorize | Batch Authorize |
| Batch Phantom | Batch Phantom |
| Batch Read Only | Batch Read Only |
| Batch Write | Batch Write |

| Role Name | Role Description |
|---|---|
| BMM Processor Access | Business Processor Access |
| BMM Processor Advanced | Business Processor Advanced |
| BMM Processor Authorize | Business Processor Authorize |
| BMM Processor Phantom | Business Processor Phantom |
| BMM Processor Read Only | Business Processor Read Only |
| BMM Processor Write | Business Processor Write |
| Dimension Access | Dimension Access |
| Dimension Advanced | Dimension Advanced |
| Dimension Authorize | Dimension Authorize |
| Dimension Phantom | Dimension Phantom |
| Dimension Read Only | Dimension Read Only |
| Dimension Write | Dimension Write |
| BMM Hierarchy Access | BMM Hierarchy Access |
| BMM Hierarchy Advanced | BMM Hierarchy Advanced |
| BMM Hierarchy Authorize | BMM Hierarchy Authorize |
| BMM Hierarchy Phantom | BMM Hierarchy Phantom |
| BMM Hierarchy Read Only | BMM Hierarchy Read Only |
| BMM Hierarchy Write | BMM Hierarchy Write |
| Measure Access | Measure Access |
| Measure Advanced | Measure Advanced |
| Measure Authorize | Measure Authorize |
| Measure Phantom | Measure Phantom |
| Measure Read Only | Measure Read Only |
| Measure Write | Measure Write |
| Catalog Access | User Group mapped will have access to Link and Summary. |
| Catalog Advanced | User Group mapped will have access to export the Catalog. |
| Catalog Authorize | User Group mapped will have access to authorize the Catalog. |

| Role Name | Role Description |
|---|---|
| Catalog Phantom | User Group mapped will have access to ignore access type and ignore lock. |
| Catalog Read Only | User Group mapped will have access to View and Trace Definition. |
| Catalog Write | User Group mapped will have access to add, edit, copy and remove Catalog. |
| DEFQ access | Data Entry Forms and Queries access |
| DEFQ advanced | Data Entry Forms and Queries advanced |
| DEFQ authorize | Data Entry Forms and Queries authorize |
| DEFQ Manager | Data Entry Forma and Query Manager Role |
| DEFQ phantom | Data Entry Forms and Queries phantom |
| DEFQ read | Data Entry Forms and Queries read |
| DEFQ write | Data Entry Forms and Queries write |
| DI Access | Data Ingestion Access Role |
| DI Phantom | Data Ingestion Phantom Role |
| DI Read | Data Ingestion Read-only Role |
| DI Write | Data Ingestion Write Role |
| DMM Access | Data Model Maintenance Access Role |
| DMM Advanced | Data Model Maintenance Advanced Role |
| DMM Authorize | Data Model Maintenance Authorize Role |
| DMM Phantom | Data Model Maintenance Role |
| DMM Read | Data Model Maintenance Read-only Role |
| DMM Write | Data Model Maintenance Write Role |
| Document MGMT access | Document management access |
| Document MGMT advanced | Document management advanced |
| Document MGMT authorize | Document management authorize |
| Document MGMT phantom | Document management phantom |
| Document MGMT read | Document management read |
| Document MGMT write | Document management write |
| DQ Access | Data Quality Rule Access Role |

| Role Name | Role Description |
|---|---|
| DQ Advanced | Data Quality Rule Advanced Role |
| DQ Authorize | Data Quality Rule Authorize Role |
| DQ Phantom | Data Quality Rule Phantom Role |
| DQ Read | Data Quality Rule Read-only Role |
| DQ Write | Data Quality Rule Write Role |
| Derived Entity Access | Derived Entity Access |
| Derived Entity Advanced | Derived Entity Advanced |
| Derived Entity Authorize | Derived Entity Authorize |
| Derived Entity Phantom | Derived Entity Phantom |
| Derived Entity Read Only | Derived Entity Read Only |
| Derived Entity Write | Derived Entity Write |
| Dataset Access | Dataset Access |
| Dataset Advanced | Dataset Advanced |
| Dataset Authorize | Dataset Authorize |
| Dataset Phantom | Dataset Phantom |
| Dataset Read Only | Dataset Read Only |
| Dataset Write | Dataset Write |
| DT Access | Data Transformation Access Role |
| DT Phantom | Data Transformation Phantom Role |
| DT Read | Data Transformation Read-only Role |
| DT Write | Data Transformation Write Role |
| Essbase Cube Access | Essbase Cube Access |
| Essbase Cube Advanced | Essbase Cube Advanced |
| Essbase Cube Authorize | Essbase Cube Authorize |
| Essbase Cube Phantom | Essbase Cube Phantom |
| Essbase Cube Read Only | Essbase Cube Read Only |
| Essbase Cube Write | Essbase Cube Write |

| Role Name | Role Description |
|---|---|
| ETL Analyst | ETL Analyst Role |
| Expression Access | Expression Access Role |
| Expression Advanced | Expression Advanced Role |
| Expression Authorize | Expression Authorize Role |
| Expression Phantom | Expression Phantom |
| Expression Read Only | Expression Read Only Role |
| Expression Write | Expression Write Role |
| Forms Renderer access | Forms Renderer access |
| Forms Renderer advanced | Forms Renderer advanced |
| Forms Renderer authorize | Forms Renderer authorize |
| Forms Renderer phantom | Forms Renderer phantom |
| Forms Renderer read | Forms Renderer read |
| Forms Renderer write | Forms Renderer write |
| Filter Access | Filter Access Role |
| Filter Advanced | Filter Advanced Role |
| Filter Authorize | Filter Authorize Role |
| Filter Phantom | Filter Phantom |
| Filter Read Only | Filter Read Only Role |
| Filter Write | Filter Write Role |
| Forms Conf access | Forms Configuration access |
| Forms Conf advanced | Forms Configuration advanced |
| Forms Conf authorize | Forms Configuration authorize |
| Forms Conf phantom | Forms Configuration phantom |
| Forms Configuration read | Forms Configuration read |
| Forms Configuration write | Forms Configuration write |
| Hier Browser Access | Hier Browser Access Role |
| Hier Browser Advanced | Hier Browser Advanced Role |

| Role Name | Role Description |
|---|---|
| Hier Browser Authorize | Hier Browser Authorize Role |
| Hier Browser Phantom | Hier Browser Phantom |
| Hier Browser Read Only | Hier Browser Read Only Role |
| Hier Browser Write | Hier Browser Write Role |
| Hierarchy Access | Hierarchy Access Role |
| Hierarchy Advanced | Hierarchy Advanced Role |
| Hierarchy Authorize | Hierarchy Authorize Role |
| Hierarchy Phantom | Hierarchy Phantom |
| Hierarchy Read Only | Hierarchy Read Only Role |
| Hierarchy Write | Hierarchy Write Role |
| Identity MGMT access | Identity management access |
| Identity MGMT advanced | Identity management advanced |
| Identity MGMT authorize | Identity management authorize |
| Identity MGMT phantom | Identity management phantom |
| Identity MGMT read | Identity management read |
| Identity MGMT write | Identity management write |
| Mapper Access | Mapper Access |
| Mapper Advanced | Mapper Advanced |
| Mapper Authorize | Mapper Authorize |
| Mapper Phantom | Mapper Phantom |
| Mapper Read Only | Mapper Read Only |
| Mapper Write | Mapper Write |
| MDB Access | Metadata Browser Access |
| MDB Read | Metadata Browser Read-only |
| MDB Write | Metadata Browser Write |
| Publish Metadata | Publish Metadata Role |
| Obj Migration Access | Object Migration Access Role |

| Role Name | Role Description |
|---|---|
| Obj Migration Advanced | Object Migration Advanced Role |
| Obj Migration Authorize | Object Migration Authorize Role |
| Obj Migration Phantom | Object Migration Phantom Role |
| Obj Migration Read | Object Migration Read-only Role |
| Obj Migration Write | Object Migration Write Role |
| Manage Run Access | Manage Run Access Role |
| Manage Run Advanced | Manage Run Advanced Role |
| Manage Run Authorize | Manage Run Authorize Role |
| Manage Run Phantom | Manage Run Phantom |
| Manage Run Read Only | Manage Run Read Only Role |
| Manage Run Write | Manage Run Write Role |
| ObjectAdmin advanced | ObjectAdmin advanced access |
| Oracle Cube Access | Oracle Cube Access |
| Oracle Cube Advanced | Oracle Cube Advanced |
| Oracle Cube Authorize | Oracle Cube Authorize |
| Oracle Cube Phantom | Oracle Cube Phantom |
| Oracle Cube Read Only | Oracle Cube Read Only |
| Oracle Cube Write | Oracle Cube Write |
| PR2 Administrator | PR2 Administrator Role |
| Process Access | Process Access Role |
| Process Advanced | Process Advanced Role |
| Process Authorize | Process Authorize Role |
| Process Phantom | Process Phantom |
| Process Read Only | Process Read Only Role |
| Process Write | Process Write Role |
| Rule Access | Rule Access Role |
| Rule Advanced | Rule Advanced Role |

| Role Name | Role Description |
|---|---|
| Rule Authorize | Rule Authorize Role |
| Rule Phantom | Rule Phantom |
| Rule Read Only | Rule Read Only Role |
| Rule Write | Rule Write Role |
| Run Access | Run Access Role |
| Run Advanced | Run Advanced Role |
| Run Authorize | Run Authorize Role |
| Run Phantom | Run Phantom |
| Run Read Only | Run Read Only Role |
| Run Write | Run Write Role |
| System admin access | System administration access |
| System admin advanced | System administration advanced |
| System admin authorize | System configuration authorize |
| System admin phantom | System administration phantom |
| System admin read | System administration read |
| System admin write | System administration write |
| Fusion AMHM Admin | Fusion Dimension Maintenance Admin Role |
| Fusion AMHM UMM Map Admin | Fusion UMM Maintenance Admin Role |
| Fusion Expressions Admin | Fusion Expressions Admin Role |
| Fusion Filters Admin | Fusion Filters Admin Role |
| Atomic excel access | Atomic schema excel upload access |
| Atomic excel advanced | Atomic schema excel upload advanced |
| Atomic excel authorize | Atomic schema excel upload authorize |
| Atomic excel phantom | Atomic schema excel upload phantom |
| Atomic excel upload read | Atomic schema excel upload read |
| Atomic excel upload write | Atomic schema excel upload write |
| Config excel advanced | Configuration schema excel upload and download access |

# Appendix B: Frequently Asked Questions

1. After applying OFSAAI 8.0.5.1.0 */8.0.5.2.0 ML* patch, why am I not able to view the option to upload Erwin XML file from client machine to server location?

   For uploading Erwin XML file from client machine to server location, you should be mapped to DMMFILEUPLR User Role (function is DMMFILEUPL). For more information on mapping User Roles to User Groups, see User Group Role Map section.

   To upload Erwin XML file after mapping DMMFILEUPLR User Role to your User Group:

   1. From the *Business Model Upload* window, select **Erwin** as the **Upload Option**.
   2. Click **Save New ERwin File in Server**. The *Save Erwin File* dialog is displayed. Click **Choose File** and navigate to the location of the file and select the ERwin XML file.
   3. Click **Save File** and the file is copied to the server path. The status is indicated in the progress bar and once complete, the ERwin XML file is added to the drop-down list and is also selected by default. For more details, see Model Upload Using Erwin section.

2. After applying OFSAAI 8.0.5.1.0 */8.0.5.2.0 ML* patch, why am I not able to view the Generate Query button in New- DQ Definition window?

   For generating and viewing the SQL Query of the Data Quality Rule, your user group should be mapped to DQQRYVIEWR User Role (function is DQ_QRY_VIW).

   To generate and view the Query after mapping DQQRYVIEWR User Role to your User Group:

   1. From the *New- DQ Definition* window, define the DQ Rule. For more information, see Data Quality Rule section.
   2. Click **Generate Query**. The details are validated and the validated query along with the status is displayed in the *Generated Query* section.
   3. Click **Save**.

3. After applying OFSAAI 8.0.5.1.0 */8.0.5.2.0 ML* patch, why am I not able to view the button to view the SQL Query of the Data Mapping definition?

   For validating and viewing the SQL Query of the Data Mapping definition, you should be mapped to DI Advanced User Role DIADV (function is DMVIEWSQL). For more information on mapping User Roles to User Groups, see User Group Role Map section.

   To view and validate the Data Mapping definition, after mapping DIADV User Role to your User Group:

   1. From the *Data Mapping* window, specify the Data Mapping details and select the required Entities. For more information, see Define Data Mapping to Table section.
   2. Click button to define Expressions, Join conditions, or Filters on Source. In the *Expression* window, click **Show Advanced Options**.

3. Click button to validate the query by converting to the selected RDBMS source. If Validation is successful, the *Explain Plan* for the SQL query is displayed. Else, the *SQL Exception* is displayed.
4. Click button to view SQL, which acts as print command for the complete query.

**NOTE:** The Definition Query in case of RDBMS will be validated on save irrespective of this flag. However the SQL errors, if any, will not be shown in the UI.

4. After applying OFSAAI 8.0.5.1.0 */8.0.5.2.0 ML* patch, why am I not able to view the button to generate Logicand view the SQL Query of the Post Load Changes definition?

   For generating Logic and viewing the SQL Query of the Post Load Changes definition, you should be mapped User Role DTAdvanced DTADV (function is DTGENLOG). For more information on mapping User Roles to User Groups, see User Group Role Map section.

   To generate logic and view SQL query of the Post Load Changes definition, after mapping DTADV User Role to your User Group:

   1. From the *Post Load Changes* window, click **Expression Generator** after defining Transformation details and parameters.
   2. In the *Expression Generator* grid:
      - Click button to generate Logic and view the SQL query in the *Query Generated* grid.
      - Click **Check Syntax** to check the syntax of the query generated.

   For more information, see Post Load Changes section.

# ANNEXURE

**Third Party Software**

The **Apache** Software License, Version 1.7.1

This product includes software developed by the Apache Software Foundation (http://www.apache.org).

Apache License Version 2.0, January 2004

http://www.apache.org/licenses/

**Quadbase Systems, Inc.**

Copyright © 2006 Quadbase Systems, Inc. All rights reserved

**NAG Limited**

NAG Limited ® 2005

Portions utilize NAG's C library - All rights reserved

**Gnuplot, V 4.2.0**

Copyright 1986 - 1993, 1998, 2004

www.gnuplot.info

# OFSAAI SUPPORT CONTACT DETAILS

- Contact Infrastructure support at https://flexsupp.oracle.com if you have installed ERM and FCCM applications.
- Raise an SR in https://support.oracle.com if you have any queries related to EPM applications.

# SEND US YOUR COMMENTS

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

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

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

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

**OFSAAI**

**8.0.5.0.0 User Guide**

**Oracle Corporation**
**World Headquarters**
**500 Oracle Parkway**
**Redwood Shores, CA 94065**
**U.S.A.**

**Worldwide Inquiries:**

**Phone: +1.650.506.7000**

**Fax: +1.650.506.7200**

**www.oracle.com/us/industries/financial-services/**

**Copyright © 1993, 2022 Oracle Financial Services Software Limited. All rights reserved.**

**No part of this work may be reproduced, stored in a retrieval system, adopted or transmitted in any form or by any means, electronic, mechanical, photographic, graphic, optic recording or otherwise, translated in any language or computer language, without the prior written permission of Oracle Financial Services Software Limited.**

**Due care has been taken to make this OFSAAI 8.0.5.0.0 User Guide and accompanying software package as accurate as possible. However, Oracle Financial Services Software Limited makes no representation or warranties with respect to the contents hereof and shall not be responsible for any loss or damage caused to the user by the direct or indirect use of this OFSAAI 8.0.5.0.0 User Guide and the accompanying Software System. Furthermore, Oracle Financial Services Software Limited reserves the right to alter, modify or otherwise change in any manner the content hereof, without obligation of Oracle Financial Services Software Limited to notify any person of such revision or changes.**

**All company and product names are trademarks of the respective companies with which they are associated.**