Master Data Management

Server Guide

Release 4.8.0
B035-0000-9707
December 2022

Copyrights or Trademarks

All copyrights and trademarks used in Teradata documentation are the property of their respective owners. For more information, see Section : “Teradata Trademark and Trademark.”

Product Safety

Safety Type	Description
NOTICE	Indicates a situation which, if not avoided, could result in damage to property, such as to equipment or data, but not related to personal injury.
⚠CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate personal injury.
⚠WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious personal injury.

Warranty Disclaimer

Except as may be provided in a separate written agreement with Teradata or required by applicable law, the information available from the Teradata Documentation website or contained in Teradata information products is provided on an "as-is" basis, without warranty of any kind, either express or implied, including the implied warranties of merchantability, fitness for a particular purpose, or noninfringement.

The information available from the Teradata Documentation website or contained in Teradata information products may contain references or cross-references to features, functions, products, or services that are not announced or available in your country. Such references do not imply that Teradata Corporation intends to announce such features, functions, products, or services in your country. Please consult your local Teradata Corporation representative for those features, functions, products, or services available in your country.

The information available from the Teradata Documentation website or contained in Teradata information products may be changed or updated by Teradata at any time without notice. Teradata may also make changes in the products or services described in this information at any time without notice.

Feedback

To maintain the quality of our products and services, e-mail your comments on the accuracy, clarity, organization, and value of this document to: docs@teradata.com.

Any comments or materials (collectively referred to as "Feedback") sent to Teradata Corporation will be deemed nonconfidential. Without any payment or other obligation of any kind and without any restriction of any kind, Teradata and its affiliates are hereby free to (1) reproduce, distribute, provide access to, publish, transmit, publicly display, publicly perform, and create derivative works of, the Feedback, (2) use any ideas, concepts, know-how, and techniques contained in such Feedback for any purpose whatsoever, including developing, manufacturing, and marketing products and services incorporating the Feedback, and (3) authorize others to do any or all of the above.

Teradata Trademark and Trademark Attributions

Preface

Purpose

Welcome to Teradata's Master Data Management (MDM) Product. Teradata's Master Data Management product can be thought as the set of methods or processes and procedures used to manage, reference, and synchronize correct and consistent Master Data across an Enterprise. The Teradata MDM product can provide the user with the capability to manage, integrate and consolidate Master Data with or without having to replace existing systems. Master Data can be defined as Data that is important to the company, may be referenced in transactional data, and changes over time (hence must be managed), and is needed in multiple enterprise systems by multiple users.

Teradata's MDM product provides the business users with the capability to create and manage the data. Teradata's MDM provides the ability to create flexible business workflows that accurately reflect the specific business needs of the customer and to provide this accurate and consistent information to anyone in the enterprise. Teradats's MDM is built upon an open architecture known as Service Oriented Architecture (SOA) and the Teradata platform itself, which provides the necessary performance, scalability, and reliability attributes of a World Class Master Data Management product.

With the Teradata's MDM solution you can stage, consolidate, validate, cleanse, store, augment, cross-reference, and publish data to systems in and across your enterprise. By ensuring cross-system data consistency, Teradata's Master Data Management can enable flawless and timely execution of business processes – while leveraging existing investments and reducing the total cost of ownership to manage business critical data.

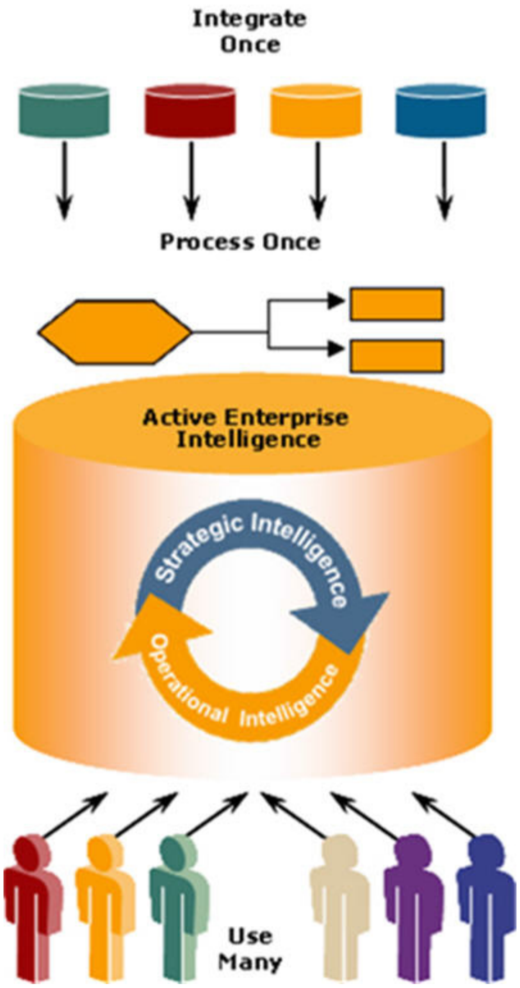
Teradata's MDM provides a framework for building business workflows by defining the necessary data in workflows via X-Docs and expressing the business logic that operates on the data via X-Rules. This framework enables the definition of business process workflows in a configurable manner with little programming effort.

Topics:

- About Teradata's Master Data Management
- About This Book
- Related Documentation
- Customer Support
- Documentation Feedback

About Teradata's Master Data Management

Teradata's Master Data Management (MDM) helps you manage key data elements within the Enterprise Data Warehouse (EDW), within an Active Data Warehouse (ADW), as well as, across various enterprise systems and geographies.



Teradata's MDM enables this with the following high-level key features:

- Data Staging for Loading, Cleansing, and Validation.
- Master Data Life-Cycle Manager for Data Maintenance and Business Specific Workflows and Processes.
- Publishing, Versioning, and Cross Referencing of Master Data.
- Data Model Extensibility and Integration with the Enterprise Data Model.
- Hierarchy Management.

About This Book

This document describes how to set up the MDM and is designed to help you understand MDM and provides detailed description of the user interface, features, and procedures associated with specific business processes.

Target Audience

This document is intended for System Administrators and Technical Support personnel responsible for configuring the Master Data Management application and for MDM application users.

What You Should Know

This document assumes that you have prior experience in working on Unix platforms: Solaris/HPUX/AIX, or the Windows 2003 server platforms, as applicable. It also assumes that you have a basic knowledge about creating code values, data load workflow, table editors, and managing hierarchies in MDM.

Document Structure

This book contains the following sections:

- "Section A - Server Administration Reference" describes how to set up MDM.
- "Section B - Server User Reference" describes the MDM user interface, features, and procedures associated with specific business processes.

Changes to This Book

The following changes were made to this book in support of the current release. For a complete list of changes to the product, refer *Master Data Management Release Definition* associated with this release.

Date and Release	Description
November 2013, 3.3	Chapter 13: "Third Party Tools" included. Chapter 16: "Workflow Management." included. Chapter 25: "Manage Authorization" updated for the RLS and CLS changes. Section : "Manage Trust" and Section : "Attribute Level Cross Reference" and Section : "Manage Trust" included. Chapter 8: "Configurable UI" updated. Chapter 18: "Manage Lookup Data with Control Framework" updated for the custom table. Chapter 18: "Manage Approvals." updated. Chapter 25: "Manage Authorization" updated for the RLS and CLS changes. Section : "Manage Events" included in Chapter 21: "Administration."

Date and Release	Description
April 2014, 3.3.1	Chapter 8: "Configurable UI" updated. Chapter 14: "Workflow Management." updated. Chapter 18: "Manage Approvals." updated. Chapter 20: "Manage Business Entity" included. Chapter 22: "Manage Scheduler" included. Chapter 23: "Profile Migration" included. Chapter 13: "Third Party Tools" updated.
July 2014, 3.3.1	Excel-MDM Toolkit Appendix removed.
November 2014, 3.4	Chapter 10: "Configurable UI" updated. Chapter 13: "Upload Documents" updated. Chapter 16: "Workflow Management." updated for Workflow Designer. Chapter 15: "Manage Lookup Data" updated. Chapter 19: "Relationship Data Management" updated. Chapter 21: "Manage Approvals." updated. Chapter 19: "Data Quality" updated. Chapter 23: "Profile Migration" updated. Appendix A: "MDM Schema Generation Process." updated.
January 2015, 3.4.0.1	Version details updated.
February 2015, 3.4.1	All the screenshots in the guide replaced as per new MDM UI and all the naviagtion path updated.
November 2015, 3.5	Updated Chapter 13: "Upload Documents", Chapter 16: "Workflow Management." Included Chapter 26: "Categorize Data", Chapter 25: "Model Builder" Included Section : "Hierarchy Promotion." and Section : "Hierarchy Statistics." Section : "Upload Excel Data."
March 2016, 3.5.1	Updated Chapter 16: "Workflow Management." with Fork node details. Included Manage Template and Manage Dictionary in Chapter 24: "Model Builder" Updated Chapter 16: "Hierarchy Management."as per the new UI changes. Included Section : "Manage Rollup Attributes." Included Appendix G: "UDF's Execution Modes."
June 2016, 3.5.2	Included Dashboard UI and Group Attributes in Chapter 15: "Manage Lookup Data." Included Review Model Builder SQLs through Approval in Chapter 25: "Model Builder" and updated the Migartion Scripts section. Updated Chapter 18: "Manage Approvals."as per the new UI changes and included Dashboard UI in Approval Inbox section.

Date and Release	Description
November 2016, 3.5.3	Updated new UI changes in in Chapter 8: "Configurable UI." Included Manage Import Metadata in Chapter 25: "Model Builder". Updated Chapter 18: "Manage Approvals."as per the new UI changes for Assign Me and View Records. Included creating unbalanced hierarchy section in Chapter 16: "Hierarchy Management"
August 2017, 4.0.0	Updated new UI changes in Chapter 8: "Configurable UI." Included Source System Association in Chapter 15: "Manage Lookup Data." Updated Matching and Survivorship as per the new changes in Chapter 12: "Data Harmonization Features" and removed source registration section. Included Merge Hierarchy section in Chapter 16: "Hierarchy Management" Email Notification section updated in Manage Approvals chapter. Updated Manage Queries chapter with Rest Enhancements.
September 2017, 4.0.1	Approval chapter updated with new enhancements. Support for Import from X-documents included in Chapter 24: "Model Builder." Manage code set Version and Name value pair support in code set included in Chapter 15: "Manage Lookup Data." Updated Customization as per the new changes in Chapter 12: "Data Harmonization Features". E2E for mapped source included in Chapter 9: "The E2E (Data Load) Workflow" UDFs updated in Chapter 12: "Data Harmonization Features"
December 2017, 4.1.0	Email enhancements updated in Chapter 18: "Manage Approvals.". Manage Sequence and Manage DDP Configuration added in Chapter 24: "Model Builder." Merge Hierarchy updated in Chapter 16: "Hierarchy Management." Manage Sequence added in Chapter 15: "Manage Lookup Data."
June 2018, 4.2.0	Email enhancements in user group based approval updated in Chapter 18: "Manage Approvals.". Metadata delete added, Report Monitoring and Auto Generate View section added in Chapter 24: "Model Builder." Excel Upload in Hierarchy version updated, delete and metadata delete of version hierarchy updated in Chapter 16: "Hierarchy Management." Approval notification in E2E added in Chapter 9: "The E2E (Data Load) Workflow."

Date and Release	Description
April 2019, 4.3.0	Group approval, E-signature updated in Chapter 18: “Manage Approvals.”. Model builder ISG log section updated and Model Builder Dashboard section added in Chapter 24: “Model Builder.” Profile Migration chapter updated with upload profile and view log enhancements in Chapter 23: “Profile Migration.” Version hierarchy flattened view and copy hierarchy version updated in Chapter 16: “Hierarchy Management.” Cleansing and standardization, Matching and Survivorship sections updated in Chapter 12: “Data Harmonization Features.”
November 2019, 4.4.0	Collect MDM Database Statistics and Configure Non MDM Table for MDM Operations section added in Chapter 24: “Model Builder.” Handling of Unassigned hierarchy nodes details added in Chapter 16: “Hierarchy Management.” Matching and Survivorship enhancements details included in Chapter 12: “Data Harmonization Features.”
June 2020, 4.5.0	Add Folder and Link section updated in Chapter 2: “Admin Tasks.” Approval Inbox, Monitor and Makers Inbox UIs and realted content updated as per the UI enhancements in in Chapter 18: “Manage Approvals.” Data Steward Dashboard section added in in Chapter 12: “Data Harmonization Features.” Chapter 13: “Cross Reference Management.” added newly. Chapter 24: “Model Builder.” updated as per the UI enhancements.
March 2021, 4.6.0	Replaced all the screenshots in the guide as per new UI changes. Approval Inbox, Monitor and Makers Inbox UIs and related content updated as per the UI enhancements in Chapter 18: “Manage Approvals.” Secondary Connection section updated. Hierarchy Viewer section updated. Chapter 24: “Model Builder.” updated as per the UI enhancements.
March 2022, 4.7.0	Replaced screenshots in the guide as per new UI changes. Data Harmonization Features updated in Section 12: “Data Harmonization Features” Approval Inbox, Monitor and Makers Inbox UIs and related content updated as per the UI enhancements Chapter 18: “Manage Approvals.” New topics for Sources and NOS Integration has added
June 2022, 4.7.1	Drag and Drop option for Menu builder updated in Chapter 2: “Admin Tasks”
October, 2022, 4.8	Updated Matching Process module for Simple and Advanced matching attribute profile

Related Documentation

For more information on MDM, refer the following documents:

- *Master Data Management Release Definition*
  (Master Data Management 4.8.0 Release Definition.pdf)
- *Master Data Management Studio User Guide*
  (Master Data Management 4.8.0 Studio User Guide.pdf)
- *Master Data Management Developer Guide*
  (Master Data Management 4.8.0 Developer User Guide.pdf)
- *Master Data Management Installation Guide*
  (Master Data Management 4.8.0 Installation Guide.pdf)
- Master Data *Management* Reference Guide
  (Master Data Management 4.8.0 Reference Guide.pdf)

The above Teradata documents are available at: https://docs.teradata.com

To Read The Documentation

To read the pdf files, you must have Adobe Acrobat Reader, version 4.0 or higher. If you do not have Acrobat Reader on your machine, you can download it from Adobe's Web site at http://www.adobe.com.

Customer Support

Customer support is available at the Teradata customer support Web site (https://access.teradata.com), where you can:

- Request shipment of software.
- Download software documentation.
- Submit new issues or cases.
- Track the status of current issues or cases.

Documentation Feedback

Please share your thoughts and ideas:

- Send feedback to docs@teradata.com.
- Navigate to https://teradata-documentation.ideas.aha.io/ideas/new and provide your ideas.

Table of Contents

Chapter 7: User Management

Chapter 8: Configurable UI

Chapter 10: Business Rules . . . 250

Chapter 11: Upload Documents . . . 289

Chapter 12: Data Harmonization Features . . . 309

Chapter 15: Manage Lookup Data. 615

Chapter 16: Hierarchy Management. 715

Chapter 19: Data Quality 899

Chapter 20: Manage Business Entity 917

Chapter 21: Administration 925

Chapter 22: Manage Scheduler 964

Chapter 23: Profile Migration 998

Chapter 24: Model Builder 1016

Chapter 26: Manage Authorization

Appendix A: MDM Schema Generation Process 1215

Appendix B: ABC Framework 1225

Appendix C: Backup and Storage Guidelines 1232

Appendix D: MDM Workflow Monitoring 1238

List of Figures

List of Tables

SECTION A Server Administration Reference

Section A provides link to the various chapters on server administration reference.

- Chapter 1: “Introduction.”
- Chapter 2: “Admin Tasks.”
- Chapter 3: “MDM Customization.”
- Chapter 4: “Alerts.”
- Appendix A: “MDM Schema Generation Process.”
- Appendix C: “Backup and Storage Guidelines.”

CHAPTER 1 Introduction

What's In This Chapter

This chapter provides an overview of MDM and its features.

Topics include:

- About Teradata Master Data Management
- MDM Server Architecture
- MDM Generic Notes

About Teradata Master Data Management

Teradata Master Data Management platform solution provides a way to integrate and consolidate master data without having to replace existing infrastructure investments. MDM provides a trusted infrastructure with built-in processes and services for Enterprise Data Management. You can stage, consolidate, validate, cleanse, store, augment, cross-reference, and publish data to systems in your IT infrastructure. By ensuring cross-system data consistency, MDM enables flawless execution of business processes – while leveraging existing IT investments and reducing the total cost of ownership to manage business critical data.

MDM helps you to define, create, validate, and distribute key enterprise static data. In addition, MDM also facilitates management of enterprise transaction data from source to target, within the enterprise supply chain environment. MDM can either be deployed as a master data repository, or as a service provider, or in conjunction with an external master data repository.

MDM helps you synchronize key data elements across disparate systems and geographies. MDM enables you with:

- Data staging for loading, cleansing, validating, aggregating, and publishing data.
- Data model maintenance for model extension and model repository.
- Master Data life cycle maintenance for data maintenance workflows and versioning, editing, and archiving data.

MDM simplifies deployment, integration of heterogeneous systems, is easier to manage, provides high quality data, and decouples data from business application software. Consider using Master Data Management at these levels in your organization:

- Enterprise Asset Level (example: Product Master, Customer Master and so on).

- Program Level (example: Supply Chain Data Management, Enterprise Risk Data Management).
- Enterprise Wide MDM Repository for all your master data needs.

MDM platform framework comprises two components as listed below:

MDM Studio

An Integrated Development Environment (IDE) for designing, debugging and maintaining the workflows, data models, and user interfaces that together define a business process. Web services used to define the integration touch points with external applications can be imported inside Studio and used seamlessly within workflows.

MDM Server

The workflows, data models, and user interfaces designed in MDM Studio are deployed in a production environment using the MDM Server. It scales as the transaction volumes increase and can easily be configured for load balancing, failover, etc. One of the key goals of MDM is to avoid building point solutions for every new workflow. The framework promotes reuse of components like business rules, UI screens, documents, sub-workflows and so on intuitively, thus enabling users to define, and later extend, new workflows with ease.

The MDM includes the following key features:

- **Configurable UIs**

  Configurable UIs are automatically generated for each entity modeled within MDM. They have the following features:

  - Pattern and expression-based search (>, <, =, 1=, <=, >=, and Like operator).
  - Wizard to create SQL expression search and save the search for later use.
  - Export filtered set of data.
  - Mass update, increment/decrement or inflate/deflate the properties on the selected records.
  - Edit multiple records simultaneously.
  - Copy function to create new records.
  - You can search for any entity by specifying a wildcard character (*). For example: to search for user group on the User Groups UI, enter bp* in the **Group Name** field. Such a filter will retrieve all the records that have bp in their group name.
- **Hierarchy Management**

  A hierarchy is defined as any logical grouping of objects/components in the system.

  - Instances of any arbitrary object/component in the system can be grouped together to form a tree structure, thus constituting a hierarchy.
  - The hierarchy metadata feature facilitates the creation of any number of hierarchies on any object/component present in the system.
- **Data Load**

  The data load feature helps you to:

  - Initiate the process of receiving data from the client database, comparing the data against set rules, and committing this data into the MDM database.
  - Execute the end-to-end (E2E) or data load workflow to propagate the input staging data into MDM.
- **Workflows**

  Workflows are XML based specification to model business processes and embed execution logic. Workflows can be reused by modeling them as sub-workflows. The sub-workflows can be composed to create complete complex process flows. You can instantiate the sub-workflows explicitly or through an event.
- **User Management**

  The enterprise model feature helps you to manage users, user groups, and roles in MDM. The MDM user security model is based on Role Based Access Control. You can create roles based on the group requirements. You can then assign activities to these roles, which in turn, are assigned to the users belonging to underlying user groups. This determines the activities/workflows that a user with a particular role will be able to perform.
- **Managing Master Data**

  MDM provides for the creation and maintenance of certain basic master data entities like items, locations, item locations, resources, and resource alternates.
- **Security**
  - Role-based security for workflows and data for users and user groups.
  - Single sign on with MDM applications.
  - Delegate authentication to third-party systems.
- **MDM Studio plug-in for Eclipse as Design-time visual development environment**
  - Modify existing models, workflows, and business rules.
  - Create new custom workflows, models, and business rules.
  - Create new UI workflows and business logic using the MDM Studio.

MDM Server Architecture

MDM Server is componentized to separate out the X-Core layer of the product as an independent platform. On top of the platform, services are added to add functionalities. Within each service, modules exist which are also componentized and independent of each other in terms of codes and related artifacts. The MDM server architecture includes the following:

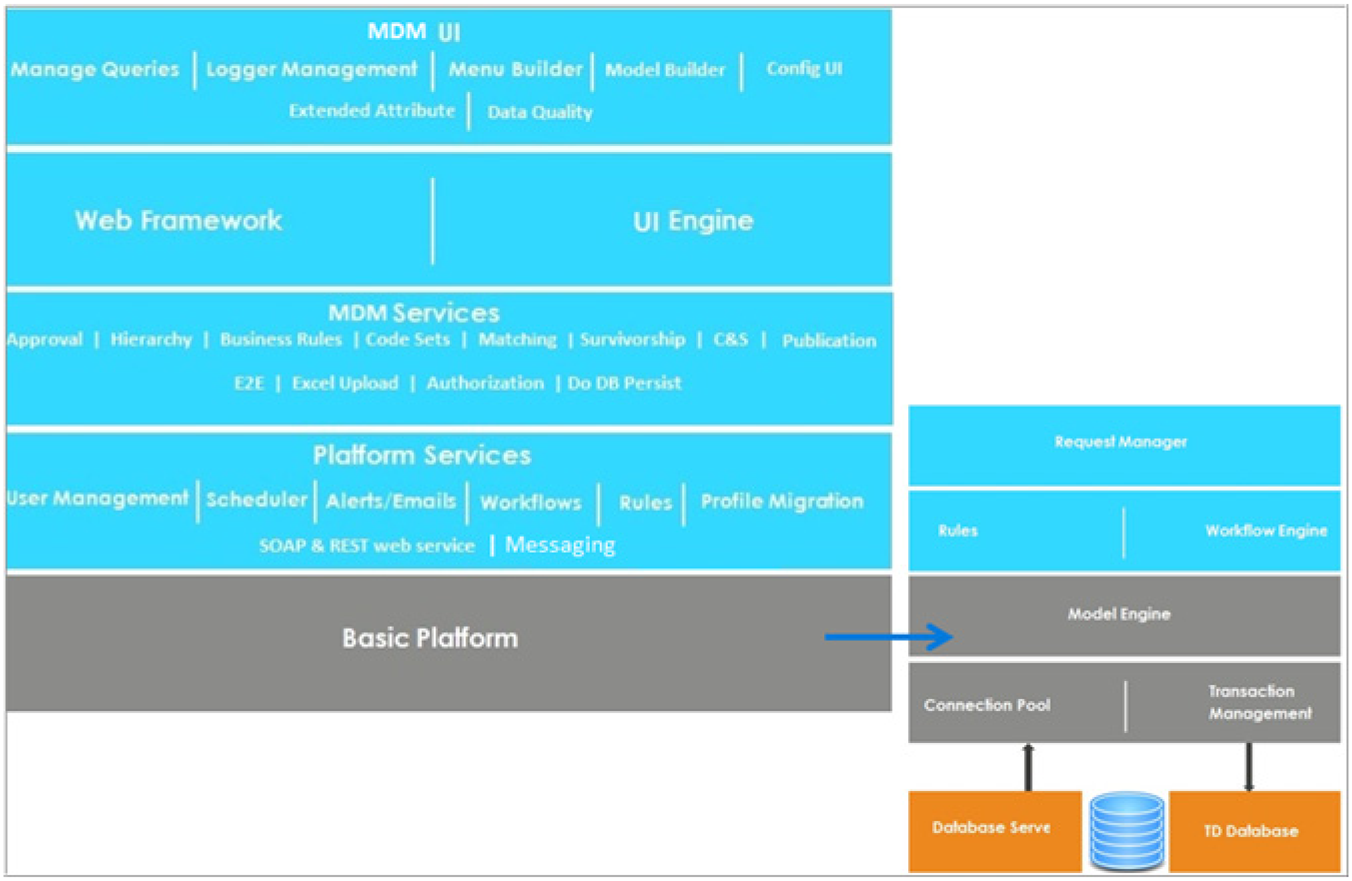
- MDM Server Componentization
- Database Schema Related Changes

MDM Server Componentization

The Figure 1 displays the MDM server componentized architecture. The Basic Platform, the bottom layer in Figure 1 is the separated core part of the MDM product (X-core). The X-core layer is separated as an independent platform. The X-core layer contains connection pooling for managing connections within product, Transaction Manager for managing transactions on the server, request manager for managing incoming and outgoing requests, workflow and rule engine to execute workflows and rules on server and model engine to host models defined on the server. The Basic Platform has a separate SVN repository.

On the top of the Basic Platform, we have the Platform Services layer. The Platform Services contain some of the features that are necessary for any application to work on (like User Management is required for authentication and security related configuration, scheduler for scheduling any workflows, Alerts and Email, Workflows, Rules, Profile Migration, SOAP and REST Web Services and Messaging). The Platform Services also have a separate repository.

Figure 1: MDM Server Componentized Architecture


MDM UI
Manage Queries | Logger Management | Menu Builder | Model Builder | Config UI
Extended Attribute | Data Quality
Web Framework
UI Engine
MDM Services
Approval | Hierarchy | Business Rules | Code Sets | Matching | Survivorship | C&S | Publication
E2E | Excel Upload | Authorization | Do DB Persist
Platform Services
User Management | Scheduler | Alerts/Emails | Workflows | Rules | Profile Migration
SOAP & REST web service | Messaging
Basic Platform
Request Manager
Rules
Workflow Engine
Model Engine
Connection Pool
Transaction Management
Database Serve
TD Database

The Platform Services along with Basic Platform is provided as a separate installer named as Platform Server. The basic idea for bringing up this Platform Server is to make available an independent platform with basic capabilities to host any application on top of it. Currently within Teradata, TAS for Oracle and TAS for SAP teams use this Platform Server to host their application on top of this platform.

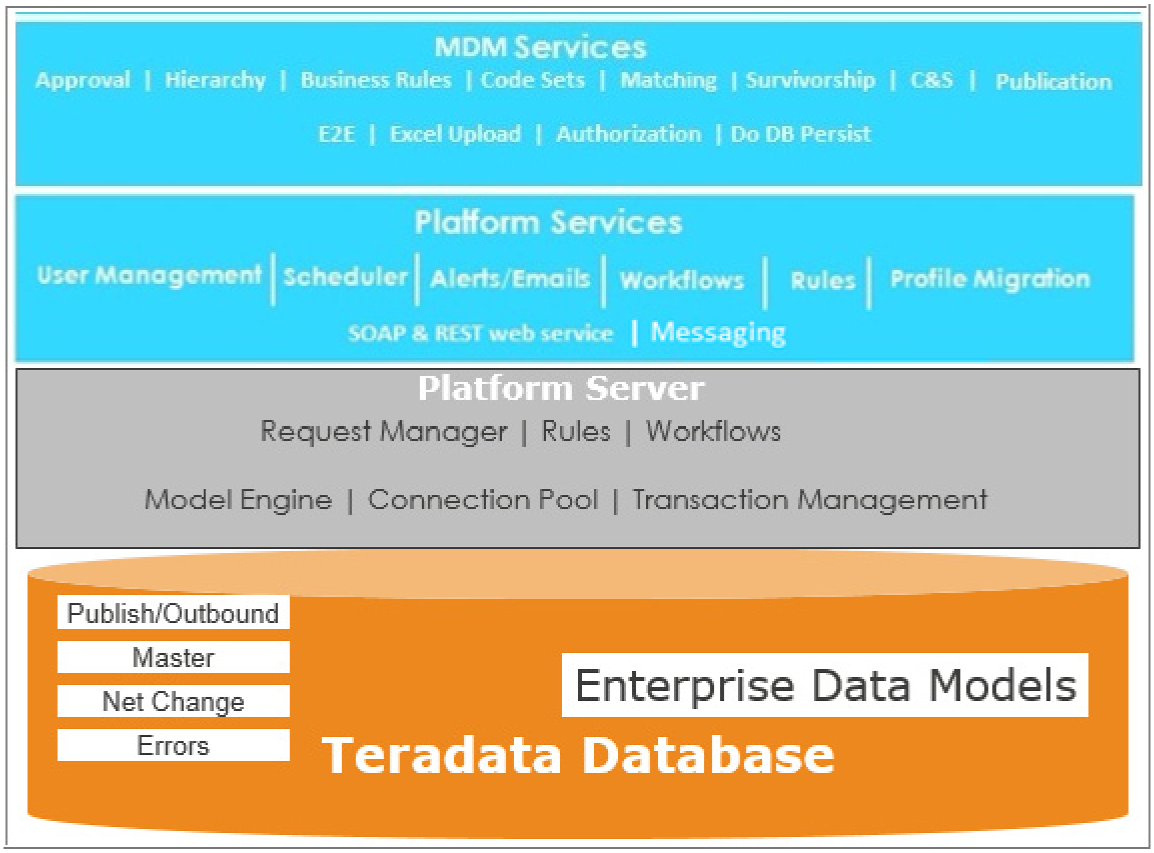
MDM application is also deployed on top of this platform. The Figure 2 displays the service layout of the MDM and its componentized modules. MDM has two new services added into the product:

- Platform Service: All modules of Platform added as components in Platform Service.
- MDM Service: All MDM specific modules added as components in MDM Service.

On top of MDM services, we have web framework and UI engine and then web UI layer.

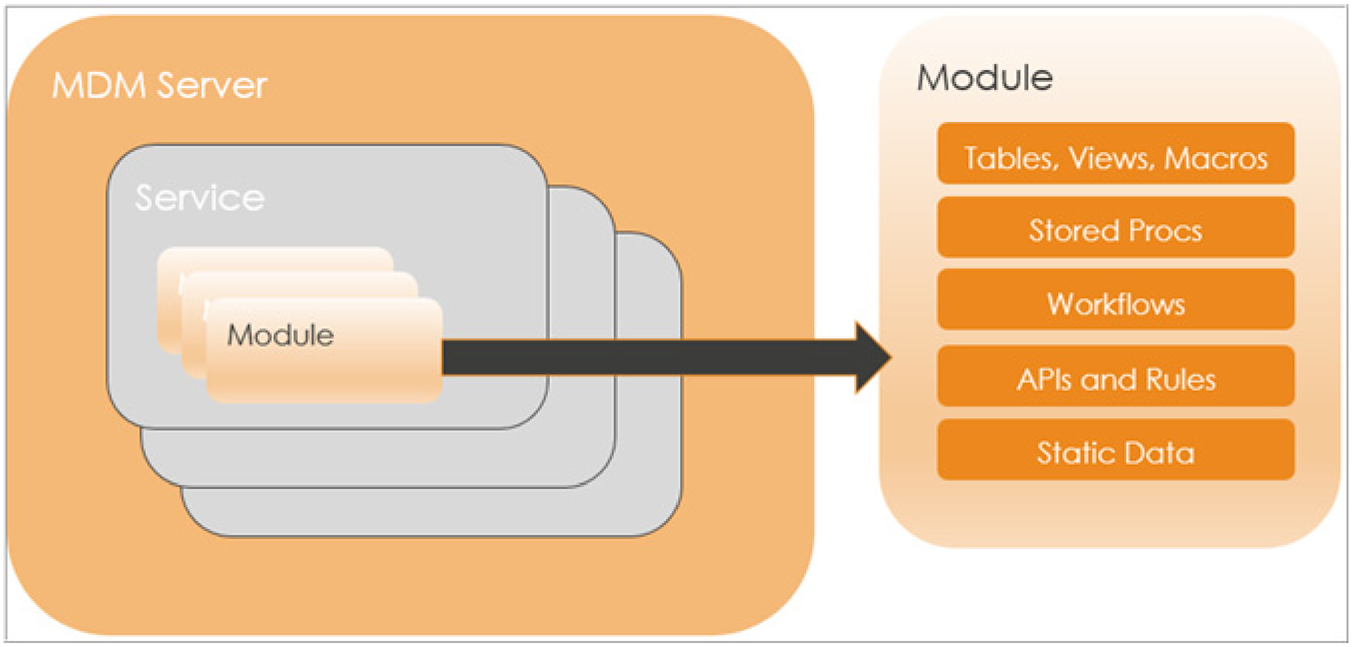
In the MDM Service layer, a service can have many modules defined within it. Each module in MDM Service or Platform Service is componentized and each module within product are independent of each other. All the artifacts (Workflows, Rules, Stored Procedures, Tables, Views and Static data) of a module are separated and maintained at separate location (folder structure). MDM service layer supports all staging (Master, Net Change, Output, Input and Version) services.

Figure 2: Service and Modules Layout in MDM


MDM Services
Approval | Hierarchy | Business Rules | Code Sets | Matching | Survivorship | C&S | Publication
E2E | Excel Upload | Authorization | Do DB Persist
Platform Services
User Management | Scheduler | Alerts/Emails | Workflows | Rules | Profile Migration
SOAP & REST web service | Messaging
Platform Server
Request Manager | Rules | Workflows
Model Engine | Connection Pool | Transaction Management
Publish/Outbound
Master
Net Change
Errors
Enterprise Data Models
Teradata Database

The Figure 2 displays the Module concept in MDM. Within MDM Server, we have MDM Services and within services, we have modules for each feature. Each module is organized in a folder structure to store the related tables, views, macros, stored procedures, workflows, APIs, Rules and Static Data. Based on requirements, each module can be enabled by configuring in a service file. You also create new modules within service using MDM Studio. For details, refer to Module creation section in MDM Studio User Guide.

Figure 3: MDM Module Concept

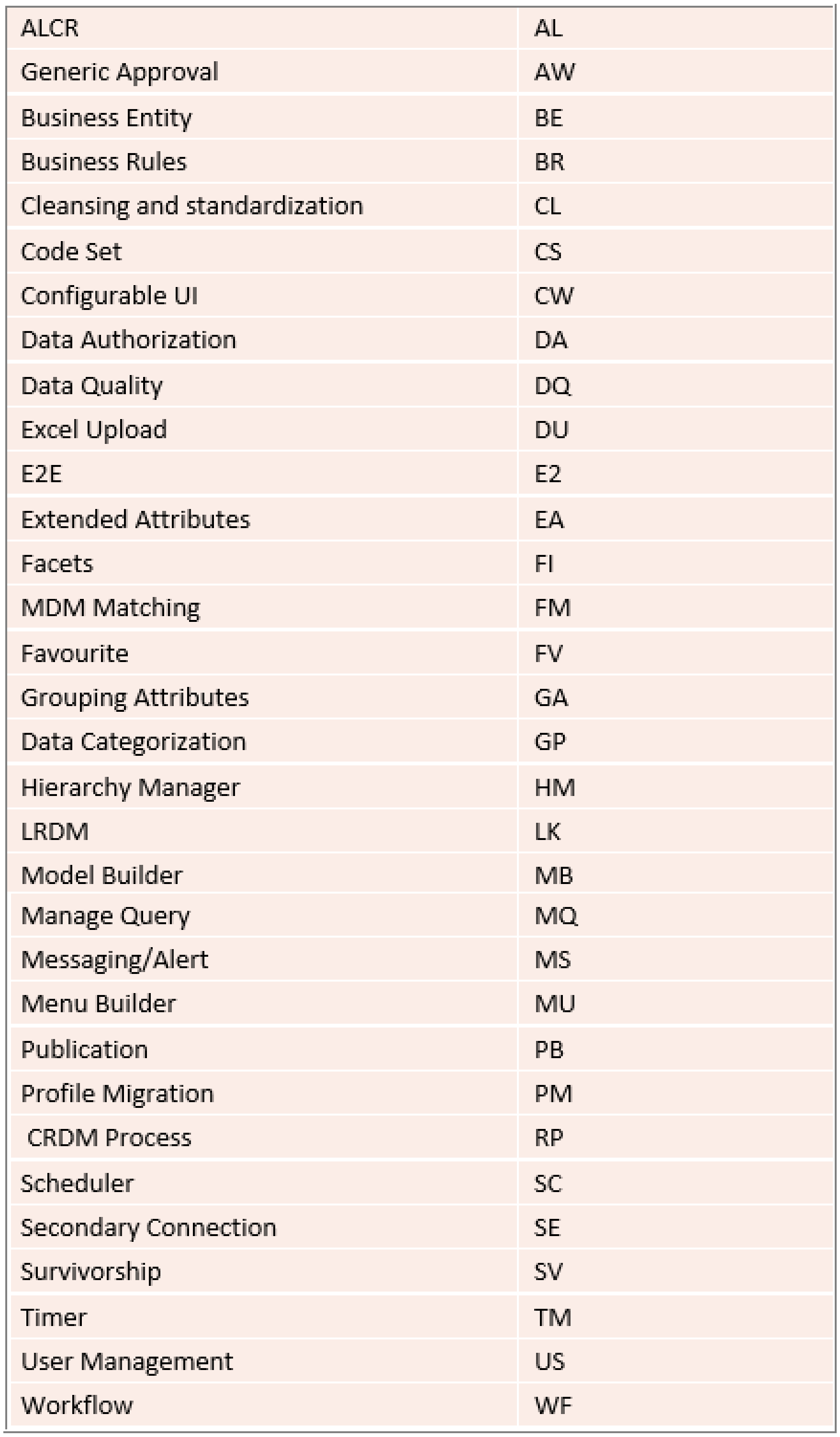


- A single installer handles all the complexities involved without any impact on end user.
- Upgrade scripts are provided to upgrade from MDM 3.5.3 release to 4.0 (Componentized MDM).
- The following services (Approval, Bpemeta, Dataupload, E2E, Validation, Email, Hierarchy, Messaging, User Security, Validation) are removed from MDM Server and the modules related to these are added as module in MDM or Platform Services.

Database Schema Related Changes

The schema structure of MDM is standardized to make it more aligned with the modules. The following list provides some of the changes in database schema:

- Modified the physical names of metadata tables of MDM. The first two letters in the table name represents the module to which it belongs to. The full list of module wise prefix is given in the below:



ALCR	AL
Generic Approval	AW
Business Entity	BE
Business Rules	BR
Cleansing and standardization	CL
Code Set	CS
Configurable UI	CW
Data Authorization	DA
Data Quality	DQ
Excel Upload	DU
E2E	E2
Extended Attributes	EA
Facets	FI
MDM Matching	FM
Favourite	FV
Grouping Attributes	GA
Data Categorization	GP
Hierarchy Manager	HM
LRDM	LK
Model Builder	MB
Manage Query	MQ
Messaging/Alert	MS
Menu Builder	MU
Publication	PB
Profile Migration	PM
CRDM Process	RP
Scheduler	SC
Secondary Connection	SE
Survivorship	SV
Timer	TM
User Management	US
Workflow	WF

- SYS fields are added to metadata table across all modules. Some of these fields are added for future enhancement purpose which may not be populated now.

The extended table name length support is provided in MDM. The maximum length of the table is now increased to 100 characters. The required support for this is provided in Model Builder or MDM Studio. The existing schema of MDM is also changed to support this.

MDM Generic Notes

The following section provides all the MDM generic notes.

1. MDM UI is now using Angular Framework. To revert back to PGL framework, navigate to *<MDM_Install_Directory>/web/mdmclient* and extract the file “angular-fallback.zip” and follow the ReadMe available in the extracted location.
2. You must not include special character * while creating records in MDM (example: in configurable UI, business rule name, object creation and so on) as such specifying * during search operation will retrieve and display all the records.
3. It’s recommended not to use the following special characters in any primary key columns.
   - # hash
   - * star
   - ( ) parentheses
   - & ampersand
   - , Comma
4. Teradata MDM does not support wildcard search on Date, Timestamp and boolean fields. Performing wildcard search on Date and Timestamp field might result in an error on MDM UI.
5. For decimal datatype, the maximum decimal field size is recommended to be 15.
6. The following conventions have to be followed while entering the column names and table names in MDM:
   - A name must be from 1 to 30 characters long.
   - A name can contain the letters A through Z, the digits 0 to 9, the underscore(_). A name should not contain characters such as !"#$%&'()*+,/;<=>?@[]^`{|}~ and white space.
   - A name in double quotation marks can contain any characters except double quotation marks.
   - A name is not case sensitive even when enclosed within double quotation marks.
   - A name cannot be a Teradata reserved word.
   - Table Names and Column Names must not start with numeric characters and (- or .)
7. It is recommended not to use the special characters such as # * ( ) & , = while creating data records in MDM. You must not use the special characters such as & ‘ < > to avoid Ajax error.
8. For the search functionality to work on the I18nized value, the search entity should include the original value and not the I18nized value.
9. On PGL UIs, the table names or column names will not be i18nized value.

10 In configurable UIs or any PGL UI like Manage Lookup Data, the text entered in entry field with leading spaces will be displayed in the same manner on search UIs.

11 When you upgrade MDM from a lower version to MDM 3.02.00 release, you need to assign the users to adminFolderActivity for the administration link to be visible on the left navigation pane. You need to assign the users to utility activity for the links under Utilities like menu builder, manage queries etc., to be visible on the left navigation pane.

12 It is recommended not to use "," in the decimal fields and use only "." in decimal fields.

13 The below error messages would be displayed for different types of errors in excel upload or table editor UIs.

- RI violation: Data not found in table MST_xxx
- Uniqueness violation: Uniqueness Constraint Violated for attribute <attribute Name>
- Not Null Violation: Value missing for attribute <attribute Name>.
- For Refrential Integrity Violation during insert, update and delete operation, the error message displayed is "Child data found in table (<master table name>) , Child data found in table (master table name)".

  For example: Child data found in table (MST_REFERENCE_CODE) , Child data found in table (MST_DOMAIN),
- The error message does not start with semi colon ; and if there are many error messages, they are separated with semi colon ; as in the below example.

  For Example: NOT_NULL_VIOLATION (PROCESS_NAME);NOT_NULL_VIOLATION (RECORD_DELETED_FLAG);NOT_NULL_VIOLATION (LANGUAGE_NAME);NOT_NULL_VIOLATION (START_DATE);NOT_NULL_VIOLATION (PROCESS_ID);NOT_NULL_VIOLATION (DESCRIPTION);NOT_NULL_VIOLATION (END_DATE)

14 MDM does not support left navigation pane implementation using pages.cnd, functions.cnd and perm-def.cnd files.

15 If you import a record of any template entity, it is validated against the master to see if this entity exists. If it does not exist, it is considered as INSERT, if it does exist and is ACTIVE, it is considered as an UPDATE and if it exists as DELETED, it is marked as ACTIVATE.

16 It is recommended not to use BYTEINT data type in MDM.

PGL Limitations and Notes

The following section provides the list of PGL limitations and notes:

1 The following conventions have to be followed while entering the data in PGL framework:

- While using special character like < you must use space after < else the content following the character < will be ignored by PGL.

  For example: A < b will be displayed properly, and A <b will be displayed as A and <b will be ignored.

2. In PGL framework, the JS function “querySelectorAll” is supported only from IE version 8.
3. For any PGL containing <ui:table> with <ui:buttons>, it is recommended and a good practice to include onLoadSuper() call inside onLoad().

CHAPTER 2 Admin Tasks

What's In This Chapter

This chapter provides detailed information on configuring MDM application UI.

Topics include:

- MDM UI Customization
- MDM Application Configurations
- MDM Database Related Configurations

MDM UI Customization

This section provides the following MDM UI customization details:

- Customizing Online Help
- Configuring Custom Online Documents
- Customizing MDM Left Navigation Pane—Menu Builder

Customizing Online Help

The online help available on configurable UI screens is generic in nature. All screens have a default mapping to a single help file, so the same online help is displayed whether launched from the Item configurable UI or the Location configurable UI on the MDM UI. You can configure this behavior and customize the online help files for tables.

Modify the file x2-config.cnd located at *<MDM_Install_Directory>\web\mdmclient\WEB-INF\bcm\model\bcm\framework* and specify the online help file corresponding to a table.

The XML configuration in x2-config.cnd will have the following settings:

```
<HELPFILE_CONFIG>
        <DEFAULT_HELP_FILENAME searchHelpFile="dbtable_help.htm"
editHelpFile="table_editor_edit_help.htm"
createHelpFile="table_editor_add_help.htm"
copyHelpFile="copy_record.html"/>
        <TABLE_HELPFILE_MAP>
            <TABLE Name="Dimension"
searchHelpFile="dimension_search_help.htm"
editHelpFile="edit_dimension_help.htm"
createHelpFile="create_dimension_help.htm"
copyHelpFile="copy_dimension_help.htm"/>
            <TABLE Name="Hierarchy"
searchHelpFile="hierarchy_search_help.htm"
editHelpFile="edit_hierarchy_help.htm"
```

```
createHelpFile="create_hierarchy_help.htm"
copyHelpFile="copy_hierarchy_help.htm"/>
           <TABLE Name="Level" searchHelpFile="level_search_help.htm"
editHelpFile="edit_level_help.htm"
createHelpFile="create_level_help.htm"
copyHelpFile="copy_level_help.htm"/>
           <TABLE Name="LevelHierarchy"
searchHelpFile="levelhierarchy_search_help.htm"
editHelpFile="edit_levelhierarchy_help.htm"
createHelpFile="create_levelhierarchy_help.htm"
copyHelpFile="copy_levelhierarchy_help.htm"/>
          <TABLE Name="Member" searchHelpFile="member_search_help.htm"
editHelpFile="edit_member_help.htm"
createHelpFile="create_member_help.htm"
copyHelpFile="copy_member_help.htm"/>
           <TABLE Name="Location" searchHelpFile="location_help.htm"
editHelpFile="location_edit_help.htm" copyHelpFile="copy_record.html"/>
           <TABLE Name="BOM" searchHelpFile="bom_help.htm"
editHelpFile="bom_help.htm" copyHelpFile="copy_record.html"/>
        </TABLE_HELPFILE_MAP>
    </HELPFILE_CONFIG>_MAP>
      </HELPFILE_CONFIG>
```

The default help file will be common to all tables in the table editor. If no mapping exists in the cnd file for any table, then the default help file will be applicable for that table.

Creating and Uploading a Thesaurusdef.xml File

The loadThesaurusDef is used to update an thesaurus definition for a Metadata search. A default definition is loaded as part of system initialization. User-specific definition can be loaded dynamically by loading the appropriate definition file. The thesaurusdef.xml file has the following elements:

- Data Packages can have bidirectional relationship. For some tables T1 can be the source for T2, for other tables T2 may be the source for T1.
- DataGroupRelation is to define which two tables in the DataPackages are being linked.
- DataElementRelation is to define which two fields are being linked.
- Cardinality shows whether the relationship is a 1-to-1 or many-to-1.
- Match Exact implies that the target field is identical to the source field.
- Derived means that the field is computed from the source field(s). Note that it is possible to have a one-to-one cardinality and a derived match. It is also possible that two target fields are derived from the same source field (or a subset of same source field).

  Example:

  ```
  <Thesaurus Name="THESARUSUS1">
      <DataPackages>
         <DataPackage Name="BCM_MASTER"/>
      </DataPackages>
  <Relations>
      <DataPackageRelation SourceDataPackage="BCM_MASTER"
  TargetDataPackage="BCM_OUTPUT_STAGING">
      <DataGroupRelation SourceDataGroup="AttributeSet"
  TargetDataGroup="AttributeSet">
  ```

```
    <DataElementRelation
Name="BCM_MASTER.AttributeSet.attributeSetID" Cardinality="One-to-
One" Match="Exact" TargetDataElement="attributeSetID"
Comments="name of system - system code">
    <Source SourceDataElement="attributeSetID"/>
    </DataElementRelation>
    </DataGroupRelation>
    <DataGroupRelation SourceDataGroup="GroupGPMAttribute"
TargetDataGroup="AttributeSetDetail">
    <DataElementRelation
Name="BCM_MASTER.GroupGPMAttribute.attributeSetID" Cardinality="One-
to-One" Match="Exact" TargetDataElement="attributeSetID"
Comments="name of system - system code">
    <Source SourceDataElement="attributeSetID"/>
    </DataElementRelation>
    </DataGroupRelation>
    <DataGroupRelation SourceDataGroup="AttributeSetDetail"
TargetDataGroup="AttributeSet">
    <DataElementRelation
Name="BCM_MASTER.AttributeSetDetail.attributeSetID" Cardinality="One-
to-One" Match="Exact" TargetDataElement="attributeSetID"
Comments="name of system - system code">
<Source SourceDataElement="attributeSetID"/>
    </DataElementRelation>
    </DataGroupRelation>
    </DataPackageRelation>
</Relations>
</Thesaurus>
```

In the DataElementRelation tag, the attribute “Name” should be in the format: DataPackage.Name.DataGroup where Name is the entity name of the data group (logical name of the table).

To load user-specific thesaurus definition:

1. In order to load a user specific definition dynamically, create a loadThesaurusDef.xml (the above given example) at *<MDM_Install_Directory>\lib\override\xservice\meta\xml directory*. (If the override folder does not exist, create a new directory under the lib folder).
2. Comment out the updateModelDefinition and updateBusinessRuleDefinition request in the metaDataportal.xml located at *<MDM_Install_Directory>\cfg\xservice\toolki\data*.
3. Load the file metaDataportal.xml on the MDM server.

Configuring Custom Online Documents

Perform the following steps to deploy the custom documents on the MDM UI:

1. Navigate to *<MDM_Install_Directory>\web\mdmclient\bcm\help\OnlineDocs* folder.
2. Copy the required custom online guides (pdf) to the above location.

3. Edit doclink_user.htm file available at *<MDM_Install_Directory>\web\mdmclient\bcm\help\OnlineDocs* folder to include required online guides

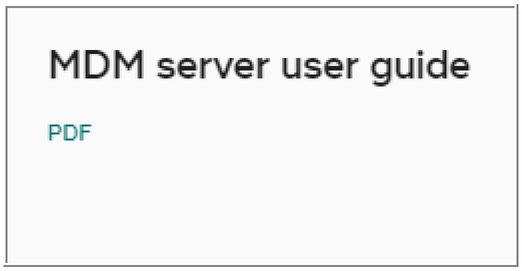
   That is, add any custom guide or pdf as below:

```
<br>
<table class="shadow" cellspacing="0" cellpadding="0"width="100%"
border="0"><tr>
<td style="COLOR: blue" class="tableHeaderNew">MDM Server Guide</td>
<td class="tableHeaderNew">[<a target="_blank" href="MDM Server
Guide.pdf">PDF</a>]</td>
<br>
```

4. Login into MDM UI and on the right corner of page, click on the help icon to access the online documents.

   A popup displays the added links as in Figure 4.

Figure 4: MDM Online Documentation



MDM server user guide

PDF

Customizing MDM Left Navigation Pane—Menu Builder

When a user logs in to MDM, the left navigation tree provides links to various MDM application functions and processes available to logged in user depending on the access permissions (role associated with the user profile). You can customize the left navigation structure as per your needs and assign required activities and roles to the user groups.

Key features of Menu Builder module:

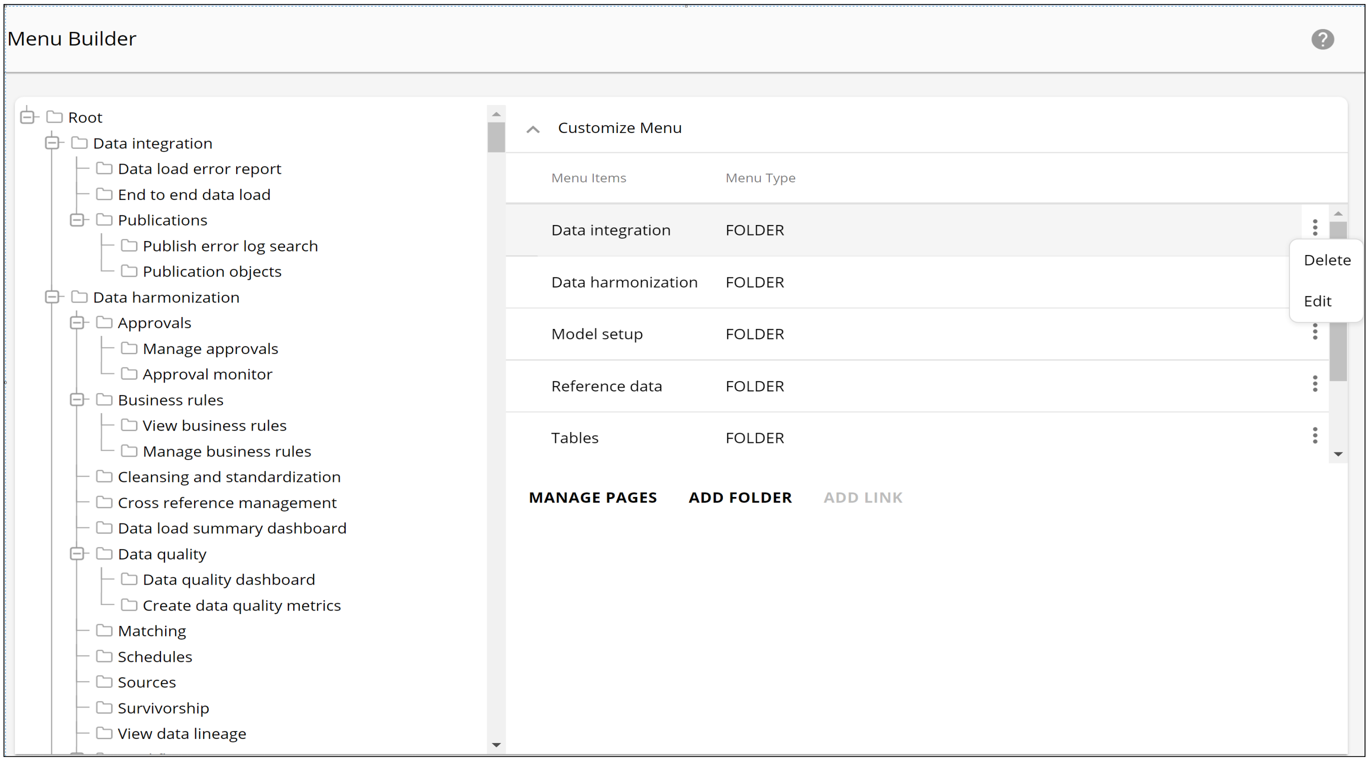
- Left navigation menu link to any new workflow or page can be added/modified.
- Activities to any left navigation link can be added or modified. Based on the activity, users logging into the application can access these links.
- The similar links can be a grouped into a folder using menu builder.
- The activities assigned to all existing links can be reviewed using menu builder.

Navigate to Menu Builder UI from left navigation pane **Administration** -> **Menu Builder**.

The Figure 5 displays the Menu Builder UI. On the Menu Builder UI:

- The left pane displays the existing left navigation structure.
- The right pane provides option to customize the left navigation menu using the Manage Pages, Add Folder and Add Link buttons.
- The right pane also provides option to organize the sequence of display of folders and links using drag and drop.

Figure 5: Menu Builder



Menu Items	Menu Type
Data integration	FOLDER
Data harmonization	FOLDER
Model setup	FOLDER
Reference data	FOLDER
Tables	FOLDER

Steps for configuring the left navigation structure includes:

1. Add Pages—See Manage Pages. On Manage Pages UI, you can add, edit or delete pages and workflows.
2. Add Folder or Link—See Manage Menu Details. On the Customize Menu pane, you can add, edit and delete folders and links.
3. Organize the sequence of display of folders and links. See Organize Menu List.

Manage Pages

The Pages are defined in **Menu Builder** for any of the below reasons:

- To point to an already existing page (for example: a html report page), which you want to display on click of a left navigation link. The URL of the page to be displayed needs to be given as input while defining a page.
- To invoke a workflow from a link in left navigation. In this process you can select the workflow you want to invoke, the page URL will be taken care automatically.

Pages are given as input while defining a left navigation link.

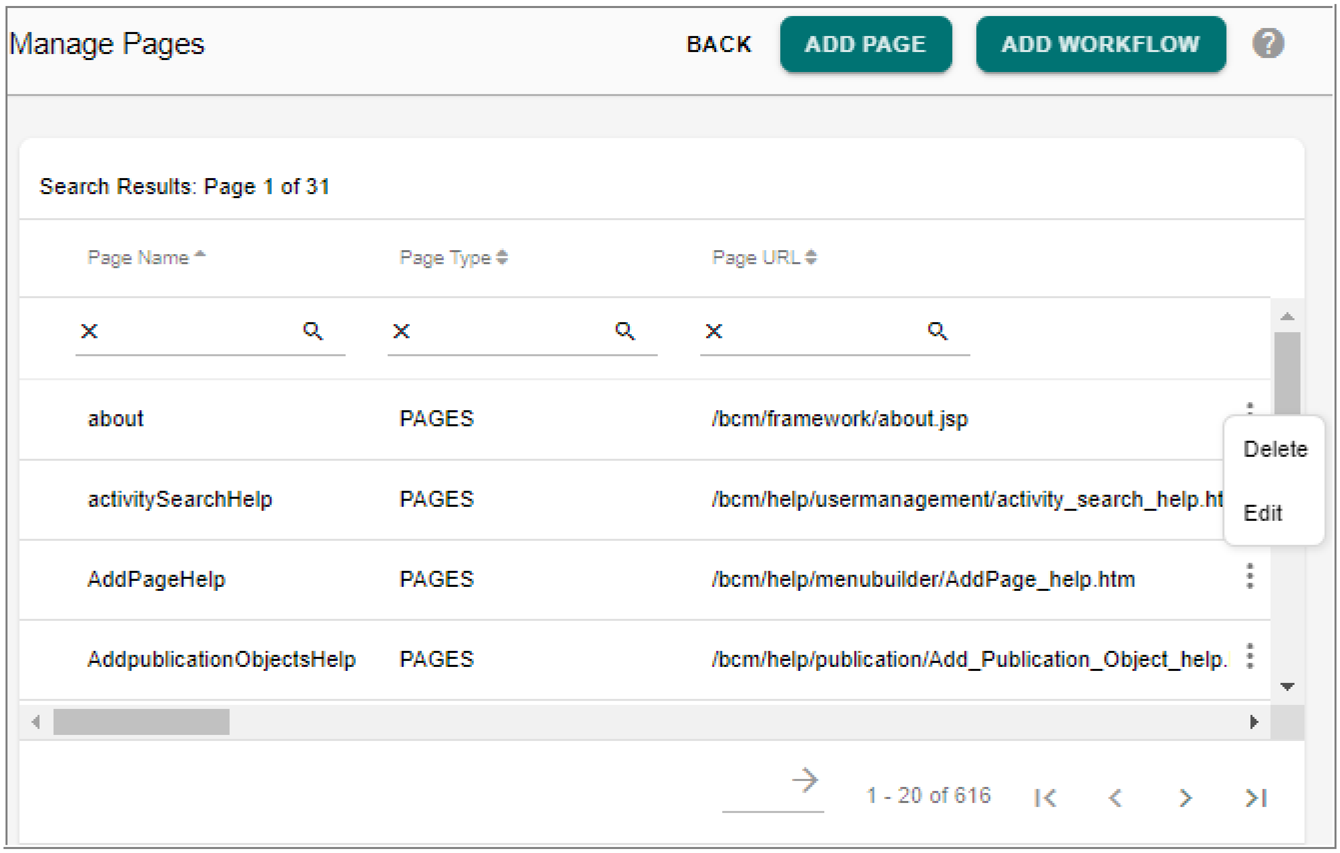
Navigate to Manage Pages UI from **Administration** -> **Menu Builder** and on the **Menu Builder** UI, in the **Customize Menu** pane, click **Manage Pages**.

The Figure 6 displays the Manage Pages UI.

- The Manage Pages UI displays all the existing pages.

- Manage Pages UI helps in adding or updating or deleting new resources or workflows to the left navigation menu.
- The pages created on Manage Pages UI can then be associated with the activity which can be assigned to the required role under User Management.

Figure 6: Manage Pages



Search Results: Page 1 of 31

Page Name	Page Type	Page URL
about	PAGES	/bcm/framework/about.jsp
activitySearchHelp	PAGES	/bcm/help/usermanagement/activity_search_help.ht
AddPageHelp	PAGES	/bcm/help/menubuilder/AddPage_help.htm
AddpublicationObjectsHelp	PAGES	/bcm/help/publication/Add_Publication_Object_help.

1 - 20 of 616

On the Manage Pages, you can add, edit or delete the page and workflow details.

- Add Page
- Edit Page Details
- Add Workflows
- Edit Workflow Details
- Delete Page or Workflow Details

Add Page

To add page:

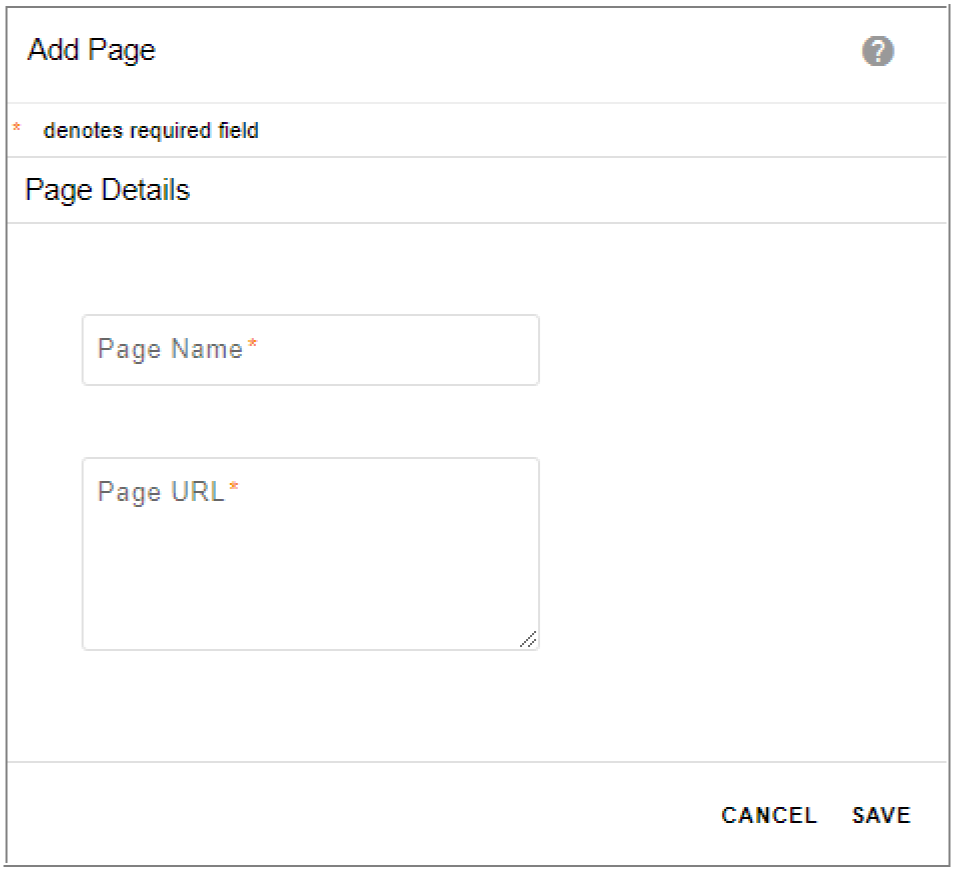
1. On the **Menu Builder** page (Figure 5), in the **Customize Menu** pane, click **Manage Pages**.

   The **Manage Pages** UI (Figure 6) is displayed. The **Manage Pages** UI displays all the existing pages.

2. On the **Manage Pages** UI (Figure 6), click **Add Page**.

   The **Add Page** UI (Figure 7) displays all the fields to be entered for creating a new page.

Figure 7: Add Page



3 On the **Add Page** UI (Figure 7),

- **Page Name:** name of the page being created.
- **Page URL:** URL of the page being created.

  The page to be accessed must be copied at any folder under *<MDM_Install_Directory>/web/mdmclient.* If the file is copied in bcm folder located at *<MDM_Install_Directory>/web/mdmclient/bcm* the path would be */bcm/<filename>*
- Click **Save**.

  Message: Page added successfully is displayed.

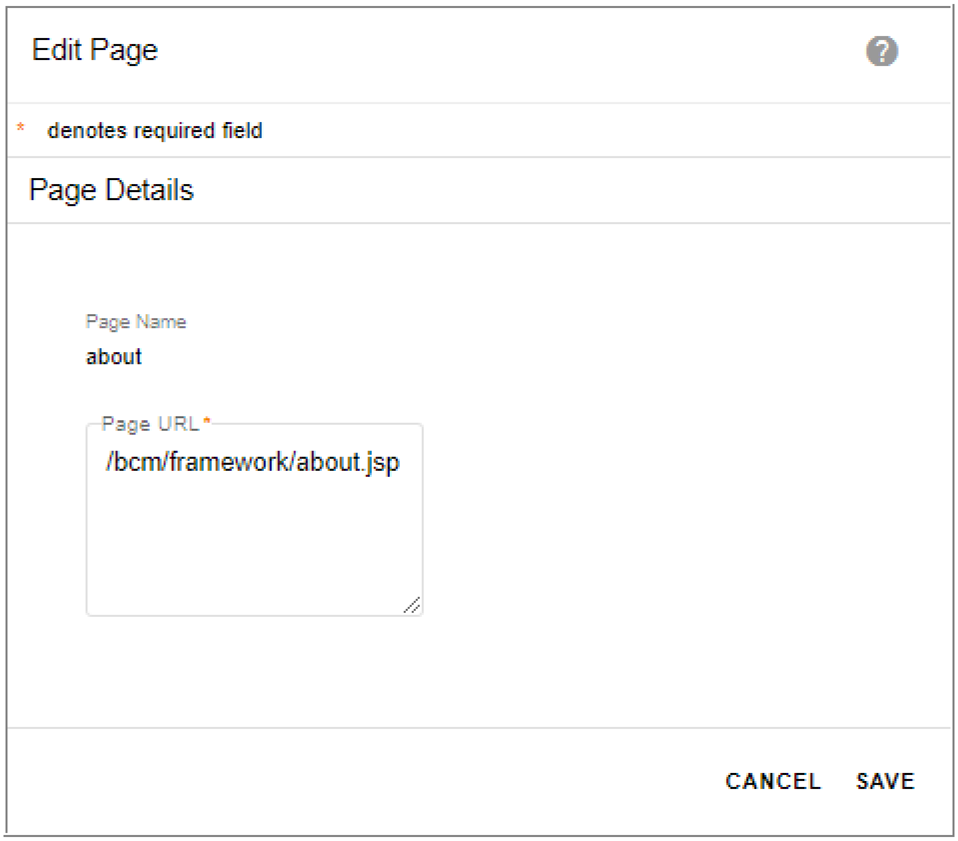
Edit Page Details

To edit page details:

1 On the **Manage Pages** UI (Figure 6), click on the Menu icon ⋮ corresponding to the required page and click **Edit**.

The **Edit Page** UI (Figure 8) displays the existing page details of the selected page.

Figure 8: Edit Page



Edit Page

* denotes required field

Page Details

Page Name
about

Page URL*
/bcm/framework/about.jsp

2 On the **Edit Page** UI (Figure 8), modify the page URL and click **Save**.

Message: Page details edited successfully is displayed.

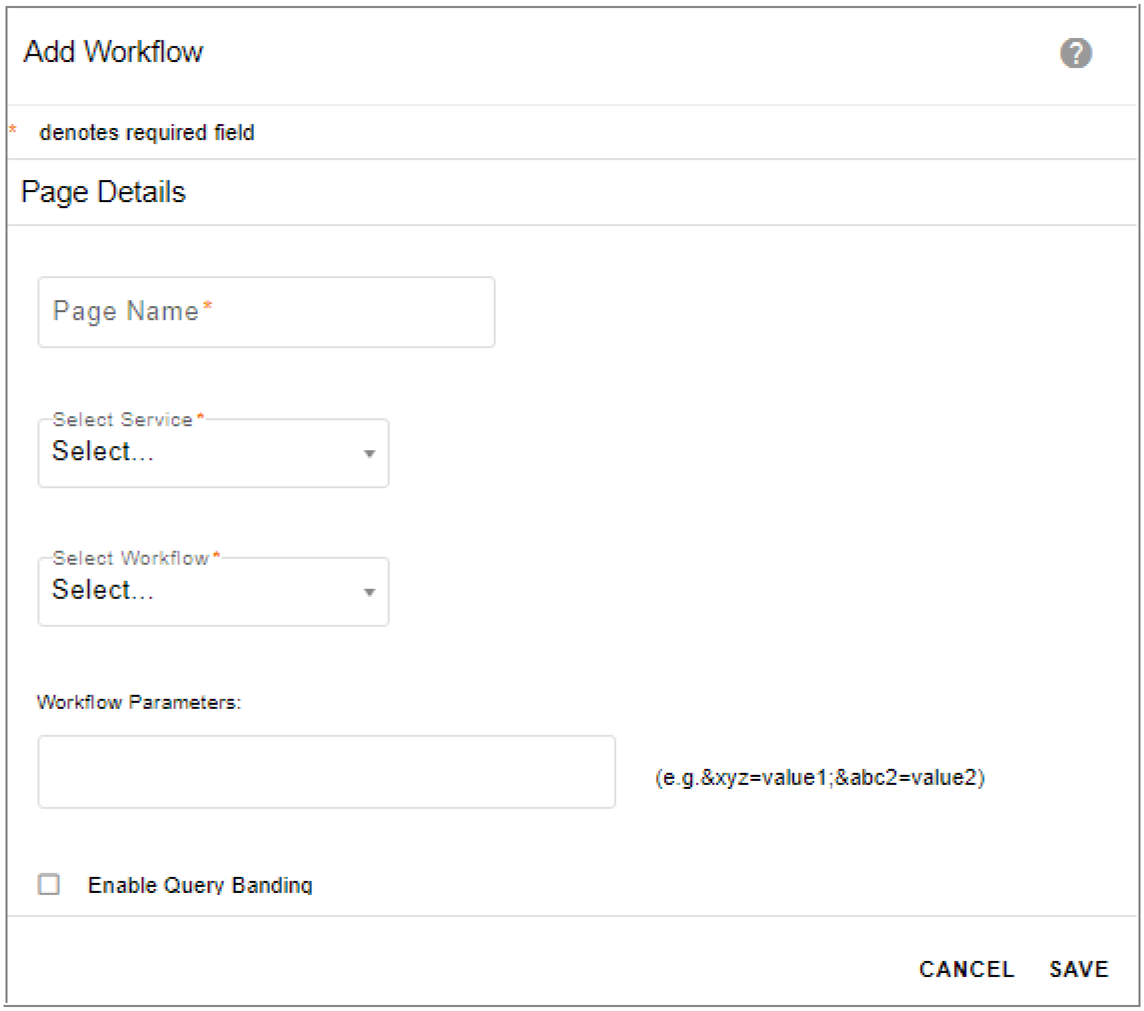
Add Workflows

To add workflow:

1 On the **Manage Pages** UI (Figure 6), click **Add Workflows**.

The **Add Workflow** page (Figure 9) displays all the fields to be entered for creating a new workflow.

Figure 9: Add Workflow



2 On the **Add Workflow** page (Figure 9),

- **Page Name:** page name of the workflow being created.
- **Select Service:** displays the list of services. Select the required service from the dropdown.
- **Select Workflow:** displays the list of existing workflows of the selected service. Select the required workflow from dropdown.
- **Workflow Parameters:** enter the workflow parameters in the field.
- **Enable Query Banding**: select the checkbox if query banding required at workflow level.

  If you select the option **Enable Query Banding**, the **Query Band Identifier** entry field is displayed.
- enter the query band identifier value in the **Query Band Identifier** field.

  For details on Query Banding, see Section : “Query Banding.” in this chapter.
- Click **Save**.

  Message: Page added successfully is displayed.

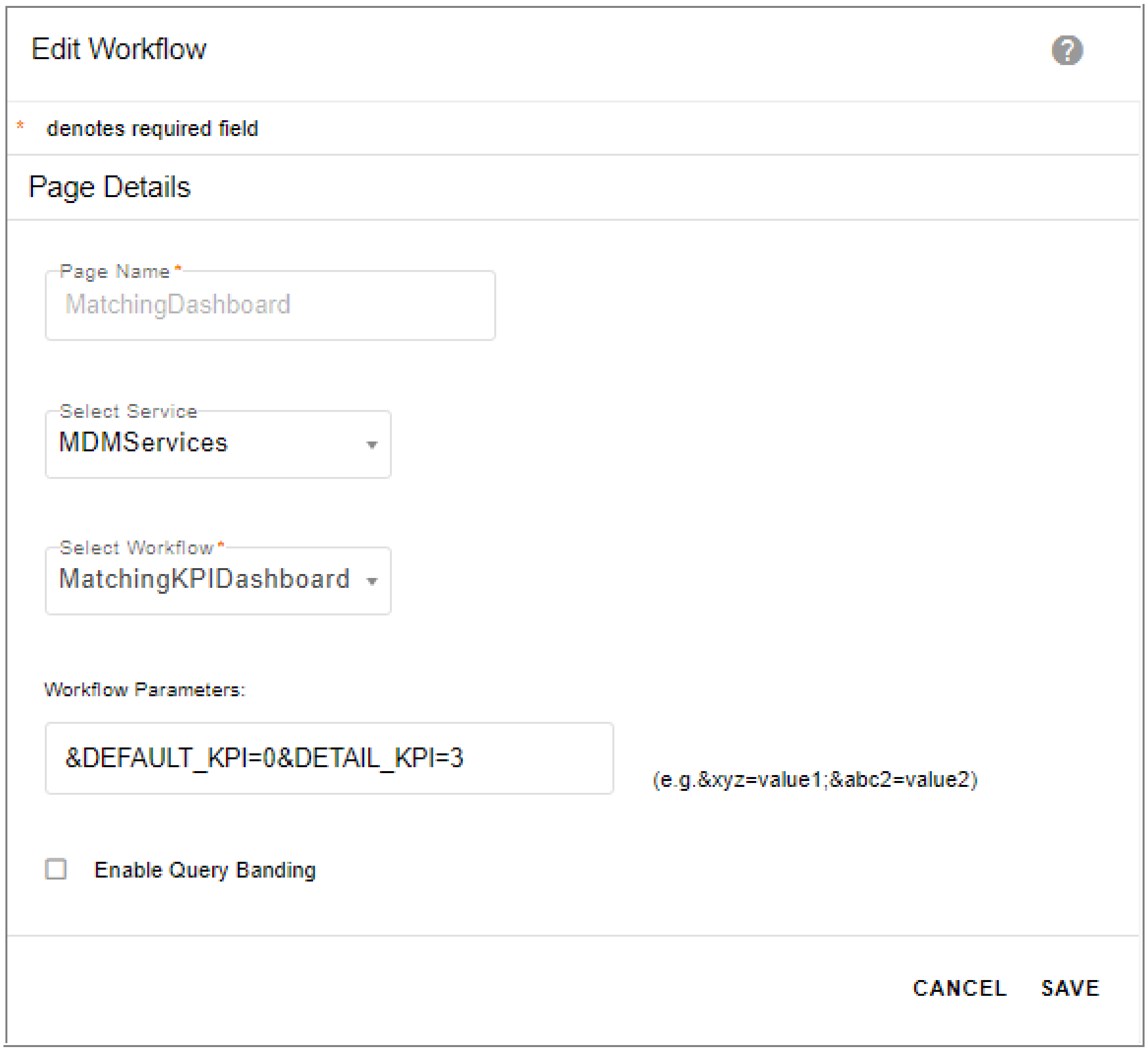
Edit Workflow Details

To edit workflow details:

1. On the **Manage Pages** UI (Figure 6), click on the Menu icon ⋮ corresponding to the required workflow and click **Edit**.

   The **Edit Workflow** UI (Figure 10) displays the existing values of the selected workflow.

Figure 10: Edit Workflow



Edit Workflow

* denotes required field

Page Details

Page Name *: MatchingDashboard

Select Service: MDMServices

Select Workflow *: MatchingKPIDashboard

Workflow Parameters: &DEFAULT_KPI=0&DETAIL_KPI=3 (e.g.&xyz=value1;&abc2=value2)

☐ Enable Query Banding

2. On the **Edit Workflow** UI (Figure 10), modify the required details (you can update service, workflow, workflow parameters and enable or disable query banding at workflow level, modify query band identifier value) and click **Save**.

   Message: Page details edited successfully is displayed.

Delete Page or Workflow Details

To delete page details:

1 On the **Manage Pages** UI (Figure 6), click on the Menu icon ⋮ corresponding to the required page or workflow and click **Delete**.

The confirmation **Webpage Dialog** is displayed.

2 On the **Webpage Dialog**, click **Yes**.

Message: Page deleted successfully is displayed.

Manage Menu Details

The customize menu pane allows you to add folders and links and sequence the list as required to be displayed on the UI left navigation pane.

On the Menu Builder—Customize Menu pane, you can perform the following:

- Add Folder
- Add Link
- Edit Folder or Link
- Delete Folder or Link

Add Folder

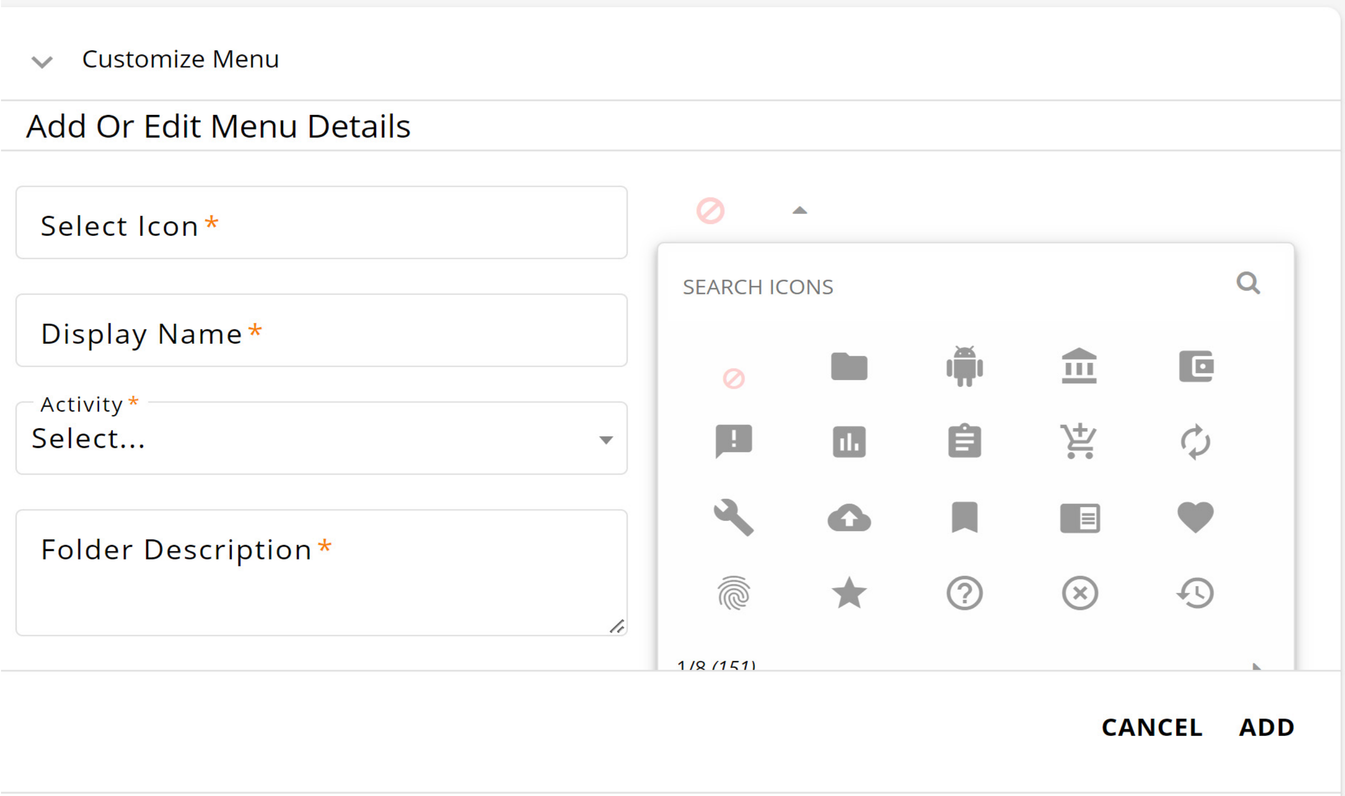
The folders are means of grouping links or folders. Links or existing folders can be defined within a new folder. Each folder is associated with an activity which decides the roles that can access a particular folder.

To add folder details:

1 On the **Menu Builder** page (Figure 5), in the **Customize Menu** pane, click **Add Folder** to add parent folder or select the parent folder (click on the folder for which you want to add sub folder) and click **Add Folder**.

The **Add or Edit Menu Details** pane (Figure 11) is displayed to add folder at the root level.

Figure 11: Add or Edit Menu Details—Add Folder



2 On the **Add or Edit Menu Details** pane (Figure 11),

- **Select Icon**: the Select Icon textbox and a dropdown is used to assign a icon to the folder being created. Click on the dropdown arrow and select the required icon to be assigned to the folder. You can also search icons by name.
- **Display Name**: display name of the folder being created.
- **Folder Description**: description of the folder being created.
- **Activity:** select the activity for the folder being created from the drop-down.

- The Activity drop-down will display only the Admin and MenuForm activity types.
- Select Icon and Folder Description will not be displayed for adding sub folders. It is displayed only for adding the folders at root level. Parent Folder field will be displayed for adding sub folders.

---

3 Click **Add**.

Message: Folder added successfully is displayed.

Add Link

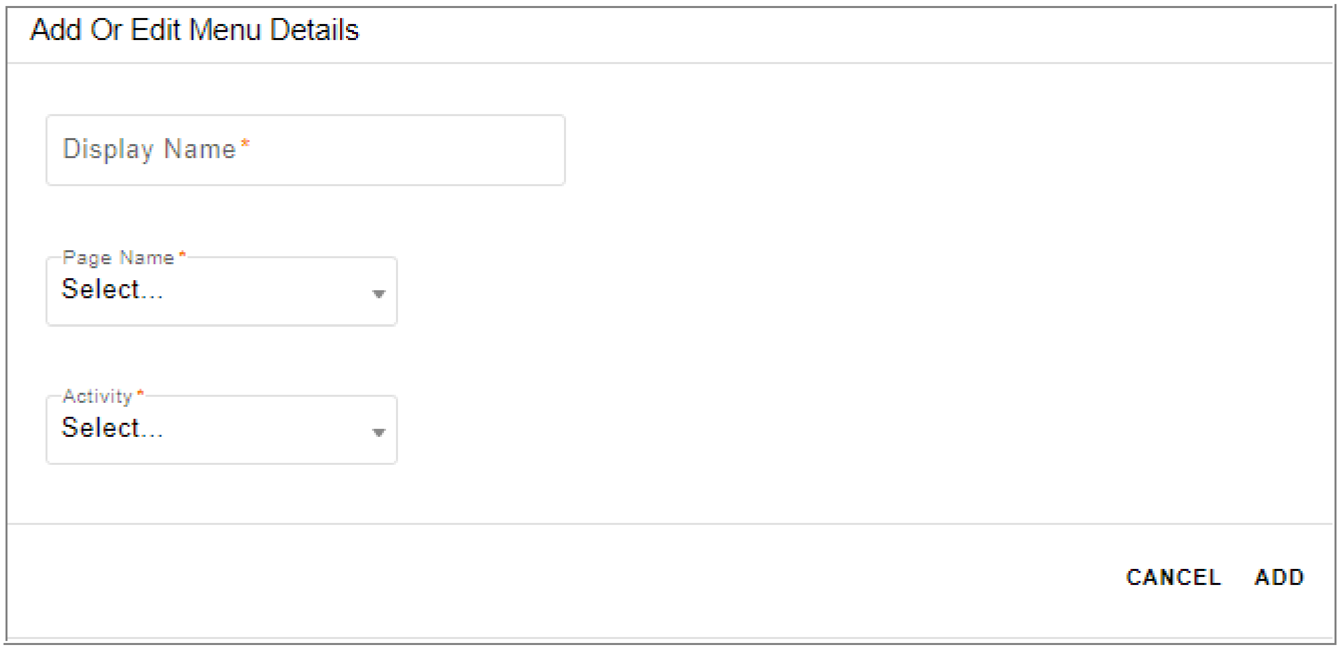
Any pages defined within menu builder are accessed via links. Pages are given as input while defining links. Links are associated with activities which decides the roles that can access a particular link.

To add Link details:

1. On the **Menu Builder** page (Figure 5), in the **Customize Menu** pane, select the required folder and click **Add Link**.

   The **Add or Edit Menu Details** pane (Figure 12) is displayed.

Figure 12: Add or Edit Menu Details—Add Link



2. On the **Add or Edit Menu Details** pane (Figure 12),
   - **Display Name:** display name of the link being created.
   - **Page Name**: select the page to be associated with the link being created.

     Note: The Page Name drop-down will display only Page type of pages not xsl pages.
   - **Activity**: select the activity from the **Activity** drop-down.
3. Click **Add**.

   Message: Link added successfully is displayed.

- It is recommended to add new activity for each folder or link and assign it to the respective roles. For details, see Chapter 9: "User Management." You cannot create link without folder. Empty folder without links will not be displayed.

- Links must not be created under View Tables as View Tables are restricted to handle only Configurable UIs.

Left navigator auto collapse Settings

MDM has the following Auto-collapsibility for the menu items:

- In small screens, the first and second menu level items are auto-collapsible.
- In large screens, the first level menu items are visible by default.

  You can set the auto-collapsibility of the second and third level menu items from config.js file.

  To set the auto-collapsibility for MDM version below 4.7, set the LEFT_NAV_COLLAPSIBLE parameter value to "true" in config.js file available at:
  <MDM_Install_Directory>\web\mdmclient\covalent\welcome

  For MDM version 4.7 or above, set the LEFT_NAV_COLLAPSIBLE parameter value to "true" in script.*.js file available at:
  <MDM_Install_Directory>\web\mdmclient\covalent\welcome

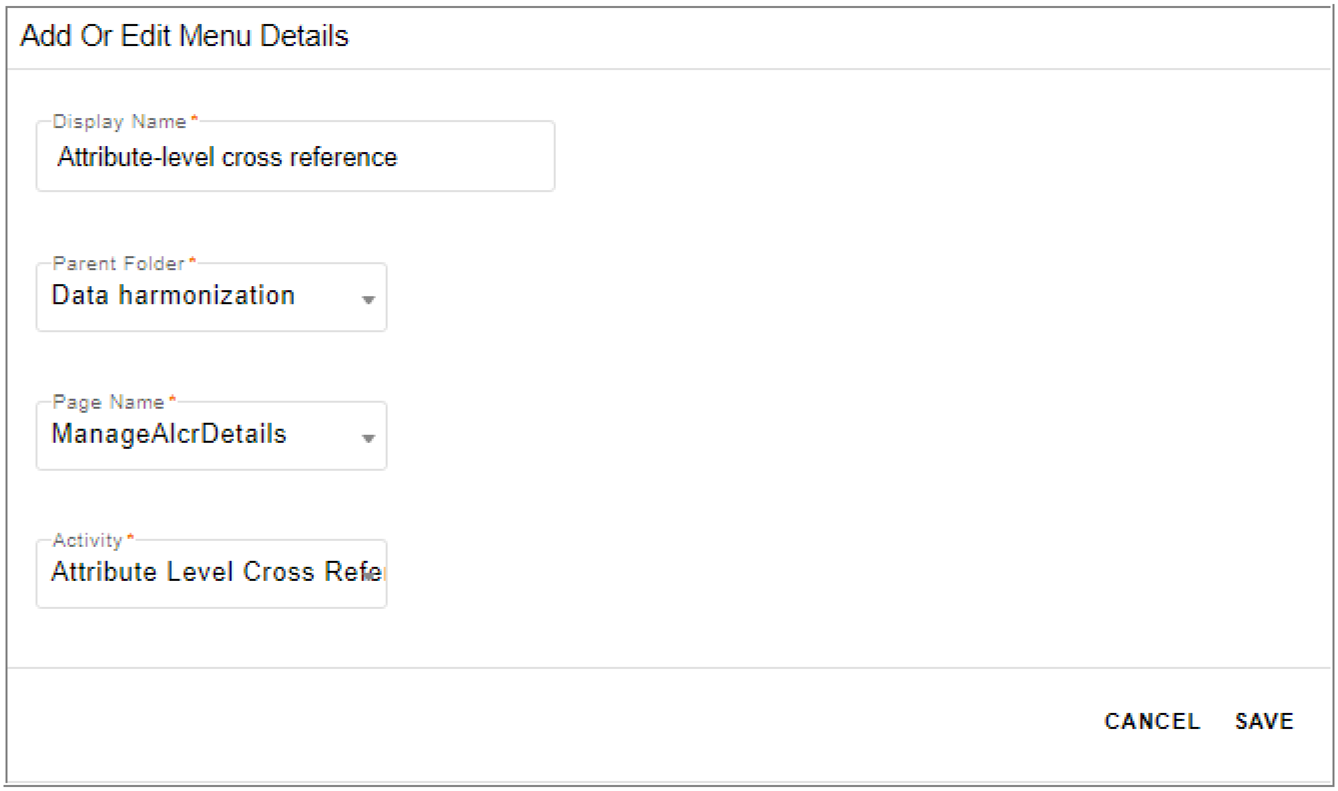
Edit Folder or Link

To edit Folder or Link details:

1. On the **Menu Builder** page (Figure 5), in the **Customize Menu** pane, click on the Menu icon ⋮ corresponding to the Folder or Link and click **Edit**.

   If a Link is selected for edit, the below **Add or Edit Menu Details** pane (Figure 13) is displayed.

Figure 13: Add or Edit Menu Details—Edit Link



Add Or Edit Menu Details

Display Name *: Attribute-level cross reference

Parent Folder *: Data harmonization

Page Name *: ManageAlcrDetails

Activity *: Attribute Level Cross Refe

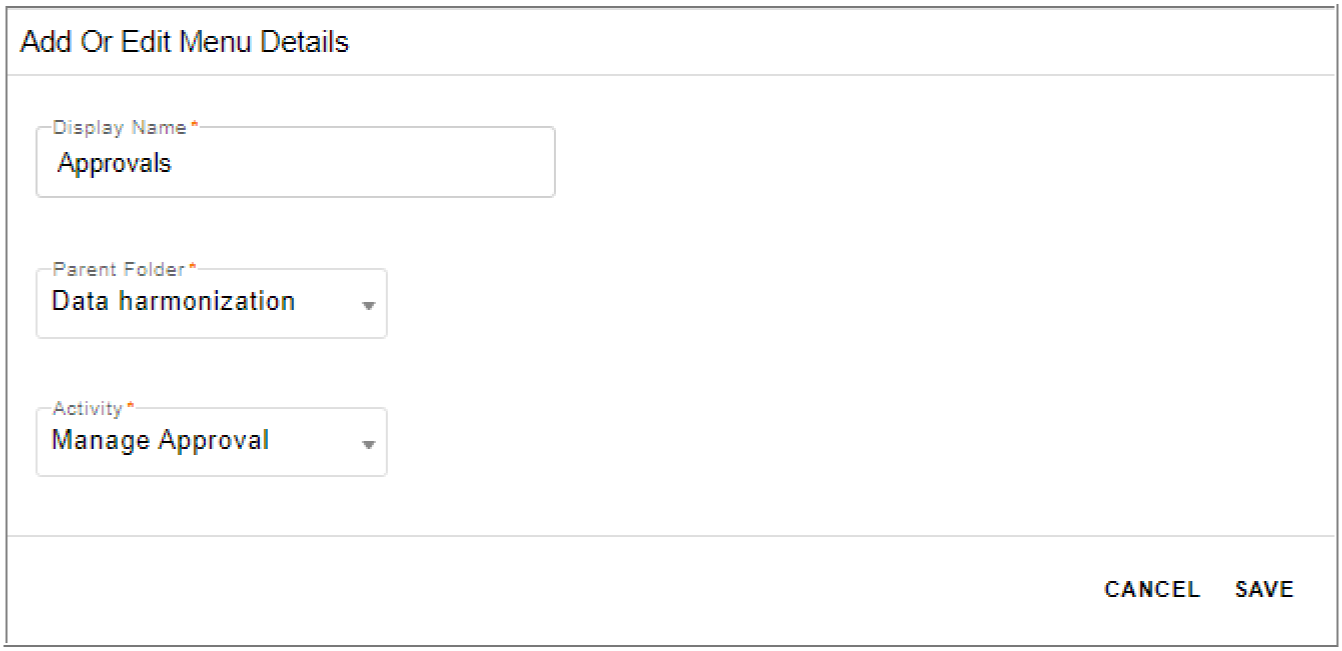
2 On the **Add or Edit Menu Details** pane, modify the required details and click **Save**.

- **Display Name:** display name of the link.
- **Parent Folder**: displays the parent folder of the link.
- **Page Name**: displays the associated page of the link.
- **Activity**: displays the assigned activity of the link.

Message: “Link details edited successfully” is displayed.

If a Folder is selected for edit, the below **Add or Edit Menu Details** pane (Figure 13) is displayed.

Figure 14: Add or Edit Menu Details—Edit Folder



Display Name*: Approvals

Parent Folder*: Data harmonization

Activity*: Manage Approval

3 On the **Add or Edit Menu Details** pane, modify the required details and click **Save**.

- **Display Name:** display name of the folder.
- **Parent Folder**: displays the parent folder of the sub folder.

  The Parent folder will not be displayed if the selected folder is at the root level and the Folder Description field will be displayed.
- **Activity**: displays the assigned activity of the folder.

Message: “Folder details edited successfully” is displayed.

- Select Icon field will be displayed for editing only if the root level folder has been assigned with the icon.
- A folder containing any auto-generated link cannot be moved to different parent folder.
- A link or folder cannot be moved to a different parent folder if the parent folder contains link or folder with same name.
- Cannot move parent folder to its own child folder.

Delete Folder or Link

To delete Folder or Link:

1 On the **Menu Builder** page (Figure 5), in the **Customize Menu** pane, click on the Menu icon ⋮ corresponding to the Folder or Link and click **Delete**.

   The confirmation **Webpage Dialog** is displayed.

2 On the **Webpage Dialog**, click **Yes**.

   Note: If a folder has sub folders/links, delete the sub folders/links first before deleting the parent folder.

Organize Menu List

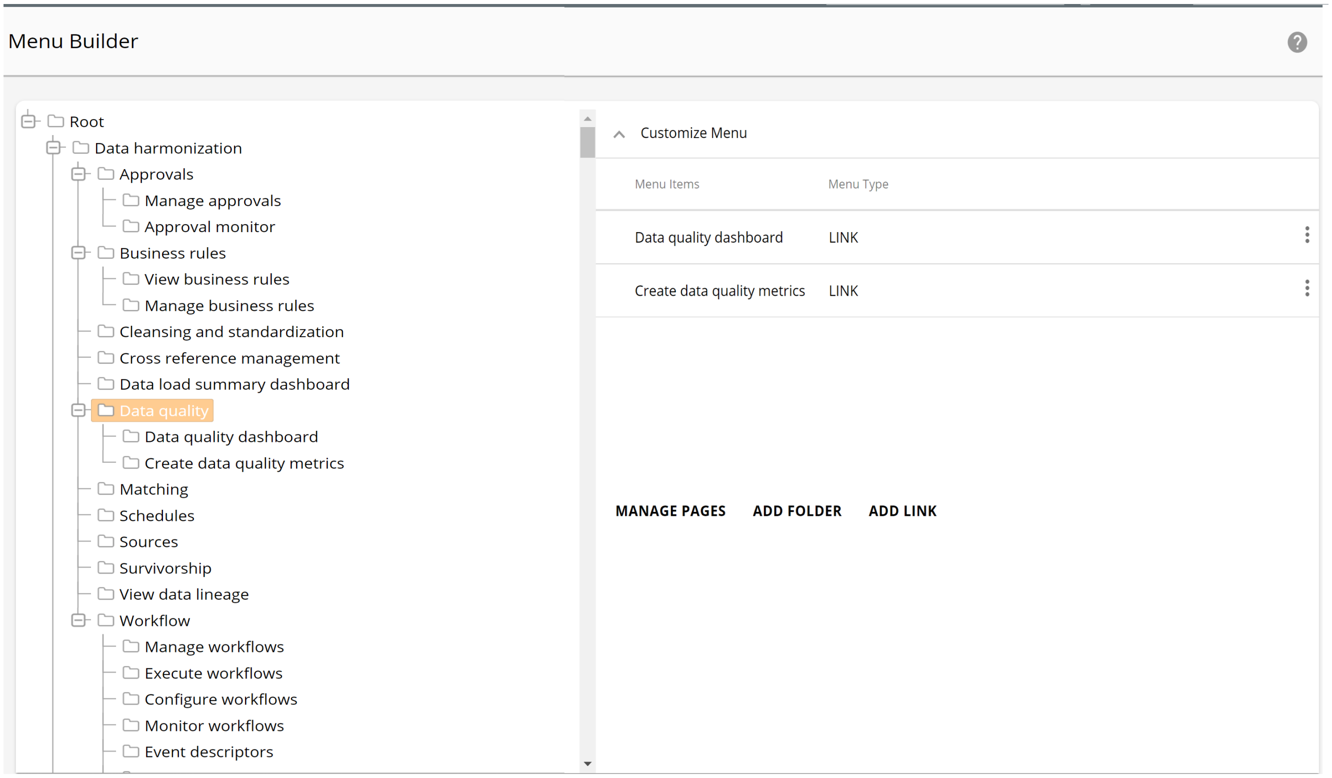
To organize the sequence of folders and links:

1 On the **Menu Builder** UI (Figure 5), select any **Menu Item** in the **Customize Menu** pane and drag & drop to the required position.

   Page automatically refreshes and you can see the changes in the Menu Builder left navigation pane.

2 When you select any folder or subfolder from the left navigation pane, the folder in left navigation pane highlights in yellow.

   Yellow highlighted folder in left navigation pane indicates that you are currently working on the highlighted folder.



Menu Items	Menu Type
Data quality dashboard	LINK
Create data quality metrics	LINK

Disable Auto Rendering of Left Navigation First Link

Perform the following steps to disable the automatic loading of the first workflow when a menu folder on the left navigation link is opened:

1. Navigate to *<MDM_Install_Directory>\web\mdmclient\covalent\config.js* and set the value of paremeter “LEFT_NAV_FIRST_LINK_AUTO_RENDER” to “false”.
2. Restart the servers.

In case of collapsed setup, run mkColocJar.bat/.sh available at: <MDM_Install_Directory>\web\mdmclient\bin and then restart the servers.

When the value of the parameter “LEFT_NAV_FIRST_LINK_AUTO_RENDER” is set to false, the default linked page for the menu folder will not be rendered. The desired page will be loaded on the right panel only when you click the link on the left navigation pane.

Left Navigation Display Optimization

This section describes how to optimize your MDM left navigation panel display for fast rendering and better performance when many master tables and multiple users are involved and left navigation response time takes long.

MDM provides the below method to optimize the left navigation display response time:

- Option to materialize the execution of left navigation macro output to a table.

  Every time a user logins to MDM UI, a left navigation macro is executed to display the left navigation entries on the UI. If many master tables and users are involved, the execution of the left navigation macro takes long time and the display time of left navigation entries are prolonged. To overcome this performance degradation, the output of the left navigation macro execution is materialized to a table and the execution of macro can be scheduled as required.

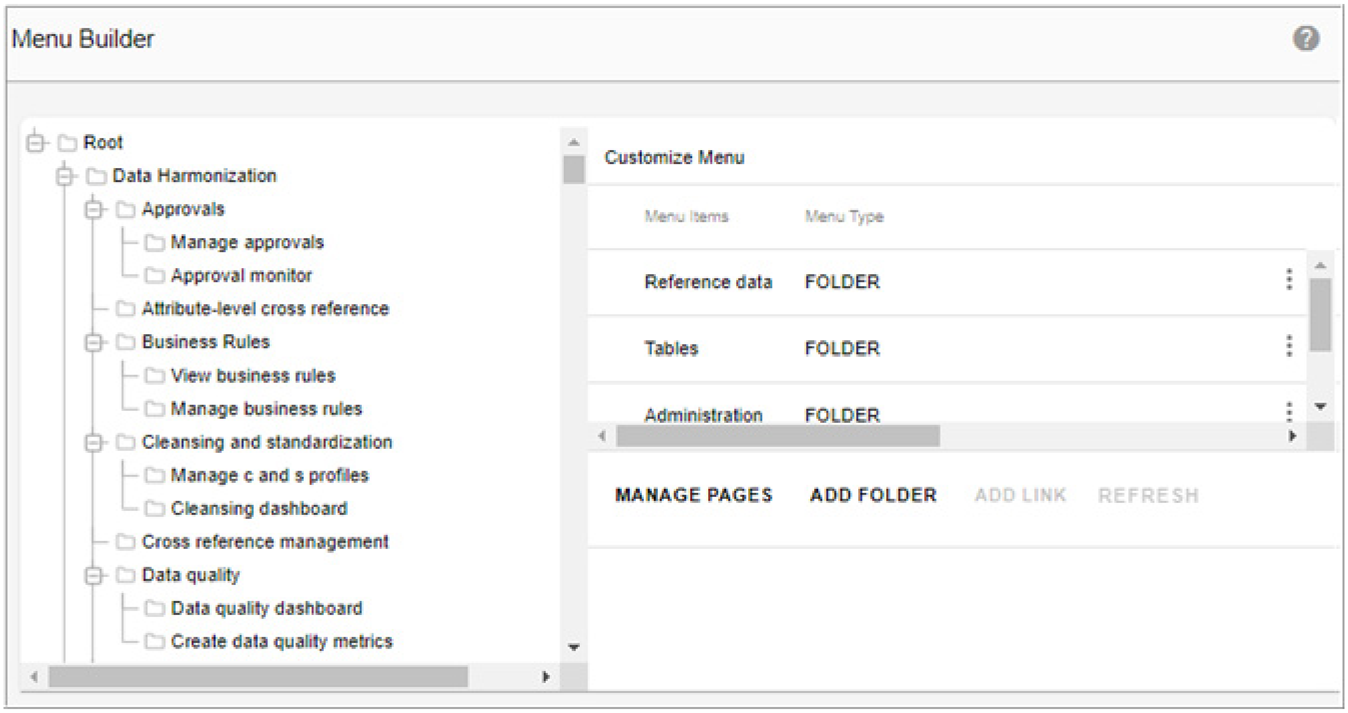
  Option to materialize the data to a table involves the following steps:

  a. Navigate to *<MDM_Install_Directory>/cfg/properties* and enable the parameter “LeftNavLoadOptimization” to “true” in xserver.xml file in case of MDM colocated setup and enable the parameter “LeftNavLoadOptimization” to “true” in both in xserver.xml and xserverweb.xml files in case of MDM collapsed setup. The default value of this parameter is “false”, that is by default it will be non materialized.

  b. Bring up the servers. In case of MDM colocated setup, bring up the MDM and application servers and then execute the file materializeMenuBuilderTable.bat/.sh from *<MDM_Install_Directory>/bin* and in case of MDM collapsed setup, bring up the application server and execute file mkColocJar.bat/.sh from *<MDM_Install_Directory>/web/mdmclient/bin* and then execute the file materializeMenuBuilderTable.bat/.sh from *<MDM_Install_Directory>/bin*.

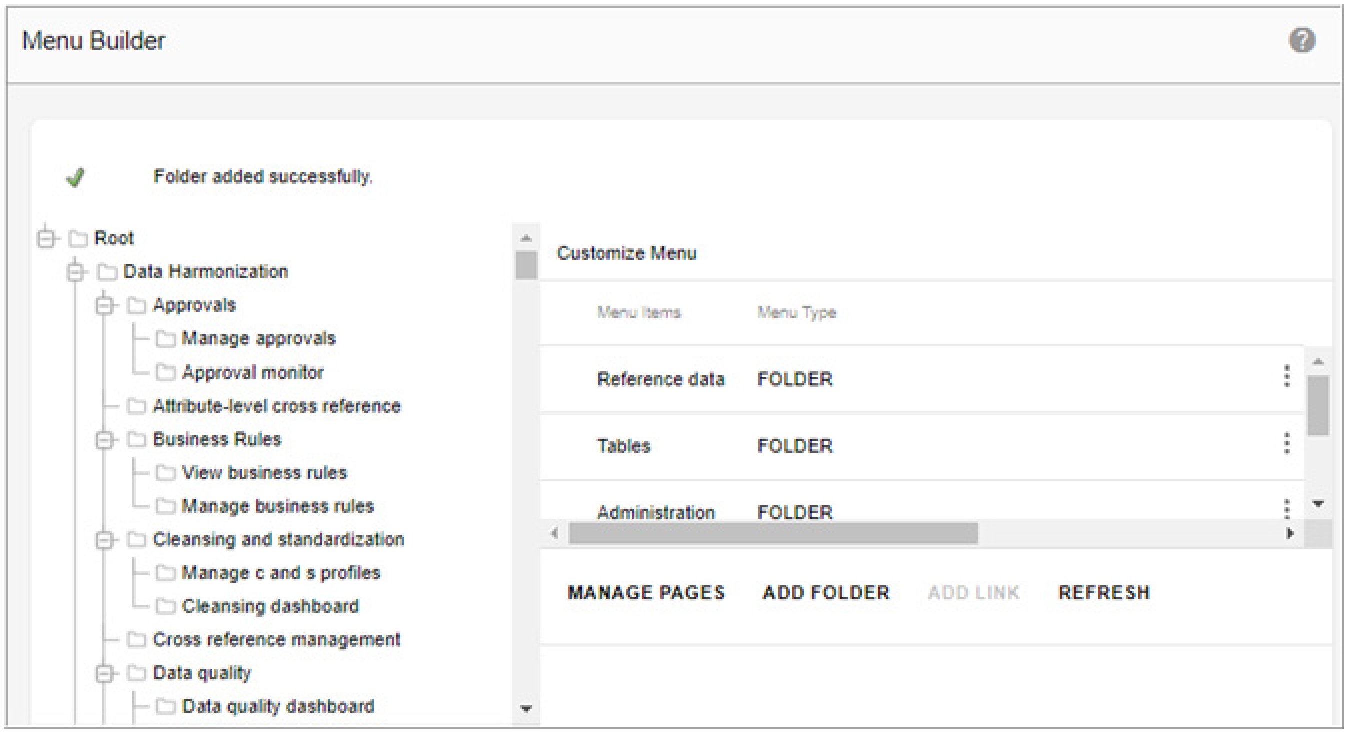
  c. Login to MDM UI and navigate to Menu Builder UI, a new button “Refresh” will be added on the Menu builder UI and will be disabled as in Figure 15.

Figure 15: Menu Builder—Refresh



d Now any changes done on Menu Builder UI or any activities on user management UI will be reflected on the left navigation pane only if the **Refresh** button is clicked. Note that the Refresh button will be enabled only if some changes are done on the UI as in Figure 16.

Figure 16: Menu Builder—Refresh

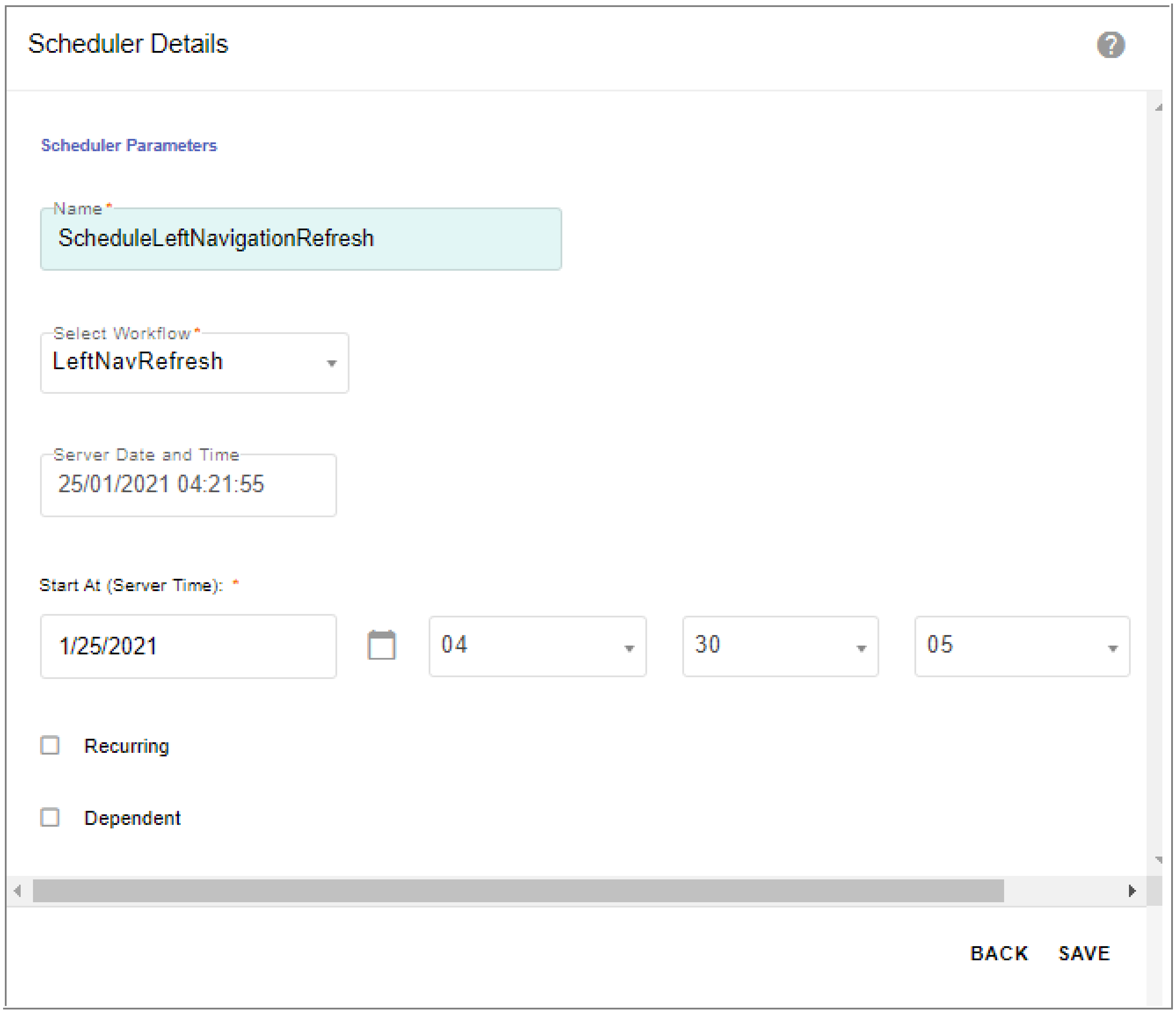


✓ Folder added successfully.

Menu Items	Menu Type
Reference data	FOLDER
Tables	FOLDER
Administration	FOLDER

e You also have an option to schedule the left navigation refreshment through scheduler UI as in Figure 17. For details on creating scheduler, see Chapter 22: “Manage Scheduler.”

Figure 17: Scheduler Details



Scheduler Details

Scheduler Parameters

Name *: ScheduleLeftNavigationRefresh

Select Workflow *: LeftNavRefresh

Server Date and Time: 25/01/2021 04:21:55

Start At (Server Time): *

1/25/2021 04 30 05

☐ Recurring

☐ Dependent

Configuring MDM Landing Page

When a user logs in to MDM, the MDM landing page or home page can be configured for different users based on their roles. By default, MDM provides the following landing page OOTB:

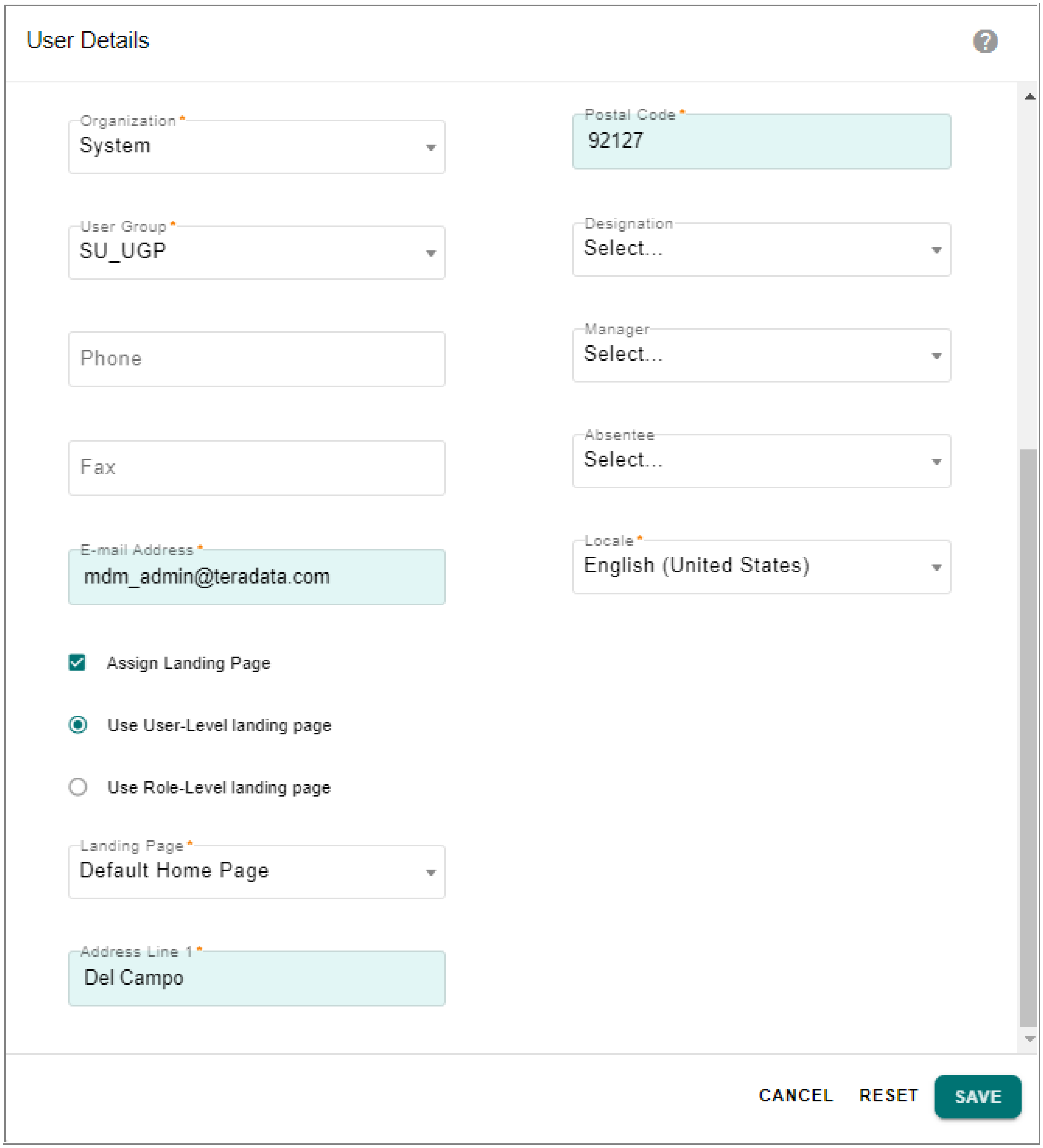
- nav_home_default: this is same as existing home page.

You can create any landing page from Manage Pages UI and these pages can then be assigned to user based on their roles from Manage Users->Create User page. For details on creating page, see Section : “Manage Pages.”

On the Create User—selecting the **Assign Landing Page** checkbox displays the following options as in Figure 18.

- **Use User-Level landing page**: if Use User-Level landing page option is selected, the landing page dropdown is displayed as in Figure 18. Select the landing page and click **Save**.

Figure 18: User Details—Landing Page



User Details

Organization *: System

User Group *: SU_UGP

Phone

Fax

E-mail Address *: mdm_admin@teradata.com

☑ Assign Landing Page

● Use User-Level landing page

○ Use Role-Level landing page

Landing Page *: Default Home Page

Address Line 1 *: Del Campo

Postal Code *: 92127

Designation: Select...

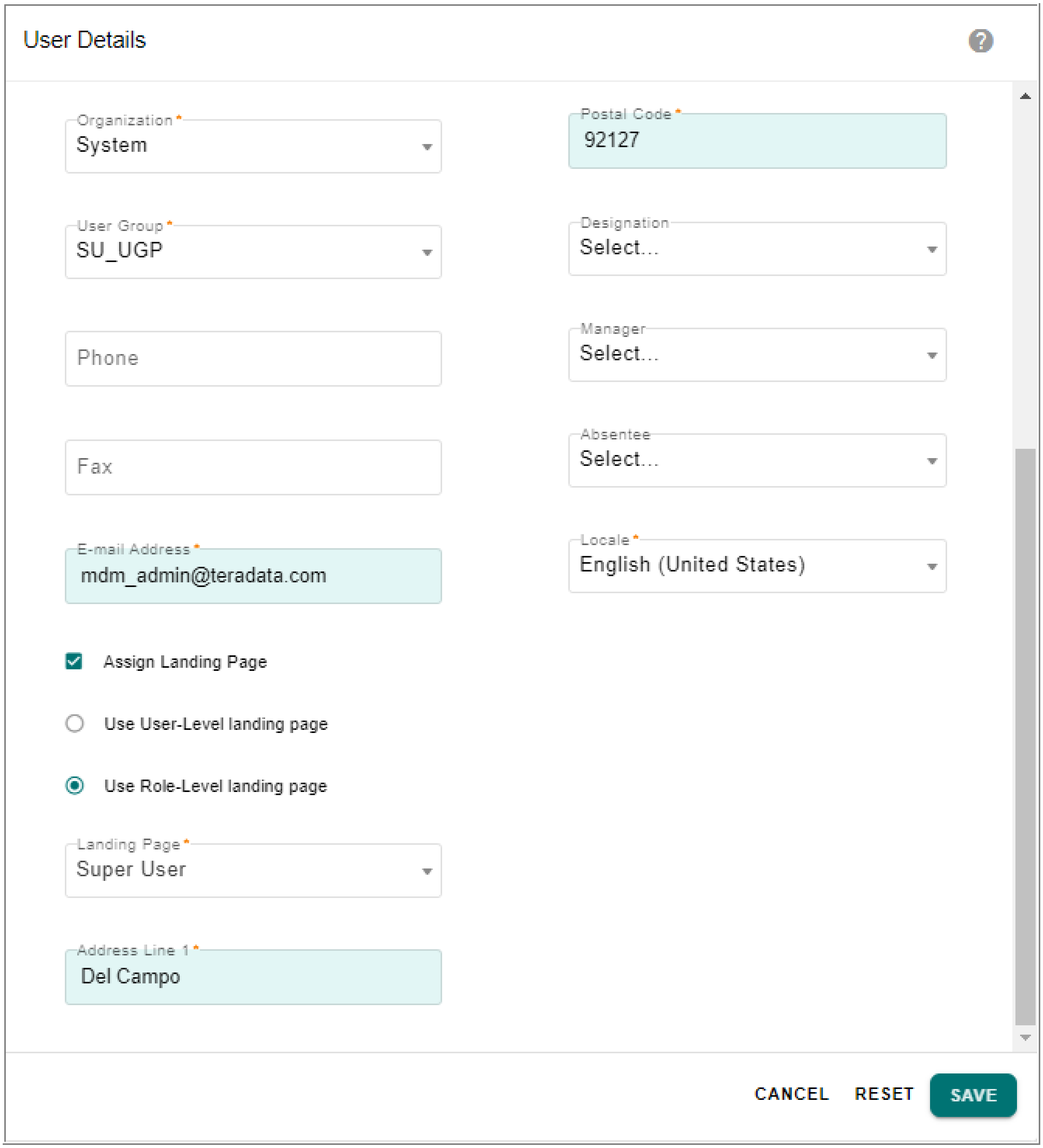
Manager: Select...

Absentee: Select...

Locale *: English (United States)

- **Use Role-Level landing page**: if Use Role-Level landing page option is selected, the Role dropdown is displayed as in Figure 19. Select the role and click **Save**.

Figure 19: User Details—Landing Page



User Details

Organization * System

User Group * SU_UGP

Phone

Fax

E-mail Address * mdm_admin@teradata.com

☑ Assign Landing Page

○ Use User-Level landing page

● Use Role-Level landing page

Landing Page * Super User

Address Line 1 * Del Campo

Postal Code * 92127

Designation Select...

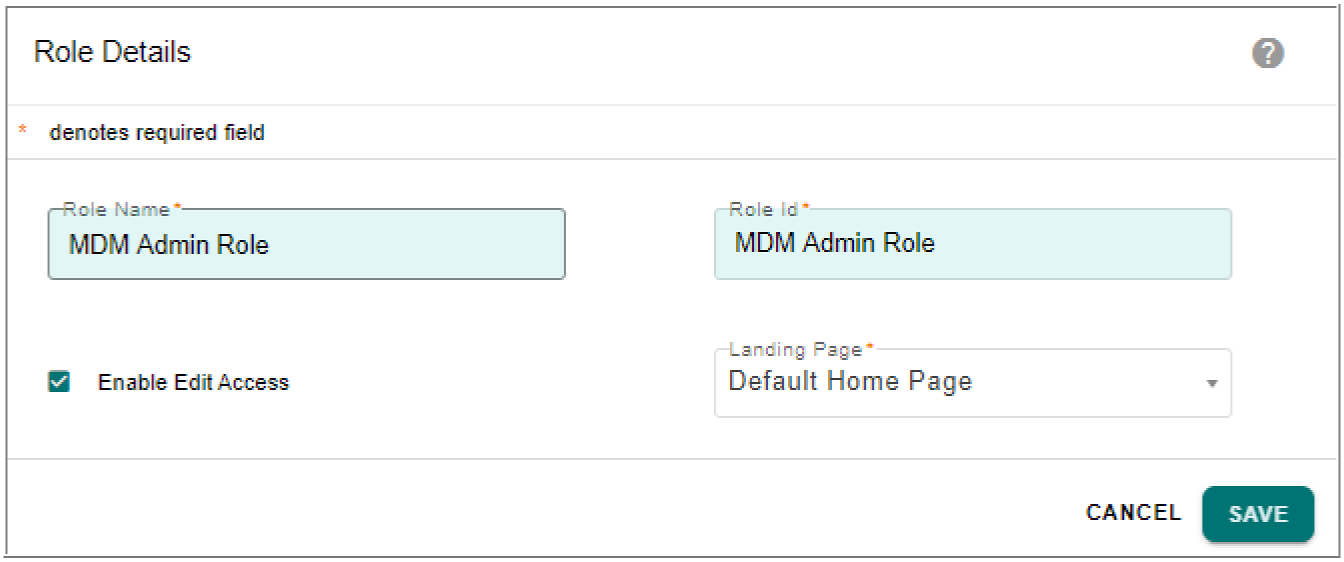
Manager Select...

Absentee Select...

Locale * English (United States)

The landing page for role can be configured from Manage Roles->Create Role UI as in Figure 20. Select the landing page and click **Save**.

Figure 20: Role Details—Landing Page



Role Details

* denotes required field

Role Name*: MDM Admin Role

Role Id*: MDM Admin Role

☑ Enable Edit Access

Landing Page*: Default Home Page

Change of landing page for particular role will change the landing page for all users belonging to that role.

You can also change the landing page for a role by editing a role. On the Manage Roles UI, select the role and click Role Details. On the **Role Details** pane, you can select a different landing page from **Landing Page** dropdown and click **Update**.

Customizing MDM Landing Page Mat Cards and Left Navigation Icons

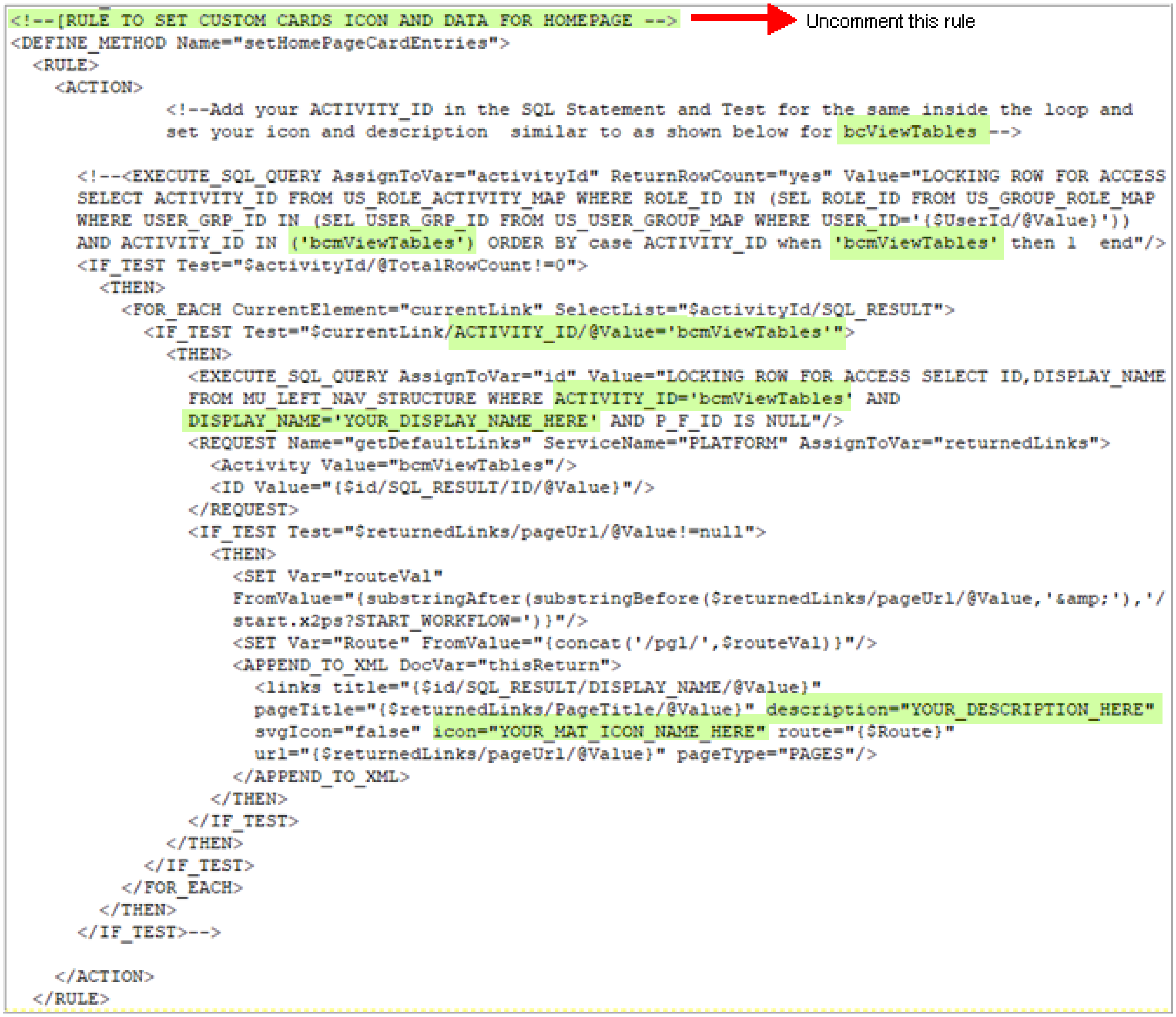
The below section describes the configuration steps to add new Mat Cards on the MDM landing page and left navigation icon.

1. Navigate to <MDM_Install_Directory>\cfg\xservice\mdmservices\modules\common\rules and open the commonRules.xml file.

   For customizing Landing Page Entries

2. In the commonRules.xml file, search for the Rule (setHomePageCardEntries), uncomment the rule section and update the following parameters as in the below sample:
   - **ACTIVITY_ID**: update the Activity_Id value to the required one. In the sample, the default value "bcmViewTables" must be changed to the required value for the ACTIVITY_ID of selected pages to be displayed on the dashboard. The Activity_Id value can be taken from the database table “MU_LEFT_NAV_STRUCTURE” using the below query:

     ```
     SELECT ACTIVITY_ID FROM MU_LEFT_NAV_STRUCTURE WHERE
     DISPLAY_NAME IN (<'displayname1','displayname2'....>);
     ```



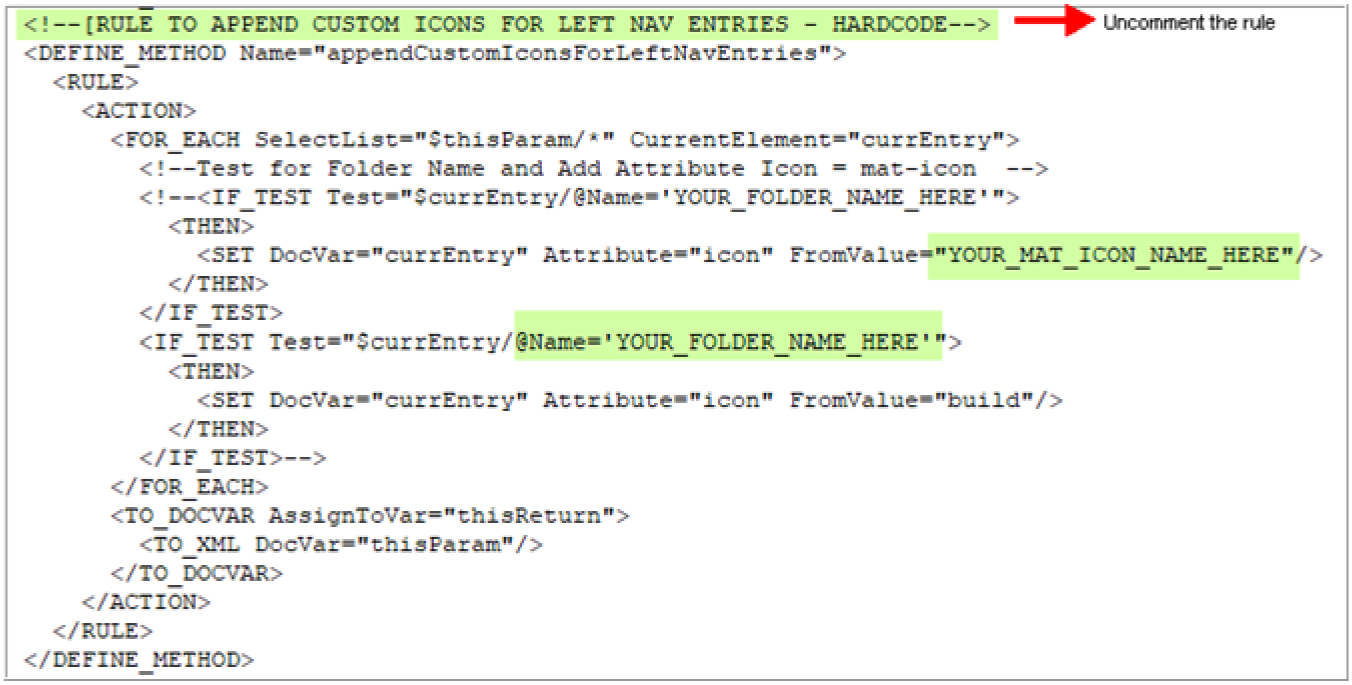
```
<!--[RULE TO SET CUSTOM CARDS ICON AND DATA FOR HOMEPAGE -->
<DEFINE_METHOD Name="setHomePageCardEntries">
  <RULE>
    <ACTION>
              <!--Add your ACTIVITY_ID in the SQL Statement and Test for the same inside the loop and
              set your icon and description  similar to as shown below for bcViewTables -->

      <!--<EXECUTE_SQL_QUERY AssignToVar="activityId" ReturnRowCount="yes" Value="LOCKING ROW FOR ACCESS
      SELECT ACTIVITY_ID FROM US_ROLE_ACTIVITY_MAP WHERE ROLE_ID IN (SEL ROLE_ID FROM US_GROUP_ROLE_MAP
      WHERE USER_GRP_ID IN (SEL USER_GRP_ID FROM US_USER_GROUP_MAP WHERE USER_ID='{$UserId/@Value}'))
      AND ACTIVITY_ID IN ('bcmViewTables') ORDER BY case ACTIVITY_ID when 'bcmViewTables' then 1  end"/>
      <IF_TEST Test="$activityId/@TotalRowCount!=0">
        <THEN>
          <FOR_EACH CurrentElement="currentLink" SelectList="$activityId/SQL_RESULT">
            <IF_TEST Test="$currentLink/ACTIVITY_ID/@Value='bcmViewTables'">
              <THEN>
                <EXECUTE_SQL_QUERY AssignToVar="id" Value="LOCKING ROW FOR ACCESS SELECT ID,DISPLAY_NAME
                FROM MU_LEFT_NAV_STRUCTURE WHERE ACTIVITY_ID='bcmViewTables' AND
                DISPLAY_NAME='YOUR_DISPLAY_NAME_HERE' AND P_F_ID IS NULL"/>
                <REQUEST Name="getDefaultLinks" ServiceName="PLATFORM" AssignToVar="returnedLinks">
                  <Activity Value="bcmViewTables"/>
                  <ID Value="{$id/SQL_RESULT/ID/@Value}"/>
                </REQUEST>
                <IF_TEST Test="$returnedLinks/pageUrl/@Value!=null">
                  <THEN>
                    <SET Var="routeVal"
                    FromValue="{substringAfter(substringBefore($returnedLinks/pageUrl/@Value,'&amp;'),'/
                    start.x2ps?START_WORKFLOW=')}"/>
                    <SET Var="Route" FromValue="{concat('/pgl/',$routeVal)}"/>
                    <APPEND_TO_XML DocVar="thisReturn">
                      <links title="{$id/SQL_RESULT/DISPLAY_NAME/@Value}"
                      pageTitle="{$returnedLinks/PageTitle/@Value}" description="YOUR_DESCRIPTION_HERE"
                      svgIcon="false" icon="YOUR_MAT_ICON_NAME_HERE" route="{$Route}"
                      url="{$returnedLinks/pageUrl/@Value}" pageType="PAGES"/>
                    </APPEND_TO_XML>
                  </THEN>
                </IF_TEST>
              </THEN>
            </IF_TEST>
          </FOR_EACH>
        </THEN>
      </IF_TEST>-->

    </ACTION>
  </RULE>
```

- **DISPLAY_NAME**: update the display name for the mat card as required.
- **Description:** update the description value as required.
- **Icon**: update the icon for the mat card. The Mat Icon name can be taken from https://material.io/resources/icons.

For customizing left navigation icons:

3 In the commonRules.xml file, search for the rule (appendCustomIconsForLeftNavEntries), uncomment the rule section and update the following parameters as in below sample.:

- **Icon**: update the icon for the mat card. The Mat Icon name is taken from https://material.io/resources/icons
- **Folder Name**: update the left navigation folder name.



Uncomment the rule

```
<!--[RULE TO APPEND CUSTOM ICONS FOR LEFT NAV ENTRIES - HARDCODE-->
<DEFINE_METHOD Name="appendCustomIconsForLeftNavEntries">
  <RULE>
    <ACTION>
      <FOR_EACH SelectList="$thisParam/*" CurrentElement="currEntry">
        <!--Test for Folder Name and Add Attribute Icon = mat-icon  -->
        <!--<IF_TEST Test="$currEntry/@Name='YOUR_FOLDER_NAME_HERE'">
          <THEN>
            <SET DocVar="currEntry" Attribute="icon" FromValue="YOUR_MAT_ICON_NAME_HERE"/>
          </THEN>
        </IF_TEST>
        <IF_TEST Test="$currEntry/@Name='YOUR_FOLDER_NAME_HERE'">
          <THEN>
            <SET DocVar="currEntry" Attribute="icon" FromValue="build"/>
          </THEN>
        </IF_TEST>-->
      </FOR_EACH>
      <TO_DOCVAR AssignToVar="thisReturn">
        <TO_XML DocVar="thisParam"/>
      </TO_DOCVAR>
    </ACTION>
  </RULE>
</DEFINE_METHOD>
```

4 Restart the server for the changes to be reflected.

5 For every single icon or mat card change, the respective rule needs to be copied and the above changes have to applied.

MDM Application Configurations

This section provides the following MDM application configuration details:

- Configuring Application Parameters
- Creating Spreadsheets for Data Upload
- Export MDM Data
- Customizing Pagination on MDM UI
- MDM Daylight Savings
- MDM Date Format
- MDM UI and i18n (Internationalization of Data)
- Monitoring MDM Server
- Cross Site Scripting

Configuring Application Parameters

The system administrator can configure certain application behavioral parameters to suit the needs of the organization. This configuration needs to be performed before starting the MDM Server. Once the server is up, changes to any of these parameters will not be registered unless the server is re-started.

JAVA_HOME

The installer performs this step during the installation. Perform this step only if the JDK home directory has to be updated.

Specify the path to the JDK home directory on the host machine.

Example:

Windows

Edit `bcmenv.bat` in the location: *<MDM_Install_Directory>\bin\*

```
set JAVA_HOME=C:\jdk1.8
```

UNIX

Edit `bcmenv.sh` in the location: *<MDM_Install_Directory>/bin/*

```
export JAVA_HOME=/opt/jdk 1.8
```

Update E-mail Parameters

To update email parameters, perform the below steps:

Before updating the email parameters, bring down the MDM server and take backup of the platform.xml file from *<MDM_Install_Directory>/cfg/properties* and *<MDM_Install_Directory>/web/mdmclient/WEB-INF/bcm/cfg/properties.*

Update the required email parameters as in the below steps and then bring up the MDM server.

If the MDM deployment is in collapsed mode, regenerate the mkColocjar.bat file from *<MDM_Install_Directory>/web/mdmclient/bin*

Specify the SMTP configuration parameters for sending e-mails from the MDM.

1. Edit the service file `platform.xml` in the location *<MDM_Install_Directory>/cfg/properties*
2. Set om.smtpHost to the SMTP host for your organization. Set om.systemFromAddress to a valid email address in your organization. All emails sent by the system will contain this value in the FROM field of the mail.

To provide an hyperlink in the email body which gives the application URL, perform the below steps:

1. Open messaging.properties file from *<MDM_Install_Directory>/cfg.*
2. Add the below line in messaging.properties file where ever required.

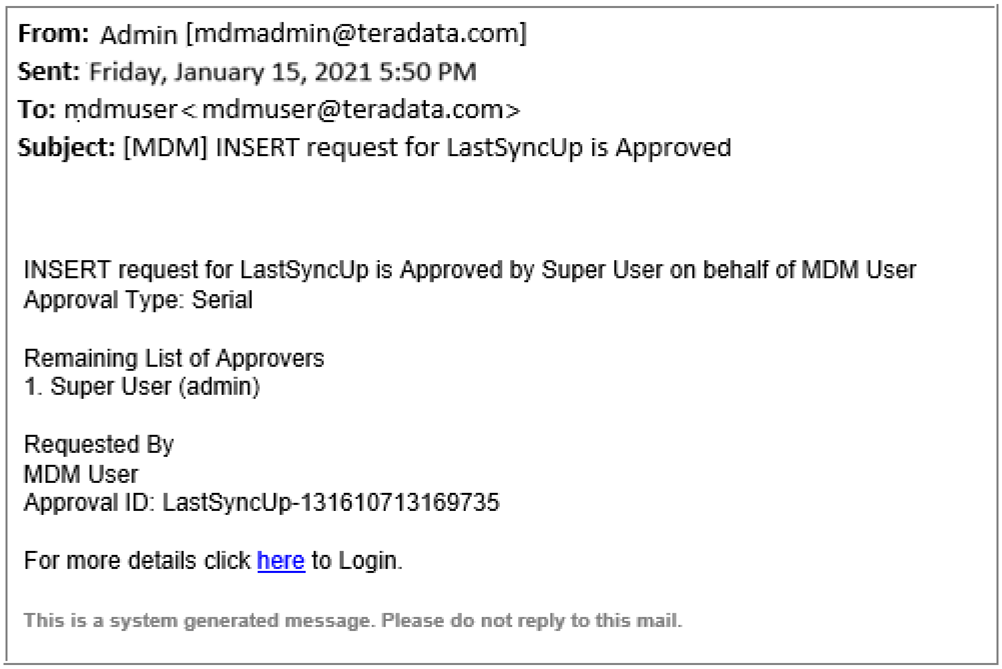
   Please <a href=http://<IP_ADDRESS>:<PORT>/mdm>click here</a> to access application link.

MDM provide support to configure email sender Id alias name. To configure the email alias name:

1. Open platform.xml file from <MDM_Install_Directory>/cfg/properties
2. Enter the alias name in the parameter <param Name="om.systemFromAddress.alias" Value= "Admin"/>

   Figure 21 displays the sample email where "Admin" is the alias name for mdmadmin user.

Figure 21: Email Alias Name



From: Admin [mdmadmin@teradata.com]
Sent: Friday, January 15, 2021 5:50 PM
To: mdmuser < mdmuser@teradata.com>
Subject: [MDM] INSERT request for LastSyncUp is Approved

INSERT request for LastSyncUp is Approved by Super User on behalf of MDM User
Approval Type: Serial

Remaining List of Approvers
1. Super User (admin)

Requested By
MDM User
Approval ID: LastSyncUp-131610713169735

For more details click here to Login.

This is a system generated message. Please do not reply to this mail.

The "om.systemFromAddress.alias" parameter picks the name and sends the personal name in SMTP request. If the address book in the mail client have a different name stored, it will ignore SMPT request and display the name information from the address book. The behavior varies in different mail clients.

All out going emails from OOB product features will have the following items included in the email:

- Email subject header can be configured from System Properties UI.

  Navigate to System Properties UI (**Administration** -> **System Properties**), select MDMEnvironment property, click **Edit** and enter the text in **Property Value** field. The entered text will be appended to the subject of the email.
- Link to navigate to login UI of MDM.
- Email footer with system generated email message.

Email Attachment Size Configuration:

In MDM, by default, the email attachment size is not set. If you want to configure the size, perform the following steps:

- Open platform.xml file from <MDM_Install_Directory>/cfg/properties
- In the platform.xml, set the om.smtp.attachment.max.limit.mb parameter value to required size. Email notification will be sent with attachment up to the specified size. If the attachment exceeds the specified size, email will be sent without attachment.

  <param Name="om.smtp.attachment.max.limit.mb" Value="-1"/>

  For example: <param Name="om.smtp.attachment.max.limit.mb" Value="15"/>

  In this example, email will be sent with attachment up to 15 MB.

Advanced Secured SMPT Configurations

MDM provides support for the following secured SMPT configurations:

- SMTP with username and password based authentication.

  The SMTP Authentication is an extension of the Simple Mail Transfer Protocol where an SMTP client may log in using an authentication mechanism supported by the SMTP server.
- Option to change port for secured communication.

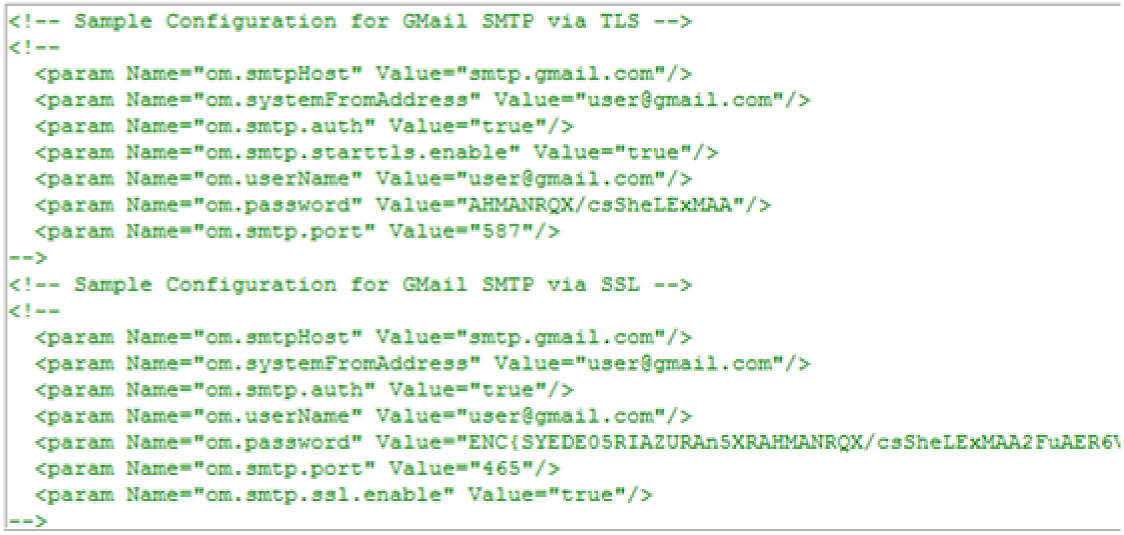
  The below list provides the common SMTP ports. MDM support relaying mail on these ports and other custom ports.

Table 1: Parameter Description

Description	Port
SMTP	25 or 2525 or 587
Secure SMTP (SSL / TLS)	465 or 25 or 587, 2526 (Elastic Email)
Amazon SES requires	25, 465 (with a secure SSL) or 587

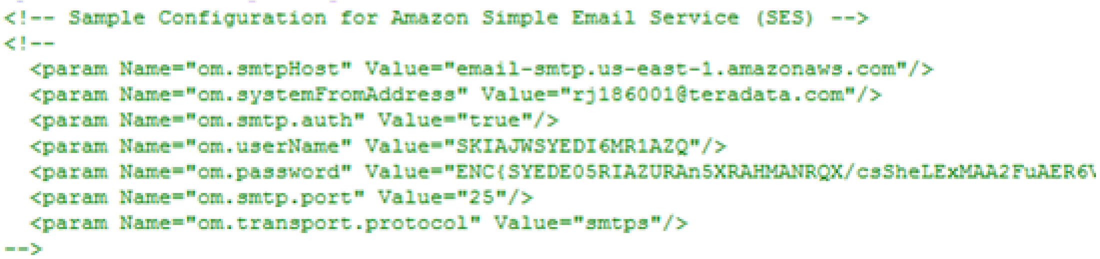
- Support SSL and TLS communication protocol.

  The SSL and TLS provide a way to encrypt a communication channel between MDM server and outgoing mail server.
- Support for sending mail using secured Gmail email service.



```
<!-- Sample Configuration for GMail SMTP via TLS -->
<!--
  <param Name="om.smtpHost" Value="smtp.gmail.com"/>
  <param Name="om.systemFromAddress" Value="user@gmail.com"/>
  <param Name="om.smtp.auth" Value="true"/>
  <param Name="om.smtp.starttls.enable" Value="true"/>
  <param Name="om.userName" Value="user@gmail.com"/>
  <param Name="om.password" Value="AHMANRQX/csSheLExMAA"/>
  <param Name="om.smtp.port" Value="587"/>
-->
<!-- Sample Configuration for GMail SMTP via SSL -->
<!--
  <param Name="om.smtpHost" Value="smtp.gmail.com"/>
  <param Name="om.systemFromAddress" Value="user@gmail.com"/>
  <param Name="om.smtp.auth" Value="true"/>
  <param Name="om.userName" Value="user@gmail.com"/>
  <param Name="om.password" Value="ENC{SYEDE05RIAZURAn5XRAHMANRQX/csSheLExMAA2FuAER6
  <param Name="om.smtp.port" Value="465"/>
  <param Name="om.smtp.ssl.enable" Value="true"/>
-->
```

- Support for sending mail using secured Amazon SES Scalable Cloud-Based Email Service.



```
<!-- Sample Configuration for Amazon Simple Email Service (SES) -->
<!--
  <param Name="om.smtpHost" Value="email-smtp.us-east-1.amazonaws.com"/>
  <param Name="om.systemFromAddress" Value="rj186001@teradata.com"/>
  <param Name="om.smtp.auth" Value="true"/>
  <param Name="om.userName" Value="SKIAJWSYEDI6MR1AZQ"/>
  <param Name="om.password" Value="ENC{SYEDE05RIAZURAn5XRAHMANRQX/csSheLExMAA2FuAER6
  <param Name="om.smtp.port" Value="25"/>
  <param Name="om.transport.protocol" Value="smtps"/>
-->
```

Email configurations in platform.xml available at:<MDM_Install_Directory>/cfg/properties

```
<!--Messaging module params-->

      <param Name="om.smtpHost" Value="SMTPServer.com"/>

      <param Name="om.systemFromAddress"
Value="myName@myCompany.com"/>

      <param Name="om.mail.smpt.auth" Value="true"/>

      <param Name="om.smpt.port" Value="587"/>

      <param Name="om.userName" Value="myName@myCompany.com"/>

      <param Name="om.password" Value="ENC(art/tytu/1234/yiohij}"/>

<!--For SSL-->

      <param Name="om.smpt.socketFactory.port" Value="465"/>

      <param Name="om.smpt.socketFactory.class"
Value="javax.net.ssl.SSLSocketFactory"/>

<!--For SSL-->

      <param Name="om.mail.smpt.starttls.enable" Value="true"/>
```

The below list provides the description of the parameters:

Table 2: Parameter Description

Parameter Name	Description	Required
om.smtpHost	SMTP host machine IP/name	Yes
om.systemFromAddress	From address	Yes
om.mail.smpt.auth	If true, attempt to authenticate the user using the AUTH command. Defaults to false.	Optional
om.smpt.port	Local port number to bind to, while creating the SMTP socket. Defaults to the port number picked by the Socket class.	Optional
om.userName	User Name	Yes, if Auth enabled.
om.password	Password	Yes, if Auth enabled.
om.smpt.socketFactory.port	Specifies the port to connect to when using the specified socket factory. If not set, the default port will be used.	Optional
om.smpt.socketFactory.class	If set, Specifies the name of a class that implements the javax.net.SocketFactory interface. This class will be used to create SMTP sockets.	Optional
om.mail.smpt.starttls.enable	If true, enables the use of the STARTTLS command (if supported by the server) to switch the connection to a TLS-protected connection before issuing any login commands. Defaults to false.	Optional

Encrypt Password in Platform.xml

The MDM default encryption algorithm is used to encrypt password field in database.

```
<!--Messaging module params-->

      <param Name="om.smtpHost" Value="SMTPServer.com"/>

      <param Name="om.systemFromAddress"
Value="myName@myCompany.com"/>

      <param Name="om.mail.smpt.auth" Value="true"/>

      <param Name="om.smpt.port" Value="587"/>

      <param Name="om.userName" Value="myName@myCompany.com"/>

      <param Name="om.password" Value="ENC(art/tytu/1234/yiohij}"/>

<!--For SSL-->
```

Configuring Data Load Workflow Log

To get detailed logs from the data load workflow, the logging level can be increased to DEBUG level.

To increase log level:

```
Set 'DEBUG_LOG_SETTING' to 1 in S_E2E_SETTINGS table for the
MODULE_NAME 'DATA_LOAD'
```

Note: The default setting for setDebugLogOn in E2E_LOG_PKG is FALSE.

Modifying MDM Port Addresses Manually

Execute the following steps to modify the MDM ports manually:

MDM Server Port

1. Open *<MDM_Install_Directory>\cfg\properties\xserver.xml*
2. Search for the text listenerPort. Replace the existing port number with the new port number. For example, if the port on which you want the MDM Server to come up is 16666, then replace it as *<listenerPort Value="16666"/>*
3. Search for the text soapAddr. Replace with the same port number specified in step 2.
4. Open *<MDM_Install_Directory>\cfg\properties\xserverweb.xml*, repeat steps 2 and 3.

   You need to execute step 4 to deploy MDM in collapsed tier mode.
5. Open *<MDM__Install_Directory>\web\mdmclient\WEB-INF\bcm\model\xcore-init.cnd*. Search for the text "locatorURL". Replace the existing port number with the new one. For example, if you want locator to come up on port 12222, then replace it as *<property name="locatorURL" value="http://localhost:12222/"/>*.

User Security (Login, Password) Parameters

Specify the configuration parameters for the login page.

1. Edit the service file `platform.xml` in the location *<MDM_Install_Directory>/cfg/properties*.
2. Set LOGIN_CHARS_TO_EXCLUDE and PASSWORD_CHARS_TO_EXCLUDE to specify special characters that must not be allowed in the User ID and Password fields. Default characters to exclude are "%#@"
3. Set LOGIN_STRINGS_TO_EXCLUDE and PASSWORD_STRINGS_TO_EXCLUDE to specify strings that must be not be allowed in the User ID and Password fields. Default User ID to exclude is "" and default Passwords to exclude are changeme, password, cancel
4. Set PASSWORD_MIN_LENGTH to specify minimum length of password. Default is "2".
5. Set PASSWORD_MAX_LENGTH to specify maximum length of password. Default is "16".
6. Set PASSWORD_TYPE to specify the type of passwords allowed. The following password types can be used:
   - ALPHA (all should be alphabets)
   - NUMERIC (all should be numeric)
   - ALPHANUMERIC (both alphabets and numeric). It is the default password type.

- ALPHANUMERIC + SPECIAL_CHARACTER (both alphabets and numeric + atleast one special character)
- ALPHANUMERIC + MIXED_CASE ((both alphabets and numeric + (atleast one uppercase + one lowercase))
- SPECIAL_CHARACTER + MIXED_CASE (atleast one special character + (atleast one uppercase + one lowercase))
- ALPHANUMERIC + SPECIAL_CHARACTER + MIXED_CASE (both alphabets and numeric + atleast one special character + (atleast one uppercase + one lowercase))

Password types can have multiple parameters separated by &amps;

Example: ALPHANUMERIC &amp; SPECIAL_CHARACTER &amp; MIXED_CASE

---

7. Set PASSWORD_EXPIRY_DAYS to specify expiry period. Default is "1800".
8. Set PASSWORD_HISTORY to specify number of previous passwords to be compared at the time of changing password. Default is "5".

Clearing Data from Input Staging

All data in the inbound staging area of MDM can be cleared using the stored procedure CLEAR_IN_TABLES. This can be used to clear input staging prior to running the batch data load (E2E) workflow.

Session Expiration Parameters

After logging into MDM UI, if there is no activity for a certain period of time, you will be automatically logged out. This session expiration period (timeout) is set to a default of 120 minutes and can be changed at the time of deployment.

Open web.xml file from <*MDM_Install_Directory*>*/web/mdmclient/WEB-INF* and in “session-config” section, replace “120” with the required timeout value in minutes as below.

```
<session-config>
<session-timeout>120</timeout>
</session-config>
```

Warning and Error Thresholds

The mass update and export to excel features of MDM are associated with error and warning thresholds. A warning message is displayed when you attempt to mass update/export more than ten records. You can ignore this message and continue with the mass update/export. However, when an error message is displayed, you cannot mass update/export more than 100 records. These default settings can be changed at the time of deployment.

Edit <*MDM_Install_Directory*>*\cfg\properties\xserver.xml*:

```
<param xmlns=""  Value="10" Name="warnThreshold"/>

<param xmlns=""  Value="100" Name="exceptionThreshold"/>
```

MDM server and UI have to be restarted after editing service files.

DataPersist Specification

MDM provides two different mechanisms, DO_Persist and DO_DB_Persist to plug in custom business logic for specific entities, irrespective of whether the data for this entity is sent through a backend data load or entered through the MDM table editor UIs.

Selecting any of the method (DO_Persist and DO_DB_Persist) is based on the nature of input data, source of data, type of validation rules, and the load size.

DO_Persist framework is useful for xml form of input data wherein you can define xml based validations.

DO_DB_Persist is used for bulk data load activity to achieve optimal performance. DO_DB_Persist can use SQL based validation rules and SQL based custom business logic rules defined through Business Rule UI (see Chapter 19: “Data Quality”).

For DO_PERSIST and DO_DB_PERSIST APIs description, refer to *section DO_PERSIST and DO_DB_PERSIST in Framework Service Operations section* of Chapter *X-Operations in Master Data Management Reference Guide.*

Action Handlers

For every action, you can declare up to five different handler APIs for different purposes. All these handlers are optional, as the default specification is referred.

The handlers are invoked in the following sequence:

1. Validation: The name of the xml-validation API to be used to validate the document record.

   Note: This is the name of Validation API and not the X-Rule.
2. If the Validation API fails, then further execution is terminated and the response is sent back.
3. API: The name of X-Rule API for the action. It is invoked only if the validation is successful.

   Note: The API support is only applicable to single record DO_DB_PERSIST requests. Multiple records DO_DB_PERSIST ignores API specification and performs native database operation corresponding to specified action.
4. OnError: This is the error API. It is invoked if the API fails for any reason.
5. AlertOnSuccess: The X-Rule that raises the success alert, when the API is successfully executed.
6. AlertOnFailure: The X-Rule that raises the failure alert, when the API fails for any reason.

Note: The error message is passed to the alertOnFailure API in the Error attribute.

Specification File

The data persist specification file maps the document with its action handler API. A default data persist specification file do_persist_config_spec.xml is provided under the dataPersist folder within the MDM service. Here is an example of a typical specification file.

Note: In this file, create refers to INSERT and edit refers to UPDATE action.

```
<data-persistence>
<document name="Item">
  <create validation="validateCreateOrEditItem" api="editItem"
onError="onError" alertOnSuccess="createDocSuccessEvent"
alertOnFailure="createDocFailedEvent"/>
  <edit validation="validateCreateOrEditItem" api="editItem"
onError="onError" alertOnSuccess="createDocSuccessEvent"
alertOnFailure="createDocFailedEvent"/>
  <delete validation="validateCreateOrEditItem" api="editItem"
onError="onError" alertOnSuccess="createDocSuccessEvent"
alertOnFailure="createDocFailedEvent"/>
  <mass-update validation="validateCreateOrEditItem" api="editItem"
onError="onError" alertOnSuccess="createDocSuccessEvent"
alertOnFailure="createDocFailedEvent"/>
  <activate validation="validateCreateOrEditItem" api="editItem"
onError="onError" alertOnSuccess="createDocSuccessEvent"
alertOnFailure="createDocFailedEvent"/>
  <deactivate validation="validateCreateOrEditItem" api="editItem"
onError="onError" alertOnSuccess="createDocSuccessEvent"
alertOnFailure="createDocFailedEvent"/>
 </document>
</data-persistence>
```

If the document name is _ANY_DOCUMENT_, it is referred to as the default specification. MDM server defines default specifications for all documents for INSERT, UPDATE, MASS_UPDATE and DELETE operations. This specification can be overridden for each service by defining specifications for _ANY_DOCUMENT_ in addition to the document specific specifications as described above.

For DO_DB_Persist specification, refer *chapter X-Operations in Master Data Management Reference Guide.*

Hierarchical Overriding of the Specifications

The specifications are overridden for each action handler. An example of hierarchical overriding of the specifications is given below.

MDM server has the following definition:

```
<document name="_ANY_DOCUMENT_">
<create api="addDocSmart" />
<delete api="removeDocLogical" />
<edit api="modifyDocSmart" />
<mass-update api="modifyDocSmart"/>
</document>
```

This specification targets all documents for create, delete, update, and mass update operations.

This can be overridden as follows:

Example 1:

```
<document name="_ANY_DOCUMENT_">
<create onError="onInsertError"/>
<delete onError="onDeleteError"/>
<edit onError="onEditError"/>
</document>
```

This example specifies only the onError handler for all documents for create, delete and update operations as default. However, all other handlers remain the same as the MDM server specifications.

Example 2:

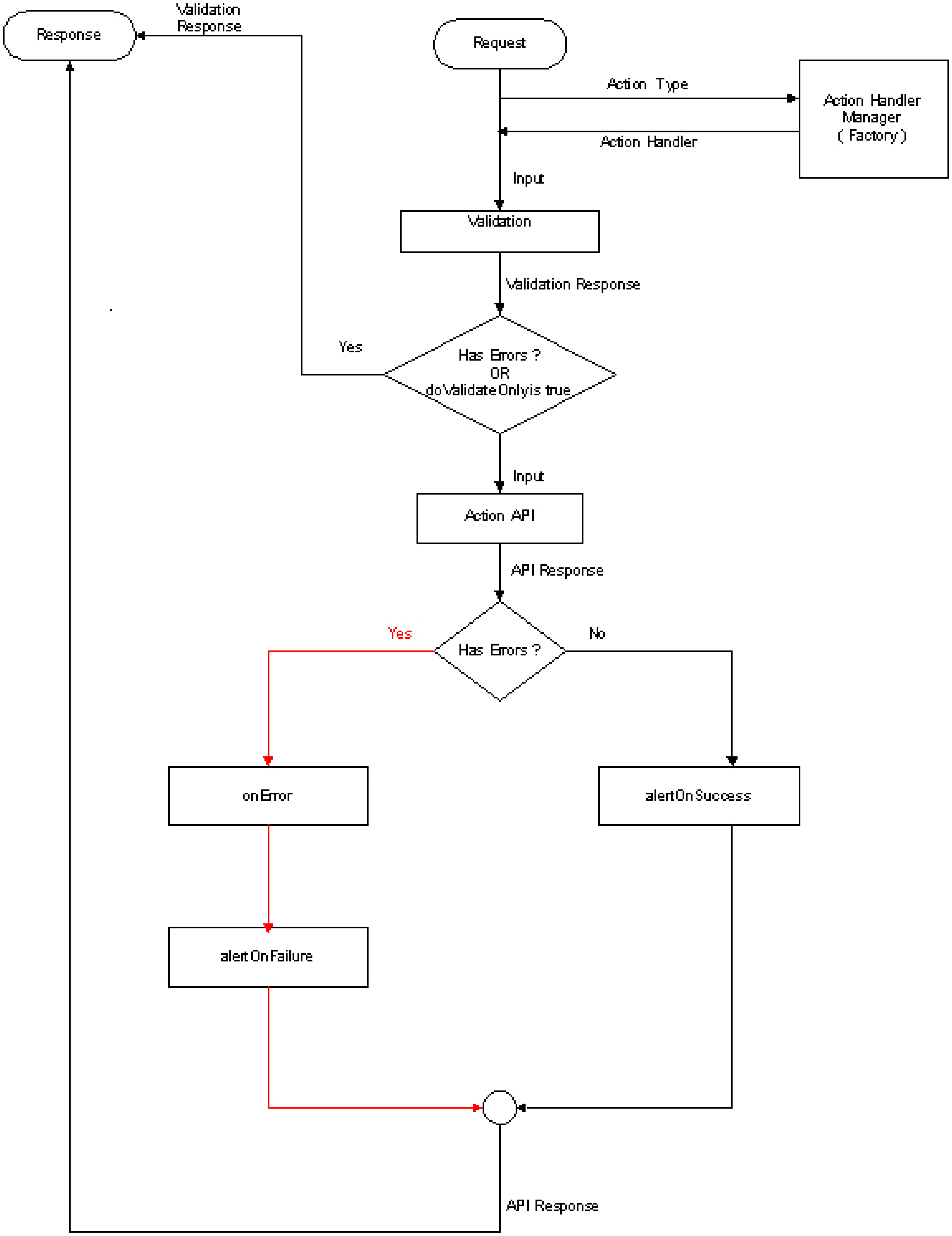
```
<document name="Item">
<create validation="validateAddItem" alertOnSuccess="addItemSuccess"/>
<delete validation="validateDeleteItem"
alertOnSuccess="deleteItemSuccess"/>
<edit validation="validateUpdateItem" alertOnSuccess="editItemSuccess"/>
</document>
```

This example specifies the validation and alertOnSuccess handlers for the Item document. All other handlers remain the same as the MDM server specifications. Thus, you can hierarchically override the specification from MDM server to specific documents and/or action handlers.

Action Flowchart

Figure 22 displays the detailed flowchart of the DO_PERSIST tag.

Figure 22: Flowchart



Creating Spreadsheets for Data Upload

To upload data through MDM UI, the excel spreadsheet file to be uploaded must be created to match the corresponding upload template. For example, to upload data for the table Item, the upload file must match the EntityItemTemplate.

The upload templates for all tables are available at:
<MDM_Install_Directory>\cfg\xservice\toolkit\mdm_setup\entity_templates.xml.

Note: Excel spreadsheets with formulae in cells are not supported. You can only upload spreadsheets that have only values in the cells.

Setting Excel Upload Size

You can specify the maximum upload size for data excel upload. The default allowable size is set to 10 MB. You can modify the upload size by changing the “maximumUploadSize” parameter in defaults.cnd file available at: *<MDM_Install_Directory>/\web\mdmclient\WEB-INF\core\model*

For example: `<util:set-system-property name="com.teradata.x2.util.configurability.maximumUploadSize" value="10K"/>`

The alphabet as a suffix to the value determines the unit of file size. For example 10G is 10 GB, 10M is 10 MB and 10K is 10 KB. The default value of 10 is same as 10 MB.

Once the maximumUploadSize value is updated, clear the application server cache and restart MDM and application server.

Export MDM Data

The below list provides the different methods to export MDM data, which can be used to populate target systems.

1. Method1:

   MDM data can be exported using below request for required tables and generated data file can be executed at target system to populate tables.

   a. Prepare a sample request.xml file with the following content:

   ```
   <REQUESTS>
   <EXPORT File="E:\response.xml">
   <DOCUMENT Name="SAP_Profit_Centre"/>
   </EXPORT>
   </REQUESTS>
   ```

   b. Bring down MDM Server and update xserver.xml to enable cmdLineInput=“true”.

   c. Execute above request via poster and will get response.xml having ADD_DOCUMENT for data for the underlying table.

   Snippet of the file created.

   ```
   <REQUESTS>
   <ADD_DOCUMENT Name="Profit_Centre">
   <ProfitCenterCode Value="48388"/>
   <CREATED_BY Value="USR_3474"/>
   <CREATION_DATE Value="01/07/2009 01:29:05:000"/>
   ```

```
<Description Value="Recharges to Consumer"/>
<ENTITY_STATE Value="ACTIVE"/>
<ParentProfitCenterCode Value="91077"/>
<SOURCE Value="UI"/>
<SYS_TYPE Value="INSERT"/>
</ADD_DOCUMENT>
<ADD_DOCUMENT Name="Profit_Centre">
<ProfitCenterCode Value="80552"/>
<CREATED_BY Value="USR_3474"/>
..
..
</REQUESTS>
```

2. Method 2:

   The same can be achieved using Export to Excel feature of MDM MST tables and then data can be imported to the target system.

3. Method 3:

   Teradata Data export (FastExport) utility can also be used to perform the same.

Customizing Pagination on MDM UI

The default value of number of records displayed on MDM UI is 20. To modify to any custom value say 1000, follow the below steps:

1. Navigate to <MDM_Install_Directory>\cfg\properties and open xserver.xml
2. Modify the tableDefaultRows in xserver.xml as shown below.

   <param Value="1000" Name="tableDefaultRows"/>

3. Restart MDM Server.

Use value of tableDefaultRows in GET_DOCUMENT as shown below:

```
<GET_DOCUMENT Name="SYS_FM_PROFILE" ServiceName="BPE_META"
AssignToVar="profileList" DirtyRead="true" ReturnRowCount="yes"
StartAtRow="{$paginateStart}" MaxRows="{$tableDefaultRows}">

            <TO_XML SelectList="$orderByXml"/>

            <OR>

              <Profile_Type Value="MDM"/>

              <Profile_Type Value="External"/>

            </OR>

          </GET_DOCUMENT>
```

MDM Daylight Savings

In MDM, the date APIs apply the daylight savings effect based on the server timezone settings to consider the daylight settings effect. This could also happen if the JDK has been upgraded to consider the daylight effect.

There are various approaches to ignore daylight savings effect.

Method 1: The simplest way is to apply the universal timezone to the java process.

In the MDM server startup script, startServices.bat/.sh file located at *<MDM_Install_Directory>\bin*, add the below as JAVA_OPTIONS:

“-Duser.timezone=UTC”

Method 2: If running MDM Server from Studio, perform the following:

On the Eclipse Studio, navigate to Run-> Run Configurations> Teradata MDM Server-> click Arguments tab and enter “-Duser.timezone=UTC” and click Run.

MDM Date Format

In MDM, the default date format is MM/DD/YYYY and Date/Time format is MM/DD/YYYY HH:MM:SS (AM/PM). To change the default format for Date, Time and DateTime datatypes, perform the following steps:

1. Navigate to *<MDM_Install_Directory>\web\mdmclient\WEB-INF\core\model\defaults.cnd* file and uncomment below mentioned lines with required format, that is,

   ```
   <util:set-system-property name="DEFAULT_INCOMING_DATE_FORMAT"
   value="yyyy/MM/dd"/>
   <util:set-system-property name="DEFAULT_INCOMING_DATE_TIME_FORMAT"
   value="yyyy/MM/dd HH:mm:ss"/>
   <util:set-system-property name="DEFAULT_INCOMING_TIME_FORMAT"
   value="HH:mm:ss/>
   ```

   Example of date format includes: ddMMyyyy, M/d/yyyy, MM/dd/yyyy etc.

2. Clear Application Server Cache after performing step 1.
3. On the PGL, in the Date display-field, specify dataType="Date" and specify the required format as below:

   ```
   <ui:display-field displayText="Start Date" id="START_DATE"
   name="START_DATE" dataType="Date" format="yyyy/MM/dd"/>
   ```

   The first two steps changes the input of date format on the MDM UI and the third step changes the date display format on the UI.

MDM UI and i18n (Internationalization of Data)

MDM is designed to support internalization and can be localized for specific regions.Teradata MDM provides OOTB capability to i18n data values while displaying on MDM UI. For Example: If you create UOM with Name= “KG” then on MDM UI, UOM will be displayed as “Kilogram”. For more details, see Chapter 6: “MDM UI Customization”.

You can change this behavior so data values from table will not be i18nized and you can retrieve data as it is stored in database if required. By default, all MDM data tables will be i18nized.

Note: MDM does not support i18nization of dynamic text values.

To avoid data getting i18nized, perform the following steps to correct data on MDM UI:

1. Rename the file cm_i18n_text.xml located at: *<MDM_Install_Directory>\web\mdmclient\WEB-INF\bcm\i18n-text to cm_i18n_text.xl2*
2. Remove conflicting (Name=Value) entries from the file i18n-messages.properties located at: *<MDM_Install_Directory>\web\mdmclient\WEB-INF\classes*
3. Remove/Rename the file i18n-messages_en_US.properties located at: *<MDM_Install_Directory>\web\mdmclient\WEB-INF\classes*
4. Execute the file extracti18n_new.bat/extracti18n_new.sh from the location *<MDM_Install_Directory>\web\mdmclient\bin* to regenerate the i18n bundle and properties file.
5. Clear application server cache and restart the application server.
6. Login to MDM UI and check data values on MDM UI.

If you want to do i18nization of any angular UI's in MDM or CI then you must update couple of files in installation location along with those files we need to update files in below location as well:

covalent/welcome/assets/i18n/canonical

covalent/welcome/assets/i18n/core

Monitoring MDM Server

A new page (monitor.jsp) is created at: *<MDM_Install_Directory>\web\mdmclient\bcm\framework* to monitor the status of MDM server from MDM UI.

Perform the following configuration steps to get the status of MDM server on the MDM UI:

Bring down the Application server before performing step1.

1. In the monitor.jsp file located at: *<MDM_Install_Directory>\web\mdmclient\bcm\framework*, update the following:

   hostname

   MDM server port #

   Bring up application server, MDM server.

   Note: The MDM port in monitor.jsp is hard-coded to always point to 14444. In case if you want to use custom MDM port, the port number needs to be manually updated in monitor.jsp available at <MDM_Install_Directory>/web/mdmclient/bcm/framework to point to custom port for it to work.

   In collapsed mode, due the limitation of poster, you must not post to the MDM Server through its port but to the port opened by MDM Server in the Tomcat (random port) and since it is a random port, you cannot post request to it.
2. Invoke *http://hostname:portno/mdm/bcm/framework/monitor.jsp* from UI.

The following message is displayed if both MDM server is running:

MDM Server is up..

The following message is displayed if the MDM server is not running:

MDM Server is down..

Cross Site Scripting

The cross site scripting refers to a process where user can add and run unauthorized script on MDM and the same scripts will be executed and displayed on the MDM UI. By default, the cross site scripting is not blocked in MDM. To protect against cross-site scripting in MDM, uncomment the following in *<MDM_Install_Directory>\web\mdmclient\WEB-INF\web.xml*

```
<filter>
<filter-name>AntiXSSFilter</filter-name>
<filter-class>com.teradata.x2.servlet.filter.AntiXSSFilter</filter-
class>
</filter>
<filter-mapping>
<filter-name>AntiXSSFilter</filter-name>
<url-pattern>/*</url-pattern>
</filter-mapping>
```

The cross site attack pattern can be configured in *<MDM_Install_Directory>\web\mdmclient\WEB-INF\classes\ xssFilter.config*

MDM Database Related Configurations

This section provides the MDM database related configuration details:

- Collect Statistics
- Clean Up MDM Data
- User Security Access
- Query Banding

Collect Statistics

Statistics play a very important role in Teradata query execution.Teradata query optimizer generally makes better plans for the query that it needs to be executed based on various parameters and one of the key parameters is statistics collection and the freshness of the statistics collection (generally no statistics are better than stale statistics and there are detailed documentation available on the frequency and the kind of statistics that needs to be collected, even statistics wizard tool can be used to analyze statistics collection).

Most of the operational queries in MDM would be based on PK/PI but not all of them and MDM relies very heavily on the DBC metadata, with MDM 2.1.1 having its own local copy

DBC, hence its necessary that statistics be collected on custom tables as well as few key MDM metadata tables such as SYS_DBC_TABLES, SYS_DBC_COLUMNS, SYS_DBC_INDICES, SYS_DBC_ALL_RI_CHILDREN, SYS_DBC_DATABASES etc. on the frequently joined columns.

Example: Collect statistics On SYS_DBC_COLUMNS column (DATABASENAME, TABLENAME, COLUMNNAME);

Statistics can be collected on individual columns or on group of columns and both these methods would have different efficiency on the query optimization.Columns used in join/ where conditions are better to be collected in group.

Apart from the SYS_DBC_*, the following are the few more MDM infra tables that might need statistics collection:

- SYS_TABLE_MAP
- SYS_DB_MAP
- MDRM tables
- SYS_DEFAULT_RULES
- User Profile tables etc.

The statistics collection is also recommended after MDM application goes through an upgrade and after schema generation/incremental schema generation.

Note: The statistics collection procedure will have to be included/invoked in workflows if the user or database administrator feel the need for statistics collection. By default, this procedure is not integrated with any workflow/process.

Note: A sample stored procedure (Collect_Statistics) is provided out of box to collect statistics on the PK/PI columns.

Clean Up MDM Data

The following section describes the steps required to clean up MDM data.

1. **Clean up MDM database**

   Teradata MDM provides MDM_CLEANUP_PROC.SQL stored procedure in order to clean up MDM database.This procedure cleans up database by dropping individual database objects. It does not require any explicit Drop/Delete database privileges.

   Note: Some of the stored procedures like MDM_CLEANUP_PROC.SQL, REMOVELOGICALLYDELETEDDATA.SQL, DELETE_HIERARCHY_STORE_PROC.SQL are not active by default and does not get compiled during MDM installation and would not be available on the Admin UI. Perform the following steps to execute the stored procedures that are not available on the Admin UI:

   a. Compile the required stored procedure from <MDM_Install_Directory>\sql\teradata\storedProcedures using Teradata SQL tool or Bteq.

      Once compiled, this stored procedure will be available on Admin UI.

b. Supply required parameters if any and execute the stored procedure.

c. Alternatively, you can use Teradata SQL tool or Bteq to manually execute the stored procedure.

Note: MDM_CLEANUP_PROC.SQL does not take any parameter.

Executing this stored procedure will drop all existing database objects except publication and publication audit objects.

2. **Clean up MDM log files**

   If required, you can clean up MDM log files from MDM UI. For more details, see "Manage Logger" section in Chapter 21: "Administration".

3. **Clean up login audit data**

   You can explicitly delete data from USER_SECURITY_AUDIT table using Teradata SQL tool.

4. **Clean up MDM staging tables data**

   Clearing inbound and netchange table data—All data in the inbound and netchange staging area of MDM can be cleared using the stored procedure CLEAR_IN_TABLES.sql. This can be used to clear input and netchange staging prior to running the batch data load (E2E) workflow.

5. **Clean up Excel upload related tables data**

   All Excel upload related table data can be cleared using the stored procedure CLEAR_UPLOAD_TABLES.SQL.

6. **Clean up logically deleted data**

   You can use the stored procedure REMOVELOGICALLYDELETEDDATA.SQL to clean up logically deleted data that is, the records having SYS_ENT_STATE = 'DELETED' from MDM master staging tables. You can use Teradata SQL tool or Bteq to manually execute this.

7. **Clean up hierarchy metadata**

   You can use the stored procedure DELETE_HIERARCHY_STORE_PROC.SQL to clean up MDM hierarchy related metadata. You can use Teradata SQL tool or Bteq to manually execute this.

8. **Clean up E2E, stored procedure execution and application log table**

   - To clean up E2E log, delete data from S_E2E_LOG table using Teradata SQL tool.
   - To clean up stored procedure execution log:

     Execution of stored procedure will be logged in SYS_SP_LOG table. This log table logs only the below listed stored procedure execution:

     CREATE_SNAPSHOTS

     UPDATE_SNAPSHOT

     ON_REQUEST_SNAPSHOT

     You can delete data from SYS_SP_LOG table using Teradata SQL tool to delete stored procedure execution logs.

- To clean application log table (S_APP_LOG), execute the Stored Procedure APP_LOG_INITIALIZE.SQL from Teradata SQL tool or Bteq.

9 **Clean aborted or errorneous Excel Upload xls files**

The abort mechanism is provided for Data Upload Service. To achieve the same, a service parameter "MAX_ERR_THRESHOLD_PERCENT" is added in dataupload.xml xservice file as below:

<param Name="MAX_ERR_THRESHOLD_PERCENT" Value="50"/>. Default value of MAX_ERR_THRESHOLD_PERCENT is set to 50.

This parameter is the safety cap for the maximum percentage of error records allowed in a complete upload. That is, When set to 50, an excel upload process comprising 1000 records would abort as soon as error record count exceeds 500 (50 % of 1000).

It is computed based on the total input record count. On exceeding the computed value, the upload process Aborts and error records will be moved to UPLD_ERR_RPT table and errorneous/faulty excel file is moved to *<MDM_Install_Directory>\data\upload\inprocess* folder. The errorneous excel file will be reprocessed only upon the MDM server restart and can be cleaned/deleted by manually deleting them from the mentioned location or using custom .bat/.sh script to clean up files under *<MDM_Install_Directory>\data\upload\inprocess* before the MDM server restart.

10 **Cleanup unused or inactive file records**

Perform the following steps to cleanup unused or inactive file records for out of the box tables as well custom tables:

- Navigate to <MDM_Install_Directory>/bin
- Execute cleanupFileTypeColumnValues.bat/sh

  It will clear all the unreferenced file data from the SYS_FILE_DATA meta table.

The following log files can be deleted by deleting corresponding table records.

11 SYS_CAS_RULE_EXEC_LOG: this file stores the cleansing and standardization rule execution log details.

12 SYS_FM_LOG: this file stores matching profile execution log details.

Note: Cleaning the log details of SYS_FM_LOG will affect matching dashboard as these log details are used to render the statistics on matching dashboard. Matching KPIs refers to this table.

13 SYS_SURV_SAVE_LOG: this file stores the intermediate logs for survivorship profile save.

14 SYS_SURV_EXEC_LOG: this file stores survivorship profile execution log details.

Note: Cleaning the log details of SYS_SURV_EXEC_LOG will affect survivorship dashboard as the log details are used to render the statistics on survivorship dashboard.

15 SYS_SURV_EXEC_DETAIL_LOG: this file stores step by step log details of survivorship profile executions.

16 SYS_CRDM_PROCESS_EXEC_LOG: this file stores RDM process execution log details.

17 QUERY_EXECUTION_LOG: this file stores manage queries log details.

18 WORKFLOW_ACTIVITY_LOG: this file stores MDM workflow related activity logs.

19 WORKFLOW_STATUS: this file stores step by step details of E2E workflow status.

User Security Access

From MDM 2.01.02 release, MDM resource access security feature is enhanced and better control is provided on who can access what resource based on the roles assigned. The authentication filters are provided to control resource access. Prior to MDM 2.01.01, if the user knows the URL for a particular activity, the user would be able to access the workflow even if that particular activity is removed from assigned roles. With the user security enhancements, the user is restricted from accessing the workflow when their respective activities are removed from assigned roles.

Modification Required for User Security Access

A filter servlet is created which can be invoked before forwarding request to the particular application resource. In MDM, the filter servlet traces all calls to MDM workflows/JSP (start.x2ps/view.x2ps) and checks whether the logged-in user is authorized to access this resource or not.

Perform the following changes for the user security access configuration:

Note: After MDM installation, by default, security authorization is disabled. Perform the following steps to enable security authorization:

1 Web.xml changes

In web.xml file located at <*MDM_Install_Directory*>*/web/mdmclient/web-INF*, uncomment the following code:

```
<!-- By Default Auth filter is disabled -->
<!--
    <filter>
      <filter-name>AuthFilter</filter-name>
      <filter-class>com.teradata.x2.filters.AuthFilter</filter-class>
      <init-param>
        <param-name>error_page</param-name>
        <param-value>/bcm/framework/access_error.html</param-value>
      </init-param>
    </filter>

     <filter-mapping>
      <filter-name>AuthFilter</filter-name>
      <url-pattern>*.x2ps</url-pattern>
     <dispatcher>REQUEST</dispatcher>
     <dispatcher>FORWARD</dispatcher>
     <dispatcher>INCLUDE</dispatcher>
     <dispatcher>ERROR</dispatcher>
    </filter-mapping>

    <filter-mapping>
      <filter-name>AuthFilter</filter-name>
      <url-pattern>*.jsp</url-pattern>
     <dispatcher>REQUEST</dispatcher>
     <dispatcher>FORWARD</dispatcher>
     <dispatcher>INCLUDE</dispatcher>
```

```
        <dispatcher>ERROR</dispatcher>
       </filter-mapping>
       <filter-mapping>
         <filter-name>AuthFilter</filter-name>
         <url-pattern>*.x2p</url-pattern>
       </filter-mapping>

    -->
```

2. A new column name ACTIVITY_URI of type string (150) is added to the existing table USER_ACTIVITY.

   Insert values of URLs in above column for the required activity as below:

   - For jsp pages it will be /<jsp name>

     For example, for Manage Query Page it will be /manageQuerySearch.jsp
   - For workflow it will be /start.x2ps?START_WORKFLOW=<workflow name>

     For example, for Manage Activity workflow, value entered will be /start.x2ps?START_WORKFLOW=ManageActivity

     Respective JSP/Workflow values can be referred from pages.cnd

- By default, MDM resource URL will be populated with the above columns.
- This feature is supported for menuform activities only.
- For every update to above ACTIVITY_URI column, restart the MDM server.

If user tries to access the unauthorized resource, the following error message would be displayed.

Message: “You are not authorized to access this resource. Please contact MDM administrator.”

To customize the error page, update the web.xml for the following parameters:

```
<init-param>
        <param-name>error_page</param-name>
        <param-value>/bcm/framework/access_error.html</param-value>
</init-param>
```

Note: Restart application server after performing any changes to web.xml.

Query Banding

Query banding is a database feature starting 12.0 version to aid in better accounting and managing queries/applications which typically use a single database user Id and session connection pools to interact with the Teradata database.

Query banding provides a mechanism for enterprise applications to collaborate with the underlying Teradata Database in order to provide for better accounting, prioritization, and workload management. Query banding provides the capability to wrap metadata around a query (that is, band the query with metadata).

The query band is a set of name:value pairs such as ‘Job=payroll; Userid=dg120444; Jobsession=1122;’. Both the name and value are defined by the application so they can be customized to each application’s unique needs.

The following list provides the base “Reserved” Query band names:

- ClientUser
- ApplicationName
- Source
- Group
- Version
- Action
- ProxyUser
- QueryIssueTime
- StartTime
- ProxyRole

For more detailed information on query banding, refer to Teradata documentation.

Implementing Query Band in MDM

The Query band can be set at the TRANSACTION or SESSION level as below:

```
SET QUERY_BAND = 'Application=TZA-User=USER_1;' FOR SESSION;
```

```
SET QUERY_BAND = 'Application=TZA-User=USER_1;' FOR TRANSACTION;
```

The Query band at the session level is active till a session ends (connection is closed in MDM) or SET QUERY_BAND = NONE FOR SESSION is fired.

The Query band at the transaction level is active till a transaction ends or SET QUERY_BAND = NONE FOR TRANSACTION is fired.

Query banding configurations at different level:

- **Query banding at Xserver level**: Query banding can be enabled at the Xserver level in xerver.xml property file. This enables the query banding for all connections irrespective of specific process.

  Navigate to *<MDM_Install_Directory>\cfg\properties* and open xserver.xml and xserverweb.xml and enable the service parameter “isQbEnabled” to “yes” in both the files. By default this parameter is set to “no”.

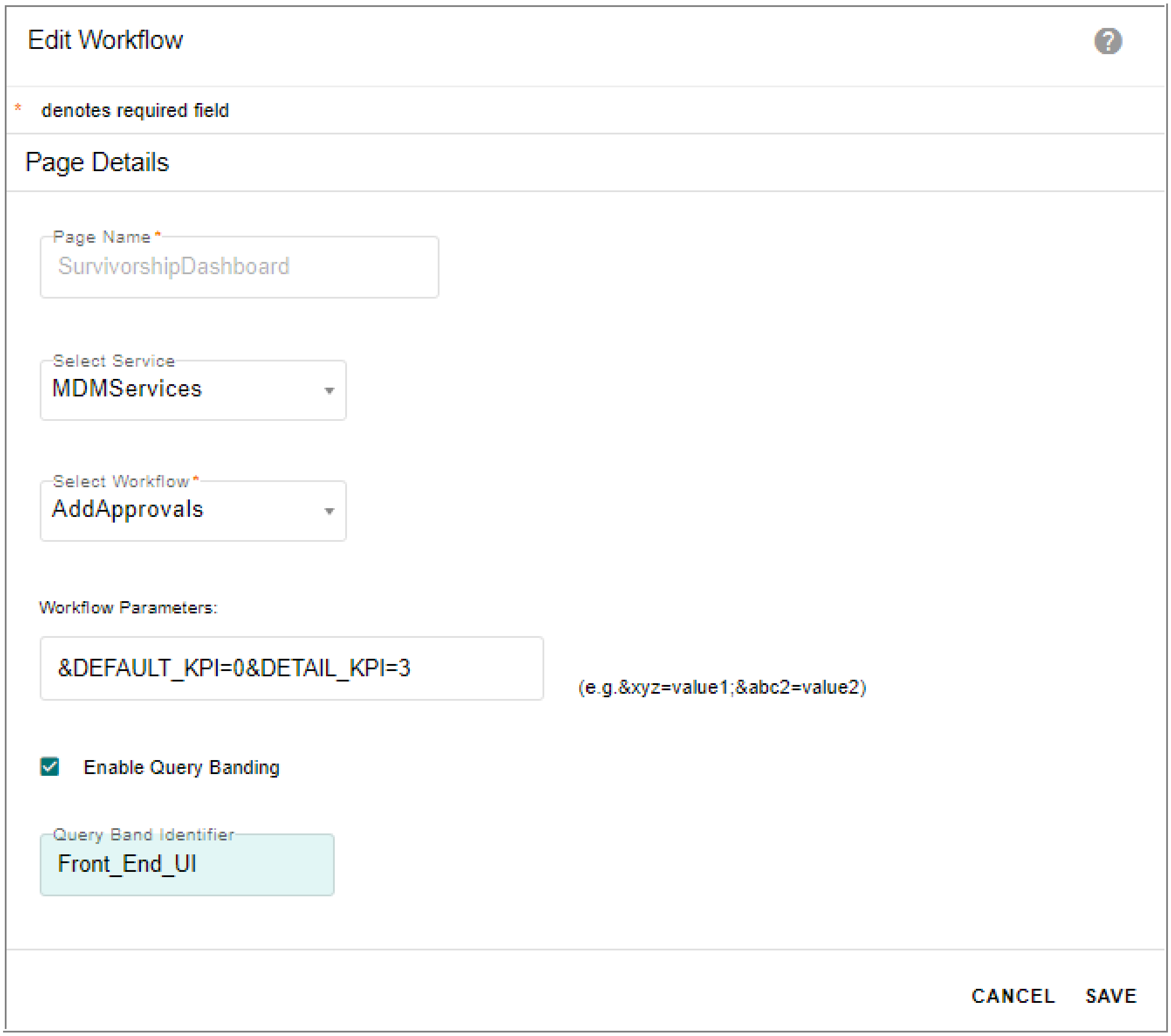
  In this level, you cannot enable or disable query banding for specific process and it is difficult to identify the query logs specific to processes.
- **Query banding at REQUESTS level**: Query banding can be enabled at REQUESTS level. When IsQbEnabled in REQUESTS as attribute is set to true, it enables QueryBand for that specific REQUESTS.

  QbIdentifier in REQUESTS as attribute: the “qb_identifier” is used as a REQUESTS attribute to identify Query band pertaining to a particular REQUESTS.

```
<REQUESTS ServiceName="BCM_MASTER" IsQbEnabled="true"
QbIdentifier="Test_GetDocs">
          <GET_DOCUMENT Name="RelationalObject" DirtyRead="true"/>
          <GET_DOCUMENT Name="Domain" DirtyRead="true"/>
          <GET_DOCUMENT Name="Code_Set" DirtyRead="true"/>
          <GET_DOCUMENT Name="Valid_Language" DirtyRead="true"/>
</REQUESTS>
```

- **Query banding at Workflow level**: Query banding can be enabled at Workflow level using Menu Builder—Add Workflow/Edit Workflow UI. On the Add Workflow/Edit Workflow UI, you can add the parameters for workflow url in the Workflow Parameters text field and enable query banding by selecting the **Enable Query Banding** checkbox and you can enter the query band identifier value as in Figure 23.

Figure 23: Edit Workflow



Edit Workflow

* denotes required field

Page Details

Page Name *: SurvivorshipDashboard

Select Service: MDMServices

Select Workflow *: AddApprovals

Workflow Parameters: &DEFAULT_KPI=0&DETAIL_KPI=3 (e.g.&xyz=value1;&abc2=value2)

☑ Enable Query Banding

Query Band Identifier: Front_End_UI

- **Query banding at Start Workflow Xcommand level**: Query banding can be enabled from START_WORKFLOW Xcommand as in below example:

  ```
   <START_WORKFLOW ServiceName="BCM_MASTER"
  AssignToVar="startWfResponse" HandleException="true"
  IsQbEnabled="true" QbIdentifier="WfProcessUI">
            <TEMPLATE Value="TemplateName"/>
            <ADDITIONAL_PARAMETERS>
              <WORKFLOW_PROCESS_ID Value="101"/>
            </ADDITIONAL_PARAMETERS>
          </START_WORKFLOW>
  ```

  You can enable or disable query banding at xcommand level by setting IsQbEnabled=true/false as in above example.
- **Query banding for excel upload:** Query banding can be enabled for excel upload. You can enable or disable query banding for excel upload process by setting enableUploadQueryBanding= “true/false” in <MDM_Install_Directory>\web\mdmclient\WEB-INF\upload_kit\model\upload_kit\uploads\upload_details.cnd.

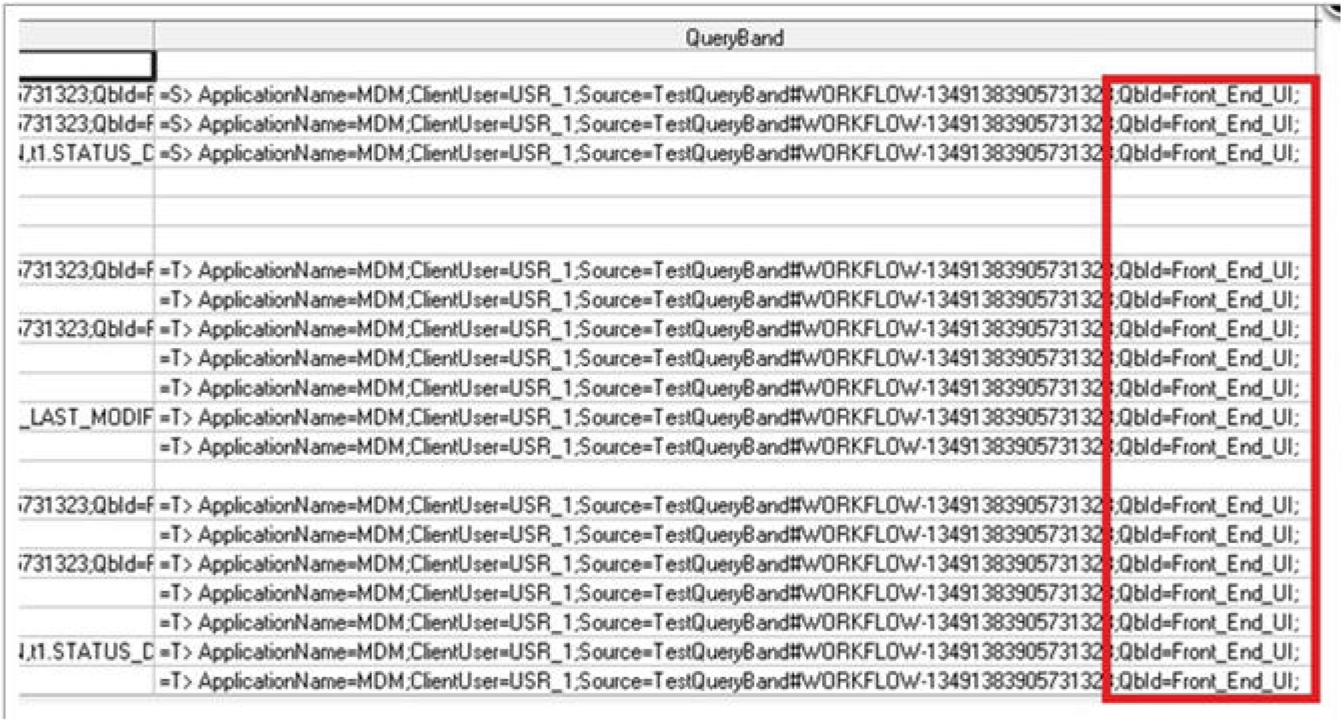
  ```
  <xapl:variable name="enableUploadQueryBanding" select="'false'"
  resolver="application" global="true"/>
  ```

  QqIdentifier flag in upload_details.cnd: qbIdentifier= “Excel_Upload” in *<MDM_Install_Directory>\web\mdmclient\WEB-INF\upload_kit\model\upload_kit\uploads\upload_details.cnd* to enable or disable Query banding for excel upload process.

Using Query Band Captured Data

Query band if employed is captured as part of standard query logging mechanism that currently exists in Teradata such as DBQL.

Sample log for Excel Upload DBC.DBQLogTbl with Query banding enabled.



	QueryBand
731323;QbId=F	=S> ApplicationName=MDM;ClientUser=USR_1;Source=TestQueryBand#WORKFLOW-1349138390573132;QbId=Front_End_UI;
731323;QbId=F	=S> ApplicationName=MDM;ClientUser=USR_1;Source=TestQueryBand#WORKFLOW-1349138390573132;QbId=Front_End_UI;
1,t1.STATUS_C	=S> ApplicationName=MDM;ClientUser=USR_1;Source=TestQueryBand#WORKFLOW-1349138390573132;QbId=Front_End_UI;
731323;QbId=F	=T> ApplicationName=MDM;ClientUser=USR_1;Source=TestQueryBand#WORKFLOW-1349138390573132;QbId=Front_End_UI;
	=T> ApplicationName=MDM;ClientUser=USR_1;Source=TestQueryBand#WORKFLOW-1349138390573132;QbId=Front_End_UI;
731323;QbId=F	=T> ApplicationName=MDM;ClientUser=USR_1;Source=TestQueryBand#WORKFLOW-1349138390573132;QbId=Front_End_UI;
	=T> ApplicationName=MDM;ClientUser=USR_1;Source=TestQueryBand#WORKFLOW-1349138390573132;QbId=Front_End_UI;
	=T> ApplicationName=MDM;ClientUser=USR_1;Source=TestQueryBand#WORKFLOW-1349138390573132;QbId=Front_End_UI;
_LAST_MODIF	=T> ApplicationName=MDM;ClientUser=USR_1;Source=TestQueryBand#WORKFLOW-1349138390573132;QbId=Front_End_UI;
	=T> ApplicationName=MDM;ClientUser=USR_1;Source=TestQueryBand#WORKFLOW-1349138390573132;QbId=Front_End_UI;
731323;QbId=F	=T> ApplicationName=MDM;ClientUser=USR_1;Source=TestQueryBand#WORKFLOW-1349138390573132;QbId=Front_End_UI;
	=T> ApplicationName=MDM;ClientUser=USR_1;Source=TestQueryBand#WORKFLOW-1349138390573132;QbId=Front_End_UI;
731323;QbId=F	=T> ApplicationName=MDM;ClientUser=USR_1;Source=TestQueryBand#WORKFLOW-1349138390573132;QbId=Front_End_UI;
	=T> ApplicationName=MDM;ClientUser=USR_1;Source=TestQueryBand#WORKFLOW-1349138390573132;QbId=Front_End_UI;
	=T> ApplicationName=MDM;ClientUser=USR_1;Source=TestQueryBand#WORKFLOW-1349138390573132;QbId=Front_End_UI;
1,t1.STATUS_C	=T> ApplicationName=MDM;ClientUser=USR_1;Source=TestQueryBand#WORKFLOW-1349138390573132;QbId=Front_End_UI;
	=T> ApplicationName=MDM;ClientUser=USR_1;Source=TestQueryBand#WORKFLOW-1349138390573132;QbId=Front_End_UI;

Where S denotes the session level Query band value and T denotes the transaction level Query band values and “QbId = Excel_Upload” in Query band field denotes that the query banding is for excel upload.

You can verify the session level settings by issuing “HELP SESSION;” to the database.

In Query band, the value of the parameter ApplicationName is configurable. To configure the ApplicationName, navigate to xserver.xml and xserverweb.xml available at: *<MDM_Install_Directory>\cfg\properties* and modify the ApplicationName parameter value. By default, the value is displayed as “MDM”.

Apart from this, Teradata out of box (OOB) has provided few User Defined Functions (UDF) that can be used on the fly to report the Query band information.

The following UDF’s are available in the Teradata database SYSLIB

GetQueryBand

GetQueryBandValue

GetQueryBandPairs

MonitorQueryBand

By default the user will be logged as TMDM_INTERNAL for the queries for which username is not available.

The MDM functionalities hierarchy manager and stored procedures are not covered as part of Query Banding feature. For MDM stored procedures logging, see "Logger Settings for MDM Stored Procedure" in Chapter 21: "Administration".

Limitations

Query band limitations:

1. Query band is not supported for the following modules:
    - Publication
    - Data quality
    - Stored procedures
    - Hierarchy viewer
2. Query band is supported only in Teradata database version 12 or above.

CHAPTER 3 MDM Customization

What’s In This Chapter

This chapter provides detailed information on customization of the MDM application.

Topics include:

- New Models
- Service Customization
- Customizing MDM Project
- UI Service Customization
- Deployment with Customizations

New Models

New models need to be created in one or more new model-sets.

Service Customization

Execute the following steps for service customization:

1. Navigate to Services, right-click on the required service and select 'Customize Service'.
2. The customer service wizard is displayed. Select MDM-Based. Click Next.
3. Select 'New Service'. Enter custom service file name.

   Note: The directory cannot be changed here even though the option is provided. The custom service field should exist in the same path as the install and should exist in the cfg/ properties folder.
4. A screen is displayed prompting for model-instance file name and showing new models (which were not part of parent service).

   Note: Model-instance file has to be under cfg/xservice/<custom-service>/model-instance.
5. Add any new models as required. Click Next.
6. Select 'Setup staging', 'scenario enabled' and 'scenario instance' and Click Ok. This would create a child service under the parent service which will have its own model instance, rules, workflows, and so on.
7. Click on the model instance and note that it contains only the new models added in the creation wizard. It doesn't show parent service models.

8 Right-click on Model Instance and select 'Override Document'. This will bring up all parent models. You can choose 'Select All' to include all models.

9 Additional fields can be added at the custom service level to existing models by going to the custom model instance. Similarly, facets can be added to the new fields. Existing fields can be overridden in custom model instance by right-clicking and selecting 'Override' on the field. Facets, advanced parameters (example: audit trail setting), physical name, additional keys or constraints are all examples of how a field can be overridden.

10 Additional rules and workflows can be written in the custom service. Existing rules can be overridden too.

For detailed steps, refer to *chapter Process Modelling of Master Data Management Studio User Guide.*

Customizing MDM Project

This section describes model customizations and steps to be followed to realize the changes in MDM UI.

Adding a Table

To add a table and view in MDM UI:

1. Add a table to the model following the instructions in the section *Inserting Tables to the Model* of the *Master Data Management Studio User Guide*.

   Note: Once the table is added to the model, it has to be included in the model instance to be part of the service.

2. Select **Override Document** from the right-click menu on the model instance. Select the new added model from the **Model Unit Selection** page.
3. Update the service setup following the instructions in the section *"Service Customization"*. The documents and facets will now be updated to include the newly added table.
4. Update the solution setup. Refer *chapter 4 Process Modeling* in *Master Data Management Studio User Guide*.The database will now be updated to include the newly added table.
5. Restart the server and client.
6. Login to the MDM UI and access the table. The newly added table should now be available under the category it was added to in the model instance.

To access table on the MDM UI:

1. Generate configurable UI for the table. For details, see Section : "Generate Configurable UI."
2. On the MDM UI, expand **View Tables**, expand **Master Tables** and click the required tables.

Enabling Audit Trail

This section describes steps required to enable audit trail on a table and view the audit trail in MDM UI.

1. Select the table for which audit trail has to be enabled.
2. Go to the Facets tab and check the Audit Trail box.
3. Update the service setup following the instructions in the section *"Service Customization"*. The documents and facets will now be updated to include the audit trail table. The physical name of the audit trail is obtained by adding "_AT" as a suffix to the physical name of the parent table. For example, if audit trail is enabled for the Item table, the physical name of the audit trail table will be MST_ITEM_AT.
4. Update the solution setup. Refer *chapter 4 Process Modeling* in *Master Data Management Studio User Guide*. The database will now be updated to include the audit trail table.
5. Restart the server and client.
6. Login to the MDM UI and access audit trail tables. The audit trail table should now be available.

To access audit trail tables on MDM UI:

1. Generate configurable UI for the table. For details, see Section : "Generate Configurable UI."
2. On the MDM UI, navigate to **Tables-> Audit Tables** and click the required tables.

   MDM provides support for Effective date display in Audit table. On the Model Builder, while creating model, in Advanced settings, select the Audit Trail check box to enable audit trail on table. If Audit Trail option is enabled, the Audit End Date check box is displayed. When a record in master table is changed, the existing entry in audit table will be updated with an end date and a new entry will be made to the audit table with a start date.

   This change will be applicable through DO_DB _PERSIST framework and through ADD_DOCUMENT/ MODIFY_DOCUMENT/ REMOVE_DOCUMENT X-commands.
3. If approval is enabled on a audit table and when the approval process takes place, approval details like system approval Id, approver name and approval date will be displayed on the Audit table under SYS_Approval_ID, Approver and Approved Date columns. In case of multiple approvers, the name of the approver and corresponding date of approval will be separated by comma.

UI Service Customization

You can create custom UI workflows by customizing the UI_Workflow service defined in the MDM UI project <web\mdmclient\WEB-INF\bcm\ToolkitUI.owb>.

Follow the steps specified in the Service Customization section above, to create a custom UI_WORKFLOW. Perform the following steps to deploy into MDM:

1. Edit x2.properties.

   Add reference to the new workflow service configuration property file (for example, custom_ui_workflow.xml), by modifying the xcore.xservices attribute specified in <MDM_Install_Directory>/web/mdmclient/WEB-INF/classes/x2.properties:

   ```
   xcore.xservices=xserver.xml,ui_workflow.xml,custom_ui_workflow.xml
   ```

2. Websphere Deployment specifics:

   If your client is deployed on an AIX server with Wepsphere Application Server, then the Studio-based customizations on your Windows machine, should migrate to the Websphere deployment. Perform the following steps:

   a Create an archive of your new custom UI workflow files into a .jar, and copy this archive into <MDM_Install_Directory>\web\mdmclient\WEB-INF\lib directory. The archive needs to include the workflow configuration properties file (for example, custom_ui_workflow.xml), and the rules and workflow files under the cfg\xservice directory of your new workflow.

   To create a .jar, navigate to the root directory of your MDM install using a command window and type the following commands where C:\Teradata\MDM\<version no> needs to be replaced with your MDM installation directory.

   ```
   C:> cd C:\Teradata\MDM\<version no>\bin
   C:\Teradata\MDM\<version no>\bin> bcmenv.bat
   C:\Teradata\MDM\<version no>\bin> cd C:\Teradata\MDM\<version
   no>\web\mdmclient\WEB-INF\bcm\cfg
   C:\Teradata\MDM\<version no>\web\mdmclient\WEB-INF\bcm\cfg> md
   temp
   C:\Teradata\MDM\<version no>\web\mdmclient\WEB-INF\bcm\cfg> cd
   temp
   C:\Teradata\MDM\<version no>\web\mdmclient\WEB-INF\bcm\cfg\temp>
   copy ..\properties\custom_ui_workflow.xml .
   C:\Teradata\MDM\<version no>\web\mdmclient\WEB-INF\bcm\cfg\temp>
   md xservice\custom_ui_workflow
   C:\Teradata\MDM\<version no>\web\mdmclient\WEB-INF\bcm\cfg\temp>
   cd xservice\custom_ui_workflow
   C:\Teradata\MDM\<version no>\web\mdmclient\WEB-
   INF\bcm\cfg\temp\xservice\custom_ui_workflow> xcopy /s
   ..\..\..\xservice\custom_ui_workflow .
   C:\Teradata\MDM\<version no>\web\mdmclient\WEB-
   INF\bcm\cfg\temp\xservice\custom_ui_workflow> cd ..\..
   C:\Teradata\MDM\<version no>\web\mdmclient\WEB-INF\bcm\cfg\temp>
   %JAVA_HOME%\bin\jar -cvf custom_ui.jar *
   C:\Teradata\MDM\<version no>\web\mdmclient\WEB-INF\bcm\cfg\temp>
   copy custom_ui.jar ..\..\..\lib
   ```

   This should result in creation of a custom_ui.jar file in your <MDM_Install_Directory>\web\mdmclient\WEB-INF\lib directory. You can now delete the temporary folder created at <MDM_Install_Directory>\web\mdmclient\WEB-INF\bcm\cfg.

   b Since the client is deployed in WebSphere using a Web archive (a .war file), you need to re-create a Web archive in your Windows design environment, then ftp the .war over to the AIX server, and re-deploy it on WebSphere.

   To create a .war, navigate to the root directory of your MDM install using a command window and type the following commands where C:\Teradata\MDM\<version no> needs to be replaced with your MDM installation directory.

```
C:> cd C:\Teradata\MDM\<version no>\bin
C:\Teradata\MDM\<version no>\bin> bcmenv.bat
C:\Teradata\MDM\<version no>\bin> cd C:\Teradata\MDM\<version
no>\web\mdmclient
C:\Teradata\MDM\<version no>\web\mdmclient> %JAVA_HOME%\bin\jar -
cvf bcmclient.war *
```

This should result in the creation of a Web archive called bcmclient.war in the bcmclient directory.

Deployment with Customizations

1 To generate the resulting xdocs and facets, run 'Service Setup' on the custom service.

   Note: This generates the xdocs and facets in an absolute manner. That is, the generated xdoc would have the fields from parent service and the fields added at the custom level. Facets are also generated in an absolute manner. Rules and workflows, on the other hand, are stored only if they are overridden at the custom level. These files get copied as part of service setup in every MDM based service.

2 Schema generation: cust_gen_schema.bat has to be created which includes the custom service and related staging services in addition to all existing services.

   Xdocs are included as absolute docs and xcore picks up xdocs only the first time. The same holds true for dataPersist rules. So the procedure mechanism is as follows:

   Create a separate customXdocDataPersist.xml manually. This file should contain only the xdoc and dataPersist entries from the customService.

   For example:

```
<?xml version="1.0" encoding="UTF-8"?>
<dom-config>
  <service-config Name="BCM_MASTER" TransactionCache="false"
Register="true">
    <register-handlers>
      <handler TagName="MDM"
ClassName="com.td.bcm.xcore.tool.MDMPreInitHandler"/>
      <handler TagName="dataPersistSpec"
ClassName="com.td.bcm.xcore.datapersist.DataPersistConfigSpecHandler"
/>
      <handler TagName="validationSpecFiles"
ClassName="com.td.xservice.validation.ValidationSpecsHandler"/>
      <handler TagName="idgen"
ClassName="com.td.xcore.idgen.IdGenConfigHandler"/>
    </register-handlers>
    <MDM/>
    <dataPersistSpec>
      <dataPersistSpecFile Name="xservice/customservice/dataPersist/
CustomDocPersistConfig.xml"/>
    </dataPersistSpec>
    <extensionFiles>
      <extensionFile Name="com/td/bcm/xcore/serverutil/xml/
bcm_rule_extension.xml"/>
    </extensionFiles>
    <docDefnFiles>
```

```
      <docDefnFile Name="xservice/customservice/documents/
mst_xdoc.xml"/>
      <docDefnFile Name="xservice/customservice/documents/
tk_xdoc.xml"/>
    </docDefnFiles>

    <logger>
      <file Name="../log/bcmmaster.log"/>
      <logLevels>
        <logLevel Value="Exception"/>
        <logLevel Value="Error"/>
      </logLevels>
      <brief-console Value="false"/>
    </logger>
  </service-config>
</dom-config>
```

Similarly, customXdoc-input.xml, customXdoc-nechange.xml and customXdoc-output.xml need to be created.

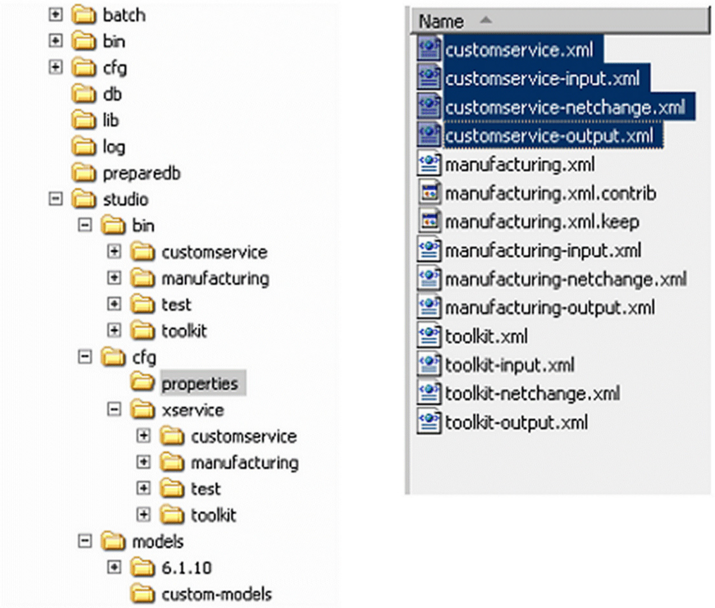
Cust_gen_schema.bat should include all the manually created custom files (customXdocDataPersist.xml, customXdoc-input.xml, and so on.) at the beginning and should include customservice.xml, customservice-input.xml etc. at the end.

3. Static data population: cust_gendb.bat has to be created. This should call cust_gen_schema.bat. Also, facet upload should happen from custom service. So, change facet upload to point to custom service. And finally, the sys_table_map loading needs to happen from customservice. So, change the loading of correlation.xml to point to customservice.xml.
4. cust_startServices.bat: Needs to be changed to include customXdocDataPersist.xml at the beginning and custom service and related staging property files at the end.
5. cust_startAll.bat: Should call cust_startServices.bat instead of startServices.bat.

Location of Custom Service Files

After performing all the above actions, here is how the custom files would be in the install loaction.

Figure 24: Custom Files



1. Custom model sets would be under studio/models.
2. Custom service files would be under studio/cfg/properties.
3. Custom service would be under studio/cfg/xservice/<customservice>.
4. This would contain the model instance, rule files, workflow files and so on.
5. Generated files after service setup would be under studio/bin/<customservice>.

   Note: These are generated files and would not be required during migration.
6. Batch files to run schema generation, static data population and bring up servers would be in bin directory.

   Note: These can be changed to reside elsewhere as long as paths etc. are changed to match the new path.

CHAPTER 4 Alerts

What’s In This Chapter

Alert is a mechanism by which notifications are published to users on occurrence of events to which the user is subscribed. This chapter describes alert configurations, raising alerts, and viewing alerts.

Topics include:

- Configuration
- Recipient Groups
- Viewing Alerts
- Deleting the Alert Records

Configuration

This section describes the Metadata required to define alerts. Once the alerts are defined, they can be raised in any service as required.

Message Template

The message template defines the communication protocol, alert message, and alert severity. A template can be used by different events. In the below example, the service file refers to the Document.

For example:

```
<message_template Name="ItemLocationAddedMT"
Document="ItemLocationMaster" ServiceName="BCM_MASTER">
      <comm_protocol Type="ALERT">
        <priority Value="3"/>
        <message Type="TEXT">
          <text>
```

Item location buffer {0} - {1} is CREATED based on signal from source system. Creating {0} - {1} from BCM outbound staging.

```
 </text>
          <args>
            <arg Select="$thisDoc/itemID/@Value"/>
            <arg Select="$thisDoc/locationID/@Value"/>
          </args>
        </message>
      </comm_protocol>
</message_template>
```

The document is passed when this alert is invoked. The message text is dynamically constructed based on the template as shown above using the arguments passed in the document.

Message Template Protocol

The communication protocol can be ALERT or EMAIL. The priority indicates the severity of the alert. 0=Fatal, 1=Severe, 3=Warning, 4=Information.

Message Template Arguments

The message text can be dynamically generated by substituting for the arguments in the message text defined in the template. In the example above, the message text uses two arguments, itemID and locationID, represented by {0} and {1}. These variables are replaced by evaluating the arguments at runtime.

For detailed information on messaging service and e-mail services, refer to *Appendix Messaging and E-mail Service of Master Data Management Reference Guide.pdf.*

Recipient Groups

Recipient group identifies the list of users that subscribe to an event action. This list can be defined using a rule or be obtained from the document passed as an argument to the event.

```
<recipient_group Name="BCMMasterDataUpdateRG" Document="BCM_ALERT"
ServiceName="BCM_MASTER">
      <recipient_def Name="BCMMasterDataUpdateRG" Type="RULE">
        <request Name="getBCMMasterDataUpdateRGDetails"
ServiceName="BCM_MASTER"/>
      </recipient_def>
    </recipient_group>
```

In this example, the recipients in the group are identified using a rule getBCMMasterDataUpdateRGDetails.

```
<recipient_group Name="UserRG" ServiceName="BCM_MASTER">
      <recipient_def Name="User" Type="ENTITY">
        <entity_type Value="USER"/>
        <entity_id Select="$thisDoc/USER_ID/@Value"/>
      </recipient_def>
    </recipient_group>
```

In this example, the recipients in the group are identified from the document passed as an argument to the event.

Event

An event is associated with a service and a document that will be passed as an argument when the alert is raised.

For example:

```
<event Name="ItemLocationDeletedEvent" ServiceName="BCM_MASTER"
Document="BCM_ALERT" Category="Severe"/>
```

Event definitions

An event performs one or more actions targeted towards a recipient group. Each action uses a message template. Different events can use the same template.

For example:

```
<event_def Name="ItemLocationDeletedEvent" ServiceName="BCM_MASTER">
      <action Name="SendMessage1" Type="SEND_MESSAGE">
        <message_template Value="ItemLocationDeletedMT"/>
        <recipient_groups>
          <recipient_group Value="BCMMasterDataUpdateRG"/>
        </recipient_groups>
      </action>
    </event_def>
    <event_def Name="ItemLocationDeletedEvent" ServiceName="BCM_MASTER">
      <action Name="SendMessage1" Type="SEND_MESSAGE">
        <message_template Value="ItemLocationDeletedEmailMT"/>
        <recipient_groups>
          <recipient_group Value="BCMMasterDataUpdateRG"/>
        </recipient_groups>
      </action>
    </event_def>
```

In this example, ItemLocationDeletedEvent can perform two actions:

1. Send an alert message to the user indicating the specific Item Location that could not be deleted.
2. Send an email message to the user indicating the specific Item Location that could not be deleted.
3. These actions can be associated with different templates ItemLocationDeletedMT and ItemLocationDeletedEmailMT that use different communication protocols, ALERT and EMAIL respectively. Both actions were targeted towards the BCMMasterDataUpdateRG recipient group.

For more information on Events, refer to section Events and Listeners, Managing Events and Requests and Event Node in chapter Process Modeling in Master Data Management Studio User Guide.

Raising Alerts

Once an event has been defined, it can be raised in any service.

For example:

```
<TO_DOCVAR AssignToVar="alertDoc">
              <ALERT>
                <ITEM_ID Value="ITEM-1"/>
                <LOC_ID Value="LOCATION-1"/>
                <USER_ID Value="user_1"/>
              </ALERT>
            </TO_DOCVAR>
            <RAISE_MSG_EVENT Name="ItemLocationDeletedEvent" 
Select="$alertDoc"/>
```

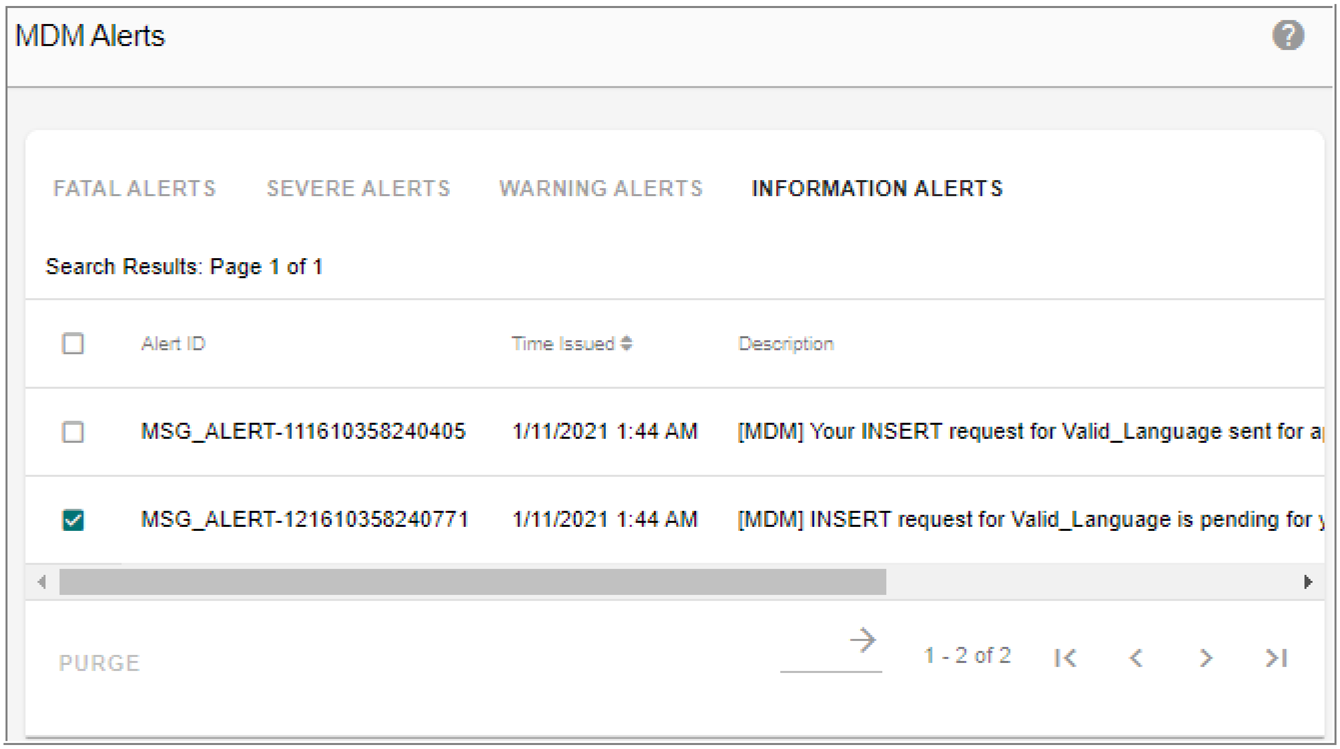
In this example, the event ItemLocationDeletedEvent is being raised with $alertDoc as the argument.

Viewing Alerts

Login to MDM, for details, see section “MDM Login Page”. The MDM Home page is displayed.

On the MDM UI, select **Alerts** from **Alerts & Inbox** icon 🔔 drop-down. The **Alerts** page (Figure 25) is displayed.

Figure 25: Alerts



Search Results: Page 1 of 1

☐	Alert ID	Time Issued	Description
☐	MSG_ALERT-111610358240405	1/11/2021 1:44 AM	[MDM] Your INSERT request for Valid_Language sent for a
☑	MSG_ALERT-121610358240771	1/11/2021 1:44 AM	[MDM] INSERT request for Valid_Language is pending for

This **Alerts** page (Figure 25) displays four tabs:

- Fatal Alerts
- Severe Alerts
- Warning Alerts
- Information Alerts

The first three alerts require you to take appropriate actions to resolve the issue (s). Information alerts provide a confirmation of the tasks that you have completed. For example, an Information alert will inform the administrator of the completion of various phases of the inbound staging process.

Note: You can view these alerts only after running the E2E workflow.

Field Description

Table 3: Field Description

Field	**Description**
Alert ID	Displays the Alert ID.
Time Issued	Time Issued displays the time when the alert record was generated.
Description	Displays a brief description of the alert record.

Deleting the Alert Records

To delete alert records:

1. On the **Alerts** page (Figure 25), select the alert record(s) by clicking the corresponding checkbox(es).
2. Click **Purge**.

SECTION B Server User Reference

Section B provides link to the various chapters on server user reference.

- Chapter 5: “MDM Web User Interface.”
- Chapter 6: “MDM UI Customization.”
- Chapter 9: “User Management.”
- Chapter 8: “Configurable UI.”
- Chapter 9: “The E2E (Data Load) Workflow.”
- Chapter 10: “Business Rules.”
- Chapter 11: “Upload Documents.”
- Chapter 12: “Data Harmonization Features.”
- Chapter 13: “Cross Reference Management.”
- Chapter 14: “Workflow Management.”
- Chapter 15: “Manage Lookup Data.”
- Chapter 16: “Hierarchy Management.”
- Chapter 17: “Manage Extended Attributes.”
- Chapter 18: “Manage Approvals.”
- Chapter 19: “Data Quality.”
- Chapter 20: “Manage Business Entity.”
- Chapter 21: “Administration.”
- Chapter 22: “Manage Scheduler.”
- Chapter 23: “Profile Migration.”
- Chapter 24: “Model Builder.”
- Chapter 26: “Manage Authorization.”
- Chapter 27: “Categorize Data.”
- Chapter 28: “Manage Queries.”
- Appendix D: “MDM Workflow Monitoring.”
- Appendix E: “Trillium Integration.”
- Appendix F: “Disaster Recovery.”
- Appendix G: “UDF’s Execution Modes.”

CHAPTER 5 MDM Web User Interface

What’s In This Chapter

This chapter provides information about logging into MDM and the key UI elements available.

Topics include:

- Accessing MDM
- MDM Out-of-the Box Features

Accessing MDM

MDM is a Web based application and is accessible through the Web browser. Contact your system administrator for the appropriate link to the MDM login page.

MDM Login Page

MDM Login

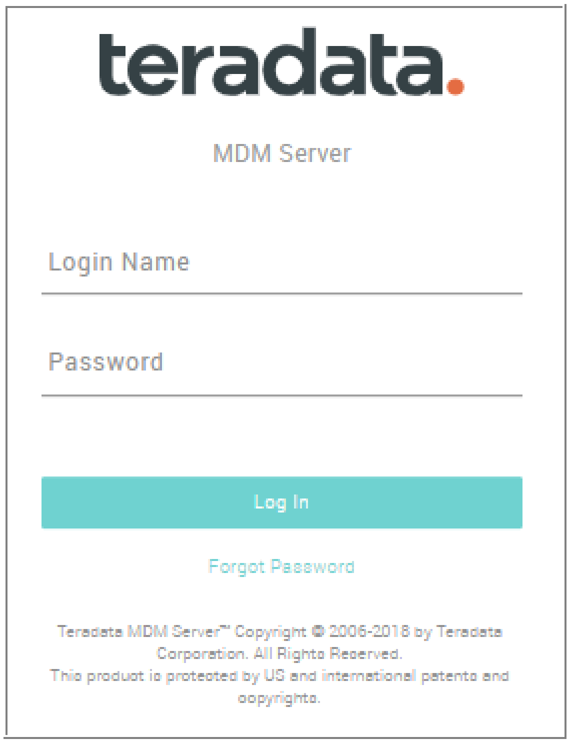
To log into MDM:

1 Open the Web browser and enter the MDM Universal Resource Locator (URL) in the Address field and press Enter.

For example: http://localhost:7001/mdm/bcm/framework/login.jsp

The **Login** page (Figure 26) is displayed.

Figure 26: Login



Teradata MDM Server™ Copyright © 2006-2018 by Teradata Corporation. All Rights Reserved.
This product is protected by US and international patents and copyrights.

2 On the **Login** page (Figure 26), in the **Login Name** field, enter the login name and in the **Password** field, enter the password.

MDM Admin login name is “admin” and password is “admin”.

3 Click **Log In**.

The **MDM User Interface** (Figure 29) is displayed.

- The login name and password are case sensitive.
- For successful MDM login, cookies have to be enabled.
- By default, Auto-fill option for login Id and password fields are disabled. Chrome browser does not honor the auto-fill option. It is recommended to use some other browser if you do not want auto-fill option or you can manually disable auto-fill option by following below steps.
  - On the Chrome browser, click on the icon ⋮ and select Settings.
  - On the Settings page, click Show advanced settings.
  - Under “Passwords and forms”, uncheck “Enable Autofill to fill out web forms in a single click”.
- Within any instances of the same browser, there can be only one active MDM application session at a time. The last user login will override the previous active session.

Customizing Logo on Login Page

You can change the Teradata default logo on the MDM login page using the below step:

1. Navigate to *<MDM_Install_Directory>\web\mdmclient\td\images* and replace the teradata-dark.svg.

Post Login Redirection

Perform the following steps to customize the login page to redirect to the desired UI:

1. Enter the MDM page name (as in the LEFT_NAV_URL) to be redirected to as value to Parameter REDIRECT_PAGE along with the URL.

   For example: If you want to redirect to Manage Workflow Process page after logging in, enter the URL as

   http://localhost:8080/mdm/bcm/framework/
   login.jsp?REDIRECT_PAGE=ManageWorkflowProcess
2. You can also provide additional parameters along with the URL which will get appended along with the redirected URL.

   For example: You can provide a URL as below:

   http://localhost:8080/mdm/bcm/framework/
   login.jsp?REDIRECT_PAGE=ManageWorkflowProcess&PARAM1=event_id101&PARAM_WF_NAME=wfprocess102

   The additional parameters PARAM1 and PARAM_WF_NAME will be appended along with the redirected URL.

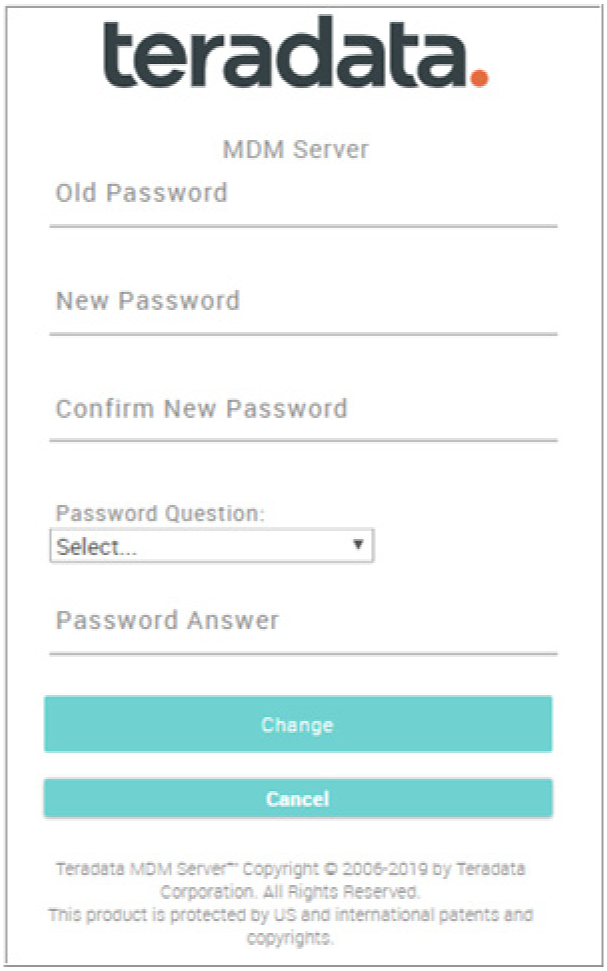
Change MDM Login Password

When a user logins for the first time with correct password, by default, it will be redirected to change password UI. Perform the following steps on the change password UI.

1. On the **Change Password** (Figure 27) UI, enter the following:
   - In the **Old Password** field, enter the old password.
   - In the **New Password** field, enter the new password.
   - In the **Confirm New Password** field, reenter the new password.
   - From the **Password Question** list, select the required password question.
   - In the **Password Answer** field, enter the password answer.
   - Click **Change**.

     Message: “You have successfully changed your password” is displayed.

Figure 27: Change Password



Teradata MDM Server™ Copyright © 2006-2019 by Teradata Corporation. All Rights Reserved.
This product is protected by US and international patents and copyrights.

---

1. The password question and password answer are stored in your profile. The password question will be posed to you, when you have lost your password or cannot recollect it. You have to provide the password answer for the question posed to be able to login to MDM.

2. Only active users can use the change password feature.

Add New Password Question

You can add new password question for password recovery and login other than the standard OOTB questions. Perform the following steps to add new question:

1 Navigate to **Manage Lookup Data** (**Reference Data** -> **Manage Reference Data**) and search for code set “PASSWORD_RECOVERY_QUERY”.

2 Select the code set and click **Manage Code Values**.

3 On the **Manage Code Values** UI, click **Add**.

4. On the **Add Code Value** page, enter the question in **Enterprise Code Value** field, provide brief description in Description field and click **Save**.

   Message: “Code value added successfully” is displayed. The newly added code value (password question) will be displayed in the Password Question list along with the OOTB questions.

   For detailed steps on adding code values, refer to Section : “Manage Code Values.” in Chapter 15: “Manage Lookup Data.”

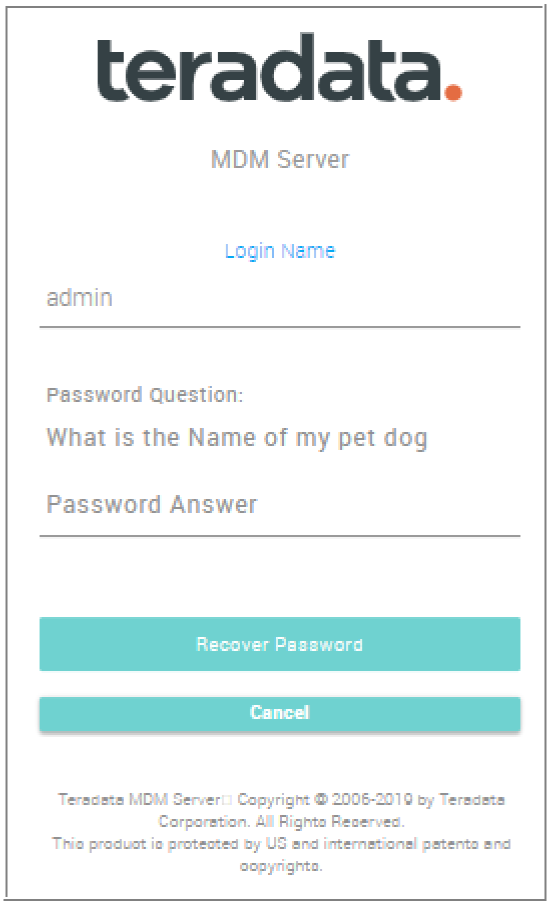
Retrieve MDM Login Password

To retrieve the password:

1. On the **Login** page (Figure 26), in the **Login Name** field, enter the login name.
2. Click **Forgot Password**.

   The **Recover Password** (Figure 28) page is displayed.

Figure 28: Recover Password



MDM Server

Login Name

admin

Password Question:

What is the Name of my pet dog

Password Answer

Teradata MDM Server□ Copyright © 2006-2019 by Teradata Corporation. All Rights Reserved.
This product is protected by US and international patents and copyrights.

3. On the **Recover Password** (Figure 28) page, in the **Login Name** field, the login name appears by default and in the **Password Answer** field, enter the answer.
4. Click **Recover Password**.

   The password will be e-mailed to you.

Note: Only active users can use the password retrieve feature. A locked/inactive user will get the error message: "ERROR : Please try again. The given user name is invalid."

MDM Log Out

To log out of MDM, click the **Logout** link displayed on the upper right-hand side of the page.

Session Expiry

After logging in to MDM UI, if there is no user activity for the timeout period (as defined in web.xml), a warning message “The session you are trying to use has expired” is displayed and on click of **Ok**, you will be automatically logged out.

The default timeout period is set to 120 minutes and can be changed at the time of deployment.

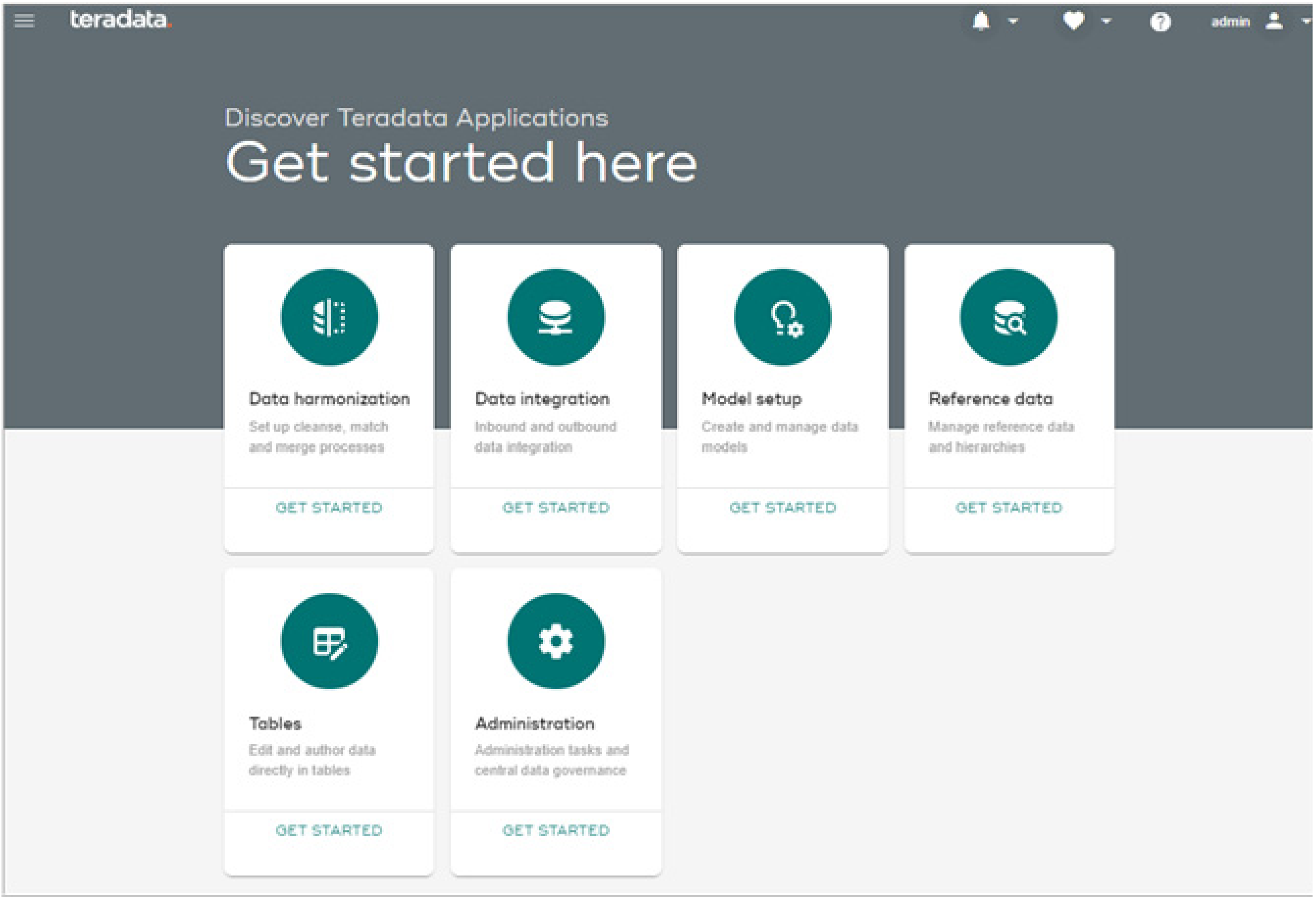
Open web.xml file from *<MDM_Install_Directory>/web/mdmclient/WEB-INF* and in “session-config” section, replace “120” with the required timeout value in minutes as below.

```
<session-config>
<session-timeout>120</timeout>
</session-config>
```

MDM User Interface

Once you login to MDM, the **MDM User Interface** (Figure 29) is displayed.

Figure 29: MDM User Interface


teradata.
admin
Discover Teradata Applications
Get started here
Data harmonization
Set up cleanse, match and merge processes
GET STARTED
Data integration
Inbound and outbound data integration
GET STARTED
Model setup
Create and manage data models
GET STARTED
Reference data
Manage reference data and hierarchies
GET STARTED
Tables
Edit and author data directly in tables
GET STARTED
Administration
Administration tasks and central data governance
GET STARTED

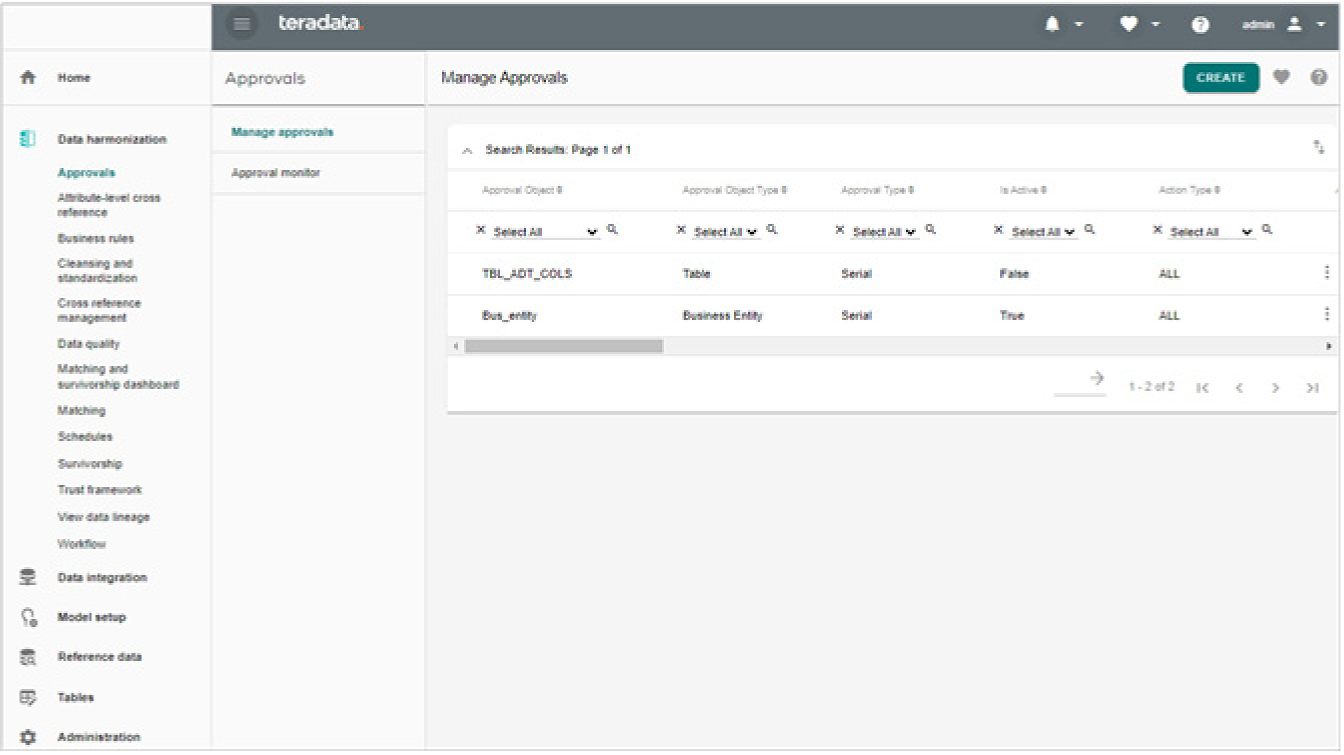
The MDM User Interface (UI) has the following areas:

1 **The Masthead** - provides access to tools like favorites, help files, alerts and Inbox, and admin (view profile, about and logout options).

2 **The Navigation Pane** - provides links to various MDM functions and processes available to you, depending on your access permissions (role associated with the user profile).

The Left navigation displays first level links. On click of the link, the second level will be displayed on right side and links will be shown as pallets in the Content Area as in Figure 30.

Figure 30: MDM User Interface—Navigation Links

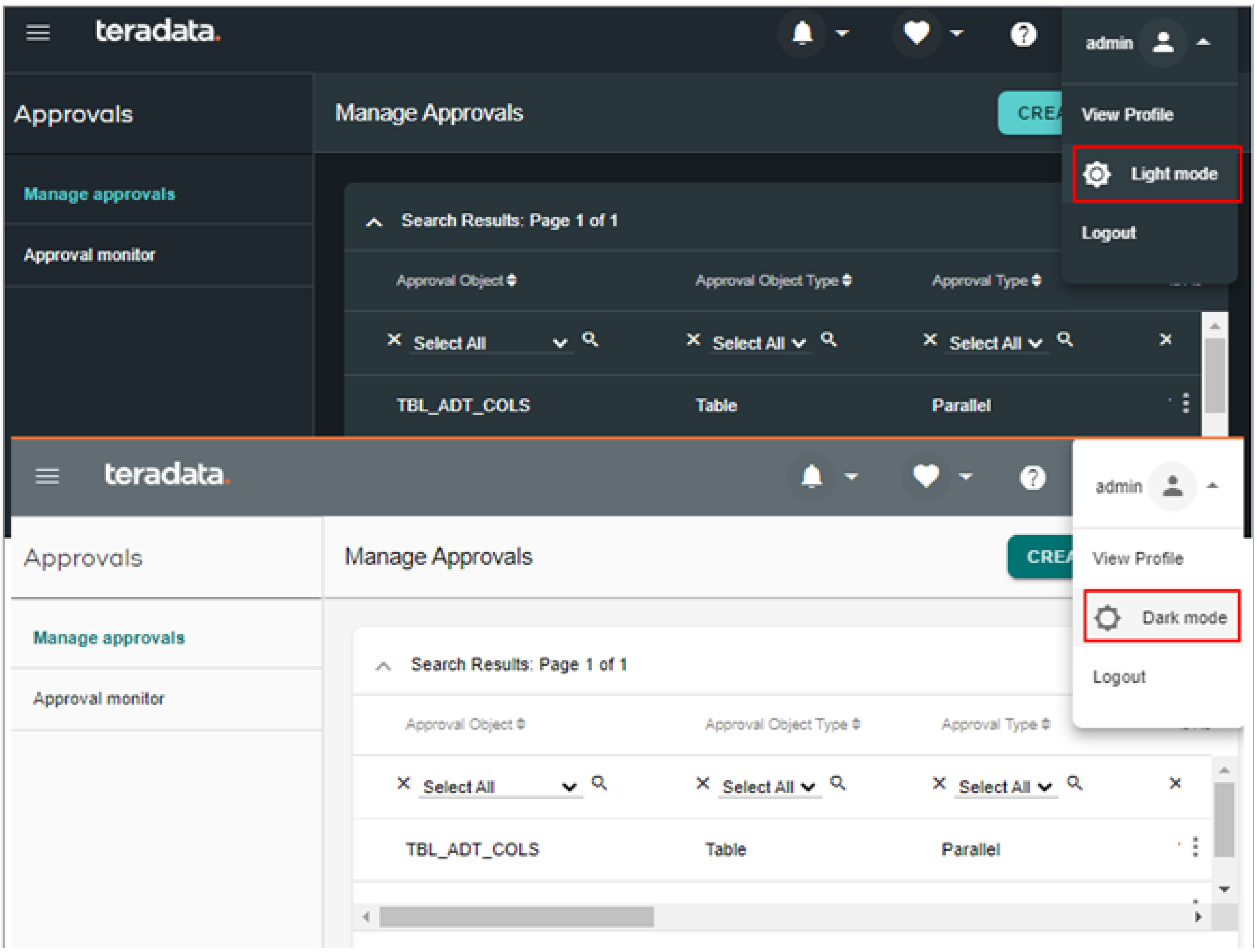


Approval Object	Approval Object Type	Approval Type	Is Active	Action Type
TBL_ADT_COLS	Table	Serial	False	ALL
Bus_entity	Business Entity	Serial	True	ALL

3 **Dark Theme** - new theme introduced for better user interafce. The UI theme can be set either to light or dark mode by selecting the required option from Profile icon as in Figure 30.

The theme settings applied on the MDM UI in normal browser mode will not be retained when the same application is opened in Incongnito mode. The settings have to be done again on the Incognito mode broswer.

Figure 31: MDM User Interface—Navigation Links



Approval Object	Approval Object Type	Approval Type
TBL_ADT_COLS	Table	Parallel

4 **The Content Area -** provides space to enter the required data to perform all the MDM functions and view the related information.

Click on any link on the left navigation pane, the appropriate page displays on the content area. On the content area of page, the Trail bar is displayed on the top.

In addition, the content area of a particular page displays certain general task icons. Table 4 lists the icons used in the MDM application.

Table 4: Icons Used in MDM Application

Icons	Description	Task
⟳	Refresh	Refresh the content area.
♥	Create Favorite	Mark a page as a favorite.

Table 4: Icons Used in MDM Application

Icons	Description	Task
▥	Customize	Launch the customization page.
?	Context Sensitive Help	Display the help text for the current screen.
>	Next	Go to the next set of search results.
<	Previous	Go to the previous set of search results.
|<	First	Go to the first set of search results.
>|	Last	Go to the last set of search results.
→	Jump	This navigation button helps you to go to a specific page in the search results. Enter the page number in the textbox provided, and click the button.
>>	Add Selected	Move all items selected from the list on the left side to the list on the right side. For example, move all the items selected from the Assigned User Role list to Available User Role list.
<<	Remove Selected	Move all the items from the list on the right side to the list on the left side. For example, move all the items from the Available User Role list to Assigned User Role list.
	Export to Excel	Export the table data to an Excel file.

Customizing Logo on MDM Home Page

You can change the Teradata default logo on the MDM home page using the below step:

1. Navigate to *<MDM_Install_Directory>\web\mdmclient\covalent\assets\icons* and replace the teradata.svg.

Links

The search results displayed in a table grid, often contain data accompanied with links (marked in blue) for more detailed information about the entities displayed.

My Profile

The My Profile—User Details page provides general information about the user currently logged in.

While some of the fields in this page are displayed as read-only labels, there are a few editable fields where the existing values can be modified.

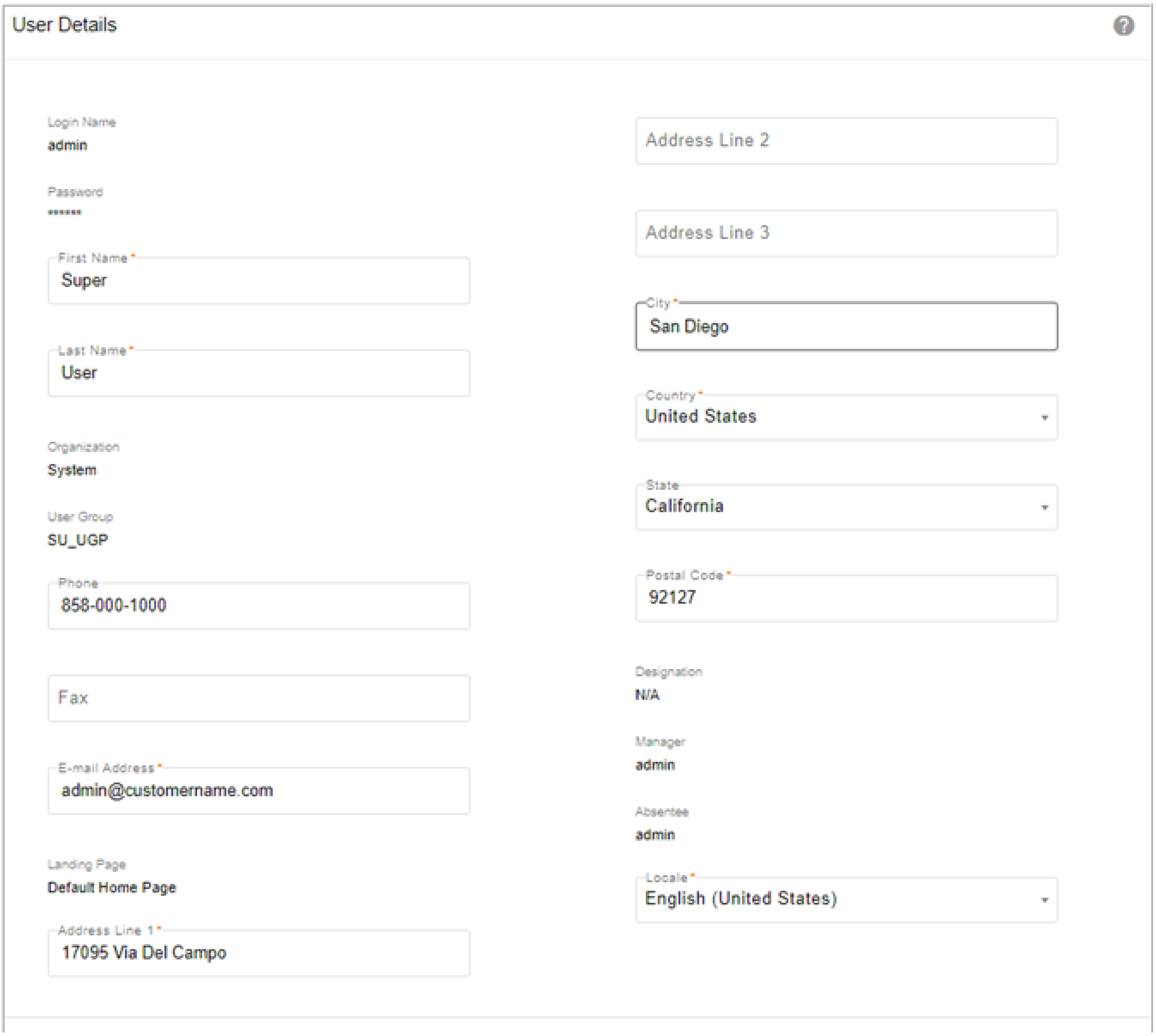
To view the user details:

1. On the MDM UI, select **View Profile** from Profile icon 👤 drop down.

   The **User Details - General Information (My Profile)** page (Figure 32) is displayed.

   You can view and modify general user information on the User Details—General Information page.

Figure 32: My Profile



User Details

Login Name
admin

Password
******

First Name *
Super

Last Name *
User

Organization
System

User Group
SU_UGP

Phone
858-000-1000

Fax

E-mail Address *
admin@customername.com

Landing Page
Default Home Page

Address Line 1 *
17095 Via Del Campo

Address Line 2

Address Line 3

City *
San Diego

Country *
United States

State
California

Postal Code *
92127

Designation
N/A

Manager
admin

Absentee
admin

Locale *
English (United States)

Table 5 provides a description of the fields on the **User Details** page.

Table 5: Fields on the User Details Page

Field	Description
Login Name	Displays your (the user who has logged in) login name.
Password	Displays the password in encrypted format.
First Name	Displays the User’s First name. You can modify this value.
Last Name	Displays the Last Name. You can modify this value.
Organization	Displays the Organization full name.

Table 5: Fields on the User Details Page

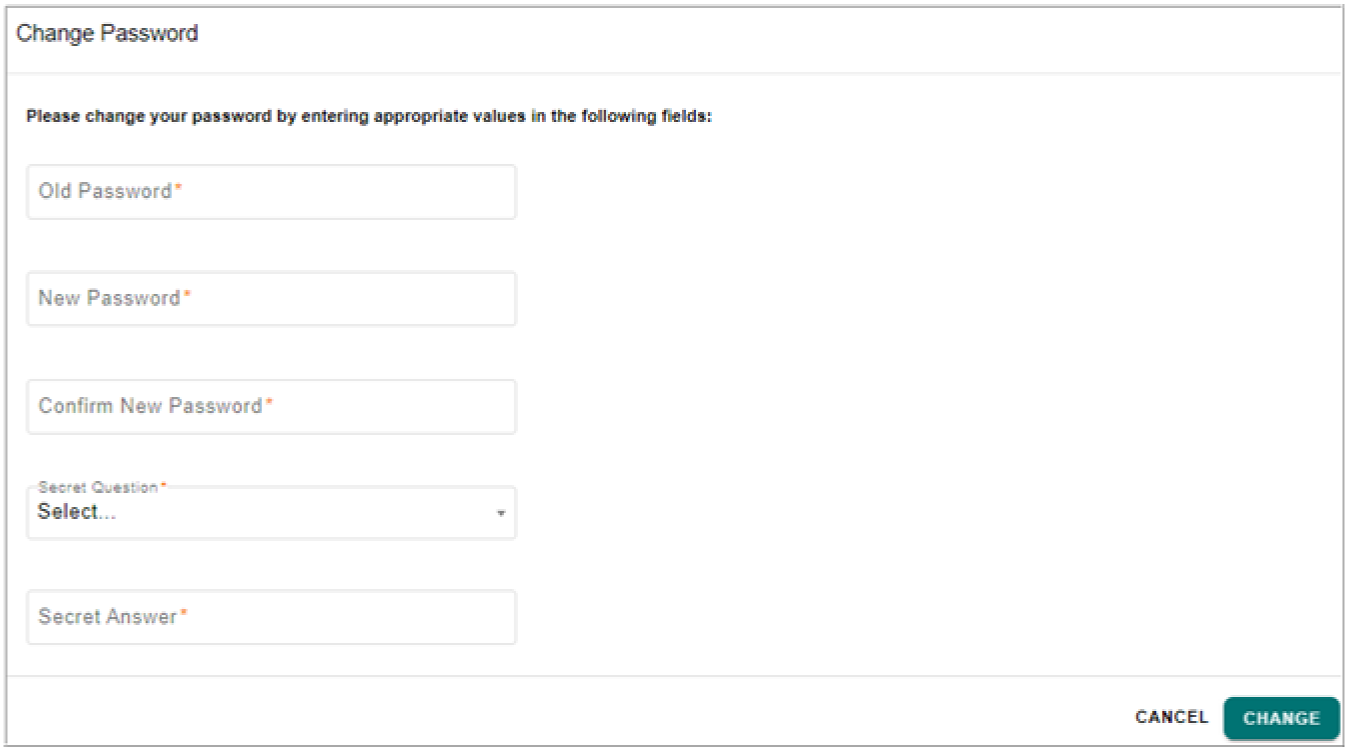
Field	Description
User Group	Displays the User Group to which the User belongs.
Phone	Displays the user's contact phone number. You can modify this value.
Fax	Displays the user's fax number. You can modify this value.
E-mail Address	Displays the user's e-mail address. You can modify this value.
Address Line 1	Displays the user's address. You can modify the address fields.
Address Line 2	The user's address details continued.
Address Line 3	The user's address details continued.
City	Displays the City where the user is located. You can modify this value.
Country	Displays the Country where the user is located. To modify this value, select the required country name from the list.
State	Displays the State where the user is located. To modify this value, select the required State code from the list.
Postal Code	Displays the user's postal code. You can modify this field.
Designation	Displays the user's designation.
Manager	Displays the name of the Manager for the logged in user.
Absentee	Displays the name of the person who can be assigned the tasks, in this user's absence.
Locale	Displays the language setting for the logged in user. You can change the Locale setting by selecting the required language from the list. For detailed information about changing the locale settings, see Section : "Localization." in Chapter 6: "MDM UI Customization".

2 Click **Update** to update the changes.

3 Click **Change Password t**o change the password.

The **Change Password** page (Figure 33) is displayed.

Figure 33: Change Password



Please change your password by entering appropriate values in the following fields:

4 On the **Change Password** page (Figure 33), enter the following:

  a In the **Old Password** field, enter the existing password.

If the entered old password is wrong, the message: “Password change failed. Please try again. The old password is invalid” is displayed.

---

  b In the **New Password** field, enter the new password.

  c In the **Confirm New Password** field, confirm the new password.

  d From **Secret Question** list, select the required secret question.

  e In the **Secret Answer** field, type the secret answer.

  You will be prompted for the secret question and the secret answer when you have forgotten your password and try to retrieve it.

  f Click **Change**.

  The password is changed.

MDM Out-of-the Box Features

Teradata MDM comes with many pre-defined workflows and rules as part of the default package installation kit. The Teradata MDM provides the following Out-of-the Box (OOTB) features.

Alerts

Alert is a mechanism by which notifications are published to users on occurrence of events to which the user is subscribed. It provides real-time information to users about the status of activities. By default, MDM generates alters based on the severity of each activity.

User Management

The User management represent organizational views of the roles within an enterprise. User Management models are crucial to the authentication and authorization aspects of information access. This feature deals with configuring users and user groups in MDM.

Data Authorization

MDM framework creates a master copy of all of the data and then subsequently manages the access to this data using the data authorization feature. It incorporates the capability of having Row Level Security (RLS) and Column Level Security (CLS) on tables. This integration ensures that each user will have access to only data and data attributes to which they are authorized

Data Load (E2E Workflow)

The E2E Workflow facilitates propagation of the Input Staging data into the Master tables. The E2E Workflow sends notification and error alerts to users with relevant roles and permissions. Data must be loaded into the MDM Input Staging tables prior to starting up the E2E Workflow. A part of this data may be owned by legacy systems. This data is typically fed in bulk mode as a flat file or via ETL (Extract Transform and Load). The E2E Workflow provides the ability to validate, fix and clean up errors, and load the data to the master tables. It also provides the ability to plug in or disable business validations.

Business Rules

The business rules allow you to define custom rules on the relevant input and master staging tables. You can add data filter, validation, auto fill and autocorrect rules through the user interface. These rules, except the filter rules, are invoked through Do_Db_Persist. Since Table Editor on the master tables and excel upload use Do_Db_Persist to persist data, these rules will be invoked automatically while using these features. For E2E, if the default PERSIST_TYPE (i.e. DO_DB_PERSIST) is used to persist data from net change to the master area, then the update and validation rules will be invoked automatically. Filter rules are defined on the input staging tables and are invoked during E2E.

Data Quality

The Data Quality dashboard is the front end to monitor the data quality of enterprise data based on a predefined set of business and data rules.

Manage Queries

The manage query functionality allows you to create custom database-specific SQL queries that can be executed against the MDM database. A user can search queries, create, edit or delete queries, execute queries and inspect query execution history.

Manage Logger

Manage logger feature enables better exception handling and logging through out MDM application.

Upload Documents

You can upload Excel spreadsheet or xml files through the MDM UI. Upload reports and error corrections are also available.

Hierarchy Management

MDM’s Hierarchy Manager feature allow users with proper authorization to create or modify the structural composition of a hierarchy. Using Hierarchy Manager, you can define a hierarchy structure that effectively mirrors the hierarchical nature of the data, that is, map a hierarchy to hierarchical data residing in the Master database. This hierarchy structure can then be used to drive the hierarchy viewer and drive reporting processes.

Lookup Reference Data Management

MDM supports an out-of-the-box feature called Lookup Reference Data Management (LRDM), to create and manage all lookup reference data in the data warehouse. The pre-packaged LRDM application empowers data experts to create and manage the set of conformed (source system values mapped to the unified values) lookup reference data in the data warehouse as well as the cross reference mappings that enable data lineage and support the ETL process.

Configurable UIs

The Configurable UI feature is introduced to support and provide integration with non-MDM/External or EDW tables/views via MDM user interfaces.

The Configurable UI is based on the standard UI template providing configurable Search, Result and CRUD operations on the underlying tables/views. The user can define a UI on one or multiple MDM (Master and Input) and non-MDM/external tables or a combination of both. CRUD operations can be configured for access and UI configuration options such as pagination, hover text, etc., can be defined for both Search as well as Result pages.

Reference Data Management

Reference Data Management (RDM) core processes that is, source registration, cleansing sandbox, Cleansing & Standardization, Matching and Survivorship are included as part of MDM and can be used with any reference data domain, such as the new RDM Solution, or any custom RDM solution.

Cleansing sandbox

RDM Cleansing and Standardization rules are applied on the underlying registered source or MDM table or view data. In case, if you do not want to change or update the existing source data, Cleansing Sandbox feature helps you in creating a copy of the existing source table or view which can then be used for RDM processing leaving the source data untouched.

Cleansing & Standardization

Cleansing and Standardization rules can be defined using the Business Rules editor on MDM and non-MDM (EDW) Tables to perform cleansing and standardization on the underlying tables. Cleansing and Standardization rules can be executed independently or as part of the overall RDM process execution. The Cleansing & Standardization process can maintain data lineage between the source data and cleansed and/or standardized data.

Matching

The Matching process can help in identifying new records, duplicates, exact match records or cross referencing existing master records with source system records. The Matching process is a Probabilistic matching implementation, which works on the scores and weights assigned to match attributes for the underlying match profile.

Survivorship

The Survivorship process refers to the process of reviewing matching results (scores/weights) and performing merge, duplicate resolution or creating new records and also creating cross references or relations between source and target tables.

The Survivorship process also involves interactive processes for merge and duplicate resolution where a user can review primary and secondary data records to take action on data records.

CHAPTER 6 MDM UI Customization

What’s In This Chapter

This chapter provides information about different customization on MDM UI.

Topics include:

- Filters and Searches
- Customization and User Favorites
- Localization
- Multi Language Data Support in MDM

Filters and Searches

This section provides information about setting search criteria and creating filters. MDM supports both the simple and advanced filters on the UI.

Simple Filters

Using simple filters, you can perform a simple search by specifying a search string. Search strings can be any alphanumeric character combinations including the wildcard listed in the Table 6.

Table 6: Wildcard List

Wildcard	Description
*	Any number of characters

Advanced Filters

The advanced filter helps you to perform a more granular search. Using this feature, you can specify complex filters (search parameters), which can be applied to the supported activities, saved and invoked by name, at a later time.

Advanced filters are specific to a particular activity, that is, the system maintains the context of an advanced filter. If you have previously defined advanced filters for a particular activity, a list of available advanced filters will appear when you click this icon. You can then select the required filter and apply it to the search activity.

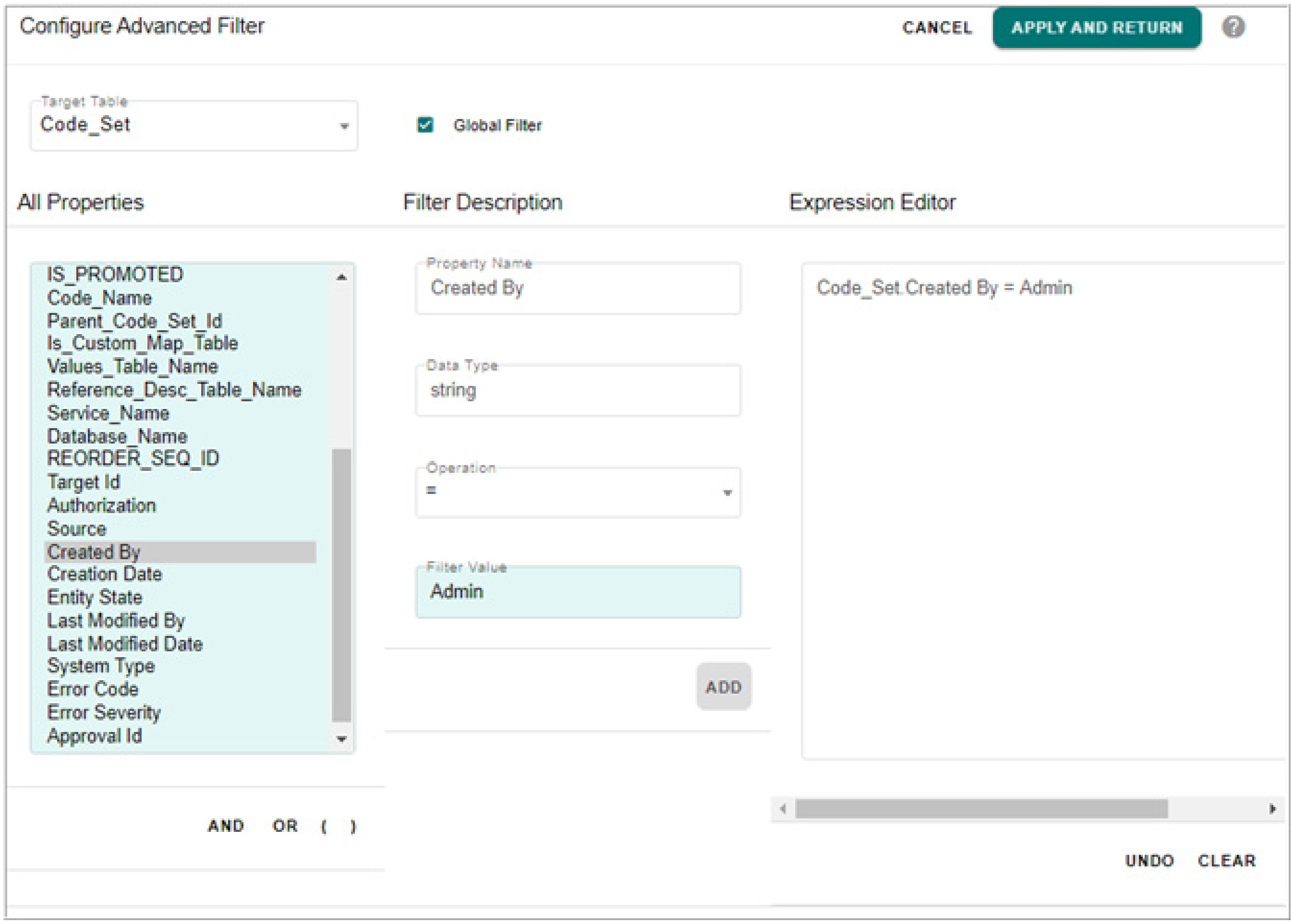
Note: Normally, filters are saved by the specific user logged into MDM. Unless a filter has been marked as global, it will be visible only to the user who created it.

To create advanced filters:

1. On any search result page, click the Configure Advanced filter.

   The **Configure Advanced Filter** page (Figure 34) is displayed.

Figure 34: Filter Expression Page



Target Table: Code_Set

☑ Global Filter

IS_PROMOTED
Code_Name
Parent_Code_Set_Id
Is_Custom_Map_Table
Values_Table_Name
Reference_Desc_Table_Name
Service_Name
Database_Name
REORDER_SEQ_ID
Target Id
Authorization
Source
Created By
Creation Date
Entity State
Last Modified By
Last Modified Date
System Type
Error Code
Error Severity
Approval Id

Property Name: Created By
Data Type: string
Operation: =
Filter Value: Admin

Code_Set.Created By = Admin

2. On the **Configure Advanced Filter** page (Figure 34), enter the following:

   - In the **All Properties** pane, select the required Code_Set property.
   - In the **Filter Description** pane, select the operation and enter the filter value in the **Filter Value** field and click **Add**.
   - In the **Expression Editor,** the added the filter expression is displayed.

   For example, you can create an advanced filter for Code_Set Created By such that Code_Set Created By is displayed only when it has values admin.

   To create this advanced filter:

   a. In the **All Properties** pane, select **Code_Set.Created By**.

      This value is displayed in the **Field Name** field of the **Filter Description** pane.

   b. In the **Filter Value** field of the **Filter Description** area, type admin.

c. Click **Add**.

   The advanced filter will now display Code_Set Created By with admin only.

   The available operations are:

   - =
   - <>
   - <
   - >
   - <=
   - >=
   - like
   - is null
   - is not null
   - in
   - not in

   You can construct complex boolean expressions by combining these operations with the **AND** and **OR** buttons from the **All Properties** pane. Parentheses are provided to allow proper nesting of constraints.

d. Click **Apply and Return**.

   The Code_Set Result page with **Save Filter** pane is displayed.

Customization and User Favorites

You can customize the configurable UI page and PGL user interface using the customization feature in MDM. You can perform the following types of customization:

1. Hide columns
2. Reorder the fields
3. Sort the values in a column
    - Simple sort
    - Multiple sort (nested sort)
4. Freeze and unfreeze columns
5. Customize online help
6. Create favorites

The following section explains the various customization options:

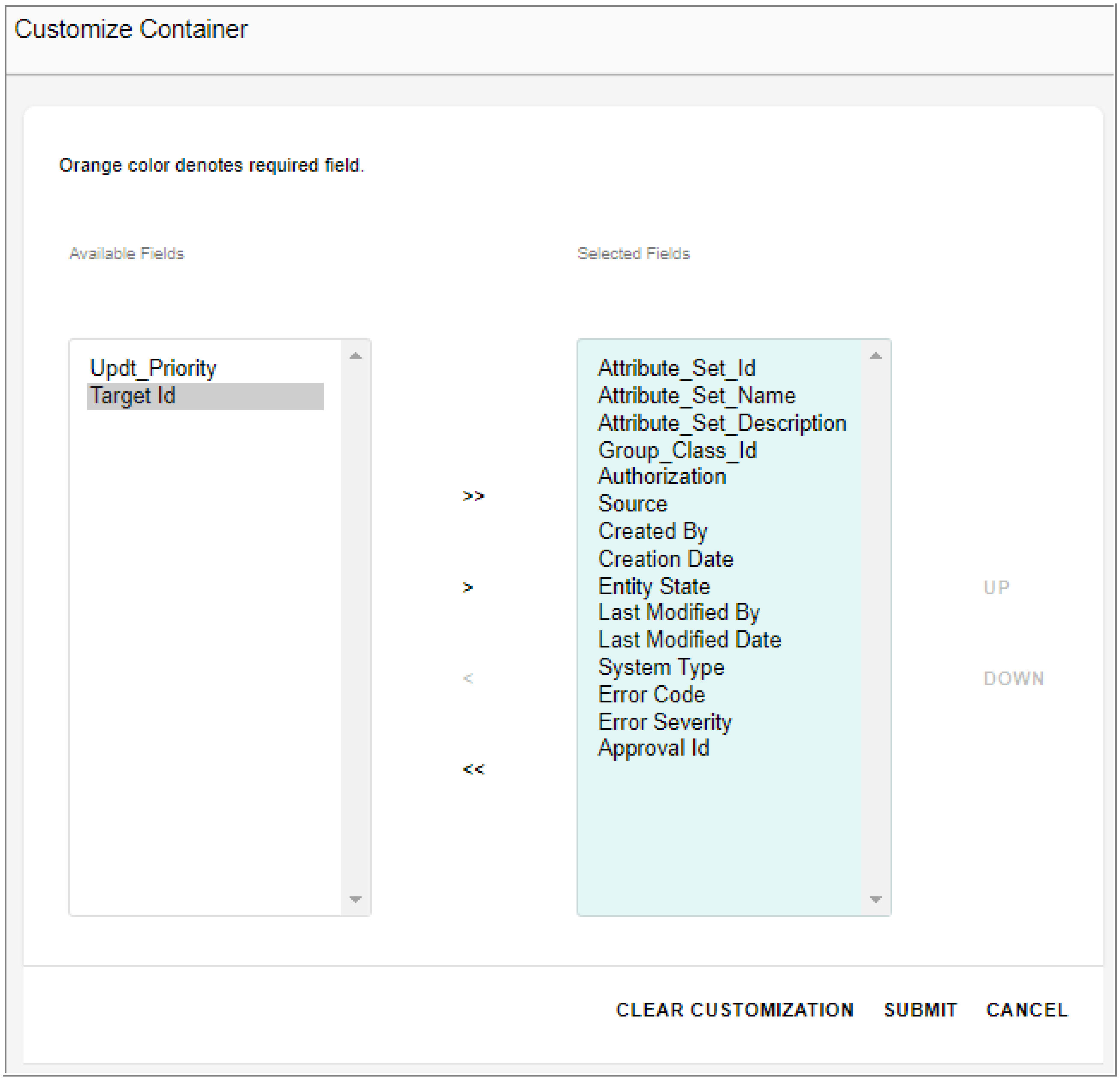
Hide Columns

To hide columns on the configurable UI:

1 On the configurable UI page, for example on Attribute_Set page, click the customize icon ▥ .

The **Customize Container** page (Figure 35) is displayed.

Figure 35: Customize Container



Customize Container

Orange color denotes required field.

Available Fields

- Updt_Priority
- Target Id

Selected Fields

- Attribute_Set_Id
- Attribute_Set_Name
- Attribute_Set_Description
- Group_Class_Id
- Authorization
- Source
- Created By
- Creation Date
- Entity State
- Last Modified By
- Last Modified Date
- System Type
- Error Code
- Error Severity
- Approval Id

2 On the **Customize Container** page (Figure 35), choose the fields that you wish to hide from the **Selected Fields** column and click on the **Unselect Selected Fields** arrow button. The fields to be hidden are moved to the **Available Fields** column. To hide all fields, click **Unselect All Fields** arrow button.

It is recommended not to hide the Id / primary key columns on the UI using customization option for proper functioning of the UI features like sort columns, reorder fields etc.

Reorder Fields

To reorder fields:

1 On the **Customize Container** page (Figure 35), select the field which you want to reorder from the **Selected Fields** column.

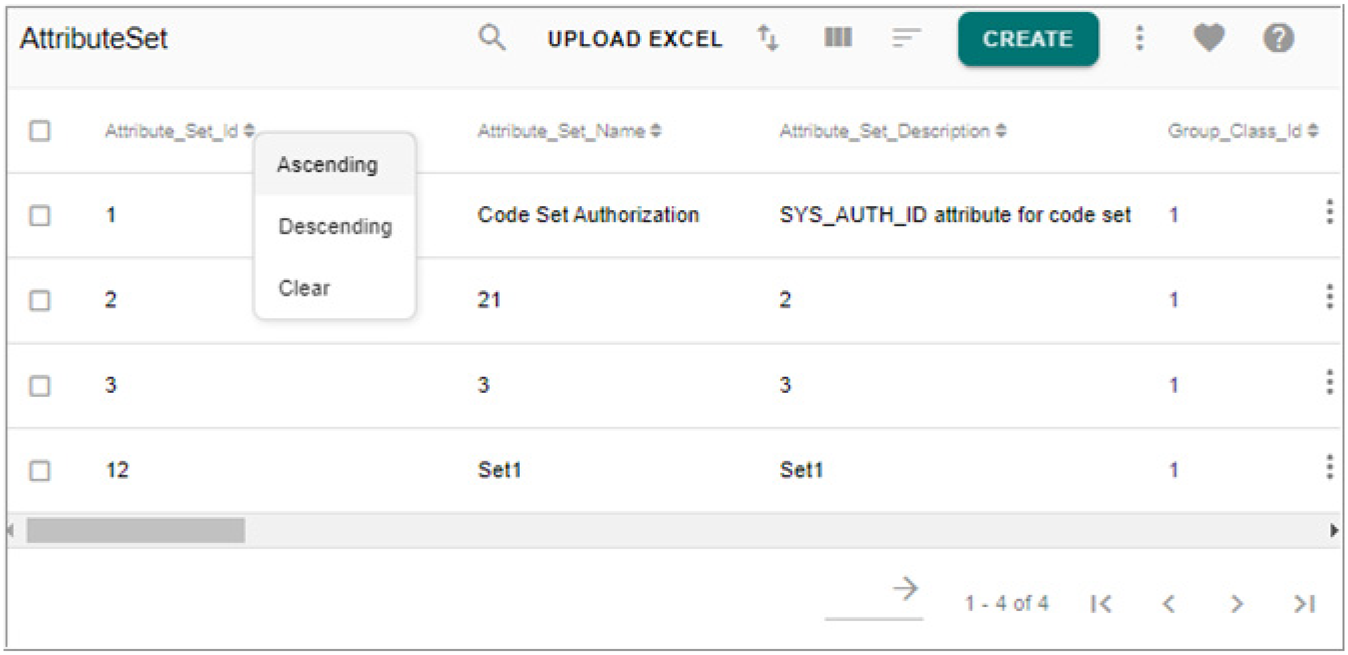
2 Click **Up** or **Down** arrow buttons to change the display sequence of the fields.

Sort Column Values

To sort the column values:

1 To perform a simple sort, click on the column header and a pop-up menu displays the options **Ascending**, **Descending** and **Clear** as in Figure 36. You can select **Ascending** or **Descending** options as per the sorting requirement.

Figure 36: Sort Options



☐	Attribute_Set_Id	Attribute_Set_Name	Attribute_Set_Description	Group_Class_Id
☐	1	Code Set Authorization	SYS_AUTH_ID attribute for code set	1
☐	2	21	2	1
☐	3	3	3	1
☐	12	Set1	Set1	1

2 perform multi column sorting, that is sort the records in each column either in ascending or descending order. Select the order in each column and click the Enable/Disable Multi Column Sort icon and click Multi Sort icon and then select the option **Sort**. You can also clear the sorting order by clicking on the Multi Sort icon and select the option **Clear sort.**

Freeze/Unfreeze Columns

To freeze/unfreeze columns:

The freeze column feature is supported both on table editors as well as workflow editors that display information in the form of a table (table layout).

1. To freeze the columns, click on the column header until which you want to freeze and select **Freeze** from the popup menu that is displayed.

   When the user selects freeze, all the columns to the left of the selected column (including the selected column) are frozen and do not scroll. A scroll bar appears for all the other columns to the right of selected column. The scroll bar allows these columns to scroll from left to right and vice versa. The number of fields for display remains the same as before the freeze.

2. To unfreeze the columns, click on any one of the column headers of the frozen columns and select **Unfreeze**.

Customize Online Help

The configurable UI help is enhanced from the current provision of a single help for all tables in the generated configurable UI. It is enabled to provide online help for each table in the generated configurable UI.

When the user clicks on the help icon in any generated configurable UI, it displays the help page for the specific table that the user had selected. This feature will be applicable for generated configurable UI only.

For configuring the online html help page, see section "Customizing Online Help," in Chapter 4: "Alerts".

Customization on PGL UI Workflow

The following section explains the various customization on the PGL UI workflow.

To enable customization on PGL UI node having <ui:table>, set the below attribute:

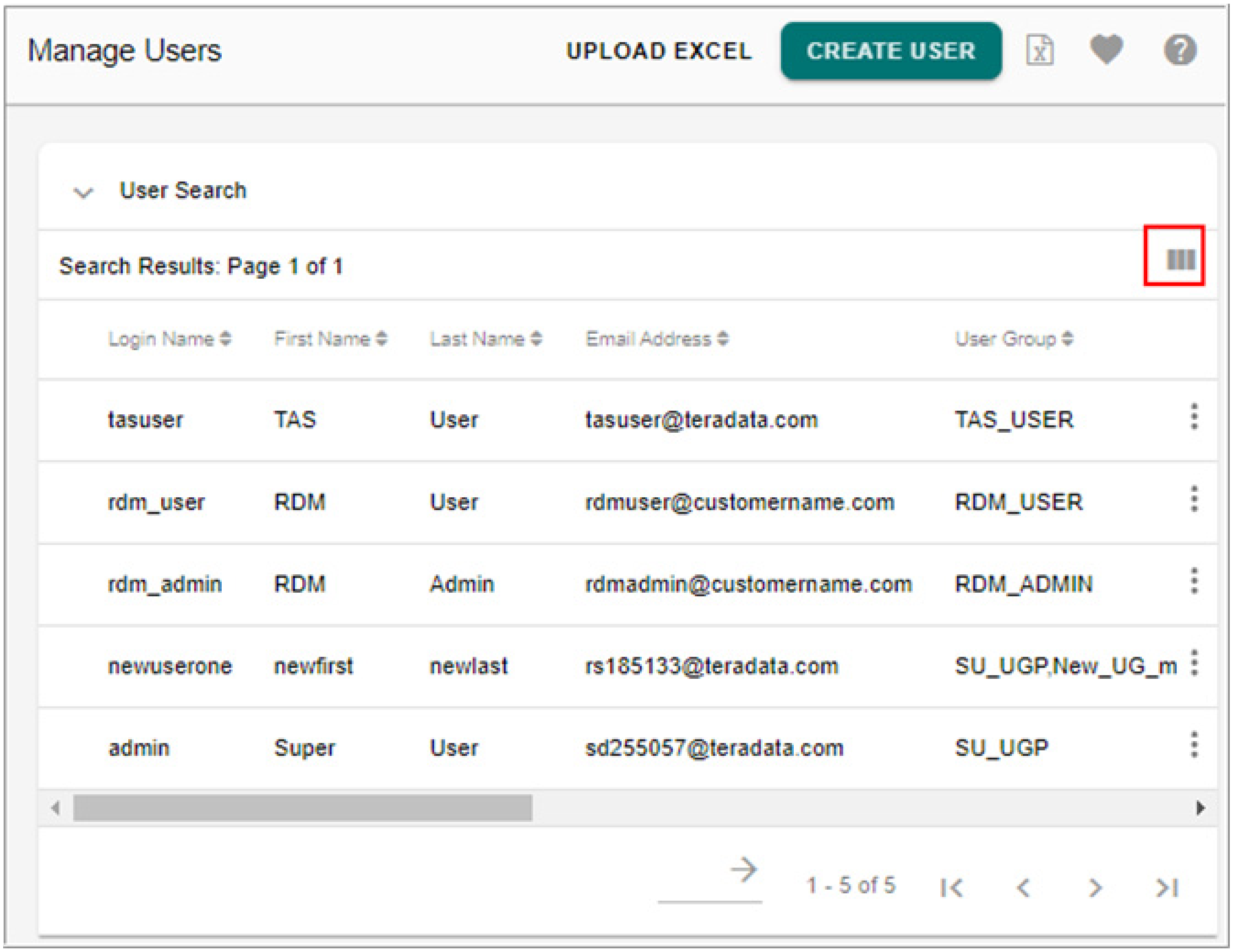
```
configurable="true" attribute on the <ui:table>
```

Hide Columns

To hide columns on the PGL UI workflow:

1 On the PGL UI workflow, for example on the **Manage Users** page, click the Customize Table icon on the PGL component as in Figure 37.

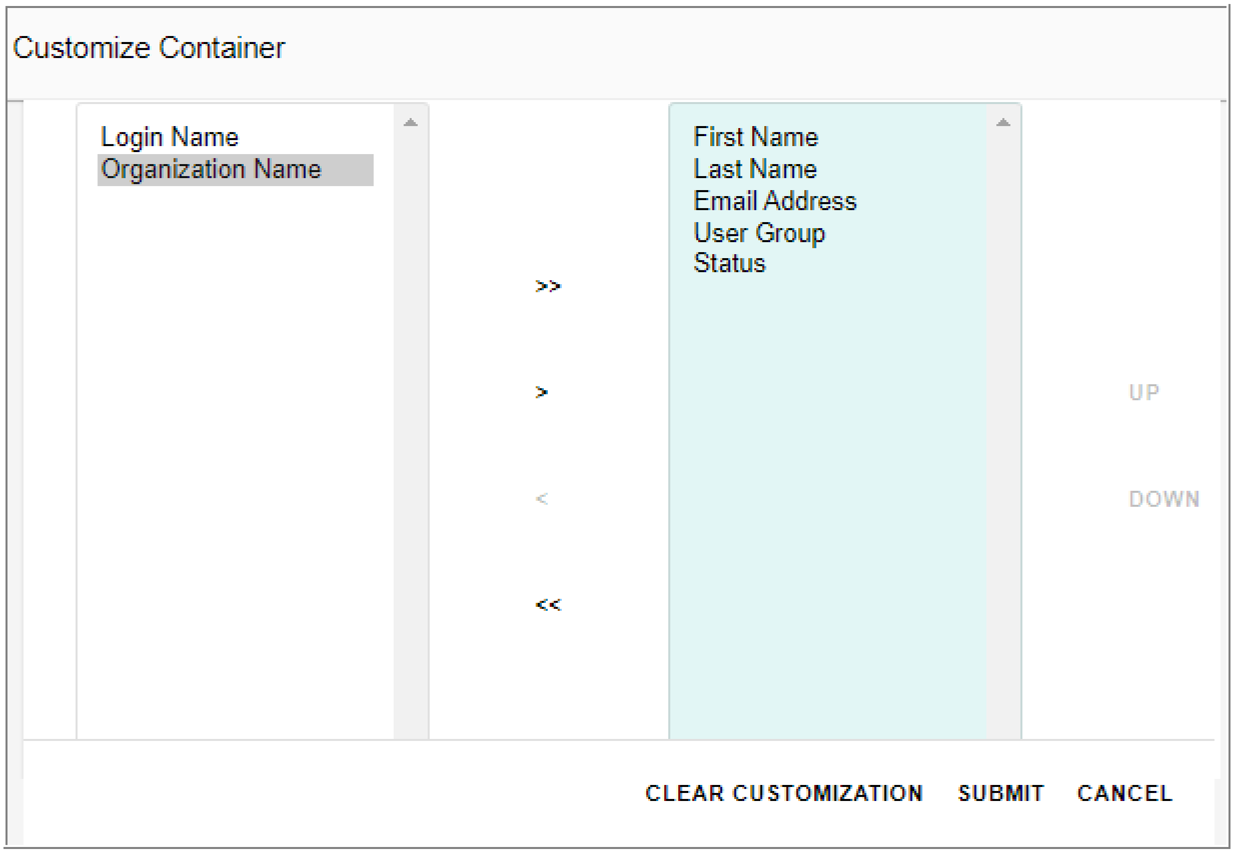
Figure 37: Manage Users—Customize Table Icon



Login Name	First Name	Last Name	Email Address	User Group
tasuser	TAS	User	tasuser@teradata.com	TAS_USER
rdm_user	RDM	User	rdmuser@customername.com	RDM_USER
rdm_admin	RDM	Admin	rdmadmin@customername.com	RDM_ADMIN
newuserone	newfirst	newlast	rs185133@teradata.com	SU_UGP,New_UG_m
admin	Super	User	sd255057@teradata.com	SU_UGP

The **Customize Container** page (Figure 38) is displayed.

Figure 38: Customize Container



2 On the **Customize Container** page (Figure 38), choose the fields that you wish to hide from the **Selected Fields** column and click on the **Unselect Selected Fields** arrow button. The fields to be hidden are moved to the **Available Fields** column. To hide all fields, click **Unselect All Fields** arrow button.

3 Click **Submit**.

Click Cancel to return without applying the customizations.

4 Click **Clear Customization** to reset the Table customization to default display.

Note: The table customization on the PGL UI and on the Favorites are independent of each other. That is the customization done on the favorites page will not be reflected on the PGL UI and vice versa. Similarly the Clear customization on the PGL UI will not reset the customization on Favorites and vice versa.

Reorder Fields

To reorder fields:

1 On the **Customize Container**page (Figure 38), select the field which you want to reorder from the **Selected Fields** column.

2 Click **Up** or **Down** buttons to change the display sequence of the fields.

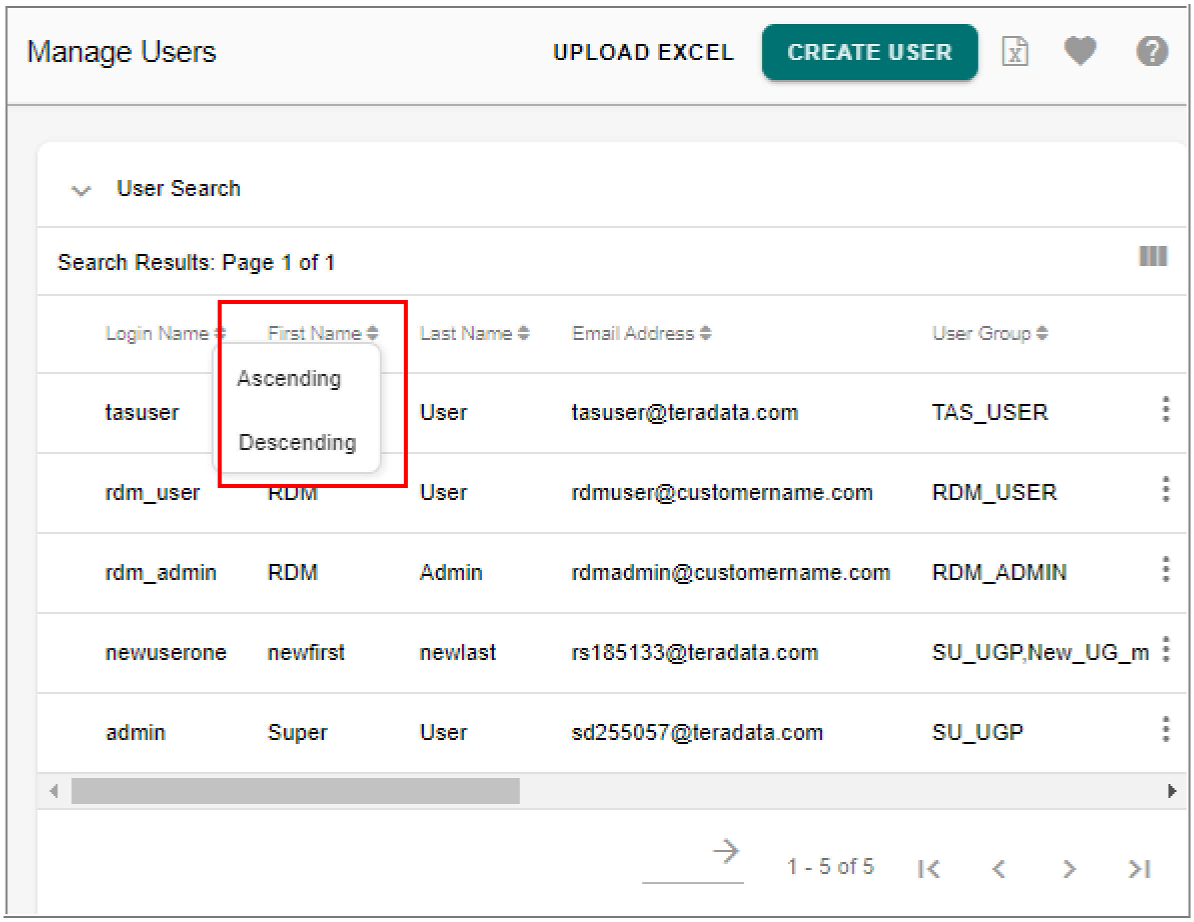
3 Click **Submit**.

Sort Column Values

To sort the column values:

1 To perform a simple sort, click on the column header and a pop-up menu displays the options **Ascending** and **Descending** as in Figure 39. You can select **Ascending** or **Descending** options as per the sorting requirement.

Figure 39: Sort Options



Login Name	First Name	Last Name	Email Address	User Group
tasuser		User	tasuser@teradata.com	TAS_USER
rdm_user	RDM	User	rdmuser@customername.com	RDM_USER
rdm_admin	RDM	Admin	rdmadmin@customername.com	RDM_ADMIN
newuserone	newfirst	newlast	rs185133@teradata.com	SU_UGP,New_UG_m
admin	Super	User	sd255057@teradata.com	SU_UGP

2 For multiple column sort, refer to *Table <ui:table> component in chapter 3 Basic Controls of Master Data Management Reference Guide.pdf.*

The column reorder and nested sort features are supported only for screens having a table layout.

PGL UI Fields—Mouse Over Text Display

The title attribute is added to the PGL UI field components as below to display mouse over text.

```
<ui:entry-field id="LOGIN_NAME" name="LOGIN_NAME" displayText="Login
Name" title="Enter login name"/>
```

The title attribute may be added to the following PGL UI fields: <ui:display-field>, <ui:entry-field>, <ui:textarea>, <ui:checkbox>, <ui:radiobutton>, <ui:dropdown> and <ui:date-range>.

Note: Title attribute does not work with <ui:dropdown> on IE6 as per the problem listed by Microsoft under PRB : 221608 (http://support.microsoft.com/kb/221608)

Customization on Angular UI

This section provide details on how to customize existing angular UI as per customer's needs. UI customization like adding new buttons, hyperlinks and changing textual display can be achieved using the steps described in the below section.

Development Environment

In development environment, you can perform any UI customization.

1. Navigate to project development root location and refer to README.md file before performing the UI changes.
2. Perform the required UI changes in the development environment (Visual Studio code, Angular CLI server etc.)
3. Do a production build using the below command

   ```
   ng build --project=cdi --prod --source-map --base-href=.
   ```

   The above command execution creates a "dist" folder in the project development root location.
4. Copy the contents of "dist" folder from the project development root location to <MDM_Install_Directory>\web\mdmclient\covalent

   Note: Delete the existing contents in the covalent\dist folder before copying the updated content.
5. Clear browser cache and refresh UI.

   It is not required to restart application server (Tomcat) and MDM servers for the changes to be reflected on the UI.

Production Environment

In production environment only textual changes on UI (like table headers, card headers etc.) can be modified.

To perform textual change, navigate to below location and modify the required text changes in the i18 files and the same will be reflected on the UI.

<MDM_Install_Directory>\web\mdmclient\covalent\assets-cdi\i18n\ en_US.cdi.json and
<MDM_Install_Directory>\web\mdmclient\covalent\assets\i18n\ en_US.json

In production environment, UI customization like adding new buttons, hyperlinks etc. cannot be performed as all the Angular UI files are available as minified bundles at <MDM_Install_Directory>\web\mdmclient\covalent.

User Favorites

Customizations defined once on search screens of generated configurable view table UI or PGL UI workflow can be saved for future re-use as favorites. You can create and save the favorite at user level as well as at the role level.

- To enable Favorites on PGL UI node, set the below attribute:

  `showFavorite="true" attribute on the <ui:container>`

- In order to support Save Search functionality on PGL favorites, you must customize the code as below at the end of pre processing in the UI node.

  ```
  <ADD_CHILDREN DocVar="pglFormInput" FromSelectList="$thisParam/
  *"/>
  ```

  For more details on achieving Save Search on PGL Favorites, refer to *Section Search and Results in chapter 3 Basic Controls in Master Data Management Reference Guide.*

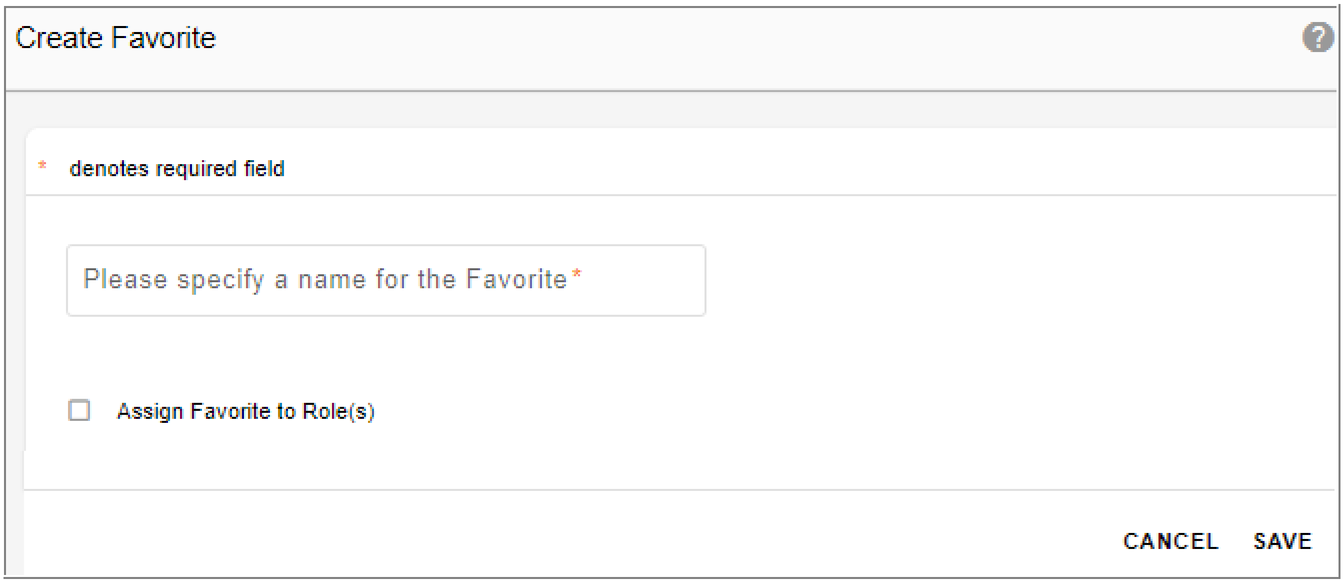
Create Favorite at User Level

Favorites created at the user level will be available only to that user who created the favorites.

1 On any generated configurable view table page or PGL UI, click the **Create Favorite** ♥ icon.

The **Create Favorite** page (Figure 40) is displayed.

Figure 40: Create Favorite



Create Favorite

* denotes required field

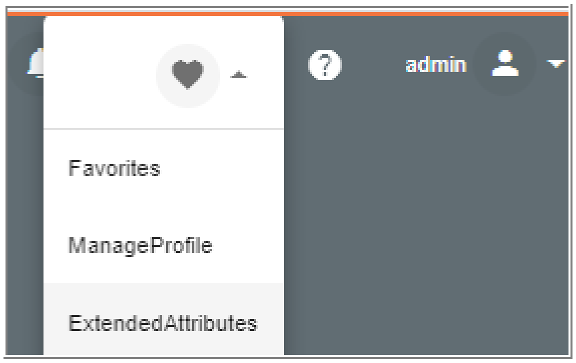
Please specify a name for the Favorite *

☐ Assign Favorite to Role(s)

2 On the **Create Favorite** page (Figure 40), enter a name for the favorite and click **Save**.

Message: Favorite saved successfully is displayed. The favorite is created and saved for the user under the **Favorites** icon as in Figure 41 on MDM UI. Click on the Manage Favorites link to navigate to the Favorites list.

Figure 41: Favorites List



Create Favorite at Role Level

MDM provides an OOTB feature to create and save the favorite at role level; that is, user can create a favorite and assign it to any role. Any user with that role will be able to view all the favorites created for that particular role as well as the favorites created by the user.

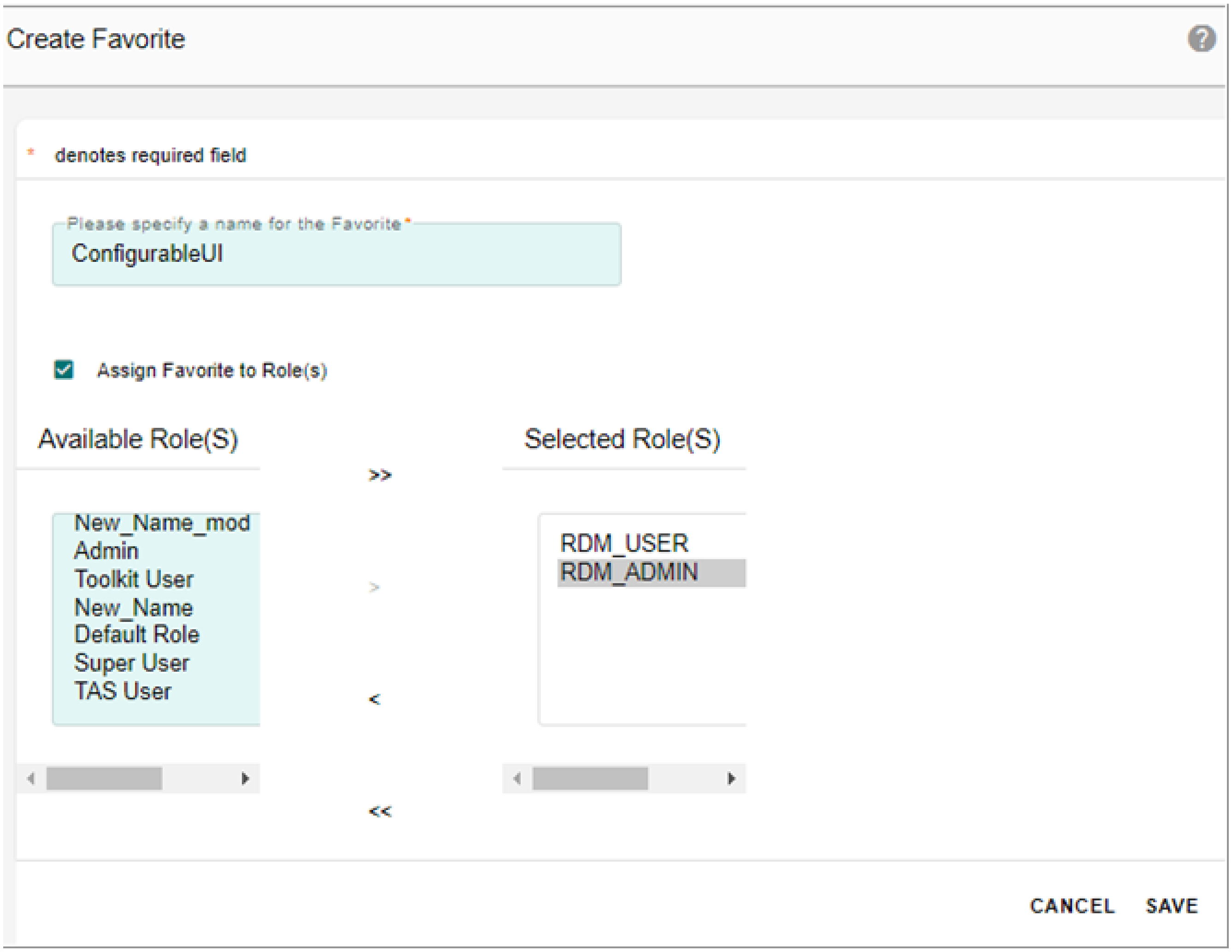
- Only a user assigned with "Create Role Based Favorites" activity would be able to create favorites for any role irrespective of whether the user belongs to that role or not, but cannot view, delete or organize role based favorites unless assigned with "Delete Role Based Favorites" activity.
- A user can manage the role based favorites only when a local favorite exists for the user. In the absence of a local favorite, the Manage Favorites icon will not be visible on the left navigation pane even if the "Delete Role Based Favorites" activity is assigned to the user.

To create favorite at role level:

1 On the **Create Favorite** page, enter a name for the favorite and select the **Assign Favorite to Role(s)** checkbox as in Figure 40.

The Create Favorite page refreshes with the Available Roles and Selected Roles pane.

Figure 42: Save Favorite Page



Please specify a name for the Favorite*: ConfigurableUI

☑ Assign Favorite to Role(s)

Available Role(S):
New_Name_mod
Admin
Toolkit User
New_Name
Default Role
Super User
TAS User

Selected Role(S):
RDM_USER
RDM_ADMIN

2 From the **Available Roles**, select the required role and move it to the **Selected Roles** pane using the arrow button and click **Save**.

Login with the required user role details. On the MDM UI, on the top right corner, click on the favorite icon. The favorite icon displays all the favorites created for the user as well as all the favorites that exist for the roles to which the user belongs to.

Manage Favorites

The manage favorites page displays all the favorites created for the role as well as the favorites created by the user.

Only a user assigned with “Delete Role Based Favorites” activity would be able to manage all the role level favorites.

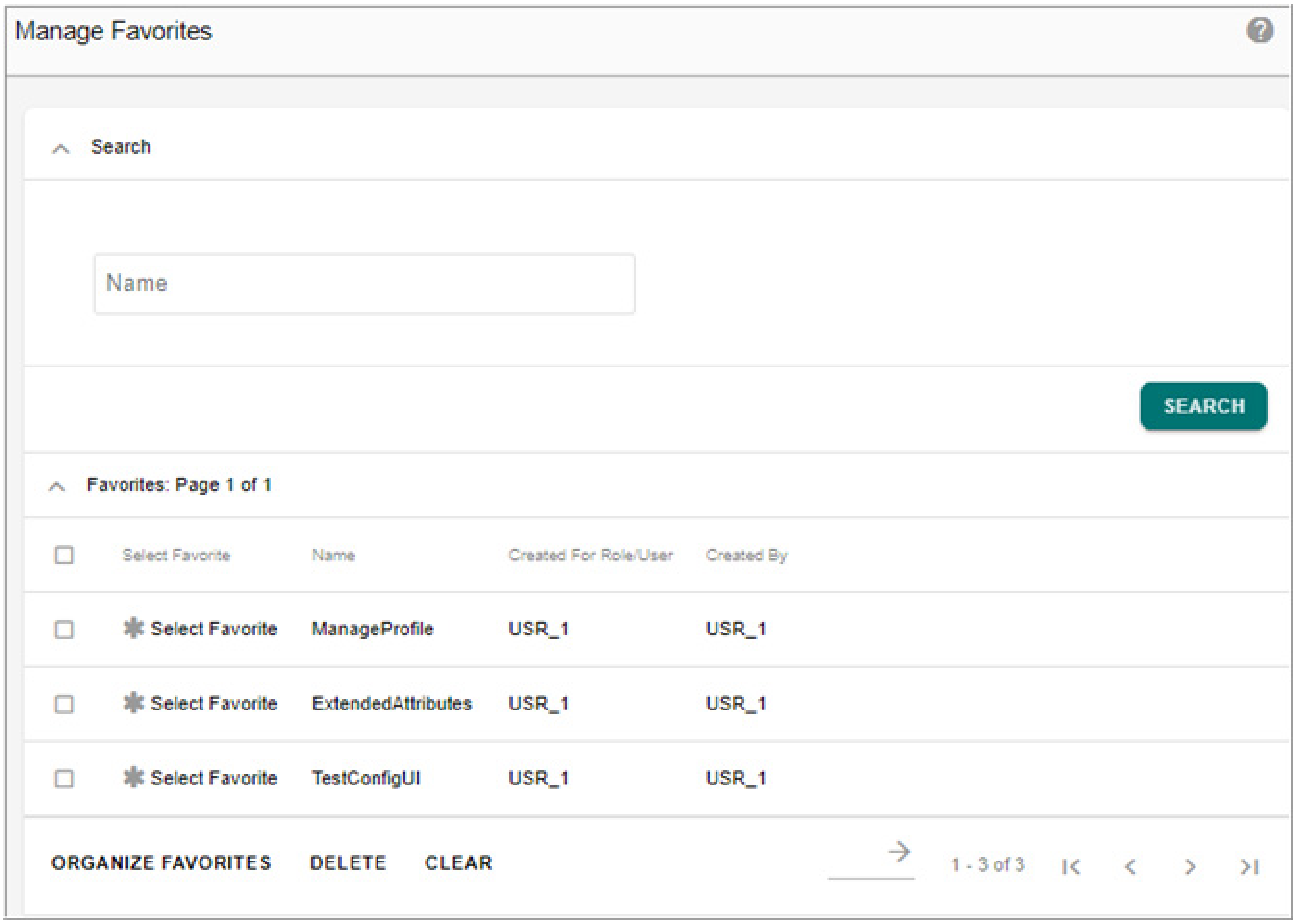
To manage favorites:

1 Select **Manage Favorites** from **Favorite** icon on MDM UI.

The **Manager Favorites** page (Figure 43) is displayed.

On the manage favorite page, the “Created for Role/User”column displays the role name if the favorite was created for a role and displays the “user name” if the favorite was created by the user. The “Created By” column displays the “user name” of the user who created the favorite.

Figure 43: Manage Favorites Page



☐	Select Favorite	Name	Created For Role/User	Created By
☐	✱ Select Favorite	ManageProfile	USR_1	USR_1
☐	✱ Select Favorite	ExtendedAttributes	USR_1	USR_1
☐	✱ Select Favorite	TestConfigUI	USR_1	USR_1

2 On the **Manager Favorites** page (Figure 43), you can perform the following:

- To search for a specific favorite; in the **Search** pane, in the **Name** field, enter the favorite name and click **Search**.

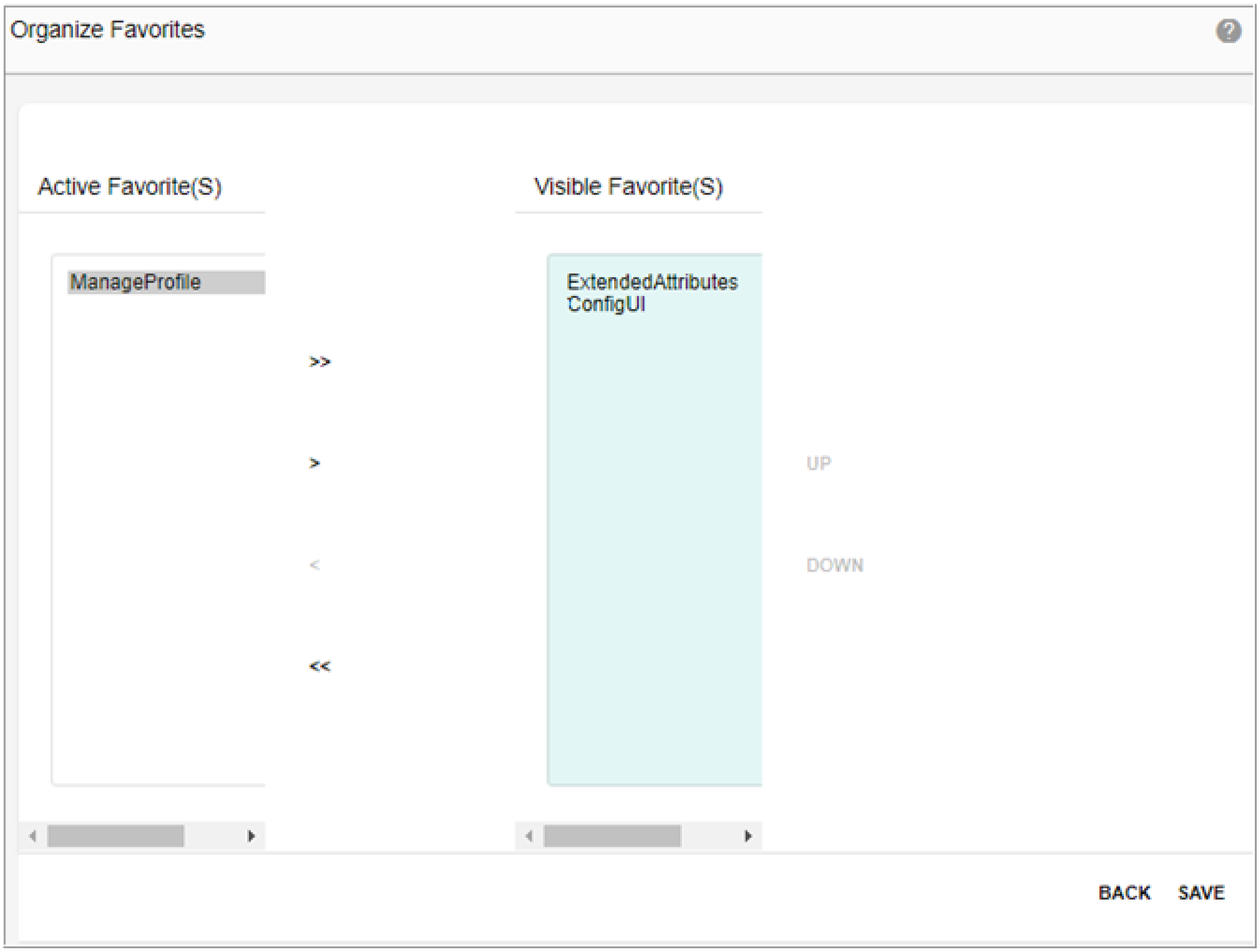
  The **Favorites** pane displays the search result.
- To navigate to a favorite page; in the **Favorites** pane, in the **Select Favorite** column, click the required icon ✱ to navigate to the favorite page.
- To delete a favorite; in the **Favorites** pane, select the favorite by clicking the corresponding checkbox and click **Delete**.

Only a user assigned with “Delete Role Based Favorites” activity would be able to delete favorites for any role irrespective of whether the user belongs to that role or not.

- To organize favorites: in the **Favorites** pane, click **Organize Favorites** to organize the favorites.

  The **Organize Favorites** page (Figure 44) is displayed.

Figure 44: Organize Favorites



On the **Organize Favorites** page (Figure 44), the **Visible Favorites** column displays all the favorites displayed on the MDM left navigation pane and the **Active Favorites** column displays the favorites that are not visible on the left navigation pane.

- To hide any favorites on the MDM left navigation pane, select the required favorites from the **Visible Favorites** column and move to **Active Favorites** column using the appropriate arrow buttons. To hide all favorites, click Unselect All Fields arrow button.

  - To display any favorites on the MDM left navigation pane, select the required favorites from the **Active Favorites** column and move to **Visible Favorites** column using the appropriate arrow buttons. To display all favorites, click Select All Fields arrow button.
  - Click **Up** or **Down** button to reorder the display of favorites in the MDM left navigation pane and click **Save**.

    Accordingly, the Favorite bar on left navigation pane displays the favorites.

Limitations on Favorites:

The following list provides the limitations on favorites:

- While creating favorite for a role, the favorite name must be unique across the system.
- The Favorite bar and the Manage Favorites icon on the MDM left navigation pane will be displayed only when a favorite is created for the user or favorite is created for role to which the user belongs to.
- Favorites are not supported on MDM Breadcrumbs.
- Due to Framework limitations, the Role based favorites assigned to particular user is not displayed in the tiles form on the home page of the logged in user.

Localization

You can localize the MDM environment for a specific country and language. This section provides information about localizing MDM for different language settings.

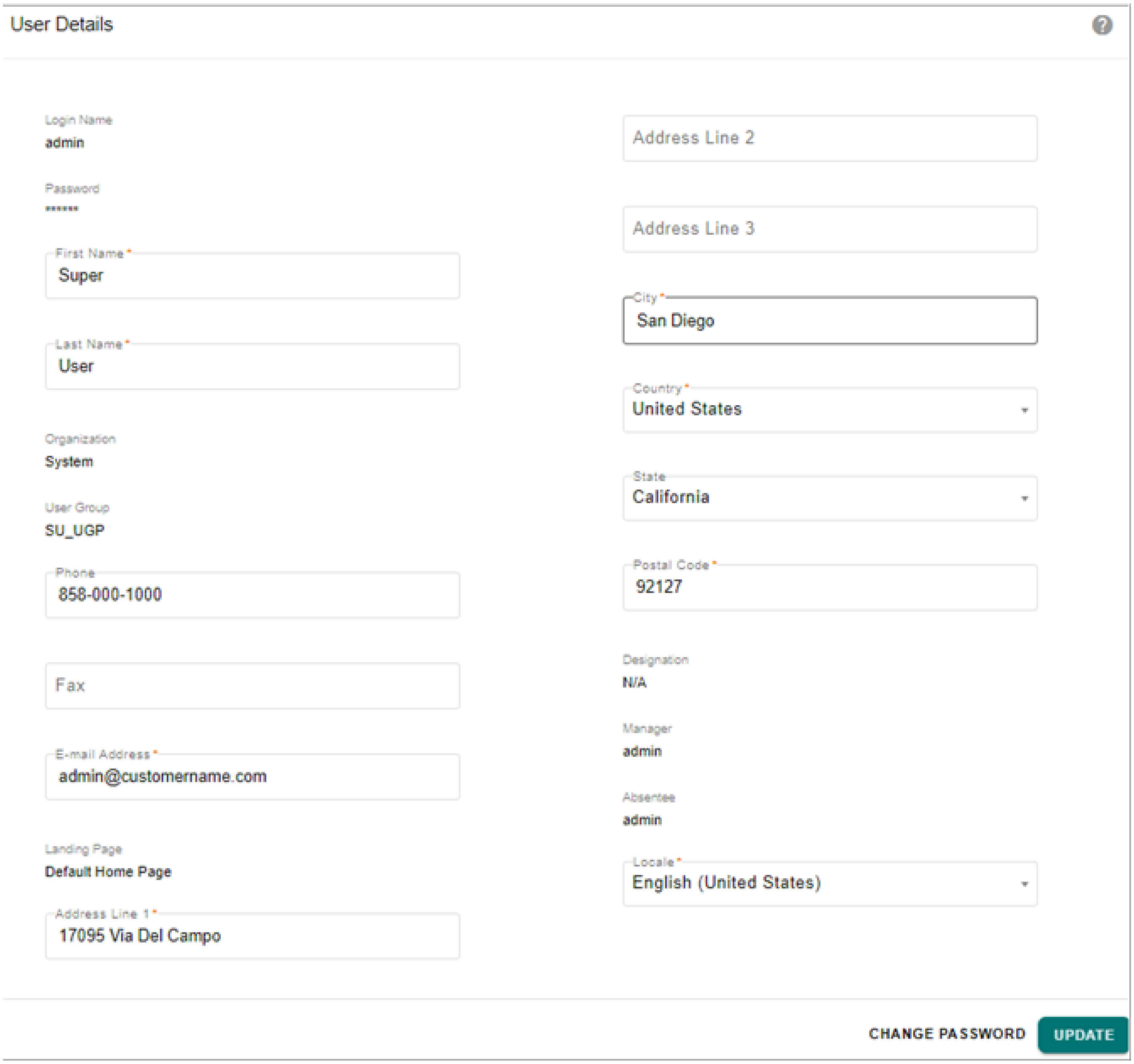
MDM is designed to support internalization and can be localized for specific regions.You can set the language settings to the language of your choice. When you login to MDM, the user interface will be displayed in the language that you have set. Contact MDM product management to get a list of languages for which the product is localized out of the box and to understand localization roadmap.

To enable localization:

1. On the MDM UI, click on profile icon and select **View Profile**.

   The **User Details—General Information** page (Figure 45) is displayed.

Figure 45: User Details—General Information



User Details

Login Name: admin
Password: ******
First Name*: Super
Last Name*: User
Organization: System
User Group: SU_UGP
Phone: 858-000-1000
Fax:
E-mail Address*: admin@customername.com
Landing Page: Default Home Page
Address Line 1*: 17095 Via Del Campo
Address Line 2:
Address Line 3:
City*: San Diego
Country*: United States
State: California
Postal Code*: 92127
Designation: N/A
Manager: admin
Absentee: admin
Locale*: English (United States)

2 On the **User Details—General Information** page (Figure 45), from the **Locale** list, select the required language.

3 Click **Update** to save the new setting.

4 You must log out and log in again for the changed setting to be reflected in the User Interface.

- The above change in the locale setting will be reflected only if you have the i18n-messages.properties file for the required language.
- After you have changed the local setting to the required value, ensure that a translated i18n-messages.properties file for the selected language is available at: `<MDM_Install_Directory>\web\weblogic\bcmclient\WEB-INF\classes\i18n-messages_<locale>.properties`.

  For example, if you have selected Japanese as the new Locale setting, the translated Japanese file must be called i18n-messages_ja.properties.
- You can dynamically change the user locale using a command “set-locale” in login.cnd file available at: *<MDM_Install_Directory>\web\mdmclient\WEB-INF\bcm\model\bcm\framework.*

  Add the “set-locale” command after the create-identity command in the login module as below:

  ```
  <identity:create-identity userId="{$this/USER_NAME/@Value}"/>
  <xapl:variable name="localeVal "><xapl:value-of select="LOCALE/
  @Value "/></xapl:variable>
  <identity:set-locale locale="{$localeVal}"/>
  ```

  For example:

  `<identity:set-locale locale="ja"/>` <!—Sets the locale to Japanese, the locale value must be ISO 639 standard language code as en_US, en_GB, fr, nl - ->

  The above command overrides the locale of the specified user.
- Date picker is supported only for English (United States) locale.

- The Japanese characters display if spring.datasource.url in application.properties is updated to include charset=UTF16.

Multi Language Data Support in MDM

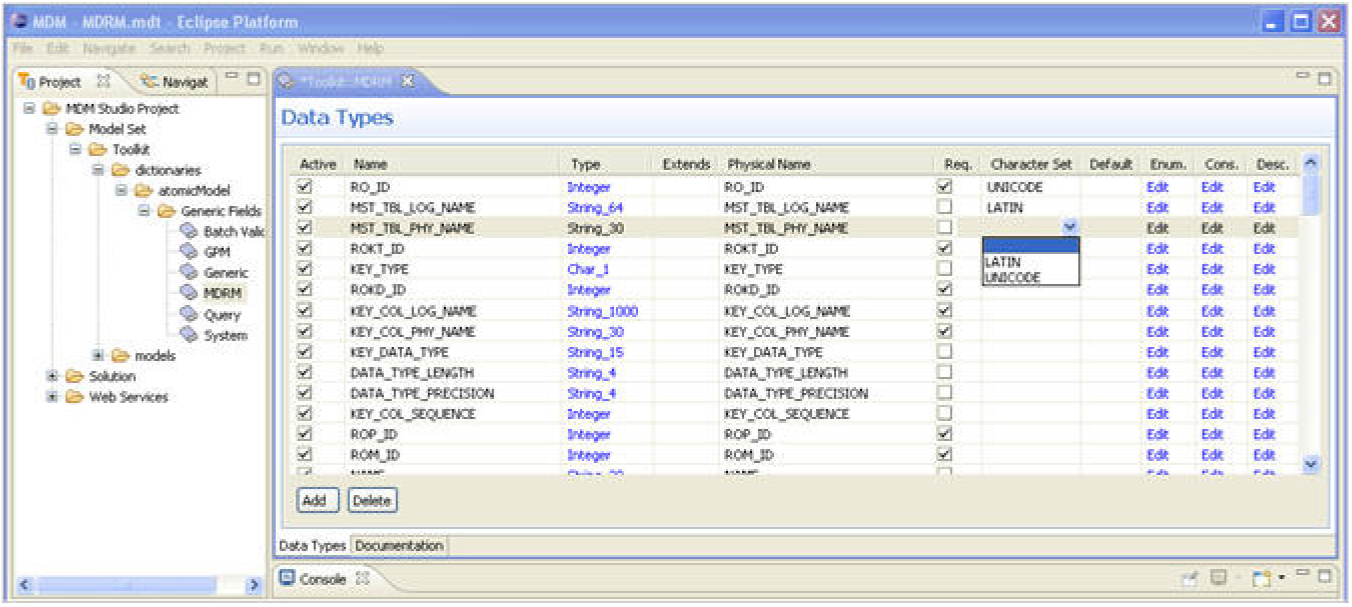
Teradata MDM supports UNICODE data as part of localization of MDM for multi language data support. The following section describes the process to achieve Unicode data using MDM Studio design and schema generation process and also provides configurations steps to load Unicode data into MDM.

Model Design in MDM Studio

You can define a Unicode data type while designing a model in MDM Studio. Character Set property is introduced to support the Unicode character set at design time. For more details, refer to *Chapter Model set in Master Data Management Studio User Guide*.

- In Studio, specify the character set as “Unicode” for the data type in the data dictionary as in Figure 46.

Figure 46: Data Dictionary—Datatype set as Unicode

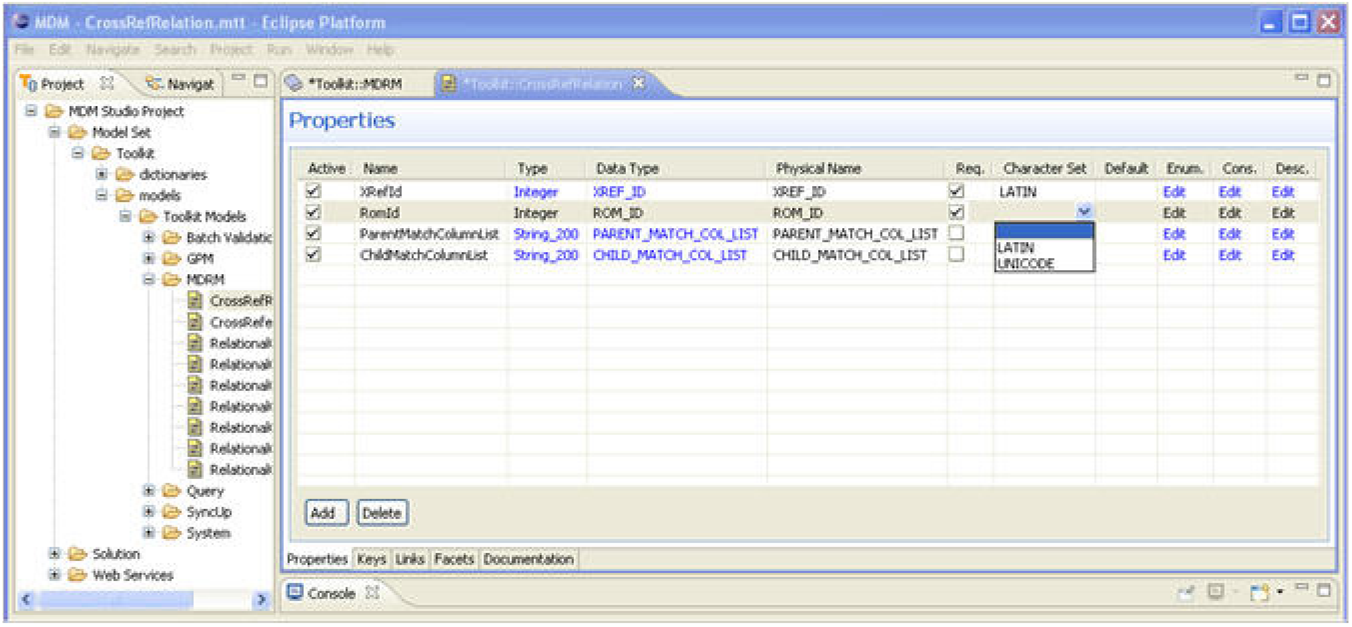


Data Types

Active	Name	Type	Extends	Physical Name	Req.	Character Set	Default	Enum.	Cons.	Desc.
☑	RO_ID	Integer		RO_ID	☑	UNICODE		Edit	Edit	Edit
☑	MST_TBL_LOG_NAME	String_64		MST_TBL_LOG_NAME	☐	LATIN		Edit	Edit	Edit
☑	MST_TBL_PHY_NAME	String_30		MST_TBL_PHY_NAME	☐			Edit	Edit	Edit
☑	ROKT_ID	Integer		ROKT_ID	☑	LATIN UNICODE		Edit	Edit	Edit
☑	KEY_TYPE	Char_1		KEY_TYPE	☐			Edit	Edit	Edit
☑	ROKD_ID	Integer		ROKD_ID	☑			Edit	Edit	Edit
☑	KEY_COL_LOG_NAME	String_1000		KEY_COL_LOG_NAME	☑			Edit	Edit	Edit
☑	KEY_COL_PHY_NAME	String_30		KEY_COL_PHY_NAME	☑			Edit	Edit	Edit
☑	KEY_DATA_TYPE	String_15		KEY_DATA_TYPE	☐			Edit	Edit	Edit
☑	DATA_TYPE_LENGTH	String_4		DATA_TYPE_LENGTH	☐			Edit	Edit	Edit
☑	DATA_TYPE_PRECISION	String_4		DATA_TYPE_PRECISION	☐			Edit	Edit	Edit
☑	KEY_COL_SEQUENCE	Integer		KEY_COL_SEQUENCE	☐			Edit	Edit	Edit
☑	ROP_ID	Integer		ROP_ID	☑			Edit	Edit	Edit
☑	ROM_ID	Integer		ROM_ID	☑			Edit	Edit	Edit

- Verify whether the same is displayed (after selecting the data dictionary data type) when creating the fields for the table.
- You can also define fields with UNICODE character set by selecting it from the **Character Set** dropdown on the **Document Property** tab as in Figure 47.

Figure 47: Studio Model—Datatype as Unicode



Properties

Active	Name	Type	Data Type	Physical Name	Req.	Character Set	Default	Enum.	Cons.	Desc.
☑	XRefId	Integer	XREF_ID	XREF_ID	☑	LATIN		Edit	Edit	Edit
☑	RomId	Integer	ROM_ID	ROM_ID	☑			Edit	Edit	Edit
☑	ParentMatchColumnList	String_200	PARENT_MATCH_COL_LIST	PARENT_MATCH_COL_LIST	☐	LATIN UNICODE		Edit	Edit	Edit
☑	ChildMatchColumnList	String_200	CHILD_MATCH_COL_LIST	CHILD_MATCH_COL_LIST	☐			Edit	Edit	Edit

Schema Generation

- Perform the solution setup from Studio or run Incremental Schema Generation.
- Verify the actual DDL of the table.

Sample DDL extract for UNICODE character set fields:

```
 CREATE SET TABLE MDM.MST_EMPLOYEE, NO FALLBACK,
      NO BEFORE JOURNAL,
      NO AFTER JOURNAL,
      CHECKSUM = DEFAULT
      (
      ID VARCHAR (50) CHARACTER SET UNICODE NOT CASESPECIFIC,
      EMP_NAME VARCHAR (500) CHARACTER SET UNICODE NOT 
CASESPECIFIC,
      CONTCT_ADDRESS VARCHAR (500) CHARACTER SET UNICODE NOT 
CASESPECIFIC,
      PHONE_ VARCHAR (50) CHARACTER SET UNICODE NOT CASESPECIFIC,
   )
```

For more details, refer to *Chapter Manually Preparing the Product Database of Master Data Management Installation Guide*.

Populate Data in Tables

To populate data in Unicode fields in tables:

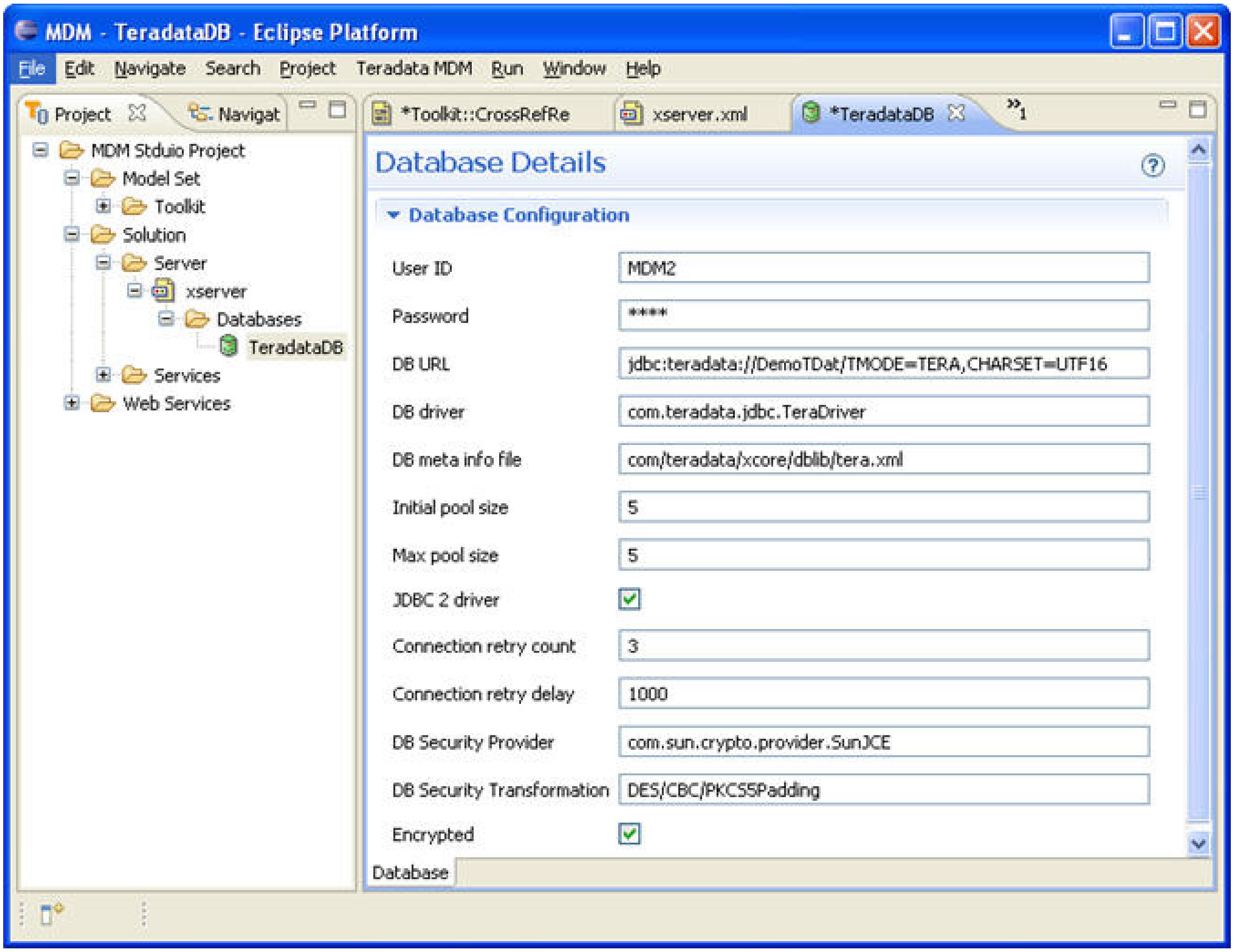
- In Studio, update the database URL with the below details as in Figure 48.

  “<db-url Value=“jdbc:teradata://DemoTDat/TMODE=TERA”/>”

  To

  “<db-url Value=“jdbc:teradata://DemoTDat/TMODE=TERA,CHARSET=UTF16”/>”

Figure 48: Teradata Database



Database Details

Database Configuration

User ID: MDM2
Password: ****
DB URL: jdbc:teradata://DemoTDat/TMODE=TERA,CHARSET=UTF16
DB driver: com.teradata.jdbc.TeraDriver
DB meta info file: com/teradata/xcore/dblib/tera.xml
Initial pool size: 5
Max pool size: 5
JDBC 2 driver: ☑
Connection retry count: 3
Connection retry delay: 1000
DB Security Provider: com.sun.crypto.provider.SunJCE
DB Security Transformation: DES/CBC/PKCS5Padding
Encrypted: ☑

- To update manually, edit the attribute (db-url Value) in the following files:
  <MDM_Install_Directory>\cfg\properties\xserver.xml
  <MDM_Install_Directory>\cfg\properties\xserverweb.xml
- Restart MDM Server and upload the Unicode data to MDM tables after performing the changes listed in step 1.

Limitations

The following section lists the limitations:

- Above mentioned changes have to be done after solution setup process. CHARSET attribute should be removed from Database URL while running schema generation or solution setup because Hierarchy Manager related stored procedures and some E2E related stored procedures fail with this setting.
- There is a known issue with the Teradata JDBC drivers when handling "CHAR" data types for character sets other than LATIN. You might get some blank spaces appended to

data while retrieving CHAR fields. To resolve that perform Trim function on the data retrieved using GET_DOCUMENT or GET_DOC_SMART.

- Also “CHARSET=UTF8” should work but due to Teradata JDBC driver issues, it is recommended to use UTF16 for CHARSET.
- If you find UNICODE data to be inserted as “?” in database then set database URL with CHARSET=UTF16 to rectify inserting “?” instead of Unicode data.

CHAPTER 7 User Management

What's In This Chapter

This chapter provides information about configuring roles and activities, organizations, user group types, user groups and users using user management module.

Topics include:

Introduction

The user management provides a context for classifying information by business function. Typically, enterprises are arranged into layered business entities that follow a defined management hierarchy. Responsibilities, such as those for specific business lines flow down into specific branches of the enterprise organization hierarchy, which can be used to classify at a coarse business level access to information. Multiple enterprises may be required to cover vendor/supplier/consumer relationships in planning.

Key features of User Management feature:

- Provides capability to define Activities for Roles.
- Provides capability to define Roles for User Groups.
- Provides capabilities to define Users for any organization/enterprise who can perform different roles.
- Provides capability to group Users belonging to same functional area into a single User Group.
- Provides security access to specific functional areas/links for users based on the roles they play.

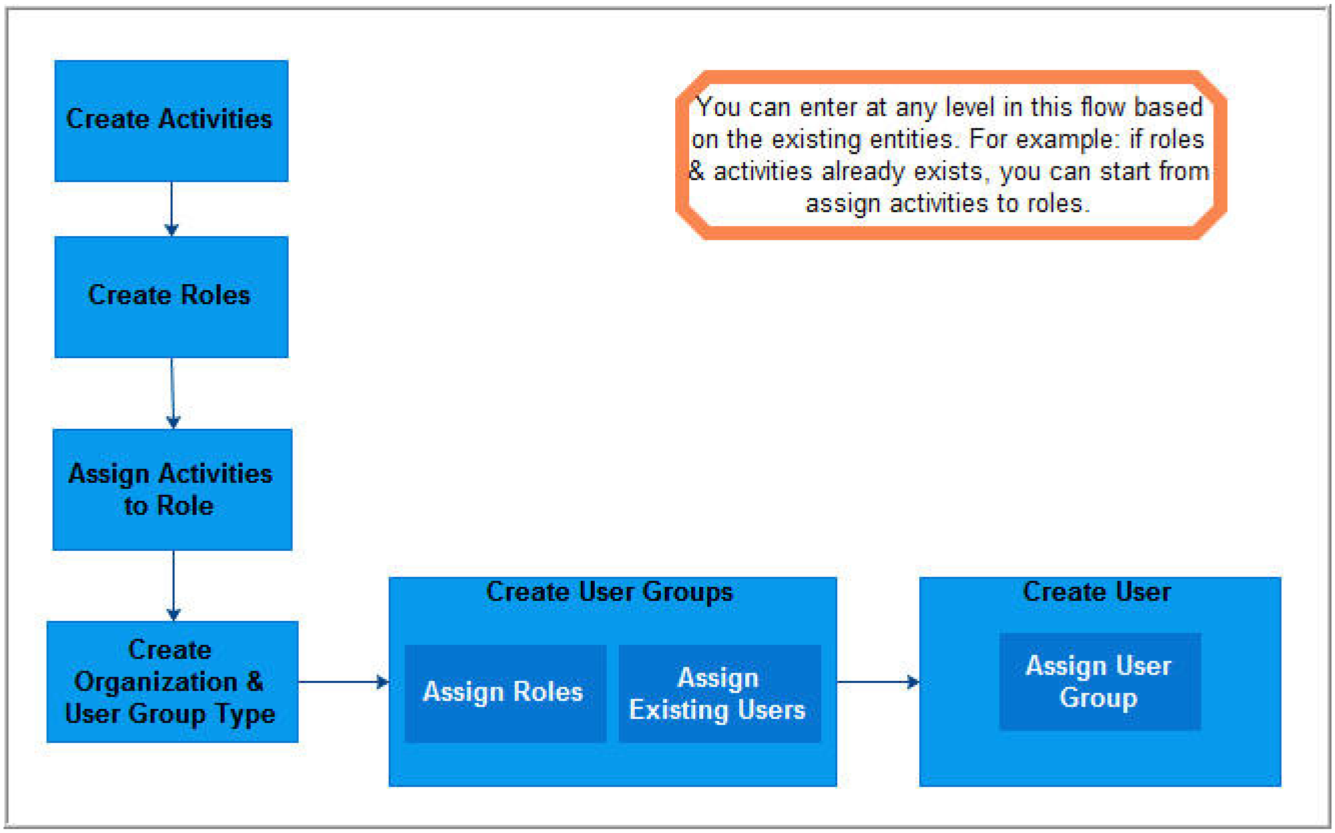
The different entities used in the User Management feature includes the following:

- **Activities**: Activities are the tasks or actions performed by a User within an Organization or Enterprise. For example: an activity may be created for Users to access and work on Query feature. Ideally each workflow and tables within the product will have a corresponding activity.
- **Roles**: Roles define different Activities that can be performed within an Organization or Enterprise. Role is a collection of Activities. Same Activities can be part of multiple Roles. Roles are assigned to User Groups so that Users belonging to the User Groups can perform the Activities defined within the Role. The access to the CRUD operations within a table can also be configured within an activity. User Security module is driven by Role Based Access Control (RBAC).
- **User Groups**: User Group is a collection of Users. Roles are assigned to User Groups so that all users belonging to the User Group can have access to the Roles assigned to it.
- **Organization**: Organization refers to the company or the entity for which the underlying User Management is setup. Some default Organizations available as part of the product includes System and Default. User Groups belong to an Organization.
- **User Group Type**: A user group type is used to define a logical group based on the nature of functions performed by the underlying user groups (for example: Administrator, Business, Partner). User Groups are assigned to Group Type to define nature of functions performed by Users.

  That is, consider an example of an organization, where an HR department needs group types such as Admin, Business Users, Internal Users etc. User can then create multiple User Groups belonging to one of the mentioned group type (HR_Admin Group is of type Admin and similarly Finance department creates a user group Fin_Admin belonging to the same type Admin.) which helps the underlying organization to manage the role based access control to the Platform.
- **Users**: Every user within an Organization or Enterprise is identified by a unique user name. A user can belong to multiple User Groups. A user with valid credentials can log into the Product User Interface. On login of the User, authentication check is performed by the application so that the User can access only the workflows or tables it has access to.

The Figure 49 displays the logical flow of user security management setup.

Figure 49: User Management Flow Diagram


Create Activities
Create Roles
Assign Activities to Role
Create Organization & User Group Type
Create User Groups
Assign Roles
Assign Existing Users
Create User
Assign User Group
You can enter at any level in this flow based on the existing entities. For example: if roles & activities already exists, you can start from assign activities to roles.

- **Create Activities**

  You can create and assign activities to the roles, which in turn are assigned to the users. For details, see Section : “Manage Activities.”
- **Create Roles**

  You can create roles based on the group requirements. For details, see Section : “Manage Roles.”
- **Assign Activities to Role**

  When activities are assigned to the roles, the user(s) associated with that particular role will be able to perform all the activities/workflows assigned to that role. For details, see Section : “Manage Roles.”
- **Create Organization**

  You can create multiple organizations based on the interfaces and user groups (Users) required to access the systems such as Trading Partners, Contractors etc. User gets created with one of the organization value to group them in one of the logical entity they belong to. For details see Section : “Manage Organization.”
- **Create User Group Types**

  You can create user group type to define a logical group based on the nature of functions performed by the underlying user groups. For details on creating user group types, see Section : “Manage User Group Types.”

- **Create User Groups and Assign Roles and Users to them**

  You can assign multiple roles to a user by creating user groups, which enables multiple users to have similar privileges. A For details, see Section : "Manage User Groups."

- **Create Users and Assign required User Groups**

  A user is represented in a user profile. For details on creating users and assigning users to user groups, see Section : "Manage Users."

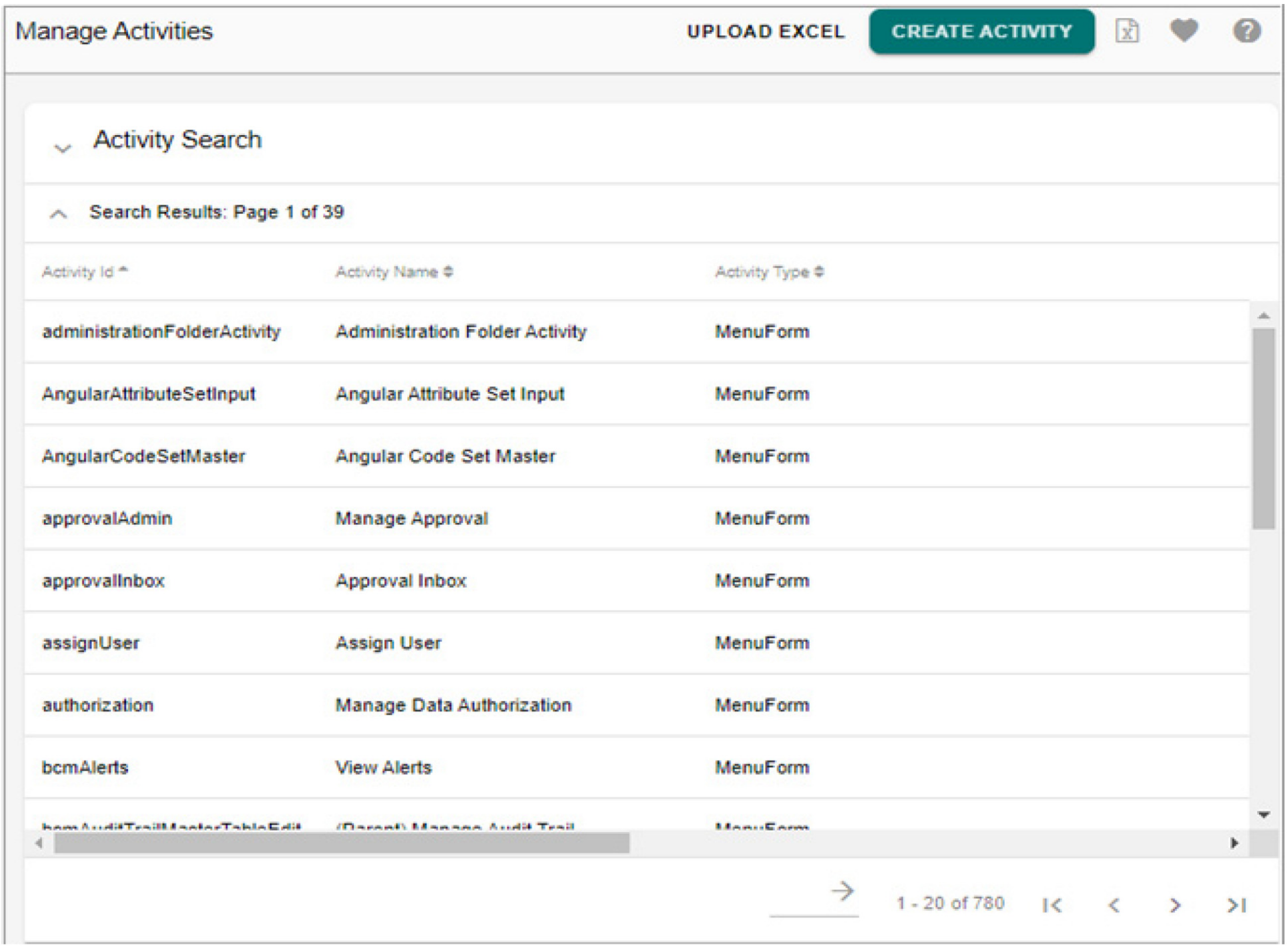
In the above user management logical flow, you can enter and define the module details at any level based on the already existing entities.

Manage Activities

Navigate to **Manage Activities** UI from left navigation pane **Administration -> User Management -> Activities**. The Figure 50 displays the **Manage Activities** UI.

- The Manage Activities UI displays all the existing activities. You can also search for particular activity by specifying either activity Id or activity name or activity type.
- On the Manage Activities UI using the **Create Activity** option, you can create new activities that can be assigned to the roles to be performed by a user within an organization.

Figure 50: Manage Activities



Activity Id	Activity Name	Activity Type
administrationFolderActivity	Administration Folder Activity	MenuForm
AngularAttributeSetInput	Angular Attribute Set Input	MenuForm
AngularCodeSetMaster	Angular Code Set Master	MenuForm
approvalAdmin	Manage Approval	MenuForm
approvalInbox	Approval Inbox	MenuForm
assignUser	Assign User	MenuForm
authorization	Manage Data Authorization	MenuForm
bcmAlerts	View Alerts	MenuForm
bcmAuditTrailMasterTableEdit	(Parent) Manage Audit Trail	MenuForm

On the Manage Activities UI, you can perform the following functions:

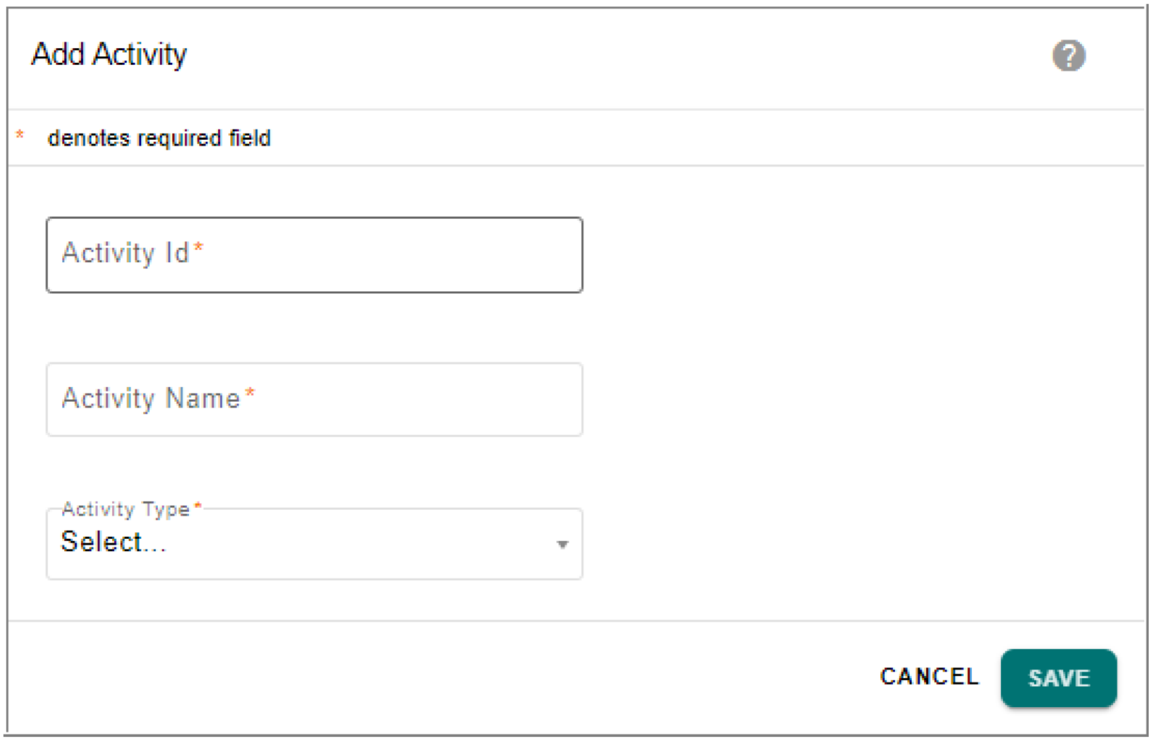
- Create Activities
- Other Functions on Manage Activities UI

Create Activities

You can create activities/workflows that a user with a particular role will be able to perform. Navigate to **Add Activity** UI by clicking **Create Activity** button on the **Manage Activities** UI.

The Figure 51 displays the various fields to be populated for creating activity.

Figure 51: Add Activity



Add Activity

* denotes required field

Activity Id*

Activity Name*

Activity Type*
Select...

On the **Add Activity** UI,

- **Activity Id:** unique activity Id of the activity being created.
- **Activity Name**: name of the activity being created.
- **Activity Type**: displays the activity type (UIForm, MenuForm, Admin).

  Click **Save** and the message: “Activity created successfully” is displayed on the **Manage Activities** UI.

Other Functions on Manage Activities UI

On the Manage Activities UI, you can also perform the following functions:

- Search Activity
- Upload Excel

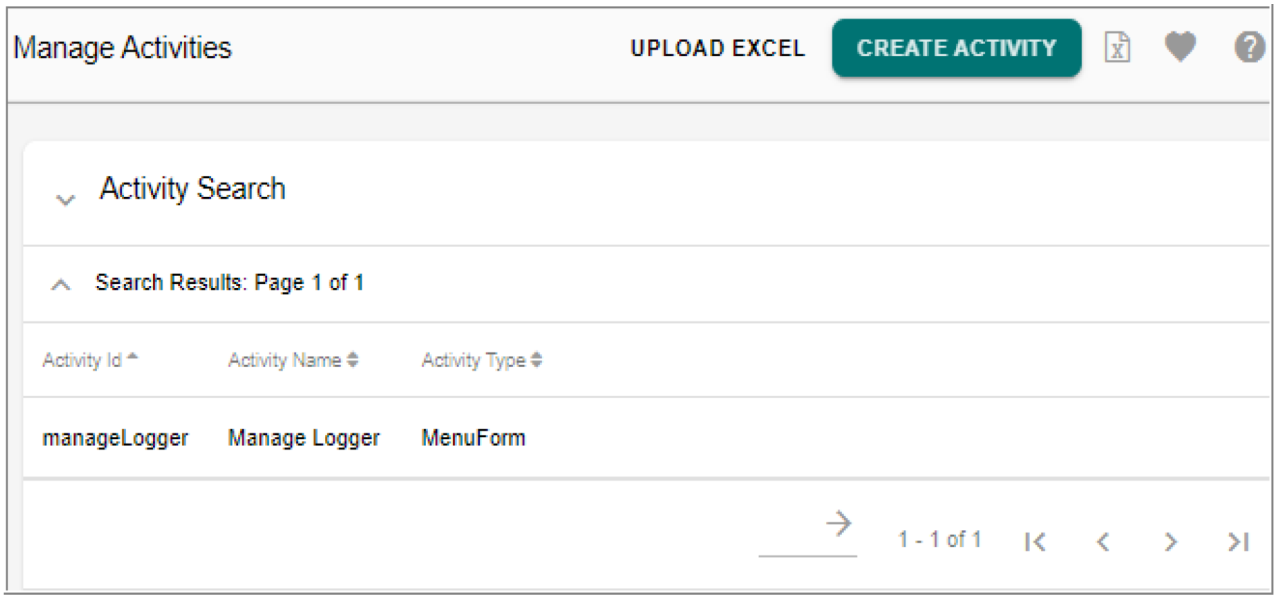
Search Activity

To search user activity:

1. On the **Manage Activities** UI (Figure 50), enter the search parameter—activity Id or activity name or select the activity type (UIForm, MenuForm, Admin) from the **ActivityType** drop-down and click **Search**.

   The **Activity Search Results** pane displays the results as in Figure 52.

Figure 52: Activity Search



Activity Id	Activity Name	Activity Type
manageLogger	Manage Logger	MenuForm

Upload Excel

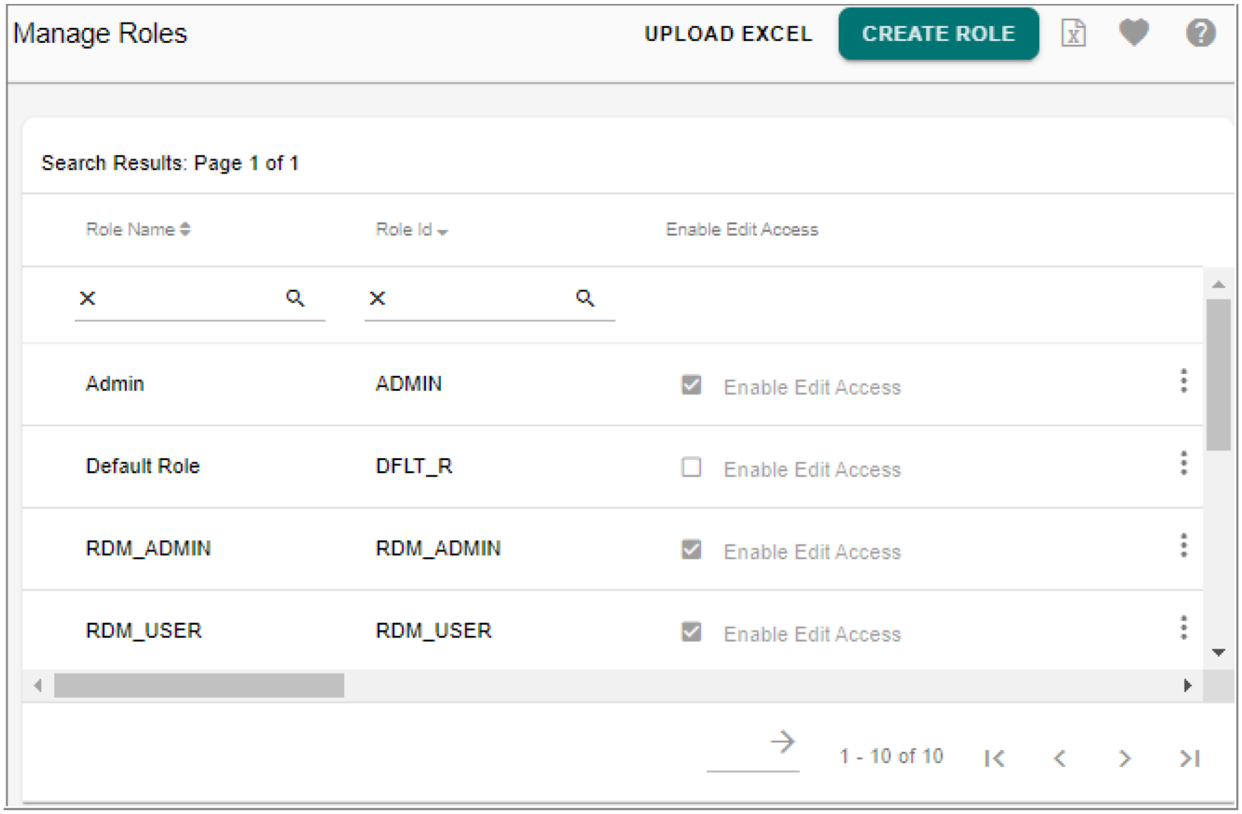
The Upload Excel option on the Manage Activities UI provides the ability to upload data to create Activities. For details, see Section : “Upload Excel Data.”

Manage Roles

Navigate to **Manage Roles** UI from left navigation pane **Administration -> User Management -> Roles**. The Figure 53 displays the Manage Roles UI.

- The Manage Roles UI displays all the existing roles. You can also search for particular role by specifying the role Id and/or role name.
- On the Manage Roles UI using the **Create Role** option, you can create role by providing basic details like role name, role Id and landing page.
- Once the role is created, using the **Role Details** option, you can add and manage a set of activities to the role.
- When a role is assigned to a user group, all the users in that user group will be able to perform the activities that constitute the assigned role.

Figure 53: Manage Roles



Search Results: Page 1 of 1

Role Name	Role Id	Enable Edit Access
Admin	ADMIN	☑ Enable Edit Access
Default Role	DFLT_R	☐ Enable Edit Access
RDM_ADMIN	RDM_ADMIN	☑ Enable Edit Access
RDM_USER	RDM_USER	☑ Enable Edit Access

From the Manage Roles UI, you can perform the following functions:

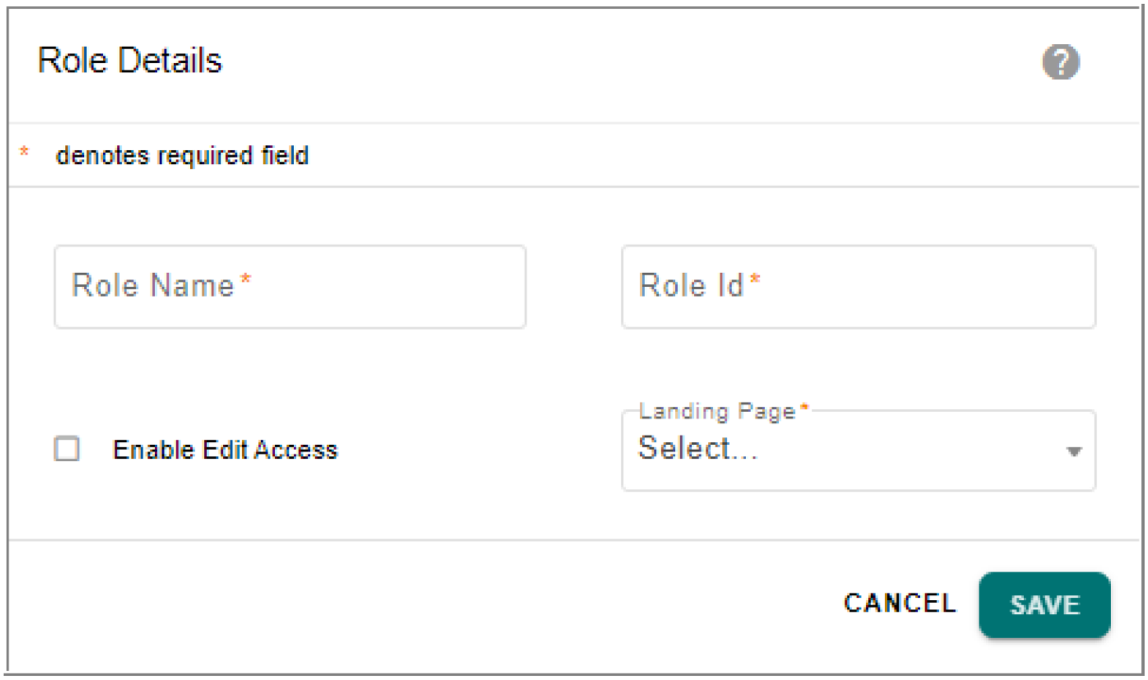
- Create Role
- Add Activities
- Edit Activities
- Save as New Role
- Remove Activities
- Other Functions on Manage Roles UI

Create Role

Navigate to **Role Details** UI from left navigation pane **Administration** -> **User Management** -> **Roles** and on the **Manage Roles** UI, click **Create Role**.

The Figure 54 displays the various fields to be populated for creating roles.

Figure 54: Role Details



The **Role Details** UI displays two tabs: **Workflow Role Details** and **Table Editor Role Details**. With **Workflow Role Details** tab selected,

- **Role Name:** name for role being created.
- **Role Id**: unique Id for role being created.
- **Enable Edit Access:** optionally assign data authorization rights by selecting the Enable Edit access checkbox.

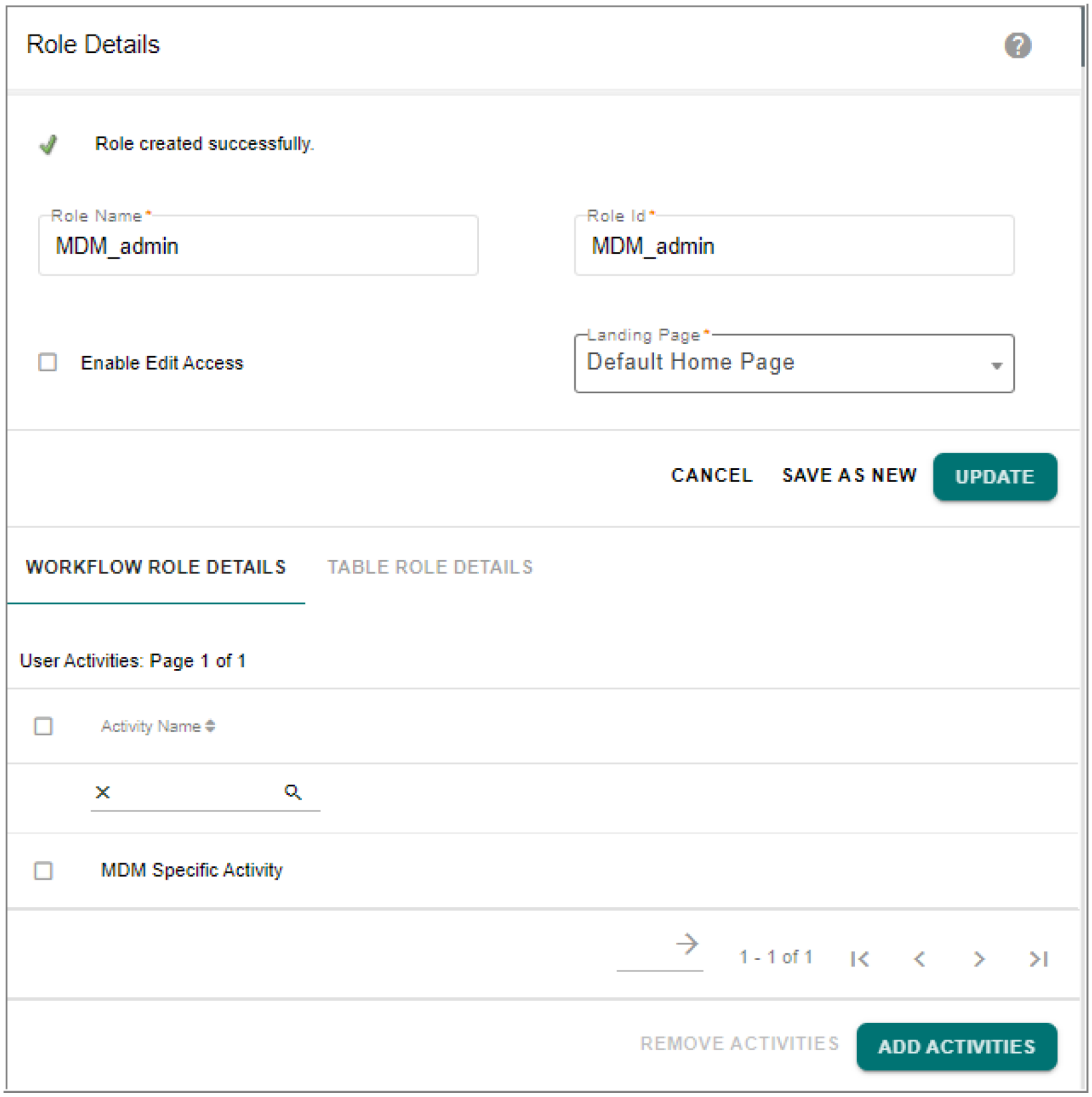
  For details on data authorization, see Chapter 26: “Manage Authorization”.
- **Landing Page**: select the landing page for the role being created from dropdown.

  All the users associated with the role being created will have the same landing page when they login to MDM URL. For more details on landing page, see Section : “Configuring MDM Landing Page.” in Chapter 2: “Admin Tasks.”

  Click **Save** and the **Role Details** UI (Figure 55) refreshes with options to add and remove activities, update role details and save the existing role as new role.

  You can manage activities (add and delete activities, updated role details and save as new role) on the Role Details UI at any point of time.

Figure 55: Role Details



✓ Role created successfully.

Role Name*: MDM_admin

Role Id*: MDM_admin

☐ Enable Edit Access

Landing Page*: Default Home Page

User Activities: Page 1 of 1

☐ Activity Name

☐ MDM Specific Activity

1 - 1 of 1

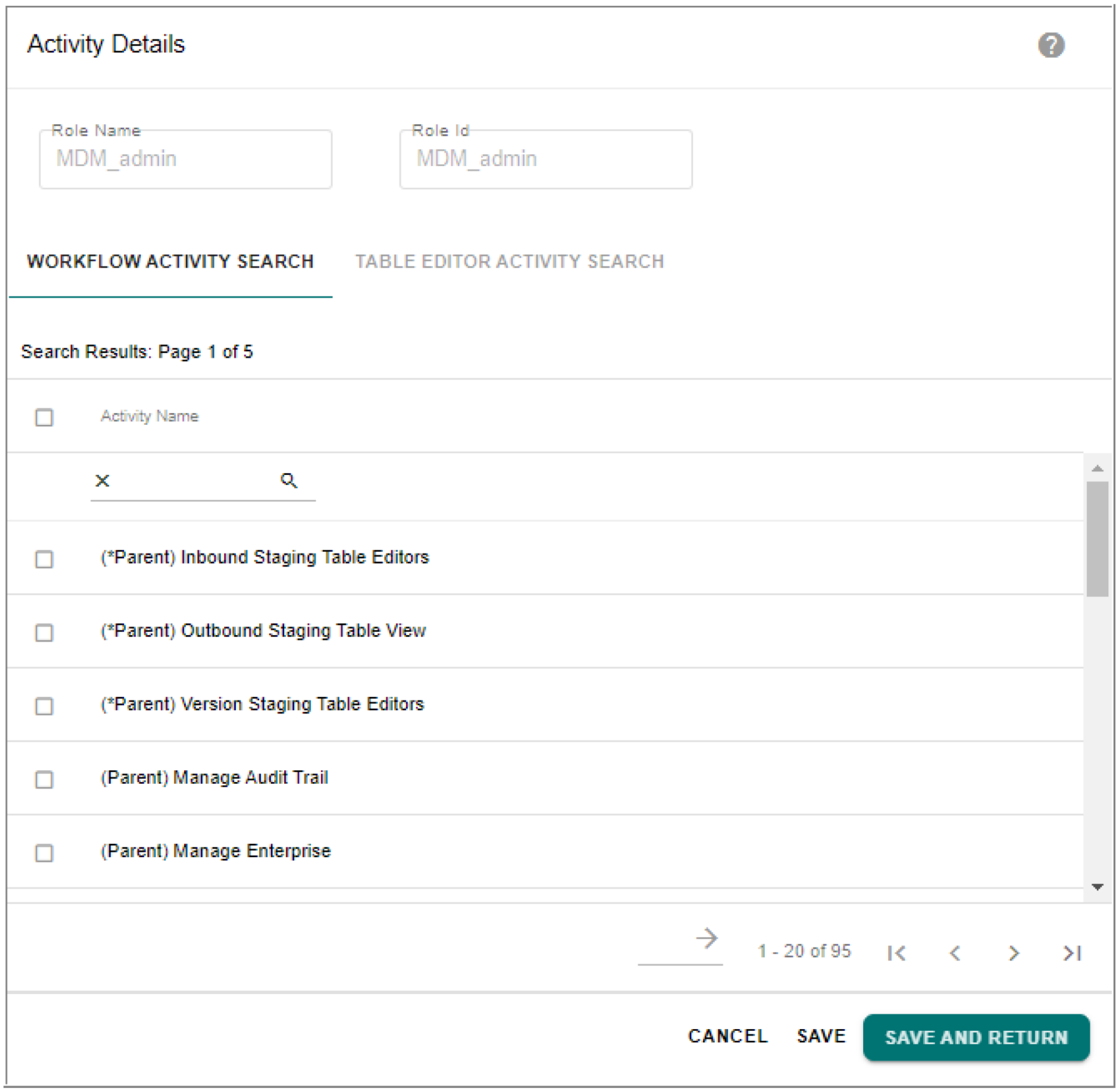
Add Activities

Navigate to **Role Details** UI from left navigation pane **Administration** -> **User Management** -> **Roles.** On the **Manage Roles** UI, select the required role to which you want to add activities and click **Role Details**.

1 Click **Add Activities** on the **Role Details** UI (Figure 55).

The **Activity Search** UI (Figure 56) displays two tabs: **Workflow Activity Search** and **Table Editor Activity Search**. By default, the **Workflow Activity Search** tab is displayed.

Figure 56: Activity Search—Workflow Activity Search Tab



Role Name: MDM_admin

Role Id: MDM_admin

Search Results: Page 1 of 5

☐	Activity Name
☐	(*Parent) Inbound Staging Table Editors
☐	(*Parent) Outbound Staging Table View
☐	(*Parent) Version Staging Table Editors
☐	(Parent) Manage Audit Trail
☐	(Parent) Manage Enterprise

2 With the **Workflow Activity Search** tab selected, select the required activity name(s) and click **Save**.

Message: “Activities for Role added successfully” is displayed on the Workflow Activity Search UI and you can add more activities.

When you click Save and Return, the message: “Activities for Role added successfully” is displayed on the Workflow Role Details UI and to add more activities, you must click on Add Activities again.

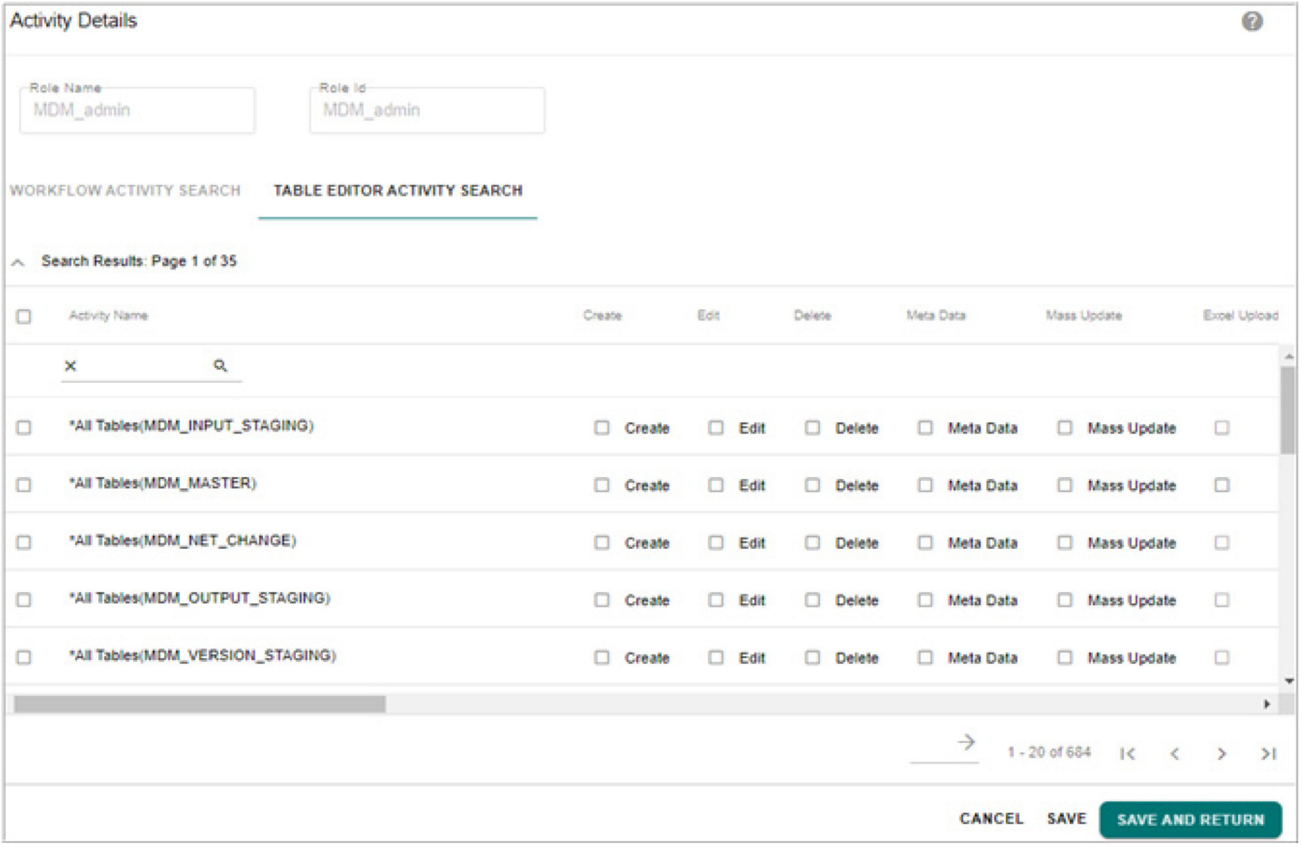
When you assign activities for a role relating to a certain table with the prefix (*Parent) from the Workflow Activity Search UI, you must ensure to select the corresponding activity from the Table Editor Activity Search UI also.

---

3 With the **Table Editor Activity Search** tab selected, select the activity name and the corresponding checkboxes to provide access permissions to the activity and click **Save** as in Figure 57.

Message: “Role details saved successfully” is displayed on the **Field Access Details** UI.

Figure 57: Activity Search—Table Editor Activity Search Tab



Role Name: MDM_admin

Role Id: MDM_admin

Search Results: Page 1 of 35

☐	Activity Name	Create	Edit	Delete	Meta Data	Mass Update	Excel Upload
☐	*All Tables(MDM_INPUT_STAGING)	☐ Create	☐ Edit	☐ Delete	☐ Meta Data	☐ Mass Update	☐
☐	*All Tables(MDM_MASTER)	☐ Create	☐ Edit	☐ Delete	☐ Meta Data	☐ Mass Update	☐
☐	*All Tables(MDM_NET_CHANGE)	☐ Create	☐ Edit	☐ Delete	☐ Meta Data	☐ Mass Update	☐
☐	*All Tables(MDM_OUTPUT_STAGING)	☐ Create	☐ Edit	☐ Delete	☐ Meta Data	☐ Mass Update	☐
☐	*All Tables(MDM_VERSION_STAGING)	☐ Create	☐ Edit	☐ Delete	☐ Meta Data	☐ Mass Update	☐

1 - 20 of 684

You can assign the following permissions for the selected activity names.

- Create—select this option to create records under the selected activity.

  You will be able to create records in the table only if you have assigned permission for Create option.
- Edit—select this option to edit records under the selected activity.

  You will be able to edit records in the table only if you have assigned permission for Edit option.

While setting the Edit options for field names, the Not Null and PK field names should always be assigned, else an exception will be displayed while creating a record from configurable UI.

- Delete—select this option to delete records under the selected activity.

  You will be able to delete records in the table only if you have assigned permission for Delete option.
- Meta Data—select this option to enable the user role to access the metadata of the table generated through model builder.
- Mass Update—select this option to do multi edit, multi delete and mass update records.

  You will be able to multi edit or multi delete records in the table only if you have assigned permission for Mass Update option. When mass update is selected, by default the edit checkbox will be selected.

If Mass Update option is not enabled, you cannot perform Multi Edit and Delete operations, but can edit single record.

Bulk delete permission is supported only for Master or Input staging

---

- Excel Upload—select this option to perform excel upload on master table and non MDM tables. For other staging areas, excel upload option is disabled.

  You will be able to do excel upload only if you have assigned permission for Excel Upload option.

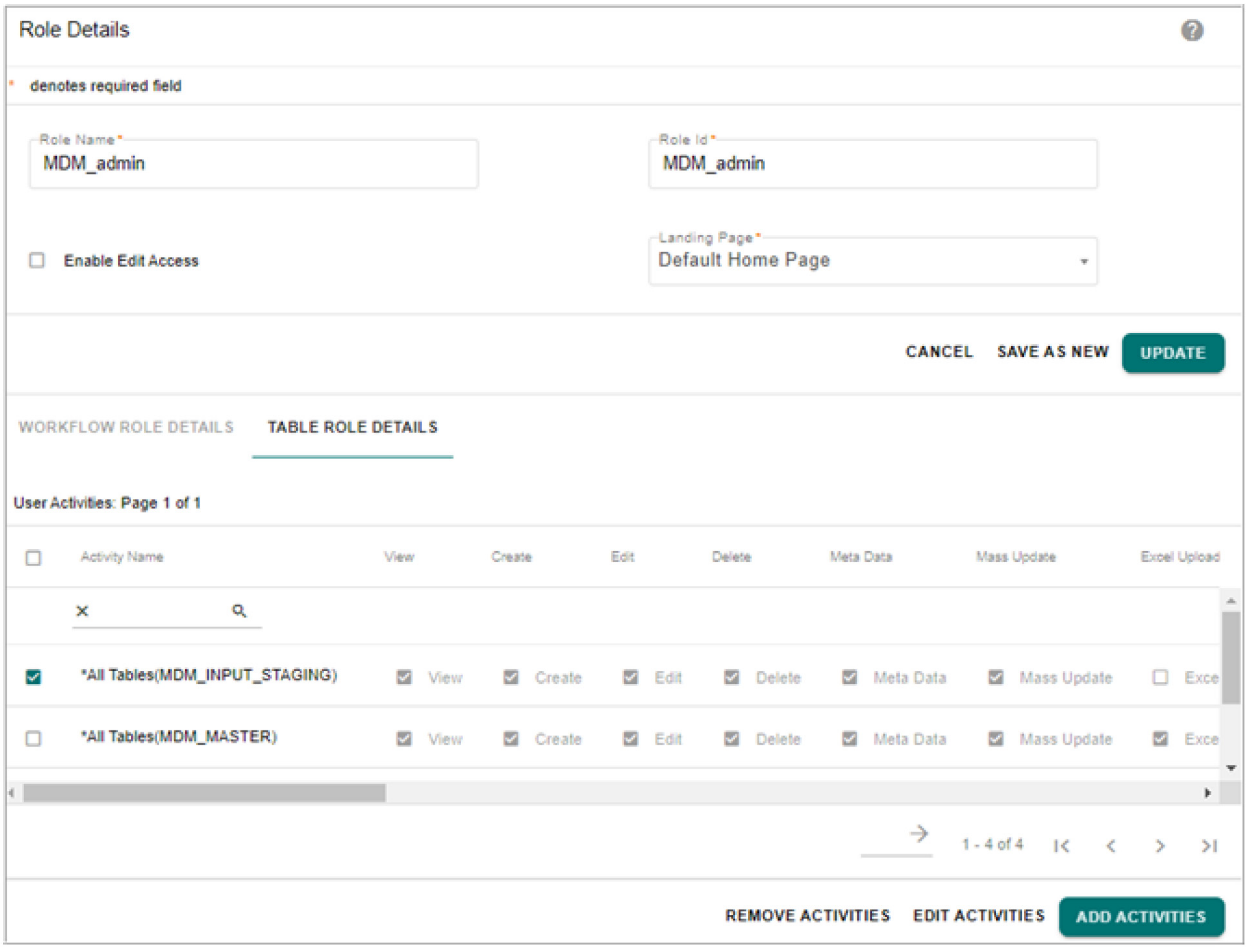
- The permissions set on the Table Editor Activity Search UI will be applicable on the configurable UI defined on single Master or Input staging table.
- In a user defined configurable UI, to perform Create/Edit/Delete/Massupdate/Excel Upload operations on the UI, both the Table activity role permission and CRUD permission must be set while defining configurable UI.

Edit Activities

To edit activities added to a role:

1 On the **Role Details** UI, with **Table Role Details** tab, select the activity and click **Edit Activities** as in Figure 58.

Figure 58: Role Details—Edit Activities



Role Details

* denotes required field

Role Name*: MDM_admin

Role Id*: MDM_admin

☐ Enable Edit Access

Landing Page*: Default Home Page

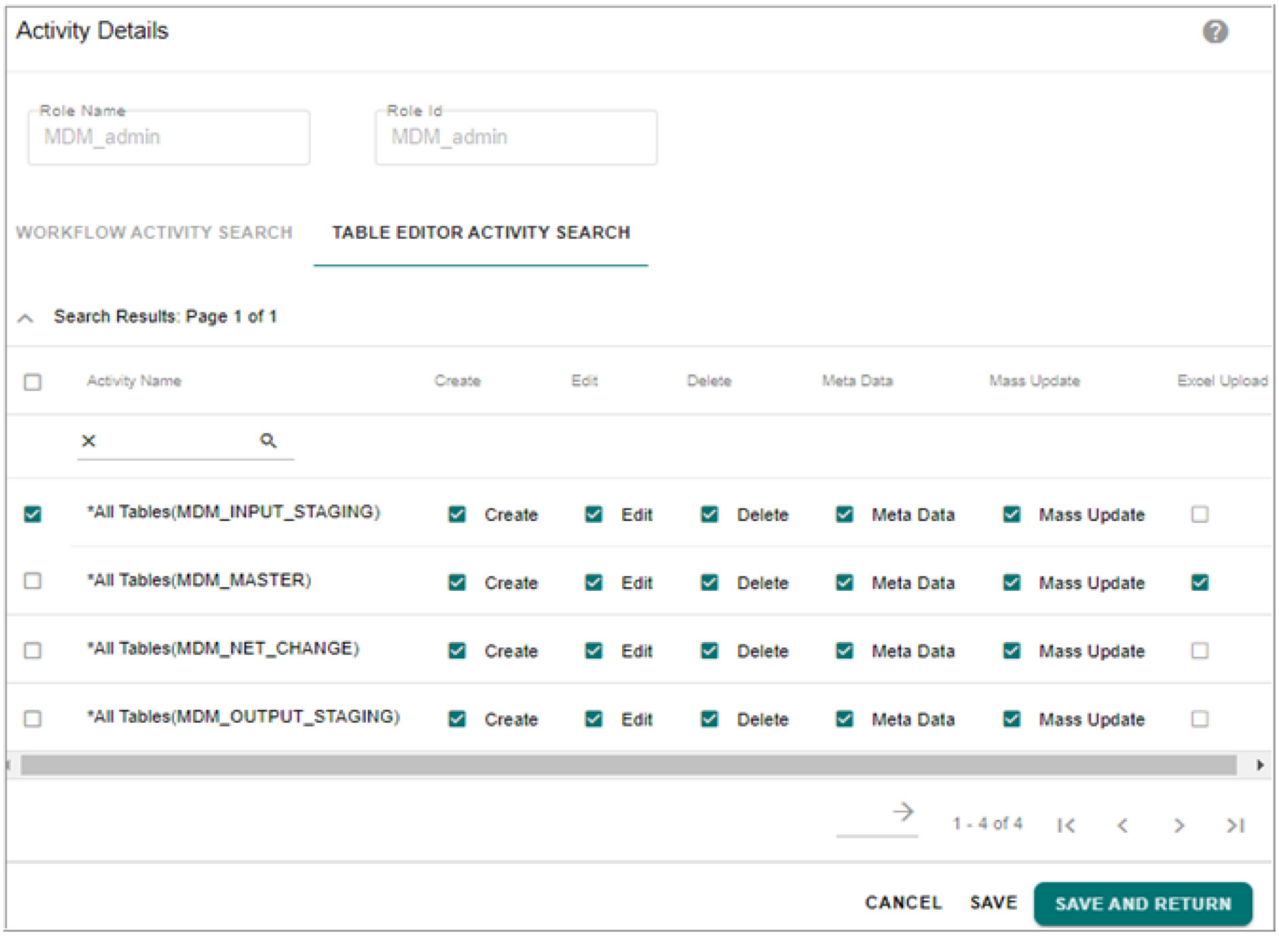
User Activities: Page 1 of 1

☐	Activity Name	View	Create	Edit	Delete	Meta Data	Mass Update	Excel Upload
☑	*All Tables(MDM_INPUT_STAGING)	☑ View	☑ Create	☑ Edit	☑ Delete	☑ Meta Data	☑ Mass Update	☐ Exce
☐	*All Tables(MDM_MASTER)	☑ View	☑ Create	☑ Edit	☑ Delete	☑ Meta Data	☑ Mass Update	☑ Exce

1 - 4 of 4

The Role Details UI displays the permissions granted for the selected activity as in Figure 59.

Figure 59: Role Details—Edit Activities



Role Name: MDM_admin

Role Id: MDM_admin

Search Results: Page 1 of 1

☐	Activity Name	Create	Edit	Delete	Meta Data	Mass Update	Excel Upload
☑	*All Tables(MDM_INPUT_STAGING)	☑ Create	☑ Edit	☑ Delete	☑ Meta Data	☑ Mass Update	☐
☐	*All Tables(MDM_MASTER)	☑ Create	☑ Edit	☑ Delete	☑ Meta Data	☑ Mass Update	☑
☐	*All Tables(MDM_NET_CHANGE)	☑ Create	☑ Edit	☑ Delete	☑ Meta Data	☑ Mass Update	☐
☐	*All Tables(MDM_OUTPUT_STAGING)	☑ Create	☑ Edit	☑ Delete	☑ Meta Data	☑ Mass Update	☐

2 On the **Role Details** UI, modify the required access permissions and click **Save and Return**.

Message: “Activities for the role modified successfully” is displayed on the **Role Details** UI.

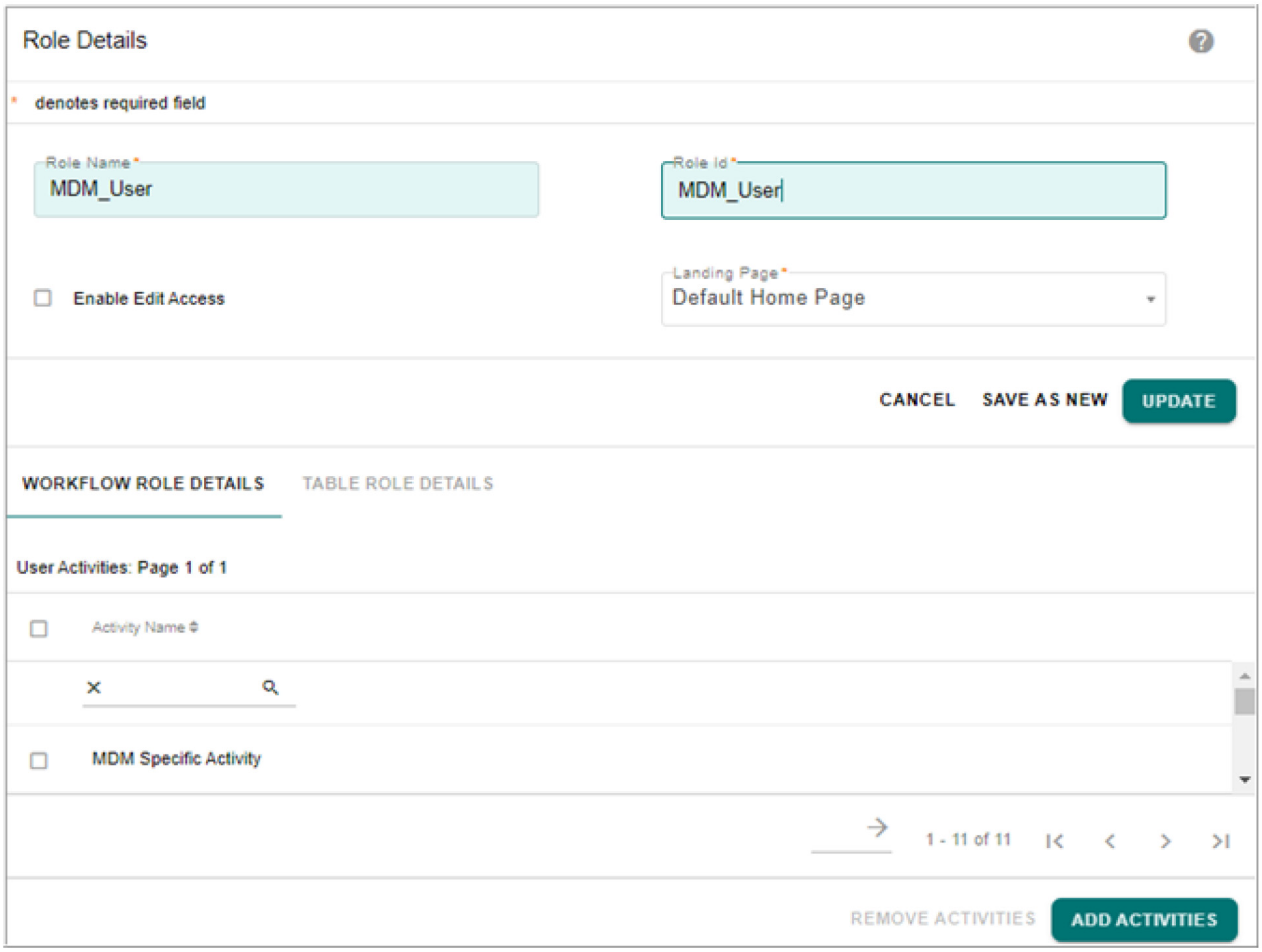
Save as New Role

To save existing role as new role.

1 On the **Manage Roles** UI, select the required role to which you want to add activities and click **Role Details**.

2 On the **Role Details** UI, enter new role name and role Id in the **Role Name** and **Role Id** field and click **Save as New** as in Figure 60.

Figure 60: Role Details—New Role



Role Details

* denotes required field

Role Name*: MDM_User

Role Id*: MDM_User

☐ Enable Edit Access

Landing Page*: Default Home Page

User Activities: Page 1 of 1

☐ MDM Specific Activity

1 - 11 of 11

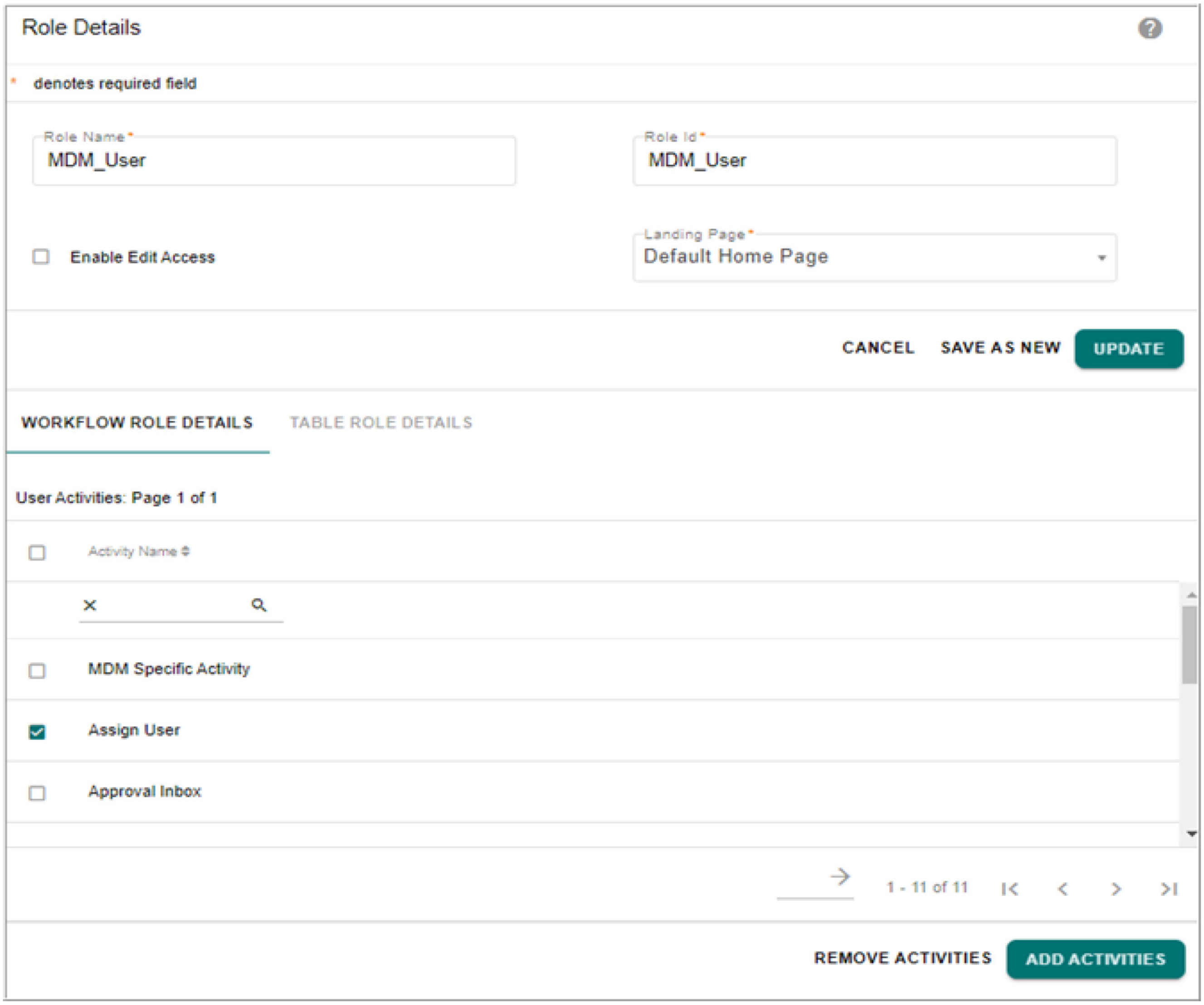
Message: “Role created successfully” is displayed.

Remove Activities

To remove activities assigned to the role:

1 On the **Role Details** UI (Figure 61), select the activity and click **Remove Activities**.

Figure 61: Role Details



Role Name*: MDM_User

Role Id*: MDM_User

☐ Enable Edit Access

Landing Page*: Default Home Page

☐ MDM Specific Activity

☑ Assign User

☐ Approval Inbox

Message: “Activities for role removed successfully” is displayed.

Other Functions on Manage Roles UI

On the manage roles UI, you can also perform the following functions:

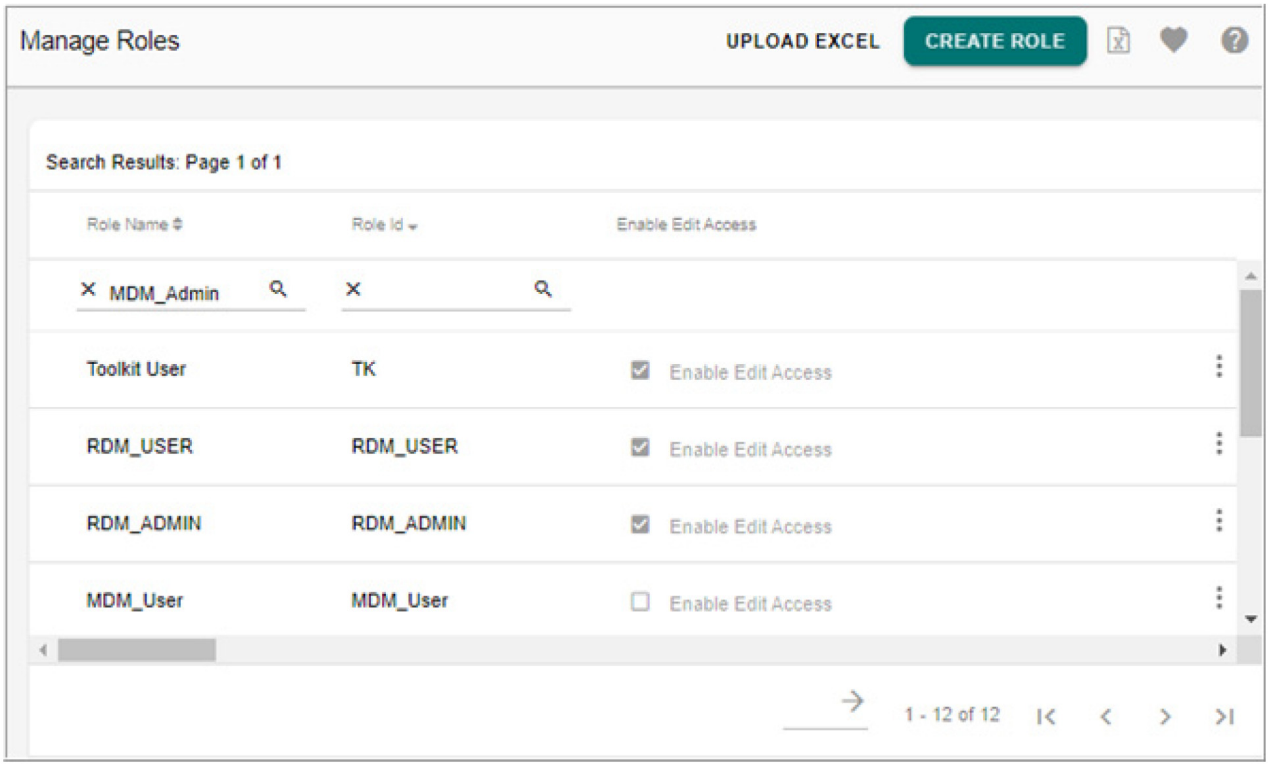
- Search Roles
- Edit Role Details
- Upload Excel

Search Roles

To search existing roles:

1 On the **Manage Roles** UI (Figure 62), search for roles by specifying either Role Id or Role Name in the respective textbox and click Search icon.

Figure 62: Search Roles



Search Results: Page 1 of 1

Role Name	Role Id	Enable Edit Access
× MDM_Admin	×	
Toolkit User	TK	☑ Enable Edit Access
RDM_USER	RDM_USER	☑ Enable Edit Access
RDM_ADMIN	RDM_ADMIN	☑ Enable Edit Access
MDM_User	MDM_User	☐ Enable Edit Access

1 - 12 of 12

2 Click Clear Filter icon to clear the filter condition.

The **Search Results** pane displays all the roles that match the specified search parameters.

Edit Role Details

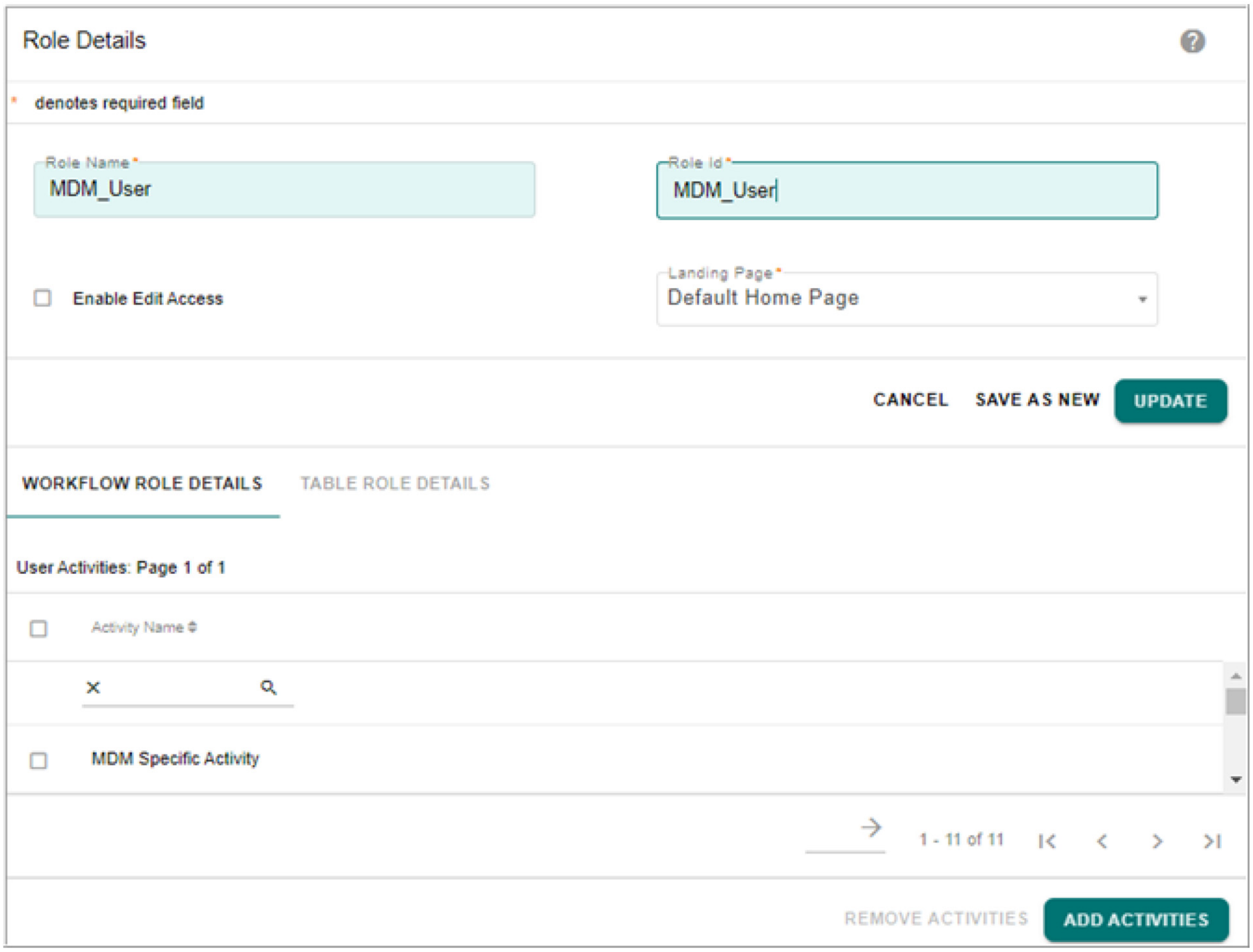
To view the role details:

1 On the **Manage Roles** UI (Figure 62), click the Menu icon corresponding to the required role name and click **Role Details**.

The **Role Details** UI (Figure 63) is displayed. You can select a different landing page and either enable or disable edit access. Add or remove activities to the role and click **Update**.

Message: “The user role updated successfully” is displayed.

Figure 63: Role Details



Role Name*: MDM_User

Role Id*: MDM_User

☐ Enable Edit Access

Landing Page*: Default Home Page

Upload Excel

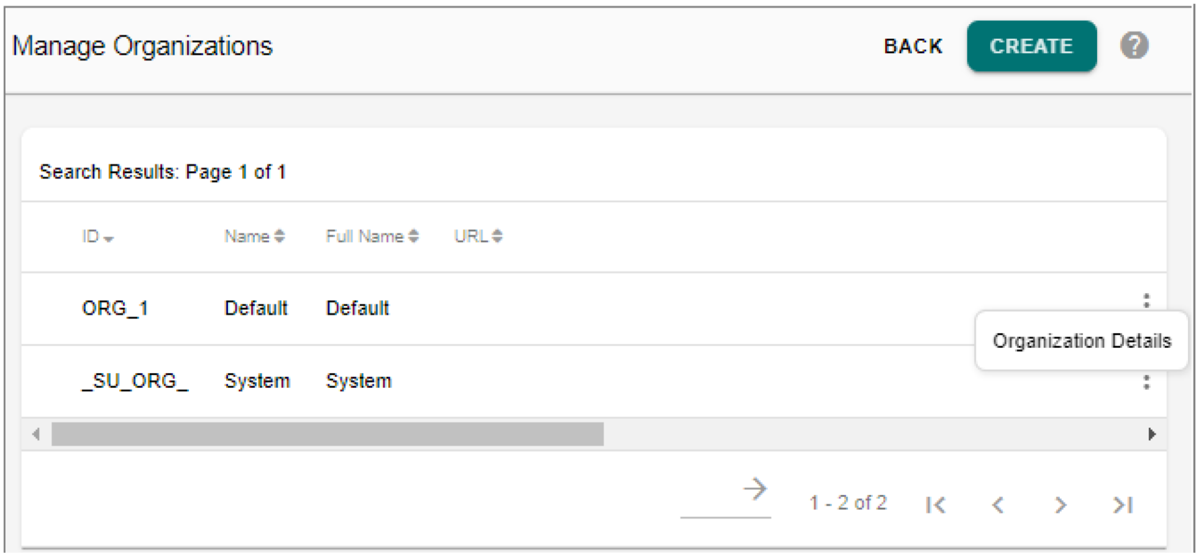
The Upload Excel option on the Manage Roles UI provides the ability to upload data to create Roles, Activities and Role-Activity mapping. For details, see Section : “Upload Excel Data.”

Manage Organization

Navigate to **Manage Organization** UI from left navigation pane **Administration -> User Management -> User Groups** and on the **Manage User Groups** UI, select **Manage Organization** from **Actions** dropdown list. The Figure 64 displays the **Manage Organization** UI.

- The Manage Organization UI displays all the existing organization names.
- On the Manage Organization UI using the Create Organization option, you can create organization and users will get created with one of the organization value to group them in one of the logical entity they belong to.
- Using **Organization Details** option, you can view and edit organization details.

Figure 64: Manage Organization



Search Results: Page 1 of 1

ID	Name	Full Name	URL
ORG_1	Default	Default	
_SU_ORG_	System	System	

On the **Manage Organization** UI, you can perform the following:

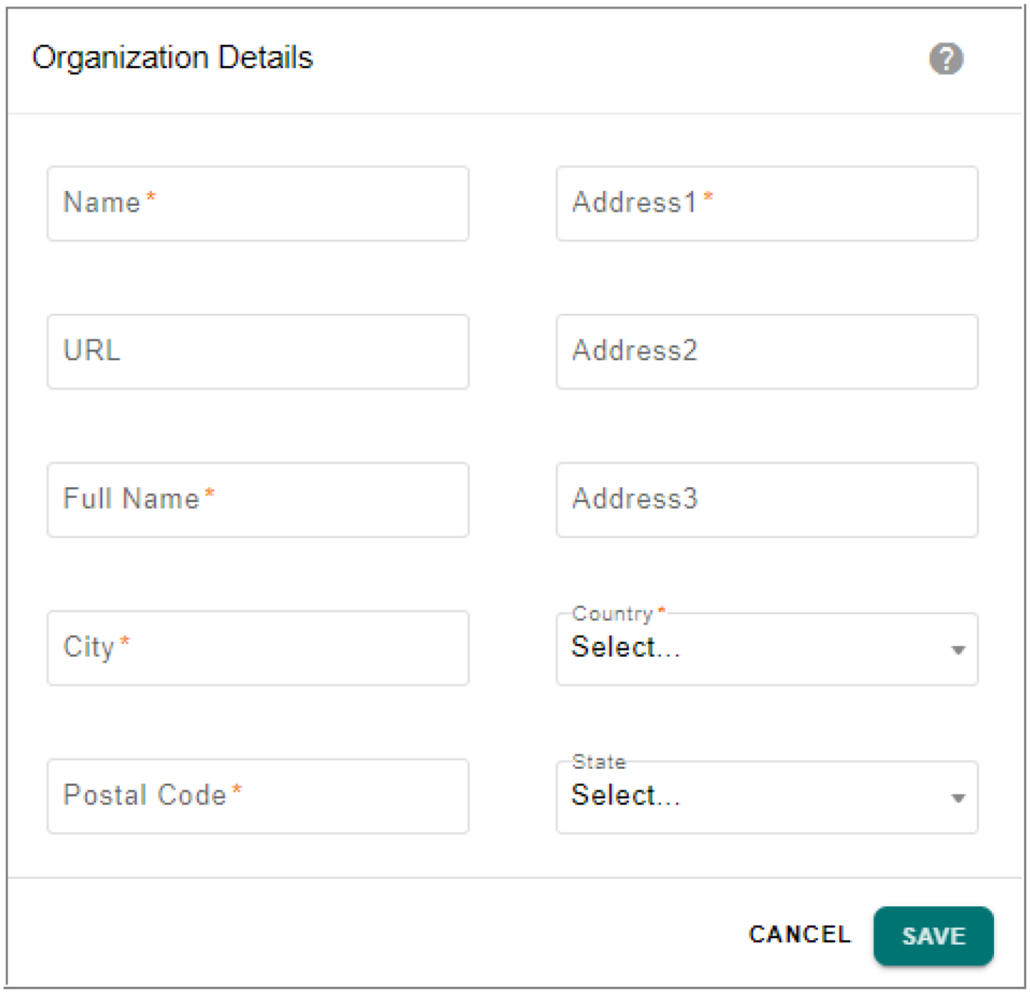
- Create Organization
- View Existing Organization Details

Create Organization

To create organization:

1 On the **Manage Organizations** UI (Figure 64), click **Create**.

Figure 65: Organization Details



2 On the **Organization Details** UI (Figure 65), enter the following details and click **Save**.

- **Name:** unique name of the organization being created.
- **URL:** URL of the organization being created.
- **Full Name:** unique full name of the organization**.**
- **City:** name of the city where the organization is located.
- **Postal Code:** postal code of the location where the organization exists.
- **Address Fields:** complete address of the organization location.
- **Country:** name of the country where the organization is located.
- **State:** name of the state where the organization is located.

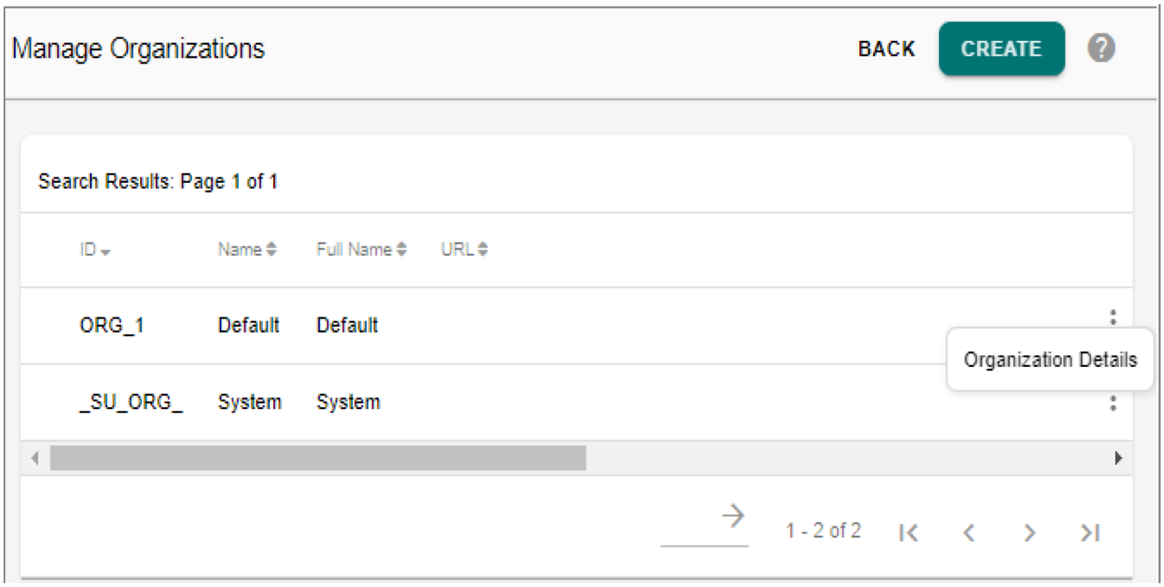
Message: “Organization created successfully” is displayed.

Viewing and Editing Organization Details

To view and edit organization details:

1 On the **Manage Organizations** UI, select the required organization and click **Organization Details** as in Figure 66.

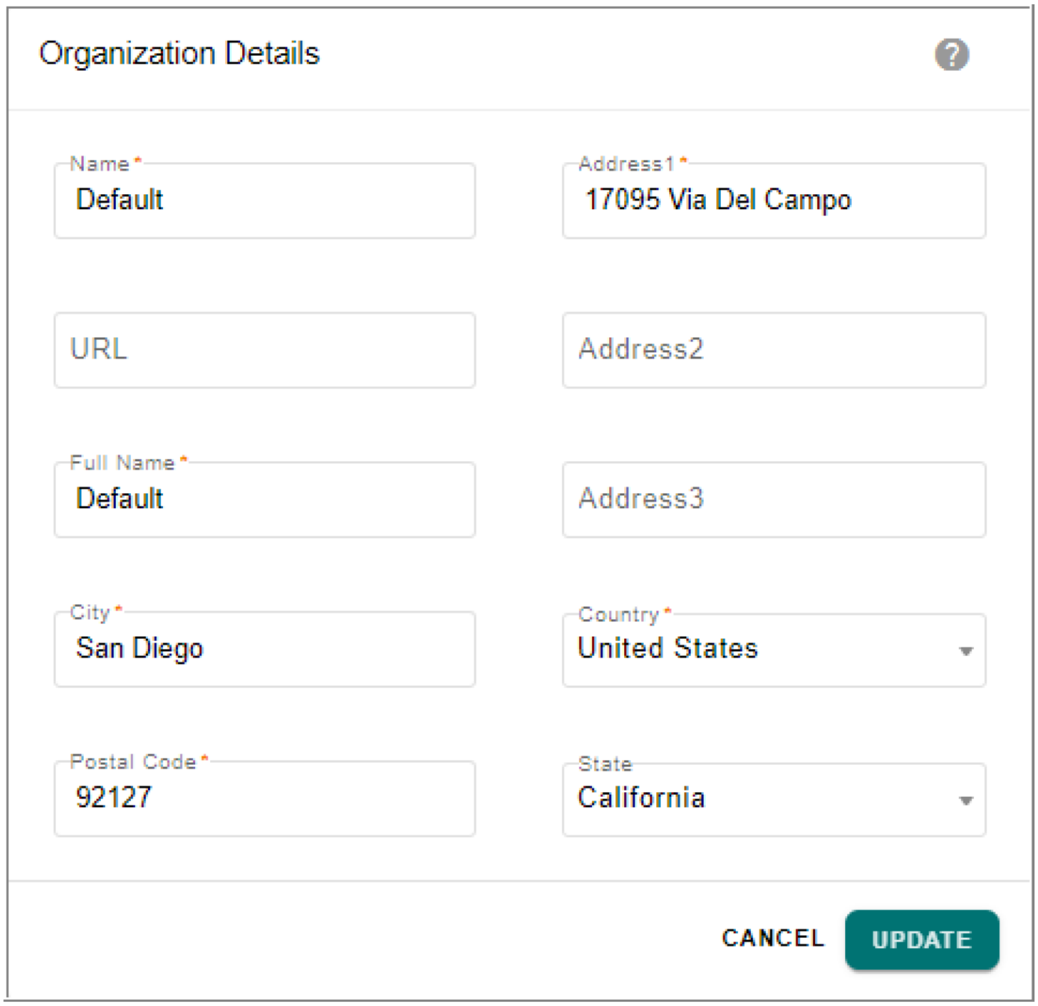
Figure 66: Manage Organization



Search Results: Page 1 of 1

ID	Name	Full Name	URL
ORG_1	Default	Default	
_SU_ORG_	System	System	

Figure 67: View and Edit Organization



Organization Details

Name*: Default

Address1*: 17095 Via Del Campo

URL

Address2

Full Name*: Default

Address3

City*: San Diego

Country*: United States

Postal Code*: 92127

State: California

2 On the **Organization Details** UI (Figure 67), update the required details and click **Update**.

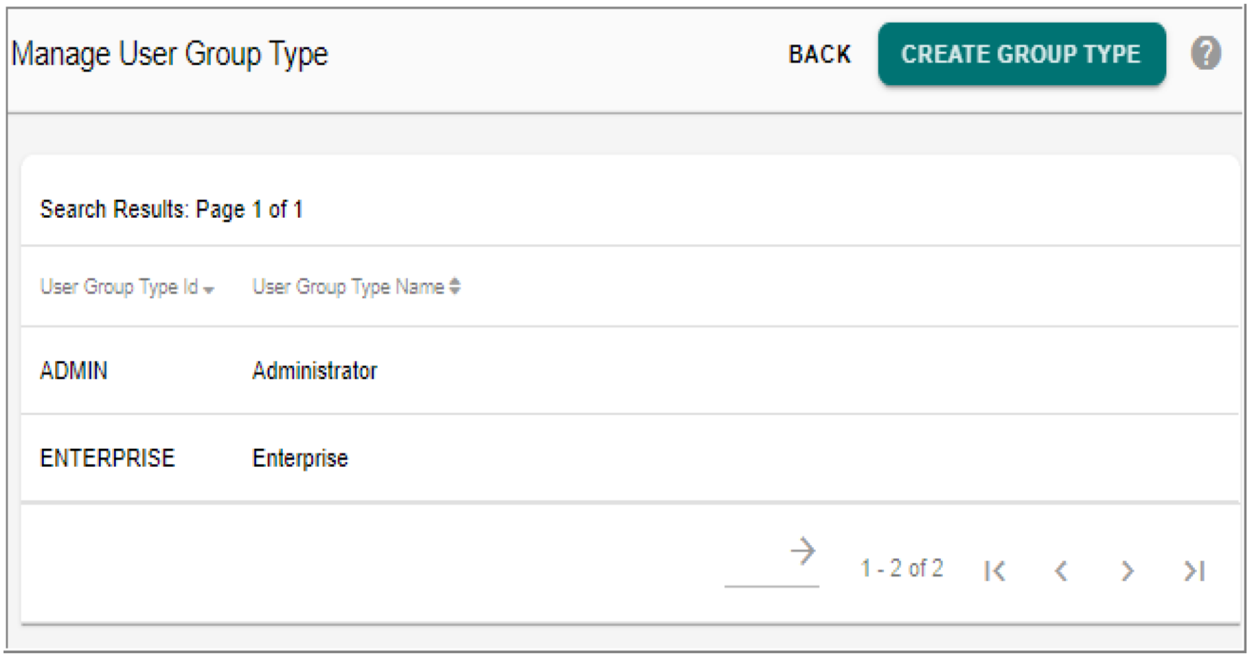
Message: “Organization updated successfully” is displayed.

Manage User Group Types

Navigate to **Manage User Group Type** UI from left navigation pane **Administration -> User Management -> User Groups** and on the Manage User Groups UI, click **Manage User Group Type** from **Actions** dropdown list. The Figure 68 displays the Manage User Group Type UI.

- The Manage User Group Type UI displays all the existing user group type names.
- On the Manage User Group Type UI, using the **Create Group Type** option, create user group type to define a logical group based on the nature of functions performed by the underlying user groups.

Figure 68: Manage User Group Type



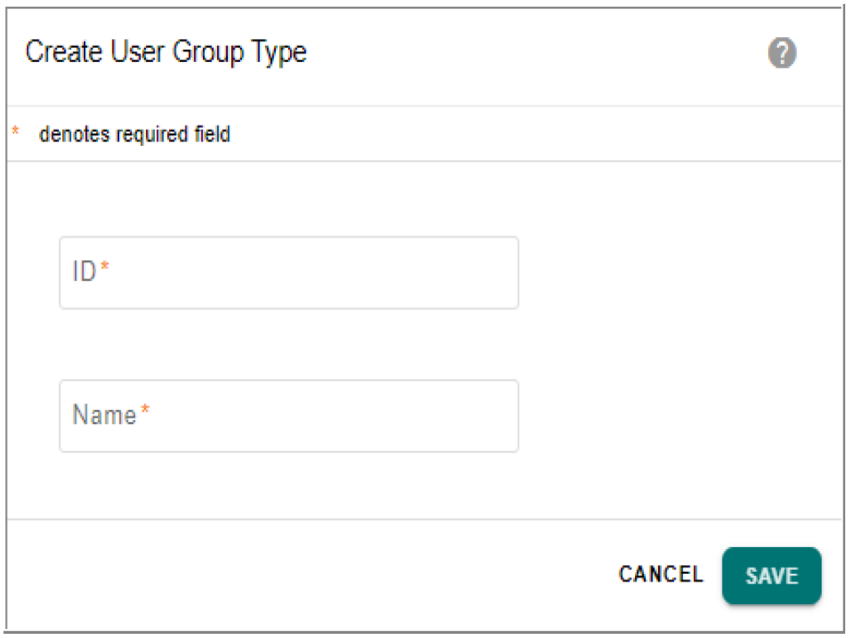
Search Results: Page 1 of 1

User Group Type Id	User Group Type Name
ADMIN	Administrator
ENTERPRISE	Enterprise

To create user group types:

1 On the **Manage User Groups** UI (Figure 68), click **Create Group Type**.

Figure 69: Create User Group Type



2 On the **Create User Group Type** UI (Figure 69), enter the following and click **Save**.

- ID: unique id of the user group type being created.
- Name: name of the user group type being created.

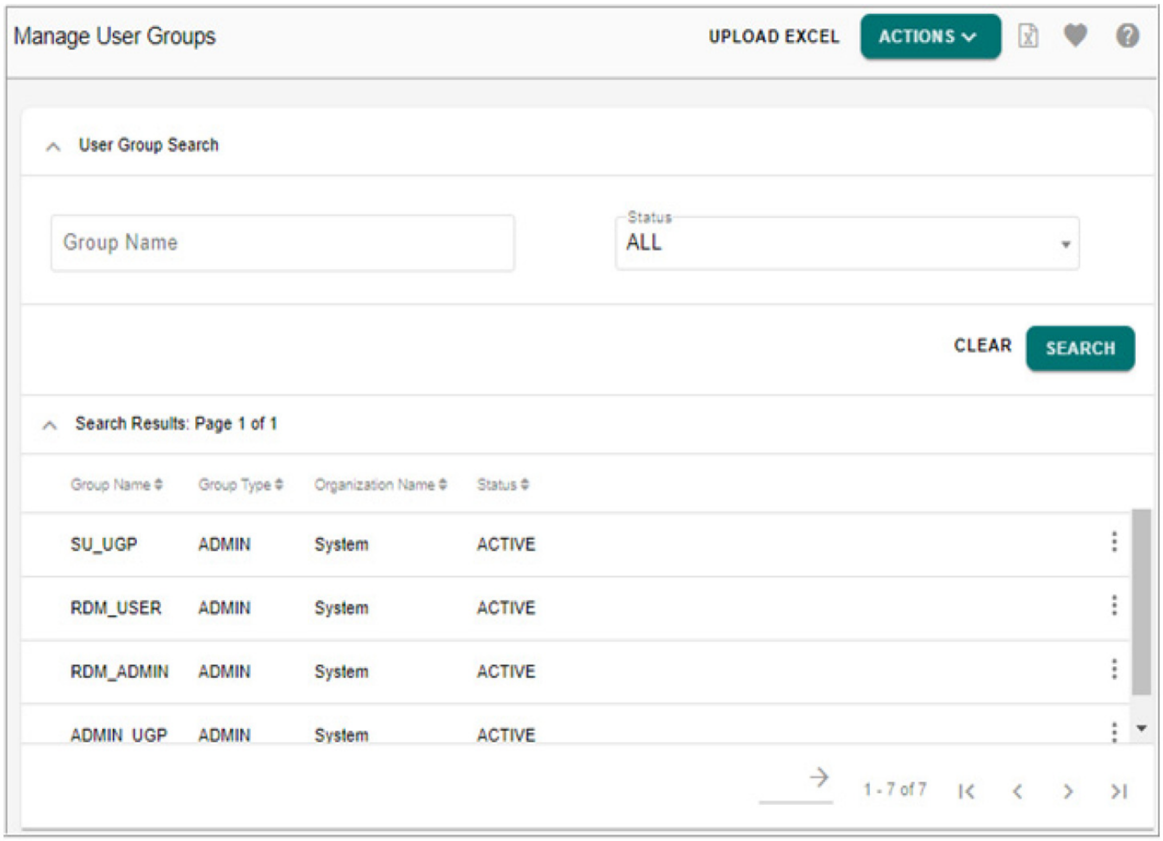
Message: "User Group Type created successfully" is displayed.

Manage User Groups

Navigate to **Manage User Groups** from left navigation pane **Administration -> User Management -> User Groups**. The Figure 70 displays the **Manage User Groups** UI.

- The Manage User Groups UI displays all the existing user groups. You can search for a particular user group by specifying the group name and group status.
- On the Manage User Groups UI using the **Create User Group** option you can create a User Group. Assign roles to User Groups so that all users belonging to the User Group can have access to the Roles assigned to it.
- Using the **User Group Details** option, you can view user details, assign/unassign users, activate/deactivate user groups, save as new group and update the group details.
- From the **Manage User Group** UI, you can navigate to **Manage Organization** UI and create organization and navigate to Create User Group Type UI and create user group types.

Figure 70: Manage User Groups



Status: ALL

Group Name	Group Type	Organization Name	Status
SU_UGP	ADMIN	System	ACTIVE
RDM_USER	ADMIN	System	ACTIVE
RDM_ADMIN	ADMIN	System	ACTIVE
ADMIN_UGP	ADMIN	System	ACTIVE

On the **Manage User Groups** UI, you can perform the following:

- Create User Group

- Other Functions on Manage User Group UI

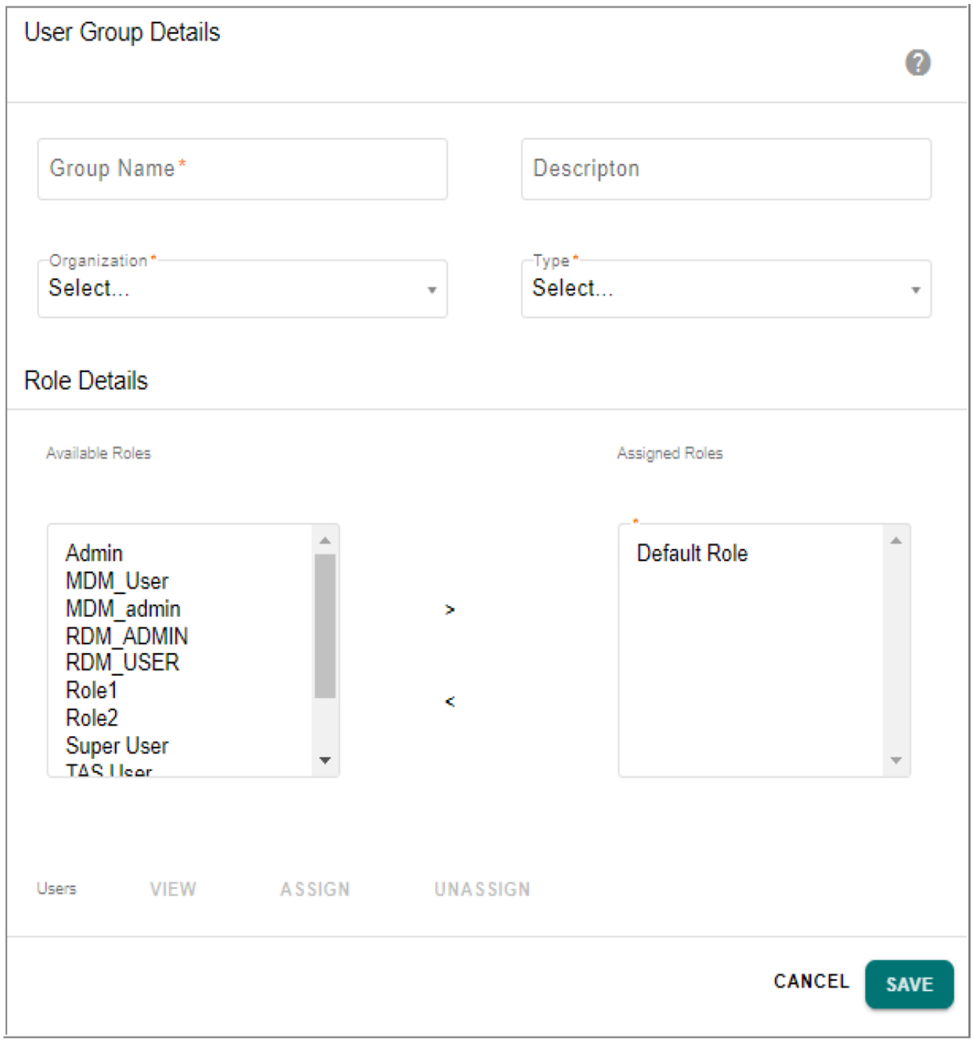
Create User Group

Creating a user group becomes the basis for creating users in the system, as a user cannot exist without being associated to a user group. You can create new users and assign them to specific user groups. From the user groups, you can create and manage individual users and their attributes as a user group.

To create user groups and assign roles to user groups:

1. On the **Manage User Groups** UI (Figure 70), click **Create User Group** from **Actions** dropdown.

Figure 71: User Group Details



2. On the **User Group Details** UI (Figure 71), enter the details as below and click **Save**.
    - **Group Name**: unique group name.
    - **Description**: brief description about the user group being created.
    - **Organization**: select the organization name from the list.

- **Type**: select the required group Type from the list.
- **User**: the View, Assign, and Unassign buttons will be enabled only when you save the user group. Create a new user or assign an existing user to the selected user group.
    - To view the users belonging to the selected group, click the **View** button.
    - To assign new users to the selected group, click the **Assign** button.
    - To unassign users from the group, click **Unassign** Users button.
- **Role Details**: The roles created are displayed in the Available Roles area. Select the required role and click the << or >> button to either add or remove the role from the Assigned Roles area. The user group is saved with the roles defined in the Assigned Roles area. For detailed information about Roles, see "Manage Roles" in this chapter.

Message: "User Group created successfully" is displayed.

3 Click **Activate** to activate the user group.

4 Click **Cancel** to return to the **Manage User Groups** UI without saving the changes made to the selected user group.

The **Update, Activate** and **Save As New** buttons will be enabled after the user group is created.

Other Functions on Manage User Group UI

On the Manage User Group UI, you can also perform the following:

- Search User Group
- View and Edit User Groups Details
- Activate or Deactivate a User Group
- Save as a New User Group
- View and Edit Users of the Selected User Group
- Assign or Unassign Users to User Group
- Upload Excel

Search User Group

To search for user groups:

1 On the **Manage User Groups** UI (Figure 70), search for a user group by specifying any one of the following search parameters or all of these.

- Group Name: in the **Group Name** field, enter the group name and click **Search**.

  You can sort the columns using the Ascending/Descending arrows.
- Status: In the **Status** drop-down, select any of the below options and click **Search**.
    - if **All** option is selected, the search result displays all the user groups. By default, **All** option is selected.
    - if **Inactive** option is selected, the search result displays all those user groups whose

status is inactive.

- if **Active** option is selected, the search result displays all those user groups whose status is active.
- if **Dormant** option is selected, the search result displays all those user groups whose status is dormant.

The **Search Results** pane displays the results.

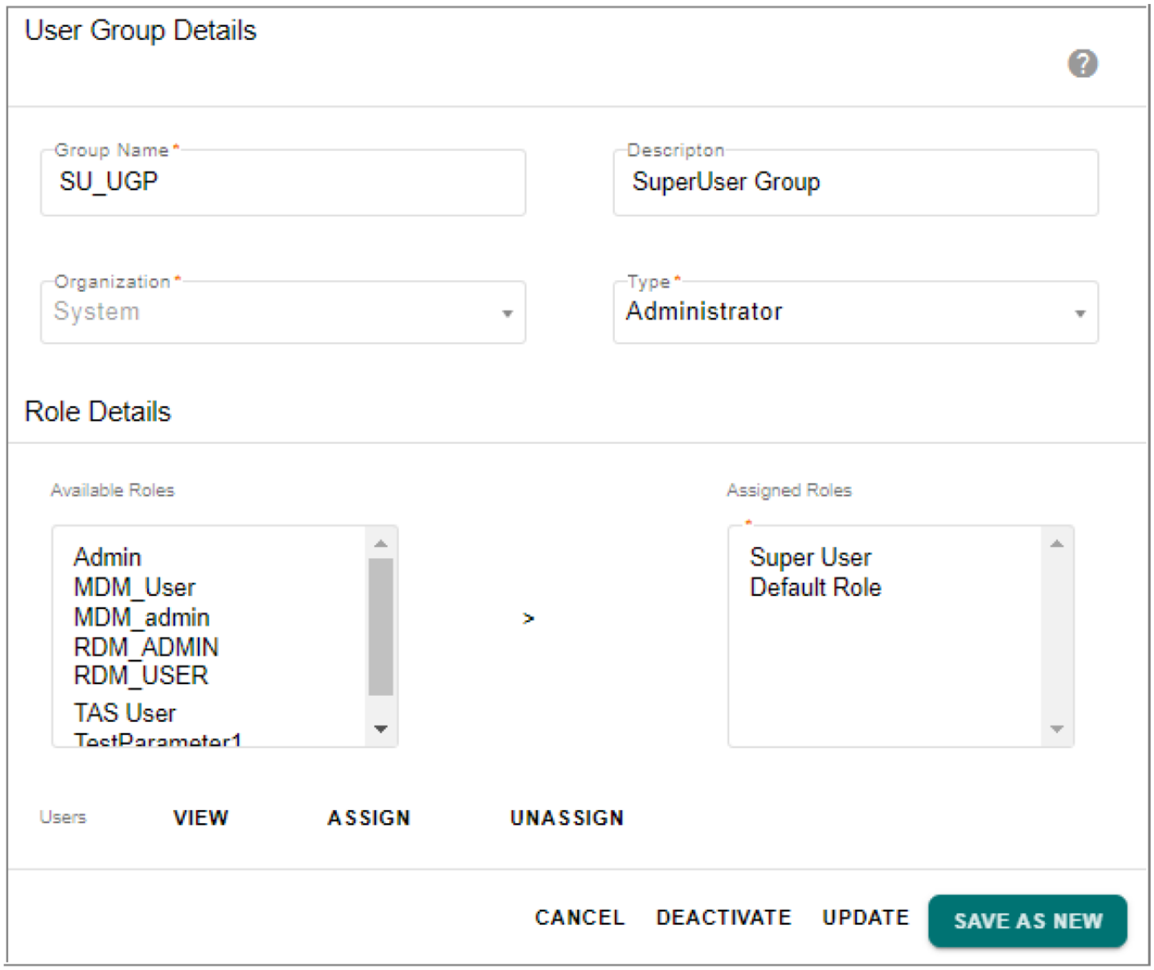
If you perform a search without specifying any filters in the search fields, the search result displays all the user groups.

View and Edit User Groups Details

To view the user group details UI:

1 On the **Manage User Groups** UI (Figure 70), select the required Group Name and click **User Group Details**.

Figure 72: User Group Details



User Group Details

Group Name*: SU_UGP

Descripton: SuperUser Group

Organization*: System

Type*: Administrator

Role Details

Available Roles:
Admin
MDM_User
MDM_admin
RDM_ADMIN
RDM_USER
TAS User
TestParameter1

Assigned Roles*:
Super User
Default Role

On the **User Group Details** UI (Figure 72), you can view user details, assign/unassign users, activate/deactivate user groups and update the group details.

Activate or Deactivate a User Group

To deactivate a user group:

1. On the **User Group Details** UI (Figure 72), click **Deactivate**.
2. On the Confirmation pop-up, click **Yes**.

   Message: “User Group deactivated successfully” is displayed.

If the user belongs to single user group and if the user group is deactivated, the user will be in active state but cannot login.

If the user belongs to multiple user groups and if any one user group is deactivated, the user will be in active state and can login.

If the user belongs to both active and deactivated usergroup and when the user logins, the user can only see the activities of the active user group.

To activate a user group:

1. On the **Manage User Groups** UI (Figure 70), select the **Inactive** option and click **Search**.

   The **Search Results** pane displays the results.
2. On the **Manage User Groups** UI (Figure 70), in the **Search Results** pane, select the required user group whose status is Inactive and click **User Group Details**.
3. On the **User Group Details** UI (Figure 72), click **Activate**.
4. On the Confirmation pop-up, click **Yes**.

   Message: “User Group activated successfully” is displayed.

Save as a New User Group

To save an existing user group as a new user group:

1. On the **User Group Details** UI (Figure 72), in the **Group Name** field, enter a new name for the user group.
2. In the **Description** field, enter the description of the user group.

   You can assign new users and roles to the users. For detailed information about assigning new users and assigning roles to users, see *“Manage User Groups”* and *“Manage Roles”* in this chapter.

   When a new group is created using “Save as New” option”, the Organization field is non-editable and will display the existing value.
3. Click **Save as New**.

   Message: “User Group created successfully” is displayed.

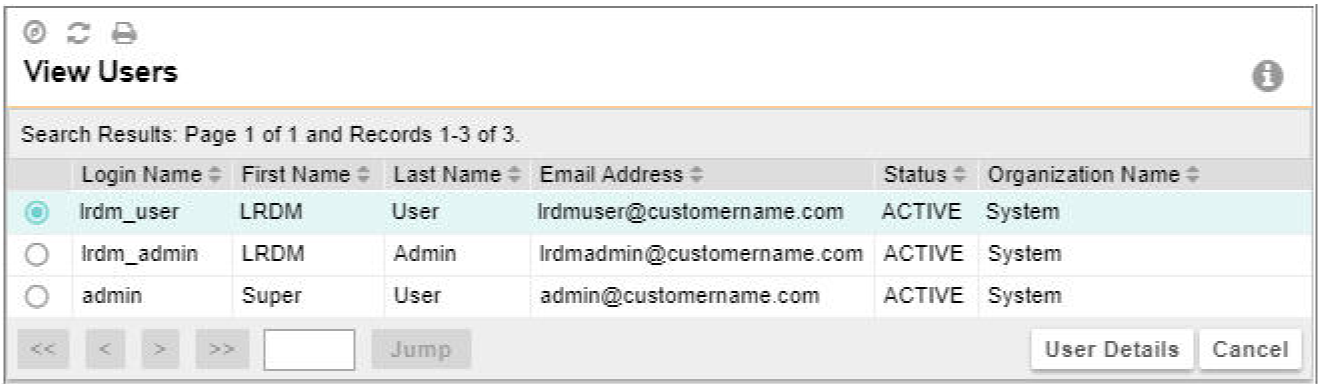
View and Edit Users of the Selected User Group

To view users of a user group:

1. On the **User Group Details** UI (Figure 72), click **View**.

   The **View Users** UI (Figure 73) is displayed. The **View Users** UI displays the users of the selected user group.

Figure 73: View Users



Search Results: Page 1 of 1 and Records 1-3 of 3.

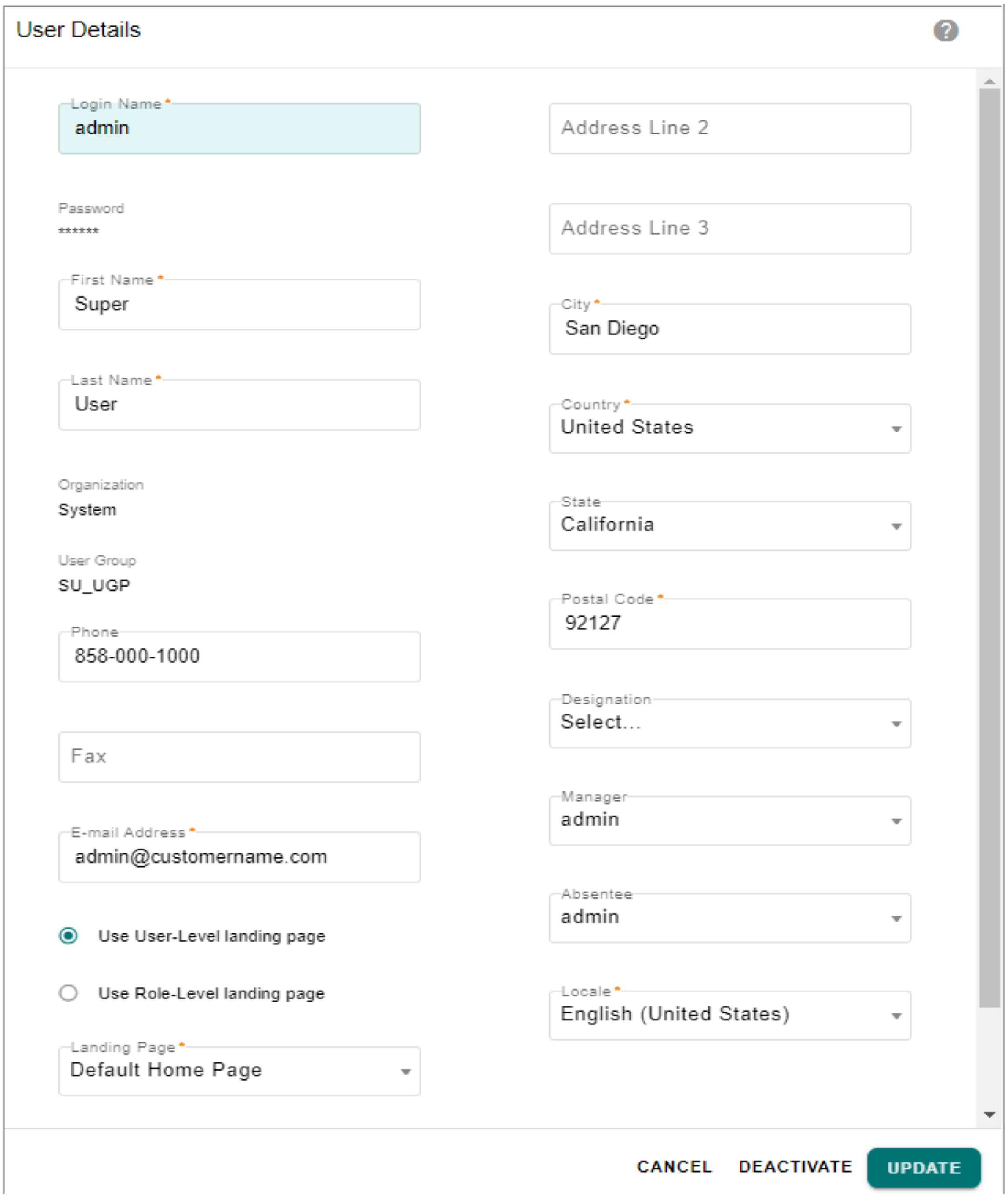
	Login Name	First Name	Last Name	Email Address	Status	Organization Name
●	lrdm_user	LRDM	User	lrdmuser@customername.com	ACTIVE	System
○	lrdm_admin	LRDM	Admin	lrdmadmin@customername.com	ACTIVE	System
○	admin	Super	User	admin@customername.com	ACTIVE	System

To edit users of a user group:

1. On the **View Users** UI (Figure 73), click the Menu icon corresponding to the required user, and click **User Details.**

   The **User Details** UI (Figure 74) is displayed for the selected user.

Figure 74: User Details



Login Name* admin

Password ******

First Name* Super

Last Name* User

Organization System

User Group SU_UGP

Phone 858-000-1000

Fax

E-mail Address* admin@customername.com

● Use User-Level landing page

○ Use Role-Level landing page

Landing Page* Default Home Page

Address Line 2

Address Line 3

City* San Diego

Country* United States

State California

Postal Code* 92127

Designation Select...

Manager admin

Absentee admin

Locale* English (United States)

1 On the **User Details** UI (Figure 74), you can

- edit information and click **Update** to save the changes.
- click **Deactivate** to deactivate the user.

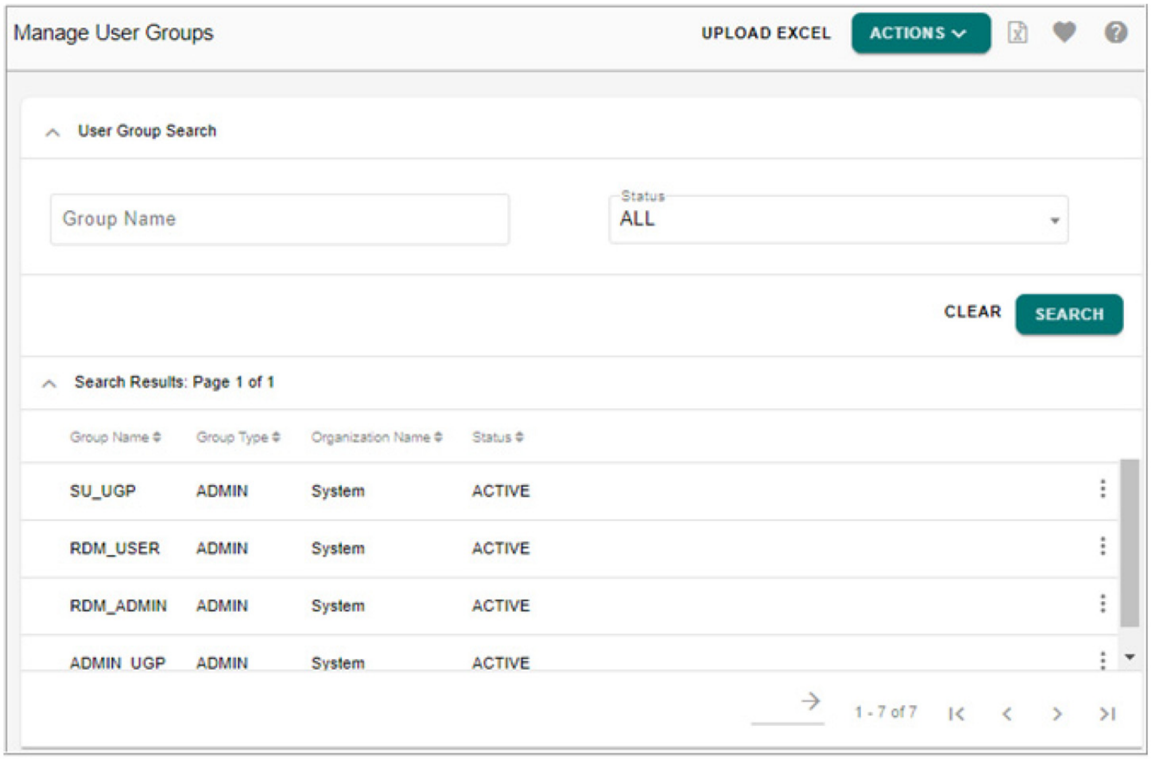
  The selected user will be deactivated and will not be visible on the **User Search** UI (Figure 73).
- click **Cancel** to navigate to **View Users** UI (Figure 73).

Assign or Unassign Users to User Group

To assign users to user group:

1 On the **Manage User Groups** UI (Figure 75), click the Menu icon corresponding to the user group and click **User Group Details**.

Figure 75: Manage User Groups



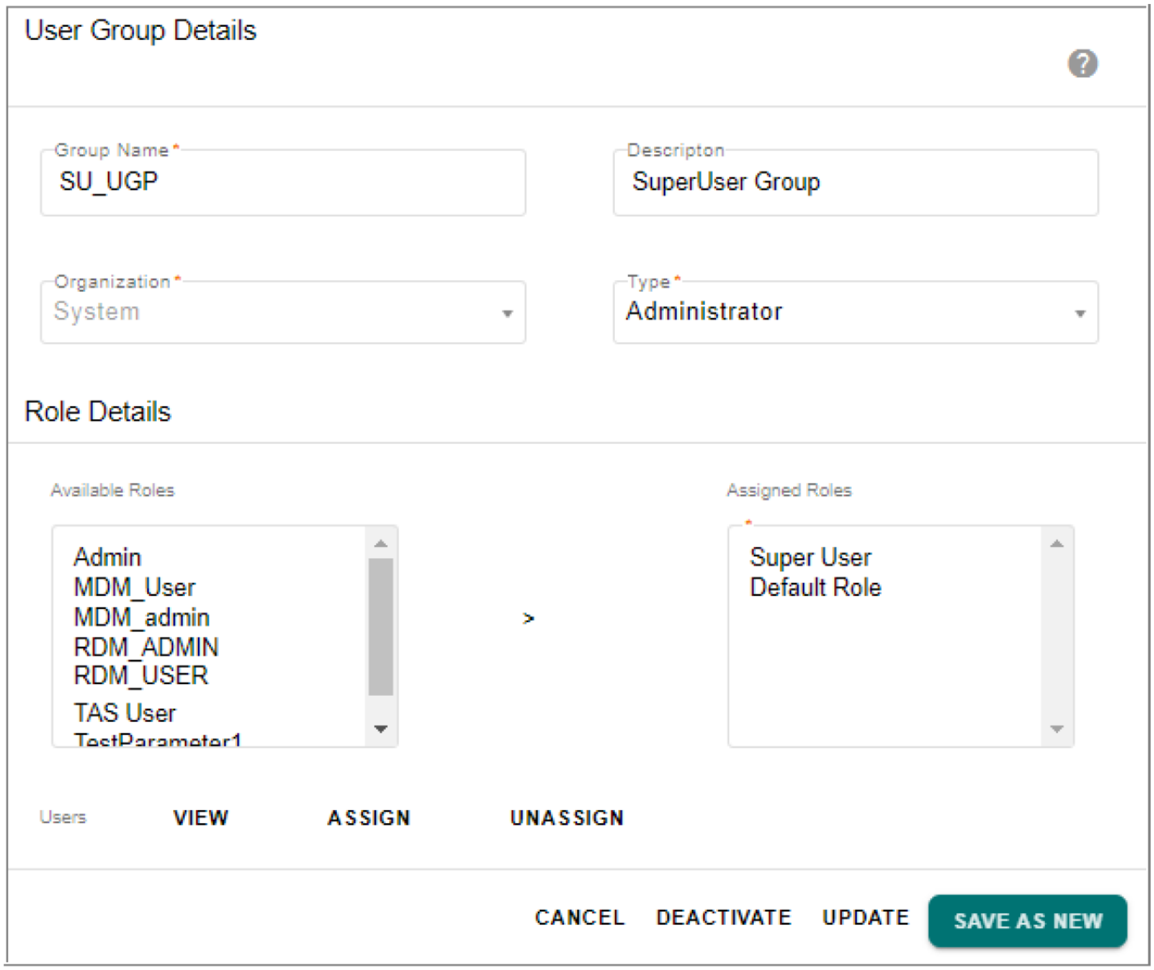
Group Name

Status: ALL

Group Name	Group Type	Organization Name	Status
SU_UGP	ADMIN	System	ACTIVE
RDM_USER	ADMIN	System	ACTIVE
RDM_ADMIN	ADMIN	System	ACTIVE
ADMIN_UGP	ADMIN	System	ACTIVE

2 On the **User Group Details** UI (Figure 76), click **Assign**.

Figure 76: User Group Details



User Group Details

Group Name*: SU_UGP

Descripton: SuperUser Group

Organization*: System

Type*: Administrator

Role Details

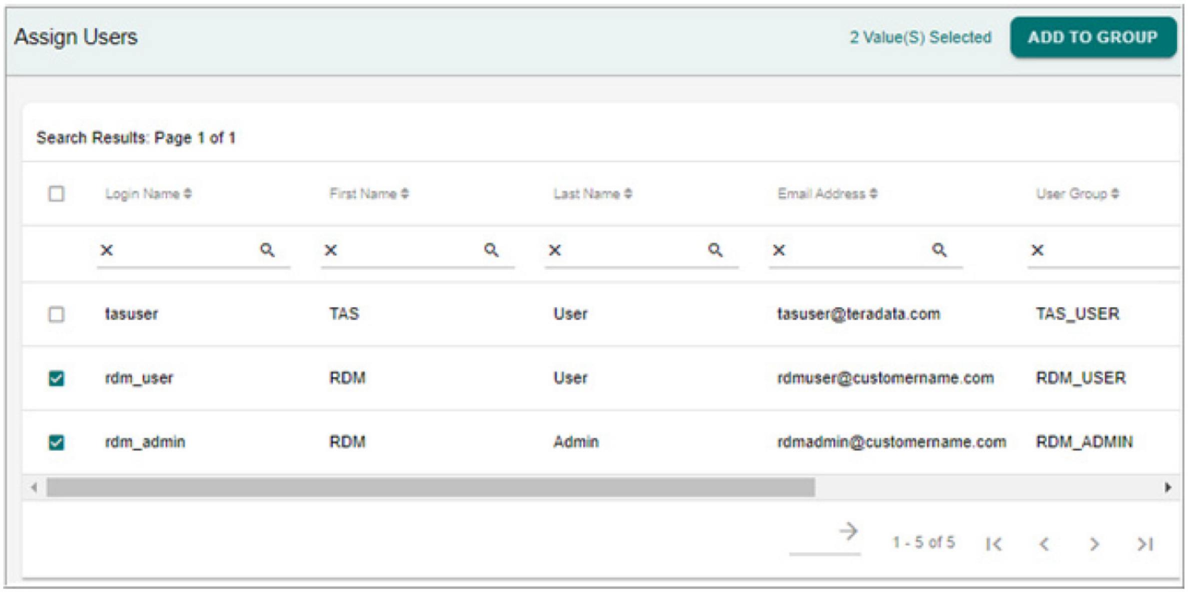
Available Roles:

Admin
MDM_User
MDM_admin
RDM_ADMIN
RDM_USER
TAS User
TestParameter1

Assigned Roles*:

Super User
Default Role

Figure 77: Assign Users



Assign Users

2 Value(S) Selected

Search Results: Page 1 of 1

☐	Login Name	First Name	Last Name	Email Address	User Group
☐	tasuser	TAS	User	tasuser@teradata.com	TAS_USER
☑	rdm_user	RDM	User	rdmuser@customername.com	RDM_USER
☑	rdm_admin	RDM	Admin	rdmadmin@customername.com	RDM_ADMIN

1 - 5 of 5

3 On the **Assign Users** UI (Figure 77), select the users and click **Add to Group**.

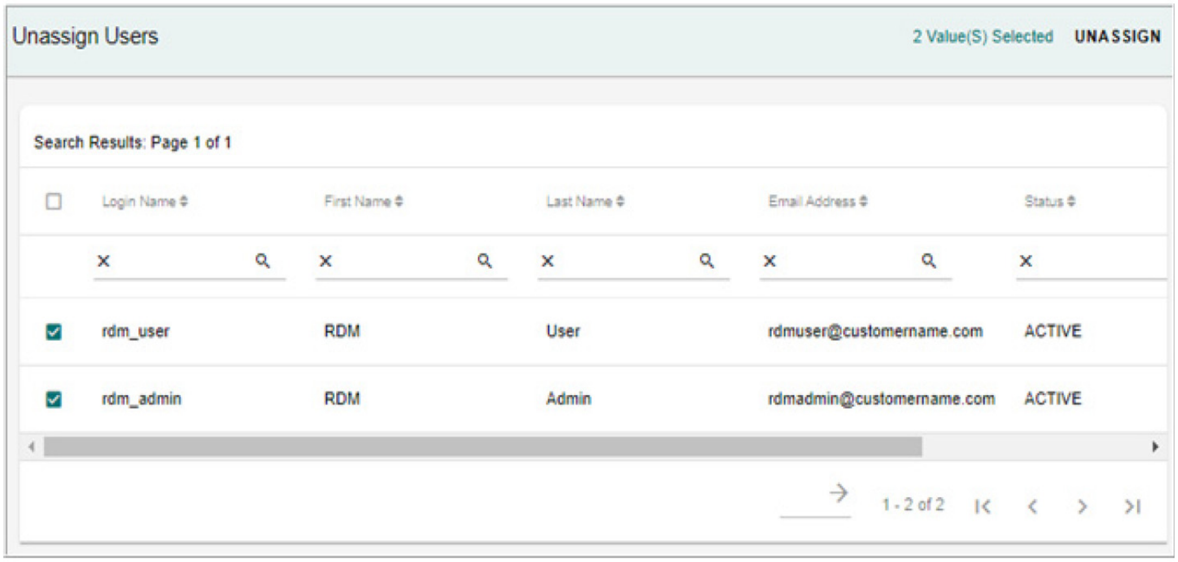
Message: “User(s) added to the user group successfully” is displayed on **User Group Details** UI. The added user(s) can be viewed on the View Users UI.

To unassign users from user groups:

1 On the **User Group Details** UI (Figure 76), click **Unassign**.

The **Unassign Users** UI (Figure 78) is displayed.

Figure 78: Unassign Users



Search Results: Page 1 of 1

☐	Login Name	First Name	Last Name	Email Address	Status
☑	rdm_user	RDM	User	rdmuser@customername.com	ACTIVE
☑	rdm_admin	RDM	Admin	rdmadmin@customername.com	ACTIVE

2 On the **Unassign Users** UI (Figure 78), select the users and click **Unassign**.

Message: “User(s) removed from user group successfully” is displayed on **User Group Details** UI.

User(s) assigned to single user group cannot be unassigned.

Upload Excel

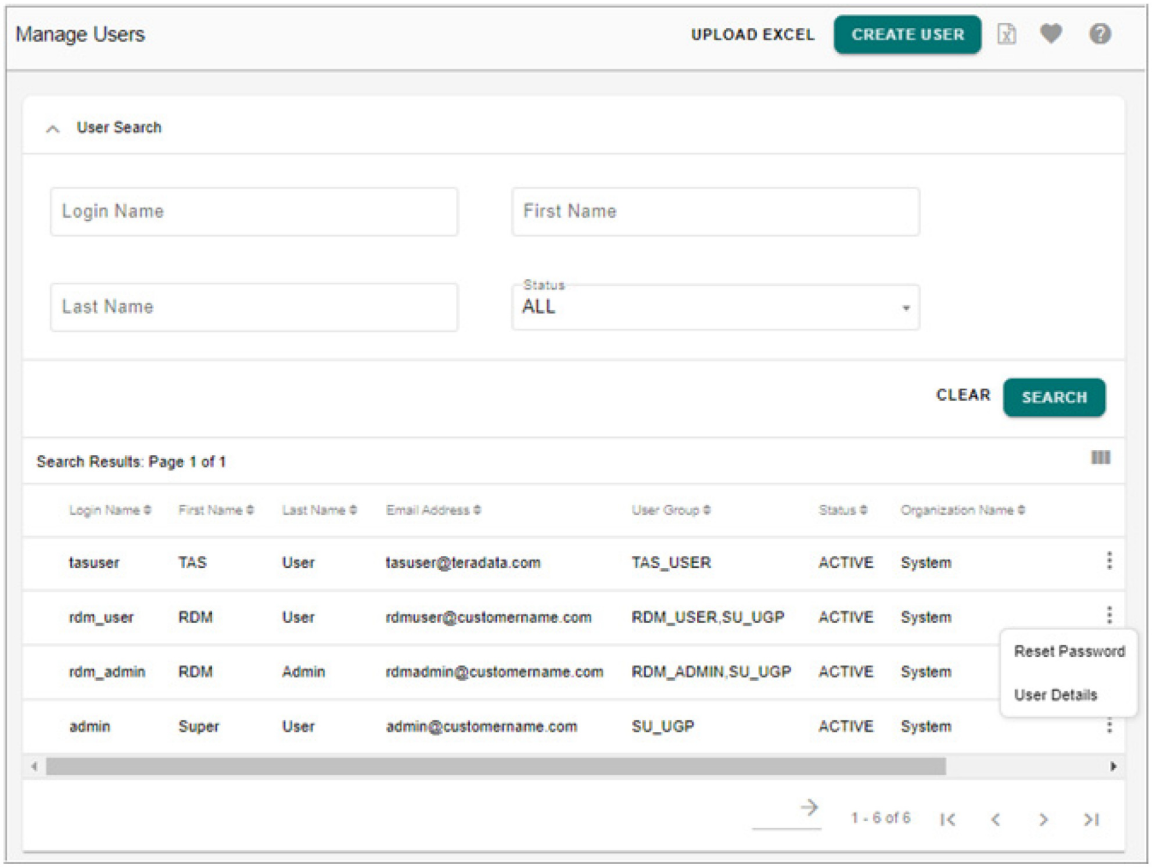
The Upload Excel option on the Manage User Groups UI provides the ability to upload data to create user groups. For details, see Section : “Upload Excel Data.”

Manage Users

Navigate to **Manage Users** UI from left navigation **Administration** -> **User Management** -> **Users**. The Figure 79 displays the **Manage Users** UI.

- The Manage Users UI displays all the existing users. You can search for a particular user by specifying either login name or first name or last name or user status.
- On the Manage Users UI, using the **Create User** option, you can create new user by entering all the required user profile details. A user with valid credentials can log into the Product User Interface.
- Using the **User Details** option, you can view and update the existing user details and activate/deactivate the user.
- Using the Reset Password option, you can reset the password of the selected user.

Figure 79: Manage Users



Login Name	First Name	Last Name	Email Address	User Group	Status	Organization Name
tasuser	TAS	User	tasuser@teradata.com	TAS_USER	ACTIVE	System
rdm_user	RDM	User	rdmuser@customername.com	RDM_USER,SU_UGP	ACTIVE	System
rdm_admin	RDM	Admin	rdmadmin@customername.com	RDM_ADMIN,SU_UGP	ACTIVE	System
admin	Super	User	admin@customername.com	SU_UGP	ACTIVE	System

The Manage Users UI displays all the existing users. On the Manage Users UI, you can perform the following functions:

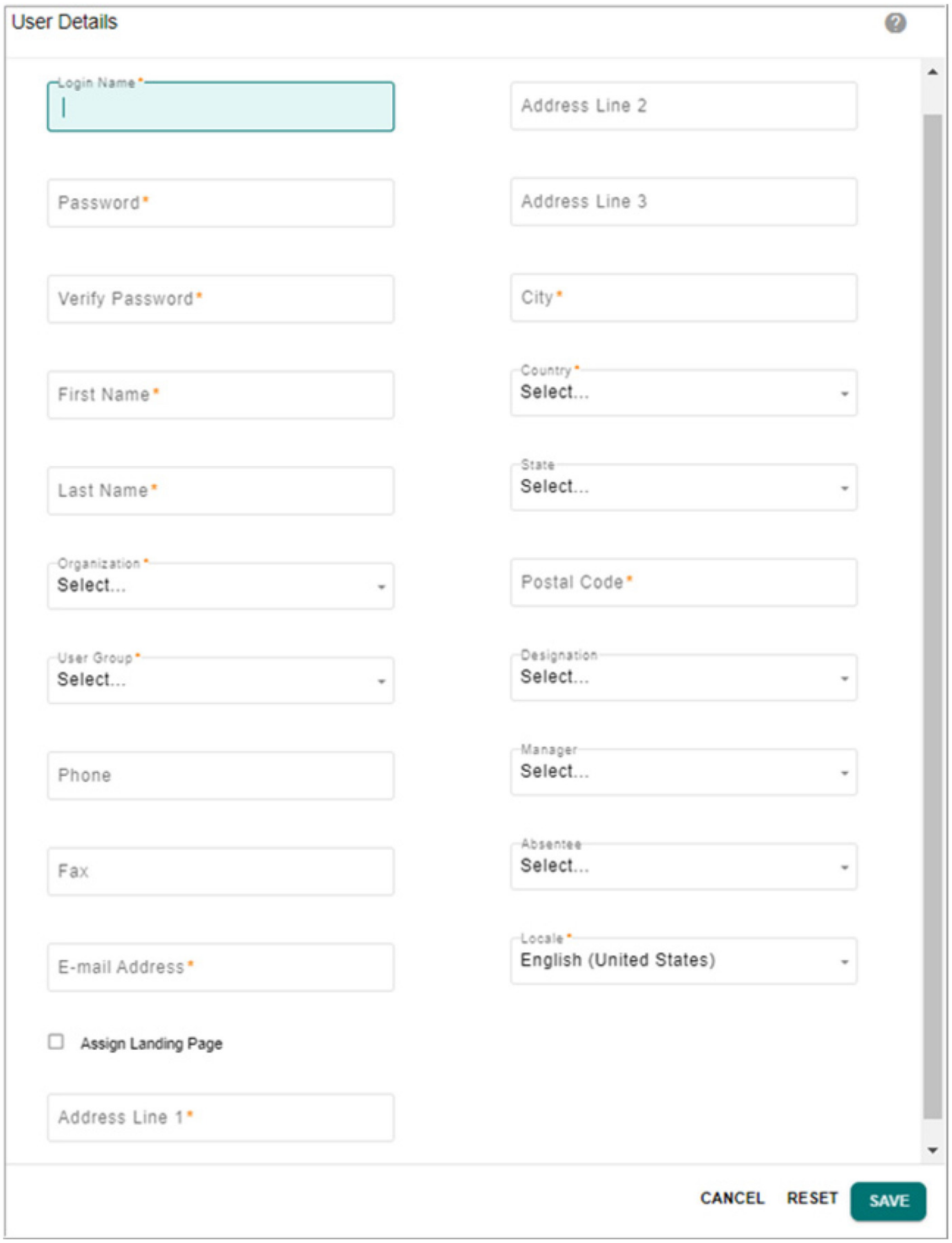
- Create User
- Other Functions on Manage Users UI

Create User

To create a user:

1 On the **Manage Users** UI (Figure 79), click **Create User**.

Figure 80: User Details—General Information



Locale*: English (United States)

2 On the **User Details—General Information** UI (Figure 80), enter the required details as below:

- **Login Name**: unique login name for the user.
- **Password**: the password for the user. The password is case-sensitive.
- **Verify Password**: re-enter the password for the user.
- **First Name**: user’s first name.
- **Last Name**: user’s last Name.
- **Organization**: select the organization name.
- **User Group**: select the User Group to which the user belongs.

You can select multiple user group for the selected organization. That is, one user can belong to multiple user group.

- **Phone**: user’s phone number.
- **Fax**: user’s fax number.
- **E-mail Address**: user’s e-mail address.

The email template can be modified by editing following files.

- `<MDM_Install_Directory>\Runtime\cfg\messaging.properties`
- `<MDM_Install_Directory>\Runtime\web\mdmclient\WEB-INF\bcm\cfg\messaging.properties`
- `<MDM_Install_Directory>\Runtime\web\mdmclient\WEB-INF\classes\messaging.properties`
- `<MDM_Install_Directory>\Runtime\web\mdmclient\WEB-INF\classes\messaging_en_US.properties`

- **Assign Landing Page**: Assign Landing page for user. For details see Section : “Configuring MDM Landing Page.” in Chapter 2: “Admin Tasks.”
- **Address Line 1, Address Line 2, Address Line 3**: user’s address details.
- **City**: select the city to which the user belongs.
- **Country**: select the country to which the user belongs.
- **State**: select the state to which the user belongs.
- **Postal Code**: user’s postal code.
- **Designation**: select the user’s designation.
- **Manager**: select the Manager for the user.
- **Absentee**: select the required user from the same group who can be assigned the tasks during the current user’s absence.
- **Locale**: select the language setting for the user. For detailed information about the locale settings, see Chapter 6: “MDM UI Customization”.

3. Click **Reset** to undo the changes if needed.
4. Click **Save** to create new user.

   Message: “User created successfully” is displayed.

   The new user is created and associated with the selected user group.

After creating the user, login as the new user created to view the activities for which you have set the relevant permissions.

Other Functions on Manage Users UI

On the Manage Users UI, you can also perform the following functions:

- Search User
- View User Details
- Reset Password
- Upload Excel

Search User

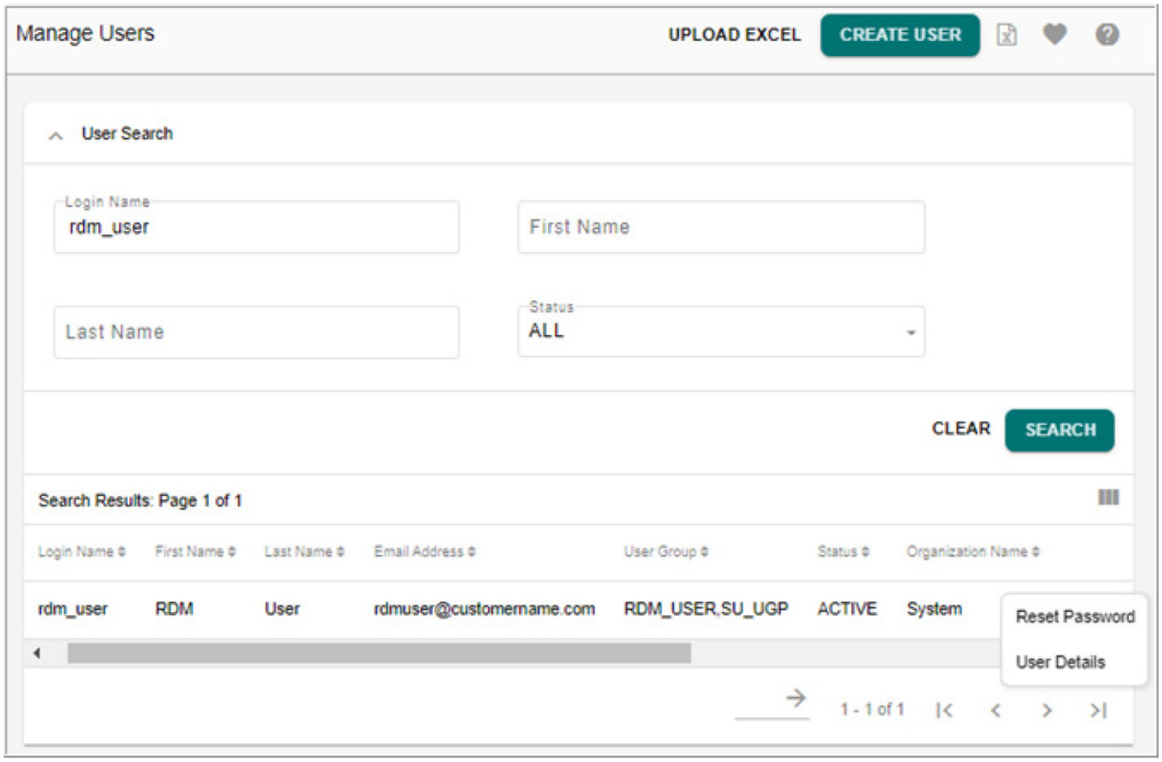
To search existing users:

1. On the **Manage Users** UI, search for a user by specifying any one of the following search parameters or all of these as in Figure 81.
    - Login Name
    - First Name
    - Last Name
    - Status

      In the Status drop-down,

        - if **All** option is selected, the search result displays all the users. By default, **All** option is selected.
        - if **Inactive** option is selected, the search result displays all those user whose status is inactive.
        - if **Active** option is selected, the search result displays all those users whose status is active.
        - if **Locked** option is selected, the search result displays all those users whose status is locked.

Figure 81: User Search



Login Name: rdm_user

Status: ALL

Search Results: Page 1 of 1

Login Name	First Name	Last Name	Email Address	User Group	Status	Organization Name
rdm_user	RDM	User	rdmuser@customername.com	RDM_USER,SU_UGP	ACTIVE	System

2 Click **Search**.

The **Search Results** pane displays the search results.

- If you search for users without specifying any criteria in the search fields, all the available users will be displayed.
- You can sort the columns using the Ascending/Descending arrows.

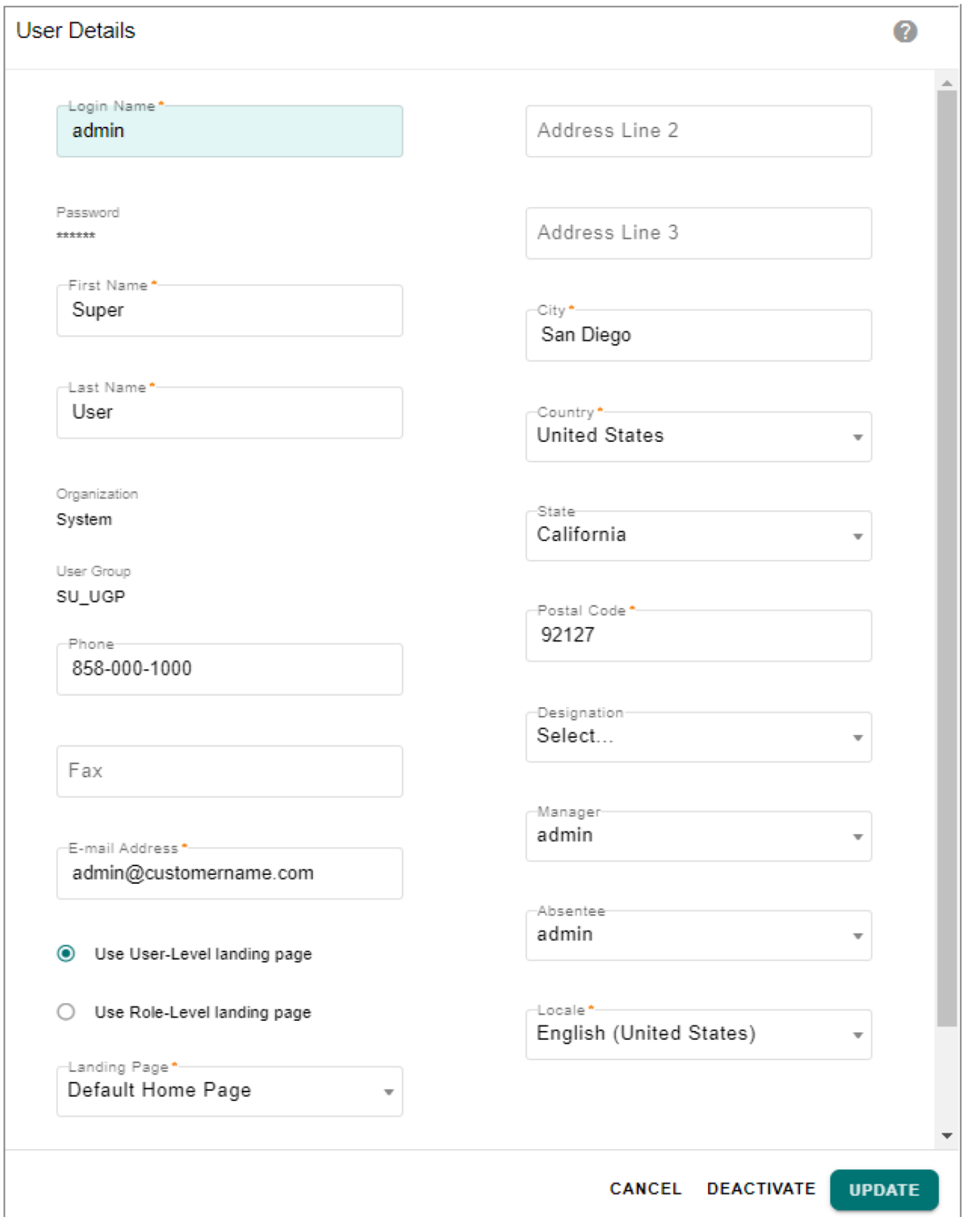
View User Details

To view existing user details:

1 On the **Manage Users** UI (Figure 79), select any existing user and click **User Details**.

The **User Details** UI displays the details of the selected user as in Figure 82.

Figure 82: User Details


User Details

Login Name* admin

Password ******

First Name* Super

Last Name* User

Organization System

User Group SU_UGP

Phone 858-000-1000

Fax

E-mail Address* admin@customername.com

● Use User-Level landing page

○ Use Role-Level landing page

Landing Page* Default Home Page

Address Line 2

Address Line 3

City* San Diego

Country* United States

State California

Postal Code* 92127

Designation Select...

Manager admin

Absentee admin

Locale* English (United States)

2 On the **User Details** UI (Figure 82), modify the required details and click **Update**.

For detailed information about the fields on the **User Details** UI, see Section : “Manage Users”.

Message: “The user profile has been updated successfully” is displayed.

Reset Password

To reset user password:

1 On the **Manage Users** UI (Figure 79), click the Menu icon corresponding to the user and click **Reset Password**.

2 On the Confirmation pop-up, click **Yes**.

Message: “The password has been changed successfully” is displayed.

If the admin resets the password for a locked or inactive user, it will not automatically unlock or activate the user account to enable login.

Upload Excel

The Upload Excel option on the Manage Users UI provides the ability to upload data to create users. For details, see Section : “Upload Excel Data.”

Locking and Unlocking User Account

MDM supports the locking and unlocking a user account feature. The user account would be locked, if the user fails to supply a valid password for a predefined number of login attempts. Once the account is locked, you would not be able to login unless the account is unlocked. Unlocking can be executed by any user who has the rights to manage the users. However if your login attempts have not reached the predefined number of login attempts within a predefined time interval, the number of login attempts would be reset to zero that is, you can try to login again with the predefined number of attempts.

- Admin User account would never be locked.
- After a successful login, the number of wrong attempts is set to zero.
- Inactive users cannot be locked.
- For the first login, the users must login with the correct password and perform the change password process else the user would not be locked for any number of wrong attempts.
- Once a user account is locked, the user cannot use the feature ‘Change Password’ or ‘Forgot Password’.

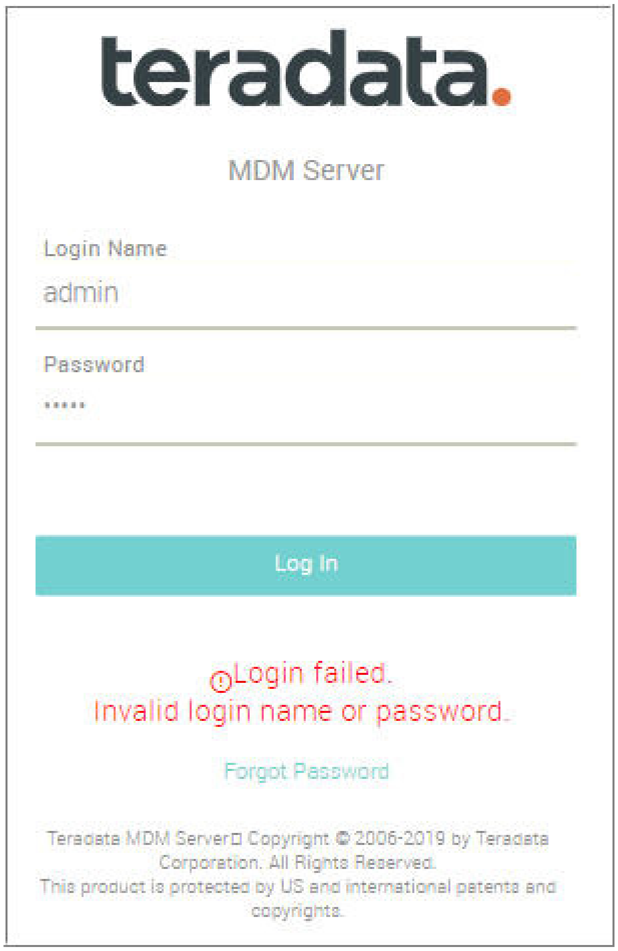
Locking a User Account

The following section illustrates the locking feature.

1 On the MDM UI, enter the login name and password.

If a wrong password is entered, the login failed message is displayed as in Figure 83.

Figure 83: Login Failed



Login Name: admin

Password: *****

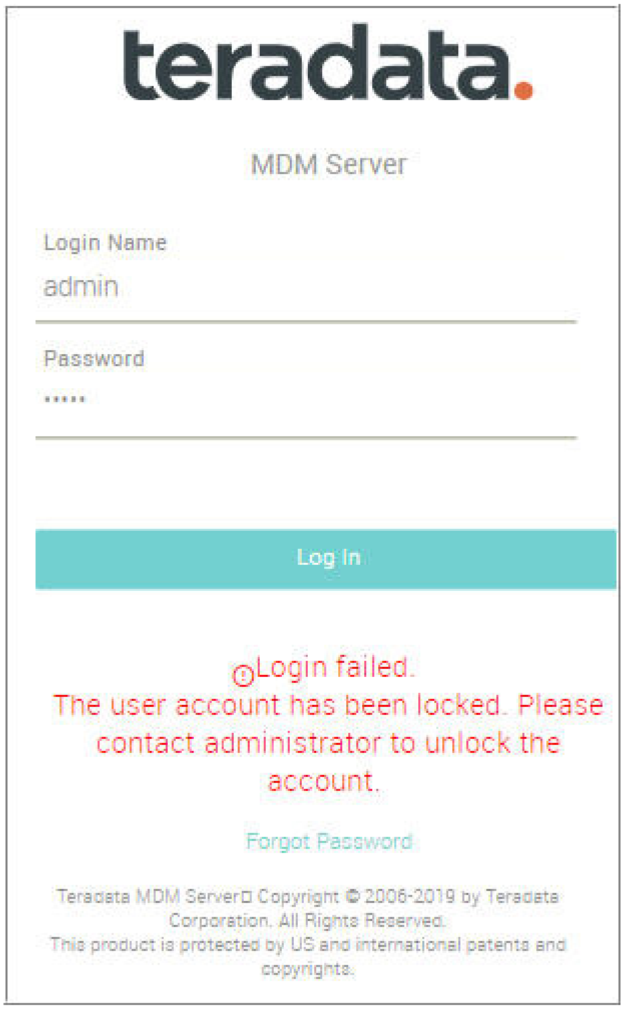
Login failed.
Invalid login name or password.

Teradata MDM Server Copyright © 2006-2019 by Teradata Corporation. All Rights Reserved.
This product is protected by US and international patents and copyrights.

2 On the MDM UI, enter the login name and the password again.

If you have tried entering wrong password subsequently for the predefined number of attempts say three, the account locked message is displayed as in Figure 84.

Figure 84: User Account Locked



MDM Server

Login Name
admin

Password
*****

Login failed.
The user account has been locked. Please contact administrator to unlock the account.

Teradata MDM Server□ Copyright © 2006-2019 by Teradata Corporation. All Rights Reserved.
This product is protected by US and international patents and copyrights.

By default, the predefined number of attempts is set to three and predefined time interval is set to 24hrs. You can modify the settings as per your requirement. To modify the default settings, perform the following steps:

a Edit the following parameters under `<service_param>` in the platform.xml available at: *<MDM_Install_Directory>\cfg\properties.*

```
<param Name="LOCK_PASSWORD_IN_ATTEMPTS" Value="3"/>
<param Name="RESET_ATTEMPTS_IN_HOURS" Value="24"/>
```

b Restart MDM.

Unlocking the User Account

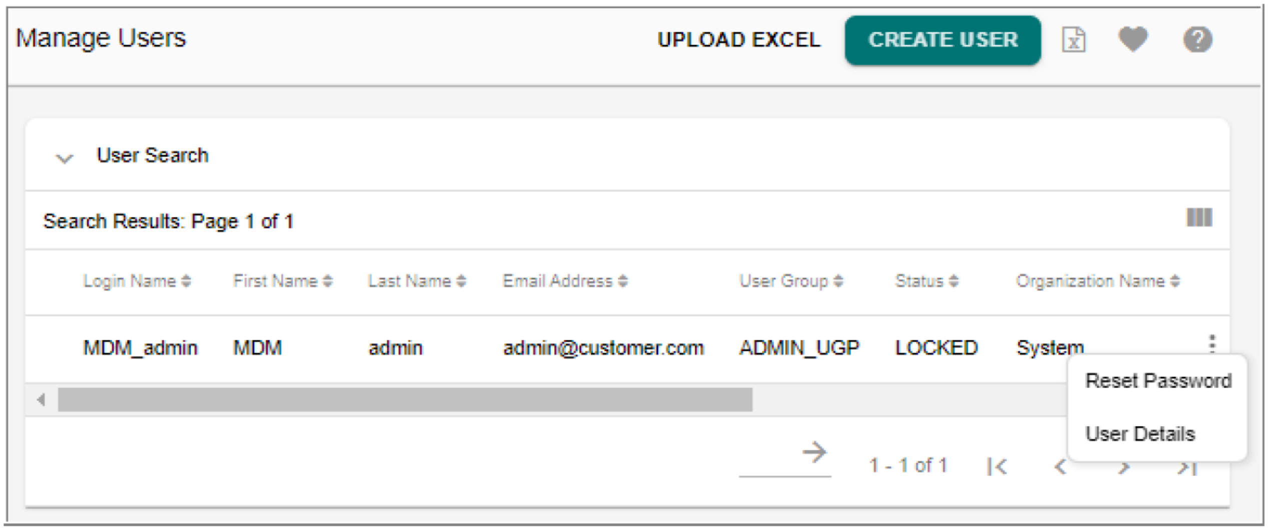
Unlocking can be done by any user with manage users privileges.

Perform the following steps to unlock an user account:

1. On the MDM UI, login with an account having privileges to manage users.
2. On the navigation pane, expand **Administration**, expand **User Management** and click **Users**.
3. On the **Manage Users** UI (Figure 85), select the **Locked** option from **Status** drop-down and click **Search**.

   The **Search Results** pane displays the user accounts. The **Status** column on the **Search Results** pane displays the status as LOCKED as in Figure 85.

Figure 85: Manage User—User Account Status Locked

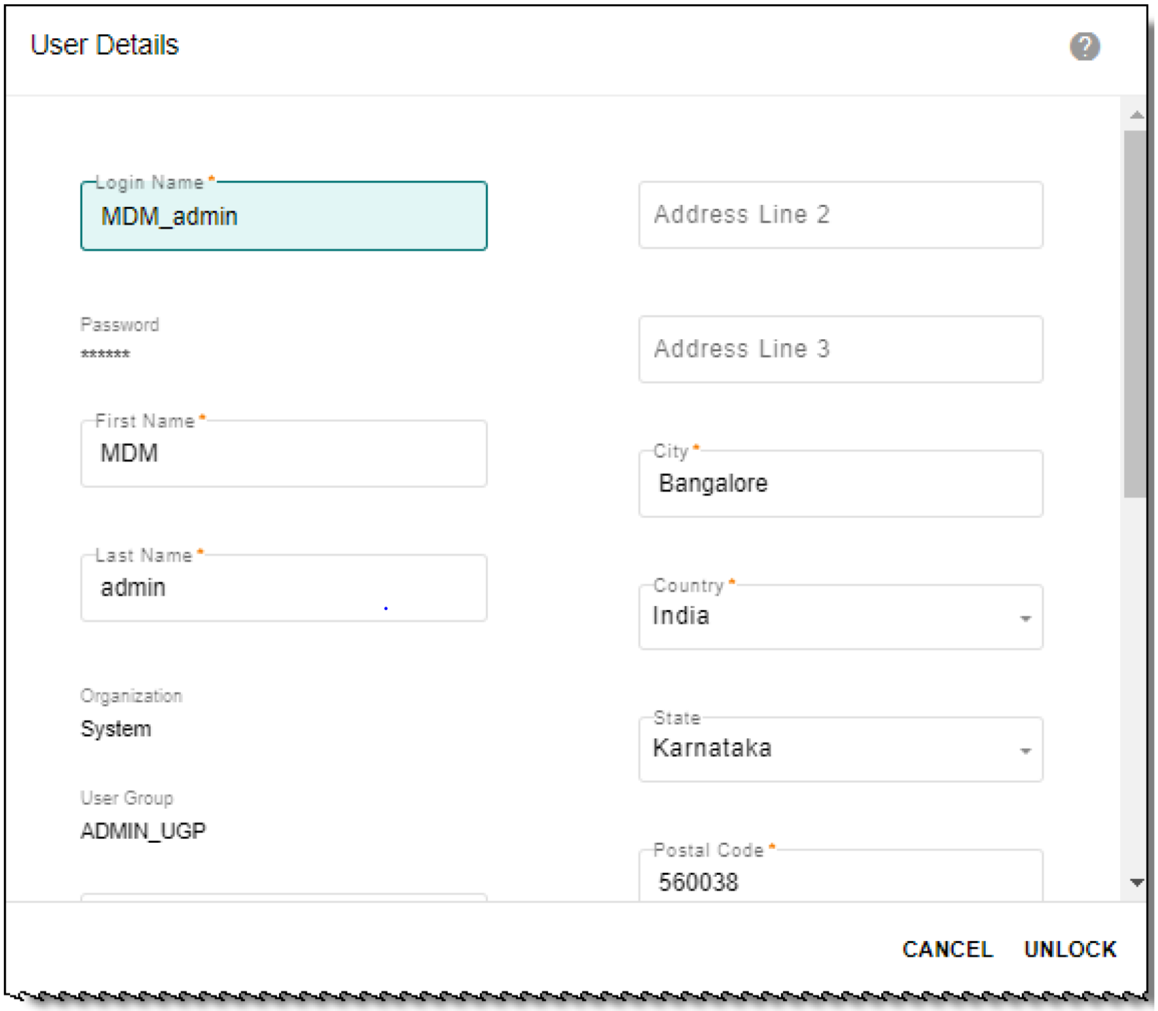


Login Name	First Name	Last Name	Email Address	User Group	Status	Organization Name
MDM_admin	MDM	admin	admin@customer.com	ADMIN_UGP	LOCKED	System

4. On the **Manage Users** UI with the status displayed as LOCKED (Figure 85), select the user and click **User Details**.

   The **User Details** (Figure 86) UI is displayed.

Figure 86: User Details



User Details

Login Name* MDM_admin

Password ******

First Name* MDM

Last Name* admin

Organization System

User Group ADMIN_UGP

Address Line 2

Address Line 3

City* Bangalore

Country* India

State Karnataka

Postal Code* 560038

5 On the **User Details** (Figure 86), click **Unlock.**

The message: Unlock Successful is displayed on the **User Details** UI.

If the admin resets the password for a locked user, it will not automatically unlock the user account. The admin has to explicitly unlock the user account for enabling login of a user.

Upload Excel Data

The Upload Excel option on the User Management UI provides the ability to upload data to manage Users, Groups, Roles, Activities and Role-Activity mapping thereby enabling the creation of users, groups, roles, activities and role-activity mappings in bulk. On the User

Management UIs, the following options are provided to support upload excel data of users, user groups, roles and activities modules. Upload of entities of user management (users, user groups, activities, roles and role-activity mapping) supports error correction. Erroneous records can be corrected and reloaded.

- Upload Button—to upload excel file containing data related to users, user groups, roles, activities, role-activity mappings.
- Template—for easy upload of data to user management modules, you can download the templates available on the top right corner of each user management UI. In the templates, you can enter the correct details and then upload the excel file to respective modules. All mandatory fields need to be populated in the templates for successful upload. The upload in turn calls the user management APIs and create the related records.
- Reference data—reference data is provided on each page of user management module, which can be downloaded to fill the template. The reference data is helpful to fill in the excel file columns with correct data. For example, to input the role name, you can download role data and find the appropriate role name. The following reference data are available on the user management UIs:
  - On Manage Users UI, you can download Locale, Country and State details. In the downloaded Excel file, you need to enter the locale, country and state name as provided in the database. You can find the appropriate names in the reference data available on each page.
  - On User Groups UI, you can download user group data.
  - On Roles UI, you can download role data.
  - On Activities UI, you can download activity and left navigation link and corresponding activity data.
- Error correction—during excel upload, all the validations required for creating users, user groups, roles, activities and role-activity mapping are performed. In case of errors, the erroneous records will be marked as error records with the valid error message and the correct records will be processed successfully.
- Update records through Excel Upload—you can update the existing users, user groups, activities, roles and role-activity mapping by uploading the related excel file.
  - For Users, the excel upload looks for existing login name and update the related details.
  - For User Groups, the excel upload looks for existing User Group and update the related details.
  - For Roles, the excel upload looks for role ID and updates Enable Edit access and landing page details.
  - For Activities, the update through excel upload is not supported.
  - For Role-Activity mappings, the excel upload update supports incremental upload of activities for a role. That is, you can upload activities to the role in addition to the already existing activities assigned to the role. Supports change of access (Create, Edit, Delete) for an activity assigned to a role.

While uploading the role details for the first time through Upload Excel option, you need to enter the landing page as MDM Default Home or leave the column value as BLANK as the default value will be taken.

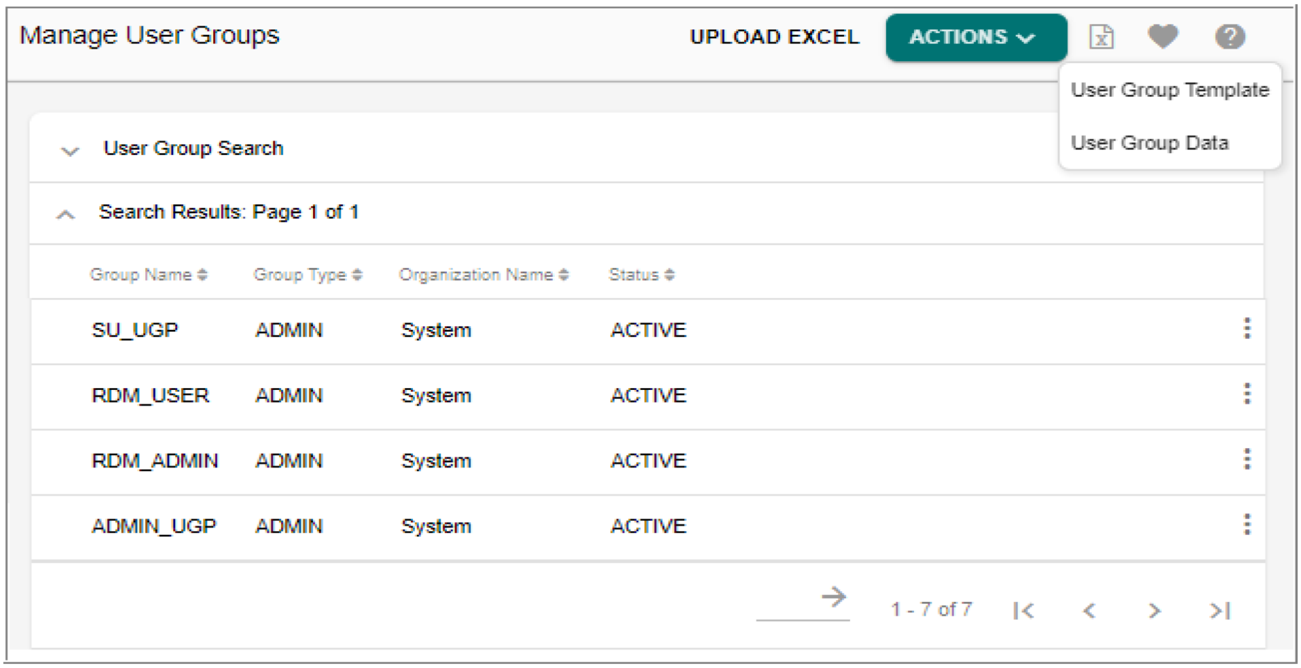
The process of uploading data to user role, user groups and activities are same. For user role, you can optionally upload either user roles or user role activity mapping as in step 5 below.

The following section describes the user group upload. Perform the following steps to upload data to Manage User Groups UI:

1 Navigate to **Manage User Groups** UI from **Administration** ->**User Management** -> **User Groups**.

2 On the **Manage User Groups** UI, download the template by clicking on the Template icon as in Figure 87 and select **User Group Template**.

Figure 87: Manage User Groups



Group Name	Group Type	Organization Name	Status
SU_UGP	ADMIN	System	ACTIVE
RDM_USER	ADMIN	System	ACTIVE
RDM_ADMIN	ADMIN	System	ACTIVE
ADMIN_UGP	ADMIN	System	ACTIVE

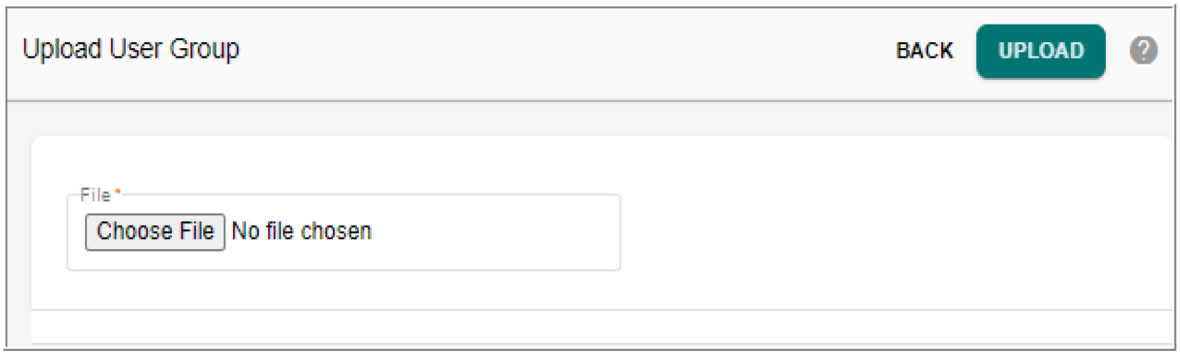
3 In the downloaded excel sheet, enter the required details.

For reference, you can download the Reference Data template (User Group data).

4 On the **Manage User Groups** UI, click **Upload Excel**.

The **Upload User Group** UI (Figure 88) is displayed.

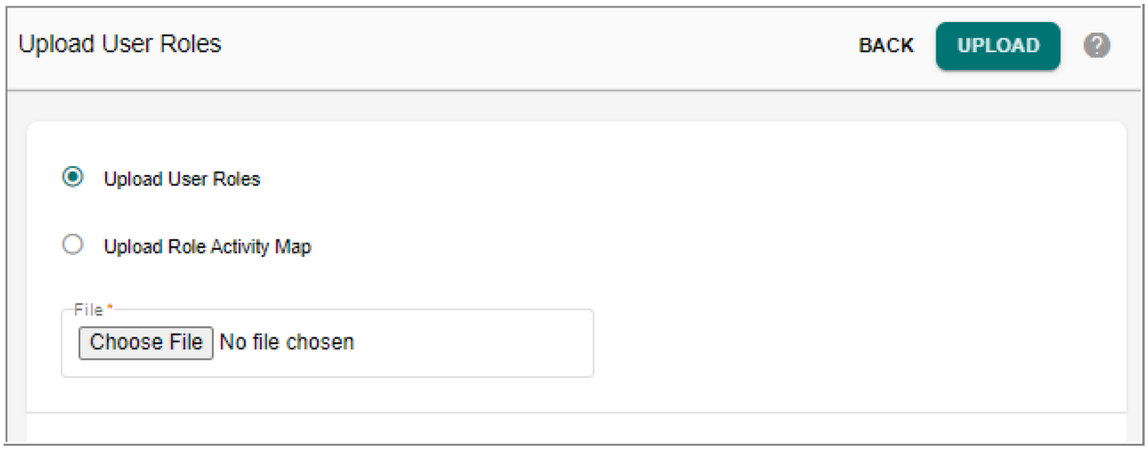
Figure 88: Upload User Group



5 On the **Upload User Group** UI (Figure 88), click **Choose File** to select the file and then click **Upload**.

In case of user role upload, the Upload User Role UI displays the option to upload either the user roles or role activity mapping as in Figure 89.

Figure 89: Upload User Role



● Upload User Roles

○ Upload Role Activity Map

The **View Reports** UI is displayed.

User Audit

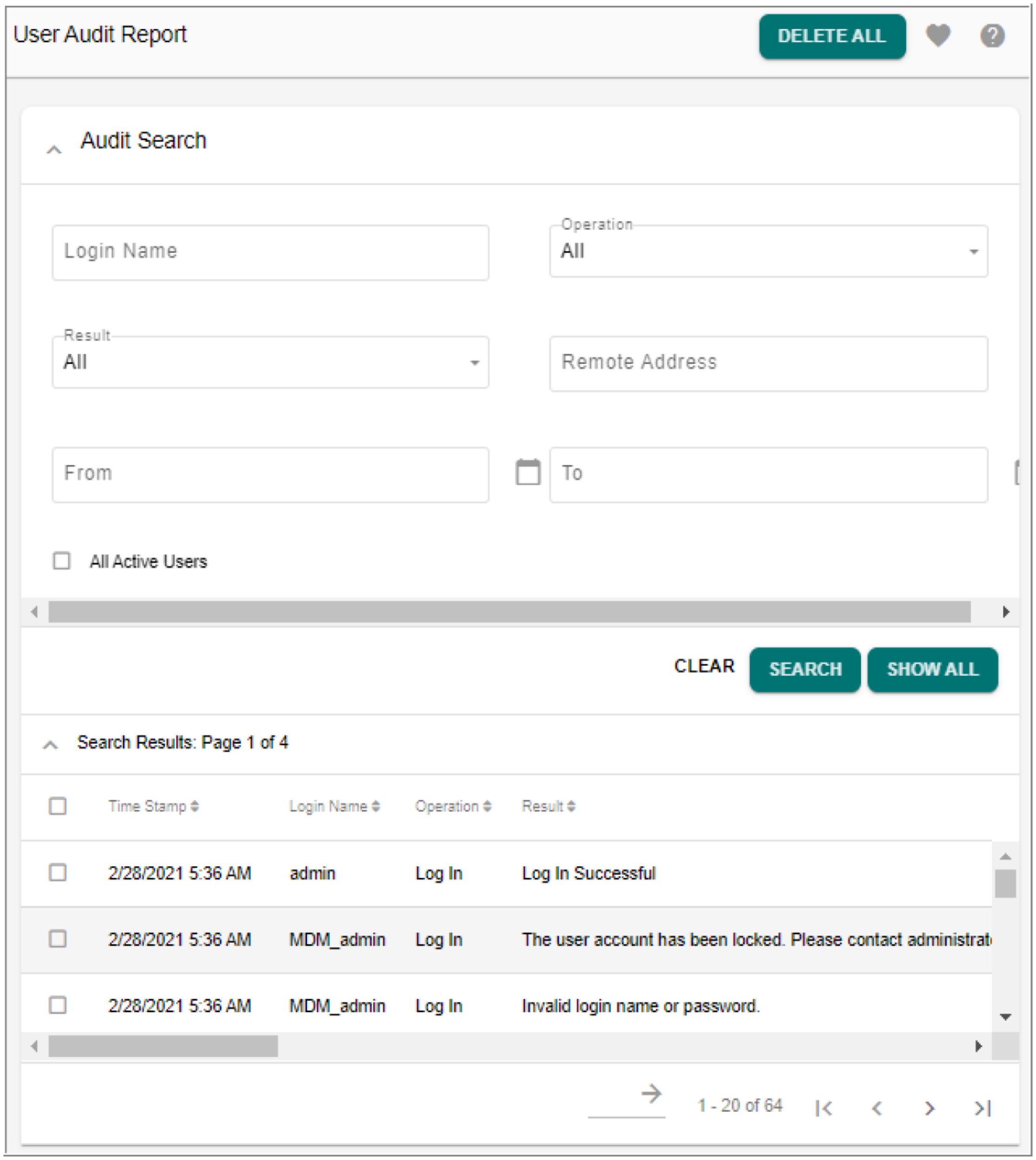
The User Audit Report feature in the User Management module enables user monitoring. It displays the current user login details and the history of all users logged on to the system.

Navigate to **User Audit Report** UI from left navigation pane **Administration -> User Management -> User Audit Report.**

The Figure 90 displays the User Audit Report UI. On the User Audit Report UI, you can perform the following functions:

- Search User Login Information
- Delete User Login Information

Figure 90: User Audit Report



Operation: All

Result: All

☐	Time Stamp	Login Name	Operation	Result
☐	2/28/2021 5:36 AM	admin	Log In	Log In Successful
☐	2/28/2021 5:36 AM	MDM_admin	Log In	The user account has been locked. Please contact administrat
☐	2/28/2021 5:36 AM	MDM_admin	Log In	Invalid login name or password.

Search User Login Information

To search user login details:

1 On the **User Audit Report** page (Figure 90), in the **Audit Search** pane, enter the search parameter and click **Search**.

You can search by any of the following parameters:

- **Login Name**: user login name.

- **Result**: can be any one of the following: All, Log In Successful, Log Out Successful, The given login name does not exists, Password is not valid, Password has expired or This user account is been locked.
- **Operation**: can be either All or Log In or Log Out.
- **Remote Address**: remote address of the logged in user.
- **Date**: From and To date.
- **All Active Users**: select this checkbox to display all the active users.

The **Search Results** pane displays the results.

Click on **Show All** displays the complete history of all the users logged on to the system.

Delete User Login Information

To delete user login details:

1. On the **User Audit Report** page (Figure 90), in the **Search Results** pane, select the required user login information and click **Delete Selected.**
2. On the confirmation pop-up, click **Yes**.

Click on **Delete All** will permanently delete all the user entries.

Public API Support for Manage Users & Manage User Groups

MDM provides the following APIs as public APIs to be invoked by external systems via web service calls to create, update, deactivate users and user groups and assign and unassign users from user groups.

- **Create user**
  - Purpose— to create new user.
  - Input format

```
<REQUEST Name="addUser" UserId=" ">
     <LOGIN_NAME Value=" "/>
     <FIRST_NAME Value=" "/>
     <LAST_NAME Value=" "/>
```

```
            <LOCALE Value=" "/>
            <ADDRESS1 Value=" "/>
            <ADDRESS2 Value=" " Optional="true"/>
            <ADDRESS3 Value=" " Optional="true"/>
            <ABSENTEE_ID Value=" " Optional="true"/>
            <ORG_ID Value=" "/>
            <CITY Value=" "/>
            <PHONE Value=" " Optional="true"/>
            <FAX Value=" " Optional="true"/>
            <STATE Value=" "/>
            <POSTAL_CODE Value=" "/>
            <MANAGER_ID Value=" " Optional="true"/>
            <COUNTRY Value=" "/>
            <DESIGNATION Value=" " Optional="true"/>
            <EMAIL_ADDRESS Value=" "/>
            <PASSWORD Value=" "/>
            <FORCE_PASSWORD_CHANGE Value="true|false"/>
         <USR_GRPS_SELECTED>
            <USER_GRP_ID Value=" "/>
            <USER_GRP_ID Value=" "/>
         </USR_GRPS_SELECTED>
      </REQUEST>
```

- Expected output:

```
<RESPONSE Status="Success" DbgTag_="REQUEST" DbgCmd_="addUser">
      <ID Value=" ">
 </RESPONSE>
```

- Attribute Description

  Table 7 provides the description of the various attributes used in the Create User API.

Table 7: Attribute Descriptions for Create User API

Field	Description	Mandatory / Optional Field
LOGIN_NAME	Login user name.	Mandatory
FIRST_NAME	Login user’s first name.	Mandatory
LAST_NAME	Login user’s last name. You can modify this value.	Mandatory
LOCALE	Language setting for the logged in user.	Mandatory
ADDRESS1	Login user’s address.	Mandatory
ADDRESS2	The user’s address details continued.	Optional
ADDRESS3	The user’s address details continued.	Optional

Table 7: Attribute Descriptions for Create User API

Field	Description	Mandatory / Optional Field
ABSENTEE_ID	Id of the person who can be assigned the tasks, in this login user's absence.	Optional
ORD_ID	Organization ID of the user.	Mandatory
CITY	City where the user is located.	Mandatory
PHONE	User's contact phone number.	Optional
FAX	User's fax number.	Optional
STATE	State where the user is located.	Mandatory
POSTAL CODE	User's postal code.	Mandatory
MANAGER_ID	User's Manager ID	Optional
COUNTRY	Country where the user is located.	Mandatory
DESIGNATION	User's designation.	Optional
EMAIL_ADDRESS	User's e-mail address.	Mandatory
PASSWORD	User's password.	Mandatory
FORCE_PASSWORD_CHANGE	Option to change the password.	True/False
USER_GRP_ID	User Group to which the User belongs.	Mandatory

- **Modify User**
  - Purpose— to update or modify existing user details.
  - Input format

```
<REQUEST Name="modifyUser">
   <ID Value=" "/>
   <LOGIN_NAME Value=" "/>
   <ORG_ID Value=" "/>
   <MANAGER_ID Value=" "/>
   <ABSENTEE_ID Value=" "/>
   <PASSWORD Value=" "/>
   <DESIGNATION Value=" " CodeMasterValue="true" ValidValues=" "/>
   <STATUS Value="ACTIVE" ValidValues="ACTIVE/INACTIVE"/>
   <FIRST_NAME Value=" "/>
   <MIDDLE_INITIAL Value=" "/>
   <LAST_NAME Value=" "/>
   <EMAIL_ADDRESS Value=" "/>
   <PHONE Value=" "/>
   <FAX Value=" "/>
   <ADDRESS1 Value=" "/>
```

```
        <ADDRESS2 Value=" "/>
        <ADDRESS3 Value=" "/>
        <POSTAL_CODE Value=" "/>
        <CITY Value=" "/>
        <STATE Value=" "/>
        <COUNTRY Value=" "/>
</REQUEST>
```

- Expected output

  ```
  <RESPONSE Status="Success"> </RESPONSE>
  ```

- Attribute Description

  Modify User API has the following attributes in addition to the attributes described in Table 7 for Create User API.

Table 8: Attribute Description for Modify User

Field	Description	Mandatory / Optional Field
ID	Login user ID.	Mandatory
MIDDLE_INITIAL	Middle name / Initial of the login user.	Mandatory
STATUS	Status value of the login user.	ACTIVE / INACTIVE

- **Deactivate User**
  - Purpose— to deactivate user details.
  - Input format

    ```
     <REQUEST Name="setUserStatus" UserId=" ">
          <USER_ID Value=" "/>
          <ID Value=" "/>
          <STATUS Value="INACTIVE"/>
    </REQUEST>
    ```

  - Expected output

    ```
    <RESPONSE Status="Success"> </RESPONSE>
    ```

  - Attribute Description

    Deactivate User API attributes are same as in Table 8 for Modify User API.
- **Create New User Group**
  - Purpose— to create new user group.
  - Input format

    ```
    <REQUEST Name="createUserGroup">
            <GRP_NAME Value=" "/>
            <ORG_ID Value=" "/>
            <ROLE_TEMP_ID Value=" "/>
            <GRP_TYPE Value=" "/>
            <DESC Value=" "/>
            <ASSIGN_ROLE_TEMPLATES>
    ```

```
              <ROLE_TEMPLATE Value=" "/>
        </ASSIGN_ROLE_TEMPLATES>
</REQUEST>
```

- Expected output

```
<RESPONSE Status="Success">
    <USER_GROUP_ID Value=" ">
 </RESPONSE>
```

When new user group is created using the above API, the status will be displayed as "Dormant". You need to activate the user group to change the status to Active.

- Attribute Description

  Create New User Group API has the following attributes as described in Table 9.

Table 9: Attribute Description for Create New User Group

Field	Description	Mandatory / Optional Field
GRP_NAME	Unique group name.	Mandatory
ORG_ID	Organization Id.	Mandatory
ROLE_TEMP_ID	Role Id to be assigned to the user group.	Mandatory
GRP_TYPE	Group type like Enterprise or Admin	Mandatory
DESC	Description of the user group	Optional
ROLE_TEMPLATE	Role template to be assigned to the user group.	Mandatory

- **Modify User Group**
  - Purpose— to modify existing user group details.
  - Input format

```
<REQUEST Name="modifyUserGroup" entireResponse="true" name="//
UserSecurity/getRolesForUser" ScenarioId="0" SysSource="UI">
   <ID Value=" "/>
   <GRP_NAME Value=" "/>
   <ORG_ID Value=" "/>
   <GRP_TYPE Value=" "/>
   <DESC Value=" "/>
   <STATUS Value=" "/>
   <ASSIGN_ROLES>
     <ROLE_ID Value=" "/>
```

```
            <ROLE_ID Value=" "/>
            <ROLE_ID Value=" "/>
        </ASSIGN_ROLES>
        <UNASSIGN_ROLES>
            <ROLE_ID Value=" "/>
            <ROLE_ID Value=" "/>
        </UNASSIGN_ROLES>
    </REQUEST>
```

- Expected output

  ```
  <RESPONSE Status="Success"> </RESPONSE>
  ```

- Attribute Description

  Modify User Group API has the following attributes in addition to the attributes described in Table 9 for Create New User Group API.

Table 10: Attribute Description for Modify User Group

Field	Description	Mandatory / Optional Field
ID	User group ID.	Mandatory
STATUS	Status value of the login user.	ACTIVE / INACTIVE

- **Deactivate User Group**
  - Purpose— to deactivate user group.
  - Input format

    ```
    <REQUEST Name="inActivateUserGroup">
             <USER_GROUP_ID Value=" "/>
              <USERS>
                  <USER/>
              </USERS>
    </REQUEST>
    ```

  - Expected output

    ```
    <RESPONSE Status="Success"> </RESPONSE>
    ```

  - Attribute Description

    Deactivate User Group API has the following attributes as described in Table 11.

Table 11: Attribute Description for Deactivate User Group

Field	Description	Mandatory / Optional Field
USER_GROUP_ID	Unique user group ID.	Mandatory
USER	User name.	Mandatory

- **Add user to User Group**

  - Purpose— to add user to user group.
  - Input format

```
<REQUEST Name="addUserToUserGroup">
     <USER_GROUP_ID Value=" "/>
      <USERS>
        <USER Value=" "/>
      </USERS>
</REQUEST>
```

  - Expected output

```
<RESPONSE Status="Success"> </RESPONSE>
```

  - Attribute Description

    Add User to User Group API has the attributes described in Table 11.

- **Remove user from User Group**
  - Purpose— to remove user from user group.
  - Input format

```
<REQUEST Name="removeUserFrmUserGroup">
      <USER_GROUP_ID Value=" "/>
      <USERS>
          <USER Value=" "/>
      </USERS>
</REQUEST>
```

  - Expected output

```
<RESPONSE Status="Success"> </RESPONSE>
```

  - Attribute Description

    Remove User from User Group API has the attributes described in Table 11.

CHAPTER 8 Configurable UI

What's In This Chapter

This chapter provides detailed information on configurable UIs.

Topics include:

Introduction

Teradata MDM's Configurable UI feature allows the business user to create a new user interface screen using a simple wizard method or generate a new UI in a single click. Configurable UI eliminates the need to perform MDM Studio development cycle and restart of server to introduce a new UI. Configuring a new UI can be performed either by Manage Configurable UI or Generate Configurable UI process.

Manage Configurable UI

Manage Configurable UI feature allows the business user to create and use user interface screens and view analytical data involving tables from various sources. Create Configurable UI provides the capability to map one or more non-MDM Tables/Views and MDM Tables/Documents into a single UI with configurable search and result options. It supports join definitions across selected data sources and supports operations like create, update, delete etc.

Key features of Manage Configurable UI:

- Reduce the development cycle involved in designing user interface.
- Integrate tables from various sources like MDM, NON-MDM etc.
- Configure UI with search and result panels based on simple wizard screens.
- Define multiple join conditions for tables.
- Support Temporal, Geospatial and Mass Update features.

Generate Configurable UI

Generate Configurable UI feature allows a business user with admin rights to generate a configurable UI on a table or view of selected service with a single click.

Key features of Generate Configurable UI:

- Auto generates configurable UI for any defined Master table or view, Staging table or view, or any registered source (non-MDM table or view).
- Generate left navigation link in alphabetical order for all auto generated configurable UIs under a predefined folder like View Configurable UI.
- Rearrange the auto generated left navigation links.
- Notify the configured user with details after the auto generation of configurable UI.
- Supports actions like create, edit, delete, search, mass update, copy and excel upload similar to as that of table editor. All features of table editor are available in auto generated configurable UI.
- A configurable UI with default OOTB settings will be generated. The default settings or design of auto generated configurable UI can be customized from Manage Configurable UI page. Once an auto generated configurable UI is edited, it is no longer considered as auto generated.
- The auto generated configurable UI will honor basic features like RLS or CLS and user security for master tables.

Note: In configurable UI, you cannot create or delete a record containing special character # and " in PK field.

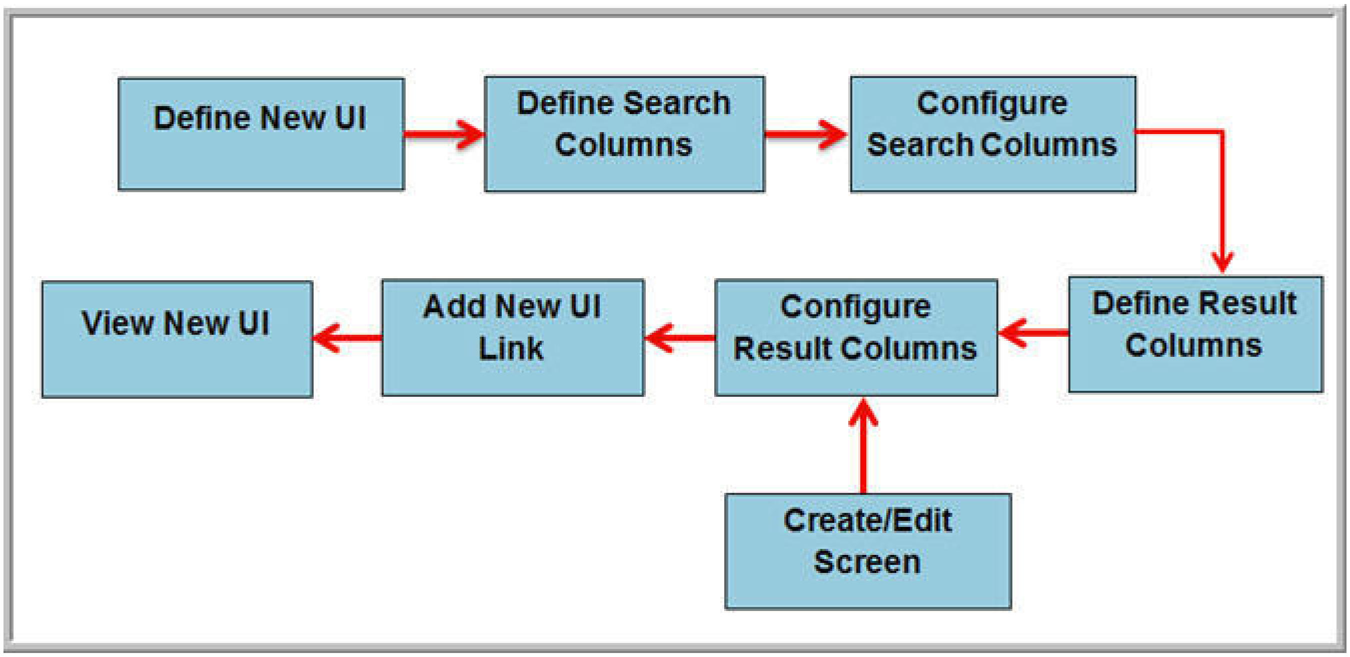
Create Configurable UI Process

The following steps constitute the overall flow of create configurable UI process.

1. Define New UI
2. Define Search Columns
3. Configure Search Columns
4. Define Result Columns
5. Configure Result Columns and Create/Edit Screen Designer
6. Add UI Link Using Menu Builder
7. View New UI

The Figure 91 illustrates the create configurable UI process.

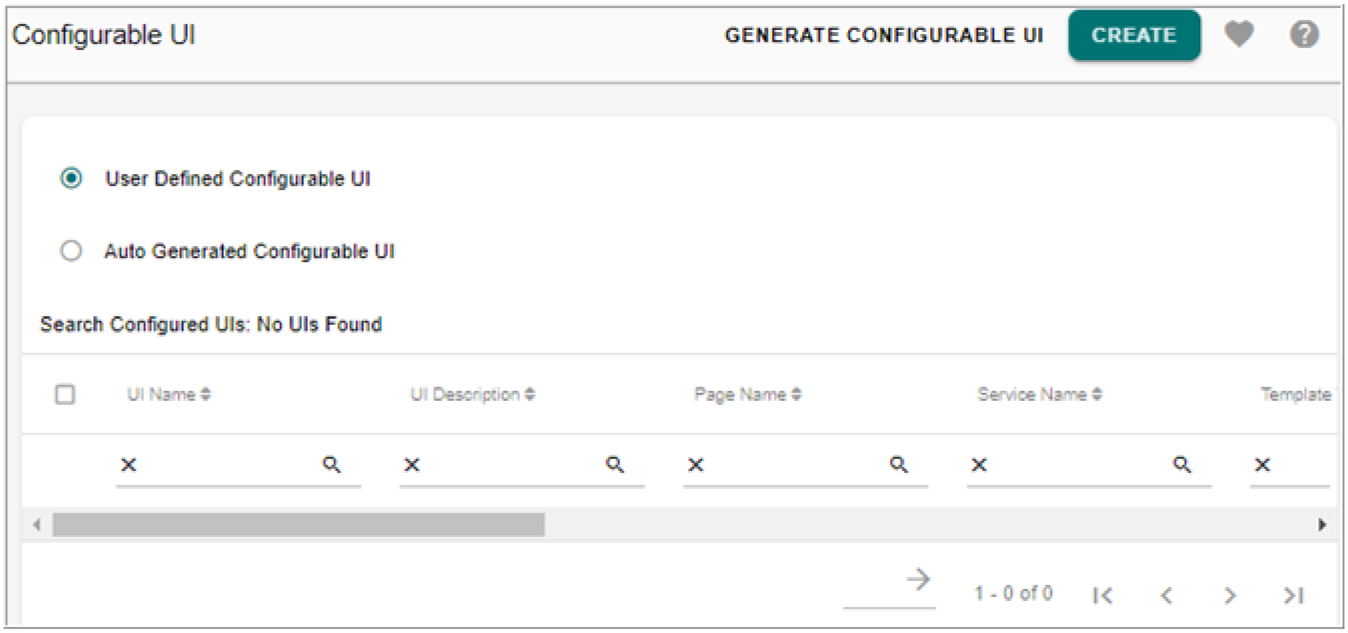
Figure 91: Configurable UI—Block Diagram



Define New UI

Define New UI page helps you to select the objects on which the UI will be based on and the relationships between these objects. Navigate to Define New UI from left navigation pane **Model Setup** -> **Configurable ui**-> **Create** as in Figure 92.

Figure 92: Configurable UI



Configurable UI

● User Defined Configurable UI

○ Auto Generated Configurable UI

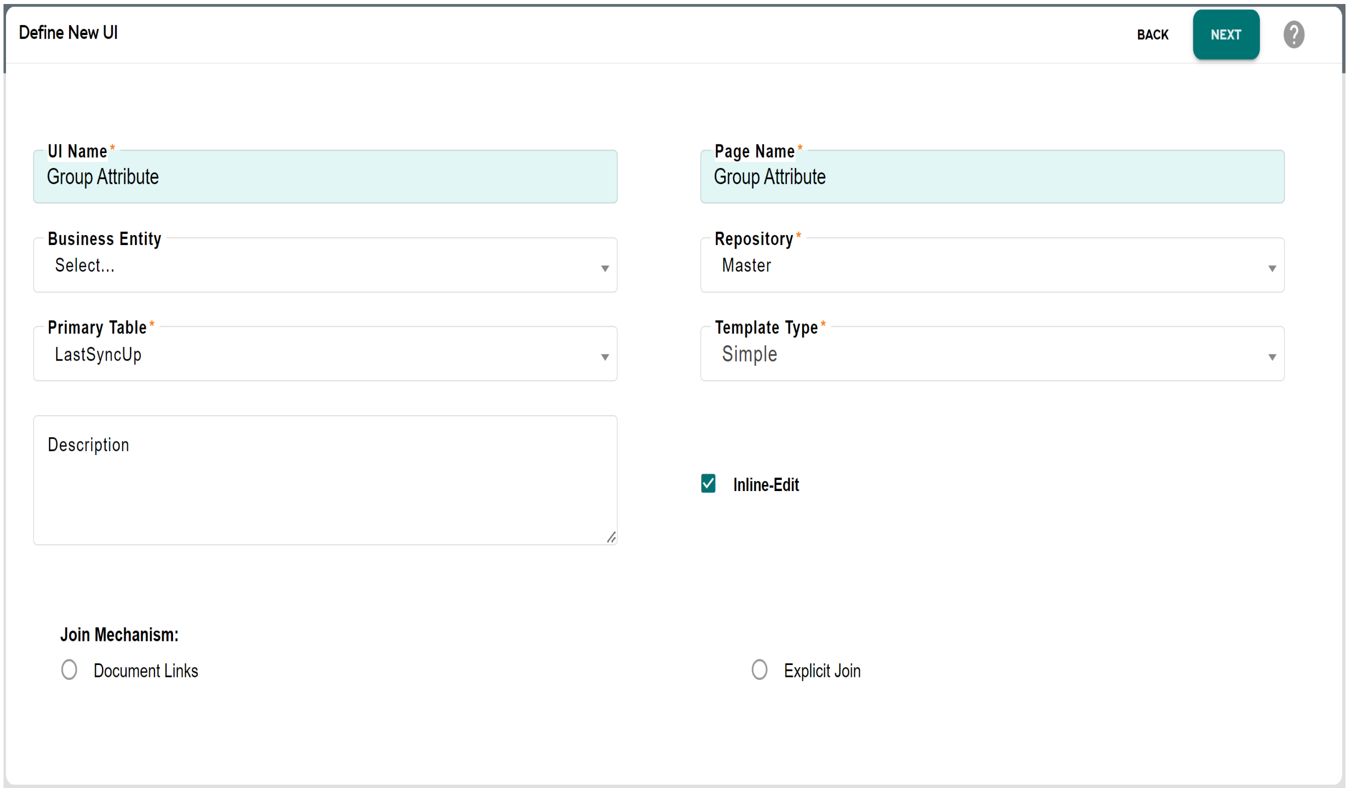
Search Configured UIs: No UIs Found

☐	UI Name	UI Description	Page Name	Service Name	Template

1 - 0 of 0

The Figure 93 displays the various fields to be populated for defining a new UI.

Figure 93: Define New UI



UI Name*: Group Attribute

Page Name*: Group Attribute

Business Entity: Select...

Repository*: Master

Primary Table*: LastSyncUp

Template Type*: Simple

Description

☑ Inline-Edit

Join Mechanism:

○ Document Links

○ Explicit Join

On the **Define New UI** page (Figure 93),

- **UI Name**—unique name of the configurable UI page.
- **Page Name**—unique name of the page to be displayed on the left navigation pane after the deployment of configurable UI.
- **Business Entity**—configurable UI can be defined on the Business Entity comprising a set of MDM tables. Business Entity dropdown displays all the entities created through Manage Business Entity. See Chapter 20: "Manage Business Entity". The master tables configured in the selected entity will be displayed in Primary Table dropdown.
- **Repository**—repository of the primary table and could be either Master, Input or Non MDM table. If a business entity is selected from business entity dropdown, the repository is selected as Master by default and cannot be changed.
- **Primary Table**—corresponding tables of the selected repository. If any entity is selected in Business Entity Dropdown, the list will be further filtered with the master tables of the selected entity.
- **Template Type**—you can design the configurable UI with search panel or configurable UI without search panel.
  - **Simple**: The Simple template type allows you to configure new UI without a separate search panel. In this template, table header provides search boxes for all searchable columns in the same manner that was available on table editor as in Figure 94. The

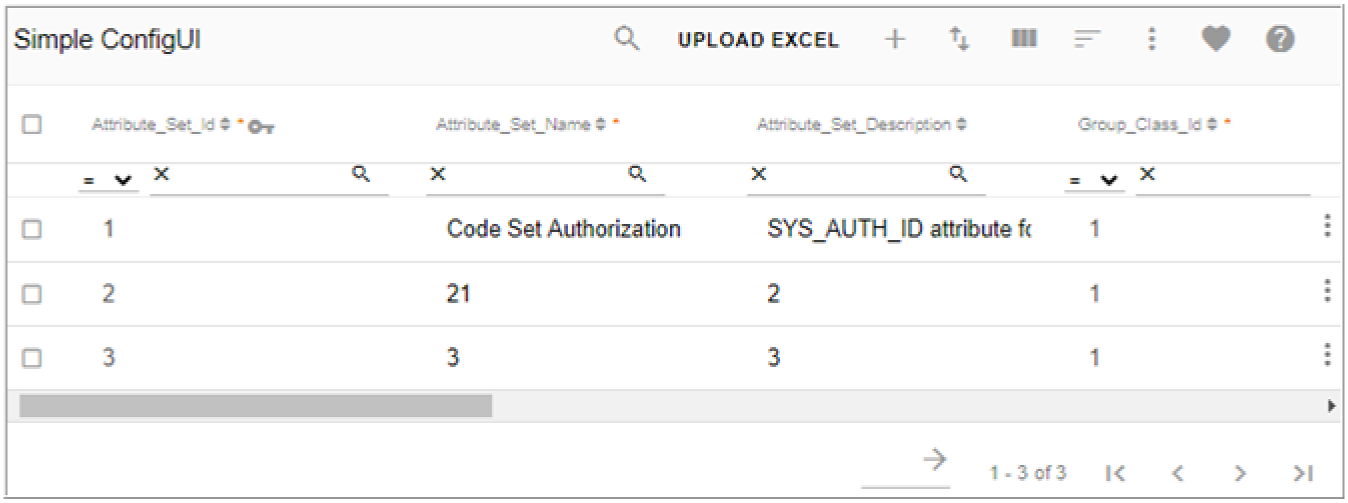
Define and Configure Search Columns UI will not be displayed while designing the UI if Simple template type is selected.

The Figure 94 displays the configurable UI for a simple template type.

If Simple Template Type is selected, the **Inline-Edit** checkbox is displayed. Select the Inline-Edit checkbox to enable inline editing on the generated configurable UI.

Currently, inline editing on the generated configurable UI is supported only on the current page and not across multiple pages.

Figure 94: Configurable UI—Simple Template



Simple ConfigUI

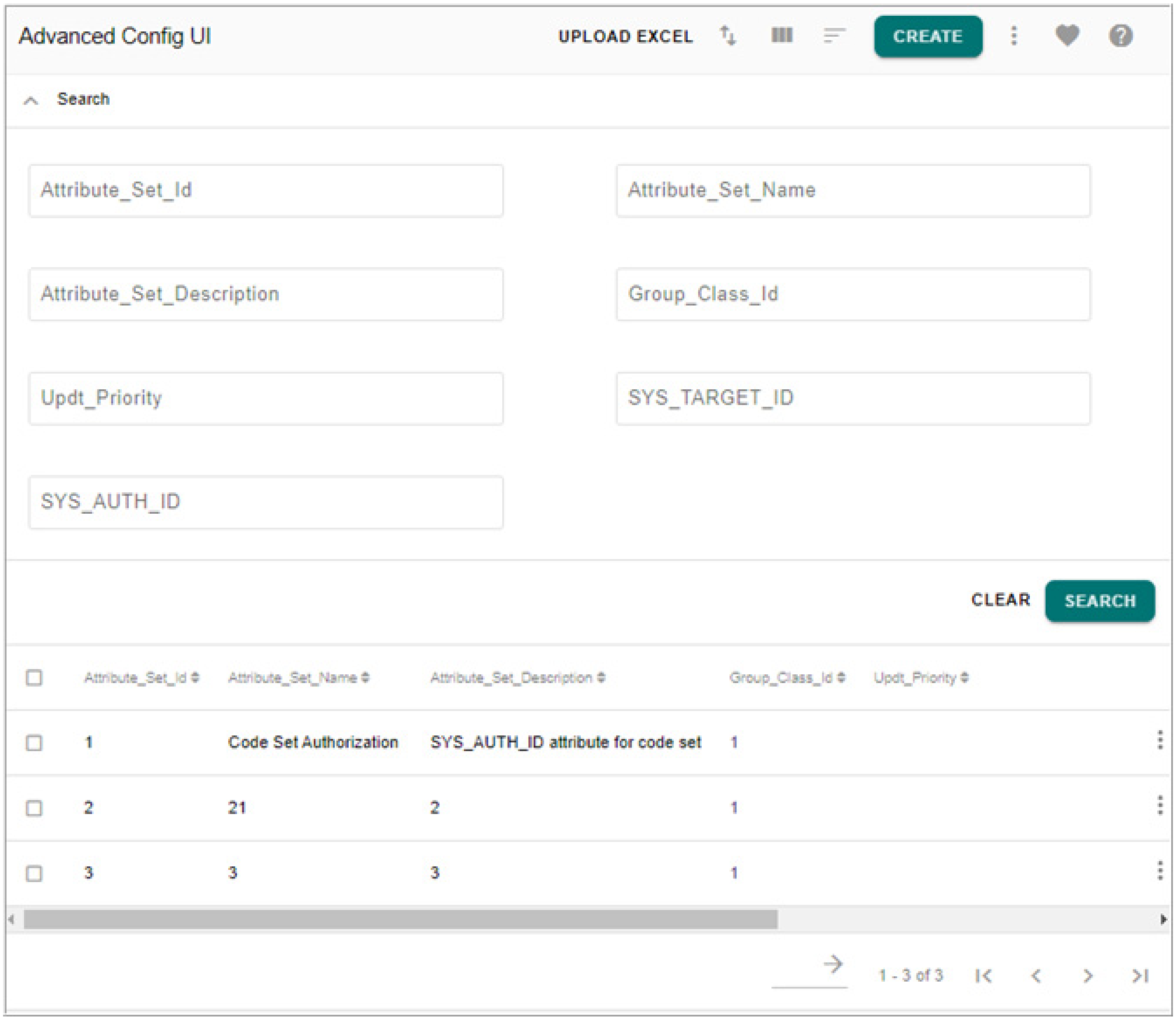
☐	Attribute_Set_Id *	Attribute_Set_Name *	Attribute_Set_Description	Group_Class_Id *
☐	1	Code Set Authorization	SYS_AUTH_ID attribute fc	1
☐	2	21	2	1
☐	3	3	3	1

1 - 3 of 3

- **Advanced**: The Advanced template type allows you to configure new UI with separate search panel as in Figure 95. The Define and configure Search Columns UI option will be displayed while designing the UI.

  The Figure 95 displays the configurable UI for a advance template type.

Figure 95: Configurable UI—Advance Template



☐	Attribute_Set_Id	Attribute_Set_Name	Attribute_Set_Description	Group_Class_Id	Updt_Priority
☐	1	Code Set Authorization	SYS_AUTH_ID attribute for code set	1	
☐	2	21	2	1	
☐	3	3	3	1	

- ❑ Description—optional field, brief description about the new UI being configured.
- ❑ **Join Mechanism**—can be either Document Links or Explicit Join. By default, Explicit Join is selected.

  Document Links: Document Links option allows to join or link tables only from MDM Staging area (Master or Input tables) using pre-defined relationships. If Document Links option is selected, the Define New UI page displays the following fields as in Figure 93.

  - *Available Tables*—displays all the tables linked to the selected Primary Table (Master/Input).
  - *Selected Tables*—initially the Selected Tables column is blank.

Explicit Join: Explicit Join option allows to link tables available from different repositories by explicitly defining join conditions. If Explicit Join option is selected, the Define New UI page displays the following fields as in Figure 96.

- *Repository for Join Tables* drop-down—displays the source from where the tables can be selected to link with the primary table. Source could be either Master, Input or Non MDM.
- *Available Tables*—displays all the corresponding tables available for the selected Repository for Join Tables.
- *Selected Tables*—by default, displays the selected primary table.
- *Define Join Condition*—defining a join condition for the selected tables is a mandatory step in Explicit Join mechanism. The Define Join Condition shows how the tables are joined together. You can define the Join condition using the tables available in **Table One** and **Table Two** drop-down and the corresponding **Column** drop-downs.

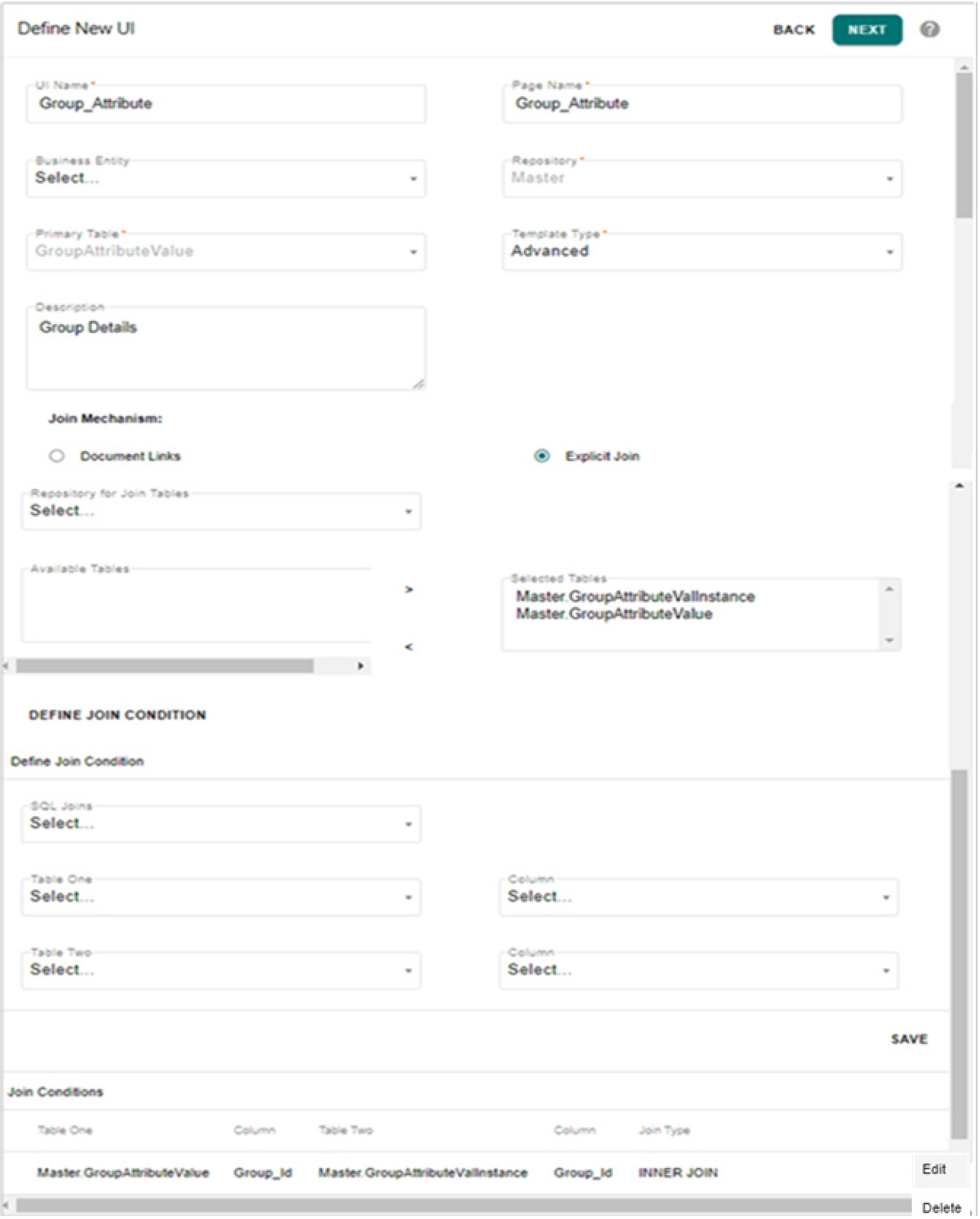
- Datatype of Join columns must be same.
- When joining a table with view, datatype check on Join columns will not be performed.
- When a join condition is created on audit tables, records will be fetched based on the join condition, but any CRUD operation will fail.
- Creating configurable UI using Join Document links, the parent table is taken as the primary table. Deleting records cannot be supported in this case as child records may exist in the child table (linked table). So, it is user's responsibility to create configurable UI without providing Delete access.
- When explicit join is created between tables and if the tables contain encrypted string column then the value of this column will not be decrypted in UI. User can see the encrypted value and it’s stored format in Database.

The SQL Joins dropdown displays the below list of Join types:

- Inner Join: Inner join returns rows from both tables as long as there is a match between the values in columns of both tables.
- Left Join: Left Join keyword returns all rows from the left table (table1) and the matching rows from the right table (table2). When there are no matching rows in the right table, the values of columns corresponding to those rows in right table will be null.
- Right Join: Right Join keyword returns all rows from the right table (table2) and the matching rows in the left table (table1). When there are no matching rows in the left table, the values of columns corresponding to those rows in left table will be null.
- Full Join: Full Outer Join keyword returns all rows from the left table (table1) and from the right table (table2). The FULL OUTER JOIN keyword combines the result of both LEFT and RIGHT joins.

You can define any number of join conditions for the tables. The defined join conditions will be displayed in the Joined Tables panel as in Figure 96. You can also edit or delete the defined join conditions using the Edit or Delete button on the Joined Tables panel.

Figure 96: Define New UI—Joined Tables



Define New UI

UI Name*: Group_Attribute

Page Name*: Group_Attribute

Business Entity: Select...

Repository*: Master

Primary Table*: GroupAttributeValue

Template Type*: Advanced

Description: Group Details

Join Mechanism:

○ Document Links

● Explicit Join

Repository for Join Tables: Select...

Available Tables:

Selected Tables:
Master.GroupAttributeValInstance
Master.GroupAttributeValue

Define Join Condition

SQL Joins: Select...

Table One: Select...

Column: Select...

Table Two: Select...

Column: Select...

Join Conditions

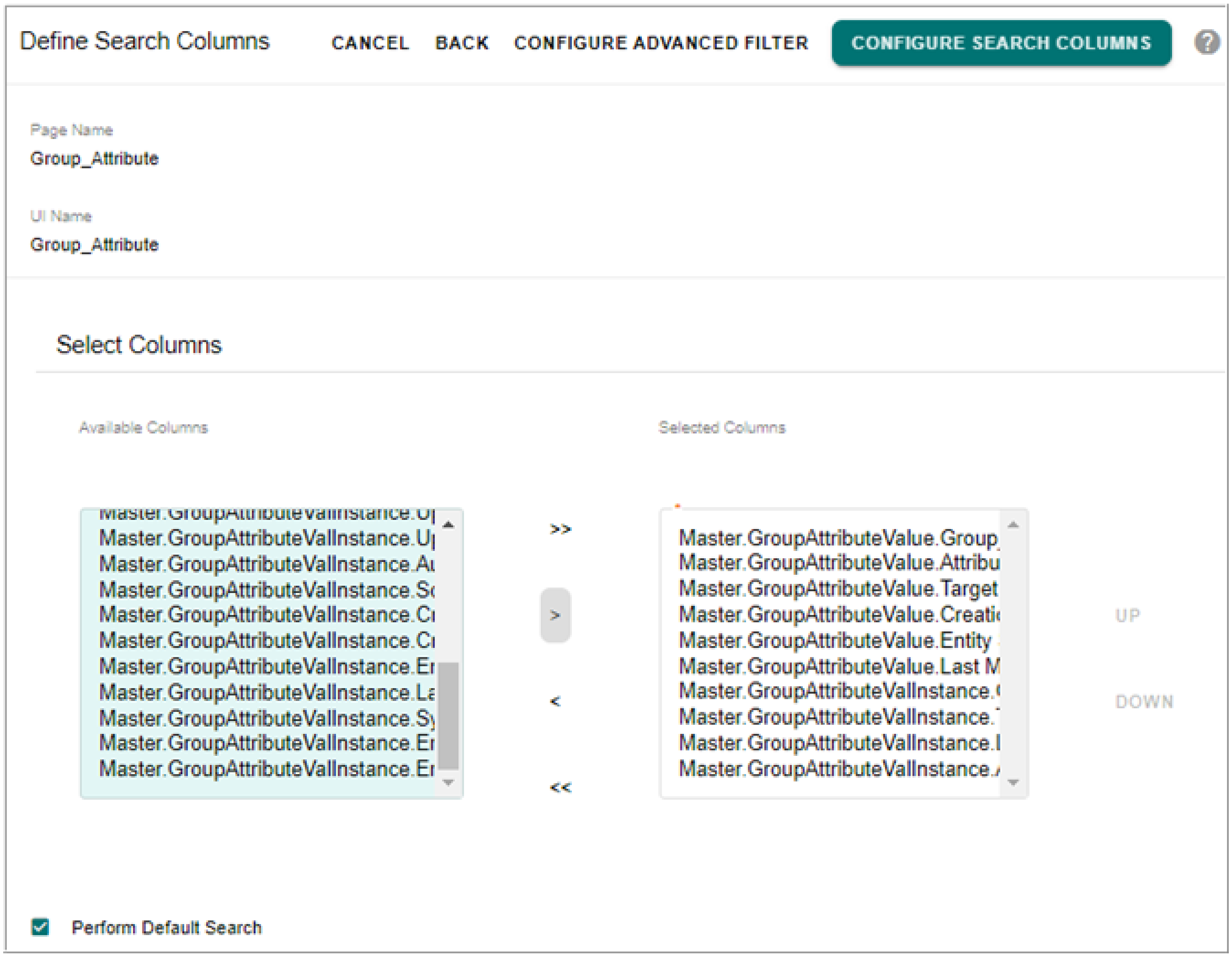
Table One	Column	Table Two	Column	Join Type
Master.GroupAttributeValue	Group_Id	Master.GroupAttributeValInstance	Group_Id	INNER JOIN

Define Search Columns

The Define Search Columns page is used to select the columns from the tables involved in the configurable UI that can be used to search data within these tables. The Figure 97 displays the fields on **Define Search Columns** page.

- The **Available Columns** list displays all the columns of the selected Primary Table.
- The **Selected Columns** list displays all the columns selected to be used as search columns.

Figure 97: Define Search Columns


Define Search Columns
CANCEL
BACK
CONFIGURE ADVANCED FILTER
CONFIGURE SEARCH COLUMNS
?
Select Columns
Available Columns
Master.GroupAttributeValInstance.U
Master.GroupAttributeValInstance.U
Master.GroupAttributeValInstance.A
Master.GroupAttributeValInstance.S
Master.GroupAttributeValInstance.C
Master.GroupAttributeValInstance.C
Master.GroupAttributeValInstance.E
Master.GroupAttributeValInstance.L
Master.GroupAttributeValInstance.S
Master.GroupAttributeValInstance.E
Master.GroupAttributeValInstance.E
>>
>
<
<<
Selected Columns
Master.GroupAttributeValue.Group
Master.GroupAttributeValue.Attribu
Master.GroupAttributeValue.Target
Master.GroupAttributeValue.Creati
Master.GroupAttributeValue.Entity
Master.GroupAttributeValue.Last M
Master.GroupAttributeValInstance.
Master.GroupAttributeValInstance.
Master.GroupAttributeValInstance.
Master.GroupAttributeValInstance.
UP
DOWN

Page Name
Group_Attribute

UI Name
Group_Attribute

☑ Perform Default Search

You can set the display order of the search columns using the **Up** and **Down** buttons.

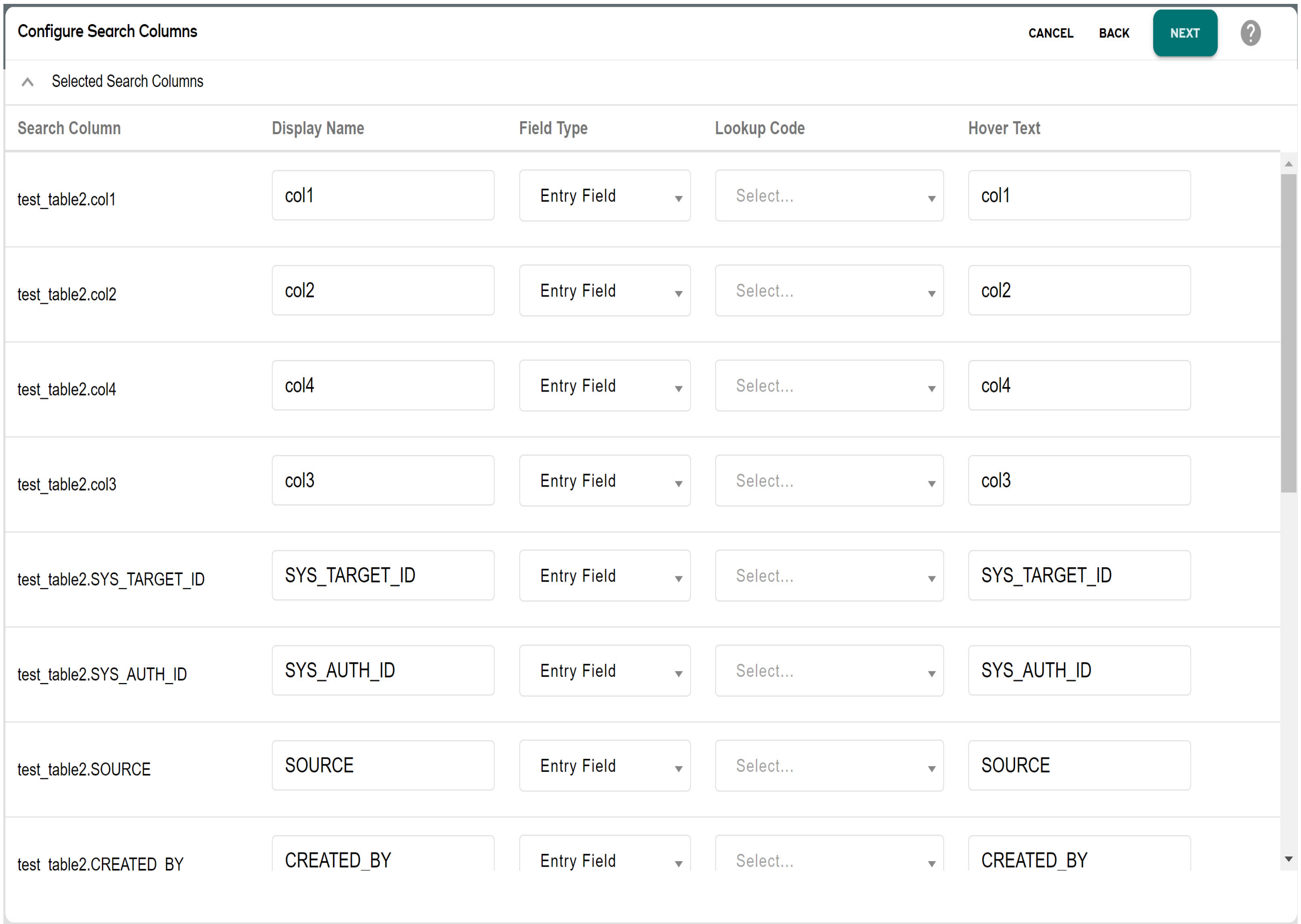
- **Perform Default Search:** The **Perform Default Search** checkbox is selected by default. If this is enabled, at runtime when the UI is invoked, Search operation will be performed by default without any criteria and all available records will be displayed on the UI. If this is disabled, you can enter search or filter values (if any) and click on the Search button to display applicable records at runtime.

- **Configure Advanced Filter**: The configure advanced filter option allows to define more granular and complex searches to filter the records to be displayed on the newly configured UIs. This acts as a conditional display of data configured during design time. For details on Configure Advanced Filter, see Section : “Advanced Filters” in Chapter 6: “MDM UI Customization.”

Configure Search Columns

The Configure Search Columns page is used to change the display name, hover text and field type of the search columns, if required. By default, the logical names would be displayed. Figure 98 displays the list of selected search columns on Configure Search Columns UI.

Figure 98: Configure Search Columns



Search Column	Display Name	Field Type	Lookup Code	Hover Text
test_table2.col1	col1	Entry Field	Select...	col1
test_table2.col2	col2	Entry Field	Select...	col2
test_table2.col4	col4	Entry Field	Select...	col4
test_table2.col3	col3	Entry Field	Select...	col3
test_table2.SYS_TARGET_ID	SYS_TARGET_ID	Entry Field	Select...	SYS_TARGET_ID
test_table2.SYS_AUTH_ID	SYS_AUTH_ID	Entry Field	Select...	SYS_AUTH_ID
test_table2.SOURCE	SOURCE	Entry Field	Select...	SOURCE
test_table2.CREATED_BY	CREATED_BY	Entry Field	Select...	CREATED_BY

Field Type

The Field Type drop down will be either entry field or drop down. If the field type is selected as drop-down, the corresponding Lookup Code drop down is enabled. You can select the required code set to fetch the code values for the drop down.

The attributes data type and the selected lookup code should be compatible.

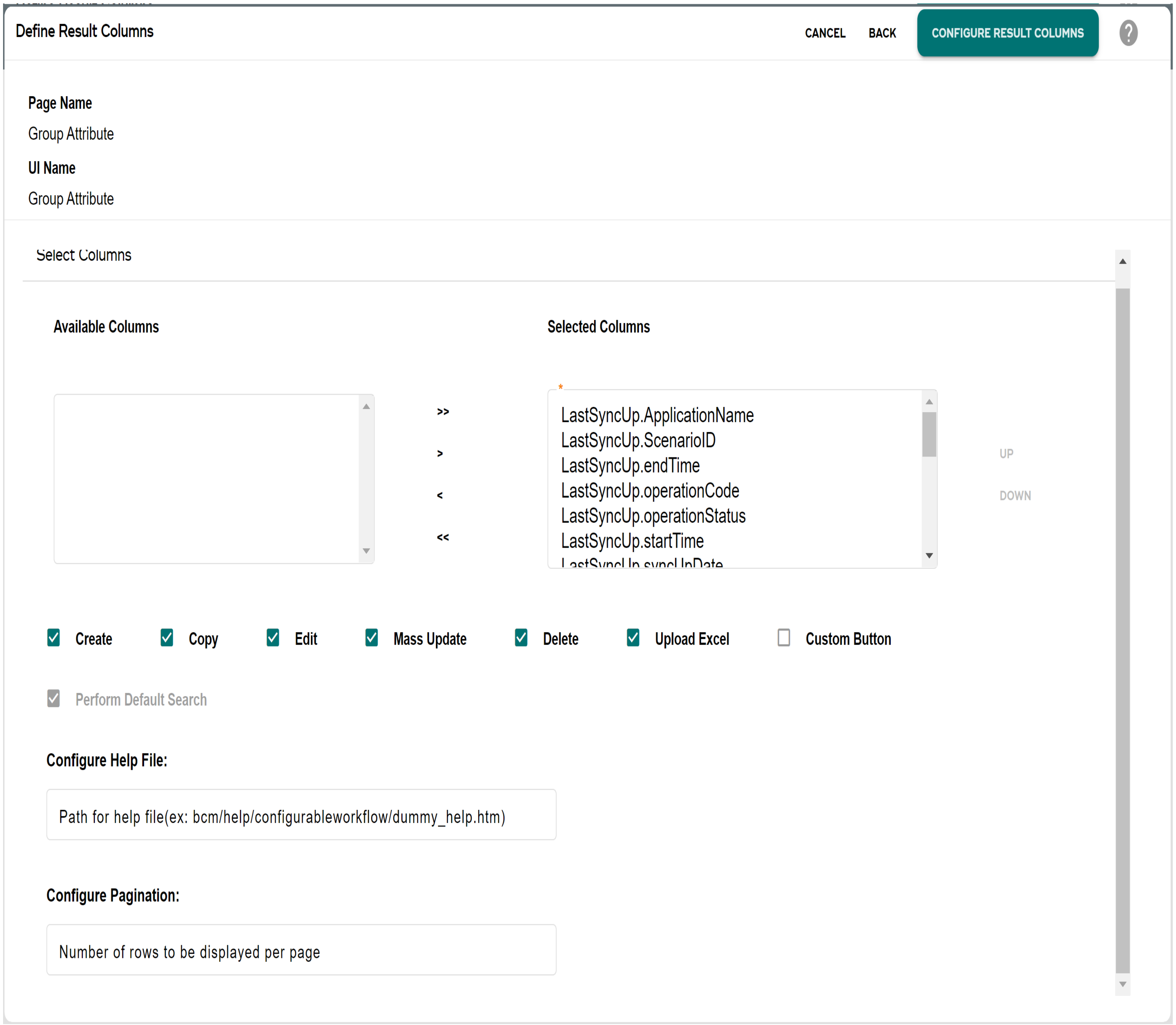
Define Result Columns

The Define Result Columns page is used to determine the columns that will appear on the search result page when a search for data is made on the configurable UI. You can also determine the type of operations to be supported on this result page. The **Define Result Columns** page displays the following fields as in Figure 99.

- The **Available Columns** list displays all the columns of the selected primary table.
- The **Selected Columns** list displays all the columns to be displayed on the Search Results pane.

  You can specify the order of display columns names using **Up** and **Down** buttons.

Figure 99: Define Result Columns



Define Result Columns

Page Name
Group Attribute

UI Name
Group Attribute

Select Columns

Available Columns

Selected Columns

LastSyncUp.ApplicationName
LastSyncUp.ScenarioID
LastSyncUp.endTime
LastSyncUp.operationCode
LastSyncUp.operationStatus
LastSyncUp.startTime
LastSyncUp.syncUpDate

☑ **Create** ☑ **Copy** ☑ **Edit** ☑ **Mass Update** ☑ **Delete** ☑ **Upload Excel** ☐ **Custom Button**

☑ Perform Default Search

Configure Help File:

Path for help file(ex: bcm/help/configurableworkflow/dummy_help.htm)

Configure Pagination:

Number of rows to be displayed per page

- The **Create**, **Copy**, **Edit**, **Mass Update**, **Delete** and **Upload Excel** check boxes will be selected by default to be displayed as actions buttons on the UI being configured.

  If the Upload Excel checkbox is selected, on the UI being configured, Upload Excel button will be displayed for uploading the corresponding excel file.

  If required, these options can be deselected and the buttons will not be displayed on the configured UI.

  In case of MDM Staging tables, DO_DB_Persist Xcommand will be used for Create/ Update or Delete operations.

  If required in case of Non MDM tables or views, you can define macros using Source Registration—Advanced Options. If not used, SQL Insert/Update/Delete queries will be used for Non MDM tables/views.

You can define authorization of user to access these action buttons using Manage Roles UI. Configurable UI will honor the same authorization as defined for table editor from Administration-> User Management->Manage Roles page.

In case of configurable UI created on multiple tables and if any one of the table does not have access to an action button, the action buttons will not be displayed on the UI.

For configurable UI to work on macro, the parameter names of macro must be same as that of the linked table/view.

- **Configure Help File**: you can configure the help files to be available on the new UI by specifying the file path of the help file in the **Path for Help File** text field.
- **Configure Pagination**: you can configure the number of rows to be displayed on the Search Results page by specifying the number of rows in the Number of rows to be displayed per page text field.
- **Custom Buttons**

  The Custom Buttons option allows you to perform the following as in Figure 100.

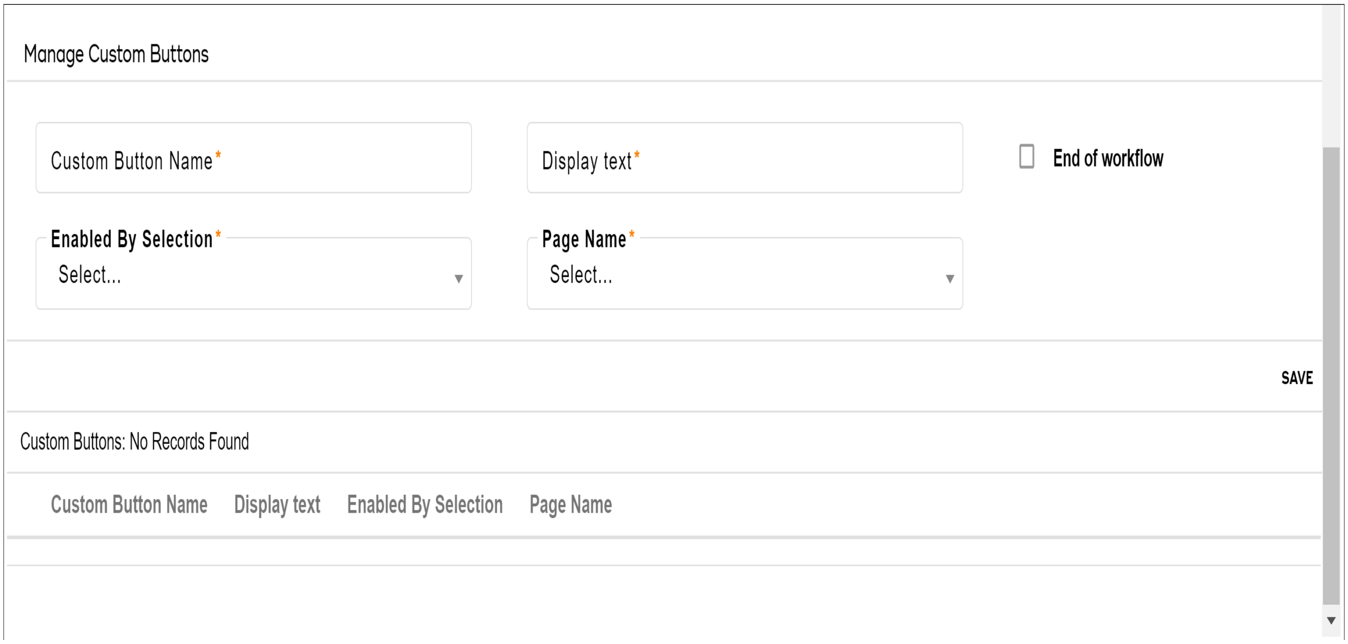
  - create your own custom buttons to be displayed on the newly configured UI along with the default (create, edit, mass update and delete) buttons by specifying the button's display name.

    - The custom button name must not contain any spaces and should not begin with any numeric values. The custom button display text can begin with numeric values.
    - You can define maximum of three custom buttons.

  - specify the page or URL to navigate, when the button is clicked. If the **End of Workflow** checkbox is selected, it will navigate to the end of workflow.
  - configure the button to be either enabled or disabled, when the page is loaded by setting the **Enabled By Selection** option to true or false.

    If the option is set to "true", the button will be enabled only when you select a record on the configured UI. If the option is set to "false", the button will always be enabled on the configured UI.

Figure 100: Define Result Columns



Manage Custom Buttons

Custom Button Name*

Display text*

☐ End of workflow

Enabled By Selection*
Select...

Page Name*
Select...

SAVE

Custom Buttons: No Records Found

Custom Button Name	Display text	Enabled By Selection	Page Name

Configure Result Columns and Create/Edit Screen Designer

The Configure Result Columns page displays the list of selected Result Columns as in Figure 101. The Configure Result Columns page is used to perform the following:

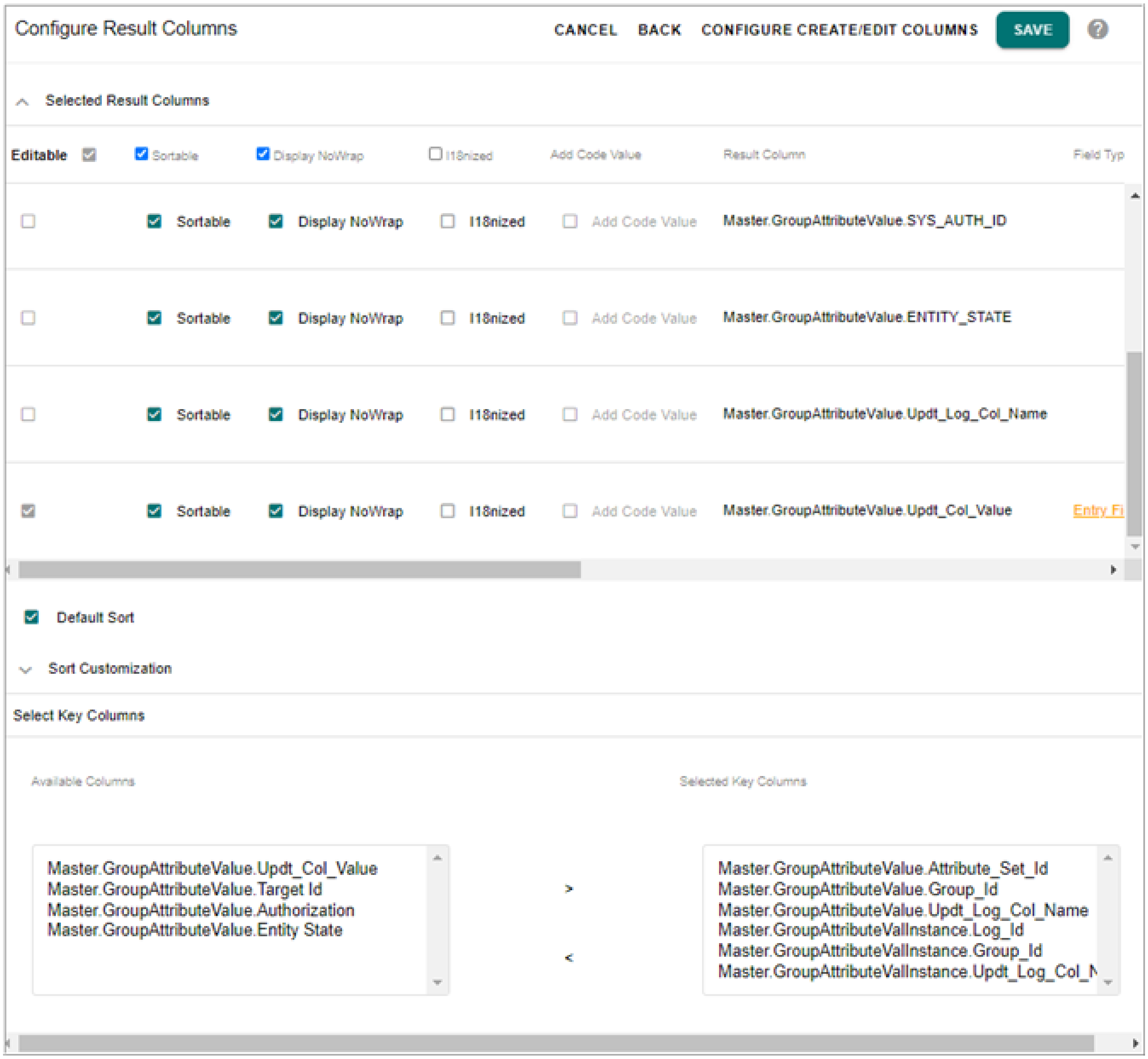
- Change the display name, hover text (by default, the logical names would be displayed) and specify the default values of the result columns.
- Specify the background color for each of the result column.

The color is stored in Status Color Codes code set. To display new colors in the **Color Code** dropdown, store the color name and color hex code value in the code value and description columns of the code set.

- **Editable** checkbox: make any column non editable by clicking the **Configure Create/Edit Columns** button to enable de-selection of the corresponding columns checkboxes. By default, all the selected result columns will be editable on the configured Create or Edit page except SYS and Primary Key columns.
- **Sortable** checkbox: by default, all the selected result columns will be sortable on the Search Result page of the configured UI. Make any column non sortable by de-selecting the corresponding checkbox.
- **Display NoWrap** checkbox: by default, the hover text of all the selected result columns will be wrapped on the Search Result page of the configured UI. De-selecting this option on any column results in No wrapping of the hover text.

- **i18nized** checkbox: by default, the i18nized checkbox is not selected. If the i18nized option is selected for a column, the corresponding column data will be displayed in i18nized format on the Preview page.

Figure 101: Configure Result Columns



Editable ☑	☑ Sortable	☑ Display NoWrap	☐ I18nized	Add Code Value	Result Column	Field Typ
☐	☑ Sortable	☑ Display NoWrap	☐ I18nized	☐ Add Code Value	Master.GroupAttributeValue.SYS_AUTH_ID	
☐	☑ Sortable	☑ Display NoWrap	☐ I18nized	☐ Add Code Value	Master.GroupAttributeValue.ENTITY_STATE	
☐	☑ Sortable	☑ Display NoWrap	☐ I18nized	☐ Add Code Value	Master.GroupAttributeValue.Updt_Log_Col_Name	
☑	☑ Sortable	☑ Display NoWrap	☐ I18nized	☐ Add Code Value	Master.GroupAttributeValue.Updt_Col_Value	Entry Fi

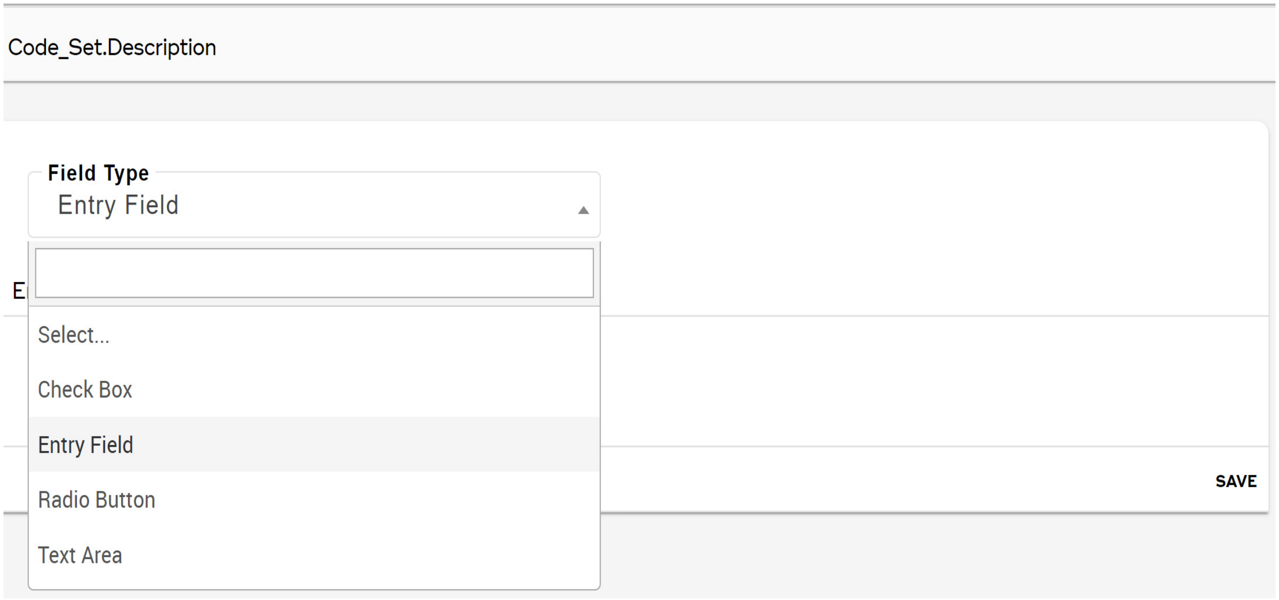
☑ Default Sort

Available Columns		Selected Key Columns
Master.GroupAttributeValue.Updt_Col_Value Master.GroupAttributeValue.Target Id Master.GroupAttributeValue.Authorization Master.GroupAttributeValue.Entity State	> <	Master.GroupAttributeValue.Attribute_Set_Id Master.GroupAttributeValue.Group_Id Master.GroupAttributeValue.Updt_Log_Col_Name Master.GroupAttributeValInstance.Log_Id Master.GroupAttributeValInstance.Group_Id Master.GroupAttributeValInstance.Updt_Log_Col_N

- Add Code Value: this checkbox will be enabled only for Enum defined columns. When this checkbox is selected on the configurable UI, lookup icon will be displayed next to the corresponding field and on click on this icon, the control is redirected to Manage code values UI where you can define code values on fly.
- **Field Type**: You can configure the field type to be either as checkbox or entry field or radio button or textbox for attribute of data type String. In the Field Type column, click on the

EntryField hyperlink. The field type configuration pop-up is displayed. On the Field Type pop-up, select the field type from Field Type dropdown.

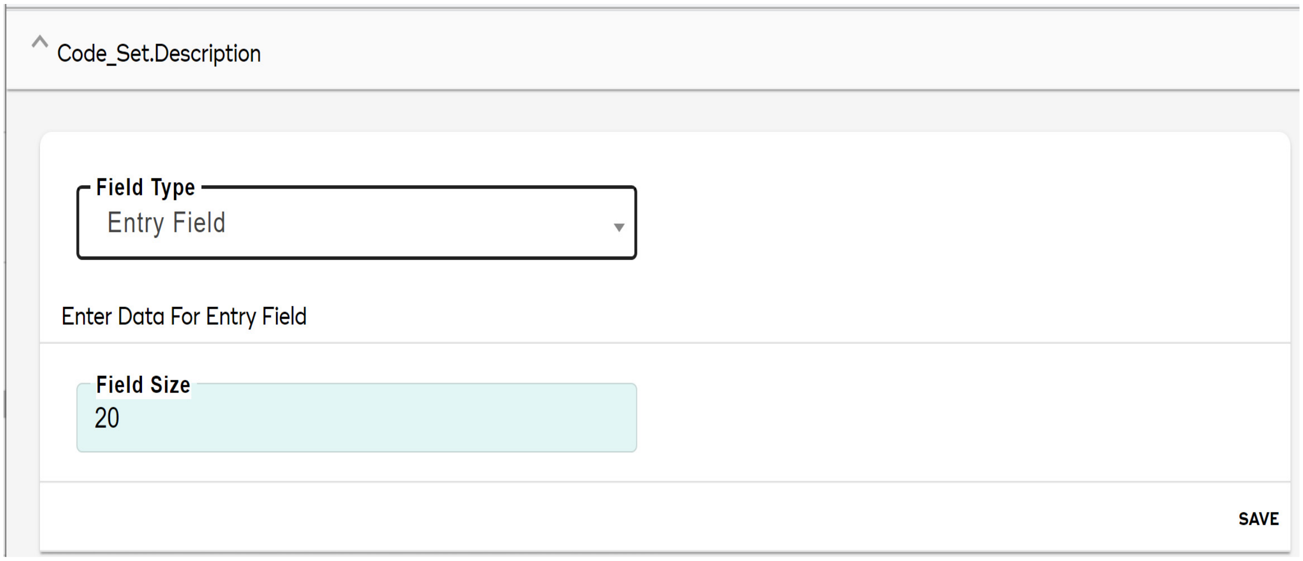
Figure 102: Field Type Configuration


Code_Set.Description

Field Type: Entry Field

- If field type is selected as **Entry Field**, enter the field size as in Figure 103.

Figure 103: Field Type—Entry Field


Code_Set.Description

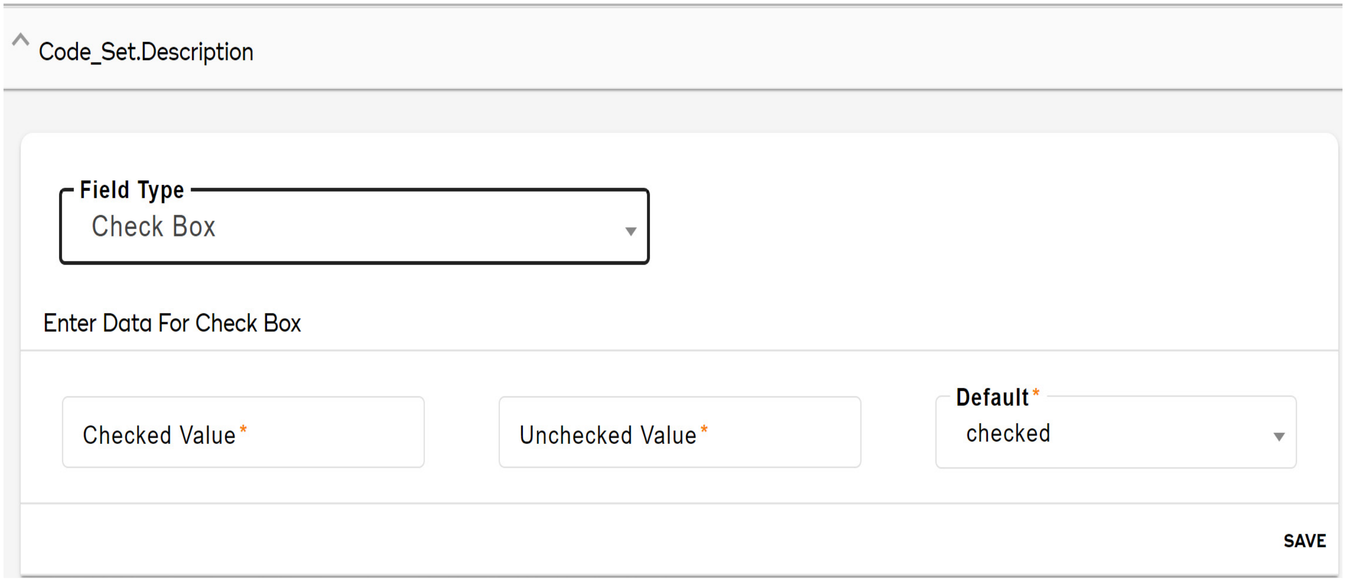
Field Type: Entry Field

Enter Data For Entry Field

Field Size: 20

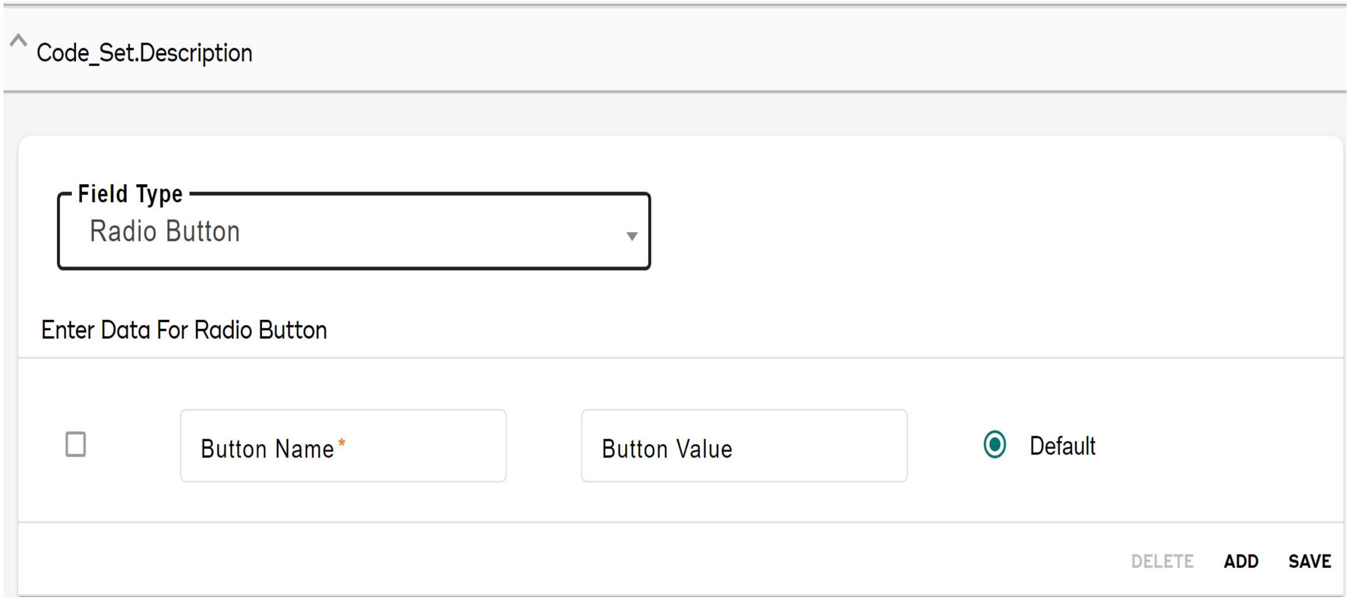
- If field type is selected as **Check box**, enter the checked value, unchecked value and the select default value to be either checked or unchecked as in Figure 104.

Figure 104: Field Type—Check Box



- If field type is selected as **Radio Button**, click on **Add** to add buttons and for each added button, enter the button name, button value and select it either to be displayed as default button or not as in Figure 105.

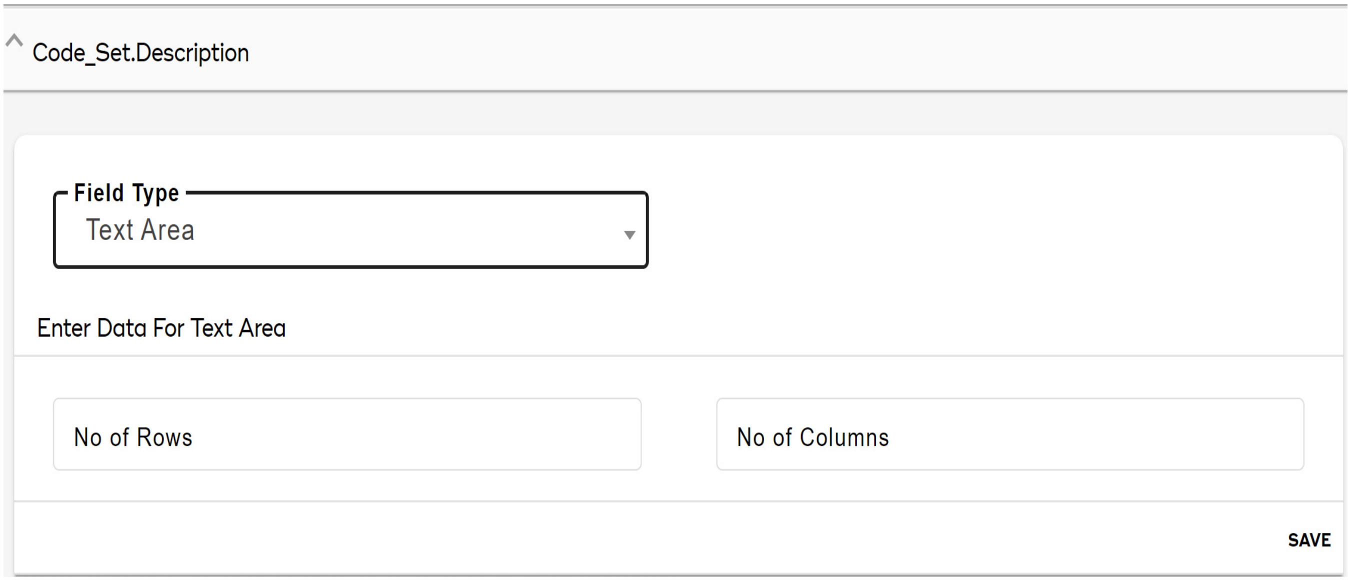
Figure 105: Field Type—Radio Button



In multi-edit screen, the radio-button fields will be displayed as check-boxes customized to work as radio buttons due to framework limitation.

- If field type is selected as **Text Area**, enter the number of rows and number of columns to be used in the text area as in Figure 106.

Figure 106: Field Type—Text Area



Field Type: Text Area

- Click **Save**.

  Navigate to create or edit page to view the field types configured.

- Select the Key columns from the **Available Columns** list and move it to **Selected Key Columns** list. By default, the Selected Key Columns list displays the Primary Key columns of all the participating tables in the UI. The selection of **Key Columns** is a mandatory step as runtime operations use Selected Key Columns to operate on the selected rows.

The key columns are used to fetch data for configurable UI from the underlying tables/views.

- **Default Sort**: Select the Default Sort option to sort the records in each column either in ascending or descending order on the configured UI at runtime. When the Default Sort option is selected, the **Sort Customization** panel is displayed. On the Sort Customization panel, select the columns on which you want to apply the sort and the corresponding sorting order.

  The configured default sort cannot be modified at runtime on the configured UI. To modify the sorting configuration, navigate back to Configure Result Columns UI and modify the default settings.

- **Hide Non Editable Columns**: Select the Hide Non Editable Columns checkbox to hide the selected editable columns on the Create and Edit page of the configured UI.

Primary Key columns cannot be hidden.

Add UI Link Using Menu Builder

Before you view the newly configured UI, you need to add the newly created UI to the left navigation pane on the MDM UI using the Menu Builder feature. For detailed information on adding link to the left navigation pane, see Section : "Customizing MDM Left Navigation Pane—Menu Builder". Logout and login to MDM UI to view the newly configured UI link on the left navigation pane.

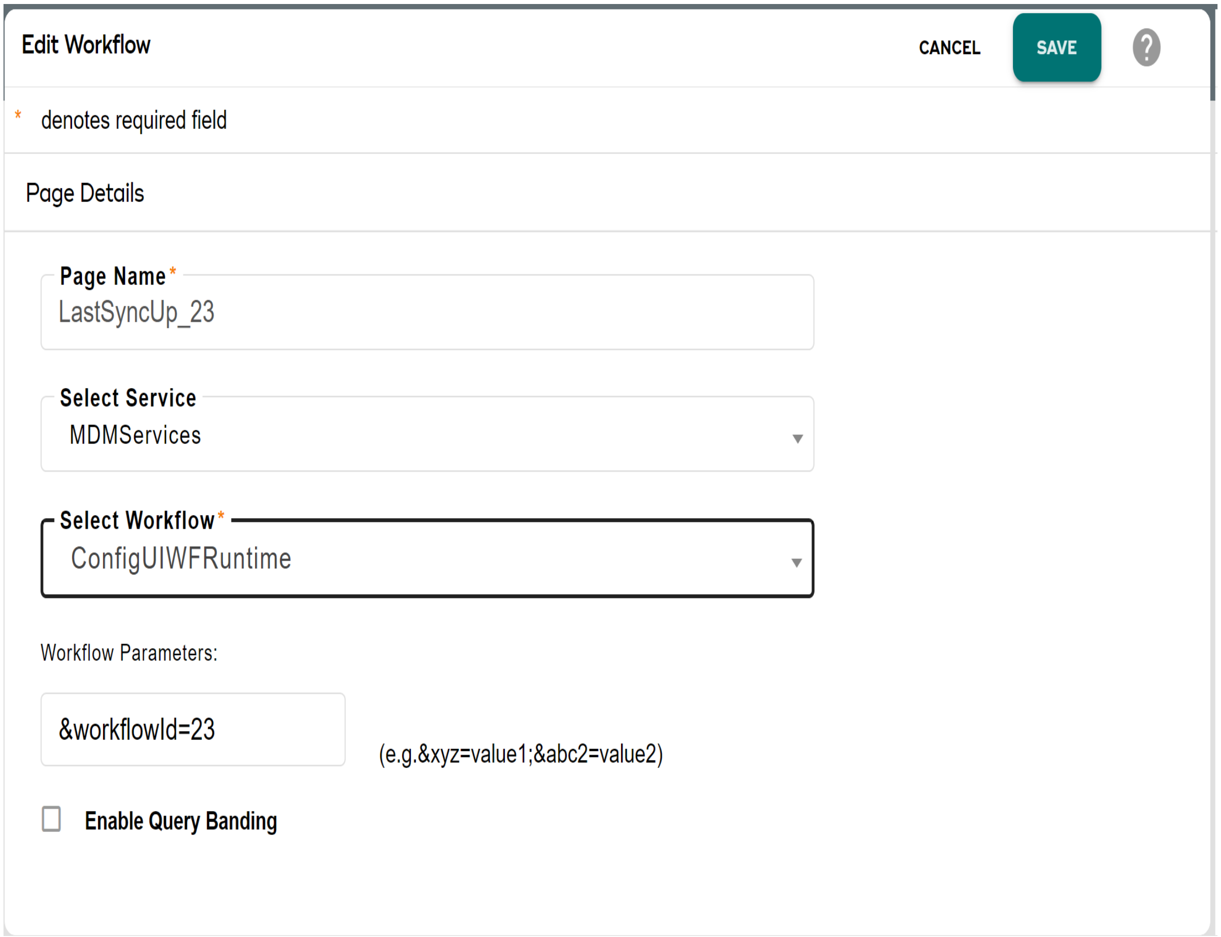
URL Filters for Configurable UI

You can configure the search URL filters to display specific record on the newly configured UI. Perform the following steps:

a. Navigate to **Administration > Menu Builder** UI from left navigation pane and click **Manage Page**.

b. On the **Manage Pages** UI, click on the Menu icon corresponding to the workflow on which you want to add the URL filters and click **Edit**.

Figure 107: Edit Workflow



* denotes required field

Page Details

Page Name*: LastSyncUp_23

Select Service: MDMServices

Select Workflow*: ConfigUIWFRuntime

Workflow Parameters: &workflowId=23 (e.g.&xyz=value1;&abc2=value2)

☐ Enable Query Banding

c On the **Edit Workflow** page (Figure 107), in the **Workflow Parameters**, specify the parameters as below and click **Save**.

For MDM table: add as below

&workflowId=14&<table name>.<table column name>=<table column value>

The &workflowId will be displayed by default.

For example: &workflowId=14&LastSyncUp.syncUpID=2222

For Non MDM table: add as below

&workflowId=14&<DB Name>.<table name>.<table column name>=<table column value>

For example: &workflowId=14&EXT_SRC_09.REL_INDVL_PARTY.PRTY_ID=45011

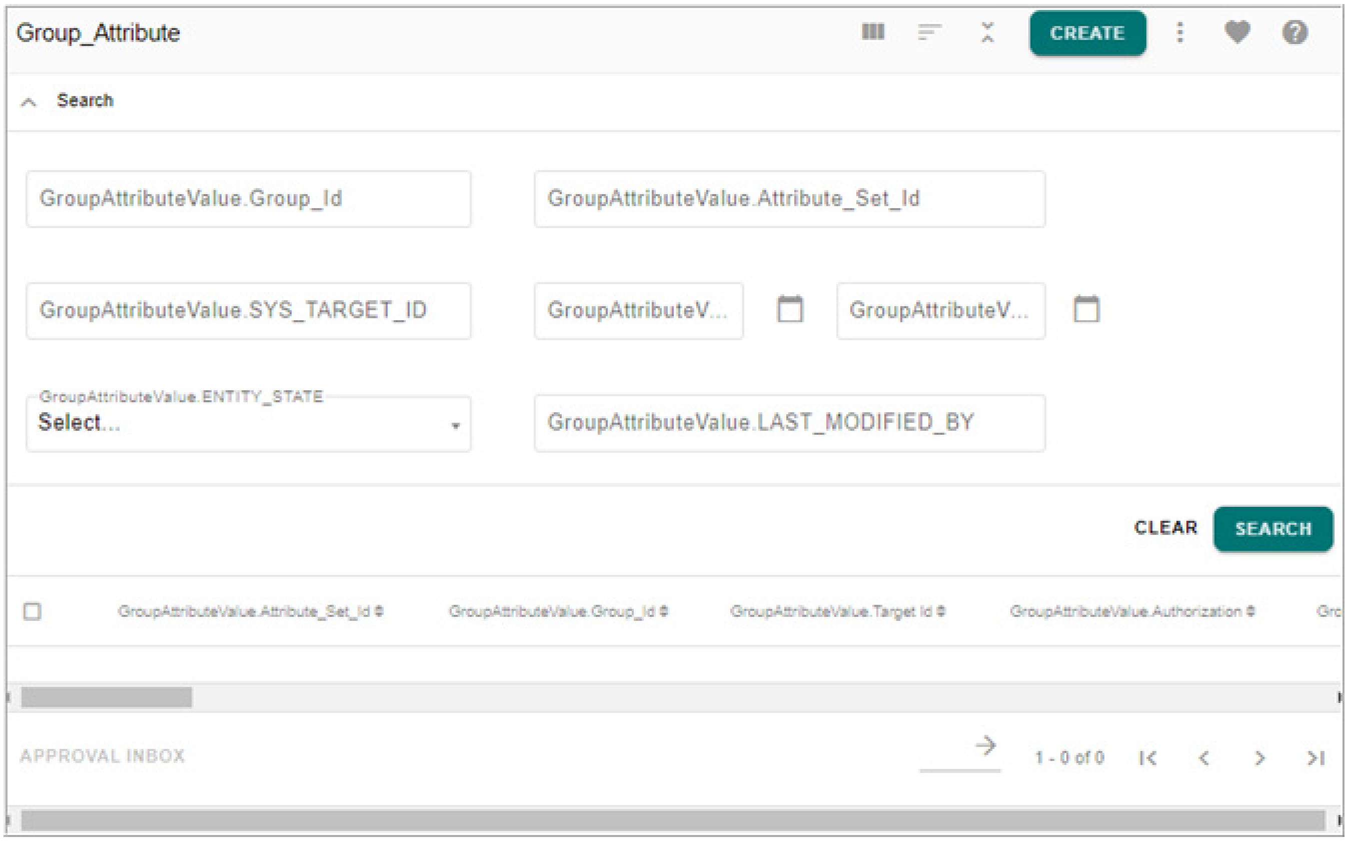
d Navigate to the newly configured UI from the link on the left navigation pane.

The newly configured UI will display only the filtered record.

View New UI

Users having required access rights will be able to see the newly added UI link on the MDM left navigation pane. Navigate to the newly configured UI (Figure 108) from the left navigation pane. All the operations performed on the default configurable UIs can be performed on the newly configured UIs.

Figure 108: Newly Configured UI


Group_Attribute
CREATE
Search
GroupAttributeValue.Group_Id
GroupAttributeValue.Attribute_Set_Id
GroupAttributeValue.SYS_TARGET_ID
GroupAttributeV...
GroupAttributeV...
GroupAttributeValue.ENTITY_STATE
Select...
GroupAttributeValue.LAST_MODIFIED_BY
CLEAR
SEARCH
GroupAttributeValue.Attribute_Set_Id
GroupAttributeValue.Group_Id
GroupAttributeValue.Target Id
GroupAttributeValue.Authorization
Grc
APPROVAL INBOX
1 - 0 of 0

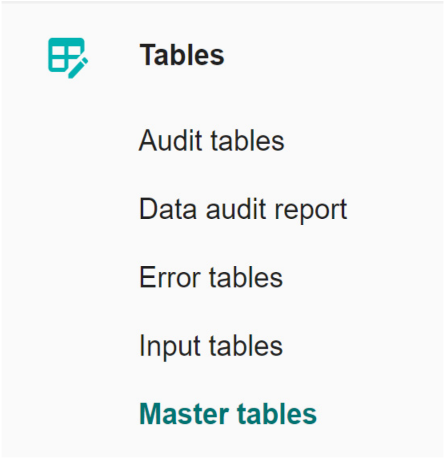
On the newly configured UI, you can write custom code to be executed after performing on any of the operations like create, delete, edit, copy and mass update in the xml file available at:

<MDM_Install_Directory>\web\mdmclient\WEB-INF\bcm\cfg\xservice\ui_workflow\rules\ConfigurableWorkflows\ConfigurableWorkflowRT

Default Configurable UI Links

By default, configurable UI links will be generated in the left navigation pane in the **Tables** folder for all the tables in Master, Audit Trial and Error services as in Figure 109 after schema generation. If any new tables are added and schema generation is performed, the newly added tables will be displayed in the **Tables** folder.

Figure 109: Tables



Tables

Audit tables

Data audit report

Error tables

Input tables

Master tables

The default configurable UI use Simple Template type. The configurable UIs do not have a separate Search Item panel.

By default, all the system columns display on the configurable UI. To hide system columns like (SYS_FILTER, SYS_TARGET_ID etc) on the configurable UIs, perform the following steps:

- Open system-fields-pres.xml from <MDM_Install_Directory>\cfg

  The system-fields-pres.xml provides the list of system columns.
- To hide any system column, set the “HIDDEN” parameter value to “true” in the corresponding system field definition as in the below sample.

```
<SYSTEM_FIELD_PRESENTATION Name="SYS_TARGET_ID">
    <DISPLAY_NAME Value="Target Id" />
    <EDITABLE Value="true" />
    <HIDDEN Value="true" />
    <SORTABLE Value="true" />
    <SEARCHABLE Value="true" />
    <NO_WRAP Value="true" />
    <I18NIZE Value="true" />
</SYSTEM_FIELD_PRESENTATION>
```

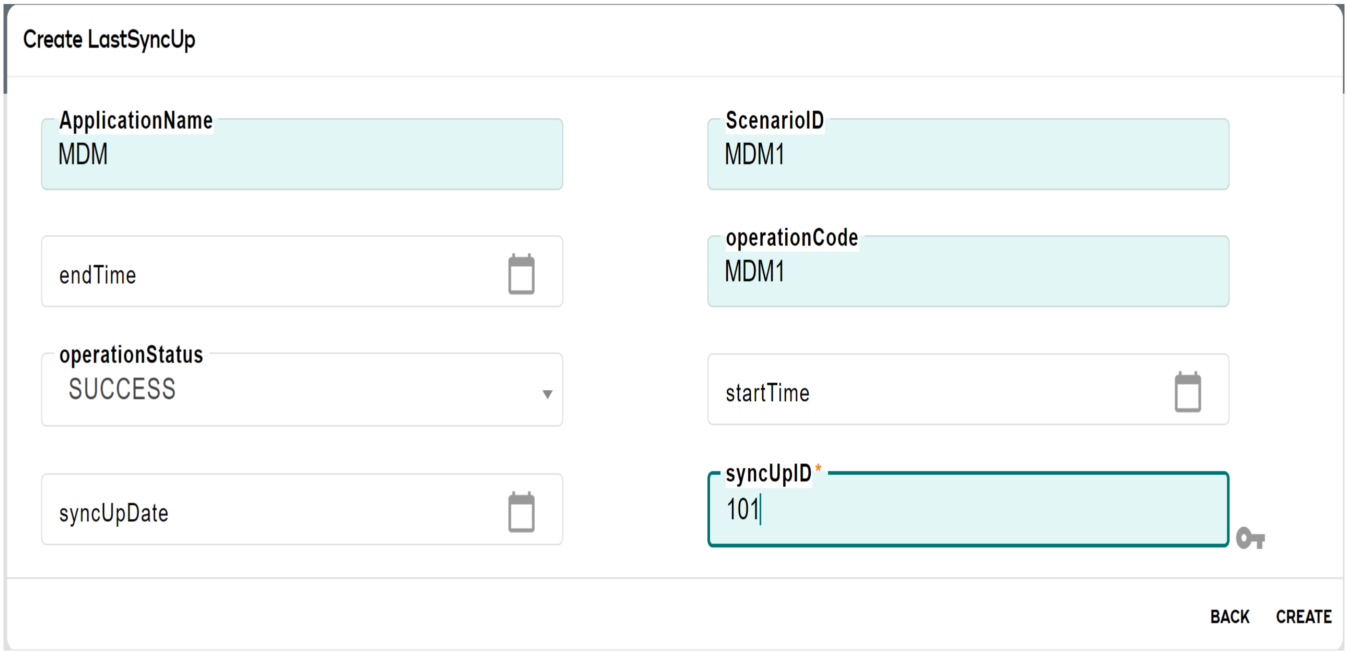
- Perform Incremental Schema Generation, restart the servers and regenerate the configurable UI for the changes to be reflected on the UI.

You can perform the following operations on the default configurable UIs.

Create Records

1. From left navigation pane, select **Tables** and then select any table.
2. Under tables options, select a particular table set and then click table name for which you want to create the record.
3. Click **Create** button. On the Create page, you can add the required details and click on **Create** to persist the data to the underlying tables.

Figure 110: Create Page



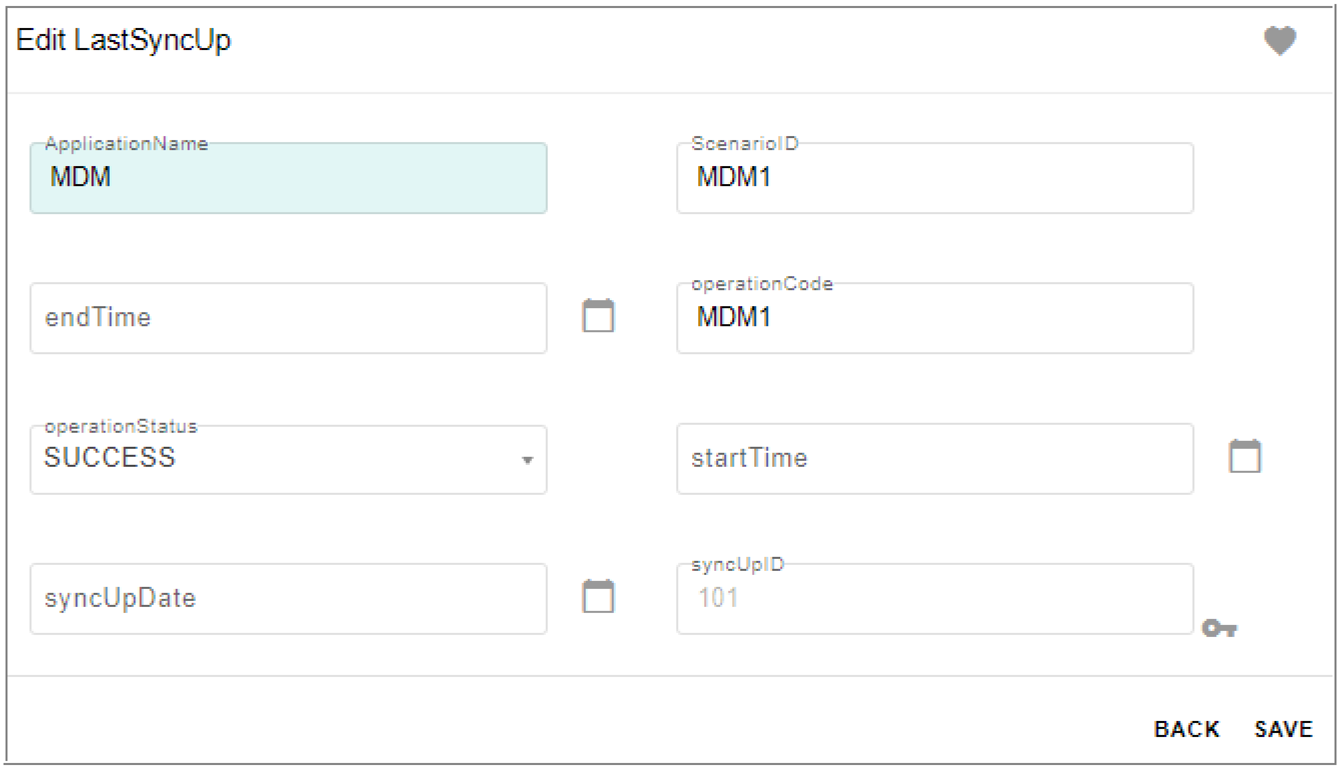
Create LastSyncUp

ApplicationName: MDM
ScenarioID: MDM1
endTime
operationCode: MDM1
operationStatus: SUCCESS
startTime
syncUpDate
syncUpID*: 101

Edit Records

1. From left navigation pane, select **Tables** and then navigate the records which you have created under specific table.
2. Select the record and click **Edit**. On the Edit page, you can edit the details and click on **Save** to persist the updated data to the underlying tables.

Figure 111: Edit Page



Edit LastSyncUp

ApplicationName: MDM

ScenarioID: MDM1

endTime

operationCode: MDM1

operationStatus: SUCCESS

startTime

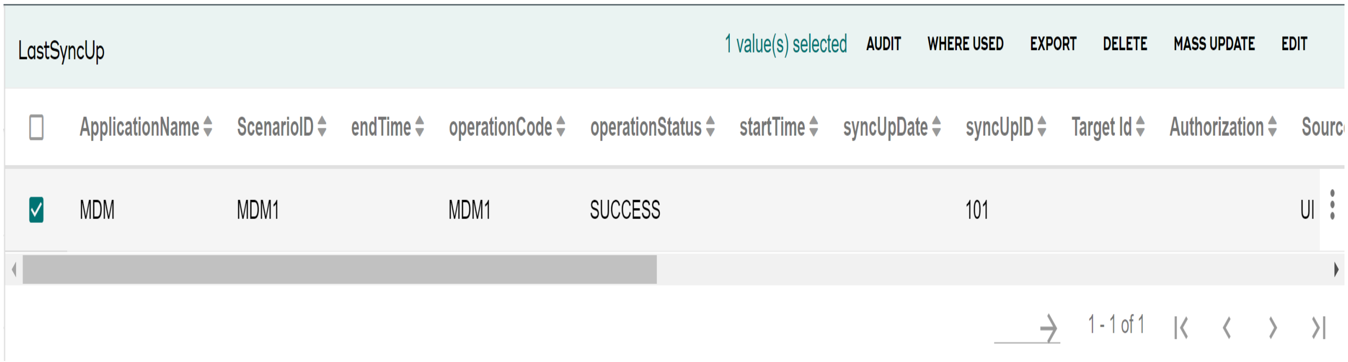
syncUpDate

syncUpID: 101

Mass Update Records

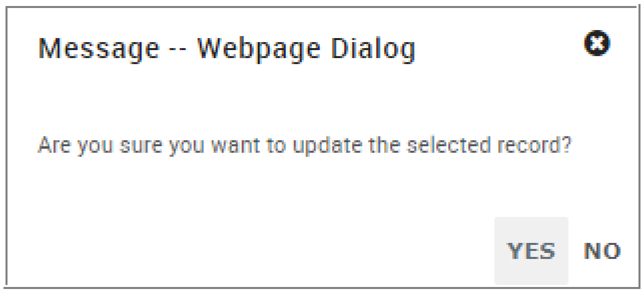
1. From left navigation pane, select **Tables** and then navigate the records which you have created under specific table.
2. Select the record and click **MASS UPDATE** to update multiple records using Mass Update functionality.

Figure 112: Mass Update



☐	ApplicationName	ScenarioID	endTime	operationCode	operationStatus	startTime	syncUpDate	syncUpID	Target Id	Authorization	Sourc
☑	MDM	MDM1		MDM1	SUCCESS			101			UI

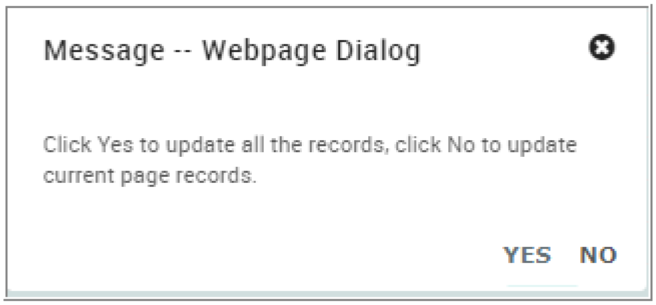
The Confirmation pop-up is displayed as below.



Message -- Webpage Dialog

Are you sure you want to update the selected record?

If all the records are selected, the below confirmation pop-up is displayed. Click **Yes** to update all the records and click **No** to update only the records on the current page.

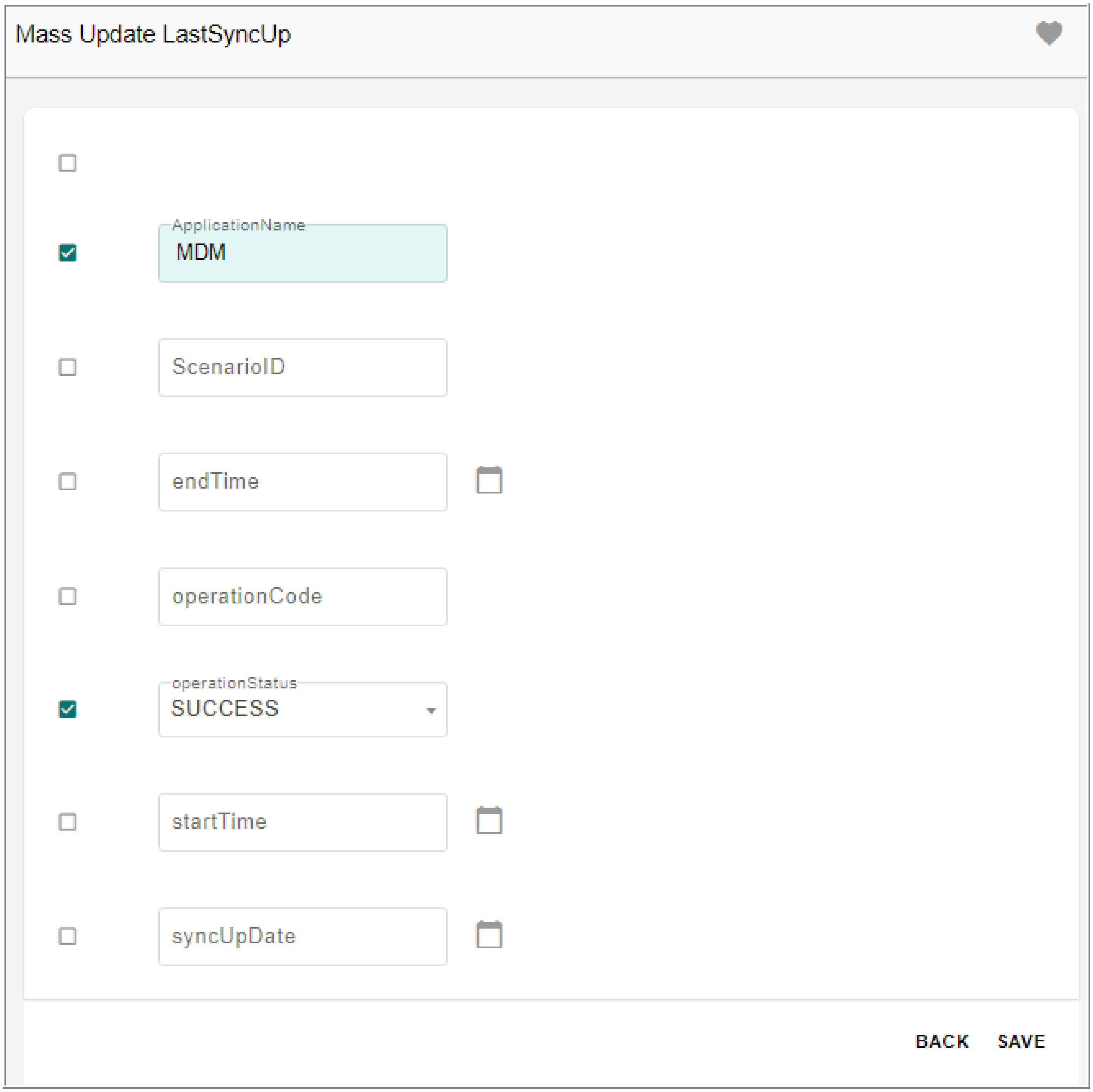


Message -- Webpage Dialog

Click Yes to update all the records, click No to update current page records.

On the Mass Update page, select the required column(s) and enter the value(s) and click **Save**. The entered column value will be updated in all the selected records.

Figure 113: Mass Update



☐

☑ ApplicationName: MDM

☐ ScenarioID

☐ endTime

☐ operationCode

☑ operationStatus: SUCCESS

☐ startTime

☐ syncUpDate

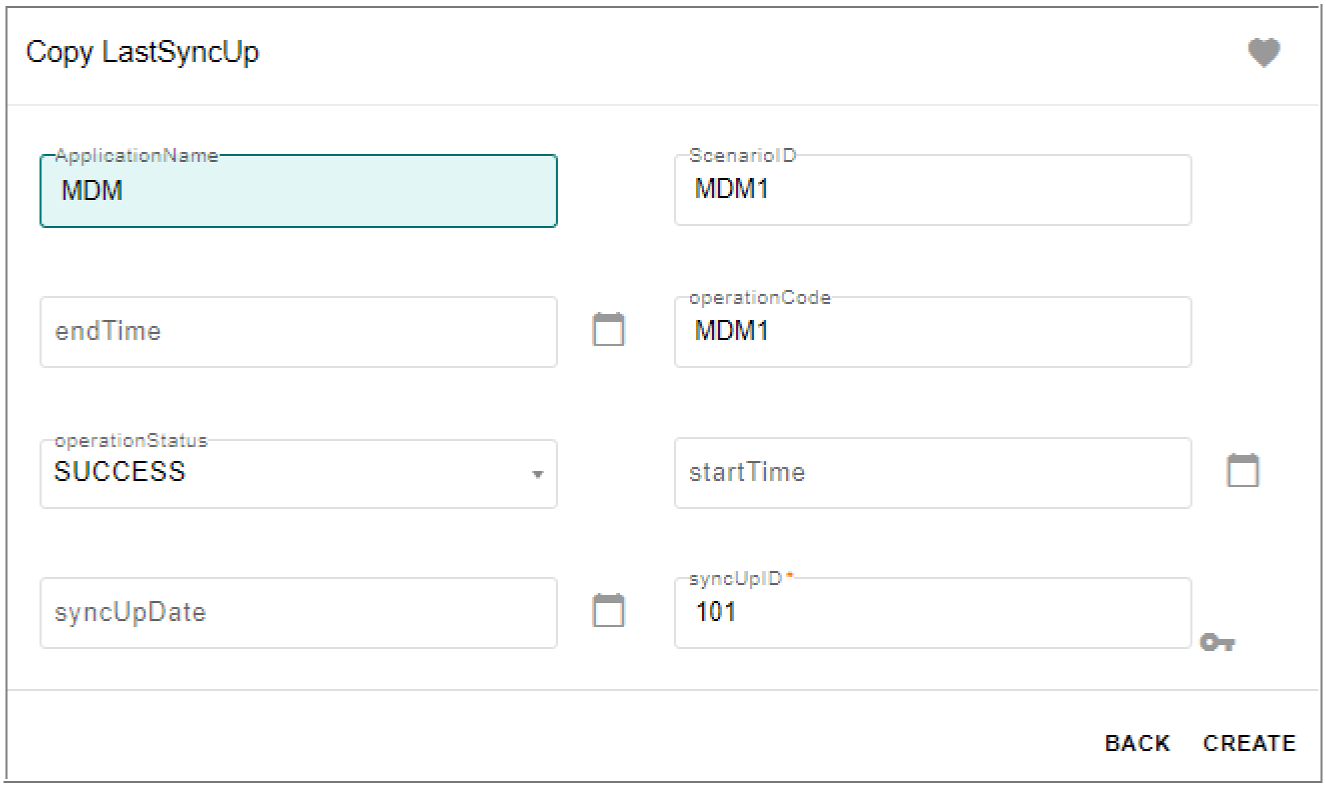
Copy Record

1. From left navigation pane, select **Tables** and then navigate the records which you have created under specific table.
2. Select the record and click on the Menu icon corresponding to the required record and click **Copy**.

   The **Copy** page (Figure 114) is displayed. On the **Copy** page, you can enter new primary key values and modify any details if required.

3 Click **Save**.

Figure 114: Copy Record Details



Copy LastSyncUp

ApplicationName: MDM

ScenarioID: MDM1

endTime

operationCode: MDM1

operationStatus: SUCCESS

startTime

syncUpDate

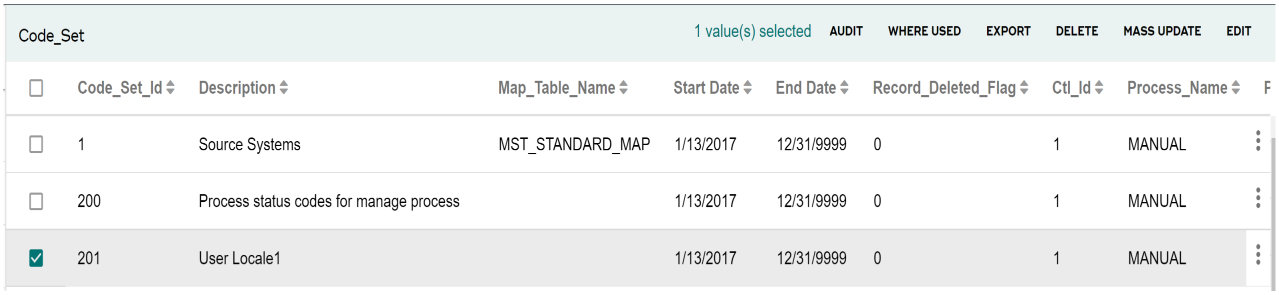
syncUpID*: 101

View Audit Records

You can directly view the audit records under Master tables. Do the following:

1 From left navigation pane, select **Tables** > **Master Tables**

2 Select the record for which you want to view the audit records and click **Audit**.



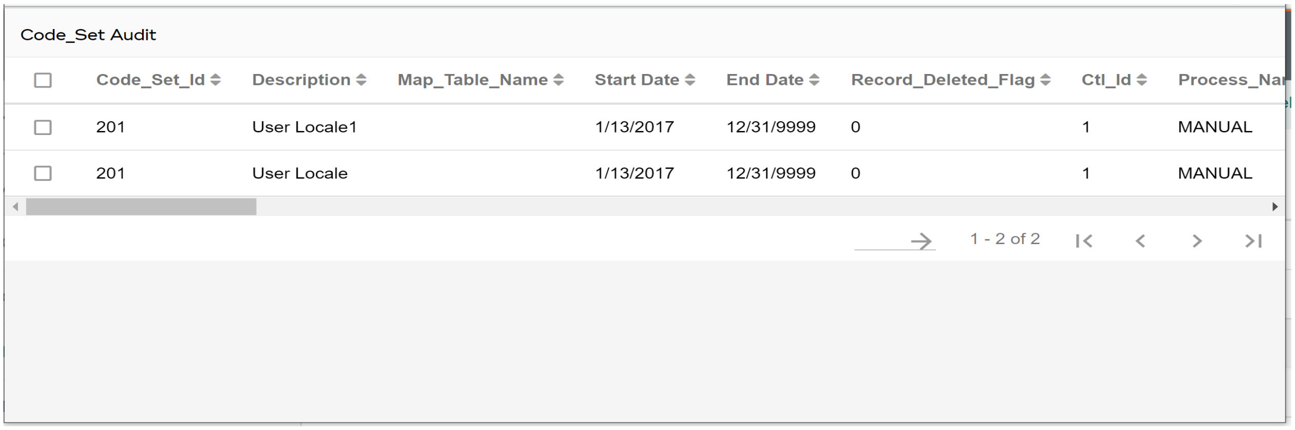
Code_Set

1 value(s) selected

☐	Code_Set_Id	Description	Map_Table_Name	Start Date	End Date	Record_Deleted_Flag	Ctl_Id	Process_Name	F
☐	1	Source Systems	MST_STANDARD_MAP	1/13/2017	12/31/9999	0	1	MANUAL	
☐	200	Process status codes for manage process		1/13/2017	12/31/9999	0	1	MANUAL	
☑	201	User Locale1		1/13/2017	12/31/9999	0	1	MANUAL	

The Audit records displays.

Any changes made to the records, displays in the audit record. The latest updated records displays on top.



Code_Set Audit

☐	Code_Set_Id	Description	Map_Table_Name	Start Date	End Date	Record_Deleted_Flag	Ctl_Id	Process_Na
☐	201	User Locale1		1/13/2017	12/31/9999	0	1	MANUAL
☐	201	User Locale		1/13/2017	12/31/9999	0	1	MANUAL

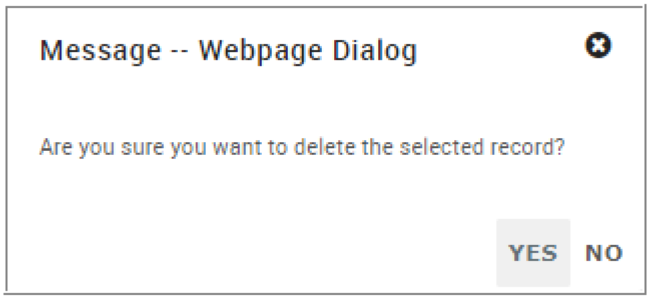
Delete Record(s)

1 From left navigation pane, select **Tables** and then navigate the records which you have created under specific table.

2 Select the record and click **Delete**.

The below confirmation pop-up is displayed.

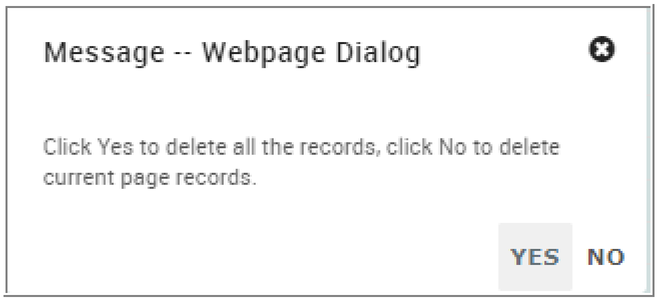
3 Click **Yes** to delete the selected records.



Message -- Webpage Dialog

Are you sure you want to delete the selected record?

On the configurable UI page, if all the record(s) are selected to delete, the below confirmation pop-up is displayed. On the confirmation page, click **Yes** to delete all the records or click **No** to delete only the records on the current page.



Message -- Webpage Dialog

Click Yes to delete all the records, click No to delete current page records.

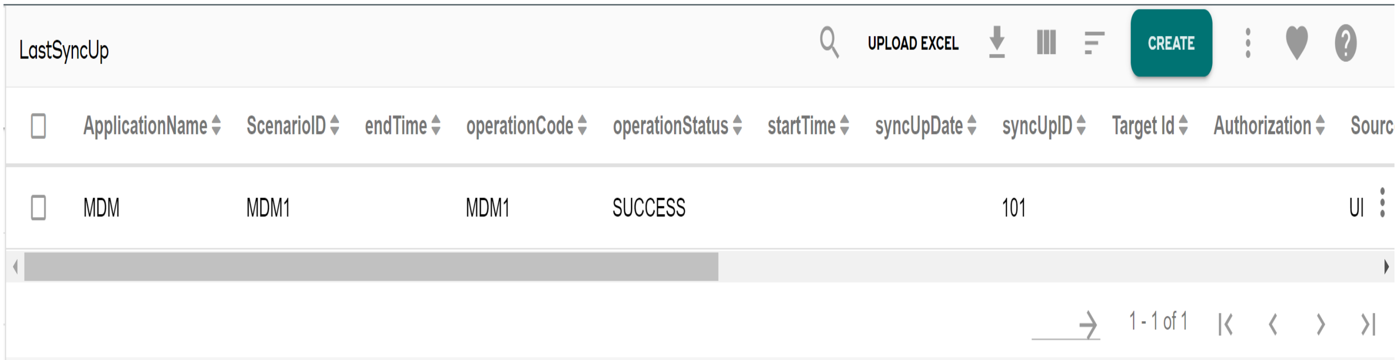
Upload Excel

You can upload or populate data to Master, Input or Non MDM table using the **Upload Excel** button available on the configurable UI.

To upload excel file:

1 On the Tables, go to the records and click **Upload Excel** as in Figure 115.

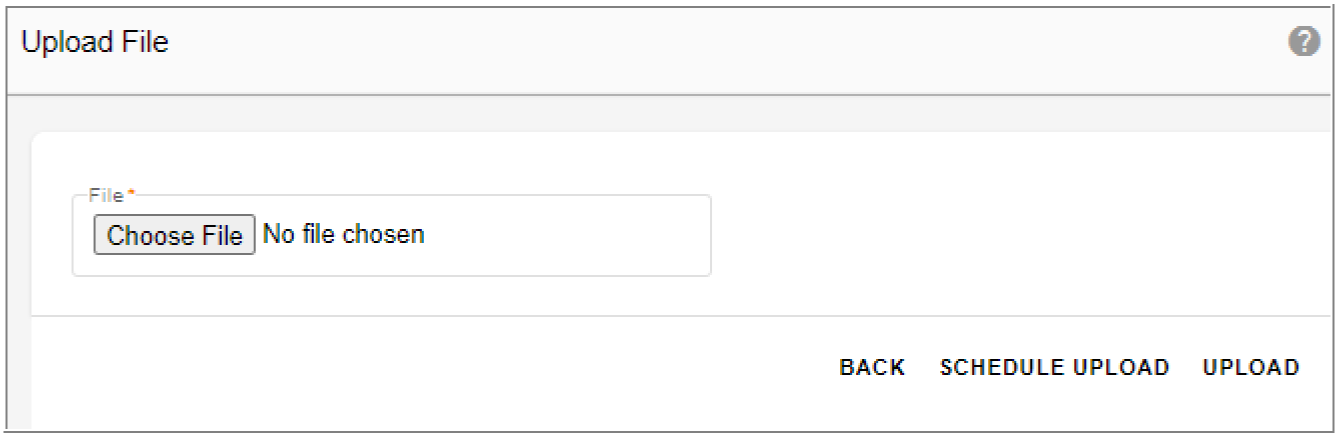
Figure 115: Upload Excel



☐	ApplicationName	ScenarioID	endTime	operationCode	operationStatus	startTime	syncUpDate	syncUpID	Target Id	Authorization	Sourc
☐	MDM	MDM1		MDM1	SUCCESS			101			UI

2 On the **Upload File** page, click **Choose File** and select the required file to upload and then click **Upload** as in Figure 116.

Figure 116: Upload Excel



The View Reports page is displayed. For details on view reports, refer to Chapter 11: "Upload Documents."

The **Schedule Upload** button on the **Upload File** page provides an option to schedule an excel upload.

To schedule an upload:

1 On the **Upload File** UI, click **Schedule Upload.**

The **Scheduler Details** page is displayed.

2 On the **Scheduler Details** page, by default, the DataUpload_RT workflow is selected. In **Workflow Parameters** pane, the service name will be displayed by default. Specify the table and path of the file to be scheduled for upload and click **Save**.

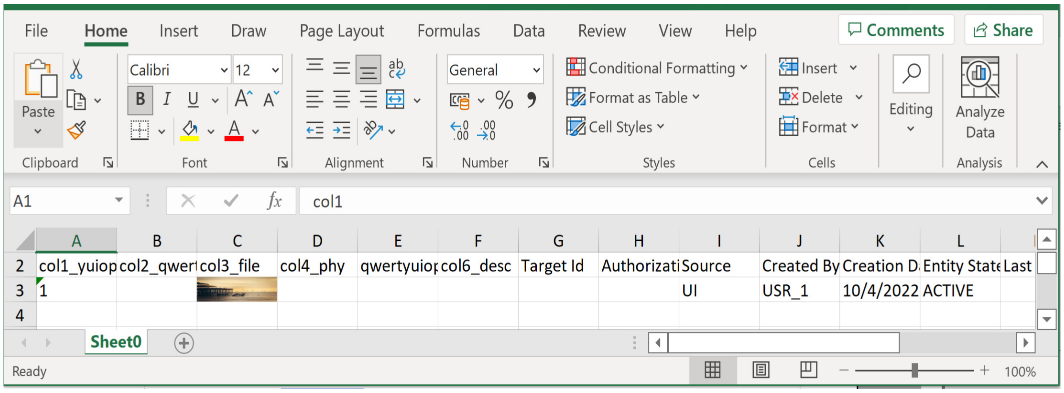
The scheduled excel upload details will be displayed on the **Manage Scheduler** page. For detailed information on creating scheduler details, see Chapter 22: “Manage Scheduler”.

Other Operations Performed on View Table UIs

You can perform the following tasks:

- View help file by clicking the Help ? icon.
- **Multi Column Sort**: perform multi column sorting, that is sort the records in each column either in ascending or descending order. Select the order in each column and click the Enable/Disable Multi Column Sort icon and click Multi Sort icon and then select the option **Sort**. You can also clear the sorting order by clicking on the Multi Sort icon and select the option **Clear sort.**
- **Configure Advanced Filter**

  Click the ⋮ icon and select the Advanced Filter option, which allows to define more granular and complex searches to filter the records to be displayed on the newly configured UIs. This acts as a conditional display of data configured during design time. For details on advanced filter, see Section : “Advanced Filters.” in Chapter 6: “MDM UI Customization.”
- **Download Template**: using the Download Template icon, you can download the corresponding document template in excel or xml format.
- **Export Records/Image to Excel**: Using the Export button, you can export the record details as well as full image to an excel file. The exported excel file will be saved with table name and local server current timestamp (<docname>_<local server timestamp>). For example: AttributeSet_1_10_2019 12_10AM.



col1

	A	B	C	D	E	F	G	H	I	J	K	L
2	col1_yuiop	col2_qwert	col3_file	col4_phy	qwertyuiop	col6_desc	Target Id	Authorizati	Source	Created By	Creation D	Entity State	Last
3	1								UI	USR_1	10/4/2022	ACTIVE	
4													

While exporting the records with image, the image exports in the excel file instead image ID.

- **Show History**: the “SHOW HISTORY” button is available only on the Temporal tables. The Show History displays the history details of the selected record. The record history details are displayed in the descending order of TemporalValidTime, that is in the most recent updated order. You can click on the Hide History button to close the history details.

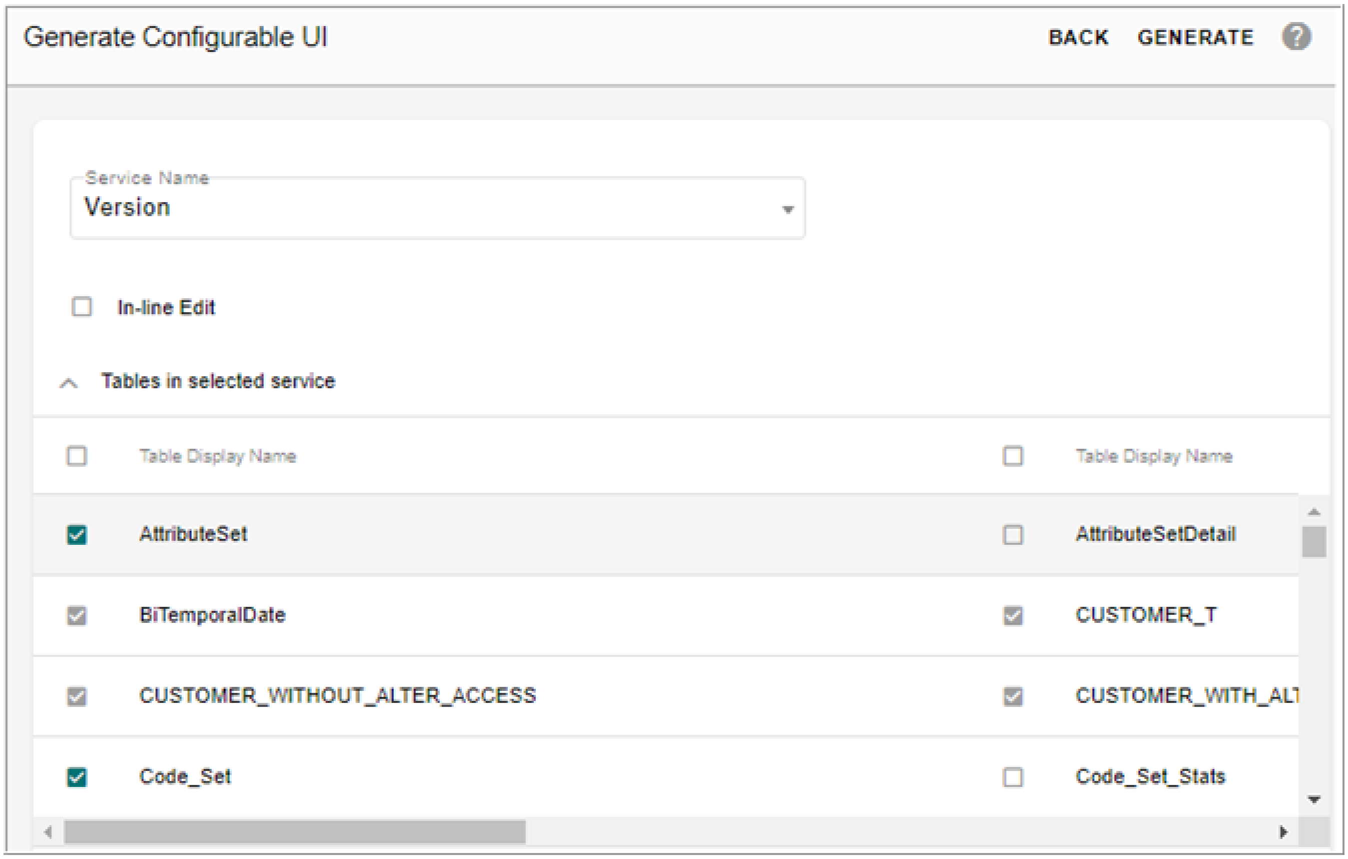
- **Customize Table** ▥ : for details on customize table, see in Chapter 6: “MDM UI Customization.”
- **Create Favorite**: Favorites can be created at user level or role level on configurable UI using the create favorite icon ♥ . For details, see Section : “User Favorites.” in Chapter 6: “MDM UI Customization.”
- **WhereUsed**: If the selected table has foreign key constraint, on click of “WHERE USED” button, the related table information will be displayed along with linked columns.

Generate Configurable UI

Navigate to Generate Configurable UI from **Model Setup**-> **Configurable UI**. On the **Configurable UI** page, click **Generate Configurable UI**. On the **Generate Configurable UI** (Figure 117),

- **Service Name**: displays a list of service names (Audit Table, Error Table, Master, Input, Non MDM, Net Change, Output Staging, Version Staging) on which you can auto generate configurable UI.
- **In-line Edit**: select the In-line Edit checkbox to enable inline editing on the generated configurable UI.
- The **Tables** panel displays all the tables of the selected service. Tables for which configurable UIs are generated will be grayed out as in Figure 117.

Figure 117: Generate Configurable UI



Service Name: Version

☐ In-line Edit

Tables in selected service

☐	Table Display Name	☐	Table Display Name
☑	AttributeSet	☐	AttributeSetDetail
☑	BiTemporalDate	☑	CUSTOMER_T
☑	CUSTOMER_WITHOUT_ALTER_ACCESS	☑	CUSTOMER_WITH_ALT
☑	Code_Set	☐	Code_Set_Stats

- **Generate** button: When you click on Generate, you will get a specific message as

  "A notification will be sent to the configured email Id after the completion of configurable UI generation".

  By default, configurable UI links will be generated in the left navigation pane under the **Tables** folder.

  The auto generated configurable UI will use Simple Template type. The configurable UIs will not have a separate Search Item panel. The user can change the template type to Advanced, but all the previously configured changes will be lost. For details on template types, see Section : "Define New UI".

- The auto generation of configurable UI is an asynchronous process. An email notification will be sent to the configured email id notifying completion of generation of the UI.

  You need to logout and login in order to view the newly generated configurable UI if accessed in the same session of its generation.

  In order to change the default settings of auto generated configurable UI, you need to navigate to Configurable UI (**Model Setup**-> **Configurable UI**). All the facets defined for a table/view in studio will be honored in auto generated configurable UI

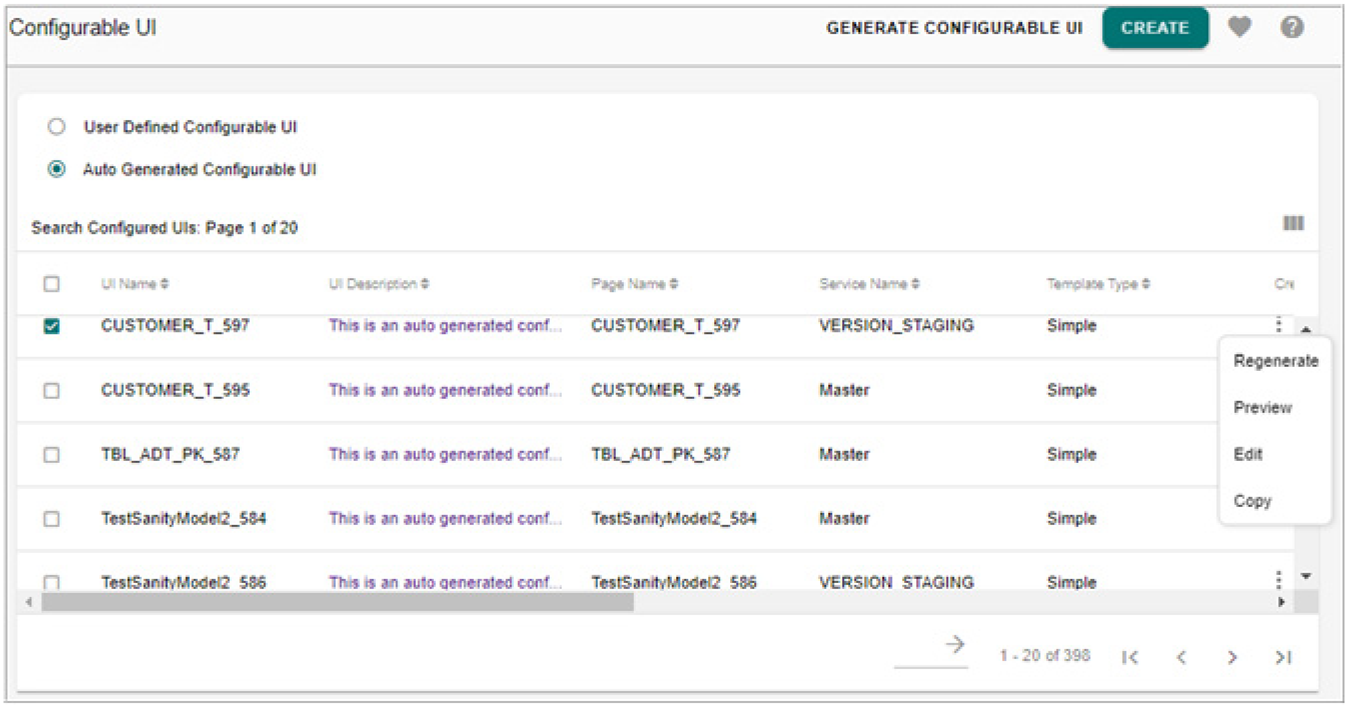
- When you edit an auto generated configurable UI (MDM or non MDM) from Configurable UI page, the edited configurable UI is converted into user-defined configurable UI and its left navigation link is removed. You need to regenerate that configurable UI again through Autogen Configurable UI to display its link on the left navigation pane.

Auto Generate Configurable UI

On the **Configurable UI** page, by default, the **User Defined Configurable UI** radio button is selected and the search pane displays user defined configurable UIs.

When the **Auto Generated Configurable UI** option is selected, the search panel displays the auto generated configurable UIs as in Figure 118.

Figure 118: Configurable UI



○ User Defined Configurable UI
● Auto Generated Configurable UI

Search Configured UIs: Page 1 of 20

☐	UI Name	UI Description	Page Name	Service Name	Template Type
☑	CUSTOMER_T_597	This is an auto generated conf...	CUSTOMER_T_597	VERSION_STAGING	Simple
☐	CUSTOMER_T_595	This is an auto generated conf...	CUSTOMER_T_595	Master	Simple
☐	TBL_ADT_PK_587	This is an auto generated conf...	TBL_ADT_PK_587	Master	Simple
☐	TestSanityModel2_584	This is an auto generated conf...	TestSanityModel2_584	Master	Simple
☐	TestSanityModel2 586	This is an auto generated conf...	TestSanityModel2 586	VERSION STAGING	Simple

With auto Generated Configurable UI option selected, you can perform the create, edit, delete, copy and preview configurable UI in the same manner as in user defined configurable UI. The Regenerate option is used to regenerate the auto configurable UI for the selected table in all the staging areas.

User needs to regenerate the configurable UI to honor the CLS changes.

Business Entity Object Approval in Configurable UI

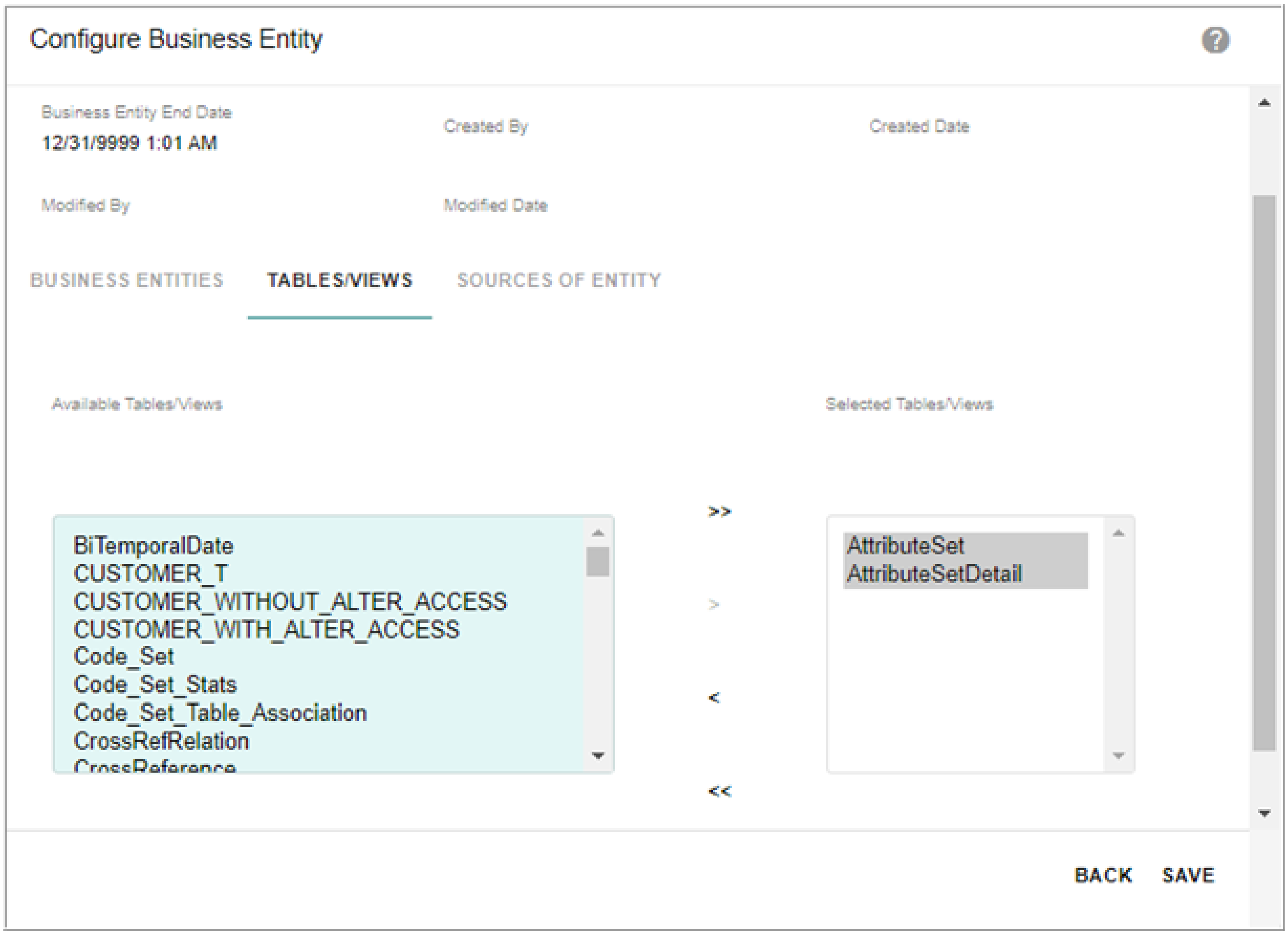
Configurable UI is capable of honoring Business Entity based approval. When configurable UI is created on tables that belong to an entity on which approval is enabled, the whole entity records will go for approval under the same approval request. Also if a configurable UI is created on an entity and there exists a related underlying table, which is not part of entity but part of the configurable UI, all the entity table records along with that of related table will go for entity based approval. The advantage with entity based approval is that you can accept or reject records of an entity at a time and that resolves the issue of referential integrity violations in scenarios where approval is defined on parent table not on child table.

Perform the following steps to enable entity based approval in configurable UI:

1 Navigate to **Manage Business Entity** page and create a business entity. For example, create a business entity by name “Bus_entity” with two Master tables as in Figure 119.

For detailed steps on creating entity, see Section : “Create Business Entity”.

Figure 119: Configure Business Entity



Configure Business Entity

Business Entity End Date
12/31/9999 1:01 AM

Created By

Created Date

Modified By

Modified Date

Available Tables/Views

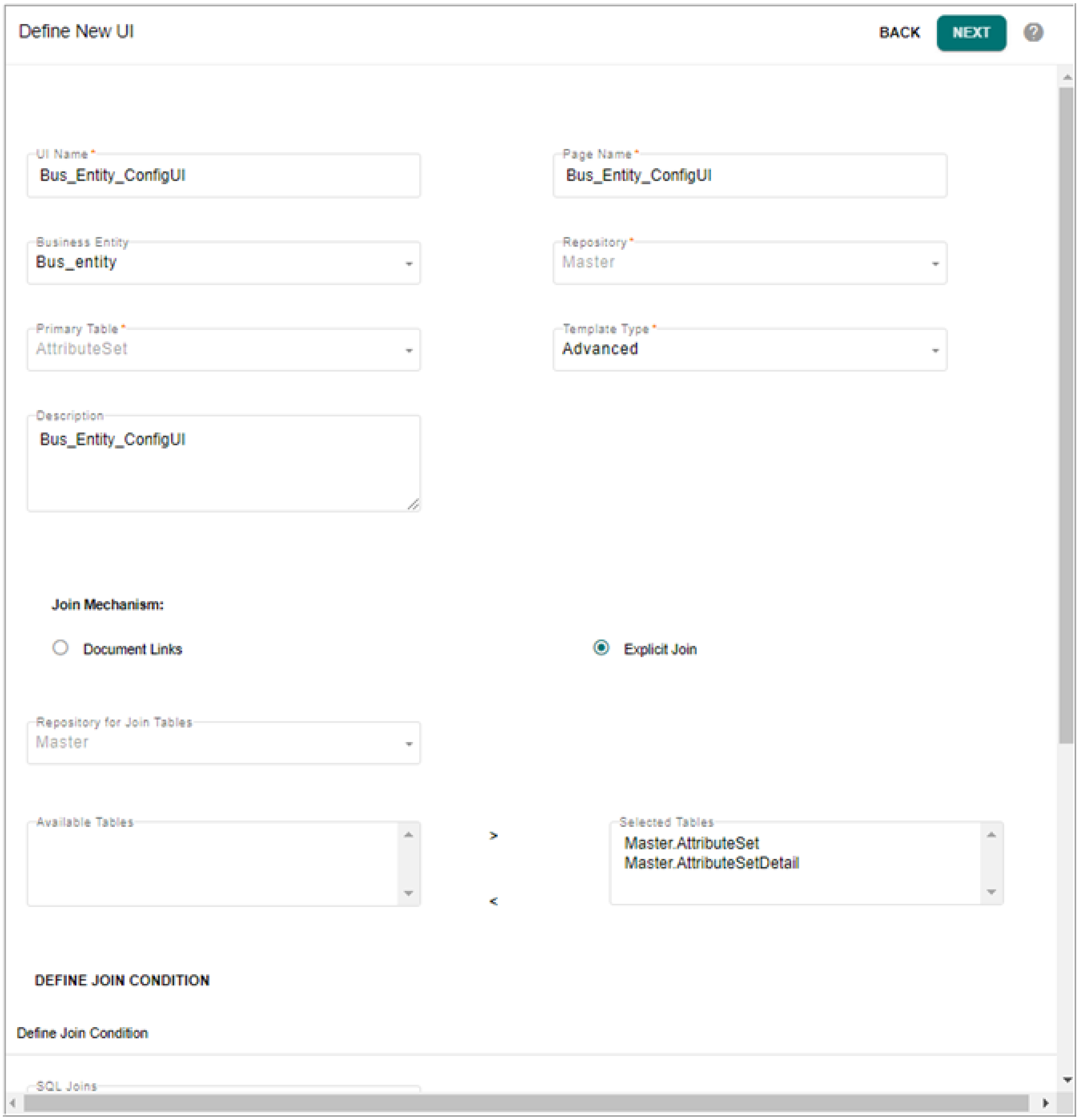
BiTemporalDate
CUSTOMER_T
CUSTOMER_WITHOUT_ALTER_ACCESS
CUSTOMER_WITH_ALTER_ACCESS
Code_Set
Code_Set_Stats
Code_Set_Table_Association
CrossRefRelation
CrossReference

Selected Tables/Views

AttributeSet
AttributeSetDetail

2 Navigate to Configurable UI page and create a new configurable UI using the business entity created in step1 as in Figure 120.

Figure 120: Define Configurable UI



UI Name * Bus_Entity_ConfigUI

Page Name * Bus_Entity_ConfigUI

Business Entity Bus_entity

Repository * Master

Primary Table * AttributeSet

Template Type * Advanced

Description Bus_Entity_ConfigUI

Join Mechanism:

○ Document Links

● Explicit Join

Repository for Join Tables Master

Available Tables

Selected Tables
Master.AttributeSet
Master.AttributeSetDetail

DEFINE JOIN CONDITION

Define Join Condition

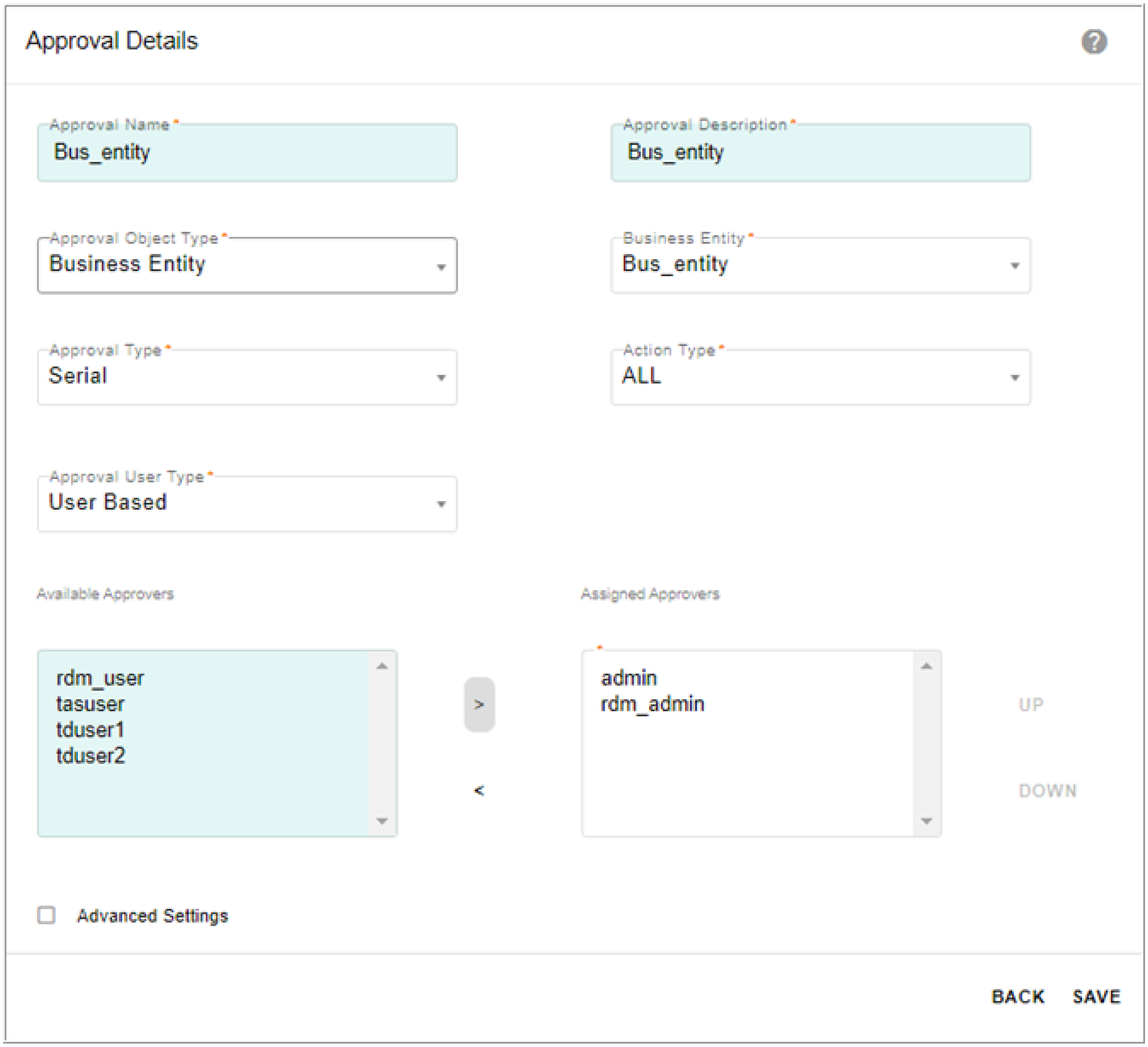
SQL Joins

For detailed steps on creating configurable UI, see Section : “Define New UI”.

3 Navigate to **Manage Approval** UI and create an approval on the business entity defined in step 1 as in Figure 121.

For detailed steps on creating approval, see Chapter 18: “Manage Approvals,”.

Figure 121: Approval Details



Approval Details

Approval Name*: Bus_entity

Approval Description*: Bus_entity

Approval Object Type*: Business Entity

Business Entity*: Bus_entity

Approval Type*: Serial

Action Type*: ALL

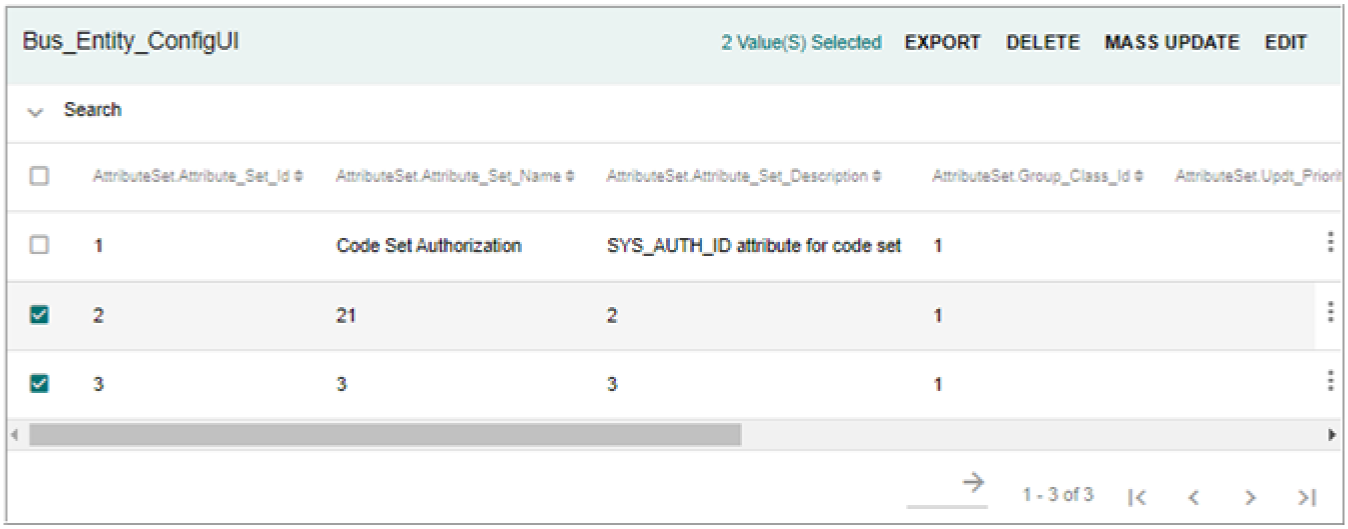
Approval User Type*: User Based

Available Approvers:
rdm_user
tasuser
tduser1
tduser2

Assigned Approvers*:
admin
rdm_admin

4 Navigate to Configurable UI—Preview page and perform any action say deleting the record as in Figure 122.

Figure 122: Preview Configurable UI



☐	AttributeSet.Attribute_Set_Id	AttributeSet.Attribute_Set_Name	AttributeSet.Attribute_Set_Description	AttributeSet.Group_Class_Id	AttributeSet.Updt_Priori
☐	1	Code Set Authorization	SYS_AUTH_ID attribute for code set	1	
☑	2	21	2	1	
☑	3	3	3	1	

All the records in the selected row of configurable UI will be sent for entity based approval.

5 Navigate to Approval Monitor page, click on the Menu icon ⋮ corresponding to the approval request and click **View** to view the entity records.

Records of all the tables of the entity for the selected row will be displayed.

6 On the Approval Monitor page, click on the Menu icon ⋮ corresponding to the entity record and click **Take Action**.

On the approval monitor page for admin or on approval inbox for the respective users, if the approval request is accepted, all the records in that entity will be deleted.

On the newly configured UI, the records violating business rules will not be inserted into error table.

Tasks Performed on Configurable UI

On the Configurable UI, you can perform the following:

- Create Configurable UI
- Generate Configurable UI Process
- Edit Configured New UI
- Copy Configured New UI Details
- Preview Configured New UI

- Delete Configured New UI

Create Configurable UI

Perform the following steps to create configurable UI:

1. Navigate to the **Define New** UI from **Model Setup**-> **Configurable UI** and click **Create**.
2. On the **Define New UI**, enter the UI name, page name, description, select the business entity, repository, primary table, template type and define the join conditions and click **Next**.
3. On the **Define Search Columns** page, select and specify the order of search columns to search within the UI, enable or disable the **Perform Default Search** check box and click **Next**.
4. On the **Configure Search Columns** page, modify the display name, change the hover text, field type and click **Next**.
5. On the **Define Result Columns** page,
    - Select and specify display order of the result columns to be displayed on the Search Result table at runtime.
    - Select the buttons to be displayed on the UI being configured by selecting corresponding checkboxes.
    - Enter the file path of the help file.
    - Enter the number of rows to be displayed per page in the Number of rows to be displayed per page text field.
    - Define the custom buttons and click **Configure Result Columns**.
6. On the **Configure Result Columns** page,
    - Click **Configure Create/Edit Columns** button to enable the **Editable Columns** list in order to deselect the required result columns checkboxes and make the columns non editable on the configured Create or Edit UI.
    - Select **Sortable** checkbox to make all the selected result columns to be sortable on the Search Result page of the configured UI. Make any column non sortable by de-selecting the corresponding checkbox.
    - Select **Display NoWrap** checkbox to make the hover text of all the selected result columns be wrapped on the Search Result page of the configured UI. De-selecting this option on any column results in No wrapping of the hover text.
    - **i18nized** checkbox: if the i18nized option is selected for a column, the corresponding column data will be displayed in i18nized format on the Preview page.
    - In the **Selected Result Columns** pane, you can modify the required display name and hover text and enter the default values for the columns. You can specify the background color for each of the result column by selecting the required color from Color Code dropdown.
    - From the **Available Columns** list, select the columns to be set as key columns and move the columns to **Selected Key Columns** list.
7. Click **Save**.

Generate Configurable UI Process

Perform the following steps to generate configurable UI:

1. On the Generate Configurable UI, select the service from **Service Name** dropdown.
2. Optionally select the **In-line Edit** checkbox to enable inline editing on the generated table.
3. In the **Tables** pane, select the tables or views and click **Generate**.

Edit Configured New UI

To edit the details on the new configured UI:

1. On the **Configurable UI** page, click on the Menu icon ⋮ corresponding to the required UI and click **Edit**.
2. On the **Edit UI** page, you can modify the description, modify the selected Tables column, define new join condition if Explicit Join mechanism is used and click **Next**.
3. On the **Edit Search Columns** page, you can modify the Selected Columns list and enable/disable the Perform Default Search option and click **Configure Search Columns**.
4. On the **Configure Search Columns** page, you can change the Field Type of the search columns and click **Next**.
5. On the **Edit Results Column** page, you can modify the Selected Columns list and enable/disable the buttons required on the Result Container, add or remove custom buttons, and click **Configure Results Column**.
6. On the **Configure Results Column** page, by default, all the selected result columns will be editable on the configured Create or Edit page except SYS and Primary Key columns. You can make any columns non editable by clicking **Configure Create/Edit Columns** button to enable deselection of the corresponding columns checkboxes.
    - On the **Selected Result Columns** pane, you can modify the required display name and hover text and enter the default values for the columns.
    - You can modify the Selected Key Columns list.
7. Click **Save**.

Copy Configured New UI Details

Using the Copy option, you can copy an existing configured UI with all its details and make a new configurable UI by entering the UI name and Page name.

To copy the configured UI details:

1. On the Configurable UI, click on the Menu icon ⋮ corresponding to the required UI and click **Copy**.
2. On the **Copy UI** page, enter new UI name, Page name and modify other details if required click **Next**.

   You can navigate to subsequent pages and modify the details if required and then click **Save**.

Message: “UI copied successfully” is displayed.

Preview Configured New UI

To preview the new configured UI:

1 On the Configurable UI, click on the Menu icon ⋮ corresponding to the required UI and click **Preview**.

On the new configured UI preview page, you can search records, create, edit, copy, delete and mass update records.

Delete Configured New UI

To delete the new configured UI:

1 On the Configurable UI, select the required UI and click **Delete**.

2 On the Confirmation Webpage Dialog, click **Yes**.

Troubleshooting

This section helps you to identify and resolve the problems that you may experience while using Manage configurable UI and generate configurable UI features.

Q 1: *The Page Name entered while defining the new UI is not available on the Menu Builder UI?*

A. The Page Name entered by the user while defining the new UI will be available on the Menu Builder only for the active UIs (that is, the user should complete all the tasks while creating a new UI for the page name to be included in the Menu Builder).

Q 2: *While creating configurable UI, if same column name is selected from different tables, how to distinguish the columns on Search Item and Search Results pane?*

A. On the configurable UI, if same column name is selected from different tables, it is recommended to modify the display column name and/or the hover text, so that on the Search Item or Search Results page, the column names can be distinguished.

Q 3: *If a column is deleted using MDM Studio and incremental schema is generated, the search and results pane on the newly configured UI page still display the deleted column?*

A. Delete the column using Edit Configurable UI functionality.

Q 4: *On the newly configurable UI, the Show History option is not available to display history records?*

A. On the configurable UI, the Show History option will be available to display history records only if all the tables involved in configurable UI are temporal tables.

Q 5: *Not able to view the generated configurable UI link on the left navigation pane?*

A. Logout and login to see generated configurable UI link on the left navigation pane.

Q 6: *The selection checkbox not visible on the auto generated configurable UIs?*

A. If the primary keys are not selected for tables on which configurable UIs are generated, the selection checkbox will not be visible on the configurable UI and the table records cannot be updated. In order to update the table records, perform the below steps:

- Navigate to **Configurable UI** page, select the auto generated configurable UI and click **Edit**.
- Navigate to **Configure Result Columns** page and select the key columns and click **Save**.

The selection checkboxes will be visible and the table records can be updated.

Q 7: *If an extended attribute is renamed, the changes are not reflected in already generated Configurable UI's?*

A. Delete the generated Configurable UI and then regenerate the configurable UI for the changes to be reflected.

Q 8: *Records are not displayed on the configurable UI result panel even though the data exists in the underlying tables?*

A. One of the reason could be the columns involved in the join condition of the configurable UI might have null values.

Points to Remember

Points to remember on Configurable UIs:

1. On the Configurable UI pages, if you want to i18nize hover text and display text, the respective values should be available in i18n-messages_en_US.properties file available at *<MDM_Install_Directory>\web\mdmclient\WEB-INF\classes*
2. It is recommended and required to rename the extended attribute before using it in the Configurable UI.
3. Geospatial columns will not be available in the Search Configuration page.
4. You can not insert the records with single/double quotes in the Enum Constant values from Configurable UI.
5. It is recommended not to configure a UI with sum of the columns of the VARCHAR length exceeding 64000 as the same UI will throw an exception during runtime due to database limitations. The character length is calculated as per the Teradata character set (UTF 16, UTF 8, ASCII etc.,) of the connection.
6. The default data type for Macros are string. User needs to take care of maximum length and format of data type in macros.
7. It is recommended to use a maximum of five tables on the configurable UI.
8. For Non MDM Views in configurable UI, macro configuration is mandatory.
9. For self-referenced table, the Available Tables list displays the selected primary table twice. It is recommended not to select the selected primary table in the Available Tables list.
10. Datatype validation on configurable UI is applied on the following numeric data types: INTERGER, BYTEINT, SMALLINT, BIGINT, decimal, float and double.

11 For MDM view support on configurable UI, make sure to define a Primary Key (PK) on view model definition as PK is a must for MDM functionalities. In case of MDM view, configurable UI executes DO_DB_Persist request. For CRUD operations to work with views, define Save API for CRUD operations in DO_DB_Persist configuration file and then perform operations on configurable UI.

The response in the Save API must be in the below format for the message to be displayed on the configurable UI:

In case of any error, the message must be:

```
<RESPONSE>
<UI_MESSAGE Value="ERROR" Message="MESSAGE TO BE DISPLAYED"/>
</RESPONSE>
```

In case of success, the message must be:

```
<RESPONSE>
<UI_MESSAGE Value="SUCCESS" Message="MESSAGE TO BE DISPLAYED"/>
</RESPONSE>
```

12 Configurable UI do not support Tables or entities defined as IS-NATIVE on model. Example of Is-Native tables or entities includes: Process, QueryParam, Step, VersionHistory etc.

13 If the auto generated Id's from Manage UI matches the pre-populated Id’s, then the IdGen entry in the ID_SQR table should be updated. Possibly, prefix or start the IdGen from a number which does not conflict with the IdGen process.

14 On the newly configured UI, if approval is enabled on any of the tables, approval process will be successful and the success message displayed on the UI will be generic and no specific approval messages would be displayed.

15 User request generated row of data or a sort key size exceeding internal Teradata database limitations (presently about 64230 BYTES for a row) applies to configurable UI also.

16 If configurable UI is designed on a table having primary key as surrogate key then while creating a record, user will not be requested for primary key input.

CHAPTER 9 The E2E (Data Load) Workflow

What's In This Chapter

This chapter provides detailed information about the E2E (Data Load) workflow in MDM and information on creating procedures and workflows in the MDM application.

Topics include:

- Loading Data
- E2E Workflow
- Configuration in MDM Studio
- Data Load (E2E) Prerequisites
- Executing Data Load (E2E) Workflow
- Data Load (E2E) Workflow Details
- Custom Validations and Business Logic
- Dynamic Business Rules for Bulk Data
- Custom Extensions to Data Load Workflow
- Data Load Workflow Monitoring and Troubleshooting
- Data Cleansing Workflow
- E2E Environment Check Using MDM Test Service Framework

Loading Data

After installing MDM, you can load data into MDM either by running the E2E workflow or by executing sample data scripts. When you load your data, it populates the input staging tables. Then you have to run the E2E workflow to persist your data in to the master tables. But when you load sample data it populates the master tables directly.

To load sample data:

1. Navigate to *<MDM_Install_Directory>/testdata.*
2. To load the testdata for Toolkit, execute call_populateTestData_tk.bat or tk_populateTestData.sh on Windows and Unix respectively.
3. Restart the MDM Server and Weblogic Server.

   This loads the sample data into MDM.

For detailed information on executing the Data load (E2E) workflow, see the below sections.

E2E Workflow

The Data Load (E2E) workflow facilitates propagation of the input staging data into the master tables. Data must be loaded into the MDM input staging tables prior to starting up the Data Load (E2E) workflow. A part of this data may be owned by legacy systems. This data is typically fed in bulk mode as a flat file or through ETL (Extract Transform and Load). MDM supports a relational input staging interface where this data is loaded. This bulk data is taken as input to compute the netchange in data from the previous load. The netchange data is then persisted into the MDM Master tables. The data load workflow provides a framework to plug in (enable) or disable business validations before persisting into Master tables. It also provides the ability to validate, fix and clean up errors, and load the data to the master tables. You can customize and configure the data load workflow during deployment.

The data load workflow can either be complete or partial. The complete load workflow persists the data from all the input staging tables to the master tables. The partial load workflow allows data from selective data sources to be persisted into the MDM Master tables. All validated data that is persisted to the Master or Reference area is also replicated to the default output staging area for publishing to target systems. The data load workflow also sends notification and error alerts to users with relevant roles and permissions.

- Data Load and E2E can be referred interchangeably.
- The below listed behavior changes will apply to Data Load (E2E) and NetChange workflow:
  - Redundant Referential Integrity (RI) check is removed on the Input staging.
  - Filter records will not be deleted from the Input staging tables upon the Data Load workflow execution.
- E2E can be performed successfully on a table having maximum number of columns as 100, for tables with more than 100 columns, E2E may not work as expected.
- E2E is not supported for table with JSON data types.

Concurrent E2E Workflow

MDM supports concurrent E2E process to handle concurrent load requests to MDM server. The Data Quality is made optional for any load.

In the concurrent E2E process, same table cannot be used in concurrent loads.

Inbound Staging

The inbound staging area is the data acquisition area. Data is moved to the master tables only after it is cleansed. Data is loaded into unconstrained input staging, so that loads are faster and the impact on the source systems is minimal. These data loads may be via Multiload or Fastload, Informatica, or shell/perl scripts.

To view the inbound staging tables:

1. Log in as administrator.
2. Generate tables for Input Staging tables using Generate Configurable UI. For details on generating tables, see Section : "Generate Configurable UI Process."
3. Navigate to required Table UI from left navigation pane **Tables** -> **Input Tables** and click on the required table.

Net Change (NC)

Net change is the difference between the existing data and the data present in the input staging area. The START_NET_CHANGE stored procedure calculates the net change by comparing the input staging with the reference database. This stored procedure populates data to the tables prefixed with NC_. The START_NET_CHANGE procedure calculates net change only for tables/fields that are part of the NC_ tables, as the NC_ tables represent true staging tables.

To view the net change tables:

1. Log in as administrator.
2. Generate tables for NetChange tables using Generate Configurable UI. For details on generating tables, see Section : "Generate Configurable UI Process."
3. Navigate to required Table UI from left navigation pane **Tables** -> **Netchange Tables** and click on the required table.

Master Tables

Master tables in MDM receive data from the inbound staging tables. This data is then synchronized with the data in the outbound staging tables. Propagation of data from the inbound staging area to master tables constitutes the E2E workflow. For detailed information about initiating data flow from inbound staging area to the master tables, see *"Data Load (E2E) Workflow Details"* in this chapter.

To view the master tables:

1. Log in as administrator.
2. Generate tables for Master tables using Generate Configurable UI. For details on generating tables, see Section : "Generate Configurable UI Process."
3. Navigate to required Table UI from left navigation pane **Tables** -> **Master Tables** and click on the required table.

Outbound Staging

The master tables in MDM receive data from the inbound staging tables. This data is then synchronized with the data in the outbound staging tables.

To synchronize outbound staging tables for the first time, execute the procedure CREATE_SNAPSHOTS. To update the outbound staging tables after that, execute the procedure UPDATE_SNAPSHOT.

You can check for the outbound staging tables using the following steps:

1. Log in as administrator.
2. Generate tables for Output Staging tables using Generate Configurable UI. For details on generating tables, see Section : "Generate Configurable UI Process."
3. Navigate to required Table UI from left navigation pane **Tables** -> **Output Tables** and click on the required table.

Configuration in MDM Studio

Perform the following configurations in MDM Studio:

Setting Source Facet

The MDM Meta-model stores information regarding the system of record for every model and field. The tables and fields originating from the backend need to be classified as BACKEND in the definition of the entities. For these entities, the Net Change tables get generated when the schema is generated for MDM. For information on how to set the source, refer to *Chapter 3 Model Set in Master Data Management Studio User Guide*.

Note that this configuration must be followed by an update to the service setup and schema regeneration. For information, refer to *Chapter 3 Process Modeling in Master Data Management Studio User Guide*.

Data Load (E2E) Prerequisites

Before deploying MDM, entities for which data originate from the external source systems must be identified and classified as such in MDM Studio. For these entities, the net change tables are generated when the schema is generated for MDM. For detailed information on managing MDM system table map facet, refer to *Chapter 3 Model Set in Master Data Management Studio User Guide*.

Data for such entities must be loaded from external systems into the IN_ tables.

E2E/CLOB Limitations:

- E2E cannot be run on tables with CLOBs columns as during Net Change computation, each column data of INPUT staging table is compared with MASTER staging and CLOBs cannot be compared.

- Functionalities like search, sort etc., will also not work on CLOBs fields.

  To run E2E on tables with CLOBS, perform the following steps:

  - Define all the CLOB columns as "MASTER" only and the Table kind as "BOTH" in the MDM Studio. In that case CLOB columns will not be present in NC tables (though present in IN tables).
  - E2E will ignore these CLOB columns and load rest of the columns data to MST tables.

  For more details, refer to *Chapter 3 Model Set in Master Data Management Studio User Guide*.

E2E Limitation on Number of Columns

E2E is supported for all the tables for which the maximum limit of accumulated column name length is less than or equal to 40000.

The accumulated column name length of any table can be calculated as below (110+6*length_of_col1name) + (110+6*length_of_col2name)+….

110 - represents the length of keywords (like IS NOT NULL, AND) that are added along with the column names.

6 - represents that the column name is repeated 6 times in the SQL.

Executing Data Load (E2E) Workflow

This section explains the steps to register new load, complete and partial data load workflows.

Data Load Registry

MDM has a data load registry where different data loads can be created. Registering a load involves specifying the set of tables which would be loaded as part of the data load and the source system from which data for the load would be sourced.

Creating the Register Load Details

Register load workflow is used to register the table with Load Id for the E2E process. It displays the Inbound Service related tables to select to continue the process.

To register load details as batch process:

1. Navigate to *<MDM_Install_Directory>/batch/preload*.
2. Open registerLoad.xml and edit to point to the required load id, for example load Id '10', edit source value, document name value as per the requirement.

```
<REQUESTS ServiceName="E2E">
  <REQUEST Name="registerLoad">
    <LOAD_ID Value="10"/>
  <NAME Value="default"/>
  <SOURCE Value="BackEnd"/>
  <DATA_LOAD_TYPE Value="INPUT"/>
  <TABLES>
   <TABLE>
    <DOCUMENT_NAME Value="ItemLocationMaster"/>
   </TABLE>
   </TABLES>
 </REQUEST>
</REQUESTS>
```

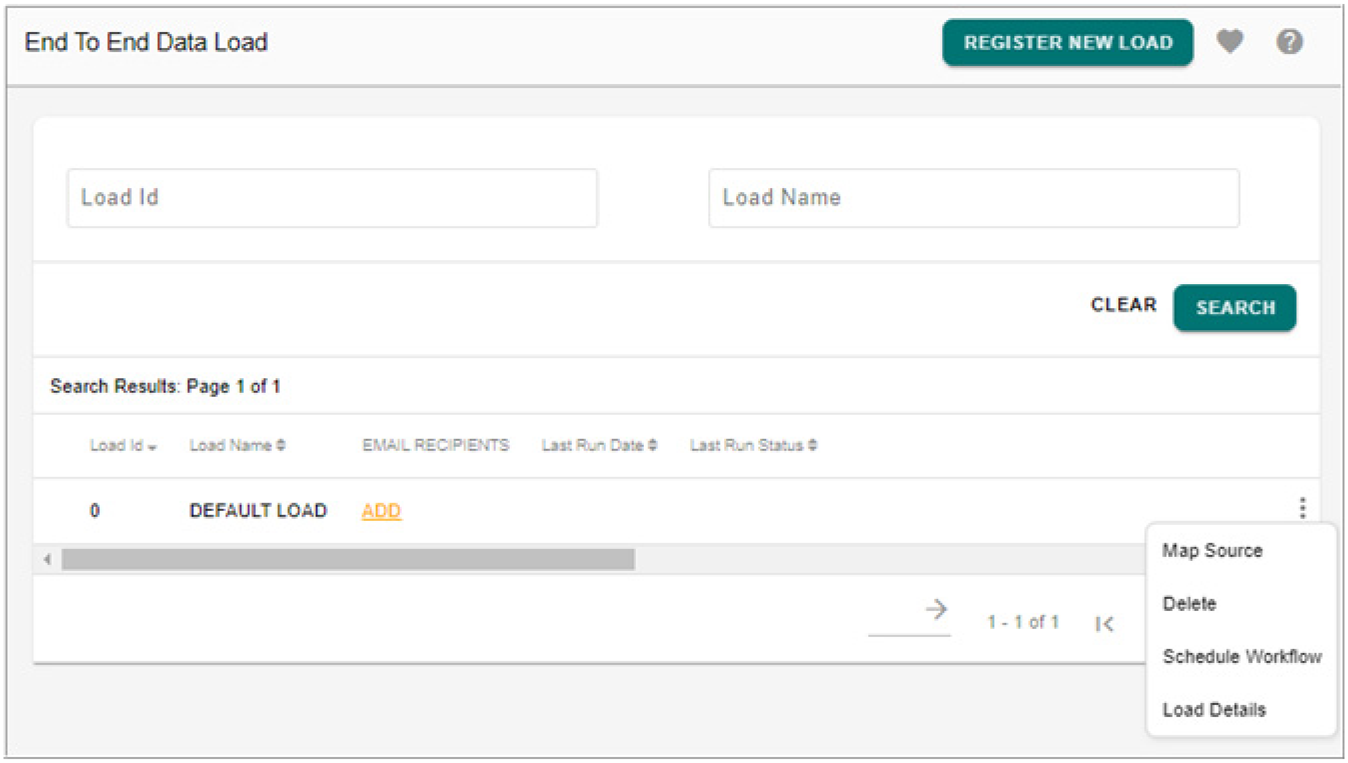
3 Execute registerLoad.bat/.sh.

To create the register load details from MDM UI:

1 Navigate to **Registered Data Loads** UI from MDM left navigation pane **Data Integration**-> **End to End Data Load** -> **Data Load Workflow**.

The **End to End Data Load** page (Figure 123) is displayed.

Figure 123: End to End Data Load

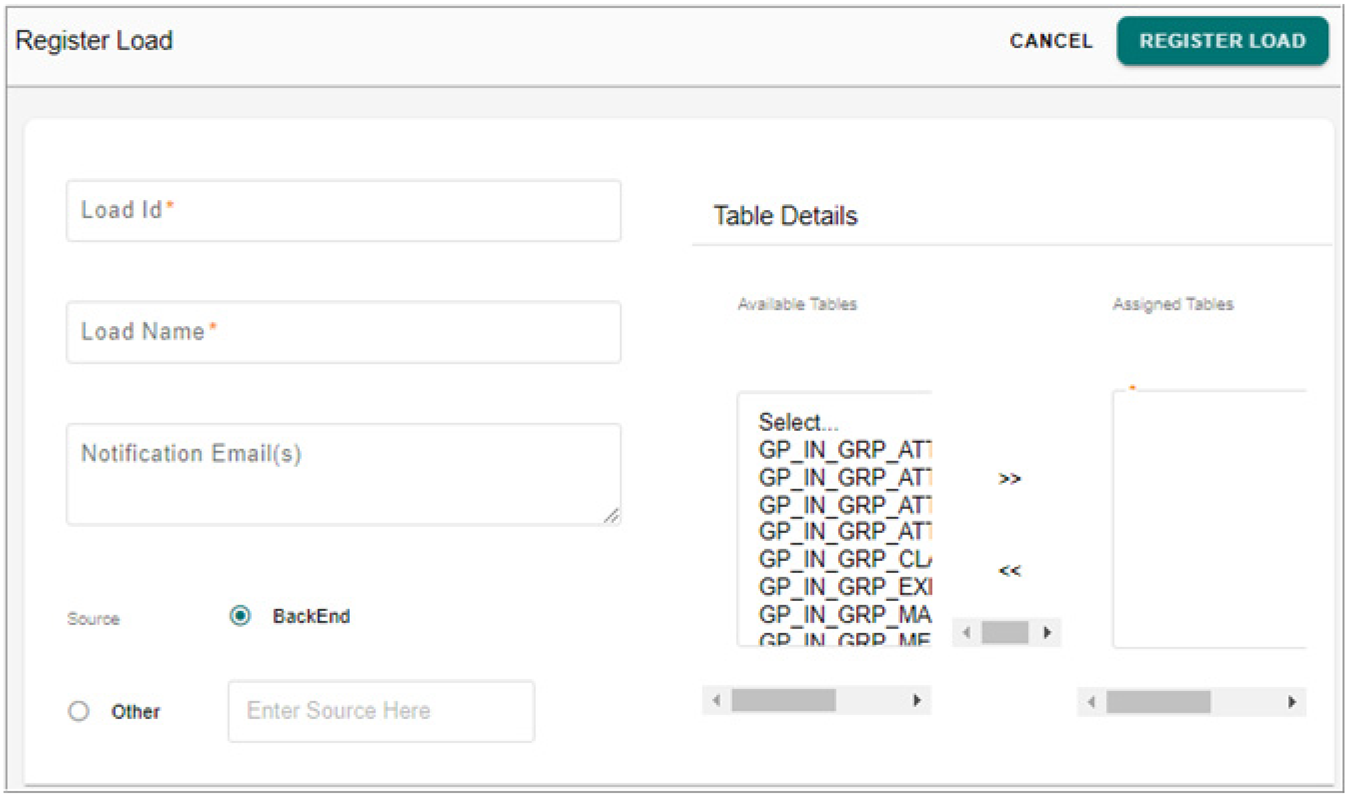


Load Id	Load Name	EMAIL RECIPIENTS	Last Run Date	Last Run Status
0	DEFAULT LOAD	ADD		

2 On the **End to End Data Load** page (Figure 123), click **Register New Load**.

The **Register Load** page (Figure 124) is displayed.

Figure 124: Register Load



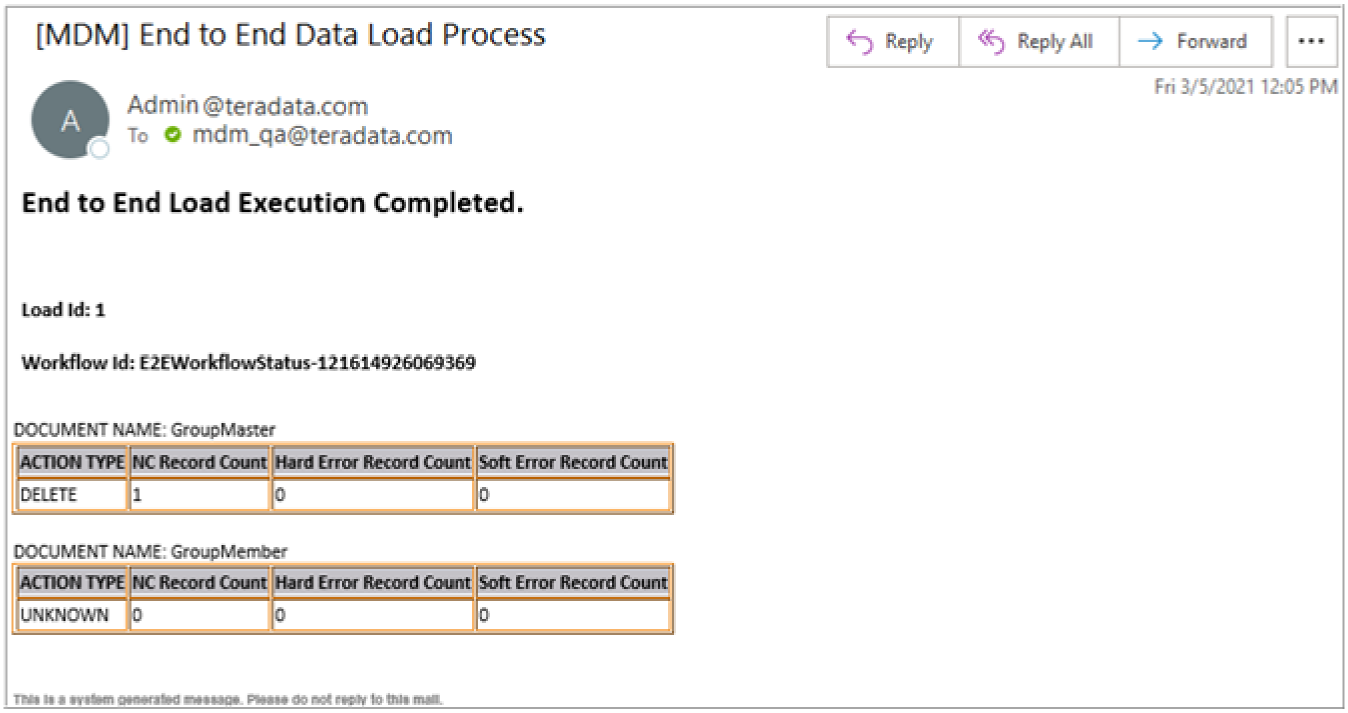
3 On the **Register Load** page (Figure 124), enter the following details:

- in the **Load Id** field, enter the load Id. It is recommended to enter load Id as integer.
- in the **Load Name** field, enter the load name.
- **Notification Email(s)**: enter the email address of all the users who need to get notified about the status of E2E data load process. Multiple email addresses must be separated by commas.

  For already existing registered load, you can enter the email addresses in EMAIL RECIPIENTS column on the Registered Data Load UI by clicking on the ADD link as in Figure 123 and on the E2E_EMAIL_IDs popup, enter the email Id(s) and click Save.

  Message: “Notification saved successfully” is displayed. Figure 125 displays a sample email notification.

Figure 125: Sample Email Notification



[MDM] End to End Data Load Process

Fri 3/5/2021 12:05 PM

Admin @teradata.com
To mdm_qa@teradata.com

End to End Load Execution Completed.

Load Id: 1

Workflow Id: E2EWorkflowStatus-121614926069369

DOCUMENT NAME: GroupMaster

ACTION TYPE	NC Record Count	Hard Error Record Count	Soft Error Record Count
DELETE	1	0	0

DOCUMENT NAME: GroupMember

ACTION TYPE	NC Record Count	Hard Error Record Count	Soft Error Record Count
UNKNOWN	0	0	0

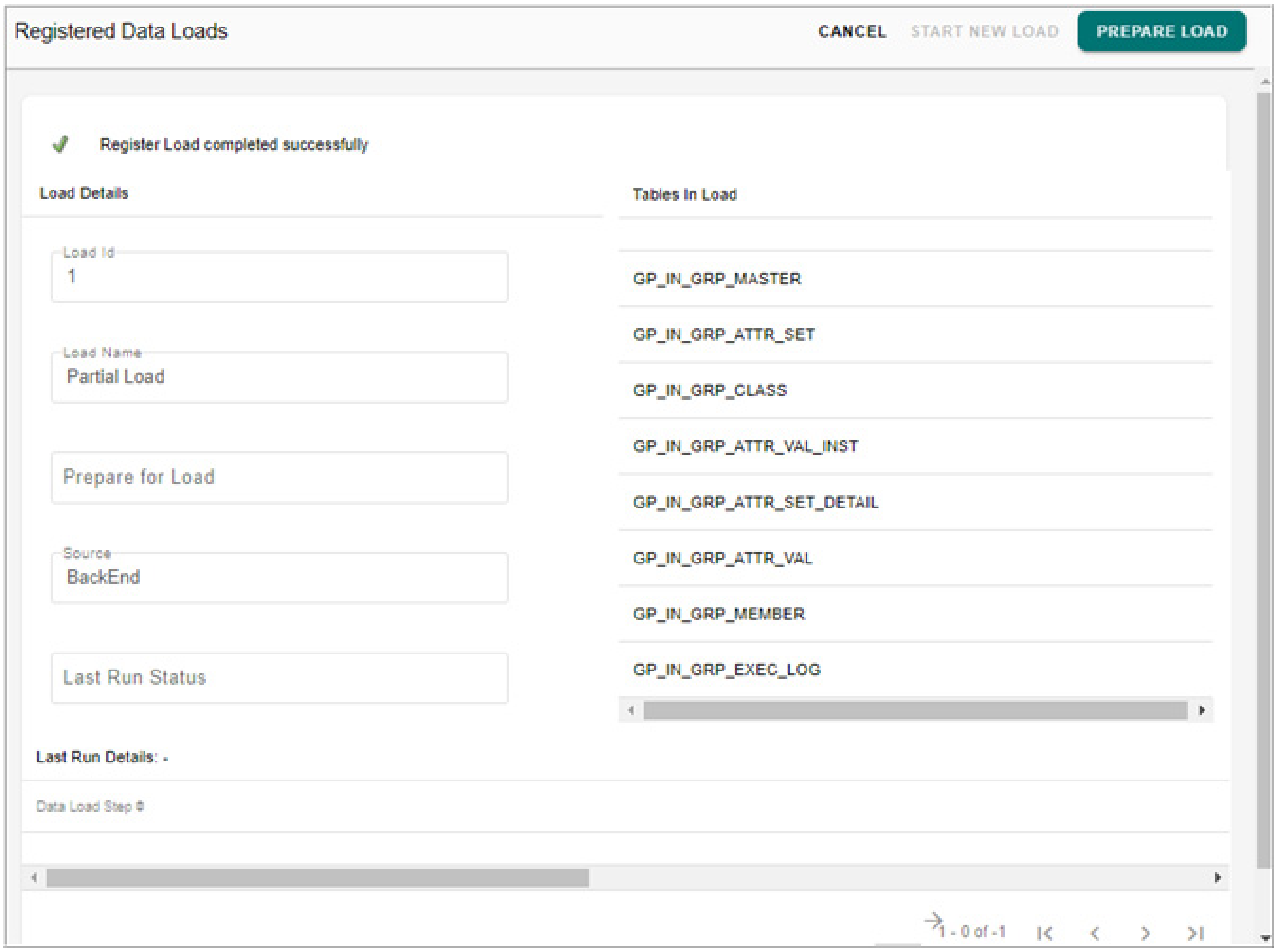
This is a system generated message. Please do not reply to this mail.

- for **Source**, select either as Backend or Other. If Other option selected, enter the source.
- from the **Available Tables** section, select the table to be registered with the load id and click the arrow buttons.

  The selected tables will be added to the **Assigned Tables** section.
- click **Register Load**.

The **Registered Data Load** page displays the success message as in Figure 126.

Figure 126: Success Message on Registered Data Load Page



Register Load completed successfully

Load Id: 1

Load Name: Partial Load

Prepare for Load

Source: BackEnd

Last Run Status

GP_IN_GRP_MASTER
GP_IN_GRP_ATTR_SET
GP_IN_GRP_CLASS
GP_IN_GRP_ATTR_VAL_INST
GP_IN_GRP_ATTR_SET_DETAIL
GP_IN_GRP_ATTR_VAL
GP_IN_GRP_MEMBER
GP_IN_GRP_EXEC_LOG

While selecting tables from the **Available Tables** section, if these same set of tables are registered with another load Id, the **Register Load** page will display the message: *These tables are present with Load Id <No.>*. Click **New load** to register new load details.

Complete Data load Workflow

This section describes the steps to execute a complete data load as a batch process and from the MDM Web UI.

Default Registered Load

MDM, by default, provides a load '0' which assumes a load of all backend tables with a default source 'BackEnd'. So, if the implementation involves only one run for all backend data, then there is no need to register any loads.

Batch Process Execution

The below section describes the batch process execution.

Preload

The first step to running a data load is to run the preload. Preload lets the system know as to which load (from the load registry) is about to start.

Preload performance is improved if preload is repeated for the same load. It processes the input data only for inserts/updates. This will be useful in deployments without deleting existing data based on feeds.

To run a preload:

1. Navigate to *<MDM_Install_Directory>/batch/preload*.
2. Open preDataLoad.xml and edit to point to the required load id, for example load id '0'.

```
<REQUESTS ServiceName="E2E">
    <REQUEST Name="setPreloadConfig">
       <PRELOAD_PARAMETERS>
          <LOAD_ID Value="0"/>
       </PRELOAD_PARAMETERS>
    </REQUEST>
</REQUESTS>
```

3. Execute PreDataLoad.bat/sh.

Data Load

Once the preload is complete, the system is ready for the complete data load. Now, the input tables can be populated from the source systems. Input tables can be populated by writing ETL adapters from source databases and flat files.

After populating the input tables, trigger the data load workflow by executing startDataLoadWorkflow.bat/sh. from *<MDM_Install_Directory>/batch*.

In the startDataLoadWorkflow.xml file (available at: *<MDM_Install_Directory>/batch*), you can set the following parameters:

- LOAD ID: Specify the load Id. The Load_Id is the unique identifier for each E2E process.
- IGNORE_DELETES: Only inserts, activates and updates will be processed and persisted to master. Deletes will be ignored. The Ignore Deletes tag is optional, by default it is set to “false”.
- ENABLE DQ: The Enable DQ tag is optional, by default it is set to “false”. If set to true it generates data quality report for the selected load Id.

To enable or disable IGNORE_DELETES and Data Quality, set the parameters values in startDataLoadWorkflow.xml:

```
<REQUESTS ServiceName="E2E">
  <REQUEST Name="startEndToEndWorkflowSync">
    <LOAD_ID Value="10"/>
    <IGNORE_DELETES Value="true/false"/>
    <ENABLE_DQ Value="true/false"/>
  </REQUEST>
</REQUESTS>
```

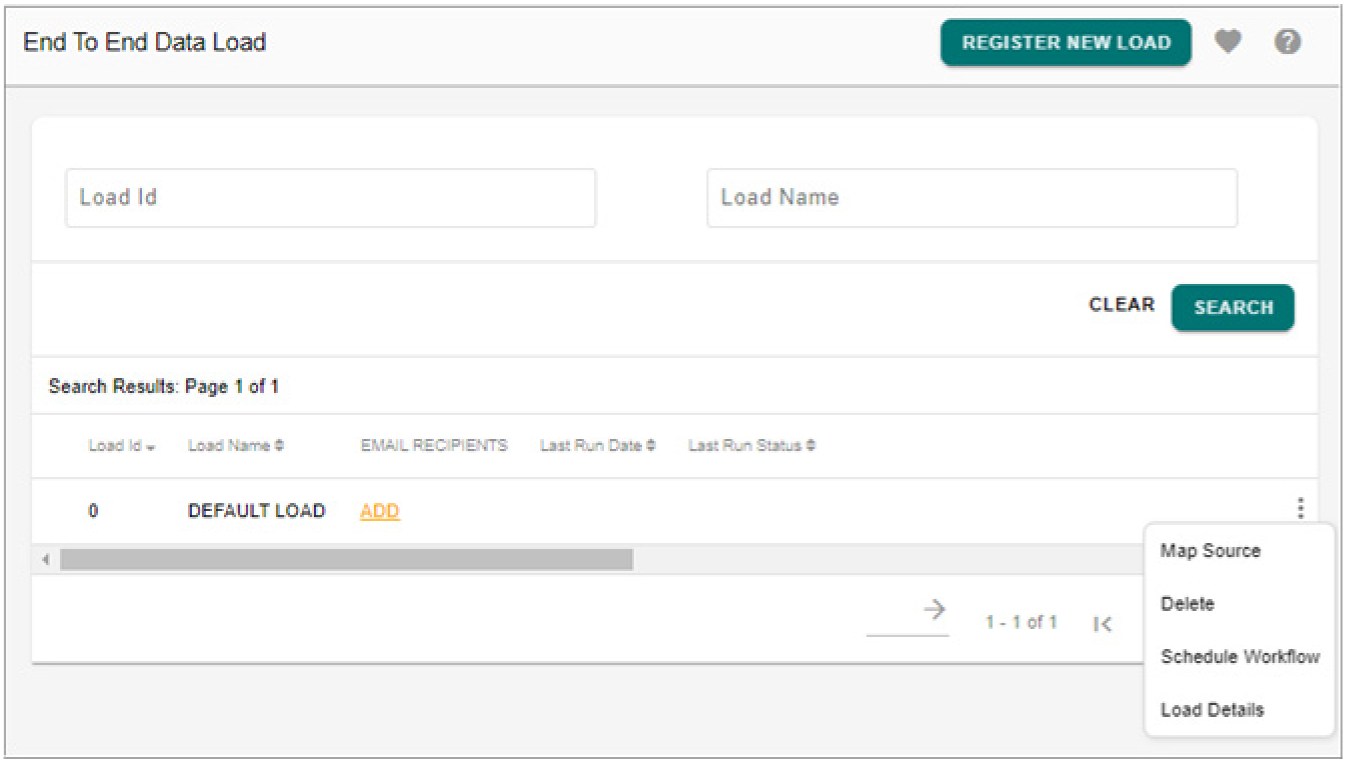
Complete Data Load Workflow from MDM Web UI

To run complete data load workflow from MDM Web UI:

1. Navigate to **Registered Data Loads** UI from MDM left navigation pane **Data Integration**-> **End to End Data Load** -> **Data Load Workflow**.

   The **End to End Data Load** page (Figure 127) is displayed.

Figure 127: End to End Data Load



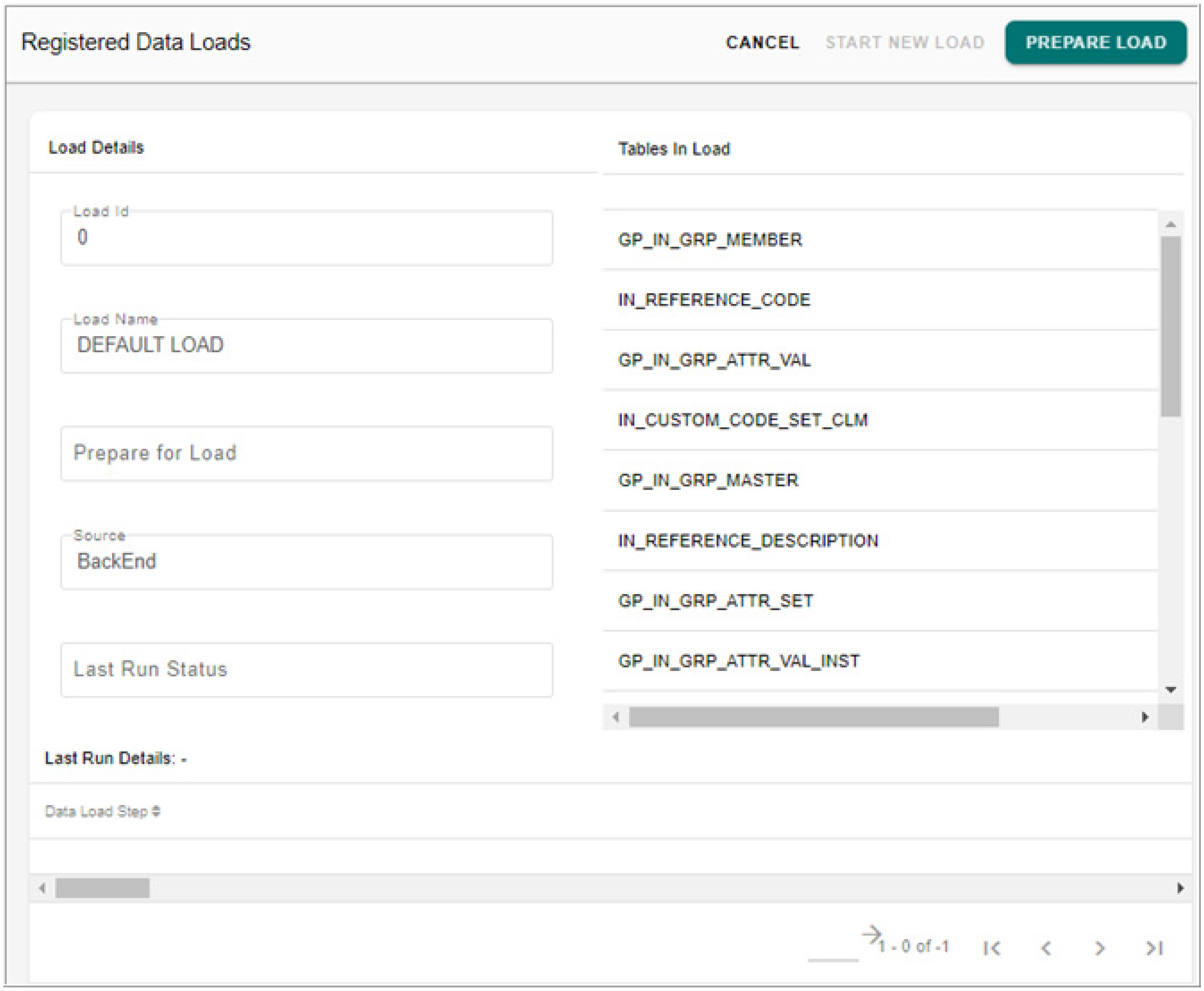
Search Results: Page 1 of 1

Load Id	Load Name	EMAIL RECIPIENTS	Last Run Date	Last Run Status
0	DEFAULT LOAD	ADD		

2. On the **End to End Data Load** page (Figure 127), click on the Menu icon corresponding to the default load Id “0” and click **Load Details**.

   The **Registered Data Loads** page (Figure 128) is displayed for the Load Id 0.

Figure 128: Registered Data Loads



Load Id: 0

Load Name: DEFAULT LOAD

Source: BackEnd

GP_IN_GRP_MEMBER
IN_REFERENCE_CODE
GP_IN_GRP_ATTR_VAL
IN_CUSTOM_CODE_SET_CLM
GP_IN_GRP_MASTER
IN_REFERENCE_DESCRIPTION
GP_IN_GRP_ATTR_SET
GP_IN_GRP_ATTR_VAL_INST

Last Run Details: -

3 On the **Registered Data Loads** page (Figure 128), click **Prepare Load**.

Clicking on the **Prepare Load** is equivalent to executing the batch file PreDataLoad.bat(Windows) or PreDataLoad.sh (unix) scripts from command line.

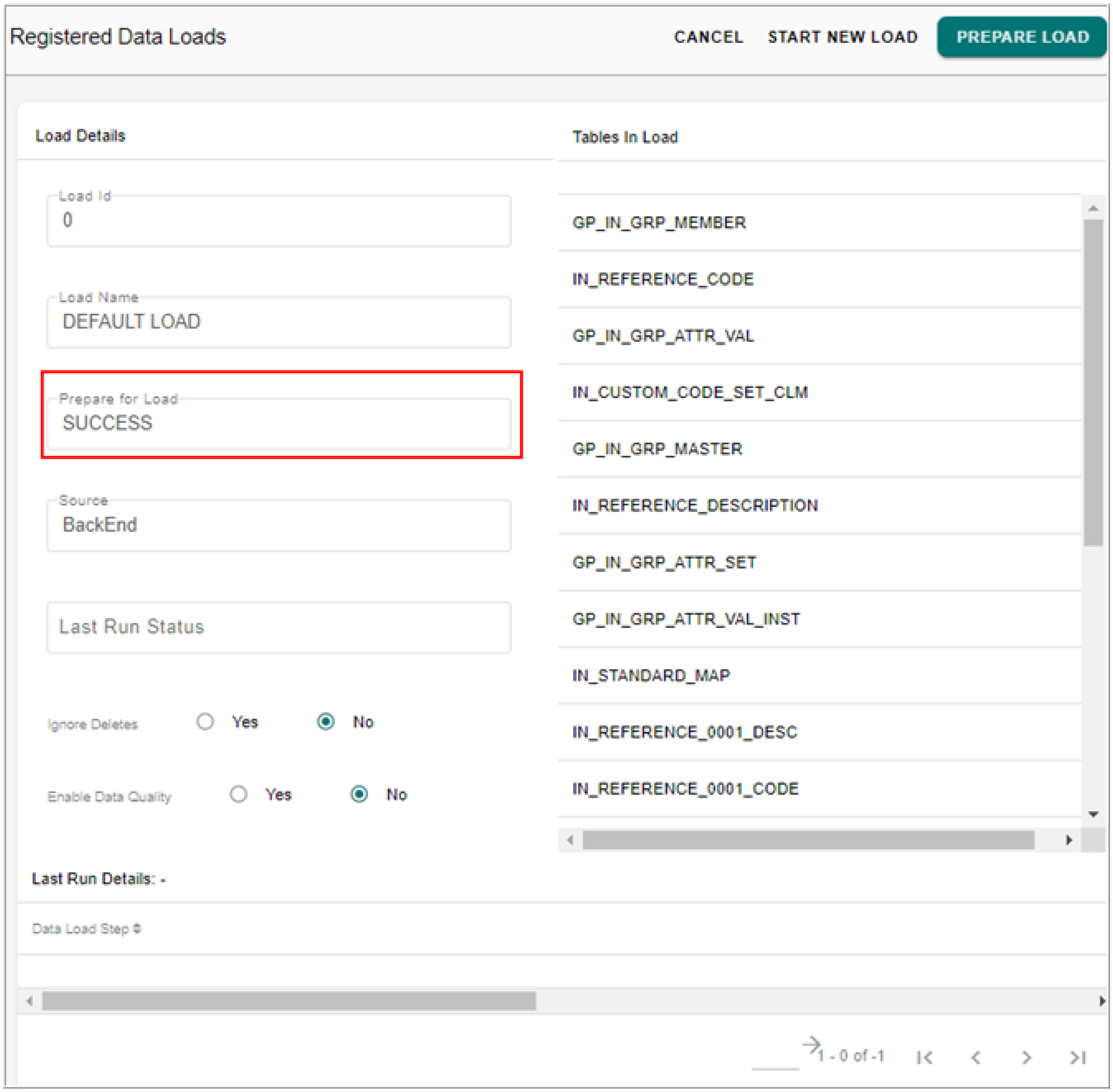
---

4 On the **Confirmation** page, click **Yes** to start the prepare load process.

Until the Prepare for load is success, the **Start New Load** button would be disabled.

The status of the prepare load process is displayed in the **Prepare for Load** field on the **Load Details** pane as in Figure 129.

Figure 129: Registered Data Loads



Load Id: 0

Load Name: DEFAULT LOAD

Prepare for Load: SUCCESS

Source: BackEnd

Last Run Status

Ignore Deletes ○ Yes ● No

Enable Data Quality ○ Yes ● No

GP_IN_GRP_MEMBER
IN_REFERENCE_CODE
GP_IN_GRP_ATTR_VAL
IN_CUSTOM_CODE_SET_CLM
GP_IN_GRP_MASTER
IN_REFERENCE_DESCRIPTION
GP_IN_GRP_ATTR_SET
GP_IN_GRP_ATTR_VAL_INST
IN_STANDARD_MAP
IN_REFERENCE_0001_DESC
IN_REFERENCE_0001_CODE

Last Run Details: -

The Ignore_Deletes and Enable Data Quality options would be displayed only when the Prepare for Load is Success. By default, ‘No’ option is selected for both Ignore_Deletes and Enable Data Quality.

Ignore_Deletes: If Yes option is selected, only inserts, activates and updates will be processed and persisted to master. Deletes will be ignored.

Enable Data Quality: If Yes option is selected, it generates data quality report for the selected load Id.

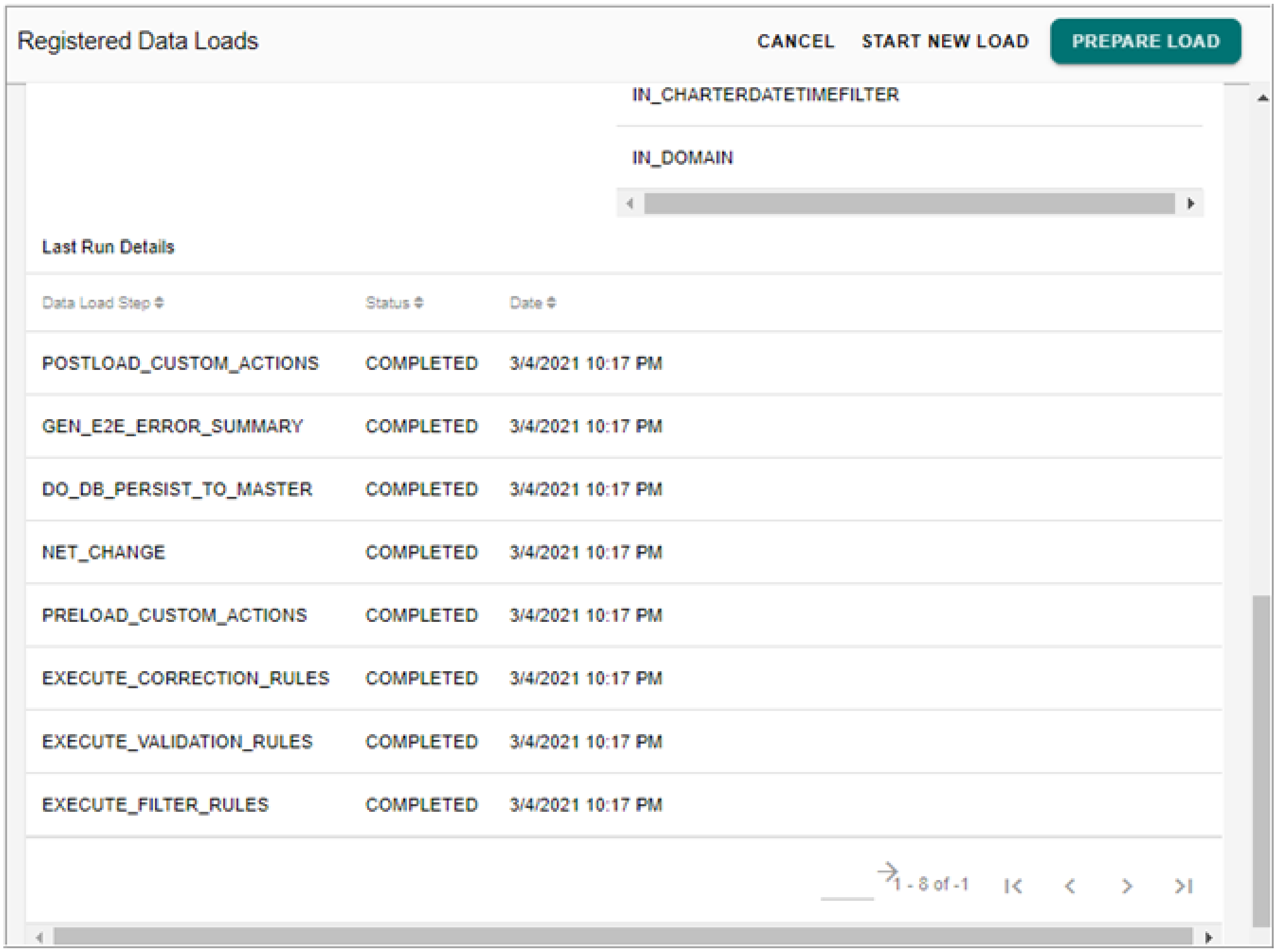
5 Click **Start New Load**.

You are prompted for confirmation.

6 Click **Yes** to start the data load process.

The status of the data load process is displayed as in Figure 130.

Figure 130: Registered Data Loads



IN_CHARTERDATETIMEFILTER

IN_DOMAIN

Last Run Details

Data Load Step	Status	Date
POSTLOAD_CUSTOM_ACTIONS	COMPLETED	3/4/2021 10:17 PM
GEN_E2E_ERROR_SUMMARY	COMPLETED	3/4/2021 10:17 PM
DO_DB_PERSIST_TO_MASTER	COMPLETED	3/4/2021 10:17 PM
NET_CHANGE	COMPLETED	3/4/2021 10:17 PM
PRELOAD_CUSTOM_ACTIONS	COMPLETED	3/4/2021 10:17 PM
EXECUTE_CORRECTION_RULES	COMPLETED	3/4/2021 10:17 PM
EXECUTE_VALIDATION_RULES	COMPLETED	3/4/2021 10:17 PM
EXECUTE_FILTER_RULES	COMPLETED	3/4/2021 10:17 PM

Partial Data load Workflow

The E2E partial load workflow allows data from selective input staging tables to be persisted into the MDM master tables.

During a partial load workflow, enable constraints will enable the referential (foreign key) constraints only for the input tables that are registered with the current E2E load. The constraints corresponding to tables that are not a part of the load are disabled until the completion of the E2E run. As a result, data integrity checks are made only for tables in the load, in input staging. But once data is moved to master tables, all integrity checks are made (including those with tables not in the load).

For example, if new orders for an Item are coming in, you would want to update orders only while the related Item is already present in Item Master. In this case, register a load of 10 with the orders table and then run E2E workflow. During E2E, enable constraints will do a partial enable for input staging order table alone. Hence the foreign key which refers to the input staging Item will not be enabled now. However when data is actually persisted to Master Order table, the Foreign Key reference to Item (Master table) is verified and if error exists, the record is moved to the Order error table.

This section describes steps to execute a partial data load as a batch process and from the MDM Web UI.

Register load

1. Navigate to *<MDM_Install_Directory>/batch/preload*.
2. Make a copy of registerLoad.bat/sh and registerLoad.xml, say registerNewLoad.bat/sh and registerNewLoad.xml.
3. Edit registerNewLoad.xml to reflect the list of tables being loaded and a name for the source being loaded.

   For example, if the specific load involves Supplier and SupplierItem tables and the data is coming from a source 'S1', then

```
<REQUESTS ServiceName="E2E">
  <REQUEST Name="registerLoad">
    <LOAD_ID Value="1"/>
    <NAME Value="default"/>
    <SOURCE Value="S1"/>
    <DATA_LOAD_TYPE Value="INPUT"/>
    <TABLES>
      <TABLE>
        <DOCUMENT_NAME Value="Supplier"/>
        <COLUMN_NAME Value="All"/>
      </TABLE>
      <TABLE>
        <DOCUMENT_NAME Value="SupplierItem"/>
        <COLUMN_NAME Value="All"/>
      </TABLE>
    </TABLES>
  </REQUEST>
</REQUESTS>
```

   LOAD_Id: This would be the identifier of the load. This needs to be provided at the time of pre-load, so that the system prepares for the specific load.

   SOURCE: The source for this load. This parameter is optional, if data loads for a given entity are always run at the same time. A sample usecase for using the SOURCE parameter would be: If Apparel Items come from one data source and Footwear Items come from a different source and the data loads for these two are run at different times.

   Note that source S1 could represent three different sources if loads from the three sources always occur together. Note that a load for source 'S1' will only load data that have the SYS_SOURCE field set to 'S1' in the input tables. COLUMN_NAME should always have a value of 'All'.

   TABLES: If there are partial data loads, that is Item data is loaded at a different time and Bill of Material data is loaded at a different time, then the Tables which would be filled as part of this load need to be identified. The DOCUMENT_NAME is the logical document name.

4. Edit registerNewLoad.bat/.sh to point to the new registerNewLoad.xml.
5. Execute registerNewLoad.bat/sh.

   Multiple loads for different tables and from different sources can be registered in this manner.

Preload

The first step to running a data load is to run the preload. Preload lets the system know as to which load (from the load registry) is about to start. In preparation for the data load, the system disables the necessary constraints on the Input tables.

To run a preload:

1. Navigate to *<MDM_Install_Directory>/batch/preload*.
2. Open preDataLoad.xml and edit to point to the correct load id.

   For example, if the load to be run has load id '3', perform the settings as below:

```
<REQUESTS ServiceName="E2E">
    <REQUEST Name="setPreloadConfig">
        <PRELOAD_PARAMETERS>
            <LOAD_ID Value="3"/>
        </PRELOAD_PARAMETERS>
    </REQUEST>
</REQUESTS>
```

3. Execute preDataLoad.bat/.sh.

Data Load

Once the preload is complete, the system is ready for the specified data load. Now, the input tables can be populated from the source systems. Input tables can be populated by writing ETL adapters from source databases, flat files, and so on. It is important to populate the correct source value for SYS_SOURCE in the input tables.

After populating the input tables, trigger the data load workflow as below.

1. Navigate to <MDM_Install_Directory>/batch.
2. Execute startDataLoadWorkflow.bat/.sh.

Partial Data Load Through MDM Web UI

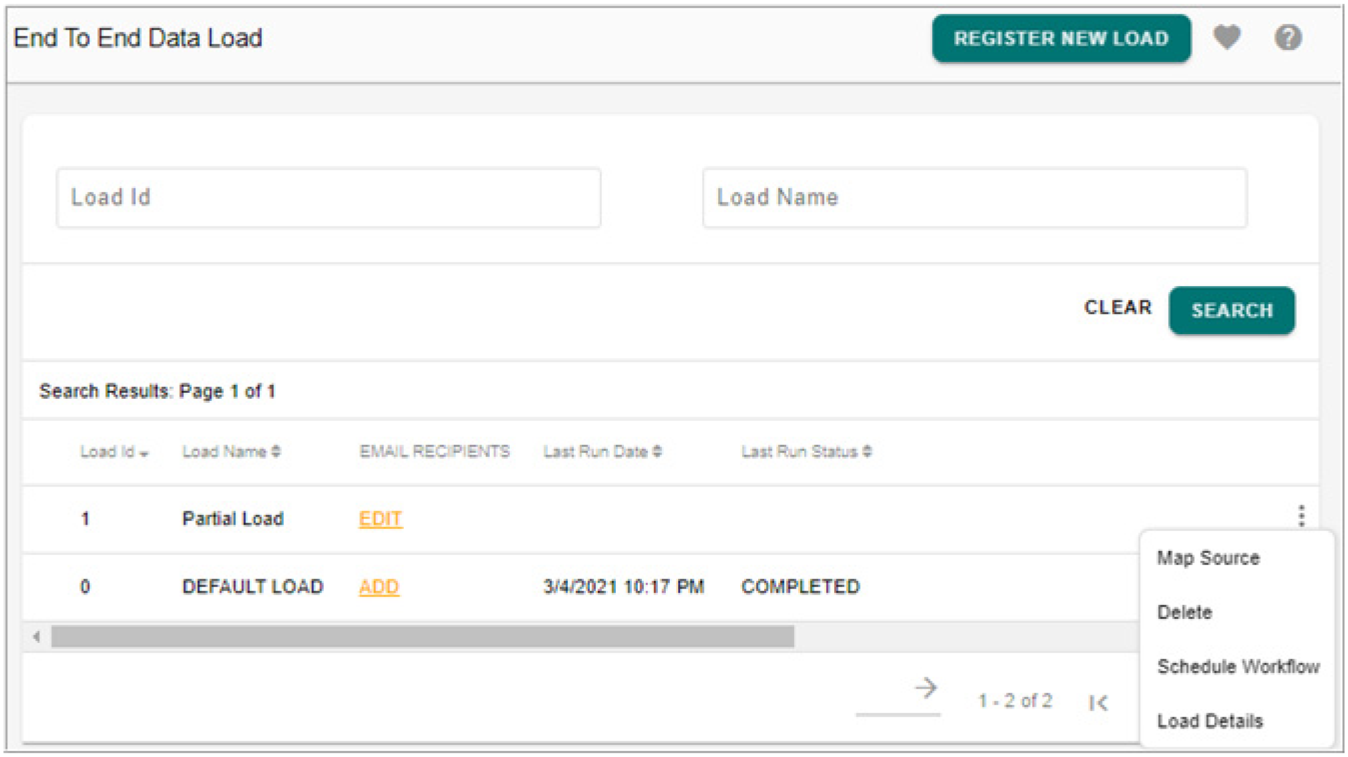
Before running a partial data load from the MDM UI, the load must be registered. See section "Creating the Register Load Details".

To run partial data load workflow:

1. Navigate to **Registered Data Loads** UI from MDM left navigation pane **Data Integration**-> **End to End Data Load** -> **Data Load Workflow**.

   The **End to End Data Load** page (Figure 131) is displayed.

Figure 131: End to End Data Load

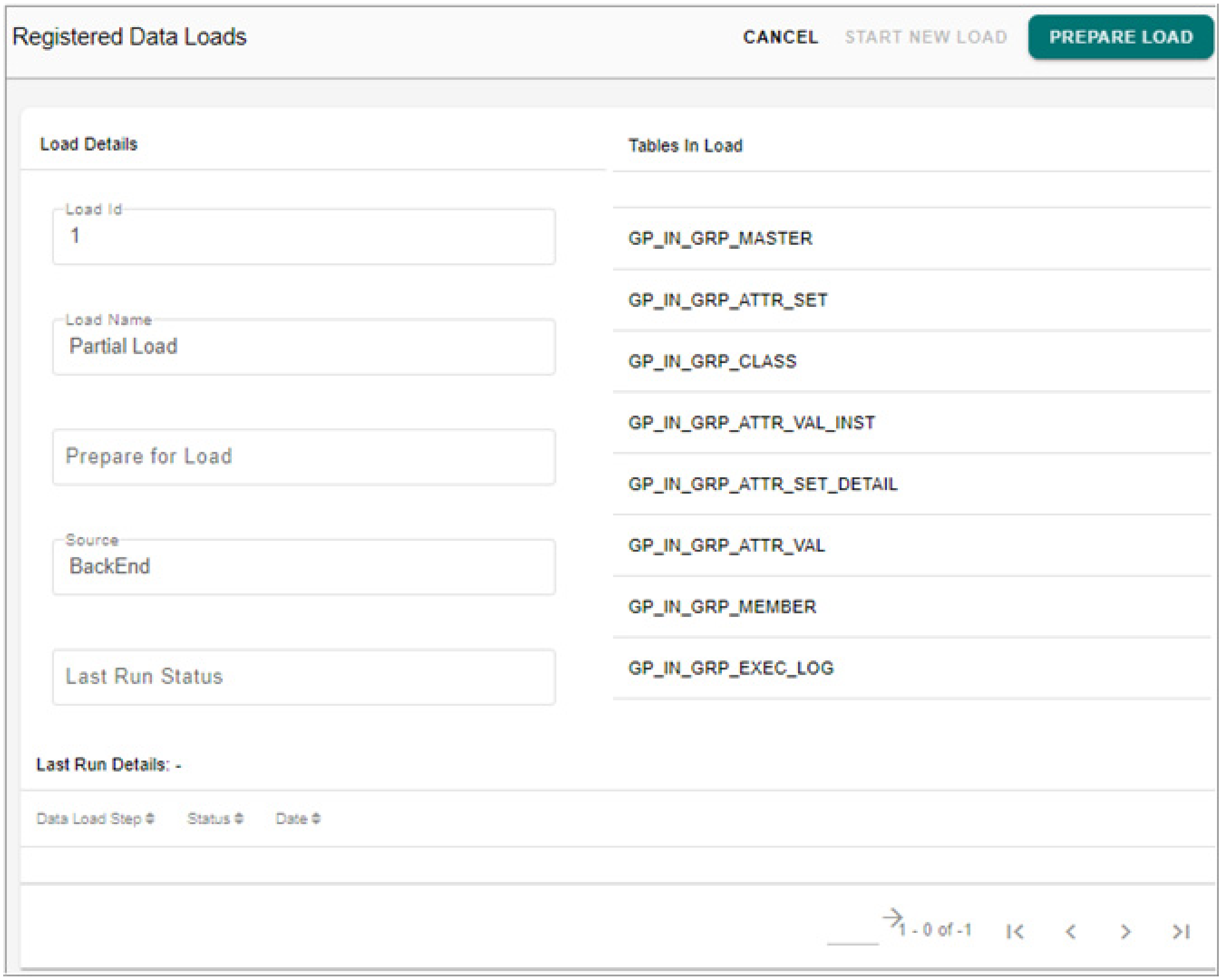


Load Id	Load Name	EMAIL RECIPIENTS	Last Run Date	Last Run Status
1	Partial Load	EDIT		
0	DEFAULT LOAD	ADD	3/4/2021 10:17 PM	COMPLETED

2 On the **End to End Data Load** page (Figure 131), click on the Menu icon corresponding to the Load Id 1 (Load Id that you have assigned to the registered load) and click **Load Details**.

The **Registered Data Loads** page (Figure 132) is displayed for the selected Load Id.

Figure 132: Registered Data Loads



Registered Data Loads

Load Details

Load Id: 1

Load Name: Partial Load

Prepare for Load

Source: BackEnd

Last Run Status

Tables In Load

- GP_IN_GRP_MASTER
- GP_IN_GRP_ATTR_SET
- GP_IN_GRP_CLASS
- GP_IN_GRP_ATTR_VAL_INST
- GP_IN_GRP_ATTR_SET_DETAIL
- GP_IN_GRP_ATTR_VAL
- GP_IN_GRP_MEMBER
- GP_IN_GRP_EXEC_LOG

Last Run Details: -

Data Load Step	Status	Date

3 On the **Registered Data Loads** page (Figure 132), click **Prepare Load**.

You are prompted for confirmation.

4 Click **Yes** to start the prepare load process.

The status of the prepare load process is displayed on the Load Details pane.

5 Click **Start New Load**.

You are prompted for confirmation.

6 Click **Yes** to start the data load process.

The status of the data load process is displayed on the Load Details pane. For more details on the prepare load and start data load, see Section : “Complete Data Load Workflow from MDM Web UI”.

View Support on E2E

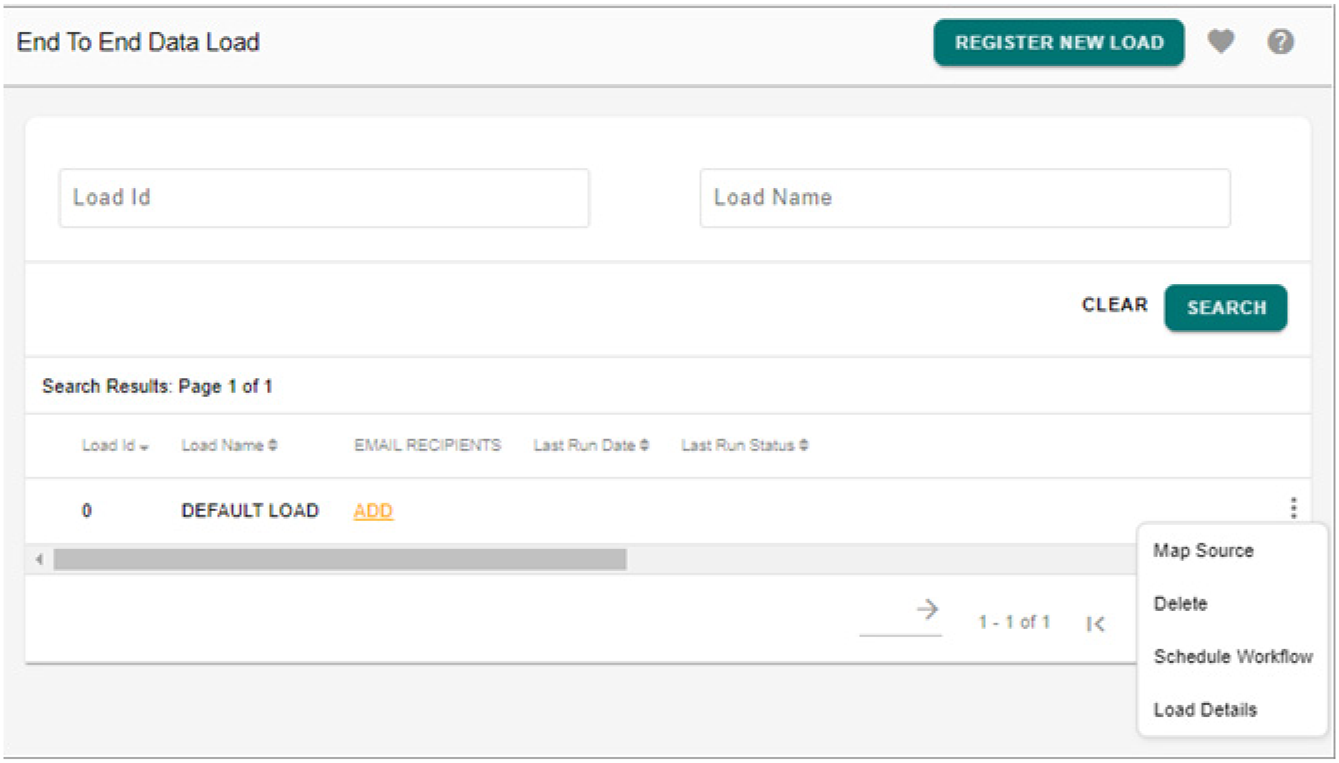
MDM views or non-MDM views can be linked to input staging tables for moving the source data from view to target table. The structure of the custom or source view must be exactly same as linked input staging table. The structure is validated during mapping. The data from source view will be copied to input staging tables and the remaining E2E process remains the same. E2E execution log will show the required details related to data movement from view to input staging tables.

Perform the following steps to move source data from view to target table:

1 Navigate to **Registered Data Loads** UI from MDM left navigation pane **Data Integration**-> **End to End Data Load** -> **Data Load Workflow**.

The **End to End Data Load** page (Figure 133) is displayed.

Figure 133: End to End Data Load



Search Results: Page 1 of 1

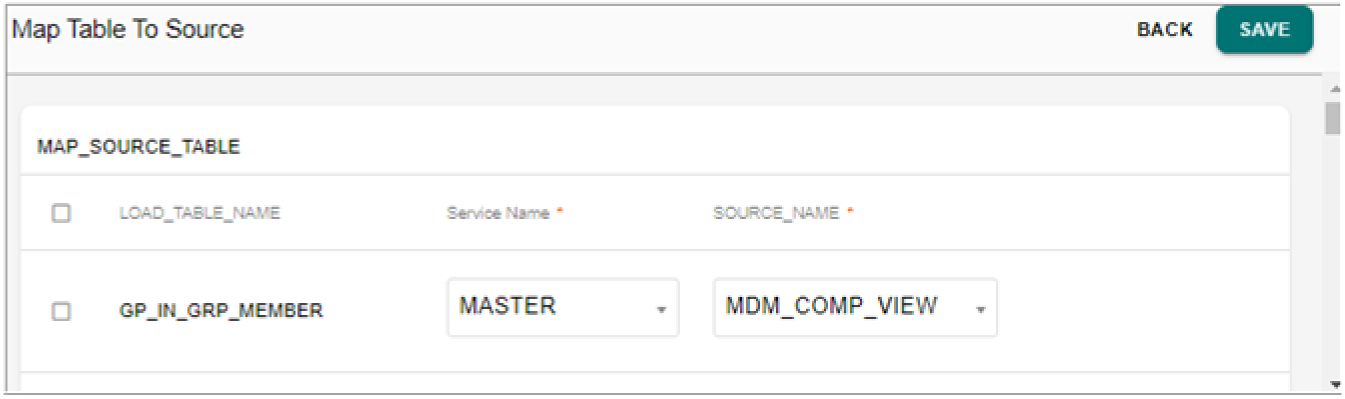
Load Id	Load Name	EMAIL RECIPIENTS	Last Run Date	Last Run Status
0	DEFAULT LOAD	ADD		

2 On the **End to End Data Load** page (Figure 133), click on the Menu icon corresponding to the required load Id and click **Map Source**.

The **Map Table To Source** page (Figure 134) is displayed.

3 On the **Map Table To Source** page, select the source and view details as in Figure 134 and click **Save**.

Figure 134: Registered Data Load



MAP_SOURCE_TABLE

☐	LOAD_TABLE_NAME	Service Name *	SOURCE_NAME *
☐	GP_IN_GRP_MEMBER	MASTER	MDM_COMP_VIEW

Message: “Source mapping added successfully” is displayed.

4 Perform the Prepare Load and Start New Load process. For details on the prepare load and start data load process, see Section : “Complete Data Load Workflow from MDM Web UI”.

The status of the data load process and the data move from view to input staging will be displayed on the Registered Data Loads page.

The Startload process considers only the mapped source data and deletes the input staging data by replacing it with map source data.

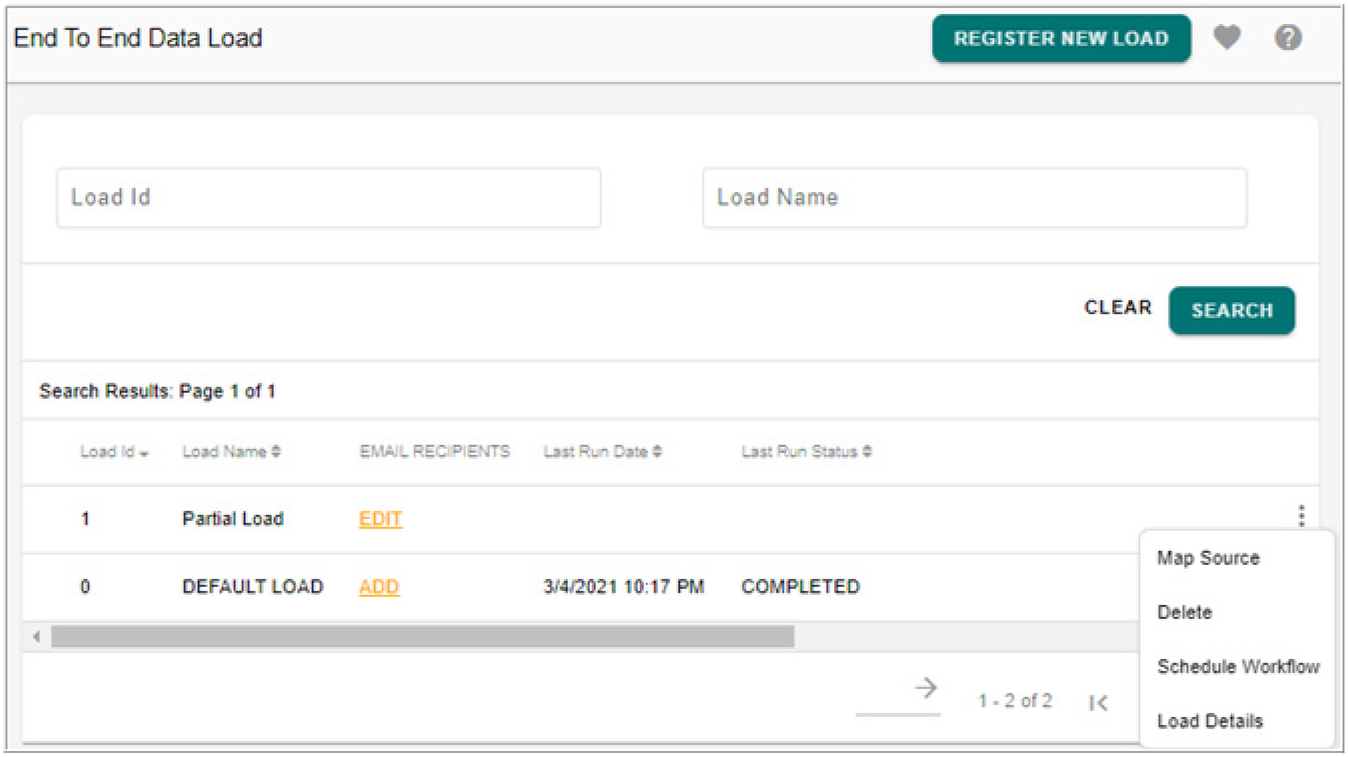
Schedule Workflow

You can schedule a workflow from Data load workflow UI.

To schedule workflow:

1. On the **End To End Data Load** page (Figure 135), click on the Menu icon corresponding to the required data load and click **Schedule Workflow**.

Figure 135: End to End Data Load



Search Results: Page 1 of 1

Load Id	Load Name	EMAIL RECIPIENTS	Last Run Date	Last Run Status
1	Partial Load	EDIT		
0	DEFAULT LOAD	ADD	3/4/2021 10:17 PM	COMPLETED

On the **Scheduler Details** page, in the **Workflow Parameters** pane, the **Load Id** field is prepopulated with load Id selected from End to End Data Load page and the **Ignore Deletes** and the **Persist Type** fields are prepopulated from the selected load details UI.

2. On the **Scheduler Details** page, enter the workflow schedules and specify the E2E workflow parameters and click **Save**.

   It is required to provide pre data load xrule call as a dependent request for E2E workflow. Directly scheduling E2E workflow may lead to error.

   For detailed information on scheduler, see Chapter 22: “Manage Scheduler”.

   The Manage Scheduler Page is displayed with the RDM process workflow schedule details.

Netchange Workflow

If bulk net change data is available as input, then the Netchange workflow can be used to persist these changes into the Master area. Currently, this workflow cannot be executed from the UI.

To trigger the netchange workflow:

1. cd to *<MDM_Install_Directory>/batch*.
2. Execute startNetChangeDataload.bat/.sh.

The field SYS_NC_TYPE must be populated with DELETE/INSERT/UPDATE according to the netchange operation for each item.

NC tables are not deleted after data moves from NC to MST. They have to be cleared before the next run.

E2E Execution Through Web Services

In MDM, the below E2E API's are defined as PUBLIC methods and can be called or executed as Web Services. The E2E Webservices are exposed under MDM Services. Register load must be done manually through MDM UI or Backend scripts. Prepare Load and E2E process can be called through Web services.

- setPreloadConfig - Prepares the load

  ```
  <REQUEST Name="setPreloadConfig">
  <PRELOAD_PARAMETERS>
  <LOAD_ID Value="111"/>
  <DIRECT_SQL_LOAD Value="true"/>
  </PRELOAD_PARAMETERS>
  </REQUEST>
  ```

- startEndToEndWorkflowSync - Loads the data

  ```
  <REQUEST Name="startEndToEndWorkflowSync">
  <LOAD_ID Value="100"/>
  <IGNORE_DELETES Value="false"/>
  </REQUEST>
  ```

Error Reporting and Correction

All error records identified during the data load workflow are persisted in ERR_ tables. The data load workflow generates a summary of the errors found in a load at the end of the workflow. A common error reporting mechanism has been built for all the following types of errors:

1. Errors generated from batch business rule validations.
2. Errors generated due to database constraint violations.
3. Errors generated from record level validation rules written in X-core validation framework.
4. Errors generated due to some errors at the time of persisting into master tables.
5. Errors generated when loading data from a csv file.

Once a data load is started (both for backend data as well as csv file upload), a report Id will be captured and shown for tracking the status of the load.

Report Summary

This screen captures the summary of all data load reports in the system. It displays ReportId, Load date & time, Status (Success/Errors). The reported error is a link to the error summary screen for the specific report. You can use any of the above fields for searching the reports.

Error Summary

The error summary can be viewed by navigating to inbound staging instance and clicking on 'Data Load Error Report'. This shows a summary of the errors by table.

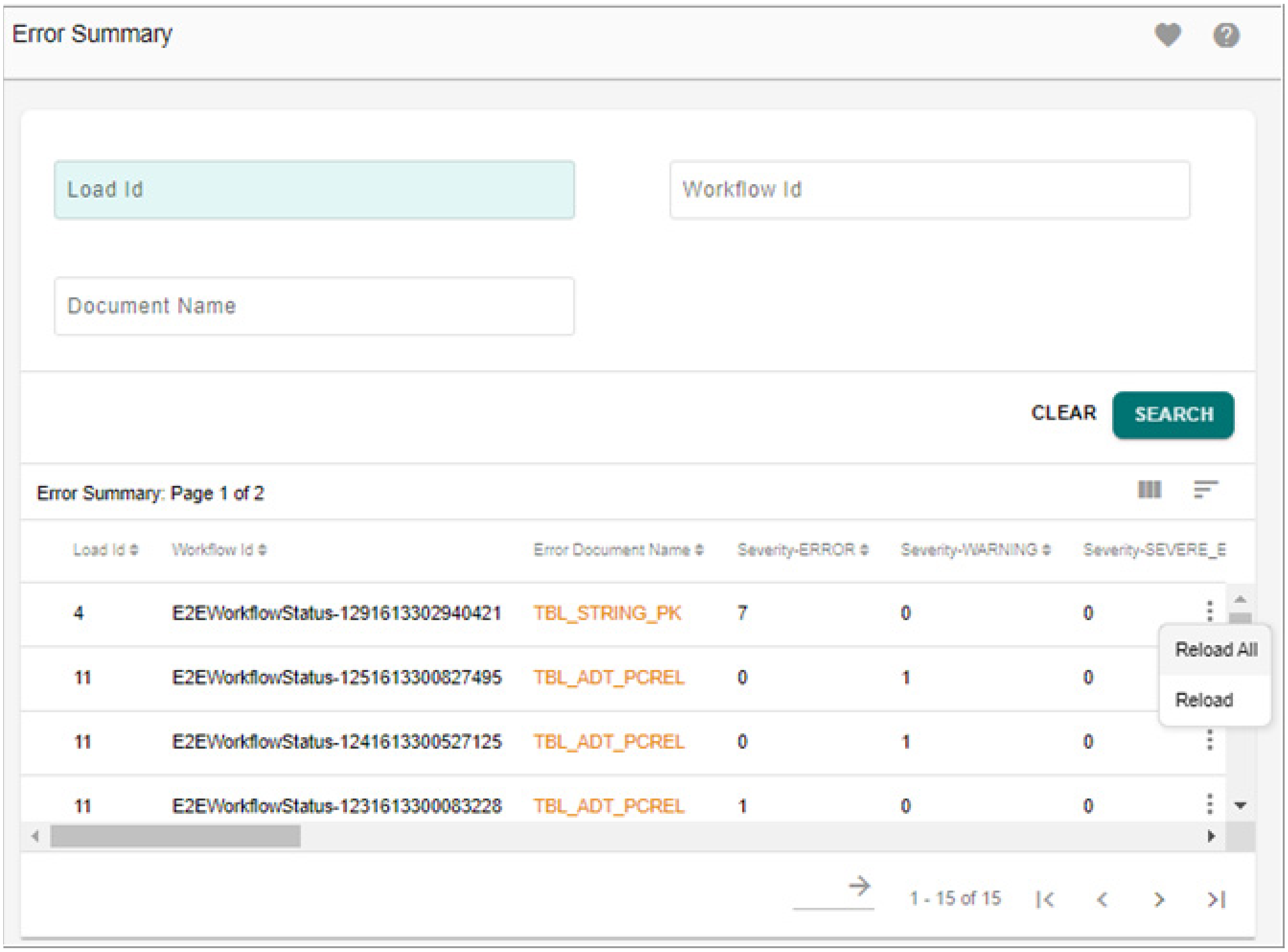
This screen captures the error summary for the selected report. The header shows the Report Id, Date and Time of load. The error details are captured in a table as follows:

Entity, # of errors (Entity should be searchable).

When you click on the entity, it takes you to the Error Detail page. You can correct the errors by clicking on the table which takes you to the error table editor. Errors can be corrected using edit, mass update, or delete options. Once errors are corrected, MDM provides the ability to reload the data of a specific table or to reload all the error data.

The Reload button triggers the error workflow again. All the valid records are persisted to the master and all the erroneous data remains in the error tables.

Figure 136: Error Summary



Error Summary: Page 1 of 2

Load Id	Workflow Id	Error Document Name	Severity-ERROR	Severity-WARNING	Severity-SEVERE_E
4	E2EWorkflowStatus-1291613302940421	TBL_STRING_PK	7	0	0
11	E2EWorkflowStatus-1251613300827495	TBL_ADT_PCREL	0	1	0
11	E2EWorkflowStatus-1241613300527125	TBL_ADT_PCREL	0	1	0
11	E2EWorkflowStatus-1231613300083228	TBL_ADT_PCREL	1	0	0

Note that the error correction workflow re-runs all the custom validations and rules, but it does NOT re-run the business rule validations.

The default value for MAX_ERROR_THRESHOLD is set to 500 in DataLoadWorkflow.xml under <*MDM_Install_Directory*>*/cfg/xservices/E2E/xml/workflow/*.

```
<service-params>
<param Name="MAX_ERROR_THRESHOLD" Value="500"/>
</service-params>
```

The Value="500" can be changed to any desired number but if modified it throws an error.

The Error Correction workflow is enhanced to support for bulk correction through a configurable parameter in the E2E.xml service file.

A new service level parameter "RUN_BULK_ERROR_WF" is provided to perform bulk correction. Default value is set to "FALSE" for single record processing. Set it to "TRUE" to perform the bulk correction.

That is., <param Name="RUN_BULK_ERROR_WF" Value="TRUE"/>

Error Detail

The error detail page points to the search pane of the specific error table. The error table displays the complete error record with an error code column that captures all error codes and an error message column which captures all error messages (localized). In addition, the record also displays the source of the error record (SYS_SOURCE) and the error severity. You can search on any column on the error table, and do mass updates and edits. You cannot create new error records. You can delete those error records which are irrelevant. The delete operation results in a physical delete of the record from the error table.

Reload

When you click on Reload for a specific report, it triggers a reload of the error records for the specific report. The error records have to be processed through constraint checks, bulk business rule validations and record-by-record validations (if specified in DO_Persist framework). After successful processing through all the validations, the records are persisted in the master tables. If the record still results in errors, it has to be persisted back into the error table so that the error correction process can be repeated. The reload can be processed as a 'new' load with a new 'report id'/'load id'. The Reload All button will trigger the error correction on all error tables for which error summary exists. That is, it will reload all the records against the selected load id.

Data Load (E2E) Workflow Details

The following steps constitute the workflow:

1. Preload custom actions

   The preload_custom node runs at the beginning of the workflow and can be used to prepare the staging data in the input area with any additional business logic as may be necessary. In order to add custom logic in preload_custom, override the X-rule with name preLoadCustomActions. For more details on configuring preload custom action rules, see *"Configuring the Preload and Postload Custom Action Rules"* in this chapter.

2. Executing the filter rules, correction rules, and validation rules.

   The validate, update, and filter rules applied on a document using the business rules framework is applied at various stages during E2E. While filter rules are applied at the first step of E2E, the validate and update rules are applied when data moves from netchange to master. For more information on creation of business rules, see *Chapter 19: "Data Quality"*.

3. Perform Referential Integrity (RI):

   Effectively validates parent – child relationship for child table records in batch by using the PK-FK relationship (soft RI)

   a. validates child records against its parent/(s)

   b. deletes orphan records from child table if any and also

   c. inserts the orphan records into error table

4 Net change

During net change, the data from the input tables is compared with data in the reference database and the net change is computed in NC_tables.

5 Persist to master

The data from net change tables are moved to master tables.

6 Postload custom actions

The postload_custom node runs at the end of the workflow before error summary computation. Logic can be introduced in postload_custom to run any additional logic on the master data. In order to add custom logic in postload_custom, override the X-rule with name postLoadCustomActions. For more details on configuring postload custom action rules, see *"Configuring the Preload and Postload Custom Action Rules"* in this chapter.

7 Generate summary

During E2E all data errors which are moved to error tables are summarized and placed in the Error_Summary table.

Configuring the Preload and Postload Custom Action Rules

This section describes the steps to override the default preload custom action and postload custom action rules:

1. Open the MDM Project in the MDM Studio. Refer to *Chapter 2 Getting Started in Master Data Management Studio User Guide*.
2. Navigate to E2E service, right-click and select **Customize Service**.

   A child service for E2E will be created.
3. Add rules with the same name for those that you wish to override, and add the custom logic to them.

Performance Tuning

This section describes the variable parameters that influence performance of the data load workflow and their optimal settings.

Modify the below parameter in *dataupload.xml file available at: <MDM_Install_Directory>/cfg/properties.*

Table 12: Dataupload.xml Parameters

Parameter	Description
GEN_DQ_REPORT	Determines if data quality reports are enabled on Excel Upload process. Default value is set to false. Set it to "true" to generate data quality reports for Excel upload.

Table 12: Dataupload.xml Parameters

Parameter	Description
SET_SPACE_TO_NULL	Using this parameter, you can specify whether the excel upload process should accept or reject blank spaces in the NOT NULL field. When SET_SPACE_TO_NULL is set to FALSE as below: <param Name="SET_SPACE_TO_NULL" Value="false"/> blank characters will be accepted in the NOT NULL fields and excel upload will get completed without any errors. When SET_SPACE_TO_NULL is set to TRUE, blank characters will not be accepted in the NOT NULL fields and excel upload will get completed with gaps and the error records will get loaded into error table.
MAX_ERR_THRESHOLD_PERCENT	This parameter is the safety cap for the maximum percentage of error records allowed in a complete upload. Default value of MAX_ERR_THRESHOLD_PERCENT is set to 50. That is, when set to 50, an excel upload process comprising 1000 records would be aborted as soon as error record count exceeds 500 (50% of 1000).
DEFAULT_MAX_ROWS_FETCH	The default maximum number of records fetched is set to 10000. The default value (10000) can be modified by setting the parameter value DEFAULT_MAX_ROWS_FETCH and regenerate coloc.jar and restart the server.
CAN_ARCHIVE	When this flag is set to false, upload remains in inprocess folder and not archived. When this flag is set to true, the upload details is moved to archive folder.
ENCRYPT_UPLOAD_LOG	To encrypt or hide log details, set the ENCRYPT_UPLOAD_LOG flag to true.

Recommended values based on test conducted for 3.2 million records distributed across 3 tables

- Number of threads = 8
- Batch size = 500
- Request queue size = 4000
- Progress refresh count = 500000

E2E.xml

Modify following parameters under <MDM_Install_Directory>/cfg/properties/E2E.xml, as required.

- MAX_ERROR_THRESHOLD: Number of error records allowed while moving data from input staging to netchange tables. If the number of error exceeds its value, E2E will exit.
- PERSIST_TYPE: If set to DO_DB_PERSIST, data is uploaded to master tables using DO_DB_Persist framework. Both XML validations defined through MDM validation

framework and SQL validations authored through "RuleBuilder" UI in MDM Studio are executed and error records are moved to corresponding error tables.

Others

1. In the Toolkit installation, set the datasourcevalidation to False in the file *<MDM_Install_Directory>/cfg/properties/toolkit.xml*.
2. Setting audit trail OFF improves performance. For more information, see "Enabling Audit Trail" in Chapter 3: "MDM Customization".

   For detailed information on editing service property files refer to *Master Data Management Studio User Guide*.
3. If a Master table have more than 45 columns, there is chance that E2E or DO DB persist may fail with the error "START_NET_CHANGE:Insufficient memory to parse this request, during Optimizer phase. [E2E]"

   This occurs when Teradata Database's MaxParseTreeSegs* DBS value is too small to process the SQLs.

   The solution is to increase the MaxParseTreeSegs value to 12000 (or Above) and retry.

   * MaxParseTreeSegs is an DBS field in Database. DBS fields of Database can be managed using dbscontrol console.

   Steps:

   - Login to Teradata unix console (root/root).
   - Type the command: /usr/tdbms/bin/dbscontrol
   - Type DISPLAY Performance

     You get a list of parameters and find the number corresponding to MaxParseTreeSegs. Say the number is 4.
   - Type MODIFY Performance 4=12000
   - Type W
   - Type Q
   - Restart the DB: - tpareset -f changedbs

Recommended: the above steps must be done only by database experts.

Custom Validations and Business Logic

MDM provides a mechanism to plug in custom business logic for specific entities, irrespective of whether the data for this entity is sent through a backend data load or entered through the MDM table editor UIs. For backend entities, the custom logic is invoked when a record is being loaded from net change to the master table. For master entities, the custom logic is invoked from table editors. This section describes steps to enable such custom business logic.

Defining Custom Rules

Custom validation rules can be written in the MDM validation rule language. Refer to *chapter X-Rules in Master Data Management Reference Guide*. Custom X-Rules can be written for create, edit, and delete of a specific entity.

Defining Default Validation Rules

MDM checks for database constraints as part of validation rules while persisting data into Master table through DO_DB_Persist framework. Prior to MDM 3.0, such validation rules can be written only through xml validation. From MDM 3.0, such common validation rules are provided OOTB and gets executed during execution of DO_DB_Persist requests. For more information on default validation rules, refer to Chapter 10: “Business Rules”.

DataPersist Specification file

Once the rules are written, they have to be declared in the MDM DataPersist specification file. For detailed information on configuring the DataPersist specification file, see *“DataPersist Specification”* in *Chapter 2: “Admin Tasks”*.

Updating MDM service

This custom DataPersist specification file has to be declared in the MDM service. In MDM Studio, the MDM can be found under Solution > Services. In the Toolkit installation, it is represented as toolkit.xml.

Dynamic Business Rules for Bulk Data

MDM also provides the capability to write business rules for bulk data and manage them dynamically through the MDM Web UI. The business rules can be written on top of any set of tables. But the execution of the business rules will need to be triggered as required in the context of the application. MDM provides the feature to execute the business rules written on Input Staging tables as part of the data load workflow.

Business rules are of three types: filter, update and validate.

Filter Rules

Business rules of type filter can be written to identify conditions based on which data should be filtered and prevented from getting into the MDM reference area. For example, if items of a specific category are not meant to be brought into MDM, we can achieve this in two ways. The first approach is to implement this logic in the data extraction code (for example, ETL). The issue with this approach is that the logic is embedded inside the extractor and cannot be changed at run-time. There are a number of situations where the data which needs to be filtered out today needs to be made available in the MDM reference area later. For such use cases, the 'filter' business rules can be written. For details on how to write business rules, see Chapter 19: “Data Quality”.

Update Rules

Business rules of type “update” are meant to be used for auto-filling or auto-correcting backend data. For example, there may be a rule that list_price of an item cannot be empty. So, an update rule can be written to auto-fill the list_price if it is null.

Validate Rules

Business rules of type “validate” may be used to write validations which need to be applied on bulk data and which may need to be changed dynamically based on the business processes of the enterprise. When the data load workflow runs, it executes the filter rules at first. The validate rules are run when data is moved from the netchange to the master area. All records which are found to be invalid based on these validate rules are recorded in the error tables.

Custom Extensions to Data Load Workflow

If there is a need to write additional data preparation logic as part of the data load workflow, it can be added using the two custom nodes provided out of the box in MDM.

To add additional data load logic at the beginning of the workflow, a rule called 'preLoadCustomActions' has to be overridden. This rule is a no-op in the default implementation. Similarly, to add additional logic which should run at the end of the data load workflow, a rule called 'postLoadCustomActions' has to be overridden. Note that the error summary computation happens after this node so that any custom error records written to the error tables are counted in the summary capture.

Data Load Workflow Monitoring and Troubleshooting

Workflow Status

The overall data load workflow status is provided in a table called WORKFLOW_STATUS. Valid values for the status are INCOMPLETE, COMPLETE, and FAILED.

Workflow Activity Log

A more detailed status on the workflow is provided in WORKFLOW_ACTIVITY_LOG. In this table, start and completion of each node in the data load workflow is recorded.

Database Log

If any node in the WORKFLOW_ACTIVITY_LOG shows a status of 'FAILED', further details would be available in S_E2E_LOG table. This table provides details on the database error which occurred due to which the specific task failed.

Note that the same monitoring capability is available for the error correction workflow as well.

Checking Data Load Workflow Status

Execute <MDM_Install_Directory>/batch/checkE2EStatus.bat (.sh)

If the workflow is not completed in 60 minutes, this script returns an error. For more information, see "Configuring Data Load Workflow Log" in Chapter 2: "Admin Tasks".

Spooler Settings

If the service parameter PERSIST_TYPE is set to SPOOLER in E2E.xml (<MDM_Install_Directory>/cfg/properties/E2E.xml), the data load workflow spools all the netchange data to flat files before uploading into the Master area. Spooler generates flat files from Net Change tables for faster and sequential upload using SQL loads into the Master area. It uses spooler.props present in <MDM_Install_Directory>/cfg/properties to the target directory where the files should be written. Once the spooling is completed, it triggers the Data Upload service to read the spooled files. The Data Upload service in turn invokes any custom logic, as described in section "Custom Validations and Business Logic" on page 243 on the net change records. For detailed information on Data Upload service, refer to *Appendix Upload Services in Master Data Management Reference Guide*.

The required spooler settings are as shown:

```
SPOOLER.TARGET_DIR=../targetDir1/targetDir2
```

The target directories will be default based on a relative path.

The database details will be read from xserver.xml in case of PERSIST_TYPE = "SPOOLER" while performing data load through E2E.

Spooler Parameter

```
SPOOLER.BATCH_SIZE
```

Determines the number of batches in which spooling from database to flat files is performed. Spooling of tables is performed in order of the ranks, and may be performed in parallel for tables at the same rank. The ideal value of this parameter should be (Max Number) of tables at a given rank. This value can be greater than or equal to n if you have n participating tables in the Data Load.

Data Cleansing Workflow

Data cleansing in MDM happens at the time of loading data from input staging into master. As part of data cleansing the data in the input staging is checked for both constraint violations and business rule violations. The error data is identified and moved into error tables.

The data cleansing framework will allow users to review the errors by table or entity, correct them and resubmit them for the load.

Data cleansing workflow is required for planning input data for Teradata applications only. Data cleansing workflow will require three step workflow:

- Error Summary
- Error Drill Down
- Error Correction

Corrected data will move from MDM Inbound to MDM Master.

E2E Environment Check Using MDM Test Service Framework

Overview

For running E2E on a particular table, certain prerequisite conditions has to be met. This section explains how, by using the MDM Test Service Framework, these preconditions can be verified. The test workflows are incorporated to check all those prerequisite conditions before running E2E on a particular table. These workflows will do an E2E environment readiness check of a particular table.

Description

The parameters that need to be checked for testing the E2E readiness of a table are:

1. The particular table should have an entry in SYS_TABLE_MAP with source as Both or BackEnd.
2. SYS_NC_SQLs should have entries of INSERT, UPDATE, DELETE and ACTIVATE sqls for that particular table.
3. The corresponding GT table should get created for that particular table.

Test Cases

The workflows for E2E environment testing are written under *<MDM_Install_Directory>\cfg\xservice\toolkit\test*

The following functionality test cases examples are available:

- User Security

- E2E Environment Test
- E2E test
- DO_DB_PERSIST(Source EXTERNAL)
- Configurable UIs
- SQL Rule Builder

There are three workflows which will test all the three cases mentioned above.

1. The user needs to provide the Logical Name of the document in the *<MDM_Install_Directory>\cfg\xservice\toolkit\test\E2E\Data\E2EDocSourceCheckData.xml file.*

   For example:

   ```
   <DATA>
        <TABLES>
             <DOCUMENT_NAME Value="ACCOUNT_PARTY"/>
        </TABLES>
   </DATA>
   ```

2. Put the entry of the test service file `test.xml` in `startServices.bat/.sh` file. Start the MDM Server.
3. Run the file `<MDM_Install_Directory>\bin\runTests.bat/.sh`
4. This will generate the results for the test workflows in `<MDM_Install_Directory>\cfg\xservice\test\xml\results` folder.

   For example:

   ```
   <TEST_SUITE Name="NCSqlsExistenceWf" Id="NCSqlsExistenceWf"
   CountPassed="1" CountFailed="0" Result="Pass">
     <TEST_CASES>
       <TEST_CASE Name="NCSqlsExistenceWf.xml" Result="Pass">
         <RESULTS>
           <ASSERTS
   ExpectFile="C:\Teradata\MDM\2.0.2\cfg\xservice\toolkit\test
   \E2E\Expect\NCSqlsExistenceExpect.xml">
             <ASSERT Name="Validating the existence of NC sqls"
   Result="Pass">
               <REPORT Value="NC Sqls Populated"/>
             </ASSERT>
           </ASSERTS>
         </RESULTS>
         <REQUESTS ServiceName="TEST"
   AssignToVar="userResponse">
           <REQUEST Name="NCSqlsExistence">
             <TABLES>
   ```

```
            <DOCUMENT_NAME Value="AttributeSet"/>
          </TABLES>
        </REQUEST>
      </REQUESTS>
      <RESPONSES Status="Success">
        <RESPONSE Status="Success">
          <SQL_RESULT>
            <TABLE_NAME Value="IN_ATTRIBUTE_SET"/>
          </SQL_RESULT>
          <SQL_RESULT>
            <TABLE_NAME Value="IN_ATTRIBUTE_SET"/>
          </SQL_RESULT>
          <SQL_RESULT>
            <TABLE_NAME Value="IN_ATTRIBUTE_SET"/>
          </SQL_RESULT>
          <SQL_RESULT>
            <TABLE_NAME Value="IN_ATTRIBUTE_SET"/>
          </SQL_RESULT>
          <TEST_RESULT Value="Pass"/>
        </RESPONSE>
      </RESPONSES>
    </TEST_CASE>
  </TEST_CASES>
</TEST_SUITE>
```

CHAPTER 10 Business Rules

What's In This Chapter

This chapter provides information on the Business rule builder Web UI.

Topics include:

Introduction

MDM's Business rule functionality provides business users the capability to build extensive data acquisition, validation, cleansing, standardization, transformation and enrichment rules on entities in the relevant staging area. The business rules get invoked whenever the data enter MDM through entry points like E2E workflow, Configurable UI and Data Upload. The MDM framework reads the business rules before persisting data and executes the specified actions accordingly.

Key features of Business Rules:

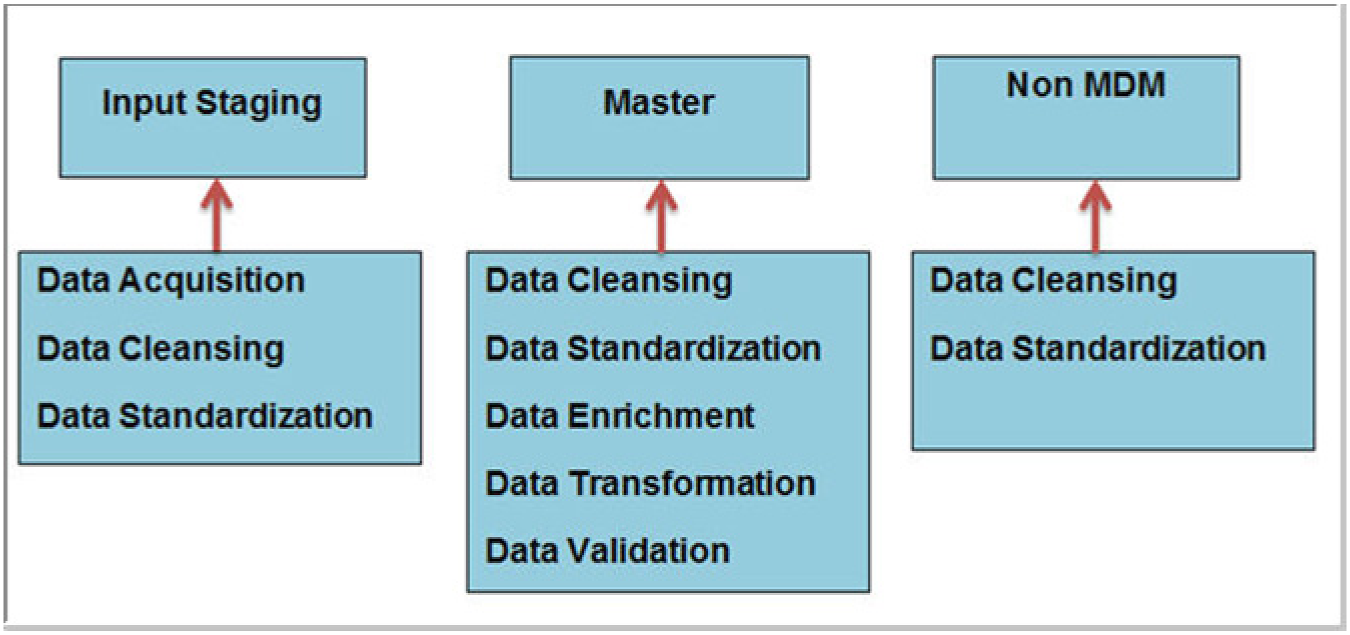
- Business rules framework provides quality and integrity to the data coming to MDM.
- Business rules along with DO_DB_Persist Framework provide common data governance across all the entry points to MDM.
- Business rules framework enables the user to create business rules with least technical knowledge and use the business knowledge to convert the business requirement into business rules.
- The Business rules framework supports in built functions and nested conditions to form advanced rules. Business rule UI also facilitates creation of custom expression for complex rules that cannot be built with the out of the box rule builder UI.
- Business rules framework provides a consolidated view of all the business rules across organization.
- Business rules feature provide a default rule generator, which can be used to generate mass rules on columns of tables using predefined functions.

- Business rules framework also supports the configuration of approval process on business rules.

Types of Business Rules

The categorization of business rules is based on the Data Management Life Cycle activities such as bringing data into the MDM, accepting data for the load process, standardizing data for the usage and enriching data. The Figure 137 displays the various Business Rules that can be created on tables in different repositories or staging areas.

Figure 137: Types of Business Rules



- Data Acquisition Rules: the data acquisition rules are created on input staging tables to filter out records that satisfy the defined business rules or conditions. Data acquisition rules are executed first to ensure that data that gets into MDM Master fulfills the outlined business criteria and all other business rules are applied only on the filtered relevant records. Examples of acquisition rules include filtering raw transaction data like banking data entry details that are not transformed and cleansed.
- Data Cleansing Rules: the data cleansing rules identify and correct invalid or inaccurate data records and provide a clean and consistent data set. Examples of cleansing rules include normalize spaces, remove extra trailing or leading spaces in the data columns, correct invalid characters and null values, provide default values etc.
- Data Standardization Rules: the data standardization rules establish a common data format across the organization. The data standardization rules identify and update data with certain standard formats. Examples of standardization rules include replace known values to preferred values using lookup code sets, example: Street to ST, change uppercase to lowercase, standardize city name based on the postal code etc.

- Cleansing and Standardization (C&S) rules will be executed as part of Do DB Persist request.
- The records updated or enriched by C&S rules can be reviewed by approvers.
- The C&S rules will be executed as part of Configurable UI & Excel Upload process.

- Data Enrichment Rules: the data enrichment rules allow data enrichment on the input data that is change data using calculations, Teradata functions etc., which can be of Insert and Update types. The enrichment rules are action based, that is, at the time of definition, you can declare the action type (DO_DB_PERSIST API action) based on which the given enrichment insert /update type rule gets executed. Example may include address correction, enrichment rules can be used to correct address by standardizing street, city, and state fields, and adding the last four digits of the zip code etc.

  When the data enrichment rule is insert type, it can only perform INSERT operation on the same table/other table using the input record values as per defined criteria. Inserting child records in the dependent entities can easily be accomplished using insert type of business rule.

  When the data enrichment rule is update type, it can only perform UPDATE operation on the same table/other table using the input record values as per defined criteria. During DO_DB_PERSIST processing, the data enrichment insert and update type rules get executed by default after input record is persisted successfully into master table.
- Data Transformation Rules: the data transformation rules can be categorized as a set of rules defined to covert the data format of a source data system into the data format of a destination. Examples include value conversions or translation functions, normalizing numeric values to conform to minimum and maximum values.
- Data Validation Rules: the data validation rules define validation criteria or checks on any master table as per business scenario by which erroneous data can be identified. You can also specify the severity of error associated with the business rule. The execution of these business rules is enabled by default with the DO_DB_PERSIST framework. Records failing data validation business rules are inserted into error table by DO_DB_PERSIST framework. Examples include data size checks like data value must consist of 10 characters only, format checks to see that data conform to specific format like first 9 characters must be digits from 0 through 9 and 10th must be digit or X, data range like data must lie within specified maximum and minimum value like customer account number to be within 10000 to 20000 etc.
- Default Validation Rules: MDM checks for database constraints as part of validation rules while persisting data into Master table through DO_DB_PERSIST framework. Prior to MDM 3.0, default validation rules were written only through xml validation. From MDM 3.0, the common validation rules are provided OOTB and get executed during execution of DO_DB_PERSIST requests.

  The different default validation rule includes:

- Uniqueness violation (PK, USI, Unique constraint)
- Referential integrity
- Not Null
- Column check constraints

The above default validation rules are implemented uniquely for Master or Backend/both table types and also for each DO_DB_PERSIST action types.

The default validation rules get created every time during SG or ISG by reading metadata, hence collecting statistics on SYS_DBC_COLUMNS table would be beneficial.

Disabling Default Validation Rules

The following options disables default validation rules:

- Delete generated validation rules from SYS_DEFAULT_RULES table.
- Make all/required rules INACTIVE using STATUS column (Default would be ACTIVE).

Collecting Statistics is recommended on SYS_DEFAULT_RULES table considering number of rules created will be huge based on the MDM schema size.

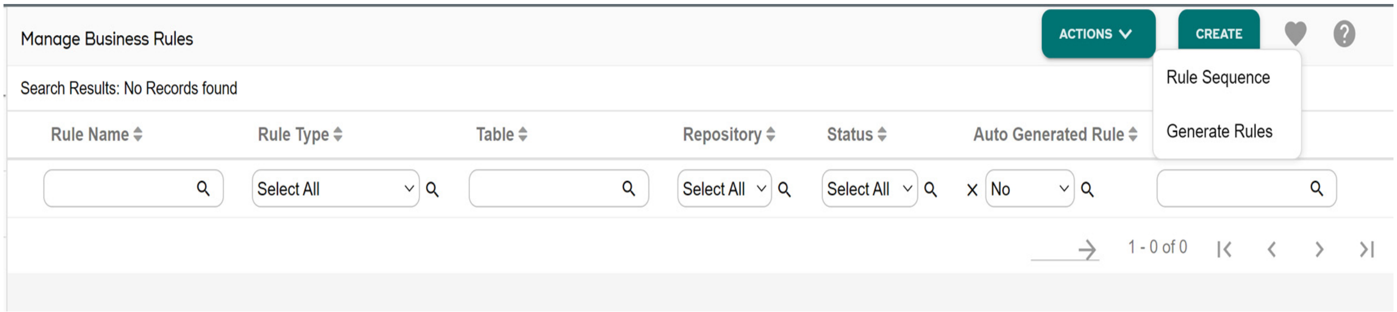
Table 13: Business Rules Types and SQL Generated

Business Rule Type	SQL Generated for Rule
Data Acquisition	`update  T1  from IN_CODE_SET T1   SET SYS_FILTER = 'true' where T1.Description = 'Teradata'`
Data Cleansing / Data Standardization	`update T1 from MST_LAST_SYNC_UP T1, MST_CLASSIFICATION_ERROR_MAP T2 set APPLICATION_NAME = 'SAP', SYNC_UP_ID = T2.ENTITY_CLASSIFICATION_ID, SYS_CREATED_BY = T1.SYS_CREATED_BY, SYS_ENT_STATE = 'ACTIVE', SYS_SOURCE = T1.SYS_SOURCE, SYS_CREATION_DATE = current_timestamp(0) where T1.APPLICATION_NAME = 'SAP'`
Data Enrichment / Data Transformation	`insert  into  MST_LAST_SYNC_UP (APPLICATION_NAME ,SYNC_UP_ID ,SYS_CREATED_BY ,SYS_ENT_STATE ,SYS_SOURCE ,SYS_CREATION_DATE) select 'Teradata', '123',  T1.SYS_CREATED_BY,  'ACTIVE', T1.SYS_SOURCE,  current_timestamp(0) from MST_LAST_SYNC_UP T1 where T1.INSTANCE_ID = '1'`
Data Validation	`update  T1  from MST_LAST_SYNC_UP T1   SET SYS_ERR_CODE =  (COALESCE(T1.SYS_ERR_CODE,'')` ||`'Application Name cannot be SAP') , SYS_ERR_SVRTY = 'Error' where T1.APPLICATION_NAME = 'SAP'`

Manage Business Rules User Interface

The Manage Business Rules UI displays a consolidated view of all the existing business rules across the organization. Navigate to **Manage Business Rule** UI from **Data Harmonization**-> **Business Rules**-> **Manage Business Rules**.

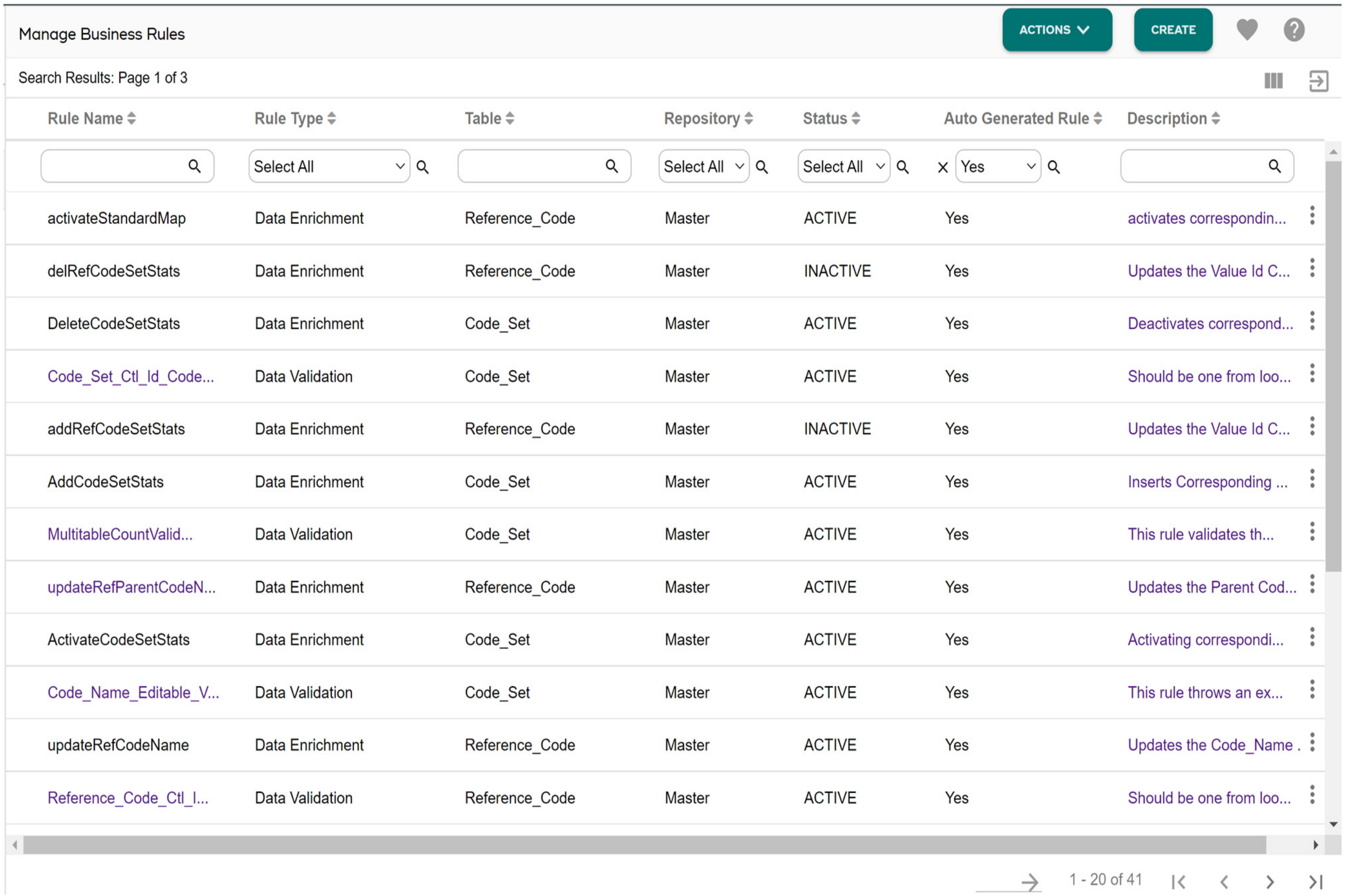
Figure 138: Manage Business Rules



On the **Manage Business Rules** UI (Figure 138),

- By default, all the user defined business rules will be displayed.
- To show **Auto Generated Rules**, select **Yes** from **Auto Generated Rules** dropdown and click **search icon** to view all the auto generated rules across the organization as in Figure 139.

Figure 139: Manage Business Rules—Auto Generated Rules



Manage Business Rules

Search Results: Page 1 of 3

Rule Name	Rule Type	Table	Repository	Status	Auto Generated Rule	Description
	Select All		Select All	Select All	Yes	
activateStandardMap	Data Enrichment	Reference_Code	Master	ACTIVE	Yes	activates correspondin...
delRefCodeSetStats	Data Enrichment	Reference_Code	Master	INACTIVE	Yes	Updates the Value Id C...
DeleteCodeSetStats	Data Enrichment	Code_Set	Master	ACTIVE	Yes	Deactivates correspond...
Code_Set_Ctl_Id_Code...	Data Validation	Code_Set	Master	ACTIVE	Yes	Should be one from loo...
addRefCodeSetStats	Data Enrichment	Reference_Code	Master	INACTIVE	Yes	Updates the Value Id C...
AddCodeSetStats	Data Enrichment	Code_Set	Master	ACTIVE	Yes	Inserts Corresponding ...
MultitableCountValid...	Data Validation	Code_Set	Master	ACTIVE	Yes	This rule validates th...
updateRefParentCodeN...	Data Enrichment	Reference_Code	Master	ACTIVE	Yes	Updates the Parent Cod...
ActivateCodeSetStats	Data Enrichment	Code_Set	Master	ACTIVE	Yes	Activating correspondi...
Code_Name_Editable_V...	Data Validation	Code_Set	Master	ACTIVE	Yes	This rule throws an ex...
updateRefCodeName	Data Enrichment	Reference_Code	Master	ACTIVE	Yes	Updates the Code_Name .
Reference_Code_Ctl_I...	Data Validation	Reference_Code	Master	ACTIVE	Yes	Should be one from loo...

1 - 20 of 41

You can search **Manage Business Rules** using available inline options.

- Search for rules based on search criteria (rule name, rule type, table, repository, status, and descriptions).
- Clear search filters and the manage business rule UI will display all the existing user defined rules.
- Displays the hyperlink for Description, SQL Query, and business rule name for better readability. Clicking on the hyperlink navigates you to a popup page which display complete details for the relevant information. You can copy the text for further use.
- Activate or deactivate a selected rule.
- Modify or delete the existing rule.
- Create new business rule.
- Create a copy of the existing rule.
- Generate business rules.
- Change the sequence of rule execution. The rule on the top gets executed first.

Business Rule Creation User Interface

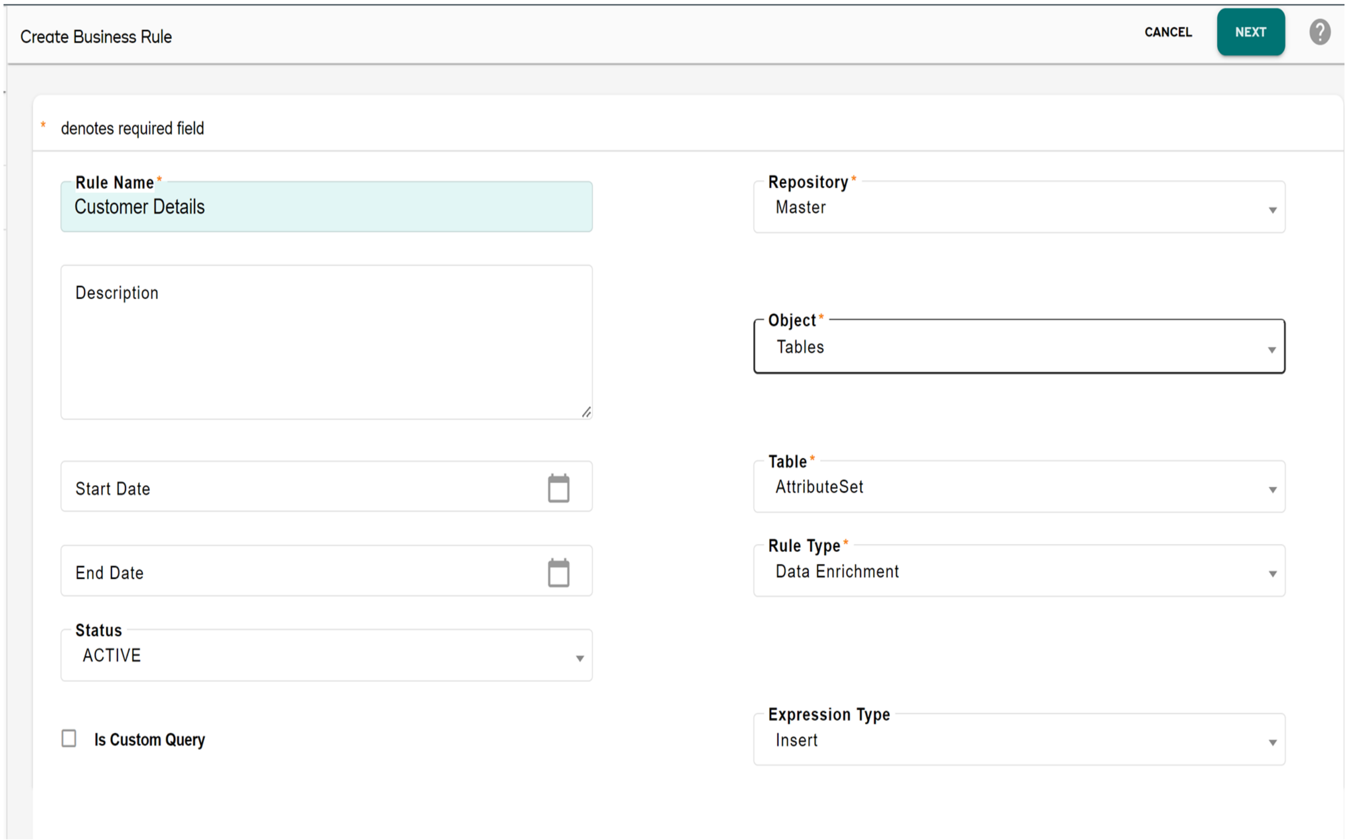
The flow of defining business rule remains same for all types of business rules. The creation of business rule involves the following steps:

- Create Business Rule
- Rule Editor Wizard or Custom Rule Editor Wizard
- Summary Rule Expression

Create Business Rule

The Create Business Rule UI allows you to specify all the basic details of the rule.

Figure 140: Create Business Rule



Create Business Rule

* denotes required field

Rule Name*: Customer Details

Description

Start Date

End Date

Status: ACTIVE

☐ Is Custom Query

Repository*: Master

Object*: Tables

Table*: AttributeSet

Rule Type*: Data Enrichment

Expression Type: Insert

1 Navigate to **Create Business Rule** from **Data Harmonization**-> **Business Rules** -> **Manage Business Rules** -> **Create**.

2 On the Create Business Rule UI (Figure 140), enter following information:

- **Rule Name**: unique name of the business rule.
- **Repository**: repository on which the business rule is being created. Repository can be (Input Staging, Master or Non MDM). See Figure 137 to define various Business Rules on tables in different repositories or staging areas.
- **Description**: brief description of the purpose of business rule being created.

- **Objects**: objects dropdown lists the valid values as Tables, Code Sets and Hierarchy Objects. On selection of the object in Object dropdown, the corresponding selected object dropdown is displayed. If the object is seleted as Tables, the tables dropdown is displayed.
- **Tables**: name of the table in the selected repository on which the business rule is being created.
  - **Start and End Date**: validity period of the rule being created.
- **Rule Type**: business rule type based on the repository selected.
- **Status**: preferred status (active or inactive) of the rule being created.
- **Is Custom Query**: option to input custom expression by providing the ‘where clause’ explicitly.
- **Expression Type**: the Expression Type can be as Insert or Update and the rule will perform an insert or update action accordingly.

Is Custom Query and **Expression Type** options are not applicable for data acquisition and data validation rule types.

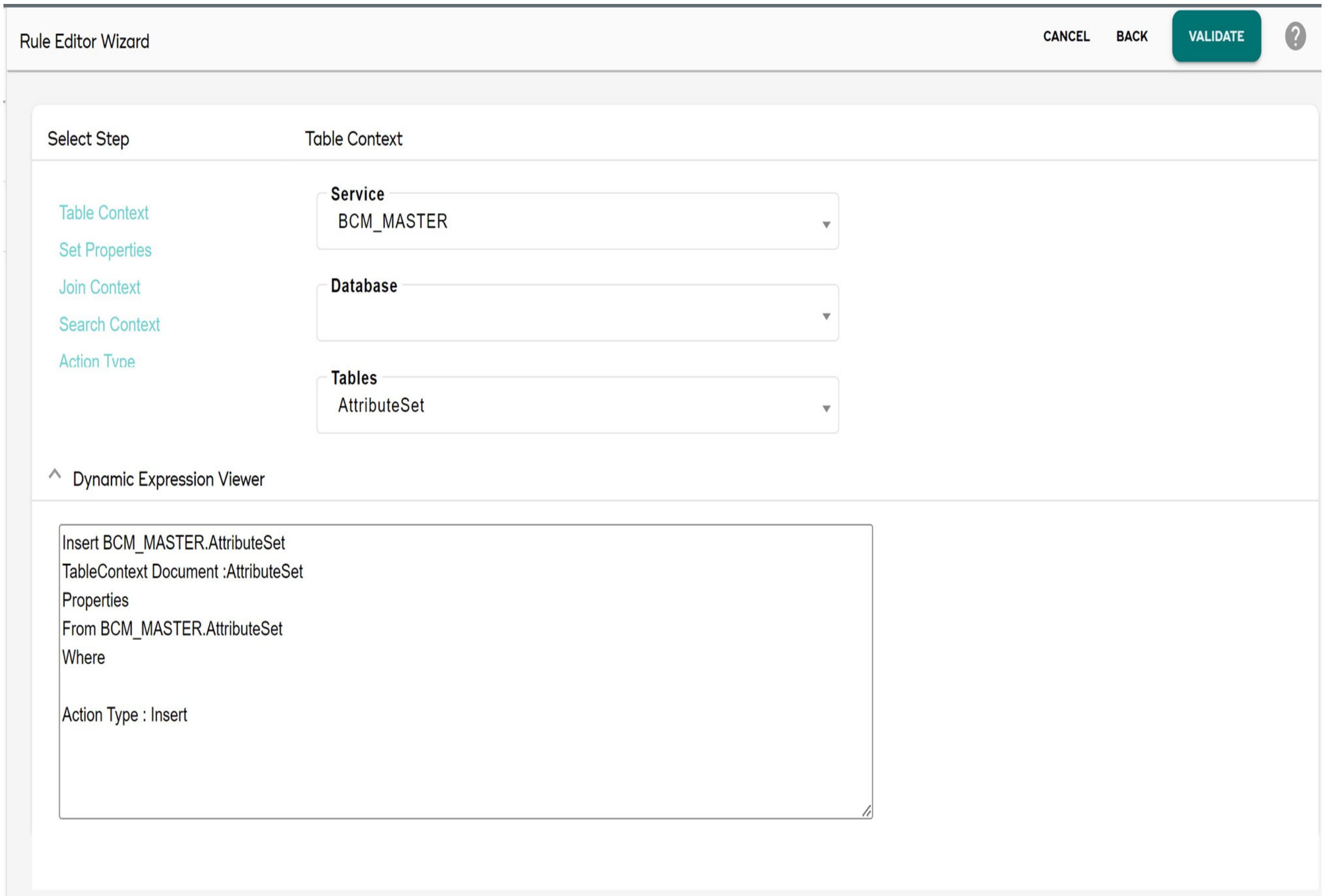
While creating the rule, if you select **Is Custom Query** option, then the **Custom Rule Wizard** displays else **Rule Editor Wizard** displays.

3 Click **Next**.

Rule Editor Wizard

The Rule Editor Wizard allows you to define the core functionality of the business rule being created. On the Rule Editor Wizard (Figure 141), the **Select Step** panel displays the various stages involved while defining the rule. When you select any step in the **Select Step** panel, the right panel displays the various fields to be updated or populated for the corresponding step. The **Dynamic Expression Viewer** displays the format of SQL expression being created.

Figure 141: Rule Editor Wizard—Table Context



Service: BCM_MASTER

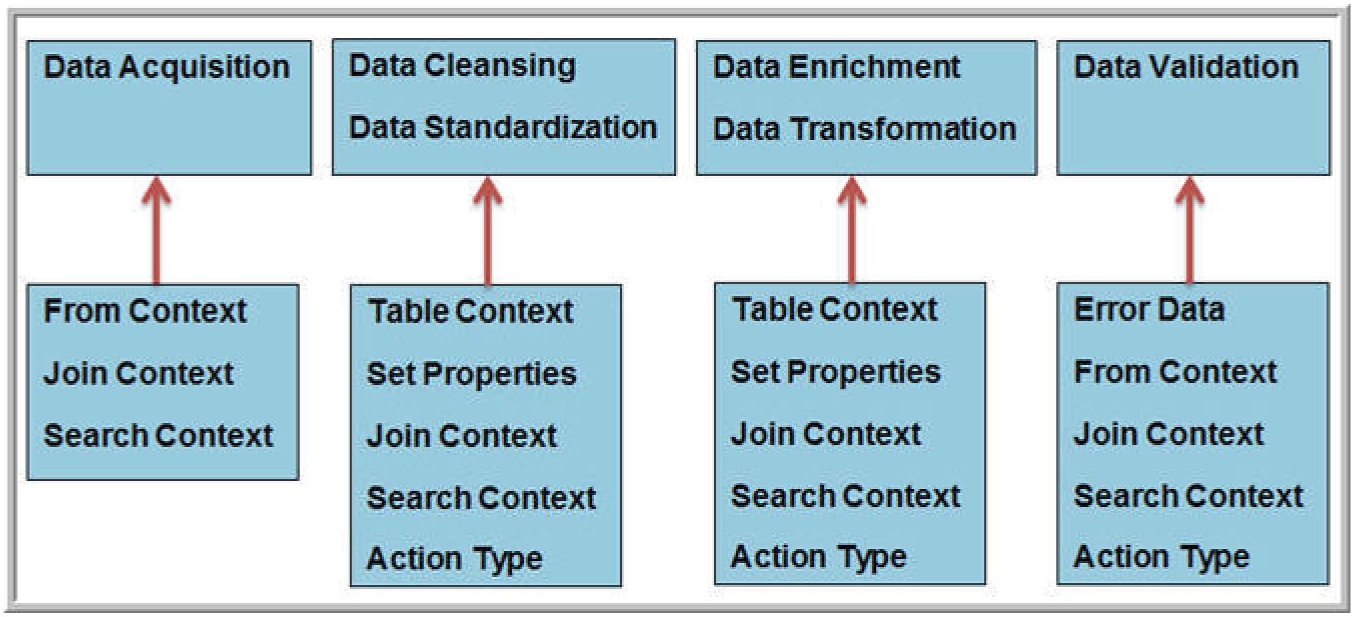
Database:

Tables: AttributeSet

```
Insert BCM_MASTER.AttributeSet
TableContext Document :AttributeSet
Properties
From BCM_MASTER.AttributeSet
Where

Action Type : Insert
```

The Figure 142 displays the various steps involved in different types of rules.

Figure 142: Rule Editor Wizard—Set Properties



The various steps involved in business rule creation includes:

- Table Context
- Set Properties
- Search Context
- From Context
- Join Context
- Error Data
- Action Type

Table Context

In **Table Context**, you can select the table on which you can set data for its columns through business rule. When **Table Context** step is selected, the right panel by default displays the service name and table name selected during create business rule step (Figure 141). You can change the selected table under table context if you want to insert or update records into a different table based on the criteria on the table on which business rule is defined. The Database displays the database names if the selected table is a non MDM table.

Set Properties

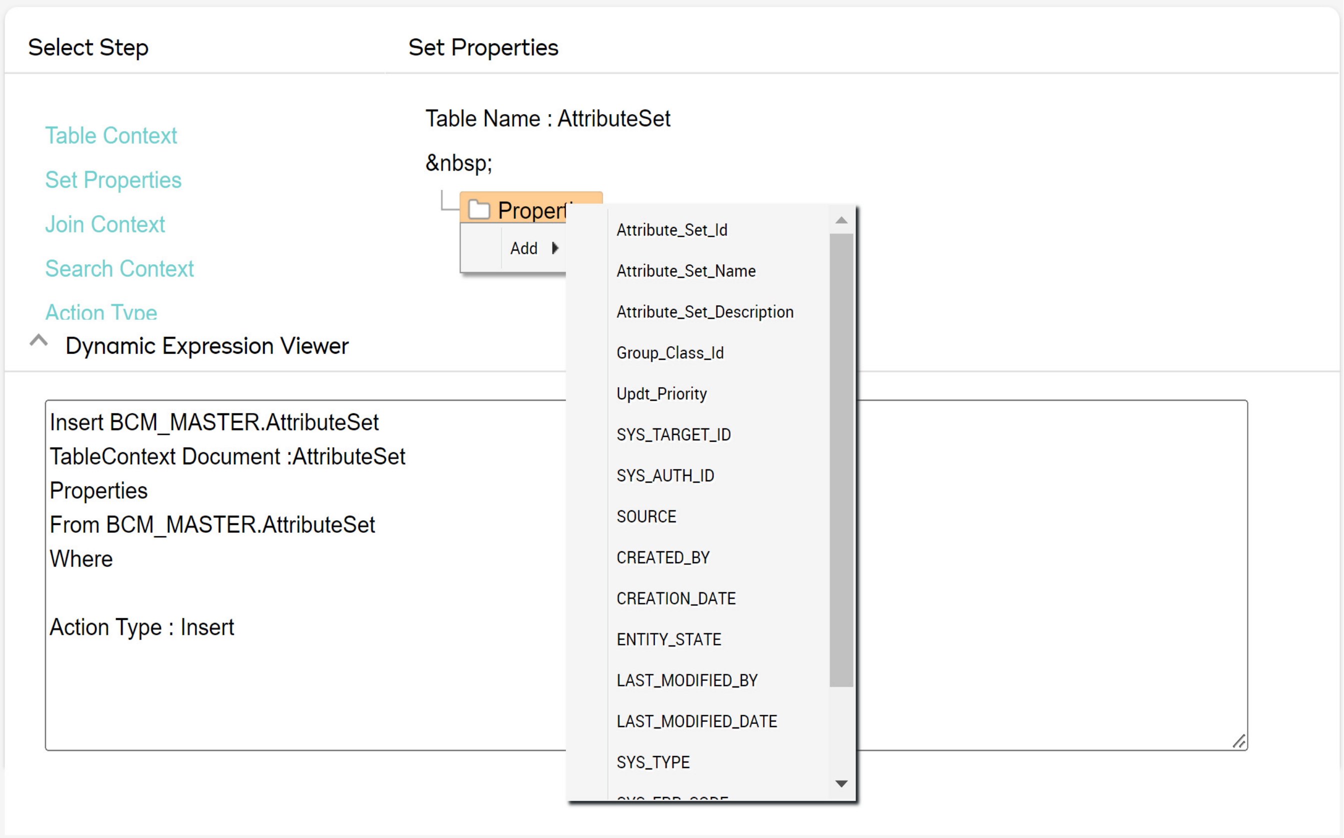
In **Set Properties**, you can set values for columns of the table selected in Table Context step.

1. From **Select Step**, select **Set Properties**.

   The right panel displays the Properties folder.

2. Right click on the Properties folder, all available columns of the selected table displays where you can add the required value as in Figure 143.

Figure 143: Rule Editor Wizard—Set Properties



Select Step

Set Properties

Table Name : AttributeSet

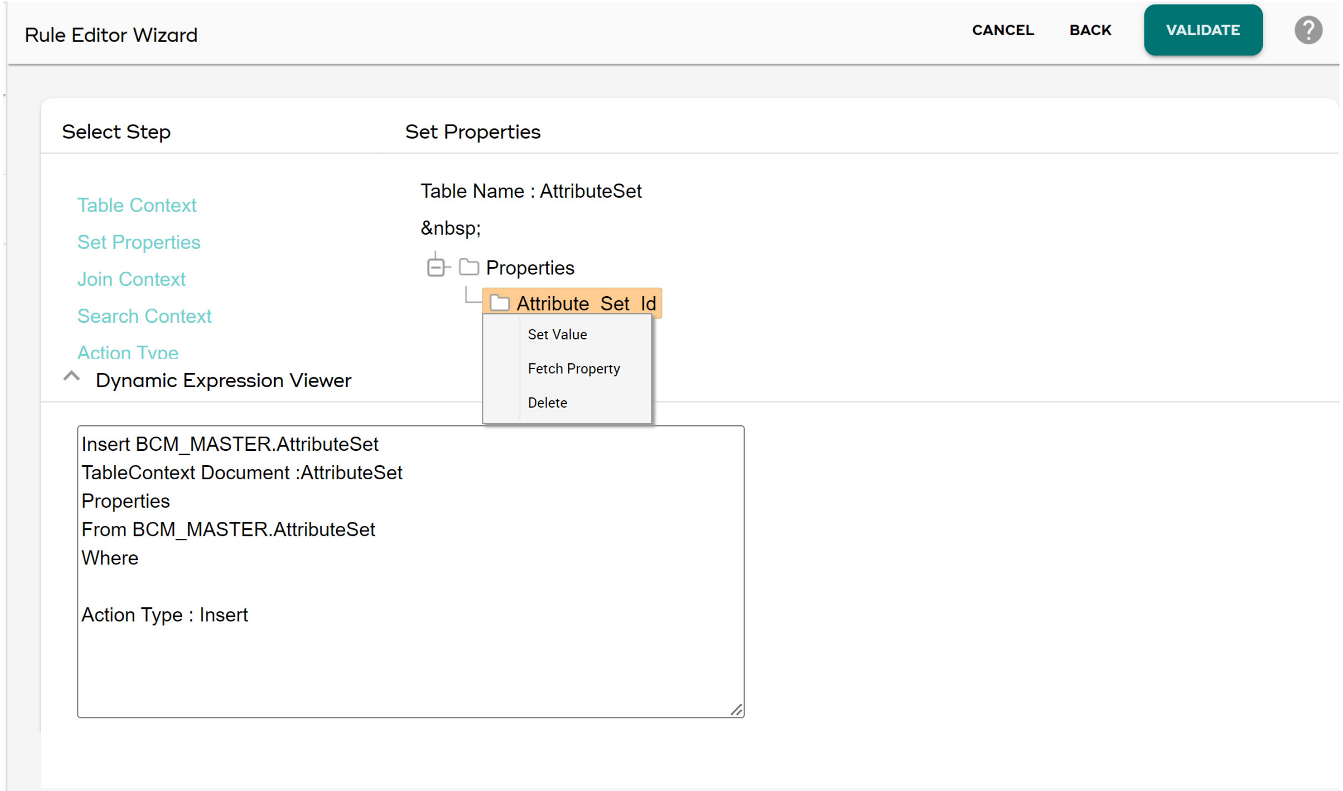
Dynamic Expression Viewer

Insert BCM_MASTER.AttributeSet
TableContext Document :AttributeSet
Properties
From BCM_MASTER.AttributeSet
Where

Action Type : Insert

3 Right click the added property, you can see three options: **Set Value, Fetch Property** and **Delete** as in Figure 144.

Figure 144: Rule Editor Wizard—Set Properties

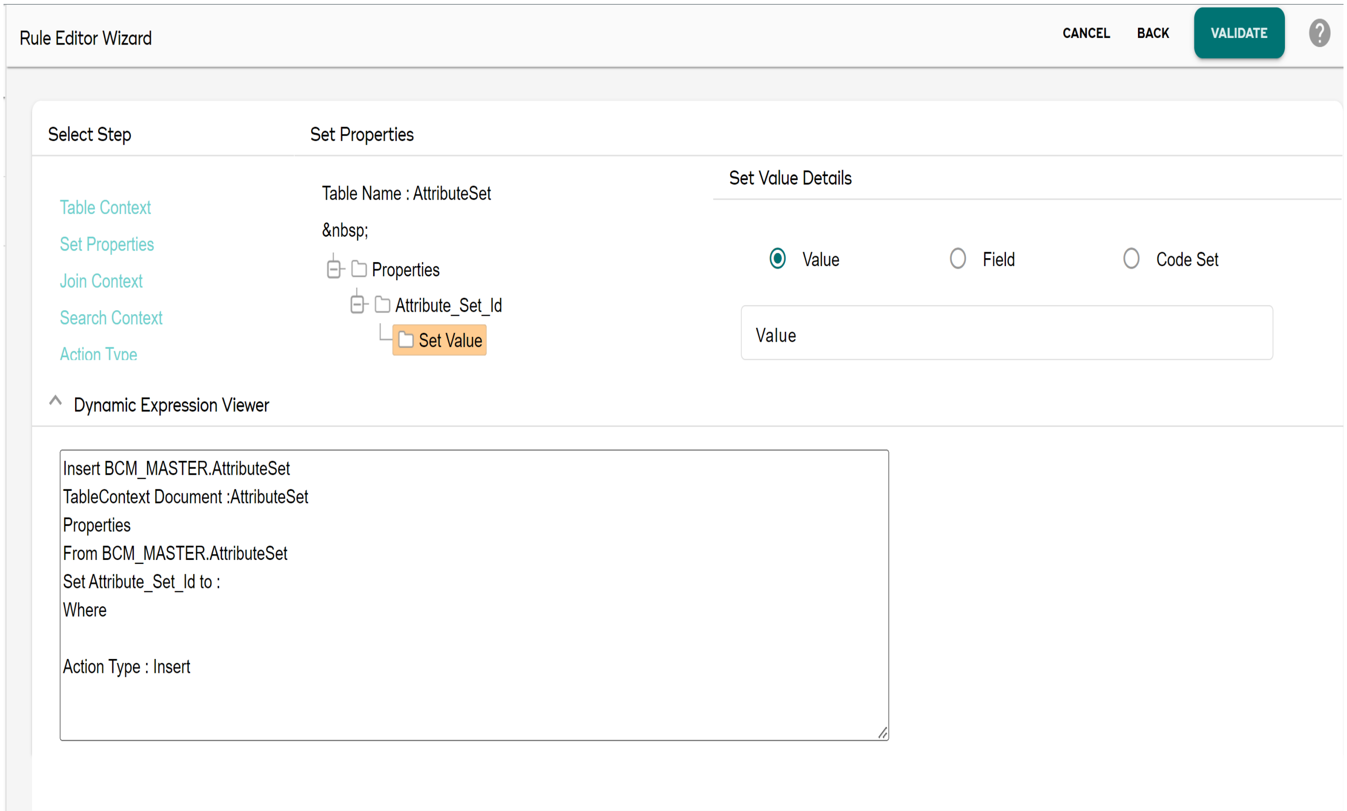


Insert BCM_MASTER.AttributeSet
TableContext Document :AttributeSet
Properties
From BCM_MASTER.AttributeSet
Where

Action Type : Insert

- **Set Value**: When you click on Set Value option, the right panel displays the value setting options as in Figure 145.

Figure 145: Rule Editor Wizard—Set Value Details



● Value ○ Field ○ Code Set

Value

```
Insert BCM_MASTER.AttributeSet
TableContext Document :AttributeSet
Properties
From BCM_MASTER.AttributeSet
Set Attribute_Set_Id to :
Where

Action Type : Insert
```

  - If **Value** option is selected, enter the value of the property in Value field.
  - If **Field** option is selected, select the property from where you can set the property of a table by deriving its value from the other property of the same table.
  - If **Code Set** option is selected, you can select the value from the available codesets.
- **Fetch Property**: When you click on Fetch Property option, the right panel displays the fetch property details as in Figure 146. Using Fetch property, you can fetch the value from another column in the same table or from another table's column (requires a link/join and can be defined in Join Context step).

  You can also have multiple properties and/or values that can have a math operator (+, -, *, /) or concat. In addition a few string or math functions can be applied to the column (Average, Count, Distinct, Lower, Max, Min, Sum, Upper, Concat, Strlen, Trim).

Figure 146: Rule Editor Wizard—Fetch Property

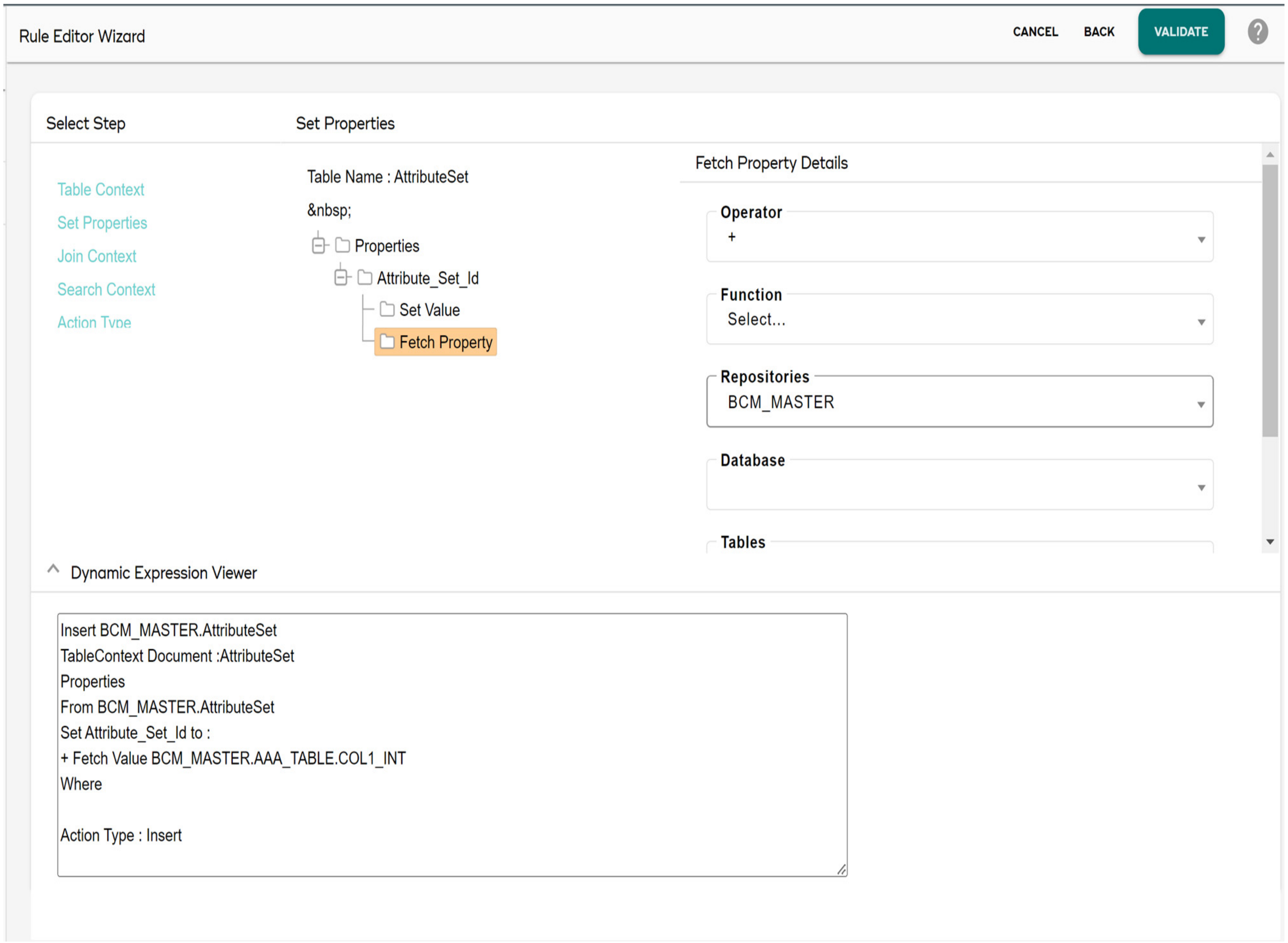


Table Name : AttributeSet

Operator: +
Function: Select...
Repositories: BCM_MASTER
Database:
Tables:

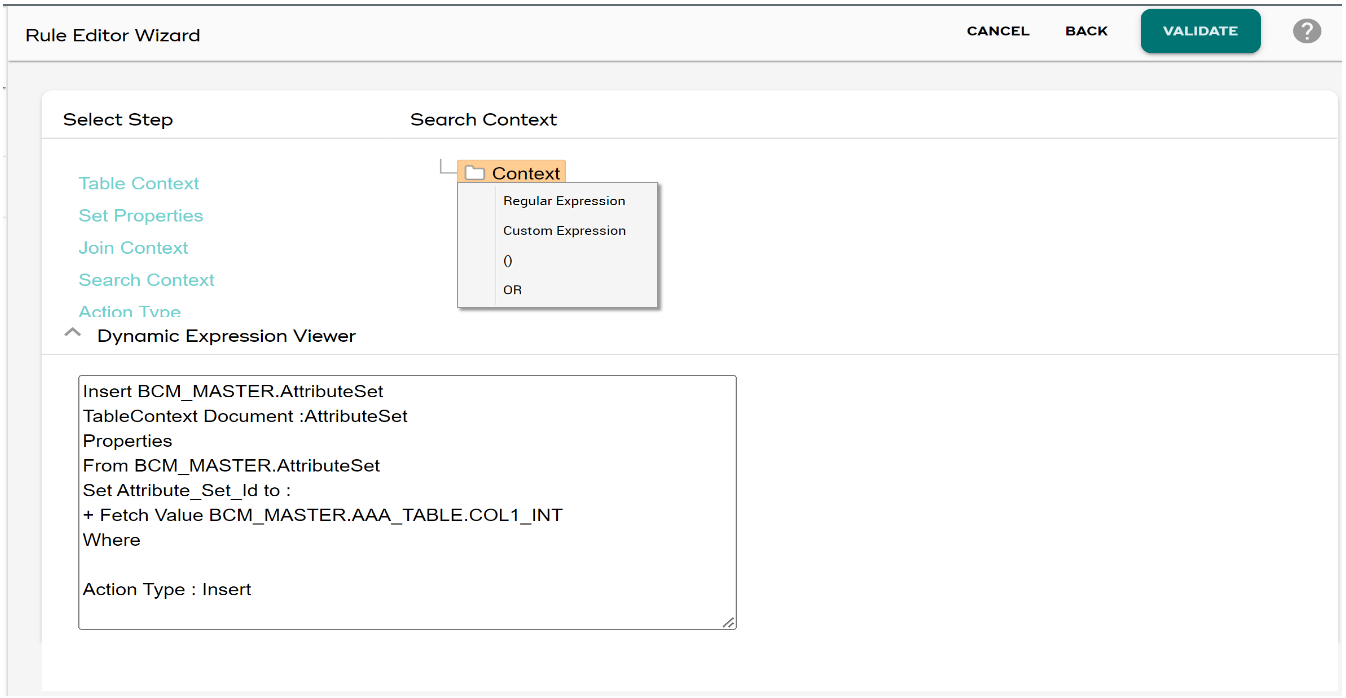
```
Insert BCM_MASTER.AttributeSet
TableContext Document :AttributeSet
Properties
From BCM_MASTER.AttributeSet
Set Attribute_Set_Id to :
+ Fetch Value BCM_MASTER.AAA_TABLE.COL1_INT
Where

Action Type : Insert
```

- **Delete**: when you click on Delete, the added property folder is deleted.

Search Context

In the search context step, you can specify the where clause for the business rule. When Search Context step is selected, the right panel displays the Context folder. Right click on the Context folder to insert any SQL or where clause using the options displayed on the pop-up as in Figure 147.

Figure 147: Rule Editor Wizard—Search Context

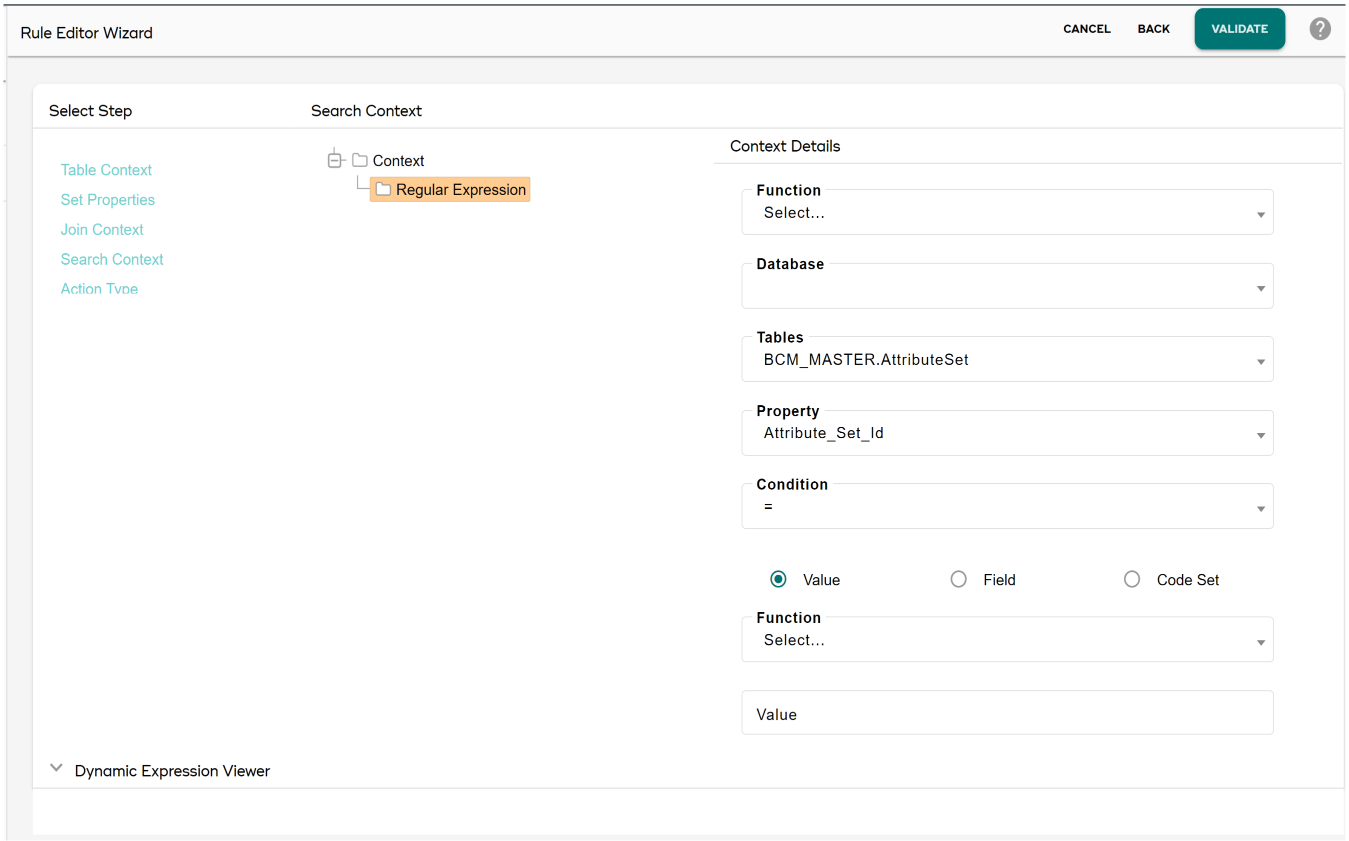


Insert BCM_MASTER.AttributeSet
TableContext Document :AttributeSet
Properties
From BCM_MASTER.AttributeSet
Set Attribute_Set_Id to :
+ Fetch Value BCM_MASTER.AAA_TABLE.COL1_INT
Where

Action Type : Insert

- Regular Expression: when you click on the Regular Expression, the Context Details pane allows you to select the document and its property and assign a value using literal value or fetch it from other table’s property as in Figure 148.

Figure 148: Rule Editor Wizard—Regular Expression



Function: Select...

Database:

Tables: BCM_MASTER.AttributeSet

Property: Attribute_Set_Id

Condition: =

● Value

Function: Select...

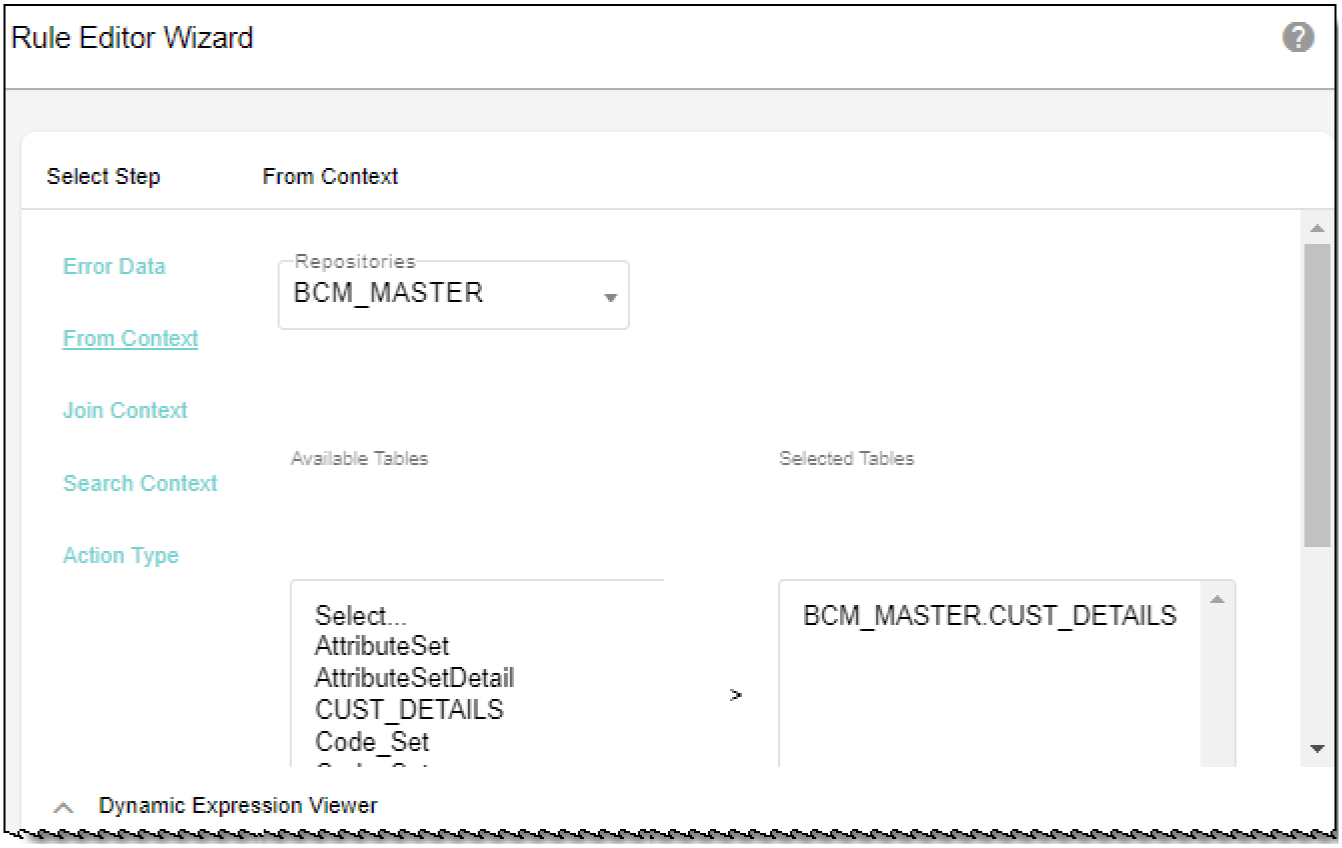
Value

- The Function drop-down displays all the advanced string functions (like Concat, String-length, Trim, Upper, Lower etc.) to build more sophisticated business rules. These functions can as well be used in the custom expression to provide any user defined Where clause to the business rules.
- Table dropdown displays the table on which the rule is defined.
- Property dropdown displays the list of available attributes for the selected table.
- Database dropdown displays the database names of Non MDM tables.
- Condition dropdown displays the available conditions (=, <>, <=, >=, <,>, IS NULL, IS NOT NULL, LIKE, NOT LIKE, IN and NOT IN).
    - If Value option is selected, you can enter the value in Value field.
    - If Field option is selected, you can fetch the value from property of other tables.
    - If CodeSet option is selected, you can select the value from the available codesets.
- Custom Expression: Using Custom Expression, you can write your own ‘where clause’. Normally it is recommended to use custom expression if you cannot build your rule using rule builder UI.
- (): Using (), you can write complex nested expression, right-click on () and select Regular or Custom Expression.
- OR: Using OR, you can insert OR between two expressions. By default its AND.

From Context

In From Context, you can select tables that will take part in the business rule. When From Context is selected, the right panel displays option to select repository and table on which the rule is to be executed (by default, the table selected in create business rule step (Figure 140) is selected). However, if you select more than one table, links may be created between the new table and the rule table using the Join Context step. The available tables list displays all the tables of the selected service.

Figure 149: Rule Editor Wizard—From Context


Rule Editor Wizard

Select Step

From Context

Repositories: BCM_MASTER

Available Tables

Select...
AttributeSet
AttributeSetDetail
CUST_DETAILS
Code_Set

Selected Tables

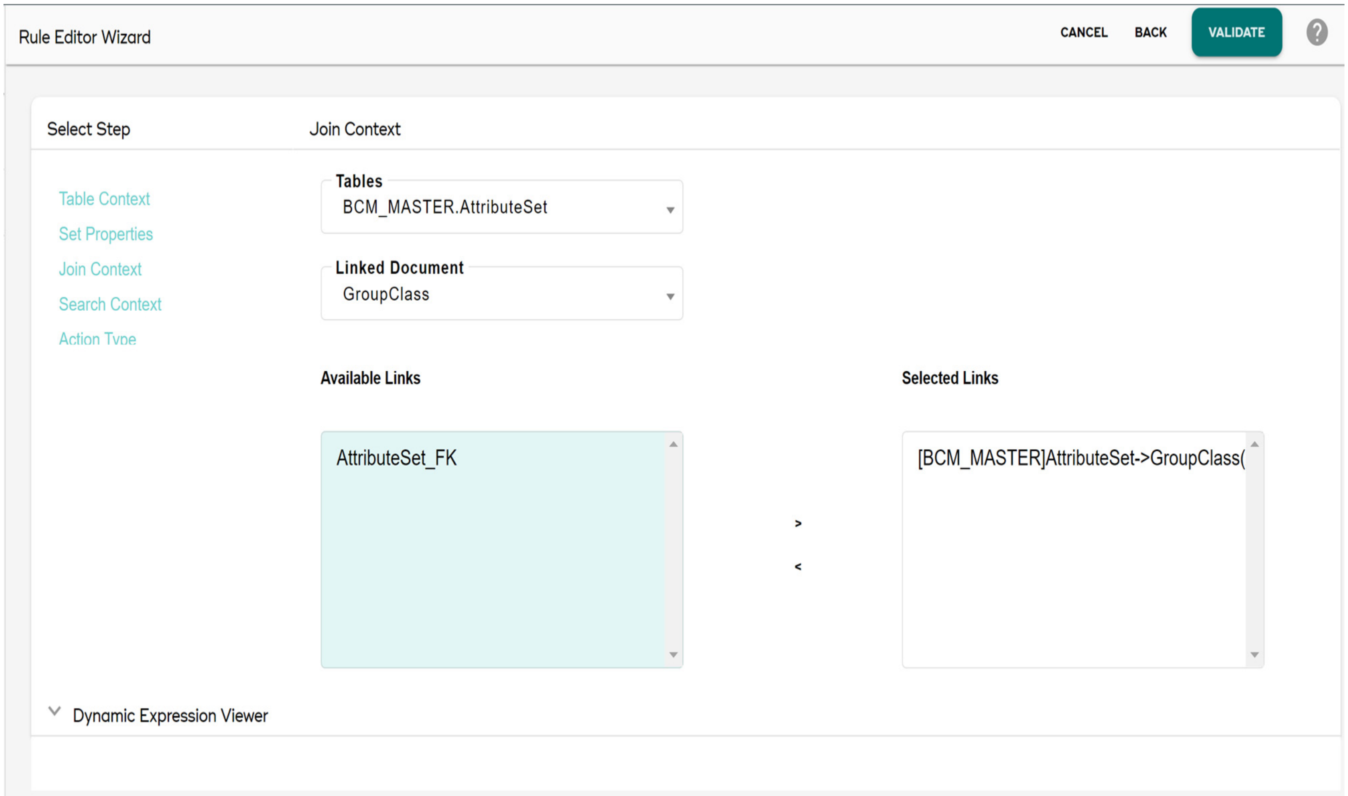
BCM_MASTER.CUST_DETAILS

Dynamic Expression Viewer

Join Context

In the Join Context step, you can select joins between tables selected in From Context step. When Join Context step is selected, the right panel displays the table and linked documents as in Figure 150. When you select a link from Available Links list, a corresponding join condition gets added to the where clause of the rule. The links displayed for a pair of tables selected in Tables and Linked Document drop downs are the foreign key links defined while designing the tables in MDM model builder.

Figure 150: Rule Editor Wizard—Join Context



Tables: BCM_MASTER.AttributeSet

Linked Document: GroupClass

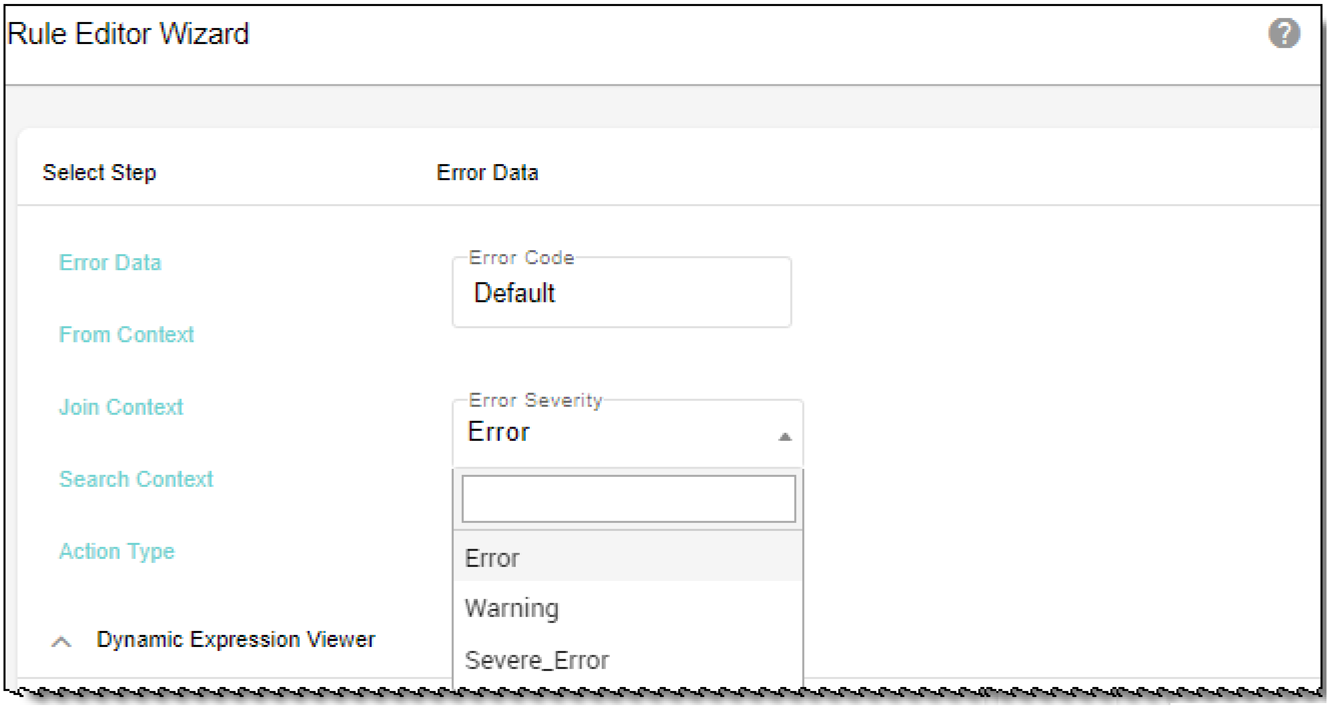
AttributeSet_FK

[BCM_MASTER]AttributeSet->GroupClass(

Error Data

When Error Data step is selected, the right panel displays the error code and error severity options as in Figure 151. The text provided in Error Code field gets displayed when a particular record fails validation. The error severity can be ERROR, SEVERE_ERROR or WARNING. If a record fails a validation rule of severity ERROR or SEVERE_ERROR, the record will be “moved” to corresponding error table. If a record fails a validation rule of severity WARNING, the record will be “copied” to the corresponding error table, but the original record will be persisted to master.

Figure 151: Rule Editor Wizard—Error Data



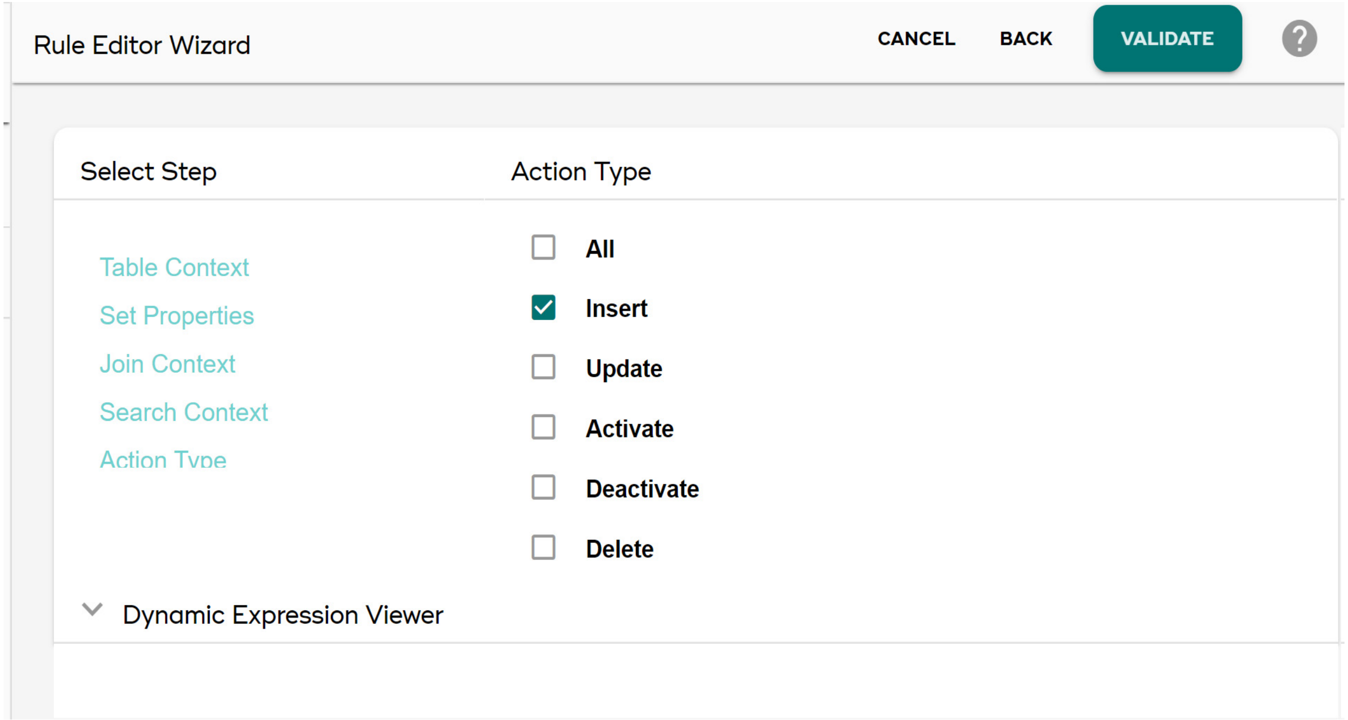
Error Code: Default

Error Severity: Error

Action Type

In Action type, you can select the actions for which you want the rule to be executed. The rules will be executed if any of the actions selected for the business rule is performed on the table on which business rule is created. When Action Type is selected, the right panel displays option to select the Action Type on table that will fire the rule. By default, all the options would be selected as in Figure 152.

Figure 152: Rule Editor Wizard—Action Type



Action Type

☐ All
☑ Insert
☐ Update
☐ Activate
☐ Deactivate
☐ Delete

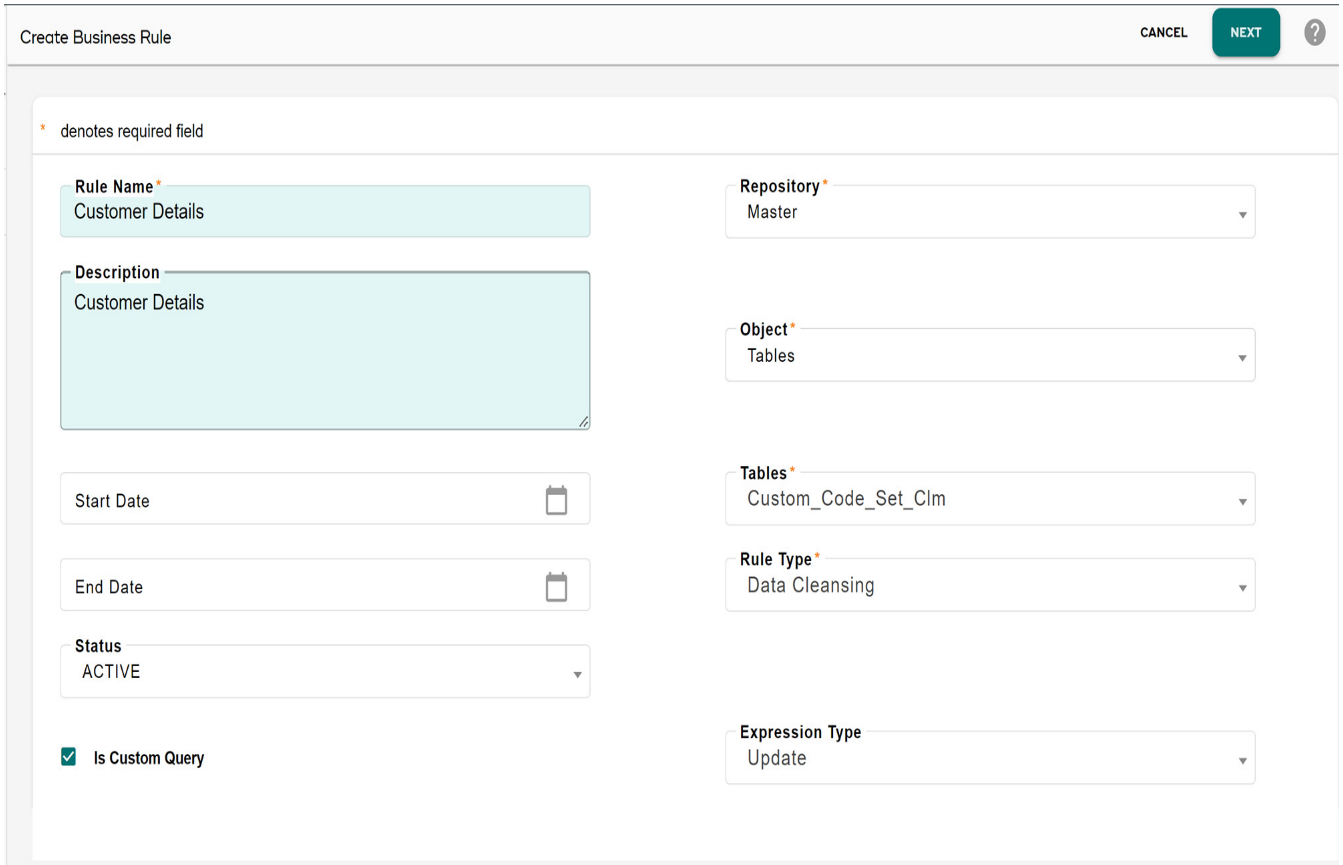
Once all the business rule details are configured, click on **Validate** to verify the rule definition for correctness. On successful validation, the **Summary Rule Expression** page (Figure 155) will be displayed.

Custom Rule Editor Wizard

Custom expression gives business users the flexibility to define complex SQL business rules instead of using built-in operators. You can directly write SQL business rules using custom expression and invoke the same. It also gives the flexibility to import predefined SQL business rules outside of MDM system and make use of it by defining it here. While custom expression under Search Context enables to define custom SQL as a Where clause, this custom expression allows you to define entire SQL business rule.

To create custom expression, select the option **Is Custom Query** in create business rule step as in Figure 153. The **Is Custom Query** option is not available on data validation and data acquisition rule types.

Figure 153: Custom Rule Create Business Rule



* denotes required field

Rule Name*: Customer Details

Description: Customer Details

Start Date

End Date

Status: ACTIVE

☑ Is Custom Query

Repository*: Master

Object*: Tables

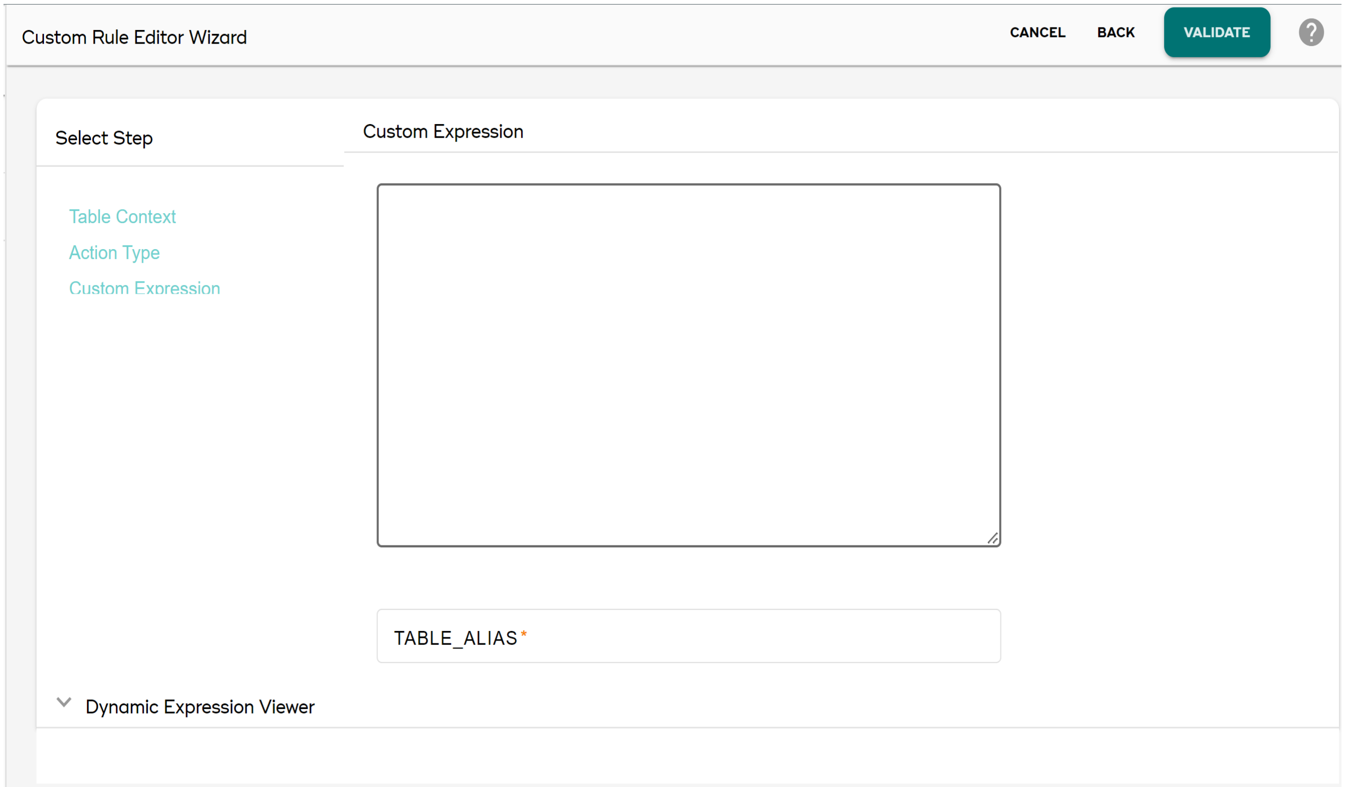
Tables*: Custom_Code_Set_Clm

Rule Type*: Data Cleansing

Expression Type: Update

On the **Custom Rule Editor Wizard**, when you click on **Custom Expression**, the right panel displays an entry field to include the custom expression as in Figure 154.

Figure 154: Custom Rule Editor Wizard

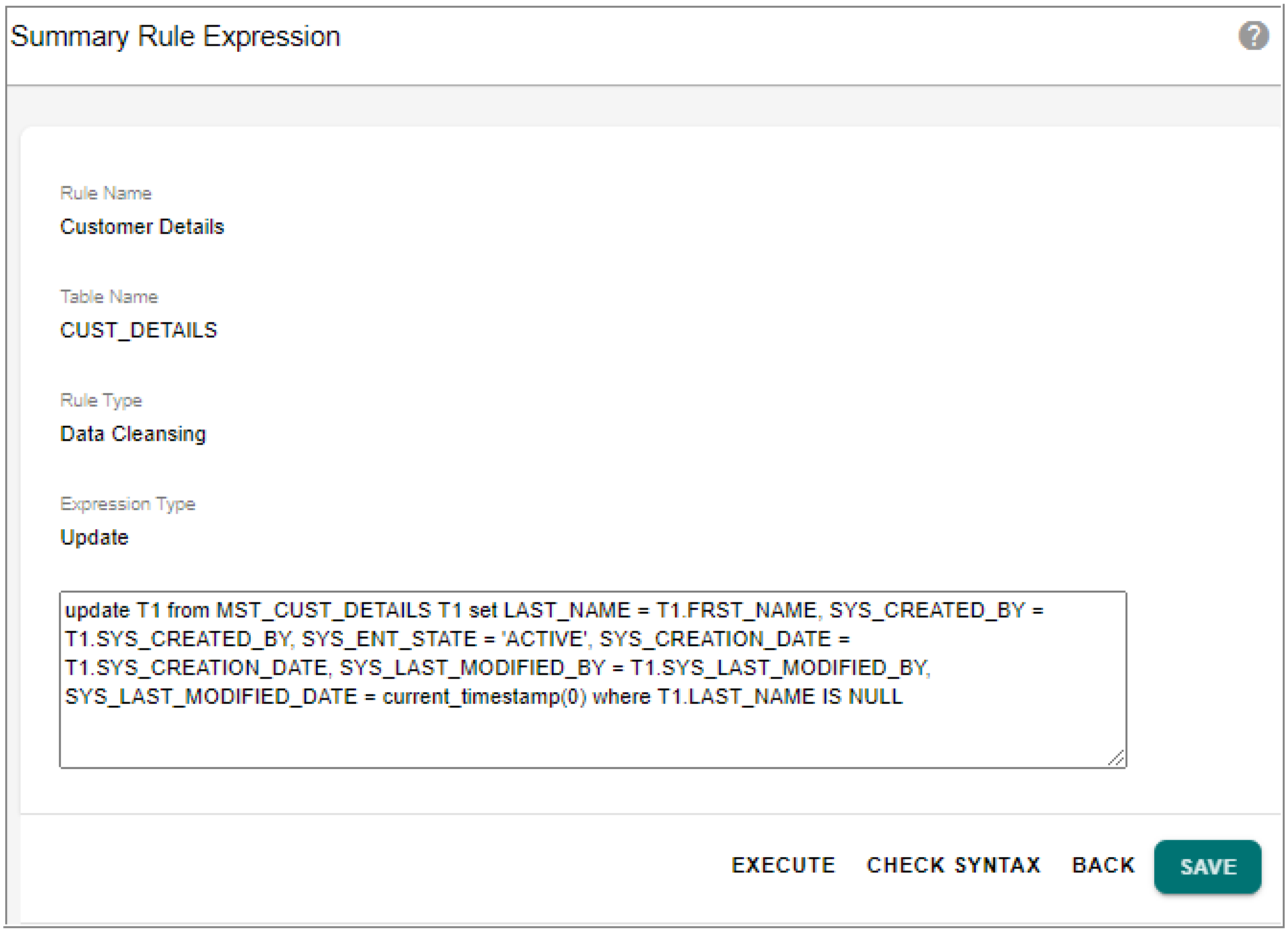


Summary Rule Expression

The Summary Rule Expression page display the created SQL expression in addition to the user entered details as in Figure 155. On the **Summary Rule Expression** page, you can:

- Click **Check Syntax** button to verify the custom expression syntax correctness.
- Click **Execute** button to execute the rule on the selected table.
- Click **Save** button to save the rule to the database.
- Click **Back** button to modify any rule details.

Figure 155: Summary Rule Expression



Rule Name
Customer Details

Table Name
CUST_DETAILS

Rule Type
Data Cleansing

Expression Type
Update

```
update T1 from MST_CUST_DETAILS T1 set LAST_NAME = T1.FRST_NAME, SYS_CREATED_BY =
T1.SYS_CREATED_BY, SYS_ENT_STATE = 'ACTIVE', SYS_CREATION_DATE =
T1.SYS_CREATION_DATE, SYS_LAST_MODIFIED_BY = T1.SYS_LAST_MODIFIED_BY,
SYS_LAST_MODIFIED_DATE = current_timestamp(0) where T1.LAST_NAME IS NULL
```

Tasks Performed on Manage Business Rules UI

On the Manage Business Rules UI, you can perform the following tasks:

- Hide Columns
- Reorder Fields
- Search Business Rule
- Export Business Rule Details
- Edit Business Rule Details
- Activate or Deactivate Validation Rule

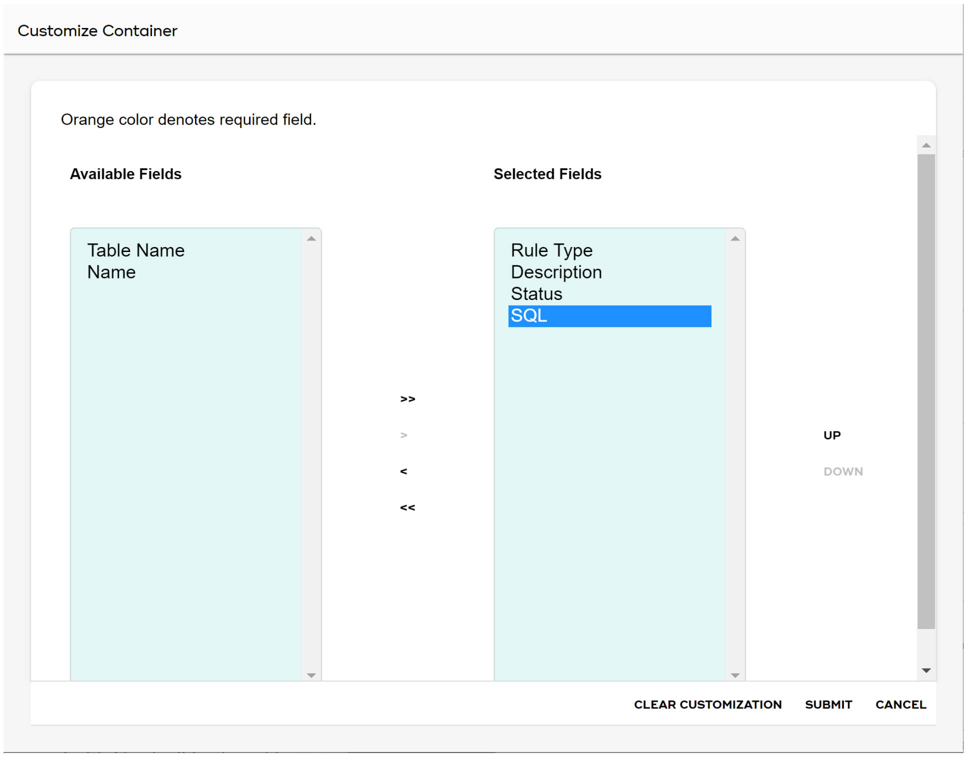
Hide Columns

Customize Table option allows you to change the view of the business rule list for better readability. You can add or remove the columns for the better view. To customize the table, do the following:

1 On the **Manage Business Rules**, click **Customize table** icon ▥

The **Customize Container** page opens.

2 On the **Customize Container** page, choose the fields that you wish to hide from the **Selected Fields** column and click on the **Unselect Selected Fields** arrow button. The fields to be hidden are moved to the **Available Fields** column. To hide all fields, click **Unselect All Fields** arrow button.



Customize Container

Orange color denotes required field.

Available Fields

Table Name
Name

Selected Fields

Rule Type
Description
Status
SQL

3 Click **SUBMIT**.

Reorder Fields

To reorder fields:

1 On the **Customize Container** page, select the field which you want to reorder from the **Selected Fields** column.

2 Click **Up** or **Down** arrow buttons to change the display sequence of the fields.

Search Business Rule

To search business rules:

1 On the **Manage Business Rules** page, enter the value for the specific parameter (Table Name, Rule Type and Rule Status as Active or Inactive, Repository,)in the search box and click search icon.

Export Business Rule Details

To export business rule details:

1. On the **Manage Business Rules** page, click Export to Excel icon ⇥.

   The **confirmation** popup is displayed.
2. On the **confirmation** popup, click **Yes** to export all the records and click **No** to export current page records.

   The exported excel file will be downloaded in the default location with name as “ManageBusinessRules_data_export”.

Edit Business Rule Details

You can navigate to business rule details page from the view business rule UI using the Edit option. To edit business rule details from view business rules page:

1. On the **Manage Business Rules** page with **Business Rules** tab selected, click on the Menu icon ⋮ corresponding to the required rule and click **Edit**.

   The **Rule Details** page for the selected rule is displayed.
2. On the **Rule Details** page, modify the required details and click **Save**.

Activate or Deactivate Default Validation Rule

You can activate or deactivate default validation rules from View Business Rules UI.

1. On the **Manage Business Rules** page with **Default Validation Rules** tab selected, click on the Menu icon ⋮ corresponding to an inactive rule and click **Activate** or click on the Menu icon ⋮ corresponding to the required active rule and click **Deactivate** as required.

Copy Rules

To create a copy of the existed rules, do the following:

- On the **Manage Business Rules** page with **Business Rules** tab selected, click on the Menu icon ⋮ corresponding to the required rule and click **Copy**.
- Provide the name of the rule and click **Next**.
- Follow same procedure as for creating the new rule.

Generate Business Rule

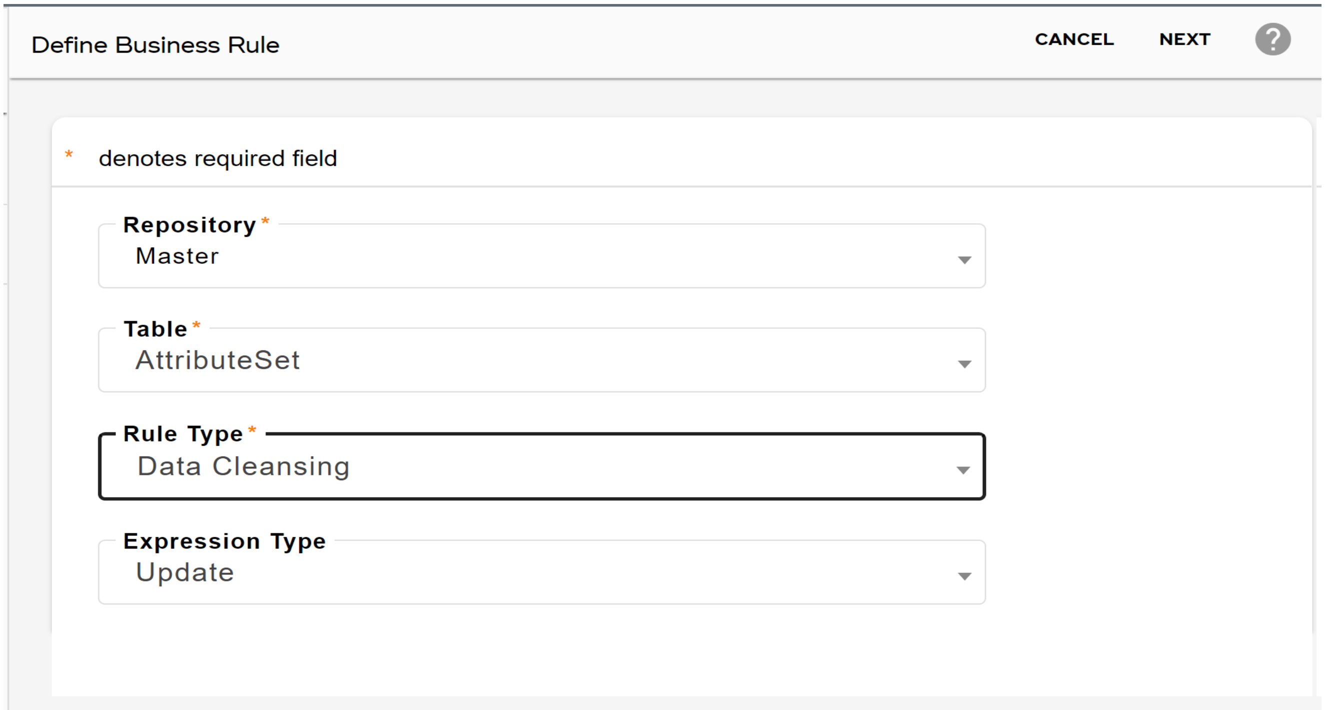
The Generate Rules option allows you to auto generate business rules for multiple columns of a table using predefined functions at a time. This facility of auto generate business rules is available for data cleansing, data standardization, data enrichment and data transformation rule types.

The rule name will be dynamically assigned and will be prefixed with the word AutoGen. For example: AutoGen-BCM_MASTER-CUSTOMER_PARTY-CustomerFirstName. You can modify the auto generated business rule details using the Edit option on Manage Business Rules UI.

1. On **Manage Business Rules**, click **Actions** and then select **Generate Rules**.

   The **Define Business Rule** UI displays.

Figure 156: Define Business Rule



Define Business Rule

* denotes required field

Repository *
Master

Table *
AttributeSet

Rule Type *
Data Cleansing

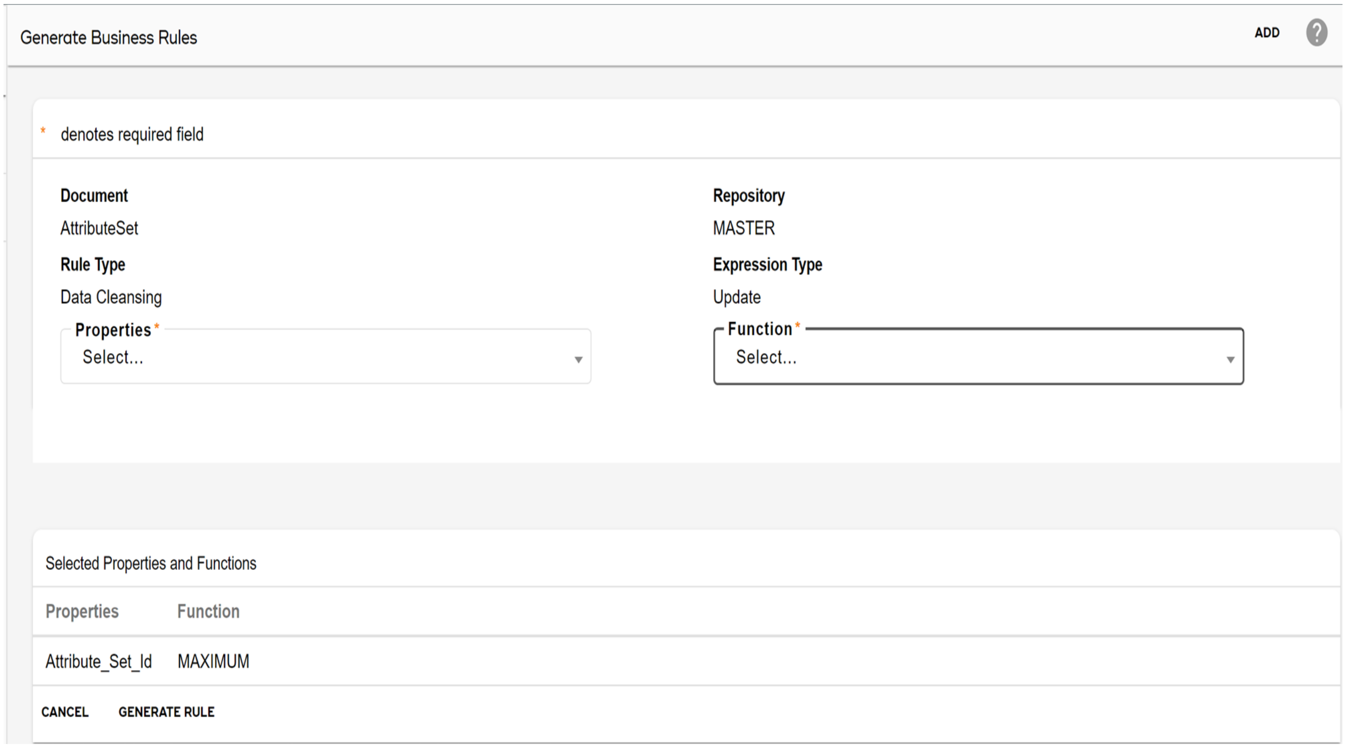
Expression Type
Update

2. On the **Define Business Rule** UI (Figure 156), provide following information.
   - **Repositories**: repository on which the business rule is being auto generated. Repository can be (Input Staging, Master or Non MDM).
   - **Tables**: name of the table in the selected repository on which the business rule is being auto generated.
   - **Rule Type**: business rule type based on the repository selected.
   - **Expression Type**: the Expression Type can be as Insert or Update and the rule will perform an insert or update action accordingly.
3. Click **Next.**.

   On the **Generate Business Rules** UI (Figure 156), the upper pane displays all the details selected on **Define Business Rule** UI.
4. Select a column of the selected table from Properties dropdown.
5. Select function from **Function** dropdown corresponding to be applied on the column values.
6. Click **Add**.
7. Click **Generate Rule** to auto generate rules on the selected table. You can add multiple properties.

The auto generated rule gets added to the list of rules on the Manage Business Rules UI and you can perform all the operations like edit, delete, copy etc., on the auto generated rule.

Figure 157: Generate Business Rules



Generate Business Rules

* denotes required field

Document
AttributeSet

Repository
MASTER

Rule Type
Data Cleansing

Expression Type
Update

Properties*
Select...

Function*
Select...

Selected Properties and Functions

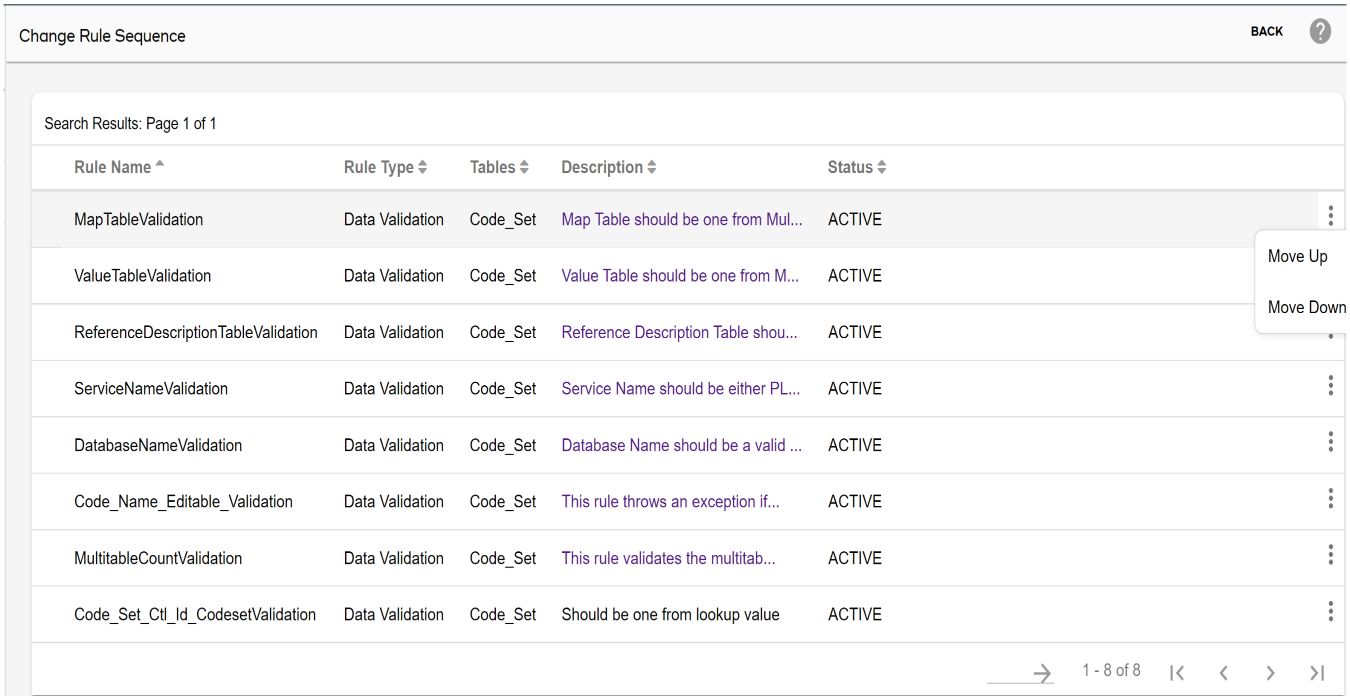
Properties	Function
Attribute_Set_Id	MAXIMUM

Change Rule Sequence

On the Manage Business Rules UI, you can specify the order of rule execution using the Change Rule Sequence option.

1. On Manage Business Rule UI, click **Actions** and then select **Rule Sequence**.
2. Select the value for the repository, rule type, object type, and table from the corresponding dropdown and click **Search**.
3. On the Search Results page, you can reorder the rule execution sequence using the Move Up and Move Down buttons as in Figure 158. The rule on the top gets executed first.

Figure 158: Change Rule Sequence



Search Results: Page 1 of 1

Rule Name	Rule Type	Tables	Description	Status
MapTableValidation	Data Validation	Code_Set	Map Table should be one from Mul...	ACTIVE
ValueTableValidation	Data Validation	Code_Set	Value Table should be one from M...	ACTIVE
ReferenceDescriptionTableValidation	Data Validation	Code_Set	Reference Description Table shou...	ACTIVE
ServiceNameValidation	Data Validation	Code_Set	Service Name should be either PL...	ACTIVE
DatabaseNameValidation	Data Validation	Code_Set	Database Name should be a valid ...	ACTIVE
Code_Name_Editable_Validation	Data Validation	Code_Set	This rule throws an exception if...	ACTIVE
MultitableCountValidation	Data Validation	Code_Set	This rule validates the multitab...	ACTIVE
Code_Set_Ctl_Id_CodesetValidation	Data Validation	Code_Set	Should be one from lookup value	ACTIVE

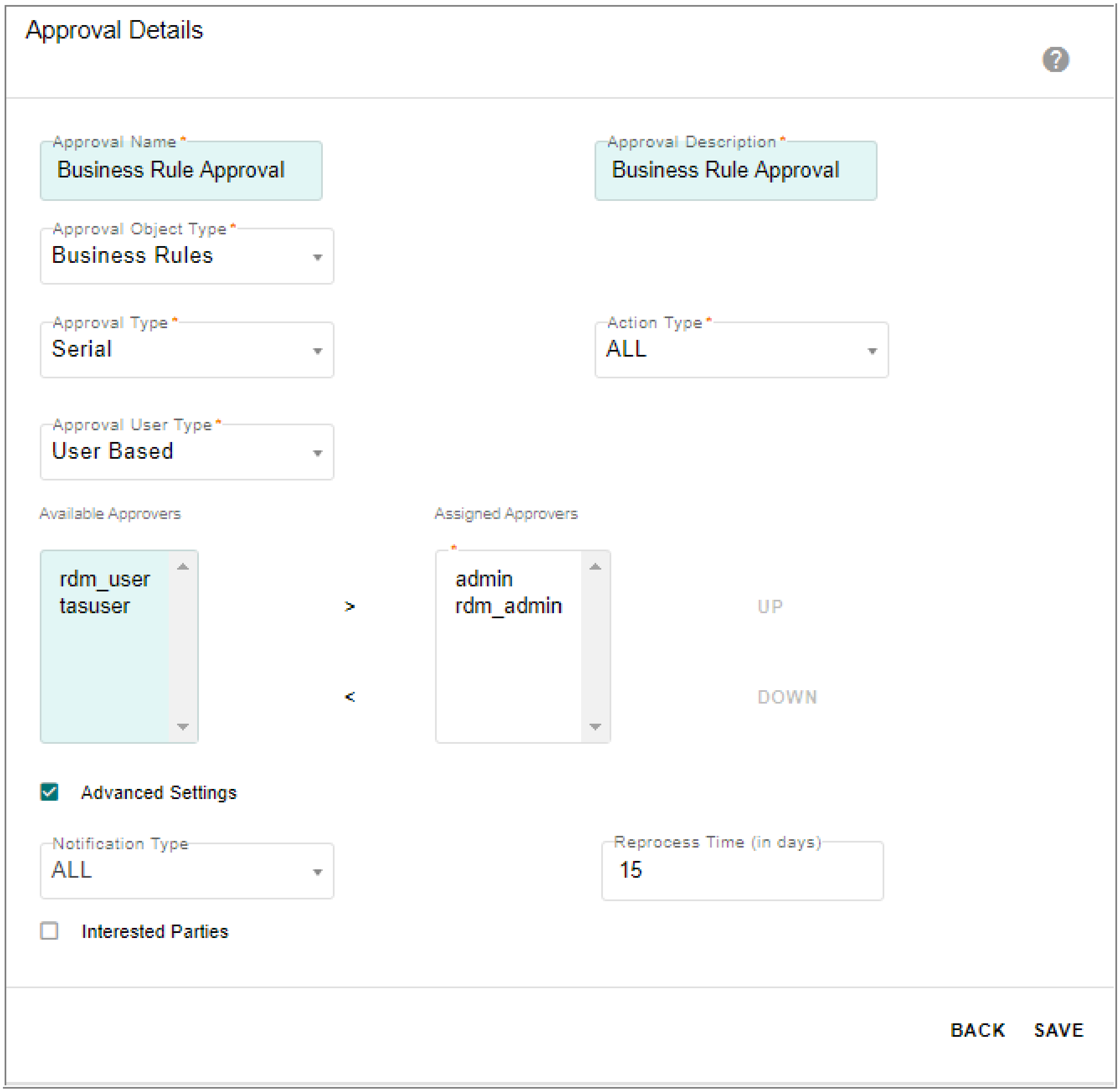
1 - 8 of 8

Approval on Business Rules

MDM provides the capability to configure approval on business rules. Once approval is enabled on business rule, the appropriate user can approve, reject or view business rules sent for the approval. Perform the following steps for approval on business rules:

1 Create an approval on business rule as in Figure 159. On Approval Details UI, select Business Rules as Approval Object Type for enabling approval on business rules. For details on creating approval, refer to Chapter 18: “Manage Approvals.”

Figure 159: Approval Details



Approval Details

Approval Name*: Business Rule Approval

Approval Description*: Business Rule Approval

Approval Object Type*: Business Rules

Approval Type*: Serial

Action Type*: ALL

Approval User Type*: User Based

Available Approvers: rdm_user, tasuser

Assigned Approvers*: admin, rdm_admin

☑ Advanced Settings

Notification Type: ALL

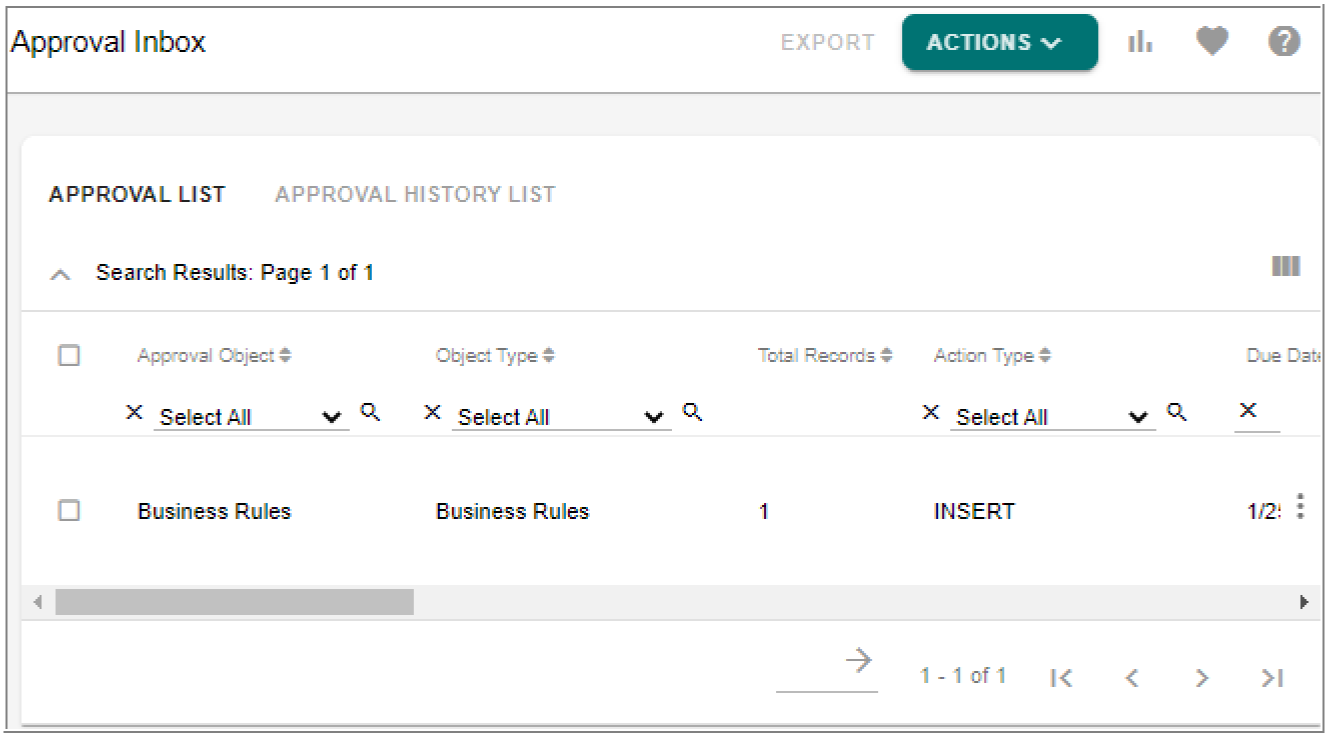
Reprocess Time (in days): 15

☐ Interested Parties

2 Create any business rule. For details, see Section : “Create Business Rule.”

When a business rule is created, a notification with all details would be sent to the approvers based on the type of Approval Type and approves selected. The business approval requests will be available in the respective user Approval Inbox UI as in Figure 160.

Figure 160: Approval Inbox



☐	Approval Object	Object Type	Total Records	Action Type	Due Date
	Select All	Select All		Select All	
☐	Business Rules	Business Rules	1	INSERT	1/2!

3 On the **Approval Inbox** UI (Figure 160), approver can view business rule sent for approval, accept or reject business rule and assign the request to logged in user (self). For details, refer to Chapter 18: “Manage Approvals.”

Tasks Performed on Manage Business UI

On the Manage Business UI, you can perform the following tasks:

- Create Business Rule
- Generate Business Rule
- Edit Rule
- Copy Rule
- Change Rule Sequence
- Activate or Deactivate Rule
- Delete Rule

Create Business Rule

The following section describes the steps for creating the different types of business rules.

Create Data Acquisition Rule

Perform the following steps to create data acquisition rule:

1 On the MDM UI left navigation pane, click **Data Harmonization**-> **Business Rules** -> **Manage Business Rules.**

2 On the **Manage Business Rule** page, click **Create**.

3 On the **Create Business Rule** page, enter the rule name and rule description, select the repository, table, rule type as data acquisition and specify the start and end date, the status of the rule and click **Next**.

4 On the **Rule Editor Wizard** page,

- Click **From Context**, the repository selected on **Create Business Rule** page is displayed in the Repositories dropdown and the table selected on **Create Business Rule** page is displayed in **Selected Tables** list. You can add/remove additional tables from the **Available Tables** list.
- Click **Join Context** to select joins on the tables. The right panel displays the table and linked documents. When you select a link from **Available Links** list, a corresponding join condition gets added to the where clause of the rule.
- Click **Search Context**, the right panel displays the **Context** folder. Right-click on context folder to insert a Where clause. You can select Regular Expression to build expression on the **Context Details** pane or click Custom Expression to write your 'where clause' explicitly.
- Click **Validate**.

5 On the **Summary Rule Expression** page, click **Check Syntax** to check for rule syntax correctness, click **Execute** to execute the rule on the selected table and click **Save** to save the rule to database.

Create Data Validation Rule

Perform the following steps to create data validation rule:

1 On the **Manage Business Rule** page, click **Create**.

2 On the **Create Business Rule** page, enter the rule name and rule description, select the repository, table, rule type as data validation and specify the start and end date, the status of the rule and click **Next**.

3 On the **Rule Editor Wizard** page,

- Click **Error Data**, the right panel displays the error code and error severity options. Provide the error code and select an error severity.
- Click **From Context**, the repository selected on Create Business Rule page is displayed in the Repositories dropdown and the table selected on Create Business Rule page is displayed in Selected Tables list. You can add/remove additional tables from the Available Tables list.
- Click **Join Context** to select joins on the tables. The right panel displays the table and linked documents. When you select a link from **Available Links** list, a corresponding join condition gets added to the where clause of the rule.
- Click **Search Context**, the right panel displays the **Context** folder. Right-click on context folder to insert a Where clause. You can select Regular Expression to build expression on the **Context Details** pane or click Custom Expression to give define the 'where clause' explicitly.
- Click **Action Type**, in the right panel, by default, all the options would be selected. Select the Action Type on table for which you want the rule to be executed.

  - Click **Validate** to verify the rule definition for correctness.

4. On the **Summary Rule Expression** page, click **Check Syntax** to check for rule syntax correctness, click **Execute** to execute the rule on the selected table and click **Save** to save the rule to database.

Create Data Cleansing Rule

Perform the following steps to create data cleansing rule:

1. On the **Manage Business Rule** page, click **Create**.
2. On the **Create Business Rule** page, enter the rule name and rule description, select the repository, table, rule type as data cleansing and specify the start and end date and the status of the rule, select the expression type and click **Next**.

   If you want to write custom expression, select **Is Custom Query** option. If custom query option is selected, the Custom Rule Editor Wizard is displayed.
3. On the **Rule Editor Wizard** page,
   - Click **Table Context**, the repository selected on Create Business Rule page is displayed in the Services dropdown and the table selected on Create Business Rule page is displayed in Tables dropdown. You can select any table from the Tables dropdown as required.
   - Click **Set Properties**, the right panel displays the Properties folder. Right-click on the Properties folder and click Add.

     A list of properties of the selected table is displayed.
     - Right-click on the <property_name>, you can see two options: **Set Value** and **Fetch Property**.
     - Right-click and select **Set Value**, the right panel displays the value setting options.
     - Right-click and select **Fetch Property**, the right panel displays the fetch property details. Using Fetch property, you can fetch the value from another column in the same table or from another table's column.
   - Click **Join Context** to select joins on the tables. The right panel displays the table and linked documents. When you select a link from **Available Links** list, a corresponding join condition gets added to the where clause of the rule.
   - Click **Search Context**, the right panel displays the **Context** folder. Right-click on context folder to insert a Where clause. You can select Regular Expression to build expression on the **Context Details** pane or click Custom Expression to give define the 'where clause' explicitly.
4. On the **Summary Rule Expression** page, click **Check Syntax** to check for rule syntax correctness, click **Execute** to execute the rule on the selected table and click **Save** to save the rule to database.

Create Data Standardization Rule

Perform the following steps to create data cleansing rule:

1. On the **Manage Business Rule** page, click **Create**.
2. On the **Create Business Rule** page, enter the rule name and rule description, select the repository, table, rule type as data standardization and specify the start and end date, the status of the rule, select the expression type and click **Next**.

   If you want to write custom expression, select **Is Custom Query** option.
3. On the **Rule Editor Wizard** page, all the steps are same as data cleansing rule. See Section : “Create Data Cleansing Rule”.

   If custom query option is selected, the Custom Rule Editor Wizard is displayed.
4. On the **Custom Rule Editor Wizard**, click on **Custom Expression**, the right panel displays an entry field to include the custom expression.
5. On the **Summary Rule Expression** page, click **Check Syntax** to check for rule syntax correctness, click **Execute** to execute the rule on the selected table and click **Save** to save the rule to database.

Create Data Transformation Rule

Perform the following steps to create data transformation rule:

1. On the **Manage Business Rule** page, click **Create**.
2. On the **Create Business Rule** page, enter the rule name and rule description, select the repository, table, rule type as data transformation and specify the start and end date, the status of the rule, select the expression type and click **Next**.

   If you want to write custom expression, select **Is Custom Query** option.
3. On the **Rule Editor Wizard** page, you can perform the following:
   - Click **Table Context** and select any table from the Tables torpedoing as required.
   - Click **Set Properties** and set the property value or fetch the property value from another column in the same table or from another table's column.
   - Click **Join Context** to create joins on the tables.
   - Click **Search Context** to insert a Where clause.
   - Click **Action Type** to and select the Action Type on table for which you want the rule to be executed.

   For more details, see Section : “Create Data Cleansing Rule” and Section : “Create Data Validation Rule”
4. On the **Summary Rule Expression** page, click **Check Syntax** to check for rule syntax correctness, click **Execute** to execute the rule on the selected table and click **Save** to save the rule to database.

Create Data Enrichment Rule

Perform the following steps to create data enrichment rule:

1. On the **Manage Business Rule** page, click **Create**.
2. On the **Create Business Rule** page, enter the rule name and rule description, select the repository, table, rule type as data enrichment and specify the start and end date and the status of the rule, select the expression type and click **Next**.

If you want to write custom expression, select **Is Custom Query** option.

3. On the **Rule Editor Wizard** page, all the steps are same as data transformation rule. For details see Section : “Create Data Transformation Rule”.
4. On the **Summary Rule Expression** page, click **Check Syntax** to check for rule syntax correctness, click **Execute** to execute the rule on the selected table and click **Save** to save the rule to database.

Generate Business Rule

Perform the following steps to generate business rule:

1. On the **Manage Business Rules** page, click **Generate Business Rule**.
2. On the **Define Business Rule** page, select the repository, table, rule type and expression type and click **Next**.
3. On the **Generate Business Rules** page, select the property and function and click **Add**. You can add multiple properties.
4. Click **Generate Rule**.

Edit Rule

To edit business rule details:

1. On the **Manage Business Rules** page, click on the Menu icon ⋮ corresponding to the required rule and select **Edit.**
2. On the **Edit Business Rules** page, you can modify the rule name, description, start and end date and status fields and click **Next**.
3. On the **Rule Editor Wizard** or **Custom Rule Editor Wizard**, modify the rule functionality details and click **Validate**.
4. On the **Summary Rule Expression** page, click **Check Syntax** to check for rule syntax correctness, click **Execute** to execute the rule on the selected table and click **Save** to save the rule to database.

Copy Rule

To copy business rule details:

1. On the **Manage Business Rules** page, click on the Menu icon ⋮ corresponding to the required rule and select **Copy.**
2. On the **Copy Business Rules** page, you can enter a new name for the business rule, modify the description, start and end date and status and click Next.
3. On the **Rule Editor Wizard** or **Custom Rule Editor Wizard**, modify the rule functionality details and click **Validate**.
4. On the **Summary Rule Expression** page, click **Check Syntax** to check for rule syntax correctness, click **Execute** to execute the rule on the selected table and click **Save** to save the rule to database.

Change Rule Sequence

To change rule execution sequence:

1. On the **Manage Business Rules** page, select the repository, rule type, table and click **Change Rule Sequence**.
2. On the **Change Rule Sequence** page, click on the Menu icon ⋮ corresponding to the required rule and click **Move Up** or **Move down**.

Activate or Deactivate Rule

To activate or deactivate business rule:

1. On the **Manage Business Rules** page, click on the Menu icon ⋮ corresponding to the required deactivated rule and click **Activate**.
2. On the **Manage Business Rules** page, click on the Menu icon ⋮ corresponding to the required active rule and click **Deactivate**.

Delete Rule

To delete business rule:

1. On the **Manage Business Rules** page, click on the Menu icon ⋮ corresponding to the required rule and click **Delete**.
2. On the Confirmation Webpage dialog, click **Yes**.

Export Business Rules

To export Business Rules, execute/run Export_SQL_Validation_Rules.bat/sh from the location: *<MDM_Install_Directory>\bin*. This will export the business rules in a file named sql_validation_rules.xml to *<MDM_Install_Directory>\cfg\xservice\toolkit\data.*

Note: In case of custom application, execute custom_export_SQL_Validation_Rules.bat/sh from the location: *<MDM_Install_Directory>custom\appName\bin.*

Upload the file (sql_validation_rules.xml) to MDM server. For details, see Section : “Incremental Schema Generation” in Appendix A: “MDM Schema Generation Process”.

View Business Rules

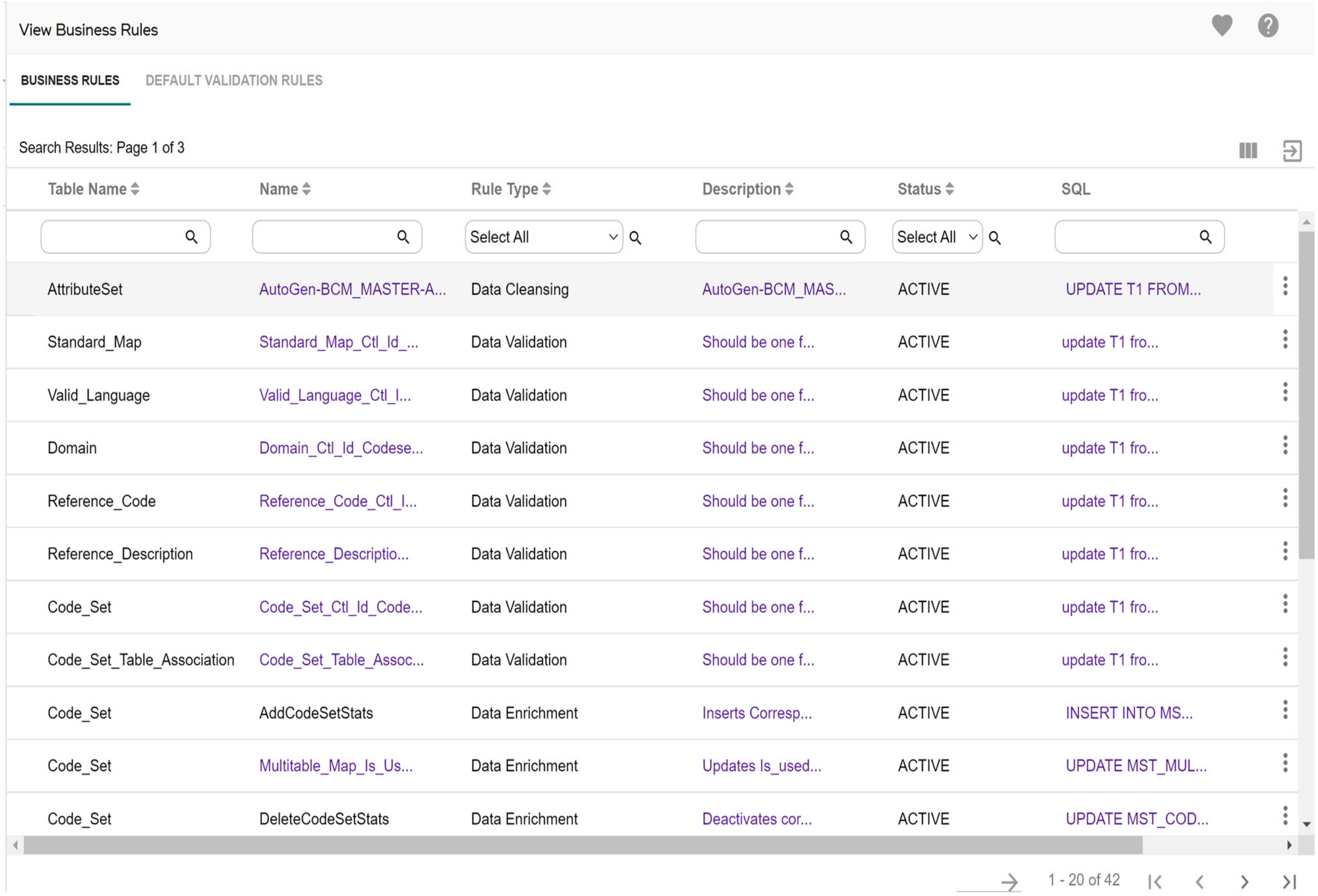
The View Business Rules page displays the consolidated view of all the business rules of the underlying master data. On the view business rules page, you can search for rules using any of the search parameters (Table name, Name, rule type, Description, Status, and SQL). You can access the View Business Rules page from the left navigation pane on the MDM UI.

The view business rules page displays two tabs:

- Business Rules
- Default Validation Rules

The Business Rules tab displays all the business rules across tables and rule types on a single page as in Figure 161. The Default Validation Rules tab displays all the implicit database constraints validation rules that is., Referential Integrity (RI), NOT NULL, Unique constraints across tables on a single page as in Figure 162.

Figure 161: View Business Rules—Business Rules Tab

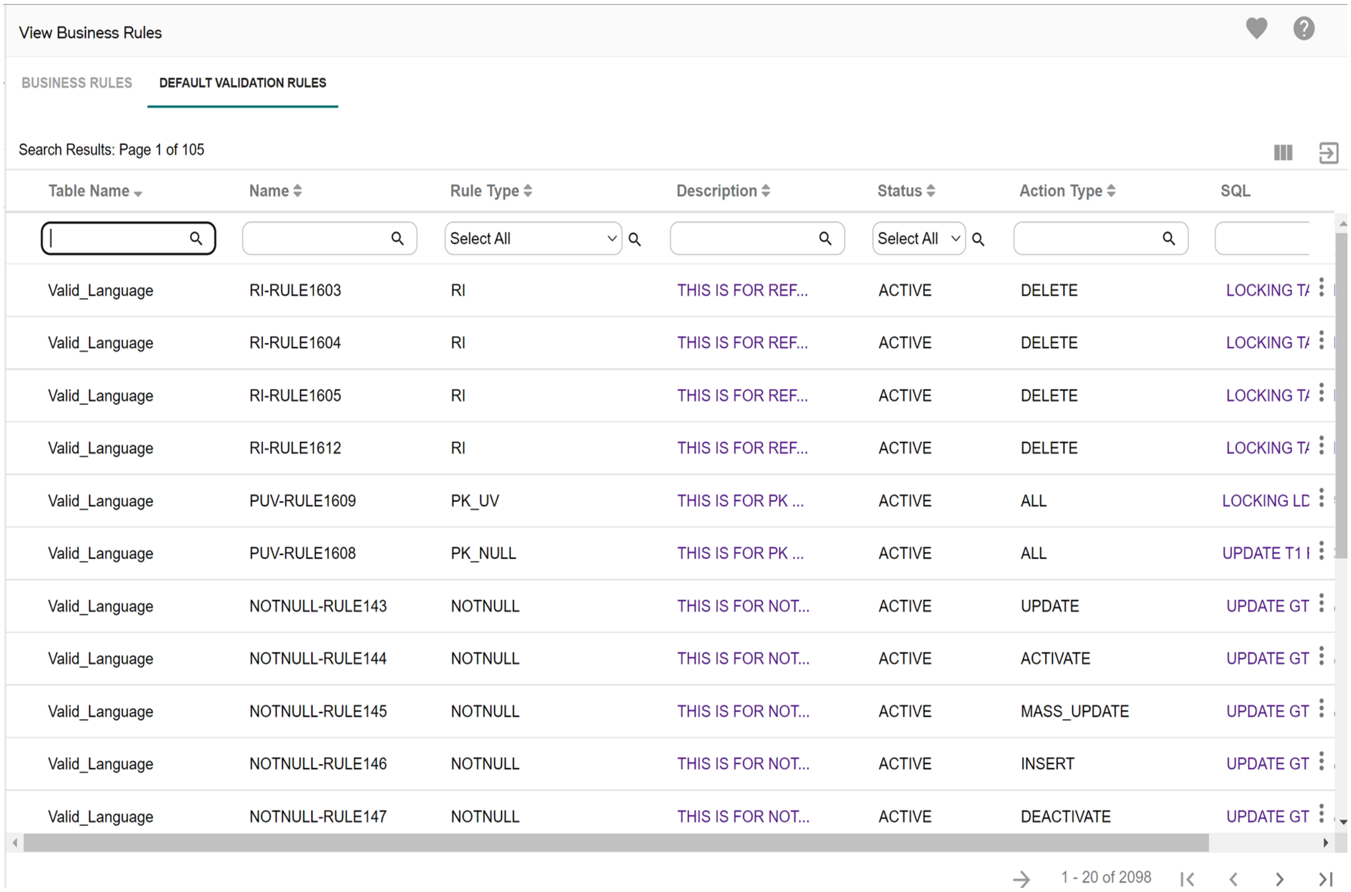


Search Results: Page 1 of 3

Table Name	Name	Rule Type	Description	Status	SQL
AttributeSet	AutoGen-BCM_MASTER-A...	Data Cleansing	AutoGen-BCM_MAS...	ACTIVE	UPDATE T1 FROM...
Standard_Map	Standard_Map_Ctl_Id_...	Data Validation	Should be one f...	ACTIVE	update T1 fro...
Valid_Language	Valid_Language_Ctl_I...	Data Validation	Should be one f...	ACTIVE	update T1 fro...
Domain	Domain_Ctl_Id_Codese...	Data Validation	Should be one f...	ACTIVE	update T1 fro...
Reference_Code	Reference_Code_Ctl_I...	Data Validation	Should be one f...	ACTIVE	update T1 fro...
Reference_Description	Reference_Descriptio...	Data Validation	Should be one f...	ACTIVE	update T1 fro...
Code_Set	Code_Set_Ctl_Id_Code...	Data Validation	Should be one f...	ACTIVE	update T1 fro...
Code_Set_Table_Association	Code_Set_Table_Assoc...	Data Validation	Should be one f...	ACTIVE	update T1 fro...
Code_Set	AddCodeSetStats	Data Enrichment	Inserts Corresp...	ACTIVE	INSERT INTO MS...
Code_Set	Multitable_Map_Is_Us...	Data Enrichment	Updates Is_used...	ACTIVE	UPDATE MST_MUL...
Code_Set	DeleteCodeSetStats	Data Enrichment	Deactivates cor...	ACTIVE	UPDATE MST_COD...

1 - 20 of 42

Figure 162: View Business Rules—Default Validation Rules Tab



Search Results: Page 1 of 105

Table Name	Name	Rule Type	Description	Status	Action Type	SQL
		Select All		Select All		
Valid_Language	RI-RULE1603	RI	THIS IS FOR REF...	ACTIVE	DELETE	LOCKING T
Valid_Language	RI-RULE1604	RI	THIS IS FOR REF...	ACTIVE	DELETE	LOCKING T
Valid_Language	RI-RULE1605	RI	THIS IS FOR REF...	ACTIVE	DELETE	LOCKING T
Valid_Language	RI-RULE1612	RI	THIS IS FOR REF...	ACTIVE	DELETE	LOCKING T
Valid_Language	PUV-RULE1609	PK_UV	THIS IS FOR PK ...	ACTIVE	ALL	LOCKING L
Valid_Language	PUV-RULE1608	PK_NULL	THIS IS FOR PK ...	ACTIVE	ALL	UPDATE T1
Valid_Language	NOTNULL-RULE143	NOTNULL	THIS IS FOR NOT...	ACTIVE	UPDATE	UPDATE GT
Valid_Language	NOTNULL-RULE144	NOTNULL	THIS IS FOR NOT...	ACTIVE	ACTIVATE	UPDATE GT
Valid_Language	NOTNULL-RULE145	NOTNULL	THIS IS FOR NOT...	ACTIVE	MASS_UPDATE	UPDATE GT
Valid_Language	NOTNULL-RULE146	NOTNULL	THIS IS FOR NOT...	ACTIVE	INSERT	UPDATE GT
Valid_Language	NOTNULL-RULE147	NOTNULL	THIS IS FOR NOT...	ACTIVE	DEACTIVATE	UPDATE GT

1 - 20 of 2098

Tasks Performed on View Business Rules UI

On the View Business Rules UI, you can perform the following tasks:

- Hide Columns
- Reorder Fields
- Search Business Rule
- Export Business Rule Details
- Edit Business Rule Details
- Activate or Deactivate Validation Rule

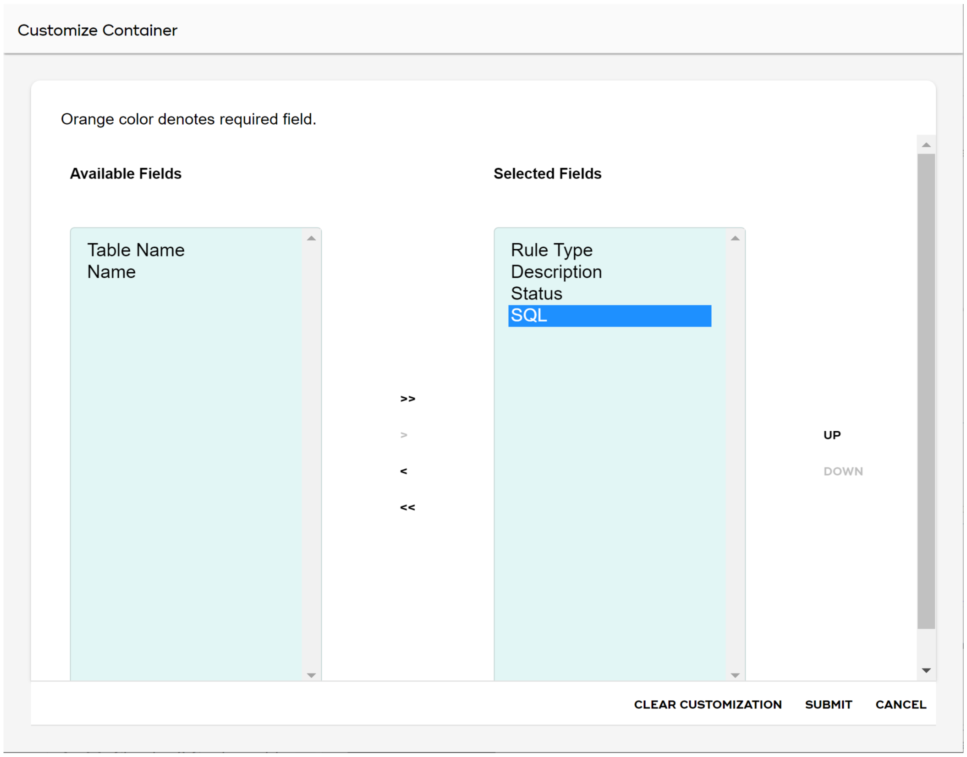
Hide Columns

Customize Table option allows you to change the view of the business rule list for better readability. You can add or remove the columns for the better view. To customize the table, do the following:

1 On the **View Business Rules**, click **Customize table** icon ▥

The **Customize Container** page opens.

2 On the **Customize Container** page, choose the fields that you wish to hide from the **Selected Fields** column and click on the **Unselect Selected Fields** arrow button. The fields to be hidden are moved to the **Available Fields** column. To hide all fields, click **Unselect All Fields** arrow button.


Customize Container

Orange color denotes required field.

Available Fields	Selected Fields
Table Name Name	Rule Type Description Status SQL

3 Click **SUBMIT**.

Reorder Fields

To reorder fields:

1 On the **Customize Container** page, select the field which you want to reorder from the **Selected Fields** column.

2 Click **Up** or **Down** arrow buttons to change the display sequence of the fields.

Search Business Rule

To search business rules:

1 On the **View Business Rules** page (Figure 161), in the **Business Rules Search** pane, enter the search parameter (Table Name, Rule Type and Rule Status (Active or Inactive)), select the required tab (Business Rules or Default Validation Rules) and click **Search**.

You can use the Reset button to reset the search parameter values.

Export Business Rule Details

To export business rule details:

1. On the **View Business Rules** page (Figure 161), in the **Search Results** pane, click Export to Excel icon ⇥ .

   The **confirmation** popup is displayed.
2. On the **confirmation** popup, click **Yes** to export all the records and click **No** to export current page records.

   The exported excel file will be downloaded in the default location with name as “ViewBusinessRules_data_export”.

Edit Business Rule Details

You can navigate to business rule details page from the view business rule UI using the Edit option. To edit business rule details from view business rules page:

1. On the **View Business Rules** page (Figure 161) with **Business Rules** tab selected, click on the Menu icon ⋮ corresponding to the required rule and click **Edit**.

   The **Rule Details** page for the selected rule is displayed.
2. On the **Rule Details** page, modify the required details and click **Save**.

Activate or Deactivate Validation Rule

You can activate or deactivate default validation rules from View Business Rules UI.

1. On the **View Business Rules** page (Figure 161) with **Default Validation Rules** tab selected, click on the Menu icon ⋮ corresponding to an inactive rule and click **Activate** or click on the Menu icon ⋮ corresponding to the required active rule and click **Deactivate** as required.

Troubleshooting

This section helps you to identify and resolve the problems that you may experience while using Business Rule feature.

Q. *Business rules generated through Generate Business Rules UI not working as expected?*

A. Once a rule is generated through Generate Business Rules UI, you should not edit the rule name and also the alias (T1) used in the custom expression otherwise rules will not work as expected.

CHAPTER 11 Upload Documents

What's In This Chapter

This chapter provides detailed information about uploading Excel documents to the MDM server.

Topics include:

Introduction

Teradata MDM's Upload Documents feature allows the business user to populate MDM master tables, MDM input tables and Non MDM tables with data from Excel or XML files.

Key features of Upload Documents feature:

- Provide capability to upload data to master, input and non MDM tables.
- Provide capability to view the upload status and perform error correction and reload data if required.
- Provide capability to abort an upload process from MDM UI using Abort option.
- Provide capability to purge or remove all faulty files using Purge option.
- Provide capability to send the uploaded records for approval before persisting to master staging.
- Provide support for partial column update on MDM master, input and non MDM tables.

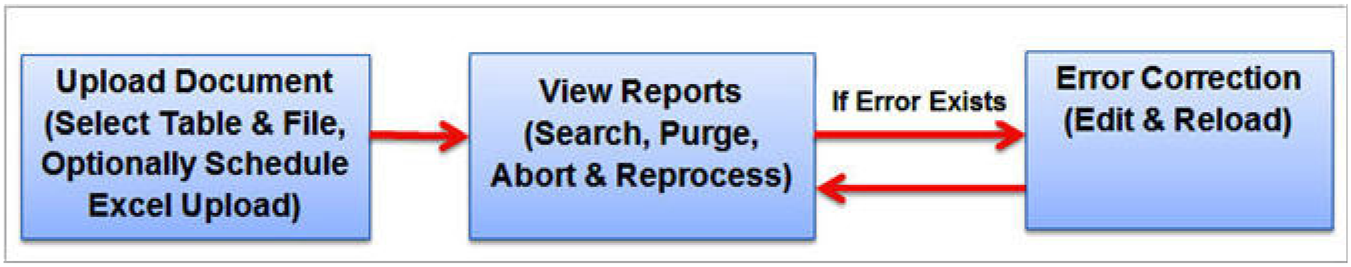
Upload Process

The following steps constitute the overall flow of upload documents process.

- Upload Document
- View Reports
- Upload Status: Error Correction

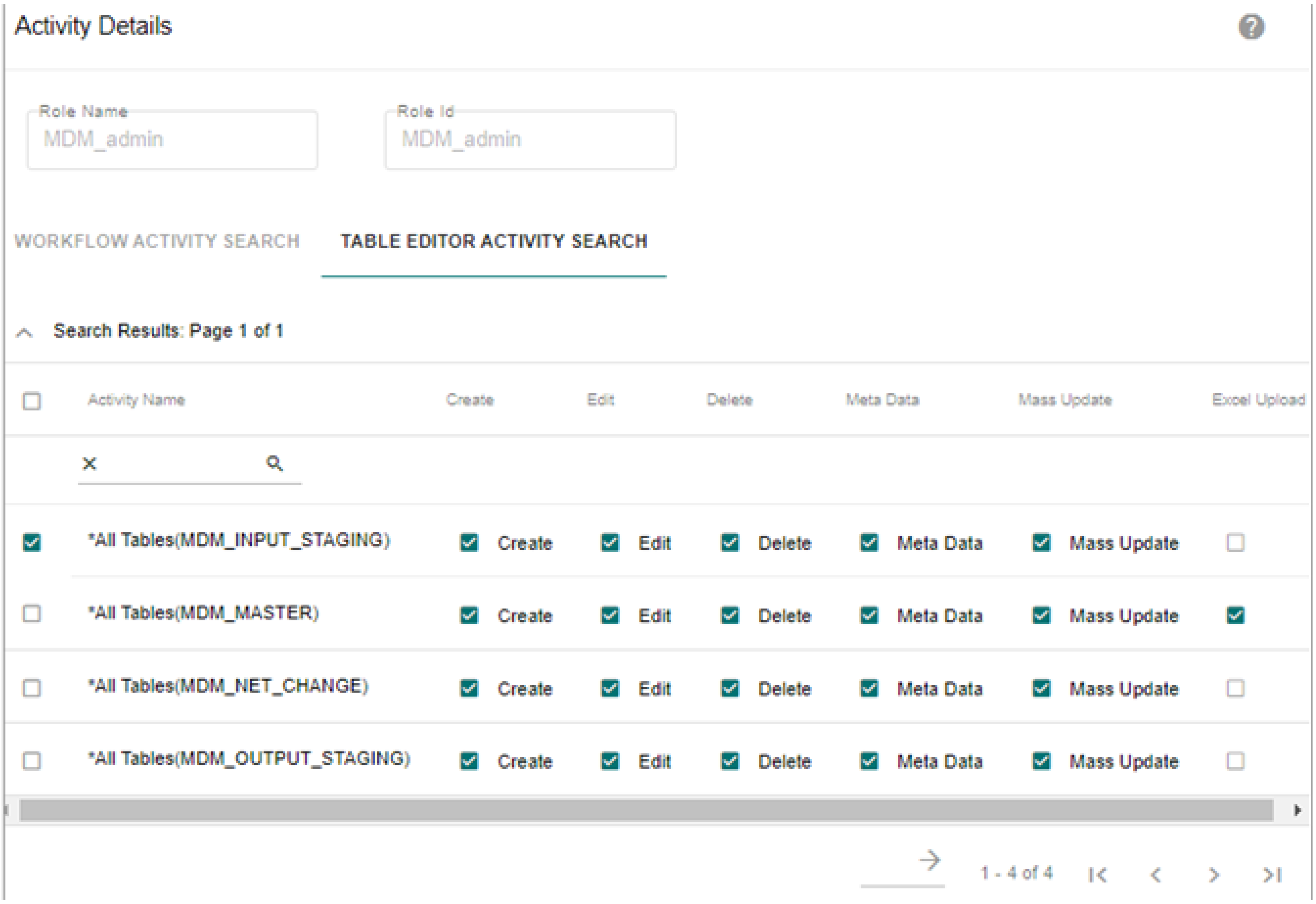
The Figure 163 illustrates the upload documents process in MDM.

Figure 163: Upload Documents Process


Upload Document (Select Table & File, Optionally Schedule Excel Upload)
View Reports (Search, Purge, Abort & Reprocess)
If Error Exists
Error Correction (Edit & Reload)

For any user to upload documents using the Upload Documents feature, the user must be assigned to a role for which the table editor role details activities (create, edit and delete) are enabled for the selected tables as in Figure 164. The Upload Document—Template page will not be displayed if the table editor role details are not enabled. *For details, refer to Chapter 9: “User Management.”*

Figure 164: Table Editor Role Details



Role Name: MDM_admin
Role Id: MDM_admin

Search Results: Page 1 of 1

☐	Activity Name	Create	Edit	Delete	Meta Data	Mass Update	Excel Upload
☑	*All Tables(MDM_INPUT_STAGING)	☑ Create	☑ Edit	☑ Delete	☑ Meta Data	☑ Mass Update	☐
☐	*All Tables(MDM_MASTER)	☑ Create	☑ Edit	☑ Delete	☑ Meta Data	☑ Mass Update	☑
☐	*All Tables(MDM_NET_CHANGE)	☑ Create	☑ Edit	☑ Delete	☑ Meta Data	☑ Mass Update	☐
☐	*All Tables(MDM_OUTPUT_STAGING)	☑ Create	☑ Edit	☑ Delete	☑ Meta Data	☑ Mass Update	☐

1 - 4 of 4

Upload Document

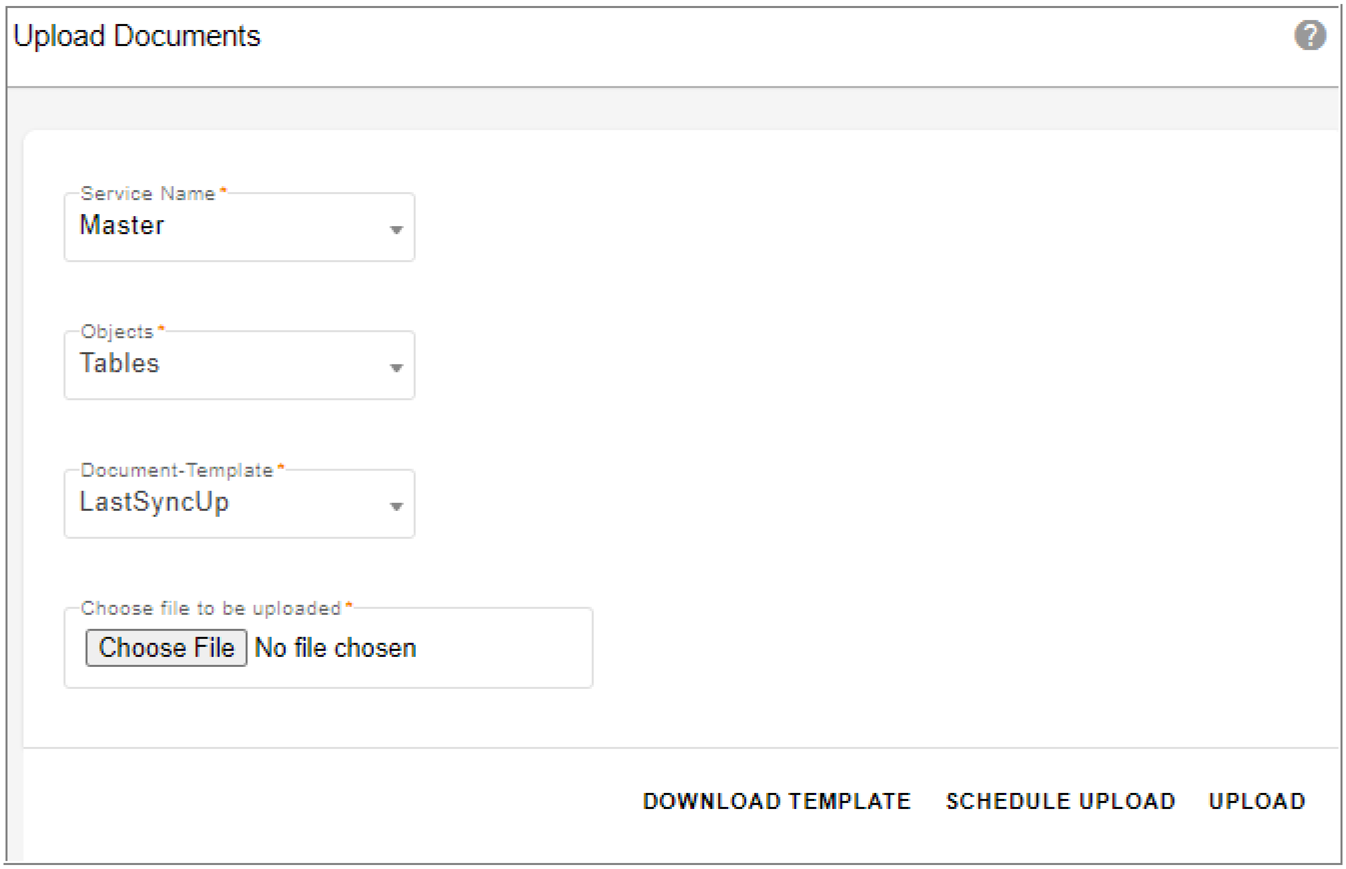
The Upload Document feature includes the following capabilities:

- Upload Data to Master, Input or Non MDM Tables
- Partial Column Upload for Record Updates
- Schedule Upload

Upload Data to Master, Input or Non MDM Tables

Navigate to Upload Documents UI from **Model Setup** -> **Upload Data** and click **Upload**. The Figure 165 displays the **Upload Documents** UI.

Figure 165: Upload Documents



Upload Documents

Service Name*: Master

Objects*: Tables

Document-Template*: LastSyncUp

Choose file to be uploaded*: Choose File No file chosen

On the **Upload Documents** UI (Figure 165):

- ❑ **Service Name**: the Service Name dropdown lists services as Non MDM, Master and Input. If the service name is selected as Master, the Objects drop-down is displayed.
- ❑ **Objects**: the objects dropdown lists the valid objects as Tables, Code Sets and Hierarchy Objects.
- ❑ **Document-Template**: the Document-Template dropdown displays the list of templates of the corresponding object if the selected service is Master. For Non-MDM or Input services, the table templates are displayed.

- **Choose File to be Uploaded**: provides an option to navigate and select the file to be uploaded. You can upload files with the extensions .xls, .xlsx and .xml.

  Select the service, corresponding table template and the file to upload and click **Upload**.

The Upload file name should not contain special character “&”.

In the excel file being uploaded, ensure that all the primary keys and not null columns are available.

On click of the Upload button, the View Reports page is displayed. For details on view reports, see Section : “View Reports.”

Partial Column Upload for Record Updates

You can update the existing record of a table by uploading an excel file by providing values for all the columns or only for few columns. The excel upload process updates those columns with the values provided and retain the existing values in those columns for which the values are not provided.

Any column which should not be updated has to be deleted from the excel sheet. To update a column with NULL value, include a column in the excel sheet without providing any value in it. In case of partial column update on MDM, you must provide values for all the required columns like primary keys and NOT NULL columns.

MDM does not support partial excel upload on non MDM tables.

Schedule Upload

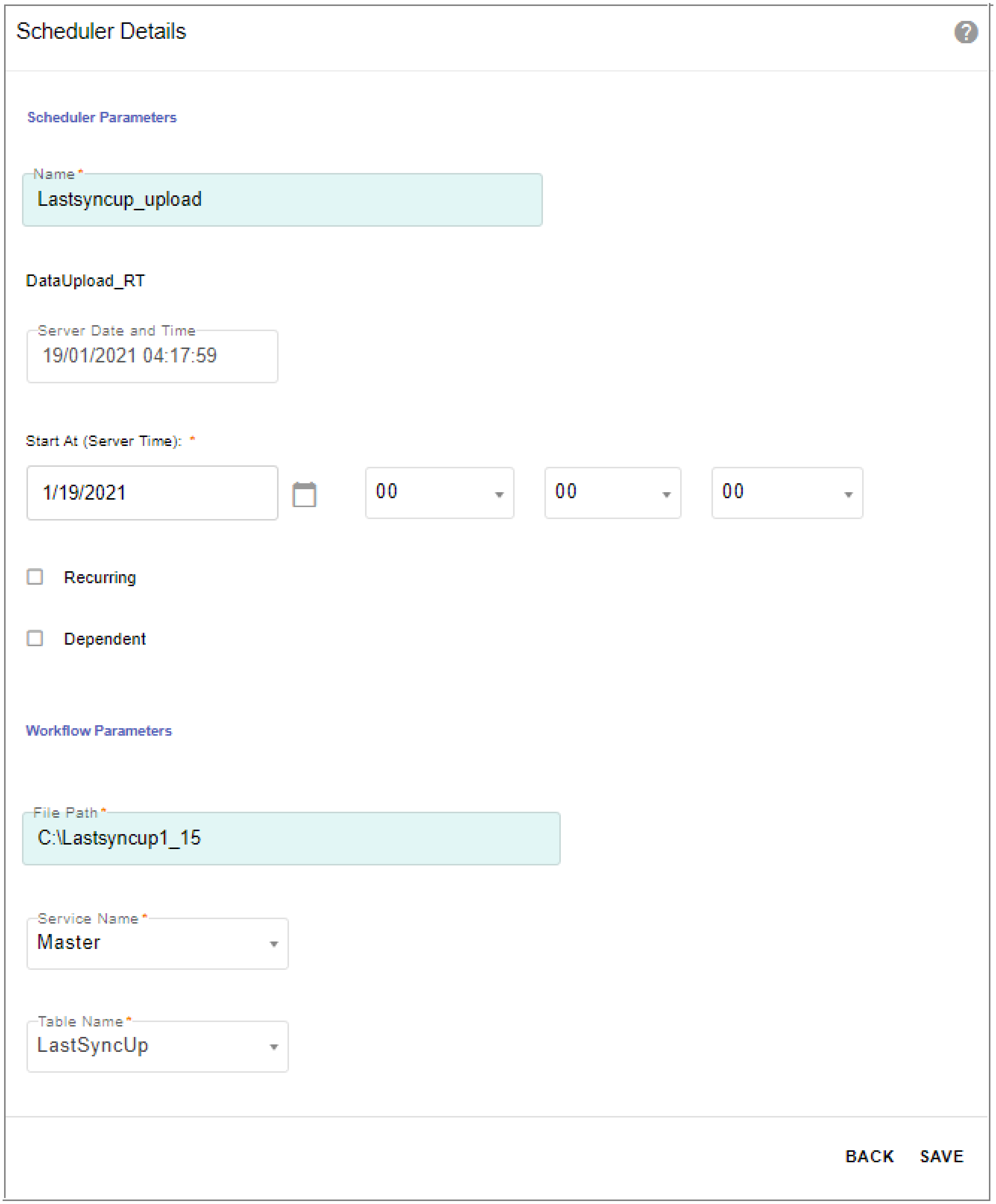
Schedule Upload button on the Upload Documents page provides an option to schedule an excel upload for the selected service, table and the specified file.

- The file to schedule should be at a location where MDM application server is installed or at any linked network folder in the same network where MDM application server is installed.
- Scheduler picks the file from the specified location during the scheduled time to upload.

On the **Upload Documents** UI, select the service, corresponding table and click **Schedule Upload** as in Figure 165.

The **Scheduler Details** page (Figure 166) is displayed.

Figure 166: Scheduler Details



Scheduler Details

Scheduler Parameters

Name *: Lastsyncup_upload

DataUpload_RT

Server Date and Time: 19/01/2021 04:17:59

Start At (Server Time): * 1/19/2021 00 00 00

☐ Recurring

☐ Dependent

Workflow Parameters

File Path *: C:\Lastsyncup1_15

Service Name *: Master

Table Name *: LastSyncUp

On the **Scheduler Details** page (Figure 166),

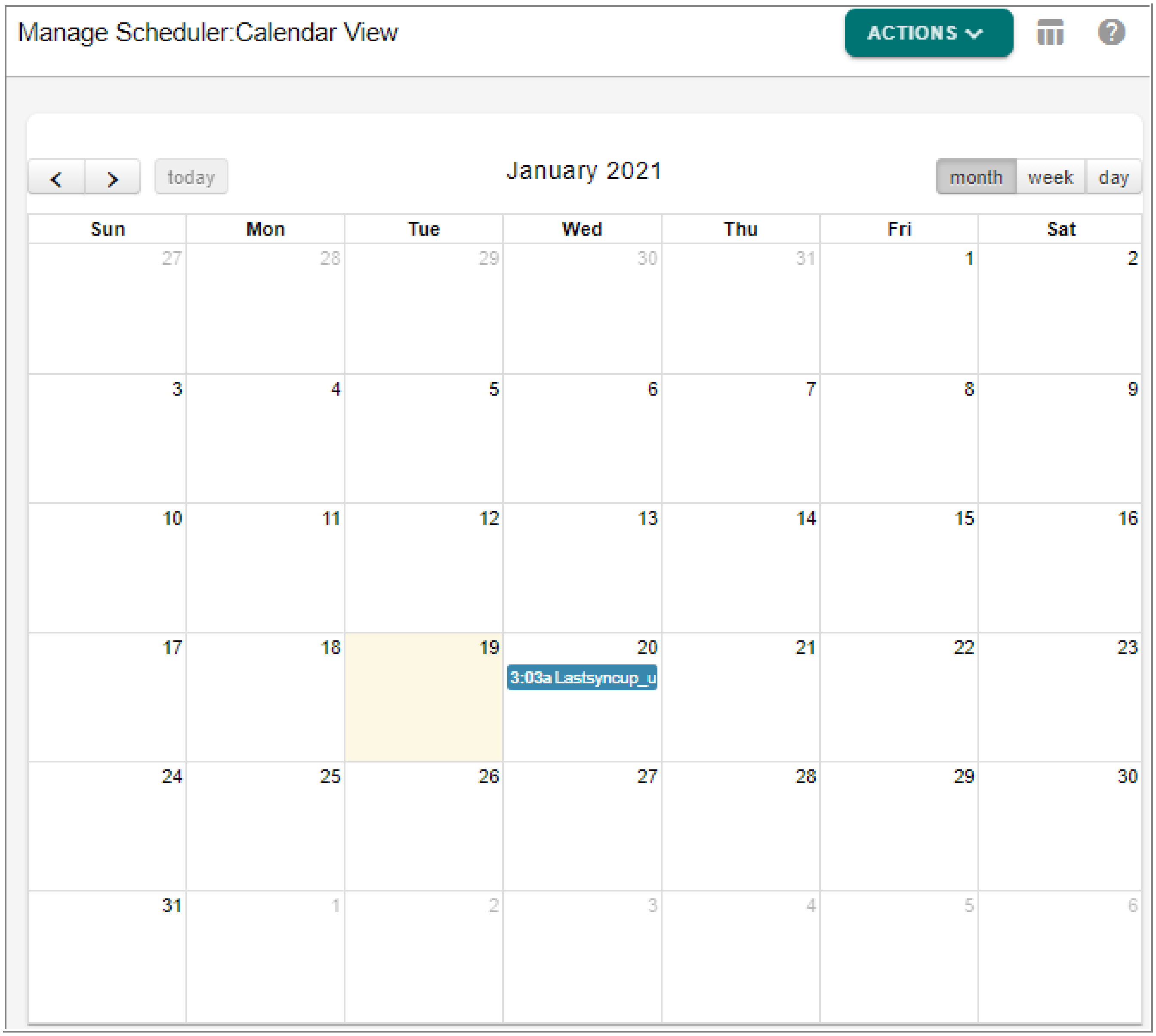
- By default, the **DataUpload_RT** workflow is selected in the **Select Workflow** dropdown.
- In **Workflow Parameters** pane, the service name and the table name will be selected by default as specified on the Upload Documents page. Specify the path of the file to be scheduled for upload and click **Save**.

  For detailed information on creating scheduler details, see Chapter 22: “Manage Scheduler”.

  Message: “Schedule created successfully” is displayed on the Upload Documents UI.

  The scheduled excel upload details will be displayed on the **Manage Scheduler** page as in Figure 167.

Figure 167: Manage Scheduler—Excel Upload



Manage Scheduler:Calendar View

January 2021

Sun	Mon	Tue	Wed	Thu	Fri	Sat
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20 3:03a Lastsyncup_u	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

- In case of excel upload for Input staging tables and non MDM tables, if multiple records with duplicate PK values are uploaded, then first record will be considered as INSERT if it is not there in table else it will be updated. Subsequent records will be considered as UPDATE.
- During Excel Upload, if you do not want to populate non editable columns, set the parameter “ALLOW_TO_UPDATE_NON_EDITABLE_COLUMNS” to “no” in xserver.xml and xserverweb.xml file available at: *<MDM_Install_Directory>\cfg\properties*. By default this parameter flag is set to “yes”.
- To perform simultaneous upload, update the value of the parameter as per the number of uploads required in MAX_JOB_THRESHOLD parameter in platform.xml file available at: *<MDM_Install_Directory>\web\mdmclient\WEB-INF\bcm\cfg\properties* and restart the servers. By default, the value is set to “1”. It is recommended not to perform more than 3 or 4 upload simultaneously for better performance of the system.
- When you upload data for a table containing column of type lookup for a code set, the out of the box business rules created during schema generation or incremental schema generation validates the valid values of the code set. If the uploaded code set value does not contain a valid value, then the record will be moved to error table.
- Once the data is read from the excel file, each record is validated for data type and also the date format for excel upload should comply to the User Locale date format of the uploading user. Records that pass the validation will be inserted into master table and the failed records will be moved to the error tables with proper description of the error type (Example: Number Format Error, Invalid Date String etc).
- For xml upload, the data must be present in a specific format as in the below example (xml upload for Code Set table).

```
<ROOT>
  <BATCH_REQUEST>
    <Code_Set_Id Value=""/>
    <Code_Name Value=""/>
    <Ctl_Id Value=""/>
    <Description Value=""/>
    <End_Date Value=""/>
    <Map_Table_Name Value=""/>
    <Process_Id Value=""/>
    <Process_Name Value=""/>
    <Record_Deleted_Flag Value=""/>
    <Start_Date Value=""/>
    <IS_EDITABLE Value=""/>
    <IS_PROMOTED Value=""/>
    <Is_Custom_Map_Table Value=""/>
    <Parent_Code_Set_Id Value=""/>
    <Reference_Desc_Table_Name Value=""/>
    <Update_Process_Id Value=""/>
    <Update_Process_Name Value=""/>
    <Values_Table_Name Value=""/>
    <SYS_ERR_SEVERITY Value=""/>
    <SYS_ERR_CODE Value=""/>
    <SYS_TYPE Value=""/>
    <LAST_MODIFIED_DATE Value=""/>
    <LAST_MODIFIED_BY Value=""/>
    <ENTITY_STATE Value=""/>
    <CREATION_DATE Value=""/>
    <CREATED_BY Value=""/>
    <SOURCE Value=""/>
    <SYS_AUTH_ID Value=""/>
    <SYS_TARGET_ID Value=""/>
    <EXT_ATTRB_DEC_3 Value=""/>
    <EXT_ATTRB_DEC_2 Value=""/>
    <EXT_ATTRB_DEC_1 Value=""/>
    <EXT_ATTRB_DATE_2 Value=""/>
    <EXT_ATTRB_DATE_1 Value=""/>
    <EXT_ATTRB_5 Value=""/>
    <EXT_ATTRB_4 Value=""/>
    <EXT_ATTRB_3 Value=""/>
    <EXT_ATTRB_2 Value=""/>
    <EXT_ATTRB_1 Value=""/>
  </BATCH_REQUEST>
 <BATCH_REQUEST>
    .....
 </BATCH_REQUEST>
</ROOT>
H_REQUEST>
</ROOT>
```

- For xml record, you must fill in the values in the Value attribute of the XML wherever required and if you want to keep the value as NULL for a certain field then the 'Value' attribute for that particular field needs to be removed from the tag.
- By default, timestamp is added to the file path of an excel upload. If you do not want to append timestamp with the file name, set the below property to false in defaults.cnd file at <MDM_Install_Directory>/web/mdmclient/WEB-INF/core/model

  ```
  <util:set-system-property
  name="com.teradata.x2.util.configurability.uploadPathAppendTime
  Stamp" value="false"/>
  ```

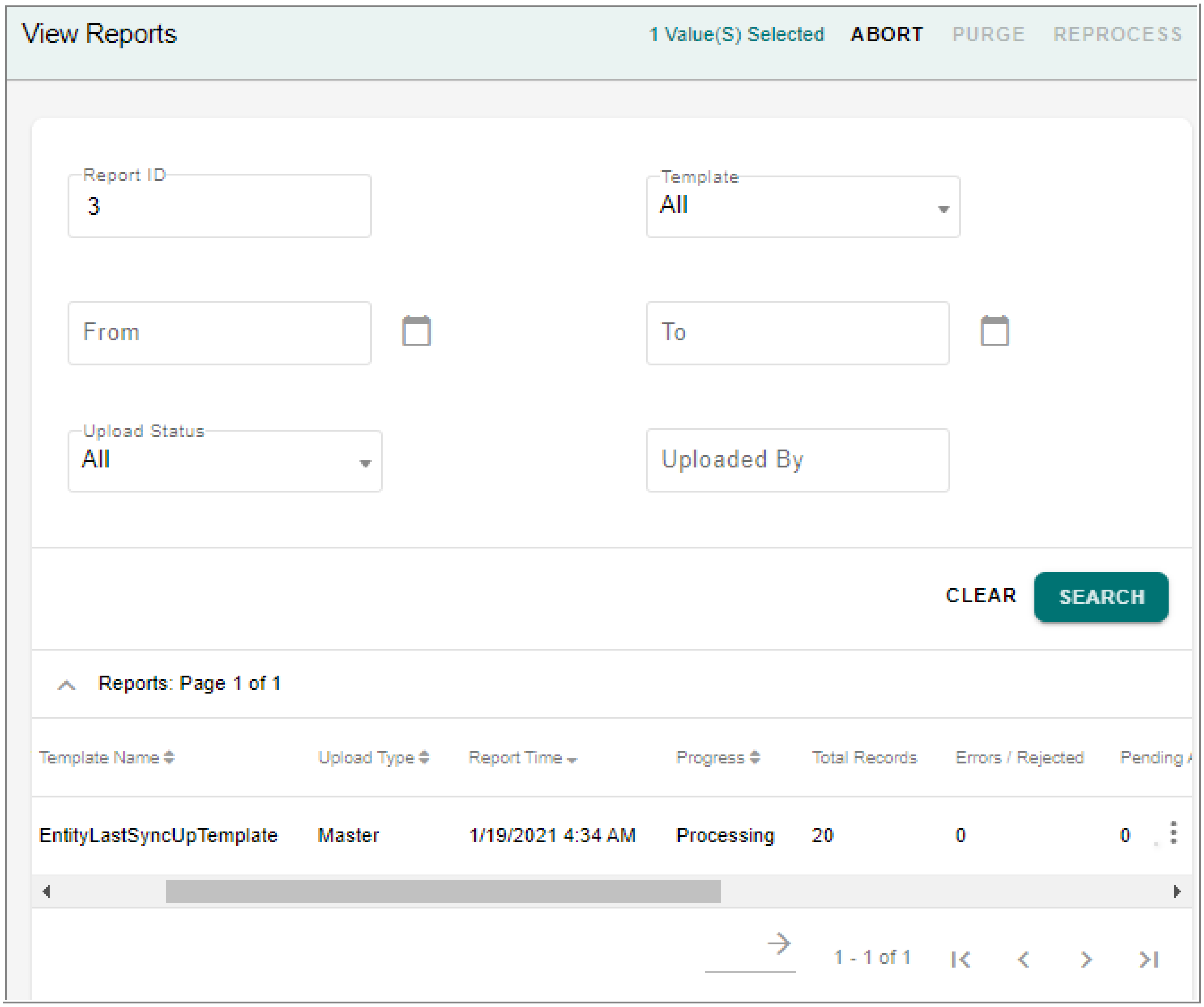
- Excel upload on Geometry and JSON data type are not supported.
- To modify the default date format in Excel Upload, uncomment the default incoming date in default.cnd and add the following under service-params handler in platform.xml.

  ```
  <param Name="DEFAULT_INCOMING_DATE_FORMAT" Value="MM/dd/yyyy"/>

  <param Name="DEFAULT_INCOMING_DATE_TIME_FORMAT" Value="MM/dd/
  yyyy hh:mm:ss"/>
  ```

View Reports

The View Reports UI allows users with proper authorization to view reports of all the upload processes. The Figure 168 displays the View Reports page and Table 14 describes all the fields on the View Reports UI.

Figure 168: View Reports



Report ID: 3

Template: All

Upload Status: All

Template Name	Upload Type	Report Time	Progress	Total Records	Errors / Rejected	Pending
EntityLastSyncUpTemplate	Master	1/19/2021 4:34 AM	Processing	20	0	0

Table 14: View Reports Field Description

Column Name	Description
Report ID	Auto generated unique Id of the upload process.
Template Name	Template selected during upload.
Upload Type	Upload type (Non MDM, Master or Input) selected during upload.
Report Time	Report generation time and date.

Table 14: View Reports Field Description

Column Name	Description
Progress	Specifies the progress status of the uploaded file and can be: ◆ Initializing—upload process initiated. ◆ Processing—if the upload is in progress, it displays Processing/ Processing with gaps. ◆ Processing with gaps— "Processing with gaps" is displayed when erroneous records are encountered during processing. ◆ Completed— a successful upload will be indicated with Progress as 'Completed/Completed with gaps". ◆ Completed with Gaps—"Completed with gaps" is displayed when erroneous records are encountered during upload, which gets inserted into the error table, and the upload is successful. ◆ Aborted—if the upload fails or aborted/cancelled, the progress will indicate 'Aborted'. When the upload status is completed with gaps or processing with gaps, an associated error report is generated.
Total Records	Total number of records uploaded.
Errors / Rejected	Total number of error records uploaded.
Pending Approval	Total number of records to be approved.
Uploaded By	User details of the user uploading the file.
Message - Aborted	Uploads with status "Aborted" will have valid exception message (Not null check) Examples of valid error messages in case of abort process includes the following: (a) If empty template is used in upload process, message is displayed as 'Aborted, template is empty'. (b) If any NOT NULL column is not available in the excel template, message is displayed as 'NOT NULL Constraint not defined'.
Message - "Completed with gaps" or "Completed with gaps: sent for approval"	Uploads with status "Completed with gaps" will have proper message.

On the **View Reports** page Figure 168, you can:

- ☐ Search reports and sort the display order of the reports.
- ☐ Purge or delete report(s) using Purge option.

  The Purge operation deletes the aborted upload files from inprocess folder *<MDM_Install_Directory>\data\upload\inprocess*. The Purge also deletes the archive files created at: *<MDM_Install_Directory>\data\upload\archive*
- ☐ Abort/cancel running upload using Abort option.

The Abort button provides the capability to abort/cancel the data upload being uploaded with status as ‘Processing’ and ‘Processing with gaps’.

During Abort process, the data upload will be cancelled and the status of the underlying upload will be marked as ‘Aborted’. The Abort also deletes the archived files created at: *<MDM_Install_Directory>\data\upload\archive*

Abort operation does not ensure data rollback.

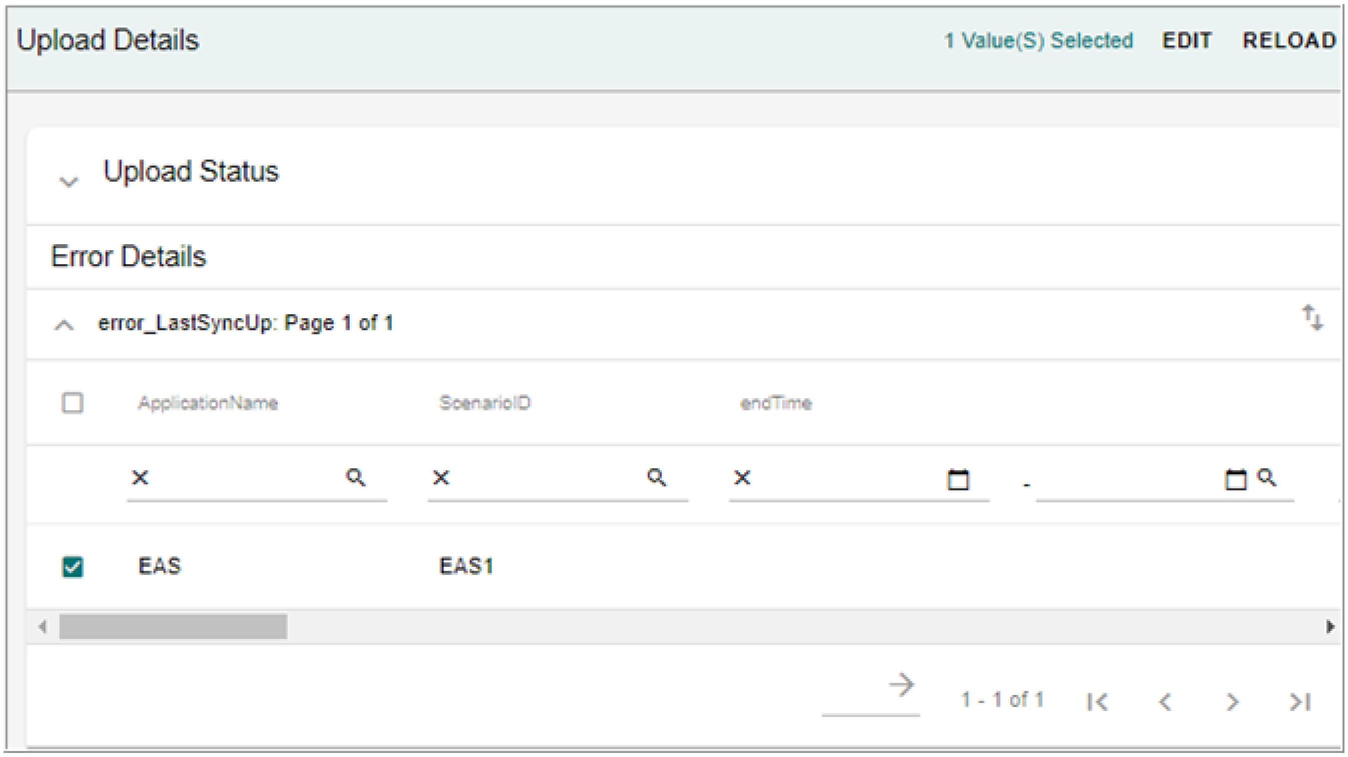
- Resubmit the records with status “completed with gaps” using Reprocess option.

- Sorting on Report ID will work according to alphanumeric as it is a varchar column.
- For reports with different Progress status, you cannot perform bulk records purge. For Progress status (Completed: sent for approval and Completed with gaps: sent for approval), you cannot perform abort, purge or reprocess.
- For reports with Progress status as Initializing, you cannot perform abort operation.
- Reprocess cannot be performed on completed reports.
- When an excel upload is aborted by user, the currently processing batch records will be discarded and will not be persisted to error table and the error record count will not be updated.

Upload Status: Error Correction

The excel upload feature provides a mechanism to correct the records moved to error table during excel upload process. You can edit the records to resolve the problem and reload it. Navigate to **Upload Status** page (Figure 169) by clicking on the report Id on the View Reports page.

Figure 169: Upload Status—Error Details

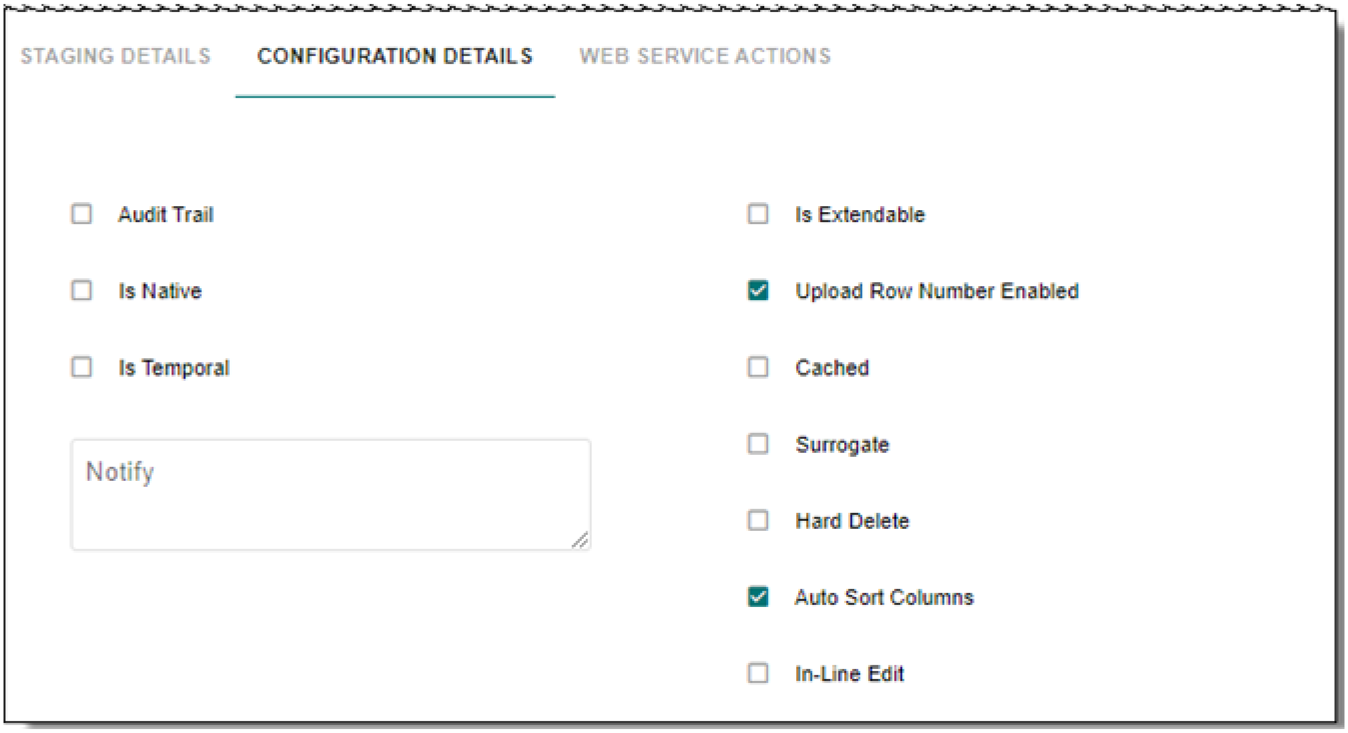


☐	ApplicationName	ScenarioID	endTime
☑	EAS	EAS1	

Display of Error Record Excel Row Number

In case of upload of an excel file with large number of records, if error(s) are encountered, it is difficult to identify and edit the error record(s). MDM provides an option to capture and display the excel row number of the error record(s). To enable this functionality, on the Model Builder UI, for the selected object, enable the facet “Upload Row Number Enabled” option as in Figure 170 and run ISG.

Figure 170: Model Details—Advanced Setting-Configuration Details



☐ Audit Trail
☐ Is Native
☐ Is Temporal
☐ Is Extendable
☑ Upload Row Number Enabled
☐ Cached
☐ Surrogate
☐ Hard Delete
☑ Auto Sort Columns
☐ In-Line Edit

Once the ISG is completed successfully and when records are uploaded, on occurrence of any errors, Upload Status UI displays the excel row number of the error record in the UPLOAD_ROW_NUMBER column.

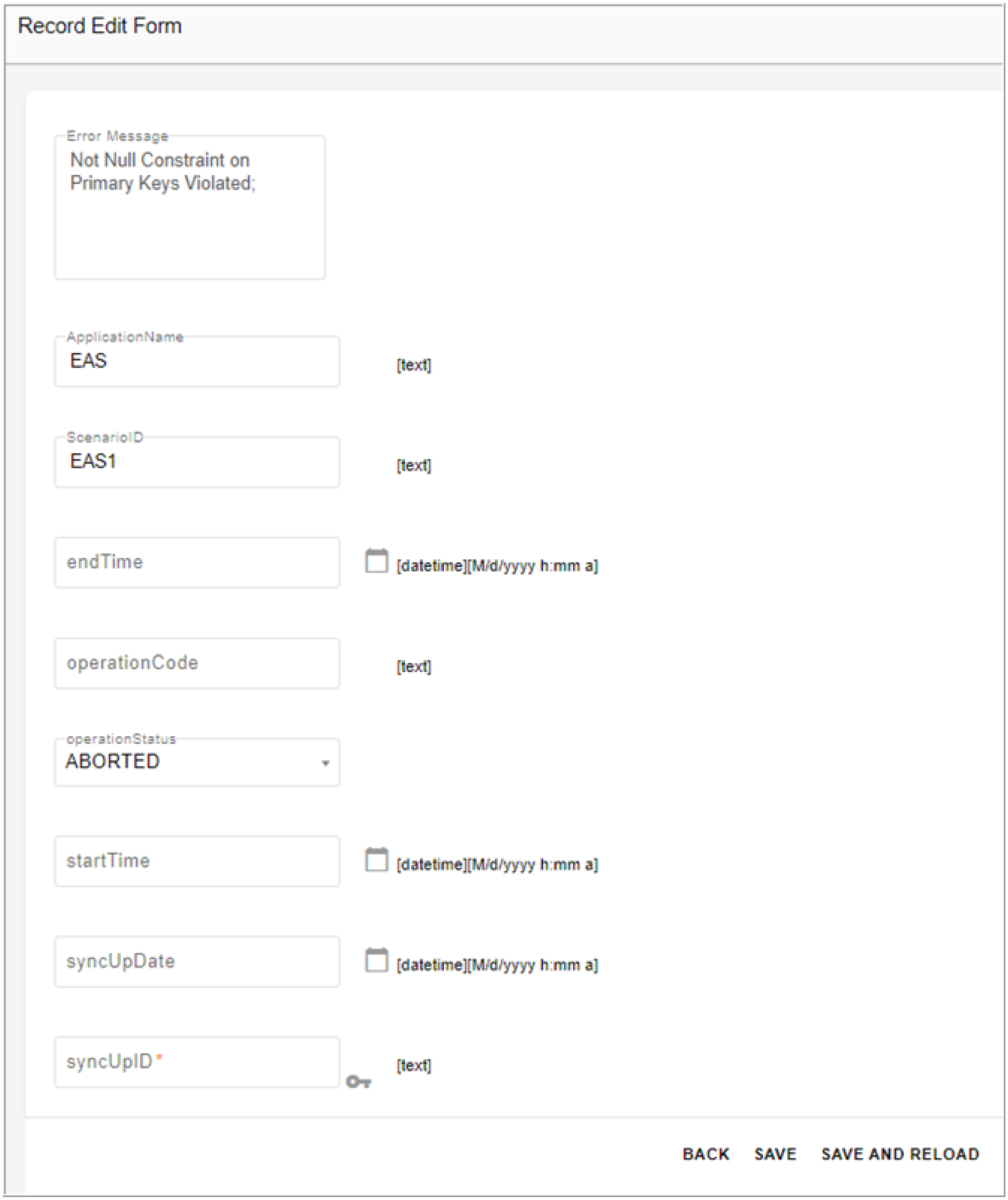
The display of error record excel row number is not supported on Input staging tables.

Edit and Reload Error Records

On the **Upload Status** page, update the record(s) details to correct the errors using **Edit** option and reload the records using **Reload** option. On the Upload Status—Error Details page, you can edit and reload multiple records at a time. If multiple records are selected for update, the Record Edit Form page displays all the records details on a single page side by side as in Figure 171.

The Record Edit Form page does not display the SYS column fields.

Figure 171: Record Edit Form



Record Edit Form

Error Message: Not Null Constraint on Primary Keys Violated;

ApplicationName: EAS [text]

ScenarioID: EAS1 [text]

endTime [datetime][M/d/yyyy h:mm a]

operationCode [text]

operationStatus: ABORTED

startTime [datetime][M/d/yyyy h:mm a]

syncUpDate [datetime][M/d/yyyy h:mm a]

syncUpID* [text]

On the **Record Edit Form** page (Figure 171),

- For the attributes that have Foreign Key (FK) defined, an icon will be displayed next to the columns. You can navigate to the corresponding view table UI page by clicking on the icon and all the existing values will be displayed. The attribute with FK defined on Record Edit Form page will be updated with the selected value.

You can select only one value at a time; if you select more than one value an error message would be displayed.

- For the attributes that are lookup data type, dropdown listing all the lookup valid values will be displayed.

  Clicking on **Save** on **Record Edit Form** page (Figure 171) will not reload the corrected data. Click on **Save And Reload** to save and reload the corrected record.

  If any error is encountered during the reload, the error message (database error message) will be displayed on the Upload Status page. You can edit the record details, save and reload it again.

Data Upload Control Flow

The below section describes the data upload control flow for MDM tables and data upload control flow for non MDM tables.

Data Upload Control Flow for MDM Master Tables

Below listing details the control flow for MDM master table excel upload feature.

- Upload an excel file to MDM master table.
- Excel file records are inserted into corresponding Load Table. Each Master table will have a Load table defined with the same properties as that of its Master table without its Key constraints.
- Records having errors such as values with Date Type mismatch, Date values not confirming to the user locale format etc., are identified and moved to Error Table.
- PK validation scripts are executed to filter out the records with duplicate Primary Key and such records will also be moved to Error Table.
- For the remaining records in the load table, MDM Persist framework API (DO_DB_PERSIST) is applied and the valid records are persisted in Master Table and the remaining records are moved to Error Table.
- As part of schema generation, the following referential integrity (RI) rules are generated to check master table, load table and approval tables for the existence of parent records. The RI rules checks for load tables in addition to master tables, so that if parent records are in pending approval, yet the child record can be uploaded. In this case child records will also exist in load tables.

  - RI: this rule checks only parent master table for the existence of parent records. This will be executed if approval is not enabled on child table and while accepting child table approval records.
  - RI_PAC: this rule checks parent master and approval tables for the existence of parent records. This will be executed if approval is enabled on child table and load table does not exist for parent table.
  - RI_LD_PAC: this rule checks parent master, load and approval tables for the existence of parent records. This will be executed if approval is enabled on child table and load table exists for parent table.

Data Upload Control Flow for MDM Input Tables

Below listing details the control flow for MDM Input excel upload feature.

- Upload an excel file to MDM input table.
- The uploaded excel/xml records are converted into a batch of SQL statements and then executed in a single transaction.
- Records having errors such as values with Date Type mismatch, Date values not confirming to the user locale format etc., are identified and moved to Error Table.
- PK validation scripts are executed to filter out the records with duplicate Primary Key and such records will also be moved to Error Table.
- Valid records are persisted in Input Table and the remaining error records are moved to Error Table.

Data Upload Control Flow for Non MDM Tables

Below listing details the control flow for non MDM excel upload feature.

- Upload an excel file to non MDM table.
- Records having errors such as values with Date Type mismatch, Date values not confirming to the user locale format etc., are identified and moved to Error Table.
- PK validation scripts are executed to filter out the records with duplicate Primary Key and such records will also be moved to Error Table.
- For Non MDM table upload, validations are not performed and by default, error tables are not available for non MDM tables. Error tables are created during the excel upload process and related information are available in an error mapping table (ERROR_MAPPING_TBL).
- Error table name will be generated automatically as NON_MASTER_ERR_ with an auto generate ID.
- For custom error table, you can update the error mapping table (ERROR_MAPPING_TBL) with the required error table name. The custom created error table must satisfy all the below error table criteria:
  - SYS_ERROR_ID, SYS_ERR_CODE, SYS_LOAD_ID needs to be present in error table.
  - All the error table column names should be same as non-master table column names.
  - All the column data types should be “varchar”.

- SYS_ERROR_ID column should be an Identity column.

Excel Upload Performance Statistics

The below section specifies the excel upload statistics for different upload sizes on MDM installed on Windows 7 with RAM size: 8GB on database version 14 and on table with 21 attributes+11system fields.

The first time upload will require creation of the load table and hence will be slower than subsequent loads to the table.

Table 15: Excel Upload Statistics

Number of Records Uploaded	Time Taken	Action
100	3 seconds	Insert
1k	5 seconds	Insert+Update
5k	7 seconds	Insert+Update
10k	28 seconds	Insert+Update
50k	33 seconds	Insert+Update
100k	1 minute 20 seconds	Insert+Update

Limitation on Concurrent Bulk Exports

Perform the following steps to configure the limitation on number of concurrent bulk exports:

- Navigate to <MDM_Install_Directory>\web\mdmclient\WEB-INF\core\model\defaults.cnd
- In defaults.cnd file, by default, the parameter "com.teradata.x2.util.configui.restrictConcurrentExports" value is set to true to restrict concurrent exports as below.

  ```
  <util:set-system-property
  name="com.teradata.x2.util.configui.restrictConcurrentExports"
  value="true"/>
  ```
- If the concurrent restriction is set to true, then the count specified in parameter "com.teradata.x2.util.configui.concurentExportCount" as below will be count of maximum number of concurrent exports allowed at any time.

  ```
  <util:set-system-property
  name="com.teradata.x2.util.configui.concurentExportCount" value="1"/>
  ```

For concurrent requests more than the specified count, the new export request will wait for 20 seconds for any other in-progress export to finish and will fail and report error if none of the on-going exports finish.

This restriction is only for bulk exports (Full table export with more than 250 records) and will not affect other exports having less records

Excel Upload Notes

- The excel spreadsheets for upload can be generated based on the column sequence provided for each template. For detailed information, see "Creating Spreadsheets for Data Upload" in Chapter 2: "Admin Tasks". In addition, you can use the Excel spreadsheet generated by the Export to Excel feature on the view table UI as a template for the Upload.
- Approval process will be triggered on the data upload if approval is enabled for the underlying table for the specific action.
- In excel upload, for Update operations on approval enabled tables, the action type are always marked as MASSUPDATE.
- You can generate Data quality reports on data upload processes. Set GEN_DQ_REPORT parameter in dataupload.xml to "true" in order to get data quality reports for data Upload process.

  To generate the data quality report in collapsed set-up, perform the following steps:
  - Edit the dataupload.xml file in <MDM_Install_Directory>\web\mdmclient\WEB-INF\bcm\cfg\properties and set GEN_DQ_REPORT = true
  - Run the mkcolocjar.bat from <MDM_Install_Directory>\web\mdmclient\bin
  - Start the MDM server in collapsed mode
- For any excel upload process, all the duplicate records will be moved to error tables.
- Warning records would not be displayed on View Reports and Report Details page, as the warning record count does not contribute to the Excel Upload View Report ErrorCount field value for a given report. You can see the warning records in the error tables.
- When excel uploads are interrupted during the upload process like restarting the server, the upload process continue to resume back when the server is restarted.
- When an excel file is uploaded, the SYS_AUTH_ID column is updated.
- In case of excel upload with temporal column value populated, the excel process fails in DDP. Upload using configurable UI without approval enabled displays the error message on the View Report UI. If approval is enabled, approval accept fails and load table is not cleared. As a workaround, the load table must be cleared, temporal column must be deleted from excel file and then the excel file must be uploaded.

Tasks Performed on Upload Documents UI

To upload document:

1. Navigate to **Upload Documents** UI from **Model Setup** -> **Upload Data** and click **Upload**.
2. On the **Upload Documents** page,
   - Select the service from **Service Name** dropdown.
   - Select the object and the template to which you want to upload the data from the **Objects** and **Document-Template** drop-down.
   - Click **Browse** to select an excel or xml file (.xls, .xlsx or .xml file) to upload.
   - Click **Upload**.

   The corresponding **View Reports** page for the particular upload is displayed. The file is uploaded and a Report Id is assigned.

To schedule upload:

1. On the **Upload Document** page,
   - Select the service from **Service Name** dropdown.
   - Select the object and the template to which you want to upload the data from the **Objects** and **Document-Template** drop-down.
2. Click **Schedule Upload**.

   The **Scheduler Details** page is displayed.
3. On the **Scheduler Details** page, enter the name for the scheduler, specify the start date, file path of the file to schedule upload, recurrence and dependency options and click **Save**.

   The **Manage Scheduler** page is displayed.

Tasks Performed on View Reports UI

To view all the reports:

1. Navigate to **View Reports** UI from **Model Setup** -> **Upload Data** and click **View Reports**.
2. On the **View Reports** page, you can perform the following:
   - Search reports based on Report ID, Template (table), Upload Status, Uploaded By or execution start and end times.
   - You can sort the order of the records on the Report ID, Template Name, Report Time and Progress columns. Sorting on Report ID will work according to alphanumeric as it is a varchar column.
   - Select the required report(s) and click **Purge** to delete the aborted records.
   - Select the required report and click **Abort** to abort/cancel running upload.
   - Select any report, which is completed with gaps and click **Reprocess** to resubmit the file for upload.
   - Click on the required Report ID to navigate to **Upload Status—Error Details** page to check the status of the upload.
   - On the **Upload Status—Error Details** page, select the error record(s) and click **Edit** to update the form details.

- On the **Record Edit Form** page, update the details and click **Save**.
- On the **Record Edit Form** page, click **Save And Reload** to save and reload the corrected record.

  If any error is encountered during the reload, the error message (database error message) will be displayed on the Upload Status page. You can edit the record details, save and reload it again.

CHAPTER 12 Data Harmonization Features

What's In This Chapter

This chapter provides information on Reference Data Management (RDM) and its processes.

Topics include:

Sources

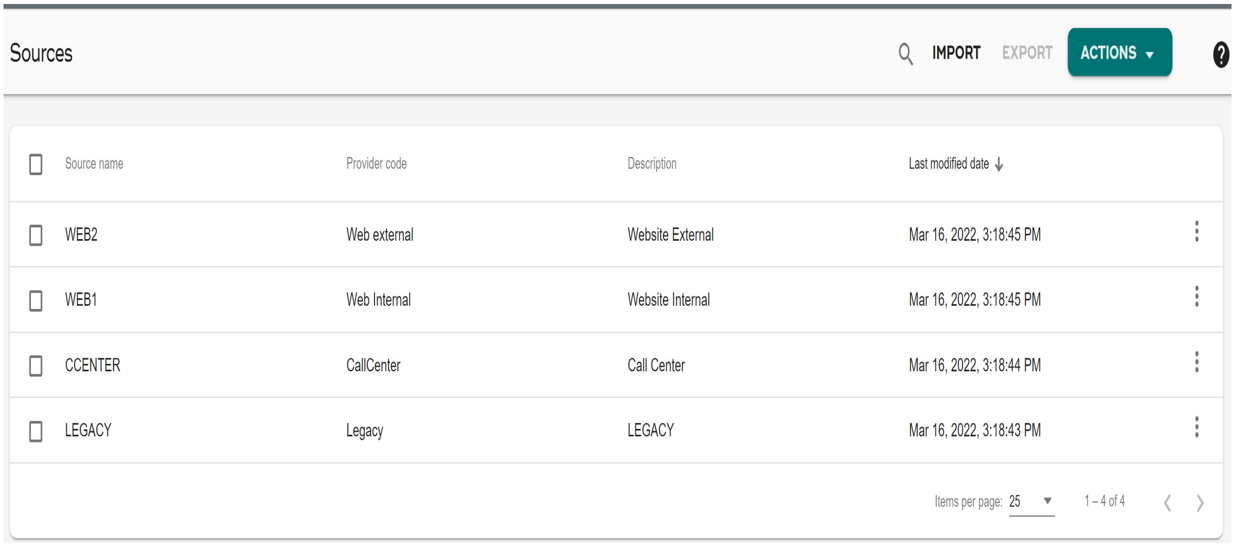
Sources allow you to register various sources to contribute to reference data. SalesForce, WideOrbit, BridgeFiles, TIM are the few examples of Sources. To obtain the Golden Master table, source data are directly transferred into the RDM Cleansing Database, where the RDM specific process flow initiates.

Source Registration

1 Navigate to **Data Harmonization -> Sources**.

Sources page opens.

Figure 172: Sources

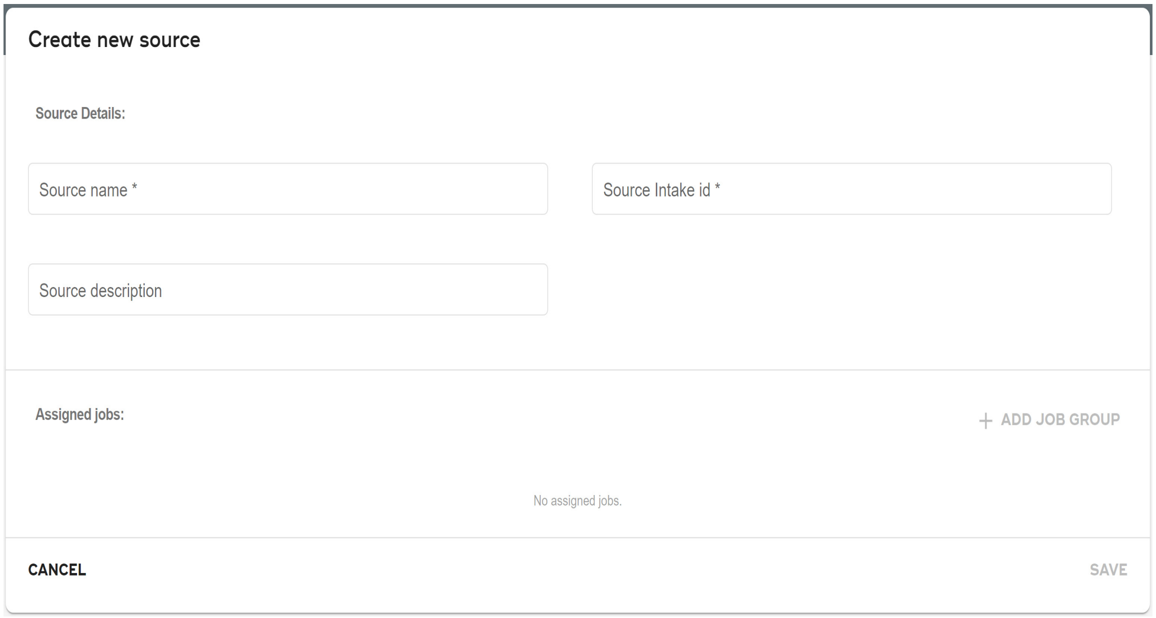


☐	Source name	Provider code	Description	Last modified date ↓
☐	WEB2	Web external	Website External	Mar 16, 2022, 3:18:45 PM
☐	WEB1	Web Internal	Website Internal	Mar 16, 2022, 3:18:45 PM
☐	CCENTER	CallCenter	Call Center	Mar 16, 2022, 3:18:44 PM
☐	LEGACY	Legacy	LEGACY	Mar 16, 2022, 3:18:43 PM

2 On **Actions**, click **Create new**.

Create new source page opens.

Figure 173: Create New Source



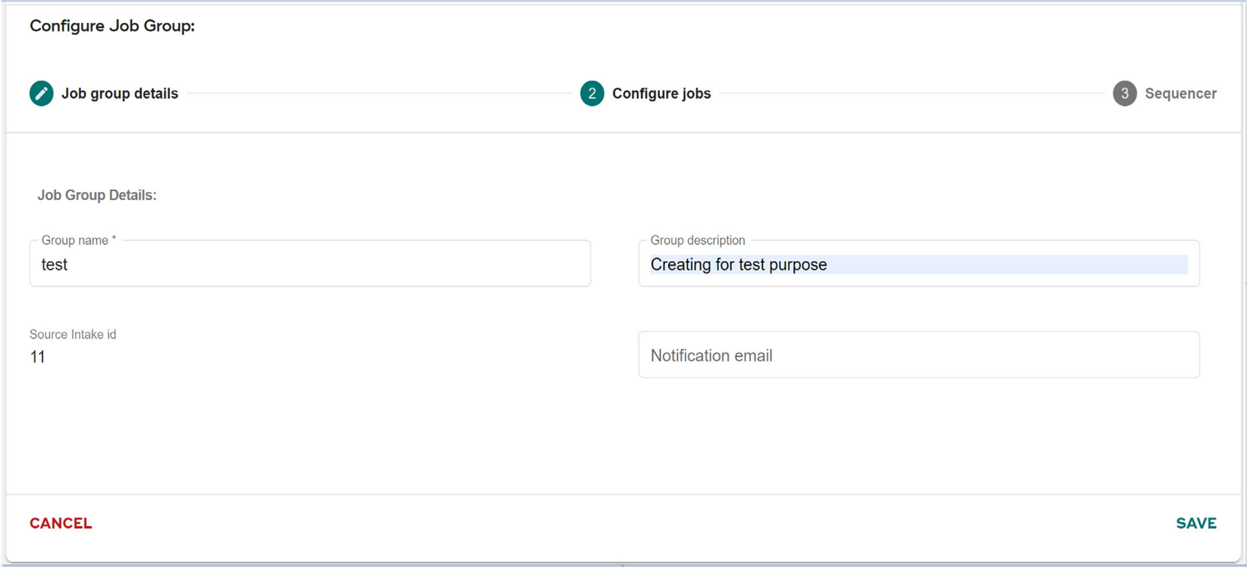
3 Provide **Source name** and **Source intake ID** and **Source description**.

4 To add various jobs to the group, click **Add job group**.

Configure job groups expands to configure the job group.

5 Under **Job group details**, provide group name, group description, and notification email.

Figure 174: Job Group Details



Group name * test

Group description Creating for test purpose

Source Intake id 11

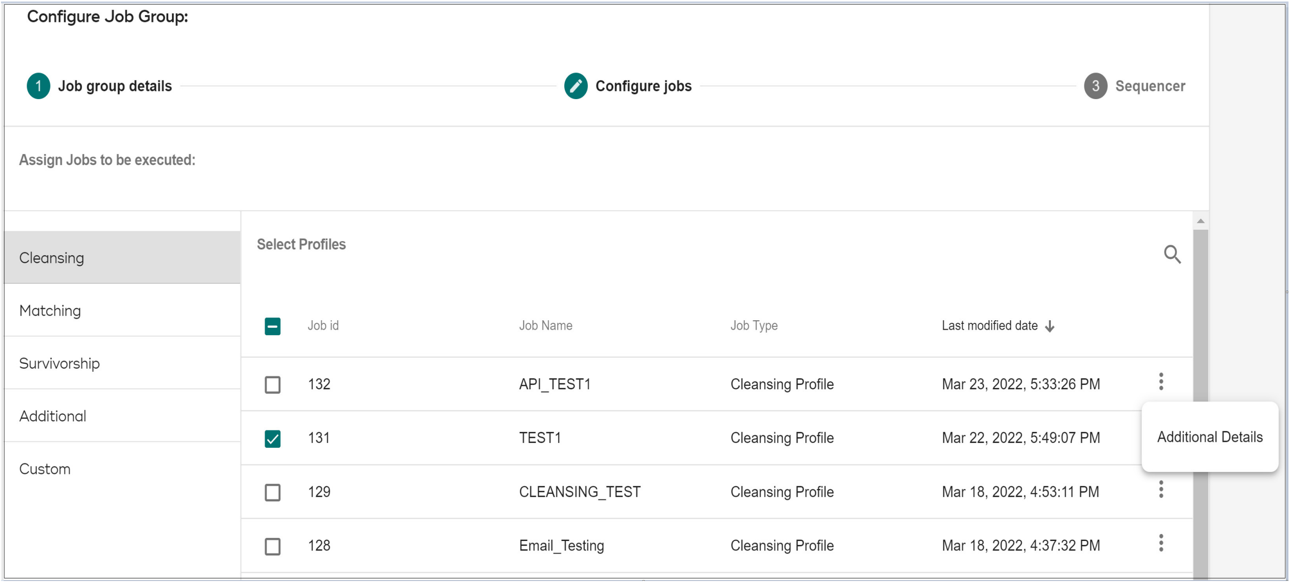
Notification email

6 Click **SAVE** to navigate to next section **Configure jobs**.

7 Under **Configure jobs**, select the matching profile from the left pane and select the required jobs to add to the group from the list

8 To add more details to the jobs, click menu icon corresponding to the particular job and click **Additional details**.

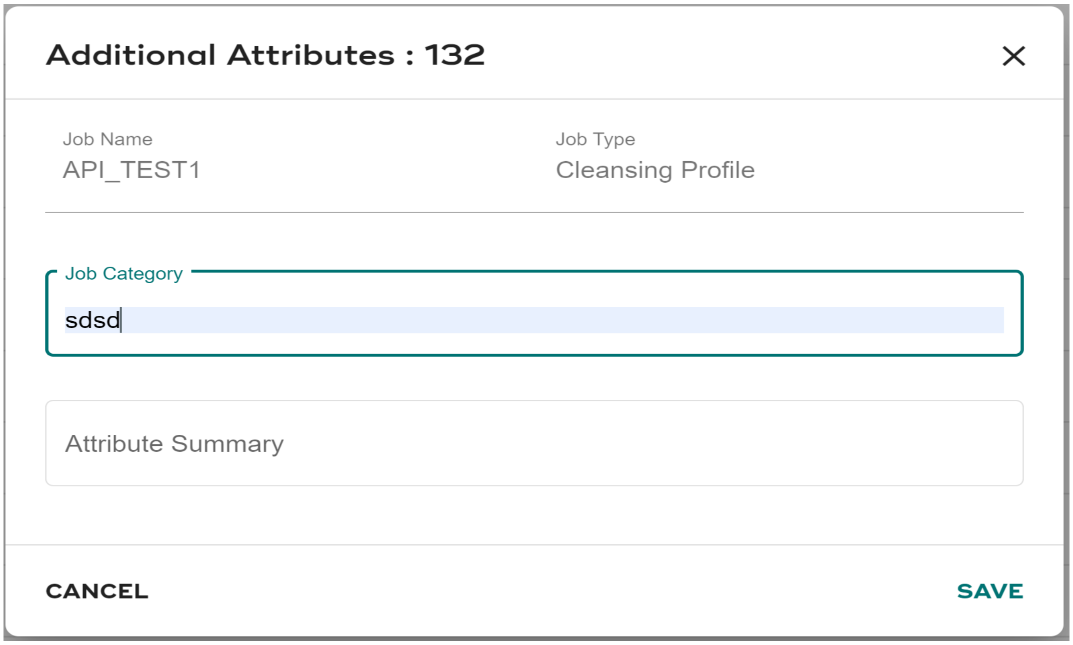
Figure 175: Additional Details



☐	Job id	Job Name	Job Type	Last modified date ↓
☐	132	API_TEST1	Cleansing Profile	Mar 23, 2022, 5:33:26 PM
☑	131	TEST1	Cleansing Profile	Mar 22, 2022, 5:49:07 PM
☐	129	CLEANSING_TEST	Cleansing Profile	Mar 18, 2022, 4:53:11 PM
☐	128	Email_Testing	Cleansing Profile	Mar 18, 2022, 4:37:32 PM

- Provide **Job category** and **Attribute Summary.**
- Click **SAVE**.

Figure 176: Additional Attribute



Additional Attributes : 132

Job Name
API_TEST1

Job Type
Cleansing Profile

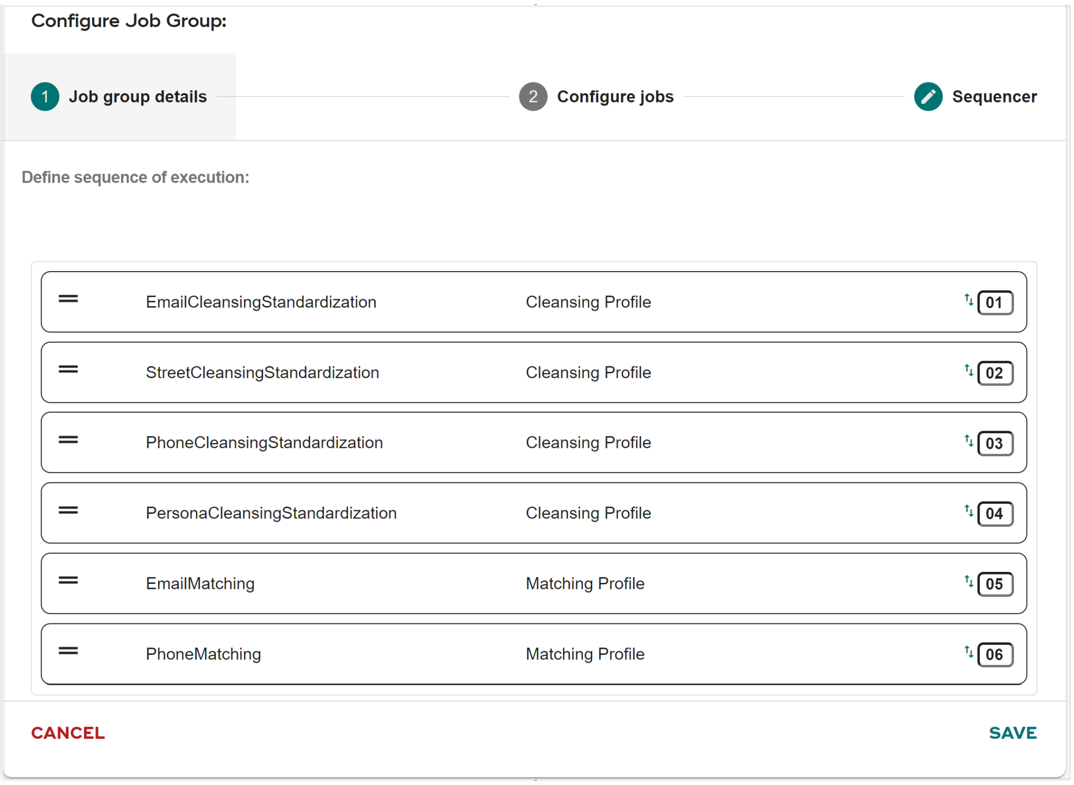
Job Category
sdsd

9 Click **SAVE** to navigate to the next section **Sequencer**.

Sequencer indicates the order in which jobs were selected. During execution of a group, the job execution follows this order. Hence the sequence should be same as that of the job execution order. To change the sequence order, you can either drag and drop the sequence or you can edit the sequence number.

10 To save the job sequence, click **SAVE**.

Figure 177: Sequencer



Configure Job Group:

Define sequence of execution:

EmailCleansingStandardization	Cleansing Profile	01
StreetCleansingStandardization	Cleansing Profile	02
PhoneCleansingStandardization	Cleansing Profile	03
PersonaCleansingStandardization	Cleansing Profile	04
EmailMatching	Matching Profile	05
PhoneMatching	Matching Profile	06

View Source Logs

When you create a C & S, matching or survivorship profile either from UI or through import profile process, a job creates ABC with Job name same as the profile name and link to the corresponding default group of that module as in the below list.

- DEFAULT_CS— the default ABC group created for C & S profiles.
- DEFAULT_MATCHING—the default ABC group created for Matching profiles.
- DEFAULT_SURVIVORSHIP—the default ABC group created for Survivorship profiles
- DEFAULT_CUSTOM_JOB—the default ABC group created for additional and custom profiles.

The job mapping to groups stored inside ABC_JOB_GROUP_MAP.

As part of the CI Implementation, mapping table defines a list of groups provided as static data and the jobs execution order within that groups.

The group names provide as part of workflow execution are:

- LEGACY_ALL
- CALLCENTER_ALL
- WEB1_ALL
- WEB2_ALL

The integration of Audit Balance & Check (ABC) model in MDM provides an enterprise view of logging mechanism for any of MDM OOTB processes and/or custom processes. It increases traceability, data quality, data lineage and exception handling.

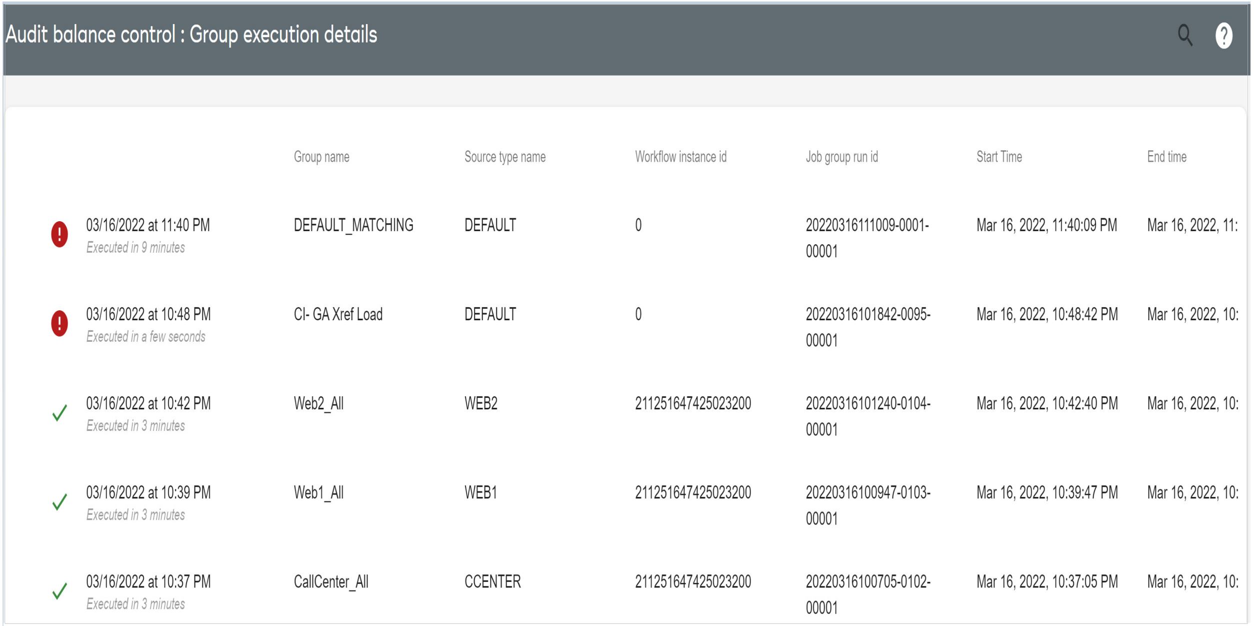
The MDM Audit Balance & Check (ABC) model captures all Cleansing and Standardization, Matching, Survivorship, and any other batch execution performed from the MDM server. When any of the C&S or Matching or Survivorship profile is executed, the execution logs will be captured in ABC_JOB_LOG. And when a group is executed, the execution logs will be captured in ABC_GROUP_JOB_LOG. These logs of each group execution can be viewed through Logs UI under Sources.

To view the group execution log:

1. Navigate to **Data Harmonization** -> **Sources**.
2. Click **Actions** and then click **Logs**.

   Audit balance control: Group execution details page opens.

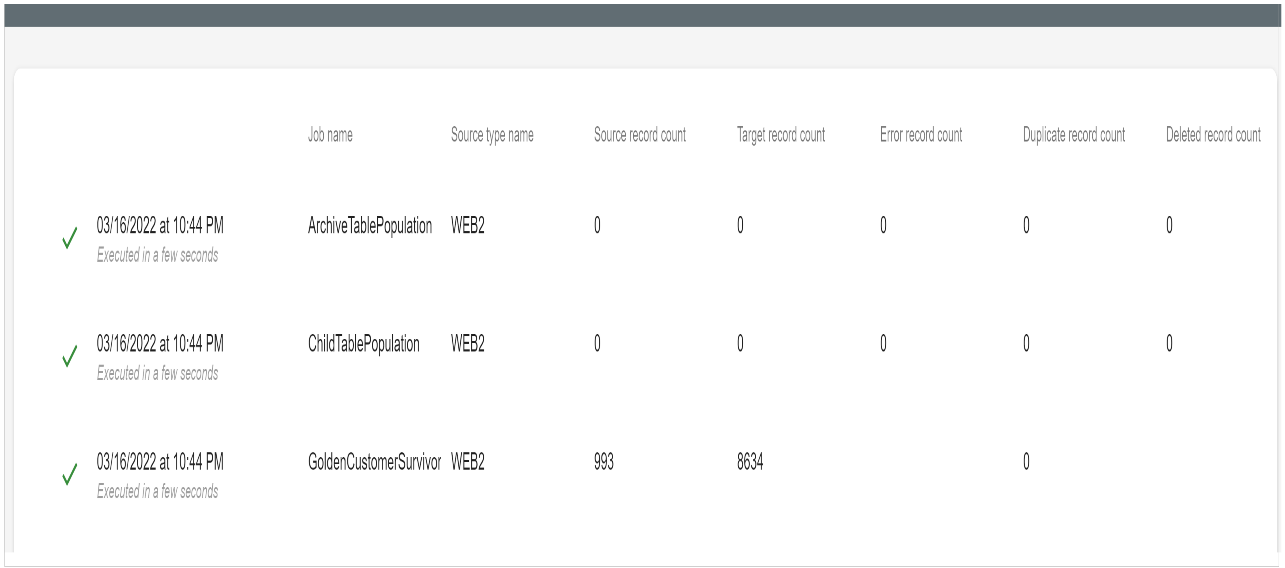
   Figure 178: ABC: Group Execution Details



		Group name	Source type name	Workflow instance id	Job group run id	Start Time	End time
!	03/16/2022 at 11:40 PM *Executed in 9 minutes*	DEFAULT_MATCHING	DEFAULT	0	20220316111009-0001-00001	Mar 16, 2022, 11:40:09 PM	Mar 16, 2022, 11:
!	03/16/2022 at 10:48 PM *Executed in a few seconds*	CI- GA Xref Load	DEFAULT	0	20220316101842-0095-00001	Mar 16, 2022, 10:48:42 PM	Mar 16, 2022, 10:
✓	03/16/2022 at 10:42 PM *Executed in 3 minutes*	Web2_All	WEB2	211251647425023200	20220316101240-0104-00001	Mar 16, 2022, 10:42:40 PM	Mar 16, 2022, 10:
✓	03/16/2022 at 10:39 PM *Executed in 3 minutes*	Web1_All	WEB1	211251647425023200	20220316100947-0103-00001	Mar 16, 2022, 10:39:47 PM	Mar 16, 2022, 10:
✓	03/16/2022 at 10:37 PM *Executed in 3 minutes*	CallCenter_All	CCENTER	211251647425023200	20220316100705-0102-00001	Mar 16, 2022, 10:37:05 PM	Mar 16, 2022, 10:

3. Click on a specific group name to view executed logs for each job defined in that group.

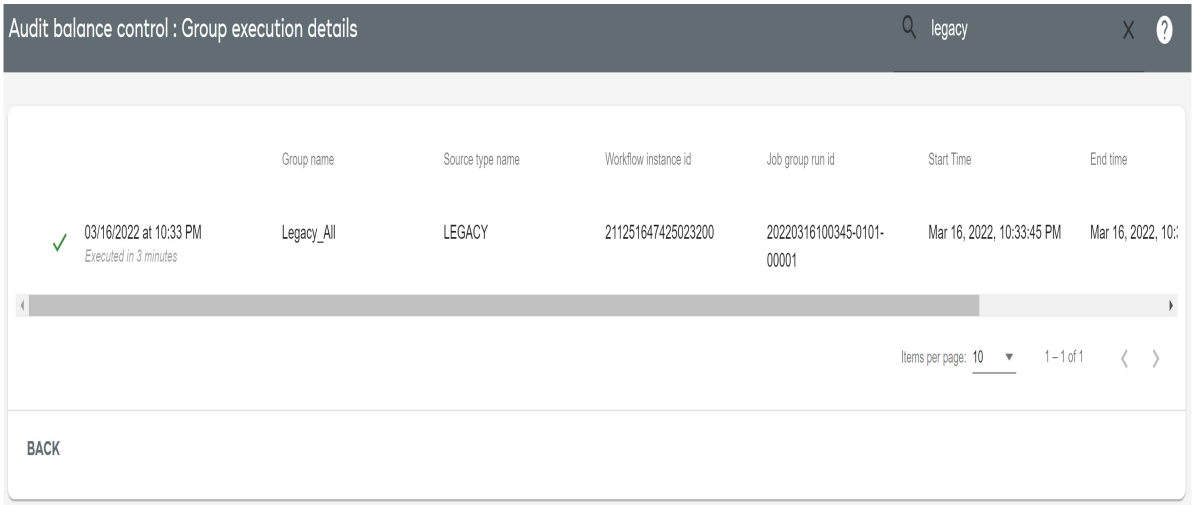
Figure 179: Group Detailed Job



	Job name	Source type name	Source record count	Target record count	Error record count	Duplicate record count	Deleted record count
✓ 03/16/2022 at 10:44 PM *Executed in a few seconds*	ArchiveTablePopulation	WEB2	0	0	0	0	0
✓ 03/16/2022 at 10:44 PM *Executed in a few seconds*	ChildTablePopulation	WEB2	0	0	0	0	0
✓ 03/16/2022 at 10:44 PM *Executed in a few seconds*	GoldenCustomerSurvivor	WEB2	993	8634		0	

4 To search a particular group, type name of the group in search field.

Figure 180: Search Group



Audit balance control : Group execution details

	Group name	Source type name	Workflow instance id	Job group run id	Start Time	End time
✓ 03/16/2022 at 10:33 PM *Executed in 3 minutes*	Legacy_All	LEGACY	211251647425023200	20220316100345-0101-00001	Mar 16, 2022, 10:33:45 PM	Mar 16, 2022, 10:

Import Audit Balance Control Group

1 Navigate to **Data Harmonization** -> **Sources**.

2 Click **Import**.

The **Import audit balance control groups** page opens.

3 Click **Browse** to upload an audit balance control file.

4 Select the location of the file and click **Open**.

5 Click **Import**.

Export a Source

1. Navigate to **Data Harmonization** -> **Sources**.
2. Select any group you want to export.
3. Click **Export**.

Edit a Source

1. Navigate to **Data Harmonization** -> **Sources**.
2. On the source list, click menu icon corresponding to the particular source you want to edit.
3. Click **Edit**.
4. Modify the details and follow same instruction for creating a source.

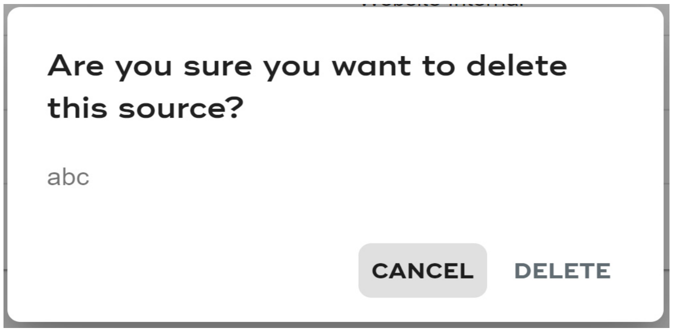
   For more information, see Sources.

Delete a Source

1. Navigate to **Data Harmonization** -> **Sources**.
2. On the source list, click menu icon corresponding to the particular source you want to delete.
3. Click **Delete**.

   A confirmation pop up displays to delete the source.

   Figure 181: Source Delete Confirmation



Are you sure you want to delete this source?

abc

4. On confirmation pop up, click **DELETE**.

Connections

Connections is used to configure profiles on external database. Connections is used in cleansing and standardization, matching and survivorship pages. Connections created in connection page will appear in create profile page of C&S, matching and survivorship. The tables can be selected from the connections specified. You can Create, Edit and delete a connection.

You must have required activity to add a connection to perform this action.

Create a New Connection

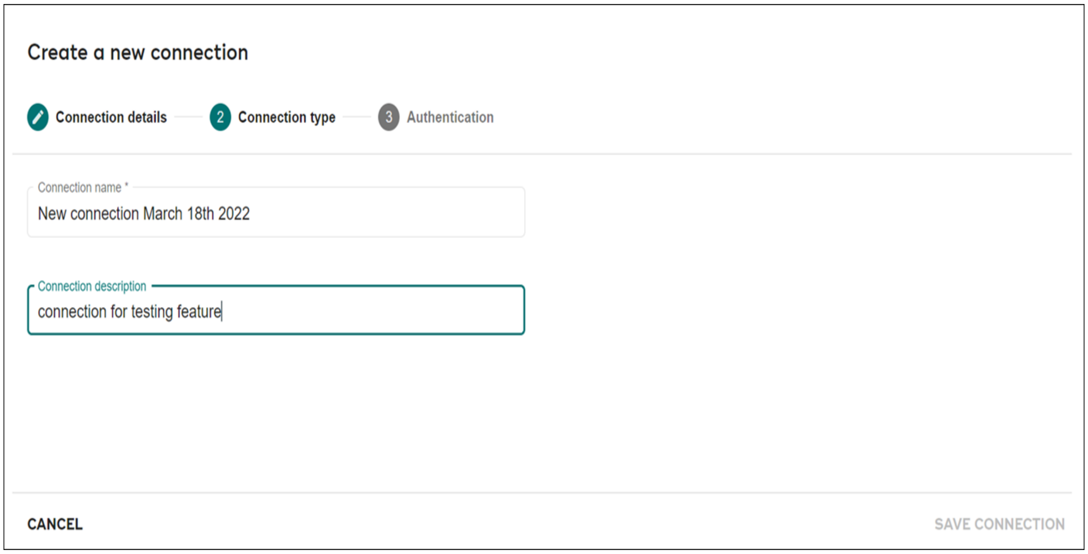
1 Navigate to **Data harmonization -> Connections.**

Create a new connection page displays.

2 On the **Create a new connection page**, enter the following details under **Connection details**:

- **Connection name**: Name of a connection. The connection name is unique for a connection.
- C**onnection description**: Enter a name to the connection (optional)

Figure 182: Connection: Create New Connection



Create a new connection

Connection name *: New connection March 18th 2022

Connection description: connection for testing feature

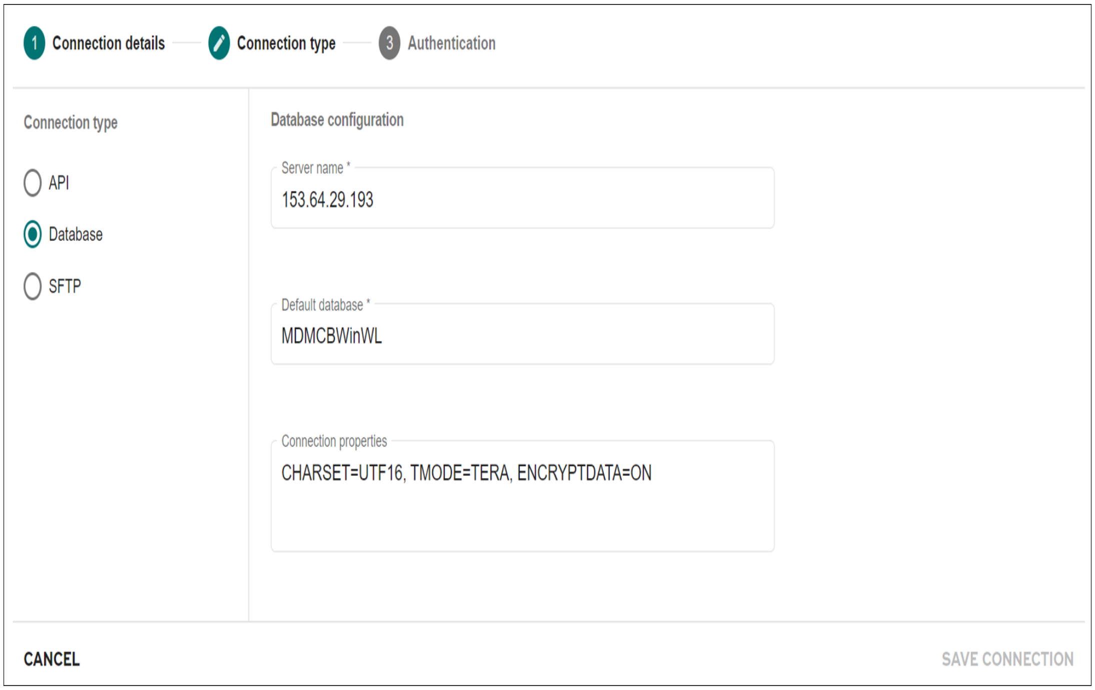
3 Click **SAVE CONNECTION**.

4 Click **Connection type** section next to **Connection details** and provide the following details:

- Select **Connection type**.
- Under Database configuration, provide the following details:

- **Server Name**: specifies the database IP to connect to URL
- **Default database**: default database for a connection being created. The entered default database name
- **Connection properties**: field auto populates based on the above entries after saving the connection

Figure 183: Connection: Connection Type



Server name *: 153.64.29.193

Default database *: MDMCBWinWL

Connection properties: CHARSET=UTF16, TMODE=TERA, ENCRYPTDATA=ON

5 Click **SAVE CONNECTION**.

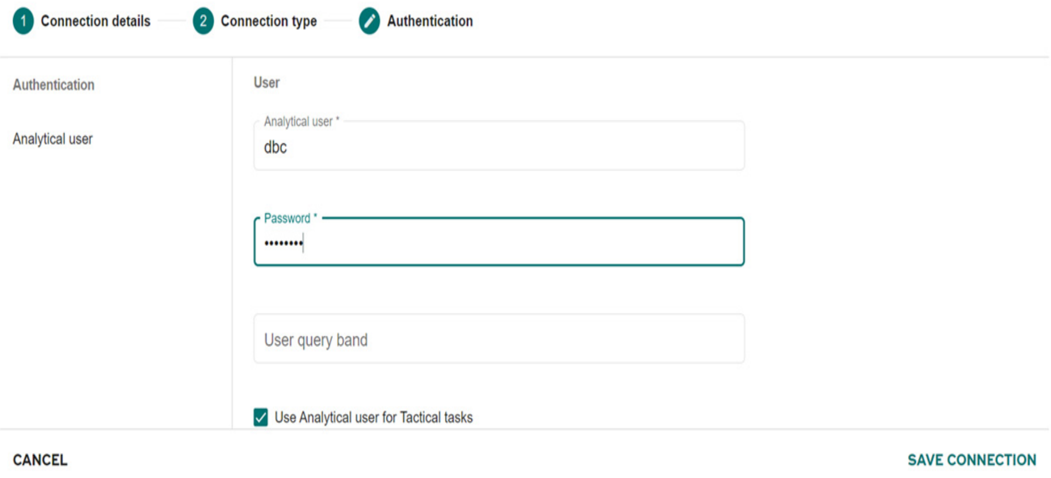
6 Click **Authentication** next to **Connection type** and provide the following details:

- **Analytical User**: specifies the user ID of the database. verifying the identity of a user
- **Password**: specifies the password of the database

7 Click **SAVE CONNECTION**.

You must have the required activity to add a connection to perform this action

Figure 184: Connection: Authentication



Analytical user *
dbc

Password *
••••••••

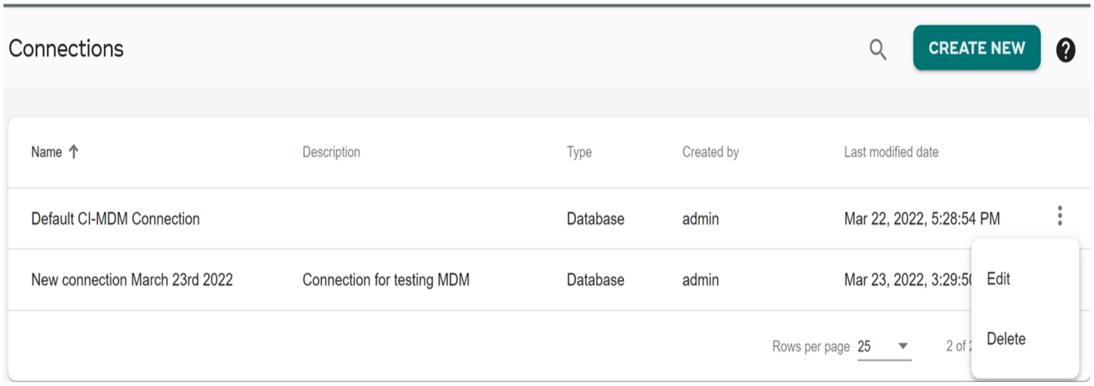
User query band

☑ Use Analytical user for Tactical tasks

Edit New Connection

1 Click on the Menu icon corresponding to the required connection and click **Edit**.

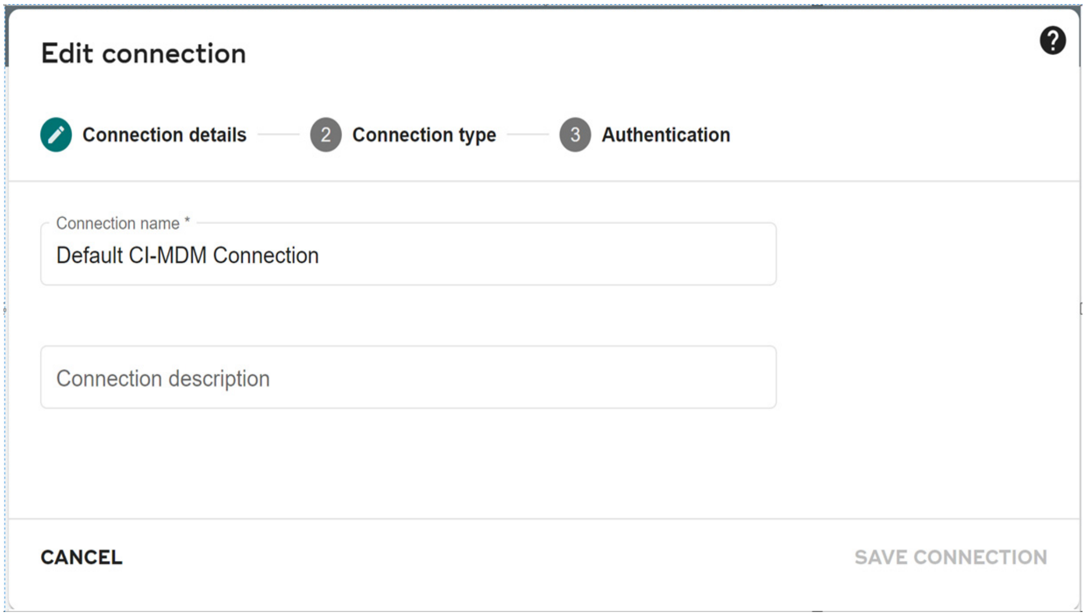
Figure 185: Edit Connection



Name ↑	Description	Type	Created by	Last modified date
Default CI-MDM Connection		Database	admin	Mar 22, 2022, 5:28:54 PM
New connection March 23rd 2022	Connection for testing MDM	Database	admin	Mar 23, 2022, 3:29:5

2 Modify the details for the connection and click **SAVE CONNECTION**.

Figure 186: Edit Connection Details



Edit connection

Connection name *: Default CI-MDM Connection

Connection description

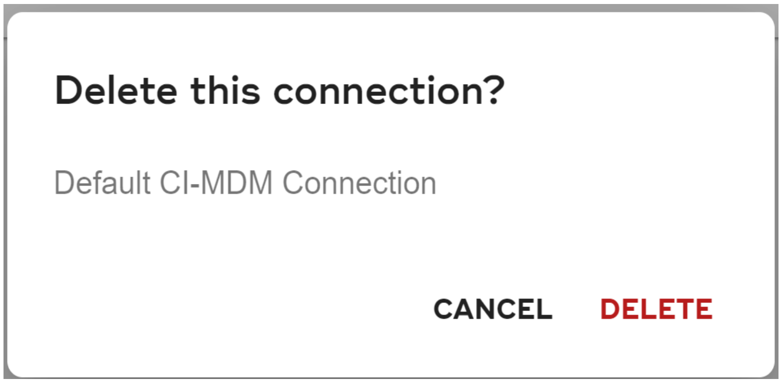
Delete Connection

1. Click on the Menu icon corresponding to the required connection and click **DELETE**.

   A confirmation message appears to delete the connection.

2. Click **DELETE**.

   Figure 187: Delete Connection



Delete this connection?

Default CI-MDM Connection

Cleansing and Standardization

Cleansing refers to the process of identifying and removing and/or correcting inaccurate, incomplete, incorrect or irrelevant data records or part of data records based on the defined cleansing rules before loading the clean and consistent data into Master database.

Standardization refers to the process of establishing a common standard data format to be used across the enterprise. Standardization allows the user to format the data in a standard and enterprise-wide recognizable format.

RDM Cleansing and Standardization rules are applied to the underlying registered source or MDM table or view data.

Features of Cleansing and Standardization:

- Profiles can be created to configure/create rules for Cleansing and Standardization of Source records.
- OOTB provision for Email validation & ZIP code validation and Phone & US name standardization added.
- Provides a framework to define customer C&S functions.
- Provides option to preview C&S profile execution result before saving.

Manage C & S Profile

The Cleansing and standardization page helps you in managing all the existing internal and external C & S profiles. On the Cleansing and standardization page, you can create a C & S profile by providing the profile name and map the source table to the target table and required columns. Once the profile is created, you can apply OOTB validation rules (Phone validation, Email validation and US Zipcode validations), OOTB C & S rules and custom business rules on the target table and preview the rule execution results on the target tables using the Preview button. If the test execution results are satisfactory, you can save the profile. Once the profile is created successfully, you can execute the profile and view the execution logs.

On the Cleansing and standardization UI, you can perform the following:

- Create C & S Profile
- Edit C & S Profile
- Execute C & S Profile
- View Results
- Delete C & S Profile

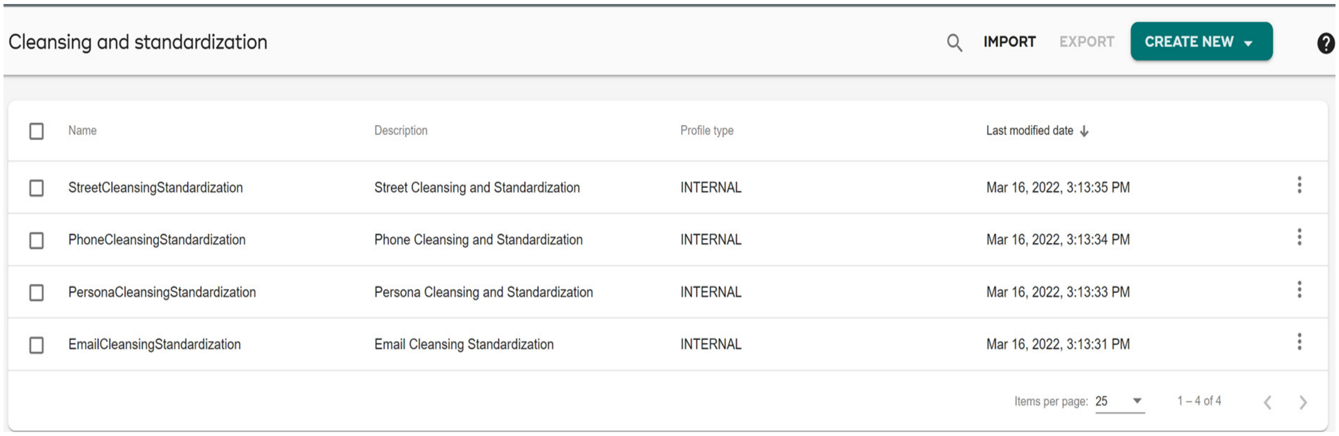
Create C & S Profile

To create C & S profile, perform the following:

1 Navigate to Cleansing and standardization UI from **Data Harmonization -> Cleansing and standardization**.

The **Cleansing and standardization** page (Figure 188) displays all the internal C & S profiles.

Figure 188: Cleansing and standardization



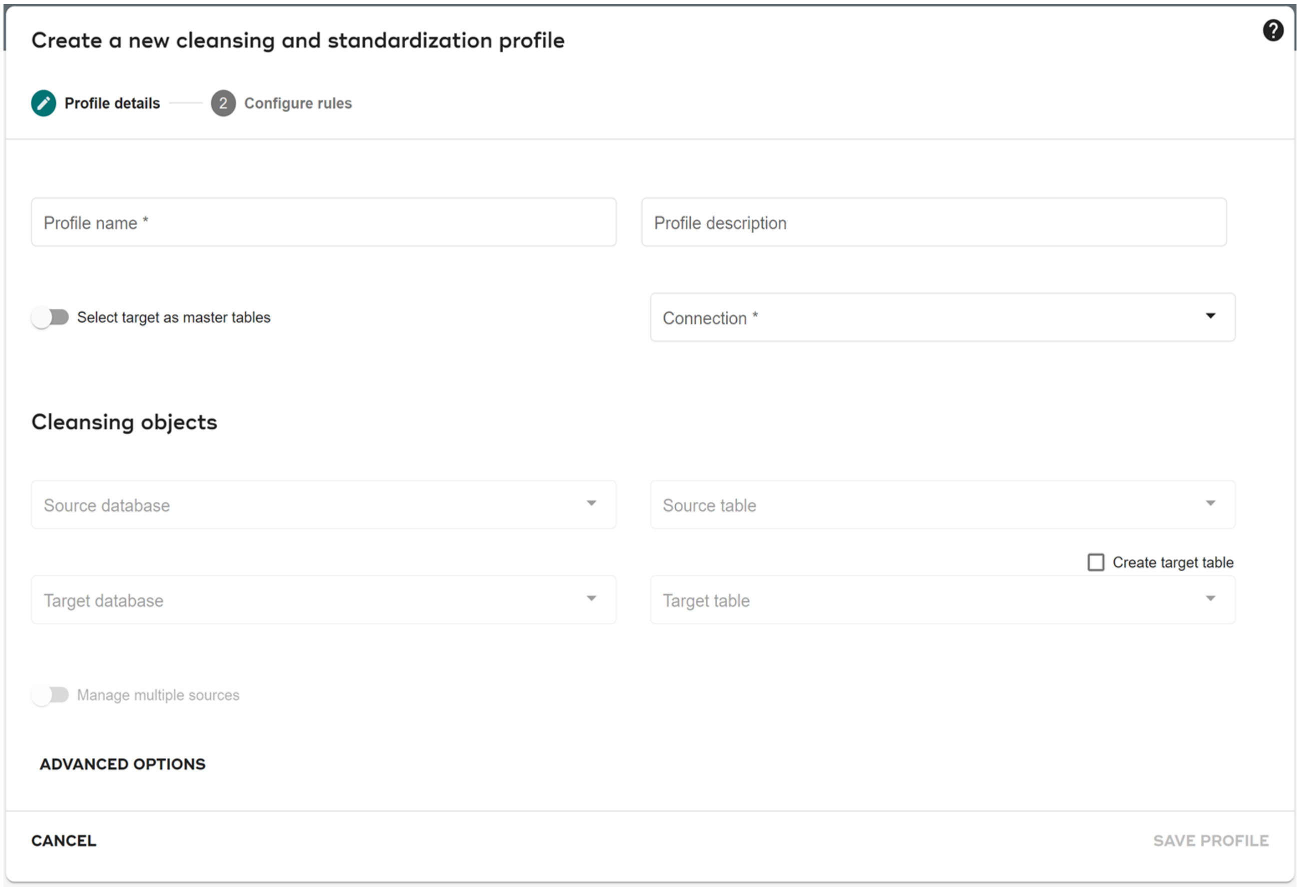
Cleansing and standardization

☐	Name	Description	Profile type	Last modified date ↓
☐	StreetCleansingStandardization	Street Cleansing and Standardization	INTERNAL	Mar 16, 2022, 3:13:35 PM
☐	PhoneCleansingStandardization	Phone Cleansing and Standardization	INTERNAL	Mar 16, 2022, 3:13:34 PM
☐	PersonaCleansingStandardization	Persona Cleansing and Standardization	INTERNAL	Mar 16, 2022, 3:13:33 PM
☐	EmailCleansingStandardization	Email Cleansing Standardization	INTERNAL	Mar 16, 2022, 3:13:31 PM

Items per page: 25 1 – 4 of 4

2 On the **Cleansing and standardization** page, click **Create New.**

Figure 189: Create C & S Profile



Create a new cleansing and standardization profile

3 On the **Create a new cleansing and standardization profile** page, enter the following and click **Save**.

- **Profile Name**—enter a unique name for the profile being created.
- **Source Database**—select the source database, which contains the source table.

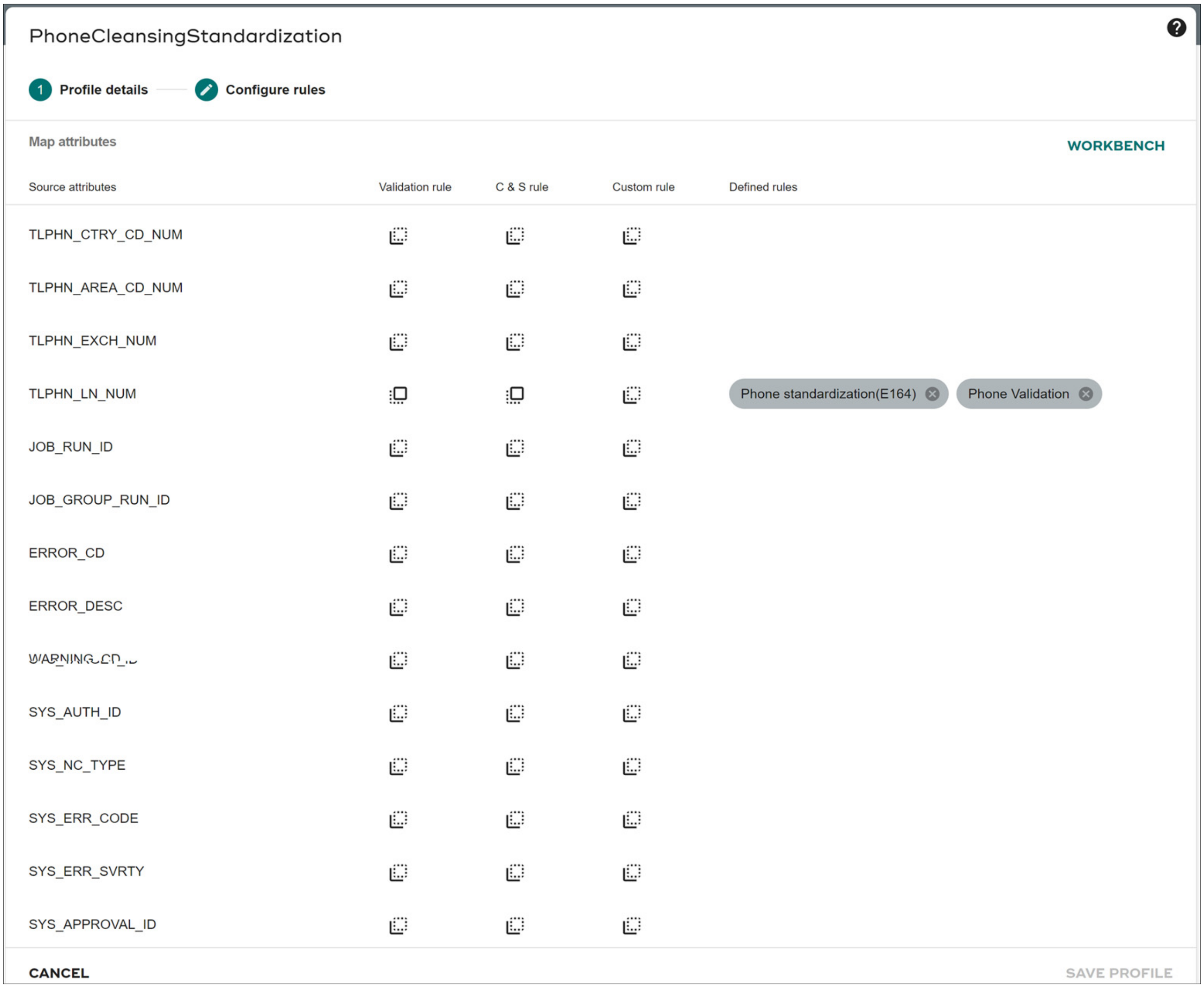
- **Source Table**—select the source table or view to be used in C & S Profile.
- **Create Target Table**—select this checkbox to create a new target table in the target database.
- **Target Database**—select the target database, which contains the target table.
- **Target Table**—select / enter the target table to be used in C & S profile.
- **Manage multiple source**— Enable the option to select the source attribute from the dropdown list.

Message: “Database mapping saved successfully” is displayed and the **Map Attributes** section is displayed as in Figure 190.

4 Under **ADAVANCED OPTIONS**, provide Notification email id to send email notifications about the status.

5 Click **SAVE PROFILE** to navigate to **Configure rules** tab.

Figure 190: Map Attributes



PhoneCleansingStandardization

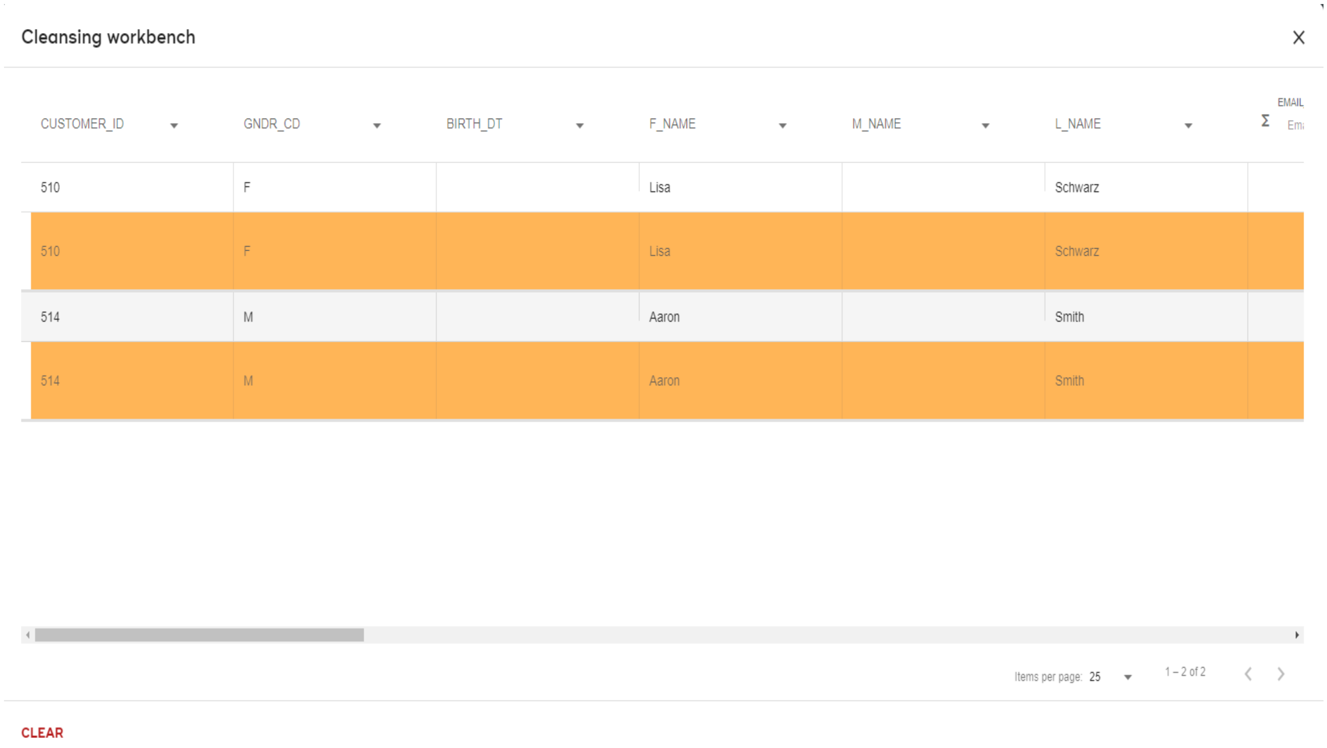
Map attributes

Source attributes	Validation rule	C & S rule	Custom rule	Defined rules
TLPHN_CTRY_CD_NUM	☐	☐	☐	
TLPHN_AREA_CD_NUM	☐	☐	☐	
TLPHN_EXCH_NUM	☐	☐	☐	
TLPHN_LN_NUM	☐	☐	☐	Phone standardization(E164) ⊗ Phone Validation ⊗
JOB_RUN_ID	☐	☐	☐	
JOB_GROUP_RUN_ID	☐	☐	☐	
ERROR_CD	☐	☐	☐	
ERROR_DESC	☐	☐	☐	
WARNING_CD_ID	☐	☐	☐	
SYS_AUTH_ID	☐	☐	☐	
SYS_NC_TYPE	☐	☐	☐	
SYS_ERR_CODE	☐	☐	☐	
SYS_ERR_SVRTY	☐	☐	☐	
SYS_APPROVAL_ID	☐	☐	☐	

6 On **Configure rules**, under **Map Attributes** pane, click **Workbench**.

The C&S Workbench defines the C&S Profile for each Source, which may contain Cleansing and Standardization Rules. The **Workbench** displays the source from each set of records from different sources.

Figure 191: Cleansing Workbench



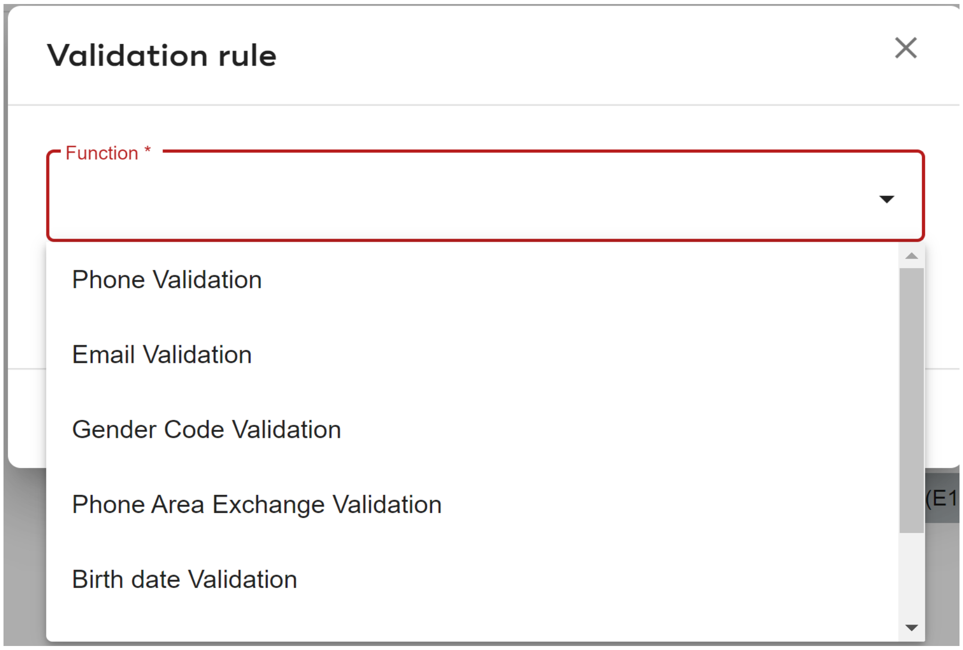
CUSTOMER_ID	GNDR_CD	BIRTH_DT	F_NAME	M_NAME	L_NAME	EMAIL
510	F		Lisa		Schwarz	
510	F		Lisa		Schwarz	
514	M		Aaron		Smith	
514	M		Aaron		Smith	

7 Click on the Validation Rule icon corresponding to the column on which you want the validation rule to be applied. You can select one of the following validation function:

- **Phone validation**: Add valid phone number numbers to update
- **Email validation**: Add valid Email ID to update
- **Gender Code Validation**: Add valid gender code
- **Phone Area Exchange Validation**: Add valid area exchange numbers @ CL_TLPN_AREA_EXCHANGE_CD
- **Birth date Validation**: Add valid date of birth details to update
- **Blacklist Phone Number**: Add numbers to be blacklisted @ CL_TLPN_EXCLUDE

A pop-up is displayed to select the function name as in Figure 192.

Figure 192: Validation Rule



Validation rule

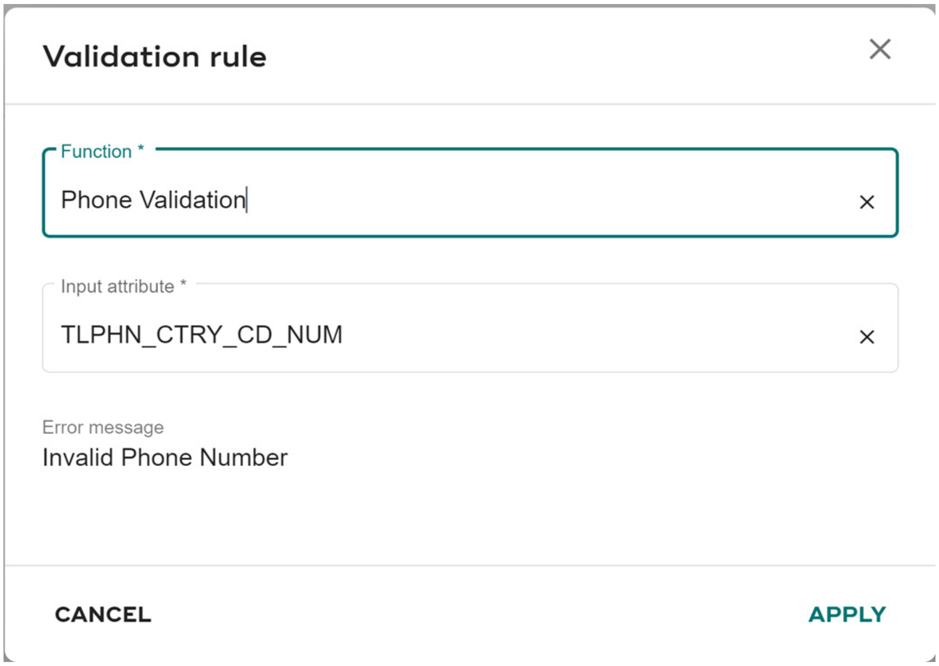
Function *

8 From **Function** selection pop-up, select the function name.

Note: You can define your own custom function. For details, see Section : “Create Custom Function Names.”

The **Configure Validation Business Rules** pop-up is displayed with the function name and input column selected as in Figure 193.

Figure 193: Configure Validation Business Rules



Validation rule

Function *
Phone Validation

Input attribute *
TLPHN_CTRY_CD_NUM

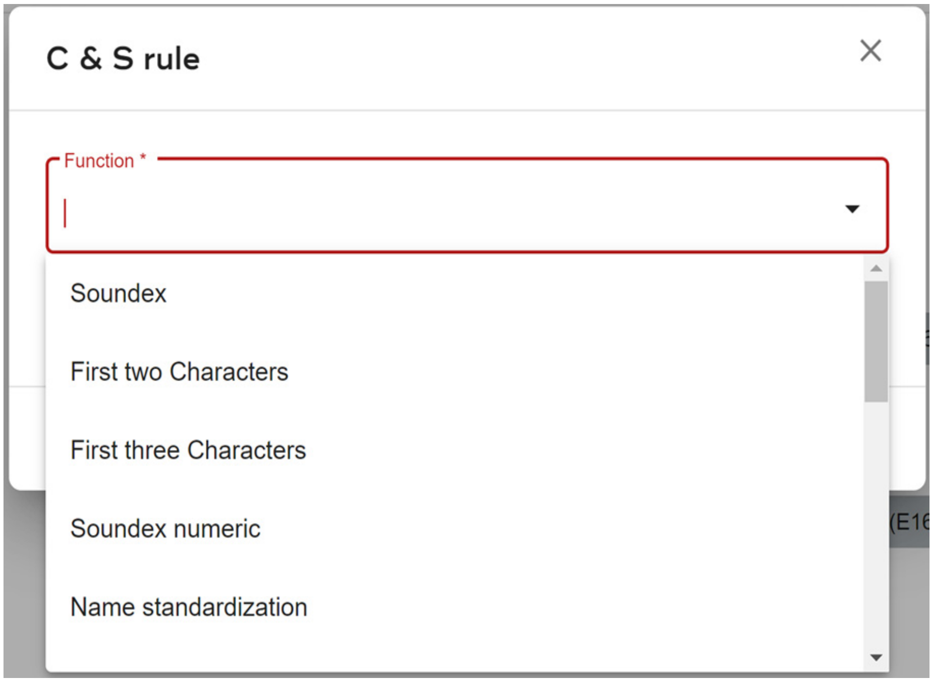
Error message
Invalid Phone Number

9 On **Validation rule** configuration, click **Apply**.

10 Similarly, click on the C & S Rule icon corresponding to the column on which you want the C & S rule to be applied.

11 Click **C&S Rule** icon corresponds to the Source Attribute.

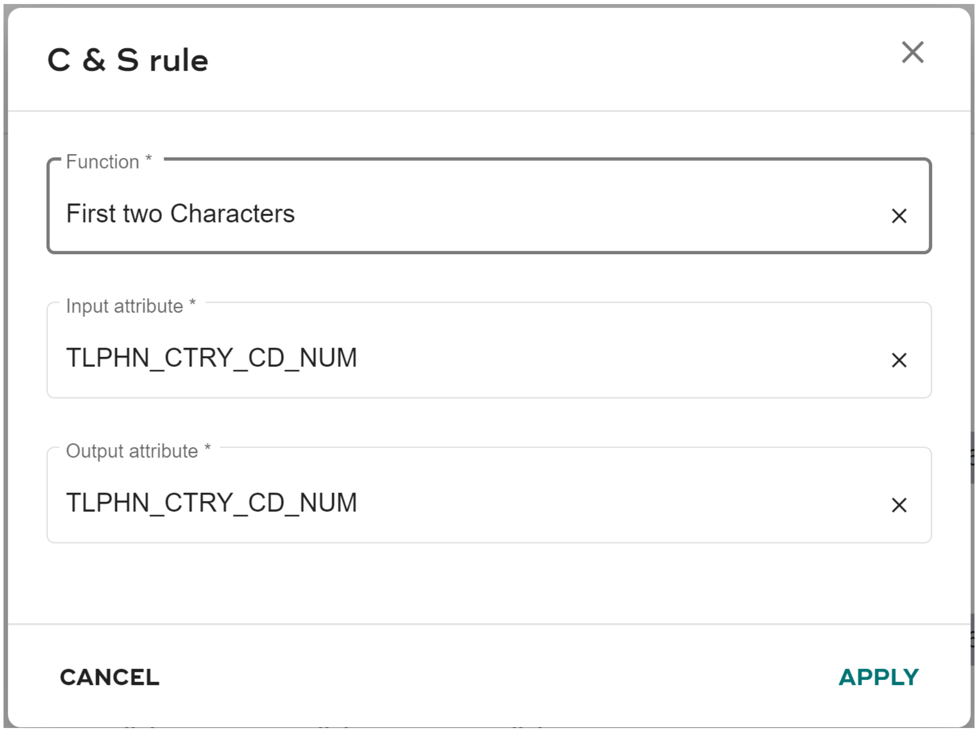
Figure 194: C & S Rules



12 Select a function name from the list and, then make a selection for input attribute and output attribute to configure C&S rule.

13 Click **Apply**.

Figure 195: Configure C & S Business Rules



Function *
First two Characters

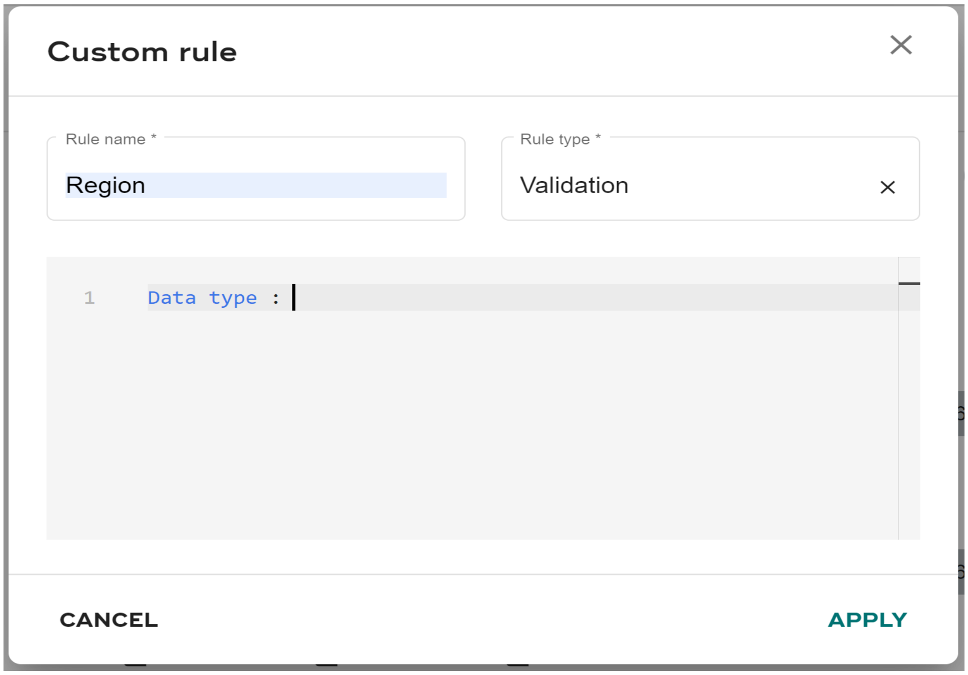
Input attribute *
TLPHN_CTRY_CD_NUM

Output attribute *
TLPHN_CTRY_CD_NUM

14 Click on the Custom Rule icon corresponding to the column on which you want the custom rule to be created.

The **Custom Rules** pop-up is displayed as in Figure 196.

Figure 196: Custom Rules



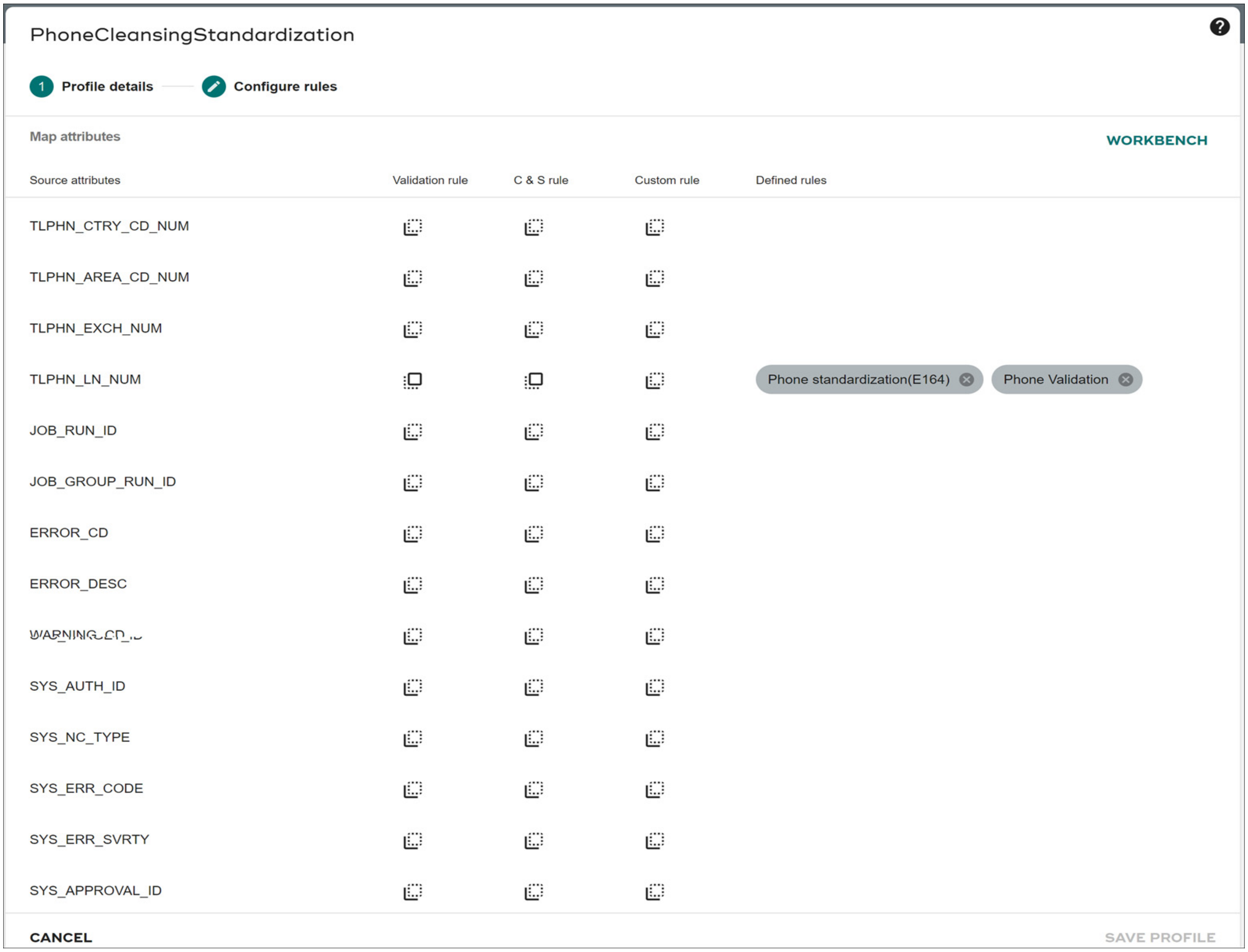
Rule name *
Region

Rule type *
Validation

```
Data type :
```

15 On the **Custom Rules** UI, click **Apply**.

Figure 197: Create C & S Profile



PhoneCleansingStandardization

Map attributes

Source attributes	Validation rule	C & S rule	Custom rule	Defined rules
TLPHN_CTRY_CD_NUM	☐	☐	☐	
TLPHN_AREA_CD_NUM	☐	☐	☐	
TLPHN_EXCH_NUM	☐	☐	☐	
TLPHN_LN_NUM	☐	☐	☐	Phone standardization(E164) ⊗ Phone Validation ⊗
JOB_RUN_ID	☐	☐	☐	
JOB_GROUP_RUN_ID	☐	☐	☐	
ERROR_CD	☐	☐	☐	
ERROR_DESC	☐	☐	☐	
WARNING_CD	☐	☐	☐	
SYS_AUTH_ID	☐	☐	☐	
SYS_NC_TYPE	☐	☐	☐	
SYS_ERR_CODE	☐	☐	☐	
SYS_ERR_SVRTY	☐	☐	☐	
SYS_APPROVAL_ID	☐	☐	☐	

On the **PhoneCleansingStandardization** page, the **Defined Rules** section displays all the rules defined. Hover over the rule to preview the defined rule.

16 Click **SAVE PROFILE**.

Message: “Profile Saved Successfully” is displayed on the Cleansing and standardization page.

C & S rules created on Cleansing and standardization UI cannot be edited from Manage Business Rules UI.

Create Custom Function Names

Cleansing and standardization framework provides option to define custom function names to be used while defining validation and C & S rules in addition to OOTB functions.

To create custom function:

1. Navigate to <MDM_Install_Directory>\cfg\xservice\mdmservices\modules\businessrules\staticdata and open FunctionStaticData xml document and in the <ADD_DOC_SMART Name="BusinessRuleFunctions"> add the new custom function.

   For example, you can add Pincode validation function as.below:

```
<ADD_DOC_SMART Name="BusinessRuleFunctions">
    <FN_NAME Value="UF_VALIDPINCODE"/>
    <FN_DISPLAY_NAME Value="Pincode Validation"/>
    <FN_DESCRIPTION Value="Validate Pincode If valid then return 1 
else 0"/>
    <FN_GRAMMER Value="UF_VALIDPINCODE(INPUT_COLUMN)"/>
    <NO_OF_INPUT Value="1"/>
    <NO_OF_OUTPUT Value="1"/>
    <FN_TYPE Value="UDF"/>
    <IS_CUSTOM Value="N"/>
    <IS_DATABASE_FN Value="N"/>
    <RULE_TYPE Value="Validation"/>
    <PASS_CONDITION Value="&lt;>1"/>
    <ERROR_MESSAGE Value="Invalid Pincode"/>
    <ERROR_CODE Value="Error"/>
  </ADD_DOC_SMART>
```

2. Execute <Add_Doc_Smart> by following the below steps:
   - Make sure the MDM server and application server are running.
   - Navigate to <MDM_Install_Directory>\bin\runTests.bat and replace the text TEST with MDMServices.
   - Navigate to <MDM_Install_Directory>\cfg\xservice\test\requests\RunTests.xml and replace the contents of the REQUESTS with the following code and change the ServiceName TEST to MDMServices.

```
<REQUESTS ServiceName="MDMServices">
<ADD_DOC_SMART Name="BusinessRuleFunctions">
<FN_NAME Value="Test"/>
<FN_DISPLAY_NAME Value="Extract Year"/>
<FN_DESCRIPTION Value="Extracts Year from date"/>
<FN_GRAMMER_SET Value="OUTPUT_COLUMN=UF_EXYR(INPUT_COLUMN)"/>
<NO_OF_INPUT Value="1"/>
<NO_OF_OUTPUT Value="1"/>
<FN_TYPE Value="UDF"/>
<IS_CUSTOM Value="N"/>
<IS_DATABASE_FN Value="N"/>
<RULE_TYPE Value="CAS"/>
</ADD_DOC_SMART>
</REQUESTS>
```

   - Navigate to <MDM_Install_Directory>\bin and run runTests.bat/.sh.

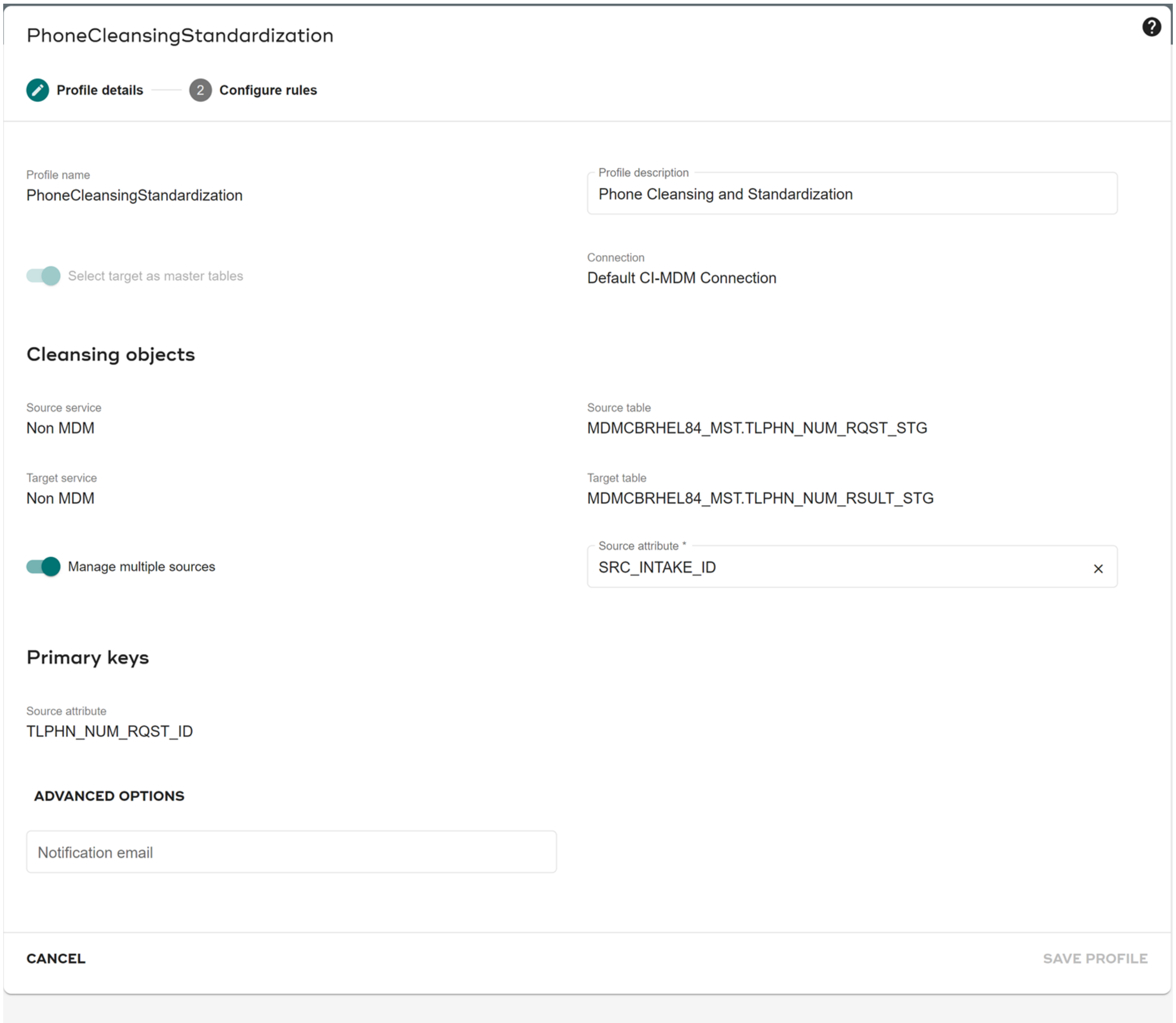
     Ensure that the response obtained is a success.

Edit C & S Profile

To edit C & S profile, perform the following steps:

1 On the **Cleansing and standardization** page, click on the Menu icon corresponding to the required C & S profile and click **Edit**.

Figure 198: Create C & S Profile



PhoneCleansingStandardization

Profile name
PhoneCleansingStandardization

Profile description
Phone Cleansing and Standardization

Select target as master tables

Connection
Default CI-MDM Connection

Cleansing objects

Source service
Non MDM

Source table
MDMCBRHEL84_MST.TLPHN_NUM_RQST_STG

Target service
Non MDM

Target table
MDMCBRHEL84_MST.TLPHN_NUM_RSULT_STG

Manage multiple sources

Source attribute *
SRC_INTAKE_ID

Primary keys

Source attribute
TLPHN_NUM_RQST_ID

ADVANCED OPTIONS

Notification email

2 On the **appeared** page, modify the required rules, add new rules or delete existing rules and click **SAVE PROFILE**.

Message: ""Profile Saved Successfully" is displayed on the Cleansing and standardization page.

Execute C & S Profile

The **Execute** button on the Cleansing and standardization page allows you to execute the selected profile. Once the execution is successful, you can view the execution details.

To execute rule:

1 On the Cleansing and standardization page, click on the Menu icon corresponding to the required profile and click **Execute**.

Message: “Profile Executed Successfully” is displayed.

View Results

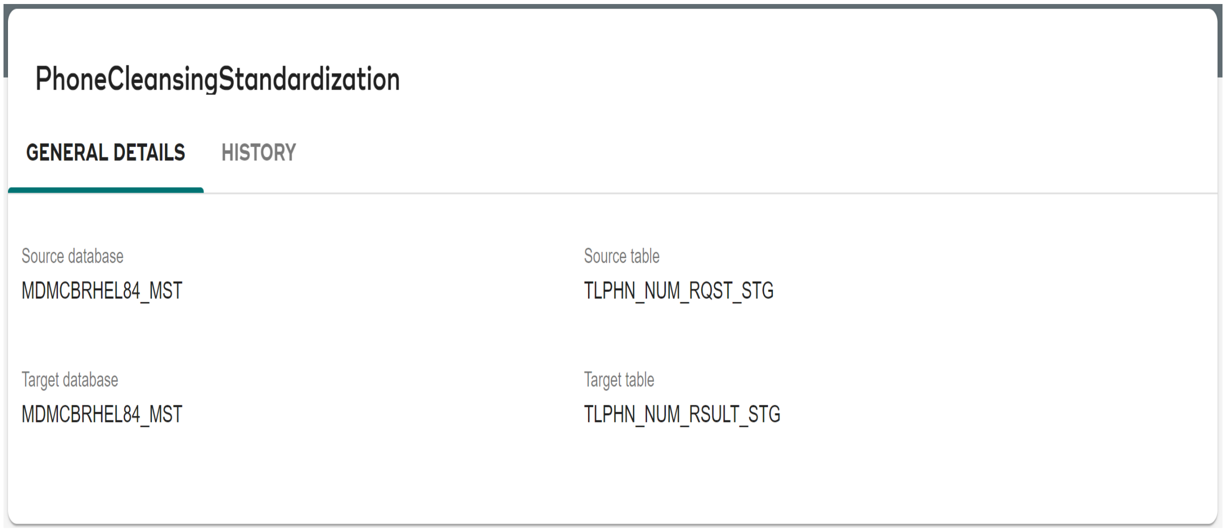
To view results:

1 On the **Cleansing and standardization** page, click on the Menu icon corresponding to the required executed profile and click **Results**.

The Cleansing and standardization page (Figure 200) is displayed. The **Cleansing and standardization** page displays two sections: the General Details and History.

General Details: The General Details section displays database and table name for the Source and Target.

Figure 199: C&S Results: General Details



PhoneCleansingStandardization

Source database
MDMCBRHEL84_MST

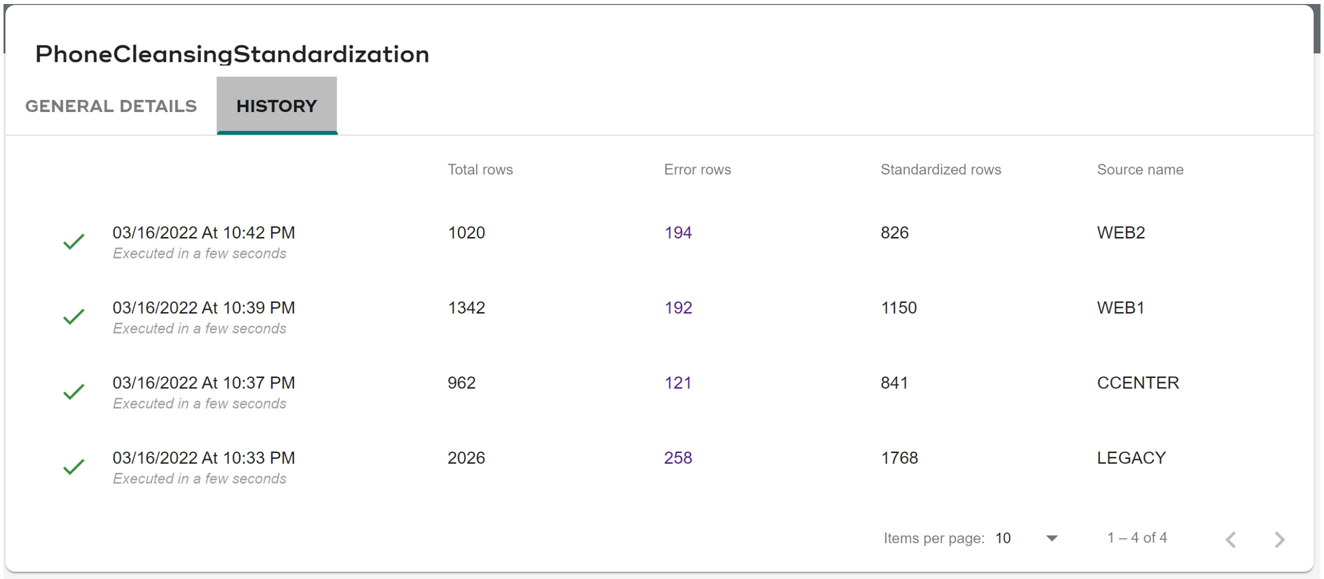
Source table
TLPHN_NUM_RQST_STG

Target database
MDMCBRHEL84_MST

Target table
TLPHN_NUM_RSULT_STG

History: The History section displays the count of total records, standardized records and error records.

Figure 200: Cleansing and standardization—View Result



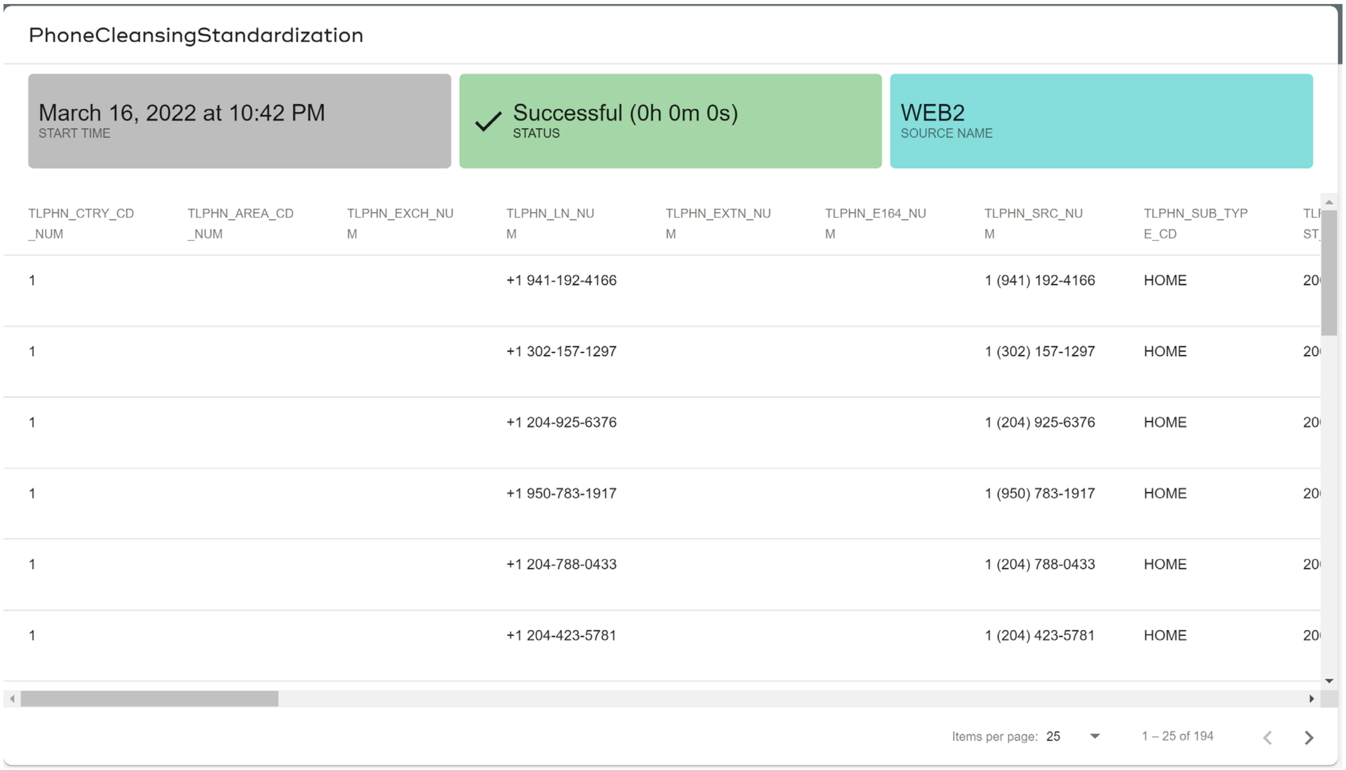
PhoneCleansingStandardization

		Total rows	Error rows	Standardized rows	Source name
✓	03/16/2022 At 10:42 PM *Executed in a few seconds*	1020	194	826	WEB2
✓	03/16/2022 At 10:39 PM *Executed in a few seconds*	1342	192	1150	WEB1
✓	03/16/2022 At 10:37 PM *Executed in a few seconds*	962	121	841	CCENTER
✓	03/16/2022 At 10:33 PM *Executed in a few seconds*	2026	258	1768	LEGACY

Items per page: 10 1 – 4 of 4

On the **History** section, click on the error record count, the error records will be displayed as in Figure 201.

Figure 201: Cleansing and standardization—View Results—View Error Records



PhoneCleansingStandardization

March 16, 2022 at 10:42 PM
START TIME

✓ Successful (0h 0m 0s)
STATUS

WEB2
SOURCE NAME

TLPHN_CTRY_CD_NUM	TLPHN_AREA_CD_NUM	TLPHN_EXCH_NUM	TLPHN_LN_NUM	TLPHN_EXTN_NUM	TLPHN_E164_NUM	TLPHN_SRC_NUM	TLPHN_SUB_TYPE_CD	TL ST_
1			+1 941-192-4166			1 (941) 192-4166	HOME	20
1			+1 302-157-1297			1 (302) 157-1297	HOME	20
1			+1 204-925-6376			1 (204) 925-6376	HOME	20
1			+1 950-783-1917			1 (950) 783-1917	HOME	20
1			+1 204-788-0433			1 (204) 788-0433	HOME	20
1			+1 204-423-5781			1 (204) 423-5781	HOME	20

Items per page: 25 1 – 25 of 194

Delete C & S Profile

To delete profile:

1. On the **Cleansing and standardization** page, click on the Menu icon corresponding to the required profile and click **Delete**.

   The Confirmation Webpage Dialog is displayed.
2. On the Confirmation Webpage Dialog, click **DELETE**.

   Message: “Profile deleted successfully” is displayed.

Manage External C & S Tool

MDM supports cleansing and standardization using third party tools like Loqate in addition to MDM’s own capacity of cleansing & standardization process. Data can be cleansed through third party tools using MDM UI and the cleansed and standardized data can be used in the matching and survivorship process of MDM. The cleansing and standardization using third party tool can be done in batch mode.

Batch Mode: Batch mode is used for cleansing and standardization of data stored in a source table by third party cleansing tool. MDM prepares and saves the data to a file in the required format for Loqate and sends it to the Loqate server. Each record will then be cleansed, standardized, verified and returned in a file for MDM to process. The file will be read and each record is updated in the source table or inserted in the target table based on the profile configuration. The cleansed and standardized data can be further used for matching and survivorship.

Third Party Integration

Prerequisite:

- It is recommended to install the third party tool (Loqate) and MDM server on the same machine for the MDM to work with third party tool.
- Copy the third party jar files from <third party tool install location> to <MDM_Install_Directory>\lib\3plib and restart the MDM server.

Perform the following steps for Cleansing and Standardization using third party tool (Loqate):

- Register Source and Target Tables Using Model Builder UI (Batch Mode)
- Create C & S Profile (External Profile)
- Execute C & S Profile

Register Source and Target Tables Using Model Builder UI (Batch Mode)

Register Source and Target tables participating in third party C & S using Model Builder UI. If the target table does not exists, create the target table using **Configure Tables for External Profile** UI.

The source table contains the input data to be cleansed and standardized by the third party tool (Loqate). The output data (cleansed and standardized data) can be stored in a separate target table or can be stored in the same source table. If you want to store the cleansed data in a different table, register a target table.

For details on registering source and target tables, refer to Model Builder chapter.

Create C & S Profile (External Profile)

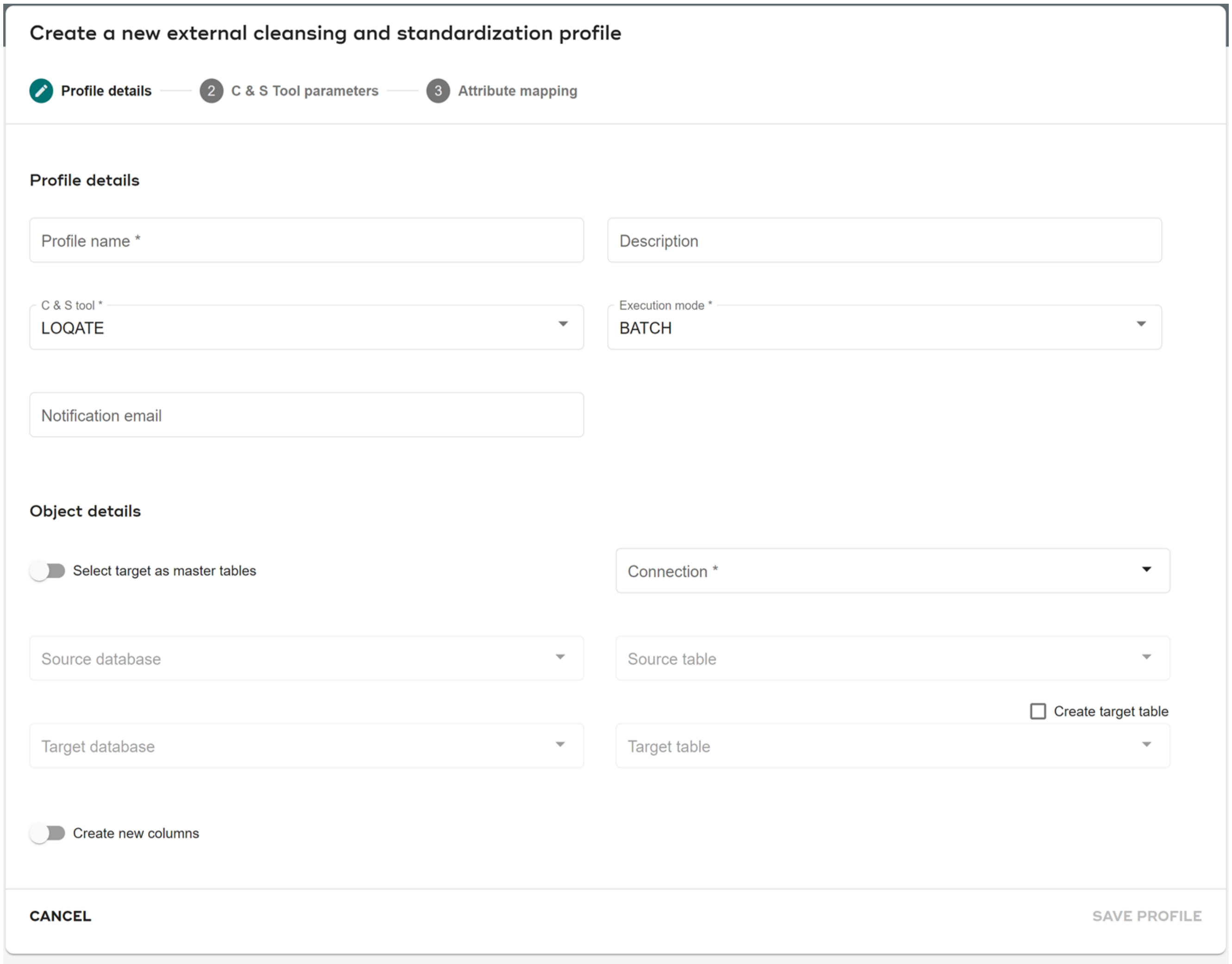
To create external C & S profile:

1 On the MDM UI, in the left navigation pane, click **Data Harmonization** -> **Cleansing & standardization**.

2 Click **Create New** -> **External profile**.

The **Create a new external cleansing and standardization profile** page (Figure 202) opens.

Figure 202: Create External C & S Profile



Create a new external cleansing and standardization profile

C & S tool *: LOQATE

Execution mode *: BATCH

Profile Details

3 Under **Profile details** tab on the **Create a new external cleansing and standardization profile** page

- enter the profile name in the **Profile Name** and **Profile description** field.
- select the external C & S tool from **C & S Tool** drop-down.
- select the execution mode from **Execution Mode** drop-down.

  You can execute the profile in two modes (API or Batch).

4 Under **Object Details** section in Profile Details tab,

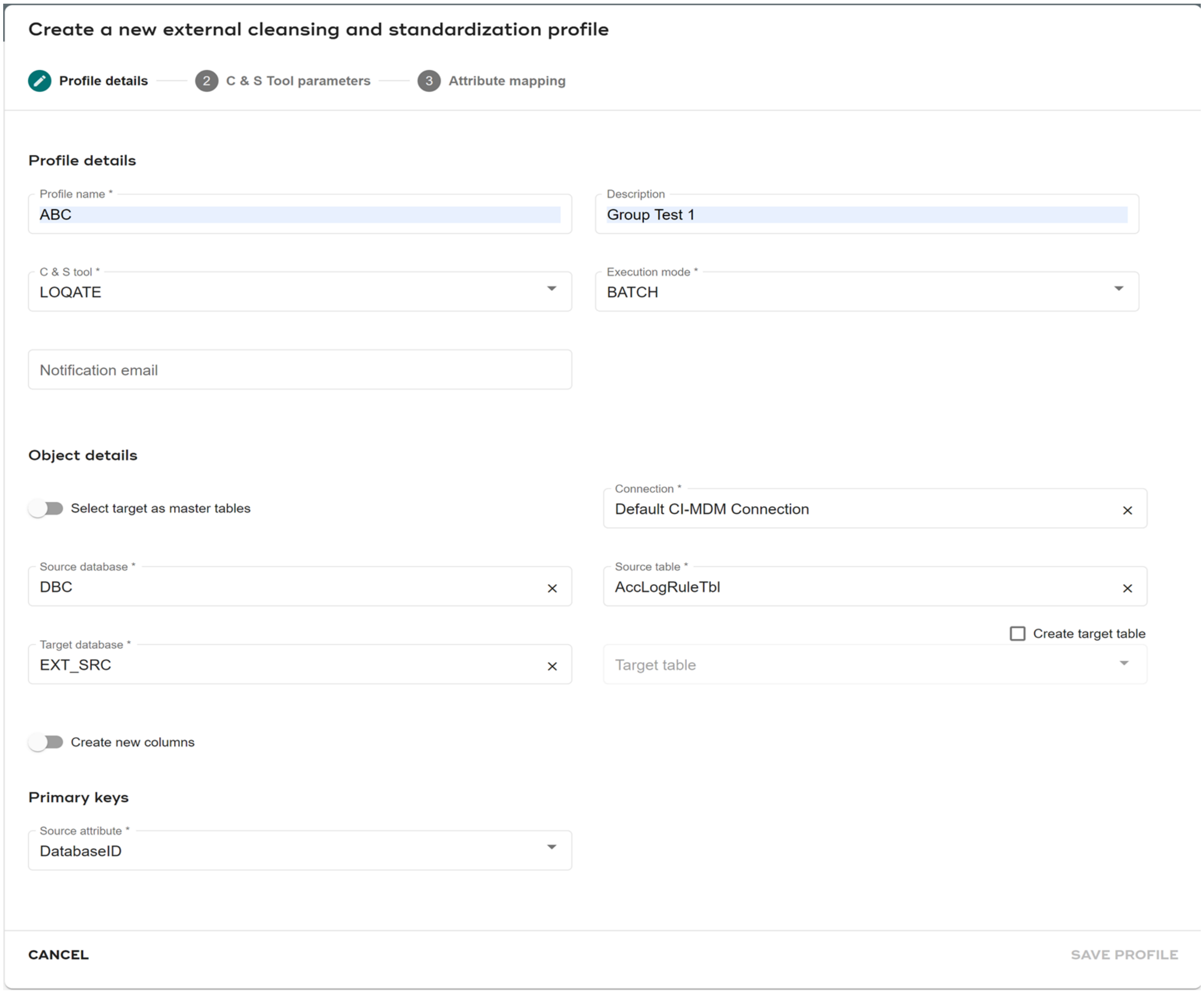
- Enable the option **Select target as master database** to select the default connection for master database.

  You must select the connection for master database manually if you do not enable the **Select target as master database** option.

- Select **Source database** and **Source table** from the dropdown.

  Primary keys section appears when you select **Source Table**. You must select the **Source attribute** under **Primary keys** section

Figure 203: External C&S Profile: Primary Keys



Create a new external cleansing and standardization profile

Profile details

Profile name *: ABC

Description: Group Test 1

C & S tool *: LOQATE

Execution mode *: BATCH

Notification email

Object details

Select target as master tables

Connection *: Default CI-MDM Connection

Source database *: DBC

Source table *: AccLogRuleTbl

☐ Create target table

Target database *: EXT_SRC

Target table

Create new columns

Primary keys

Source attribute *: DatabaseID

- Select **Target database** and **Target table** from the dropdown.

  Note: In batch mode, the Source and Target tables can be same or different. If the source and target tables are same, the project configurations must be done in a way that it returns only one output record for each input record.

If the execution mode selected is Batch, the **Create a new external cleansing and standardization profile** page refreshes to display the entry fields for Target table details and C & S Tool Parameters.

- Select **Create target table** to generate a new target table.
- Click **SAVE PROFILE**.

C&S Tool parameters

Click **C&S Tool parameters** tab to specify C&S parameters (third party project (Loqate) parameter values).

The third party (Loqate) project related parameters are added as Code Values in Cleansing Tool Params code set at the time of static data population.

The Figure 205 displays the C & S parameters settings for Loqate project.

Provide following details for C&S Tools parameters:

- Under **Input details**:
  - Provide **Input file path**: Complete path of input file. MDM creates input file in this location.

    For example: C:\Program Files\<third party tool name: Loqate>\test\input.txt
  - Provide **Input Template file path**: Full path of sample input file that shows the input format of third party project (Loqate).

    For example: C:\Program Files\<third party tool name: Loqate>\sample.txt

    MDM provides sample files at: <MDM_Install_Directory>\batch\<third party tool name: Loqate>

    MDM reads only first line from this file.
- Under **Output details**:
  - Provide **Output file path**: Complete path of output file. MDM reads output file from this location.

    For example: C:\Program Files\<third party tool name: Loqate>\test\output.txt
  - Provide **Output template file path**: Full path of sample output file that shows the output format of third party project (Loqate).

  For example: C:\Program Files\<third party tool name: Loqate>\output.txt

  MDM provides sample files at: <MDM_Install_Directory>\batch\<third party tool name: Loqate>

  MDM reads only first line from this file.
- Under **Tool Details**,
  - **Batch file path**: Complete path of the batch project.

    For example for Loqate project:
    <MDM_Install_Directory>\batch\Loqate\runbatch.bat

    MDM provides sample files at:
    <MDM_Install_Directory>\batch\Externaltools\Loqate
  - **Data seperator**: Data separator in template input or output files.

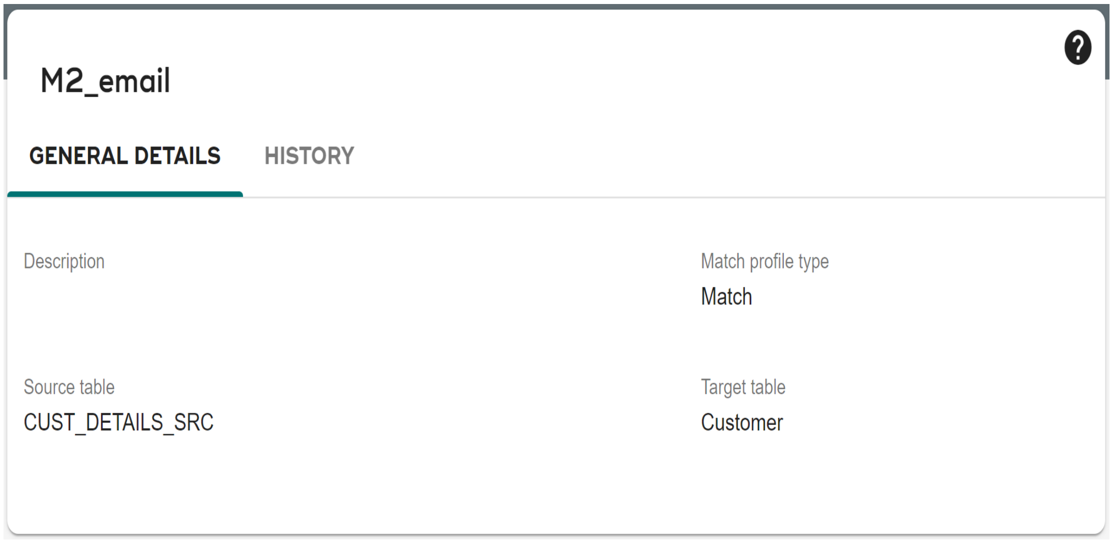
    For example: |, $, & etc.

Data separator values are added as Code Values for Data Separator code set at the time of static data population as in Figure 205. New separators can be added dynamically.

- Click **SAVE PROFILE**.

Router Project information is optional. If Router project entry is not available, MDM executes C & S project.

Figure 204: Create C & S Profile



M2_email

Description

Match profile type
Match

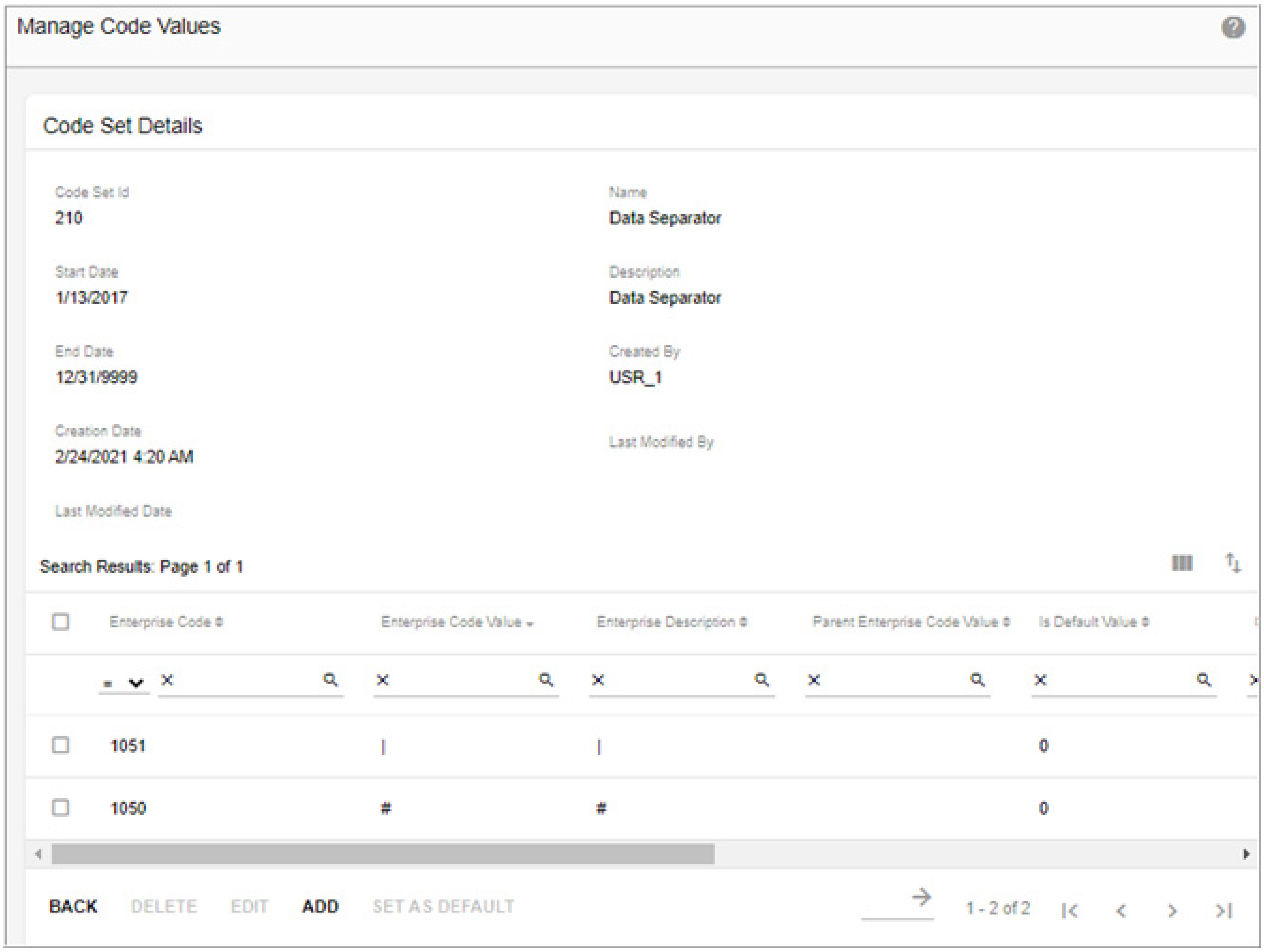
Source table
CUST_DETAILS_SRC

Target table
Customer

On the Create C & S Profile page (Figure 204),

-

Figure 205: Manage Code Values



Code Set Details

Code Set Id
210

Name
Data Separator

Start Date
1/13/2017

Description
Data Separator

End Date
12/31/9999

Created By
USR_1

Creation Date
2/24/2021 4:20 AM

Last Modified By

Last Modified Date

Search Results: Page 1 of 1

☐	Enterprise Code	Enterprise Code Value	Enterprise Description	Parent Enterprise Code Value	Is Default Value
☐	1051	|	|		0
☐	1050	#	#		0

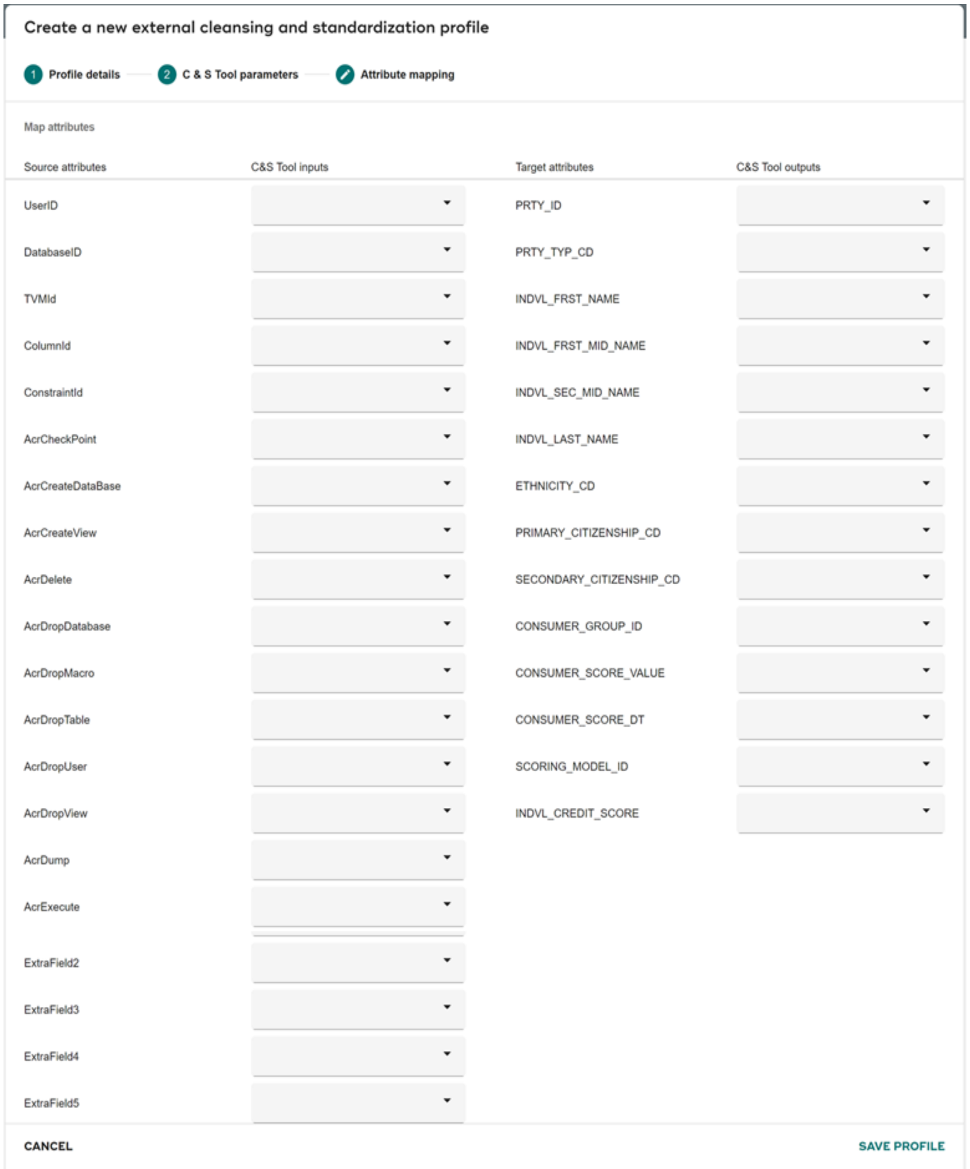
Attribute mapping

Once you define C&S Tool parameters, click **Attribute mapping** tab to derive the source and target attributes from the provided attributes on **Create a new external cleansing and standardization profile** page.

The C & S Tool Inputs and Outputs corresponds to the header of Input and Output template file (path provided) specified in **Create a new external cleansing and standardization profile** page.

5 Map the Source and Target attributes participating in C&S to third party tool (Loqate) template input and output columns.

Figure 206: Map C & S Attributes



Create a new external cleansing and standardization profile

Map attributes

Source attributes	C&S Tool inputs	Target attributes	C&S Tool outputs
UserID		PRTY_ID	
DatabaseID		PRTY_TYP_CD	
TVMId		INDVL_FRST_NAME	
ColumnId		INDVL_FRST_MID_NAME	
ConstraintId		INDVL_SEC_MID_NAME	
AcrCheckPoint		INDVL_LAST_NAME	
AcrCreateDataBase		ETHNICITY_CD	
AcrCreateView		PRIMARY_CITIZENSHIP_CD	
AcrDelete		SECONDARY_CITIZENSHIP_CD	
AcrDropDatabase		CONSUMER_GROUP_ID	
AcrDropMacro		CONSUMER_SCORE_VALUE	
AcrDropTable		CONSUMER_SCORE_DT	
AcrDropUser		SCORING_MODEL_ID	
AcrDropView		INDVL_CREDIT_SCORE	
AcrDump			
AcrExecute			
ExtraField2			
ExtraField3			
ExtraField4			
ExtraField5			

6 Click **SAVE PROFILE**.

Message: "C & S profile created successfully" is displayed.

Execute C & S Profile

To execute Profile

1 On the **Create a new external cleansing and standardization profile** page, click on the Menu icon corresponding to the required profile and click **Execute**.

Message: "Execution of the log file has began. Please view log for more details." is displayed.

2 On the **Create a new external cleansing and standardization profile** page, click on the Menu icon corresponding to the required profile and click **Log**.

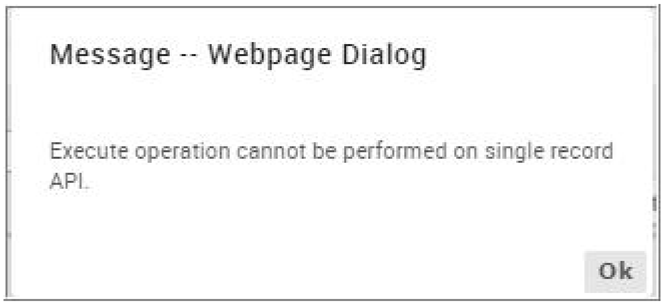
The **Execution Log** page is displayed.

The execution log displays the status of different processes like Fast Export, Fast Load, and Execution of third party tool (Loqate) project.

- Fast Export— Fast Export generates input file reading the source table in the input file location specified during profile creation.
- Execute Tool—Start and End of Loqate project execution.
- Fast Load—Read output file from Output file location and updates the output data in target table.

- The column names in the target table for JDBC fast load should not be more than 28 characters.
- For successful execution of the Loqate profiles created through MDM, the parameters in the executeLoqate.bat file require changes, if the input paths provided during profile creation are different.
- If execution mode is selected as API, you cannot execute the profile from UI and the error message will be displayed as in Figure 207. The third party (Loqate) API profile will be called when you create and save a record on the corresponding party sub type UI.

Figure 207: Error Message



Message -- Webpage Dialog

Execute operation cannot be performed on single record API.

Edit External C & S Profile

Once you have created a external C & S profile, you can edit the profile for any changes required.

To edit an external C & S profile:

1 On the **Create a new external cleansing and standardization profile** page, click on the Menu icon corresponding to the required profile and click **Edit**.

If the selected profile is with API execution mode, you can modify the business entity and click **Save**.

Message: C & S profile edited successfully is displayed.

If the selected profile is with Batch execution mode, modify the required details on the **Edit External C & S Profile** and click **Continue** and on the **Attribute mapping** page, you can modify the Source and Target attribute mappings participating in C & S to third party tool (Loqate) template input and output columns and click **Save**.

Message: “C & S profile edited successfully” is displayed.

Delete External C & S Profile

To delete an external C & S profile:

1. On the **Manage External C & S** page, click on the Menu icon corresponding to the required profile and click **Delete.**

   The Confirmation Webpage Dialog is displayed.

2. On the Confirmation Webpage Dialog, click **DELETE**.

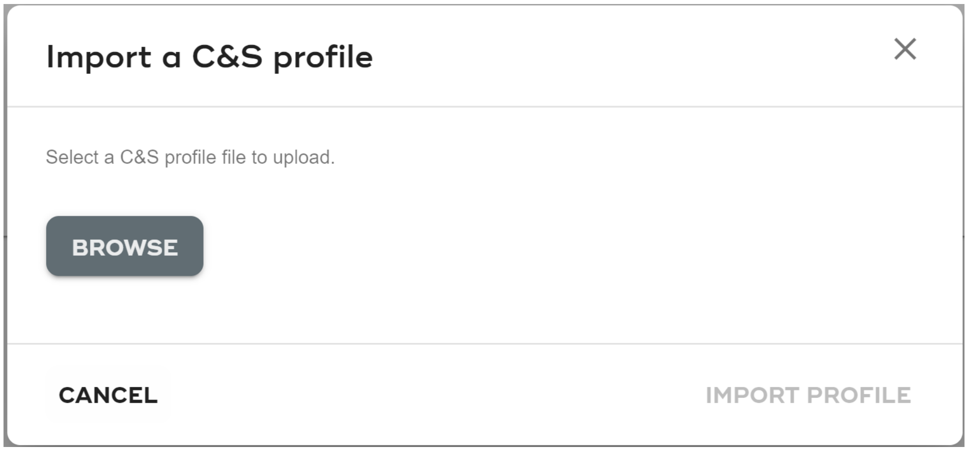
   Message: C & S profile deleted successfully is displayed.

Import C&S Profile

1. On the **Cleansing and standardization**, click **Import**.

   The **Import a C&S profile** page opens.

2. Click **Browse** and navigate to the file location.



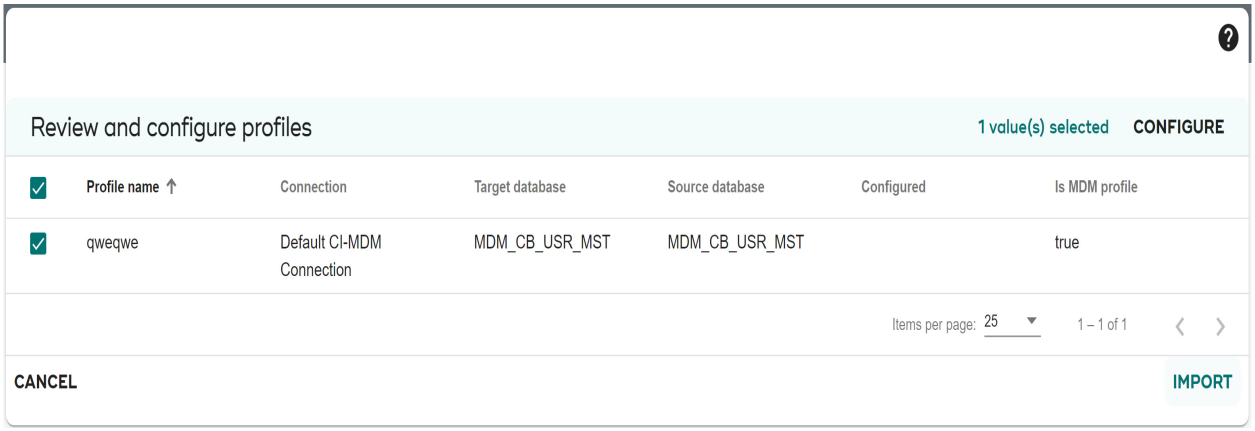
Import a C&S profile

Select a C&S profile file to upload.

3. Click **Open**.

4. Click **IMPORT PROFILE**.

   The **Review and configure profiles** page opens.



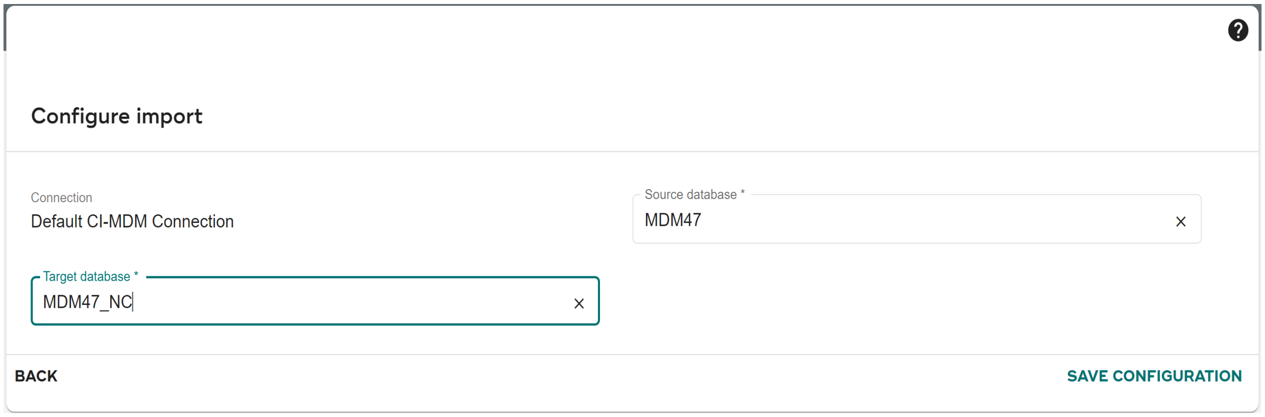
☑	Profile name	Connection	Target database	Source database	Configured	Is MDM profile
☑	qweqwe	Default CI-MDM Connection	MDM_CB_USR_MST	MDM_CB_USR_MST		true

5 Select the profile you want to import and click **Configure**.

The **Configure import** page opens.

6 Select **Source database** and **Target database** from the drop down list.

7 Click **SAVE CONFIGURATION**.



Connection: Default CI-MDM Connection

Source database *: MDM47

Target database *: MDM47_NC

8 After saving the configuration, on **Review and configure profiles**, click **IMPORT**.

Export C&S Profile

1 On the **Cleansing and standardization**, select a profile from the list which you want to export.

2 Click **Export**.

Profile exports to your system.

Matching Process

Data matching also known as Record matching or data deduplication refers to the process of identifying matching Primary and secondary source(s) data records based on the predefined set of attributes and functions and producing score or results to perform the survivorship and/or merge process based on the results. Matching process helps in identifying new records, duplicate or exact match records or cross referencing existing master records with source system records.

Matching process is a Probabilistic matching, which works on the scores and weights assigned to match attributes for the underlying match profile. The Probabilistic method is essentially a scoring method whereby each row of data set "A" is scored against each row of data set "B". The score in this instance represents likelihood that 2 given rows match. Scores are separated into 3 groups by setting 2 threshold values. Exact Match, Potential Match, and New Records. The output of this process is an associative table holding the matching primary keys from each set. This table can be used as a means of joining source data sets to a Golden Master for the purposes of performing survivorship.

RDM Matching process provides capabilities like creating match profile with configured functions, deduplication, test run of match profiles and support for external match profiles.

The following lists the pre-requisites for matching process:

- Source tables are populated with cleansed and standardized data, cleansing and standardization improves the data quality, which would provide better and accurate match results.
- Source registration is a mandatory step for non MDM sources (table or view) used for matching.
- Source should have the Primary Key (PK) columns defined. In Advanced Option, you can define logical PKs if tables do not have PK or Unique Primary Index (UPI). Any column can be selected as logical PK and can be used in Matching.

Manage Match Profiles

On the Manage Match Profiles page, you can perform the following functions.

- Create Match Profile
- Create Matching Reconciliation
- Create External Profile
- Edit Profile
- Execute Match Profile and View Execution Details
- Delete Profile

Profile Details

A matching profile refers to specific configuration details required for performing the matching process. The following details have to be specified while creating the matching profile:

1. Select the Master and Source table or view to be compared. The master and source can be either table or view.
2. Select Attributes—select attributes and functions for source and master tables.
   - Select attributes to be compared for match.

- Select functions to be applied to attributes. It is an optional step.
- During matching, data for selected attribute is transformed by the selected function and then compared between source and master.
- Fine tune the attributes and functions for better matching results.

3. Map attribute pairs—attributes from source and master are paired to be compared during matching.
4. Multi Match Criteria—Multilevel matching capability allows multiple criteria for matching between source and target within the same matching profile. Multiple matching criteria are considered as OR conditions while performing the matching and the results will be either match or no match.
5. Assign Threshold—Threshold values are assigned to tailor characteristic of match profile.
   - Match table have agree and disagree values generally entered by Data Steward.
     - Agree column: given that the two compared records are a match, what is the probability that the selected attribute pair will match correctly.
     - Disagree column: derived from agree column value as 100 - agree column value
   - Non-match table have agree and disagree values generally entered by Data Steward.
     - Agree column: given that the two compared records are non-match, what is the probability that the selected attribute pair will match by chance.
     - Disagree column: derived from agree column value as 100 - agree column value.
   - Score Value
     - Agree column: agreement score is calculated using the below formula

       log2(agree column value in match table/agree column value in non-match table)
     - Disagree column: disagreement score is calculated using the below formula

       log2(disagree column value in match table/disagree column value in non-match table)
   - Score Range
     - Minimum: sum of all disagreement scores.
     - Maximum: sum of all agreement scores.
   - Set Threshold
     - Match Threshold: If the score value is greater than or equal to match threshold, the records are considered exact match.

       If the score value is lesser than match threshold and score value is greater than bypass limit, the records are considered potential match.

       Both exact match and potential match records will become candidates for survivorship process.
     - Bypass Threshold: If the score value is equal to or less than this bypass threshold, then the records will be ignored.
6. Partition Attributes—assign attributes for creating partitions. Creating partitions is an optional step. Creating partitions helps in grouping the records based on the selected attributes (preferably select attributes common to both the master and source) to reduce

the number of row counts for comparison. Records in the same partitions will then be compared.

- First Pass: select the attribute and function to be applied on the attributes.
- Second Pass: optionally select the attribute and function for second pass. The second pass is provided to enhance the selectivity of the match as there might be some missed good matches that might be caught by a second pass.

7. Partition Profile—displays the partition profile details for first pass and second pass.
8. Partition Summary—displays the partition details like number of partitions (block number), block values and row count.
9. Partition Run Summary—The run summary table displays the Match quality, indicating the percentage of Source rows matched and un-matched.

   The following points recommended on the choice of columns for matching:

   - Selected columns in an attribute pair should have common domains.
   - Numeric Id columns especially one's with check digits are good candidates. Example, bank Account, SSN, TIN, Policy No. etc.
   - Columns with large domain range are good choices. Examples may include driving license, part number, serial No. etc.
   - Columns should not have many blanks or nulls.
   - Columns with large character strings may not make good matching columns.
   - Partitioning columns should not be used as match columns.
   - Using non-correlated columns as attribute pairs will result in better efficiency.

     Note: The number and nature of the candidate columns usually has a bearing on the success of probabilistic matching. Standardized data with large number of candidate keys may provide better results depending on the nature of files used for comparison.

Create Match Profile

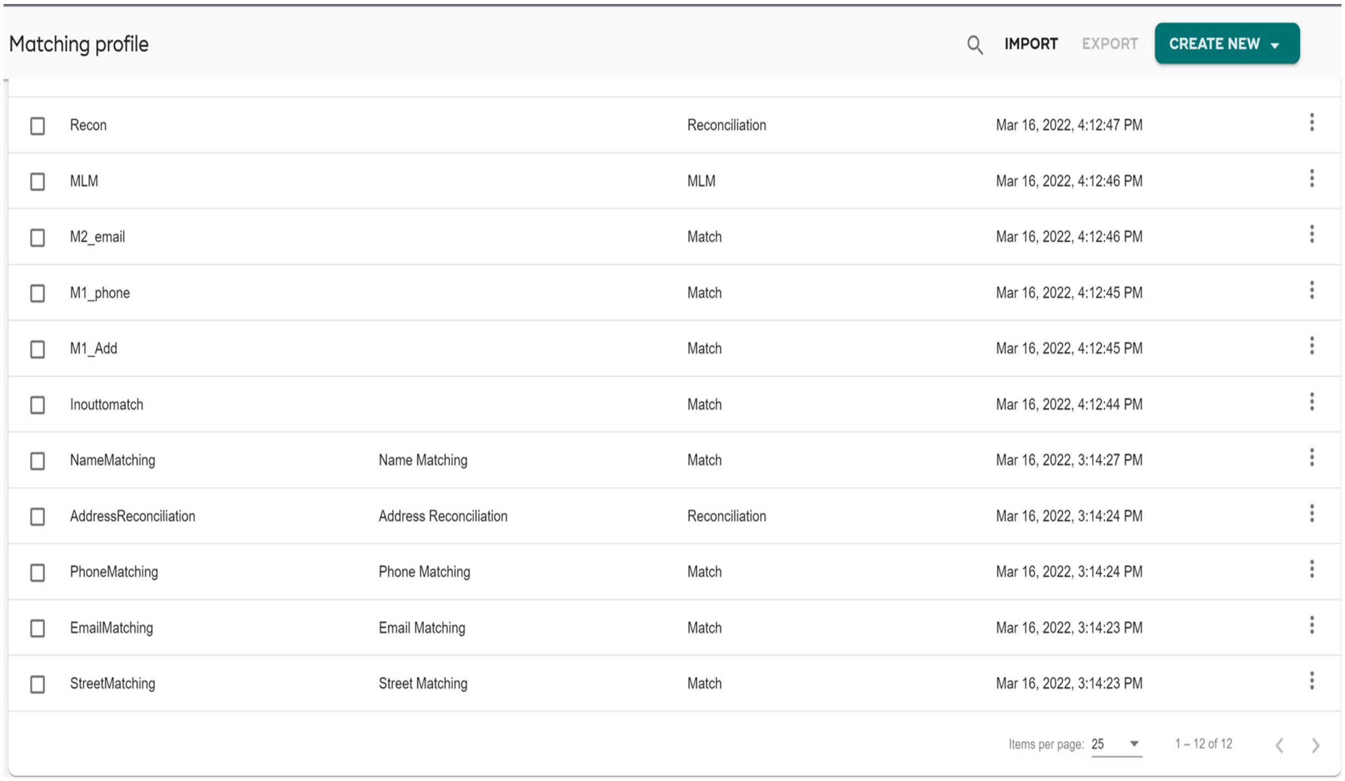
For detailed description on various fields during profile creation, see Section : “Profile Details”

To create matching profile:

1. On the MDM UI, in the left navigation pane, click **Data Harmonization** -> **Matching**.

   The **Matching Profiles** page (Figure 208) is displayed.

Figure 208: Matching Profile



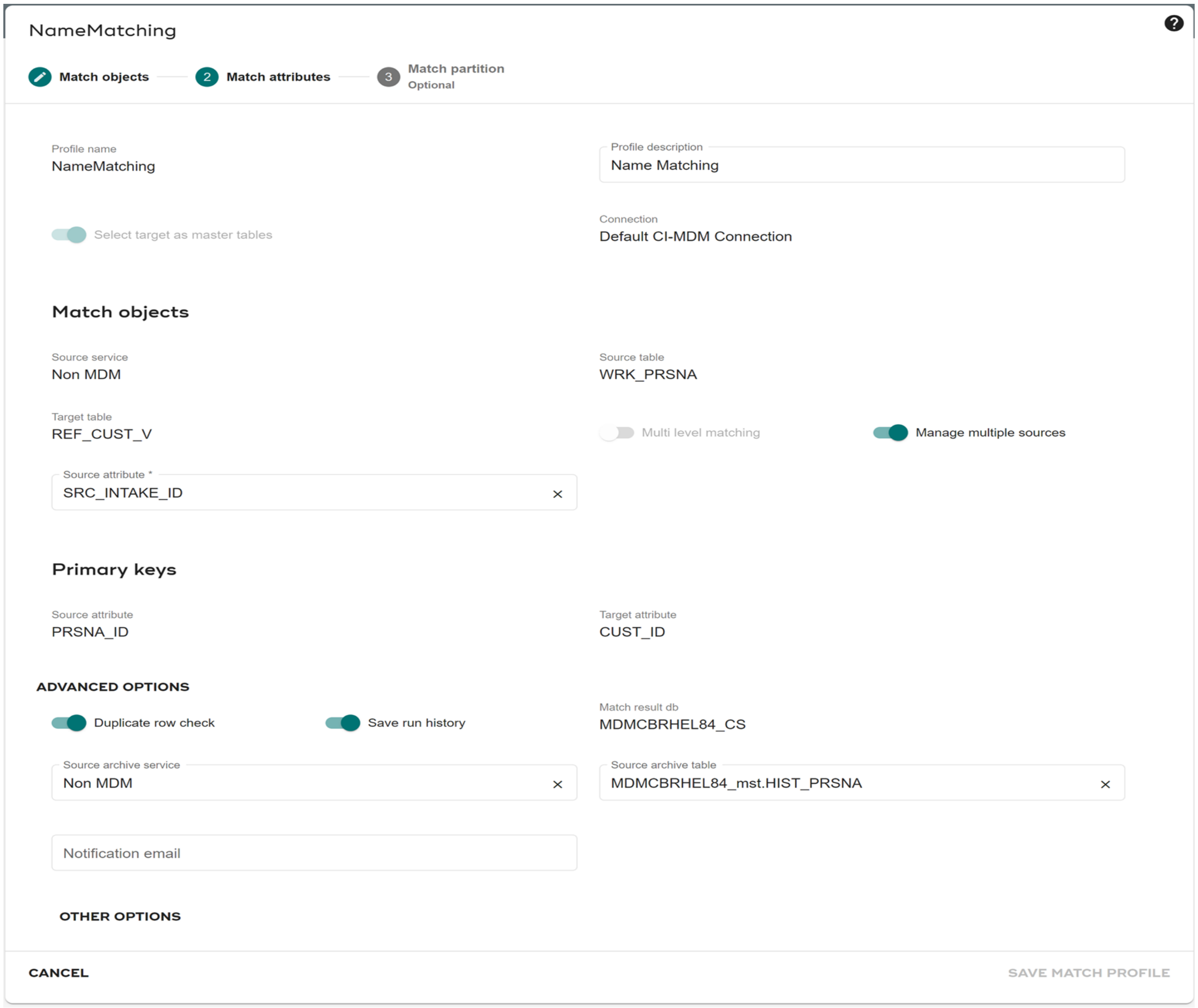
☐ Recon		Reconciliation	Mar 16, 2022, 4:12:47 PM	⋮
☐ MLM		MLM	Mar 16, 2022, 4:12:46 PM	⋮
☐ M2_email		Match	Mar 16, 2022, 4:12:46 PM	⋮
☐ M1_phone		Match	Mar 16, 2022, 4:12:45 PM	⋮
☐ M1_Add		Match	Mar 16, 2022, 4:12:45 PM	⋮
☐ Inouttomatch		Match	Mar 16, 2022, 4:12:44 PM	⋮
☐ NameMatching	Name Matching	Match	Mar 16, 2022, 3:14:27 PM	⋮
☐ AddressReconciliation	Address Reconciliation	Reconciliation	Mar 16, 2022, 3:14:24 PM	⋮
☐ PhoneMatching	Phone Matching	Match	Mar 16, 2022, 3:14:24 PM	⋮
☐ EmailMatching	Email Matching	Match	Mar 16, 2022, 3:14:23 PM	⋮
☐ StreetMatching	Street Matching	Match	Mar 16, 2022, 3:14:23 PM	⋮

Items per page: 25 1 – 12 of 12

2 On the **Matching Profiles** page (Figure 208), click **Create New > Match Profile**.

The **Create Match Profile** page (Figure 209) is displayed.

Figure 209: Create Match Profile



Profile name: NameMatching

Profile description: Name Matching

● Select target as master tables

Connection: Default CI-MDM Connection

Match objects

Source service: Non MDM

Source table: WRK_PRSNA

Target table: REF_CUST_V

○ Multi level matching

● Manage multiple sources

Source attribute *: SRC_INTAKE_ID

Primary keys

Source attribute: PRSNA_ID

Target attribute: CUST_ID

ADVANCED OPTIONS

● Duplicate row check

● Save run history

Match result db: MDMCBRHEL84_CS

Source archive service: Non MDM

Source archive table: MDMCBRHEL84_mst.HIST_PRSNA

Notification email

OTHER OPTIONS

3 On the **Create a new match profile** page (Figure 209), enter the following:

Match objects

- **Profile Name**: enter the name of the profile.
- **Profile description:** enter the description of the profile
- **Connection**: select the Connection under which source and target DBs & tables/views needs to be selected. You can define a new connection after adding a new "Connections" activity.
- **Select target as master table**: Enable the option disable the **Connection** settings and make default database as connection.

  If you do not enable the option, you can select any Vantage table or view.
- **Source database**: select the source database (Input, Master or Non MDM source).
- **Source table**: select the source table or view to be compared with the master table or view.

- **Target database**: select the target database
- **Target table**: select the source table or view to be compared with the master table or view.
- **Multi level matching**: enable the option to specify multiple match criteria (defined by creating group of matching attributes) for matching between source and target within the same matching profile.
- **Manage multiple sources:** enable the option to select the **Source attribute** if multiple sources exists. If you do not enable the option, default source attribute value considers.
- Under **ADVANCED OPTIONS** section in **Match objects**, provide the following:
  - **Duplicate Row Check**: Enable the option, if you want to perform deduplication on the source.

Deduplication results will be used during Survivorship which will avoid creating multiple records for the duplicates in the source system.

- **Save Run History**: Enable the option to save match results of previous runs. If this option is selected, you will get option to work on results of previous matching runs (History runs) in the corresponding Survivorship profile.

  If this option is selected, **Select History Source Repository** and **Select History Table** dropdown will be displayed as below.

  It is mandatory to select the source details if the Save Run History option is selected. It is recommended to select the same source repository and source table used for matching process.

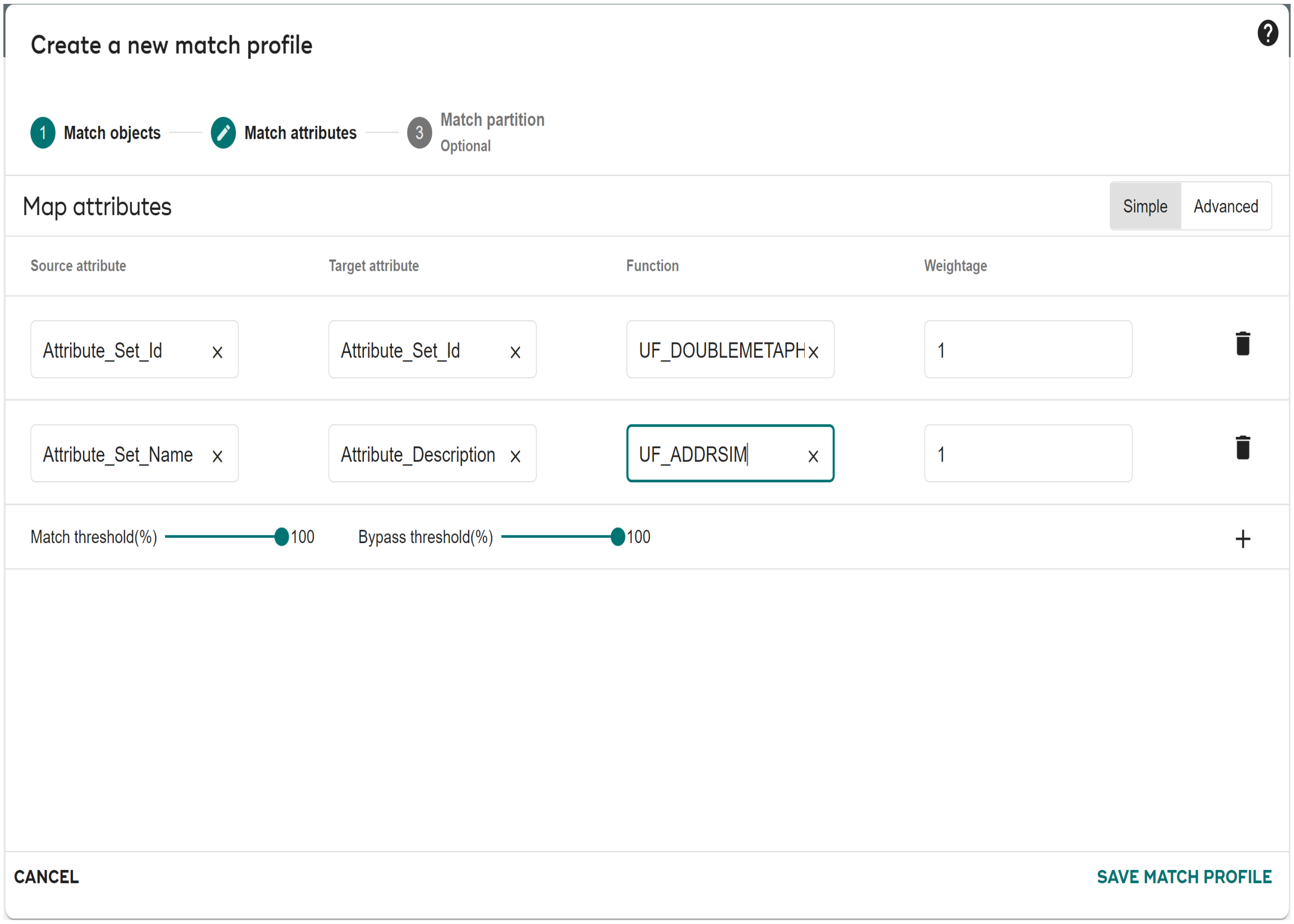
  If this option is selected, on the Data load dashboard summary, the history execution log details of the corresponding matching profile will have the hyperlink enabled on the Count columns.
- **Notification email**: Provide email ID to send email notifications about the status of matching process.
- **Match result db**: select the datbase to match the result.
- **Source archive service**: select archive service for Source
- **Source archive table**: select archive table for source
- Under **OTHER OPTIONS**, you can configure the following:
  - **Manage Authorization**: The Authorization feature provides security on a profile level. Only users who have access on the matching profile would be able to access/ modify the profile. This feature can be used when you need to restrict the users from accessing all matching profiles and its underlying result data. Select **Manage Authorization** Checkbox to define authorization for a match profile. Select the User Groups from **Available User Groups** list box and move them to **Assigned User Groups** list box by clicking on the arrow in between. The Groups in **Assigned User Groups** list box will get the access for the match profile. Click

Save button to Save the Authorization configuration.

- **Cross reference for manual override resolution**: When user does a manual Match resolution, if a new source record is merged manually in previous run, the current match result for the same source record will be made inactive and manual override value will be tagged as match. Click **Cross Reference For Manual Override Resolution** checkbox.

- Select the Source and Target tables for which you want to consider cross reference information to prioritize manual override.
  - Click **DONE** to save the settings.

Figure 210: Create Match Profile—Match Attribute



Create a new match profile

Map attributes

Source attribute	Target attribute	Function	Weightage
Attribute_Set_Id	Attribute_Set_Id	UF_DOUBLEMETAPH	1
Attribute_Set_Name	Attribute_Description	UF_ADDRSIM	1

Match threshold(%) 100
Bypass threshold(%) 100

4 On the **Match Attribute** section, select “Simple Match Profile”or “Advanced Match Profile”.

Simple Match Profile

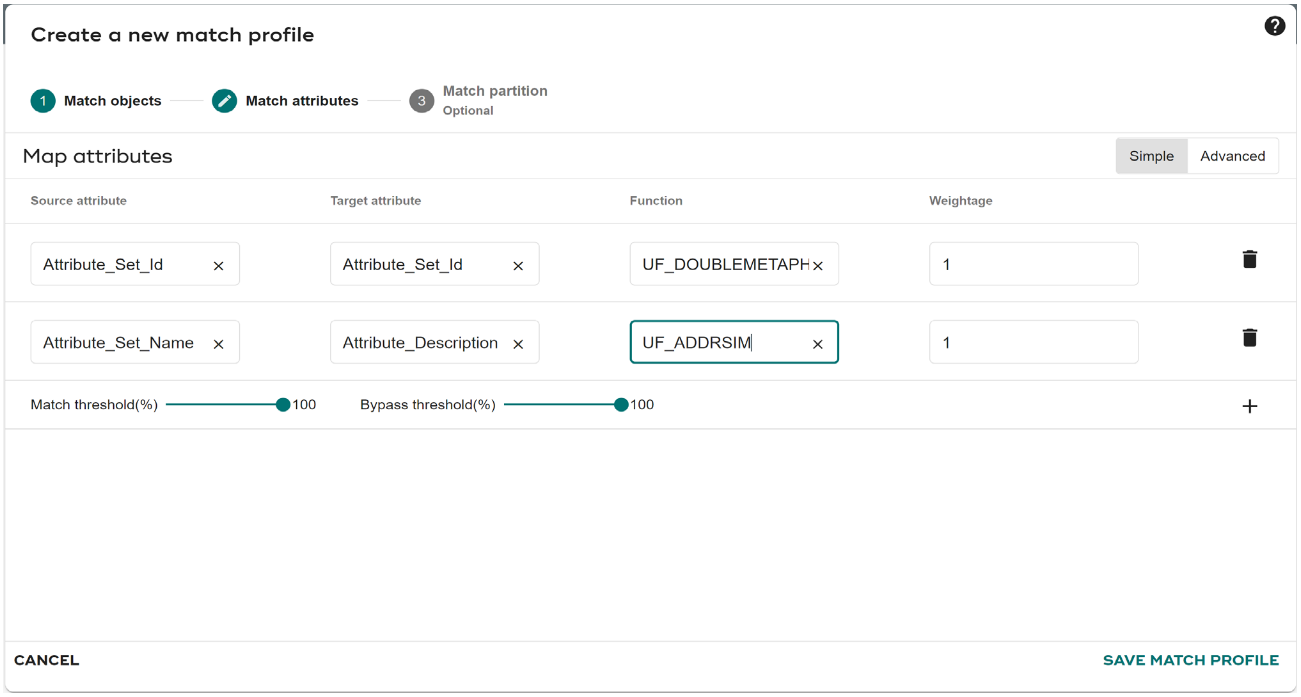
On **Simple** match profile, do the following:

a Select **Source Attribute** select the attributes of the source to be used for comparing from the Attribute list.

b Select **Target Attribute**, select the attributes of the target to be used for comparing from the **Attribute** list.

c Select **Function** for each of the attribute from **Source Function** dropdown.

d Provide **Weightage** to give weightage to the matching comparison.



Map attributes

Source attribute	Target attribute	Function	Weightage
Attribute_Set_Id	Attribute_Set_Id	UF_DOUBLEMETAPH	1
Attribute_Set_Name	Attribute_Description	UF_ADDRSIM	1

Match threshold(%) 100

Bypass threshold(%) 100

- The input parameter for the function and the matching attribute it works on, should have compatible data types.
- The function drop-down does not display the internal functions. Any function with FM_TYPE = 'I' are internal functions. These functions are created by MDM but used inside other functions.

e Provide the **Match threshold** percentage value for each of the attribute pair for the match.

f Provide the **Bypass threshold** percentage value for each of the attribute for the match.

g Click delete icon corresponding to the particular attribute to remove the attribute row.

h Click add icon to add a new attribute row.

Advanced Match Profile

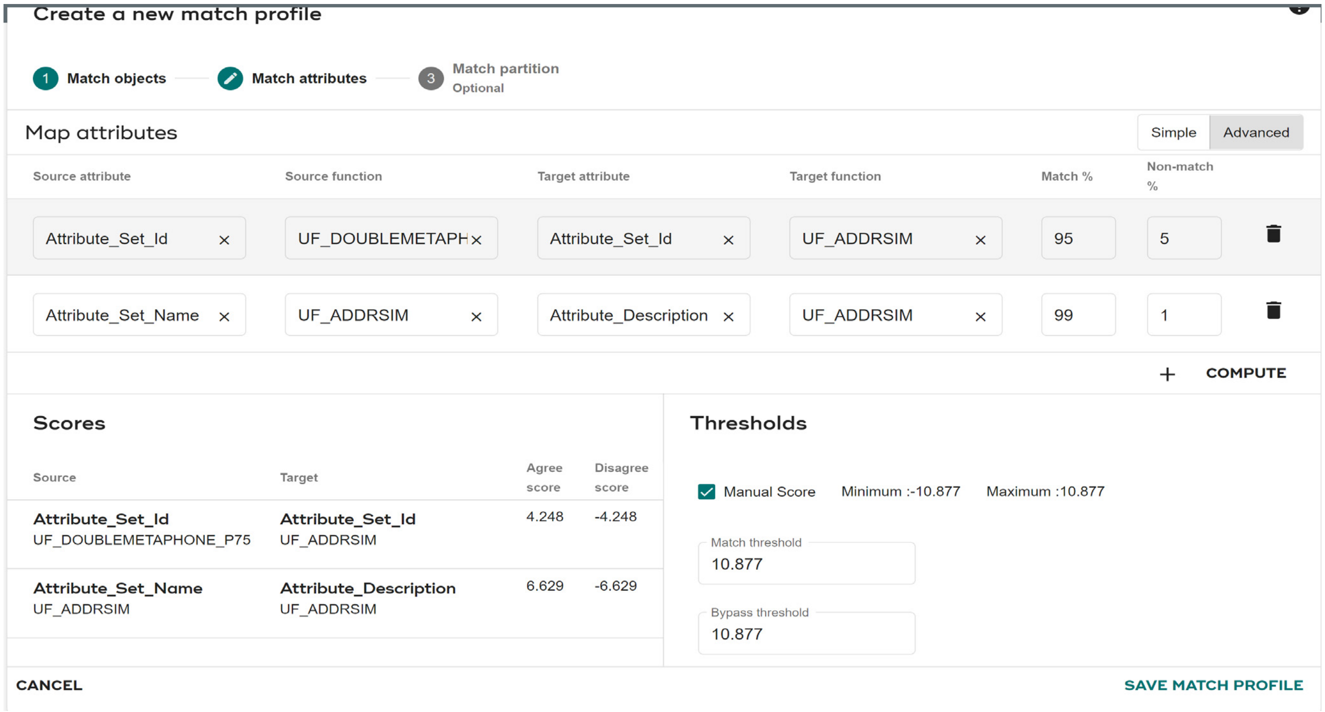
a Click **Advanced** under **Map Attributes** for creating the Advanced Matching profile and do the following:

i Select **Source Attribute** select the attributes of the source to be used for comparing from the Attribute list.

ii From **Source Function** dropdown, select function for each of the source attribute.

iii From **Target Attribute** dropdown, select the attributes of the target to be used for comparing from list.

iv From **Target Function** dropdown, select target function for each of the target attribute.



Map attributes

Source attribute	Source function	Target attribute	Target function	Match %	Non-match %
Attribute_Set_Id	UF_DOUBLEMETAPH	Attribute_Set_Id	UF_ADDRSIM	95	5
Attribute_Set_Name	UF_ADDRSIM	Attribute_Description	UF_ADDRSIM	99	1

Scores

Source	Target	Agree score	Disagree score
Attribute_Set_Id UF_DOUBLEMETAPHONE_P75	**Attribute_Set_Id** UF_ADDRSIM	4.248	-4.248
Attribute_Set_Name UF_ADDRSIM	**Attribute_Description** UF_ADDRSIM	6.629	-6.629

Thresholds

☑ Manual Score Minimum :-10.877 Maximum :10.877

Match threshold
10.877

Bypass threshold
10.877

- The input parameter for the function and the matching attribute it works on, should have compatible data types.
- The number of parameters in the configured function on both Master and Source should be same.
- The function drop-down does not display the internal functions. Any function with FM_TYPE = 'I' are internal functions. These functions are created by MDM but used inside other functions.

v Enter the match percentage value for each of the attribute pair in the **Match%** column for the match.

vi Enter the non match percentage value for each of the attribute pair for non-match in the Non-Match% column.

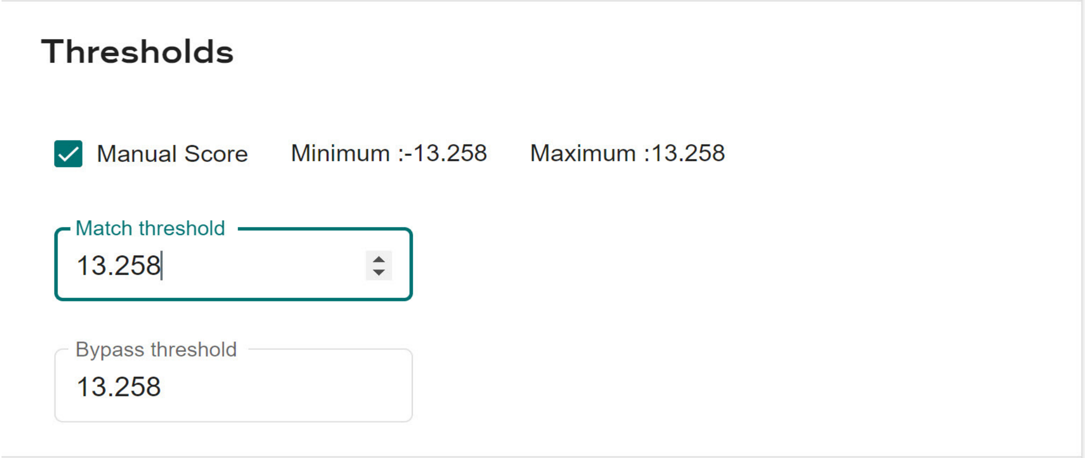
vii Click delete icon corresponding to the particular attribute to remove the attribute row.

viii Click add icon to add a new attribute row.

ix Click **Compute**.

In the **Scores** section, the Agree and Disagree value, Minimum and Maximum score range, the Match and Bypass Threshold values would be populated automatically.

If the **Manual Score** checkbox is selected, you can manually enter the Match and Bypass Threshold values as below.



Thresholds

☑ Manual Score Minimum :-13.258 Maximum :13.258

Match threshold: 13.258

Bypass threshold: 13.258

Make sure to provide Match agree score greater than the Match disagree score in order to perform the matching successfully.

Multi Level Matching

If you enable the option **Multi Level Matching** on the **Create a New Match Profile** UI, then under **Match Attributes**, do the following

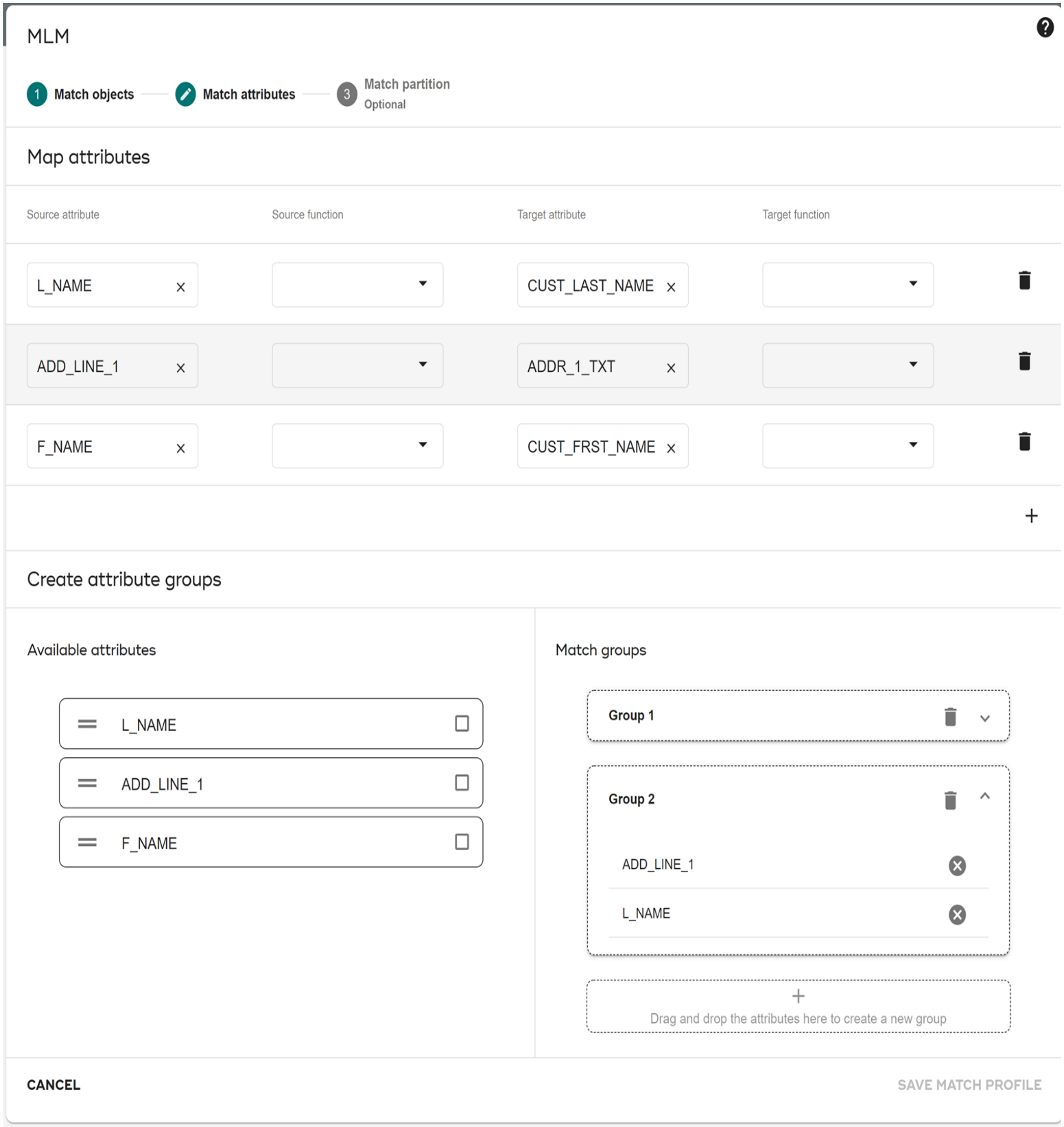
a On the Multi Match Criteria, to create a group, drag and drop the attributes from Available attributes to Match groups list under the section **Drag and drop the attributes here to create a new group**.

A group will be created with group Id and selected attributes. Multiple groups can be created with different combinations of attributes.

In the multi level matching process, each group will be considered as one match criteria and will be evaluated as OR conditions.

In case of multi level matching, the matching results will be either match or no match and the Match Probabilities values will not be displayed as the results are either match or no match.

Figure 211: Create Match Profile—Multi Match Criteria



Source attribute	Source function	Target attribute	Target function
L_NAME		CUST_LAST_NAME	
ADD_LINE_1		ADDR_1_TXT	
F_NAME		CUST_FRST_NAME	

Available attributes: L_NAME ☐, ADD_LINE_1 ☐, F_NAME ☐

Group 1

Group 2: ADD_LINE_1, L_NAME

5 Click **Save Match Profile**

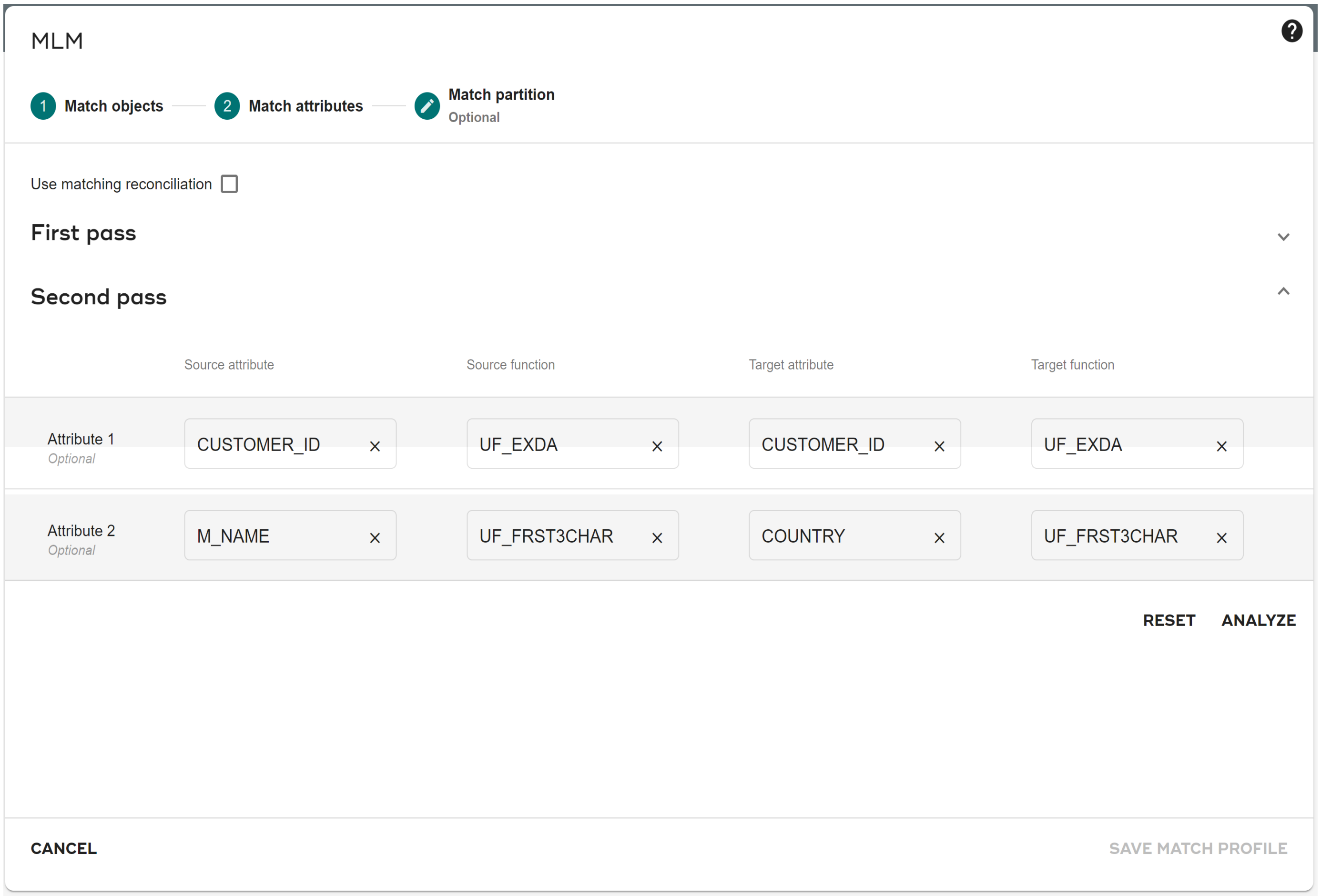
Currently there is no option for manual resolution of records from UI. You can use the API to manually resolve records. This API persists the source table data as part of survivorship execution. Pass the isManualFlag as 1 if you want to manually override the record.

```
<REQUEST Name="executeSurvivorshipMaster"  ServiceName="MDMServices"
HandleException="true">
        <SurvMappingId Value="301"/>
        <MatchProfileId Value="401"/>
        <SurvActionType Value="ALL"/>
        <SurvExecuteCondition Value=""/>
        <UserName Value="USR_1"/>
        <isManualFlag Value="0"/>
</REQUEST>
```

6. Click Match **Partition**.

   The **Partition Profile** section (Figure 212) is displayed. Creating partition is an optional step.

Figure 212: Create Match Profile—Match Partition



MLM

1 Match objects — 2 Match attributes — Match partition (Optional)

Use matching reconciliation ☐

First pass

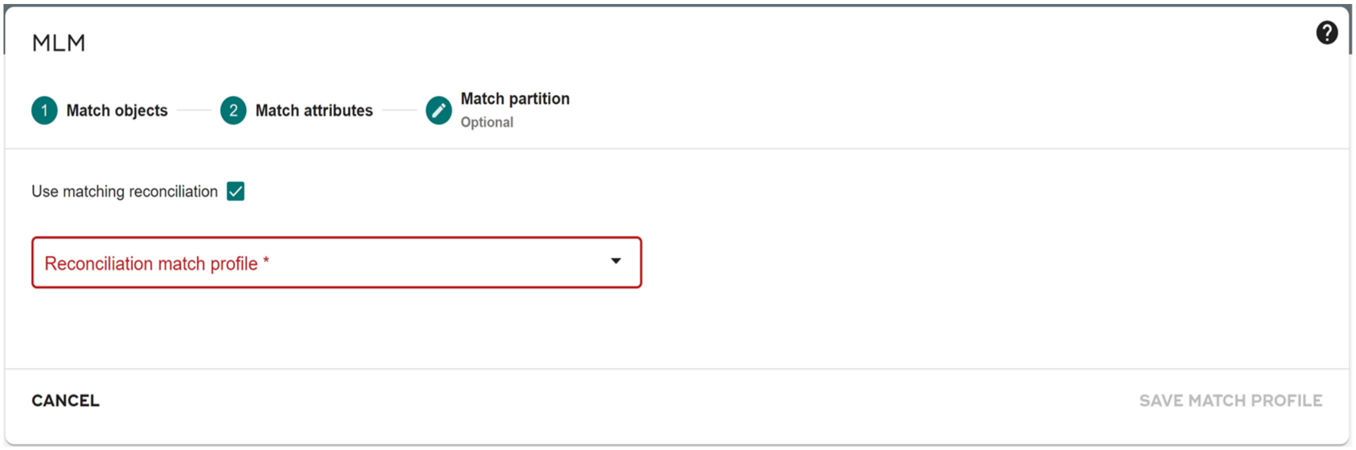
Second pass

	Source attribute	Source function	Target attribute	Target function
Attribute 1 *Optional*	CUSTOMER_ID	UF_EXDA	CUSTOMER_ID	UF_EXDA
Attribute 2 *Optional*	M_NAME	UF_FRST3CHAR	COUNTRY	UF_FRST3CHAR

7. On the **Match partition** section, select the option **Use matching reconciliation** to use Reconciliation matching profile for partition. The Match output from the reconciliation profile will be used as partition for the new match profile.

   If **Use Matching Reconciliation** option is selected, the **Reconciliation match profile** section is displayed as in Figure 213.

Figure 213: Create Match Profile—Partition Profile



Use matching reconciliation ☑

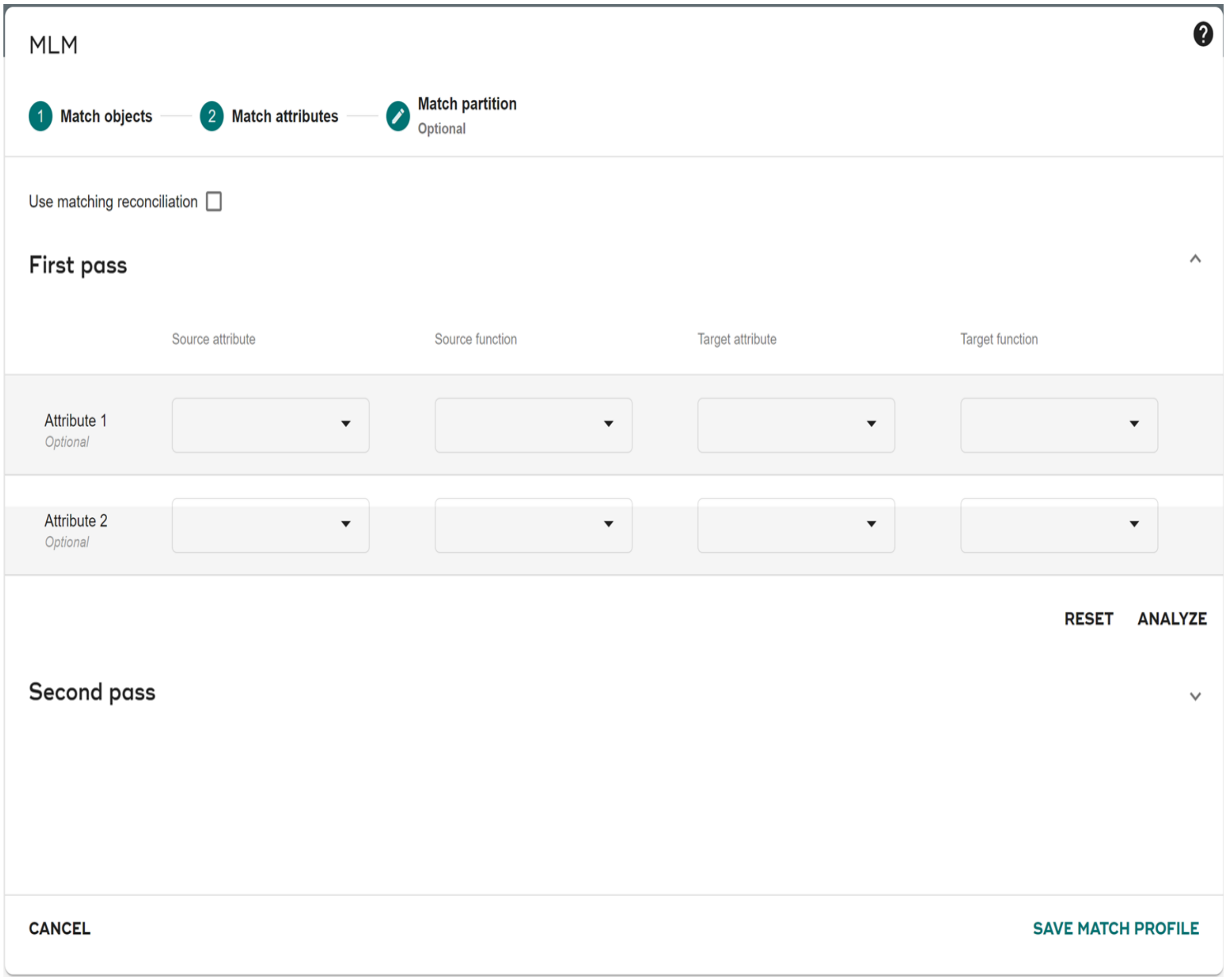
Reconciliation match profile *

8 Select the reconciliation profile to be used for partition and select the key mapping and click **SAVE MATCH PROFILE**.

9 On the **Match partition** section, if Matching Reconciliation is not selected, perform the following:

- In the **First Pass** pane, select the attributes and functions in the **Target** and **Source** section.

Figure 214: Create Match Profile—Match partition



- Click **ANALYZE**.

- The data type of the function attributes on both Target and source should be same.
- It is recommended to have different partition attributes and matching attributes for better comparison.
- Always use user defined functions (UDFs) that return similar datatype in Partition attributes UI. Otherwise Blocking will not work as expected. Following UDF (UF_EXMO-Integer, UF_EXYR-Integer, UF_FRST2CHAR-Char, UF_FRSTCHAR-Char, UF_EXDA-Integer, UF_SNDX_B-Char and UF_FRST3CHAR-Char) are available in Partition page with output data type.
- Make sure to select correct and same partitioning attributes on the Master and Source for successful match execution.

When you click **ANALYZE**, the Partition information is displayed for both target and source with the following details as in Figure 214.

- **# of Partitions**: total number of partitions in master and source.
- **# of Orphans**: number of orphan partition in master and source.
- **Average records/Partition**: average number of records per partition in master and source.
- The Results section displays the number of Intersection (% display of how much of the partitions between master and source share common partition) and # of Compares (total number of compares performed in the common partition between source and master).
- In the **Run Time Parameters** section, you can select the below options:

  Invert: this option allows the match operation to operate on a smaller table size containing just the matching columns and the blocking columns as the primary index. Aligning the blocking columns is significant in that the comparison operation becomes AMP local. The copy operation also applies any data altering function introduced by functions as well as converting all blank entries to null. This is done to aid performance as only straight compares are performed.

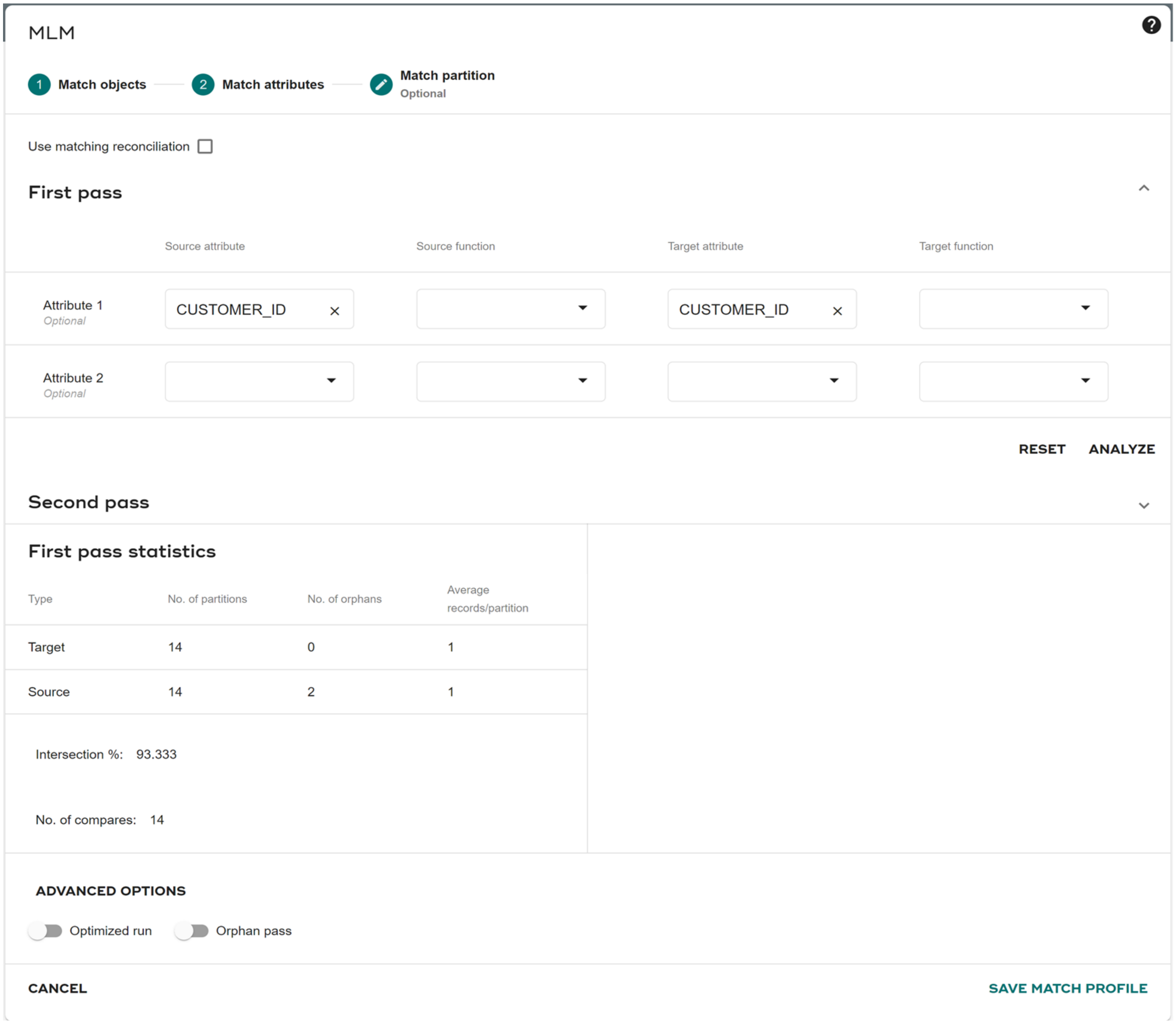
  As the match operation can be invoked several times as in training runs or perhaps multiple production runs, INVERT will not repeat making copies of the original tables as it tracks the column makeup of the inverted tables in a comment on the affected table. This comment is compared against the current matching column composition as well as the current pass number. If different as when there is change to the column makeup or the second pass it will in that circumstance make new copies. If the user switches back to a non-inverted run the original entries in the profile table are restored.

  Orphan Pass: On blocked runs there is the possibility that not all rows will be covered by 1 or 2 pass specifications. Bona fide new rows are likely candidates to fall into this category as well as rows having missing information in one of more blocking columns or rows. The records that do not fall under the category of pass 1 and pass 2 will qualify for orphan run. In orphan run, these orphan records will be matched against the records of all the passes.

- Click **Reset** to reset the changes.
- The above steps can optionally be performed in the **Second Pass** section.
- Click on View Partition Details.

The **Partition Summary** and **Run summary** are displayed. The **Run Summary** table will display the execution details of match records after the profile is executed. Click on the View Partition Samples arrow icon to view the page.

Figure 215: Create Match Profile—Partition Summary



	Source attribute	Source function	Target attribute	Target function
Attribute 1	CUSTOMER_ID		CUSTOMER_ID	
Attribute 2				

First pass statistics

Type	No. of partitions	No. of orphans	Average records/partition
Target	14	0	1
Source	14	2	1

Intersection %: 93.333

No. of compares: 14

10 Click **SAVE MATCH PROFILE**.

Message: “Profile created successfully” is displayed.

Create Matching Reconciliation

MDM matching reconciliation is the ability to define multiple match profiles and then reconcile the matched outputs to created consolidated match results which can be provided as input to another match profile to optimize the matching process performance. The reconciliation process reconciles the matched output from individual matches after execution of all the individual profiles. The reconciled output will later be used as input to another match profile. For example, individual match profiles like Postal Address, Email and Phone are reconciled and provided as a input to Name matching profile.

During the reconciliation process, it provides an option to define deterministic rules for Match or Potential Match or Non Match conditions. The match reconciliation profile also provides the ability to find cyclic matches.

All the match profiles selected should have finished execution before Match reconciliation execution.

To create matching profile:

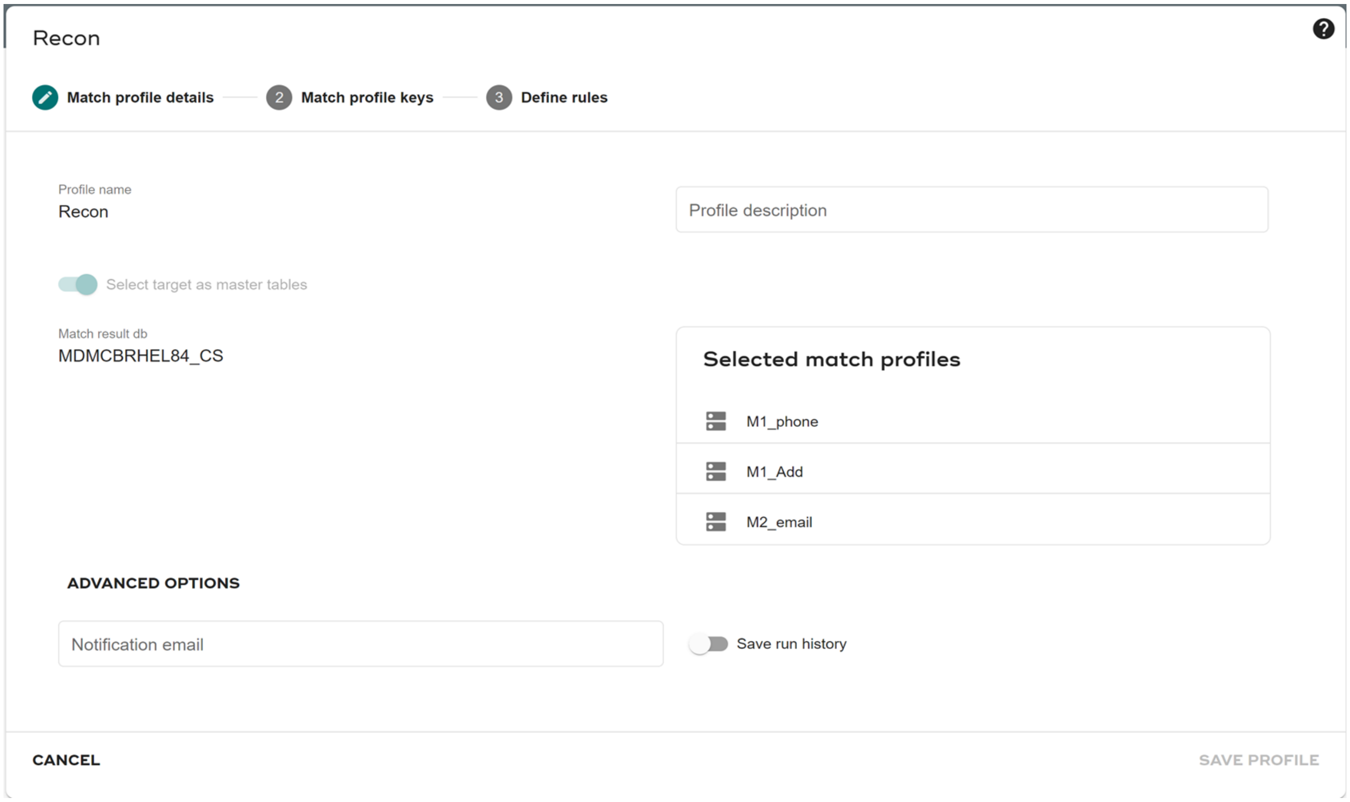
1 On the MDM UI, in the left navigation pane, click **Data Harmonization** -> **Matching**.

The **Matching Profiles** page is displayed.

2 On the **Matching Profiles** page, click **CREATE NEW** and select **Reconciled profile**.

The **Create a reconciled profile** page (Figure 216) is displayed.

Figure 216: Match Reconciliation—Profile Details



Profile name
Recon

Match result db
MDMCBRHEL84_CS

Selected match profiles
- M1_phone
- M1_Add
- M2_email

3 On the **Create a reconciled profile** page (Figure 216), in the **Match Profile Details** section, enter the following:

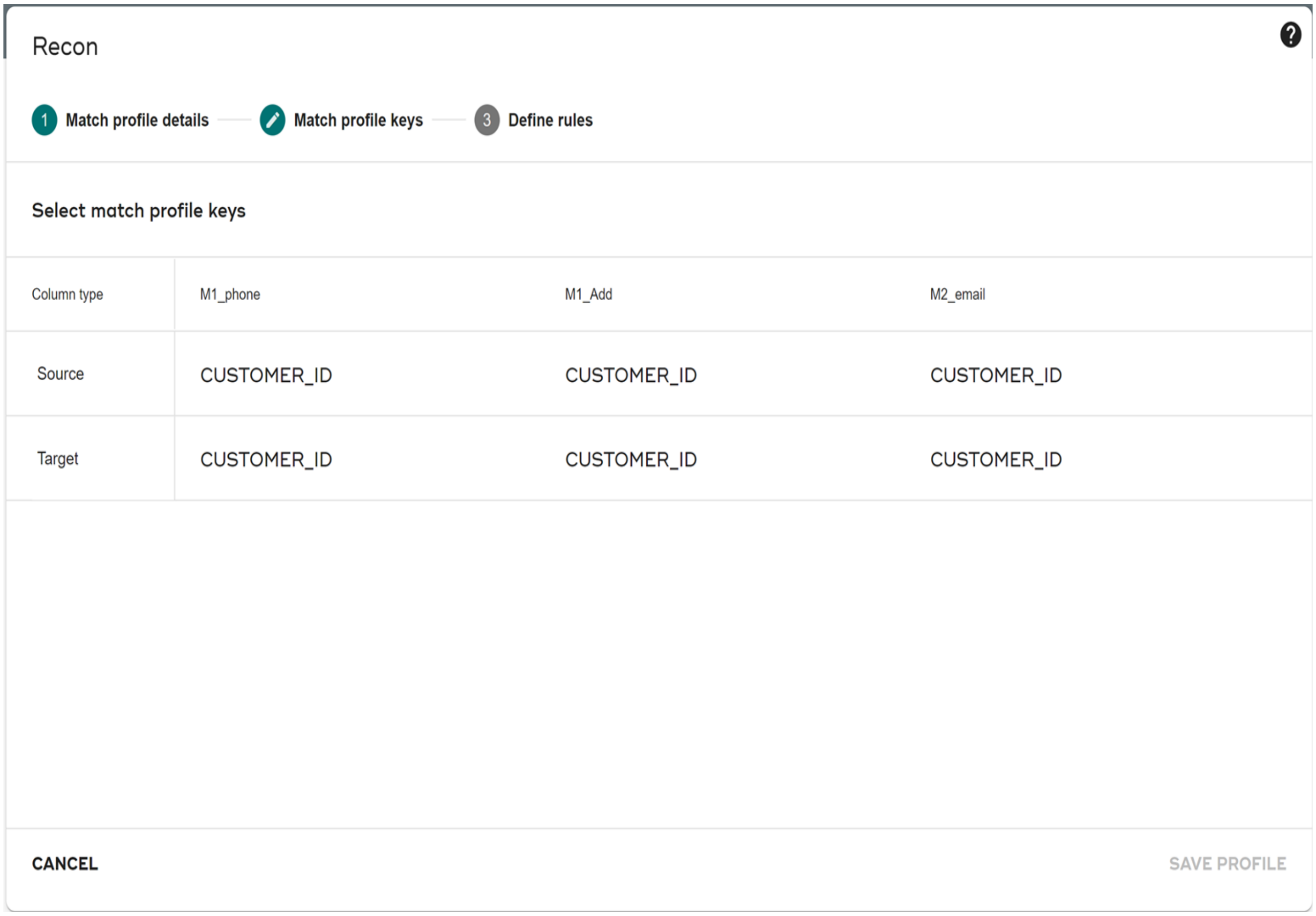
- **Profile Name**: enter the name of the reconciliation profile being created.
- **Profile description**: enter the description of the reconciliation profile being created.

- **Match Profiles**: the Available Match Profiles list displays all the available match profiles. Select the match profiles required to create reconciliation match profile and move it to **Selected Match Profiles** list.
- **Selected Match Profiles**: displays the list of match profiles selected for creating reconciliation profile.
- **Match result db**: select database to match the result from matching profiles

4 Click **Match profile keys** tab.

The **Select match profile keys** section is displayed. This UI provides the option to select Source and target keys for the source and target tables involved in each of the selected match profiles.

Figure 217: Matching Reconciliation—Select Match Profile Attribute Keys



Select match profile keys

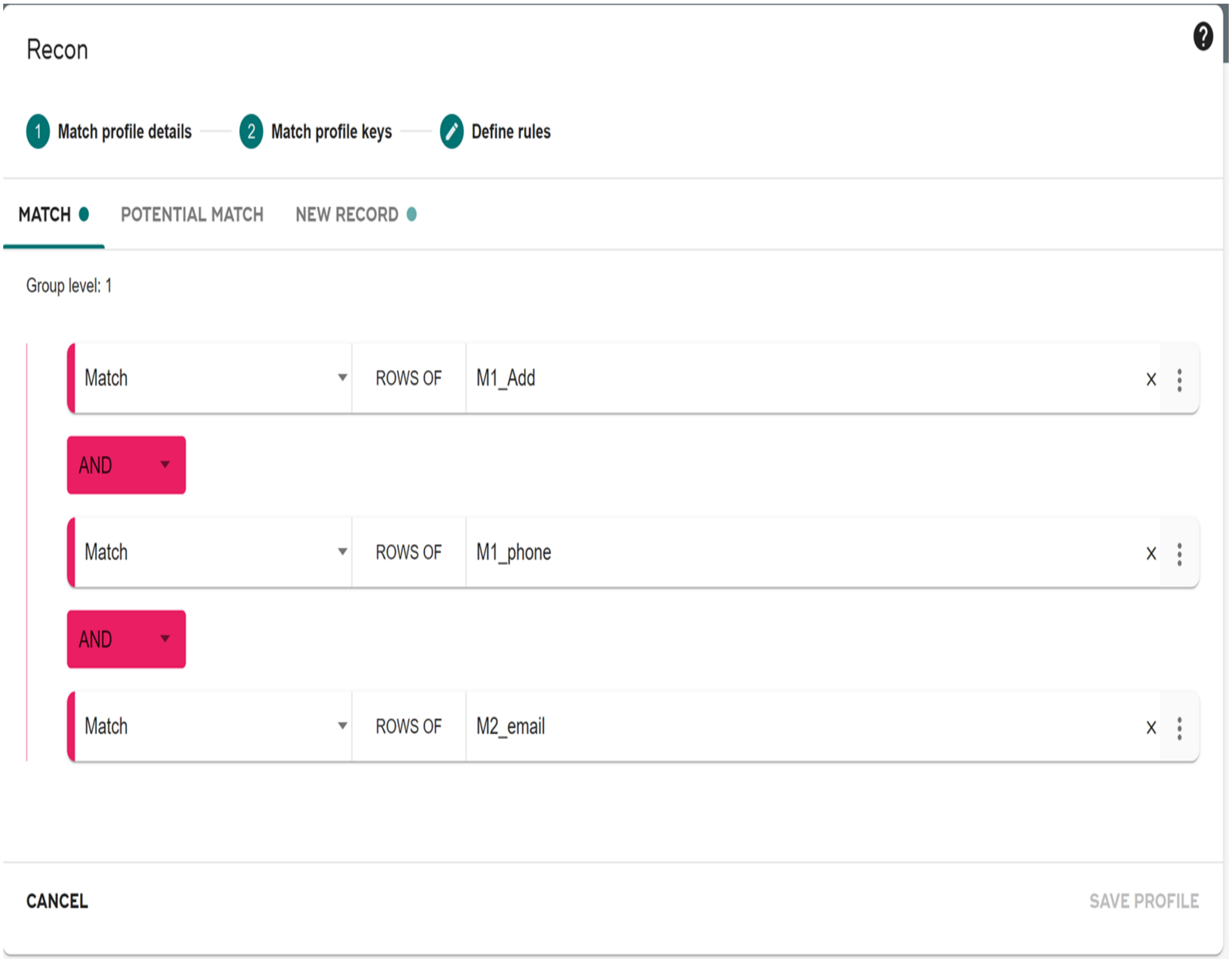
Column type	M1_phone	M1_Add	M2_email
Source	CUSTOMER_ID	CUSTOMER_ID	CUSTOMER_ID
Target	CUSTOMER_ID	CUSTOMER_ID	CUSTOMER_ID

5 On the **Select match profile keys** (Figure 217) section, select the source and target key columns and click **SAVE PROFILE**.

6 Click **Define Rules** section.

The (Figure 218) section is displayed.

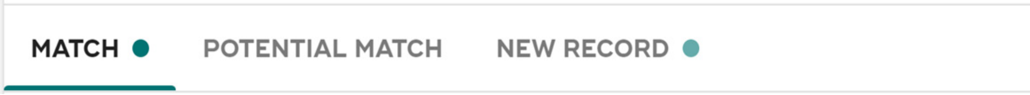
Figure 218: Matching Reconciliation—Define Rules



7 On the **Define Rules** (Figure 218) section, you can define the rules for Match condition, Potential Match condition and New Record condition for the reconciliation profile being created by selecting the corresponding radio button.

- Select **Match** tab and add the match conditions.
- Click on the Add Condition icon to add match condition and click Delete Condition icon to delete match condition.
- Click on the Sub-Group icon to club more than one match condition to create sub group of related match conditions.
- Click on the Add Group icon to club subgroup of match conditions to be group as single group to be executed.

  Once the match condition is defined, a green check mark is displayed before the match radio button as below.



- Similarly select potential match and new record match radio buttons and define the corresponding rules.

  If you click **Save and Return** button before defining the Potential and New Record rules, the below message is displayed. If you click **No**, it will display the Define Rules UI again.

8 Click **SAVE PROFILE.**

Message: “Profile created successfully” is displayed.

Create External Profile

Creating external profile is required in the following scenarios:

- Scenario1: If the Matching process is performed externally by a third party tool (like Loqate) and to execute survivorship from MDM.

Scenario 1: If the Matching process is performed externally by a third party tool (like Loqate) and to execute survivorship from MDM.

Pre requisite for enabling External profile on MDM

- Server that host the third party system (like loqate) and MDM should be within a network or should have communication path between both server to invoke APIs.
- Result tables or views from third party system (like Loqate) should be populated to same Teradata box where MDM user resides.
- The third party system (like Loqate) result tables or views that has to be used in MDM should be registered as Non MDM table or view.
- For using third party system result tables in Survivorship, an external Match profile has to be created from Matching Workbench.

The following API must be executed in order to perform survivorship on the external profile results.

```
<REQUEST Name="addHistoryDetails_ExternalProfile"
  ServiceName="UI_WORKFLOW">
  <Run_Id Value="1"/> //Max+1 each time you execute this API
  <Profile_Id Value="2"/> //Match Profile Id
  <Begin_Run_Time Value="02/28/2019 11:24"/>
  <End_Run_Time Value="02/28/2019 11:24"/>
  <Elapsed_Run_Time Value="0"/>
  <Status Value="Run Complete"/>
  <Source_Rows Value="100"/> //Total number of rows in source/
  load
  <Master_Rows Value="100"/> //Total number of master rows for
  this load
```

```
    <ExecutedBy Value="Test User"/>
    <NO_OF_MATCHED_ROWS Value="30"/> //Total number of rows in
    result table with score of as defined in the profile
    <NO_OF_POTENTIAL_MATCH_ROWS Value="30"/> //Total number of rows
    in result table with score of as defined in the profile
    <NO_OF_NEW_ROWS Value="40"/> //Total number of rows in result
    table with score of as defined in the profile
  </REQUEST>
```

Result Table Standards

- All the Keys of Source and Target should be present in the result table or view.
- A separate single score column is required to denote New Row, Match and Potential Match records.
- For New records, target Primary key columns in result table should be populated with Patterns.
- If deduplication is enabled in MDM (From External Match Profile page), the third party system like Trillium should populate same patterns for set of records that are duplicates. Records that have the same pattern will be considered as duplicate set.

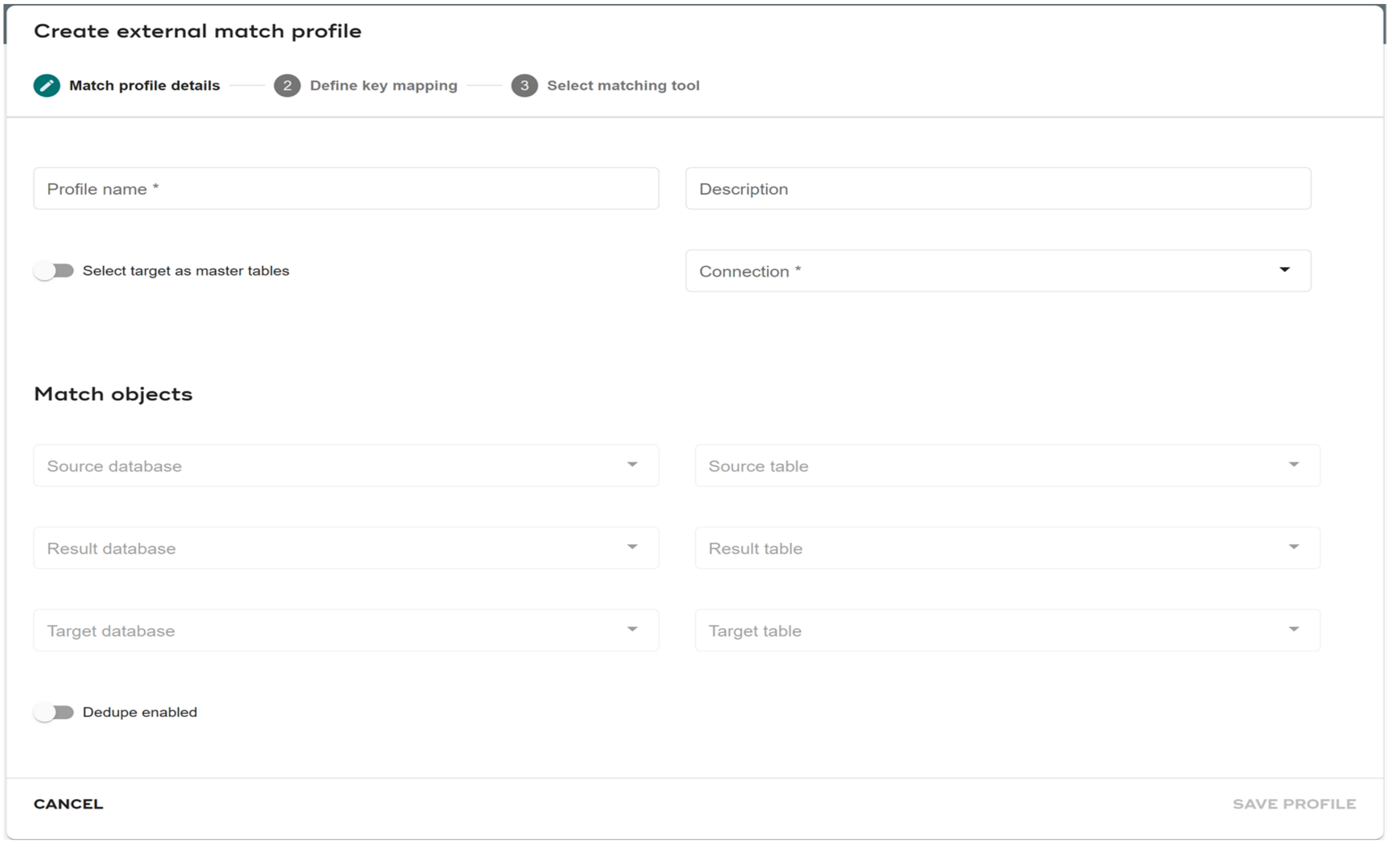
To create external matching profile:

1. On the MDM UI, in the left navigation pane, click **Data Harmonization** -> **Matching**.

   The **Matching Profiles** page is displayed.
2. On the **Matching Profiles** page, select **CREATE NEW** and then click **External profile**.

   The **Create external match profile** page (Figure 219) is displayed.

Figure 219: Create External Profile



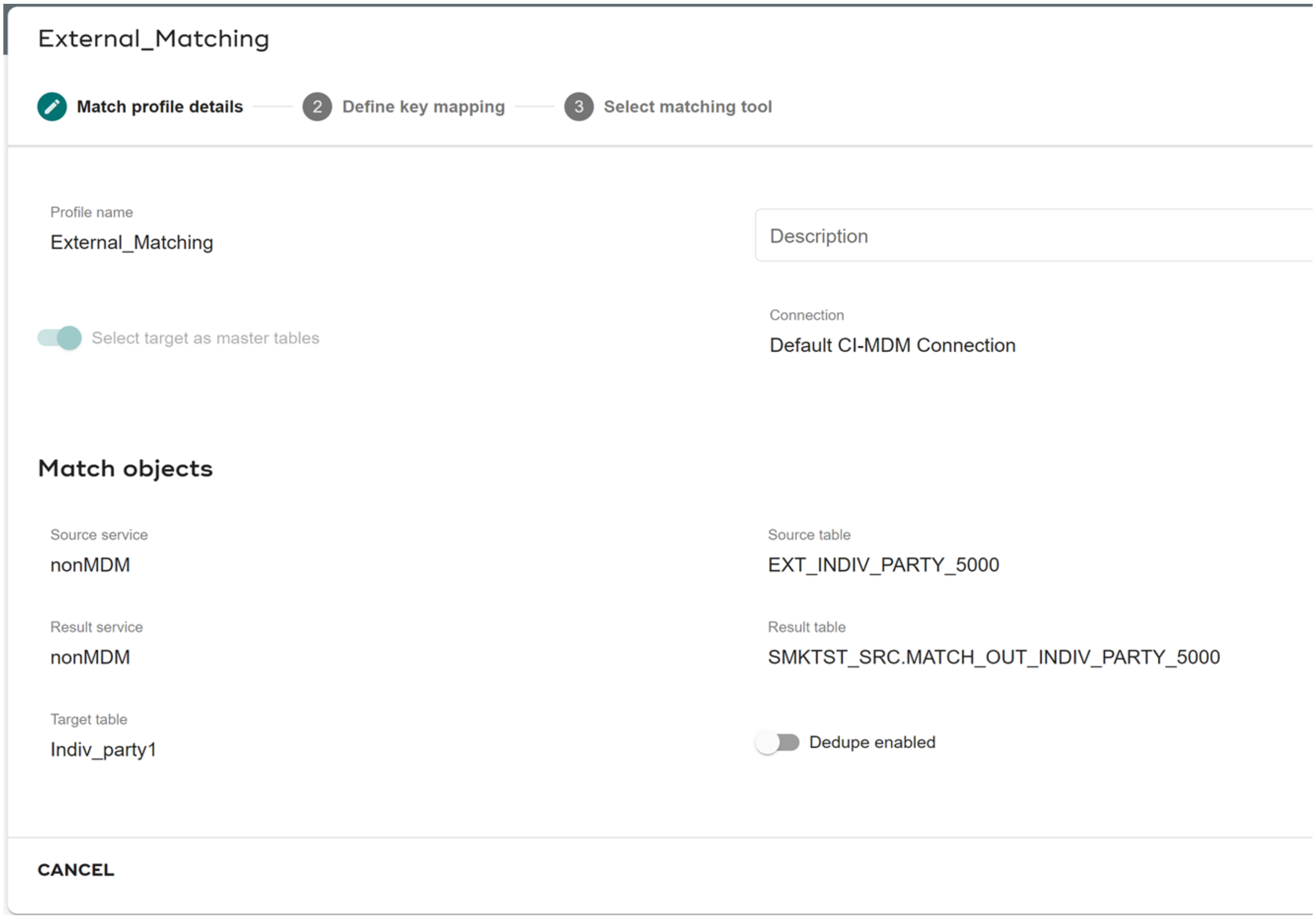
Create external match profile

Match objects

3 On the **Create External Profile** page (Figure 219), enter the following:

- **Profile Name**: enter the name of the profile.
- **Profile Description**: enter the description of the profile.
- **Matching Tool**: in the Matching Tool dropdown, select **Others**, Figure 220 is displayed.

Figure 220: Create External Profile



Profile name: External_Matching

Select target as master tables

Connection: Default CI-MDM Connection

Source service: nonMDM

Source table: EXT_INDIV_PARTY_5000

Result service: nonMDM

Result table: SMKTST_SRC.MATCH_OUT_INDIV_PARTY_5000

Target table: Indiv_party1

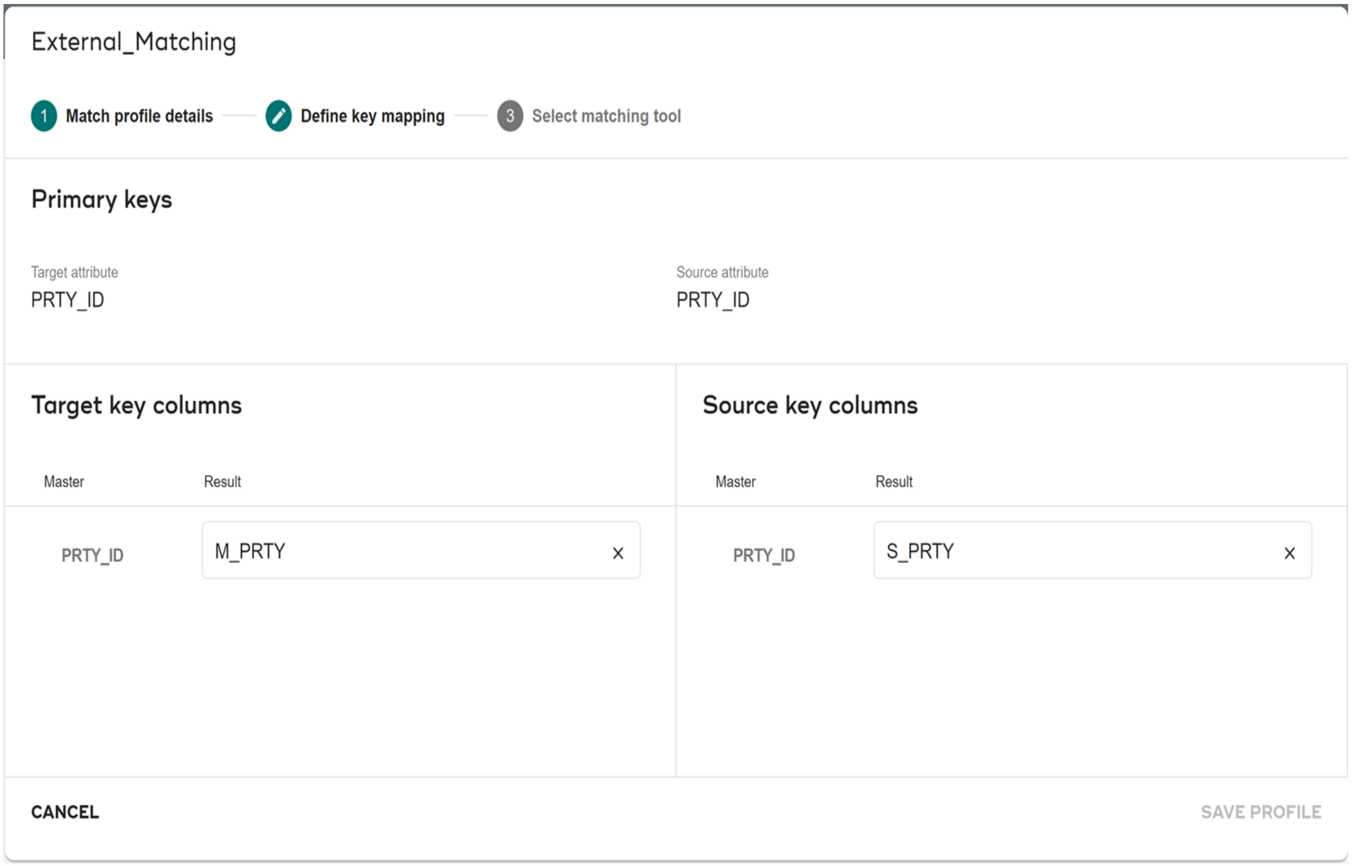
Dedupe enabled

- **Source Repository**: select the source repository (Master or Non MDM source).
- **Source**: select the source table or view used to compare with the master table or view.
- **Match Results Repository**: select the repository for storing match results (Master or Non MDM source).
- **Match Result**: select the table or view where the match results are stored.
- **Master**: select the Master table used for matching in external process. The master can be table or view.
- **Dedupe Enabled**: select this checkbox, if you want to perform deduplication on the source.

In external matching profile, the same table (or view) cannot be used for both the source and the result table (or view). In scenario where source table (or view) and result table (or view) has to be same, create and use a view with different name for either the source or result table (or view).

- Click **Define key mapping** and configure the following:

Figure 221: Create External Profile—Define key mapping

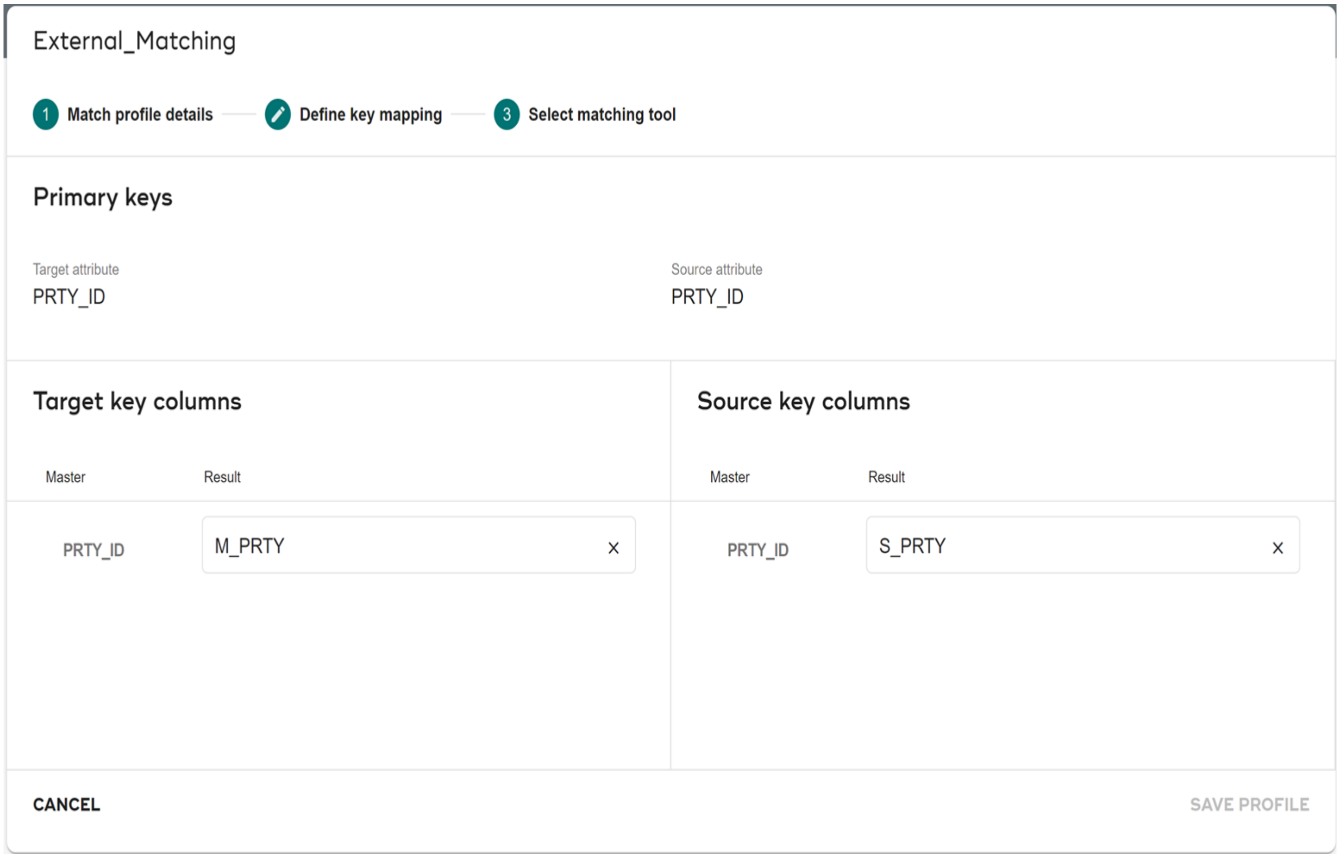


  - **Target Key Columns**: displays the primary key columns of master table or view. Select the column in the result table representing master primary column.
  - **Source attribute**: displays the primary key columns of source table or view. Select the column in the result table representing source primary column.
- Click **Select matching tool** and configure the following:
- **Score Column**: select the score column where the score values are stored in the result table.
- **Threshold Details**: enter the exact match score, partial match score and new row score values in the respective text field and click **Save**.

  The threshold values are absolute values that will be used during survivorship process.

  Message: Profile created successfully is displayed.

Figure 222: Create External Profile—Select matching tool



External_Matching

Primary keys

Target attribute: PRTY_ID

Source attribute: PRTY_ID

Target key columns

Master	Result
PRTY_ID	M_PRTY

Source key columns

Master	Result
PRTY_ID	S_PRTY

Edit Profile

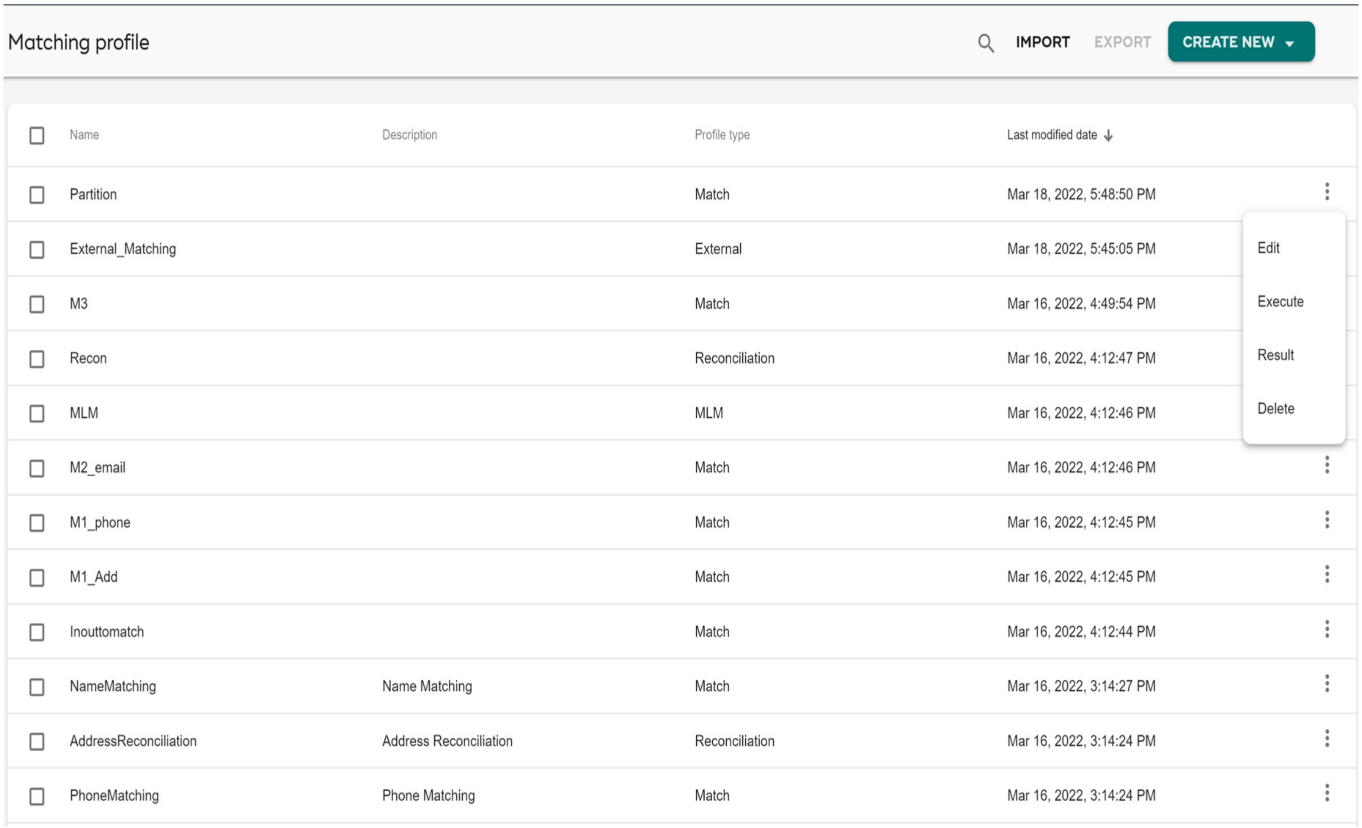
To edit profile details:

1 On the MDM UI, in the left navigation pane, click **Data Harmonization** -> **Matching**.

If any Matching profile is associated with Survivorship profile, and if the matching profile is edited, you should also edit and save Survivorship Profile for the changes to be reflected during survivorship execution.

The **Matching Profile** page is displayed.

Figure 223: Matching Profiles

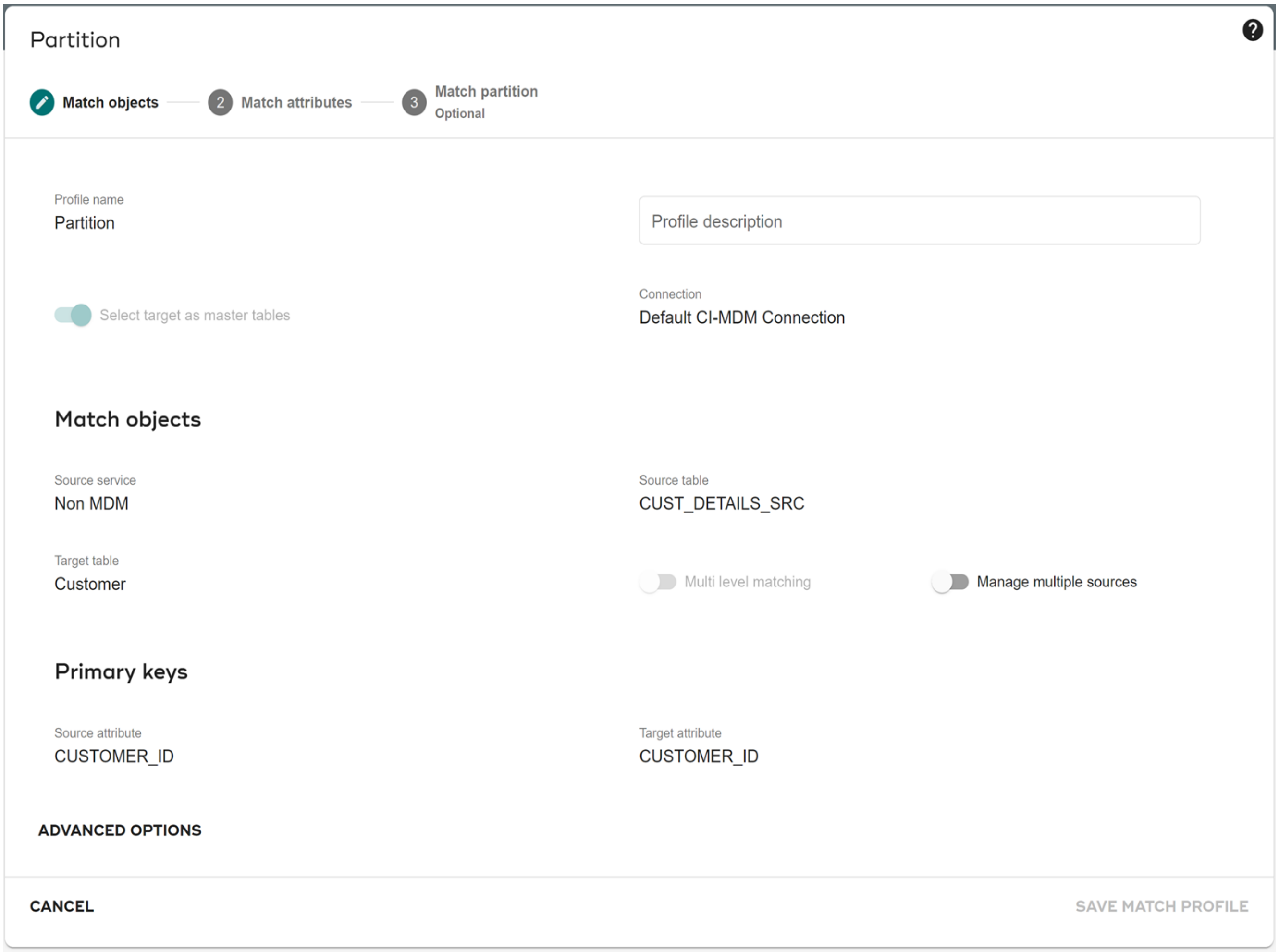


☐	Name	Description	Profile type	Last modified date ↓
☐	Partition		Match	Mar 18, 2022, 5:48:50 PM
☐	External_Matching		External	Mar 18, 2022, 5:45:05 PM
☐	M3		Match	Mar 16, 2022, 4:49:54 PM
☐	Recon		Reconciliation	Mar 16, 2022, 4:12:47 PM
☐	MLM		MLM	Mar 16, 2022, 4:12:46 PM
☐	M2_email		Match	Mar 16, 2022, 4:12:46 PM
☐	M1_phone		Match	Mar 16, 2022, 4:12:45 PM
☐	M1_Add		Match	Mar 16, 2022, 4:12:45 PM
☐	Inouttomatch		Match	Mar 16, 2022, 4:12:44 PM
☐	NameMatching	Name Matching	Match	Mar 16, 2022, 3:14:27 PM
☐	AddressReconciliation	Address Reconciliation	Reconciliation	Mar 16, 2022, 3:14:24 PM
☐	PhoneMatching	Phone Matching	Match	Mar 16, 2022, 3:14:24 PM

2 On the **Matching Profiles** page, click on the Menu icon corresponding to the required profile and click **Edit**.

The relevant page opens to edit the details.

Figure 224: Edit Profile



Partition

Profile name: Partition

Select target as master tables: ●

Connection: Default CI-MDM Connection

Match objects

Source service: Non MDM

Source table: CUST_DETAILS_SRC

Target table: Customer

Multi level matching: ○

Manage multiple sources: ○

Primary keys

Source attribute: CUSTOMER_ID

Target attribute: CUSTOMER_ID

3 You can modify the required details and click **SAVE MATCH PROFILE**.

On the **Match Attribute** section, if any field is edited for changes, you must click on **Compute** button for the changes to be saved and then click **SAVE MATCH PROFILE.**

If external profile is selected for editing, the **Edit External Profile** page is displayed.

4 On the **Edit External Profile** page, modify the required changes and click **Save**.

Message: “Profile updated successfully” is displayed.

Execute Match Profile and View Execution Details

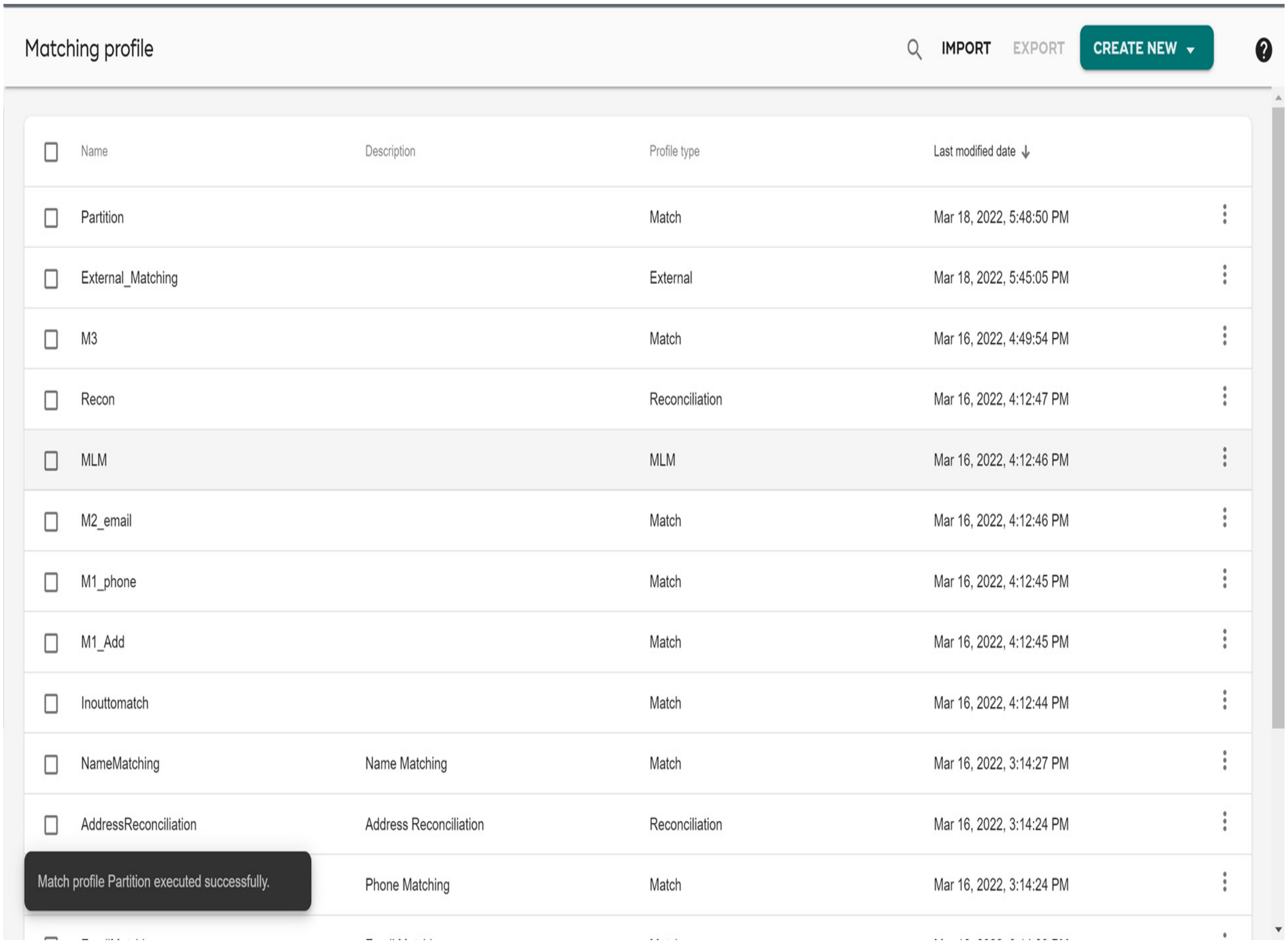
The execution of matching profile can be done either from Matching Profiles UI, Manage RDM processes UI or using Execute APIs.

To execute profile from Matching Profiles UI:

1 On the **Matching Profiles** page, click on the Menu icon corresponding to the required profile and click **Execute**.

If execution is successful, a confirmation message displays that the particular profile executed successfully.

Figure 225: Profile Executed Successfully



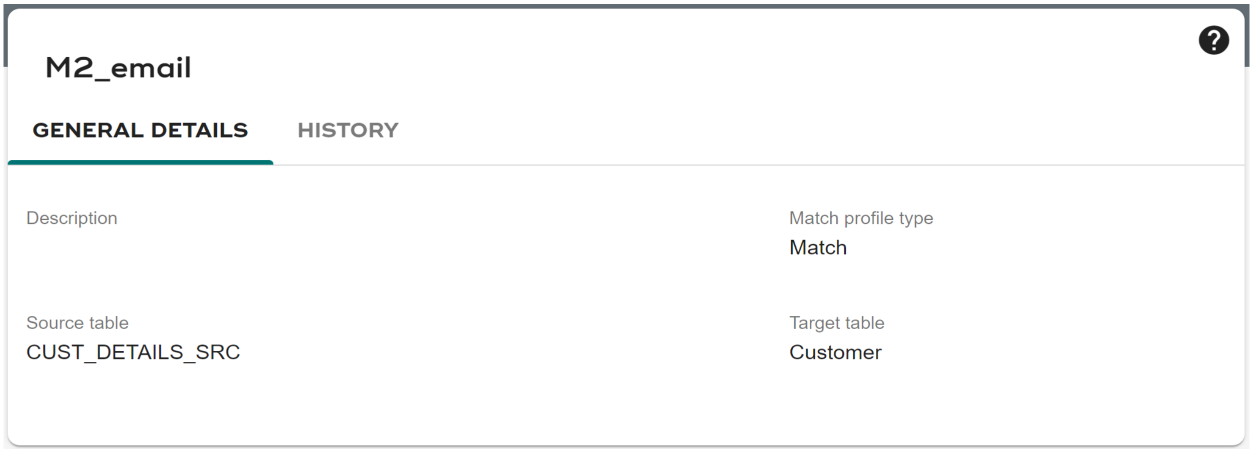
☐	Name	Description	Profile type	Last modified date ↓
☐	Partition		Match	Mar 18, 2022, 5:48:50 PM
☐	External_Matching		External	Mar 18, 2022, 5:45:05 PM
☐	M3		Match	Mar 16, 2022, 4:49:54 PM
☐	Recon		Reconciliation	Mar 16, 2022, 4:12:47 PM
☐	MLM		MLM	Mar 16, 2022, 4:12:46 PM
☐	M2_email		Match	Mar 16, 2022, 4:12:46 PM
☐	M1_phone		Match	Mar 16, 2022, 4:12:45 PM
☐	M1_Add		Match	Mar 16, 2022, 4:12:45 PM
☐	Inouttomatch		Match	Mar 16, 2022, 4:12:44 PM
☐	NameMatching	Name Matching	Match	Mar 16, 2022, 3:14:27 PM
☐	AddressReconciliation	Address Reconciliation	Reconciliation	Mar 16, 2022, 3:14:24 PM
		Phone Matching	Match	Mar 16, 2022, 3:14:24 PM

Match profile Partition executed successfully.

2 On the **Matching Profiles** page, click on the Menu icon corresponding to the required profile and click **Result**.

The result page for the particular profile displays the general details like source table, target table, matching profile type and profile description.

Figure 226: Profile Executed Successfully



M2_email

Description

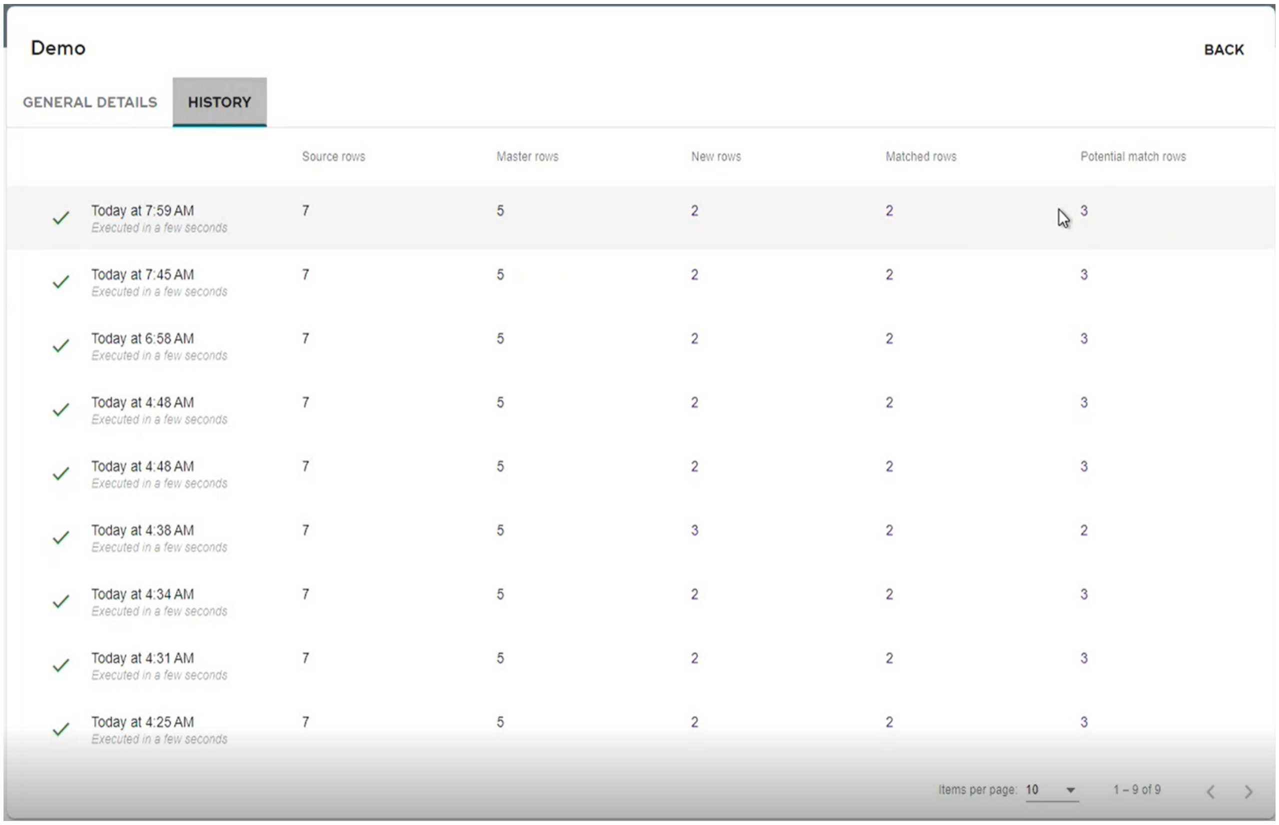
Match profile type
Match

Source table
CUST_DETAILS_SRC

Target table
Customer

The History tab displays the count of source rows, Master rows, New rows added, Matched rows and Potential match rows. You can click the count of the New rows added, Matched rows and Potential match rows to view the partition history details.

Figure 227: Profile Executed Successfully



Demo

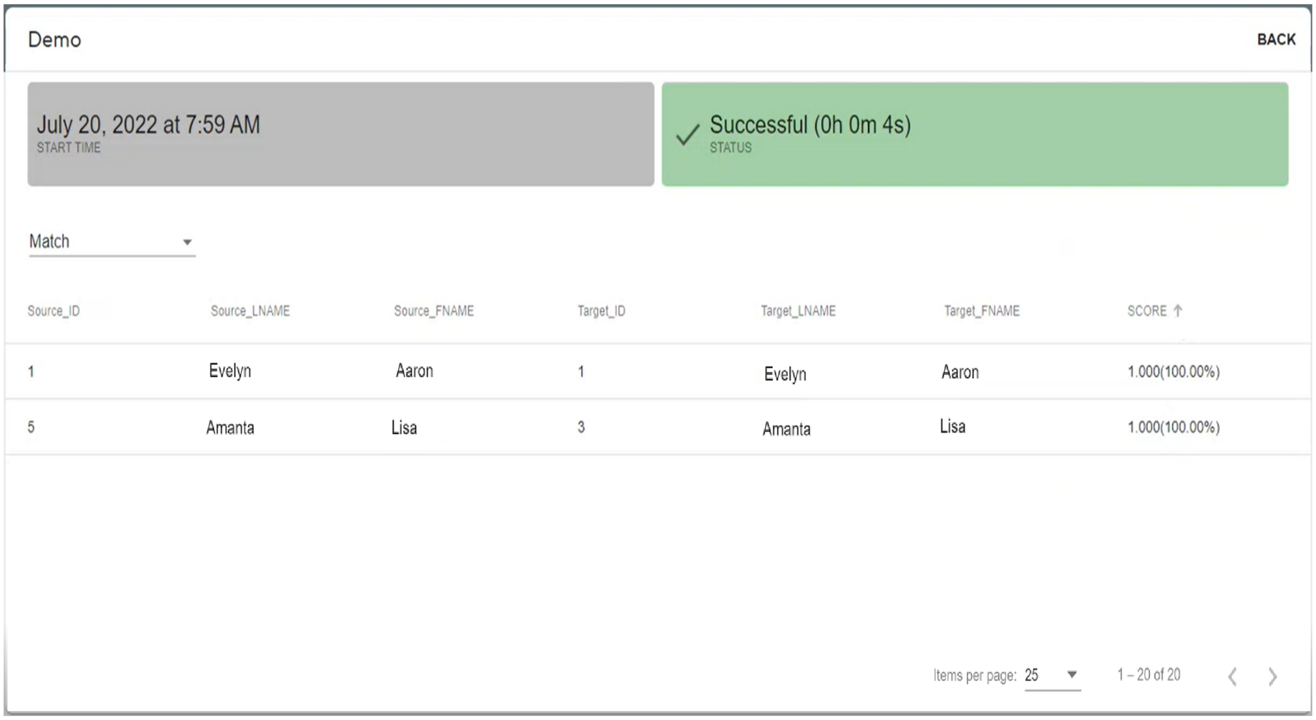
	Source rows	Master rows	New rows	Matched rows	Potential match rows
✓ Today at 7:59 AM Executed in a few seconds	7	5	2	2	3
✓ Today at 7:45 AM Executed in a few seconds	7	5	2	2	3
✓ Today at 6:58 AM Executed in a few seconds	7	5	2	2	3
✓ Today at 4:48 AM Executed in a few seconds	7	5	2	2	3
✓ Today at 4:48 AM Executed in a few seconds	7	5	2	2	3
✓ Today at 4:38 AM Executed in a few seconds	7	5	3	2	2
✓ Today at 4:34 AM Executed in a few seconds	7	5	2	2	3
✓ Today at 4:31 AM Executed in a few seconds	7	5	2	2	3
✓ Today at 4:25 AM Executed in a few seconds	7	5	2	2	3

Items per page: 10 1 – 9 of 9

You can view Matching results for each Source separately. When you click the hyperlinks for New /Duplicate/ match records, it displays the Source name on top along with the data and a dropdown to select the records type (New/Duplicate/ Match etc.)

On the Matching Profile page, when an external match profile is selected for execution, the message (“Cannot execute match profile”) is displayed in the Matching Status column on the result page.

Figure 228: View Execution Log—Detailed Result



July 20, 2022 at 7:59 AM
START TIME

Successful (0h 0m 4s)
STATUS

Source_ID	Source_LNAME	Source_FNAME	Target_ID	Target_LNAME	Target_FNAME	SCORE ↑
1	Evelyn	Aaron	1	Evelyn	Aaron	1.000(100.00%)
5	Amanta	Lisa	3	Amanta	Lisa	1.000(100.00%)

Items per page: 25

1 – 20 of 20

Delete Profile

To delete profile:

1 On the **Matching Profiles** page, click on the Menu icon corresponding to the required profile and click **Delete**.

The Confirmation pop-up is displayed.

2 On the Confirmation pop-up, click **DELETE**.

Message: Profile deleted successfully is displayed.

Points to Remember

The following list provides the notes and limitation on matching process:

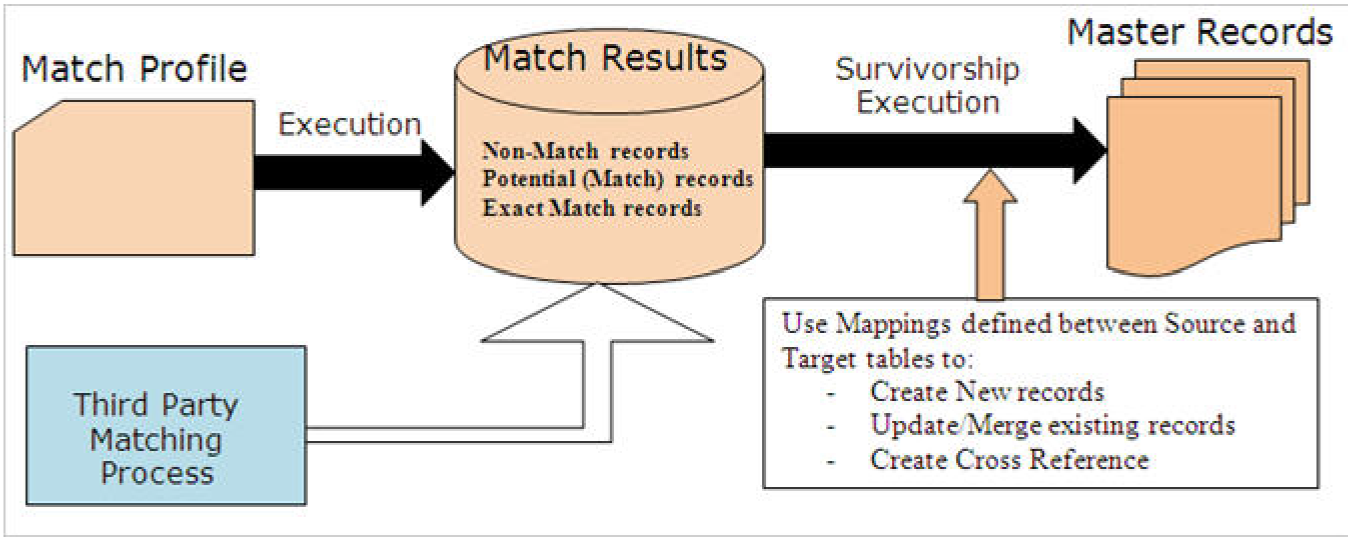
- If the profile creation is stopped in between, the profile would be saved, but the status of the profile will be in INACTIVE state. Inactive profiles cannot be executed.
- Make sure to provide appropriate access rights on the Source (External) tables or views in order to perform Matching and Survivorship.
- Match attribute functions (UDFs) can be installed via script provided with MDM installer. For more details on matching function, see Section : “Matching Functions”.
- Key columns in Source tables must not contain nulls.

- Make sure not to use Geospatial data types in matching for the matching process to be performed successfully.
- For using third party system (like Trillium) match output in survivorship, source and target primary key columns in result table should have the same name as that of source table and target table in survivorship profile.
- Columns starting with EXT_ and SYS_ will not be displayed in Matching mapping.
- In matching process, if the source and target attributes have null or space records, then the attributes are not considered as equal and will always be considered as new records, due to which the survivorship may fail with error. Cleansing and standardization must be performed on such attributes before matching process to avoid error.
- Matching cannot be created with an attribute having Encrypted String datatype as matching attribute or criteria.
- Matching process considers all the records (active, inactive and deleted state records) for matching logic. If only active records need to be considered for matching, then Views need to be created and used with appropriate conditions.

Survivorship Process

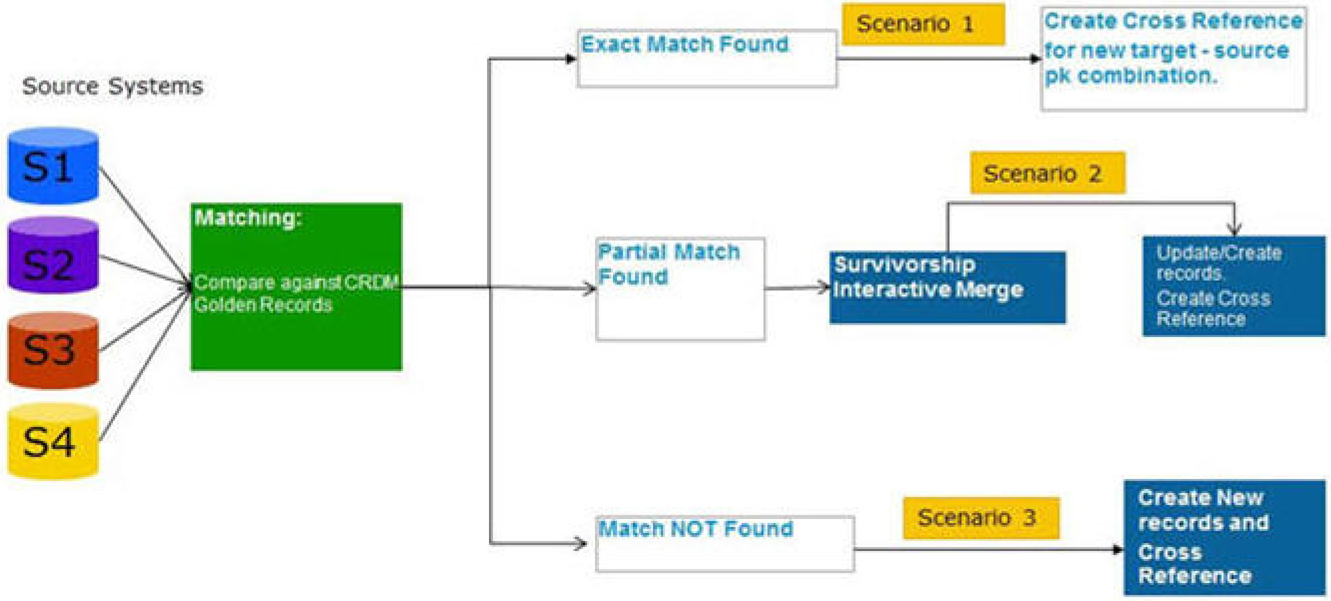
Definition: Survivorship process refers to the process of reviewing matching results (scores/ weights) and performing merge, duplicate resolution, creating cross reference and creating new records. Figure 229 illustrates the survivorship process.

Figure 229: Survivorship Process



The RDM cross reference will be created during survivorship execution process in different scenarios as in Figure 230. For details on cross reference, see Section : “Cross Reference and Relationship.”

Figure 230: RDM Cross Reference Creation Scenarios


Source Systems
S1
S2
S3
S4
Matching:
Compare against CRDM Golden Records
Exact Match Found
Scenario 1
Create Cross Reference for new target - source pk combination.
Partial Match Found
Scenario 2
Survivorship Interactive Merge
Update/Create records.
Create Cross Reference
Match NOT Found
Scenario 3
Create New records and Cross Reference

Survivorship

You can navigate to the Survivorship Workbench from MDM left navigation pane.

On the Survivorship Workbench, the data steward would be able to perform the following functions:

- Survivorship Mapping
- Create Survivorship Profile
- Customization
- Manage Survivorship Rules
- Edit Survivorship Profile
- Execute Survivorship Profile
- View New Records
- View Match Records
- View Survivorship Execution Log
- Delete Survivorship Profile

Survivorship Mapping

Mapping defined between source (table or view) and target table(s) columns help the Data steward to either Create new records or Merge to update existing records in the target tables. Below are the possible scenarios for the mapping:

Mapping between Source(s) and target table(s)

ST—> TT

ST—> TT1,TT2

SV —> TT

ST —> TV

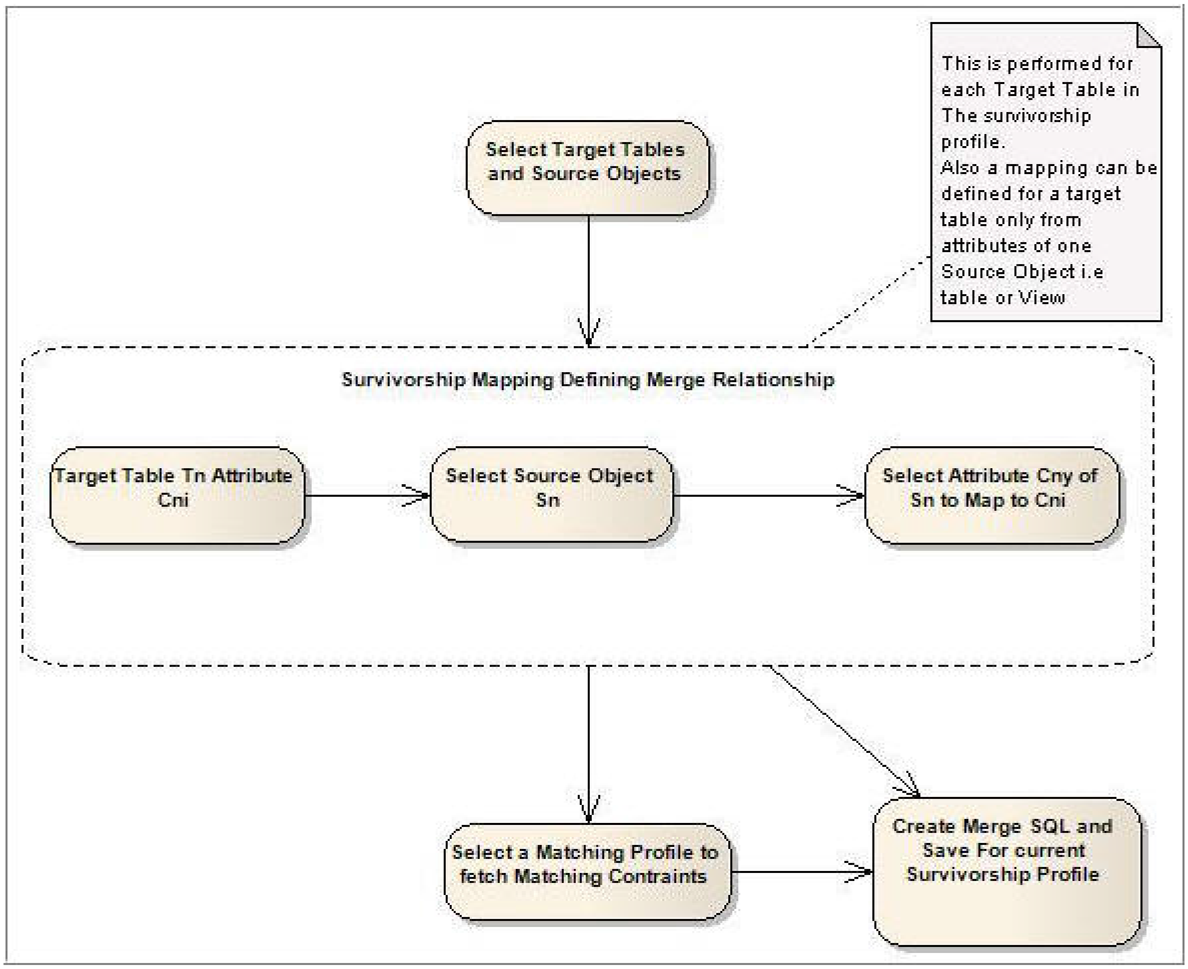
SV —> TV

Where ST — Source Table, SV — Source View, TT — Target Table and TV — Target View

TT1, TT2 — Multiple Target Tables

Figure 231 displays the overview of Survivorship mapping.

Figure 231: Survivorship Mapping Overview


This is performed for each Target Table in The survivorship profile.
Also a mapping can be defined for a target table only from attributes of one Source Object i.e table or View
Select Target Tables and Source Objects
Survivorship Mapping Defining Merge Relationship
Target Table Tn Attribute Cni
Select Source Object Sn
Select Attribute Cny of Sn to Map to Cni
Select a Matching Profile to fetch Matching Contraints
Create Merge SQL and Save For current Survivorship Profile

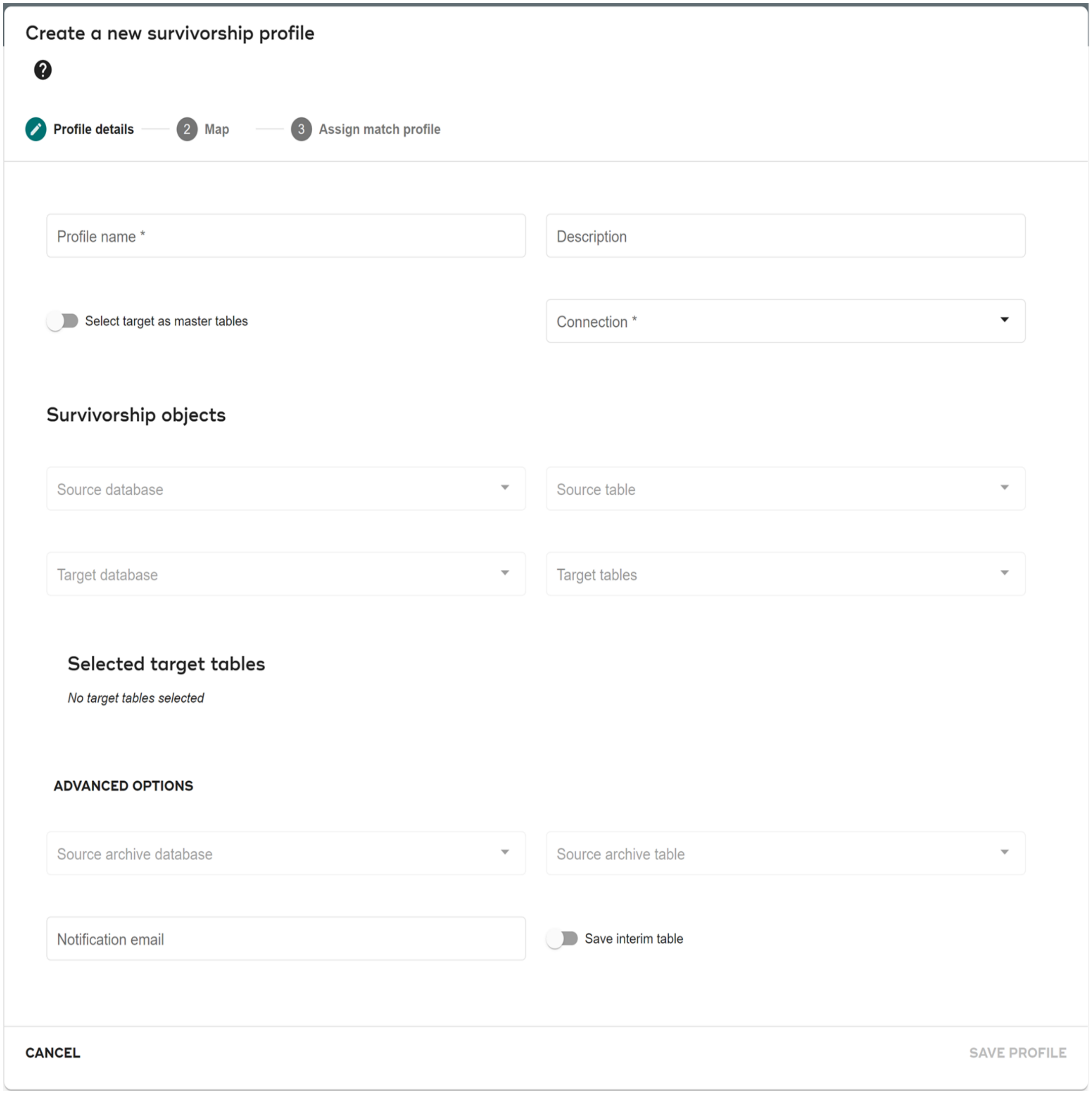
Create Survivorship Profile

The Survivorship profile refers to specific configuration details required for performing the survivorship process. To create survivorship profile:

1. Navigate on MDM UI to **Data Harmonization -> Survivorship**.
2. Click **Actions** and select **Create profile**

   The **Create a new survivorship profile** page (Figure 232) displays.

Figure 232: Create Survivorship Profile



Create a new survivorship profile

Profile details — 2 Map — 3 Assign match profile

Profile name *

Description

Select target as master tables

Connection *

Survivorship objects

Source database

Source table

Target database

Target tables

Selected target tables

No target tables selected

ADVANCED OPTIONS

Source archive database

Source archive table

Notification email

Save interim table

CANCEL

SAVE PROFILE

3 Under section **Profile details** on **Create a new survivorship profile** page (Figure 232), provide the following details:

- **Profile name** and **Profile description**.
- Enable **Select target as master table** to make default database as connection.

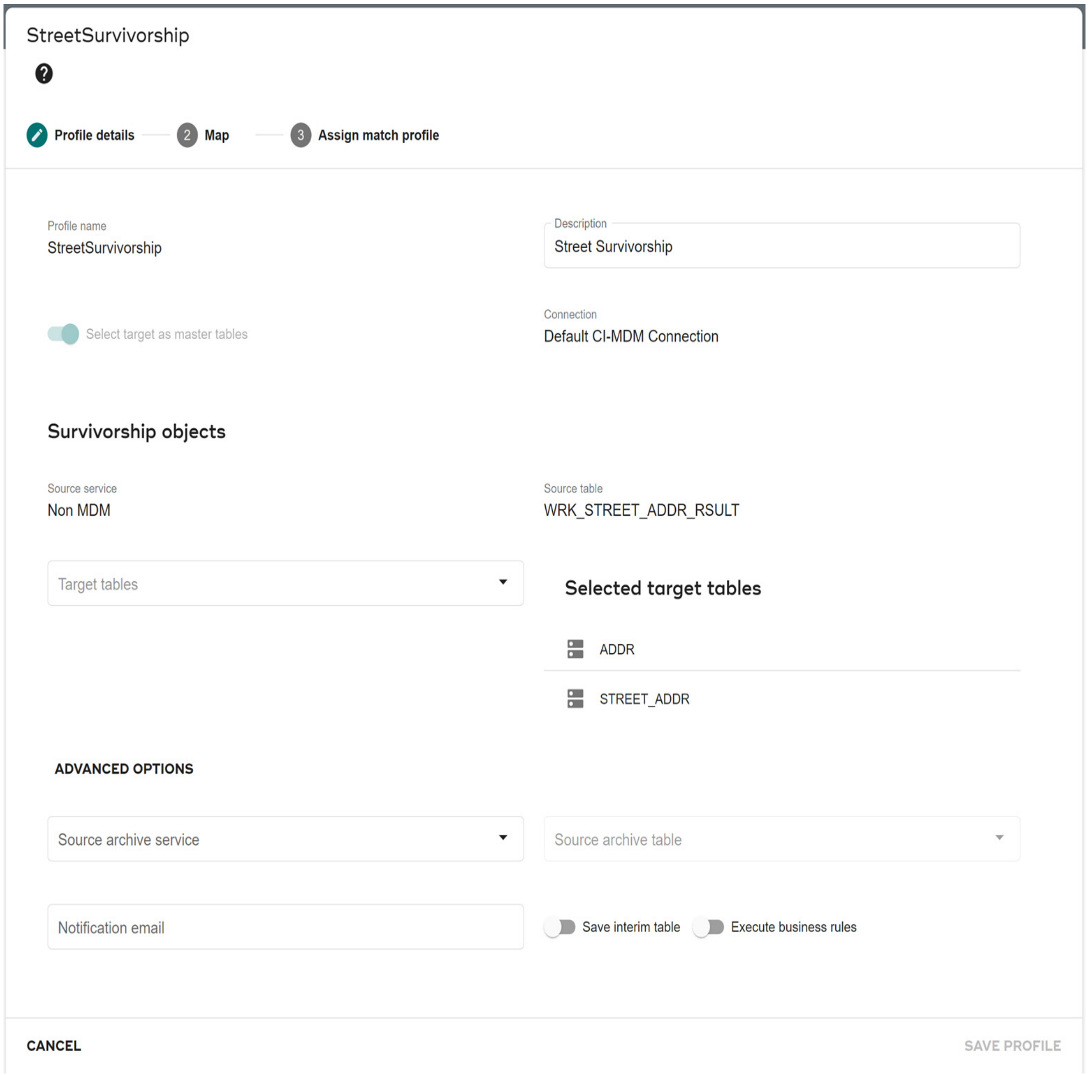
  If you do not enable the option, you must select the connection from the drop down list.

- Under **Survivorship objects**, select Source database, Source table, Target database, and Target table.

  If you enable **Select target as master table**, you need not the select target database. In the **Target Tables** dropdown, select the target tables for survivorship from the Available Master Tables list which adds to the target tables list.
- Under **ADVANCED OPTIONS**, select Source archive service, Source archive table, and provide Notification email.

  The source repository can be either Input, Master or Non MDM. On Select of Repository from drop-down, the available tables for the corresponding source selected will be displayed in the **Select Table** drop-down.
- **Save Interim Tables**: Select this option to copy the Interim result into History tables (All interim table data).
- **Execute Business Rules**: If this option is enabled, business rules defined on the target tables will be executed through DDP process.

Figure 233: Survivorship Profile Details



StreetSurvivorship

Profile details
Map
Assign match profile

Profile name: StreetSurvivorship

Description: Street Survivorship

Select target as master tables

Connection: Default CI-MDM Connection

Survivorship objects

Source service: Non MDM

Source table: WRK_STREET_ADDR_RSULT

Target tables

Selected target tables
- ADDR
- STREET_ADDR

ADVANCED OPTIONS

Source archive service

Source archive table

Notification email

Save interim table

Execute business rules

4. Click **SAVE PROFILE**.
5. Click **Map** and configure the following details:
   - Select the source attribute for mapping with target table attribute.
   - For each of the target table attribute, select the source attribute to be mapped from the respective **Source Attributes** dropdown or select the customized attributes.

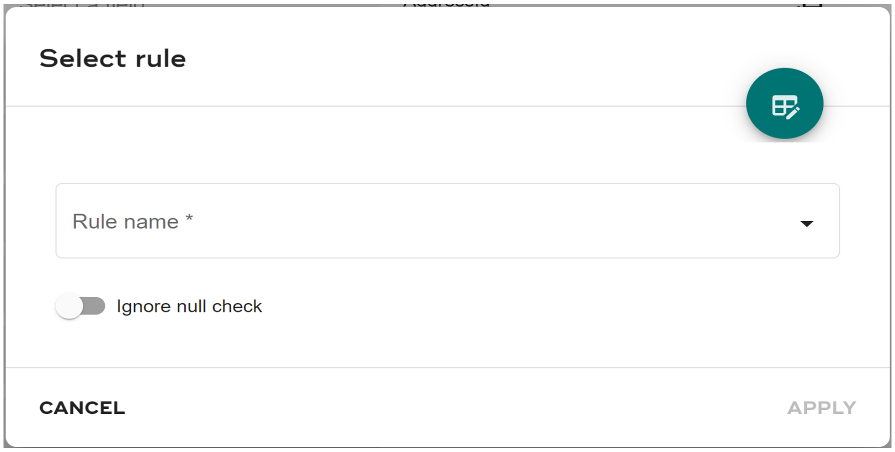
- It is recommended not to have more than 200 mapping columns for a selected target table.
- Selecting a Customized mapping will override the source attribute mapping.
- Customized attributes of type Auto Id and Transformation of type Custom will be visible to all the profiles (will be displayed in the Customizations dropdown) irrespective of the source selected.

- The **Enable Primary Key Update** pane displays all the primary keys columns of the selected target table.
- **Source Filter Condition**: the survivorship execution will split the source data between multiple tables based on condition provided in the Source Filter Condition. Only one condition per source can be defined.

  For example: source table data can be split and persisted between Individual and Organization customer tables by providing filter condition as CUST_TYPE_CD ='Individual' and CUST_TYPE_CD='ORG' respectively.
- Click Rules icon 📋 corresponding to the target attribute to select the rules.

  A rule can be defined for an attribute which is mapped by clicking on rule icon corresponding to a target attribute. The survivorship rules are meant to resolve the duplicate source records which qualify to update the same target/master record.

Figure 234: Select Rule



For more information on creating a rule, see

- Click **Transformation** icon corresponding to the target attribute.

  For more information on Transformation, see Section : “Manage Survivorship Rules”Section : “Customization,”
- On the **Add Survivorship Rule** popup , select a rule and attribute and click **Add**.

  For more details on rules, see Section : “Manage Survivorship Rules”.

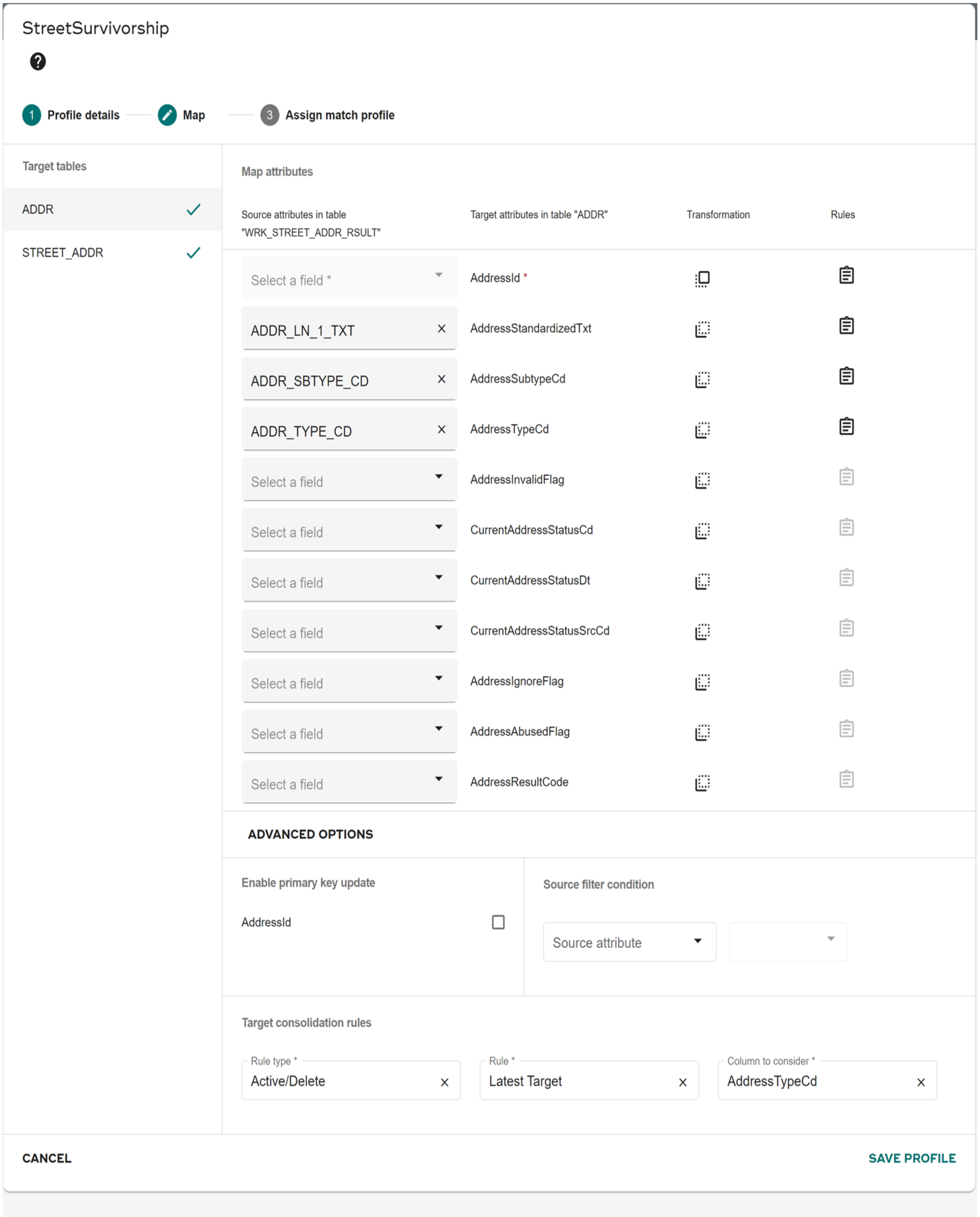
6 **Target Consolidation Rule**: if a source row is matched with multiple master records, consolidation rule can be defined to merge multiple records into single golden master record and other records are considered as duplicate (or inactive) records. MDM provides the two OOTB consolidation rules (Latest Target and Oldest Target).

Two types of Target Consolidation Rules can be defined:

- Update All rows with (for Golden ID population) - all the rows that are in the group will be populated with value of column that satisfy the Rule.
- Active/Delete (for SYS_ENT_STATE) - row that satisfy the rule will be Updated as Active else will be Populated as Deleted.

To define consolidation rules:

Figure 235: Add Consolidation Rule



Source attributes in table "WRK_STREET_ADDR_RSULT"	Target attributes in table "ADDR"
Select a field *	AddressId *
ADDR_LN_1_TXT	AddressStandardizedTxt
ADDR_SBTYPE_CD	AddressSubtypeCd
ADDR_TYPE_CD	AddressTypeCd
Select a field	AddressInvalidFlag
Select a field	CurrentAddressStatusCd
Select a field	CurrentAddressStatusDt
Select a field	CurrentAddressStatusSrcCd
Select a field	AddressIgnoreFlag
Select a field	AddressAbusedFlag
Select a field	AddressResultCode

Enable primary key update

AddressId ☐

Source filter condition

Source attribute

Target consolidation rules

Rule type *: Active/Delete

Rule *: Latest Target

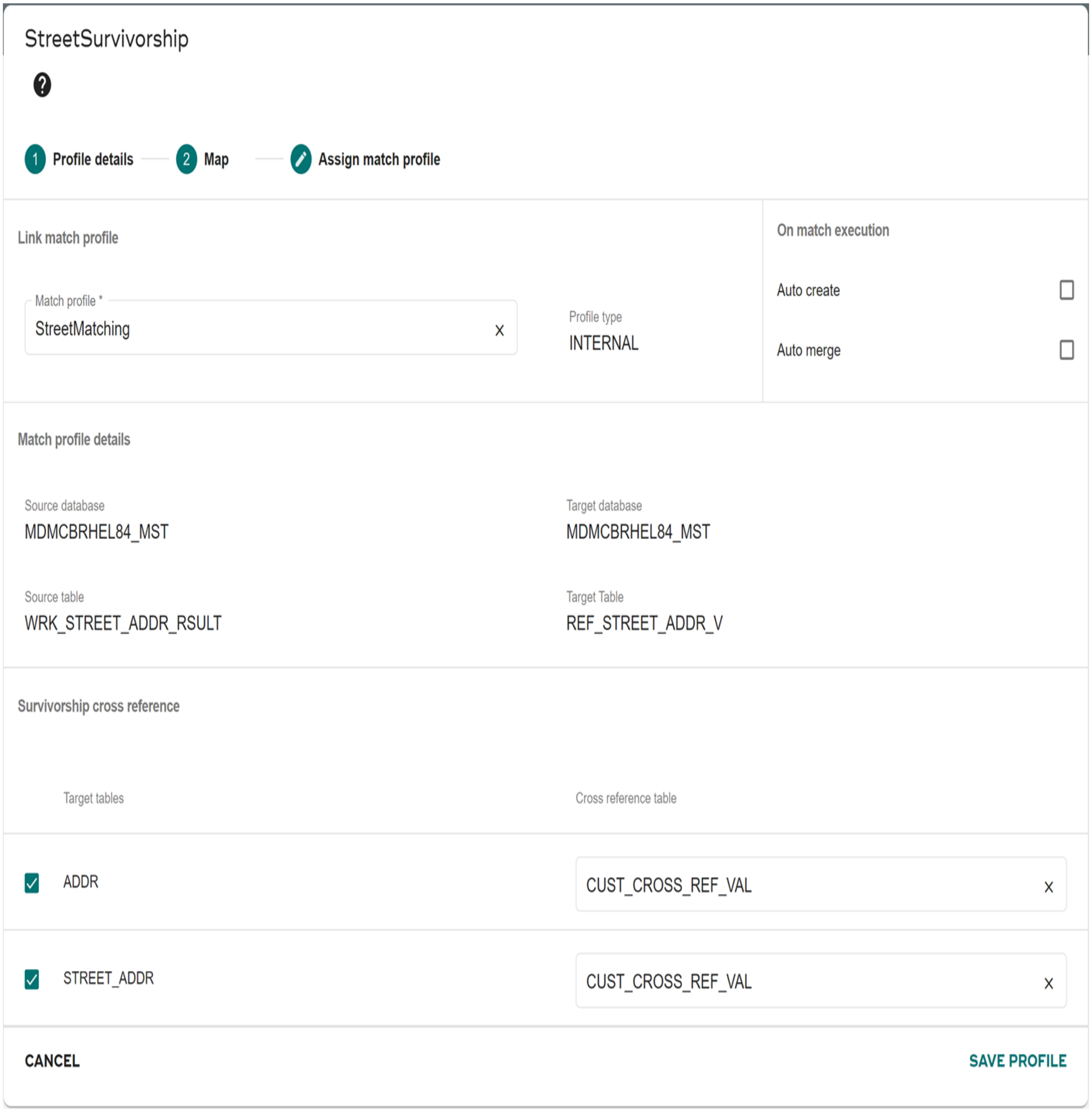
Column to consider *: AddressTypeCd

- Select rule type, rule and column to consider and click **Save profile**.

7 Click **Assign Match Profile**

The **Assign Match Profile** page displays.

Figure 236: Assign Match Profile



StreetSurvivorship

Match profile * StreetMatching

Profile type INTERNAL

Auto create ☐

Auto merge ☐

Source database MDMCBRHEL84_MST

Target database MDMCBRHEL84_MST

Source table WRK_STREET_ADDR_RSULT

Target Table REF_STREET_ADDR_V

Target tables	Cross reference table
☑ ADDR	CUST_CROSS_REF_VAL
☑ STREET_ADDR	CUST_CROSS_REF_VAL

8 On the **Assign Match Profile** page, select the required match profile from **Match Profile** dropdown.

On the Assign Match Profile page, linking of match profile to survivorship can be done only when the user has authorization and Survivorship Workbench will not display the profiles if the user does not have access to the linked match profiles.

The **Match Profile Details** pane displays the target table name and target table database and the Match Profile Source Details pane displays the source table name and source table database details.

Select a Match Profile dropdown displays both the mapped and unmapped match profiles. You can assign the same match profile to more than one survivorship profiles.

---

9. Under **On Match execution** pane, if you want to run survivorship process automatically after matching process, select **Auto Create** and/or **Auto Merge** option for the underlying match profile. This option is available only for MDM matching. When the matching profile is executed and completed successfully, survivorship process will start automatically based on the options selected.
10. In the **Survivorship Cross Reference** pane, you can enable or disable cross reference creation. When cross reference is enabled, by default it gets stored in RelationalObjectData table provided OOB. If you want to store the cross reference data in your own table, you can create cross reference template tables from Model Builder Chapter : “Manage Template”. The template tables created through model builder will appear in the **Cross Reference Table** dropdown.

When a non MDM table is used as source or for Master tables that do not have ROM, a Relational Object Mapping (ROM) is created based on the source and target tables selected during survivorship profile creation if no prior target source attribute mapping was done. This note is applicable for all types of survivorship profiles.

---

11. Click **Save Profile**.

    Message: Profile created successfully is displayed.

Customization

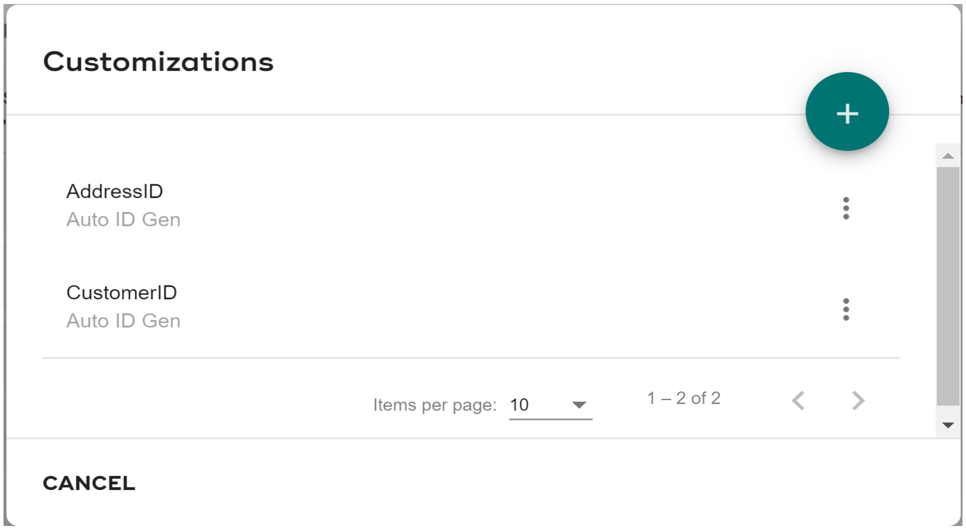
You can customize the source attribute to be mapped using the customization option. Customization is required when the target table columns do not have the required source columns or the source column attribute values are not in the desired format.

To customize the source attribute for mapping:

1. On the **Create a new survivorship profile** page, select **Map**
2. Click Customization icon corresponding to the source attribute.

   The **Customizations** page displays.

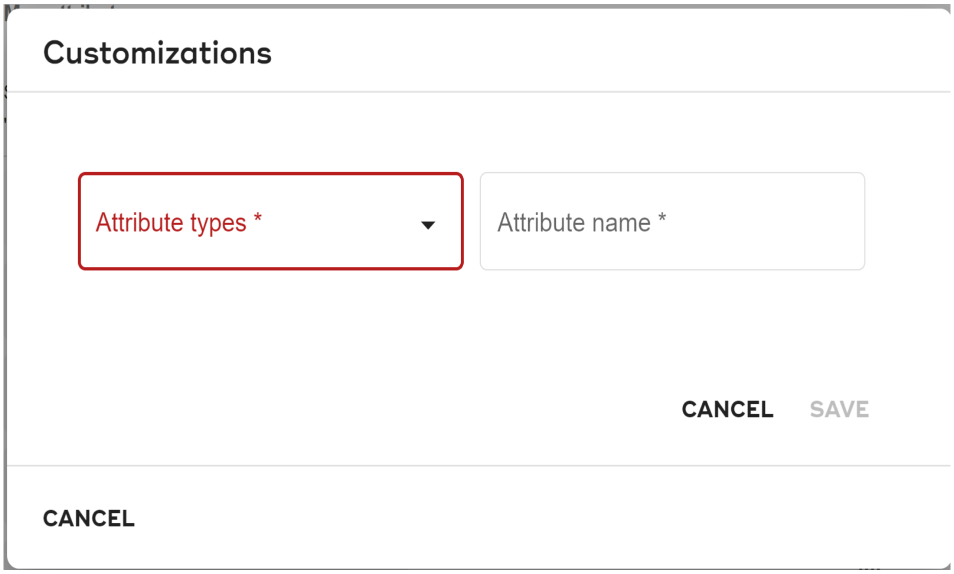
Figure 237: Customizations



3 Click Add icon + .

4 Select **Attribute types**.

Figure 238: Customization: Attribute Type



The customized attribute name must start with a character and is not case sensitive.

ID Gen: Auto ID Gen option creates system generated ID for a specified target column. Auto ID is of two types: Auto and Custom.

Transformation: transformation functions will allow you to transform the source system data before creating or merging records into the target tables.

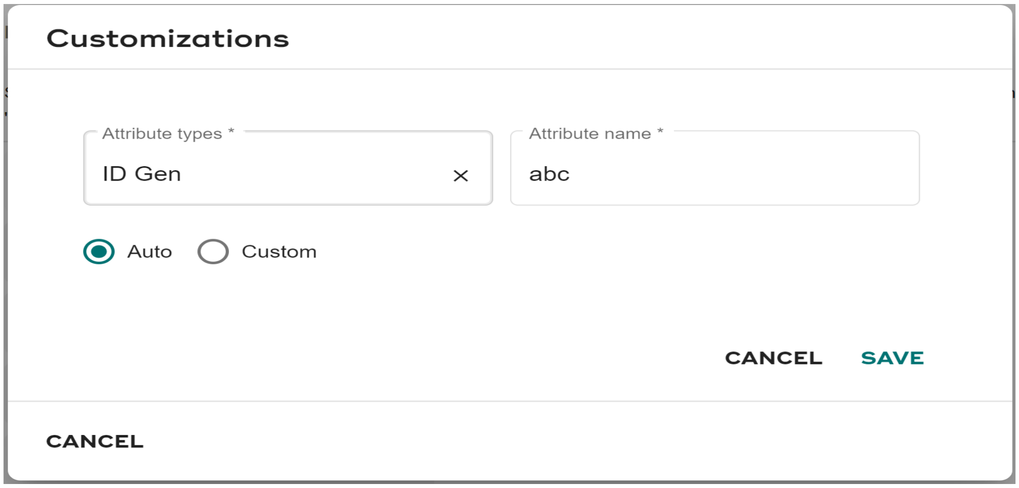
- If **Auto** option selected for **ID Gen** option, the Id Name dropdown displays the list of auto gen Ids created on the Manage Auto Gen Id UI. You can select the required auto gen Id and click Save.

  Data type of Auto ID gen by default is VARCHAR. This can be modified to INTEGER to boost performance of Joins during Survivorship running.

  To change Auto Id to INTEGER datatype, the following SQL can be used:

  INSERT INTO SV_SURV_PARAMETERS (0,0,'AUTOID_DATATYPE','INTEGER');

Figure 239: Customizations—ID Gen Definition



Customizations

Attribute types *: ID Gen

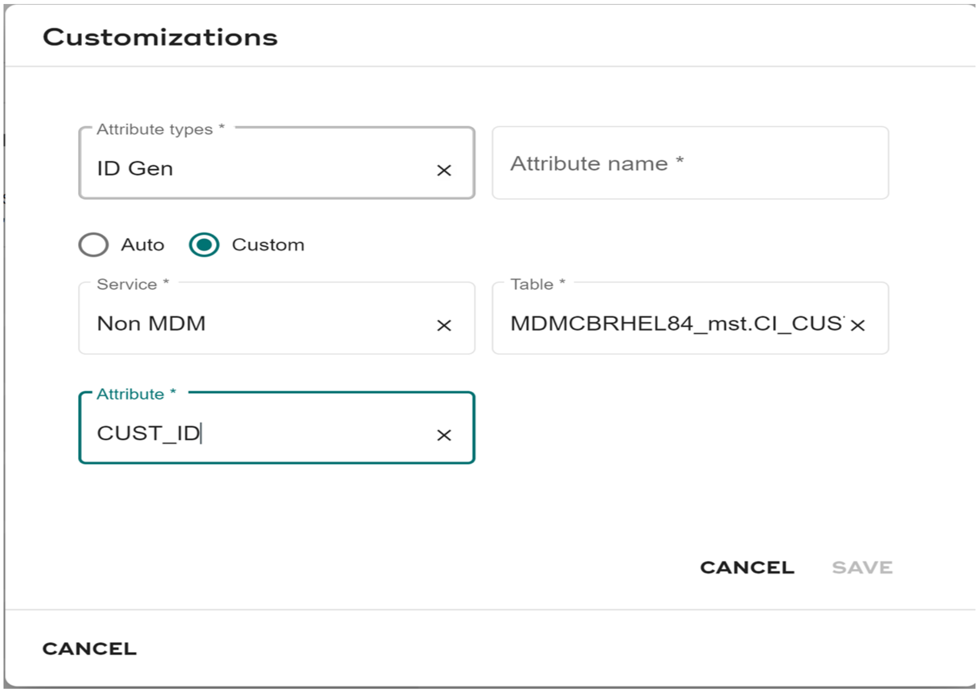
Attribute name *: abc

● Auto ○ Custom

  During the survivorship profile creation, you can assign multiple auto gen Id in a single profile.

- If **Custom** is selected, survivorship uses predefined IDs stored in a table. Provide Service name, Table, and Attribute.

Figure 240: Custom ID Gen



Customizations

Attribute types *: ID Gen

Attribute name *

○ Auto ● Custom

Service *: Non MDM

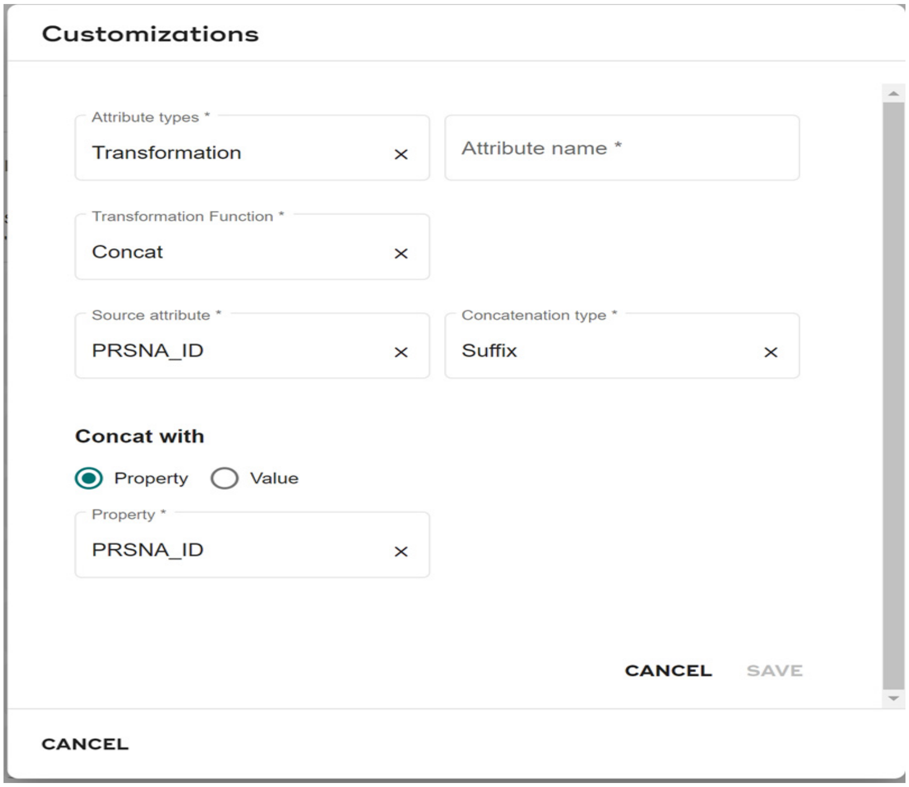
Table *: MDMCBRHEL84_mst.CI_CUS

Attribute *: CUST_ID

- If **Attribute type** selected as **Transformation** on **Customization** page, then provide **A.ttribute name**
- Select the **Transformation function** (Concat, Custom, Lower, StrLen, SubString, Trim and Upper) to be applied on the source column from the **Select Transformation Function** dropdown.,

  For example: select the transformation function as Upper and select the source attribute as FIRST_NAME. The First name will be updated with all upper case.
- Select Source attribute and Concatenation type for the selected function.
- Select **Property** or **Value** and provide the value for respective option.

Figure 241: Transformation



Attribute types *: Transformation

Transformation Function *: Concat

Source attribute *: PRSNA_ID

Concatenation type *: Suffix

Concat with

● Property ○ Value

Property *: PRSNA_ID

- Click **SAVE**.

  Message: Attribute saved successfully is displayed.

  Note:

  - Only one Auto Id Gen can be used per Target Table Mapping.
  - Usage of Auto ID is restricted to PK columns only.
  - For Custom Id gen, you must have columns with exactly same physical name in the custom table as that of the PK columns in source table. Pre populate corresponding columns of custom Id gen table with PK values of the source, else the execution will fail.

  Message: Attribute saved successfully is displayed.

Custom Transformation

You can do any custom transformation on source column by selecting Custom from the Select Transformation Function dropdown and enter the custom transformation SQL (for example: Multiply Revenue_sum with 1000).

Any Teradata SQL Clause that can be used in a Normal SELECT Statement can be provided in the Custom transformation option. For example: Arithmetic operation, Functions, UDFs, CASE statement etc.

Points on custom transformation:

- All columns should be aliased with Database name and Table name.
- Aggregate functions can be used only with OVER PARTITION BY Clause.
- Any string constant should be in Single quotes.

- In custom transformation, only Source table columns should be used. SQL clause should contain only column from source table selected during Survivorship. Using columns from other tables will result in serious performance degradation and may not work as expected.

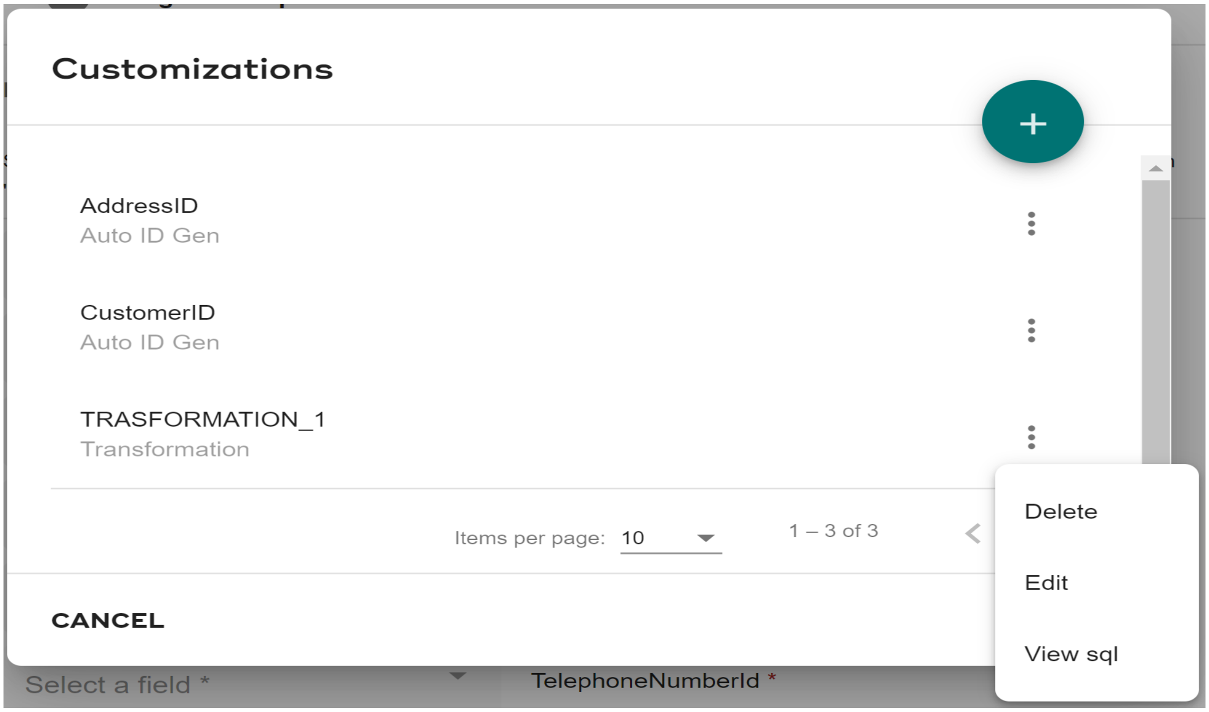
Customizations of type Custom Transformation and Auto ID will be available across all the survivorship profiles.

Edit Customization

To edit customized attribute:

1. On the **Customizations** page, click on the Menu icon corresponding to the required customized attribute and click **Edit** as in Figure 242.

Figure 242: Edit Customizations



The Customizations page refreshes to display the customized attribute details.

2. On the Customizations page, you can modify the required values and click **Save**.

Figure 243: Edit Customization Details

Message: Customization saved successfully is displayed.

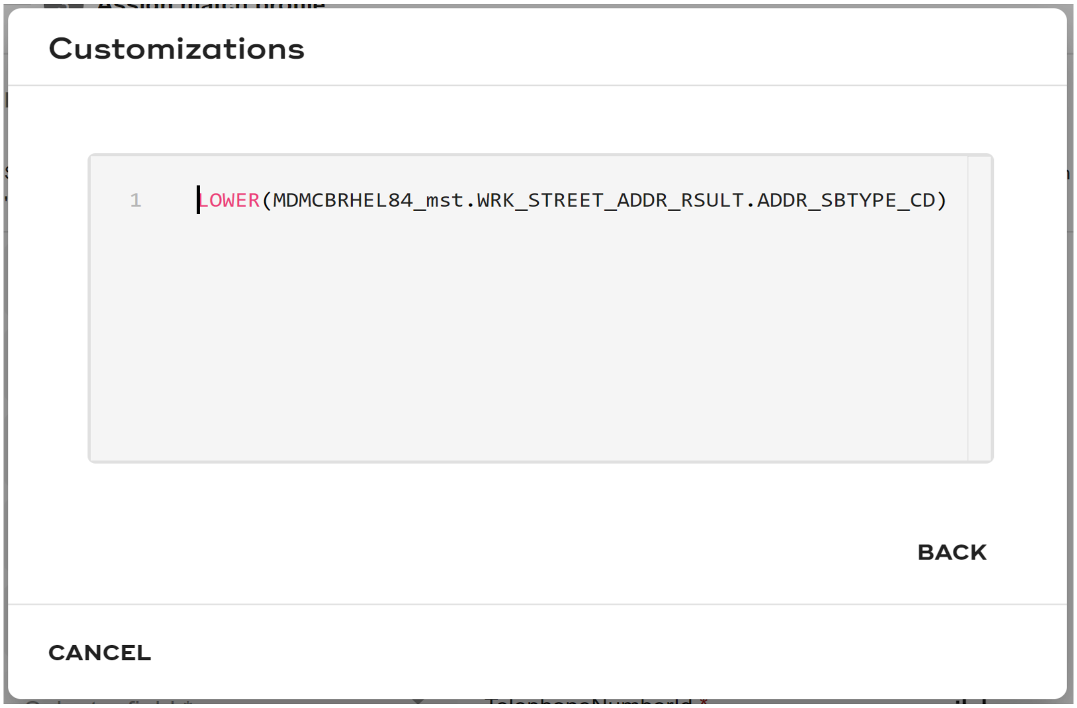
View SQL for Customization

To view all the customized attributes:

1 On any of the Customizations page either while creating the customized attribute or during edit operation on customized attribute, click on the Menu icon and click **View sql**.

The Customizations page will display the sql details for the specific customization.

Figure 244: View Customization sql



```
LOWER(MDMCBRHEL84_mst.WRK_STREET_ADDR_RSULT.ADDR_SBTYPE_CD)
```

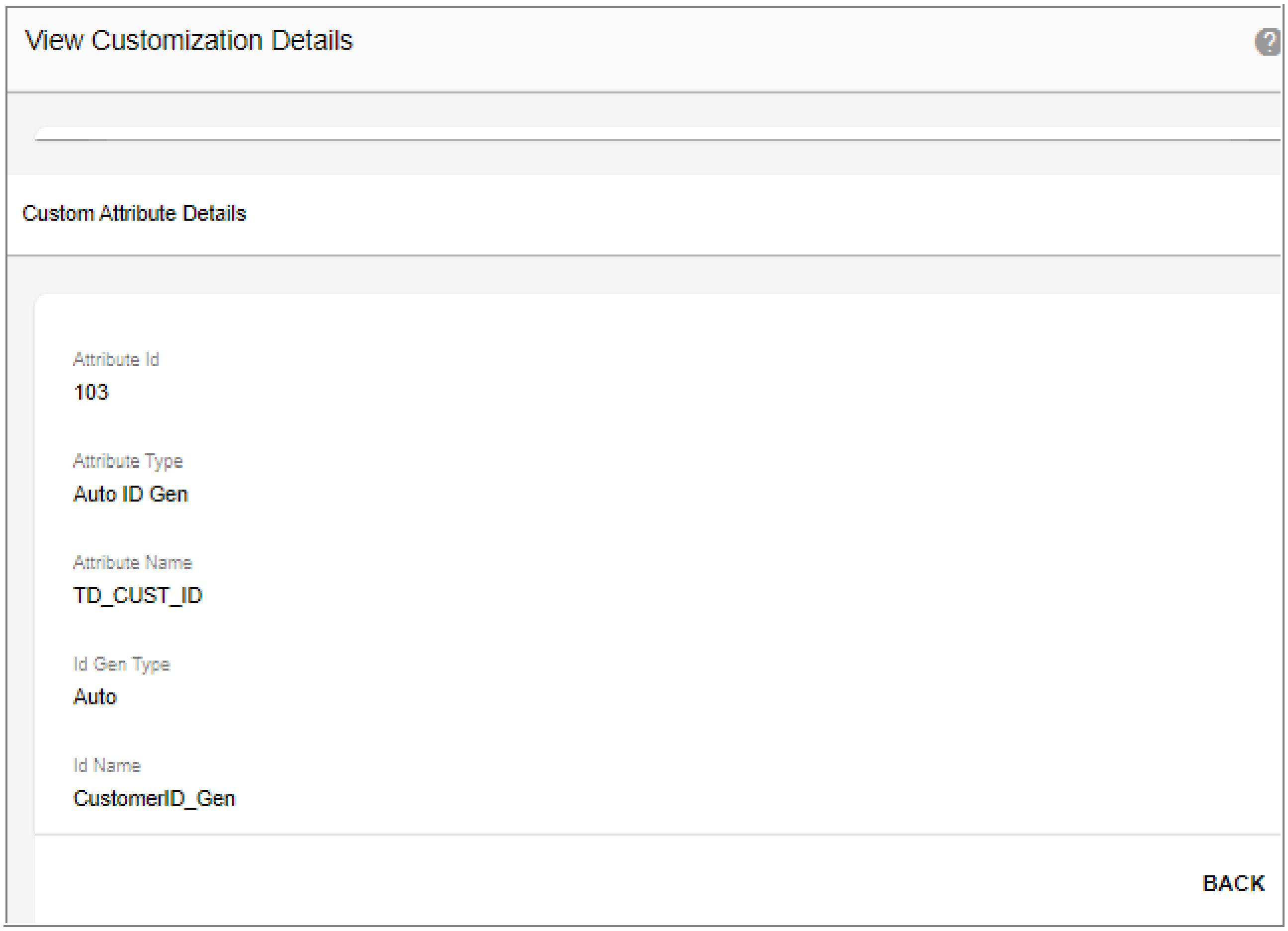
View Customized Attribute Details

To view customized attribute details:

1 On the Customizations page, click on the Menu icon corresponding to the required customized attribute and click **View Details**.

   The View Customization Details page displays all the details of the customized attribute as in Figure 245.

Figure 245: View Customization Details



View Customization Details

Custom Attribute Details

Attribute Id
103

Attribute Type
Auto ID Gen

Attribute Name
TD_CUST_ID

Id Gen Type
Auto

Id Name
CustomerID_Gen

Delete Customized Attributes

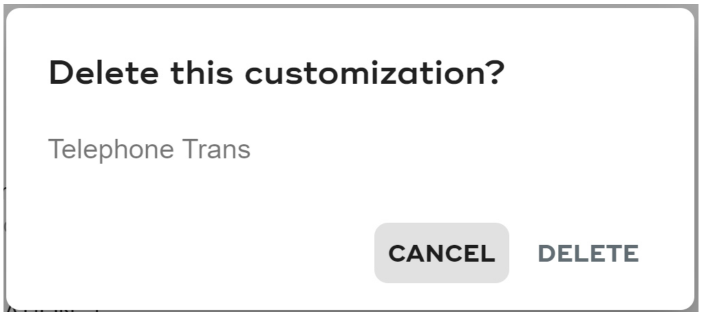
To delete customized attribute:

1 On the **Customizations** page, click on the Menu icon corresponding to the required customized attribute and click **Delete**.

   If the customized attribute is used by any of the survivorship profile, the confirmation webpage that the customization is being used by one or more survivorship profile.

2 Click **DELETE** to remove the particular profile.

3 If the customized attribute is not used by any of the survivorship profile, the below confirmation webpage dialog is displayed.


Delete this customization?

Telephone Trans

4 On the confirmation webpage dialog, click **Yes**.

Manage Survivorship Rules

Survivorship rules are the criteria's based on which the surviviorship process will decide on all the duplicates in source as which one should be created or merged in the golden master table. It helps selecting specific attributes from the required source tables, in case of multiple source table(s) records matching to the same golden master record, based on below mentioned criteria applied while performing survivorship.

MDM supports the following survivorship rules:

- Most Recent—this survivorship rule helps in identifying the most recent record available in multiple source records matched with the underlying golden master record to update the golden master record with the incoming source record. That is, while defining the rule, one should define the anchor column in the source table to provide date value to identify the freshness of the source records.

In case of using most recent rules, the selected source and target columns should have same data type (Most Recent rules are always defined using Date/Time Attributes of Source)

- Most Recently Modified—This rule helps identifying the update based on the last modification date on the golden master record against the incoming multiple records from the source for the same golden master. While defining the rule, one should define the anchor column in the source table to provide the date value which can be compared against the “Last Modified date” attribute of the golden master record. If the golden master record is updated before the new updates from the source, then the recent record from the source system will be selected for the merge/update operation.
- Oldest—This rule works opposite to that of Most Recent rule type. Out of records matched for target (or in a Dupe group for new records), survivor will be the record with least value on the column selected.
- Average—If more than one record matched for target (or in a Dupe group for new records), Average rule type will find the average of column selected in the mapping.

- Maximum—If more than one record matched for target (or in a Dupe group for new records), Maximum rule type will find the maximum of column selected in the mapping.
- Minimum—If more than one record matched for target (or in a Dupe group for new records), Minimum rule type will find the minimum of column selected in the mapping.
- Sum—If more than one record matched for target (or in a Dupe group for new records), Sum rule type will find the sum of column selected in the mapping.

Add Survivorship Rule

Apart from the OOTB survivorship rules provided, you can define custom rules as per the requirements. Each custom rule will be specific to Survivorship profile (Source Table and Source Column).

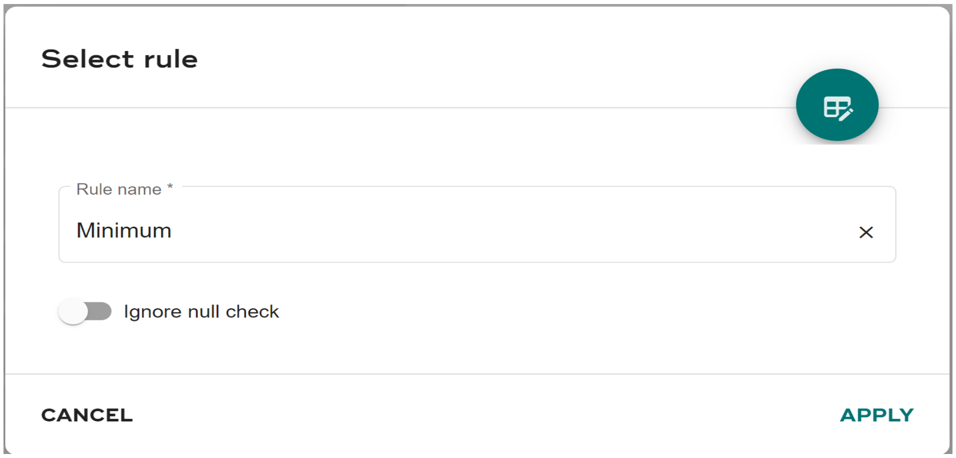
To create survivorship rules:

1 On the **Create a new survivorship profile**, select **Map**.

2 Click a rule icon corresponding to the source attribute.

Select rule window opens.

Figure 246: Select Rule



Rule name *: Minimum

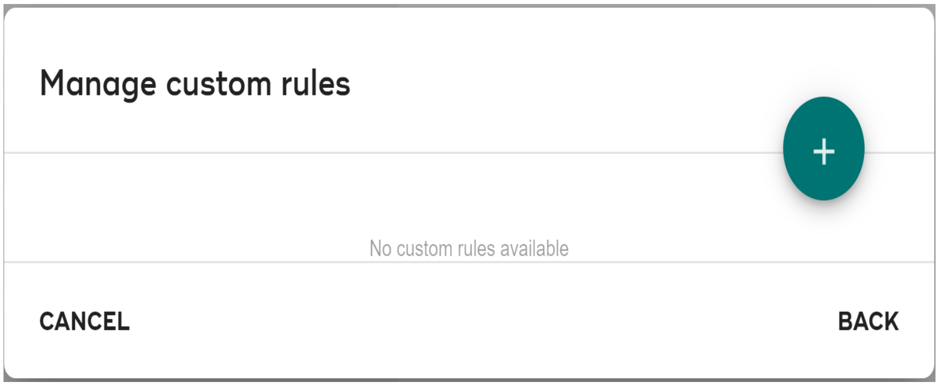
Ignore null check

3 Optionally enable the **Ignore Null Values** to ignore the master record being updated with NULL value from source irrespective of priority. The master record will be updated with not null value of next priority.

4 Click **Manage Custom Rules** icon.

Manage custom rules window opens.

Figure 247: Manage custom rules

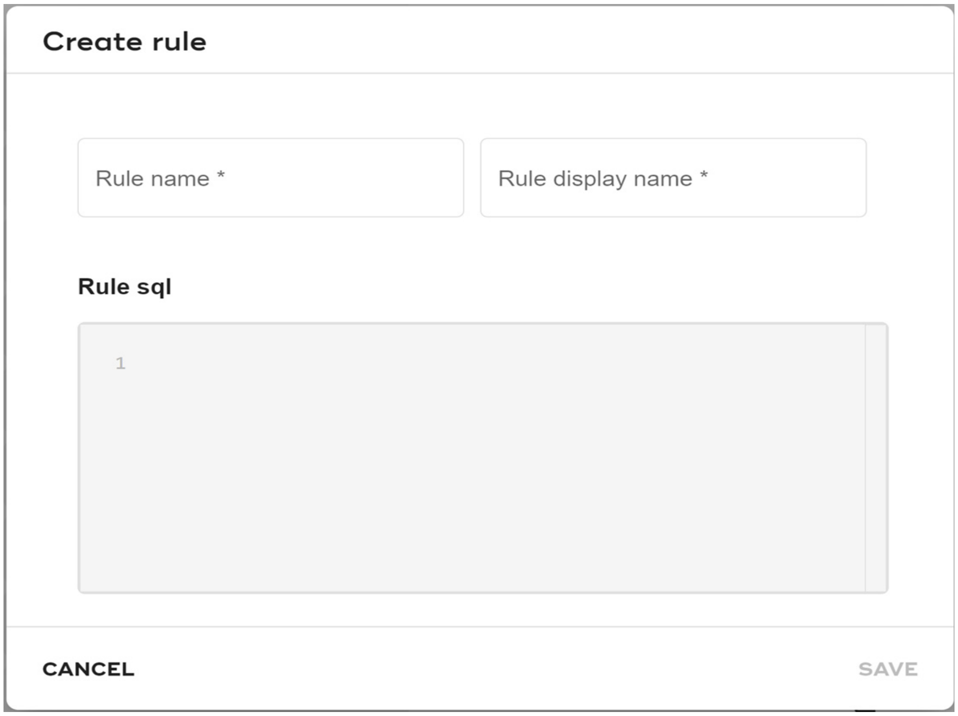


Manage custom rules

No custom rules available

5 Click Add icon.

Figure 248: Add Survivorship Rule



Create rule

6 On the **Create Rule** page, enter rule name, rule display name and rule SQL (*see below section: custom Rule SQL for more details*) in respective fields and click **Save**.

Message: Rule saved successfully is displayed.

The custom rules once added will be available in the Add Rule Popup options on clicking rule popup icon on Define Source to Target Attribute Mapping Page and can be used for survivorship profile.

Custom Rule SQL

Few points on custom rule SQL:

- Before creating a custom rule, create and save a survivorship profile on which you are planning to create custom Rule. MDM requires Mapping Id and Matching Id of a profile to create a custom SQL.
- you must know the name of Source Database and Source Table that can provide source column information.
- you must know the cleansing sandbox database where MDM stores the Survivorship intermediate table.This database is provided during MDM installation and can be viewed by executing the below SQL in MDM database

  ```
  SELECT PHYSICAL_DB FROM SYS_DB_MAP WHERE LOGICAL_DB =
  'CRDM_SANDBOX'
  ```
- Intermediate tables are created during Survivorship.

  Table Name <UF_ Sandbox>.SURV_<Mapping_id>_<Matching_Profile_id>_1.This table will have all the column used in Mapping, PK column of the tables selected as Source and Target and Few additional columns.

  Note: If source table PK and Target PK columns are same then Source PK Columns will be Prefixed with S_ and Target as M_
- ROWSEQNUM and RELATION_KEY columns in sequence represents the related records in a source.The records that are related will have the same ROWSEQNUM and Relation Key. Survivorship uses the Matching output and De-duplication output (if present) to generate the ROWSEQNUM and Relation Key in the same sequence.

Example of custom rule SQL:

If Mapping Id is 238 and Matching Profile Id is 765

Source Table: SAP_Org

Source Column Name to be selected: Company_Name

Source Database: SRC_DB

RDM Database: RDM_DB

Logic choose the First_Name: If there are more than one row matched to target or there are duplicate among rows qualified for Matching, Choose the record that have not null column in Priority_column.

Structure of Source table

SAP_Org

SRC_PK INTEGER (PK),

Company_Name VARCHAR(100),

Priority_column VARCHAR(10)

The SQL will be as below

```
SELECT INTER .ROWSEQNUM, INTER .RELATION_KEY, Company_Name
FROM SRC_DB. SAP_Org   SOURCE
INNER JOIN RDM_DB. SURV_ 238_ 765_1 INTER
ON SOURCE .SRC_PK = INTER. SRC_PK
WHERE Priority_column IS NOT NULL
```

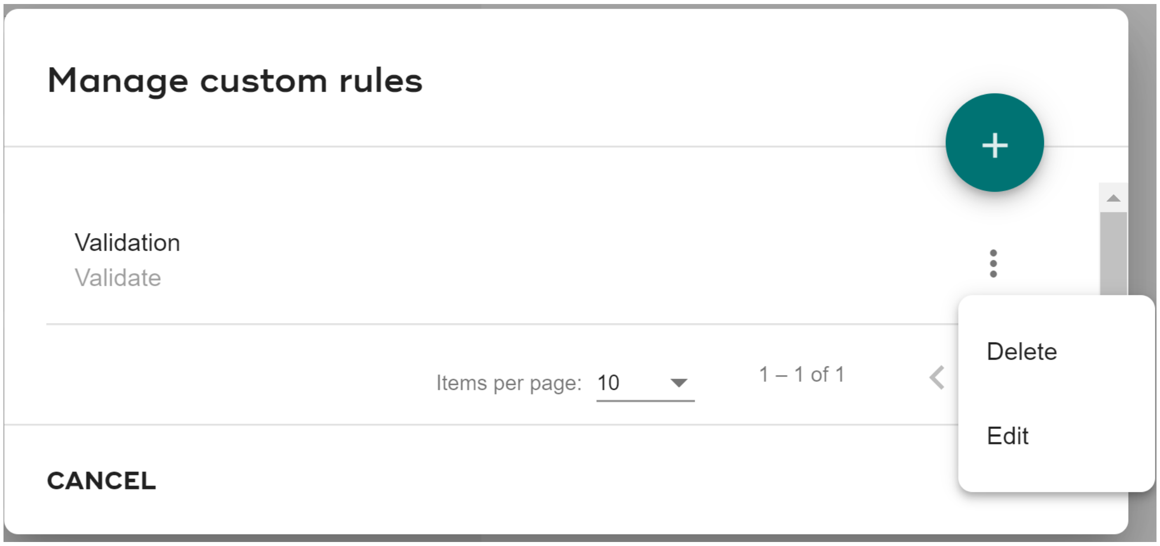
Edit Survivorship Rule

To edit survivorship rules:

1. On the **Survivorship Profiles**, click the menu icon corresponding to the particular profile and click **Edit.**
2. Select **Map** tab and click on the **Rules** icon.

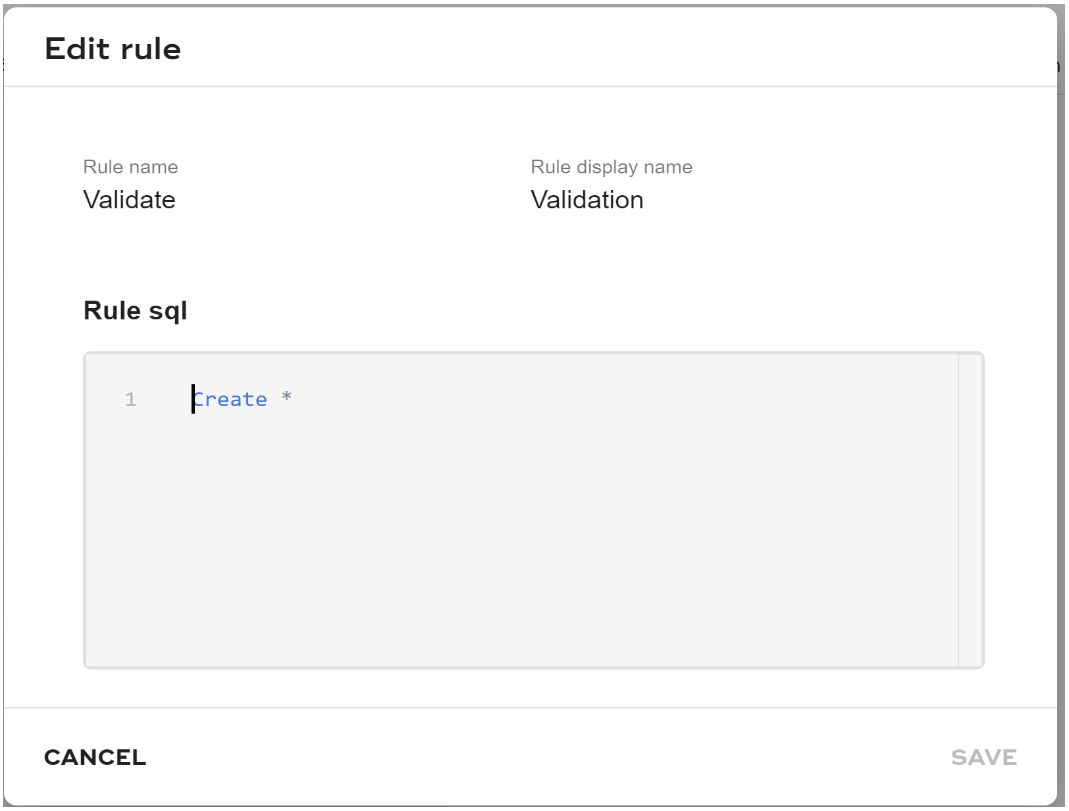
   The **Select rule** page is displayed.
3. Click on **Manage custom rules** icon.
4. Under **Manage custom rules**, click on the menu icon corresponding to the particular rule and click **Edit**.

Figure 249: Edit Survivorship Rule Option



5. On the **Edit Rule** page, you can update the rule sql.

Figure 250: Edit Survivorship Rule



Edit rule

Rule name
Validate

Rule display name
Validation

Rule sql

```
Create *
```

6 Click **SAVE**.

Message: Rule saved successfully is displayed.

Delete Survivorship Rule

To edit survivorship rules:

1 On the **Survivorship Profiles**, click the menu icon corresponding to the particular profile and click **Edit.**

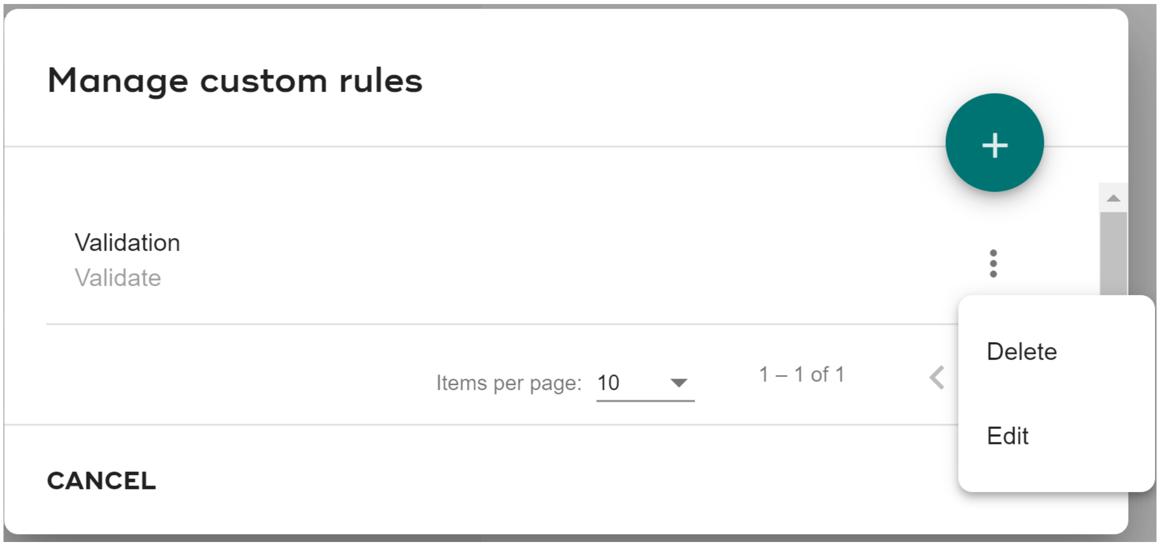
2 Select **Map** tab and click on the **Rules** icon.

The **Select rule** page is displayed.

3 Click on **Manage custom rules** icon.

4 Under **Manage custom rules**, click on the menu icon corresponding to the particular rule and click **Delete**.

Figure 251: Edit Survivorship Rule Option



A confirmation message appears to delete the survivorship rule.

5 Click **DELETE**.

Message: Custom Rule deleted successfully is displayed.

Points to Remember

Survivorship notes and limitations:

1. Target View should be single table view or simple view without any joins to other tables.
2. MDM by default does not support insert into view, hence it’s mandatory to create Save API to insert into view.
3. Target tables are always MDM master Table.
4. If a source table belongs to Non-MDM database, it must be registered to get reflected in the selectable options on UI.
5. Primary Key (PK) columns of multiple Target Tables selected should be same.
6. Only one source table can be selected per profile. In case a target table needs multiple sources it is assumed to have a view object created over the multiple sources in a way which serves the purpose.
7. While associating Mapping with Matching, Master/Source PK Column in Matching should be same as Survivorship Target/Source table Primary Keys.
8. Make sure to rename extended attributes prior to defining a mapping in survivorship.
9. Name of Custom attribute should not be same as any column name of the associated Source or Target table.
10. To run multiple survivorship concurrently, use customized attributes created using custom Id Gen Definition option as Auto ID Gen option does not support concurrent multiple survivorship execution.

11 If Auto Id gen is used for mapping in survivorship for a target table, which is pre loaded with data then manually update the values in NEXT_AVAILABLE_ID and NEXT_AVAILABLE_SEQUENCE columns of SYS_SURV_ID_GENERATOR table.

12 Columns starting with EXT_ and SV_ will not be displayed in Survivorship mapping.

13 E2E considers source also as part of PK for calculating the Net change and there by determining Update or Insert. When user defines a Survivorship and E2E on a same master table, records updated by Survivorship (if different source) will not be considered for Net change, whereas survivorship considers all the rows.

14 For successful execution of survivorship interactive merge or create process, the date stored in the string field of Source should be in same format as defined in database.

15 From the UI, mapping of Target Tables PK columns for ALCR and Trust is restricted but if Source PK column is mapped to a Non-PK Target Column with ALCR or Trust then Survivorship Execution will fail with error "The column '%VSTR' has been referenced twice. !! Failed SQL !!"

16 The integer datatype will not be converted to Char if the Char length is less than four.

17 When trust is defined on any column from Survivorship, Target and Mapping column should be compatible data type, else Survivorship execution may fail.

Edit Survivorship Profile

To edit survivorship profile:

1. On the **Survivorship Profiles**, click on the Menu icon corresponding to the required profile and click **Edit**.

   The particular profile page opens which you want to edit.

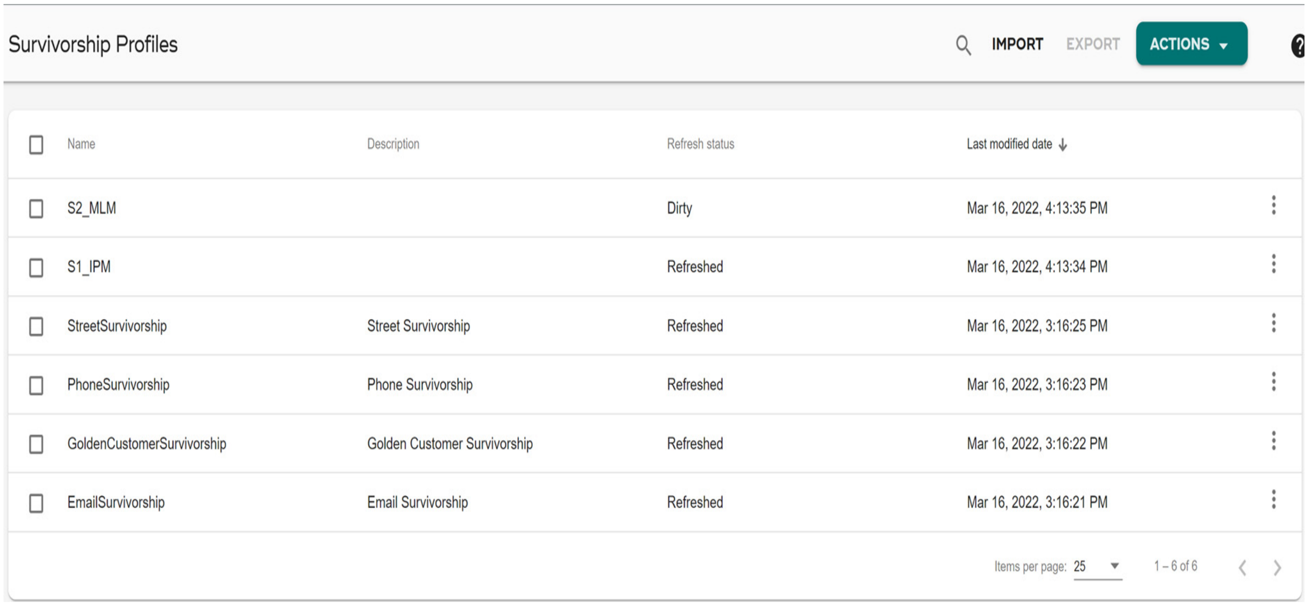
2. Edit the details for profile details, map and match profile and Click **SAVE PROFILE**.

Refresh Profile

Refreshing the profiles is required for the changes to be reflected in case of changes that happened outside of Survivorship UI. You can refresh each individual profile from Survivorship Profiles UI using Refresh Profile button. You can also refresh all the profiles at a time by using the Refresh Profile(s) button on the Manage Trust UI.

The Profile Status column on the Survivorship profiles displays the status of the profile refresh as in Figure 252.

Figure 252: Profile Status



☐	Name	Description	Refresh status	Last modified date ↓
☐	S2_MLM		Dirty	Mar 16, 2022, 4:13:35 PM
☐	S1_IPM		Refreshed	Mar 16, 2022, 4:13:34 PM
☐	StreetSurvivorship	Street Survivorship	Refreshed	Mar 16, 2022, 3:16:25 PM
☐	PhoneSurvivorship	Phone Survivorship	Refreshed	Mar 16, 2022, 3:16:23 PM
☐	GoldenCustomerSurvivorship	Golden Customer Survivorship	Refreshed	Mar 16, 2022, 3:16:22 PM
☐	EmailSurvivorship	Email Survivorship	Refreshed	Mar 16, 2022, 3:16:21 PM

Any of the following profile status can be displayed on the workbench:

1. Dirty—Profile is changed but not refreshed.
2. Refresh Started—Profile refresh is in progress.
3. Validation Error—Profile refresh failed due to validation error.
4. Error—Profile refresh failed due to occurrence of severe error during Refresh.

   If you encounter error for any profile, you need to edit the profile from workbench and save it to get the details of error.

   Note: You can execute the profile only if the Profile Status is Refreshed.

Execute Survivorship Profile

Once a survivorship profile is created successfully, you can execute the profile. A survivorship execution is dependent upon the associated match profile execution result as well as the source data selected for the survivorship profile.

Survivorship workflow is enhanced to provide option to execute premaster and master data of selected survivorship profile separately and the corresponding logs can be enabled on demand.

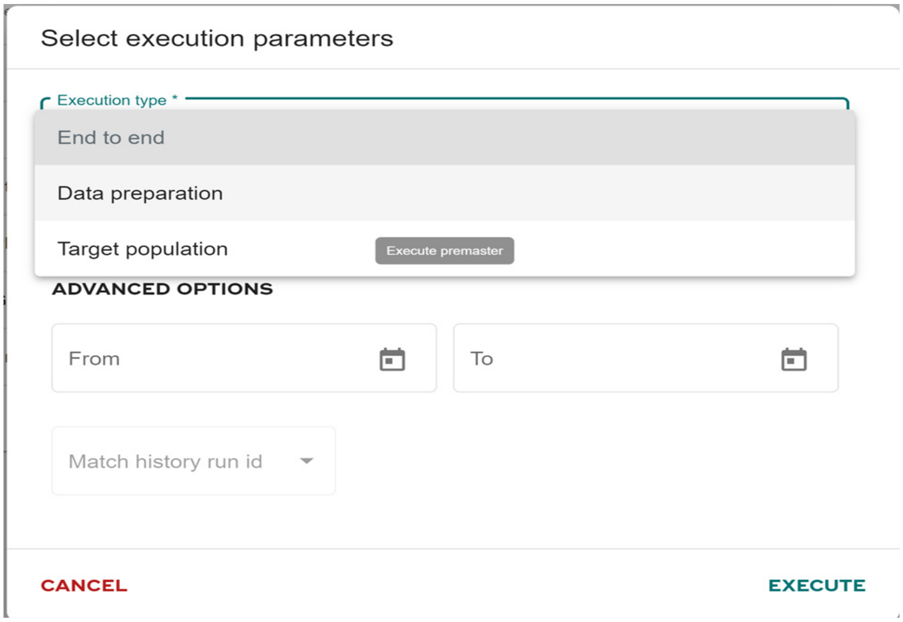
Survivorship execution performs the following operations:

- Create—creates new records from the matching results, see Section : “View New Records”.
- Merge—merges exact match records from the matching results, see Section : “View Match Records”.
- Interactive Merge—Interactively Merge/Create by selecting each match or potential match record from the matching results, see Section : “Potential Merge”

To execute survivorship profile:

1. On the **Survivorship profiles**, click on the Menu icon corresponding to the required profile and click **Execute** and select the option to **End to end Data Preparation**, or **Target population**.
2. The **End to end** execution type executes the part of survivorship that prepares required SQLs for actual movement of data from Source to Target tables. The **Data Preparation** execution mode executes the SQLs prepared in **End to end** step to move data from Source to Target tables. The **Target population** of Survivorship executes both **End to end** and **Data Preparation** together in a sequence. If you want to separate out the survivorship process in order to schedule actual data movement step (master execution) at a different time (may be off business hours), the **End to end** & **Data Preparation** execution modes can be used.

Figure 253: Survivorship Workbench



Pre-requisite for survivorship profile execution: matching should have already been executed for the selected profile.

The confirmation Webpage Dialog is displayed.

3. Under **ADVANCED OPTIONS**, provide the duration for which you want to execute the history runs.

   Based on selection of Run Date, the corresponding Run Id will be populated in the Run Id dropdown.
4. Select the **Match history Run Id** and click **Execute**.

   Message: Profile executed successfully is displayed.

- It is recommended not to concurrently run survivorship profiles with Auto ID and ALCR, as this may lead to Dead Lock.
- During survivorship profile execution, to avoid the spool space issue, it is recommended to purge the log tables. Purging the log tables will impact the following KPIs results count.

  It is recommended to take backup of the following Survivorship and Matching log tables. The below tables have RUN_ID and MATCH_PROFILE_ID (Profile_ID) in Common. Retain at least the latest few RUN IDs (Say 5 Runs) for each MATCH_PROFILE_ID (Profile_ID) in log tables.

  SV_SURV_EXEC_DETAIL_LOG

  SV_SURV_EXEC_LOG

  FM_DEDUPE_RUN_HISTORY

  FM_RUN_HISTORY

Single Transaction for Multiple Execution of Survivorship Profiles

You can execute multiple survivorship profiles in a single transaction using a Xrule API as shown in the below example. A bunch of execSurvivorhsip requests when called within a single REQUEST will be carried as a single transaction.

Sample Request to execute three survivorship profiles in single transaction:

```
<DEFINE_METHOD Name="SingleSurvRule">
<RULE>
<ACTION>
<REQUEST Name="executeSurvivorship">
<SURV_PROFILE_ID Value="103"/>
<MATCH_PROFILE_ID Value="105"/>
<ACTION_TYPE Value="ALL"/>
<SURV_EXEC_CONDTION Value=""/>
<USER_NAME Value="USR_1"/>
<INVOCATION_ORIGIN Value="SURV_UI"/>
</REQUEST>
<REQUEST Name="executeSurvivorship">
<SURV_PROFILE_ID Value="101"/>
<MATCH_PROFILE_ID Value="101"/>
<ACTION_TYPE Value="ALL"/>
<SURV_EXEC_CONDTION Value=""/>
<USER_NAME Value="USR_1"/>
<INVOCATION_ORIGIN Value="SURV_UI"/>
</REQUEST>
<REQUEST Name="executeSurvivorship">
```

```
<SURV_PROFILE_ID Value="102"/>
<MATCH_PROFILE_ID Value="103"/>
<ACTION_TYPE Value="ALL"/>
<SURV_EXEC_CONDTION Value=""/>
<USER_NAME Value="USR_1"/>
<INVOCATION_ORIGIN Value="SURV_UI"/>
</REQUEST>
</ACTION>
</RULE>
</DEFINE_METHOD>
```

APIs to execute Pre and Post Master Custom Survivorship rules

MDM provides an option to write any custom rules to be executed before or after premaster or master execution.

To write pre and post master custom rules, perform the following steps:

1. Open SurvivorshipRules.xml file from <MDM_Install_Directory>\cfg\xservice\mdmservices\modules\survivorship\rules
2. In SurvivorshipRules.xml, uncomment the following rules to be executed.
    - PreMaster APIs
        - preStepPreMasterCustomRule
        - postStepPreMasterCustomRule
    - Master APIs
        - preStepMasterCustomRule
        - postStepMasterCustomRule
3. Navigate to Survivorship Workbench and execute the profile on which the custom rules are defined.

    On execution, the premaster or master execution corresponding preStepCustomRule will be executed first and then postStepCustomRule will be executed.

    The details of the these rules execution will be displayed on Survivorship Logs page as in Figure 254.

    If any errors are encountered during the execution of custom rule, the entire survivorship execution will be rolled back and the error log can be seen in view logs page.

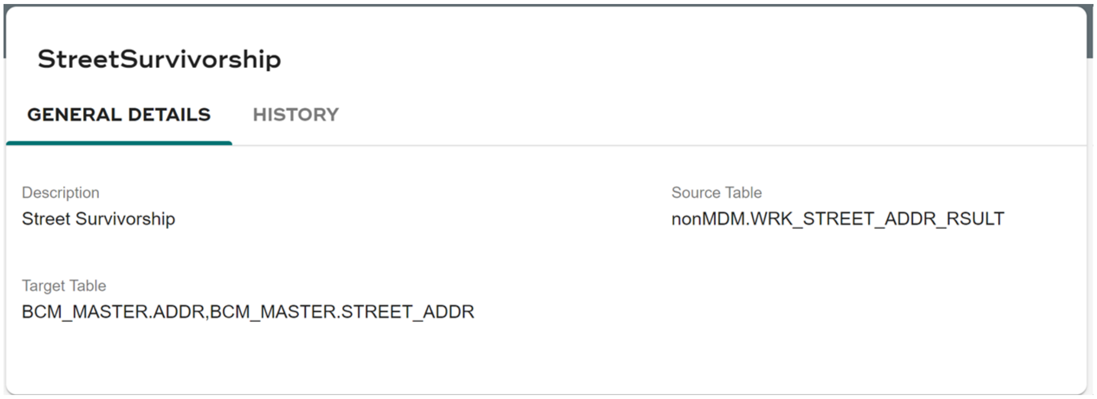
View Survivorship Execution Log

Once the survivorship profile execution starts, you can view related logs.

To view survivorship execution log:

1. On the Survivorship profiles, click on the Menu icon corresponding to the profile and click **Result**.

Figure 254: Survivorship Execution Log



StreetSurvivorship

Description
Street Survivorship

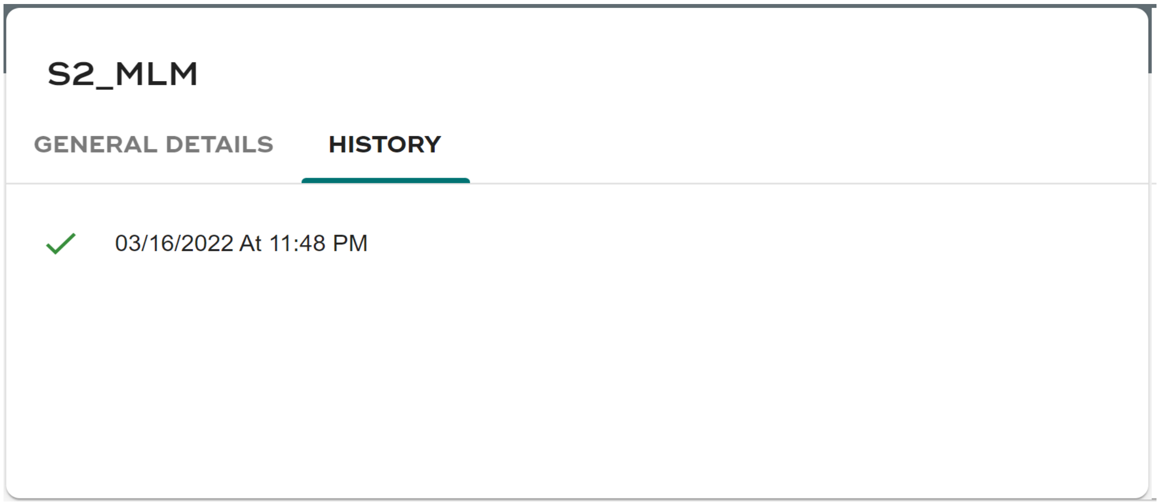
Source Table
nonMDM.WRK_STREET_ADDR_RSULT

Target Table
BCM_MASTER.ADDR,BCM_MASTER.STREET_ADDR

Two types of logs can be viewed from execution log page:

- **General Details**: this tab displays the logs for the most recent survivorship run of a profile.
- **History**: this tab displays the execution date and time for each source individually. .

Figure 255: Survivorship History Log



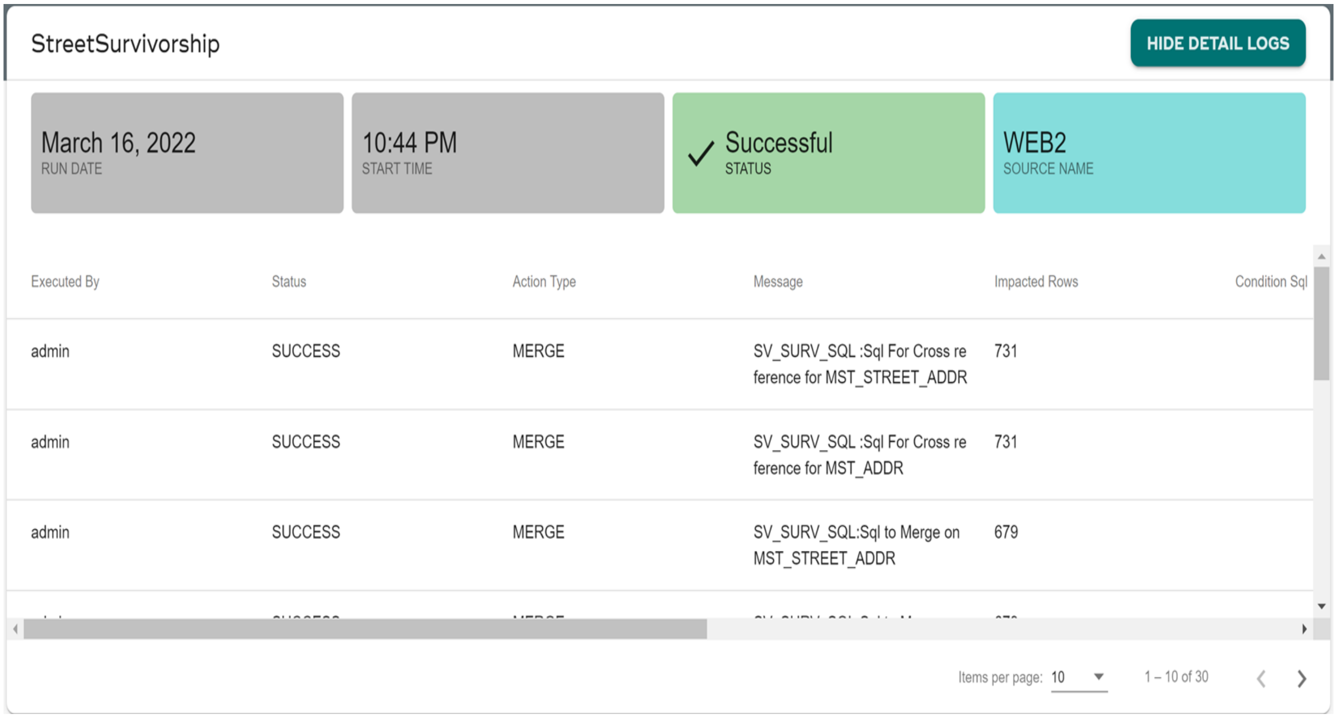
S2_MLM

✓ 03/16/2022 At 11:48 PM

The Step Number in the detailed result is important for debugging. For intermediate table population, this step number matches with SQLs in SYS_SURV_INTERIM_SQL and if the step number is 9999. etc. then it is a operation on Target table for which SQL will be available in SYS_SURV_SQL

2. Click any source details to view detailed execution logs.

Figure 256: Survivorship Execution Log_Detail Log



StreetSurvivorship

March 16, 2022
RUN DATE

10:44 PM
START TIME

✓ Successful
STATUS

WEB2
SOURCE NAME

Executed By	Status	Action Type	Message	Impacted Rows	Condition Sql
admin	SUCCESS	MERGE	SV_SURV_SQL :Sql For Cross reference for MST_STREET_ADDR	731	
admin	SUCCESS	MERGE	SV_SURV_SQL :Sql For Cross reference for MST_ADDR	731	
admin	SUCCESS	MERGE	SV_SURV_SQL:Sql to Merge on MST_STREET_ADDR	679	

Items per page: 10

1 – 10 of 30

View New Records

To view new records:

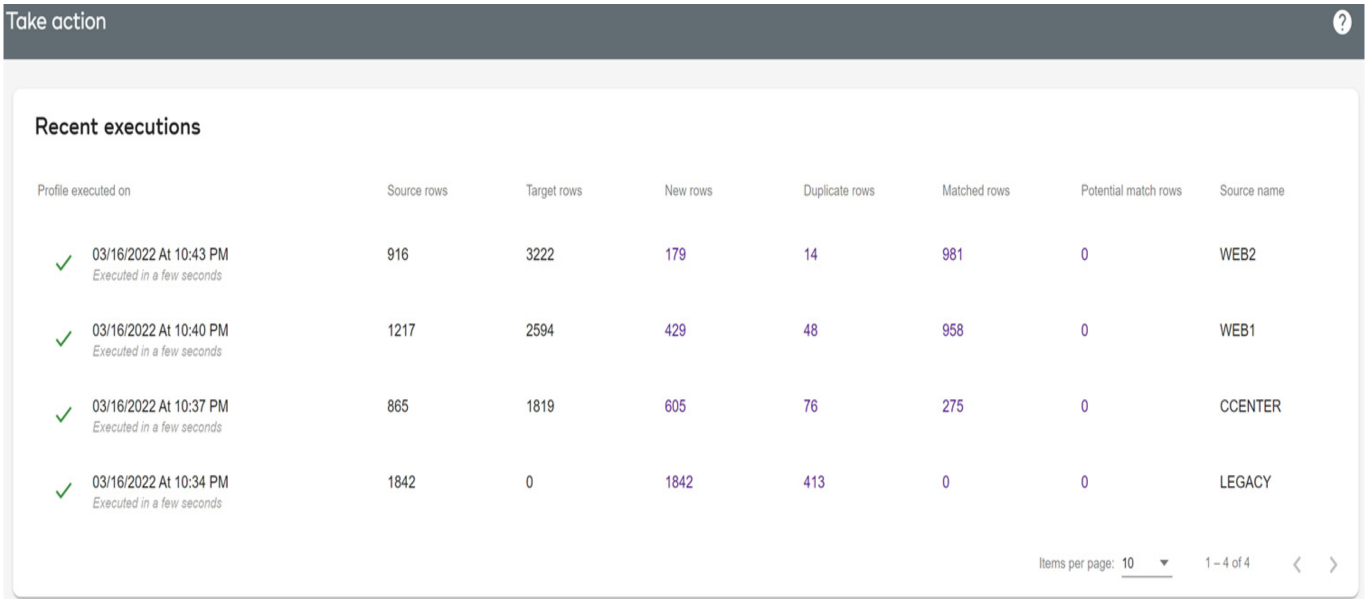
1. On the **Survivorship profiles**, click on the Menu icon corresponding to required profile and click **Take Action**.

   The **Take Action** option takes you to create non match records page where all the new records for the associated match profile can be viewed and you can perform create operations on the records.

   Pre-requisite for view new records: matching should have already been executed for the selected profile.

   The **Recent Execution** page displays with details like source and target row, New rows, duplicate rows, matched rows, potential match rows and source name.

Figure 257: Take action: Recent executions

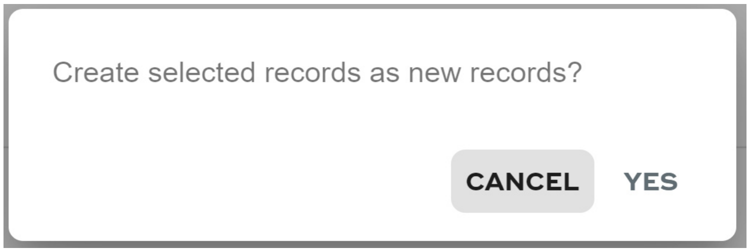


Recent executions

	Profile executed on	Source rows	Target rows	New rows	Duplicate rows	Matched rows	Potential match rows	Source name
✓	03/16/2022 At 10:43 PM *Executed in a few seconds*	916	3222	179	14	981	0	WEB2
✓	03/16/2022 At 10:40 PM *Executed in a few seconds*	1217	2594	429	48	958	0	WEB1
✓	03/16/2022 At 10:37 PM *Executed in a few seconds*	865	1819	605	76	275	0	CCENTER
✓	03/16/2022 At 10:34 PM *Executed in a few seconds*	1842	0	1842	413	0	0	LEGACY

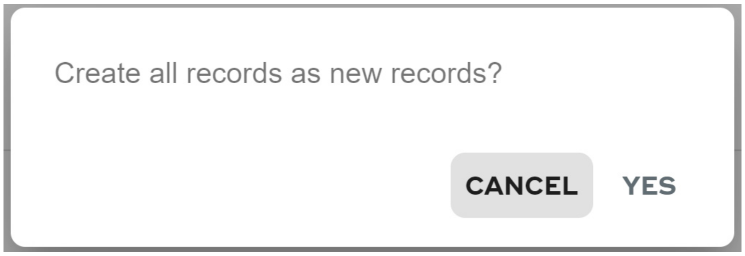
2 On the Match execution results page (Figure 257), if you select the records and click **Selected records** after clicking + icon to create new records.

The below confirmation **Webpage Dialog** is displayed.


Create selected records as new records?

3 On the Match execution results page (Figure 257), if you do not select the records and click **All records** after clicking + icon to create new records.

The below confirmation **Webpage Dialog** is displayed.


Create all records as new records?

Note: In case, the matching profile has Deduplication enabled, survivorship process will use criteria to resolve the duplicates and perform the Create operation.

If Deduplication is enabled on match profiles, the **Create Non Match Records** page will display the RELATION_KEY column. The RELATION_KEY column displays the duplicate records.

4. On the confirmation **Webpage Dialog**, click **Yes**.

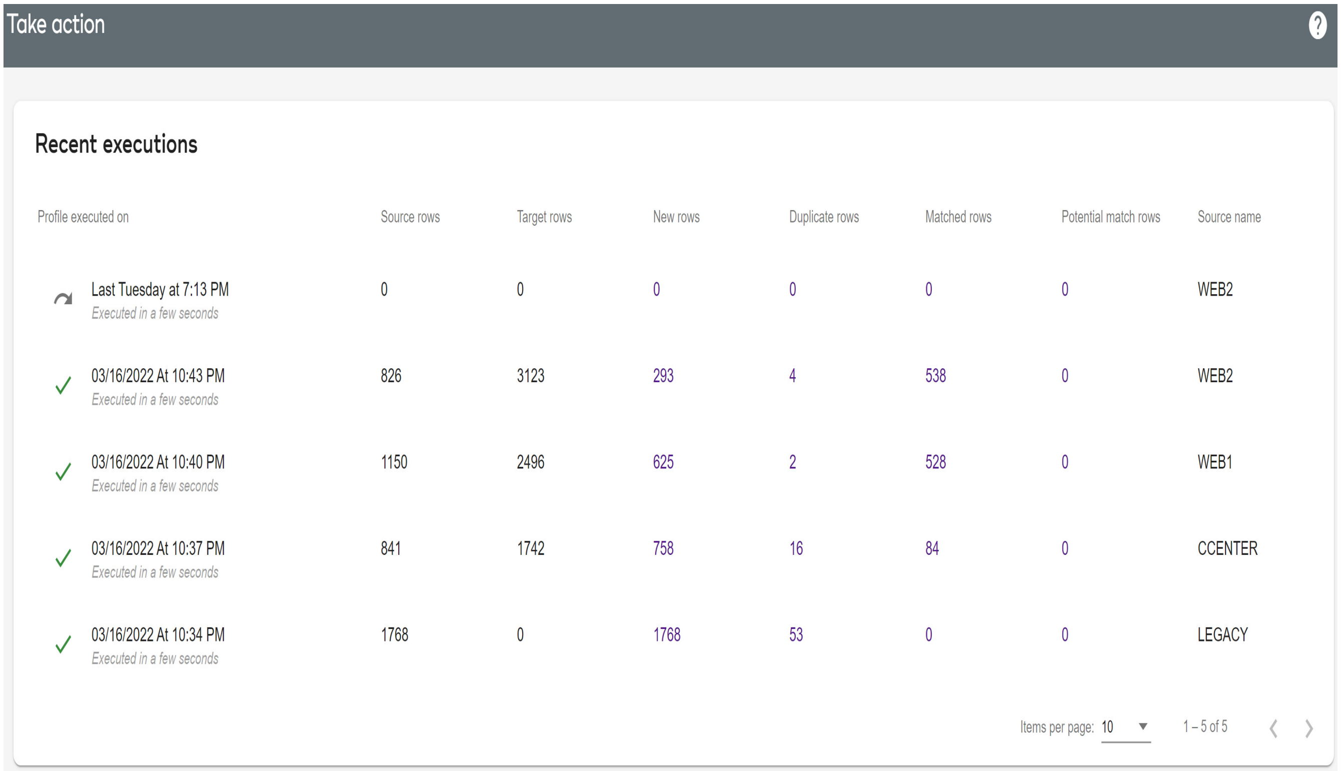
   Message: Records created successfully is displayed.

View Match Records

To view match records:

1. On the **Survivorship profiles**, click on the Menu icon corresponding to the required profile and click **Take action**.
2. Click the hyper link for the New, Duplicate, Matched rows, and Potential Matched rows record count from **Recent executions** list.

Figure 258: View Recent Execution



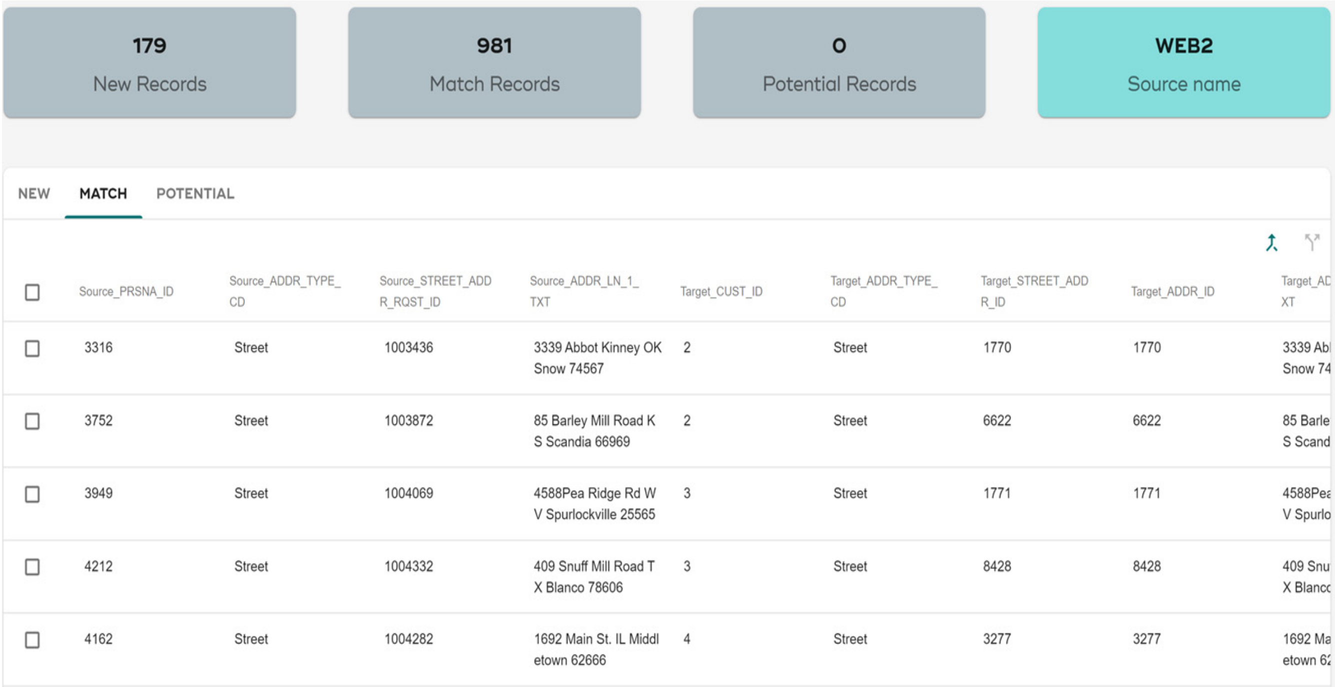
Recent executions

Profile executed on	Source rows	Target rows	New rows	Duplicate rows	Matched rows	Potential match rows	Source name
↻ Last Tuesday at 7:13 PM *Executed in a few seconds*	0	0	0	0	0	0	WEB2
✓ 03/16/2022 At 10:43 PM *Executed in a few seconds*	826	3123	293	4	538	0	WEB2
✓ 03/16/2022 At 10:40 PM *Executed in a few seconds*	1150	2496	625	2	528	0	WEB1
✓ 03/16/2022 At 10:37 PM *Executed in a few seconds*	841	1742	758	16	84	0	CCENTER
✓ 03/16/2022 At 10:34 PM *Executed in a few seconds*	1768	0	1768	53	0	0	LEGACY

On the **Match Execution results** page, all the new, potential and exact match records for the associated match profile displays and you can perform merge and potential merge operations on the records.

Pre-requisite for view match records: matching should have already been executed for the selected profile.

Figure 259: Match Execution Results



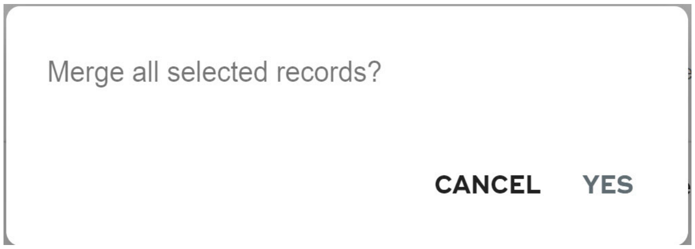
☐	Source_PRSNA_ID	Source_ADDR_TYPE_CD	Source_STREET_ADDR_RQST_ID	Source_ADDR_LN_1_TXT	Target_CUST_ID	Target_ADDR_TYPE_CD	Target_STREET_ADDR_ID	Target_ADDR_ID	Target_AD XT
☐	3316	Street	1003436	3339 Abbot Kinney OK Snow 74567	2	Street	1770	1770	3339 Ab Snow 74
☐	3752	Street	1003872	85 Barley Mill Road K S Scandia 66969	2	Street	6622	6622	85 Barle S Scand
☐	3949	Street	1004069	4588Pea Ridge Rd W V Spurlockville 25565	3	Street	1771	1771	4588Pea V Spurlo
☐	4212	Street	1004332	409 Snuff Mill Road T X Blanco 78606	3	Street	8428	8428	409 Snu X Blanc
☐	4162	Street	1004282	1692 Main St. IL Middl etown 62666	4	Street	3277	3277	1692 Ma etown 6

3 On the **Match execution results** page:

- You can view the exact count of New Records, Exact Match records or Potential Match records, and Source name.
- You can sort the records after clicking the arrow appears with column heading while hover over.
- You can select the required records (both potential or exact match records) by selecting the corresponding checkbox and click **Merge Records icon.**
- On the confirmation **Webpage Dialog**, click **Yes**.

  Message: Records merged successfully is displayed.
- You can also click on **Merge Records** without selecting any of the checkbox(es) to merge all the exact match records for the selected profile.

  The following confirmation **Webpage Dialog** is displayed.



Merge all selected records?

- On the confirmation **Webpage Dialog**, click **Yes**.

  Message: “Execution of the selected survivorship profile has began. Please view the log for more details.” is displayed.

- Navigate to the survivorship execution log page to check the execution details. See Section : “View Survivorship Execution Log”.

4 From the **Merge Match results** page (Figure 259), you can navigate to Matching Dashboard and Survivorship Workbench.

Potential Merge

Potential merge process facilitates the user to selectively Merge/Create "Exact Match" or "Potential Match" records.

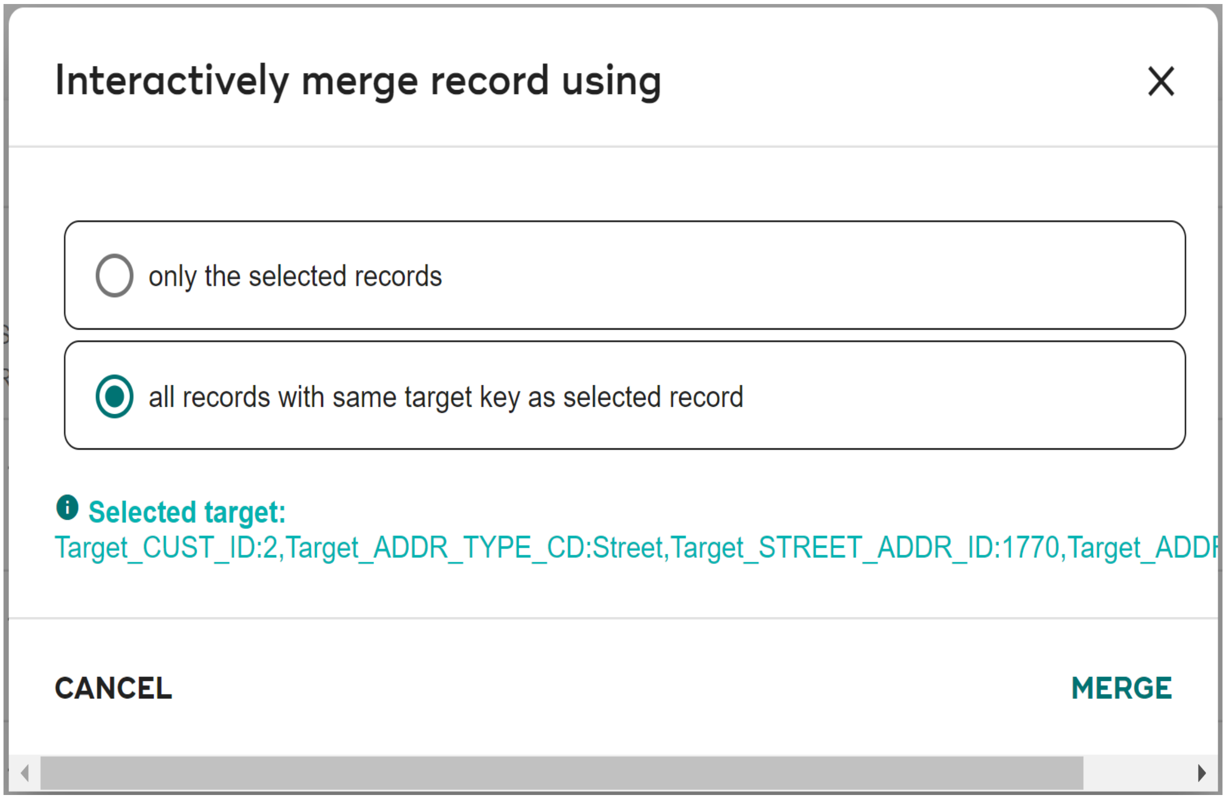
You can use Interactive Merge for one-one merging of exact match record or potential match record.

Note: Potential match records can be merged only through Interactive Merge process.

1 On the **Match execution results** page (Figure 259), select a single record or multiple records and click **Interactive Merge** icon.

The **Interactive merge record using** page (Figure 260) displays.

Figure 260: Interactive Merge Records



Interactively merge record using

○ only the selected records

● all records with same target key as selected record

Selected target:
Target_CUST_ID:2,Target_ADDR_TYPE_CD:Street,Target_STREET_ADDR_ID:1770,Target_ADD

2 On the **Interactive Merge record using** page (Figure 260), to merge record, select either the source and target properties values by selecting the corresponding radio button and click **Merge Record**.

Message: Records merged successfully is displayed.

The following list provides few point on Interactive Merge:

- Interactive merge operation is supported only for profile of type: survivorship and not for relationship.
- Only attributes for which mapping is done in the profile will be displayed in Interactive Merge.
- Interactive merge uses DO_DB_Persist for all the Requests hence approval is supported. In case approval is enabled on any of the target tables, user is prompted to check approval inbox.
- Interactive merge is not supported for survivorship profiles with Primary Key Update enabled.
- Check Merge Status before selecting a record for Interactive Merge.
- Check Merge Status before selecting a record for Interactive Merge. It is assumed by default that batch execution of survivorship will be done before any Interactive Merge executions, so if any of the record(s) for a Match run is Merged via Interactive merge before batch processing then Batch Insert/Merge operation will abort with a message as " MERGE ABORT!!-ACTION ALREADY PERFORMED."

Import Survivorship Profile

1. On the **Survivorship profiles**, click **Import**.

   The **Import a survivorship profile** page opens.
2. Click **Browse**.
3. Provide the file location and click **Open**.
4. Click **IMPORT PROFILE**.

Export Survivorship Profile

1. On the **Survivorship profiles**, select a profile from the list which you want to export.
2. Click **Export**.

   Profile exports to your system.

Delete Survivorship Profile

To delete survivorship profile:

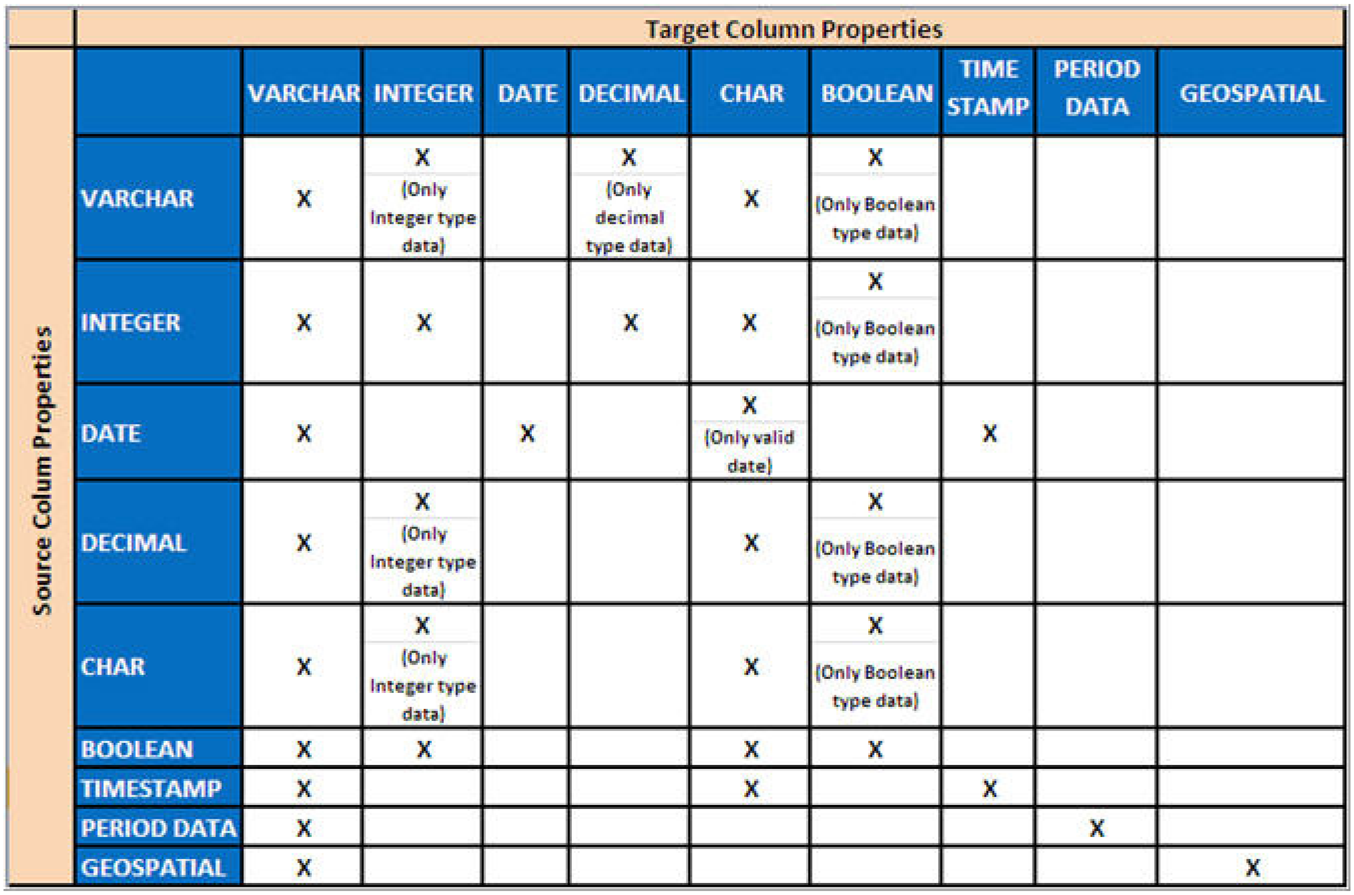
1. On the **Survivorship profiles**, click on the Menu icon corresponding to the required profile and click **Delete**.

   The confirmation **Webpage Dialog** is displayed.
2. On the confirmation **Webpage Dialog**, click **Yes**.

   Message: Profile deleted successfully is displayed.

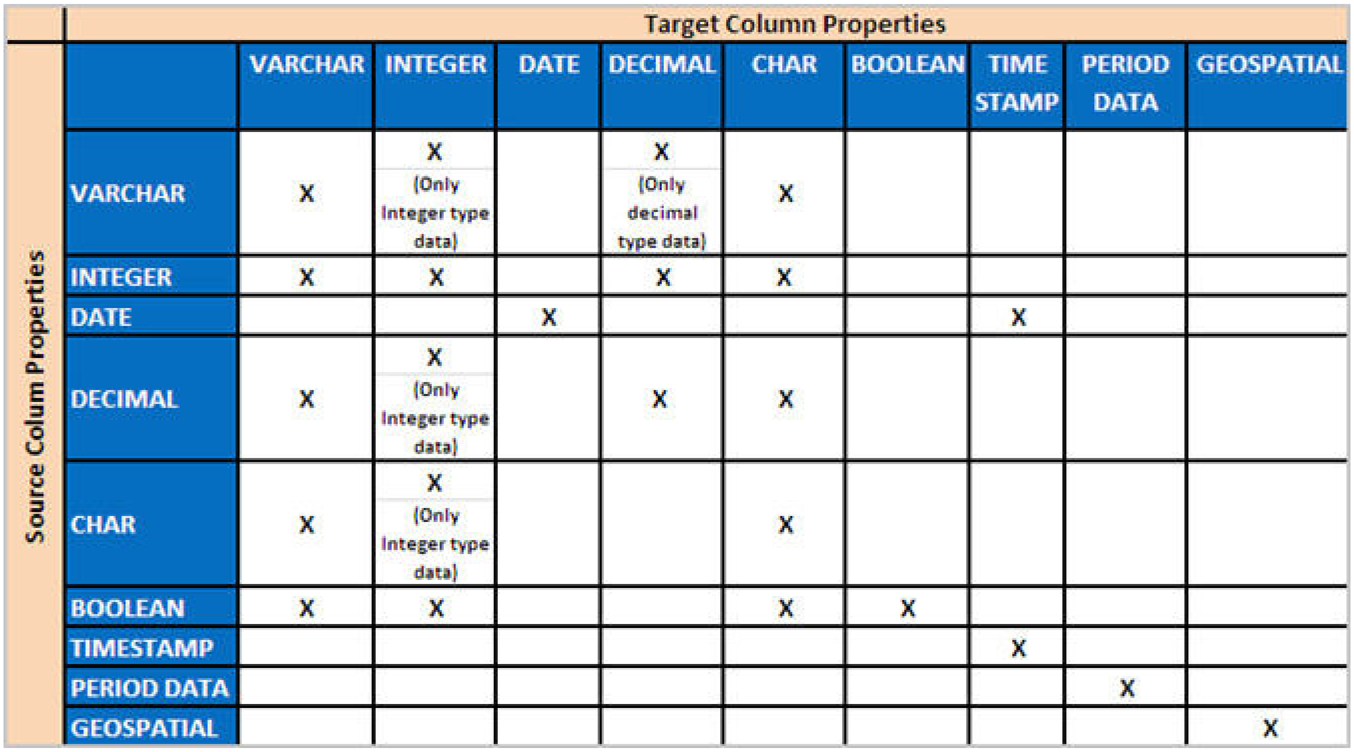
Survivorship DataType Compatibility

The below table provide datatype compatibility details for normal survivorship.



Source Colum Properties	Target Column Properties								
	VARCHAR	INTEGER	DATE	DECIMAL	CHAR	BOOLEAN	TIME STAMP	PERIOD DATA	GEOSPATIAL
VARCHAR	X	X (Only Integer type data)		X (Only decimal type data)	X	X (Only Boolean type data)			
INTEGER	X	X		X	X	X (Only Boolean type data)			
DATE	X		X		X (Only valid date)		X		
DECIMAL	X	X (Only Integer type data)			X	X (Only Boolean type data)			
CHAR	X	X (Only Integer type data)			X	X (Only Boolean type data)			
BOOLEAN	X	X			X	X			
TIMESTAMP	X				X		X		
PERIOD DATA	X							X	
GEOSPATIAL	X								X

The below table provide datatype compatibility details for survivorship with trust framework.



		Target Column Properties								
		VARCHAR	INTEGER	DATE	DECIMAL	CHAR	BOOLEAN	TIME STAMP	PERIOD DATA	GEOSPATIAL
Source Colum Properties	VARCHAR	X	X (Only Integer type data)		X (Only decimal type data)	X				
	INTEGER	X	X		X	X				
	DATE			X				X		
	DECIMAL	X	X (Only Integer type data)		X	X				
	CHAR	X	X (Only Integer type data)			X				
	BOOLEAN	X	X			X	X			
	TIMESTAMP							X		
	PERIOD DATA								X	
	GEOSPATIAL									X

Cross Reference and Relationship

Survivorship profile creation also creates Relational Objects (RO) and Relational Object Maps (ROM) for each table/view involved in profile creation and for which RO/ROM does not already exist. These are used to populate Cross reference data and relationship data for corresponding profiles.

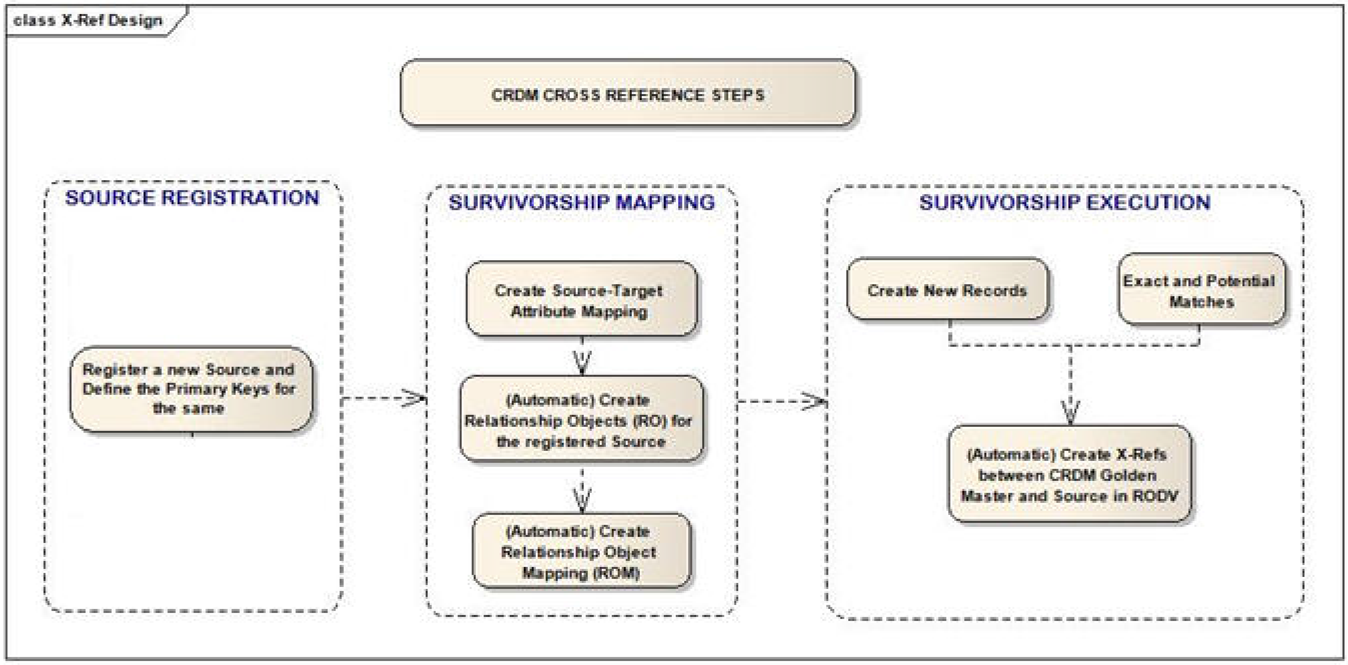
- Relational Object Creation: ROs are created for non-mdm registered table/views for which RO does not exist and which are being used in Survivorship process.
- Relational Object Map creation:
  - ROMs are created for survivorship process for each source and target pair. These ROM are of type = XREF_REL denoting Cross References.
  - ROMs are created for Relationship process Parent - Child table pair. These ROM are of type = other denoting Relationship.
- Relational Object Data Values:

  The target for storing relational object data values is either of the following types:
  - CRODV (PARTY_RELATIONSHIP) - if RDM Custom application is installed.
  - RODV (RelationalObjectData) - if RDM Custom application not installed.
  - For relationship, user can select the Relational Object Data table among CRODV/RODV from the UI. RODV is Default MDM table.

  Based on the selection done during profile creation, the Relational data (cross reference data or relationship data) are stored in respective table (CRODV/RODV) when a survivorship process executes.

Figure 261 illustrates the process flow for the RDM Cross Reference Design.

Figure 261: RDM Cross Reference Process Flow


class X-Ref Design
CRDM CROSS REFERENCE STEPS
SOURCE REGISTRATION
Register a new Source and Define the Primary Keys for the same
SURVIVORSHIP MAPPING
Create Source-Target Attribute Mapping
(Automatic) Create Relationship Objects (RO) for the registered Source
(Automatic) Create Relationship Object Mapping (ROM)
SURVIVORSHIP EXECUTION
Create New Records
Exact and Potential Matches
(Automatic) Create X-Refs between CRDM Golden Master and Source in RODV

Note: Few points to remember on cross reference:

- A cross reference/Relationship data is inserted in CRODV or RODV table for each new combination of target and source primary keys pair for the corresponding ROM, during survivorship execution process with actions: create/merge or interactive merge.

Store Cross Reference in Custom Target Table

To use custom target table to store cross reference details, perform the following steps:

1. Create and save a Survivorship profile (not Survivorship and Relation profile).

   It will create records in MST_REL_OBJ_MAP with TGT_TBL_RO_ID of MST_REL_OBJ_DATA_VAL. It will also create records in SV_SURV_SQL table and the query in column CROSS_REFERENCE_SQL will point to MST_REL_OBJ_DATA_VAL table.
2. Update the MST_REL_OBJ_MAP.TGT_TBL_RO_ID to RO_ID of custom table.
3. Save the survivorship profile.

   Check SV_SURV_SQL.CROSS_REFERENCE_SQL, it will have a query pointing to custom table instead of MST_REL_OBJ_DATA_VAL.
4. Refresh survivorship profile and if there is any table that do not have Survivorship and have ALCR then call below stored procedure.

   CALL SV_SURV_SOURCE_RULE_MANUAL ('<SQL db, SQL Table>',sql msg).

   Note:

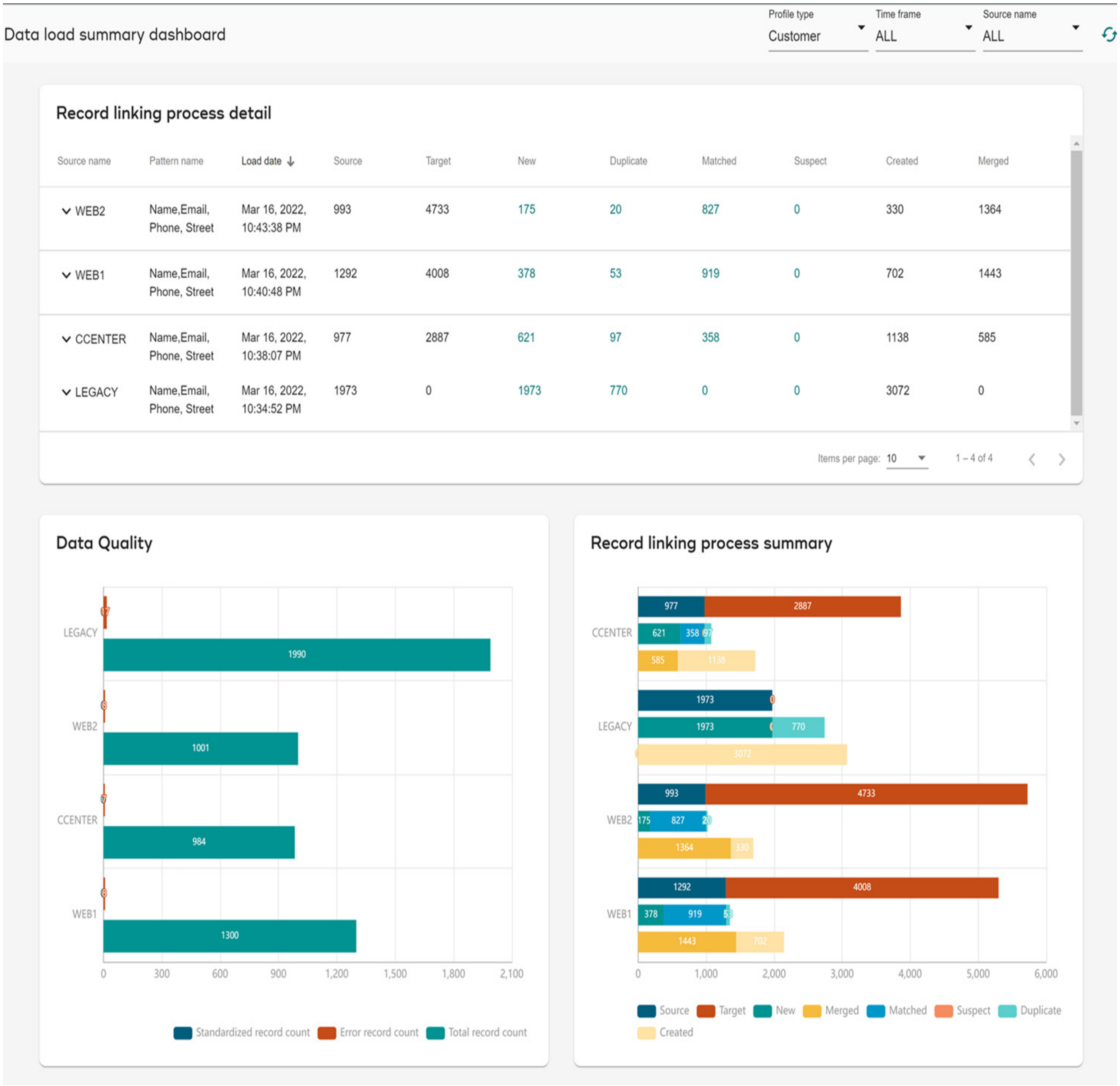
   - Custom table should have all the columns present in MST_REL_CLM_OBJ_DATA_VAL.

- Same custom table should be used for mapping all the columns in a table.

Data Load Summary Dashboard

Navigate to Data Load Summary Dashboard from MDM UI left navigation pane (**Data Harmonization** -> **Data load summary dashboard**). The Data load summary (Figure 262) provides a comprehensive view of the underlying matching and survivorship execution logs in a single page. Data load summary can view the combined logs and manage the execution results.

Figure 262: Data Load Summary Dashboard



Data load summary dashboard

Profile type: Customer
Time frame: ALL
Source name: ALL

Record linking process detail

Source name	Pattern name	Load date	Source	Target	New	Duplicate	Matched	Suspect	Created	Merged
WEB2	Name,Email, Phone, Street	Mar 16, 2022, 10:43:38 PM	993	4733	175	20	827	0	330	1364
WEB1	Name,Email, Phone, Street	Mar 16, 2022, 10:40:48 PM	1292	4008	378	53	919	0	702	1443
CCENTER	Name,Email, Phone, Street	Mar 16, 2022, 10:38:07 PM	977	2887	621	97	358	0	1138	585
LEGACY	Name,Email, Phone, Street	Mar 16, 2022, 10:34:52 PM	1973	0	1973	770	0	0	3072	0

Items per page: 10
1 – 4 of 4

Data Quality

Record linking process summary

Under **Data load summary dashboard**, you can select for the following values:

- **Profile type**: Select the profile type from the drop down list as phone, street, customer, email or all.
- **Time frame**: Select the duration for which you want to display the data summary on the dashboard.
- **Source name**: Select source name from the dropdown list. You can select single or all the sources.

The Dashboard lists the following:

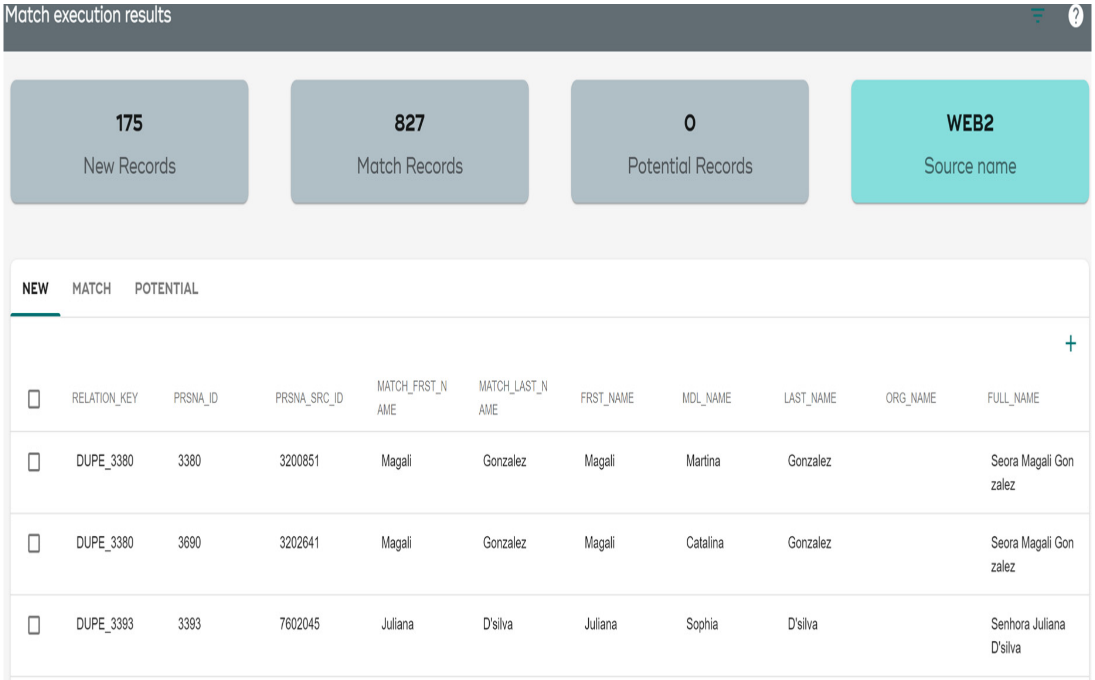
Record Linking Process Details

You can view the details of the records which sources execute through Survivorship. Under **Record linking process details** section, you can view following records:

- **Source Name**: Name of the source you have selected to view the details
- **Pattern Name**: Name of the pattern you have specified
- **Load date**: Date when the record has loaded
- **Source**: Number of source records
- **Target**: Number of the target records which has executed from source to target
- **New**: Number of new records created after the matching execution.
- **Duplicate**: Number of duplicate records created after the matching execution. This count displays as N/A if the Duplicate Row Check option is not enabled during the matching profile creation. If this option is selected, Dedupe results will be used during Survivorship which will avoid creating multiple records for the duplicates in the source system.
- **Matched**: Number of match records created after the matching execution
- **Suspect**: Number of potential match records created after the matching execution
- **Created**: Number of new records after the survivorship execution. If survivorship is not configured, the count would be displayed as 0.
- **Merged**: Number of records merged after the survivorship execution. If survivorship is not configured, the count would be displayed as 0

A hyperlink is provided on the counts to drill down to view the record details for New, Duplicate, Matched and Suspect. When you click count for the specific category, a detailed information displays for the records on **Match execution results** as New Records, Potential Records and Match Records.

Figure 263: DLSD Matching details



175 New Records

827 Match Records

0 Potential Records

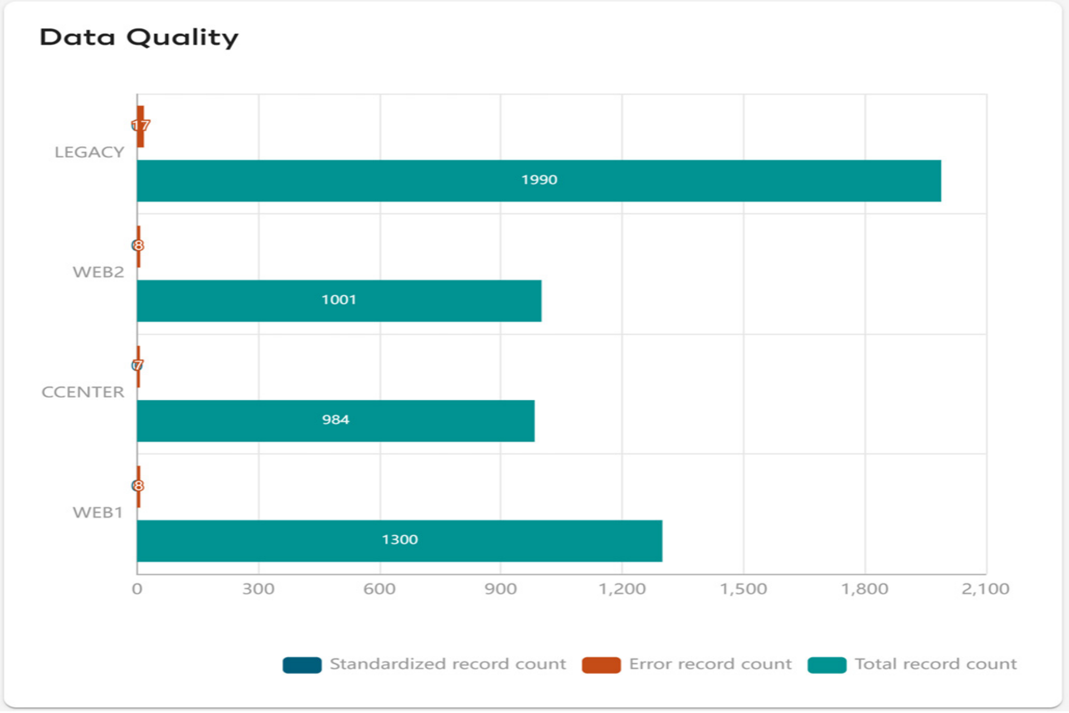
WEB2 Source name

☐	RELATION_KEY	PRSNA_ID	PRSNA_SRC_ID	MATCH_FRST_NAME	MATCH_LAST_NAME	FRST_NAME	MDL_NAME	LAST_NAME	ORG_NAME	FULL_NAME
☐	DUPE_3380	3380	3200851	Magali	Gonzalez	Magali	Martina	Gonzalez		Seora Magali Gonzalez
☐	DUPE_3380	3690	3202641	Magali	Gonzalez	Magali	Catalina	Gonzalez		Seora Magali Gonzalez
☐	DUPE_3393	3393	7602045	Juliana	D'silva	Juliana	Sophia	D'silva		Senhora Juliana D'silva

Data Quality

Data Quality section displays the Standardize record count, Error record count and Total record count in graphical representation. You can hover over the bar graph to view the count of the matching records for different category.

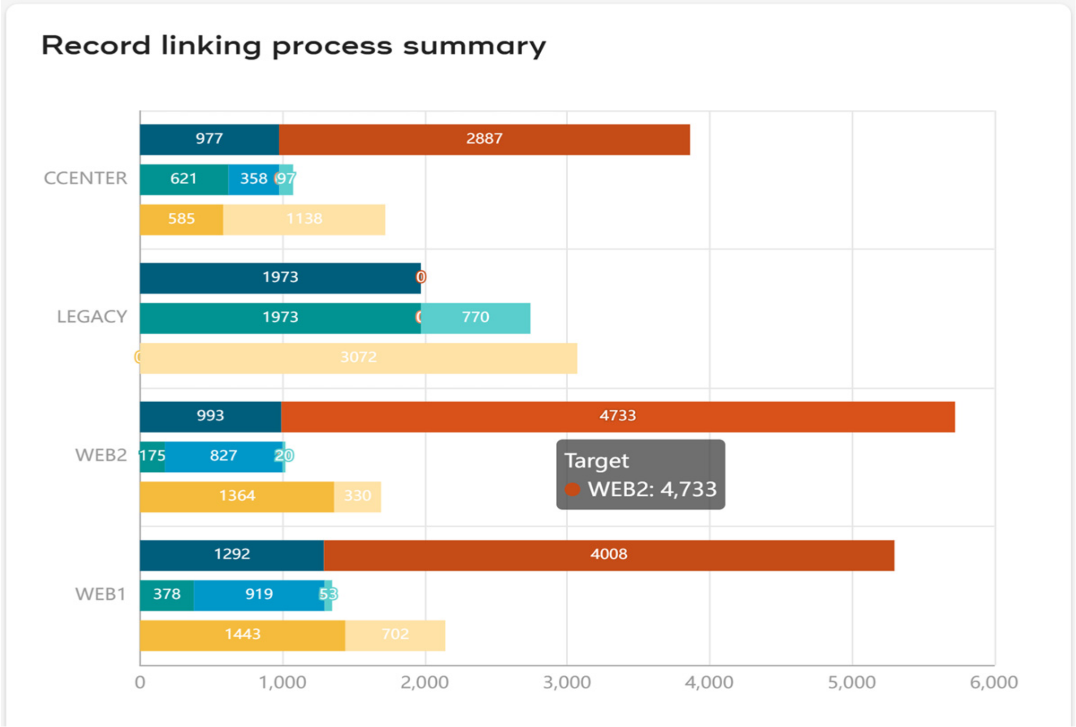
Figure 264: Data Quality



Record Linking Process Summary

Record linking process summary is the graphical representation of Record linking process details. Each color represents different category of the records. You can hover over the graph to view the count of the records.

Figure 265: Record Linking Process Summary



Manage Trust

In survivorship, when an attribute of target table is sourced from more than one source tables (survivorship profile), a process is required to assign priorities to the contributing sources, so that the correct value from the correct source is survived. MDM provides an out of the box feature called **Manage Trust** that provides a facility to assign priorities across multiple sources of data for attributes of target table.

The **Manage Trust** utilizes the prioritization method to determine which source values will be used over other source values. The priority is based on the numeric value, the lowest valued priority number takes precedence over other values. For example, a priority assigned as “1” takes the highest priority.

Pre-requisites for **Manage Trust**:

- It is recommended to have all the matching and survivorship profiles taking part in trust to be created before defining trust as the trust prioritizes the sources for the attributes of target table taking part in a survivorship profiles. In case if a new survivorship profile source has to be added to an already defined trust, the new source can be added directly from **Manage Trust** UI or from survivorship mapping page while creating or editing survivorship profile.

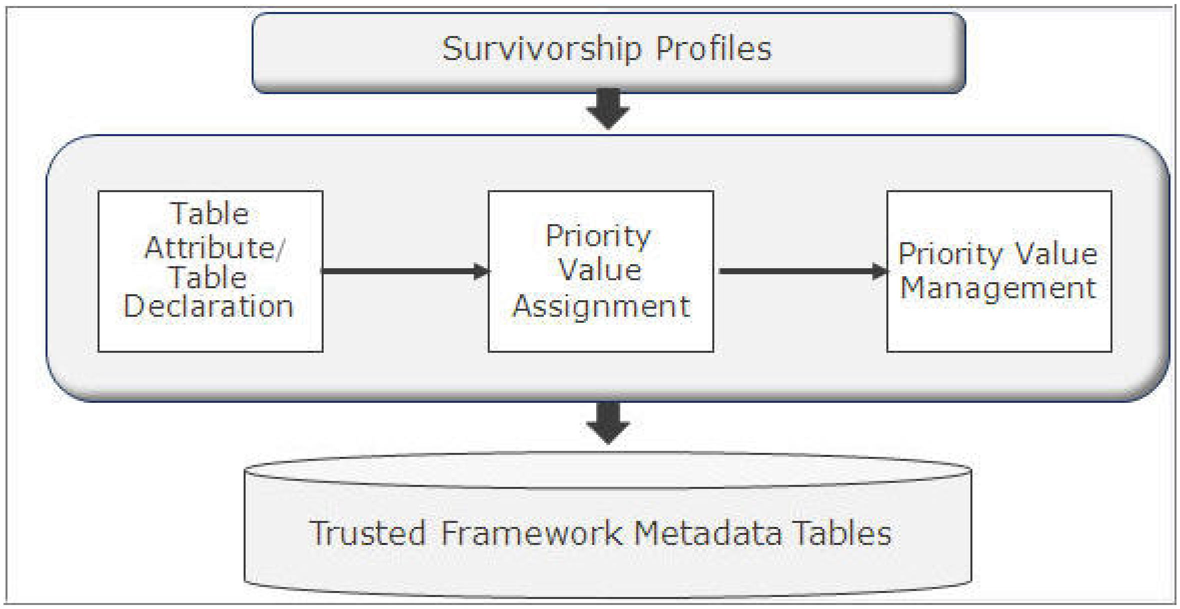
Manage Trust — Manage Priorities

Figure 266 displays the trust framework process flow. MDM provides two types of trust framework:

- **Attribute level trust**: Attribute Level Trust allows to define highest priority per column in a table. The source having highest priority will override the defined attribute/column value in the target table.
- **Row level trust**: Row Level Trust allows to provide highest priority to an entire source. The source having highest priority will override all column values in target table.

  A table can have either attribute level or row level trust defined and not both.

Figure 266: Manage Trust Process Flow


Survivorship Profiles
Table Attribute/ Table Declaration
Priority Value Assignment
Priority Value Management
Trusted Framework Metadata Tables

Defining level trust consists of three main steps:

- Target Table/Table Attribute Selection: It is the process of defining which attributes of selected golden master or target table will take part in trust framework.
- Priority Value Assignment: It is the process of defining priority for sources contributing to the attributes of the target table across different survivorship profiles and manual override.

  Manual Override: Manual override is a default source that comes with each selected attribute of target table in Trust Framework. If the golden master tables are populated by a processes other than survivorship that uses Do_DB_PERSIST are called Manual Override process. Processes in MDM like excel upload, table editor are called manual override. The priority of manual override operations can be controlled by assigning a priority value to it.
- Priority Value Management: It is the process responsible for managing the priority assignment including deletion and editing of priority values. It also manages the process

of refreshing profiles for any changes done during assigning or editing or deleting priorities in trust framework.

Once the priority values are assigned for the target attributes, you can execute the survivorship profiles sourcing the target attributes. On execution of the profiles, it will honour the priorities defined through Trust Framework and the target tables will be updated as per the assigned priorities.

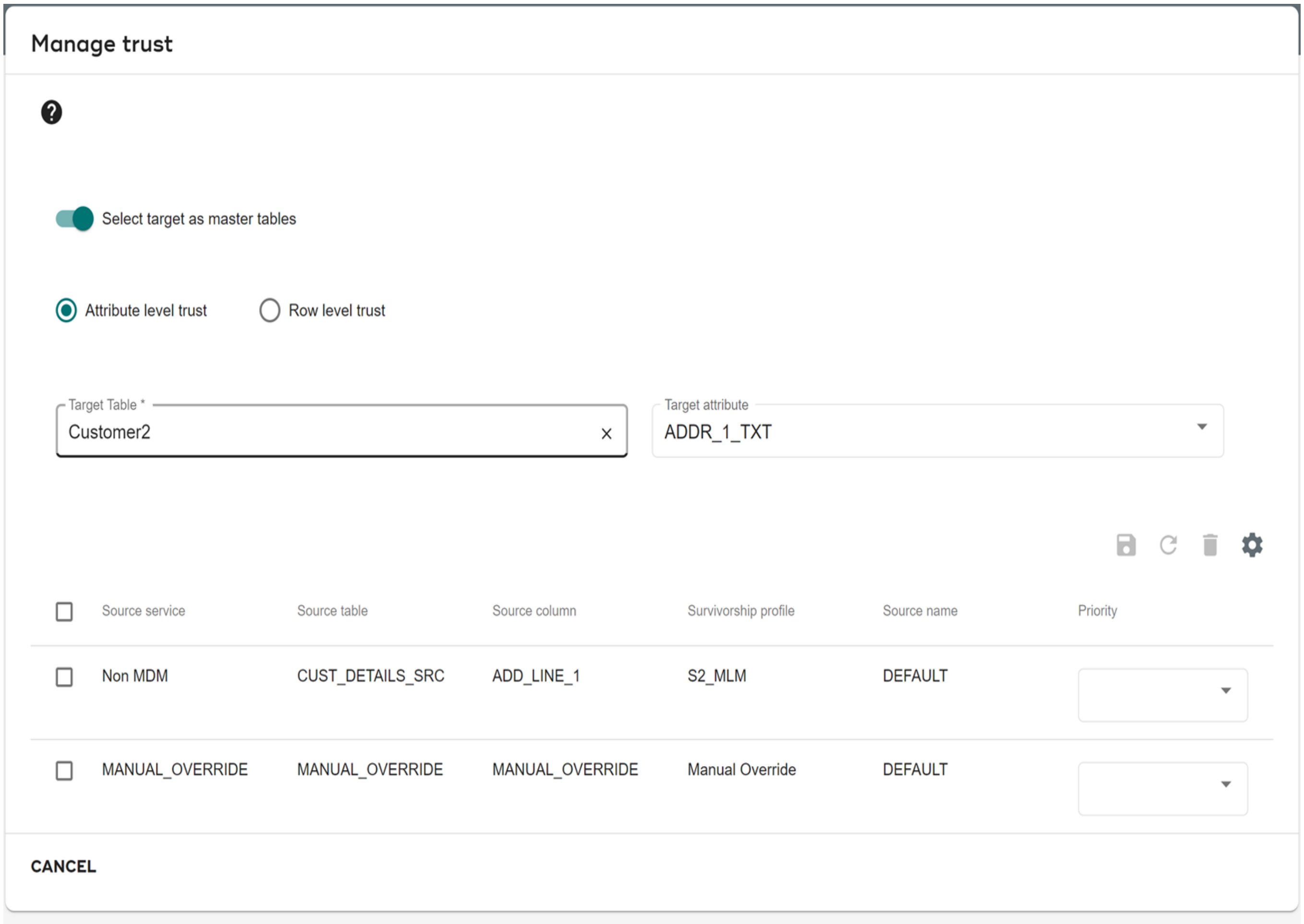
Attribute Level Trust

Perform the following steps to assign priorities:

1. On the MDM UI, in the left navigation pane, click **Data Harmonization** -> **Survivorship**.
2. Click **Actions -> Manage Trust**.

   The **Manage Trust** page (Figure 267) displays.

Figure 267: Manage Trust



Manage trust

Select target as master tables

● Attribute level trust ○ Row level trust

Target Table *: Customer2

Target attribute: ADDR_1_TXT

☐	Source service	Source table	Source column	Survivorship profile	Source name	Priority
☐	Non MDM	CUST_DETAILS_SRC	ADD_LINE_1	S2_MLM	DEFAULT	
☐	MANUAL_OVERRIDE	MANUAL_OVERRIDE	MANUAL_OVERRIDE	Manual Override	DEFAULT	

3. On the **Manage Trust** page (Figure 267), enable **Attribute level trust**.

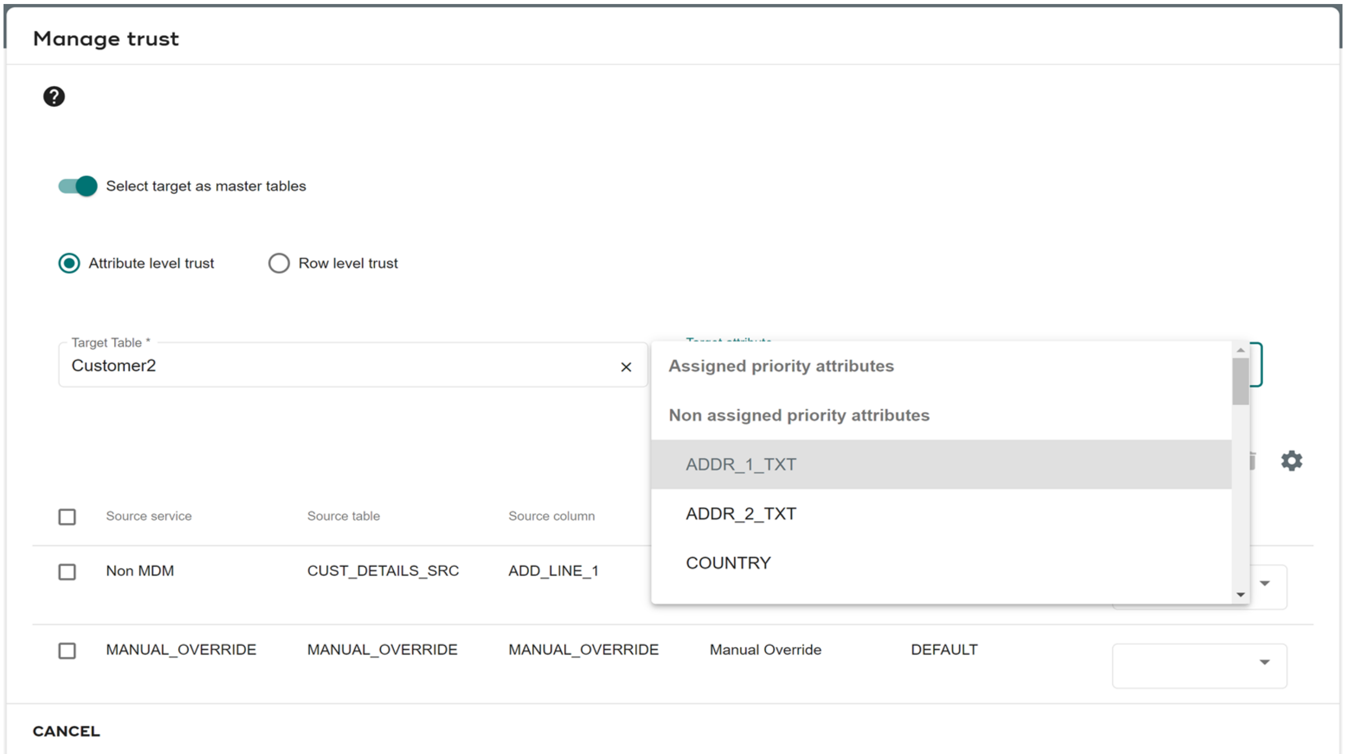
   The **Target Table** drop-down displays all the tables on which the survivorship profile is created or exists with defined attribute level trust.

- Select the master or target table to be used in Trust Framework from **Target Table** drop-down.

  The **Target Attribute** drop-down displays all the attributes (Assigned Priority Attributes and Non Assigned Priority Attributes) of the selected target table as in Figure 268.

  All the attributes displayed in the **Target Attribute** drop-down can be used in trust framework.

Figure 268: Manage Trust Framework


Manage trust
?
Select target as master tables
● Attribute level trust
○ Row level trust
Assigned priority attributes
Non assigned priority attributes
ADDR_1_TXT
ADDR_2_TXT
COUNTRY
CANCEL

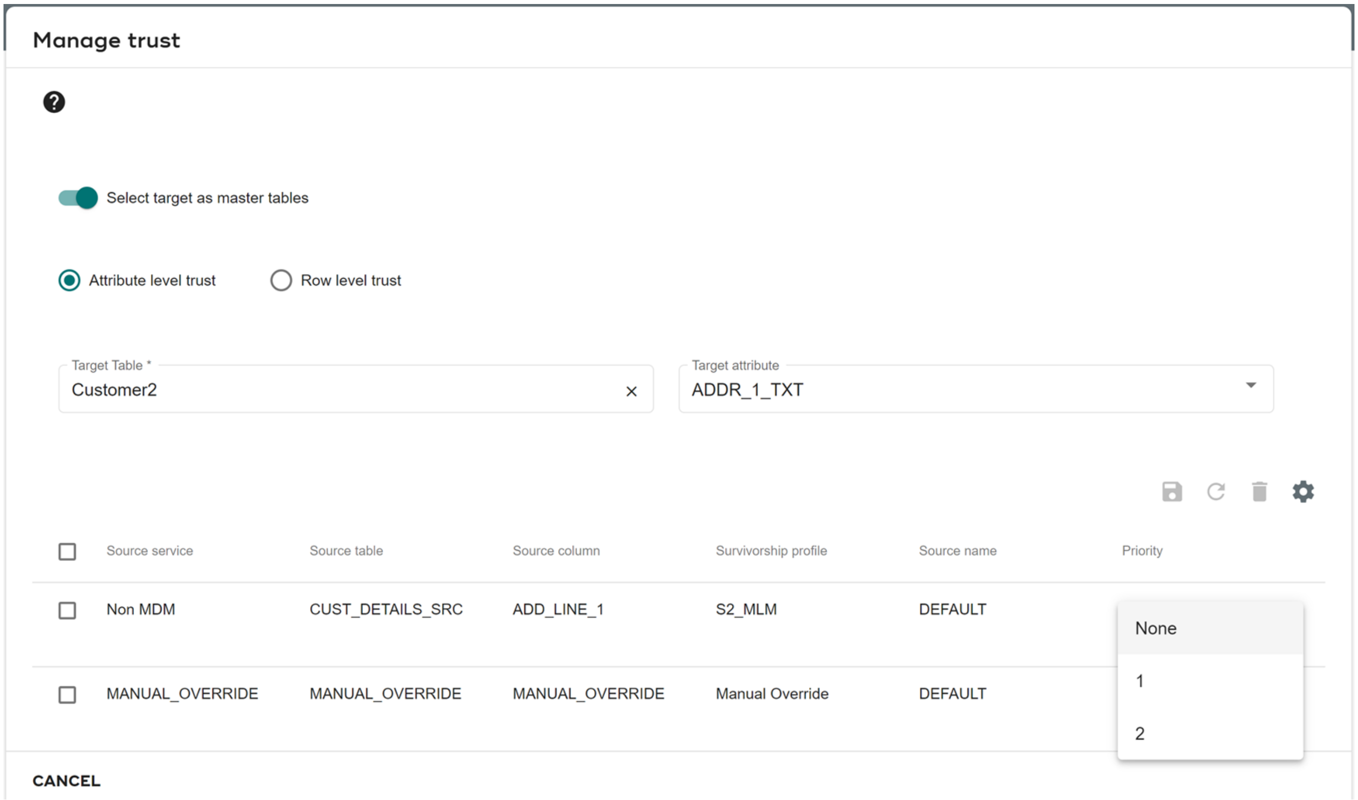
Target Table * Customer2 ×

☐	Source service	Source table	Source column		
☐	Non MDM	CUST_DETAILS_SRC	ADD_LINE_1		
☐	MANUAL_OVERRIDE	MANUAL_OVERRIDE	MANUAL_OVERRIDE	Manual Override	DEFAULT

- Select the required attributes from **Target Attribute** drop-down.

  The Manage Trust page refreshes to display all the source details that are sourcing the selected attribute as in Figure 269.

Figure 269: Manage Trust—Assign Priorities



Manage trust

Select target as master tables

● Attribute level trust ○ Row level trust

Target Table *: Customer2

Target attribute: ADDR_1_TXT

☐	Source service	Source table	Source column	Survivorship profile	Source name	Priority
☐	Non MDM	CUST_DETAILS_SRC	ADD_LINE_1	S2_MLM	DEFAULT	
☐	MANUAL_OVERRIDE	MANUAL_OVERRIDE	MANUAL_OVERRIDE	Manual Override	DEFAULT	

On the **Manage Trust** page (Figure 269),

- The **Source name** column displays the source name that is provided during source registration process.
- The **Survivorship Profile** column displays all the sources or survivorship profiles sourcing the selected attributes.

  The **Manual Override** specifies that the selected attribute is sourced from a process using DO_DB_Persist like excel upload, table editor etc., and not from survivorship profile.
- The **Source Table** column displays the name of the source table and can be either from Input, Master, Non MDM source.
- The **Source Column** column displays the source attribute mapped with the target attribute.
- The **Priority** drop-down displays the priority number to be assigned.

  The total number of priorities displayed under the priority drop-down corresponds to the number of sources or survivorship profiles sourcing the selected target table. The maximum value of the priority number will be two digits and all priority values must be unique.
- The **Start Date** and **End Date** columns specifies the start and end date for the priority assigned. The assigned priority will be valid only for the duration specified in the start date and end date columns.

4. On the Manage Trust page, you can reassign the priority by selecting the required priority number from the **Priority** drop-down.

   Once a priority number is assigned to a target attribute for a particular source, the **Priority** drop-down will display only the remaining unassigned priority numbers for the next sources. For example, if the **Priority** drop-down displays four (1, 2, 3 and 4) priority numbers, and for a profile, if 3 is assigned as a priority then the **Priority** drop-down will display the remaining (1, 2 and 4) priority number for the next source.

   If no priority is assigned for a particular source in survivorship profile, the particular profile will not honor priority.

5. Select the start and end date for each priority assigned.

   If you do not specify the start and end date, the value of the start date will be taken as database current timestamp and the end date will be “12/31/9999 11:23 PM”.

6. Click save icon 💾.

   Message: Priorities saved successfully is displayed.

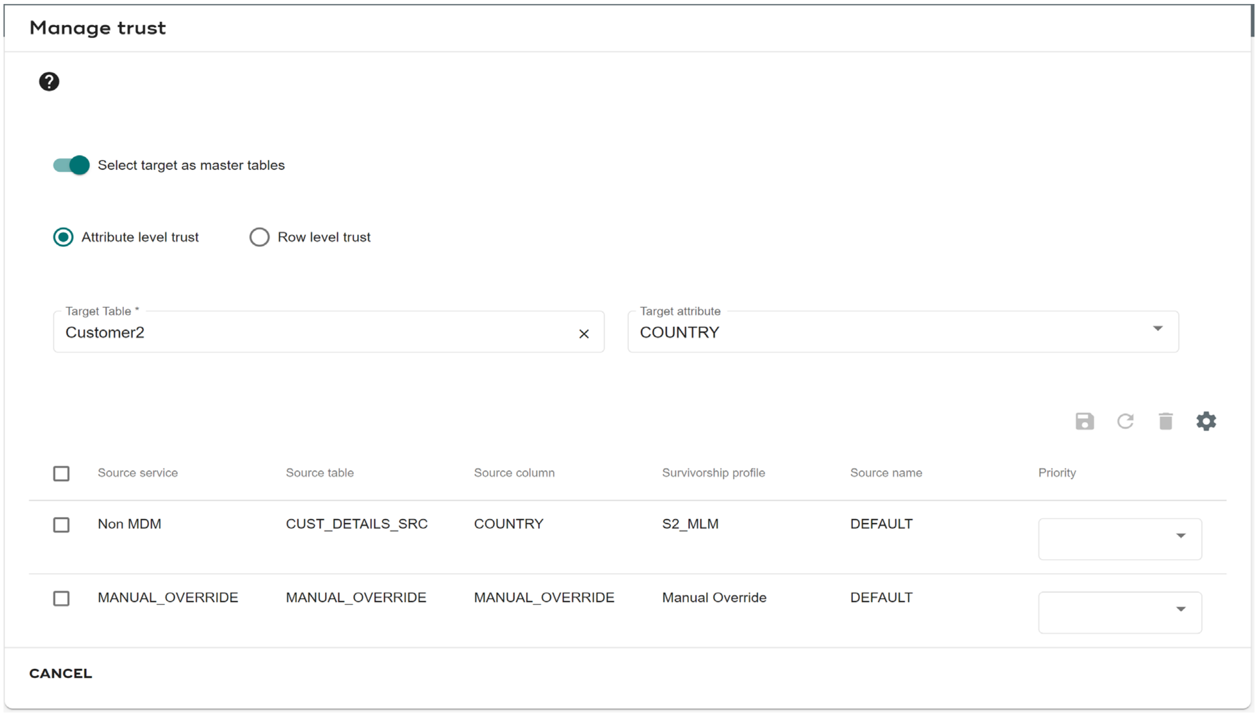
   Similarly you can assign priorities for all the required attributes.

Row Level Trust

Perform the following steps to assign priorities in Row Level Trust framework:

1. On the MDM UI, in the left navigation pane, click **Data Harmonization** -> **Survivorship**.
2. Click **Actions** and then select **Manage trust**.
3. On **Manage trust** page, select **Row level trust** as in Figure 270.

Figure 270: Manage Trust Framework



Manage trust

Select target as master tables

● Attribute level trust ○ Row level trust

Target Table *: Customer2

Target attribute: COUNTRY

☐	Source service	Source table	Source column	Survivorship profile	Source name	Priority
☐	Non MDM	CUST_DETAILS_SRC	COUNTRY	S2_MLM	DEFAULT	
☐	MANUAL_OVERRIDE	MANUAL_OVERRIDE	MANUAL_OVERRIDE	Manual Override	DEFAULT	

The **Target Table** drop-down displays all the tables on which the survivorship profile is created or exists with defined row level trust framework.

4. Select the master or target table to be used in Trust Framework from **Target Table** drop-down.

   The Manage Trust Framework page refreshes to display all the source details that are sourcing the selected table. On the **Manage Trust** page,

   - The **Source Table** column displays the name of the source table and can be either from Input, Master, Non MDM source.
   - The **Survivorship Profile** column displays all the sources or survivorship profiles sourcing the selected table.
   - The **Source Name** column displays the source name that is provided during source registration process.

     The **Manual Override** specifies that the selected table is sourced from a process using DO_DB_Persist like excel upload, table editor etc., and not from survivorship profile.
   - The **Priority** drop-down displays the priority number to be assigned.
   - When you click **Advanced options** icon ⚙, **Valid Column** appears where you can evaluate and consider valid values for any attributes while merging, If existing value is not valid and populated from higher trust source, you can replace the value with a valid value from lower priority trust.

5. On the Manage Trust Framework page, you can reassign the priority by selecting the required priority number from the **Priority** drop-down.

   Once a priority number is assigned to a table, the **Priority** drop-down will display only the remaining unassigned priority numbers for the next sources. If no priority is assigned for a particular source in survivorship profile, the particular profile will not honor priority.

6. Click Save icon.

   Message: Priorities saved successfully is displayed.

Refresh Profile

Refreshing the profiles contributing to the selected target table in trust framework is required for the changes to be reflected in case of any changes done during assigning or editing or deleting priorities in trust framework. It is recommended to refresh profiles corresponding to a selected target table after trust is defined for all the columns. You can refresh the profiles by using the Refresh Profile(s) button on the Manage Trust UI. You can also refresh each individual profile from Survivorship UI.

If you select a table and click Refresh Profile(s), all profiles associated with the selected table will get refreshed. If more than one table is involved in a single profile and refreshing the corresponding profile refreshes all the tables involved in that profile and you need not refresh profile for all the tables separately.

Execute Survivorship Profile and View Target Table Details

Once the Trust Framework is defined, the survivorship profiles should be executed from Survivorship (Section : “Survivorship,”). On execution of the survivorship profiles, it will honour the priorities defined through Trust Framework.

Note:

- If a target attribute is updated from different sources with different priorities, then the updates on the attribute will be allowed as per the set priorities. If a source with lowest priority updates the attribute, the update will be allowed and if an other source with next priority updates the attribute, the update will also be allowed as long as its being updated from lowest to highest priority. Once the attribute is updated from highest priority source (lowest assigned priority number), then any other updates from other sources will be not be allowed.
- If Manual Override source is set as priority one (highest priority) for any target attribute in a table, then after the manual override source updates the attribute values, no other updates from survivorship source profiles will be allowed.
- If any source tries to update the target attribute in a table with NULL value, the attribute value will not be updated even when the source has the highest priority.
- Multiple Survivorship Profiles can exist for a single source system. If a Target table attribute is defined within the Trust Framework, it becomes the implementations responsibility to ensure priority integrity with no conflicts across all related survivorship profiles. Customization, survivorship rules, and trust framework can coexist for any attribute.
- If user opt for a Primary Key update in Survivorship, trust framework may give unexpected results as ALCR keeps track of rows using primary key values.
- Trust framework may not work on a table updated by E2E.

View and Edit Assigned Priorities

To view and edit the assigned priorities:

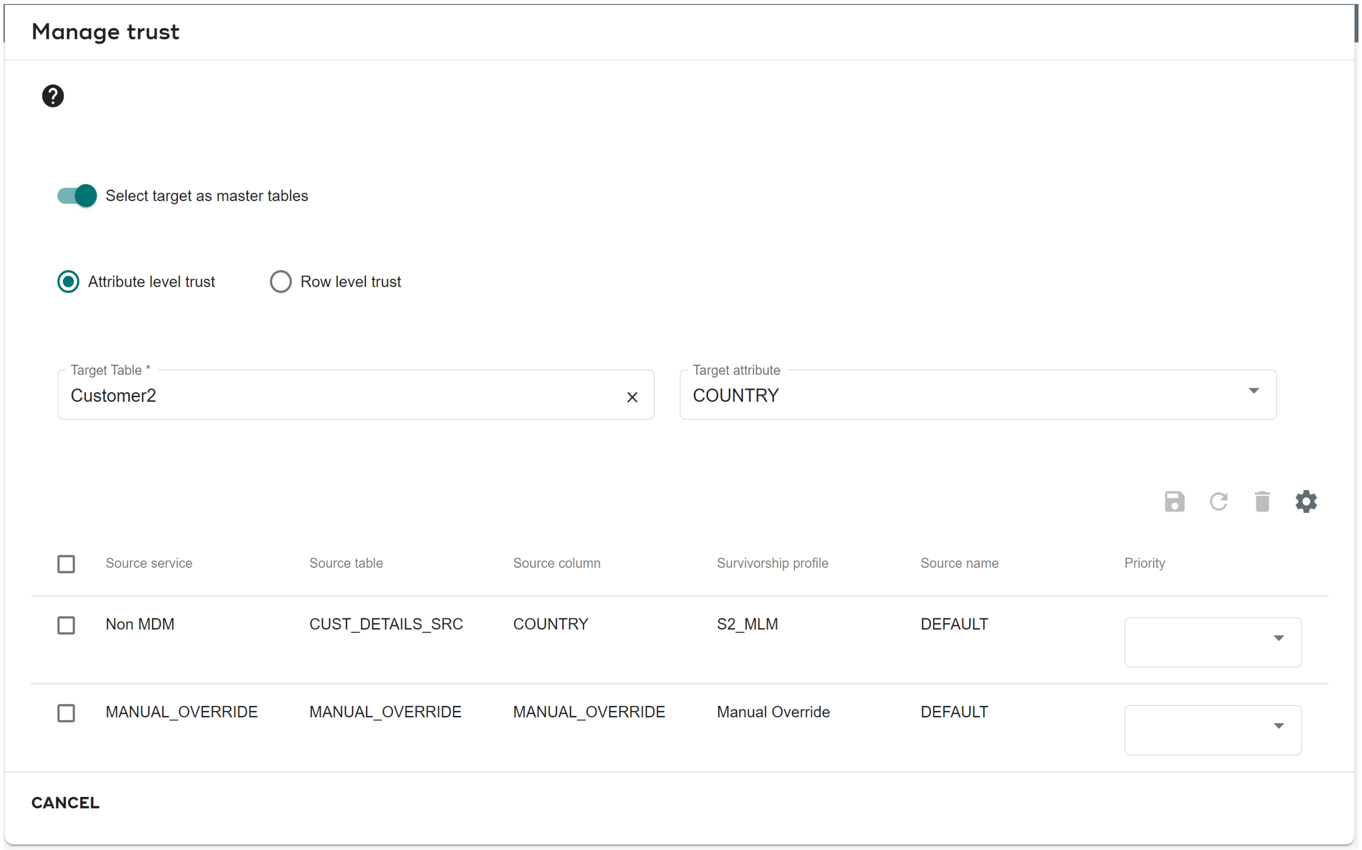
1. On the **Manage Trust** page, select the target table from the **Target Table** drop-down and target attribute from **Target Attribute** drop-down in case of Attribute Level Trust.

   The **Manage Trust** refreshes to display the assigned priorities and priority assigned validity period.

2. On the **Manage Trust** page, select the target table from the **Target Table** drop-down in case of Row Level Trust.

   The **Manage Trust Framework** refreshes to display the assigned priorities.

Figure 271: Manage Trust Framework—Row Level Trust



Manage trust

Select target as master tables

● Attribute level trust ○ Row level trust

Target Table *: Customer2

Target attribute: COUNTRY

☐	Source service	Source table	Source column	Survivorship profile	Source name	Priority
☐	Non MDM	CUST_DETAILS_SRC	COUNTRY	S2_MLM	DEFAULT	
☐	MANUAL_OVERRIDE	MANUAL_OVERRIDE	MANUAL_OVERRIDE	Manual Override	DEFAULT	

3 On the **Manage Trust** page, you can unassign the assigned priorities for the selected target attribute or for selected source profile and then reassign as required and click Save icon.

Message: Priority saved successfully is displayed.

Delete Assigned Priorities

To delete assigned priorities:

1 On the **Manage Trust Framework** page, select the required priority by selecting corresponding checkbox.

2 Click Delete icon. 🗑

Message: Priority deleted successfully displays.

Trust Framework Feedback Mechanism for DO_DB_Persist

When user submit a DoDB request on table with Trust framework on columns, there was no way to know whether a particular request had really updated the column or it just skipped to update a column because of a lower priority defined by Trust framework.

The new feature described below will help to know if actual update happened or not for all columns.

Note: This feature is not implemented on OOTB DoDB calls, but this facility can be used in custom code.

Attribute Level Cross Reference

The Attribute Level Cross Reference (ALCR) will provide the ability to store and manage attribute source data lineage. Column level cross reference can be captured on execution of survivorship process and all manual override processes involving DO_DB_PERSIST like Excel Upload, Table Editor etc. Using ALCR you can capture the details of which attribute value of source has contributed to a particular value of golden master. Any table which is the part of survivorship, is eligible for attribute level cross reference. The ALCR is designed to work with the Survivorship processes and Trust framework design uses the information of ALCR to honour the priorities assigned across different sources.

From 4.7.1 onwards, only the tables which are participating in survivorship, are able to define Trusted Framework.

Manage Column Level Cross Reference

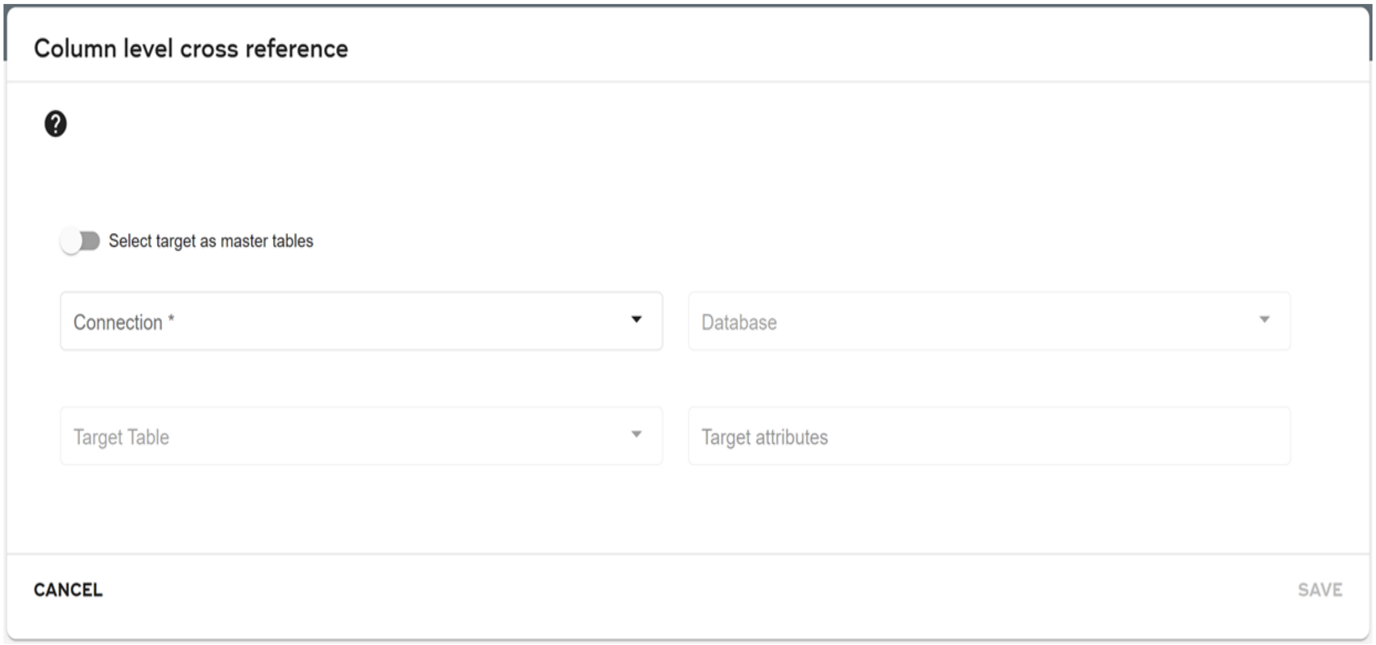
On the Manage Column Level Cross Reference page, you can assign and unassign attribute level cross reference to the target attributes.

To assign ALCR to target attribute:

1. On the MDM UI, in the left navigation pane, click **Data Harmonization** -> **Survivorship**.
2. Click **Actions** and select **Column level cross reference**.

   The **Column level cross reference** page (Figure 272) displays.

Figure 272: Manage Attribute Level Cross Reference


Column level cross reference

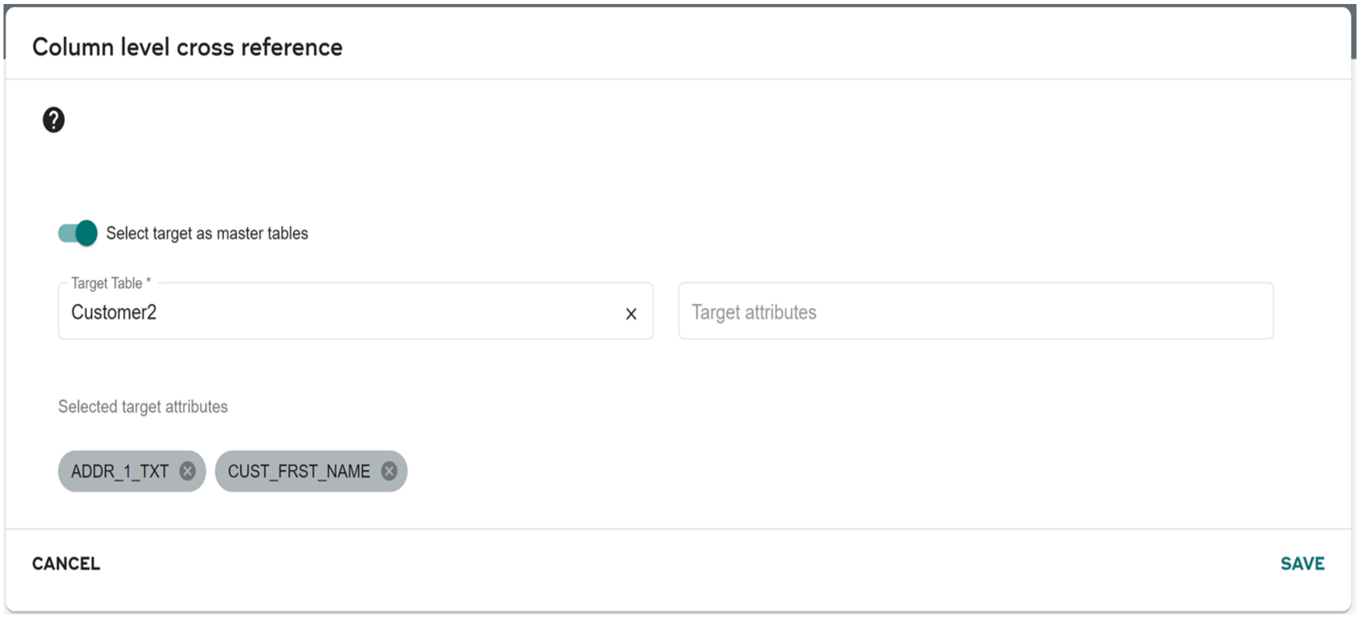
3. Enable **Select target as master tables** to set master table connection as default for database.

   If you do not enable the option then you must select the connection for the database.

4. On the **Column level cross reference** page (Figure 272), select the target table from **Target Table** drop-down.

   The **Column level cross reference** page refreshes to display all the available attributes of the selected target table as in Figure 273. Primary Key columns and SV_Columns will not be displayed.

Figure 273: Manage Column Level Cross Reference


Column level cross reference

Select target as master tables

Target Table *: Customer2

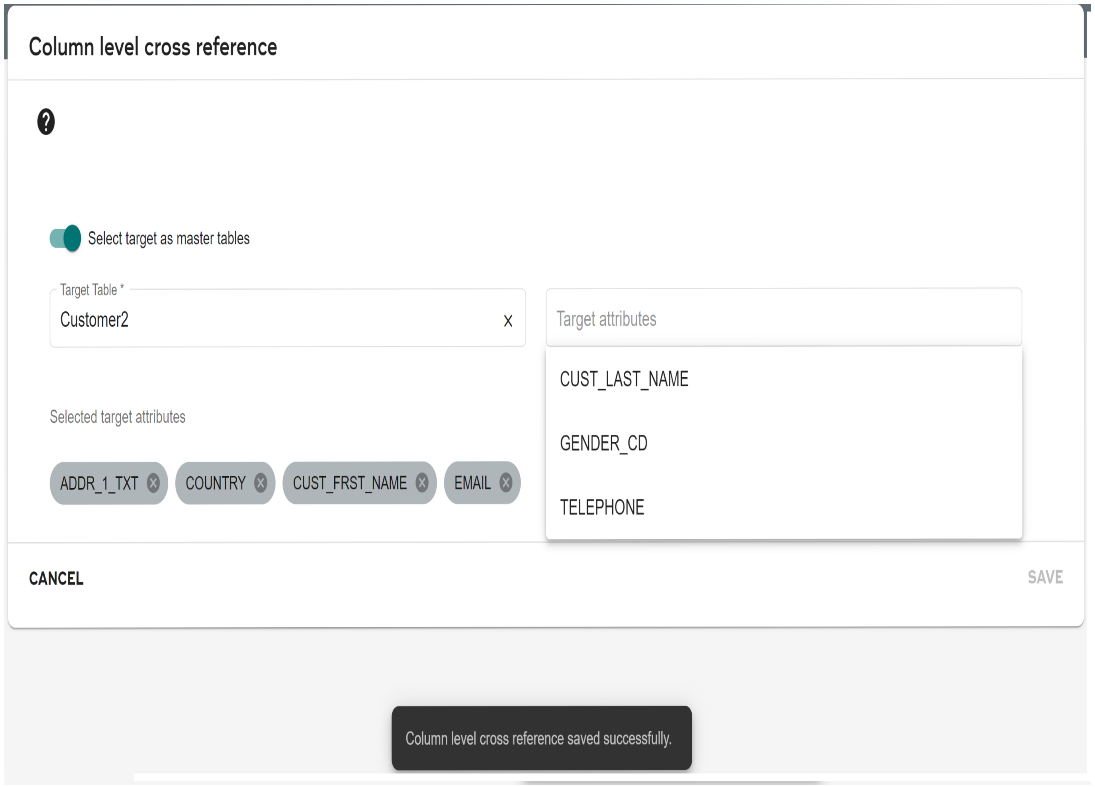
Selected target attributes

ADDR_1_TXT
CUST_FRST_NAME

5 On the **Column level cross reference** page (Figure 273), select the required attributes for which you want to assign ALCR and click **SAVE**.

Message: ALCR details saved successfully displays.

Figure 274: ALCR Saved Success


Column level cross reference

Select target as master tables

Target Table *

Customer2

Target attributes

CUST_LAST_NAME

GENDER_CD

TELEPHONE

Selected target attributes

ADDR_1_TXT

COUNTRY

CUST_FRST_NAME

EMAIL

Column level cross reference saved successfully.

Target Table dropdown targets only the table which participates in survivorship.

To unassign ALCR from target attribute:

1 On the **Column level cross reference** page, close the corresponding target attribute for which you want to unassign ALCR.

2 Click **SAVE**.

Message: ALCR details saved successfully is displayed.

The target attributes on which trust is already defined, ALCR automatically enable these attributes and cannot be disabled from **Column Level Cross Reference** UI. Trust Framework internally uses ALCR data to honour the priorities.

While capturing ALCR on timestamp columns, if the format of source is different from target, Invalid timestamp error will be displayed on the lineage details page.

View Data Lineage

The View Data Lineage UI provides lineage details for an attribute enabled to capture attribute level cross reference. It provides the current value of a particular attribute in a target table and the history of attribute value being updated over a period of time.

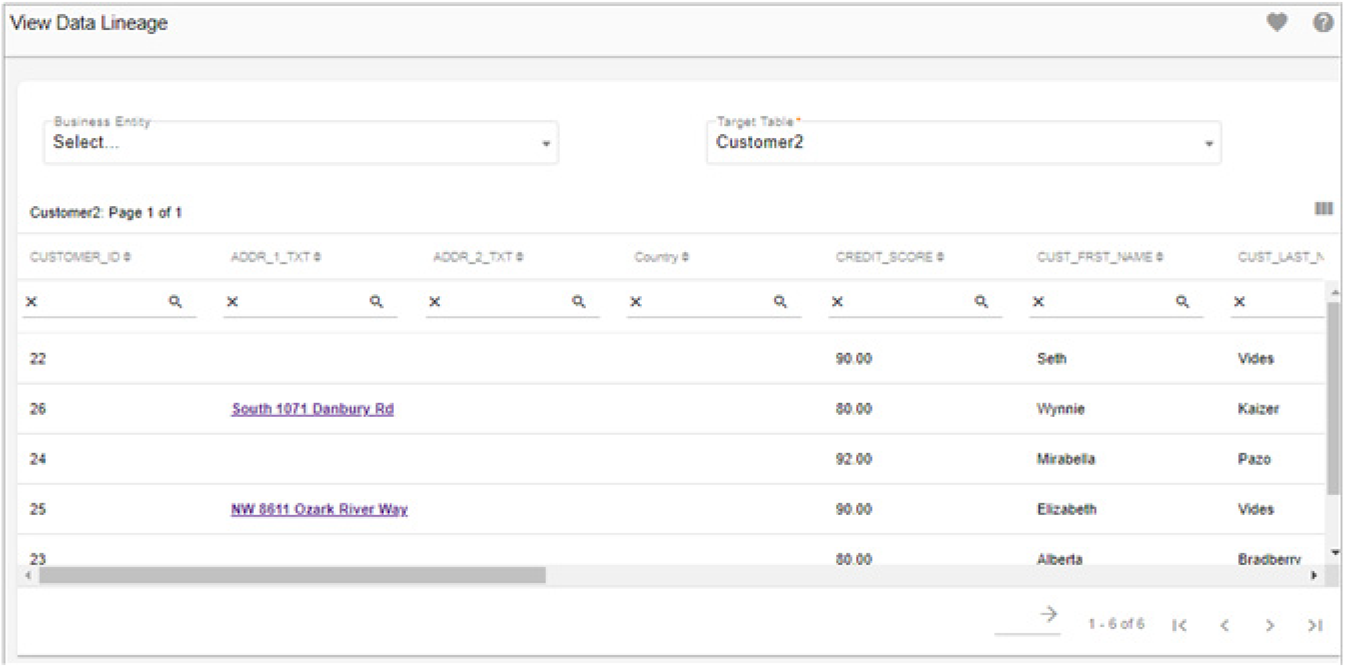
To view data lineage details:

1. On the MDM UI, in the left navigation pane, click **Data Harmonization** -> **View Data Lineage**.
2. On the **View Data Lineage** page (Figure 275), you can optionally select the business entity from **Business Entity** dropdown and select the target table from **Target Table** drop-down or select only the target table from **Target Table** drop-down.

   If you select any business entity, the target table dropdown will display all the tables associated with the selected entity with ALCR/Trust defined on the tables. By default, "All" will be selected in Business Entity dropdown and the Target Table dropdown will display all the target tables.

   The View Data Lineage page refreshes to display the target table records as in Figure 275. All the columns on which attribute level cross reference is enabled will be displayed with hyperlink.

Figure 275: View Data Lineage



View Data Lineage

Business Entity: Select...

Target Table*: Customer2

Customer2: Page 1 of 1

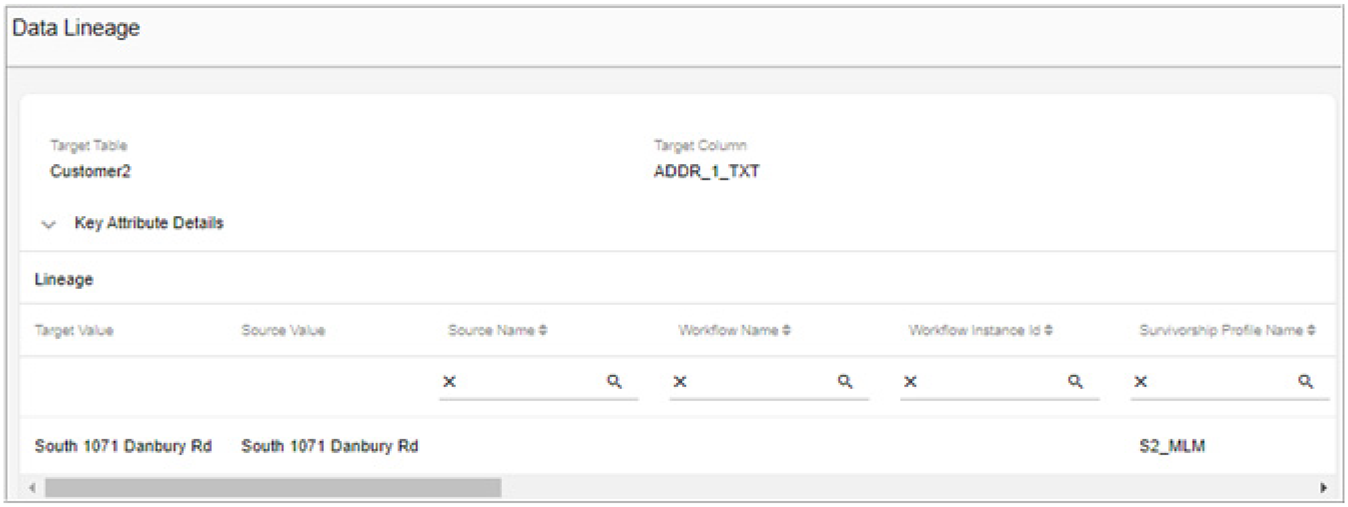
CUSTOMER_ID	ADDR_1_TXT	ADDR_2_TXT	Country	CREDIT_SCORE	CUST_FRST_NAME	CUST_LAST_N
22				90.00	Seth	Vides
26	South 1071 Danbury Rd			80.00	Wynnie	Kaizer
24				92.00	Mirabella	Pazo
25	NW 8611 Ozark River Way			90.00	Elizabeth	Vides
23				80.00	Alberta	Bradberry

3. Click on the attribute hyperlink.

   The Data Lineage popup (Figure 276) page is displayed with the target table and target column, key attribute and lineage details. The most recent record will be highlighted and all the records will be displayed in descending order of creation date and time.

- For an already executed survivorship profile, if priorities are assigned using trust framework, the Lineage details will not be displayed on the Data Lineage UI as no data relating to ALCR was captured earlier.
- Lineage details will not be displayed on the Data Lineage UI for deleted records.
- Lineage details will not be displayed on the Data Lineage UI for tables having float and date as primary key column.
- Lineage details will not be captured and displayed on Data Lineage UI for records processed directly through SQL queries. Only records that are processed through DDP and survivorship will be captured and displayed on the Data Lineage UI.

Figure 276: Data Lineage



Data Lineage

Target Table
Customer2

Target Column
ADDR_1_TXT

Key Attribute Details

Lineage

Target Value	Source Value	Source Name	Workflow Name	Workflow Instance Id	Survivorship Profile Name
South 1071 Danbury Rd	South 1071 Danbury Rd				S2_MLM

On the **Data Lineage** page (Figure 276), the Lineage pane displays the following details.

Table 16: Data Lineage Details

Column Name	Description
Target Value	Displays the value in the Target Column after the execution of the survivorship profile.
Source Value	Displays the actual value of the column in the Source Table at the time of survivorship execution. If a Customization or a Transformation rule has been applied then the Source Value may not be the same as the Target Value. In use case of manual override on a Trust Framework controlled column, the Source Value will be the same as the Target Value.

Table 16: Data Lineage Details

Column Name	Description
Source Name	The name of the Source system that contains the Source table. In case of manual override on a Trust Framework controlled column, the Source Name will be displayed as "Manual Override.
Workflow Name	Workflow name will be populated with: Table Editor value if the DDP request is triggered from table editor. E2E workflow name if the DDP request is triggered from E2E workflow. Config_Edit value if the DDP request is triggered from Configurable UI. Note: For interactive merge, the workflow name will be displayed as “SurvMerge” and the survivorship profile name.
Workflow Instance Id	Workflow Instance Id is a dynamic value and will be displayed for DDP request triggered from E2E workflow and Configurable UI. The Workflow Instance Id column will be blank if the DDP request is triggered from Table Editor.
Survivorship Profile Name	Displays the name of the Survivorship Profile that was executed for the target column. In case of manual override on a Trust Framework controlled column, the Survivorship Profile Name is displayed as 'N/A'.
Source Mapping	Indicates whether a source-to-target mapping exists (Y or N). In case of manual override on a Trust Framework controlled column, the Survivorship Mapping is displayed as 'N/A'.
Source Database	Name of the Source Database used in the Survivorship Profile execution. In case of manual override on a Trust Framework controlled column, the Source Database is displayed as 'N/A'.
Source Table	Name of the Source Table used in the Survivorship Profile execution. In case of manual override on a Trust Framework controlled column, the Source Table is displayed as 'N/A'.
Source Column	Name of the column in the Source Table used in the Survivorship Profile execution. In case of manual override on a Trust Framework controlled column, the Source Column is displayed as 'N/A'.
Customization	Displays the Survivorship customization type (Lookup, Transformation, ID-gen or None). In case of manual override on a Trust Framework controlled column, the Customization is displayed as 'N/A'.

Table 16: Data Lineage Details

Column Name	Description
Trust Priority	If the attribute is controlled by the Trust Framework, it displays the value of the Trust Framework Priority assigned to the Source. For non-trust framework, it displays as "None".
Rule Type	Displays the survivorship rule type. In case of manual override on a Trust Framework controlled column, the rule type is displayed as 'N/A'.
Updated By	Displays the user updating the records.
Modified Date	Displays the date on which the update occurred.

Skip ALCR SQLs Option for Single Record DoDB

During Single DoDb Persist for columns that have ALCR enabled, ALCR SQLs for a column will run only if that column is present in UPDATE_PROPERTY tag under DoDB request. This enhancement makes the DODB much more faster by omitting the column that are not updated.

Manage Dashboard KPIs

Key Performance Indicator (KPI) is a type of measurement commonly used by an organizations to measure, manage and monitor a particular activity. MDM provides few OOTB KPIs for cleansing & standardization, data quality, matching and survivorship process.

The dashboard KPIs provide the following benefits:

- It enables historical trend analysis to provide another dimensional view of dashboard summary.
- Travel through time to visually see changes if the underlying source table is temporal.
- Better user experience as summary and charts are rendered instantly.
- Provide backend processing to capture data on scheduled timed interval and on-demand.

On the Manage KPIs UI, you can perform the following operations:

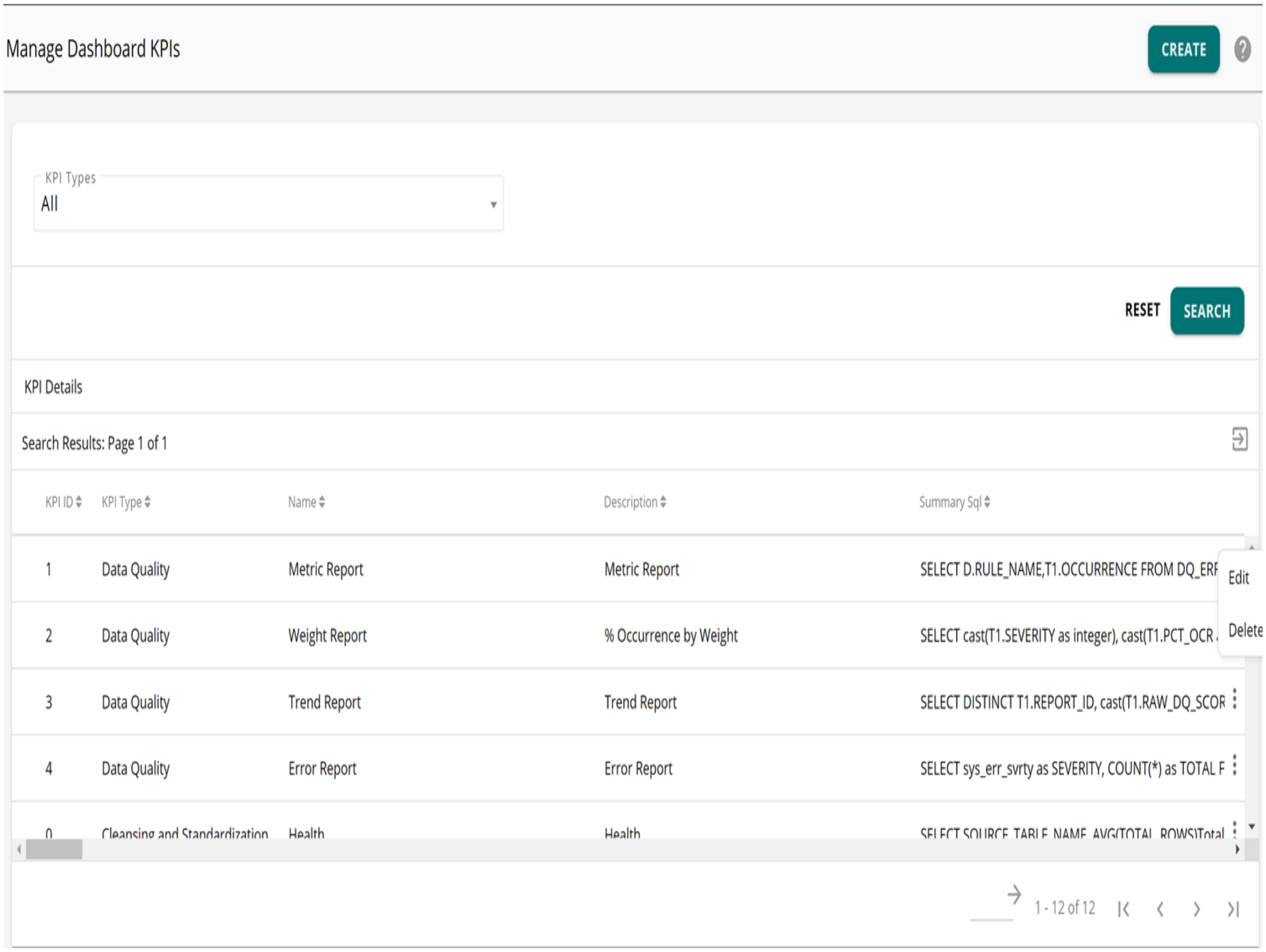
- Create KPI
- Edit KPI
- Search KPI
- Delete KPI

Create KPI

To create KPI:

1 Navigate to **Manage Dashboard KPIs** UI from **Administration** -> **KPI Dashboards**

Figure 277: Manage Dashboard KPIs



KPI Types: All

KPI Details

Search Results: Page 1 of 1

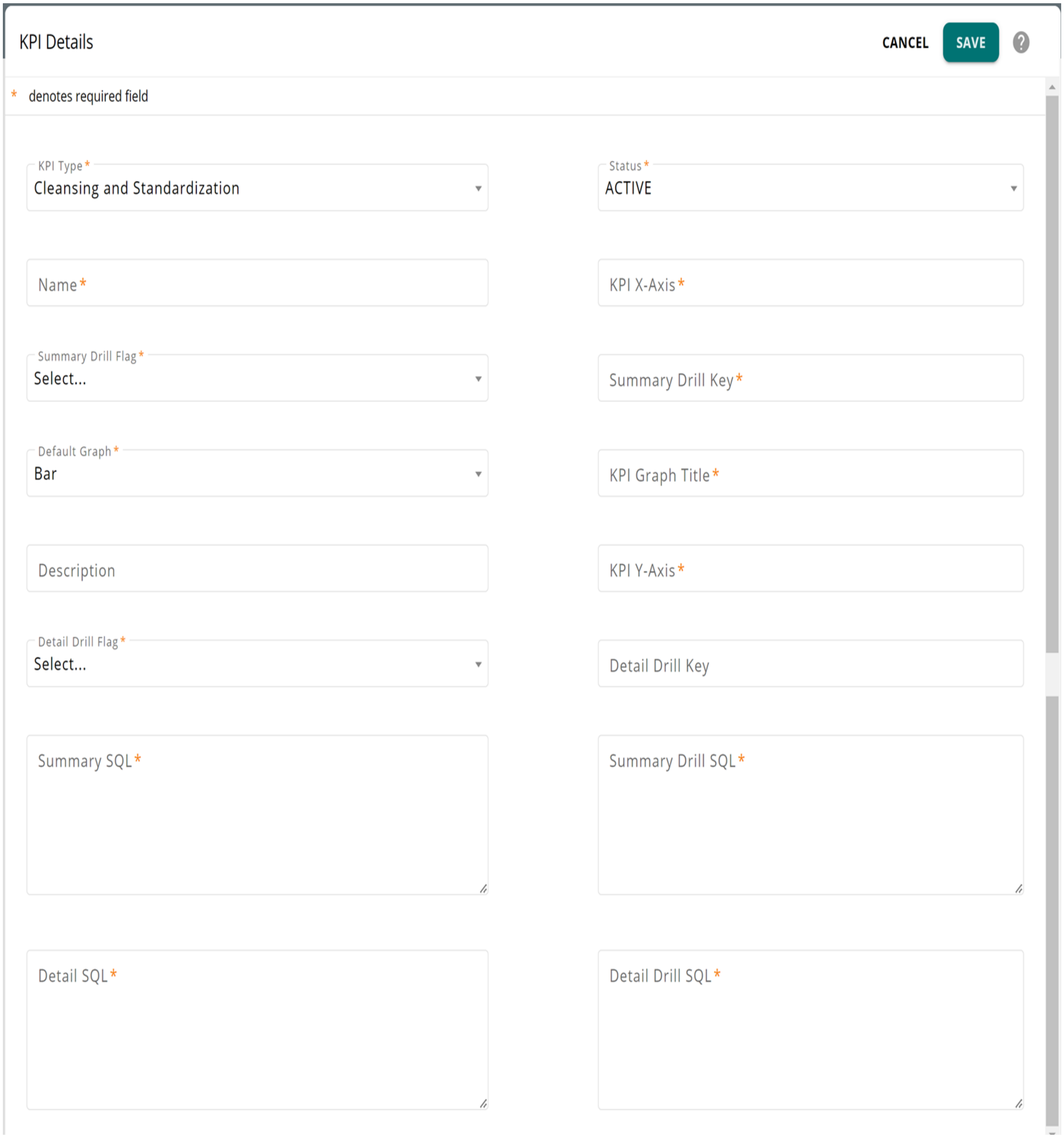
KPI ID	KPI Type	Name	Description	Summary Sql
1	Data Quality	Metric Report	Metric Report	SELECT D.RULE_NAME,T1.OCCURRENCE FROM DQ_ERF
2	Data Quality	Weight Report	% Occurrence by Weight	SELECT cast(T1.SEVERITY as integer), cast(T1.PCT_OCR
3	Data Quality	Trend Report	Trend Report	SELECT DISTINCT T1.REPORT_ID, cast(T1.RAW_DQ_SCOR
4	Data Quality	Error Report	Error Report	SELECT sys_err_svrty as SEVERITY, COUNT(*) as TOTAL F
0	Cleansing and Standardization	Health	Health	SELECT SOURCE_TABLE_NAME, AVG(TOTAL_ROWS)Total

1 - 12 of 12

2 On the **Manage Dashboard KPIs** UI (Figure 277), click **Create**.

The **KPI Details** UI (Figure 278) is displayed.

Figure 278: KPI Details



KPI Details

* denotes required field

KPI Type*: Cleansing and Standardization

Status*: ACTIVE

Summary Drill Flag*: Select...

Default Graph*: Bar

Detail Drill Flag*: Select...

3 On the **Create KPI** page (Figure 278), perform the following:

- KPI Type: select the KPI type (for example, cleansing, matching etc.,). The added KPIs will be available under the respective process dashboards.

  Note: The sorting order of the KPIs would be Cleansing & Standardization/Data Quality/Matching/Survivorship.
- Status: select the KPI status to be Active or Inactive.

- Name: enter the KPI name.
- KPI X-Axis: enter the text (column name from Summary_SQL) to be displayed on the X-axis of graph.
- Summary Drill Flag: select “Yes” if drill down details required on the graph and summary section.
- Summary Drill Key: enter the parameters required to initiate drill down SQL
- Default Graph: select the graph type (bar or line)
- KPI Graph Title: enter the title text to be displayed for the KPI graph.
- Description: enter a short description for KPI.
- KPI Y-Axis: enter the text (column name from Summary_SQL) to be displayed on the Y-axis of graph.
- Detail Drill Flag: select “Yes” if drill down details required on the graph and detail section.
- Detail Drill Key: enter the parameters required to initiate drill down SQL
- Summary SQL: enter the SQL to populate the upper panel of the summary section with summary results when a KPI is selected.
- Summary Drill SQL: enter the SQL for drill down details. This SQL should have the required parameters that would be substituted during run time when the drill down is requested on the summary section.
- Detail SQL: enter the SQL to populate upper panel of the detail section with summary results when a KPI is selected.
- Detail Drill SQL: enter the SQL for drill down details. This SQL should have the required parameters that would be substituted during run time when the drill down is requested on the detail section.

4. Click **Save**.

   Message: KPI created successfully is displayed.

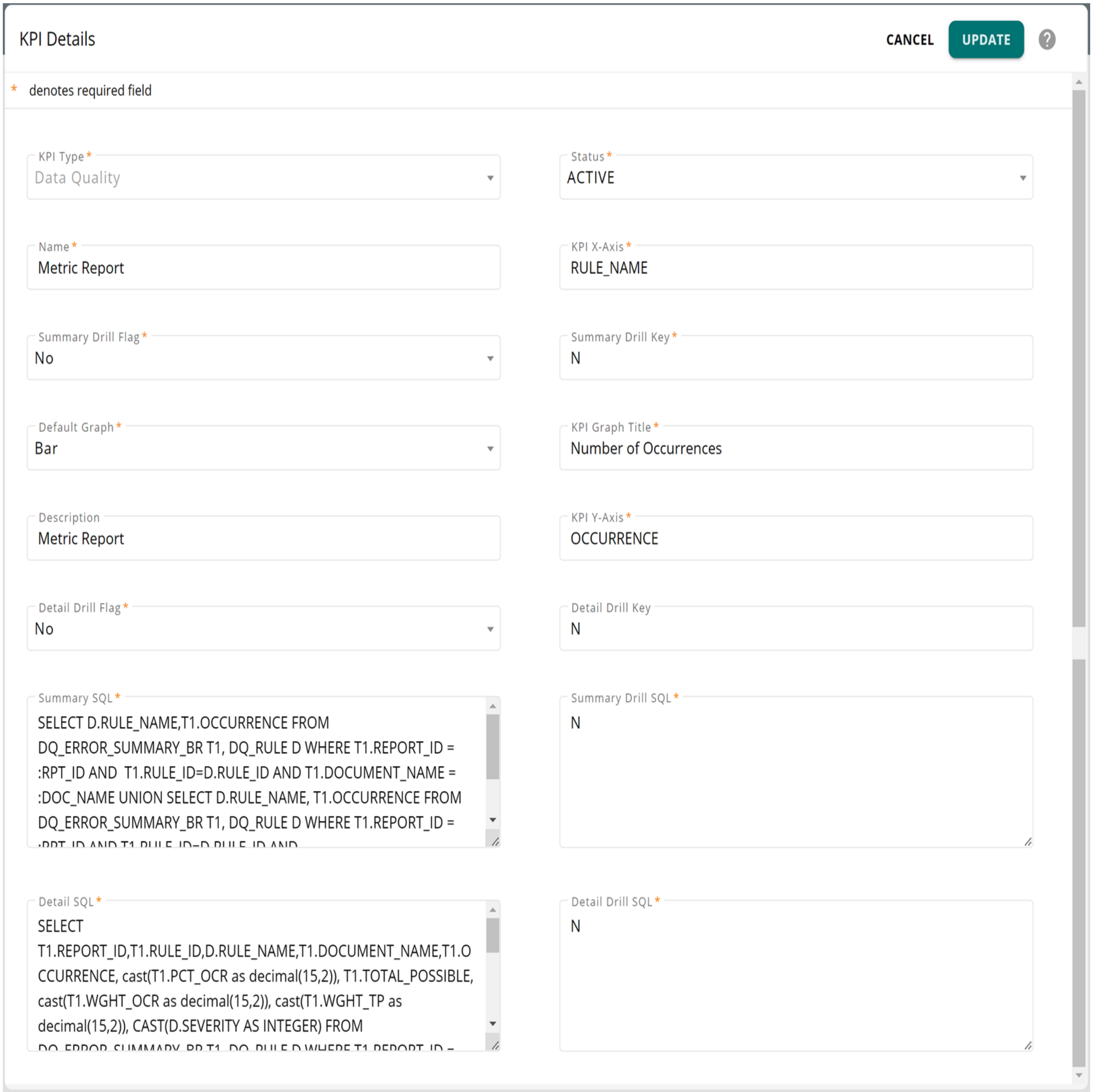
Edit KPI

To edit KPI:

1. On the **Manage Dashboard KPIs** page (Figure 277), click on the Menu icon corresponding to the required KPI and click **Edit**.

   The **KPI Details** page (Figure 280) is displayed.

Figure 279: KPI Details



KPI Details

* denotes required field

KPI Type *: Data Quality
Status *: ACTIVE
Name *: Metric Report
KPI X-Axis *: RULE_NAME
Summary Drill Flag *: No
Summary Drill Key *: N
Default Graph *: Bar
KPI Graph Title *: Number of Occurrences
Description: Metric Report
KPI Y-Axis *: OCCURRENCE
Detail Drill Flag *: No
Detail Drill Key: N

Summary SQL *:

```
SELECT D.RULE_NAME,T1.OCCURRENCE FROM
DQ_ERROR_SUMMARY_BR T1, DQ_RULE D WHERE T1.REPORT_ID =
:RPT_ID AND  T1.RULE_ID=D.RULE_ID AND T1.DOCUMENT_NAME =
:DOC_NAME UNION SELECT D.RULE_NAME, T1.OCCURRENCE FROM
DQ_ERROR_SUMMARY_BR T1, DQ_RULE D WHERE T1.REPORT_ID =
```

Summary Drill SQL *: N

Detail SQL *:

```
SELECT
T1.REPORT_ID,T1.RULE_ID,D.RULE_NAME,T1.DOCUMENT_NAME,T1.O
CCURRENCE, cast(T1.PCT_OCR as decimal(15,2)), T1.TOTAL_POSSIBLE,
cast(T1.WGHT_OCR as decimal(15,2)), cast(T1.WGHT_TP as
decimal(15,2)), CAST(D.SEVERITY AS INTEGER) FROM
```

Detail Drill SQL *: N

2 On the **KPI Details** page (Figure 280), modify the required details and click **Update**.

Message: KPI updated successfully is displayed.

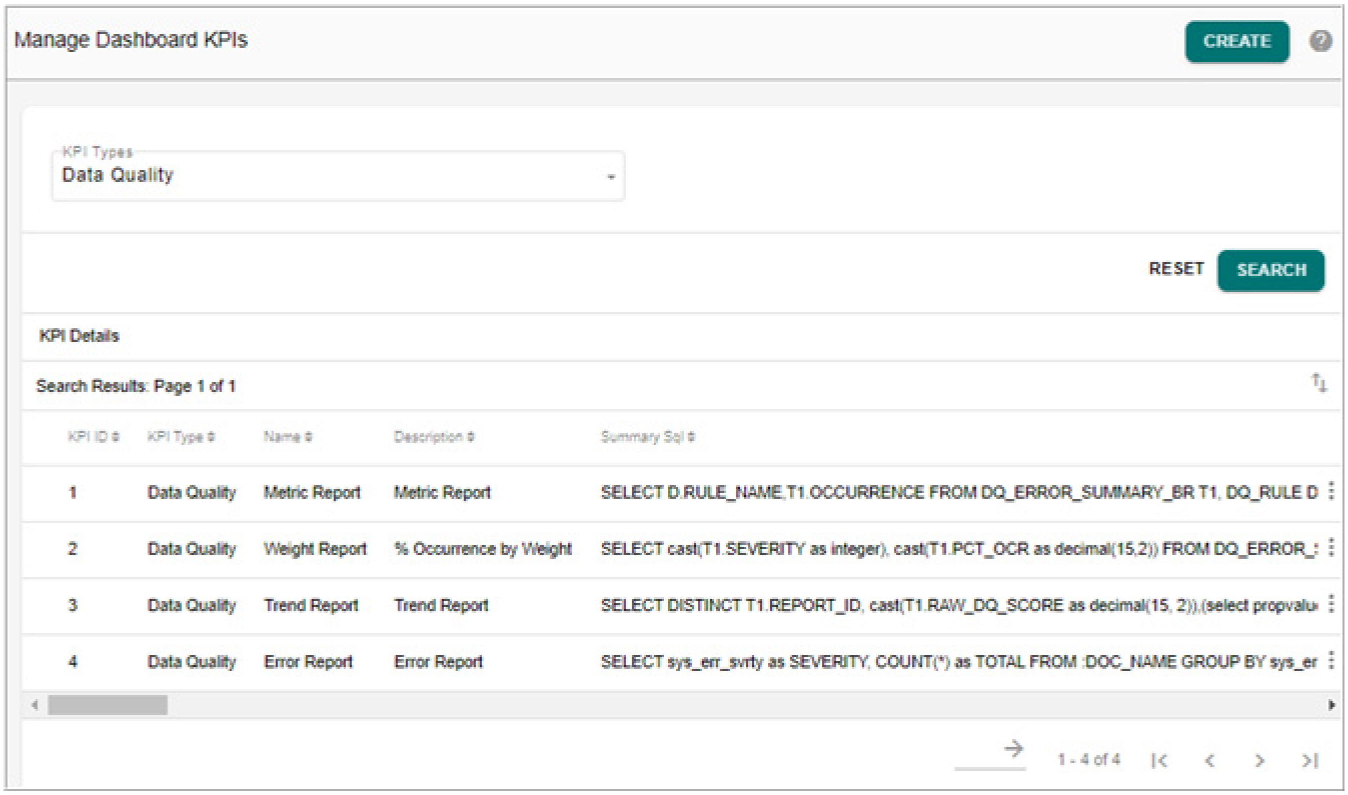
Search KPI

You can view the list of KPIs created for a selected KPI type. To view the KPIs based on KPI type:

1 On the **Manage Dashboard KPIs** page (Figure 277), select the KPI type from the **KPI Type** drop-down and click **Search**.

The **Search Results** pane displays the list of KPIs as in Figure 280.

Figure 280: Manage Dashboard KPIs—Search KPI



KPI Types: Data Quality

KPI Details

Search Results: Page 1 of 1

KPI ID	KPI Type	Name	Description	Summary Sql
1	Data Quality	Metric Report	Metric Report	SELECT D.RULE_NAME,T1.OCCURRENCE FROM DQ_ERROR_SUMMARY_BR T1, DQ_RULE D
2	Data Quality	Weight Report	% Occurrence by Weight	SELECT cast(T1.SEVERITY as integer), cast(T1.PCT_OCR as decimal(15,2)) FROM DQ_ERROR_:
3	Data Quality	Trend Report	Trend Report	SELECT DISTINCT T1.REPORT_ID, cast(T1.RAW_DQ_SCORE as decimal(15, 2)),(select propvalu
4	Data Quality	Error Report	Error Report	SELECT sys_err_svrty as SEVERITY, COUNT(*) as TOTAL FROM :DOC_NAME GROUP BY sys_er

1 - 4 of 4

Delete KPI

To delete KPI:

1 On the **Manage Dashboard KPIs** page (Figure 277), click on the Menu icon corresponding to the required KPI and click **Delete**.

2 On the **Confirmation Webpage Dialog**, click **Yes**.

Message: KPI deleted successfully is displayed.

RDM Processes APIs

RDM APIs allows you to execute the RDM processes, that is, Cleansing and Standardization, Matching, Survivorship etc., for the underlying source. The API process alerts the specified user about the completion status by sending emails at the end of each individual process. The RDM APIs must be made public with <API_DOC> tag so that the same can be invoked via external web service call.

Cleansing and Standardization APIs

The Cleansing and Standardization API allows you to execute defined cleansing and/or standardization rules on the underlying source.

Sample API:

```
<REQUESTS ServiceName="MDMServices" >
<REQUESTS Name="CallExecuteInternalCleansingProfile">
<SOURCE_DB Value="DB"/> <!--SOURCE_TABLE : Pass Physical Name-->
<SOURCE_TABLE Value="S1"/> <!--CLE_STD_IND : Pass C for Cleansing,S for
Standardization and CS for both-->
<ProfileName Value="c1"/>
</REQUEST></REQUESTS>
```

Matching APIs

The Matching API allows you to execute defined matching profile for source.

Sample API:

- Execute a Match Profile

  ```
  <REQUESTS ServiceName= ="MDMServices" >
  <REQUEST Name="callexecuteMatchProfile">
  <ProfileName Value="c1"/>
  </REQUEST></REQUESTS>
  ```

- Abort a Running Match Profile

  ```
  <REQUEST Name="abortMatchProfileExec" ServiceName="UI_WORKFLOW" >
            <Profile_Id Value=" "/>
  </REQUEST>
  ```

Survivorship APIs

The following Survivorship API allows you to execute survivorship. All the APIs have a pre and post custom rules. These are placeholder rules and can be implemented for the desired results. The below survivorship APIs will be called from survivorship UI and matching UI.

1. Survivorship Automated Execution API

   ```
   <REQUEST Name="execAutoSurvivorship" ServiceName="BCM_MASTER">
       <MATCH_PROFILE_ID Value="2"/>
       <USER_NAME Value="Data Steward"/>
   </REQUEST>

   <!-- execAutoSurvivorhsip pre execution custom rule call -->
   <REQUEST Name="preAutoSurvCustomRule" ServiceName="BCM_MASTER"/>

   <!-- execAutoSurvivorhsip post execution custom rule call -->
   <REQUEST Name="postAutoSurvCustomRule" ServiceName="BCM_MASTER"/>
   ```

2. Survivorship Execute API

   ```
   <REQUEST Name="executeSurvivorship" ServiceName="BCM_MASTER">
       <SURV_PROFILE_ID Value="1"/>
       <MATCH_PROFILE_ID Value="2"/>
       <ACTION_TYPE Value="INSERT|MERGE|ALL"/>
   <!--The action type is passed as a parameter and the value can be
   (INSERT, MERGE, ALL) -->
   ```

```
    <SURV_EXEC_CONDTION Value=""/>
    <USER_NAME Value="Data Steward"/>
</REQUEST>

<!-- executeSurvivorhsip pre execution custom rule call -->
<REQUEST Name="preSurvExecuteCustomRule" ServiceName="BCM_MASTER"/>

<!-- executeSurvivorhsip post execution custom rule call -->
<REQUEST Name="postSurvExecuteCustomRule" ServiceName="BCM_MASTER"/>
```

3 MDM 3.5 introduces two additional new APIs to execute Survivorship.

- **executeSurvivorshipPreMaster**: populate only out of the box Temporary tables for any profile
- **executeSurvivorshipMaster**: Update/Insert Master table from Temporary Table populated

  The above APIs split the survivorship execution into two process:

  - Populate Intermediate tables
  - Update/Insert Master table from Intermediate tables

  The above process reduces the lock on Master tables when more than one profile need to be executed in single transaction. Implementation can populate intermediate tables for multiple profiles in one transaction and all master table population can be done on another transaction.

  Note: When multiple profiles has to be executed in single transaction, it is recommended to execute "executeSurvivorshipPreMaster" in separate transaction for each profile to avoid Auto ID gen lock issues.

  The following provides the sample API for executeSurvivorshipPreMaster and executeSurvivorshipMaster.

```
<REQUESTS ServiceName="BPE_META">
 <REQUEST Name="executeSurvivorshipPreMaster"
ServiceName="BPE_META" AssignToVar="execSurvRes">
    <SurvMappingId Value="416"/>
    <MatchProfileId Value="237"/>
    <SurvActionType Value="ALL"/>
    <SurvExecuteCondition Value=""/>
    <UserName Value="USR_1"/>
 </REQUEST>
</REQUESTS>


<REQUESTS ServiceName="BPE_META">
 <REQUEST Name="executeSurvivorshipMaster" ServiceName="BPE_META"
AssignToVar="execSurvRes">
    <SurvMappingId Value="416"/>
    <MatchProfileId Value="237"/>
    <SurvActionType Value="ALL"/>
    <SurvExecuteCondition Value=""/>
    <UserName Value="USR_1"/>
 </REQUEST>
</REQUESTS>
```

For executeSurvivorshipMaster API, a new optional parameter (IsRealTime Value) is added for setting RowByRow execution or Batch execution. If it is set to "true", RowByRow execution is performed. If this parameter is not provided, by default Batch execution is selected.

Sample request to Run Survivorship in RowByRow Mode:

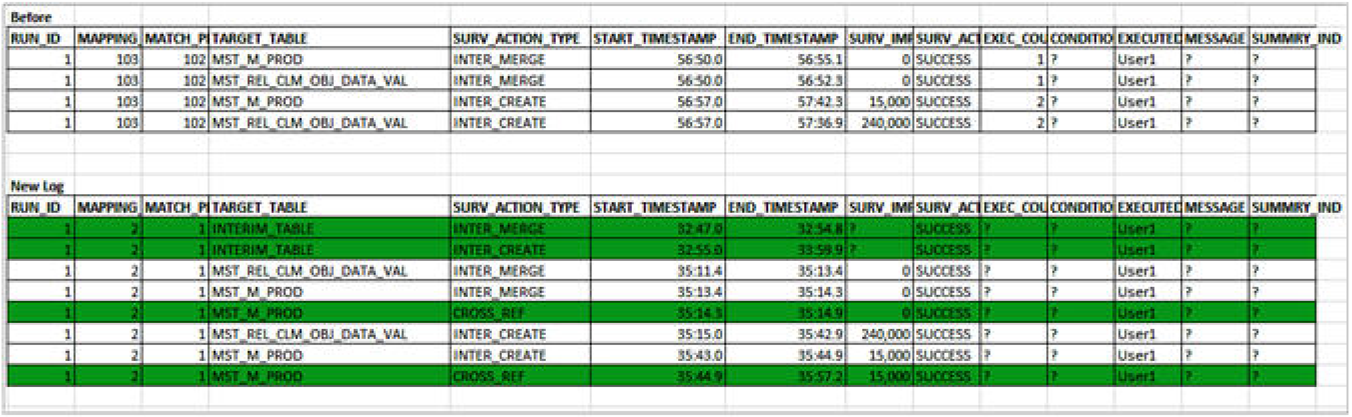
```
<REQUEST Name="executeSurvivorshipMaster" ServiceName="BPE_META">
<SurvMappingId Value="<mapping_Id>"/>
<MatchProfileId Value="<matching Profile id>"/>
<SurvActionType Value="<ALL/MERGE/INSERT/"/>
<SurvExecuteCondition Value=/>
<UserName Value="USR"/>
<IsRealTime Value="true"/>
</REQUEST>
```

Note: RowByRow option is useful to run Survivorship without acquiring Table level Locks on Master table. RowByRow Survivorship along with RowByRow (real-time) DoDB option helps implementation to run Survivorship and Bulk DoDB concurrently without blocking each other. For details on RowByRow (real-time) DoDB option, see Section : “RowByRow (real-time) DoDB Option.”

Known limitations on RowByRow Do DB execution is applicable for RowByRow Survivorship also. For details see Section : “RowByRow (real-time) DoDB Option.”

Difference between executeSurvivorship API and executeSurvivorshipPreMaster and executeSurvivorshipMaster API.

- Survivorship log table will have extra entries compared to executeSurvivorship API as below. (No progress messages is displayed)



Before

RUN_ID	MAPPING	MATCH_PI	TARGET_TABLE	SURV_ACTION_TYPE	START_TIMESTAMP	END_TIMESTAMP	SURV_IMF	SURV_ACT	EXEC_COU	CONDITIO	EXECUTED	MESSAGE	SUMMRY_IND
1	103	102	MST_M_PROD	INTER_MERGE	56:50.0	56:55.1	0	SUCCESS	1	?	User1	?	?
1	103	102	MST_REL_CLM_OBJ_DATA_VAL	INTER_MERGE	56:50.0	56:52.3	0	SUCCESS	1	?	User1	?	?
1	103	102	MST_M_PROD	INTER_CREATE	56:57.0	57:42.3	15,000	SUCCESS	2	?	User1	?	?
1	103	102	MST_REL_CLM_OBJ_DATA_VAL	INTER_CREATE	56:57.0	57:36.9	240,000	SUCCESS	2	?	User1	?	?

New Log

RUN_ID	MAPPING	MATCH_PI	TARGET_TABLE	SURV_ACTION_TYPE	START_TIMESTAMP	END_TIMESTAMP	SURV_IMF	SURV_ACT	EXEC_COU	CONDITIO	EXECUTED	MESSAGE	SUMMRY_IND
1	2	1	INTERIM_TABLE	INTER_MERGE	32:47.0	32:54.8	?	SUCCESS	?	?	User1	?	?
1	2	1	INTERIM_TABLE	INTER_CREATE	32:55.0	33:59.9	?	SUCCESS	?	?	User1	?	?
1	2	1	MST_REL_CLM_OBJ_DATA_VAL	INTER_MERGE	35:11.4	35:13.4	0	SUCCESS	?	?	User1	?	?
1	2	1	MST_M_PROD	INTER_MERGE	35:13.4	35:14.3	0	SUCCESS	?	?	User1	?	?
1	2	1	MST_M_PROD	CROSS_REF	35:14.3	35:14.9	0	SUCCESS	?	?	User1	?	?
1	2	1	MST_REL_CLM_OBJ_DATA_VAL	INTER_CREATE	35:15.0	35:42.9	240,000	SUCCESS	?	?	User1	?	?
1	2	1	MST_M_PROD	INTER_CREATE	35:43.0	35:44.9	15,000	SUCCESS	?	?	User1	?	?
1	2	1	MST_M_PROD	CROSS_REF	35:44.9	35:57.2	15,000	SUCCESS	?	?	User1	?	?

- By default SV_SURV_EXEC_DETAIL_LOG will not be populated. Need to enable stored procedure logger to see the entries in SV_SURV_EXEC_DETAIL_LOG.

<Execution Errors will be Logged into SV_SURV_EXEC_LOG and SV_SP_LOG >

- The executeSurvivorshipMaster API will not have internal check to see if a particular profile ran or not.

4. Parallel Running (ExecSurvMaster only)

The exSurvMaster_Parallel API can submit multiple profiles at a time and will initiate parallel execution.

Sample exSurvMaster_Parallel API is given below:

```
<REQUESTS>
<REQUEST Name="exSurvMaster_Parallel">
```

```
<SURV_DETAILS>
<SurvMappingId Value="2"/>
<MatchProfileId Value="1"/>
<SurvActionType Value="All"/>
<SurvExecuteCondition/>
<UserName Value="USR_1"/>
</SURV_DETAILS>
<SURV_DETAILS>
<SurvMappingId Value="5"/>
<MatchProfileId Value="118"/>
<SurvActionType Value="All"/>
<SurvExecuteCondition/>
<UserName Value="USR_1"/>
</SURV_DETAILS>
<SURV_DETAILS>
<SurvMappingId Value="6"/>
<MatchProfileId Value="110"/>
<SurvActionType Value="All"/>
<SurvExecuteCondition/>
<UserName Value="USR_1"/>
</SURV_DETAILS>
<SURV_DETAILS>
<SurvMappingId Value="7"/>
<MatchProfileId Value="102"/>
<SurvActionType Value="All"/>
<SurvExecuteCondition/>
<UserName Value="USR_1"/>
</SURV_DETAILS>
<SURV_DETAILS>
<SurvMappingId Value="8"/>
<MatchProfileId Value="134"/>
<SurvActionType Value="All"/>
<SurvExecuteCondition/>
<UserName Value="USR_1"/>
</SURV_DETAILS>
</REQUEST>
</REQUESTS>
```

Note: The parallel running will run only four tasks at a time. The remaining tasks will be in queue.

RowByRow (real-time) DoDB Option

The normal Bulk DoDB by default accrue Table level lock on Master table, Error table and ALCR table. This may result in Locking between concurrent process on same table. A new parameter (IsRealTime="true") is provided to run Bulk DoDb without acquiring Table level Lock.

Sample API with IsRealTime parameter:

```
<DO_DB_PERSIST DocumentName="LastSyncUp" Action="DELETE"
Source="EXTERNAL" IsRealTime="true">
<LastSyncUp>
                ……….
```

```
  </LastSyncUp>
   <LastSyncUp>
                  …… .
  </LastSyncUp>
</DO_DB_PERSIST>
```

Note: Single DoDB by default accrue Row level lock on Master table, Error Table and ALCR table.

Known limitations on RowByRow execution:

- RowByRow operations will prevent Table level locking only if Master tables are not Temporal and not have any JOIN Index (including ALCR and cross reference).
- RowByRow operations will prevent Table level locking during DoDB persist only if no Insert Update rule is defined on Master table that do a Table level lock.
- Number of records that can be updated/inserted as RowByRow in a single transaction is bonded to Teradata Database Lock table limitations.
- RowByRow option do not honor the following features:
  - Audit table
  - CLS and RLS
  - Activate/Delete

Additional Details

This section provides additional information about RDM for reference.

Matching Functions

Table 17 provides the OOTB match functions.

Table 17: Match Functions

Function	Description	Syntax	Parameter	Return Type
UF_SNDX_B	Apply Soundex function on Column	UF_SNDX_B(<STRING1>)	Single	CHAR
UF_SDX	Compares two Strings by applying Soundex functions	UF_SDX(<STRING1>,<STRING 2>)	Multiple(2)	INTEGER
UF_EXDA	Extracts Day from date	UF_EXDA(<DATE>)	Single	INTEGER
UF_FRSTCHAR	Extracts first character from string	UF_FRSTCHAR(<STRING>)	Single	CHAR
UF_FRST3CHAR	Extracts first three characters from string	UF_FRST3CHAR(<STRING>)	Single	CHAR
UF_FRST2CHAR	Extracts first two characters from string	UF_FRST2CHAR(<STRING>)	Single	CHAR

Table 17: Match Functions

Function	Description	Syntax	Parameter	Return Type
UF_EXMO	Extracts Month from date	UF_EXMO(<DATE>)	Single	INTEGER
UF_EXYR	Extracts Year from date	UF_EXYR(<DATE>)	Single	INTEGER
UF_GETNAME	Removes non-alpha characters from string (called by SDX)	UF_GETNAME(<STRING>)	Single	CHAR
UF_DIFFI	Returns 1|0 if integer values within 1 of each other	UF_DIFF1(<INTEGER1>,<INTEGER2>)	Multiple	INTEGER
UF_DTEDIF1	Returns 1|0 if YEAR values within 1 of each other	UF_DTEDIF1(<DATE1>,<DATE2>)	Multiple	INTEGER
UF_DTEDIF2	Returns 1|0 if YEAR values within 2 of each other	UF_DTEDIF2(<DATE1>,<DATE2>)	Multiple	INTEGER
UF_EDITDISTANCE_U	Returns number of edits to make string1=string2 (called by STRSIM3)	UF_EDITDISTANCE_U(<STRING1>,<STRING2>)	Single	INTEGER
UF_NGRAMM_U	Returns number of ngrams 2 strings have in common (called by STRSIM)	UF_N_GRAMM_U(<STRING1>,<STRING2>,<NGRAM CHARS>)	Multiple(3)	CHAR
UF_STRINGCOMP	String compare returns no match if both strings are blank	UF_STRINGCOMP(<STRING1>,<STRING2>)	Multiple(2)	INTEGER
UF_STRSIM4	String similarity measure, blend of strsim and strsim3 returns Editdistance index	UF_STRSIM4(<STRING1>,<STRING2>)	Multiple	DECIMAL
UF_STRSIM3	String similarity measure, returns scaling factor Editdistance index >.7	UF_STRSIM3(<STRING1>,<STRING2>)	Multiple	DECIMAL
UF_STRSIM2	String similarity measure, returns scaling factor JACCARD INDEX >.6	UF_STRSIM2(<STRING1>,<STRING2>)	Multiple	DECIMAL
UF_STRSIM	String similarity measure, returns scaling factor JACCARD INDEX >.7	UF_STRSIM(<STRING1>,<STRING2>)	Multiple	DECIMAL
UF_JAROIDX	Jaro-Winkler Distance Index	UF_JAROINDX <STRING1>, <STRING2>	Double	DECIMAL
UF_ADDRSIM	ADDRESS similarity measure, returns scaling factor 1.0 IF > .8, INDEX IF > .55 ELSE 0	UF_STRSIM (<STRING1>, <STRING2>)	Multiple	CHAR

Table 17: Match Functions

Function	**Description**	**Syntax**	**Parameter**	**Return Type**
UF_NICKNAME	NICKNAME MATCH	UF_NICKNAME <STRING1>, <STRING2>), <STRING3>, <STRING4>	Multiple	CHAR
UF_GENDER	DUMMY FUNCTION	UF_GENDER <STRING1>,	Single	CHAR
UF_EXYDA	Extracts Day from date	UF_EXDA(<DATE>)	Single	INTEGER
UF_SNDX	Soundex function	UF_SNDX(<STRING1>)	Single	CHAR
UF_METAPHONE_P75	Do a Metaphone comparison between strings and return 1 if edit distance between metaphone is above 75 percentage. Note: You can create similar SQL UDFs with different edit distance percentages *UF_metaphoneMDM (<String1>,<String2>,<max length>,<Edit distance threshold>)*	UF_METAPHONE_P75 <STRING1>,<STRING2>	Multiple	CHAR
UF_DOUBLEMETAPHONE_P75	Do a Double Metaphone comparison between strings and return 1 if edit distance between metaphone is above 75 percentage Note:You can create similar SQL UDFs with different edit distance percentages *UF*_doubleMetaphone *(<String1>,<String2>,<max length>,<Edit distance threshold>)*	UF_DOUBLEMETAPHONE_P75 <STRING1>,<STRING2>	Multiple	CHAR

By default, all Matching UDFs (Non SQL) are created to run in protected mode. Following 'C' UDFs are defined as Protected mode by default

UF_GETNAME

UF_JAROIDX

It is advisable to make Non SQL UDFs to run in unprotected mode when migrated to Production for a better performance. Before changing the Mode, make sure Implementation do sufficient testing on production of similar data. Refer to Appendix G: “UDF’s Execution Modes,” for more details on Unprotected Vs Protected modes.

Validation Functions

Table 18 provides the list of validation functions.

Table 18: Validation Functions

Function_Name	Description	Syntax	Return Type	Example
UF_VALIDEMAIL	Email Validation. Check for Validate Email. (Note: Checks only format)	UF_VALIDEMAIL(<STRING>)	INTEGER Returns 1 if valid else 0	Select UF_VALIDEMAIL('mdm@teradata.com') will return 1. Select UF_VALIDEMAIL('*mdm@teradata.com') will return 0.
UF_VALIDPOSTCODE_US	US Zipcode Validation. Check for Postal Code. (Note:Checks only format)	UF_VALIDPOSTCODE_US (<STRING>)	INTEGER Returns 1 if valid else 0	Select UF_VALIDPOSTCODE_US('99501') will return 1. Select UF_VALIDPOSTCODE_US('FL-99501') will return 0.
UF_ISVALIDPHONE_US	Checks for US Phone Validation.	UF_ISVALIDPHONE_US(<STRING>)	INTEGER Returns 1 if valid else 0	Select UF_ISVALIDPHONE_US ('202-555-0187') will return 1. Select UF_ISVALIDPHONE_US ('202-555-018700') will return 0.

Cleansing and Standardization Functions

Table 19 provides the list of cleansing and Standardization functions.

Table 19: Cleansing and Standardization Functions

Function_Name	Description	Syntax	Return Type	Example
UF_STD_PHONE_NATIONAL_US	Phone standardization(national) Return US number in national format	UF_STD_PHONE_NATIONAL_US(<STRING>)	Return US number in national format as String	Select UF_STD_PHONE_NATIONAL_US ('2025550187') will return '(202) 555-0187'.
UF_GETLOCATION_US	Get Location of US valid phone numbers	UF_GETLOCATION_US(<STRING>)	Returns the location of the phone number	Select UF_GETLOCATION_US ('2025550187') will return 'Washington D.C.'
UF_STD_PHONE_INTERNATIONAL_US	Phone standardization(international) Return US number in International format	UF_STD_PHONE_INTERNATIONAL_US(<STRING>)	Return US number in International format	Select UF_STD_PHONE_INTERNATIONAL_US ('2025550187') will return '+1 202-555-0187'

Table 19: Cleansing and Standardization Functions

Function_Name	Description	Syntax	Return Type	Example
UF_STD_PHONE_E164	Phone standardization(E164) E164 defines a general format for international telephone numbers.	UF_STD_PHONE_E164(<STRING>)	Returns the E.164 format of the telephone number.	Select UF_STD_PHONE_E164('2025550187') Will return '+12025550187'
UF_SNDX3	Soundex function returns numeric portion	UF_SNDX3(<STRING>)	Returns the numeric portion of the Soundex result	Select UF_SNDX3('TERADATA') will return 633
UF_EXMO	Extracts Month from date	UF_EXMO (from value)	INTEGER	Select UF_EXMO (FROM '1996-12-12'); returns 12
UF_EXYR	Extracts Year from date	UF_EXYR (from value)	INTEGER	Select UF_EXYR (from Current_Date); returns 2020
UF_EXDA	Extracts Day from date.	UF_EXDA (from value)	INTEGER	Select UF_EXDA (FROM '1996-12-12'); returns 12

UPPER	Convert Characters to Upper Case. Returns a character string identical to string_expression, except that all lowercase letters are replaced with their uppercase equivalents.	UPPER (string_expression)	CHAR	The use of UPPER to store values is shown in the following example:
				INSERT INTO names
				SELECT UPPER(last_name), UPPER(first_name)
				FROM newnames;

LOWER	Convert Characters to Lower Case. Returns a character string identical to string_expression, except that all uppercase letters are replaced with their lowercase equivalents.	LOWER (string_expression)	CHAR	SELECT LOWER (last_name)
				FROM names;

UF_FRSTCHAR	Extracts first character from string	UF_FRSTCHAR(<STRING>)	CHAR	Select UF_FRSTCHAR(John) returns 'J'
UF_FRST2CHAR	Extracts first two characters from string	UF_FRST2CHAR(<STRING>)	CHAR	Select UF_FRST2CHAR(MARY) returns 'MA'
UF_FRST3CHAR	Extracts first three characters from string.	UF_FRST3CHAR(<STRING>)	CHAR	Select UF_FRST3CHAR(MARY) returns 'MAR'

Table 19: Cleansing and Standardization Functions

Function_Name	Description	Syntax	Return Type	Example
TRIM	Removes extra Space. Takes a character or byte string_expression argument, trims the specified pad characters or bytes, and returns the trimmed string.	TRIM (string_expression)	If input is a byte string, the result type is VARBYTEIf the input is a numeric expression or character string, the result type is VARCHAR	If the Names table includes the columns first_name and last_name, which contain the following information: first_name (CHAR(12)) has a value of 'Mary ' last_name (CHAR(12)) has a value of 'Jones ' then this statement: SELECT TRIM (BOTH FROM last_name) || ', ' || TRIM(BOTH FROM first_name) FROM names ; returns the following string (note that the seven trailing blanks at the end of string Jones, and the eight trailing blanks at the end of string Mary are not included in the result): 'Jones, Mary'
UF_SNDX	Soundex function. The SOUNDEX() function returns the Soundex code for the given string. The Soundex code is a four-character code that is based on how the string sounds when spoken. The Soundex code is constructed by following the below guidelines: 1. The first character of the code is the first character of the string. 2. The second through fourth characters of the code are numbers that represent the letters in the expression. The letters A, E, I, O, U, H, W, and Y are ignored unless they are the first letter of the string. 3. Zeroes are added at the end if necessary to produce a four-character code.	UF_SNDX (string_expression)	CHAR	Select UF_SNDX ('ashcraft') retuns the value a261

Table 19: Cleansing and Standardization Functions

Function_Name	Description	Syntax	Return Type	Example
UF_SDX	Compares two Strings by applying Soundex functions.	UF_SDX(<STRING1>,<STRING2>)	INTEGER	Select UF_SDX ('see') (sea). It returns an integer value measuring the difference between the SOUNDEX() values of two strings. The difference between the two SOUNDEX() values on a scale of 0 to 4. A value of 0 means weak or no similarity between SOUNDEX() values; 4 means strongly similar or identical SOUNDEX() values.

Installing Out of the Box Match Attribute Functions

Out of the box match attribute functions can be installed via script provided with MDM 4.3 installer.

Note: For Matching to work on 4.3, all the OOTB MDM UDFs must be reinstalled using the new package available at <MDM_Install_Directory>\ batch\TMDM_udfs\TMDM_udfs.zip

The old UDFs can still be retained and can be used in custom code. Optionally you can drop all Pre 4.3 UDFs, for details see section Section : “Unistall UDFs.”

To execute UDFs that are required for Matching, the following grant access must be provided:

```
GRANT CREATE FUNCTION, EXECUTE FUNCTION, DROP FUNCTION ON SYSLIB TO
<MDM_USER>;
```

Install UDFs on Windows

Perform the following functions to install user defined matching attribute functions on Windows server:

1 Copy the zip file (TMDM_udfs.zip) from *<MDM_Install_Directort>/batch/TMDM_udfs* to *C:/* folder.

   Note: Below steps are defined on assumption that Zip folder is extracted to C:/ .If zip is not extracted to C:/, you may have to update the new file location in the below files before proceeding to next step:

   `mdmcreate_judf.btq`

   `mdmcomp_scriptudf.btq`

   The above files are available at: C:\TMDM_udfs\bteq

   Replace the text "C:\TMDM_udfs" with new file location

   Example: If new file location of the extracted file is D:\TDUDF\SQL\TMDM_udfs, then replace "C:\TMDM_udfs" with "D:\TDUDF\SQL\TMDM_udfs" without quotes in the above files.

2 Open LOGIN_INFO.sql and enter the Teradata login details as below:

   If Database IP is 153.65.183.79

User name is SYSDBA

PASSWORD is SYSDBA1234, then enter as below

.logon 153.65.183.79/SYSDBA,SYSDBA1234;

Note: You should have CREATE, DROP and Execute function rights on SYSLIB and SYSUDTLIB database.

3. Execute Install.bat from C:\TMDM_udfs\setup

Install UDFs on Linux

Perform the following changes in BTEQ scripts while installing Teradata UDFs in Linux server.

1. Unzip TMDM_udfs.zip file under "/root" directory and run the "./install.sh" file from "setup" directory only.

   For example: `<LINUX SERVER>TMDM_udfs/setup #./install.sh`
2. Open `mdmcreate_sqludf.btq` script

   Replace `".run file C:\TMDM_udfs\LOGIN_INFO.sql"` with `".run file ../LOGIN_INFO.sql;"`
3. Open `mdmcreate_udt.btq` script

   Replace `".run file C:\TMDM_udfs\LOGIN_INFO.sql"` with `".run file ../LOGIN_INFO.sql;"`
4. Open `mdmcomp_scriptudf.btq` script,
   - a Replace `".run file C:\TMDM_udfs\LOGIN_INFO.sql"` with `".run file ../LOGIN_INFO.sql"`
   - b In function `UF_GETNAME, replace EXTERNAL NAME` path,

     `EXTERNAL NAME 'CS!UF_GETNAME!../lib/getname.c';`
   - c In function `UF_EDITDISTANCE_U`, replace `EXTERNAL NAME` path,

     `EXTERNAL NAME 'CS!strUF_EDITDISTANCE_U!../lib/editdistance_u.c!F!UF_EDITDISTANCE_U';`
   - d In function `UF_EDITDISTANCE_U`, replace `EXTERNAL NAME` path,

     `EXTERNAL NAME 'CS!strUF_EDITDISTANCE_U_OPT!../lib/editdistance_u_opt.c!F!UF_EDITDISTANCE_U_OPT';`
   - e In function `UF_JAROC`, replace `EXTERNAL NAME` path,

     `EXTERNAL NAME 'CS!UF_jaroc!../lib/jaro.c!F!UF_JAROC';`
5. Open `mdmcreate_judf.btq` script,

   Replace `".run file C:\TMDM_udfs\LOGIN_INFO.sql"` with `".run file ../LOGIN_INFO.sql"`

   Note: perform the following changes in `CALL SQLJ.INSTALL_JAR` while creating below UDFs:

   - `CALL SQLJ.INSTALL_JAR('cj!../lib/commons-codec-1.10.jar', 'commons-codec-1.10', 0);`

- `CALL SQLJ.INSTALL_JAR('cj!../lib/MetaphoneMDMJarFile.jar', 'MetaphoneMDMJarId', 0);`
- `CALL SQLJ.INSTALL_JAR('cj!../lib/DoubleMetaphoneHandlerJarFile.jar', 'DoubleMetaphoneHandlerJarId', 0);`

6 Open `mdmudf_Dropall.btq` script,

Replace `".run file C:\TMDM_udfs\LOGIN_INFO.sql"` with `".run file ../LOGIN_INFO.sql;"`

7 Open `mdmudf_DropPre42_UDFs.btq` script,

Replace `".run file C:\TMDM_udfs\LOGIN_INFO.sql"` with `".run file ../LOGIN_INFO.sql;"`

Testing

1 Once Installation is complete, make sure all the functions (`UF_SNDX_B, UF_SDX, UF_EXDA, UF_FRSTCHAR, UF_FRST3CHAR, UF_FRST2CHAR, UF_EXMO, UF_EXYR, UF_GETNAME, UF_DTEDIF1, UF_DTEDIF2, UF_EDITDISTANCE_U, UF_NGRAMM_U, UF_STRINGCOMP, UF_STRSIM4, UF_STRSIM3, UF_STRSIM2, UF_STRSIM`) gets created in SYSLIB database.

2 Testing: Run Below SQLs from BTEQ or SQLA to make sure all functions are created properly. The below function execution should not fail.

```
SelectUF_SNDX_B('ASDF1');
SelectUF_SDX('ASDF12','ASKSD');
SelectUF_EXDA(DATE);
SelectUF_FRSTCHAR('ASDF1');
SelectUF_FRST3CHAR('ASDF1');
SelectUF_FRST2CHAR('ASDF1');
SelectUF_EXMO(DATE);
SelectUF_EXYR(DATE);
SelectUF_GETNAME('ASDF1');
SelectUF_DTEDIF1(DATE,DATE-2);
SelectUF_DTEDIF2(DATE,DATE-2);
SelectUF_EDITDISTANCE_U('ASDF12','ASKSD');
SelectUF_NGRAMM_U('ASDF12','ASKSD','1');
SelectUF_STRINGCOMP('ASDF12','ASKSD');
SelectUF_STRSIM4('ASDF12','ASKSD');
SelectUF_STRSIM3('ASDF12','ASKSD');
SelectUF_STRSIM2('ASDF12','ASKSD');
SelectUF_STRSIM('ASDF12','ASKSD');
```

Note: The Seed data for all the above said Functions will get populated into the `SYS_FM_FUNCTION` table as part of Installation.

Unistall UDFs

Perform the below steps to unistall UDFs:

1 Copy the zip file (TMDM_udfs.zip) from *<MDM_Install_Directort>/batch/TMDM_udfs* to *C:/* folder.

   Note: Below steps are defined on assumption that Zip folder is extracted to C:/ .If zip is not extracted to C:/, you may have to update the new file location in the below files before proceeding to next step:

   mdmcreate_judf.btq

   mdmcomp_scriptudf.btq

   The above files are available at: C:\TMDM_udfs\bteq

   Replace the text "C:\TMDM_udfs" with new file location

   Example: If new file location of the extracted file is D:\TDUDF\SQL\TMDM_udfs, then replace "C:\TMDM_udfs" with "D:\TDUDF\SQL\TMDM_udfs" without quotes in the above files.

2 Open LOGIN_INFO.sql and enter the Teradata login details as below:

   If Database IP is 153.65.183.79

   User name is SYSDBA

   PASSWORD is SYSDBA1234, then enter as below

   .logon 153.65.183.79/SYSDBA,SYSDBA1234;

   Note: You should have CREATE, DROP and Execute function rights on SYSLIB and SYSUDTLIB database.

3 To remove, execute dropall.bat from C:\TMDM_udfs\setup. Refer log in the console for any failure.

4 To remove all pre 4.2 UDFs, execute dropPre42UDFs.bat from C:\TMDM_udfs\setup. Refer log in the console for any failure.

Custom or User Defined Matching functions

Any custom or user defined functions (UDF) can be used in matching process. Perform the following steps to enable custom or user defined function to be used in matching process:

1 Create a user defined function as per Teradata UDF standards (refer to Teradata UDF guide for more details on UDF standards)

2 Install the user defined function in Teradata box where MDM is installed.

   The UDF can be created in SYSLIB database or any database within the Teradata box.

3 Grant Execute Function privilege to the MDM user on the function created.

   GRANT CREATE FUNCTION ON SYSLIB TO <MDM _DB_User>

4 Populate SV_FM_FUNTIONS with the meta data information about the function as given in the below table.

FM_FUNCTION	Function Name
FM_DESCRIPTION	Description of function
FM_GRAMMAR	Syntax of function, example: EXDA(<DATE>)

FM_TYPE	Number of parameters passed to function ‘S’ - only one parameter ‘M’ - Two (cannot provide custom UDF that have more than two parameters) ‘I’ - for internal, for functions that are not to be included in the dropdown list provided to the user.
FM_RETURN	Return Type (A, B or S) A = Altered column, example: as in Soundex or firstchar. The Column is altered for the purpose of comparison. B = Binary return 1 or 0. 1 = pass, 0 = fail S = Scale, function returns a decimal value that allows one to alter the score given to a column match. For example: First_Name perfect match = 4.0, if it scores an 75 % match due to n-gram index or edit distance the function would yield a score of 3.0 = 4.0 * .75.
FM_ARG_TYP	Argument Type N - numeric, C - character, D - Date (Future use - It is the information that the UI may use if someone attempts to apply a numeric function to a character field to flag an error)

RDM Terms Definitions

The below section provides the definition of various terms used in RDM.

- Source—source is the repository (view or table) which provides input data for various processing steps, such as Cleansing & Standardization, Matching, etc. Source can be an MDM table/view or an external table/view.
- Target—target is the repository (view or table) which provides target/candidate data for various processing steps, such as processing of Golden master data against which the matching is performed.
- Party Sub Type—party sub type refers to the concept of different types of business entities (commonly known as PARTY), such as Customer, Household, Individual, Account, Business, Organization or Associate, etc.
- Profile—A Profile refers to a specific configuration instance required to perform the execution of underlying processes such as Matching, Survivorship, etc.
- Threshold—Threshold in the Match profile refers to the limit or range of possible scores for the given category of match results, i.e. Match, Non match, or Potential match.
- Seed Data—seed data refers to the default data sets provided with the MDM installation such as Lookup Code Sets and Values.
- EDW Tables—EDW Tables refer to any non MDM tables/views residing in the Teradata database.
- Repository—repository refers to the category or type for the underlying source or target tables/views.
- Dashboard—dashboard refers to the UIs provided to the data steward user role to access and administer the overall health/status related information for RDM processes.
- Master—Golden master table, primary table as a source.

- Secondary—Secondary source table, it may be an EDW table, MDM staging table, or MDM master table.
- Match Process—Process to compare Master and Secondary sources and produce scoring results. Match process produces scoring results between master and source records on the probability that they match, or they do not match.
- Partition—Group of records which are chosen because they share common attributes or combination of transformed attributes. Also know as block or window.
- Merge Process—Merge process consumes scoring results from match process to trigger one of four sub-processes: auto-merge, interactive merge, by-pass, or non-match (create unique records).
- Record Pair Frequency—Vertical axis represents the count of record pairs between Master and SourceX, for a given Record Pair Match Score.
- Record Pair Match Score—Each record pair is processed through the match algorithm, defined within the Match Profile for a given Master and SourceX combination, resulting in a Record Pair Match Score. The range of the Record Pair Match Score varies from one Match Profile to another Match Profile, based on the number of attributes being compared and other characteristics of the Match Profile, for any given Master SourceX combination. Positive scores indicate that record pair is most likely match. Negative scores indicate that the record pair is unlikely to match. Lower scores do not say that the source record should be a new master record, but simply that the source record does not match well enough, with the paired master record.
- Match Threshold Value—This value is set by a Data Analyst to define a value in a Record Pair Match Score range where record pairs which are equal to or greater than this value is considered a valid match, for a given Master and SourceX combination. Record pairs that meet this threshold value are often considered candidates for automated merge processing and passed onto the survivorship process.
- Non-Match Threshold Value—This value is set by a Data Analyst to define a value in Record Pair Match Score range where record pairs which are equal to or less than this value is considered to not match, for a given Master and SourceX combination.
- Unknown Range—Master and SourceX Combination Record pairs with a Record Pair Match Score between the Non-Match Threshold Value and the Match Threshold Value. These Record Pairs Match Score are therefore considered to be ‘unknown’. The Record pairs within this range are typically considered candidates for Data Steward review.
- By-Pass Threshold Limit—This value is set by a Data Analyst to define a limit to the number of Record pairs to be reviewed by a Data Steward. This threshold is provided as the number of record pairs in the Unknown Range can become very large.
- Unique Threshold Limit—This value is set by a Data Analyst to define the value in a Record Pair Match Score range where Record pairs with scores equal to or less than this limit are considered to have source records that are not present in master. Typically a Unique list of source records are gathered from this group of record pairs. This threshold value is used to define the number of records to be considered most likely to be new master records.

- False Negatives - Result Scores of Record Pairs, based upon the Matching Profile for that SourceX to Master Combination that are mis-classified as being not a Match, when they actually should be (Outliers or Type1).
- False Positives - Result Scores of Record Pairs, based upon the Matching Profile for that SourceX to Master Combination that are mis-classified as being a Match', when actually they should not be (Outliers or Type2).

CHAPTER 13 Cross Reference Management

What's In This Chapter

This chapter provides information on cross reference management.

Topics include:

- Introduction
- Cross Reference Entities
- Entity Definition
- Search Source Records
- Search Master Records

Introduction

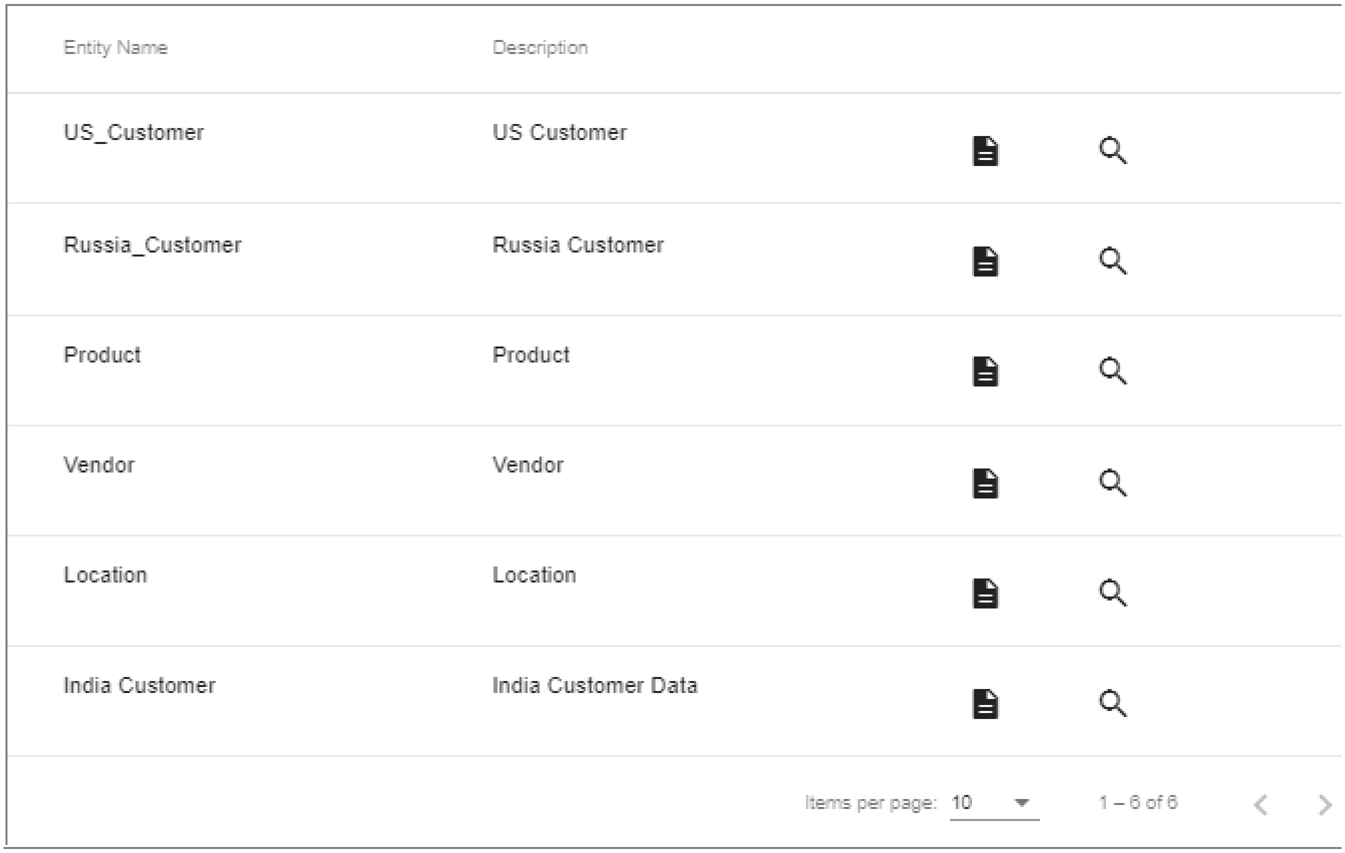
The Cross Reference management solution provides the ability to manage relations of any domains (Customers, Product, Vendors etc). It provides the Data Stewards with the comprehensive overview of all the existing cross reference relations across the enterprise. The records to manage cross reference are derived from the execution of corresponding Matching and Survivorship profiles or any other source. A metadata configuration driven intuitive User Interface allows the Data Stewards to review the relation between records and take final actions to maintain the best version of cross reference relations. It allows the Data Stewards to monitor the linkage of data, view all the contributing sources for the target records and also manually link/un-link and re-link records within a cross reference as required.

The Data Stewards can also search cross reference records based on certain search parameters. You have an option to search either on source or master records and make the required adjustments to ensure that proper relations are represented.

Cross Reference Entities

Navigate to Cross Reference Entities UI from MDM left navigation (**Data Harmonization** -> **Cross Reference Management**). Figure 281 displays the **Cross Reference Entities** UI. The Cross Reference Entities UI displays the list of business entities that are cross referenced. It displays entity names, their descriptions, View Entity Configuration Details icons and a search icons respectively.

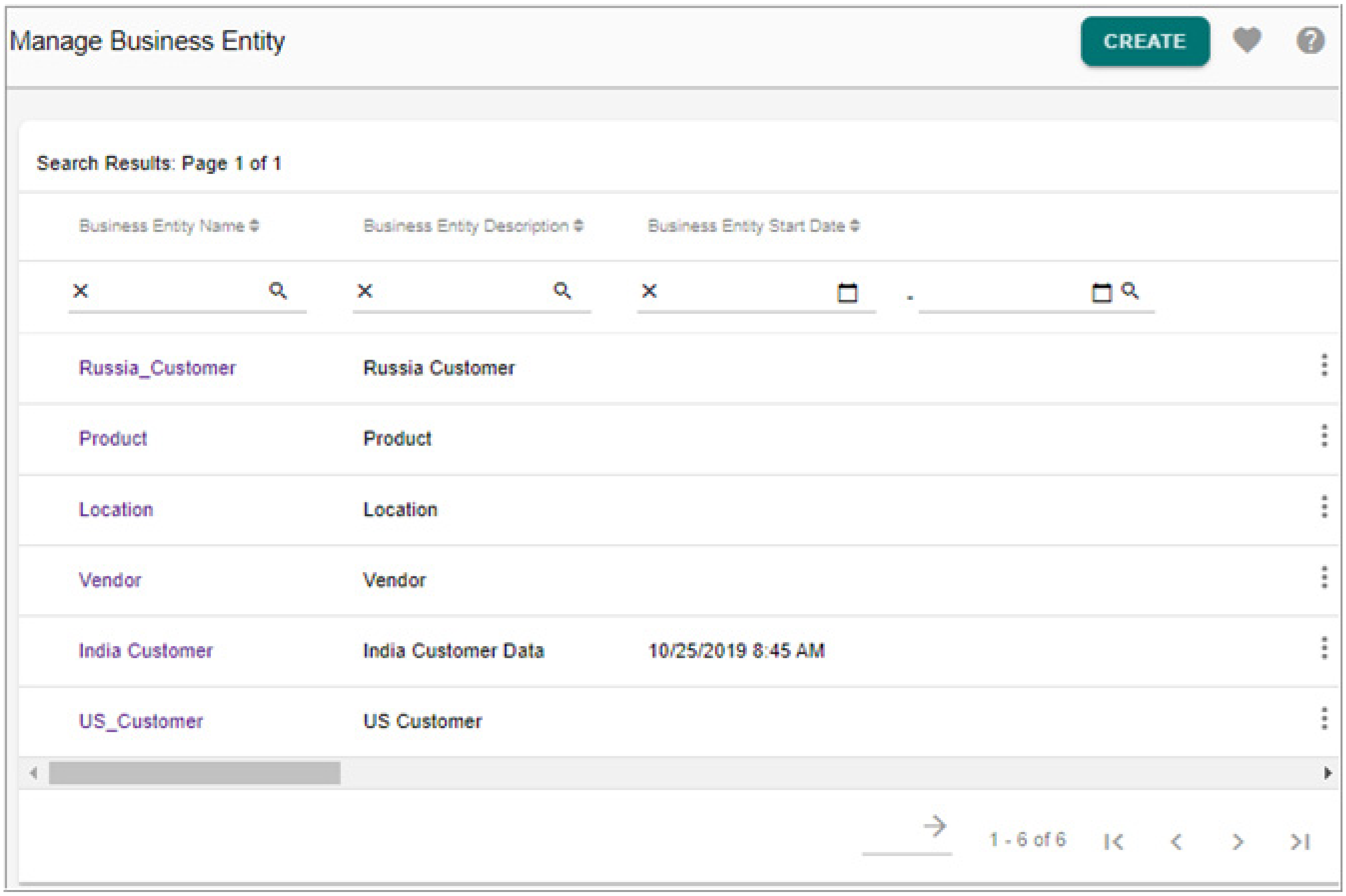
Figure 281: Cross Reference Entities



Entity Name	Description
US_Customer	US Customer
Russia_Customer	Russia Customer
Product	Product
Vendor	Vendor
Location	Location
India Customer	India Customer Data

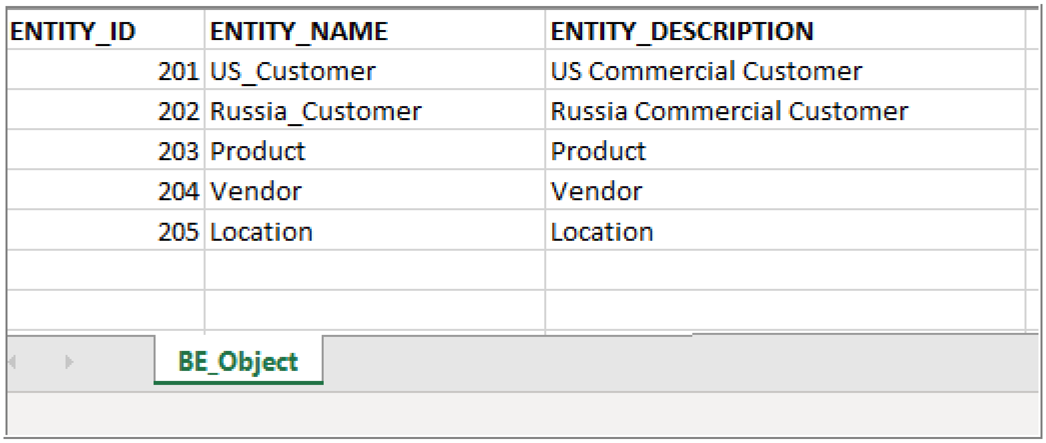
The business entities on the Cross Reference Entities UI are fetched from **Manage Business Entity** UI as in Figure 282 or from backend table called **BE_Object** as shown in the excel file in Figure 282. To add a new entity, you can add either through Manage Business Entity UI or from backend table (BE_Object). *For details on creating business entities, refer to Chapter Manage Business Entities*

Figure 282: Manage Business Entity



Business Entity Name	Business Entity Description	Business Entity Start Date
Russia_Customer	Russia Customer	
Product	Product	
Location	Location	
Vendor	Vendor	
India Customer	India Customer Data	10/25/2019 8:45 AM
US_Customer	US Customer	

Figure 283: BE_Object



ENTITY_ID	ENTITY_NAME	ENTITY_DESCRIPTION
201	US_Customer	US Commercial Customer
202	Russia_Customer	Russia Commercial Customer
203	Product	Product
204	Vendor	Vendor
205	Location	Location

Key features on Cross Reference Entities UI:

- You can navigate to Entity Definition UI to examine the entity details using the View Entity Configuration Details icons .
- You can perform search operation on entity records either by Source or by Master records using the search icon .

- You can sort the entity records in ascending or descending order, based on entity name/ description column sorting option.
- You can Export the list of entity details to a excel file using the Export to Excel icon . The exported excel file will have the entity Ids, Entity names and description details.
- By default the Cross Reference Entities UI display 10 records. You can customize the display to 25 or 50 records by selecting the required number from Items per Page dropdown.

Entity Definition

Navigate to **Entity Definition** UI by clicking the View Configuration Details icon on **Cross Reference Entities** UI. On the **Entity Definition** UI, each entity panel data is fetched or defined from configurable master tables or from backend and these data will be displayed on different cross reference search records UI as shown in Table 20.

General Features on each Entity Panel UI:

- Each entity details section by default displays five records. You have an option to customize the display to 10 or 15 records.
- In each entity details section, you can sort the records in ascending or descending order, based on each column sorting option.
- Export each of the entity details separately to a excel file using the Export excel icon .

Table 20: Entity Definition Panels

Entity Panel Name	Entity Panel Data Fetched From Table	Entity Panel Data Used on UI
EntityDisplay	Configurable UI Table - **MMEntityDisplay** or from Backend table - **EntityDisplay**	Defined source systems will be displayed as dropdown on the cross reference Search Source Record UI. For details, see Section : “Entity Display.”
EntityAttribute	Configurable UI Table - **MMEntityAttribute** or from Backend table - **EntityAttribute**	Defined BusinessKey and BusinessDesc Attribute types will be displayed as Source Key and Description search parameters on the cross reference Search Record UI. MatchKeyAttributes will be displayed as Key Attributes search parameters and Additional Attributes will be displayed as Additional Attributes search parameters under Advanced Filter on the cross reference Search Record UI. For details, see Section : “Entity Attribute.”
EntityRelation	Configurable UI Table - **MMEntityRelation** or from Backend table - **EntityRelation**	The source and target record linkage details like linked master record, link type (Auto, Manual or None) and link status (linked, unlinked or New) will be displayed on the Source Details UI under the Cross Reference tab and Cross Reference History tab. For details, see Section : “Entity Relations.”

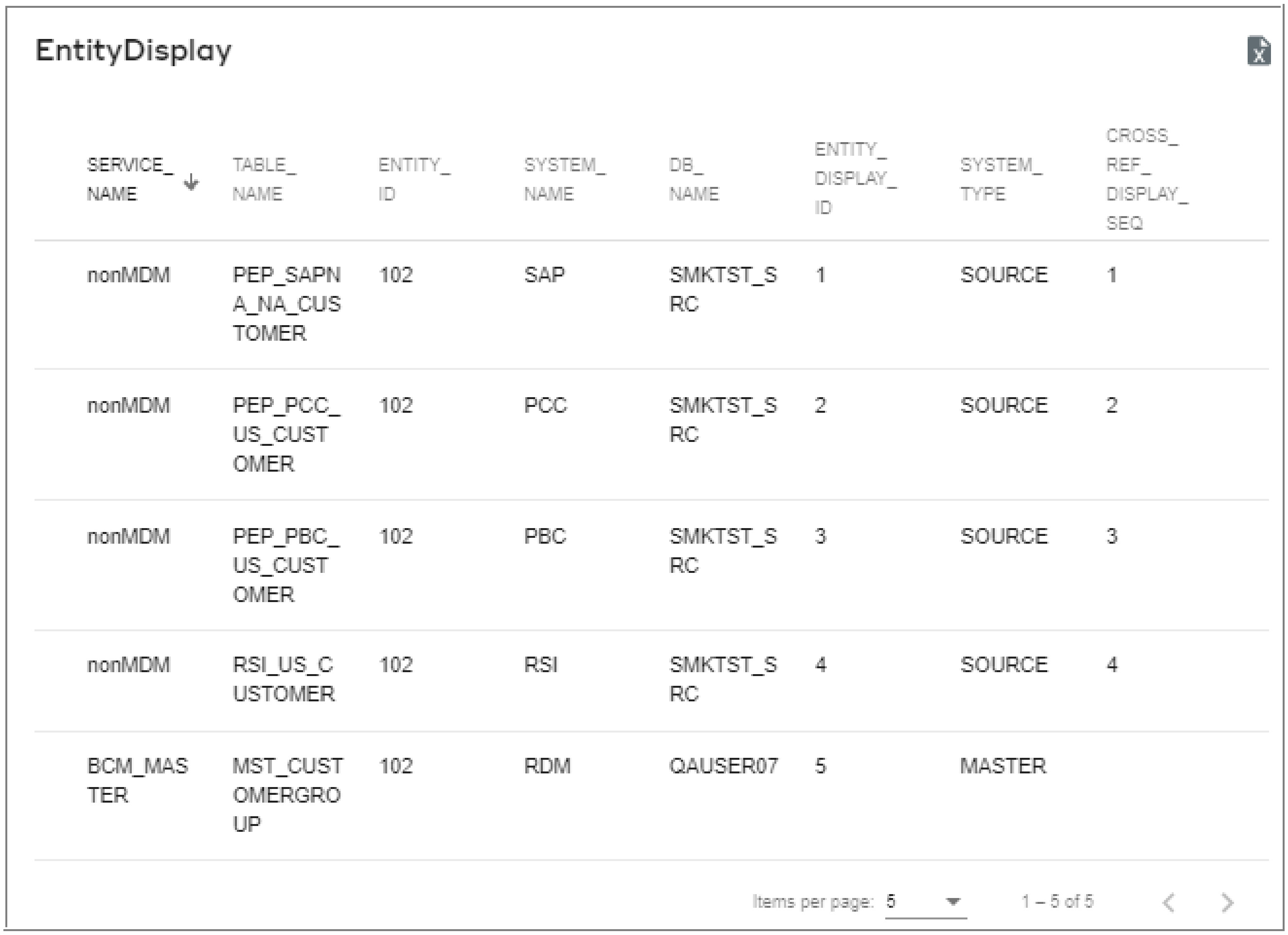
Table 20: Entity Definition Panels

Entity Panel Name	Entity Panel Data Fetched From Table	Entity Panel Data Used on UI
EntityProfiles	Configurable UI Table - **MMEntityProfiles** or from Backend table - **EntityProfiles**	The execution of these profiles on the backend displays the data across the Cross Reference Entities Search Record UIs. For details, see Section : “Entity Profiles.”
EntityParameters	Configurable UI Table - **MMEntityParameters** or from Backend table - **EntityParameters**	Not displayed on any Cross Reference Entities UI. For details, see Section : “Entity Parameters.”
EntityAuthorization	Configurable UI Table - **MMEntityAuthorization**	Not displayed on any Cross Reference Entities UI. For details, see Section : “Entity Authorization.”

Entity Display

Figure 284 displays the **Entity Display** panel. It displays all the system name, related database name, table name and source type (master or source) from where the data is fetched for the entity. For example, for the selected US Customer entity, the different source systems that are contributing can be viewed under the System_Name column.

Figure 284: Entity Definition—Entity Display

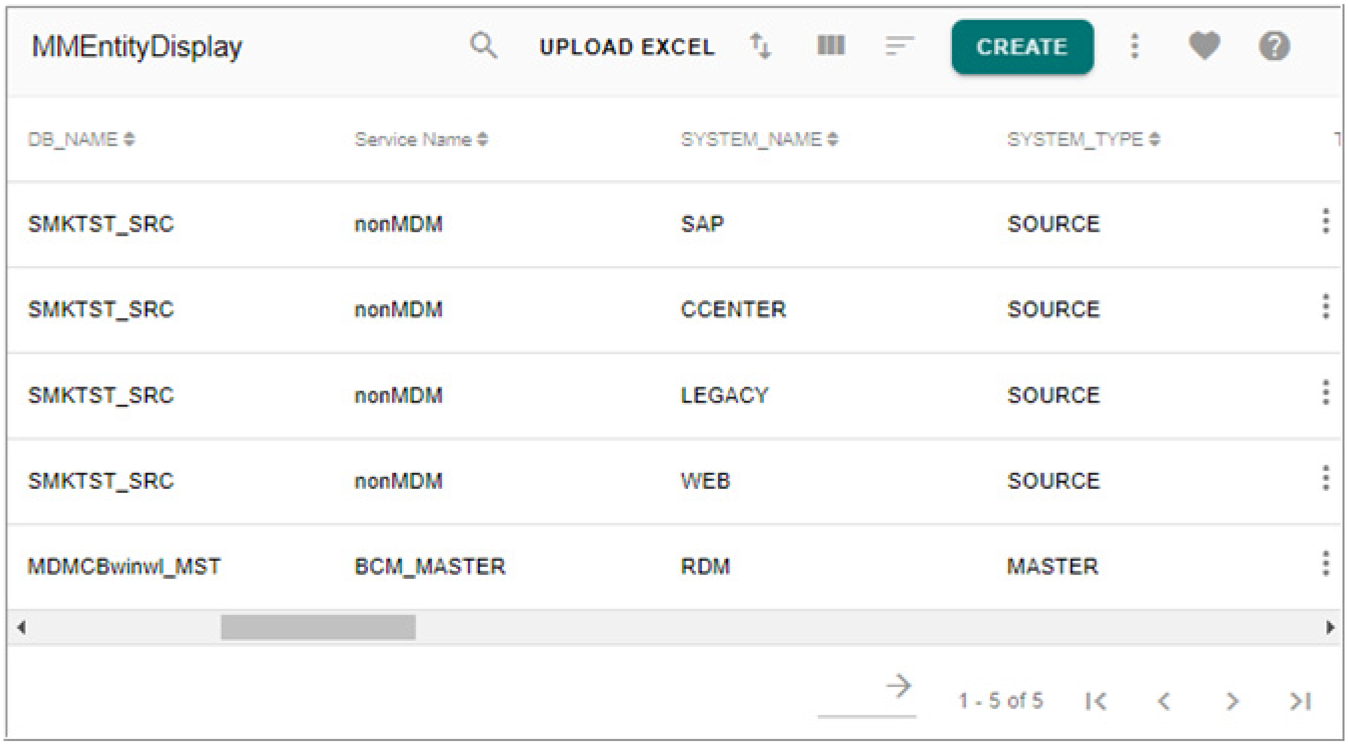


EntityDisplay

SERVICE_NAME	TABLE_NAME	ENTITY_ID	SYSTEM_NAME	DB_NAME	ENTITY_DISPLAY_ID	SYSTEM_TYPE	CROSS_REF_DISPLAY_SEQ
nonMDM	PEP_SAPNA_NA_CUSTOMER	102	SAP	SMKTST_SRC	1	SOURCE	1
nonMDM	PEP_PCC_US_CUSTOMER	102	PCC	SMKTST_SRC	2	SOURCE	2
nonMDM	PEP_PBC_US_CUSTOMER	102	PBC	SMKTST_SRC	3	SOURCE	3
nonMDM	RSI_US_CUSTOMER	102	RSI	SMKTST_SRC	4	SOURCE	4
BCM_MASTER	MST_CUSTOMERGROUP	102	RDM	QAUSER07	5	MASTER	

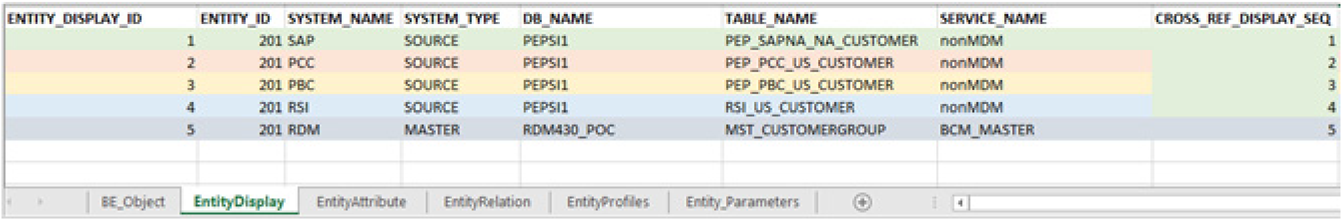
The contributing source systems, source type and the related source table for the selected entity are fetched or defined from configurable UI table called **MMEntityDisplay** as in Figure 284 or from backend table called **EntityDisplay** as shown in the excel file in Figure 285. For example, for the selected US Customer entity, the contributing sources are (SAP, PCC, PBC and RSI) as shown under the System_Name column, the cross reference tables are shown under the Table Name column and target table is the master table called MST_CUSTOMERGROUP and the master source system is represented as RDM. These defined System Names will be displayed on the cross reference Source Search Record UIs under the Source Systems dropdown as in Figure 287.

Figure 285: MMEntityDisplay



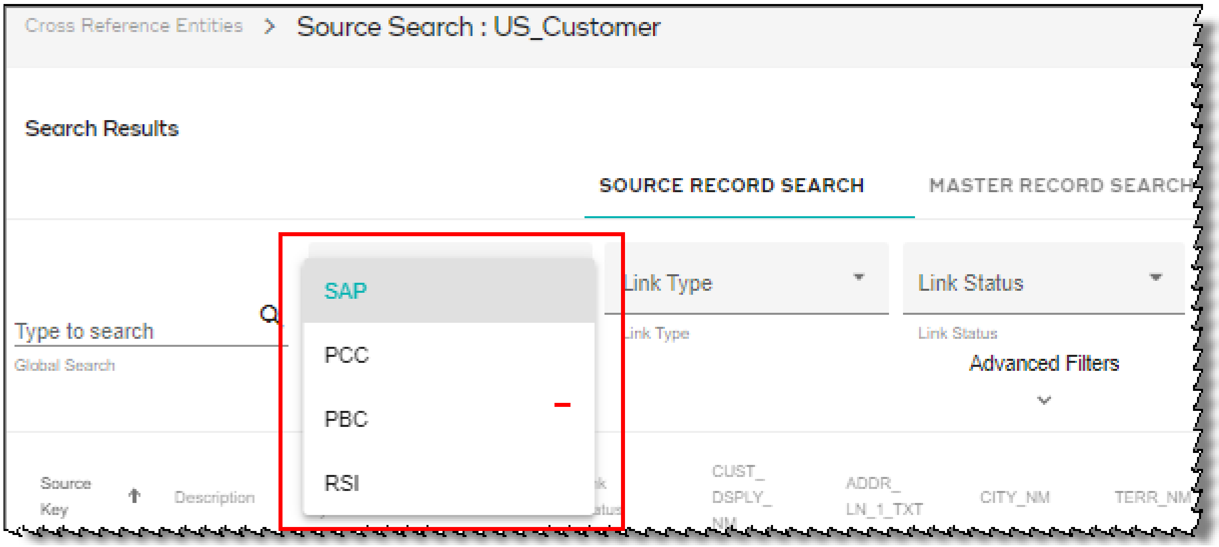
DB_NAME	Service Name	SYSTEM_NAME	SYSTEM_TYPE
SMKTST_SRC	nonMDM	SAP	SOURCE
SMKTST_SRC	nonMDM	CCENTER	SOURCE
SMKTST_SRC	nonMDM	LEGACY	SOURCE
SMKTST_SRC	nonMDM	WEB	SOURCE
MDMCBwinwl_MST	BCM_MASTER	RDM	MASTER

Figure 286: Backend_Entity Display


BE_Object
EntityDisplay
EntityAttribute
EntityRelation
EntityProfiles
Entity_Parameters

ENTITY_DISPLAY_ID	ENTITY_ID	SYSTEM_NAME	SYSTEM_TYPE	DB_NAME	TABLE_NAME	SERVICE_NAME	CROSS_REF_DISPLAY_SEQ
1	201	SAP	SOURCE	PEPSI1	PEP_SAPNA_NA_CUSTOMER	nonMDM	1
2	201	PCC	SOURCE	PEPSI1	PEP_PCC_US_CUSTOMER	nonMDM	2
3	201	PBC	SOURCE	PEPSI1	PEP_PBC_US_CUSTOMER	nonMDM	3
4	201	RSI	SOURCE	PEPSI1	RSI_US_CUSTOMER	nonMDM	4
5	201	RDM	MASTER	RDM430_POC	MST_CUSTOMERGROUP	BCM_MASTER	5

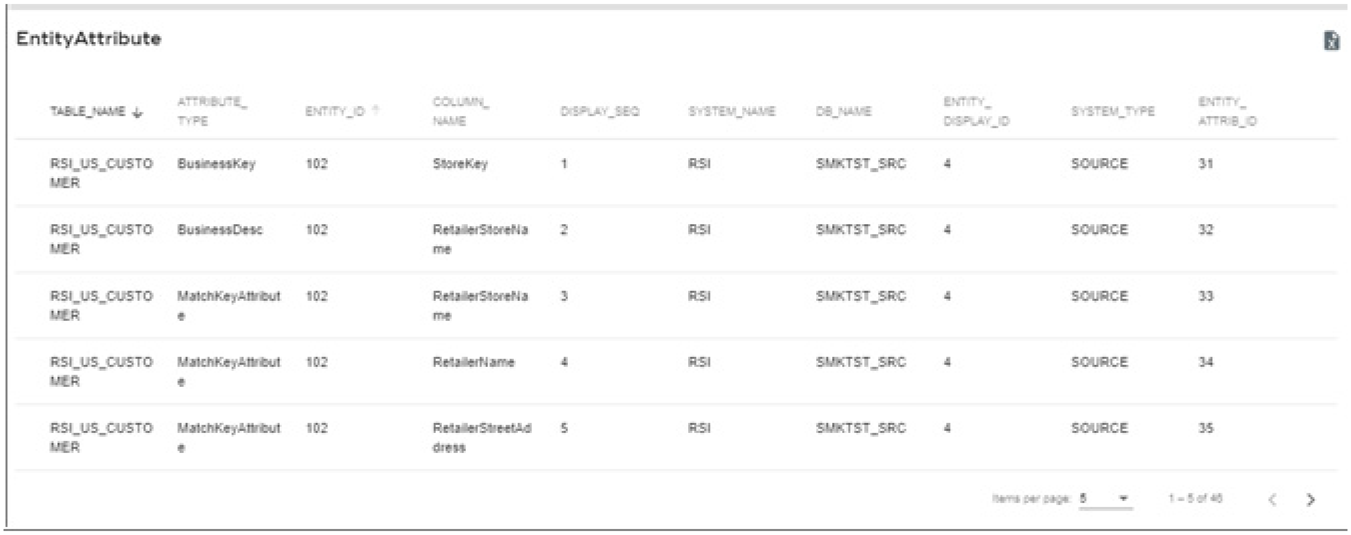
Figure 287: Display of Entity Display Definition Attributes



Entity Attribute

Figure 288 displays the **Entity Attribute** panel. It displays the list of all the attribute selected for each of the source system to be displayed as search parameters (key attributes and additional attributes) on the **Cross Reference Search** records UI.

Figure 288: Entity Definition—Entity Attributes



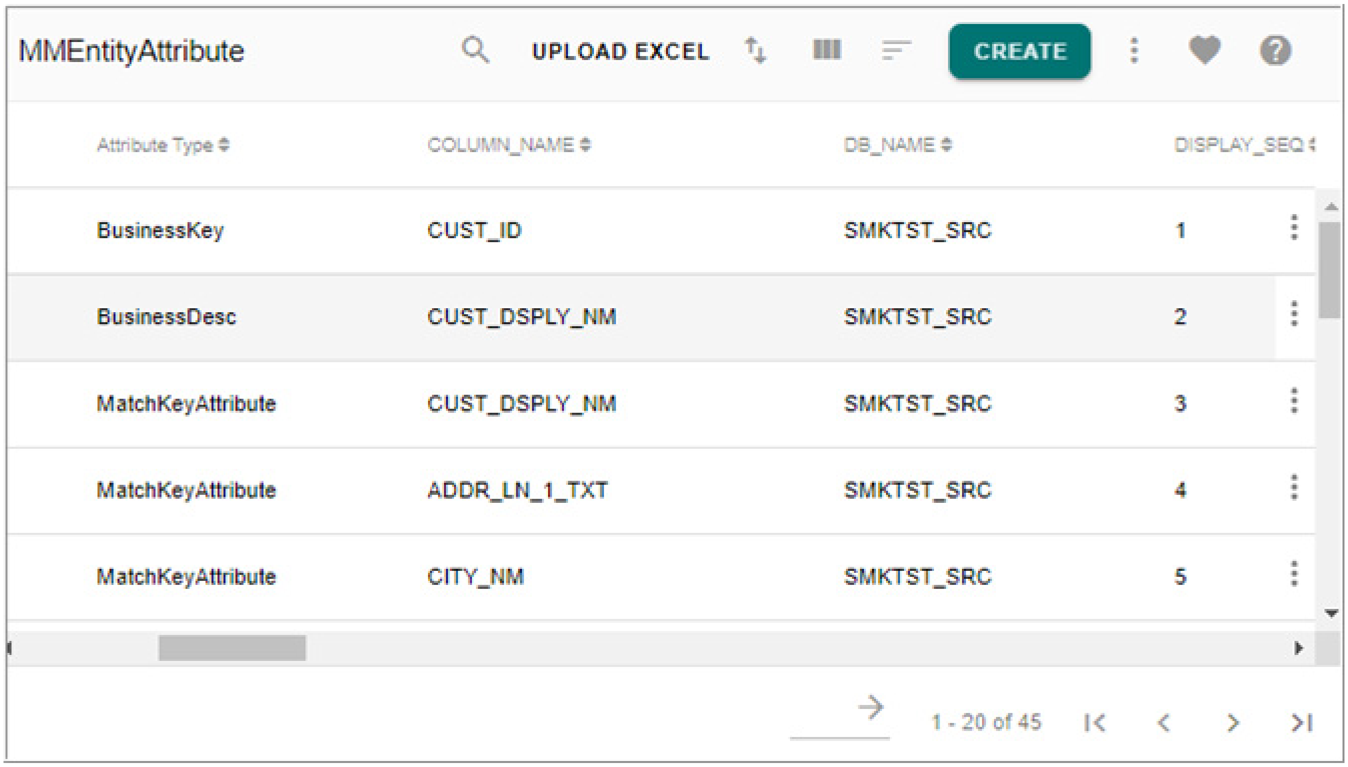
EntityAttribute

TABLE_NAME	ATTRIBUTE_TYPE	ENTITY_ID	COLUMN_NAME	DISPLAY_SEQ	SYSTEM_NAME	DB_NAME	ENTITY_DISPLAY_ID	SYSTEM_TYPE	ENTITY_ATTRIB_ID
RSI_US_CUSTOMER	BusinessKey	102	StoreKey	1	RSI	SMKTST_SRC	4	SOURCE	31
RSI_US_CUSTOMER	BusinessDesc	102	RetailerStoreName	2	RSI	SMKTST_SRC	4	SOURCE	32
RSI_US_CUSTOMER	MatchKeyAttribute	102	RetailerStoreName	3	RSI	SMKTST_SRC	4	SOURCE	33
RSI_US_CUSTOMER	MatchKeyAttribute	102	RetailerName	4	RSI	SMKTST_SRC	4	SOURCE	34
RSI_US_CUSTOMER	MatchKeyAttribute	102	RetailerStreetAddress	5	RSI	SMKTST_SRC	4	SOURCE	35

The entity attribute details are fetched or defined from configurable UI table called **MMEntityAttribute** as in Figure 289 or from backend table called **EntityAttribute** as shown in the excel file in Figure 290.

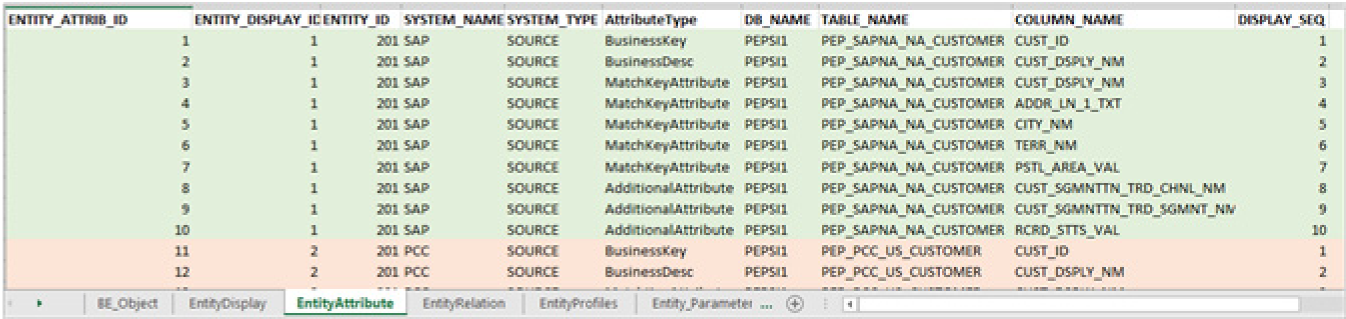
For example, for the selected US Customer entity, for each source system, the type of attribute is defined under the Attribute Type and list of attribute columns are defined under the Column Names. These attribute column names will be displayed as search parameters on the cross Reference Search UI. The Defined BusinessKey and BusinessDesc Attribute column names will be displayed as Source Key and Description search parameters. The MatchKeyAttributes will be displayed as Key Attributes and Additional Attributes will be displayed as Additional Attributes search parameters under Advanced Filter on the cross reference Search UI under Source Record Search tab as in Figure 291. Similarly for Master Source Type (the system name is RDM), the defined BusinessKey and BusinessDesc Attribute types will be displayed as Master Key and Description search parameters. The MatchKeyAttributes will be displayed as Key Attributes and Additional Attributes will be displayed as Additional Attributes search parameters under Advanced Filter on the cross reference Search UI under Master Record Search tab.

Figure 289: MMEntityAttribute



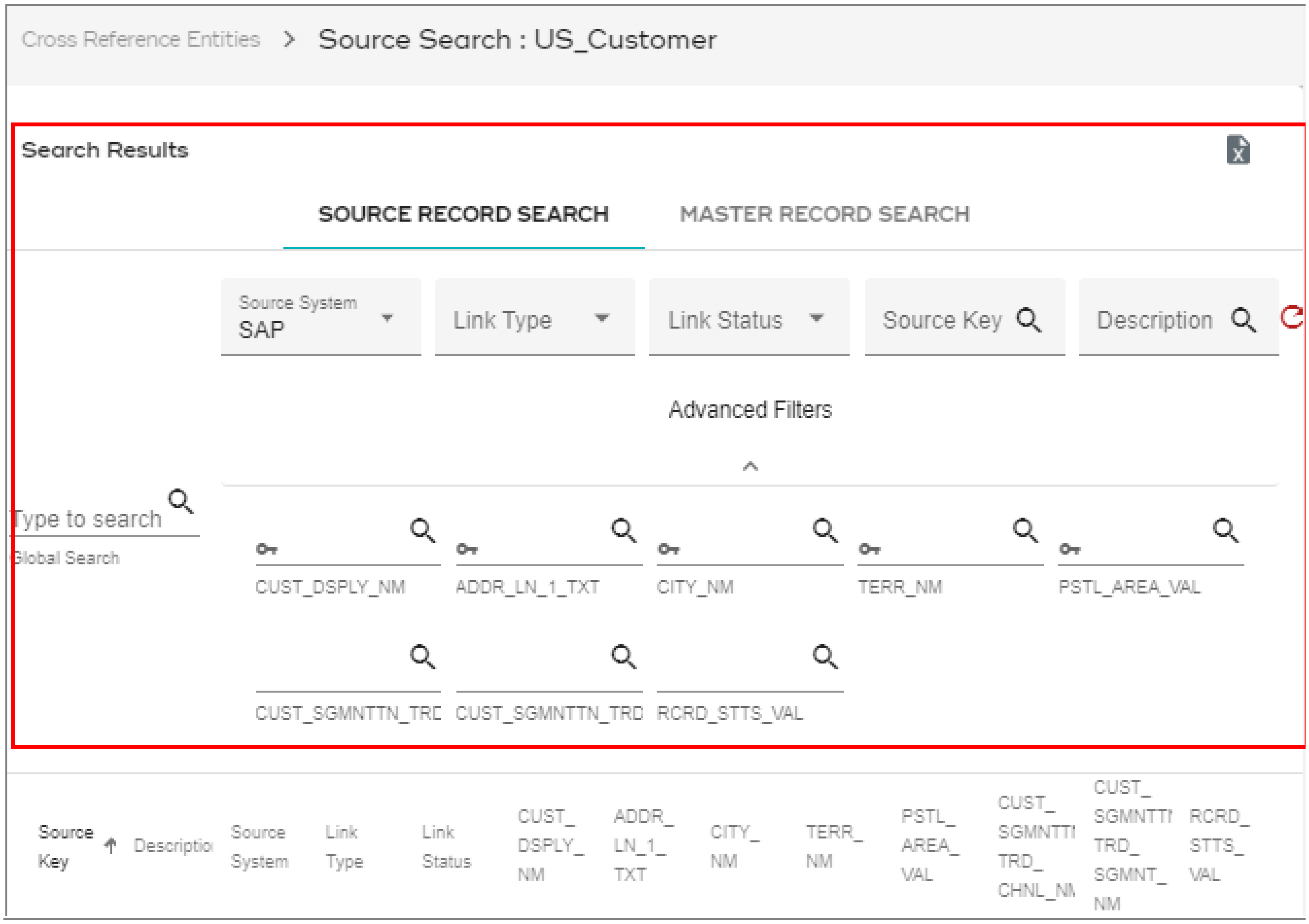
Attribute Type	COLUMN_NAME	DB_NAME	DISPLAY_SEQ
BusinessKey	CUST_ID	SMKTST_SRC	1
BusinessDesc	CUST_DSPLY_NM	SMKTST_SRC	2
MatchKeyAttribute	CUST_DSPLY_NM	SMKTST_SRC	3
MatchKeyAttribute	ADDR_LN_1_TXT	SMKTST_SRC	4
MatchKeyAttribute	CITY_NM	SMKTST_SRC	5

Figure 290: Backend—Entity Attribute



ENTITY_ATTRIB_ID	ENTITY_DISPLAY_ID	ENTITY_ID	SYSTEM_NAME	SYSTEM_TYPE	AttributeType	DB_NAME	TABLE_NAME	COLUMN_NAME	DISPLAY_SEQ
1	1	201	SAP	SOURCE	BusinessKey	PEPSI1	PEP_SAPNA_NA_CUSTOMER	CUST_ID	1
2	1	201	SAP	SOURCE	BusinessDesc	PEPSI1	PEP_SAPNA_NA_CUSTOMER	CUST_DSPLY_NM	2
3	1	201	SAP	SOURCE	MatchKeyAttribute	PEPSI1	PEP_SAPNA_NA_CUSTOMER	CUST_DSPLY_NM	3
4	1	201	SAP	SOURCE	MatchKeyAttribute	PEPSI1	PEP_SAPNA_NA_CUSTOMER	ADDR_LN_1_TXT	4
5	1	201	SAP	SOURCE	MatchKeyAttribute	PEPSI1	PEP_SAPNA_NA_CUSTOMER	CITY_NM	5
6	1	201	SAP	SOURCE	MatchKeyAttribute	PEPSI1	PEP_SAPNA_NA_CUSTOMER	TERR_NM	6
7	1	201	SAP	SOURCE	MatchKeyAttribute	PEPSI1	PEP_SAPNA_NA_CUSTOMER	PSTL_AREA_VAL	7
8	1	201	SAP	SOURCE	AdditionalAttribute	PEPSI1	PEP_SAPNA_NA_CUSTOMER	CUST_SGMNTTN_TRD_CHNL_NM	8
9	1	201	SAP	SOURCE	AdditionalAttribute	PEPSI1	PEP_SAPNA_NA_CUSTOMER	CUST_SGMNTTN_TRD_SGMNT_NM	9
10	1	201	SAP	SOURCE	AdditionalAttribute	PEPSI1	PEP_SAPNA_NA_CUSTOMER	RCRD_STTS_VAL	10
11	2	201	PCC	SOURCE	BusinessKey	PEPSI1	PEP_PCC_US_CUSTOMER	CUST_ID	1
12	2	201	PCC	SOURCE	BusinessDesc	PEPSI1	PEP_PCC_US_CUSTOMER	CUST_DSPLY_NM	2

Figure 291: Display of Entity Attributes Columns



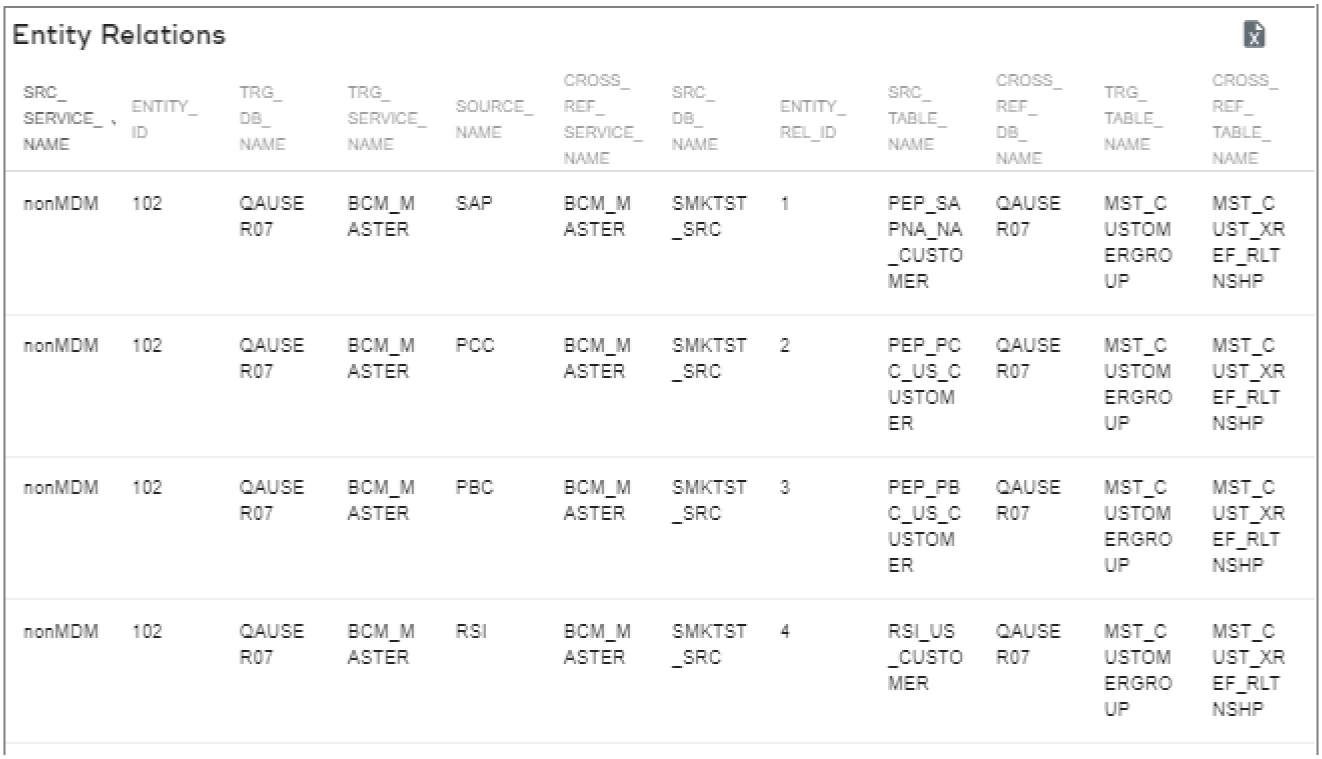
Source System: SAP

Entity Relations

Figure 292 displays the Entity Relation UI. It displays the list of existing cross reference relationship tables for each of the source system of the selected entity.

The Entity Attribute details are fetched or defined from configurable UI table called **MMEntityRelation** as in Figure 293 or from backend table called **EntityRelation** as shown in the excel file in Figure 294. The Entity Relation table provides the details of source table, target table and the cross reference table for each source system. The cross reference table provides the source and target record linkage details like linked master record, link type (Auto or Manual) and link status (linked, unlinked or New) that will be displayed on the Source Details UI under the Cross Reference tab and Cross Reference History tab as in Figure 295.

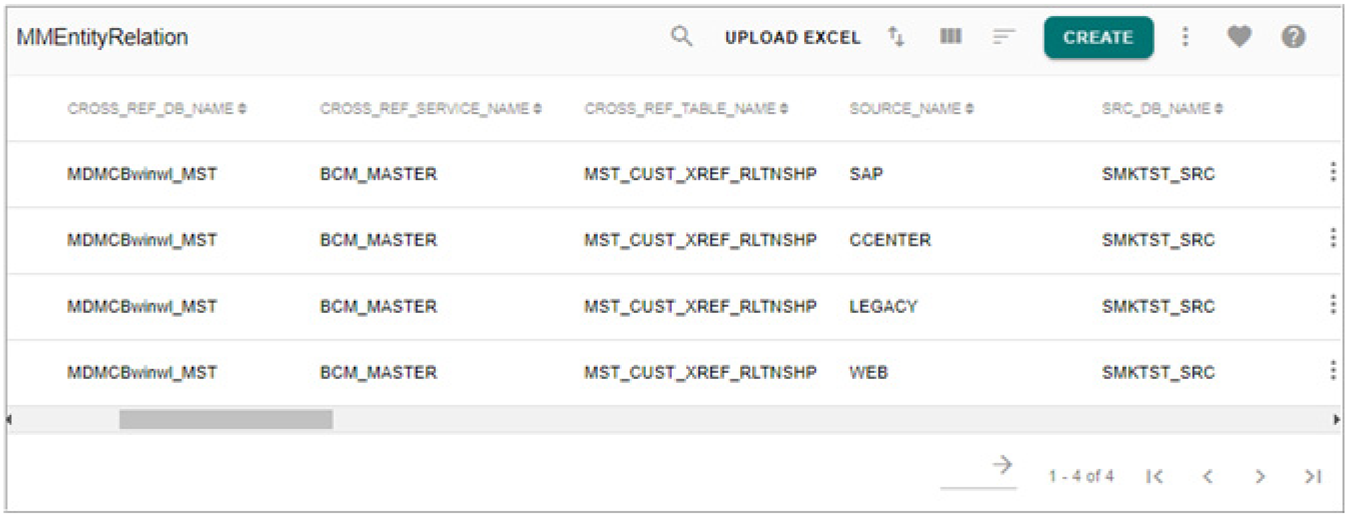
Figure 292: Entity Definition—Entity Relations



Entity Relations

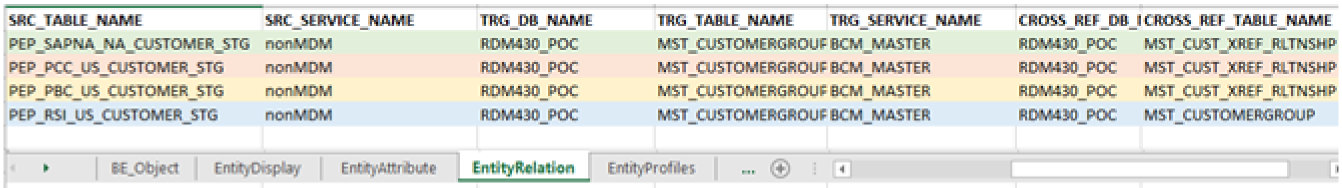
SRC_SERVICE_NAME	ENTITY_ID	TRG_DB_NAME	TRG_SERVICE_NAME	SOURCE_NAME	CROSS_REF_SERVICE_NAME	SRC_DB_NAME	ENTITY_REL_ID	SRC_TABLE_NAME	CROSS_REF_DB_NAME	TRG_TABLE_NAME	CROSS_REF_TABLE_NAME
nonMDM	102	QAUSER07	BCM_MASTER	SAP	BCM_MASTER	SMKTST_SRC	1	PEP_SAPNA_NA_CUSTOMER	QAUSER07	MST_CUSTOMERGROUP	MST_CUST_XREF_RLTNSHP
nonMDM	102	QAUSER07	BCM_MASTER	PCC	BCM_MASTER	SMKTST_SRC	2	PEP_PCC_US_CUSTOMER	QAUSER07	MST_CUSTOMERGROUP	MST_CUST_XREF_RLTNSHP
nonMDM	102	QAUSER07	BCM_MASTER	PBC	BCM_MASTER	SMKTST_SRC	3	PEP_PBC_US_CUSTOMER	QAUSER07	MST_CUSTOMERGROUP	MST_CUST_XREF_RLTNSHP
nonMDM	102	QAUSER07	BCM_MASTER	RSI	BCM_MASTER	SMKTST_SRC	4	RSI_US_CUSTOMER	QAUSER07	MST_CUSTOMERGROUP	MST_CUST_XREF_RLTNSHP

Figure 293: MMEntityRelation



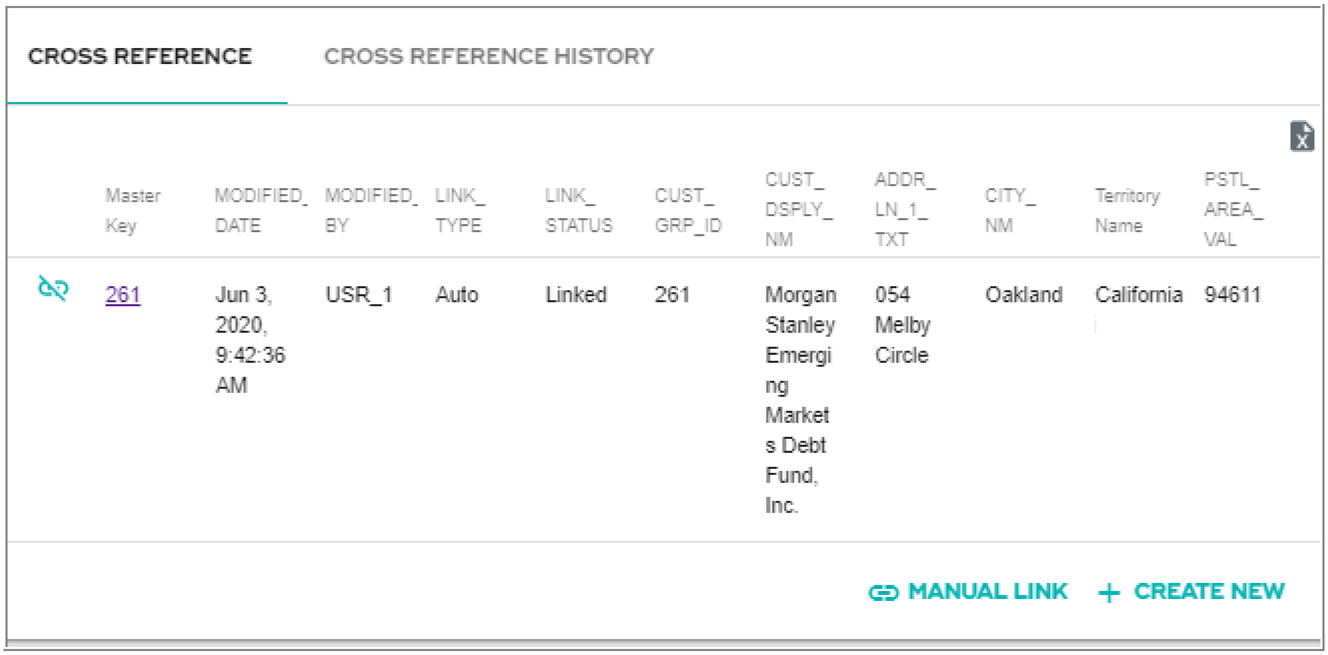
CROSS_REF_DB_NAME	CROSS_REF_SERVICE_NAME	CROSS_REF_TABLE_NAME	SOURCE_NAME	SRC_DB_NAME
MDMCBwinwl_MST	BCM_MASTER	MST_CUST_XREF_RLTNSHP	SAP	SMKTST_SRC
MDMCBwinwl_MST	BCM_MASTER	MST_CUST_XREF_RLTNSHP	CCENTER	SMKTST_SRC
MDMCBwinwl_MST	BCM_MASTER	MST_CUST_XREF_RLTNSHP	LEGACY	SMKTST_SRC
MDMCBwinwl_MST	BCM_MASTER	MST_CUST_XREF_RLTNSHP	WEB	SMKTST_SRC

Figure 294: Backend—Entity Relation



SRC_TABLE_NAME	SRC_SERVICE_NAME	TRG_DB_NAME	TRG_TABLE_NAME	TRG_SERVICE_NAME	CROSS_REF_DB_I	CROSS_REF_TABLE_NAME
PEP_SAPNA_NA_CUSTOMER_STG	nonMDM	RDM430_POC	MST_CUSTOMERGROUF	BCM_MASTER	RDM430_POC	MST_CUST_XREF_RLTNSHP
PEP_PCC_US_CUSTOMER_STG	nonMDM	RDM430_POC	MST_CUSTOMERGROUF	BCM_MASTER	RDM430_POC	MST_CUST_XREF_RLTNSHP
PEP_PBC_US_CUSTOMER_STG	nonMDM	RDM430_POC	MST_CUSTOMERGROUF	BCM_MASTER	RDM430_POC	MST_CUST_XREF_RLTNSHP
PEP_RSI_US_CUSTOMER_STG	nonMDM	RDM430_POC	MST_CUSTOMERGROUF	BCM_MASTER	RDM430_POC	MST_CUSTOMERGROUP

Figure 295: Entity Relation Data



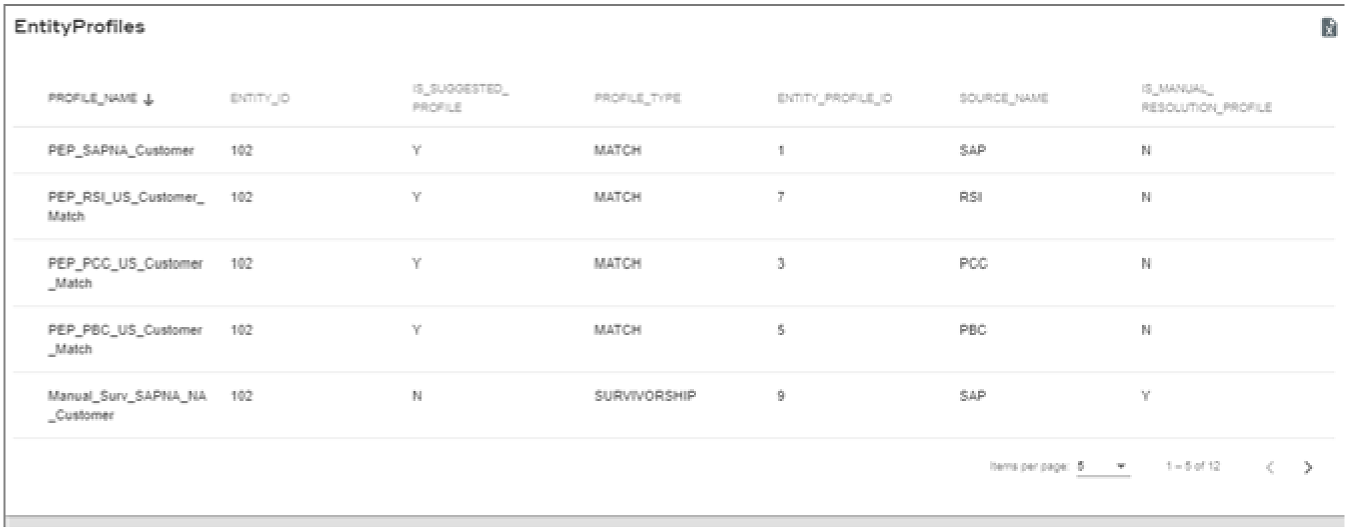
	Master Key	MODIFIED_DATE	MODIFIED_BY	LINK_TYPE	LINK_STATUS	CUST_GRP_ID	CUST_DSPLY_NM	ADDR_LN_1_TXT	CITY_NM	Territory Name	PSTL_AREA_VAL
	261	Jun 3, 2020, 9:42:36 AM	USR_1	Auto	Linked	261	Morgan Stanley Emerging Markets Debt Fund, Inc.	054 Melby Circle	Oakland	California	94611

Entity Profiles

Figure 296 displays the Entity Profiles UI. It displays the list of all the profiles (matching and survivorship profiles) contributing to the selected entity.

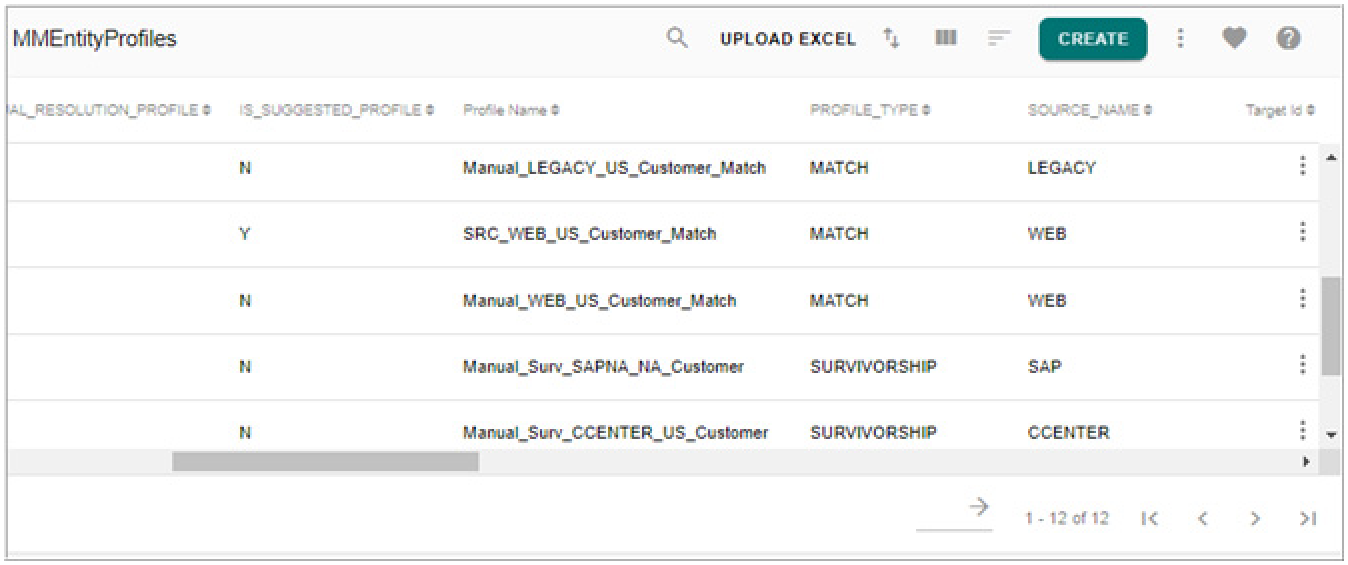
The entity profile details are fetched or defined from configurable UI table called **MMEntityProfiles** as in Figure 297 or from backend table called **EntityProfiles** as shown in the excel file in Figure 298. The execution of these profiles on the backend displays the data across the Cross Reference Entities Search Record UIs.

Figure 296: Entity Definition—Entity Profiles



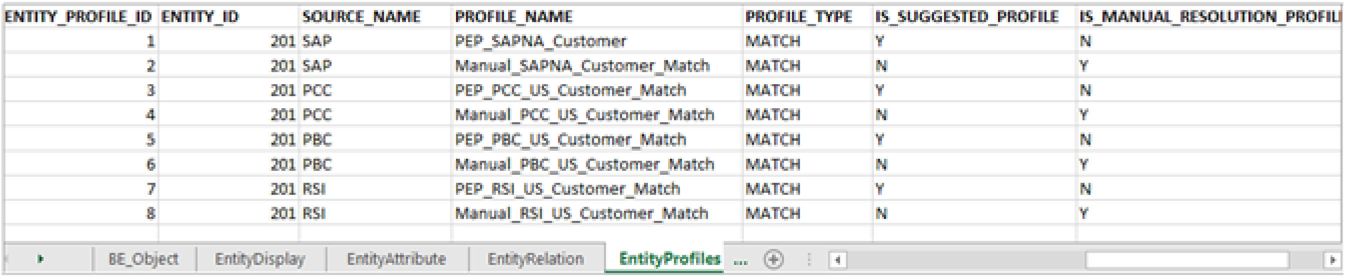
PROFILE_NAME	ENTITY_ID	IS_SUGGESTED_PROFILE	PROFILE_TYPE	ENTITY_PROFILE_ID	SOURCE_NAME	IS_MANUAL_RESOLUTION_PROFILE
PEP_SAPNA_Customer	102	Y	MATCH	1	SAP	N
PEP_RSI_US_Customer_Match	102	Y	MATCH	7	RSI	N
PEP_PCC_US_Customer_Match	102	Y	MATCH	3	PCC	N
PEP_PBC_US_Customer_Match	102	Y	MATCH	5	PBC	N
Manual_Surv_SAPNA_NA_Customer	102	N	SURVIVORSHIP	9	SAP	Y

Figure 297: MMEntityProfiles



IAL_RESOLUTION_PROFILE	IS_SUGGESTED_PROFILE	Profile Name	PROFILE_TYPE	SOURCE_NAME	Target Id
	N	Manual_LEGACY_US_Customer_Match	MATCH	LEGACY	
	Y	SRC_WEB_US_Customer_Match	MATCH	WEB	
	N	Manual_WEB_US_Customer_Match	MATCH	WEB	
	N	Manual_Surv_SAPNA_NA_Customer	SURVIVORSHIP	SAP	
	N	Manual_Surv_CCENTER_US_Customer	SURVIVORSHIP	CCENTER	

Figure 298: Backend—Entity Profiles



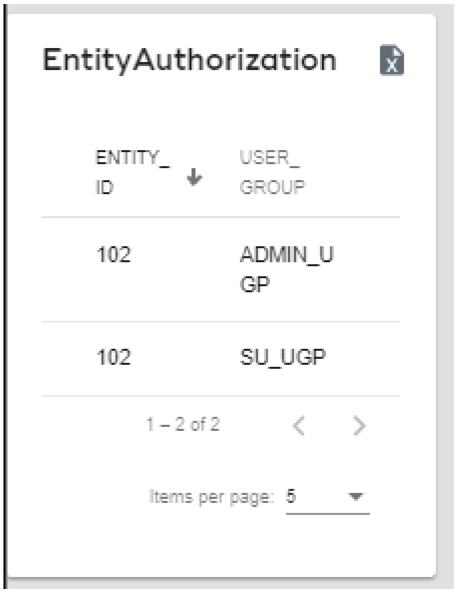
ENTITY_PROFILE_ID	ENTITY_ID	SOURCE_NAME	PROFILE_NAME	PROFILE_TYPE	IS_SUGGESTED_PROFILE	IS_MANUAL_RESOLUTION_PROFIL
1	201	SAP	PEP_SAPNA_Customer	MATCH	Y	N
2	201	SAP	Manual_SAPNA_Customer_Match	MATCH	N	Y
3	201	PCC	PEP_PCC_US_Customer_Match	MATCH	Y	N
4	201	PCC	Manual_PCC_US_Customer_Match	MATCH	N	Y
5	201	PBC	PEP_PBC_US_Customer_Match	MATCH	Y	N
6	201	PBC	Manual_PBC_US_Customer_Match	MATCH	N	Y
7	201	RSI	PEP_RSI_US_Customer_Match	MATCH	Y	N
8	201	RSI	Manual_RSI_US_Customer_Match	MATCH	N	Y

Entity Authorization

Figure 299 displays the Entity Authorization UI. It displays the list of user groups that have access to the selected entity.

The Entity Authorization details are fetched or defined from configurable UI table called **MMEntityAuthorization** as in Figure 300.

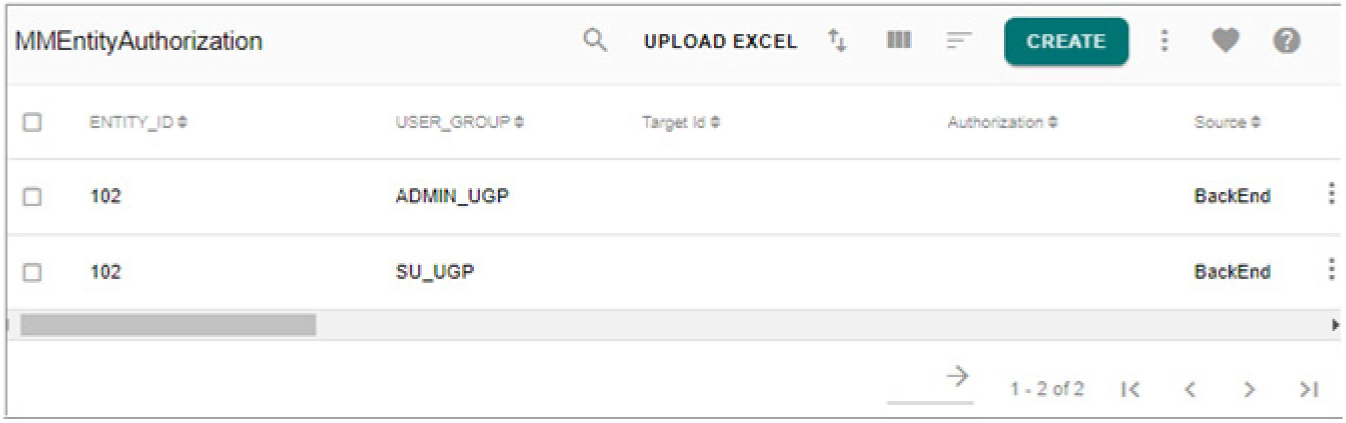
Figure 299: Entity Definition—Entity Authorization



EntityAuthorization

ENTITY_ID	USER_GROUP
102	ADMIN_UGP
102	SU_UGP

Figure 300: MMEntity Authorization



MMEntityAuthorization

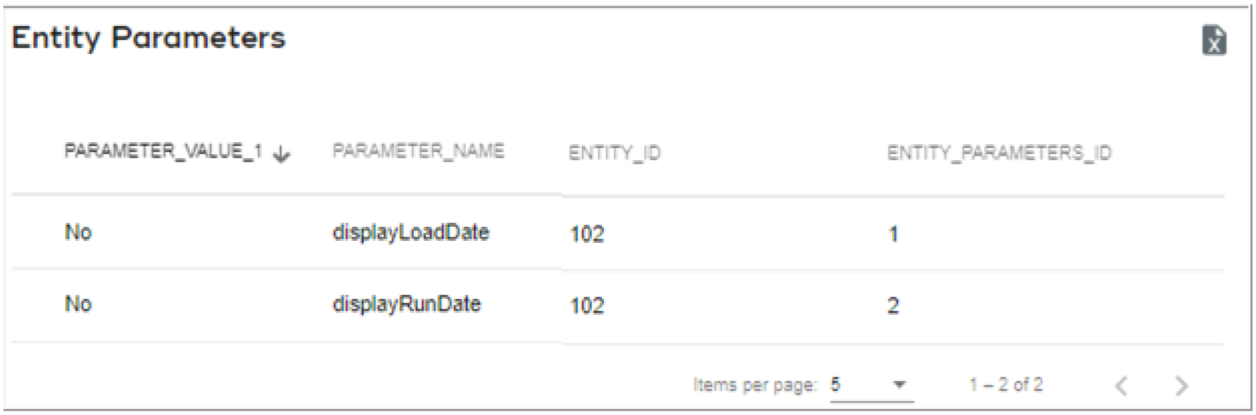
☐	ENTITY_ID	USER_GROUP	Target Id	Authorization	Source
☐	102	ADMIN_UGP			BackEnd
☐	102	SU_UGP			BackEnd

Entity Parameters

Figure 301 displays the Entity Parameters UI. It displays the list of additional parameters associated with the selected entity.

The Entity Parameters details are fetched or defined from configurable UI table called **MMEntityParameters** as in Figure 300.

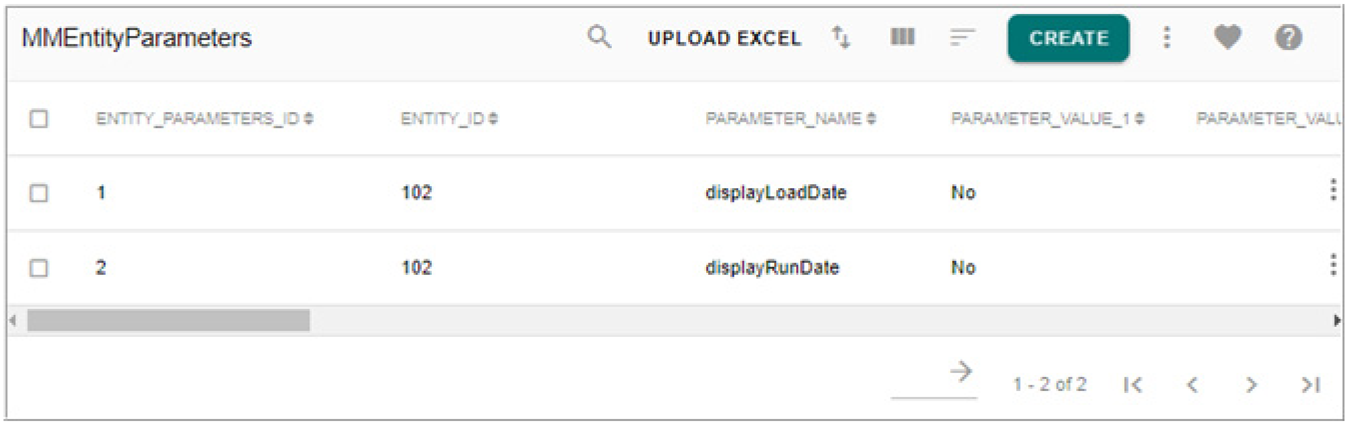
Figure 301: Entity Definition—Entity Parameters



Entity Parameters

PARAMETER_VALUE_1	PARAMETER_NAME	ENTITY_ID	ENTITY_PARAMETERS_ID
No	displayLoadDate	102	1
No	displayRunDate	102	2

Figure 302: MMEntityParameters



MMEntityParameters

☐	ENTITY_PARAMETERS_ID	ENTITY_ID	PARAMETER_NAME	PARAMETER_VALUE_1	PARAMETER_VALU
☐	1	102	displayLoadDate	No	
☐	2	102	displayRunDate	No	

Search Cross Reference Records

Navigate to Search Records UI by clicking the Search icon on Cross Reference Entities UI. On the Search Records UI, you can perform search operation on either source records or master records.

- Search Source Records
- Search Master Records

Search Source Records

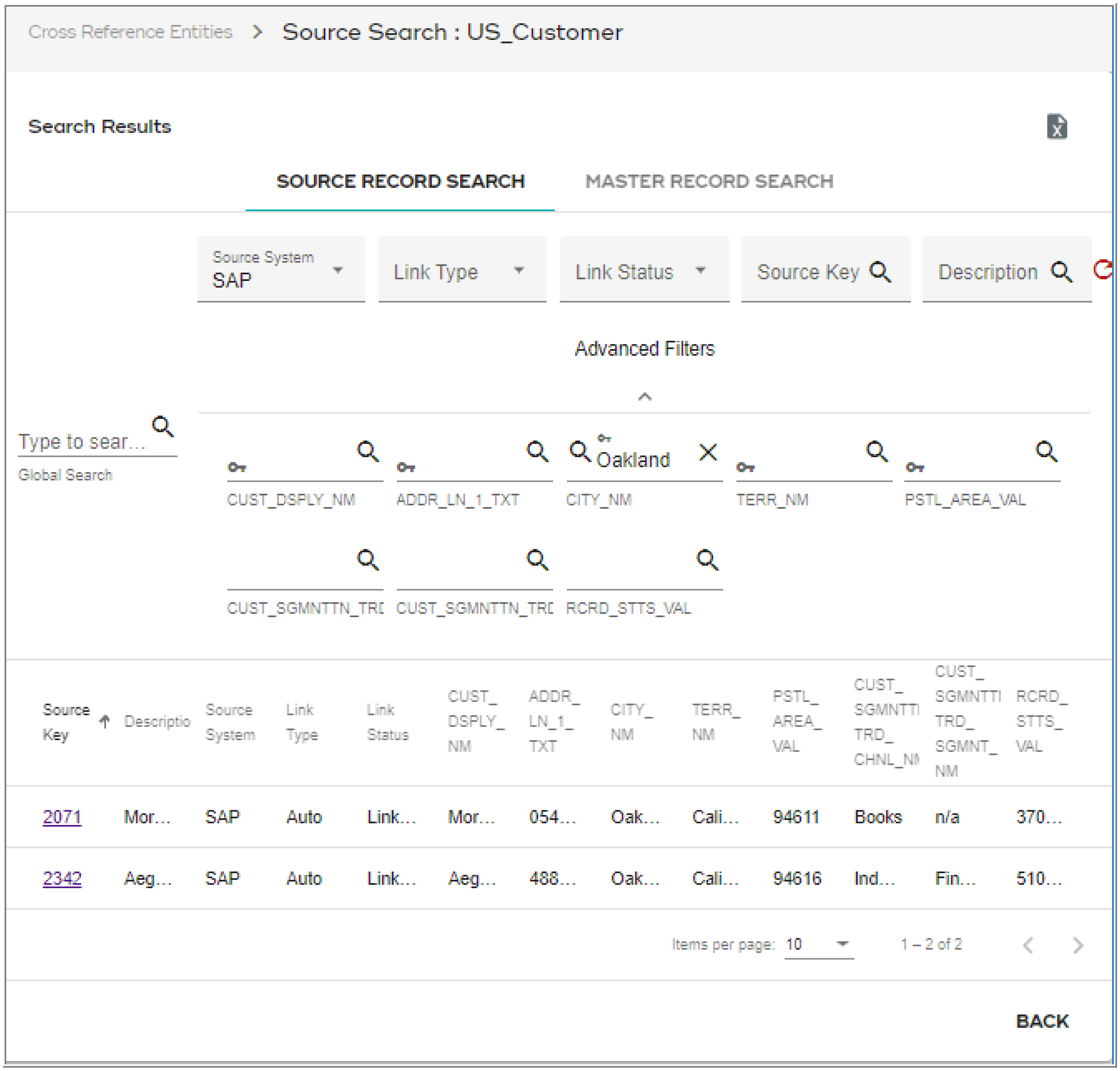
On the Search Records UI, by default, the **Source Search Records** tab is selected as in Figure 303. With the **Source Search Record** tab selected, you can search the source records by specifying any of the following parameters:

- **Source System**: displays the list of sources. Select the required source on which you want to perform search operation. This dropdown is populated from Entity Display panel.
- **Link Type**: displays the list of cross reference link types created between source and target record. It can either be Auto or Manual. Auto link are the links created automatically through survivorship and matching process. Manual links are user created links.

- **Link Status**: represents the status of link created. It can be either Linked, Unlinked or New. Linked status means the source record is linked with a particular master/target record. Unlinked status shows that the source record was linked to a master record and has been unlinked currently. New link represents the source records that are not linked to any master/target record.
- **Source Key**: primary key of the source.
- **Description**: description of the source record.
- **Advanced Filters**: on selecting the source system, the Key Attributes and Additional Attributes will be loaded as entry fields under Advanced Filters section. These search attributes are fetched from Entity Attributes definition on the Cross Reference Entities UI. You can specify any of the attribute value and click on search icon.
- **Refresh Filters**: click on the Refresh Filters icon ↻ to reset the filter attributes.
- **Global Search**: you can do a global search across all the columns either by specifying a word or a set of characters. For example, enter "ORE" as a search parameter in the **Search** field and click search icon.

  Once you click on the search icon after specifying the required search parameters, the UI refreshes to display the search results as in Figure 303.

Figure 303: Source Search Records



Source System: SAP

CITY_NM: Oakland

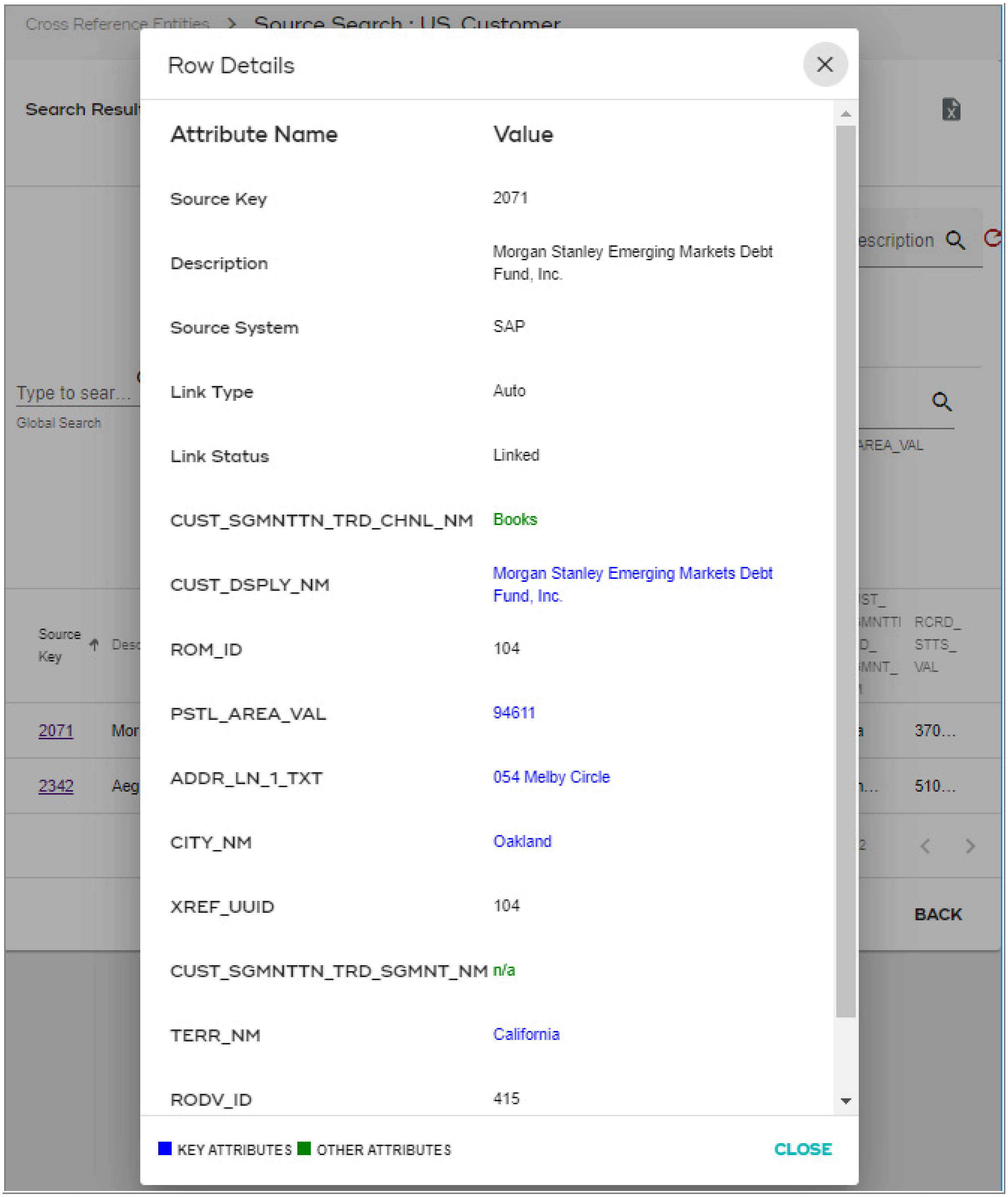
Source Key	Descriptio	Source System	Link Type	Link Status	CUST_DSPLY_NM	ADDR_LN_1_TXT	CITY_NM	TERR_NM	PSTL_AREA_VAL	CUST_SGMNTTI TRD_CHNL_NI	CUST_SGMNTTI TRD_SGMNT_NM	RCRD_STTS_VAL
2071	Mor...	SAP	Auto	Link...	Mor...	054...	Oak...	Cali...	94611	Books	n/a	370...
2342	Aeg...	SAP	Auto	Link...	Aeg...	488...	Oak...	Cali...	94616	Ind...	Fin...	510...

Items per page: 10 1 – 2 of 2

On the Search Results UI (Figure 303), you can perform the following:

- Click on Export to Excel icon to export the search result to a Excel file.
- Click on the Source Key column of any record to view the source record details such as attribute name and its value as in Figure 304.

Figure 304: Source Record—Row Details



Cross Reference Entities > Source Search : US Customer

Row Details

Attribute Name	Value
Source Key	2071
Description	Morgan Stanley Emerging Markets Debt Fund, Inc.
Source System	SAP
Link Type	Auto
Link Status	Linked
CUST_SGMNTTN_TRD_CHNL_NM	Books
CUST_DSPLY_NM	Morgan Stanley Emerging Markets Debt Fund, Inc.
ROM_ID	104
PSTL_AREA_VAL	94611
ADDR_LN_1_TXT	054 Melby Circle
CITY_NM	Oakland
XREF_UUID	104
CUST_SGMNTTN_TRD_SGMNT_NM	n/a
TERR_NM	California
RODV_ID	415

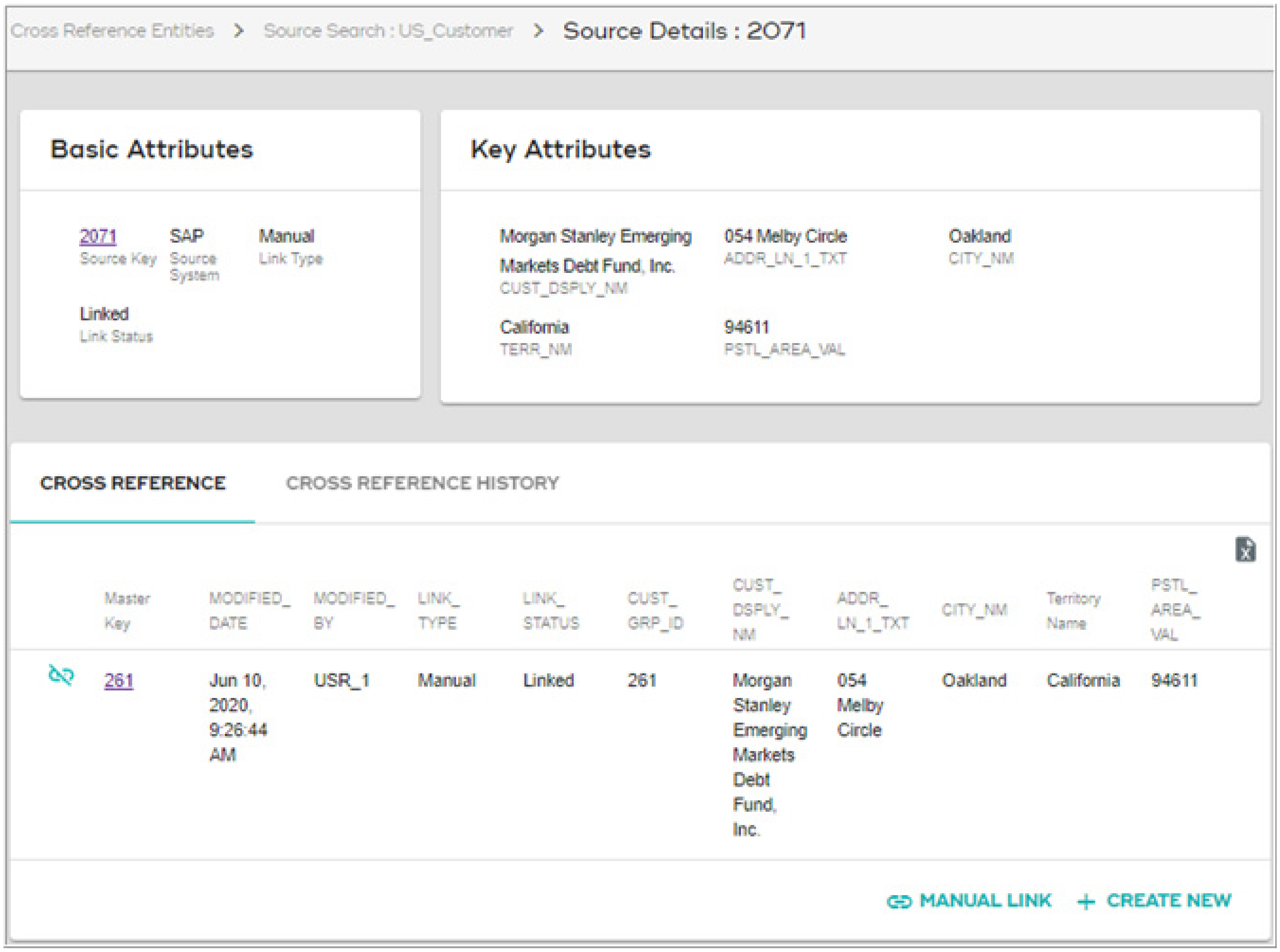
🟦 KEY ATTRIBUTES 🟩 OTHER ATTRIBUTES

- Click on the Description or any other column except the source key column of any record to view the Source details as in Figure 305.

Source Details UI

You can navigate to Source Details UI (Figure 305) from Search Results page by clicking on any of the columns of the corresponding source.

Figure 305: Source Details



2071
Source Key

SAP
Source System

Manual
Link Type

Linked
Link Status

Morgan Stanley Emerging Markets Debt Fund, Inc.
CUST_DSPLY_NM

054 Melby Circle
ADDR_LN_1_TXT

Oakland
CITY_NM

California
TERR_NM

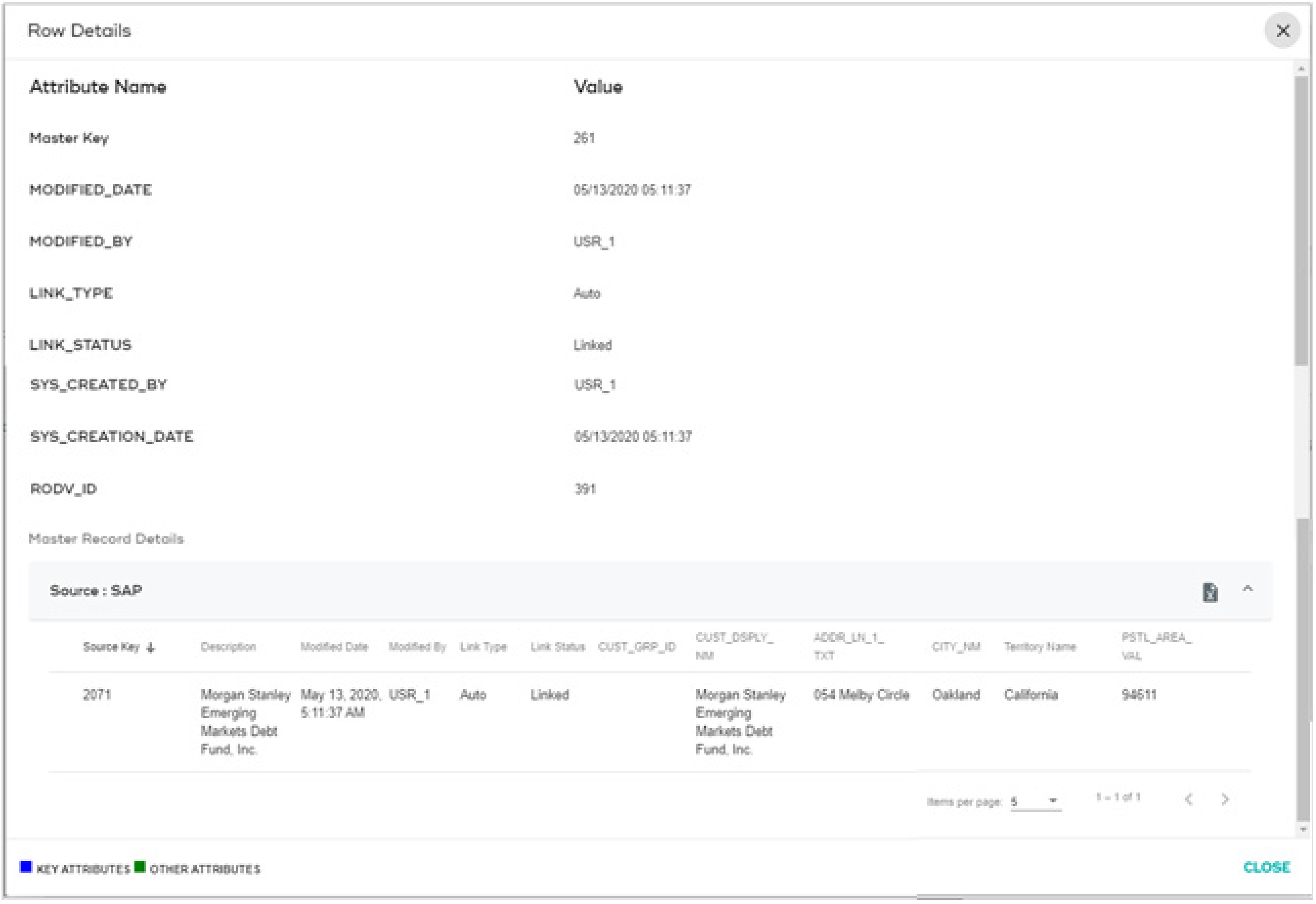
94611
PSTL_AREA_VAL

Master Key	MODIFIED_DATE	MODIFIED_BY	LINK_TYPE	LINK_STATUS	CUST_GRP_ID	CUST_DSPLY_NM	ADDR_LN_1_TXT	CITY_NM	Territory Name	PSTL_AREA_VAL
261	Jun 10, 2020, 9:26:44 AM	USR_1	Manual	Linked	261	Morgan Stanley Emerging Markets Debt Fund, Inc.	054 Melby Circle	Oakland	California	94611

On the **Source Details** UI (Figure 305), you can view the following details:

- **Basic Attributes**: displays the basic details of the selected source record like source key, source system name, type of link and link status.
- **Key Attributes**: displays all the key attributes of the selected source record.
- **Cross Reference** Tab: under the Cross Reference tab, you can view the Master record to which the source record is cross referenced. You can click on the Master Key to view the master record details and the source record details to which it is cross referenced as in Figure 306.

Figure 306: Master Record—Row Details



Attribute Name	Value
Master Key	261
MODIFIED_DATE	05/13/2020 05:11:37
MODIFIED_BY	USR_1
LINK_TYPE	Auto
LINK_STATUS	Linked
SYS_CREATED_BY	USR_1
SYS_CREATION_DATE	05/13/2020 05:11:37
RODV_ID	391

Master Record Details

Source : SAP

Source Key ↓	Description	Modified Date	Modified By	Link Type	Link Status	CUST_GRP_ID	CUST_DSPLY_NM	ADDR_LN_1_TXT	CITY_NM	Territory Name	PSTL_AREA_VAL
2071	Morgan Stanley Emerging Markets Debt Fund, Inc.	May 13, 2020, 5:11:37 AM	USR_1	Auto	Linked		Morgan Stanley Emerging Markets Debt Fund, Inc.	054 Melby Circle	Oakland	California	94611

On the **Source Details** UI (Figure 305), the Data Steward can examine the linkage of records and perform the following tasks:

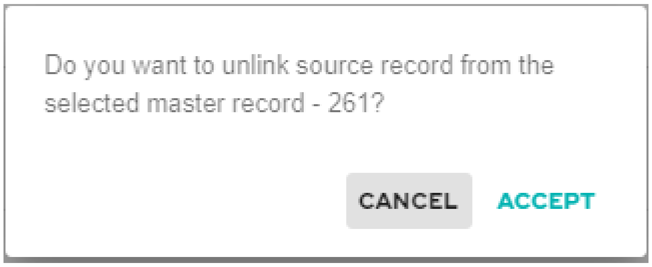
- Unlink Record
- Create New Record
- Manual Link

Unlink Record

To unlink the source record from the linked master record, perform the following steps:

1. On the **Source Details** UI, with the **Cross Reference** tab selected, click on the **Unlink** icon corresponding to the master record.

Figure 307: Confirmation Webpage Dialog



Do you want to unlink source record from the selected master record - 261?

2. On the Webpage Dialog, click **Accept** to unlink the record.

   Message: “Source record has been successfully unlinked from master” is displayed.

   On the Search Record UI, the Link Status of the source record will be updated as Unlinked and the record will not be displayed under the Cross Reference tab.

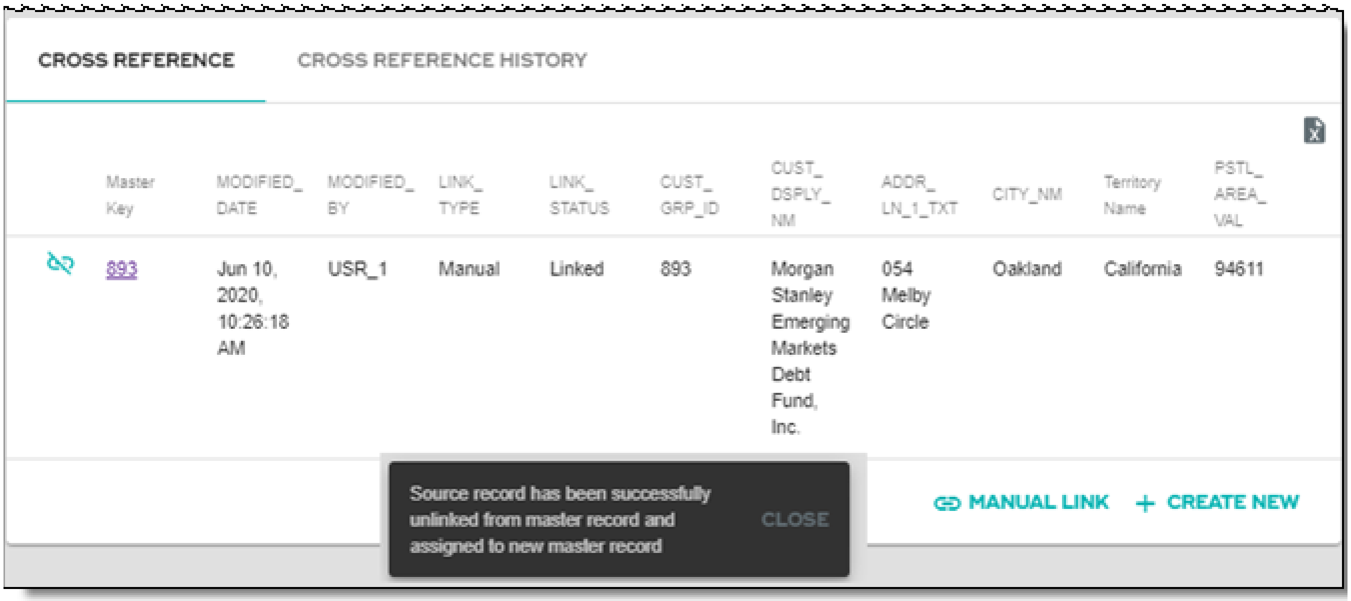
Unlink and Create New Master Link

If you want to automatically create a new master link for the source record after unlinking the existing master record, you need to enable CrossRefUnlinkAndCreate parameter. To enable CrossRefUnlinkAndCreate parameter, perform the following steps:

- On the MDM left navigation pane, navigate to **Administration** -> **System Properties** and select the **CrossRefUnlinkAndCreate** parameter and click **Edit**.
- On the **System Properties** UI, select the Property value to “True”.

Once this parameter is enabled and unlink operation is performed as in above steps (1 and 2), the existing linked master record will be unlinked and new master record will be linked to the source record. The new master record details will be displayed under the cross reference tab as in Figure 308 and the message: “Source record has been successfully unlinked from master record and assigned to new master record” is displayed as in Figure 308.

Figure 308: Source Details—Cross Reference



	Master Key	MODIFIED_ DATE	MODIFIED_ BY	LINK_ TYPE	LINK_ STATUS	CUST_ GRP_ID	CUST_ DSPLY_ NM	ADDR_ LN_1_TXT	CITY_NM	Territory Name	PSTL_ AREA_ VAL
	893	Jun 10, 2020, 10:26:18 AM	USR_1	Manual	Linked	893	Morgan Stanley Emerging Markets Debt Fund, Inc.	054 Melby Circle	Oakland	California	94611

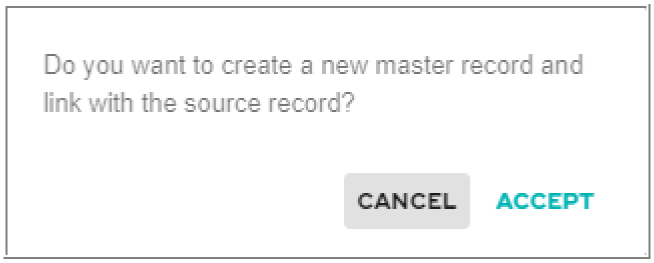
Source record has been successfully unlinked from master record and assigned to new master record

Create New Record

To create new master record for the selected source record, perform the following steps:

1 On the **Source Details** UI, with the Cross Reference tab / Cross Reference History tab selected, click on **Create New**.

Figure 309: Confirmation Webpage Dialog



Do you want to create a new master record and link with the source record?

2 On the Webpage Dialog, click **Accept** to unlink the existing master record and create link with new master record if already an master record is linked else it will create a new master link.

Message: "Source record has been linked successfully with new master record" is displayed.

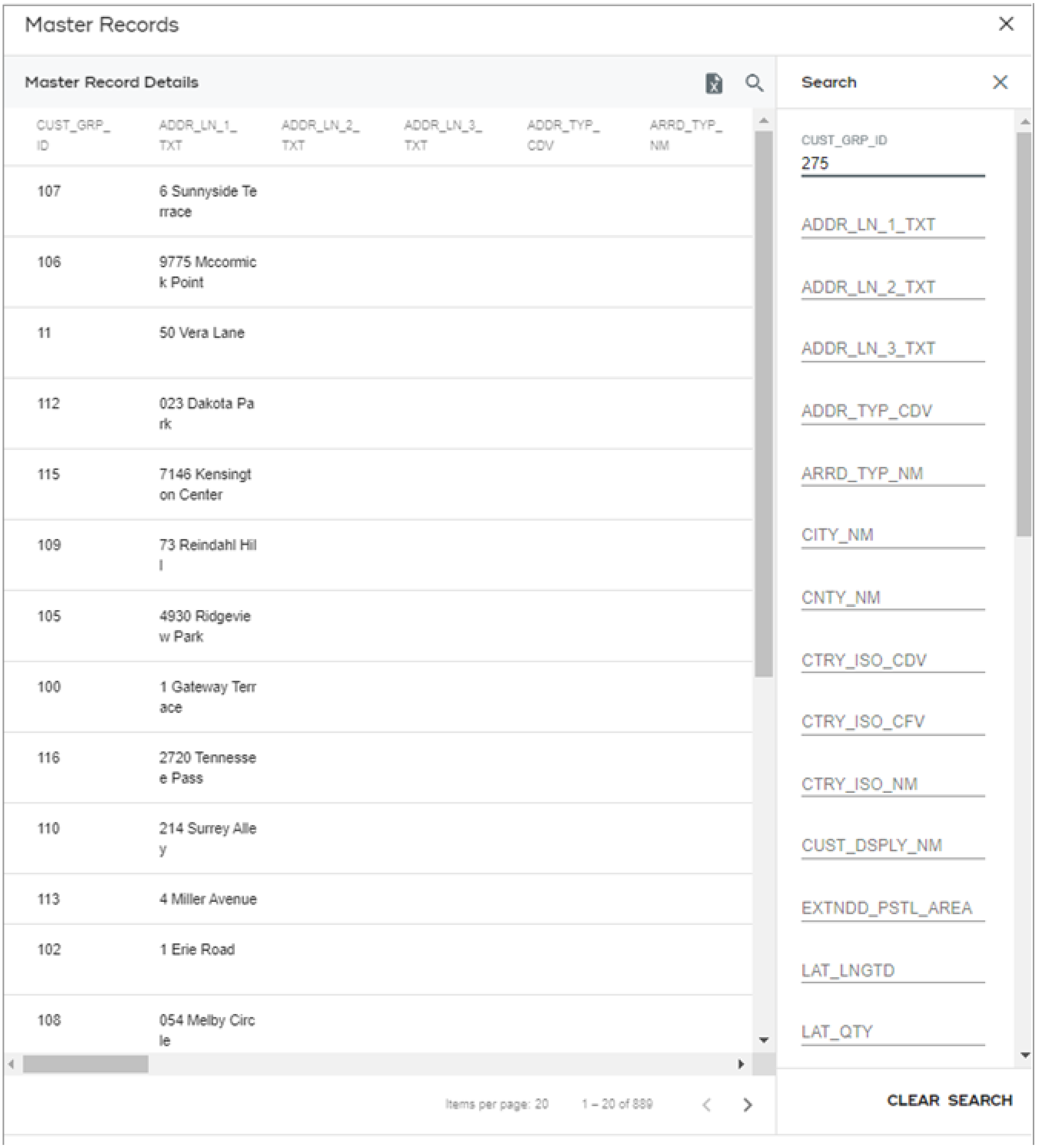
Manual Link

To create link manually, perform the following steps:

1 On the **Source Details** UI, with the Cross Reference tab / Cross Reference History tab selected, click **Manual Link**.

The Master Records UI displays all the existing master record details as in Figure 310.

Figure 310: Master Record Details



CUST_GRP_ID	ADDR_LN_1_TXT	ADDR_LN_2_TXT	ADDR_LN_3_TXT	ADDR_TYP_CDV	ARRD_TYP_NM
107	6 Sunnyside Terrace				
106	9775 Mccormick Point				
11	50 Vera Lane				
112	023 Dakota Park				
115	7146 Kensington Center				
109	73 Reindahl Hill				
105	4930 Ridgeview Park				
100	1 Gateway Terrace				
116	2720 Tennessee Pass				
110	214 Surrey Alley				
113	4 Miller Avenue				
102	1 Erie Road				
108	054 Melby Circle				

Items per page: 20 1 – 20 of 889

CUST_GRP_ID
275

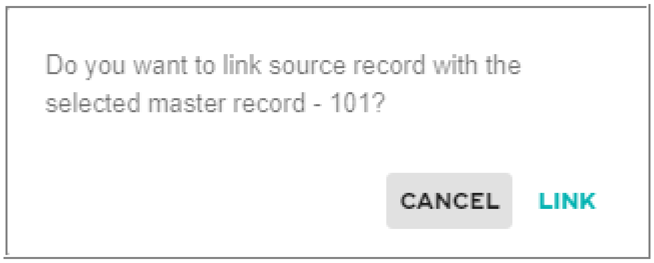
ADDR_LN_1_TXT
ADDR_LN_2_TXT
ADDR_LN_3_TXT
ADDR_TYP_CDV
ARRD_TYP_NM
CITY_NM
CNTY_NM
CTRY_ISO_CDV
CTRY_ISO_CFV
CTRY_ISO_NM
CUST_DSPLY_NM
EXTNDD_PSTL_AREA
LAT_LNGTD
LAT_QTY

2 On the **Master Record Details** UI (Figure 310), you can search for the required record. Click on the search icon and enter any parameter value and click **Search**.

You can use the Clear button to clear the search values.

3 On the **Master Record Details** pane, click on the searched record to link with the source record.

Figure 311: Confirmation Webpage Dialog

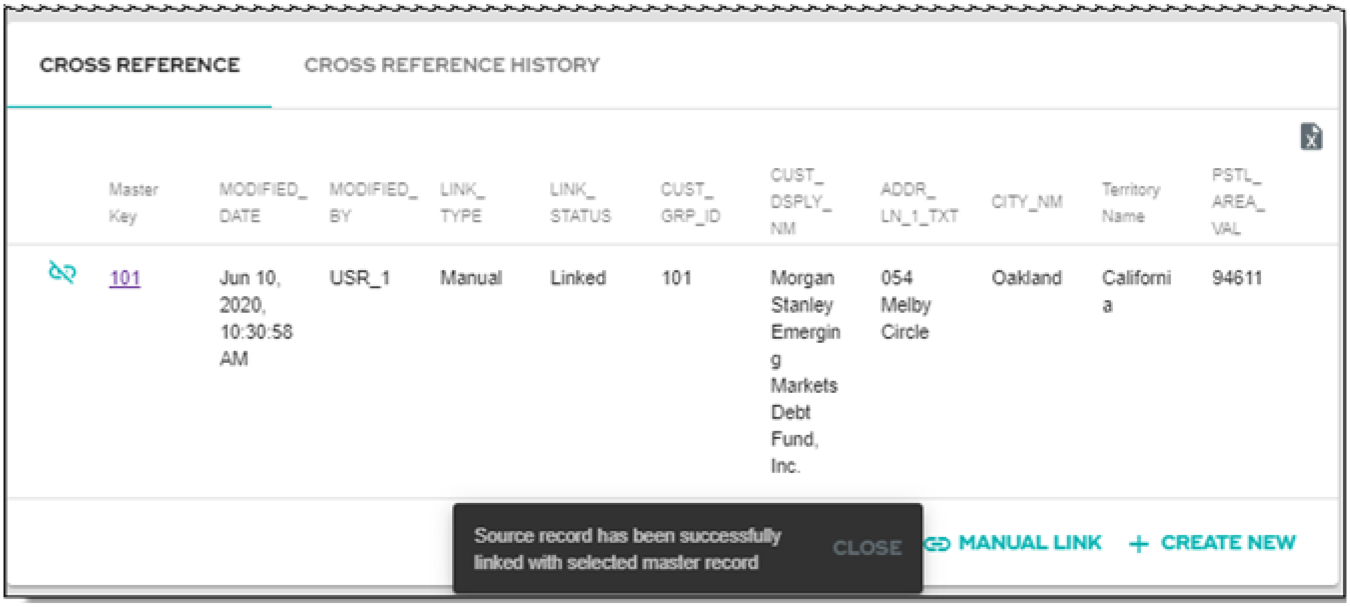


Do you want to link source record with the selected master record - 101?

4 On the Webpage Dialog, click **Link** to unlink the existing master record and create link with the selected new master record.

Message: “Source record has been linked successfully with new master record” is displayed and the new master record details will be displayed under the Cross Reference tab as in Figure 312.

Figure 312: Source Details—Cross Reference



	Master Key	MODIFIED_DATE	MODIFIED_BY	LINK_TYPE	LINK_STATUS	CUST_GRP_ID	CUST_DSPLY_NM	ADDR_LN_1_TXT	CITY_NM	Territory Name	PSTL_AREA_VAL
	101	Jun 10, 2020, 10:30:58 AM	USR_1	Manual	Linked	101	Morgan Stanley Emerging Markets Debt Fund, Inc.	054 Melby Circle	Oakland	California	94611

Source record has been successfully linked with selected master record

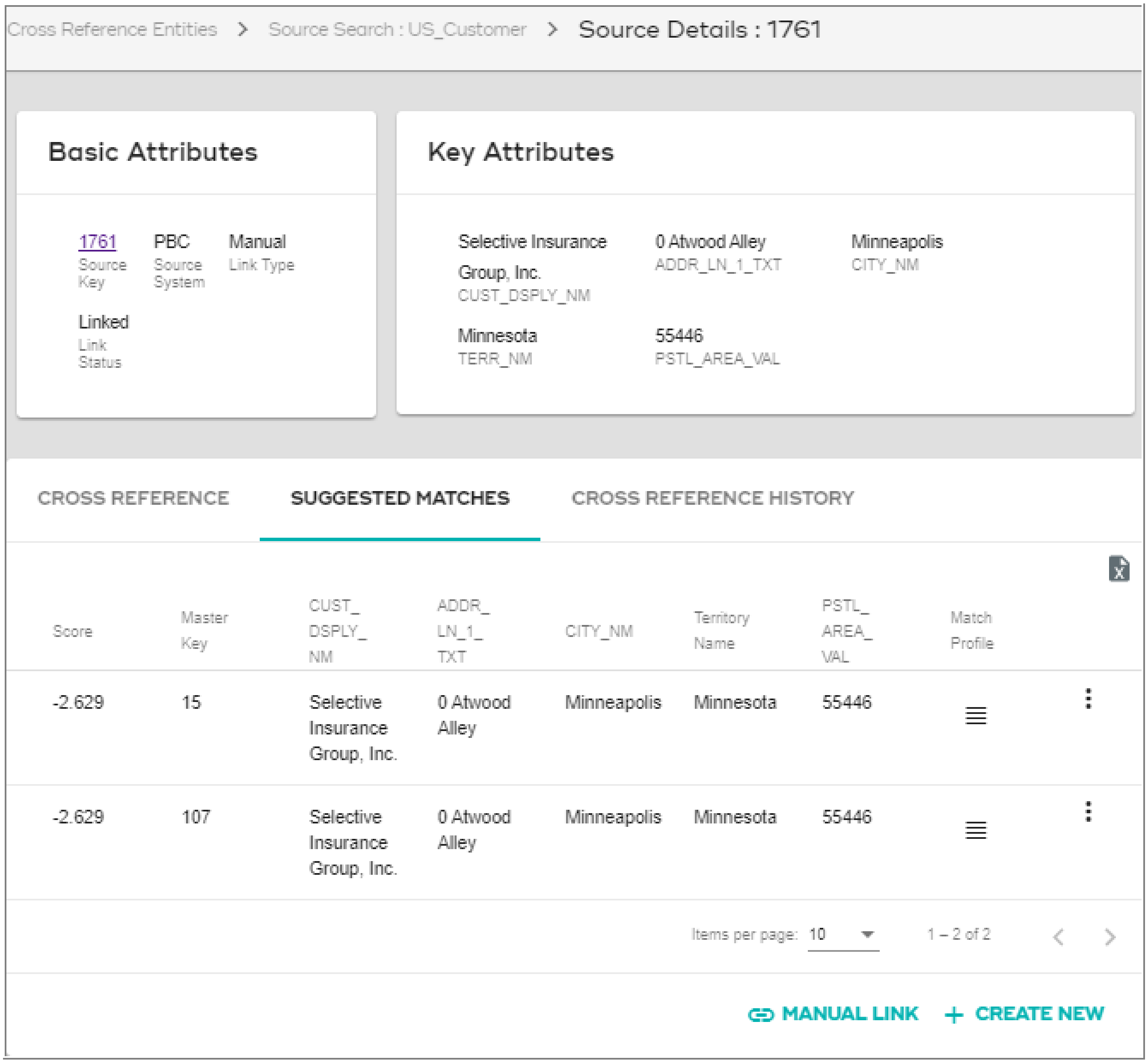
Source Details—Suggested Matches

The Suggested Match tab will be displayed only if any potential matches exists for the record. It displays the list of potential match records as in Figure 313.

To link the suggested match records, perform the following steps:

1 On the **Source Details** page, under the **Suggested Matches** tab, you can view the match profile details of any of the potential / suggested match by clicking on the Match Profile icon of the corresponding match record as in Figure 313.

Figure 313: Source Details



Cross Reference Entities > Source Search : US_Customer > Source Details : 1761

Basic Attributes

1761 Source Key
PBC Source System
Manual Link Type
Linked Link Status

Key Attributes

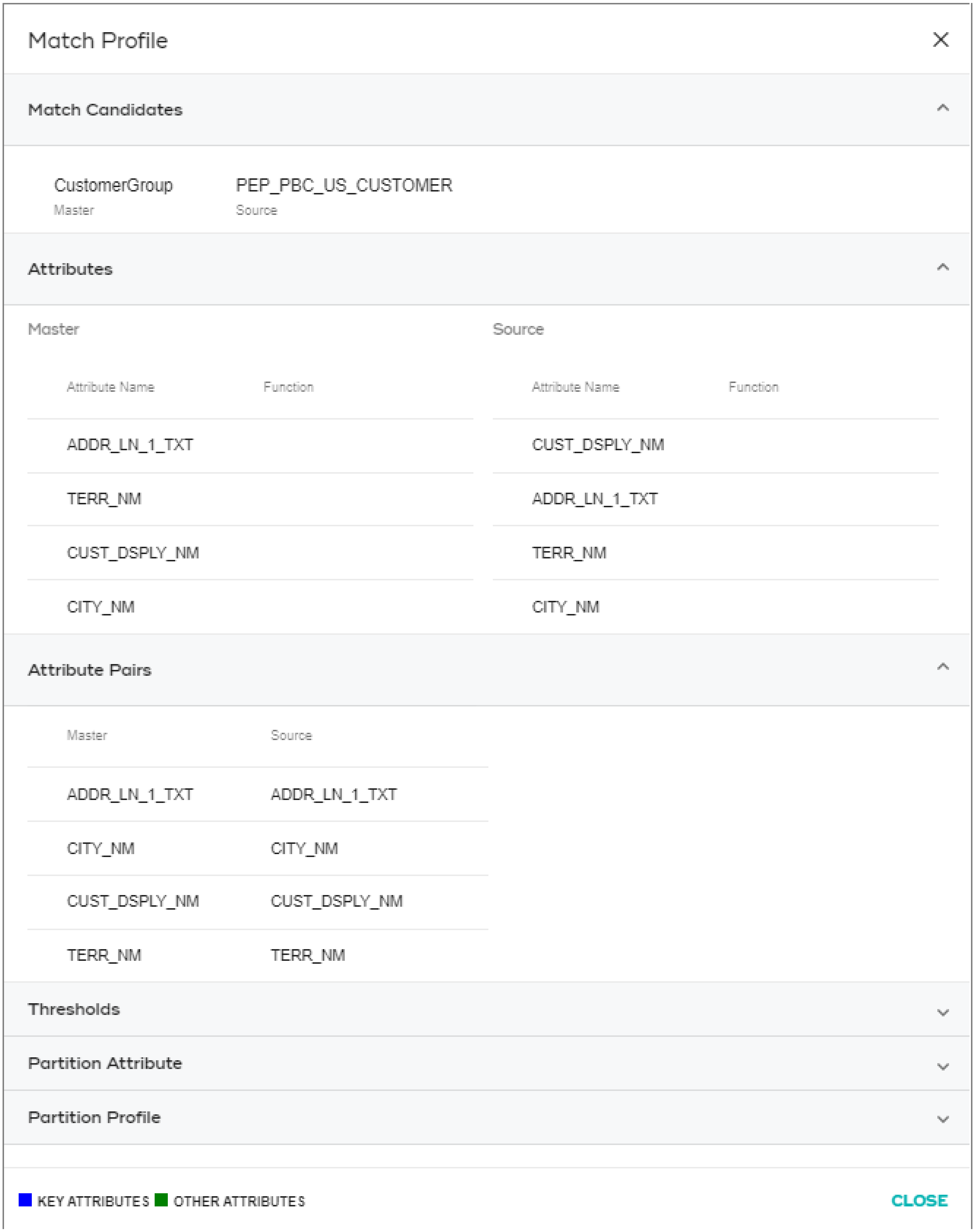
Selective Insurance Group, Inc. CUST_DSPLY_NM
0 Atwood Alley ADDR_LN_1_TXT
Minneapolis CITY_NM
Minnesota TERR_NM
55446 PSTL_AREA_VAL

Score	Master Key	CUST_ DSPLY_ NM	ADDR_ LN_1_ TXT	CITY_NM	Territory Name	PSTL_ AREA_ VAL	Match Profile
-2.629	15	Selective Insurance Group, Inc.	0 Atwood Alley	Minneapolis	Minnesota	55446	≣
-2.629	107	Selective Insurance Group, Inc.	0 Atwood Alley	Minneapolis	Minnesota	55446	≣

Items per page: 10 1 – 2 of 2

The Match Profile details is displayed as in Figure 314.

Figure 314: Match Profile



Match Profile

Match Candidates

CustomerGroup
Master

PEP_PBC_US_CUSTOMER
Source

Attributes

Master

Attribute Name	Function
ADDR_LN_1_TXT	
TERR_NM	
CUST_DSPLY_NM	
CITY_NM	

Source

Attribute Name	Function
CUST_DSPLY_NM	
ADDR_LN_1_TXT	
TERR_NM	
CITY_NM	

Attribute Pairs

Master	Source
ADDR_LN_1_TXT	ADDR_LN_1_TXT
CITY_NM	CITY_NM
CUST_DSPLY_NM	CUST_DSPLY_NM
TERR_NM	TERR_NM

Thresholds

Partition Attribute

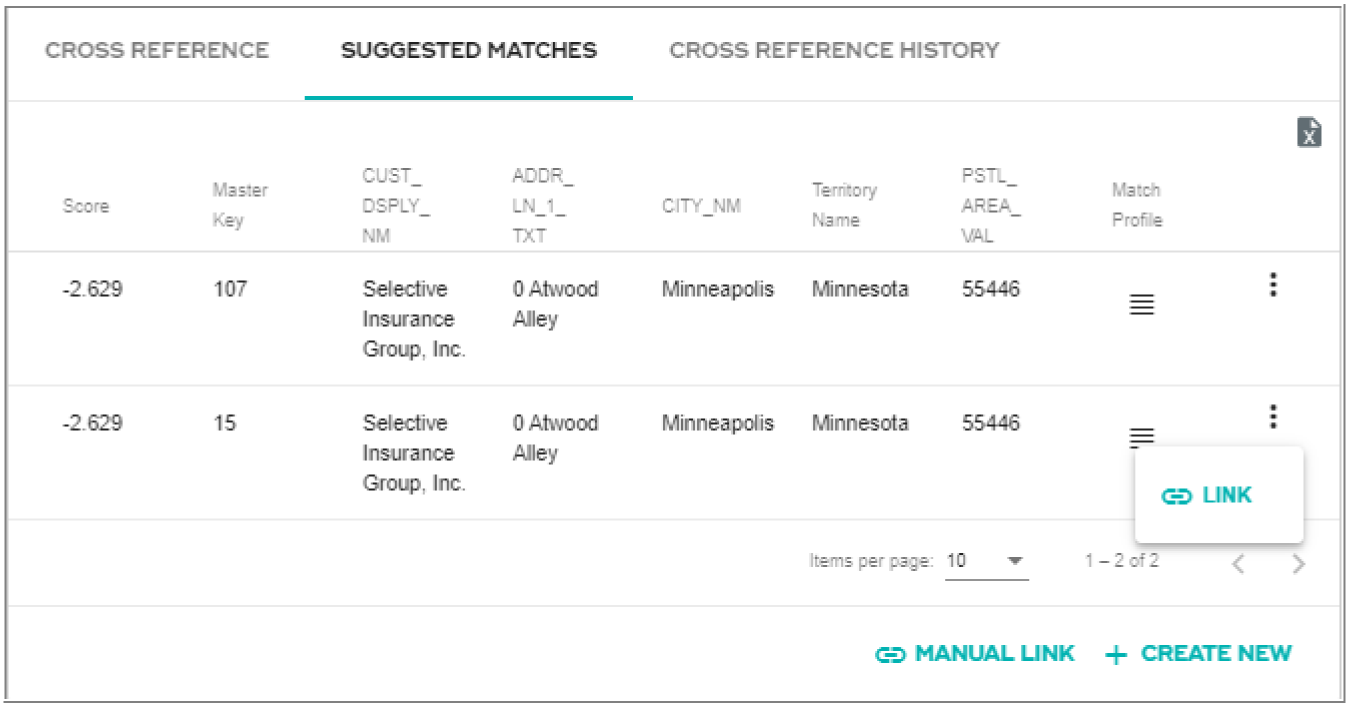
Partition Profile

🟦 KEY ATTRIBUTES 🟩 OTHER ATTRIBUTES

The Data Steward can view the match profile details and can link the match record with the source details as below.

2. Under the **Suggested Matches** tab, click on the Menu icon and select the **Link** option to link this master record with the source record as in Figure 315.

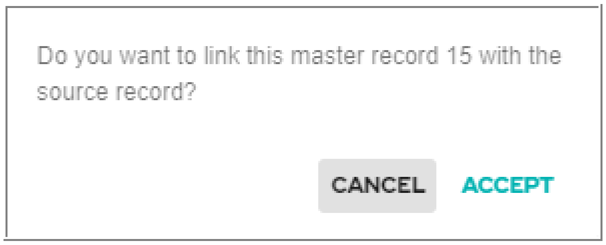
Figure 315: Source Record—Suggested Matches



Score	Master Key	CUST_DSPLY_NM	ADDR_LN_1_TXT	CITY_NM	Territory Name	PSTL_AREA_VAL	Match Profile	
-2.629	107	Selective Insurance Group, Inc.	0 Atwood Alley	Minneapolis	Minnesota	55446	≣	⋮
-2.629	15	Selective Insurance Group, Inc.	0 Atwood Alley	Minneapolis	Minnesota	55446	≣	⋮

Items per page: 10 1 – 2 of 2

Figure 316: Confirmation Webpage Dialog

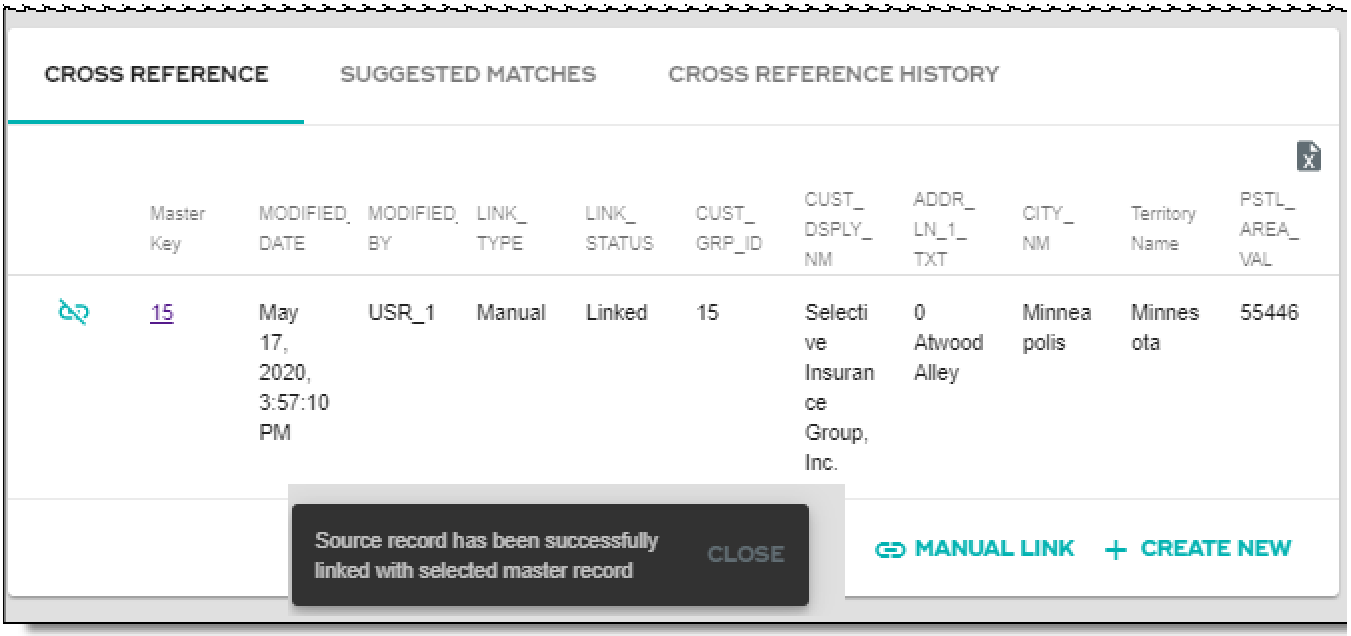

Do you want to link this master record 15 with the source record?

3. On the Webpage Dialog, click **Accept**.

   Message: Source Record has been successfully linked with selected master record" is displayed as in Figure 317.

   The existing record will be unlinked and the selected match record will be linked and will be displayed under the Cross Reference tab as in Figure 317.

Figure 317: Source Details—Cross Reference



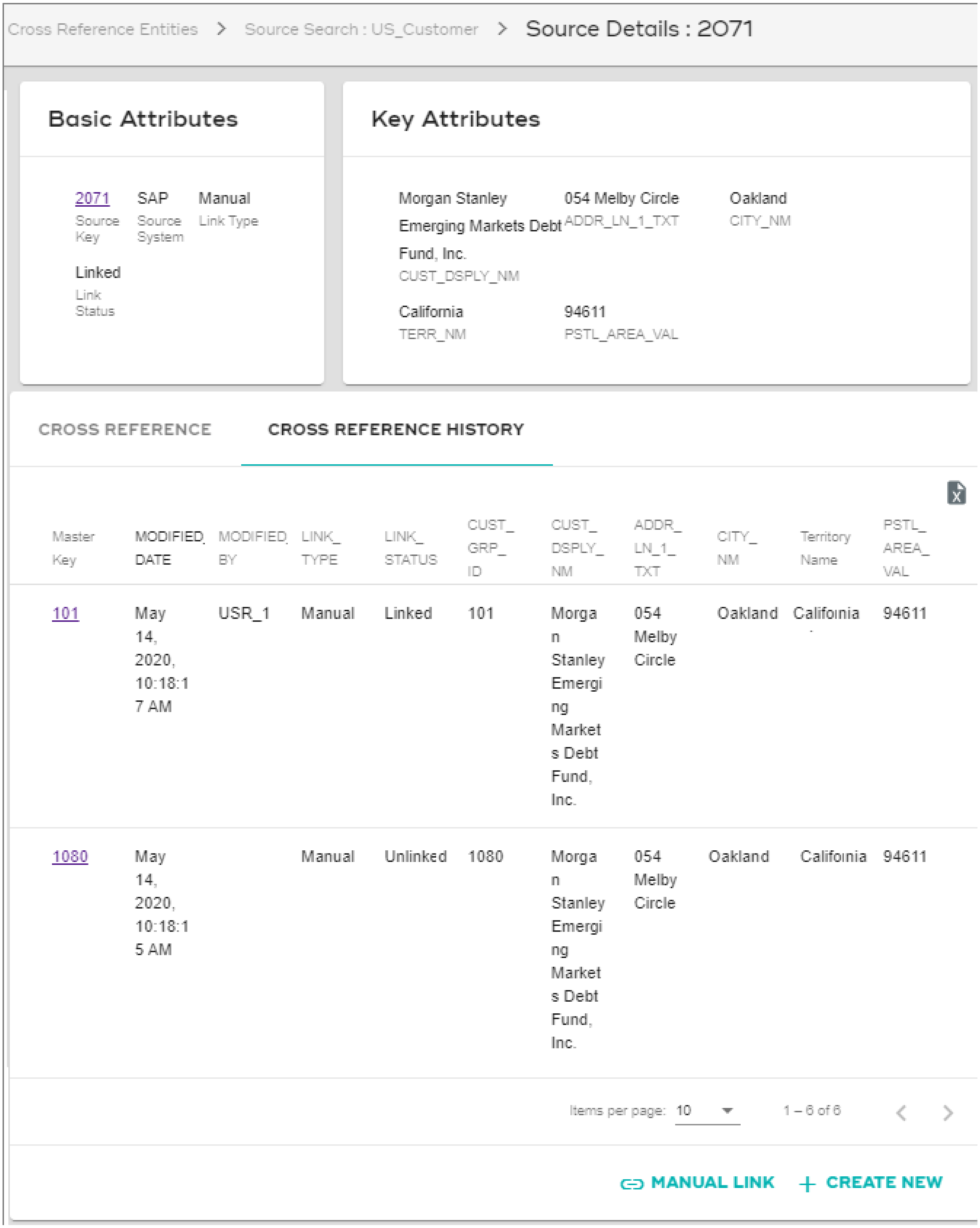
	Master Key	MODIFIED_DATE	MODIFIED_BY	LINK_TYPE	LINK_STATUS	CUST_GRP_ID	CUST_DSPLY_NM	ADDR_LN_1_TXT	CITY_NM	Territory Name	PSTL_AREA_VAL
	15	May 17, 2020, 3:57:10 PM	USR_1	Manual	Linked	15	Selective Insurance Group, Inc.	0 Atwood Alley	Minneapolis	Minnesota	55446

Source record has been successfully linked with selected master record

Source Details—Cross Reference History

On the **Source Details** UI, click on **Cross Reference History** tab. The Cross Reference History tab displays the history of actions taken on the selected source record. It displays the history of all the master records that were linked or unlinked with the selected source as in Figure 312.

Figure 318: Source Details—Cross Reference History



Basic Attributes

Source Key: 2071
Source System: SAP
Link Type: Manual
Link Status: Linked

Key Attributes

CUST_DSPLY_NM: Morgan Stanley Emerging Markets Debt Fund, Inc.
ADDR_LN_1_TXT: 054 Melby Circle
CITY_NM: Oakland
TERR_NM: California
PSTL_AREA_VAL: 94611

Master Key	MODIFIED_DATE	MODIFIED_BY	LINK_TYPE	LINK_STATUS	CUST_GRP_ID	CUST_DSPLY_NM	ADDR_LN_1_TXT	CITY_NM	Territory Name	PSTL_AREA_VAL
101	May 14, 2020, 10:18:17 AM	USR_1	Manual	Linked	101	Morgan Stanley Emerging Markets Debt Fund, Inc.	054 Melby Circle	Oakland	California	94611
1080	May 14, 2020, 10:18:15 AM		Manual	Unlinked	1080	Morgan Stanley Emerging Markets Debt Fund, Inc.	054 Melby Circle	Oakland	California	94611

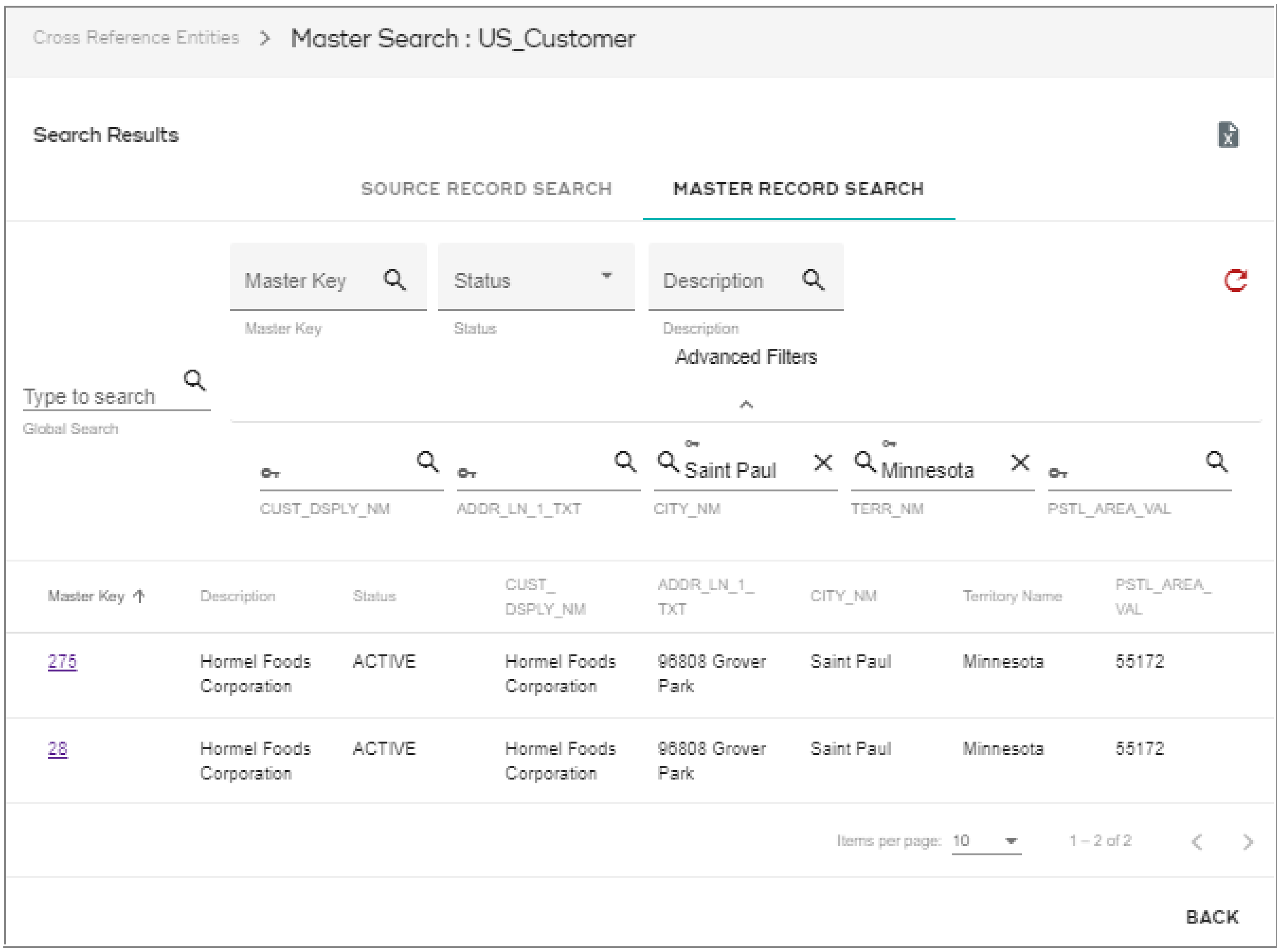
Items per page: 10 1 – 6 of 6

Search Master Records

On the Search Records UI, with **Master Search Record** tab selected, you can search the master records by specifying any of the following parameters as in Figure 319:

- **Global Search**: you can do a global search across all the columns either by specifying a word or a set of characters. For example, enter "ORE" as a search parameter in the **Search** field and click search icon.
- **Master Key**: primary key of the master record. You can specify the primary key and click on search icon.
- **Status**: represents the status of link. It can be either Active, Inactive or None. Active status means the master record has a linked source record. Inactive status shows that the master record has no linked source record.
- **Description**: description of the master record. You can enter the description and click on search icon.
- **Advanced Filters**: displays the Key Attributes and Additional Attributes fetched from Entity Attributes definition on the Cross Reference Entities UI. You can specify any of the attribute value and click on search icon.

Figure 319: Master Record Search



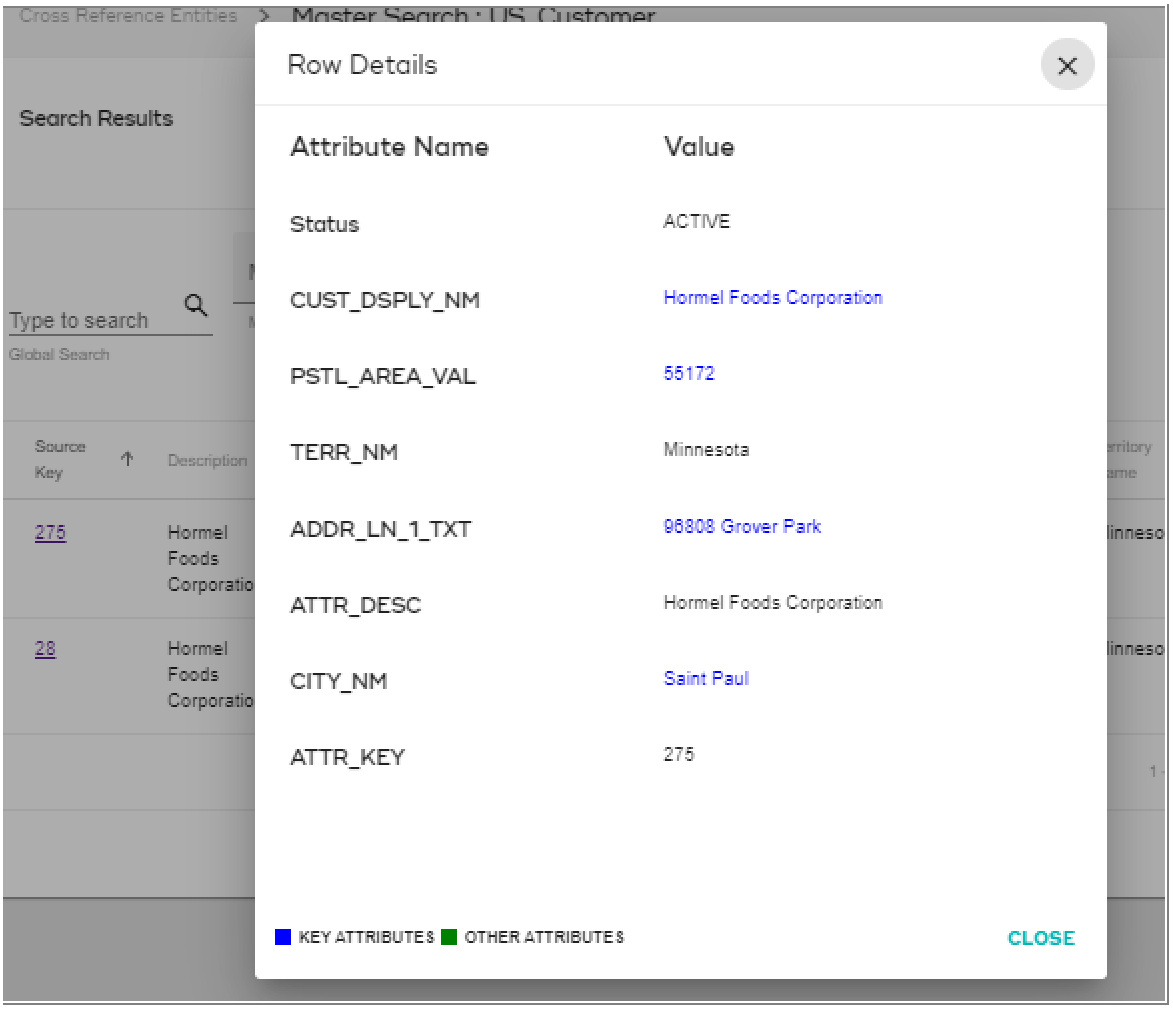
CITY_NM: Saint Paul
TERR_NM: Minnesota

Master Key	Description	Status	CUST_DSPLY_NM	ADDR_LN_1_TXT	CITY_NM	Territory Name	PSTL_AREA_VAL
275	Hormel Foods Corporation	ACTIVE	Hormel Foods Corporation	96808 Grover Park	Saint Paul	Minnesota	55172
28	Hormel Foods Corporation	ACTIVE	Hormel Foods Corporation	96808 Grover Park	Saint Paul	Minnesota	55172

On the Search Results UI, you can perform the following:

- Click on Export to Excel icon to export the search result to a Excel file.
- Click on the Source Key to view the row details of the source record as in Figure 320.

Figure 320: —Source Row Details



Attribute Name	Value
Status	ACTIVE
CUST_DSPLY_NM	Hormel Foods Corporation
PSTL_AREA_VAL	55172
TERR_NM	Minnesota
ADDR_LN_1_TXT	96808 Grover Park
ATTR_DESC	Hormel Foods Corporation
CITY_NM	Saint Paul
ATTR_KEY	275

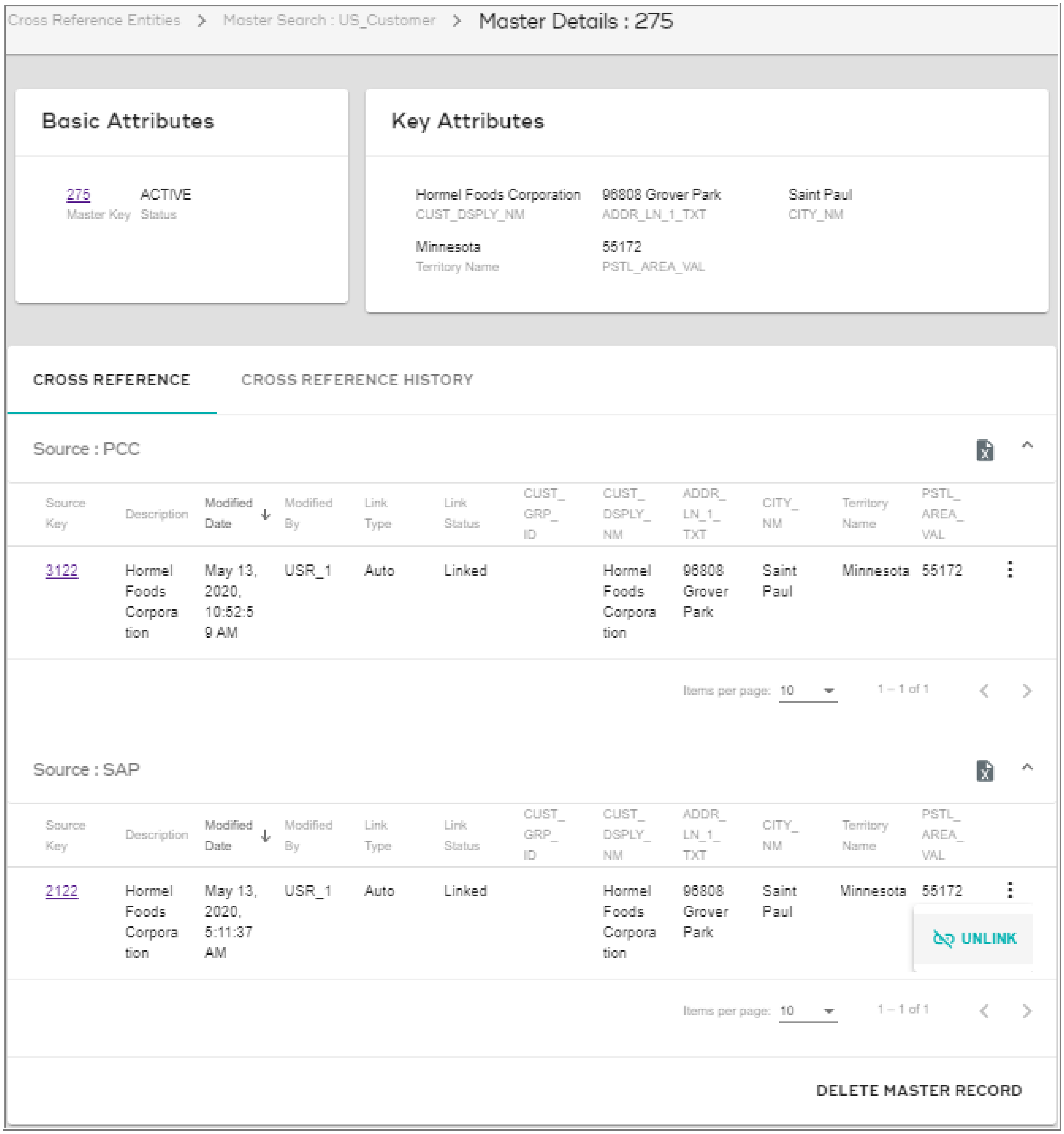
🟦 KEY ATTRIBUTES 🟩 OTHER ATTRIBUTES

- Click on the Description or any other column except the source key column of any record to view the Master details as in Figure 321.

Master Record Details UI

You can navigate to Master Details UI (Figure 321) from Search Results page by clicking on any of the columns of the corresponding master record.

Figure 321: Master Details



Cross Reference Entities > Master Search : US_Customer > Master Details : 275

Basic Attributes

Master Key	Status
275	ACTIVE

Key Attributes

CUST_DSPLY_NM	ADDR_LN_1_TXT	CITY_NM
Hormel Foods Corporation	96808 Grover Park	Saint Paul

Territory Name	PSTL_AREA_VAL
Minnesota	55172

Source : PCC

Source Key	Description	Modified Date	Modified By	Link Type	Link Status	CUST_GRP_ID	CUST_DSPLY_NM	ADDR_LN_1_TXT	CITY_NM	Territory Name	PSTL_AREA_VAL
3122	Hormel Foods Corporation	May 13, 2020, 10:52:59 AM	USR_1	Auto	Linked		Hormel Foods Corporation	96808 Grover Park	Saint Paul	Minnesota	55172

Source : SAP

Source Key	Description	Modified Date	Modified By	Link Type	Link Status	CUST_GRP_ID	CUST_DSPLY_NM	ADDR_LN_1_TXT	CITY_NM	Territory Name	PSTL_AREA_VAL
2122	Hormel Foods Corporation	May 13, 2020, 5:11:37 AM	USR_1	Auto	Linked		Hormel Foods Corporation	96808 Grover Park	Saint Paul	Minnesota	55172

On the **Master Details** UI (Figure 321), under the **Cross Reference** tab, you can perform the following tasks:

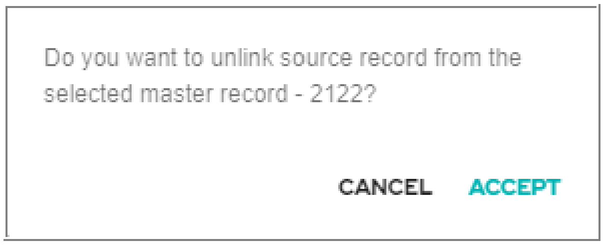
- View all the sources to which the master record is linked.
- Click on source key to view the row details of the source record.
- Export the source details to an excel file using the export to excel icon.

Unlink Linked Source Record

To unlink the source record, perform the following steps:

1. On the **Master Details** page, under the **Cross Reference** tab, click on the Menu icon corresponding to the source record and select **Unlink** option as Figure 321.

Figure 322: Confirmation Webpage Dialog

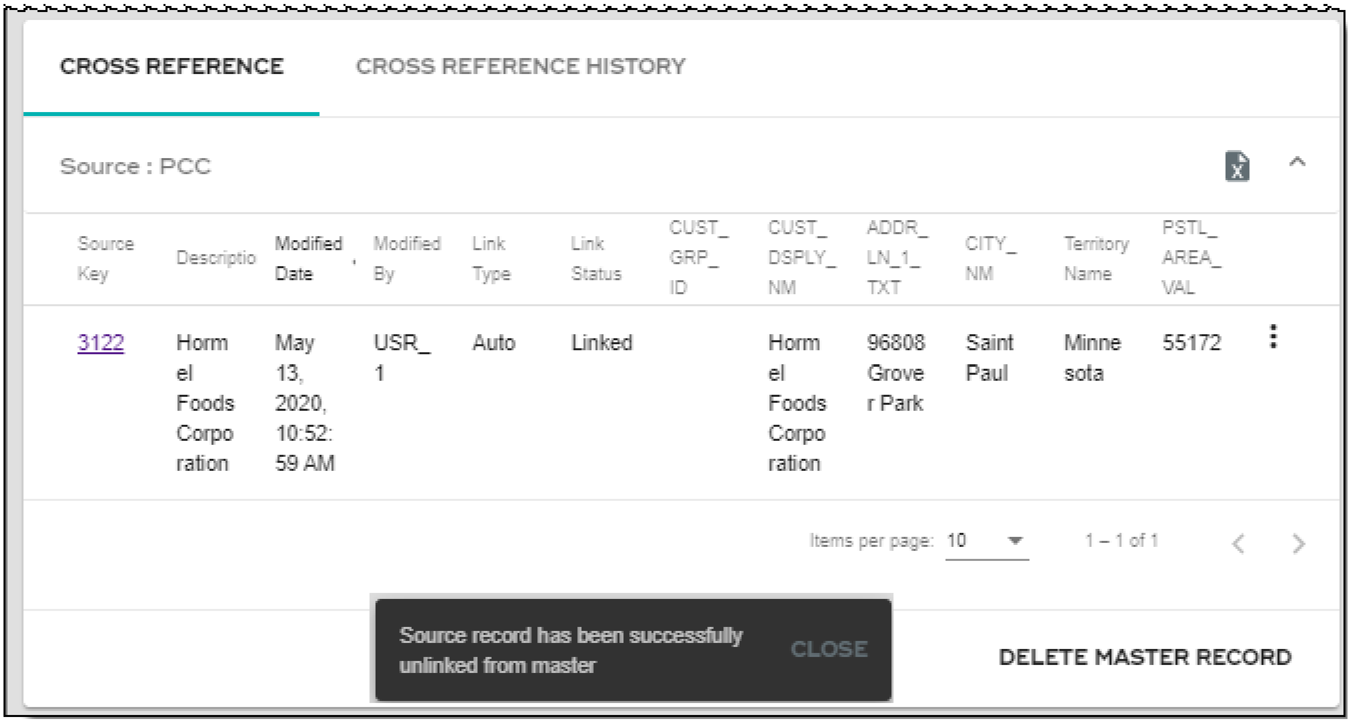


Do you want to unlink source record from the selected master record - 2122?

2. On the Webpage Dialog, click **Accept**.

   The source record will be unlinked and the message: “Source record has been successfully unlinked from master” is displayed and the source record will not be displayed under the Cross Reference tab as in Figure 323.

Figure 323: Master Details—Cross Reference



Source Key	Descriptio	Modified Date	Modified By	Link Type	Link Status	CUST_GRP_ID	CUST_DSPLY_NM	ADDR_LN_1_TXT	CITY_NM	Territory Name	PSTL_AREA_VAL
3122	Hormel Foods Corporation	May 13, 2020, 10:52:59 AM	USR_1	Auto	Linked		Hormel Foods Corporation	96808 Grover Park	Saint Paul	Minnesota	55172

Source record has been successfully unlinked from master

Unlink and Create New Master Link

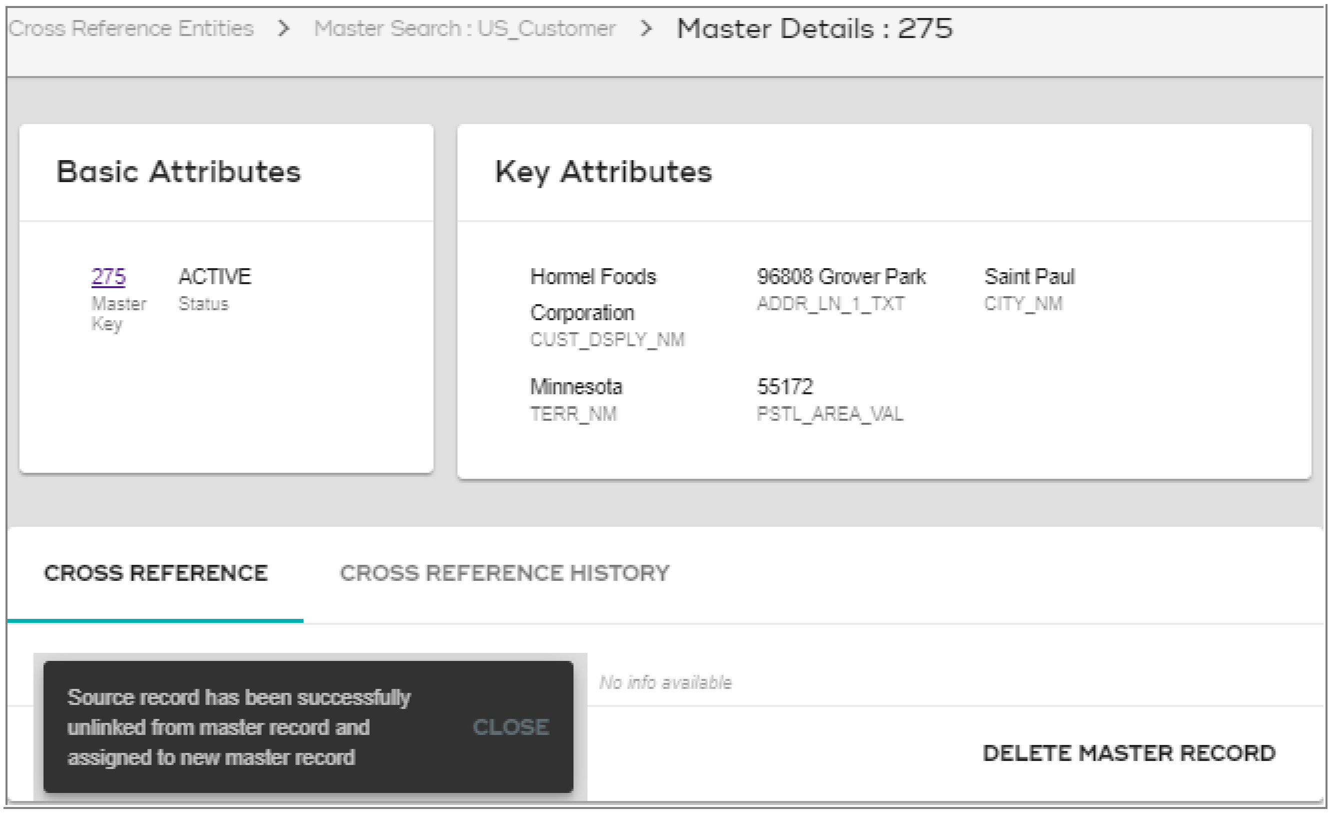
You have an option to unlink the existing source record and automatically create a new master link for the unlinked source record. To automatically create new master link, you need to enable CrossRefUnlinkAndCreate parameter. To enable CrossRefUnlinkAndCreate parameter, perform the following steps:

- On the MDM left navigation pane, navigate to **Administration** -> **System Properties** and select the **CrossRefUnlinkAndCreate parameter** and click **Edit**.

- On the **System Properties** UI, select the Property value to "True".

Once this parameter is enabled and unlink operation is performed as in above steps (1 and 2), the existing source record will be unlinked and new master link will be created for the source record. The unlinked record will not be displayed on the Master Record Details UI and the message: "Source record has been successfully unlinked from master record and assigned to new master record" is displayed as in Figure 308.

Figure 324: Master Details—Cross Reference



Source record has been successfully unlinked from master record and assigned to new master record

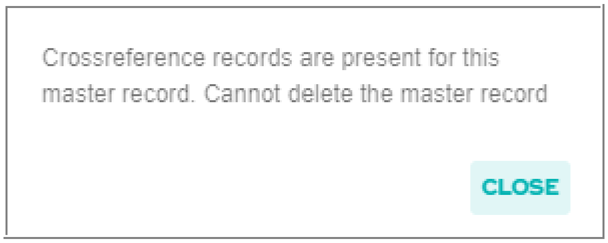
Delete Master Record

To delete the master record, perform the following steps:

1 On the **Master Record Details** page, under the Cross Reference /Cross Reference History tab, click Delete Master Record as in Figure 323.

You can delete the master record only when no source records are linked with it. The below popup message will be displayed if you try to delete the master record with linked source records.

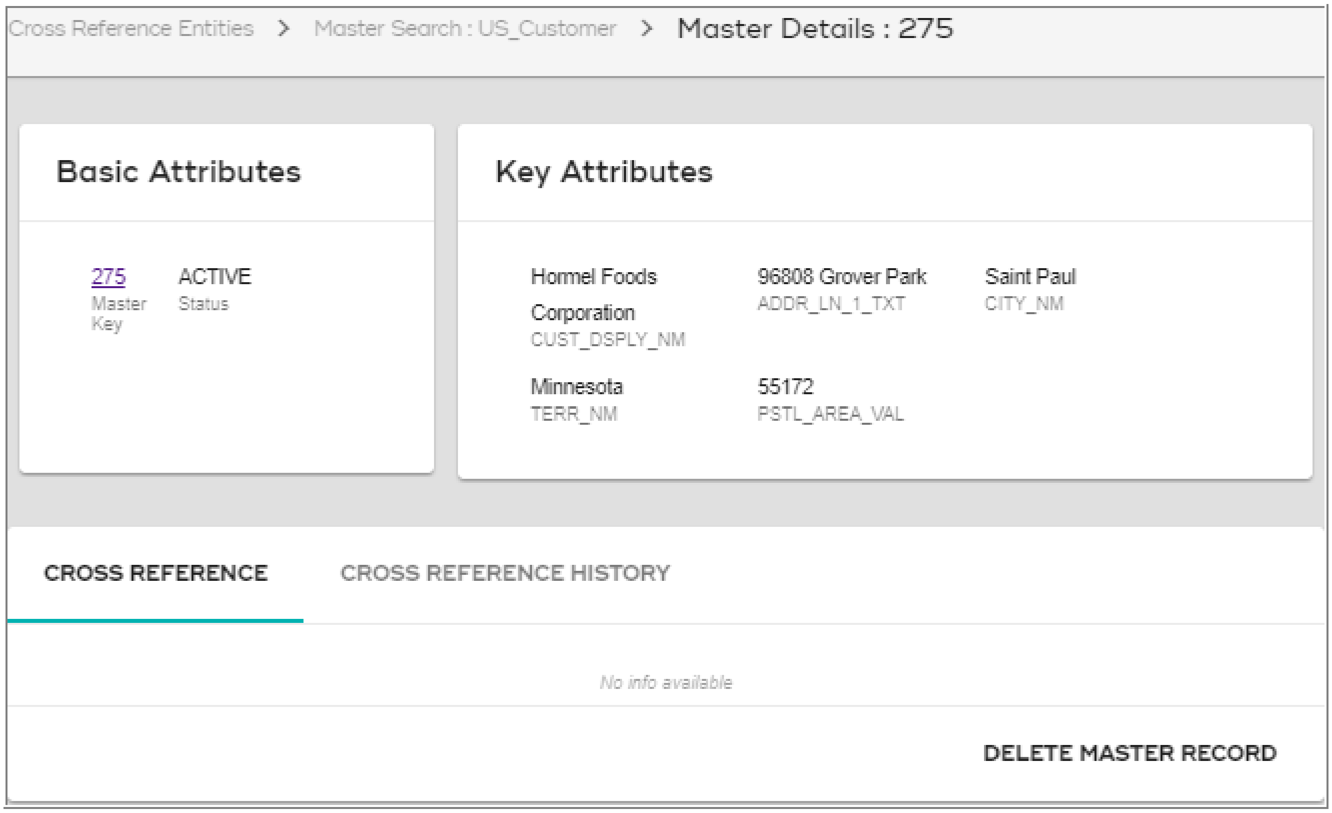
Figure 325: Entity Definition—Entity Parameters



Crossreference records are present for this master record. Cannot delete the master record

2 Unlink all the source records as in Figure 326 and then click **Delete Master Record**.

Figure 326: Master Details—Cross Reference



Cross Reference Entities > Master Search : US_Customer > Master Details : 275

Basic Attributes

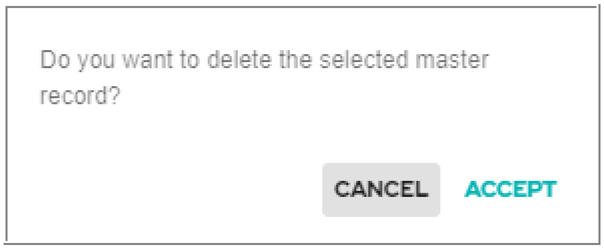
275 Master Key
ACTIVE Status

Key Attributes

Hormel Foods Corporation CUST_DSPLY_NM
96808 Grover Park ADDR_LN_1_TXT
Saint Paul CITY_NM
Minnesota TERR_NM
55172 PSTL_AREA_VAL

No info available

Figure 327: Confirmation Webpage



Do you want to delete the selected master record?

3 On the Webpage Dialog, click **Accept**.

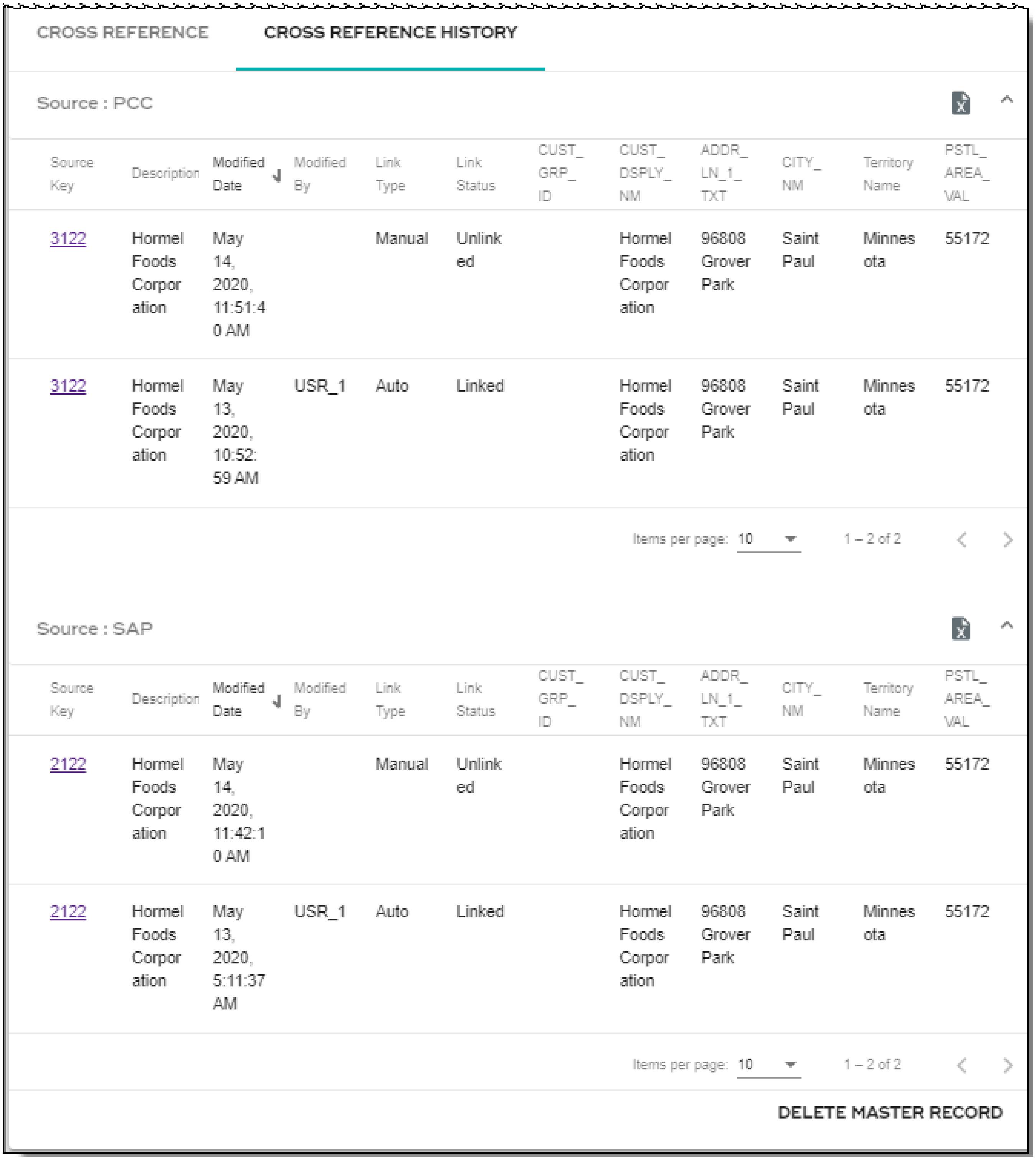
Message: “Master record has been successfully inactivated” is displayed.

The master record status will be updated as Inactive and will not be linked with any source record.

Master Record Details—Cross Reference History

On the Master Record Details page, under the Cross Reference History tab, you can view all the actions taken on the source records that were linked with master record as in Figure 328.

Figure 328: Master Details—Cross Reference History



Source : PCC

Source Key	Description	Modified Date	Modified By	Link Type	Link Status	CUST_GRP_ID	CUST_DSPLY_NM	ADDR_LN_1_TXT	CITY_NM	Territory Name	PSTL_AREA_VAL
3122	Hormel Foods Corporation	May 14, 2020, 11:51:40 AM		Manual	Unlinked		Hormel Foods Corporation	96808 Grover Park	Saint Paul	Minnesota	55172
3122	Hormel Foods Corporation	May 13, 2020, 10:52:59 AM	USR_1	Auto	Linked		Hormel Foods Corporation	96808 Grover Park	Saint Paul	Minnesota	55172

Source : SAP

Source Key	Description	Modified Date	Modified By	Link Type	Link Status	CUST_GRP_ID	CUST_DSPLY_NM	ADDR_LN_1_TXT	CITY_NM	Territory Name	PSTL_AREA_VAL
2122	Hormel Foods Corporation	May 14, 2020, 11:42:10 AM		Manual	Unlinked		Hormel Foods Corporation	96808 Grover Park	Saint Paul	Minnesota	55172
2122	Hormel Foods Corporation	May 13, 2020, 5:11:37 AM	USR_1	Auto	Linked		Hormel Foods Corporation	96808 Grover Park	Saint Paul	Minnesota	55172

CHAPTER 14 Workflow Management

What's In This Chapter

This chapter provides detailed information on the manage workflows, execute workflows and Workflow monitoring.

Topics:

Workflow Management

MDM Workflow Management feature helps the user to create and deploy workflows at runtime. The creation of workflows at runtime saves lot of development and test cycles, which in turn saves time and effort. Workflow Management feature enables user to create, edit and re-deploy workflows with few behavior changes at minimal effort.

Although workflow management can be achieved using MDM Studio, you need to write specific codes, deploy the workflow, and restart server for the workflow to be functional. In scenarios, where you want to create a workflow similar to an existing one with minimal changes or modify few changes in an existing workflow, in studio, you need to bring down MDM Server, re-deploy the workflows and restart the server. Workflow Management overcomes the above problems by allowing you to create or change the workflows at runtime without any server downtime.

Key features of workflow management:

- Create workflows without MDM Studio development cycle.
- Supports different types of nodes with specific functionalities, non-linear nodes such as decision and branch nodes.

- Provides extensive workflow monitoring UI to track the progress of workflow execution.
- Provides an out of the box workflow called Task Inbox to manage and monitor a task.
- Provides task monitoring UI to monitor the in progress or completed tasks within a workflow.

The Workflow Management supports: different types of nodes with specific functionalities, non-linear nodes such as decision and branch nodes, extensive monitoring, and event based workflows etc.

The Workflow Management involves four main steps:

1. Design—the design step involves creating, editing and saving the workflows using available workflow nodes.
2. Deploy—the deploy step involves the translation of the workflow metadata to xml so that the same can be executable by MDM workflow engines.
3. Execute—the execute step involves the execution of the selected workflow using the START_WORKFLOW command. The workflow is already loaded in server as part of deploy step and the MDM framework executes it. Also this step may incorporate the optional Query Banding parameters while executing the workflow.
4. Monitor—the monitor step involves the monitoring workflow to track the progress of a workflow execution as well as view workflow execution history to see the logs for each execution instance of a workflow.

Manage Workflows

On the Manage Workflows UI, you can create and design a workflow using the required workflow nodes and deploy the workflow for execution and monitoring.

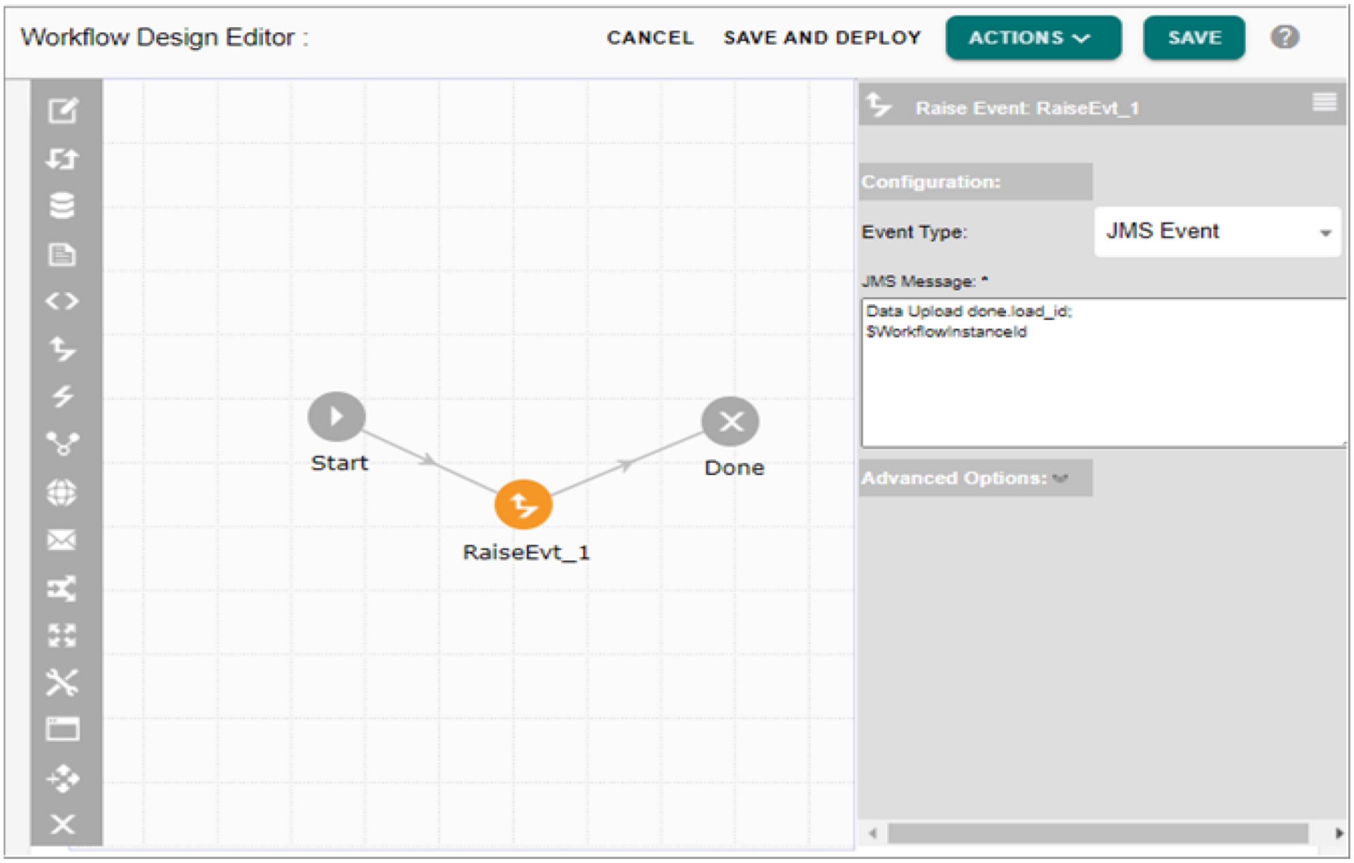
- Workflow Designer
- Workflow Nodes
- Task Performed on the Manage Workflows

Workflow Designer

On the Workflow Designer, you can define the actual workflow functionality using the workflow nodes and connections. All the nodes required to construct the workflow can be graphically added and managed on the Workflow Designer.

The main components in workflow designer involves the following:

Figure 329: Workflow Design Editor



Event Type: JMS Event

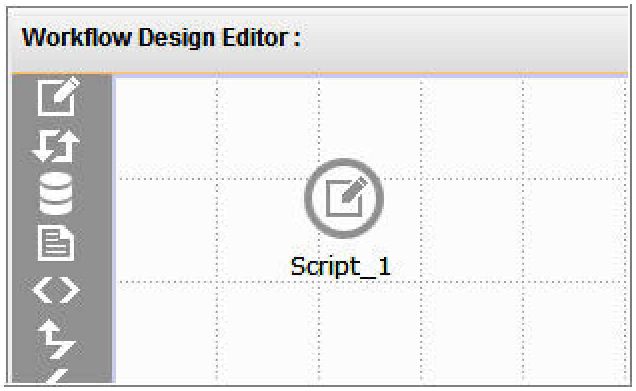
JMS Message: *

Data Upload done.load_id;
$WorkflowInstanceId

- **Workflow Nodes Palette**: displays the list of all the available nodes that can be used in the workflow. For details on each node, see Section : “Workflow Nodes.”
- **Workflow Design Area**: the GUI area, where workflow can be constructed by picking the nodes from palette and connecting them.
- **Drag and Drop Node Creation**: create node by drag and drop from palette and position it on Design Area as in Figure 330. You can rename the node directly on the Designer UI.

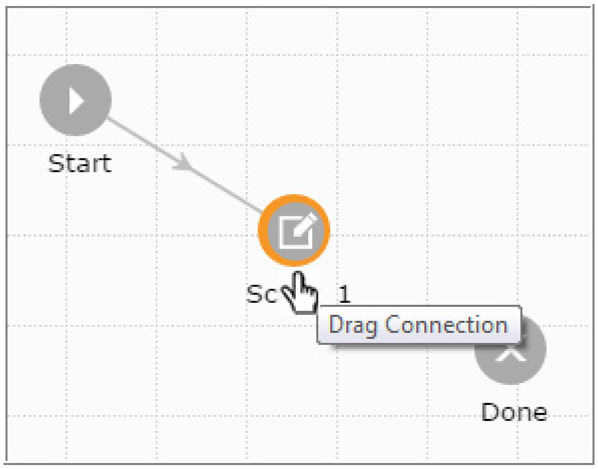
  Note: It is recommended not to have any workflow node name as unicode value as the workflow cannot be deployed with unicode values.

Figure 330: Node Instance



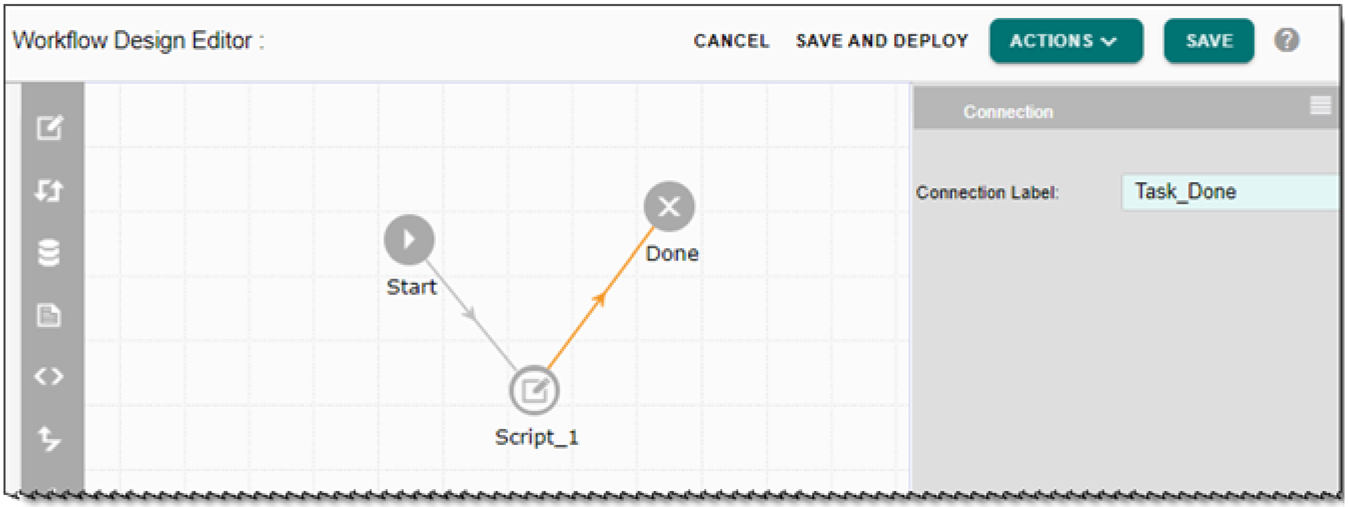
- **Workflow Node Connection**: define node connections between various workflow nodes and label the connections. To connect the nodes—draw a connectivity link from one node to other node. To draw connectivity, move the cursor to the outer ring of the node from which connection needs to be created. The node will be highlighted and cursor hand symbol will be displayed as in Figure 331. You can then drag the connection to the required node.

Figure 331: Node Connection



You can also label the connectivity for the flow by clicking on the connectivity link. The **Connection** panel is displayed on the right. Enter the connectivity name and click anywhere in the editor area as in Figure 332.

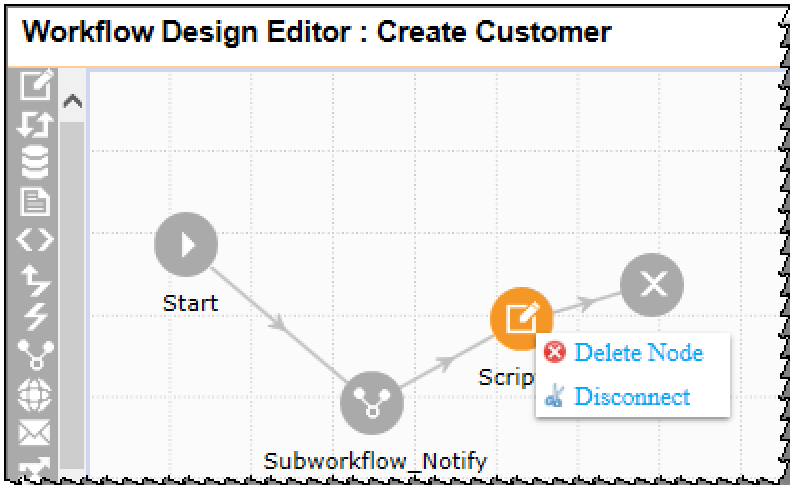
Figure 332: Connectivity Link Name



Connection Label: Task_Done

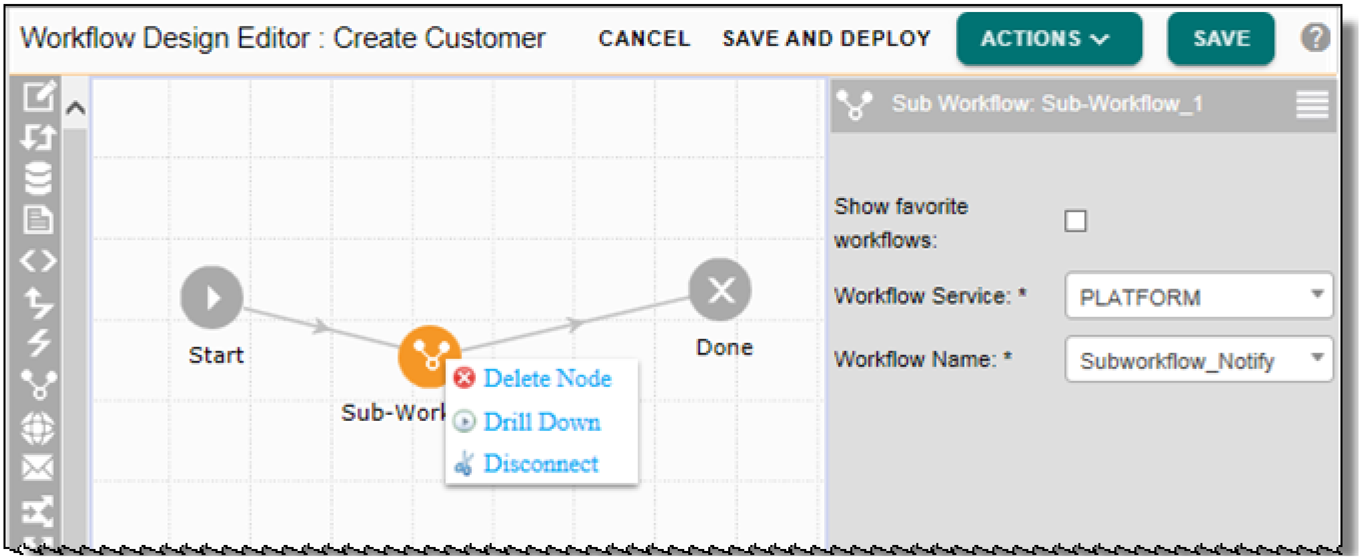
- **Delete and Disconnect**: you can delete any node by right-clicking on a node and select Delete Node option as in Figure 333. You cannot delete a Start and Done node, however if more than one Done node is used in the workflow, it can be deleted. You can remove the node connections using **Disconnect** option as in Figure 333 or directly double-click on the connectivity link.

Figure 333: Delete Node and Disconnect Option



- **Drill Down**: right-click on the subworkflow node in a parent workflow and select **Drill Down** option to navigate to the child workflow as in Figure 334.

Figure 334: Drill Down Option



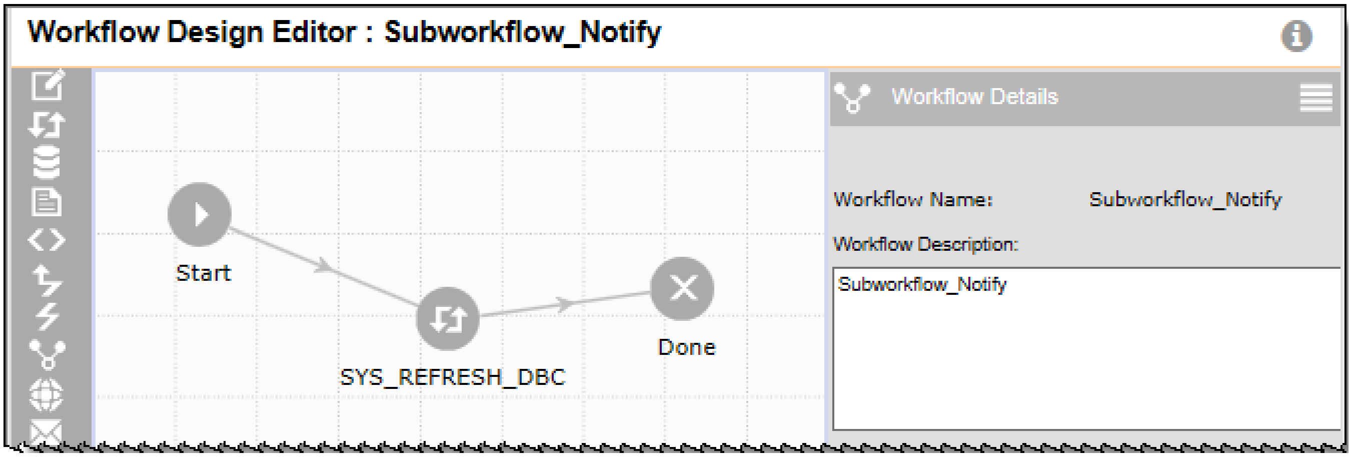
Show favorite workflows: ☐

Workflow Service: * PLATFORM

Workflow Name: * Subworkflow_Notify

On the child workflow design editor, click on Back button to navigate back to the parent workflow editor as in Figure 335.

Figure 335: Drill Down Option



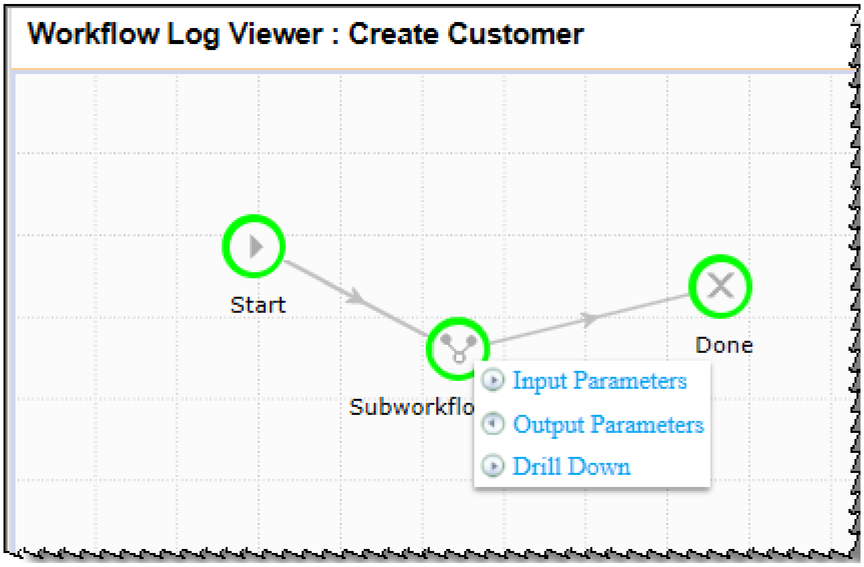
Workflow Name: Subworkflow_Notify

Workflow Description:

Subworkflow_Notify

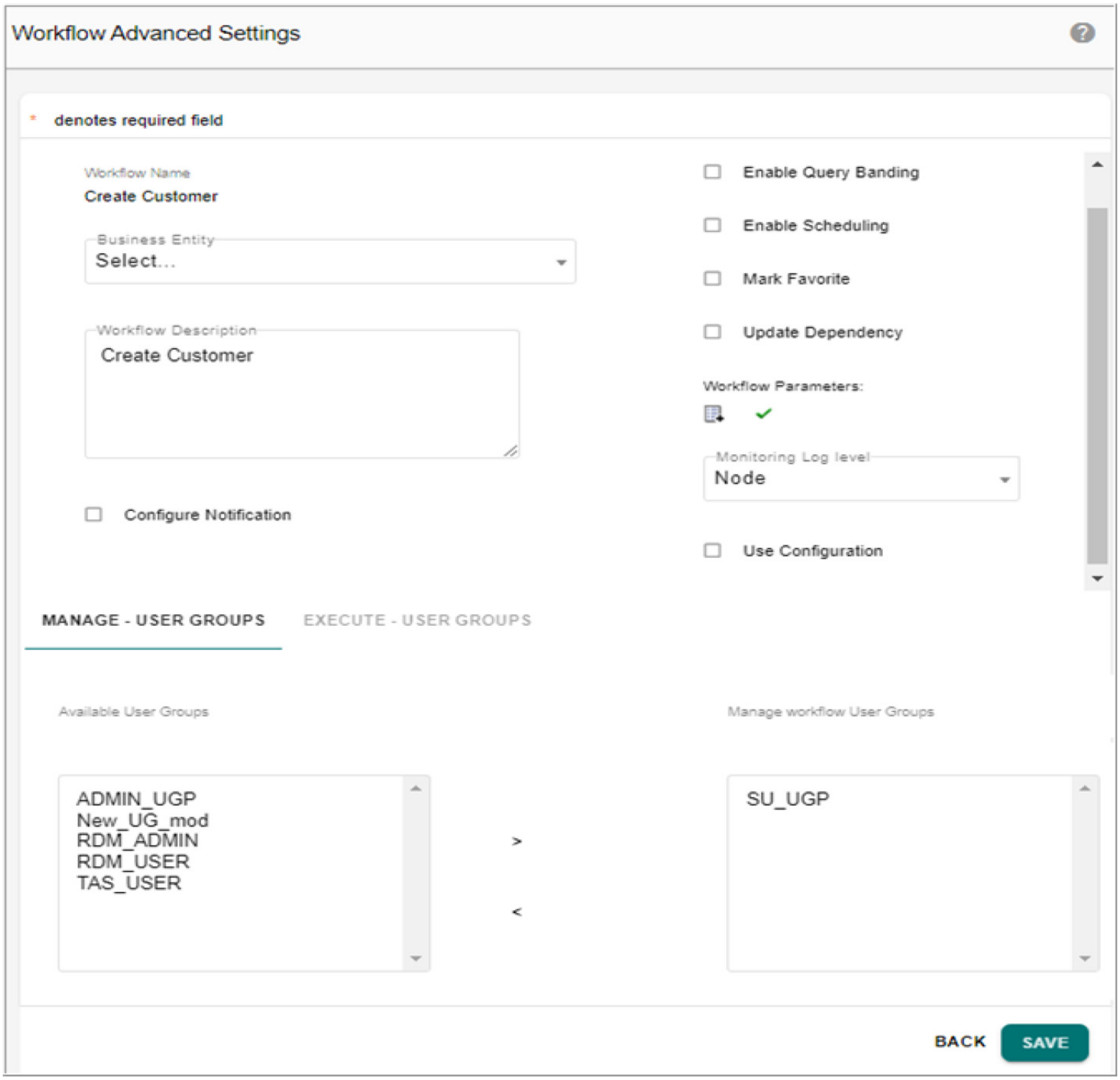
The Drill Down option is also available on the Workflow Log Viewer as in Figure 336

Figure 336: Drill Down Option—Workflow Log Viewer



- **Advanced Settings**: additional configurations for a workflow can be configured using Advanced Settings option. The Figure 337 displays the various options that can be configured on the Workflow Advanced Settings page. For details, see Section : “Workflow Advanced Settings.”

Figure 337: Workflow Advanced Settings



Workflow Advanced Settings

* denotes required field

Workflow Name
Create Customer

Business Entity
Select...

Workflow Description
Create Customer

☐ Configure Notification

☐ Enable Query Banding

☐ Enable Scheduling

☐ Mark Favorite

☐ Update Dependency

Workflow Parameters:
✓

Monitoring Log level
Node

☐ Use Configuration

Available User Groups
ADMIN_UGP
New_UG_mod
RDM_ADMIN
RDM_USER
TAS_USER

Manage workflow User Groups
SU_UGP

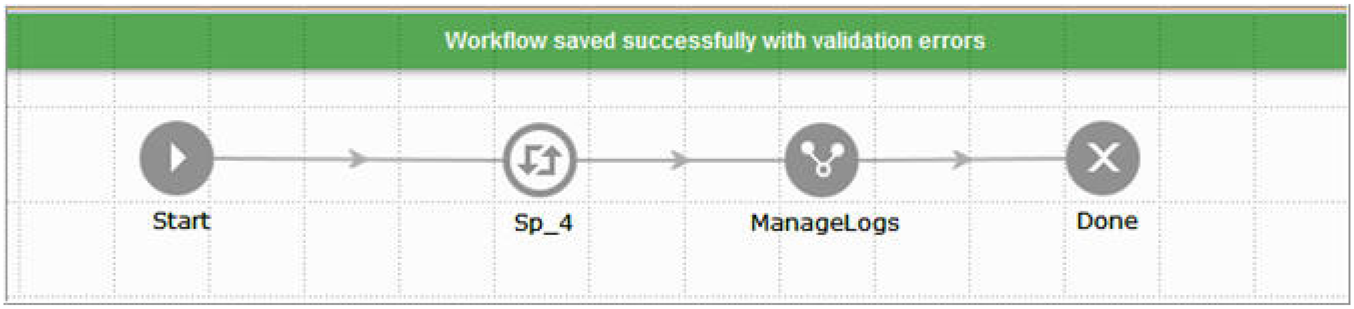
- **Redraw Workflow**: Redraw Workflow allows to re-align the workflow nodes for better visualization.
- **Workflow Parameters:** Workflow Parameters are parameters that are used inside nodes of the workflow as variables. Its values are passed or internally computed during execution of the workflow. Workflow parameters can have different scopes: Workflow Local Variable, Workflow Transaction Variable, Workflow Global Variable. For more details on adding, editing and deleting workflow parameters, see Section : “Manage Workflow Parameters.”
- **Define Event Descriptor:** MDM facilitates users to create a new Event descriptor at runtime from the MDM web UI. Creating event descriptor is the first step towards using an event

node or triggering a raise event or mapping an event to JMS event. For more details on adding, editing and deleting event descriptors, see Section : "Manage Event Descriptors."

- **Save**: once all the node designing and configuration details added, you can click Save to save the node details. The Save option saves the metadata details of the workflow to the respective MDM tables. Workflows with incomplete node details will also be saved but with validation errors and the message will be displayed as in Figure 338, the node with errors will be displayed with white background. When a workflow is saved with all completed node details, the message will be displayed as in Figure 339.

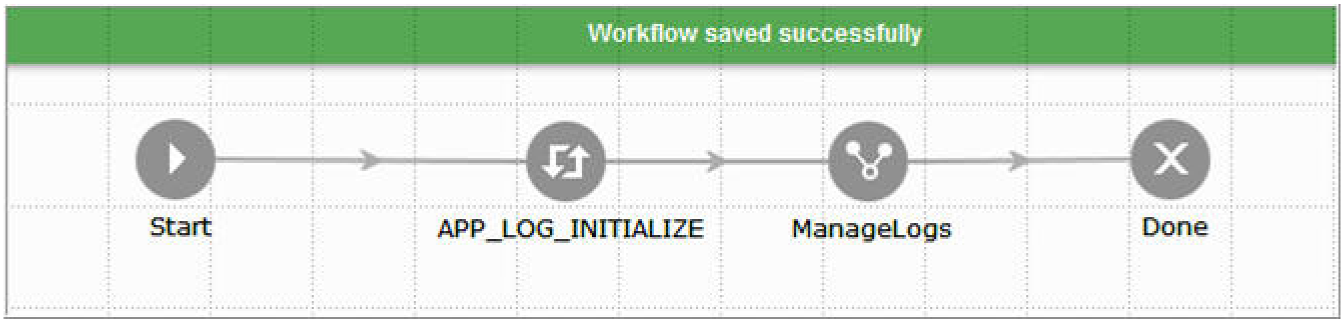
  Note: To save a workflow you can also use control key + s.

Figure 338: Workflow Save with Validation Errors



Workflow saved successfully with validation errors

Figure 339: Workflow Save

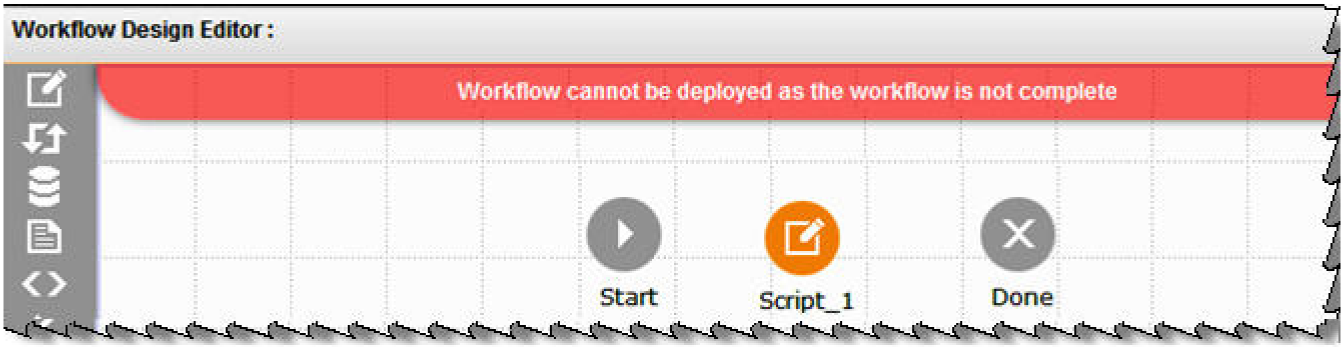


Workflow saved successfully

- **Save and Deploy**: you can save and deploy the workflow. The deployment of a workflow makes the workflow ready for execution. A newly created workflow needs to be deployed first in order to execute the workflow. When an existing workflow is modified for any changes, the workflow needs to be re-deployed for the changes to be in effect while executing the same. In case of any errors or exceptions encountered during deployment, error message is displayed on the Manage Workflows page. You can rectify the error or exception and redeploy the workflow. All the workflows deployed using the Manage Workflows UI are deployed under MASTER service and are available for reuse as Sub-Workflow under the same service. For deployment steps, see Section : "Create and Deploy Workflows."

  On click of **Save** only the configurations of all nodes in the designer are checked. If the workflow is not complete (not wired correctly), validation message is shown during deployment as in Figure 340.

Figure 340: Workflow Deploy Validation Message



Workflow Design Editor :

Workflow cannot be deployed as the workflow is not complete

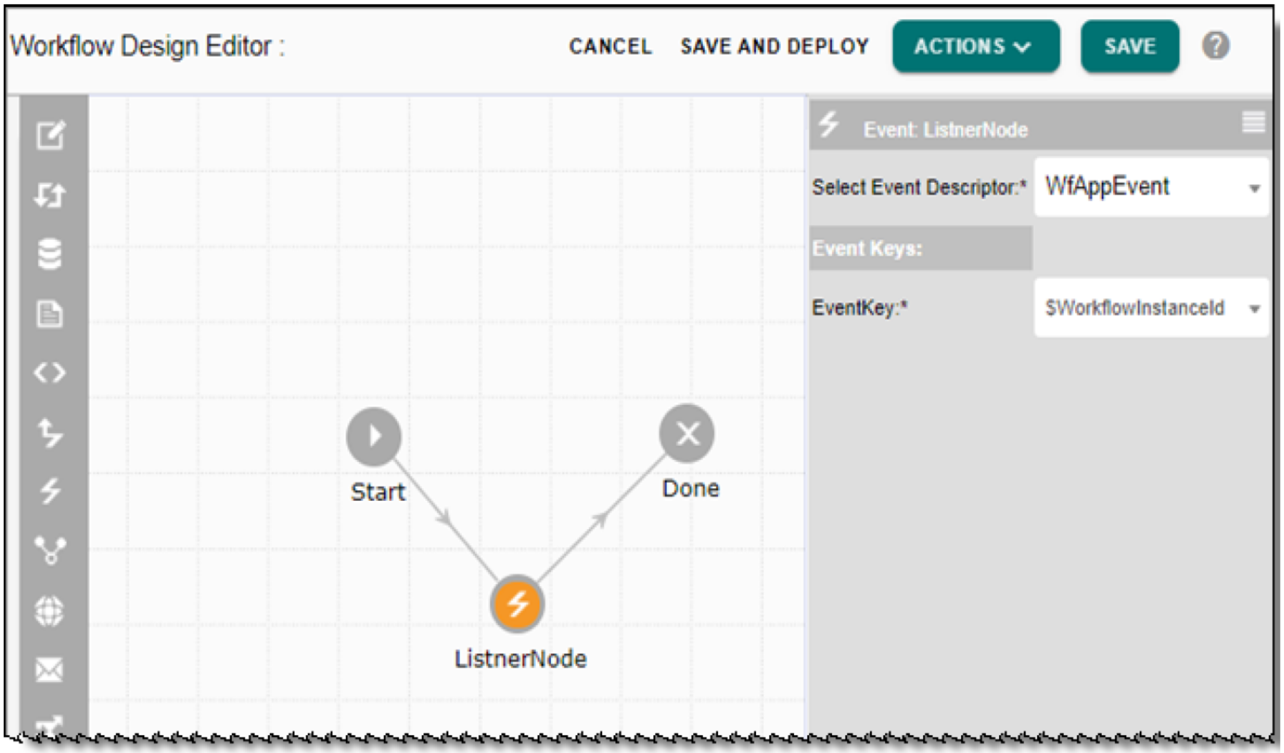
Workflow Nodes

Nodes are the building blocks of a workflow. Each node used in a workflow needs to be configured with the required properties of it. On click of the node, the node properties will be shown on the right side of the screen.

For example, add a Script node and click on the node.

The Node Configuration panel (Figure 341) is displayed to the right. The Node Configuration panel displays the parameters corresponding to the node type selected.

Figure 341: Node Configuration Panel



Workflow Design Editor :

Event: ListnerNode

Select Event Descriptor:* WfAppEvent

Event Keys:

EventKey:* $WorkflowInstanceId

For **Node Configuration (Script),** you can enter the location of script and execution timeout in seconds for your shell command execution. The node configuration will vary based on the type of node selected.

The following section provides the node configuration details for the following nodes used in workflow.

- Start Node
- Script Node
- Stored Procedure
- Execute SQL Query Node
- Macro Node
- X-Rule Node
- Raise Event Node
- Event Node
- Sub Workflow Node
- Rest Node
- Notification Node
- Decision Node
- Branch Node
- Set Node
- Configurable UI Node
- Connected Identity Node
- Fork Node
- Done Node

Start Node

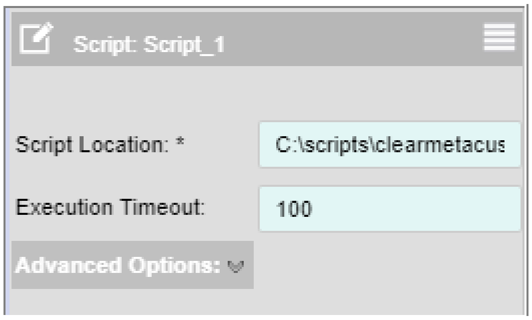
Description: Start node of a workflow. By default, start node will be added when a workflow is created.

Parameter Descriptions: None

Script Node

Description: executes a script on MDM system.

Figure 342: Script Node Configurations



Script Location: * C:\scripts\clearmetacus

Execution Timeout: 100

Parameter Descriptions

- Script Location—location of a script to be executed. In case the script location has spaces, user should not provide it with quotes. The MDM system will automatically translate it to proper format.

  Example: C:\scripts\clearmetacustomer.bat

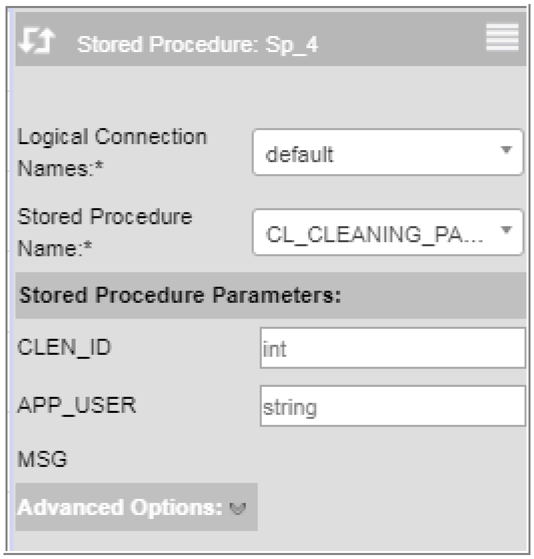
  Note:

  - The script files must be available in the same server machine/shared location accessible to the MDM server with all required access permissions and the path must be a complete path else the script node may fail with “File Not Found” error.
- Execution Timeout—timeOut in seconds for providing an execution timeout for your shell command execution. If the execution time exceeds timeout ShellReturnValue attribute is set to 1 and ExecutionTimedout attribute is set to "yes" in the NodeOutput response.

Stored Procedure

Description: invokes a stored procedure execution with parameters.

Figure 343: Stored Procedure Node Configurations



Stored Procedure: Sp_4

Logical Connection Names:* default

Stored Procedure Name:* CL_CLEANING_PA...

Stored Procedure Parameters:

CLEN_ID int

APP_USER string

MSG

Parameter Descriptions

- Logical Connection Names—list of logical name of secondary connections created on the Manage Secondary Connection UI. If there exists only one physical connection for a logical connection and no configurations are used, the stored procedure will be executed using that. If there exists one or more physical connections for a logical connection and configurations are used, the stored procedure will be executed using the physical connection passed as part of configuration during runtime. Logical connection name "Default" is for MDM user database.
- Stored Procedure Name—displays a list of stored procedures available under the selected connection. If more than one connections are defined against a logical connection name, the default connection for the logical connection name will be considered for fetching the

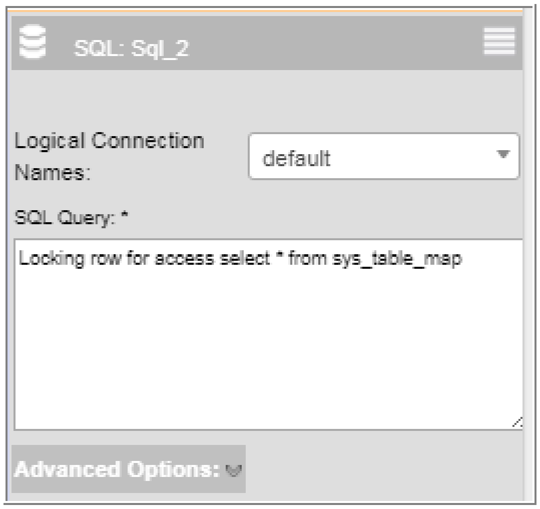
stored procedure list metadata. Select the name of the stored procedure to be executed. Based on the stored procedure name selected, the corresponding stored procedure parameters will be displayed.

- Stored Procedure Parameters—input and output parameter of the selected stored procedure.

Execute SQL Query Node

Description: invokes a SQL query procedure execution.

Figure 344: Execute SQL Query Node Configurations



Logical Connection Names: default

SQL Query: *

```
Locking row for access select * from sys_table_map
```

Parameter Descriptions

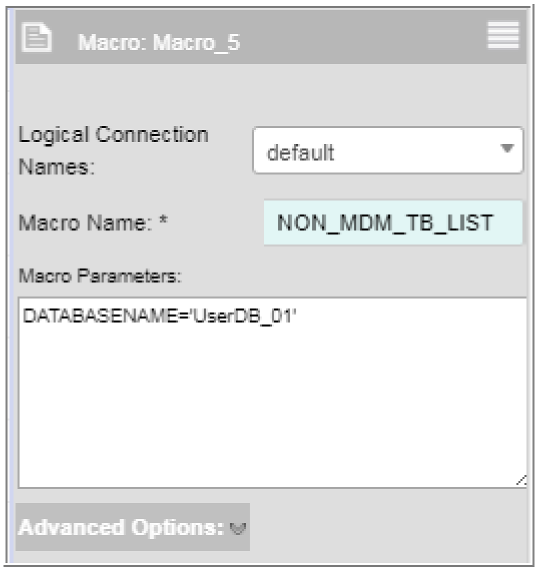
- Logical Connection Names—list of logical name of secondary connections created on the Manage Secondary Connection UI. If there exists only one physical connection for a logical connection and no configurations are used, the SQL will be executed using that. If there exists one or more physical connections for a logical connection and configurations are used, the SQL will be executed using the physical connection passed as part of configuration during runtime.
- SQL Query—enter the SQL query to be executed.

Note: To execute the query “Select COUNT(*) from TableName” on a SQL Node, use the alias name in the query as: “Select Count(*) as <alias name> from <TableName>”. For example: “sel Count(*) as sys_count from sys_table_var”.

Macro Node

Description: invokes macro execution with parameters.

Figure 345: Macro Node Configurations



Logical Connection Names: default

Macro Name: * NON_MDM_TB_LIST

Macro Parameters:

DATABASENAME='UserDB_01'

Parameter Descriptions

- Logical Connection Names—list of logical name of secondary connections created on the Manage Secondary Connection UI. If there exists only one physical connection for a logical connection and no configurations are used, the macro will be executed using that. If there exists one or more physical connections for a logical connection and configurations are used, the macro will be executed using the physical connection passed as part of configuration during runtime.
- Macro Name—enter the macro name to be executed.
- Macro Parameters— Macro IO parameters provided as Param_Name=Param_Value pair, multiple parameters can be provided in above name value pair syntax separated by # delimiter.

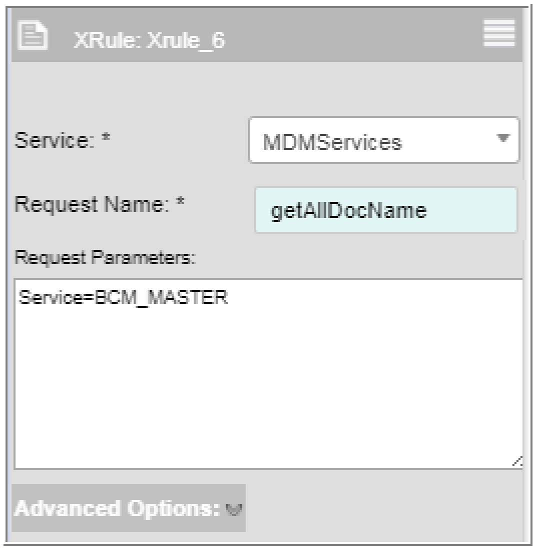
  Example: Param_Name1=Param_Value1#Param_Name2=Param_Value2#.. .

  Note: If you want to use datetime workflow parameter to pass a timestamp value to a macro, it should be used as a node's parameter with apostrophe, for example: macro_date_time ='$date_time_var'. During execution, the datetime should be provided in the format (YYYY-MM-DD hh:mm:ss).

X-Rule Node

Description: invokes an Xrule API deployed under MDM server.

Figure 346: XRule Node Configurations



Service: * MDMServices

Request Name: * getAllDocName

Request Parameters:

```
Service=BCM_MASTER
```

Parameter Descriptions

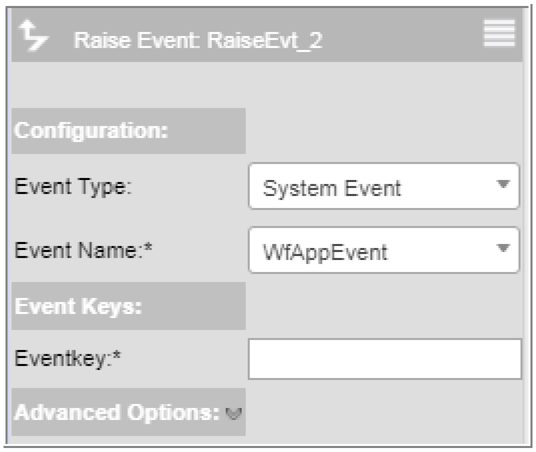
- Service—select the service to which x-rule belongs to.
- Request Name—enter the name of the x-rule Request API.
- Request Parameters—enter the request parameters in the **Request Parameters** text field. X-rule request API parameters are provided as Param_Name=Param_Value pair, multiple parameters can be provided in above name value pair syntax separated by # delimiter.

  Example: Param_Name1=Param_Value1#Param_Name2=Param_Value2#...

Raise Event Node

Description: raises an event identifier for a listening event.

Figure 347: Raise Event Node Configurations



Event Type: System Event

Event Name:* WfAppEvent

Eventkey:*

Parameter Descriptions

- Event Type—select the event type. Event type can be System or JMS.

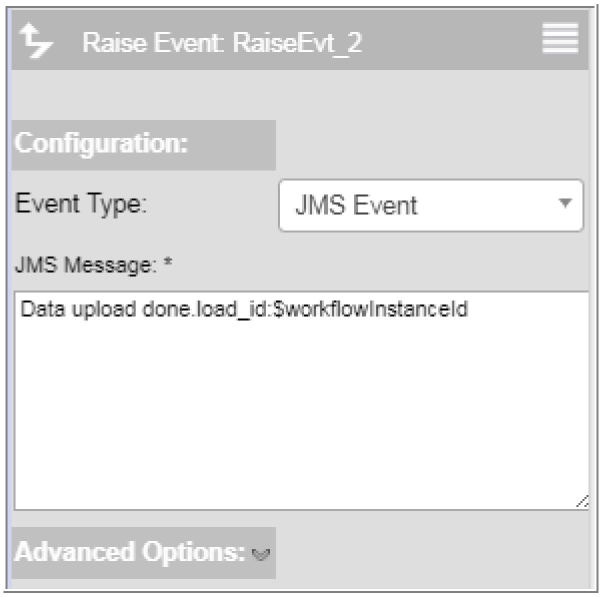
If System is selected as Event type, select the event name from Event Name dropdown.

- Event Name—displays the list of all events defined using Event Descriptors UI. For details, see Section : “Manage Events.”
- Event Keys—the event key parameters will be displayed based on the event name selected. Enter the corresponding event key values.

If JMS is selected as Event type, enter the JMS message in the JMS Message text field as in Figure 348.

Example: Data upload done.load_id:$WorkflowInstanceId

Figure 348: JMS Message



Event Type: JMS Event

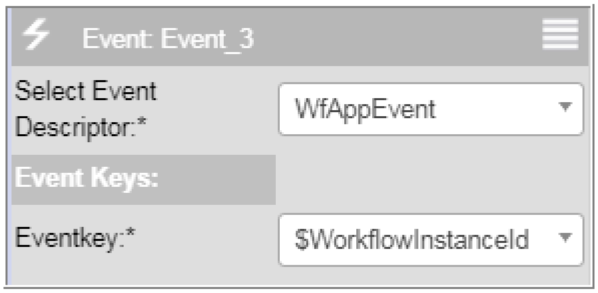
JMS Message: *

Data upload done.load_id:$workflowInstanceId

Event Node

Description: Event node is required for suspending the workflow till a corresponding raise event occurs.

Figure 349: Event Node Configurations



Select Event Descriptor:* WfAppEvent

Eventkey:* $WorkflowInstanceId

Parameter Descriptions

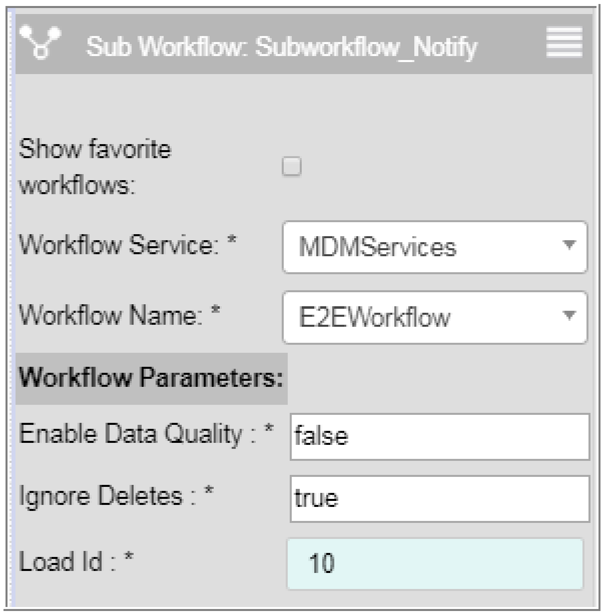
- Select Event Descriptor—select the event descriptor. It displays the list of all events defined using Event Descriptors UI. For details, see Section : “Manage Events.”

- Event Keys—the event key parameters will be displayed based on the event name selected. Enter the corresponding event key values.

Sub Workflow Node

Description: Sub-Workflow node is required for reusing an earlier defined workflow.

Figure 350: Sub Workflow Node Configurations



Sub Workflow: Subworkflow_Notify

Show favorite workflows: ☐

Workflow Service: * MDMServices

Workflow Name: * E2EWorkflow

Workflow Parameters:

Enable Data Quality : * false

Ignore Deletes : * true

Load Id : * 10

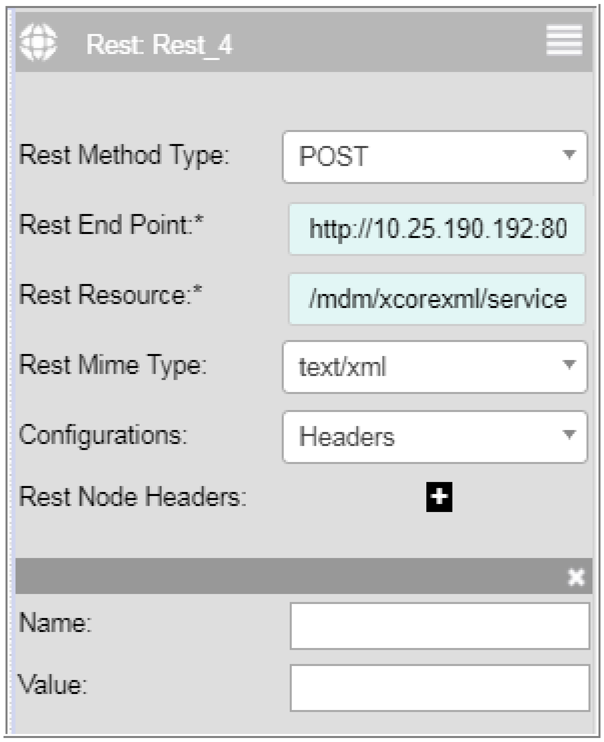
Parameter Descriptions

- Show Favorite Workflow—if this checkbox is selected, only the workflows marked as favorite workflows will be displayed in the workflow name list. You will have to mark a workflow as favorite sub-workflow through Configure workflows UI.
- Workflow Service—displays the list of all services. Select the workflow service.
- Workflow Name—displays the list of all workflows of the selected service. Select the required workflow to be executed as sub workflow.
- Workflow Parameters—displays the workflow parameters of the selected workflow.

Rest Node

Description: The Rest node is used for outgoing Rest based web services.

Figure 351: Rest Node Configurations



Rest Method Type: POST

Rest End Point:* http://10.25.190.192:80

Rest Resource:* /mdm/xcorexml/service

Rest Mime Type: text/xml

Configurations: Headers

Rest Node Headers:

Name:

Value:

Parameter Descriptions

- Rest Method Type—HTTP method types.

  GET: used to access information about a resource.

  POST: used to create new resources, typically by calling it on the parent to create child resource.

  PUT: used to update (example: replaces) or creates a resource. To create a resource, the logical URL of the resource must be able to be generated by the client otherwise POST needs to be used instead.

  DELETE: used to delete a resource.
- Rest End Point—specify REST End point.
- Rest Resource—specify the resource point.

  The End point and resource point are combined in run time to form a REST resource or REST end point URL.

  For example:

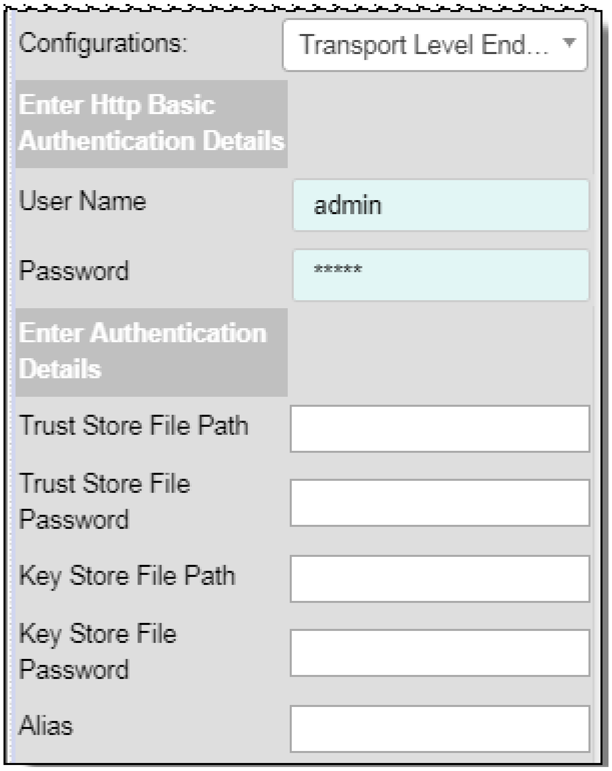
  End Point: http://maps.googleapis.com

  Resource: maps/api/geocode/xml

  REST end point URL: http://maps.googleapis.com/maps/api/geocode/xml
- Rest Mime Type—specify the data interchange format type. Can be text/xml, text/html, application/xml and application/JSON.
- Configurations—specify the configuration details like SSL, security etc., in the Rest node.

- Headers: HTTP header fields are components of the header section of request and response messages in the Hypertext Transfer Protocol (HTTP). They define the operating parameters of an HTTP transaction.
- Parameters: specify the variable parts of resources. In run time, if the selected method is GET then endpoint URL will be appended with all available parameters. If the selected method is POST then all parameter values will be posted to the specified end point. Enter the name and the value of the parameter.
- XMLHTTP/JSON Request: specify the XMLhttp or Json request.
- Transport Level Endorsement: specify the security parameters as in Figure 352. MDM supports HTTP basic Authentication and SSL.

Figure 352: Rest Node Configuration



Configurations: Transport Level End...

Enter Http Basic Authentication Details

User Name: admin

Password: *****

Enter Authentication Details

Trust Store File Path

Trust Store File Password

Key Store File Path

Key Store File Password

Alias

For HTTP Basic authentication details, enter user name and password.

For SSL authentication, enter the following:

- Trust Store File Path —File path for Trust Store. The value entered should be in the format as file: <PATH_TO_TRUST_STORE>

  Example: file:C:\ssl\truststore.jks
- Trust Store File Password—Password for trust store
- Key Store File Path—File path for Key Store. The value entered should be in the format as file: <PATH_TO_KEY_STORE>

  Example: file:C:\ssl\keystore.jks

  Note: Trust Store and Key Store files should be in JKS format.

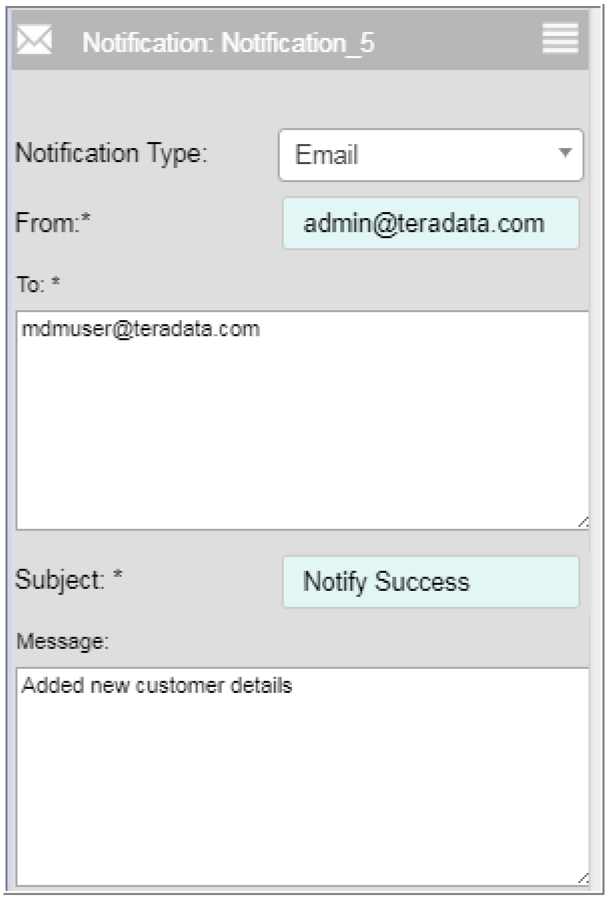
- Key Store File Password—Password for key store
- Alias—Alias value for keystore file.

  Note: For one way SSL, only the Trust Store File Password is required. For two way SSL, both the Trust store and Key Store Passwords required.

Notification Node ✉

Description: notification node is required to configure and send email or web notification.

Figure 353: Notification Node



Notification: Notification_5

Notification Type: Email

From:* admin@teradata.com

To: * mdmuser@teradata.com

Subject: * Notify Success

Message: Added new customer details

Parameter Descriptions

- Notification Type—Email/Web (Alert)
- From—For Type: Web - MDM User Id from where notification should be sent, For Type: E-mail - you can enter valid email id from where notification should be sent.
- To—For Type: Web - MDM User Id to which notification should be sent to, For Type: E-mail - you can enter multiple valid email ids separated by ';'
- Subject—Notification subject
- Message—Notification message

Decision Node

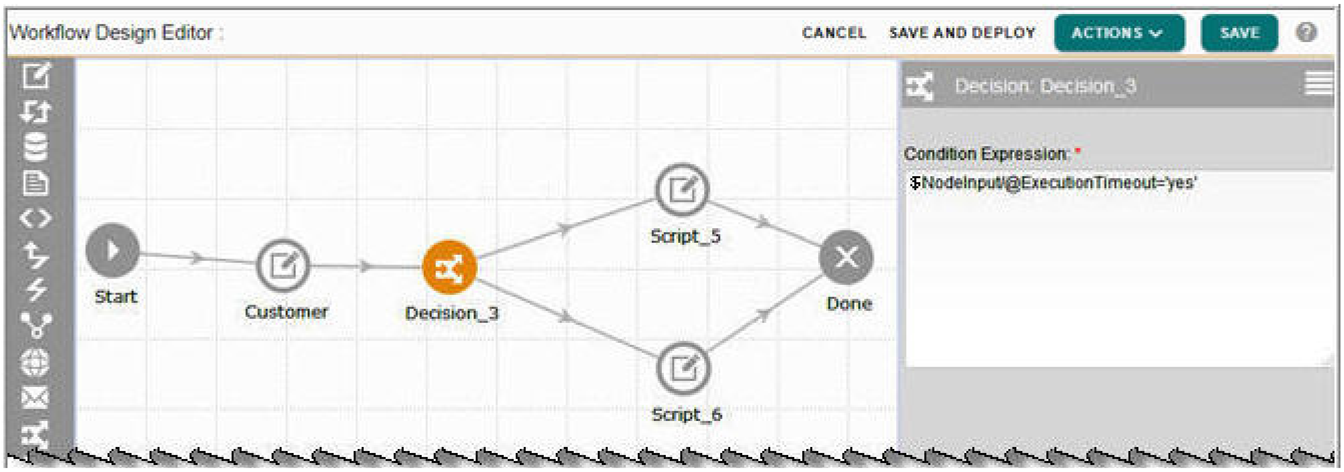
Description: Decision node is required to check a particular condition and select the path of execution based on the condition being true or false. In the Decision node configuration panel, enter the condition expression in **Condition Expression** text field as in Figure 354.

Parameter Descriptions

Condition Expression—Decision node condition expression in xrule (xpath) syntax.

For example: $NodeInput/@ExecutionTimeout='yes'

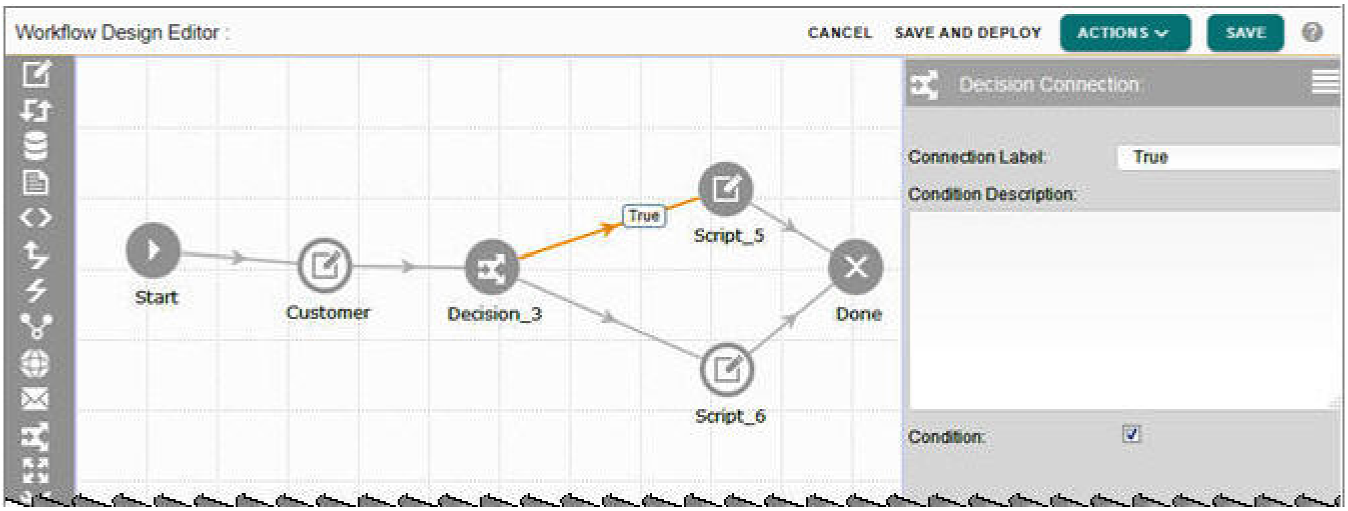
Figure 354: Decision Node—Condition Expression



Condition Expression: *
$NodeInput/@ExecutionTimeout='yes'

Click on the Decision connectivity and in the **Decision Connection** configuration panel, if the **Condition** checkbox is selected, the true connection will be executed, else the default condition is executed as in Figure 355. Decision node can have only two connections.

Figure 355: Decision Node—Condition Checkbox



Connection Label: True
Condition Description:
Condition: ☑

Branch Node

Description: Branch—Branch node is required to split execution to multiple paths depending upon one or more conditions. Branch node can have multiple connections.

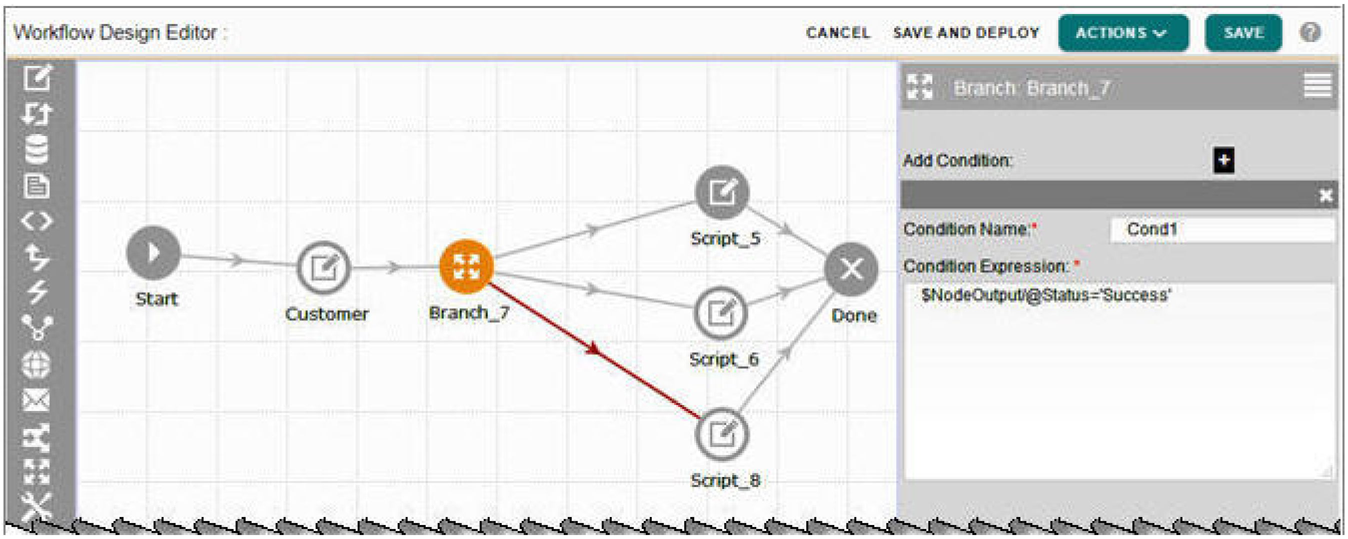
Parameter Descriptions

Condition Expression—branch condition expression in xrule (xpath) syntax.

For example: $NodeInput/@Status='Success'

On the Branch Node Configuration panel, click on the Add Condition +. Enter the condition name in the **Condition Name** field and enter the condition expression in the **Condition Expression** text field as in Figure 356.

Figure 356: Branch Node—Condition Expression

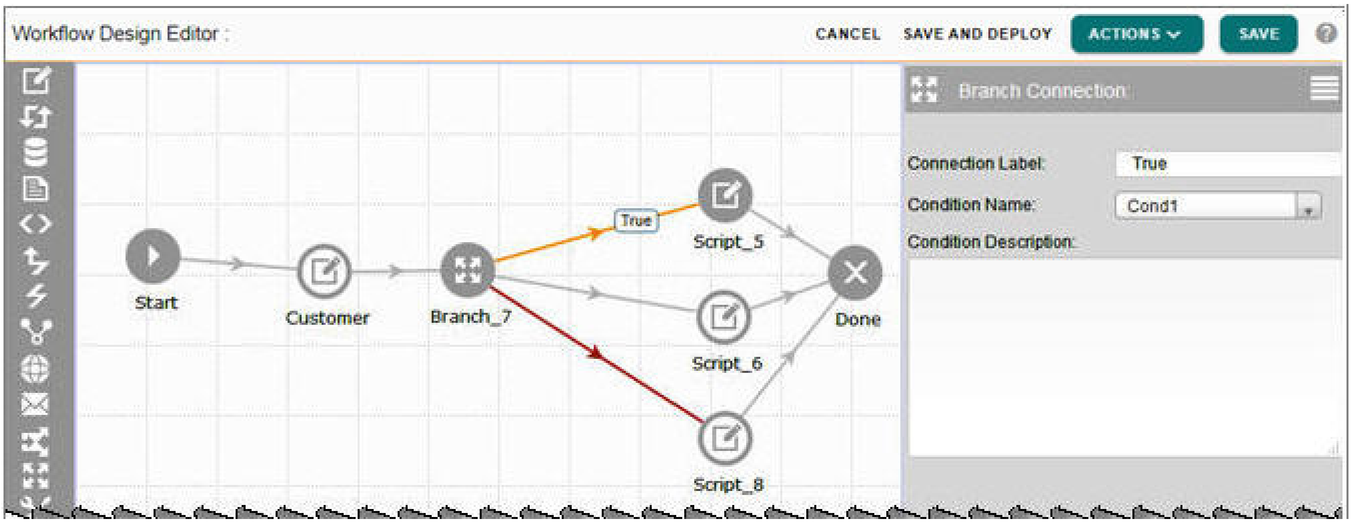


Condition Name:* Cond1

Condition Expression: * $NodeOutput/@Status='Success'

Click on the Branch connectivity and in the **Branch Connection** configuration panel, enter the connection label and select the condition name to execute the corresponding condition expression as in Figure 357.

Figure 357: Branch Node—Branch Configuration



Connection Label: True

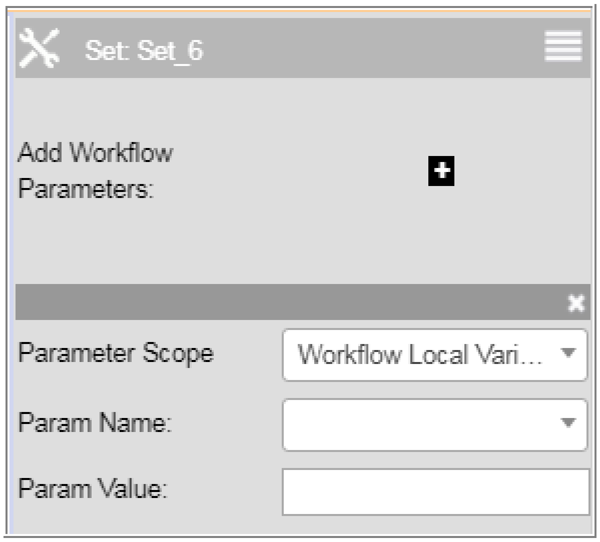
Condition Name: Cond1

Condition Description:

Set Node

Description: Set node is used for setting the values of workflow parameters within a workflow.

Figure 358: Set Node Configurations



Add Workflow Parameters:

Parameter Scope: Workflow Local Vari...

Param Name:

Param Value:

Parameter Descriptions

- Add Workflow Parameters—used for adding the input field for Param Name and Param Value. By default, one input field will be displayed.
- Parameter Scope—select the parameter scope (workflow local variable, workflow global variable and workflow transaction variable).
- Param Name—for Local and Global variables, select name of the parameter from dropdown. For Transaction variables, type the parameter names (Data list of transaction variables containing the letters typed will be displayed).

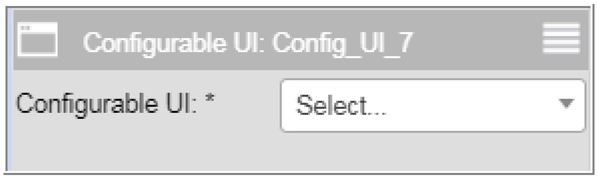
- Param Value—value of the workflow parameter.

Configurable UI Node

Description: Configurable UI node is used to use any configurable UIs within a workflow.

For using the configurable UI as a subworkflow, the configurable UI should have the custom button configured as End of Workflow so that next node in the workflow can be executed on click of the custom button. For details on creating configurable UI with custom button as End of workflow, see Chapter 8: "Configurable UI."

Figure 359: Configurable UI Node Configuration



Configurable UI: Config_UI_7

Configurable UI: * Select...

Parameter Descriptions

- Configurable UI: displays the list all active configurable UIs.

Connected Identity Node

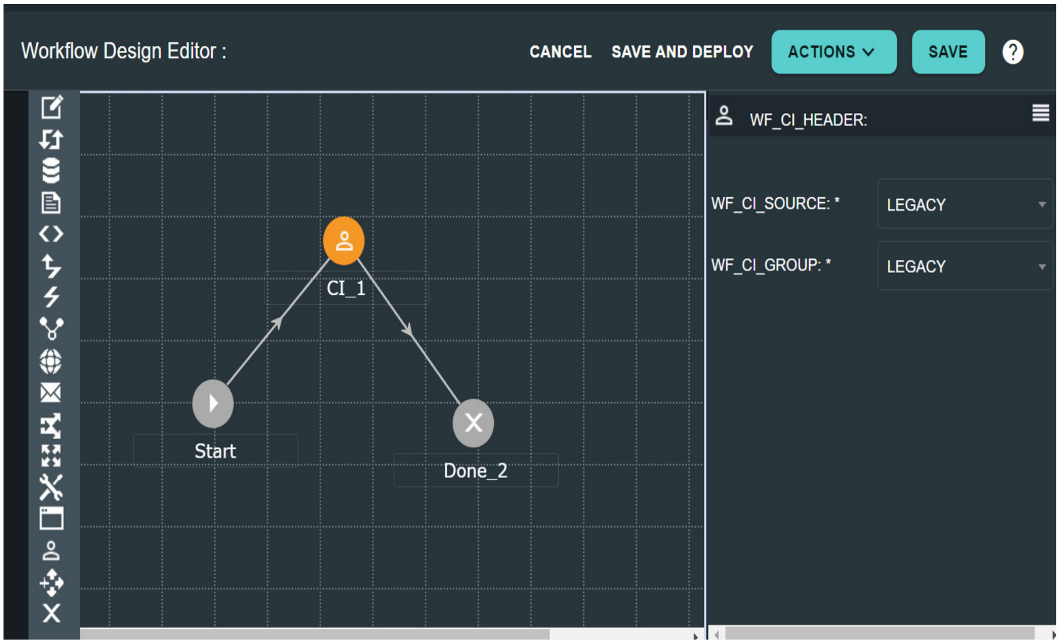
CI node is used to invoke the Connected Identity services to process a particular source or group. You can resume or restart the workflows. CI node enables you to select/enter the groupId to execute the source or group using a drop-down list. This should be obtained from the Connected Identity service via API call.

In order to execute a group through MDM Workflows, you must create a workflow with Connected Identity Node. You can define the source and group to be executed in the node and deploy the setting after saving it.

Once the workflow is saved and deployed, you can navigate to workflows and execute the workflow.

Ensure that you have access to ACCESS_CI_PROCESSES activity to execute CI workflow.

Figure 360: CI node



WF_CI_SOURCE: * LEGACY

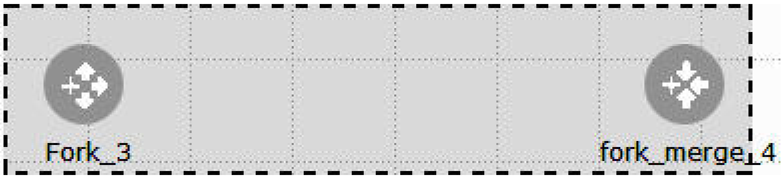
WF_CI_GROUP: * LEGACY

Fork Node

Description: Fork node is used to split execution of workflow into multiple concurrent paths. All the concurrent paths will join at the Fork_merge node to continue the execution of the workflow into next node(s).

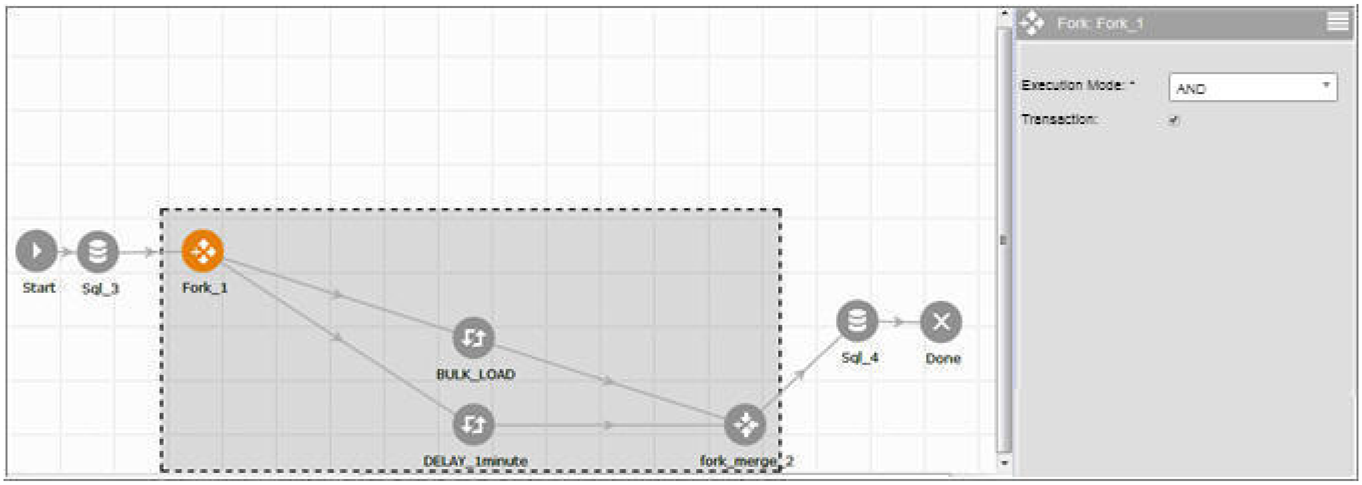
On the Workflow Designer, when you drag and drop the fork node, a rectangular box will be formed with a split node and merge node in a dashed-box as in Figure 361.

Figure 361: Fork Node



You can drag and drop nodes into the area within the rectangular box. When a node is dropped into the box, it automatically forms a connection from split node to the dropped node and from the dropped node to the merge node. You an click on the Fork node and select the execution as AND or OR as in Figure 362.

Figure 362: Fork Node in Workflow



Fork: Fork_1

Execution Mode: * AND

Transaction: ✓

Two types of Fork node (Fork-And node and Fork-Or node) can be added in a workflow. Both the Fork-And node and Fork-Or node can be used to perform concurrent tasks, but will differ in the way the workflow waits for the completion of the tasks.

- Fork AND node:
  - Fork AND node executes all the parallel tasks in a transaction and waits for the completion of all its tasks before continuing with the main workflow.
  - If any task within the Fork AND node fails, the changes of the fork node will be rolled back depending on the Xrule definition, Fork node will be marked as Failed and workflow will be aborted.
  - Logs of the Fork AND node will be available only after the execution of all the tasks specified.
- Fork OR node
  - Fork OR node executes all the parallel tasks in a transaction and as soon as one of the task is completed successfully, the execution of the workflow continues. If all the tasks fail, node will be marked as failed and the workflow will be terminated.
  - Logs will be available once the main workflow resumes execution.

Points to remember on Fork node:

- Only the following nodes (Task nodes: Script, Macro, SQL, Stored Procedure, Raise Event, XRule and Sub-Workflow node) can be added to the fork node.
- Within a fork node box, every path can have at most one node. If a task requires more than one node in a path, it should be specified as a sub-workflow.
- Custom Error Handling is disabled for all nodes within the fork node box.
- Individual task nodes can be deleted from the fork node.
- When a fork node is deleted, the box and its contents will be deleted.

Done Node

Description: Done node indicates the end of workflow.

Parameter Descriptions: None

Points to remember while using workflow nodes:

1. A workflow starts at Start Node and follows the next node for each of the nodes in order of connectivity.
2. Each workflow must have only one Start node and can have more than one Done node. Configure each next nodes including “Start” node to build a proper workflow pattern and flow.
3. Done node cannot be configured or edited and it represents the end of the workflow flow.
4. Each node will have at least one next node to form a well-connected workflow. Decision node has two (a true and a false) next nodes while branch nodes can have multiple next nodes depending on the requirement.
5. When there are multiple conditions in a branch node with the same condition, the sequence of execution is top to bottom as designed by the user.

Advance Options in Nodes

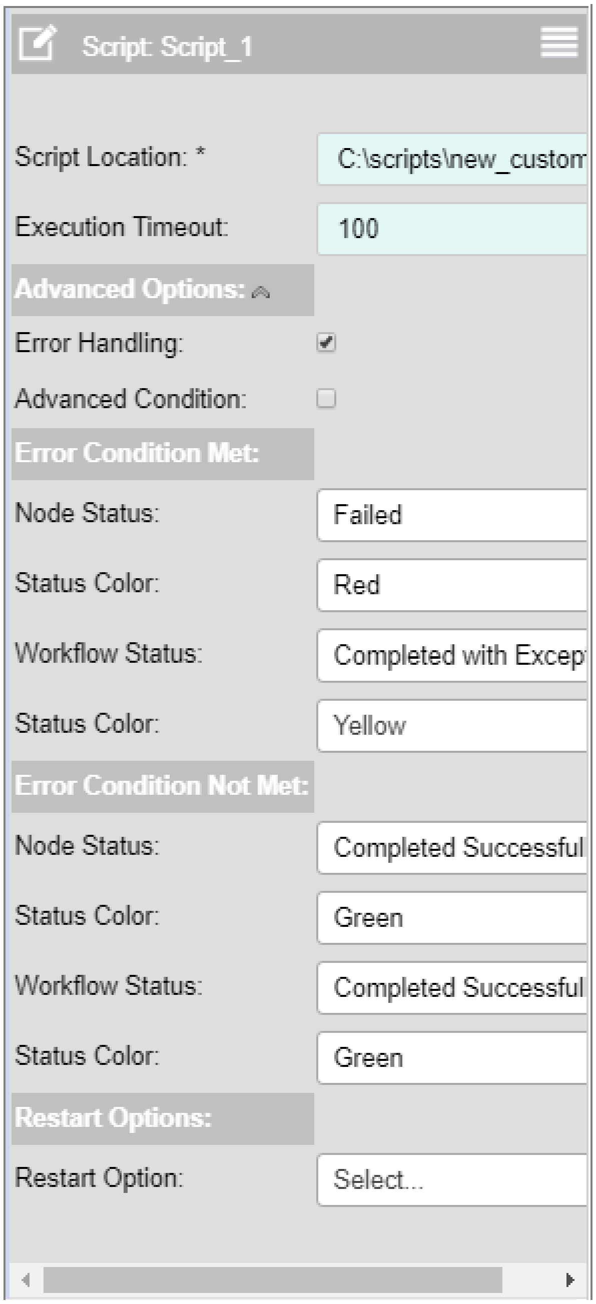
The Script, SQL, Stored Procedure, Macro, X-Rule and Raise Event nodes have Advanced Options facility. Advanced Option is used to configure error handling options. By default, the error handling option is not selected. If the Error Handling checkbox is selected, the workflow engine performs error checks based on pre-defined conditions. Additional error checks can be done using Advanced Condition. The node and workflow status can be customized as required. Workflow restart options can also be configured.

Error Handing

- Error Handling—When Error Handling check box is selected as in Figure 363, the system designed standard error checks for different types of node or workflow executions are performed.

If the Error Handling checkbox is not selected and if a node fails, the entire workflow and its parents are aborted. The node and workflow status will be displayed as “Failed”.

Figure 363: Task Configuration—Error Handling



Script Location: * C:\scripts\new_custom

Execution Timeout: 100

Advanced Options:

Error Handling: ☑

Advanced Condition: ☐

Error Condition Met:

Node Status: Failed

Status Color: Red

Workflow Status: Completed with Excep

Status Color: Yellow

Error Condition Not Met:

Node Status: Completed Successful

Status Color: Green

Workflow Status: Completed Successful

Status Color: Green

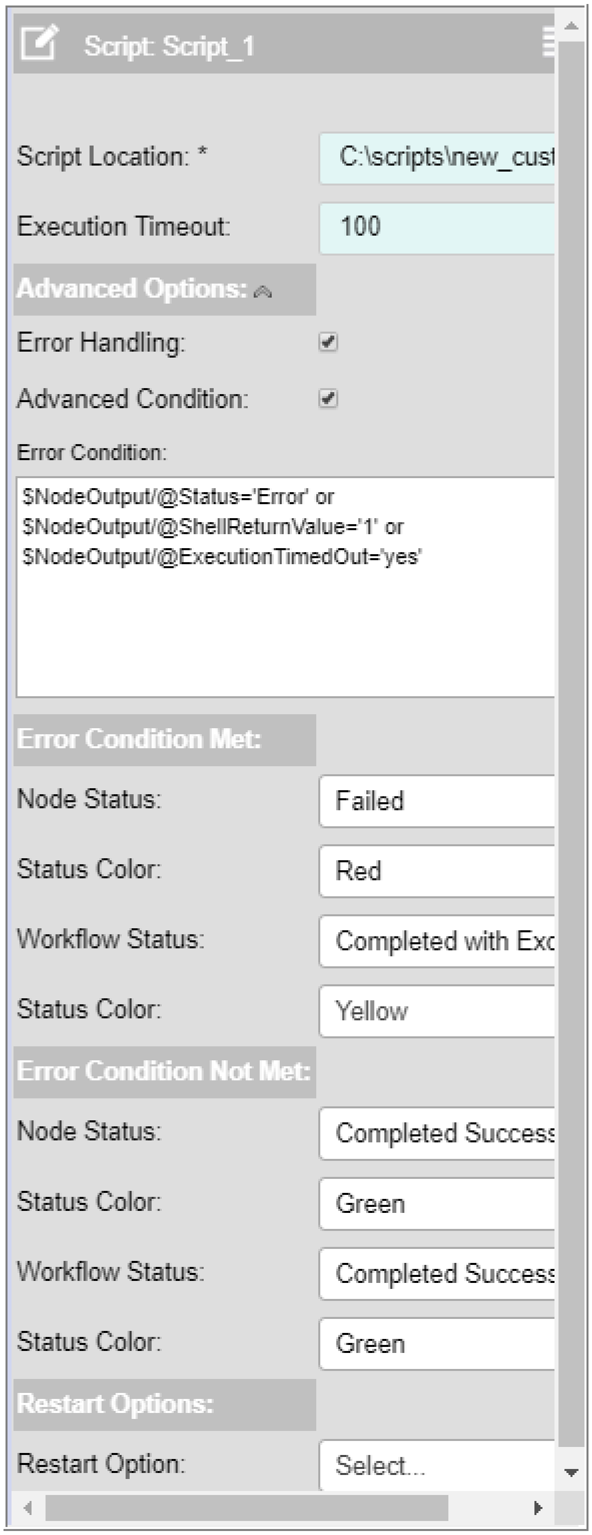
Restart Options:

Restart Option: Select...

- Advanced Condition—when Advanced Condition checkbox is selected, you can define your own custom error checks in the **Error Condition** text field as in Figure 364.

  The response of the configured node after execution will be available in the NodeOutput variable. In order to construct correct X-path expression, it is helpful to execute the workflow once to get the exact response format.

Figure 364: Task Configuration—Advanced Condition



Script Location: * C:\scripts\new_cust

Execution Timeout: 100

Error Handling: ☑

Advanced Condition: ☑

Error Condition:

```
$NodeOutput/@Status='Error' or
$NodeOutput/@ShellReturnValue='1' or
$NodeOutput/@ExecutionTimedOut='yes'
```

Node Status: Failed

Status Color: Red

Workflow Status: Completed with Exc

Status Color: Yellow

Node Status: Completed Success

Status Color: Green

Workflow Status: Completed Success

Status Color: Green

Restart Option: Select...

For both the Advanced Options (Error Handling or Advanced Condition), the custom node, workflow status and Restart options can be configured as described in the below sections.

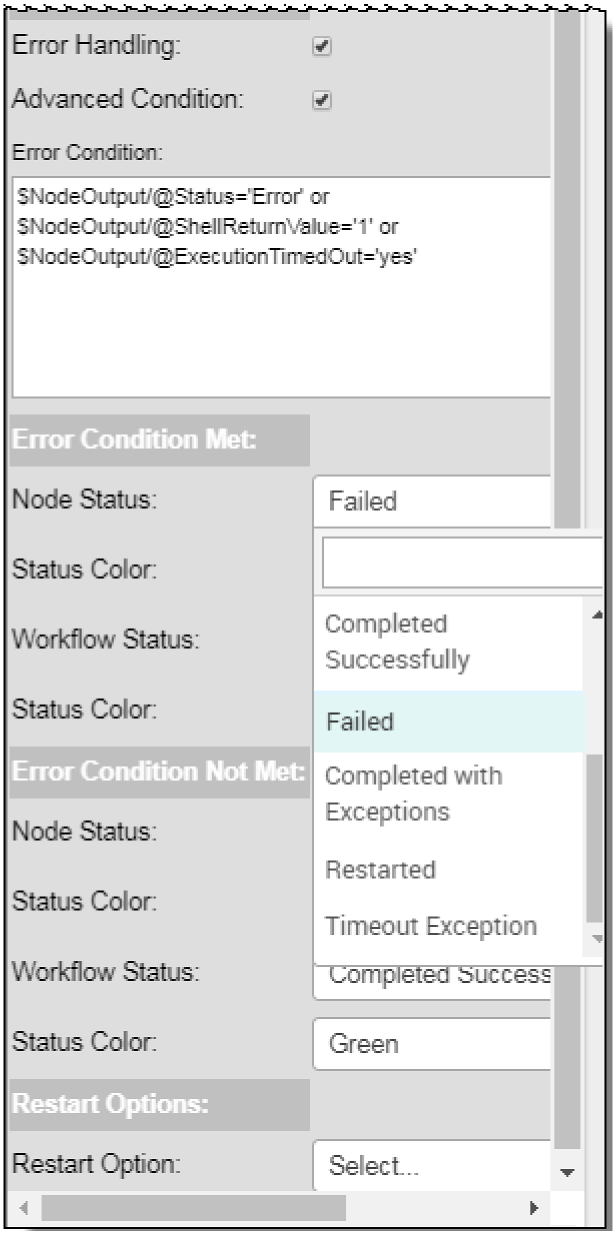
When the error condition is met, the node and workflow status and the status color specified in the **Error Condition Met** section would be applied on the workflow. When the error condition is not met, the node and workflow status and the status color specified in the **Error Condition Not Met** section would be applied on the workflow.

Custom Node Status and Custom Workflow Status

For any workflow, the node status and workflow status refers to node and workflow execution result status. By default, a fixed set of standard workflow and node statuses are set for any workflow created through manage workflow UI. If you want to add your own custom node status or workflow status, you can choose from the list of existing status and colors provided OOTB or you can define your own custom status and corresponding color codes by adding new custom status and colors. The workflow and node status defined for a workflow, for error conditions met and for error conditions not met can be seen on the workflow monitoring UI, based on the execution result of workflow and the nodes within it.

The **Node Status** and **Workflow Status** are the look up code values of the code set: **Process Status Codes**. You can define your own code values or use the OOTB code values. Figure 365 displays the OOTB node and workflow status and Table 21 lists the description of the OOTB status available for workflow and node execution results.

Figure 365: Node and Workflow Status



Error Handling: ☑

Advanced Condition: ☑

Error Condition:

```
$NodeOutput/@Status='Error' or
$NodeOutput/@ShellReturnValue='1' or
$NodeOutput/@ExecutionTimedOut='yes'
```

Error Condition Met:

Node Status: Failed

Status Color:

Workflow Status:

Status Color:

Error Condition Not Met:

Node Status:

Status Color:

Workflow Status: Completed Success

Status Color: Green

Restart Options:

Restart Option: Select...

Table 21: Node and Workflow Status

Node Status	Description
Executing	This status corresponds to an in progress node execution.
Awaiting Event	This status corresponds to a node execution awaiting an event trigger.
Halted due to Exceptions	This status corresponds to a node execution halted due to exceptions.
Stopped	This status corresponds to a node execution stopped.

Table 21: Node and Workflow Status

Node Status	Description
Completed Successfully	This status corresponds to a node response status=Success.
Failed	This status corresponds to a node response status with one or more error.
Completed with Exceptions	This status corresponds to a node response with one or more exceptions.
Restarted	This status corresponds to restart of node execution.
Timeout Exception	This status corresponds to script execution time out exceptions.

You can select different colors to indicate the node or workflow status from the Status Color dropdown. The status colors are the look up code values of the code set: **Status Color Codes**. You can define your own code values or use the default code values.

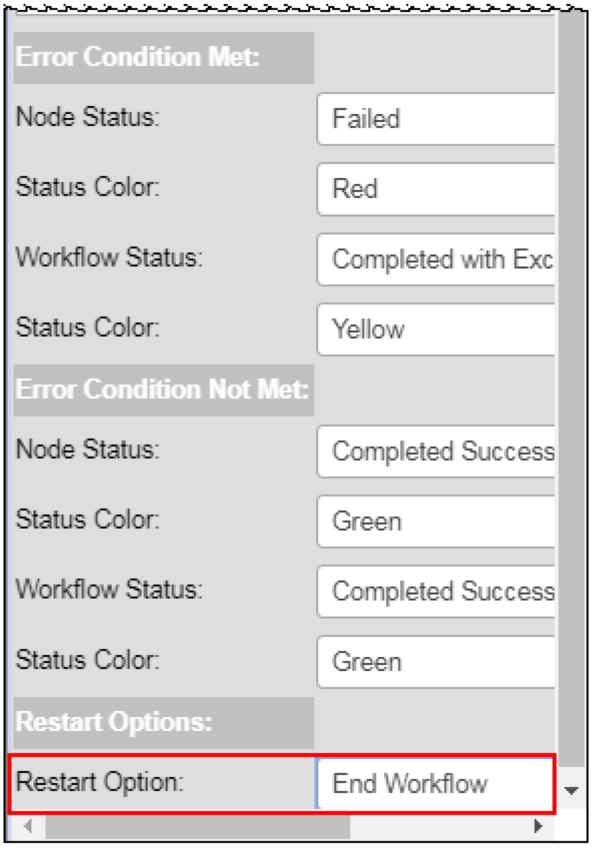
Restart Options

The restart options are available for task nodes only. With restart options, you can restart a workflow based on satisfaction of error conditions. The standard error checks are done OOTB by the system. You can add your customized error conditions by selecting advanced options.

Using the Restart Options, you can provide error handling for the workflow node failure scenario by directing the workflow execution through an alternative workflow path or previously executed path. You can use any of the below restart options to handle the errors.

- End Workflow—When the error condition is satisfied, the workflow execution will terminate at Done node as in Figure 366.

Figure 366: Script Node Configuration—Restart Options



Error Condition Met:

Node Status: Failed

Status Color: Red

Workflow Status: Completed with Exc

Status Color: Yellow

Error Condition Not Met:

Node Status: Completed Success

Status Color: Green

Workflow Status: Completed Success

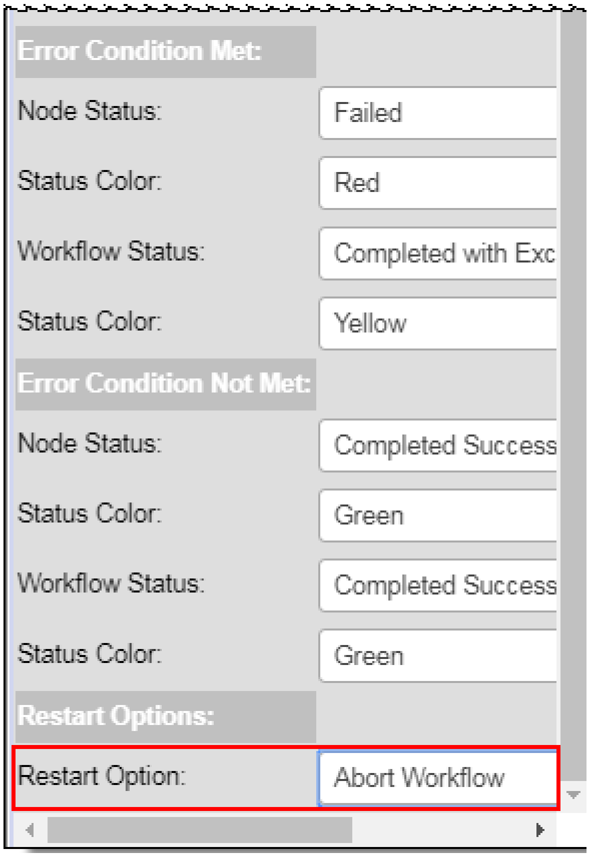
Status Color: Green

Restart Options:

Restart Option: End Workflow

- Abort Workflow—When the error condition is satisfied, the workflow execution will be aborted as in Figure 367.

Figure 367: Script Node Configuration—Restart Options



Error Condition Met:

Node Status: Failed

Status Color: Red

Workflow Status: Completed with Exc

Status Color: Yellow

Error Condition Not Met:

Node Status: Completed Success

Status Color: Green

Workflow Status: Completed Success

Status Color: Green

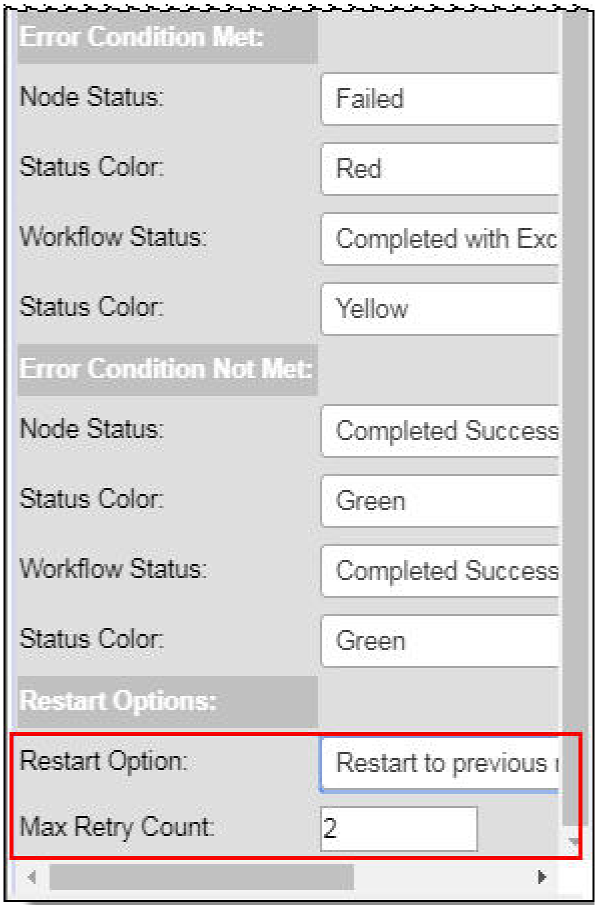
Restart Options:

Restart Option: Abort Workflow

- Restart to previous node—Directs workflow execution to previous node in a linear flow when the error condition is met. You also need to specify the maximum retry count as in Figure 368.

  The retry count will allow the workflow execution to be restarted for the specified number of times.

Figure 368: Script Node Configuration—Restart Options



Error Condition Met:

Node Status: Failed

Status Color: Red

Workflow Status: Completed with Exc

Status Color: Yellow

Error Condition Not Met:

Node Status: Completed Success

Status Color: Green

Workflow Status: Completed Success

Status Color: Green

Restart Options:

Restart Option: Restart to previous

Max Retry Count: 2

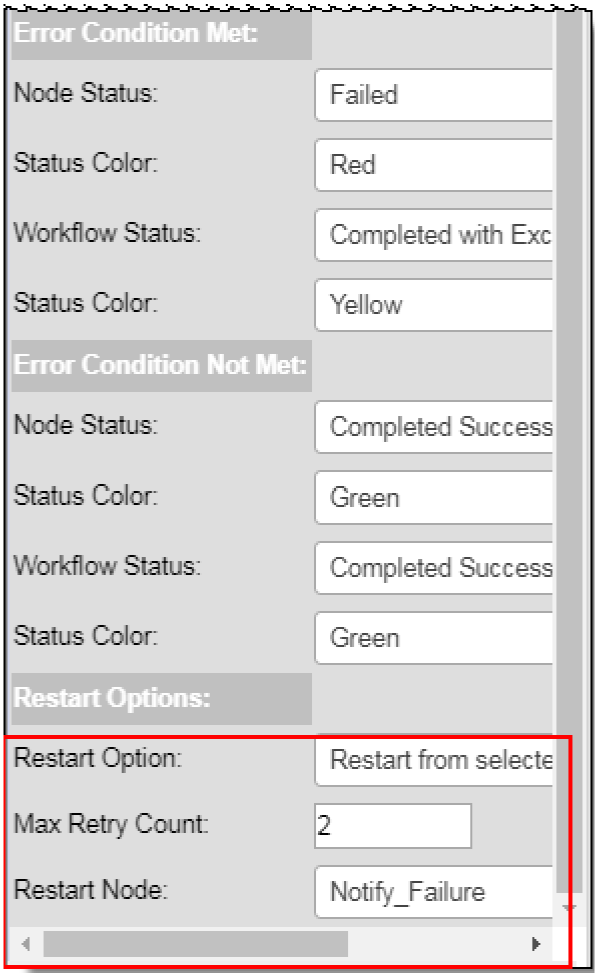
- Restart from selected node—Directs workflow execution to specified restart node when the error condition is met. You can also specify the maximum retry count as in Figure 368.

  The retry count will allow the workflow execution to be restarted for the specified number of times.

  Note: When max retry count is left blank, then any restart loop will continue infinitely.

  When the error condition is satisfied, the workflow execution will pass on to the specified restart node.

Figure 369: Script Node Configuration—Restart Options



Error Condition Met:

Node Status: Failed

Status Color: Red

Workflow Status: Completed with Exc

Status Color: Yellow

Error Condition Not Met:

Node Status: Completed Success

Status Color: Green

Workflow Status: Completed Success

Status Color: Green

Restart Options:

Restart Option: Restart from selecte

Max Retry Count: 2

Restart Node: Notify_Failure

- Wait for event to end or restart—Waits for a restart decision event, which expects manual intervention to direct execution to specified restart node or done node.

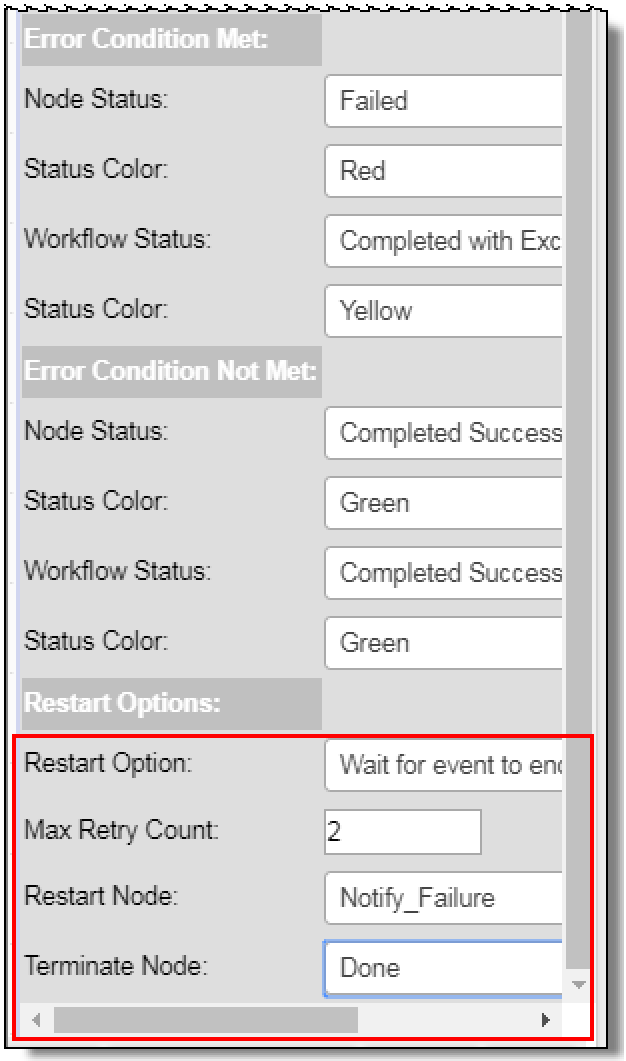
  The “Wait for event to end or restart” option requires two inputs Restart node and Terminate node. This option incorporates a system generated event if the error condition for the configured node is met and waits for the decision by a monitoring external user to reroute the execution to either Restart Node or Terminate Node. Specify the retry count, restart node and terminate node as in Figure 370.

  The retry count will allow the workflow execution to be restarted from the Monitor Workflow UI for the specified number of times.

  Restart Node dropdown displays a list of workflow nodes where the execution should be directed if Error Condition is evaluated to true for a node's restart configuration.

  Terminate Node displays a list of workflow nodes where the execution should be directed after the user terminates the workflow execution on workflow monitoring UI.

Figure 370: Script Node Configuration—Restart Options



Error Condition Met:

Node Status: Failed

Status Color: Red

Workflow Status: Completed with Exc

Status Color: Yellow

Error Condition Not Met:

Node Status: Completed Success

Status Color: Green

Workflow Status: Completed Success

Status Color: Green

Restart Options:

Restart Option: Wait for event to en

Max Retry Count: 2

Restart Node: Notify_Failure

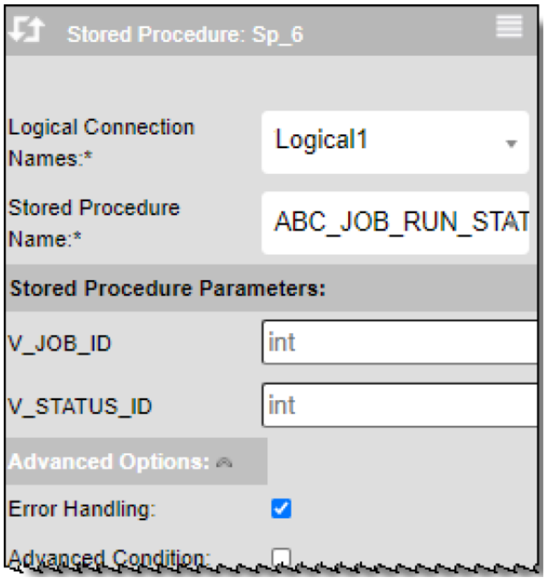
Terminate Node: Done

For detailed description on Restart Options, see Section : “Manage Workflow—Restart Use Cases”.

Secondary Connections

The Workflow Management feature is enabled to accept connections other than MDM user and perform database operations such as: execute stored procedure, execute macro and execute SQLs in other database users. In the workflow, while defining the node configuration for stored procedure, macro and SQL, the Logical Connection Names dropdown displays the list of logical name of secondary connections created on the Manage Secondary Connection UI as in Figure 371. If there exists only one physical connection for a logical connection and no configurations are used, the stored procedure or macro or SQL will be executed using that. If there exists one or more physical connections for a logical connection and configurations are used, the stored procedure or macro or SQL will be executed using the physical connection passed as part of configuration during runtime. For details on configuring secondary database connection, see Section : “Manage Secondary Connections”.

Figure 371: Stored Procedure—Logical Connection Names



Logical Connection Names:* Logical1

Stored Procedure Name:* ABC_JOB_RUN_STAT

Stored Procedure Parameters:

V_JOB_ID int

V_STATUS_ID int

Error Handling: ☑

Advanced Condition: ☐

Task Performed on the Manage Workflows

On the Manage Workflows UI, you can perform the following tasks:

- Create and Deploy Workflows
- Manage Workflow Parameters
- Workflow Advanced Settings
- Edit Workflow Details
- Search Workflow
- Activate or Deactivate Workflow
- Copy Workflow
- Schedule Workflow
- Delete Workflow

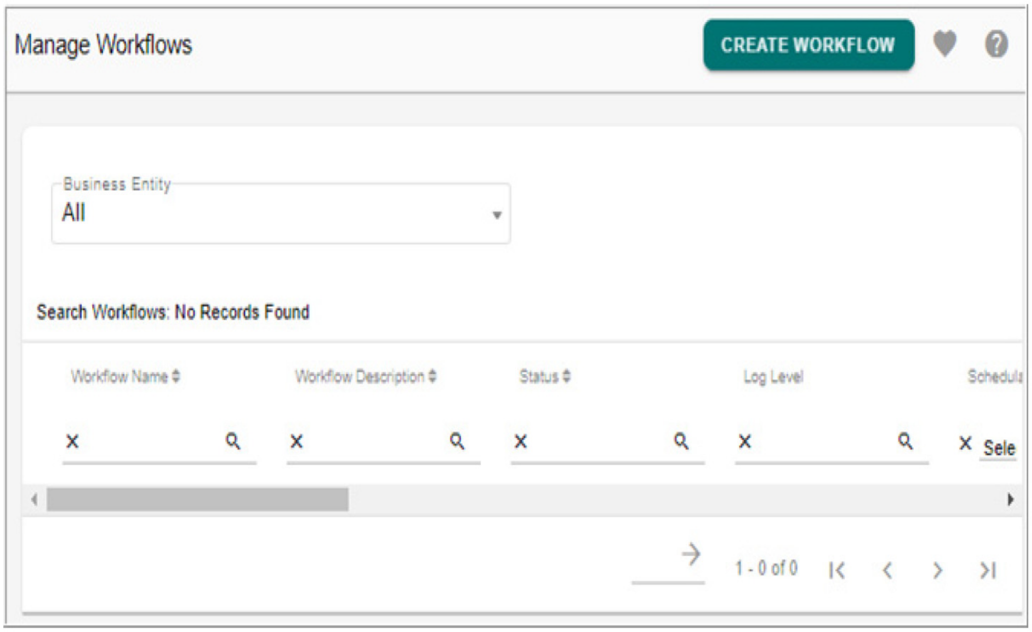
Create and Deploy Workflows

To create new workflows:

1 On the MDM UI navigation pane, click **Administration** -> **Workflow** -> **Manage Workflows**.

The **Manage Workflows** page (Figure 372) is displayed.

Figure 372: Manage Workflows



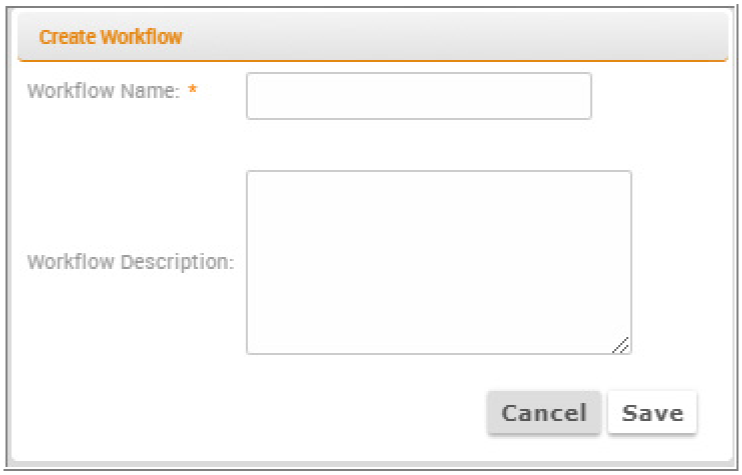
Business Entity: All

Search Workflows: No Records Found

2 On the **Manage Workflows** page, click **Create Workflow**.

The **Create Workflow** page (Figure 373) is displayed.

Figure 373: Create Workflow



3 On the **Create Workflow** page (Figure 373),

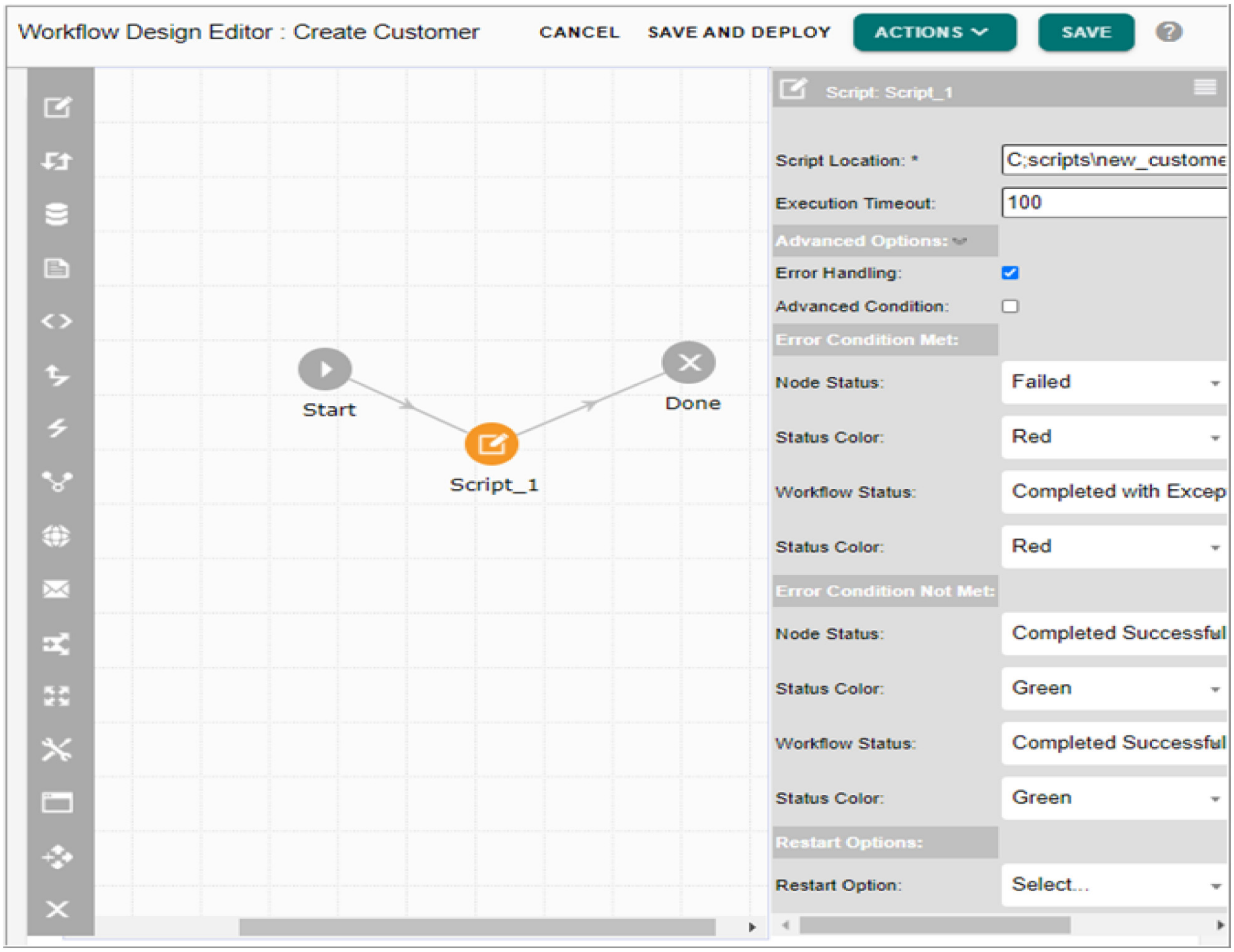
- enter the workflow name in the **Workflow Name** field.

  Note: workflow name is a unique name and no two workflows can be created with the same name.

- enter the description of the workflow in the **Workflow Description** field.
- click **Save**.

The **Workflow Design Editor** (Figure 374) is displayed where you can define the actual workflow functionality using the workflow nodes and connections. By default start and end nodes are added for each workflow.

Figure 374: Workflow Design Editor



Script: Script_1

Script Location: * C;scripts\new_custome

Execution Timeout: 100

Advanced Options:

Error Handling: ☑

Advanced Condition: ☐

Error Condition Met:

Node Status: Failed

Status Color: Red

Workflow Status: Completed with Excep

Status Color: Red

Error Condition Not Met:

Node Status: Completed Successful

Status Color: Green

Workflow Status: Completed Successful

Status Color: Green

Restart Options:

Restart Option: Select...

- Drag and drop the required nodes of the workflow from the node pallet. Connect the nodes in the sequence required.
- Click on the nodes added and fill in the required configuration details. For details about the node configuration, see Section : "Workflow Nodes."

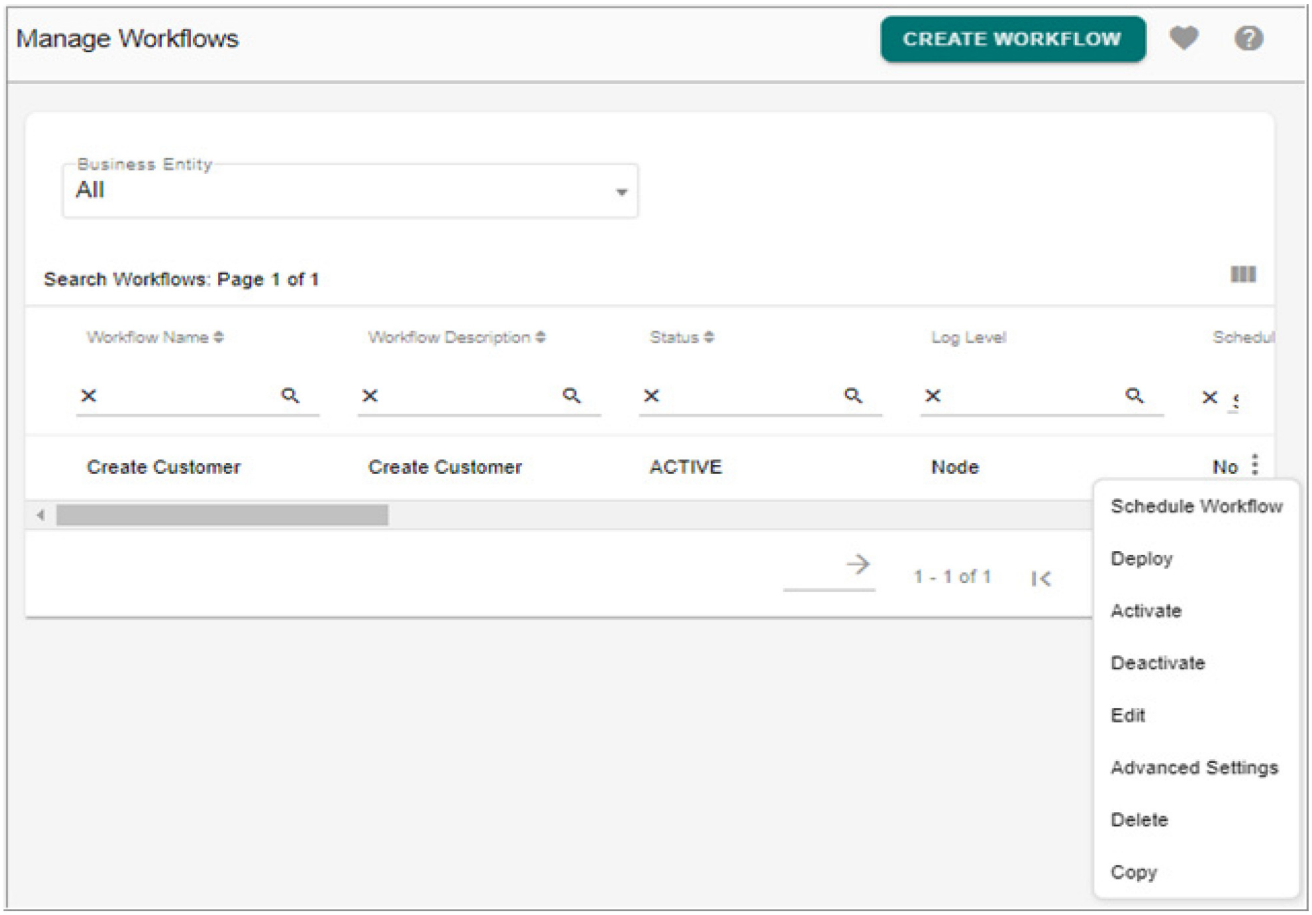
  Once the workflow is designed, you can save and then deploy the workflow.

4 On the **Workflow Design Editor** UI, click **Save and Deploy**.

Message: "Workflow deployed successfully" is displayed and the workflow will be available on the Execute Workflows UI.

You can also deploy the workflow from Manage Workflows UI, by selecting the required workflow and click **Deploy** as in Figure 375.

Figure 375: Manage Workflows



Manage Workflow Parameters

The workflow parameters are the workflow variable parameters, which once configured can be used throughout the workflow to pass dynamic values for the workflow instances. Defining and managing parameters can be done from Manage Parameters UI. On the Manage Parameters UI, you can define a parameter as “Required” and on execution of a particular instance of the workflow, the values of the required parameters need to be provided.

Important points of manage workflow parameters:

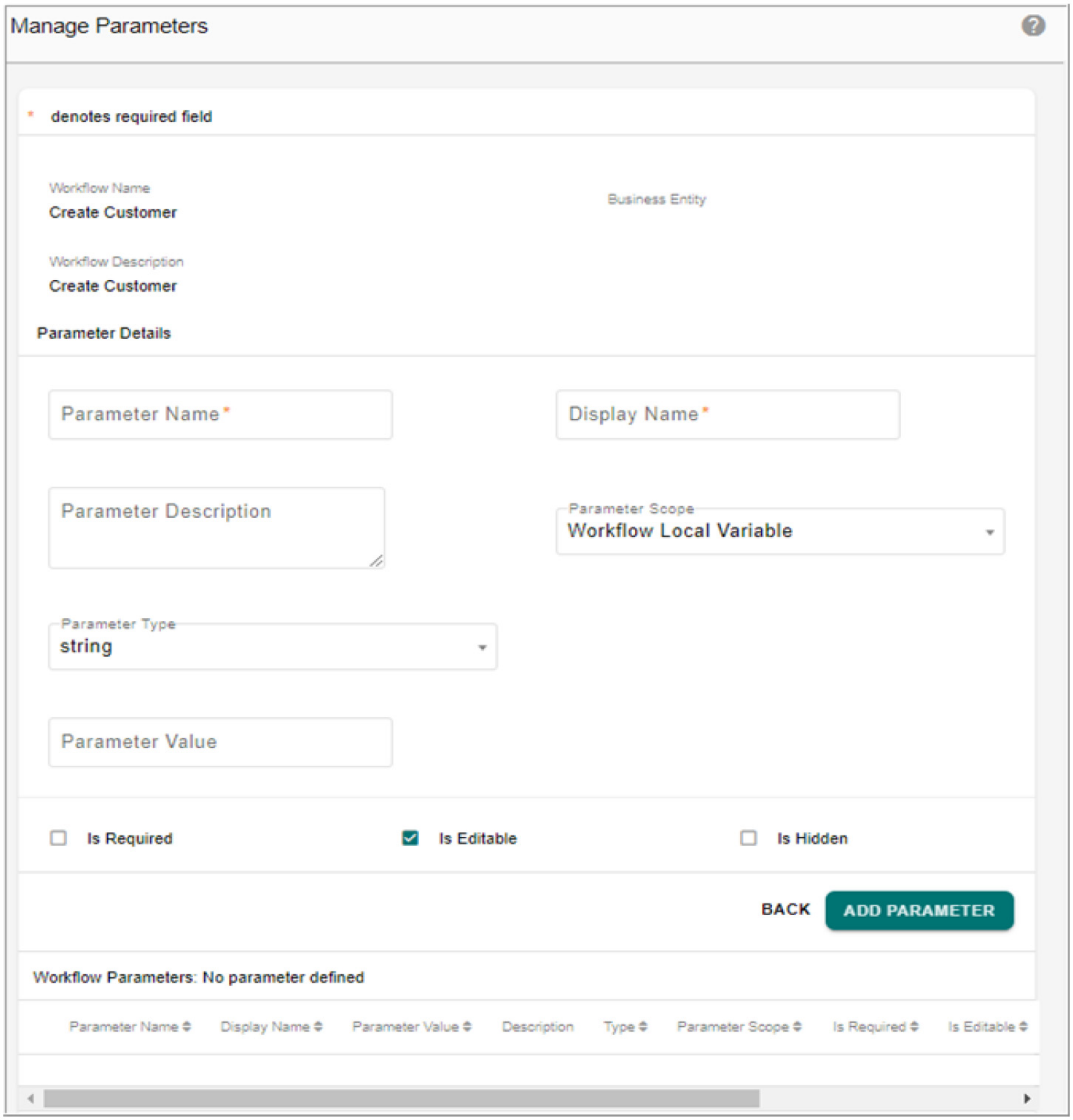
- Parameters can be used within a workflow node as a variable. In order to use a parameter as a variable within a node, the parameter name should be prefixed by a $.
- The values of the parameters can be passed to the workflow during execution of it. User will be prompted to provide values of the parameters. The execution of a workflow cannot be started unless values of mandatory parameters are provided.
- If the parameters are of type Global or Transaction, they can be used in any of the sub-workflow of the parent workflow where it is defined. The sub-workflow need not define them.

To add workflow parameters:

1 On the **Workflow Design Editor** page, click **Workflow Parameters** from the **Actions** dropdown.

The **Manage Parameters** page (Figure 376) is displayed.

Figure 376: Manage Parameters



Workflow Name: Create Customer

Workflow Description: Create Customer

Parameter Scope: Workflow Local Variable

Parameter Type: string

☐ Is Required ☑ Is Editable ☐ Is Hidden

Workflow Parameters: No parameter defined

2 On the **Manage Parameters** page (Figure 376),

- enter the parameter name in the **Parameter Name** field.

  The workflow parameter name is used as the workflow variable and should adhere to the following:

  - The parameter name must not contain white spaces and special character.

  - It is recommended not to provide parameter names as any of the global workflow variables like, Workflows, userId, thisParam etc., as this can be conflicting with workflow execution variables.
  - The parameter name must not be any internally defined workflow parameters like,

  $WorkflowInstanceId—a runtime generated workflow identifier

  $WorkflowProcessId—the process id of the workflow process

  $WfProcessExecutor—holds the user id of the person who starts the workflow instance.

  The above predefined workflow parameters or variables can be used as workflow parameters in any of the node configuration as required.

- enter the UI display name of the workflow parameter in **Display Name** field.

  The UI display name of the workflow parameter is displayed at the time of starting a workflow execution.
- enter the workflow parameter description in **Parameter Description** field.

  The description is displayed as hover text title on the start workflow execution on workflow parameters page.
- select the parameter scope from the **Parameter Scope** dropdown.
  - workflow local variable: workflow local variable are the variables available for access within the workflow.
  - workflow global variable: workflow global variable are the variables available for access within the workflow and its sub-workflows within the same service where it is defined.
  - workflow transaction variable: workflow transaction variables are the variables available for access within the workflow and its sub-workflows in a transaction within the same service where it is defined.
- enter the parameter value in the **Parameter Value** field.

  The entered parameter value can be defined as the default value, which will be assigned to parameter when the UI displays the workflow parameters prior to start workflow.
- select the parameter type (date, datetime, string, text area) from the **Parameter Type** dropdown.
- select **Is Required** check box if the parameter is a required field at the time of creating a new instance of a workflow.
- select **Is Editable** checkbox if you want the parameter to be editable at runtime.
- select **Is Hidden** checkbox if you want to hide the parameter on execution UI prior to start workflow.

3 Click **Add Parameter**.

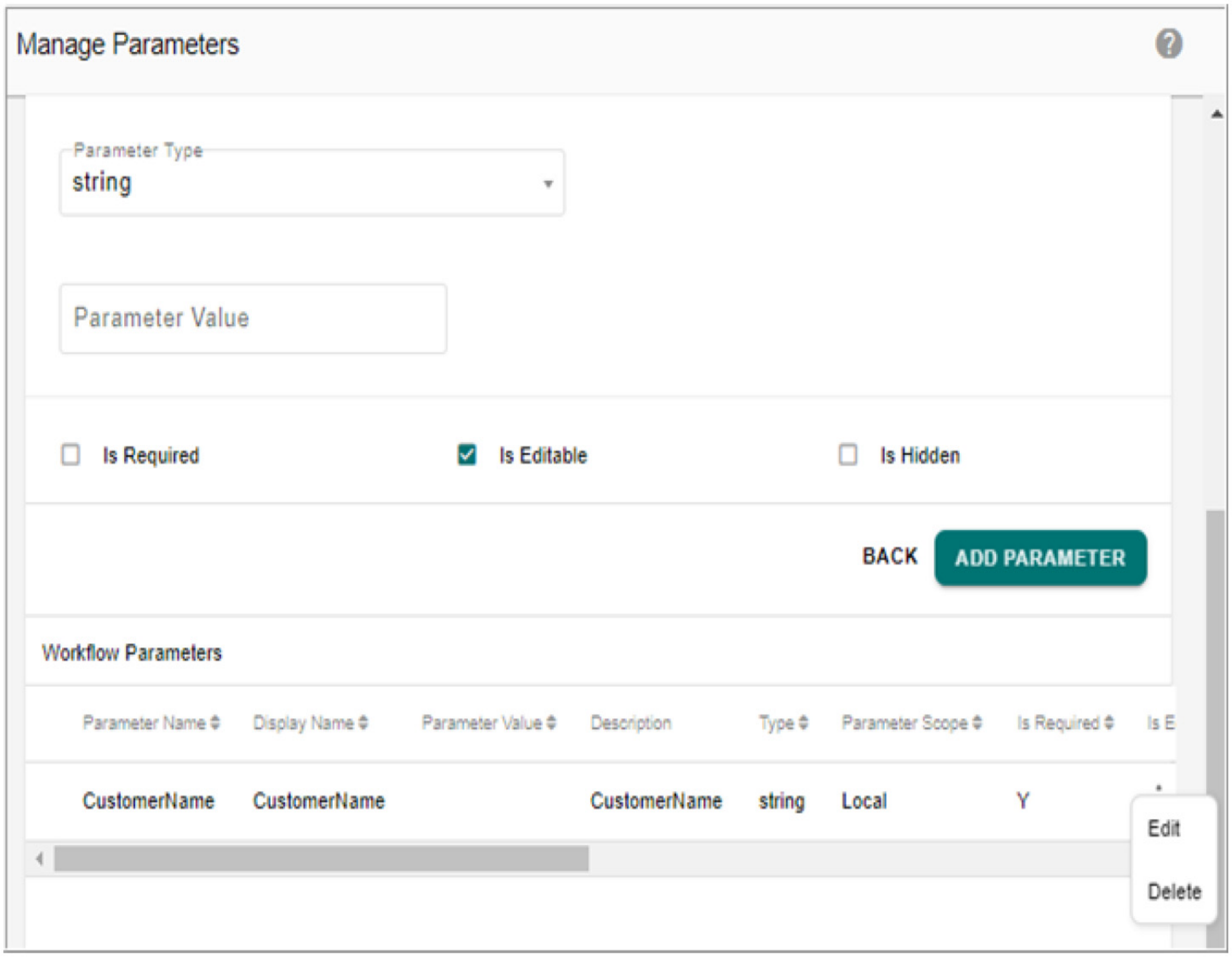
Message: “Parameter saved successfully” is displayed.

Once defined, the workflow parameters can be used inside any of the node’s configuration values by using '$' prefix to the parameter name. For example, to use 'CustomerName' parameter use '$CustomerName' as the configuration value. The value will be asked for at the time of workflow execution and the same value will be passed to the node configuration for that instance. The same can be noticed on the edit node configuration.

To edit workflow parameters:

4 On the **Manage Parameters** page, click on the menu icon corresponding to the required parameter and click **Edit** as in Figure 377.

Figure 377: Manage Parameters



Parameter Type: string

Parameter Value

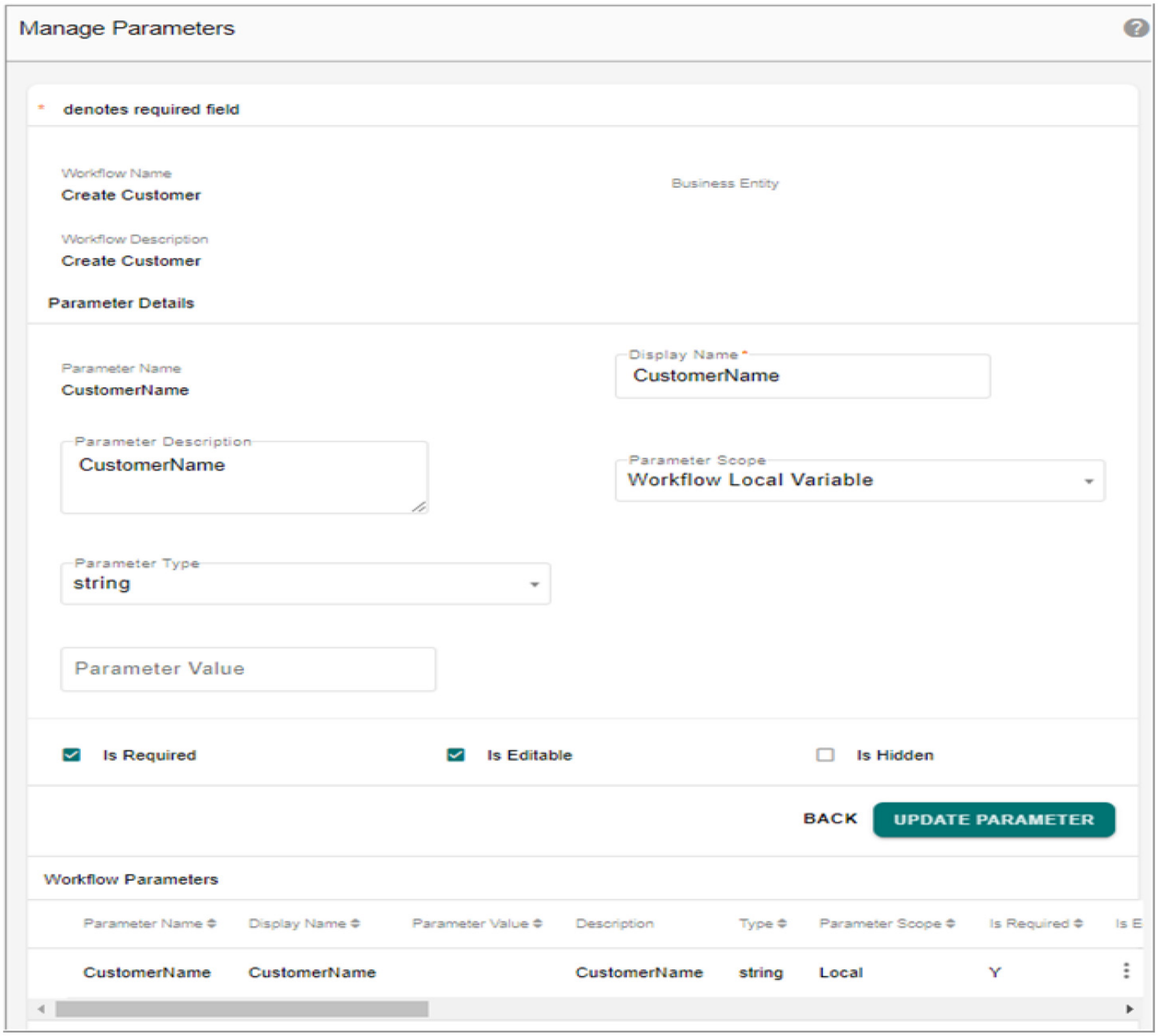
☐ Is Required ☑ Is Editable ☐ Is Hidden

Workflow Parameters

Parameter Name	Display Name	Parameter Value	Description	Type	Parameter Scope	Is Required	Is E
CustomerName	CustomerName		CustomerName	string	Local	Y	

The Manage Parameters page refreshes to display the edit parameter details as in Figure 378.

Figure 378: Manage Parameters—Edit Parameters



Manage Parameters

* denotes required field

Workflow Name
Create Customer

Business Entity

Workflow Description
Create Customer

Parameter Details

Parameter Name
CustomerName

Display Name *
CustomerName

Parameter Description
CustomerName

Parameter Scope
Workflow Local Variable

Parameter Type
string

Parameter Value

☑ Is Required ☑ Is Editable ☐ Is Hidden

Workflow Parameters

Parameter Name	Display Name	Parameter Value	Description	Type	Parameter Scope	Is Required	Is E
CustomerName	CustomerName		CustomerName	string	Local	Y	⋮

5 On the **Manage Parameters** page (Figure 378), edit the required details and click **Update Parameter**.

Message: “Parameter updated successfully” is displayed.

To delete workflow parameters:

6 On the **Manage Parameters** page, click Menu icon corresponding to the required parameter and click **Delete** as in Figure 377.

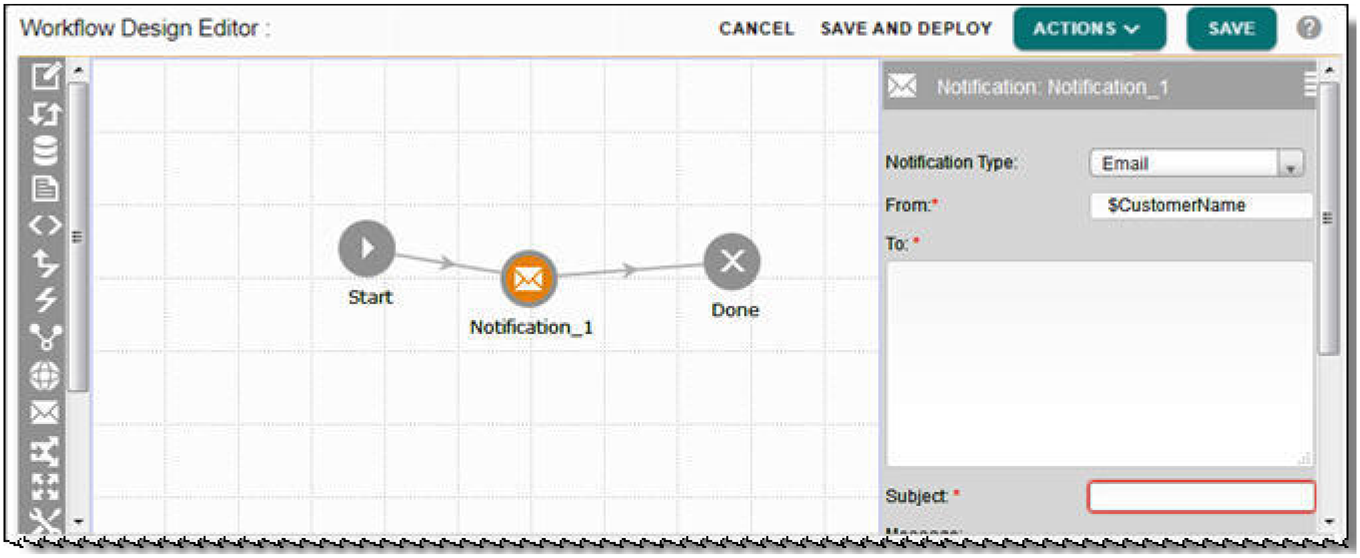
The Confirmation Webpage dialog is displayed.

7 On the Confirmation Webpage dialog, click **Yes**.

Message: “Parameter deleted successfully” is displayed.

Note: You can use the defined workflow parameters in any of the workflow nodes as in Figure 379.

Figure 379: Manage Parameters used in Workflow Nodes



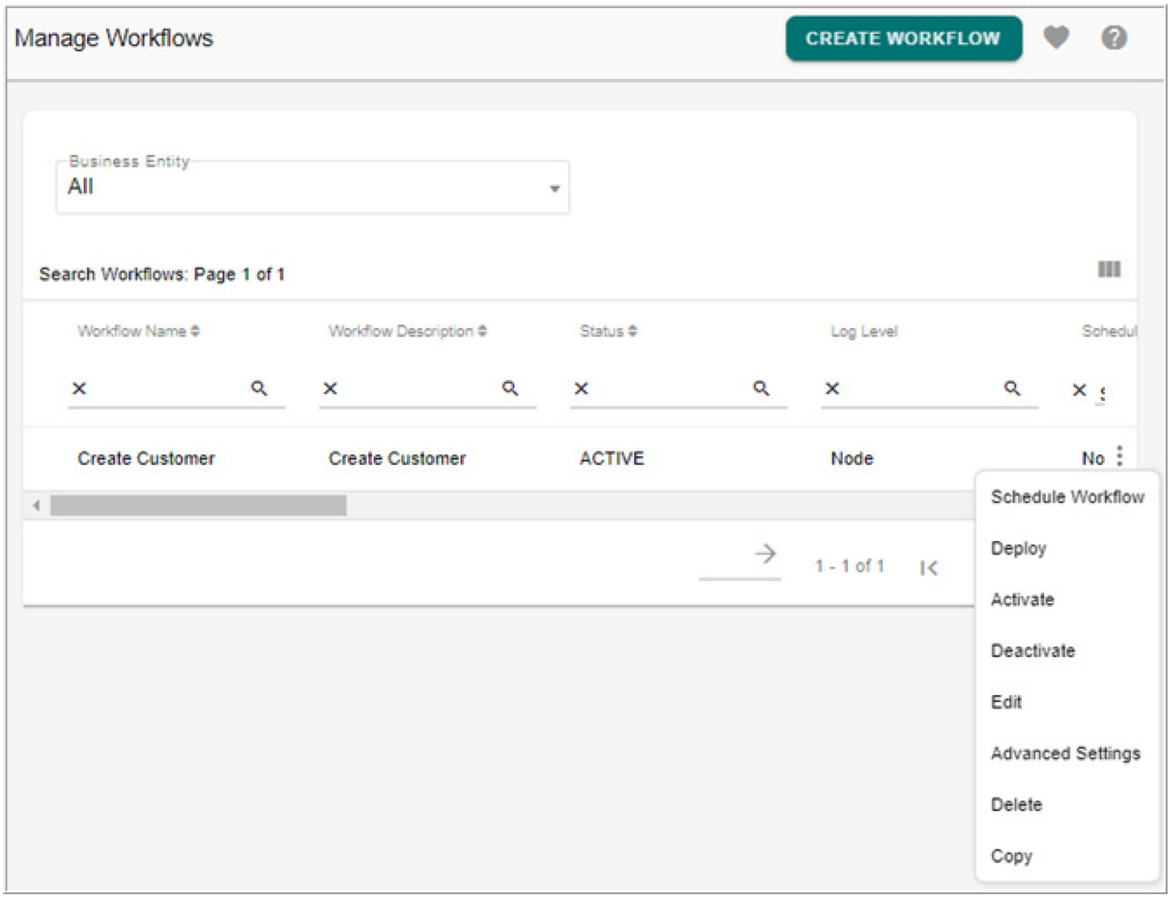
Notification Type: Email
From:* $CustomerName
To: *
Subject: *

Workflow Advanced Settings

To set advanced options for workflow:

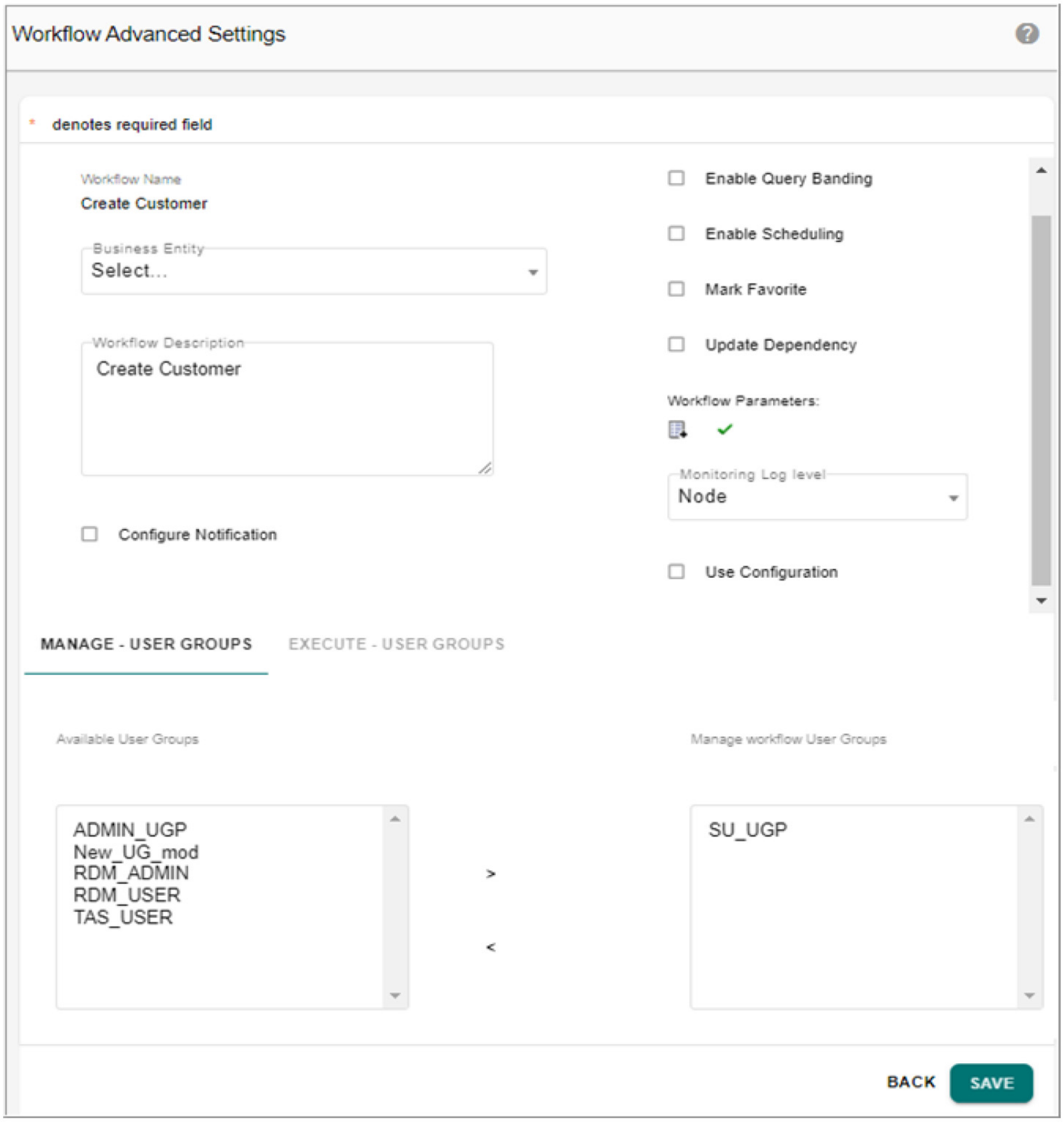
1 On the **Manage Workflows** page, click Menu icon corresponding to the required workflow and click **Advanced Settings** as in Figure 380.

Figure 380: Manage Workflows



The **Workflow Advanced Settings** page (Figure 381) is displayed.

Figure 381: Workflow Advanced Settings



Workflow Advanced Settings

* denotes required field

Workflow Name
Create Customer

Business Entity
Select...

Workflow Description
Create Customer

☐ Configure Notification

☐ Enable Query Banding

☐ Enable Scheduling

☐ Mark Favorite

☐ Update Dependency

Workflow Parameters: ✓

Monitoring Log level
Node

☐ Use Configuration

Available User Groups
ADMIN_UGP
New_UG_mod
RDM_ADMIN
RDM_USER
TAS_USER

Manage workflow User Groups
SU_UGP

2 On the **Workflow Advanced Settings** page (Figure 381),

- select the business entity to which the workflow belongs to from the **Business Entity** dropdown.
- select **Configure Notification** checkbox to send email notification about the status of the workflow.

  If **Configure Notification** checkbox is selected, the **Notification Email** field is displayed.
- enter the email Id to which the notification has to be sent in the **Notification Email** field.

  You can enter multiple email Ids separated with semicolon “;” .
- select **Enable Query Banding** checkbox if MDM query banding is required to monitor the workflow created.

- select **Enable Scheduling** checkbox if you want to enable the workflow for scheduling.
- select **Mark Favorite** checkbox if the workflow is frequently used and to be available on the workflow node palette itself.
- select **Update Dependency** checkbox if you want to update dependency status when the done node is executed.
- click on Workflow Parameters icon to navigate to Manage Workflow Parameters UI where you can define and manage workflow parameters. If workflow parameters were already defined, a green tick mark will be displayed next to the workflow parameters icon. For details on workflow parameters, see Section : "Manage Workflow Parameters."
- select Monitoring Log Level for workflow monitoring.

  You can monitor logs either at workflow level or at node level. By default, the monitoring at node level will be selected. If workflow level option is selected, the monitoring workflow UI displays the logs, the input and output parameters at the workflow level. If Node level option is selected, the monitoring workflow UI displays the logs, the input and output parameters at both the workflow level and node level.

  If Disabled option is selected for Monitoring Log Levels, no log details will be displayed on the Monitor Workflows UI. For detailed information on monitoring, see Section : "Workflow Monitoring".
- select **Use Configuration** checkbox if you want to use a configuration while executing a workflow. For details, see Section : "Manage Configurations."
- The Workflow Advanced Settings page displays two tab: **Manage - User Groups and Execute - User Groups**. Under these tabs, you can assign the required user groups for manage and execute workflow roles for more secured workflow. The Available User Groups list displays all the MDM available user groups.
- with **Manage - User Groups** tab selected, select the required user groups from **Available User Groups** list and move it to **Manage Workflow User Groups** using the arrow buttons.
- similarly with **Execute - User Groups** tab selected, select the required user groups from **Available User Groups** list and move it to **Execute Workflow User Groups** using the arrow buttons.

3 Click **Save**.

Message: "Workflow details updated successfully" is displayed.

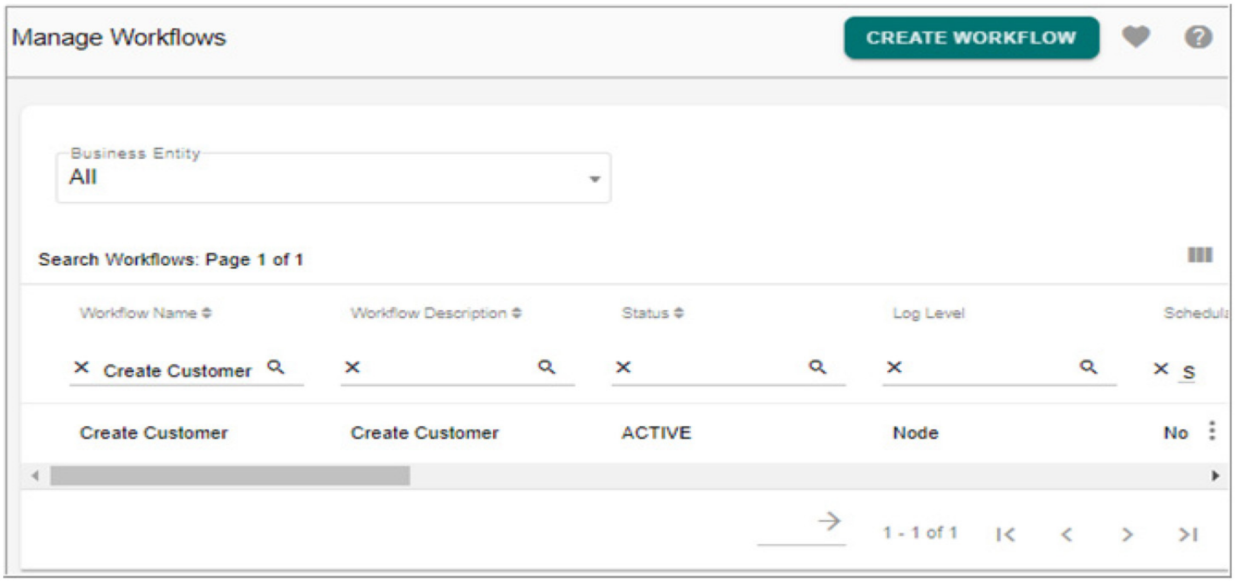
Search Workflow

To search workflow:

You can search workflow based on the business entity or also search workflows by entering any of the search parameters like workflow name, workflow description, status, log level, schedulable, favorite, use configuration, created by, created date, modified date, modified by, last deployed date and last deployed by and click on apply filter icon.

1 On the **Manage Workflows** page (Figure 382), enter the search parameter or select the business entity and search.

Figure 382: Manage Workflows



Business Entity: All

Search Workflows: Page 1 of 1

Workflow Name	Workflow Description	Status	Log Level	Schedul
Create Customer				S
Create Customer	Create Customer	ACTIVE	Node	No

The **Search Workflows** pane refreshes to display all the workflows defined under the selected business entity.

Edit Workflow Details

Once you have created and saved a workflow, you can edit the workflow details for any changes required using the Edit button on the Manage Workflows UI.

To edit workflow details:

1 On the **Manage Workflows** page, click Menu icon corresponding to the required workflow and click **Edit**.

The **Workflow Design Editor** page is displayed.

2 On the **Workflow Design Editor** page, you can add new nodes or modify the existing node configuration details or delete exiting nodes as described in Section : “Workflow Nodes”and click **Save**.

Message: “Workflow saved successfully” is displayed.

Activate or Deactivate Workflow

You can make a workflow active or deactive using the Activate or Deactivate buttons on the Manage Workflows UI. By default, a newly created workflow is in Active state and you cannot execute a deactivated workflow.

To activate a workflow:

1 On the **Manage Workflows** page, click Menu icon corresponding to the workflow that is in Inactive state and click **Activate**.

Message: “Workflow activated successfully” is displayed.

To deactivate a workflow:

1 On the **Manage Workflows** page, click Menu icon corresponding to the workflow that is in active state and click **Deactivate**.

Message: "Workflow deactivated successfully" is displayed.

Copy Workflow

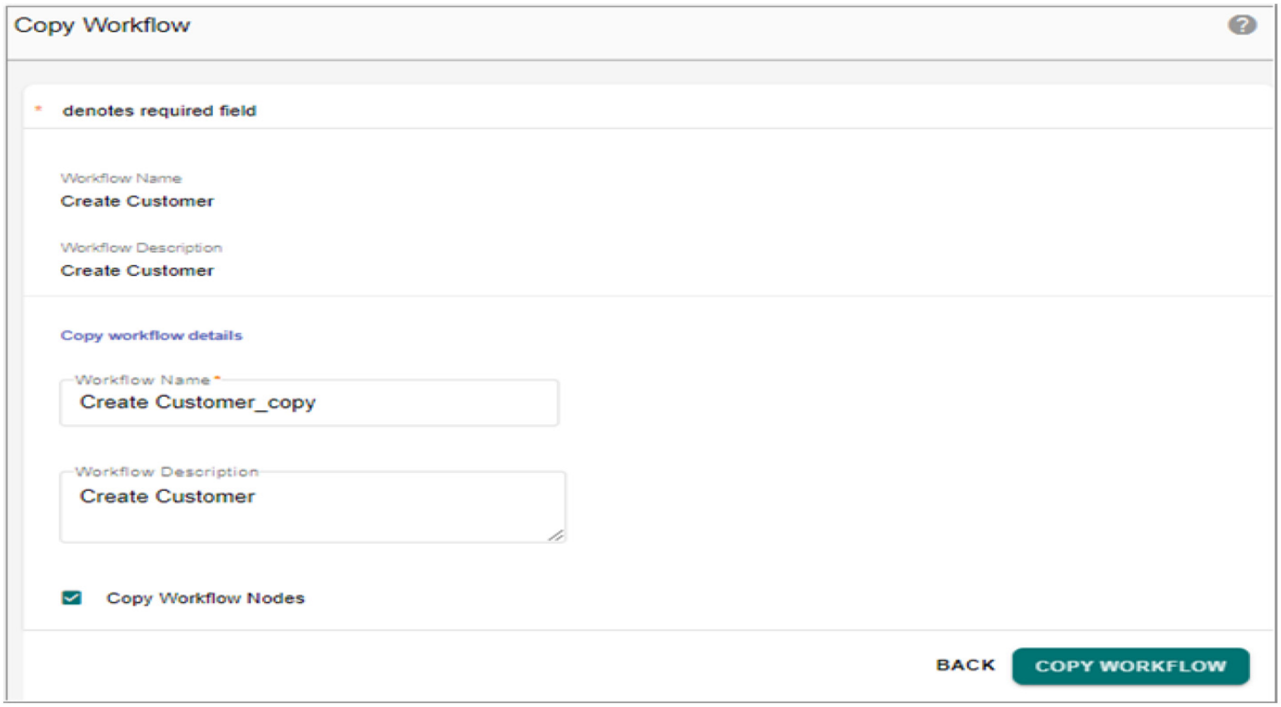
The Copy feature creates a copy of an existing workflow with or without its workflow nodes.

To copy workflow:

1 On the **Manage Workflows** page, click Menu icon corresponding to the workflow for which you want to create a copy of and click **Copy**.

The **Copy Workflow** page (Figure 383) is displayed

Figure 383: Copy Workflow



Copy Workflow

* denotes required field

Workflow Name
Create Customer

Workflow Description
Create Customer

Copy workflow details

Workflow Name *
Create Customer_copy

Workflow Description
Create Customer

☑ Copy Workflow Nodes

2 On the **Copy Workflow** page (Figure 383),

- enter the new workflow name and description in the **Workflow Name** and **Workflow Description** fields.
- select or deselect the **Copy Workflow Nodes** checkbox to copy the workflow details along with or without workflow node details.

  By default, the **Copy Workflow Nodes** checkbox is selected.

3 Click **Copy Workflow**.

The **Confirmation Webpage Dialog** is displayed.

4 On the **Confirmation Webpage Dialog**, click **Yes**.

Message: "Workflow copied successfully" is displayed.

Delete Workflow

To delete workflow:

1. On the **Manage Workflows** page, select the required workflow and click **Delete**.
2. On the **Webpage Dialog** confirmation, click **Yes**.

   Message: "Workflow deleted successfully" is displayed.

Schedule Workflow

You can schedule a workflow from Manage Workflows UI or from Execute workflows UI.

To schedule workflow:

1. On the **Manage Workflows** page, click Menu icon corresponding to the required workflow and click **Schedule Workflow**.

   The **Scheduler Details** page is displayed.
2. On the **Scheduler Details** page, enter the scheduler details and click **Save**.

   For detailed information on scheduler, see Chapter 22: "Manage Scheduler."

   The Manage Scheduler Page is displayed with the workflow schedule details.

Execute Workflows

Once a workflow is successfully deployed, the same can be executed from Execute Workflows UI. The execution history of the workflow can also be monitored from execute workflows UI. On the Execute Workflows page, you can perform the following:

- Search Workflow
- Execute Workflow
- View Workflow History
- Schedule Workflow

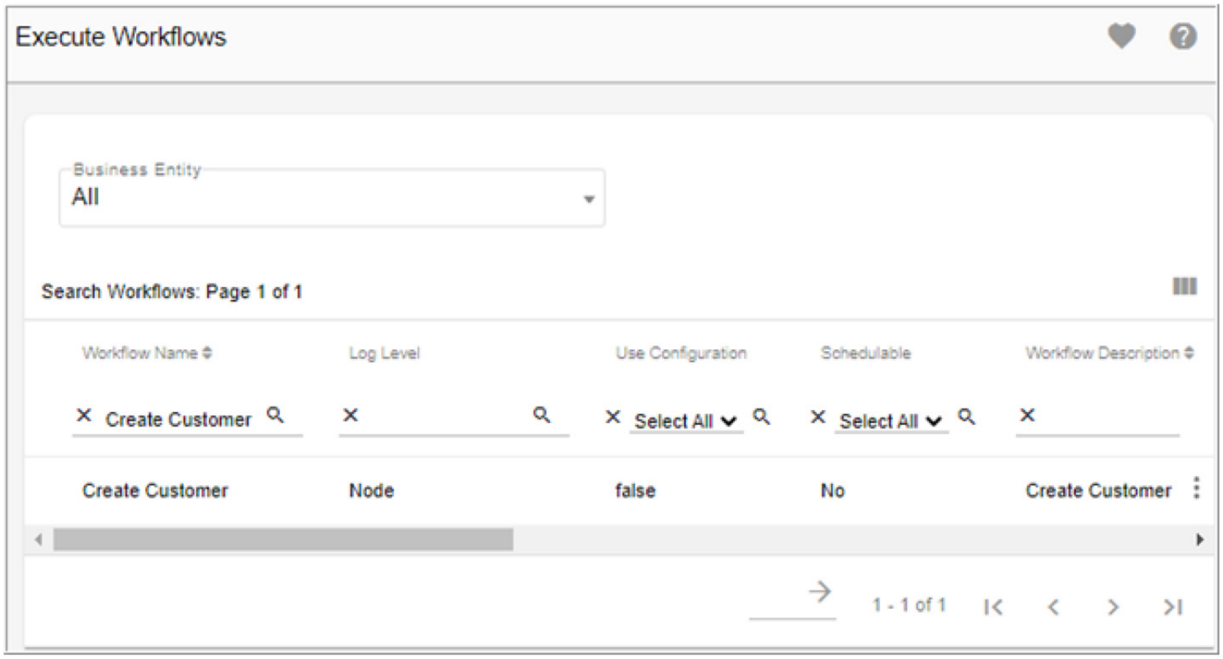
Search Workflow

To search workflow:

If a workflow is defined under business entities, you can the filter the workflow based on the business entity. You can also search workflows by entering any of the search parameters like workflow name, workflow description, log level, schedulable, use configuration, created by, created date, last deployed date and last deployed by and click on apply filter icon.

1 On the **Execute Workflows** page (Figure 382), enter the search parameter and click search icon.

Figure 384: Execute Workflows



The **Search Workflows** pane refreshes to display all the workflows defined under the selected business entity.

Execute Workflow

When a workflow is executed from Execute Workflow page, workflow engine starts an instance of the workflow. If there are workflow parameters defined for the workflow, you will be prompted to provide the values of those before starting the workflow.

If the workflow is configured to Use Configuration, user will be prompted to select a configuration from the available configurations before starting the workflow.

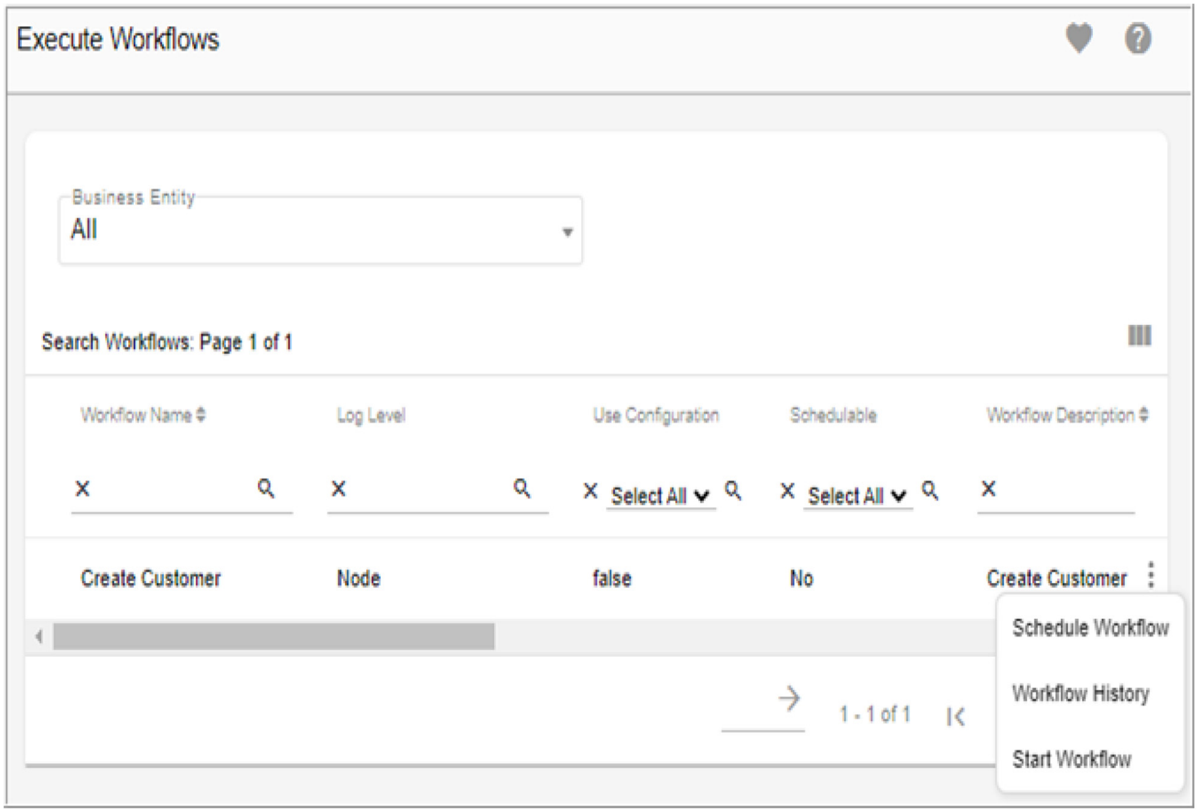
To execute workflow:

1 On the MDM UI navigation pane, click **Administration** -> **Workflow** -> **Execute Workflows**.

The **Execute Workflows** page is displayed.

2 On the **Execute Workflows** page, click the Menu icon to select the required workflow and click **Start Workflow** as in Figure 385.

Figure 385: Execute Workflows



Execute Workflows

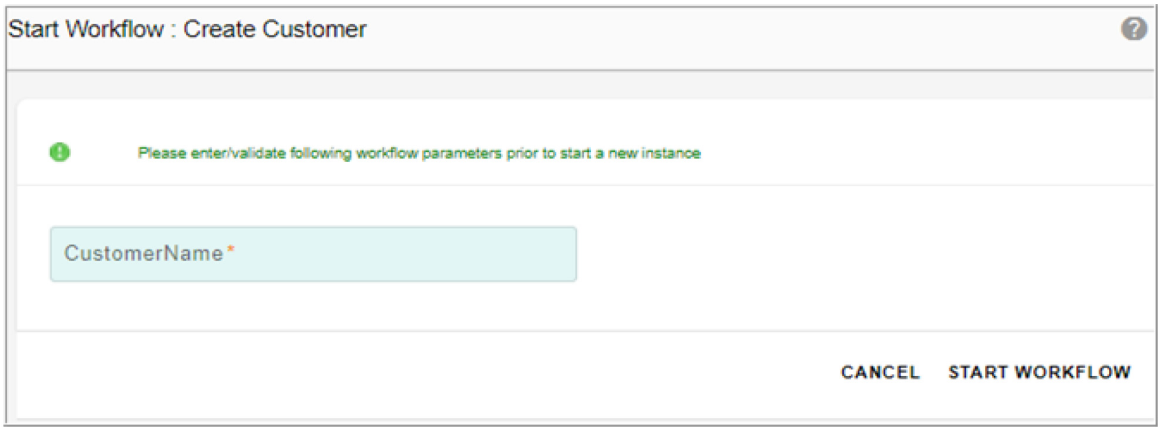
Business Entity: All

Search Workflows: Page 1 of 1

Workflow Name	Log Level	Use Configuration	Schedulable	Workflow Description
Create Customer	Node	false	No	Create Customer

The **Start Workflow** page (Figure 386) is displayed. On the **Start Workflow** page, you are prompted to provide values of the parameters defined in the workflow.

Figure 386: Start Workflow



Start Workflow : Create Customer

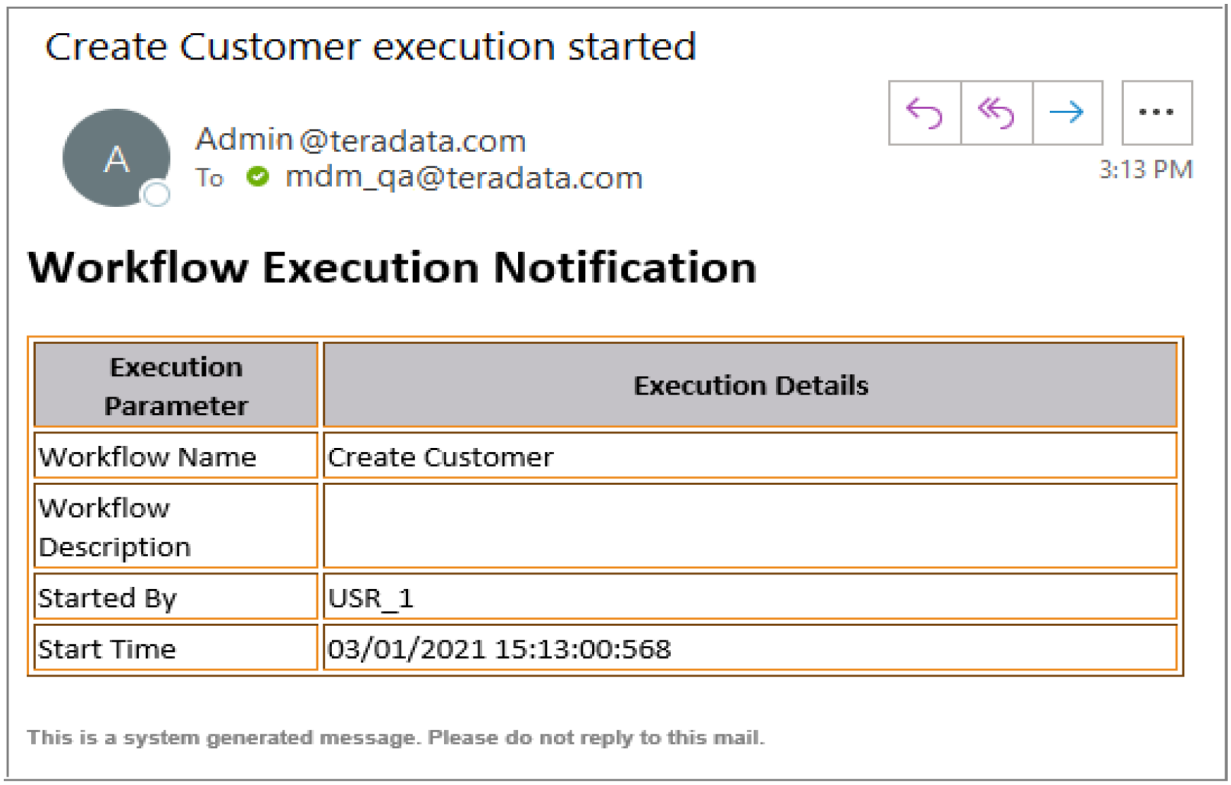
Please enter/validate following workflow parameters prior to start a new instance

CustomerName*

3 On the **Start Workflow** page (Figure 386), enter or update the workflow parameters and click **Start Workflow**. For example, enter customer name in the **Customer Name** field.

Message: “Workflow execution started. Please check workflow history for execution status” is displayed. The workflow execution started and workflow execution ended notification messages will be sent to the specified user in the below format.

Figure 387: Workflow Execution Started Notification



Create Customer execution started

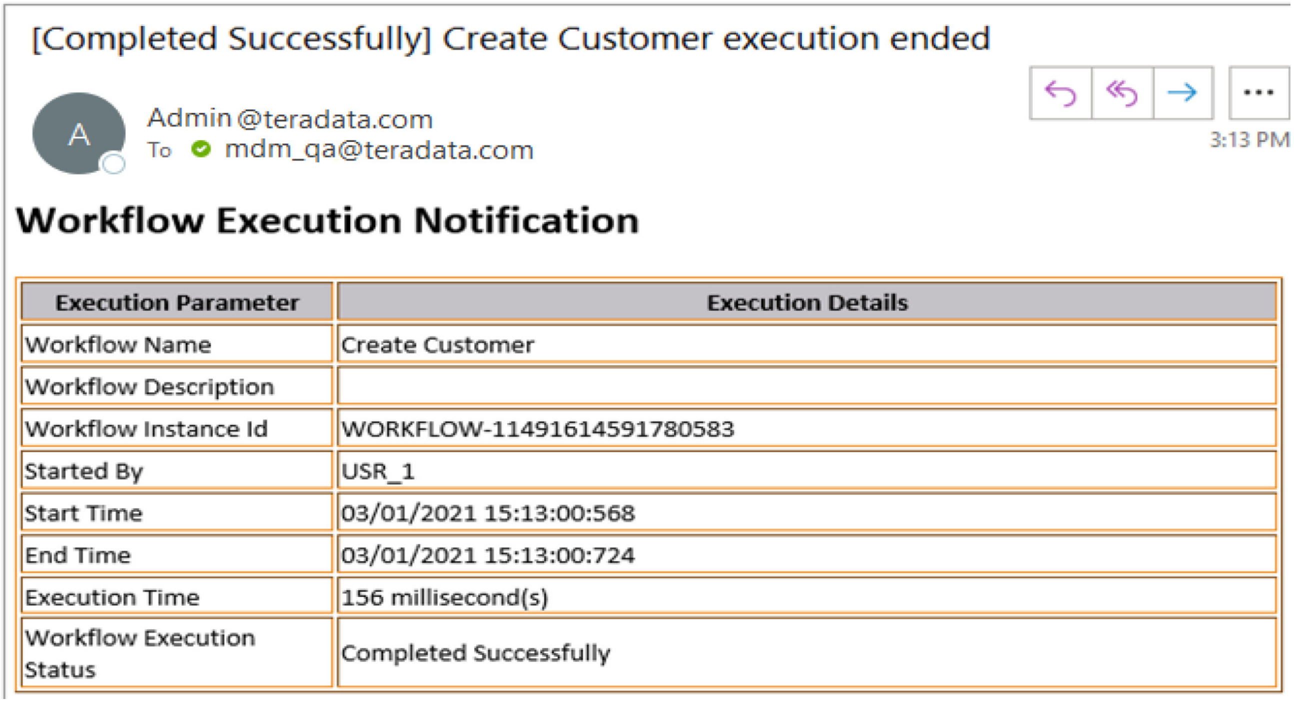
Admin @teradata.com
To mdm_qa@teradata.com

Workflow Execution Notification

Execution Parameter	Execution Details
Workflow Name	Create Customer
Workflow Description	
Started By	USR_1
Start Time	03/01/2021 15:13:00:568

This is a system generated message. Please do not reply to this mail.

Figure 388: Workflow Execution Ended Notification



[Completed Successfully] Create Customer execution ended

Admin @teradata.com
To mdm_qa@teradata.com

Workflow Execution Notification

Execution Parameter	Execution Details
Workflow Name	Create Customer
Workflow Description	
Workflow Instance Id	WORKFLOW-11491614591780583
Started By	USR_1
Start Time	03/01/2021 15:13:00:568
End Time	03/01/2021 15:13:00:724
Execution Time	156 millisecond(s)
Workflow Execution Status	Completed Successfully

View Workflow History

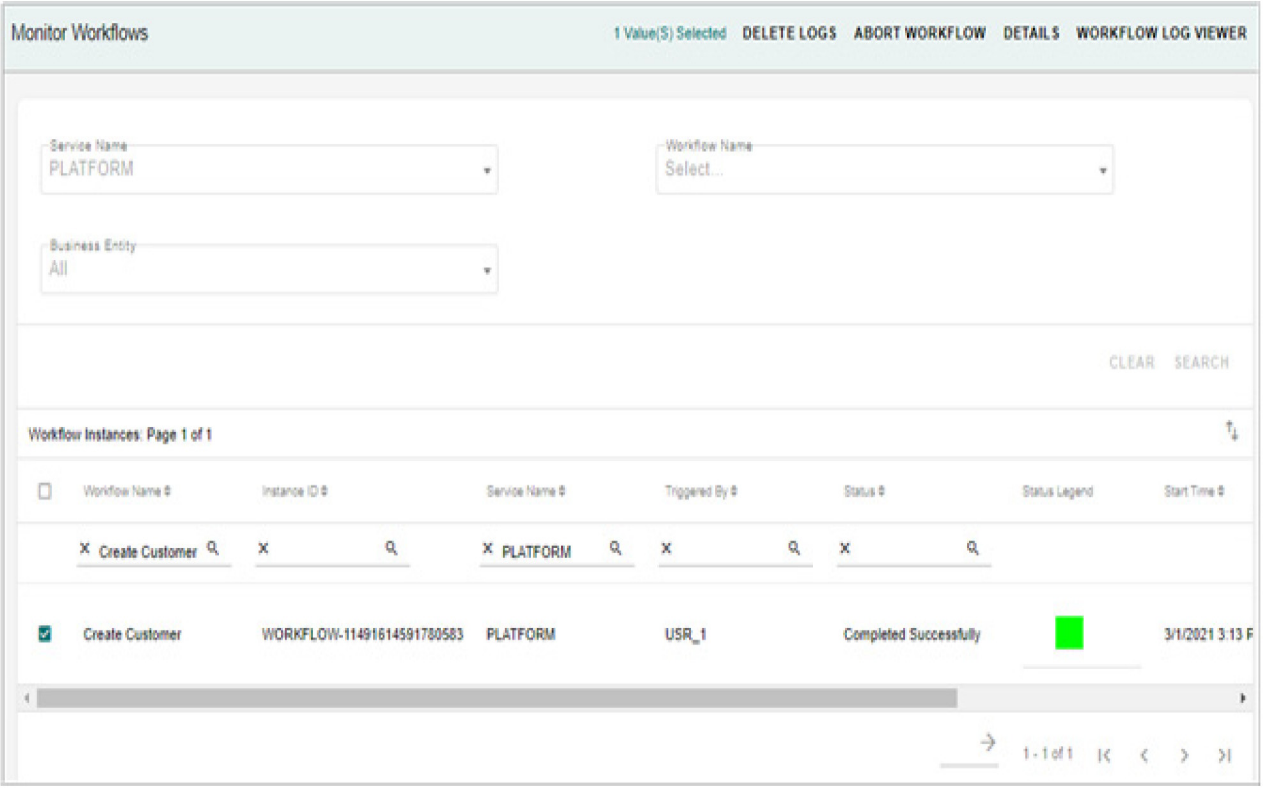
View Workflow History allows you to view detail logs of the execution of the workflow using workflow monitoring facility. The logs of execution of each workflow nodes (Node input and output parameters) can be viewed using this facility.

To view workflow history details:

1 On the **Execute Workflows** page, click the Menu icon to select the required workflow and click **Workflow History** as in Figure 389.

The **Monitor Workflows** page is displayed.

Figure 389: Monitor Workflows



Service Name: PLATFORM

Workflow Name: Select...

Business Entity: All

Workflow Instances: Page 1 of 1

☐	Workflow Name	Instance ID	Service Name	Triggered By	Status	Status Legend	Start Time
	Create Customer		PLATFORM				
☑	Create Customer	WORKFLOW-11491614591780583	PLATFORM	USR_1	Completed Successfully	🟩	3/1/2021 3:13

For details on workflow monitoring, see Section : “Workflow Monitoring”.

Schedule Workflow

You can schedule a workflow from Execute workflows UI. You can create a workflow scheduler with details based on calendars, repeat frequency and dependent jobs.

To schedule workflow:

1 On the **Execute Workflows** page, click the Menu icon corresponding to the required workflow and click **Schedule Workflow**.

The **Scheduler Details** page is displayed. For detailed description on create scheduler, see Section : “Schedule Workflow”.

Execute Workflow Using JMS Messages

Workflow can also be executed by an external process using JMS message. Perform the below are the steps:

The JMS message format should be as below to invoke a workflow execution inside MDM framework.

Note: Pre-requisite: All JMS configurations have to be configured as described in Section : “Manage JMS Parameters”

```
<REQUEST>
      <Jms_Event_Id Value="Execute_Process"/>
      <Process_Name Value="RunCleanupScripts"/>
        <PROCESS_PARAMETERS>
               <ScriptLocation Value="C:\\dpmscripts\\clearDDL.bat"/>
         <ExecutionTimeOut Value="2000"/>
         <NotifyUserEmail Value="dpmAdmin@dpm.com"/>
        </PROCESS_PARAMETERS>
    </REQUEST>
```

In the above code sample:

- Root tag name—REQUEST can be renamed for any message.
- Jms_Event_Id Property must be set to Value = Execute_Process
- The process parameters need to be specified: PROCESS_PARAMETERS Property should have the child elements as workflow parameters in the below format:

  <Parameter_Name Value="Parameter_Value"/>
- If the process does not exist, the following message will appear in log.

```
      <RESPONSE Status="Success" DbgTag_="REQUEST"
DbgCmd_="JmsMsgExecuteProcessCallBack">
              <_ERROR>
                <ERROR_MESSAGE Value="Jms Execute Process Callback -
process : TestProcessefse doesnot exist or is in inactive state."/>
              </_ERROR>
            </RESPONSE>
```

- If a required process parameter is not supplied in the JMS message, the following response will appear in the log.

```
<RESPONSE Status="Success" DbgTag_="REQUEST"
DbgCmd_="JmsMsgExecuteProcessCallBack">

           <_ERROR>

             <ERROR_MESSAGE Value="Jms Execute Process Callback -
Insufficient parameters for process : TestProcess - No value provided
for parameter : ScriptLocation"/>

           </_ERROR>

            </RESPONSE>
```

- A workflow notification will be sent to the configured user emails.

Workflow Monitoring

The Workflow Monitoring UI actively tracks the progress of a workflow execution as well as the history of its executions with either success and failure status. On the workflow monitoring UI, all the workflow instances are listed with out of the box status or custom status as configured during creation of workflow. All the workflows created through manage workflow UI are deployed under Master service. Workflows listed under workflow monitoring section can be filtered using service filter or business entity filter on the UI.

On the Workflow Monitoring UI, you can:

- View Execution Logs
- Workflow Input Output Logs
- Workflow Node Input Output Logs
- Other Tasks Performed on Workflow Monitoring

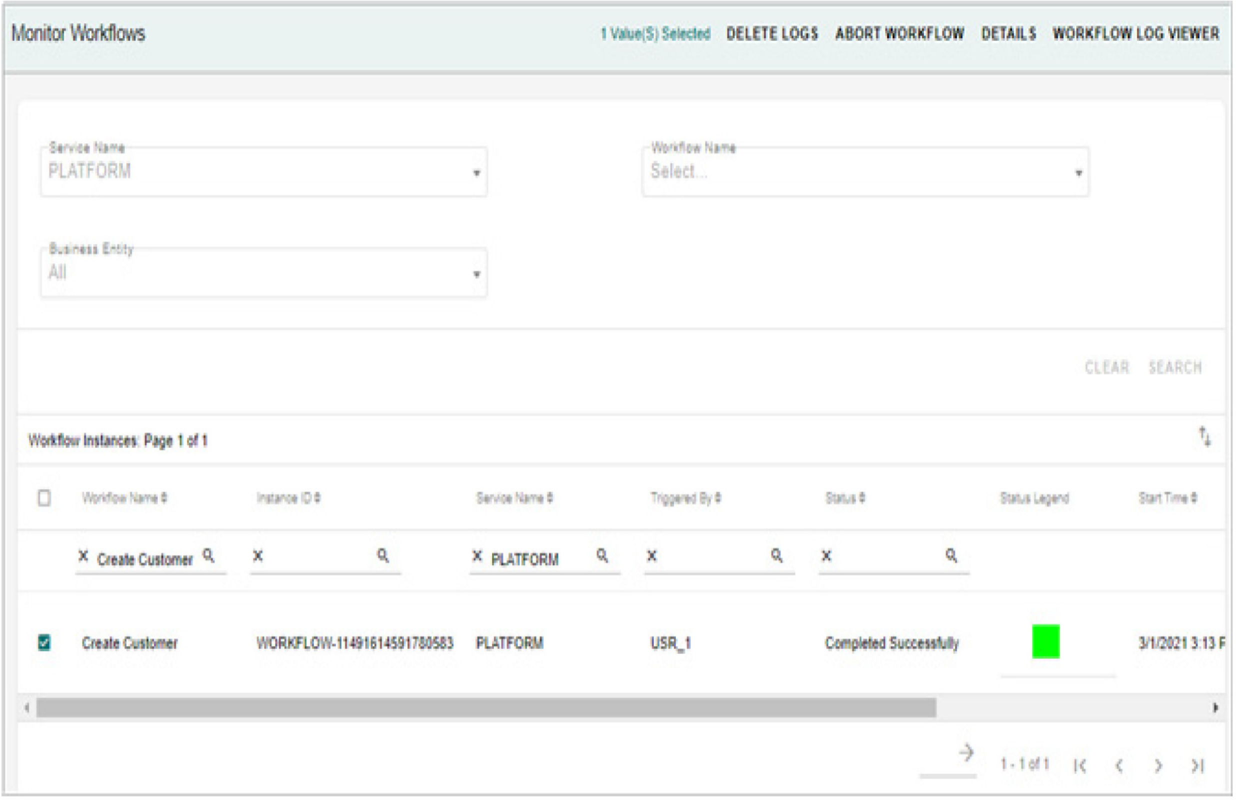
View Execution Logs

On the Workflow Monitoring UI, you can view workflow execution log details in both PGL form and in the Graphical form. To view workflow execution details:

1. On the MDM UI navigation pane, click **Administration** -> **Workflow** -> **Monitor Workflows**.

   The **Monitor Workflows** page (Figure 390) is displayed. The Monitor Workflows page displays all the workflow instances.

Figure 390: Monitor Workflows



Service Name: PLATFORM

Workflow Name: Select...

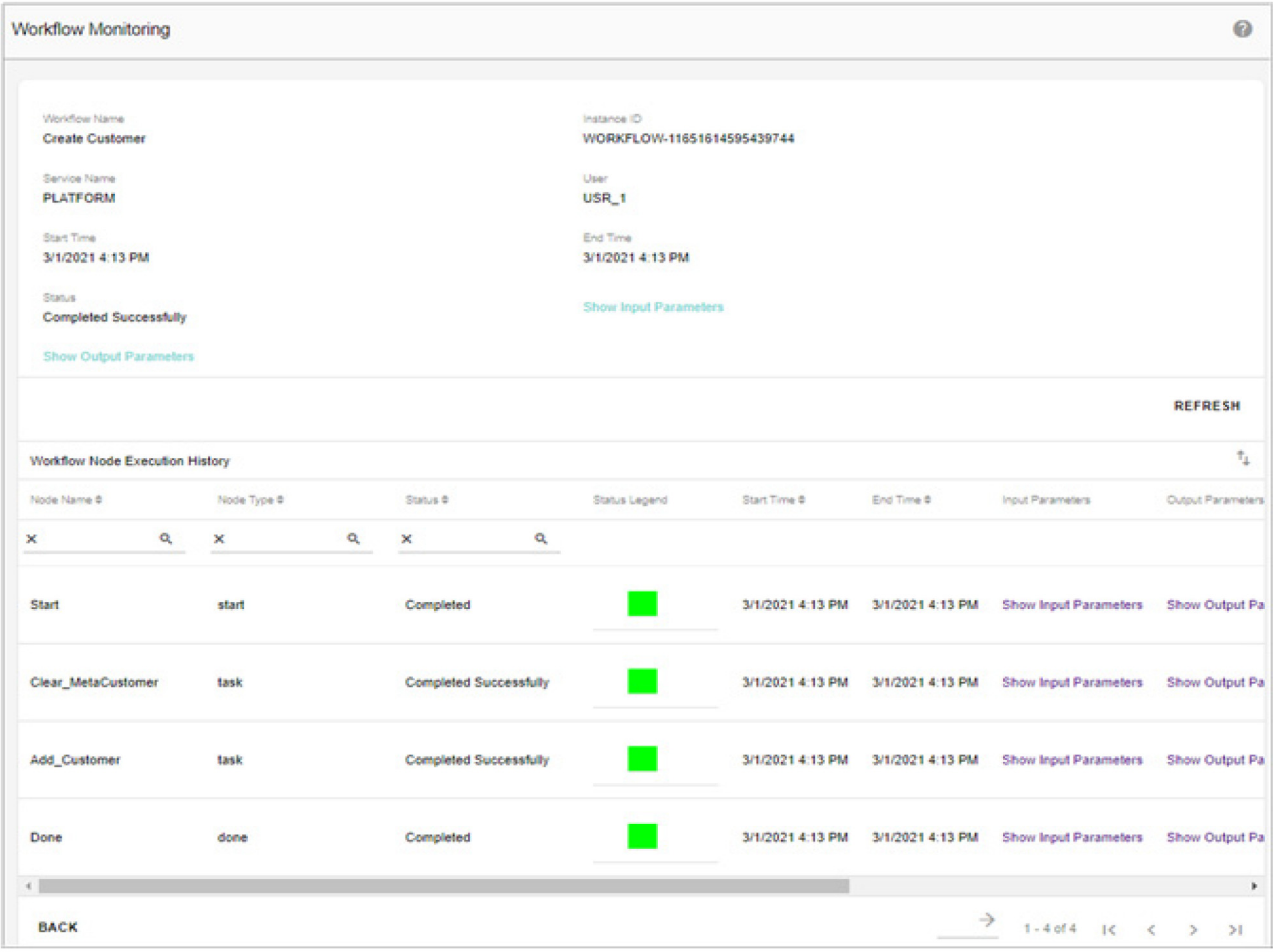
Business Entity: All

Workflow Instances: Page 1 of 1

☐	Workflow Name	Instance ID	Service Name	Triggered By	Status	Status Legend	Start Time
	Create Customer		PLATFORM				
☑	Create Customer	WORKFLOW-11491614591780583	PLATFORM	USR_1	Completed Successfully	🟩	3/1/2021 3:13 F

2 On the **Monitor Workflows** page (Figure 391), select the required workflow instance and click **Details** to view the PGL logs as in Figure 391.

Figure 391: Workflow Monitoring



Workflow Monitoring

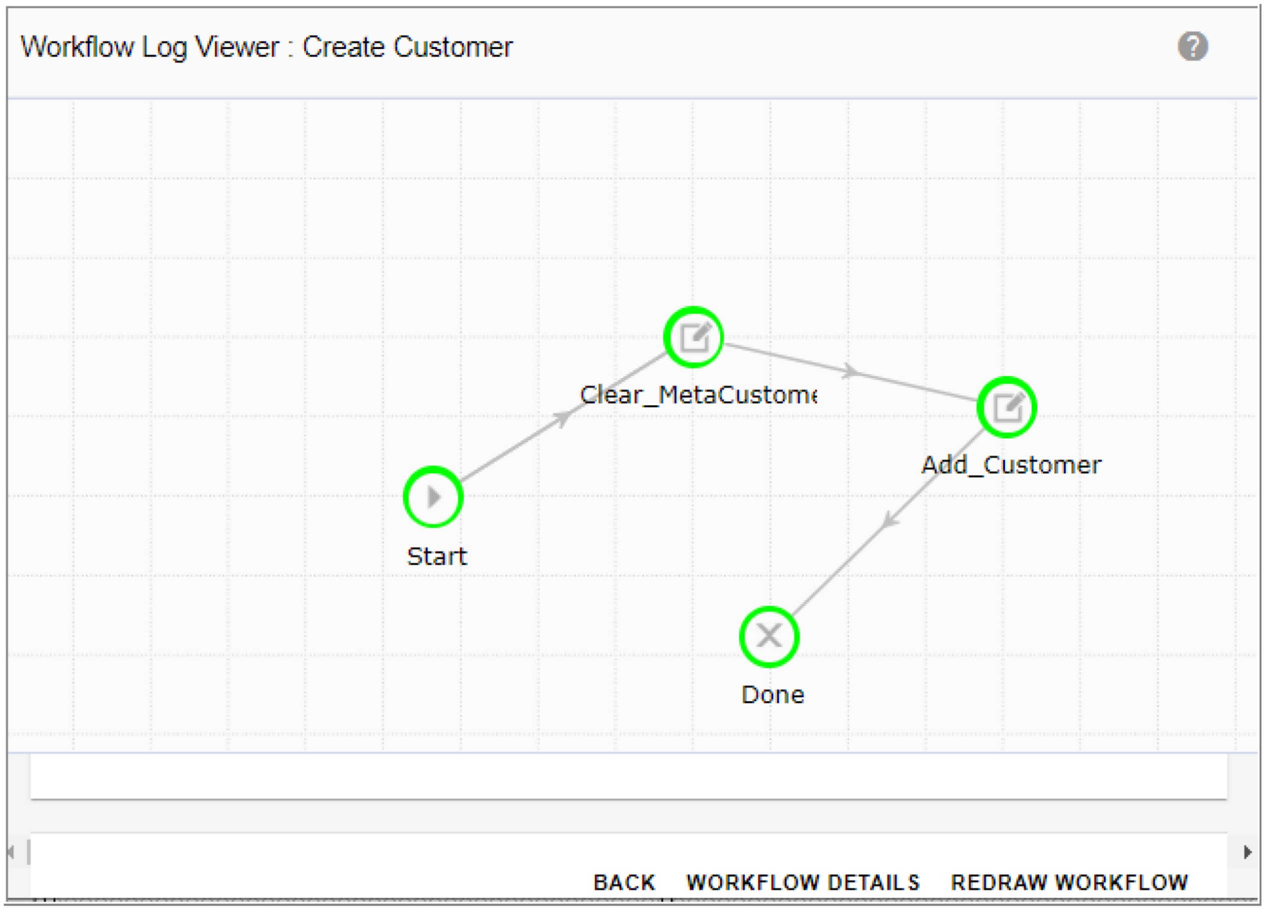
Workflow Name: Create Customer
Instance ID: WORKFLOW-11651614595439744
Service Name: PLATFORM
User: USR_1
Start Time: 3/1/2021 4:13 PM
End Time: 3/1/2021 4:13 PM
Status: Completed Successfully

Workflow Node Execution History

Node Name	Node Type	Status	Status Legend	Start Time	End Time	Input Parameters	Output Parameters
Start	start	Completed	🟩	3/1/2021 4:13 PM	3/1/2021 4:13 PM	Show Input Parameters	Show Output Pa
Clear_MetaCustomer	task	Completed Successfully	🟩	3/1/2021 4:13 PM	3/1/2021 4:13 PM	Show Input Parameters	Show Output Pa
Add_Customer	task	Completed Successfully	🟩	3/1/2021 4:13 PM	3/1/2021 4:13 PM	Show Input Parameters	Show Output Pa
Done	done	Completed	🟩	3/1/2021 4:13 PM	3/1/2021 4:13 PM	Show Input Parameters	Show Output Pa

3 On the **Monitor Workflows** page (Figure 391), select the required workflow instance and click **Workflow Log Viewer** to view the logs in graphical form as in Figure 392.

Figure 392: Workflow Log Viewer



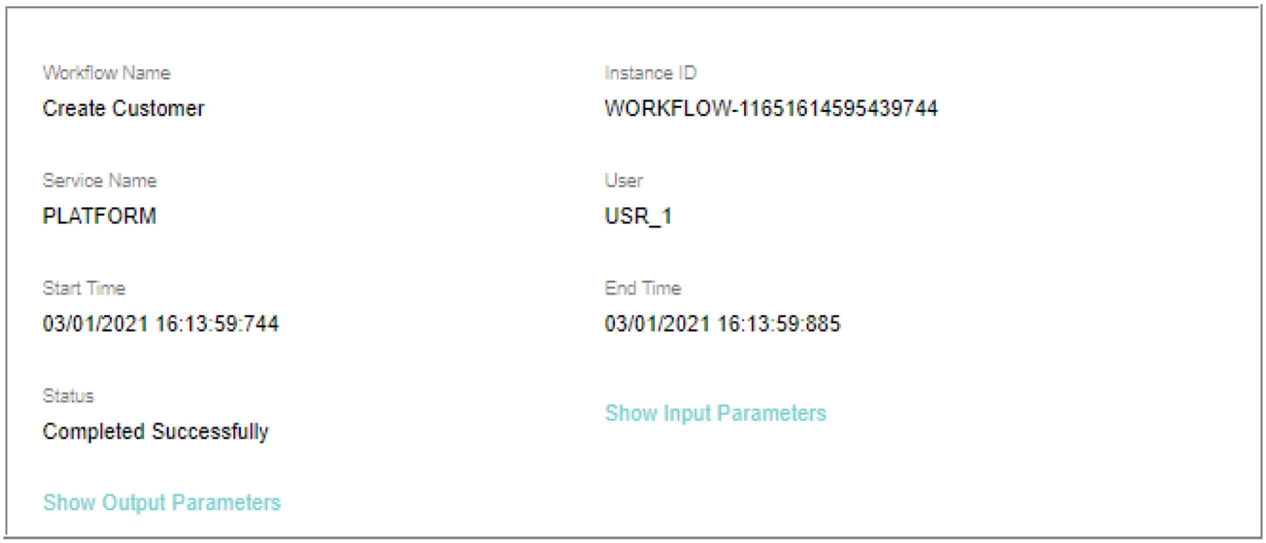
On the **Workflow Log Viewer**, the workflow node colors indicates the status of the workflow execution.

- Green represents workflow execution completed successfully.
- Red represents workflow execution failure.
- Yellow represents workflow execution in progress.

  For any node, the color can be customized. For details, see Section : "Custom Node Status and Custom Workflow Status."

On the **Workflow Log Viewer** (Figure 392), click **Workflow Details** to view the workflow details like start time, end time, status etc., as in Figure 393.

Figure 393: Workflow Log Viewer—Workflow Details



Workflow Name
Create Customer

Instance ID
WORKFLOW-11651614595439744

Service Name
PLATFORM

User
USR_1

Start Time
03/01/2021 16:13:59:744

End Time
03/01/2021 16:13:59:885

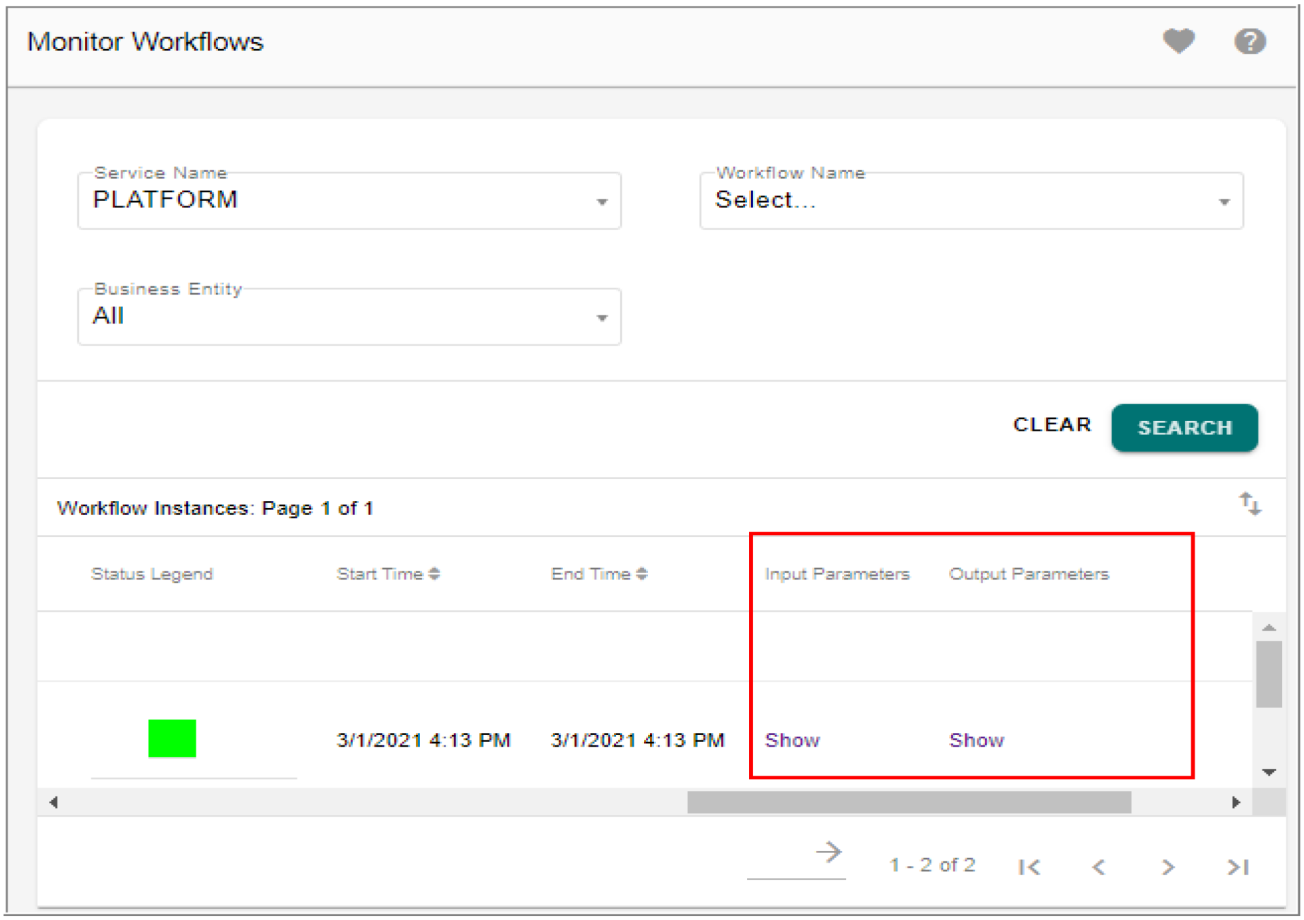
Status
Completed Successfully

- Workflows created through MDM studio cannot be monitored on workflow log viewer UI.
- The workflow log viewer UI will not display information correctly if the workflow is designed with AND and OR nodes.

Workflow Input Output Logs

You can view the execution logs for each instance of workflow execution either at workflow level or at node level. The workflow parameters for the selected instance can be viewed by clicking on Show hyperlink in the Input Parameters and Output Parameters columns as in Figure 394.

Figure 394: Monitor Workflows



Monitor Workflows

Service Name: PLATFORM

Workflow Name: Select...

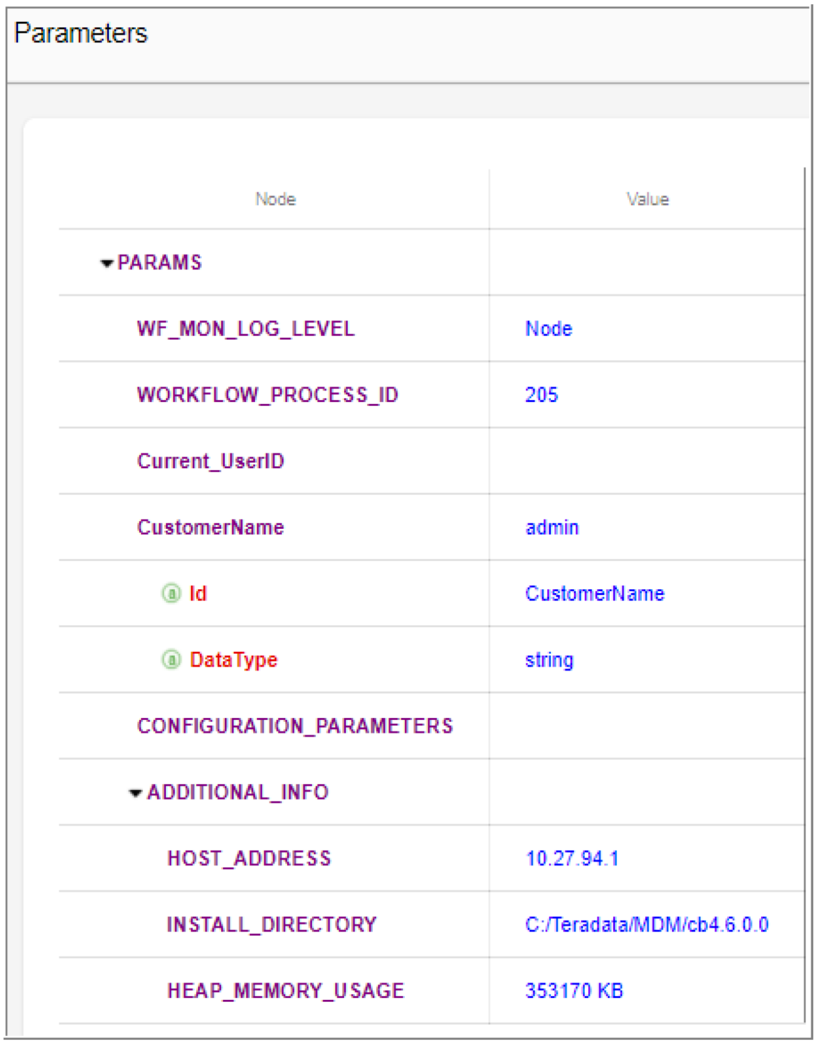
Business Entity: All

Workflow Instances: Page 1 of 1

Status Legend	Start Time	End Time	Input Parameters	Output Parameters
🟩	3/1/2021 4:13 PM	3/1/2021 4:13 PM	Show	Show

The Figure 395and Figure 396 displays the workflow input and output parameters.

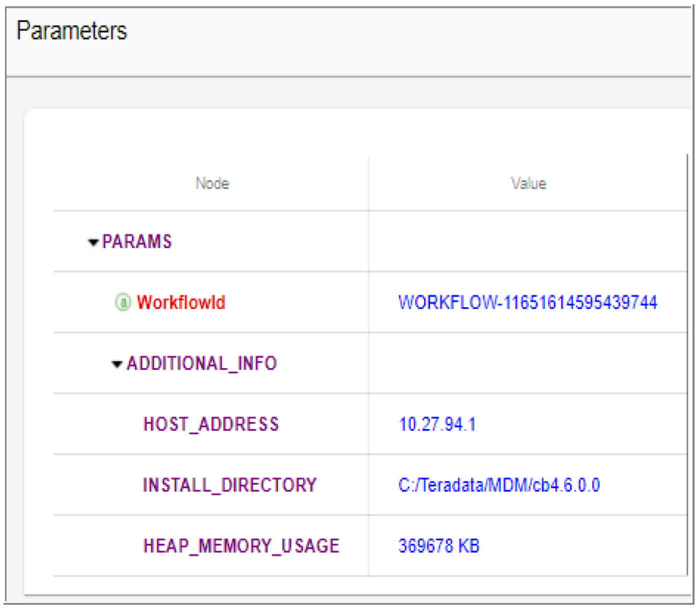
Figure 395: Workflows Input Parameters



Parameters

Node	Value
▾PARAMS	
WF_MON_LOG_LEVEL	Node
WORKFLOW_PROCESS_ID	205
Current_UserID	
CustomerName	admin
ⓐ Id	CustomerName
ⓐ DataType	string
CONFIGURATION_PARAMETERS	
▾ADDITIONAL_INFO	
HOST_ADDRESS	10.27.94.1
INSTALL_DIRECTORY	C:/Teradata/MDM/cb4.6.0.0
HEAP_MEMORY_USAGE	353170 KB

Figure 396: Workflow Output Parameters



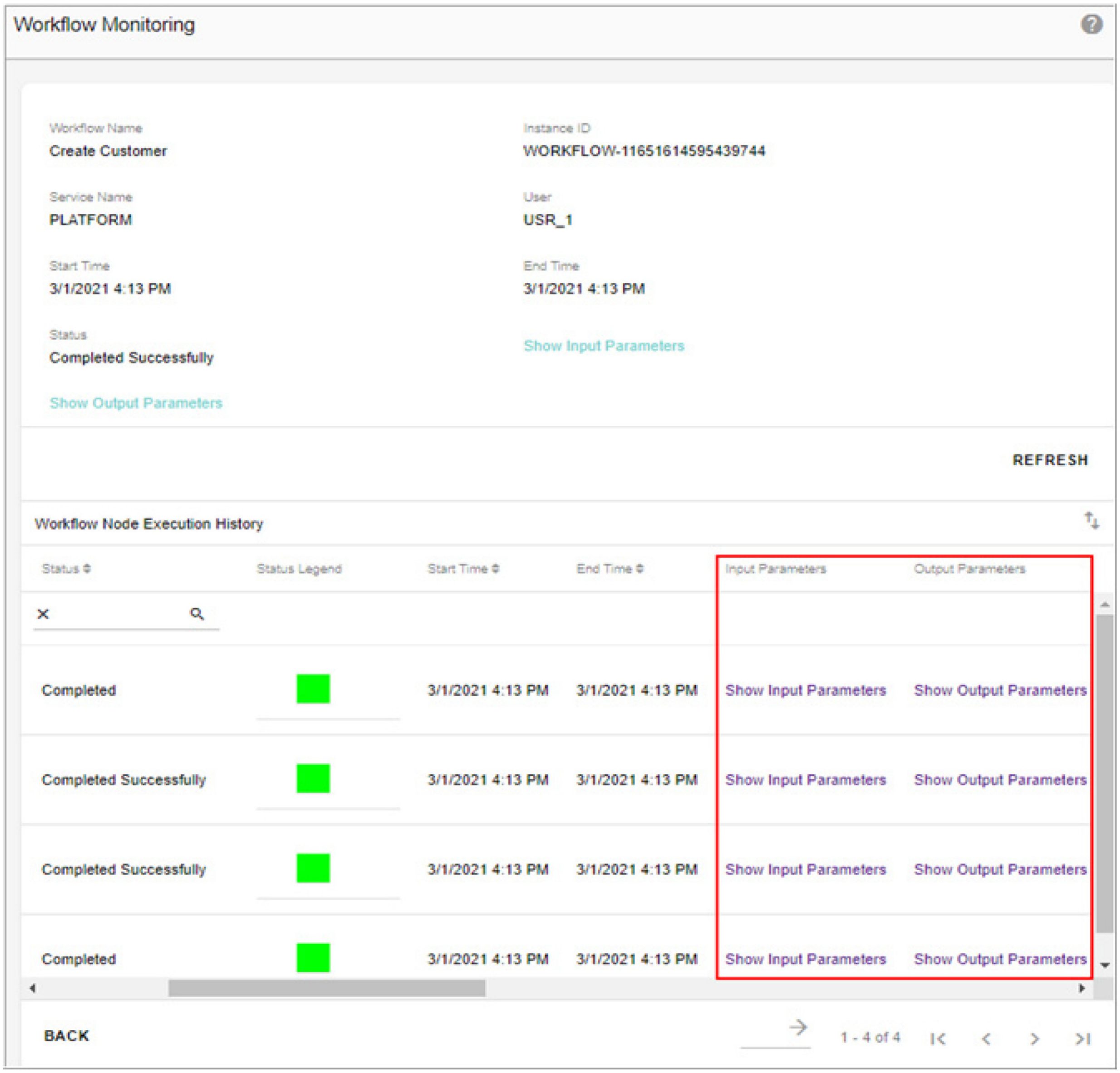
Parameters

Node	Value
PARAMS	
WorkflowId	WORKFLOW-11651614595439744
ADDITIONAL_INFO	
HOST_ADDRESS	10.27.94.1
INSTALL_DIRECTORY	C:/Teradata/MDM/cb4.6.0.0
HEAP_MEMORY_USAGE	369678 KB

Workflow Node Input Output Logs

For each node, the input and output parameters can be viewed by clicking on Show hyperlink in the Input Parameters and Output Parameters column on the Workflow Details UI as in Figure 391. Node level details of workflow can be seen only when the particular workflow is configured to capture monitoring logs at node level.

Figure 397: Workflow Output Parameters



Workflow Name
Create Customer

Instance ID
WORKFLOW-11651614595439744

Service Name
PLATFORM

User
USR_1

Start Time
3/1/2021 4:13 PM

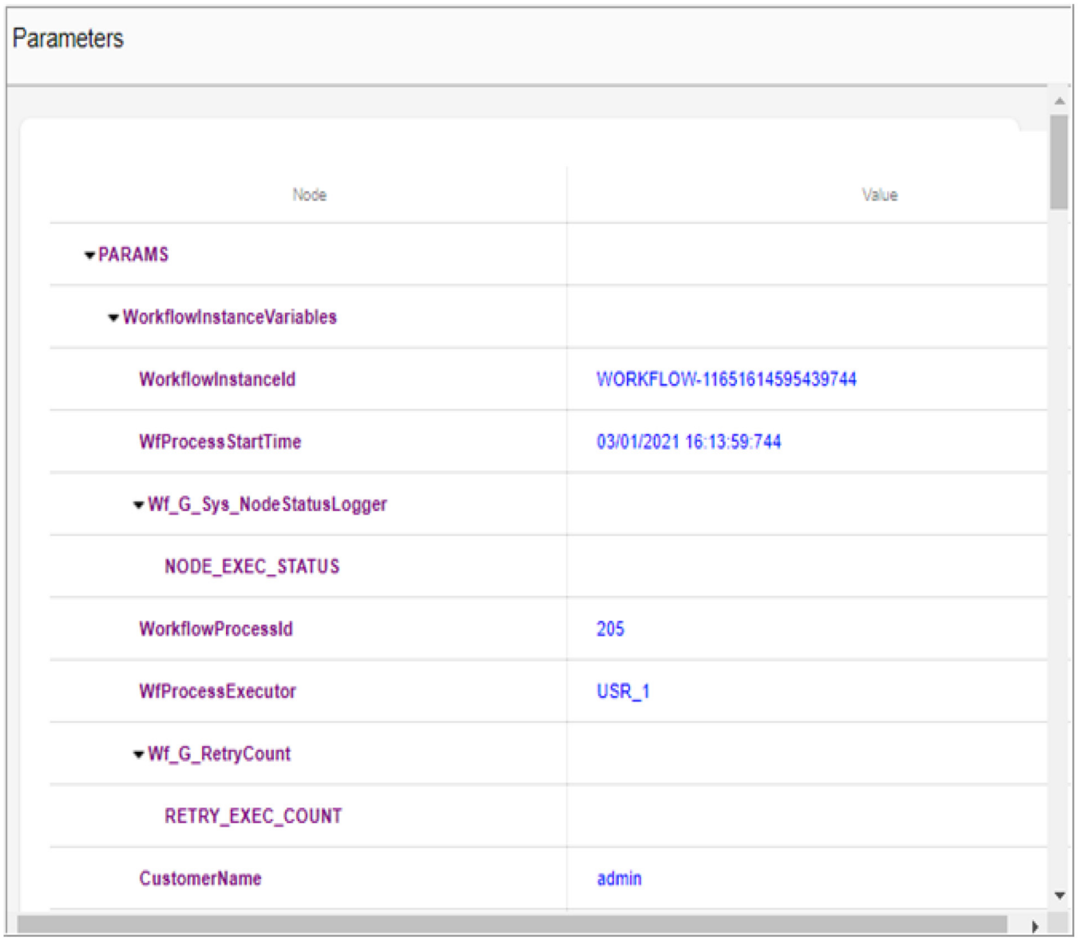
End Time
3/1/2021 4:13 PM

Status
Completed Successfully

Status	Status Legend	Start Time	End Time	Input Parameters	Output Parameters
Completed	🟩	3/1/2021 4:13 PM	3/1/2021 4:13 PM	Show Input Parameters	Show Output Parameters
Completed Successfully	🟩	3/1/2021 4:13 PM	3/1/2021 4:13 PM	Show Input Parameters	Show Output Parameters
Completed Successfully	🟩	3/1/2021 4:13 PM	3/1/2021 4:13 PM	Show Input Parameters	Show Output Parameters
Completed	🟩	3/1/2021 4:13 PM	3/1/2021 4:13 PM	Show Input Parameters	Show Output Parameters

Clicking on the **Show Input Parameters** hyperlink displays the input parameters as in Figure 398 and clicking on the **Show Output Parameters** hyperlink displays the output parameters as in Figure 399.

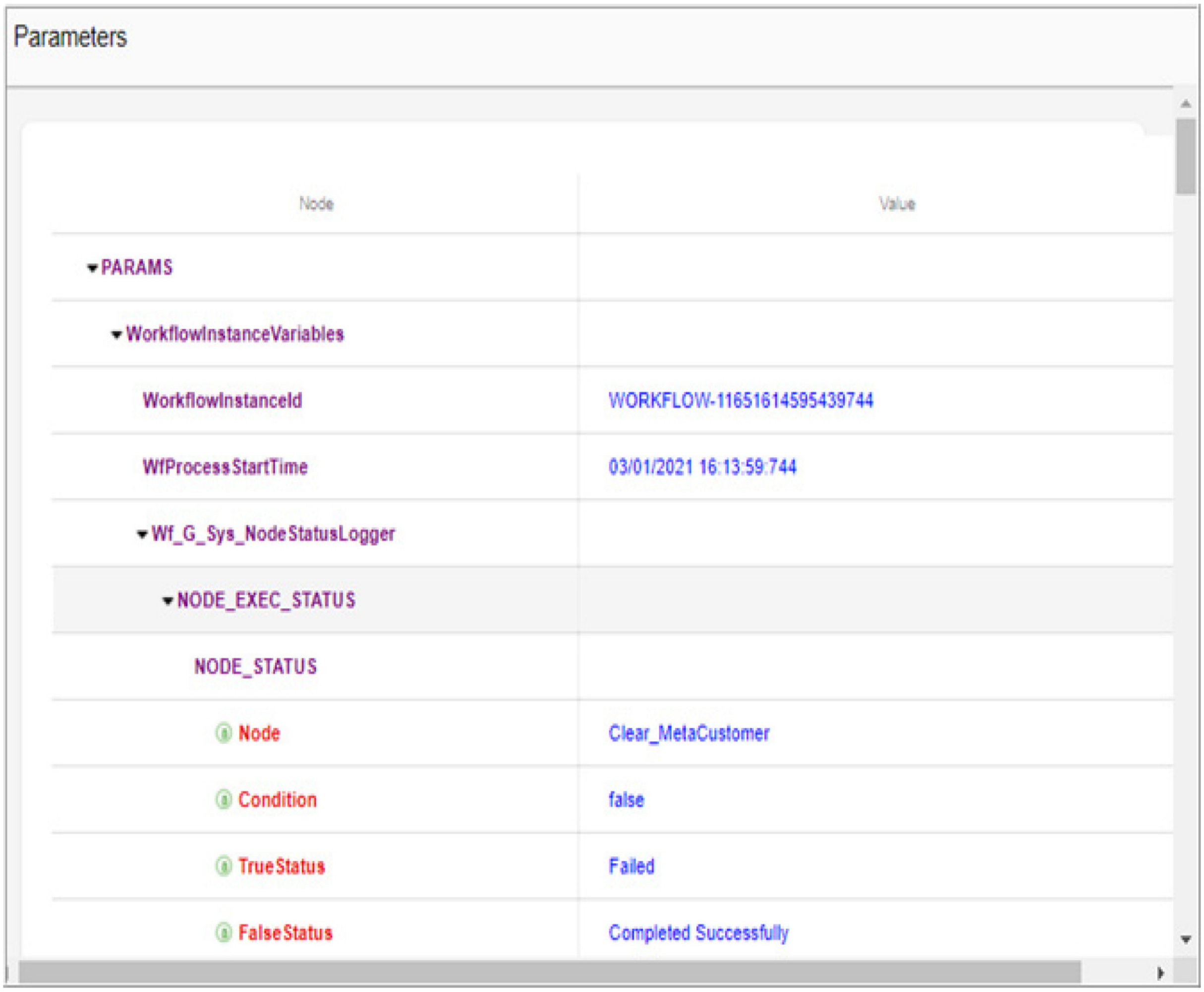
Figure 398: Input Parameters



Parameters

Node	Value
▾PARAMS	
▾WorkflowInstanceVariables	
WorkflowInstanceId	WORKFLOW-11651614595439744
WfProcessStartTime	03/01/2021 16:13:59:744
▾Wf_G_Sys_NodeStatusLogger	
NODE_EXEC_STATUS	
WorkflowProcessId	205
WfProcessExecutor	USR_1
▾Wf_G_RetryCount	
RETRY_EXEC_COUNT	
CustomerName	admin

Figure 399: Output Parameters



Parameters

Node	Value
PARAMS	
WorkflowInstanceVariables	
WorkflowInstanceId	WORKFLOW-11651614595439744
WfProcessStartTime	03/01/2021 16:13:59:744
Wf_G_Sys_NodeStatusLogger	
NODE_EXEC_STATUS	
NODE_STATUS	
Node	Clear_MetaCustomer
Condition	false
TrueStatus	Failed
FalseStatus	Completed Successfully

Other Tasks Performed on Workflow Monitoring

You can perform the following tasks on the **Monitor Workflows** page.

- Search Workflow Instance
- Abort Workflow
- Delete Logs

Search Workflow Instance

On the **Monitor Workflows** page, you can filter the workflow instances based on the service or based on business entity selected. To search workflow instance:

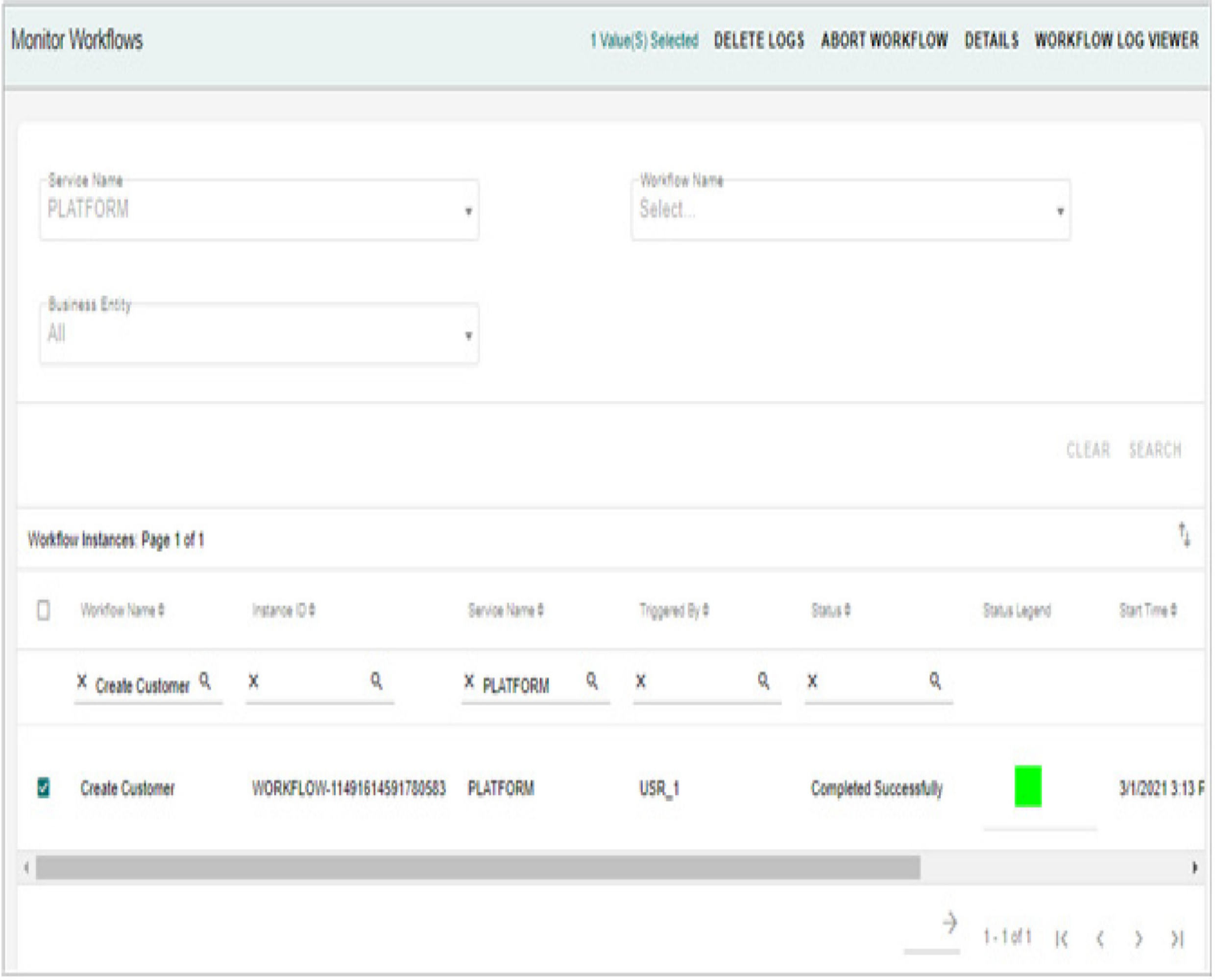
1. On the **Monitor Workflows** page, select the service from **Service Name** dropdown.

   Based on the selection of service name, the Workflow Name dropdown list will be populated.

2. Select the workflow name from the **Workflow Name** dropdown and click **Search**.

The Monitor Workflows page refreshes to display the workflow instances of the selected service and workflow as in Figure 400.

Figure 400: Monitor Workflows—Search Workflow Instance



Service Name: PLATFORM

Workflow Name: Select...

Business Entity: All

☐	Workflow Name	Instance ID	Service Name	Triggered By	Status	Status Legend	Start Time
	Create Customer		PLATFORM				
☑	Create Customer	WORKFLOW-11491614591780583	PLATFORM	USR_1	Completed Successfully	🟩	3/1/2021 3:13

If you select Entity from Business Entity dropdown, Service Name and Workflow Name drop downs will be disabled. When you click on search, all the instances of all the workflows configured under the selected entity will be displayed.

Abort Workflow

On the Monitor Workflows page, you can abort a workflow using the Abort Workflow button. You can abort workflows only if the status is “In Progress”.

To abort a workflow:

1. On the **Monitor Workflows** page (Figure 400), select a workflow instance and click **Abort Workflow**.

   The **Confirmation Webpage** dialog is displayed.

2. On the **Confirmation Webpage** dialog, click **Yes**.

Note:

- When Abort workflow is initiated, it waits for the currently executing node to complete. Once the node execution is complete, workflow is terminated.
- Aborting a workflow does not clean the data committed by any workflow prior to abort. Abort workflow simply aborts the MDM workflow execution from next node onwards. The abort workflow is at server level and it does not take care of database transactions.

Delete Logs

On the Monitor Workflows page, you can delete the workflow execution logs using the Delete Logs button.

To delete workflow execution logs:

1. On the **Monitor Workflows** page, select a workflow instance and click **Delete Logs**.

   The **Confirmation Webpage** dialog is displayed.

2. On the **Confirmation Webpage** dialog, click **Yes**.

Manage Secondary Connections

The Secondary Connection feature helps you to connect to different database users other than MDM database user from MDM server. The Manage Secondary Connections UI manages different database connection parameters. With this facility, user will be able to perform database operations such as: execute stored procedure, execute macro and execute SQLs in other database users. Currently the Workflow Management feature is enabled to accept connections other than MDM user and execute stored procedures, macros and SQLs with proper granted access.

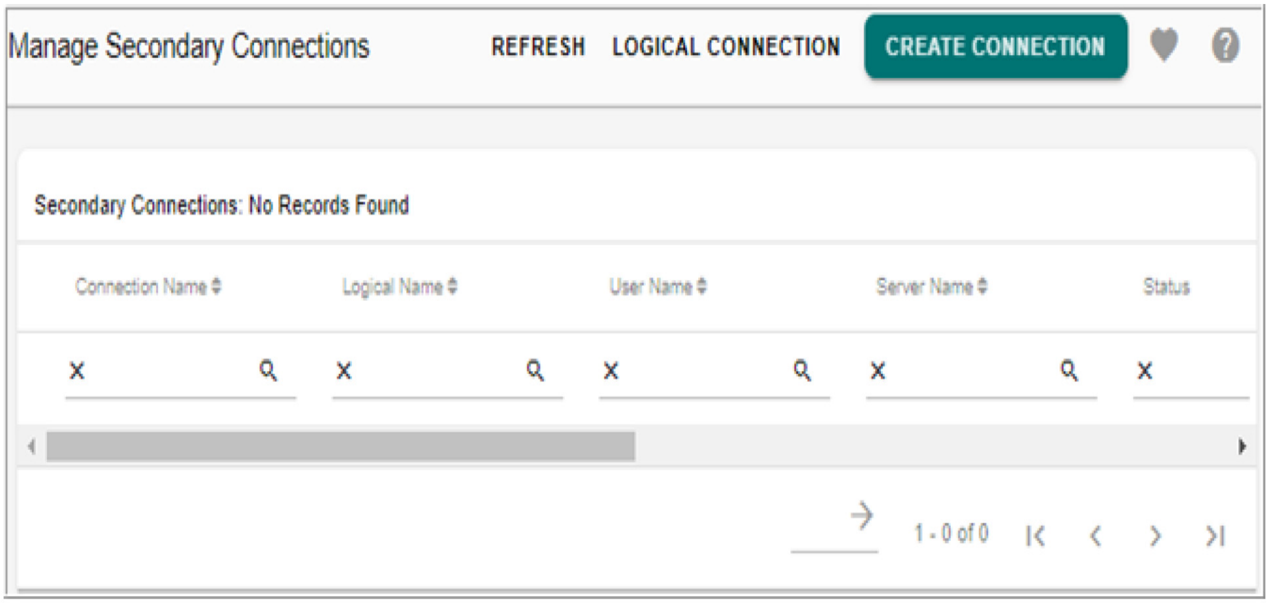
Create New Secondary Connections

To create new secondary connection:

1. Navigate to **Administration** -> **Secondary Connections**.

   The **Manage Secondary Connections** UI (Figure 401) is displayed.

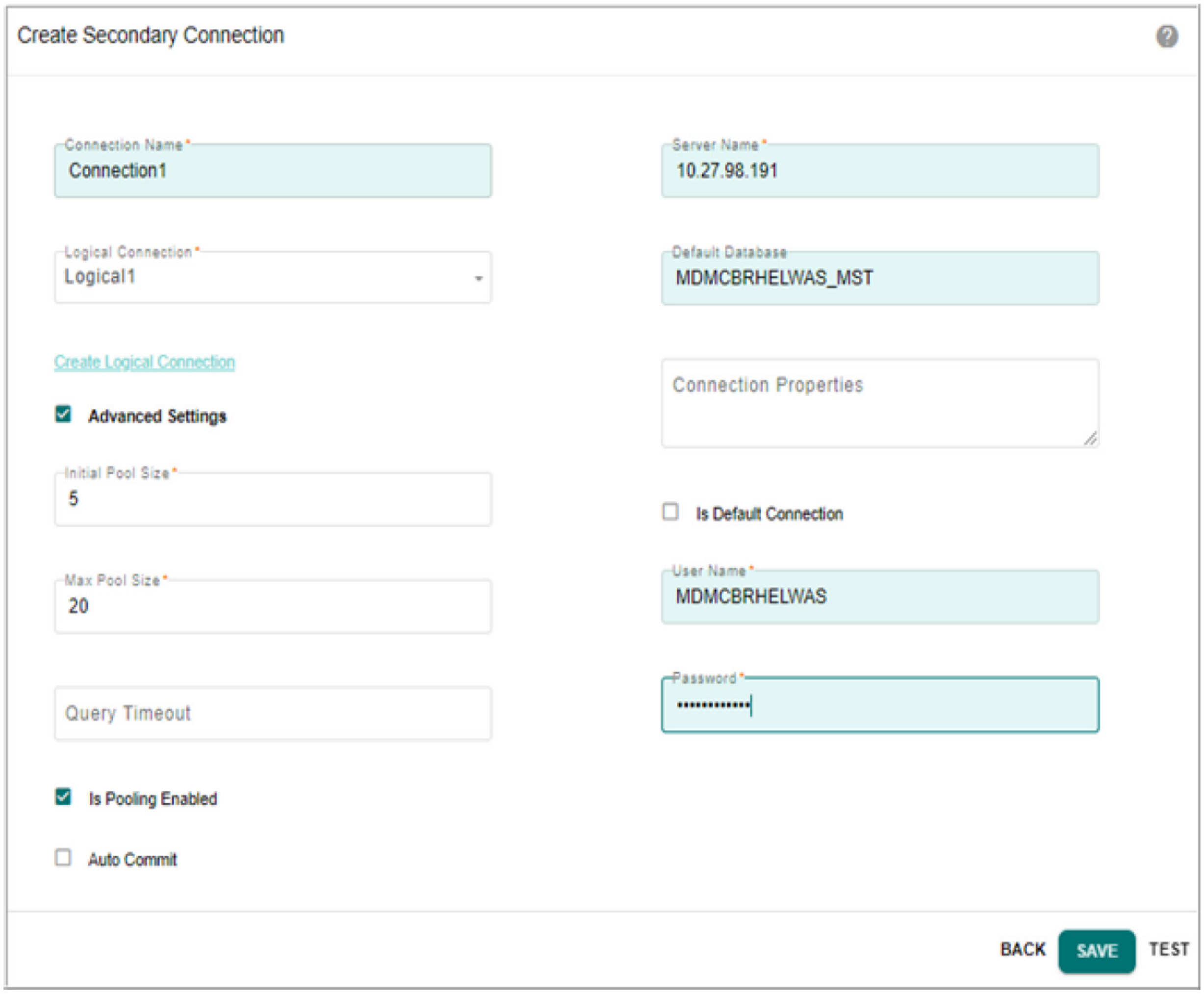
Figure 401: Manage Secondary Connections



2 On the **Manage Secondary Connections** UI (Figure 401), select **Create Connection**.

The **Create Secondary Connection** page (Figure 402) is displayed.

Figure 402: Create Secondary Connection



Connection Name*: Connection1

Server Name*: 10.27.98.191

Logical Connection*: Logical1

Default Database: MDMCBRHELWAS_MST

☑ Advanced Settings

Initial Pool Size*: 5

☐ Is Default Connection

Max Pool Size*: 20

User Name*: MDMCBRHELWAS

Password*: ••••••••••••

☑ Is Pooling Enabled

☐ Auto Commit

3. On the **Create Secondary Connection** page (Figure 402), enter the following:
   - **Connection Name**: name of the secondary connection.The connection name is unique for a connection.
   - **Logical Connection Name**: select the logical connection name. You can click on the Create Logical Connection link to navigate to Create Logical Connections UI to create new connection and manage existing connections. For details, see Section : “Create and Manage Logical Connections”.
   - **Server Name**: specifies the database IP to connect to URL.
   - **Default Database**: default database for a connection being created. The entered default database name will be added at the end of the database URL separated by comma.

     For example: jdbc:teradata://192.168.187.129/TMODE=TERA, DATABASE=<DatabaseName>
   - **Connection Properties**: when you do not want to encrypt SP, set this field to “SP_SPL=SPL”. The database URL will be in the format: jdbc:teradata://<DB_Hostname>/TMODE=TERA,SP_SPL=SPL. If you want to encrypt SP then the

Connection Properties value should be set to SP_SPL=NOSPL. The database URL will be in the format: jdbc:teradata://<DB_Hostname>/TMODE=TERA,SP_SPL=NOSPL. When no value is given to this field, it gets auto-populated as “SP_SPL=SPL” (no encryption). The database URL will be in the format: jdbc:teradata://<DB_Hostname>/TMODE=TERA.

- **Is Default Connection**: if selected it indicates whether the profile name corresponding to the record is the default connection for its logical name.

- Every secondary connection created should have a Logical Name associated with it.
- One logical name can be used for more than one connection.
- Every logical connection name will have one default connection.
- If a connection is not set as a default connection for a logical connection, automatically one connection will be made as default.
- The logical connection name will be displayed as dropdown in stored procedure, macro and SQL nodes of Workflow Management. To fetch the meta data of stored procedure, the default connection associated with the logical connection name will be used.

- **User Name**: specifies the user ID of the database.
- **Password**: specifies the password of the database.
- **Is Pooling Enabled**: if Is Pooling Enabled check box is selected, enter:
  - **Initial Pool Size**: specifies the initial number of database connections to be opened when the connection is started. The initial pool size value can be set in xserver.xml by specifying the max-idle-connection parameter.It specifies the number of connections that needs to be kept open at any point of time. If the number of idle connections exceed this value, it will automatically get closed.
  - **Max Pool Size**: specifies the maximum number of database connections that need to be opened if required.
- **Query Timeout**: specifies the timeout for query. SQLs which take more time than the allotted time in query timeout will be aborted.
- **Auto Commit**: if the Auto Commit checkbox is selected, the transaction will be committed automatically. If the Auto Commit checkbox is not selected, the transaction management is taken care by MDM server. It will commit or rollback the transaction when workflow completes.

4 Click **Test** to verify if the entered details are correct and the connection is established.

If the entered information are correct, the message “Connection tested successfully” is displayed.

If the entered information are not correct, the message “Connection test failed. Please check the logs for more details” is displayed.

5 Click **Save**.

Message: “Profile created successfully” is displayed.

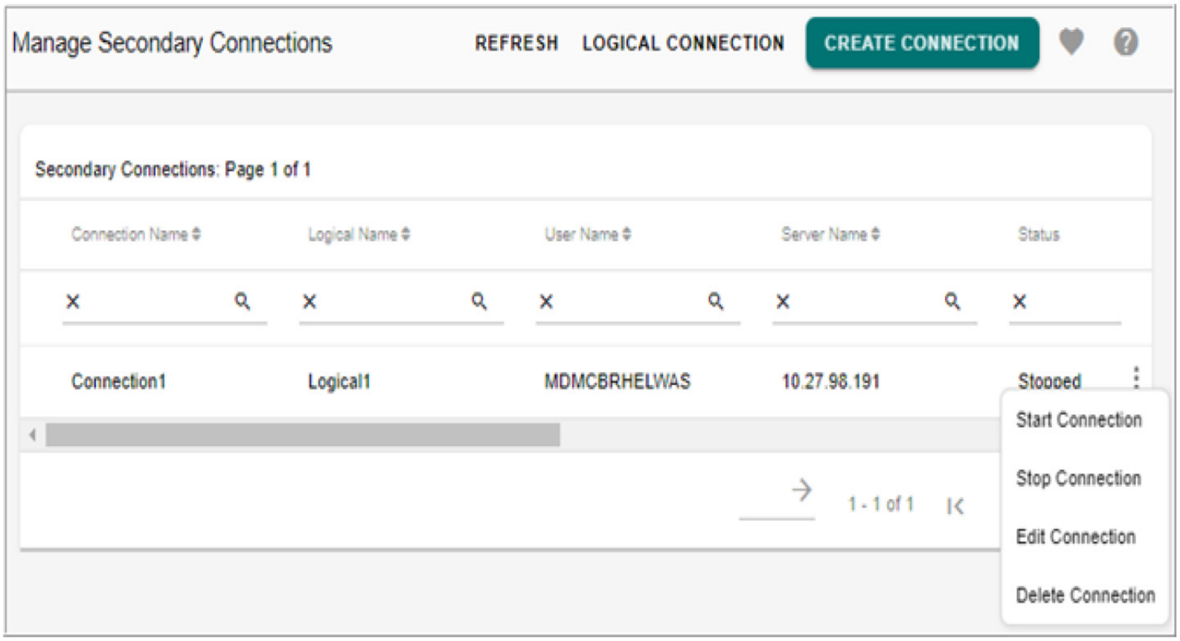
Start Secondary Connection Profile

Once the secondary connection profile is created. You can start the profile to add the profile to connection pool.

To start connection profile:

1 On the **Manage Secondary Connections** page, click Menu icon corresponding to the required connection and click **Start Connection**.

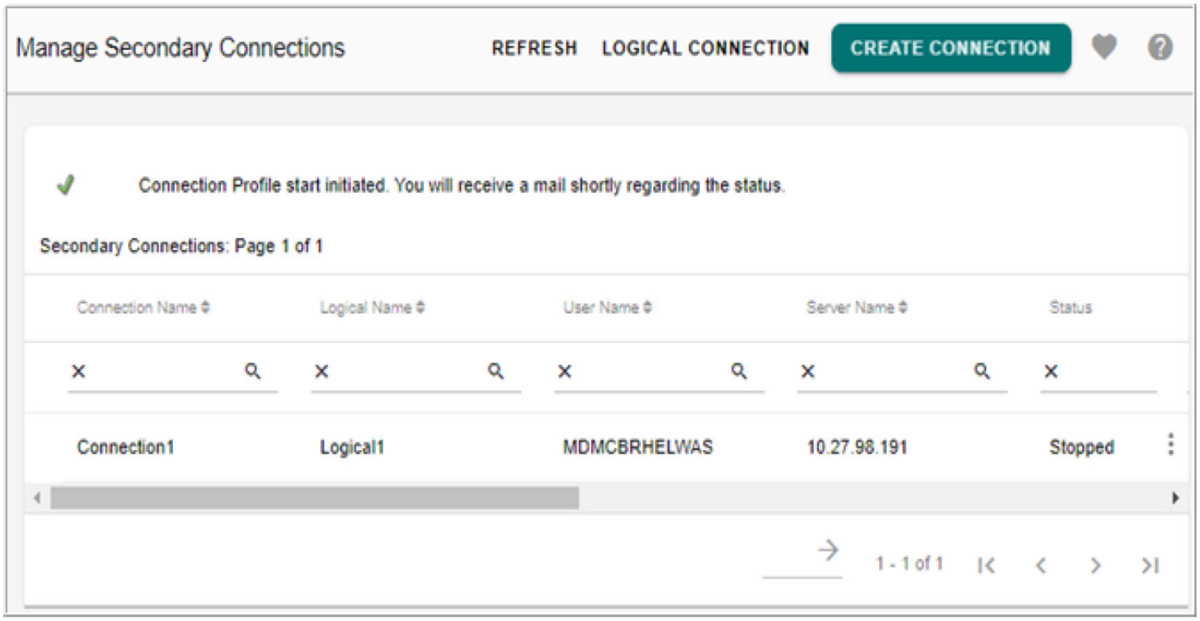
Figure 403: Manage Secondary Connections



Connection Name	Logical Name	User Name	Server Name	Status
Connection1	Logical1	MDMCBRHELWAS	10.27.98.191	Stopped

The below message is displayed. The Status Column will display the status as Started.

Figure 404: Manage Secondary Connections—Message



✓ Connection Profile start initiated. You will receive a mail shortly regarding the status.

Secondary Connections: Page 1 of 1

Connection Name	Logical Name	User Name	Server Name	Status
Connection1	Logical1	MDMCBRHELWAS	10.27.98.191	Stopped

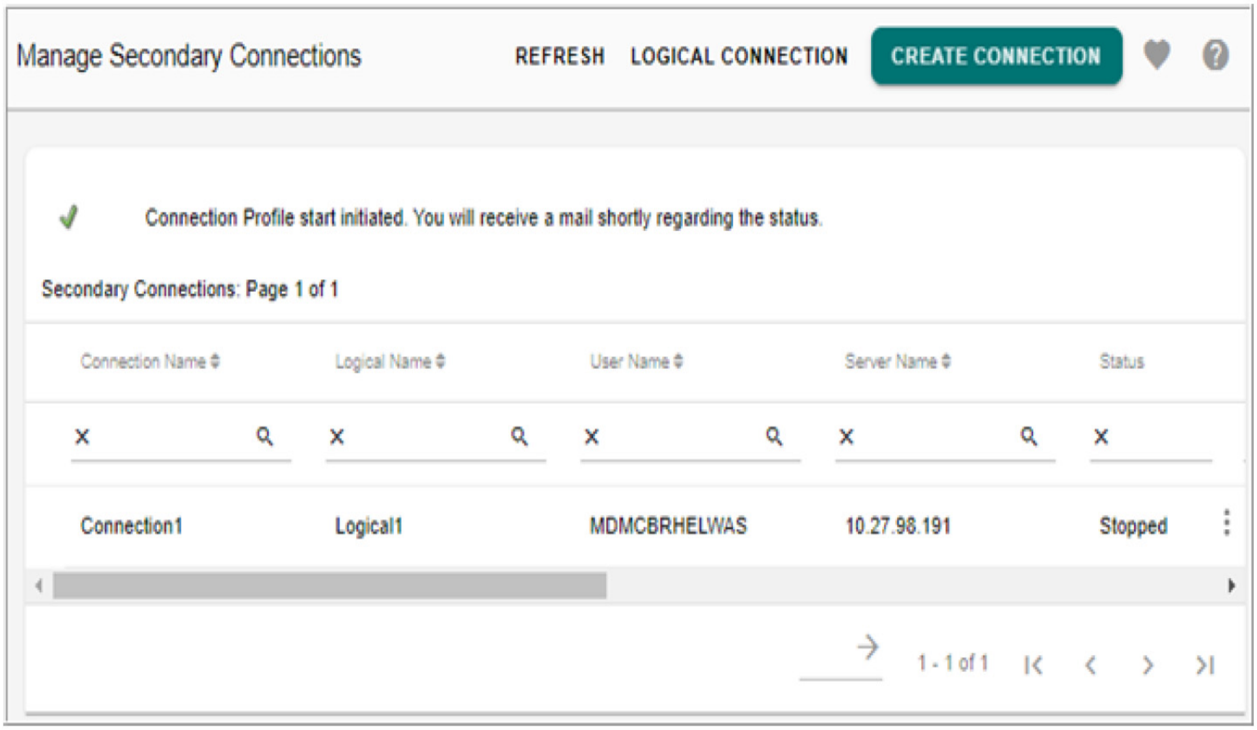
Stop Secondary Connection Profile

You can stop or remove the profile from connection pool.

To stop connection profile:

1 On the **Manage Secondary Connections** page, click Menu icon corresponding to the required started profile and click **Stop Connection**.

Figure 405: Manage Secondary Connection—Message

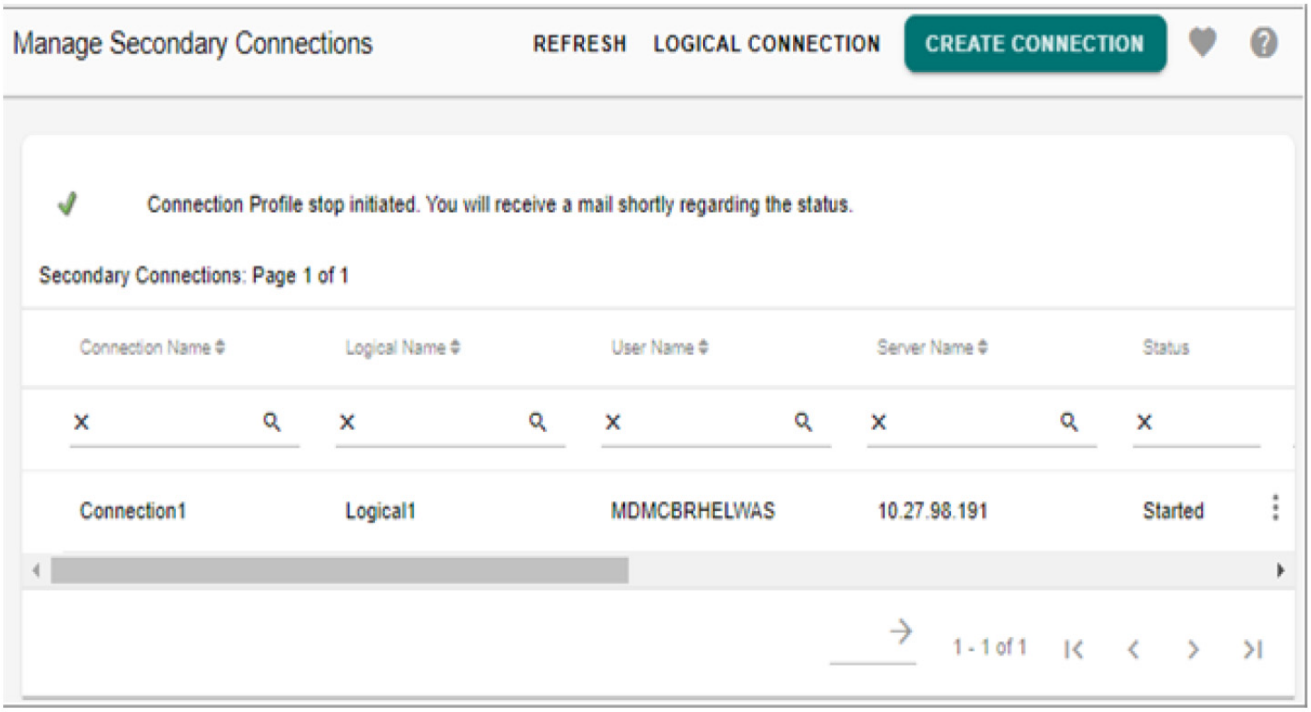


✓ Connection Profile start initiated. You will receive a mail shortly regarding the status.

Secondary Connections: Page 1 of 1

Connection Name	Logical Name	User Name	Server Name	Status
Connection1	Logical1	MDMCBRHELWAS	10.27.98.191	Stopped

The below message is displayed.



✓ Connection Profile stop initiated. You will receive a mail shortly regarding the status.

Secondary Connections: Page 1 of 1

Connection Name	Logical Name	User Name	Server Name	Status
Connection1	Logical1	MDMCBRHELWAS	10.27.98.191	Started

Edit Secondary Connection Profile

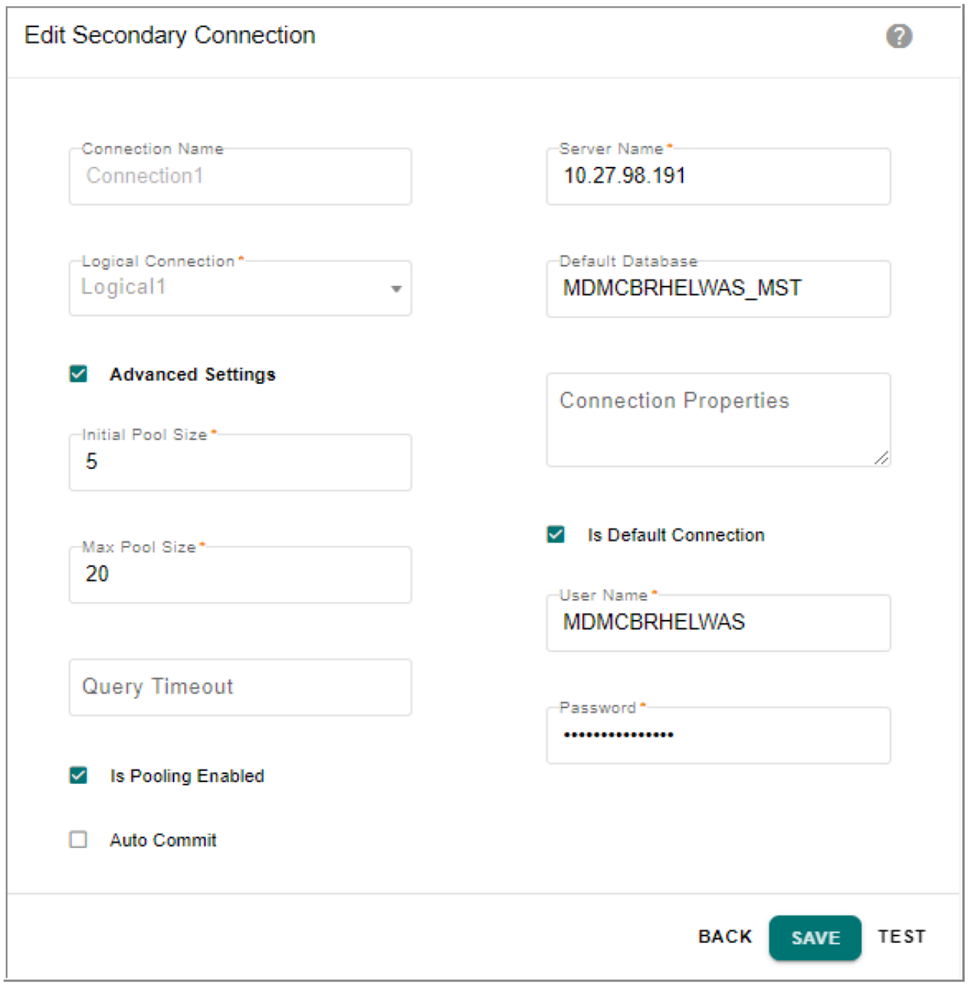
To edit secondary connection profile:

Note: You cannot edit a profile if the profile connection is already started. You can stop the connection and then edit the profile.

1 On the **Manage Secondary Connections** page, click Menu icon corresponding to the required profile and click **Edit Connection**.

The **Edit Secondary Connection** page (Figure 406) is displayed.

Figure 406: Edit Secondary Connection



Edit Secondary Connection

Connection Name: Connection1
Server Name*: 10.27.98.191
Logical Connection*: Logical1
Default Database: MDMCBRHELWAS_MST
☑ Advanced Settings
Connection Properties
Initial Pool Size*: 5
Max Pool Size*: 20
☑ Is Default Connection
User Name*: MDMCBRHELWAS
Query Timeout
Password*: •••••••••••••••
☑ Is Pooling Enabled
☐ Auto Commit

2 On the **Edit Secondary Connection** page (Figure 406), you can modify the required values and click **Test** to verify if the modified details are correct and the connection is established.

If the entered information are correct, the message “Connection tested successfully” is displayed.

If the entered information are not correct, the message “Connection test failed. Please check the logs for more details” is displayed.

3. Click **Save**.

   Message: “Profile edited successfully” is displayed.

Delete Secondary Connection

To delete connection profile:

Note: You cannot delete a profile if the profile connection is already started. You can stop the connection and then delete the profile.

1. On the **Manage Secondary Connections** page, click Menu icon corresponding to the required profile and click **Delete Connection**.

   The **Confirmation Webpage** dialog is displayed.
2. On the **Confirmation Webpage** dialog, click **Yes**.

   Message: “Profile deleted successfully” is displayed.

Executing Xcommand

If you need to execute xcommands using different connection profile, you can specify in request level as below:

Example:

```
<EXECUTE_SQL_QUERY Value="select * from sys_table_map"
ConnectionProfileName="Profile_1"/>
```

In the above sample, request will be executed using the profile_1 user. The ConnectionProfileName is the Connection Name provided during creation of the connection.

For creating secondary connection from xserver perform the following steps:

1. Navigate to *<MDM_Install_Directory>/cfg/properties* and open xserver.xml.
2. In xserver.xml, in the database configuration section, add the following with the required data.

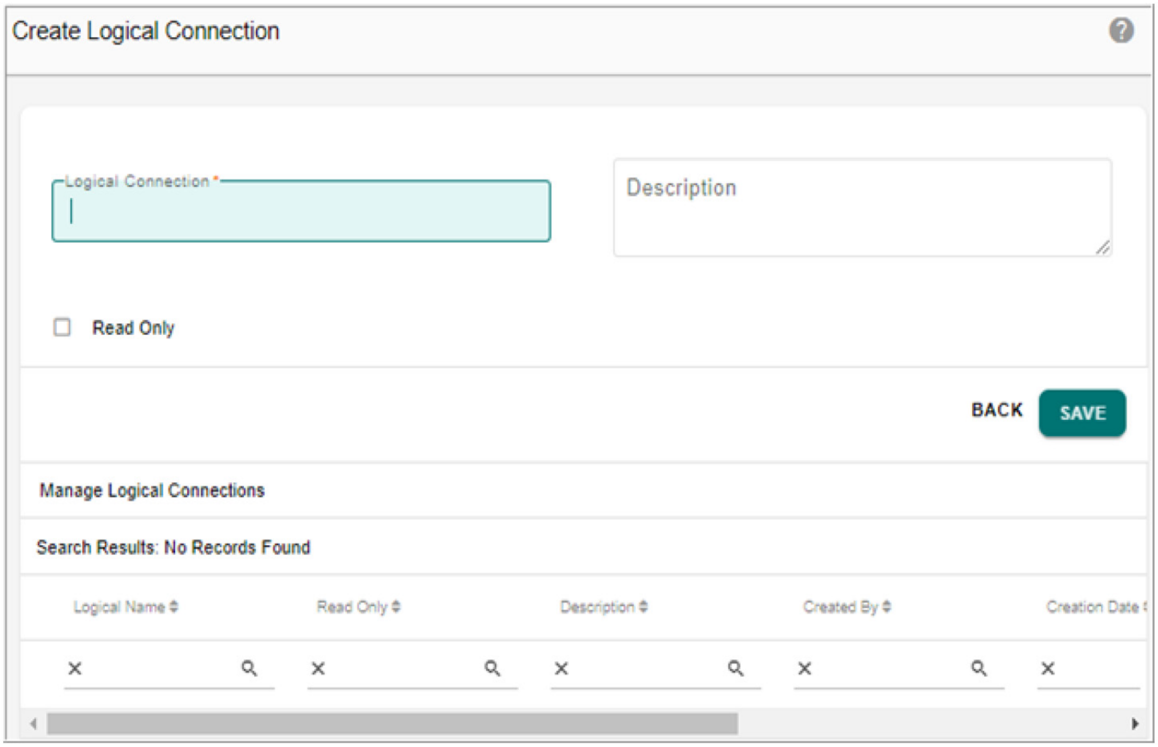
```
 <database-config Name="TeradataDB"
ConnectionProfileName="default" Type="teradata">
<userid Value="DB_USER"/>
<password Value="DB_PASSWORD"/>
<db-url Value="jdbc:teradata://db_tdpid/TMODE=TERA"/>
<db-driver Value="com.teradata.jdbc.TeraDriver"/>
<db-meta-info-file Value="com/teradata/xcore/dblib/tera.xml"/>
      <initial-pool-size Value="5"/>
      <max-pool-size Value="5"/>
      <isJdbc2Driver Value="true"/>
      <connection-retry-count Value="3"/>
      <connection-retry-delay Value="1000"/>
<db-security-provider Value="com.sun.crypto.provider.SunJCE"/>
<db-security-transformation Value="DES/CBC/PKCS5Padding"/>
    </database-config>
```

Create and Manage Logical Connections

To create new logical connection:

1 Navigate to **Administration** -> **Secondary Connections** and on the **Manage Secondary Connections** page, click **Logical connection**.

Figure 407: Manage Secondary Connections



Search Results: No Records Found

2 On the **Create Logical Connections** page (Figure 402), enter the following:

- **Logical Connection**: name of the logical connection being created.
- **Description**: brief description about the logical connection being created.
- **Read Only**: if a logical connection is set as read only, the model will not be deployed on this connection.

3 Click **Save**.

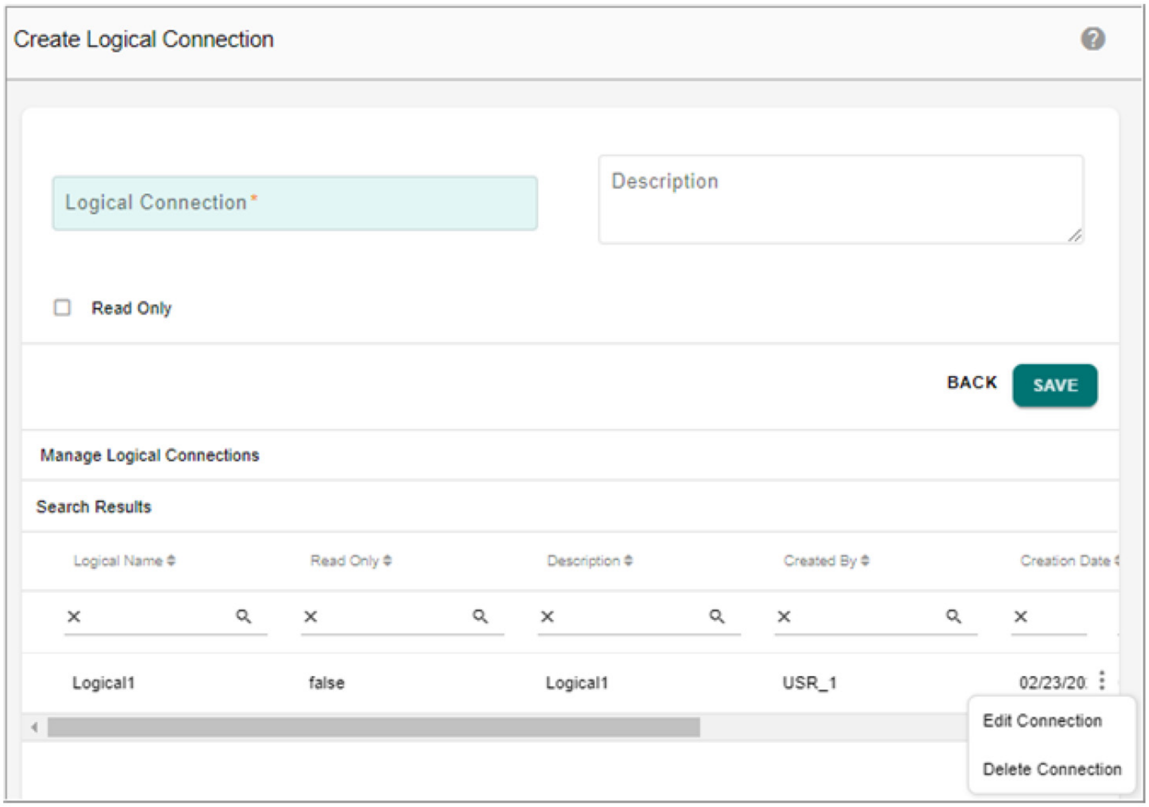
Message: “Logical Connection created successfully” is displayed.

Edit Logical Connection Profile

To edit logical connection profile:

1 On the **Create Logical Connections** UI, on the **Manage Logical Connections** pane, click menu icon corresponding to the required connection profile and click **Edit Connection**.

Figure 408: Manage Secondary Connections



Create Logical Connection

Logical Connection *

Description

☐ Read Only

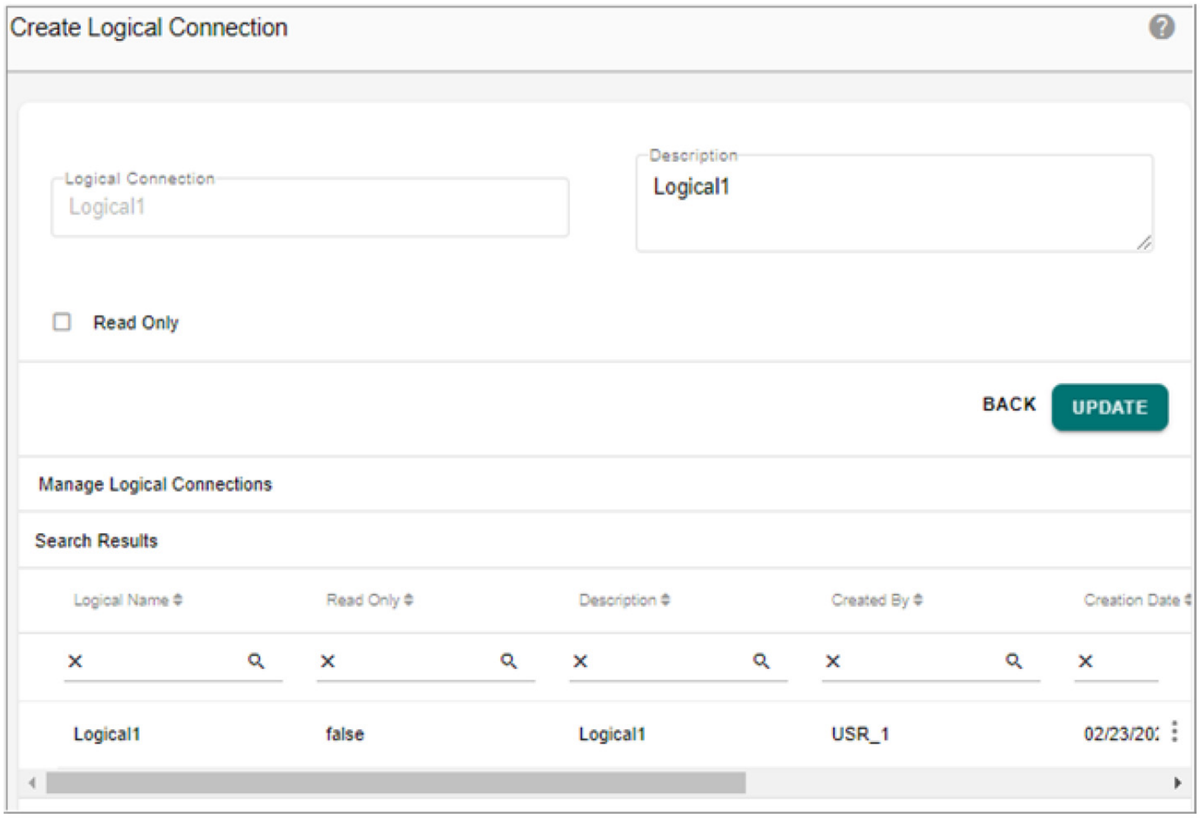
Manage Logical Connections

Search Results

Logical Name	Read Only	Description	Created By	Creation Date
Logical1	false	Logical1	USR_1	02/23/20

The **Create Logical Connections** page refreshes to display the selected logical connection details as in Figure 406.

Figure 409: Edit Secondary Connection



Create Logical Connection

Logical Connection: Logical1

Description: Logical1

☐ Read Only

Manage Logical Connections

Search Results

Logical Name	Read Only	Description	Created By	Creation Date
Logical1	false	Logical1	USR_1	02/23/20

2 On the **Create Logical Connections** UI (Figure 406), you can modify the logical connection description and the Read Only option.

3 Click **Update**.

Message: “Logical Connection updated successfully” is displayed.

Delete Logical Connection Profile

To delete logical connection profile:

1 On the **Create Logical Connections** UI, on the **Manage Logical Connections** pane, click the menu icon corresponding to the required connection profile and click **Delete Connection**.

Message: “Logical Connection deleted successfully” is displayed.

Manage Configurations

The Manage Configuration feature helps you to define system parameters for all runtime workflows created through Workflow Management feature. The system parameters are the parameters valid across all runtime workflows. Individual workflows can access them without defining at individual workflow level. For workflows to use system parameters, they need to be enabled to use configuration.

The values of all system parameters are defined through a configuration. A configuration is a set of values for all system parameters. Multiple configurations with different set of values for system parameters can be defined. During execution of runtime workflows, a configuration name is provided as input to the workflow. The values of system parameters defined in the selected configuration name will be available to the workflow.

On the Manage Configurations page, you can perform:

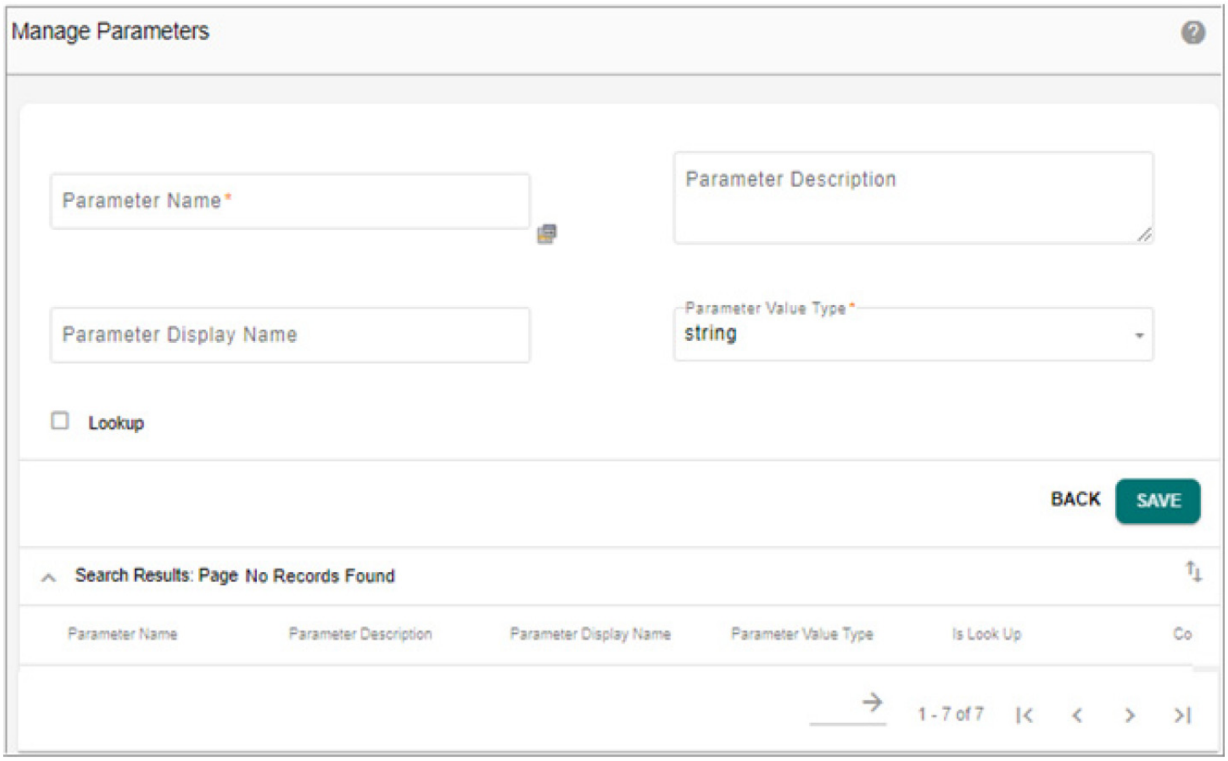
- Manage Parameters
- Create Configuration
- Edit Configuration Details
- Copy Configuration Details
- Compare Configuration Parameter Values
- Delete Configuration

Manage Parameters

The Manage Parameters feature involves the process of creating and managing system parameters required for workflows. The system parameters once defined are available across the whole system and to all workflows. Individual workflow need not define these parameters within them. The system parameter values are configurable within a configuration name.

You can access Manage Parameters UI from **Administration** -> **Manage Configurations** and click **Manage Parameters** button. On the Manage Parameters UI, you create, edit and delete parameters.

Figure 410: Manage Parameters



Create Parameter

To create parameter:

1 On the **Manage Parameters** UI (Figure 410), in the upper pane, enter the following:

- Parameter Name: name for the parameter. Name can be valid alphabets and '_'.
- Parameter Description: description for the parameter.
- Parameter Value Type: data type of the parameter being defined. The data type can be (string, date and datetime)
- Lookup: select the Lookup checkbox if the parameter being defined is of type lookup. If Lookup checkbox is selected, the Code Set Name dropdown is displayed. Select the required code set.

2 Click **Save**.

Message: "Parameter added successfully" is displayed.

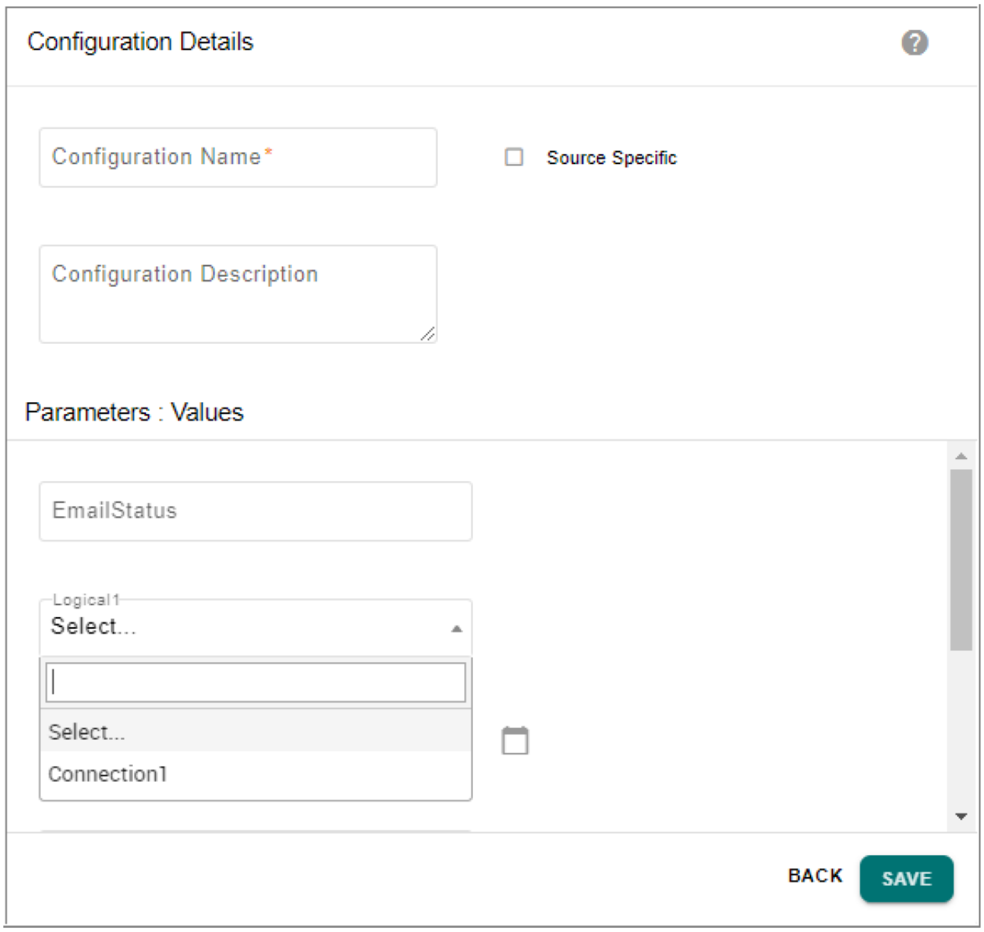
Note: You can use the connection names as parameters. The below steps describe the process of using configurations for a workflow:

1 Create a secondary connection. For details see Section : "Create New Secondary Connections."

2 Create parameter on the Manage Parameters UI by providing the parameter name as the logical connection name used (secondary connection created in step 1) and select the Lookup checkbox.

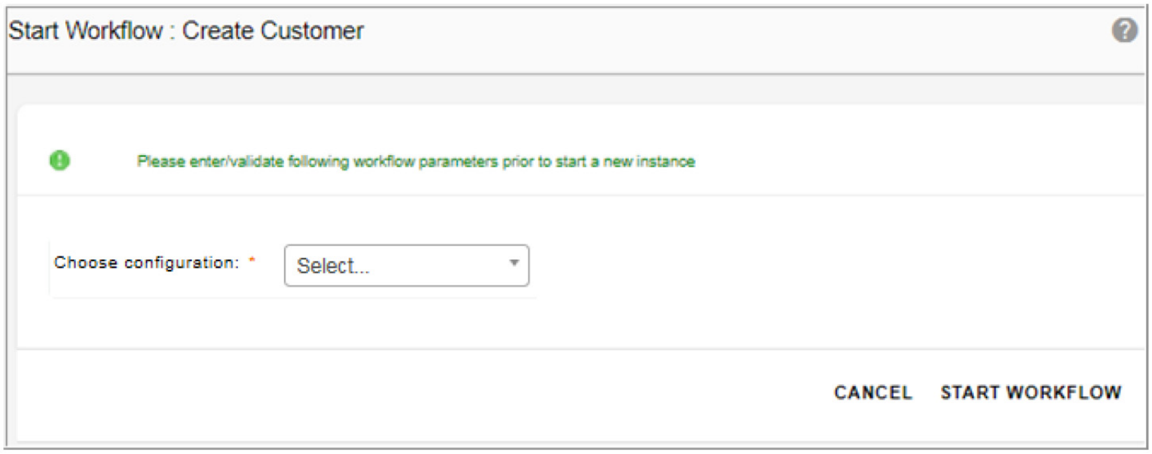
3 While defining configuration, the connections will be displayed in the defined Parameter dropdown.

Figure 411: Configuration Details



4 While executing the workflow, the Choose configuration will be displayed as Figure 412.

Figure 412: Start Workflow



Please enter/validate following workflow parameters prior to start a new instance

5 Select the configuration as Connection and click **Start Workflow**.

The workflow will be executed and the results can be viewed on the workflow monitoring UI.

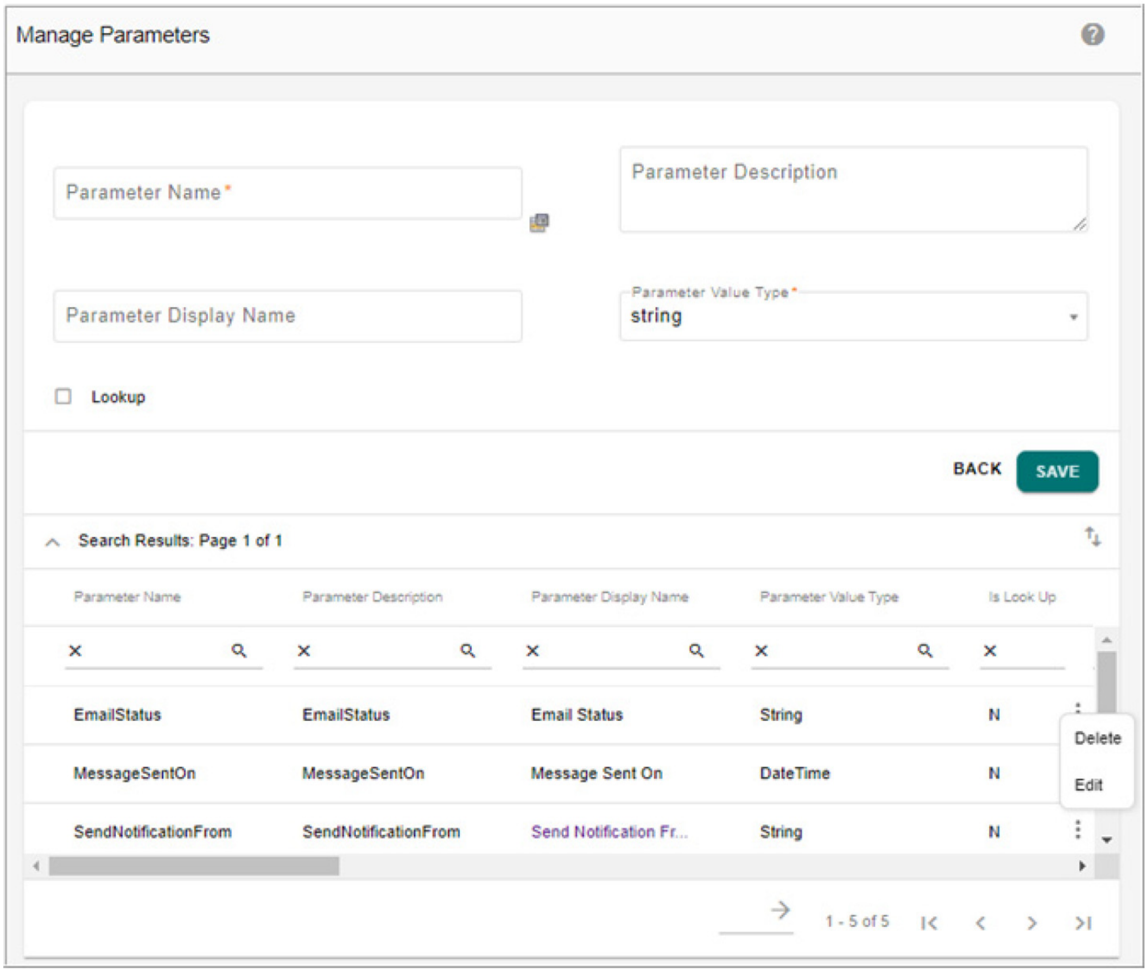
Note: If the workflow has child workflow which has use configuration parameter set, you should also enable the use configuration parameter at the parent workflow level.

Edit Parameter

To edit parameter:

1 On the **Manage Parameters** UI, in the search results pane, click the menu icon corresponding to the required parameter value and click **Edit**.

Figure 413: Manage Parameters—Edit

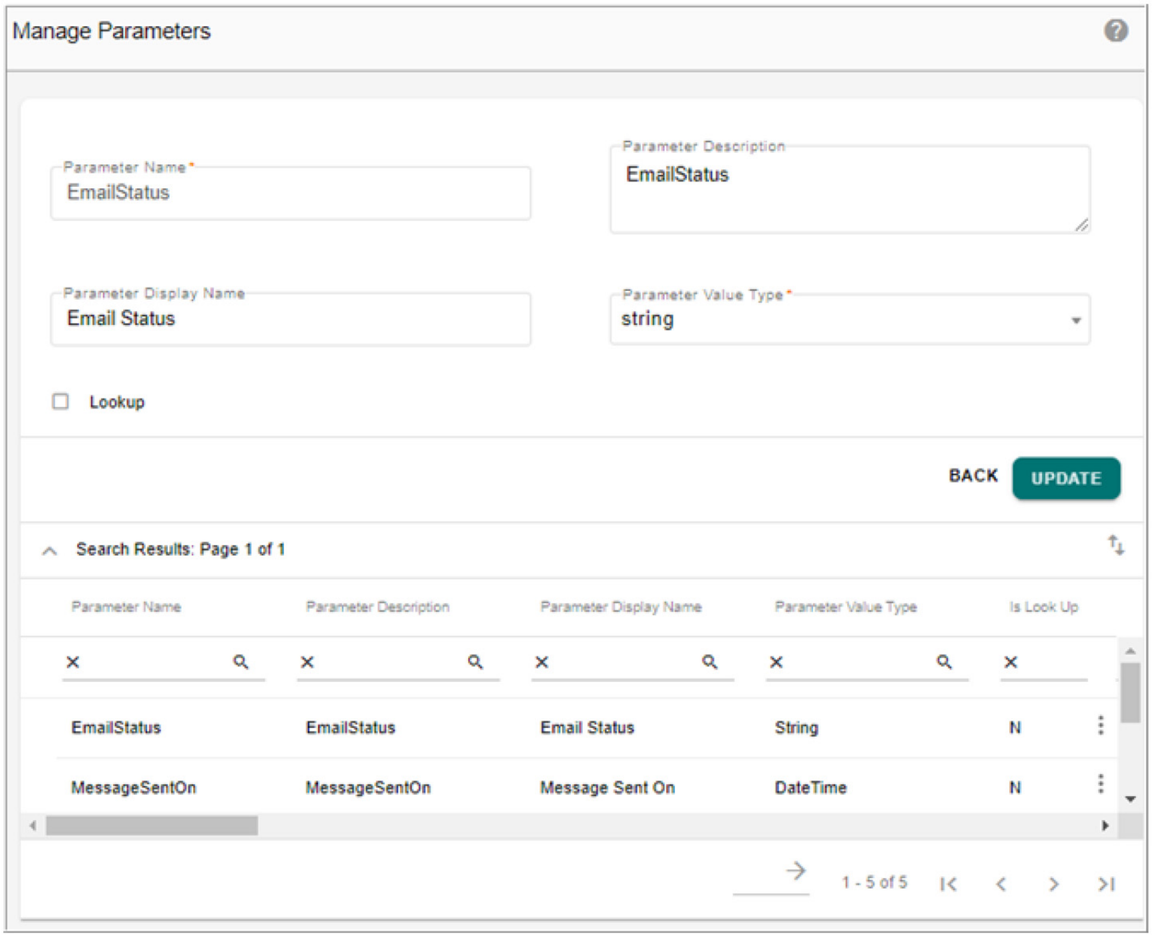


Parameter Value Type*: string

Parameter Name	Parameter Description	Parameter Display Name	Parameter Value Type	Is Look Up
EmailStatus	EmailStatus	Email Status	String	N
MessageSentOn	MessageSentOn	Message Sent On	DateTime	N
SendNotificationFrom	SendNotificationFrom	Send Notification Fr...	String	N

The upper pane on the Manage Parameters UI will be populated with the selected parameter values as in Figure 414.

Figure 414: Manage Parameters—Edit



Parameter Name*: EmailStatus

Parameter Description: EmailStatus

Parameter Display Name: Email Status

Parameter Value Type*: string

☐ Lookup

Parameter Name	Parameter Description	Parameter Display Name	Parameter Value Type	Is Look Up
EmailStatus	EmailStatus	Email Status	String	N
MessageSentOn	MessageSentOn	Message Sent On	DateTime	N

2 Modify the parameter values and click **Update**.

Message: “Parameter updated successfully” is displayed.

Delete Parameter

To delete parameter:

1 On the **Manage Parameters** UI, in the search results pane, click the Menu icon corresponding to the required parameter value and click **Delete.** .

The Confirmation webpage is displayed.

2 On the Confirmation webpage, click **Yes**.

Message: “Parameter deleted successfully” is displayed.

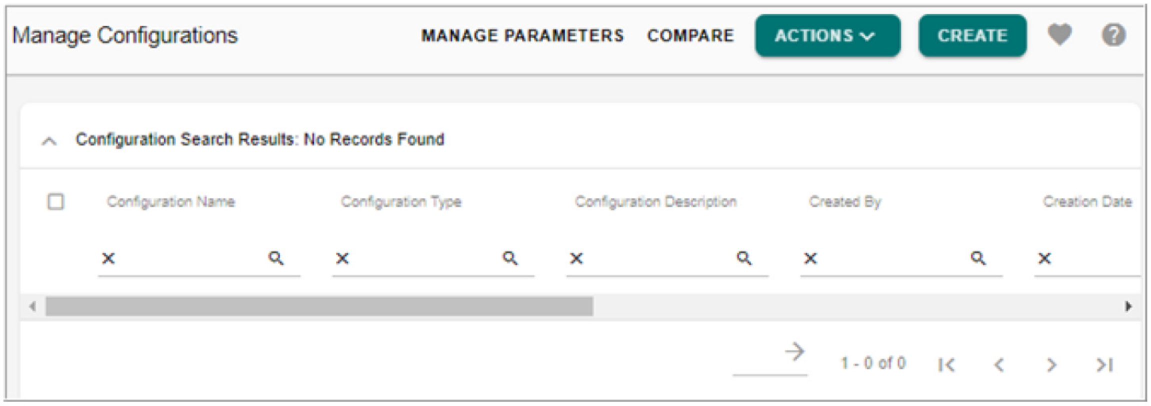
Create Configuration

Create configuration involves the process of defining a set of parameter values under a configuration name.

To create configuration:

1 Navigate to Manage Configuration UI from **Administration**-> **Manage Configurations**.

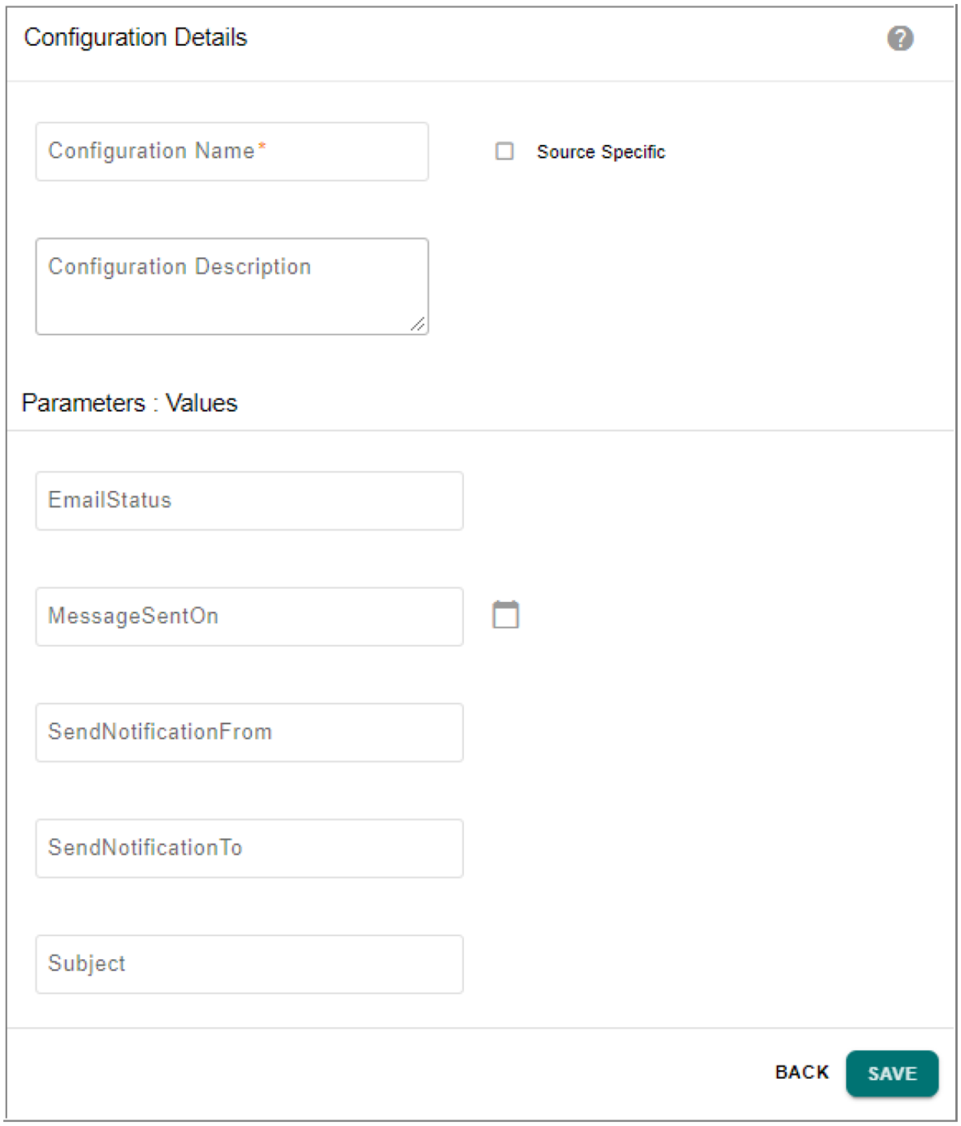
Figure 415: Manage Configurations



2 Click **Create**.

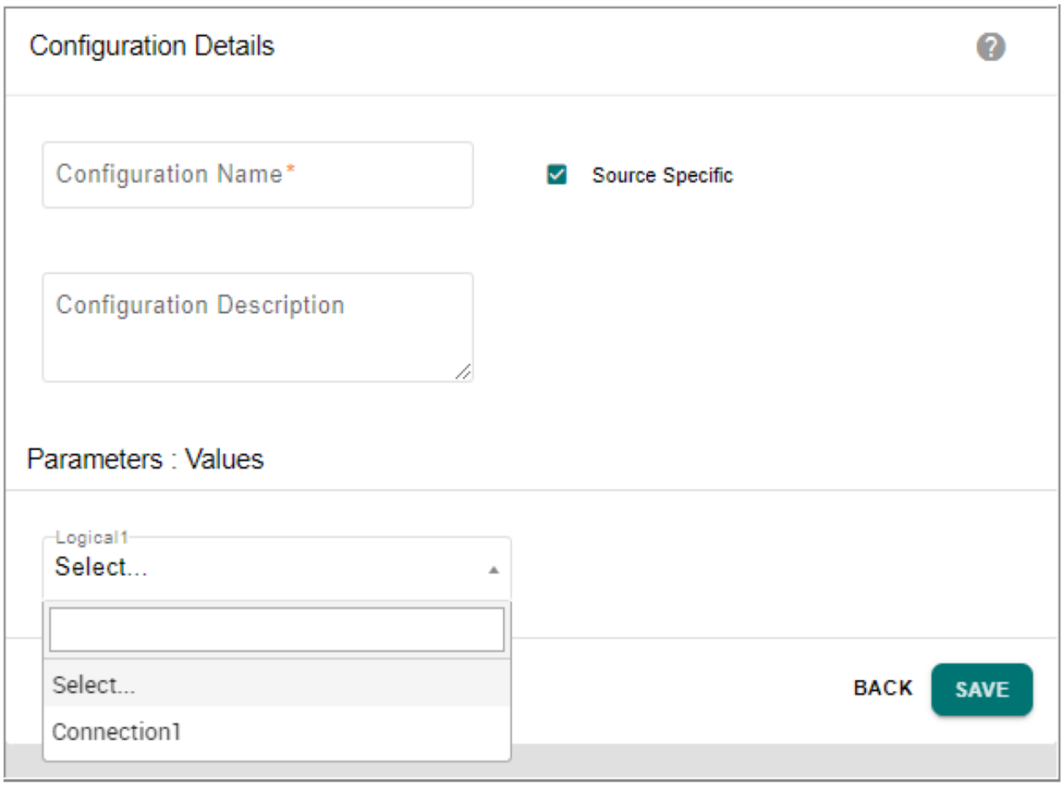
The **Configuration Details** page is displayed (Figure 415). All the parameters defined on the Manage Parameters UI will be displayed on the **Parameters: Values** pane.

Figure 416: Configuration Details



3 If the Source Specific checkbox is selected, the logical connection provided as the parameter name will be displayed as the dropdown and the existing secondary connections will be displayed as the dropdown list.

Figure 417: Configuration Details



4 On the Configuration Details page, enter the configuration name and description, enter the required parameter values and click **Save**.

Message: “Configuration created successfully” is displayed.

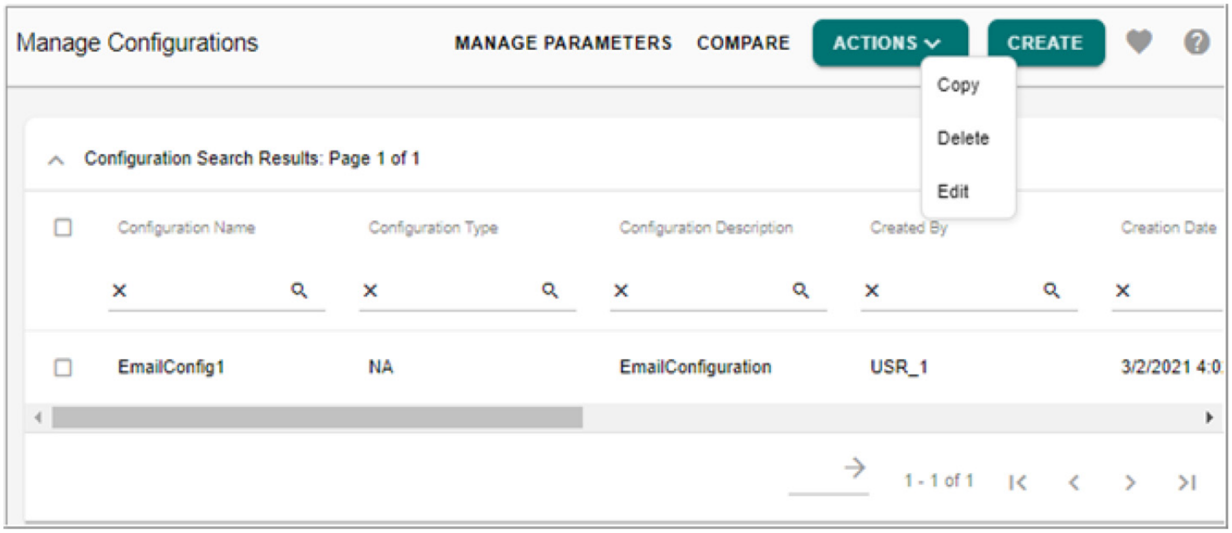
Edit Configuration Details

You can modify the configuration details using the Edit button on the Manage Configurations UI.

To edit configuration details:

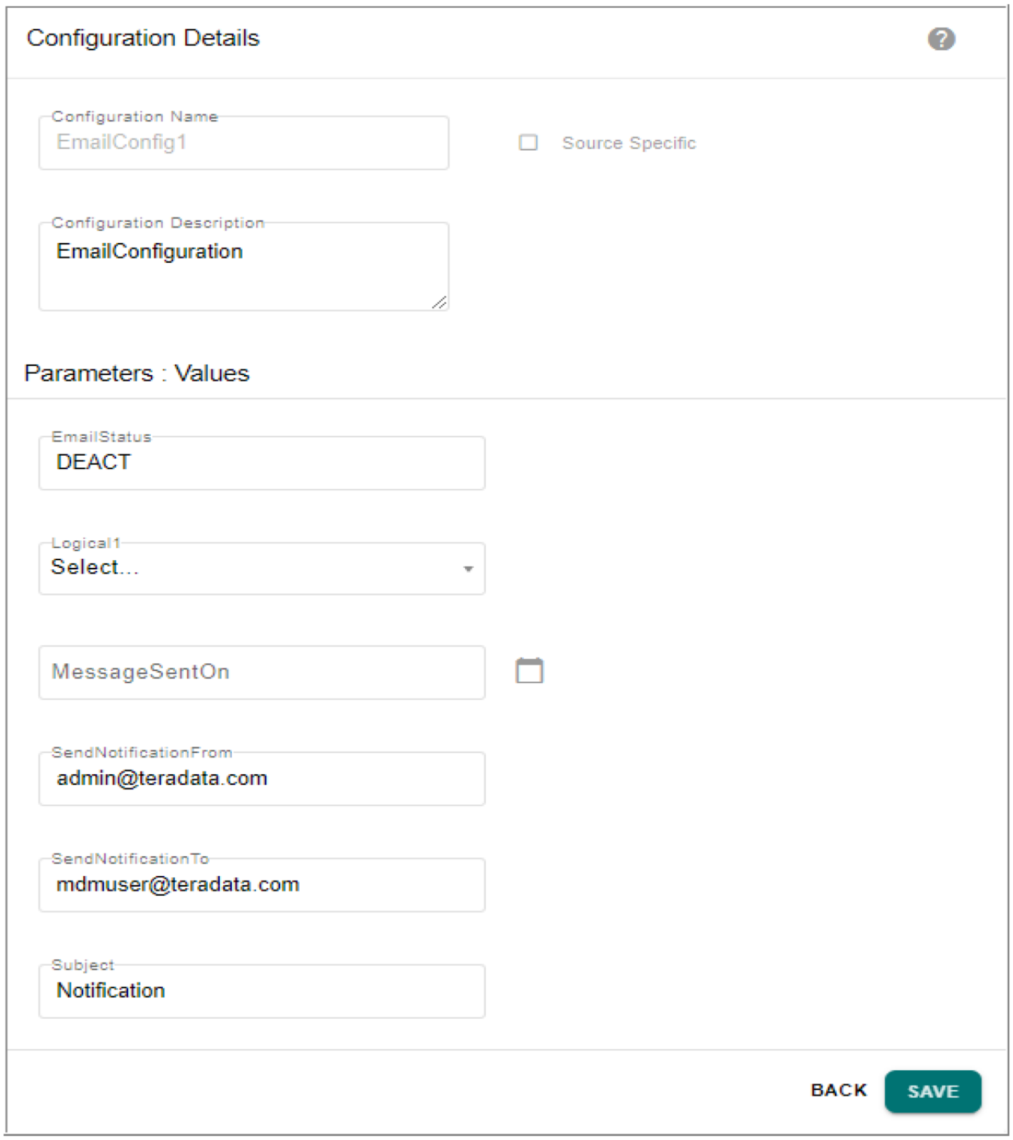
1 On the **Manage Configurations** page, select the required configuration and click **Edit** from **Actions** dropdown.

Figure 418: Manage Configurations—Edit



The **Configuration Details** page is displayed (Figure 415). All the parameters values entered during the creation of configuration details will be displayed on the **Parameters: Values** pane.

Figure 419: Configuration Details



Configuration Name: EmailConfig1

☐ Source Specific

Configuration Description: EmailConfiguration

EmailStatus: DEACT

Logical1: Select...

MessageSentOn

SendNotificationFrom: admin@teradata.com

SendNotificationTo: mdmuser@teradata.com

Subject: Notification

2 On the **Configuration Details** page (Figure 415), you can modify the configuration description and parameter values and click **Save**.

Message: “Configuration updated successfully” is displayed.

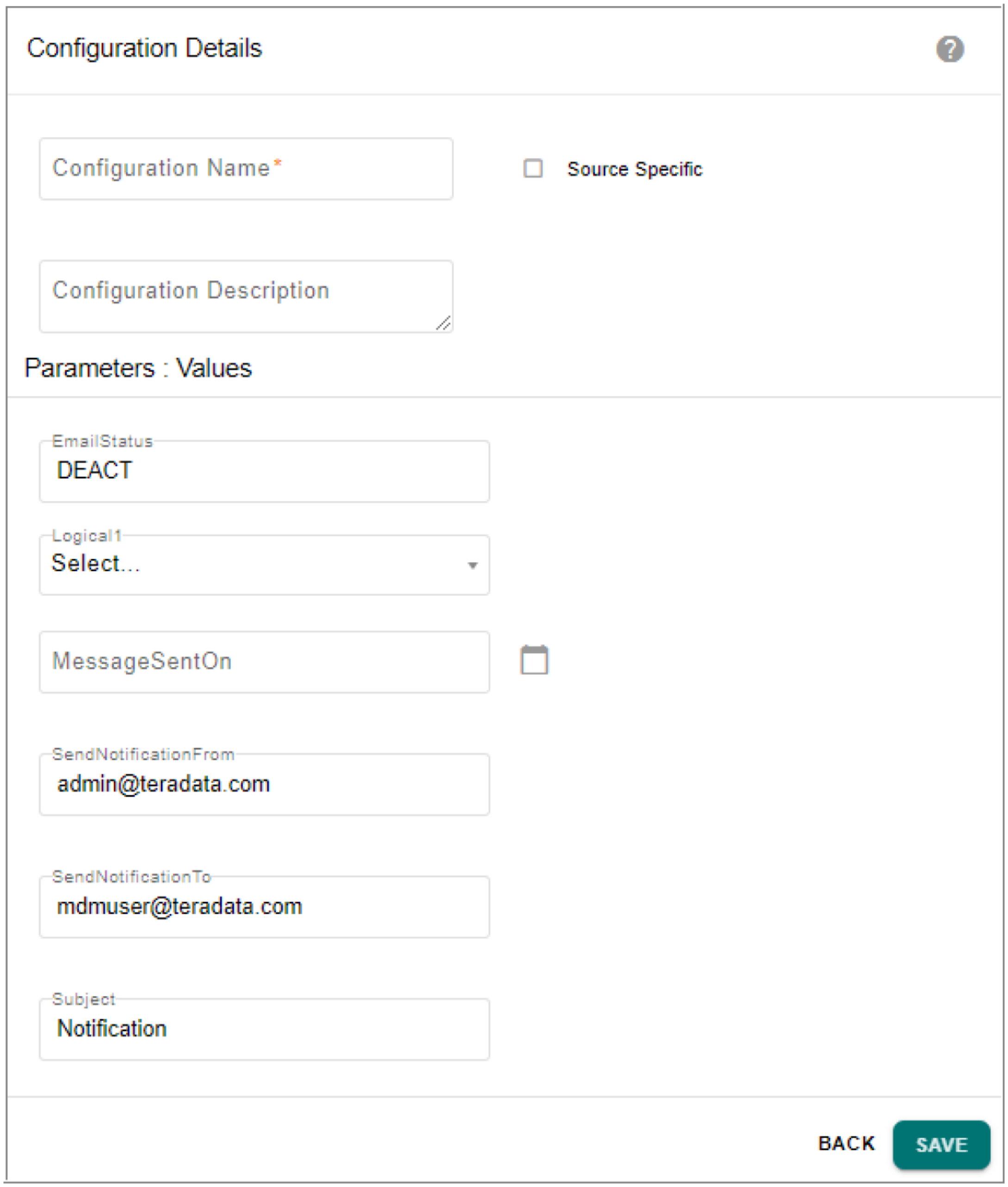
Copy Configuration Details

To copy configuration details:

1 On the **Manage Configurations** page, select the required configuration and select **Copy** from **Actions** dropdown.

The **Configuration Details** page is displayed. All the parameters values entered will be displayed on the **Parameters: Values** pane.

Figure 420: Configuration Details



Configuration Details

Configuration Name*

☐ Source Specific

Configuration Description

Parameters : Values

EmailStatus: DEACT

Logical1: Select...

MessageSentOn

SendNotificationFrom: admin@teradata.com

SendNotificationTo: mdmuser@teradata.com

Subject: Notification

2 On the **Configuration Details** page, enter the configuration name and description. If required, you can modify the parameter values and click **Save**.

Message: “Configuration created successfully” is displayed.

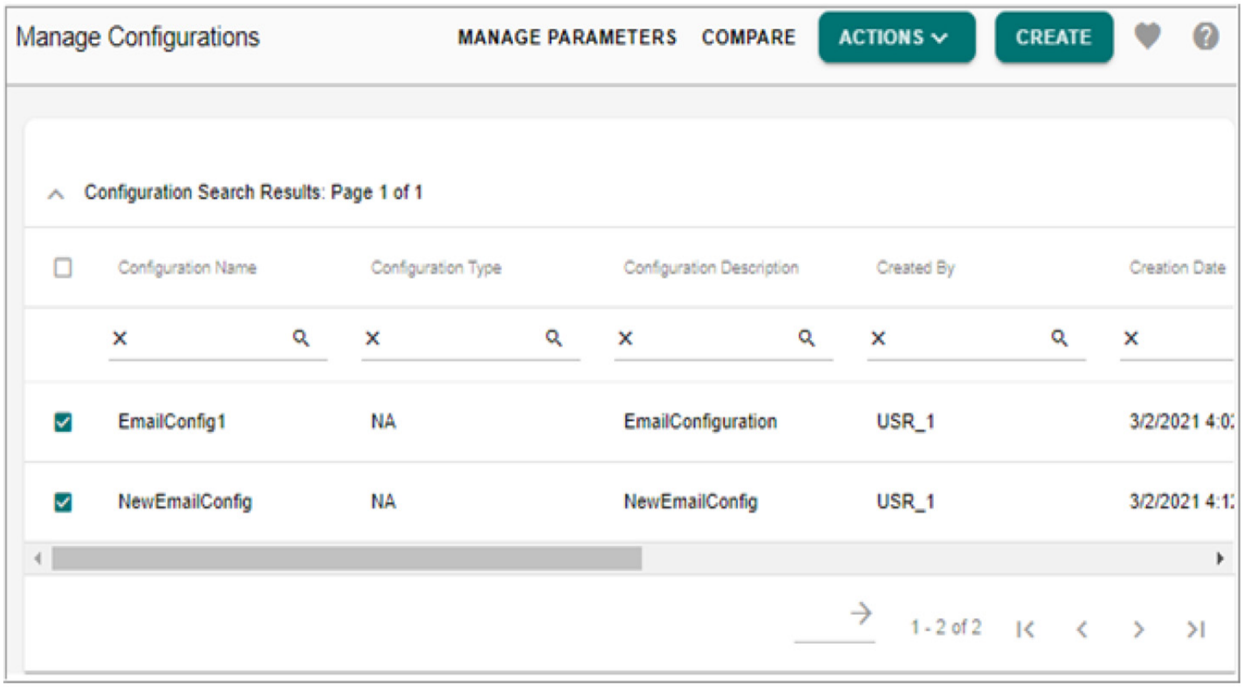
Compare Configuration Parameter Values

You can compare the parameter values across the different configurations using the Compare button on the Manage Configurations UI. You can compare the parameters values for six configurations only.

To compare configuration parameter values:

1 On the **Manage Configurations** page, select the required configurations and click **Compare**.

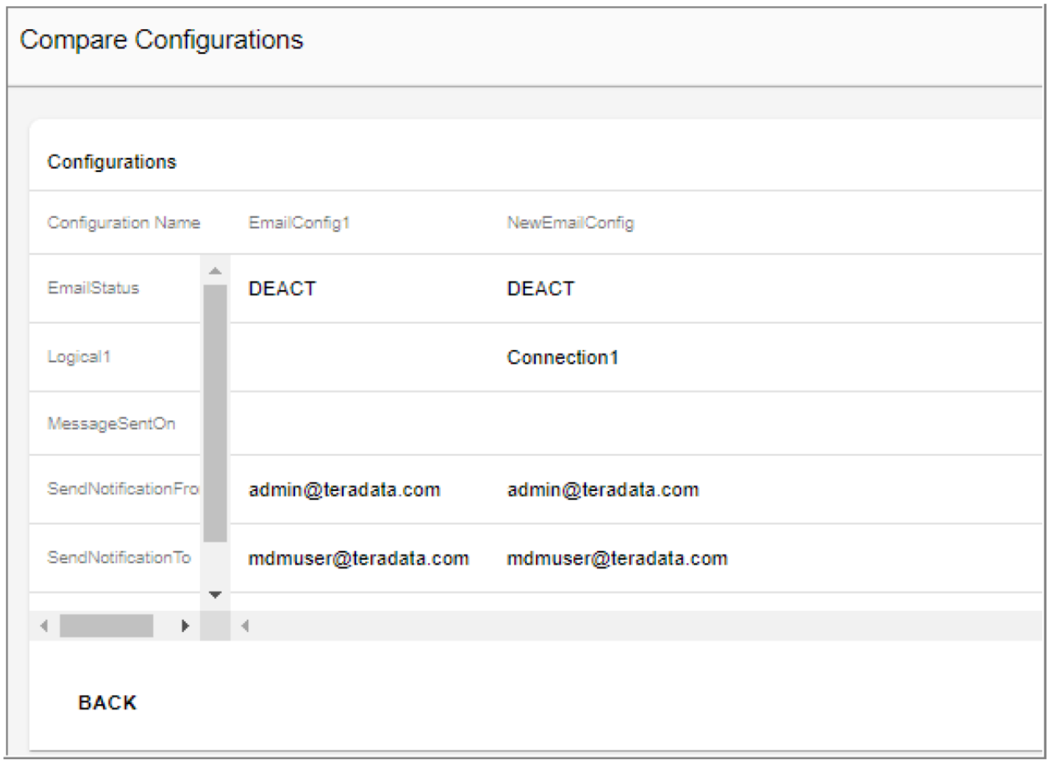
Figure 421: Manage Configurations—Compare



☐	Configuration Name	Configuration Type	Configuration Description	Created By	Creation Date
☑	EmailConfig1	NA	EmailConfiguration	USR_1	3/2/2021 4:0
☑	NewEmailConfig	NA	NewEmailConfig	USR_1	3/2/2021 4:1

The **Compare Configurations** page is displayed (Figure 415). All the parameter values of the selected configurations will be displayed.

Figure 422: Compare Configurations



Configuration Name	EmailConfig1	NewEmailConfig
EmailStatus	DEACT	DEACT
Logical1		Connection1
MessageSentOn		
SendNotificationFro	admin@teradata.com	admin@teradata.com
SendNotificationTo	mdmuser@teradata.com	mdmuser@teradata.com

Delete Configuration

To delete configuration details:

1. On the **Manage Configurations** page, select the required configurations and click **Delete** from the **Actions** dropdown.

   The **Confirmation Webpage** is displayed.

2. On the **Confirmation Webpage**, click **Yes**.

   Message: “Selected configurations deleted successfully” is displayed.

Manage Workflow—Restart Use Cases

The below use case demonstrates the following:

- Create workflow with restart options and custom node and workflow status.
- Deploy and execute the workflow.
- Monitor workflow execution results.

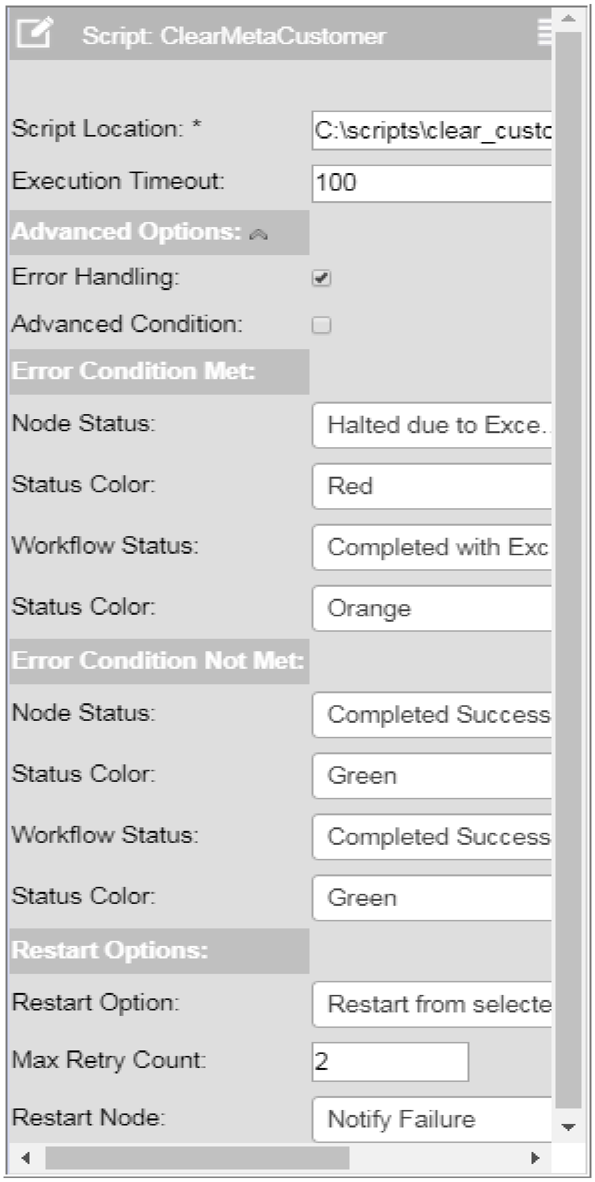
Create Workflow with Restart Options, Custom Node and Workflow Status

The use case explained in this section takes an example of creating a workflow which creates new customer executing a script. The proper error handling steps are configured and custom node status is set. By default, the start and end nodes will be created for the create customer workflow. The other required nodes have to be created as in below sections.

- Add script node. The name of the script node is:ClearMetaCustomer— this node clears any existing customer entries. If the node execution fails to clear the customer entries, the specified custom status will be applied (for example: Halted due to Exceptions) as in Figure 423. The other status are applied as per the default settings. If the node execution fails to clear the customer entries, the set restart options will be triggered. In case of failure, it takes to the node specified in the restart node dropdown.

  In the Restart Option, select the option as “Restart from selected node” and specify the Restart Node and specify the maximum retry count as in Figure 423.The retry count will allow the workflow execution to be restarted for the specified number of times.

Figure 423: Script Node Configuration

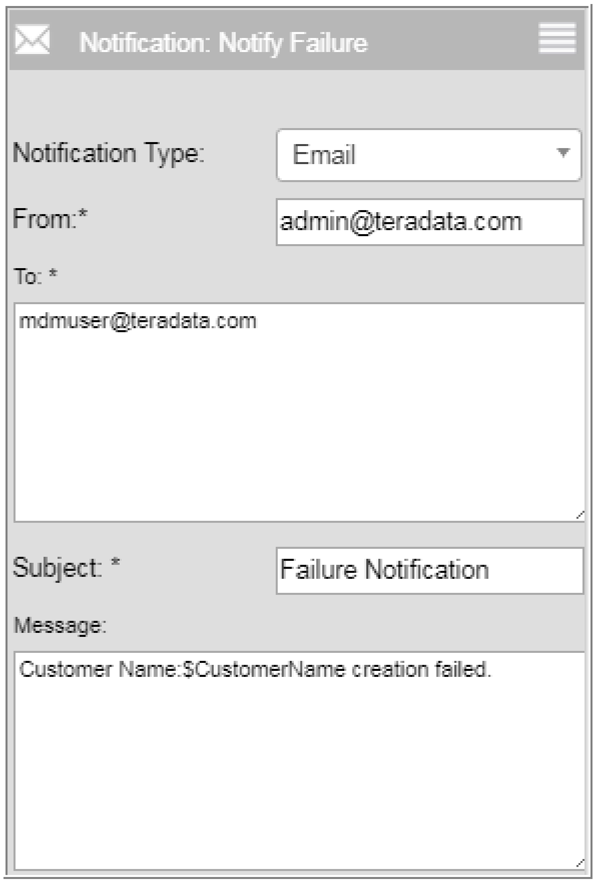


Script: ClearMetaCustomer

Script Location: *	C:\scripts\clear_custc
Execution Timeout:	100
Advanced Options:	
Error Handling:	☑
Advanced Condition:	☐
Error Condition Met:	
Node Status:	Halted due to Exce.
Status Color:	Red
Workflow Status:	Completed with Exc
Status Color:	Orange
Error Condition Not Met:	
Node Status:	Completed Success
Status Color:	Green
Workflow Status:	Completed Success
Status Color:	Green
Restart Options:	
Restart Option:	Restart from selecte
Max Retry Count:	2
Restart Node:	Notify Failure

- Add a notification node with name NotifyFailure—when the workflow execution fails, the NotifyFailure node sends out failure notification details to all the recipients (email Ids) specified in the “To” text field as in Figure 424.

Figure 424: Notification Configuration



Notification Type: Email

From:* admin@teradata.com

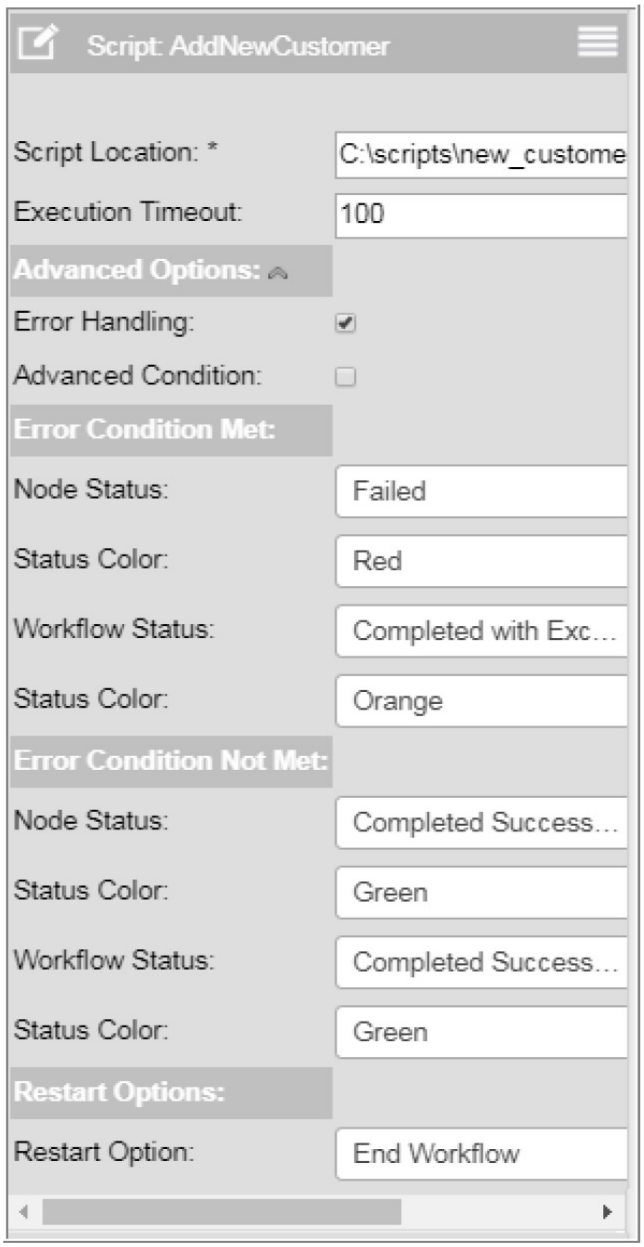
To: * mdmuser@teradata.com

Subject: * Failure Notification

Message: Customer Name:$CustomerName creation failed.

- Add a task node of type script. The name of the task node is: AddNewCustomer—this node adds new customer name details. If the node execution fails to add new customer data, the default status will be applied and the specified restart option will be triggered. In this case, the default restart option is End Workflow as in Figure 425.

Figure 425: Script Node Configuration



Script: AddNewCustomer

Script Location: * C:\scripts\new_custome

Execution Timeout: 100

Advanced Options:

Error Handling: ☑

Advanced Condition: ☐

Error Condition Met:

Node Status: Failed

Status Color: Red

Workflow Status: Completed with Exc…

Status Color: Orange

Error Condition Not Met:

Node Status: Completed Success…

Status Color: Green

Workflow Status: Completed Success…

Status Color: Green

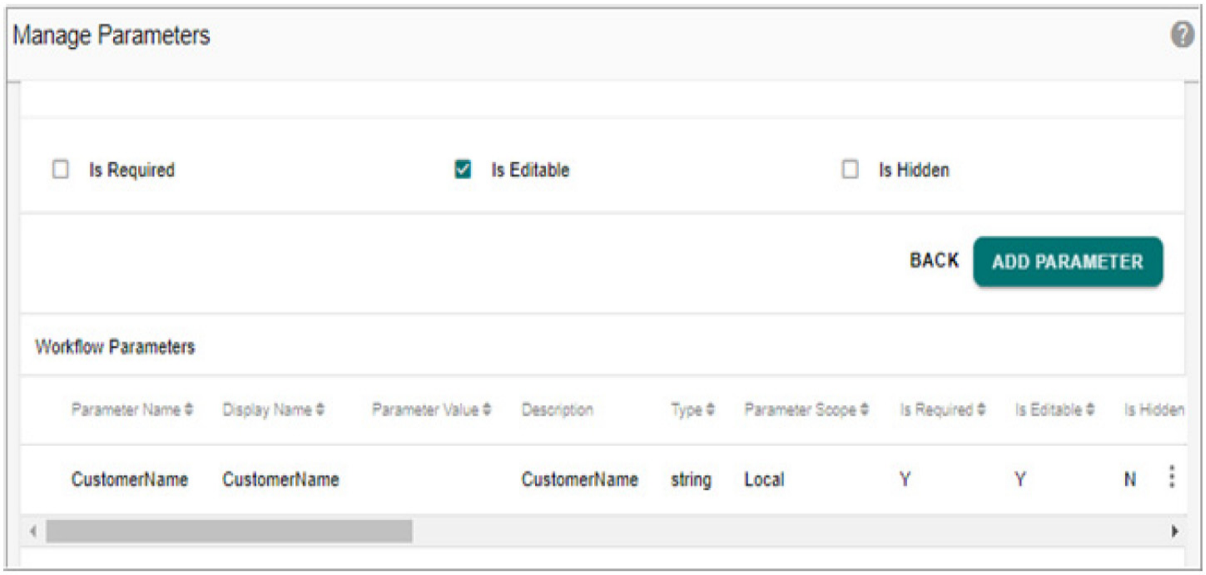
Restart Options:

Restart Option: End Workflow

- Add a notification node with name NotifySuccess—when the workflow execution is successful, the NotifySuccess node sends out success notification details to all the recipients (email Ids) specified in the “To” text field in the similar manner as in NotifyFailure section.

In the above workflow creation, a workflow parameter called CustomerName is defined as in Figure 426 to fetch the customer name details from the user during the workflow execution.

Figure 426: Workflow Parameters



Manage Parameters

☐ Is Required ☑ Is Editable ☐ Is Hidden

Workflow Parameters

Parameter Name	Display Name	Parameter Value	Description	Type	Parameter Scope	Is Required	Is Editable	Is Hidden
CustomerName	CustomerName		CustomerName	string	Local	Y	Y	N

Deploy and Execute Workflow with Restart Options

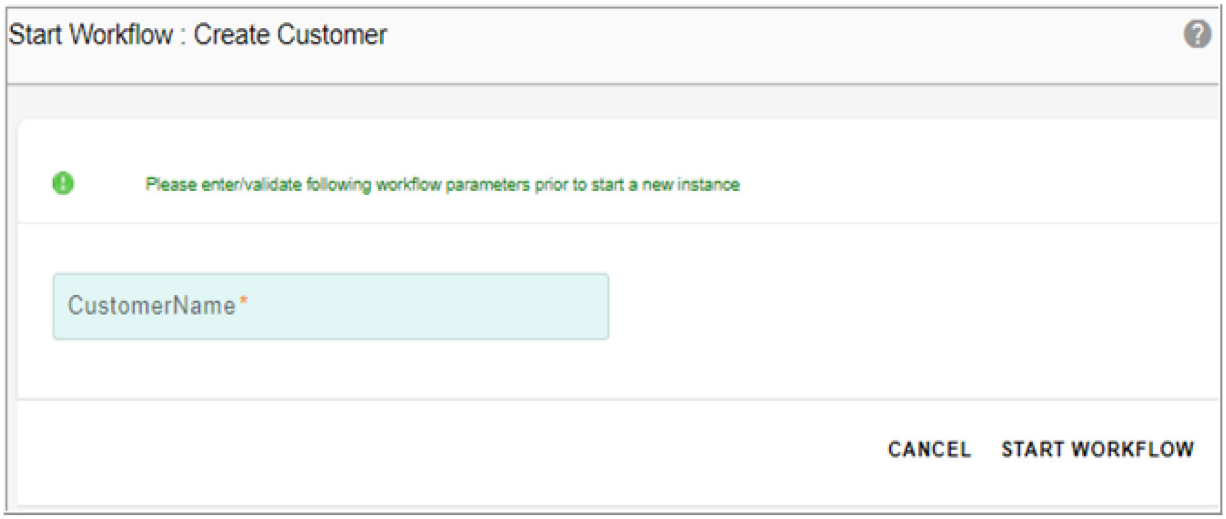
Now deploy and execute the workflow (Create Customer workflow).

Perform the following steps to deploy and execute workflow:

- On the Manage Workflow page, click the menu icon corresponding to the required workflow and click **Deploy**.
- On the Execute Workflow page, select the workflow and click **Start Workflow**.

  For detailed steps on deploy and execute workflows, see Section : "Create and Deploy Workflows" and Section : "Execute Workflows". During the execution of the workflow, you need to provide the customer name as the Customer Name is defined as the workflow parameter as in Figure 427.

Figure 427: Start Workflow



Start Workflow : Create Customer

Please enter/validate following workflow parameters prior to start a new instance

CustomerName*

- Enter the customer name and click **Start Workflow**.

  Message: “Workflow execution started. Please check workflow history for execution status” is displayed.

Monitor Workflows

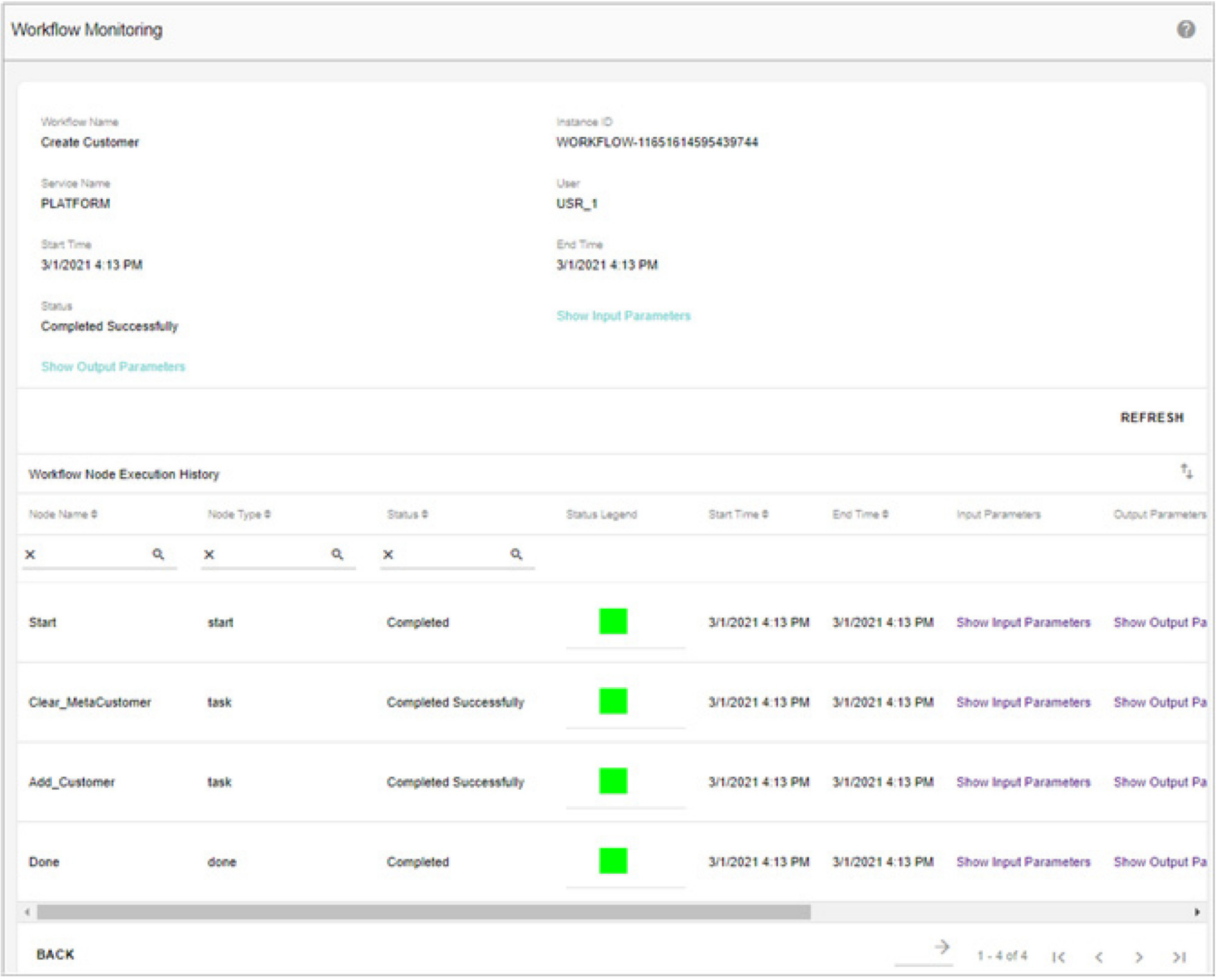
The below section demonstrates the workflow monitoring for successful execution of workflow and for different restart options in case of workflow execution failure.

Execution 1:

Describes the workflow execution without any errors and the customer is created successfully. The success notification of creating customer is sent to the email Id specified.

Navigate to the Workflow Monitoring page to view the detailed workflow execution results. Figure 428 displays the execution results on successful creation of workflow.

Figure 428: Workflow Monitoring



Workflow Name
Create Customer

Instance ID
WORKFLOW-11651614595439744

Service Name
PLATFORM

User
USR_1

Start Time
3/1/2021 4:13 PM

End Time
3/1/2021 4:13 PM

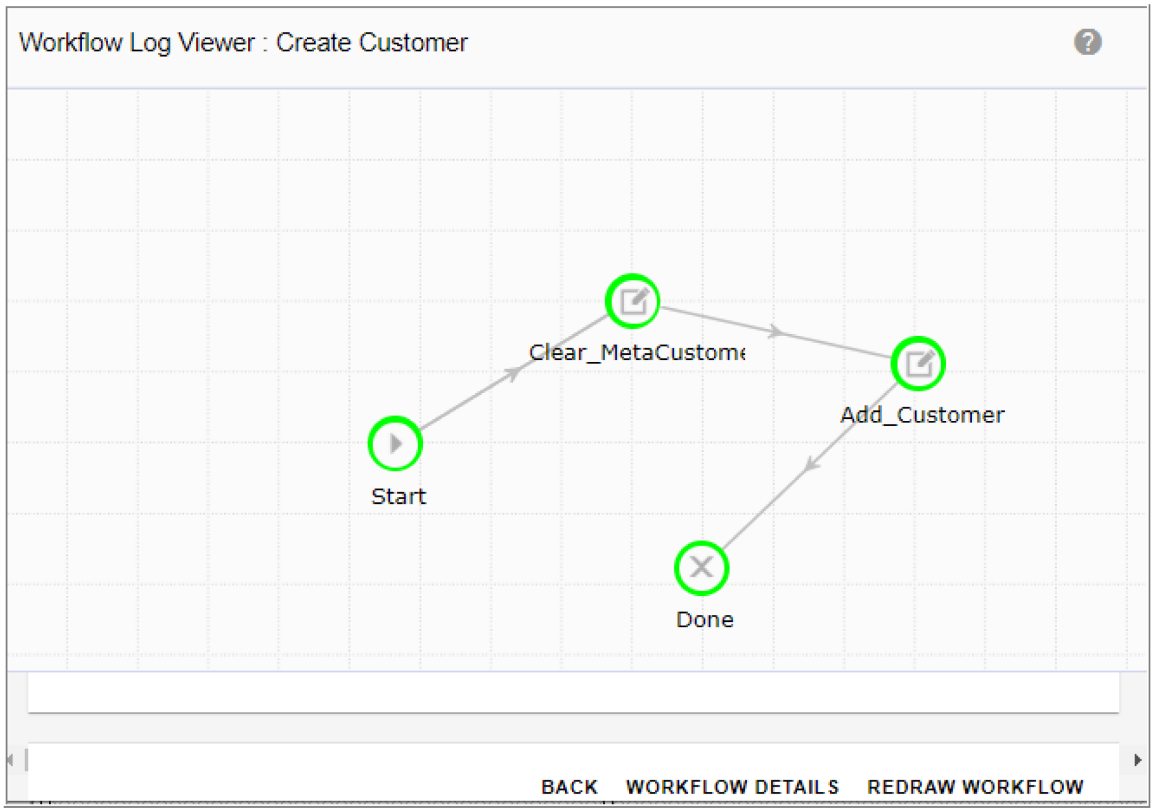
Status
Completed Successfully

Workflow Node Execution History

Node Name	Node Type	Status	Status Legend	Start Time	End Time	Input Parameters	Output Parameters
Start	start	Completed	🟩	3/1/2021 4:13 PM	3/1/2021 4:13 PM	Show Input Parameters	Show Output Pa
Clear_MetaCustomer	task	Completed Successfully	🟩	3/1/2021 4:13 PM	3/1/2021 4:13 PM	Show Input Parameters	Show Output Pa
Add_Customer	task	Completed Successfully	🟩	3/1/2021 4:13 PM	3/1/2021 4:13 PM	Show Input Parameters	Show Output Pa
Done	done	Completed	🟩	3/1/2021 4:13 PM	3/1/2021 4:13 PM	Show Input Parameters	Show Output Pa

Navigate to Workflow Log Viewer and the workflow execution is marked in green color to represent the successful complication of workflow execution as in Figure 429. For detailed description, see Section : “Workflow Monitoring”.

Figure 429: Workflow Log Viewer



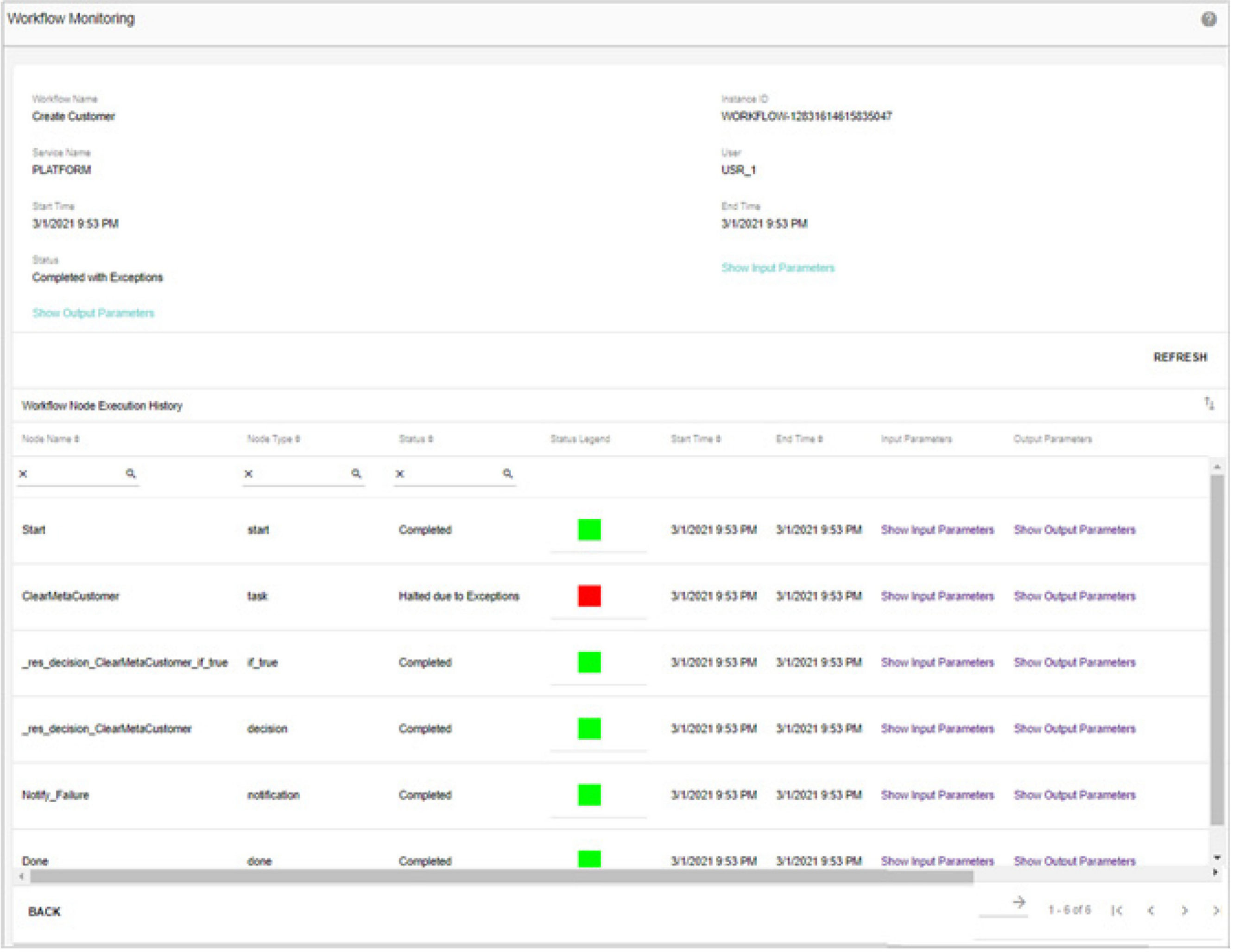
Execution 2:

Let us assume that the workflow execution fails with errors at clearMetaCustomer node and the execution moves to the node specified in the Restart Options (Restart from Selected Node) as in Figure 423.

The failure notification of not creating customer is sent to the email Id specified.

Figure 430 displays the complete workflow execution monitoring results. On the workflow execution history, the failure of node ClearMetaCustomer is displayed clearly with the custom status specified during the node configuration as “Halted due to Exceptions” and the workflow execution passes on to the NotifyFailure node as specified in the Restart Node option and can be clearly viewed on the Workflow Monitoring Log as in Figure 431.

Figure 430: Workflow Monitoring



Workflow Name: Create Customer

Instance ID: WORKFLOW-12831614615835047

Service Name: PLATFORM

User: USR_1

Start Time: 3/1/2021 9:53 PM

End Time: 3/1/2021 9:53 PM

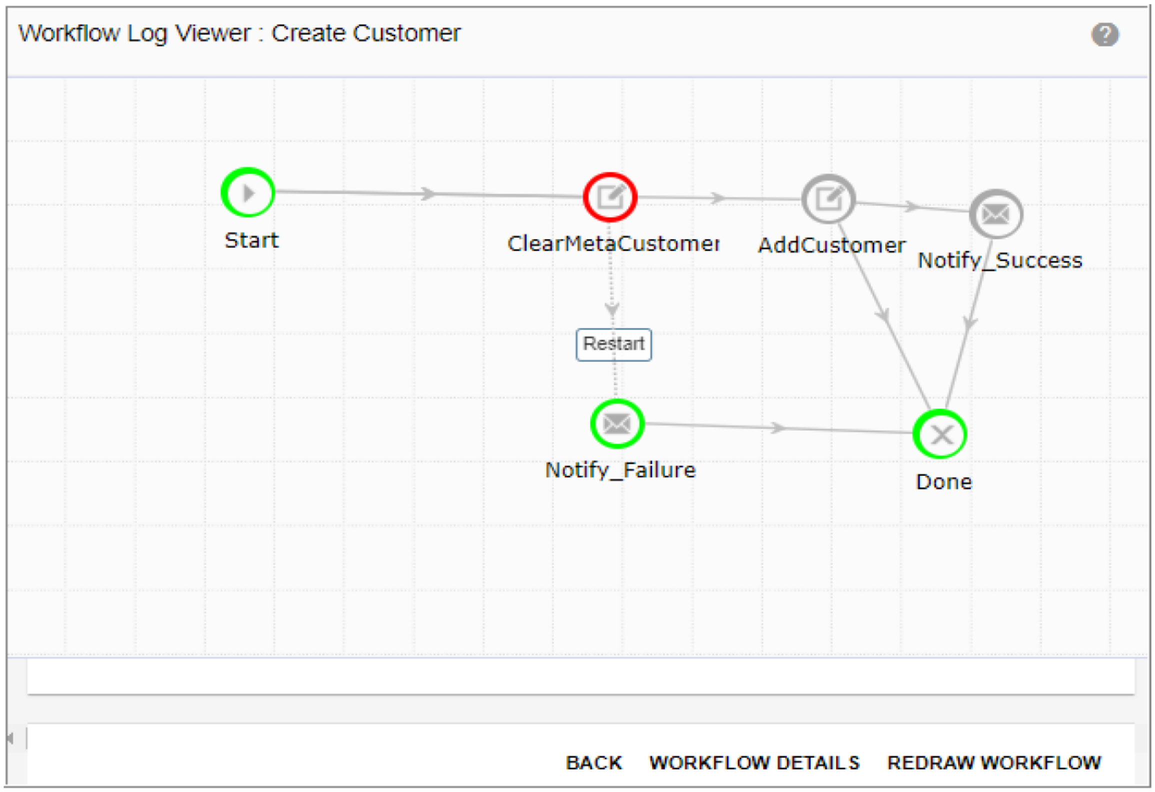
Status: Completed with Exceptions

Show Input Parameters

Show Output Parameters

Node Name	Node Type	Status	Status Legend	Start Time	End Time	Input Parameters	Output Parameters
Start	start	Completed	🟩	3/1/2021 9:53 PM	3/1/2021 9:53 PM	Show Input Parameters	Show Output Parameters
ClearMetaCustomer	task	Halted due to Exceptions	🟥	3/1/2021 9:53 PM	3/1/2021 9:53 PM	Show Input Parameters	Show Output Parameters
_res_decision_ClearMetaCustomer_if_true	if_true	Completed	🟩	3/1/2021 9:53 PM	3/1/2021 9:53 PM	Show Input Parameters	Show Output Parameters
_res_decision_ClearMetaCustomer	decision	Completed	🟩	3/1/2021 9:53 PM	3/1/2021 9:53 PM	Show Input Parameters	Show Output Parameters
Notify_Failure	notification	Completed	🟩	3/1/2021 9:53 PM	3/1/2021 9:53 PM	Show Input Parameters	Show Output Parameters
Done	done	Completed	🟩	3/1/2021 9:53 PM	3/1/2021 9:53 PM	Show Input Parameters	Show Output Parameters

Figure 431: Workflow Log Viewer

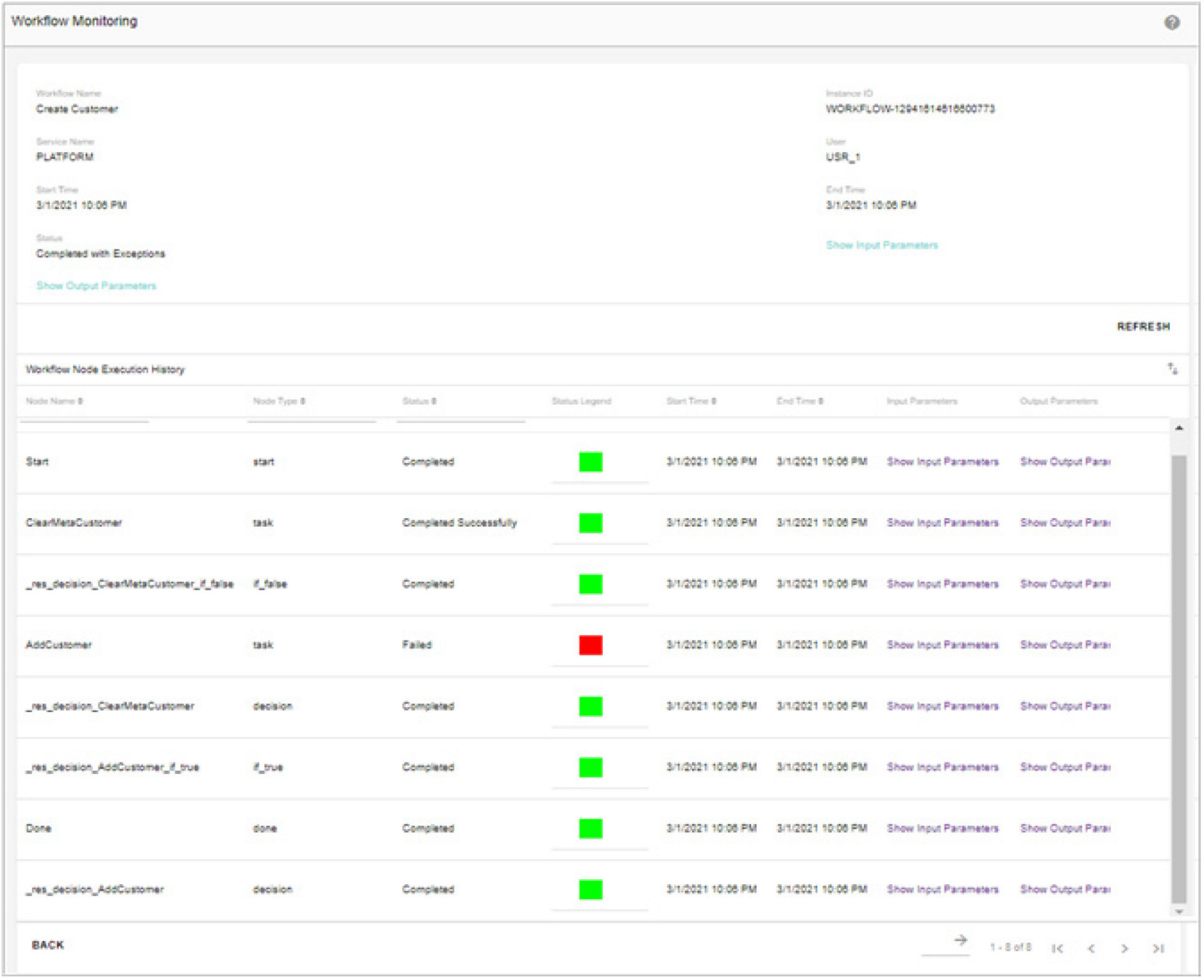


Execution 3:

Let us assume that the workflow execution fails at AddCustomer node and on failure, the workflow execution ends at the done node as End Workflow option is selected as the Restart Options. The failure notification of not creating customer is sent to the specified email Ids.

Figure 432 displays the complete workflow execution monitoring results. On the workflow execution history, the failure of node AddNewCustomer is displayed clearly with the status specified during the node configuration as “Failed” and the execution bypasses all the other nodes and ends the workflow as specified in the Restart option and the same can be viewed on the Workflow Log Viewer as in Figure 433.

Figure 432: Workflow Monitoring



Workflow Monitoring

Workflow Name
Create Customer

Instance ID
WORKFLOW-12941814816600773

Service Name
PLATFORM

User
USR_1

Start Time
3/1/2021 10:06 PM

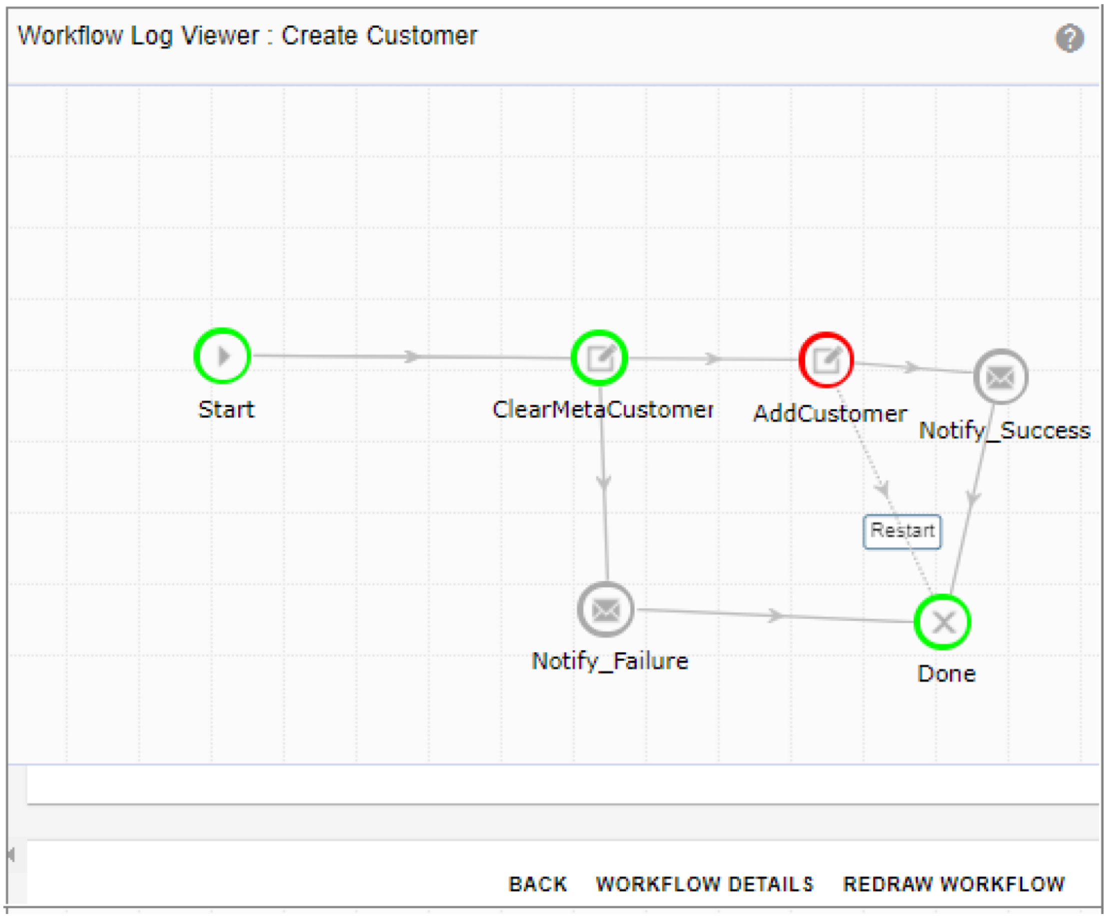
End Time
3/1/2021 10:06 PM

Status
Completed with Exceptions

Workflow Node Execution History

Node Name	Node Type	Status	Status Legend	Start Time	End Time	Input Parameters	Output Parameters
Start	start	Completed	🟩	3/1/2021 10:06 PM	3/1/2021 10:06 PM	Show Input Parameters	Show Output Para
ClearMetaCustomer	task	Completed Successfully	🟩	3/1/2021 10:06 PM	3/1/2021 10:06 PM	Show Input Parameters	Show Output Para
_res_decision_ClearMetaCustomer_if_false	if_false	Completed	🟩	3/1/2021 10:06 PM	3/1/2021 10:06 PM	Show Input Parameters	Show Output Para
AddCustomer	task	Failed	🟥	3/1/2021 10:06 PM	3/1/2021 10:06 PM	Show Input Parameters	Show Output Para
_res_decision_ClearMetaCustomer	decision	Completed	🟩	3/1/2021 10:06 PM	3/1/2021 10:06 PM	Show Input Parameters	Show Output Para
_res_decision_AddCustomer_if_true	if_true	Completed	🟩	3/1/2021 10:06 PM	3/1/2021 10:06 PM	Show Input Parameters	Show Output Para
Done	done	Completed	🟩	3/1/2021 10:06 PM	3/1/2021 10:06 PM	Show Input Parameters	Show Output Para
_res_decision_AddCustomer	decision	Completed	🟩	3/1/2021 10:06 PM	3/1/2021 10:06 PM	Show Input Parameters	Show Output Para

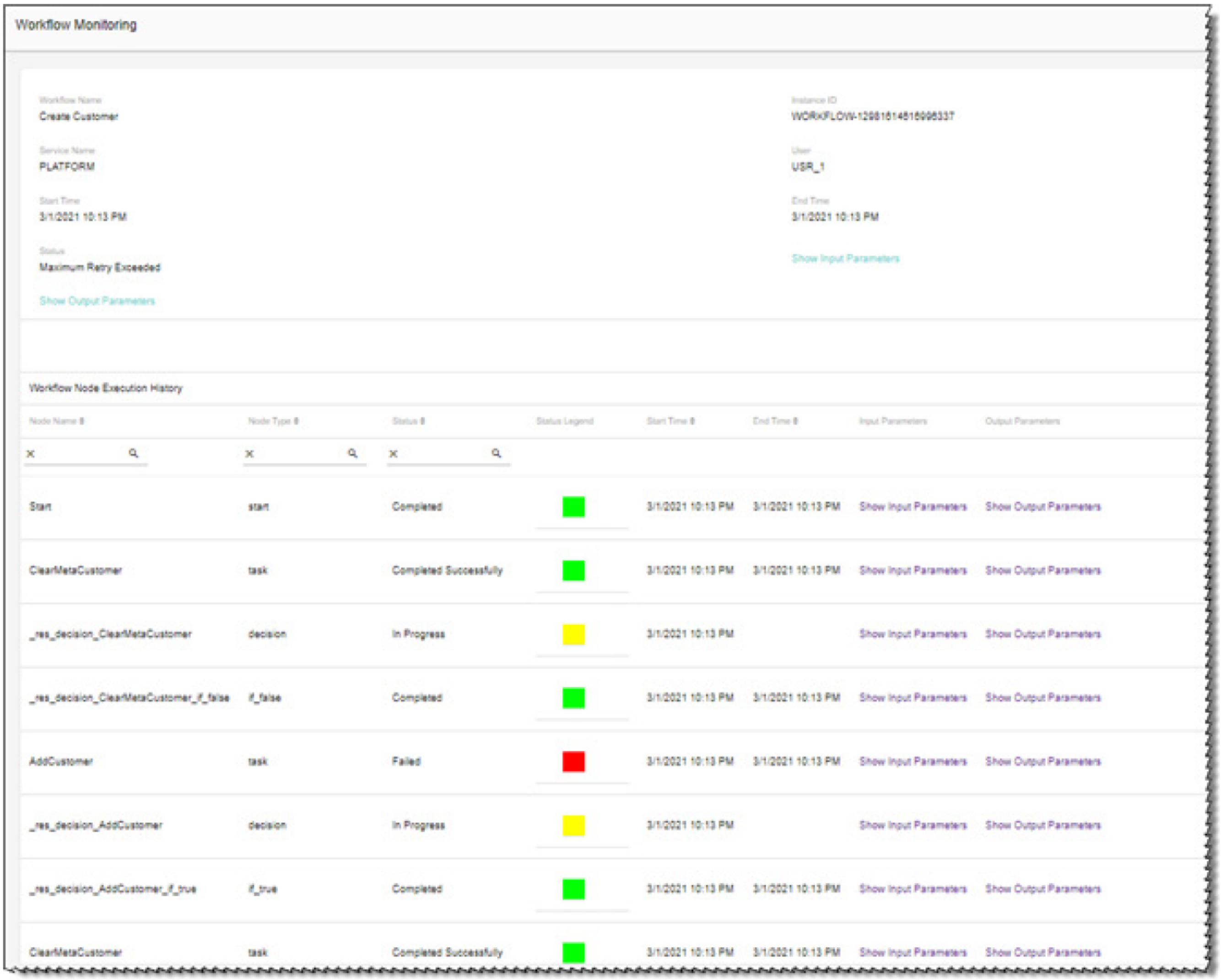
Figure 433: Workflow Log Viewer



Execution 4:

Let us assume that the workflow execution fails with errors at AddCustomer node and the execution moves to the node specified in the Restart Options (Restart from Previous Node). Restart from Previous node is similar to Restart from selected node option.The failure notification of not creating customer will be sent to the email Id specified.

Figure 434: Workflow Monitoring



Workflow Monitoring

Workflow Name
Create Customer

Service Name
PLATFORM

Start Time
3/1/2021 10:13 PM

Status
Maximum Retry Exceeded

Show Output Parameters

Instance ID
WORKFLOW-12981614816996337

User
USR_1

End Time
3/1/2021 10:13 PM

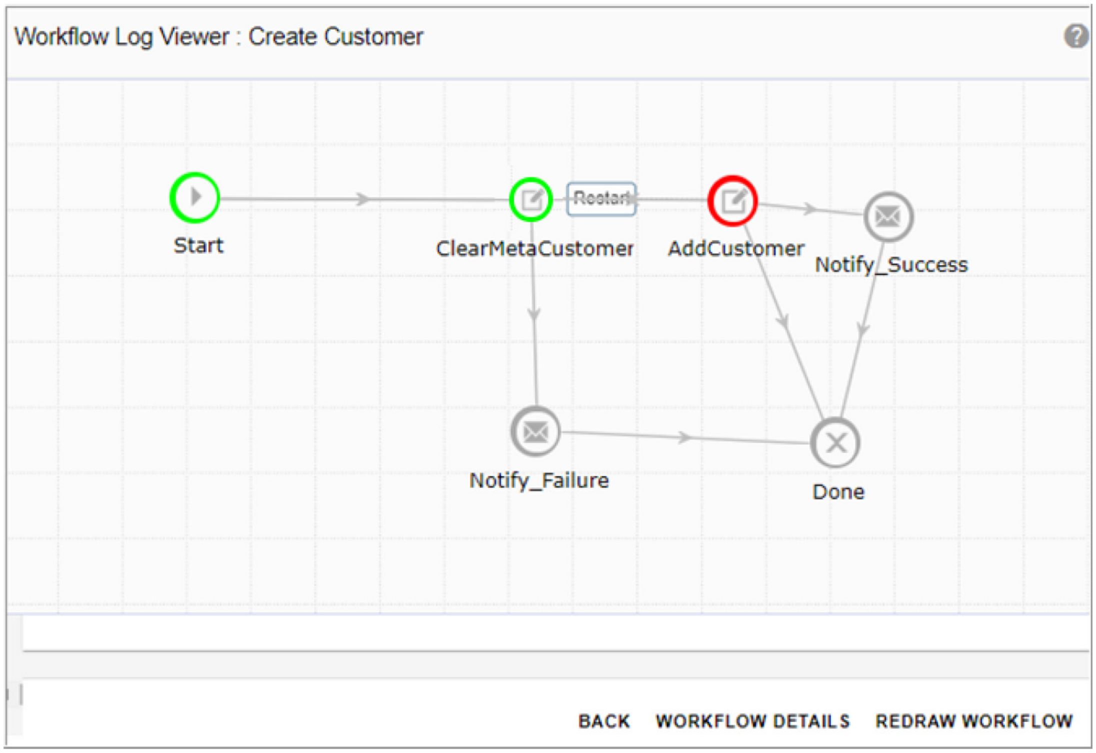
Show Input Parameters

Workflow Node Execution History

Node Name ⇕	Node Type ⇕	Status ⇕	Status Legend	Start Time ⇕	End Time ⇕	Input Parameters	Output Parameters
× 🔍	× 🔍	× 🔍					
Start	start	Completed	🟩	3/1/2021 10:13 PM	3/1/2021 10:13 PM	Show Input Parameters	Show Output Parameters
ClearMetaCustomer	task	Completed Successfully	🟩	3/1/2021 10:13 PM	3/1/2021 10:13 PM	Show Input Parameters	Show Output Parameters
_res_decision_ClearMetaCustomer	decision	In Progress	🟨	3/1/2021 10:13 PM		Show Input Parameters	Show Output Parameters
_res_decision_ClearMetaCustomer_if_false	if_false	Completed	🟩	3/1/2021 10:13 PM	3/1/2021 10:13 PM	Show Input Parameters	Show Output Parameters
AddCustomer	task	Failed	🟥	3/1/2021 10:13 PM	3/1/2021 10:13 PM	Show Input Parameters	Show Output Parameters
_res_decision_AddCustomer	decision	In Progress	🟨	3/1/2021 10:13 PM		Show Input Parameters	Show Output Parameters
_res_decision_AddCustomer_if_true	if_true	Completed	🟩	3/1/2021 10:13 PM	3/1/2021 10:13 PM	Show Input Parameters	Show Output Parameters
ClearMetaCustomer	task	Completed Successfully	🟩	3/1/2021 10:13 PM	3/1/2021 10:13 PM	Show Input Parameters	Show Output Parameters

On the Workflow Monitoring page (Figure 434), the execution fails at AddNewCustomer node and the execution navigates to the previous node (ClearMetaCustomer) as specified in the restart option and bypasses all the other nodes as in Figure 435.

Figure 435: Workflow Log Viewer

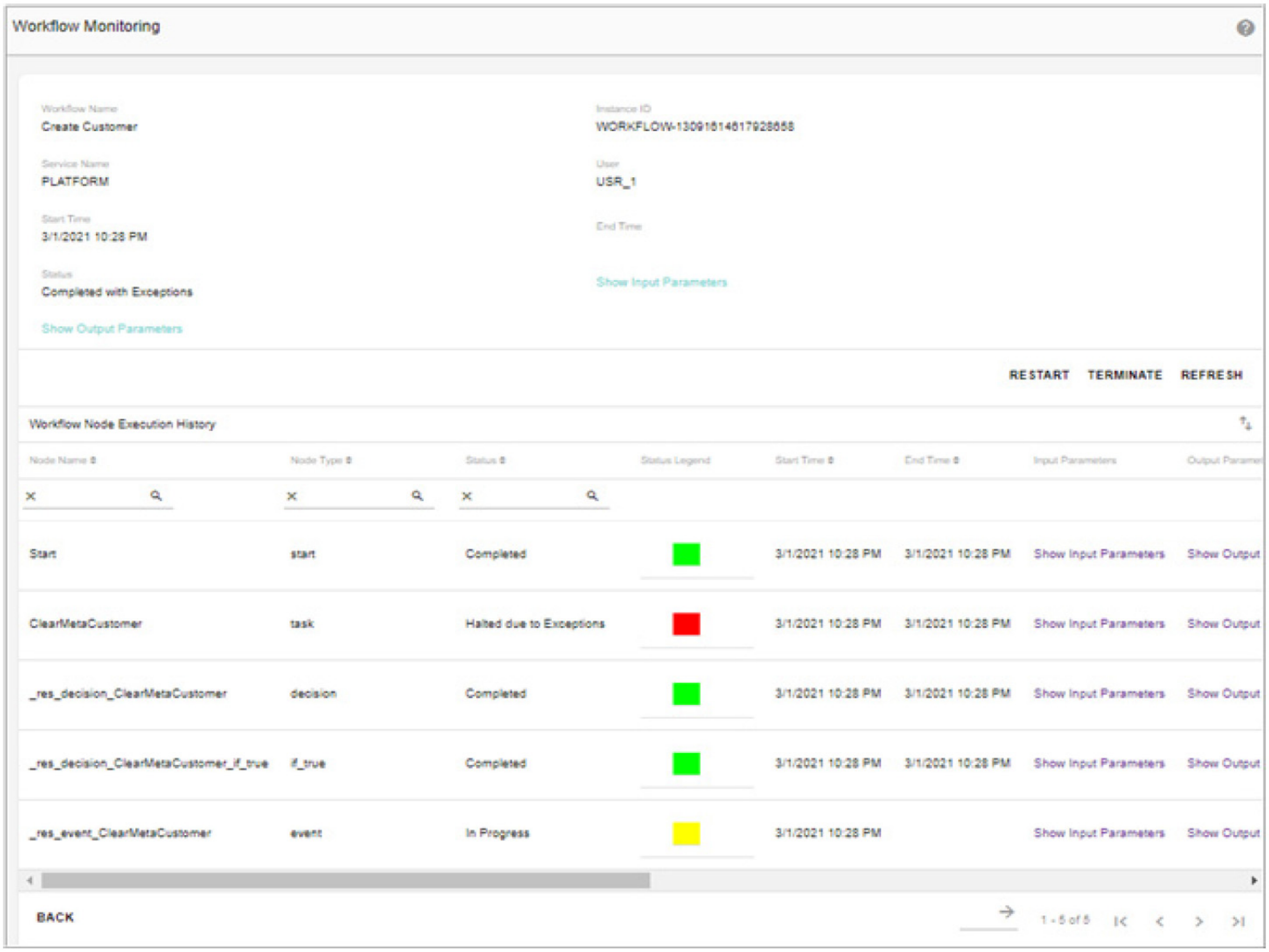


Execution 5:

Let us assume that the workflow execution fails with errors at clearMetaCustomer node and the execution moves to the node specified in the Restart Options (Wait for an Event to Restart or EndNode). The failure notification of not creating customer name will be sent to the email Id specified.

On the Monitor Workflows UI, the workflow execution failed at ClearMetaCustomer node as in Figure 436. The workflow execution waits for the user to either Restart the Workflow or Terminate the Workflow.

Figure 436: Workflow Monitoring



Workflow Monitoring

Workflow Name
Create Customer

Instance ID
WORKFLOW-13091614617928658

Service Name
PLATFORM

User
USR_1

Start Time
3/1/2021 10:28 PM

End Time

Status
Completed with Exceptions

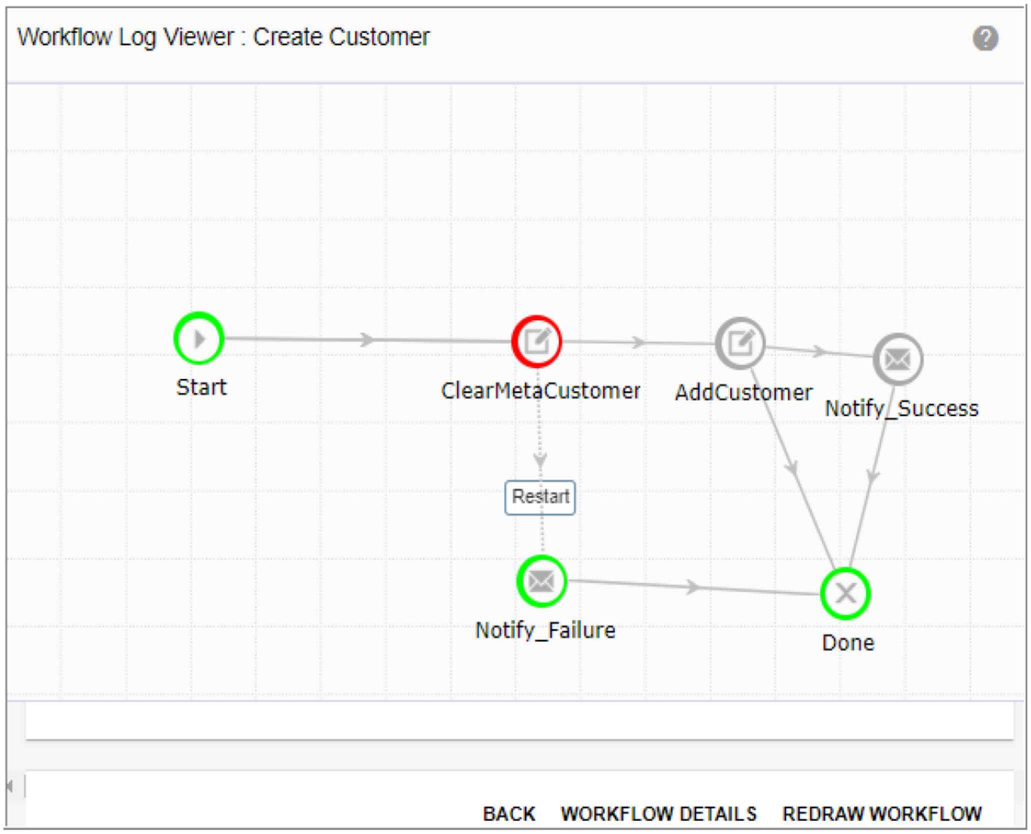
Workflow Node Execution History

Node Name	Node Type	Status	Status Legend	Start Time	End Time	Input Parameters	Output Parame
Start	start	Completed	🟩	3/1/2021 10:28 PM	3/1/2021 10:28 PM	Show Input Parameters	Show Output
ClearMetaCustomer	task	Halted due to Exceptions	🟥	3/1/2021 10:28 PM	3/1/2021 10:28 PM	Show Input Parameters	Show Output
_res_decision_ClearMetaCustomer	decision	Completed	🟩	3/1/2021 10:28 PM	3/1/2021 10:28 PM	Show Input Parameters	Show Output
_res_decision_ClearMetaCustomer_if_true	if_true	Completed	🟩	3/1/2021 10:28 PM	3/1/2021 10:28 PM	Show Input Parameters	Show Output
_res_event_ClearMetaCustomer	event	In Progress	🟨	3/1/2021 10:28 PM		Show Input Parameters	Show Output

On the Workflow Monitoring page, click **Restart** to restart the workflow. A notification mail would be sent to the user indicating that the workflow execution is restarted.

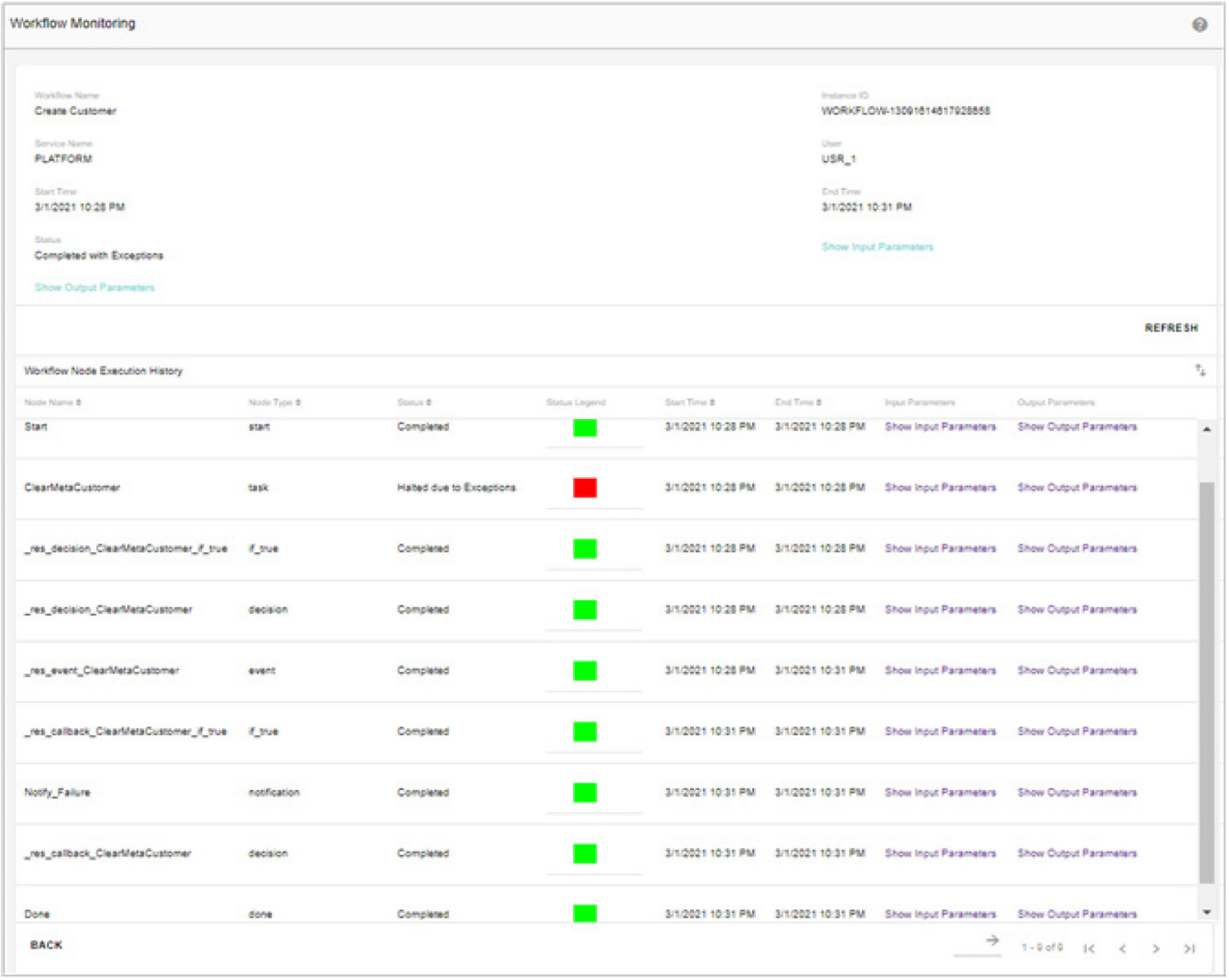
Once the restart execution is completed for the maximum specified retry count, the workflow execution will pass through the other nodes and the execution results would be displayed. On the workflow log viewer, the workflow execution fails with errors at clearMetaCustomer node as indicated by red. The green represents workflow execution completed successfully.

Workflow Log Viewer—Restart Option



On the Workflow Monitoring page, click **Terminate** to terminate the workflow. The terminate node performs tasks like cleaning data in some meta tables or notifying dependent users before moving to DONE node as in Figure 437.

Figure 437: Workflow Monitoring



Workflow Monitoring

Workflow Name
Create Customer

Instance ID
WORKFLOW-13091814817928858

Service Name
PLATFORM

User
USR_1

Start Time
3/1/2021 10:28 PM

End Time
3/1/2021 10:31 PM

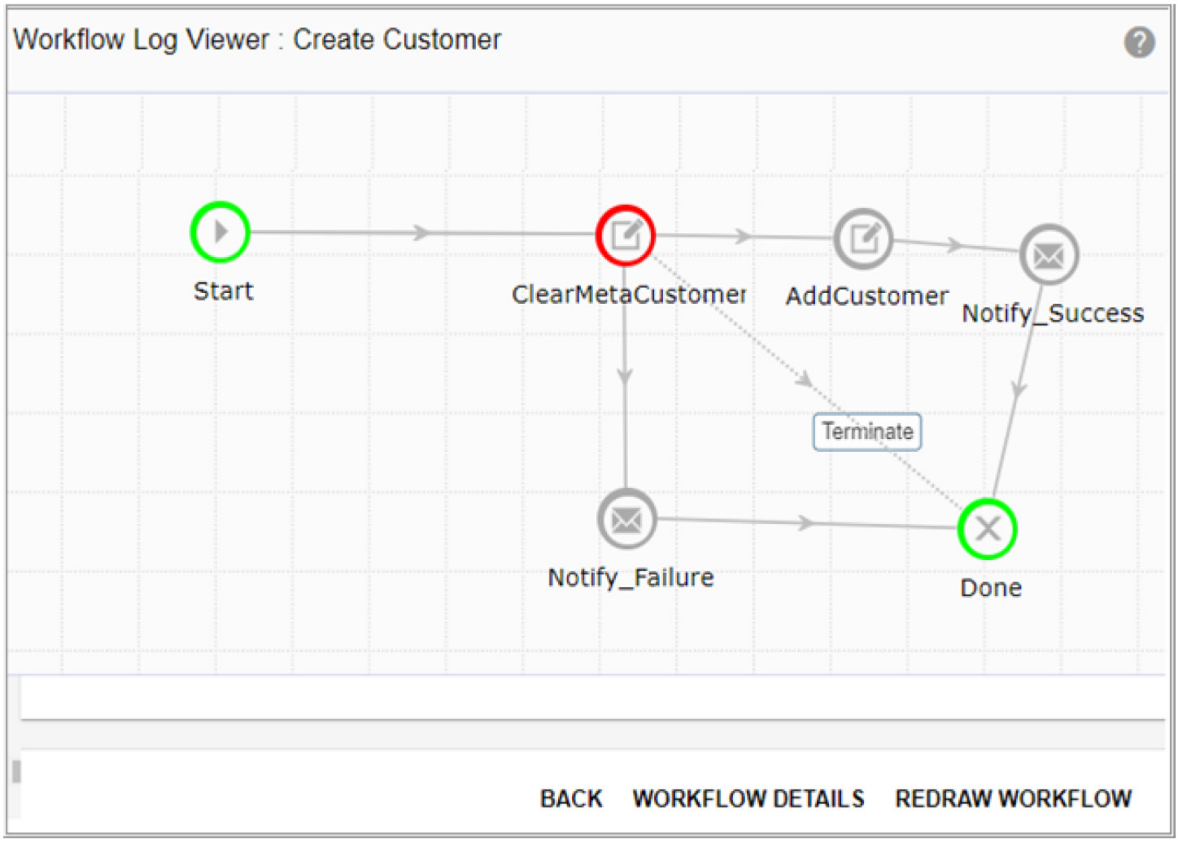
Status
Completed with Exceptions

Workflow Node Execution History

Node Name ⇕	Node Type ⇕	Status ⇕	Status Legend	Start Time ⇕	End Time ⇕	Input Parameters	Output Parameters
Start	start	Completed	🟩	3/1/2021 10:28 PM	3/1/2021 10:28 PM	Show Input Parameters	Show Output Parameters
ClearMetaCustomer	task	Halted due to Exceptions	🟥	3/1/2021 10:28 PM	3/1/2021 10:28 PM	Show Input Parameters	Show Output Parameters
_res_decision_ClearMetaCustomer_if_true	if_true	Completed	🟩	3/1/2021 10:28 PM	3/1/2021 10:28 PM	Show Input Parameters	Show Output Parameters
_res_decision_ClearMetaCustomer	decision	Completed	🟩	3/1/2021 10:28 PM	3/1/2021 10:28 PM	Show Input Parameters	Show Output Parameters
_res_event_ClearMetaCustomer	event	Completed	🟩	3/1/2021 10:28 PM	3/1/2021 10:31 PM	Show Input Parameters	Show Output Parameters
_res_callback_ClearMetaCustomer_if_true	if_true	Completed	🟩	3/1/2021 10:31 PM	3/1/2021 10:31 PM	Show Input Parameters	Show Output Parameters
Notify_Failure	notification	Completed	🟩	3/1/2021 10:31 PM	3/1/2021 10:31 PM	Show Input Parameters	Show Output Parameters
_res_callback_ClearMetaCustomer	decision	Completed	🟩	3/1/2021 10:31 PM	3/1/2021 10:31 PM	Show Input Parameters	Show Output Parameters
Done	done	Completed	🟩	3/1/2021 10:31 PM	3/1/2021 10:31 PM	Show Input Parameters	Show Output Parameters

On the workflow log viewer (Figure 438), the workflow execution fails with errors at clearMetaCustomer node as indicated by red. The green represents workflow execution completed successfully.

Figure 438: Workflow Monitoring—Terminate Option



Task Inbox as a SubWorkflow Node

The Workflow Management provides an out of the box workflow called Task Inbox. The Task Inbox workflow helps to manage and monitor a task, which is in Completed or in In-progress status. By default, every MDM user will have a task inbox. If task inbox is used as sub-workflow in any workflow process, the assigned tasks to a user will be displayed in the respective user's task inbox. Users on completion of the task can mark the task as completed and that will trigger the workflow to move forward to the next step as designed.

The task inbox workflow involves the following workflow parameters that needs to be provided while executing a workflow instance:

- SendNotificationFrom—the email id from which the notification for the task should be sent.
- SendNotificationTo—the email ids of the users who need to be notified about the task.
- NotificationSubject—task notification subject.
- NotificationMessage—task notification message. It may consist of the url to MDM pages where users should go in order to perform the specified task.
- TaskMessage—task Message which would show up in the Task inbox Message field.

- Assign Task To—User Group for which the task inbox alert would appear in their respective task inboxes. Also user belonging to this group only can view the raised task.
- Task Assigned By—the details of person by whom the task alerts are being raised and task will be created.

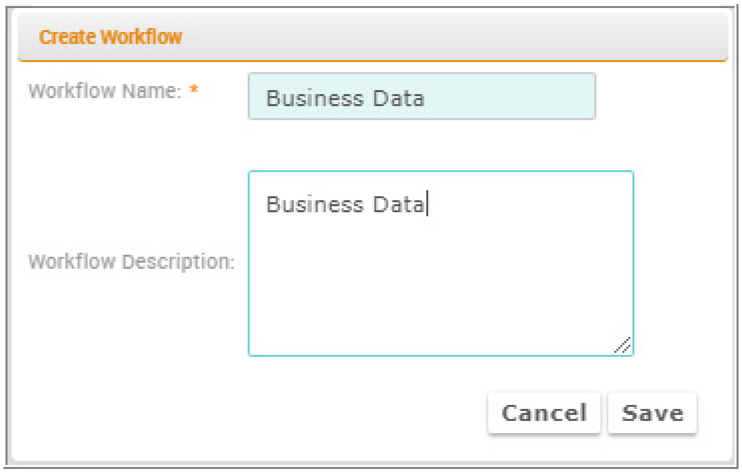
  Note: The following variables are used by the workflow for maintaining the task metadata and user is not required to provide these values.
- Workflow Process Id—internal workflow variable which inherits the workflow identifier to which the workflow instance belongs to.
- Workflow Instance Id—internal workflow variable which inherits the workflow instance identifier, a unique identifier of the workflow instance.

The following section describes the process of using a TaskInboxNode as a sub-workflow inside a workflow.

Perform the following:

1 Create a new workflow (for example: BusinessData) as in Figure 439. For details on creating new workflow, see Section : "Create and Deploy Workflows".

Figure 439: Create Workflow



Create Workflow

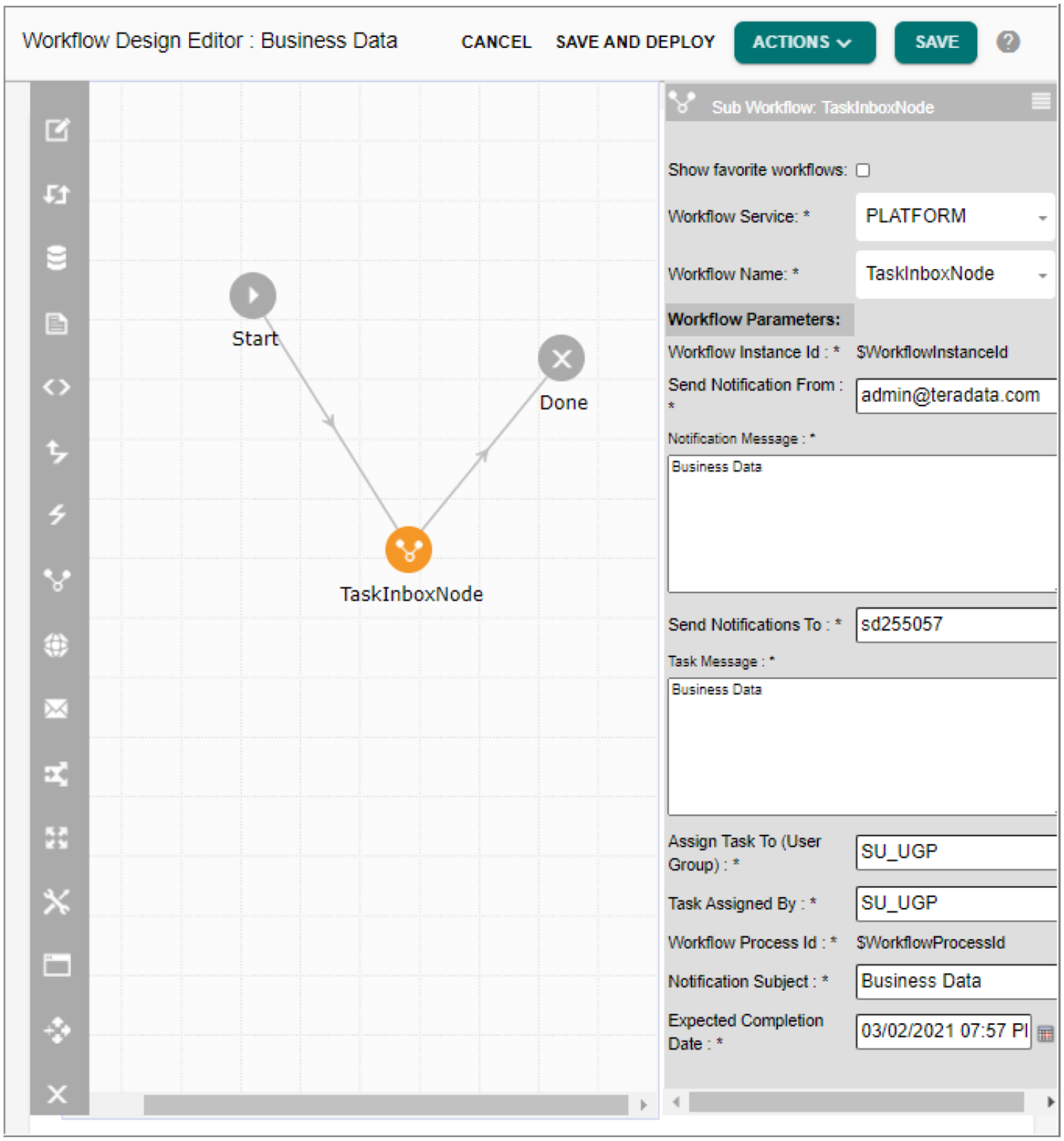
Workflow Name: * Business Data

Workflow Description: Business Data

2 On the Workflow Design Editor UI, create a workflow TaskInboxNode as sub workflow.

3 The TaskInboxNode sub workflow configuration, enter the workflow parameters values. In the Assign Task To (User Group) workflow parameter, enter the user group to which task needs to be assigned.

Figure 440: Sub Workflow: TaskInboxNode Configuration


Workflow Design Editor : Business Data
CANCEL
SAVE AND DEPLOY
ACTIONS
SAVE
Start
Done
TaskInboxNode
Sub Workflow: TaskInboxNode

Show favorite workflows: ☐

Workflow Service: * PLATFORM

Workflow Name: * TaskInboxNode

Workflow Parameters:

Workflow Instance Id : * $WorkflowInstanceId

Send Notification From : * admin@teradata.com

Notification Message : * Business Data

Send Notifications To : * sd255057

Task Message : * Business Data

Assign Task To (User Group) : * SU_UGP

Task Assigned By : * SU_UGP

Workflow Process Id : * $WorkflowProcessId

Notification Subject : * Business Data

Expected Completion Date : * 03/02/2021 07:57 PI

4 Add the remaining required workflows nodes for proper flow of workflow on the Workflow Designer UI and click **Save**.

5 On the Workflow Designer UI, click **Save and Deploy** to deploy the workflow.

The message: "Workflow deployed successfully" is displayed. For more details, For more details, Section : "Create and Deploy Workflows"

6 Navigate to the Execute Workflows UI, click on the Menu icon corresponding to the required workflow and click **Start Workflow**.

For more details, see Section : "Execute Workflow"

The start workflow triggers a new instance of the workflow and the success message will be displayed.

7 Add the remaining required workflow nodes for proper flow of workflow on the Workflow Designer UI and click **Save**.

8 On the Workflow Designer UI, click **Save and Deploy** to deploy the workflow.

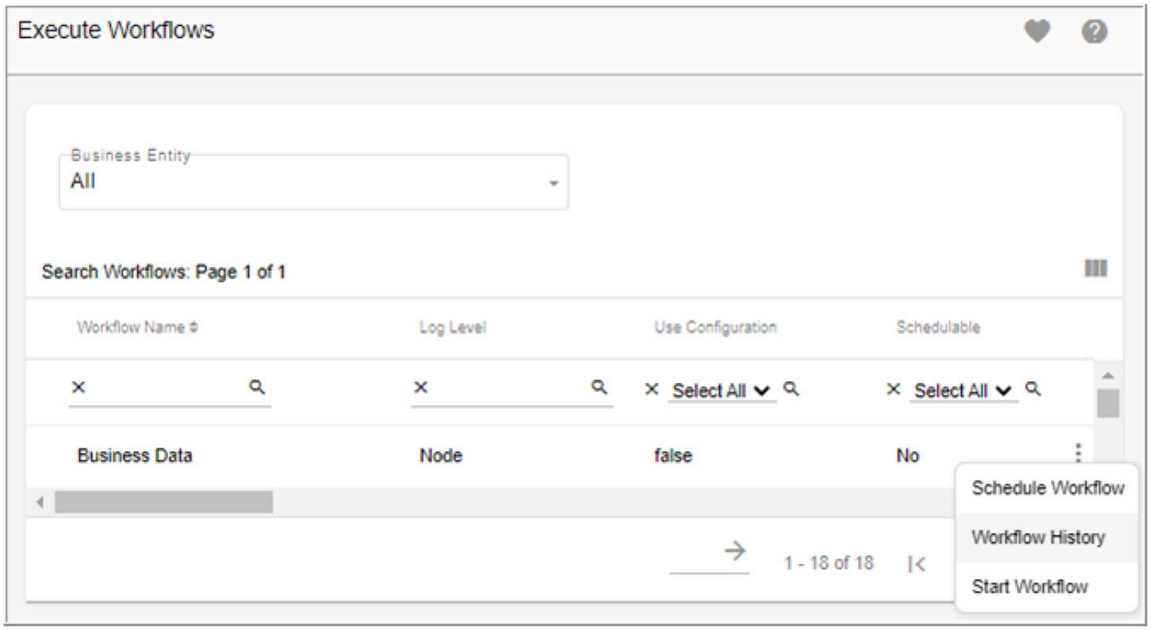
The message: “Workflow deployed successfully” is displayed. For more details, see Section : “Create and Deploy Workflows”.

9 Navigate to the **Execute Workflows** UI, select the required workflow and click **Start Workflow**.

For more details, see Section : “Execute Workflow”.

The start workflow triggers a new instance of the workflow and the success message is displayed as in Figure 441.

Figure 441: Execute Workflows



Execute Workflows

Business Entity: All

Search Workflows: Page 1 of 1

Workflow Name	Log Level	Use Configuration	Schedulable
Business Data	Node	false	No

Once the workflow execution is started, it invokes the TaskInbox node workflow, which has a notification node for sending task notification to the intended recipients (Email Ids provided as value of parameter - Send Notification To). The notification node inside the TaskInbox Node workflow sends the email to users with Notification Subject and Notification Message. Apart from the Task email notification, the users belonging to the User group to which the task is assigned to will also receive task alerts in their respective task inboxes.

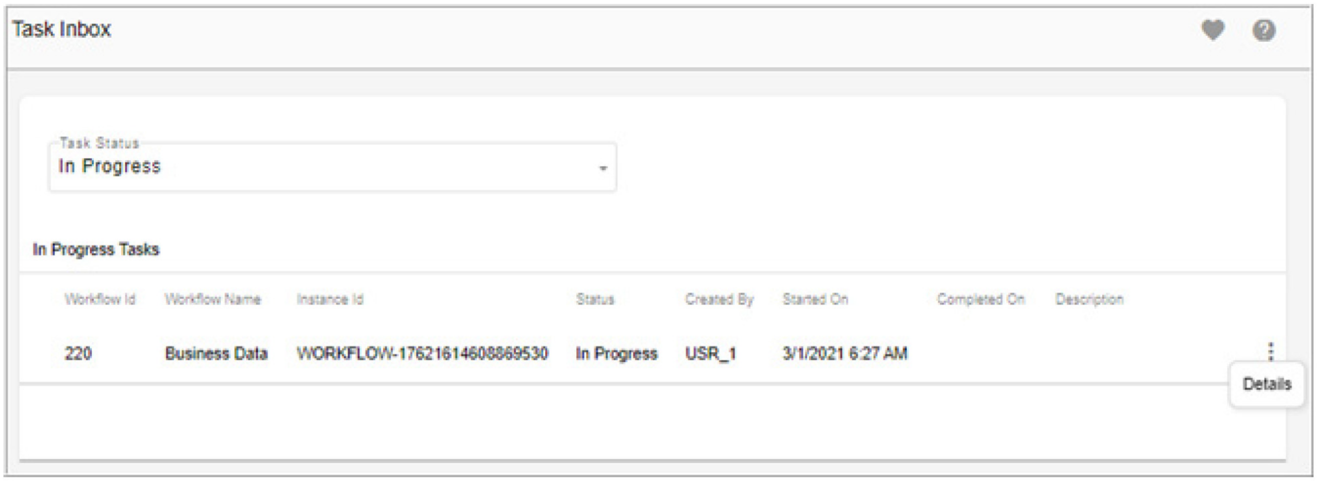
Task Inbox

The Task Inbox page for any user displays the task assigned to their user groups with basic details.

1 Navigate to the **Task Inbox** from MDM UI (select **Task Inbox** option from Notification icon dropdown).

The **Task Inbox** page (Figure 442) is displayed. All the tasks can be categorized as either “In Progress” or “Completed”. The In Progress tasks lists all the tasks which are yet to be completed.

Figure 442: Task Inbox



Task Inbox

Task Status: In Progress

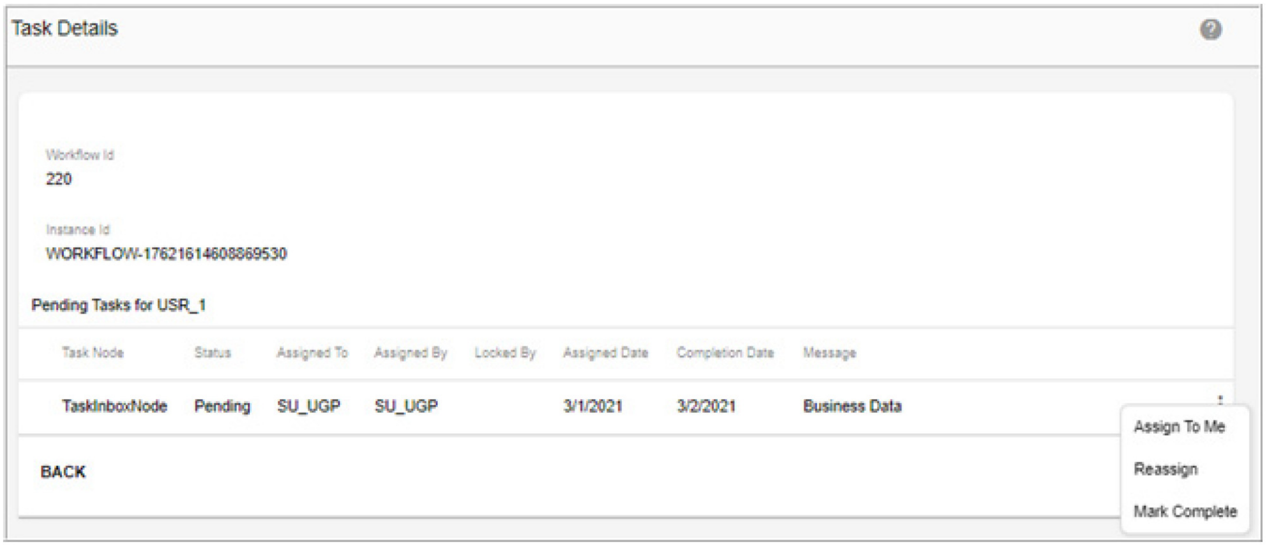
In Progress Tasks

Workflow Id	Workflow Name	Instance Id	Status	Created By	Started On	Completed On	Description
220	Business Data	WORKFLOW-17621614608869530	In Progress	USR_1	3/1/2021 6:27 AM		

2 The **Task Inbox** page (Figure 442), click the Menu icon corresponding to the required task and click **Details**.

The **Task Details** page (Figure 443) is displayed.

Figure 443: Task Details



Task Details

Workflow Id: 220

Instance Id: WORKFLOW-17621614608869530

Pending Tasks for USR_1

Task Node	Status	Assigned To	Assigned By	Locked By	Assigned Date	Completion Date	Message
TaskInboxNode	Pending	SU_UGP	SU_UGP		3/1/2021	3/2/2021	Business Data

3 On the **Task Details** page (Figure 443),

An in-progress task is always assigned to a particular user group and all users belonging to that user group can view the task in their task inbox. For a new in-progress task it is mandatory that at least one user belonging to the task user group assigns the task to itself for the task to progress. A user who has locked the task (marked by locked_by field value) can only mark it as complete and this ensures that at any particular time, multiple users cannot perform the same task. On the Task Details page, you can perform the following actions:

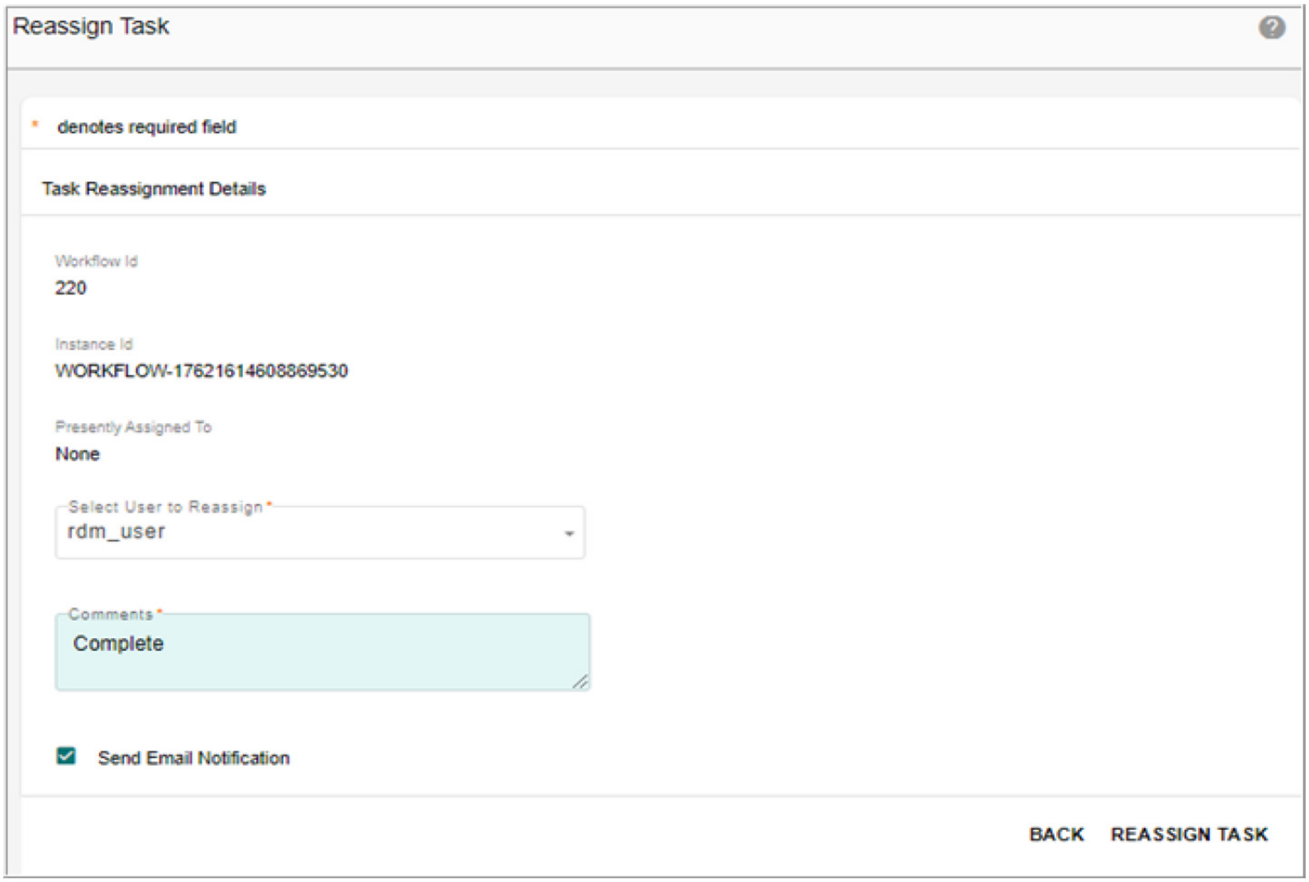
- **Assign To Me**—the "Assign To Me" button is enabled only for the new in-progress task which is not locked by any user. This action can be performed by any user belonging to the user group to which the task is assigned to. Once this action is performed the task is locked to the user performing this action and the "Mark Complete" button is enabled for that user ensuring that only that particular user can mark the workflow as complete. The user can also reassign the task to other person belonging to the same user group.
- **Reassign**—a user can re-assign an in-progress task to any other user belonging to the same user group.

  To reassign a task:

  - On the **Task Detail**s page, click on the menu icon corresponding to the task and click **Reassign.**

    The **Reassign Task** page (Figure 444) is displayed.

Figure 444: Reassign Task


Reassign Task

* denotes required field

Task Reassignment Details

Workflow Id
220

Instance Id
WORKFLOW-17621614608869530

Presently Assigned To
None

Select User to Reassign *
rdm_user

Comments *
Complete

☑ Send Email Notification

  - On the **Reassign Task** page (Figure 444), enter the following details:

    a. From the **Select User to Reassign** drop-down, select the required user belonging to the task user group other than the user who locked the task.

    b.In the **Comment** field, enter the comments.

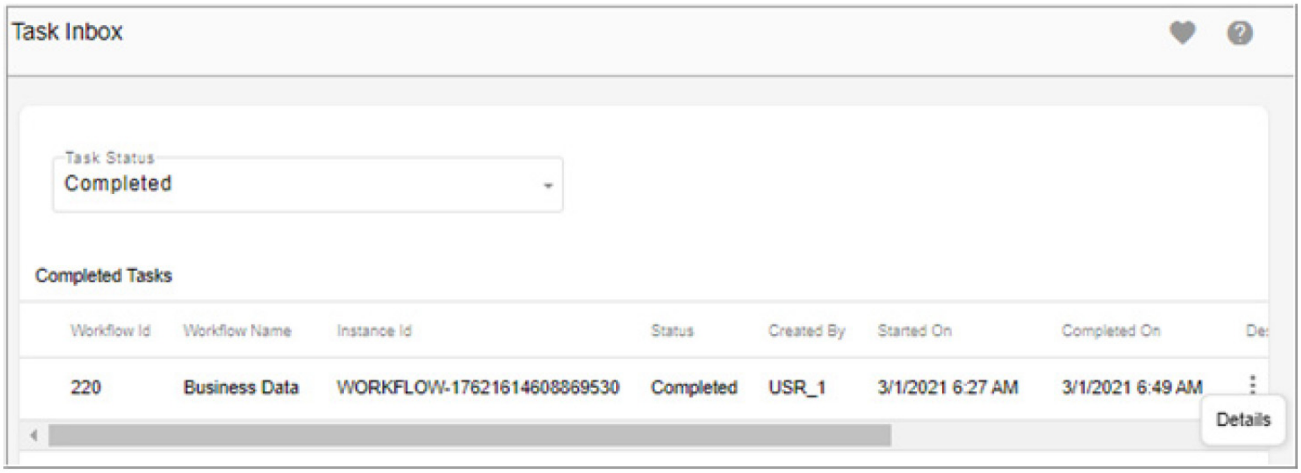
    c.Select the **Send Email Notification** check box to send the email notification to the user whose email address is configured in their MDM user profile.

  - Click **Reassign Task**.

- **Mark Complete**—only the user who has locked the task (marked by locked_by field value) can mark it complete.
  - On the **Task Details** page, click on the Menu icon corresponding the task and click **Mark Complete**.

    Message:” Task complete status updated successfully” is displayed and the task is moved to the Completed Tasks list on the Task Inbox page as in Figure 445.

Figure 445: Task Inbox



Task Inbox

Task Status
Completed

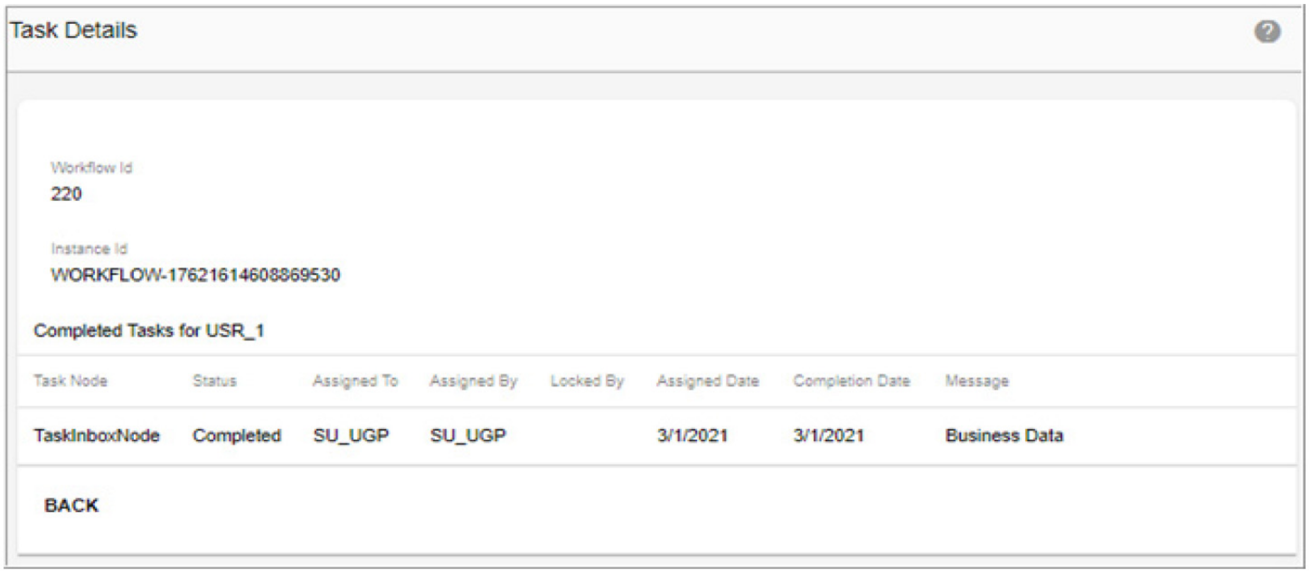
Completed Tasks

Workflow Id	Workflow Name	Instance Id	Status	Created By	Started On	Completed On	De
220	Business Data	WORKFLOW-17621614608869530	Completed	USR_1	3/1/2021 6:27 AM	3/1/2021 6:49 AM	

  - On the **Task Inbox** page (Figure 445), click the menu icon corresponding to the completed task and click **Details**.

    On the **Task Details** page you can view the details, but cannot perform any actions as in Figure 446.

Figure 446: Task Details



Task Details

Workflow Id
220

Instance Id
WORKFLOW-17621614608869530

Completed Tasks for USR_1

Task Node	Status	Assigned To	Assigned By	Locked By	Assigned Date	Completion Date	Message
TaskInboxNode	Completed	SU_UGP	SU_UGP		3/1/2021	3/1/2021	Business Data

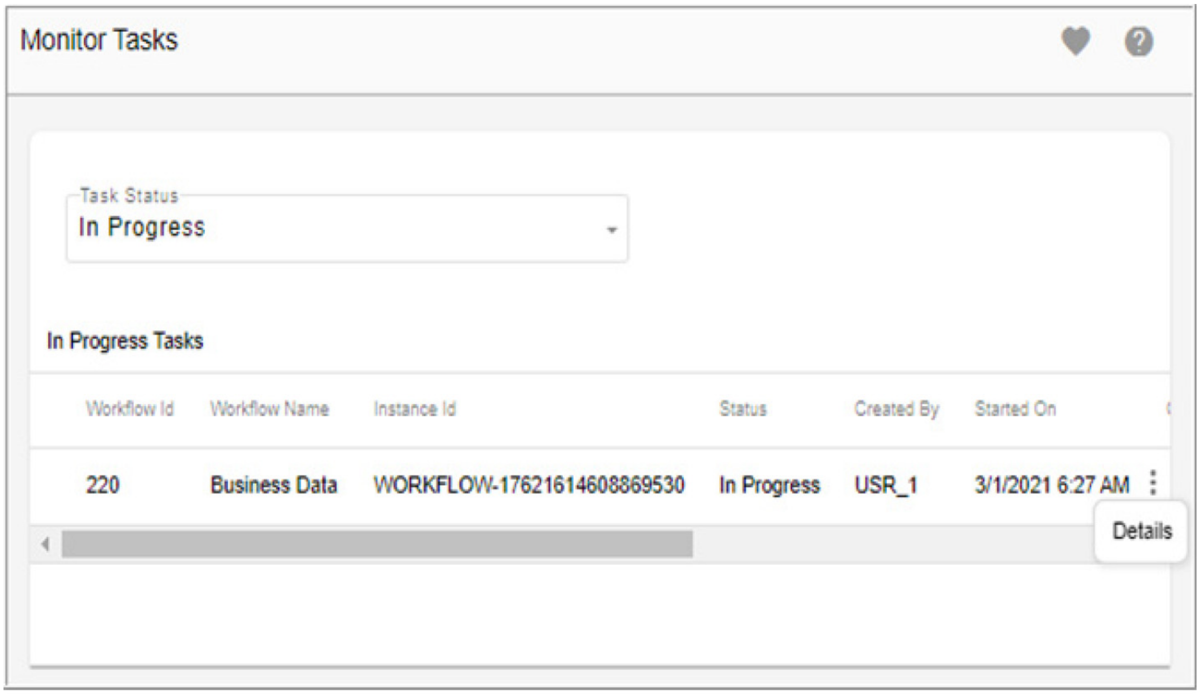
Task Monitoring

The Task Monitoring feature provides a mechanism to monitor the in progress or completed tasks within a workflow as the task progresses or gets reassigned. The task monitoring is almost same as task inbox. The difference between the task inbox and task monitoring is that task monitoring can be used as an admin activity to monitor tasks of all the users whereas task inbox is specific to the task of logged in user.

1 On the left navigation pane, click **Administration** -> **Workflow** -> **Monitor Tasks**.

  The **Monitor Tasks** page (Figure 447) is displayed. Similar to the Task inbox page, the Monitor Tasks page displays task status filters to categorize the tasks as In Progress and Completed tasks.

Figure 447: Monitor Tasks



Monitor Tasks

Task Status: In Progress

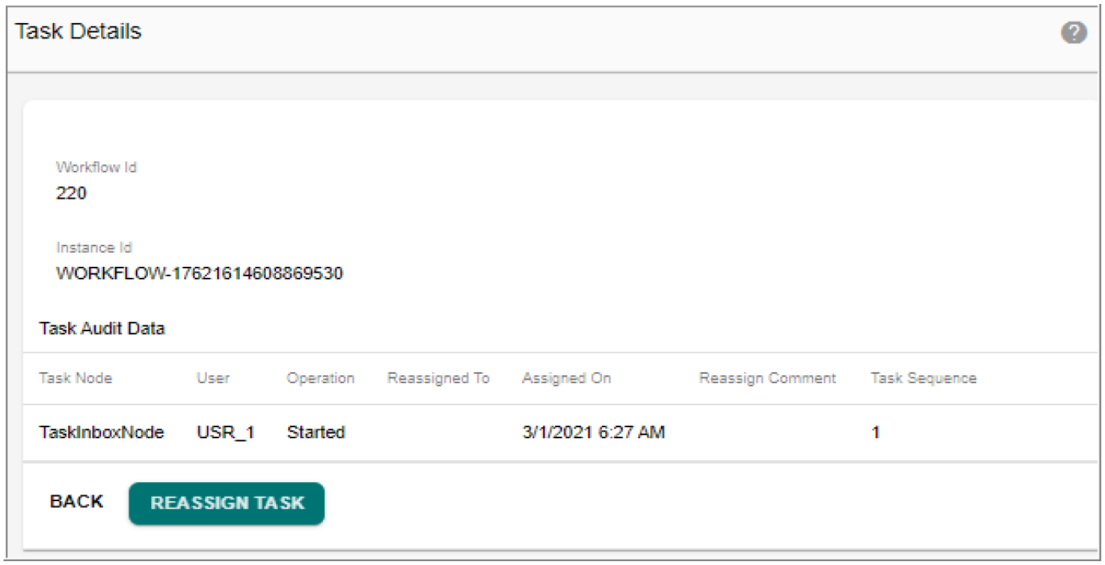
In Progress Tasks

Workflow Id	Workflow Name	Instance Id	Status	Created By	Started On
220	Business Data	WORKFLOW-17621614608869530	In Progress	USR_1	3/1/2021 6:27 AM

2 On the **Monitor Tasks** page (Figure 447), click on the Menu icon corresponding the task and click **Details**.

The **Task Details** page (Figure 448) is displayed.

Figure 448: Task Details



Task Details

Workflow Id
220

Instance Id
WORKFLOW-17621614608869530

Task Audit Data

Task Node	User	Operation	Reassigned To	Assigned On	Reassign Comment	Task Sequence
TaskInboxNode	USR_1	Started		3/1/2021 6:27 AM		1

The Task Details page displays the following columns:

- User—the user id of the user who performed an operation.
- Operation—operation performed for the task progress with following values:

  - Started—Marks the start of the task.
  - AssignMe—depicts that the User assigned the task to itself on Assigned On date field value.
  - Reassign—depicts that the User reassigned the task to itself on Assigned On date field value.
  - Completed—marks completion of the task.
- Reassigned To—user id of the user to whom the task is assigned to in case the operations are either AssignMe or Reassign.
- Assigned On—date time entry for the operation.
- Reassign Comment—comment entered at time of task reassignment.

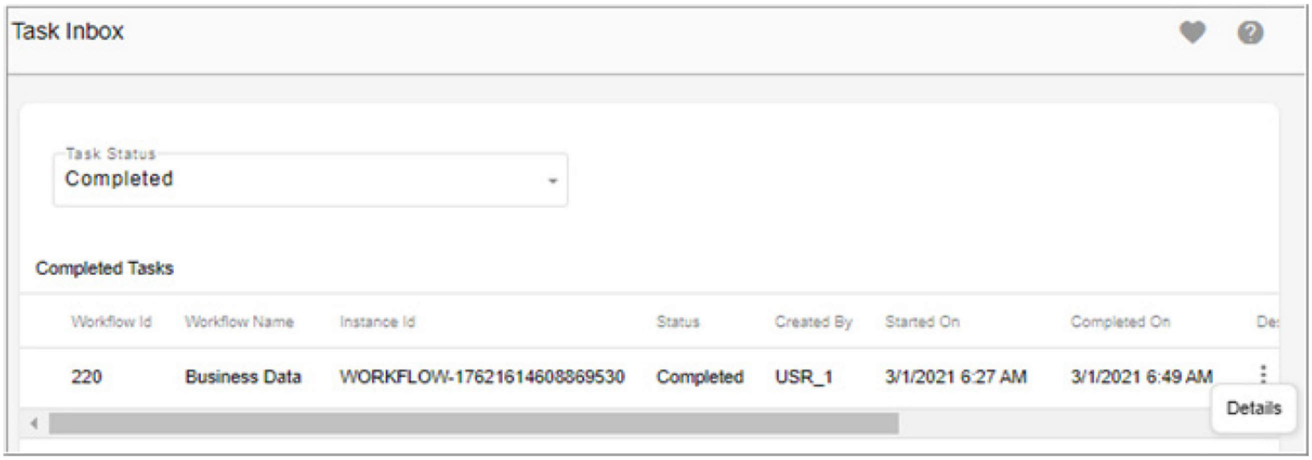
The task details page displays the Reassign Task button and the functionality is the same as in Task Inbox—Task Details page wherein a user can reassign the task to anyone. For more details, see Section : “Task Inbox”. This is an admin task and hence the Task Monitoring page activity should be assigned to a task administrator.

Raising Task Completion Event from Configurable UI

An event can be raised to mark the completion of a task on successfully saving a record in configurable UI. This enhancement is intended to automatically trigger a task completion through a UI action.

A hyperlink appended with Workflow Instance Id of the task to a particular configurable UI MDM page needs to be sent to a user via email. When user clicks on the email link, upon successful login the user will be redirected to the task configurable UI page where they can save data. Upon successful save this will internally trigger a RAISE_EVENT to mark the completion of the task. Note that in such cases task reassignment and handling through the task inbox UI may lead to ambiguity and so this should be used only when a particular user needs to perform task. Thus only the intended user should be the recipient of the mail in which MDM configurable UI page link to perform the task is sent.

Figure 449: Task Inbox



Task Inbox

Task Status: Completed

Completed Tasks

Workflow Id	Workflow Name	Instance Id	Status	Created By	Started On	Completed On	De
220	Business Data	WORKFLOW-17621614608869530	Completed	USR_1	3/1/2021 6:27 AM	3/1/2021 6:49 AM	⋮

Configuring the TaskInboxNode workflow parameter—you should send the MDM URL with REDIRECT_PAGE parameter value as the page name of the task configurable UI and EVENT_ID parameter value as the Workflow Instance Id. An example is shown below.

http://10.25.188.125:8080/mdm/bcm/framework/login.jsp?REDIRECT_PAGE=CreateBusinessData&EVENT_ID=$WorkflowInstanceId

REDIRECT_PAGE = MDM page name of the configurable UI that will be used to perform the task. The page names in the REDIRECT_PAGE parameter are case sensitive.

EVENT_ID=$WorkflowInstanceId - this is an internal workflow parameter generated for every workflow which dynamically gets the Workflow Instance Id of the workflow Instance executing. Hence it should be passed as shown above and the workflow will automatically assign the workflow instance id value to it at runtime before the email link is sent.

EVENT_ID is to uniquely identify a particular instance of a workflow for which task needs to be completed as multiple instance of the same workflow can be running at the same time.

Configure Workflow

All the out of the box workflows that are not created through Manage Workflow UI, can be configured to: enable scheduling, assign to a Business Entity or set proper monitoring log level from configure workflows UI. You can also set log levels for runtime workflows. Deployment and execution of workflows will be automatically done for all the workflows created on configure workflows UI.

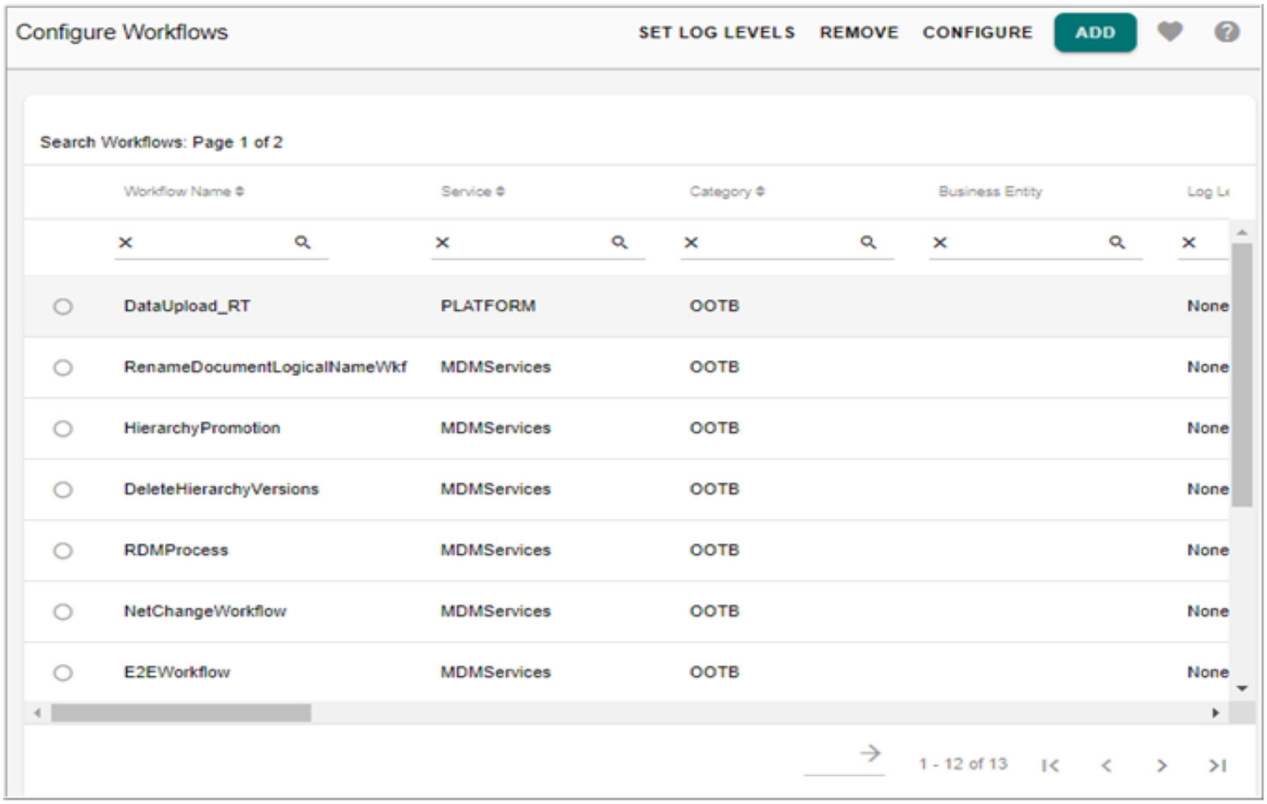
Add Workflow

To add workflow:

1 On the MDM UI navigation pane, click **Administration**-> **Workflow** -> **Configure Workflows**.

The **Configure Workflows** page (Figure 450) is displayed.

Figure 450: Configure Workflows



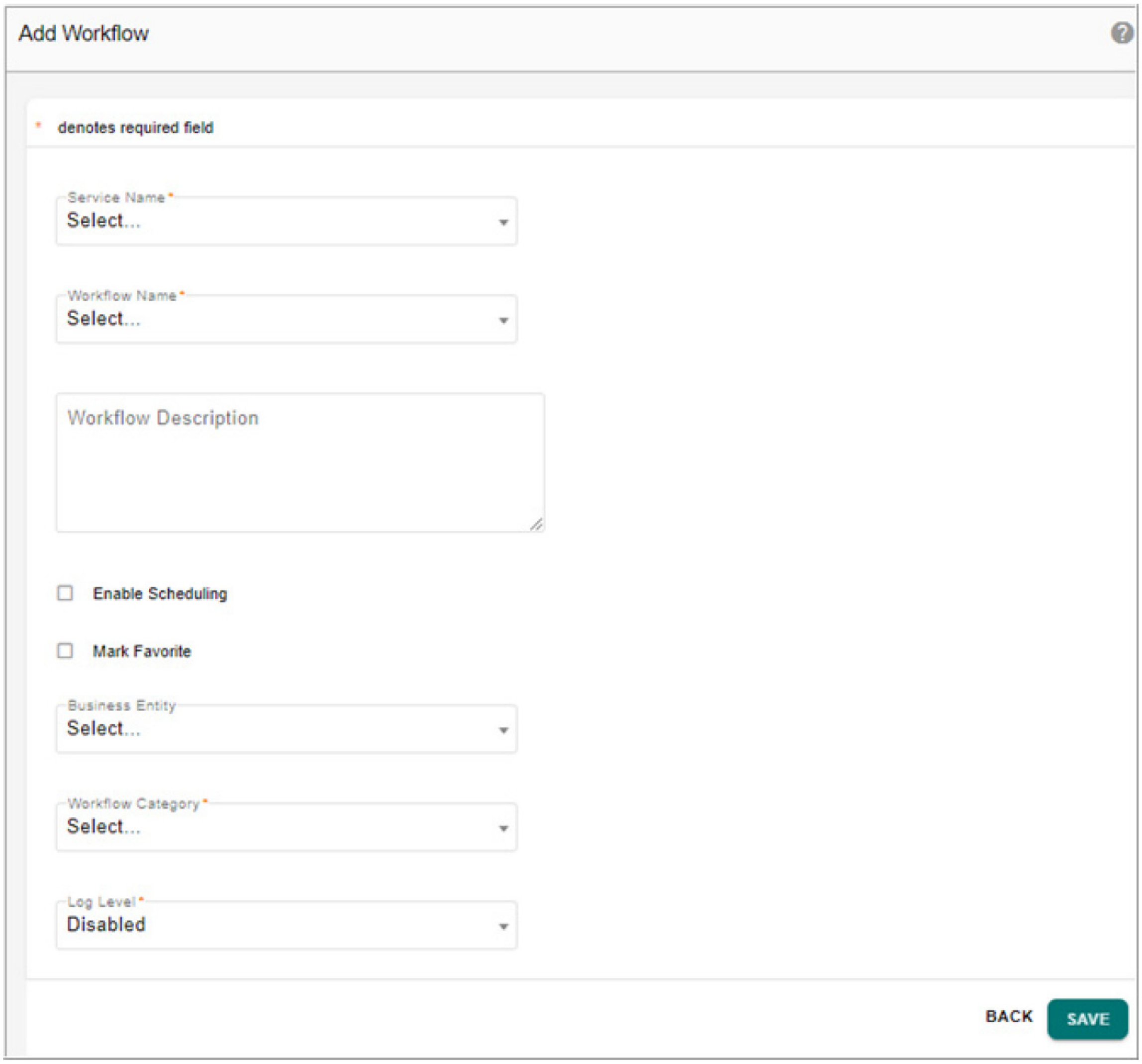
Search Workflows: Page 1 of 2

	Workflow Name	Service	Category	Business Entity	Log L
○	DataUpload_RT	PLATFORM	OOTB		None
○	RenameDocumentLogicalNameWkf	MDMServices	OOTB		None
○	HierarchyPromotion	MDMServices	OOTB		None
○	DeleteHierarchyVersions	MDMServices	OOTB		None
○	RDMProcess	MDMServices	OOTB		None
○	NetChangeWorkflow	MDMServices	OOTB		None
○	E2EWorkflow	MDMServices	OOTB		None

2 On the **Configure Workflows** page (Figure 450), click **Add Workflow**.

The **Add Workflows** page (Figure 450) is displayed.

Figure 451: Add Workflow



Add Workflow

* denotes required field

Service Name*
Select...

Workflow Name*
Select...

Workflow Description

☐ Enable Scheduling

☐ Mark Favorite

Business Entity
Select...

Workflow Category*
Select...

Log Level*
Disabled

3 On the **Add Workflows** page (Figure 450),

- select the service from the **Service Name** dropdown

  The **Service Name** dropdown displays all the MDM OOTB services.
- select the workflow name from **Workflow Name** dropdown.

  The **Workflow Name** dropdown displays all the workflows of the selected service.
- enter the workflow description in the **Workflow Description** text field.
- select **Enable Scheduling** checkbox, if you want to enable scheduling on the workflow being configured.
- select **Mark Favorite** checkbox to add the workflow to the list of favorite sub-workflow nodes in Workflow Node Palette.
- optionally, you can select the business entity to which the workflow belongs to from the **Business Entity** dropdown.

  The **Business Entity** dropdown displays the list of entities.

- select the workflow category from the **Workflow Category** dropdown.

  The workflow being created can belong to any of the workflow category like Custom (user created), OOTB (Out of the box workflows) or other workflows.
- select the log level for monitoring from **Log Level** dropdown.

  The log level can be either node level or workflow level. By default, the log level would be disabled.

4. Click **Save**.

   Message: "Workflow added successfully" is displayed.

Configure Workflow

You can modify the workflow details from Configure Workflows page.

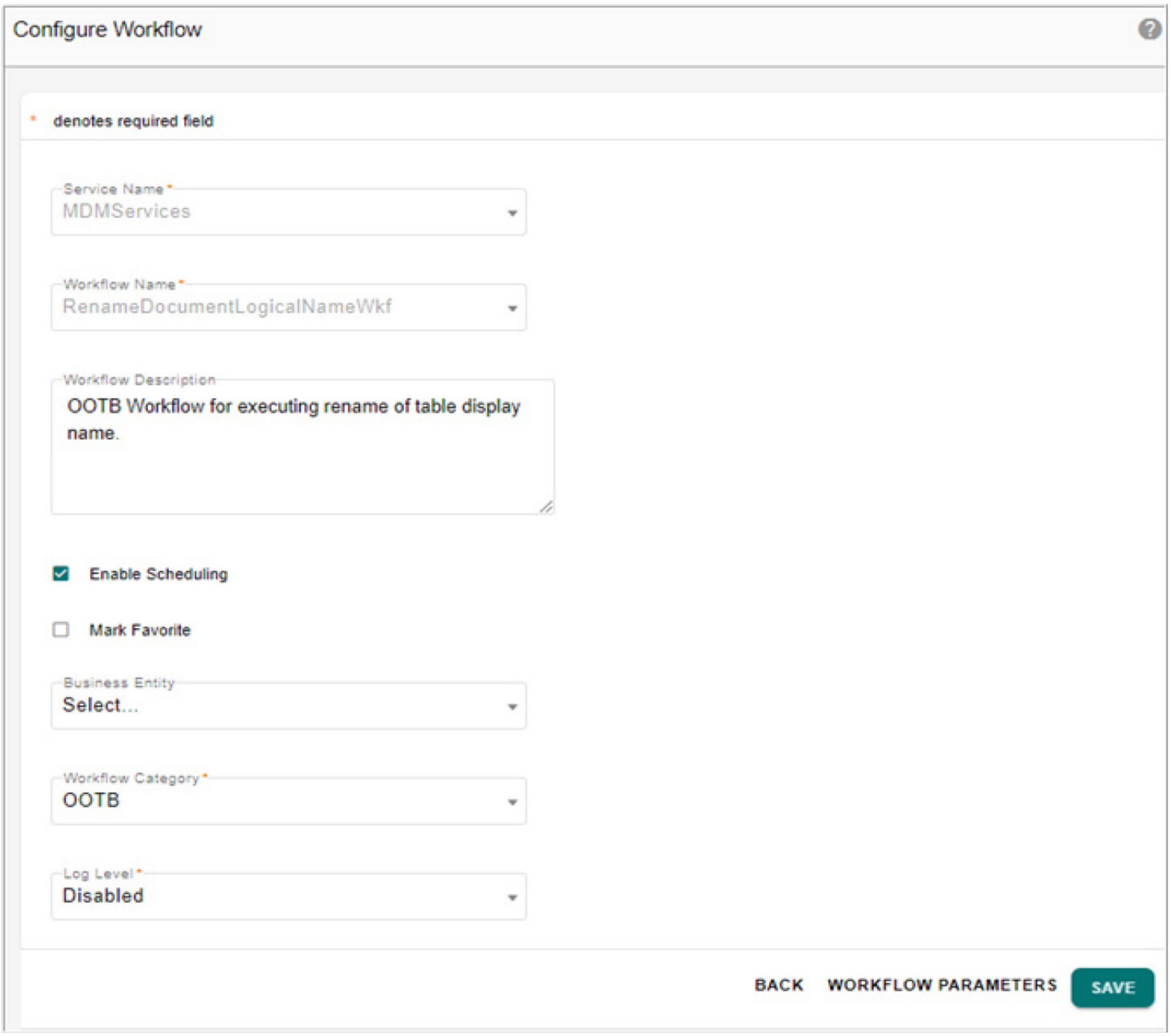
Note: You can configure only workflows created from configure workflows UI and not the runtime workflows.

To configure workflow:

1. On the **Configure Workflows** page, select the workflow and click **Configure**.

   The **Configure Workflows** page (Figure 452) is displayed.

Figure 452: Configure Workflow


Configure Workflow

* denotes required field

Service Name*: MDMServices

Workflow Name*: RenameDocumentLogicalNameWkf

Workflow Description: OOTB Workflow for executing rename of table display name.

☑ Enable Scheduling

☐ Mark Favorite

Business Entity: Select...

Workflow Category*: OOTB

Log Level*: Disabled

2 On the **Configure Workflows** page (Figure 452), you can modify the workflow description, workflow category, log level, business entity and enable or disable scheduling, favorite workflow option and click **Save**.

You can navigate to **Manage Parameters** UI to add workflow parameters using **Workflow Parameters** button.

Message: “Workflow configuration updated successfully” is displayed.

Set Log Levels

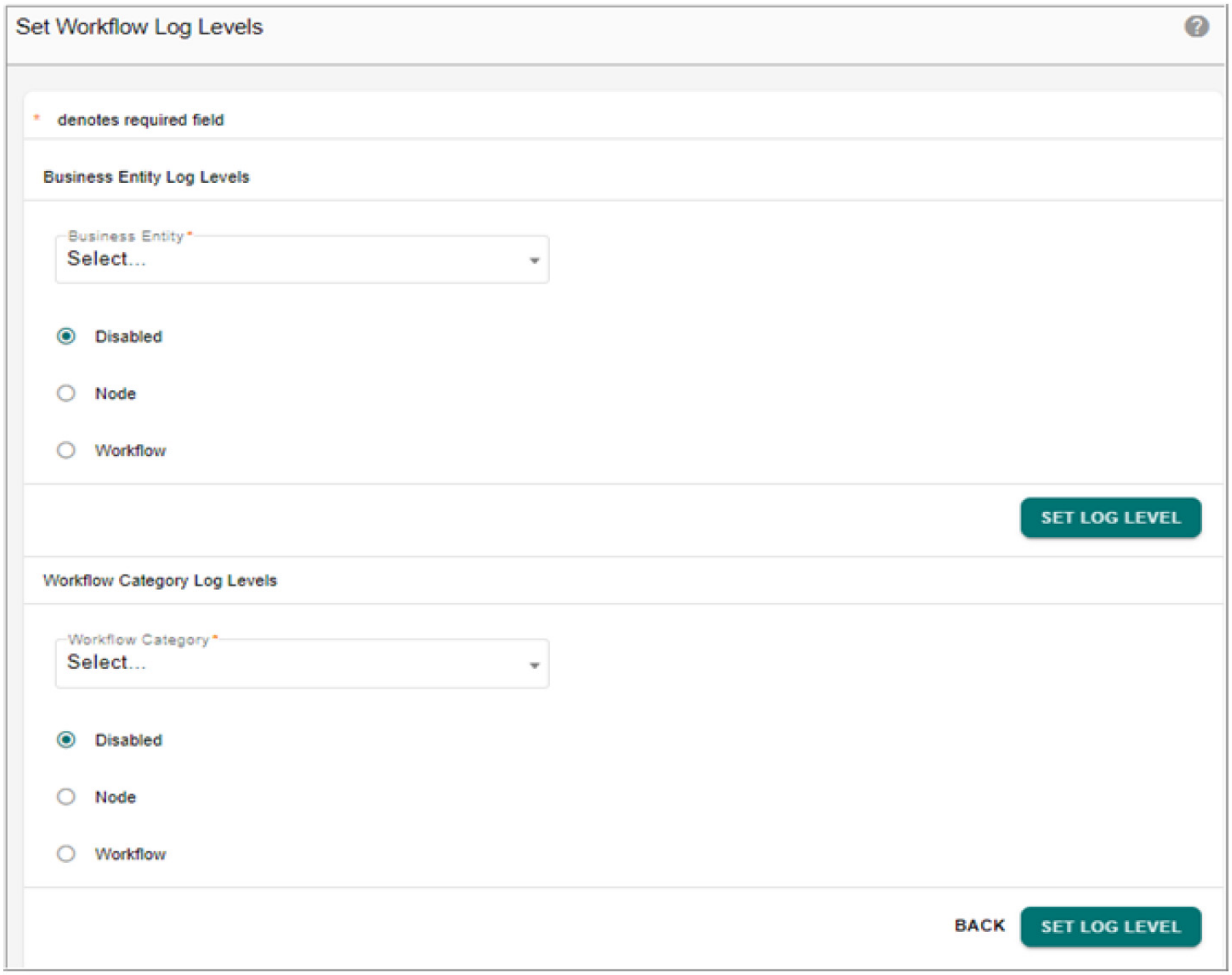
You can set the workflow log levels for all the workflows from the Configure Workflows UI. You can set log levels at both business entity level as well at workflow category level.

To set workflow log levels:

1 On the **Configure Workflows** page, select the workflow and click **Set Log Levels**.

The **Set Workflows Log Levels** page (Figure 453) is displayed.

Figure 453: Set Workflow Log Levels



Set Workflow Log Levels

* denotes required field

Business Entity Log Levels

Business Entity *: Select...

● Disabled

○ Node

○ Workflow

Workflow Category Log Levels

Workflow Category *: Select...

● Disabled

○ Node

○ Workflow

2 On the **Set Workflows Log Levels** page,

- In the **Business Entity Log Levels** pane, select the business entity (if not selected during add workflow) and select the log level (node or workflow) option and click **Set Log Level**.

  Setting the log level for Business Entity will enable logs for all the workflows defined under the selected entity.

  By default, log level disabled option is selected.

  Message: “Selected business entity log level updated successfully to <log level option>” is displayed.

- In the **Workflow Category Log Levels** pane, select the workflow category and select the log level (node or workflow) option and click **Set Log Level**.

  Setting the log level for Workflow Category will enable logs for all the workflows defined under the selected category.

By default, log level disabled option is selected.

Message: “Selected workflow category log level updated successfully to <log level option>” is displayed.

Remove Workflow

To remove workflow:

1 On the **Configure Workflows** page, select the workflow and click **Remove**.

   Note: You can remove only workflows configured from configure workflows UI and not the runtime workflows.

   The **Confirmation Webpage dialog** is displayed.

2 On the **Confirmation Webpage dialog**, click **Yes**.

   Message: “Workflow removed successfully” is displayed.

CHAPTER 15 Manage Lookup Data

What's In This Chapter

This chapter provides detailed description on lookup reference data management.

Topics include:

Lookup Reference Data

MDM supports an out-of-the-box feature called Lookup Reference Data Management (LRDM), to create and manage all lookup reference data in the data warehouse. The pre-packaged LRDM application empowers data experts to create and manage the set of conformed (source system values mapped to the unified values) lookup reference data in the data warehouse as well as the cross reference mappings that enable data lineage and support the ETL process.

Lookup Reference Data Management is a focused application or feature that supports the creation, loading and management of data that is classified as Lookup “Reference Data” in the Teradata EDW. Lookup reference data management typically involves managing code sets and cross referencing the code sets, that may be obtained from various source systems. Lookup reference data is typically defined in the data warehouse with just a lookup code value and description and is stored in tables with relatively small number of rows in tens or hundreds rather than thousands.

LRDM automates and simplifies the lookup reference data management process, improves the referential integrity of the data warehouse, and increases the business value of the analytical environment.

Code Master and LRDM

Points to remember on LRDM and Code Master reconciliation:

- With the introduction of LRDM, providing complete lookup reference data management, the existing MDM code master feature seems to be redundant, but the code master APIs will continue to work as is without any changes.
- Pre MDM 3.1 release Code Master Types are editable using new LRDM UI (that is, you can add values, edit values, delete values, edit code types for descriptions).

Logical Data Model

The APJ BMAP Logical Data Model (LDM) is adopted as part of MDM LRDM data model to provide lookup reference data management feature. The BMAP logical data model is the representation of the meta data that defines data warehouse codes sets and the detailed codes set data used in the day to day functioning of the data warehouse. Refer to *APJ Control Framework documentation for detailed information.*

The LRDM consists of six entities:

- Code_Set—a logical grouping of reference data code values (example: Gender, Title). It defines all the code sets that will be used within the Data Warehouse.
- Standard_Map—contains the actual mapping between the source reference data code value and the data warehouse code value.

  You can physically implement the Standard_Map in any of the following ways:

  - Single physical table to contain data for all domains. The consolidated table approach uses the same table to contain all Code Sets.
  - A separate single physical table for each Code Set (example, Standard_MAP_Party). Separate tables can be created for each Code Set and would be named according to the project’s naming standards.

You can select the option of having single LRDM table or Multiple LRDM tables during MDM installation. Refer to *Master Data Management Installation Guide* for details.

- Domain—contains the information about the CODE_SET_ID as to which DOMAIN it belongs to.
- Reference_Code—contains all source reference data code values assigned to a data warehouse code set and default descriptions by code set.
- Reference_Description—all source reference data code values may be associated with one or more semantic languages. It links the assigned data warehouse code value to a semantic language description.
- Valid_Language—a logical grouping of all semantic languages used in the data warehouse (example: English, Finance, System).

See Section : “LRDM Logical or Physical Data Model Overview” for the detailed description of each of the tables used in the logical data model.

LRDM tables can be converted to Temporal tables, but while converting Ref_000x_Code table to temporal table, USI defined on table will result in some DML failures due to database limitations. Whenever you convert LRDM table to temporal, you need to remove Unique Secondary Index (USI) on (CODE_SET_ID, VALUE_ID, PARENT_EDW_CODE) from Ref_000x_Code Table. In such scenario, in order to maintain the data integrity, MDM automatically generate Validation rule on Ref_000x_Code to enforce uniqueness of (CODE_SET_ID ,VALUE_ID, PARENT_EDW_CODE)

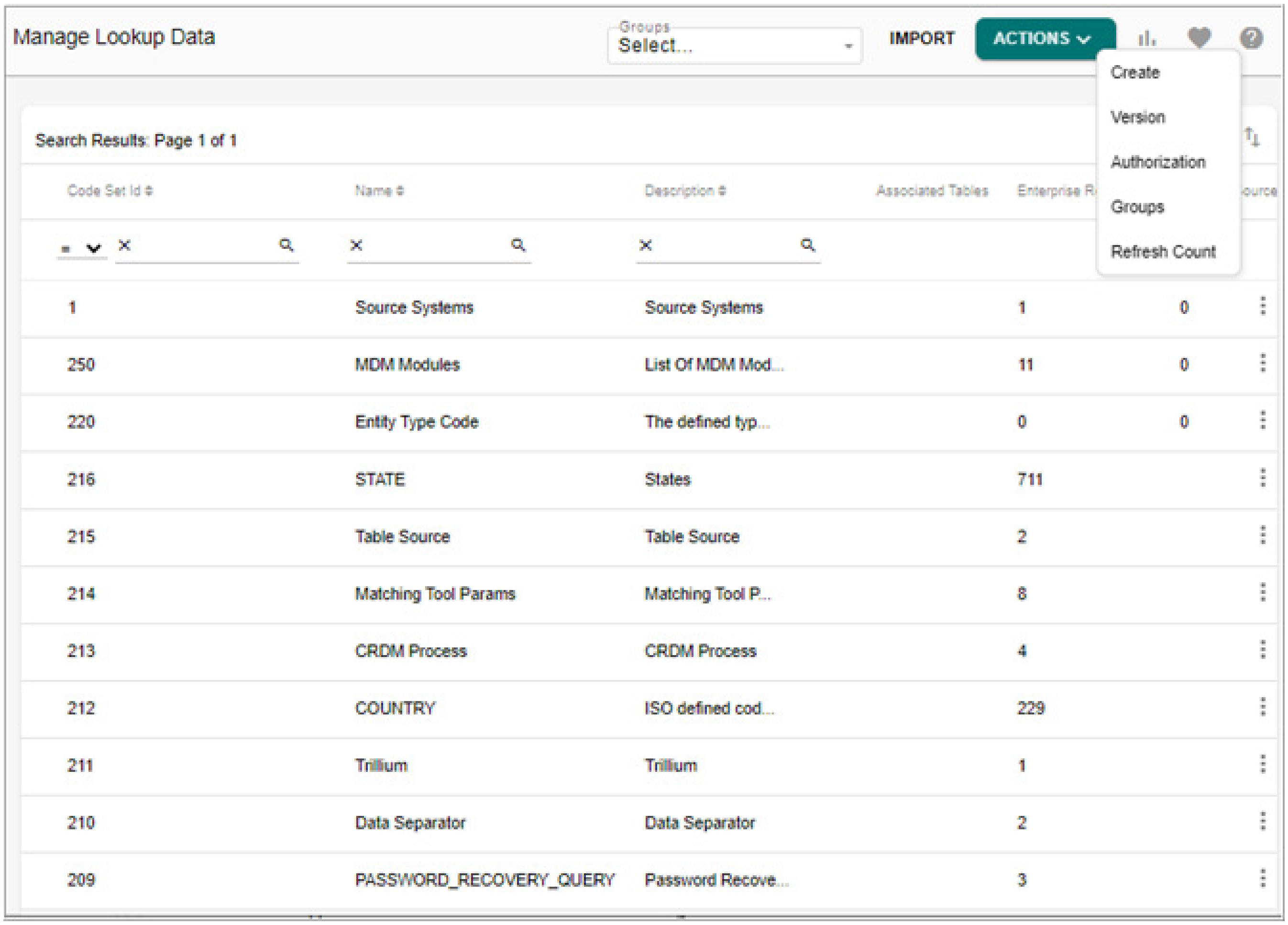
Manage Lookup Code Sets

When building an integrated data warehouse, you need to unify and map the different lookup code value sets and representations provided by source systems to a common set of enterprise lookup code values. To obtain a single view of anything in the data warehouse, you need a complete unified set of lookup reference data and the availability of their mappings to the various source system lookup code values.

Manage lookup code sets typically involves managing code sets and cross referencing the code sets that may be obtained from various source systems.

Navigate to **Manage Lookup Data** UI from left navigation pane **Reference data** -> **Manage reference data**.

Figure 454: Manage Lookup Data



Search Results: Page 1 of 1

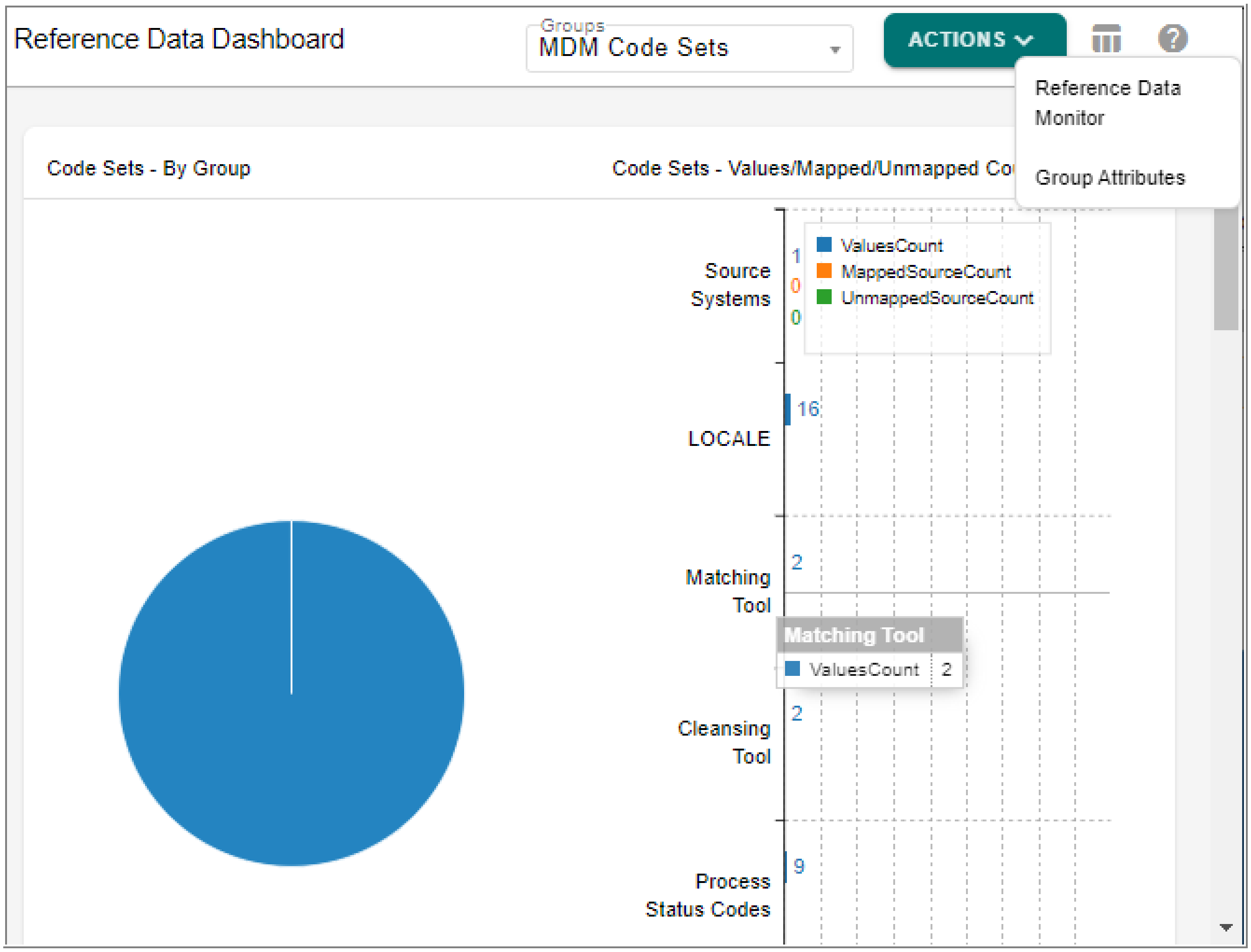
Code Set Id	Name	Description	Associated Tables	Enterprise R		ource
1	Source Systems	Source Systems		1	0	
250	MDM Modules	List Of MDM Mod...		11	0	
220	Entity Type Code	The defined typ...		0	0	
216	STATE	States		711		
215	Table Source	Table Source		2		
214	Matching Tool Params	Matching Tool P...		8		
213	CRDM Process	CRDM Process		4		
212	COUNTRY	ISO defined cod...		229		
211	Trillium	Trillium		1		
210	Data Separator	Data Separator		2		
209	PASSWORD_RECOVERY_QUERY	Password Recove...		3		

To navigate to graphical view of MDM code sets, click on the Chart icon on the Manage Lookup Data UI.

The Reference Data Dashboard displays all the existing MDM code sets in graphical format (Pie and Bar chart) as in Figure 455. For details on configuring the charts, refer to *Appendix Dashboard Technology Implementation in Master Data Management Reference Guide.pdf.*

You can click on the Tabular View icon on Reference Data Dashboard to navigate back to tabular view.

Figure 455: Reference Data Dashboard



MDM supports the grouping feature in LRDM modules. For details, see Section : “Grouping in LRDM.”

In case of Multi table LRDM code values, additional attributes can be added through model builder. The added additional attributes for a code set can be grouped into logical groups on the Group Attributes UI. For details, see Section : “Grouping of Code Value Attributes.” The added additional attributes can be viewed on the Manage Code Values UI using the View Details option.

The manage authorization feature on the LRDM UI provides an option to assign authorization and to enable view or edit permission on the code sets or groups of code sets. For details, see Section : “Manage Authorization.”

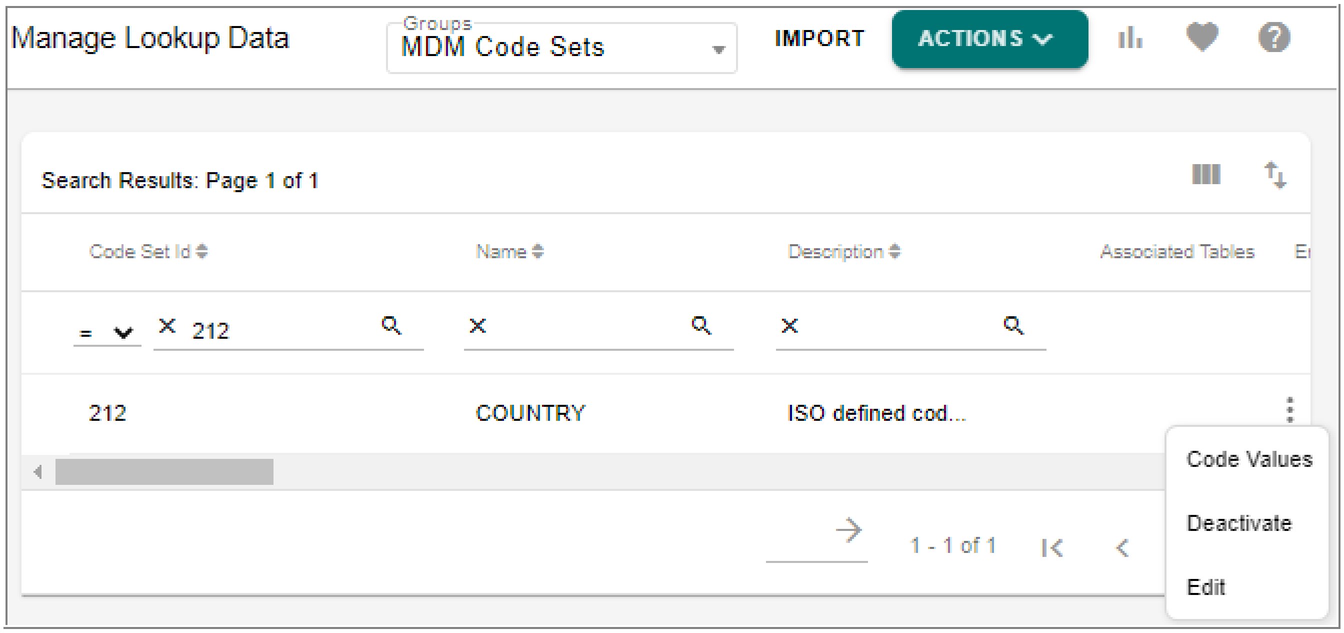
Searching Code Set

To search code set:

1 On the **Manage Lookup Data** page, specify any of the search parameter (like Code Set Id, Name, Description, Parent Code set, Map Table name, Values Table Name, Reference

Table Description Name, Created By or Last Modified By etc.,) and click Apply Filter Icon 🔍.

Figure 456: Manage Lookup Data

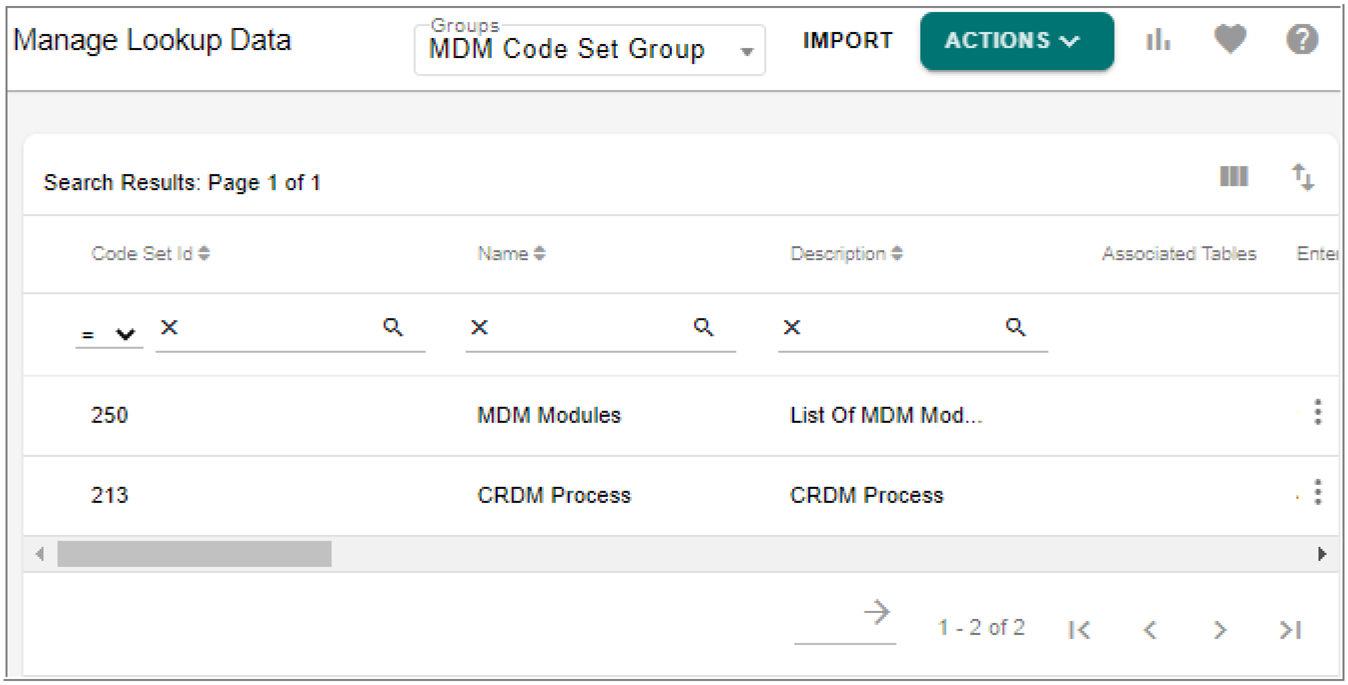


Code Set Id	Name	Description	Associated Tables	E
= 212				
212	COUNTRY	ISO defined cod...		

The search results pane displays the result as in Figure 456.

You can filter the records based on the Groups. Select the Group from **Groups** dropdown and the page refreshes to display all the code sets of the selected group as in Figure 457.

Figure 457: Manage Lookup Data



Code Set Id	Name	Description	Associated Tables	Ente
=				
250	MDM Modules	List Of MDM Mod...		
213	CRDM Process	CRDM Process		

Refresh Count: select the Refresh Count option from **Actions** dropdown to refresh the counts of Enterprise records, Mapped source counts and Unmapped source counts.

The Refresh Count will count all available code value or mapping along with the newly added code value or mapping records. By default, the Automatic refresh is made inactive as the automatic refresh count makes the performance of UI slow. To enable automatic refresh of counts, make the following rules as “Active” (currently in “Inactive” state).

1. For custom code sets, you can make the business rule "populate_Stats_(table_name)" to Active to automatically update the count.

2. For non custom code sets, the business rule "addRefCodeSetStats", "delRefCodeSetStats" are added for automatic refreshing of Enterprise Record count. The "addMappedCodeSetStats", "delMappedCodeSetStats", "updateMappedCodeSetStats" are added for automatic refreshing of Source Records count.

The above rules are also available for multi-tables.

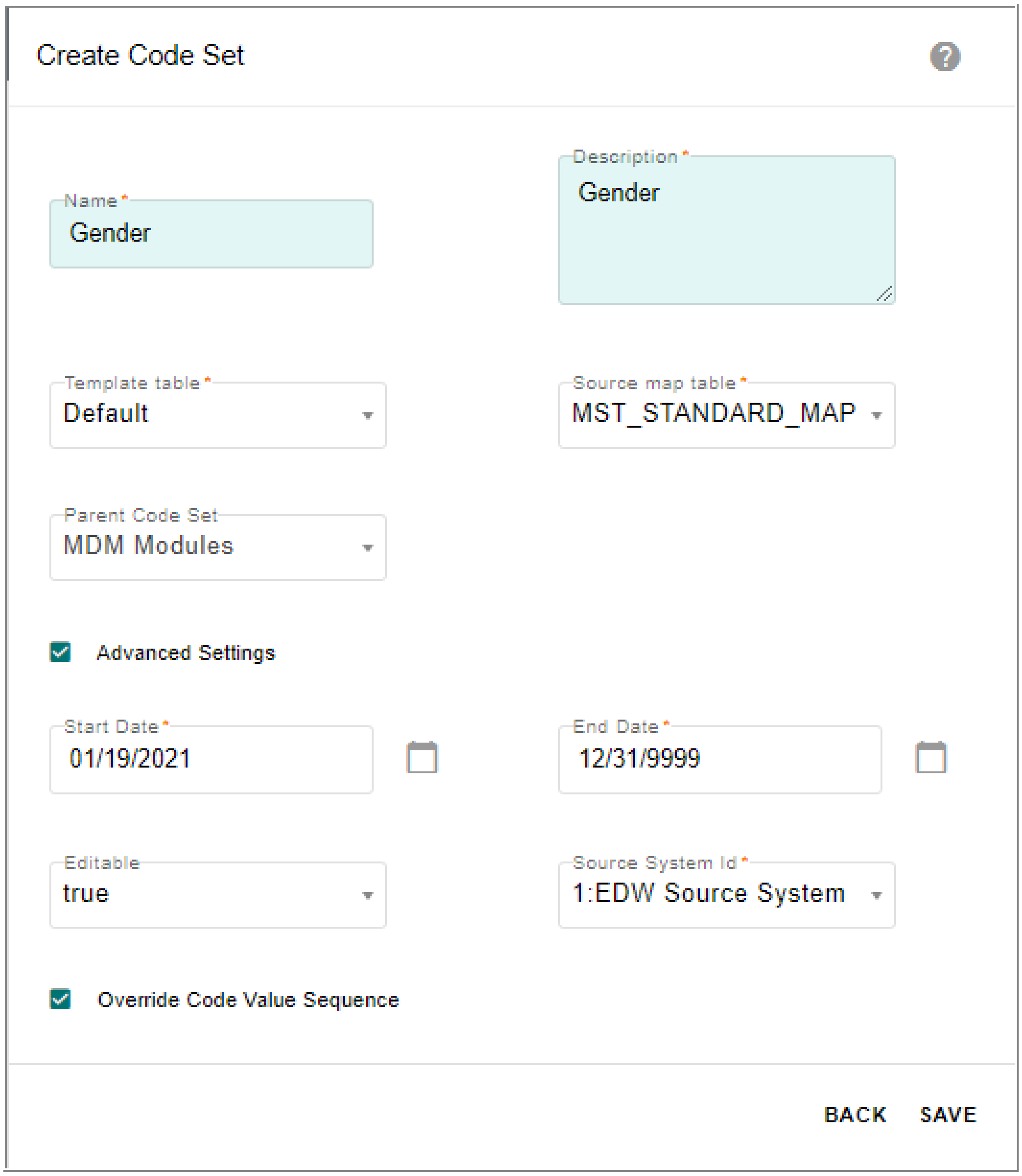
Adding Code Set

To add new code set:

1. On the **Manage Lookup Data** page (Figure 457), select **Create** from **Actions** dropdown.

   The **Create Code Set** page is displayed.

Figure 458: Create Code Set



Create Code Set

Name* Gender

Description* Gender

Template table* Default

Source map table* MST_STANDARD_MAP

Parent Code Set MDM Modules

☑ Advanced Settings

Start Date* 01/19/2021

End Date* 12/31/9999

Editable true

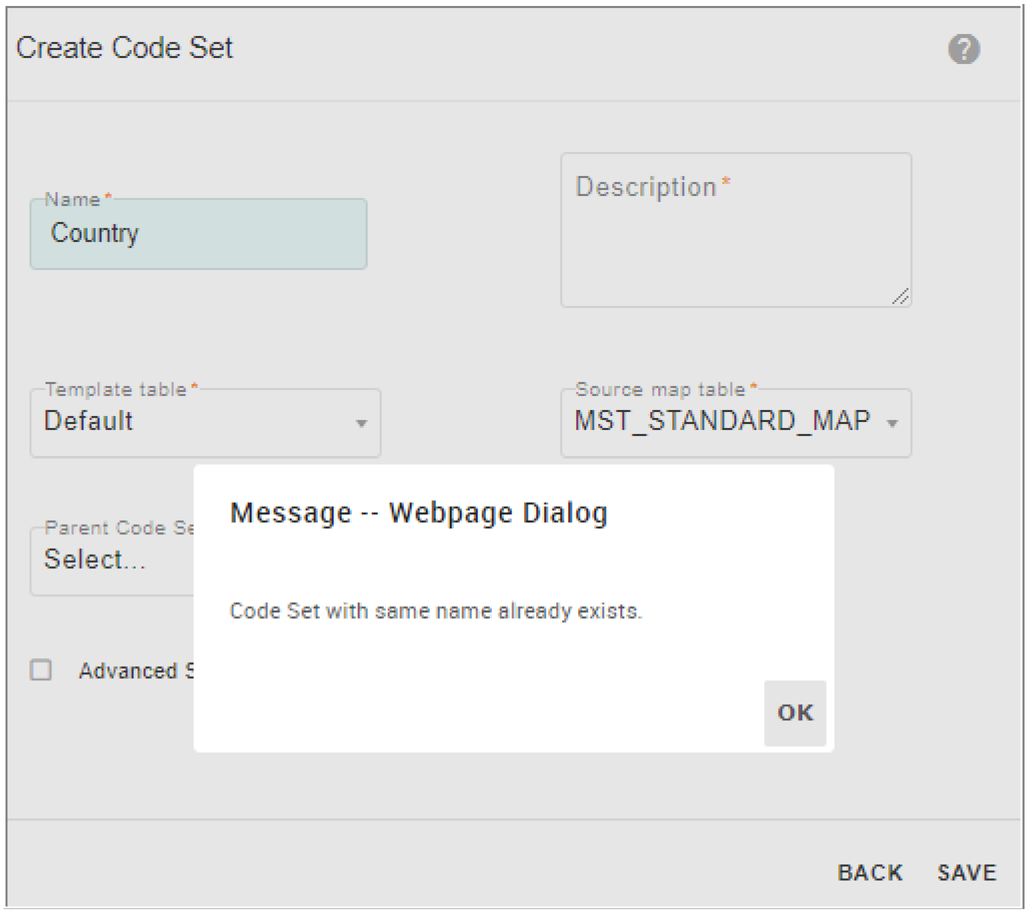
Source System Id* 1:EDW Source System

☑ Override Code Value Sequence

2 On the **Create Code Set** page (Figure 458), perform the following:

- **Name:** enter the code type in the **Nam**e field (example: Gender, Country, Designation, etc.)

The code set entered would be validated without page refresh and if the entered code set name already exists, then a message would be displayed on the UI as in below figure.



Create Code Set

Name*: Country

Description*

Template table*: Default

Source map table*: MST_STANDARD_MAP

Parent Code Se: Select...

Message -- Webpage Dialog

Code Set with same name already exists.

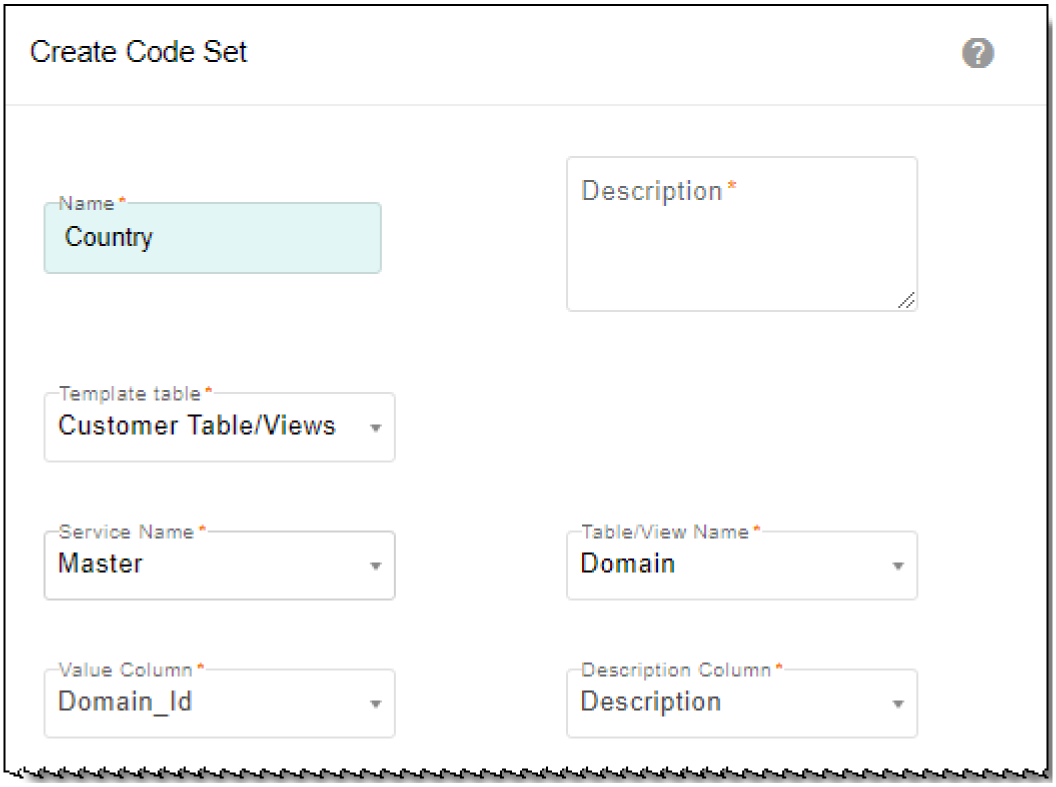
- **Description:** enter the code type description in the **Description** field.
- **Template table**: select the template type.
  - **Default**: if Default type is selected, select the standard map table from the **Standard Map Table** drop-down and if required select the parent code set from the Parent Code Set dropdown.
  - **Multitable**: if Multitable option is selected, select the table from the **Standard Map Table** drop-down.

    During MDM installation, if multiple table option selected, the Standard Map Table drop-down would display multiple tables. If single table option selected, the MST_Standard_Map Table would be displayed. Refer to *Master Data Management Installation Guide* for details.
  - **Customer Table/Views**: On the LRDM UI, the code set values are stored in a single column in “Reference_Code” table or in any multi table. LRDM UI provides an option to store the code set values in multiple columns in the selected custom value table or view.

    To store code values in custom tables:
  - On the **Create Code Set** page, select **Customer Table/View** from **Template** table dropdown.

The **Create Code Set** page refreshes to display Service Name, Table or View Name, Value Column and Description Column dropdowns as in Figure 459.

Figure 459: Create Code Set—Customer Table or View



Name*: Country
Description*:
Template table*: Customer Table/Views
Service Name*: Master
Table/View Name*: Domain
Value Column*: Domain_Id
Description Column*: Description

- Select the service name (Master or Non MDM), table or view, the value column and description column click **Save**.

  The value in the Description Column is displayed for the code value selected in Value Column field.

---

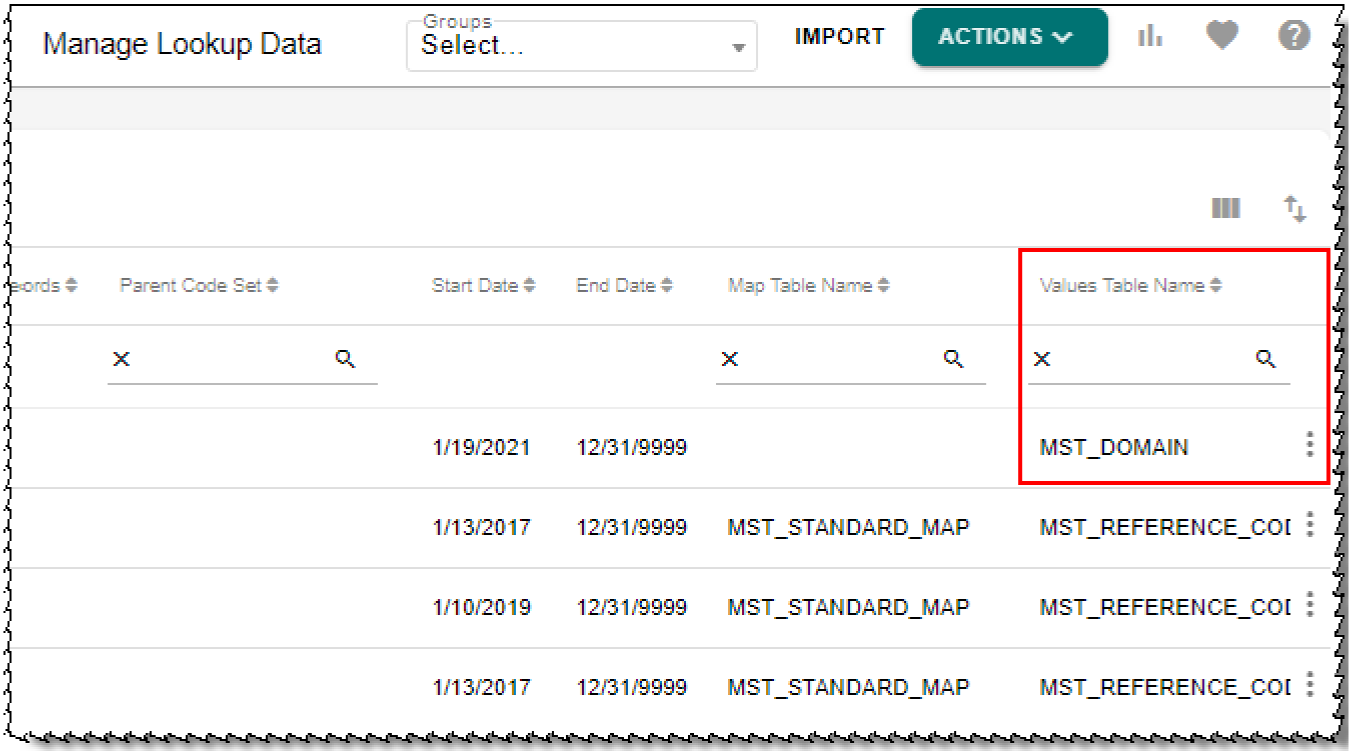
1. During the table creation using Model Builder, for columns in which look-up is defined and if the option to display descriptions of codes is selected, then in the create and edit UI, the lookup drop-down displays the code description instead of code values. For enabling Display Description option in model builder UI, see Section : “Create or Upload Model” in Chapter Model Builder.

2. Display description is honored on the following modules (Configurable UI, Excel - Import and Export, E2E, Approval Inbox and Approval Monitoring)

The Selected Columns will store all the details of the code values like name, Id, description etc., in # separated format.

When a code set with customer table or view is saved, the **Values Table Name** column on the **Manage Lookup Data** UI displays the Customer Table or View Name as in Figure 460.

Figure 460: Manage Lookup Data—Values Table Name



ords	Parent Code Set	Start Date	End Date	Map Table Name	Values Table Name
		1/19/2021	12/31/9999		MST_DOMAIN
		1/13/2017	12/31/9999	MST_STANDARD_MAP	MST_REFERENCE_COI
		1/10/2019	12/31/9999	MST_STANDARD_MAP	MST_REFERENCE_COI
		1/13/2017	12/31/9999	MST_STANDARD_MAP	MST_REFERENCE_COI

On the **Manage Lookup Data** UI, for any code set with custom table or view defined, on click of Manage Code Values, it navigates to Configurable UI of the corresponding custom table. On the Configurable UI, you can add and manage code values.

- **Advanced Settings**: click the Advanced Setting checkbox to select the below options:
  - select start and end date for the code type entered.
  - set the **Editable** fields to true/false.

    By default, Editable fields will be set to true.

If the Editable field is set to False, the following restrictions would be applied on a non-editable Code Set on LRDM UI:

- Code Set cannot be edited or deleted.

- Code Values cannot be added, edited or deleted.

  - enter the source system Id in **Source System Id** field.

    By default, the source system Id field is populated with a value 1.

- **Override Code Value Sequence**: select the Override Code Value Sequence checkbox to enable overriding the ordering sequencing of the code values on the Manage Code Value UI of the selected code set.

  By default, for all the code value, the Override Code Value Sequence is not enabled and the code values are displayed in alphabetical order on UI. If the Override Code Value Sequence checkbox is enabled, on the Manage Code Values UI, the Manage Sequence button is displayed to override the ordering sequence. For more details on ordering sequence, see Section : “Manage Sequence”.
- Click **Save**.

  Message: “Code Set added successfully” is displayed on the **Manage Lookup Data** page.

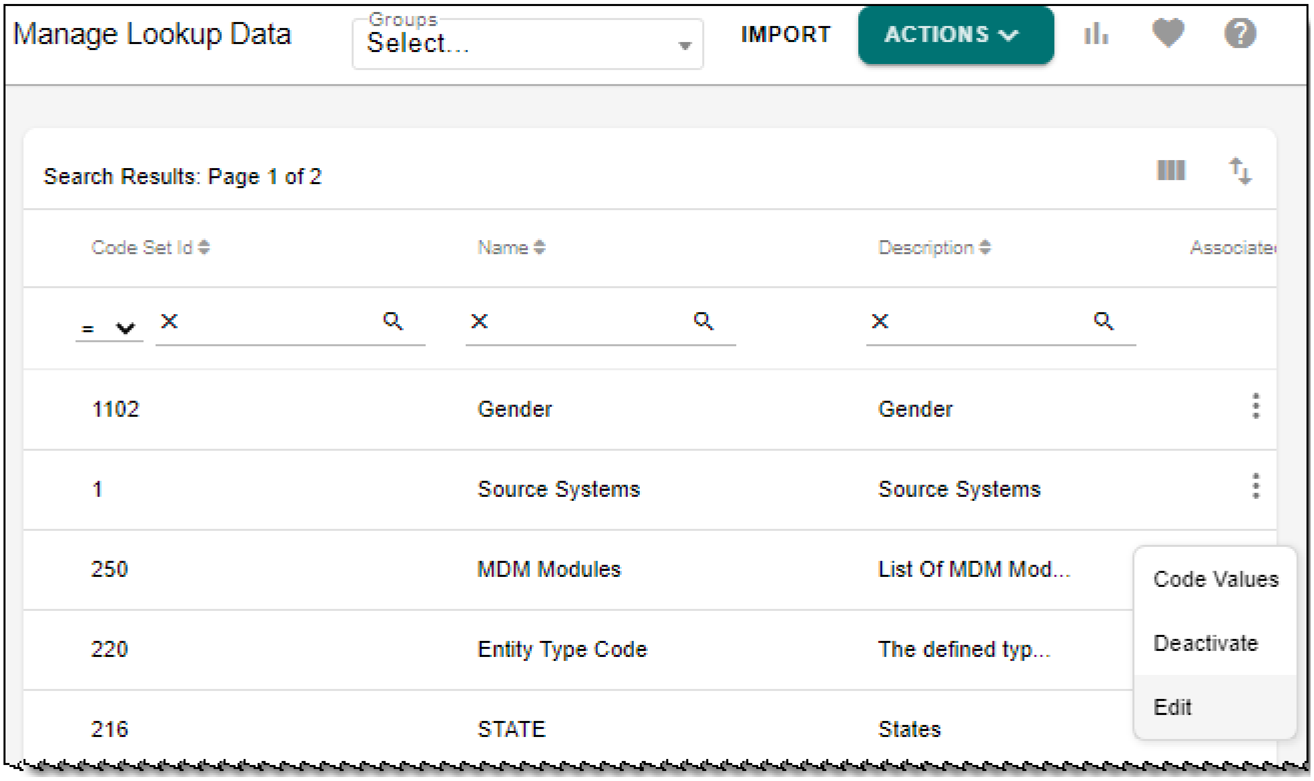
- A workflow provided with OOTB MDM to rename the multi tables (Reference Code, Standard Map and Language Description) of LRDM as per the names of Code Set assigned. Any spaces or special characters in the name of code set will be ignored while renaming the LRDM multi tables. The name of the workflow is: RenameDocumentLogicalNameWkf. This workflow can be scheduled using scheduler. This workflow internally looks for all the concerned LRDM and Hierarchy tables that are used but not renamed and renames all. In case of any failure, entire changes are reverted back.
- When RLS is enabled on a Code_Set table, you will be able to create a code set only when RLS is explicitly assigned to the rows containing CTL_ID and Categories code sets.
- It is recommended not to create custom code set on Reference_Code (or on multitable for the same table) as it may display the enterprise record count wrongly.
- If user is adding a custom code set then the count of existing enterprise records will not be updated automatically for the existing enterprise record of the custom code set. User needs to refresh the count through “Refresh Count” button provided on the UI. By default, the business rule "populate_Stats_(table_name)" is inactive. You must first make this business rule active and the record count will be updated automatically.
- Pending approval check is not honored on creating code set or code value with the same name as existing code set name or code value.

Editing Code Set

To edit code set:

1 On the **Manage Lookup Data** page, click on the Menu icon ⋮ corresponding to the required code set and click **Edit** as in Figure 461.

Figure 461: Manage Lookup Data



Code Set Id	Name	Description	Associate
1102	Gender	Gender	
1	Source Systems	Source Systems	
250	MDM Modules	List Of MDM Mod...	
220	Entity Type Code	The defined typ...	
216	STATE	States	

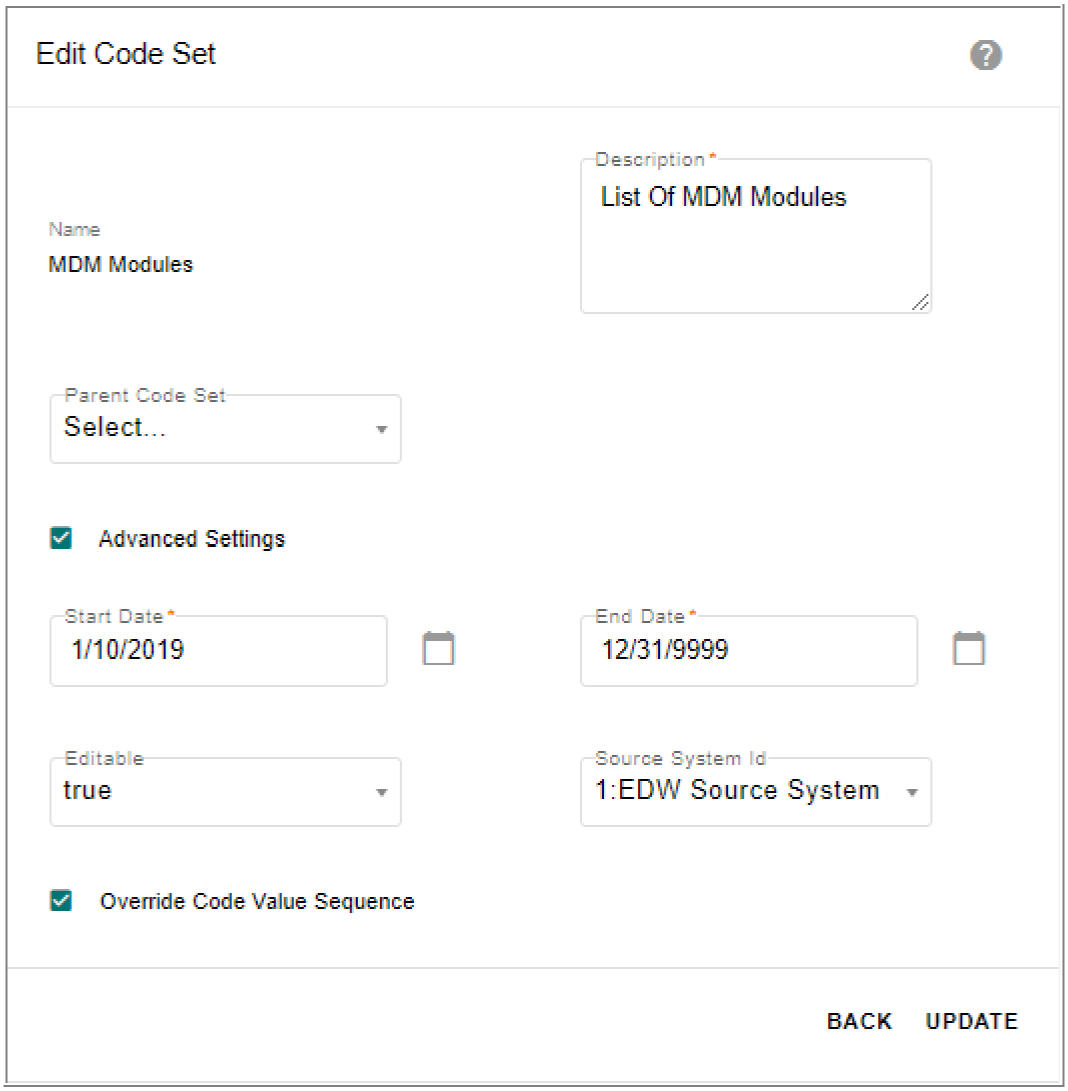
The **Edit Code Set** page (Figure 462) is displayed.

2 On the **Edit Code Set** page (Figure 462), modify the required values and click **Update**.

You can update Description, Parent Code Set, Start and End Date, Editable and Source System Id fields. For code set with custom code values table, you can select a different custom value column.

Message: “Code Set edited successfully” is displayed on the Edit Code Set page.

Figure 462: Edit Code Set



Edit Code Set

Name: MDM Modules

Description*: List Of MDM Modules

Parent Code Set: Select...

☑ Advanced Settings

Start Date*: 1/10/2019

End Date*: 12/31/9999

Editable: true

Source System Id: 1:EDW Source System

☑ Override Code Value Sequence

Importing Code Set

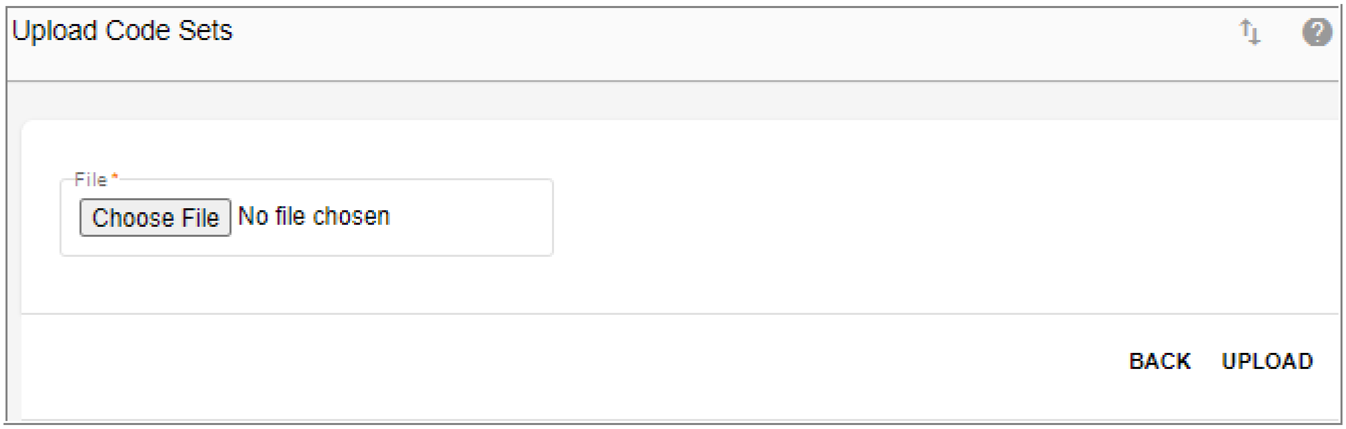
The Import option on the Manage Lookup Data page allows you to import Code Sets using Excel or XML file and there by avoids manual entry of Code Sets for bulk records. You may keep the Code Set Id blank for Code Set upload, and MDM upload process will generate a unique Code Set Id for underlying records in the Excel file.

To import code set:

1. On the **Manage Lookup Data** page, click **Import.**

   The **Upload Code Sets** page (Figure 463) is displayed.

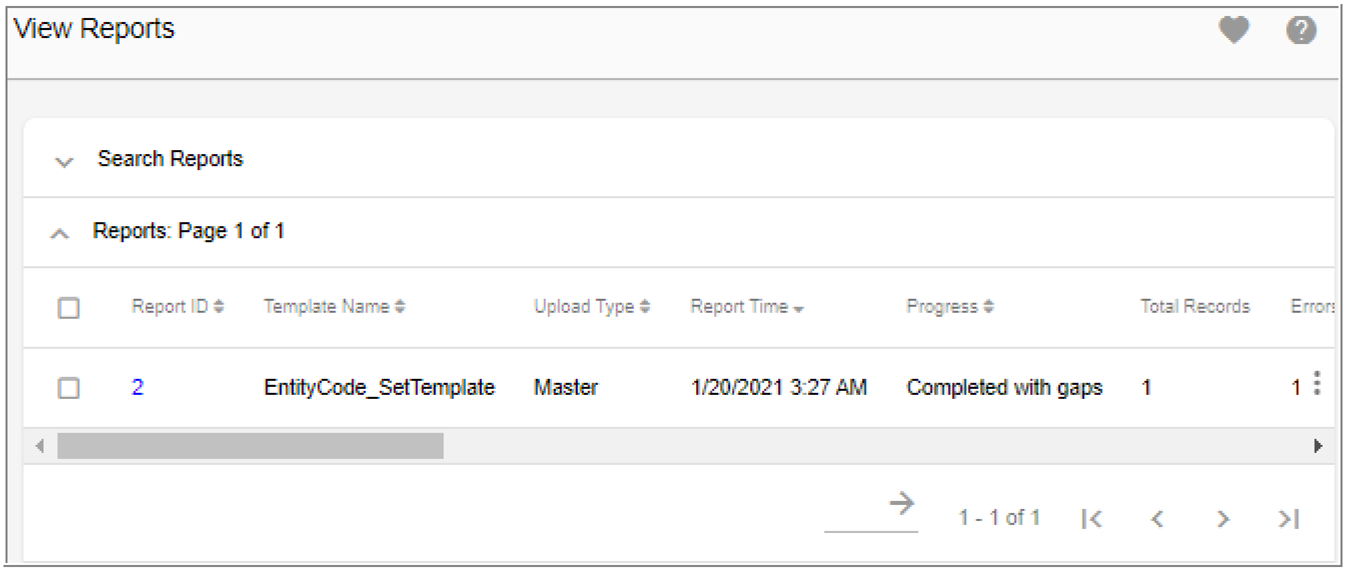
Figure 463: Upload Code Sets



2 On the **Upload Code Sets** page (Figure 463), click **Choose File** to select the required excel file and click **Upload**.

The **View Reports** page (Figure 464) is displayed.

Figure 464: View Reports



☐	Report ID	Template Name	Upload Type	Report Time	Progress	Total Records	Error
☐	2	EntityCode_SetTemplate	Master	1/20/2021 3:27 AM	Completed with gaps	1	1

For more details on the View Reports page and error details, see Chapter 11: “Upload Documents”.

When you upload or import a code set with custom value table, you cannot add the custom value columns in excel. To add the custom value columns for a code set with custom table imported by excel upload, you need to select the imported code set and perform edit operation to assign the custom value columns. The delimiter used for lookupvalue is # .

Deleting Code Set

To delete code set:

1. On the **Manage Lookup Data** page, click on the Menu icon ⋮ corresponding to the required code set and click **Deactivate**

   The Confirmation popup is displayed.

2. On the **Confirmation** popup, click **Yes**.

   Message: The “Code Set deleted successfully” is displayed on the Manage Lookup Data page.

Before deleting the code set, delete the existing code values and mappings.

Grouping in LRDM

The below section describes the following:

- Grouping of Code Sets
- Grouping of Code Value Attributes

Grouping of Code Sets

The grouping feature in LRDM allows you to logically group similar code sets. By default, the MDM Code Sets group is available and includes all the OOTB code sets used in different features of MDM.

The following points lists the grouping concepts in LRDM:

- Create a new group and assign members (code sets) to a group.
- View the members (code sets) of the existing groups.
- Search and filter code sets based on group names.
- All the OOTB code sets can be assigned to the existing groups.
- Assign newly created code sets to a group.
- Single code set can be assigned to multiple groups.

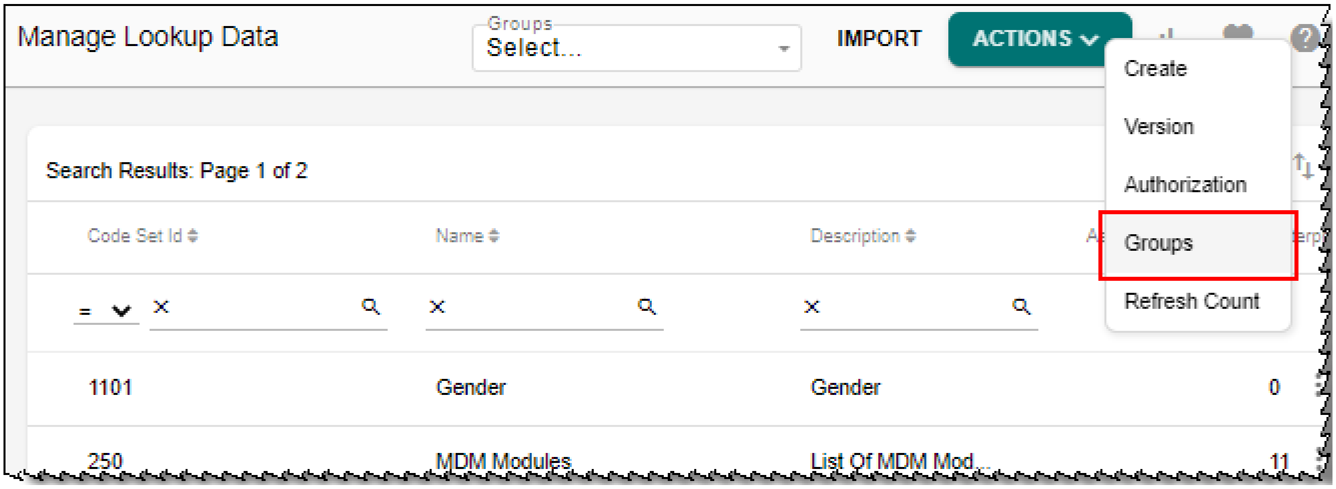
The following sections describes the detailed steps on creating groups, assigning members and remove members of the selected group.

Adding Groups

To add new group:

1 On the navigation pane, navigate to **Manage Lookup Data** UI from **Reference Data** -> **Manage Reference Data**.

Figure 465: Manage Lookup Data

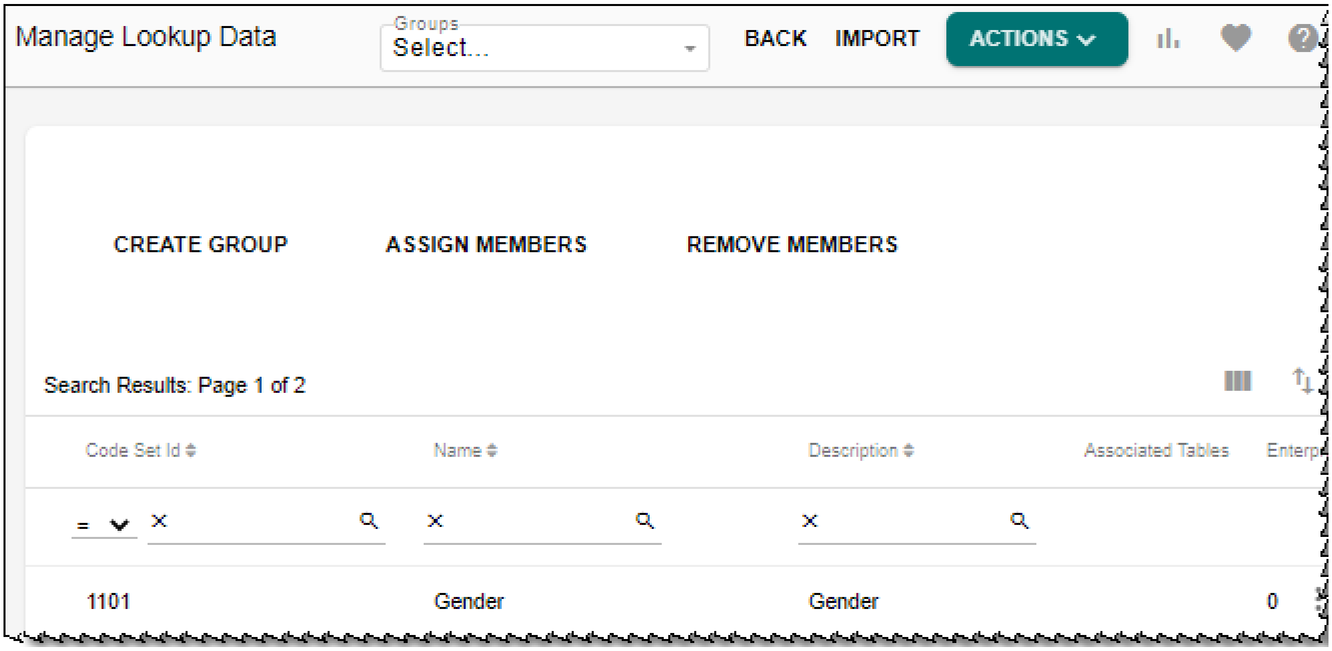


Code Set Id	Name	Description	
1101	Gender	Gender	0
250	MDM Modules	List Of MDM Mod...	11

2 On the **Manage Lookup Data** UI (Figure 465), select **Groups** from the **Actions** dropdown.

The **Manage Lookup Data** UI refreshes to display the **Create Group**, **Assign Members** and **Remove Members** options as in Figure 466.

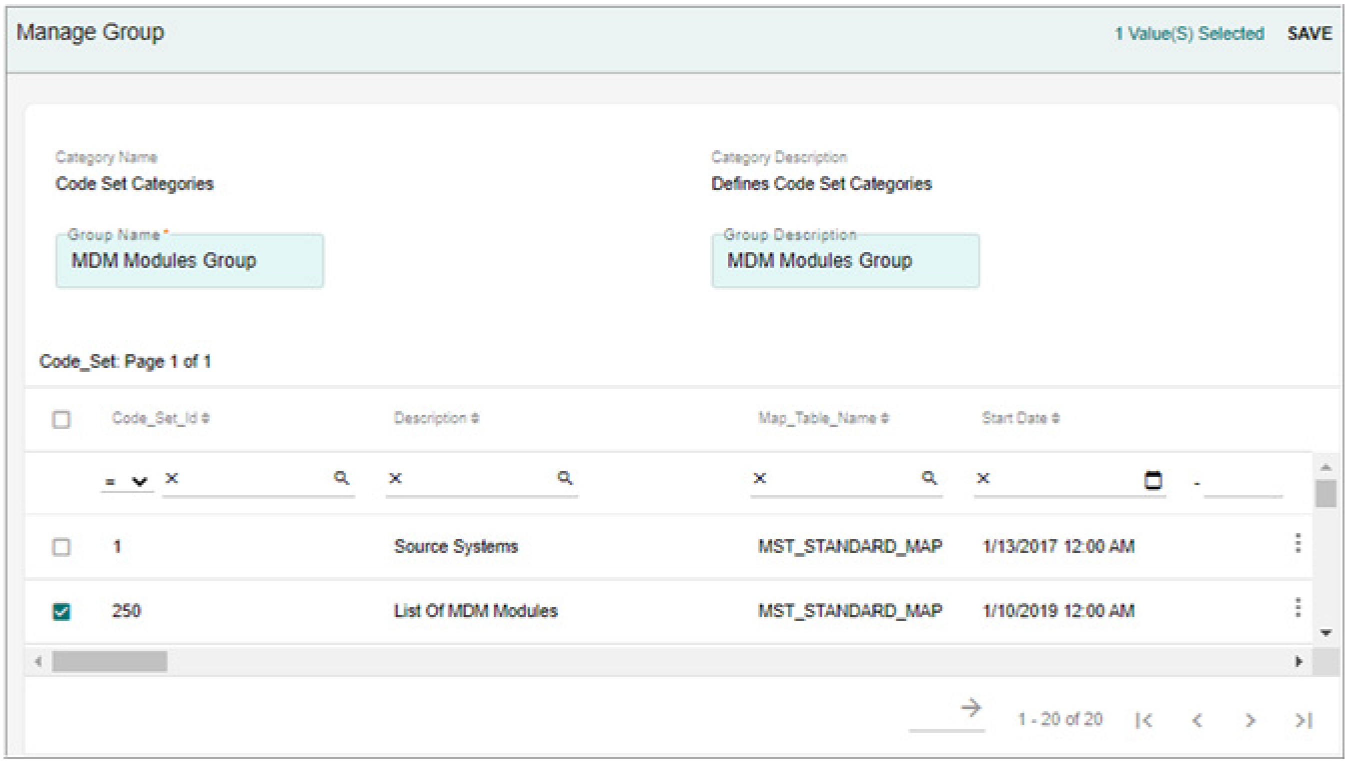
Figure 466: Manage Lookup Data



Code Set Id	Name	Description	Associated Tables
1101	Gender	Gender	0

3 On the **Manage Lookup Data** UI, click **Create Group**.

Figure 467: Manage Group



Category Name: Code Set Categories

Category Description: Defines Code Set Categories

Group Name*: MDM Modules Group

Group Description: MDM Modules Group

Code_Set: Page 1 of 1

☐	Code_Set_Id	Description	Map_Table_Name	Start Date
☐	1	Source Systems	MST_STANDARD_MAP	1/13/2017 12:00 AM
☑	250	List Of MDM Modules	MST_STANDARD_MAP	1/10/2019 12:00 AM

4 On the **Manage Group** page (Figure 467),

- enter the group name in **Group Name** field.
- enter the description in the **Group Description** field.
- select the code sets that you want to assign to the group and click **Save.**

Message: “New Group created successfully” is displayed on the Manage Lookup Data UI.

You can also add the members to the created group later as in Section : “Assign Code Sets (Members) to Group”.

Assign Code Sets (Members) to Group

To assign members to the selected group.

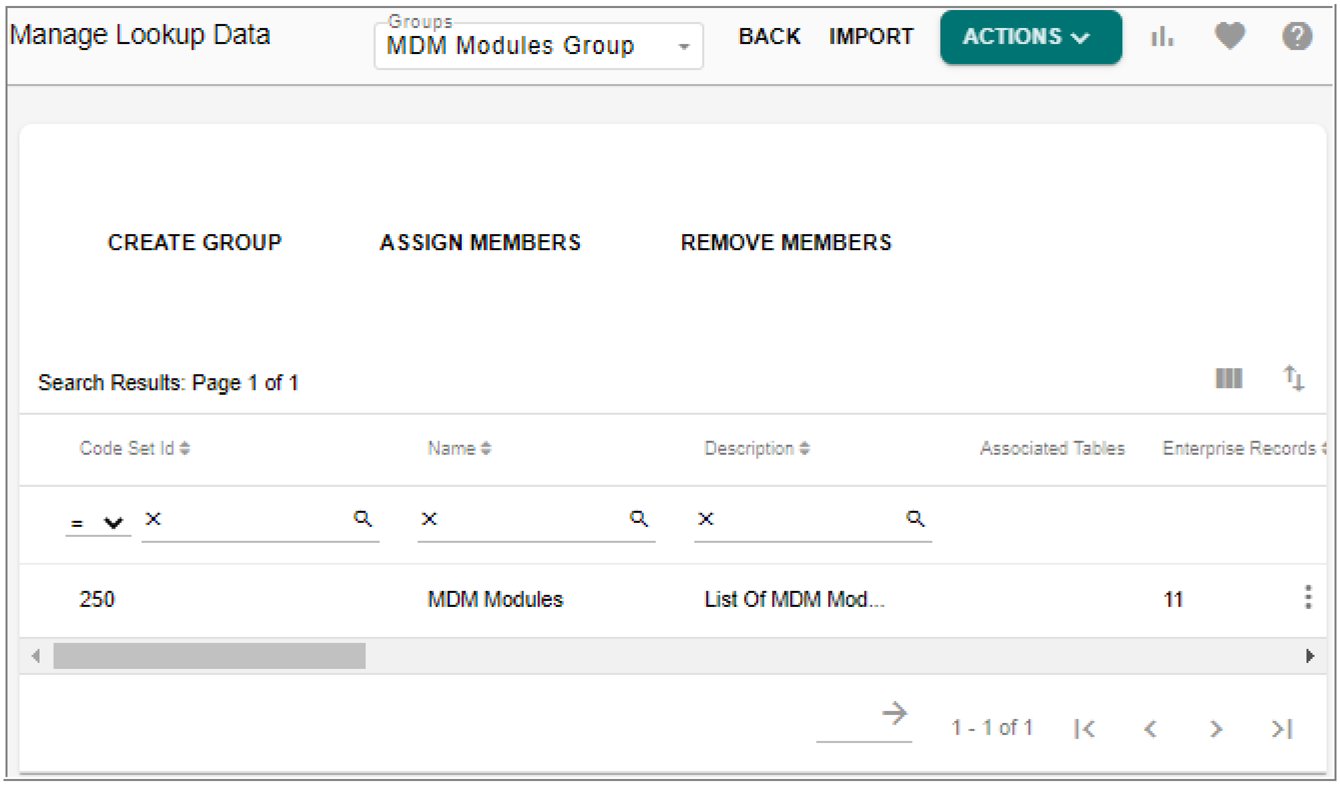
1 On the **Manage Lookup Data** UI (Figure 465), select **Groups** from the **Actions** dropdown.

The **Manage Lookup Data** UI refreshes to display the Group Create, Assign Members and Remove Members options as in Figure 466.

2 On the **Manage Lookup Data** UI, select the required group from the **Groups** dropdown.

The **Manage Lookup Data** UI refreshes to display all the assigned members of the selected group as below.

Figure 468: Manage Lookup Data



Groups: MDM Modules Group

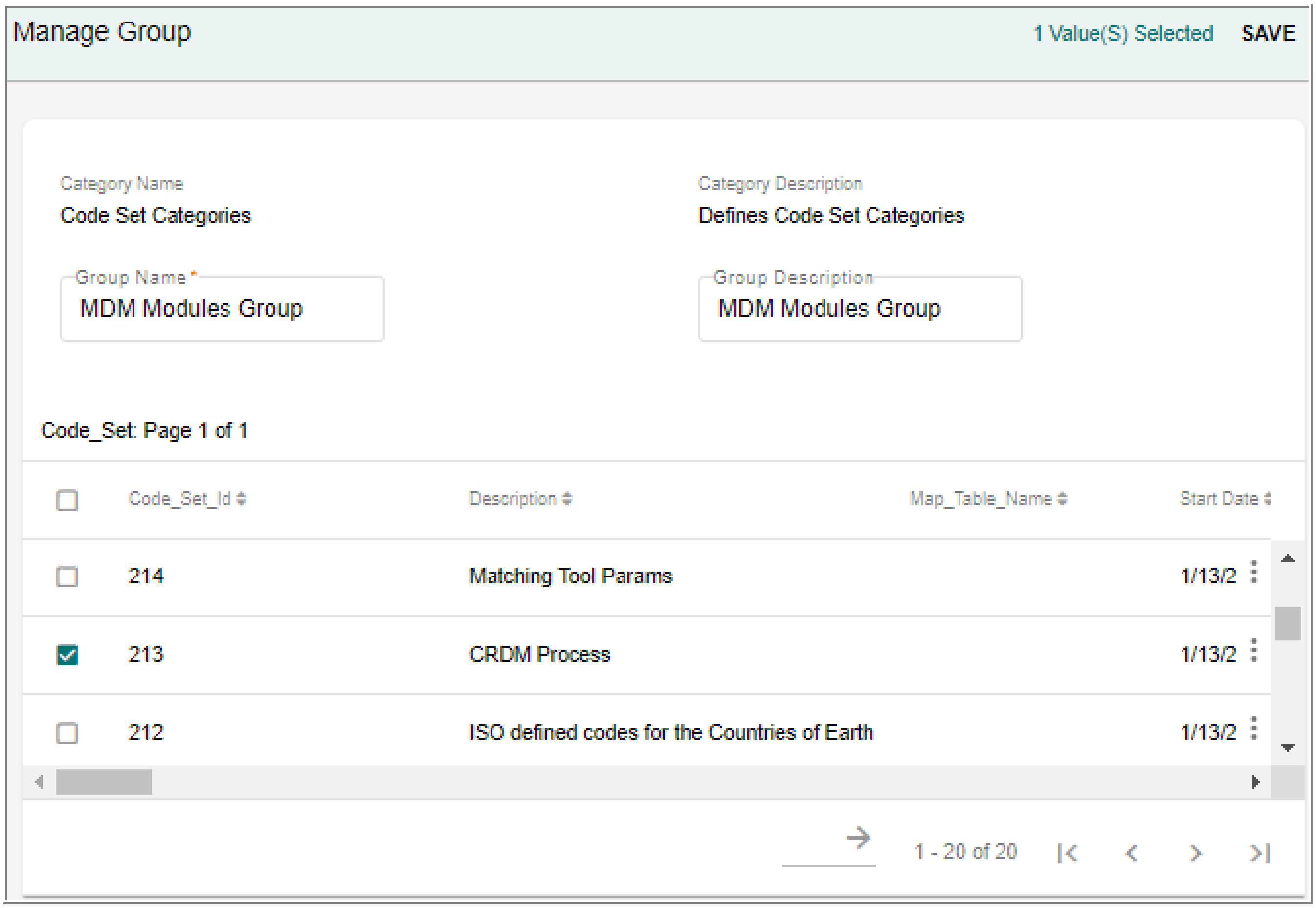
Search Results: Page 1 of 1

Code Set Id	Name	Description	Associated Tables	Enterprise Records
250	MDM Modules	List Of MDM Mod...		11

3 On the **Manage Lookup Data** UI (Figure 469), click **Assign Members**.

The **Manage Group** UI (Figure 469) is displayed. Code sets that are already assigned to the selected group will not be displayed on the Manage Group UI.

Figure 469: Manage Group



Category Name: Code Set Categories

Category Description: Defines Code Set Categories

Group Name *: MDM Modules Group

Group Description: MDM Modules Group

Code_Set: Page 1 of 1

☐	Code_Set_Id	Description	Map_Table_Name	Start Date
☐	214	Matching Tool Params		1/13/2
☑	213	CRDM Process		1/13/2
☐	212	ISO defined codes for the Countries of Earth		1/13/2

4 On the **Manage Group** UI (Figure 469), select the members (code sets) and click **Save**.

Message: “Member/Members assigned to the Group successfully” is displayed on the **Manage Lookup Data** UI.

Remove Code Sets (Members) Assigned to Group

To remove members of the selected group.

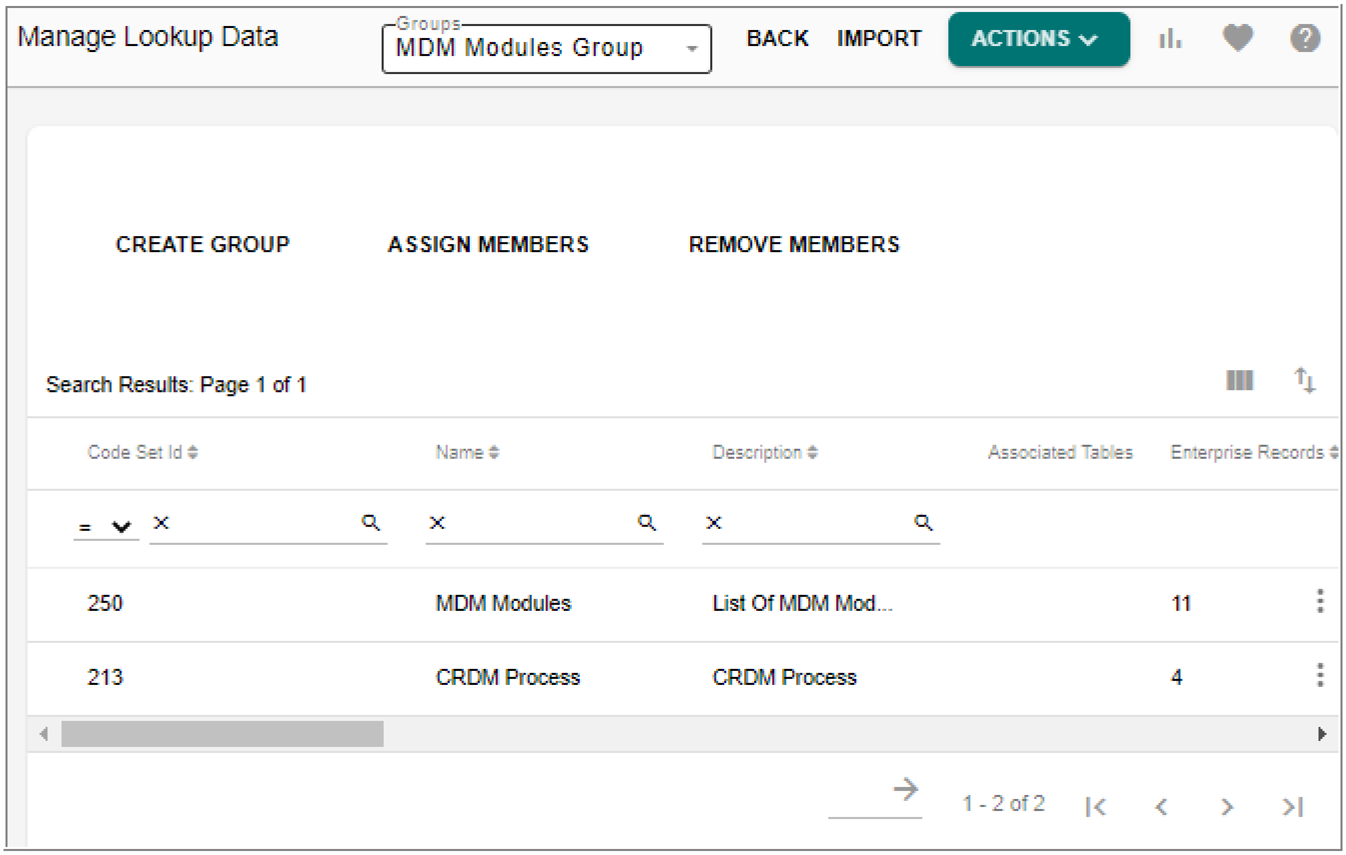
1 On the **Manage Lookup Data** UI (Figure 465), select **Groups** from the **Actions** dropdown.

The **Manage Lookup Data** UI refreshes to display the Group Create, Assign Members and Remove Members options as in Figure 466.

2 On the **Manage Lookup Data** UI, select the required group from the **Groups** dropdown.

The **Manage Lookup Data** UI refreshes to display all the assigned members of the selected group as below.

Figure 470: Manage Lookup Data

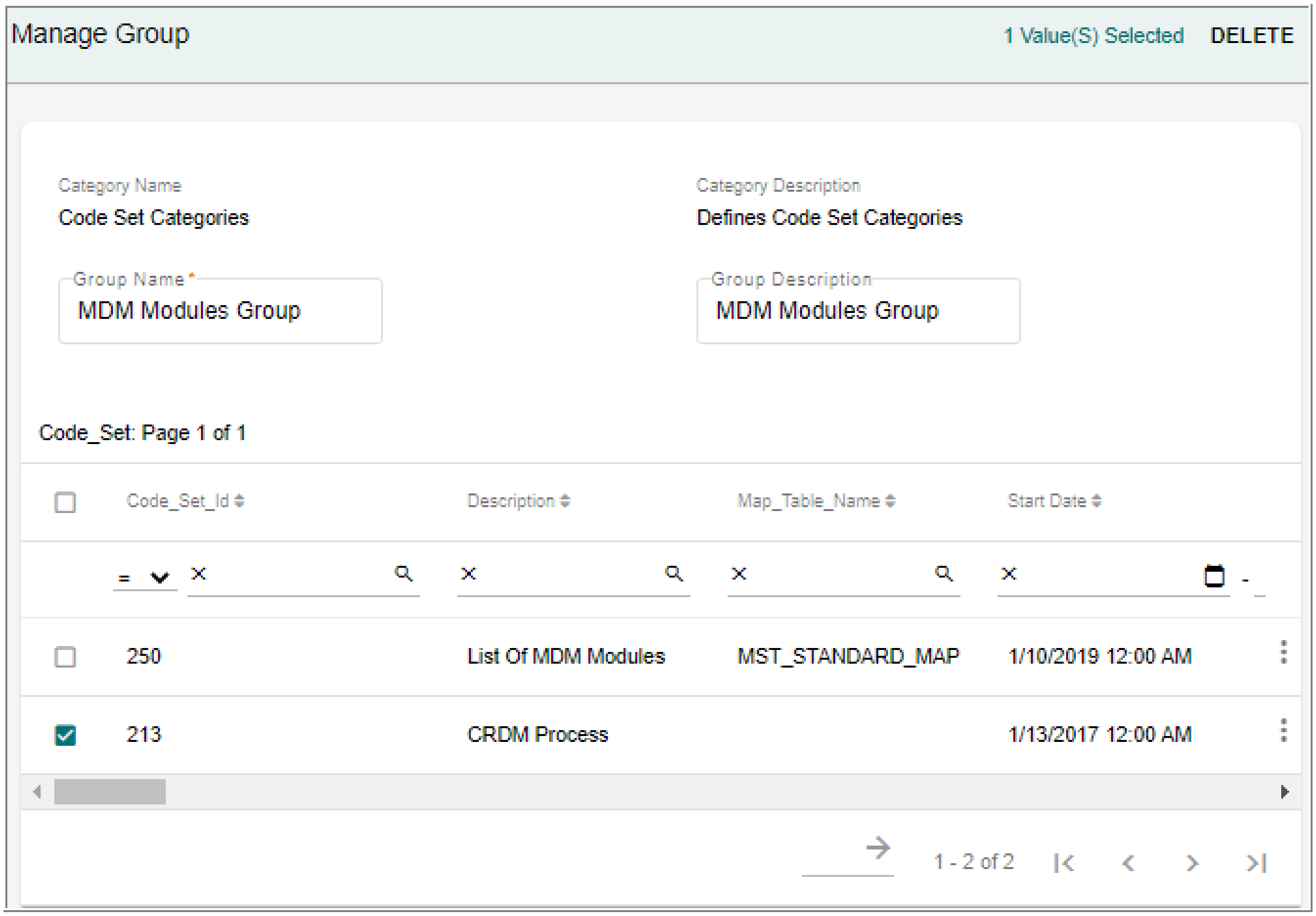


Code Set Id	Name	Description	Associated Tables	Enterprise Records
250	MDM Modules	List Of MDM Mod...		11
213	CRDM Process	CRDM Process		4

3 On the **Manage Lookup Data** page (Figure 470), click **Remove Members**.

The **Manage Group** page (Figure 469) is displayed.

Figure 471: Manage Group



Category Name: Code Set Categories

Category Description: Defines Code Set Categories

Group Name*: MDM Modules Group

Group Description: MDM Modules Group

Code_Set: Page 1 of 1

	Code_Set_Id	Description	Map_Table_Name	Start Date
☐	250	List Of MDM Modules	MST_STANDARD_MAP	1/10/2019 12:00 AM
☑	213	CRDM Process		1/13/2017 12:00 AM

4 On the **Manage Group** page (Figure 469), click on the Menu icon ⋮ corresponding to the required code set and click **Delete**.

The confirmation popup is displayed as below.

5 On the confirmation popup, click **Yes**.

Message: “Group edited successfully” is displayed on the Manage Loolup Data UI.

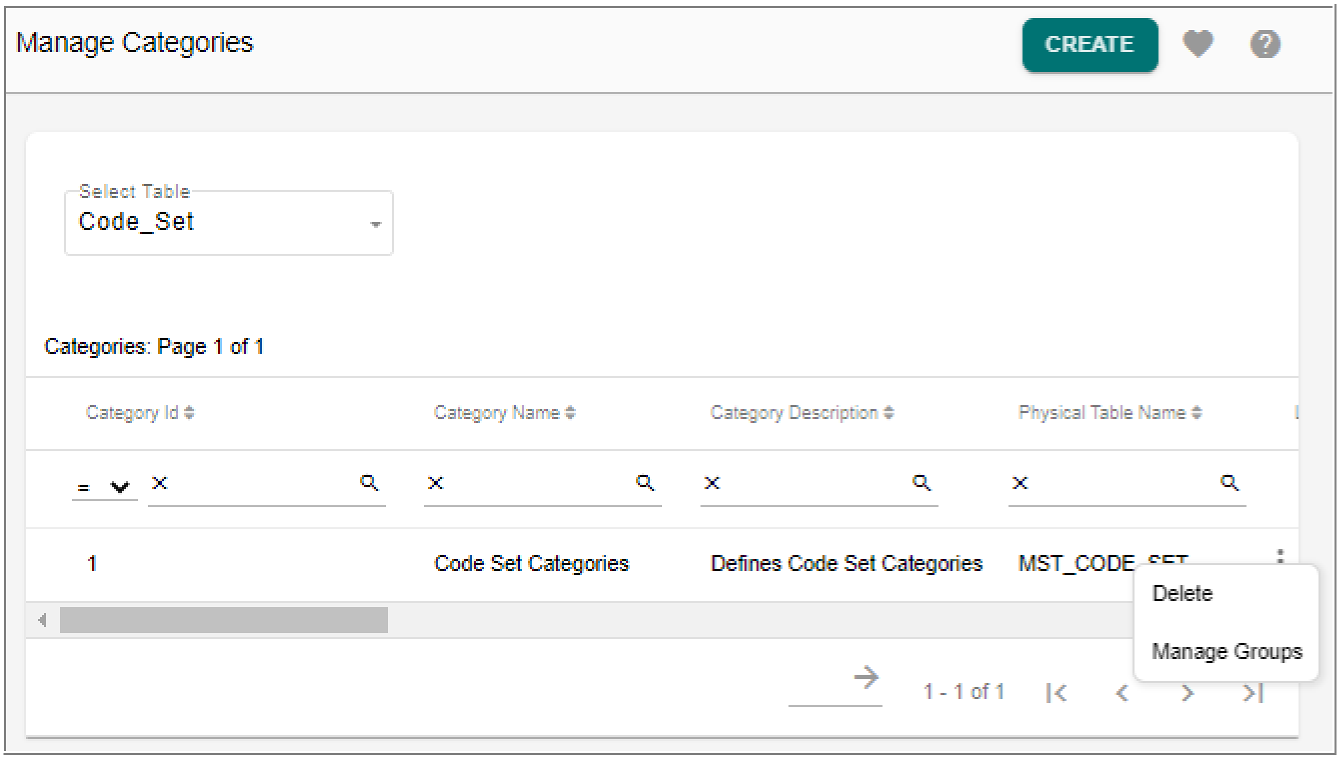
Delete Group

You can delete groups only from the Manage Categories UI.

To delete group from Manage Categories UI:

1 Navigate to **Manage Categories** UI (**Model Setup** -> **Categorize Data**) and on the **Manage Categories** UI, select the table as Code Set and click on the Menu icon ⋮ corresponding to the Code Set Categories and click **Manage Groups** as in Figure 472

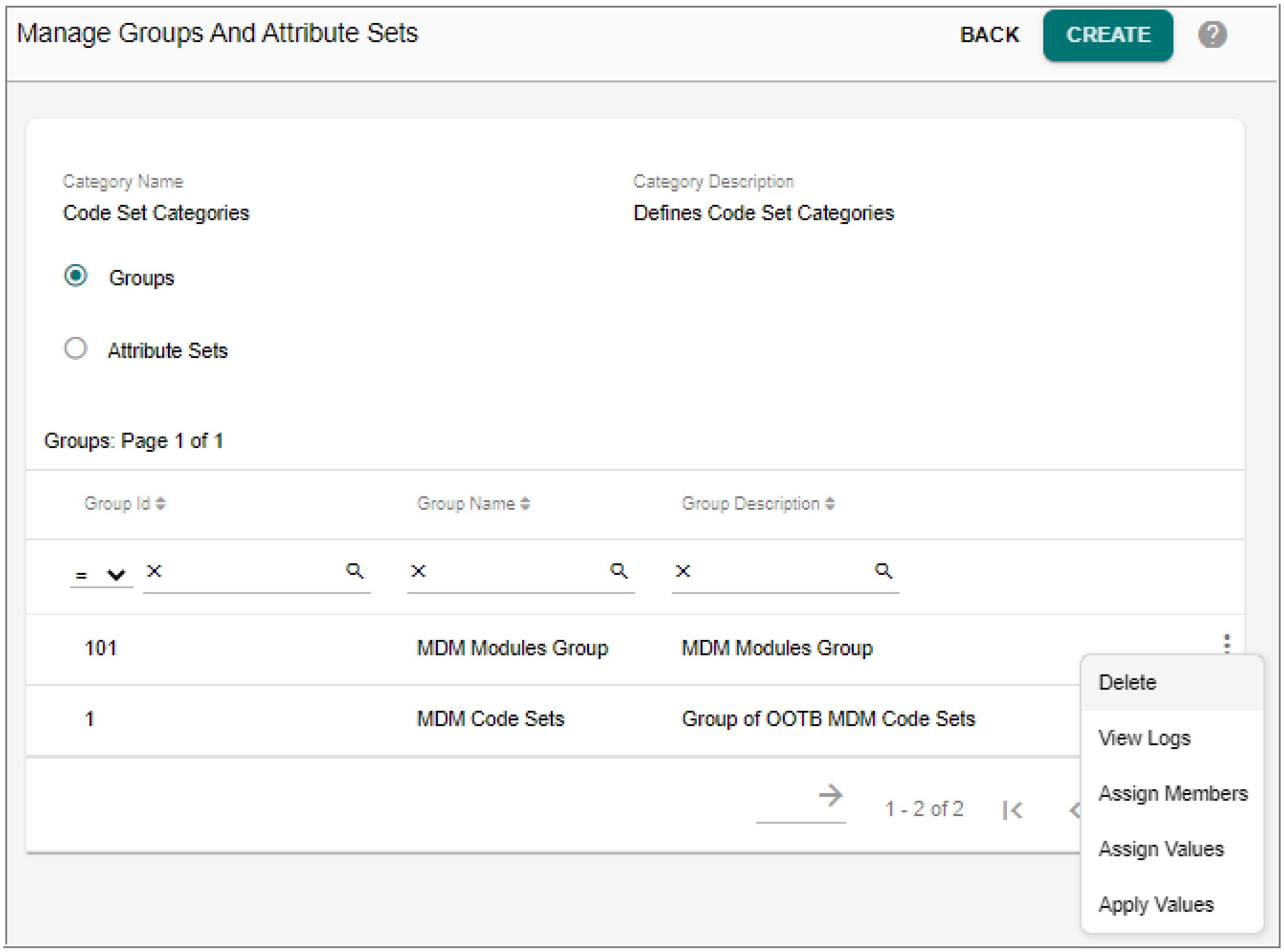
Figure 472: Manage Categories



Category Id	Category Name	Category Description	Physical Table Name
1	Code Set Categories	Defines Code Set Categories	MST_CODE_SET

2 On the **Manage Groups and Attribute Sets** UI, with **Groups** option selected, click on the Menu icon ⋮ corresponding to the required group and click **Delete** as in Figure 473.

Figure 473: Manage Groups and Attribute Sets



Manage Groups And Attribute Sets

Category Name: Code Set Categories

Category Description: Defines Code Set Categories

● Groups

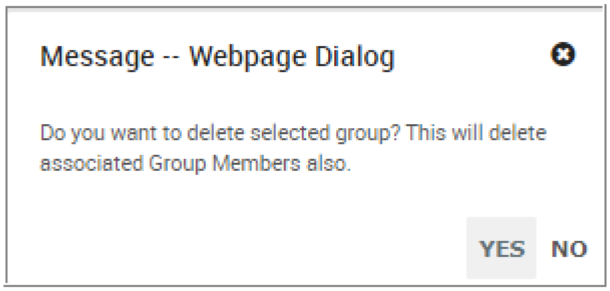
○ Attribute Sets

Groups: Page 1 of 1

Group Id	Group Name	Group Description
101	MDM Modules Group	MDM Modules Group
1	MDM Code Sets	Group of OOTB MDM Code Sets

1 - 2 of 2

The confirmation popup is displayed as below.



Message -- Webpage Dialog

Do you want to delete selected group? This will delete associated Group Members also.

3 On the confirmation popup, click **Yes**.

Message: “Group deleted successfully” is displayed.

Grouping of Code Value Attributes

In case of Multi table LRDM code values, additional attributes can be added through model builder. The added additional attributes for a code set can be grouped into logical groups on the Group Attributes UI.

Pre-requisites for creating groups through Group Attributes UI

1. Once the MDM is installed, create Reference_Code tables using Model Builder through template based table creation option. Add additional columns for the selected table and generate ISG. For details, refer to Chapter 24: "Model Builder."
2. Create code sets by selecting the required standard map table. For details, see Section : "Adding Code Set."

Navigate to Attributes Group Dashboard from left navigation pane **Reference Data** -> **Manage Reference Data** and click graphical view icon**.** On the **Reference Data Dashboard**, select **Group Attributes** from **Actions** dropdown.

On the Group Attributes UI, you can perform the following tasks:

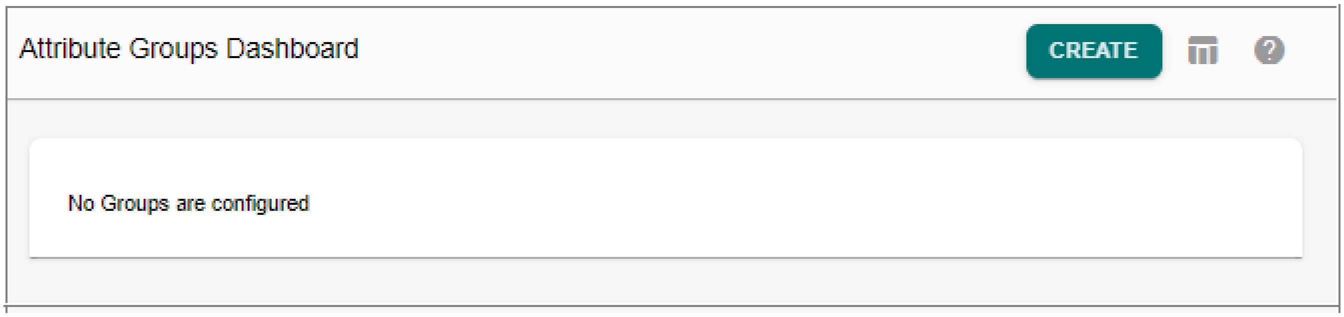
- Create Group
- Edit and Delete Group

Create Group

To create group:

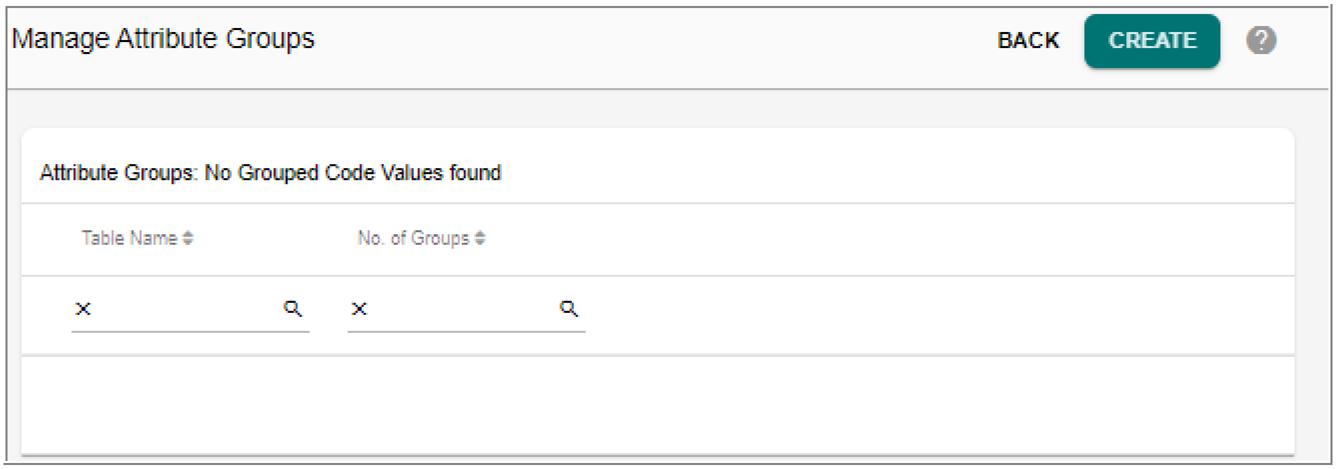
1. On the **Attribute Group Dashboard** UI, click **Create** as in Figure 474 or navigate to tabular view by clicking the tabular icon ▥ and on the **Manage Attribute Group** UI, click **Create** as in Figure 475.

Figure 474: Attribute Groups Dashboard



No Groups are configured

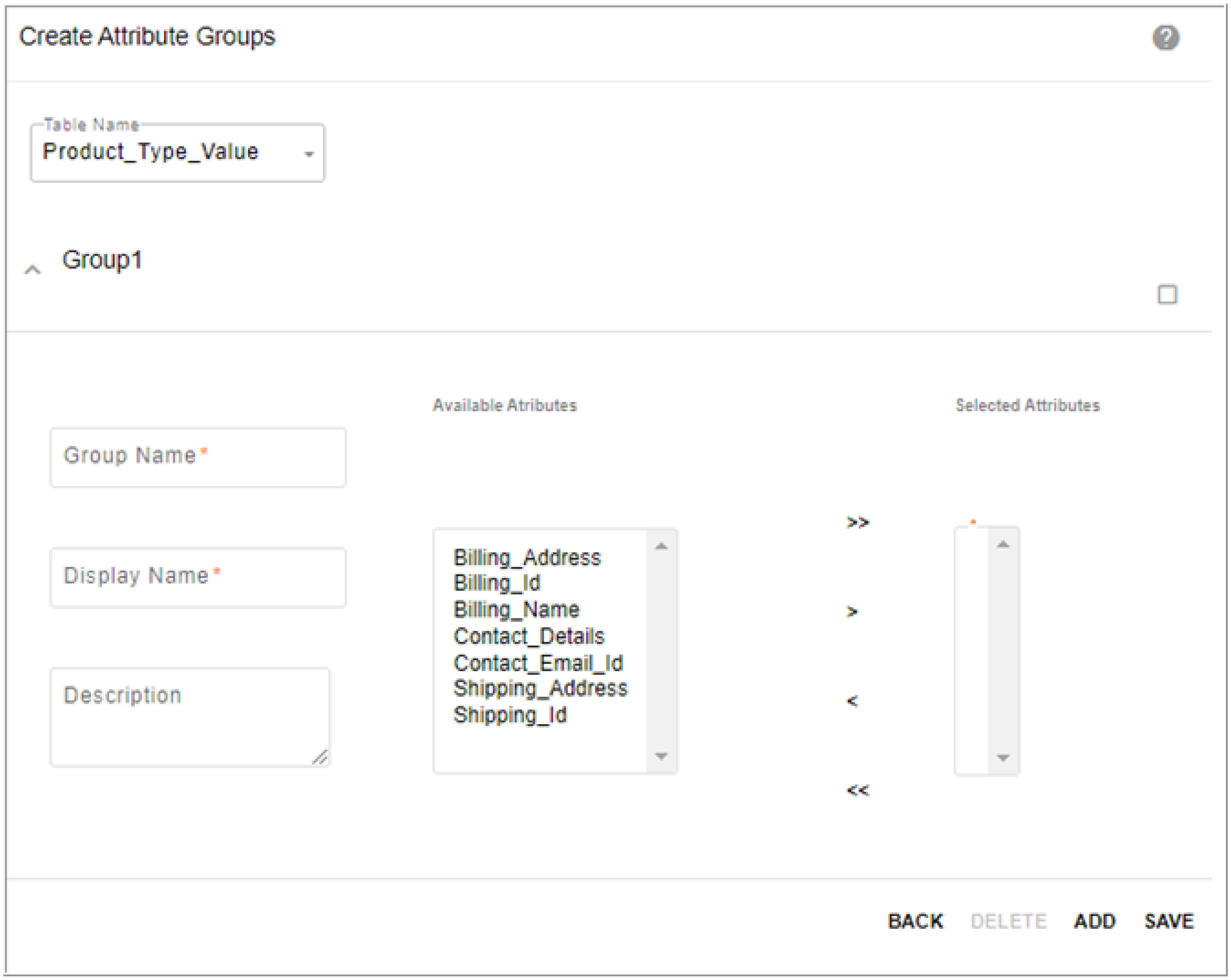
Figure 475: Manage Attribute Groups



Attribute Groups: No Grouped Code Values found

The **Create Attribute Groups** UI refreshes to displays the group addition details.

Figure 476: Create Attribute Groups



Create Attribute Groups

Table Name: Product_Type_Value

Group1

Available Atributes:
Billing_Address
Billing_Id
Billing_Name
Contact_Details
Contact_Email_Id
Shipping_Address
Shipping_Id

2 On the **Create Attribute Groups** UI (Figure 476), select the table to which you want to add group and enter the below details:

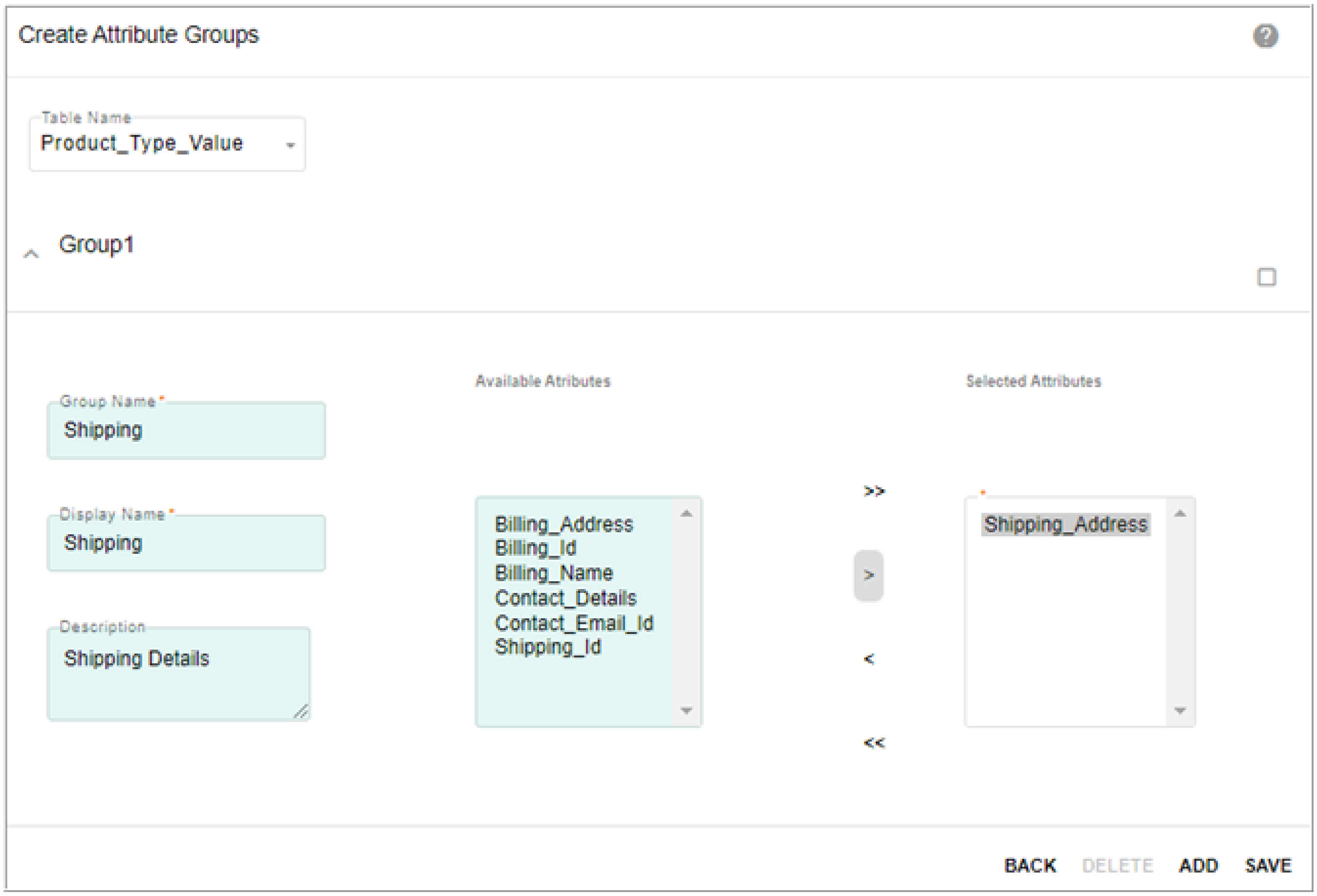
- **Group Name**: name of the group being created.
- **Display Name**: display name of the group being created.
- **Description**: brief description about the group being created.
- **Available Attributes**: displays all the additional attributes or column available for the group. Select all the required attributes from the Available Attributes list and move it to the Selected Attributes list.
- **Selected Attributes**: displays the list of attributes or columns added to the group.

3 Click **Add** to add another group.

4 You can also select group(s) by selecting the corresponding checkbox and click **Delete** to delete the group.

5 Click **Save** to save all the groups details.

Figure 477: Create Attribute Groups



Create Attribute Groups

Table Name: Product_Type_Value

Group1

Group Name*: Shipping

Display Name*: Shipping

Description: Shipping Details

Available Atributes:
Billing_Address
Billing_Id
Billing_Name
Contact_Details
Contact_Email_Id
Shipping_Id

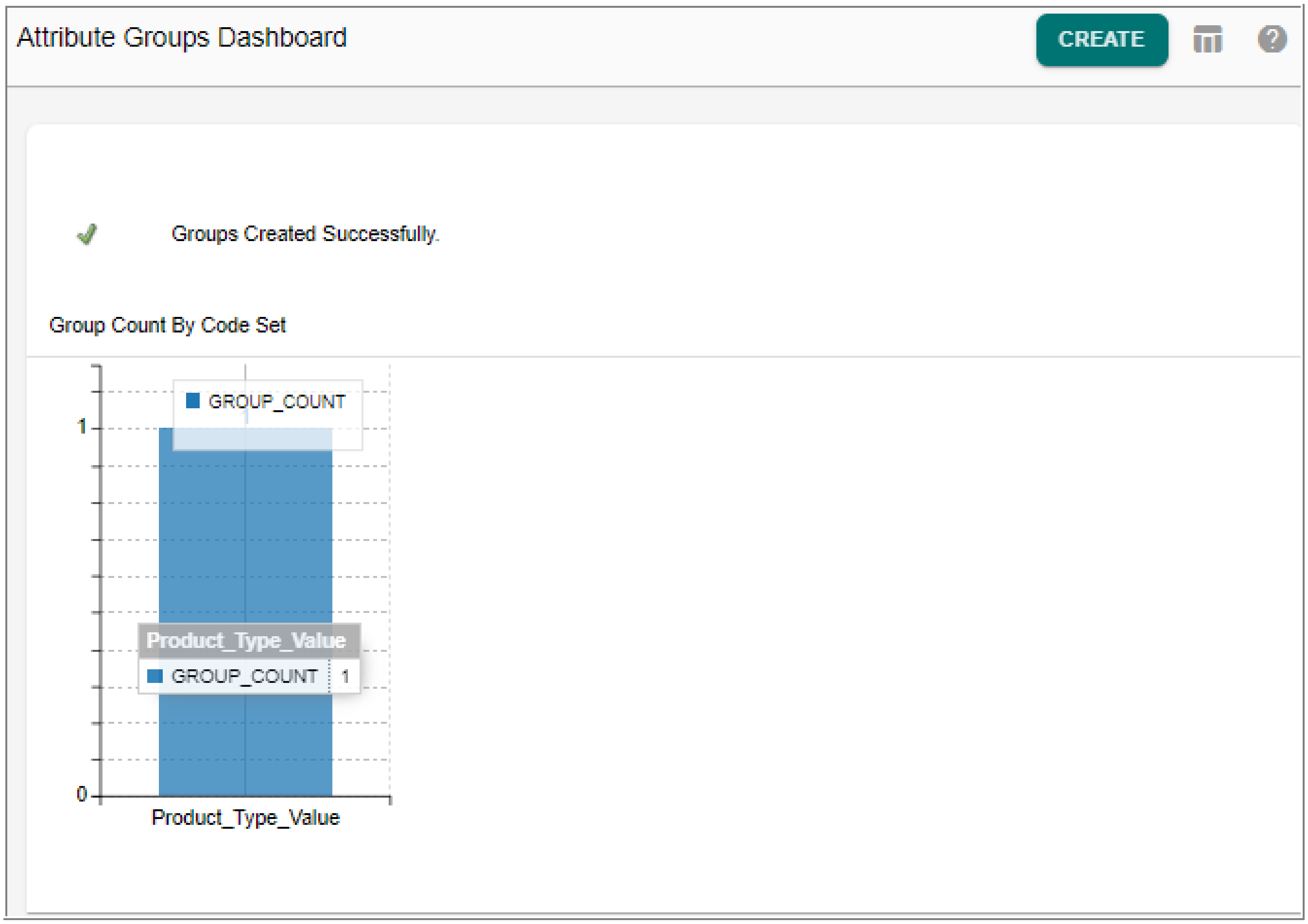
Selected Attributes:
Shipping_Address

Message: “Groups created successfully” is displayed on the Attribute Dashboard page as in Figure 478.

On the **Attributes Group Dashboard**,

- A bar graph displays the number of groups per code set.
- The graphical view can be changed to tabular view by clicking on the Tabular icon on the right corner of the page.
- On click of a code set, the edit page of the corresponding code set groups is displayed.
- Navigate to create group page by clicking the Create button.

Figure 478: Attribute Groups Dashboard



Attribute Groups Dashboard

Groups Created Successfully.

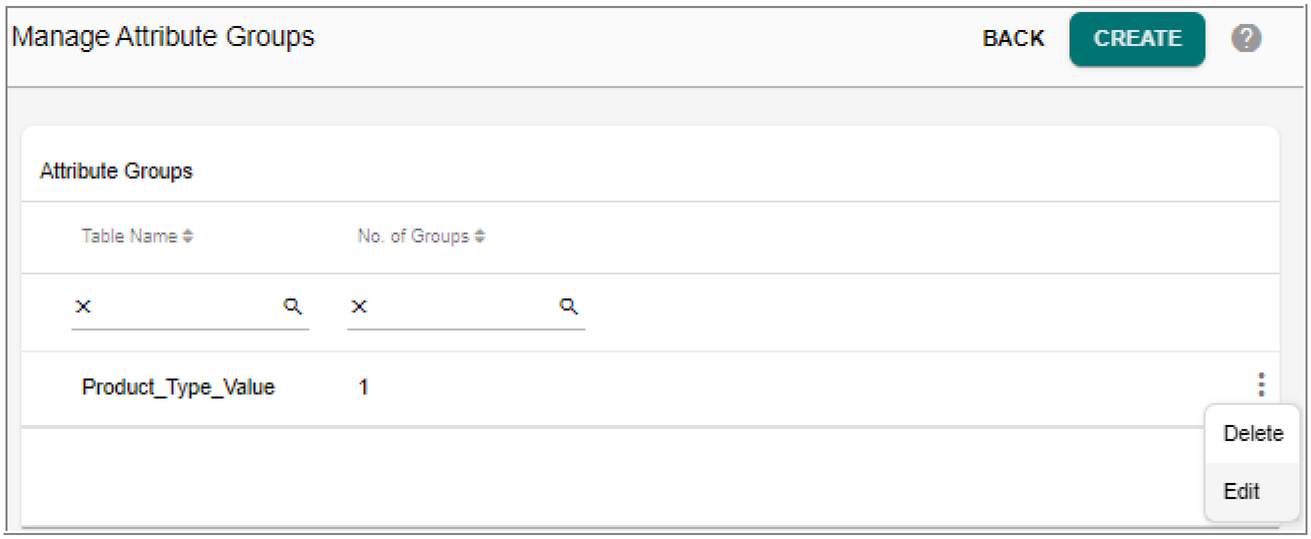
Group Count By Code Set

Edit and Delete Group

To edit group details:

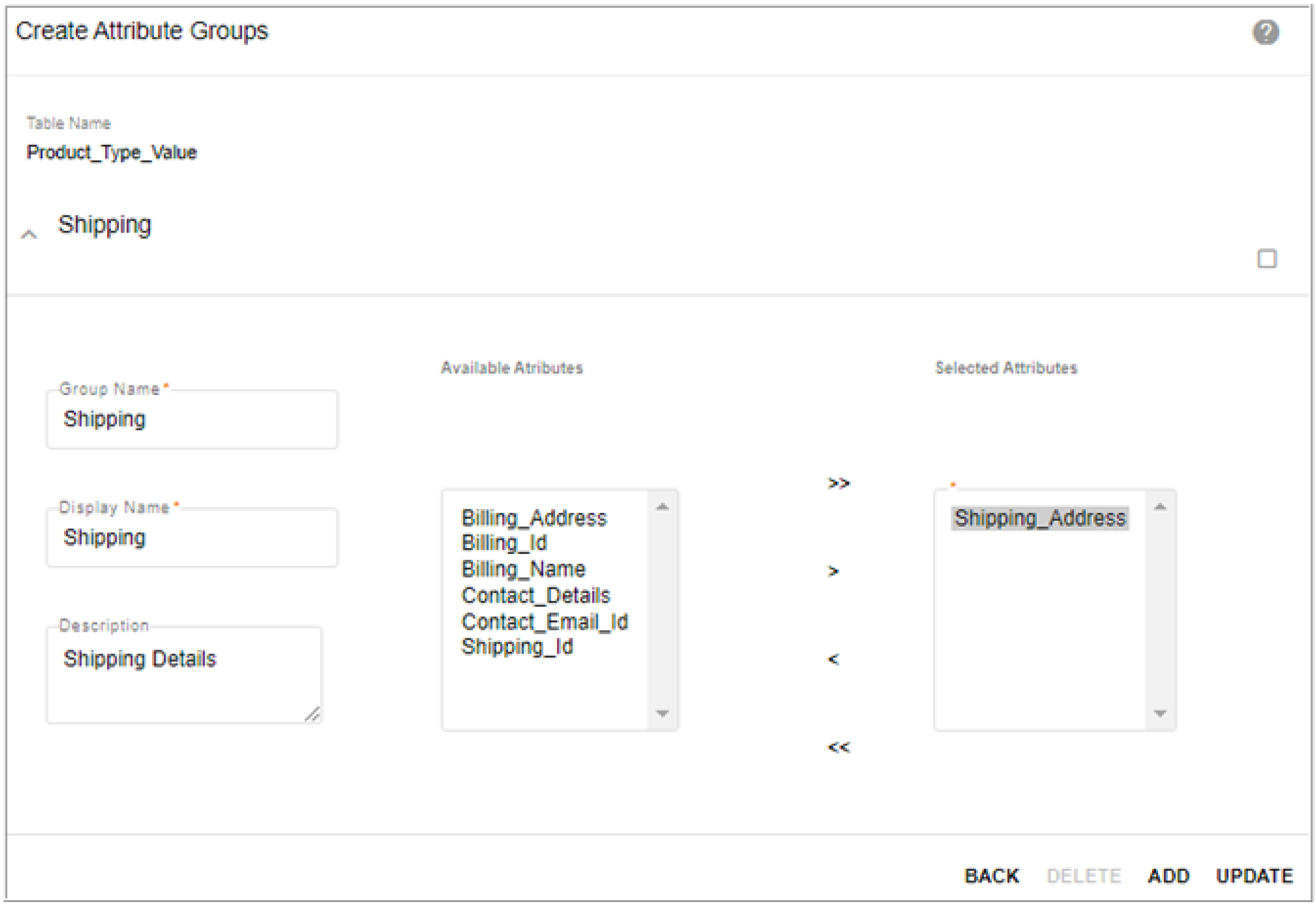
1 On the **Attribute Group Dashboard** UI (Figure 478), click on the code set or navigate to tabular view by clicking the tabular icon and on the **Manage Attribute Group** UI, click on the Menu icon ⋮ corresponding to the code set and click **Edit** as in Figure 479.

Figure 479: Manage Attribute Groups



2 On the **Create Attribute Groups** UI, modify the existing group details or add new groups and click **Update** as in Figure 480.

Figure 480: Create Attribute Groups



Message: “Groups updated successfully” is displayed.

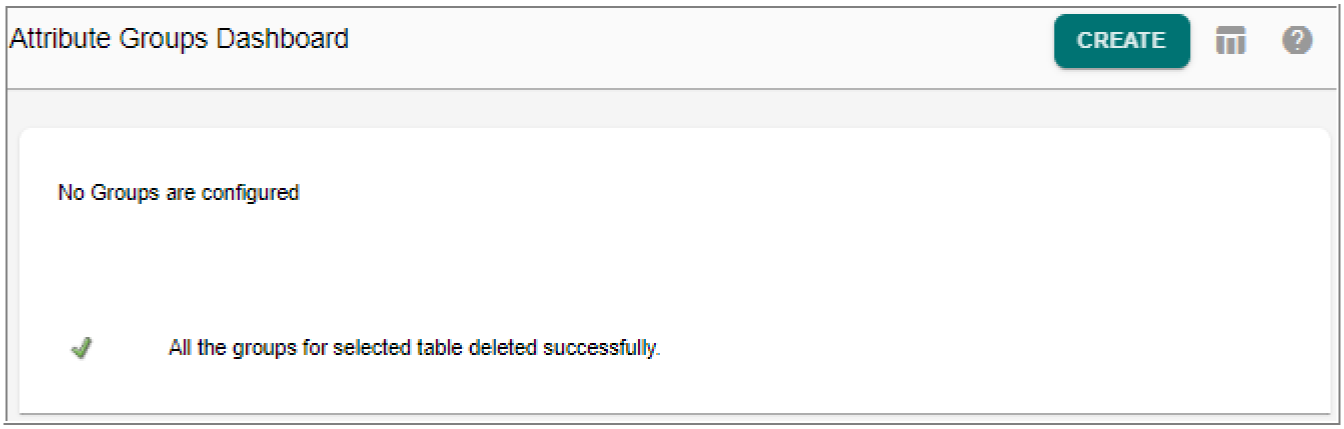
To delete group:

You can delete the groups either by using step 1 or 2.

1 On the **Attribute Group Dashboard** UI, click on the code set and on the **Manage Attributes Groups** UI select group(s) by selecting the corresponding checkbox and click **Delete.**

2 Navigate to tabular view by clicking the tabular icon and on the **Manage Attribute Group** UI, select the code set and click **Delete** to delete all the groups of the selected code set as in Figure 479.

Figure 481: Attribute Groups Dashboard



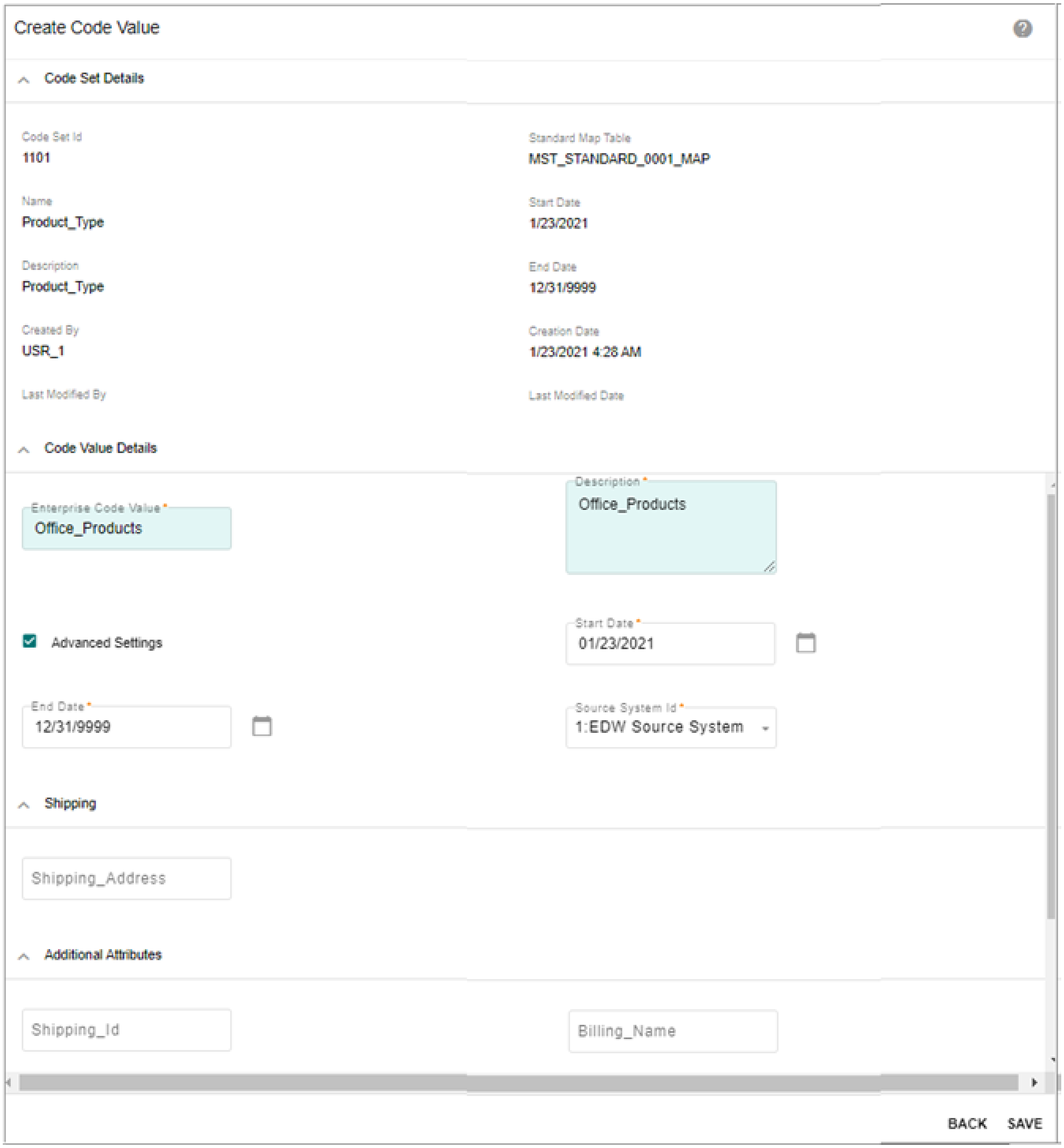
No Groups are configured

✓ All the groups for selected table deleted successfully.

Add and Edit Code Values

The Add and Edit Code Values UI displays the added additional attributes under each group in separate containers as in Figure 482 and Figure 483. The container name is the group name. You can add or edit the code values of the required columns and click save to save the values to the corresponding table.

Figure 482: Create Code Value



Create Code Value

Code Set Details

Code Set Id
1101

Standard Map Table
MST_STANDARD_0001_MAP

Name
Product_Type

Start Date
1/23/2021

Description
Product_Type

End Date
12/31/9999

Created By
USR_1

Creation Date
1/23/2021 4:28 AM

Last Modified By

Last Modified Date

Code Value Details

Enterprise Code Value *
Office_Products

Description *
Office_Products

☑ Advanced Settings

Start Date *
01/23/2021

End Date *
12/31/9999

Source System Id *
1:EDW Source System

Shipping

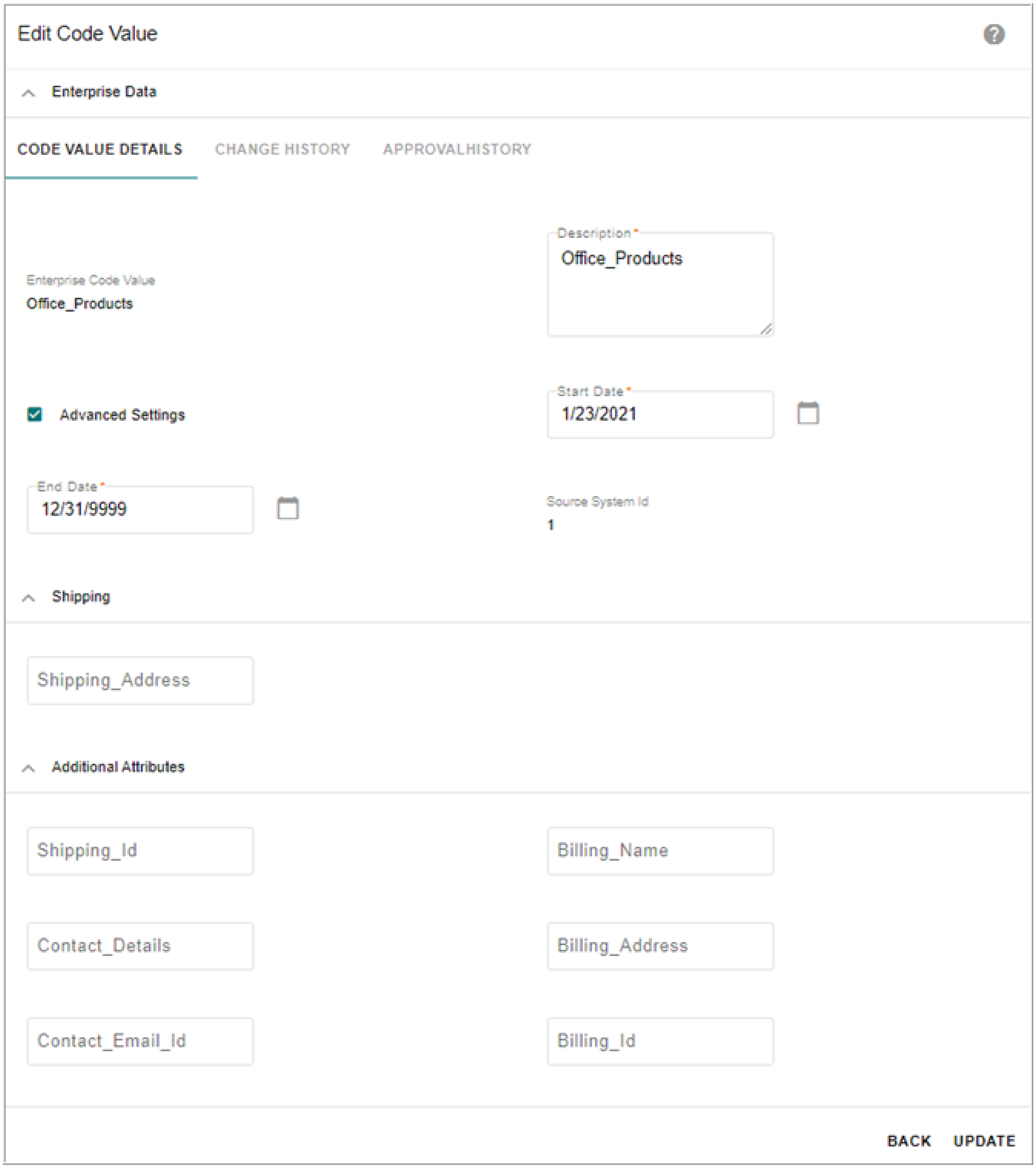
Shipping_Address

Additional Attributes

Shipping_Id

Billing_Name

Figure 483: Edit Code Value



Description*: Office_Products

Enterprise Code Value: Office_Products

☑ Advanced Settings

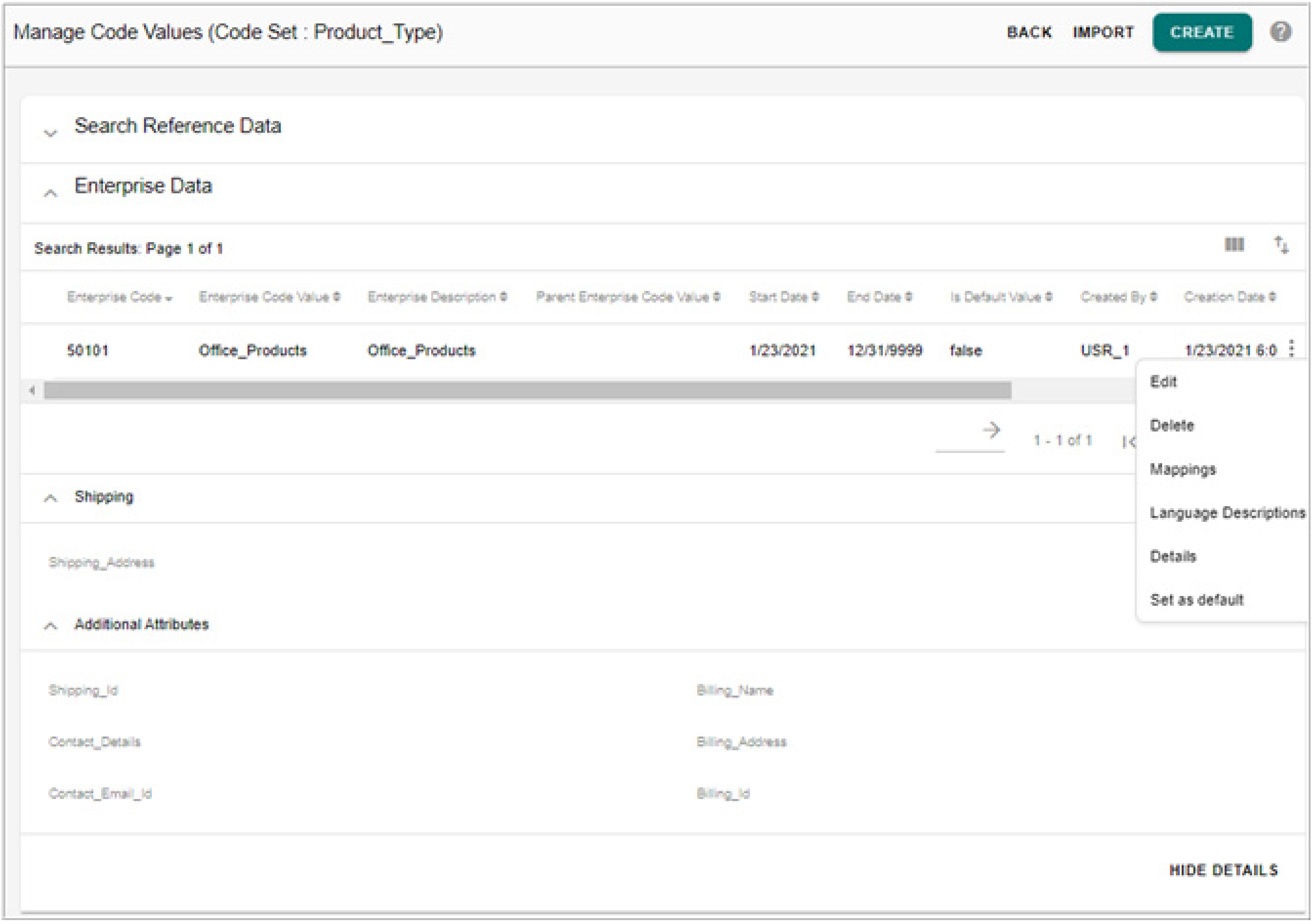
Start Date*: 1/23/2021

End Date*: 12/31/9999

Source System Id: 1

The Manage Code Value—View Details UI (Figure 484) displays all the added additional extra attribute values of the selected code value according to groups. The unassigned attributes will be available under Additional Attributes list.

Figure 484: Manage Code Values—View Details



Search Results: Page 1 of 1

Enterprise Code	Enterprise Code Value	Enterprise Description	Parent Enterprise Code Value	Start Date	End Date	Is Default Value	Created By	Creation Date
50101	Office_Products	Office_Products		1/23/2021	12/31/9999	false	USR_1	1/23/2021 6:0

Manage Authorization

The Manage Authorization option on Manage Lookup Data UI allows you to assign access to individual code set or individual group.

The Manage Authorization feature is available on the LRDM UI only for a user assigned to a role having access to manageCodeSetAuthorization activity. By default, user: Admin will have manageCodeSetAuthorization activity assigned to ADMIN role. For authorization of code sets to work as per the roles assigned, authorization has to be enabled for Code Sets. When authorization is enabled on code set, the assigned role is populated in SYS_Auth_Id of the MST code set table and the same role will be populated in all the linked tables like MST_Code Values, MST_Reference Code, MST_Stanadard Map tables and source tables etc. Any changes in the MST code set for authorization will be reflected in all the linked tables.

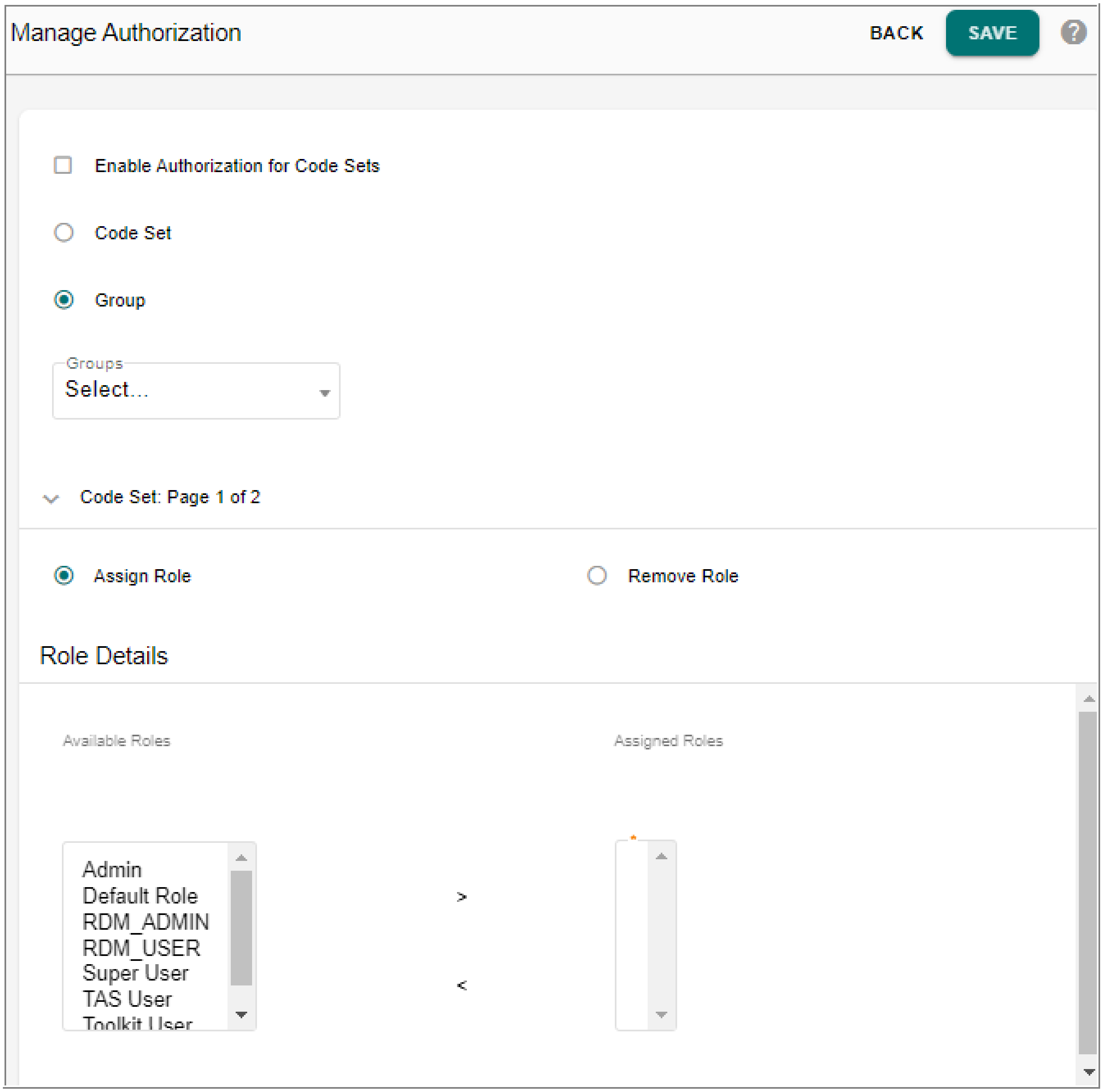
- All MDM users will have access to code sets grouped under the group “MDM Code Sets” as these code sets are used in many internal workflows of MDM. A default role is assigned to all user groups of MDM for this purpose. Once the authorization is enabled for code sets, this default role is assigned to the code sets of “MDM Code Sets” group. That is all the out of the box code sets will have default role assigned.
- Newly added non out of the box code set must be assigned to any role for RLS feature to work as expected.
- If authorization for code set is already enabled and if the user tries to add any code set, the newly added code set will not be displayed on the Manage Lookup Data UI until the newly added code set is assigned to a role on the Manage Authorization UI.

Manage Authorization UI

Navigate to **Manage Authorization** UI by selecting **Authorization** option from **Actions** dropdown on **Manage Lookup Data** UI.

The Figure 485 displays the Manage Authorization UI.

Figure 485: Manage Authorization



On the Manage Authorization UI:

- **Enable Authorization for Code Sets:** Select this checkbox to enable authorization for code set table. Once Authorization is enabled for code sets and if you disable it by deselecting the checkbox, it will remove all the authorization data of the code set table. (that is SYS_AUTH_ID for all code sets will be set to NULL).
- **Code Set:** select this option to assign or remove role for individual code set. On selection of Code Set option, all the available code sets will be displayed in the Code set pane.

- **Group**: select this option and select the group from Groups dropdown to assign or remove role for individual group. On selection of Group option, all the member of selected group will be displayed.

Manage Authorization on Individual Code Set

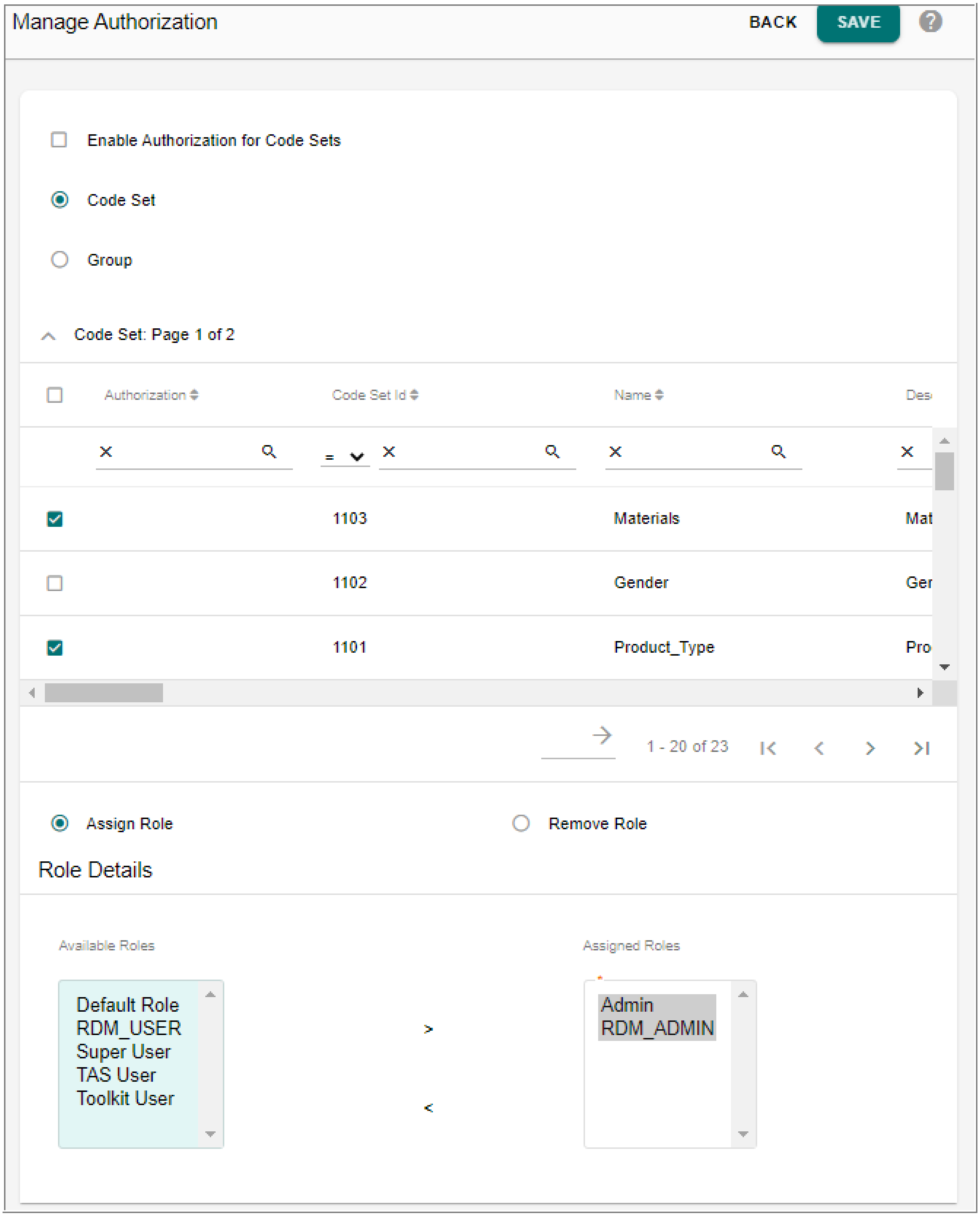
Perform the following steps to assign roles on individual code set:

1. On the **Manage Authorization** UI, select the option **Code Set.**

   All the available code sets will be displayed in the **Code Set** pane.

2. In the **Code Set** pane, select the required code sets and select the **Assign Role** option.
3. In the **Role Details** pane, select one or more role(s) from **Available Role** list and move it to **Assigned Role** list as in Figure 486.

Figure 486: Manage Authorization



☐ Enable Authorization for Code Sets

● Code Set

○ Group

Code Set: Page 1 of 2

☐	Authorization	Code Set Id	Name	Des
☑		1103	Materials	Mat
☐		1102	Gender	Ger
☑		1101	Product_Type	Pro

1 - 20 of 23

● Assign Role ○ Remove Role

Role Details

Available Roles
Default Role
RDM_USER
Super User
TAS User
Toolkit User

Assigned Roles
Admin
RDM_ADMIN

4 Click **Save.**

The selected roles will be assigned to the selected code set(s).

Perform the following steps to remove the assigned roles on individual code set:

1 On the **Manage Authorization** UI, select the option **Code Set**.

All the available code sets will be displayed in the **Code Set** pane.

2 In the **Code Set** pane, select the required code sets and select the **Remove Role** option.

3 In the **Role Details** pane, select one or more role(s) from **Assigned Role** list and move it to **Available Role** list.

4 Click **Save**.

The selected roles will be removed on the selected code set(s).

Manage Authorization on Individual Group

Perform the following steps to assign roles on individual group:

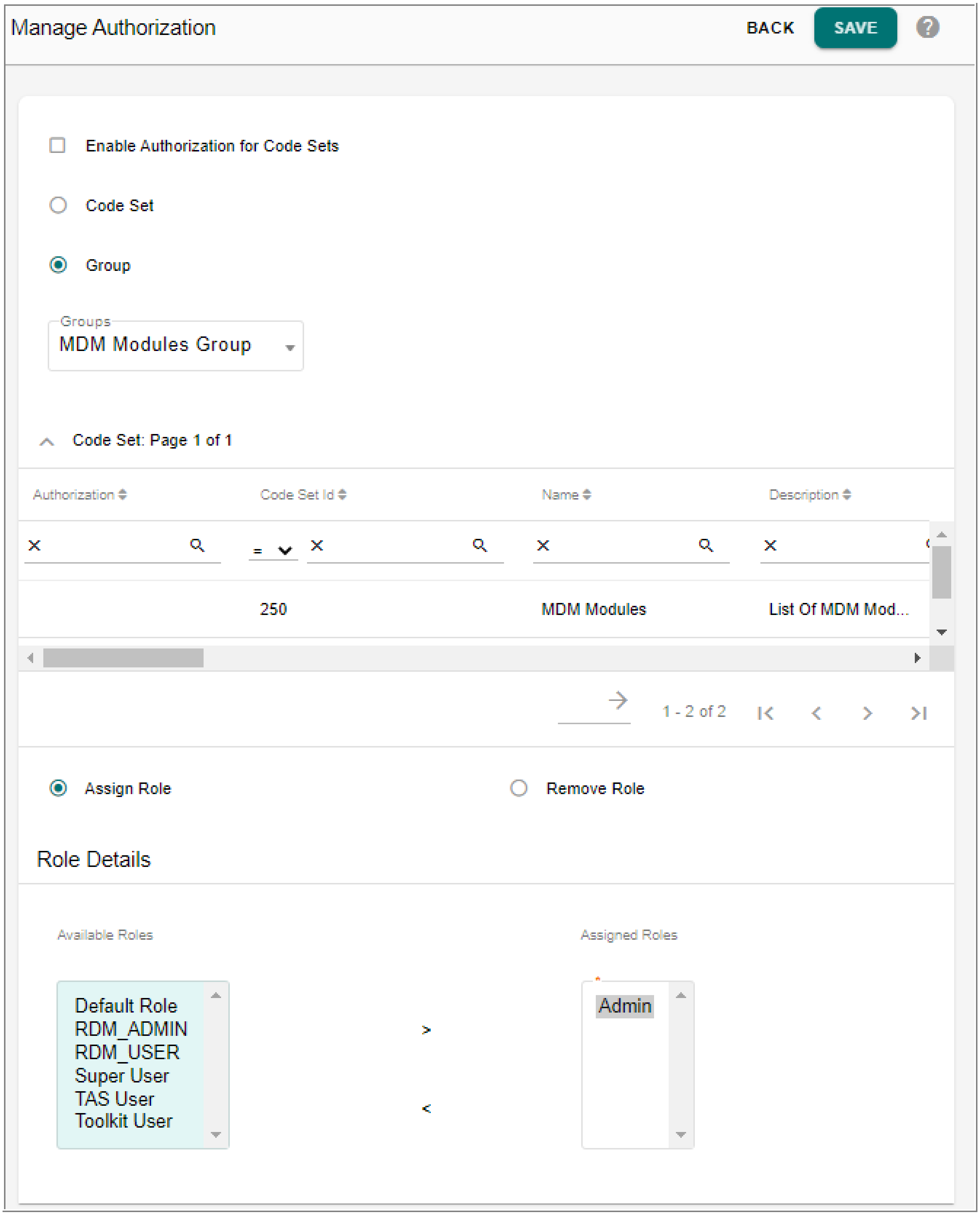
1 On the **Manage Authorization** UI, select the option **Group** and select the required group from the **Groups** dropdown.

All the available code sets of the selected group is displayed.

2 Select **Assign Role** option.

3 In the **Role Details** pane, select one or more role(s) from **Available Role** list and move it to **Assigned Role** list as in Figure 486.

Figure 487: Manage Authorization



☐ Enable Authorization for Code Sets

○ Code Set

● Group

Groups: MDM Modules Group

Code Set: Page 1 of 1

Authorization	Code Set Id	Name	Description
	250	MDM Modules	List Of MDM Mod...

1 - 2 of 2

● Assign Role ○ Remove Role

Role Details

Available Roles:
- Default Role
- RDM_ADMIN
- RDM_USER
- Super User
- TAS User
- Toolkit User

Assigned Roles:
- Admin

4 Click **Save.**

The selected roles will be assigned to all the code set(s) of the group.

Perform the following steps to remove the assigned roles on individual group:

1 On the **Manage Authorization** UI, select the option **Group** and select the required group from the **Groups** dropdown.

All the available code sets of the selected group is displayed.

2 Select **Remove Role** option.

3 In the **Role Details** pane, select one or more role(s) from **Assigned Role** list and move it to **Available Role** list.

4 Click **Save**.

The selected roles will be removed on all the code set(s) of the group.

Manage Code Values

On the **Manage Code Values** page, you can add the code values for each of the code set defined, that is, map source system values to the unified values.

To add code values for the code sets created with custom code values tables, click on the hyperlinks in the **Enterprise Records** column on the Manage Lookup Data UI or click on **Manage Code Values**. It will navigate to configurable UI of the particular code set from where you can create and manage code values.

Adding Code Value

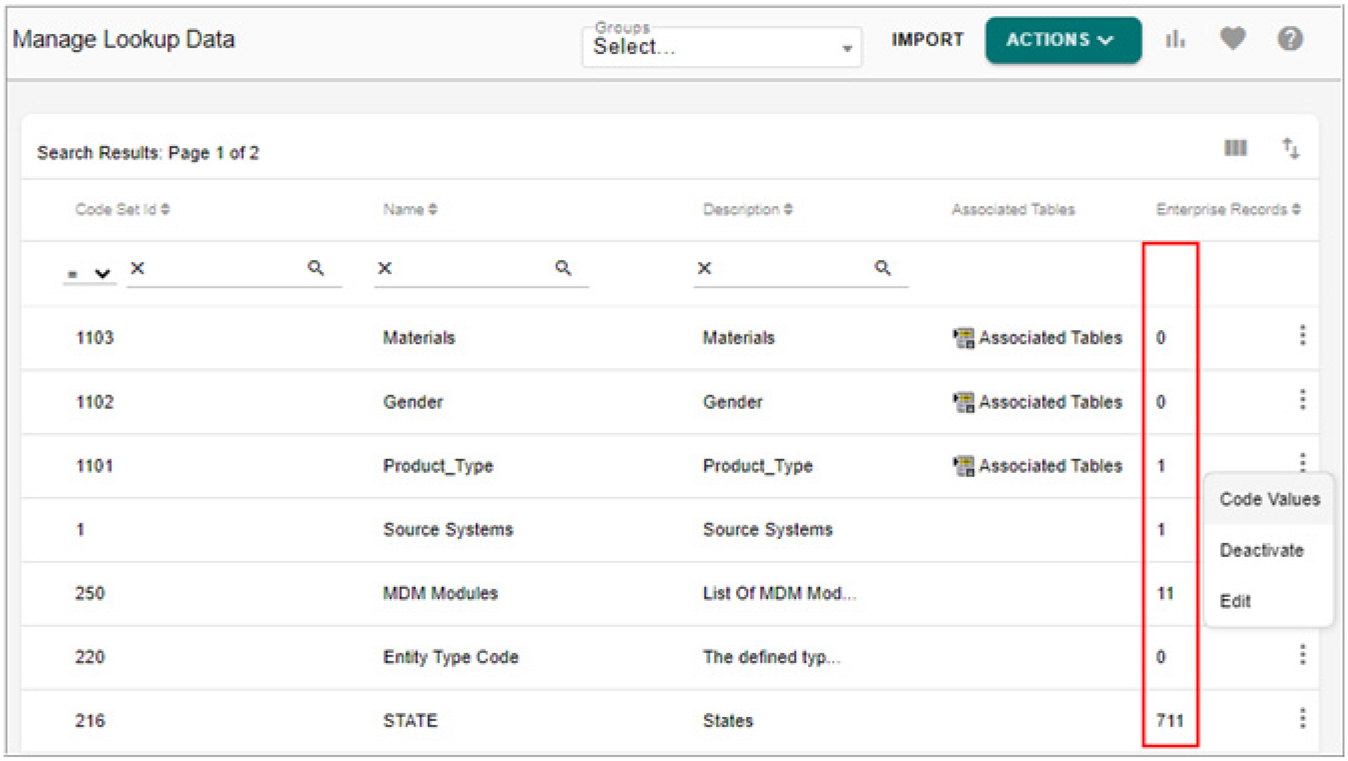
The add code value functionality creates new source code values as well as new enterprise records.

To add code value:

1 Navigate to **Manage Lookup Data** UI from left navigation pane **Reference data** -> **Manage reference data.**

2 On the **Manage Lookup Data** page, click on the Menu icon ⋮ corresponding to the required code set and click **Code Values** or in the **Enterprise Records** column, click on the record number hyperlink of the corresponding code set as in Figure 488.

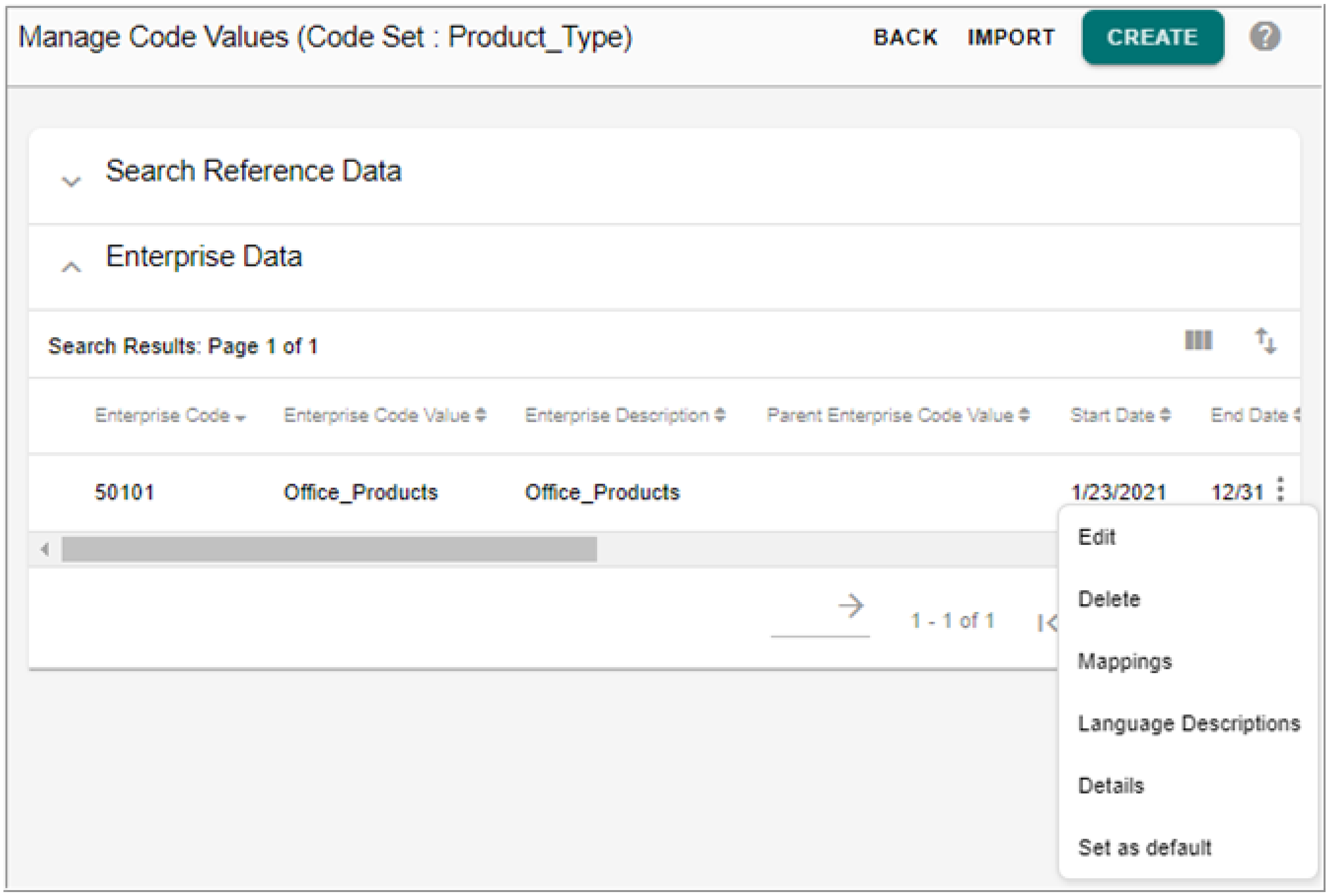
Figure 488: Manage Lookup Data—Enterprise Records Hyper-link



Search Results: Page 1 of 2

Code Set Id	Name	Description	Associated Tables	Enterprise Records
1103	Materials	Materials	Associated Tables	0
1102	Gender	Gender	Associated Tables	0
1101	Product_Type	Product_Type	Associated Tables	1
1	Source Systems	Source Systems		1
250	MDM Modules	List Of MDM Mod...		11
220	Entity Type Code	The defined typ...		0
216	STATE	States		711

Figure 489: Manage Code Values

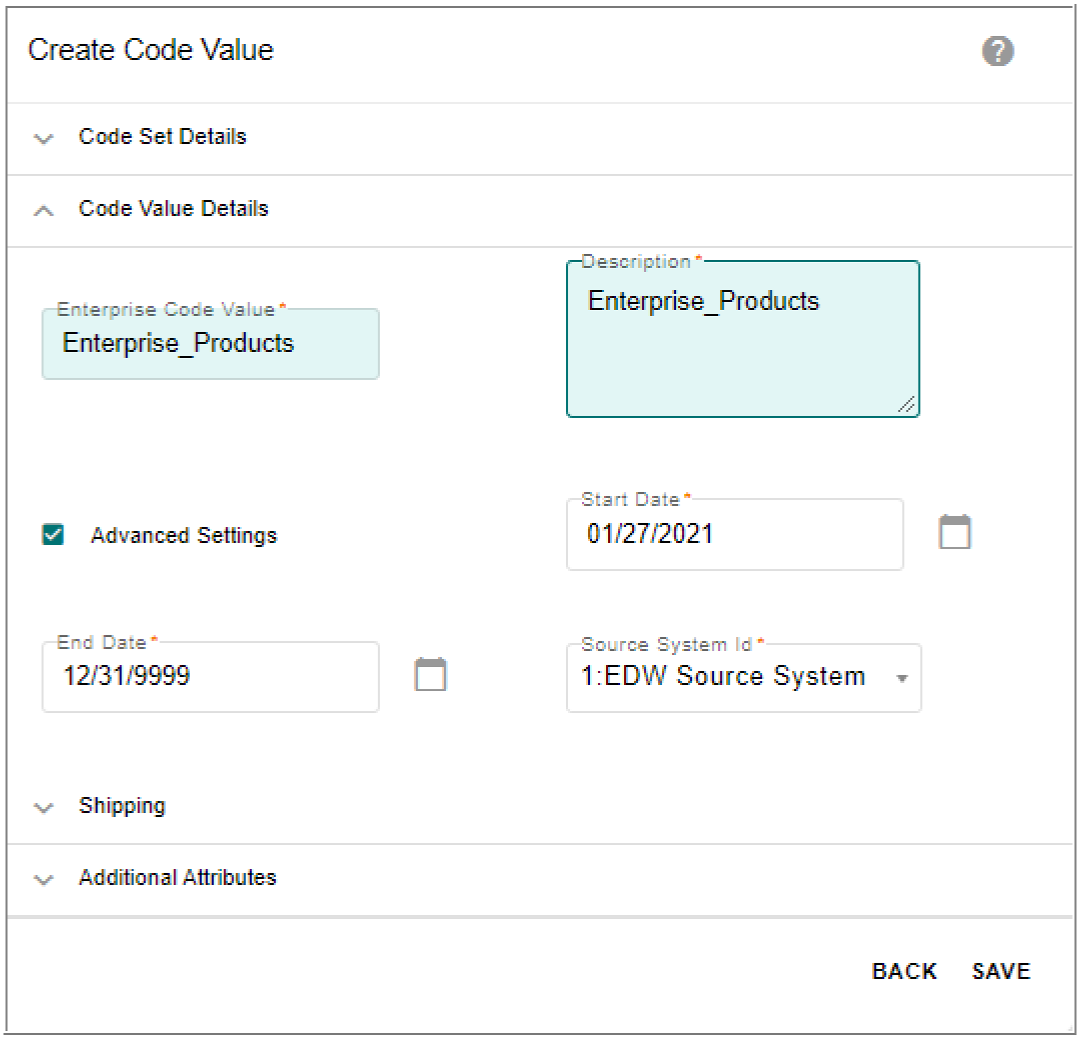


Enterprise Code	Enterprise Code Value	Enterprise Description	Parent Enterprise Code Value	Start Date	End Date
50101	Office_Products	Office_Products		1/23/2021	12/31

3 On the **Manage Code Values** page (Figure 489), click **Create**.

The **Create Code Value** page (Figure 490) is displayed.

Figure 490: Create Code Value



Create Code Value

Enterprise Code Value*: Enterprise_Products

Description*: Enterprise_Products

☑ Advanced Settings

Start Date*: 01/27/2021

End Date*: 12/31/9999

Source System Id*: 1:EDW Source System

4 On the **Create Code Value** page, in the **Code Value Details** pane (Figure 490), perform the following:

- enter the enterprise code value in the **Enterprise Code Value** field.
- enter description of the enterprise code value in the **Description** field.
- click **Advanced Settings** and populate the below fields:
- select start and end date for the code value entered.
- select the source system Id from **Source System Id** field.

  By default, the source system Id is set to 1.
- select the parent enterprise code value from the **Parent Value ID** dropdown.

5 Click **Save**.

Message: “Code Value added successfully” is displayed on the **Manage Code Values** page.

Note:

- In case if code value is being created on a multitable code set, Code Value will be stored in the corresponding multitable version of MST_REFERENCE_CODE table (that is, MST_REFERENCE_00xx_CODE).
- If you create code value with same value Id and different Parent Enterprise Code, then any lookup column for the corresponding code set will display only one value Id.
- A code set can have multiple values with same value Id and different parent codes.

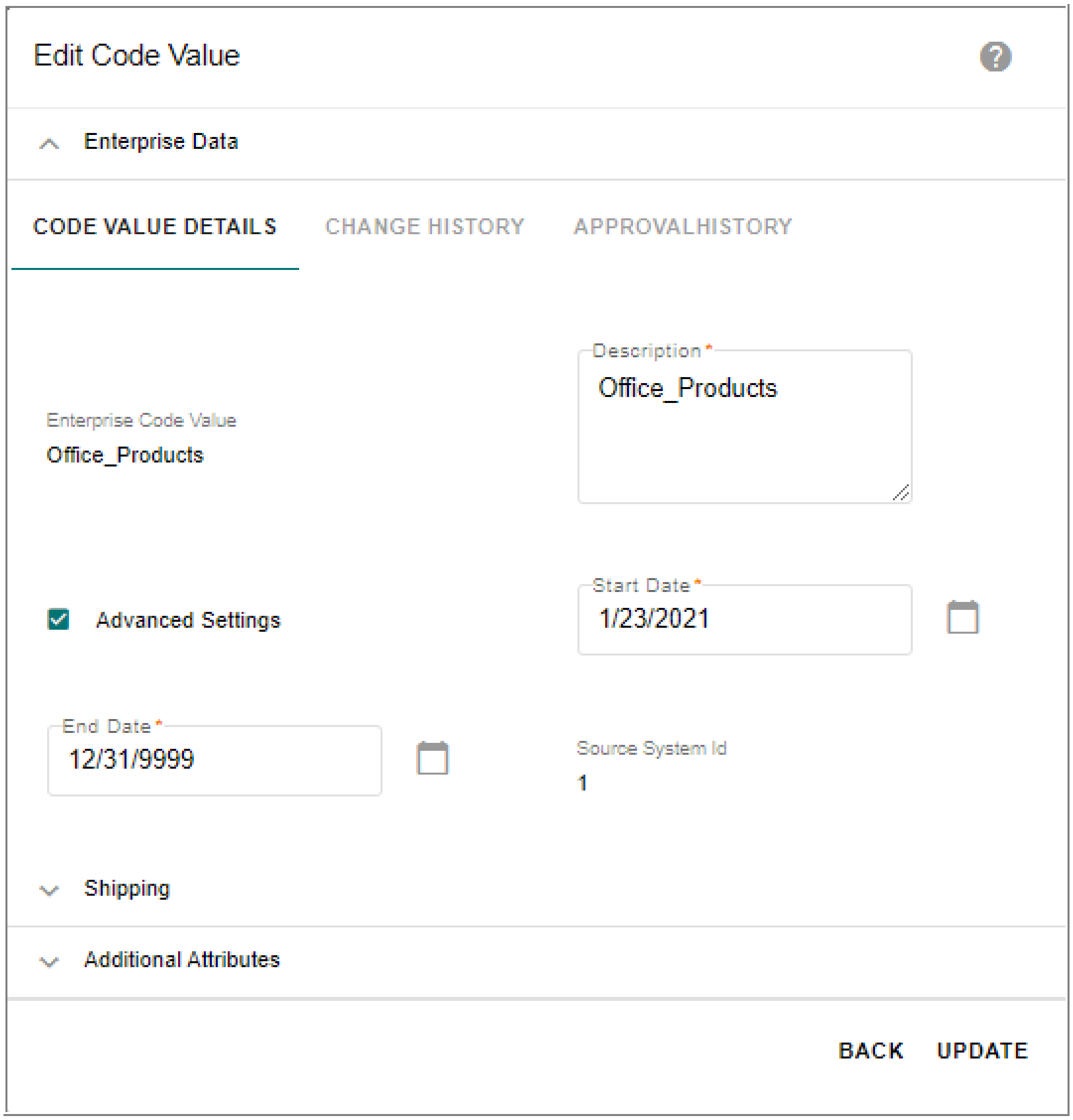
Editing Code Value

To edit code value:

1. On the **Manage Code Values** page, click on the Menu icon ⋮ corresponding to the required code value and click **Edit**.

   The **Edit Code Value** page (Figure 491) is displayed.

Figure 491: Edit Code Value


Edit Code Value

Enterprise Data

CODE VALUE DETAILS | CHANGE HISTORY | APPROVALHISTORY

Enterprise Code Value
Office_Products

Description*
Office_Products

☑ Advanced Settings

Start Date*
1/23/2021

End Date*
12/31/9999

Source System Id
1

2 On the **Edit Code Value** page (Figure 491), modify the required values and click **Update**.

You can modify the description, start and end date.

The Confirmation to update Language Description popup is displayed.

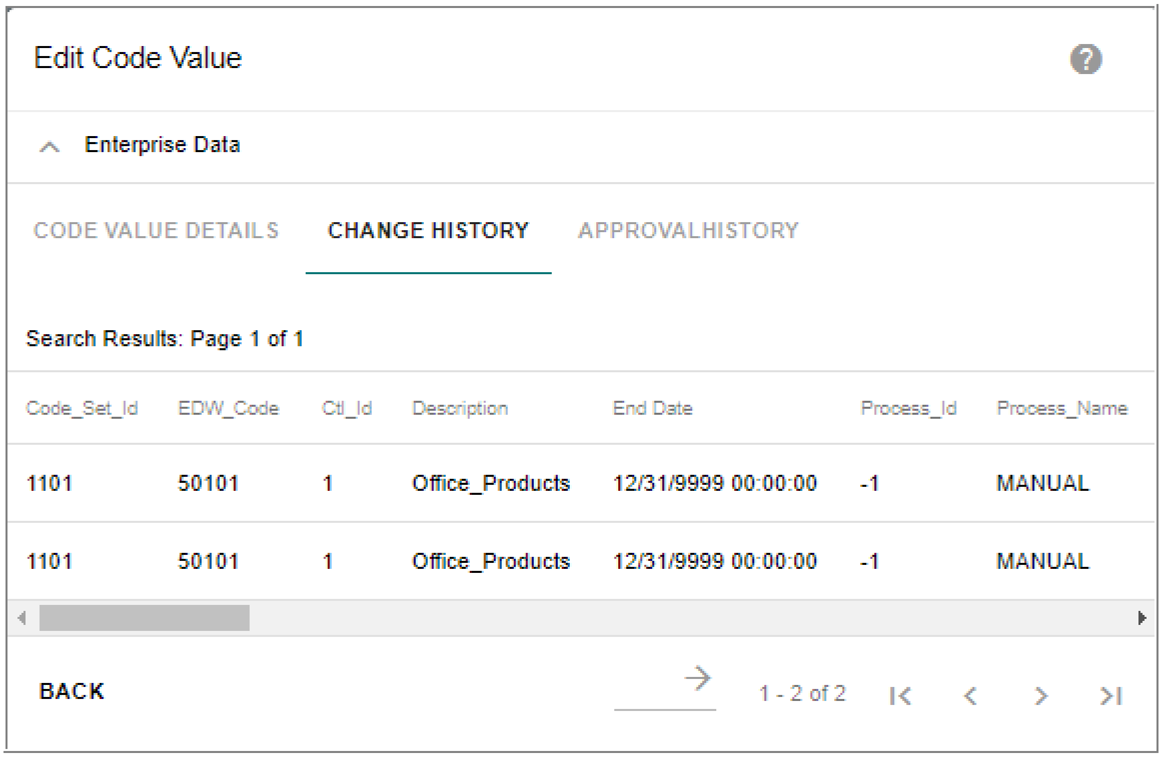
3 On the Confirmation popup, click **Yes** to update Language Description or click **No** to save the code value updates.

For details on edit language description, see Section : “Edit Language Description.”:

Message: Code Value saved successfully is displayed on the Edit Code Value page.

4 Click on the **Change History** tab to view the history of changes done on the selected code value and click **Approval History** to view the approval history details.

Figure 492: Edit Code Value—Change History

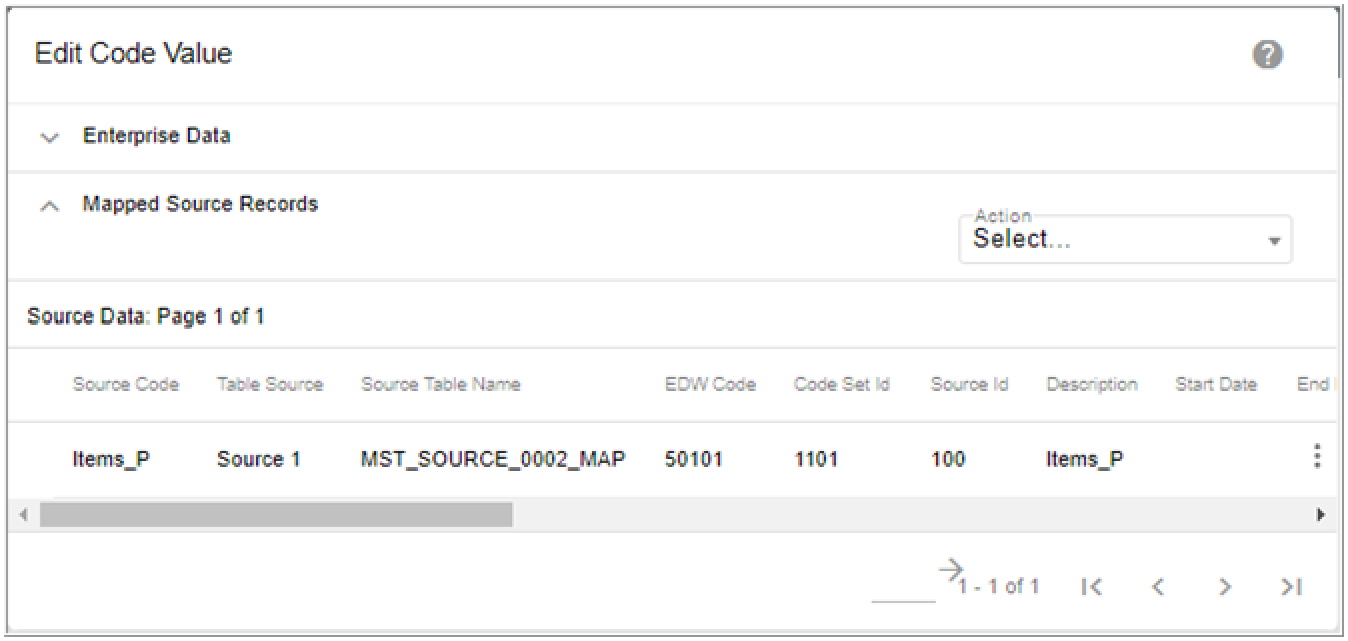


Search Results: Page 1 of 1

Code_Set_Id	EDW_Code	Ctl_Id	Description	End Date	Process_Id	Process_Name
1101	50101	1	Office_Products	12/31/9999 00:00:00	-1	MANUAL
1101	50101	1	Office_Products	12/31/9999 00:00:00	-1	MANUAL

If an association is added to a code set, the Edit Code Value UI displays the Mapped Source Records as in Figure 493.

Figure 493: Edit Code Value



Source Data: Page 1 of 1

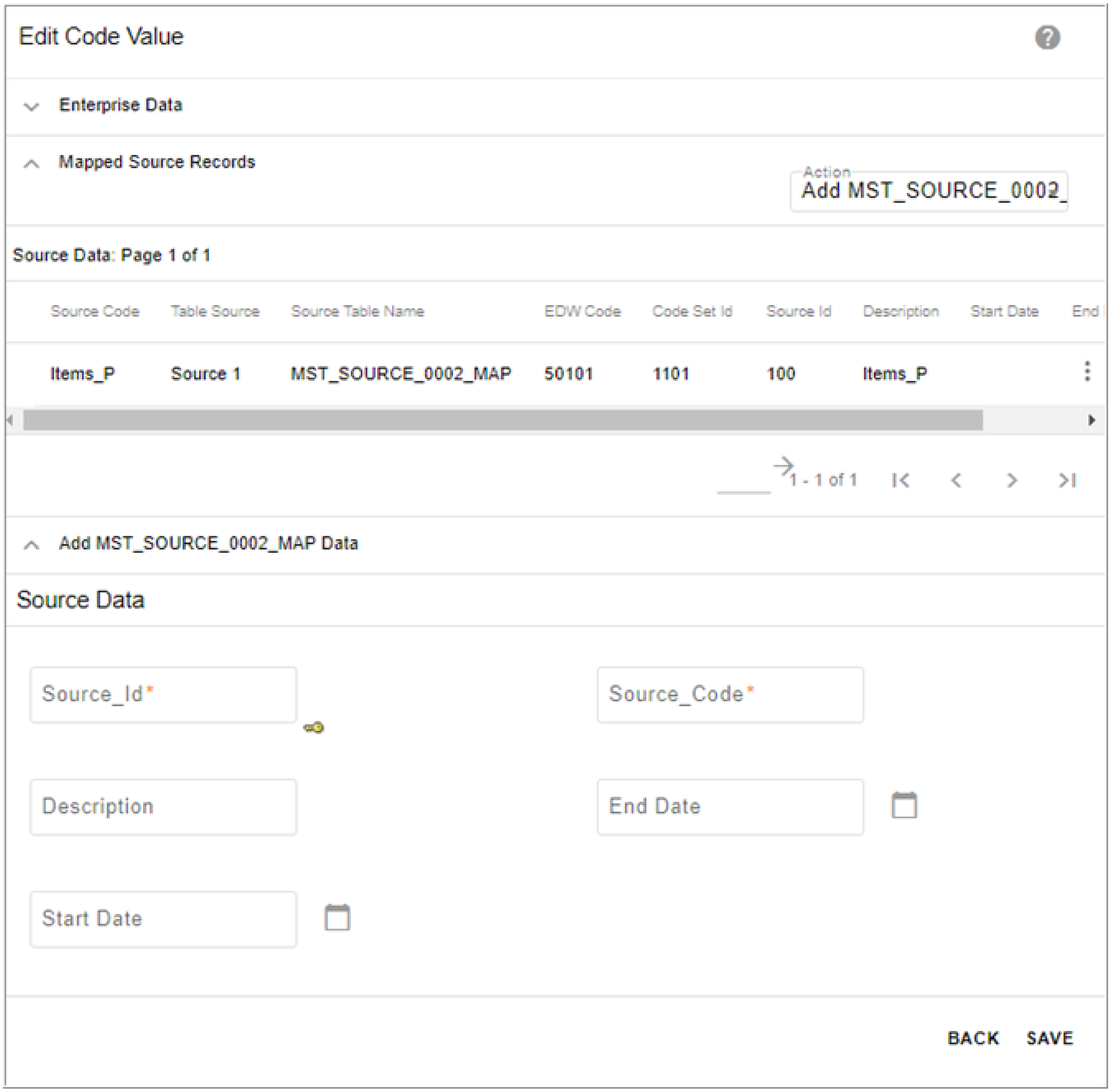
Source Code	Table Source	Source Table Name	EDW Code	Code Set Id	Source Id	Description	Start Date	End
Items_P	Source 1	MST_SOURCE_0002_MAP	50101	1101	100	Items_P		

To add source data:

1 In the **Mapped Source Records** pane, select Add_Source_<source number>_Map Value option from **Action** Dropdown.

The **Edit Code Value** page refreshes to display the **Add Source Data** pane as in Figure 494

Figure 494: Edit Code Value—Add Source Data



Source Code	Table Source	Source Table Name	EDW Code	Code Set Id	Source Id	Description	Start Date	End
Items_P	Source 1	MST_SOURCE_0002_MAP	50101	1101	100	Items_P		

2 In the **Source Data** pane, enter the source_Id, source_code, description, start and end date and click Save.

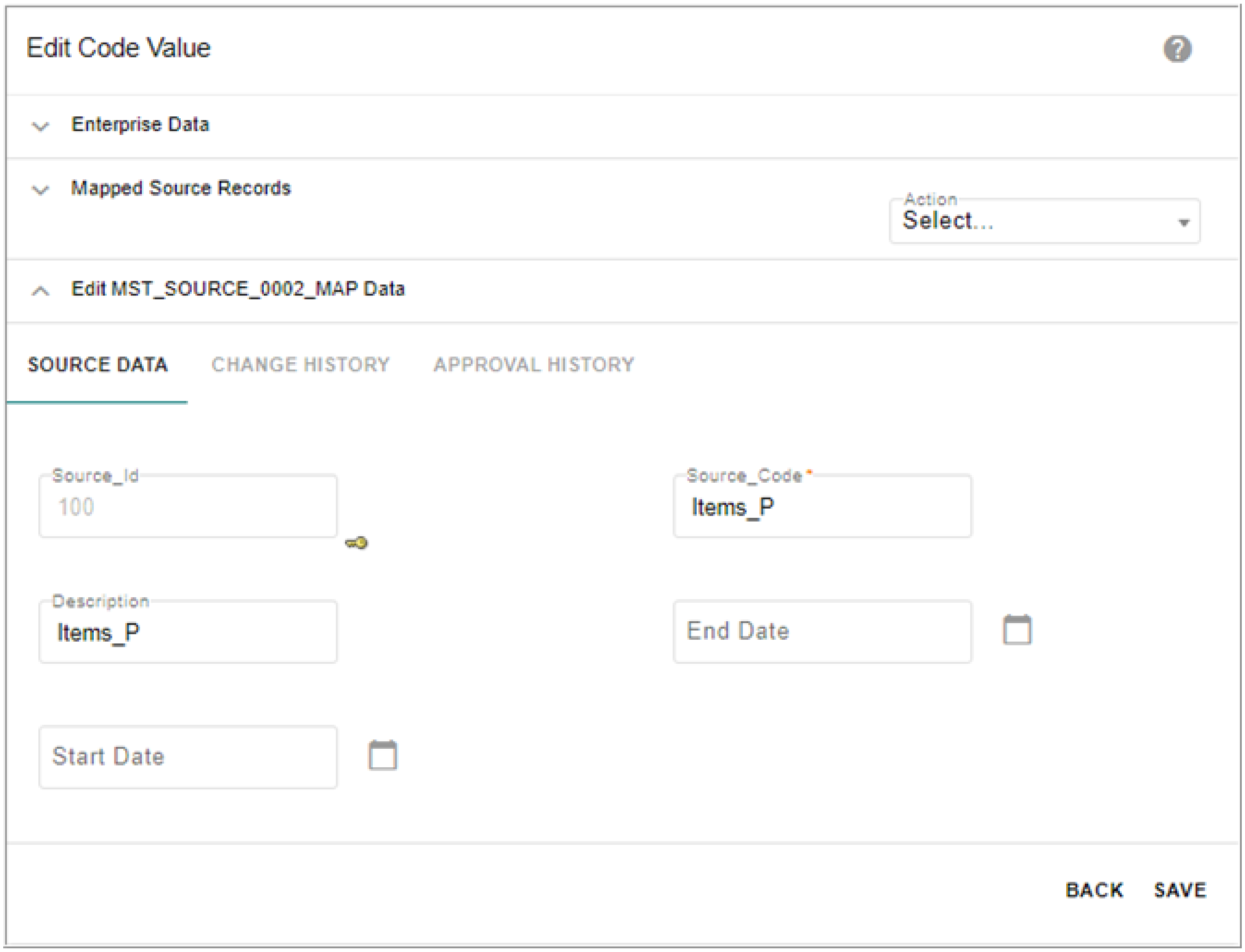
Message: “Source value added successfully” is displayed.

To edit source data:

1 In the **Mapped Source Records** pane, click on the Menu icon ⋮ corresponding to the required source data and click **Edit Source Data**.

The **Edit Code Value** page refreshes to display the **Edit Source Data** pane as in Figure 495

Figure 495: Edit Code Value—Edit Source Data



Edit Code Value

Enterprise Data

Mapped Source Records

Action: Select...

Edit MST_SOURCE_0002_MAP Data

SOURCE DATA | CHANGE HISTORY | APPROVAL HISTORY

Source_Id: 100

Source_Code*: Items_P

Description: Items_P

End Date

Start Date

BACK SAVE

2 In the **Edit Source Data** pane, modify the required details and click **Change History** tab to view the history of changes and click **Approval History** to view the approval history and click Save.

Message: “Source value edited successfully” is displayed.

Manage Sequence

On the Manage Code Values UI, by default, the code values are sorted and displayed in the alphabetical order. Using the Manage Sequence option, you can reorder the sequence of code values display. The sequence defined for code values will be displayed in the same order in all dropdowns where the code set is used.

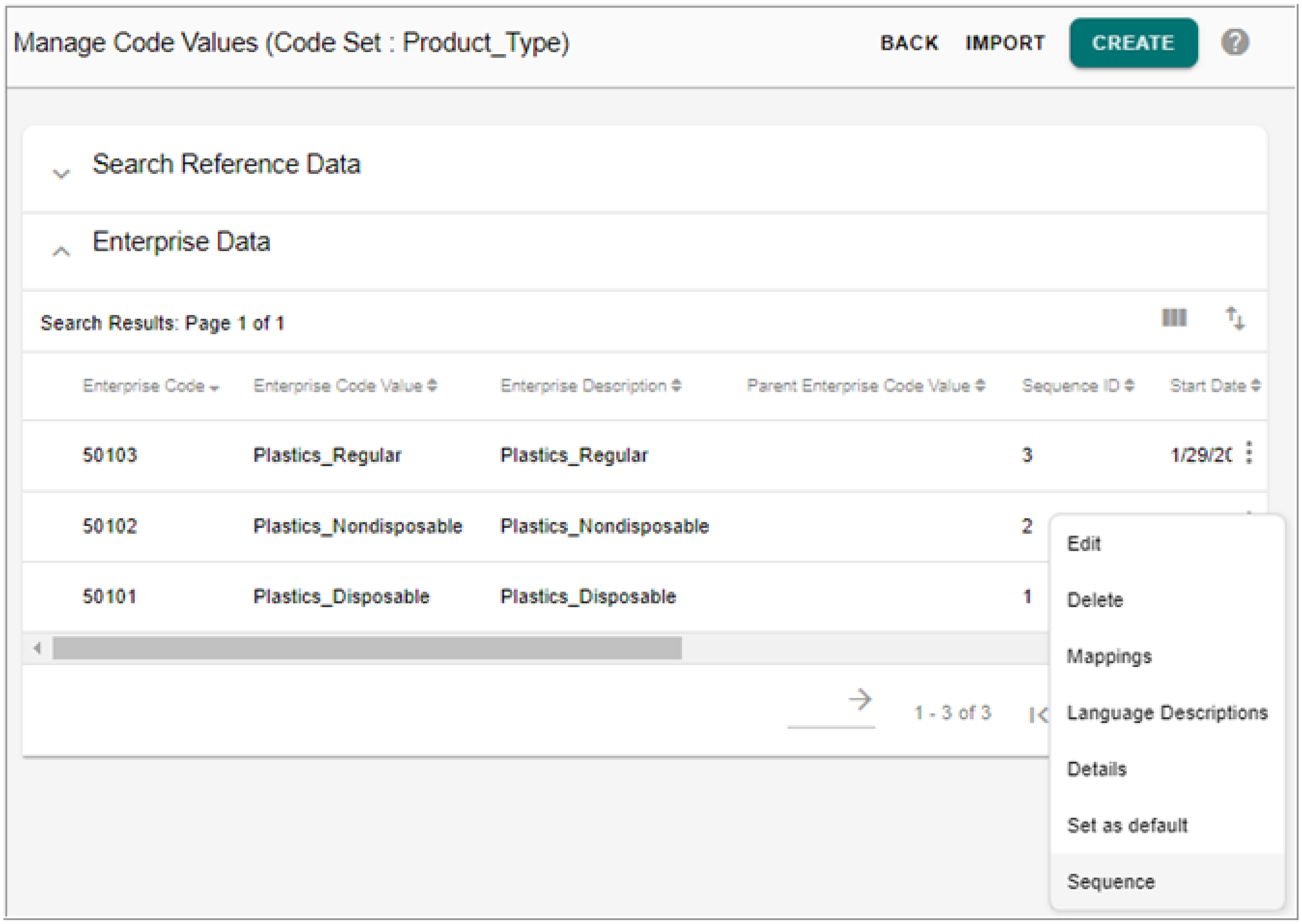
The sequence of code values can be overridden by enabling the Override Code Value Sequence checkbox on the Manage Code Set UI. After overriding the sequence, if any new code value is added, it will take the last sequence order.

Note: The Manage Sequence option is displayed on the Manage Code Values UI only if the Override Code Value Sequence is enabled during the creation of underlying code set.

To reorder the code value, perform the following steps:

1 On the **Manage Code Values** page (Figure 496), click on the Menu icon ⋮ corresponding to the required code value and click **Sequence**.

Figure 496: Manage Code Values

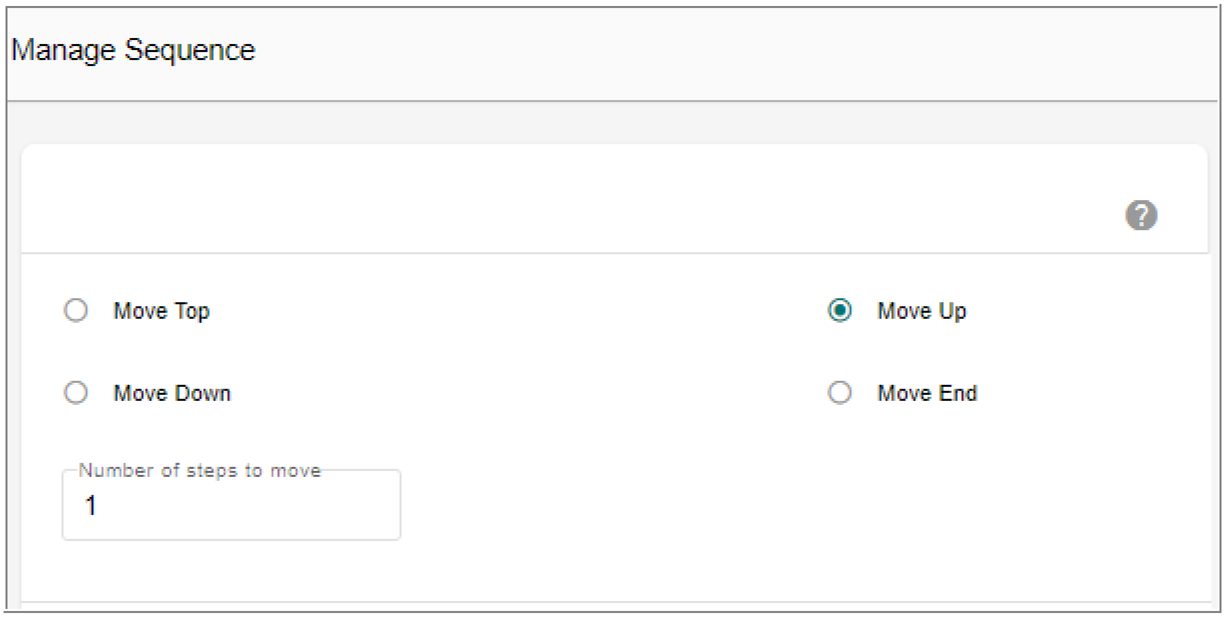


Search Results: Page 1 of 1

Enterprise Code	Enterprise Code Value	Enterprise Description	Parent Enterprise Code Value	Sequence ID	Start Date
50103	Plastics_Regular	Plastics_Regular		3	1/29/2
50102	Plastics_Nondisposable	Plastics_Nondisposable		2	
50101	Plastics_Disposable	Plastics_Disposable		1	

The **Manage Sequence** pop-up (Figure 497) is displayed.

Figure 497: Manage Sequence


Manage Sequence

○ Move Top

● Move Up

○ Move Down

○ Move End

Number of steps to move: 1

On the **Manage Sequence** pop-up (Figure 497), you can perform the following functions:

- **Move Up**: if the Move Up option is selected, the Number of Steps to Move text box is displayed. Enter the number of rows you want to move up and click Apply.
- **Move Down**: if the Move Down option is selected, the Number of Steps to Move text box is displayed. Enter the number of rows you want to move down and click Apply.
- **Move Top**: select this option to move the selected column to the top most row.
- **Move End**: select this option to move the selected column to the last bottom row.

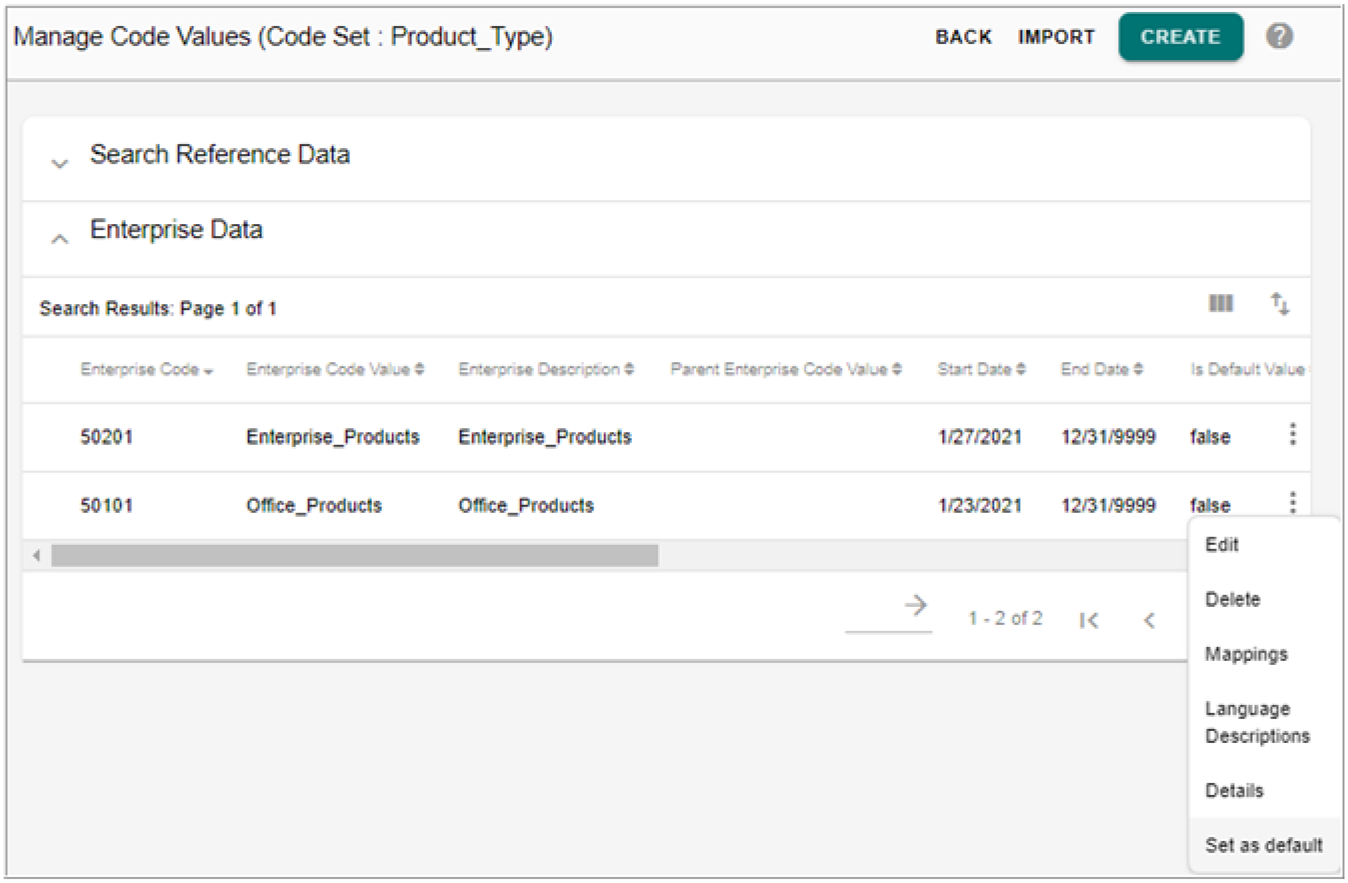
Set As Default

A code value of a code set can be set as default value. The default value of a code set will by default be selected in create/edit UIs wherever it is referred. Only one code value per code set can be set as default value.

To set code value as default value:

1 On the **Manage Code Values** page (Figure 498), click on the Menu icon ⋮ corresponding to the code value and click **Set as Default**.

Figure 498: Manage Code Values—Import



Enterprise Code	Enterprise Code Value	Enterprise Description	Parent Enterprise Code Value	Start Date	End Date	Is Default Value
50201	Enterprise_Products	Enterprise_Products		1/27/2021	12/31/9999	false
50101	Office_Products	Office_Products		1/23/2021	12/31/9999	false

Message: “Selected code value is set as default value” is displayed and the Is Default Value column is set to True.

The selected code value would be displayed by default in the drop-own in the corresponding Create or Edit configurable UIs.

Importing Code Values

The Import button on Manage Code Values page allows you to import code values using Excel or XML file and there by avoids manual entry of code values for bulk records. You may keep the Enterprise code field blank for Reference code value import, and MDM upload process will generate a unique Enterprise code for underlying records in the Excel file.

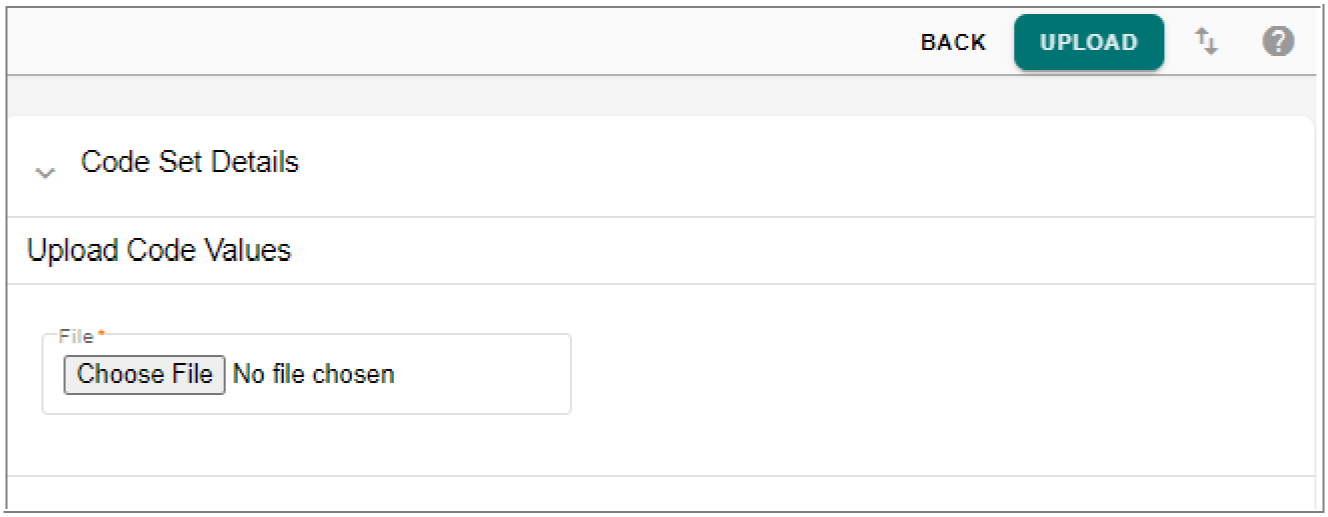
Note: While importing code values of a code set for which override code value checkbox is enabled, the sequence ID for code values must be unique and in order.

To import code values:

1 On the **Manage Code Values** page (Figure 498), click **Import**.

The **Upload Code Values** page (Figure 499) is displayed.

Figure 499: Import Code Values



2 On the **Upload Code Values** page (Figure 499), click **Choose File** to select the required excel file and click **Upload**.

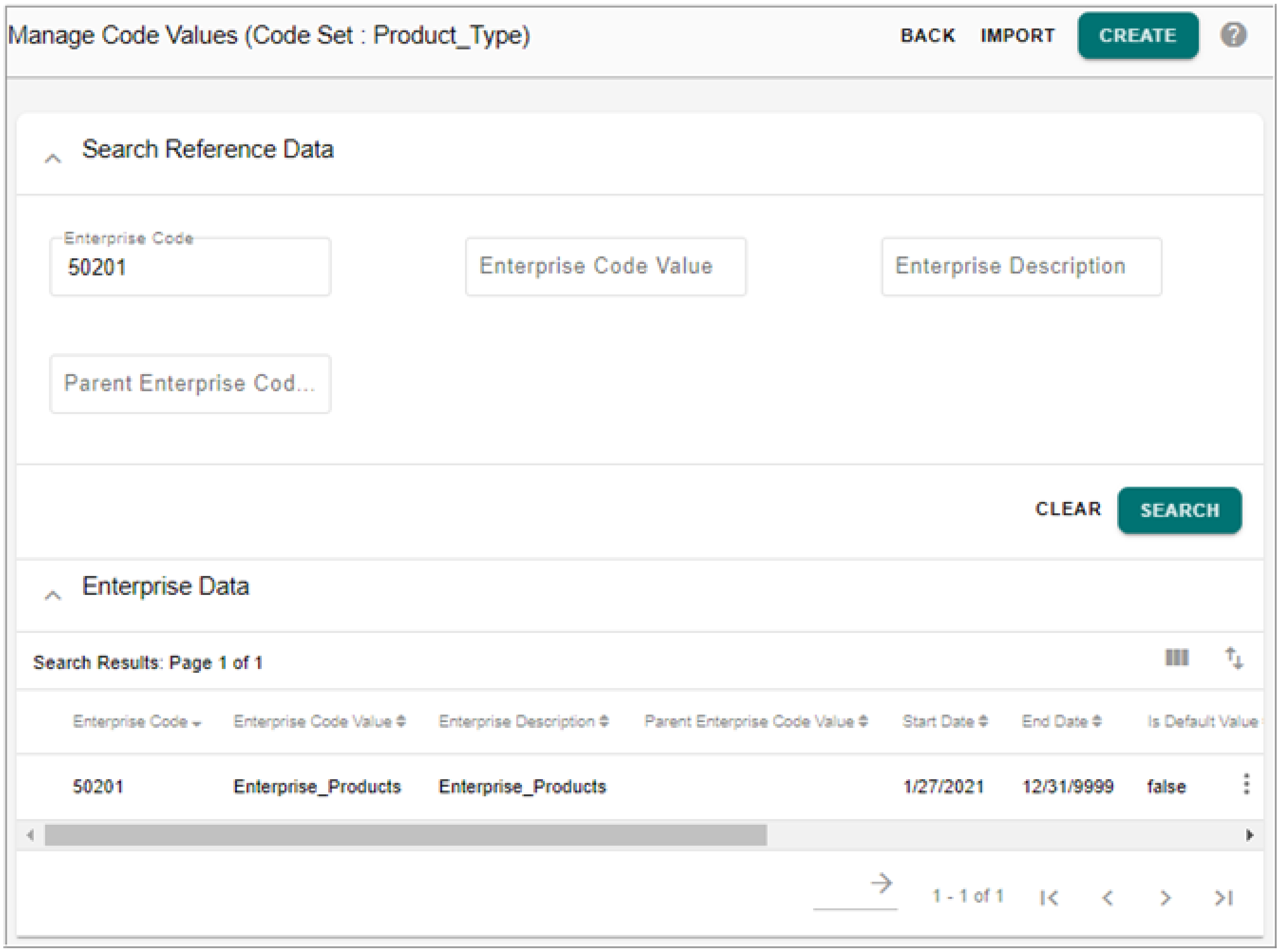
The **View Reports** page is displayed. For more details on the View Report page and error details, see Chapter 11: “Upload Documents”.

Searching Code Value

To search code value:

1 On the **Manage Code Values** page (Figure 500), enter the search parameters (Enterprise Code, Enterprise Code Value, Enterprise Description and Parent Enterprise Code Value) and click **search**.

Figure 500: Manage Code Values



Enterprise Code: 50201

Search Results: Page 1 of 1

Enterprise Code	Enterprise Code Value	Enterprise Description	Parent Enterprise Code Value	Start Date	End Date	Is Default Value
50201	Enterprise_Products	Enterprise_Products		1/27/2021	12/31/9999	false

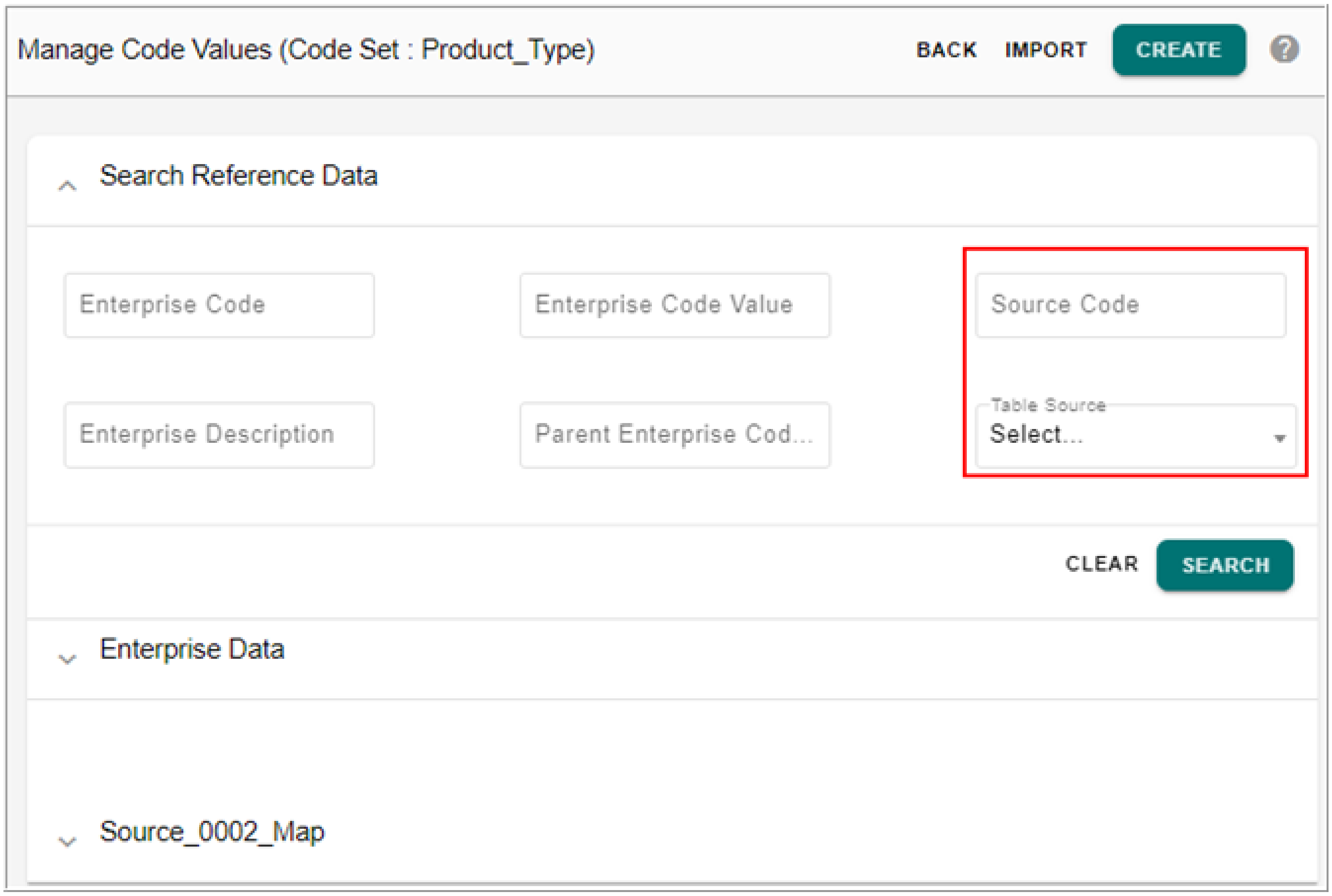
The **Search Results** pane displays the results.

Search Code Value Based on Source Value

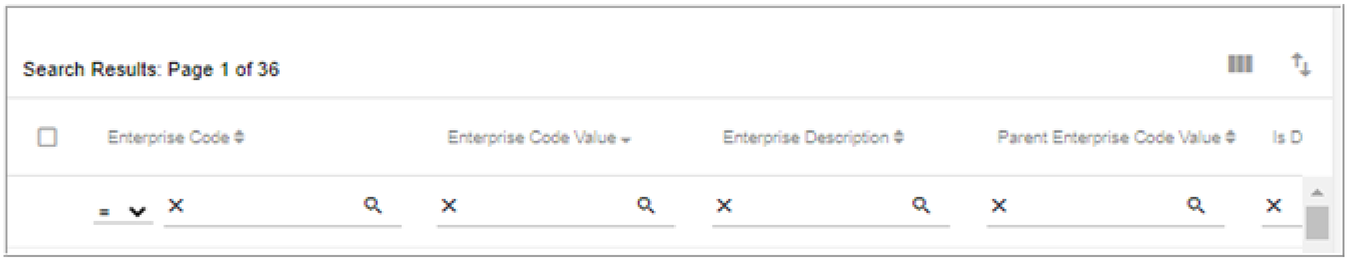
When a association is added to a code set, the search code value functionality is enhanced to search code value based on source code and table source along with other existing search parameters.

The search results display the enterprise code values and the corresponding mapped source records as in Figure 501.

Figure 501: Search—Manage Code Values



Note: For out of the box code sets, the search parameters are displayed as below.

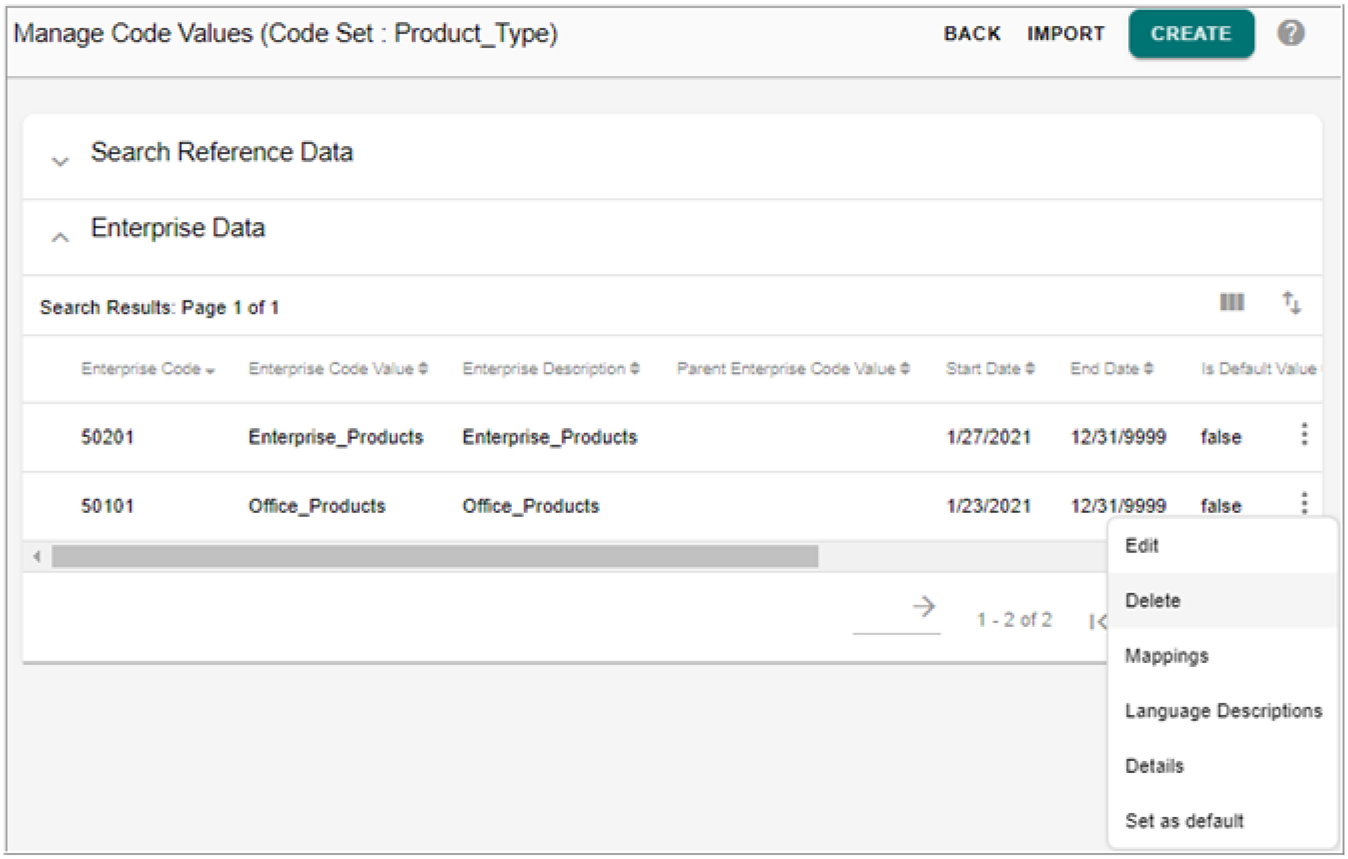

Search Results: Page 1 of 36

Deleting Code Value

To delete code value:

1 On the **Manage Code Values** page (Figure 502), click on the Menu icon ⋮ corresponding to the required code value and click **Delete**.

Figure 502: Manage Code Values



Enterprise Code	Enterprise Code Value	Enterprise Description	Parent Enterprise Code Value	Start Date	End Date	Is Default Value
50201	Enterprise_Products	Enterprise_Products		1/27/2021	12/31/9999	false
50101	Office_Products	Office_Products		1/23/2021	12/31/9999	false

The **Confirmation** popup is displayed.

2 On the **Confirmation** popup, click **Yes**.

Message: “Code Value deleted successfully” is displayed on the Manage Code Values page.

LRDM cascade delete can be configured from System Properties UI.

Navigate to System Properties UI (**Administration**->**System Property**), select CasCadeDeleteEnabledForLRDM property, click **Edit.**

By default, CasCadeDeleteEnabledForLRDM is set to true and deleting the code value will also delete the existing language descriptions and mappings.

If the CasCadeDeleteEnabledForLRDM is set to false, code value cannot be deleted if mapping or language description exists.

The error message "Cannot delete. Valid Code Values and/or Mappings exist" is displayed on Manage lookup UI.

View Details

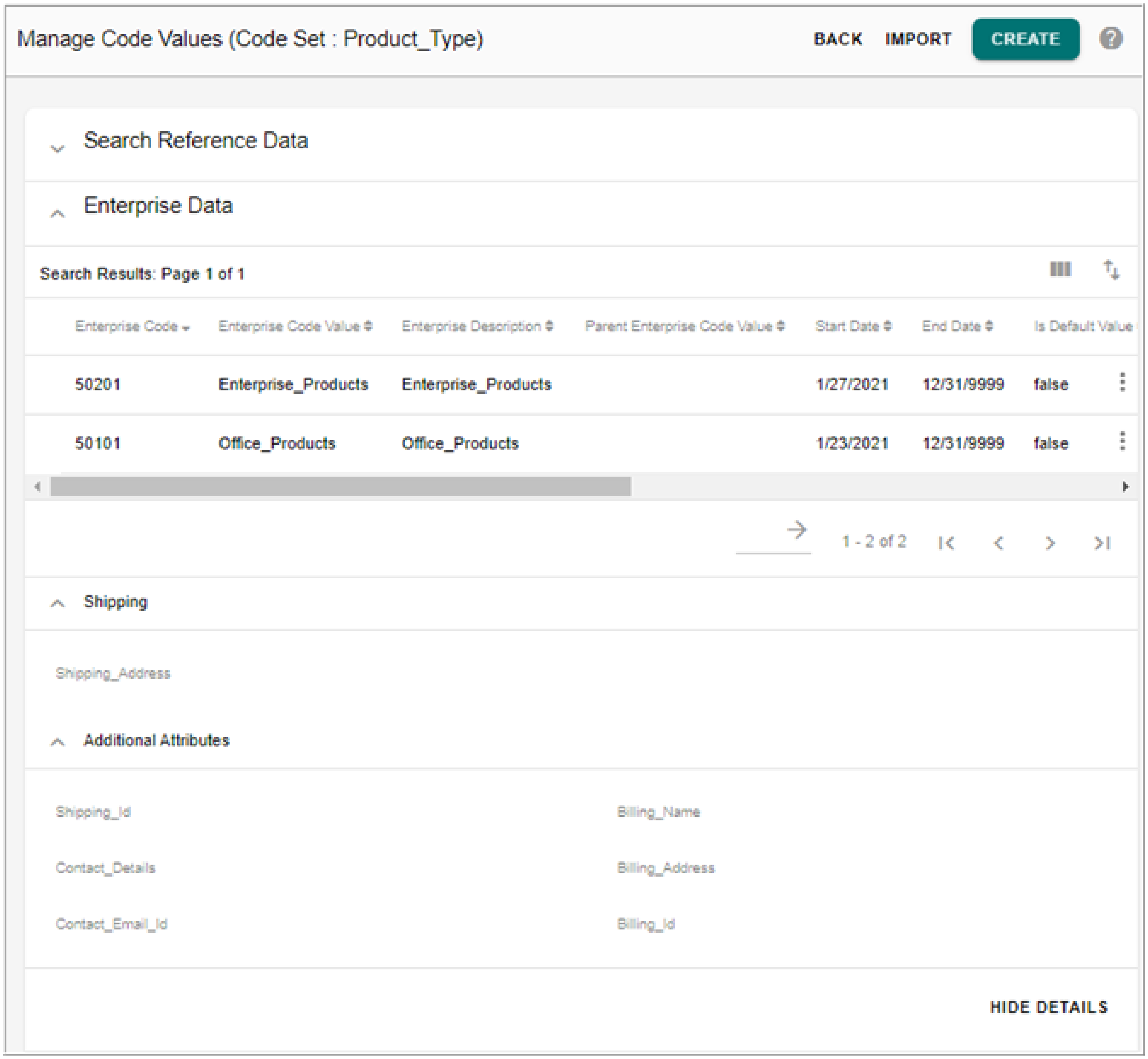
The **Details** option on the Manage Code Values UI provides an option to view all the additional attribute values of the selected code value of multi table LRDM.

To view additional attributes:

1. On the **Manage Code Values** UI, click on the Menu icon ⋮ corresponding to the required code value and click **Details**.

   The Manage Code Values UI refreshes to display all the extra attribute values of the selected code value according to groups. The unassigned attributes will be available under Additional Attributes list as in Figure 503.

Figure 503: Manage Code Values—View Details


Manage Code Values (Code Set : Product_Type)
BACK
IMPORT
CREATE
Search Reference Data
Enterprise Data
Search Results: Page 1 of 1

Enterprise Code	Enterprise Code Value	Enterprise Description	Parent Enterprise Code Value	Start Date	End Date	Is Default Value	
50201	Enterprise_Products	Enterprise_Products		1/27/2021	12/31/9999	false	⋮
50101	Office_Products	Office_Products		1/23/2021	12/31/9999	false	⋮

Manage Mapping

On the **Manage Code Values** page (Figure 502), click on the Menu icon ⋮ corresponding to the required code value and click **Mappings** to add, edit, delete and Import mappings. For details, see Section : "Manage Mapping."

Manage Language Descriptions

The manage language descriptions functionality allows you to add the description of the selected Enterprise code value in different languages.

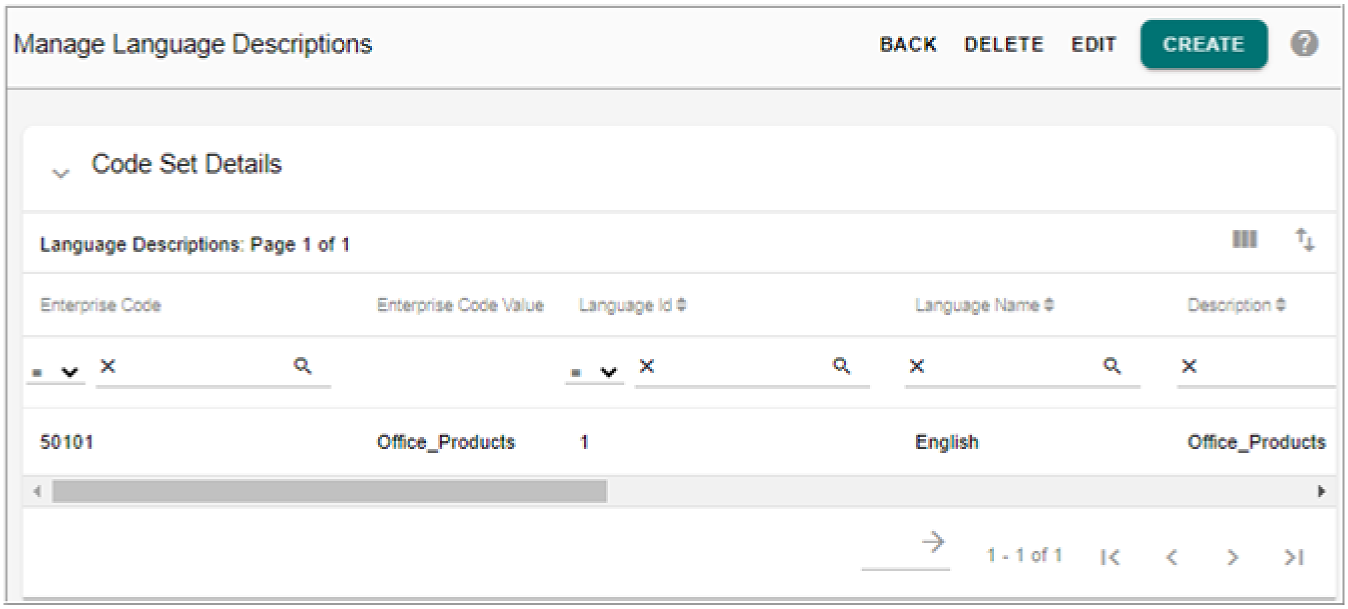
Add Language Description

To add language descriptions:

1 On the **Manage Code Values** page, click on the Menu icon ⋮ corresponding to the required code value and click **Language Descriptions**.

The **Manage Language Descriptions** page (Figure 504) is displayed.

Figure 504: Manage Language Descriptions



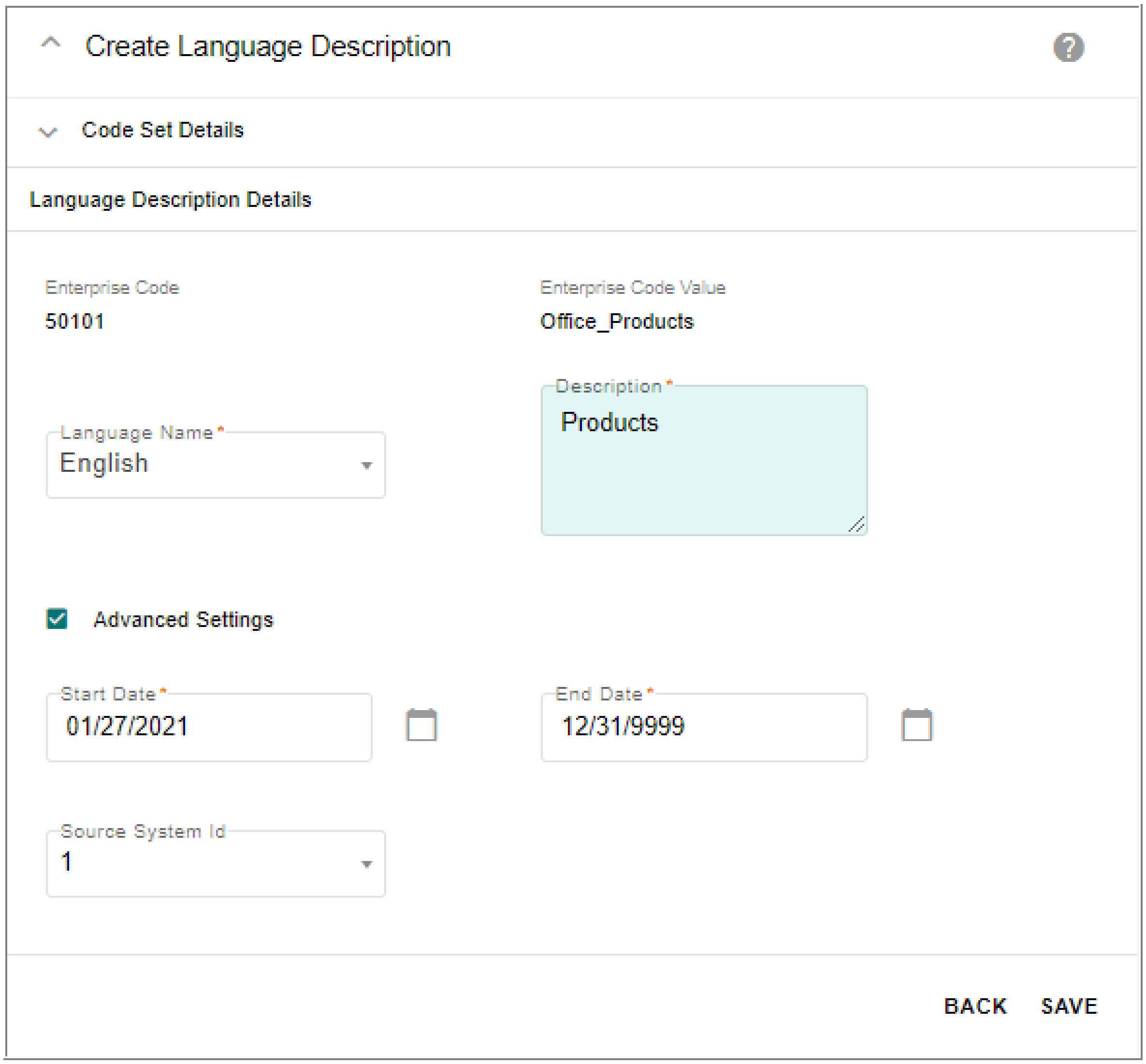
Language Descriptions: Page 1 of 1

Enterprise Code	Enterprise Code Value	Language Id	Language Name	Description
50101	Office_Products	1	English	Office_Products

2 On the **Manage Language Descriptions** page (Figure 504), click **Create**.

The **Create Language Description** page (Figure 505) is displayed.

Figure 505: Create Language Description



Enterprise Code: 50101

Enterprise Code Value: Office_Products

Language Name*: English

Description*: Products

☑ Advanced Settings

Start Date*: 01/27/2021

End Date*: 12/31/9999

Source System Id: 1

3 On the **Create Language Description** page (Figure 505), select the language from the **Language Name** drop-down and for the selected language, enter the description of the EDW code value in the **Description** field.

4 Select the start and end date.

5 Enter the source system Id.

By default, the source system Id is set to 1.

6 Click **Save**.

Message: Language Description added successfully is displayed.

Note:

1. In case of multitable code set, Language Description will be stored in the corresponding multitable version of MST_REFERENCE_DESCRIPTION table (that is, MST_REFERENCE_00xx_DESC).

2. You can have two language description on same language with different start date and end date (date should not overlap).

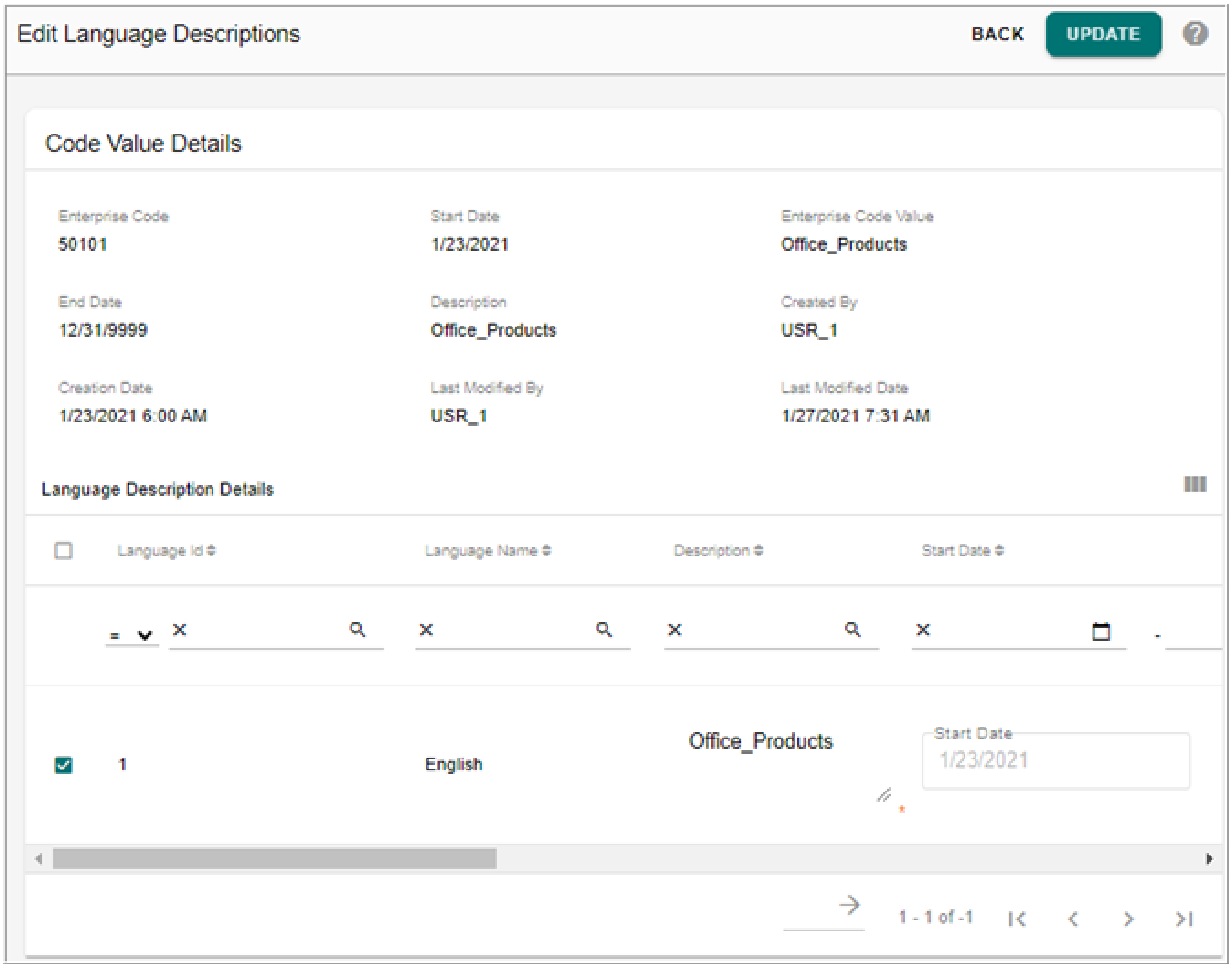
Edit Language Description

To edit language descriptions:

1 On the **Manage Language Descriptions** page, click **Edit**.

The **Edit Language Descriptions** page (Figure 506) is displayed.

Figure 506: Edit Language Descriptions



Enterprise Code: 50101
Start Date: 1/23/2021
Enterprise Code Value: Office_Products
End Date: 12/31/9999
Description: Office_Products
Created By: USR_1
Creation Date: 1/23/2021 6:00 AM
Last Modified By: USR_1
Last Modified Date: 1/27/2021 7:31 AM

☐	Language Id	Language Name	Description	Start Date
☑	1	English	Office_Products	1/23/2021

1 - 1 of -1

2 On the **Edit Language Descriptions** page (Figure 506), select the required language by clicking the corresponding checkbox and modify the description and click **Update**.

Message: Language Description(s) saved successfully is displayed on the Edit Language Description page.

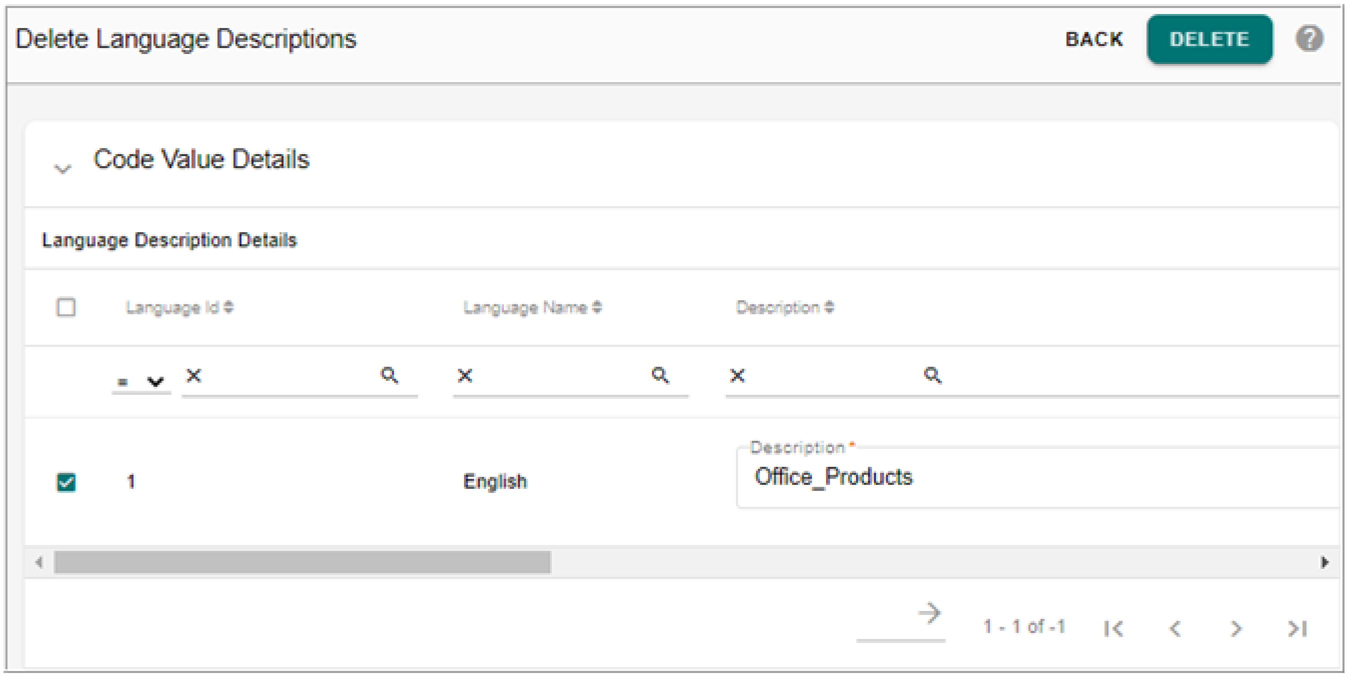
Delete Language Description

To delete language descriptions:

1 On the **Manage Language Descriptions** page, click **Delete**.

The **Delete Language Descriptions** page (Figure 507) is displayed.

Figure 507: Delete Language Descriptions



2 On the **Delete Language Descriptions** page (Figure 507), select the required language by clicking the corresponding checkbox and click **Delete**.

The **Confirmation** popup is displayed.

3 On the **Confirmation** popup, click **Yes.**

Message: Language Description(s) deleted successfully is displayed on the Delete Language Descriptions page.

Manage Mapping

The Manage Mapping functionality lets the LRDM user to maintain cross reference information of various Source Codes against golden Enterprise Codes. The cross reference information is stored under MST_STANDARD_MAP (in case of multitable option installation, it is stored in the corresponding multitable version of MST_STANDARD_MAP, that is, MST_STANDARD_00xx_MAP) and the Enterprise code information under MST_REFERENCE_CODE (in case of multitable option installation, it is stored in the corresponding multitable version of MST_REFERENCE_CODE, that is MST_REFERENCE_00xx_CODE).

Add Mapping

The Add Mapping feature allows you to create new source code value (new mapping in the Standard_Map table) by selecting the Enterprise code from the available Enterprise code list for the selected code set. The available Enterprise codes are derived from the Add Code Value functionality. The Add Code Value feature creates a new source code as well as new Enterprise code mapping.

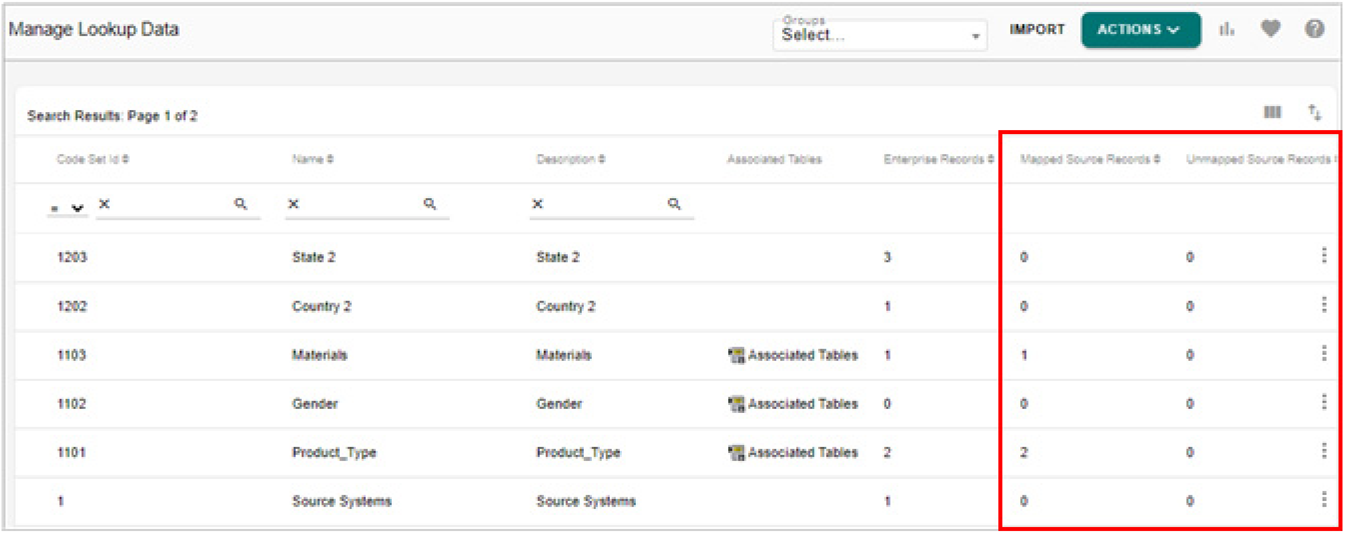
On the Manage Lookup Data UI (Figure 508),

- The count in the Mapped source Records column displays the total number of Mapped Records, that is the number of source values that are currently mapped to enterprise code values.
- The count in the UnMapped source Records column displays the total number of UnMapped Records, that is the number of source values that are not mapped to enterprise code values.
- The count in the Enterprise Records column displays 1 if there are no mapped or unmapped source records and the count on the mapped and unmapped columns is 0.

To add mapping:

1 On the **Manage Lookup Data** page, in the **Mapped Source Records** column or in the **UnMapped Source Records** column, click on the record number hyperlink of the corresponding code set as in Figure 508 or on the Manage Code Values UI, click on the Menu icon ⋮ corresponding to the required code value and click **Mappings**.

Figure 508: Manage Lookup Data

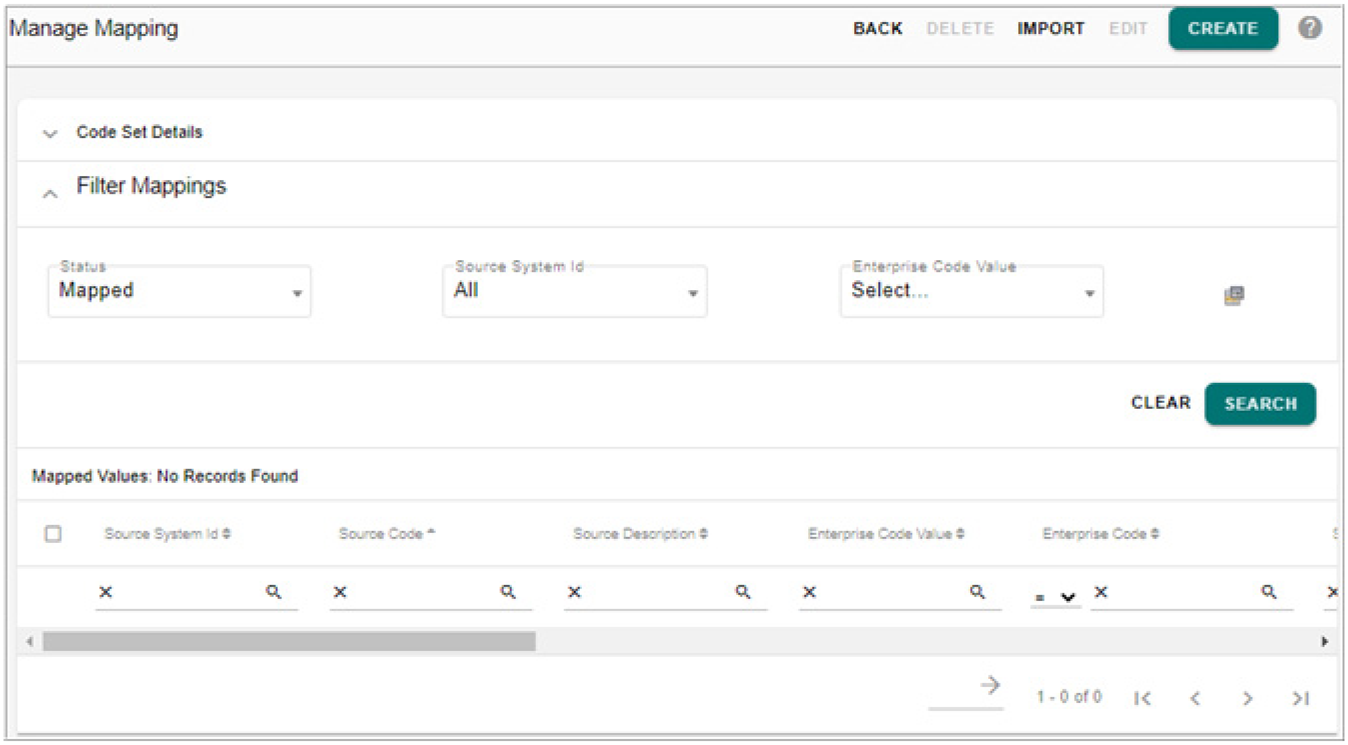


Search Results: Page 1 of 2

Code Set Id	Name	Description	Associated Tables	Enterprise Records	Mapped Source Records	Unmapped Source Records	
1203	State 2	State 2		3	0	0	⋮
1202	Country 2	Country 2		1	0	0	⋮
1103	Materials	Materials	Associated Tables	1	1	0	⋮
1102	Gender	Gender	Associated Tables	0	0	0	⋮
1101	Product_Type	Product_Type	Associated Tables	2	2	0	⋮
1	Source Systems	Source Systems		1	0	0	⋮

The **Manage Mapping** page (Figure 509) is displayed.

Figure 509: Manage Mapping



Status: Mapped

Source System Id: All

Enterprise Code Value: Select...

Mapped Values: No Records Found

2 On the **Manage Mapping** page (Figure 510),

The **Filter Mappings** section displays option to filter source records based on the following parameters:

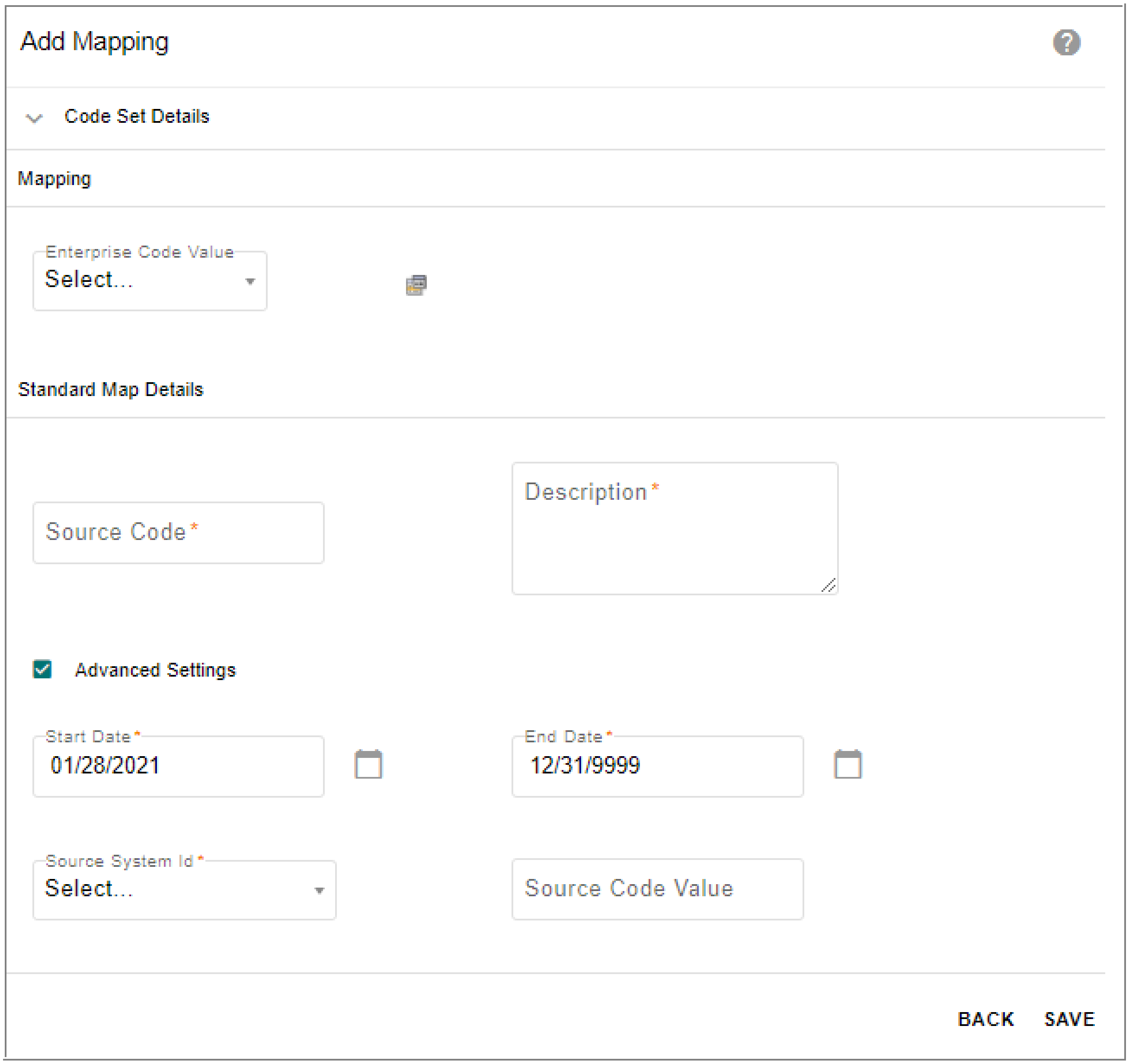
- **Show Mapped**—by default, this option is selected. When the Show Mapped option is selected and filter is applied, the Mapped Values pane displays all the source code and enterprise code mappings.
- **Show Unmapped**—the source values that do not have a mapped enterprise value are defined as unmapped source. The unmapped sources are assigned a negative EDW code value. When the Show UnMapped option is selected and filter is applied, the Mapped Values pane displays all the unmapped source codes.

  When both the options are selected or when both the options are deselected and filter is applied, the Mapped Values pane displays both the mapped and unmapped source codes.
- **Enterprise Code Value**—by default, the Enterprise Code Value dropdown displays all the EDW values of the selected code set. When any EDW value is selected and the Show Mapped and Show Unmapped options are selected and filter is applied, the Mapped Values pane displays the mapped and unmapped source codes of the corresponding enterprise code value.
- **Source System Id**—by default, the Source System Id dropdown displays all the source system Ids and filter will be applied based on the source system Id selected.

3 On the **Manage Mapping** page (Figure 510), click **Create**.

The **Add Mapping** page (Figure 510) is displayed.

Figure 510: Add Mapping



Add Mapping

Code Set Details

Mapping

Enterprise Code Value: Select...

Standard Map Details

Source Code *

Description *

☑ Advanced Settings

Start Date *: 01/28/2021

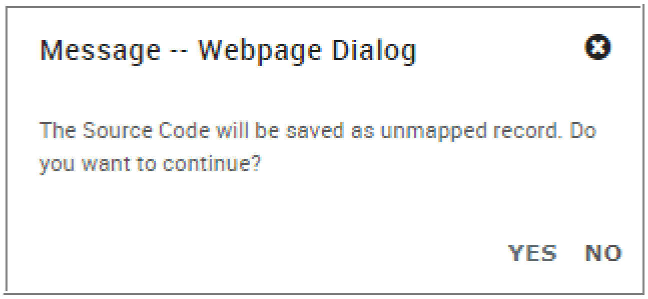
End Date *: 12/31/9999

Source System Id *: Select...

Source Code Value

4 On the **Add Mapping** page (Figure 510), select the enterprise code value from Enterprise Code Value dropdown to create a mapped source, enter the source code and description, click **Advanced Settings** to select the start and end date, source system Id and source code value and click **Save**.

If the enterprise code value is not selected, the below confirmation popup is displayed.



Message -- Webpage Dialog

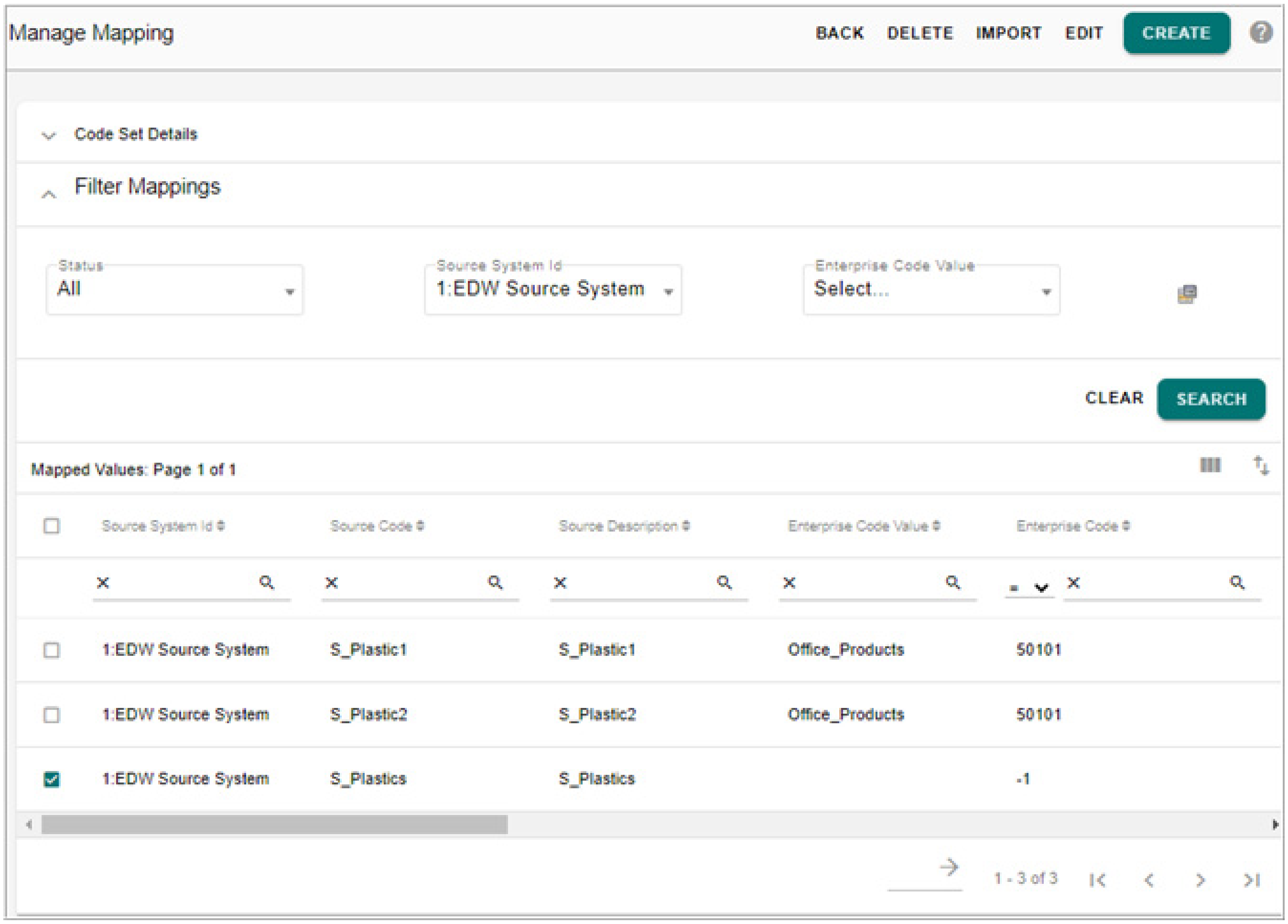
The Source Code will be saved as unmapped record. Do you want to continue?

5 On the confirmation popup, click **Yes** to create an unmapped source record.

Message: “Mapping added successfully” is displayed on the Manage Mapping page and the added record will be displayed as in Figure 511.

In case of unmapped source, the Enterprise code value will be populated with negative values and Other Source Description column will be populated with the value as "UNKNOWN". The Other Source Description column is not available on the UI for the user to enter any value.

Figure 511: Manage Mapping



Manage Mapping

Status: All

Source System Id: 1:EDW Source System

Enterprise Code Value: Select...

Mapped Values: Page 1 of 1

☐	Source System Id	Source Code	Source Description	Enterprise Code Value	Enterprise Code
☐	1:EDW Source System	S_Plastic1	S_Plastic1	Office_Products	50101
☐	1:EDW Source System	S_Plastic2	S_Plastic2	Office_Products	50101
☑	1:EDW Source System	S_Plastics	S_Plastics		-1

Note: Pending approval check is not honored on unmapped source records.

Multi Edit Mapping

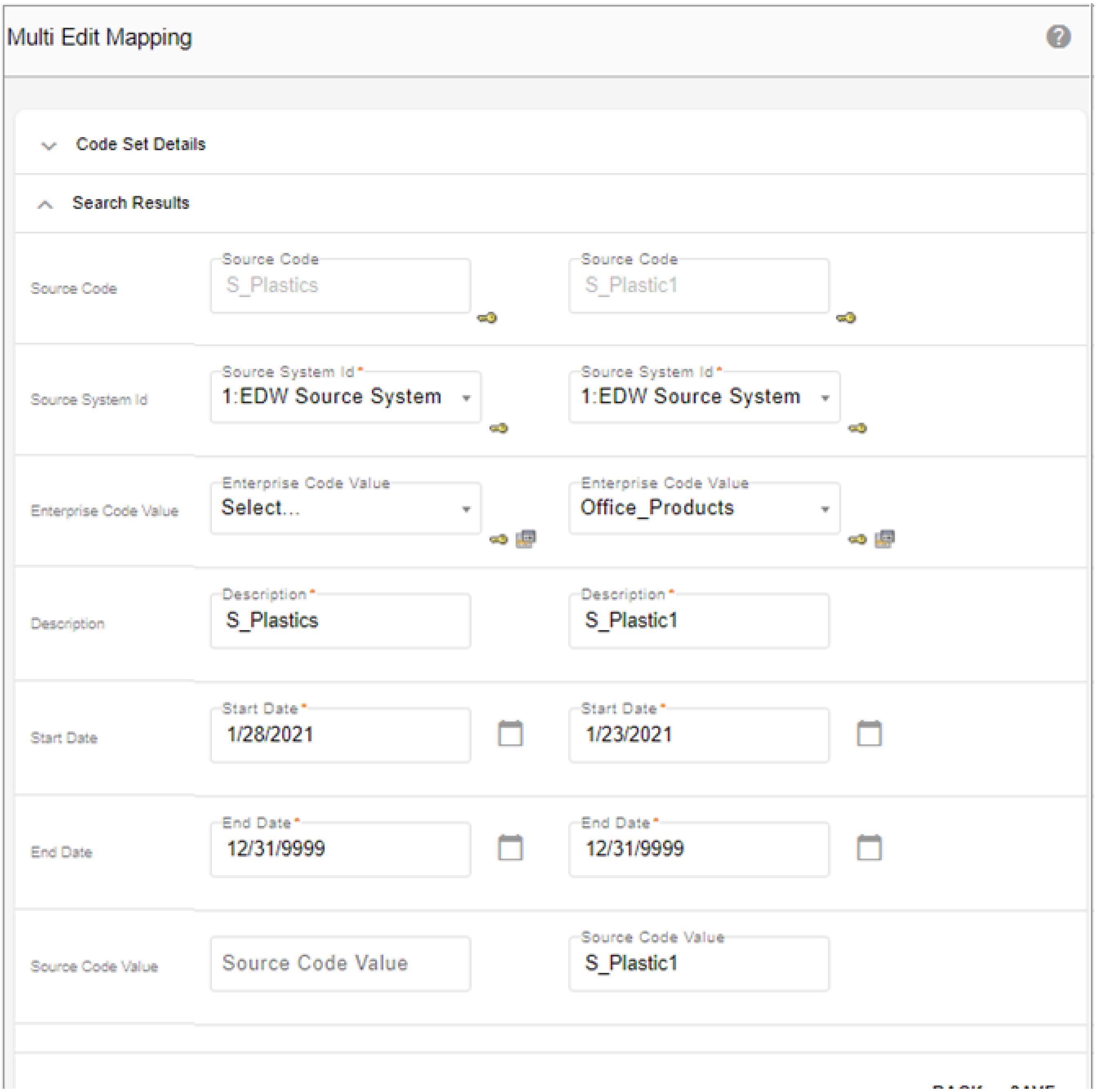
The Multi Edit Mapping feature is used to change the existing source code value, assign or unassign enterprise code value of all the selected mapping.

To multi edit mapping:

1. On the **Manage Mapping** page (Figure 511), select the required mapping values and click **Edit.**

   The **Multi Edit Mapping** page (Figure 512) is displayed.

Figure 512: Multi Edit Mapping



Source Code	Source Code: S_Plastics	Source Code: S_Plastic1
Source System Id	Source System Id *: 1:EDW Source System	Source System Id *: 1:EDW Source System
Enterprise Code Value	Enterprise Code Value: Select...	Enterprise Code Value: Office_Products
Description	Description *: S_Plastics	Description *: S_Plastic1
Start Date	Start Date *: 1/28/2021	Start Date *: 1/23/2021
End Date	End Date *: 12/31/9999	End Date *: 12/31/9999
Source Code Value	Source Code Value	Source Code Value: S_Plastic1

2 On the **Multi Edit Mapping** page (Figure 512), you can assign or unassign different enterprise code value and modify the source code value, source description, source system Id and select a different start and end date.

3 Click **Save**.

Message: “Mapping edited successfully” is displayed on the Manage Mapping page.

Import Mapping Values

The Import Mapping values feature can be used to import the mapping values.

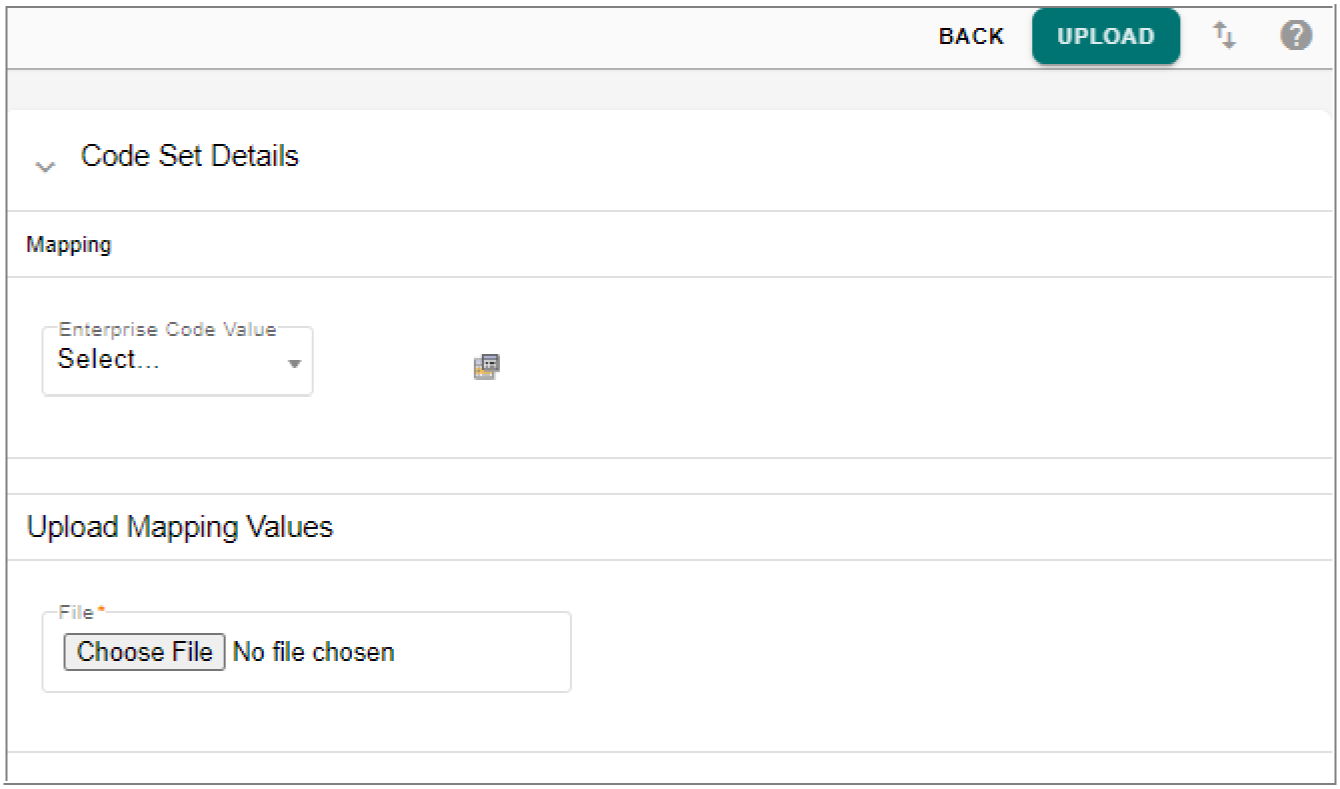
To import mapping values:

1 On the **Manage Mapping** page (Figure 511), click **Import**.

Note: For the selected Enterprise Code Value, during import, if the Excel or xml file contains the Enterprise Code Value, then the Enterprise Code Value will be updated with the value from the Excel or xml file else the value from the UI will be updated for the Enterprise Code Value. The values from Excel or XML file get higher priority than the values from the UI.

The **Upload Mapping Values** page (Figure 513) is displayed.

Figure 513: Upload Mapping Values



2 On the **Upload Mapping Values** pane, click **Choose File** to select the required Excel or xml file and click **Upload**.

The **View Reports** page is displayed. For more details on the View Report page and error details, see Chapter 11: “Upload Documents”.

Delete Mapping

To delete mapping:

1. On the **Manage Mapping** page (Figure 511), select the required mapping value and click **Delete Mapping**.

   The **Confirmation** popup is displayed.

2. On the **Confirmation** popup, click **Yes**.

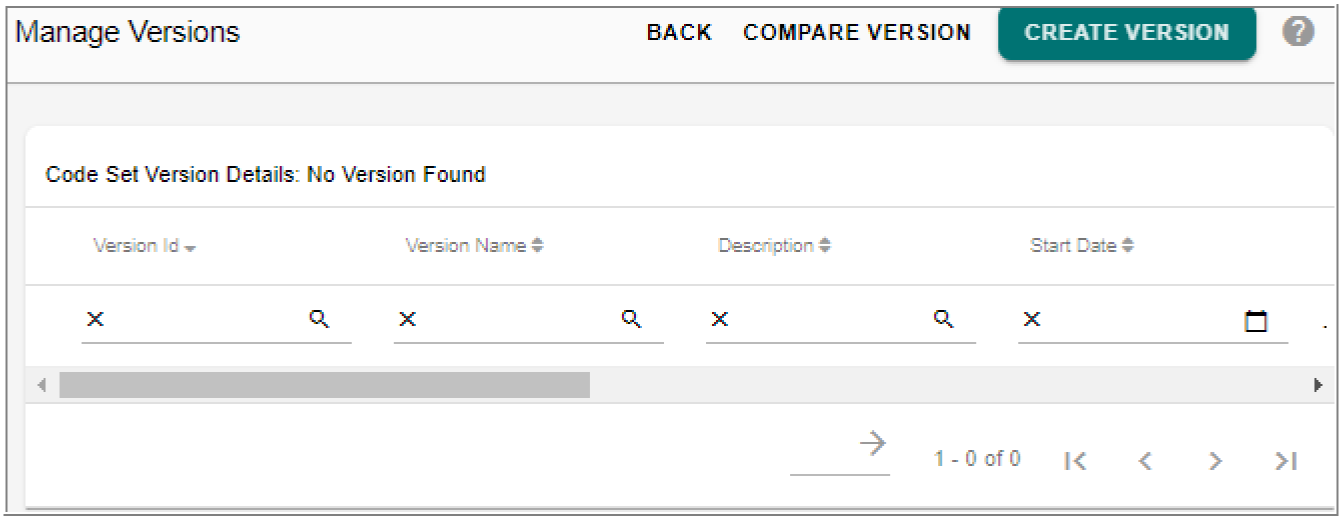
   Message: Mapping deleted successfully is displayed on the Manage Mapping page.

Manage Version

Version of one or more code sets along with its code values, mappings, source records and language descriptions can be created. The created version can be used for data reference at any point of time in future.

Navigate to **Manage Versions** UI by selecting **Versions** from **Actions** drop-down on **Manage Lookup Data** UI.

Figure 514: Manage Version



Code Set Version Details: No Version Found

On the **Manage Versions** UI, you can perform the following tasks:

- Create Code Set Version
- View Code Set Version
- Compare Code Set Versions

Create Code Set Version

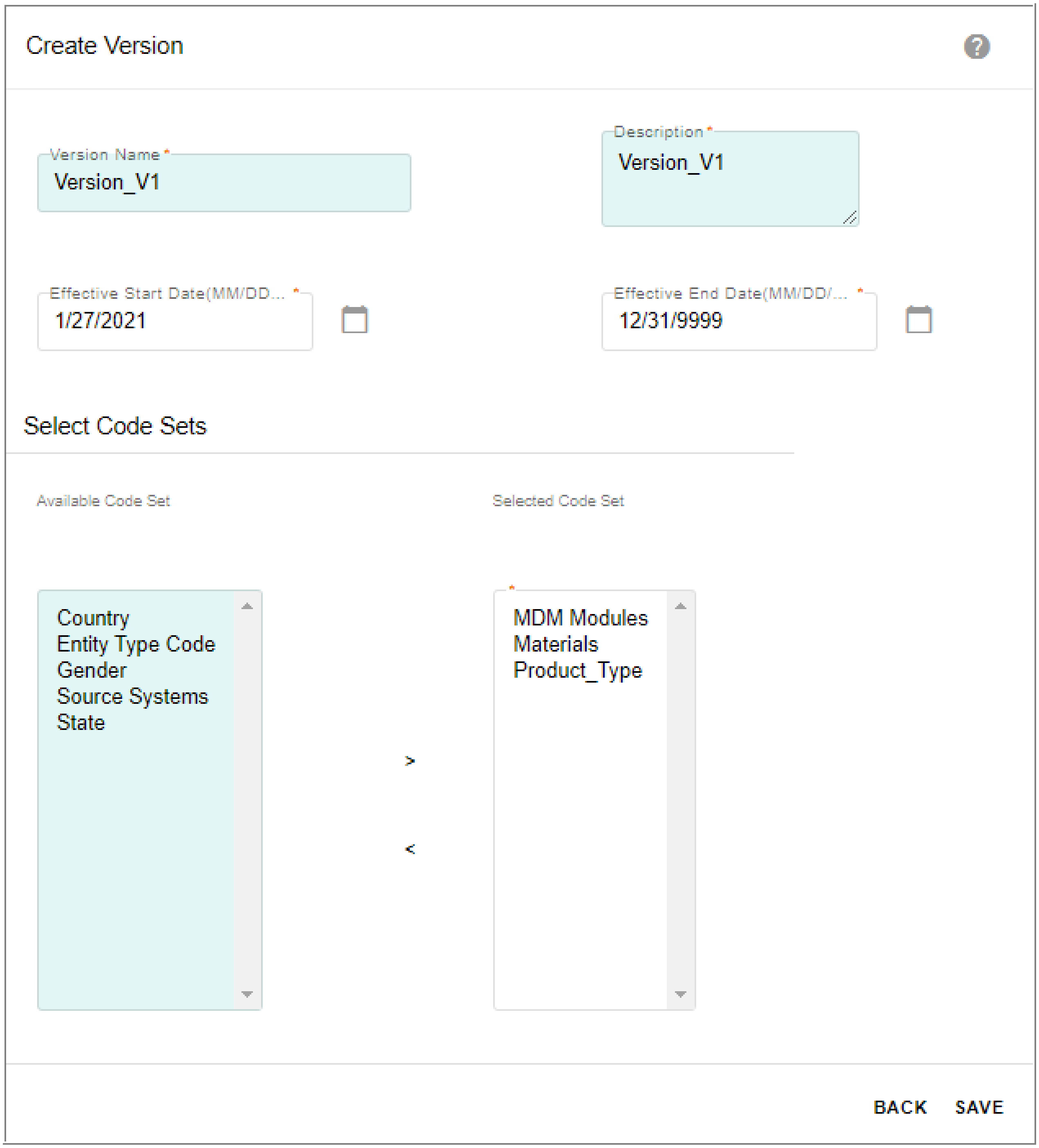
Versions of code set can be created using create version option. On creation of a version, the entire code set along with code values and mappings are versioned against a version name.

To create code set version:

1 On the **Manage Versions** UI (Figure 514), click **Create Version**.

The **Create Version** UI (Figure 515), is displayed.

Figure 515: Create Version



Create Version

Version Name *: Version_V1

Description *: Version_V1

Effective Start Date(MM/DD... *: 1/27/2021

Effective End Date(MM/DD/... *: 12/31/9999

Select Code Sets

Available Code Set

Country
Entity Type Code
Gender
Source Systems
State

Selected Code Set

MDM Modules
Materials
Product_Type

2 On the Create Version UI (Figure 515), enter the following:

- **Version Name**: enter a name for the code set version being created.
- **Description**: enter the description for the version being created.

- **Start Date** and **End Date**: the start date and end date specifies the start and end date for the version being created.

  In the **Select Code Sets** pane, the **Available Code Sets** list displays all the available code sets.
- From the **Available Code Sets** list, select the code sets and move it to the **Selected Code Set** list to be included under the version being created.

3 Click **Save**.

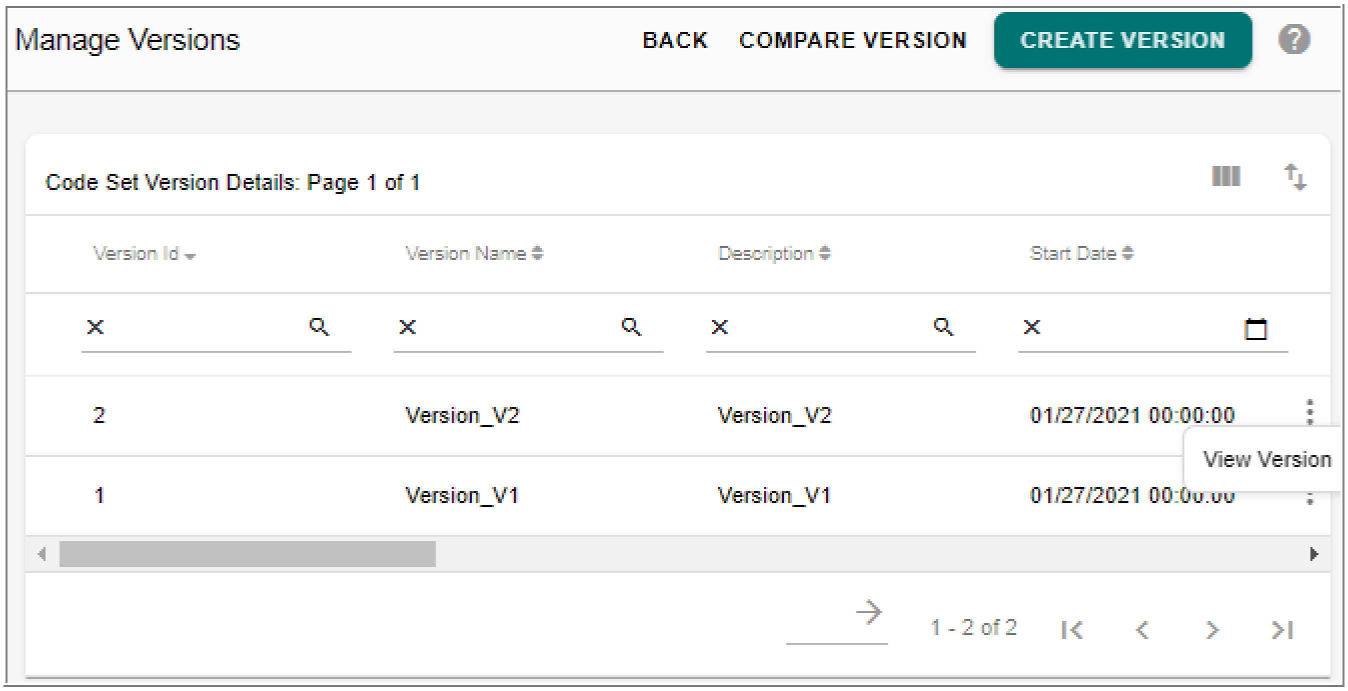
Message: “Version created successfully” is displayed.

View Code Set Version

To view code set version:

1 On the **Manage Versions** UI, click on the Menu icon ⋮ corresponding to the required version and click **View Version** as in Figure 516.

Figure 516: Manage Version

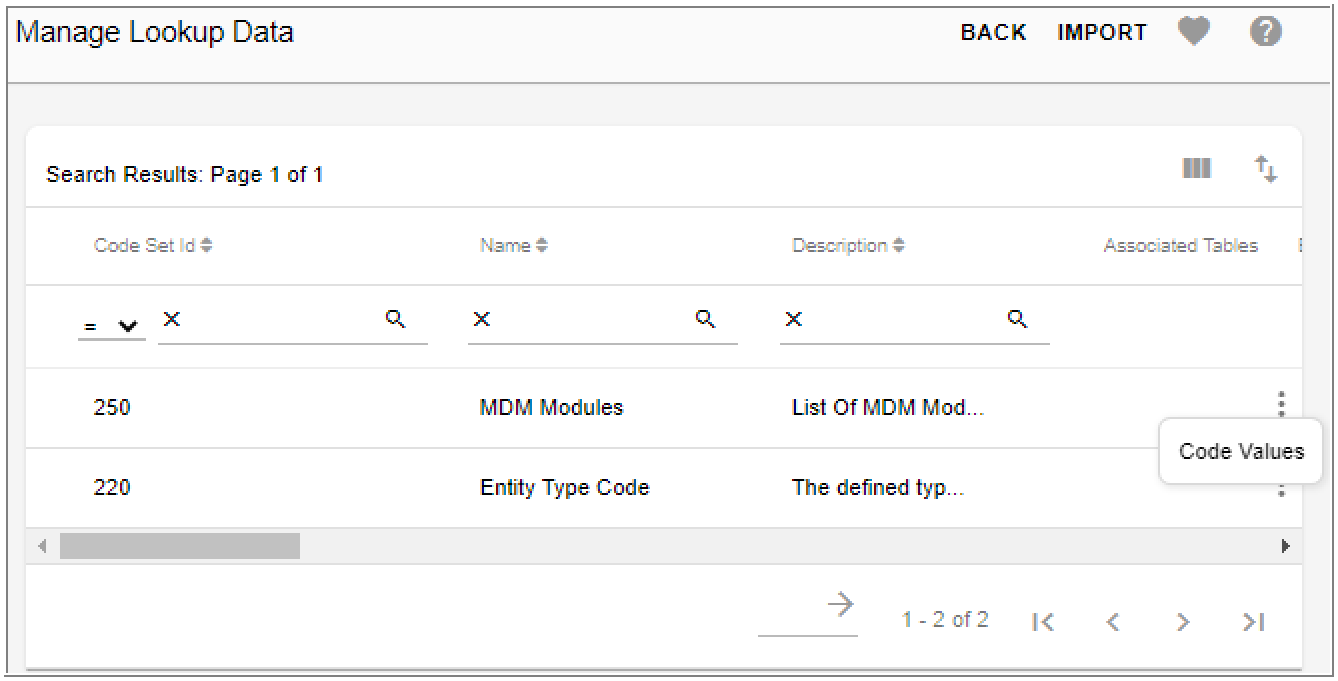


Code Set Version Details: Page 1 of 1

Version Id	Version Name	Description	Start Date
2	Version_V2	Version_V2	01/27/2021 00:00:00
1	Version_V1	Version_V1	01/27/2021 00:00:00

The **Manage Lookup Data** UI displays the list of code sets versioned under the selected version name as in Figure 517.

Figure 517: Manage Lookup Data



Code Set Id	Name	Description
250	MDM Modules	List Of MDM Mod...
220	Entity Type Code	The defined typ...

2 On the **Manage Lookup Data** UI (Figure 517), click on the Menu icon ⋮ corresponding to any code set and click **Code Values** to navigate to the Manage Code Values UI.

Compare Code Set Versions

The code set compare version feature enables you to compare two different versions of code sets to identify the following:

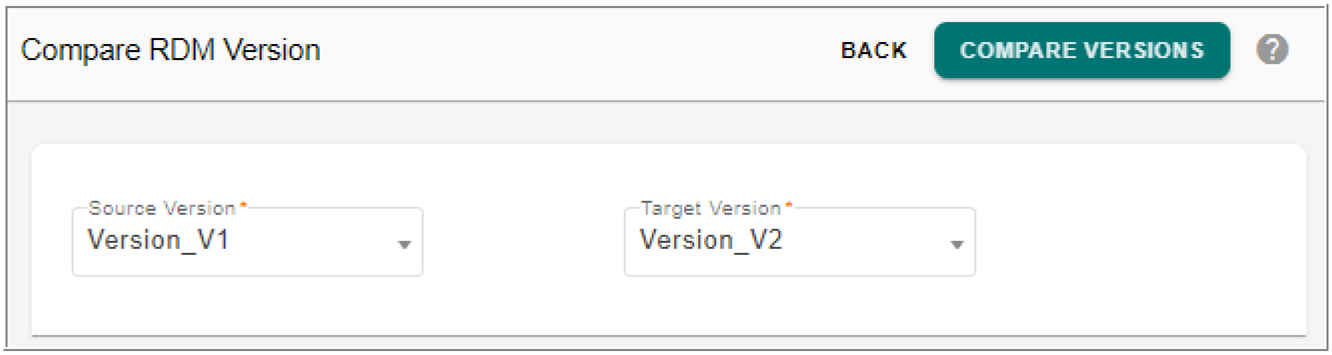
- Code sets and its corresponding Values/Mappings that were added/removed/updated between the two versions.
- Specific attribute changes in code values and mappings.

To compare code set versions:

1 On the **Manage Versions** UI (Figure 516), click **Compare Version.**

2 On the **Compare RDM Version** UI, select the source and target version to compare and click **Compare Versions** as in Figure 518.

Figure 518: Compare RDM Version



Source Version* Version_V1

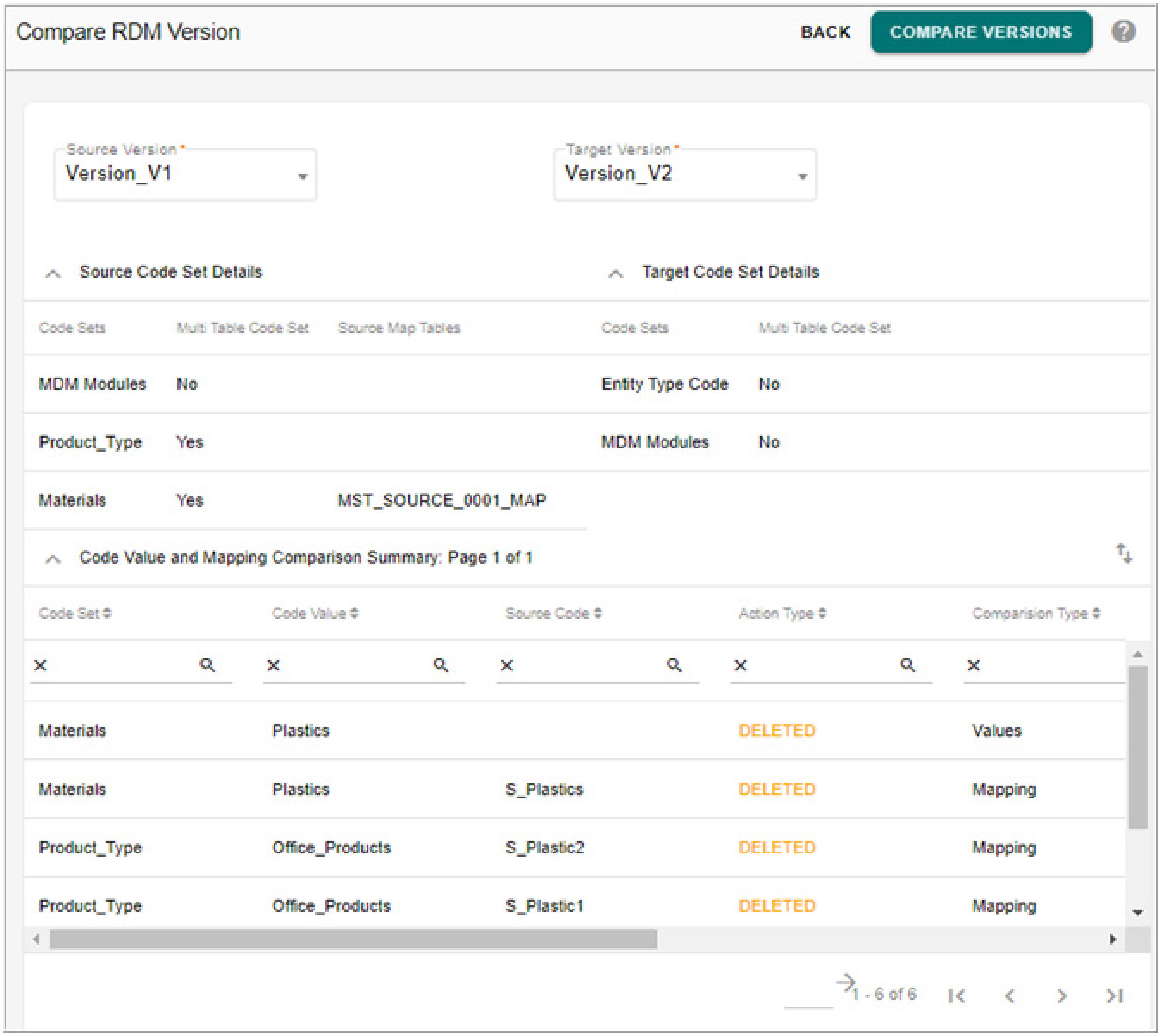
Target Version* Version_V2

The **Compare RDM Version** UI (Figure 519) refreshes to displays the following details:

- The **Source Code Set Details** and **Target Code Set Details** sections display the source code set details and target code set details respectively including the source map and Multi table code set details.
- The **Code Value and Mapping Comparison Summary** section displays the changes in code value and mappings. The **Action Type** column displays the type of operation performed. Click on the hyperlink on the Action Type value to view the details of attribute level changes of code values and mappings as in Figure 520.

If an unmapped source record is updated in any of the code set version, the **Code Value and Mapping Comparison Summary** UI section displays two records: one with Action type as “DELETED” and other one with Action type as “ADDED”.

Figure 519: Compare RDM Version



Source Version*: Version_V1

Target Version*: Version_V2

Source Code Set Details

Code Sets	Multi Table Code Set	Source Map Tables
MDM Modules	No	
Product_Type	Yes	
Materials	Yes	MST_SOURCE_0001_MAP

Target Code Set Details

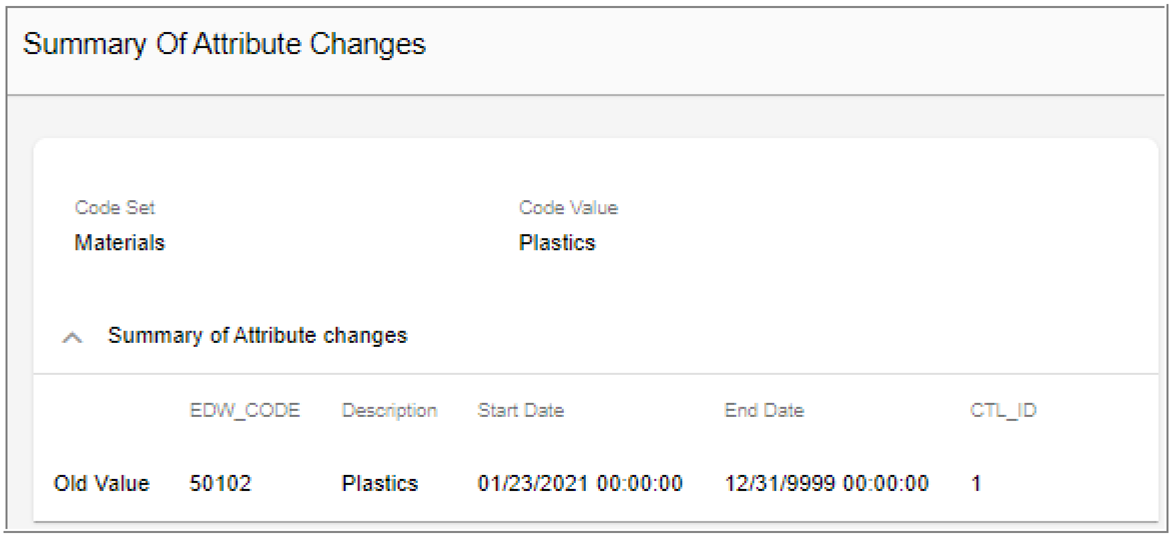
Code Sets	Multi Table Code Set
Entity Type Code	No
MDM Modules	No

Code Value and Mapping Comparison Summary: Page 1 of 1

Code Set	Code Value	Source Code	Action Type	Comparision Type
Materials	Plastics		DELETED	Values
Materials	Plastics	S_Plastics	DELETED	Mapping
Product_Type	Office_Products	S_Plastic2	DELETED	Mapping
Product_Type	Office_Products	S_Plastic1	DELETED	Mapping

- The **Summary of Attribute Changes** UI displays the new values that were added to the code set for action type “ADDED”. For “DELETED” action type, the **Summary of Attribute Changes** UI displays the old values of the code set that were deleted. For “UPDATED” action type, the **Summary of Attribute Changes** UI displays the both the old value and new value of the code set.

Figure 520: Summary of Attribute Changes



Summary Of Attribute Changes

Code Set
Materials

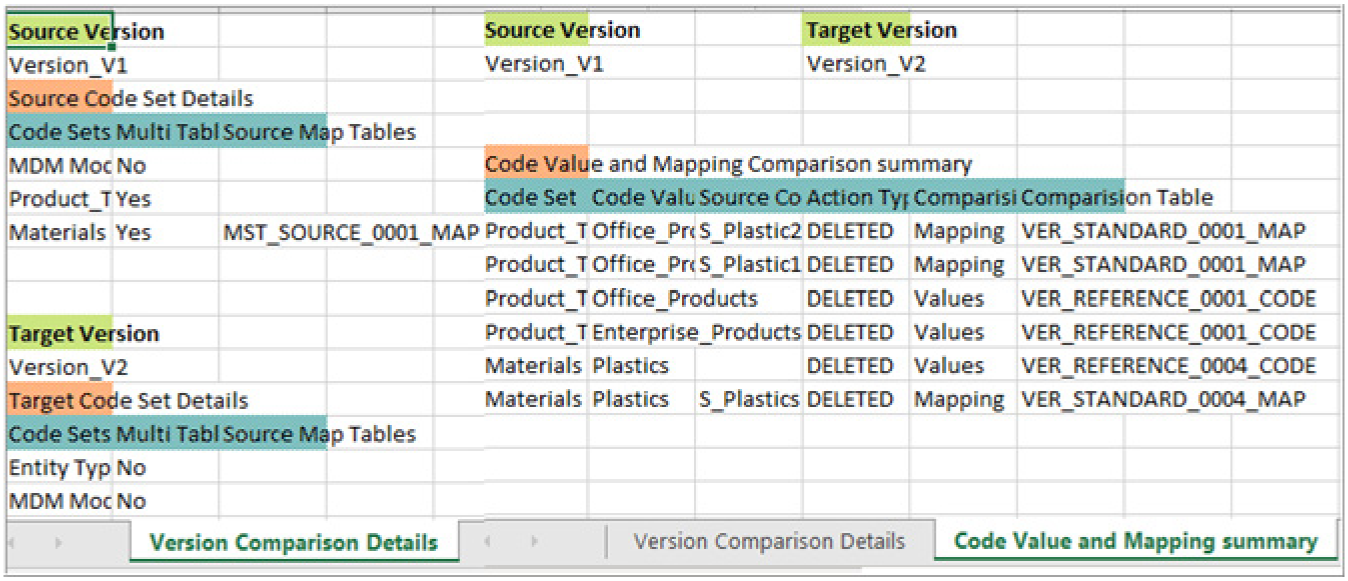
Code Value
Plastics

Summary of Attribute changes

	EDW_CODE	Description	Start Date	End Date	CTL_ID
Old Value	50102	Plastics	01/23/2021 00:00:00	12/31/9999 00:00:00	1

3 On the **Compare RDM Version** UI (Figure 519), click on the Export to Excel icon ⇅ to export the comparison details to an excel file. The details will be displayed under two tabs as **Version Comparison Details** and **Code Value and Mapping Summary** as in Figure 521.

Figure 521: Excel File of Compare Code Set Versions



Source Version		
Version_V1		
Source Code Set Details		
Code Sets	Multi Tabl	Source Map Tables
MDM Moc	No	
Product_T	Yes	
Materials	Yes	MST_SOURCE_0001_MAP
Target Version		
Version_V2		
Target Code Set Details		
Code Sets	Multi Tabl	Source Map Tables
Entity Typ	No	
MDM Moc	No	

Version Comparison Details

Source Version
Version_V1

Target Version
Version_V2

Code Value and Mapping Comparison summary

Code Set	Code Valu	Source Co	Action Tyl	Comparisi	Comparision Table
Product_T	Office_Pr	S_Plastic2	DELETED	Mapping	VER_STANDARD_0001_MAP
Product_T	Office_Pr	S_Plastic1	DELETED	Mapping	VER_STANDARD_0001_MAP
Product_T	Office_Products		DELETED	Values	VER_REFERENCE_0001_CODE
Product_T	Enterprise_Products		DELETED	Values	VER_REFERENCE_0001_CODE
Materials	Plastics		DELETED	Values	VER_REFERENCE_0004_CODE
Materials	Plastics	S_Plastics	DELETED	Mapping	VER_STANDARD_0004_MAP

Source System Association

The RDM provides an option to create a table for source system association to maintain and view the source data. You can associate multiple source Tables to each Code Set. Each code value can be mapped to a source code and its attributes available in the Source Tables. The source system association provides the following capabilities:

- Source System Association allows to associate source systems for code set mappings.
- For any code set, multiple source systems can be mapped.
- Source systems are master tables of MDM and can be generated through model builder template.
- Source system association is supported on code sets created on multi table set-up and not supported for the out of the box code sets.

The below lists outlines the various steps involved in the source system association process:

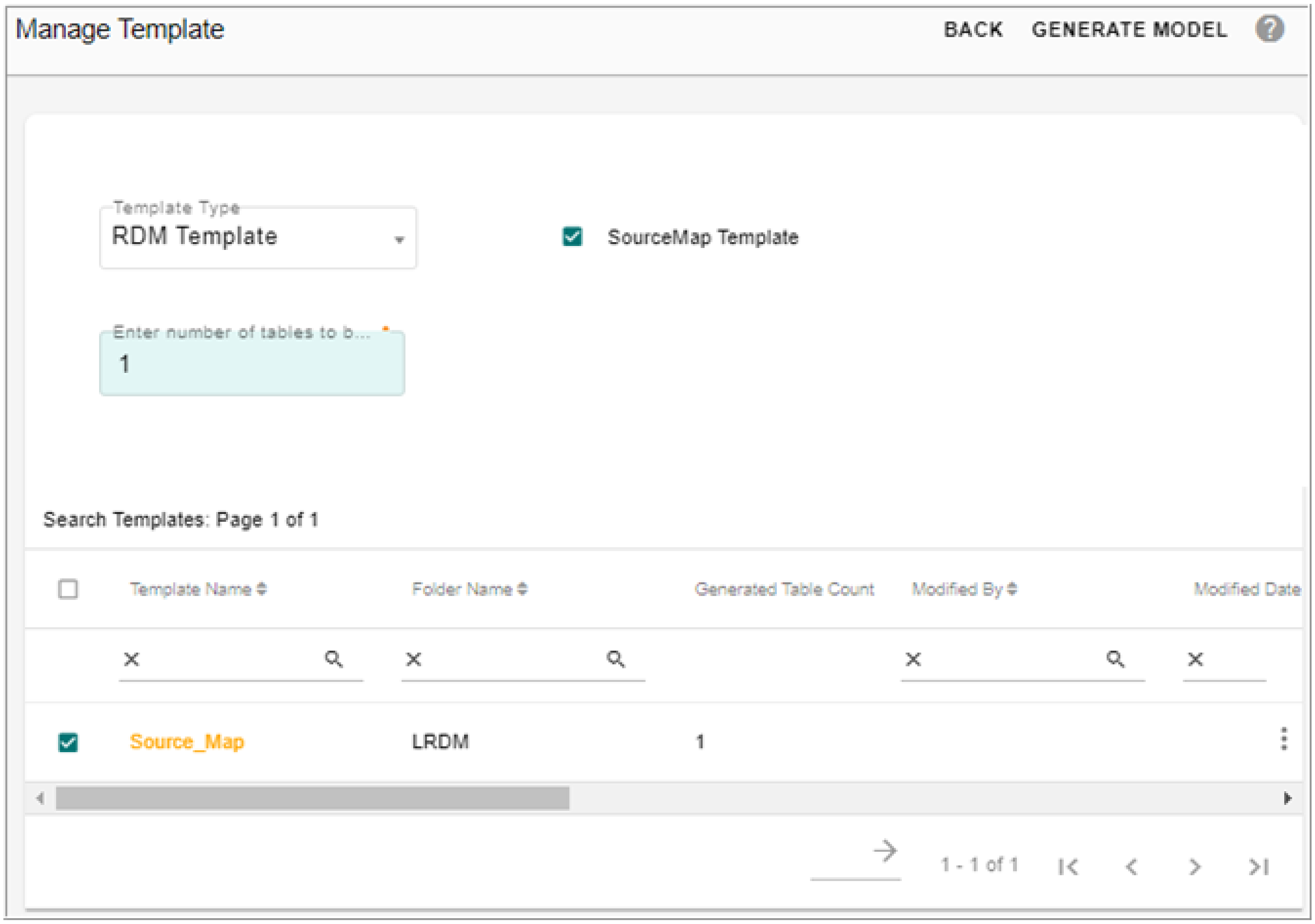
- Generate RDM Source Tables and Populate Data
- Create Code Set
- Create Source Table Association
- Create Code Values
- Map Code Values to Source

Generate RDM Source Tables and Populate Data

Perform the following steps to generate RDM source tables through Model Builder UI:

1. Navigate to **Model Builder—Manage Template** UI from left navigation pane (**Model Setup** -> **Model Builder**).
2. Select the **RDM Template** and **SourceMap Template** option and click **Generate Model** as in Figure 522.

Figure 522: Manage Template



Manage Template

Template Type: RDM Template

☑ SourceMap Template

Enter number of tables to b... *: 1

Search Templates: Page 1 of 1

☐	Template Name	Folder Name	Generated Table Count	Modified By	Modified Date
☑	Source_Map	LRDM	1		

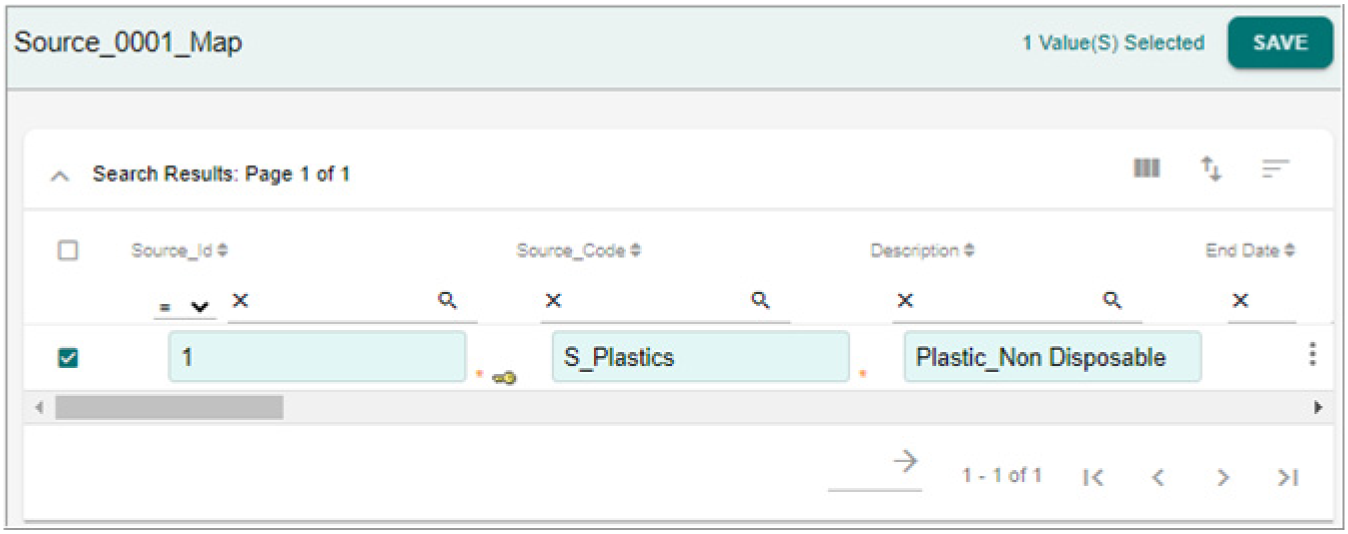
1 - 1 of 1

Once the source tables are generated, populate the source tables through configurable UI or through Excel Upload.

3 Navigate to corresponding configurable UI (source map table) from left navigation pane (**Tables -> Master Tables -> LRDM**).

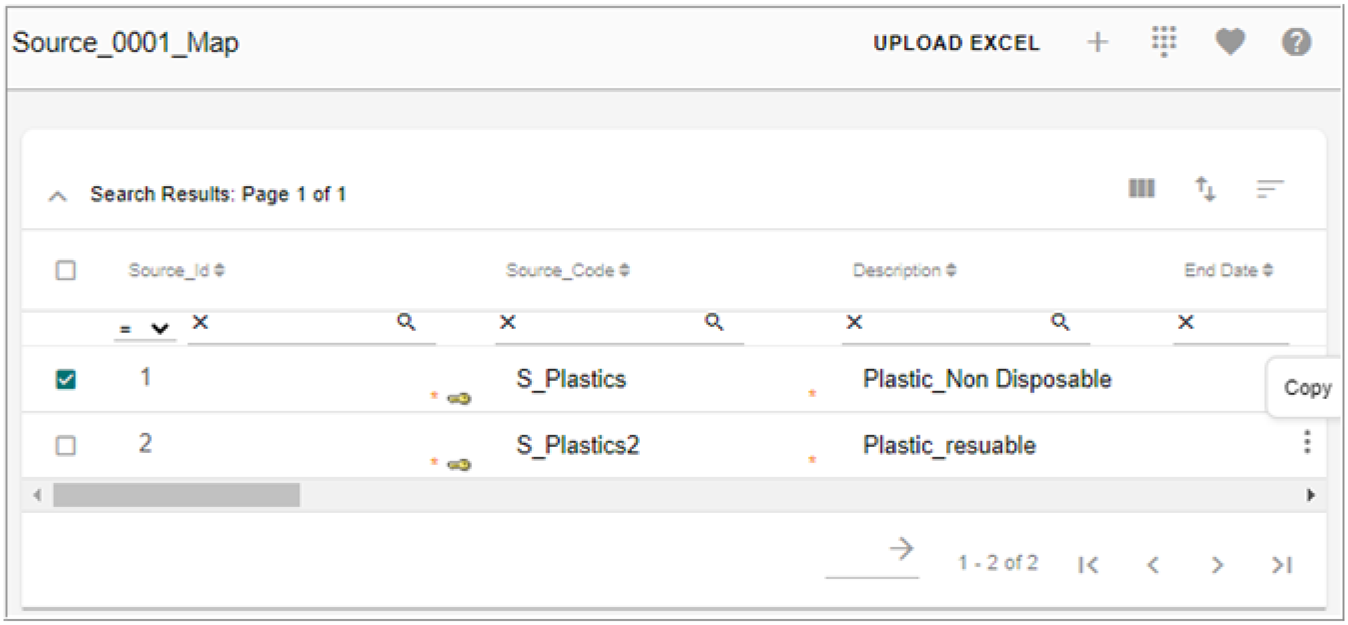
4 On the Source Map UI, click **Create** and on the Create Source Map UI, enter the details and click **Create** as in Figure 523.

Figure 523: Create Source Map



The populated data is displayed on the Source Map UI as in Figure 524.

Figure 524: Source Map

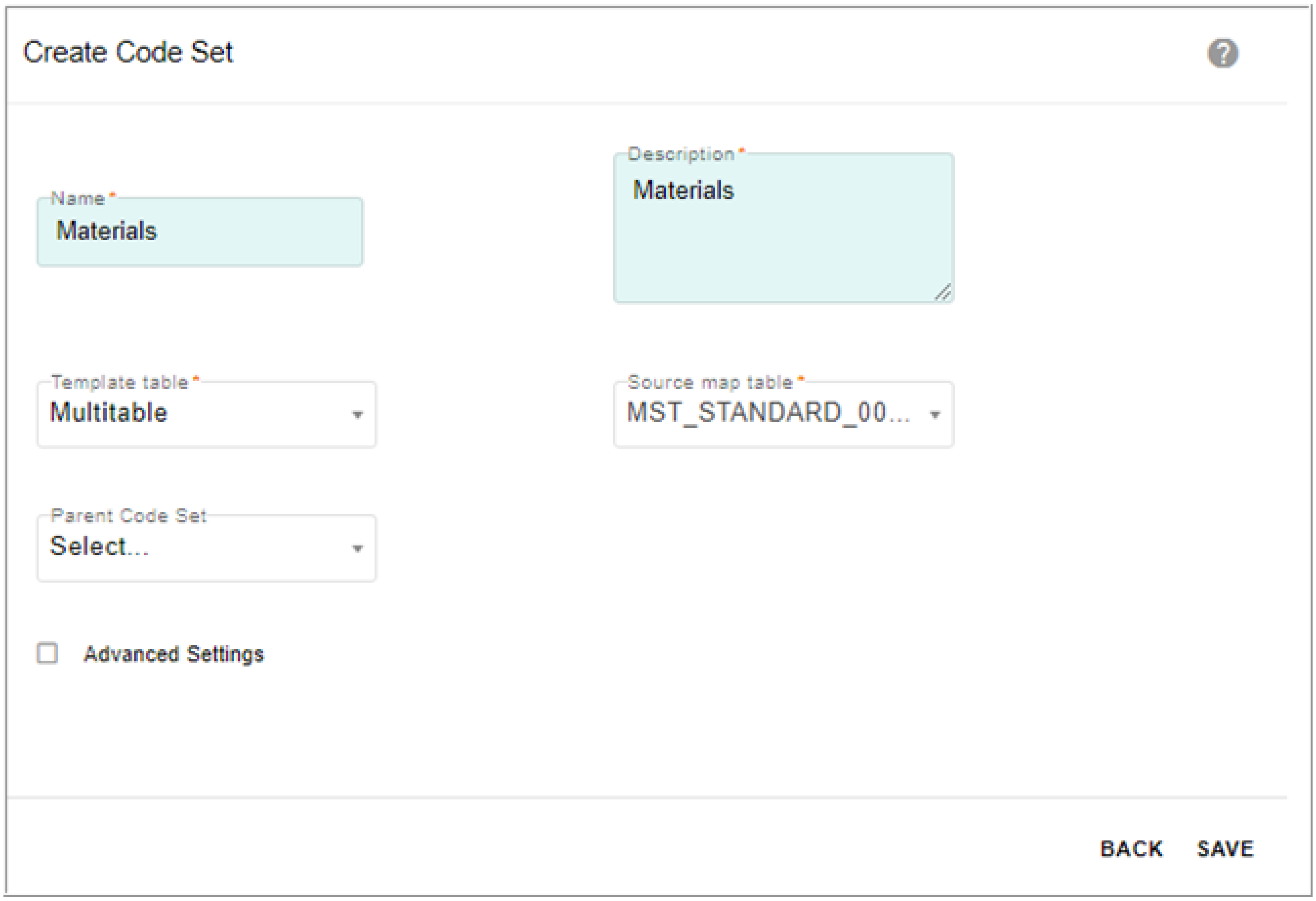


Create Code Set

Perform the following steps to create code set:

1. Navigate to **Manage Lookup Data UI** from the left navigation pane (**Reference Data-> Manage Reference Data**).
2. On the **Manage Lookup Data** page, select **Add Code Set** from the **Tasks** dropdown.
3. On the **Add Code Set** page, enter the required details as in Figure 525 and click **Save**.

Figure 525: Add Code Set



Create Code Set

Name*: Materials

Description*: Materials

Template table*: Multitable

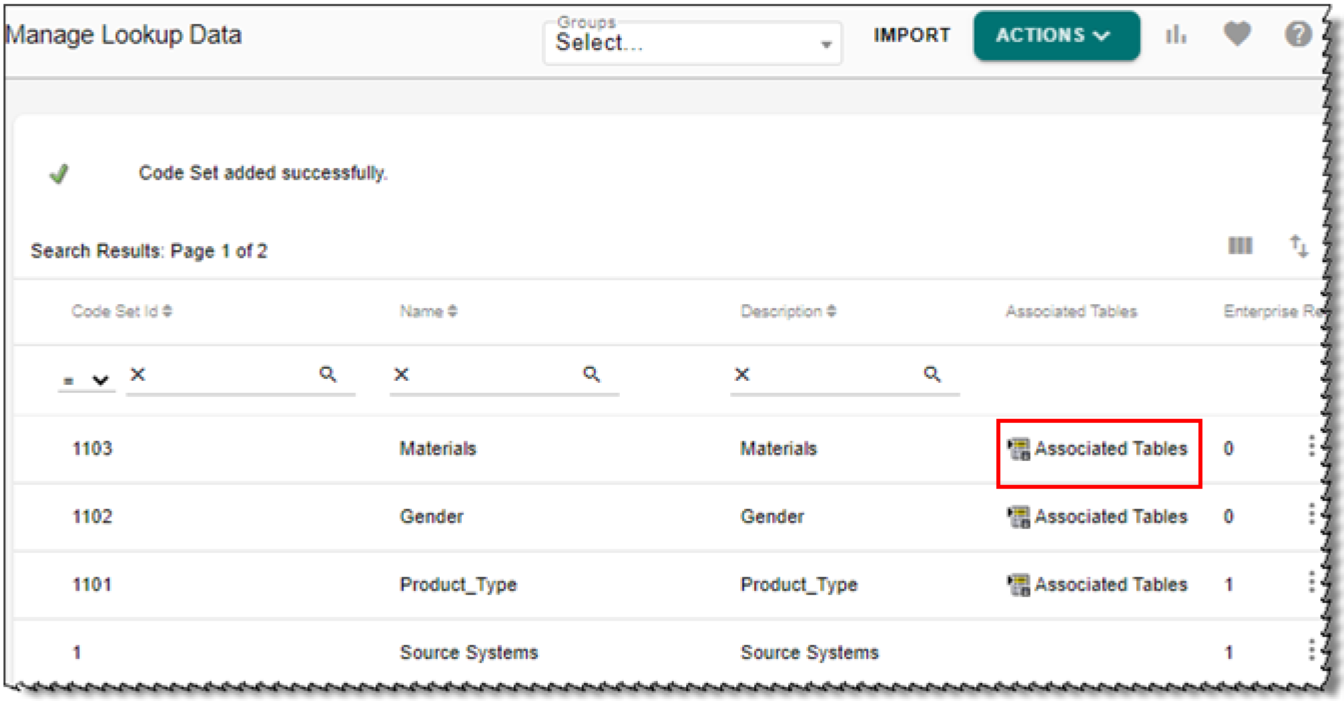
Source map table*: MST_STANDARD_00...

Parent Code Set: Select...

☐ Advanced Settings

The code set is added and the Associate Table icon is displayed in the Associate Table column as in Figure 526.

Figure 526: Manage Lookup Data



Code Set added successfully.

Search Results: Page 1 of 2

Code Set Id	Name	Description	Associated Tables	Enterprise Re
1103	Materials	Materials	Associated Tables	0
1102	Gender	Gender	Associated Tables	0
1101	Product_Type	Product_Type	Associated Tables	1
1	Source Systems	Source Systems		1

Create Source Table Association

To associate source table with code set, perform the following steps:

1 On the **Manage Lookup Data** UI, click on the Associate Table icon of the corresponding code set as in Figure 526.

2 On the **Associated Tables for Code Set** UI, enter the new table association details and click **Add Association** as in Figure 527.

Figure 527: Associated Tables for Code Set

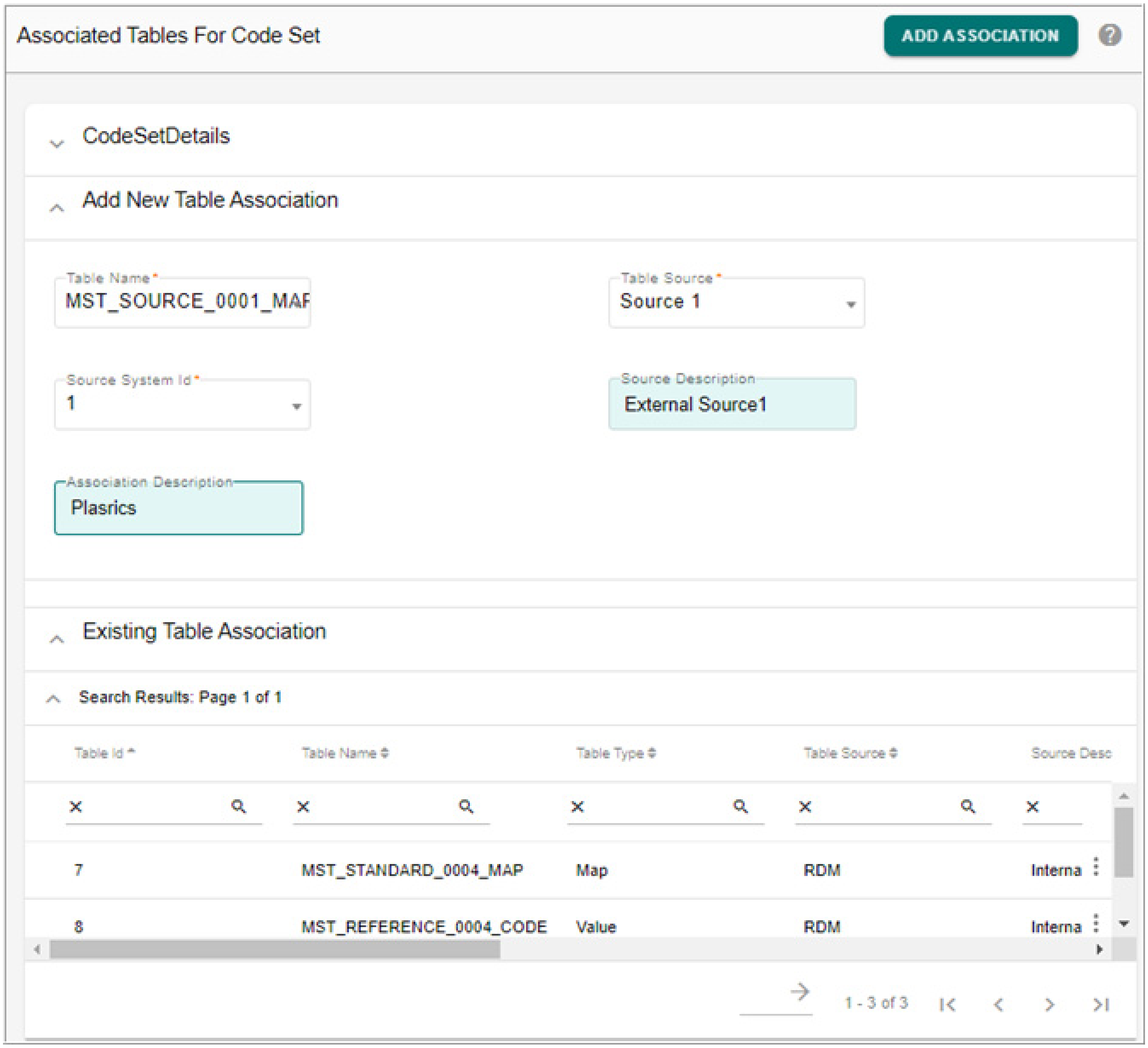

Associated Tables For Code Set
ADD ASSOCIATION
CodeSetDetails
Add New Table Association
Existing Table Association
Search Results: Page 1 of 1
1 - 3 of 3

Table Name*: MST_SOURCE_0001_MAF

Table Source*: Source 1

Source System Id*: 1

Source Description: External Source1

Association Description: Plasrics

Table Id	Table Name	Table Type	Table Source	Source Desc
7	MST_STANDARD_0004_MAP	Map	RDM	Interna
8	MST_REFERENCE_0004_CODE	Value	RDM	Interna

By Default <Table names separated by comma> tables will be displayed as Associated tables. The Source Description will be marked as Internal Source.

Message: “Association added successfully” is displayed. Similarly create the required associations.

To edit association:

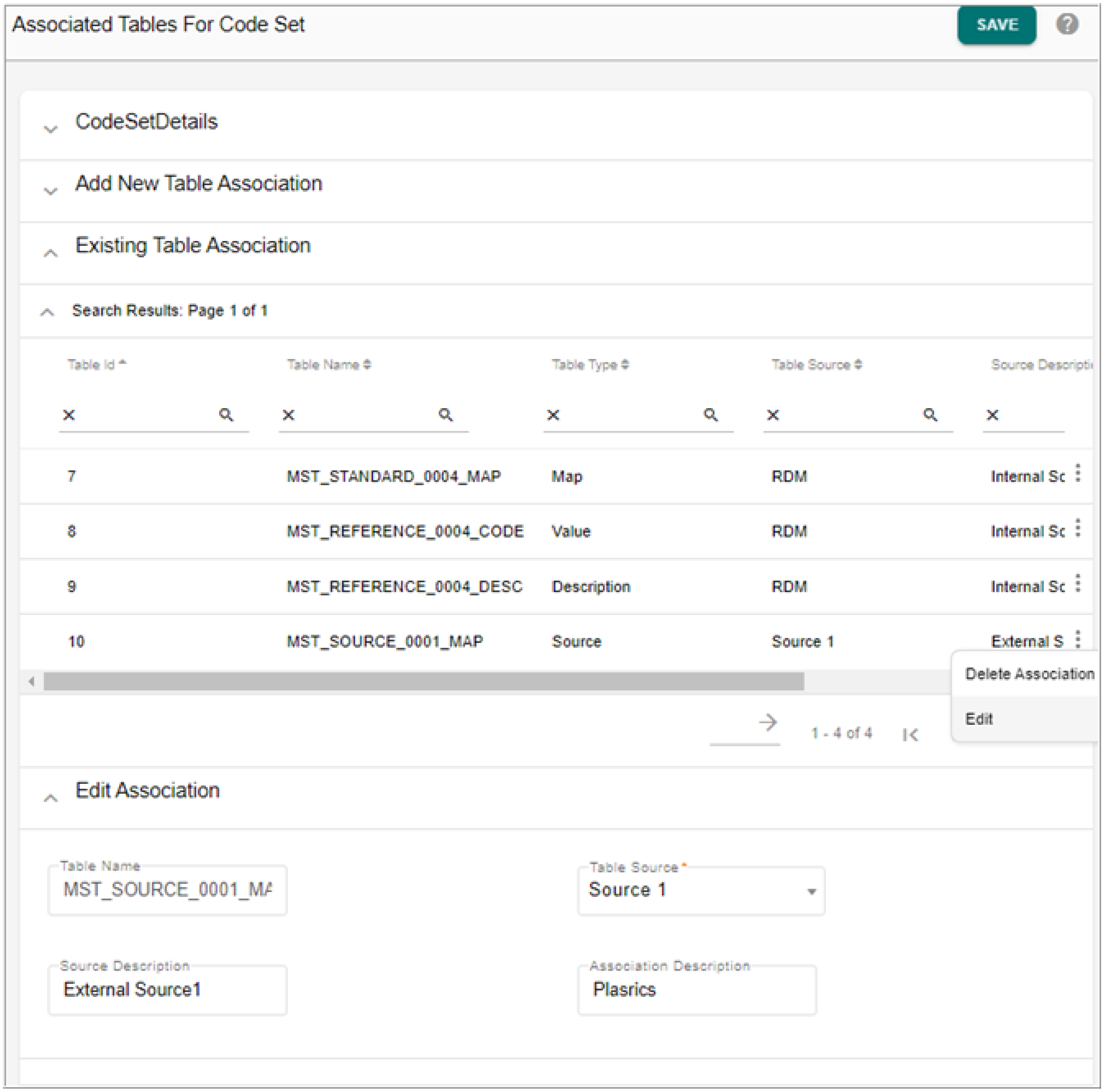
1 On the **Associated Tables for Code Set** UI, click on the Menu icon corresponding to the required table association and click **Edit**.

The **Associated Tables for Code Set** UI, refreshes to display the **Edit Association** pane as in Figure 528.

2 On the **Edit Association** pane, modify the required values and click **Save**.

Message: “Association edited successfully” is displayed.

Figure 528: Associated Tables for Code Set



Associated Tables For Code Set

CodeSetDetails

Add New Table Association

Existing Table Association

Search Results: Page 1 of 1

Table Id	Table Name	Table Type	Table Source	Source Descripti
7	MST_STANDARD_0004_MAP	Map	RDM	Internal Sc
8	MST_REFERENCE_0004_CODE	Value	RDM	Internal Sc
9	MST_REFERENCE_0004_DESC	Description	RDM	Internal Sc
10	MST_SOURCE_0001_MAP	Source	Source 1	External S

Edit Association

Table Name: MST_SOURCE_0001_MA

Table Source*: Source 1

Source Description: External Source1

Association Description: Plasrics

To delete Association:

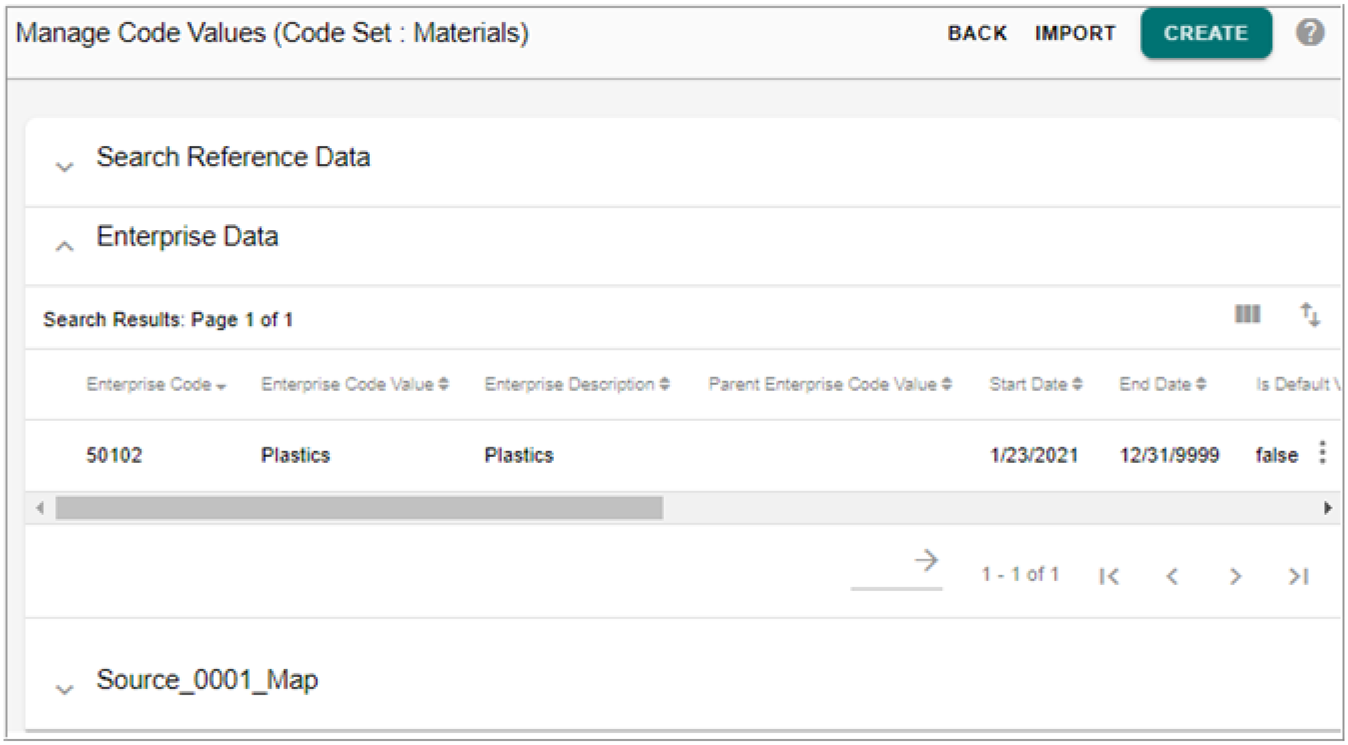
1. On the **Associated Tables for Code Set** UI, click on the Menu icon corresponding to the required table association and click **Delete Association**.
2. On the confirmation web page dialog, click **Yes**.

   Message: “Association deleted successfully” is displayed.

Create Code Values

Navigate to **Manage Code Values** UI of the corresponding code set and create the required code values. The added code values will be displayed in the Enterprise Code Values pane as in Figure 529. For details on creating code values, see Section : “Adding Code Value.”

Figure 529: Manage Code Values



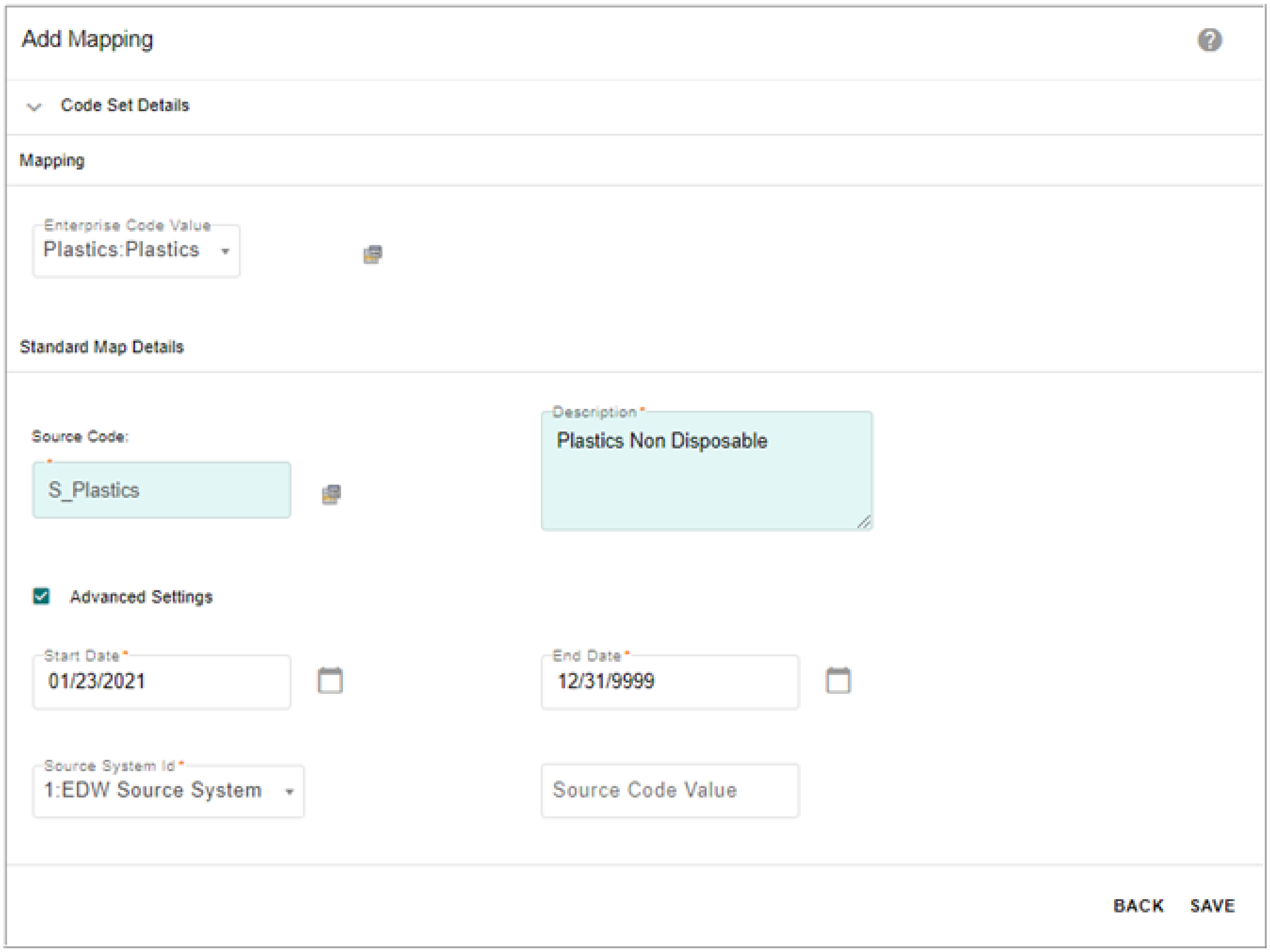
Enterprise Code	Enterprise Code Value	Enterprise Description	Parent Enterprise Code Value	Start Date	End Date	Is Default
50102	Plastics	Plastics		1/23/2021	12/31/9999	false

Map Code Values to Source

To add mapping:

1. On the **Manage Code Values** UI, in the **Enterprise Data** pane and click **Manage Mappings** and on the **Manage Mappings** UI, click **Add Mapping**.

Figure 530: Add Mapping



Enterprise Code Value: Plastics:Plastics

Source Code: S_Plastics

Description: Plastics Non Disposable

☑ Advanced Settings

Start Date: 01/23/2021

End Date: 12/31/9999

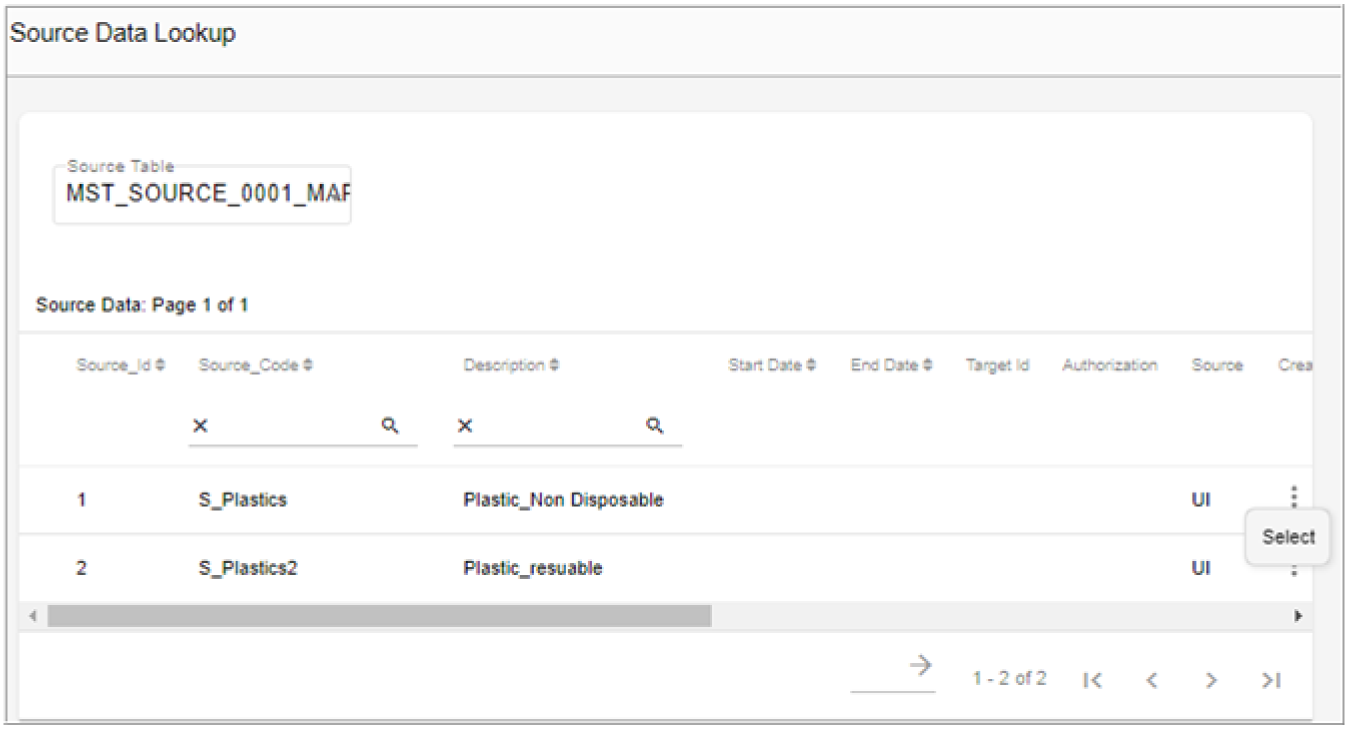
Source System Id: 1:EDW Source System

Source Code Value

2 On the **Add Mapping** UI (Figure 530),

- In the **Mapping** pane, select the enterprise code value from **Enterprise Code Value** dropdown.
- In the **Standard Map Details** pane, for **Source Code**, click on corresponding lookup icon and on the **Source Data Lookup** UI, select the source table from **Source Table** drop down, select the source data and click **Select** as in Figure 529.

Figure 531: Source Data Lookup



Source Data Lookup

Source Table: MST_SOURCE_0001_MAP

Source Data: Page 1 of 1

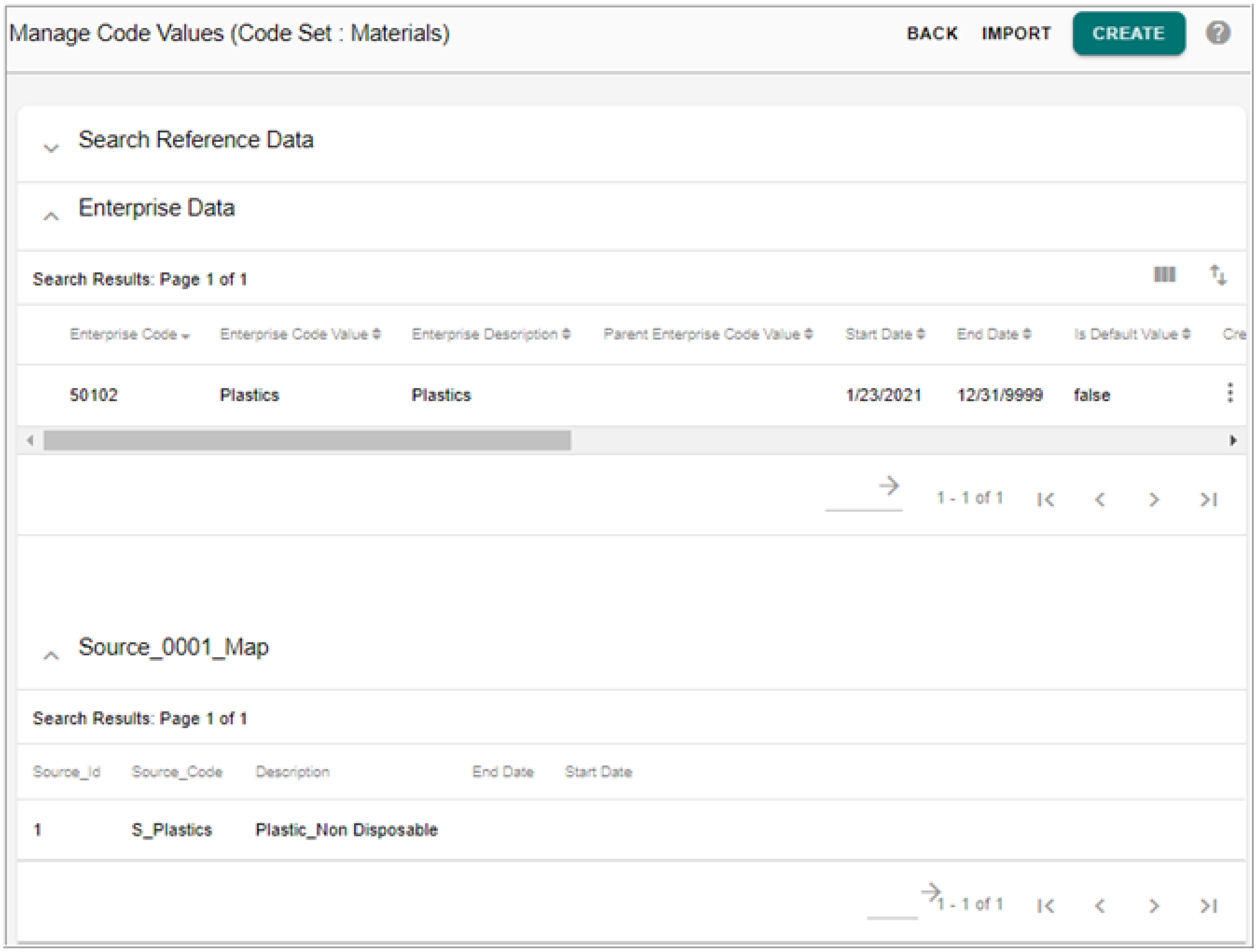
Source_Id	Source_Code	Description	Start Date	End Date	Target Id	Authorization	Source	Crea
1	S_Plastics	Plastic_Non Disposable					UI	
2	S_Plastics2	Plastic_resuable					UI	

1 - 2 of 2

- In the **Standard Map Details** pane, enter the source code description and source code value, select the start and end date, source system Id and click **Save**.

Message: “Mapping added successfully” is displayed. The **Source_Map** pane on the Manage Code Values page displays the added mappings as in Figure 531.

Figure 532: Manage Code Values



Manage Code Values (Code Set : Materials)

Search Results: Page 1 of 1

Enterprise Code	Enterprise Code Value	Enterprise Description	Parent Enterprise Code Value	Start Date	End Date	Is Default Value	Cre
50102	Plastics	Plastics		1/23/2021	12/31/9999	false	

Search Results: Page 1 of 1

Source_Id	Source_Code	Description	End Date	Start Date
1	S_Plastics	Plastic_Non Disposable		

Matching to Identify Source Mapping

The below section describes the process of using match profile for the LRDM Unmapped Source Records to match against the enterprise value records to find mapping. The match profile is created between the Unmapped Source Records and Enterprise Records for a particular code set. Perform the following steps to create match profile:

1 Create a document view on Standard Map (or multitable for the same) table with only Unmapped Source Records for a particular code set. A sample definition of the document view is provided below:

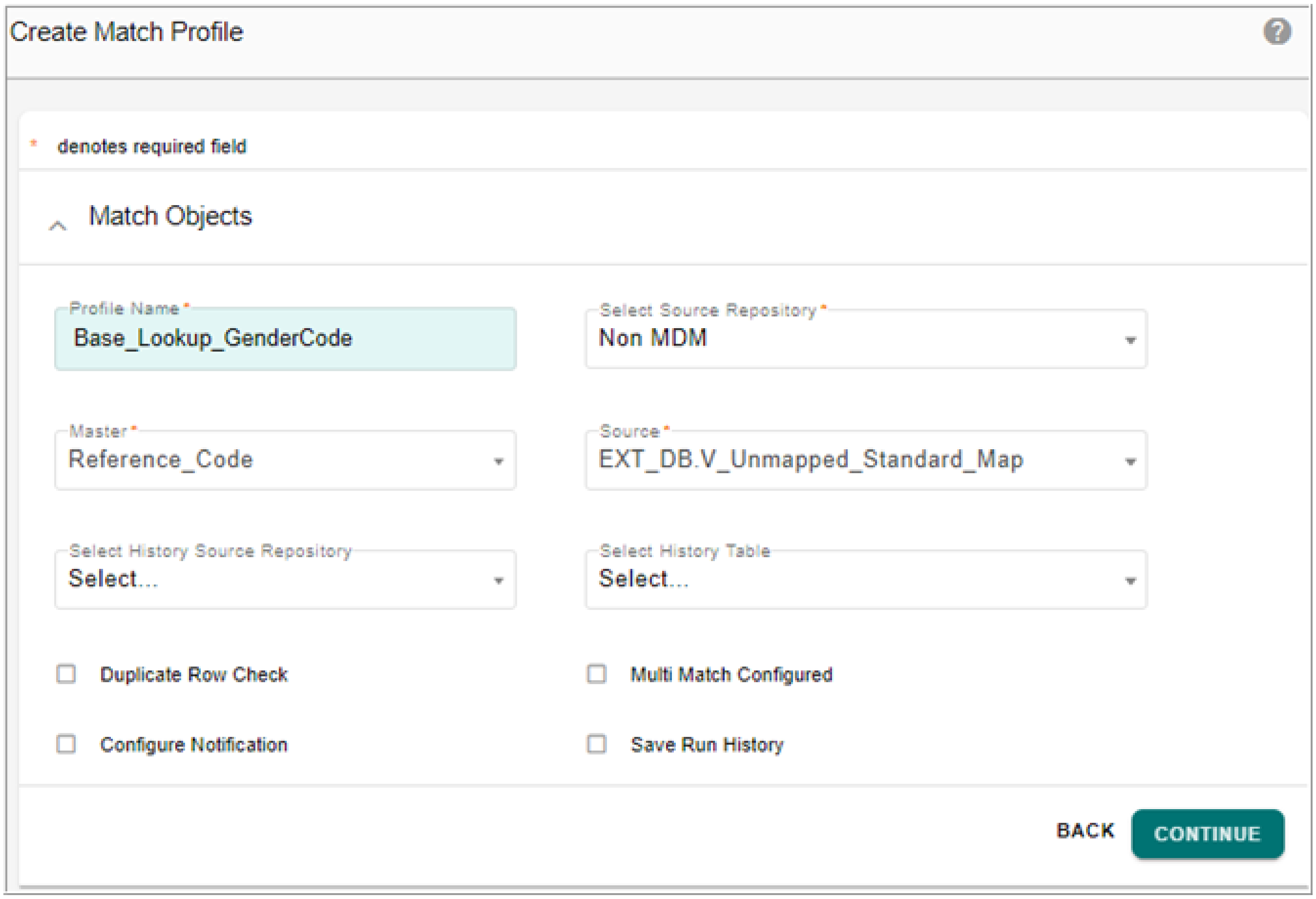
```
REPLACE VIEW EXT_DB.V_Unmapped_Standard_Map
AS
locking row for access
SELECT
SOURCE_CODE,CTL_ID,DOMAIN_ID,CODE_SET_ID,EDW_CODE,
DESCRIPTION,START_DATE,END_DATE,RECORD_DELETED_FLAG,
PROCESS_NAME,PROCESS_ID,UPDATE_PROCESS_NAME,
UPDATE_PROCESS_ID,EXT_ATTRB_1,EXT_ATTRB_2,EXT_ATTRB_3,
EXT_ATTRB_4,EXT_ATTRB_5,EXT_ATTRB_DATE_1,EXT_ATTRB_DATE_2,
EXT_ATTRB_DEC_1,EXT_ATTRB_DEC_2,EXT_ATTRB_DEC_3,
SYS_TARGET_ID,SYS_AUTH_ID,SYS_SOURCE,SYS_CREATED_BY,
SYS_CREATION_DATE,SYS_ENT_STATE,SYS_LAST_MODIFIED_BY,
SYS_LAST_MODIFIED_DATE,SYS_NC_TYPE,SYS_ERR_CODE,
SYS_ERR_SVRTY
from qauser01.mst_standard_map
where edw_code < 0 and code_set_id = '1103';
```

The document view can be either MDM or Non MDM view. In the above sample, it is non MDM view and Gender Code set.

Note: The EDW code set ID should be the primary key of the source view.

2 Navigate to Matching Workbench and create a match profile with name prefixed as “Base_Lookup” as in Figure 533. In the match profile, the master table should be selected as Reference Code table where all the enterprise values are stored. The view created in step 1 should be selected as source.

Figure 533: Create New Profile



Profile Name*: Base_Lookup_GenderCode

Select Source Repository*: Non MDM

Master*: Reference_Code

Source*: EXT_DB.V_Unmapped_Standard_Map

Select History Source Repository: Select...

Select History Table: Select...

☐ Duplicate Row Check

☐ Multi Match Configured

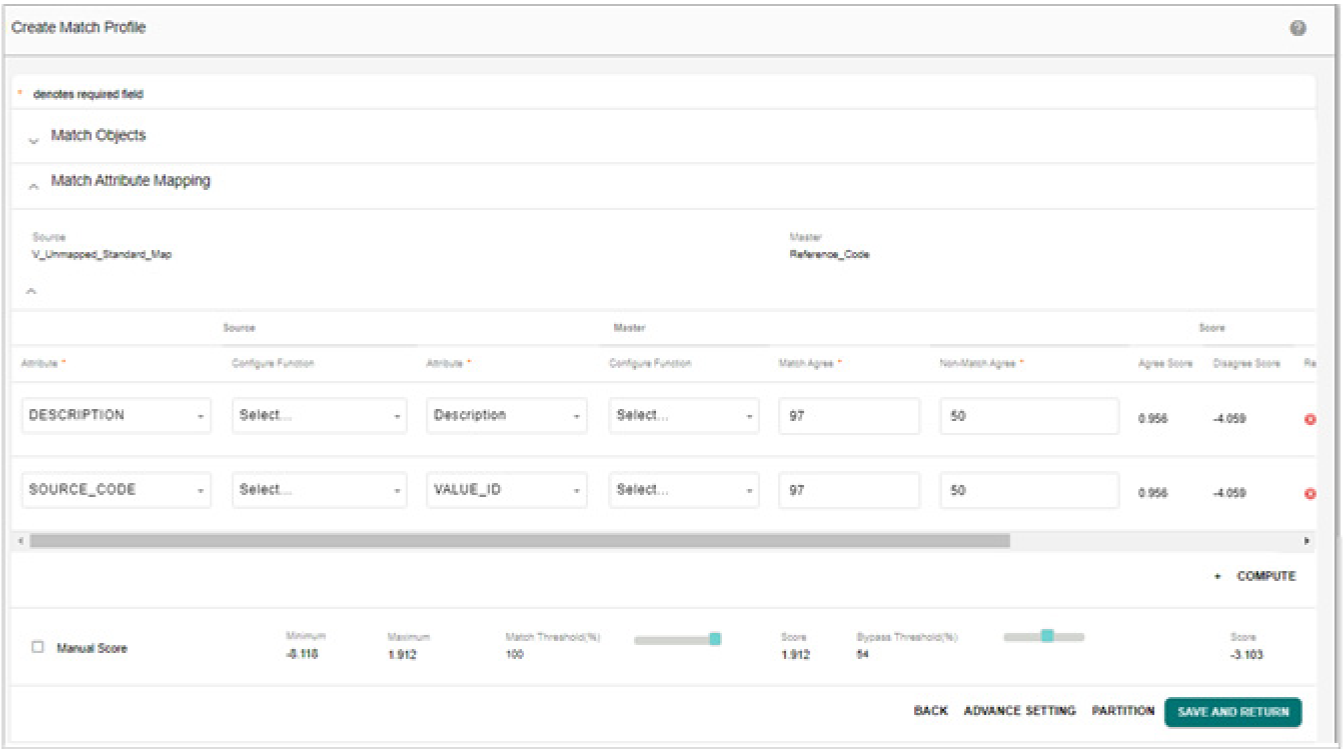
☐ Configure Notification

☐ Save Run History

3 The matching is done between “Description and Value_ID” columns from Reference Code table and “Description and Source_Code” from the Document View on Standard Map table as in Figure 534. You can choose your own matching criteria based on the data to match.

4 Map the master and source attributes, assign match probabilities and click **Save and Return**.

Figure 534: Match Attribute Mapping



Source
V_Unmapped_Standard_Map

Master
Reference_Code

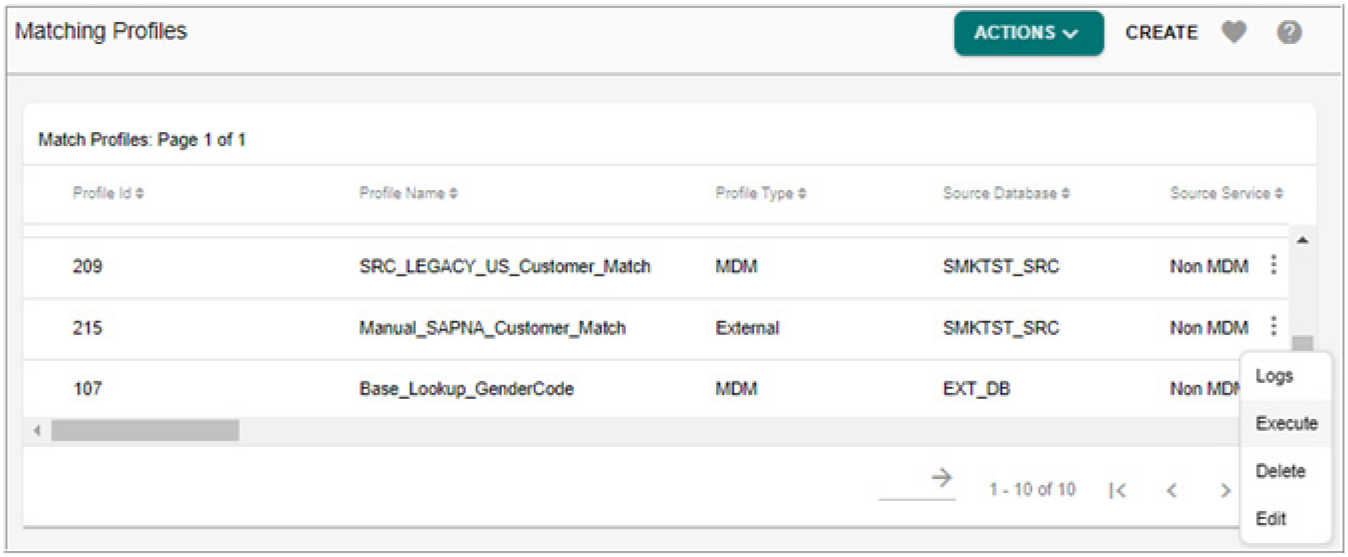
Source		Master				Score	
Attribute *	Configure Function	Attribute *	Configure Function	Match Agree *	Non-Match Agree *	Agree Score	Disagree Score
DESCRIPTION	Select...	Description	Select...	97	50	0.956	-4.059
SOURCE_CODE	Select...	VALUE_ID	Select...	97	50	0.956	-4.059

☐ Manual Score

Minimum -8.118
Maximum 1.912
Match Threshold(%) 100
Score 1.912
Bypass Threshold(%) 54
Score -3.103

5 On the Matching Profiles page, click on the Menu icon corresponding to the required profile and click **Execute** as in Figure 535.

Figure 535: Matching Profiles

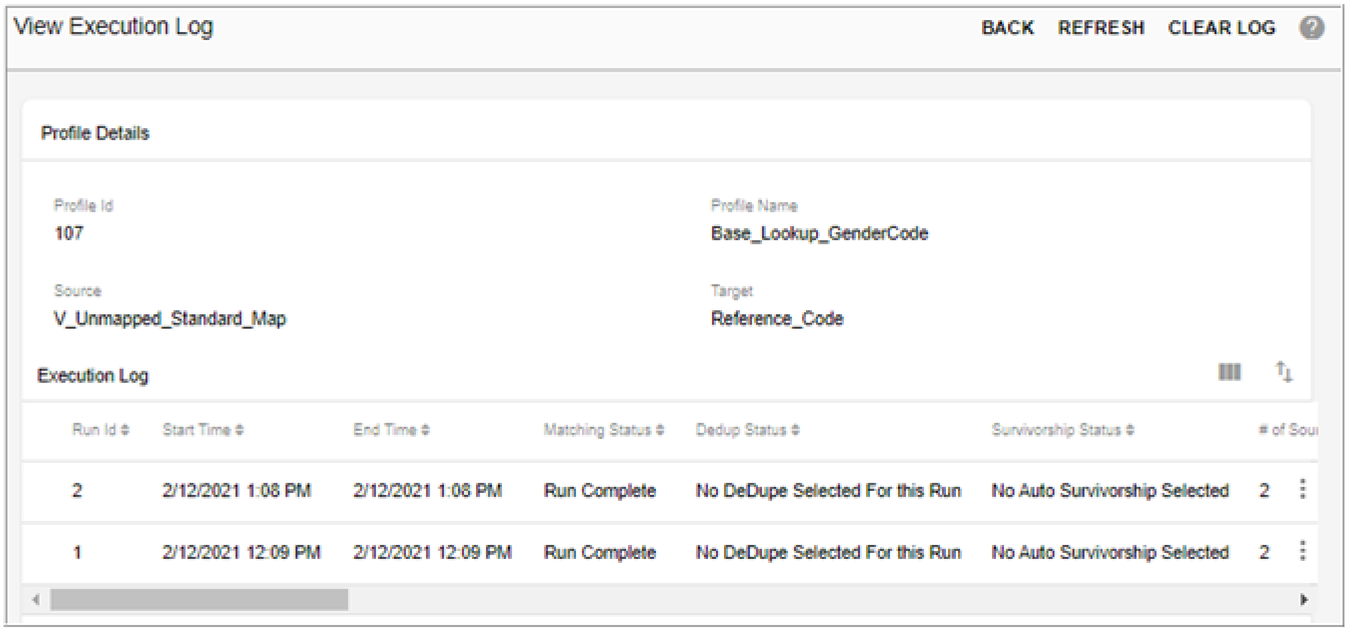


Match Profiles: Page 1 of 1

Profile Id	Profile Name	Profile Type	Source Database	Source Service
209	SRC_LEGACY_US_Customer_Match	MDM	SMKTST_SRC	Non MDM
215	Manual_SAPNA_Customer_Match	External	SMKTST_SRC	Non MDM
107	Base_Lookup_GenderCode	MDM	EXT_DB	Non MDI

6 Navigate to **View Execution Log** to see the execution results as in Figure 536.

Figure 536: View Execution Log



Profile Details

Profile Id
107

Profile Name
Base_Lookup_GenderCode

Source
V_Unmapped_Standard_Map

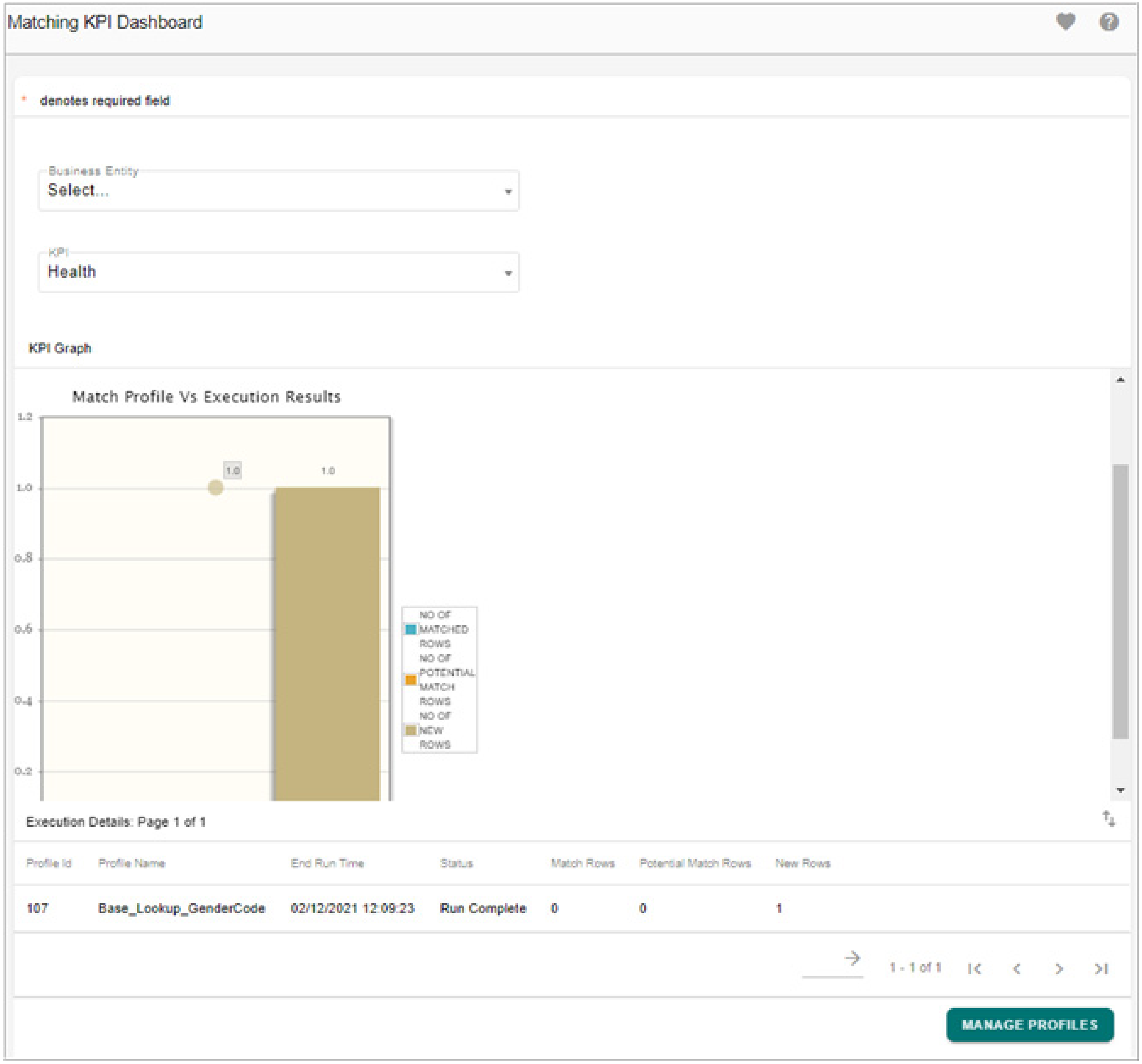
Target
Reference_Code

Execution Log

Run Id	Start Time	End Time	Matching Status	Dedup Status	Survivorship Status	# of Sou
2	2/12/2021 1:08 PM	2/12/2021 1:08 PM	Run Complete	No DeDupe Selected For this Run	No Auto Survivorship Selected	2
1	2/12/2021 12:09 PM	2/12/2021 12:09 PM	Run Complete	No DeDupe Selected For this Run	No Auto Survivorship Selected	2

7 Navigate to **Matching Dashboard** to see the Execution Details with Match Rows, New Rows etc., as in Figure 537.

Figure 537: Matching Dashboard



Matching KPI Dashboard

* denotes required field

Business Entity: Select...

KPI: Health

KPI Graph

Match Profile Vs Execution Results
1.2
1.0
0.8
0.6
0.4
0.2
1.0
1.0
NO OF MATCHED ROWS
NO OF POTENTIAL MATCH ROWS
NO OF NEW ROWS

Execution Details: Page 1 of 1

Profile Id	Profile Name	End Run Time	Status	Match Rows	Potential Match Rows	New Rows
107	Base_Lookup_GenderCode	02/12/2021 12:09:23	Run Complete	0	0	1

8 On the **Matching Dashboard**, in the **Match Rows** column, click on the numeric hyperlink.

9 On the **Merge Match Records**, select the record and click **Merge Records**.

On the Manage Lookup Data page, the record will be moved from Unmapped source column to Mapped Source Records column.

Note: For LRDM matching to work the way mentioned in the above steps:

- Matching profile naming convention as mentioned in step 2 needs to be followed.
- Apply button on Merge Match records comes only for fully matched records.

Parent Child Validation in LRDM

The parent-child relationships captured while creating code sets or Enterprise values in LRDM are honored in configurable UIs. When a parent code value is selected from parent dropdown, the corresponding child of the selected parent are populated in child dropdown.

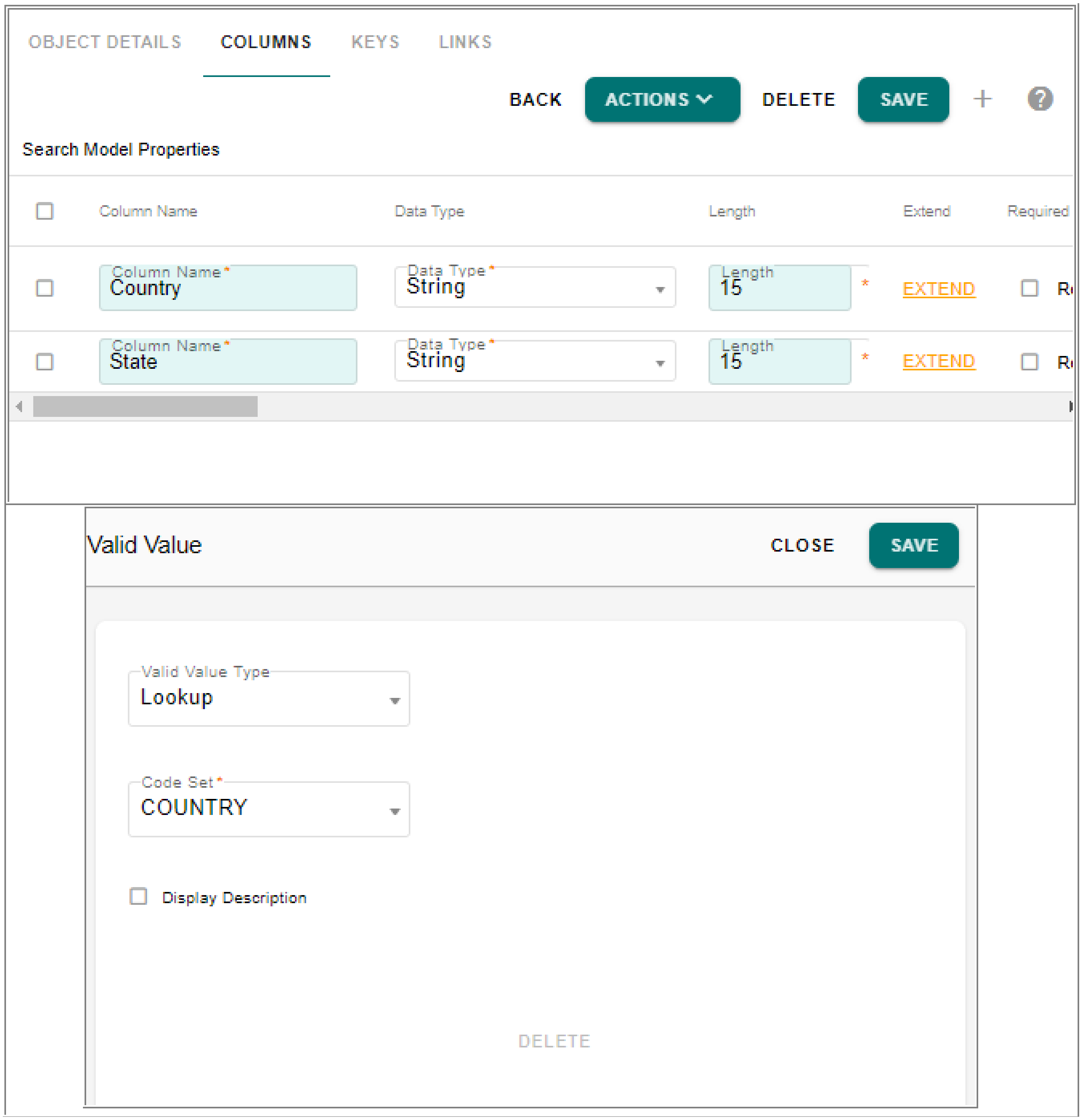
The below section demonstrates an use case of parent child validation in LRDM. It provides the necessary business rules/logic to insert/select valid parent-child values using “Country” (Parent) and “State” (Child) example.

Configurable UI: Display child values based on Parent value selection

1. Map columns of master tables to individual code sets while designing the mtts of master tables using Model Builder UI.

   Map of master table columns to code sets can be done using MDM Model Builder UI as in Figure 538. Master table column 'Country' points to code set 'Country'. Similarly map Master table column 'State' points to code set 'STATE'. For details, refer to *Master Data Management Studio User Guide.*

Figure 538: Map Master Table Column to Code Set



☐	Column Name	Data Type	Length	Extend	Required
☐	Column Name* Country	Data Type* String	Length 15 *	EXTEND	☐ R
☐	Column Name* State	Data Type* String	Length 15 *	EXTEND	☐ R

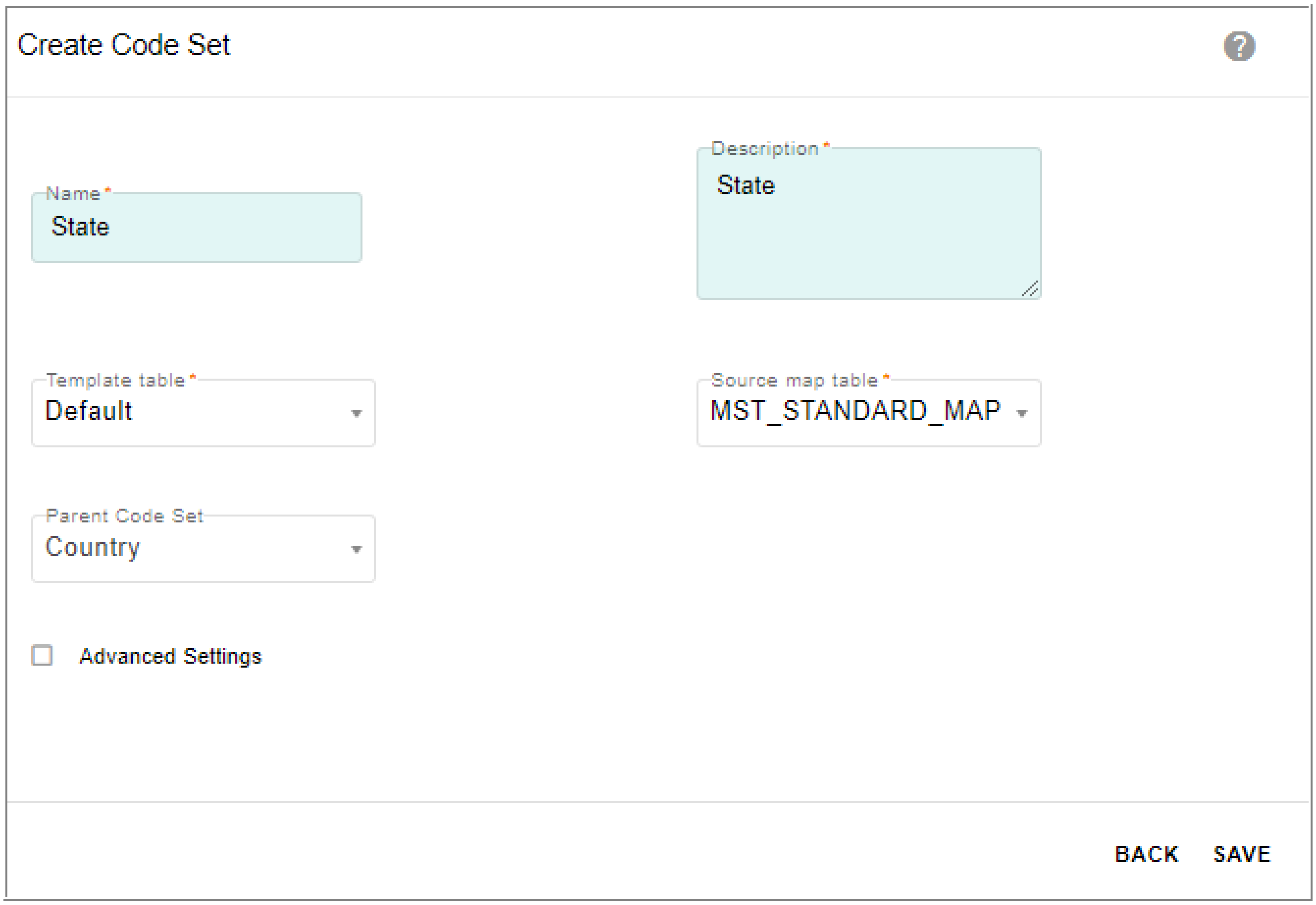
Valid Value Type: Lookup

Code Set*: COUNTRY

☐ Display Description

2 On the Manage Lookup Data UI, relation between code sets can be maintained by providing parent code set for particular code set as in Figure 539.

Figure 539: LRDM UI to Map Parent Code



Name*: State

Description*: State

Template table*: Default

Source map table*: MST_STANDARD_MAP

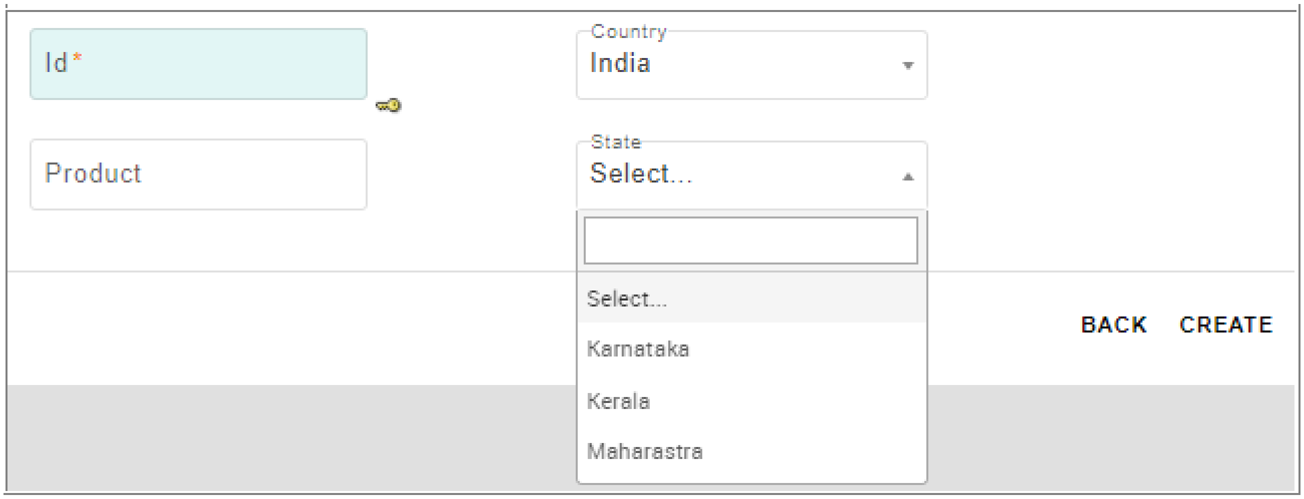
Parent Code Set: Country

☐ Advanced Settings

3 The values for related (Parent-Child relationship) master table columns are displayed on Configurable UI based on parent value selections.

In below example values for “State” are displayed based on selected value in parent “Country”.

Figure 540: Parent Child Relationship on Configurable UI



Country: India

State: Select...

Excel Upload: Business Rules for Parent-Child values validation

Business rules for each Parent-Child relationship in master table will be generated dynamically which will validate all Parent-Child values in excel upload. Business rules generation happens dynamically during ISG.

Default LRDM Admin and User Roles

LRDM provides two roles out of the box (RDM admin and RDM user) with certain set of assigned activities.

- **RDM Admin User**

  For default RDM admin user,

  - Login name: rdm_admin
  - Password: admin
  - Role: RDM_ADMIN
  - User Group: RDM_ADMIN

RDM admin user will not have default access to custom code set value tables and specific access rights have to be provided to access custom code set value tables.

- **RDM User**

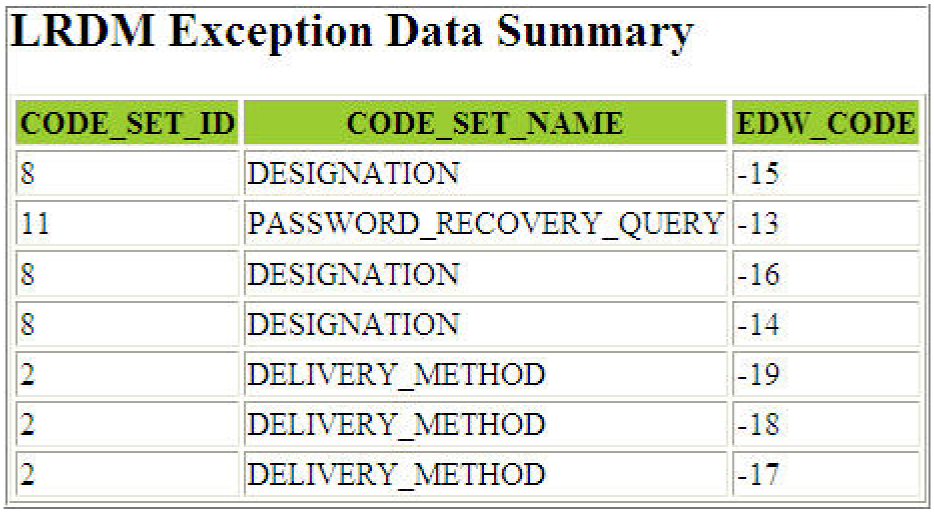
  For default RDM user,

  - Login name: rdm_user
  - Password: pw
  - Role: RDM_USER
  - User Group: RDM_USER

Exception Monitoring Process

Exception monitoring feature provides data stewards the ability to monitor and act upon unknown or new Enterprise codes available in the source data. Exception monitoring process sends an email alert at regular or configured interval for any such occurrences (negative EDW codes inserted via BMAP processes) in the Standard Map table.

By default MDM provides the data stewards every 6hrs once, the list of unknown (negative EDW) code values, if any in the Standard Map table (s), through email as below.



LRDM Exception Data Summary

CODE_SET_ID	CODE_SET_NAME	EDW_CODE
8	DESIGNATION	-15
11	PASSWORD_RECOVERY_QUERY	-13
8	DESIGNATION	-16
8	DESIGNATION	-14
2	DELIVERY_METHOD	-19
2	DELIVERY_METHOD	-18
2	DELIVERY_METHOD	-17

Perform the following steps to configure exception monitoring emails:

1 The poller properties in MST_SYS_PROPS table can be configured using configurable UI. Edit the following properties:

- PollDataSteward --- set property Value to true if you want to start poller (default: false).
- DataStewardRoleID --- role Id of Data Steward to send email/alert to (default: Admin).
- DataStewardPollerDuration -- set duration of Data Steward timer in minutes (default: 360 that is 6 hours).

- Make sure to setup email attributes correctly while installing MDM.
- Restart MDM server after setting the above properties.

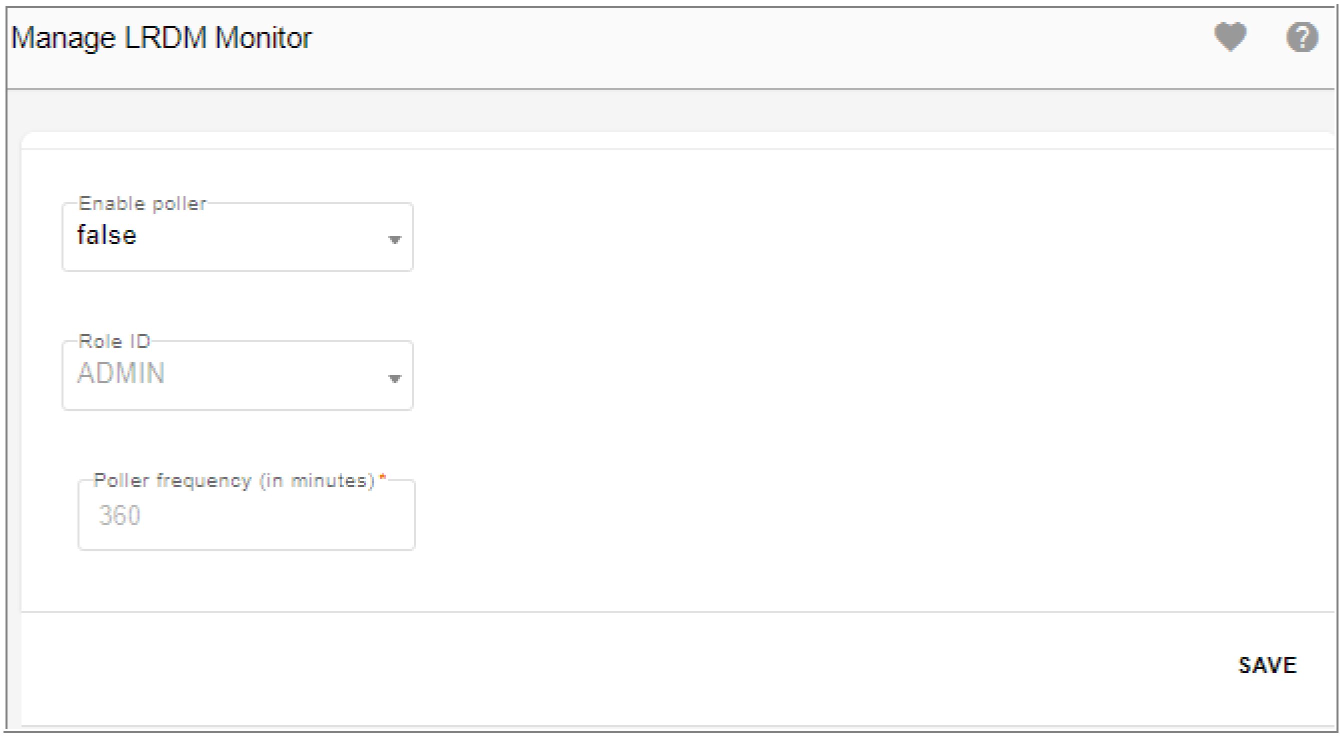
Manage LRDM Monitor

MDM provide option to configure the poller properties from MDM UI. Perform the following steps to configure poller properties:

1 On the MDM UI, click **Reference Data** -> **Manage Reference Data** and on the **Reference Data Dashboard**, select **Reference Data Monitor** from **Actions** dropdown.

The **Manage LRDM Monitor** page (Figure 541) is displayed.

Figure 541: Manage LRDM Monitor



Enable poller: false

Role ID: ADMIN

Poller frequency (in minutes)*: 360

2 On the **Manage LRDM Monitor** page (Figure 541), perform the following:

- **Enable poller**: set to true to enable monitoring process. (default: false)
- **Role ID**: select the data steward role Id from the **Role ID** drop-down to send notifications (default: Admin).
- **Poller frequency (in minutes)**: enter the poller frequency in minutes for polling the -ve edw_codes (default: 360, that is 6 hours)

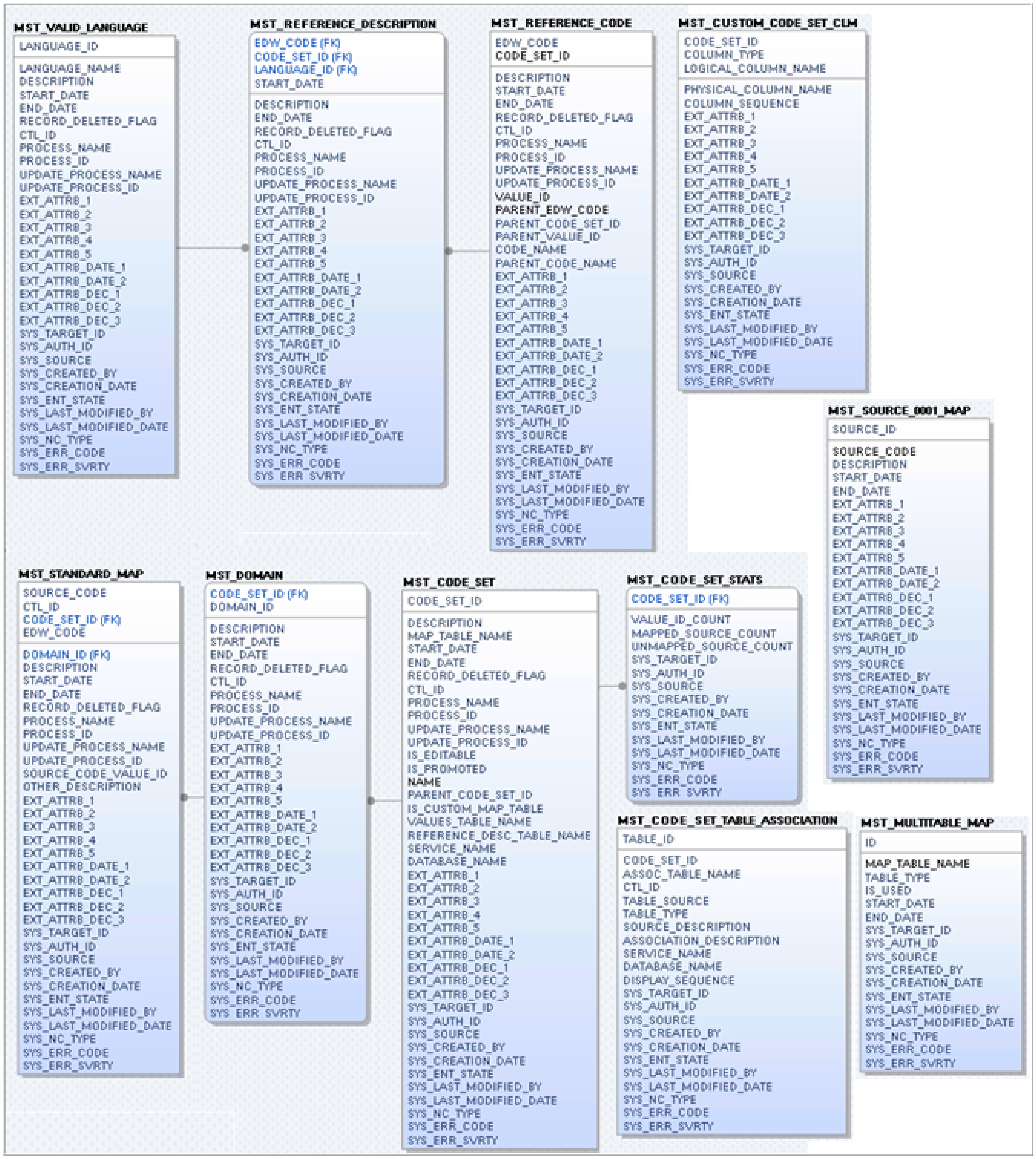
3 Click **Save**.

Message: Configuration saved is displayed.

LRDM Logical or Physical Data Model Overview

The Figure 542 displays the LRDM logical or physical data model.

Figure 542: LRDM Logical or Physical Data Model



The below section describes the logical/physical data model table fields in detail.

Table: Code_Set

Purpose: all reference data code sets are registered in Code_Set. This is a static reference table.

Note: Row Level Security (RLS) is enabled by default on the Code Set table.

Columns:

- Code_Set_Id: type—Int. System identifier of the reference data code set as per the agreed naming standard. Unique and the primary key of this table.
- Description: type—Varchar(1000). Description of the reference code data set as per the agreed naming standard.
- Map_Table_Name: type—Varchar(30). The physical table name of the standard map table for this Code_Set_Id according to the table naming convention and the agreed naming standard.
- Start_Date: type—Date. Standard control framework processing attribute.
- End_Date: type—Date. Standard control framework processing attribute.
- Record_Deleted_Flag: type—Int. Standard control framework processing attribute.
- Ctl_Id: type—Int. Standard control framework processing attribute. This value will usually be loaded by a DBA initiated special load routine. This value will usually be set to indicate the data warehouse is the source of this data.
- Process_Name: type—Char (30). Standard control framework processing attribute.
- Process_Id: type—Int. Standard control framework processing attribute.
- Update_Process_Name: type—Char(30). Standard control framework processing attribute.
- Update_Process_Id: type—Int. Standard control framework processing attribute.
- Parent_Code_Set_Id: type—System identifier of the parent code set as per the agreed naming standard.

Table: Domain

Purpose: contains the information about the CODE_SET_ID as to which DOMAIN it belongs to.

Columns:

- Code_Set_Id: type—Int. System identifier of the reference data code set as per the agreed naming standard. Unique and the primary key of this table.
- Domain_ID: type—Int. Qualifies the Code_Set_Id where a crossed domain of Source_Code occurs within a Code_Set_Id. Default to zero.
- Description: type—Varchar(1000). Description of the reference code data set as per the agreed naming standard.
- Start_Date: type—Date. Standard control framework processing attribute.
- End_Date: type—Date. Standard control framework processing attribute.
- Record_Deleted_Flag: type—Int. Standard control framework processing attribute.

- Ctl_Id: type—Int. Standard control framework processing attribute. This value will usually be loaded by a DBA initiated special load routine. This value will usually be set to indicate the data warehouse is the source of this data.
- Process_Name: type—Char (30). Standard control framework processing attribute.
- Process_Id: type—Int. Standard control framework processing attribute.
- Update_Process_Name: type—Char(30). Standard control framework processing attribute.
- Update_Process_Id: type—Int. Standard control framework processing attribute.

Table: Standard_Map

Purpose: provides the mapping between source reference data code value and the data warehouse code value.

Columns:

- Source_Code: type— Varchar(100). Unique and the primary key of this table the source reference data code value.
- Code_Set_Id: type—Int (FK). System identifier of the reference data code set as per the agreed naming standard. Unique and the primary key of this table.
- Domain_Id: type—Int. Qualifies the Code_Set_Id where a crossed domain of Source_Code occurs within a Code_Set_Id. Default to zero.
- EDW_Code: type—Int. Assigned by the process that creates records in this table. Unique within Code_Set_Id and Domain_Id.
- Description: type—Varchar(1000). Description of the reference code data set as per the agreed Naming Standard.
- Start_Date: type—Date. Standard control framework processing attribute.
- End_Date: type—Date. Standard control framework processing attribute.
- Record_Deleted_Flag: type—Int. Standard control framework processing attribute.
- Ctl_Id: type—Int. The identifier of the source system that provided this Source_Code.
- Process_Name: type—Char (30). Standard control framework processing attribute.
- Process_Id: type—Int. Standard control framework processing attribute.
- Update_Process_Name: type—Char(30). Standard control framework processing attribute.
- Update_Process_Id: type—Int. Standard control framework processing attribute.

Table: Reference_Code

Purpose: provides the mapping between source reference data code value and the data warehouse code value.

Columns:

- EDW_Code: type—Int. System identifier of the reference data code value. Incrementally assigned by the loading process. Unique within the Code_Set_Id and part of the primary key of this table.
- Code_Set_Id: type—Int (FK). From Code_Set. Part of the primary key of this table.

- Description: type—Varchar(1000). System description of the reference code data set as per the agreed naming standard. Default description used when no semantic language description is specified.
- Start_Date: type—Date. Standard control framework processing attribute.
- End_Date: type—Date. Standard control framework processing attribute.
- Record_Deleted_Flag: type—Int. Standard control framework processing attribute.
- Ctl_Id: type—Int. Standard control framework processing attribute. This value will usually be loaded by a DBA initiated special load routine. This value will usually be set to indicate the data warehouse is the source of this data.
- Process_Name: type—Char (30). Standard control framework processing attribute.
- Process_Id: type—Int. Standard control framework processing attribute.
- Update_Process_Name: type—Char(30). Standard control framework processing attribute.
- Update_Process_Id: type—Int. Standard control framework processing attribute.
- Parent_Code_Set_Id: type—System identifier of the parent code set as per the agreed naming standard.

Table: Reference_Description

Purpose: links the assigned data warehouse code value to a semantic language description.

Columns:

- EDW_Code: type—Int(FK). From CTLFW_Reference_Code.
- Code_Set_Id: type—Int (FK). From Code_Set. Part of the primary key of this table.
- Language_Id: type—Int (FK). From CTLFW_Valid_Language. The semantic language of this description.
- Start_Date: type—Date. Standard control framework processing attribute. Part of the primary key of this table.
- Description: type—Varchar(1000). Description of the data warehouse code data value for this language as per the agreed naming standard.
- End_Date: type—Date. Standard control framework processing attribute.
- Record_Deleted_Flag: type—Int. Standard control framework processing attribute.
- Ctl_Id: type—Int. Standard control framework processing attribute. This value will usually be loaded by a DBA initiated special load routine. This value will usually be set to indicate the data warehouse is the source of this data.
- Process_Name: type—Char (30). Standard control framework processing attribute.
- Process_Id: type—Int. Standard control framework processing attribute.
- Update_Process_Name: type—Char(30). Standard control framework processing attribute.
- Update_Process_Id: type—Int. Standard control framework processing attribute.

Table: Valid_Language

Purpose: all valid languages are registered in Valid_Language table.

Columns:

- Language_Id: type—Int (FK). System identifier of the language as per the agreed naming standard. Unique and the primary key of this table.
- Language: type—Varchar(30). Short description of the language (example: English)
- Description: type—Varchar(1000). Long Description of the language as per the agreed naming standard.
- Start_Date: type—Date. Standard control framework processing attribute.
- End_Date: type—Date. Standard control framework processing attribute.
- Record_Deleted_Flag: type—Int. Standard control framework processing attribute.
- Ctl_Id: type—Int. Standard control framework processing attribute. This value will usually be loaded by a DBA initiated special load routine. This value will usually be set to indicate the data warehouse is the source of this data.
- Process_Name: type—Char (30). Standard control framework processing attribute.
- Process_Id: type—Int. Standard control framework processing attribute.
- Update_Process_Name: type—Char(30). Standard control framework processing attribute.
- Update_Process_Id: type—Int. Standard control framework processing attribute.

Table: Code_Set_Stats

Purpose: Stores the number of values and mapped source records for a particular code set.

Columns:

- Value_ID_Count: type—Int. Store the count of value_id for a particular codeset.
- Mapped_Source_Count: type—Int. Stores the count of mapped source records for a particular codeset.
- UnMapped_Source_Count: type—Int. Stores the count of mapped source records for a particular codeset.

Table: Custom_Code_Set_CLM

Purpose: stores the column name of the custom table from where the values are fetched for a custom code set.

Columns:

- Code_Set_Id: type—Int. Stores the code set id.
- Column_Type: type—String. Store the data type of the column.
- Logical_Column_Name: type—String. Stores the logical name of the column.
- Physical_Column_Name: type—String. Stores the physical name of the column.
- Column_Sequence: type—Int. Stores the sequence of the column.

Table: Source_001_Map

Purpose: to store the source records.

Columns:

- Source_ID: type—Int. Store the autogenerated Id.
- Source_Code: type—String. Source_code to be stored in the standard map table.
- Description: type—String. Store the description of the source code.
- Start_ Date: type—Date. Store the start date of source code.
- End_Date: type—Date. Store the end date of source code.

Table: Multitable_Map

Purpose: to store the information of the multitables generated.

Columns:

- Map_Table_Name: type—String. Store the name of multitable.
- Table_Type: type—String. Store the type of multitable (code, description or mapping table)
- Is_Used: type—Char.Specifies whether the table is used or not.
- Start_ Date: type—Date. Store the start date of multitables.
- End_Date: type—Date. Store the end date of multitables.

Table: Code_Set_Table_Association

Purpose: Each code set will be mapped to multiple source systems. One code set and source system association table will be added to RDM data model MST_CODE_SET_ASSOCIATION

Columns:

- Table_Id: type— Int. Store Auto generated Id which identified a table associated with code set.
- Code_Set_Id: type—Int. Store the Code_Set_Id of the code set to which table is associated.
- Assoc_Table_Name: type—Varchar. Store the Table name.
- CTL_Id: type—Int. Store the Control Id of the source system to which the Table belongs.
- Table_Source: type—Varchar. Store the Table Source.
- Table_Type: type—Varchar. Store the Table Type RDM or Source.
- Source_Description: type—Varchar. Store the source description.
- Association_Description: type—Varchar. Store the association description.
- Service_Name: type—Varchar. Store service name in case of non MDM.
- Database_Name: type—Varchar. Store Database name in case of non MDM.
- Display_Sequence: type—Int. Store the sequence in which table has to be displayed.

CHAPTER 16 Hierarchy Management

What's In This Chapter

This chapter provides detailed information on Hierarchy Management feature of MDM.

Topics include:

Overview

A hierarchy management is a feature to MDM that allows users to define a hierarchy structure that effectively mirrors the hierarchical nature of their business data. The hierarchy manager provides the ability to define/manage the composition of a hierarchy. This includes the ability to add/modify/delete hierarchy objects, add/modify/delete hierarchy relationships and add/delete/modify hierarchies.

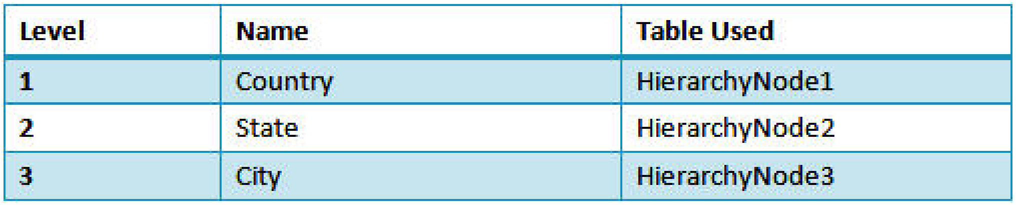
In earlier versions of MDM Hierarchy Management, in order to create a hierarchy, you need to first model the tables required for storing the parent and child node information and their relationships. Once model for the hierarchy is ready, relationships need to be created using Relational Objects for parent and child tables. In the process of creating relationship, user needs to link the key columns of parent and child tables. Since the underlying model for each hierarchy is different, each time a hierarchy is created, the process of modeling tables for hierarchy nodes and relationships, performing ISG, creating relationships taking care of link columns involved needs to be performed. This process is too tedious and technical for a business user.

MDM simplifies the process of creating Hierarchy. The new design of hierarchy manager utilizes a generic data model to store the details of Nodes (Hierarchy Objects) and their Relationships. The data model uses generic structures that can house data for any hierarchy. The tables involved are HierarchyNode and HierarchyNodeRelationship. The HierarchyNode table stores the data for one (or more) levels of the hierarchy, and the HierarchyNodeRelationship tables stores the parent child relationship between the HierarchyNode tables. Additional attributes in the form of extended attributes can be defined for any level or relationship of Hierarchy.

Business users are not expected to be aware of underlying table details of any Hierarchy Object or Relationship of a Hierarchy. All table related details will be handled behind the scene. A business user can directly start creating Hierarchy Objects and Relationships without bothering about the data model to store hierarchy data. The data for Hierarchy (node data and relationships between the nodes) can be populated either by using configurable UI or by using excel upload.

The generic data model is part of the OOB solution. These tables can be generated from newly introduced Manage Template capability of Model Builder.

Let's see with an example. Below is the model of a Geography hierarchy. It is a three level hierarchy.



Level	Name	Table Used
1	Country	HierarchyNode1
2	State	HierarchyNode2
3	City	HierarchyNode3

The parent-child relationship between Level 2 and Level 1 is stored in HierarchyNodeReln1, Level 3 and Level 2 in HierarchyNodeReln2.

Structure of Hierarchy Node Table

NodeID, NodeName, Node External ID, Node Description, 20 String extended attributes, 2 date extended attributes and 5 decimal extended attributes.

Node names of hierarchy node objects must always be unique.

Structure of Hierarchy Relationship Table

NodeID, ParentNodeID, 20 String extended attributes, 2 date extended attributes and 5 decimal extended attributes.

The below table displays the details of the extended attributes of each HierarchyNode tables for the Geography hierarchy.

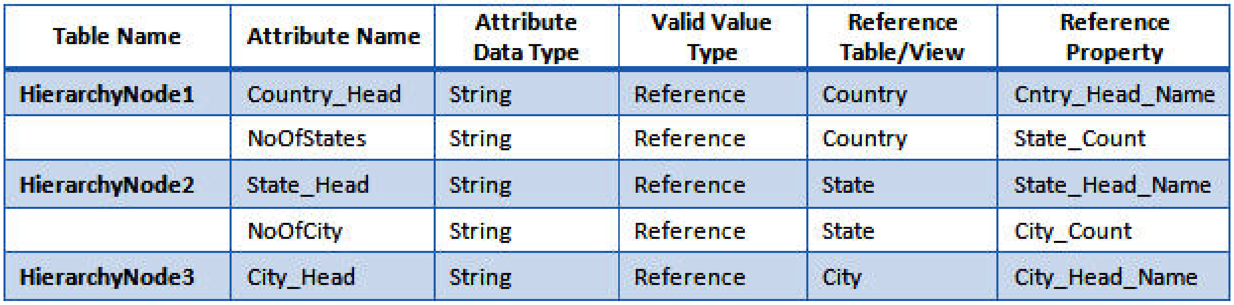


Table Name	Attribute Name	Attribute Data Type	Valid Value Type	Reference Table/View	Reference Property
HierarchyNode1	Country_Head	String	Reference	Country	Cntry_Head_Name
	NoOfStates	String	Reference	Country	State_Count
HierarchyNode2	State_Head	String	Reference	State	State_Head_Name
	NoOfCity	String	Reference	State	City_Count
HierarchyNode3	City_Head	String	Reference	City	City_Head_Name

Two types of Valid Value Type can be defined for an extended attribute:

- Reference—this is a valid value type where the user is asked to choose a reference table and the reference column or property that will be used to for referencing the attribute name.
- LookUp—this is a valid value type that makes use of the Code Set table that stores possible values under a specific category. The user will be asked to select the code set name that is created.

The Country, State and City tables are reference tables that have linkages to attributes at different levels in the hierarchy.

In Teradata MDM, significant part of business critical master data are hierarchical in nature. The hierarchical type of data resides in a series of relational database tables that are part of the core master data and consist of parent-child relationships as well as, other attributes that are unique to that relationship.

MDM’s Hierarchy Manager feature allows users with proper authorization to create or modify the structural composition of a hierarchy. Using Hierarchy Manager, you can define a hierarchy structure that effectively mirrors the hierarchical nature of the data, that is, map a hierarchy to hierarchical data residing in the Master database. This hierarchy structure can then be used to drive the hierarchy viewer and drive reporting processes.

Key features of Hierarchy Manager:

- Hierarchy manager provides the ability to efficiently create hierarchies, including the definition of hierarchy objects and the relationships.
- Hierarchy Manager provides an option for Role based access to Hierarchy Management.
- Hierarchy Objects are defined on OOB Hierarchy Node tables. Hierarchy Node tables are generic node tables containing Node ID, Node Name, Node Description, External Node IDs and extended attributes. Extended attributes are used for defining additional properties of Hierarchy Objects.
- The Relationships between objects of hierarchy are stored in OOB hierarchy relationship table. The relationship tables are generic tables containing Node ID, Parent node ID and extended attributes. Extended attributes are used to store additional information of relationships.
- Hierarchy manager provides the capability to manage and manipulate the hierarchical data and view the data in a visual hierarchy both in tree view structure and flattened or tabular view structure.

- Hierarchy manager provides an option to import hierarchy structure along with hierarchy relations from an Excel spreadsheet.
- Hierarchy manager provides the ability to create a version of a hierarchy and also view earlier versions of hierarchy along with the associated data. It provides an option to create a copy of the versioned hierarchy. It also provides an option to delete the hierarchy version.
- Hierarchy manager provides the ability to promote the version hierarchy to the master hierarchy, i.e. the current master hierarchy is replaced by the version hierarchy.
- Hierarchy manager provides the ability to export hierarchy data starting with parent element, and all child elements into Excel format.
- Hierarchy manager provides the capability to compare the underlying hierarchy against any other hierarchy or with versions.
- Hierarchy Manager provides the capability to merge the changes from two different hierarchies or two different versions of hierarchies.

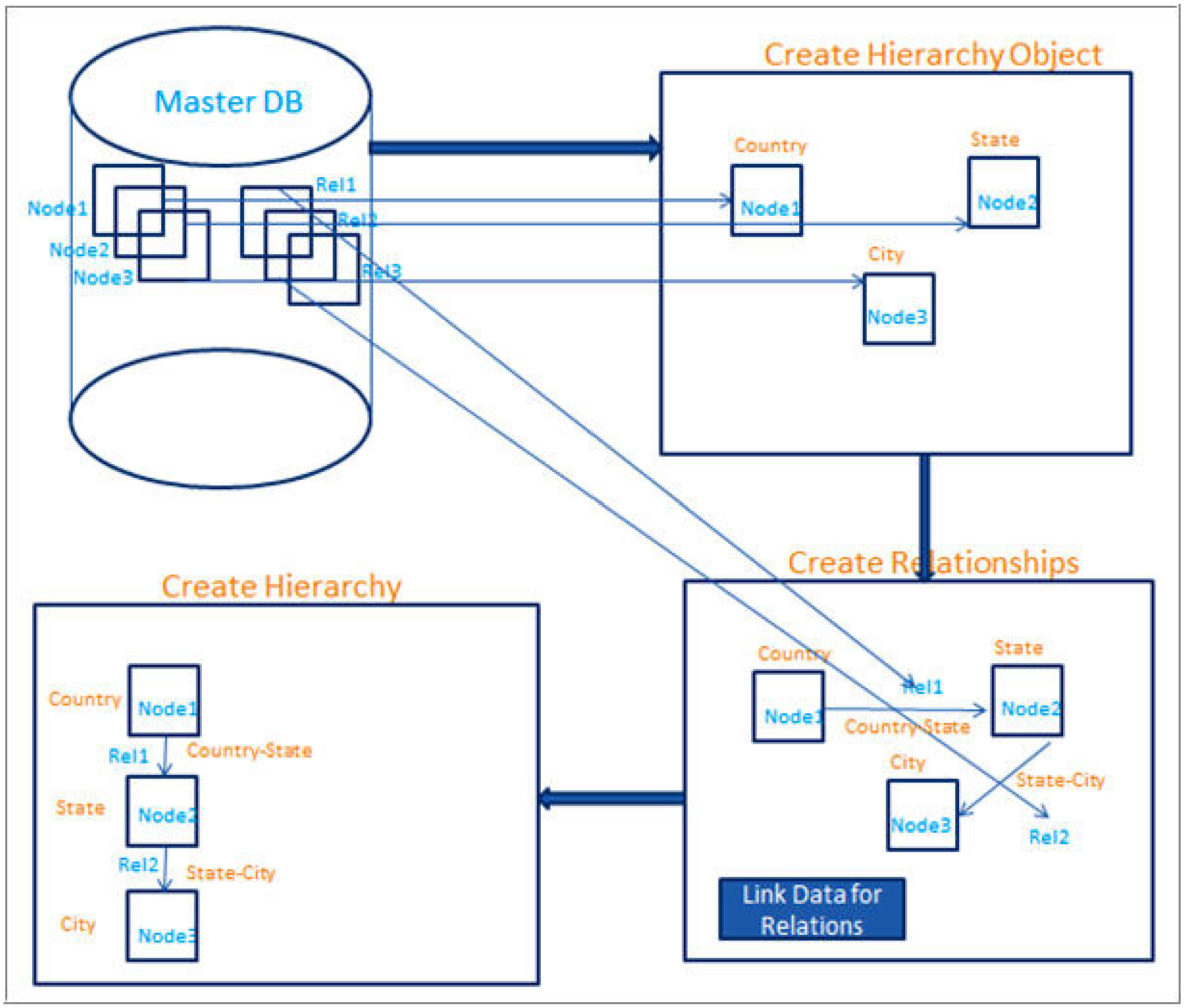
Hierarchy Manager

Pre-requisite: once the MDM is installed, create hierarchy node and hierarchy node relationship tables using Model Builder through template based table creation option. For details, refer to Chapter 24: “Model Builder.”

The creation of hierarchy involves three stages as in Figure 543.

- Create Hierarchy Objects, for details see Section : “Manage Hierarchy Objects.”
- Create Relationships, for details see Section : “Manage Relationships.”
- Create Hierarchy, for details see Section : “Hierarchy Manager.”

Figure 543: Hierarchy Creation Block Diagram



Manage Hierarchy Objects

Hierarchy objects represent each level of a Hierarchy. Creating hierarchy object is the first step to create a hierarchy. As soon as a hierarchy object is created, the next available Node table gets assigned to the object. By default, node ID, node name, external node ID and node description attributes are available as part of any node table. Additional attributes can be defined using extended attributes.

The hierarchy objects will no more be created as part of Schema Generation/Incremental Schema Generation. A separate left navigation link under Hierarchy Management is provided to manage hierarchy objects. You will be able to create, edit and delete hierarchy objects from this UI.

Navigate to **Reference Data** -> **Hierarchy Management** ->**Manage Hierarchy Objects**.

The **Manage Hierarchy Objects** UI displays all the existing hierarchy objects. You can create new hierarchy objects and manage existing hierarchy objects.

You can perform the following tasks on the **Manage Hierarchy Objects** UI:

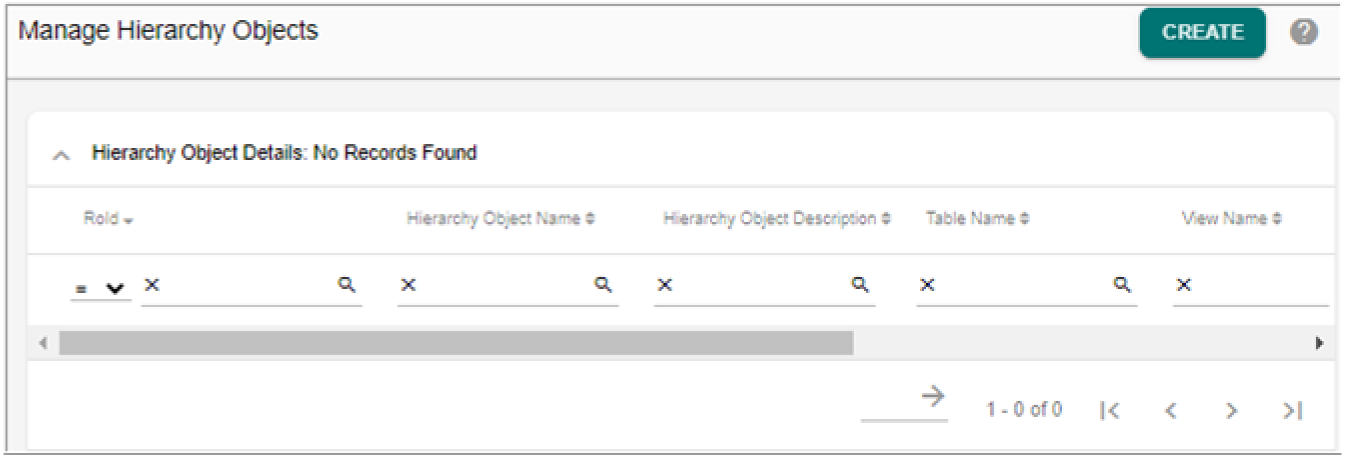
- Create Hierarchy Object
- Edit Hierarchy Objects
- Manage Extended Attributes
- Manage Base and Version Configurable UI
- View Hierarchy and View Relationship
- Delete Hierarchy Object
- Hierarchy Objects (Node and Relations) Approval

Create Hierarchy Object

To create new hierarchy objects, perform the following steps:

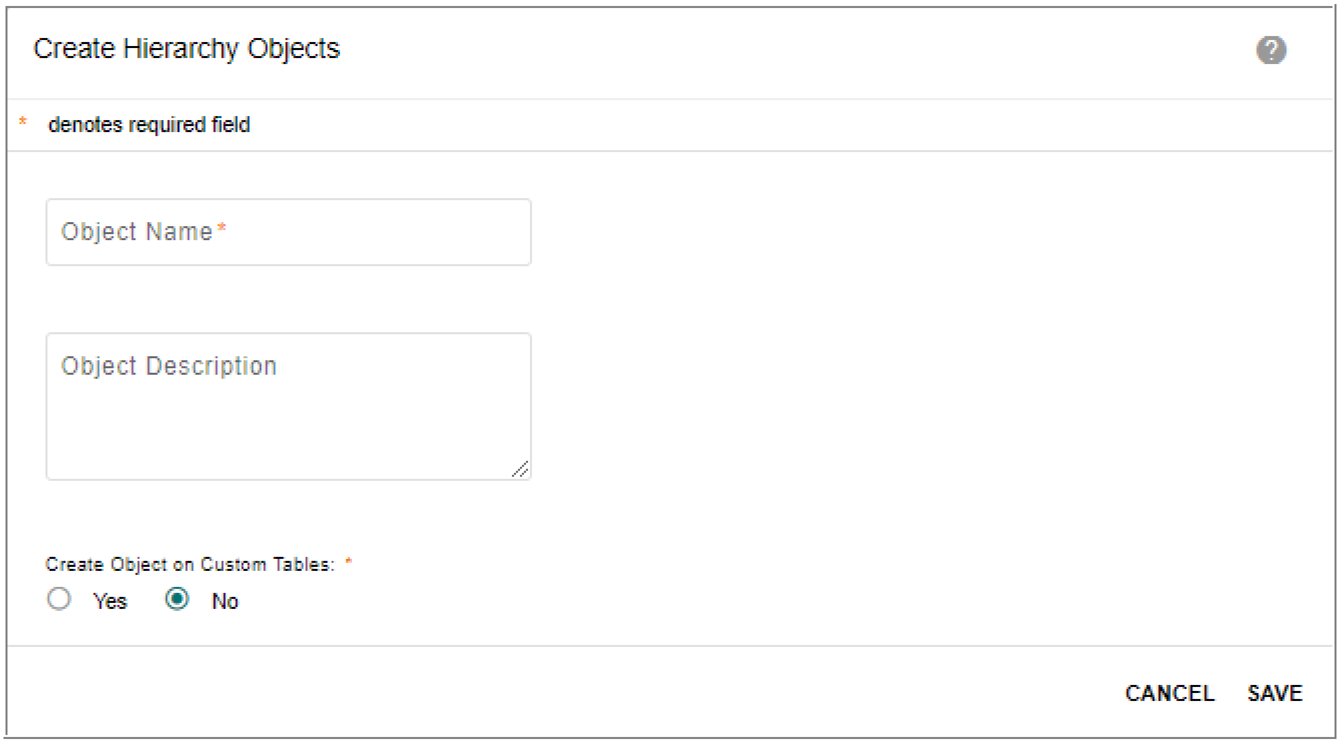
1 On the **Manage Hierarchy Objects** UI, click **Create**.

Figure 544: Manage Hierarchy Objects



Hierarchy Object Details: No Records Found

Figure 545: Create Hierarchy Objects

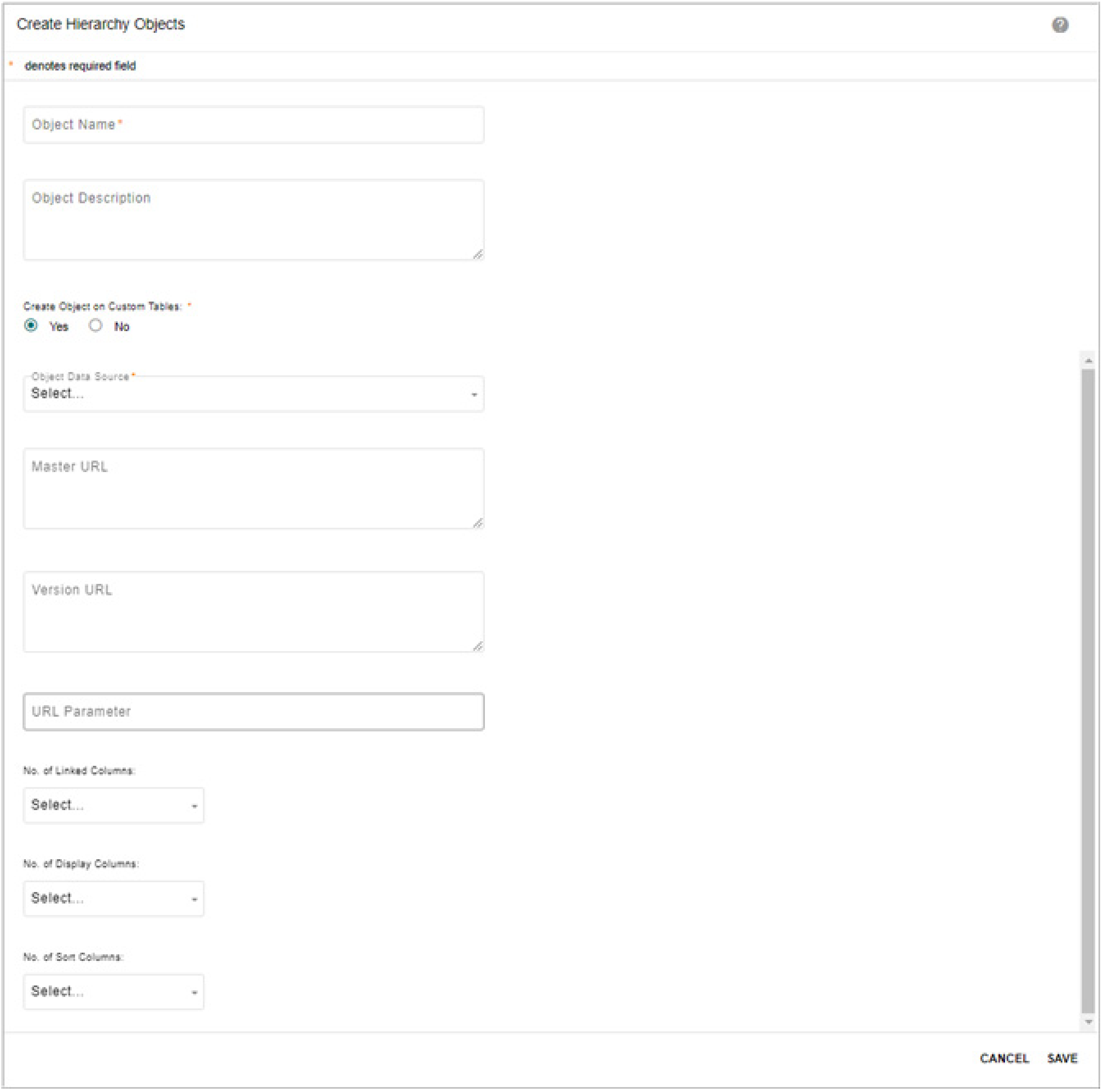


Create Object on Custom Tables: *
○ Yes ● No

2 On **Create Hierarchy Object** UI (Figure 545), enter the following and click **Save**.

- **Object Name**: unique name of the object.
- **Object Description**: brief description about the object being created.
- **Create Object on Custom Tables** (Figure 545): select this option to create objects on custom master tables. If **Yes** option is selected, **Create Hierarchy Objects** UI refreshes to display the following fields:
  - **Object Data Source**: data source for the object being created. The **Object Data Source** list display both the master tables and user created views.
  - **Master URL**: URL configured for the object.
  - **URL Parameter**: the URL parameter should contain the key column names (logical column name in case of Master tables). Columns of URL parameter should be able to uniquely identify records of table on which object is created. Multiple columns can be added separated by ||. For example: AccountId || PartyTypeCd.
  - **No. of Linked Columns**: it specifies the number of columns used to link the objects.
  - **Link Column**: link columns selected should be able to uniquely identify rows in the table on which object is created.
  - **No. of Display Columns**: it specifies the number of columns to be displayed on the hierarchy viewer.
  - **Display Column**: it specifies the column that will be displayed on the hierarchy viewer.
  - **No. of Sort Columns**: it specifies the number of columns used for sorting.
  - **Sort Column**: it specifies the column that will be used for sorting nodes in hierarchy viewer.

Figure 546: Create Hierarchy Objects



Create Hierarchy Objects

* denotes required field

Object Name *

Object Description

Create Object on Custom Tables: *
● Yes ○ No

Object Data Source *
Select...

Master URL

Version URL

URL Parameter

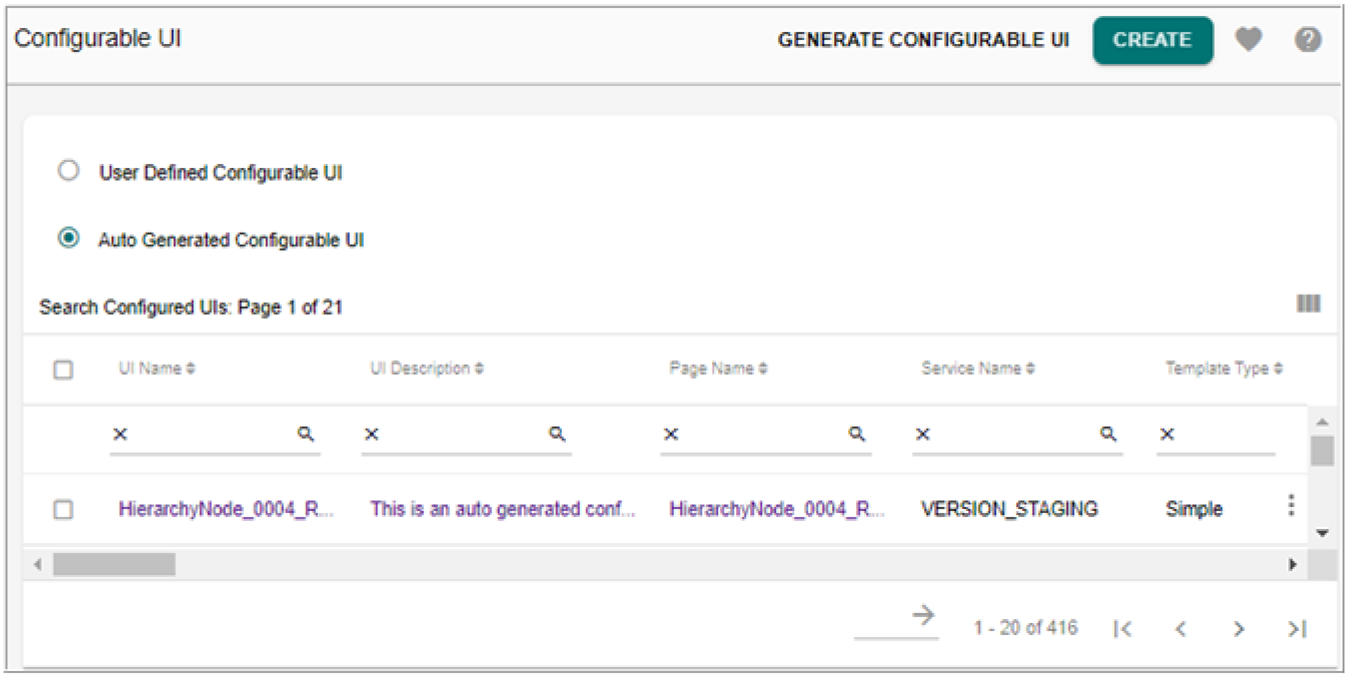
No. of Linked Columns:
Select...

No. of Display Columns:
Select...

No. of Sort Columns:
Select...

For template based hierarchy, when hierarchy object is saved, links to base and version configurable UI will be stored along with it. The configurable UIs for both base and version will be created as part of ISG through model builder as in Figure 547.

Figure 547: Hierarchy Object—Configurable UI



○ User Defined Configurable UI

● Auto Generated Configurable UI

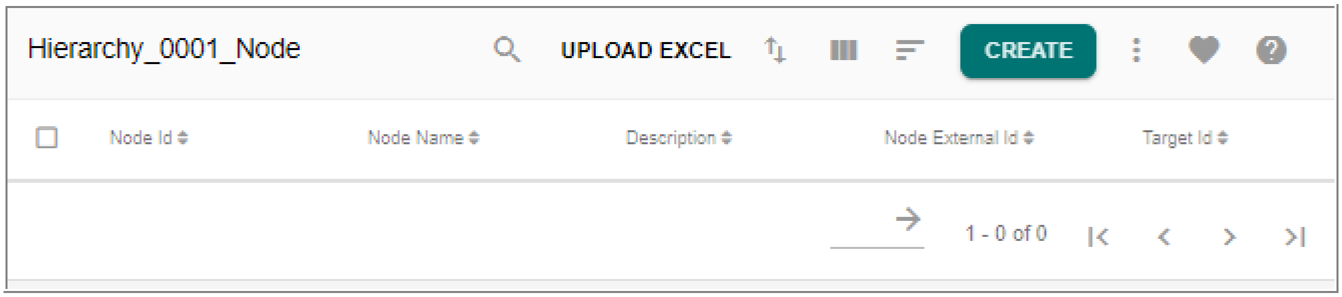
Search Configured UIs: Page 1 of 21

☐	UI Name	UI Description	Page Name	Service Name	Template Type
☐	HierarchyNode_0004_R...	This is an auto generated conf...	HierarchyNode_0004_R...	VERSION_STAGING	Simple

1 - 20 of 416

Data can be loaded into the hierarchy objects through the corresponding configurable UI (on the **Hierarchy Object—Configurable UI**, click on **Preview** and then click on **Upload Excel**). You can also load data through hierarchy object configurable UI from left navigation pane (**Tables -> Master Tables -> Hierarchy Node UI or Hierarchy Relation UI)** and on **Hierarchy Node UI** or **Hierarchy Relation UI**, click **Upload Excel** as in Figure 548.

Figure 548: Hierarchy Object UI



A workflow (RenameDocumentLogicalNameWkf) is provided with OOB MDM to rename the Hierarchy Object and Relationship tables as per the Hierarchy Object name and Relationship name assigned respectively. Any spaces or special characters in the name will be ignored while renaming tables. This workflow can be scheduled using scheduler and when the scheduler is triggered, it internally looks for all the LRDM and Hierarchy tables that are used but not renamed and then renames all the tables. In case of any failure, all the changes will be reverted back.

The RenameDocumentLogicalNameWkf should be executed before creating hierarchy using the corresponding objects and relationships.

An email notification displaying the list of renamed tables will be sent to the admin.

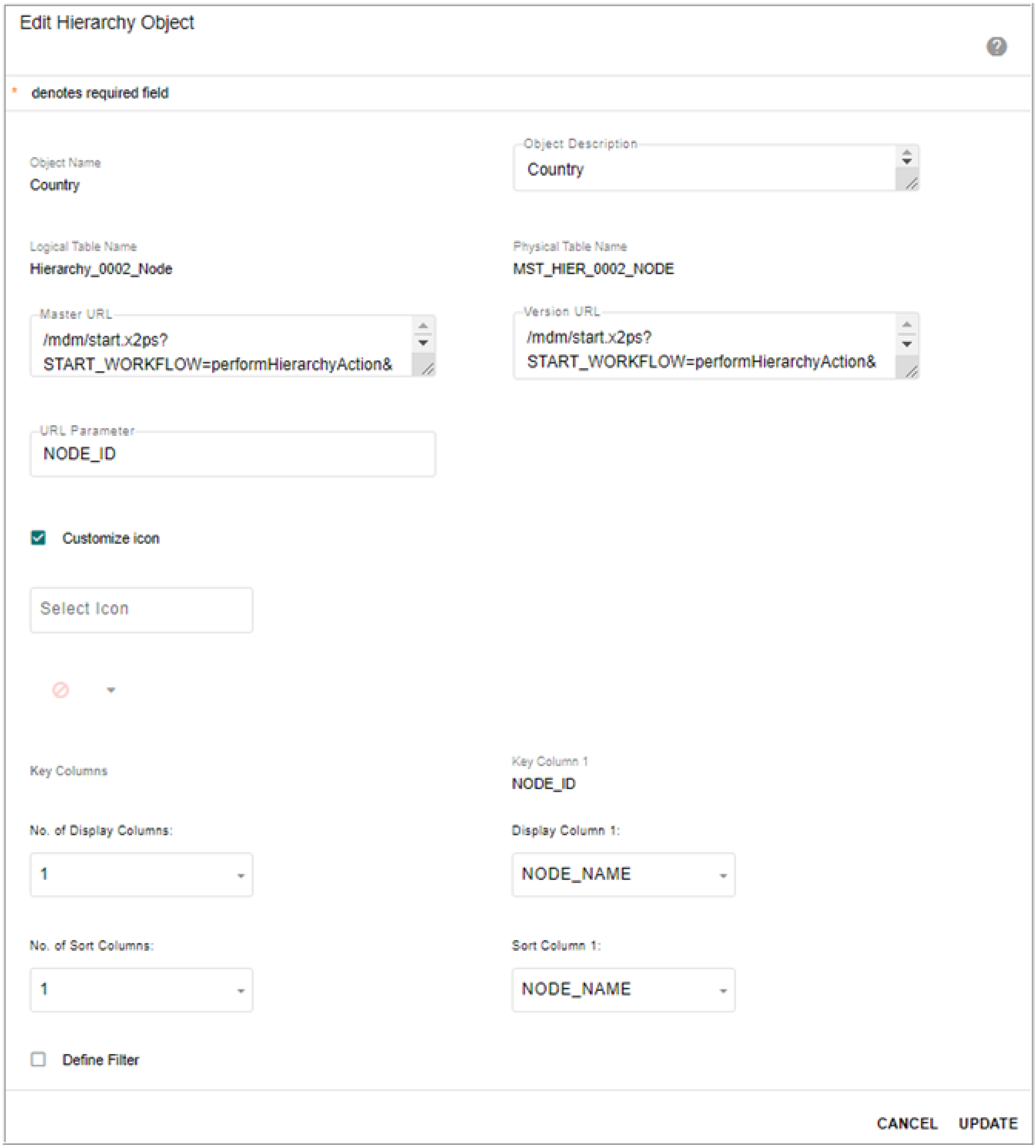
Edit Hierarchy Objects

You can modify the hierarchy object details using the **Edit** option.

To edit hierarchy object details, perform the following steps:

1. On the **Manage Hierarchy Objects**, click on the Menu icon corresponding to the required hierarchy object and click **Edit** to open the **Edit Hierarchy Object** UI.

Figure 549: Edit Hierarchy Object



Edit Hierarchy Object

* denotes required field

Object Name: Country

Object Description: Country

Logical Table Name: Hierarchy_0002_Node

Physical Table Name: MST_HIER_0002_NODE

Master URL: /mdm/start.x2ps?START_WORKFLOW=performHierarchyAction&

Version URL: /mdm/start.x2ps?START_WORKFLOW=performHierarchyAction&

URL Parameter: NODE_ID

☑ Customize icon

Select Icon

Key Columns

Key Column 1: NODE_ID

No. of Display Columns: 1

Display Column 1: NODE_NAME

No. of Sort Columns: 1

Sort Column 1: NODE_NAME

☐ Define Filter

2 On **Edit Hierarchy Object** UI (Figure 549), you can modify the following parameters:

- **Object Name**: unique name of the object. Non editable field.
- **Object Description**: brief description about the object being edited.
- **Logical Table Name**: master table logical name. Non editable field.

- **Physical Table Name**: table physical name. Non editable field.
- **Master URL**: URL configured for the hierarchy object. On click of a node in hierarchy viewer, the master URL of page set is rendered in lower bottom panel of hierarchy viewer. It is editable field.
- **Version URL**: version URL configured for the hierarchy object. On click of a node in hierarchy viewer, the version URL of page set is rendered in lower bottom panel of hierarchy viewer. It is editable field.
- **URL Parameter**: the URL parameter specifies the Node ID selected automatically from the available Node table.

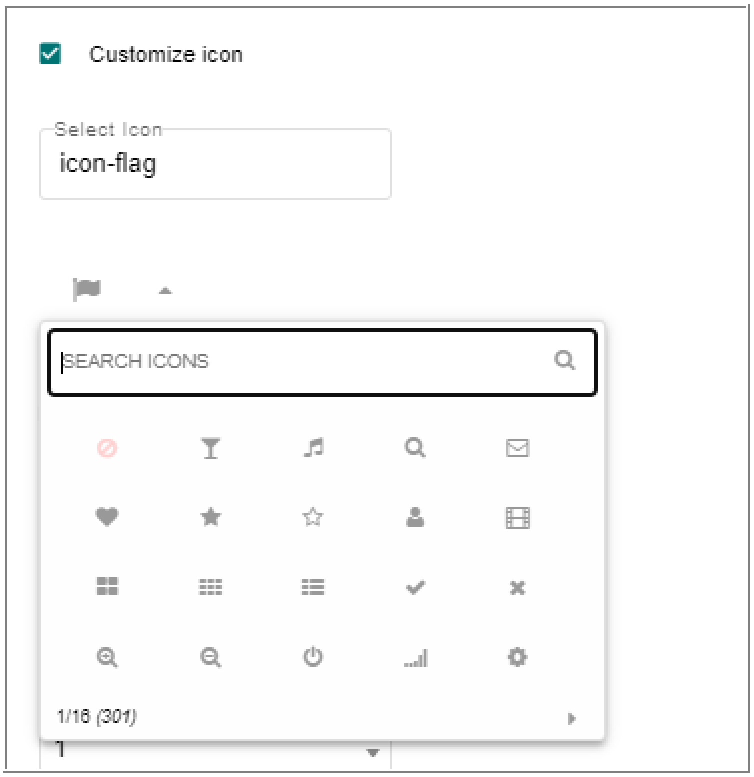
- Master URL and URL parameters are auto populated for master tables.
- The configurable UI to be shown from the hierarchy can be specified by adding a parameter “WF_ID” in the Master URL and Version URL of the Hierarchy Object. The workflowId of the required configurable UI needs to be appended to the Master/ Version URL in order for that configurable UI to be used across all hierarchy actions. If no workflowId has been mentioned explicitly, then the latest user-defined configurable UI will be used.

- **Customize Icon**: select the Customize icon checkbox to assign different icons for different hierarchy objects. In the hierarchy tree view, each hierarchy node level displays the selected icon preceding the node name.The icon display helps to identify the level at which the data is present.

  When Customize icon checkbox is enabled, the **Select Icon** textbox and a dropdown is displayed as in Figure 550. Click on the dropdown arrow and select the required icon to be assigned to the object. You can also search icons by name.

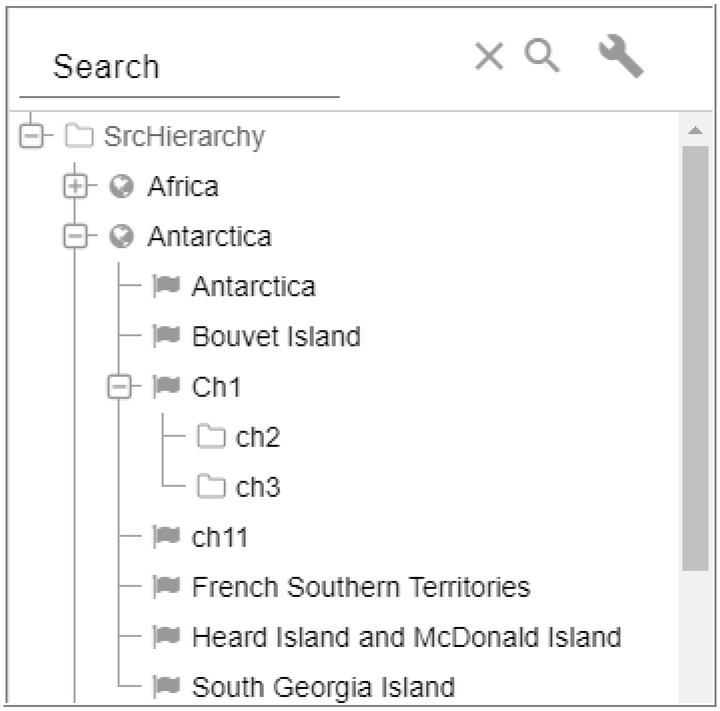
Customize icon is not supported for relationship objects.

Figure 550: Customize Icon



The assigned icons for each object will be displayed on the hierarchy tree view as in Figure 551.

Figure 551: Hierarchy Viewer



- **Key Columns**: it specifies the number of columns used for Key columns. Non editable field.
- **No. of Display Columns**: specifies the number of columns to be displayed on the hierarchy viewer.
- **Display Column**: it specifies the column that will be displayed on the hierarchy viewer.
- **No. of Sort Columns**: it specifies the number of columns used for sorting.
- **Sort Column**: it specifies the column that will be used for sorting nodes in hierarchy viewer.

- You can select maximum five number of display columns and five number of sort columns.
- It is recommended not to use special character '#' in hierarchy display column value as drag and drop may not work on the hierarchy viewer.

To delete the existing hierarchy object, on the **Manage Hierarchy Objects**, click on the Menu icon corresponding to the required hierarchy object and click **Delete**.

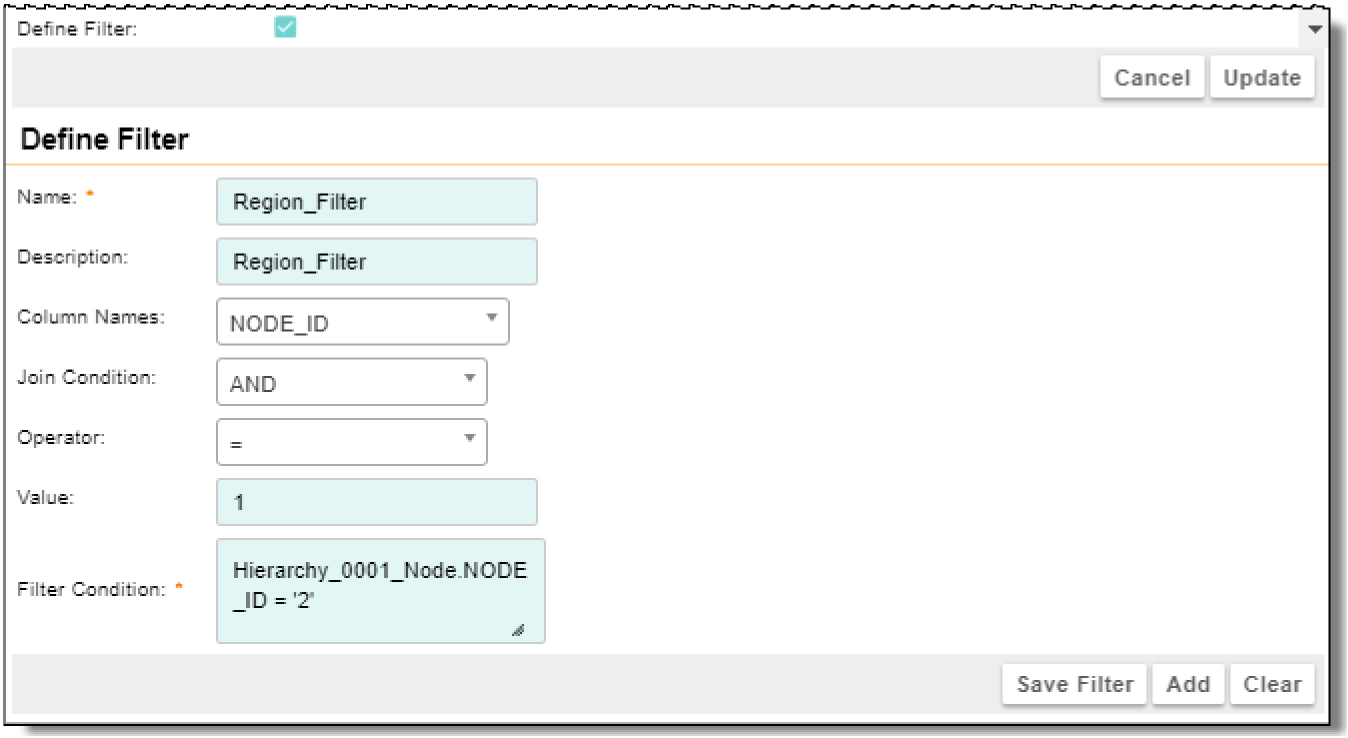
Define Filter

Filters are defined on hierarchy objects. Filters defined on hierarchy objects allow filtering data of hierarchies in hierarchy viewer. Filter can be of static or dynamic in nature. For static filters, the filter values are provided along with the filter condition. For dynamic filters, the filter values are taken from the user while invoking the hierarchy for viewing.

Filters can be created only on the existing objects using **Edit** option on the **Manage Hierarchy Objects** UI. When you select an existing hierarchy object and click on **Edit**, the **Define Filter** option is displayed on the **Edit Hierarchy Object** UI as in Figure 549.

On the **Edit Hierarchy Object** UI, when the **Define Filter** option is selected, the **Define Filter** pane is displayed as in Figure 552.

Figure 552: Define Filter



Define Filter: ☑

Name: * Region_Filter

Description: Region_Filter

Column Names: NODE_ID

Join Condition: AND

Operator: =

Value: 1

Filter Condition: * Hierarchy_0001_Node.NODE_ID = '2'

On the **Define Filter** UI (Figure 552), enter the following:

- **Name**: unique name for the filter.
- **Description**: brief description about the filter being created.
- **Column Names**: column name to be used in the filter condition.
- **Operator**: list of operators (=, < >,<, >, IS NULL, IS NOT NULL) available for defining filter condition.
- **Value:** unique value for the filter condition.

When you click on **Add**, the entered filter condition will be added to the **Filter Condition** text box. You can also edit the filter condition in the **Filter Condition** text box. Using the **Join Condition** option, you can specify multiple filter conditions.

Once filters are created on a relational object, it would be applied to hierarchy viewer data. Click **Clear** to remove the filter condition from the **Filter Condition** text box.

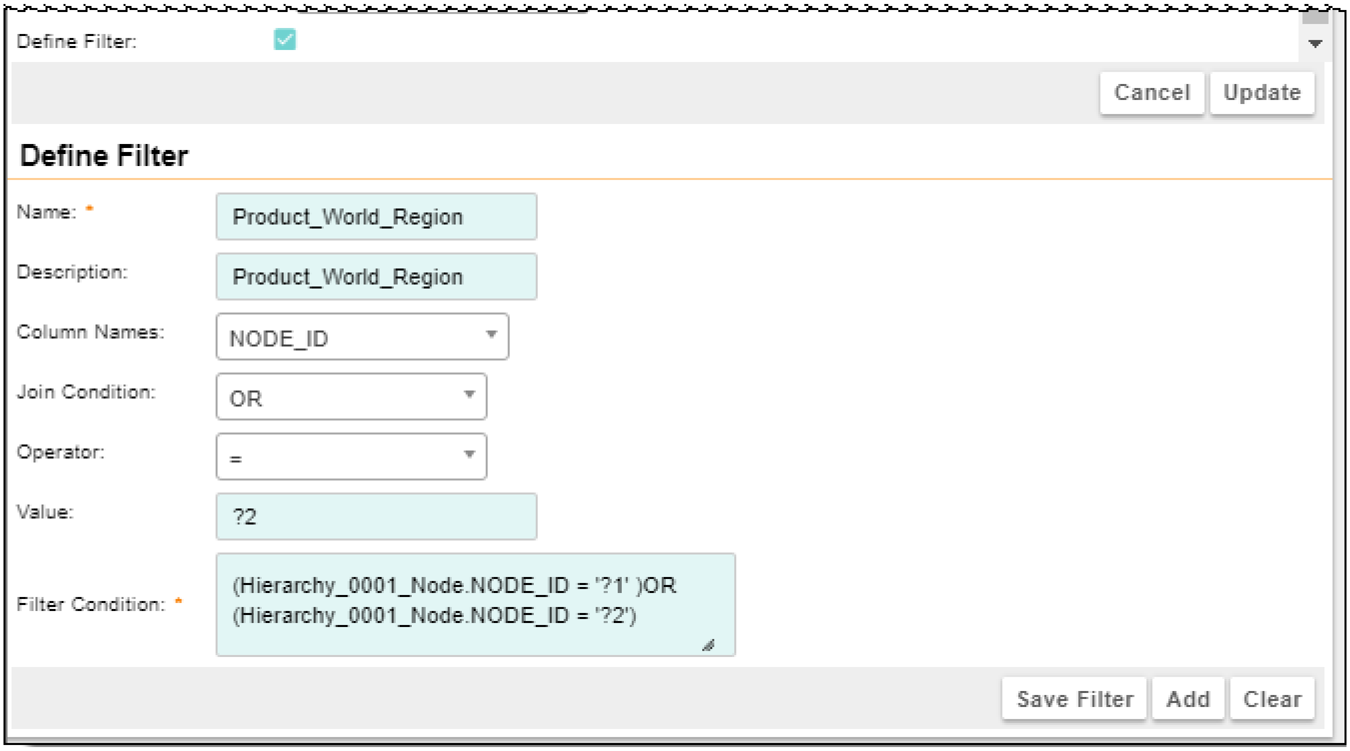
Dynamic Filter

Dynamic filter is a dynamic query condition provided on hierarchy viewer before displaying data. The dynamic filter feature significantly improves the performance while loading the hierarchy.

On the **Define Filter** UI, enter the values with a question mark(?) followed by numbers in increasing order incremented by one in sequence starting with 1 for the first value for an object as given in the below example and as in Figure 553.

(Product_WorldRegion.Product_WR_ID='?1') OR
(Product_WorldRegion.Product_WR_ID='?2')

Figure 553: Define Filter



Define Filter: ☑

Define Filter

Name: *	Product_World_Region
Description:	Product_World_Region
Column Names:	NODE_ID
Join Condition:	OR
Operator:	=
Value:	?2
Filter Condition: *	(Hierarchy_0001_Node.NODE_ID = '?1')OR (Hierarchy_0001_Node.NODE_ID = '?2')

The values for the dynamic filter defined above will be taken from the user where the dynamic filter is applied. Dynamic filter is applicable on Hierarchy viewer for both versioned and master hierarchy.

- For dynamic filters, you can also enter the values from backend by setting a value for the value attribute in the below tag in HierarchyDetails.pgl available at: *<MDM_Install_Directory>\web\mdmclient\WEB-INF\bcm\cfg\xservice\ui_workflow\workflows\HierarchyDesigner*

  ```
  <ui:hidden-field id="dynamicFilter" name="dynamicFilter" value=""/
  >
  ```

  For example: `<ui:hidden-field id="dynamicFilter" name="dynamicFilter" value="112#5" />`

  Where 112 is the relational object Id and 5 is the value.

- Dynamic filters for float, integer and double data type leads to exception while saving filters.

  As dynamic filters are identified and stored generically as '?1' , this format would be good for all string (char/varchar/clob) data types but for integer datatype, it would lead to exception.

  Workaround to overcome the design restriction on dynamic filters for cases where the columns used in filter "where clause" is of type integer or integer related.

To avoid the exception and still use dynamic filters in hierarchy for integer/float/double data type columns, use the "text edit" option in filters and add data type conversion logic as shown below for various data types.

- Integer/ small Int / byte Int

  Where (trim(cast (TableA.Int_col as varchar(11))) = '?1'
- Decimal (m, n)/ Float.

  Where (trim(cast (TableA.Dec/Float_col as varchar(m+1))) = '?1'

  Note: When dynamically passing the value for decimal/float, note the decimal/point precision value.
- Date/Timestamp(0)

  Where (trim(cast (TableA.Date/TS_col as varchar(19))) = '?1'
- Default formats would be very critical when dealing with float/date/timestamp(0)/ decimal data types.
- When using greater than or less than operators for integer related data types, note this will result in a character comparison and the results will be unlike integer comparison.

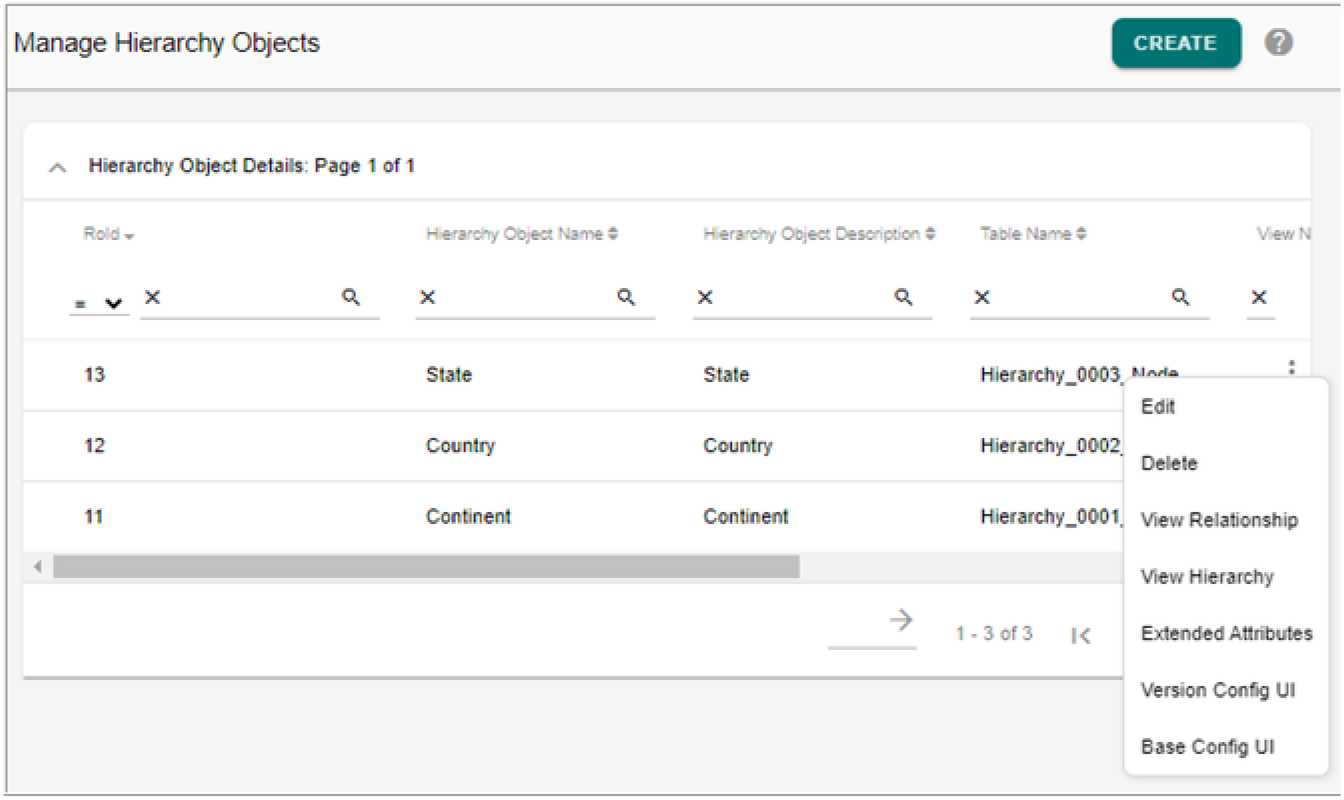
Limitations on Filters

- ☐ Multiple filters on same hierarchy object is not supported.
- ☐ By default, parenthesis brackets does not get added for multiple conditions in filters. You need to enter manually in the Filter Condition text box. You need to define the precedence for the conditions.
- ☐ While using connectors (AND,OR) for joining filter conditions, the filter condition must be enclosed within parenthesis brackets ['(' , ')']. For example: ((MST_STATE.STATE_ID = 'S003' and MST_STATE.NAME = 'KAR') or (MST_STATE.STATE_ID = 'S002' and MST_STATE.NAME = 'OH'))
- ☐ Manage relationship and cross reference do not support filters.

Manage Extended Attributes

All underlying node tables of Hierarchy Object contain extended attributes. Additional attributes for Hierarchy Objects can be defined through extended attributes. Click on the Menu icon corresponding to the required object and click Extended Attribute.

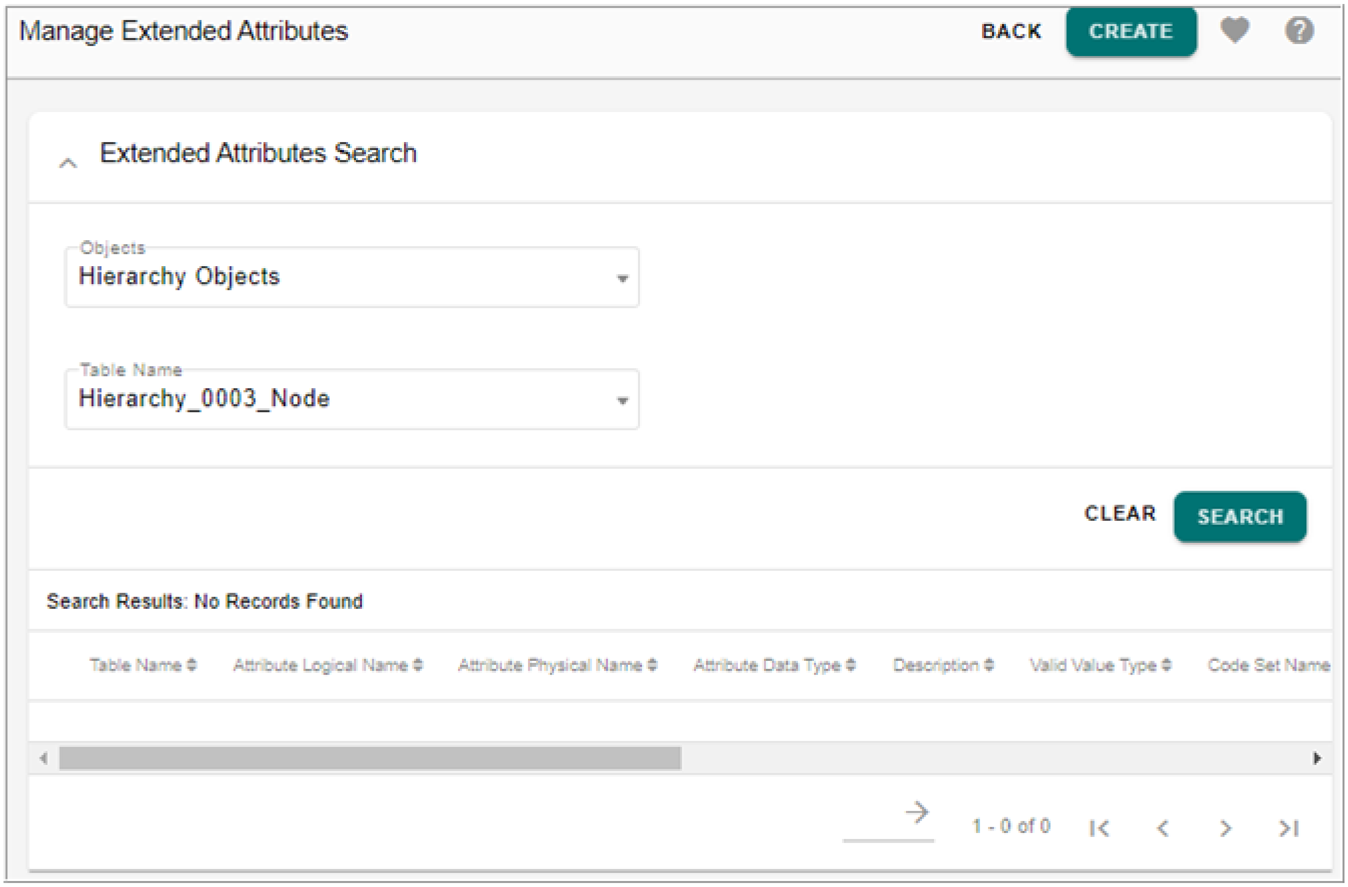
Figure 554: Manage Hierarchy Objects - Delete Option



RoId	Hierarchy Object Name	Hierarchy Object Description	Table Name	View N
13	State	State	Hierarchy_0003_Node	
12	Country	Country	Hierarchy_0002_	
11	Continent	Continent	Hierarchy_0001_	

The **Extended Attributes** option on the **Manage Hierarchy Objects** UI allows you to navigate to the **Manage Extended Attribute** page (Figure 555) of the corresponding hierarchy object from where you can create and delete extended attributes for the selected object and table. For details on Extended Attributes, see Chapter 17: “Manage Extended Attributes.”

Figure 555: Manage Extended Attributes



Objects: Hierarchy Objects

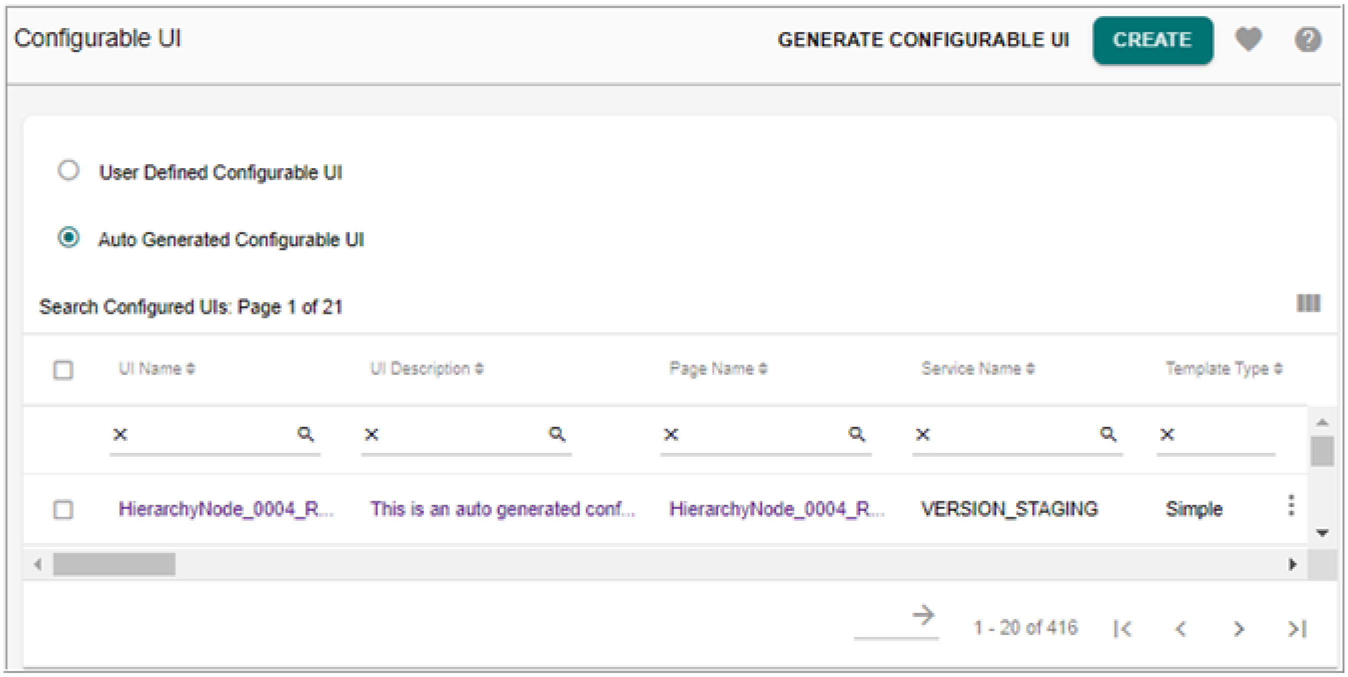
Table Name: Hierarchy_0003_Node

Search Results: No Records Found

Manage Base and Version Configurable UI

Click on the Menu icon corresponding to the required object and click **Base Config UI** or **Version Config UI**.The **Base Config UI** and **Version Config UI** options on the **Manage Hierarchy Objects** UI allows you to navigate to the Manage Base and Manage Version Config page (Figure 556) of the corresponding hierarchy object from where you can download template and upload the data for the object and manage the hierarchy object details. For details on Configurable UI, see Chapter 8: “Configurable UI.”

Figure 556: Configurable UI



○ User Defined Configurable UI

● Auto Generated Configurable UI

Search Configured UIs: Page 1 of 21

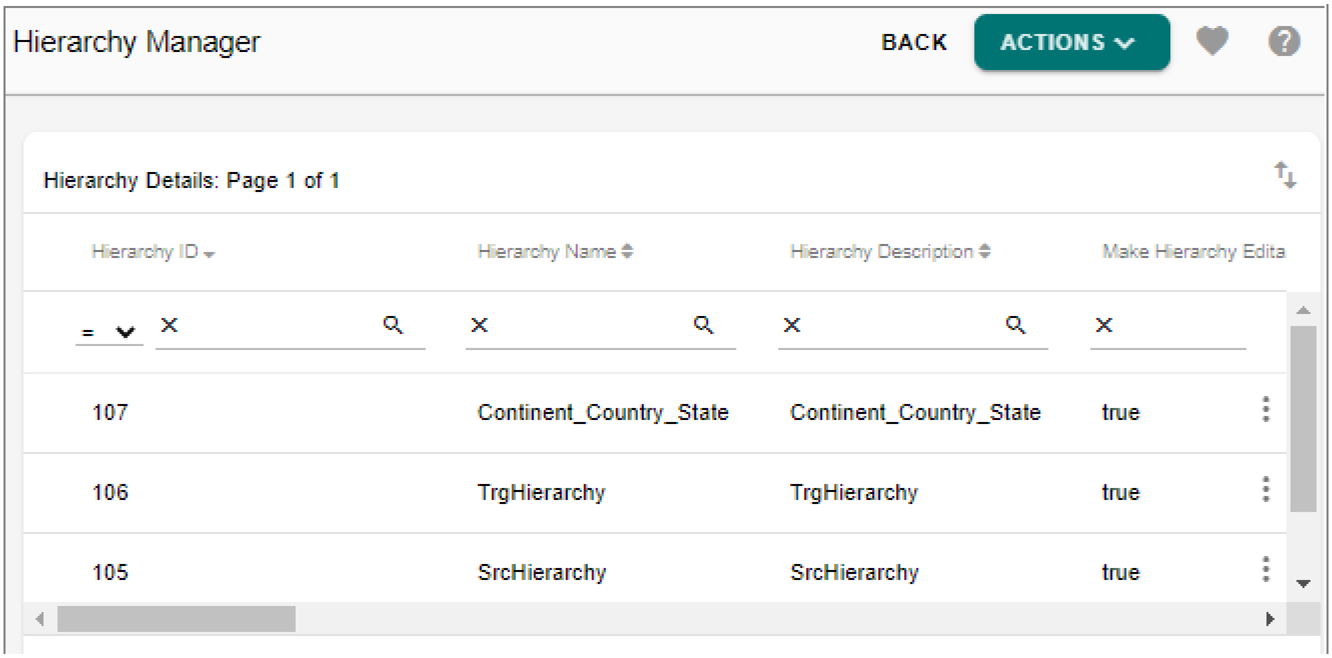
☐	UI Name	UI Description	Page Name	Service Name	Template Type
☐	HierarchyNode_0004_R...	This is an auto generated conf...	HierarchyNode_0004_R...	VERSION_STAGING	Simple

1 - 20 of 416

View Hierarchy and View Relationship

Click on the Menu icon corresponding to the required object and click **View Hierarchy**. The **View Hierarchy** option on the **Manage Hierarchy Objects** UI allows you to navigate to Hierarchy Manager page of the corresponding hierarchy from where you can view hierarchy and manage hierarchy as in Figure 557. For details on Hierarchy Manager, see Section : “Hierarchy Manager.”

Figure 557: Hierarchy Manager

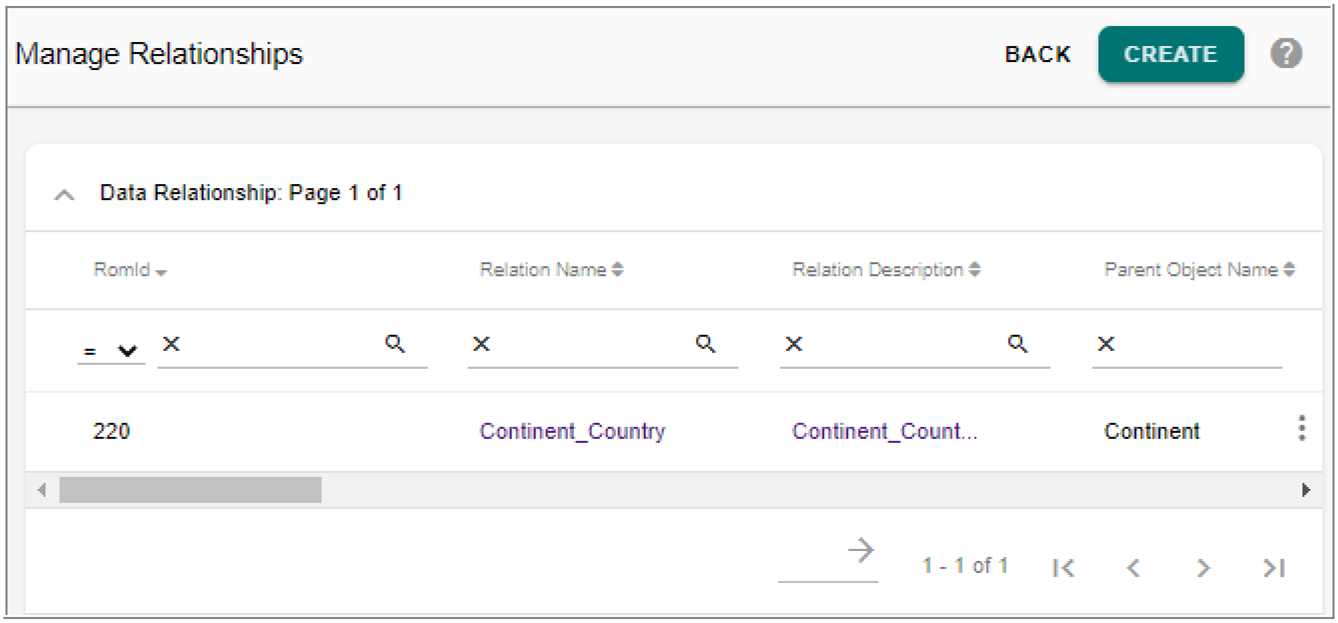


Hierarchy Details: Page 1 of 1

Hierarchy ID	Hierarchy Name	Hierarchy Description	Make Hierarchy Edita
107	Continent_Country_State	Continent_Country_State	true
106	TrgHierarchy	TrgHierarchy	true
105	SrcHierarchy	SrcHierarchy	true

The **Show Relationship** option on the **Manage Hierarchy Objects** UI allows you to navigate to corresponding **Manage Relationship** UI from where you can manage relationships as in Figure 558. For details on Manage Relationships, see Section : “Manage Relationships.”

Figure 558: Manage Relationships



Data Relationship: Page 1 of 1

RomId	Relation Name	Relation Description	Parent Object Name
220	Continent_Country	Continent_Count...	Continent

1 - 1 of 1

Delete Hierarchy Object

Click on the Menu icon corresponding to the required object and click **Delete.** The **Delete** option on the **Manage Hierarchy Objects** UI allows you to delete the hierarchy object. You cannot delete an object, if the object has relationships. You need to delete the relationship and then delete the object.

- When Objects and Relationships are deleted, the Node and Relationship tables become unusable and corresponding left navigation entries are not deleted. You need to manually delete the configurable UIs.
- Executing ISG after deleting hierarchy object or relationship makes the deleted node and relationship tables usable again.

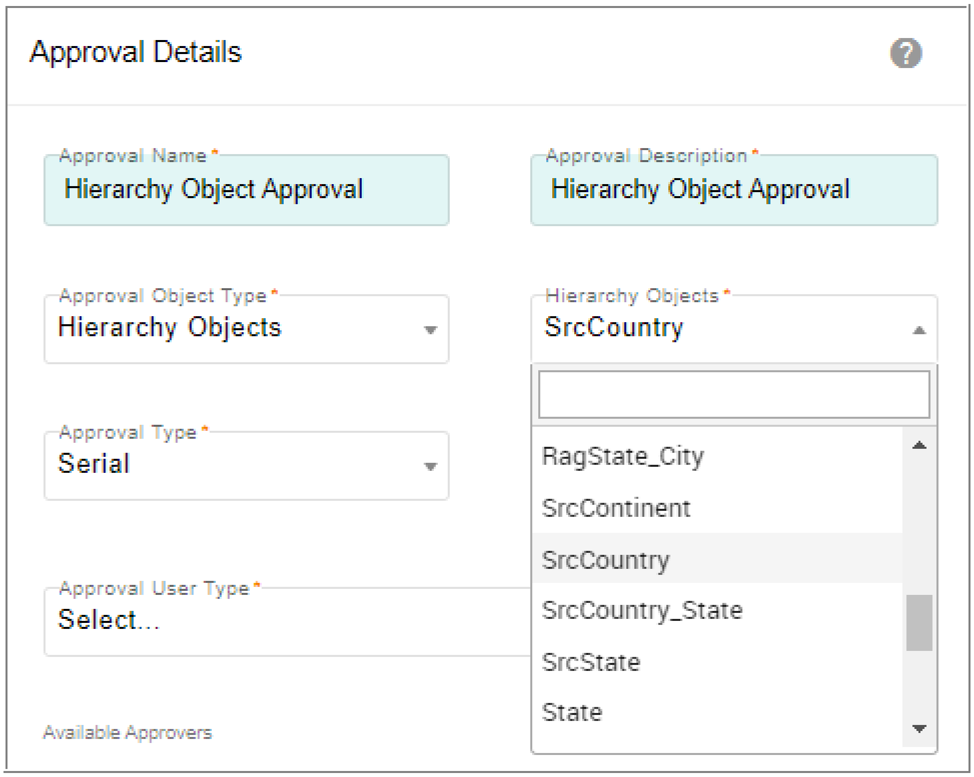
Hierarchy Objects (Node and Relations) Approval

MDM provides the capability to configure approval on hierarchy objects. Once approval is enabled on hierarchy objects, the appropriate user can approve, reject or view hierarchy object details sent for the approval. Perform the following steps for approval on hierarchy objects:

1 On the **Approval Details** UI, create approval on hierarchy objects as in Figure 554 and click **Save**.

When approval object type is selected as Hierarchy Objects, the hierarchy objects dropdown displays all the existing hierarchy objects (nodes and relations). Select the required object and click save. For more details on approval creation, see Chapter 18: “Manage Approvals.”.

Figure 559: Approval Details



Approval Details

Approval Name*: Hierarchy Object Approval

Approval Description*: Hierarchy Object Approval

Approval Object Type*: Hierarchy Objects

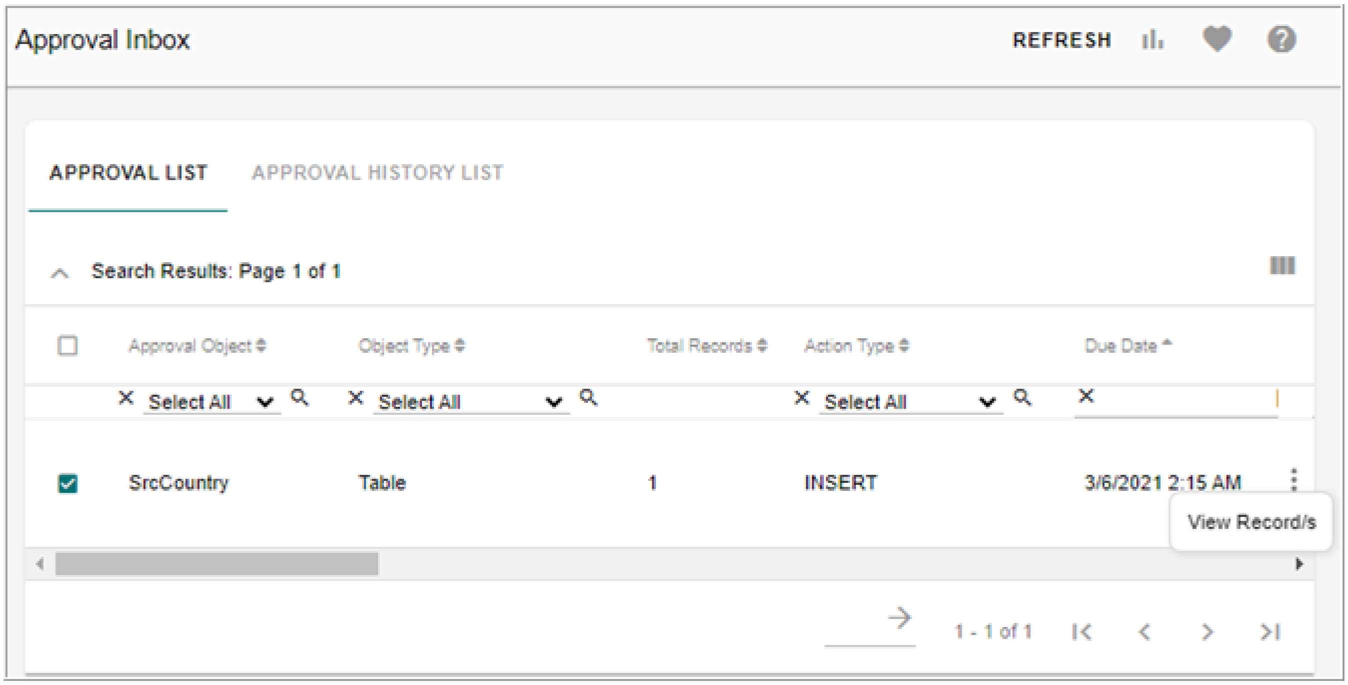
Hierarchy Objects*: SrcCountry

Approval Type*: Serial

Approval User Type*: Select...

When the approval enabled hierarchy object is updated, a notification with all details would be sent to the approvers based on the type of Approval Type and Approves selected. The approval requests will be available in the respective user **Approval Inbox** UI as in Figure 560.

Figure 560: Approval Details

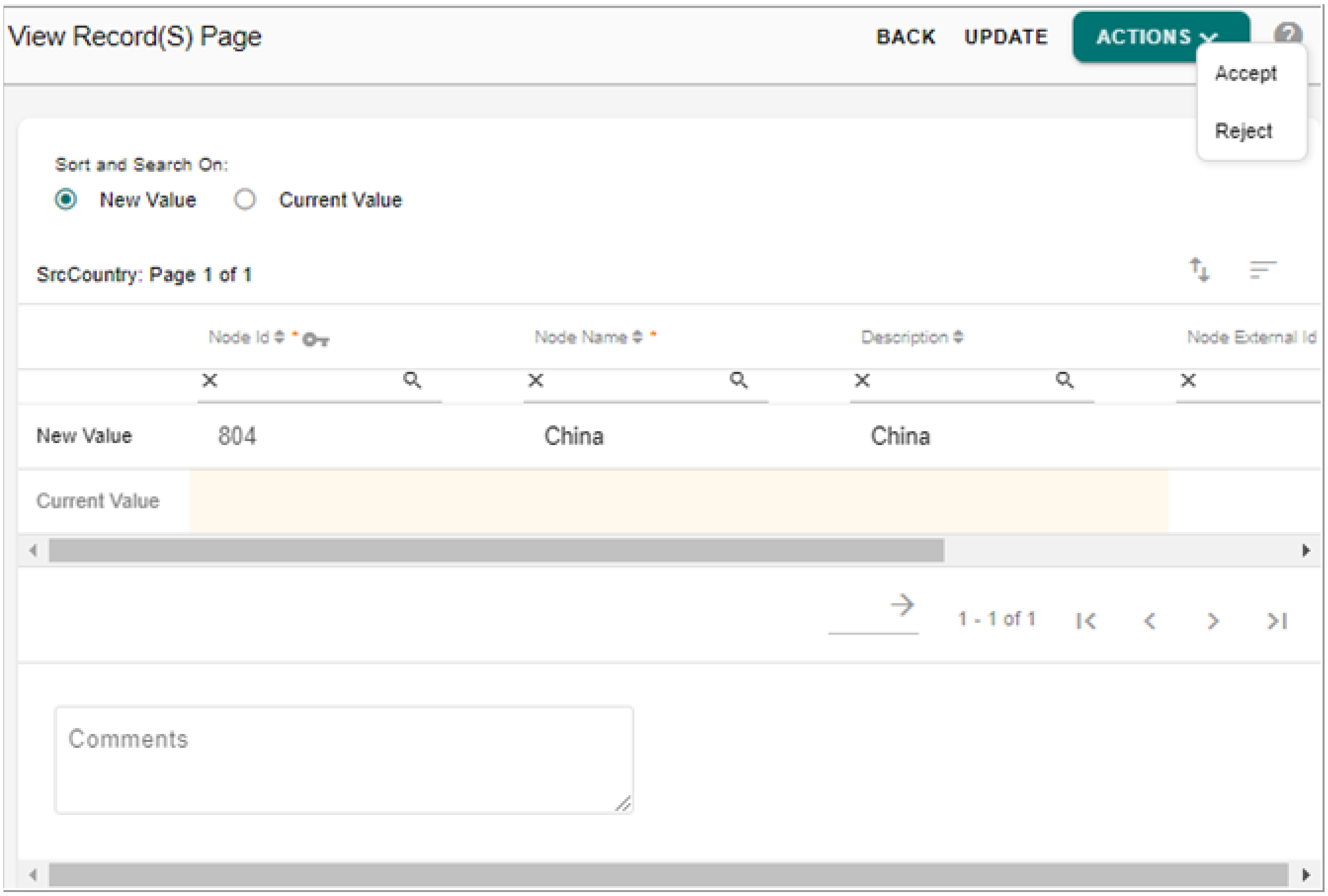


☐	Approval Object	Object Type	Total Records	Action Type	Due Date
☑	SrcCountry	Table	1	INSERT	3/6/2021 2:15 AM

On the **Approval Inbox** UI (Figure 560), approver can view approval request using the **View Record/s** button.

On the **View Record(s)** UI, the relation and node details will be displayed as in Figure 561.

Figure 561: Approval Details



Sort and Search On:
● New Value ○ Current Value

SrcCountry: Page 1 of 1

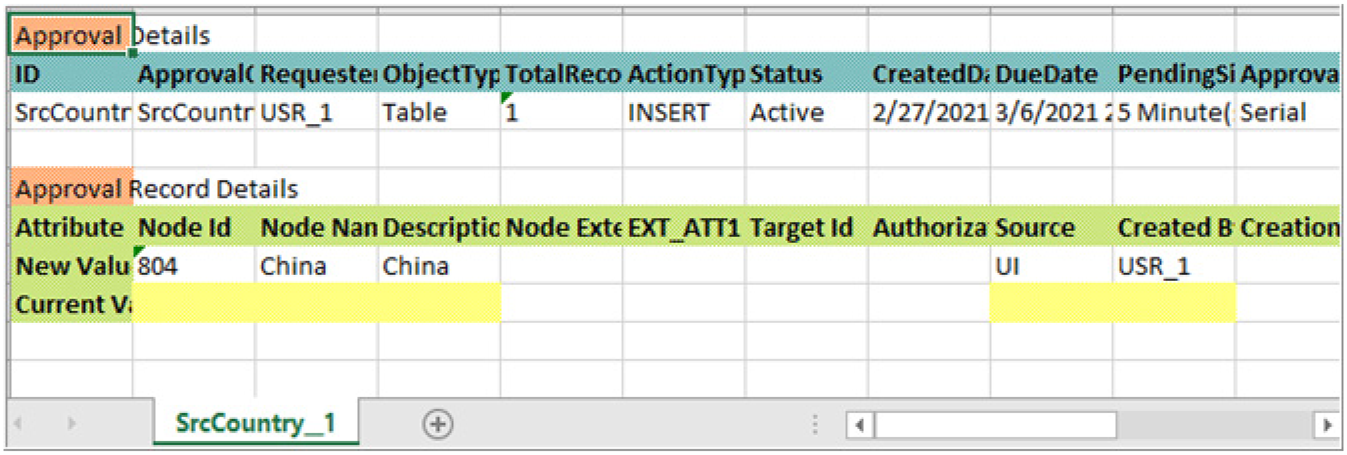
	Node Id *	Node Name *	Description	Node External Id
New Value	804	China	China	
Current Value				

1 - 1 of 1

Comments

On the **Approval Inbox** UI (Figure 560), select the approval request and click **Export** to export the details to an excel file. The exported excel file will have all the relation and node details as in Figure 561.

Figure 562: Approval Details



Approval Details

ID	Approval(	Requeste	ObjectTyp	TotalReco	ActionTyp	Status	CreatedD	DueDate	PendingSi	Approva
SrcCountr	SrcCountr	USR_1	Table	1	INSERT	Active	2/27/2021	3/6/2021	5 Minute(	Serial

Approval Record Details

Attribute	Node Id	Node Nan	Descriptic	Node Exte	EXT_ATT1	Target Id	Authoriza	Source	Created B	Creation
New Valu	804	China	China					UI	USR_1	
Current V										

Pending approval check will not be honored on hierarchy nodes created with the same name as the existing nodes.

Manage Relationships

Relationships are the building blocks of hierarchy. The data of hierarchy comes from relationships. Relationships are built linking two hierarchy objects (tables). Hierarchy objects are the pre-requisites for manage relationships.

Navigate to **Reference Data** -> **Hierarchy Management** ->**Manage Relationships**. You can perform the following tasks on the **Manage Relationships** UI:

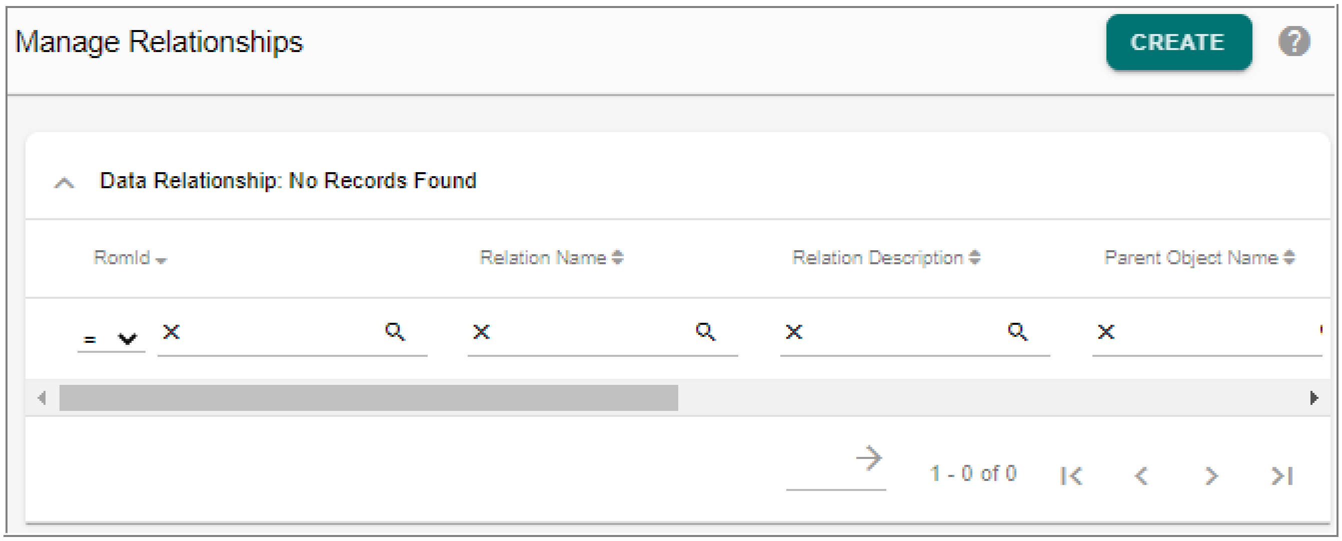
- Create Relationships
- Link and View Data
- Define Additional Attributes
- Delete Relationship

Create Relationships

To create new relationship, perform the following steps:

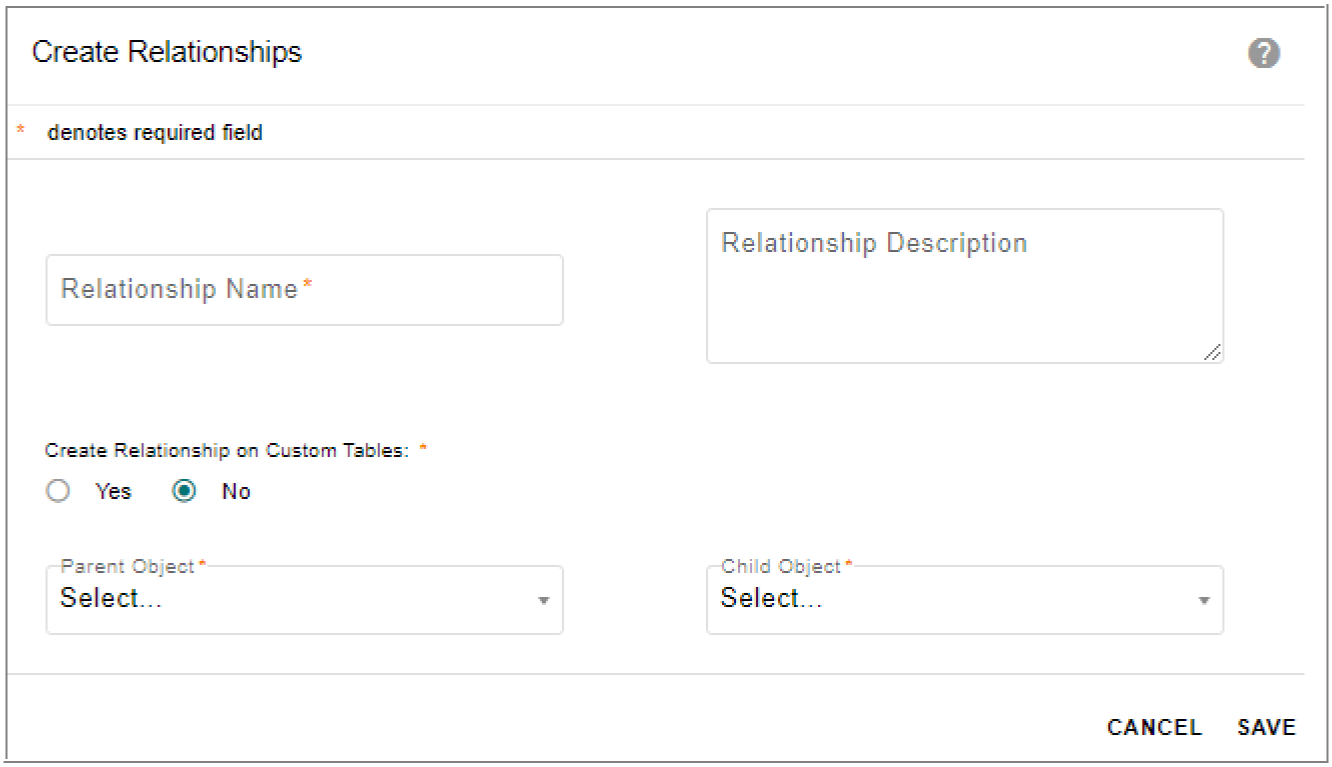
1 On the **Manage Relationships** UI, click **Create**.

Figure 563: Manage Relationships



Data Relationship: No Records Found

Figure 564: Create Relationships



Create Relationships

* denotes required field

Relationship Name*

Relationship Description

Create Relationship on Custom Tables: *

○ Yes ● No

Parent Object*
Select...

Child Object*
Select...

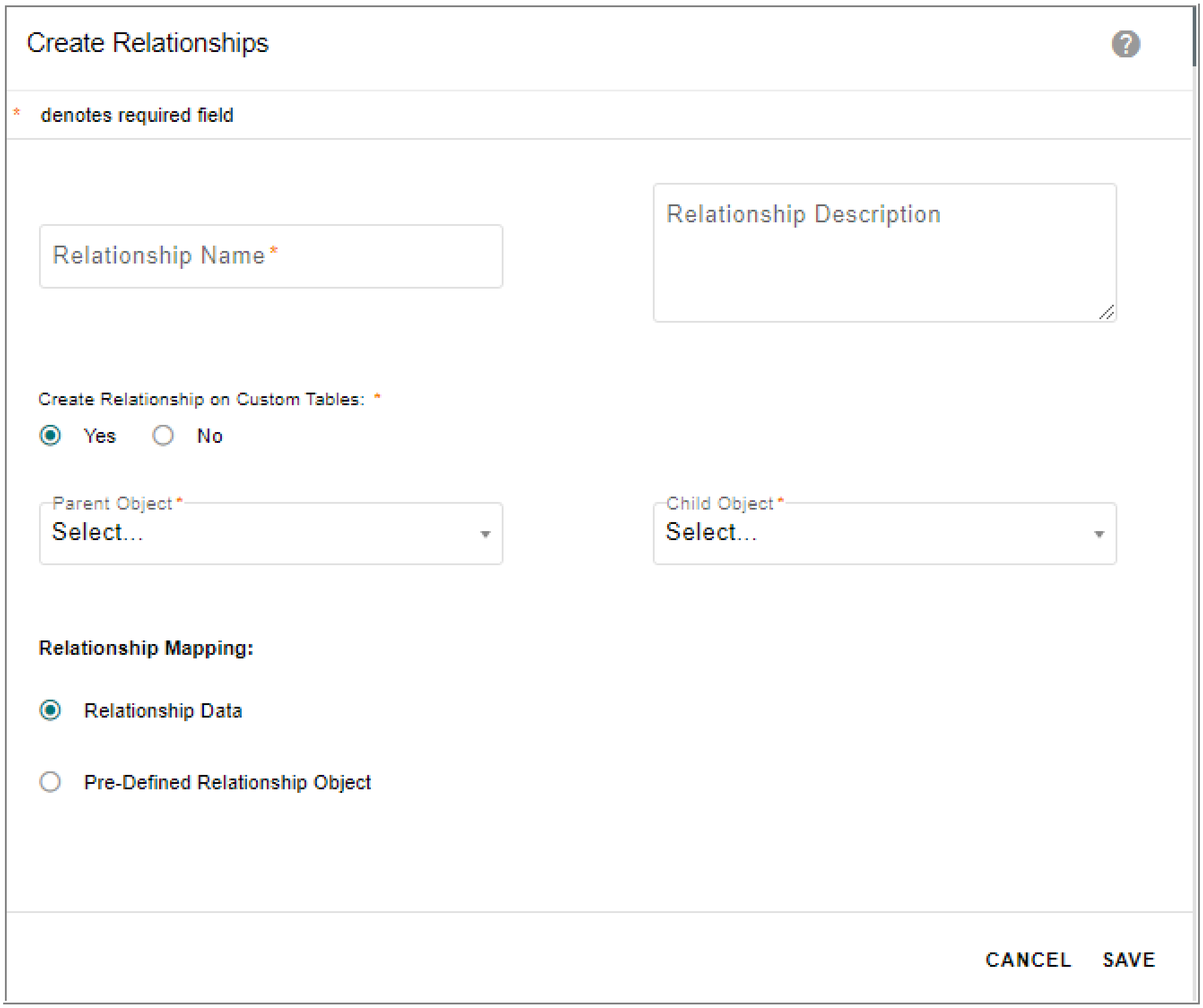
2 On the **Create Relationships** page (Figure 564), enter the following and click **Save**.

- **Relationship Name:** unique name of the relationship.

The relationship name should not be more than 50 characters. In case of names having more than 50 characters, Teradata Database will truncate value of name with maximum length and in this case it would be 50 characters.

- **Relationship Description:** brief description of the relationship being created.
- **Parent Object**: displays the list of the objects. You can select the required hierarchy object to be used as parent object.
- **Child Object:** displays the list of the objects. You can select required hierarchy object to be used as child object.
- **Create Relationship on Custom Tables:** select this option to create relationship on custom tables. If **Yes** option is selected, the **Relationship Mapping** section is displayed. The relational object selected in **Relationship Mapping** section holds the relationship of parent and child objects. It can be either **Relationship Data** or **Predefined** as in Figure 565.

Figure 565: Create Relationships



- Select the option **Relationship Data** if you want to store the relationship details in out of the box table provided by MDM.
- Select the option **Pre-defined Relationship Object**, if you want to use custom defined relational object to store the relationship details.

  If the **Pre-defined Relationship Object** is selected, the **Create Relationships** page displays the **Relationship Object** dropdown.
- The **Relationship Object** dropdown displays all the existing objects as well as user defined objects. On selection of a relationship object, parent and child object link columns are displayed. For each of the parent or child link column, a drop down populated with the columns of the selected relationship object is displayed. You can select appropriate column mappings to store the relationship details.

Link and View Data

Data of parent and child objects of a relationship can be linked using **Link Data** facility. The same linked data can be viewed using **View Data** facility. Using the **Link Data** option, you can select the parent data and link it with the child data manually. On the **Manage Relationships** UI, click on the Menu icon corresponding to the required relationship and click **Link Data**. The **Parent Data** page displays all the available parent data as in Figure 566. You can select a parent data and click **Select Child Data**. The **Child Data** page displays all the available child data. You can select multiple child data to link as in Figure 567 and click **Link Data**.

Figure 566: Parent Data

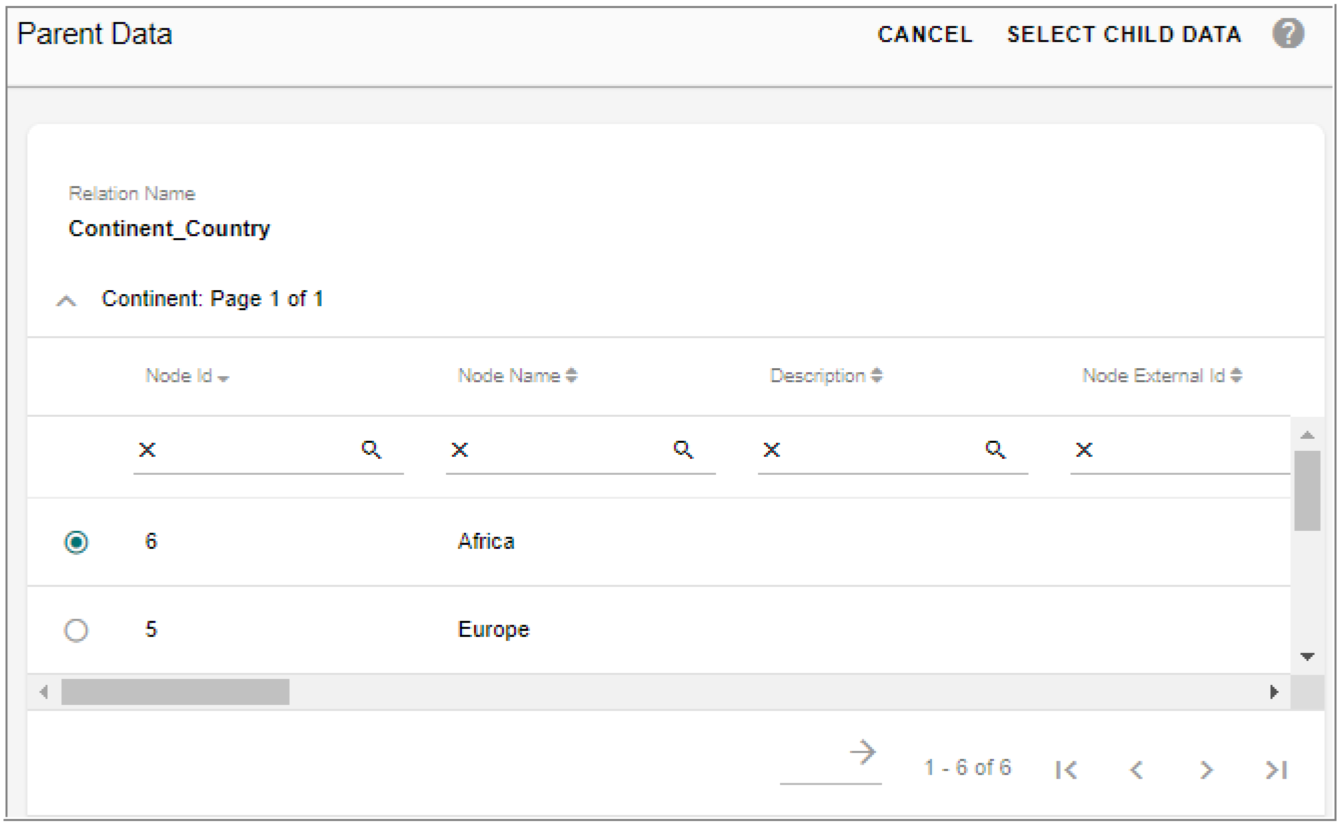
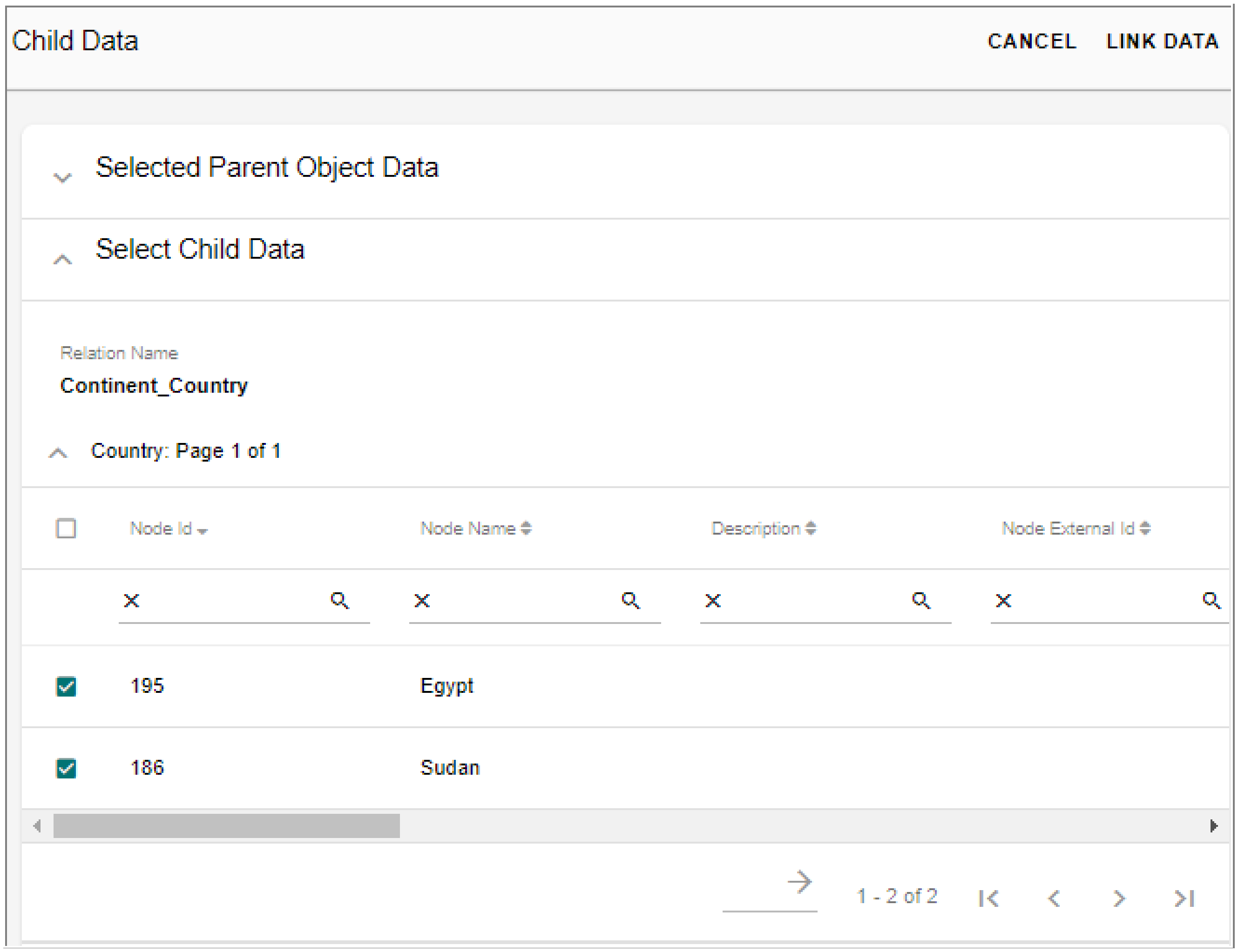


Figure 567: Child Data

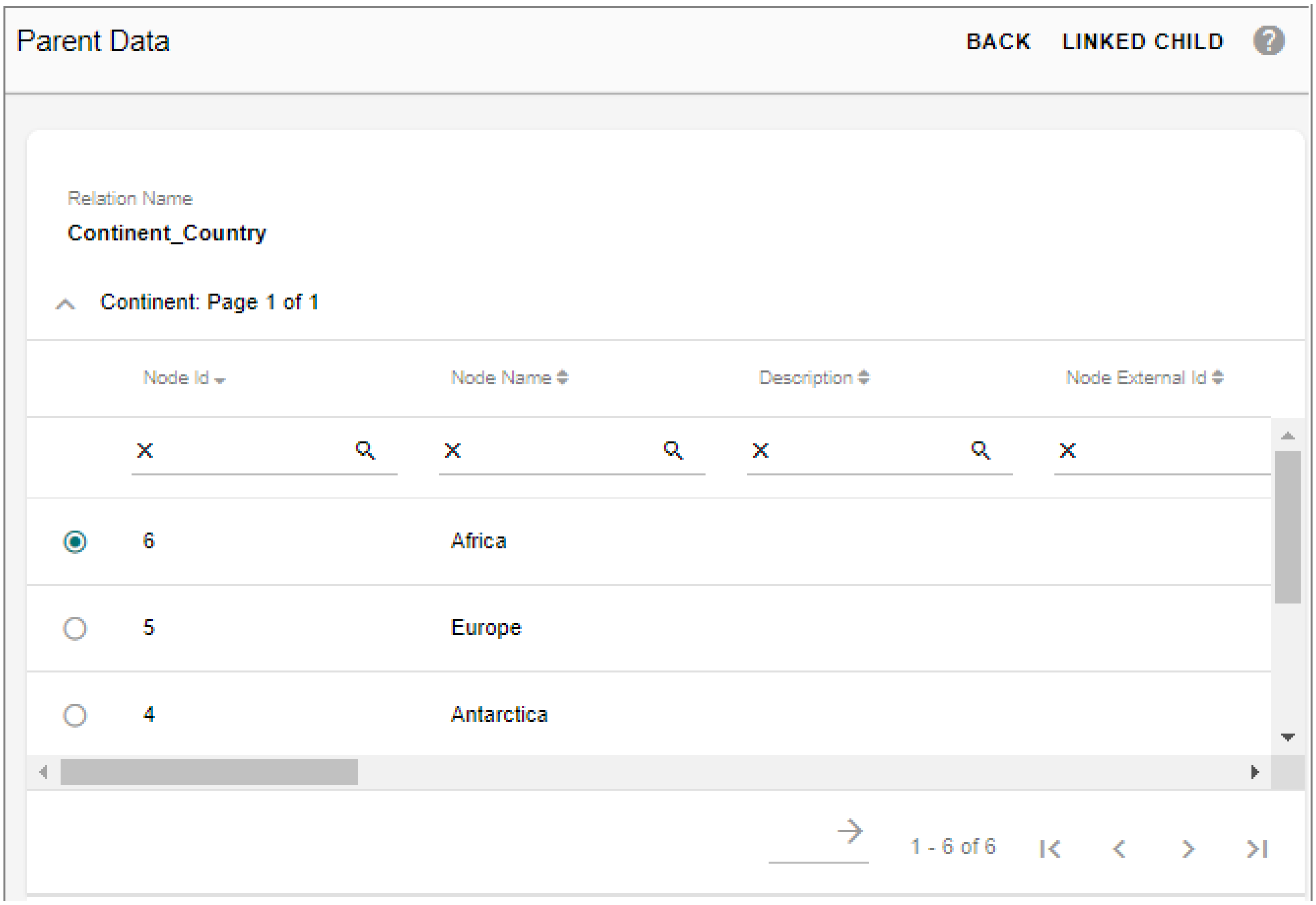


Relation Name
Continent_Country

☐	Node Id	Node Name	Description	Node External Id
☑	195	Egypt		
☑	186	Sudan		

You can also view the linked data using **View Data** option. On the **Manage Relationships** UI, click on the Menu icon corresponding to the required relationship and click **View Data**. The **Parent Data** page displays all the available parent data as in Figure 568. You can select a parent data and click **Linked Data**. The **Selected Parent Object Data** page displays all the linked child data as in Figure 569. On the **Selected Parent Object Data** page, you can delete the linked child using **Delete** option.

Figure 568: Parent Data

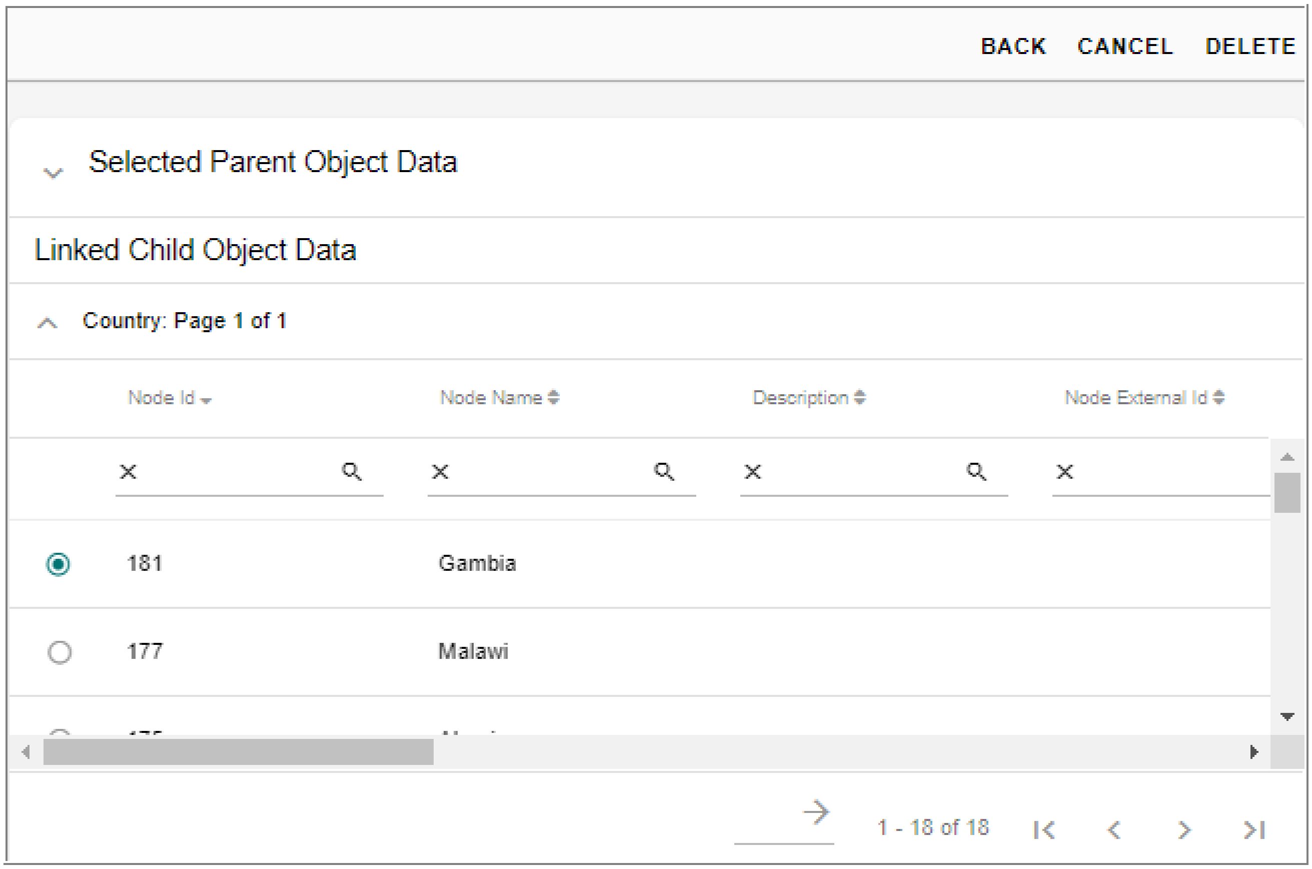


Relation Name
Continent_Country

Continent: Page 1 of 1

	Node Id	Node Name	Description	Node External Id
●	6	Africa		
○	5	Europe		
○	4	Antarctica		

Figure 569: Selected Parent Object Data

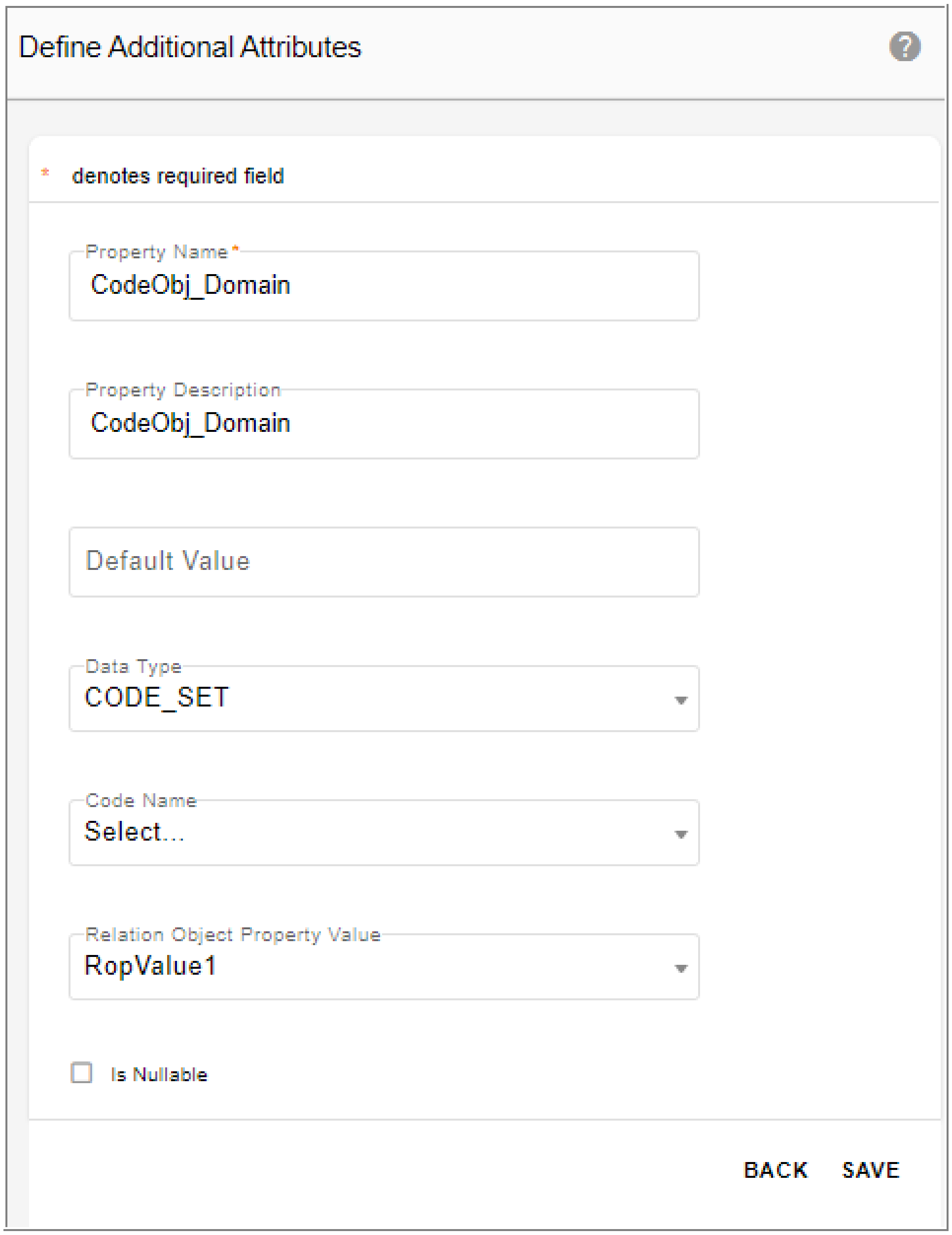


	Node Id	Node Name	Description	Node External Id
●	181	Gambia		
○	177	Malawi		

Define Additional Attributes

Additional attributes are the common attributes of relationship. These attributes can be defined for a relationship and each individual relation data of a relationship will have corresponding additional attribute value associated with it. On the **Manage Relationship** UI, click on the Menu icon corresponding to the required relationship and click **Additional Attributes.** On the **Manage Additional Attributes** UI, click **Create**. The **Define Additional Attributes** is displayed.

Figure 570: Define Additional Attributes



Define Additional Attributes

* denotes required field

Property Name*: CodeObj_Domain

Property Description: CodeObj_Domain

Default Value

Data Type: CODE_SET

Code Name: Select...

Relation Object Property Value: RopValue1

☐ Is Nullable

On the **Define Additional Attributes** popup (Figure 570),

- **Property Name**: unique name of the property being defined.
- **Property Description**: brief description about the property being defined.
- **Default Value**: any default value for the property.
- **Data Type**: data type of the property.
- **Code Name**: specify the code set name if the data type is selected as Code_Set.
- **Relational Object Property Value**: specify the relational object property value.
- **Is Nullable**: select this option if the property being defined is to be of null value.

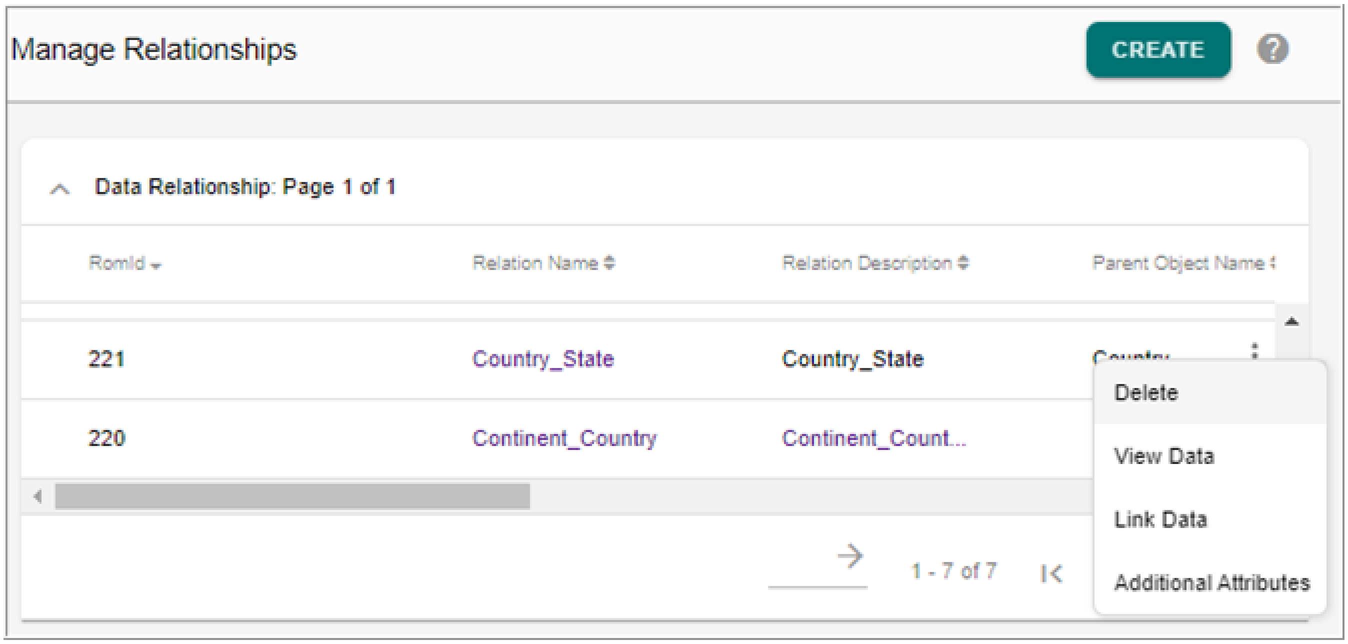
Additional Attributes cannot be defined for custom RODV tables.

To delete the defined additional attributes, on the **Manage Additional Attributes** UI, click on the Menu icon corresponding to the required attribute and click **Delete**.

Delete Relationship

To delete the relationship, on the **Manage Relationship** UI, click on the Menu icon corresponding to the required relationship and click **Delete** as in Figure 571.

Figure 571: Manage Relationship-Delete Option



RomId	Relation Name	Relation Description	Parent Object Name
221	Country_State	Country_State	Country
220	Continent_Country	Continent_Count...	

If the relationship is being used by any Hierarchy, you need delete the hierarchy and then delete the relationship.

Hierarchy Manager

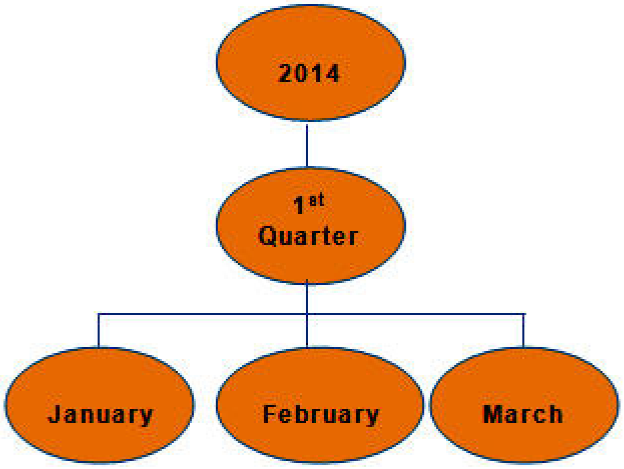
Hierarchy is defined as a logical grouping of objects or components in the system. Instances of any arbitrary object or component in the system can be grouped together to form a tree structure, thus constituting a hierarchy.

MDM supports the following hierarchy types:

Balanced or Structured Hierarchy

In balanced hierarchies, the branches of the hierarchy all descend to the same level, with each member's parent being at the level immediately above the member. A common example of a balanced hierarchy is one that represents time, where the depth of each level (year, quarter, and month) is consistent. Figure 572displays a balanced time hierarchy.

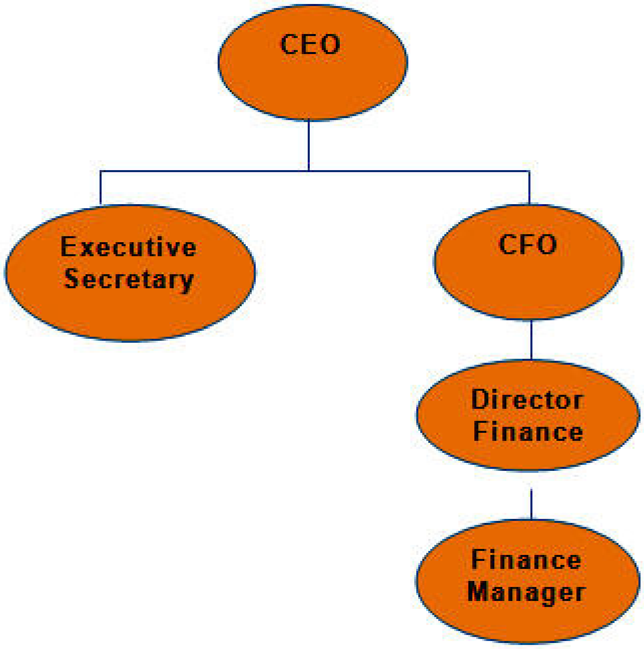
Figure 572: Example of Balanced Hierarchy Type



Unbalanced Hierarchy

An unbalanced hierarchy includes levels that have a consistent parent-child relationship, but have logically inconsistent levels. The hierarchy branches can also have inconsistent depths. An example of an unbalanced hierarchy is an organization chart, which shows reporting relationships among employees in an organization. The levels within the organizational structure are unbalanced, with some branches in the hierarchy having more levels than others. In Figure 573, the parent-child relationships on both branches of the hierarchy are consistent. However, the levels of both branches are not logically equivalents.

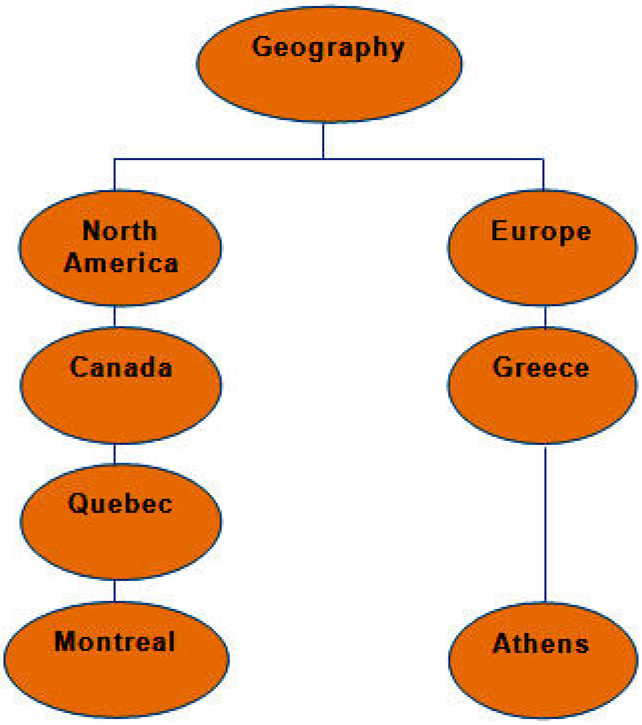
Figure 573: Example of UnBalanced Hierarchy Type



Ragged Hierarchy

A hierarchy in which each level has a consistent meaning, but the branches have inconsistent depths because at least one member attributes in a branch level is unpopulated. A ragged hierarchy can represent a geographic hierarchy in which the meaning of each level such as city or country is used consistently, but the depth of the hierarchy varies. In Figure 574, the example shows a geographic hierarchy that has Continent, Country, Province/State, and City levels defined. One branch has North America as the Continent, United States as the Country, California as the Province or State, and San Francisco as the City. However, the hierarchy becomes ragged when one member does not have an entry at all levels. For example, another branch has Europe as the Continent, Greece as the Country, and Athens as the City, but has no entry for the Province or State level because this level is not applicable to Greece for the business model in this example. In this example, the Greece and United States branches descend to different depths, creating a ragged hierarchy.

Figure 574: Example of Ragged Hierarchy Type



Navigate to **Reference Data** -> **Hierarchy Management** ->**Hierarchy Manager**

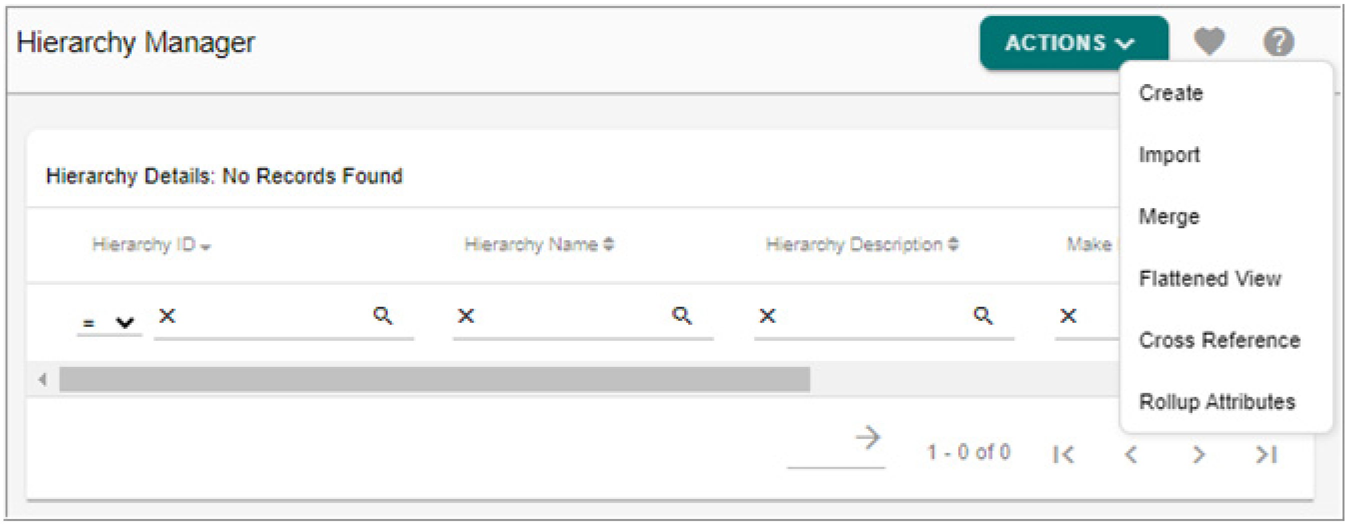
You can perform the following tasks on the Hierarchy Manage UI.

- Create Hierarchy
- Export Hierarchy
- Import Hierarchy
- Manage Custom Actions
- Edit Hierarchy
- View Hierarchy
- Create Version
- Copy Hierarchy Version
- Manage Version
- Compare Hierarchy
- Merge Hierarchy
- Hierarchy Statistics
- Manage Cross Reference
- Manage Rollup Attributes

Create Hierarchy

To create hierarchy, select **Create** option from **Actions** dropdown on **Hierarchy Manager** UI as in Figure 575.

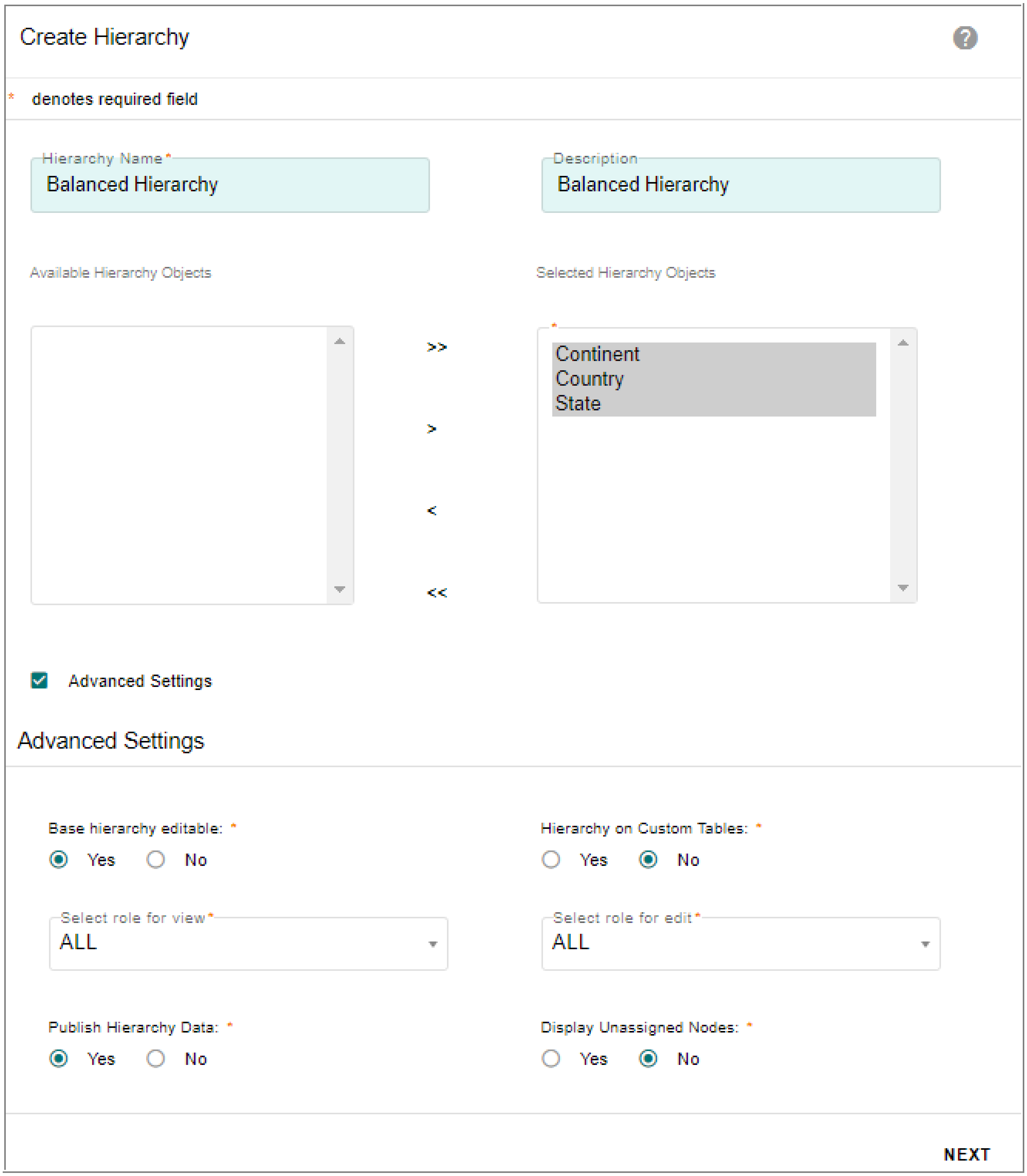
Figure 575: Hierarchy Manager



Hierarchy Manager

Hierarchy Details: No Records Found

Figure 576: Create Hierarchy



Create Hierarchy

* denotes required field

Hierarchy Name*: Balanced Hierarchy

Description: Balanced Hierarchy

Available Hierarchy Objects:

Selected Hierarchy Objects*:
Continent
Country
State

☑ Advanced Settings

Advanced Settings

Base hierarchy editable: * ● Yes ○ No

Hierarchy on Custom Tables: * ○ Yes ● No

Select role for view*: ALL

Select role for edit*: ALL

Publish Hierarchy Data: * ● Yes ○ No

Display Unassigned Nodes: * ○ Yes ● No

On the **Create Hierarchy** page (Figure 576),

- **Hierarchy Name**: unique name of the hierarchy.
- **Description**: brief description about the hierarchy being created.

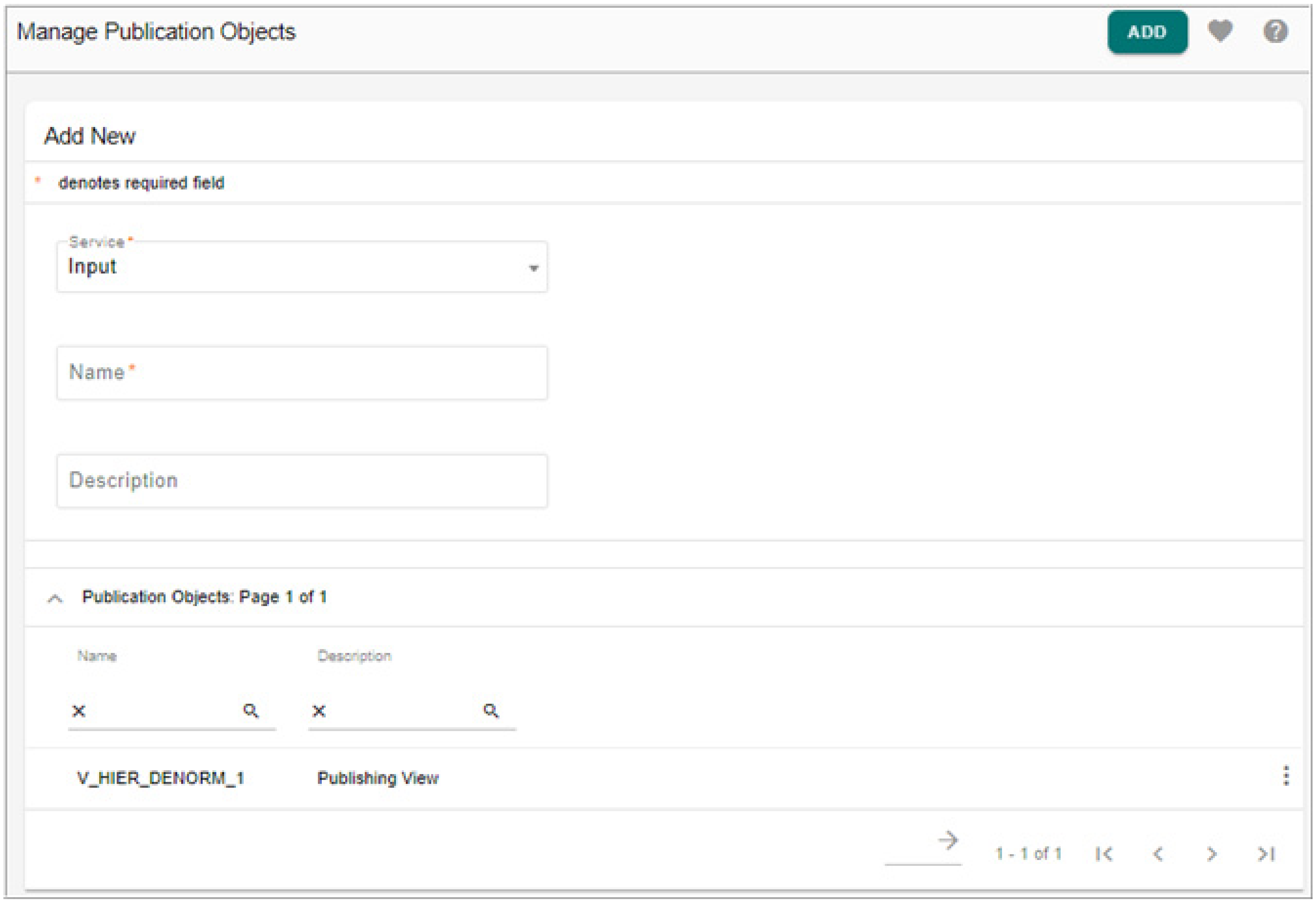
- **Selected Hierarchy Objects**: displays a list of all the selected hierarchy objects to create hierarchy relationship.
- **Available Hierarchy Objects**: displays a list of all the available hierarchy objects that can be selected to create a hierarchy relationship.

  You can configure a set of advanced settings (Figure 576) for hierarchy. Click on **Advanced Settings** checkbox to configure.
- **Base hierarchy editable**: you can make the base hierarchy editable or non editable.

  If base hierarchy is selected as non-editable, the hierarchy will be non-editable to all the user groups irrespective of what role is been selected for 'Select role for edit'. You cannot perform any changes including drag and drop to the underlying hierarchy data from Hierarchy Viewer. By default, the hierarchy is editable.
- **Hierarchy on Custom Tables**: select Yes option to create hierarchy on custom master table. The Available Hierarchy Objects list displays the objects created on custom tables.
- **Select role for view**: the selected role can only view the composition of the hierarchy and cannot make changes to hierarchy details.
- **Select role for edit**: the selected role can make modifications to the structure or composition of the hierarchy.
- **Publish Hierarchy Data**: you can enable to publish flattened representation view of a Hierarchy data by selecting **Yes** option. By default, No option is selected.

  If publishing is enabled for a hierarchy, the required publishing metadata for the hierarchy will be created automatically as in Figure 577. The actual publish of hierarchy data can be triggered from Manage Publication Objects UI when required.
- **Display Unassigned Nodes**: You can use this option to display orphan nodes (Nodes that do not have a parent) in Hierarchy Viewer. The orphan nodes will be displayed under a dummy parent node called Unassigned_<HierarchyObjectName> in viewer. The orphan nodes then can be dragged to valid parent.

Figure 577: Manage Publication Objects



Service*: Input

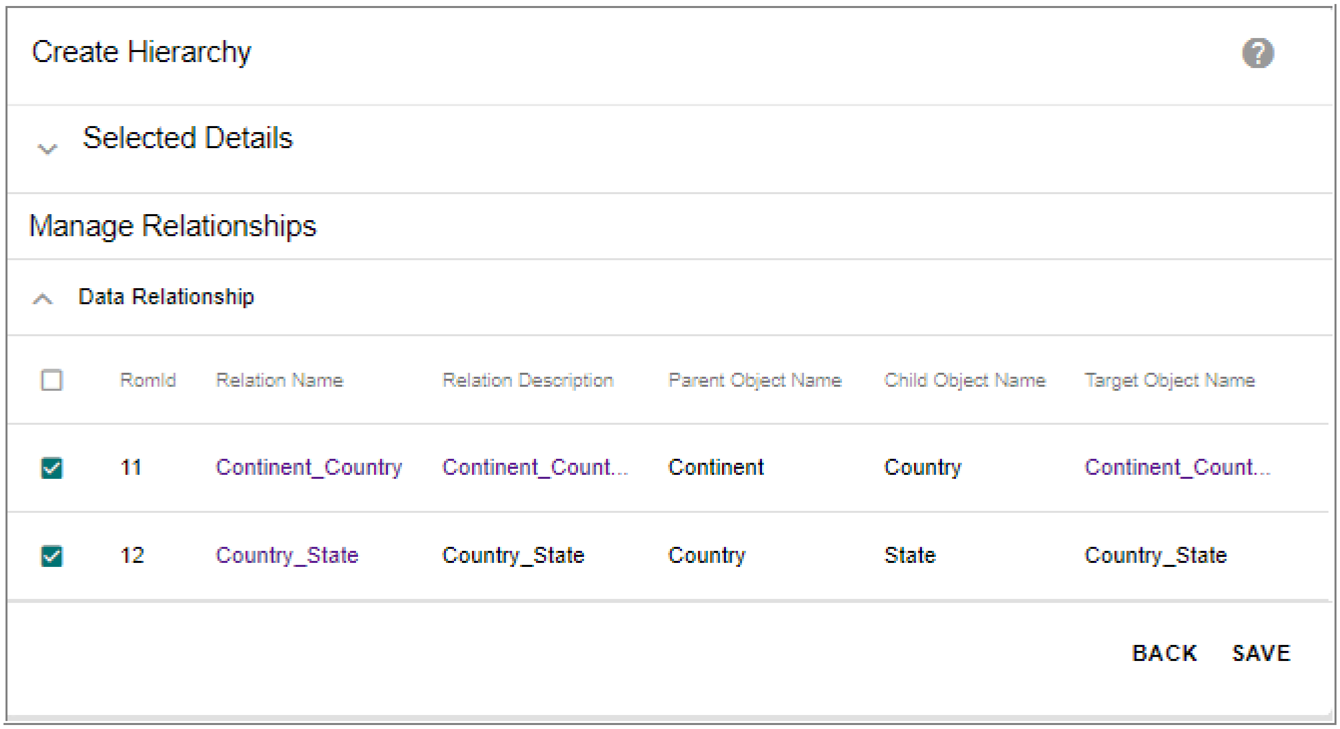
Name*

Description

Name	Description
V_HIER_DENORM_1	Publishing View

- Navigate to the next page using the **Next** button to select the relationships as in Figure 578.

Figure 578: Create Hierarchy



Create Hierarchy

Selected Details

Manage Relationships

Data Relationship

☐	RomId	Relation Name	Relation Description	Parent Object Name	Child Object Name	Target Object Name
☑	11	Continent_Country	Continent_Count...	Continent	Country	Continent_Count...
☑	12	Country_State	Country_State	Country	State	Country_State

- On the **Create Hierarchy—Manage Relationships** page, select the data relationships and click **Save** to save the hierarchy being created.

Creating Unbalanced Hierarchy

You can create hierarchy on data of same table (unbalanced hierarchy). For example: Region Hierarchy.

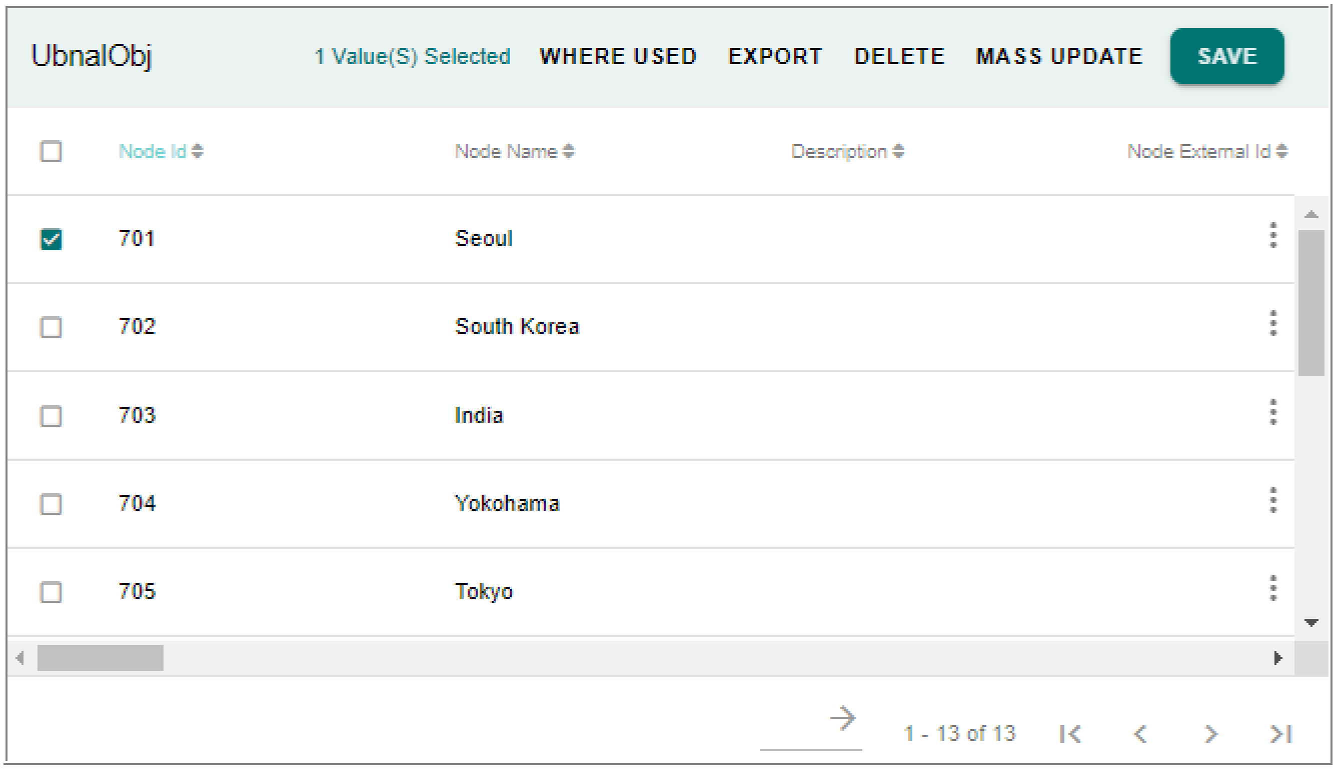
To create unbalanced hierarchy:

1 Create hierarchy objects. See Section : “Create Hierarchy Object.”

In case of unbalanced hierarchy, since the parent and child data will come from same table, only one RO needs to be created.

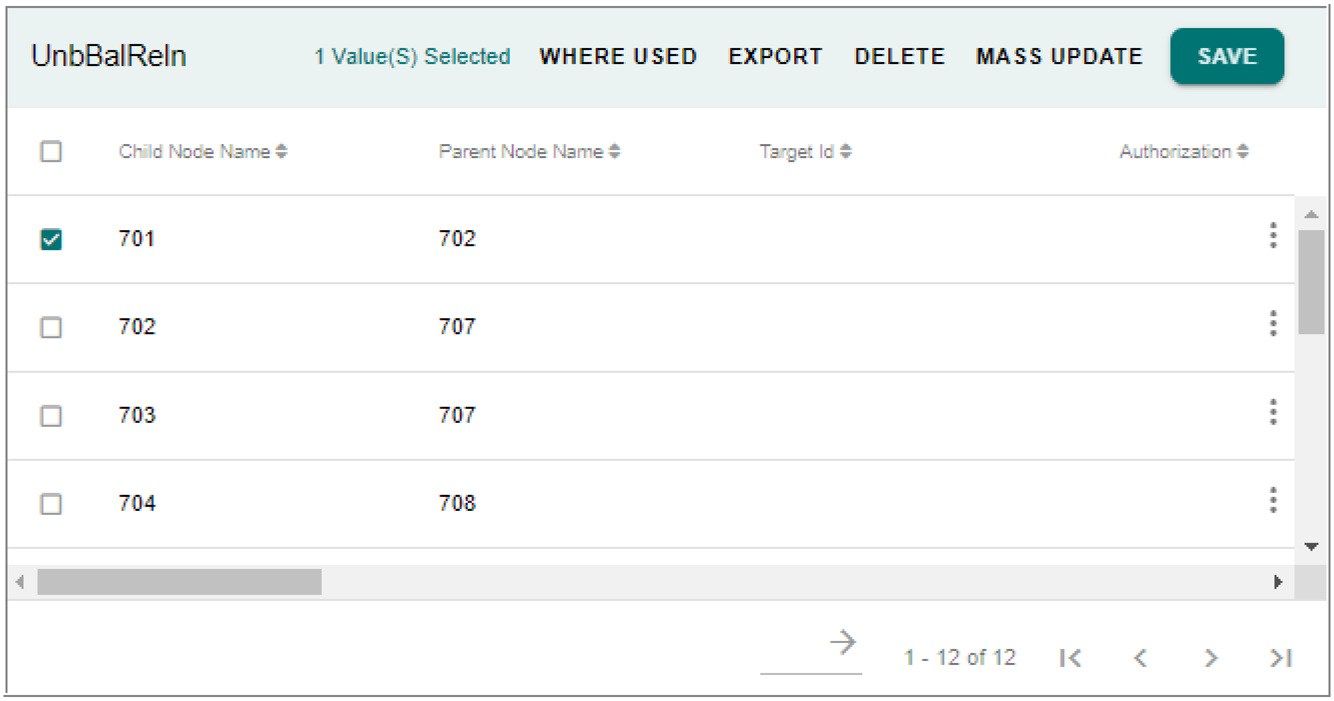
Both the hierarchy object table and relation table must be populated with correct data. For example as in Figure 579 and Figure 580.

Figure 579: Object Data



☐	Node Id	Node Name	Description	Node External Id
☑	701	Seoul		
☐	702	South Korea		
☐	703	India		
☐	704	Yokohama		
☐	705	Tokyo		

Figure 580: Relation Table Data

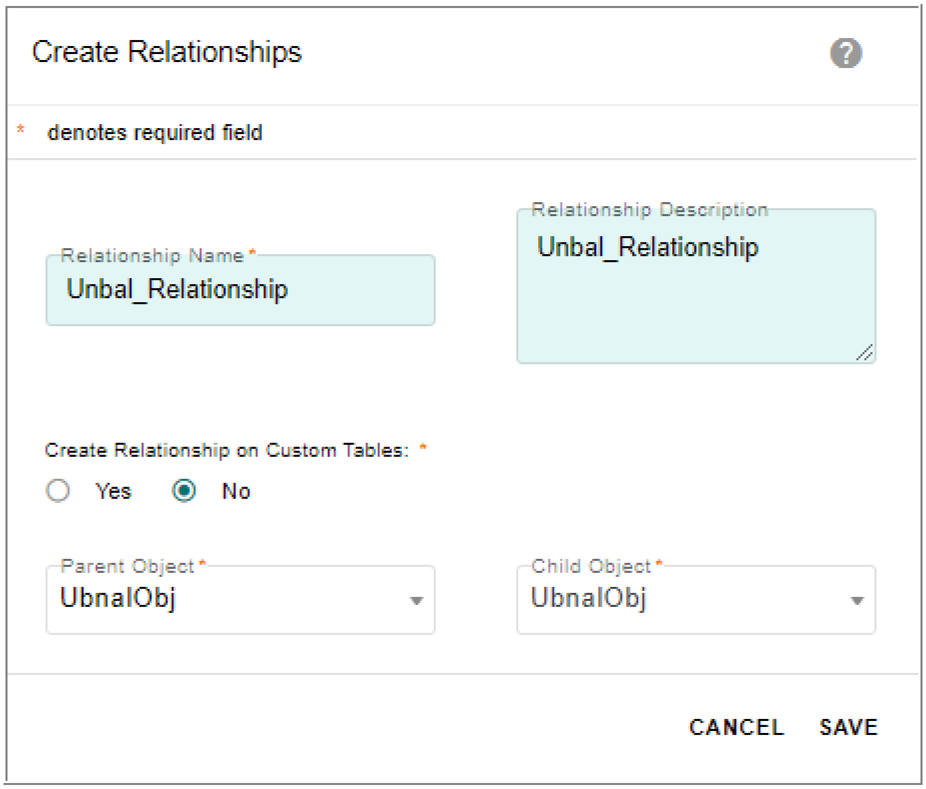


☐	Child Node Name	Parent Node Name	Target Id	Authorization
☑	701	702		
☐	702	707		
☐	703	707		
☐	704	708		

The top most node will not have parent node Id and the subsequent nodes will have corresponding parent nodes.

2 Create relationship using the same hierarchy object as parent and child as in Figure 581.

Figure 581: Create Relationship for Unbalanced Hierarchy



Create Relationships

* denotes required field

Relationship Name*: Unbal_Relationship

Relationship Description: Unbal_Relationship

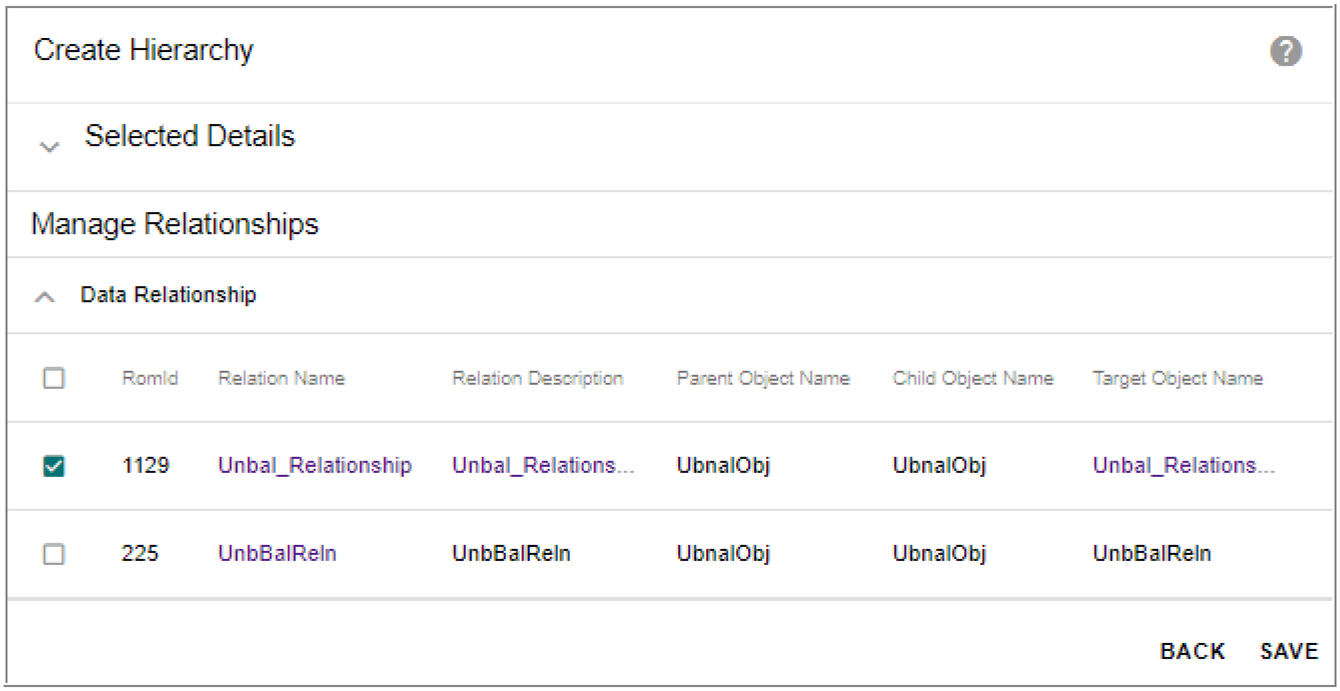
Create Relationship on Custom Tables: *
○ Yes ● No

Parent Object*: UbnalObj

Child Object*: UbnalObj

3 Create hierarchy using the above relationship as in Figure 582. See Section : “Create Hierarchy.”

Figure 582: Create Hierarchy



Create Hierarchy

Selected Details

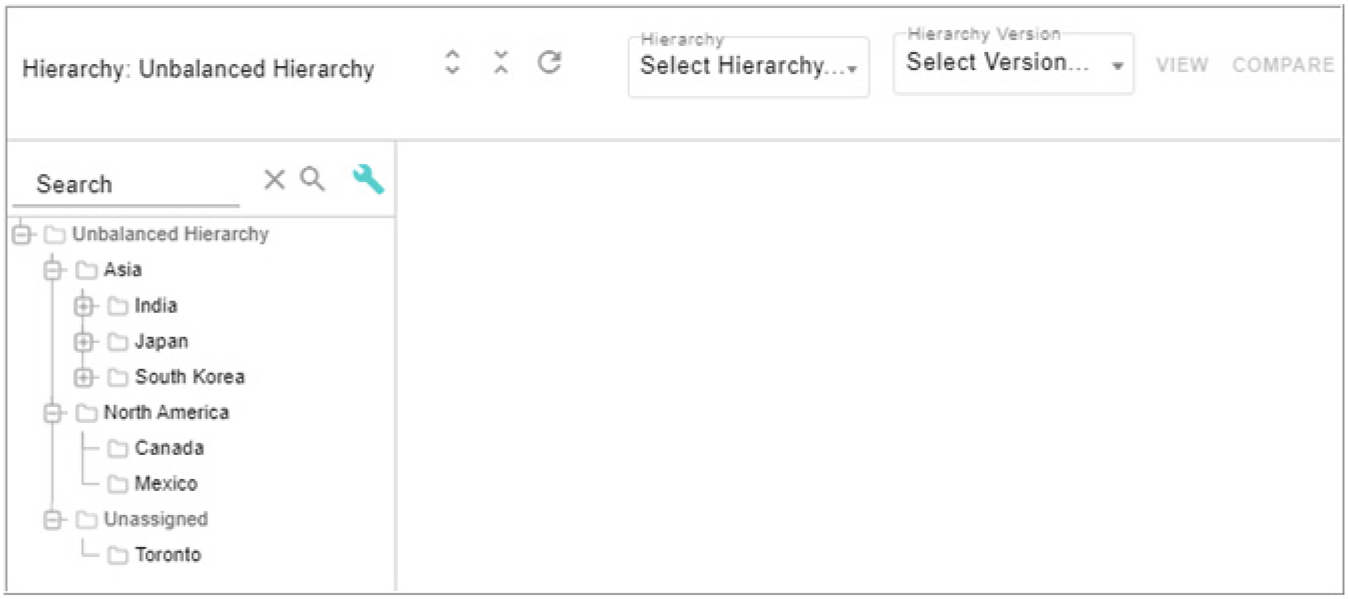
Manage Relationships

Data Relationship

☐	RomId	Relation Name	Relation Description	Parent Object Name	Child Object Name	Target Object Name
☑	1129	Unbal_Relationship	Unbal_Relations...	UbnalObj	UbnalObj	Unbal_Relations...
☐	225	UnbBalReln	UnbBalReln	UbnalObj	UbnalObj	UnbBalReln

All features of balanced hierarchy is supported for unbalanced Hierarchy on **Hierarchy Viewer** as in Figure 583.

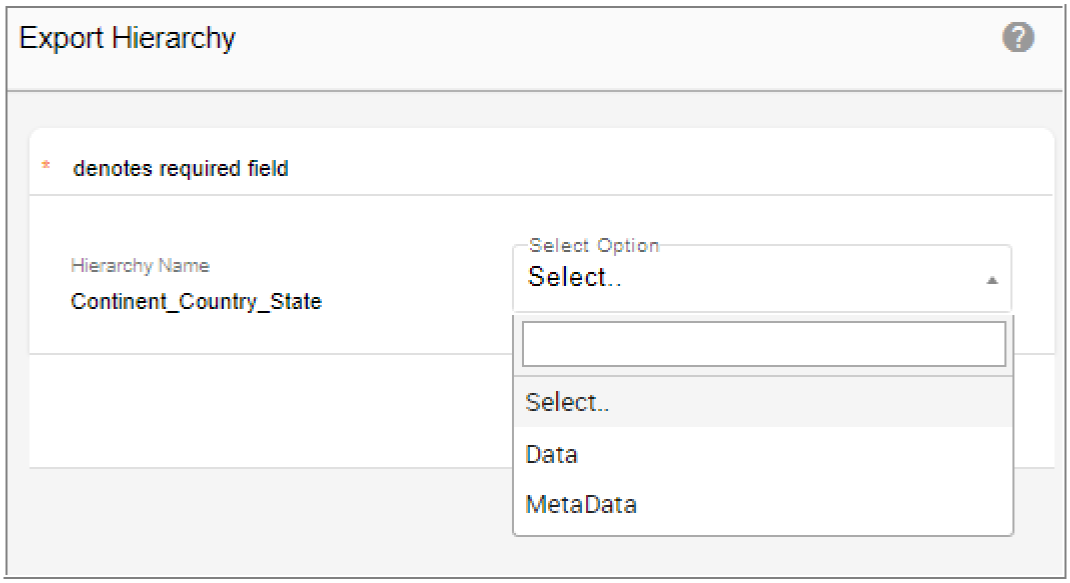
Figure 583: Hierarchy Viewer



Export Hierarchy

On the **Hierarchy Manager** UI, click on the Menu icon corresponding to the required hierarchy and click **Export.** The Export option provides the ability to export the hierarchy data and hierarchy metadata with all its element and all child elements into Excel format. On the **Export Hierarchy** UI, you can select either **Data** or **MetaData** option as required. When **MetaData** option is selected, you can export the metadata of the selected hierarchy.

Figure 584: Export Hierarchy

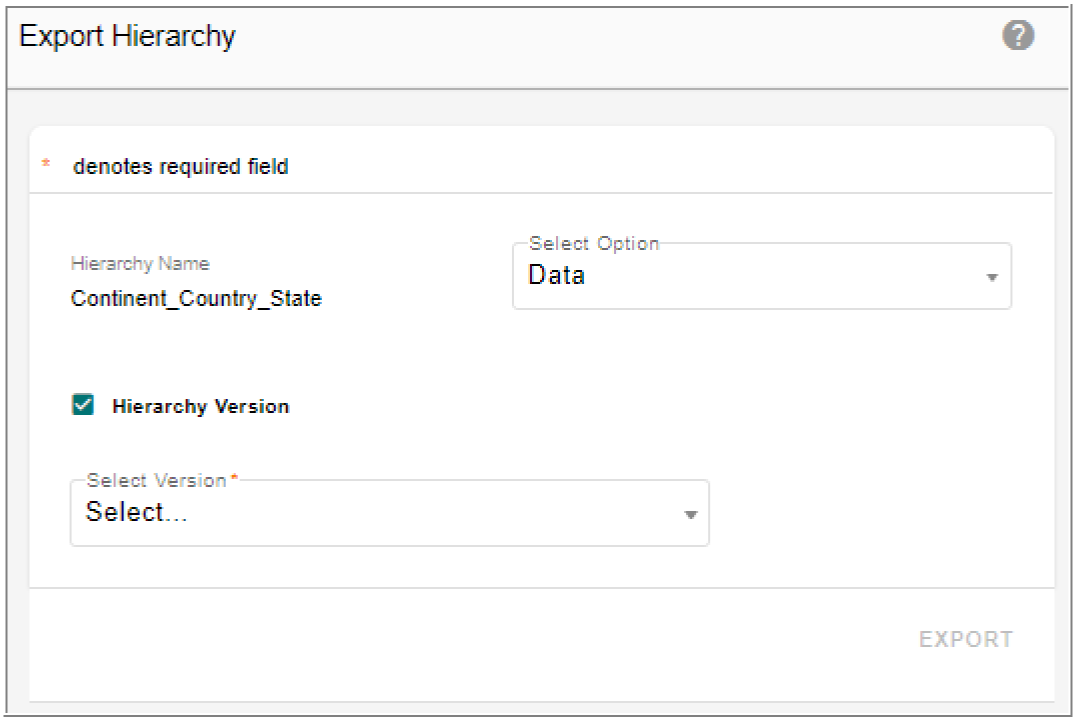

Export Hierarchy

* denotes required field

Hierarchy Name
Continent_Country_State

When **Data** option is selected, the **Export Hierarchy** UI displays the option to select hierarchy version as in Figure 585. Select the **Hierarchy Version** checkbox if you want to export a particular version of hierarchy. On selection of this option, all available versions of the selected hierarchy will be populated in a drop down. When hierarchy data is exported, the data of all nodes and the relationships between the nodes are exported in separate sheets of the same excel.

Figure 585: Export Hierarchy



* denotes required field

Hierarchy Name: Continent_Country_State

Select Option: Data

☑ Hierarchy Version

Select Version *: Select...

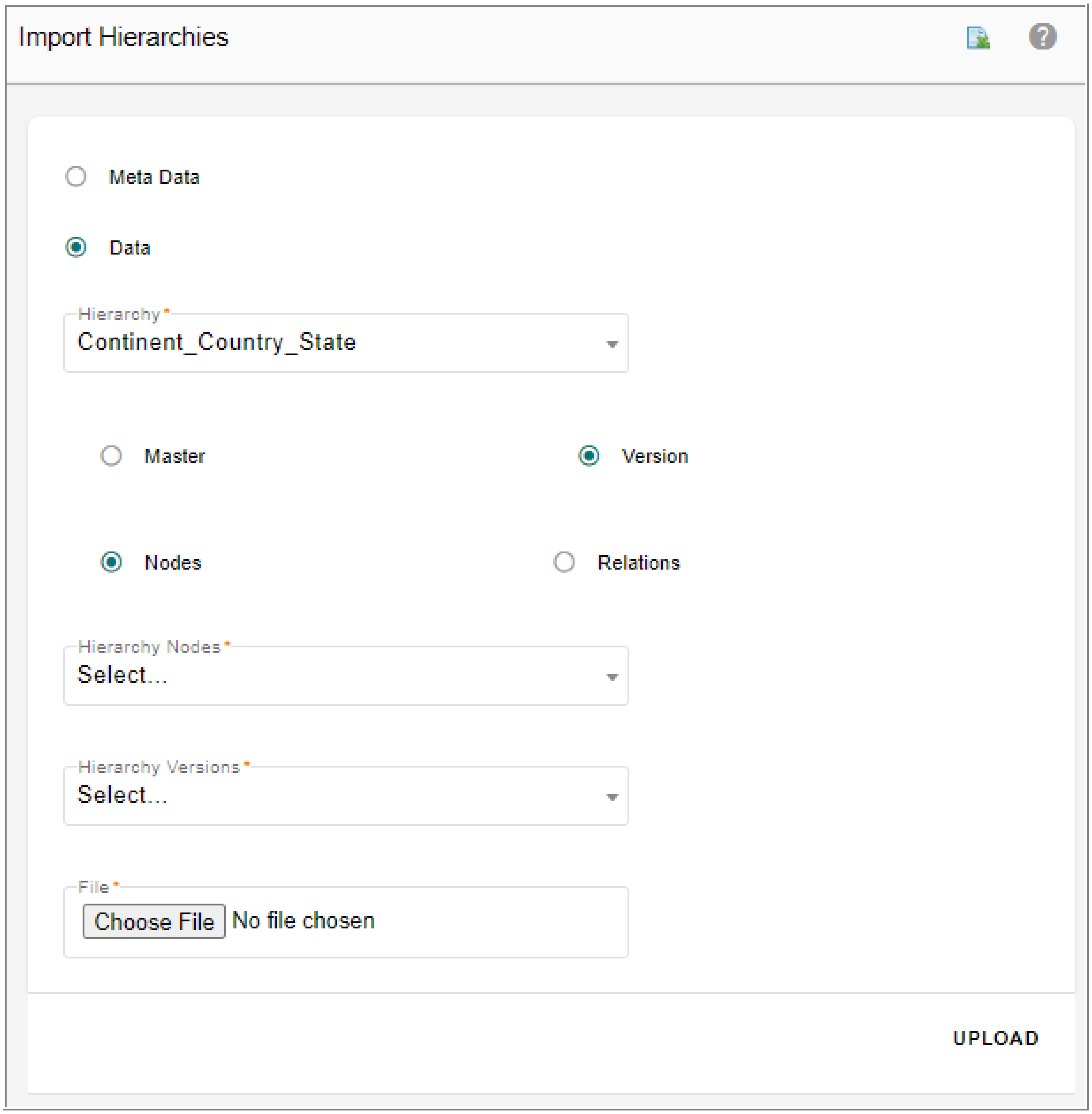
- All records in parent and child table are exported during export hierarchy.

Import Hierarchy

MDM supports import of hierarchy data. When a hierarchy is selected for importing its data, it provides options to import meta data or data (nodes and relations) separately. Hierarchy data import utilizes excel upload mechanism and supports error corrections.

Navigate to **Import Hierarchy** UI from **Hierarchy Manager** UI by selecting **Import** option from **Actions** dropdown.

Figure 586: Import Hierarchy



Import Hierarchies

○ Meta Data

● Data

Hierarchy*: Continent_Country_State

○ Master ● Version

● Nodes ○ Relations

Hierarchy Nodes*: Select...

Hierarchy Versions*: Select...

File*: Choose File No file chosen

On the **Import Hierarchy** UI (Figure 586):

- **Meta Data**: select **Meta Data** option to import the hierarchy metadata. Select **Meta Data** option, choose the file to import and click **Upload**.
- **Data**: select the **Data** option to import the hierarchy data. When **Data** option is selected, the **Hierarchy** drop down is displayed.
- **Hierarchy**: select the hierarchy whose data needs to be imported from **Hierarchy** dropdown.

  When a hierarchy is selected, it displays options to import:

  - **Master** hierarchy: select the **Master** option and the corresponding nodes/relations to import.

  - **Version** hierarchy: when **Version** option is selected, the **Hierarchy Versions** dropdown is displayed. You can select the required version and the corresponding nodes/relations to import.
- **Nodes**: select **Nodes** option to import node details. When **Nodes** option is selected, **Hierarchy Nodes** drop down displays all the existing nodes (Hierarchy Objects) of the selected hierarchy. Select the required node to import from the **Hierarchy Nodes** dropdown.
- **Relations**: select **Relations** option to import relation details. When **Relations** option is selected, **Hierarchy Relations** dropdown displays all the existing relationships of the selected hierarchy. Select the required relationship to import from the **Hierarchy Relations** dropdown.

Nodes should be imported before relations as validation is done on the relation table to check if the node names exist in the corresponding node tables.

The Import Hierarchy is not supported in custom table based hierarchy.

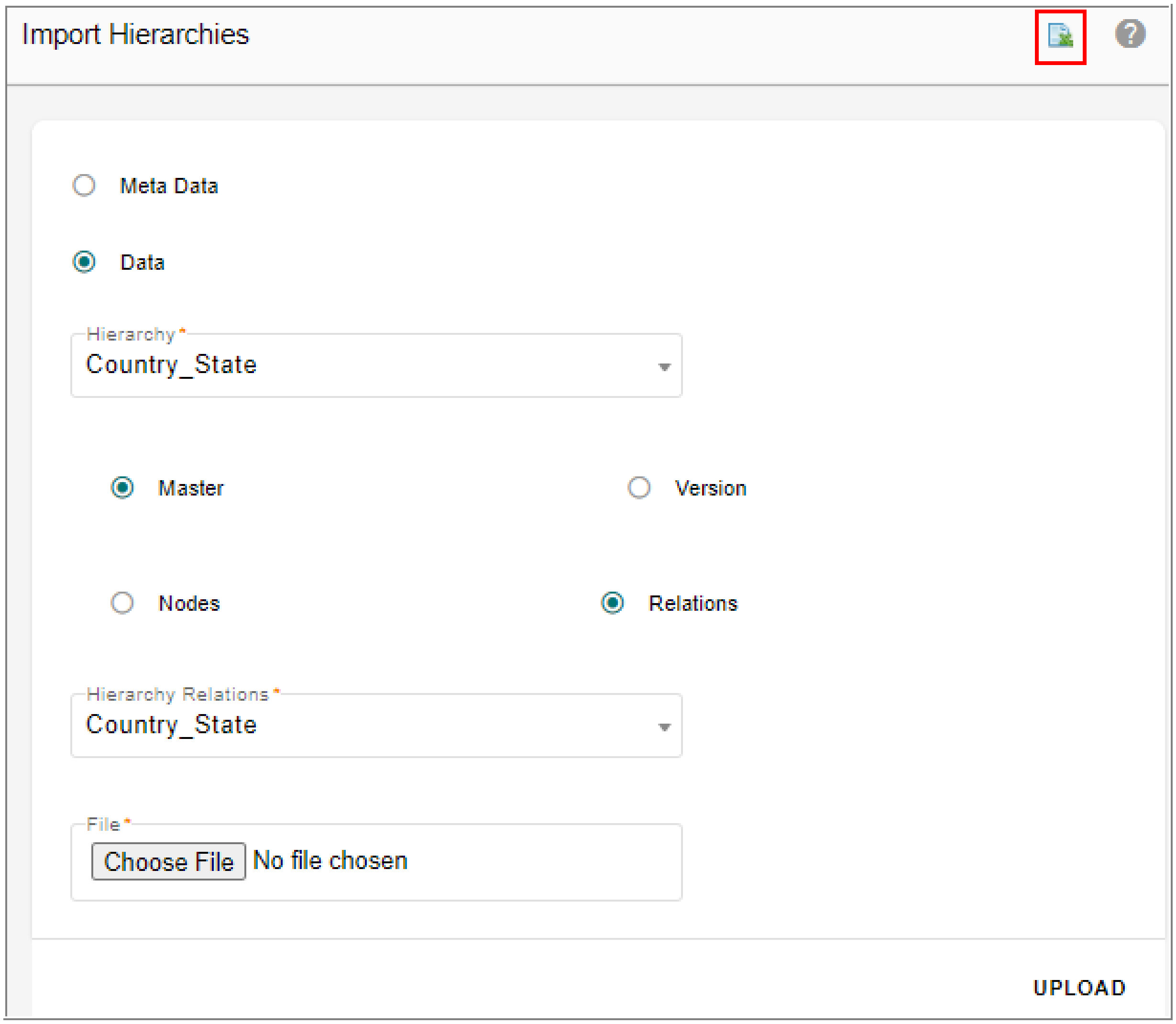
- Click **Choose File** to locate the corresponding excel file and click **Upload**.

The **View Reports** page is displayed. If any error occurs, you can perform error correction and reload data. For more details on error correction, see Chapter 11: “Upload Documents.”

Download Document Template for Import

The Document Template feature available on **Import Hierarchies** UI allows you to download the template in excel for each import type like Meta Data, Data (Nodes and Relations). On the **Import Hierarchies** UI, select the import type (meta-data or nodes or relations) and select the corresponding data and click on the Document Template icon as in Figure 587.

Figure 587: Import Hierarchies—Document Template



○ Meta Data

● Data

Hierarchy *: Country_State

● Master ○ Version

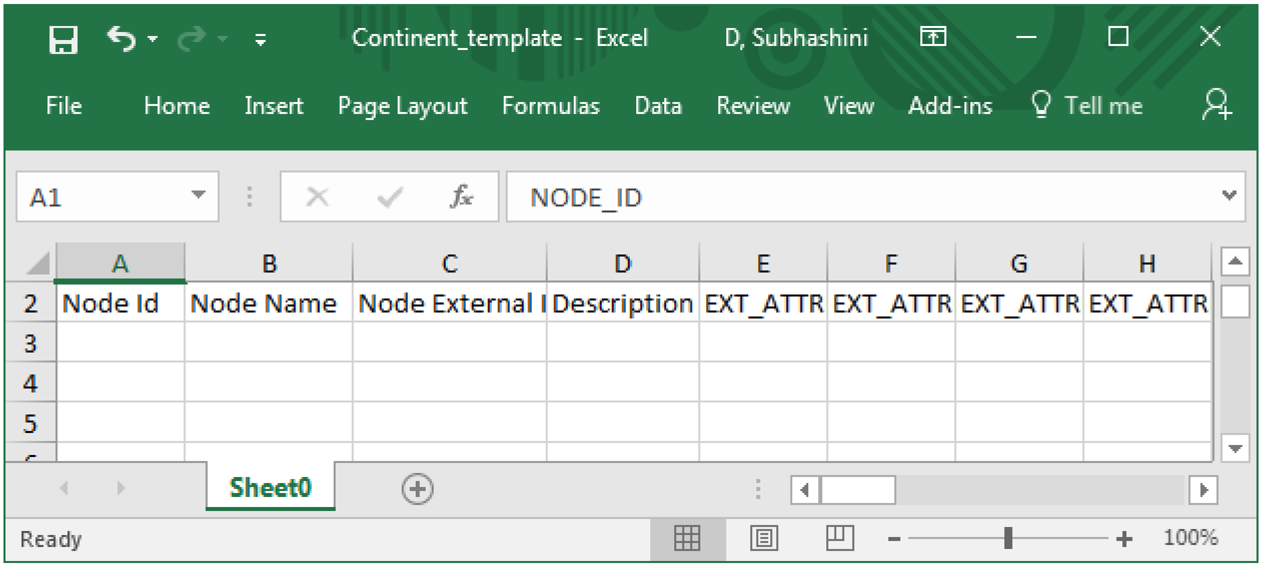
○ Nodes ● Relations

Hierarchy Relations *: Country_State

File *: Choose File No file chosen

Open the downloaded template file as in Figure 588 and Figure 589. You can enter the required details in the excel file and later upload using the Upload Excel option.

Figure 588: Template File—Node Template



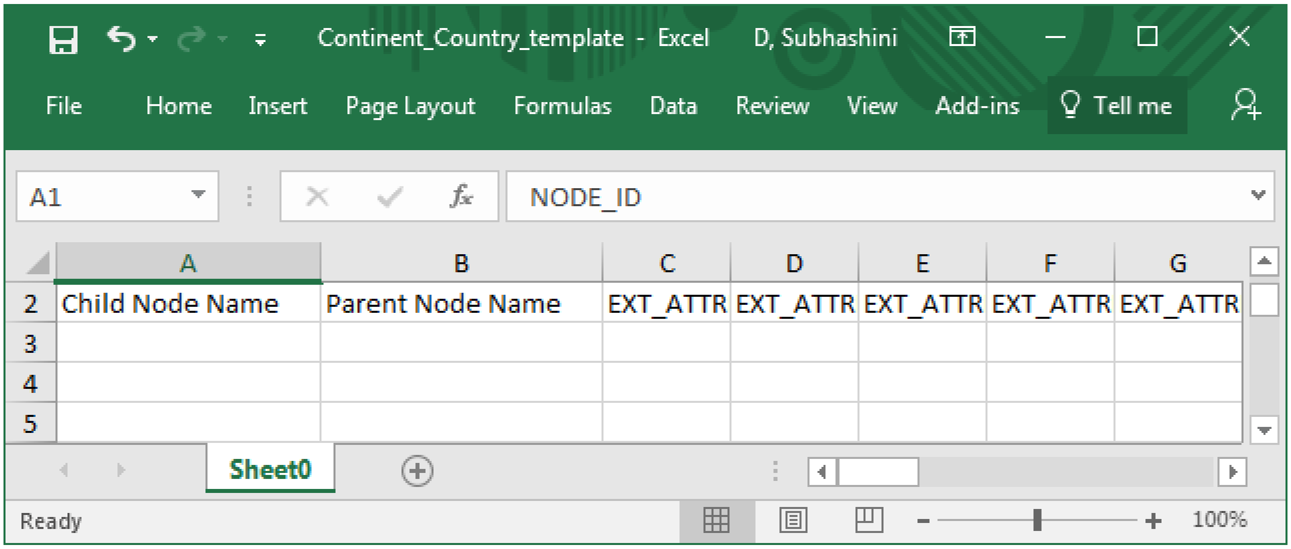
NODE_ID

	A	B	C	D	E	F	G	H
2	Node Id	Node Name	Node External I	Description	EXT_ATTR	EXT_ATTR	EXT_ATTR	EXT_ATTR
3								
4								
5								

In the Node Template file (Figure 588), Node Id is optional. The upload of node expects node names as mandatory inputs. If nodes with same name exists it will be considered as update otherwise it will be insert. In case user provides explicit node Ids in the upload excel template, user defined Ids will be considered. In that case, it is user’s responsibility to maintain uniqueness of Ids.

In the Relation Template file (Figure 589), node name and parent node name will be taken as input from user.

Figure 589: Template File—Relation Template



NODE_ID

	A	B	C	D	E	F	G
2	Child Node Name	Parent Node Name	EXT_ATTR	EXT_ATTR	EXT_ATTR	EXT_ATTR	EXT_ATTR
3							
4							
5							

Points to remember on import hierarchy process:

- Validation Rules, Cleansing and Standardization Rules defined on master tables are honored on version tables also.

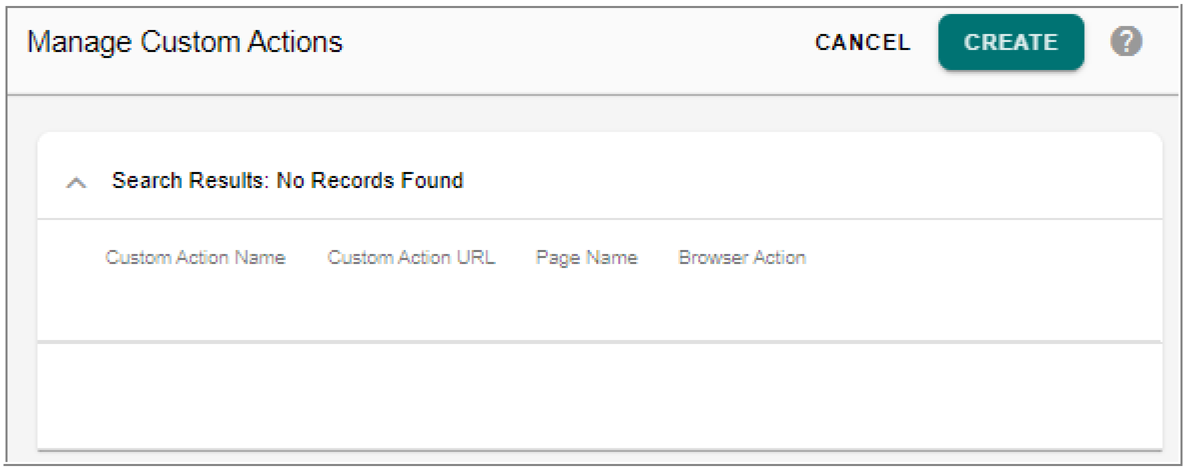
- Approval, ALCR and Insert Update Rules are applicable only on master tables and not supported on version tables.
- Error correction is supported on both master and version tables.

Manage Custom Actions

Custom Actions in Hierarchy Manager enables you to navigate to a custom page of your choice and perform custom actions based on the key values of the hierarchy node selected in hierarchy viewer. To create a custom action, you need to select the desired MDM page and type of browser action. Once the custom actions are defined for a hierarchy, the defined actions will be common to every node in the hierarchy.

On the **Hierarchy Manager** UI, click on the Menu icon corresponding to the required hierarchy and click **Custom**. On the **Manage Custom Actions** page, you can create, edit and delete custom actions.

Figure 590: Manage Custom Actions

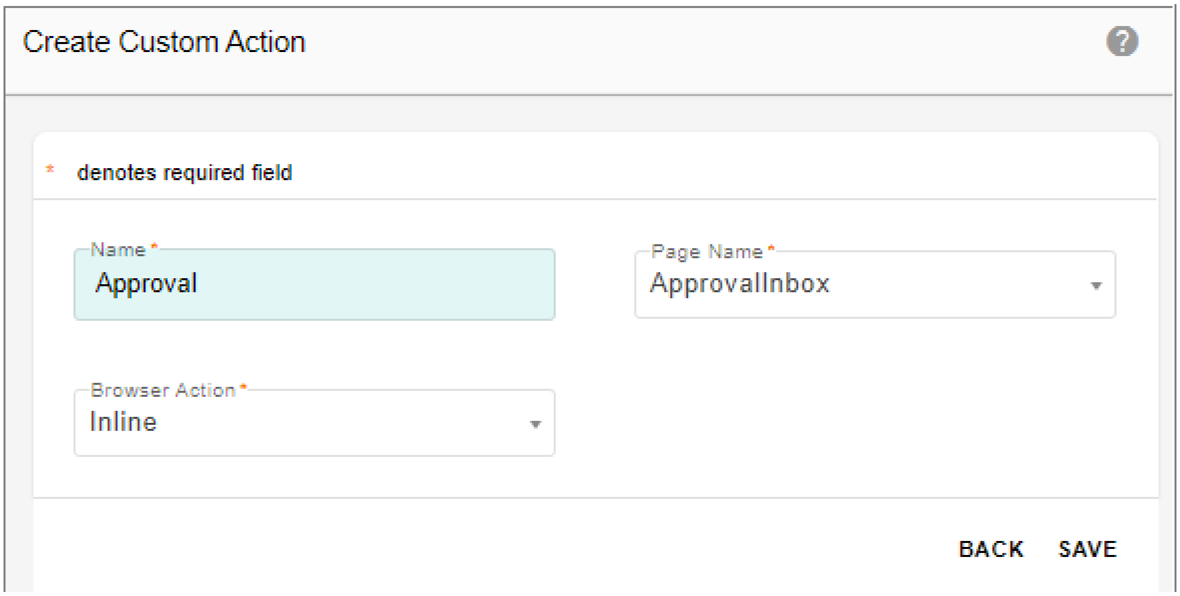


Manage Custom Actions

Search Results: No Records Found

Custom Action Name	Custom Action URL	Page Name	Browser Action

Figure 591: Create Custom Actions



Create Custom Action

* denotes required field

Name *: Approval

Page Name *: ApprovalInbox

Browser Action *: Inline

On the **Create Custom Action** pop-up (Figure 591),

- **Name**: unique name for the custom action.
- **Page Name**: specify the MDM page name to navigate.

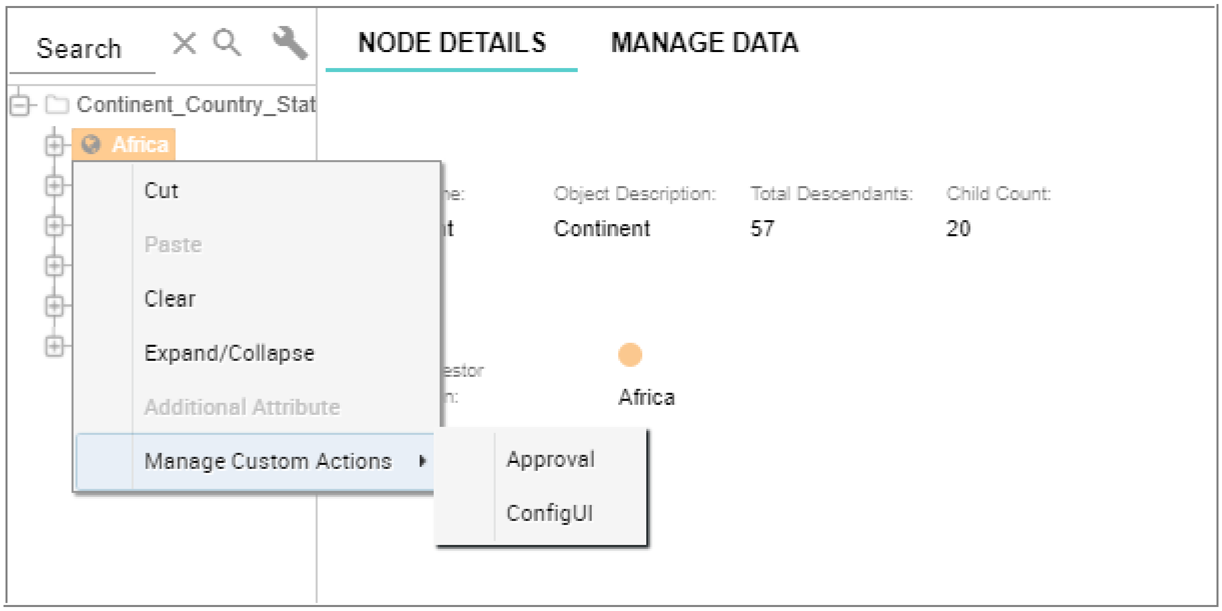
  The **Page Name** dropdown displays all the pages available on the **Manage Pages** UI of **Menu Builder**.
- **Browser Action**: specifies the mode of opening the custom action URL either as Popup or Inline.

  If the custom action is defined with browser type as popup, the custom action link will open in a different window and if the custom action is defined with browser type as inline, the custom action link will open in the same window in configurable UI panel.

  Once the custom actions are defined, you can navigate to the hierarchy viewer and on each hierarchy node of the selected hierarchy, the custom actions will be displayed as custom action links as in Figure 592. The Manage Custom Actions option will be disabled when on the Menu if no custom actions are defined on that hierarchy.

You can create maximum three numbers of custom actions.

Figure 592: Hierarchy Viewer—Manage Custom Actions Option

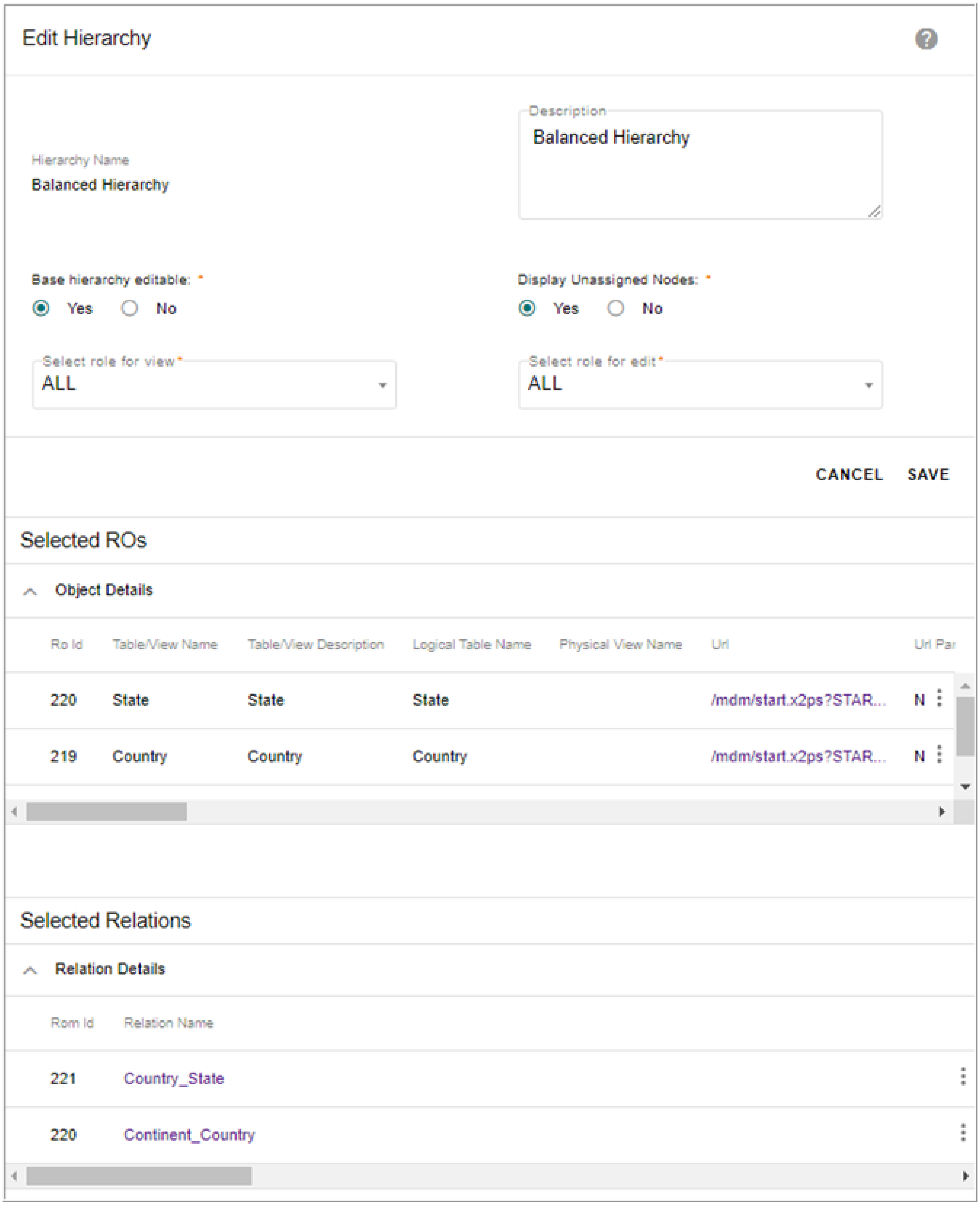


Object Description: Continent
Total Descendants: 57
Child Count: 20

Edit Hierarchy

Once the hierarchy is created, you can modify the hierarchy details using the **Edit** option. On the **Hierarchy Manager** UI, click on the Menu icon corresponding to the required hierarchy and click **Edit** to navigate to **Edit Hierarchy** page.

Figure 593: Edit Hierarchy



Edit Hierarchy

Hierarchy Name: Balanced Hierarchy

Description: Balanced Hierarchy

Base hierarchy editable: * ● Yes ○ No

Display Unassigned Nodes: * ● Yes ○ No

Select role for view*: ALL

Select role for edit*: ALL

Selected ROs

Object Details

Ro Id	Table/View Name	Table/View Description	Logical Table Name	Physical View Name	Url	Url Par
220	State	State	State		/mdm/start.x2ps?STAR...	N
219	Country	Country	Country		/mdm/start.x2ps?STAR...	N

Selected Relations

Relation Details

Rom Id	Relation Name
221	Country_State
220	Continent_Country

On the **Edit Hierarchy** page (Figure 593), you can:

- Modify hierarchy description, select different roles for view and edit hierarchy, select Display Unassigned Nodes option if required.
- In the Object Details section, click on the Menu icon corresponding to the required hierarchy object and click on **Edit** to modify hierarchy object details or to define, update or delete filter. For details, see Section : "Edit Hierarchy Objects."
- In the Relation Details section, click on the Menu icon corresponding to the required relationship and link parent and child data using **Link Data** option or view the linked data using the **View Data** option. For details, see Section : "Link and View Data."

View Hierarchy

You can view the hierarchy structure on the **Hierarchy Viewer** UI. On the **Hierarchy Viewer** page, you can also view hierarchy based on the Version as well based on Search String. You can launch the hierarchy viewer either from left navigation pane (**Reference Data** -> **Hierarchy Management** -> **Hierarchy Viewer**) or from **Hierarchy Manager**, click on the Menu icon corresponding to the required hierarchy and click **View**.

If filters were applied on the selected hierarchy, the **Dynamic Filter** pop-up will be displayed. Once you enter the filter value and click **View**, the **Hierarchy Viewer** page displays the filtered data.

For details on the tasks that can be performed on the hierarchy viewer, see Section : "Hierarchy Viewer."

Create Version

Versions of hierarchy can be created using create version feature. On creation of a version, the entire master hierarchy metadata is copied into the version hierarchy being created. Multiple versions of a hierarchy can be created at different stages of the hierarchy. Validation rules are supported on data of version staging. Rules created on Master staging gets applied on the corresponding version staging tables.

To create hierarchy version, perform the following steps:

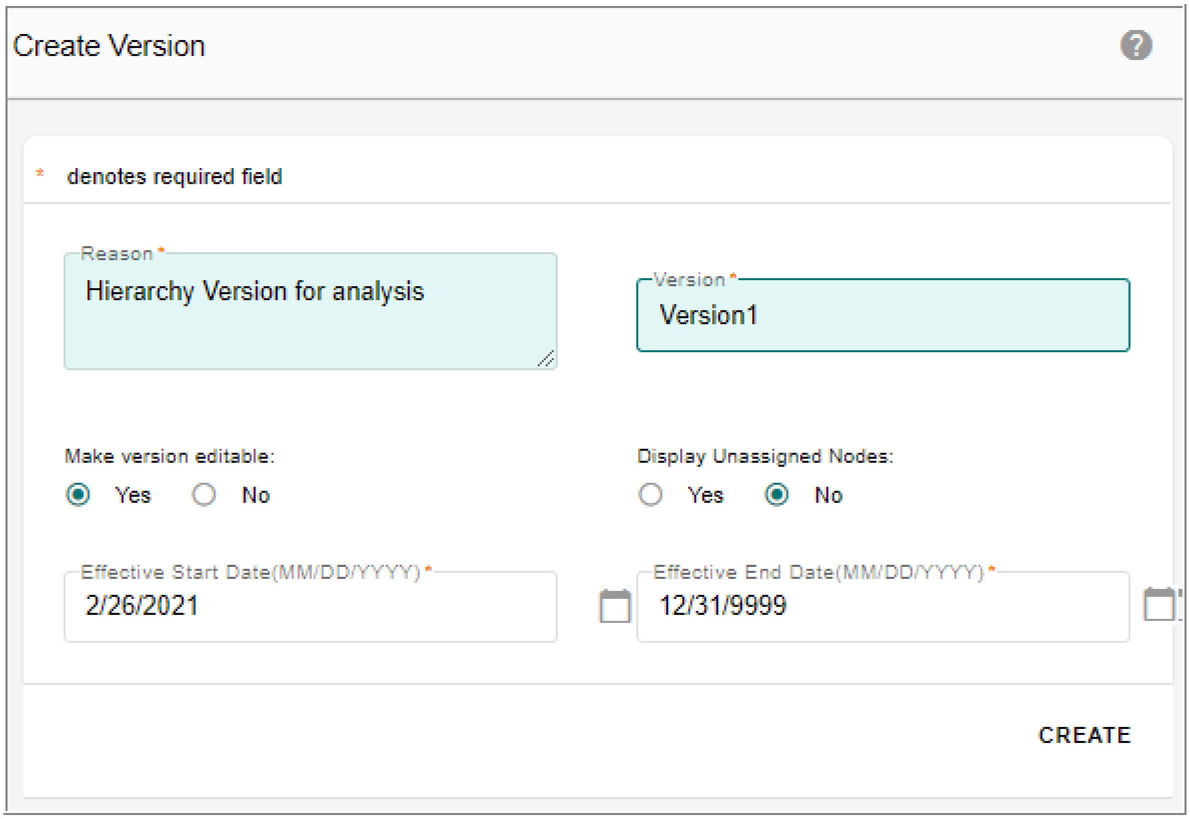
1. On the **Hierarchy Manager** UI, click on the Menu icon corresponding to the required hierarchy and click **Create Version**.
2. On the **Create Version** popup (Figure 594), enter the following details and click **Create**.

- **Reason:** brief description about the purpose of creating the hierarchy version.
- **Version**: specifies the version details like version number etc.
- **Copy Version**: select this checkbox to create a copy of any versioned hierarchy into another version. For more details, see Section : "Copy Hierarchy Version."
- **Make Version Editable**: you can either make the version editable or not. If **Yes** option selected, on the **Hierarchy Version-Viewer: <version>** page, you would be able to perform cut, paste, drag, drop, and clear operations on any node. If **No** option selected, then the cut, paste, drag, drop, and clear options would be disabled.

- **Display Unassigned Nodes**: select this option if you want to manage orphan nodes in Hierarchy Viewer. You can use this option to display orphan nodes (Nodes that do not have a parent) in Hierarchy Viewer. The orphan nodes will be displayed under a dummy parent node called Unassigned_<HierarchyObjectName> in viewer. The orphan nodes then can be dragged to valid parent.
- **Effective Start Date and Effective End Date**: the start date and end date specifies the start and end date for the version being created.

  Message: "Version created successfully" is displayed.

Figure 594: Create Version



Create Version

* denotes required field

Reason *: Hierarchy Version for analysis

Version *: Version1

Make version editable: ● Yes ○ No

Display Unassigned Nodes: ○ Yes ● No

Effective Start Date(MM/DD/YYYY) *: 2/26/2021

Effective End Date(MM/DD/YYYY) *: 12/31/9999

Versioning Limitations

Following list provides the versioning limitations:

- Version tables cannot be published using Publish feature.
- E2E cannot be performed on version tables.
- It is recommended not to create a hierarchy version with the same name used in any of the deleted hierarchy version.
- RLS/CLS
  - RLS/CLS applied on base MDM table will be applied to version tables.
  - Piggybacked authorization is not supported.
  - CLS is not inherited from Master CLS (that is, you can define different column level security for version tables then the MST tables).

Copy Hierarchy Version

The Copy Version feature provides an option to create a copy of any versioned hierarchy. By creating a copy of version hierarchy, the version hierarchy metadata is copied into a new version hierarchy being copied.

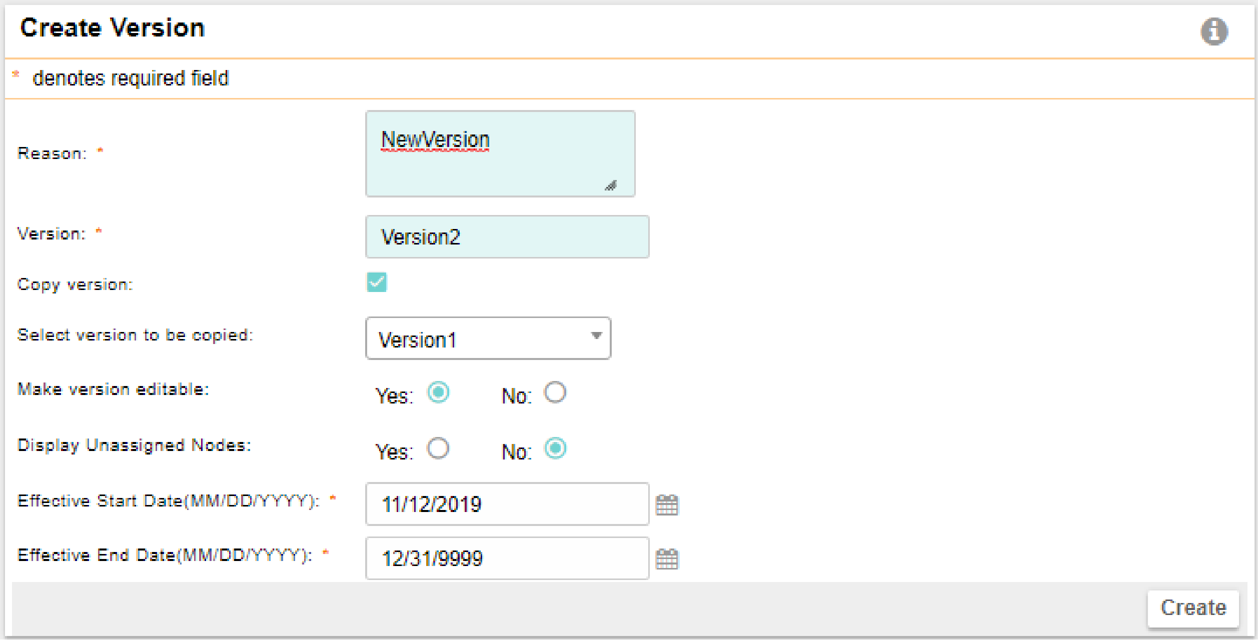
To copy hierarchy version, perform the following steps:

1. On the **Create Version** pop-up, enter all the required fields as described in the Section : “Create Version”.
2. Select the **Copy Version** checkbox.

   The **Select version to be copied** dropdown displays all the non expired hierarchy versions of the selected hierarchy.
3. Select the required version hierarchy to be copied as in Figure 595 and click **Create.**

   Message: “Version created successfully” is displayed.

Figure 595: Create Version



Create Version

* denotes required field

Reason: *	NewVersion
Version: *	Version2
Copy version:	☑
Select version to be copied:	Version1
Make version editable:	Yes: ● No: ○
Display Unassigned Nodes:	Yes: ○ No: ●
Effective Start Date(MM/DD/YYYY): *	11/12/2019
Effective End Date(MM/DD/YYYY): *	12/31/9999

During the copy hierarchy version process, the hierarchy metadata is copied from the master hierarchy and not from the corresponding version hierarchy. If the master hierarchy configurations (like display columns, sort columns of the hierarchy objects, edit/view role of hierarchy etc.) are changed after the creation of the version, which is being copied, then the copied version will reflect the configuration of the master hierarchy and not the version hierarchy.

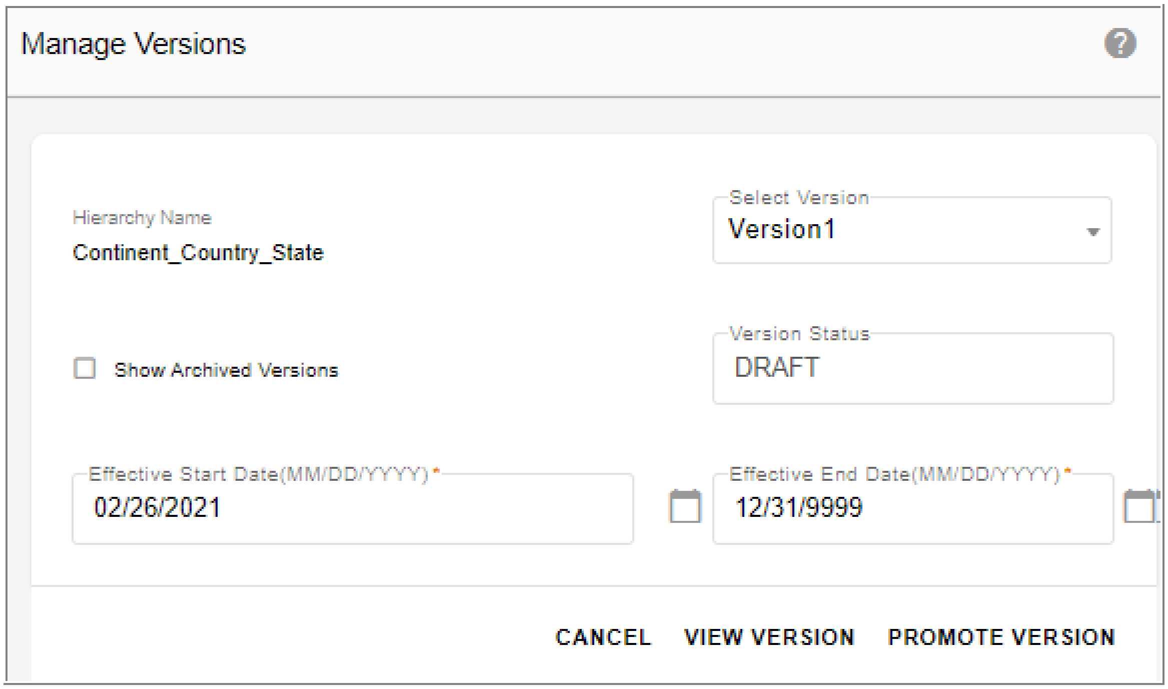
Manage Version

On **Hierarchy Manager** UI, click on the Menu icon corresponding to the required hierarchy and click **Manage Version**. On the **Manage Version** page, you can specify the version to view on the hierarchy viewer UI.

If filters were applied on the selected hierarchy version, enter the filter value and the hierarchy viewer displays the filtered versioned data.

If the hierarchy is selected for promotion during the creation of hierarchy, the below Manage Versions popup is displayed.

Figure 596: Manage Versions



Hierarchy Name
Continent_Country_State

Select Version: Version1

☐ Show Archived Versions

Version Status: DRAFT

Effective Start Date(MM/DD/YYYY)*: 02/26/2021

Effective End Date(MM/DD/YYYY)*: 12/31/9999

On the Manage Version popup, enter the following:

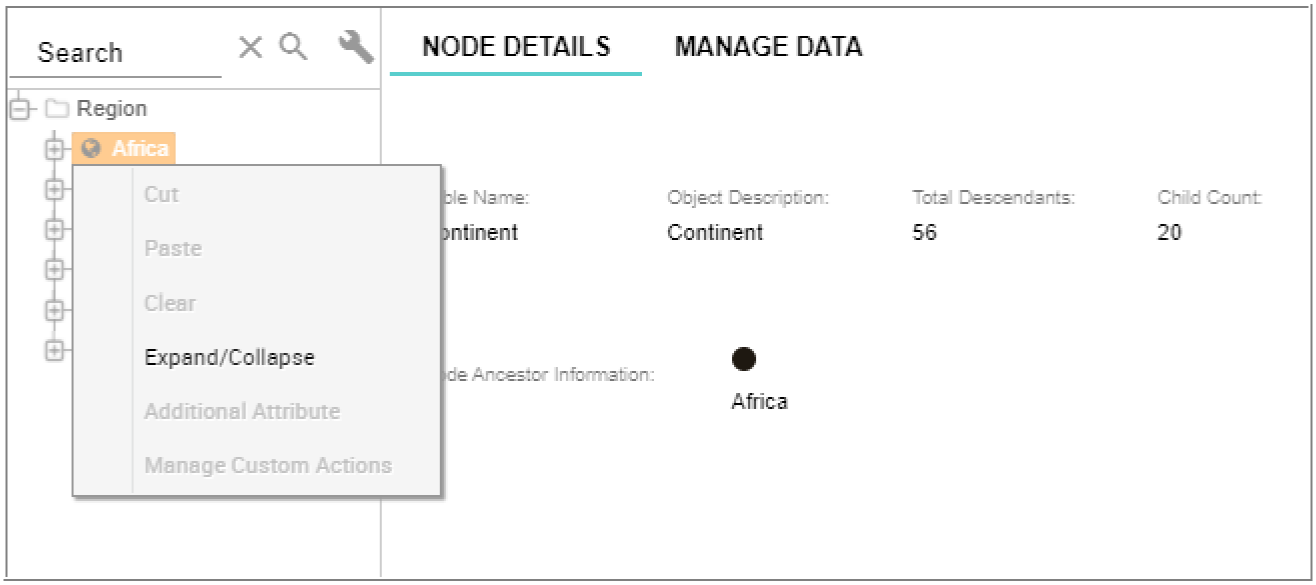
- Select the hierarchy to promote from **Select Version** dropdown.
- Select the **Show Archived Versions** checkbox to see the archived versions.
- **Version Status**: it will be in draft state until the hierarchy is promoted. For details on different version stages, see Section : “Hierarchy Promotion.”
- Select the Start and End dates for hierarchy promotion.
- Click **View Version** to view the hierarchy on the hierarchy viewer UI.
- Click **Promote Version**.

The hierarchy will be promoted and the message: “Hierarchy sent for Promotion” is displayed.

If approval is enabled, hierarchy will go for approval. Once the hierarchy is approved, the Version status will be changed to Approved on the Manage Versions popup. A scheduler is automatically created to promote hierarchy.

While creating the version, if the Mark Version Editable option is selected as No, then on the Hierarchy Version-Viewer: <version> page, the menu options (cut, paste and clear) on any node would be disabled as in Figure 597. If the Mark Version Editable option is selected as Yes, then on the Hierarchy Version-Viewer: <version> page, the menu options (cut, paste and clear) on any node would be enabled as in Figure 598.

Figure 597: Hierarchy Version Viewer:<version>



ble Name: ontinent
Object Description: Continent
Total Descendants: 56
Child Count: 20
de Ancestor Information: Africa

Figure 598: Hierarchy Version Viewer:<version>

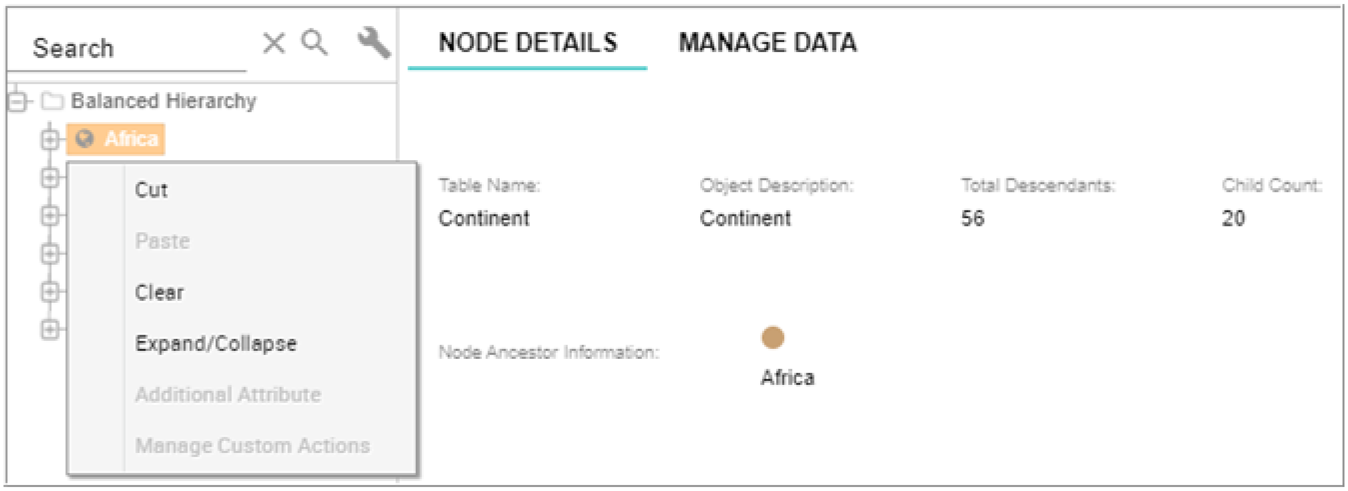


Table Name: Continent
Object Description: Continent
Total Descendants: 56
Child Count: 20
Node Ancestor Information: Africa

Compare Hierarchy

Compare hierarchy feature compares the data (nodes) of two hierarchies displaying them in side by side panels. The nodes where comparison difference is found are highlighted in both the hierarchies. You can further check the details of difference between the highlighted nodes. Hierarchy comparison identifies differences based on the following criteria:

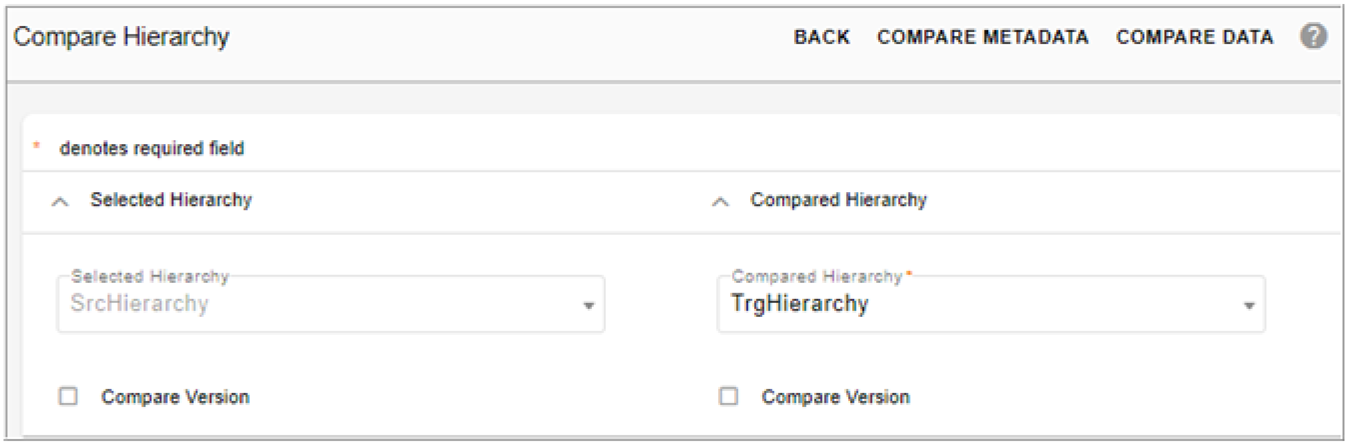
- Checks if two nodes to compare are at same level.

- Checks if the parent of node of the two nodes to compare are same.
- When the nodes at the top level matches, further comparison happens on the descendants. If the top level nodes do not match, the comparison stops at the first level itself.

A hierarchy can be compared against its version; a version of hierarchy can be compared against a different version of same hierarchy or different hierarchy. Also metadata of two hierarchies can be compared using compare hierarchy.

On **Hierarchy Manager** UI, click on the Menu icon corresponding to the required hierarchy and click **Compare**.

Figure 599: Compare Hierarchy



Selected Hierarchy: SrcHierarchy

Compared Hierarchy*: TrgHierarchy

☐ Compare Version

☐ Compare Version

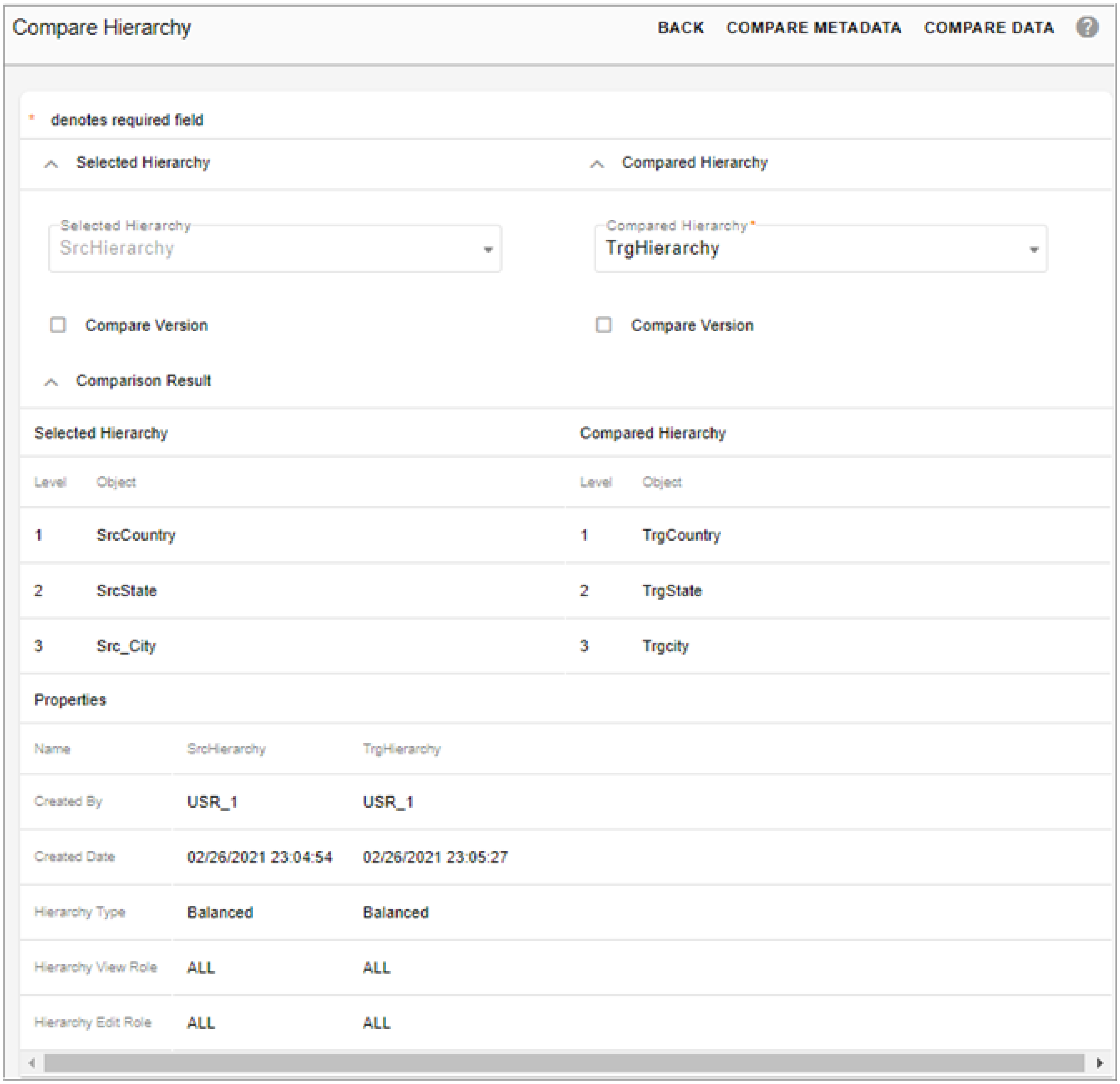
On the **Compare Hierarchy** UI, the hierarchy selected on the Hierarchy Manager UI is selected by default in the **Selected Hierarchy** dropdown. You can select a different hierarchy if required. In the **Compared Hierarchy** pane, select the hierarchy to be compared. Optionally, you can select the **Compare Version** checkbox for comparing hierarchies based on version.

On the **Compare Hierarchy**, you can:

- ❑ Click **Compare Metadata** to compare the hierarchies metadata.

  The **Compare Hierarchy** page displays the comparison results as in Figure 600.

Figure 600: Hierarchy Comparison—Compare Metadata



* denotes required field

Selected Hierarchy

Compared Hierarchy

Selected Hierarchy: SrcHierarchy

Compared Hierarchy*: TrgHierarchy

☐ Compare Version

☐ Compare Version

Comparison Result

Selected Hierarchy		Compared Hierarchy	
Level	Object	Level	Object
1	SrcCountry	1	TrgCountry
2	SrcState	2	TrgState
3	Src_City	3	Trgcity

Properties

Name	SrcHierarchy	TrgHierarchy
Created By	USR_1	USR_1
Created Date	02/26/2021 23:04:54	02/26/2021 23:05:27
Hierarchy Type	Balanced	Balanced
Hierarchy View Role	ALL	ALL
Hierarchy Edit Role	ALL	ALL

- Click **Compare Data** to compare the hierarchies on hierarchy viewer.

  The **Hierarchy Viewer** displays both the hierarchy structures side by side as in Figure 601.

  On the **Compare Hierarchy Viewer** UI,

  - By default on loading it compares only upto two levels. You can select the number of levels to compare from dropdown on the top of the hierarchy viewer as in Figure 601 and click ShowDiff icon.
  - If you scroll left hierarchy vertical panel, the right hierarchy also gets auto scrolled.

- If any node is expanded in left hierarchy panel, the corresponding node in right hierarchy panel gets expanded if the two nodes compared are same.
- Right-click on any hierarchy node, **Compare Details** option is displayed. Click on **Compare Details** option, **Compare Details** popup is displayed as in Figure 602.

Figure 601: Hierarchy Comparison on Viewer

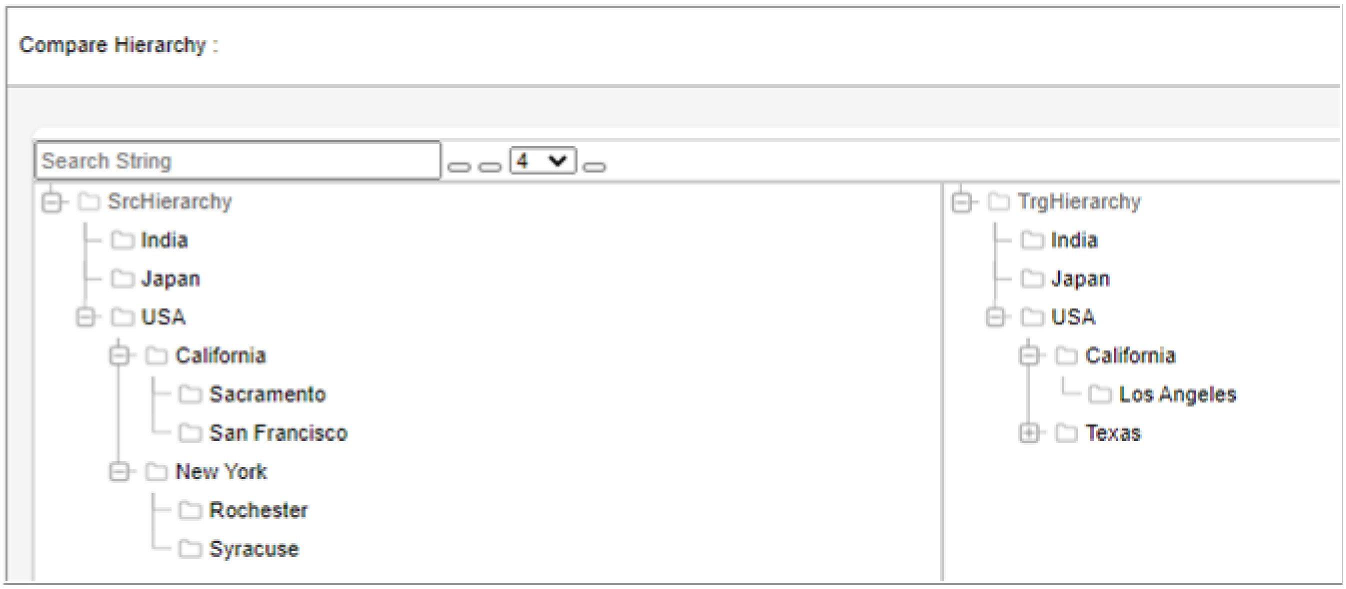
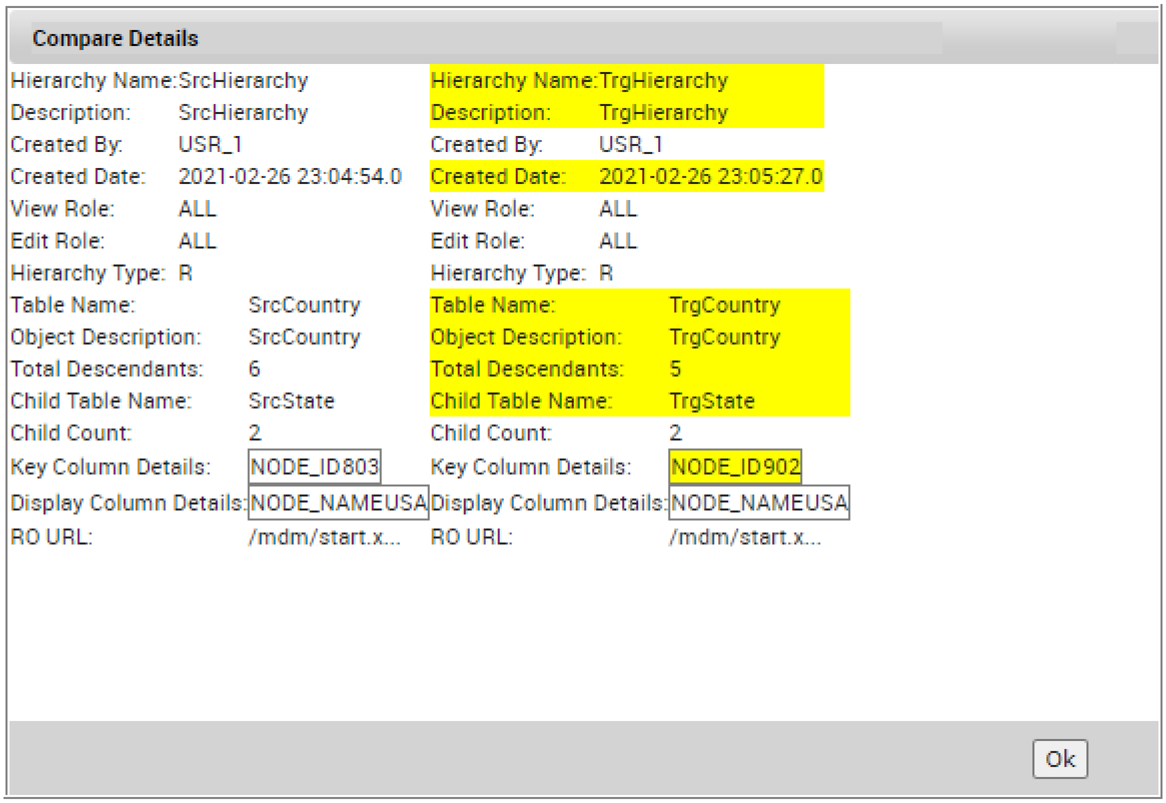


Figure 602: Compare Details



Hierarchy Name:	SrcHierarchy	Hierarchy Name:	TrgHierarchy
Description:	SrcHierarchy	Description:	TrgHierarchy
Created By:	USR_1	Created By:	USR_1
Created Date:	2021-02-26 23:04:54.0	Created Date:	2021-02-26 23:05:27.0
View Role:	ALL	View Role:	ALL
Edit Role:	ALL	Edit Role:	ALL
Hierarchy Type:	R	Hierarchy Type:	R
Table Name:	SrcCountry	Table Name:	TrgCountry
Object Description:	SrcCountry	Object Description:	TrgCountry
Total Descendants:	6	Total Descendants:	5
Child Table Name:	SrcState	Child Table Name:	TrgState
Child Count:	2	Child Count:	2
Key Column Details:	NODE_ID803	Key Column Details:	NODE_ID902
Display Column Details:	NODE_NAMEUSA	Display Column Details:	NODE_NAMEUSA
RO URL:	/mdm/start.x...	RO URL:	/mdm/start.x...

Merge Hierarchy

Using the Merge Hierarchy feature, you can merge the changes from two different hierarchies or two different versions of hierarchies. The main features of hierarchy merging includes the following:

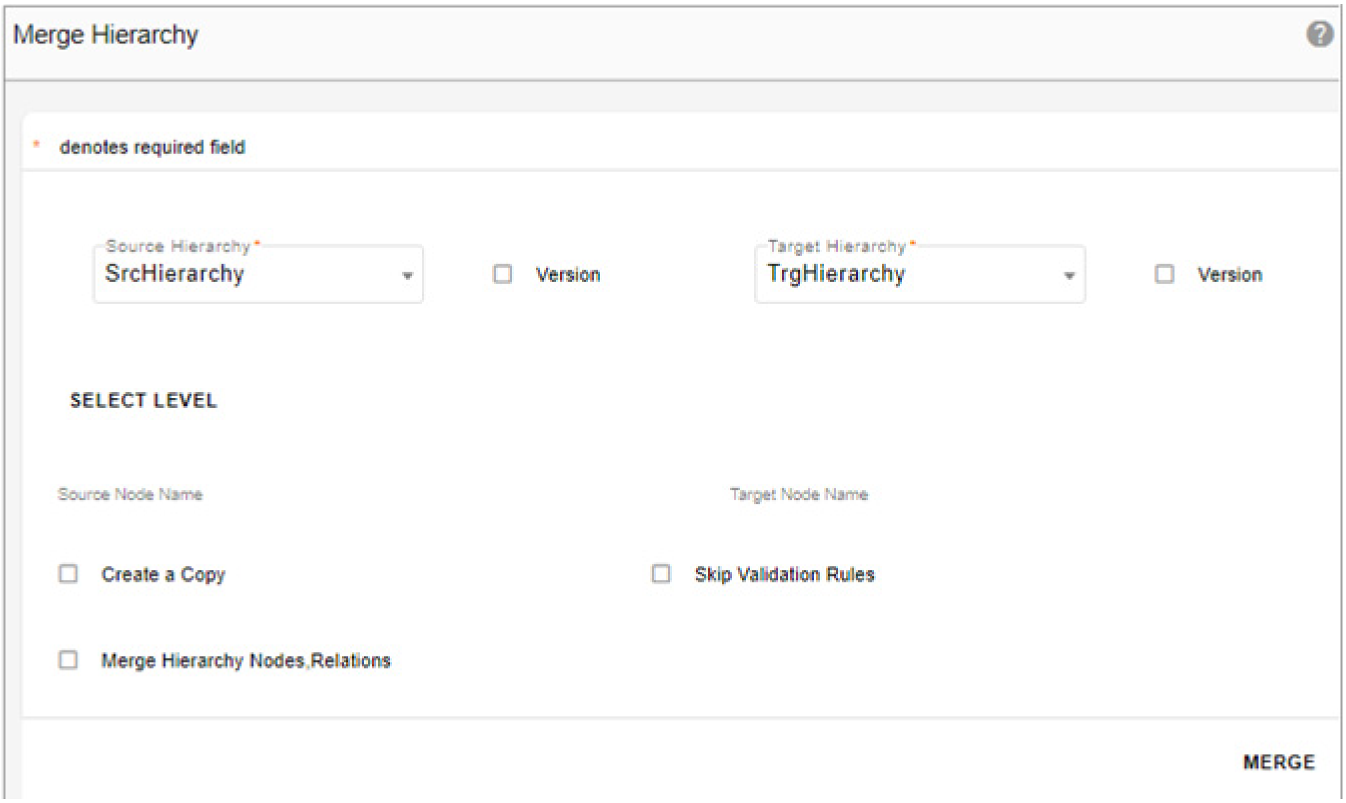
- The changes of source hierarchy can be merged into a copy of the target hierarchy or directly into the target hierarchy.
- The process of hierarchy merging is done through Do DB Persist framework.
- In merge hierarchy process, each node is uniquely identified using the NodeName. Node Id and NodeName will not be updated.
- Node name must be unique at each level.
- Optionally, validation rules defined on objects and relationships of hierarchy can be honored.
- Hierarchy merging is currently supported for Balanced Hierarchies.
- When a parent is selected for merge, all its descendants are considered for merging.
- The Merge Hierarchy is not supported on custom table based hierarchy.
- Removing node will remove node from Relation as well as from Node table.
- Deleting or adding new level is not supported through Merge hierarchy process.

Navigate to **Merge Hierarchy** UI from **Hierarchy Manager** UI using **Merge** option from the **Actions** dropdown.

On the **Merge Hierarchy** UI, perform the following steps:

1. Select the source and target hierarchy to be merged from **Source Hierarchy** and **Target Hierarchy** dropdowns as in Figure 603.
2. Select the **Version** checkbox of source or target hierarchy, if you want to merge any version hierarchy.

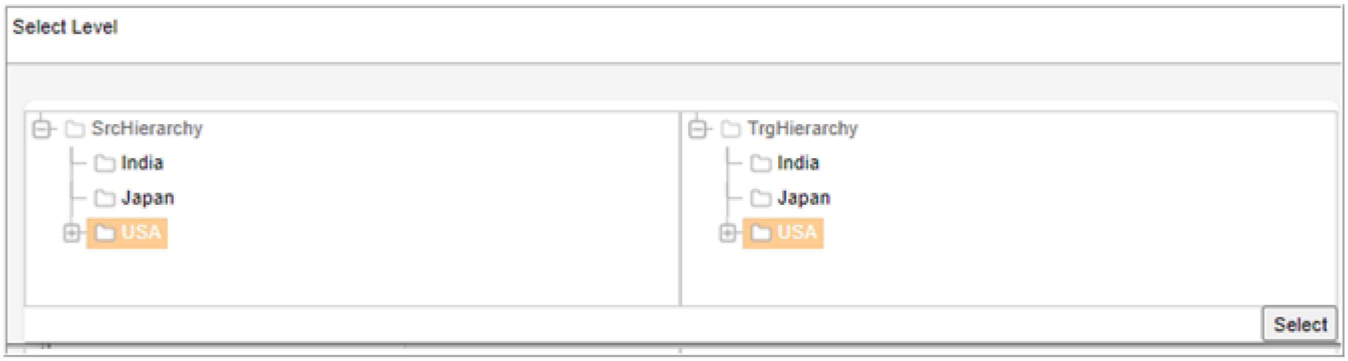
Figure 603: Merge Hierarchy



3 Click **Select Level** to select the nodes to be merged.

The **Select Level** pop-up is displayed with the selected source and target hierarchies side by side as in Figure 604.

Figure 604: Select Level



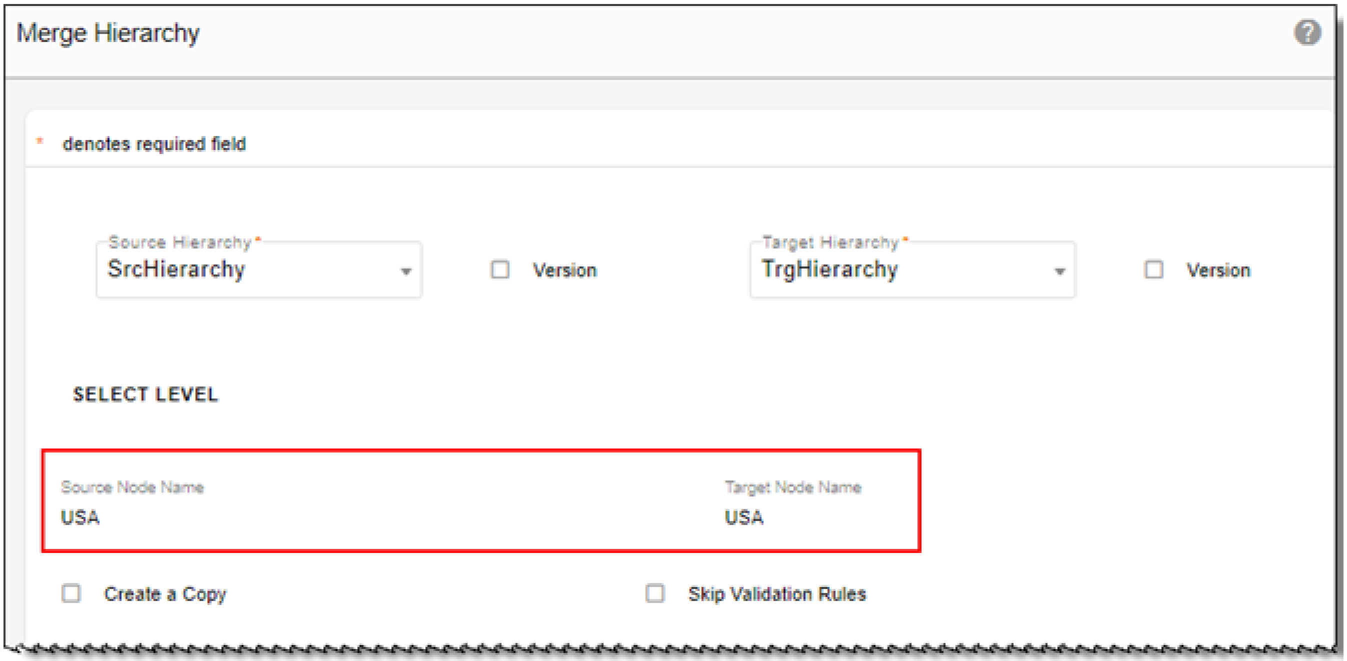
4 On the **Select Level** pop-up (Figure 604),

- From the source hierarchy, select the node which has to be used for merging.
- From the target hierarchy, select the node which has to be merged with that of the source.
- Click **Select**.

The nodes selected to be merged need not be in same level in the source and target hierarchy.

The **Merge Hierarchy** UI is displayed again.

Figure 605: Merge Hierarchy



Merge Hierarchy

* denotes required field

Source Hierarchy *: SrcHierarchy

☐ Version

Target Hierarchy *: TrgHierarchy

☐ Version

SELECT LEVEL

Source Node Name: USA

Target Node Name: USA

☐ Create a Copy

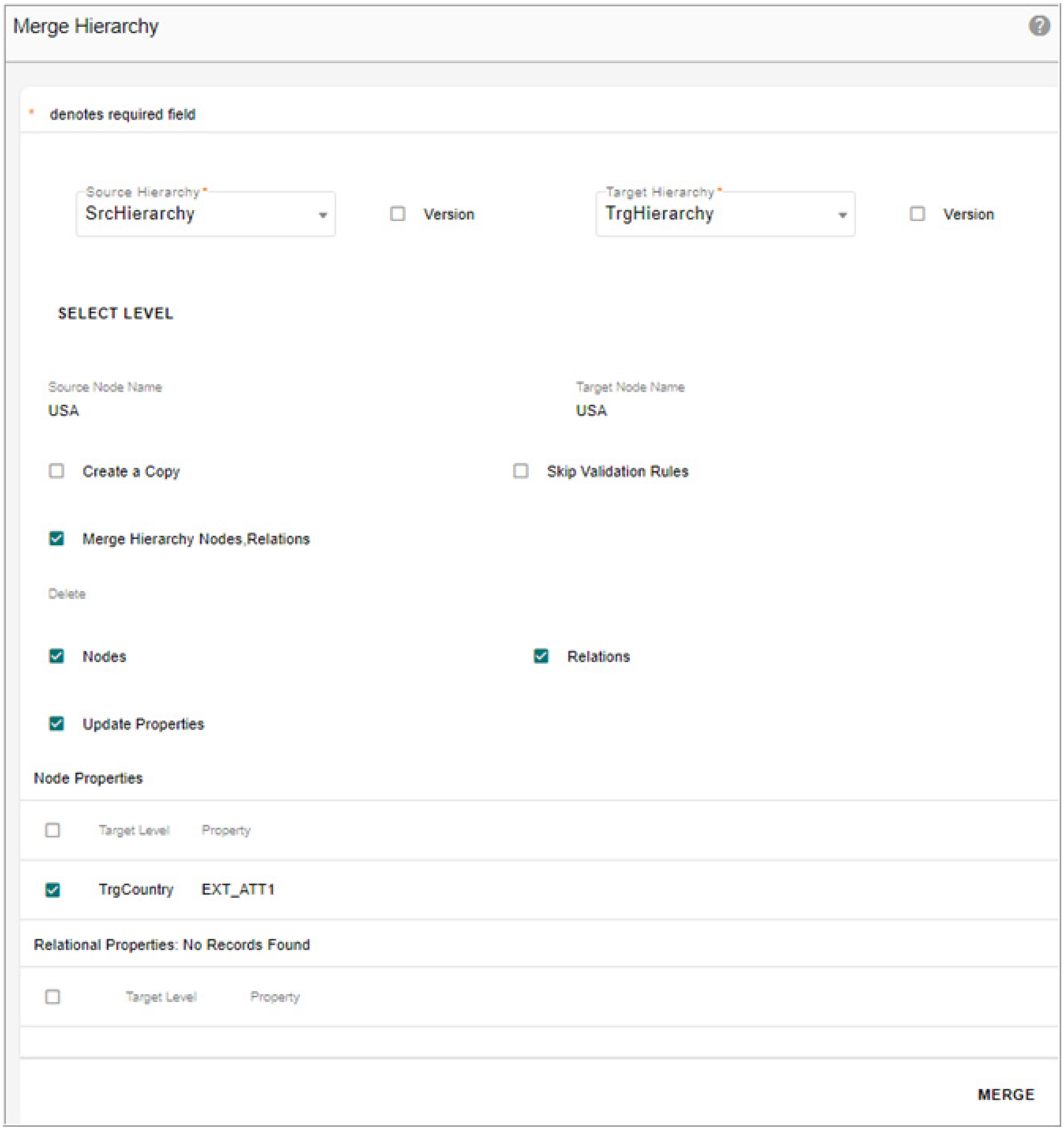
☐ Skip Validation Rules

The **Source Node Name** and **Target Node Name** fields would be populated with the selected node names as in Figure 605.

The **Merge Hierarchy** UI also displays the following options as in Figure 606:

- **Create Copy**: select the Create Copy option to merge the source hierarchy with a new version of target hierarchy. The original target hierarchy will not be updated, only the version target hierarchy will have the changes of merging.
- **Skip Validation Rules**: select the Skip Validation Rules option to skip the validation the underlying node and relationship tables used in the merging process.

Figure 606: Merge Hierarchy



Merge Hierarchy

* denotes required field

Source Hierarchy*: SrcHierarchy

☐ Version

Target Hierarchy*: TrgHierarchy

☐ Version

SELECT LEVEL

Source Node Name: USA

Target Node Name: USA

☐ Create a Copy

☐ Skip Validation Rules

☑ Merge Hierarchy Nodes,Relations

Delete

☑ Nodes

☑ Relations

☑ Update Properties

Node Properties

☐	Target Level	Property
☑	TrgCountry	EXT_ATT1

Relational Properties: No Records Found

☐	Target Level	Property

- **Merge Hierarchy Nodes, Relations**: select the Merge Hierarchy Nodes, Relations option to update the target hierarchy structure to be in sync with source hierarchy by performing Inserts or Deletes or Updates on the data in the target hierarchy in comparison to source hierarchy. The updates or inserts or deletes will be performed based on the following criteria:
    - If the source hierarchy has records that are not available in the target hierarchy,

    insert operation is performed on the target hierarchy.

    - If the target hierarchy have records that are not available in the source hierarchy, by default, the delete of nodes and relations option is selected and delete operation is performed in the target hierarchy to delete the records. If you do not want to perform delete operation, deselect the delete option to either delete both the nodes and relations or only the relations.
    - If the target hierarchy have records that have different parent in the source hierarchy, the parent of the node in the target hierarchy is updated.

  The following use cases are supported in merge hierarchy process:

    - Case 1: if the records are available in node table and relation table of both source and target hierarchy, update properties action is performed to update node and relation table properties in target hierarchy.
    - Case 2: if the records are available in target node table, source node table and source relation table and have no records in target relation table, then update action is performed on target node table and insert action is performed on target relation table to populate the target relation table with the data that is available in source relation table.
    - Case 3: if the records are available in target node table, target relation table, source node table and have no records in source relation table, then update action is performed on target node table and delete action is performed on target relation table to delete in the target relation table that is not available in the source relation table. By default, the delete action is performed. Deselect the delete option to either delete both the nodes and relations or only the relations.
    - Case 4: if no records are available in target node and target relation table and have records in source node and relation table, then insert action is performed to insert the data in target node and relation table with the data that is available in source node and relation table.
    - Case 5: if records are available in target node and target relation table and have no records in source node and relation table, then delete action is performed to delete the data in target node and relation table that are not available in source node and relation table. By default, the delete action is performed. Deselect the delete option to either delete both the nodes and relations or only the relations.

  - **Update Properties**: select the Update Properties option to update the nodes and relation properties. The **Node Properties** and **Relational Properties** panel is displayed. Select the node properties and relation properties that have to be merged.
    - **Node Properties**: the Node Properties pane displays all the properties (extended attributes) of the node tables that are common to both the hierarchies, starting from the nodes that were initially selected.
    - **Relation Properties**: the Relation Properties pane displays all the properties (extended attributes) of the relation tables that are common to both the hierarchies.

5. Click **Merge**.

   Message: “Hierarchy merged successfully. Check email for details” is displayed.

An example of hierarchy merging: The Figure 607 displays the nodes before Merge Hierarchy process.

Case1: The source hierarchy has records that are not available in the target hierarchy, insert operation is performed on the target hierarchy. In Figure 608, New York and its child nodes will be inserted in target hierarchy.

Case 2: The target hierarchy have records that are not available in the source hierarchy, delete operation is performed in the target hierarchy to delete the records. In Figure 608, Texas and its child nodes will be removed from target hierarchy if Delete option is enabled. If delete option is disabled, then the target hierarchy records that are not available in the source hierarchy are still retained in target hierarchy as in Figure 609.

Case 3: The target hierarchy have records that have same parent and different child in the source hierarchy, the child node in the target hierarchy is updated. In Figure 608 (under USA -> California, Los Angeles is removed if delete is enabled and San Francisco and Sacramento are added). In Figure 609 (under USA -> California, Los Angeles is retained if delete is disabled and San Francisco and Sacramento are added).

The Figure 608 displays the hierarchy structure after merge hierarchy process with Delete option enabled. Figure 609 displays the hierarchy structure after merge hierarchy process with Delete option disabled.

Figure 607: Example—Hierarchy Structure Before Merge Process

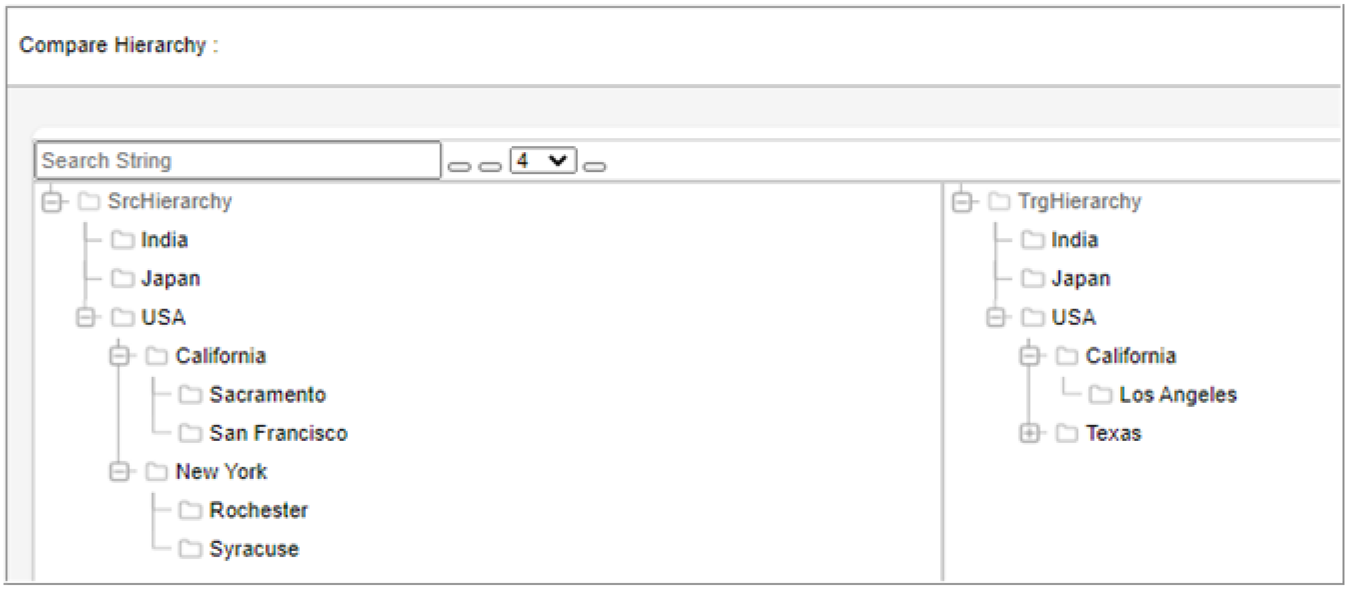


Figure 608: Example—Hierarchy Structure After Merge Process with Delete Enabled

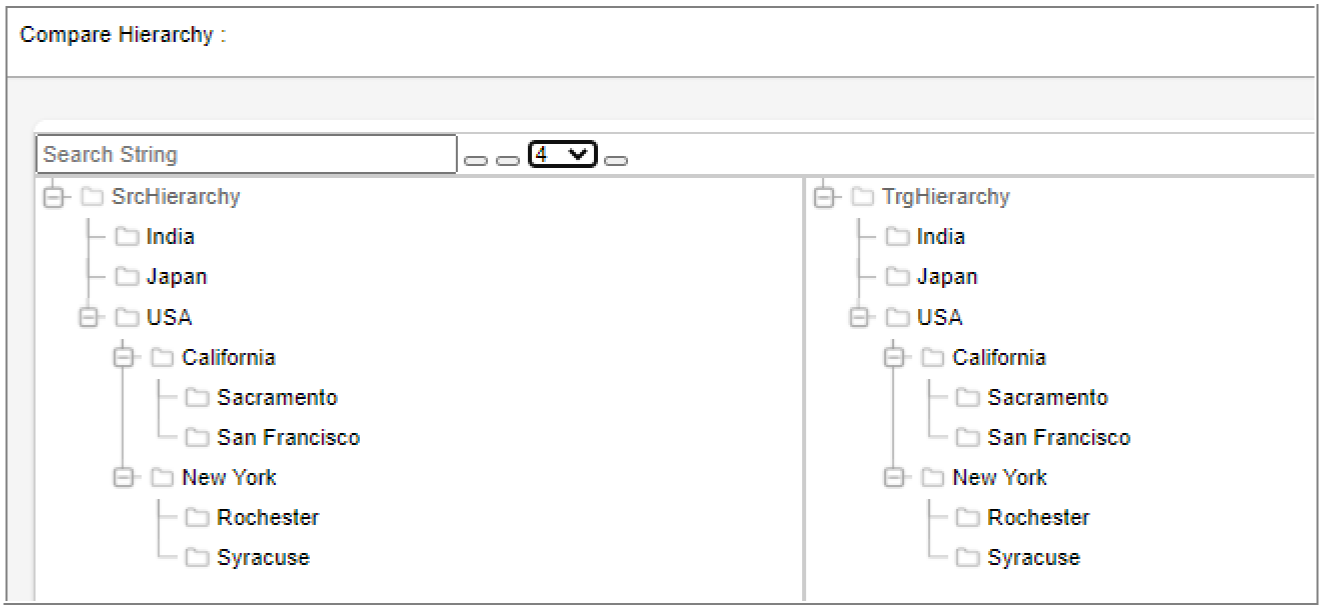
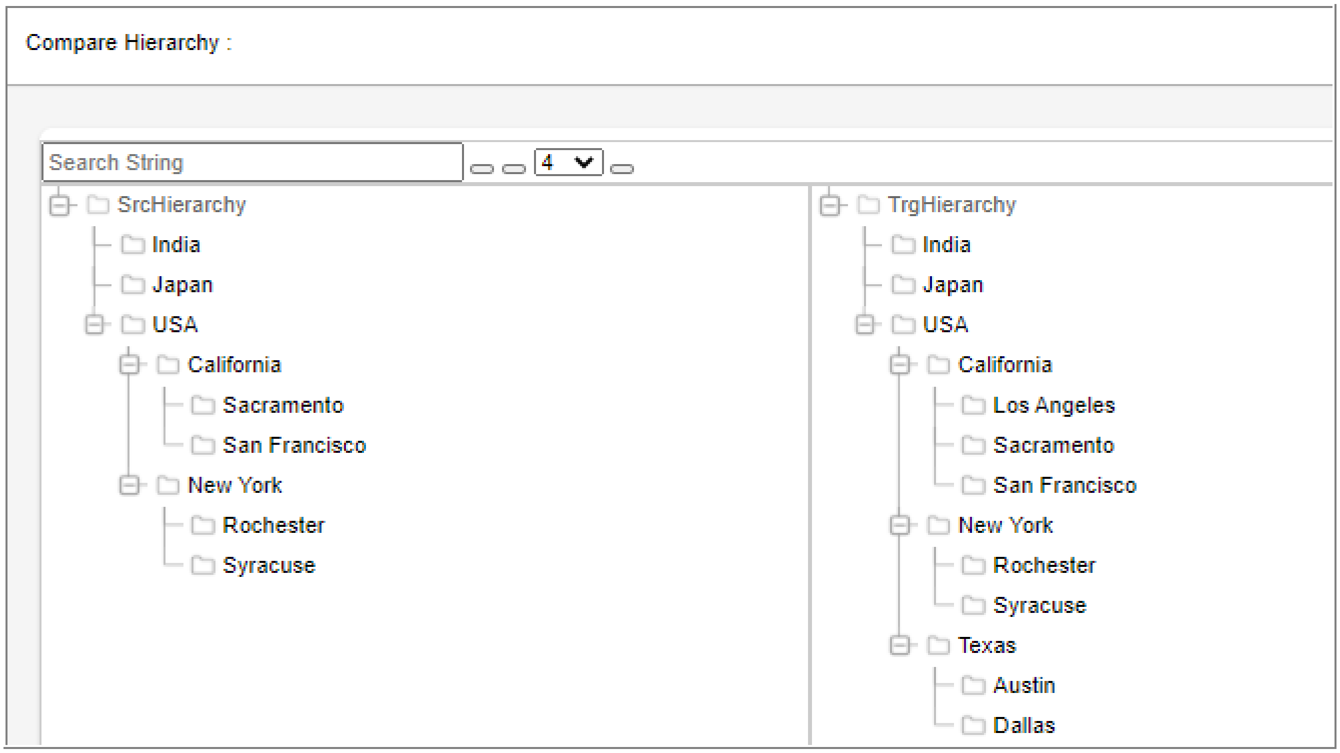
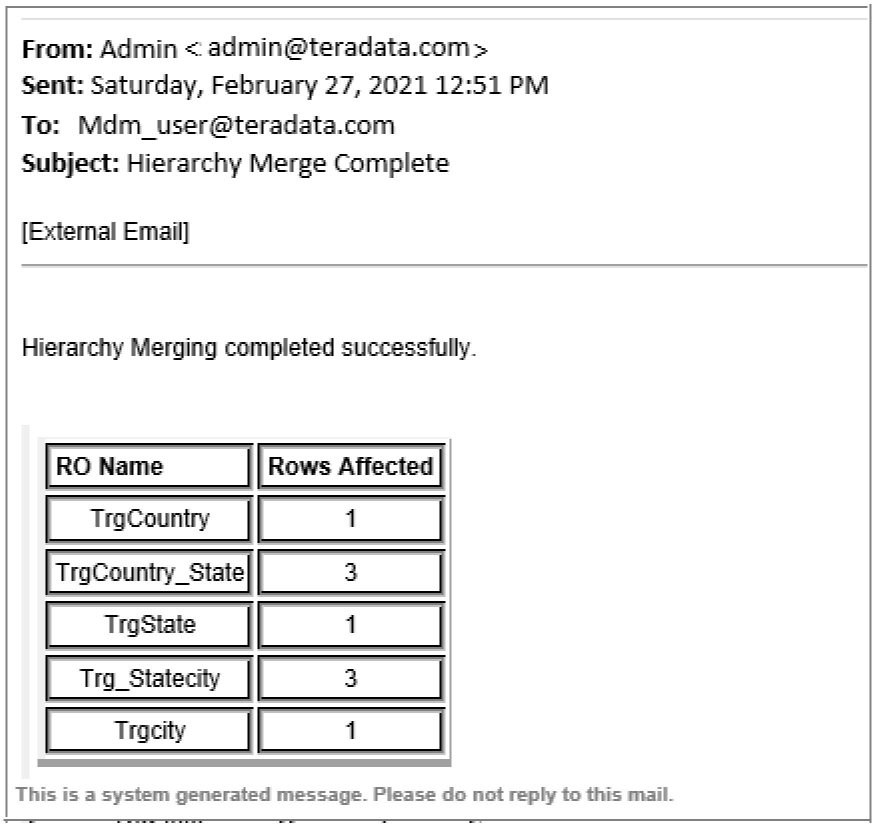


Figure 609: Example—Hierarchy Structure After Merge Process without Delete Enabled



After the merging process is complete, an email is sent to the application user who performs the operation. The email contains summary of merging process listing the number of rows impacted per table as in Figure 610.

Figure 610: Email Notification



From: Admin < admin@teradata.com >
Sent: Saturday, February 27, 2021 12:51 PM
To: Mdm_user@teradata.com
Subject: Hierarchy Merge Complete

[External Email]

Hierarchy Merging completed successfully.

RO Name	Rows Affected
TrgCountry	1
TrgCountry_State	3
TrgState	1
Trg_Statecity	3
Trgcity	1

This is a system generated message. Please do not reply to this mail.

Hierarchy Logs

The hierarchy manager module logs will be captured in log files of MDM_HM, BCM_MASTER and UI_WORKFLOW services based on the type of request fired. The log levels will be as set in the respective services.

Delete Hierarchy and Hierarchy Version

To delete hierarchy:

1. On the **Hierarchy Manager** UI, click on the Menu icon corresponding to the required hierarchy and click **Delete**.
2. On the **Confirmation** pop-up, click **Yes**.

   Message: “Hierarchy deleted successfully” is displayed.

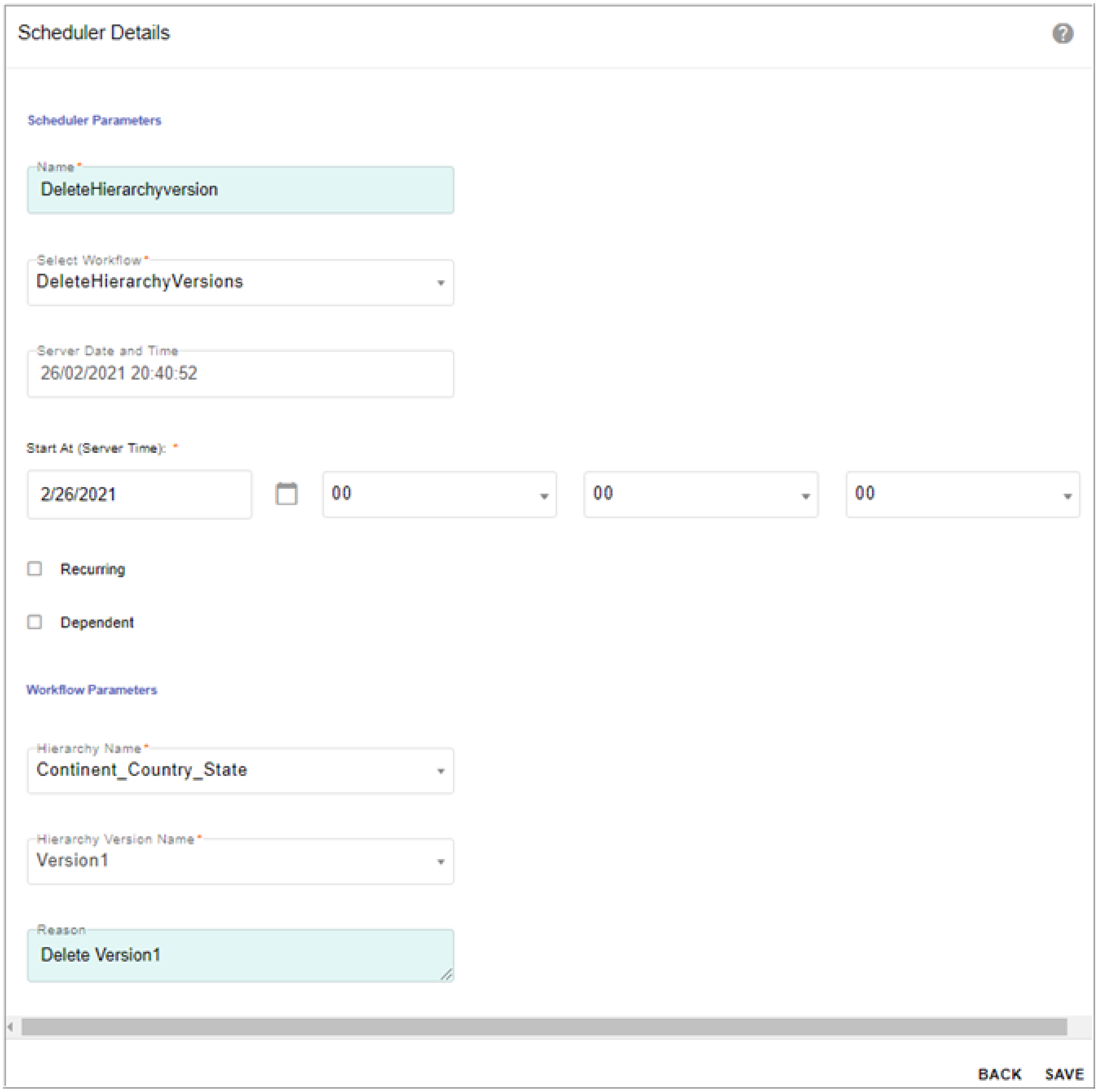
To delete hierarchy version:

1. Navigate to **Scheduler Details** UI (**Data Harmonization** -> **Schedules** -> and click **Create** from **Actions** dropdown) and create a schedule using the DeleteHierarchyVersions workflow as in Figure 611.

   The hierarchy version is deleted once the scheduler is triggered.

You can delete the hierarchy version only if the version status is either in Draft or Expired state.

Figure 611: Scheduler to Delete Hierarchy Version



Scheduler Details

Scheduler Parameters

Name*: DeleteHierarchyversion

Select Workflow*: DeleteHierarchyVersions

Server Date and Time: 26/02/2021 20:40:52

Start At (Server Time): * 2/26/2021 00 00 00

☐ Recurring

☐ Dependent

Workflow Parameters

Hierarchy Name*: Continent_Country_State

Hierarchy Version Name*: Version1

Reason: Delete Version1

Hierarchy Promotion

The Hierarchy Promotion is the process of promoting a version of the hierarchy as production hierarchy. Multiple versions of a hierarchy can be created and any one version can be promoted at a time. The promoted hierarchy can be sent for approval. When a hierarchy is promoted, the data of production hierarchy is archived in version staging tables and deleted from master staging tables. The data of promoted hierarchy version is then copied to master tables. The promotion of hierarchy is triggered via scheduler and the scheduler is scheduled to trigger promotion on the start date of version being promoted.

The following states are involved in the hierarchy promotion:

- **Draft**: when a version is created, the state of version hierarchy is in draft stage. Hierarchy versions can be changed in this state.
- **Pending Approval**: when a version is sent for promotion and approval is enabled for the hierarchy, the status will be in pending approval stage. Hierarchy version cannot be changed in this state.
- **Pending**: when a version is sent for promotion and approval is not enabled for the hierarchy, the status will be in pending stage. Hierarchy versions cannot be changed in this state.
- **Approved**: when a hierarchy version is approved for promotion, the status will be in approved state. Hierarchy version cannot be changed in this state.
- **Production**: when a hierarchy version is promoted to production, the status will be in production state.
- **Expired**: When a version of the Hierarchy is in Production state and the user promoted another version of the same Hierarchy to Production then the previous Production Version will be changed to Expired state.
- **Archived**: the current production hierarchy version is archived when a new version of hierarchy is promoted. Hierarchies cannot be changed in this state.

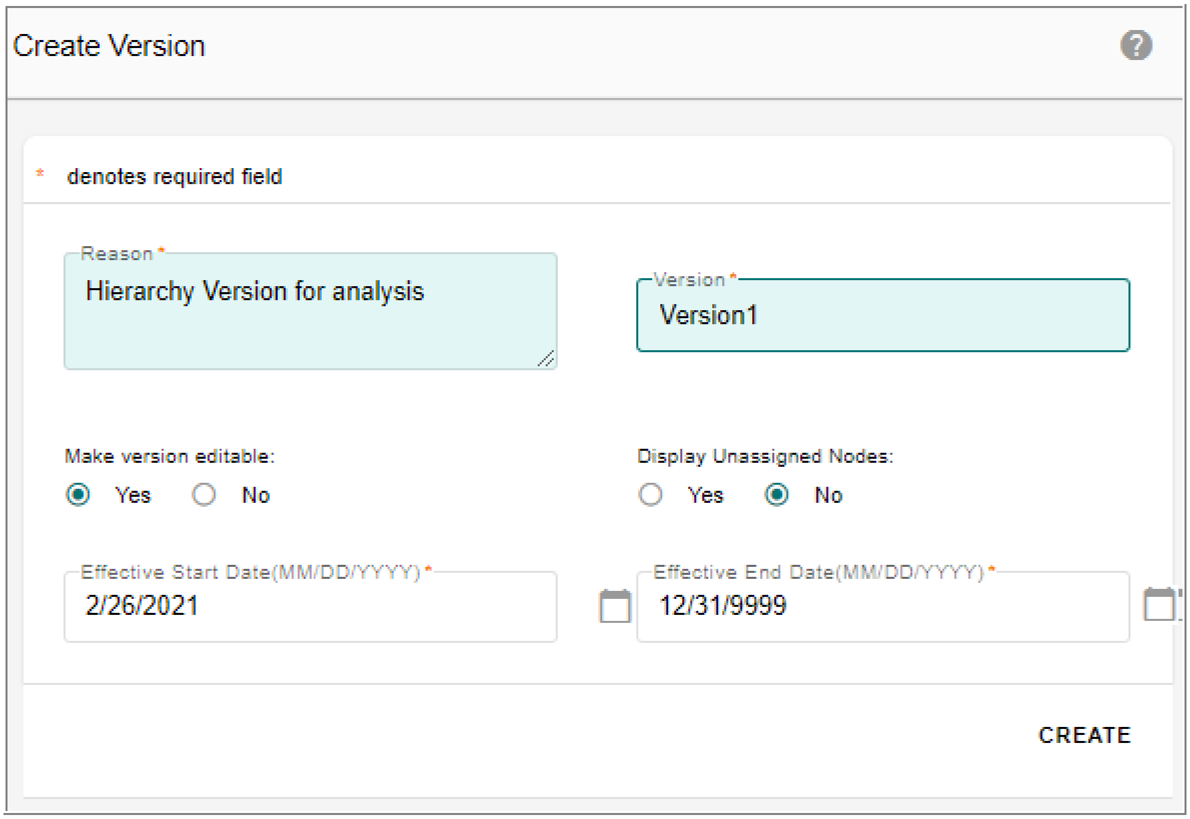
Hierarchy Promotion UI

The following section describes the process and the UIs involved in the hierarchy promotion process.

- Create version of the hierarchy as in Figure 612. The created version will be in the draft state. For details on creating version, see Section : “Create Version.”

  On the **Create Version** popup, the **Make version editable** checkbox is always selected as **Yes** and **No** option is disabled if the hierarchy is selected for promotion process in step 1.

Figure 612: Create Version



Create Version

* denotes required field

Reason *: Hierarchy Version for analysis

Version *: Version1

Make version editable: ● Yes ○ No

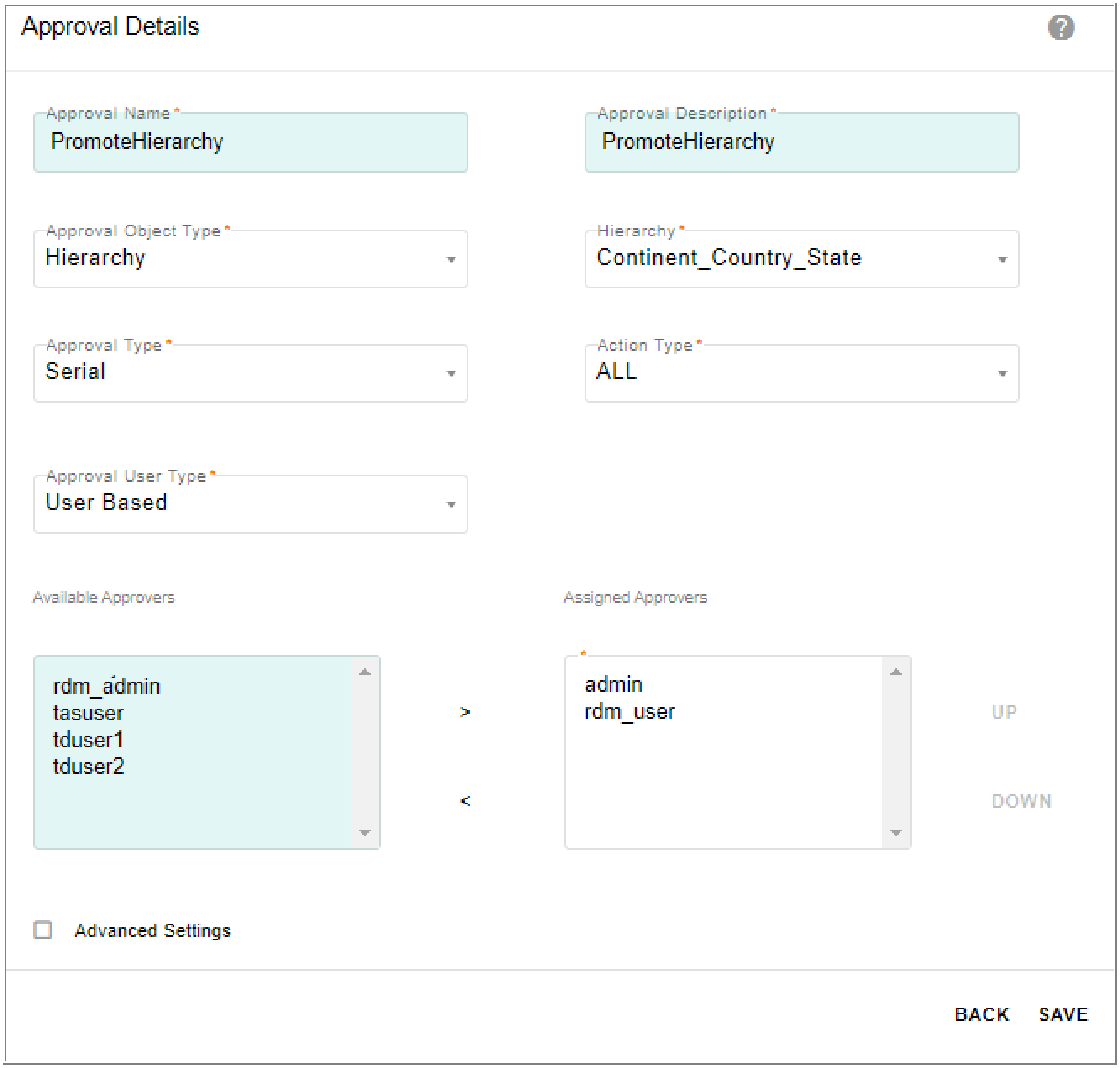
Display Unassigned Nodes: ○ Yes ● No

Effective Start Date(MM/DD/YYYY) *: 2/26/2021

Effective End Date(MM/DD/YYYY) *: 12/31/9999

- Navigate to **Manage Approvals** UI and create an approval for hierarchy by selecting the Approval Type as “Hierarchy” and specify the hierarchy name on which the approval needs to be created as in Figure 613. For details on creating approvals, see Chapter 18: “Manage Approvals.”

Figure 613: Approval Details



Approval Details

Approval Name *: PromoteHierarchy

Approval Description *: PromoteHierarchy

Approval Object Type *: Hierarchy

Hierarchy *: Continent_Country_State

Approval Type *: Serial

Action Type *: ALL

Approval User Type *: User Based

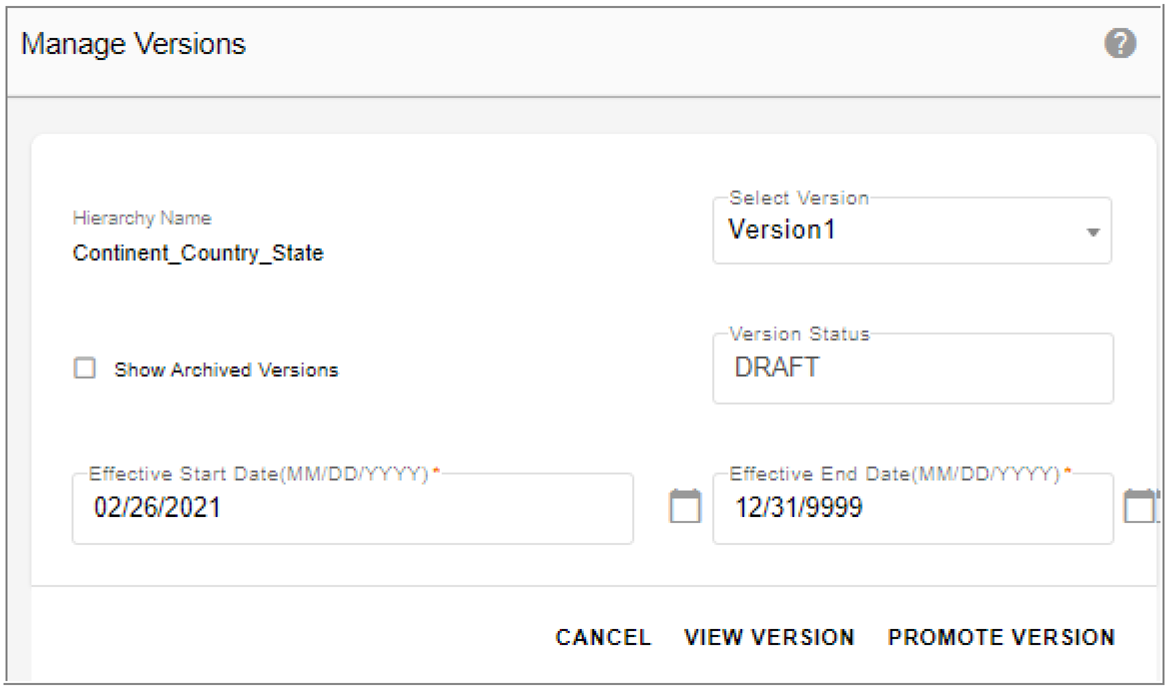
Available Approvers: rdm_admin, tasuser, tduser1, tduser2

Assigned Approvers *: admin, rdm_user

☐ Advanced Settings

- Navigate back to **Hierarchy Manager** UI and click **Manage Version**. On the **Manage Version** popup, select the hierarchy to promote and click **Promote Version** as in Figure 614. For details on Manage Version UI, see Section : "Manage Version."

Figure 614: Manage Versions



Manage Versions

Hierarchy Name: Continent_Country_State

Select Version: Version1

☐ Show Archived Versions

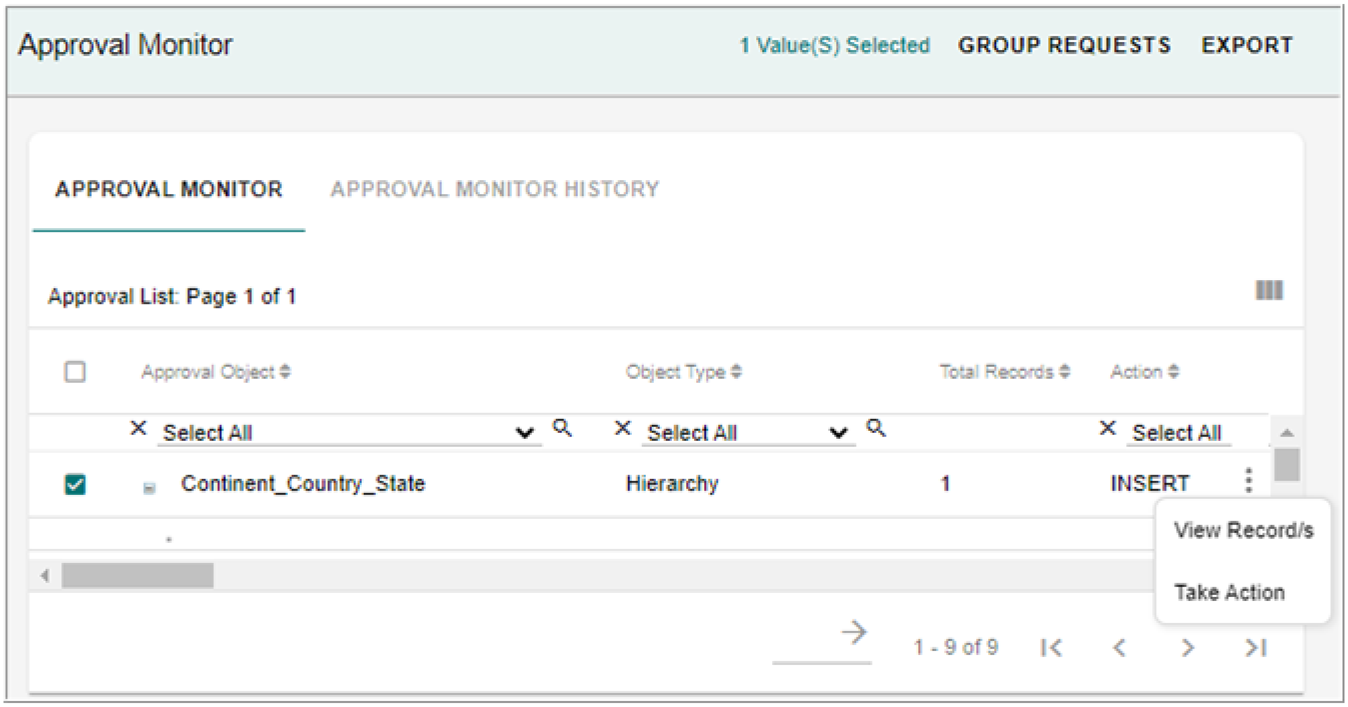
Version Status: DRAFT

Effective Start Date(MM/DD/YYYY)*: 02/26/2021

Effective End Date(MM/DD/YYYY)*: 12/31/9999

The hierarchy will be promoted and the message: “Hierarchy sent for Promotion” is displayed. If approval is enabled, hierarchy will go for approval and can be viewed on the Approval Monitor as in Figure 615.

Figure 615: Approval Monitor



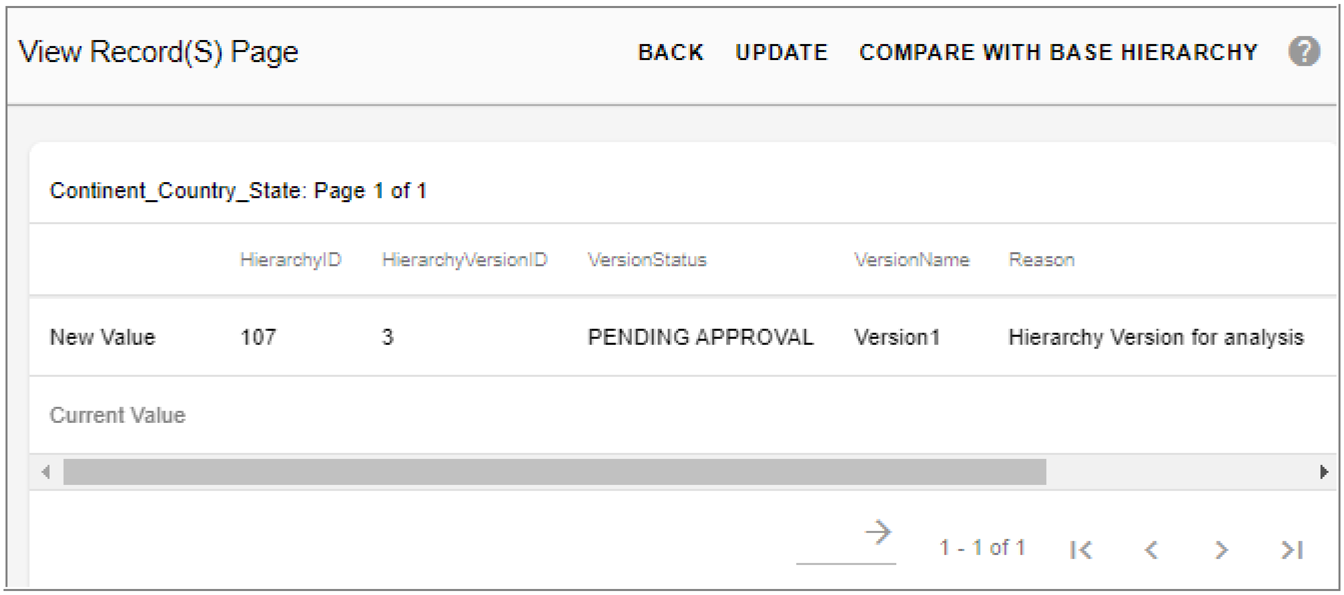
Approval Monitor

Approval List: Page 1 of 1

☐	Approval Object	Object Type	Total Records	Action
	Select All	Select All		Select All
☑	Continent_Country_State	Hierarchy	1	INSERT

- On the **Approval Monitor** UI, select the hierarchy and click **View Record/s**.

Figure 616: View Records



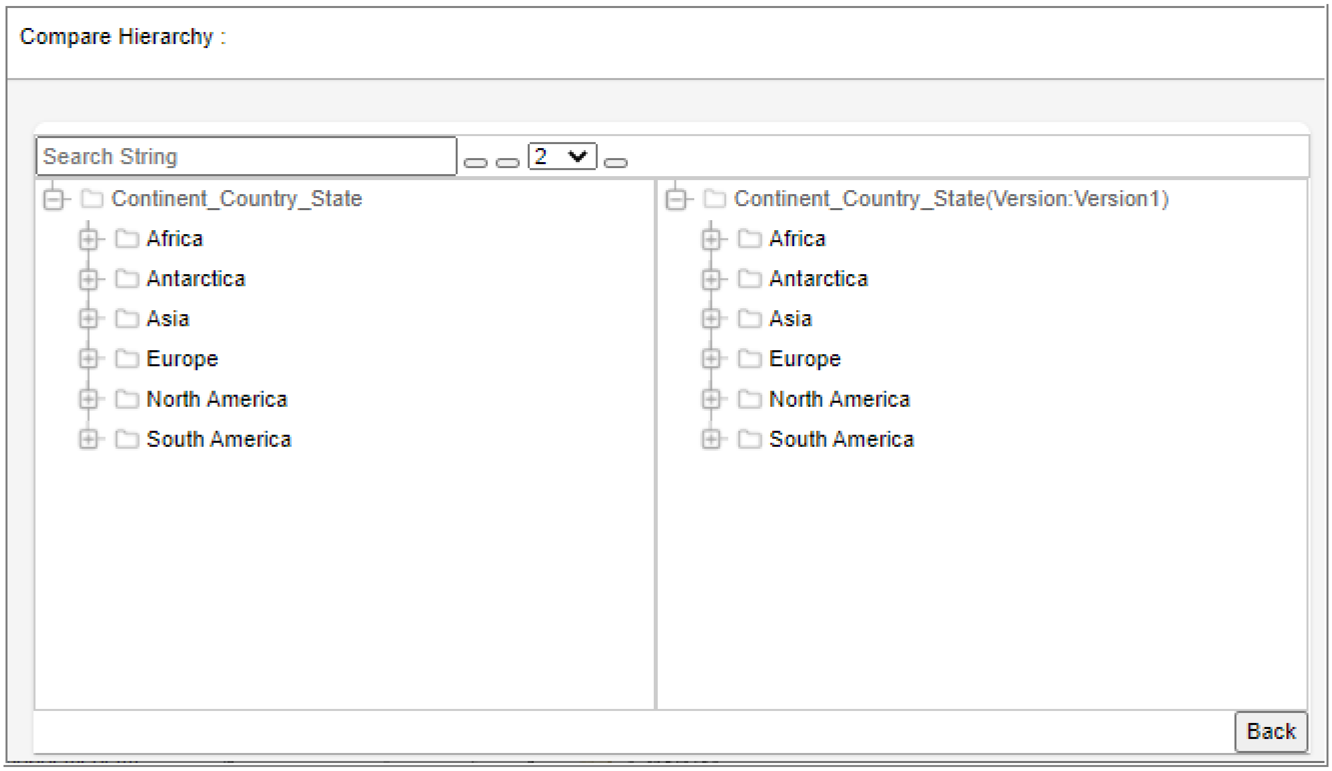
Continent_Country_State: Page 1 of 1

	HierarchyID	HierarchyVersionID	VersionStatus	VersionName	Reason
New Value	107	3	PENDING APPROVAL	Version1	Hierarchy Version for analysis
Current Value					

- On the **View Record(s)** page (Figure 615), click **Compare with Base Hierarchy**.

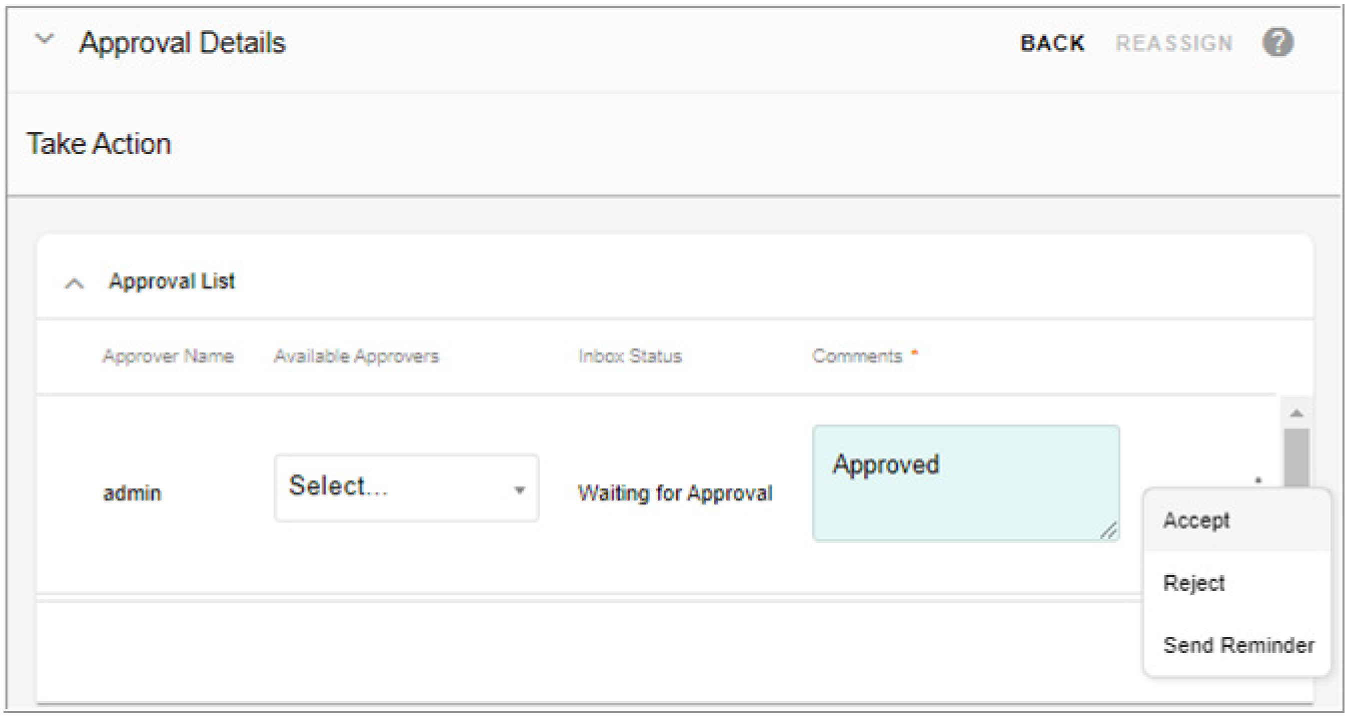
  The Compare Hierarchy screen is displayed as in Figure 617.

Figure 617: Compare Hierarchy



- On the Compare Hierarchy, you can view the records and navigate back to Approval Monitor UI and click on **Take Action** and then accept or reject the records as in Figure 618.

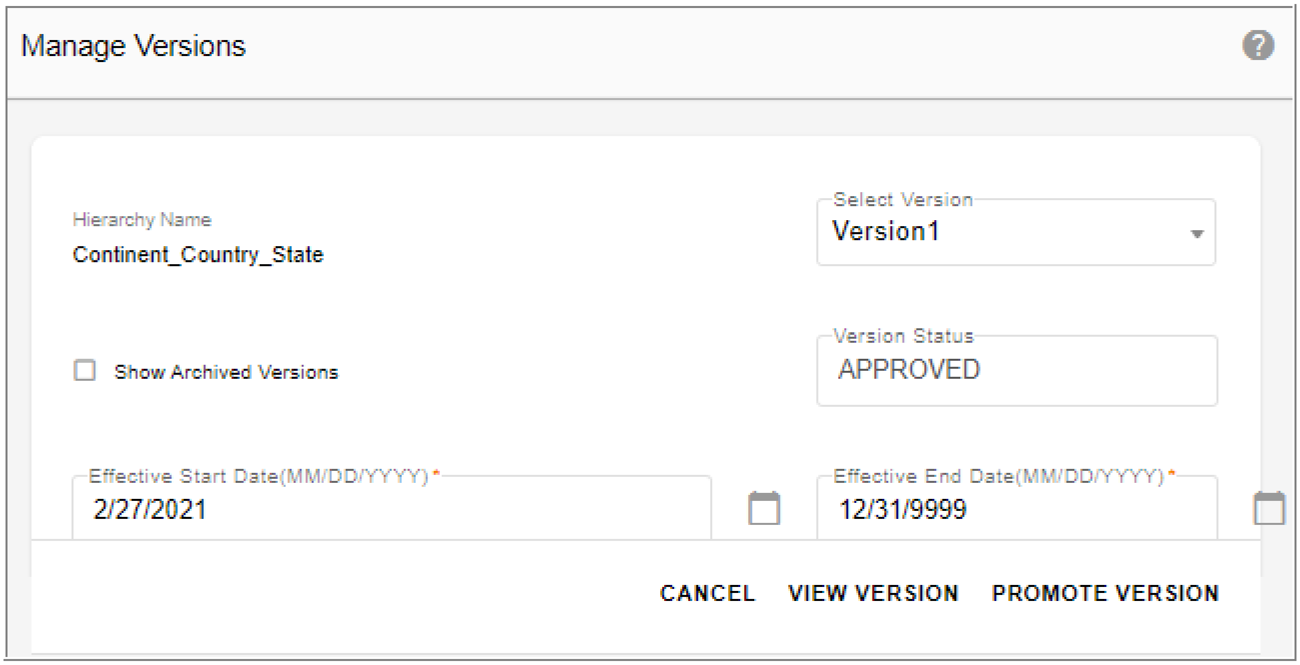
Figure 618: Take Action



Once the hierarchy is accepted or approved, the status on the Manage Version popup will be changed to Approved as in Figure 619 and a scheduler is automatically created to promote the hierarchy as in Figure 620. Once the hierarchy is promoted, it moves to production state and all the changes on version hierarchy will be reflected on the actual hierarchy.

Note: If the hierarchy is not approved before the start date of the version promoted, the state of the hierarchy will be changed to DRAFT.

Figure 619: Manage Versions



Manage Versions

Hierarchy Name
Continent_Country_State

Select Version
Version1

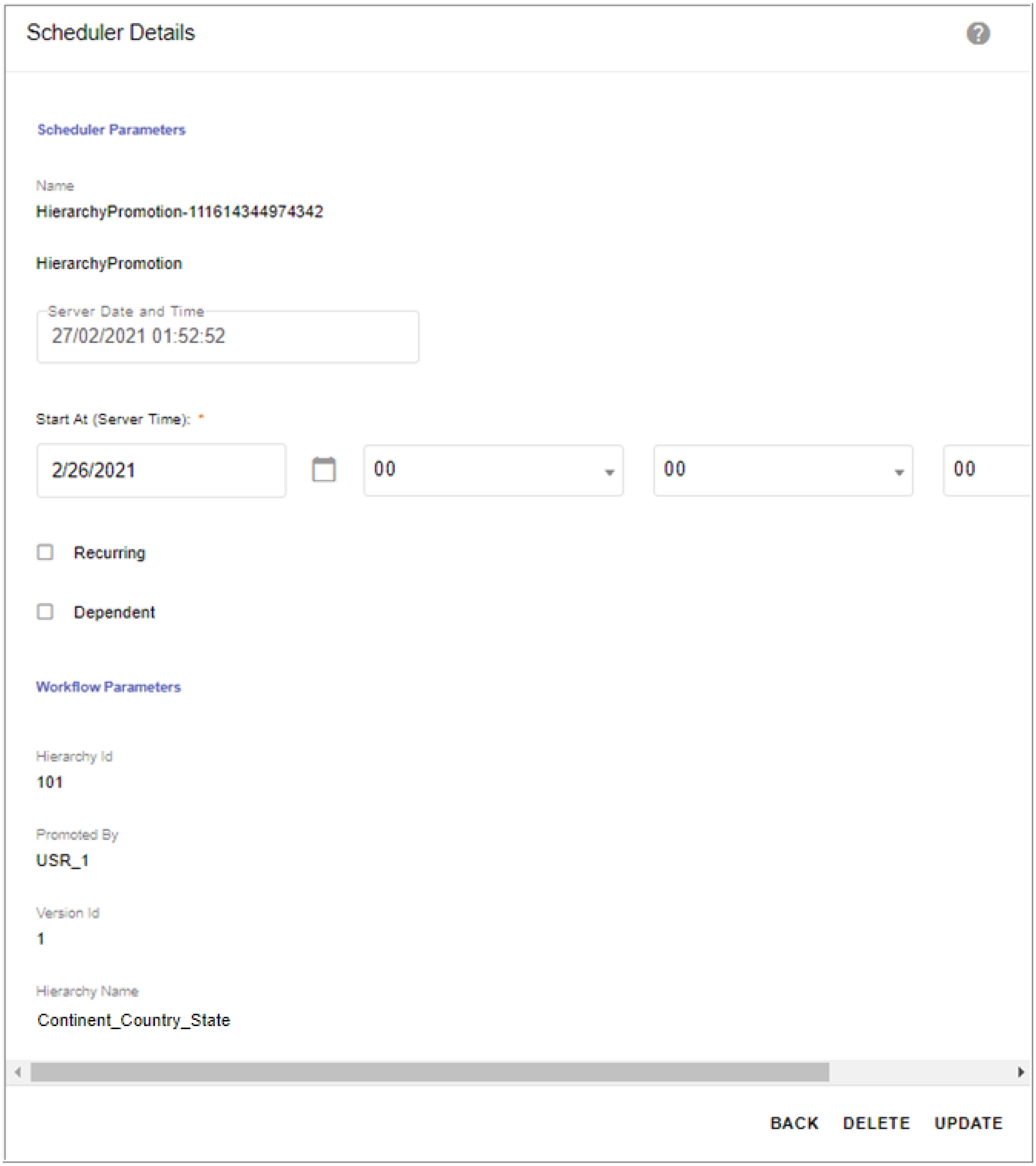
☐ Show Archived Versions

Version Status
APPROVED

Effective Start Date(MM/DD/YYYY)*
2/27/2021

Effective End Date(MM/DD/YYYY)*
12/31/9999

Figure 620: Scheduler Details



Scheduler Details

Scheduler Parameters

Name
HierarchyPromotion-111614344974342

HierarchyPromotion

Server Date and Time
27/02/2021 01:52:52

Start At (Server Time): *
2/26/2021 | 00 | 00 | 00

☐ Recurring

☐ Dependent

Workflow Parameters

Hierarchy Id
101

Promoted By
USR_1

Version Id
1

Hierarchy Name
Continent_Country_State

The scheduler time is by default set as 23:59:59 hrs on version start date. You can edit the default time if required and also edit the scheduler job details.

Withdraw Promoted Hierarchy

Perform the following steps to withdraw promoted hierarchy:

1 On the **Manage Versions** UI, click **Withdraw Promotion** as in Figure 619.

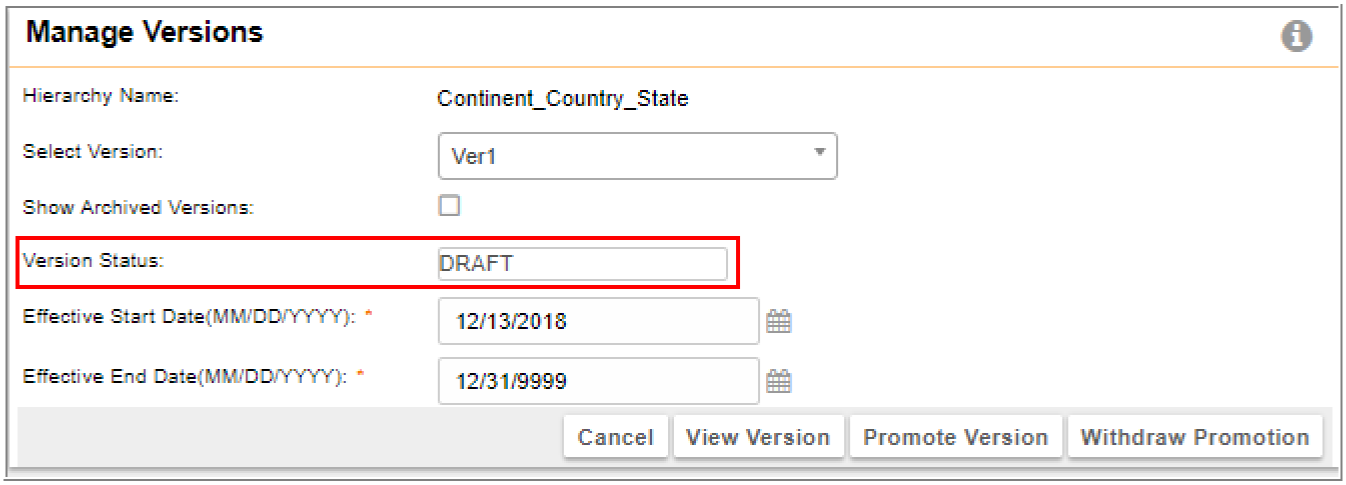
The Withdraw Promotion option is displayed only for a user assigned to a role for which the Withdraw Hierarchy Promotion Activity is enabled.

You can withdraw the promoted hierarchy version only if the version status is either Approved or Pending state.

Message: “Promotion withdrawn successfully” is displayed on the Hierarchy Manager UI.

On withdrawal of the promoted hierarchy version, the scheduler job created for promotion is deleted automatically and the version will be changed to Draft state as in Figure 621.

Figure 621: Manage Versions



Manage Versions

Hierarchy Name: Continent_Country_State

Select Version: Ver1

Show Archived Versions: ☐

Version Status: DRAFT

Effective Start Date(MM/DD/YYYY): * 12/13/2018

Effective End Date(MM/DD/YYYY): * 12/31/9999

Hierarchy Statistics

The **Stats** option button on the Hierarchy Manager allows you to collect statistics related to the selected hierarchy. The collected statistics provides information about the number of levels in the hierarchy, number of records in each level and leaf nodes at each level. You can view the statistics and save the data collected for a particular hierarchy.

Based on the data collected, a decision can be made to get all the records or fetch the records at required levels in hierarchy viewer tree structure there by reducing the loading time of the hierarchy tree structure.

If the statistics are not captured for a particular hierarchy, the decision on which mode to be used for loading will be based on the value set in hierarchy.xml file.

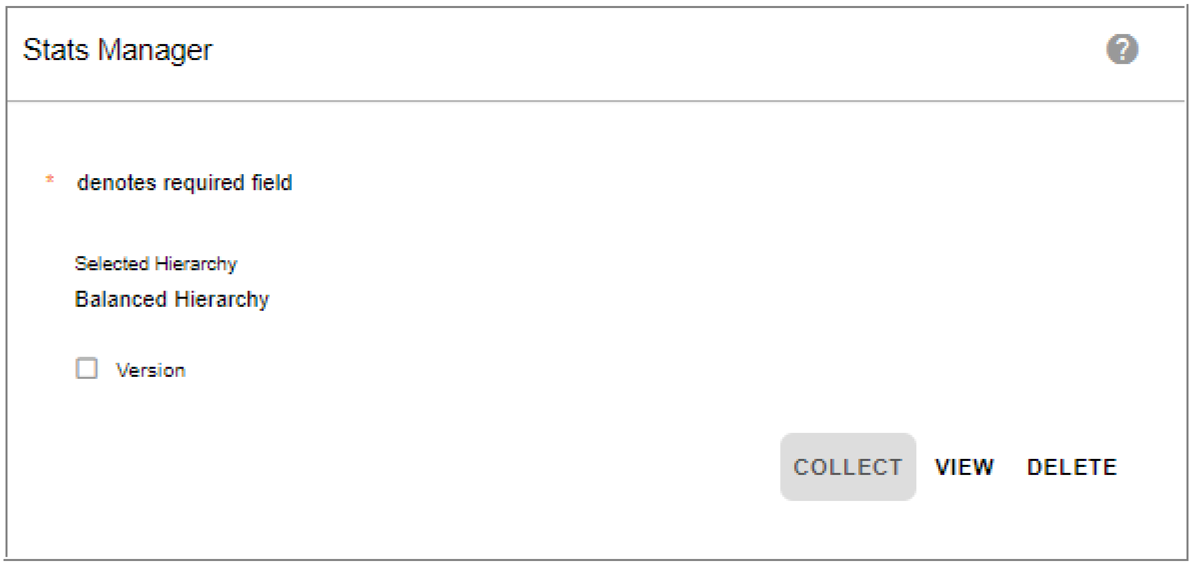
The Manage Stats button is visible only for the members of the Super User group.

Navigate to **Stats Manager** UI from **Hierarchy Manager** UI using **Manage Stats** option.

On the **Stats Manager** UI (Figure 602), you can collect, view and delete stats of the selected hierarchy or any version of the selected hierarchy. Select the Version checkbox to collect the stats of the any hierarchy version.

To collect statistics, click **Collect**.

Figure 622: Stats Manager



Stats Manager

* denotes required field

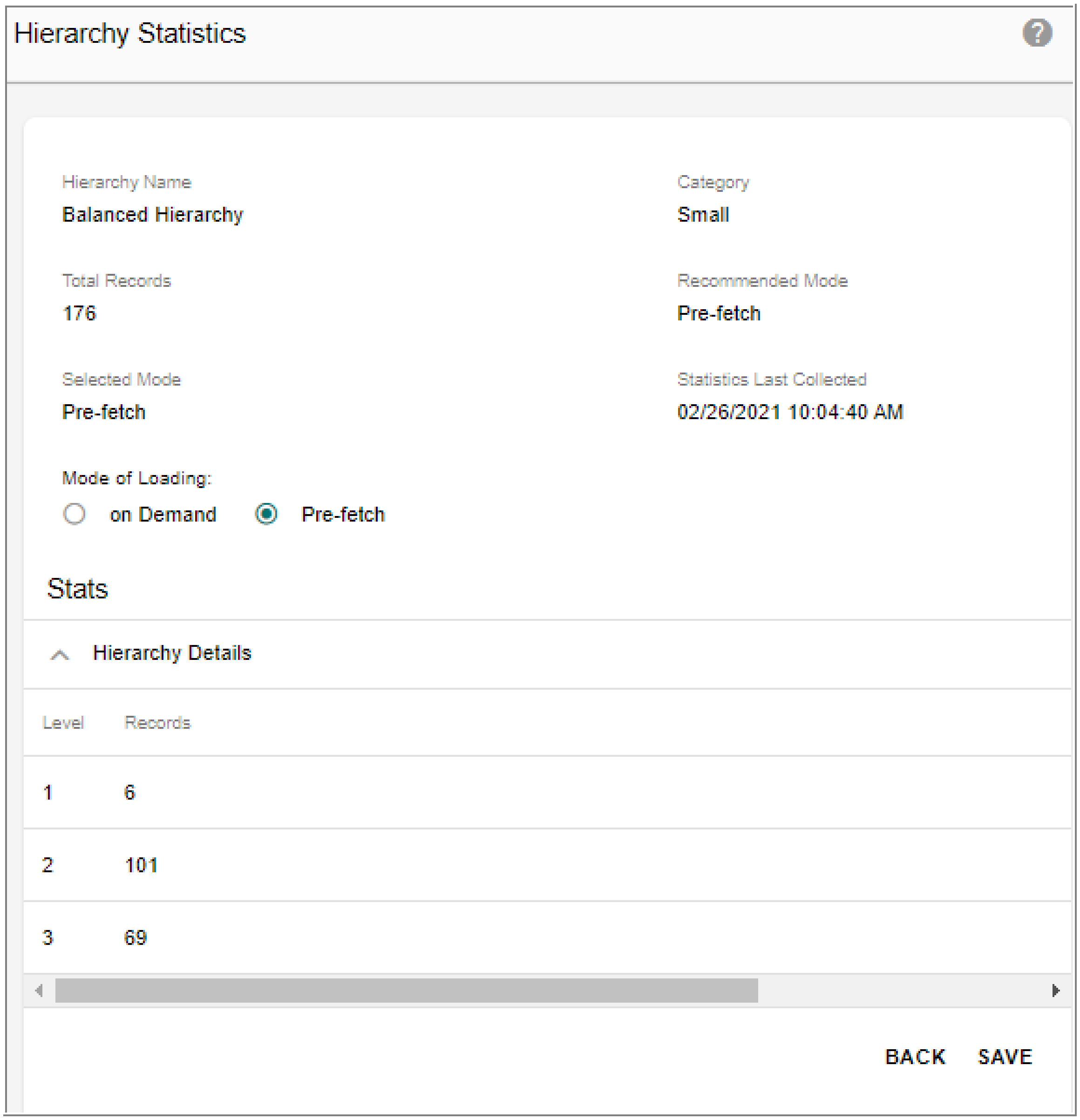
Selected Hierarchy
Balanced Hierarchy

☐ Version

Message: “Stats collection in process” is displayed.

On the **Stats Manager** UI (Figure 602), click on **View** to see the hierarchy statistics details as in Figure 622.

Figure 623: Hierarchy Statistics



Hierarchy Statistics

Hierarchy Name: Balanced Hierarchy

Category: Small

Total Records: 176

Recommended Mode: Pre-fetch

Selected Mode: Pre-fetch

Statistics Last Collected: 02/26/2021 10:04:40 AM

Mode of Loading: ○ on Demand ● Pre-fetch

Stats

Hierarchy Details

Level	Records
1	6
2	101
3	69

On the **Hierarchy Statistics** UI Figure 622,

- **Hierarchy Name**: displays the name of the hierarchy for which the statistics details are displayed.
- **Category**: specifies the size of the hierarchy.
- **Total Records**: specifies the total number of records in the selected hierarchy.
- **Recommended Mode**: specifies the recommended mode of loading hierarchy on the viewer as Pre-fetch.
- **Selected Mode**: displays the selected mode of loading the hierarchy on the viewer.
- **Statistics Last Collected**: displays the date and time of the last collected statistics.

- **Mode of Loading**: the Mode of Loading option will be selected either as On Demand or Pre-fetch. Based on the statistics collected and based on the threshold value of on Demand load set in System Properties table, mode of loading is decided. If the number of nodes exceeds the set limit, system automatically recommends the mode of hierarchy load as on Demand else its recommended as pre-fetched.
  - **On Demand**: only first two levels of data are fetched and loaded initially. The remaining levels are loaded on Demand. When user expands a node of a hierarchy, query is made to database and its corresponding children are fetched and loaded.
  - **Pre-fetched**: entire hierarchy data are fetched and loaded during the initial load of it. Recommended for hierarchies containing less (approximately below 1000 nodes) amount of data.
- **Hierarchy Details** section displays the different levels and the total number of records in each level.
- Click **Save** to save the collected stats.

Hierarchy Viewer

The hierarchy viewer provides the ability to visually view and interact with hierarchical data. Hierarchy Viewer allows you to view the hierarchy nodes and its related data in a tree structure. The hierarchy tree structure is rendered using jstree technology. You can also modify or create node data from hierarchy viewer.

You can launch the hierarchy viewer either from left navigation pane (**Reference Data** -> **Hierarchy Management** -> **Hierarchy Viewer**) or from **Hierarchy Manager**,

If dynamic filter was applied on a particular hierarchy, then the **Dynamic Filter** popup would be displayed before the display of hierarchy viewer.

On the **Dynamic Filter** pop-up, enter the filter values and click **View**. The **Hierarchy Viewer** displays the filtered data.

When you navigate to hierarchy viewer from **Hierarchy Manager (**click on the Menu icon corresponding to the required hierarchy and click **View**), the last viewed hierarchy will be loaded by default if the user returns to hierarchy viewer page within that particular session.

Figure 624: Hierarchy Viewer—Node Details

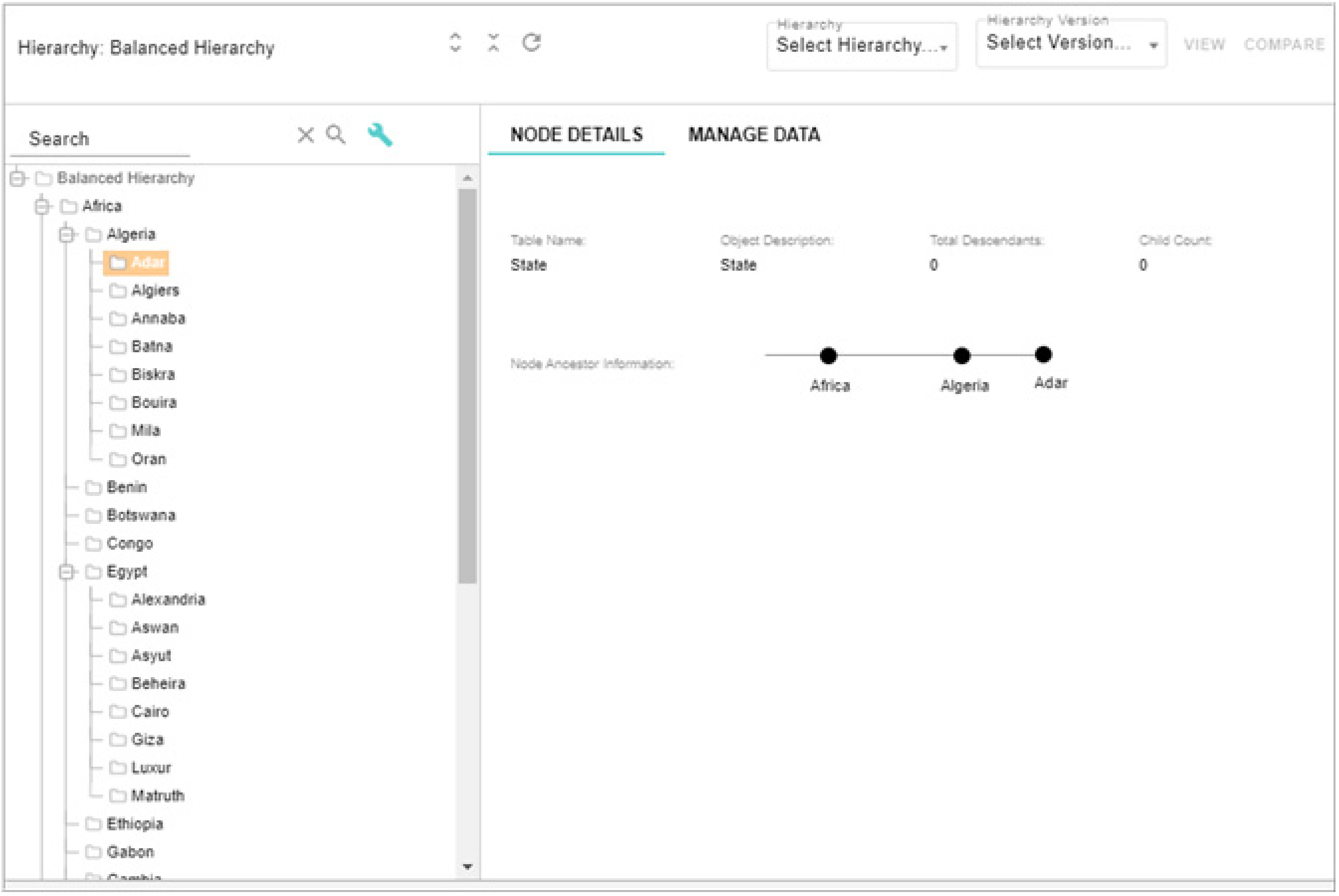


Table Name: State

Object Description: State

Total Descendants: 0

Child Count: 0

When the Hierarchy is configured to display & manage Unassigned Nodes, it will display the orphan nodes at the bottom of the hierarchy viewer tree. A dummy parent in each level of hierarchy will be assigned to all orphan nodes. The name of the dummy parent will be Unassigned_<HierarchyObjectName>. The orphan nodes can be dragged and dropped into the right parent based on requirement.

Figure 625: Hierarchy Viewer: Unassigned Nodes

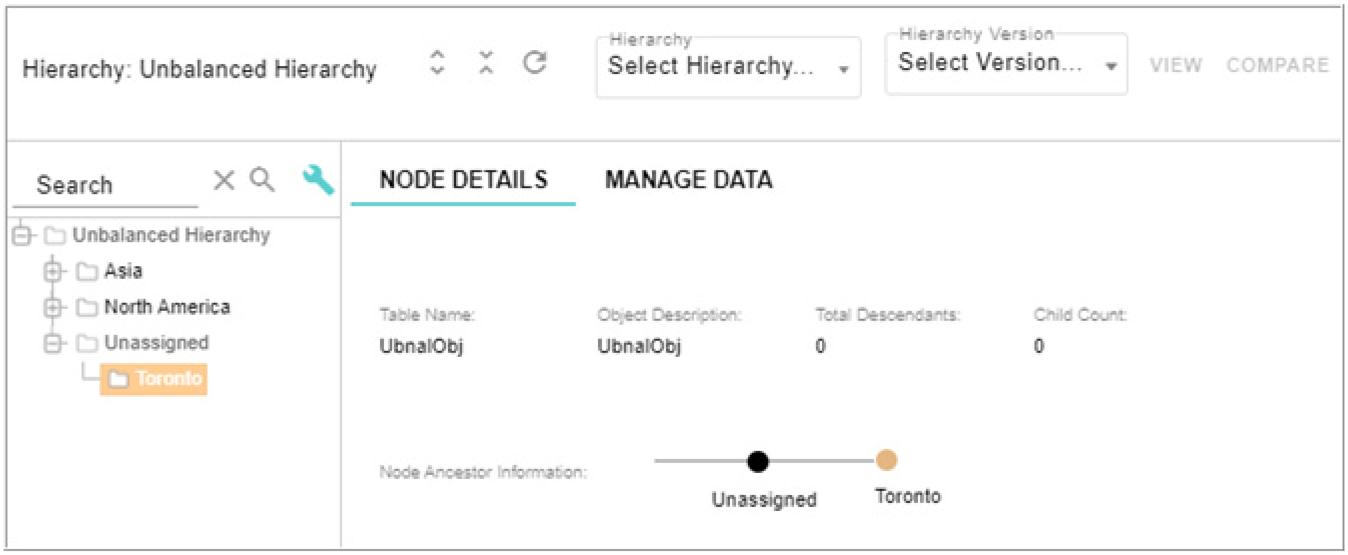


Table Name: UbnalObj

Object Description: UbnalObj

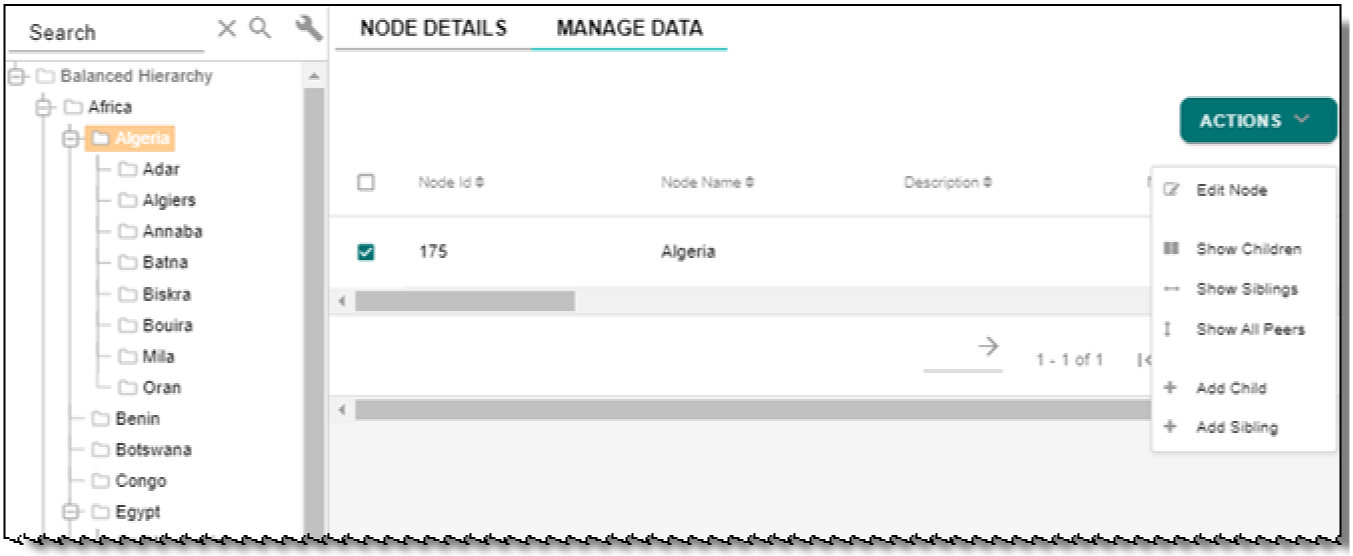
Total Descendants: 0

Child Count: 0

On the Hierarchy Viewer UI (Figure 624),

- **Left Panel:** the left panel is the tree view of the selected hierarchy and is rendered using jstree. The left panel displays all the node levels of the selected hierarchy. Node level 1 without child (orphan node level 1) is also displayed on the hierarchy viewer.
- **Node Details**: the right panel displayes two tabs (Node Details and Manage Data). Under the Node Details tab, the node details like Table Name, Object Description, Total Descendants, Child Count are displayed. It also displays the Node Ancestor Information.
- **Manage Data**: under the Manage Data, it displays the node details in tabular form and under the Actions tab, you have options can view all peers, siblings and children of a selected node. It also provides option to add child and siblings for the selected node. You can also edit the node details using the Edit option as in Figure 626.

Figure 626: Hierarchy Viewer: Manage Data



☐	Node Id	Node Name	Description
☑	175	Algeria	

Under the Manage Data tab, selecting on any option from the Actions dropdown displays the corresponding configurable UI. No UI is displayed in bottom right panel, if the corresponding configurable UI is not generated and a valid message is given to the user. For details on generating configurable UI, see Chapter 8: “Configurable UI.”

If Extended Attributes and Rollup Attributes are added to the Hierarchy Objects, ConfigUI is changed from AutoGenConfigUI to UserDefinedConfigUI.

Show All Peers: initial view when a node is selected in the tree view. Displays all of the records that are of the same levels without any filter.

Show Children: displays all child records belonging to the selected node. Show Children option is not available to leaf nodes.

Show Siblings: displays all records that are of the same level with the selected node and belongs to the same parent node. This is not available to the root node.

Add Child: allows you to add a child node to the selected parent node.

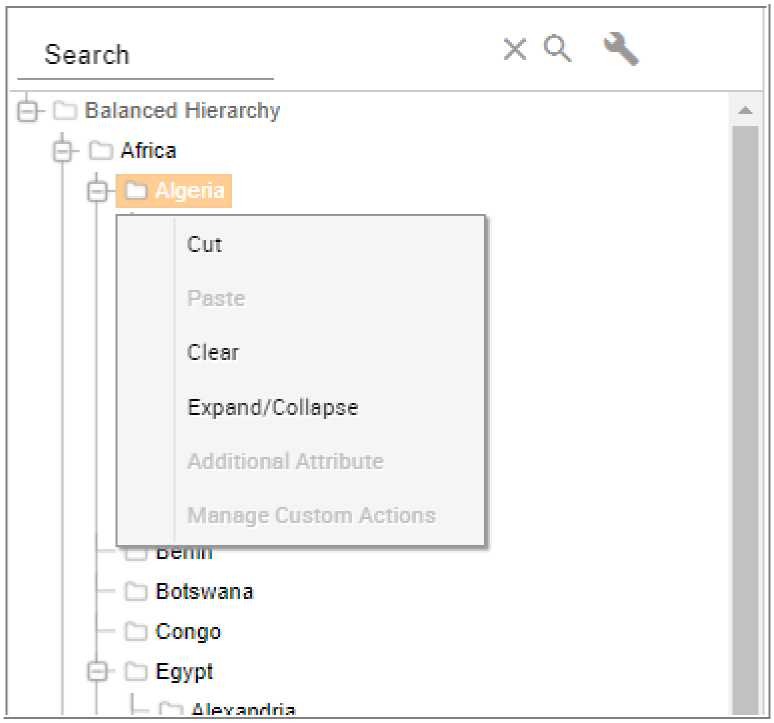
Add Siblings: allows you to add sibling node of the same level of the selected node.

- Add Child and Add Siblings will work only for hierarchies created on HierarchyNode and HierarchyRelation Tables. If the hierarchy is created on other master tables, Add Child and Add Sibling will only add a record in the corresponding table and no relation will be added.
- Add child/sibling may not work properly if approval is enabled only on the child table. It is recommended to define approval on both node and relationship tables and approve/reject them as a group while adding approval enabled child/siblings.
- In case of Unbalanced Hierarchy with Unassigned Node display, add Sibling and Show sibling option will not be available for the Unassigned/Orphan Nodes.

Edit: allows you to edit the node details of the selected node.

- **Menu Options**: right click on any hierarchy node to display the menu option as in Figure 627.

Figure 627: Hierarchy Viewer—Menu Options



The menu displays the following options:

- **Cut**: select this option to cut a particular node.
- **Paste**: select this option to paste a particular node.

You can paste the selected node at least one level up not at the same level or below level.

To perform cut and paste action when hierarchy version is launched on Hierarchy Viewer, you need to set the version editable to true while creating the version.

- **Clear**: select this option to clear the contents on the clipboard.
- **Expand/Collapse**: select this option to expand or collapse the tree of a particular node.
- **Additional Attributes**: While creating a Relationship, you may choose to add additional attributes to the Relationship. You can provide values for this additional attributes while saving the Relationship on the UI. You can view these additional attributes and values from Hierarchy Viewer by selecting this option.
- **Manage Custom Actions**: select this option to navigate to the custom defined page and perform custom actions based on the key values of the hierarchy node selected. This option will be disabled if no custom actions are defined on the selected hierarchy.

- **Expand and Collapse Nodes**: to access the Expand and collapse hierarchy nodes icon, clicki on the 🔧 icon and then click on ⇕ icon to expand all the nodes and click ⇕ icon button to collapse all the nodes.

- **Search Node**: you can search for a particular node on **Hierarchy Viewer** UI.
  - On the **Hierarchy Viewer** (Figure 628), enter the key word in the text field and click 🔍 icon.

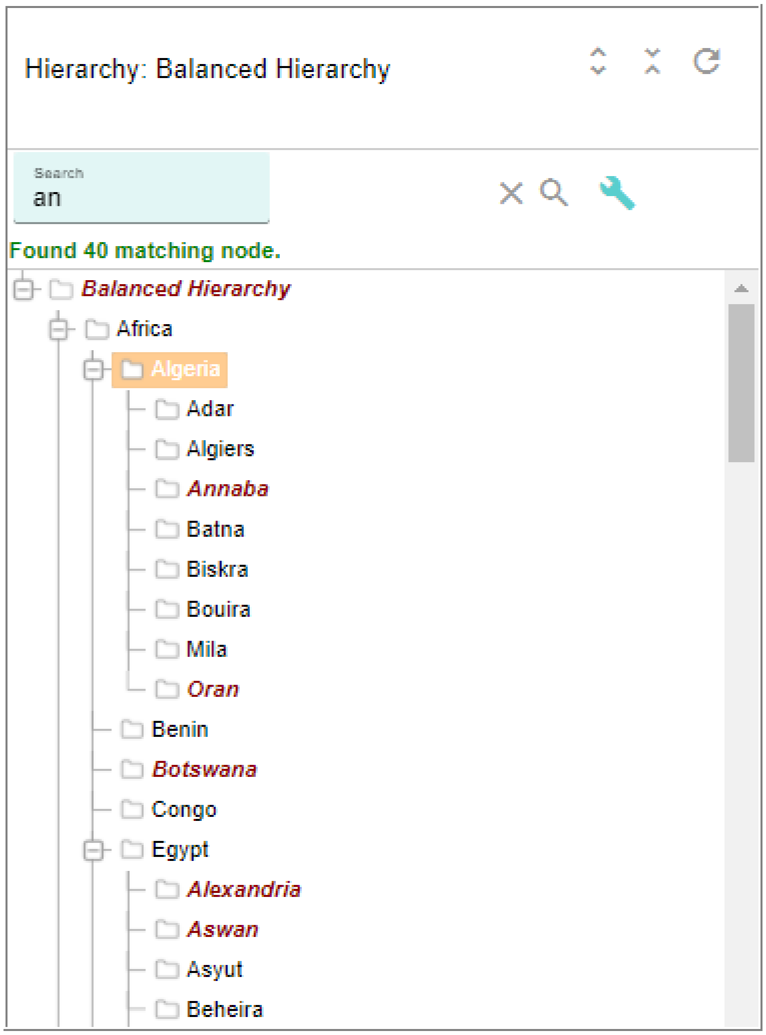
    You can do a global search either by specifying a word or a set of characters. That is you can search for a complete word or do a partial search by specifying a set of characters. For example, enter “ORE” as a search parameter in the **Search** field on the Hierarchy Viewer.

    The **Hierarchy Viewer** displays all the nodes having the character “an” as in Figure 628. All the matched nodes will be highlighted and the total number of nodes will be displayed on the **Tree View** header line.

    You can specify the search parameter and select the level to search from the **Select Level** drop down. The search operation will search for the specified parameter only in the selected level. For structured hierarchy, the level can be RO(1), RO(2) and leaf node. For unbalanced hierarchy, the level can be leaf node or all the nodes.

    You can click × icon to remove the search string.

Figure 628: Hierarchy Viewer—Search



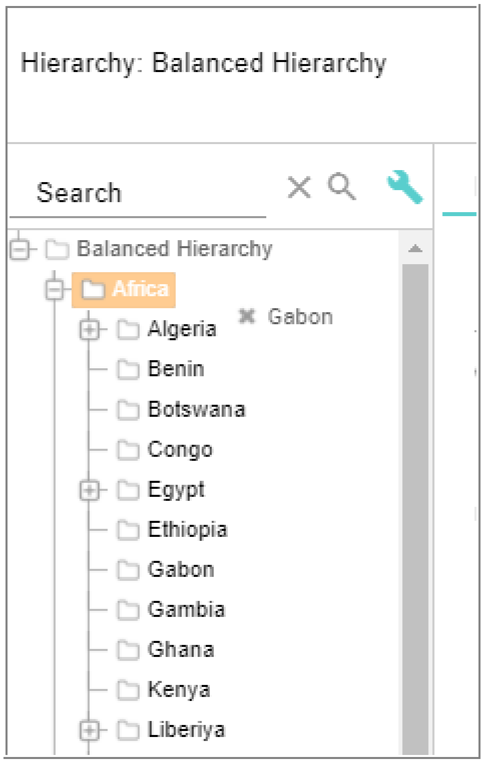
Hierarchy: Balanced Hierarchy

Search: an

Found 40 matching node.

- **Drag and Drop**: you can drag and drop the nodes on the Hierarchy Viewer. Once you select a node and drag it, the selected node will be added to the node where you want to drop. If the node where you want to drop is not a valid position, it displays the wrong icon as in Figure 629.

Figure 629: Hierarchy Viewer—Drag and Drop Wrong Icon



- Drag and drop honors approval or business rules defined on the underlying table. Appropriate message is displayed on the viewer for any validation triggered. The changes that go through approval are not reflected in viewer unless the approval request is approved.
- If approval is enabled on any of the hierarchy node or relation tables for the particular hierarchy, deactivate approval on these tables for the cut and paste and drag and drop feature to work properly.
- The current hierarchy viewer can display hierarchy of up to 12 levels (level 0 to level 11) for structured hierarchies.
- If a hierarchy has multiple objects defined at the same level, the Cut and Paste or Drag and Drop functionality will work only if there is a relation defined between the objects.

  For example:

  Consider a hierarchy with objects defined as Country, State1, State2, City1, City2 (Country, State1, State2, City1, City2 are different tables). If the relations are defined as Country-State1, Country-State2, State1-City1, State2 - City2, the Cut and Paste from

City1 to City2 under State2 will not be allowed even though City1 and City2 are at the same level in hierarchy as there is no relation defined between State2 and City1 (Paste option will be disabled in the UI). In this case, you can perform Cut and Paste or Drag and Drop from City1 records to under State1 records as there exists State1-City1 relation.

Hierarchy Flattened View

MDM hierarchy feature is enhanced to provide flattened view of hierarchy structure for both master hierarchy and versioned hierarchy. The flattened view of hierarchy structure provides the following advantages:

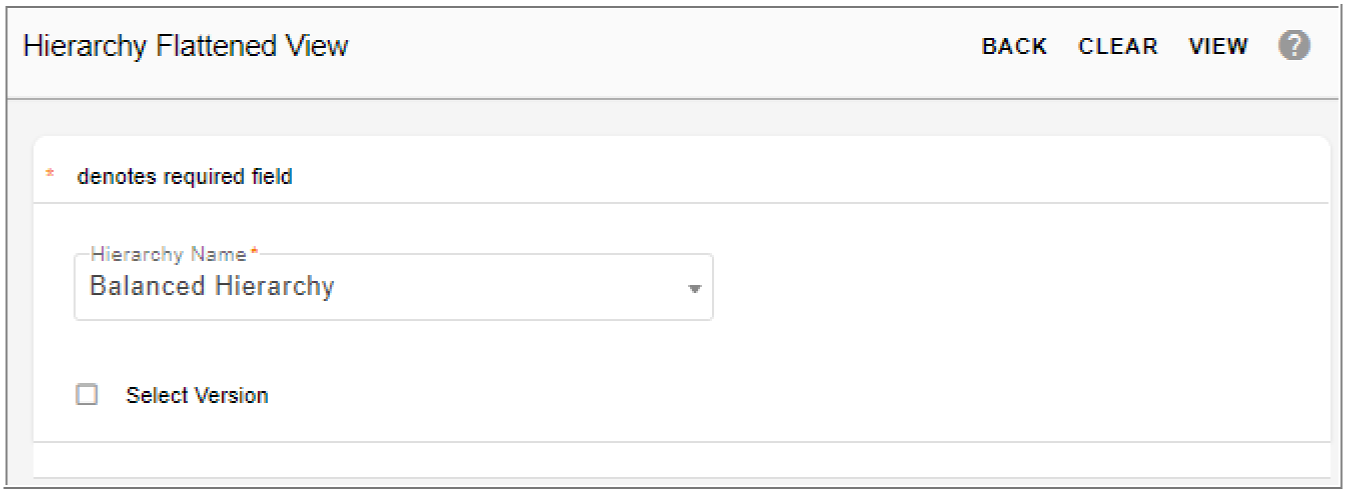
- Displays the hierarchy structure data in tabular form for easy view of complete hierarchy data.
- Displays all the linked nodes and all orphan or unlinked nodes in the hierarchy. The unlinked or orphan nodes can exists at any level in the hierarchy structure.

The flattened hierarchy view is supported only for template based hierarchies and of type balanced and ragged hierarchies.

To view hierarchy in flattened structure, perform the following steps:

1. Navigate to **Hierarchy Flattened View** UI from left navigation pane (**Reference Data** -> **Hierarchy Management** -> **Hierarchy Manager**) and on the **Hierarchy Manager** UI, select **Hierarchy Flattened View** from **Actions** dropdown.
2. On the **Hierarchy Flattened View** UI, select the hierarchy from the **Hierarchy Name** dropdown and if required you can also select any version of the selected hierarchy and click **View** as in Figure 630.

Figure 630: Hierarchy Flattened View



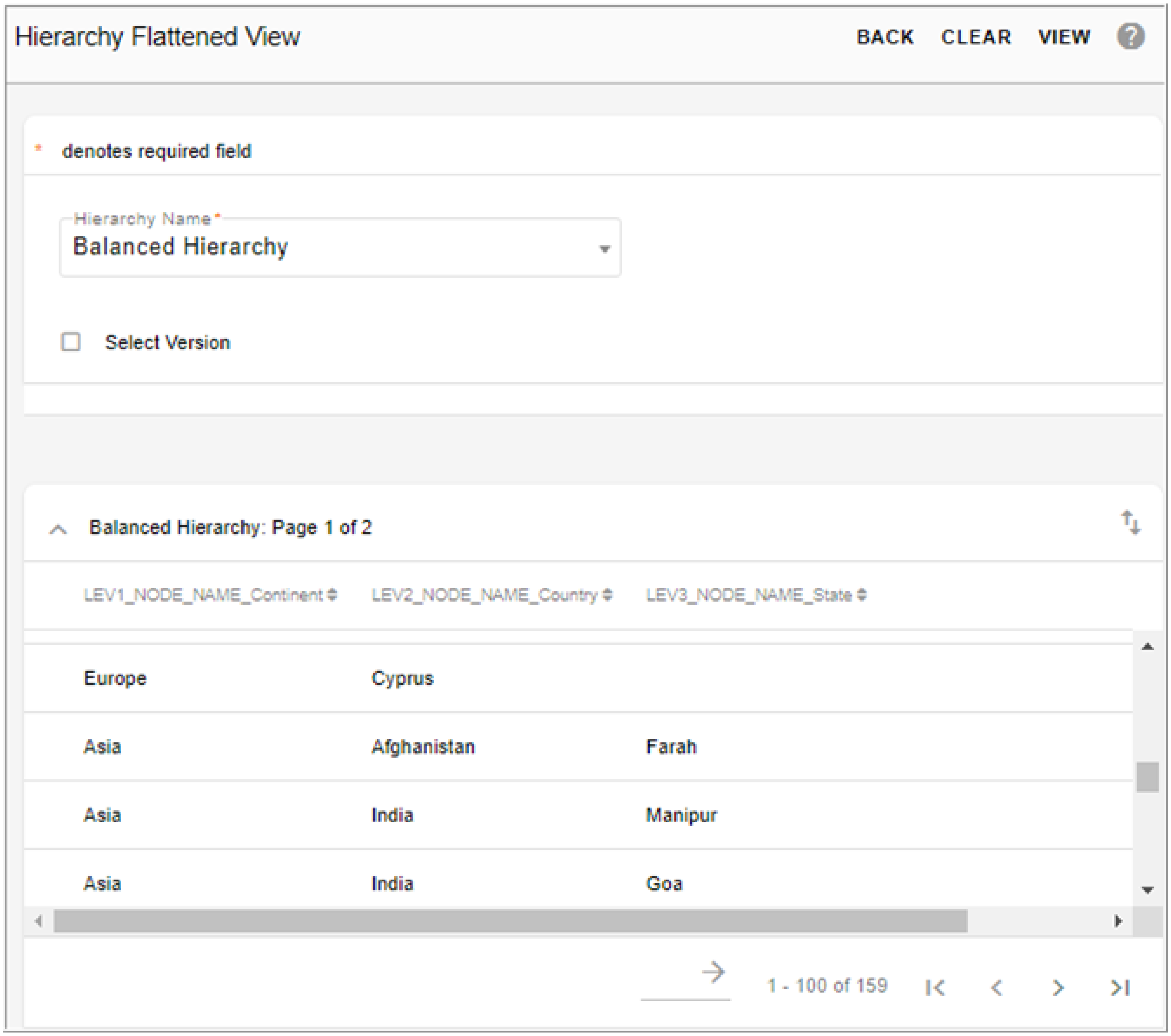
* denotes required field

Hierarchy Name*: Balanced Hierarchy

☐ Select Version

The hierarchy flattened view structure is displayed as in Figure 631. In flattened view, you can view all the nodes (linked and unlinked nodes) available at each level. In the tree structure view, you can view only the linked nodes and not the orphan nodes.

Figure 631: Hierarchy Flattened View



Hierarchy Flattened View

* denotes required field

Hierarchy Name*: Balanced Hierarchy

☐ Select Version

Balanced Hierarchy: Page 1 of 2

LEV1_NODE_NAME_Continent	LEV2_NODE_NAME_Country	LEV3_NODE_NAME_State
Europe	Cyprus	
Asia	Afghanistan	Farah
Asia	India	Manipur
Asia	India	Goa

On the hierarchy flattened view structure (Figure 631), click on the Export to Excel icon to export the hierarchy details to an excel file.

The data is exported with file name as “FlattenedView_data_export.xlsx”.

Hierarchy Roles

In hierarchy if the user has bcmHMAccess and bcmDRMAccess assigned to them, the user will be able to perform all hierarchy related actions. Both the left navigation links—Hierarchy Management and Hierarchy Viewer having "bcmHMAccess" as the activity name and the parent link Relationship Data Management has "bcmDRMAccess" as the activity name.

Note: By default, admin will have both the above listed links. For a user to get the left navigation links displayed, admin has to assign that particular activity to the user role.

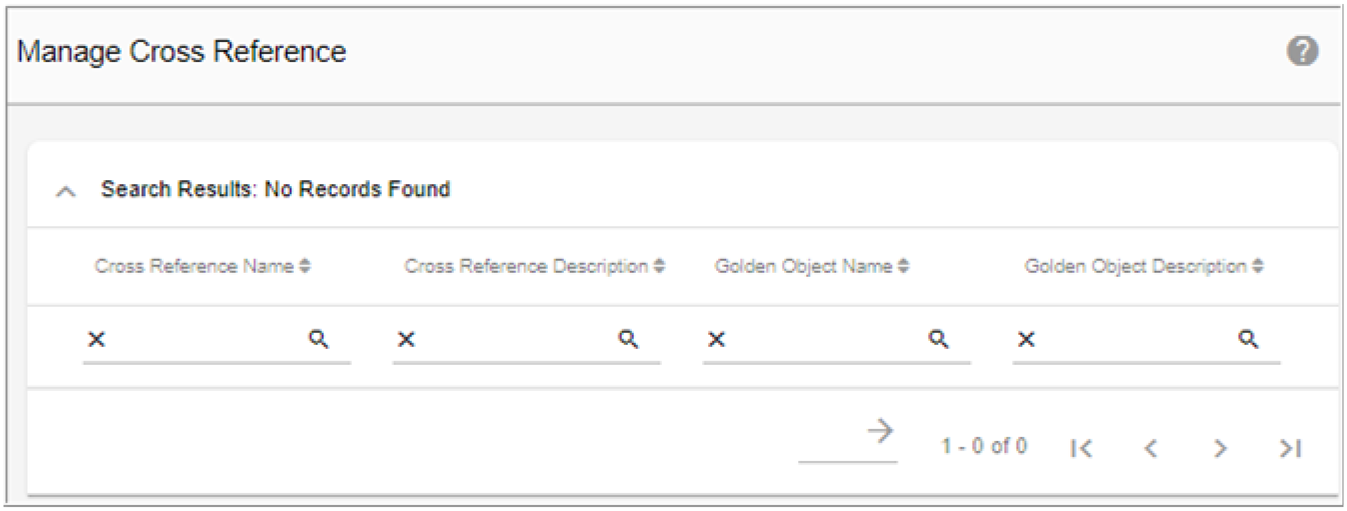
The following table displays the hierarchy specific roles and their functions.

Hierarchy Specific Role	Function
Edit	user will be able to perform the following functions:
	a. edit hierarchy (metadata)
	b. drag and drop
	c. cut and paste
	d. launch configurable UI
	e. expand and collapse the node
	f. on node clicked action, the node value can be passed to custom workflow
View	user will be able to perform the following functions:
	a. launch configurable UI
	b. expand and collapse the node
	c. on node clicked action, the node value can be passed to custom workflow
All	on selection of All option, user can perform all the actions mentioned for Edit and View roles.

Manage Cross Reference

Navigate to **Manage Cross Reference** UI (Figure 632) from **Reference Data** -> **Hierarchy Management** ->**Hierarchy Manage** and on **Hierarchy Manage** UI, select **Cross Reference** from **Actions** dropdown.

Figure 632: Manage Cross Reference



Manage Cross Reference

Search Results: No Records Found

View Cross Reference Data

To view cross reference data:

1. On the **Manage Cross References** UI, click on the Menu icon corresponding to the required cross reference object and click **View Data**.

   The **Select Parent Data** UI is displayed.

2. On the **Select Parent Data** UI, select the parent object data and click **Linked Child**.

   The **Selected Parent Object Data—Linked Child Object Data** UI is displayed.

   The **Linked Child Object Data** pane displays the child objects linked to the cross referenced object of the selected parent object data.

3. Click **View Additional Attributes** to view the defined additional attributes of the selected cross reference data.

   You can optionally delete the child object from the **Selected Parent Object Data—Linked Child Object Data** UI.

4. On the **Selected Parent Object Data—Linked Child Object Data** UI, select the required child object and click **Delete**.

   The **Confirmation** dialog box is displayed.

5. On the **Confirmation** dialog box, click **Yes**.

Manage Rollup Attributes

The Rollup attributes are the attributes assigned to a particular hierarchy. Roll up attributes are defined independent of hierarchy creation. On the Manage Rollup Attributes, you can define global attributes and associate them to a particular hierarchy. When rollup attributes are assigned to hierarchies, the system auto generates a rollup view that contains aggregated value created by the user. It displays values calculated by applying functions against transaction data available in the warehouse.

Once an attribute is assigned to a hierarchy, it will be applicable for each node within the hierarchy. When a roll-up attribute is associated with a Hierarchy, a view is created to display the Node ID and the corresponding rollup attribute value of every node in the Hierarchy. The configurable UIs for base and version of the hierarchy are changed to add join condition to display the value of the rollup attribute.

Example: Sales data for a city. The transactions would presumably be for nodes at leaf levels. When clicking on parent levels, these values would be calculated for those levels as an aggregate of all their children.

Navigate to **Manage Rollup Attributes** UI from **Reference Data** -> **Hierarchy Management -** >**Hierarchy Manager** and select **Rollup Attributes**.

The Manage Roll-up Attributes feature is not supported for custom table based hierarchy.

The following grant accesses have to be given for the rollup attribute assignment to work.

In case of topology,

```
grant all on CBUSR1_HM to EXT_SRC_09 with grant option;
grant all on EXT_SRC_09 to CBUSR1_HM with grant option;
grant all on CBUSR1 to EXT_SRC_09 with grant option;
grant all on EXT_SRC_09 to CBUSR1 with grant option;
grant all on CBUSR1 to CBUSR1_HM with grant option;
grant all on CBUSR1_HM to CBUSR1 with grant option;
```

Here, CBUSR1_HM is the database on which the rollup view is created, that is, the name of the database assigned for the MDM_HM service.

EXT_SRC_09 is the name of the external database, whose table (NonMDM) is joined with the Hierarchy table to create the rollup.

CBUSR1 is the name of the main database.

In case of non-topology,

```
grant all on CBUSR1 to EXT_SRC_09 with grant option;
grant all on EXT_SRC_09 to CBUSR1 with grant option;
```

You can perform the following tasks on the Manage Rollup Attributes UI:

- Create Hierarchy Attribute
- Edit Hierarchy Attribute
- Delete Hierarchy Attribute

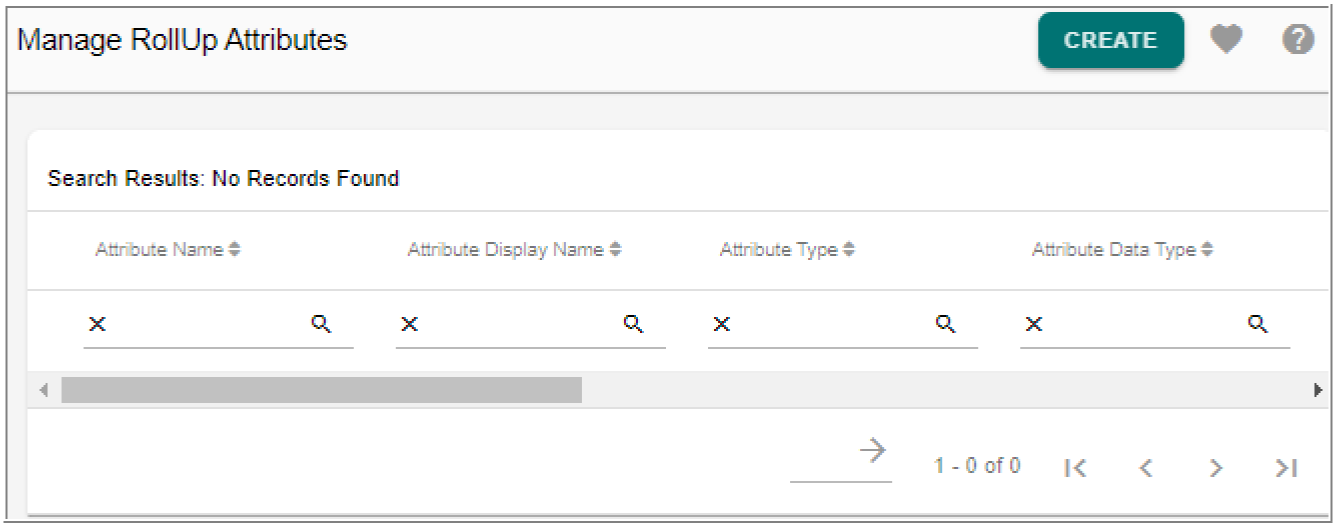
- Attach Rollup Attribute to Hierarchy

Create Hierarchy Attribute

To create attribute:

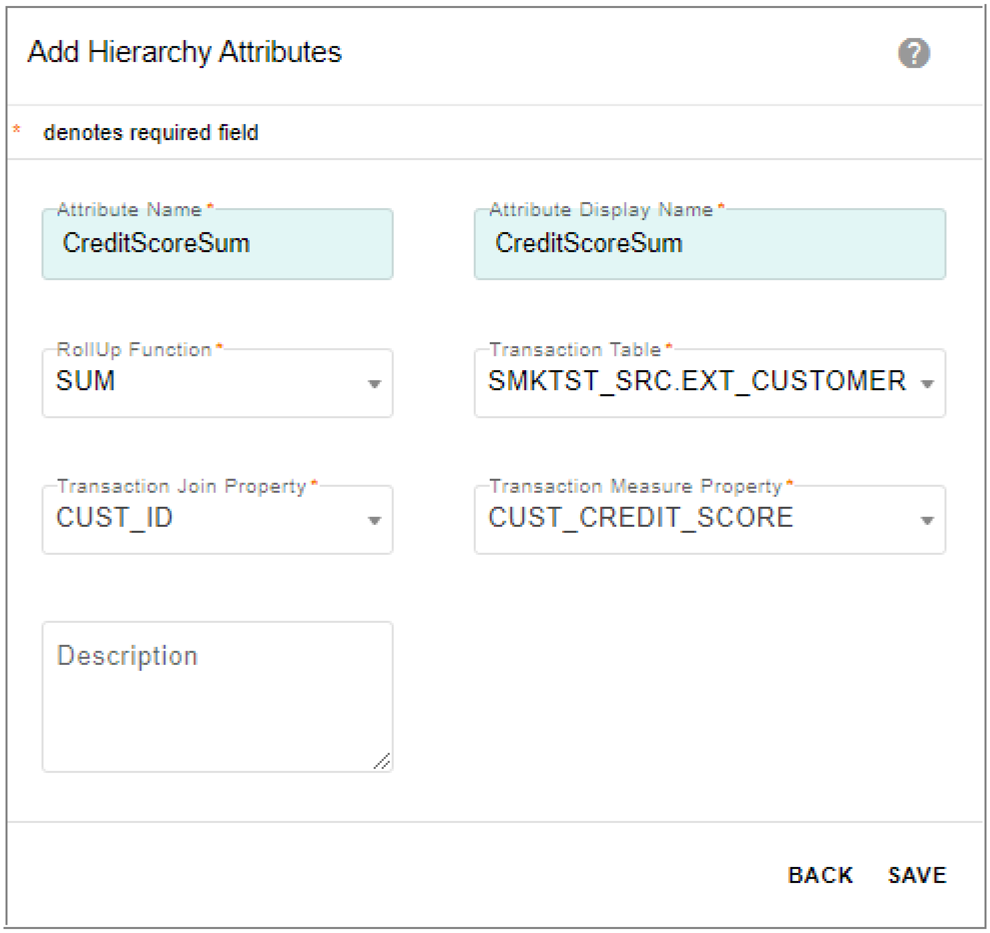
1 On the **Manage Rollup Attributes** UI, click **Create** as in Figure 633.

Figure 633: Manage Rollup Attributes



2 On the **Add Hierarchy Attributes** UI (Figure 634), enter the values as in below table:

Figure 634: Add Hierarchy Attributes



Add Hierarchy Attributes

* denotes required field

Attribute Name*: CreditScoreSum

Attribute Display Name*: CreditScoreSum

RollUp Function*: SUM

Transaction Table*: SMKTST_SRC.EXT_CUSTOMER

Transaction Join Property*: CUST_ID

Transaction Measure Property*: CUST_CREDIT_SCORE

Table 22: Hierarchy Rollup Attributes

Column	**Purpose**
Attribute Name	A required field; limited to 15 characters; recommended not to use spaces as the spaces will be deleted in the name when saved. The reason why spaces are deleted is because the Attribute Name is used to dynamically create the view for this particular rollup.
Attribute Display Name	A required field; limited to 30 characters; may contain spaces.
RollUp Function	List of available types of aggregates such as MIN, MAX, AVG, and SUM.
Transaction Table	List down tables/views that is stored in the sandbox database. Tables that contain transaction records.
Transaction Join Property	List of columns of the selected Transaction Table; column that will be used in the join condition when we associate this attribute in a particular hierarchy. Should contain NodeId of the Leaf Node Level.
Description	Provide short description for the attribute. Limited to 200 characters.

3 Click **Save**.

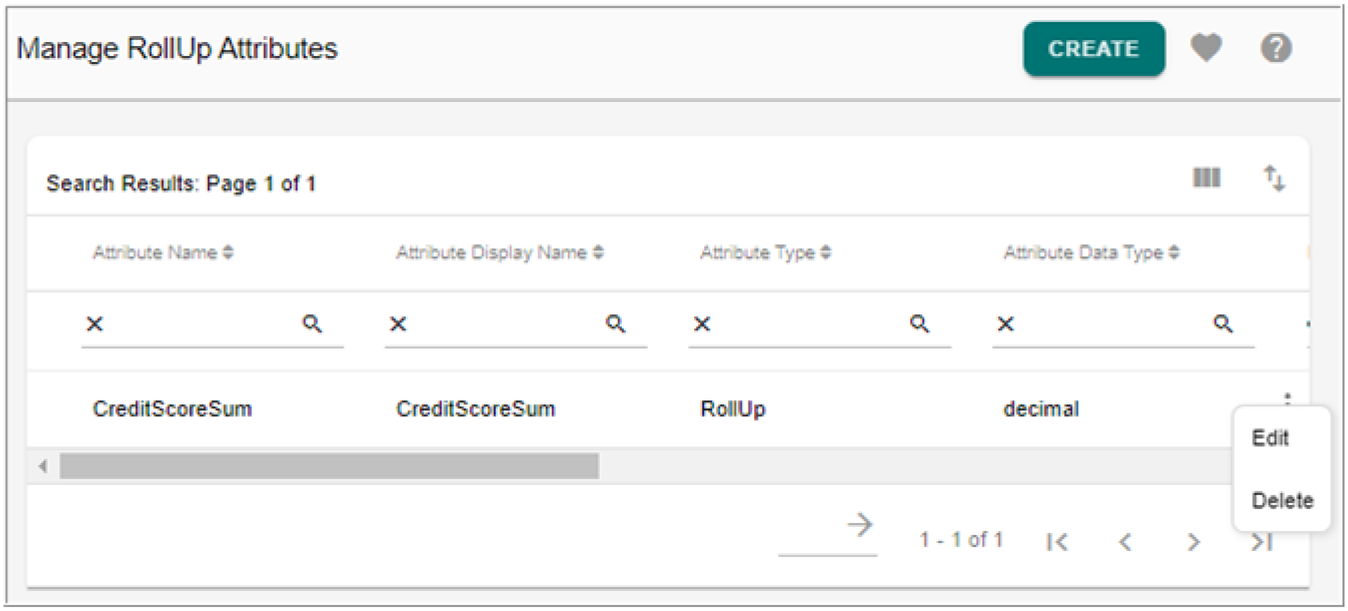
On the **Add Hierarchy Attributes** UI, the above entered data will be stored in the HierarchyExtAttributes table which serves as a pool for all hierarchy attributes.

Edit Hierarchy Attribute

To edit hierarchy attribute details:

- On the **Manage Rollup Attributes** UI (Figure 635), click on the Menu icon corresponding to the attribute and click **Edit**.

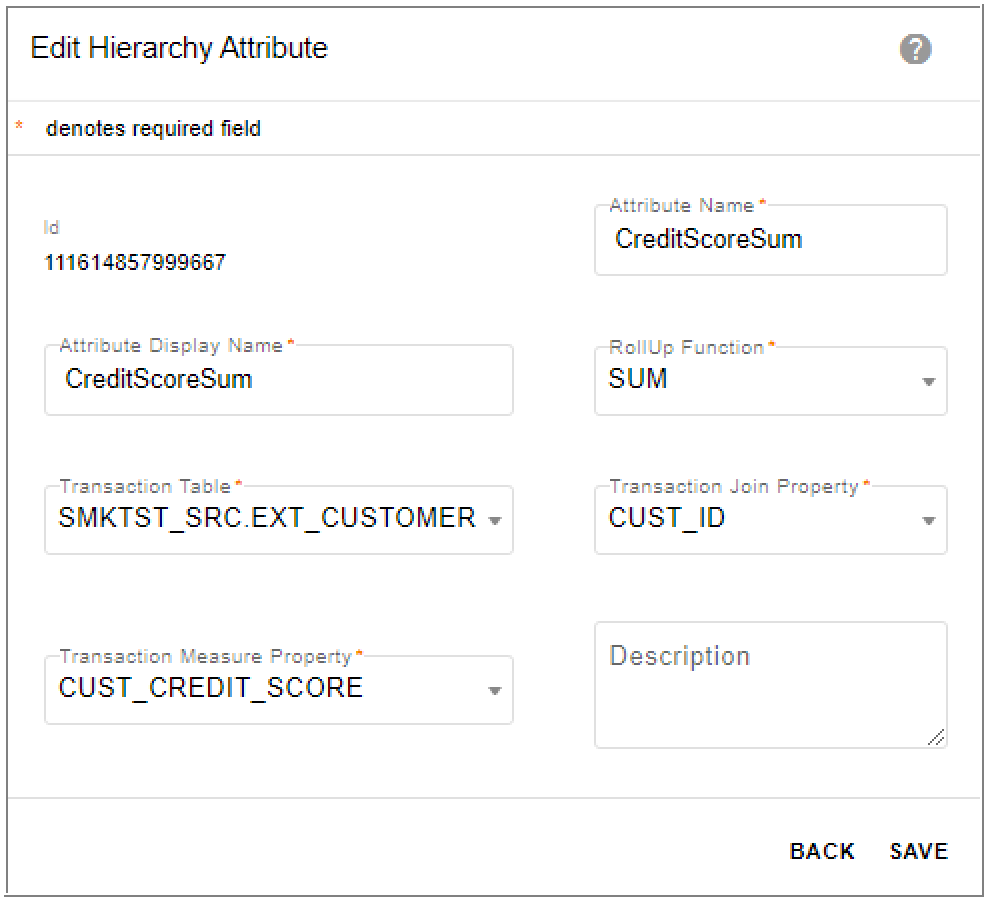
Figure 635: Manage Hierarchy Attributes



Attribute Name	Attribute Display Name	Attribute Type	Attribute Data Type
CreditScoreSum	CreditScoreSum	RollUp	decimal

- On the **Edit Hierarchy Attributes** UI (Figure 636), modify the required values and click **Save**.

Figure 636: Edit Hierarchy Attribute



Edit Hierarchy Attribute

* denotes required field

Id
111614857999667

Attribute Name *
CreditScoreSum

Attribute Display Name *
CreditScoreSum

RollUp Function *
SUM

Transaction Table *
SMKTST_SRC.EXT_CUSTOMER

Transaction Join Property *
CUST_ID

Transaction Measure Property *
CUST_CREDIT_SCORE

Description

Delete Hierarchy Attribute

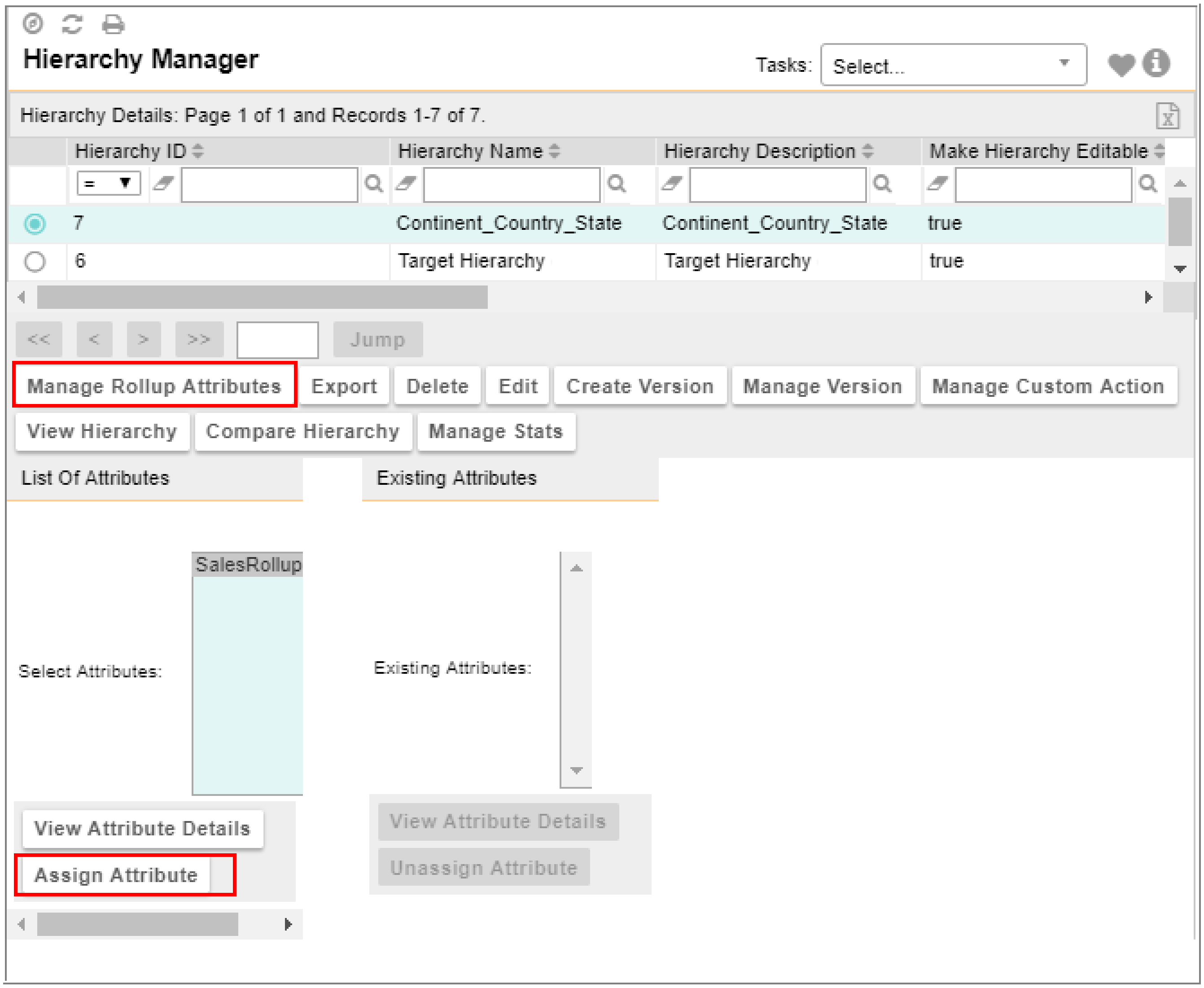
To delete hierarchy attribute details:

- On the **Manage Hierarchy Attributes** UI (Figure 635), click on the Menu icon corresponding to the required attribute and click **Delete**.
- On the Confirmation popup, click **Yes**.

Attach Rollup Attribute to Hierarchy

Once the attribute is created, you can associate the attribute to any particular hierarchy from the **Hierarchy Manager** UI. On the **Hierarchy Manager** UI, select the hierarchy and click **Manage Rollup Attributes** as in Figure 637.

Figure 637: Hierarchy Manager—Rollup Attributes



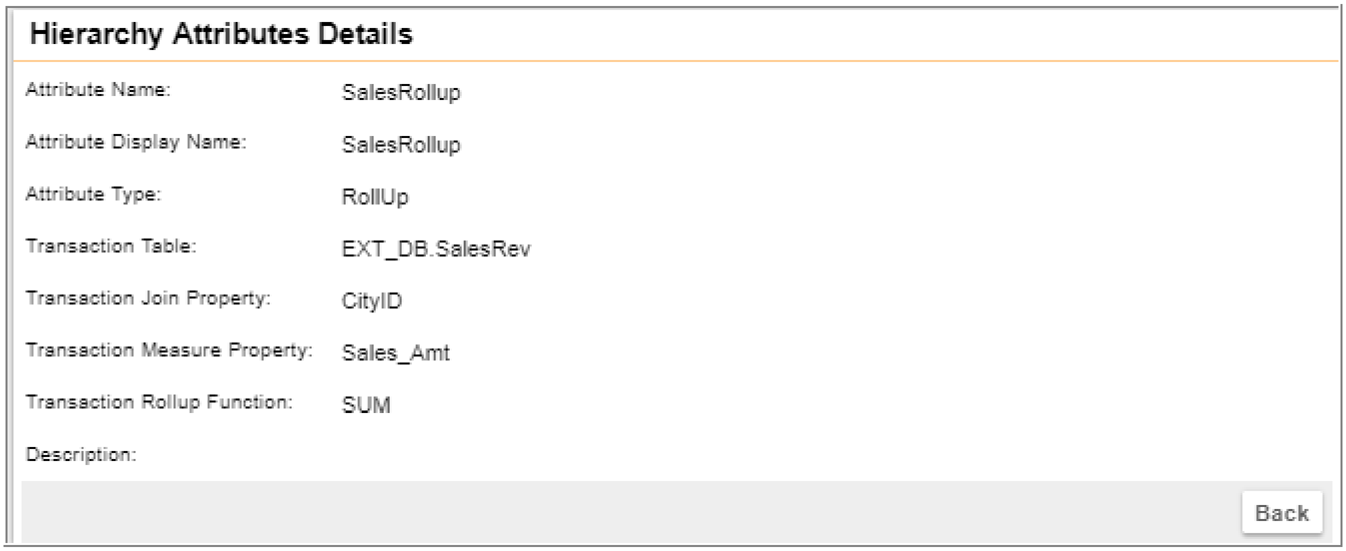
Hierarchy Details: Page 1 of 1 and Records 1-7 of 7.

	Hierarchy ID	Hierarchy Name	Hierarchy Description	Make Hierarchy Editable
●	7	Continent_Country_State	Continent_Country_State	true
○	6	Target Hierarchy	Target Hierarchy	true

On the **Hierarchy Manager** UI (Figure 637),

- The **List of Attributes** pane displays all the available attributes that can be assigned to the selected hierarchy.
- The **Existing Attributes** pane displays the assigned attributes.
- Using the **Assign Attributes** button, you an assign the attributes to the selected hierarchy.
- Before assigning the attribute to the selected hierarchy, using the **View Attribute Details** button, you can view the attribute details as in Figure 638.

Figure 638: Hierarchy Attributes Details



Hierarchy Attributes Details

Attribute Name:	SalesRollup
Attribute Display Name:	SalesRollup
Attribute Type:	RollUp
Transaction Table:	EXT_DB.SalesRev
Transaction Join Property:	CityID
Transaction Measure Property:	Sales_Amt
Transaction Rollup Function:	SUM
Description:	

When the **Assign Attribute** button is clicked, an API is called internally that formulates a dynamic query and automatically creates the Rollup View stored in the HM database. The name of the view is in format “V_HIER_(hierarchyID)_(AttributeName)_RLP”.

Example: V_HIER_1_SalesRollup_RLP- this view contains two columns (NODE_ID and SalesRollup). This sums up the sales of each nodes defined in the hierarchy.

After creating the rollup view, an entry gets inserted in the HIER_EXT_ATTRB_MAP table that stores the Hierarchy Name, Attribute Name, Rollup View Name and the database name of the rollup view. Once this entry gets inserted successfully, you will be notified that the selected attribute is successfully assigned to the selected hierarchy.

- Using the **Unassign Attributes** button, you can unassign the attributes for the selected hierarchy.

  If you chooses to unassign an attribute, the rollup view created will be deleted from the database and also deletes the record in the MST_HIER_EXT_ATTRB_MAP given the Hierarchy Name and Attribute Name.

View Hierarchies with Rollup Attributes

Once the rollup attribute is assigned to a hierarchy, the assigned attribute will be added to all the nodes of the selected hierarchy and can be viewed on the **Hierarchy Viewer** as in Figure 639.

If a rollup attribute is added to a hierarchy, the underlying configurable UI will have the rollup attribute added. If the objects of that hierarchy are reused in other hierarchies, the rollup attribute will be displayed in other hierarchies as well.

Figure 639: Hierarchy Viewer—Rollup Attribute

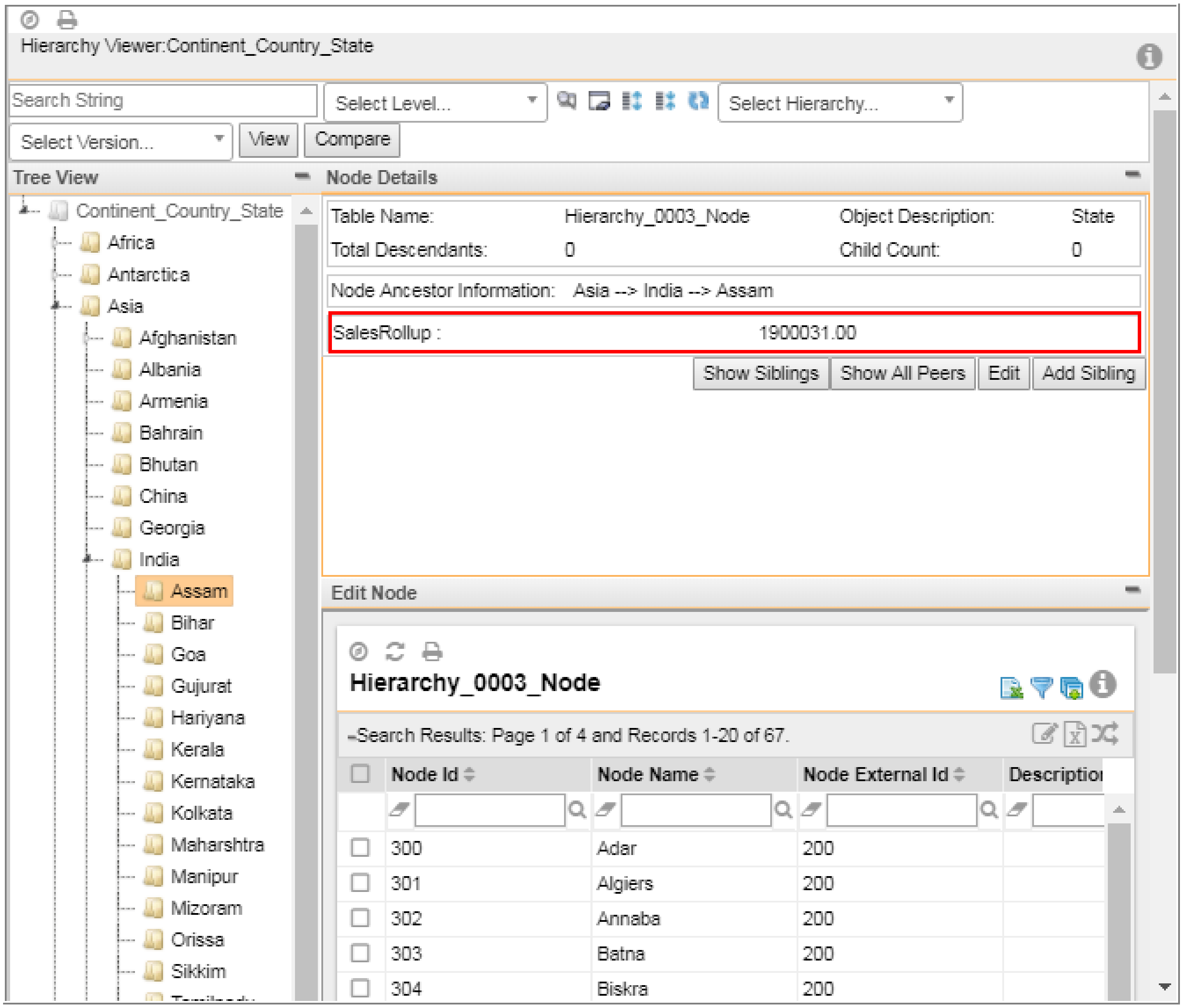


Table Name: Hierarchy_0003_Node
Object Description: State
Total Descendants: 0
Child Count: 0
Node Ancestor Information: Asia --> India --> Assam
SalesRollup : 1900031.00

Hierarchy_0003_Node

Search Results: Page 1 of 4 and Records 1-20 of 67.

☐	Node Id	Node Name	Node External Id	Descriptio
☐	300	Adar	200	
☐	301	Algiers	200	
☐	302	Annaba	200	
☐	303	Batna	200	
☐	304	Biskra	200	

Drag and Drop and Instant Rollup Impact

When you move nodes in the hierarchy, the rollup attributes are automatically updated and reflected in the new hierarchy structure without the need of any BI process. This allows business users to do instant impact analysis.

An example is shown below.

Parent node Nepal has 5 Child and has an overall SalesRollup of 9500240 as in Figure 640.

Figure 640: Hierarchy Viewer—Rollup Attribute—Drag and Drop

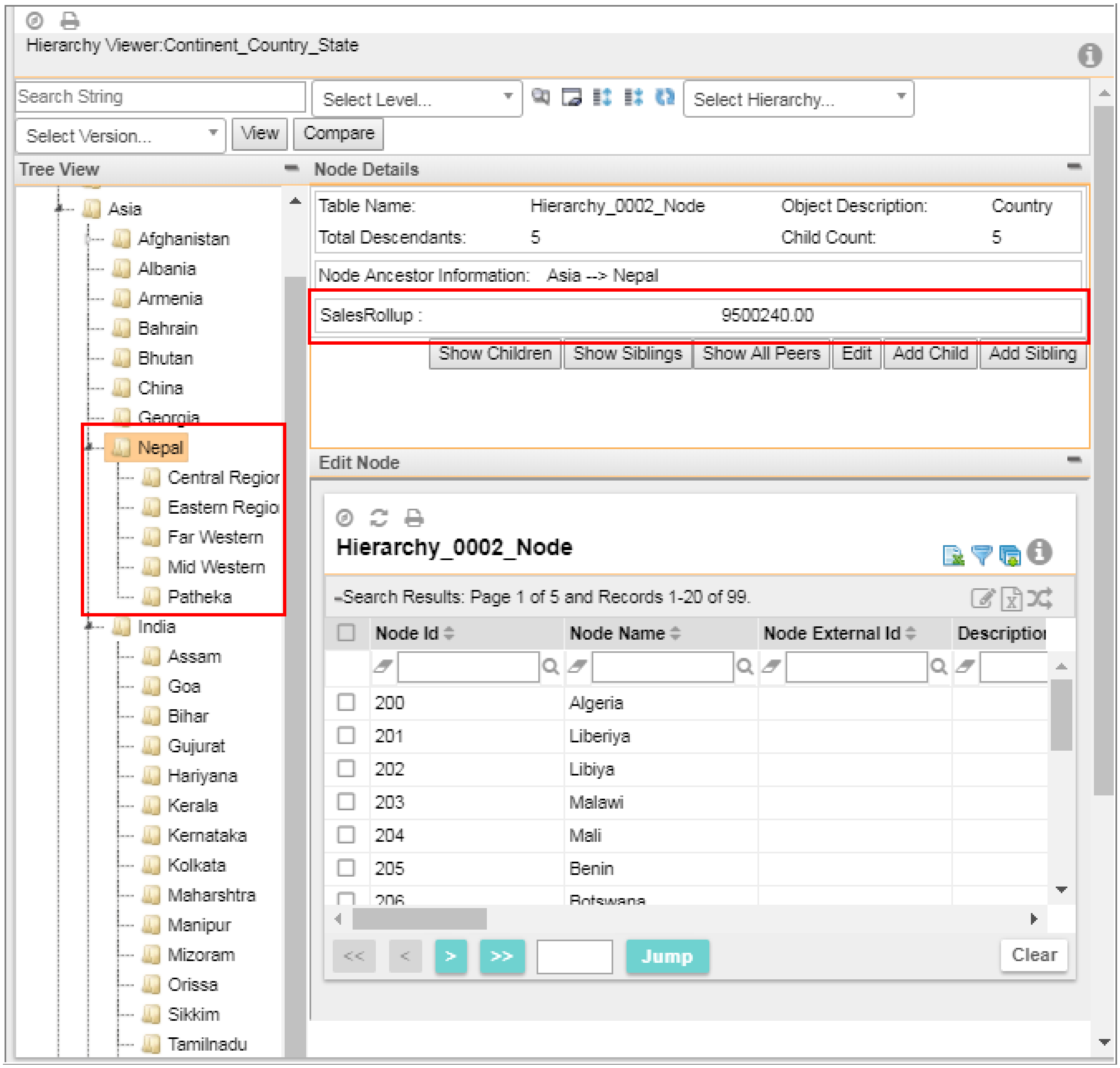


Table Name: Hierarchy_0002_Node
Object Description: Country
Total Descendants: 5
Child Count: 5
Node Ancestor Information: Asia --> Nepal
SalesRollup : 9500240.00

Hierarchy_0002_Node

-Search Results: Page 1 of 5 and Records 1-20 of 99.

☐	Node Id	Node Name	Node External Id	Descriptio
☐	200	Algeria		
☐	201	Liberiya		
☐	202	Libiya		
☐	203	Malawi		
☐	204	Mali		
☐	205	Benin		
☐	206	Botswana		

Child node Assam under parent node India has rollup of 1900031 as in Figure 641. Now let us drag and drop Assam to Nepal parent node.

Figure 641: Hierarchy Viewer—Rollup Attribute—Drag and Drop

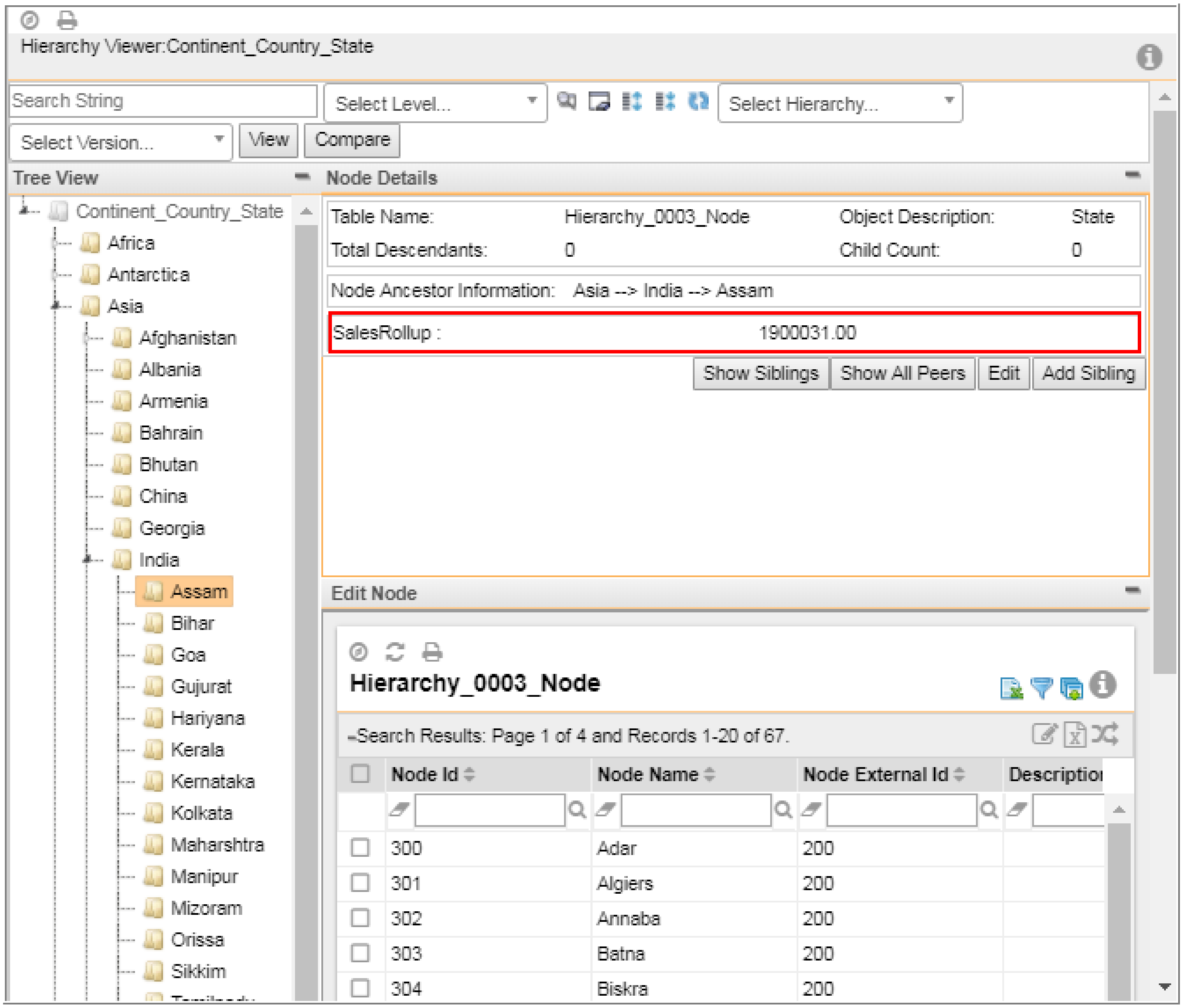


Table Name:	Hierarchy_0003_Node	Object Description:	State
Total Descendants:	0	Child Count:	0

Node Ancestor Information: Asia --> India --> Assam

SalesRollup : 1900031.00

Hierarchy_0003_Node

-Search Results: Page 1 of 4 and Records 1-20 of 67.

☐	Node Id	Node Name	Node External Id	Descriptio
☐	300	Adar	200	
☐	301	Algiers	200	
☐	302	Annaba	200	
☐	303	Batna	200	
☐	304	Biskra	200	

Once the drag and drop is successful, Nepal now has the reflected SalesRollup of Assam combined with the existing 5 child nodes as in Figure 642.

Figure 642: Hierarchy Viewer—Rollup Attribute—Drag and Drop

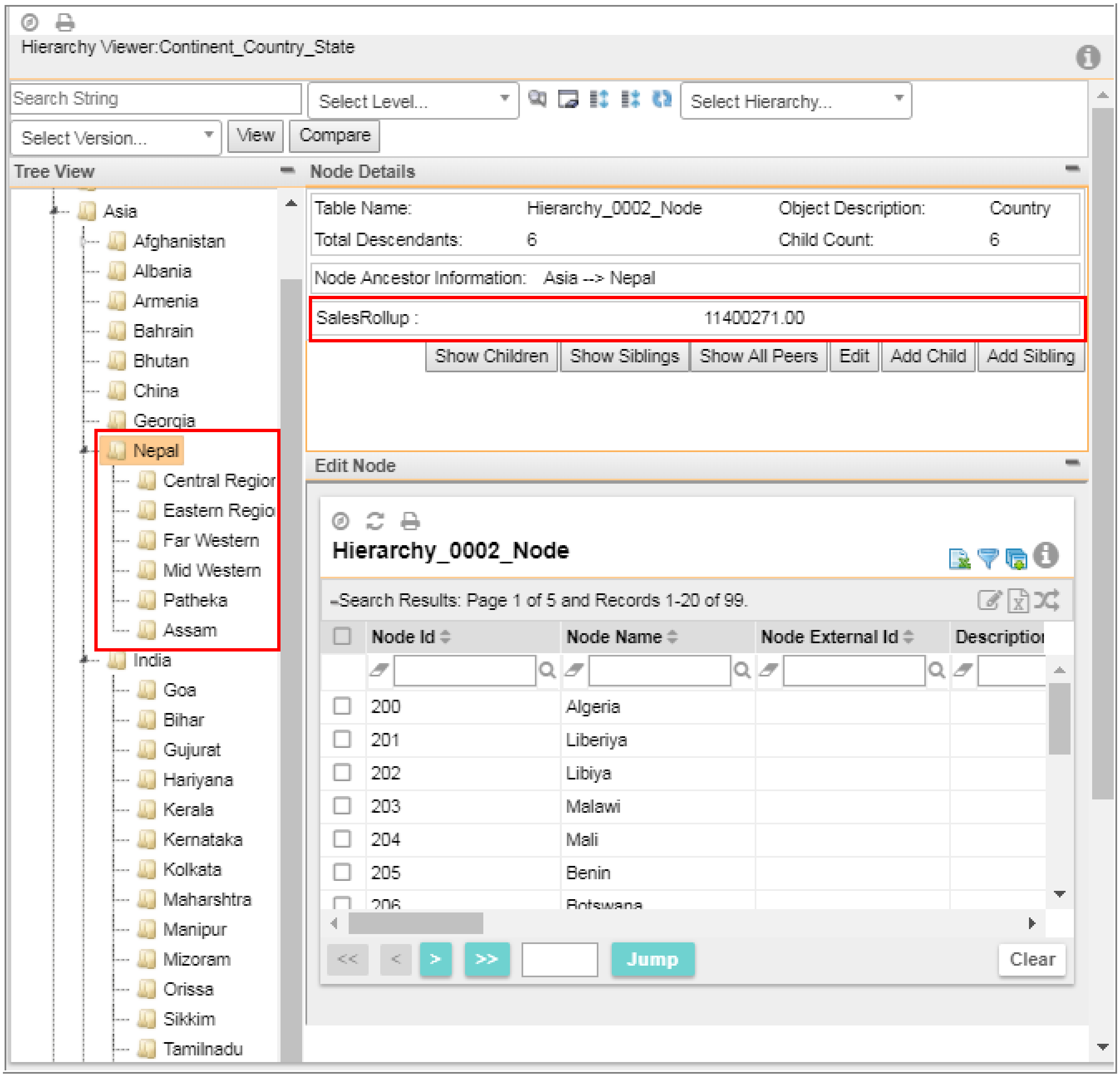


Table Name: Hierarchy_0002_Node
Object Description: Country
Total Descendants: 6
Child Count: 6
Node Ancestor Information: Asia --> Nepal
SalesRollup : 11400271.00

-Search Results: Page 1 of 5 and Records 1-20 of 99.

☐	Node Id	Node Name	Node External Id	Descriptio
☐	200	Algeria		
☐	201	Liberiya		
☐	202	Libiya		
☐	203	Malawi		
☐	204	Mali		
☐	205	Benin		
☐	206	Botswana		

Data Model Overview

Hierarchy Manager

Figure 643: Hierarchy Manager Data Model

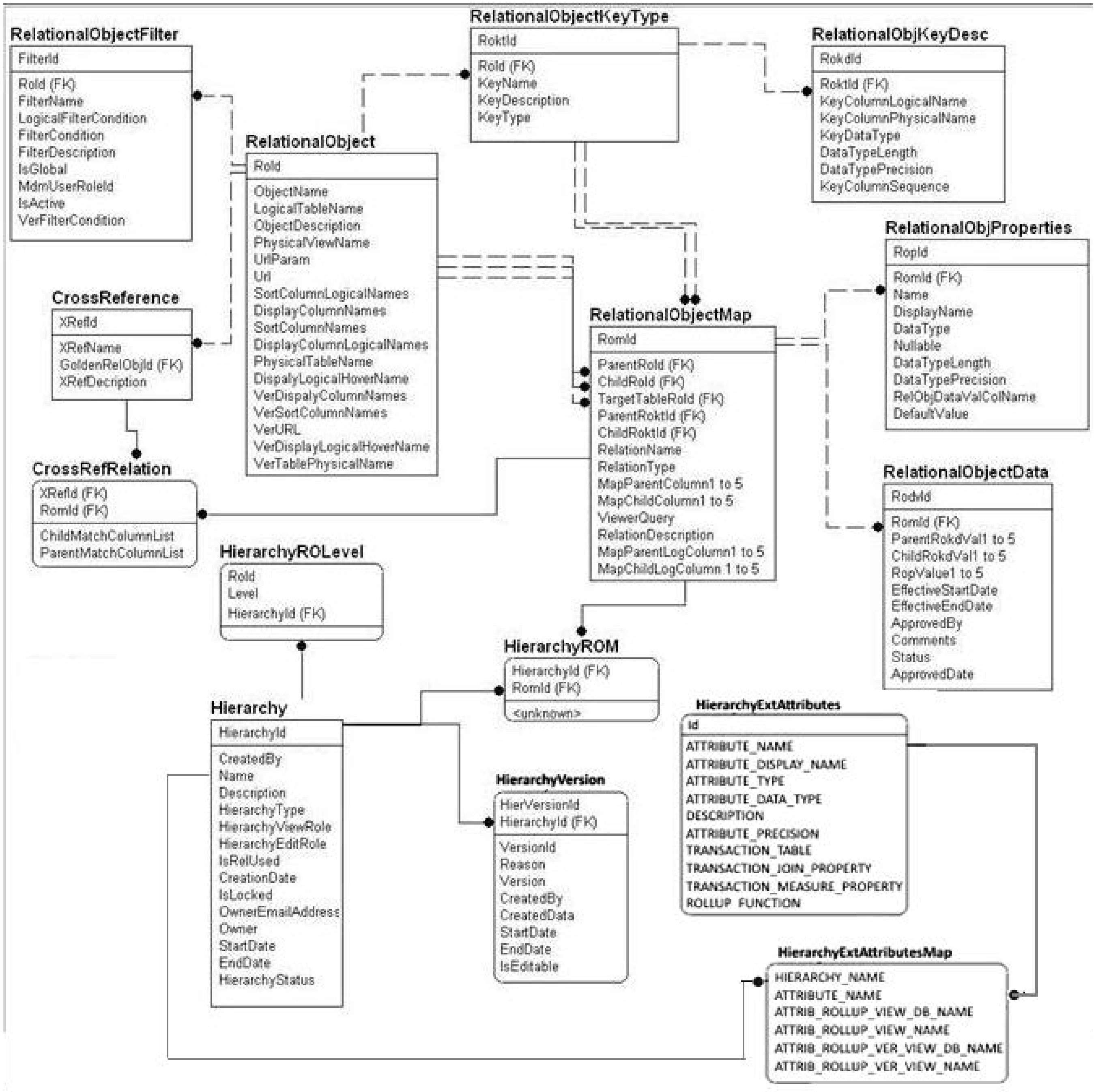


Table **Hierarchy**:

Purpose: defines a hierarchy.

Columns:

- HierarchyId: type: integer system generated ID – this is the unique identifier (integer) of the hierarchy.
- Name: type: varchar (30) – name of the hierarchy.
- Description: type: varchar (500) – description of the hierarchy.
- Created By: name of the user creating the hierarchy.
- Created Date: timestamp of the creation date.
- Hierarchy Type: type of the hierarchy created (structured or ragged or unbalanced).
- Hierarchy View Role: the role permitted to view hierarchy, user other than this assigned role would not be able to view hierarchy.
- Hierarchy Edit Role: the role permitted to edit hierarchy, user other than this assigned role would not be able to edit hierarchy.
- IS REL USED: checks whether Node network relations are used for this hierarchy.
- Hierarchy_Status: indicates whether the hierarchy is Active or Inactive.
- Start_Date: type: date, the Business Start/Availability date.
- End_Date: type: date, the Business End/Closure date
- Is_Locked: indicates that the hierarchy is locked for modifications.
- Owner_email_Addr: type: varchar, the owner's email address.
- Owner: type: varchar, the business owner of the hierarchy.

  Note: The newly added properties (Hierarchy_Status, Start_Date, End_Date, Is_Locked, Owner_email_Addr and Owner) are optional fields and can be used for any custom requirements.

  Note: The key to this table is the combination of the Hierarchy ID and the Version #.

Table **HierarchyVersion**:

Purpose: Contains information about each version of the Hierarchy.

- HierarchyId (FK): Id of the hierarchy.
- HierarchyVersionId: type: integer system generated Id.
- Version: type: varchar, version given by user to create a version of hierarchy.
- Reason: type: Varchar (500): reason to create a version.
- Created Date: date when the version is taken.
- Created By: user login name who created the version.
- VersionID: type: integer system generated Id. Data version Id.
- StartDate: type: date, effective start date for the hierarchy version.
- EndDate: type: date, effective end date for the hierarchy version.
- IsEditable: type: boolean, indicates whether the version is editable or read only.

Table **HierarchyExtAttributes**:

Purpose: This table stores the roll up attributes created.

- Id: varchar (100) : system generated ID - this is the unique identifier of the roll up attribute.
- ATTRIBUTE_NAME : varchar (100) : A required field. A name given to the roll up attribute.
- ATTRIBUTE_DISPLAY_NAME : varchar (100) : A required field. The display name of the roll up attribute.
- ATTRIBUTE_TYPE : varchar (50) : Type of attribute. Default value is ‘RollUp’.
- DESCRIPTION : varchar (200) : The description provided to the roll up attribute.
- ATTRIBUTE_PRECISION : varchar (7) : The precision of the value of the roll up attribute.
- TRANSACTION_TABLE : varchar (100) : List down tables/views that is stored in the sandbox database. Tables that contain transaction records provided by the user.
- TRANSACTION_JOIN_PROPERTY : varchar (100) : List of columns of the selected Transaction Table; column that will be used in the join condition when we associate this attribute in a particular hierarchy.
- TRANSACTION_MEASURE_PROPERTY : varchar (100) : List of columns of the selected Transaction Table; column that will be used for aggregates.
- ROLLUP_FUNCTION : varchar (30) : List of available types of aggregates such as MIN, MAX, AVG, and SUM.

Table **HierarchyExtAttributesMap**:

Purpose: This table holds the mapping information between the roll up attributes and the hierarchy to which it is assigned.

- HIERARCHY: varchar (100) : The name of the hierarchy to which the roll up attribute is assigned.
- ATTRIBUTE_NAME : varchar (100) : Name of the roll up attribute.
- ATTRIB_ROLLUP_VIEW_DB_NAME : varchar (30) : The DB name for Master Staging.
- ATTRIB_ROLLUP_VIEW_NAME : varchar (30) : The name of the view for master staging that is generated automatically when the roll up is assigned to a hierarchy.
- ATTRIB_ROLLUP_VER_VIEW_DB_NAME : varchar (30) : The DB name for Version Staging.
- ATTRIB_ROLLUP_VER_VIEW_NAME : varchar (30) : The name of the view for version staging that is generated automatically when the roll up is assigned to a hierarchy.

Table **HierarchyROLevel**

Purpose: Stores the levels of the relational objects for a particular hierarchy.

Columns:

- RoId: type: integer - unique identifier of the relational object.

- Level: type: integer - relational object level.
- HierarchyID(FK): Id of the hierarchy.

Table **HierarchyROM**

Purpose: Stores the relationship among the relational objects for a particular hierarchy.

Columns:

- RomId(FK): type: integer - unique identifier of the Relational Object Map.
- HierarchyID(FK): Id of the hierarchy.

Table **CrossReference**

Purpose: this table holds cross reference information of golden object and it's linked object.

Columns:

- XRef Id (PK): type: integer system generated ID - unique identifier of the cross reference.
- XRefName: type: varchar (50) - name of the cross reference.
- GoldenRelObj Id (FK): type: integer - unique identifier of the golden object.
- XRefDescription: type: varchar (1000) - description of the cross reference.

Table **RelationalObject**

Purpose: this table holds relational objects. By default all the Master MDM tables will be populated in this table. Relational object can be created from a database table (defined from Teradata Studio or database views).

Columns:

- ROId: type: integer - unique identifier of the relational object.
- ObjectName: type: varchar (30) - name of the object created.
- LogicalTableName: type: varchar (64) - master table logical name.
- ObjectDescription: type: varchar (1000) - description of the object created.
- PhysicalViewName: type: varchar (30) - database view name of the relational object, if the relational object is created using view as data source.
- UrlParam: type: varchar (30) - URL parameter of the relational object.
- URL: type: varchar (500) - URL of the relational object.
- SortColumnLogicalNames: type: varchar (500) - logical column name of the object table used while sorting the records.
- DisplayColumnNames: type: varchar (500) - physical column name of the table or view used as data source for the relational object.
- SortColumnNames: type: varchar (500) - physical column name of the object table used while sorting the records.
- DisplayColumnLogicalNames: type: varchar (500) - logical column name of the table or view used as data source for the relational object.
- PhysicalTableName: type: varchar (30) - master table physical name.

- DisplayLogicalHoverName: type: varchar (500) - logical column name of the table or view for UI display.
- VerDisplayColumnNames:type: varchar (500) - physical column name of the table or view used as data source for the versioned relational object.
- VerUrl: type: varchar (500) - URL of the versioned relational object.
- VerSortColumnNames: type: varchar (500) - physical column name of the versioned object table used while sorting the records.
- VerPhysicalTableNames: type: varchar (30) - version table physical name corresponding to the master table.
- VerViewName: type: varchar (30) - database versioned view name of the versioned relational object, if the relational object is created using view as data source.
- VerTableLogicalName: type: varchar (64) - versioned master table logical name.
- VerDisplayColumnLogicalHover: varchar (500) - logical column name of the versioned table or view for UI display.

Table **CrossRefRelation**

Purpose: this table holds detailed cross reference information of golden object and it's linked object (source tables of MDM Master). It also holds the mapping column names which will help in creating golden object.

Columns:

- XRef Id (PK): type: integer system generated ID - unique identifier of the cross reference.
- ROM Id: type: integer - unique identifier of the Relational Object Map.
- ParentMatchColumnList: type: varchar (200) - list of columns (separated by comma) considered from parent table for "Match criteria".
- ChildMatchColumnList: type: varchar (200) - list of columns (separated by comma) considered from child table for "Match criteria".

Table **RelationalObjectKeyType**

Purpose: This table holds the key type detailed mapping of the relational object. It is a place holder for defining more than one relation on same table using the different column combination.

Columns:

- RoktID: type: integer - unique identifier of the key type entry of the relational object.
- RoID (FK): type: integer - unique identifier of the relational object.
- KeyName: type: varchar (30) - key name of the relation type created.
- KeyDescription: type: varchar (1000) - key description of the relational object.
- KeyType: type: char (1) - key type of the relation defined on the relational object. Typical values are P-Primary and O-Others.

Table **RelationalObjectMap**

Purpose: This table holds the relationship details. It contains both the relationship detailed information as whether is it created from relationship manager or cross reference workflow.

Columns:

- RomID: type: integer - unique identifier of the relational object map.
- RelationName: type: varchar (50) - name of the relationship.
- RelationType: type: varchar (50) - it is the relation type. It is blank if the relation is created from relationship manager. It will have a default value XREF_REL if the relation is created from cross reference workflow.
- ParentRoID (FK): type: integer - unique identifier of the parent relational object.
- ParentRoktID (FK): type: integer - unique identifier of the parent relational object key type.
- ChildRoID (FK): type: integer - unique identifier of the child relational object.
- ChildRoktID (FK): type: integer - unique identifier of the child relational object key type.
- MapParentColumn1 to 5: type: varchar (30) - physical column name of the parent object.
- TargetTableRelObjID: type: integer - unique identifier of the data table object.
- MapChildColumn1 to 5: type: varchar (30) - physical column name of the child object.
- ViewerQuery: type: varchar (31000) - will store the actual SQL query for fetching data from relational object data value.
- RelationDescription: type: varchar (1000) - description of the relationship.
- MapParentLogColumn1 to 5: type: varchar (30) - logical column name of the parent object.
- MapChildLogColumn1 to 5: type: varchar (30) - logical column name of the child object.

Table **RelationalObjKeyDesc**

Purpose: this table will have the detailed information of the columns being used in mapping for a Relational object. By default all the PKs will be inserted in this

Columns:

- RokdId (PK): type: integer - automatically generated when a object and property is selected for linking/mapping.
- RoktId (FK): type: integer - unique identifier of the key type entry of the relational object.
- KeyColumnLogicalName: type: varchar (1000) - logical name of the key column.
- KeyColumnPhysicalName: type: varchar (30) - physical name of the key column.
- KeyDataType: type: varchar (15) - DB data type of the key column.
- DataTypeLength: type: varchar (4) - length of the key column data type.
- DataTypePrecision: type: varchar (4) - key column datatype precision. Example: in case of decimals.
- KeyColumnSequence: type: integer - holds the sequence number of the column in case of composite key.

Table **RelationalObjProperties**

Purpose: this table will hold additional attributes for a relation.When two objects are mapped, you can define five additional attributes which will be stored in this table. All the values of the attributes will be stored in custom RODV (Relational Object Data Value) RelationalObjectData table.

If you use custom table to fetch and store data, you cannot define additional attributes in this table.

Columns:

- RopId (PK): type: integer - automatically generated when additional attribute is inserted.
- RomId (FK): type: integer - unique identifier of the relational object map.
- Name: type: varchar (30) - name of the additional attribute.
- DisplayName: type: varchar (500) - display name of the additional attribute.
- DataType: type: varchar (15) - data type of the additional attribute
- Nullable: type: char (1) - specifies if the additional attribute is NULL or NOT NULL.
- DataTypeLength: type: varchar (4) - data type length of the additional attribute.
- DataTypePrecision: type: varchar (4) - data type precision of the additional attribute. Example: in case of decimals.
- RelObjDataValColName: type: varchar (30) - column name of the relational object where the data value will be stored.
- DefaultValue: type: varchar (500) - default value of the additional attribute.

Table **RelationalObjectData**

Purpose: this table will be provided out of the box to store the data mapped between the relationship. All the PKs will be mapped by default. You have an option of not using this table if you have your own table which holds the parent and child mapping

Columns:

- RovId: type: integer - automatically generated when parent and child are linked from UI. Five additional attributes are also part of this table.
- RomId (FK): type: integer - unique identifier of the relational object map.
- ParentRokdVal1 to 5: type: varchar (500) - parent key values.
- ChildRokdVal1 to 5: type: varchar (500) - child key values.
- RopValue1 to 5: type: varchar (200) - holds the additional attribute value.
- EffectiveStartDate: type: date - holds the effective start date of a particular RoID and parent child combination.
- EffectiveEndDate: type: date - holds the effective end date of a particular RoID and parent child combination.
- ApprovedBy: type: varchar (200) - holds the approved by details of a particular RoID and parent child combination.
- Comments: type: varchar (2000) - holds the comments of a particular RoID and parent child combination.
- Status: type: varchar (25) - holds the status of a particular RoID and parent child combination.

- ApprovedDate: type: date - holds the approved date of a particular RoID and parent child combination.

Table **RelationalObjFilter**

Purpose: this table holds information on filter conditions for relational objects.

Columns:

- FilterId:type:integer--unique Id for uniform row distribution
- FilterName:type:varchar(30)--name of the filter
- LogicalFilterCondition:type varchar(10000)--actual filter condition with table and column logical name.
- FilterCondition: type: varchar(10000)--actual filter condition with table and column physical name.
- FilterDescription:type: varchar(1000)--description of the filter.
- ROMID:type:integer--this is populated when filters on RODV /Custom RODV tables.

  Note: ROM_ID on which filters can be created, this will be populated when a user creates filter on additional attributes.
- IsGlobal:type:char(1)--this is place holder for supporting in future if want to support local and global filters.
- MDMUserRoleID:type:vrachar(64)--this is place holder for supporting in future use if we want to apply filters for specific users or roles, in conjunction with IS_GLOBAL.
- IsActive:type:char(1)--flag which will decide whether the filter is active or not.
- ROID:type:integer--relational object Id corresponding to the table/view on which the filters are intended.
- VerFilterCondition: varchar(10000)--actual filter condition with versioned table and column physical name.

Versioning Tables

For any valid hierarchy version can be taken and later on viewed with appropriate search. To create a version for hierarchy A, we need all the information which is persisted in _Ver tables. All the relationship remains good, but all are linked with hierarchyVersionId, which is a system generated ID created at the time of creation of version.

Figure 644: Hierarchy Manager—MDRM Version Data Model

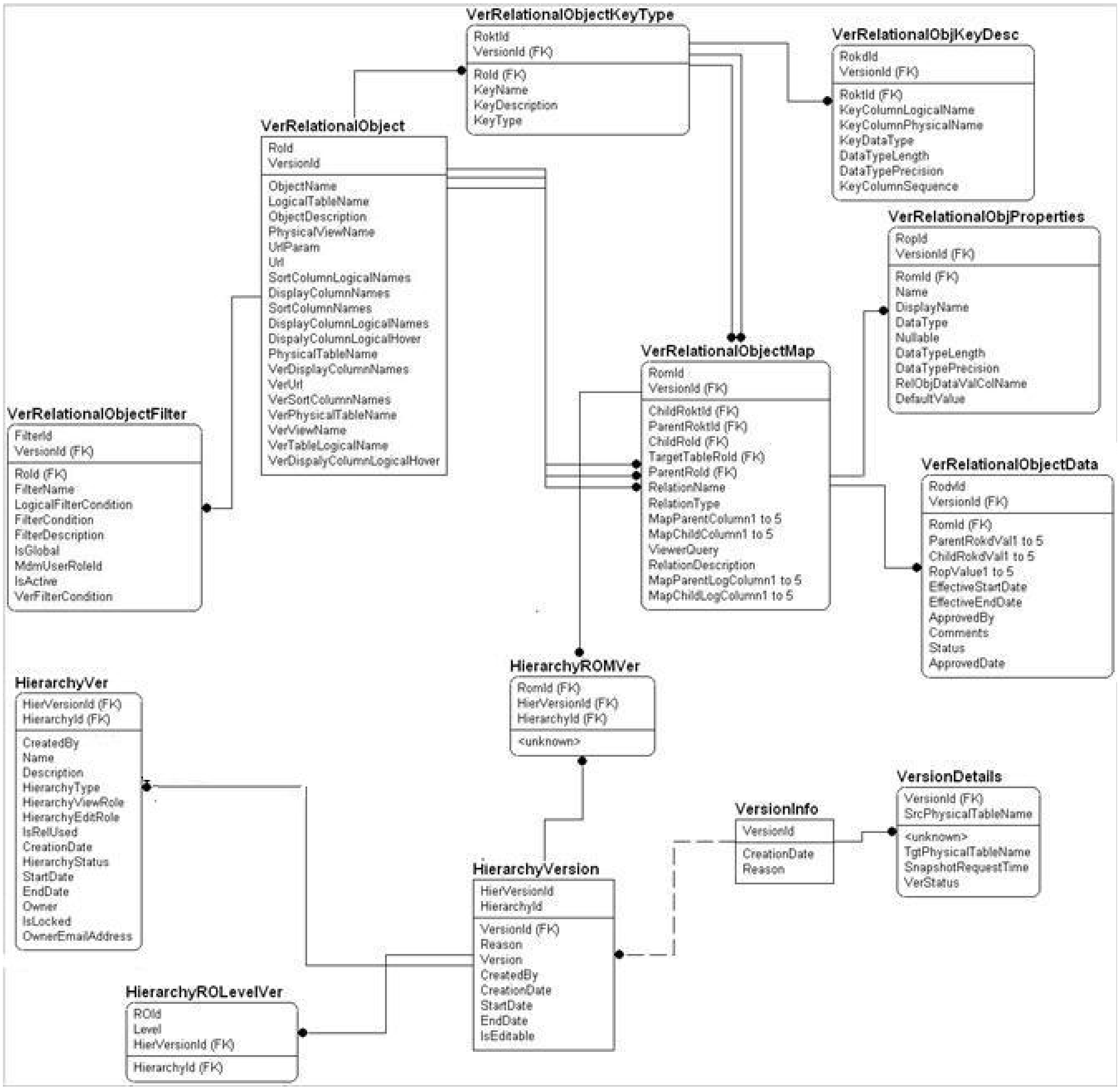


Table **VersionInfo**

Purpose: Stores the version information.

Columns:

- VersionId: type : integer system generated Id. Data version Id.
- CreationDate: type: date, date on which the version created for the hierarchy.
- Reason: type: type: Varchar (500): reason to create a version.

Table **VersionDetails**

Purpose: Stores the object details of a version.

Columns:

- VersionId(FK): type : integer system generated Id. Data version Id.
- SrcPhysicalTableName: type:string-master table name for which the version is created.
- TgtPhysicalTableName: type:string-version table name corresponding to the master table name for which the version is created.
- SnapshotRequestTime: type: timestamp-the version request current time.
- VerStatus: type: string-status of the data copy of the tables involved in version.

Note: All other tables and columns descriptions are as same as in section "Hierarchy Manager" Data model, but applicable on versioned hierarchy and relational objects.

CHAPTER 17 Manage Extended Attributes

What's In This Chapter

This chapter provides information on extended attributes feature. Describes how to define a table as extendable from MDM Studio and how to create and manage extended attributes from MDM UI.

Topics include:

Introduction

The Extended Attributes feature allows the user to dynamically add new attributes/columns to an existing table without actually involving the normal process of data model change. The newly added attributes would be handled in the same way as any other pre-existing attributes in the table and all existing functionalities will be supported on the new attributes.

Teradata MDM supports extended attributes to minimize the development or release cycle and provides support to ad-hoc or dynamic requirements of adding and using new data columns on the existing tables. The extended attributes feature is integrated in the MDM Studio and Web Interface, which help users to create and define new attributes on the table without having to go through the development cycle.

MDM provides an option to the user to define the required number of extended attributes of type (string, decimal and date) for each table.

Using extended attributes involves two major steps:

- On MDM Studio, select the table and mark it as extendable and enter the number of additional attributes and their data types, perform service setup and schema generation to add the extended attributes for the table marked as extendable. See Extended Attributes on MDM Studio.
- On the MDM UI, define the extended attributes and navigate to any configurable UI, where the extended attributes (business names) are actually used. See Manage Extended Attributes.

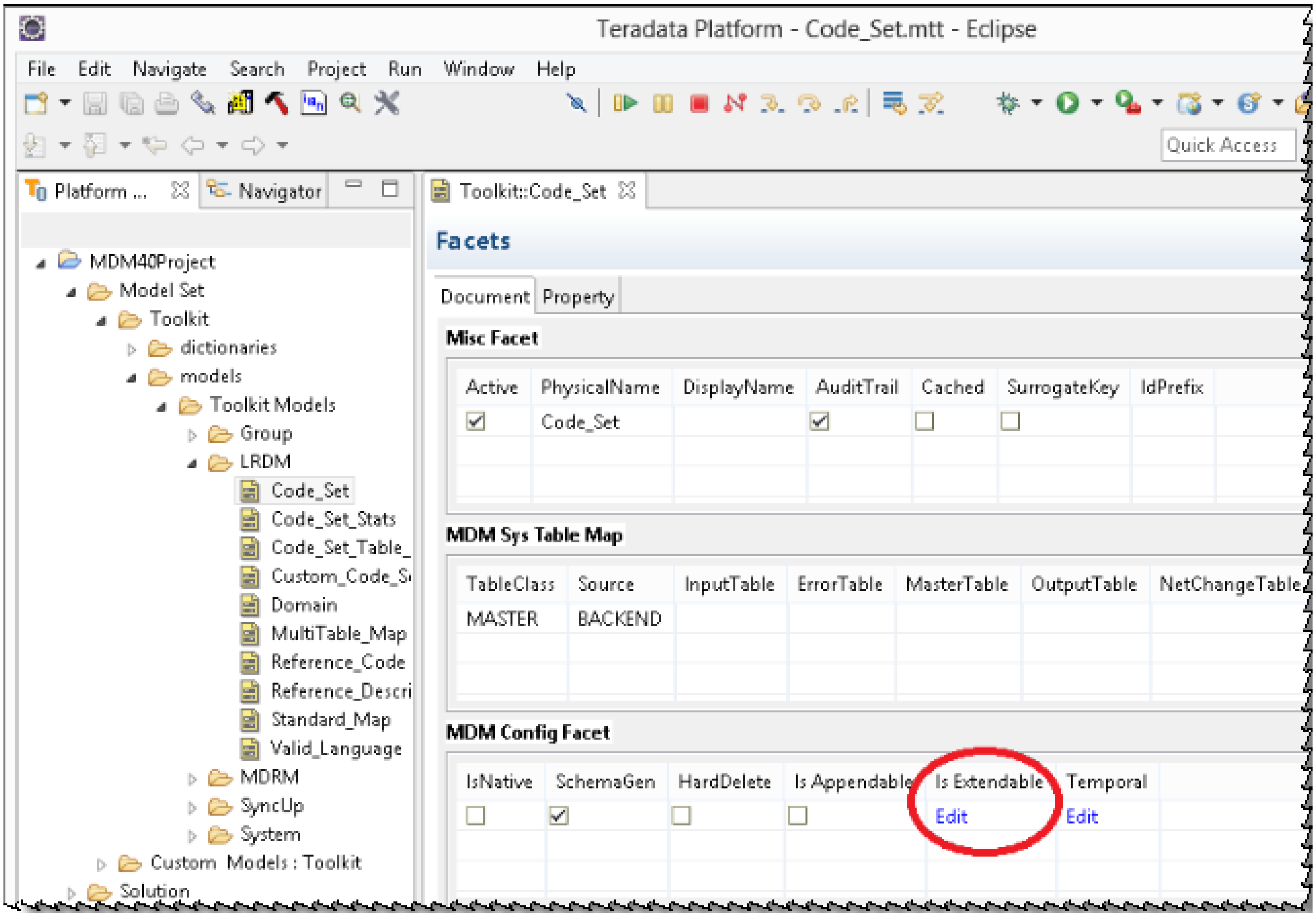
Extended Attributes on MDM Studio

The extended attributes can be defined on the given table using the MDM Studio during the development cycle. Extended attributes can be optionally enabled on the MDM Studio during the data model definition. This will provide specific set of new columns on the table during the schema generation. These columns will be available as normal attributes on the MDM table which can be used later at runtime with business defined name. MDM schema generation processes will provide support to create extended attribute columns on the table.

Perform the following steps in MDM Studio:

1 On the MDM Studio, open the required table and on the editor pane, click **Facets** and in the **MDM Config Facet** pane, under **Is Extendable** column, click **Edit** as in Figure 645.

Figure 645: Extended Attributes (Is Extendable) Option in MDM Studio



Misc Facet

Active	PhysicalName	DisplayName	AuditTrail	Cached	SurrogateKey	IdPrefix
☑	Code_Set		☑	☐	☐	

MDM Sys Table Map

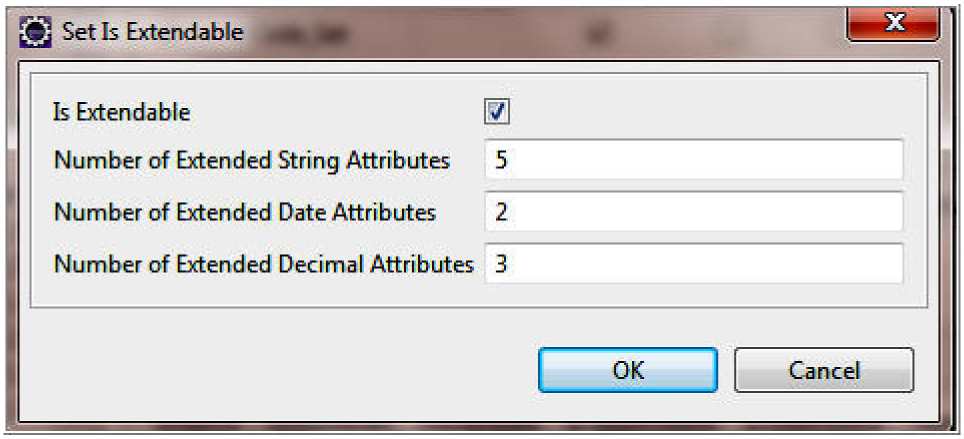
TableClass	Source	InputTable	ErrorTable	MasterTable	OutputTable	NetChangeTable
MASTER	BACKEND					

MDM Config Facet

IsNative	SchemaGen	HardDelete	Is Appendable	Is Extendable	Temporal
☐	☑	☐	☐	Edit	Edit

The **Set Is Extendable** pop-up (Figure 646) is displayed.

Figure 646: Set Is Extendable pop-up on Studio



Is Extendable ☑

Number of Extended String Attributes 5

Number of Extended Date Attributes 2

Number of Extended Decimal Attributes 3

2 On the **Set Is Extendable** pop-up (Figure 646), select the option **Is Extendable** and enter the number of additional attributes for each of the data type in their respective text fields and click **Ok**.

3 Perform service setup to generate additional properties, which acts as place holders for the extended attributes for the table defined as extendable and perform schema generation to add the extended attributes for the selected table in the database. For details on service setup and schema generation, refer to *chapter 4 Process Modeling in Master Data Management Studio User Guide*.

On the MDM UI navigate to any UI where the table (defined with extended attributes) is used and you can see all the added extended attributes of the selected table.

Extended Attribute Support on Document View

Extended Attributes is supported only for those properties in Document Views which are based on MDM Documents marked as Extendable. If the you rename an extended attribute in the base Document and if the same property is referred in the Document View, then the mapped property in the Document will be also be renamed as per the extended attribute definition.

The mapping information of the Document View Property and the actual extended property in the Document are maintained in the table "SYS_DOC_VIEW_EXT_ATTRBS_MAP"

Before you can use the extended attribute in Document View as mentioned above, you need to make an entry in "SYS_DOC_VIEW_EXT_ATTRBS_MAP" table for each extended attribute defined in the View by executing ADD_DOCUMENT as specified below:

Example:

```
<ADD_DOCUMENT Name="SYS_DOC_VIEW_EXT_ATTRBS_MAP">

    <DOCUMENT_VIEW_NAME Value="DocViewExt1"/>  <!-Name of the
Document View --->

   <ATTRIBUTE_NAME Value="CS_EXT_ATTRB_1"/>  <!-Name of the Property
defined in the Doc View --->

    <ATTRIBUTE_PHY_COL_NAME Value="EXT_ATTRB_1"/>  <!-Actual DB Col
Name of  mapped Property  --->
```

```
    <ATTRIBUTE_PHY_TBL_NAME Value="MST_CODE_SET"/> <!-Actual mapped
DB Table Name --->
 </ADD_DOCUMENT>
```

You can compile all the ADD_DOCUMENT requests in a single file and execute it using Poster utility. For more details on the poster utility, refer to *Master Data Management Studio User Guide.*

Manage Extended Attributes

Once the table is defined as extendable as per the steps given in section Extended Attributes on MDM Studio, you can use the manage extended attributes UI to create new extended attributes for the tables marked as “Extendable”. You can also view all the defined extended attributes with their actual physical column mappings and perform search operation to view the required extended attribute details.

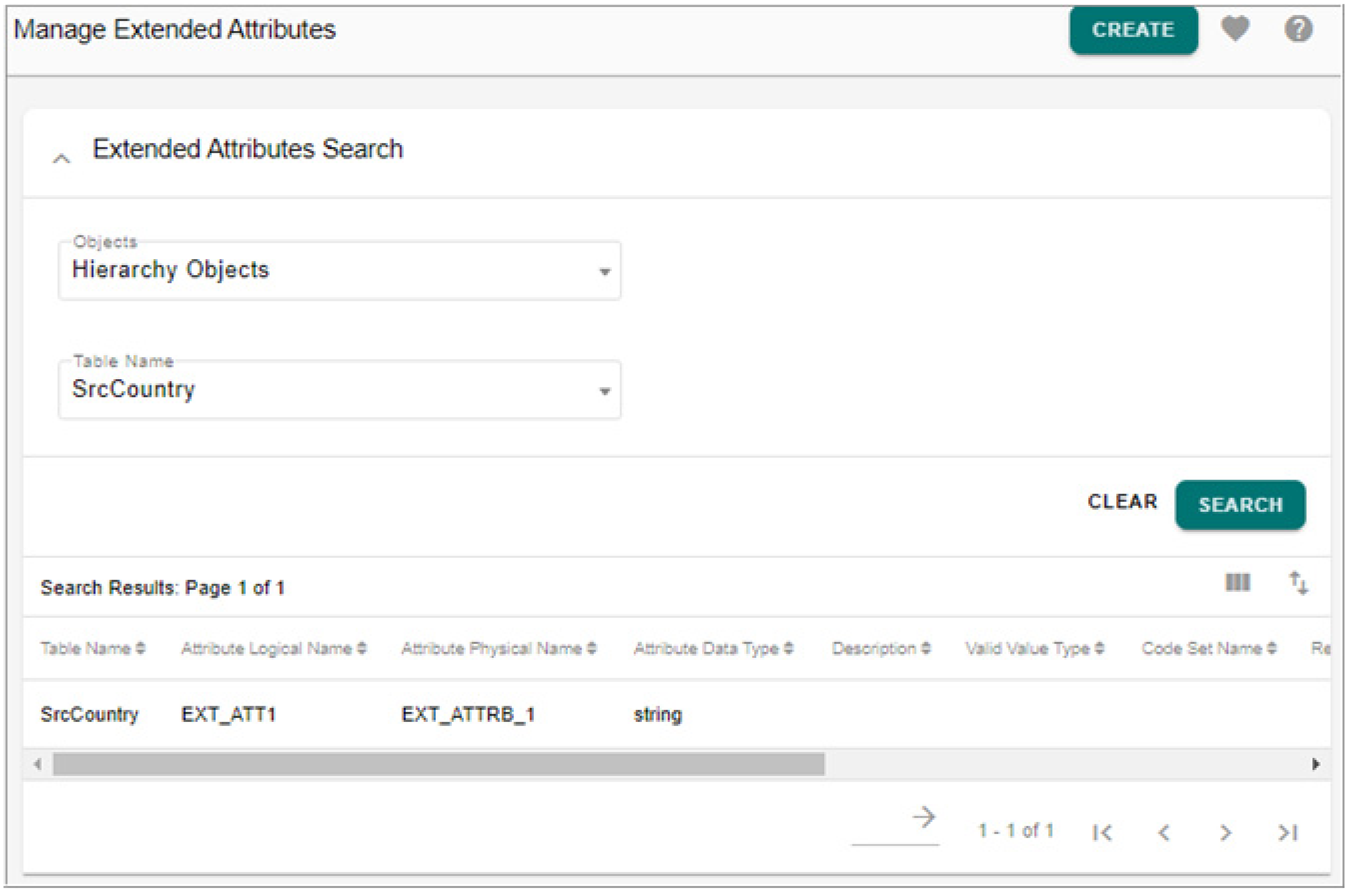
Search Extended Attributes

Perform the following steps to search extended attributes:

1. On the MDM UI, in the left navigation pane, click **Model Setup** -> **Extended Attributes**.
2. On the **Manage Extended Attributes** page (Figure 647), in the **Objects** drop down, select the object type (Tables, Code Sets or Hierarchy Objects). On selection of the object in Object dropdown, the corresponding tables will be listed in the Table Name dropdown. Select the table in the **Table Name** dropdown for which the extended attribute is created and click **Search**.

   The **Search Results** pane displays the searched table name as in Figure 647.

Figure 647: Search Extended Attributes



Objects: Hierarchy Objects

Table Name: SrcCountry

Search Results: Page 1 of 1

Table Name	Attribute Logical Name	Attribute Physical Name	Attribute Data Type	Description	Valid Value Type	Code Set Name	Re
SrcCountry	EXT_ATT1	EXT_ATTRB_1	string				

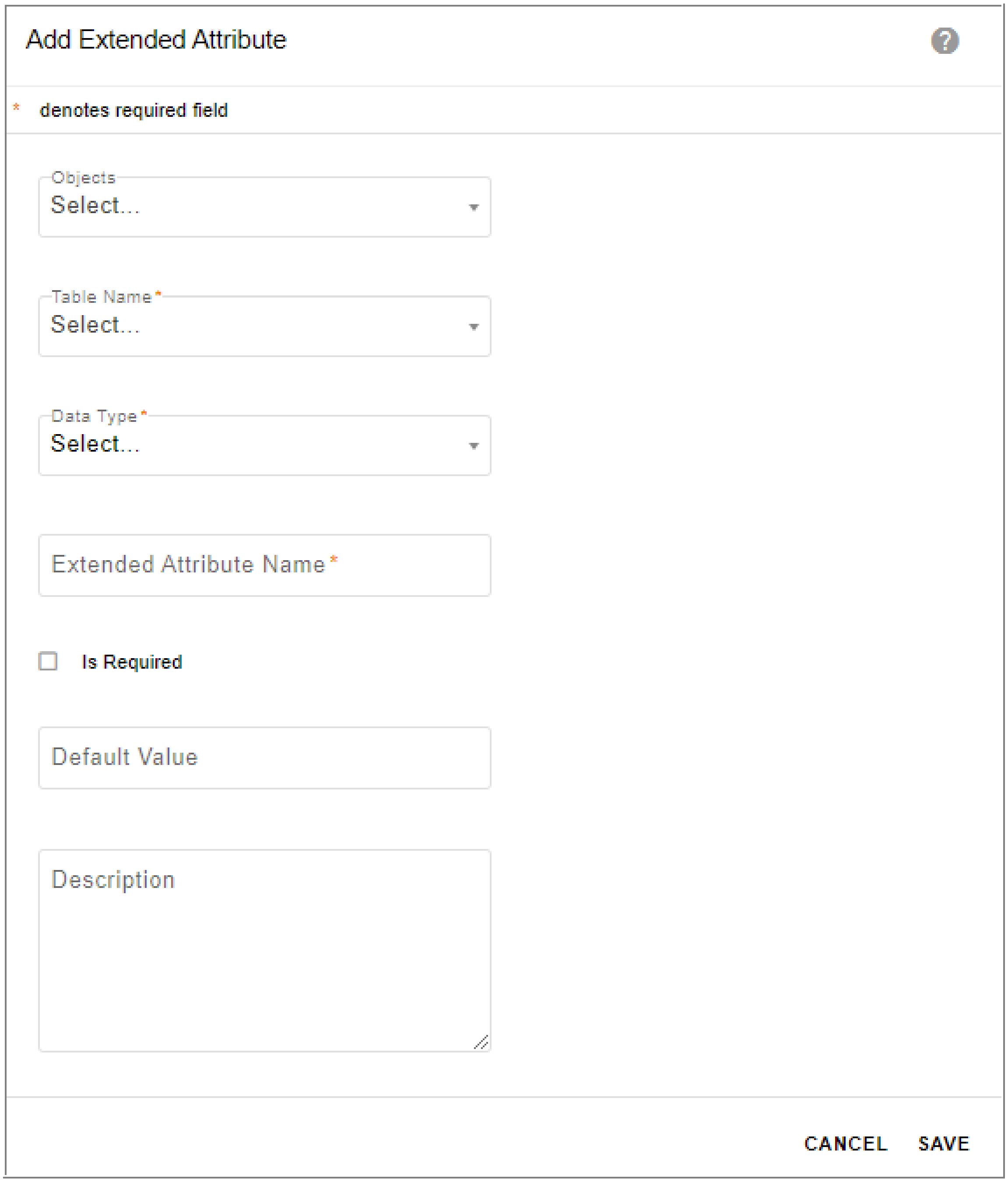
Create Extended Attributes

Perform the following steps to create extended attributes:

1 On the **Manage Extended Attributes** page (Figure 647), click **Create**.

The **Add Extended Attributes** page (Figure 648) is displayed.

Figure 648: Add Extended Attributes



2 On the **Add Extended Attributes** page (Figure 648), enter the following:

- select the object type from **Objects** drop-down.
- select the table from the **Table Name** drop-down.
- select the **Is Required** checkbox and enter the default value in the Default Value field.

  These details are stored in the Extended attributes table (SYS_EXT_ATTRBS_MAP) and also displayed on the Manage Extended Attributes Results page. These details are not supported in any OOTB UIs, but you can use in custom UIs.

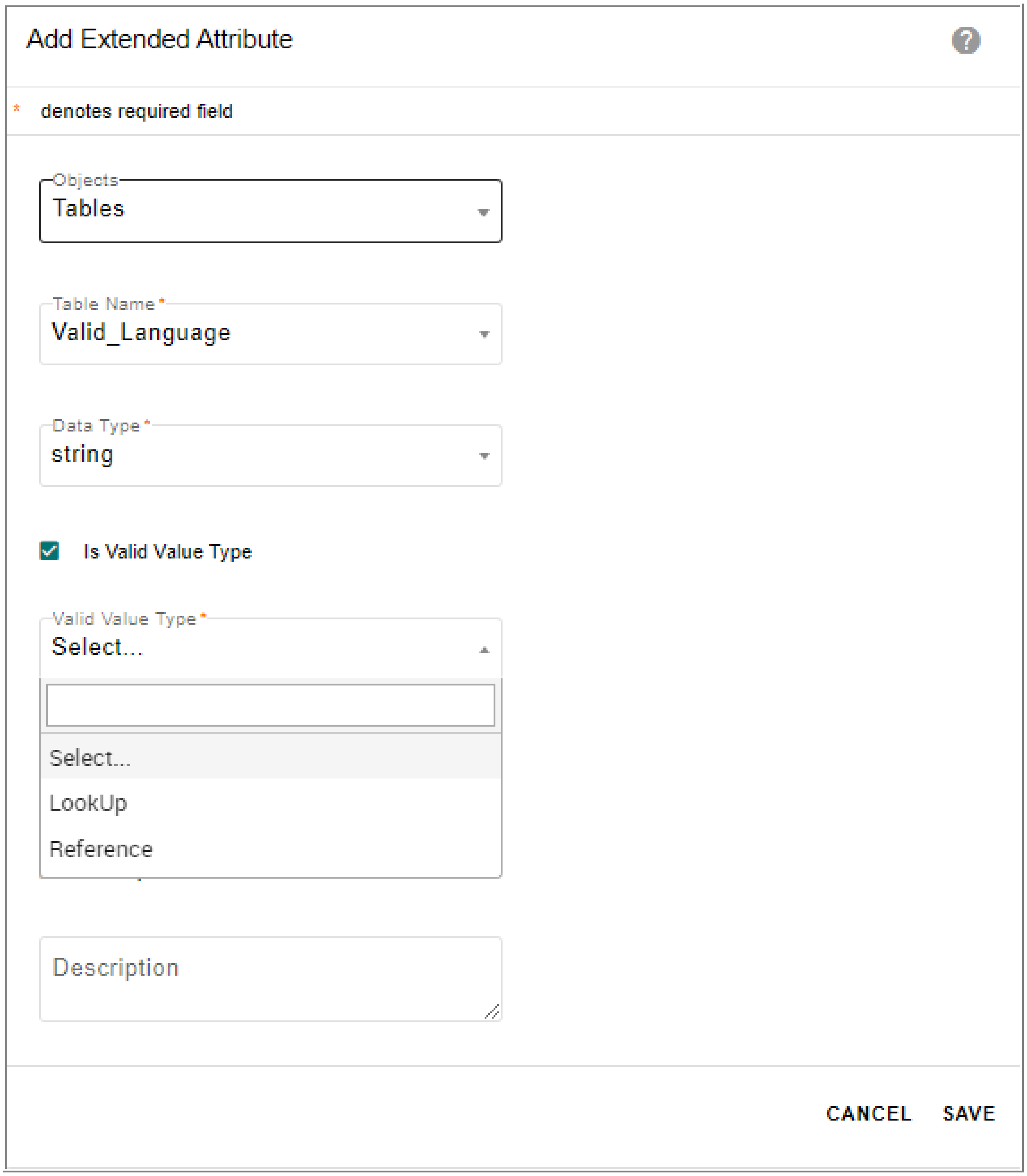
- select the data type (string, decimal or date) from **Data Type** drop-down.

  If Decimal option is selected, the Decimal Precision field is displayed.

  Note: By default, the number of digits and precision is set to 18,8. If you try to use or migrate with higher precision (greater than 8) then migration and ISG may result in data loss.

  If string option is selected, the Is **Valid Value Type** checkbox is displayed. Optionally select the Is Valid Value Type checkbox as in Figure 649.

Figure 649: Add Extended Attributes



Add Extended Attribute

* denotes required field

Objects: Tables

Table Name*: Valid_Language

Data Type*: string

☑ Is Valid Value Type

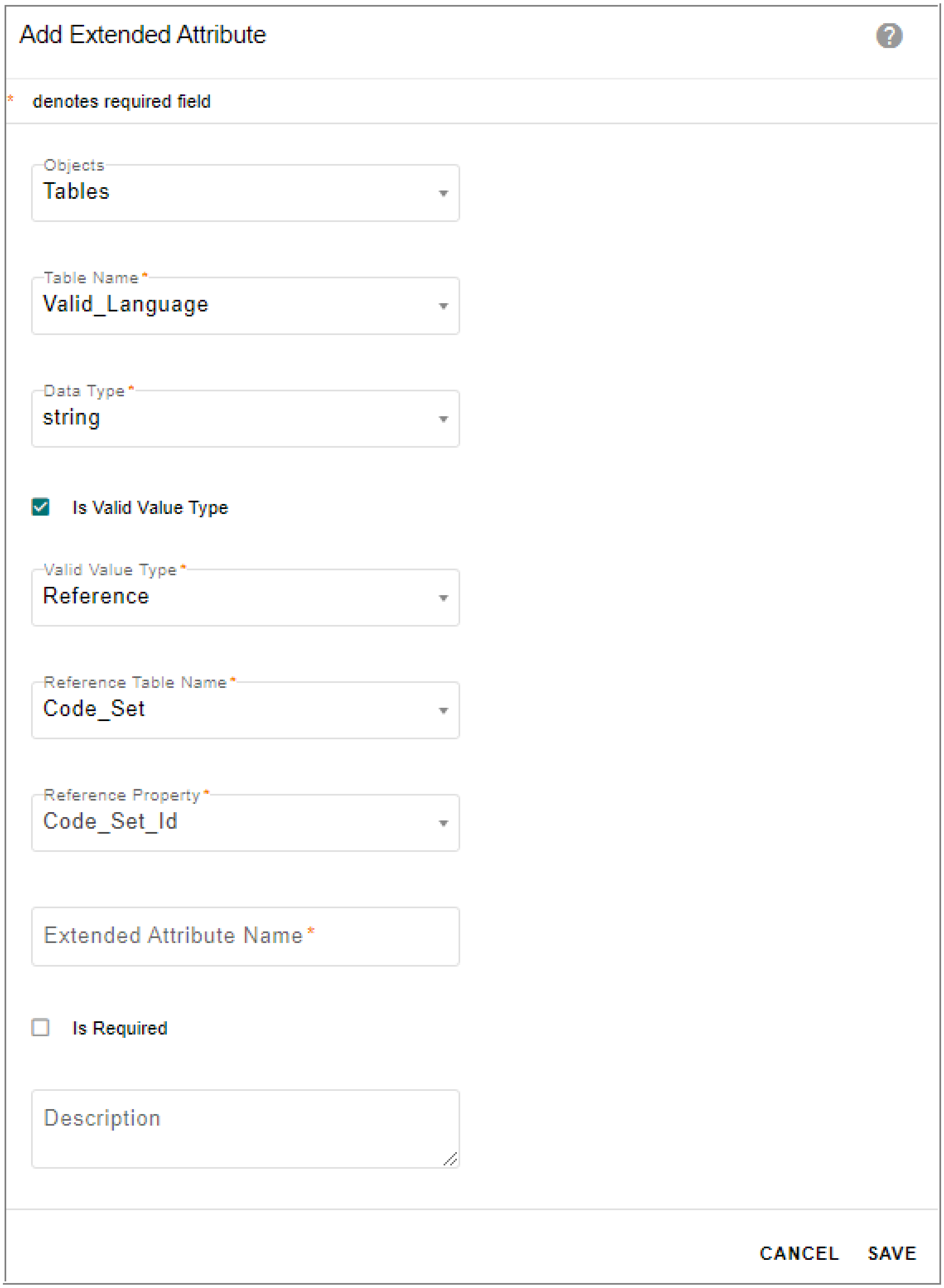
Valid Value Type*: Select...

Select the **Is Valid Value Type** checkbox, if you want to define extended attributes of valid values type. MDM supports two types of valid values.

  - Lookup: Code Set lookup values.
  - Reference: Values of a property of the selected table.

- If you select **Lookup** as your valid value type, select the code set from the **Code Set Name** drop-down.
- If you select **Reference** as your valid value type, select the reference table name and reference property from the respective drop-downs as in Figure 650.

Figure 650: Add Extended Attributes


Add Extended Attribute

* denotes required field

Objects: Tables

Table Name*: Valid_Language

Data Type*: string

☑ Is Valid Value Type

Valid Value Type*: Reference

Reference Table Name*: Code_Set

Reference Property*: Code_Set_Id

Extended Attribute Name*

☐ Is Required

Description

3 enter the extended attribute name and description in the respective fields and click **Save**.

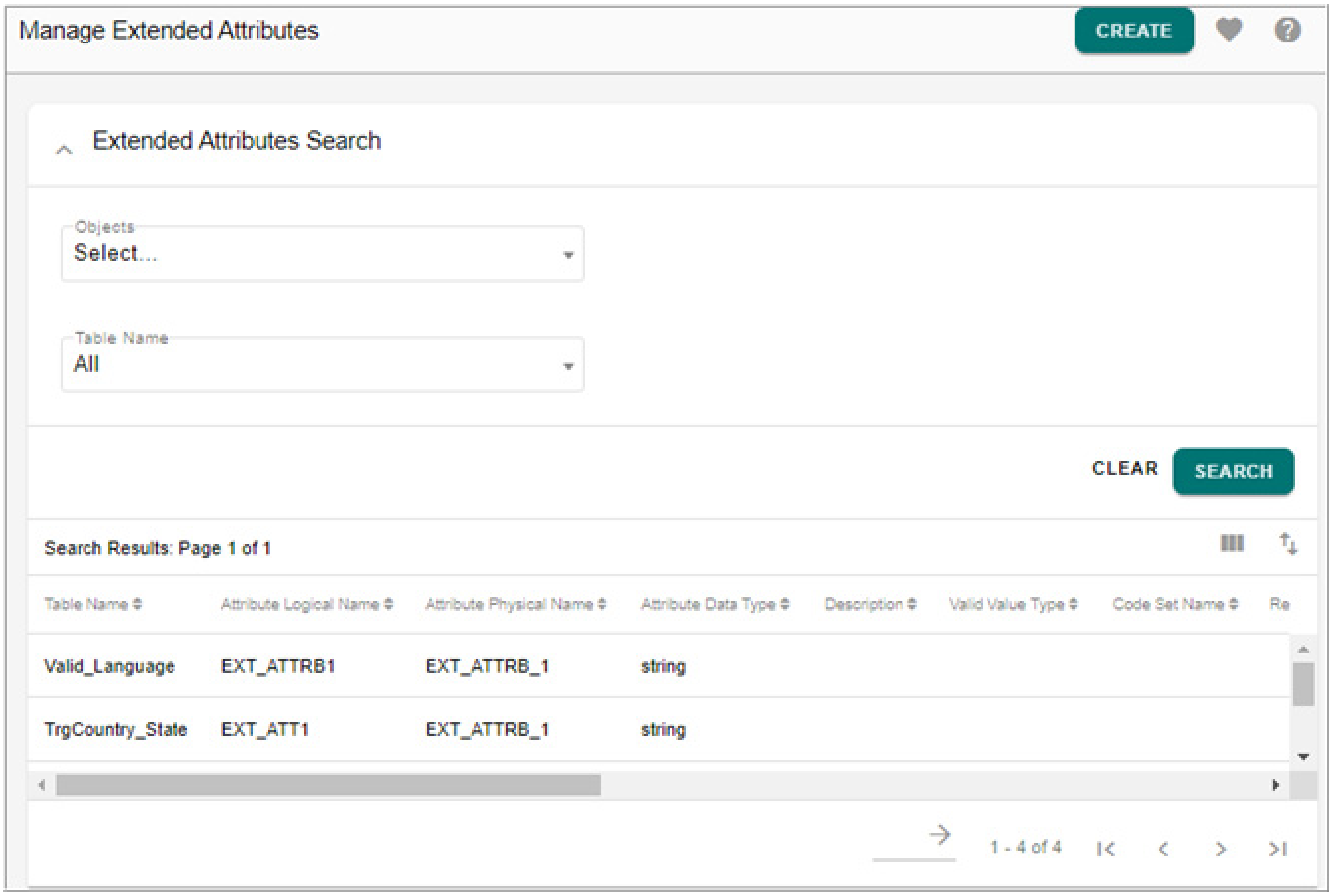
Message: “Extended Attribute added successfully” is displayed on the **Manage Extended Attributes** page.

The extended attribute name is the user defined business name of the column, which will be used on the MDM Web UI for display and all Xcommands will use the business name for the underlying attribute, that is, you need to pass business name in the <GET_DOCUMENT>.

For example: Select a table marked as extendable (for example: Domain) and enter the extended attribute name, that is, the user defined business name as “Domain_Description” and click **Save**.

Message: “Extended Attribute created successfully” is displayed on the **Manage Extended Attributes** page. The user defined business name gets populated in the **Attribute Logical Name** column and the **Attribute Data Type** column displays the data type of the extended attribute.

Figure 651: Manage Extended Attributes



Objects: Select...

Table Name: All

Search Results: Page 1 of 1

Table Name	Attribute Logical Name	Attribute Physical Name	Attribute Data Type	Description	Valid Value Type	Code Set Name	Re
Valid_Language	EXT_ATTRB1	EXT_ATTRB_1	string				
TrgCountry_State	EXT_ATT1	EXT_ATTRB_1	string				

1 - 4 of 4

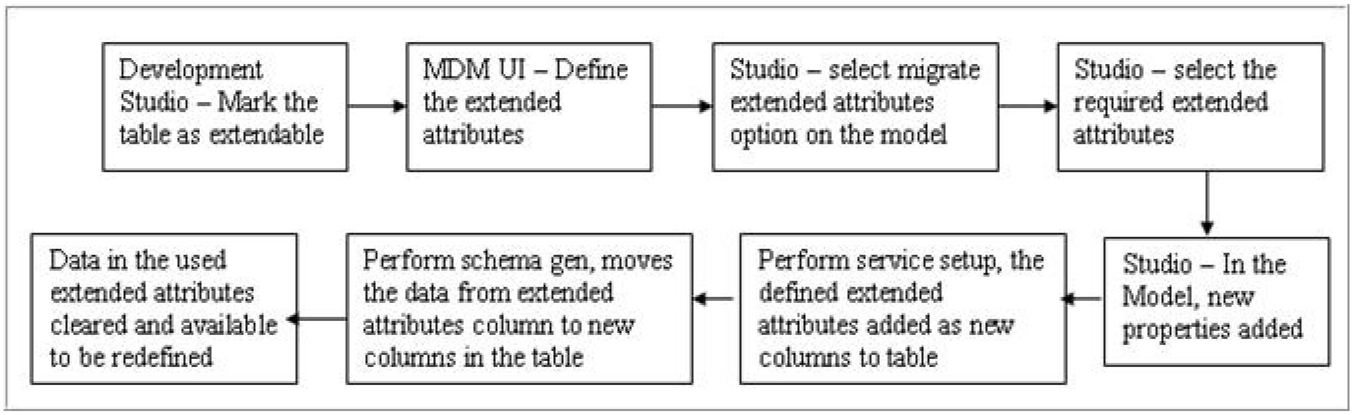
Navigate to the UI, where the business name is displayed. For example, in Create page, the extended attribute column name will be displayed with the user defined business names.

Redeployment

MDM supports the redeployment feature to migrate the used extended attributes to the underlying model in the development environment.

The extended attributes are added to the existing table without actually involving the normal process of data model changes, the redeployment feature helps to migrate these dynamically added extended attributes back to the model as well perform the data migration during the schema generation process.

The redeployment is a two step process; first it adds the selected extended attributes to the model as new properties and during service setup the defined extended attributes columns will be added as new columns to the respective tables. Secondly, during schema generation, it moves the data from the extended attribute columns to the new columns in the table and clears the data in the extended attribute column. After the redeployment process, the used extended attributes will be released and be available to be redefined again. The below figure displays the redeployment process.


Development Studio – Mark the table as extendable
MDM UI – Define the extended attributes
Studio – select migrate extended attributes option on the model
Studio – select the required extended attributes
Studio – In the Model, new properties added
Perform service setup, the defined extended attributes added as new columns to table
Perform schema gen, moves the data from extended attributes column to new columns in the table
Data in the used extended attributes cleared and available to be redefined

For detailed steps on redeployment, refer to *Chapter 3 Model Set in Master Data Management Studio User Guide.*

Notes and Limitations

The following list provides notes and limitations on extended attributes and redeployment:

- When new Extended Attributes are defined (in Tables, CodeSet, Hierarchy), the regeneration of configurable UI is automatically done and you can view the newly added Extended Attributes on the corresponding UI.
- If extended attribute is defined as lookup value, on the configurable UI, the extended attribute value will be displayed as code value instead of code description.
- Extended attributes with the same name for a single table cannot be defined. An error message “You cannot create the extended attribute, the entered attribute name already exists for the selected table” is displayed on the Add Extended Attributes page.

- When you rename an extended attribute and make it as lookup data type at runtime, the default business validation rules will not be created as the business rules for validating the code set values are created during ISG or SG. You have to create your own custom business rules for the same.
- If an extended attribute is defined in one MDM server and for this attribute to get reflected in another MDM server pointing to the same database, the second MDM server must be restarted.
- Database constraints cannot be defined on extended attributes until extended attributes are migrated back to the model.
- Metadata needs to be refreshed in order to use extended attributes on search metadata feature.
- Business rules must not be defined on extended attributes until extended attributes are created (given a business name) using Manage Extended Attributes UI.
- After renaming the extended attribute, you need to perform Incremental Schema Generation (ISG) to see the changes in Data Quality module otherwise, all the unused extended attributes will appear during data profile collection and the view data profile UI will display all the unused extended attributes.
- Attribute logical names should not have white spaces.
- The attribute logical name should not be more than 30 characters.
- During redeployment, the migration process invoked by the ISG scripts assumes that the data types of the pre-migration generic place holder column(s) and the custom column(s) are compatible, if not; it might result in migration failure, unless custom handled.

  For example: The default data type for all generic placeholder columns are varchar (200) and in case during migration, if an user changes the data type to date, then there will be a data type compatibility issue.
- The Excel upload does not support validation for extended attributes defined as required field.

CHAPTER 18 Manage Approvals

What’s In This Chapter

This chapter provides detailed information on configuring approvals on MDM Master Tables from MDM UI.

Topics include:

- Introduction
- Approval Management Process
- Rule Based Approval
- Troubleshooting

Introduction

Teradata MDM's Approval Management defines approval processes that determine who must approve a process originating within MDM application.

The Approval management ensures that any business workflow involving master data inserts, updates and deletes within MDM application requiring an approval will be monitored and approved by the appropriate approvers. The Approval Management effectively notifies the approval requests to all the available approvers within the workflow. The appropriate user can take action on the approval requests and all the actions performed by the approvers can be tracked by the administrator and can take actions if required.

Key features of Manage Approval process:

- Configure approval rules without MDM Studio development cycle.
- Configure approvals based on routing the documents to approvers in serial or parallel manner.
- Configure approvals based on the task to be performed like insert, update, delete or all.
- Configure approvals based on user or user groups.
- Generate approval request from sources like excel upload, configurable UI etc.
- Single click approval on multiple records.
- Review records before taking appropriate action on approval request.
- Issue approval and rejection notification to users.
- Activate or deactivate approvals.
- View and monitor all approvals.

- Consolidated view of all the records waiting for approval along with approval comments on Approval Monitoring UI.
- Complete history of record approvals on Approval Inbox UI and Approval Monitoring UI.

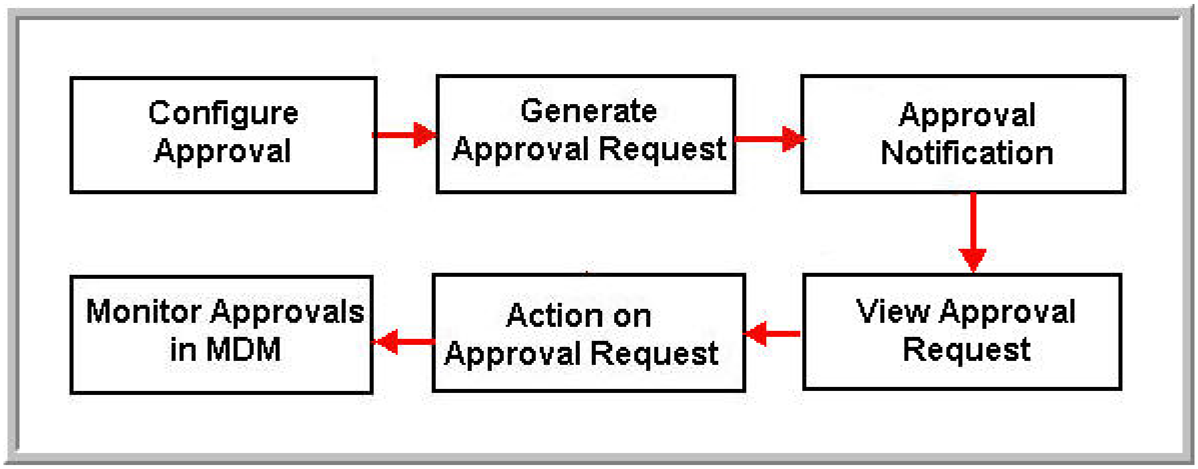
Approval Management Process

The following steps constitute the overall flow of approval management.

1. Configure Approval
2. Generate Approval Request
3. Approval Notification
4. View Approval Request
5. Action on Approval Request
6. Monitor Approvals in MDM

The Figure 652 illustrates the approval process in MDM.

Figure 652: Approval Process



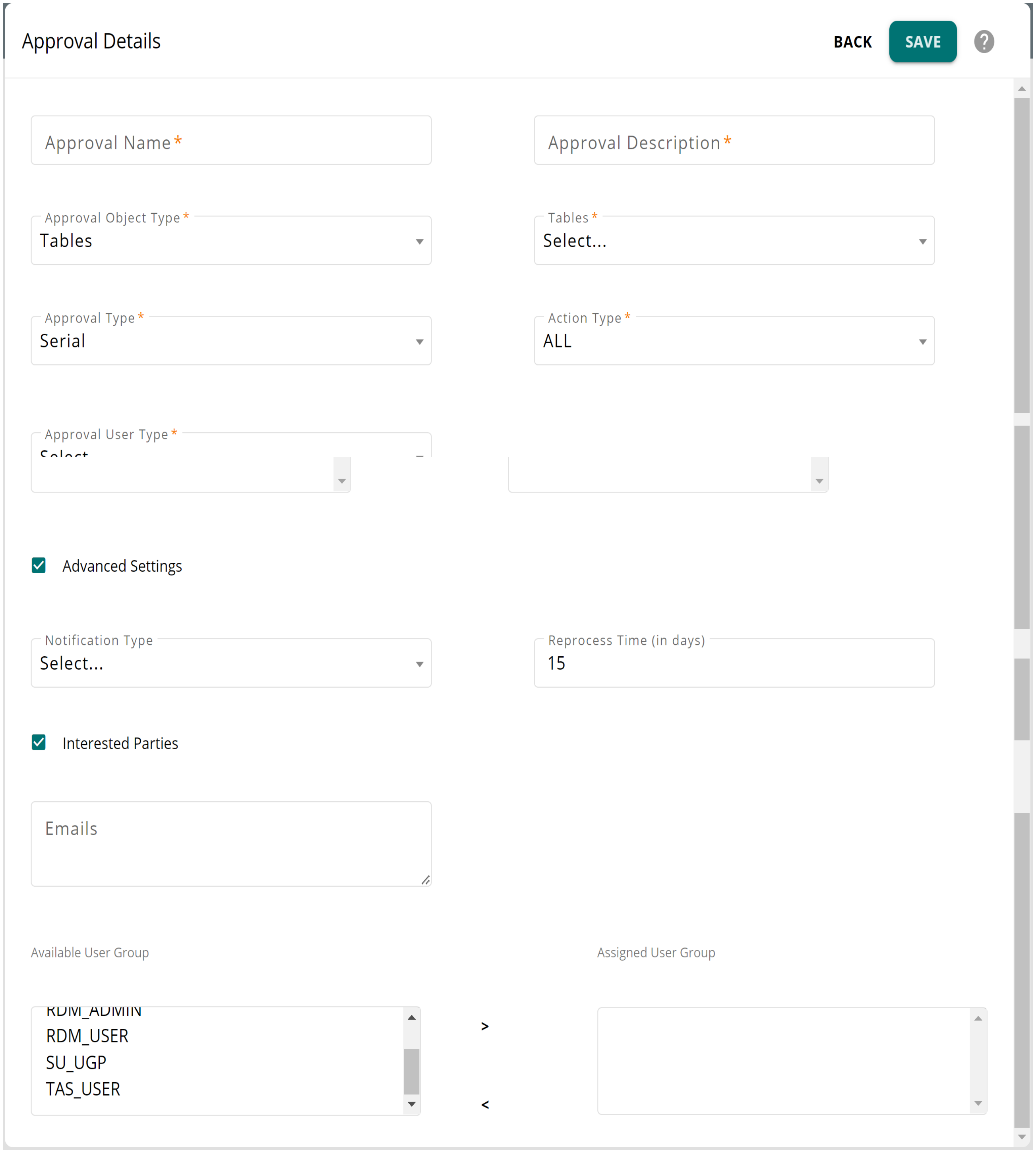
To enable skip validation rules for approval process, open mdmservices.xml file from *<MDM_Install_Directory>\cfg\properties* and under <service-params> change the value of parameter SKIP_VALIDATION_RULES_POST_APPROVAL to "true". By default it is set to false.

If the above parameter is set to true, the validation rules will be skipped on accept of records in approval process and the records will be moved to master table. The above parameter setting is supported only for tables and not on Business Entity.

Configure Approval

Configuring an approval is the first step in approval management process. Navigate to Approval Details UI from **Data Harmonization** -> **Approvals** -> **Manage Approvals** -> **Create**. The Figure 653 displays the various fields to be populated for configuring an approval.

Figure 653: Approval Details



Approval Details

Approval Name *

Approval Description *

Approval Object Type *: Tables

Tables *: Select...

Approval Type *: Serial

Action Type *: ALL

Approval User Type *: Select

☑ Advanced Settings

Notification Type: Select...

Reprocess Time (in days): 15

☑ Interested Parties

Emails

Available User Group

RDM_ADMIN
RDM_USER
SU_UGP
TAS_USER

Assigned User Group

On the **Approval Details** page (Figure 653), enter the following details and click **Save** to create approval.

- **Approval Name:** unique name of the approval process.
- **Approval Description:** brief description about the purpose of approval process being created.
- **Approval Type**: (serial or parallel)

  Serial Approval Type

  - In serial approval type, the approval process happens in serial manner. The record or document is sent to the first approver, if the approval process with the first approver is completed and approved then the approval request is sent to the next available approver if any.
  - The underlying record will be persisted to MASTER table if all of the approvers approve the record.
  - The underlying record will not be persisted to MASTER table if any of the approvers reject the record and will be persisted to the Error table with appropriate message and comments.

The serial approval will happen in the same order of approvers as in the assigned approvers list.

  Parallel Approval Type

  - In parallel approval type, the approval process happens in parallel manner. The record or document is sent to all approvers simultaneously.
  - The underlying record will be persisted to Master table if all the approvers approve the request.
  - The underlying record will not be persisted to Master table if any of the approvers reject the record and will be persisted to the Error table with appropriate message and comments.

- **Approval Object Type:** the object type on which the approval is created. Object type can be Tables, Business Entity, Business Rules, Views, Model, Code Sets, Hierarchy or Hierarchy Objects. On selection of the object in Approval Object Type drop-down, the corresponding selected object drop-down is displayed. If the object is selected as Tables, the tables drop-down is displayed.
  - **Table**: approval can be created on any MDM master tables.
  - **Business Entity**: approval can be created on any business entity comprising a set of MDM tables. Approval will be enabled on all the tables within the business entity.
  - **Business Rules**: approval can be created on business rules with all action types. For example, for action type activate and deactivate, when a business rule with action type as activate is submitted for approval and the business rule approval request is approved, then standard validations like Business rule validation, SQL validation will

be executed and the status of the rule will be Active. When a business rule with action type as activate is submitted for approval and if the business rule approval request is rejected, then the status will be changed to Inactive.

- **View**: manage approval honors all DocViews created from MDM Studio. The Save API for the views needs to be configured for approval to work on views. For more details on Save API for views, refer to *Appendix: Multiple Table Updates Using DocView in Master Data Management Reference Guide.pdf.*
- **Code Sets**: approval can be created on any code sets.
- **Model**: approval can be defined on models created through Model Builder UI.
- **Hierarchy Objects**: approval can be created on any hierarchy objects.
- **Hierarchy**: approval can be created on any hierarchy enabled for promotion process.

- **Approval User Type:** User Based or User Group Based option.
  - **User Based**: if User Based option is selected, the **Available Approvers** list displays all the available users.

    In user based approval, the record is passed from one user to another user as per the order of users in the Available Approvers list.
  - **User Group Based**: if User Group Based option is selected, the **Available Approvers** list displays all the available users groups.

    In user group based approval, the record is passed from one user group to another user group. In User Group based approval, for any user group selected as part of Approval, either all users of the group or any one user of the group will be able to participate in Approval. For details, see Section : “Manage User Groups.”

If the user group name and user name are same, preference will be given to user name approval type.

- **Action Type:** the action type can be (insert, update, delete or all).

  For approval on models, the action type by default is Update. For action type insert, update or delete, corresponding action will be taken on the tables using DO_DB_PERSIST execution. Direct SQL actions will not be honored. For details on DO_DB_PERSIST execution, refer to Section : “DataPersist Specification” in Chapter 2: “Admin Tasks.”

- An approval for a document with different approval type and same action type cannot be created. The below message is displayed.

  Message: Approval already exists on <approval object type> for < selected action type>.

For example: Code Set with Approval type as serial and action type as insert. Code Set with Approval type as parallel and action type as insert cannot be created. Message is displayed as “Approval already exits on Code Set for INSERT Action type”.

- **Advanced Settings**: select this checkbox to update the notification type, Reprocess Time and Interested Parties settings as below.
- **Notification Type**: the notification type can be (Email, Web Alerts or both). For details, see Section : “Approval Notification”.
- **Interested Parties**: enable the Interested Parties checkbox to send notification email to all interested parties when the record is approved by all the users or when a record is rejected by any user. Interested parties will be in CC list of the email sent. Interested parties can be specified by entering the email Ids and/or user groups.
  - **Emails**: enter the email addresses of all the interested parties separated by commas.
  - **User Group**: select the interested user group(s) from **Available User Group** list and move it to **Assigned User Group** list. All the users of the selected user groups in the Assigned user group(s) list will receive the notification email.
- **Reprocess Time (in days)**: enter the number of days until which the record can be reprocessed. If an approval rejected record is not reprocessed within the specified reprocess time, it will be considered as invalid and cannot be reprocessed further.
- **Available Approvers** list displays all the available approvers (based on user or user group type). The **Assigned Approvers** list displays the list of assigned approvers.

Manage User Groups

You can customize the approval process for User group based approval on master tables with the below two settings:

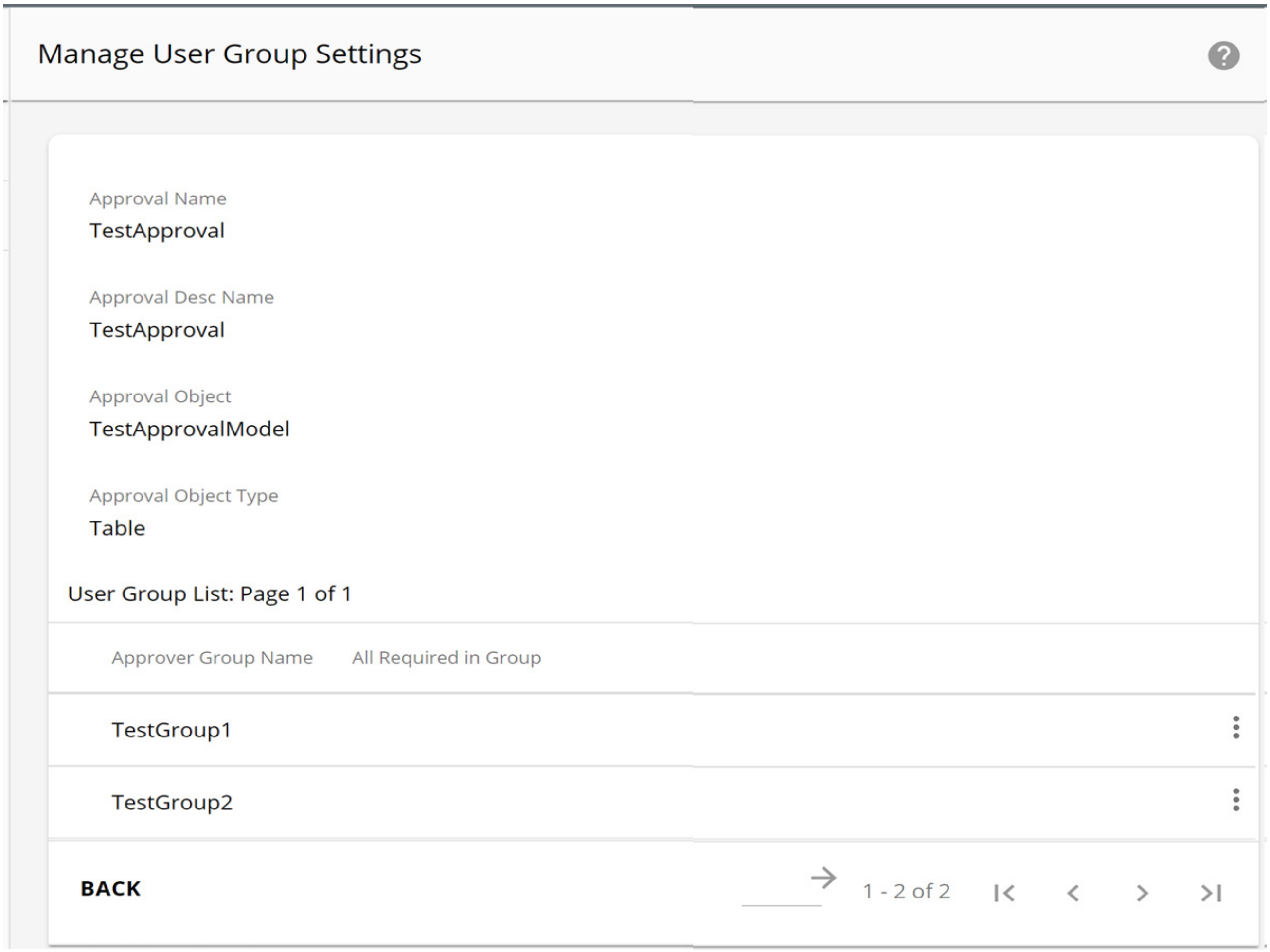
- Any one user in the user group can approve or reject the record on behalf of the entire user group.
- If multiple user groups are selected for approval, combination of ALL and ANY can co-exist among the groups.

Perform the following steps to customize user group based approval:

1. On the **Manage Approvals** page, click on the Menu icon ⋮ corresponding to the required approval request (user group based approval) and click **User Group**.

   The **Manage User Group Settings** page (Figure 654) is displayed.

Figure 654: Manage User Group Settings



Approval Name
TestApproval

Approval Desc Name
TestApproval

Approval Object
TestApprovalModel

Approval Object Type
Table

User Group List: Page 1 of 1

Approver Group Name	All Required in Group
TestGroup1	
TestGroup2	

2 On the **Manage User Group Settings** page (Figure 654), click on the Menu icon corresponding to the required user group and click:

- **Set as Any** if the approval record can be approved or rejected by any one user in the user group. If anyone in the user group approves the record, then it will be passed to next user group. If anyone in the user group rejects the record, then it will be passed to the error table. If multiple user groups are selected then any one user in each of the selected user group should approve the record.
- **Set as All** if the approval record needs to be approved by all the users in the user group.

Generate Approval Request

Once the approval is configured for an object type and when a corresponding record of the object type is added or modified or deleted from any of the sources like, configurable UI, excel upload etc., an approval request will be generated as per the approval settings.

All configured approvals will be invoked as part of DO_DB_PERSIST record execution (that is, Excel Upload, Hierarchy Drag and Drop, DO_DB_PERSIST API request etc., are honored by manage approvals).

Pending approval check is done at all data inputs (Excel upload, configurable UI, RDM UIs, Hierarchy UIs). On an approval enabled table, if already existing records with approval pending are re-loaded, the re-uploaded records will be moved to the error table.

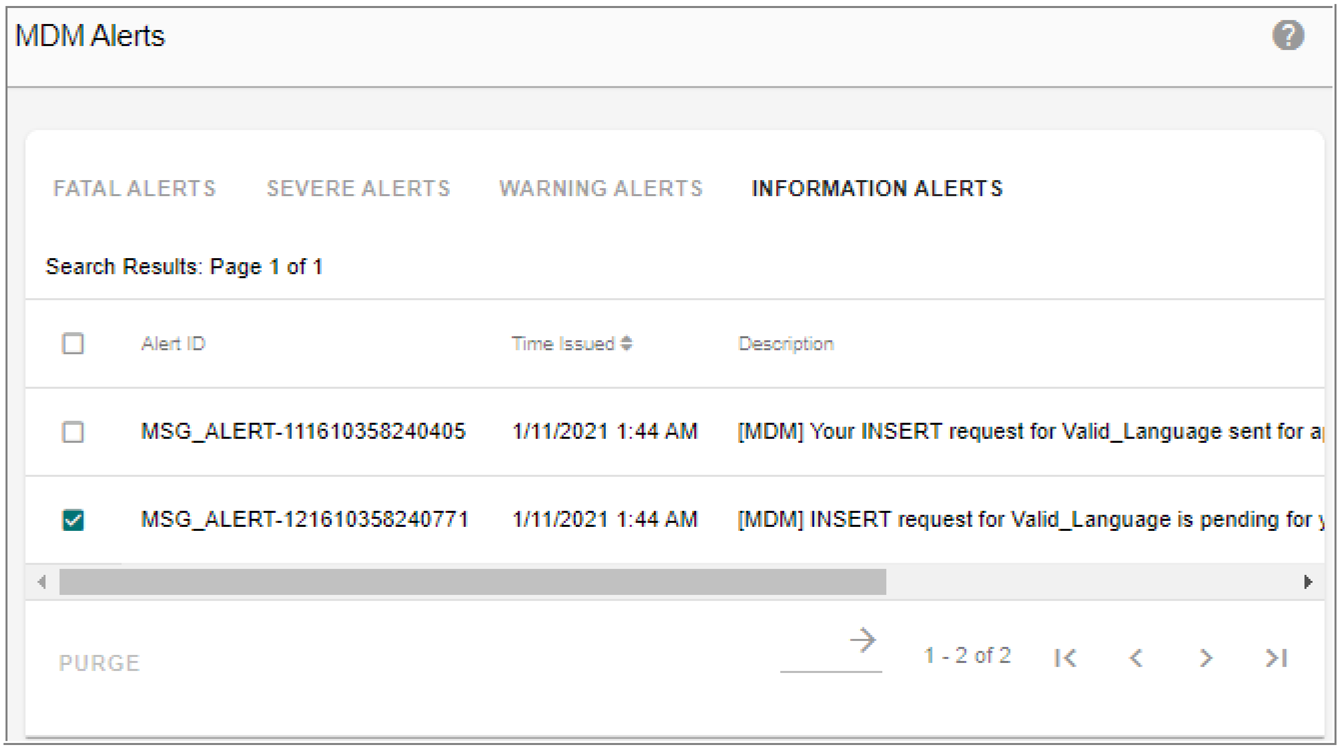
Approval Notification

Notifications will be sent to the users in the below scenarios:

- When an approval request is generated, a notification with all details would be sent to the approvers based on the type of Approval Type selected.
- When an approval request is approved or rejected, notification will be sent to the approvers based on the type of Approval Type selected.

The notification can be sent either by Email, Web Alerts or both. The Figure 655 displays Web alerts.

Figure 655: Approval Alerts



Search Results: Page 1 of 1

☐	Alert ID	Time Issued	Description
☐	MSG_ALERT-111610358240405	1/11/2021 1:44 AM	[MDM] Your INSERT request for Valid_Language sent for a
☑	MSG_ALERT-121610358240771	1/11/2021 1:44 AM	[MDM] INSERT request for Valid_Language is pending for y

Email Notification—User Based Approval

The Figure 656 displays the approval email notification sample for a record(s).

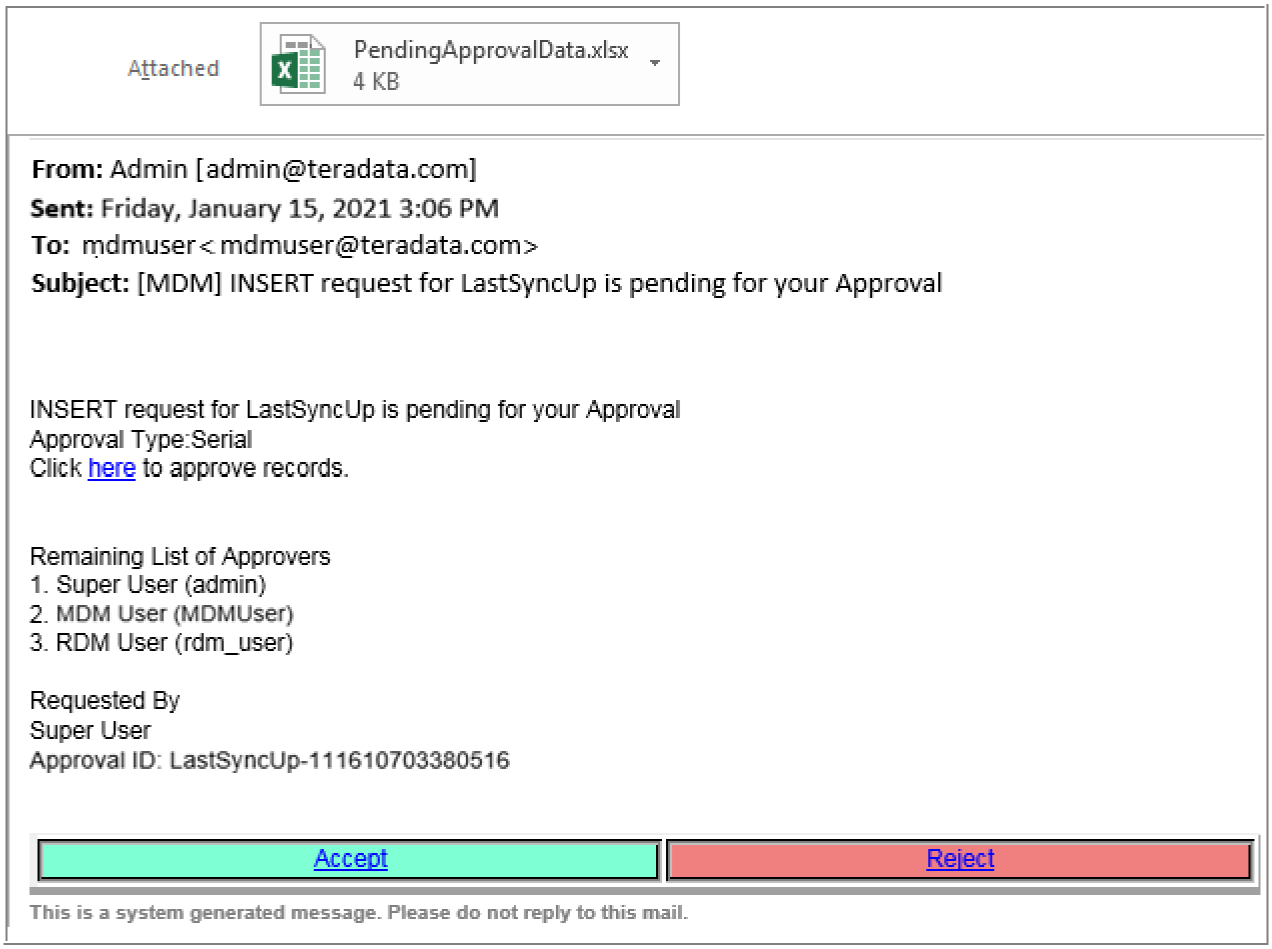
- Email notification sent to approvers during approval will contain an excel sheet containing all the record(s) details to be approved.
- The email also contain a link to MDM login page (Click Here). On click of that, you will be directed to the login page. When you login, you will be redirected to Approval Inbox of the logged in user.
- The email also provides an option to approver to Accept or Reject a record. Approver can approve/reject records by clicking on the Accept/Reject links without logging on to the application. Once the approver clicks the Accept/Reject link, the corresponding approval or rejection message is displayed.
- In the email, the Remaining List of Approvers section provides the list of users yet to approve the request. The user details are displayed as First name and Last name of the approvers as entered during the creation of users through Manage Users UI.

- Email Accept/Reject option is supported only for approval on Master tables.
- In case of approval email notification, by default, the email attachment (xlsx file) is stored in temp folder in MDM server machine.

  You can configure the file path by updating the <param Name="APPROVAL_EMAIL_XLS_FILE_PATH" Value=" <new Path>/ PendingApprovalData.xlsx "/> in mdmservices.xml file available at: *<MDM_Install_directory>\ cfg\properties*

  By default, the path is empty and the email attachment is stored in temp folder.

Figure 656: Email Notification Sample for User Based Approval



From: Admin [admin@teradata.com]
Sent: Friday, January 15, 2021 3:06 PM
To: mdmuser < mdmuser@teradata.com>
Subject: [MDM] INSERT request for LastSyncUp is pending for your Approval

INSERT request for LastSyncUp is pending for your Approval
Approval Type:Serial
Click here to approve records.

Remaining List of Approvers
1. Super User (admin)
2. MDM User (MDMUser)
3. RDM User (rdm_user)

Requested By
Super User
Approval ID: LastSyncUp-111610703380516

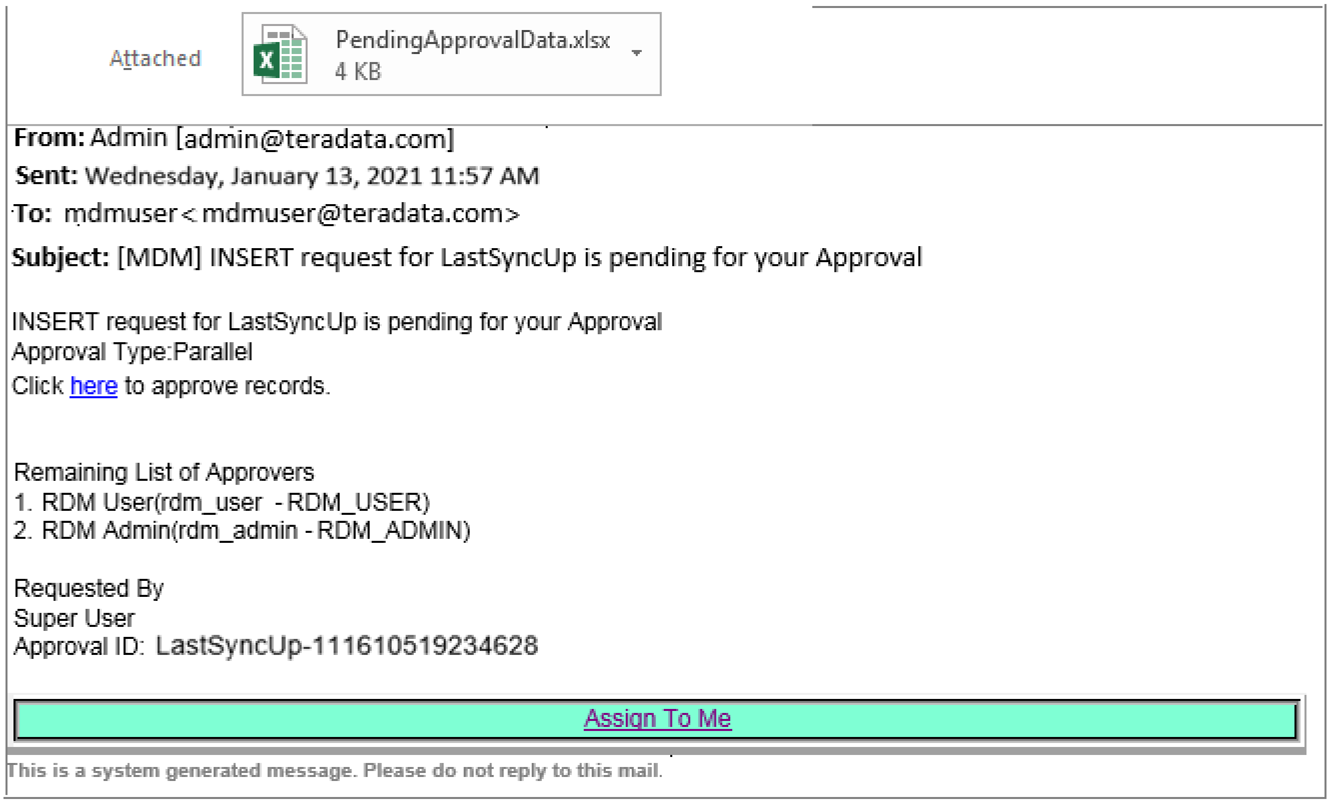
This is a system generated message. Please do not reply to this mail.

Email Notification—User Group Based Approval

In case of User Group Based approval, email notification sent to approvers during approval will contain the details as described below:

- Initial email notification is sent to approvers with a link “Assign To Me” to self assign to the approver as in Figure 657. Once the approver click on “Assign to Me” link, approval assignment message (The approval request has been assigned successfully to you) is displayed and an email with accept / reject link will be sent to the approver who assigned the request to self. The email also contains a link to MDM login page. On click of that, you will be redirected to the login page. When you login, it will be redirected to Approval Inbox of the logged in user.

Figure 657: Email Notification Sample for User Group Based Approval



From: Admin [admin@teradata.com]
Sent: Wednesday, January 13, 2021 11:57 AM
To: mdmuser< mdmuser@teradata.com>
Subject: [MDM] INSERT request for LastSyncUp is pending for your Approval

INSERT request for LastSyncUp is pending for your Approval
Approval Type:Parallel
Click here to approve records.

Remaining List of Approvers
1. RDM User(rdm_user - RDM_USER)
2. RDM Admin(rdm_admin - RDM_ADMIN)

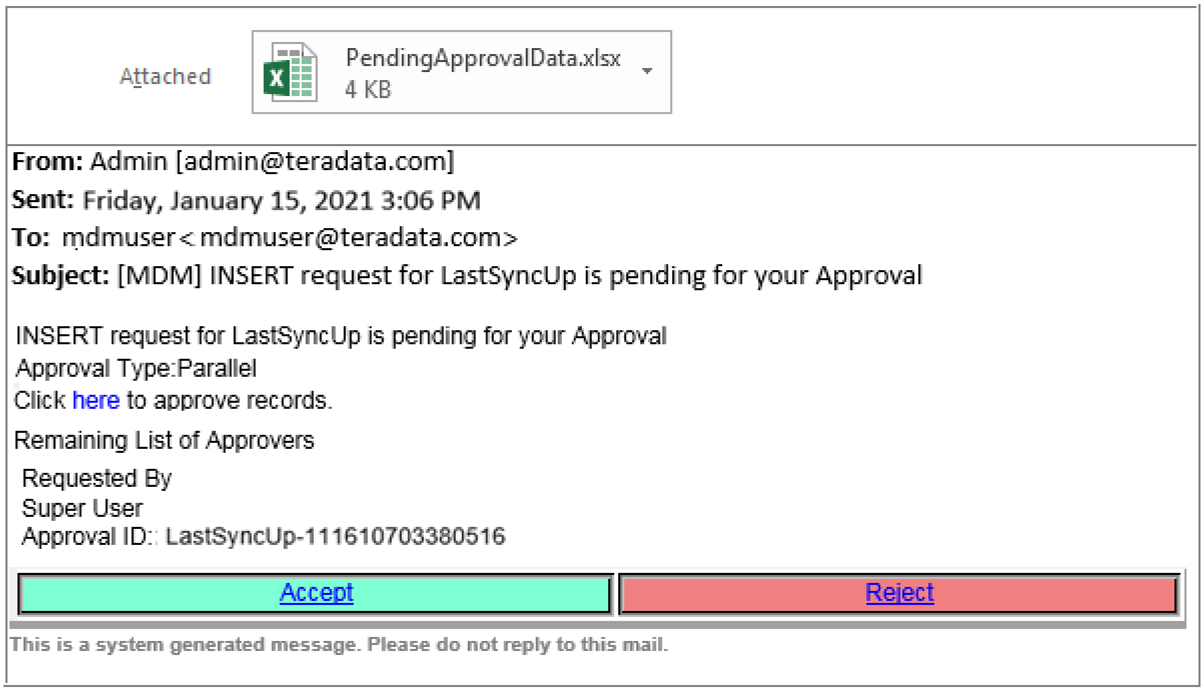
Requested By
Super User
Approval ID: LastSyncUp-111610519234628

This is a system generated message. Please do not reply to this mail.

The approval creator cannot assign the approval to self (Assign to Me) and the error message (Assignment of your own request is not allowed) is displayed.

- The second email provides an option to approver to Accept or Reject a record as in Figure 658. Approver can approve/reject records by clicking on the Accept/Reject links without logging on to the application. Once the approver clicks the Accept/Reject link, the corresponding approval or rejection message is displayed and an email with accept / reject comments will be sent to the approvers. The email also contains a link to MDM login page (Click Here). On click of that, you will be directed to the login page. When you login, it will be redirected to Approval Inbox of the logged in user.

Figure 658: Email Notification Sample for User Group Based Approval



From: Admin [admin@teradata.com]
Sent: Friday, January 15, 2021 3:06 PM
To: mdmuser < mdmuser@teradata.com>
Subject: [MDM] INSERT request for LastSyncUp is pending for your Approval

INSERT request for LastSyncUp is pending for your Approval
Approval Type:Parallel
Click here to approve records.

Remaining List of Approvers

Requested By
Super User
Approval ID:: LastSyncUp-111610703380516

This is a system generated message. Please do not reply to this mail.

Configuring Approval Emails

All approval emails are template driven and you can customize the email template.

To modify the template, perform the following steps:

- ❑ Navigate to *<MDM_Install_Directory>\cfg\xservice\mdmservices\modules\approval\xsl*
- ❑ Modify the below xsl files as per the requirement.
  - GenericApproval_Approved_Rejected_ByAdmin_Template.xsl
  - GenericApproval_Approved_Rejected_Template.xsl
  - GenericApproval_Due_For_Approval_Template.xsl
  - GenericApproval_Pending_For_Approval_Template.xsl
  - GenericApproval_Poke_Template.xsl
  - GenericApproval_Sent_For_Approval_Template.xsl
  - Hierarchy_Promotion_Template.xsl

The following parameters are included in the SystemProperties table as part of the email configuration:

- ❑ MDMEnvironment—the default value is set to <MDM_ENV>. If the default value is changed, only then, this parameter appears in the subject of the email.
- ❑ ApprovalContactEmail—the default value is set to user@domain.com. If the default value is changed, only then, this parameter appears in the email footer.
- ❑ RecordInEmail—the default value is set to true. If this parameter is set to false, then the email will not display the record that has been sent for approval.

View Approval Request

Navigate to the Approval Inbox by selecting Approval Inbox from Notification Icon dropdown on MDM UI. The Approval Inbox UI allows the users with proper approval authorization to view data to be approved, approve or reject records and also view the approval history. All approval requests will be available in the respective user Approval Inbox UI.

By default, the Approval Inbox UI is displayed as Tabular View. You can configure the Approval Inbox landing page to be either as Tabular View or Dashboard.

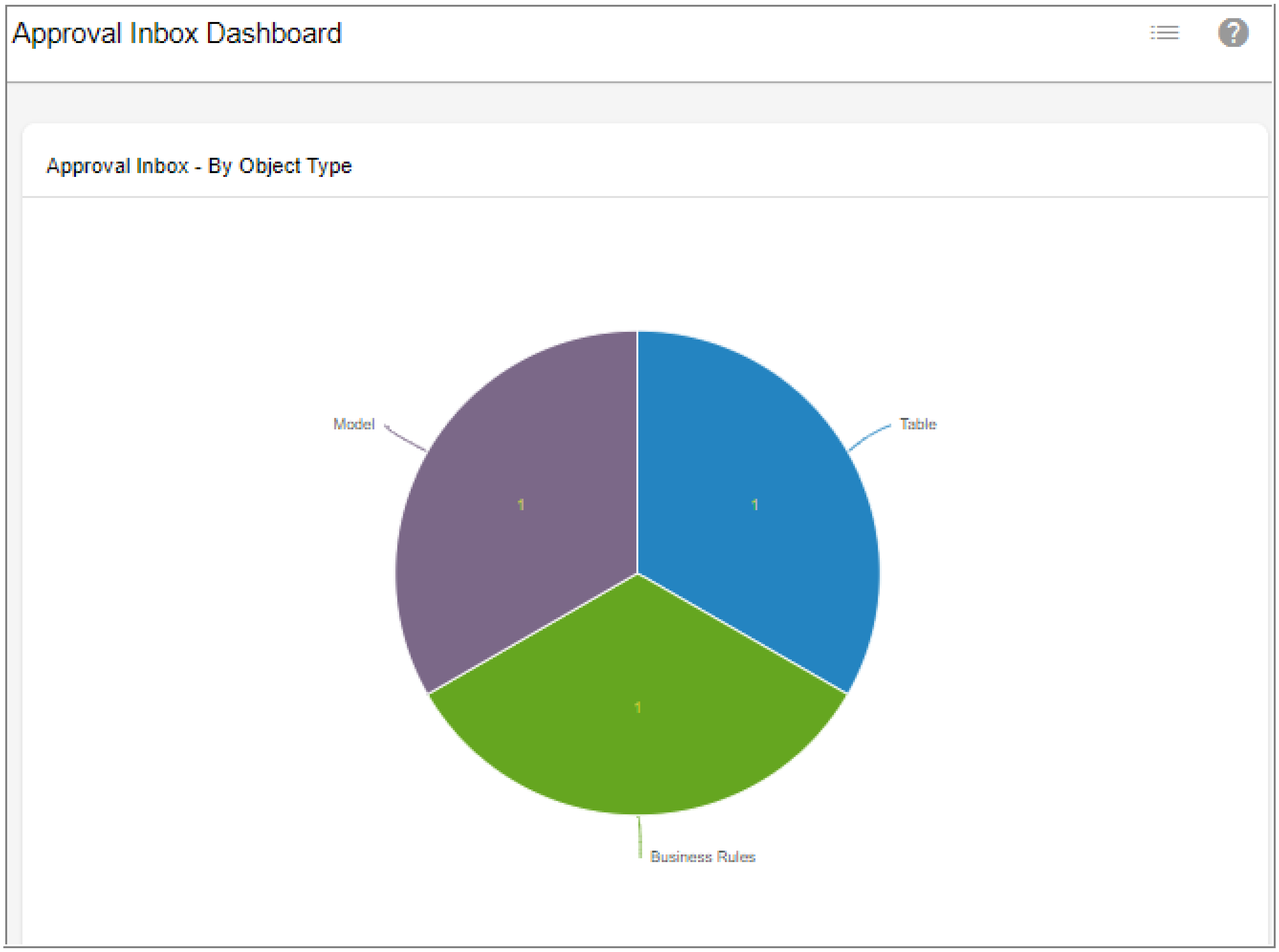
To configure the Approval Inbox landing page:

- Navigate to **System Properties** UI from MDM left navigation pane (**Administration** -> **System Property**).
- On the **System Properties** UI, select the property (ApprovalLandingPage) and click **Edit.**
- On the **System Properties** UI, modify the Property Value and click **Save**.

The Figure 659 displays the Approval Inbox Dashboard. The Approval Inbox Dashboard displays a pie chart with all the different approval type requests waiting for approval from the authorized user. Click on the pie chart to navigate to Approval Inbox UI of the corresponding approval type as in Figure 660.

On the Dashboard UI, you can also click on the Tabular View icon ☰ to navigate to Approval Inbox UI.

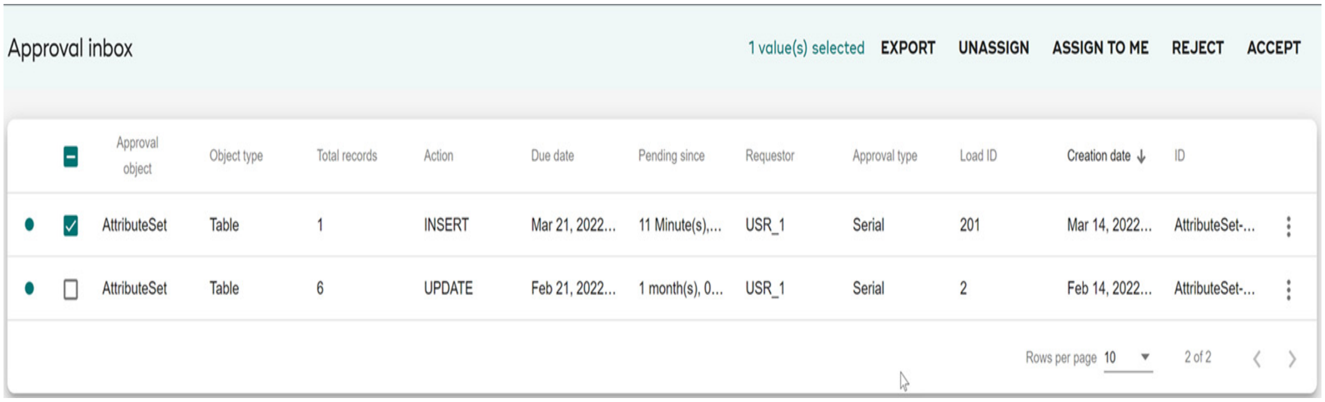
Figure 659: Approval Inbox



Approval Inbox Dashboard

Approval Inbox - By Object Type

Figure 660: Approval Inbox



Approval inbox

1 value(s) selected EXPORT UNASSIGN ASSIGN TO ME REJECT ACCEPT

	▬	Approval object	Object type	Total records	Action	Due date	Pending since	Requestor	Approval type	Load ID	Creation date ↓	ID	
●	☑	AttributeSet	Table	1	INSERT	Mar 21, 2022...	11 Minute(s),...	USR_1	Serial	201	Mar 14, 2022...	AttributeSet-...	⋮
●	☐	AttributeSet	Table	6	UPDATE	Feb 21, 2022...	1 month(s), 0...	USR_1	Serial	2	Feb 14, 2022...	AttributeSet-...	⋮

Rows per page 10 ▾ 2 of 2 ‹ ›

The records sent for approval can be:

- **Single record:** A single record sent for approval can be accepted or rejected by the approvers.
- **Multiple records (bulk approval):**

  - Multiple records processed to master staging tables through excel upload and upload excel option on the View Tables UI can be configured for bulk approval. Multiple records sent for approval in a single approval request can be accepted or rejected with a single click.
  - Configuring approval for multiple records is optional, by default, approval for bulk record is enabled. You can disable it by changing the value of the Bulk_Approve parameter to “No” as in <param Name=“Bulk_Approve” Value=”no”/> in xserver.xml file located at: *<MDM_Install_Directory>\cfg\properties*. Restart the MDM server for the changes to be effective.
- **Entity records:** All the records that belong to an entity are sent for approval together and they can be accepted or rejected with a single click. If user accepts the entity based approval request, records will be persisted to Master tables and if user rejects the approval request, records will not be persisted to Error table. For details on business entity approval support in configurable UI, see Chapter 8: “Configurable UI”.

The Table 23 describes the fields available on Approval Inbox and Approval Monitor UIs. For details on Approval Monitor, see Section : “Monitor Approvals in MDM.”

Table 23: Approval Inbox and Approval Monitor UI Column Description

Column Name	Description	Approval Inbox	Approval Monitor
Approval Object	The approval object is the name of the object type. For example, if the approval object type is Table, the approval object column displays the name of the object type name (table name) on which the approval is created. In case of LRDM multi-tables like “Reference_0012_Code”, it refers to a particular codeset. These tables are created using Model Builder and the table name can be changed to that of the codeset by executing “RenameDocumentLogicalNameWkf” before creating the approval on that table. Now the approval object column displays the actual code set name.	✓	✓
Object Type	The object type on which the approval is created. Object type can be Table, View, Business Entity, Business Rule, Hierarchy, Hierarchy Object, Code Set and Model.	✓	✓

Table 23: Approval Inbox and Approval Monitor UI Column Description

Column Name	Description	Approval Inbox	Approval Monitor
Total Records	Total Records column displays the total number of records for approval. In case of bulk, it displays the total records for approval in a single approval request. Number of bulk approval request = number of DDP batches for excel upload = Total Excel records / Upload_Batch_Size. For example: 100 excel records are uploaded with a upload_batch_size = 5, then there will be 20 approval batches. If excel upload data contains insert and update requests then two bulk approval requests will be created, one for insert and another for update.	✓	✓
Action Type	Action type of the approval process. Insert, Update, Delete or All.	✓	✓
Pending Since	The time elapsed since the approval record arrived in the Approval Inbox or Approval Monitor UI.	✓	✓
Requestor	Name of the user requesting approval on a record.	✓	✓
Approval Type	Type of approval process. Serial or Parallel.	✓	✓
Load Id	The Load ID is assigned only for bulk approval.	✓	✓
Created Date	Approval request creation date.	✓	✓
Assigned To You	In case of user group based approval, if the record is assigned to logged in user (self), this column will be populated as “Assigned” else populated as “Not Assigned”. If you try to assign to self the already assigned records using the “Assign to Me” button, the message: “Approval is already assigned to you” is displayed.	✓	✖

Table 23: Approval Inbox and Approval Monitor UI Column Description

Column Name	Description	Approval Inbox	Approval Monitor
Inbox Status	For each approval process, it displays the approvers who have already approved the records and pending approvals. In case of serial type, the approval status for the immediate approver would be “Waiting for Approval” and for the subsequent approvers, the approval status would be “Pending”. In case of parallel type, the approval status for all the pending approvals would be “Waiting for Approval” as in Figure 670.	✖	✓
Due Date	Approval request Due date. By default, each approval request will have current date + 7 days as approval due date. If required, user with Admin rights can modify the due date on the Approval Monitor UI for each request. The due date cannot be changed on the Approval Inbox UI. The default due days can be modified by changing the value of the property (DueDateDefaultDays) from the System Properties UI. **Note**: if the due date value is changed to “0”, approval process will fail. The approval request list on the Approval Inbox and Approval Monitor UI will be sorted based on the assigned Due date. Once the approval request is created, the creator and admin will get email notification daily until the due date. The email will have all the details along with due date information. On the next date after the due date, a final reminder email will be sent to the creator and the admin. The due date reminder must be scheduled from the scheduler UI using the workflow “ApprovalReminder” and the reoccurring option set as “Daily”. For details on creating scheduler, see Chapter 22: “Manage Scheduler.”	✓	✓

Table 23: Approval Inbox and Approval Monitor UI Column Description

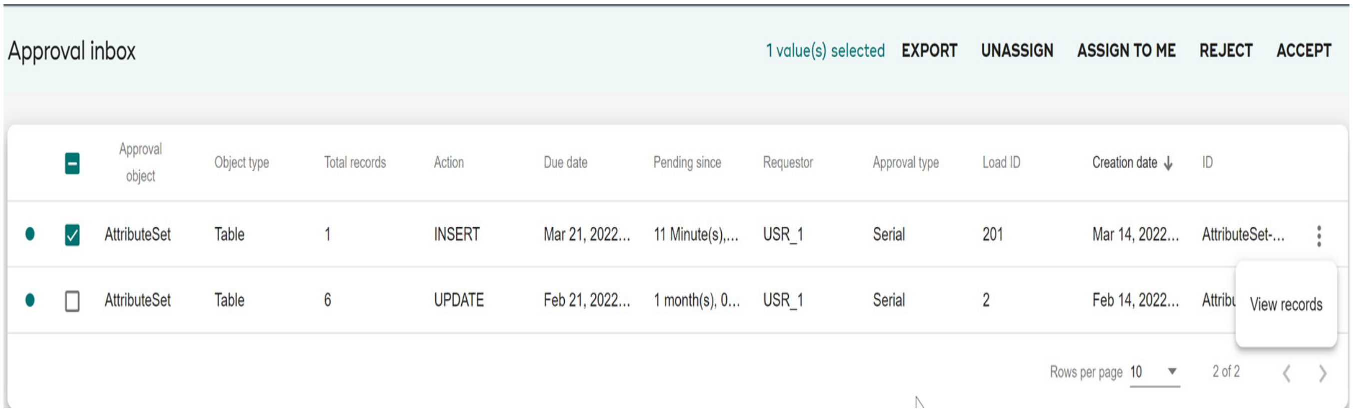
Column Name	Description	Approval Inbox	Approval Monitor
Comments	Approver can enter comments on the action taken. **Note:** The comments entered should not contain any special characters.	✓	✖
ID	Unique Id of the approval process	✓	✓
Approver Name	List of approvers for each approval process as configured during the creation of approval.	✖	✓

Action on Approval Request

On the Approval Inbox UI, you can perform the following actions:

- **View records:** on the **Approval Inbox** UI, click on the Menu icon ⋮ corresponding to the required approval record and click **View records** option to view the record details as in Figure 661.

Figure 661: Approval Inbox—View Record

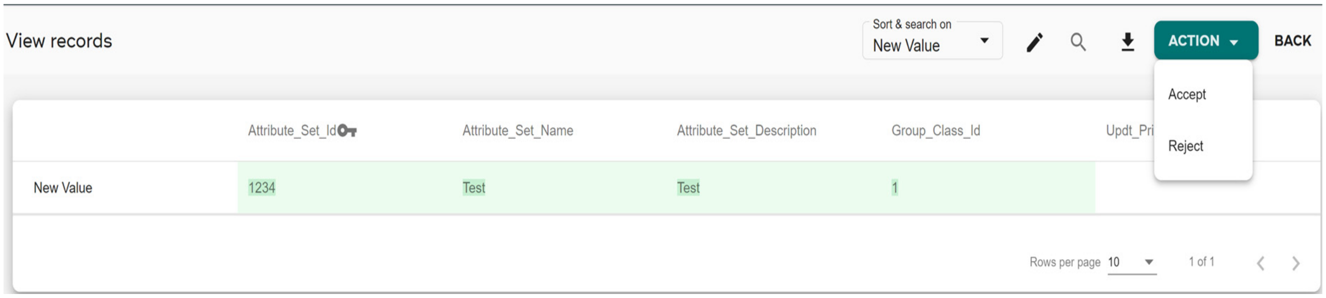


	☐	Approval object	Object type	Total records	Action	Due date	Pending since	Requestor	Approval type	Load ID	Creation date ↓	ID
●	☑	AttributeSet	Table	1	INSERT	Mar 21, 2022...	11 Minute(s),...	USR_1	Serial	201	Mar 14, 2022...	AttributeSet-...
●	☐	AttributeSet	Table	6	UPDATE	Feb 21, 2022...	1 month(s), 0...	USR_1	Serial	2	Feb 14, 2022...	Attribu

On the **View records** UI, for the action type Update approval, the view record displays existing values as well as the newly updated values. The updated values will be displayed in the **New Value** row and the existing value would be displayed in the **Current Value** row and the columns that are updated with new value will be highlighted in the **Current Value** row. For action type Insert approval, only **New Value** row would display the inserted values. For action type Delete approval, the **Current Value** row would display the existing values.

In case of bulk approval, the **View records** page displays all the records within the selected batch approval request for review. Each row represents a record.

While creating the approval, if the approval object type is selected as business entity, the view record page will display all the records on a single page.



	Attribute_Set_Id	Attribute_Set_Name	Attribute_Set_Description	Group_Class_Id	Updt_Pri
New Value	1234	Test	Test	1	

- The Current Value row displays the current values of master record and not the historical data at the point of approval.
- If the creator and approver are the same, a validation is done to restrict the user from approving his request. It is applicable for both User based approvals and for User Group based approvals.

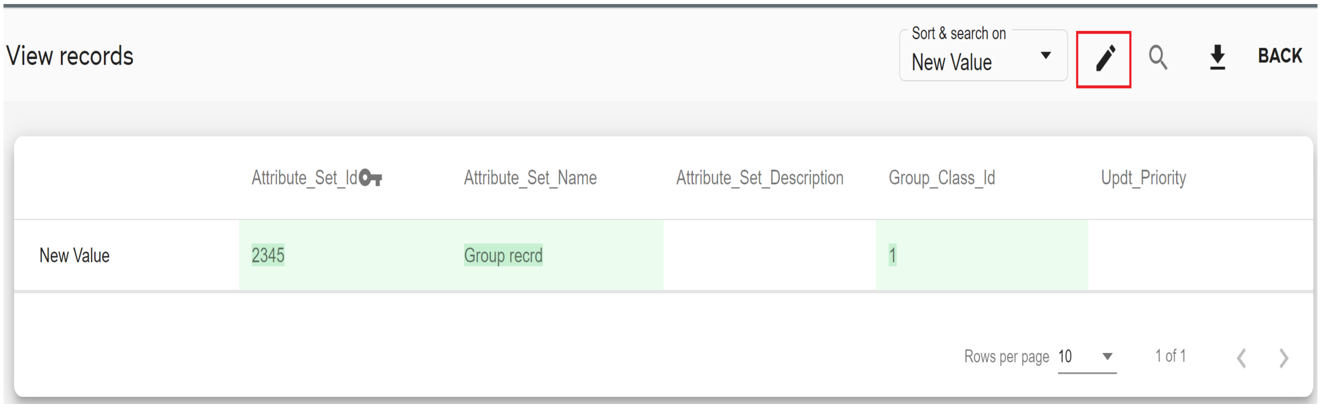
On the **View Record(s)** UI, you can perform the following tasks:

- **Accept or Reject Approval Request**: click on accept or reject and then enter the comments in the **Comments** textbox.
- **Edit Approval Request**: inline editing of the approval records on the **View Record(s)** UI is enabled only for Master tables and to the approver who is assigned with Enrichment Access activity and have create/edit access on the table. The Edit process checks for column level attribute validations like Data type validations, Primary key field will be displayed as non- editable field etc.

  To update or enrich the approval records, perform the following steps:

  - On the **View records** UI, click on Edit icon.

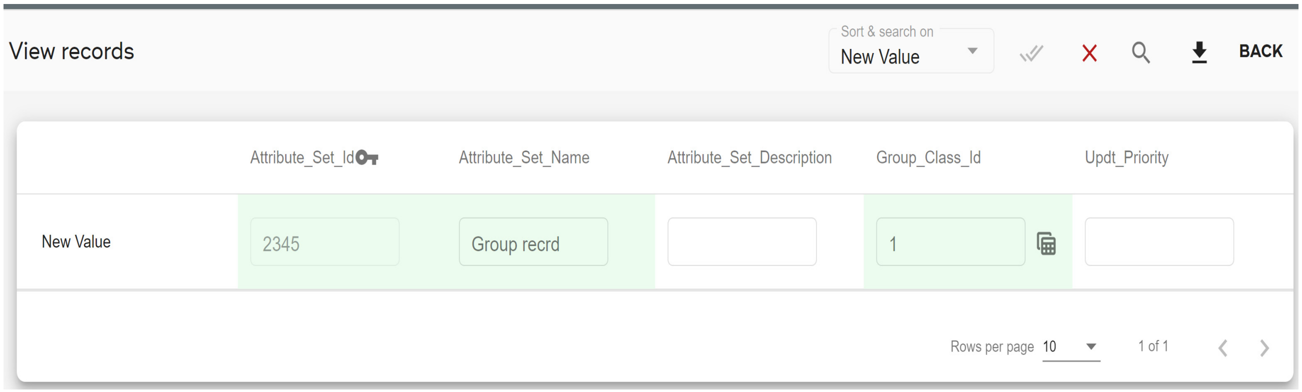
Figure 662: Edit Records



	Attribute_Set_Id	Attribute_Set_Name	Attribute_Set_Description	Group_Class_Id	Updt_Priority
New Value	2345	Group recrd		1	

You can modify the values in all the editable fields (all the columns the approver has access, that is, CLS enabled).

Figure 663: Modify Records



	Attribute_Set_Id	Attribute_Set_Name	Attribute_Set_Description	Group_Class_Id	Updt_Priority
New Value	2345	Group recrd		1	

  - Click yes icon ✓ to update the information.

    If there are no validation errors, the record will be updated and the message: “Record(s) enriched successfully” is displayed. The new updated value will get updated in the master table once the record is accepted.

    Changes done by current approver will be visible to the next approver. If the next approver does not have Edit access, the user can still see the changes done by previous users. Once all the approvers have approved, the changes will be persisted to master table.

- Export Approval Record Details

  To export approval record details, perform the following steps:

  - On the **View records** UI, click Export to Excel icon ⇥.

    If you select all the approval records on the current page and succeeding pages, a confirmation pop-up is displayed.

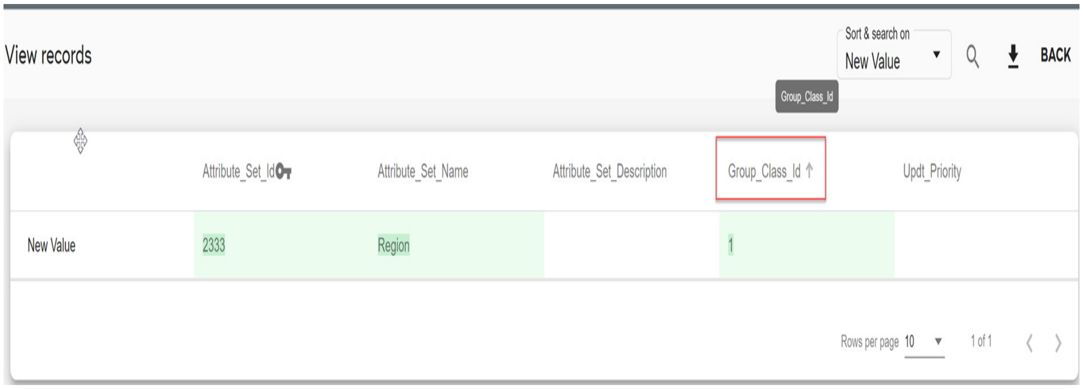
  - On the confirmation pop-up click **Yes** to export all the records or click **No** to export only the current page records.

    The details of the approval record data are downloaded in an Excel sheet in the default download location. It displays the current value and the new value for each attribute field.

- Sort & search on

  Hover over the column heading for the records and click Arrow icon to sort the New Value and Current Value. By default, New Value option is selected for the both sort and search operations.

Figure 664: Sort Record(s)



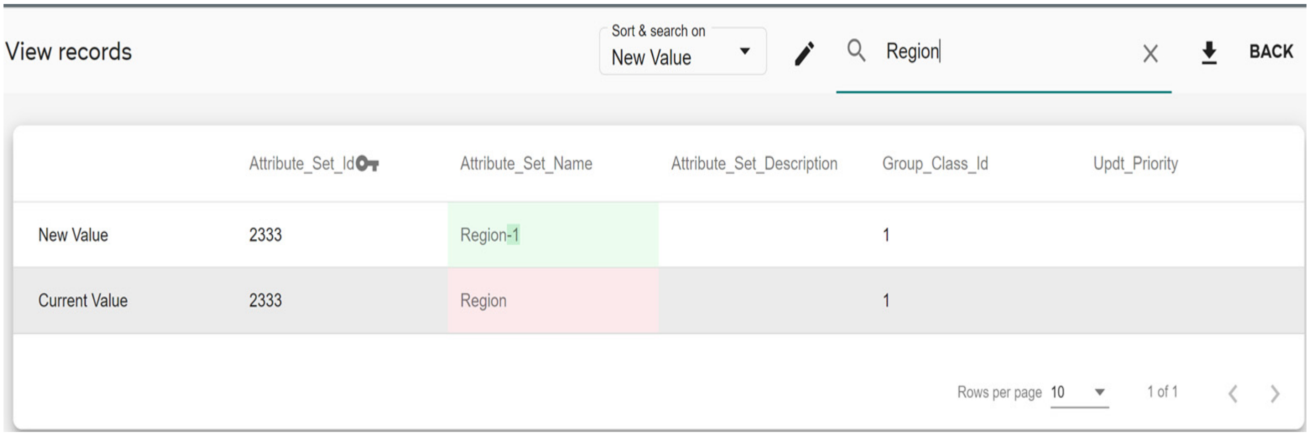
	Attribute_Set_Id	Attribute_Set_Name	Attribute_Set_Description	Group_Class_Id ↑	Updt_Priority
New Value	2333	Region		1	

To search records, perform the following steps:

- On the **View Record**, select either **New Value** or **Current Value** from the drop down.
- Enter the column value in the search field and click on the search icon as in Figure 665.

  The records satisfying the search criteria will be filtered and displayed.

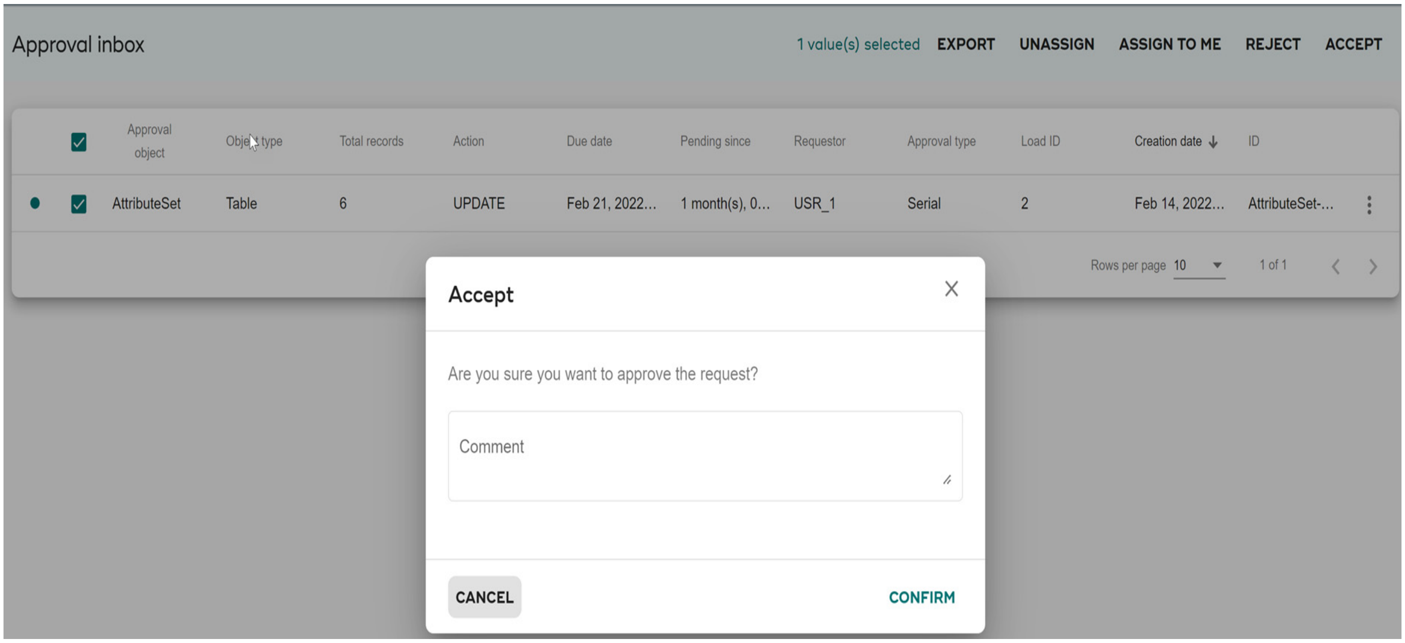
Figure 665: View Record(s)—Search Record



	Attribute_Set_Id	Attribute_Set_Name	Attribute_Set_Description	Group_Class_Id	Updt_Priority
New Value	2333	Region-1		1	
Current Value	2333	Region		1	

- **Accept Records**: When you accept the approval request, an Accept window opens to provide the comments. Enter the comments in the **Comments** text field as in Figure 666 and click **Confirm**. An email notification is sent to the record creator, user who approved the request and to all the users who are yet to approve the request (in case of serial type approval) as in Figure 668. The accepted record will be moved to the Master table if all the approvers in the approval list have approved the record.

Figure 666: Approval Inbox

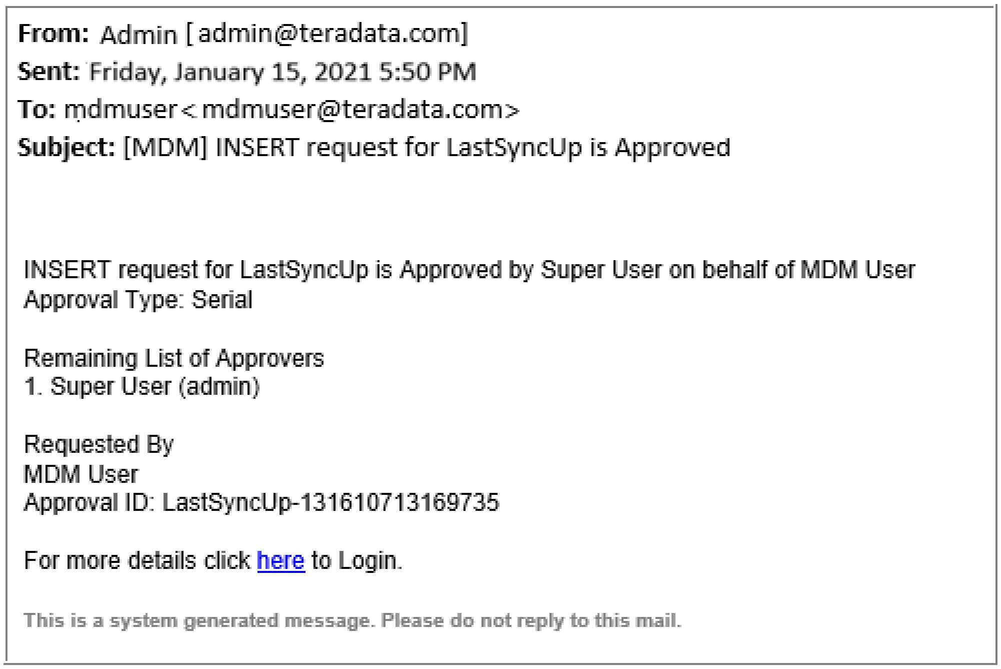


	Approval object	Object type	Total records	Action	Due date	Pending since	Requestor	Approval type	Load ID	Creation date	ID
☑	AttributeSet	Table	6	UPDATE	Feb 21, 2022...	1 month(s), 0...	USR_1	Serial	2	Feb 14, 2022...	AttributeSet-...

Are you sure you want to approve the request?

Comment

Figure 667: Accept Email



From: Admin [admin@teradata.com]
Sent: Friday, January 15, 2021 5:50 PM
To: mdmuser< mdmuser@teradata.com>
Subject: [MDM] INSERT request for LastSyncUp is Approved

INSERT request for LastSyncUp is Approved by Super User on behalf of MDM User
Approval Type: Serial

Remaining List of Approvers
1. Super User (admin)

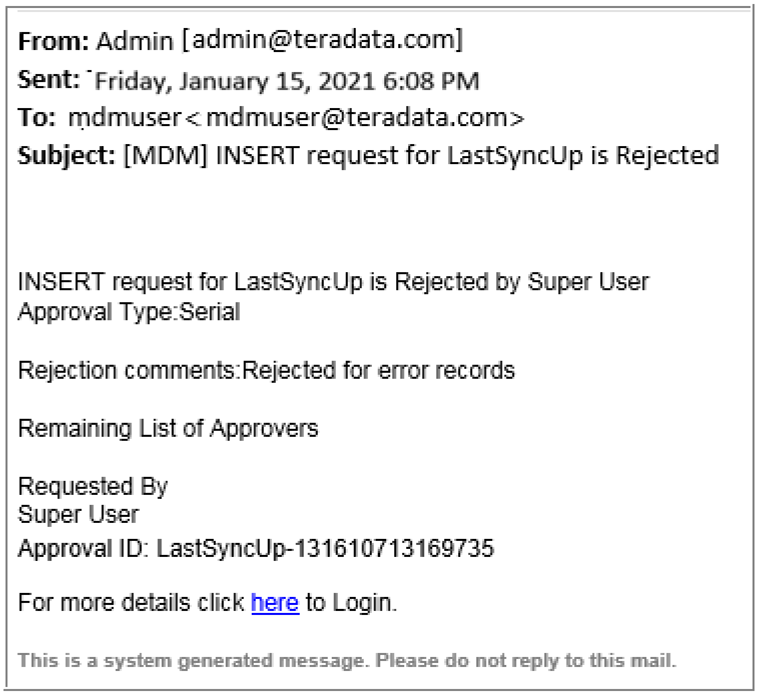
Requested By
MDM User
Approval ID: LastSyncUp-131610713169735

For more details click here to Login.

This is a system generated message. Please do not reply to this mail.

- **Reject Records:** enter the comments in the **Comments** text field and reject the record. The rejected record will be moved to the Error table. An email notification containing the reason for rejection is sent to the record creator, approver who rejected the request and also the all other approvers who approved the request earlier to rejecting the records as in Figure 668.

Figure 668: Reject Email



From: Admin [admin@teradata.com]
Sent: Friday, January 15, 2021 6:08 PM
To: mdmuser< mdmuser@teradata.com>
Subject: [MDM] INSERT request for LastSyncUp is Rejected

INSERT request for LastSyncUp is Rejected by Super User
Approval Type:Serial

Rejection comments:Rejected for error records

Remaining List of Approvers

Requested By
Super User
Approval ID: LastSyncUp-131610713169735

For more details click here to Login.

This is a system generated message. Please do not reply to this mail.

- **Assign To Me:** approver can select single or multiple records and click **Assign To Me** to assign the approval request(s) to the logged in user (self) of the user group to take action on the approval request(s). This assignment prevents multiple approvers from acting on the same record at the same time. If the record is assigned to logged in user (self), the "Assigned To You" column will be populated as "Assigned" else populated as "Not Assigned". If you try to assign to self the already assigned records using the "Assign to Me" button, the message: "Approval is already assigned to you" is displayed.

- "Assign to Me" functionality will not be supported if the user name is same as the user group name.
- Creator of approval request cannot assign the request to self. The message "Assignment of your own request is not allowed".
- In case of user group based parallel approval, if a user belongs to two different user groups with one group configured as ALL and another as ANY, the user cannot perform "Assign to me" functionality.
- While creating the approval, if the approval object type is selected as business entity, and if the records are assigned to self using "Assign To Me" button, all the records will be assigned to the logged in user at a time.

- **Unassign**: approver can select single or multiple records and select **Unassign** to unassign the selected approval request(s) from logged in user (self). Once the user unassigns the request, the approval request will appear in Approval Inbox UI of other users of the user group.When a record is unassigned from the logged in user (self), the “Assigned To You” column will be populated as “Not Assigned”.

- “Unassign” functionality is supported only for user group based approval and with user group approval setting as “Set as Any”.
- No notifications will be sent during unassign process.

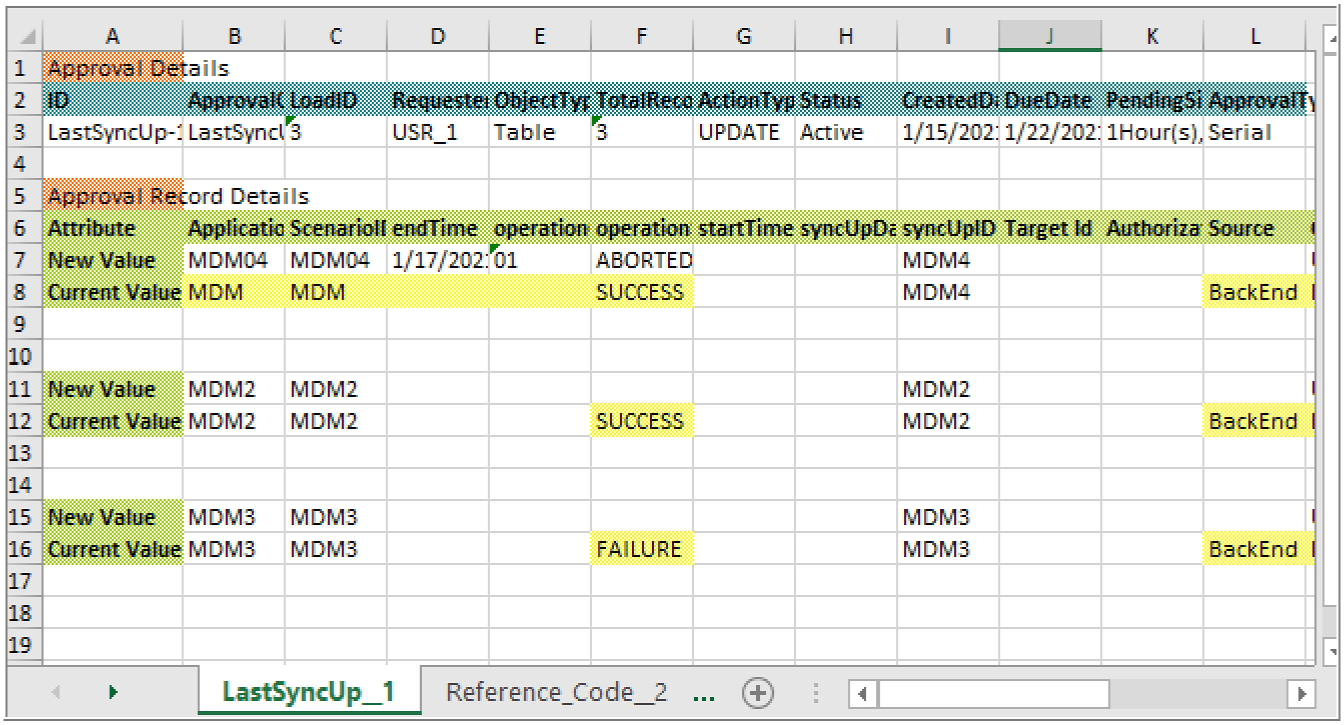
❑ **Export:** the list of approval requests on Approval Inbox UI can be exported to Excel for data analysis. To export approval requests to excel, perform the following steps:

- On the **Approval Inbox** UI, select the required approval request(s) or select all the approval request(s) and click **Export**.

  If you select all the approval request(s) on the current page or succeeding pages, a confirmation pop-up is displayed.
- On the confirmation pop-up click **Yes** to export all the requests or click **No** to export only the current page requests.

  The data of all the approval requests selected is downloaded in an Excel sheet in the default download location as in Figure 669.

Figure 669: ApprovalInboxData



	A	B	C	D	E	F	G	H	I	J	K	L
1	Approval Details											
2	ID	Approval	LoadID	Requeste	ObjectTy	TotalReco	ActionTyp	Status	CreatedD	DueDate	PendingS	ApprovalT
3	LastSyncUp-	LastSync	3	USR_1	Table	3	UPDATE	Active	1/15/202	1/22/202	1Hour(s),	Serial
4												
5	Approval Record Details											
6	Attribute	Applicatio	ScenarioI	endTime	operation	operation	startTime	syncUpD	syncUpID	Target Id	Authoriza	Source
7	New Value	MDM04	MDM04	1/17/202	01	ABORTED			MDM4			
8	Current Value	MDM	MDM			SUCCESS			MDM4			BackEnd
9												
10												
11	New Value	MDM2	MDM2						MDM2			
12	Current Value	MDM2	MDM2			SUCCESS			MDM2			BackEnd
13												
14												
15	New Value	MDM3	MDM3						MDM3			
16	Current Value	MDM3	MDM3			FAILURE			MDM3			BackEnd
17												
18												
19												

In the Excel sheet, each Approval Request is displayed under a separate tab and each tab provides the below details.

- **Approval Details**: displays the Approval related details like: Id, Approval Object, Requestor, Object Type, Total Records, Action Type, Status, Created Date, Due Date, Pending Status and Approval Type.

- **Approval Record Details**: displays the record details, the current value and the new value of each field. For updated records, the changed data will be highlighted with different colors.
- In case of Reference Code tables of RDM, the linked source data is exported along with the enterprise values in approval. Source data will displayed below the enterprise value.

Export on approval requests feature is supported only for master tables.

- **View Approval History:** you can view the history of all records approved or rejected by the user by clicking on **Approval History List** tab on Approval Inbox UI.

Approval Re-authentication (E-Signature) in MDM

MDM provides an option to enable re-authentication security support on accept/reject approval requests in Approval Inbox UI. By default, the re-authentication feature is disabled on Approval Inbox UI. To enable re-authentication on approval request, navigate to xserver.xml and xserverweb.xml available at: *<MDM_Install_Directory>\cfg\properties* and set the “RE_AUTH_ENABLED” service parameter value to “true”. Restart the server for the changes to be effective.

Once the re-authentication is enabled, each time you try to Accept/Reject an approval request on Approval Inbox UI, the password entry option will be displayed. On successful authentication with correct password entry, you can perform Accept/Reject actions.

On the password entry popup, without entering password, you can click on **Cancel** button and proceed with other operations on the UI like Export, Unassign. Assign to Me and View Records. But on the **View records** UI, you cannot accept or reject record without password authentication.

On the password entry pop-up, if wrong password is entered, error message as “Invalid Password” is displayed.

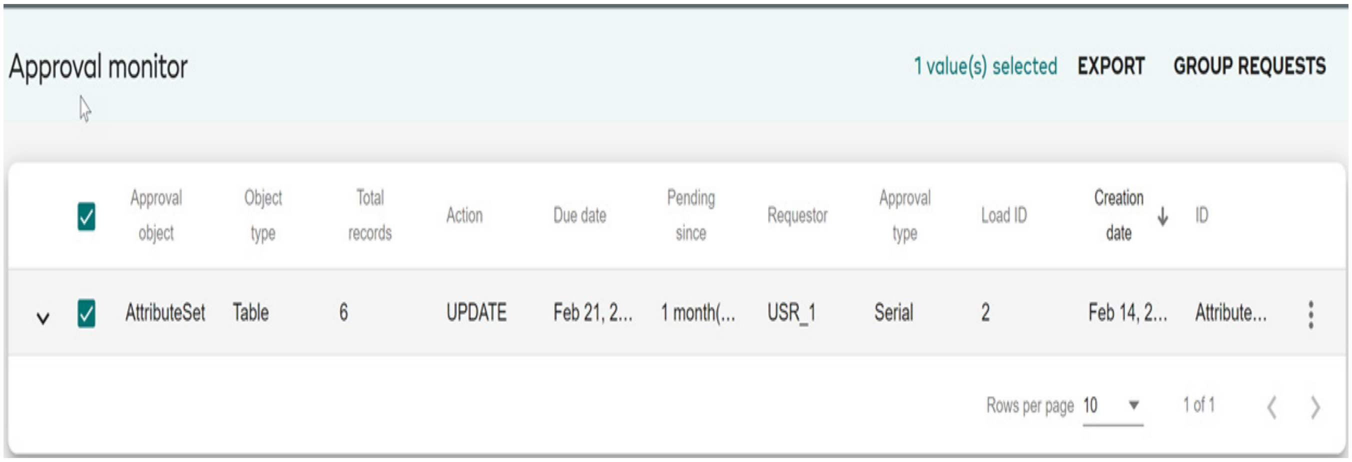
By default, three password failed attempts are allowed. After three wrong entry of password, you will be logged out of the application. The user account will get locked. Login as admin and unlock the user. For details on unlocking user, refer to Chapter 9: “User Management.” Once the user account is unlocked, you can again login to application with correct password.

The default value for password failed attempt is configurable. To configure, navigate to xserver.xml and xserverweb.xml available at: *<MDM_Install_Directory>\cfg\properties* and set the value for “RE_AUTH_PWD_RETRY_COUNT” service parameter.

Monitor Approvals in MDM

Any user with admin rights can access the **Approval Monitor** UI (Figure 670). Navigate to **Approval Monitor** UI from **Data Harmonization** -> **Approvals** -> **Approval Monitor**. The **Approval Monitor** UI provides the consolidated view of all the records waiting for approval across all the users.

Figure 670: Approval Monitor



Approval monitor

	☑	Approval object	Object type	Total records	Action	Due date	Pending since	Requestor	Approval type	Load ID	Creation date ↓	ID	
⌄	☑	AttributeSet	Table	6	UPDATE	Feb 21, 2...	1 month(...	USR_1	Serial	2	Feb 14, 2...	Attribute...	⋮

On the **Approval Monitor** UI, admin user can perform the following actions:

- **Export:** the list of approval requests on Approval Monitor UI can be exported to Excel for data analysis. To export the record, select the record(s) and select Export option from Actions dropdown. *For details on Export functionality, see* Action on Approval Request *in Approval Inbox section.*

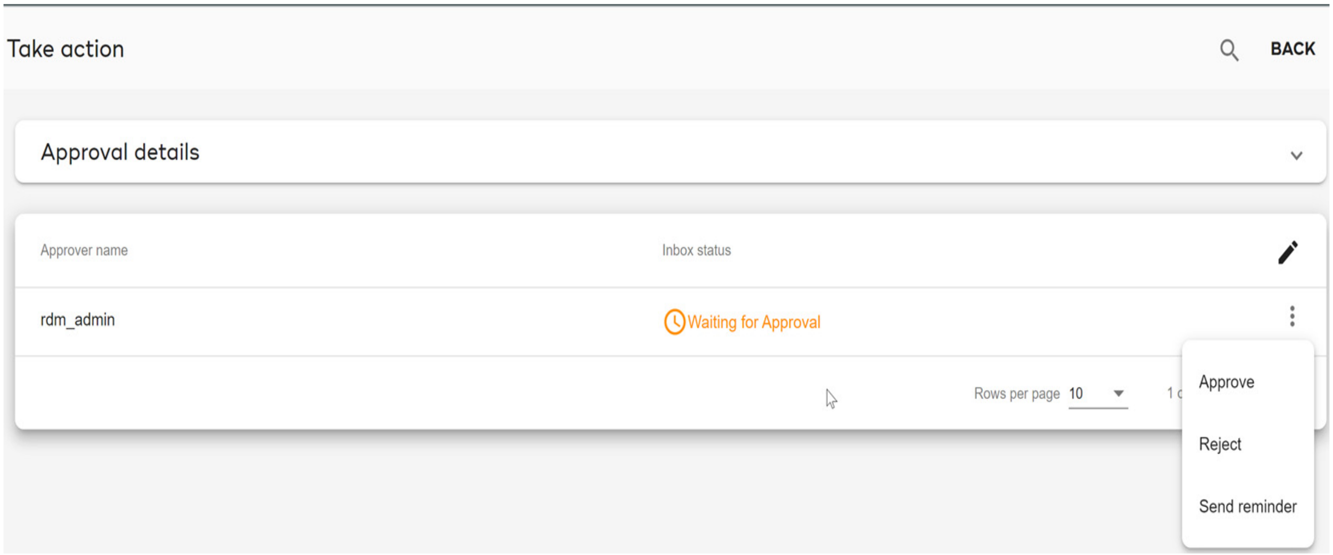
Export feature is not supported for group requests.

- **View Record/s**: view record details using **View Record** functionality. To view the record details, click on the Menu icon ⋮ corresponding to the record and click **View Record/s**. On the **View records** UI, the approver can update the record details. *For details on View Record functionality, see* Action on Approval Request *in Approval Inbox section.*
- **Take Action**: to perform the below actions on the selected record, click on the Menu icon ⋮ corresponding to the record and click **Take Action.**
  - Approve or reject any record on behalf of any approver. If the approval has multiple approvers as in Figure 671 and if the user wants to Accept the approval request, the Take Action page will be displayed until all the approvers approve the record. An email notification is sent to the record creator, user who approved the request and to all the users who are yet to approve the request (in case of serial type approval). In case of Reject approval, when a record is rejected by a approver, the Approval Monitor UI is displayed. An email notification containing the reason for rejection is sent to the

record creator, user who rejected the request and also the all the users who approved the request earlier to rejecting the records.

- Send reminder to a particular user with comments using **Send Reminder** option.

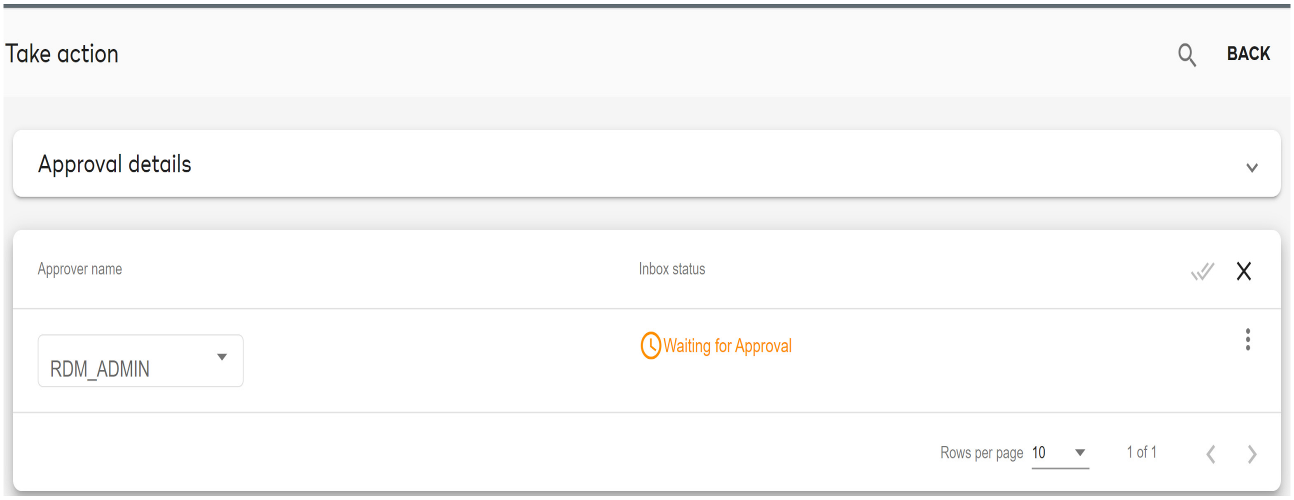
Figure 671: Take Action



Approver name	Inbox status
rdm_admin	Waiting for Approval

- You can reassign the approvers by selecting a different approver from Available Approvers list and click on **Reassign icon** ✎ . The reassigned approver will get a notification email.

  Figure 672: Reassign Approver

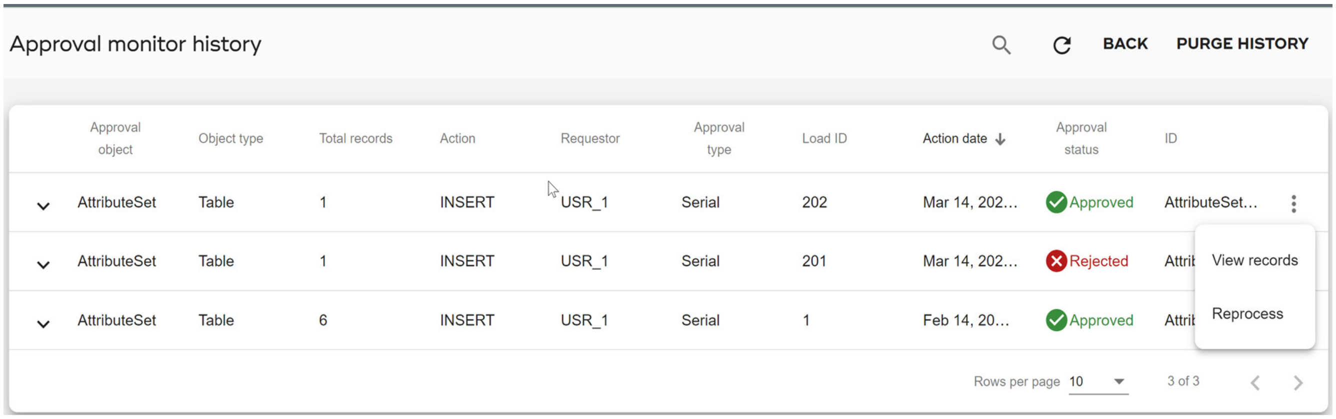


Approver name	Inbox status
RDM_ADMIN	Waiting for Approval

- **Approval Monitor History**: under the **Approval Monitor History** UI page (Figure 673), you can perform the following:
  - **Purge History :** you can delete all the records from the approval history UI using **Purge History** records option.

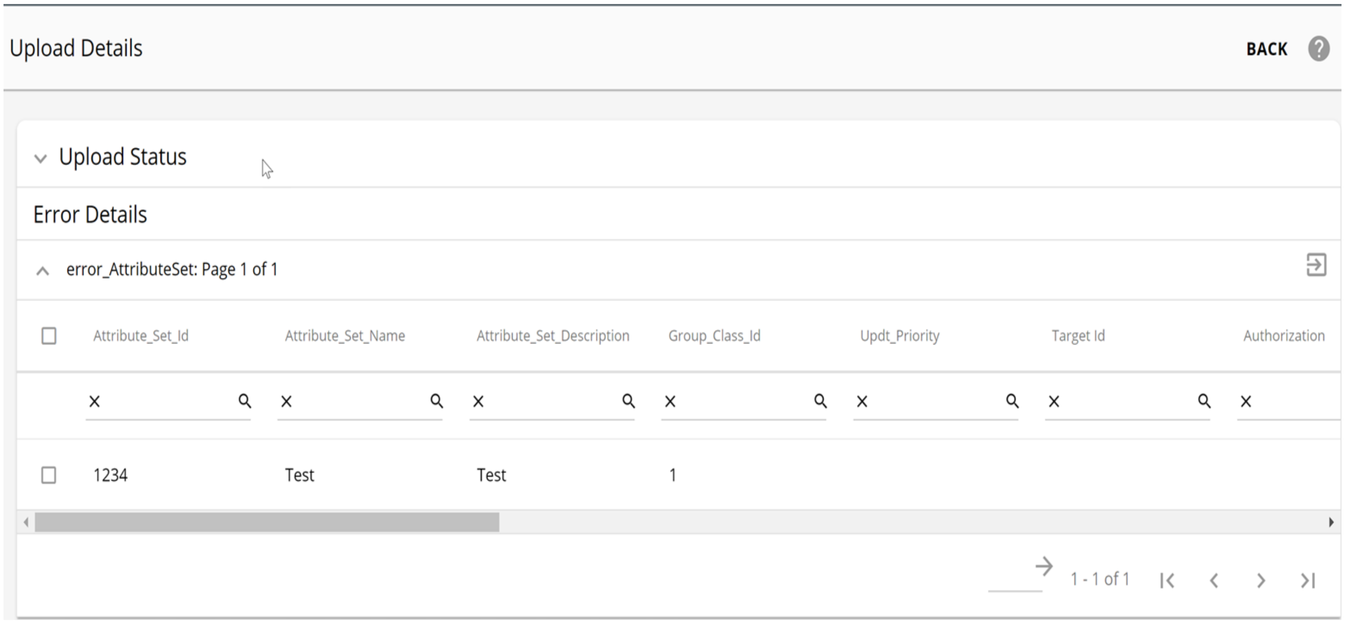
- **View records**: click on the Menu icon ⋮ corresponding to any individual approval request or group approval requests and click **View records** to view the details.
- Click on the Menu icon ⋮ corresponding to any rejected or withdrawn record and click on **Reprocess** to navigate to **Error Details** UI from where you can edit the record(s) and click **Reload** to reprocess the record as in Figure 674. *For details on editing and reloading the records, see Section : "Upload Status: Error Correction" in Upload Documents chapter.*

Figure 673: Approval Monitor



	Approval object	Object type	Total records	Action	Requestor	Approval type	Load ID	Action date ↓	Approval status	ID
⌄	AttributeSet	Table	1	INSERT	USR_1	Serial	202	Mar 14, 202...	✓ Approved	AttributeSet...
⌄	AttributeSet	Table	1	INSERT	USR_1	Serial	201	Mar 14, 202...	✕ Rejected	Attri
⌄	AttributeSet	Table	6	INSERT	USR_1	Serial	1	Feb 14, 20...	✓ Approved	Attri

Figure 674: Upload Status—Error Details



☐	Attribute_Set_Id	Attribute_Set_Name	Attribute_Set_Description	Group_Class_Id	Updt_Priority	Target Id	Authorization
☐	1234	Test	Test	1			

Group Requests

Many times for data integrity issues and based on business requirements, there is a need to group and approve related approval requests on different tables (related or independent) together. MDM provides an option on the Approval Monitor UI to select a set of individual approval requests and group it under a single parent approval request. Once the parent request in created, the Approval Inbox and Approval Monitor UIs display only the parent request and using the View button, the approver can view the child request details. The approvers can approve or reject only the parent request and all the linked child approval requests will be auto-approved or rejected accordingly.

Grouping of individual approval request must satisfy the following conditions else grouping cannot be done and valid error message will be displayed on the UI.

- The selected requests for grouping must be of the same approval type (all the selected requests must be either serial or parallel approval type).
- The selected requests for grouping must be of the same user type (all the selected requests must be either User based or User group based).
- If any of the individual approval request under the grouped request is partially approved, grouping cannot be done.
- Grouping is supported only on Table type approval object.
- Unique approvers from all requests grouped will be picked as approver of grouped request.

Grouping requests involves the following:

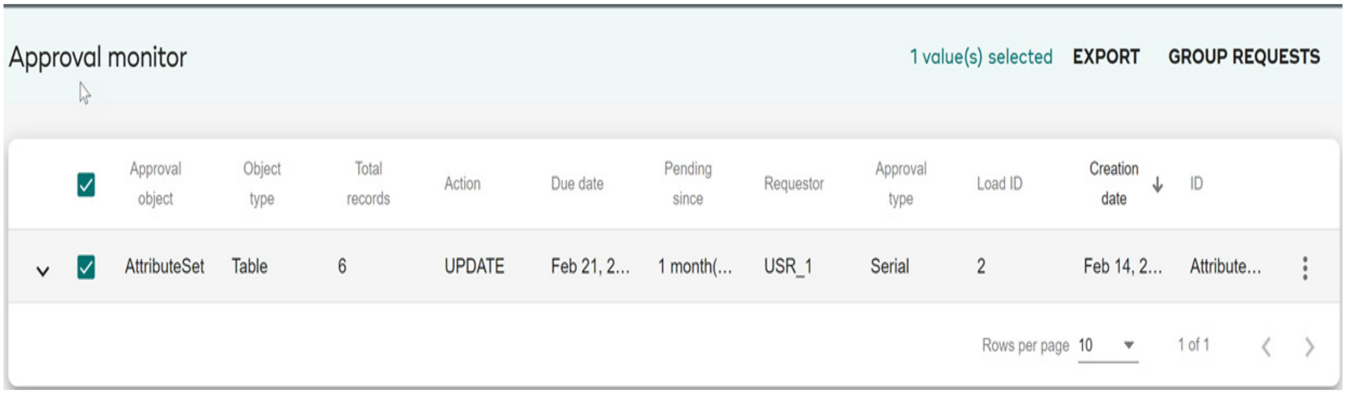
- Create Group Request
- Group Request on Approval Inbox
- Group Request on Approval Monitor
- Group Requests on Makers Inbox
- Group Requests on Approval History Tab

Create Group Request

Perform the following steps to create group requests:

1 On the **Approval Monitor** UI, select the approval requests to be grouped and click **Group Requests** as in Figure 675.

Figure 675: Approval Monitor

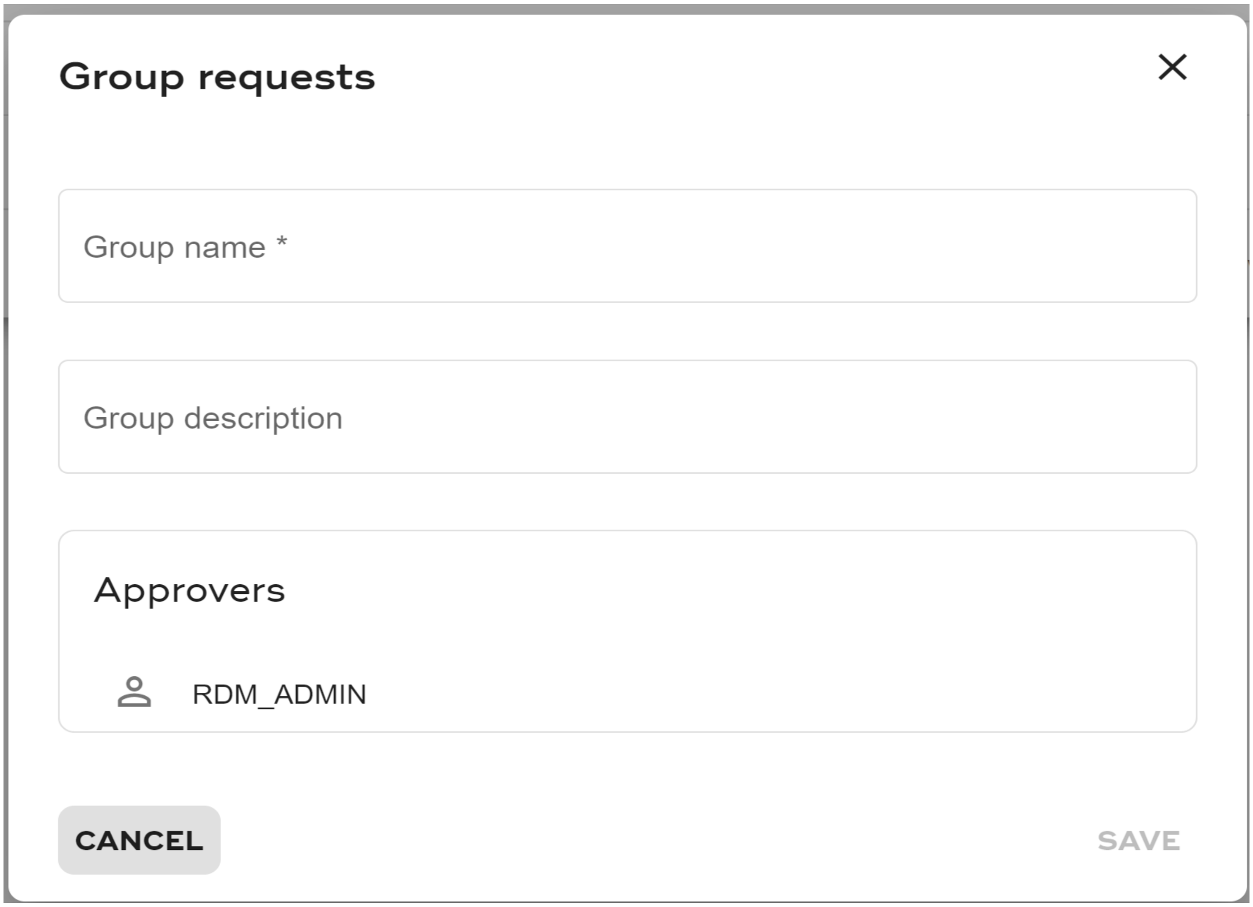


	☑	Approval object	Object type	Total records	Action	Due date	Pending since	Requestor	Approval type	Load ID	Creation date ↓	ID	
⌄	☑	AttributeSet	Table	6	UPDATE	Feb 21, 2...	1 month(...	USR_1	Serial	2	Feb 14, 2...	Attribute...	⋮

2 On the **Grouping Details** UI, enter the following details as in Figure 676.

- **Group Name**: unique name of the group being created.
- **Group Description**: brief description about the group being created.
- **Approvers:** the list of approvers for the grouped request in case of serial approval. Drag and drop the approvers to change the approval type serial.

Figure 676: Grouping Details



3 Click **Save**.

Message: “Requests are grouped successfully” is displayed. An email will be sent to the approvers about the grouped request, involved approval requests and the tables involved. The email will not contain the records details and there will be no option to accept/reject from email.

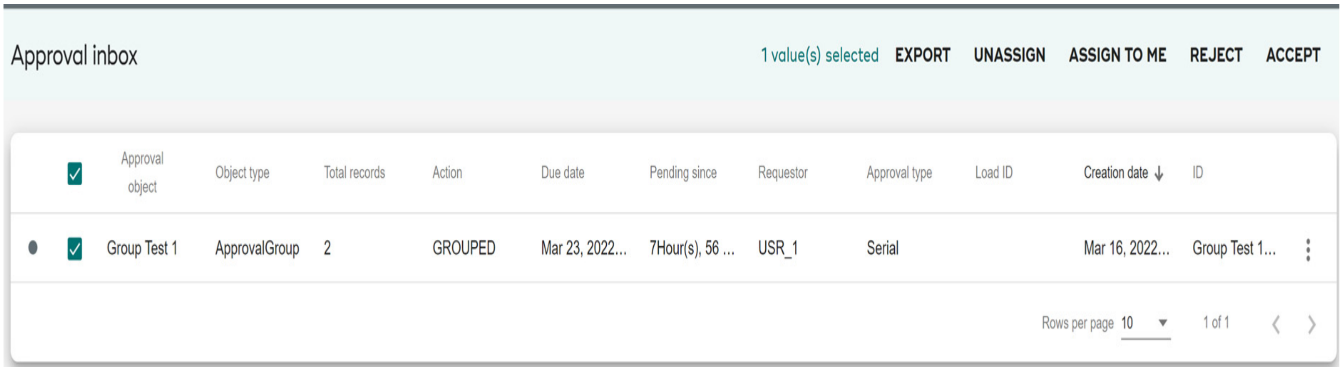
The grouped requests will be displayed on the Approval Inbox, Approval Monitor, Approval History and on the Maker’s Inbox UIs.

- Once grouping is done, individual approval requests for each approval grouped will be removed from approvers Inbox/Monitor UI and instead group request will be populated.
- Once requests are grouped, you cannot remove any request from the group.

Group Request on Approval Inbox

On the **Approval Inbox** UI, the grouped request is displayed as single request and will have the Action Type as “GROUPED” and Object Type as “ApprovalGroup” as in Figure 677.

Figure 677: Approval Inbox



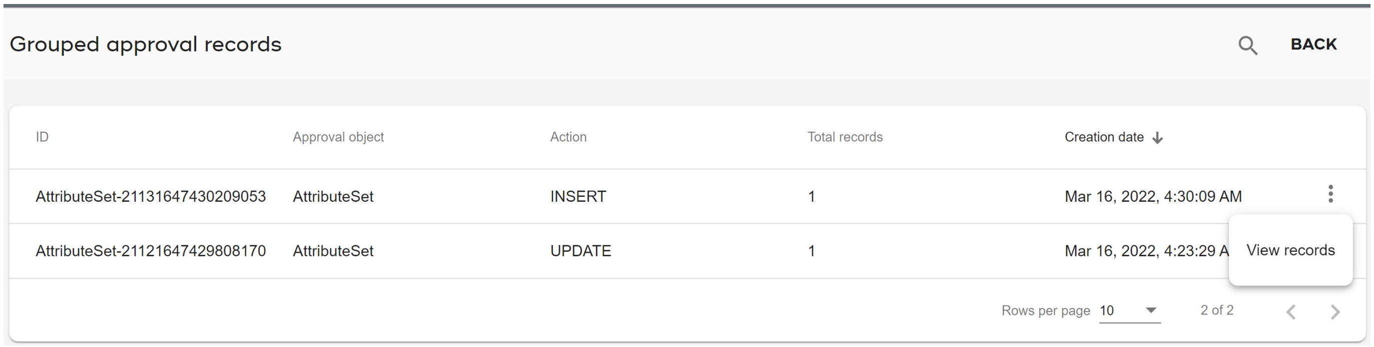
	☑	Approval object	Object type	Total records	Action	Due date	Pending since	Requestor	Approval type	Load ID	Creation date ↓	ID	
●	☑	Group Test 1	ApprovalGroup	2	GROUPED	Mar 23, 2022...	7Hour(s), 56 ...	USR_1	Serial		Mar 16, 2022...	Group Test 1...	⋮

The approver can use the **View records** option to view the details of the grouped requests. The **View Record(s)** UI displays all the individual approval requests and the approver can view the individual approval request details by selecting the request and clicking on **View** as in Figure 678.

On the **Approval Inbox** UI, approver can take action on a single group request at a time. The approver can select the group request and perform all the activities available on the Approval Inbox UI.

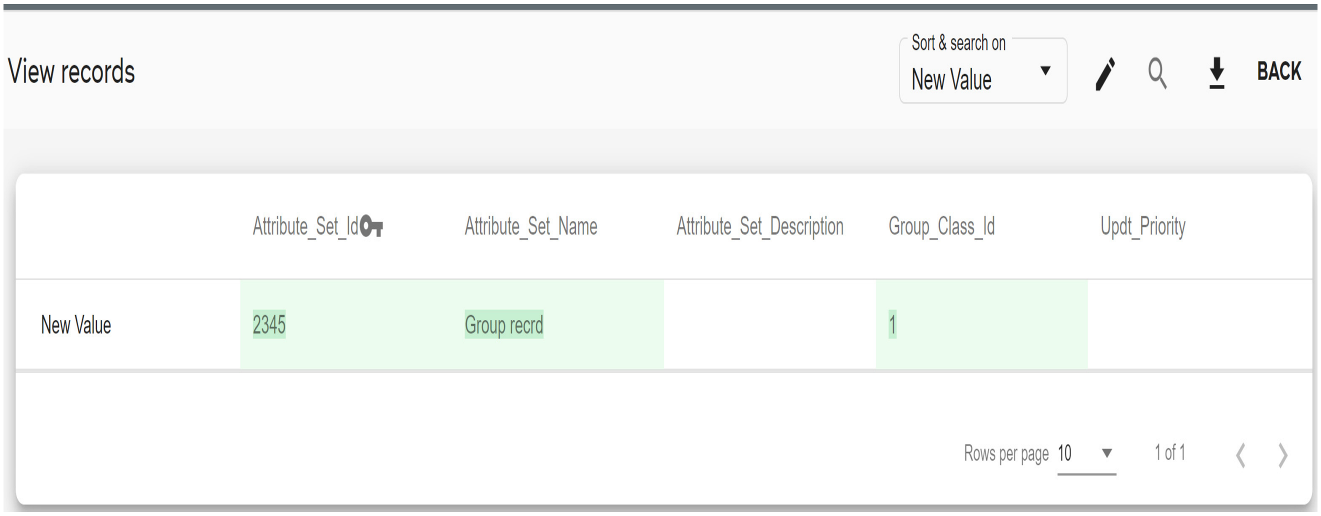
If any business rule validation error occurs on any one of the record under the grouped request, then on Accept by the last approver none of the records would get persisted but the error record will appear in the Error table. The process would rollback such that the Approval Request appears back on the UI with the status “Waiting for Approval” for the last approver. An email would be sent to the current approver and the person who grouped the requests notifying the Validation error with the details.

Figure 678: Approval Inbox—View Record(s)—Group Request



ID	Approval object	Action	Total records	Creation date
AttributeSet-21131647430209053	AttributeSet	INSERT	1	Mar 16, 2022, 4:30:09 AM
AttributeSet-21121647429808170	AttributeSet	UPDATE	1	Mar 16, 2022, 4:23:29 A

Figure 679: Records for Group Request

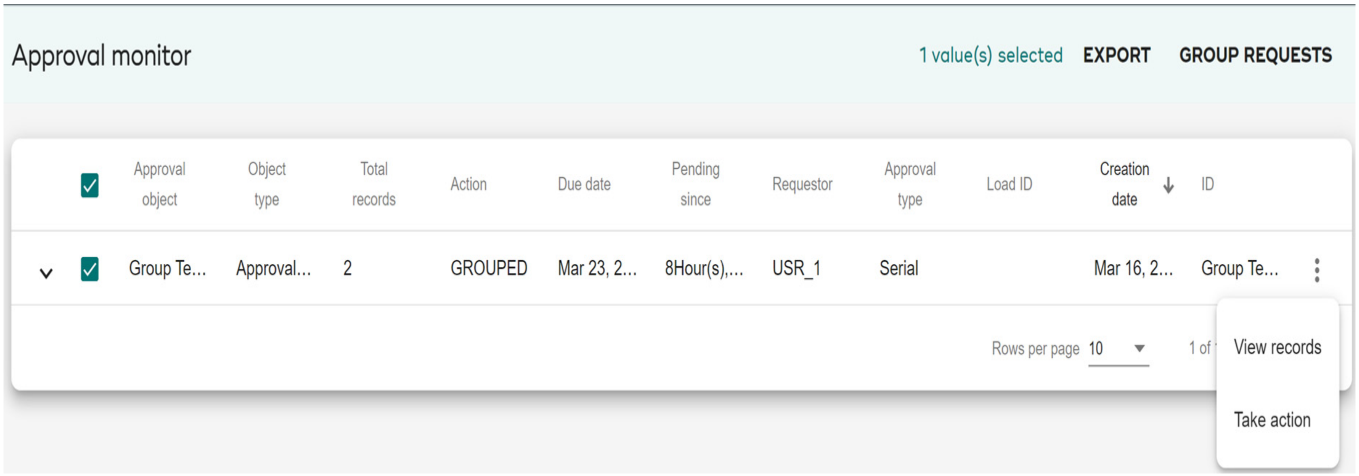


	Attribute_Set_Id	Attribute_Set_Name	Attribute_Set_Description	Group_Class_Id	Updt_Priority
New Value	2345	Group recrd		1	

Group Request on Approval Monitor

On the **Approval Monitor** UI, the details of group request are displayed in the same way as on the **Approval Inbox** UI. The grouped request is displayed as a single request and will have the Action Type as “GROUPED” and Object Type as “ApprovalGroup”.

Figure 680: Approval Monitor



Approval monitor

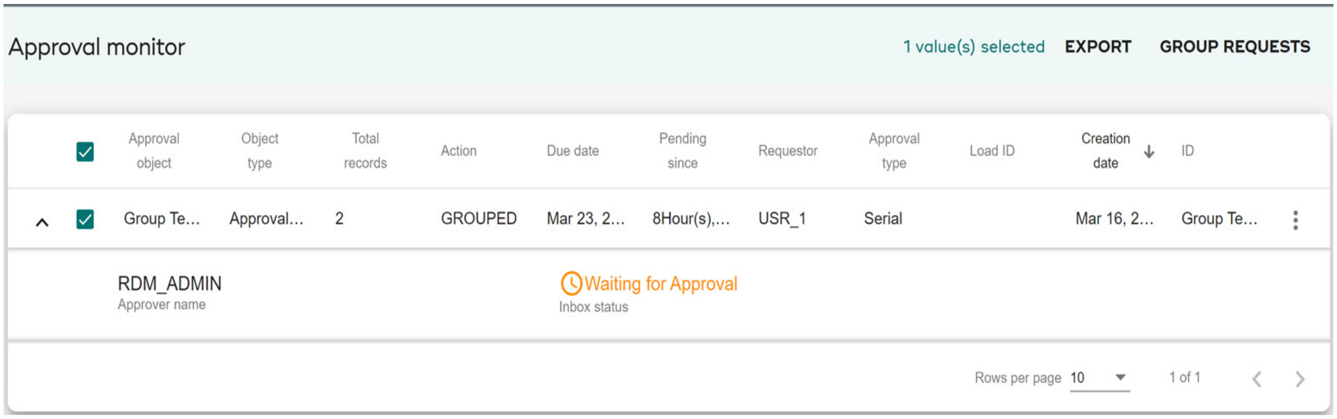
1 value(s) selected

☑	Approval object	Object type	Total records	Action	Due date	Pending since	Requestor	Approval type	Load ID	Creation date ↓	ID
☑	Group Te...	Approval...	2	GROUPED	Mar 23, 2...	8Hour(s),...	USR_1	Serial		Mar 16, 2...	Group Te...

Rows per page 10

In addition to the above details, the **Approval Monitor** UI also displays the list of approvers for each grouped request and their inbox status as in Figure 680.

Figure 681: Approval Monitor



Approval monitor

1 value(s) selected

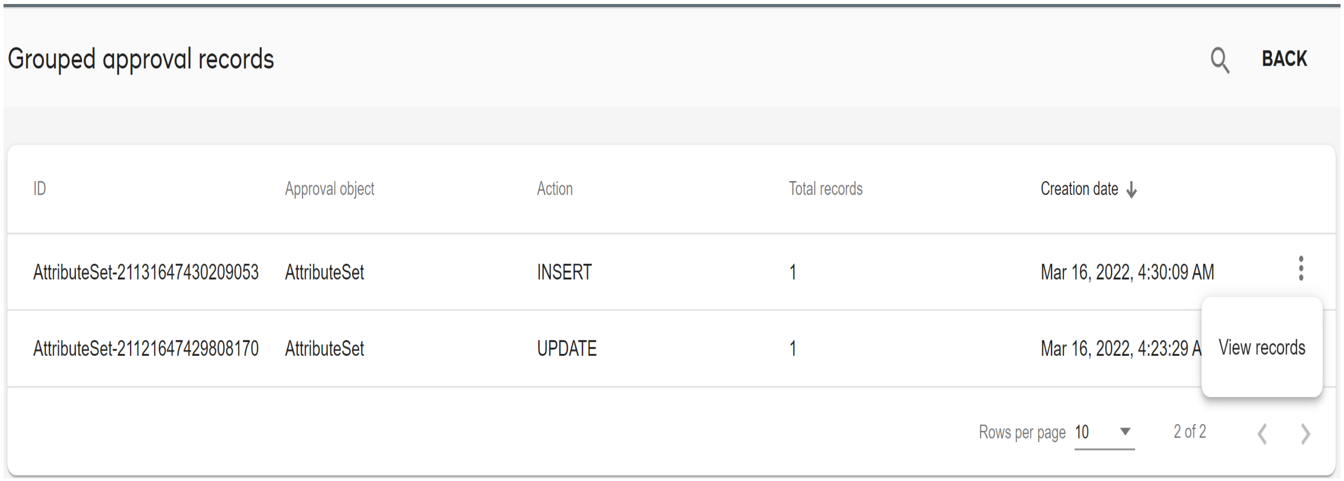
☑	Approval object	Object type	Total records	Action	Due date	Pending since	Requestor	Approval type	Load ID	Creation date ↓	ID
☑	Group Te...	Approval...	2	GROUPED	Mar 23, 2...	8Hour(s),...	USR_1	Serial		Mar 16, 2...	Group Te...

Approver name: RDM_ADMIN
Inbox status: Waiting for Approval

Rows per page 10
1 of 1

On the **Approval Monitor** UI, click on the Menu icon ⋮ corresponding to the group request and click **View** to view and edit individual requests of the selected group as in Figure 682.

Figure 682: Approval Monitor—View Record(s)—Group Request



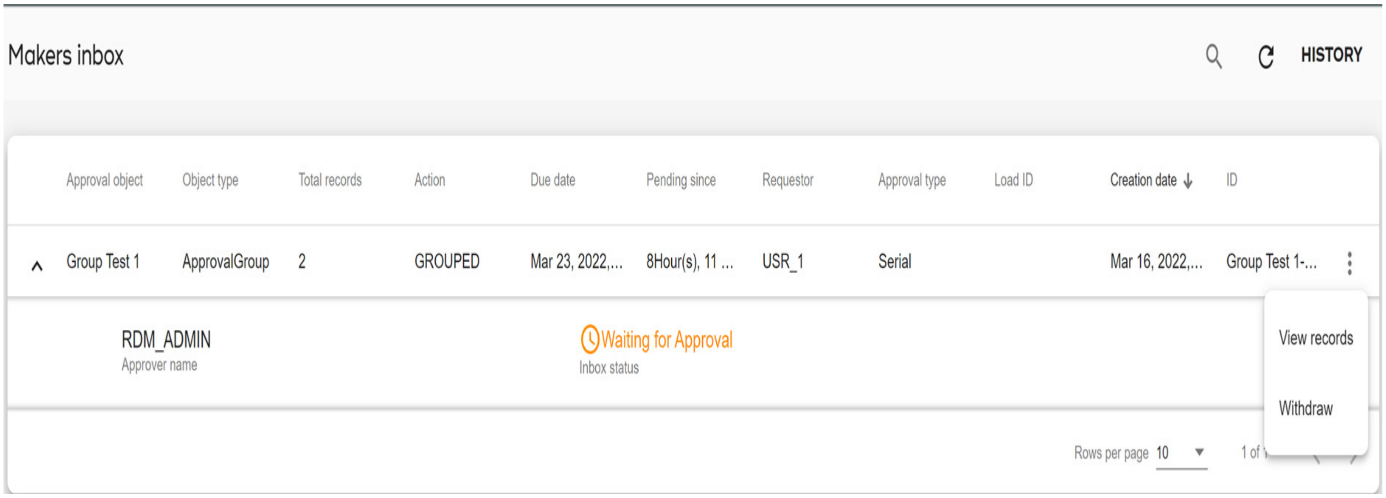
Grouped approval records

ID	Approval object	Action	Total records	Creation date ↓
AttributeSet-21131647430209053	AttributeSet	INSERT	1	Mar 16, 2022, 4:30:09 AM
AttributeSet-21121647429808170	AttributeSet	UPDATE	1	Mar 16, 2022, 4:23:29 A

Group Requests on Makers Inbox

On the **Makers Inbox** UI as well the grouped request is displayed as a single request and will have the Action Type as “GROUPED” and Object Type as “ApprovalGroup”. The Makers Inbox UI also displays the list of approvers for each grouped request and their inbox status as in Figure 683.

Figure 683: Makers Inbox—Group Request



Makers inbox

Approval object	Object type	Total records	Action	Due date	Pending since	Requestor	Approval type	Load ID	Creation date ↓	ID
Group Test 1	ApprovalGroup	2	GROUPED	Mar 23, 2022,...	8Hour(s), 11 ...	USR_1	Serial		Mar 16, 2022,...	Group Test 1-...

RDM_ADMIN
Approver name

Waiting for Approval
Inbox status

On the **Makers Inbox** UI, the approver can view the records using View records option

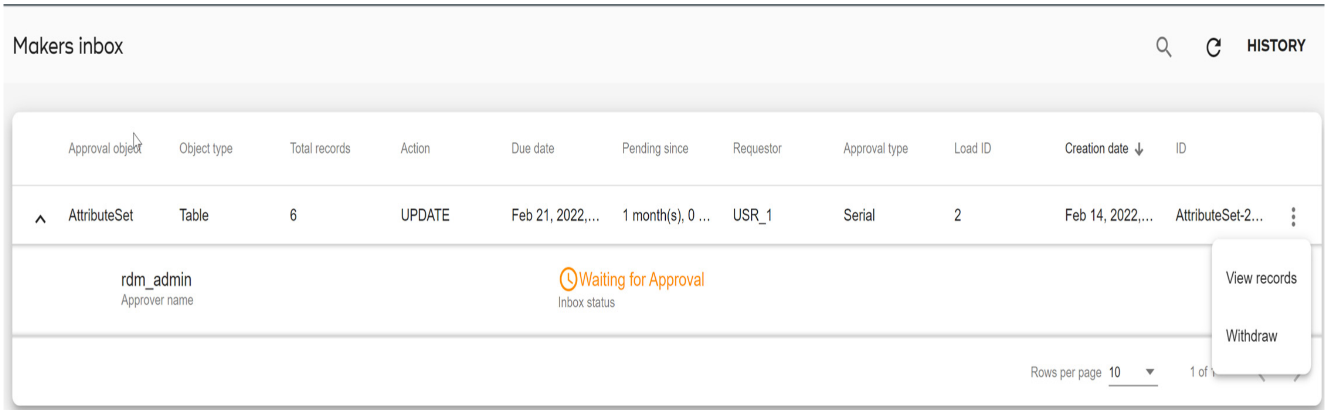
Group Requests on Approval History Tab

The **Approval History** tab on the Approval Inbox UI, Approval Monitor UI and Makers Inbox UI displays the actions performed on the group request. On the History tab, for group request, you cannot perform Reprocess activity.

Makers Inbox in MDM

Makers Inbox is the place where individual MDM users can review the approval requests created by them. Individual users can also withdraw their own approval requests at any point of time in the approval process. Users can also edit and reprocess the rejected records. Each MDM user will have individual Makers Inbox.

Figure 684: Makers Inbox



Approval object	Object type	Total records	Action	Due date	Pending since	Requestor	Approval type	Load ID	Creation date ↓	ID
AttributeSet	Table	6	UPDATE	Feb 21, 2022,...	1 month(s), 0 ...	USR_1	Serial	2	Feb 14, 2022,...	AttributeSet-2...

Approver name: rdm_admin

Inbox status: Waiting for Approval

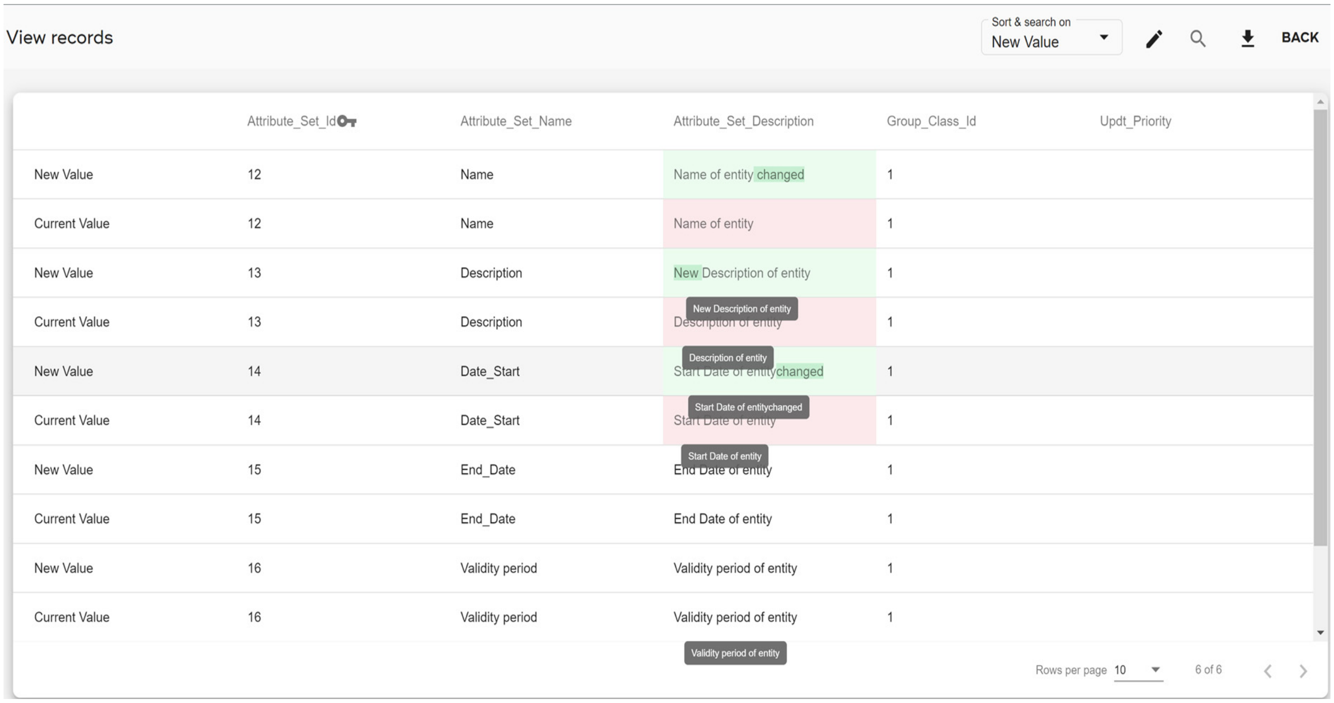
On the **Makers Inbox** UI (Figure 684), you can perform the following actions:

- ❑ The **Waiting for Approval** tab lists all the record(s) and group requests created by the logged in user. With **Waiting for Approval** tab selected, you can perform the following:
  - **Withdraw**: To withdraw a group request, do the following
    - Click the Menu icon corresponding to the group request and click **Withdraw**.

      A pop up displays to enter the comments for rejecting the group request.
    - Enter the comment and click **Confirm**.

    An email notification containing the withdrawal comment is sent to the record creator with the subject line as withdrawn.
  - **View records**: click on the Menu icon ⋮ corresponding to any record or group requests and click **View Record/s** to view record details as in Figure 685.

Figure 685: View Record(s)



	Attribute_Set_Id	Attribute_Set_Name	Attribute_Set_Description	Group_Class_Id	Updt_Priority
New Value	12	Name	Name of entity changed	1	
Current Value	12	Name	Name of entity	1	
New Value	13	Description	New Description of entity	1	
Current Value	13	Description	Description of entity	1	
New Value	14	Date_Start	Start Date of entitychanged	1	
Current Value	14	Date_Start	Start Date of entity	1	
New Value	15	End_Date	End Date of entity	1	
Current Value	15	End_Date	End Date of entity	1	
New Value	16	Validity period	Validity period of entity	1	
Current Value	16	Validity period	Validity period of entity	1	

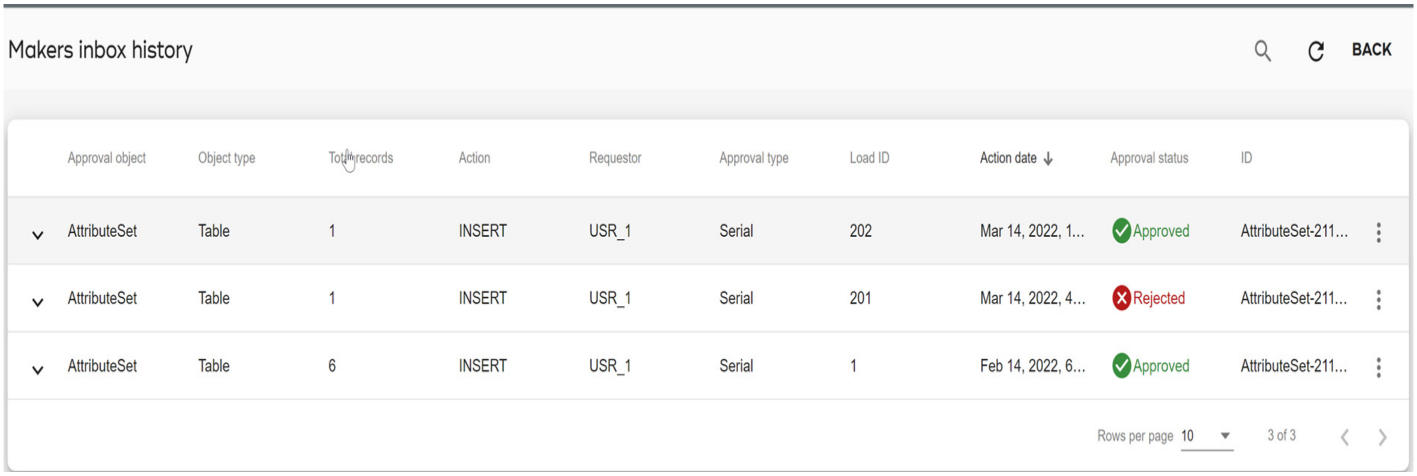
  The **Update** option for an approver is displayed if the user role has Enrichment Access activity assigned and also the approver has Create or Edit access on the table.

  - On the **View records** UI, you can perform inline editing to update or enrich the selected record. *For details, see* Action on Approval Request *in Approval Inbox section.*

- The **Makers Inbox history** tab lists the history of accepted, rejected and withdrawn records or group requests of the logged in user as in Figure 686.

In the makers inbox, when MDM users create and accept the approval requests, a validation message displays, whereas in the Approval inbox same MDM user can accept the same record without any validation message.

Figure 686: Makers Inbox



Makers inbox history

	Approval object	Object type	Total records	Action	Requestor	Approval type	Load ID	Action date ↓	Approval status	ID	
⌄	AttributeSet	Table	1	INSERT	USR_1	Serial	202	Mar 14, 2022, 1...	✓ Approved	AttributeSet-211...	⋮
⌄	AttributeSet	Table	1	INSERT	USR_1	Serial	201	Mar 14, 2022, 4...	✕ Rejected	AttributeSet-211...	⋮
⌄	AttributeSet	Table	6	INSERT	USR_1	Serial	1	Feb 14, 2022, 6...	✓ Approved	AttributeSet-211...	⋮

- With **Makers Inbox history** tab selected, you can perform the following:
  - click on the Menu icon ⋮ corresponding to any record and click **View records** to view record details.
  - click on the Menu icon ⋮ corresponding to the rejected record or withdrawn record and click on **Reprocess** to navigate to **Error Details** UI from where you can edit the record(s) and click **Reload** to reprocess the record. *For details on editing and reloading the records, see Section : "Upload Status: Error Correction" in Upload Documents chapter.*

- On the Makers Inbox Approval History UI, Reprocess on the records uploaded through excel upload is not supported.
- If a record is in Approval Inbox, on trying to reprocess the record, the message "Selected record is pending approval" is displayed.

Rule Based Approval

Generic approval feature available allows approval at table level. All rows of the table take part in approval process once approval is enabled on a table. Rule Based Approval allows approval for specific rows of a table. Specific rows of a table can be sent for approval based on rules created. Important points of Rule Based Approval are:

- Rule based approval is an advance option for MDM master tables on top of generic approval.

- This feature supports approval on change of values of specific columns of a table as opposed to approval on change of all columns values of the table. This is valid only for update action.
- This feature supports auto approval of records based on rule criteria.
- This feature supports assignment of rows of a table to specific approvers based on rule criteria. The approvers in assignment approval may not be same as generic approval approvers.
- All flows of approval remains same as generic approval.

The Rule Based approval involves the following approval types:

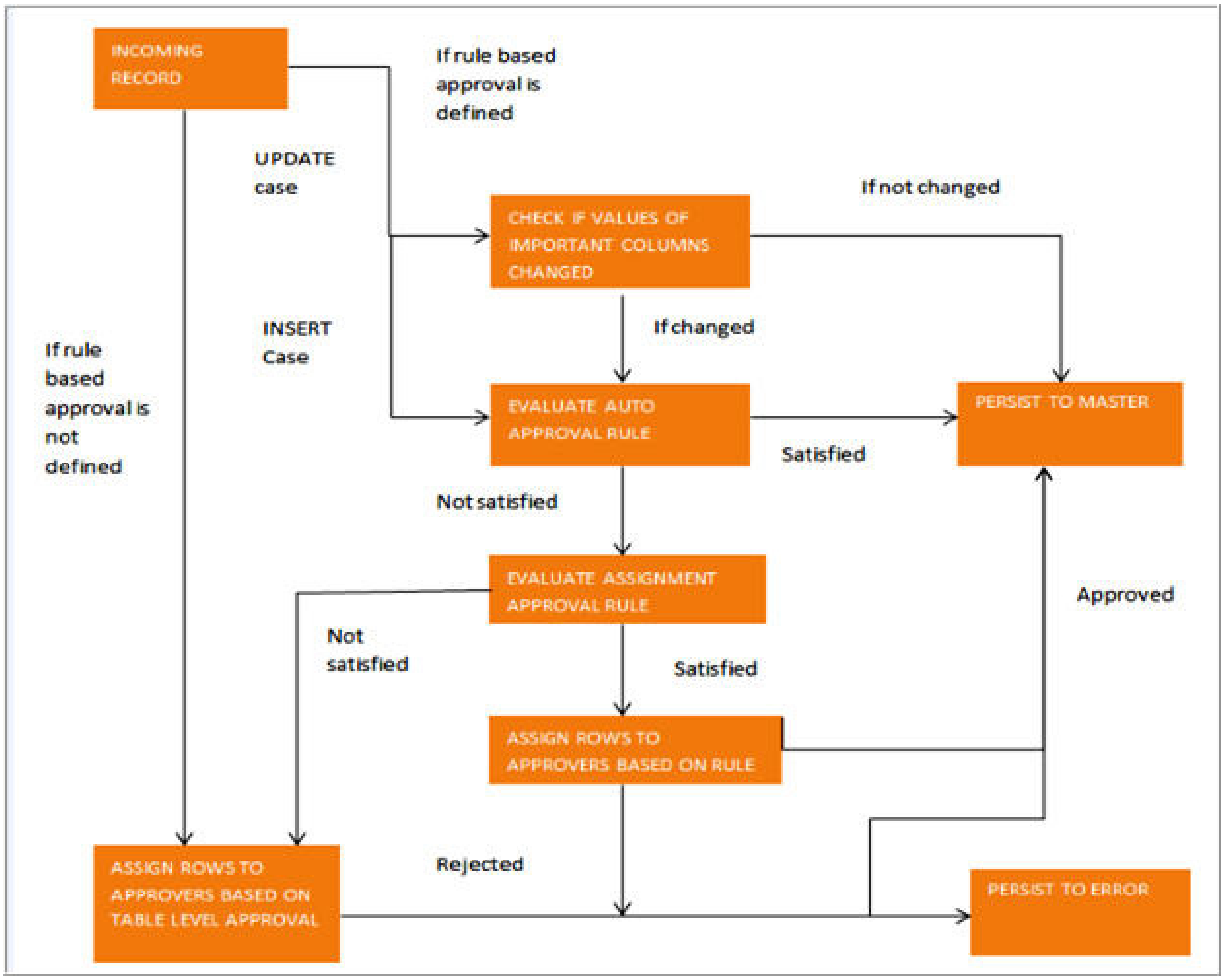
- Auto Approval
- Assignment Approval
- Column Level Approval

  Any or all the above approval type can be defined on the specific rows of a table. The rule based approval is defined on tables on which table based approval is already defined.

- Each of Auto approval, Assignment approval and Column level approval are independent of each other.
- Auto approval, Assignment approval and Column level approval can co-exist. If rows for approval do not qualify column level approval criteria, they can take part in Auto or Assignment approval.
- If rows of table do not qualify any of the rule based approval criteria, they will by default go for approvers of generic approval.

The Figure 687 below illustrates the Rule Based Approval process.

Figure 687: Rule Based Approval Flow Diagram


INCOMING RECORD
If rule based approval is defined
UPDATE case
INSERT Case
If rule based approval is not defined
CHECK IF VALUES OF IMPORTANT COLUMNS CHANGED
If not changed
If changed
EVALUATE AUTO APPROVAL RULE
Satisfied
PERSIST TO MASTER
Not satisfied
EVALUATE ASSIGNMENT APPROVAL RULE
Approved
Not satisfied
Satisfied
ASSIGN ROWS TO APPROVERS BASED ON RULE
ASSIGN ROWS TO APPROVERS BASED ON TABLE LEVEL APPROVAL
Rejected
PERSIST TO ERROR

Auto Approval

The Auto Approval also known as Skip Approval allows rows of a table to skip the approval process based on certain rule criteria. That is, if approval is defined on a table and if certain rows are not required to take part in approval, you can skip those rows by defining the required rule criteria on the table.

Note: You can have only one Auto Approval rule enabled on the table.

The Auto Approval rule creation involves two main steps:

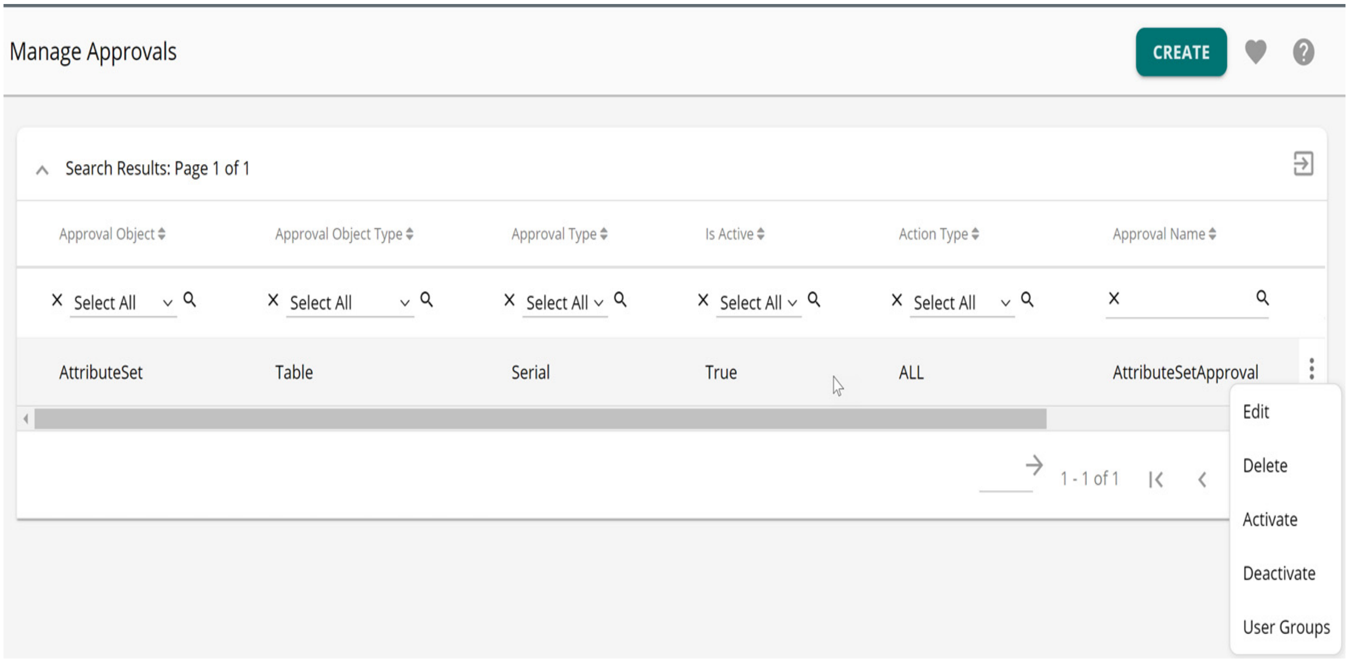
1 Create Rule Using Rule Builder

2 Set Auto Approval

Create Rule Using Rule Builder

The rule based approval is defined on tables on which table based approval is already defined. You can navigate to **Rules** UIs from **Manage Approval** UI by selecting **Edit** option from the Menu corresponding to any of the defined table level approval record as in (Figure 688).

Figure 688: Manage Approvals

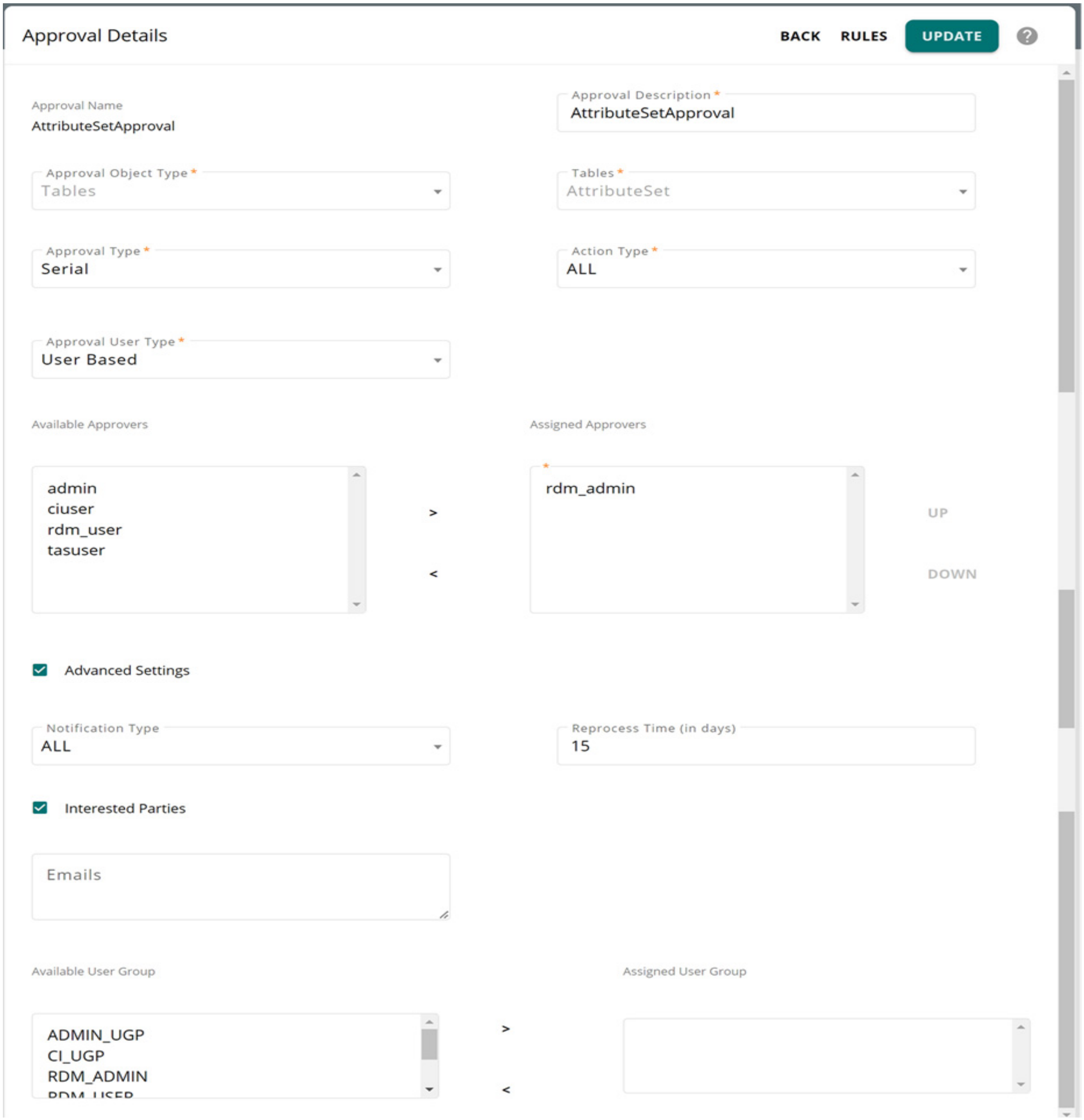


Approval Object	Approval Object Type	Approval Type	Is Active	Action Type	Approval Name
AttributeSet	Table	Serial	True	ALL	AttributeSetApproval

The **Approval Details** UI (Figure 689) is displayed.

1 On the **Approval Details** UI (Figure 689), click **Rules**.

Figure 689: Approval Details



Approval Details

Approval Name
AttributeSetApproval

Approval Description *
AttributeSetApproval

Approval Object Type *
Tables

Tables *
AttributeSet

Approval Type *
Serial

Action Type *
ALL

Approval User Type *
User Based

Available Approvers
admin
ciuser
rdm_user
tasuser

Assigned Approvers *
rdm_admin

☑ Advanced Settings

Notification Type
ALL

Reprocess Time (in days)
15

☑ Interested Parties

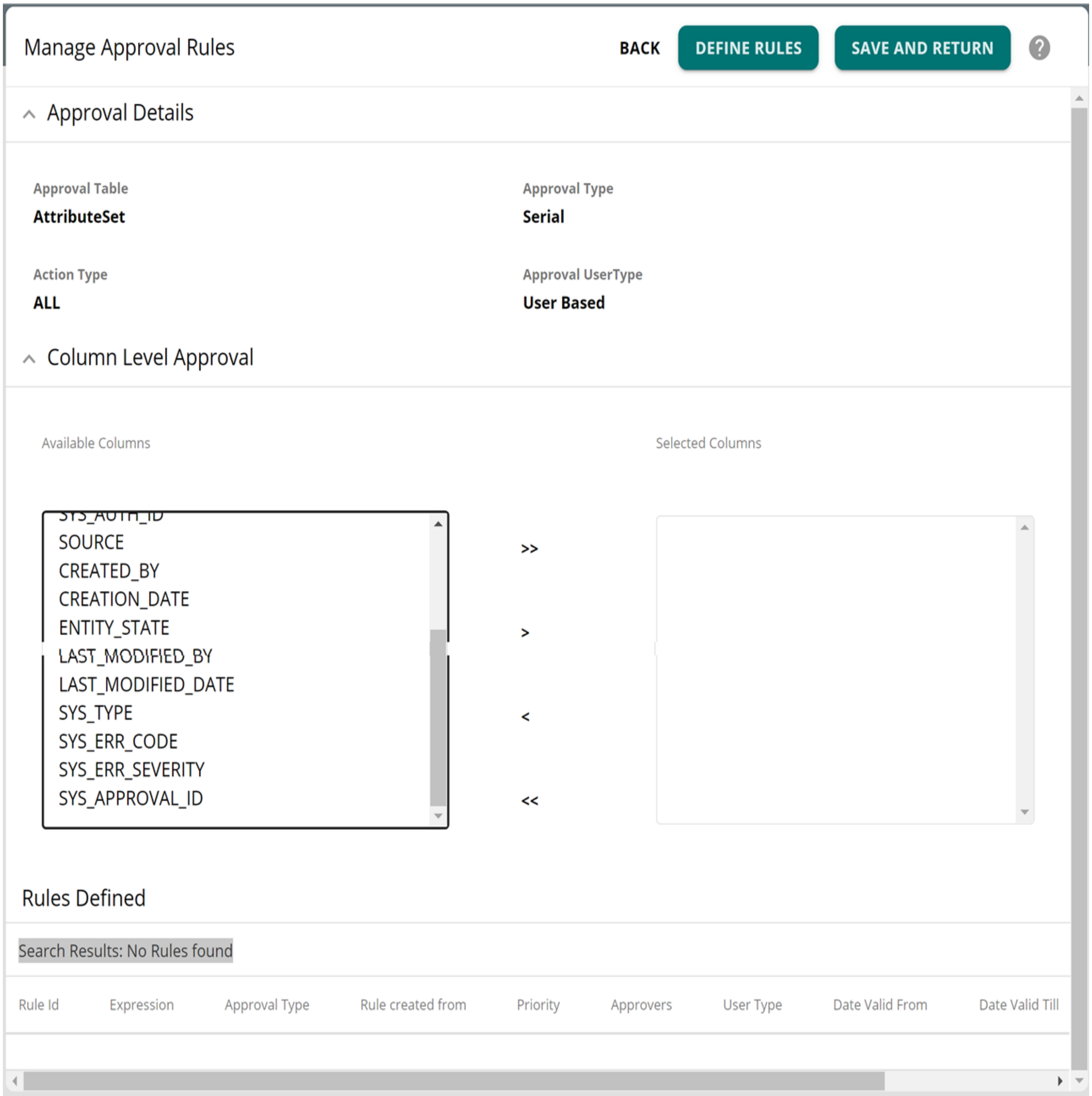
Emails

Available User Group
ADMIN_UGP
CI_UGP
RDM_ADMIN
RDM_USER

Assigned User Group

The **Manage Approval Rules** UI with **Column Level Approval** UI section (Figure 690) is displayed if the selected table level approval is of Action type UPDATE or ALL else if the selected table level approval is of Insert Action type, the **Manage Approval Rules** UI without the **Column Level Approval** section is displayed as in Figure 691. For details on Column Level Approval, see Section : "Column Level Approval."

Figure 690: Manage Approval Rules



Approval Details

Approval Table: AttributeSet
Approval Type: Serial
Action Type: ALL
Approval UserType: User Based

Column Level Approval

Available Columns:
SOURCE
CREATED_BY
CREATION_DATE
ENTITY_STATE
LAST_MODIFIED_BY
LAST_MODIFIED_DATE
SYS_TYPE
SYS_ERR_CODE
SYS_ERR_SEVERITY
SYS_APPROVAL_ID

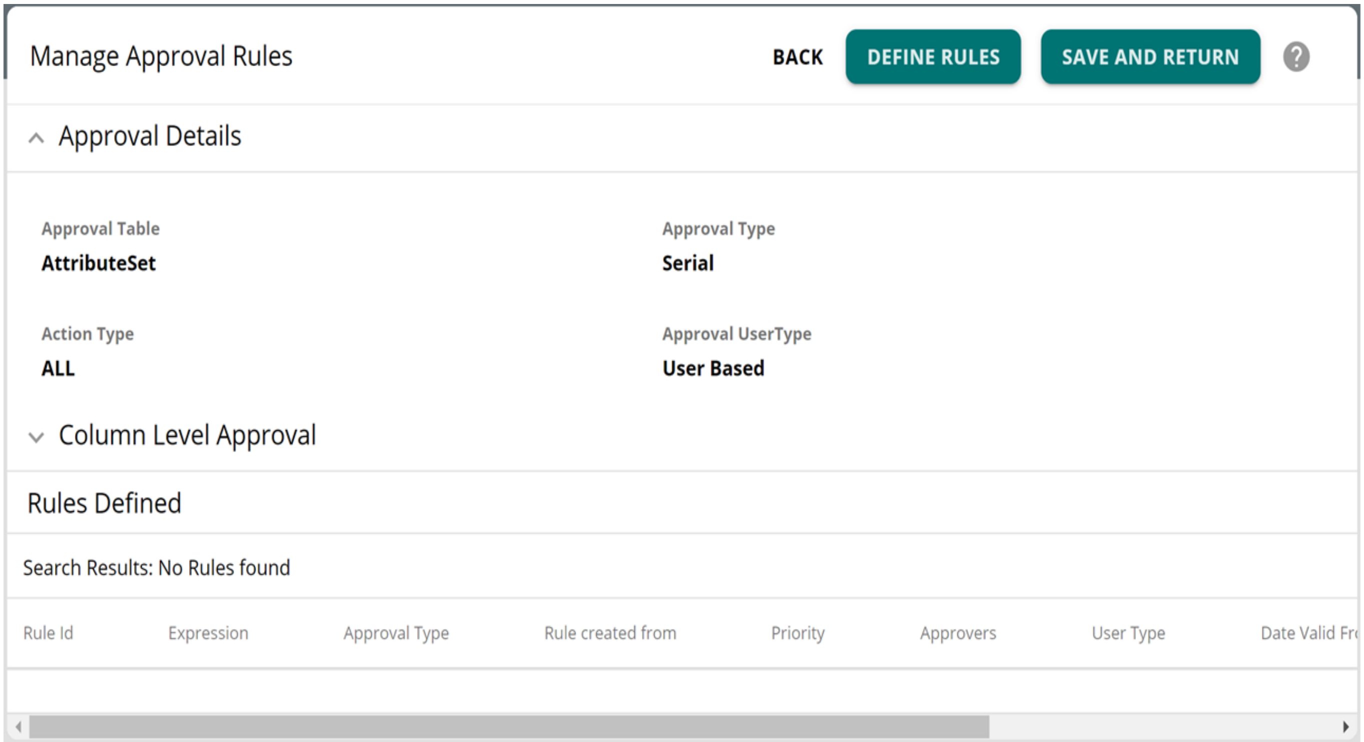
Selected Columns

Rules Defined

Search Results: No Rules found

Rule Id	Expression	Approval Type	Rule created from	Priority	Approvers	User Type	Date Valid From	Date Valid Till

Figure 691: Manage Approval Rules



Approval Table
AttributeSet

Approval Type
Serial

Action Type
ALL

Approval UserType
User Based

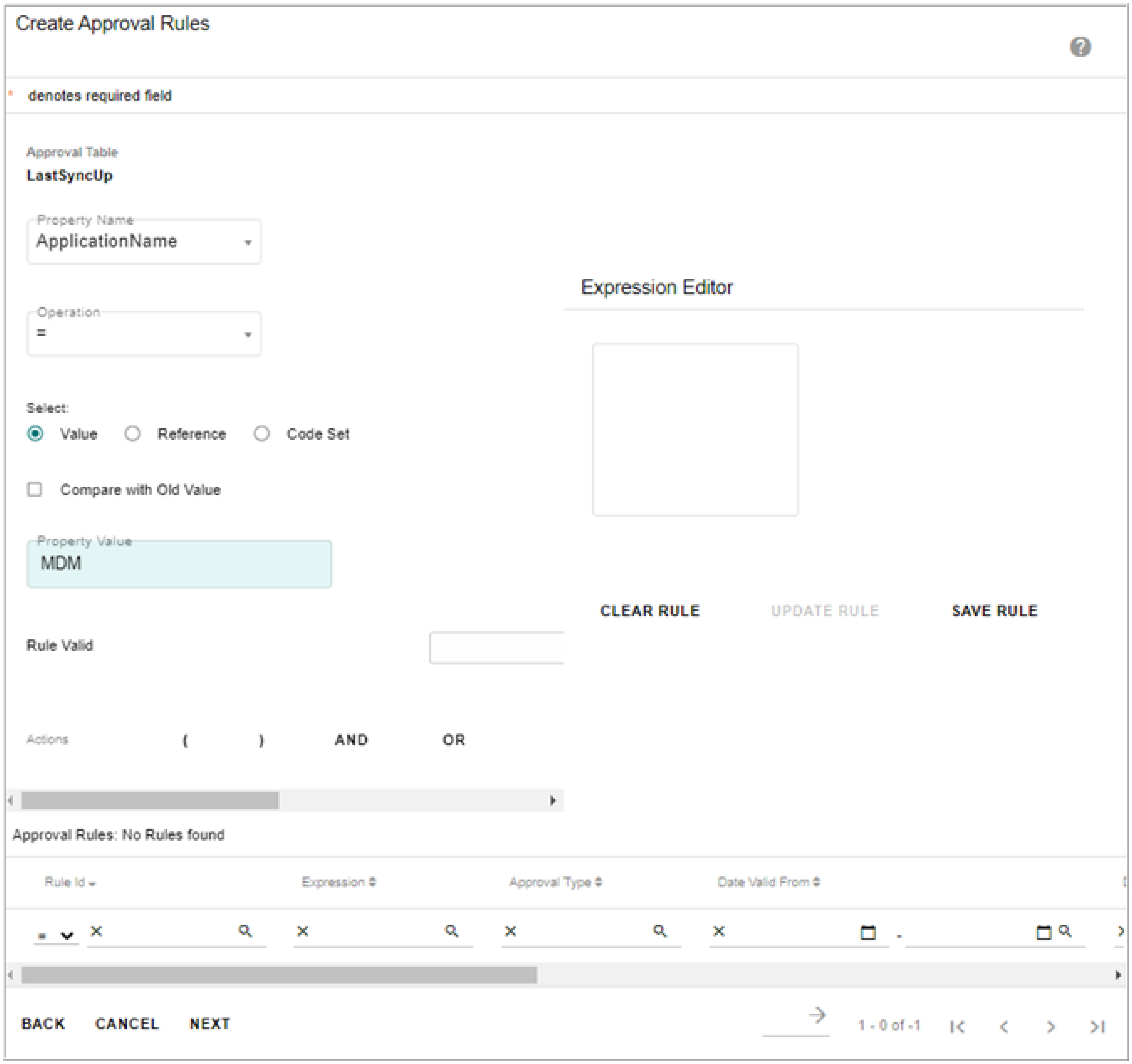
Search Results: No Rules found

Rule Id	Expression	Approval Type	Rule created from	Priority	Approvers	User Type	Date Valid Fr

2 On the Manage Approval Rules (Figure 690 or Figure 691), click **Define Rules**.

The **Create Approval Rules** UI (Figure 692) is displayed.

Figure 692: Create Approval Rules



Approval Table
LastSyncUp

Property Name
ApplicationName

Operation
=

Select:
● Value ○ Reference ○ Code Set

☐ Compare with Old Value

Property Value
MDM

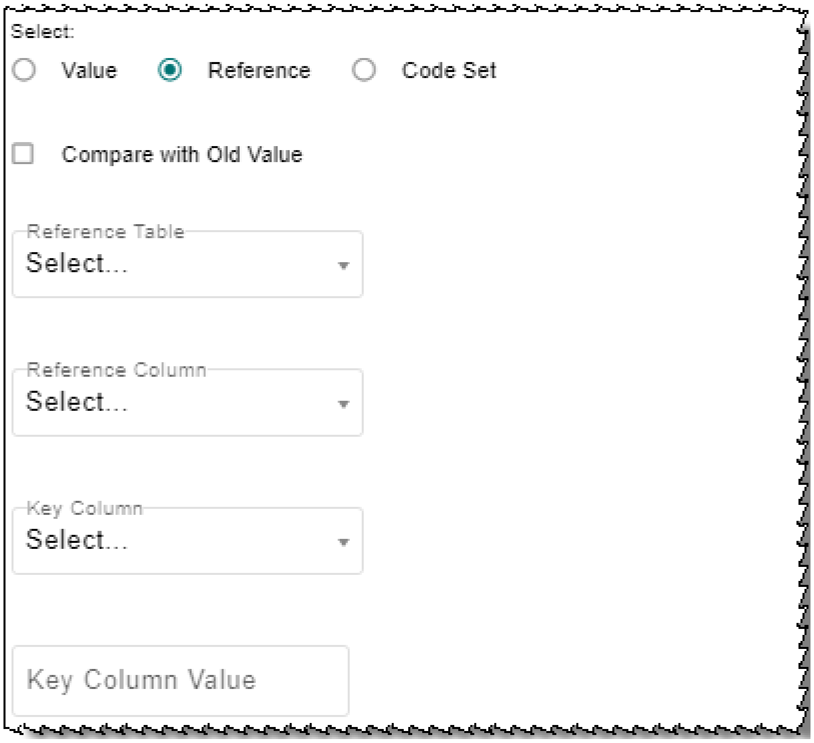
Approval Rules: No Rules found

3 On the **Create Approval Rules** UI (Figure 692), create a rule by entering the following:

- **Property Name**: lists all the columns of the selected table. Select the column on which the rule is being created.
- **Operation**: select the operation parameter (=, <. >, <=, >= , < >, is null, and is not null)
- **Value** or **Reference** or **Code Set** radio button.

  If **Value** option is selected, enter the value in the Property Value field.

  If **Reference** option is selected, additional fields are displayed as below. Select the reference table, reference column, key column and enter the key column value.



Select:

○ Value ● Reference ○ Code Set

☐ Compare with Old Value

Reference Table: Select...

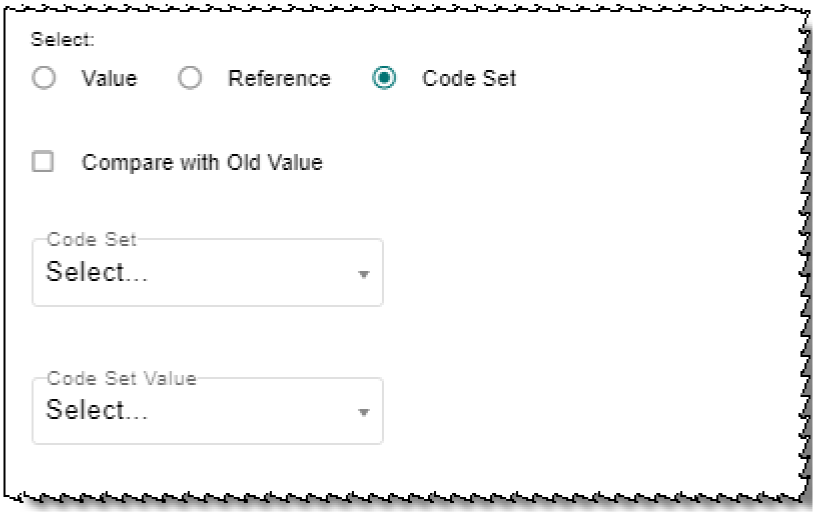
Reference Column: Select...

Key Column: Select...

Key Column Value

- Default operator supported for Key column value is '='
- The data type of the column in the approval table and the datatype in reference column should be same.
- The key column and its values should be such that only single row is fetched. Preferably the key column should be the PK of the table.
- For Reference option, if the key column is selected as date type with timestamp, the date value needs to be entered in database format (YYYY-MM-DD HH:MI:SS) and not in the locale format.

If **Code Set** option is selected, additional fields are displayed as below. Select the code set and code set value.



Select:
○ Value ○ Reference ● Code Set

☐ Compare with Old Value

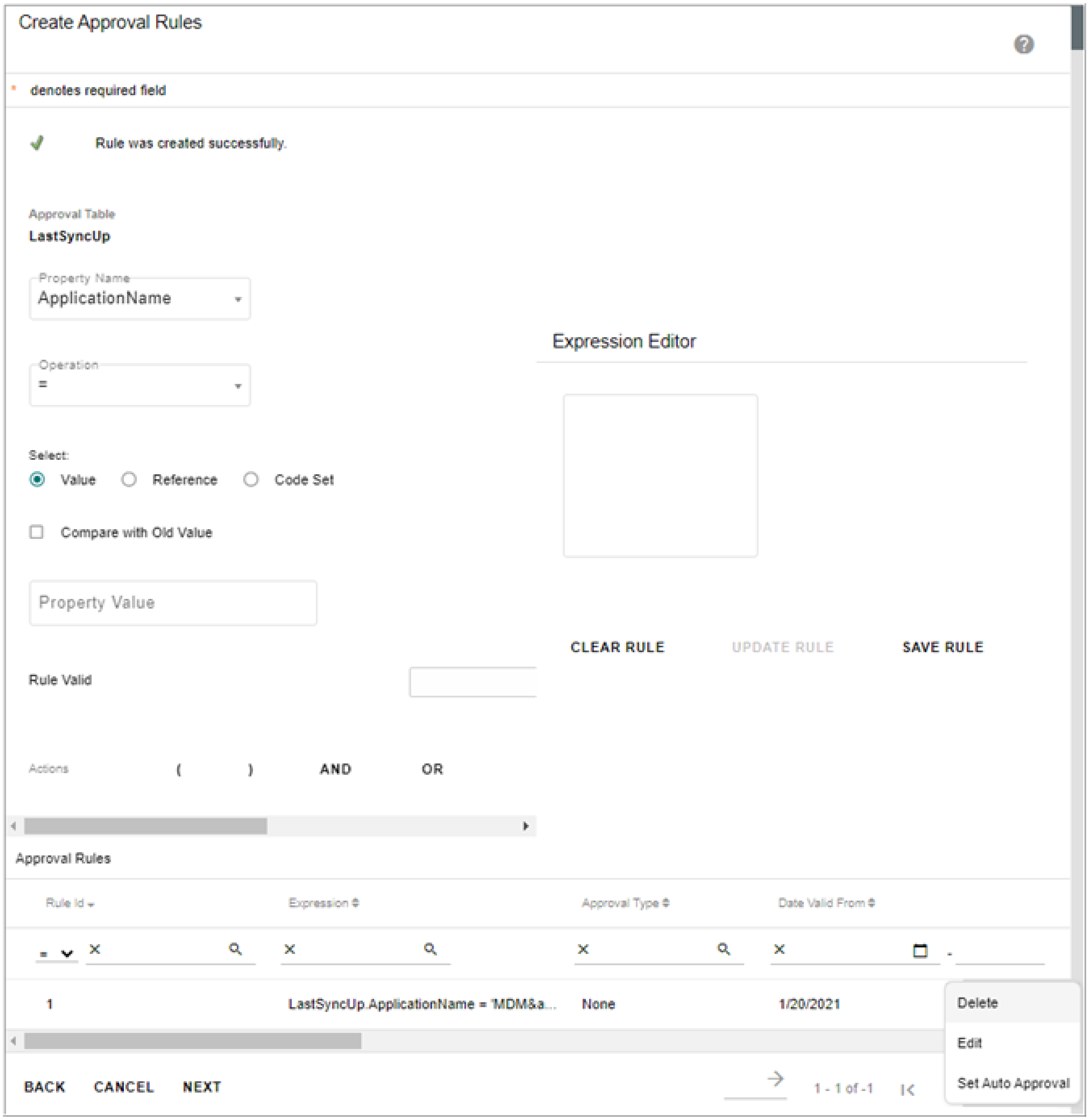
Code Set
Select...

Code Set Value
Select...

- **Compare with Old Value**: select this checkbox and click on Add Condition, a rule will be generated in the form “Table1.Col1 [Operator] #<OldValue>”. This rule compares the column values with the existing values and if there is any change in the column values, approval will be triggered.
- **Rule Valid From:** specify the From and To date. The rule being created will be valid only for the specified duration of days.
- **Actions**: you can optionally use the AND, OR, (and) buttons to build complex rule expressions.
- **Add Condition**: click Add Condition button to add the rule. The rule expression is displayed in the **Expression Editor** field.
- **Clear Rule**: click Clear Rule to delete the rule expression.
- **Save Rule**: click Save Rule to save the rule being created.

The rule is created as in Figure 693.

Figure 693: Create Approval Rules



Create Approval Rules

* denotes required field

✓ Rule was created successfully.

Approval Table: LastSyncUp

Property Name: ApplicationName

Operation: =

Select: ● Value ○ Reference ○ Code Set

☐ Compare with Old Value

Approval Rules

Rule Id	Expression	Approval Type	Date Valid From
1	LastSyncUp.ApplicationName = 'MDM&a...	None	1/20/2021

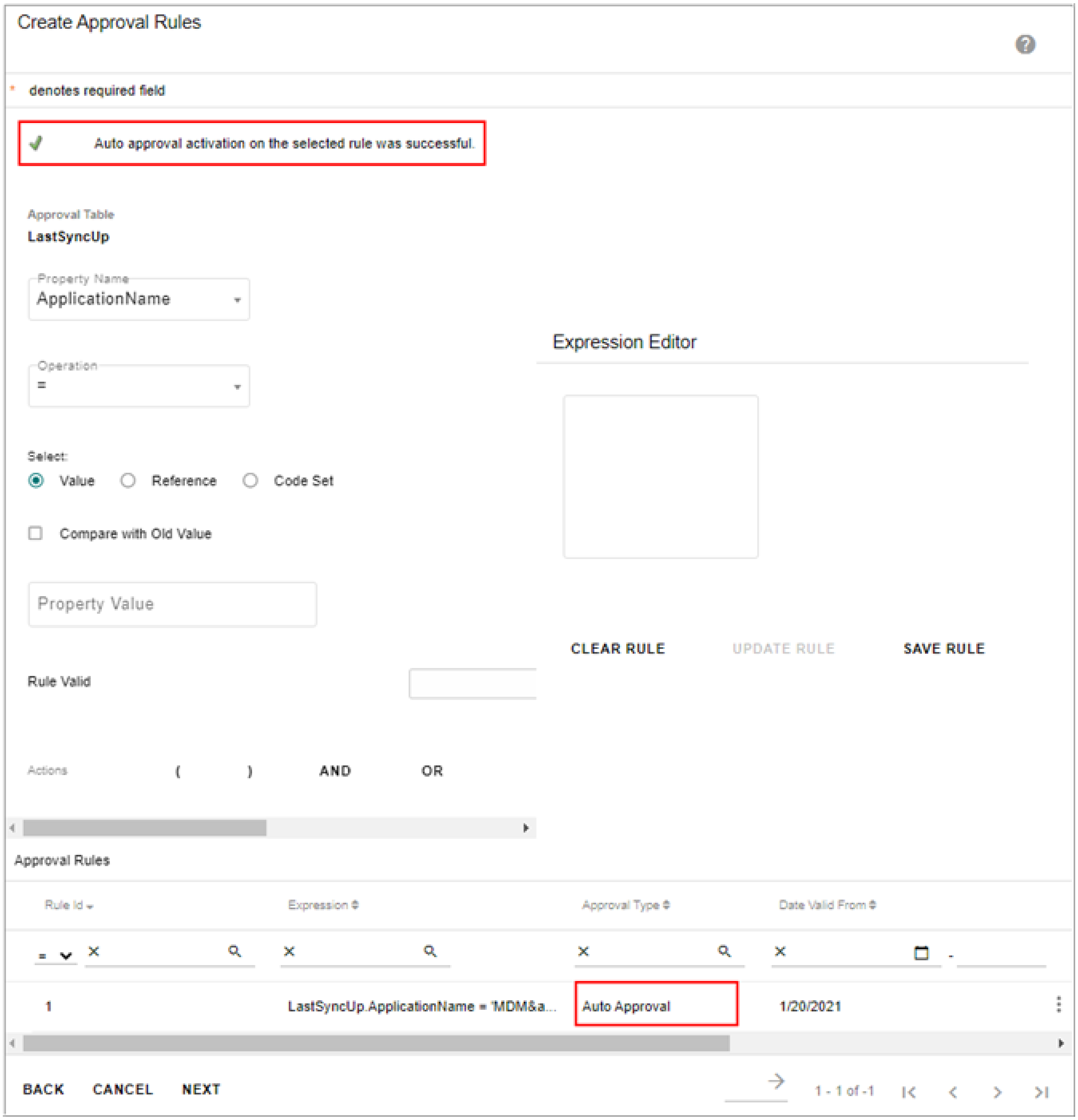
- **Update Rule**: to update a rule, on the Approval Rules section, click on the Menu icon ⋮ corresponding to the rule and click **Edit** as in Figure 693. The rule expression is displayed in the Expression Editor and the **Update Rule** button will be enabled. You can modify the expression and click **Update Rule**.

Set Auto Approval

To set auto approval on a rule, on the Approval Rules section, click on the Menu icon ⋮ corresponding to the created rule and click **Set Auto Approval** button as in Figure 693.

Once the auto approval is enabled on the rule, the activation message is displayed and the rule type will be changed to Auto Approval as displayed in the **Approval Type** column in Figure 694.

Figure 694: Create Approval Rules



Create Approval Rules

* denotes required field

✓ Auto approval activation on the selected rule was successful.

Approval Table
LastSyncUp

Property Name: ApplicationName

Operation: =

Select:
● Value ○ Reference ○ Code Set

☐ Compare with Old Value

Property Value

Rule Valid

Approval Rules

Rule Id	Expression	Approval Type	Date Valid From
1	LastSyncUp.ApplicationName = 'MDM&a...	Auto Approval	1/20/2021

1 - 1 of -1

Assignment Approval

The Assignment Approval rule allows you to assign specific approvers to approve specific rows of a table based on certain rule criteria. In the Assignment Approval, if multiple rules are created, priority can be set for execution of the assignment rules using the Set Priority option. If none of the defined rules are satisfied, by default table based approval will be applied on the rows.

The Assignment Approval rule creation involves the following main steps:

1. Create Rule Using Rule Builder
2. Assign Approvers
3. Set Priority

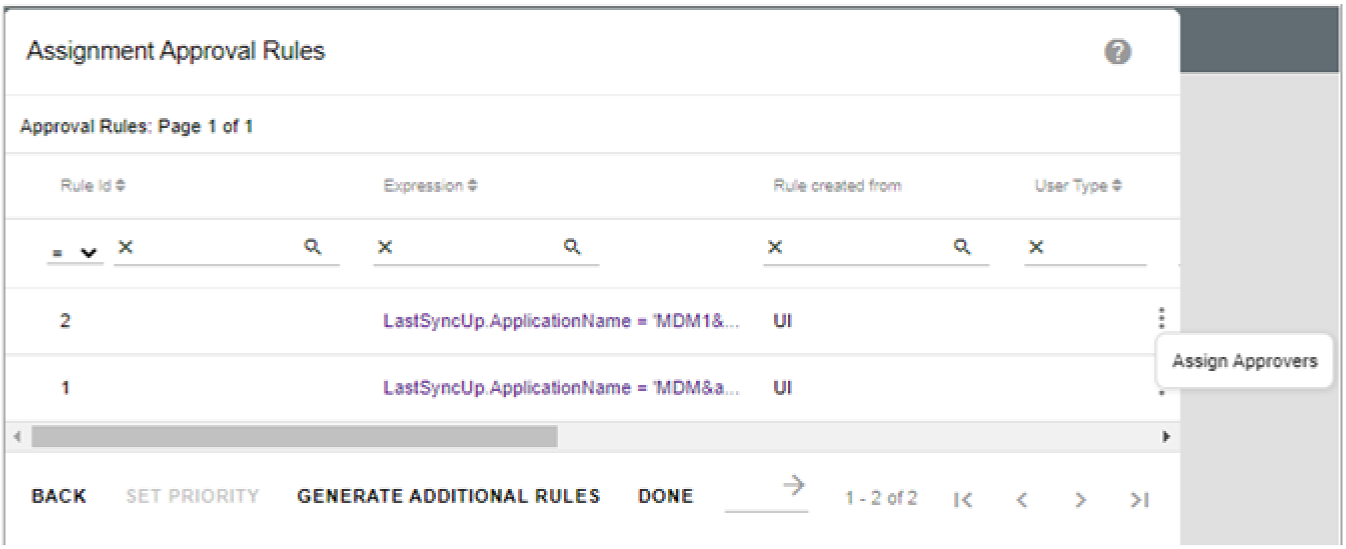
Assign Approvers

You can navigate to Assignment Approval rules UI from Create Approval Rules page. Perform the following steps to assign approvers:

1. On the **Create Approval Rules** UI (Figure 694), click **Next** to define assignment.

   The **Assignment Approval Rules** UI (Figure 695) is displayed.

Figure 695: Assignment Approval Rules



Assignment Approval Rules

Approval Rules: Page 1 of 1

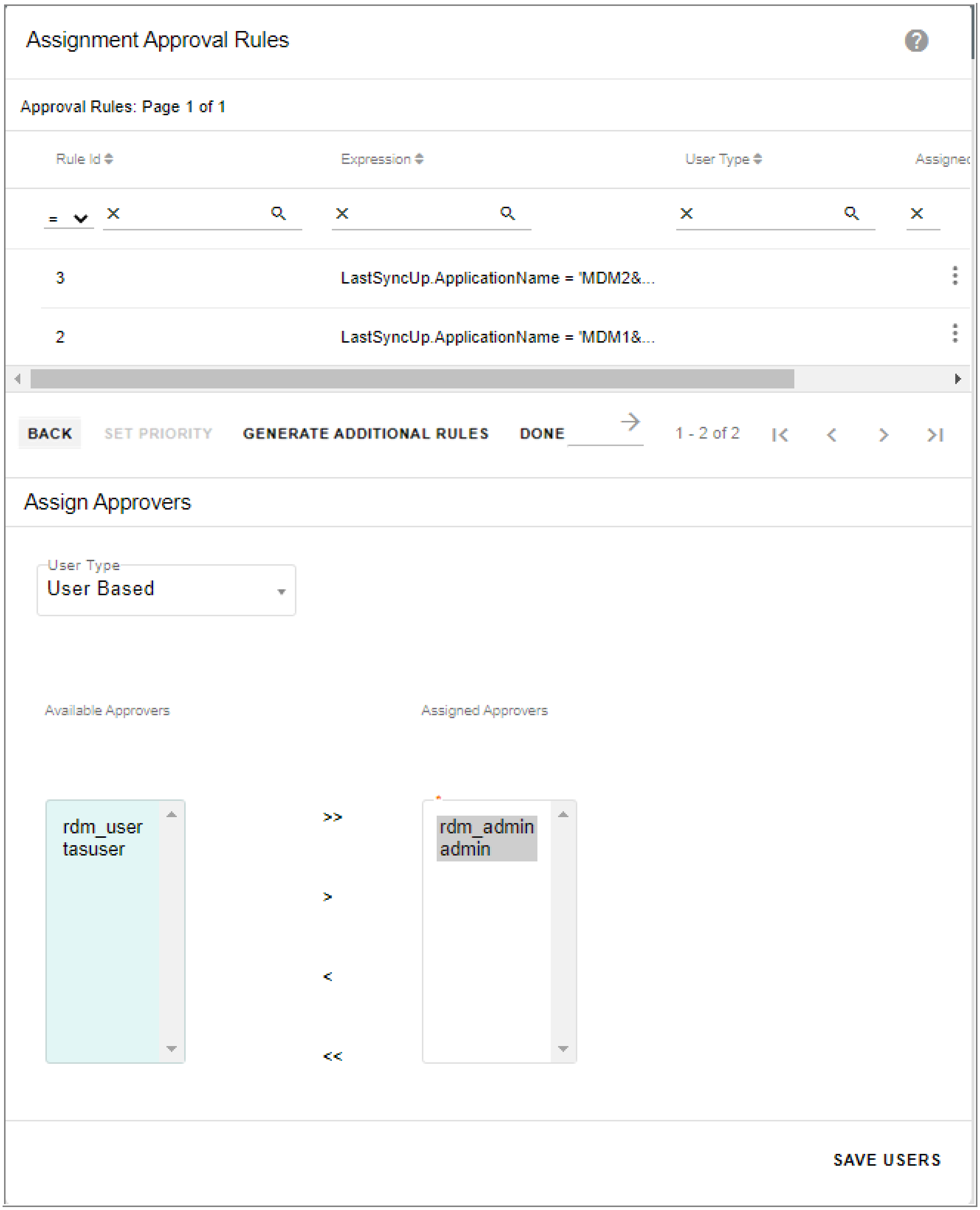
Rule Id	Expression	Rule created from	User Type
2	LastSyncUp.ApplicationName = 'MDM1&...	UI	
1	LastSyncUp.ApplicationName = 'MDM&a...	UI	

2. On the **Assignment Approval Rules** UI, click on the Menu icon ⋮ corresponding to the required rule and click **Assign Approvers** to assign approves for the selected rule as in Figure 695.

   The **Assign Approvers** pane is displayed. The **Available Approvers** list displays all the available approvers. On **Assign Approvers** pane, select the User Type. Based on user type (User based, User Group based), the Available Approvers list will be populated.

3. On the **Assign Approvers** pane, select the approvers from **Available Approvers** list and move it to **Selected Approvers** list as in Figure 696 and click **Save Users**.

Figure 696: Assignment Approval Rules



Assignment Approval Rules

Approval Rules: Page 1 of 1

Rule Id	Expression	User Type	Assigned
3	LastSyncUp.ApplicationName = 'MDM2&...		
2	LastSyncUp.ApplicationName = 'MDM1&...		

Assign Approvers

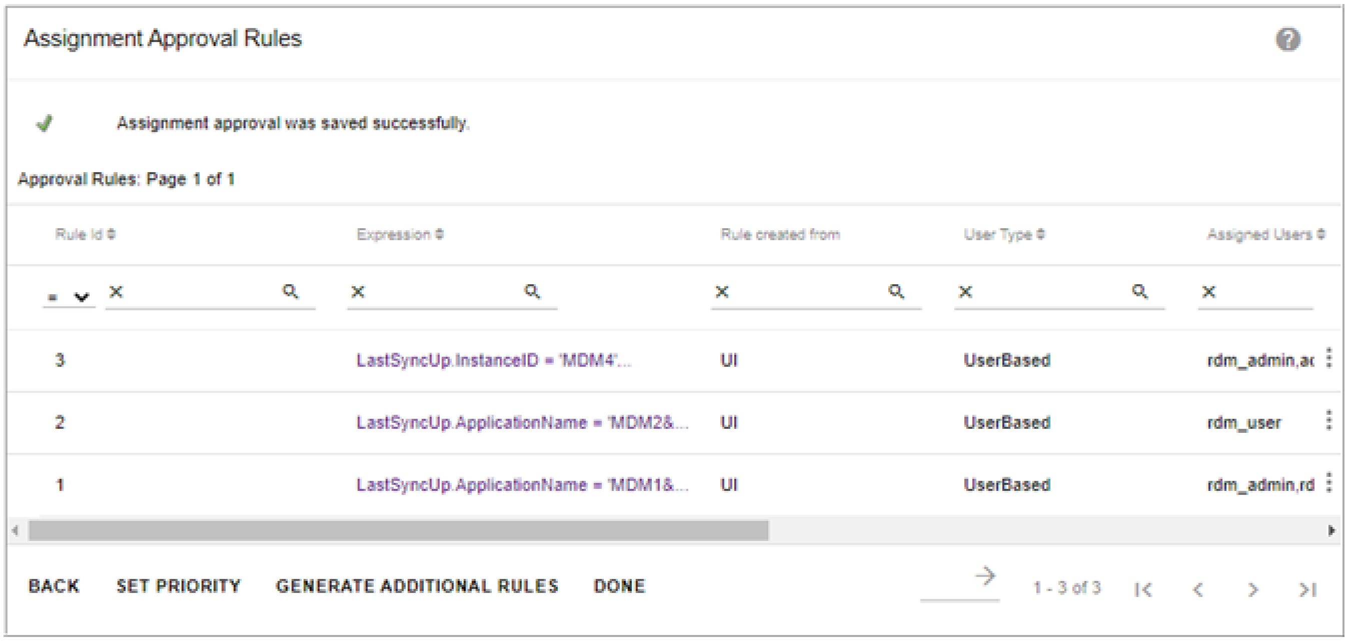
User Type: User Based

Available Approvers: rdm_user, tasuser

Assigned Approvers: rdm_admin, admin

Message: Assignment approval saved successfully is displayed and the **Assigned Users** column displays all the users assigned for approval as in Figure 697.

Figure 697: Assignment Approval Rules



Assignment Approval Rules

Assignment approval was saved successfully.

Approval Rules: Page 1 of 1

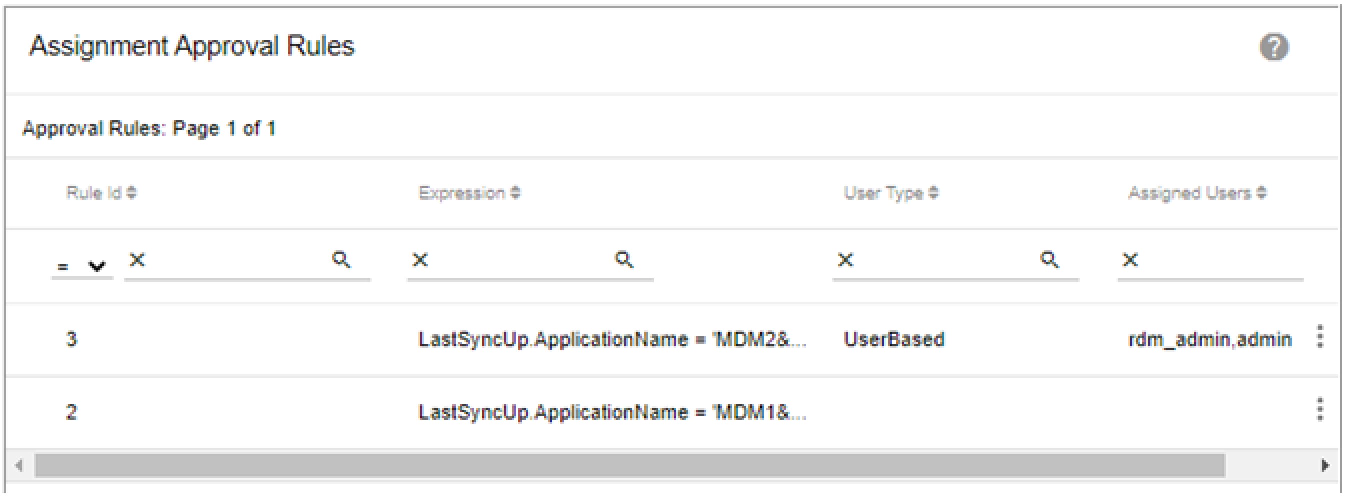
Rule Id	Expression	Rule created from	User Type	Assigned Users
3	LastSyncUp.InstanceID = 'MDM4'...	UI	UserBased	rdm_admin,ac
2	LastSyncUp.ApplicationName = 'MDM2&...	UI	UserBased	rdm_user
1	LastSyncUp.ApplicationName = 'MDM1&...	UI	UserBased	rdm_admin,rd

Set Priority

Perform the following to set priority for execution of rules.

1 On the **Assignment Approvals Rules** UI (Figure 698), click on the Menu icon ⋮ corresponding to the required rule and click **Set Priority** to set priority for execution of the assignment rules.

Figure 698: Assignment Approval Rules



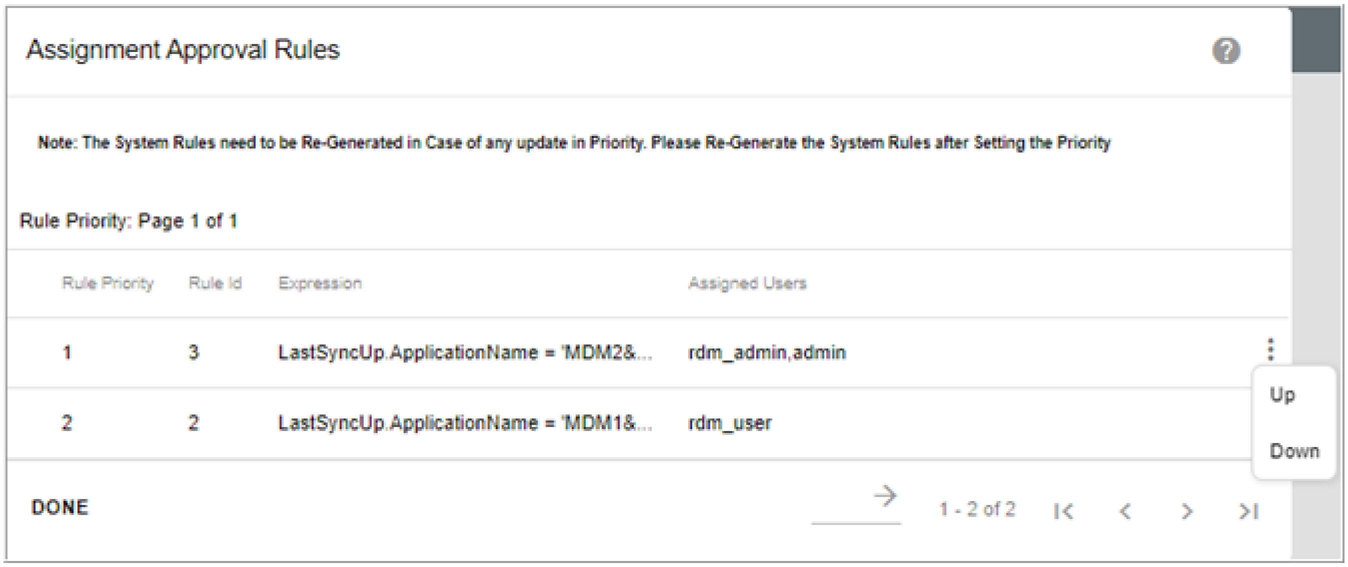
Assignment Approval Rules

Approval Rules: Page 1 of 1

Rule Id	Expression	User Type	Assigned Users
3	LastSyncUp.ApplicationName = 'MDM2&...	UserBased	rdm_admin,admin
2	LastSyncUp.ApplicationName = 'MDM1&...		

The **Rule Priority** page (Figure 699) is displayed.

Figure 699: Assignment Approval Rules—Rule Priority



Assignment Approval Rules

Note: The System Rules need to be Re-Generated in Case of any update in Priority. Please Re-Generate the System Rules after Setting the Priority

Rule Priority: Page 1 of 1

Rule Priority	Rule Id	Expression	Assigned Users
1	3	LastSyncUp.ApplicationName = 'MDM2&...	rdm_admin,admin
2	2	LastSyncUp.ApplicationName = 'MDM1&...	rdm_user

2 On the **Rule Priority** page (Figure 699), click on the Menu icon ⋮ corresponding to the required rule and click **Up** or **Down** button to sequence the order of rule execution and then click **Done**.

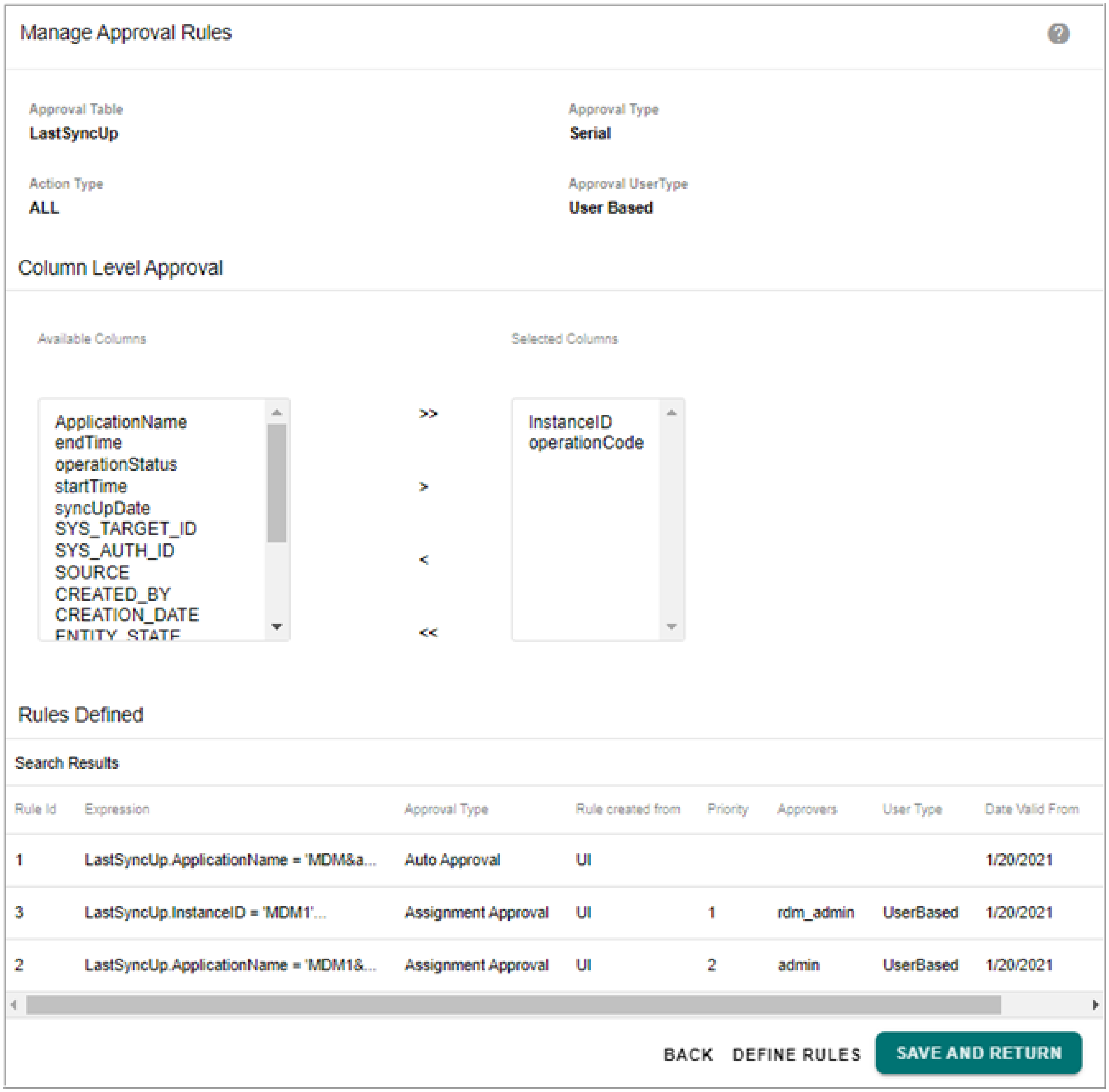
Generate Additional Approval Rules

You can generate additional system specific approval rules based on the existing user defined assignment rules. In the existing behavior of assignment based approval, when multiple rules are satisfied by an approval record, only one rule with the highest priority is considered and the approval request is sent to that set of approvers only. The generation of system specific additional rules overcomes the above limitation by combining the individual rule expressions and the assigned approvers to form all possible combinations of rules. The system also sets the rule execution priority automatically so that approval records that satisfy multiple rules can be handled more efficiently.

On the Rule Based Approval UI, once all the required assignment rules are defined, you can use the “Generate Additional Approval Rules” option to generate the system specific rules. The system reviews the existing assignment rules and generates additional rules with different combinations by associating the existing individual approval rule expressions and the assigned approvers.

1 To generate additional rules, on the **Manage Approval Rules** UI, click **Define Rules** as in Figure 700.

Figure 700: Manage Approval Rules



Manage Approval Rules

Approval Table
LastSyncUp

Approval Type
Serial

Action Type
ALL

Approval UserType
User Based

Column Level Approval

Available Columns

- ApplicationName
- endTime
- operationStatus
- startTime
- syncUpDate
- SYS_TARGET_ID
- SYS_AUTH_ID
- SOURCE
- CREATED_BY
- CREATION_DATE
- ENTITY_STATE

Selected Columns

- InstanceID
- operationCode

Rules Defined

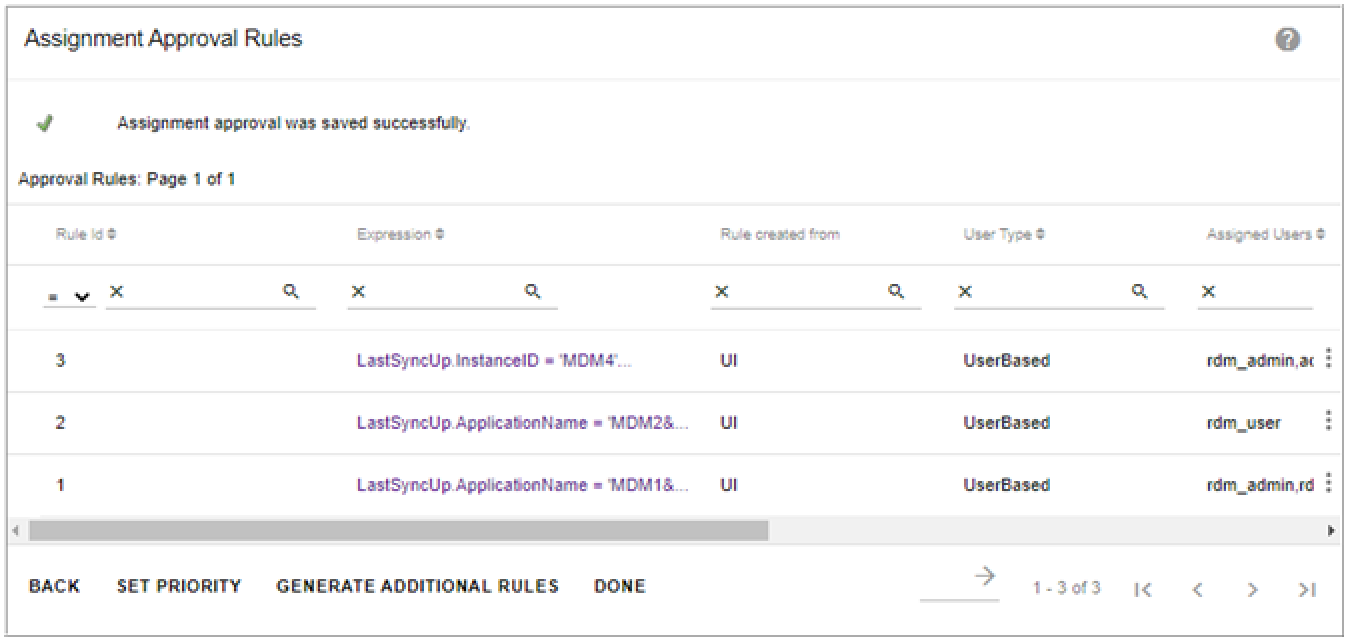
Search Results

Rule Id	Expression	Approval Type	Rule created from	Priority	Approvers	User Type	Date Valid From
1	LastSyncUp.ApplicationName = 'MDM&a...	Auto Approval	UI				1/20/2021
3	LastSyncUp.InstanceID = 'MDM1'...	Assignment Approval	UI	1	rdm_admin	UserBased	1/20/2021
2	LastSyncUp.ApplicationName = 'MDM1&...	Assignment Approval	UI	2	admin	UserBased	1/20/2021

2 On the **Create Approval Rules** UI, create the rules and click **Next**.

3 On the **Assignment Approval Rules** UI, click **Generate Additional Rules** as in Figure 701

Figure 701: Assignment Approval Rules


Assignment Approval Rules

Assignment approval was saved successfully.

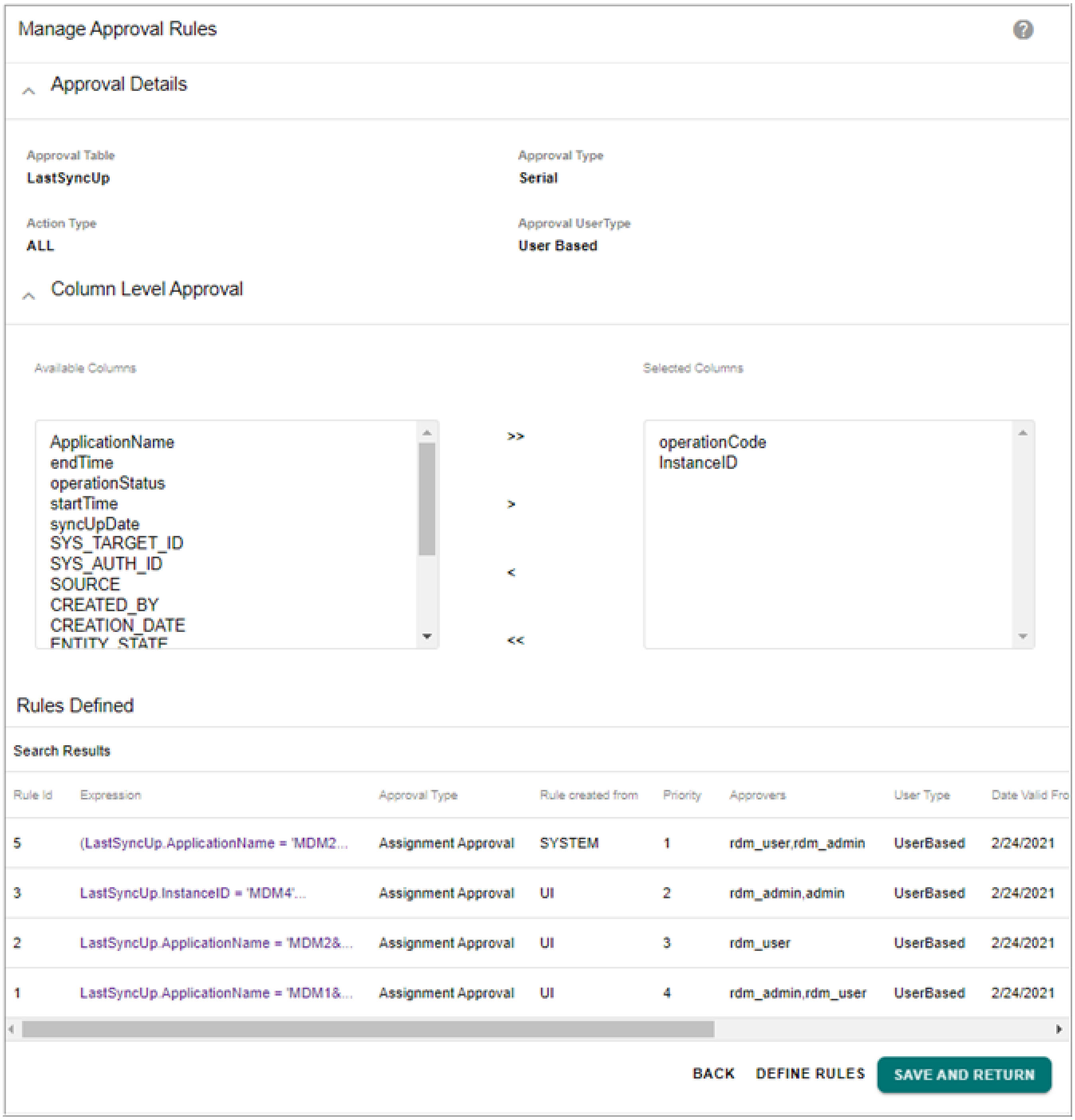
Approval Rules: Page 1 of 1

Rule Id	Expression	Rule created from	User Type	Assigned Users
3	LastSyncUp.InstanceID = 'MDM4'...	UI	UserBased	rdm_admin,ac
2	LastSyncUp.ApplicationName = 'MDM2&...	UI	UserBased	rdm_user
1	LastSyncUp.ApplicationName = 'MDM1&...	UI	UserBased	rdm_admin,rd

The system rules will be generated with different combination of rule expressions and approvers and will be listed in the **Rules Defined** section on the Manage Approval Rules UI as in Figure 702. The **Rule created from** column displays as “SYSTEM” for system generated rules and displays as “UI” for user defined rules.

The priority of rule execution will also be set automatically by the system as in Figure 702. The rule with all the combinations will have the lowest priority and that rule will be executed first. In case, if you want to change the priority, you can manually do it using the Set Priority option as in Section : “Set Priority.”

Figure 702: Manage Approval Rules



Manage Approval Rules

Approval Details

Approval Table: **LastSyncUp**

Approval Type: **Serial**

Action Type: **ALL**

Approval UserType: **User Based**

Column Level Approval

Available Columns:

ApplicationName
endTime
operationStatus
startTime
syncUpDate
SYS_TARGET_ID
SYS_AUTH_ID
SOURCE
CREATED_BY
CREATION_DATE
ENTITY_STATE

Selected Columns:

operationCode
InstanceID

Rules Defined

Search Results

Rule Id	Expression	Approval Type	Rule created from	Priority	Approvers	User Type	Date Valid Fro
5	(LastSyncUp.ApplicationName = 'MDM2...	Assignment Approval	SYSTEM	1	rdm_user,rdm_admin	UserBased	2/24/2021
3	LastSyncUp.InstanceID = 'MDM4'...	Assignment Approval	UI	2	rdm_admin,admin	UserBased	2/24/2021
2	LastSyncUp.ApplicationName = 'MDM2&...	Assignment Approval	UI	3	rdm_user	UserBased	2/24/2021
1	LastSyncUp.ApplicationName = 'MDM1&...	Assignment Approval	UI	4	rdm_admin,rdm_user	UserBased	2/24/2021

Few points on generate additional approval rules:

- The system rules are generated only if the existing rules are of the same user type (all the selected rules must be either User based or User group based).
- If any changes are made to the existing user defined rules, then the system rules must be regenerated by clicking the Generate Additional Approval Rules button to have the correct updated combination rules.

Column Level Approval

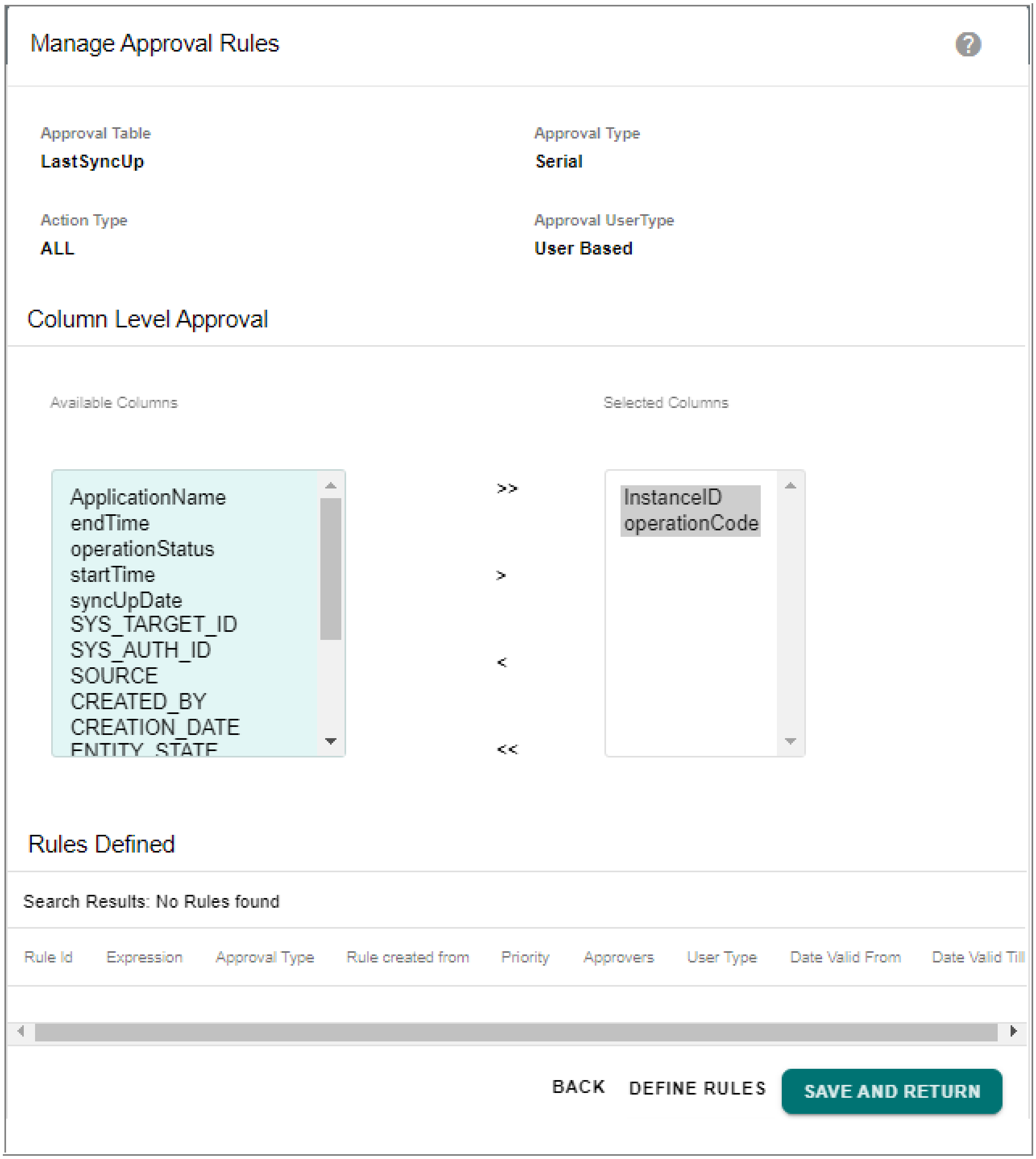
The Column Level Approval allows you to specify important columns for approval as in Figure 703. The Column Level approval will be triggered on the incoming rows only if the specified columns value changes. The Column level approval can be set on tables on which table level approval is already defined and it is applicable only for action type UPDATE and ALL.

On the **Manage Approval Rules** UI, in the **Column Level Approval** section (Figure 703), you can perform the following:

- Select the important columns on which the rules will be defined from the **Available Columns** list and move it to **Selected Columns** list.
- Click **Define Rules** to save the changes and to navigate to **Create Approval Rules** UI.

  Message "Column Level Approval saved successfully" is displayed on the Create Approval Rules UI.
- Click **Save and Return** to save the changes and return back to **Manage Approval** UI.

Figure 703: Manage Approval Rules with Column Level Approval



Manage Approval Rules

Approval Table: LastSyncUp

Approval Type: Serial

Action Type: ALL

Approval UserType: User Based

Column Level Approval

Rules Defined

Search Results: No Rules found

Rule Id	Expression	Approval Type	Rule created from	Priority	Approvers	User Type	Date Valid From	Date Valid Till

Troubleshooting

This section helps you to identify and resolve the problems that you may experience while using manage approval feature.

Q 1: *Existing approvals gets deleted from Manage Approval UI?*

A. For a document, if approvals were created with different action types like insert, update, delete and later if new approval is created with action type as “All”, the previously created approvals with other action types will be deleted. Any further changes on the Action type will not be allowed and the error message: “Similar approval Action Type exists for this document.” would be displayed.

Q 2: *Manage Approval, Approval Inbox and Makers Inbox links missing on the left navigation pane?*

A. The Manage Approval and Approval Inbox user activity needs to be assigned to the user to perform operations on the Manage Approval UI. See *User Management chapter for details on user activity and authorization.*

Q 3: *Approval request email notifications cannot be seen by the user?*

A. Email settings need to be configured in MDM. For details on email configuration, see Section : “Configuring Approval Emails”.

CHAPTER 19 Data Quality

What's In This Chapter

This chapter provides detailed description on data quality metrics and dashboard.

Topics include:

- Data Quality Metrics
- Data Quality Dashboard

Data Quality Metrics

The Data Quality Metrics UI is used to assign weight for Data Validation business rules. On the Data Quality Metrics page, you can search for saved metrics, add, edit and delete metrics.

Create Quality Metrics

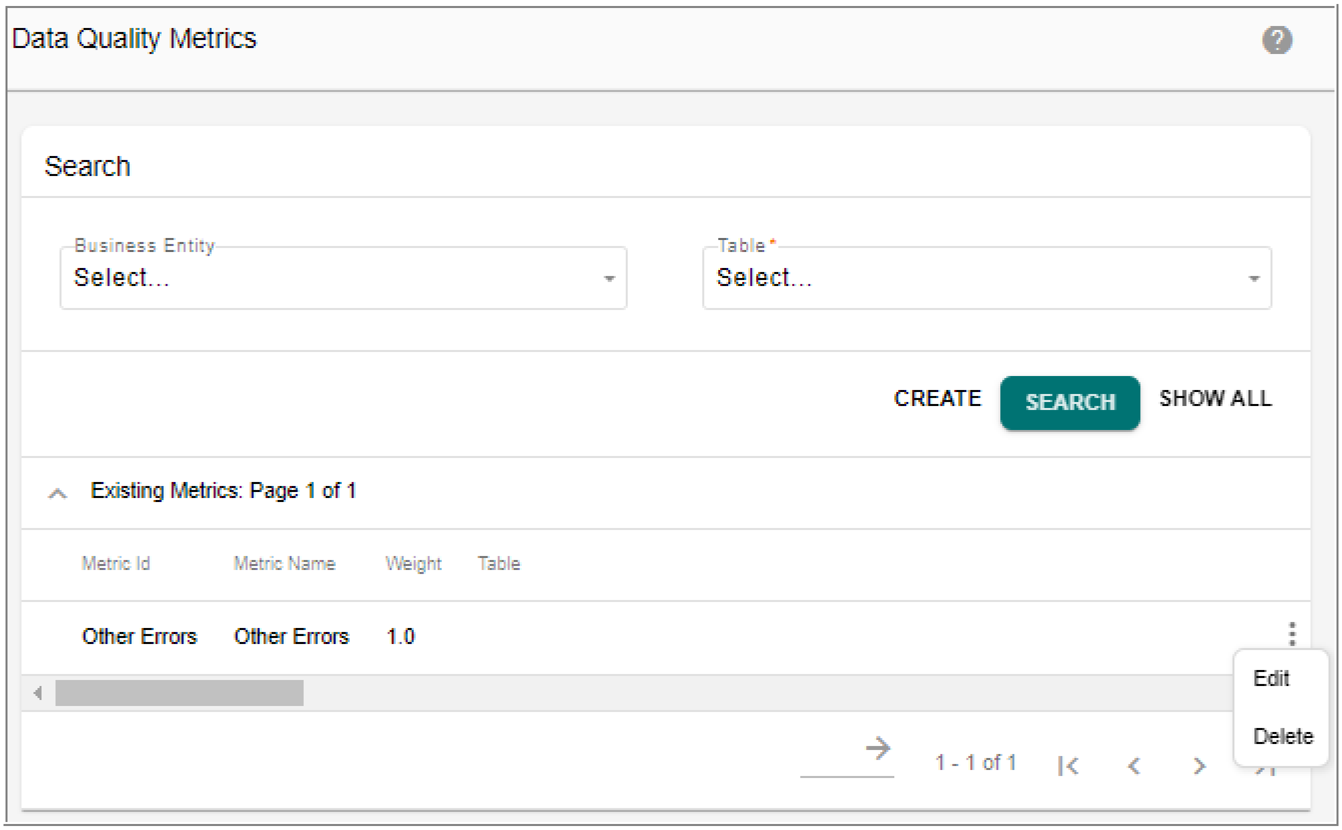
Using Create option, you can create a quality metrics by providing metric Id, metric Name and metric weight.

To create new quality metric:

1. Navigate to **Data Quality Metrics** UI from **Data Harmonization** -> **Data Quality** -> **Create Data Quality Metrics**.

   The **Data Quality Metrics** page is displayed.
2. On the **Data Quality Metrics** page, select the business entity, table and click **Create** as in Figure 704.

Figure 704: Data Quality Metrics



Metric Id	Metric Name	Weight	Table
Other Errors	Other Errors	1.0	

3 On the **Data Quality Metrics Details** page, enter the metric id, metric name, metric weight and select the error codes from available error codes list and move it to the assigned error codes as in Figure 705.

Figure 705: Data Quality Metrics Details

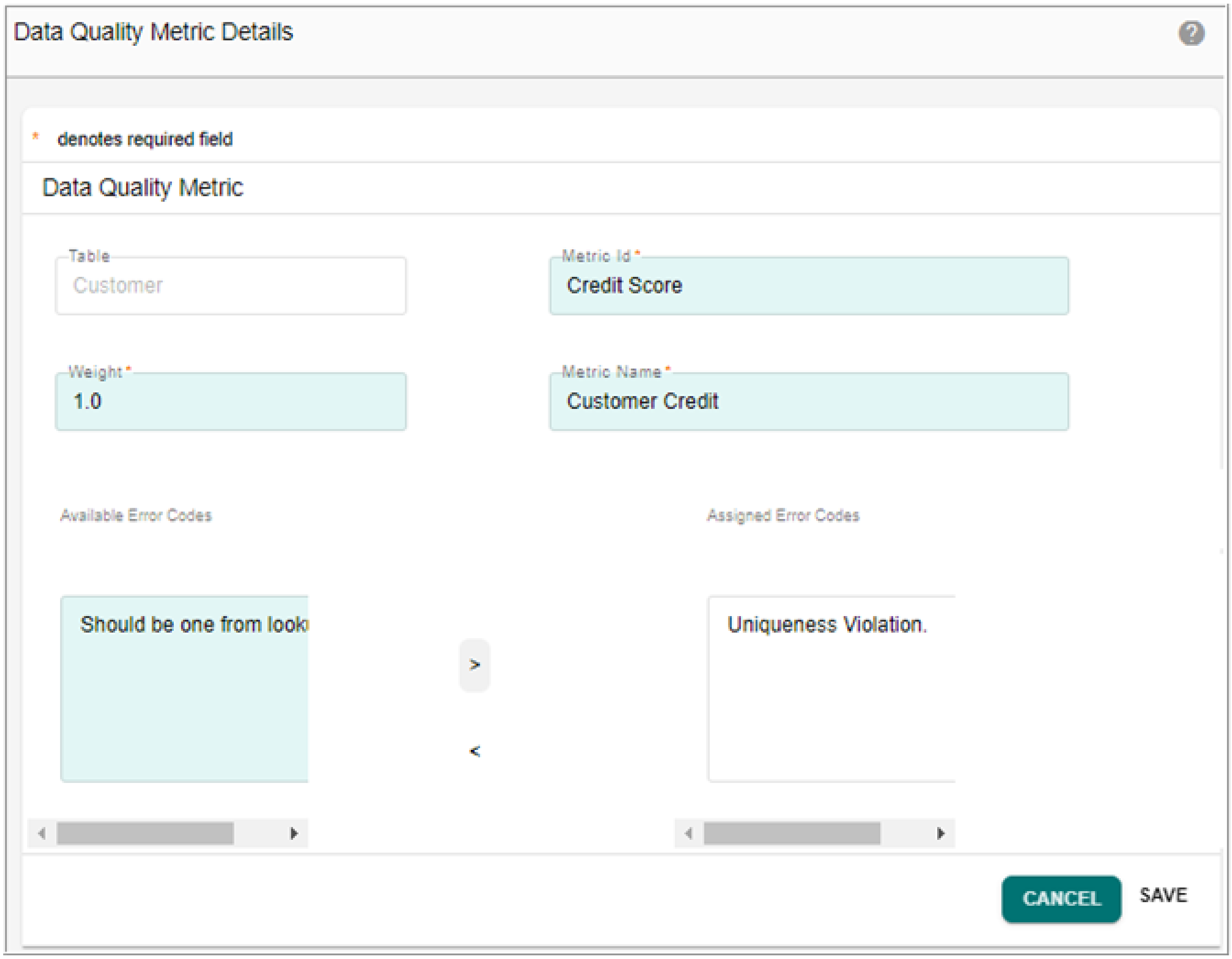


Table: Customer

Metric Id *: Credit Score

Weight *: 1.0

Metric Name *: Customer Credit

Should be one from look

Uniqueness Violation.

4 Click **Save**.

The new metric is added on the **Data Quality Metrics** page.

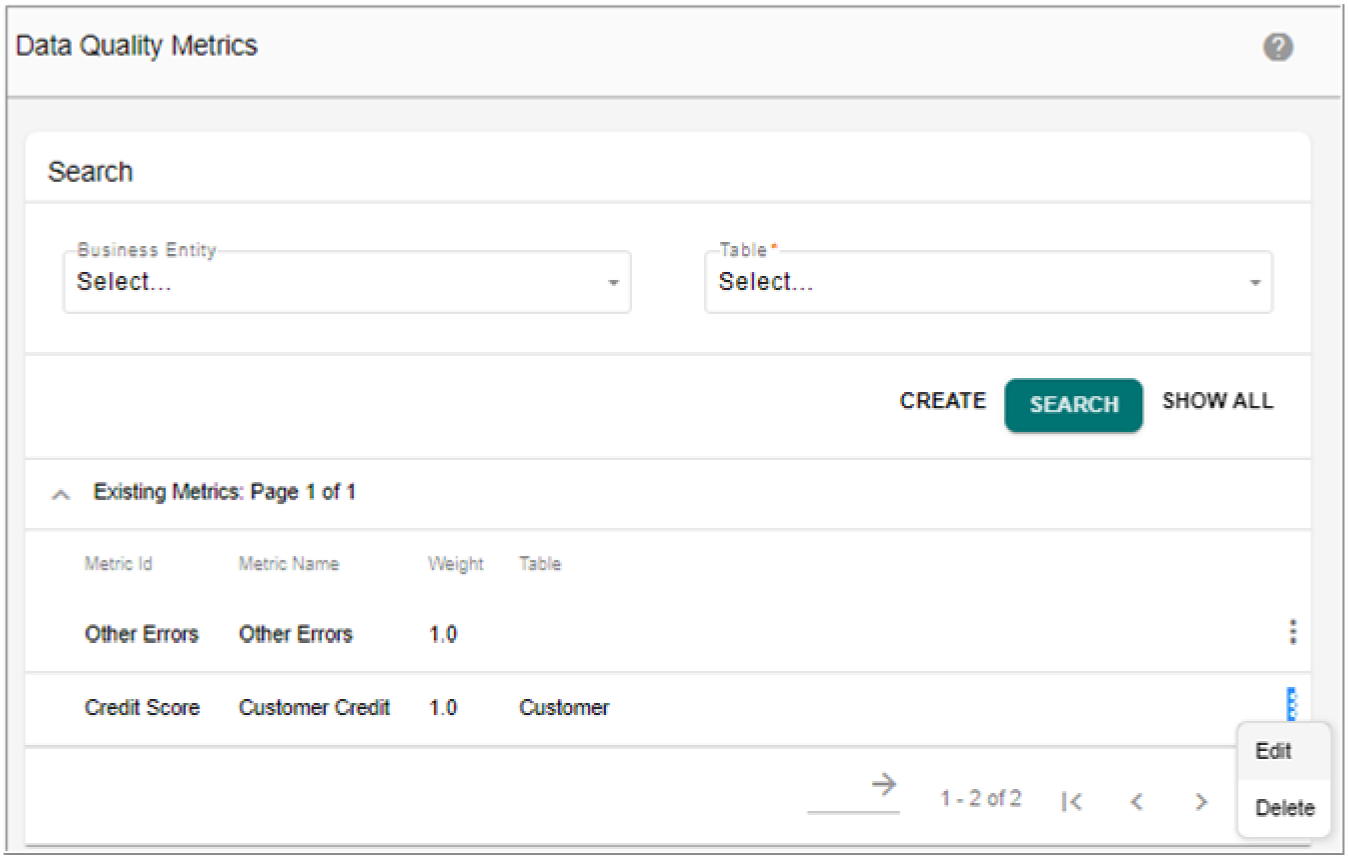
Edit Metric Details

Using the Edit option, you can modify the existing values of the selected data quality metric. The Table field and the Metric Id will not be editable and the Available Error Codes list will contain any business rule error codes that have not been previously used and the Assigned Error Codes list will display the already assigned error code.contain any Business Rule Error Codes that have already been assigned to the metric. You can assign available Error Codes and/or remove already assigned error codes.

To edit metric details:

1 On the **Data Quality Metrics** page, click on the Menu icon corresponding to the required metric and click **Edit** as in Figure 706.

Figure 706: Data Quality Metrics



Business Entity: Select...

Table*: Select...

Existing Metrics: Page 1 of 1

Metric Id	Metric Name	Weight	Table
Other Errors	Other Errors	1.0	
Credit Score	Customer Credit	1.0	Customer

Figure 707: Data Quality Metrics Details

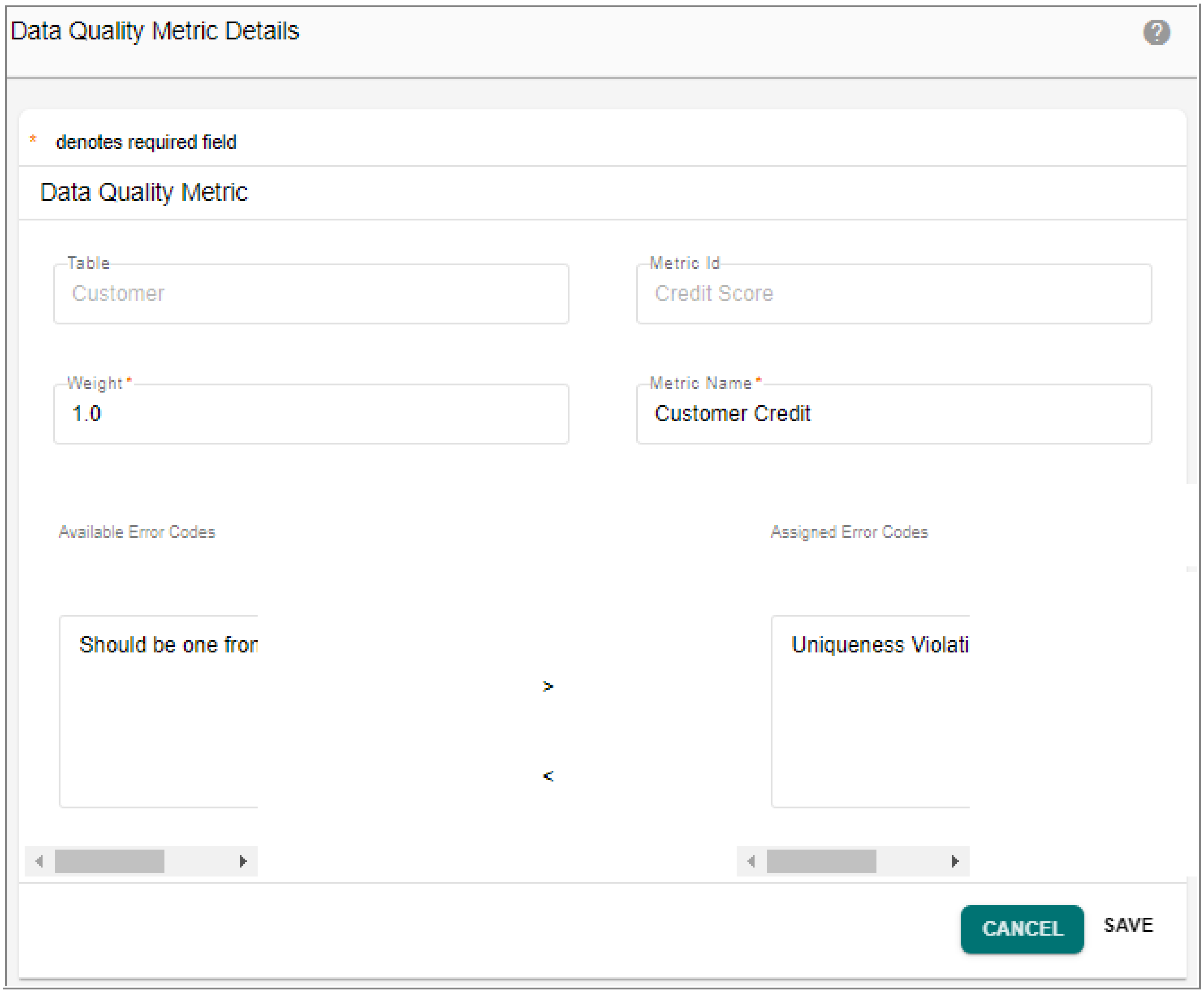


Table: Customer

Metric Id: Credit Score

Weight*: 1.0

Metric Name*: Customer Credit

Should be one fror

Uniqueness Violati

2 On the **Data Quality Metrics Details** page (Figure 707), you can modify the weight, metric name and assign new error code or remove already assigned error codes and click **Save**.

Message: Metric updated is displayed.

Search Metric Details

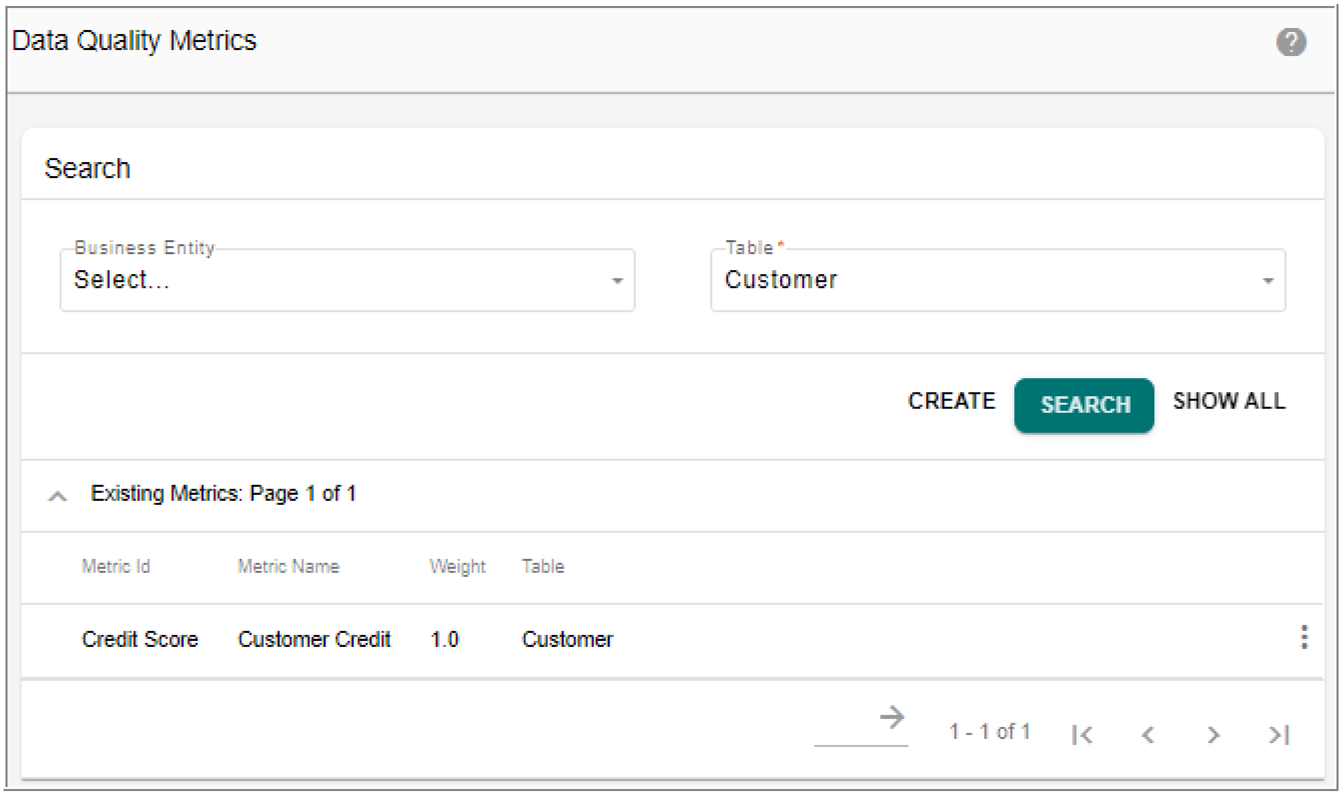
Using the Search option, you can search for a metric based on the selected business entity and associated table. Any metrics that have already been created for the selected table will be displayed on the Data Quality Metrics UI.

To search for a metric:

1 On the **Data Quality Metrics** page, select the business entity, table and click **Search.**

The **Data Quality Metrics** page displays the result as in Figure 708.

Figure 708: Data Quality Metrics



Business Entity: Select...

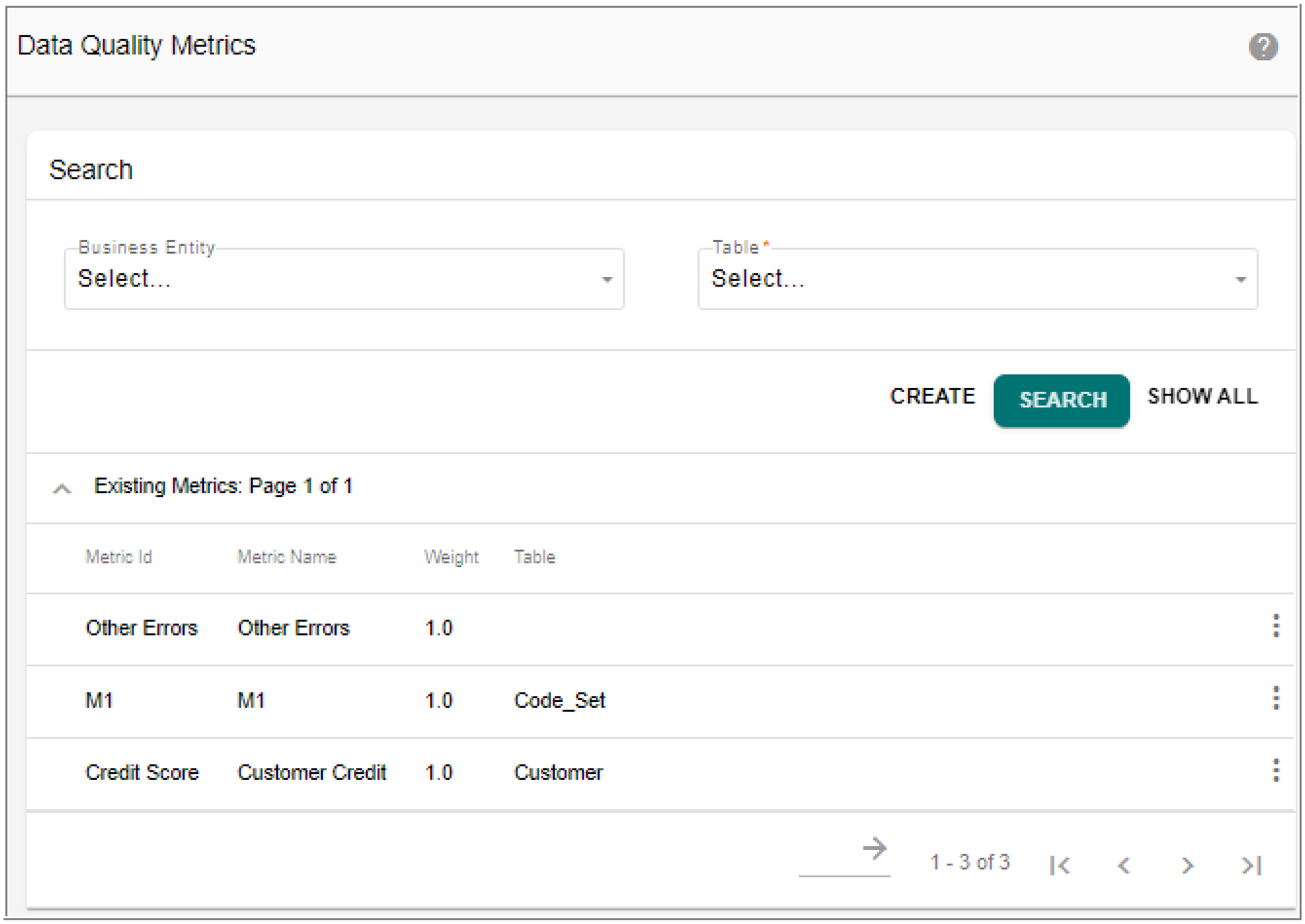
Table *: Customer

Existing Metrics: Page 1 of 1

Metric Id	Metric Name	Weight	Table
Credit Score	Customer Credit	1.0	Customer

2 On the **Data Quality Metrics** page, click Show All to view all the existing metrics as in Figure 709.

Figure 709: Data Quality Metrics



Metric Id	Metric Name	Weight	Table
Other Errors	Other Errors	1.0	
M1	M1	1.0	Code_Set
Credit Score	Customer Credit	1.0	Customer

Delete Metric Details

When a metric is deleted, all the associated business rule error codes will be deleted from the metric and the metric will be removed from the Data Quality Metrics UI.

To delete a metric:

1 On the **Data Quality Metrics** page (Figure 706), click on the Menu icon corresponding to the required metric and click **Delete**.

The confirmation pop-up is displayed.

2 On the confirmation pop-up, click **Yes**.

The metric is deleted from the Data Quality Metrics page.

Data Quality Dashboard

Definitions

1. Error Code: An error code identifies a specific type of error on data. The error code is typically defined as part of a validation rule. An error code is associated with a level of severity 'SEVERE_ERROR' or 'ERROR' to tell the user how serious the error is.
2. Data Quality Rule: A data quality rule is a rule defined for measuring data quality. The rule is essentially a group of error codes and has a numerical severity weight. A severity weight of 5 is considered more severe than a severity weight of 3. Note that a data quality rule may have error codes with different error severities. The severity weight of a data quality rule has no relation with the severity of a specific error code. An error code should belong to one and only one data quality rule. A data quality rule can be of two types: entity-dependent and entity-independent. An entity-dependent data quality rule is one where the data quality rule should be associated with a specific entity and the computation of the data quality score for such a rule should consider only records of the specific entity. On the other hand, an entity-independent data quality rule is one which includes error codes common to all entities (Example: primary key violation, non null constraint violation, duplicate data etc.). For such a rule, the data quality score should be computed by considering all records from all entities.
3. Total Possible: The total possible is defined as the total number of records which can possibly error out for a given data quality rule. For an entity-dependent data quality rule, the total possible would be the total number of records in the specific entity. In the case of an entity-independent rule, the total possible would be the total number of records in all entities.
4. Occurrence: This is the number of records which have data errors related to one or more error codes of a data quality rule. For example if a data quality rule R1 has two error codes E1 and E2, and there are three error records - one with E1 only, second with E1 and E2 and third with some other error code E3, then the occurrence would be 2 records. Note that occurrence should look at error records within an entity for entity-dependent rules and across all entities for entity-independent rules.
5. % Occurrence = Occurrence/Total Possible
6. Weighted occurrence = Occurrence * Severity weight of data quality rule
7. Weighted total possible = Total possible * Severity weight
8. Raw data quality score for an entity = sum of occurrence of all data quality rules/sum of total possible in entity
9. Weighted data quality score for an entity = sum of weighted occurrence of all data quality rules/sum of weighted total possible in entity
10. Overall raw data quality score = sum of occurrence of all data quality rules/sum of total possible
11. Overall weighted data quality score = sum of weighted occurrence of all data quality rules/sum of weighted total possible

12 Source: The data quality would be computed for each source system from which data is being sourced into MDM. The DQ score computation would be by source.

13 Acceptable DQ score: This is a percentage defined as the acceptable data quality number by each source from which the data quality is being computed.

Viewing Data Quality Report

The data quality dashboard is the front end to monitor data quality of enterprise data based on predefined set of business and data rules.

To view the data quality report, perform the following steps:

1. Create a validate business rule specifying the error code for the particular rule created.
2. Create a data quality rule. The data quality rule must specify the severity weight, table name and the given error code (error code specified while creating a validate business rule).

   Steps for creating data quality rule:

   - Navigate to DQ_RULE table and insert a new rule. For example, use the following query to insert a rule:

     ```
     insert into DQ_RULE (RULE_ID, RULE_NAME, SEVERITY,
     ENTITY)values(‘BR’, ‘Horizon Reference Master Rule’, ‘4’,
     ‘HorizonReferenceMaster’);
     ```

   - Link the ERROR_CODE of the business rule to the RULE_ID in DQ_RULE_ERR_CODES table. For example, use the following query:

     ```
     insert into DQ_RULE_ERR_CODES (RULE_ID, ERROR_CODE) values
     (‘BR’, “Default’);
     ```

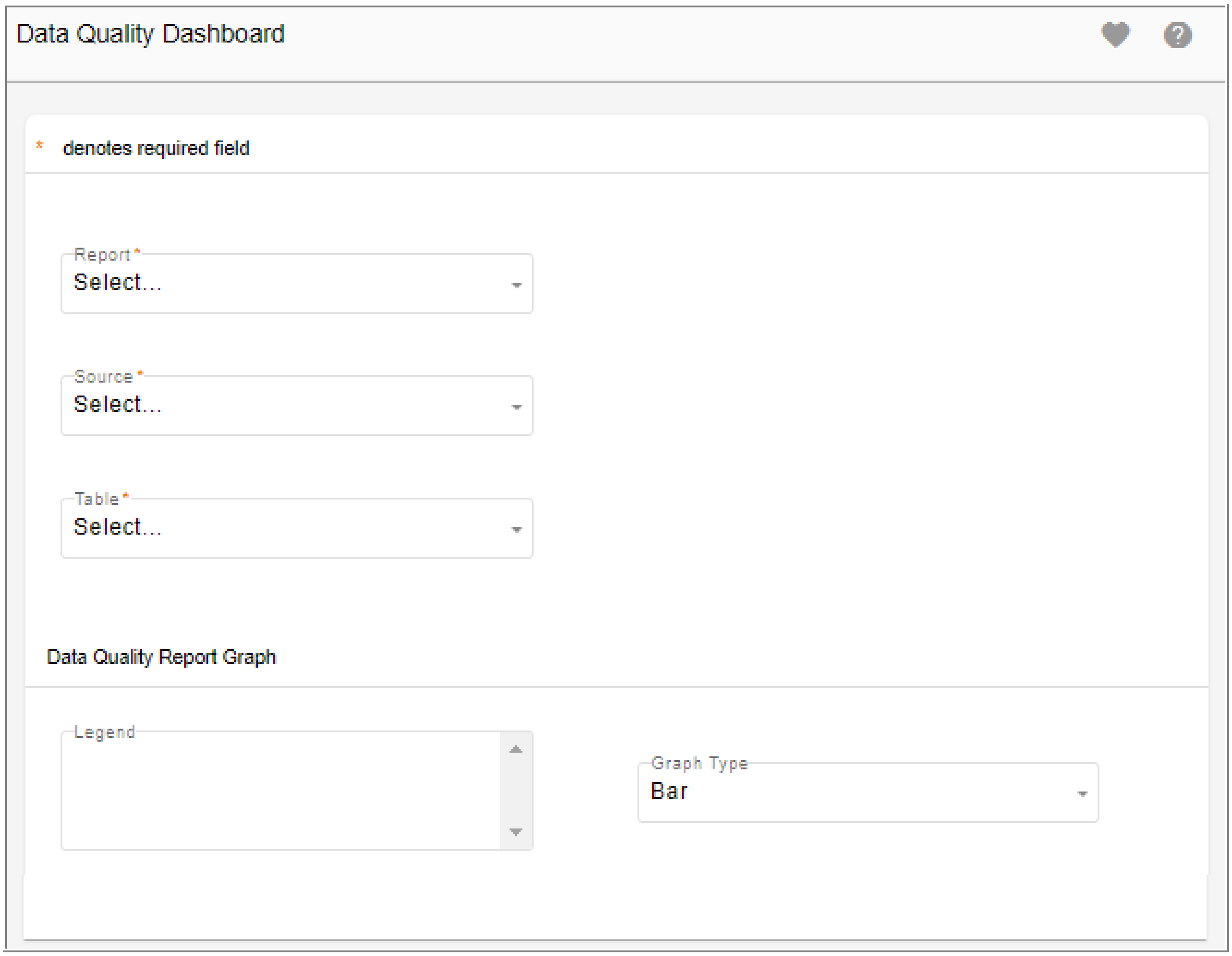
3. Execute E2E process.

   Note: The fields on the data quality reports page gets populated only after the successful execution of E2E process.

4. On the navigation pane, navigate to **Data Harmonization** -> **Data Quality** -> **Data Quality Dashboard**.

   The **Data Quality Dashboard** page (Figure 710) is displayed.

Figure 710: Data Quality Dashboard


Data Quality Dashboard

* denotes required field

Report *
Select...

Source *
Select...

Table *
Select...

Data Quality Report Graph

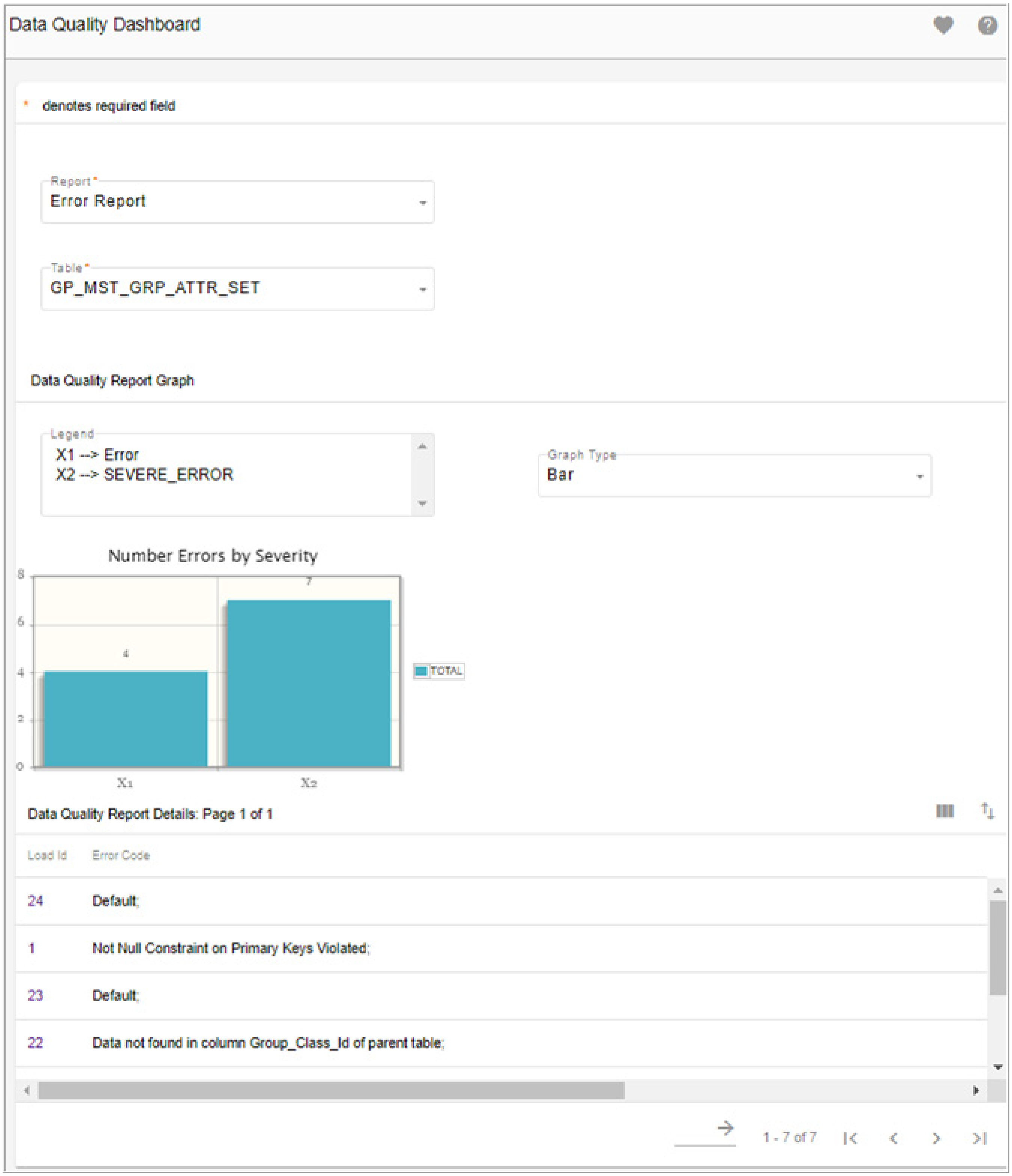
Legend

Graph Type
Bar

5 On the **Data Quality Dashboard** page (Figure 710), select the report type, accordingly other dropdowns will be displayed.

- **Error Report**: the error report displays the number of error records for a particular load. Select the report type as Error Report and select the corresponding table.

Figure 711: Data Quality Dashboard—Error Report



* denotes required field

Report*: Error Report

Table*: GP_MST_GRP_ATTR_SET

Data Quality Report Graph

Legend:
X1 --> Error
X2 --> SEVERE_ERROR

Graph Type: Bar

Data Quality Report Details: Page 1 of 1

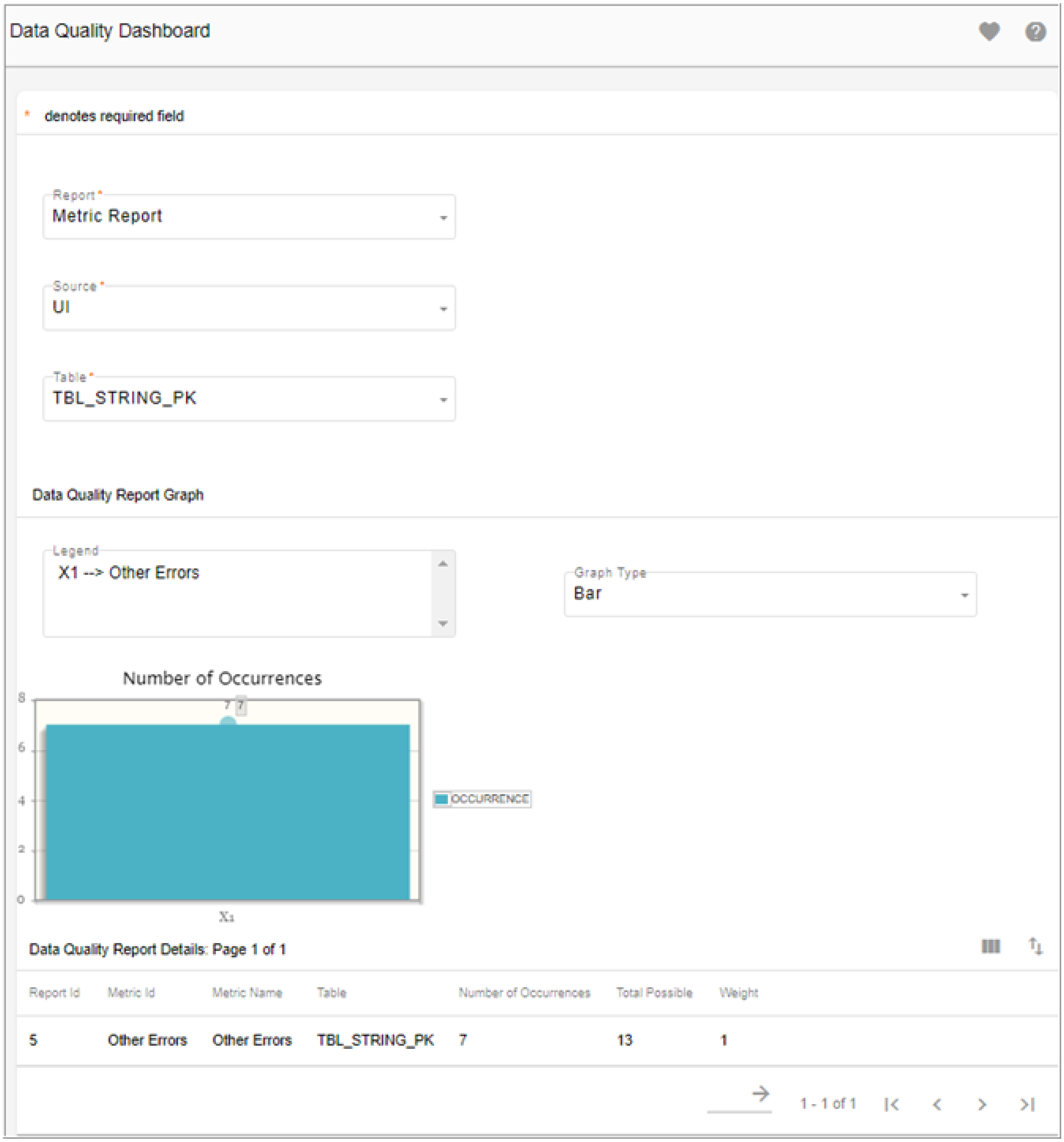
Load Id	Error Code
24	Default;
1	Not Null Constraint on Primary Keys Violated;
23	Default;
22	Data not found in column Group_Class_Id of parent table;

On the Error Report page, in the Data Quality Report Details pane, click on the Load Id to navigate to the Error Details UI.

- **Metric Report**: select the report type as Metric Report and select the corresponding source and table. The metric report displays the total occurrence of the error records. It also provides details on the total possible, percentage occurrence, and severity weight for each quality rule of a particular entity.

  The data quality chart for the metric report displays the number of occurrence for each error rule as in Figure 712. The X-axis displays the error rules and the Y-axis displays the number of occurrence for each error rule.

Figure 712: Data Quality Dashboard—Metric Report



Data Quality Dashboard

* denotes required field

Report *: Metric Report

Source *: UI

Table *: TBL_STRING_PK

Data Quality Report Graph

Legend: X1 --> Other Errors

Graph Type: Bar

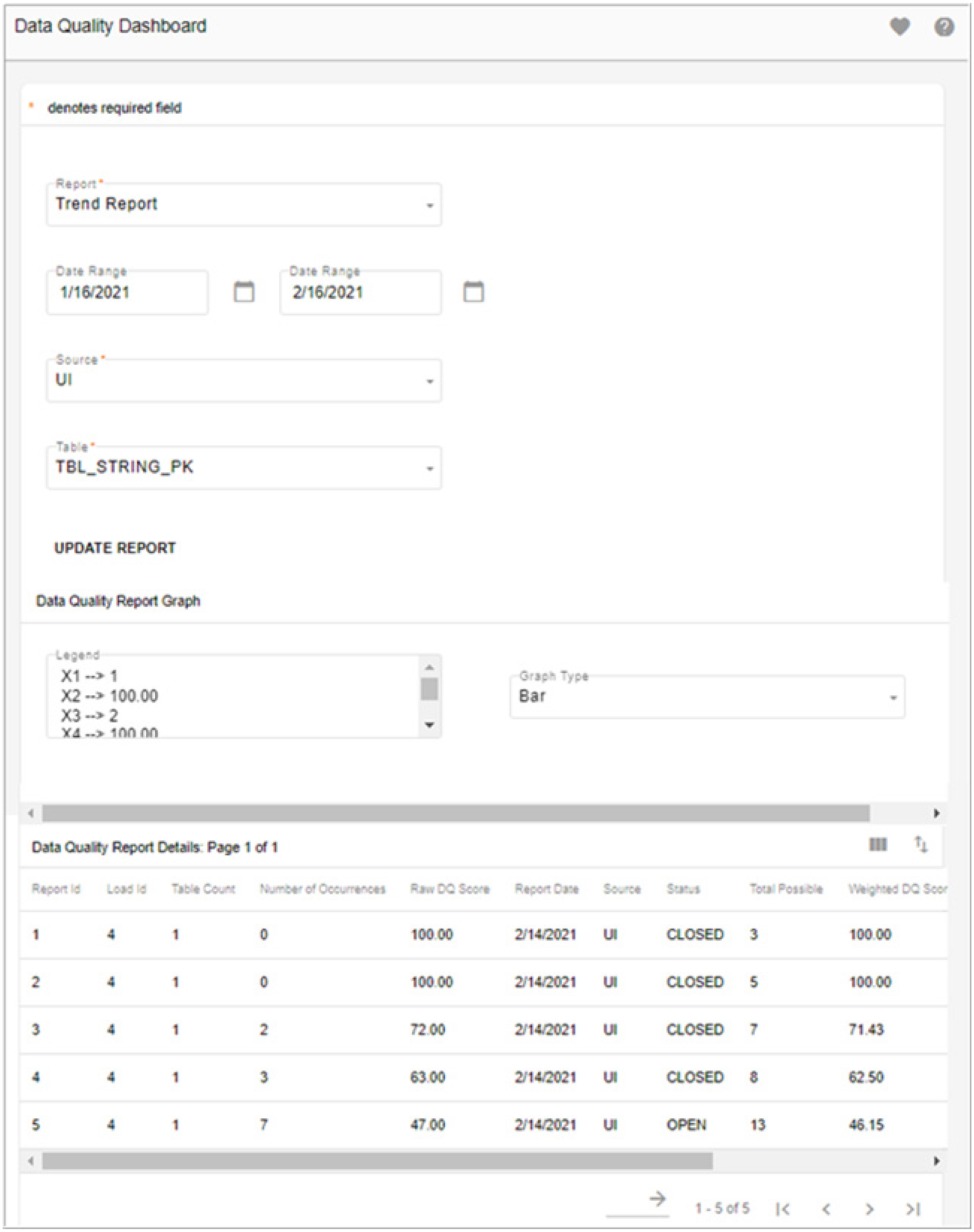
Data Quality Report Details: Page 1 of 1

Report Id	Metric Id	Metric Name	Table	Number of Occurrences	Total Possible	Weight
5	Other Errors	Other Errors	TBL_STRING_PK	7	13	1

- **Trend Report**: select the report type as Trend Report and select the corresponding source, table and specify the date range. The trend report displays the data quality trend over a period of time. For the selected date range, it displays the report generated along with the Data Quality (DQ) score and the acceptable DQ score.

The data quality chart for the trend report displays the data trend of each report generated for the selected date range. It represents the accepted DQ score and the actual DQ score in percentage as in Figure 713. The X-axis displays the date and the Y-axis displays the DQ score in percentage.

Figure 713: Data Quality Dashboard—Trend Report



* denotes required field

Report *: Trend Report

Date Range: 1/16/2021

Date Range: 2/16/2021

Source *: UI

Table *: TBL_STRING_PK

Legend:
X1 --> 1
X2 --> 100.00
X3 --> 2
X4 --> 100.00

Graph Type: Bar

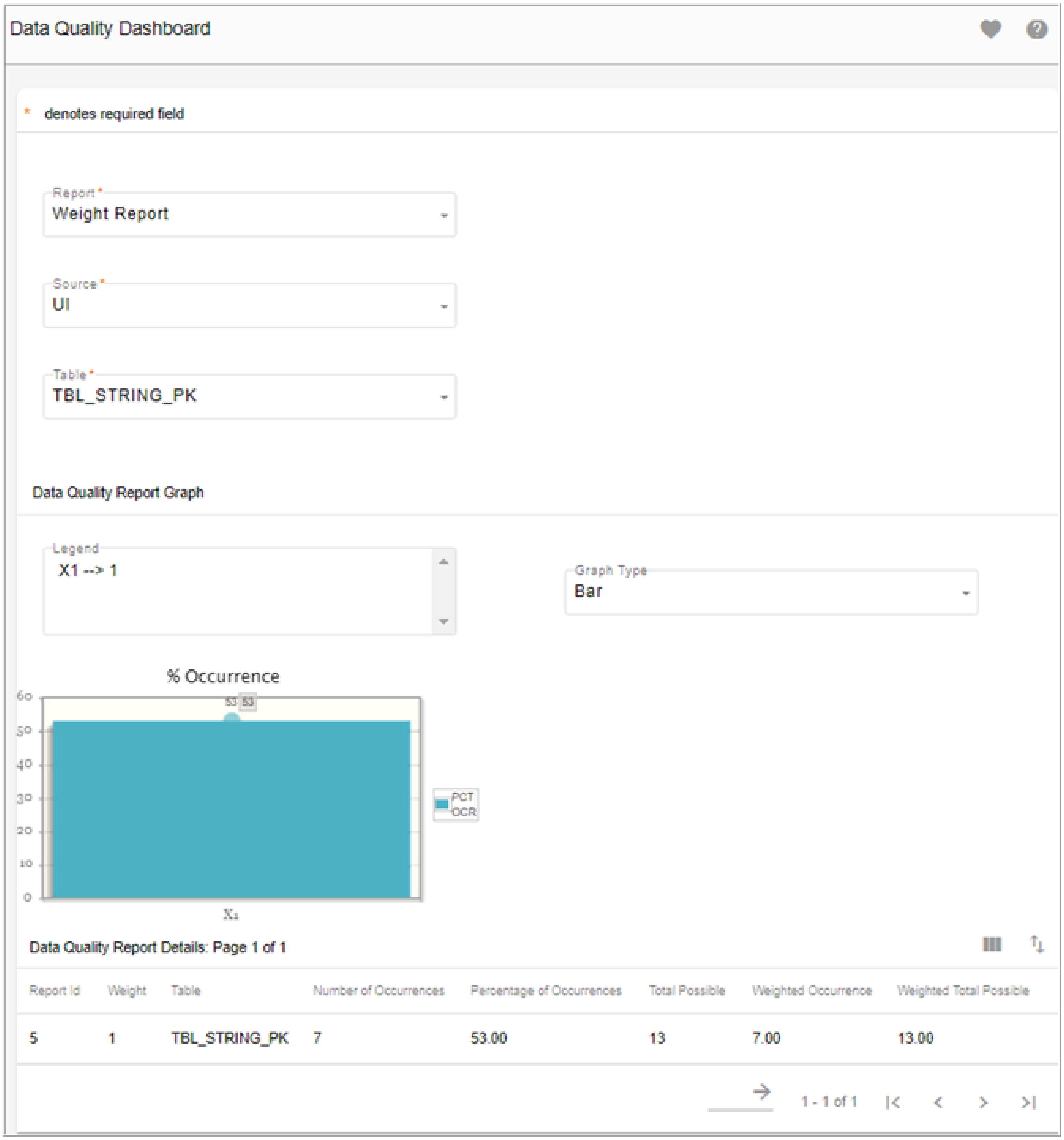
Data Quality Report Details: Page 1 of 1

Report Id	Load Id	Table Count	Number of Occurrences	Raw DQ Score	Report Date	Source	Status	Total Possible	Weighted DQ Scor
1	4	1	0	100.00	2/14/2021	UI	CLOSED	3	100.00
2	4	1	0	100.00	2/14/2021	UI	CLOSED	5	100.00
3	4	1	2	72.00	2/14/2021	UI	CLOSED	7	71.43
4	4	1	3	63.00	2/14/2021	UI	CLOSED	8	62.50
5	4	1	7	47.00	2/14/2021	UI	OPEN	13	46.15

- **Weight Report**: select the report type as Weight Report and select the corresponding source and table. The weight report displays the percentage occurrence for each severity weight. It also provides details on the total possible and occurrence for each severity weight.

  The data quality chart for the weight report displays the percentage occurrence for each severity weight as in Figure 711. The X-axis displays the severity weight and the Y-axis displays the percentage occurrence for each severity weight.

Figure 714: Data Quality Report—Weight Report



Data Quality Dashboard

* denotes required field

Report *: Weight Report

Source *: UI

Table *: TBL_STRING_PK

Data Quality Report Graph

Legend: X1 --> 1

Graph Type: Bar

Data Quality Report Details: Page 1 of 1

Report Id	Weight	Table	Number of Occurrences	Percentage of Occurrences	Total Possible	Weighted Occurrence	Weighted Total Possible
5	1	TBL_STRING_PK	7	53.00	13	7.00	13.00

1 - 1 of 1

CHAPTER 20 Manage Business Entity

What's In This Chapter

This chapter provides detailed information on manage business entities.

Topics:

Introduction

MDM supports the capability to create and manage a collection of MDM tables defined as a Business Entity or Object. The Business Entity can optionally be used to provide filtered reporting data, relative to the selected business entity for the below services:

- Configurable UI
- Approval
- RDM Dashboards
- View Business Rules
- Manage Workflows
- Workflow Monitoring
- Data Lineage

The Manage Business Entity involves three main processes:

- Business Entity or Object Management
- Business Entity Processing Support
- Business Entity or Object Reporting.

Business Entity or Object Management: The Business Entity or Object Management involves the process of creating a set of Metadata tables that contain the definition or configuration of a business Entity or Object.

Business Entity Processing Support: The Business Entity Processing Support involves the process of adding an additional high-level “filter” to the appropriate MDM OOTB features. All the appropriate OOTB features will have an additional Business Entity drop-down field on the UI displaying a list of defined business entities.

- When a business entity is selected from the Business Entity drop-down, a list of configured tables corresponding to the selected business entity will be displayed. You can optionally select the required tables to be associated with selected MDM OOTB feature.
- When no business entity is selected from the Business Entity Drop-Down list, all the tables will be displayed.

Business Entity or Object Reporting: The Business Entity or Object Reporting will be similar to the Business Entity Processing Support approach where a high-level Entity “Filter” will be available on the appropriate reporting screens.

You can create a business entity without any tables associated or configured. In this scenario, only workflow monitoring and reporting will be available.

A business entity will require at least one Master Table, in order to enable data content reporting or other MDM management activities or features.

You can access Manage Business Entity UI from MDM left navigation pane. On the Manage Business Entity UI, you can create, modify or delete business entities.

Create Business Entity

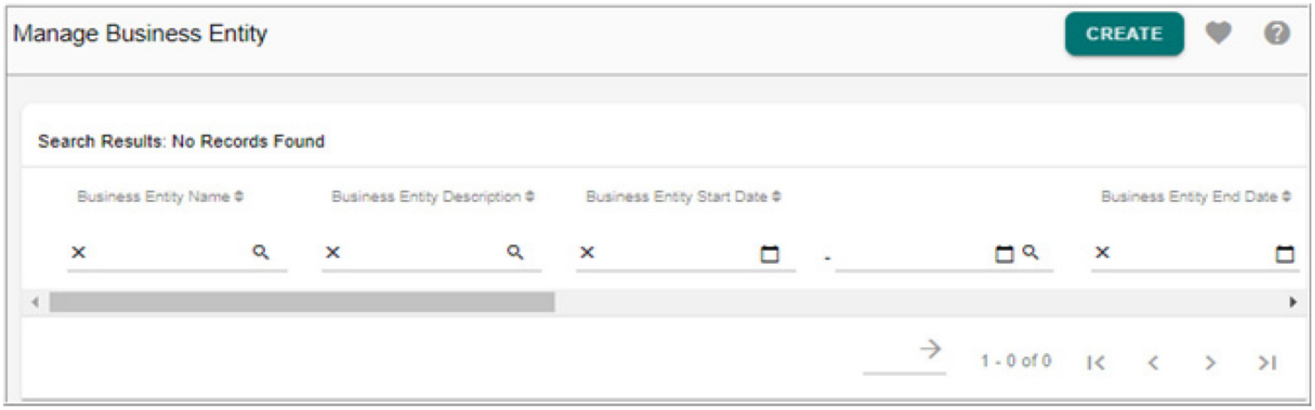
The first step in entity management is to create a business entity wherein, you will be selecting a set of master tables, entities and sources as part of the entity. The business entities created here are displayed as drop downs in various screens across MDM UIs to filter out the selected master tables of the entity.

To create business entity:

1 On the navigation pane, navigate to **Model Setup** -> **Business Entity**.

The **Manage Business Entity** UI (Figure 715) is displayed.

Figure 715: Manage Business Entity

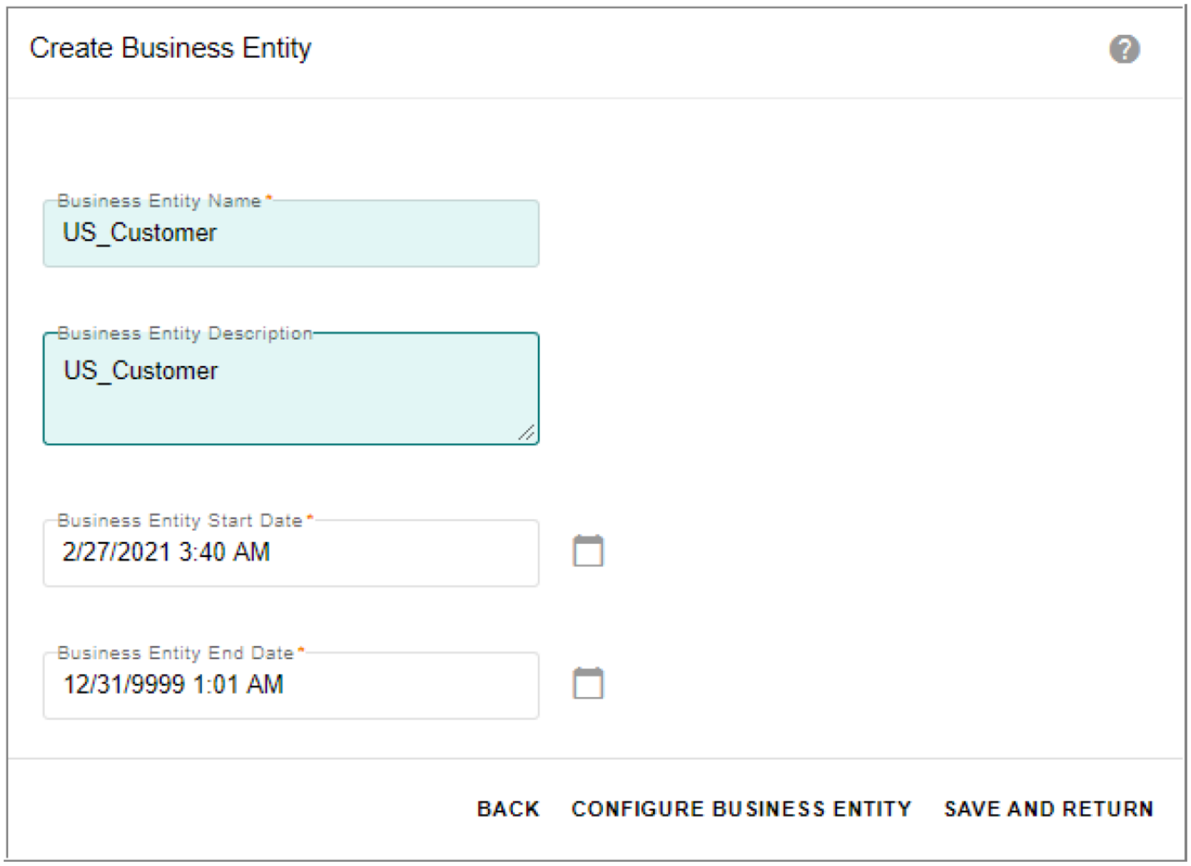


Search Results: No Records Found

2 On the **Manage Business Entity** UI (Figure 715), click **Create Business Entity**.

The **Create Business Entity** UI (Figure 716) is displayed.

Figure 716: Create Business Entity


Create Business Entity

Business Entity Name*: US_Customer

Business Entity Description: US_Customer

Business Entity Start Date*: 2/27/2021 3:40 AM

Business Entity End Date*: 12/31/9999 1:01 AM

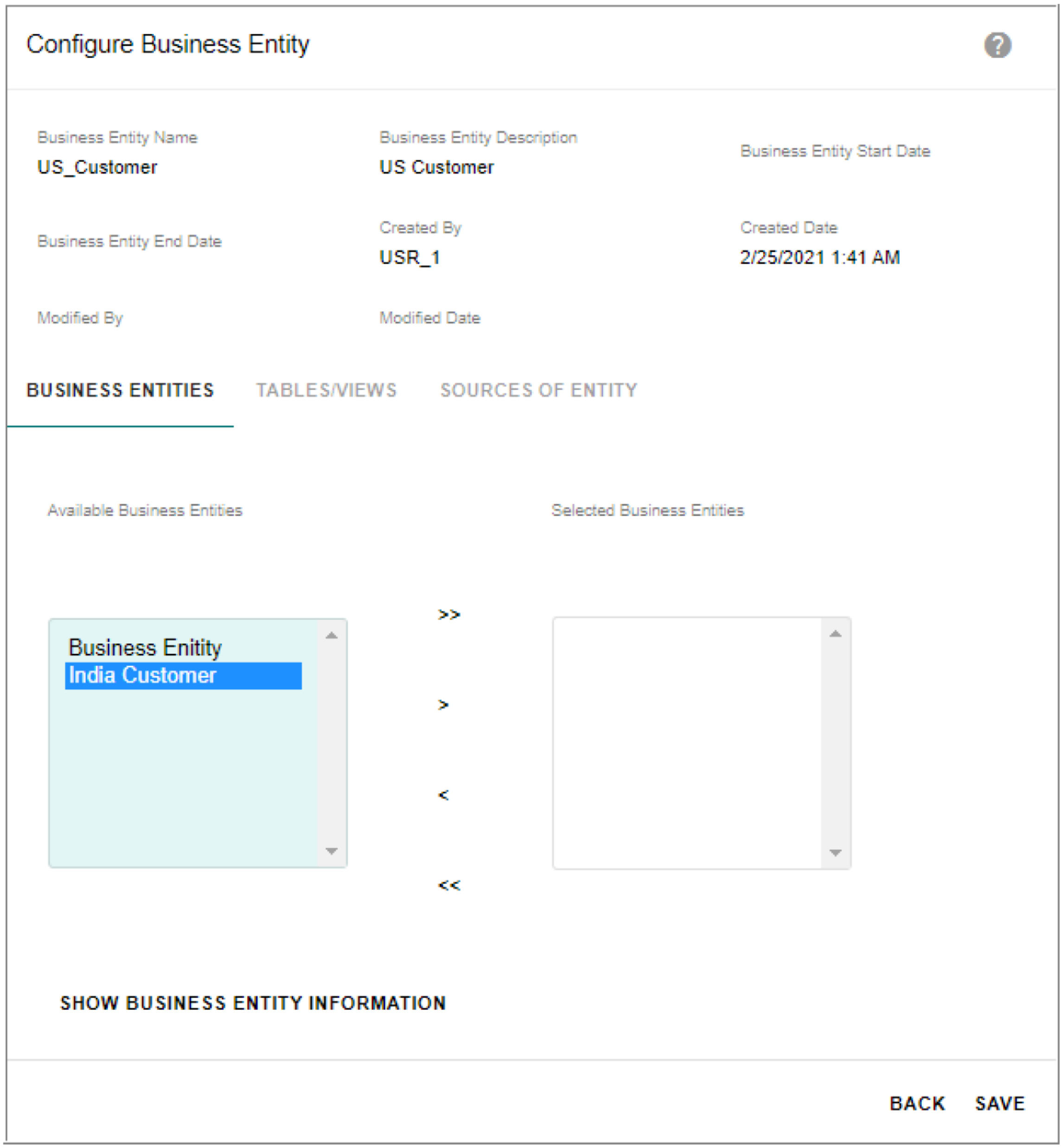
3 On the **Create Business Entity** page (Figure 716),

- enter the business entity name in **Business Entity Name** field.
- enter the business entity description in **Business Entity Description** field.
- specify the start and end date for the business entity defined.

  You can click on **Save and Return** to save the business entity details and later configure the business entity details or click on **Configure Business Entity** to configure the business entity details.
- Click **Configure Business Entity**.

  The **Configure Business Entity** page is (Figure 717) displayed.

Figure 717: Configure Business Entity



Configure Business Entity

Business Entity Name
US_Customer

Business Entity Description
US Customer

Business Entity Start Date

Business Entity End Date

Created By
USR_1

Created Date
2/25/2021 1:41 AM

Modified By

Modified Date

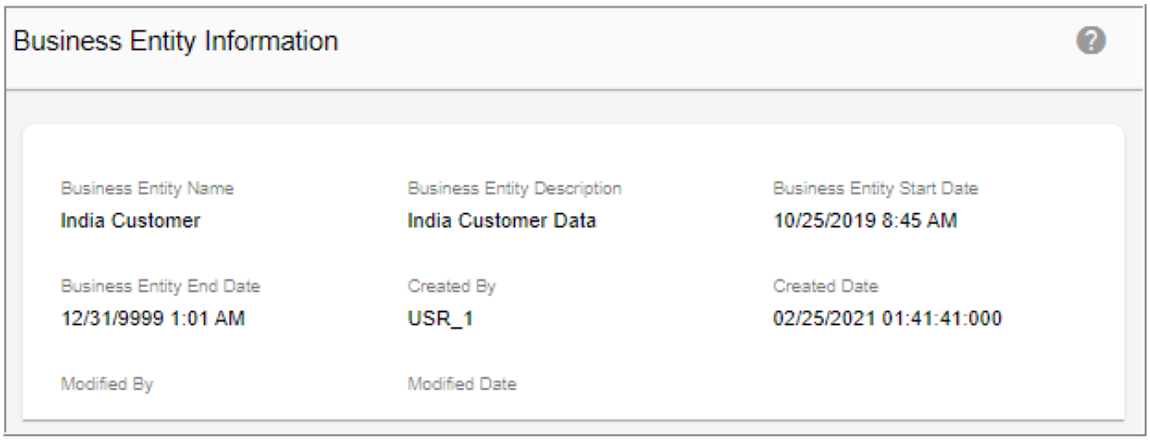
4 On the **Configure Business Entity** page (Figure 717),

- The upper pane displays the business entity details like business entity name, description, date of creation, modification etc.
- The lower pane displays tabs for **Business Entities**, **Tables/Views** and **Sources of Entity**.
- Under the **Business Entities** tab, the **Available Business Entities** list displays all the available business entities. Optionally, you can assign other business entities to the selected business entity, that is, you can define other business entities within a business entity.

You can select any business entity and click on **Show Business Entity Information** button to view the business entity details. For example, select Organization entity and click on **Show Business Entity Information** button.

The Figure 718 displays the entity information of the business entity selected in the Business Entities pane.

Figure 718: Business Entity Information



Business Entity Information

Business Entity Name
India Customer

Business Entity Description
India Customer Data

Business Entity Start Date
10/25/2019 8:45 AM

Business Entity End Date
12/31/9999 1:01 AM

Created By
USR_1

Created Date
02/25/2021 01:41:41:000

Modified By

Modified Date

- Under the **Tables/Views** tab, the **Available Table/Views** displays all the tables or views. You can select the required tables or views to be associated with the selected business entity.
- Under the **Sources of Entity** tab, the **Available Sources** list displays all the available sources. Optionally, you can select the required sources and add it to **Selected Sources** list, so that these sources will be contributing to the selected business entity.

  Note: Sources of Entity by definition are the sources of data that contributes to the master tables defined within the business entity.

5 Click **Save** after configuring all the business entity details.

Message: “Business Entity created successfully” is displayed.

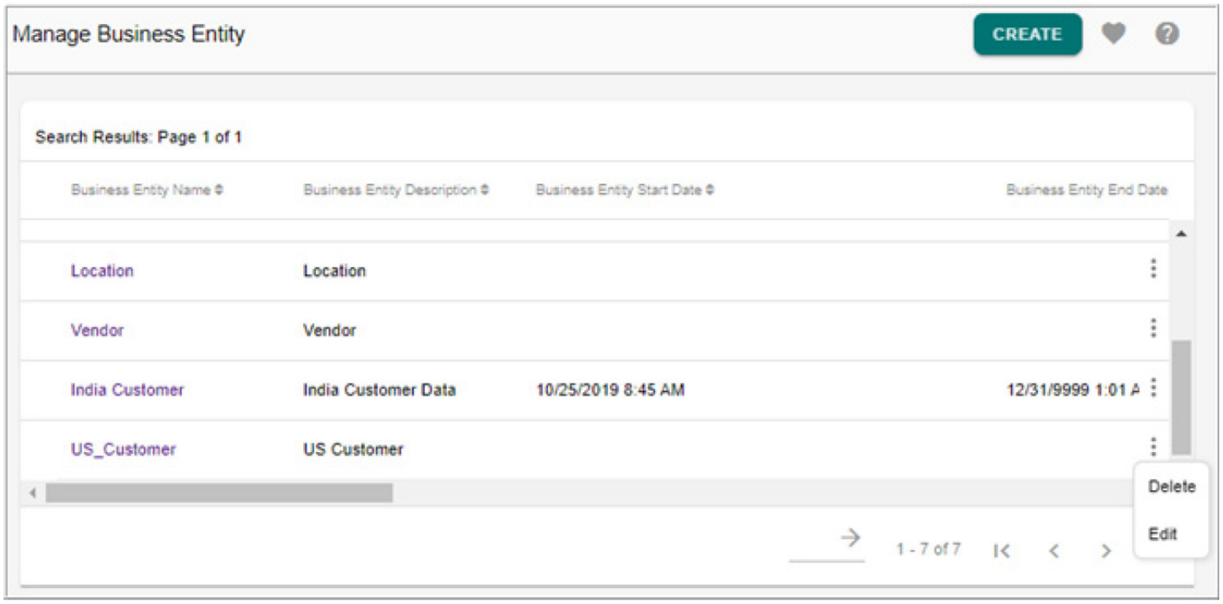
Edit Business Entity

You can modify the business entity details. To edit business entity details:

1 On the navigation pane, navigate to **Model Setup** -> **Business Entity**.

The **Manage Business Entity** page is displayed.

Figure 719: Manage Business Entity



Manage Business Entity

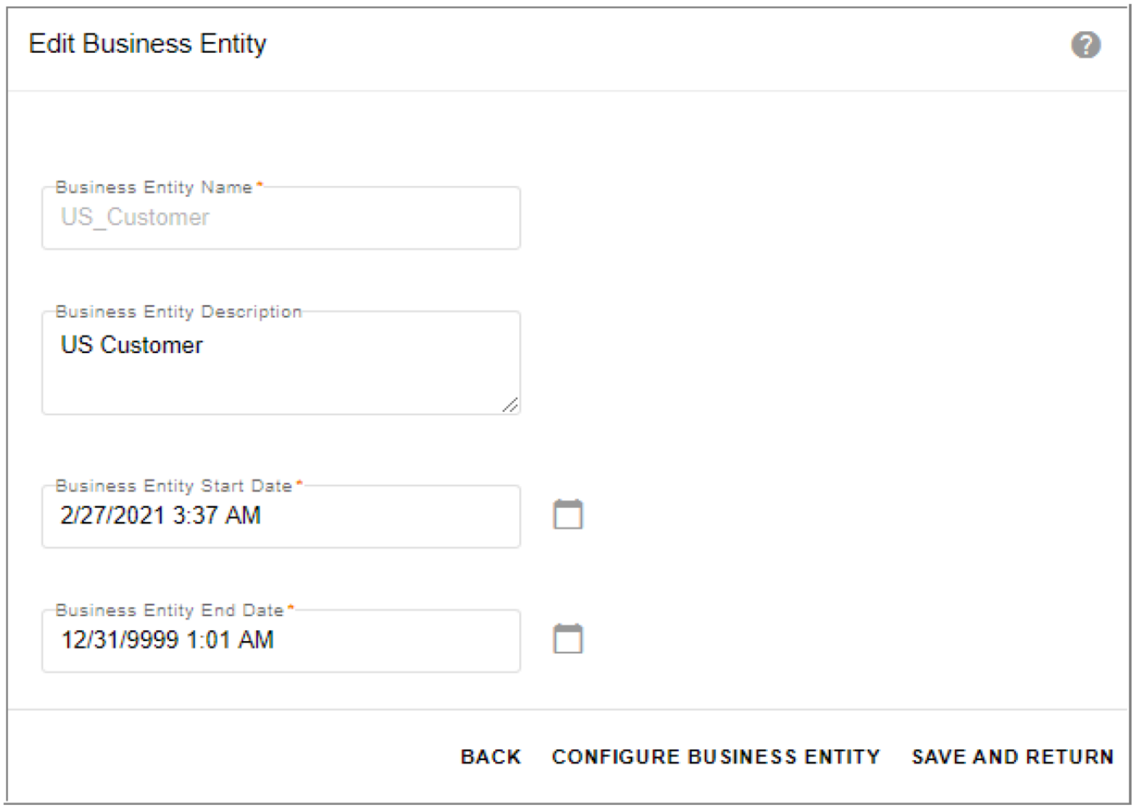
Search Results: Page 1 of 1

Business Entity Name	Business Entity Description	Business Entity Start Date	Business Entity End Date
Location	Location		
Vendor	Vendor		
India Customer	India Customer Data	10/25/2019 8:45 AM	12/31/9999 1:01 A
US_Customer	US Customer		

2 On the **Manage Business Entity** page, select the required business entity and click **Edit Business Entity** as in Figure 719.

The **Edit Business Entity** page (Figure 720) is displayed.

Figure 720: Edit Business Entity



Edit Business Entity

Business Entity Name*: US_Customer

Business Entity Description: US Customer

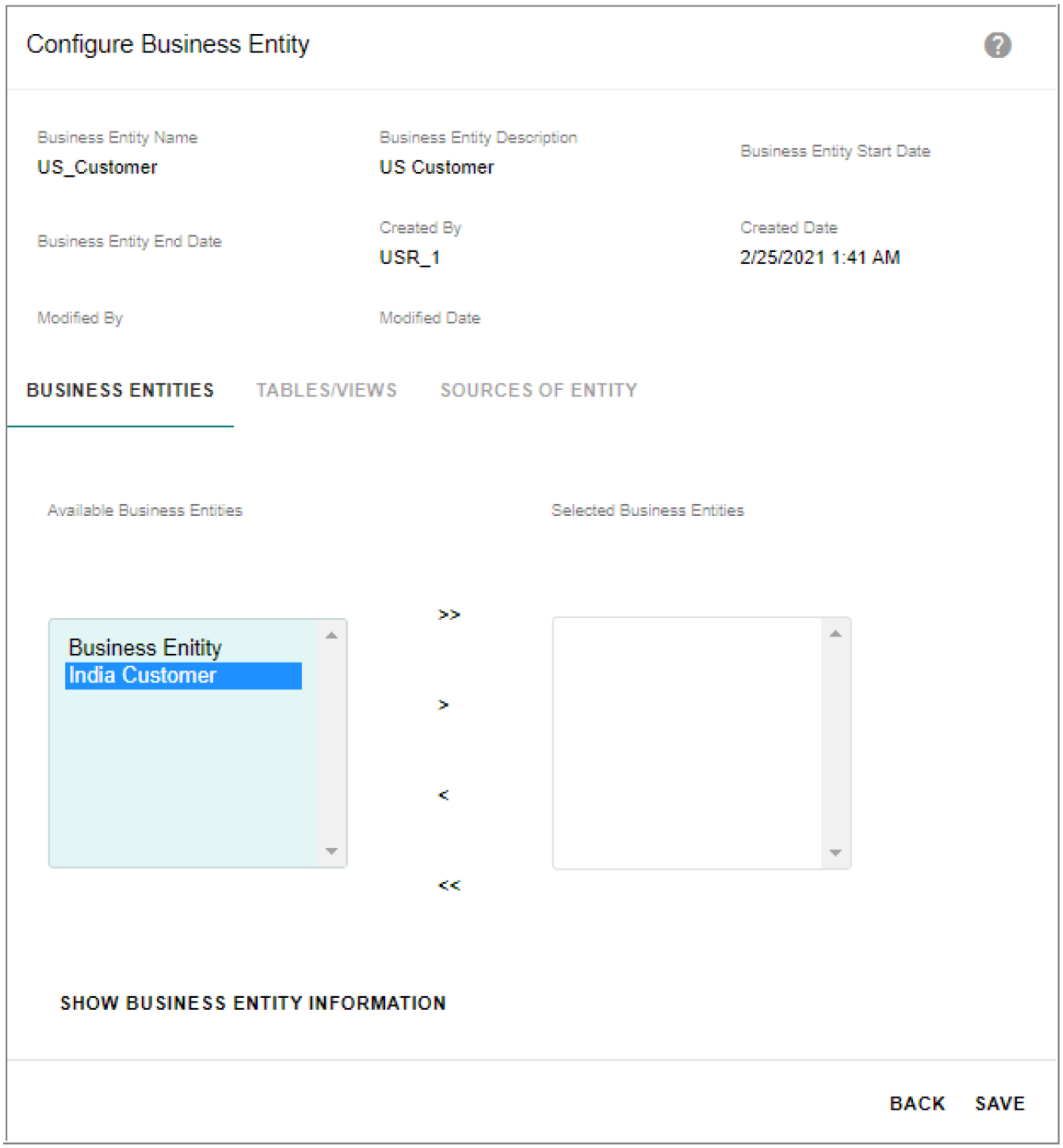
Business Entity Start Date*: 2/27/2021 3:37 AM

Business Entity End Date*: 12/31/9999 1:01 AM

3 On the **Edit Business Entity** page (Figure 720), you can modify the business entity description and start and end date of the business entity and click **Save and Return** to save the details or click **Configure Business Entity** to modify business entity configuration details.

The **Configure Business Entity** page (Figure 721) is displayed.

Figure 721: Configure Business Entity



Configure Business Entity

Business Entity Name
US_Customer

Business Entity Description
US Customer

Business Entity Start Date

Business Entity End Date

Created By
USR_1

Created Date
2/25/2021 1:41 AM

Modified By

Modified Date

4 On the **Configure Business Entity** page (Figure 721), you can assign/unassign business entities, tables and sources under the corresponding tabs and click **Save**.

Message: “Business Entity updated successfully” is displayed.

Delete Business Entity

To delete entity:

1. On the **Manage Business Entity** page (Figure 719), select the required business entity and click **Delete Business Entity.**

   Note: You cannot delete a business entity, which is a part of another business entity.

   The Confirmation Web Page Dialog is displayed.

2. On the Confirmation Web Page Dialog, click **Yes**.

   Message: "Business Entity deleted successfully" is displayed.

CHAPTER 21 Administration

What's In This Chapter

This chapter provides detailed information on the various features available for MDM Administrator role.

Topics:

- Manage Logger
- Manage Publications
- Manage Events

Manage Logger

Manage logger feature enables better exception handling and logging through out MDM application. On the MDM UI, using Manage Logger link, you can view logger settings, set logger options, and view log files for all the services running under MDM server and for MDM stored procedures.

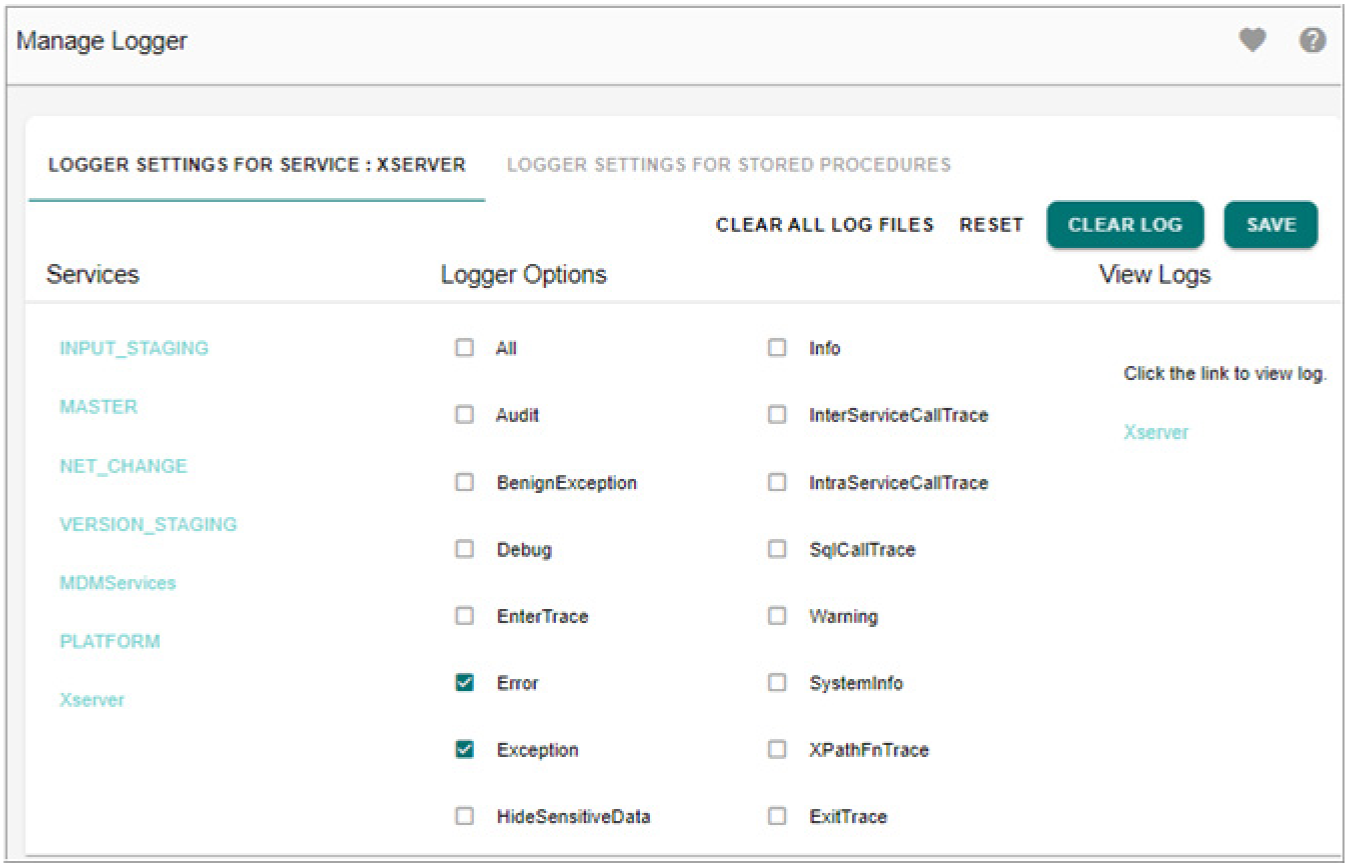
Logger Settings

To view logger settings:

1 On the navigation pane, click **Administration** -> **Logs.**

The **Manage Logger** UI (Figure 723) is displayed.

Figure 722: Manage Logger—Logger Settings for Service



☐ All
☐ Audit
☐ BenignException
☐ Debug
☐ EnterTrace
☑ Error
☑ Exception
☐ HideSensitiveData
☐ Info
☐ InterServiceCallTrace
☐ IntraServiceCallTrace
☐ SqlCallTrace
☐ Warning
☐ SystemInfo
☐ XPathFnTrace
☐ ExitTrace

The **Manage Logger** page (Figure 723) displays two tabs **Logger Settings For Service** and **Logger Settings for MDM Stored Procedure**. By default, **Logger Settings for Service** tab is selected.

Logger Settings for Service

With the **Logger Settings for Service** tab selected (Figure 723), the **Manage Logger** page displays the following:

- The **Services** pane displays all the MDM services as hyperlink.
- The **Logger Options** pane displays the logger options for the service selected. By default, the Error and Exception options will be selected.
- The **View Logs** pane displays the link to view the log file of the selected service.

  By default Xserver service is selected and logger options for Xserver is displayed.

Setting Logger Options for Service

To set logger options for service:

1. On the **Logger Options** pane, select the required logger options by clicking the corresponding checkboxes and click **Save**.

   Clicking **Reset** will reset all options and the Error and Exception options would be selected.

   All the logger options selected for a service would be active till you restart your MDM server.

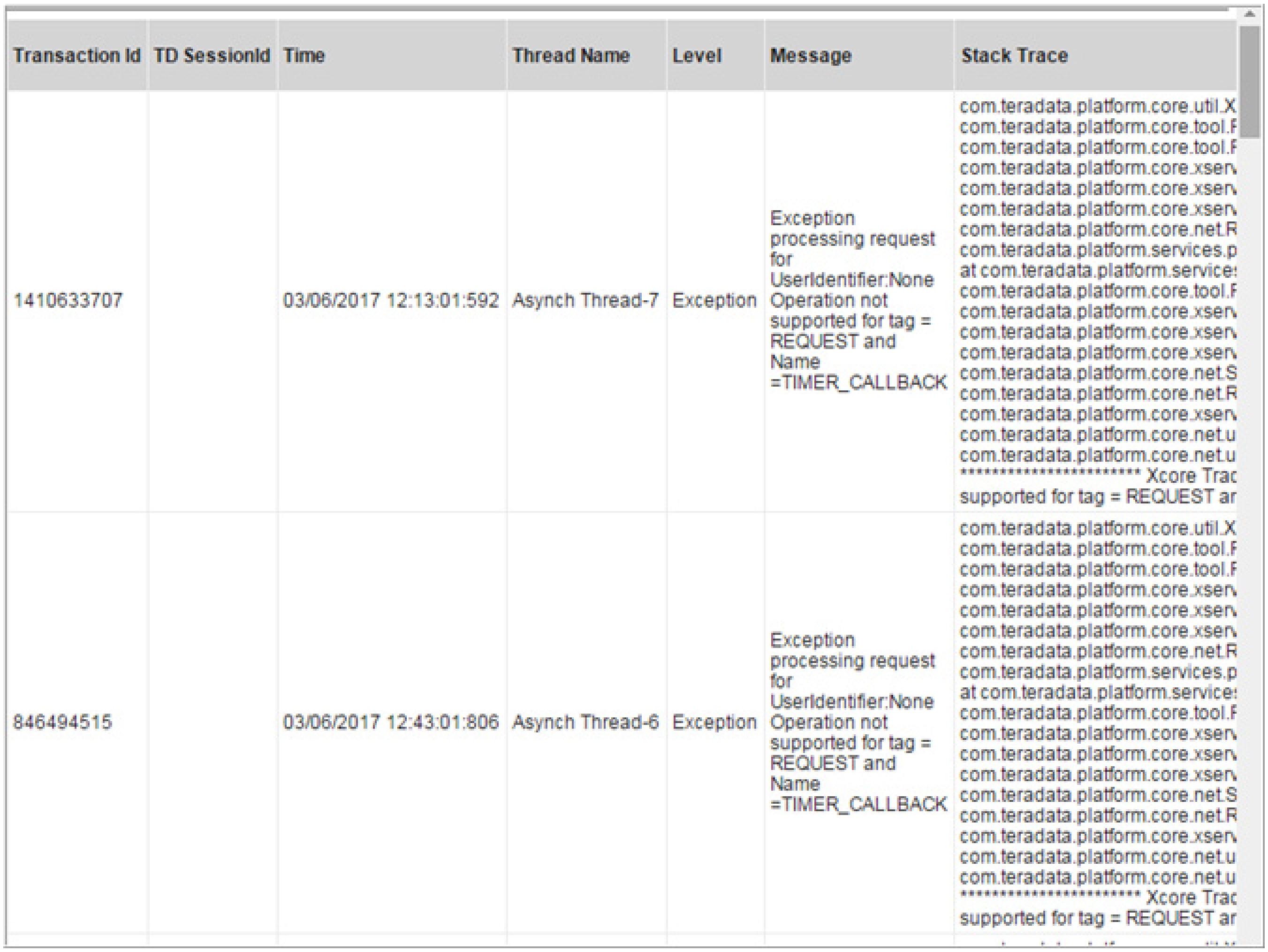
Viewing Log Files for Service

To view log files for service:

1. On the **Logger Options** pane, select the required logger options by clicking the corresponding checkboxes and click **Save**.
2. On the **View Log** pane, click on the service hyperlink to view the log file for the logger options selected.

   The **Log Message** pop-up window (Figure 723) is displayed.

Figure 723: Log Message

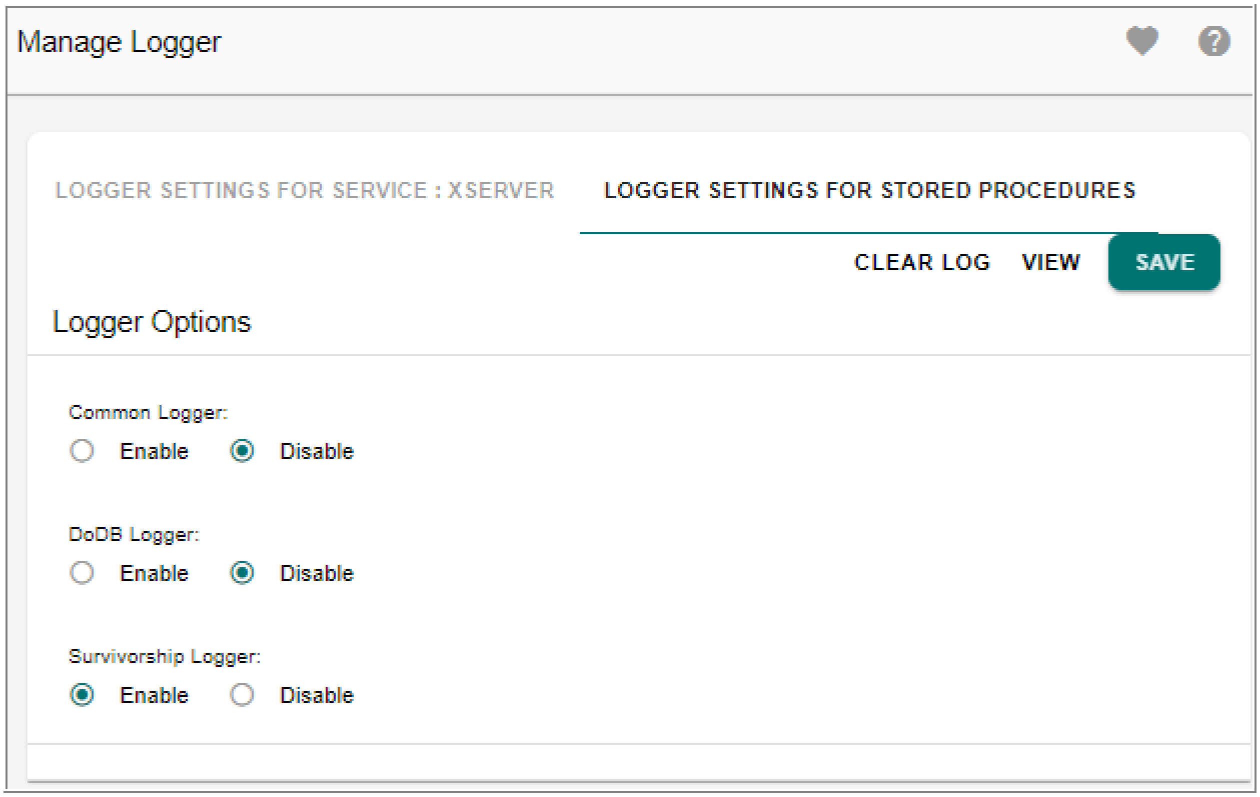


Transaction Id	TD SessionId	Time	Thread Name	Level	Message	Stack Trace
1410633707		03/06/2017 12:13:01:592	Asynch Thread-7	Exception	Exception processing request for UserIdentifier:None Operation not supported for tag = REQUEST and Name =TIMER_CALLBACK	com.teradata.platform.core.util.X com.teradata.platform.core.tool.F com.teradata.platform.core.tool.F com.teradata.platform.core.xserv com.teradata.platform.core.xserv com.teradata.platform.core.xserv com.teradata.platform.core.net.R com.teradata.platform.services.p at com.teradata.platform.services com.teradata.platform.core.tool.F com.teradata.platform.core.xserv com.teradata.platform.core.xserv com.teradata.platform.core.xserv com.teradata.platform.core.net.S com.teradata.platform.core.net.R com.teradata.platform.core.xserv com.teradata.platform.core.net.u com.teradata.platform.core.net.u *********************** Xcore Trac supported for tag = REQUEST ar
846494515		03/06/2017 12:43:01:806	Asynch Thread-6	Exception	Exception processing request for UserIdentifier:None Operation not supported for tag = REQUEST and Name =TIMER_CALLBACK	com.teradata.platform.core.util.X com.teradata.platform.core.tool.F com.teradata.platform.core.tool.F com.teradata.platform.core.xserv com.teradata.platform.core.xserv com.teradata.platform.core.xserv com.teradata.platform.core.net.R com.teradata.platform.services.p at com.teradata.platform.services com.teradata.platform.core.tool.F com.teradata.platform.core.xserv com.teradata.platform.core.xserv com.teradata.platform.core.xserv com.teradata.platform.core.net.S com.teradata.platform.core.net.R com.teradata.platform.core.xserv com.teradata.platform.core.net.u com.teradata.platform.core.net.u *********************** Xcore Trac supported for tag = REQUEST ar

Logger Settings for MDM Stored Procedure

On the **Manage Logger** page, with the **Logger Settings for MDM Stored Procedure** tab selected (Figure 724), you can perform the following operations:

Figure 724: Manage Logger—Logger Settings for MDM Stored Procedure


Manage Logger
LOGGER SETTINGS FOR SERVICE : XSERVER
LOGGER SETTINGS FOR STORED PROCEDURES
CLEAR LOG
VIEW
SAVE

Logger Options

Common Logger:
○ Enable ● Disable

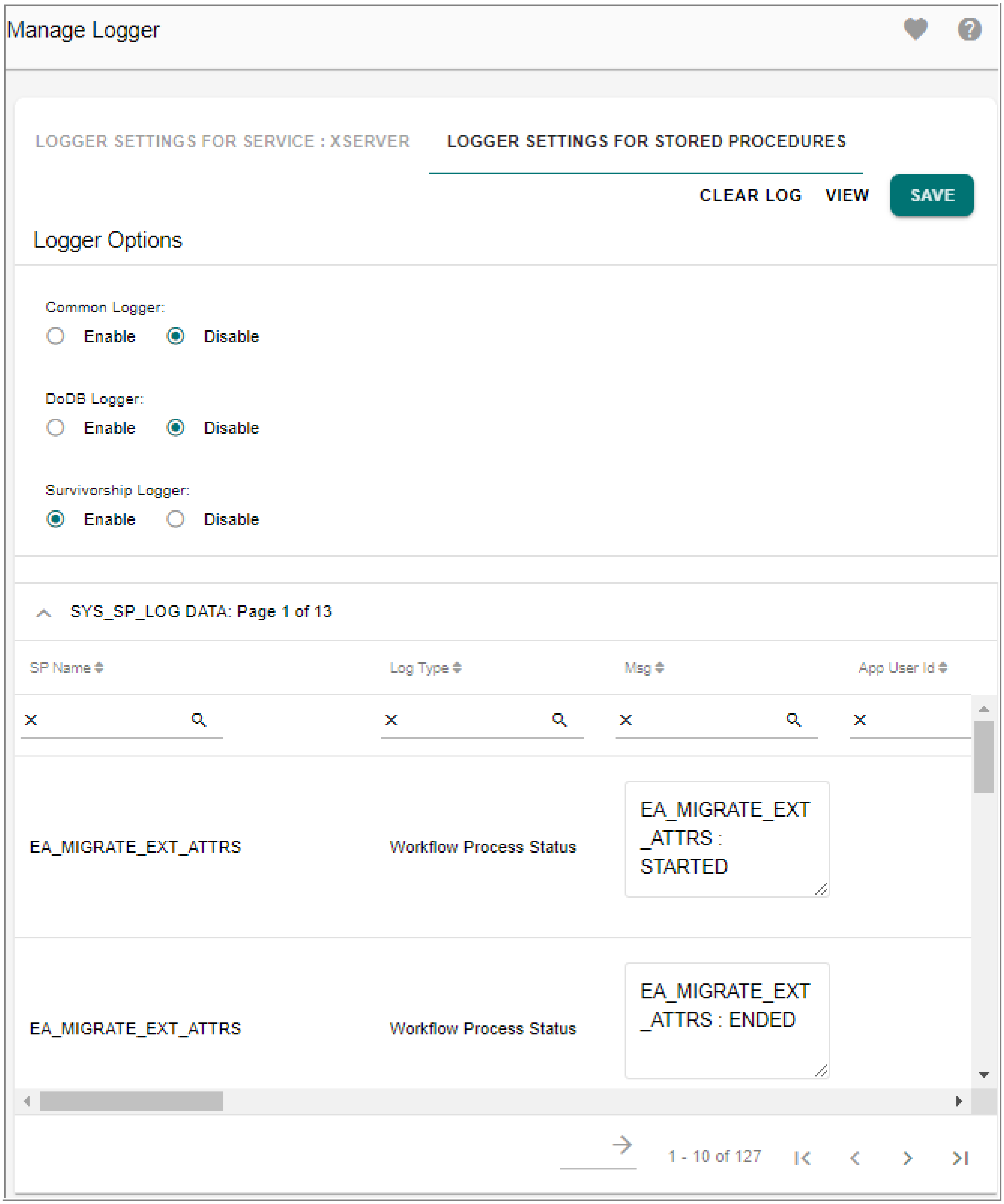
DoDB Logger:
○ Enable ● Disable

Survivorship Logger:
● Enable ○ Disable

- Select the appropriate radio button to enable or disable logging for stored procedures and Click **Save**.

  By default, Disable option is selected.
- Click **Clear Log** to delete the log entries from SYS_SP_Log.
- Click **View** to view the SYS_SP_Log information as in Figure 725.

Figure 725: View Log Details


Manage Logger
LOGGER SETTINGS FOR SERVICE : XSERVER
LOGGER SETTINGS FOR STORED PROCEDURES
CLEAR LOG
VIEW
SAVE

Logger Options

Common Logger:
○ Enable ● Disable

DoDB Logger:
○ Enable ● Disable

Survivorship Logger:
● Enable ○ Disable

SYS_SP_LOG DATA: Page 1 of 13

SP Name	Log Type	Msg	App User Id
EA_MIGRATE_EXT_ATTRS	Workflow Process Status	EA_MIGRATE_EXT_ATTRS : STARTED	
EA_MIGRATE_EXT_ATTRS	Workflow Process Status	EA_MIGRATE_EXT_ATTRS : ENDED	

- Click the Export to Excel icon to export the logs to an excel sheet.

1. In MDM, stored procedure logging is enabled and functionalities such as Excel Upload, E2E (only DO_DB_Persist execution), Stand alone DO_DB_Persist requests, Hierarchy Drag and Drop operations etc., are being logged under SYS_SP_LOG table.

2. The log pages will not be updated with correct details, If MDM is deployed in Collapsed mode and the log folder is not available in Appserver_Home directory.

Customizing Service Log Files

By default, the MDM service log files are html files and can be viewed on the View Logs UI in tabular format. If you desire to have the log files in xml format or text format and download them in the same format, perform the following steps:

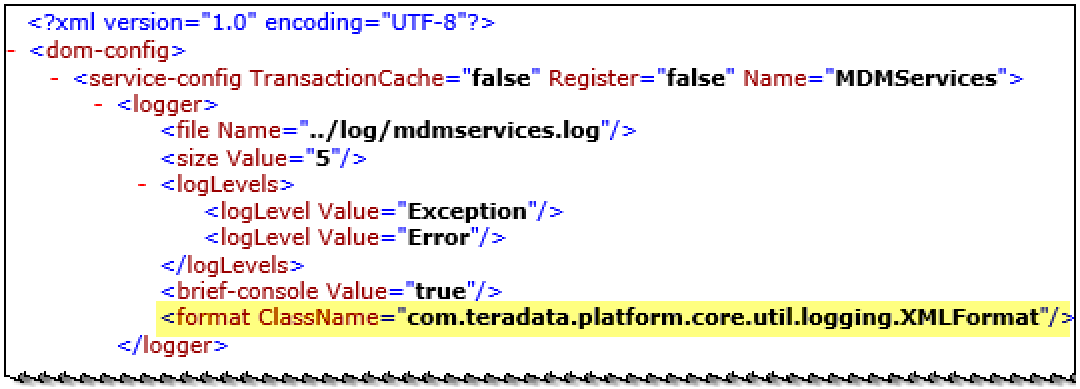
1. Navigate to <MDM_Install_Directory>\cfg\properties and add the following parameter in the logger section in the required service property file.

   <format ClassName=”com.teradata.platform.core.util.logging.XMLFormat”/>

   The valid values for ClassName includes the following:

   - com.teradata.platform.core.util.logging.XMLFormat
   - com.teradata.platform.core.util.logging.HTMLFormat
   - com.teradata.platform.core.util.logging.TextFormat

   For example in mdmservices.xml file, the log format is updated as below.



```
  <?xml version="1.0" encoding="UTF-8"?>
- <dom-config>
  - <service-config TransactionCache="false" Register="false" Name="MDMServices">
    - <logger>
        <file Name="../log/mdmservices.log"/>
        <size Value="5"/>
      - <logLevels>
          <logLevel Value="Exception"/>
          <logLevel Value="Error"/>
        </logLevels>
        <brief-console Value="true"/>
        <format ClassName="com.teradata.platform.core.util.logging.XMLFormat"/>
      </logger>
```

2. Restart the server for the changes to be reflected.

If the default format (HTMLFormat) is changed in the service file, the corresponding log file will not be displayed on the View Logs UI and can be downloaded on click of View.

Backup of Log Files

To take the backup of log files:

1. On the **Manage Logger** page (Figure 722), in the **View Log** pane, clicking on **Clear Log** will backup the log file and create a new log file. Clicking on **Clear All Log Files** will backup all log files generated and will start writing in a new log file with the same name.

   You can set maximum size (MB) of the log file in Studio environment or can modify service file to change the size of the log file. If the size exceeds the maximum size defined then the log file will be archived and new log file will be created.

   Backup will be created in the following two scenarios:

   - When MDM serve starts, the log file size will be compared with the maximum file size defined and if the size exceeds the maximum size then the file will be archived and new file will be created.
   - Timer service is created for production scenario and it runs every ten days to compare the file size with the maximum size. If the size exceeds the maximum size then the file will be archived and new file will be created. This behavior can be customized if required, using below parameters through MDM UI:

     Configuration Parameters:

     LoggerTimerDuration is the parameter to set duration of Logger timer in days. Default value is 10 days.

     LoggerTimerEnabled is the parameter to enable/disable the Logger timer. Default value is true and valid values are [true|false]

     Perform the following steps to edit the above parameters using the MDM Table Editor UI:

     i. On the MDM UI, in the left navigation pane, navigate to **Administration** --> **SystemProperty**.
     ii. On the **SystemProperties** UI, select the required SystemProperties entity and then click **Edit**.
     iii. On the **SystemProperties** UI, update the required values for logger and click **Save**.
     iv. Restart the MDM server.

Before clearing log, the log file is xserver.log and after clearing log, the backup file is xserver.logJul28173909IST2008-->filename+timestamp and the log file is xserver.log.

MDM Log Files

Lists of all MDM log files.

1 Installer log files

Location of installer log files: <*MDM_Install_Directory*>

- Teradata MDM Platform <release #> Install.log

  This log file is generated by MDM installer and provides details on MDM installation. This log file also details information on JDK version used, base installation location, Teradata JDBC jar location, 3rd party jar location, application server details and so on.

- Installer_info_<log #>.log

  This log file provides details of MDM generated log files. It also provides the operating system and browser information.

2 Schema generation (SG/ISG) log files

Location of schema generation log files: *<MDM_Install_Directory>\log*

- gendb.log

  General database log—this log file is generated while installing MDM through installer or running *<MDM_Install_Directory>\bin\call_tk_gendb.bat* file to generate schema. This file details information on database objects created as a part of SchemaGen process, store procedure compiled for MDM and other SchemaGen process details. Refer to this file in case of any SchemaGen failure.

- incr_gendb.log

  Incremental SchemaGen log—this log file is generated while running *<MDM_Install_Directory>\bin\call_incr_gendb.bat* file to generate incremental schema. Custom Incremental SchemaGen log file (incr_custom_gendb.log) will be generated while using deployment manager to install custom application under custom application. This file details information on database objects created as a part of Incremental SchemaGen process, store procedure compiled for MDM and other Incremental SchemaGen process details. Refer to this file in case of any Incremental SchemaGen failure.

3 MDM application log files

Location of MDM application log files: *<MDM_Install_Directory>\log*

The log folder contains log files for every MDM service running under MDM server. By default, MDM application logs every error or/and exception occurred on the application. You can modify logging options for MDM services using Administration UI or Studio.

If any MDM application process fails, log file captures details regarding failures with low level details which will be very useful in identifying cause of error or failure of process.

Example: If table editor fails to insert a record in the Master table due to Duplicate Primary Key exception, log information will be available into two log files:

- master.log—MDM Master Service log

  Master log file logs database error with user friendly messages. These messages are also displayed on the MDM UI.

- xserver.log—MDM Xserver Log

  Xserver log file logs low level exception details with java stack trace for in depth analysis.

Below is the list of MDM application log files available at: *<MDM_Install_Directory>\log*

- bpemeta.log—Meta Server log
- bpeui.log—BPE UI service log
- dataupload.log—Data Upload Service log
- E2E.log—E2E Service log
- email.log—Email Service log
- input.log—MDM InputStaging Service log
- master.log—MDM Master Service log
- messaging.log—Messaging Service log
- netchange.log—MDM NetChange Service log
- output.log—MDM OutputStaging log
- timer_sink.log—MDM Timer Sink log
- userSecurity.log—User Security Service log
- validation.log—Validation Service log
- xserver.log—MDM Xserver log
- hierarchyManager.log—Hierarchy Manager log
- myservice.log—UI Workflow log
- admin_ui.log—Admin UI log

Note: Hierarchy Manager log, UI Workflow log, and Admin UI log files are generated under application server location.

4 Application server log files—refer to application server guide for details.

Manage Publications

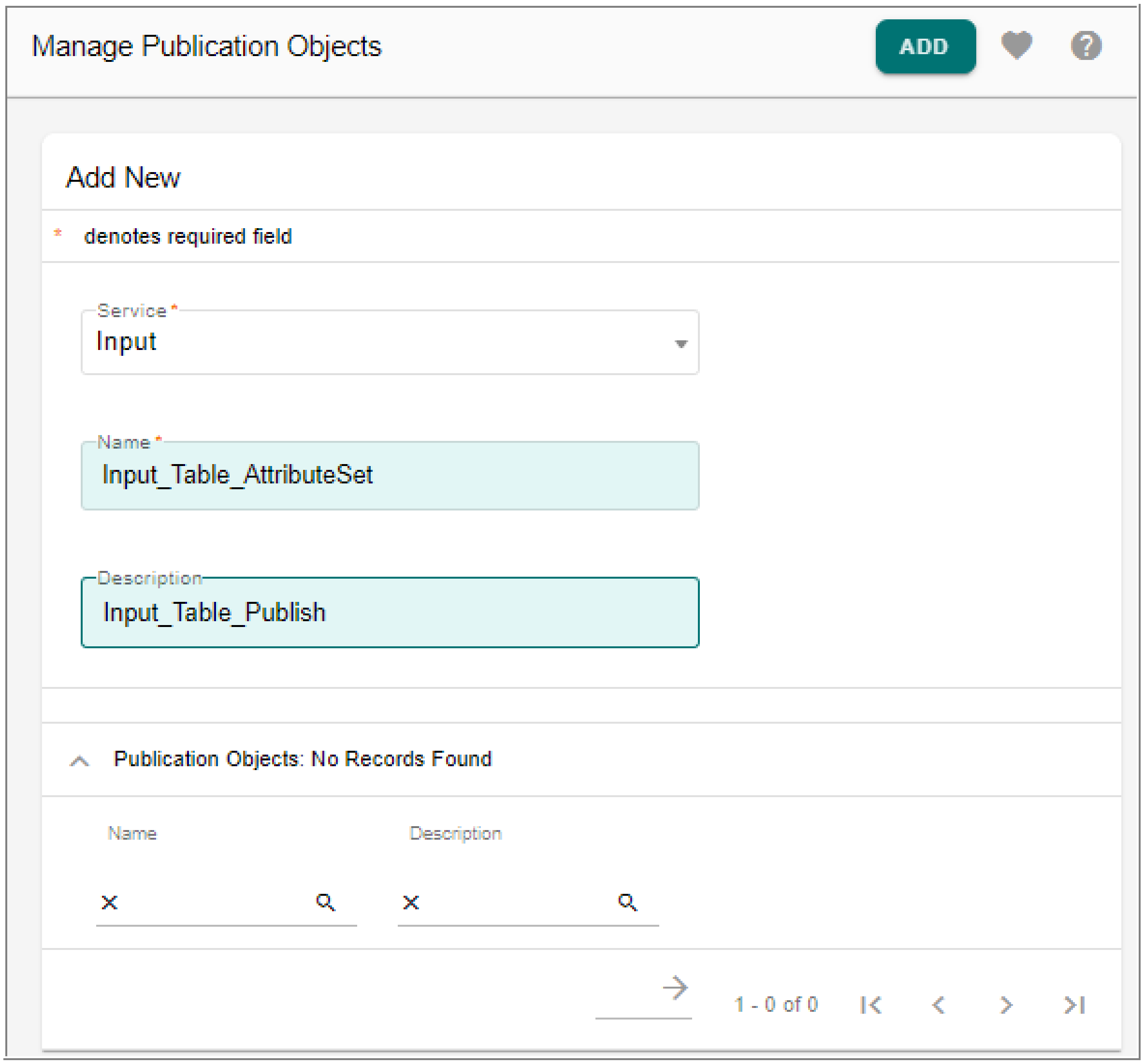
Publication object is defined as any collection of information that can be published to a downstream application, process, or end user.

Adding Publication Objects

To add publication objects:

1 Navigate to **Manage Publications** UI from **Data Integration** -> **Publications** -> **Publication Objects.**

Figure 726: Manage Publication Object


Manage Publication Objects
ADD
Add New
* denotes required field

Service *: Input

Name *: Input_Table_AttributeSet

Description: Input_Table_Publish

Publication Objects: No Records Found
Name
Description
1 - 0 of 0

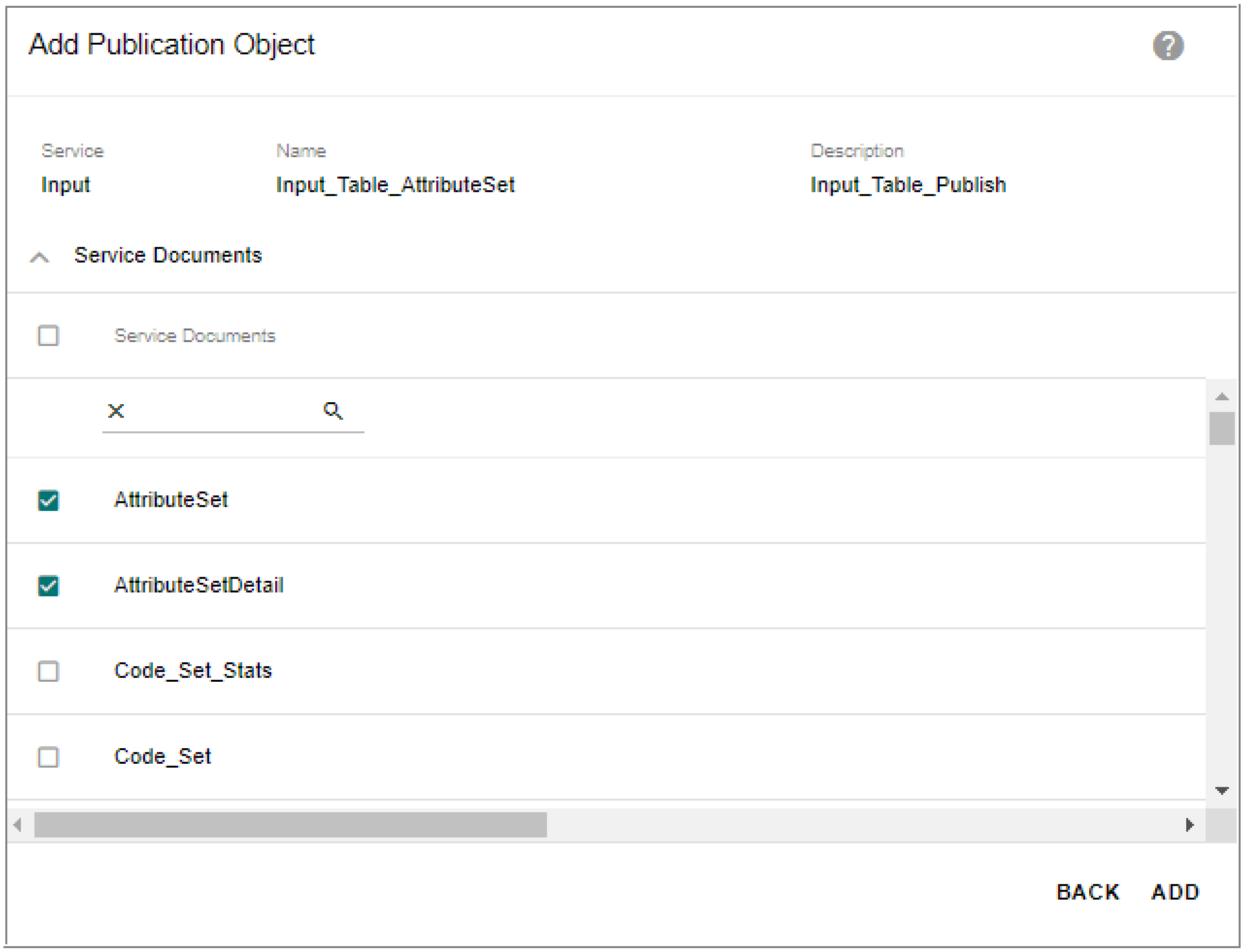
2 On the **Manage Publication Objects** page (Figure 726), enter the following in the **Add New** pane:

- **Service**: the Service dropdown displays the list of services (Input, Master, Netchange, Version and Views). Select the service to which the publication object being created is linked and whose data can be published.
- **Name**: enter the unique name for the publication object being created.
- **Description**: enter a brief description about the publication object.

3 Click **Add.**

The **Add Publication Object** page (Figure 727) is displayed. It displays the list of MDM x-documents.

Figure 727: Add Publication Object



Add Publication Object

Service	Name	Description
Input	Input_Table_AttributeSet	Input_Table_Publish

☐	Service Documents
☑	AttributeSet
☑	AttributeSetDetail
☐	Code_Set_Stats
☐	Code_Set

4 On the **Add Publication Object** page (Figure 727), in the **Service Documents** pane, select one or more service documents and click **Add**.

Message: Publication Object added successfully is displayed.

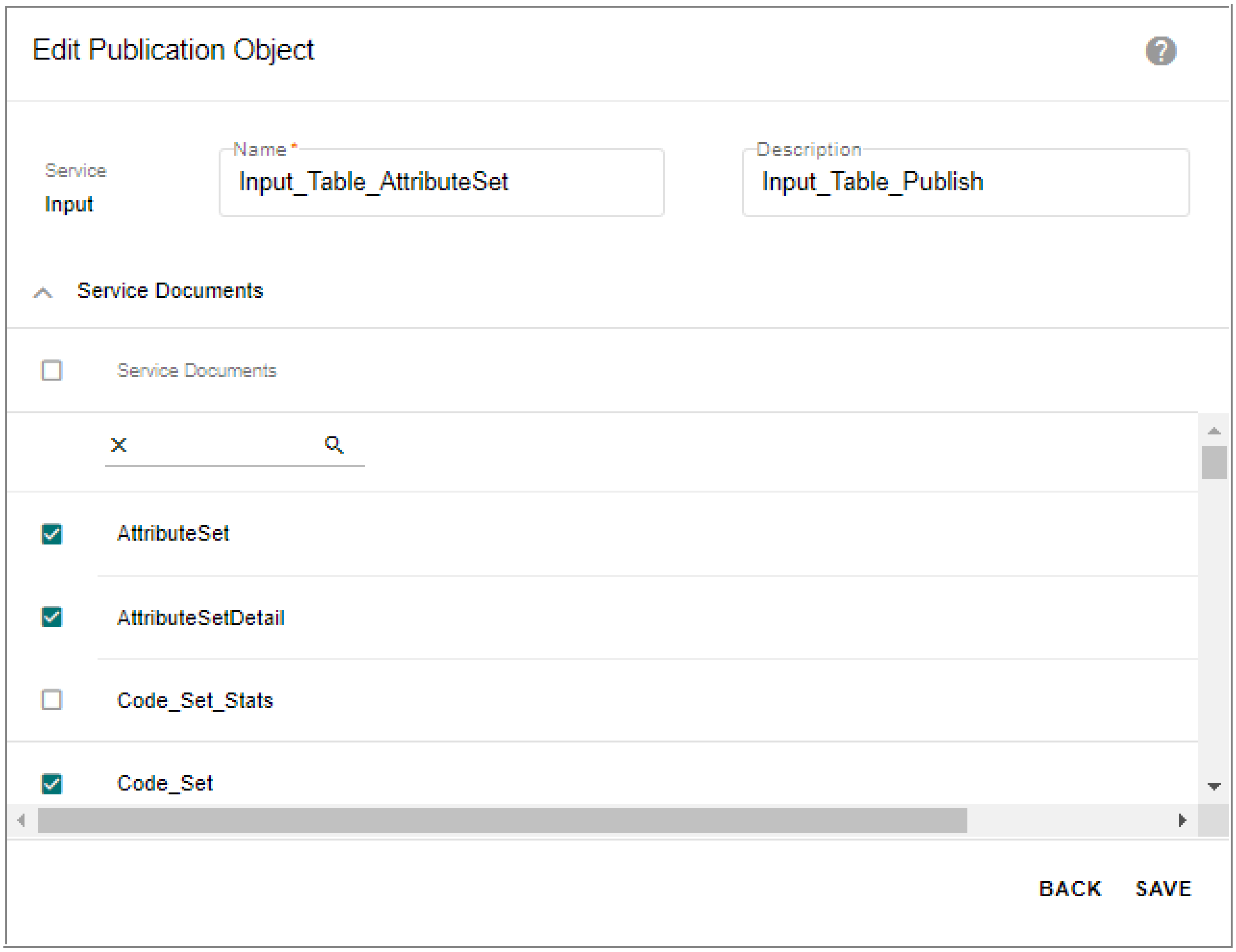
Editing Publication Objects

To edit publication objects:

1 On the **Manage Publication Objects** page (Figure 726), in the **Publication Objects** pane, click on the Menu icon corresponding to the required publication object and click **Edit**.

The **Edit Publication Object** page (Figure 728) is displayed.

Figure 728: Edit Publication Object



Edit Publication Object

Service
Input

Name*
Input_Table_AttributeSet

Description
Input_Table_Publish

Service Documents

☐ Service Documents

☑ AttributeSet

☑ AttributeSetDetail

☐ Code_Set_Stats

☑ Code_Set

2 On **Edit Publication Object** page (Figure 728), you can edit the name, description and select or deselect service documents and click **Save**.

Message: Publication Object edited successfully is displayed.

Deleting Publication Object

To delete publication object:

1 On the **Manage Publication Objects** page (Figure 726), in the **Publication Objects** pane, click on the Menu icon corresponding to the required publication object and click **Delete**.

Message: Publication Object deleted successfully is displayed.

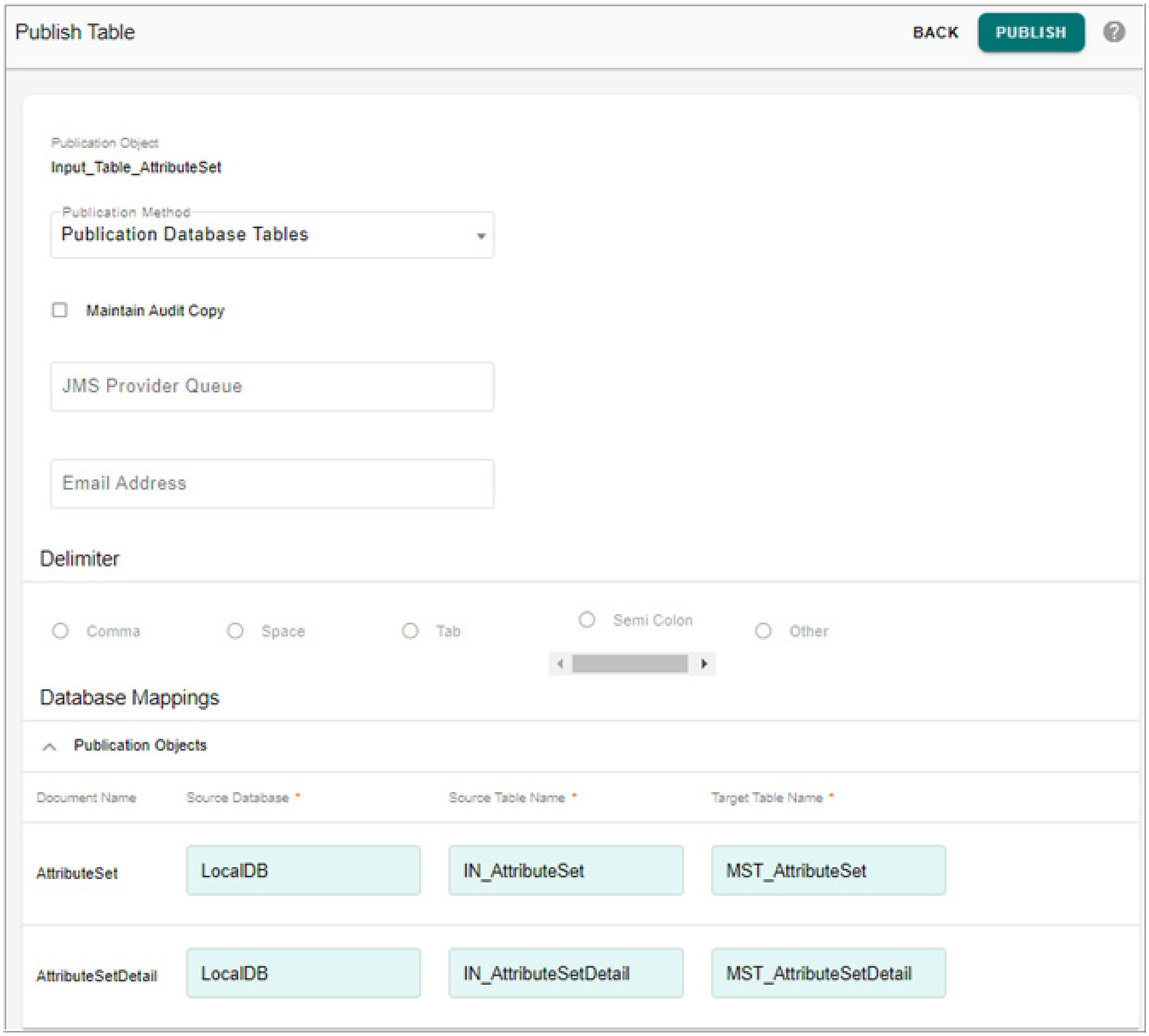
Publish Tables

To publish tables:

1 On the **Manage Publication Objects** page (Figure 726), in the **Publication Objects** pane, click on the Menu icon corresponding to the required publication object and click **Publish Table**.

The **Publish Table** page (Figure 729) is displayed.

Figure 729: Publish Table



Publication Object
Input_Table_AttributeSet

Publication Method: Publication Database Tables

☐ Maintain Audit Copy

Delimiter

○ Comma ○ Space ○ Tab ○ Semi Colon ○ Other

Database Mappings

Publication Objects

Document Name	Source Database *	Source Table Name *	Target Table Name *
AttributeSet	LocalDB	IN_AttributeSet	MST_AttributeSet
AttributeSetDetail	LocalDB	IN_AttributeSetDetail	MST_AttributeSetDetail

2 On the **Publish Table** page (Figure 729), enter the following:

- select the publication method from the **Publication Method** drop-down.

  The following publication methods are available:

  - **Publication Database Table**—this will publish the data in the Publication Object into a set of database tables that reside in the Publication database and the Join index is created automatically. The table is published as a temporal table itself with the same structure as the source table. Note that if a Publication Object contains multiple X-Documents, there will be one table created for each XDocument. The name of the table being created is specified in the TargetTableName column of the Database Mapping table.

  - **JMS Provider Queue**—this will publish the data into a specially formatted Teradata Queue table that conforms with the requirements of the new Teradata JMS Provider. As part of this step, the target table will be of type Teradata Queue table having first column as QITS with data type Timestamp (6) and rest of the columns same as the source table columns, so that it can be transported as part of a JMS messaging payload. If the table is a transactional temporal table the transaction column is not considered as this is a system populated column. Valid time and valid timestamp columns are considered for JMS publication. Note that if a Publication Object contains multiple X-Documents, there will be one Queue table created for each X-Document. The name of the table being created is specified in the TargetTableName column of the Database Mapping table.
  - **Comma Separated Values File**—this will extract the data to be published and will format it into a comma separated values (CSV) text file. If a Publication Object contains multiple X-Documents, there will be one CSV file per X-Document created. CSV files are always emailed to a single end user as specified in the Email Address field. CSV will be blank if the table does not have data.
  - **Excel**—this will extract the data to be published and will format it into a Excel spreadsheet. If a Publication Object contains multiple X-Documents, there will be one Excel worksheet per X-Document. There will always be a single Excel spreadsheet file created (containing one worksheet per X-Document), and this Excel spreadsheet will always be emailed to a single end user as specified in the Email Address field.
- to maintain an audit copy, select the **Maintain Audit Copy** checkbox.
- to publish to JMS Provider Queue, enter the name of the JMS queue in the **JMS Provider Queue** field.
- enter the email address in the **Email Address** field, if publishing to excel or comma separated values format.
- select the delimiter, if publishing to comma separated values format.
- in the Database Mappings pane, enter the Source Database, Source Table Name and the Target Table Name in the respective fields and click **Publish**.

  Message: Publish table submitted successfully is displayed.

- Non_MDM View publication is supported only for publication method of type “Publication Database Table”.
- Audit trail table will not be created for Comma separated values and Excel publication methods (for both target table as Temporal and Non Temporal).

- Tables published with maintain audit copy enabled having more than 20 characters will be trimmed upto 20 characters.

For target table as Temporal:

- For target table as temporal, an audit trail table will not be created for publishing.

For target table non Temporal:

- For target table as non-temporal there will be single audit table unlike earlier behavior of audit tables per publishing. In audit table published records for each run will be identified by a publishing id.

For detailed explanation on the various fields on the **Publish Table** page (Figure 729), refer to *Chapter Publication Services in Master Data Management Studio User Guide.*

For Publishing error logs and troubleshooting publication errors, refer to *Chapter Publication Services in Master Data Management Studio User Guide.*

Publish Error Log Search

On the Publish Error Log Search page, you can search and view publishing logs based on the publishing request Id.

To view publishing error log:

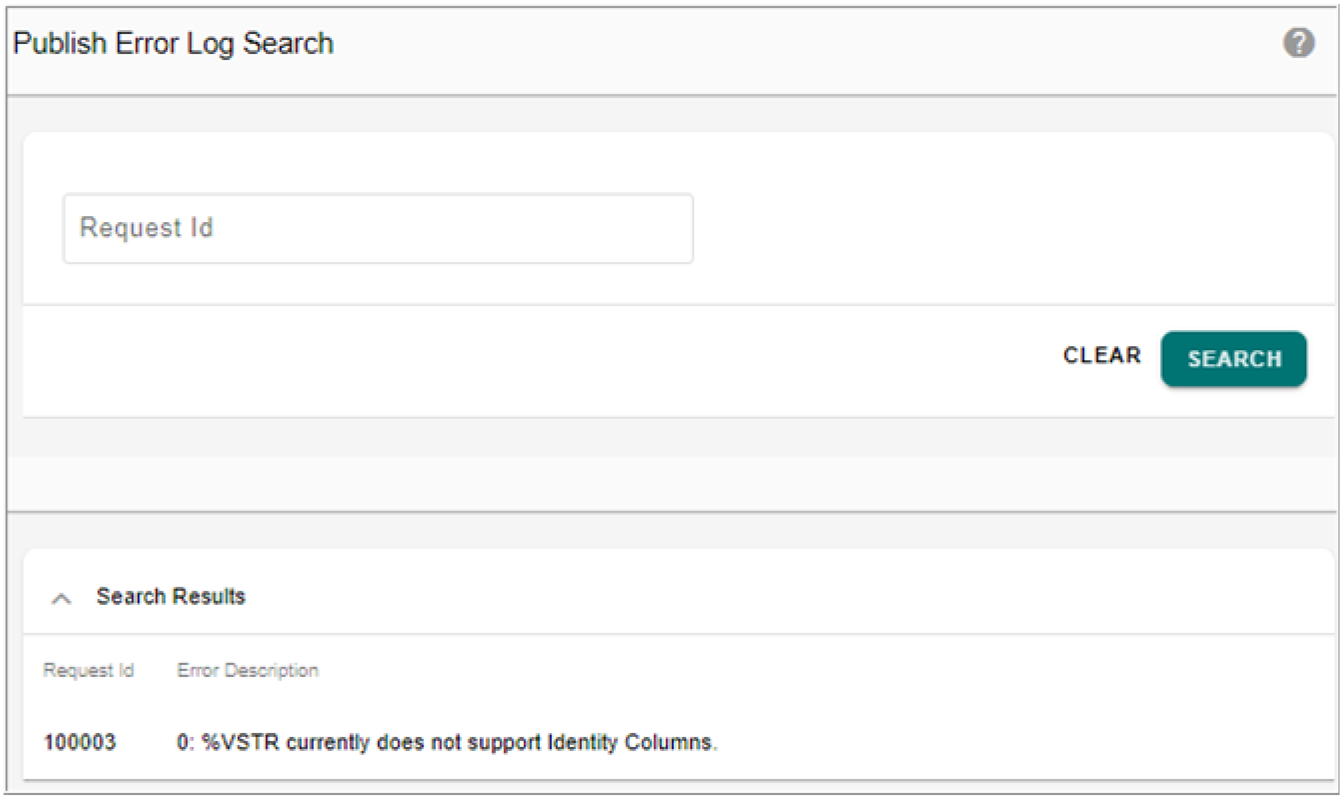
1. Navigate to **Manage Publications** UI from **Data Integration** -> **Publications** -> **Publish Error Log Search.**

   The **Publish Error Log Search** page is displayed. It displays all the publication error logs with details like request Id and error description.

2. On the **Publish Error Log Search** page, enter the publishing request Id in the **Request Id** field and click **Search**.

   The search results page displays the corresponding error log details.

Figure 730: Publish Error Log Search



Request Id	Error Description
100003	0: %VSTR currently does not support Identity Columns.

Manage Events

Under Manage Events module, you can manage event descriptors, manage JMS parameters and manage JMS event mappings.

Manage Event Descriptors

The Manage Event Descriptor page in MDM facilitates users to Create a new Event descriptor at runtime from the MDM web UI. Creating an event descriptor is the first step towards using an event node or triggering a raise event or mapping an event to JMS event. All the newly created event descriptors from this page are created for the MASTER Service. The event descriptors created using MDM Studio for MASTER Service and using manage event descriptors page do not conflict in names. On the Manage Event Descriptor page, you can define, edit and delete event descriptors.

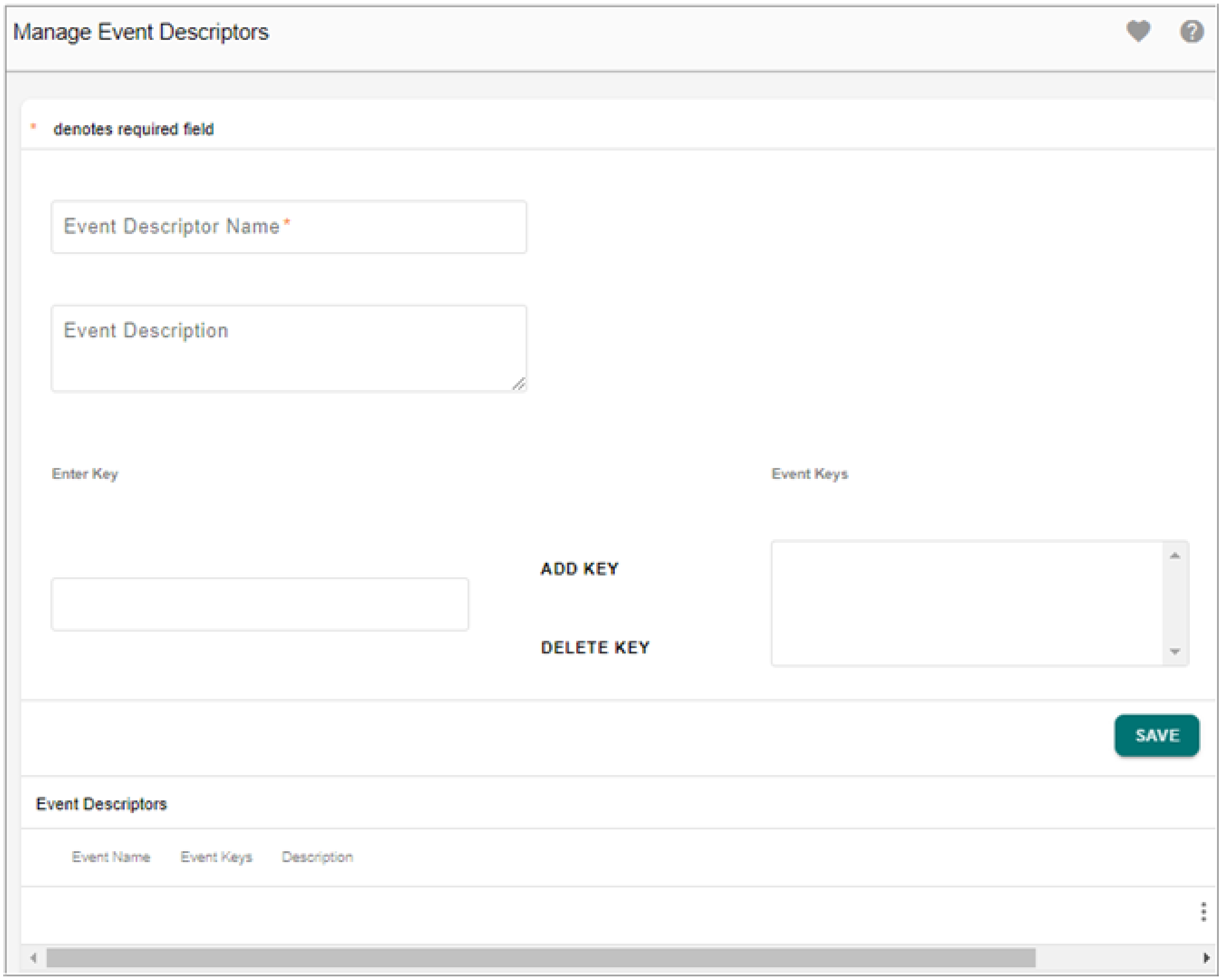
Define Event Descriptor

To define event descriptor:

1 On the navigation pane, click **Data Harmonization** -> **Workflow** -> **Event Descriptors.**

The **Manage Event Descriptor** page (Figure 731) is displayed.

Figure 731: Manage Event Descriptor



Manage Event Descriptors

* denotes required field

2 On the **Manage Event Descriptor** page (Figure 731),

- In the **Event Descriptor Name** field, enter a unique name of the event descriptor.
- In the **Event Description** field, enter the description of the event being created.
- In the **Enter Keys** pane, enter the Key definition (names).

  The value of key provided is used to uniquely identify an instance of an event. This key value will be used to trigger a particular event. More than one key can be added for an event descriptor. The event key must not contain white spaces or any special characters.

  - Add Key—adds the event key entered as event keys for the event descriptor.
  - Delete Key—removes the selected key from the event keys list.

3 Click **Save**.

Message: “Event descriptor saved successfully” is displayed.

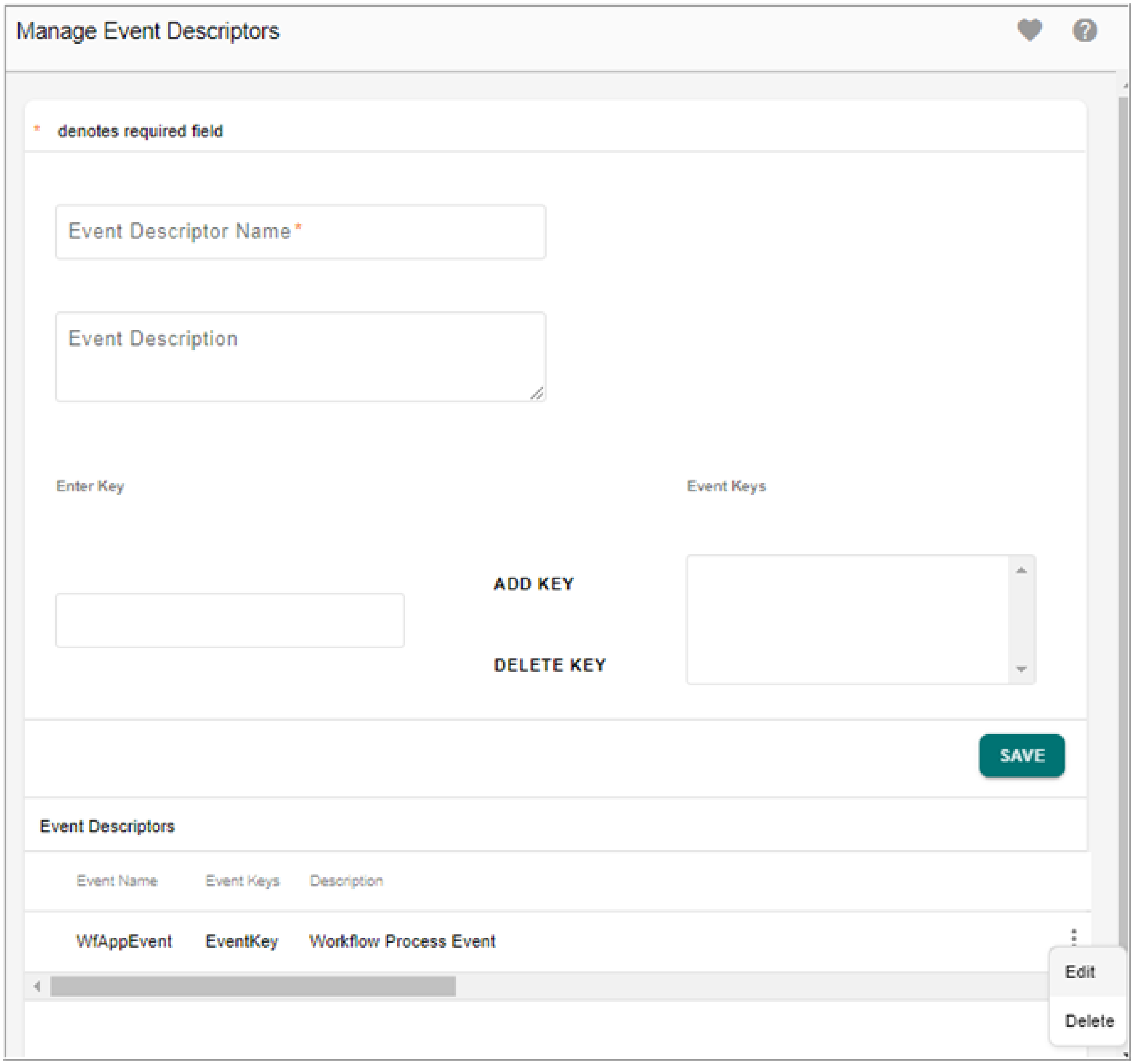
The event descriptor is used in event node and task node of type raise event in Manage Workflows.

Edit Event Descriptor

To edit event descriptor:

1 On the **Manage Event Descriptor** page, in the **Event Descriptors** pane, click on the Menu icon corresponding to the required event descriptor and click **Edit** as in Figure 732.

Figure 732: Manage Event Descriptor



Manage Event Descriptors

* denotes required field

Event Descriptor Name*

Event Description

Enter Key

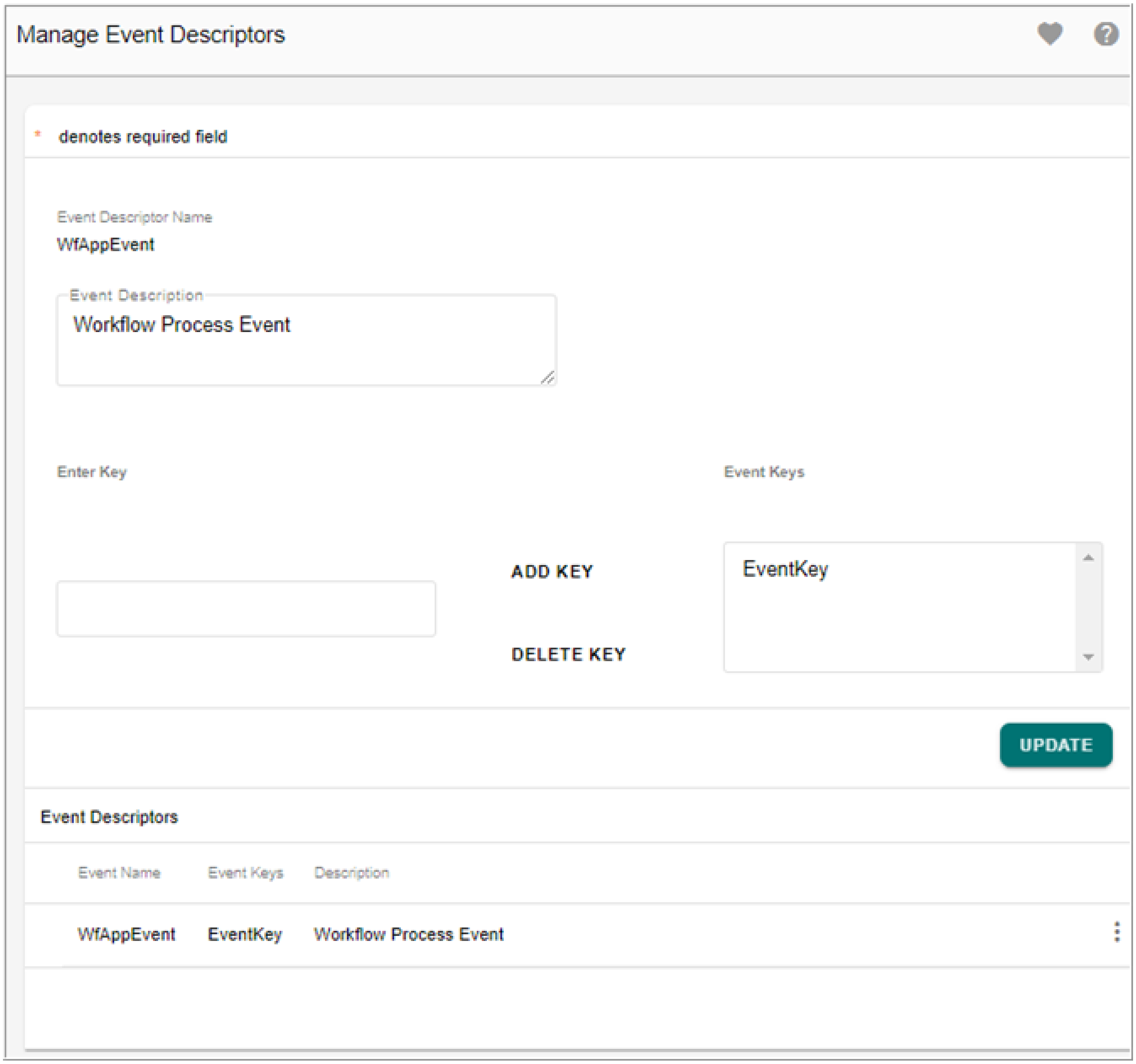
Event Keys

Event Descriptors

Event Name	Event Keys	Description
WfAppEvent	EventKey	Workflow Process Event

The Manage Event Descriptor page refreshes to display the previously saved descriptor detail as in Figure 733.

Figure 733: Manage Event Descriptor—Edit



Manage Event Descriptors

* denotes required field

Event Descriptor Name
WfAppEvent

Event Description
Workflow Process Event

Event Descriptors

Event Name	Event Keys	Description
WfAppEvent	EventKey	Workflow Process Event

2 On the **Manage Event Descriptor** page (Figure 733), modify the required details and click **Update**.

Message: “Event descriptor saved successfully” is displayed.

Delete Event Descriptor

To delete event descriptor:

1 On the **Manage Event Descriptor** page, in the **Event Descriptors** pane,click on the Menu icon corresponding to the required event descriptor and click **Delete** as in Figure 732.

2 On the confirmation webpage dialog, click **Yes**.

Message “Event descriptor deleted successfully” is displayed.

Manage JMS Parameters

To receive messages from JMS server, in Manage JMS Parameters UI, you must configure the JMS server with the required details such as JMS provider URL, QUEUE/TOPIC Name and Context Factory.

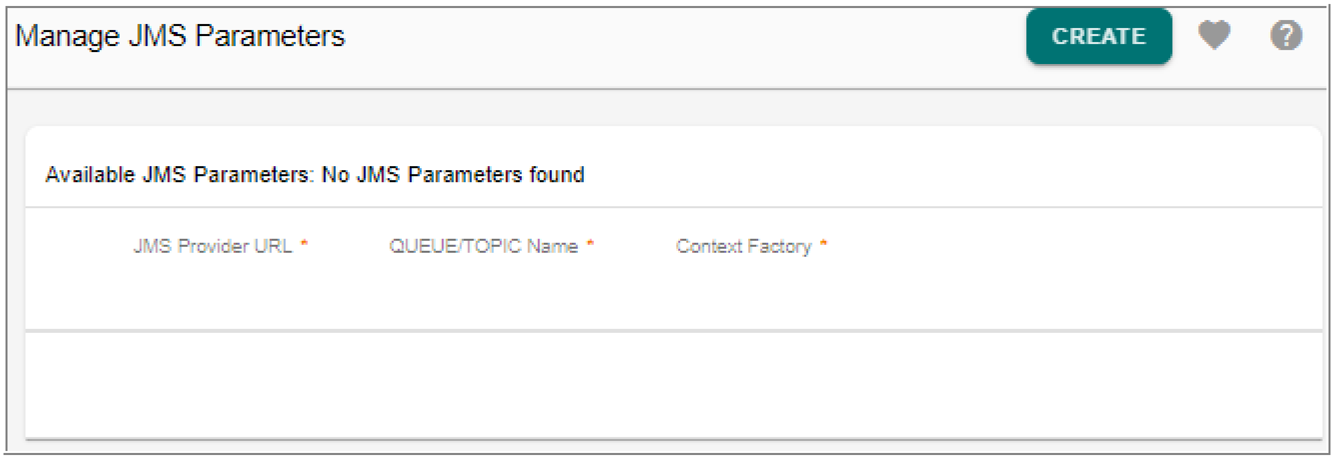
Create JMS Parameters

To create new JMS parameters:

1 On the navigation pane, click **Data Harmonization** -> **Workflow** -> **JMS Parameters.**

The **Manage JMS Parameters** page (Figure 734) is displayed.

Figure 734: Manage JMS Parameters

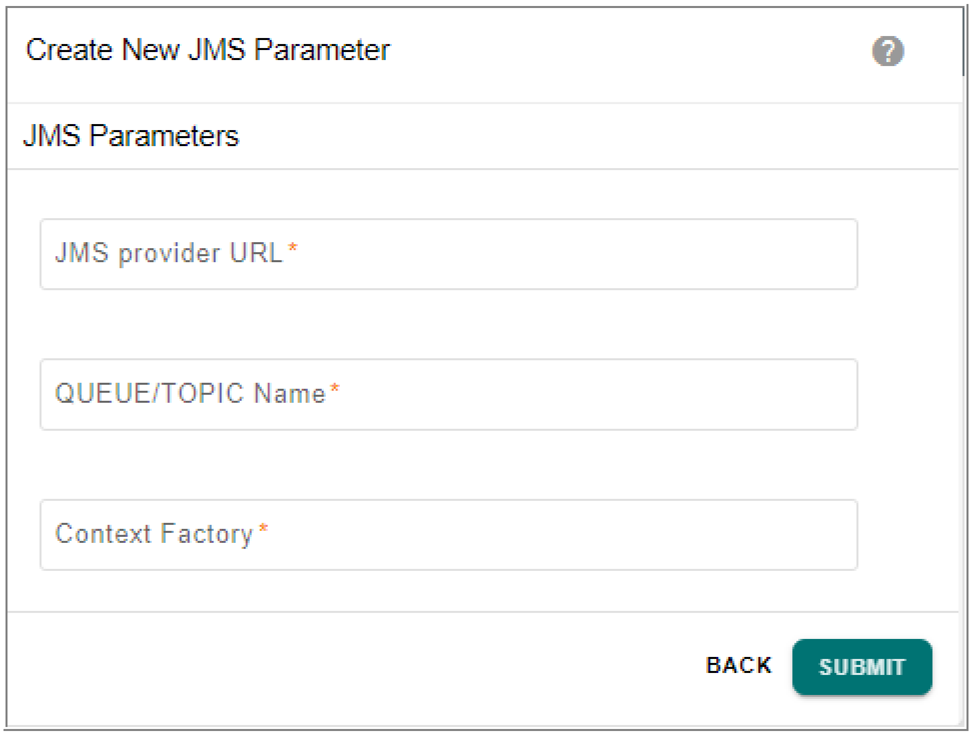


Available JMS Parameters: No JMS Parameters found

2 On the **Manage JMS Parameters** page (Figure 734), click **Create**.

The **Create New JMS Parameter** page (Figure 735) is displayed.

Figure 735: Create New JMS Parameter



3 On the **Create New JMS Parameter** page (Figure 735),

- enter the URL of the JMS provider in the **JMS Provider URL** field.
- enter the queue name (queue name on the JMS provider from where the messages are received) in **QUEUE/TOPIC Name** field.
- enter the activation jar in the **Context Factory** field.

  The activation jar specifies the source from where the messages are received.

4 Click **Submit**.

Note: The JMS configurations for sending a message to the JMS queue has to be done in td-platform-JMS-JNDI. properties file located at: <MDM_install_Directory>\cfg\properties.

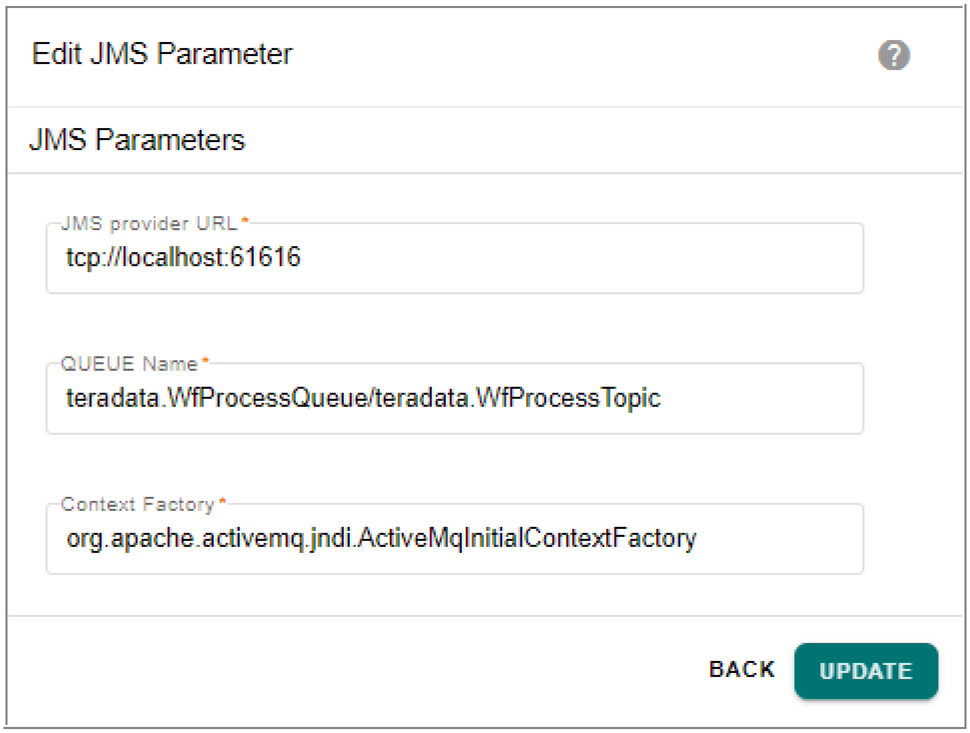
Edit JMS Parameters

To edit JMS parameters:

1 On the **Manage JMS Parameters** page (Figure 734), click on the Menu icon corresponding to the required JMS URL and click **Edit**.

The **Edit JMS Parameters** page (Figure 736) is displayed.

Figure 736: Edit JMS Parameter



JMS provider URL*: tcp://localhost:61616

QUEUE Name*: teradata.WfProcessQueue/teradata.WfProcessTopic

Context Factory*: org.apache.activemq.jndi.ActiveMqInitialContextFactory

2 On the **Edit JMS Parameters** page (Figure 736), modify the required details and click **Update**.

Message: “JMS Parameter updated successfully” is displayed.

Delete JMS Parameters

To delete JMS parameters:

1 On the **Manage JMS Parameters** page (Figure 734), click on the Menu icon corresponding to the required JMS URL and click **Delete**.

2 On the confirmation webpage dialog, click **Yes**.

Message: “JMS Parameter deleted successfully” is displayed.

Manage JMS Event Mapping

On the Manage JMS Event Mapping page, you can configure the mapping between JMS event and MDM event to receive messages from JMS providers.

On the Manage JMS Event Mapping page, you can create, edit and delete JMS parameters.

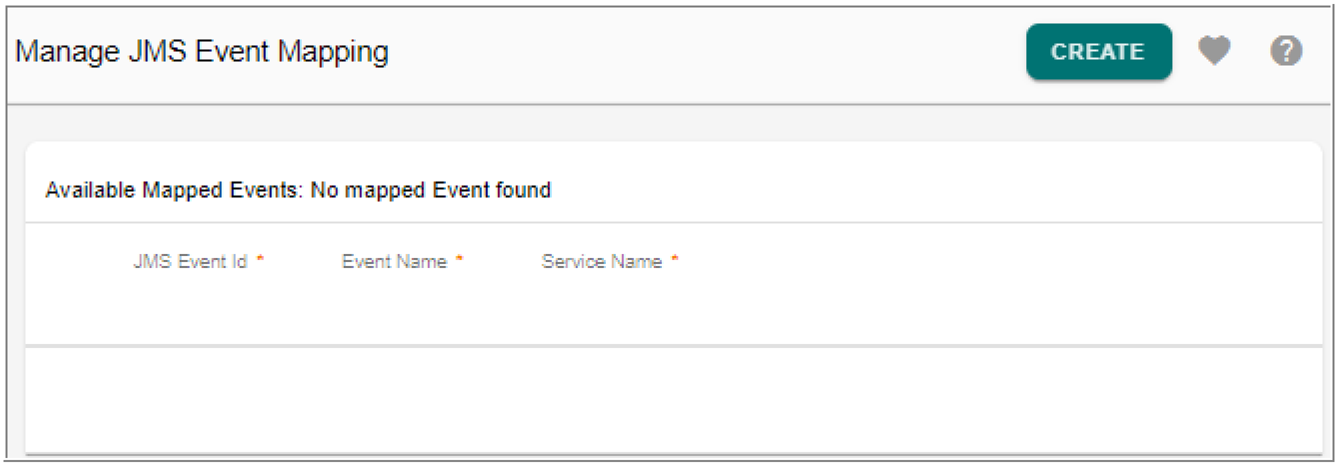
Create New JMS Event Mapping

To create new JMS event mapping:

1 On the navigation pane, click **Data Harmonization** -> **Workflow** -> **Event Mapping.**

The **Manage JMS Event Mapping** page (Figure 737) is displayed.

Figure 737: Manage JMS Event Mapping



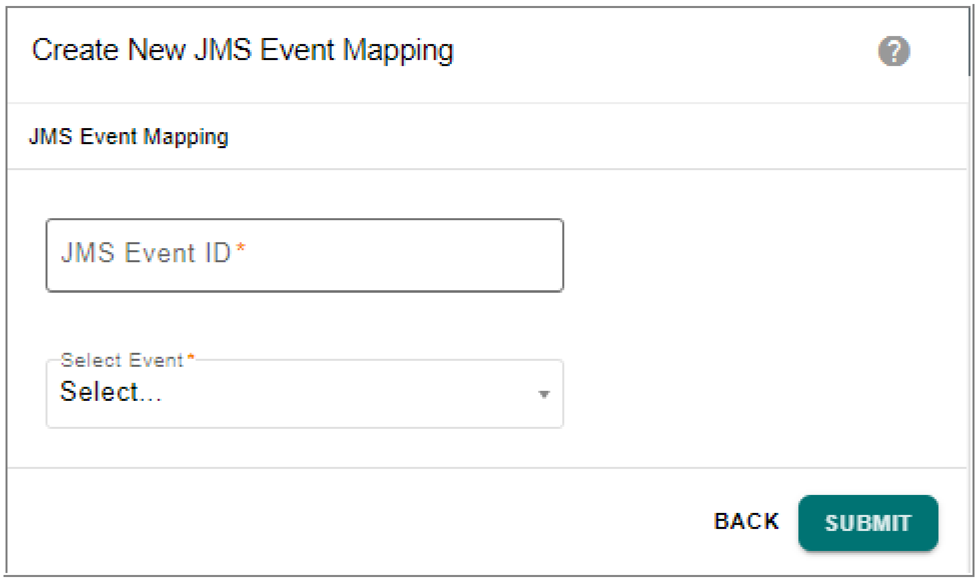
Available Mapped Events: No mapped Event found

JMS Event Id *	Event Name *	Service Name *

2 On the **Manage JMS Event Mapping** page (Figure 737), click **Create**.

The **Create New JMS Event Mapping** page (Figure 738) is displayed.

Figure 738: Create New JMS Event Mapping



3 On the **Create New JMS Event Mapping** page (Figure 738),

- enter the JMS event Id in the **JMS Event ID** field.

  The JMS event Id is the id of the event from the JMS provider.
- select the MDM event from the **Select MDM Event** dropdown.

  The MDM Event dropdown lists all the events existing on MDM.

4 Click **Submit**.

Message: “Mapping created successfully” is displayed.

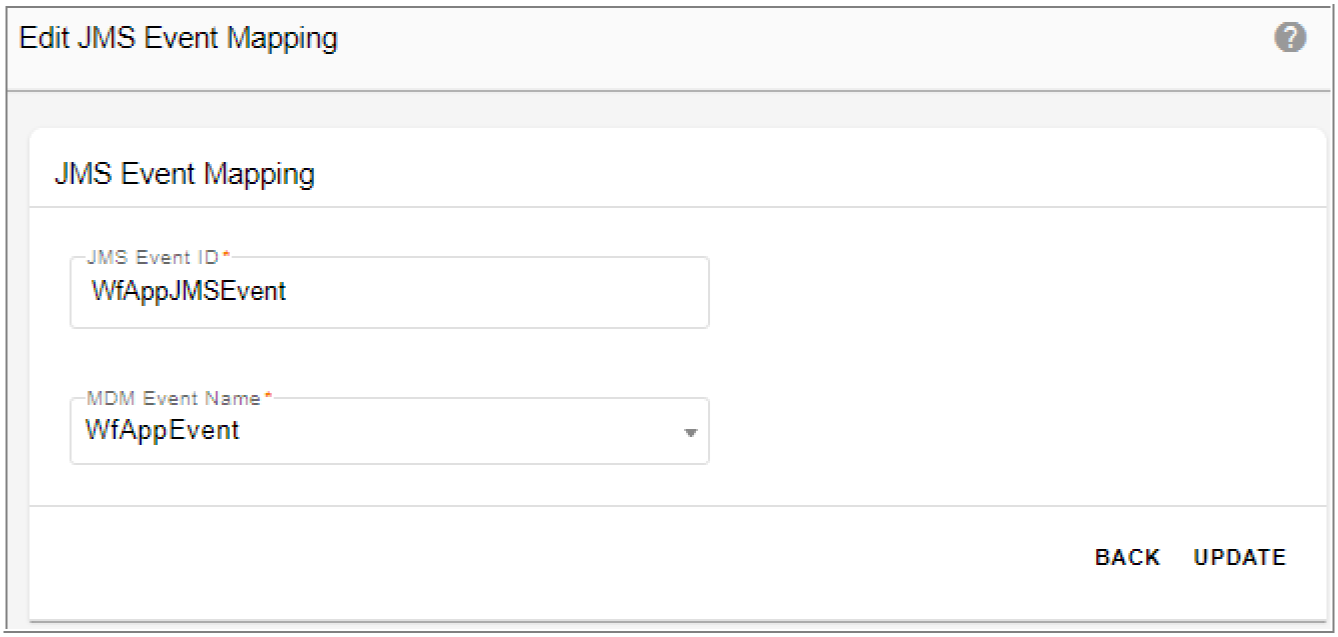
Edit JMS Event Mapping

To edit JMS event mapping:

1 On the **Manage JMS Event Mapping** page (Figure 737), click on the Menu icon corresponding to the required JMS event mapping and click **Edit**.

The **Edit JMS Event Mapping** page (Figure 739) is displayed.

Figure 739: Edit JMS Event Mapping



Edit JMS Event Mapping

JMS Event Mapping

JMS Event ID*: WfAppJMSEvent

MDM Event Name*: WfAppEvent

2 On the **Edit JMS Event Mapping** page (Figure 739), modify the required details and click **Update**.

Message: “Mapping edited successfully” is displayed.

Delete JMS Event Mapping

To delete JMS event mapping:

1 On the **Manage JMS Event Mapping** page (Figure 737), click on the Menu icon corresponding to the required JMS event mapping and click **Delete**.

2 On the confirmation webpage dialog, click **Yes**.

Message: “Mapping deleted successfully” is displayed.

Working with Events (MDM Event and JMS Event)

The below section explains how MDM server can receive and send messages from JMS server and how MDM event can be triggered by a JMS message. The following scenarios are demonstrated in this section:

- Send messages to JMS server from MDM server (see Section : “Send Messages to JMS Server from MDM Server”).
- Receive JMS messages in MDM server and execute the corresponding mapped MDM event (see Section : “Receive JMS Messages in MDM Server”).

Send Messages to JMS Server from MDM Server

To send messages to JMS server from MDM, perform the following steps in sequence:

1. Navigate to Manage JMS Parameters and provide necessary details of JMS server to be configured to send message to. (see Section : “Create JMS Parameters”).
2. Define workflow from Workflow Management UI to send message to JMS server configured in step 1. (see Section : “Define Workflow to Send Messages to SMS Server”).
3. Navigate to JMS Server and check the execution results (see Section : “Check Messages Sent to JMS Server”).

   Note: For JMS to trigger events, the database time should be the current timestamp of the MDM server.

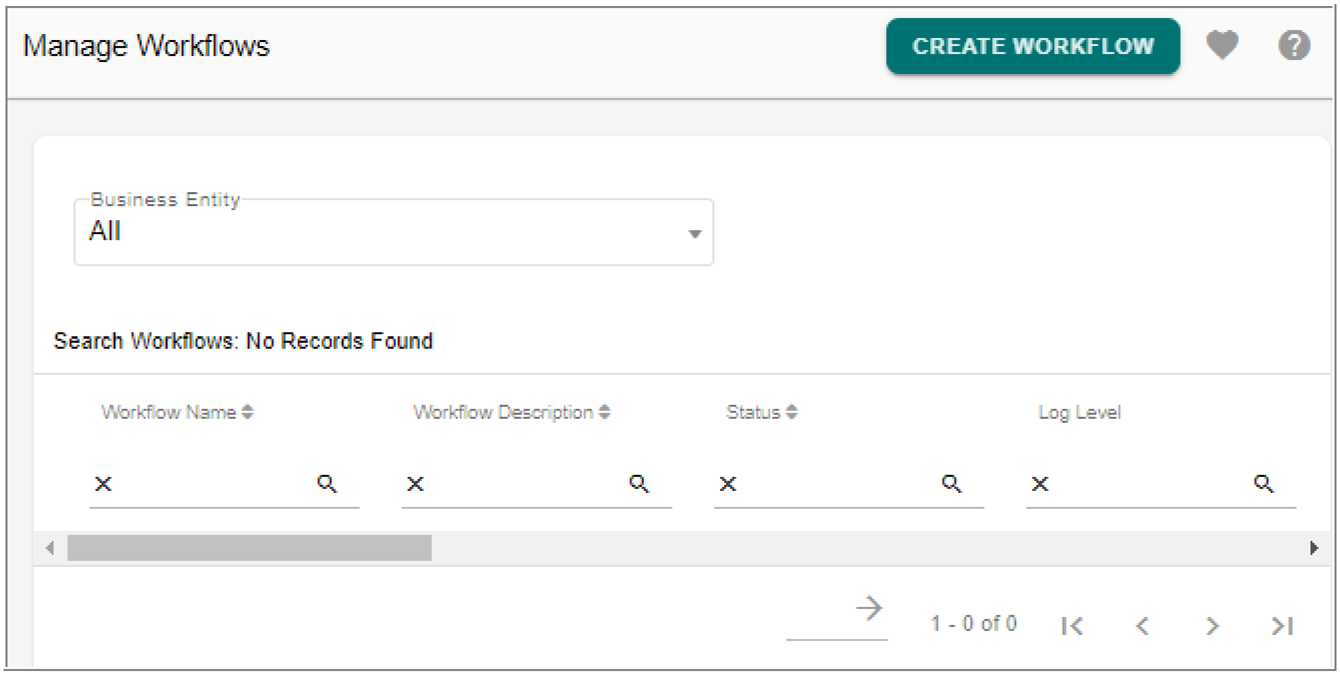
Define Workflow to Send Messages to SMS Server

Navigate to manage workflow UI and create a workflow with the below steps:

1. On the MDM UI navigation pane, click **Data Harmonization** -> **Workflow** -> **Manage Workflows**.

   The **Manage Workflows** page (Figure 740) is displayed.

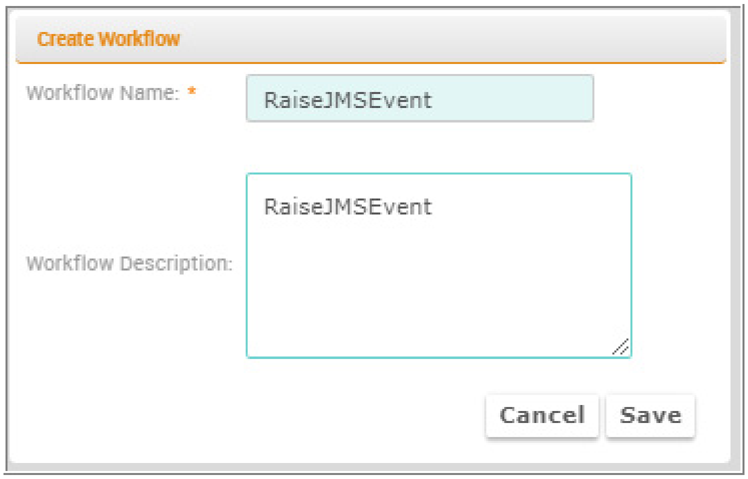
Figure 740: Manage Workflows



2. On the **Manage Workflows** page (Figure 740), click **Create Workflows.**
3. On the **Create Workflow** pop-up, enter the workflow details and click **Save**.

   For detailed description on workflow creation, see Section : “Create and Deploy Workflows” in Workflow Management chapter.

Figure 741: Create Workflow

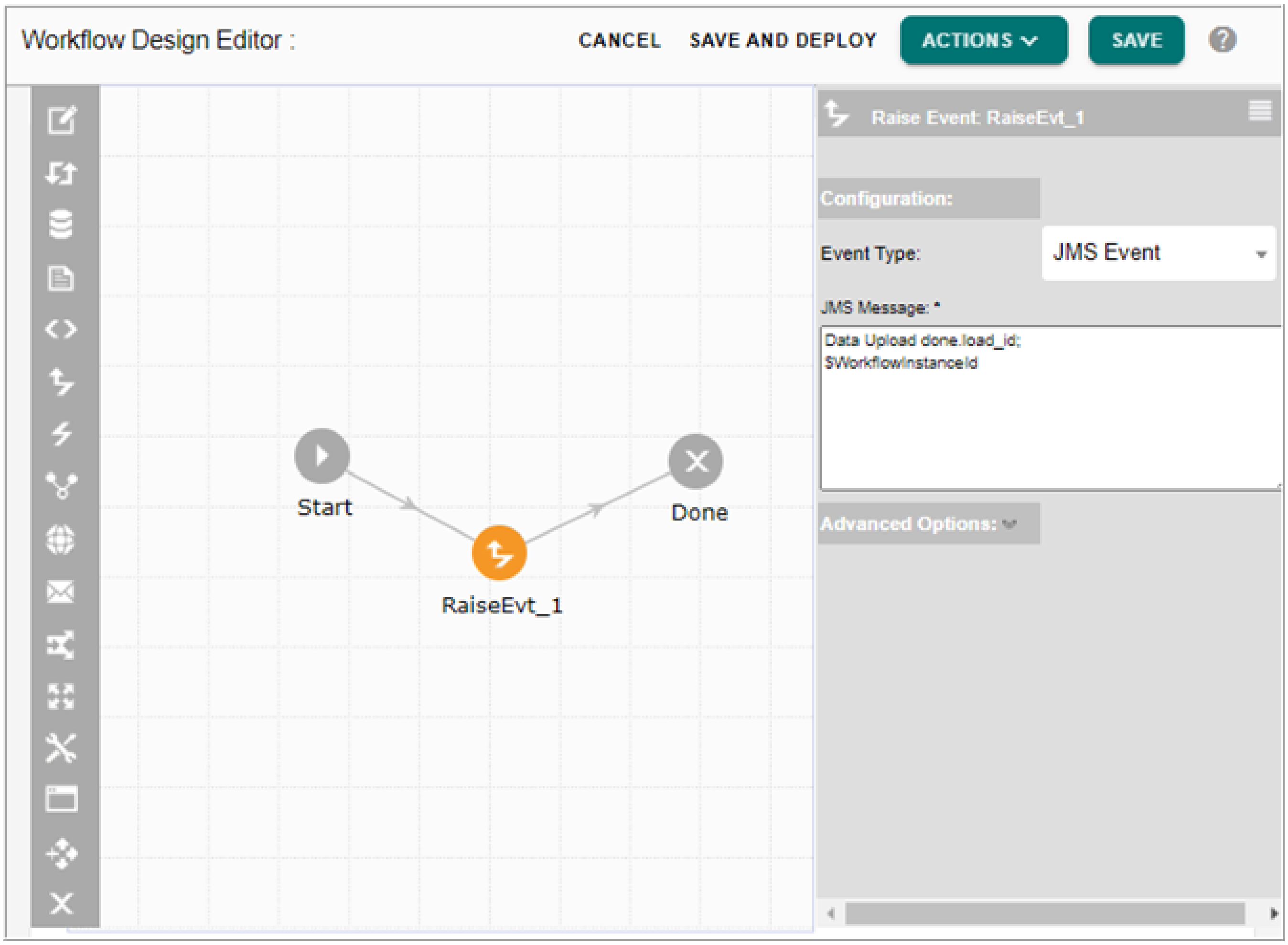


Workflow Name: * RaiseJMSEvent

Workflow Description: RaiseJMSEvent

4 On the **Workflow Designer Editor** page, click on the Raise Event node, a new instance of this node gets created on the workflow design area. You can drag and drop the node to the desired position and connect the nodes as required as in Figure 742.

Figure 742: Workflow Designer Editor



Event Type: JMS Event

JMS Message: * Data Upload done.load_id; $WorkflowInstanceId

5 Double-click on the RaiseJMSEvtNode to open the **Node Configuration** UI and enter the node configuration details. In node configuration, select event type as JMS event and provide the JMS message that you want to sent and click **Save**.

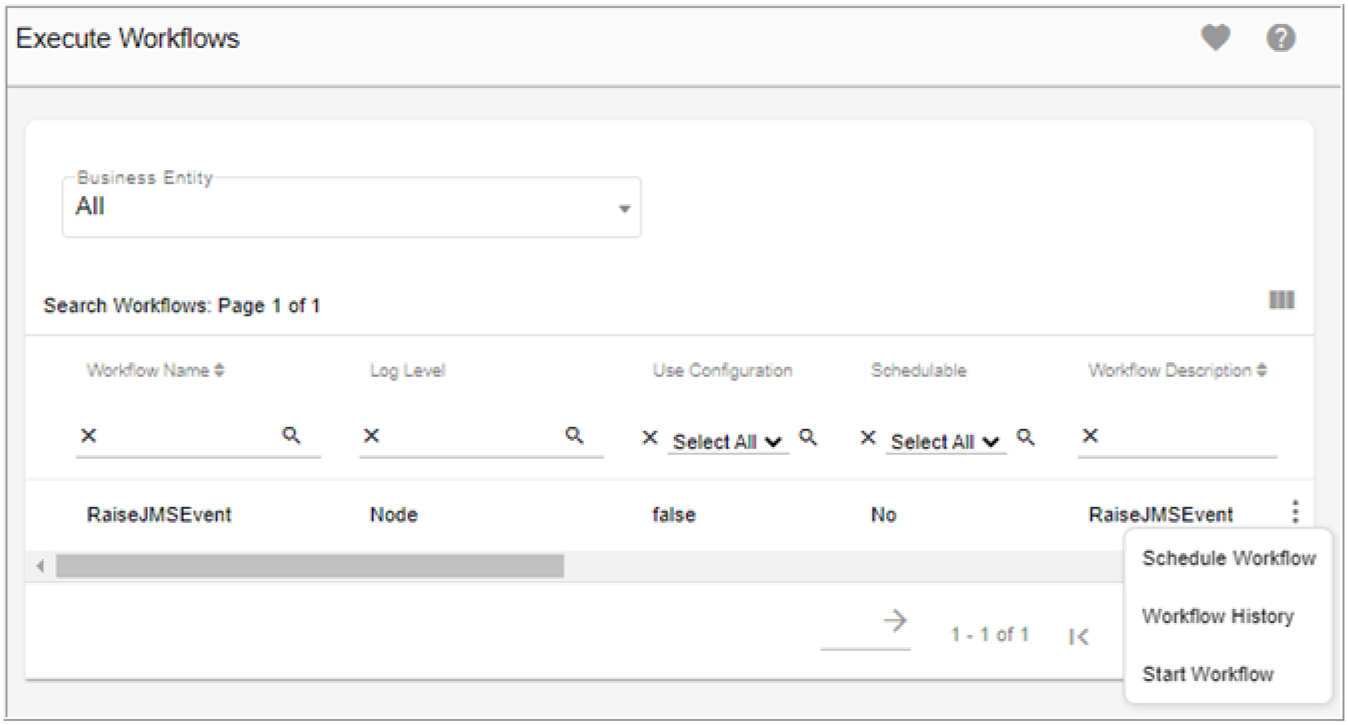
6 On the **Workflow Design Editor** page (Figure 742), you can either click on **Save** or click **Save and Deploy** to deploy the workflow.

You can also deploy the workflow from Manage Workflows page.

Message: “Workflow deployed as workflow successfully” is displayed.

7 Navigate to **Execute Workflows** UI, click on the Menu icon corresponding to the required workflow (for example: RaiseJMSEvent) and click **Start Workflow** as in Figure 743.

Figure 743: Execute Workflows



Execute Workflows

Business Entity: All

Search Workflows: Page 1 of 1

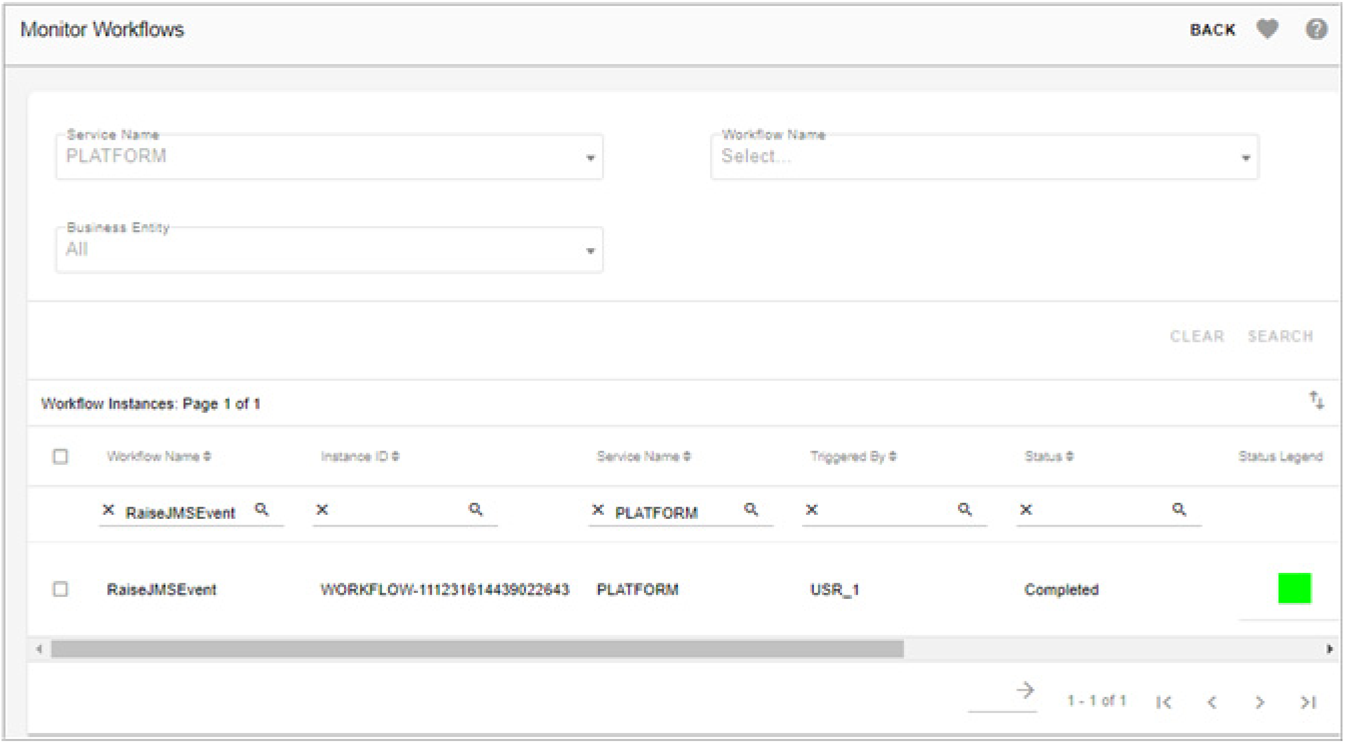
Workflow Name	Log Level	Use Configuration	Schedulable	Workflow Description
RaiseJMSEvent	Node	false	No	RaiseJMSEvent

Message: “Process execution started. Please check process history for execution details is displayed.”

8 On the **Execute Workflows** page (Figure 743), click on the Menu icon corresponding to the required workflow (for example: RaiseJMSEvent) and click **Workflow History**.

The **Monitor Workflows** page (Figure 744) is displayed. The Status column on the Monitor Workflows page displays the execution status. You can click on the **Details** button to see the detailed execution results.

Figure 744: Monitor Workflows



Service Name: PLATFORM

Workflow Name: Select...

Business Entity: All

Workflow Instances: Page 1 of 1

☐	Workflow Name	Instance ID	Service Name	Triggered By	Status	Status Legend
	RaiseJMSEvent		PLATFORM			
☐	RaiseJMSEvent	WORKFLOW-111231614439022643	PLATFORM	USR_1	Completed	🟩

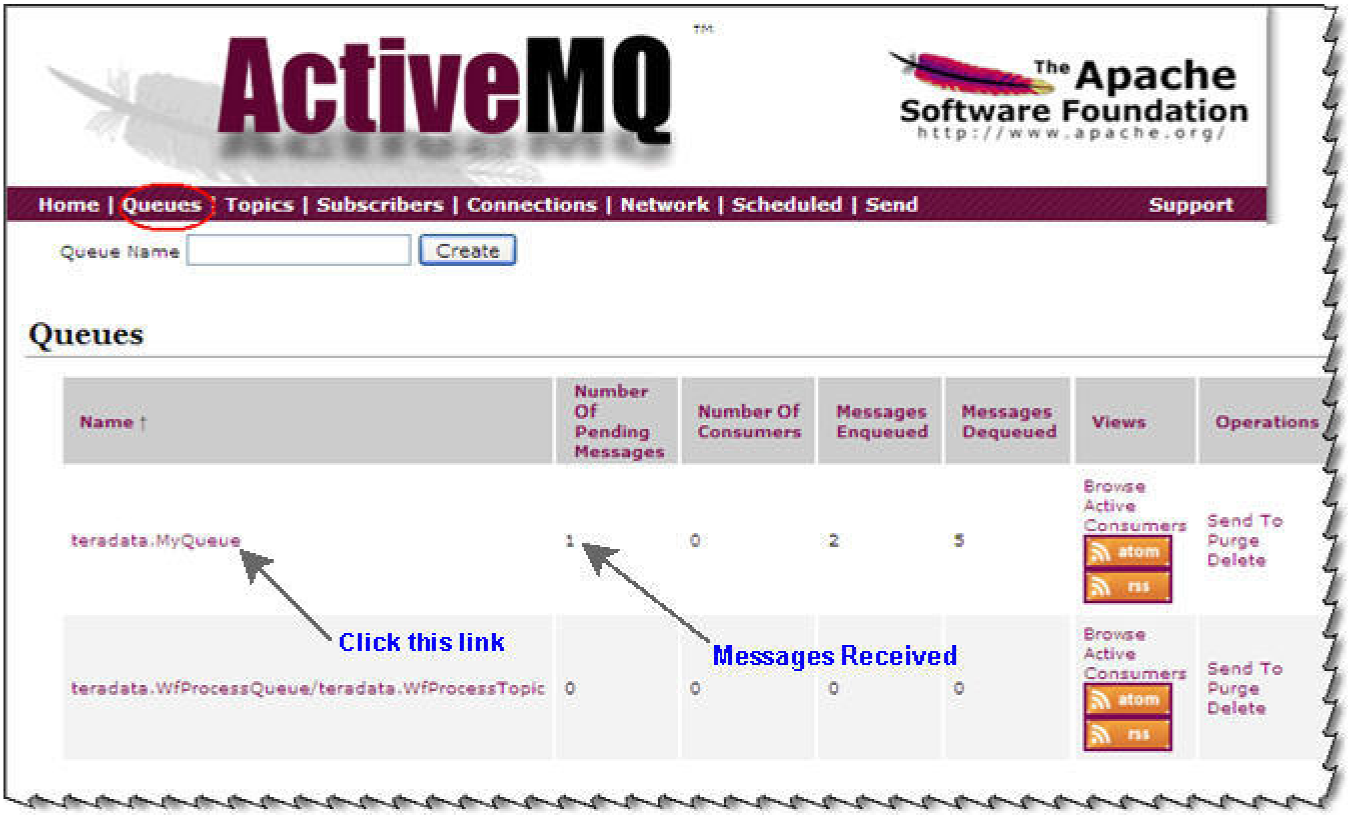
Check Messages Sent to JMS Server

Navigate to JMS server to check the JMS message sent.

1 On the JMS server (ActiveMQ), click on **Queues** tab.

2 On the **Queues** list, click on the queue where the messages are received as in Figure 745.

Figure 745: ActiveMQ

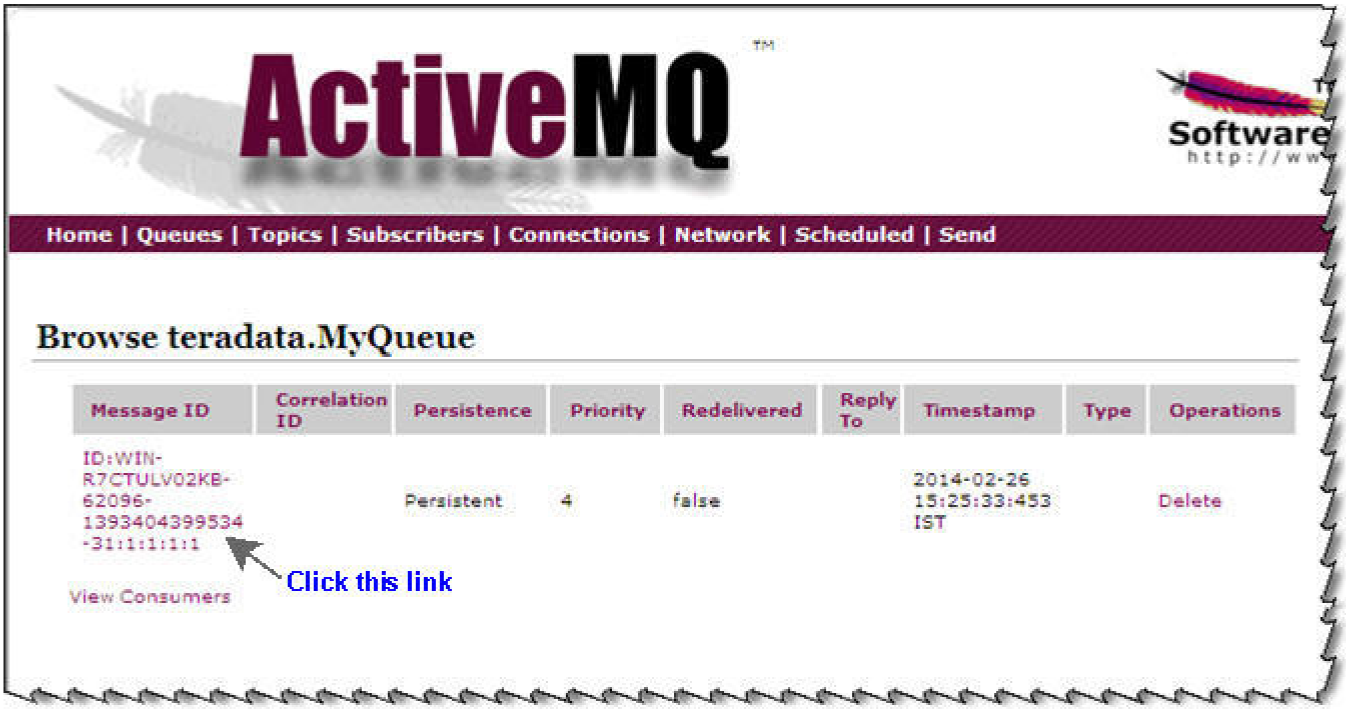

ActiveMQ™
The Apache Software Foundation
http://www.apache.org/
Home | Queues | Topics | Subscribers | Connections | Network | Scheduled | Send
Support
Queue Name
Create
Click this link
Messages Received

Queues

Name ↑	Number Of Pending Messages	Number Of Consumers	Messages Enqueued	Messages Dequeued	Views	Operations
teradata.MyQueue	1	0	2	5	Browse Active Consumers atom rss	Send To Purge Delete
teradata.WfProcessQueue/teradata.WfProcessTopic	0	0	0	0	Browse Active Consumers atom rss	Send To Purge Delete

The list of received messages are displayed as in Figure 746.

Figure 746: ActiveMQ


ActiveMQ™
Software
http://ww
Home | Queues | Topics | Subscribers | Connections | Network | Scheduled | Send
Click this link

Browse teradata.MyQueue

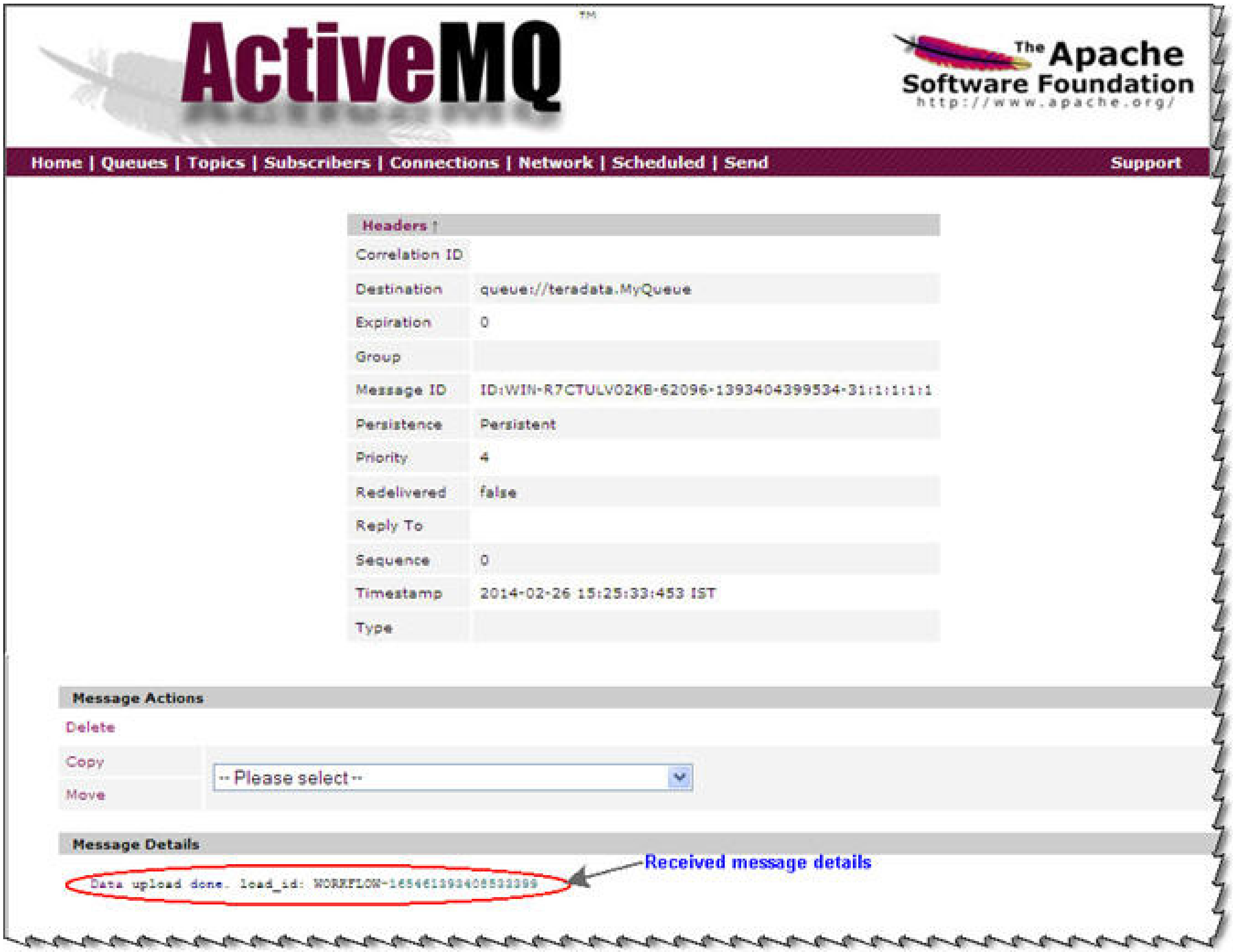
Message ID	Correlation ID	Persistence	Priority	Redelivered	Reply To	Timestamp	Type	Operations
ID:WIN-R7CTULV02KB-62096-1393404399534-31:1:1:1:1		Persistent	4	false		2014-02-26 15:25:33:453 IST		Delete

View Consumers

3 Click on the message Id as in Figure 746.

The received message details are displayed on the JMS server as in Figure 747

Figure 747: ActiveMQ



Headers ↑	
Correlation ID	
Destination	queue://teradata.MyQueue
Expiration	0
Group	
Message ID	ID:WIN-R7CTULV02KB-62096-1393404399534-31:1:1:1:1
Persistence	Persistent
Priority	4
Redelivered	false
Reply To	
Sequence	0
Timestamp	2014-02-26 15:25:33:453 IST
Type	

```
Data upload done. load_id: WORKFLOW-165461393408533399
```

Receive JMS Messages in MDM Server

To receive JMS messages in MDM server and execute the corresponding mapped MDM event, perform the following steps:

1 Navigate to Manage Events and create an event descriptor (see Section : “Define Event Descriptor”).

2 Navigate to Manage JMS Event Mapping UI to configure the mapping between JMS event and MDM event (see Section : “Create New JMS Event Mapping”).

3 Navigate to Manage Workflow UI and create a workflow (see Section : “Create, Deploy and Execute Workflow”).

4 Send messages from JMS Server (see Section : “Send Messages from JMS Server (Active MQ)”)

Create Event Descriptor

Creating an event descriptor is the first step towards using an event node or triggering a raise event or mapping an event to JMS event.

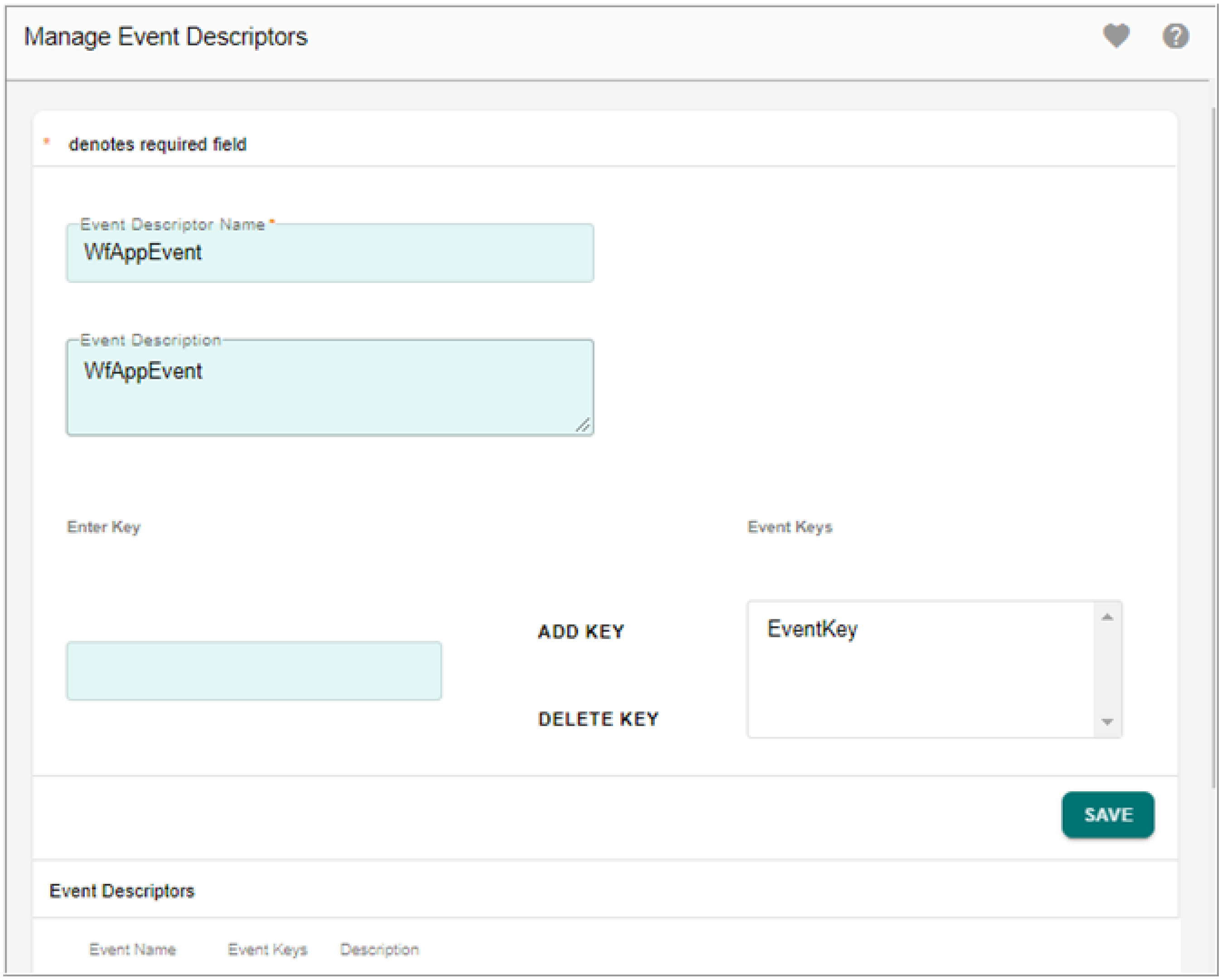
1 Navigate to **Manage Event Descriptors**.

The **Manage Event Descriptors** page is displayed.

2 On the **Manage Event Descriptor** page, enter the event descriptor details as in Figure 748 and click **Save**.

The values of key definition names at runtime is used to uniquely identify the event when multiple events for the same event descriptors are present in the MDM server waiting for a RAISE_EVENT or any trigger.

Figure 748: Manage Event Descriptor



Manage Event Descriptors

* denotes required field

Event Descriptor Name *: WfAppEvent

Event Description: WfAppEvent

Event Keys: EventKey

Message: “Event descriptor saved successfully” is displayed.

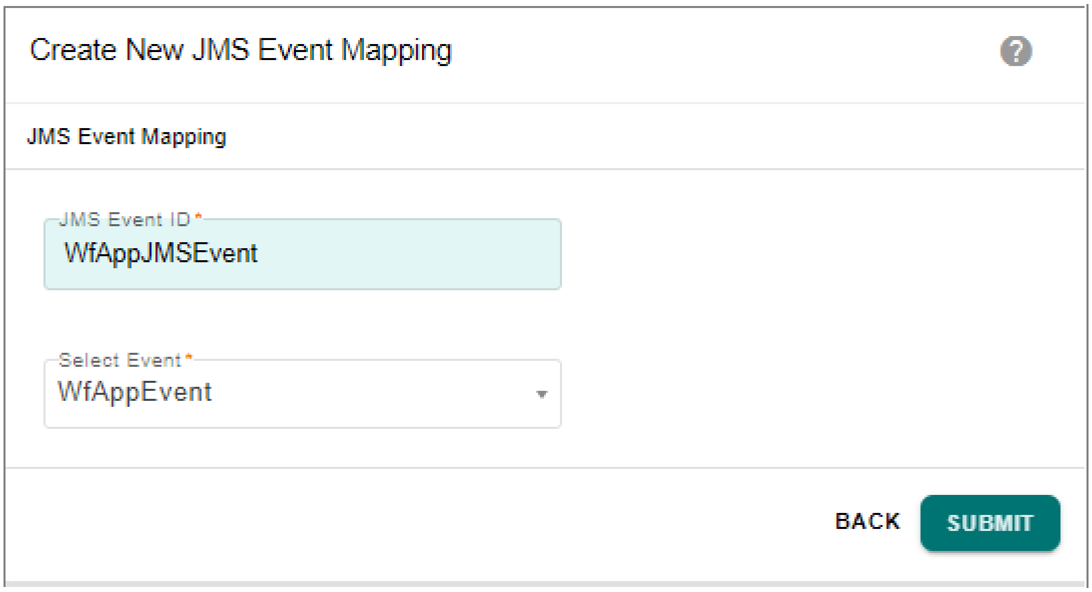
Configure Mapping between JMS and MDM Event

Configure the mapping between JMS event and MDM event to receive messages from JMS providers.

1. Navigate to **Manage JMS Event Mapping** page from the left navigation pane.
2. On the **Manage JMS Event Mapping** page, click **Create**.

   The **Create New JMS Event Mapping** page (Figure 748) is displayed.

Figure 749: Create New JMS Event Mapping



Create New JMS Event Mapping

JMS Event Mapping

JMS Event ID*: WfAppJMSEvent

Select Event*: WfAppEvent

3. On the **Create New JMS Event Mapping** page (Figure 748),
   - enter the JMS Event ID provided from the JMS provider in the **JMS Event ID** field (for example: WfAppJMSEvent)
   - select the MDM event from **MDM Event** dropdown.

     The MDM Event Name dropdown displays all the events created on the Manage Event Descriptors UI. A MDM event is the event descriptor that you have created in the previous step.
   - click **Submit**.

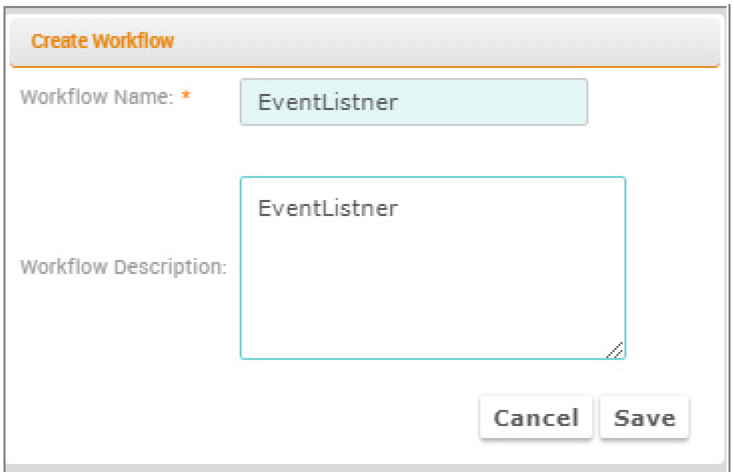
Create, Deploy and Execute Workflow

Navigate to Manage Workflows UI and create an workflow to listen to JMS provider.

1. Navigate to **Manage Workflows** page from left navigation pane.
2. On the Manage Workflows page, click **Create Workflow** to create an event listener workflow as in Figure 750 and click **Save**.

   For detailed description on workflow creation, see Section : “Create and Deploy Workflows” in Workflow Management chapter.

Figure 750: Create Workflow

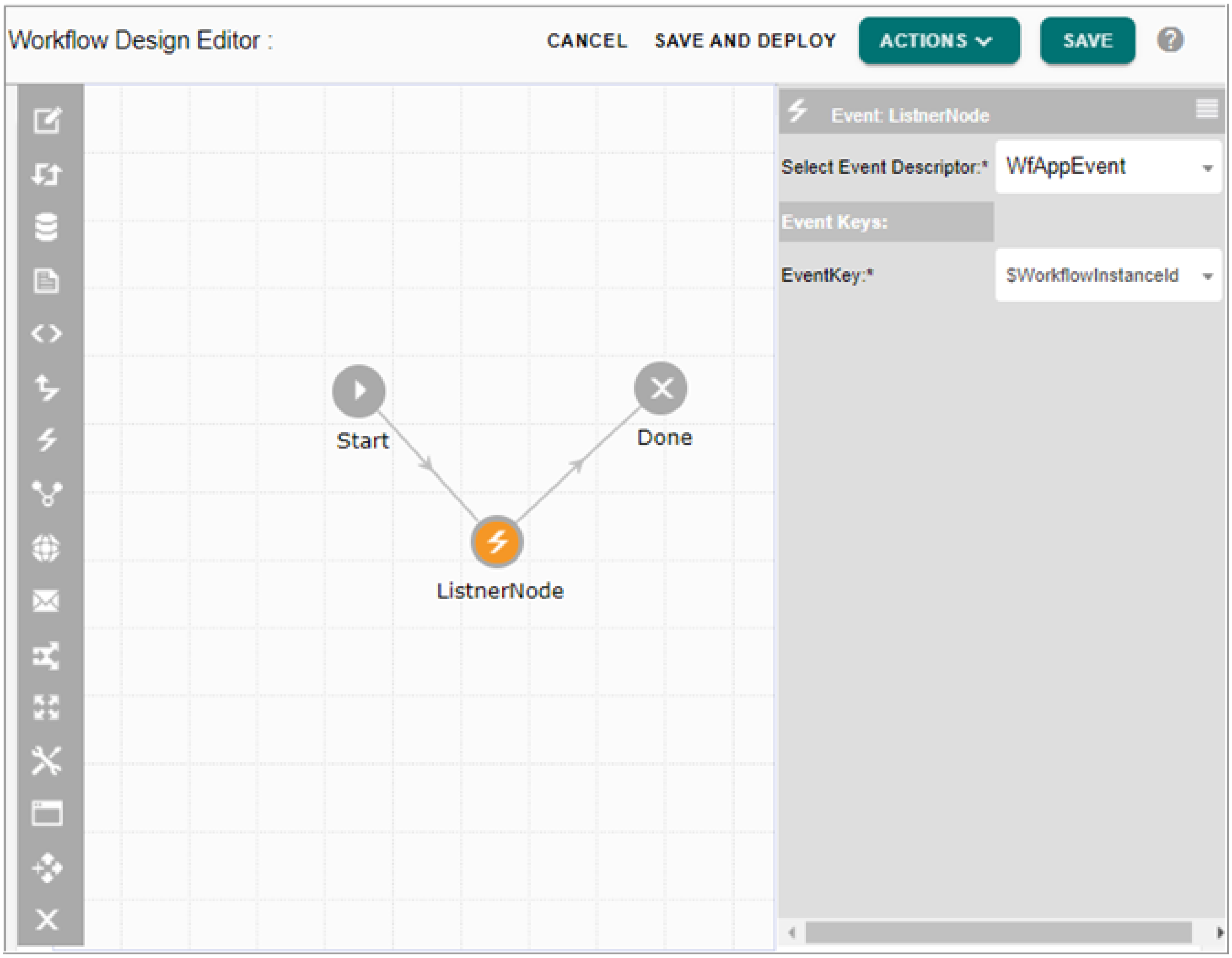


Workflow Name: * EventListner

Workflow Description: EventListner

3 On the **Workflow Design Editor** page, create an Event listener node as in Figure 751 and double-click on the **Node** to enter the node configuration details and click **Save**.

Figure 751: Workflow Designer



Select Event Descriptor:* WfAppEvent

EventKey:* $WorkflowInstanceId

On the **Event Configuration**, you can select the required event descriptor and the Eventkey. The Event Descriptor and EventKey dropdown displays all the descriptor and the corresponding event keys created on the Manage Event Descriptor UI.

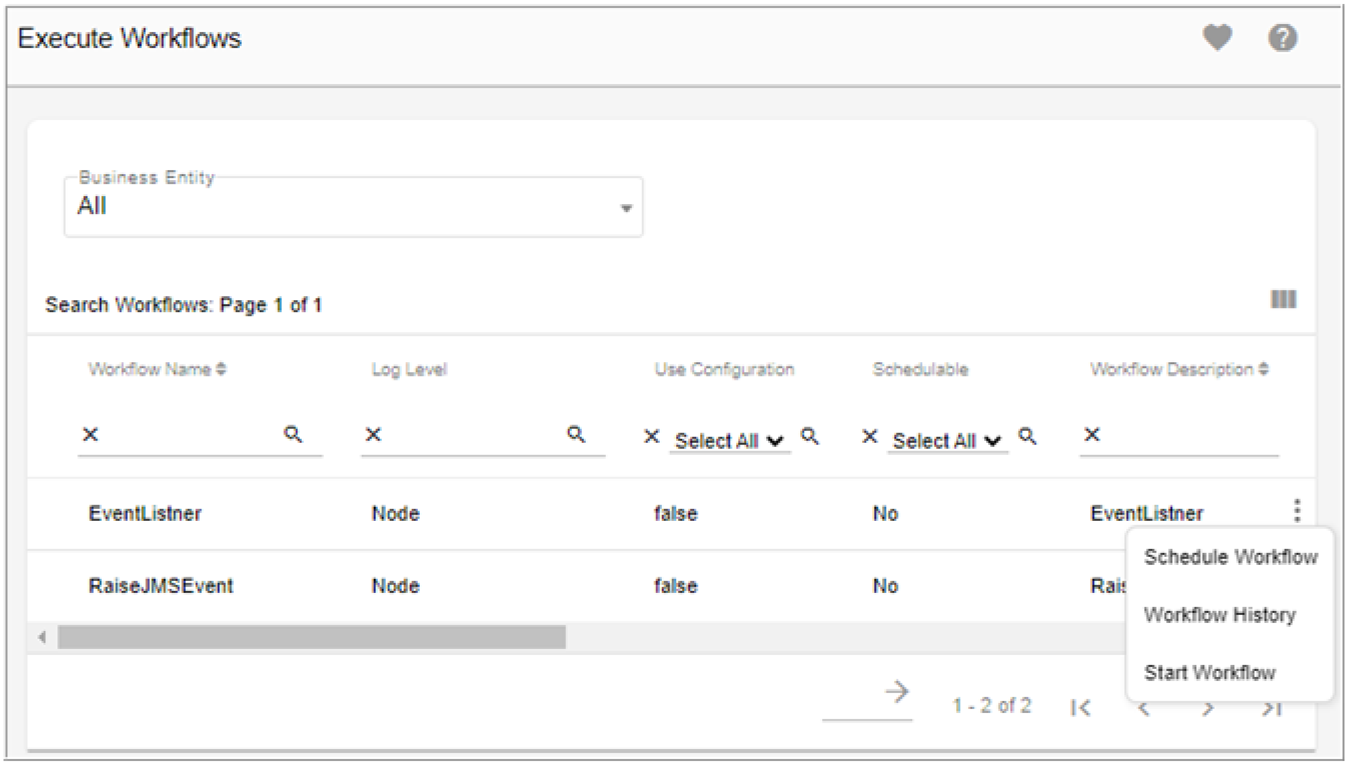
4 On the **Workflow Design Editor** page, click **Save and Deploy** to deploy the workflow.

You can also deploy the workflow from Manage Workflows page.

Message: “Workflow deployed as workflow successfully” is displayed.

5 Navigate to **Execute Workflows** UI, click on the Menu icon corresponding to the required workflow (for example: EventListnerProcess) and click **Start Workflow** as in Figure 752.

Figure 752: Execute Workflows



Execute Workflows

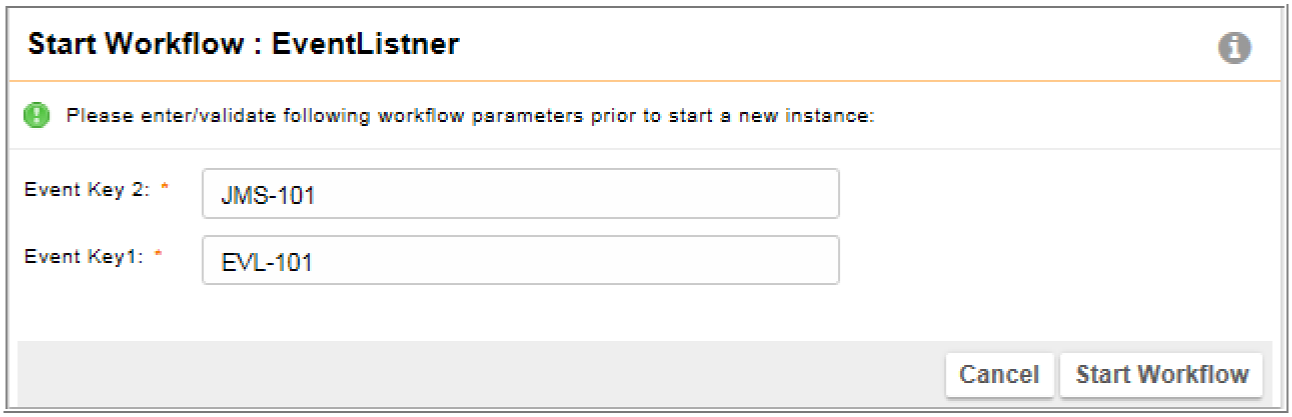
Business Entity: All

Search Workflows: Page 1 of 1

Workflow Name	Log Level	Use Configuration	Schedulable	Workflow Description
EventListner	Node	false	No	EventListner
RaiseJMSEvent	Node	false	No	Rais

The **StartWorkflow** page (Figure 753) is displayed.

Figure 753: Start Workflows



Start Workflow : EventListner

Please enter/validate following workflow parameters prior to start a new instance:

Event Key 2: * JMS-101

Event Key1: * EVL-101

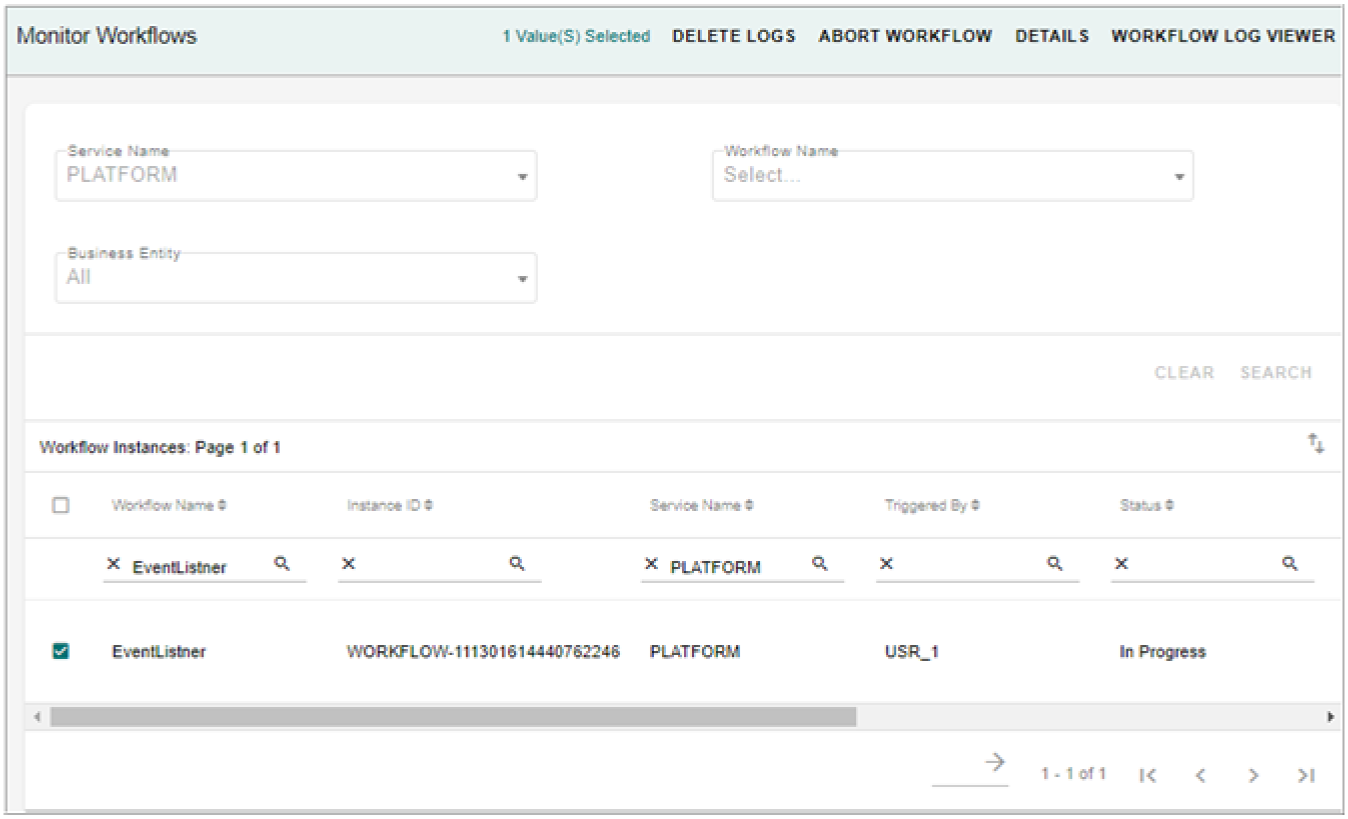
6 On the **StartWorkflow** page (Figure 753), enter or verify the eventkey and click **Start Workflow**.

Message: “Process execution started. Please check process history for execution details is displayed.”

7 On the **Execute Workflows** page (Figure 752), click on the Menu icon corresponding to the required workflow (for example: EventListnerProcess) and click **Workflow History**.

The **Monitor Workflows** page (Figure 754) is displayed.

Figure 754: Monitor Workflows



Service Name: PLATFORM

Workflow Name: Select...

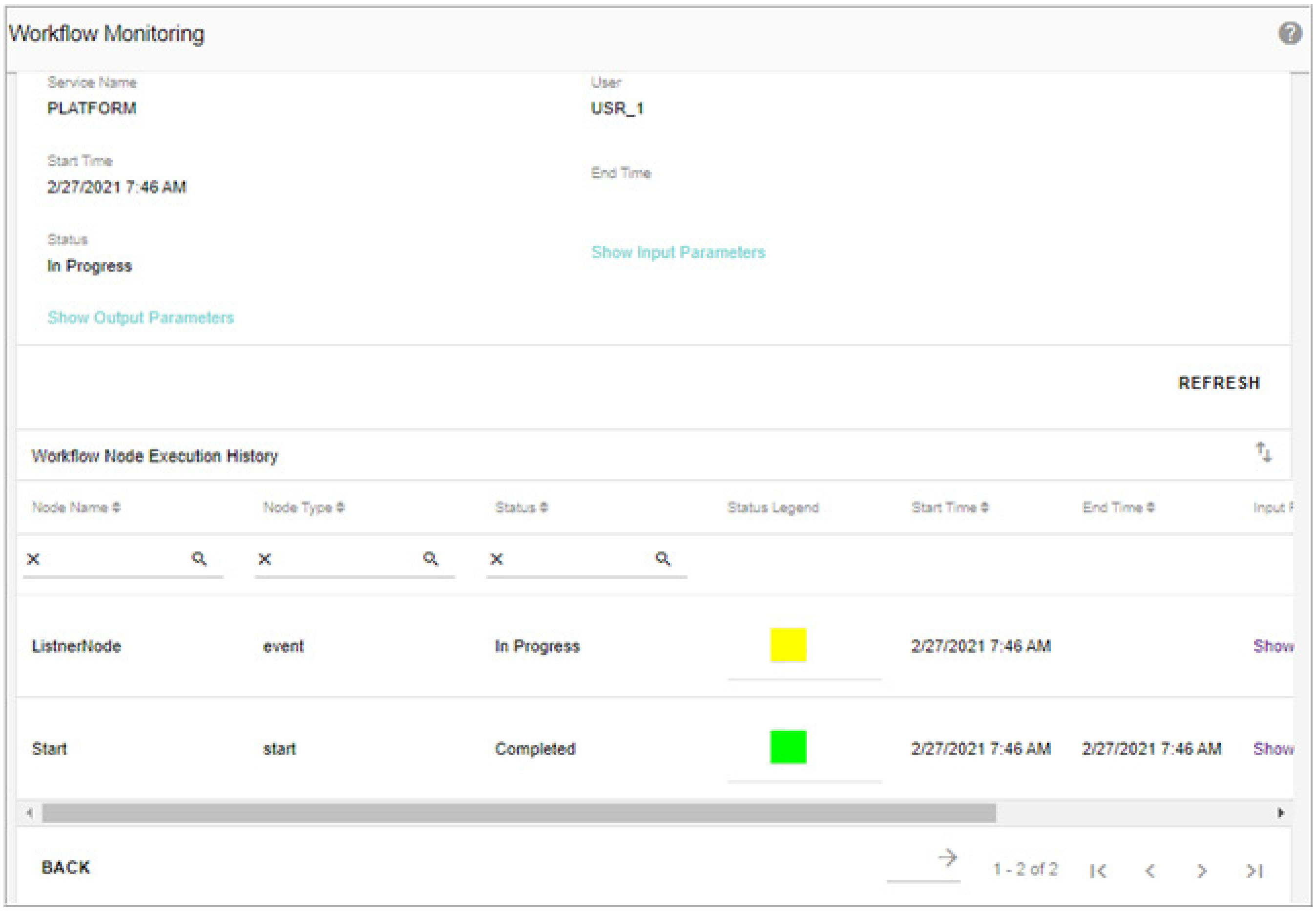
Business Entity: All

Workflow Instances: Page 1 of 1

☐	Workflow Name	Instance ID	Service Name	Triggered By	Status
	EventListner		PLATFORM		
☑	EventListner	WORKFLOW-111301614440762246	PLATFORM	USR_1	In Progress

8 On the **Monitor Workflows** page (Figure 754), select the EventListnerProcess workflow and click **Details**.

Figure 755: Monitor Workflows



Service Name
PLATFORM

User
USR_1

Start Time
2/27/2021 7:46 AM

End Time

Status
In Progress

Workflow Node Execution History

Node Name	Node Type	Status	Status Legend	Start Time	End Time	Input
ListnerNode	event	In Progress	🟨	2/27/2021 7:46 AM		Show
Start	start	Completed	🟩	2/27/2021 7:46 AM	2/27/2021 7:46 AM	Show

On the **Monitor Workflows** page (Figure 755), on the Status column, the start node status is completed and the Listener node status is displayed as Executing as the listener is listening for an MDM event to be raised. When an MDM event is raised with the same key value to which the listener is listening, the status of the listener node will be marked as completed.

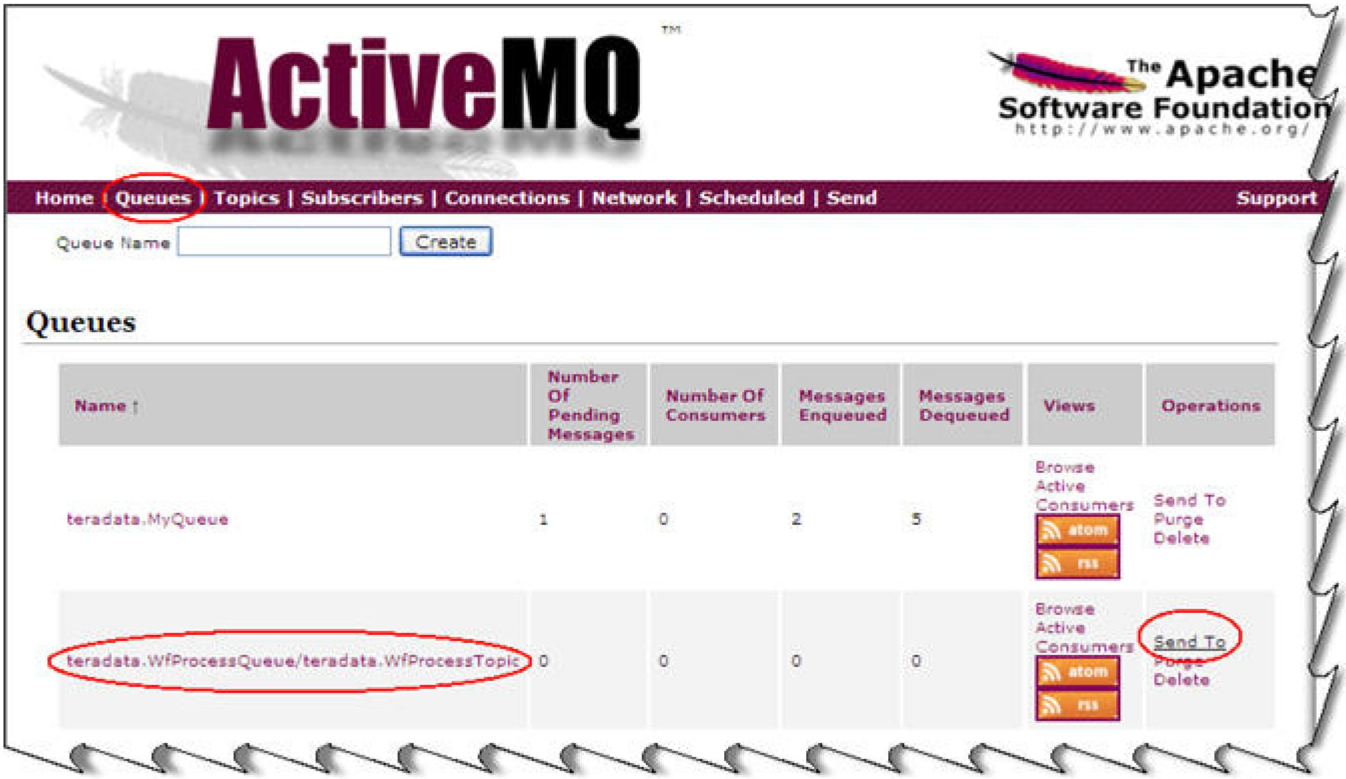
Send Messages from JMS Server (Active MQ)

Navigate to JMS server (Active MQ) and send the messages to MDM server in a specific format required by MDM to understand the message.

The JMS message will in turn raise the linked MDM event that is configured in JMS Event mapping section. The raised MDM event will trigger the MDM event listening to it.

1 On the JMS server (ActiveMQ), click on **Queues** tab.

Figure 756: Active MQ



ActiveMQ™
The Apache Software Foundation
http://www.apache.org/
Home | Queues | Topics | Subscribers | Connections | Network | Scheduled | Send
Support
Queue Name
Create

Queues

Name ↑	Number Of Pending Messages	Number Of Consumers	Messages Enqueued	Messages Dequeued	Views	Operations
teradata.MyQueue	1	0	2	5	Browse Active Consumers atom rss	Send To Purge Delete
teradata.WfProcessQueue/teradata.WfProcessTopic	0	0	0	0	Browse Active Consumers atom rss	Send To Purge Delete

2 On the **Queues** list, click on the JMS Context Factory link and click on **Send To** link as in Figure 756.

The **Send JMS Message** page is displayed.

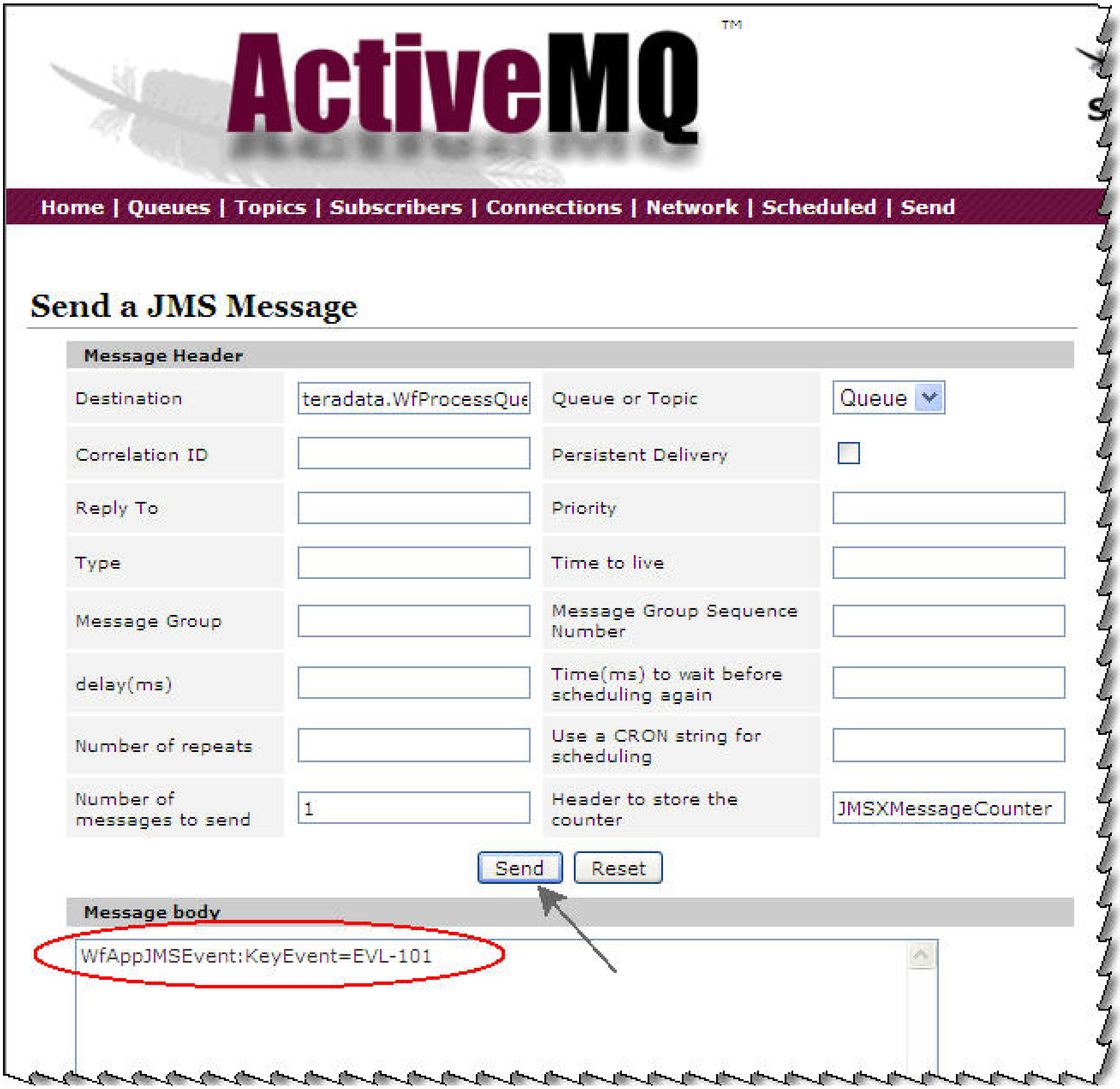
3 On the **Send JMS Message** page, enter the JMS message details and click **Send** as in Figure 757.

The message must be in the below format:

JMS Event Name:Event Key Name=Event Key Value.

For example: WfAppJMSEvent:EventKey=EVL-101

Figure 757: Active MQ



ActiveMQ
Home | Queues | Topics | Subscribers | Connections | Network | Scheduled | Send

Send a JMS Message

Message Header

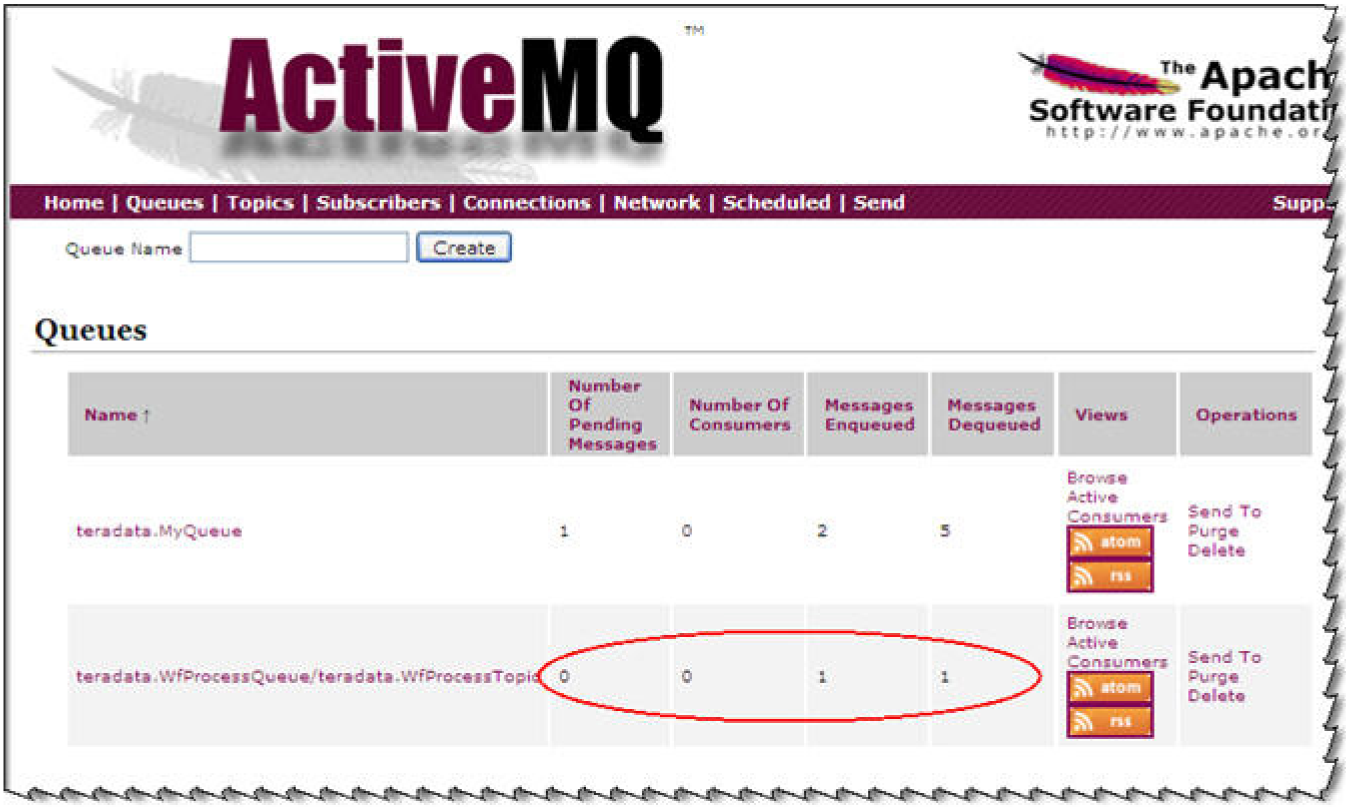
Destination	teradata.WfProcessQue	Queue or Topic	Queue
Correlation ID		Persistent Delivery	☐
Reply To		Priority	
Type		Time to live	
Message Group		Message Group Sequence Number	
delay(ms)		Time(ms) to wait before scheduling again	
Number of repeats		Use a CRON string for scheduling	
Number of messages to send	1	Header to store the counter	JMSXMessageCounter

Message body

WfAppJMSEvent:KeyEvent=EVL-101

4 On the **ActiveMQ Queues** page, the number of messages enqueued and the number of messages dequeued must be same. The Number of pending messages should get changed to zero as in Figure 758.

Figure 758: Active MQ


ActiveMQ™
The Apach
Software Foundati
http://www.apache.or
Home | Queues | Topics | Subscribers | Connections | Network | Scheduled | Send
Supp
Queue Name
Create

Queues

Name ↑	Number Of Pending Messages	Number Of Consumers	Messages Enqueued	Messages Dequeued	Views	Operations
teradata.MyQueue	1	0	2	5	Browse Active Consumers atom rss	Send To Purge Delete
teradata.WfProcessQueue/teradata.WfProcessTopic	0	0	1	1	Browse Active Consumers atom rss	Send To Purge Delete

5 Now navigate to **Monitor Workflows** page to check the status of the Listener node.

The status of all the nodes will be displayed as completed. The message send from the JMS server is received in MDM.

CHAPTER 22 Manage Scheduler

What's In This Chapter

This chapter provides detailed information on the manage scheduler, manage pollers and manage dependent jobs.

Topics:

Manage Scheduler

MDM supports the Manage Scheduler feature to provide a user managed feature: to schedule workflows based on timers or calendars, define repeat schedules, and define schedule dependencies. The MDM workflows applicable to Scheduler can be Studio built workflows, out of the box workflows, and "Managed" workflows (Runtime built).

MDM scheduler feature uses quartz scheduling service, which supports simple triggers and cron triggers (for recurrence schedules). Also, manage scheduler is capable of performing dependency checks, before executing a scheduled workflow. The dependent job can be an external job (sourcing from JMS server or QUEUE table), internal workflow, web service call, and direct API.

You can create schedules from Manage Scheduler UI. The Scheduler can also be invoked from the Managed Workflow UI directly. The user interface for viewing scheduled jobs is designed to provide a calendar based view and tabular view.

Create Schedule

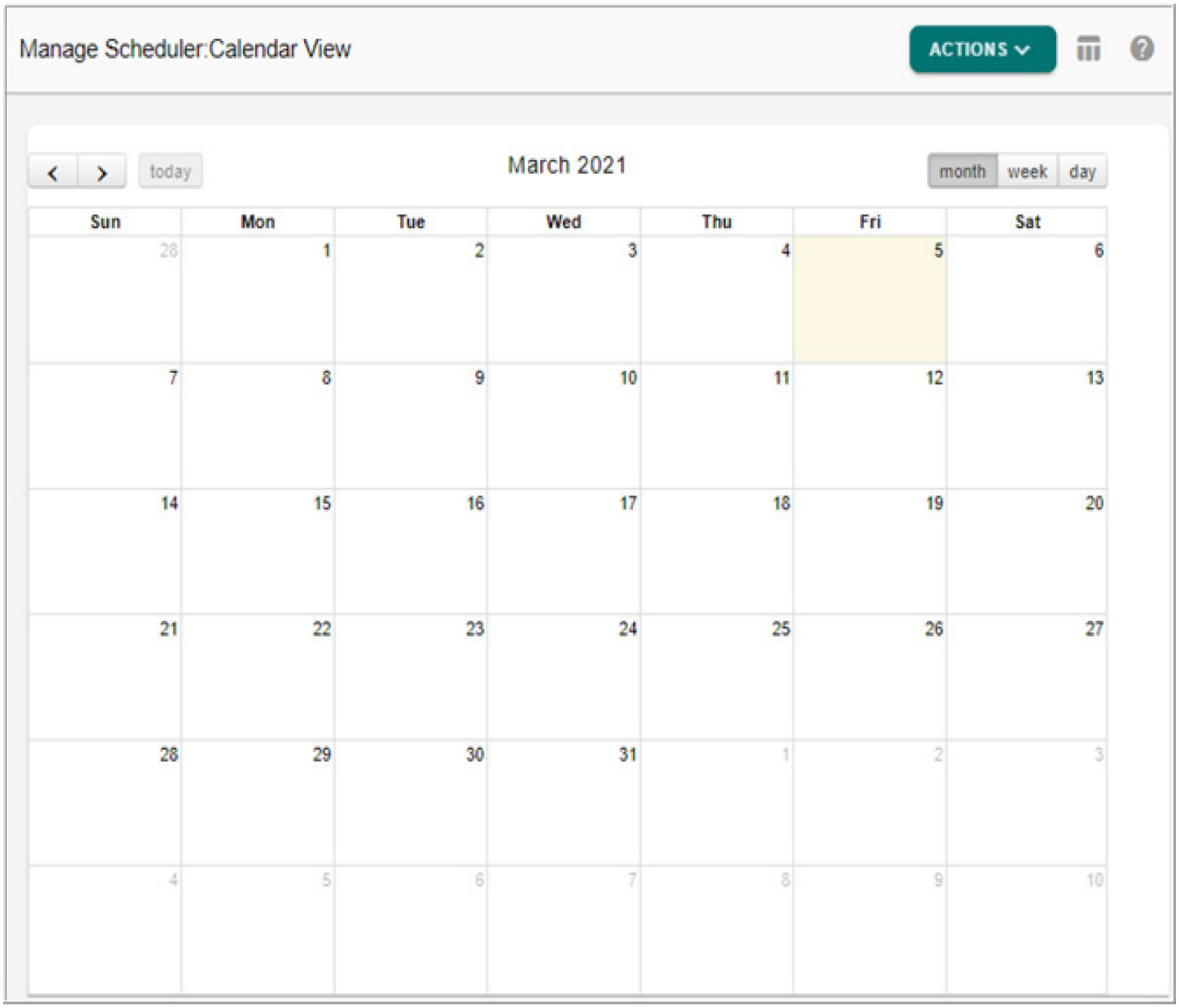
The first step in Scheduler Management is to create a schedule. To create a schedule, you need to select a schedulable workflow and provide the schedule start time.You can also create recurring schedules and choose dependent jobs for the created schedule.

To create schedule:

1 On the left navigation pane, click **Administration** -> **Schedules**.

The **Calendar View** UI (Figure 759) is displayed.

Figure 759: Manage Schedule



2 On the **Calendar View** UI (Figure 759), select **Create** from **Actions** dropdown.

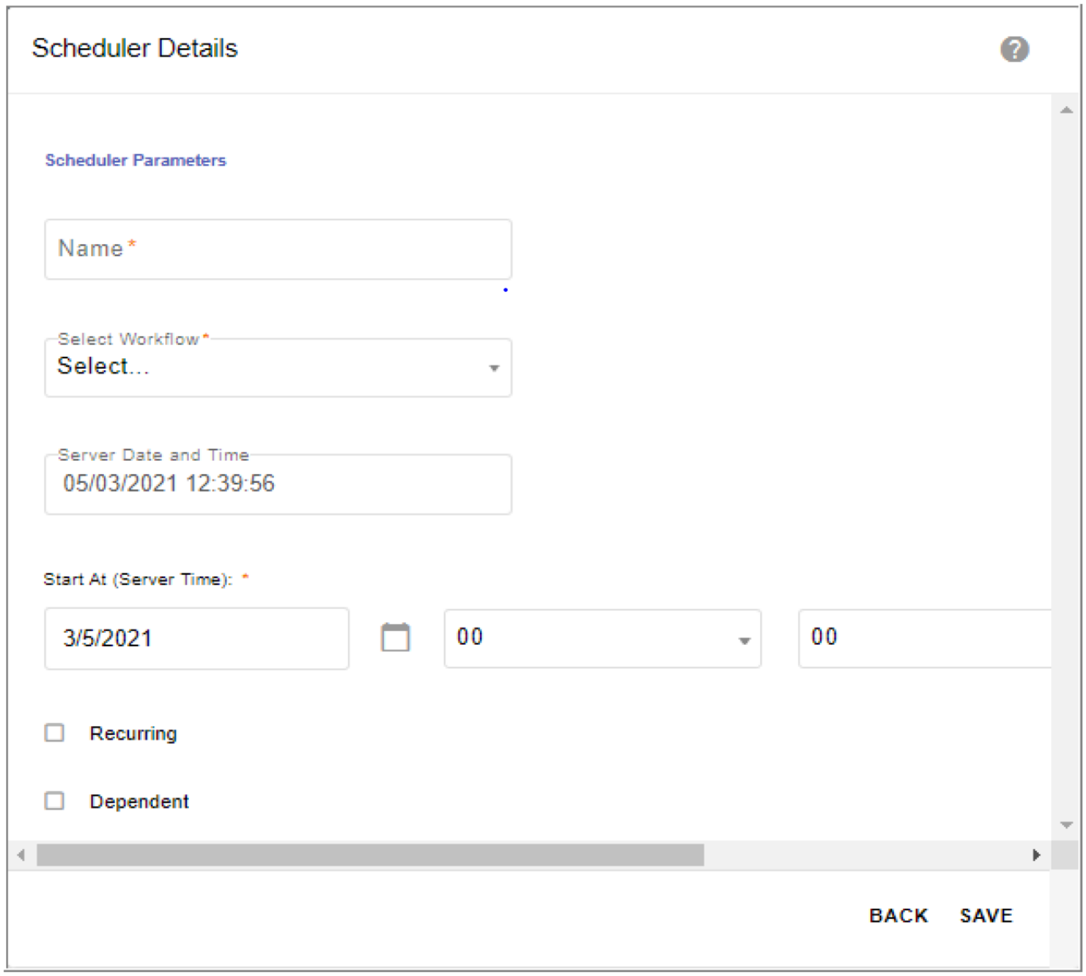
The **Scheduler Details** UI (Figure 760) is displayed.

You can also navigate from **Manage Scheduler** UI. On the **Calendar View** UI, click on the Tabular view icon to navigate to **Manage Scheduler**.

3 On the **Manage Scheduler** UI, select **Create** from **Actions** dropdown.

The **Scheduler Details** UI (Figure 760) is displayed.

Figure 760: Scheduler Details



Scheduler Details

Scheduler Parameters

Name*

Select Workflow*
Select...

Server Date and Time
05/03/2021 12:39:56

Start At (Server Time): *
3/5/2021
00
00

☐ Recurring

☐ Dependent

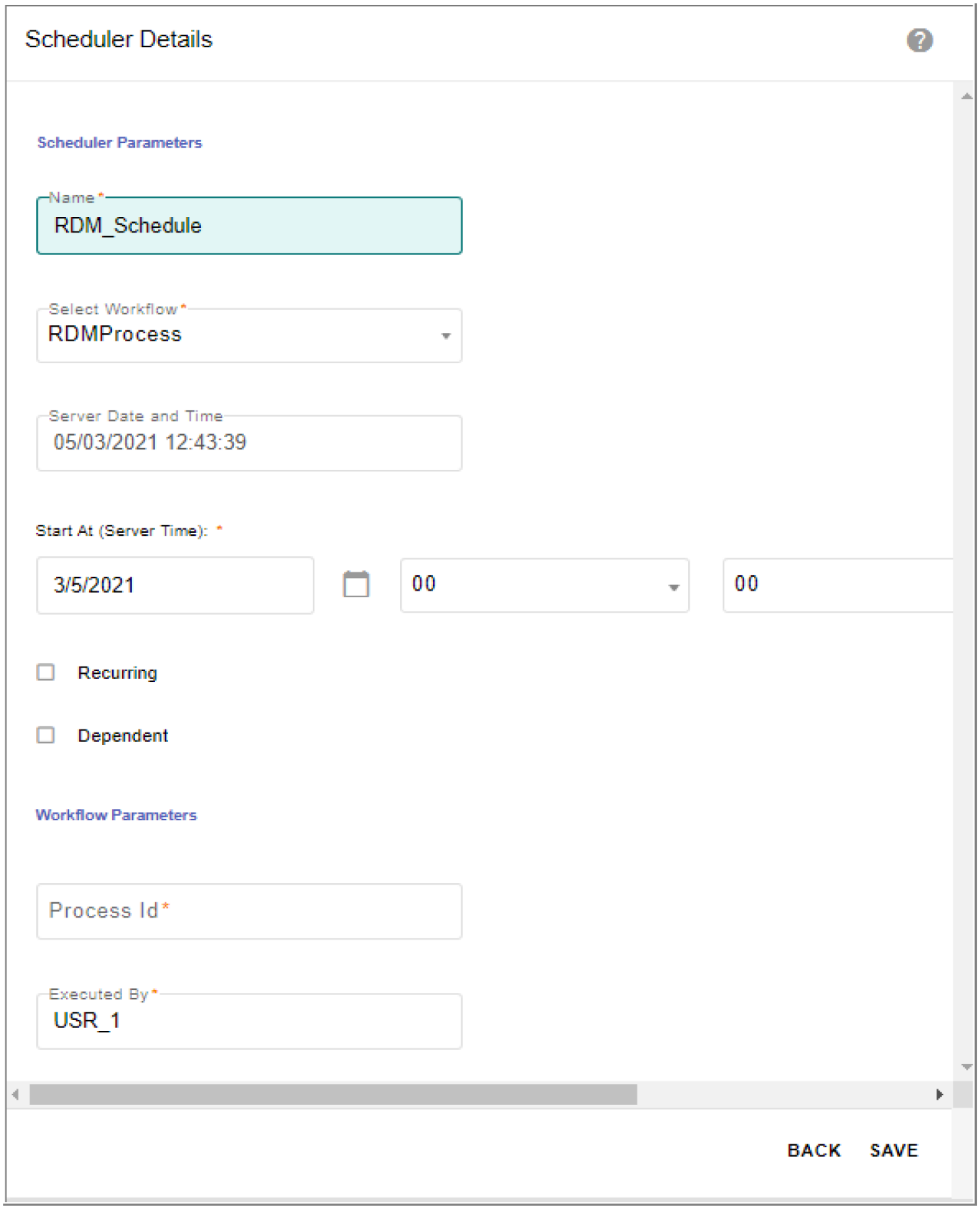
4 On the **Scheduler Details** UI (Figure 760),

- enter the scheduler name in **Name** field.
- select the workflow that needs to be scheduled from the **Select Workflow** dropdown.

  The **Select Workflow** dropdown displays all the workflows (runtime workflows) from manage workflows UI that are Active, deployed and scheduling option is enabled. It also displays the studio built workflows that does not belong to system category and scheduling option is enabled.

  Once you select the workflow from the **Select Workflow** dropdown, the **Workflow Parameters** pane is displayed with all the available parameters of the selected workflow as in Figure 761. If the selected workflow does not have any parameters defined, workflow parameters will not be displayed.

Figure 761: Scheduler Details



Scheduler Details

Scheduler Parameters

Name *: RDM_Schedule

Select Workflow *: RDMProcess

Server Date and Time: 05/03/2021 12:43:39

Start At (Server Time): *

3/5/2021 00 00

☐ Recurring

☐ Dependent

Workflow Parameters

Process Id *

Executed By *: USR_1

- enter the parameters in **Workflow Parameters** pane.
- select the start date and time for the scheduler.

  The date and time would be the default date and time format: Date (MM/DD/YYYY) and Time (HH:MM)

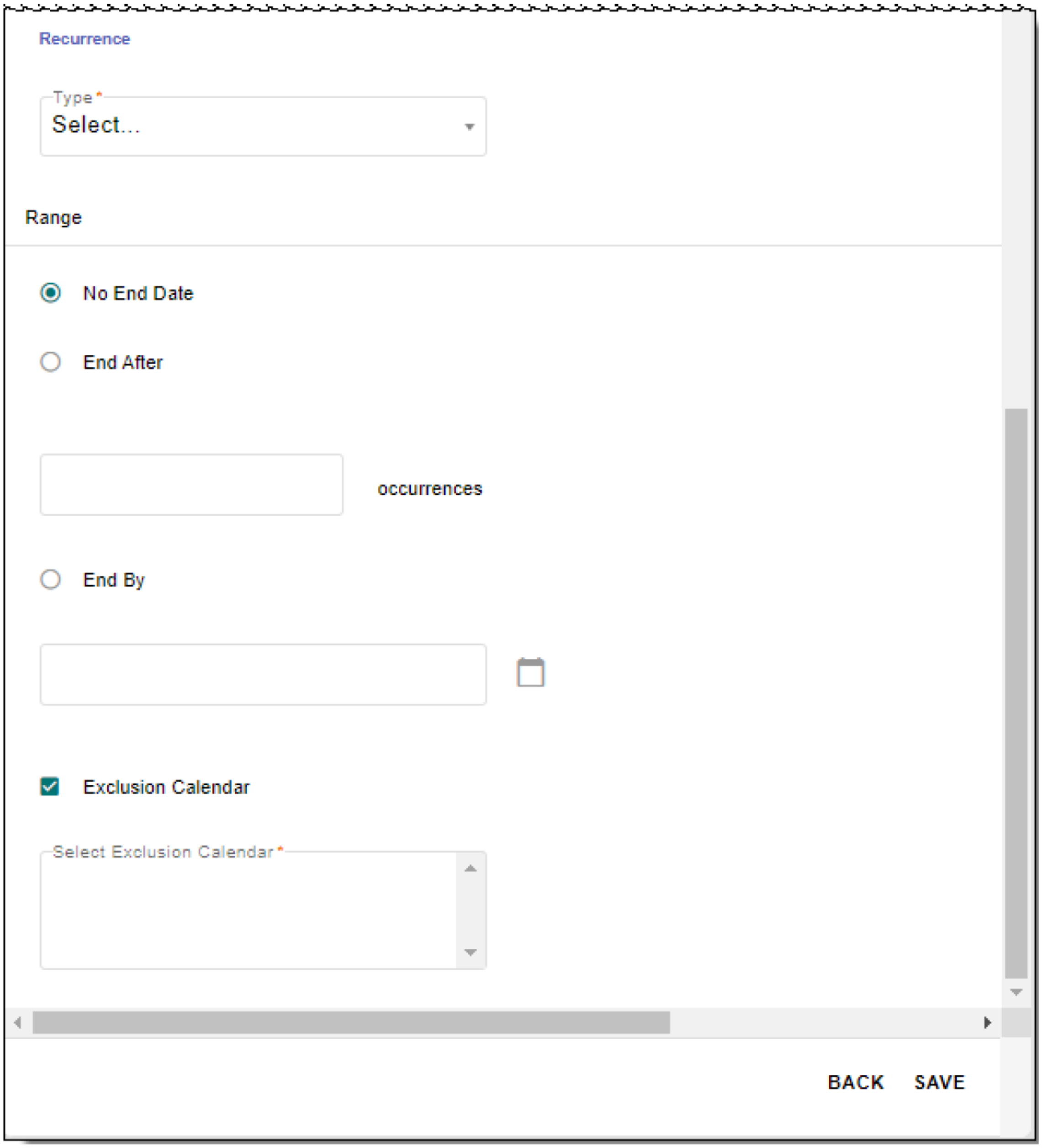
Note: Job execution through Scheduler depends on time zone of MDM server. UI related time validations are performed based on client time zone.

- select the **Recurring** checkbox to specify the recurrence pattern for the selected workflow schedule.

  The **Scheduler Details** UI displays the Recurrence pane as in Figure 762.
- On the **Recurrence** pane, you can select the type of recurrence and specify the repetition details.

  The Type of recurrence can be (Minutes, Hourly, Daily, Weekly, Monthly, Yearly) and the Range can be (No end date, end after the specified occurrences or end by the specified date). See Section : “Recurrence Types” for detailed description on different recurrence types.

Figure 762: Scheduler Details



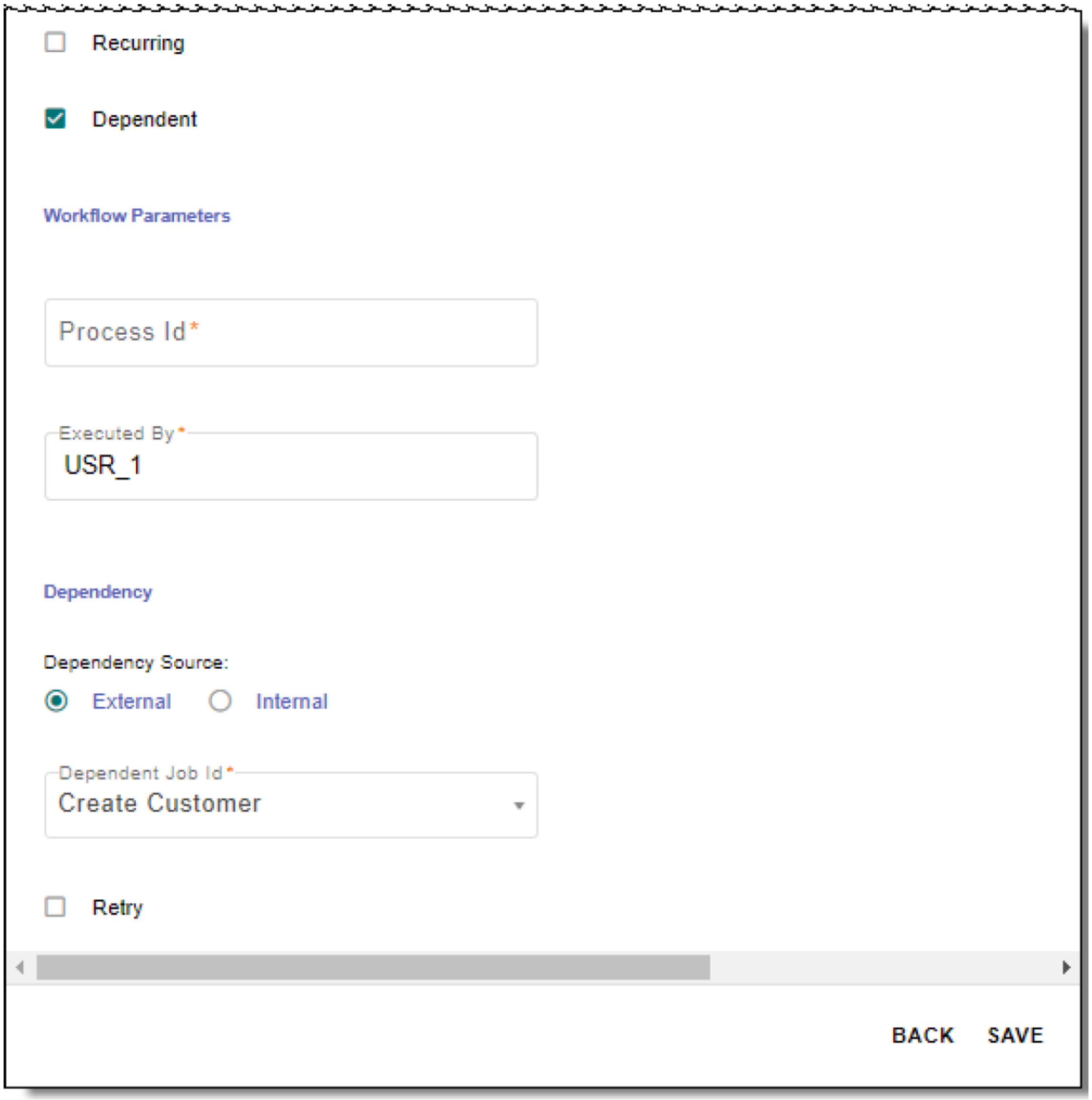
- The End time in scheduler specifies the scheduler process end time. For example, if a scheduler is created to get triggered every minute starting from 1:00 PM to 2:00 PM. The scheduler will get fired 60 time between 1:00 PM to 2:00 PM. To display end time as in Figure 765, you need to select recurrence option and then specify the end by time.
- select the **Exclusion Calendar** checkbox to specify any exclusion calendar to exclude the execution of scheduled job on any defined specific days or events.

  When the **Exclusion Calendar** checkbox is selected, the **Select Exclusion Calendar** list is displayed. You can select the required calendar, for details on Exclusion Calendar, see Section : “Manage Exclusion”.

- select the **Dependent** checkbox to specify any dependent jobs to be executed for the selected workflow schedule.

  The Scheduler Details UI displays the **Dependency** pane as in Figure 763.

Figure 763: Scheduler Details



☐ Recurring

☑ Dependent

Workflow Parameters

Process Id*

Executed By*: USR_1

Dependency

Dependency Source:

● External ○ Internal

Dependent Job Id*: Create Customer

☐ Retry

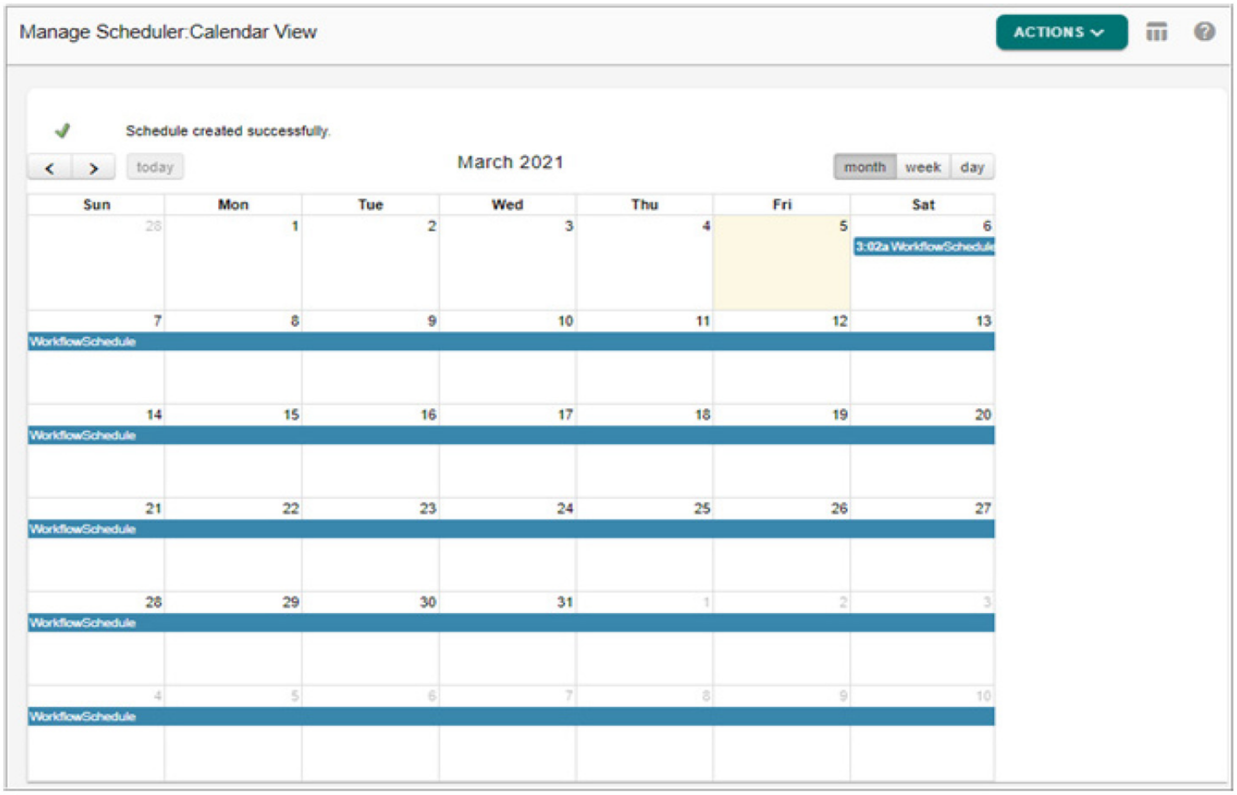
- On the **Dependency** pane, you can select dependent job for a particular schedule. The scheduler will check for the status of dependent job before executing the scheduled workflow.
  - **Dependency Source**: The source can be either External or Internal.
  - **Dependent Job Id**: If the dependency source is selected as External, all the dependent jobs created through Manage Dependencies (see Section : “Manage Dependencies”) will be available in the dropdown. If the dependency source is selected as Internal, all the existing workflows that does not fall under system workflow category will be available in the dropdown.

- **Retry**: The scheduler checks for the status of the dependent job before executing the scheduled workflow. Enabling retry option will allow the scheduler to check the dependent job status in multiple attempts in case it fails to get the desired status (COMPLETE) in first attempt.
- **Retry Interval (minutes)**: The interval within which scheduler will check for the dependent job status.
- **Maximum Retries**: The maximum number of times the scheduler will check for the dependent job status.

5 Click **Save**.

The calendar view of the created schedule is displayed as in Figure 764. You can also navigate to Calendar View from **Manage Scheduler** UI.

Figure 764: Manage Schedule —Calendar View



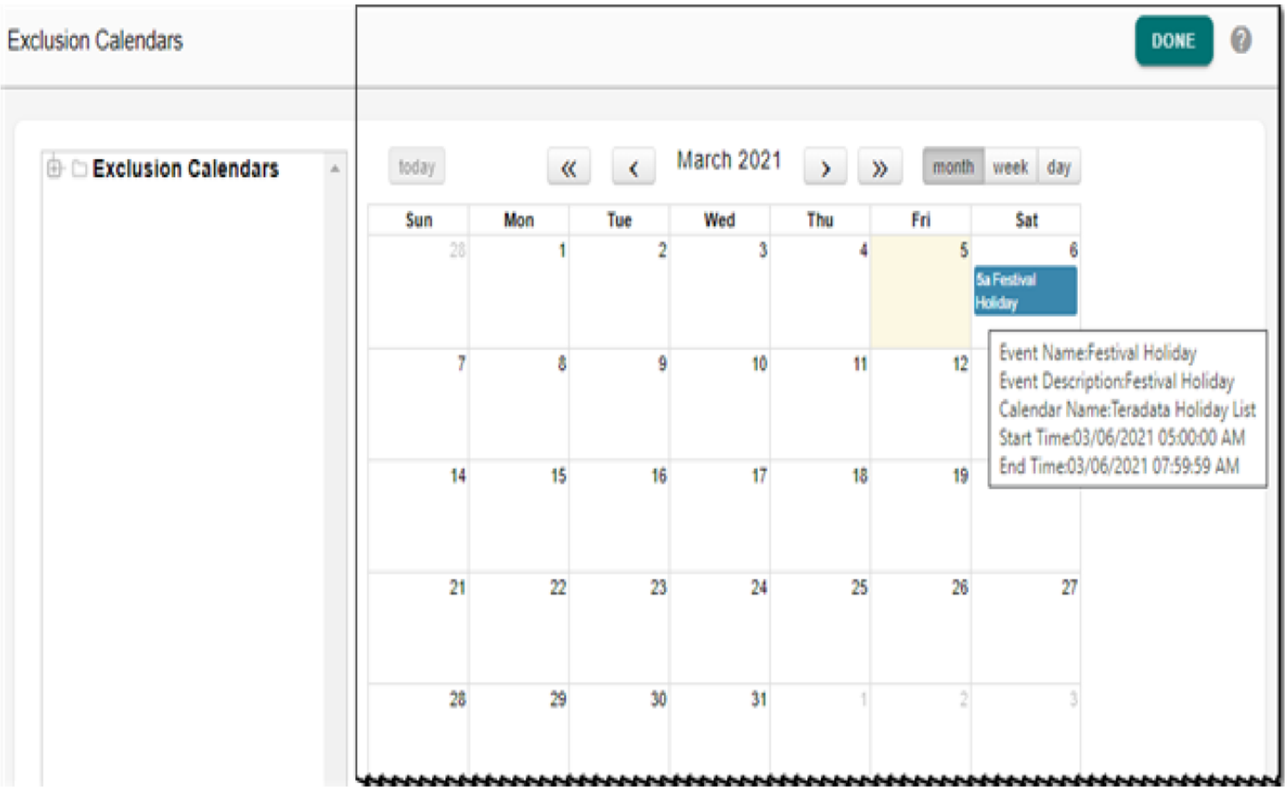
Schedule created successfully.

March 2021

From the Calendar view UI, you can perform the following:

- Navigate to Manage Exclusion, Manage Pollers, Table View (Manage Scheduler UI), Manage Dependencies and Scheduler Details UIs.
- Click on month, week or day tab to view the schedule details for a month, a week or a day.
- Hover on the label of a schedule in calender view to view the details of the particular schedule as in Figure 765. You can click on the scheduled event to navigate to Scheduler Details UI.

Figure 765: Calendar View—Hover Over



Sun	Mon	Tue	Wed	Thu	Fri	Sat
28	1	2	3	4	5	6 5a Festival Holiday
7	8	9	10	11	12	
14	15	16	17	18	19	
21	22	23	24	25	26	27
28	29	30	31	1	2	3

Event Name:Festival Holiday
Event Description:Festival Holiday
Calendar Name:Teradata Holiday List
Start Time:03/06/2021 05:00:00 AM
End Time:03/06/2021 07:59:59 AM

- The Exclusion Calendar will be marked in red on the scheduler calendar view UI as in Figure 765. Hover on the label of the exclusion calendar to view the details of the particular exclusion event. You can click on the Exclusion Calendar Event to navigate to Exclusion Calendars UI.

- By default, execution of same workflow parallelly through scheduler is enabled. In case if you do not want to execute same workflow parallelly, navigate to platform.xml available at: *<MDM_Install_Directory>/cfg/properties* and at: *<MDM_Install_Directory>/web/mdmclient/WEB-INF/bcm/cfg/properties* and set the 'SCHEDULER_PARALLEL_WORKFLOW_EXEC” parameter value to “No”.
- To configure scheduler misfire execution, configure the parameter “SCHEDULER_MISFIRE_OPTION” value in platform.xml available at: *<MDM_Install_Directory>/cfg/properties* and at: *<MDM_Install_Directory>/web/mdmclient/WEB-INF/bcm/cfg/properties* and then create new schedule for the configurations changes to be applied. The valid values for this parameter includes the following:
  - **IGNORE**: all misfired executions will be discarded and the scheduler waits for the next scheduled time.

- **FIRE_ONCE**: immediately executes the first misfired execution and discards other executions and then the scheduler waits for the next scheduled time.
- **FIRE_ALL**: all misfired executions are immediately executed and then scheduler waits for the next scheduled time.

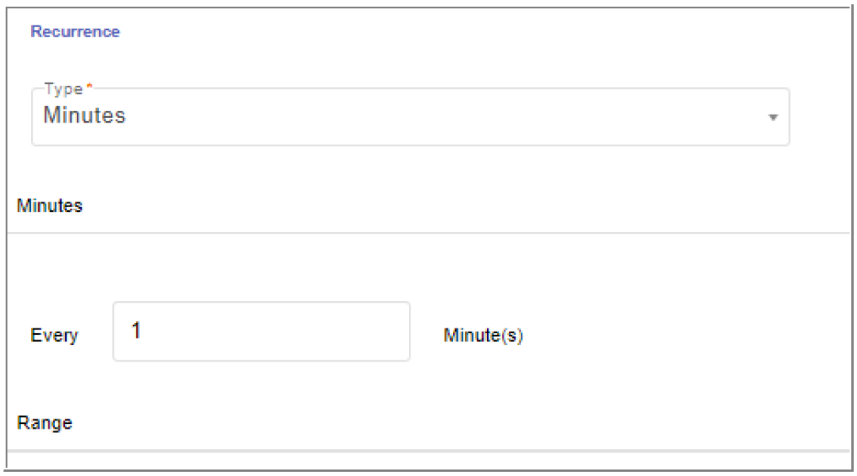
Recurrence Types

The calculation of next trigger time for all the recurrence type is based on the Cron Expression.

- If the Type is selected as **Minutes** as in Figure 766, specify the time of recurrence in minutes and specify the range.

  For example: If you select recurrence as every 5 minutes and the start time is 7.32, the next schedule sequence will be 7.35, 7.40, 7.45 etc. The counting begins from multiple of recurrence interval, that is interval 5 minutes in this case. So the first execution time of the scheduled workflow will be 7.35 not 7.32 (the start time specified while creating the schedule).

Figure 766: Scheduler Recurrence in Minutes



Recurrence

Type*: Minutes

Minutes

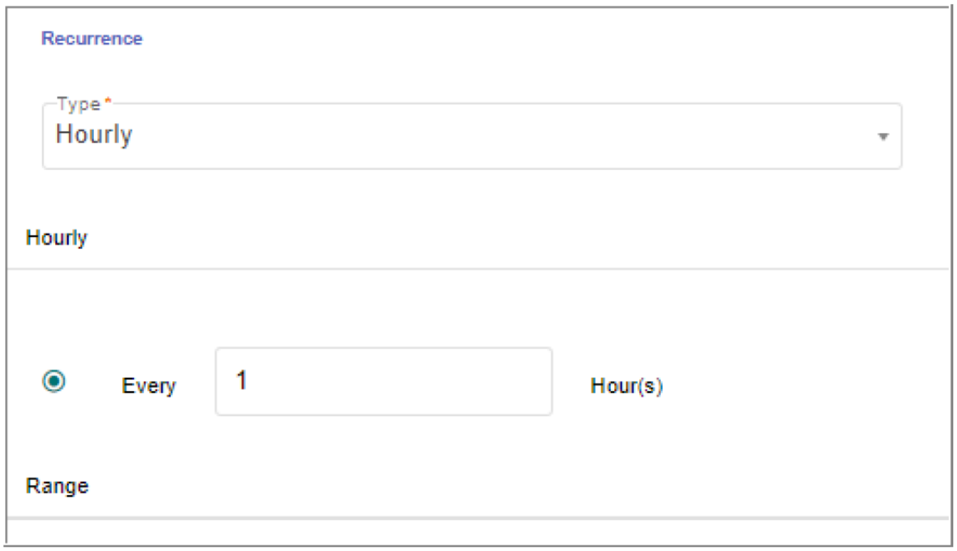
Every 1 Minute(s)

Range

- If the Type is selected as **Hourly** as in Figure 767, specify the time of recurrence in hours and specify the range as below.

  For example: If you select recurrence as every 5 hours and the start time is 7.30, the next schedule sequence will be 10.00, 3.00, 8.00 etc. The counting always begins in multiple of recurrence interval, that is interval 5 hours in this case and it takes the first specified hour not the minutes, say 10.00 and not from 7.30.

Figure 767: Scheduler Recurrence in Hours



Recurrence

Type*: Hourly

Hourly

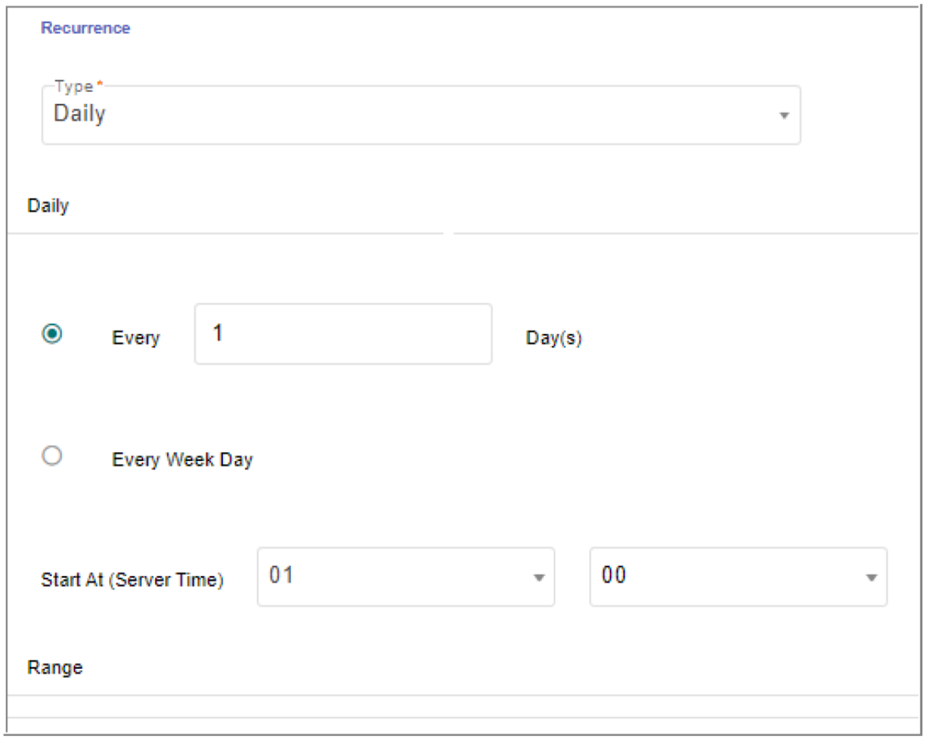
● Every 1 Hour(s)

Range

- If the Type is selected as **Daily** as in Figure 768, specify the time of recurrence in number of days or specify the week day and corresponding start time as below.

  For example: For daily, the next trigger time will be calculated in multiples of StartAt time. If you select recurrence as every 5 days and the start day is Saturday and start time is 7.35, the next schedule sequence will be Wednesday 12.00, Monday 12.00 etc.

Figure 768: Scheduler Recurrence in Daily



Recurrence

Type*: Daily

Daily

● Every 1 Day(s)

○ Every Week Day

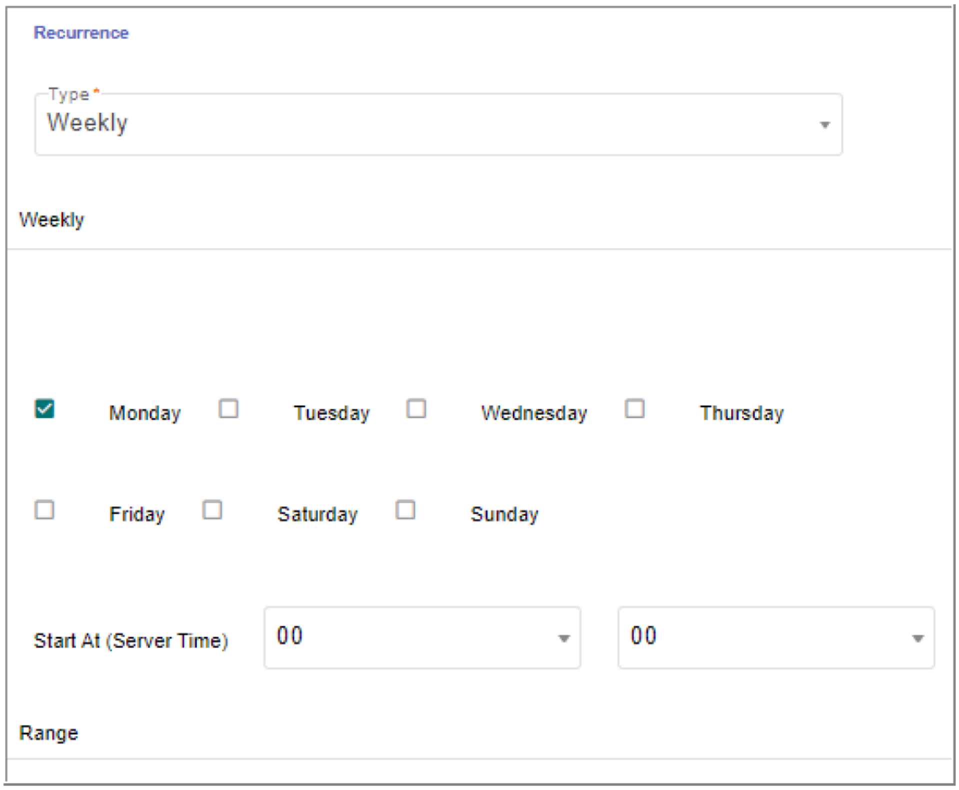
Start At (Server Time) 01 00

Range

- If the Type is selected as **Weekly** as in Figure 769, you can select the days in a week and corresponding time as when you would like to execute the recurrence schedule as below.

  For example: select Monday and start time is 4.00, the next schedule sequence will be Monday 4.00, Monday 4.00 etc.

Figure 769: Scheduler Recurrence in Weekly



Recurrence

Type*: Weekly

Weekly

☑ Monday ☐ Tuesday ☐ Wednesday ☐ Thursday

☐ Friday ☐ Saturday ☐ Sunday

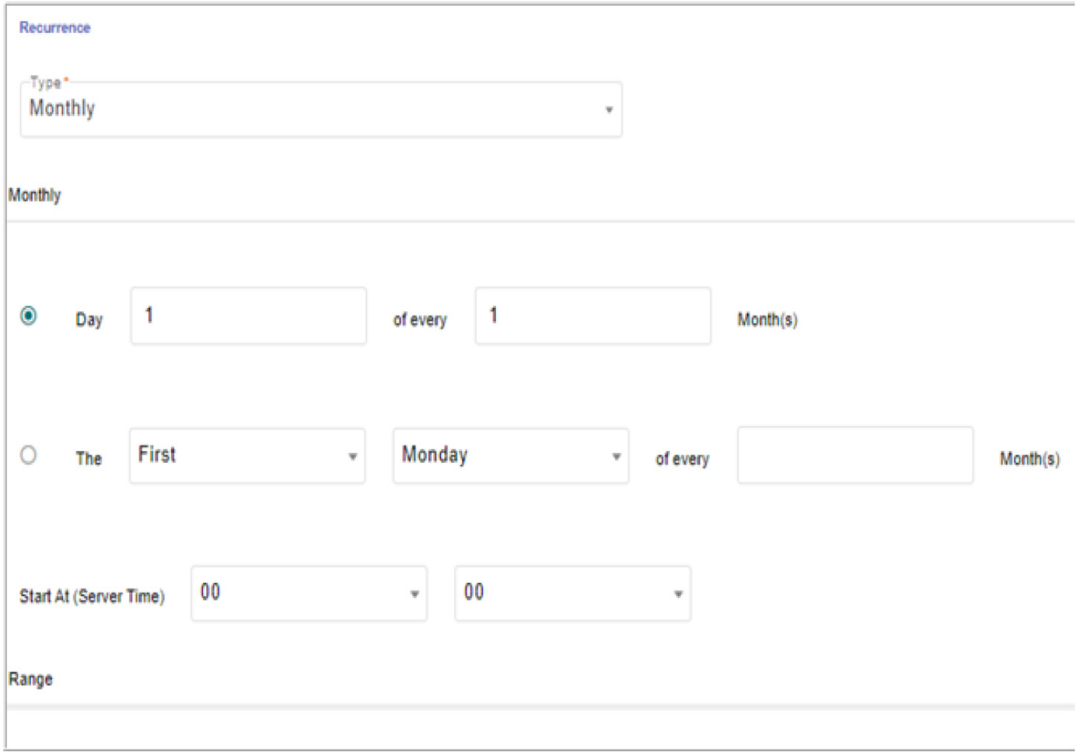
Start At (Server Time): 00 : 00

Range

- If the Type is selected as **Monthly** as in Figure 770, you can specify the time of recurrence on monthly basis, that is you can either provide a particular day of the specified month (for example 2nd day of 2nd month) or provide the order of day of specified month (for example: first Monday of every 2 month) and select the start time.

  For example: select 2 day of every 2 months and start month is April and start time is 4.00, the next schedule sequence will be June 2,4.00, August 2, 4.00 etc.

Figure 770: Scheduler Recurrence in Monthly



Recurrence

Type*: Monthly

Monthly

● Day 1 of every 1 Month(s)

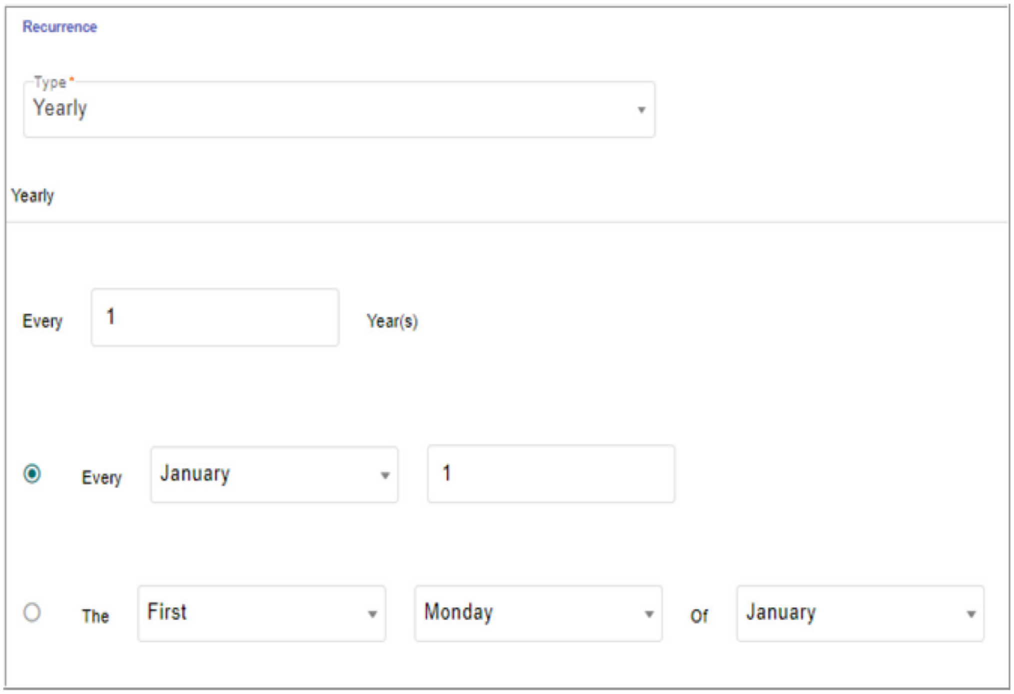
○ The First Monday of every Month(s)

Start At (Server Time) 00 00

- If the Type is selected as **Yearly** as in Figure 771, you can specify the time of recurrence on yearly basis, that is select month and day or specify the month as below.

  For example: select every 2nd year and start year is 2014, the next schedule sequence will be 2016, 2018 etc.

Figure 771: Scheduler Recurrence in Yearly



Type*: Yearly

Every 1 Year(s)

● Every January 1

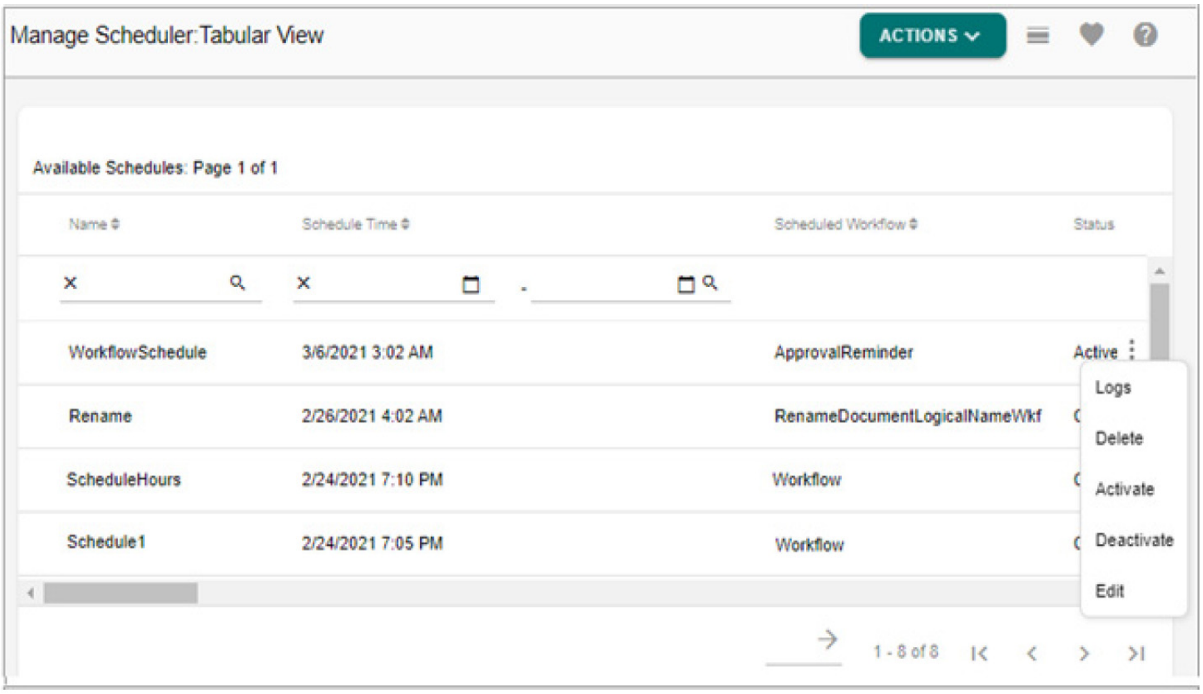
○ The First Monday Of January

Edit Scheduler Details

To edit scheduler details:

1 On the **Manage Scheduler: Tabular View**, click the menu icon corresponding to the required schedule and click **Edit.**

Figure 772: Manage Schedule

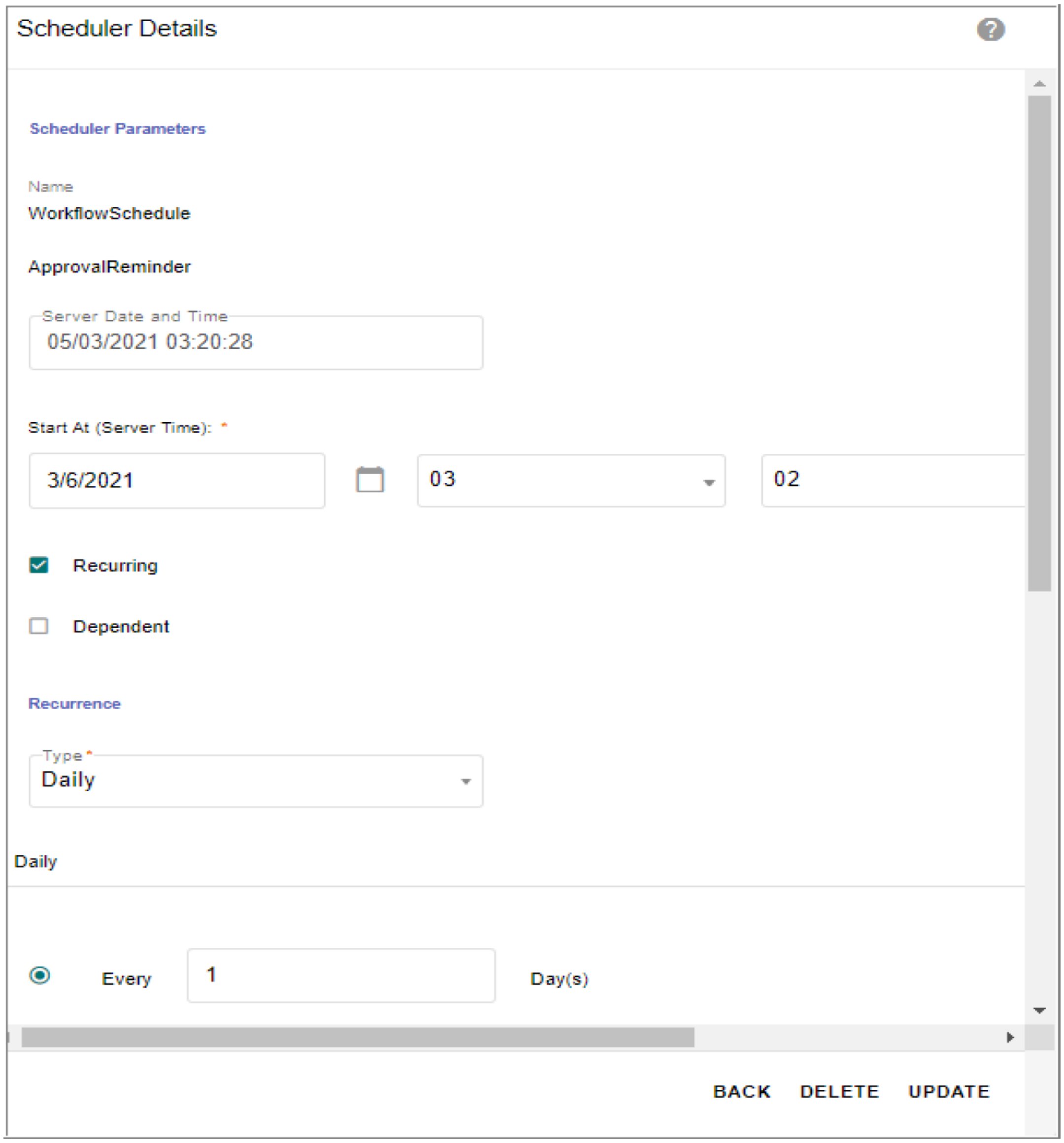


Available Schedules: Page 1 of 1

Name	Schedule Time	Scheduled Workflow	Status
WorkflowSchedule	3/6/2021 3:02 AM	ApprovalReminder	Active
Rename	2/26/2021 4:02 AM	RenameDocumentLogicalNameWkf	
ScheduleHours	2/24/2021 7:10 PM	Workflow	
Schedule1	2/24/2021 7:05 PM	Workflow	

The **Scheduler Details** UI (Figure 773) is displayed.

Figure 773: Scheduler Details



Scheduler Details

Scheduler Parameters

Name
WorkflowSchedule

ApprovalReminder

Server Date and Time: 05/03/2021 03:20:28

Start At (Server Time): * 3/6/2021 03 02

☑ Recurring

☐ Dependent

Recurrence

Type*: Daily

Daily

● Every 1 Day(s)

2 On the **Scheduler Details** UI (Figure 773), modify the required values and click **Update**.

The calendar view of the updated schedule is displayed and message “Schedule updated successfully” is displayed.

Activate or Deactivate a Schedule

To deactivate a schedule:

1 On the **Manage Scheduler: Tabular View** UI, click the Menu icon corresponding to the schedule whose status is Active and click **Deactivate**.

Message: “Schedule deactivated successfully” is displayed.

When the schedule is deactivated, the scheduler will not be triggered until it is activated.

To activate a schedule:

1. On the **Manage Scheduler: Tabular View** UI (Figure 772), click the Menu icon corresponding to the schedule whose status is Active and click **Activate**.

   Message: "Schedule activated successfully" is displayed.

Delete Scheduler Details

You can delete the scheduler details either from the Manage Scheduler UI or from the Edit Scheduler Details UI.

To delete scheduler details from Manage Scheduler UI:

1. On the **Manage Scheduler: Tabular View** UI (Figure 772), click the Menu icon corresponding to the schedule whose status is Active and select **Delete**.

   The confirmation webpage dialog is displayed.
2. On the confirmation webpage dialog, click **Yes**.

   Message: "Schedule deleted successfully" is displayed.

To delete scheduler details from Scheduler Details UI:

1. On the **Manage Scheduler: Tabular View** UI, select the required schedule and click **Edit**.

   The **Scheduler Details** UI is displayed.
2. On the **Scheduler Details** UI, click **Delete**.

   The confirmation webpage dialog is displayed.
3. On the confirmation webpage dialog, click **Yes**.

   Message: "Schedule deleted successfully" is displayed.

Manage Exclusion

MDM's Manage Exclusion feature provides the ability to exclude execution of scheduler on any defined specific days/events. For example: if a job is scheduled to execute from Monday to Friday at 10pm every day and in case of a business holiday within the week, the job can be suspended from execution on that particular day based on the details defined in the exclusion calendar selected during the creation of scheduler.

Perform the following steps to include the exclusion details in a scheduler:

- Create new exclusion calendar on Exclusion Calendar UI. See Create Exclusion Calendar.
- Create new events on the Exclusion Calendar UI. See Create Exclusion Event.
- Once the exclusion calendar is created, navigate back to Manage Scheduler UI, create or edit an existing scheduler to include the Exclusion Calendar. For details on creating or editing scheduler, see Section : "Manage Scheduler."
- When the workflow or job is executed as scheduled, the scheduler will exclude execution of scheduled jobs on events or holidays as defined in the selected exclusion calendar.

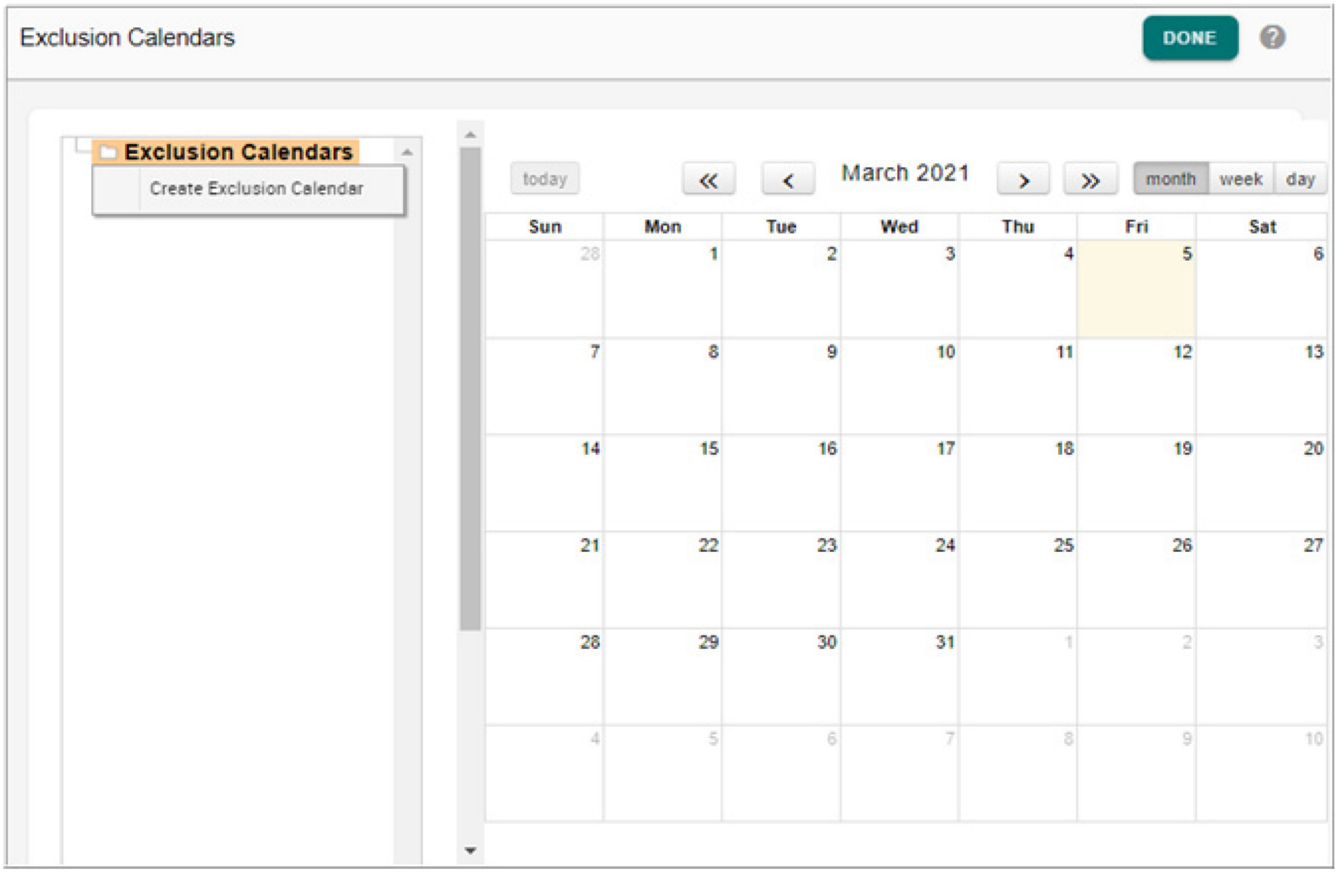
You can navigate to **Exclusion Calendar** UI either from **Calendar View** UI by using the **Manage Exclusion** button or from **Manage Scheduler** UI by selecting the **Manage Exclusion** option in the **Tasks** dropdown.

Create Exclusion Calendar

To create exclusion calendar:

1 On the **Exclusion Calendars** UI, right click on the **Exclusion Calendars** folder and select **Create Exclusion Calendar**.

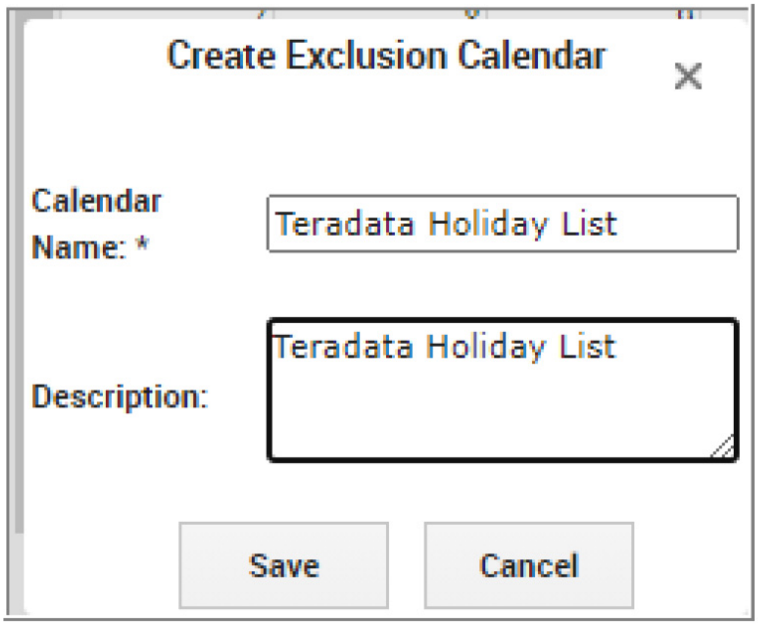
Figure 774: Exclusion Calendars—Create Exclusion Calendar



The **Create Exclusion Calendar** popup is displayed.

2 On the **Create Exclusion Calendar** popup, enter the calendar name and description and click **Save** as in Figure 775.

Figure 775: Create Exclusion Calendar



Create Exclusion Calendar

Calendar Name: * Teradata Holiday List

Description: Teradata Holiday List

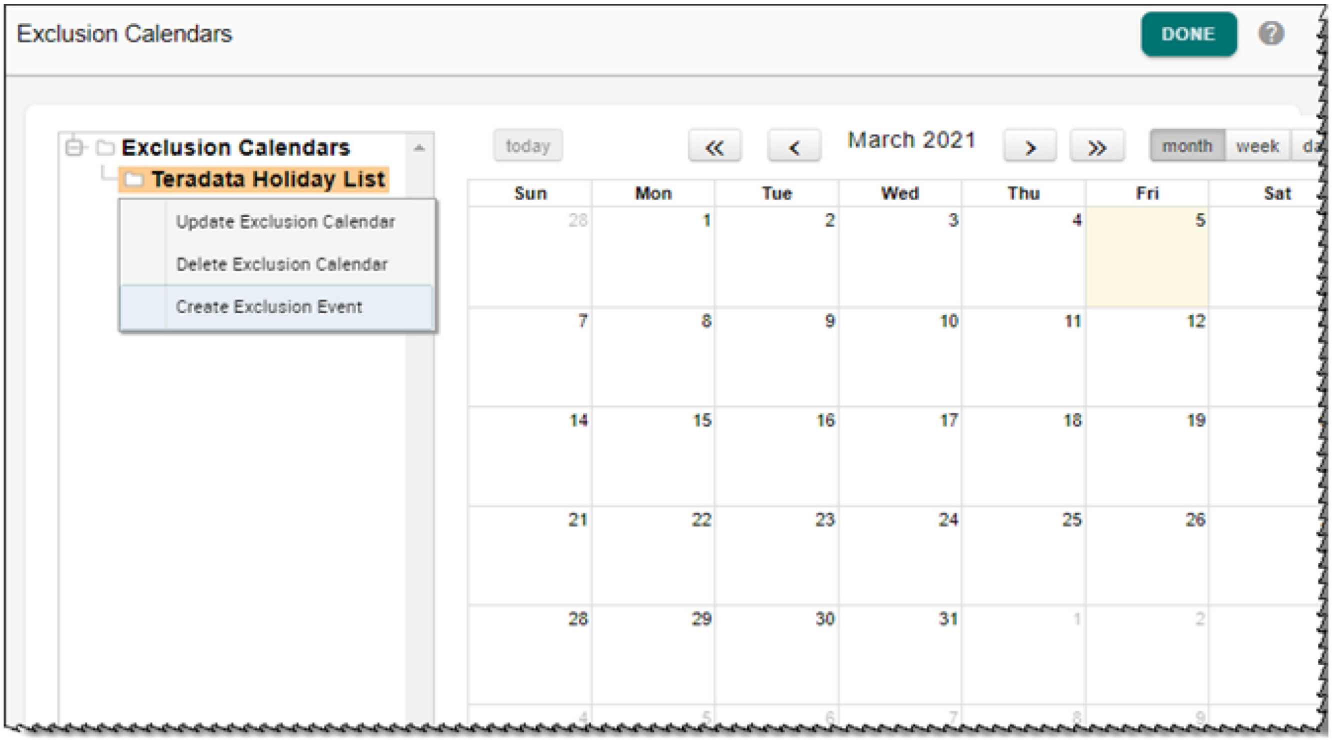
Message: “Exclusion Calendar added successfully” is displayed.

Create Exclusion Event

To create exclusion event:

1 On the **Exclusion Calendars** UI, right click on the created exclusion calendar folder and select **Create Exclusion Event** as in Figure 776.

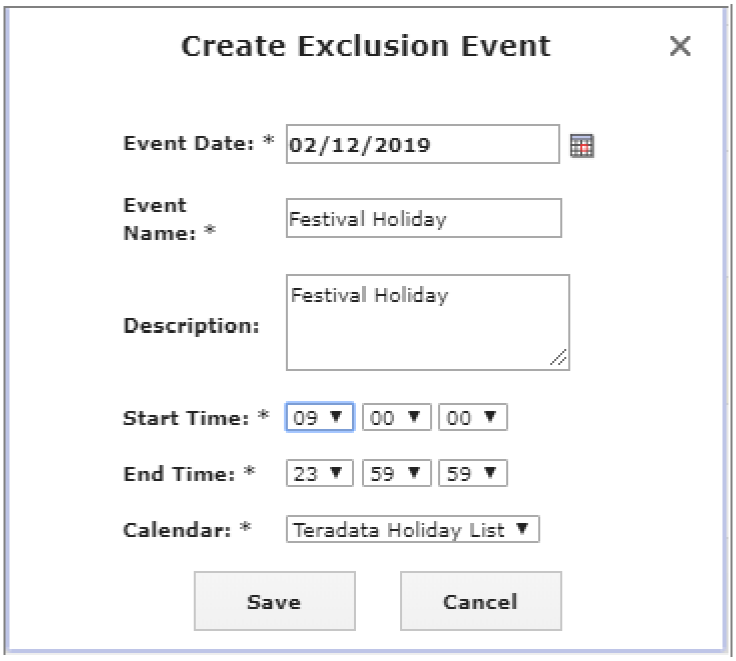
Figure 776: Exclusion Calendars—Create Exclusion Event



The **Create Exclusion Event** popup (Figure 777) is displayed.

2 On the **Create Exclusion Event** popup (Figure 777),

Figure 777: Create Exclusion Event


Create Exclusion Event

Event Date: * 02/12/2019

Event Name: * Festival Holiday

Description: Festival Holiday

Start Time: * 09 00 00

End Time: * 23 59 59

Calendar: * Teradata Holiday List

- select the event date using the date picker.
- enter the event name in the **Event Name** field.
- enter the event description in the **Description** field.
- select the event start and end time.
- select the calendar to which the event must be tagged from **Calendar** dropdown.
- Click **Save**.

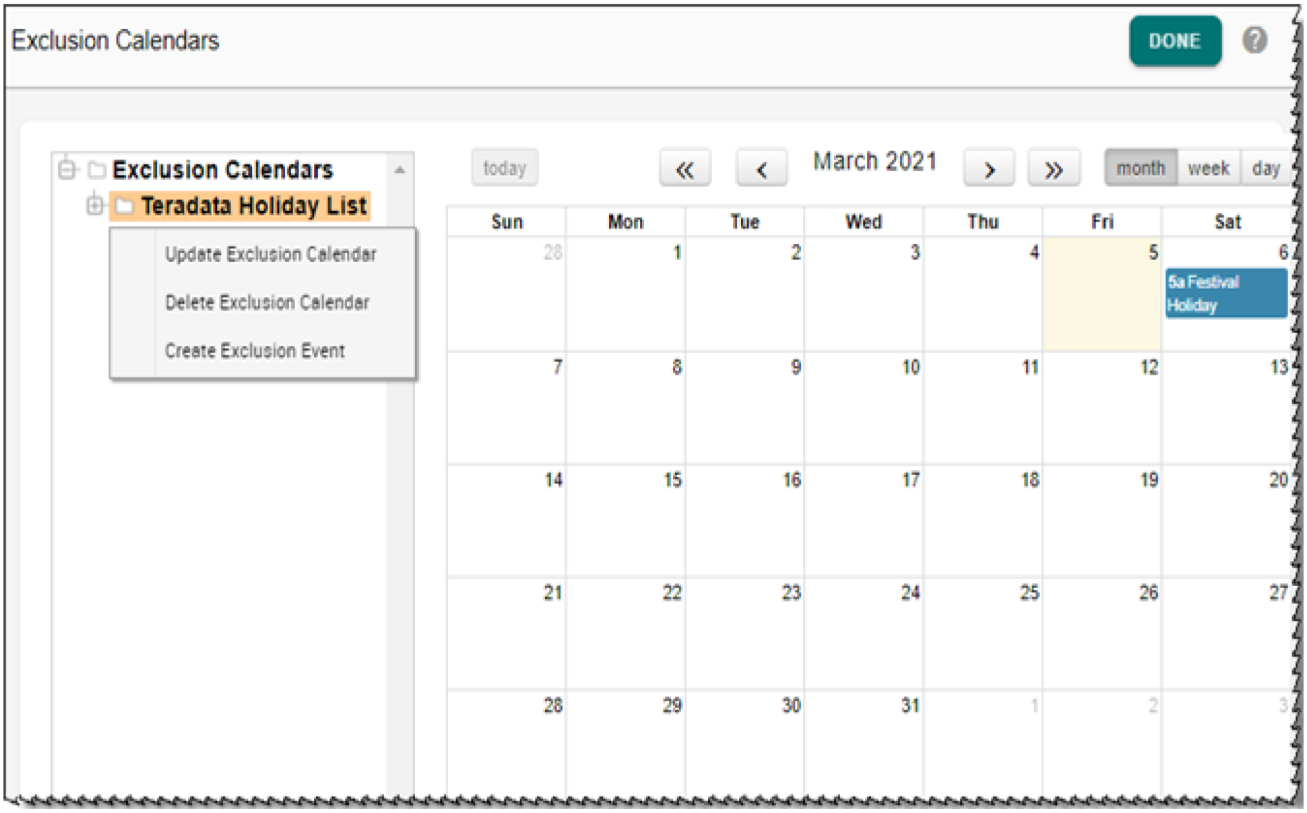
Message: “Exclusion Event added successfully” is displayed.

Update Exclusion Calendar

To update exclusion calendar details:

1 On the **Exclusion Calendars** UI, right click on the required **Exclusion Calendar** folder and select **Update Exclusion Calendar** as in Figure 778.

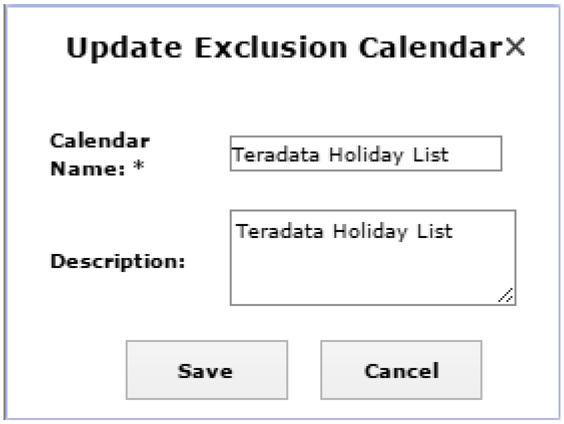
Figure 778: Exclusion Calendars—Update Exclusion Calendar



The **Update Exclusion Calendar** popup (Figure 779) is displayed.

2 On the **Update Exclusion Calendar** popup (Figure 779), you can modify the calendar name and description and click **Save**.

Figure 779: Update Exclusion Calendar



Update Exclusion Calendar

Calendar Name: * Teradata Holiday List

Description: Teradata Holiday List

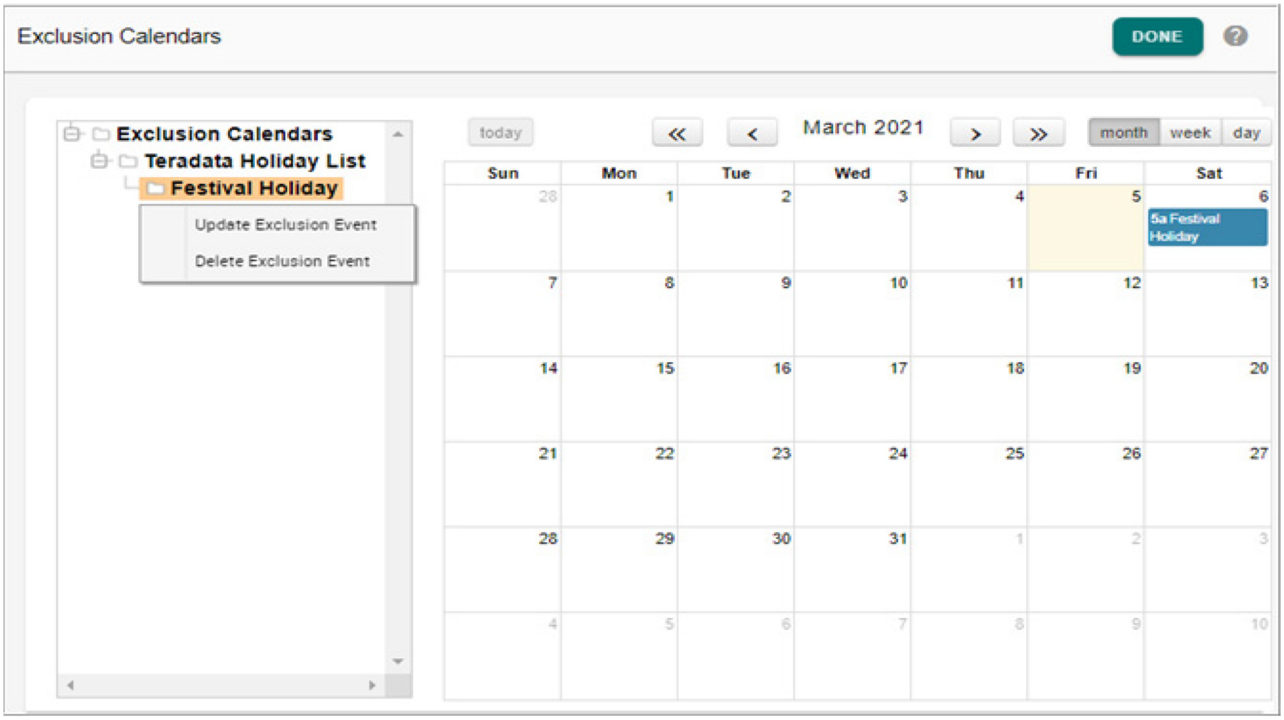
Message: “Exclusion Calendar updated successfully” is displayed.

Update Exclusion Event

To update exclusion event:

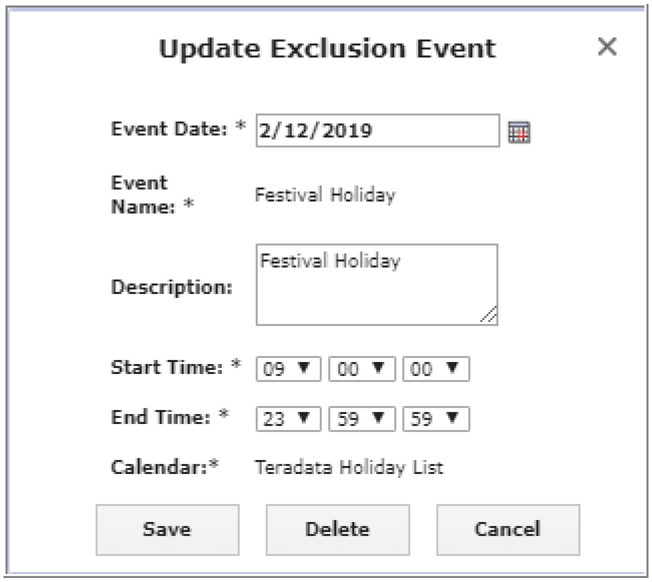
1 On the **Exclusion Calendars** UI, right click on the required exclusion event folder and select **Update Exclusion Event** as in Figure 780 or directly click on the Event in the Calendar view.

Figure 780: Exclusion Calendars—Update Exclusion event



The **Update Exclusion Event** popup (Figure 781) is displayed.

Figure 781: Update Exclusion Event



Event Date: * 2/12/2019

Event Name: * Festival Holiday

Description: Festival Holiday

Start Time: * 09 ▼ 00 ▼ 00 ▼

End Time: * 23 ▼ 59 ▼ 59 ▼

Calendar:* Teradata Holiday List

2 On the **Update Exclusion Event** popup, you can modify the event date, description, start and end time of event and click **Save.**

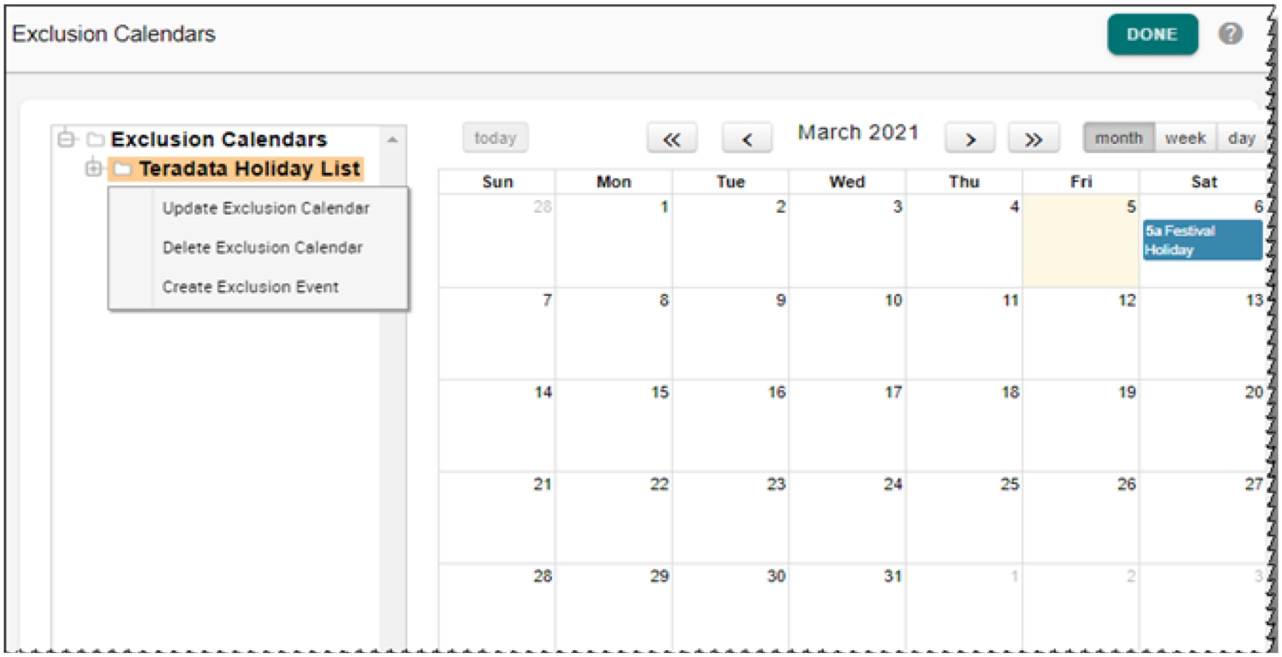
Message: “Exclusion Event updated successfully” is displayed.

Delete Exclusion Calendar

To delete exclusion calendar details:

1 On the **Exclusion Calendars** UI, right click on the required Exclusion Calendars folder and select **Delete Exclusion Calendar** as in Figure 782.

Figure 782: Exclusion Calendars—Delete Exclusion Calendar



March 2021

Sun	Mon	Tue	Wed	Thu	Fri	Sat
28	1	2	3	4	5	6 5a Festival Holiday
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3

The **Confirmation Webpage** dialog is displayed.

2 On the **Confirmation Webpage** dialog, click **Yes**.

Message: “Exclusion Calendar deleted successfully” is displayed.

Note: You cannot delete an exclusion calendar, if the calendar is associated with events. You must delete the events first and then delete the calendar.

Delete Exclusion Event

To delete exclusion event details:

1 On the **Exclusion Calendars** UI, right click on the required Exclusion Event folder and select **Delete Exclusion Event** or directly click on the event on the Calendar view.

If you delete an exclusion event directly by clicking on the event, the **Update Exclusion Event** popup is displayed. Click **Delete** on the **Update Exclusion Event** popup.

The **Confirmation Webpage** dialog is displayed.

2 On the **Confirmation Webpage** dialog, click **Yes**.

Message: “Exclusion Event deleted successfully” is displayed.

Manage Dependencies

A scheduler can be defined as dependent on a particular job. The dependent job can be of type:

- External Job—External jobs can be all the jobs that are defined through manage dependencies UI.
- Internal MDM Job—Internal jobs can be all the MDM workflows that are not part of system workflow.

Scheduler looks for the status of the dependent job, to execute the scheduled job as defined. Once the status of the dependent job is marked as COMPLETE by external or internal jobs, scheduler executes the scheduled workflow.

To mark the status of dependent job as COMPLETE, there are pre-defined APIs and message format based on the type of job.

External Job of Type Direct API

All external jobs of MDM can update the status of the dependent job by using the following API:

```
<REQUEST Name="setStatusCompleted" ServiceName="PLATFORM">

      <JobId Value="<Dependent_Job_Id>"/>
</REQUEST>
```

Dependent_Job_Id: Job Id provided while defining a dependent job. This is the id that is selected as dependent job while creating a schedule.

External Job of Type JMS

To update the status of external dependent job of type JMS, you need to send a JMS message in the format specified below. You need to provide the JobId value for the dependent job. The Job Id is the Job Identifier provided while defining a dependent job. This is the Id that is selected as dependent job while creating a schedule.

```
<STATUS>
   <Jms_Event_Id Value="Scheduler_Status"></Jms_Event_Id>
   <JobId Value="<Dependent_Job_Id>"></JobId>
</STATUS>
```

External Job of Type Web Service

To update the status of external dependent job of type Web Service, perform the following steps:

- Update the Job Id for the dependent job in the below code sample.

  ```
  <root>
     <JobId Value="<Dependent_Job_Id>"></JobId>
  </root>
  ```

- Post the URL to update the Job Id status as completed in the table as in below format and send the request.

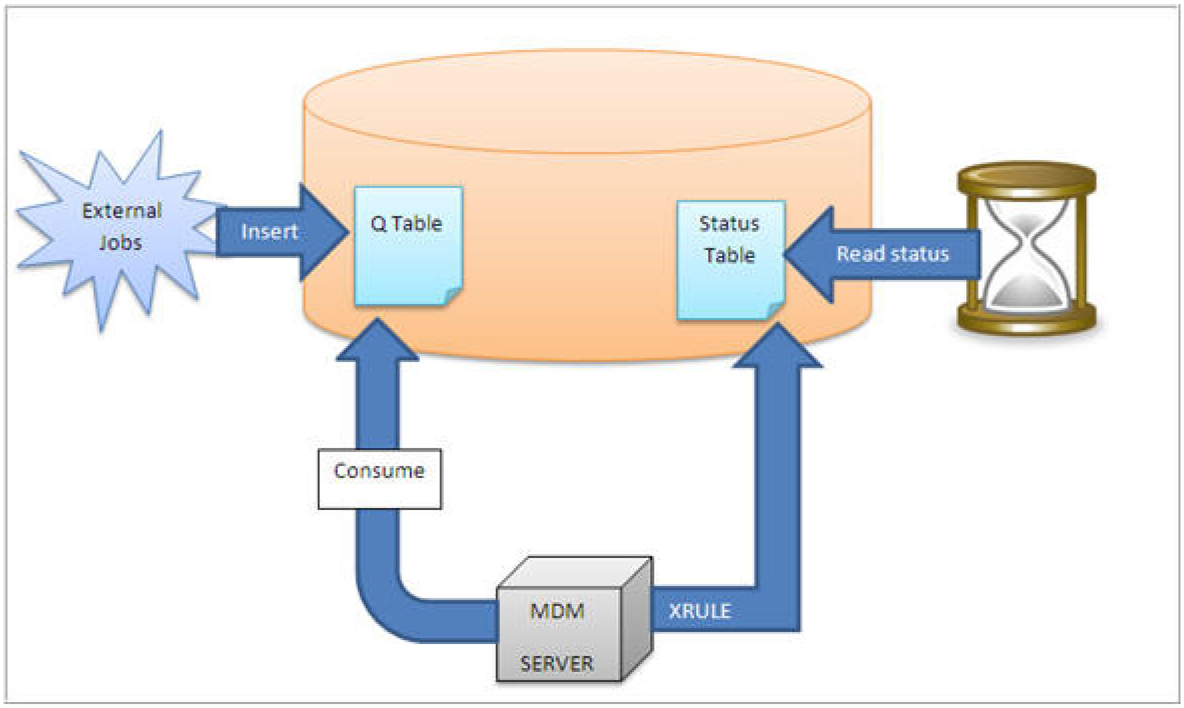
  ```
  <MDM URL>/xcorexml/services/PLATFORM/rules/setStatusCompleted
  ```

- Response status will be in the below format

  ```
  <RESPONSE STATUS=”Success”>
     <RESPONSE STATUS=”Success”>
  </RESPONSE>
  ```

External Job of Type QUEUE Table

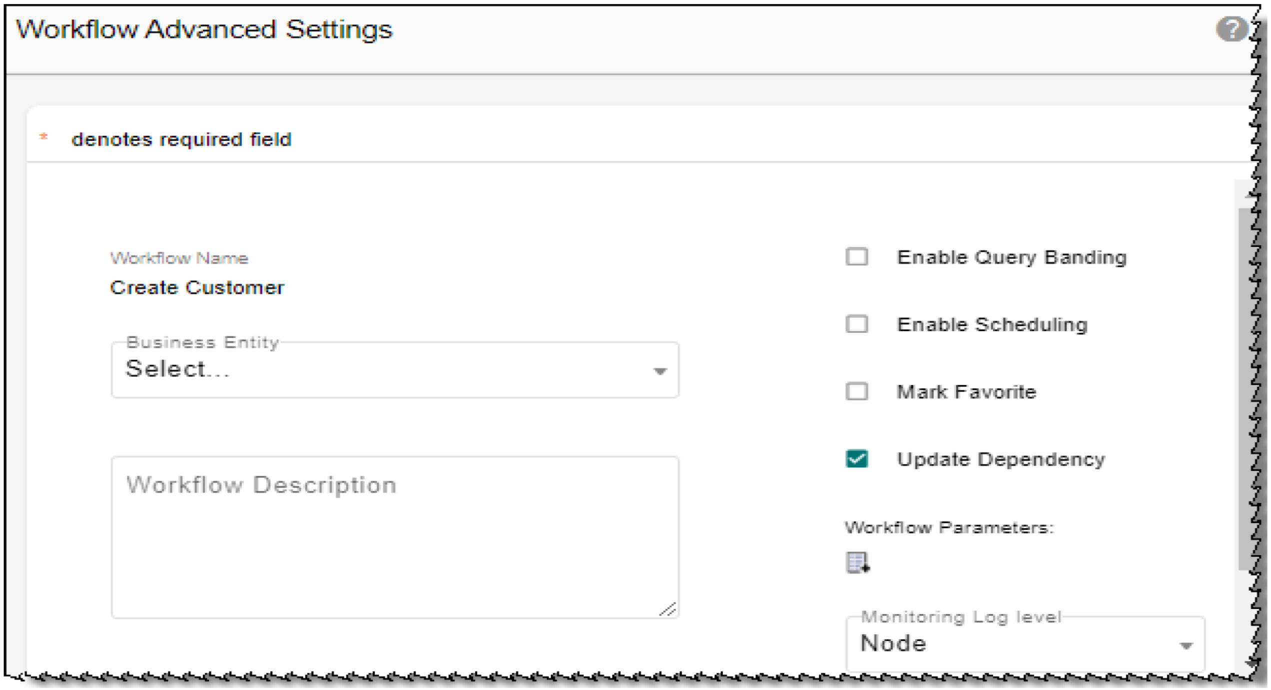
To update the status for external dependent job of type Queue table, the status table with name TM_TIMER_STATUS_Q needs to be populated with the information of JOB_ID and STATUS. Below is the schema definition of TM_TIMER_STATUS_Q table. The below diagram illustrates the Q table integration.



Internal Jobs of MDM

Internal dependent jobs category defines all the workflows (Runtime and Studio Built) of MDM except the workflows marked as system workflows.

1. **MDM runtime workflows**: for runtime workflows, you can design the particular workflow to mark its completion. At the end of workflow execution, the status of workflow will be marked as complete, if Update Dependency is selected as below during workflow advance settings.



Workflow Advanced Settings

* denotes required field

Workflow Name
Create Customer

Business Entity
Select...

Workflow Description

☐ Enable Query Banding

☐ Enable Scheduling

☐ Mark Favorite

☑ Update Dependency

Workflow Parameters:

Monitoring Log level
Node

2. **All other workflows of MDM**: All internal jobs of MDM can update the status of the dependent job by using the following API:

```
<REQUEST Name="setStatusCompleted" ServiceName="PLATFORM">
      <JobId Value="<Dependent_Job_Id>"/>
</REQUEST>
```

Dependent_Job_Id: Job Identifier provided while defining a dependent job. This is the id that is selected as dependent job while creating a schedule.

You can create your own workflow using Manage Workflow to execute this API.

Dependent Jobs

You can navigate to **Dependencies** UI either from **Calendar View** UI or the **Manage Scheduler** UI by selecting **Dependencies** option from the **Actions** dropdown.

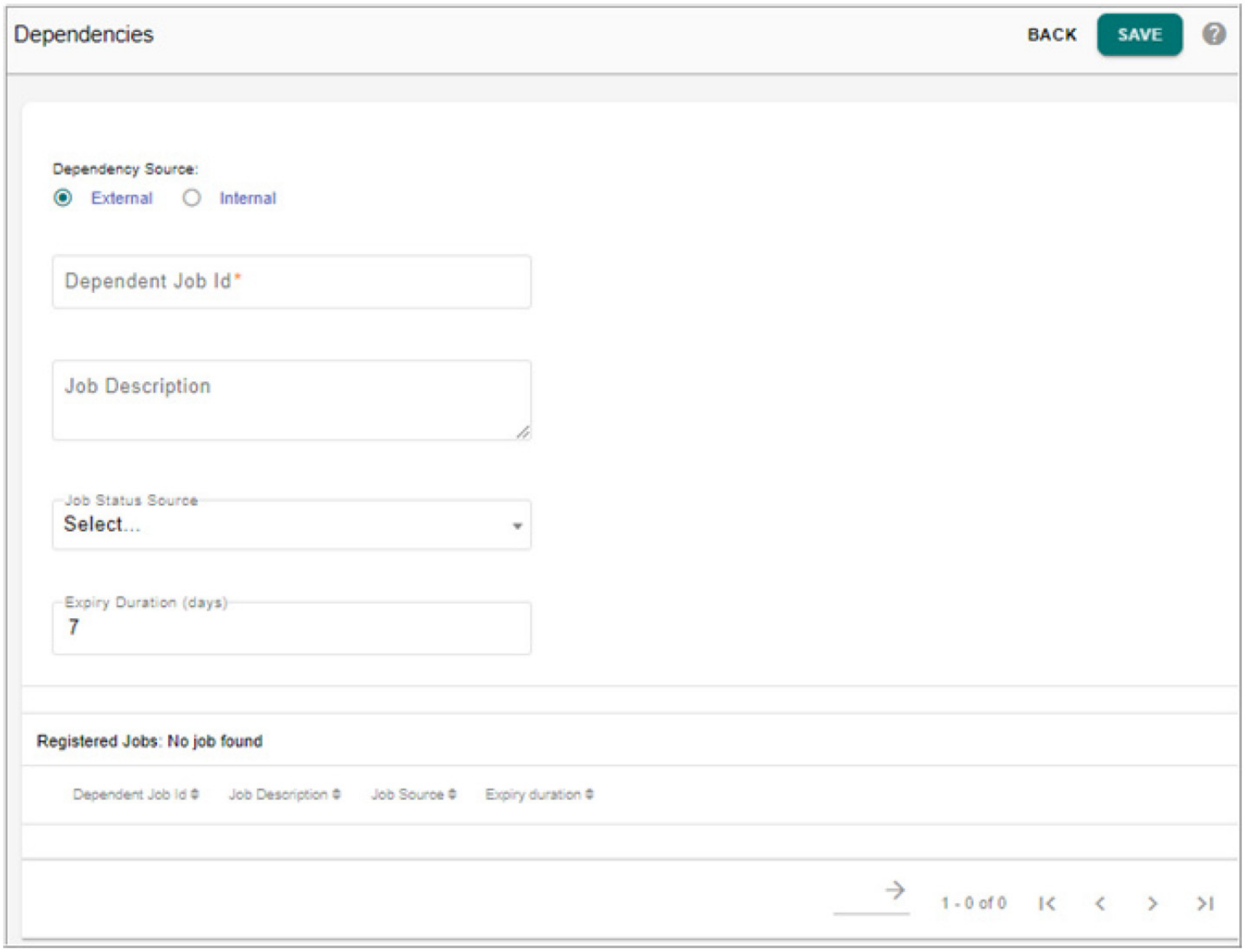
On the Manage Dependencies UI, you can create new external dependent jobs and modify the expiry duration for internal jobs.

Create External Dependent Job

To create external dependent job:

1 On the **Dependencies** UI,

Figure 783: Manage Dependencies



Dependency Source: ● External ○ Internal

Job Status Source: Select...

Expiry Duration (days): 7

Registered Jobs: No job found

- select the **Dependency Source** as **External** by selecting the corresponding radio button.
- enter the name of the job Id to be created in **Dependent Job Id** field.

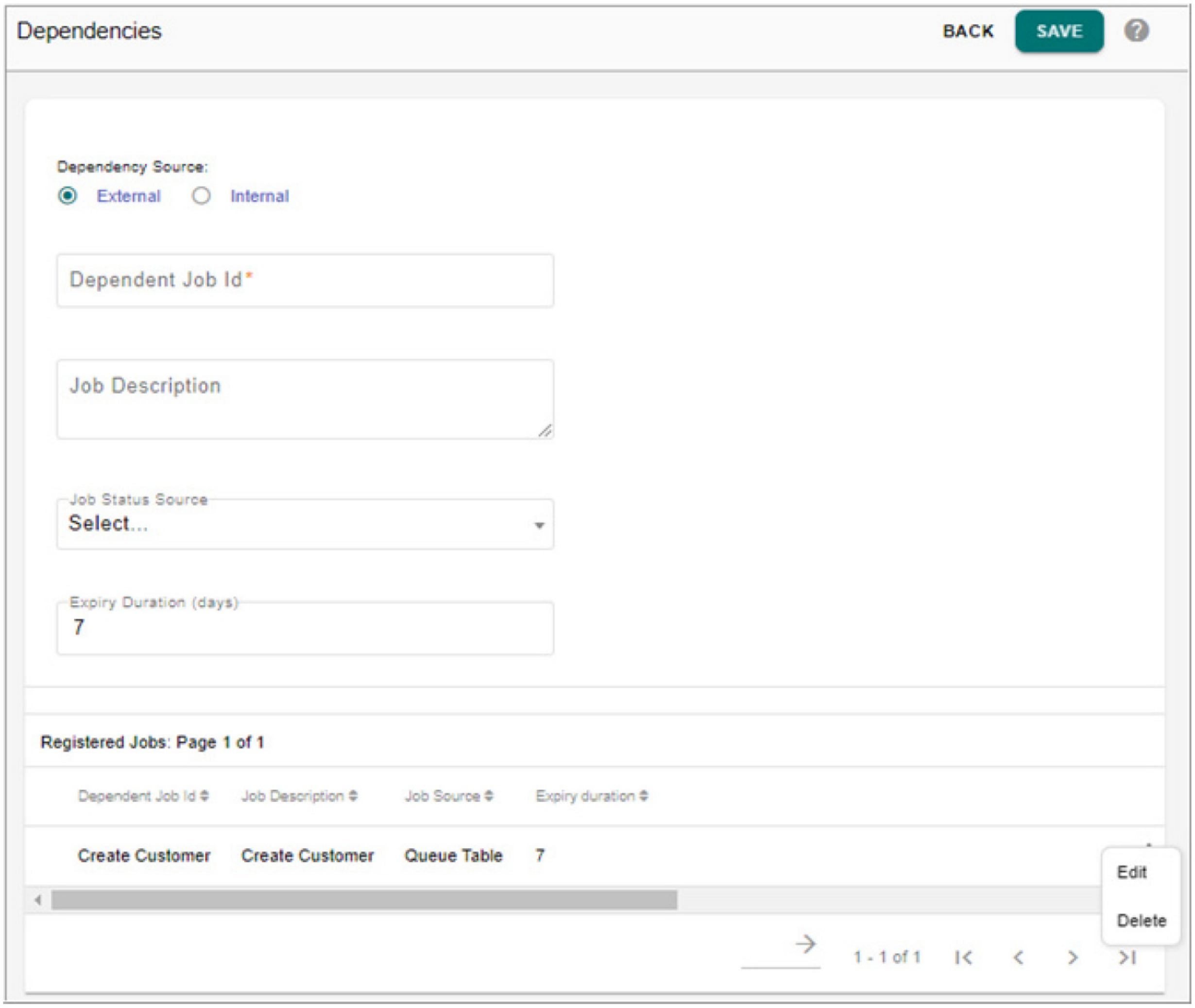
  This job Id will be displayed on the **Scheduler Details** UI in the **Dependent Job Id** dropdown when dependency source is selected as “External”.
- enter the description of the job created in **Job Description** field.
- select the source for the job from **Job Status Source** dropdown. Source can be either Direct API, JMS Message, Queue Table and Web Service.
- enter the job expiry duration in number of days in **Expiry Duration (days)** field. Default value is seven days.

  If a workflow scheduler is dependent on the job created, the scheduler will consider the dependent job status for the duration mentioned in Expiry Duration field.

2 Click **Save**.

Message: “Job registered successfully” is displayed. The created job will be displayed on the **Registered Jobs** pane as in Figure 784.

Figure 784: Dependencies



Dependency Source:
● External ○ Internal

Dependent Job Id*

Job Description

Job Status Source: Select...

Expiry Duration (days): 7

Registered Jobs: Page 1 of 1

Dependent Job Id	Job Description	Job Source	Expiry duration
Create Customer	Create Customer	Queue Table	7

3 On the **Registered Jobs** pane, you can modify the Job details or delete the Job details.

Update Expiry Duration of Internal Jobs

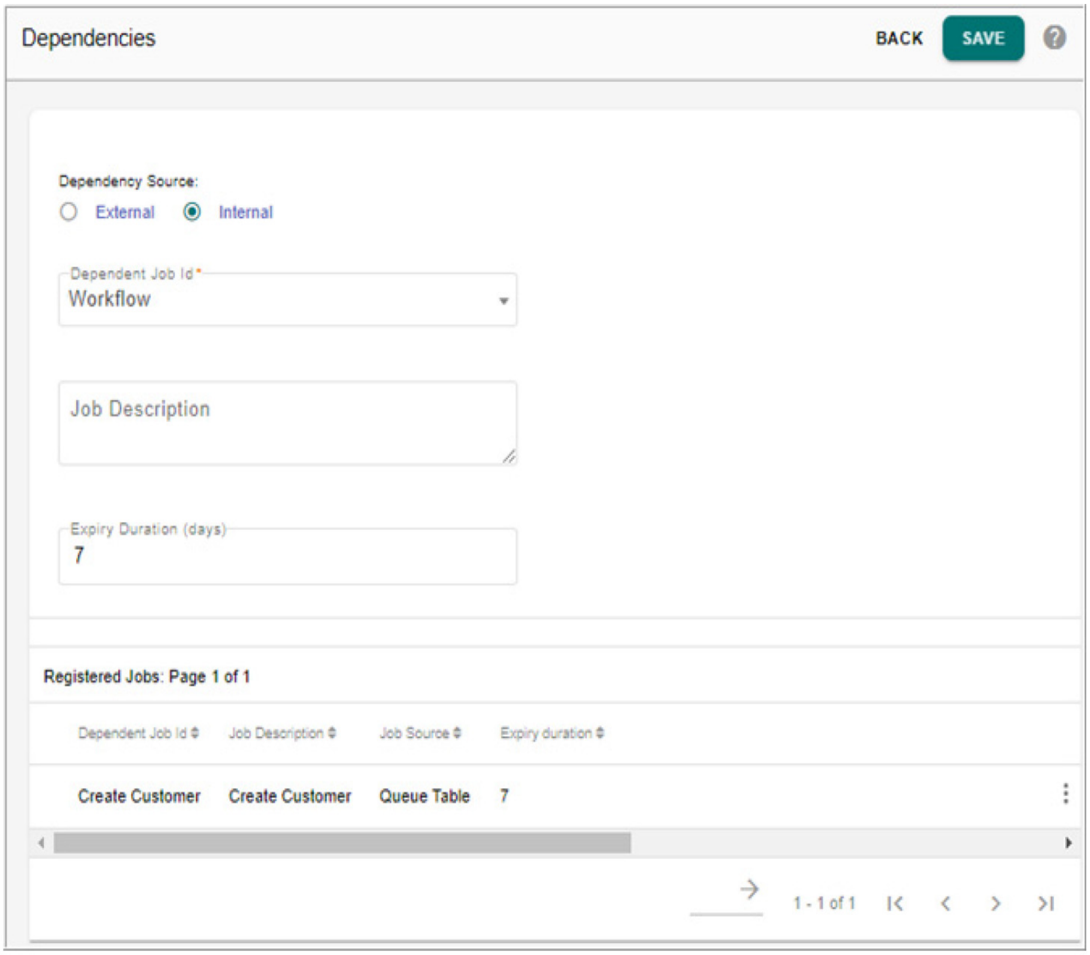
For Runtime workflows, there is no need to create a dependency job. Workflow name is taken as the job id for all internal jobs (includes runtime workflow). The default expiry duration for runtime workflows is taken as seven days.

To update the expiry duration of internal jobs:

1 On the **Dependencies** UI (Figure 784),

- select the **Dependency Source** as **Internal** by selecting the corresponding radio button.
- select the internal job Id from the **Dependent Job Id** dropdown.

Figure 785: Manage Dependencies



Dependency Source:
○ External ● Internal

Dependent Job Id*
Workflow

Job Description

Expiry Duration (days)
7

Registered Jobs: Page 1 of 1

Dependent Job Id	Job Description	Job Source	Expiry duration
Create Customer	Create Customer	Queue Table	7

- enter the description of the job in **Job Description** field.
- by default, the job expiry duration is displayed as 7 in **Expiry Duration (days)** field. You can modify the default duration.
- Click **Save**.

Message: “Job registered successfully” is displayed. The updated internal job will be displayed on the **Registered Jobs** pane.

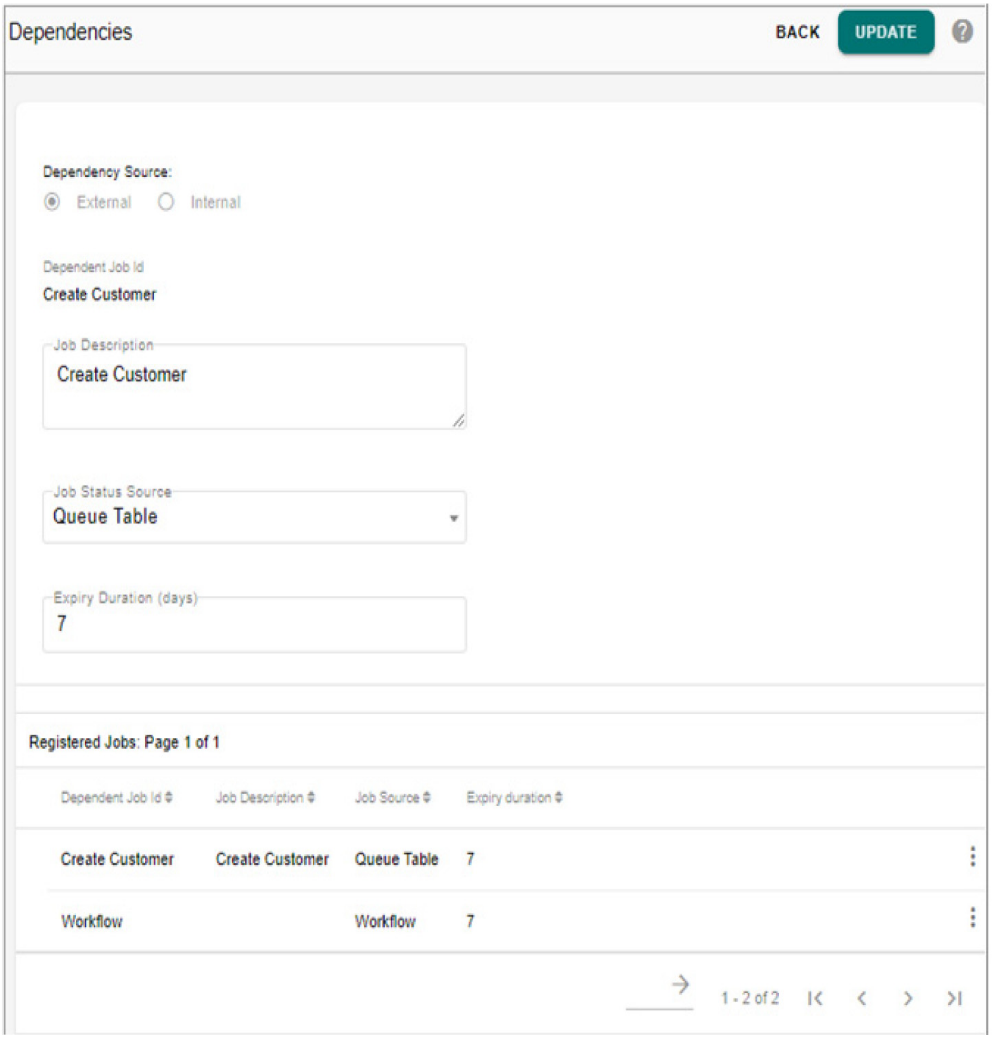
Edit Job Details

To edit Job details:

- On the **Registered Jobs** pane (Figure 784), click on the Menu icon corresponding to the required Job and click **Edit**.

  The Dependencies UI refreshes to display the Job details as in Figure 786.

Figure 786: Dependencies



Dependency Source:
● External ○ Internal

Dependent Job Id
Create Customer

Job Description
Create Customer

Job Status Source
Queue Table

Expiry Duration (days)
7

Registered Jobs: Page 1 of 1

Dependent Job Id	Job Description	Job Source	Expiry duration
Create Customer	Create Customer	Queue Table	7
Workflow		Workflow	7

- On the **Dependencies** UI (Figure 786), you can modify the job description, job status (for external jobs) and expiry duration and click **Update**.

  Message: “Job updated successfully” is displayed.

Delete Job Details

To delete Job details:

- On the **Registered Jobs** pane (Figure 784), click the Menu icon corresponding to the required Job and click **Delete**.

  The confirmation webpage dialog is displayed.
- On the confirmation webpage, click **Yes**.

  Message: “Job deleted successfully” is displayed.

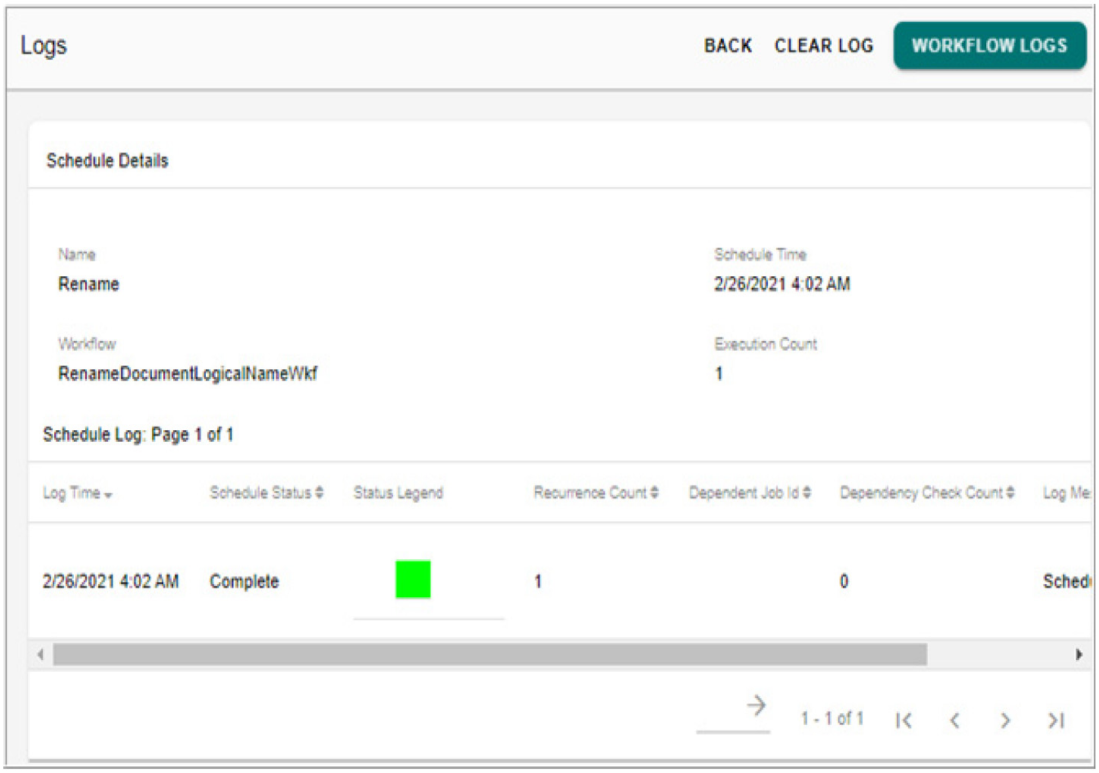
View Scheduler Log Details

View log displays all the schedule history of a selected schedule.

1 On the **Manage Scheduler** UI, click the Menu icon corresponding to the required schedule and click **Log**.

The **Logs** UI (Figure 787) is displayed.This displays all the schedule histories of the selected schedule.

Figure 787: View Logs



Name
Rename

Schedule Time
2/26/2021 4:02 AM

Workflow
RenameDocumentLogicalNameWkf

Execution Count
1

Schedule Log: Page 1 of 1

Log Time	Schedule Status	Status Legend	Recurrence Count	Dependent Job Id	Dependency Check Count	Log Me
2/26/2021 4:02 AM	Complete	🟩	1		0	Sched

On the View Logs UI, click **Clear Log** to delete all scheduler logs and click **Workflow Logs** to navigate to Monitor Workflow UI. For details on monitor workflow UI, see Section : “Workflow Monitoring.” in Workflow Management chapter.

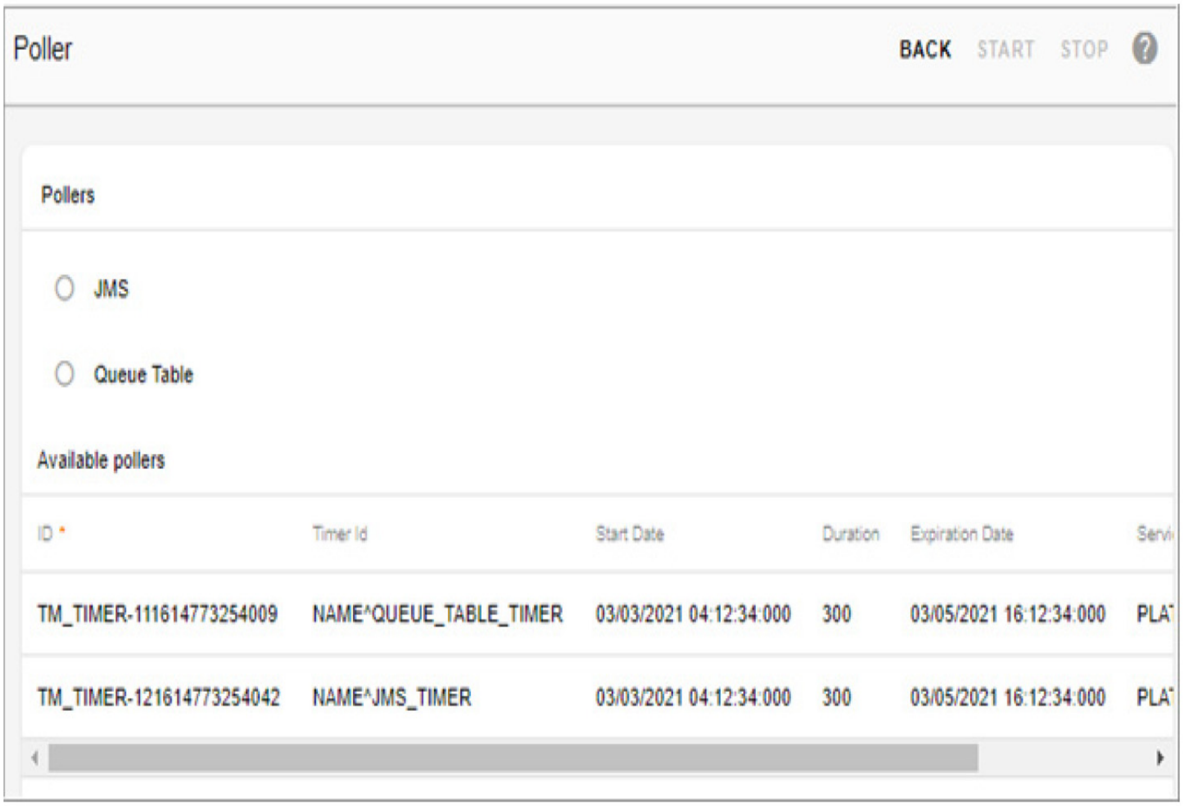
Manage Pollers

MDM dependent job scheduler poller keeps polling: JMS messages sent to MDM server and Queue tables entries received from external applications, to check the status of dependent jobs.

Manage Poller feature is used to start and stop polling JMS messages and Queue table entries.

You can navigate to **Poller** UI from **Manage Scheduler** UI or from selecting **Calender View** UI by selecting **Poller** option from Actions

Figure 788: Poller



Poller

Pollers

○ JMS

○ Queue Table

Available pollers

ID *	Timer Id	Start Date	Duration	Expiration Date	Servi
TM_TIMER-111614773254009	NAME^QUEUE_TABLE_TIMER	03/03/2021 04:12:34:000	300	03/05/2021 16:12:34:000	PLA
TM_TIMER-121614773254042	NAME^JMS_TIMER	03/03/2021 04:12:34:000	300	03/05/2021 16:12:34:000	PLA

On the **Poller** UI (Figure 788), you can perform:

- you can select either JMS or Queue Table option for polling by selecting the appropriate radio button and click **Start**.
- you can stop polling using the **Stop** button

  The **Available Pollers** pane displays all the details of polling like Id and timer Ids of the services (JMS or Queue), polling start date and time, polling end date and time, polling duration specified in seconds, service name and callback count.

Scheduler Property Files

The details of all scheduler properties will be available at: *<MDM_Install_Directory>/cfg/quartz.properties*. In the quartz.properties file, you must not change the below properties as it is being used by MDM and you can modify the other properties as per the requirement and if required can add other properties also.

- `org.quartz.jobStore.tablePrefix = SYS_QRTZ_`
- `org.quartz.jobStore.dataSource = quartzDataSource`

- `org.quartz.jobStore.driverDelegateClass = com.teradata.xservice.scheduler.TeradataDelegateClass`
- `org.quartz.dataSource.quartzDataSource.connectionProvider.class = com.teradata.xservice.scheduler.SchedulerDbConnection`

For detailed description on quartz properties, refer to http://quartz-scheduler.org/documentation/quartz-2.x/configuration/

CHAPTER 23 Profile Migration

What's In This Chapter

This chapter provides detailed information on the profile migration features.

Topics:

Introduction

MDM's Profile Migration feature helps to configure and migrate profiles of different modules from one environment to other environment. For example, profile migration can be used to migrate configured profiles from development environment to testing environment.

You can select and extract all the profiles to be migrated in the form of XML files bundled in a .zip file. The .zip containing the XML files can be imported and deployed to any target MDM installation using Profile Migration Utility. During Import, the Utility will automatically read the Target configuration and perform all the required transformations for imported profiles and integrate the same to Target system.

The Profile Migration feature also helps to carry out MDM implementations in an incremental and modularized fashion and greatly optimizes the development efforts.

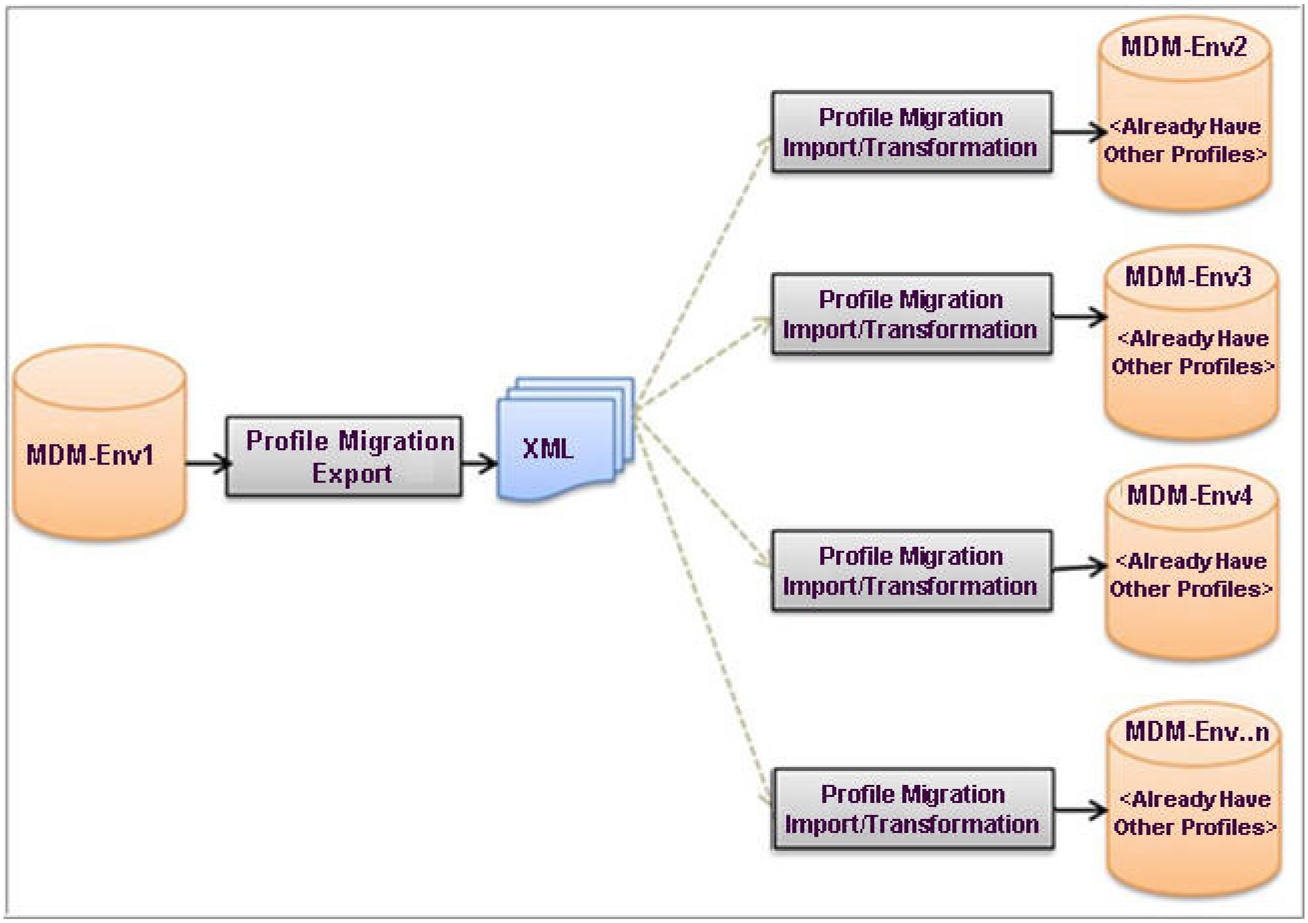
The Profile Migration involves three main modules:

- Configure profile
- Extract profile
- Migrate extracted profiles to target environment.

Before working on profile migration, please refer to the points listed in Section : "Points to Remember".

The Figure 789 displays the profile migration flow diagram.

Figure 789: Profile Manage Flow Diagram


MDM-Env1
Profile Migration Export
XML
Profile Migration Import/Transformation
MDM-Env2
<Already Have Other Profiles>
Profile Migration Import/Transformation
MDM-Env3
<Already Have Other Profiles>
Profile Migration Import/Transformation
MDM-Env4
<Already Have Other Profiles>
Profile Migration Import/Transformation
MDM-Env..n
<Already Have Other Profiles>

Configure Profile

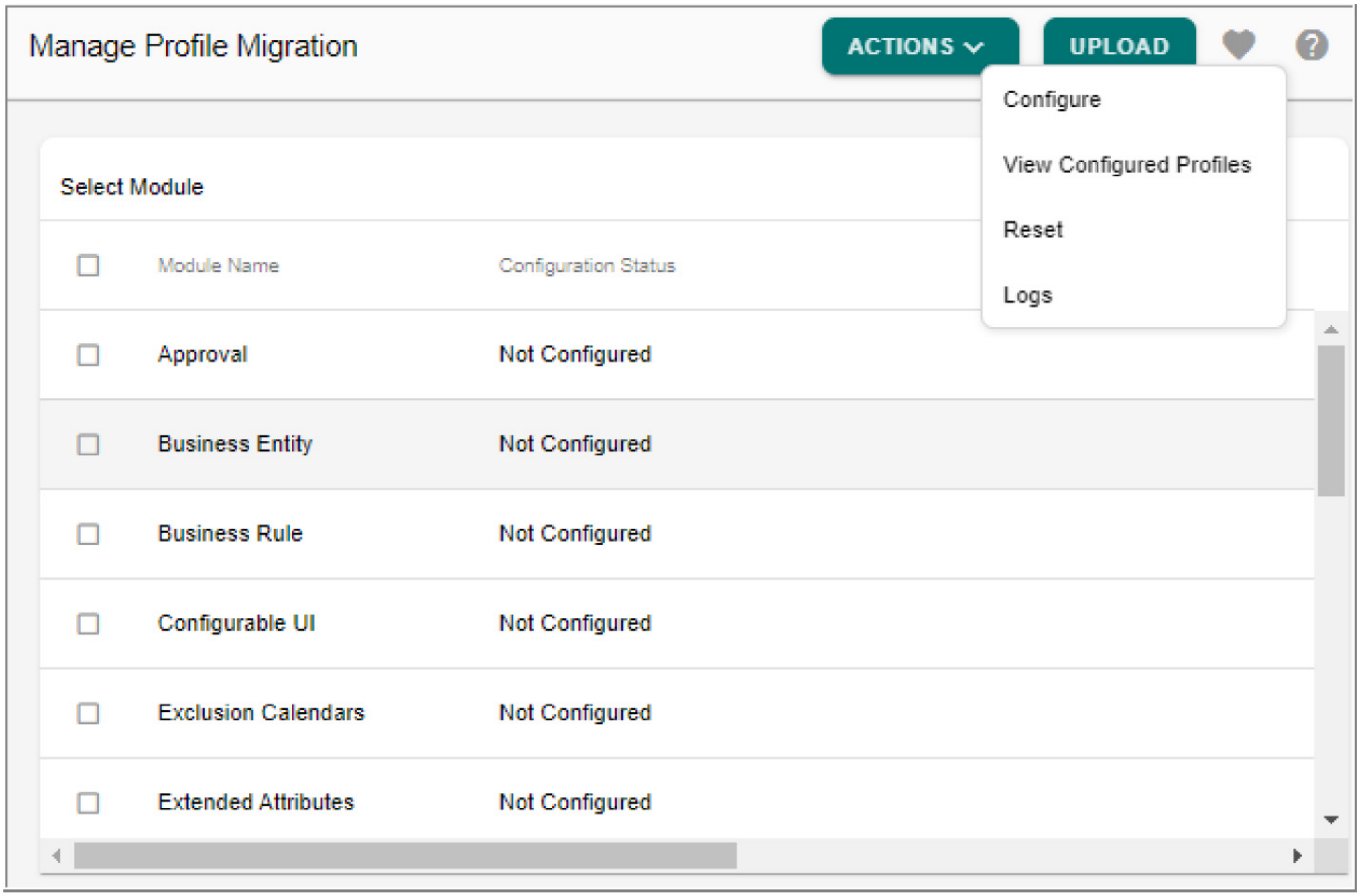
You need to configure the profiles of different modules to be extracted for migration. You can configure profiles of only one module at a time. The configured profiles can be extracted as zip file.

To configure profile:

1. On the left navigation pane, click **Administration** -> **Profile Migration**.

   The **Manage Profile Migration** page (Figure 790) is displayed. On the **Manage Profile Migration** page, the **Module Name** column displays all the modules that can be configured for profile migration and the **Configuration Status** column displays the status of the profile configuration (status can be either “Configured” or “Not Configured”).

Figure 790: Manage Profile Migration



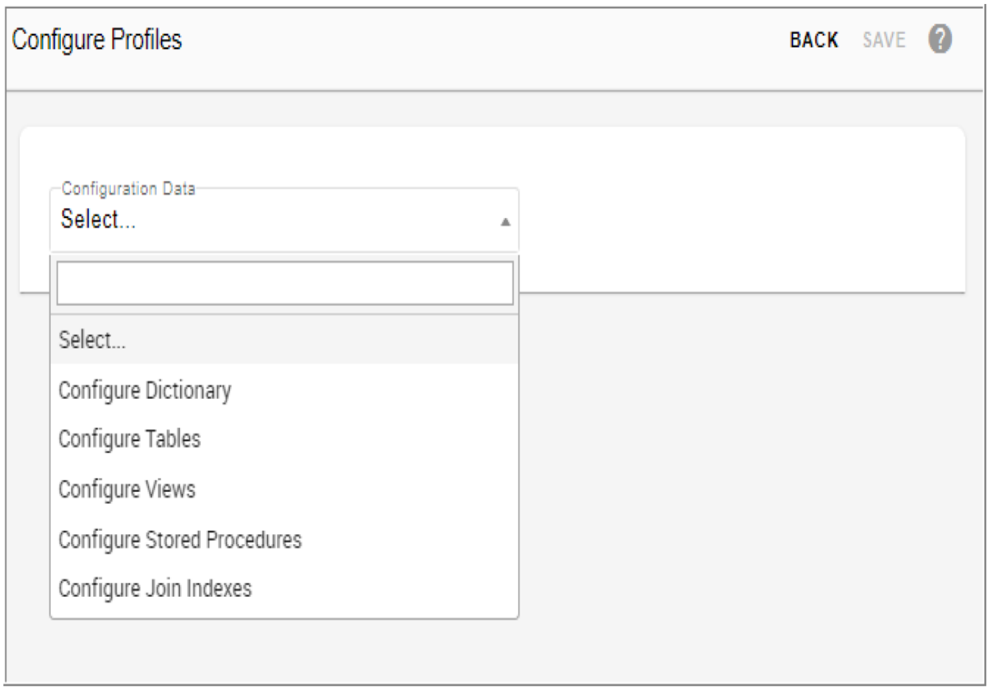
☐	Module Name	Configuration Status
☐	Approval	Not Configured
☐	Business Entity	Not Configured
☐	Business Rule	Not Configured
☐	Configurable UI	Not Configured
☐	Exclusion Calendars	Not Configured
☐	Extended Attributes	Not Configured

2 On the **Manage Profile Migration** page, select the module to be configured and click **Configure** from **Actions** as in Figure 790.

You can configure only one module at a time.

The **Configure Profile** page is displayed. The **Configure Profile** page displays all the available profiles of the selected module. In case of Model Builder, the Configure Profile page displays option to **Configure Dictionary, Configure tables, Configure Views, Configure Stored Procedure, and Configure Join Indexes** as in Figure 791. Select the required option and the configure profiles UI displays all the available profiles of the selected option.

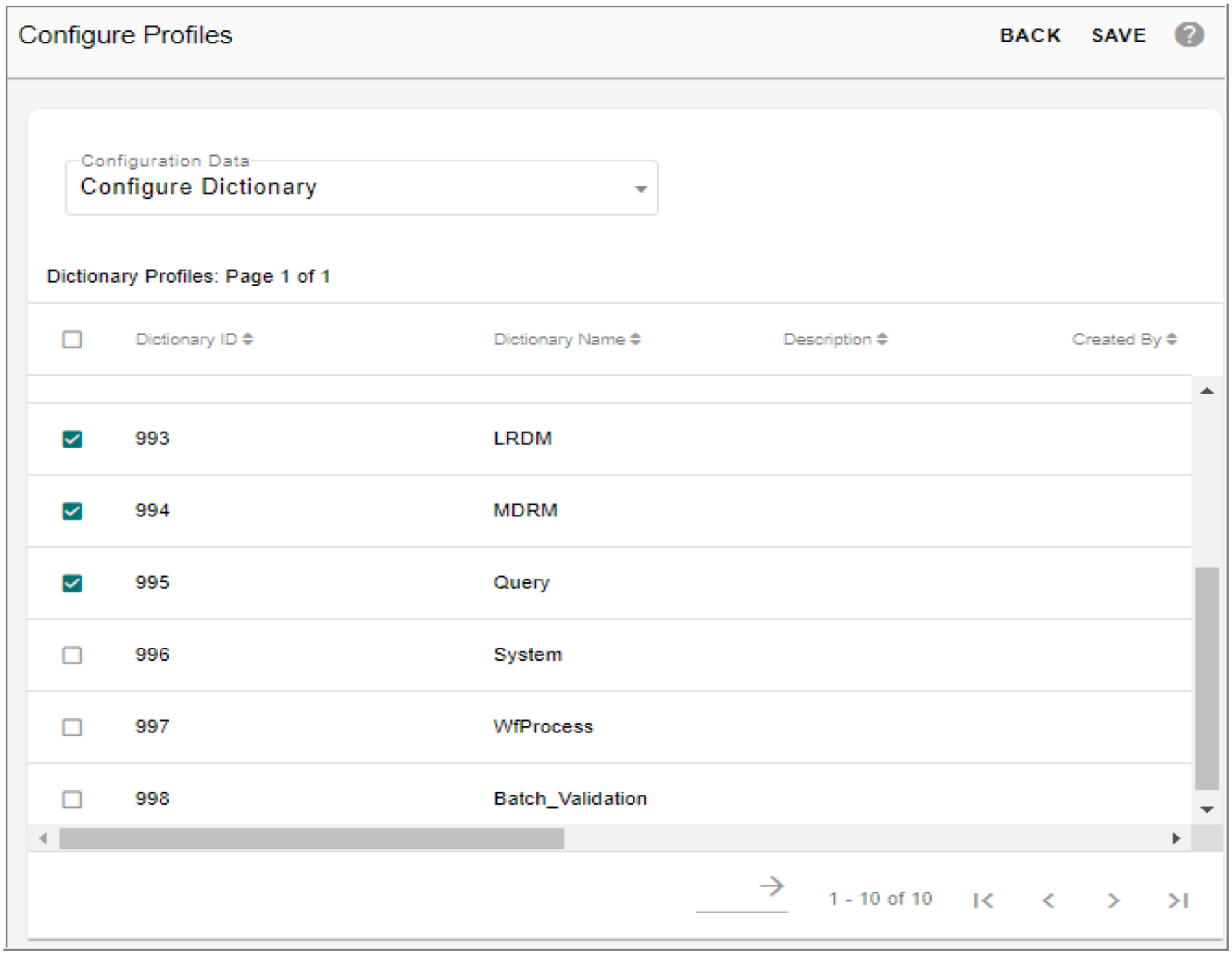
Figure 791: Configure Profiles



On the **Configure Profile** page, for the profiles that are already configured, the corresponding checkbox(es) will be displayed as selected.

3 On the **Configure Profile** page, select the required profile (s) or deselect the already configured profile (s) and click **Save** or select all the profiles and click **Save** as in Figure 792.

Figure 792: Configure Profiles



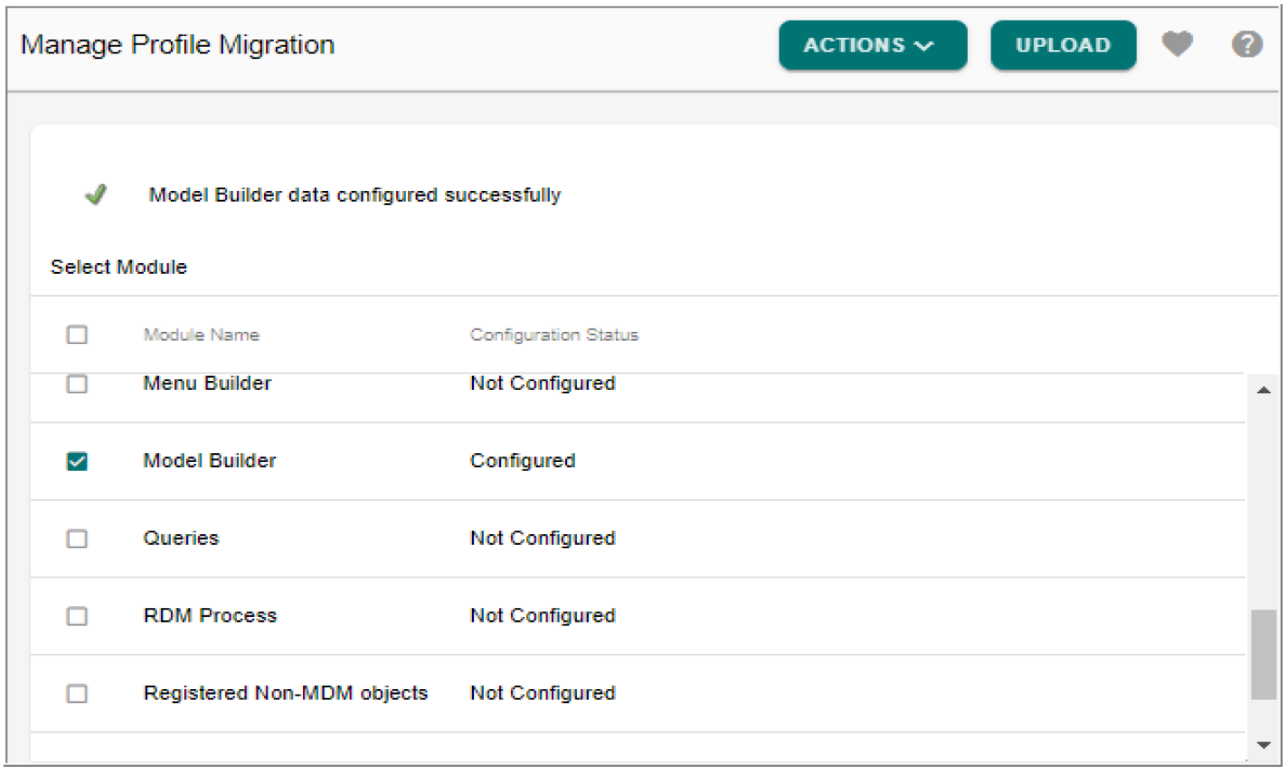
Configure Dictionary

Dictionary Profiles: Page 1 of 1

☐	Dictionary ID	Dictionary Name	Description	Created By
☑	993	LRDM		
☑	994	MDRM		
☑	995	Query		
☐	996	System		
☐	997	WfProcess		
☐	998	Batch_Validation		

Message: “<Module Name> data configured successfully” is displayed and the **Configuration Status** column on the **Manage Profiles Migration** page displays the status as configured as in Figure 793.

Figure 793: Manage Profile Migration



Manage Profile Migration

✓ Model Builder data configured successfully

Select Module

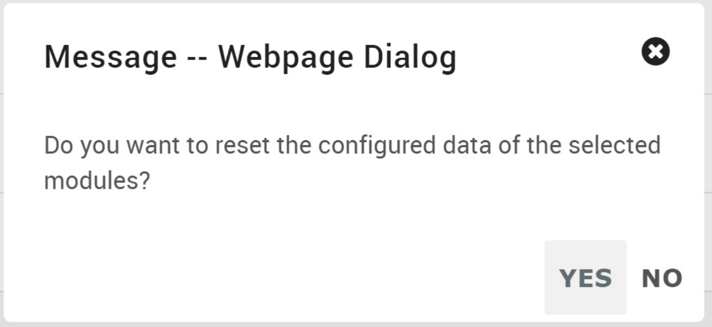
☐	Module Name	Configuration Status
☐	Menu Builder	Not Configured
☑	Model Builder	Configured
☐	Queries	Not Configured
☐	RDM Process	Not Configured
☐	Registered Non-MDM objects	Not Configured

Reset Profile

The configurations done on any module can be reset using the Reset option. To reset the configurations, perform the following steps:

1. On the **Manage profile migration** page, select the configured module and Select **Reset** option from **Actions** dropdown.
2. On the confirmation pop up, click Yes.

Figure 794: Reset Confirmation



Message -- Webpage Dialog

Do you want to reset the configured data of the selected modules?

Message: “Selected module have been reset successfully” displays and the configuration status column on the Manage profile migration changes to “Not Configured”

Extract Profile

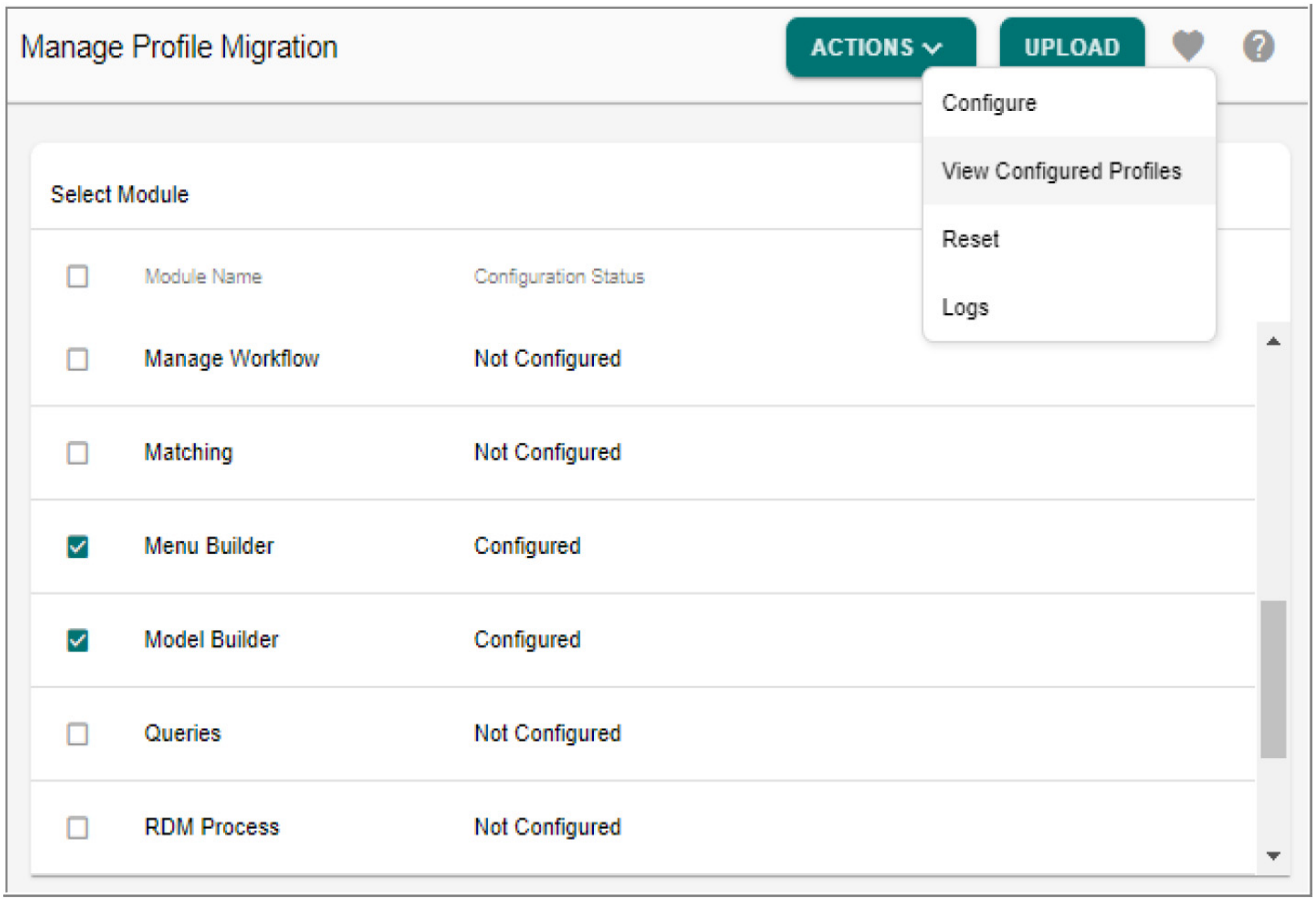
You can extract the profiles configured for different modules at a time in a zip file and save it in local hard disc. The extracted zip file can be migrated to any other MDM environment using upload profile data feature.

To extract profile data:

1 On the **Manage Profile Migration** page, select the configured module(s) to be extracted and click **View Configured Profiles** as in Figure 795.

You can extract more than one module at a time.

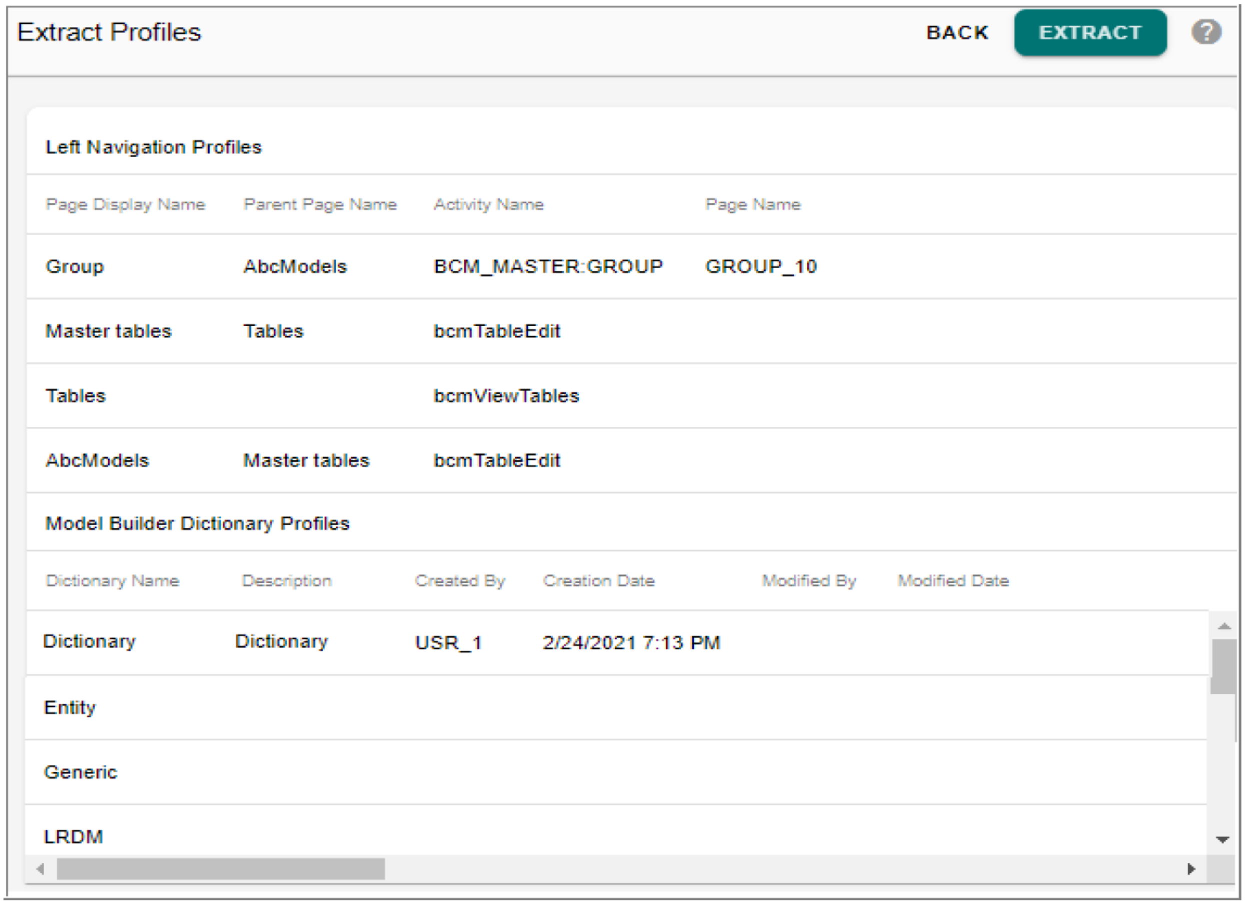
Figure 795: Manage Profile Migration



☐	Module Name	Configuration Status
☐	Manage Workflow	Not Configured
☐	Matching	Not Configured
☑	Menu Builder	Configured
☑	Model Builder	Configured
☐	Queries	Not Configured
☐	RDM Process	Not Configured

The **Extract Profile** page (Figure 796) is displayed. The **Extract Profile** page displays the summary of all the selected module(s) along with the profile details.

Figure 796: Extract Profiles



Left Navigation Profiles

Page Display Name	Parent Page Name	Activity Name	Page Name
Group	AbcModels	BCM_MASTER:GROUP	GROUP_10
Master tables	Tables	bcmTableEdit	
Tables		bcmViewTables	
AbcModels	Master tables	bcmTableEdit	

Model Builder Dictionary Profiles

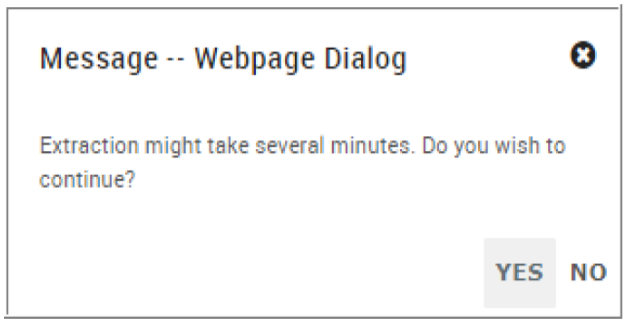
Dictionary Name	Description	Created By	Creation Date	Modified By	Modified Date
Dictionary	Dictionary	USR_1	2/24/2021 7:13 PM		
Entity					
Generic					
LRDM					

2 On the **Extract Profile** page (Figure 796), you can verify the profile details and click **Extract**.

If required, you can reconfigure the profiles by navigating to **Manage Profile Migration** UI using **Back** button.

The Extraction message popup is displayed as in Figure 797.

Figure 797: Extract Profiles



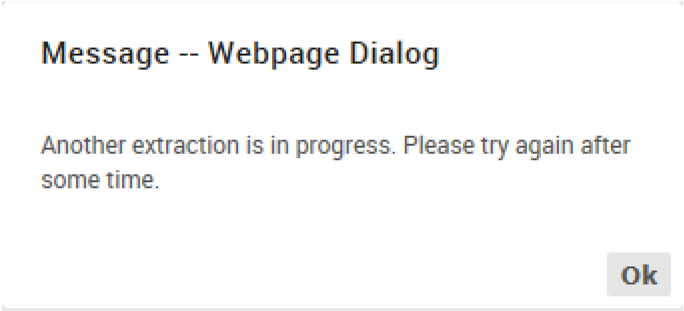
Message -- Webpage Dialog

Extraction might take several minutes. Do you wish to continue?

3 On Extraction message popup, click **Yes**.

The extracted profile data zip file will be downloaded to the default Download folder of the system. The extracted profile data zip file can later be uploaded to any other MDM environment.

- Profile migration migrates only the metadata of all the configured profiles, which includes the metadata of non-MDM database, non-MDM tables and cleansing sandbox tables. Profile migration does not migrate the cleansing sandbox mapping and external database or tables.
- In case of Hierarchy and LRDM modules, along with selected hierarchy profile(s) and Lookup Data Profile(s), the Extract Profile UI also migrates the related model builder template profile details.
- During profile extraction, if any user tries to extract another profile from the same instance, then the below pop-up message is displayed.



Message -- Webpage Dialog

Another extraction is in progress. Please try again after some time.

Upload Profile Data

The configured and extracted profile data zip file can be uploaded to any other MDM environment from Upload Profile Data UI. The upload profile data process initially reads the profile information and displays the profile details on the Upload Profile Data UI for the user to view the details of the profile being uploaded. The user can then click on Upload to deploy the profiles to the target database.

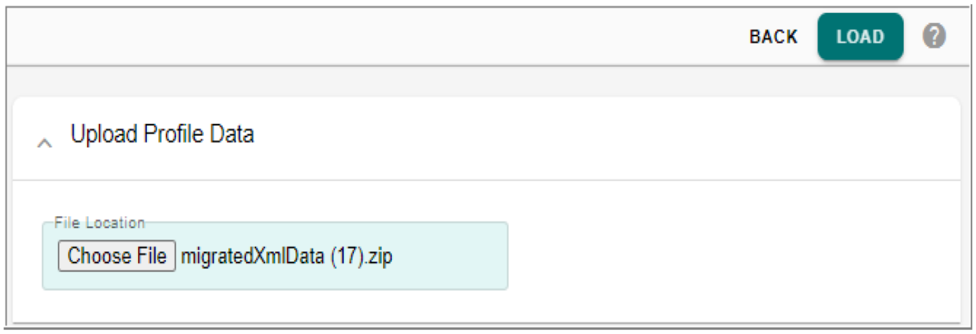
You can upload only zip files. An error message popup would be displayed if the upload file is in different format.

To upload profile data:

1. On the **Manage Profile Migration,** click **Upload Profiles**.

   The **Upload Profile Data** page (Figure 798) is displayed.

Figure 798: Upload Profile Data

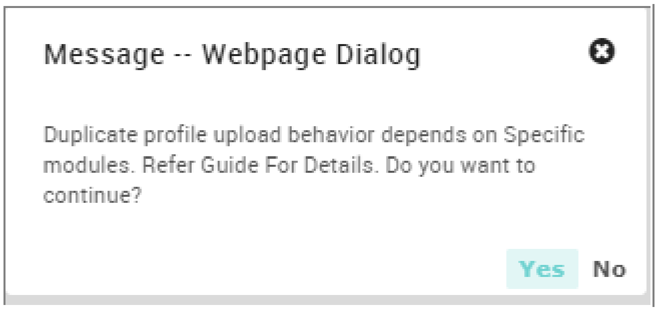


File Location: migratedXmlData (17).zip

2 On the **Upload Profile Data** page, click **Choose File** to select the extracted zip file and click **Load**.

The confirmation pop-up is displayed.

Figure 799: Confirmation Pop-up



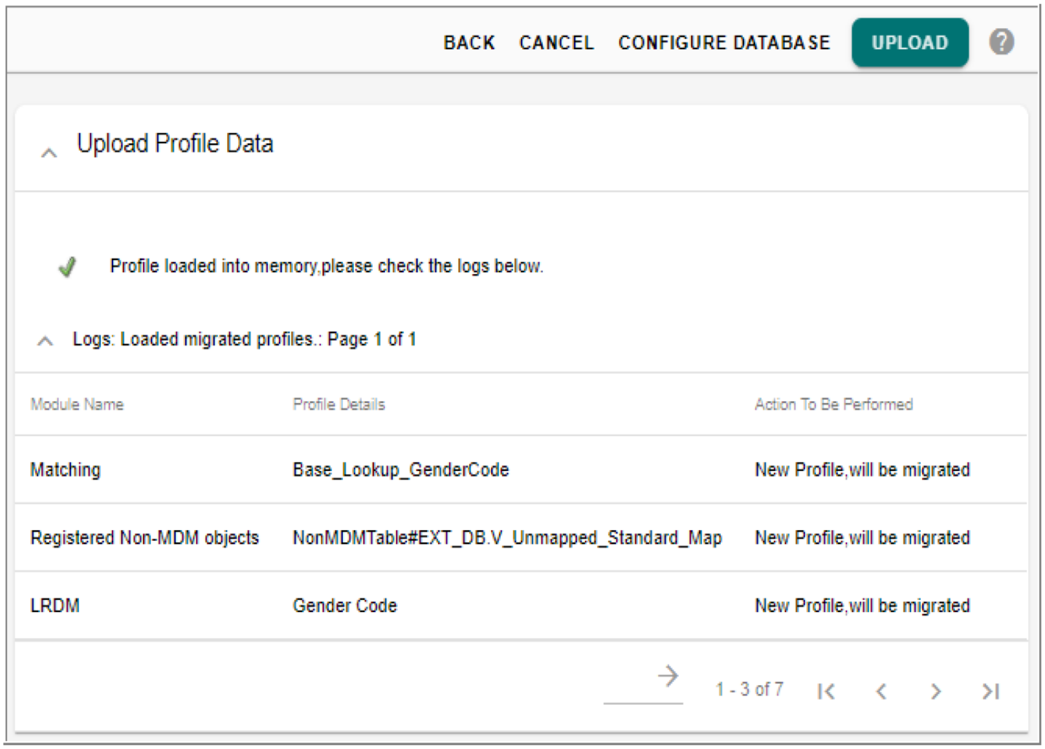
Message -- Webpage Dialog

Duplicate profile upload behavior depends on Specific modules. Refer Guide For Details. Do you want to continue?

3 On the confirmation pop-up, click **Yes**.

The **Upload Profile Data** page is displayed. Message: “Profile loaded into memory, please check the logs below.” is displayed as in Figure 800.

Figure 800: Upload Profile Data



Upload Profile Data

✓ Profile loaded into memory,please check the logs below.

Logs: Loaded migrated profiles.: Page 1 of 1

Module Name	Profile Details	Action To Be Performed
Matching	Base_Lookup_GenderCode	New Profile,will be migrated
Registered Non-MDM objects	NonMDMTable#EXT_DB.V_Unmapped_Standard_Map	New Profile,will be migrated
LRDM	Gender Code	New Profile,will be migrated

1 - 3 of 7

On the Upload Profile Data page, you can view the following information of the profile being uploaded:

- **Module Name**: displays name of the model to which the data is being uploaded.
- **Profile Details**: displays the name of the profile being uploaded.
- **Action To Be Performed**: displays information about what action would be performed of the profile once the upload is completed. The action information depends on different operations being performed on the profile as per their modules. Refer to Table 24 for different module migration and status details.

4 On the **Upload Profile Data** page (Figure 800), click **Upload t**o upload the profile to the target database.

Message: “Upload process started, please refer to logs.” is displayed. Once the upload is completed, an email with upload log details is sent to the user.

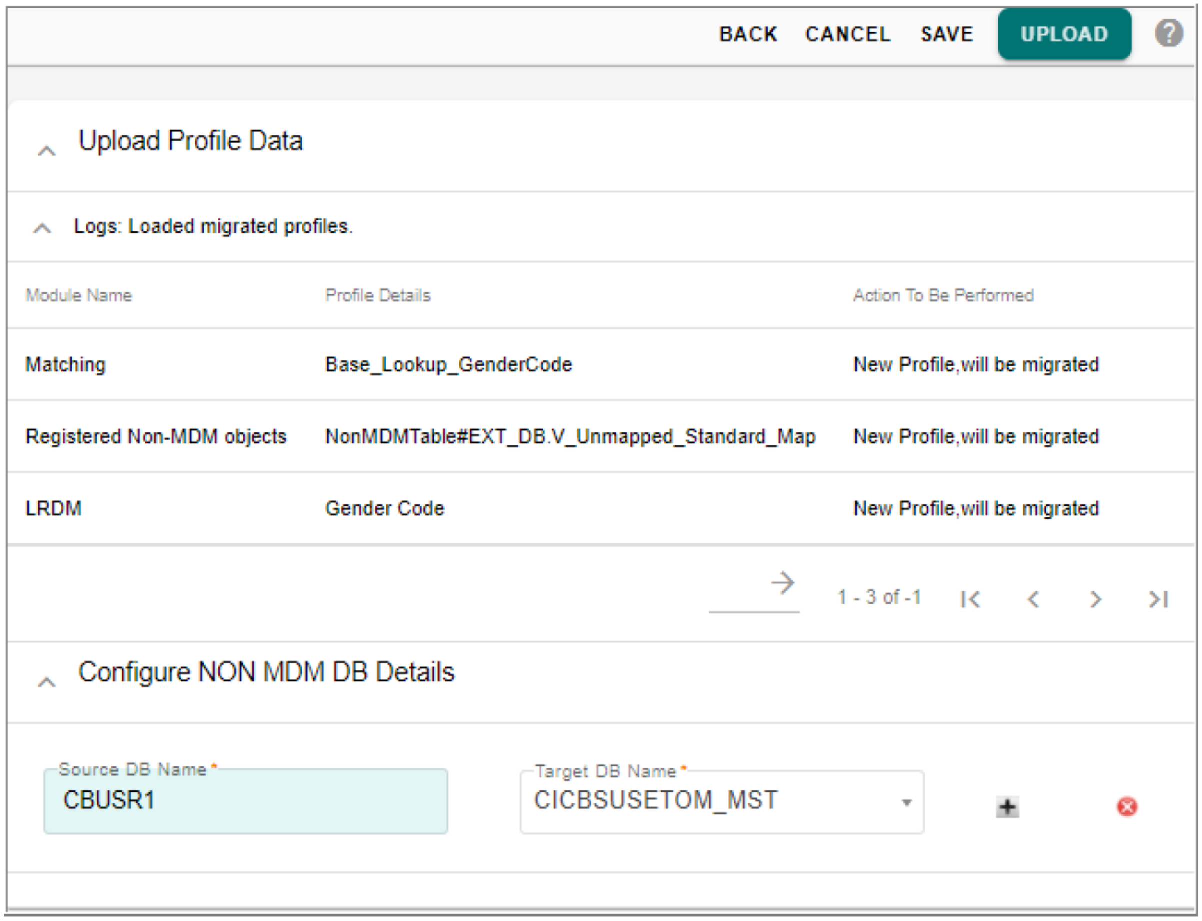
Configure Non MDM Database

The Configure Non MDM Database option is displayed on the Upload Data Profile UI only for the modules that use non MDM tables (like Model Builder, Configurable UI, Cleansing and Standardization Rule, Matching, Survivorship (ALCR, Cross reference), Hierarchy and LRDM). Using Configure Non MDM Database option, you can migrate non MDM tables from source database to a target database that have different non MDM database names.

1 On the **Upload Profile Data** page (Figure 801), click **Configure MDM Database**.

The **Configure MDM Database** pane displays.

Figure 801: Upload Profile Data—Configure Non MDM DB Details



Module Name	Profile Details	Action To Be Performed
Matching	Base_Lookup_GenderCode	New Profile,will be migrated
Registered Non-MDM objects	NonMDMTable#EXT_DB.V_Unmapped_Standard_Map	New Profile,will be migrated
LRDM	Gender Code	New Profile,will be migrated

Source DB Name* CBUSR1
Target DB Name* CICBSUSETOM_MST

The **Configure Non MDM DB Details** pane is displayed as in Figure 801.

2 On the **Configure Non MDM DB Details** pane, enter the following:

- **Source DB Name**—enter the source database name from where the profile is being migrated.
- **Target DB Name**: provides a list of all the available non MDM databases available in the target database. Select the target non mdm database where you want to migrate the profile.
- Click on the required icon to add or delete additional source DB and target DB dropdowns.

3 Click **Save**.

Message: “DB Mapping Saved Successfully.” is displayed.

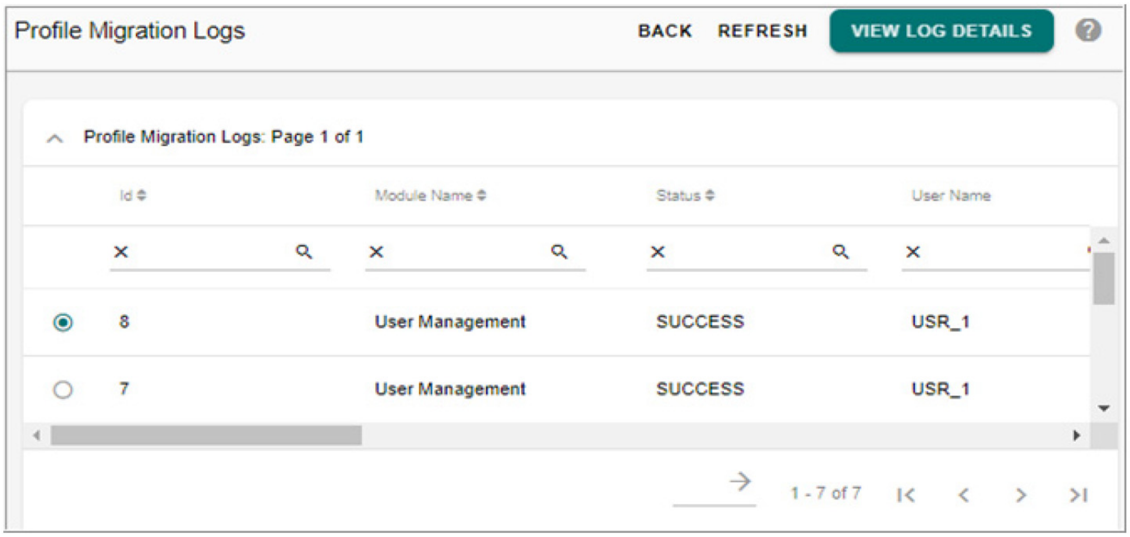
Profile Migration Log Details

The process of uploading the profile is an asynchronous process as when the upload is initiated, user gets a message to view upload information available on the profile migration logs page. On the Logs page, for a process in running state, the status of the profile migration is displayed as “In process”. Once the process is completed, the status is updated accordingly along with other information. You can also view the log details of the individual profile using the View Log Details option available on the Profile Migration Logs UI.

Perform the following steps to view the log details:

1 On the **Manage Profile Migration** page, click **Logs** under **Actions**.

Figure 802: Profile Migration Logs



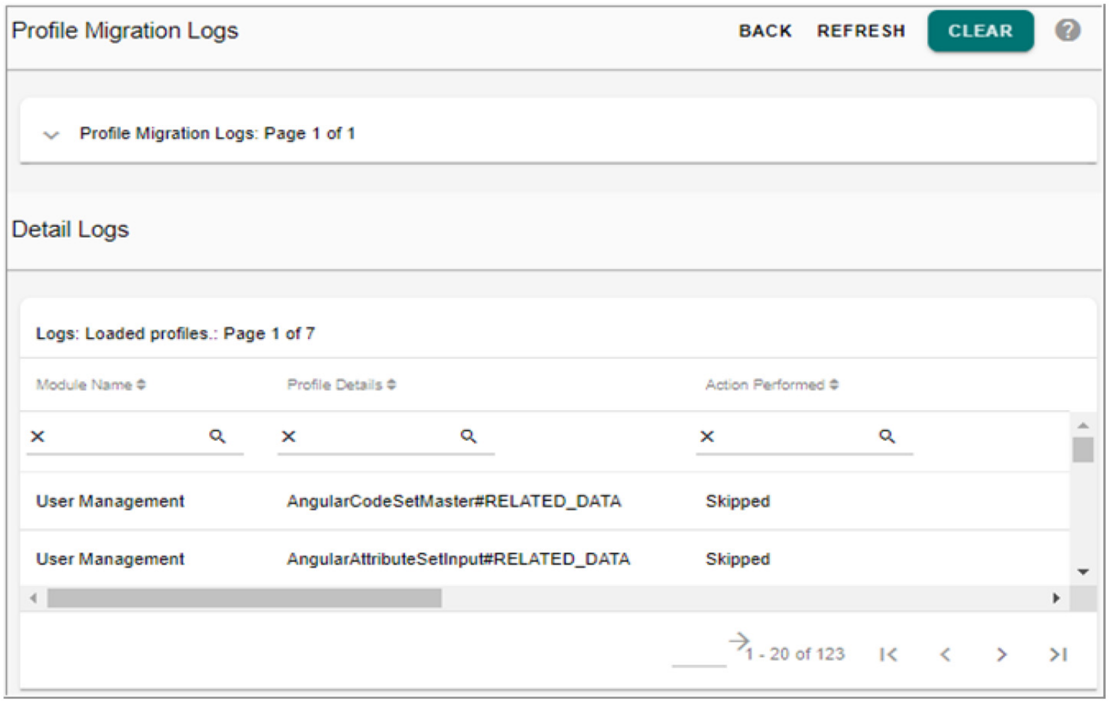
	Id	Module Name	Status	User Name
●	8	User Management	SUCCESS	USR_1
○	7	User Management	SUCCESS	USR_1

The **Profile Migration Logs** page Figure 802 displays the following basic log details of all the migrated profiles:

- **Id**—report Id of the migrated profile.
- **Module Name**—name of the model to which the profile is migrated.
- **Status**—for a process still in uploading state, the status is displayed as profile migration still in progress. Once the process is complete, the corresponding status (Success or Failed) is displayed.
- **User Name**—name of the user performing the migration.
- **Start and End Time**—start time and end time of the migration process.
- **Error Detail**—displays error message in case of failed migration.

2 On the **Profile Migration Logs** page, select any log Id and click **View Log Details** as in Figure 802.

Figure 803: Profile Migration Logs—Detail Logs



Profile Migration Logs: Page 1 of 1

Detail Logs

Logs: Loaded profiles.: Page 1 of 7

Module Name	Profile Details	Action Performed
User Management	AngularCodeSetMaster#RELATED_DATA	Skipped
User Management	AngularAttributeSetInput#RELATED_DATA	Skipped

1 - 20 of 123

The Detail Logs page displays the individual migrated profile log details as in Figure 803.

- **Module Name**: name of the model to which the profile is migrated.
- **Profile Details**: displays the name of the migrated profile.
- **Action Performed**: displays as “Migrated” for successfully migration, “Overridden” for successfully migration with overridden and “Skipped” for failed migration.

Profile Migration Modules and Expected Behavior

The Table 24 lists the different modules that can be configured with the below expected behavior.

Table 24: Profile Migration Modules

Module Name	Expected Behavior	Log Status
Business Rule	During migration if the business rule name already exists, the existing business rule name is renamed as (business rule name_old) and will be in the deactivated state. New business rule will be created and will be in active state.	Profile Exits, will be renamed.
Configurable UI	When existing page is migrated, the existing page will be renamed.	Profile Exits, will be renamed.

Table 24: Profile Migration Modules

Module Name	Expected Behavior	Log Status
Menu Builder	When existing left navigation item is migrated, the item will not be migrated. If same folders are present in source and target but folder structure is different in target, then the Page selected will get attached to immediate Parent folder.	Profile Exist, will be skipped.
Manage Workflow	If an existing workflow name is migrated, the existing workflow name will be changed and the migrated details override the existing details. If existing event is migrated, the imported events with same name as existing events will not be migrated.	Profile Exist, will be overridden.
Matching	When existing profile is migrated, the existing profile name will be renamed.	Profile Exits, will be renamed.
Registered Non-MDM Objects	Already existing tables will not be migrated. Already existing source will not be migrated.	Profile Exits, will be skipped.
Survivorship	When existing profile is migrated, the existing profile name will be renamed. When existing customization is migrated, customization will not be migrated and exists as is.	Profile Exits, will be renamed.
User Management	When existing User item is migrated, the user will not be migrated. Same with user attributes like Roles, Group, Activities, etc., Selecting a user will migrate automatically its Group, Role and Activities. Any user attributes already existing in target system will not be migrated. Migrated user can login with the same existing password. If a User or Role already exists on target system, the landing page information will not be migrated. When a new User or Role is migrated and if the landing page link is not valid on target system, it has to be manually changed.	Profile Exist, will be skipped.
Queries	Already existing profiles will not be migrated.	Profile Exist, will be skipped.

Table 24: Profile Migration Modules

Module Name	Expected Behavior	Log Status
LRDM	If the code set name exists in target, none of the code set will be migrated. If the underlying tables of the code set are being used in the target, none of the code set will be migrated. Same with code set attributes like Value Id, Domain Id, Language Id and Mapping Id. Selecting a code set will migrate automatically its Value, Mapping, Domain and Language Id associated with it. Any code set attributes already existing in target system will not be migrated. **Note**: For migrating code set with multi-table values, the target must have the same or more number of multi-tables.	Profile Exist, will be skipped.
Approval Management	If approval for a table already exists on target system with Action type = ALL, then any profile for the same table will not be migrated. If an approval profile with same table name, action type exists on target system, the profile will not be migrated. If approval profile for a table with action type = ALL is migrated then on the target system, profile for the same table with action type DELETE, INSERT, UPDATE will be replaced with the migrated one.	Profile with All action type - Profile Exists, will be overridden For other profiles - Profile Exist, will be skipped.
RDM Process	All RDM process profiles will be migrated irrespective of the profiles on target system. The corresponding matching and survivorship profiles will also be migrated.	Profile Exits, will be renamed.
Model Builder	Already existing models will not be migrated. The model can be extracted from a source and in the target it will be displayed in Draft state and you have to validate and Run ISG manually to generate the model.	Profile Exist, will be skipped.
Extended Attribute	Already existing profiles will not be migrated.	Profile Exist, will be skipped.
Exclusion Calendars	Already existing profiles will not be migrated.	Profile Exist, will be skipped.
Business Entity	If existing business entity is migrated, the migrated details override the existing details.	Profile Exists, will be overridden
Favorites	A combination of favorite name and user Id already existing on target system will not be migrated.	Profile Exits, will be skipped.

Table 24: Profile Migration Modules

Module Name	Expected Behavior	Log Status
Hierarchy/MDRM	**For Template Hierarchy**	
	1. If the hierarchy name is not same in source and target, and the template tables are present in target and are not being used, the hierarchy is migrated.	Migrated
	2. If the hierarchy name is not same in source and target, and the template tables are not present in target, the hierarchy is migrated along with the template tables.	Migrated
	3. If the hierarchy name is not same in source and target, and the template tables are present in target and are being used, the hierarchy is not migrated.	Profile Exists, will be skipped. Hierarchy Profile Exists, model will not be migrated.
	4. If the hierarchy name is same in source and target, the hierarchy is not migrated.	Profile Exists, will be skipped. Hierarchy Profile Exists, model will not be migrated.
	5. If the hierarchy name is not same in source and target, and even if any one of the template table is not present in target, the hierarchy is not migrated.	Profile Exists, will be skipped. Hierarchy Profile Exists, model will not be migrated.
	Note: Migration of template based hierarchy involves migration of template tables, the migrated template tables will be in draft state in target, run ISG from model builder after migration. In case of renamed template tables after migration, run rename workflow in the target system.	
	For Custom Hierarchy	
	1. If the hierarchy name is not same in source and target, and the tables are present in target and are not being used, the hierarchy will be migrated.	Migrated
	2. If the hierarchy name is not same in source and target, and the tables are not present in target, the hierarchy will be migrated.	Migrated
	3. If the hierarchy name is not same in source and target, and the tables are present in target and are being used, the hierarchy will be migrated.	Migrated
	4. If the hierarchy name is same in source and target, the hierarchy will not be migrated.	Profile Exists, will be skipped.
	5. If the hierarchy name is not same in source and target, and even if any one of the table metadata is not present in target, the hierarchy will be migrated.	Migrated
	Notes: 1. ROs already existing on target system will not be migrated. 2. If ROM or Cross Reference already existing on target system is migrated, the older one will be renamed.	

Points to Remember

The below list provides few points to remember on profile migration:

1. All Master and non MDM tables that are part of migration are expected to be present in Target environment with same database name.
2. If any profile having non MDM tables present in Cleansing_Sandbox is migrated, the migration script assumes that those tables are available in Target Cleansing_Sandbox and all the database reference for those tables will be on Target Cleansing_Sandbox.
3. When a profile is migrated, which uses tables that do not exist on target system, a warning message will be displayed on UI listing the tables which do not exist on the system. You need to create the tables before using the migrated profiles and run REFRESH_SYS_DBC procedure after creating the table.
4. For Migrated Survivorship profile to work, you have to Refresh the profile manually by navigating to the Survivorship UI and use the Refresh Profile option.
5. Source and Target environment should be the same MDM versions.
6. Profile Migration copies only the meta data of the profiles, it does not copy the data in the underlying tables of the profiles.
7. Profile migration works only if OREPLACE UDF is installed in database. For details, see Section : “Installing Out of the Box Match Attribute Functions”.
8. When Migrating a profile, it is users responsibility to ensure that all the dependent modules are also configured when a Parent module is migrated, especially non MDM tables.
9. If any source table (Non MDM tables) used in Survivorship profile is not present in target environment, create the table in specified database and run SP REFRESH_SYS_DBC and refresh all migrated profiles manually from UI.
10. Profile migration for matching profiles migrates only the metadata of the profile. It is user’s responsibility to make sure the required tables are available in target system.
11. Simple external matching profile migration is supported. Migration of external matching profile with tool details configured is not supported.
12. The profile migration framework creates a copy of the uploaded file at *<MDM_Install_Directory>/ web/mdmclient*. You can navigate to the location and delete these files manually.
13. In Profile migration, even if any configured profile is deleted, the deleted profile will still appear on the configured profile UI as the profile migration does not check the current status of the configured profiles during migration.
14. If the workflow/query with secondary connection is migrated, user name and password will not be migrated due to security issues. After migrating, manually update the secondary connection and start the connection, now the details will be available in the migrated workflow/query.
15. To perform profile migration from backend,: Open command prompt and navigate to <MDM_Install_Directory>/bin and run the command: profile_migration_upload.bat<zip_file_location>

CHAPTER 24 Model Builder

What's In This Chapter

This chapter provides detailed information on defining MDM based tables from MDM web UI using Model Builder UI.

Topics include:

Introduction

MDM's Model Builder feature provides the MDM user with the capability to model (Create, Edit) and deploy MDM based tables at runtime without server downtime. Tables created through model builder will be supported on the standard MDM features like Approval, Hierarchy, Configurable UI, E2E, Excel Upload, Business Rules etc.

Currently to create, edit and deploy MDM based tables, user needs to model the tables in MDM Studio, perform service set-up and run ISG. All these steps require server down time.

Also to access the ISG logs, user needs to have access permissions to MDM Server machines. Model Builder overcomes these problems by providing a user interface to model and deploy tables without any downtime and the ISG logs can be viewed from within the UI itself.

Key features of Model Builder:

- Provides an easy to use UI to model MDM based tables including staging tables from MDM web UI with facilities to define column definition, key definition, facet definition, etc.
- Provides support of excel upload to model tables as an alternate option to using web UI.
- Provides facility to create dictionary and migrate studio built dictionaries.
- Provides capability to define approval on model to review the SQL before being executed in ISG.
- Provides facility to view the table and its column description on the database.
- Provides user security access to metadata of the generated tables.
- Provides the advantage of applying several validations to prevent potential failure during ISG process.
- Provides facility to create template based tables for Hierarchy and RDM modules.
- Provides detailed ISG logs with status of each step and pre and post ISG metadata count.
- The ISG process run through model builder is truly incremental in nature. In case of any failure, entire changes will be reverted back so that existing tables work fine.

How Model Builder Works

The Figure 804 illustrates the Model Builder workflow and Figure 805 illustrates the different stages in the model builder.

Figure 804: Model Builder Process Flow

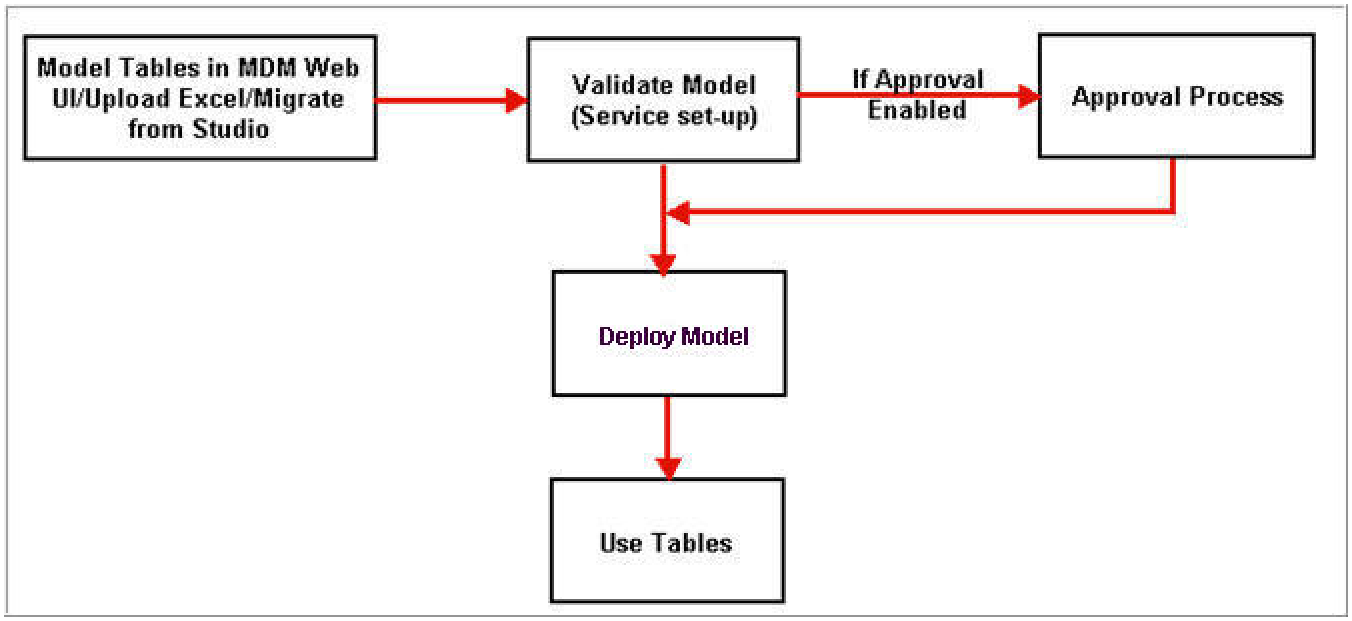
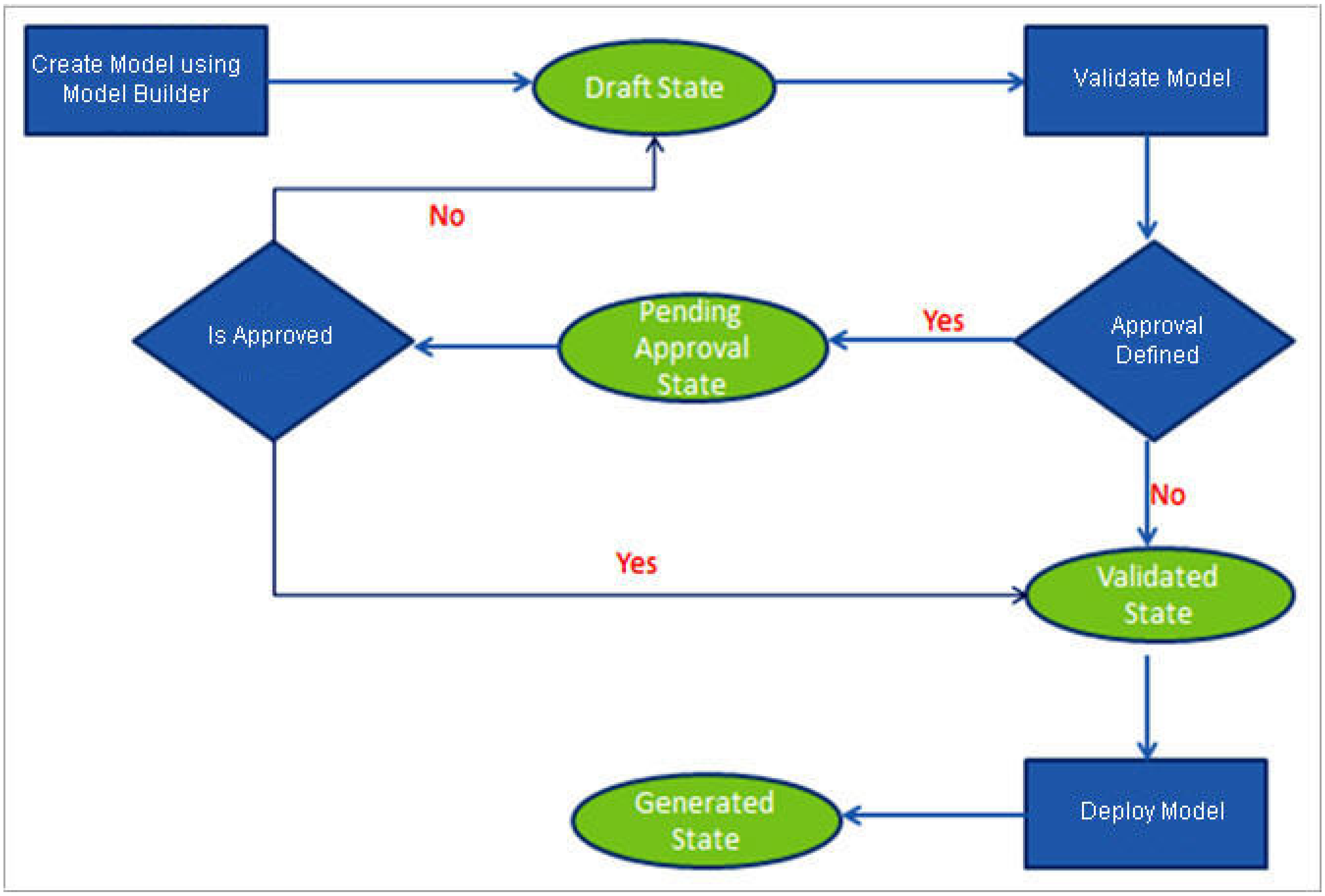

Model Tables in MDM Web UI/Upload Excel/Migrate from Studio
Validate Model (Service set-up)
If Approval Enabled
Approval Process
Deploy Model
Use Tables

Figure 805: Model Builder Stages

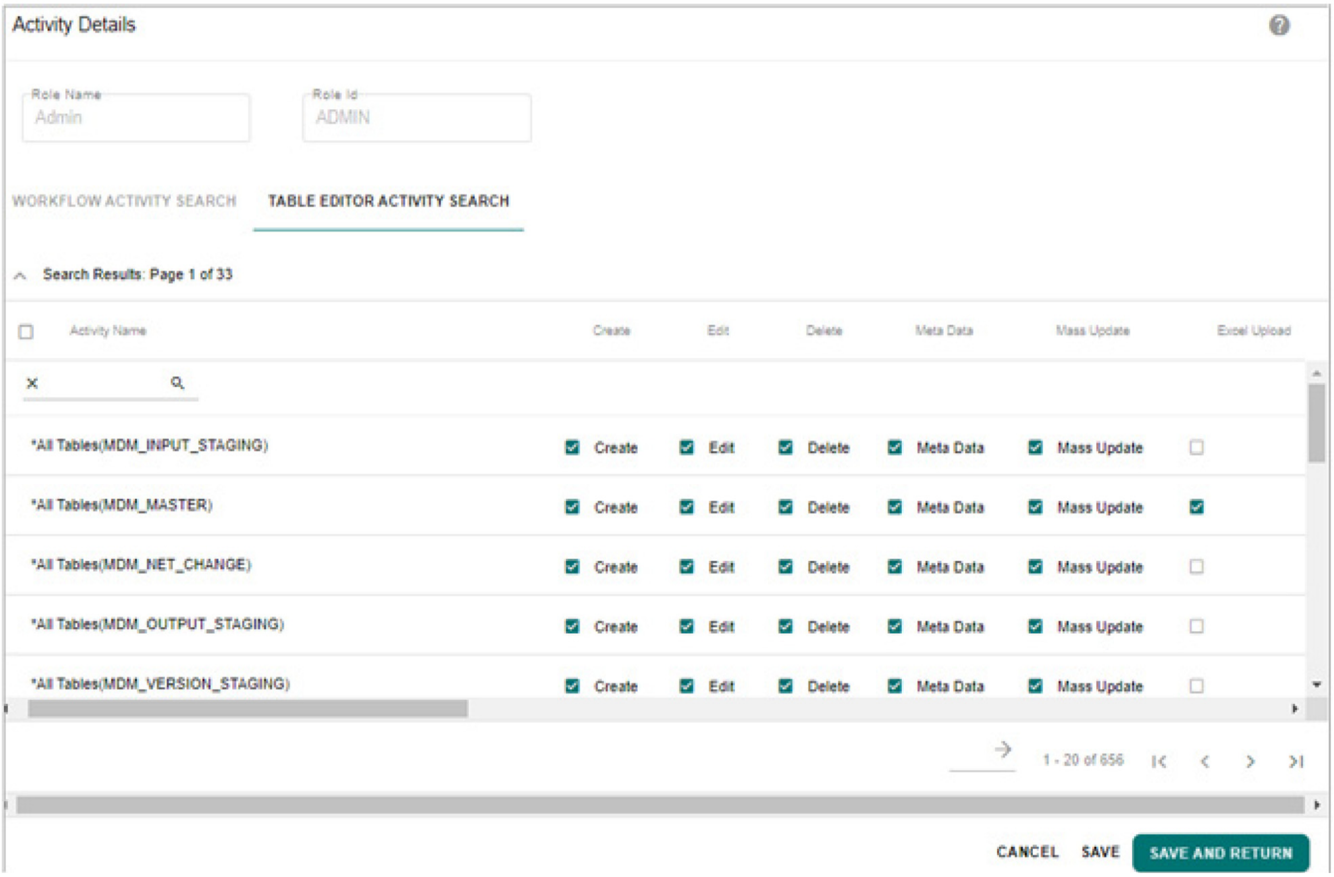


- Draft State: When a new model is created through model builder, it first enters into DRAFT state. All the details of model in draft state can be edited. The models uploaded through excel upload also enters into DRAFT state. If an already generated model is edited, it will move to DRAFT state.
- Pending Approval State: When a model in DRAFT state is validated and if approval is enabled on models, it moves to PENDING APPROVAL state. If the approver approves the model, the model enters the VALIDATED state. If the approver rejects the model, the model enters the DRAFT state again. When a model is in PENDING APPROVAL state, the model cannot be edited or deleted. You can only view DDLs and View ISG logs and export the model data to an excel sheet.
- Validated State: When a model in DRAFT state is validated and if approval is not enabled, it moves to VALIDATED state. The process of validation involves complete checking of schema in order to make sure the model is ready for ISG. The process of validation is equivalent to service set-up performed through studio for studio generated models. A log is generated and displayed on completion of validation process. In case of any errors, the model needs to be validated once again after correcting the errors. Models in validated state are eligible to take part in ISG process.
- Generated state: When ISG is executed for a model in VALIDATED state, it moves to GENERATED state. The detailed logs of model in generated state can be viewed for checking successful completion of ISG. When a model in GENERATED state is edited, it moves to DRAFT state.
- Deleted Model: When the Deleted Model option is selected, the Model Builder UI displays all the deleted models. You can activate the deleted models using the Reactivate Model button on the Model Builder UI. All the reactivated models will be in draft state.

User Security Access to Metadata of Generated Tables

The Metadata of models created through model builder can be accessed only by the creator of the model and the super user when the model is in Draft, Pending Approval and Validated state. When the model moves to Generated state, the creator will have access by default. To provide access to other user roles, Metadata access permission must be enabled for the MDM tables on the Role Details—Activity Search UI as in Figure 806. If a role is provided access to activity for any staging table, user having that role will be able to access the metadata of the table.

Figure 806: Metadata Access—User Security



Role Name: Admin

Role Id: ADMIN

Search Results: Page 1 of 33

☐ Activity Name	Create	Edit	Delete	Meta Data	Mass Update	Excel Upload
*All Tables(MDM_INPUT_STAGING)	☑ Create	☑ Edit	☑ Delete	☑ Meta Data	☑ Mass Update	☐
*All Tables(MDM_MASTER)	☑ Create	☑ Edit	☑ Delete	☑ Meta Data	☑ Mass Update	☑
*All Tables(MDM_NET_CHANGE)	☑ Create	☑ Edit	☑ Delete	☑ Meta Data	☑ Mass Update	☐
*All Tables(MDM_OUTPUT_STAGING)	☑ Create	☑ Edit	☑ Delete	☑ Meta Data	☑ Mass Update	☐
*All Tables(MDM_VERSION_STAGING)	☑ Create	☑ Edit	☑ Delete	☑ Meta Data	☑ Mass Update	☐

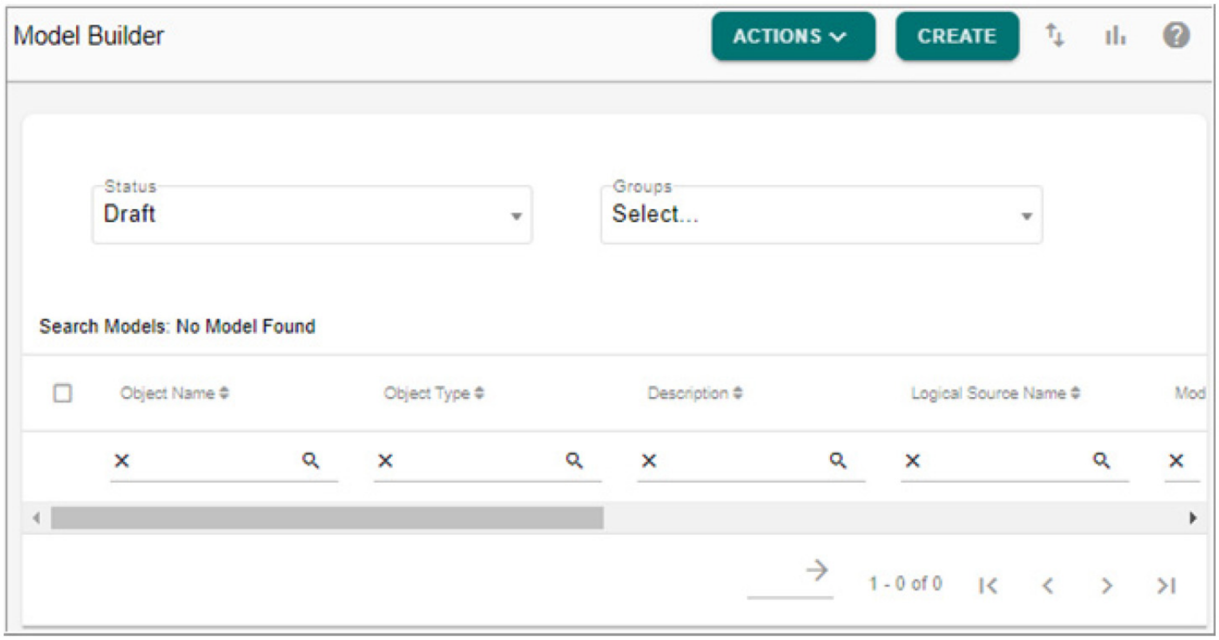
1 - 20 of 656

Once the metadata access is enabled, users having the assigned roles will be able to access the metadata of the tables in the generated model state.

Model Builder UI

You can navigate to **Model Builder** UI from **Model Setup** -> **Model Builder**. The Figure 807 displays the Model Builder UI.

Figure 807: Model Builder UI



Status: Draft

Groups: Select...

Search Models: No Model Found

On the **Model Builder** UI, by default, the Draft option is selected in **Status** drop down and all the models in the draft state will be displayed. You can select Validated or Generated radio buttons to see models that are in Validated or Generated state.

On the Model Builder UI, you can perform the following tasks:

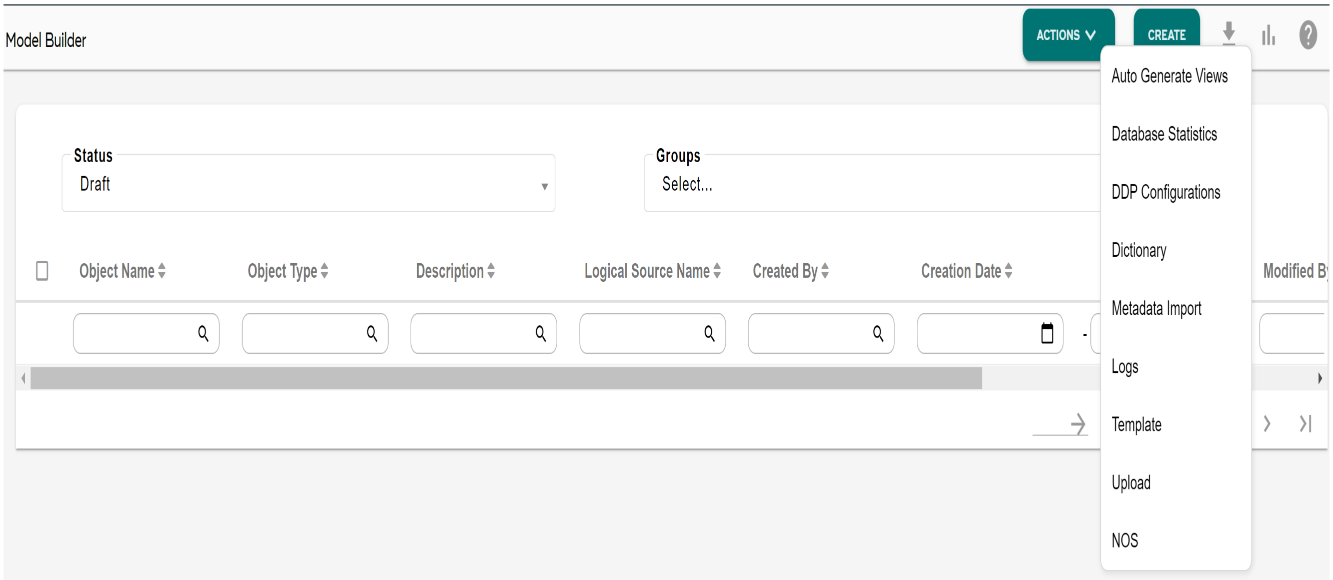
- Manage Dictionary
- Create or Upload Model
- Create MDM Based View
- Auto Generate View
- Validate Model
- Generate Model or Deploy Validated Models
- Model Deployment Log
- Edit Model
- Export Model
- Modify Table Primary Key
- Delete Model and Delete Model Metadata
- Import from X-Document
- Manage Template
- Manage Metadata Import

Manage Dictionary

The Dictionaries are standard repositories of data types and its related details such as name, length, physical name, required filed, character set, default value, Enum, Constraint, Description etc. Normally dictionaries are used to maintain data type standards and naming conventions for implementations. While defining a table, you can refer to the already stored data types in dictionary. When a data type is selected for a column in table, all the details defined for the data type will be inherited by the column.

Navigate to Manage Dictionary UI from Model Builder page by selecting **Dictionary** from **Actions** drop-down as in Figure 808.

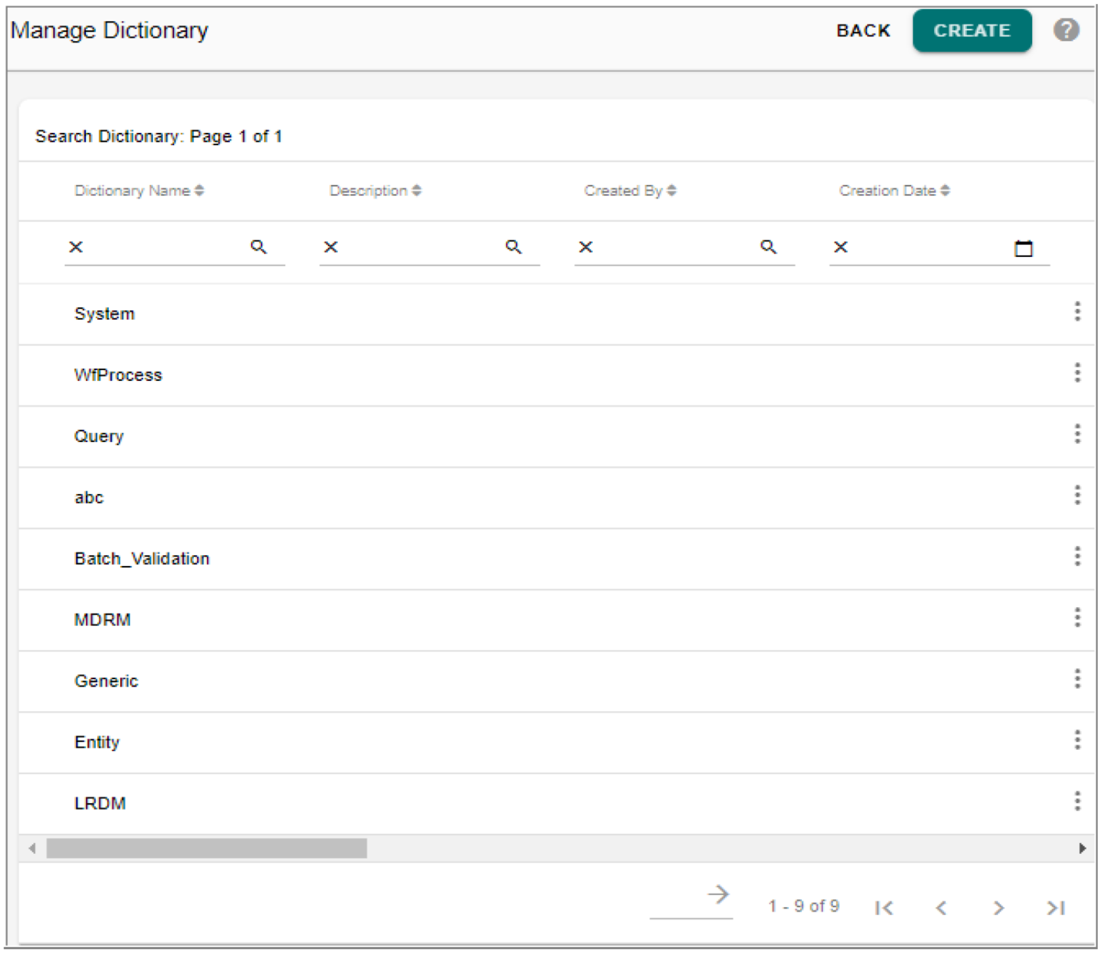
Figure 808: Model Builder



Status: Draft

Groups: Select...

Figure 809: Manage Dictionary



Dictionary Name	Description	Created By	Creation Date
System			
WfProcess			
Query			
abc			
Batch_Validation			
MDRM			
Generic			
Entity			
LRDM			

On the **Manage Dictionary** UI (Figure 809), you can perform the following:

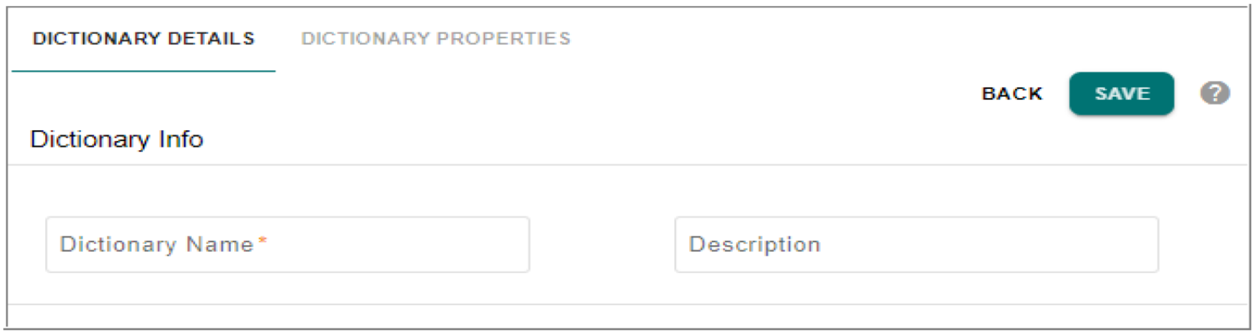
- Create Dictionary
- Edit Dictionary
- Export Dictionary
- Delete Dictionary

Create Dictionary

To create dictionary:

1 On the **Manage Dictionary** UI (Figure 809), click **Create**.

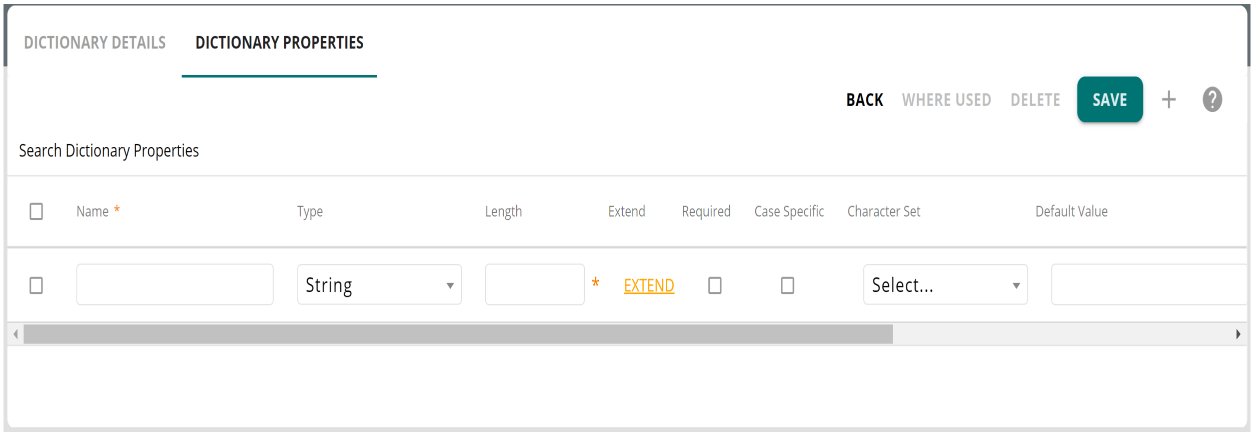
Figure 810: Dictionary Details Tab



2 On the **Create Dictionary** UI (Figure 810) with the **Dictionary Details** tab selected, enter the following:

- **Dictionary Name**: unique name of the dictionary.
- **Description**: brief description about the dictionary being created.

Figure 811: Dictionary Properties



3 On the **Create Dictionary** UI (Figure 811) with the **Dictionary Properties** tab selected, enter the following values:

- **Name**: provide display name of data type.
- **Type**: the valid data type can be: Boolean, Bigint, Char, Clob, Date, Datetime, Decimal, Double, EncryptedString, File, Float, Integer, PeriodDate, PeriodTimestamp, String, SmallInt, ST_geometry, Timestamp(0), Timestamp(6), VarByte, Xml and JSON.
- **Length**: provide the length of the data type column.
- **Extend**: using extend option, details of columns can be extended from a dictionary where it is already defined. On **Dictionary Data Type** popup, the **Folder Name** column is populated for both profile migrated and mtt migrated dictionaries.
- **Required**: select this checkbox if you want the column to be a required field.

- **Case Specific**: select this checkbox if you want the column value to be case specific. By default, it is not case specific.
- **Character Set**: select the character set.The Character Set drop-down decides the character set for a column of a table. It has two values - “LATIN”, “UNICODE”. If LATIN is selected, the column character set will be set as Latin, this means it can accept only Latin characters. If UNICODE is selected, the column character set will be set as Unicode, this means it can accept any Unicode character. If no value is provided, by default LATIN is taken.
- **Default Value**: provide the default value if any.
- **Constraint**—you can define an expression based constraint that is evaluated dynamically at the database level. All the constraints must follow a rooted Boolean tree. If there is no root element present, by default AND is taken as the root element. For example to apply the constraint

  ((Role_ID > 50 AND Role_ID < 55) OR (Role_ID = 60)) you must add the

  constraint as:

  OR

  |

  |____AND

  | |

  | |_____(Role_ID >50)

  | |_____(Role_ID <55)

  |

  |_____Role_ID=60

  - On the **Constraint** column, click Constraint link.

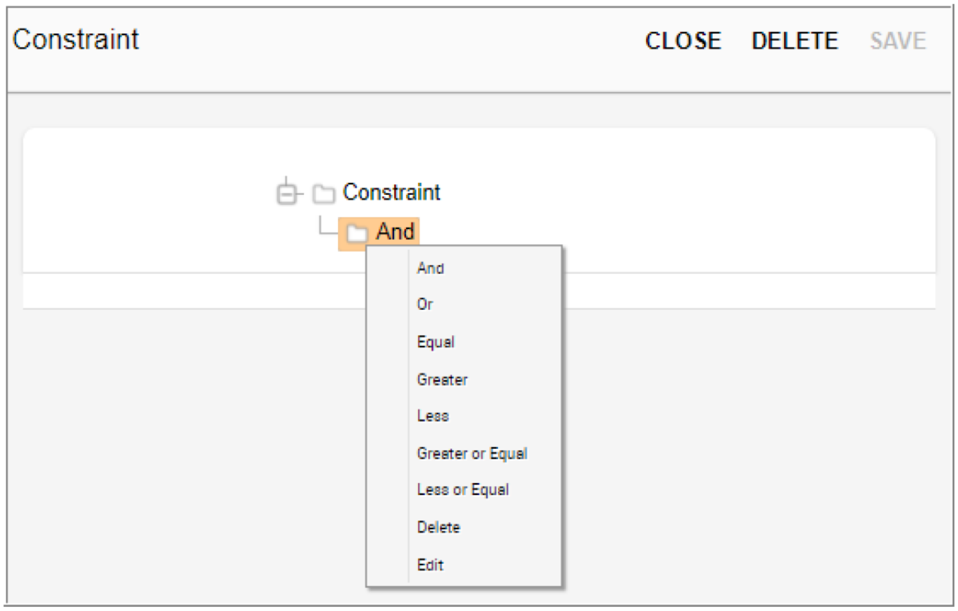
    The **Constraint** pop-up (Figure 812) is displayed.
  - On the **Constraint** pop-up, right-click the Constraint, the (And/Or) list is displayed.
  - Select And or Or to add under the constraints and right-click on any added And or Or.

    The Menu option with list of operations is displayed.
  - Select the required option from menu. For example: Select Greater and enter the input value.

    The value gets added to the Constraint.
  - Click **Save**.
  - On the Model Builder—Columns UI, under Constraint column, the link is displayed as Defined.

    You can click the Defined link to navigate to Constraint pop-up to modify the defined Constraints if required.

Figure 812: Constraint



- **Enum**: click Edit to provide the type of ENUM. The **Valid Value** popup is displayed.

  In the **Valid Value** popup, the valid value can be Constant, Lookup or Reference type.

  - If **Constant** type is selected, enter the constant values in the **Enter Constant Value** text field and click **Add** and then click **Save**.

    The values will get added to the **Available Constant Values** list. You can rearrange the values using the **Up** and **Down** button. You can also delete the constant values using **Delete** button.
  - If **Lookup** type is selected, select the code set and click **Save**.

    You can optionally select the Display Description checkbox to display the code description instead of code values.
  - If **Reference** type is selected, enter the following and click **Save.**

    Source Table: select the source table from which the data need to be fetched.

    Source Property: select the property of the source table from which the value need to be fetched.

    Display Description: by default, the source property is displayed on the UI. To display the description of the property, select Display Description checkbox.

    Source Display Property: select the property of the source table to be used as the description to be displayed.

    Validation Rule: select this checkbox to create referential integrity rules for links like reverse link, but without creating soft link in database. By default, this is not enabled. You can select either reverse link or validation rule option, but not both.
- **Physical Column Name**: provide the physical name of the field.
- **Description**: provide the description of the column.

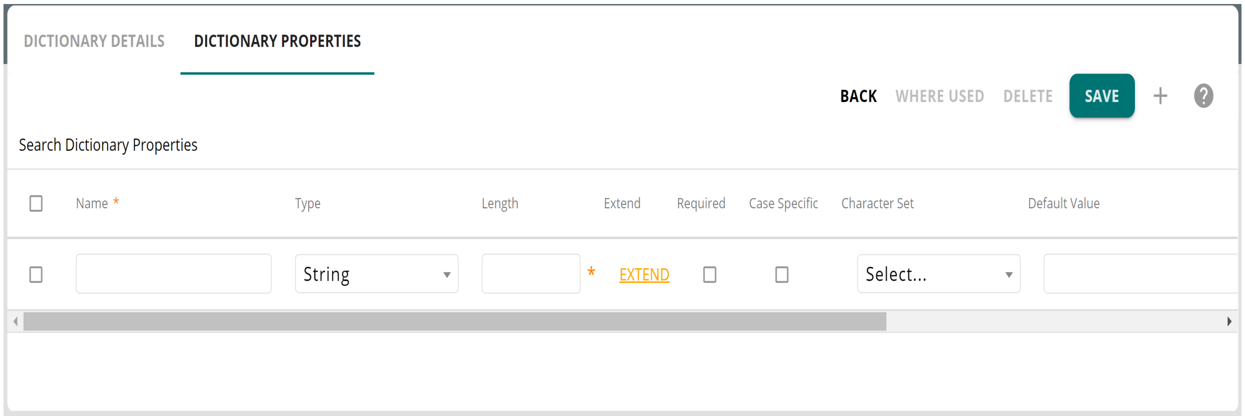
4 Click **Save Dictionary** icon.

Message: “Dictionary created successfully” is displayed.

WhereUsed: if a property in a Dictionary is used by different tables, you can use the WhereUsed option to find out the list of table names and column names where the property is being used.

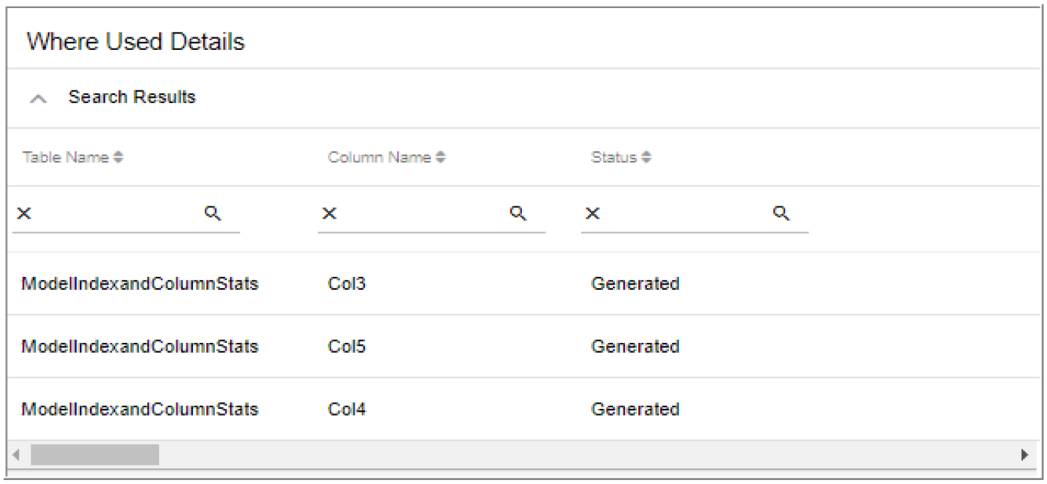
- On the **Create Dictionary** UI with the **Dictionary Properties** tab selected, select any property and click **Where Used** button as in Figure 813.

Figure 813: Dictionary Properties



The **Where Used Details** pop-up is displayed listing the table names and column names where the dictionary property is being used as in Figure 814.

Figure 814: Where Used Details


Where Used Details

Search Results

Table Name	Column Name	Status
ModelIndexandColumnStats	Col3	Generated
ModelIndexandColumnStats	Col5	Generated
ModelIndexandColumnStats	Col4	Generated

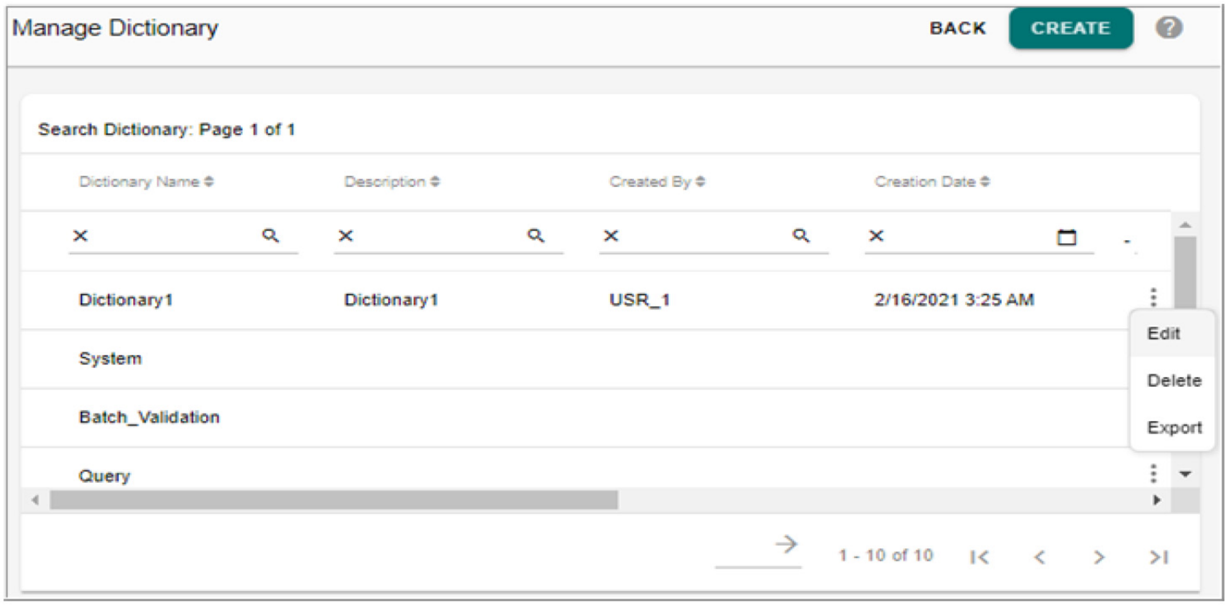
Delete: You can delete the dictionary property using the **Delete** button on Create Dictionary—Dictionary Properties UI.

Edit Dictionary

To edit existing dictionary details:

1 On the **Manage Dictionary** UI, select any dictionary and click **Edit** as in Figure 815.

Figure 815: Manage Dictionary



Search Dictionary: Page 1 of 1

Dictionary Name	Description	Created By	Creation Date
Dictionary1	Dictionary1	USR_1	2/16/2021 3:25 AM
System			
Batch_Validation			
Query			

2 On the Dictionary UI, you can modify the values under different tabs and click Save icon.

Message: “Dictionary updated successfully” is displayed.

Export Dictionary

To export existing dictionary details to an excel file:

1 On the **Manage Dictionary** UI, select any dictionary and click **Export** as in Figure 815.

In the exported excel file, the dictionary details will be displayed under two different sheets as **Dictionary Name** and **Columns**.

Delete Dictionary

To delete existing dictionary details:

1 On the **Manage Dictionary** UI, select any dictionary and click **Delete** as in Figure 815.

2 On the confirmation pop-up, click **Yes**.

Message: “Dictionary deleted successfully” is displayed.

Create or Upload Model

You can create the model in two ways:

1. Create Model using User Interface
2. Create Model using Excel Upload

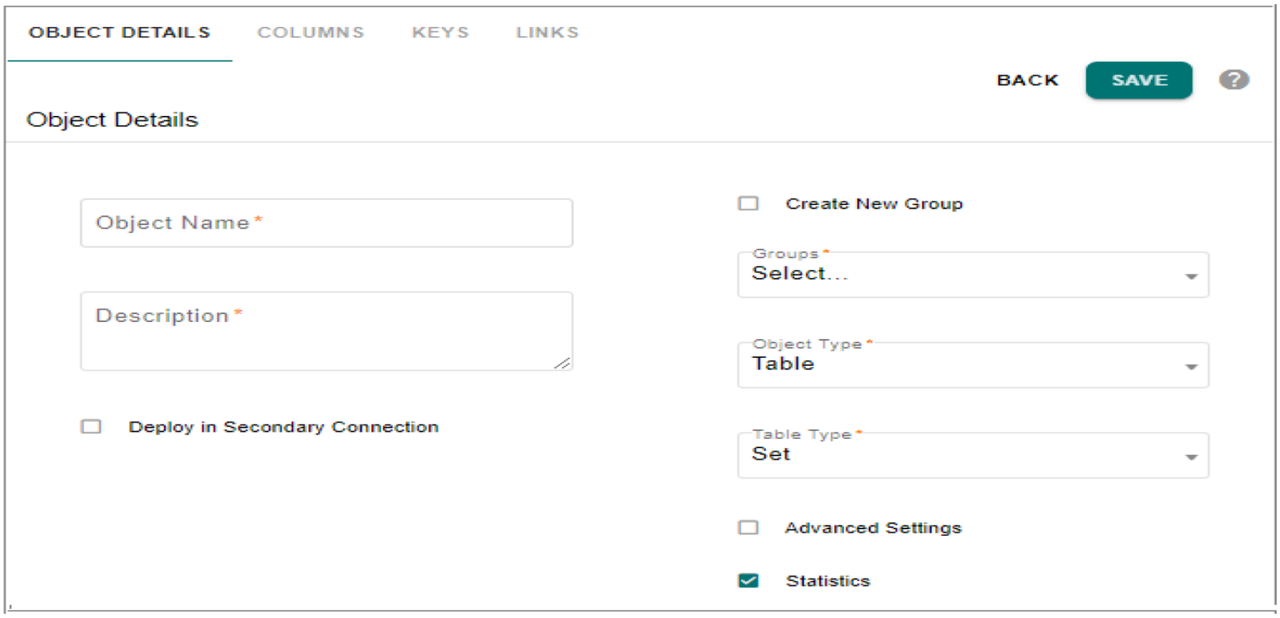
Create Model using User Interface

To create a model using user interface:

1 On the **Model Builder** UI, click on the **Create** button as in Figure 807 to navigate to Model Details UI.

A newly created model will always be in DRAFT state.

Figure 816: Model Details—Object Details



☐ Deploy in Secondary Connection

☐ Create New Group

Groups *: Select...

Object Type *: Table

Table Type *: Set

☐ Advanced Settings

☑ Statistics

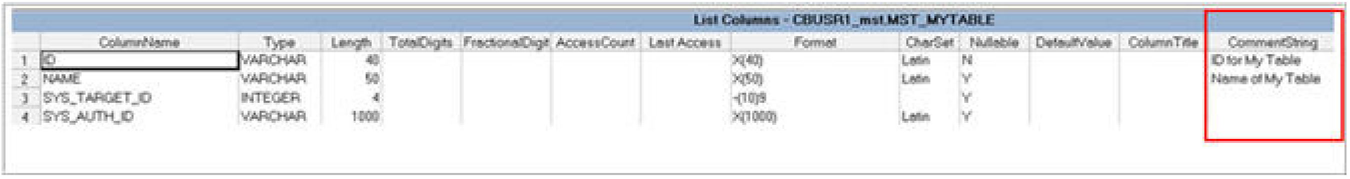
2 On the **Model Builder** UI, with **Object Details** tab selected as in Figure 816, enter the following:

- **Object Name**: unique logical name of the object and the name should not contain spaces.

Object name must not contain hyphen (-)

- **Description**: brief description about the object being created. The descriptions added can be viewed in the database as in Figure 817 only after executing ISG through Model Builder UI.

Figure 817: Comments Viewed in Databases



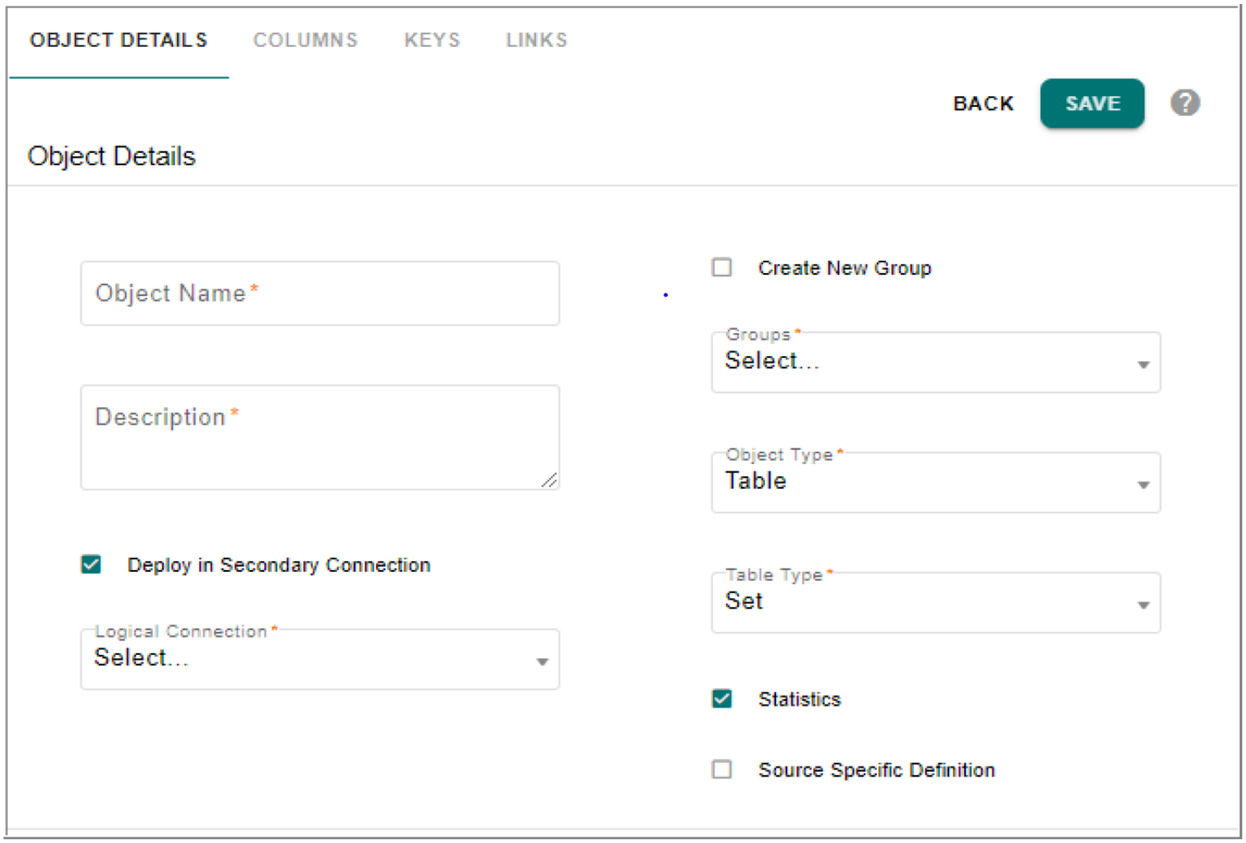
List Columns - CBUSR1_mst.MST_MYTABLE

	ColumnName	Type	Length	TotalDigits	FractionalDigit	AccessCount	Last Access	Format	CharSet	Nullable	DefaultValue	ColumnTitle	CommentString
1	ID	VARCHAR	40					X(40)	Latin	N			ID for My Table
2	NAME	VARCHAR	50					X(50)	Latin	Y			Name of My Table
3	SYS_TARGET_ID	INTEGER	4					-(10)9		Y			
4	SYS_AUTH_ID	VARCHAR	1000					X(1000)	Latin	Y			

- **Deploy in Secondary Connection**: select this checkbox to deploy the model in the secondary connection. This option can be used to deploy non-MDM tables in databases other than MDM user.

  When **Deploy in Secondary Connection** option is selected, the **Select Logical Connection** drop down is displayed as in Figure 818.

Figure 818: Model Details—Object Details



Object Details

Object Name*

Description*

☑ Deploy in Secondary Connection

Logical Connection*: Select...

☐ Create New Group

Groups*: Select...

Object Type*: Table

Table Type*: Set

☑ Statistics

☐ Source Specific Definition

- **Logical Connection**: this dropdown displays all the existing secondary connections. Select the required secondary connection on which you want to deploy the model being created.

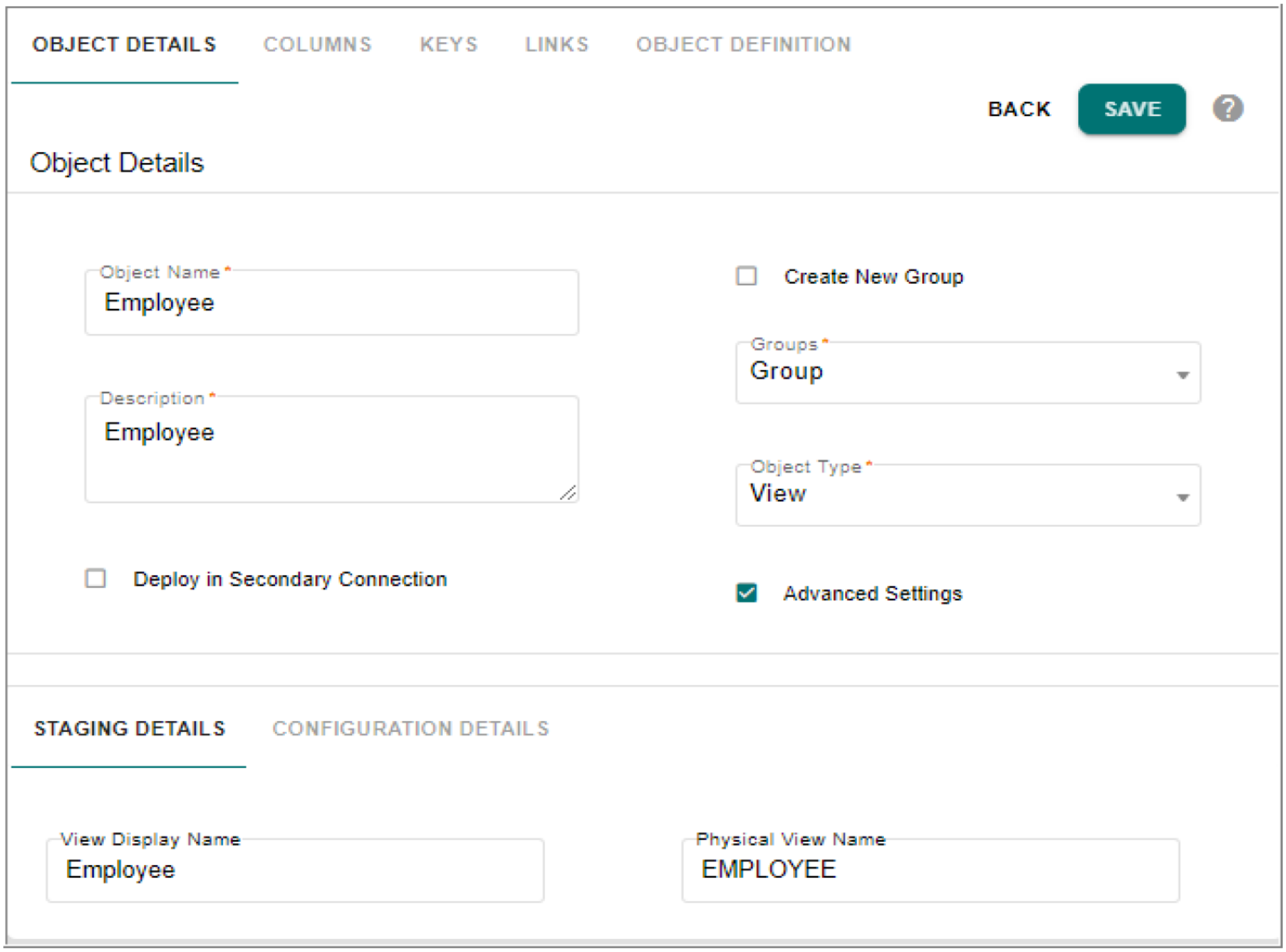
When Secondary Connection option is selected, the Advanced Settings option will not be displayed and the Source Specific Definition will be displayed.

- **Source specific definition**: select this option to import and deploy source specific objects (tables, views and stored procedures) across multiple databases in MDM.
- **Statistics**: select this checkbox if you want to enable table level statistics collection. For details on collect statistics, see Section : “Collect Database Statistics”
- **Create New Group**: select this checkbox to create a new group. If this checkbox is selected, the Group Name text field is displayed. Enter a name for the group under which the table needs to be created in the Group Name field. If you want to specify hierarchy of groups, specify the group names separated by "/". For example: <Group_1>/<Group_2>. If groups do not exist, new groups will be created. The groups are created on the left navigation pane under **Tables** -> **Master Tables**.
- **Group**: displays the list of existing groups. Select a group, if you want to create a table under any of the existing group.
- **Object Type**: Object type can be either MDM based table or MDM based view.
  - **View**: select this option to create MDM based view.

    View and Advanced Settings option: if you select **View** option and the **Advanced Settings** option, the **View Details** pane is displayed.

    The **View Display Name** and **Physical View Name** fields display default values based on the specified object name. You can modify the default values as required.

Figure 819: Object Details—Advanced Setting-Staging Details



Object Name*: Employee

Description*: Employee

☐ Deploy in Secondary Connection

☐ Create New Group

Groups*: Group

Object Type*: View

☑ Advanced Settings

View Display Name: Employee

Physical View Name: EMPLOYEE

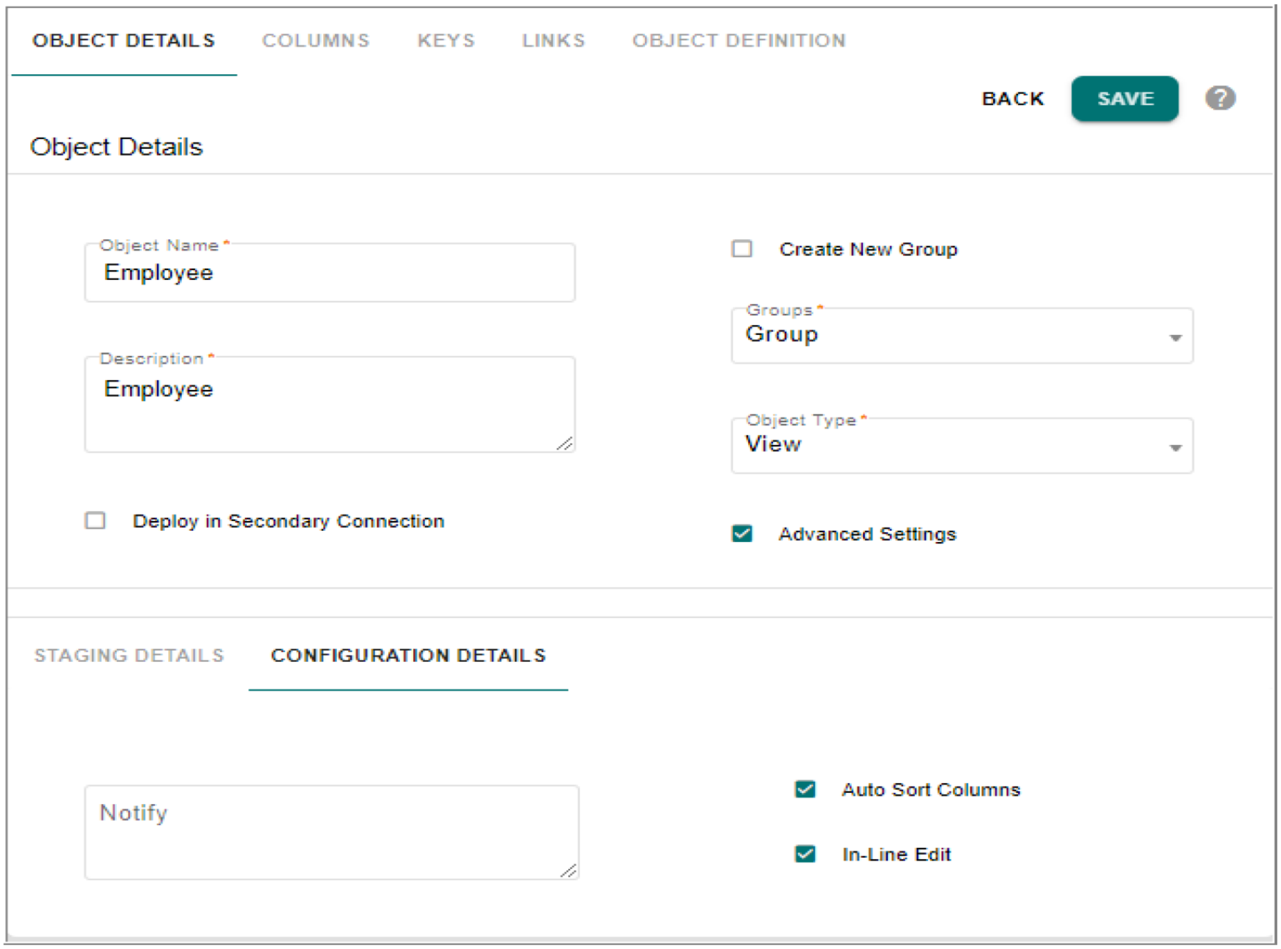
- Under the **Configuration Details** tab, you can configure the following:

  Notify: enter the email addresses of all the users to be notified with the deployment results. Multiple email Ids to be separated by commas.

  Auto sort columns: if this checkbox is selected, the table columns on the configurable UI will be sorted and displayed in the following order: primary key columns, required columns and other columns. If this checkbox is not enabled, the columns will be displayed in the order in which the columns were created during model definition.

  Inline Edit: select the Inline-Edit checkbox to enable inline editing on the generated table UI.

Figure 820: Object Details—Advanced Setting-Configuration Details



Object Details

Object Name*: Employee

Description*: Employee

☐ Deploy in Secondary Connection

☐ Create New Group

Groups*: Group

Object Type*: View

☑ Advanced Settings

Notify

☑ Auto Sort Columns

☑ In-Line Edit

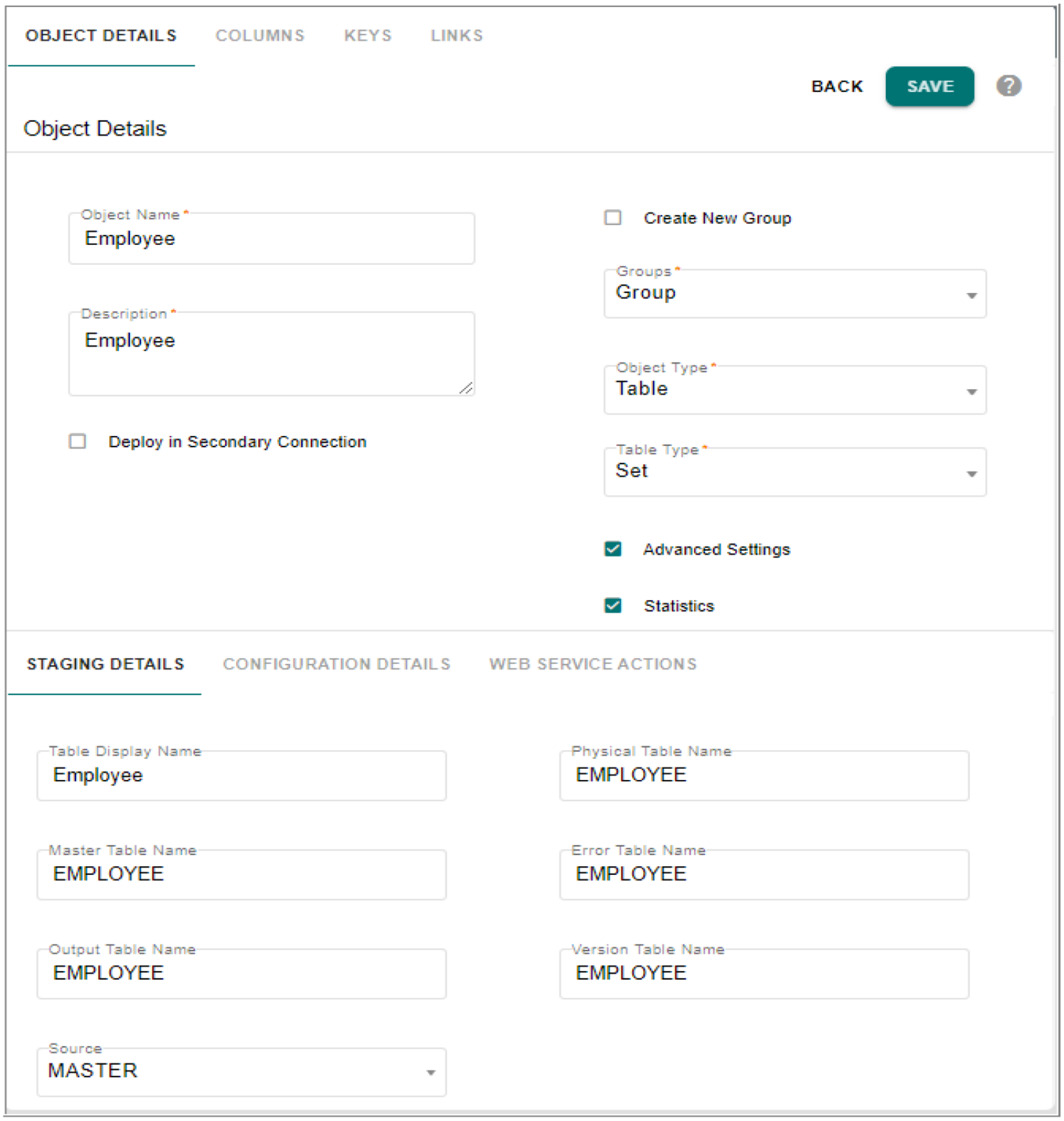
- **Table**: select Table option to create MDM based table. If Table option is selected, the Table Type is displayed. The Table type can be either Set or MultiSet.

  Set: if the Table Type is selected as Set, then the table does not allow duplicate rows.

  MultiSet: if the Table Type is selected as MultiSet, then the table allows duplicate rows.

  Table and Advanced Settings option: you can select the Table option and the Advanced Settings option to set the staging, configuration details and Web service actions as in Figure 819. The Advanced Settings pane displays the default values based on the specified object name. You can modify the default values as required.

Figure 821: Object Details—Advanced Setting- Staging Details



Object Details

Object Name*: Employee

Description*: Employee

☐ Deploy in Secondary Connection

☐ Create New Group

Groups*: Group

Object Type*: Table

Table Type*: Set

☑ Advanced Settings

☑ Statistics

Table Display Name: Employee

Physical Table Name: EMPLOYEE

Master Table Name: EMPLOYEE

Error Table Name: EMPLOYEE

Output Table Name: EMPLOYEE

Version Table Name: EMPLOYEE

Source: MASTER

- **Staging Details** tab contains details of staging tables. All names of staging tables are derived from Object Name field under Object Details.

Staging table names will follow standard MDM based staging table naming convention. If the table names are modified, it is user’s responsibility to update the staging table names.

With **Staging Details** tab selected as in Figure 819, enter the following:

  - **Table Display Name**—the display name of the table.
  - **Physical Table Name**—the physical name of the table.
  - **Input Table Name**—the name of the input staging table.
  - **Error Table Name**—the name of the error staging table.
  - **Master Table Name**—the name of the master staging table.
  - **Output Table Name**—the name of the output staging table.
  - **NetChange Table Name**—the name of the netchange staging table.
  - **Version Table Name**—the name of the version staging table.
  - **Source**—select the source for the table. Can be Master or Backend or both.

    If Source is BackEnd, tables are created for Input, Netchange, Master, Error, Version and Output staging.

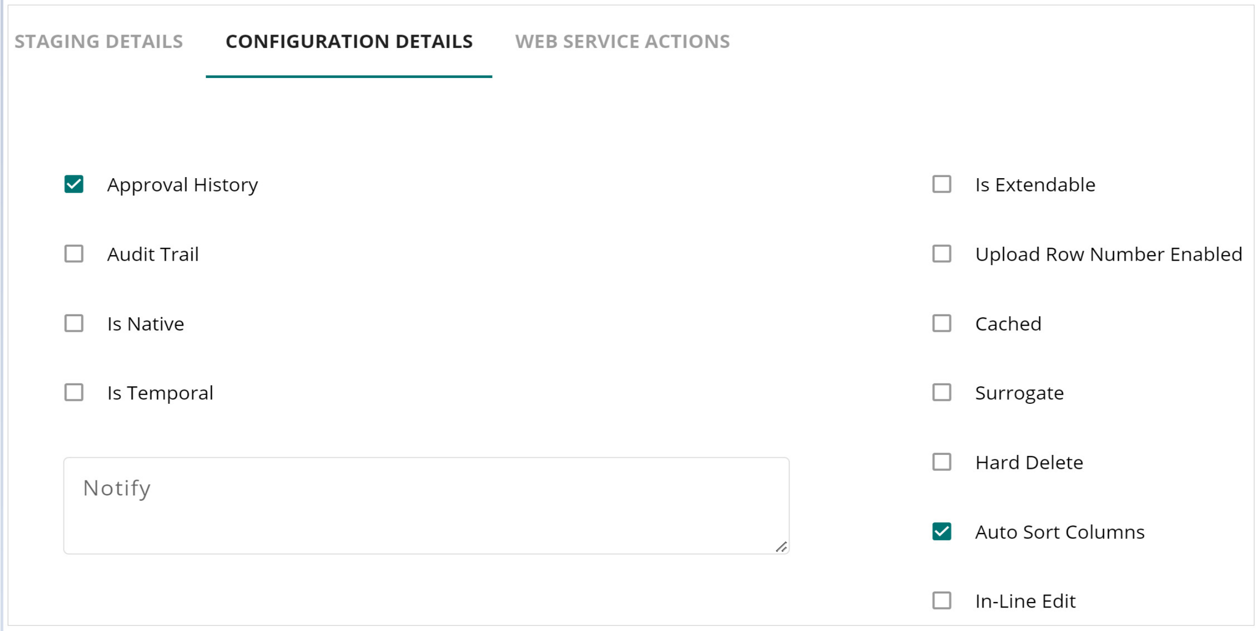
    If Source is Master, Netchange and Input tables are not created. Only Master, Error, Version and Output table are created.

    If Source set to BOTH, tables are created for Error, Output, Input, Netchange, Version and Master staging area. Table for Netchange service will carry fields that are sourced from Backend. In Netchange, by default only PK of the table will be created, that is, if user does not define any columns as backend.

- **Configuration Details** tab consists of various configurations related to the properties of the table. With **Configuration Details** tab selected as in Figure 822, select the following:

Default facet values will be populated if no value provided for facets. All the properties will have default values as false except Schema Gen.

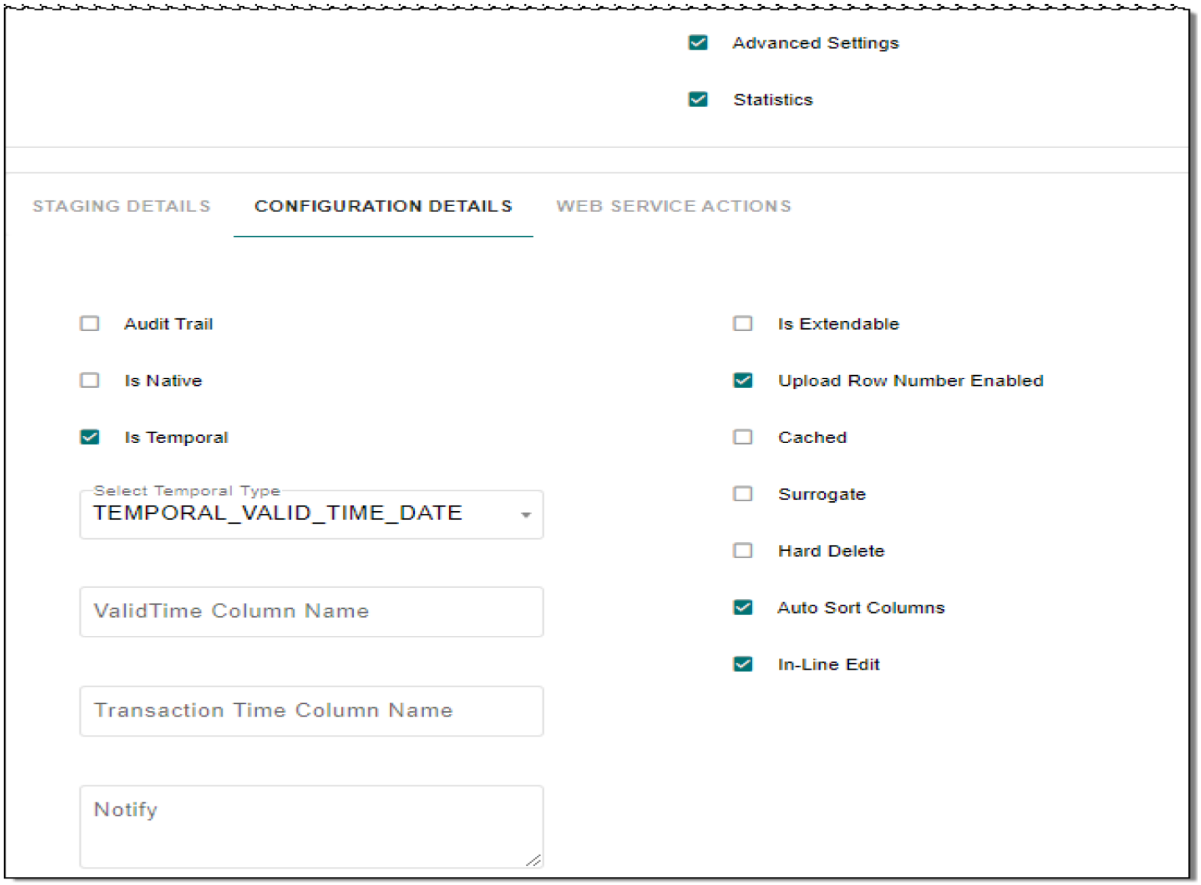
Figure 822: Model Details—Advanced Setting-Configuration Details



☑ Approval History
☐ Audit Trail
☐ Is Native
☐ Is Temporal
☐ Is Extendable
☐ Upload Row Number Enabled
☐ Cached
☐ Surrogate
☐ Hard Delete
☑ Auto Sort Columns
☐ In-Line Edit

- **Approval History**: select this check box to enable approval history on table.
- **Audit Trail**—select this check box to enable audit trail on table. If Audit Trail option is enabled, the Audit End Date check box is displayed. When Audit End Date check box is selected, the existing entry in audit table will be updated with an end date and a new entry will be made to the audit table with a start date.
- **Is Native**— Select this check box to exclude the table in MDM process and table will not be included in SYS_TABLE_MAP table.
- **Is Temporal**—select this checkbox to make the table temporal.When the Is Temporal checkbox is selected, the following options are displayed.

Figure 823: Model Details—Advanced Setting- Temporal Details



☑ Advanced Settings

☑ Statistics

☐ Audit Trail

☐ Is Native

☑ Is Temporal

Select Temporal Type: TEMPORAL_VALID_TIME_DATE

ValidTime Column Name

Transaction Time Column Name

Notify

☐ Is Extendable

☑ Upload Row Number Enabled

☐ Cached

☐ Surrogate

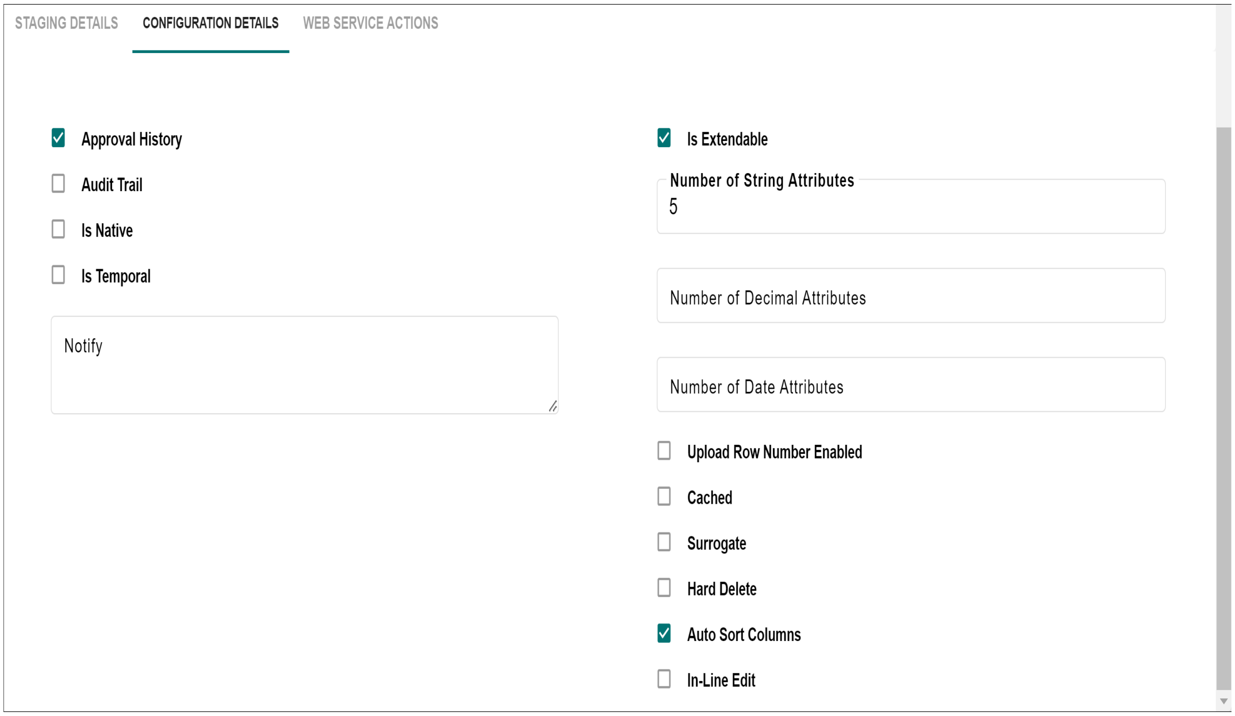
☐ Hard Delete

☑ Auto Sort Columns

☑ In-Line Edit

- **Is Extendable**—if this checkbox is selected, you can dynamically add attributes or columns to an existing table without performing any changes to the underlying data model. When Is Extendable option is selected, it displays three entry fields where you can enter the number of extended attributes to be created as in Figure 824. For String attributes, the default and minimum value is 5 and even if the entered value is less than five, five extended String attributes will be created.

Figure 824: Model Details—Advanced Setting- Extendable Details



☑ Approval History
☐ Audit Trail
☐ Is Native
☐ Is Temporal

Notify

☑ Is Extendable

Number of String Attributes: 5

Number of Decimal Attributes

Number of Date Attributes

☐ Upload Row Number Enabled
☐ Cached
☐ Surrogate
☐ Hard Delete
☑ Auto Sort Columns
☐ In-Line Edit

- **Upload Row Number Enabled**—while loading the data through excel upload process for the model being created, if any error(s) are encountered, the corresponding row number will be captured and displayed on the error details UI as in Figure 824 if the “Upload Row Number Enabled” option is selected. If the “Upload Row Number Enabled” option is not selected, the “UPLOAD_ROW_NUMBER” column will not be displayed on the Error Details UI.
- **Cached**—select this checkbox if data needs to be cached.
- **Surrogate**—select this checkbox to make the column surrogate key. When this checkbox is selected, the Id Prefix textbox is displayed. Specify the prefix parameter to system generated surrogate key.
- **Hard Delete**—select this checkbox to enable hard delete on the table. That is any delete on table will permanently delete records from table.

The display of error record row number is not supported on Input staging tables.

- **Auto Sort Columns**—if this checkbox is selected, the table columns on the configurable UI will be sorted and displayed in the following order: primary key columns, required columns and other columns. If this checkbox is not enabled, the columns will be displayed in the order in which the columns were created during model definition.

- **Valid Time Column and Transaction Time Column**: valid time column and transaction time column provide physical or logical name of the column. Enter the required values in the valid time column and transaction time column as in Table 25.

  The above fields are optional and if not provided, the default names: SYS_VALID_TIME and SYS_TRANSACTION_TIME will be used.

Temporal feature is supported only on Teradata database versions 13.10 and above. All the limitations with temporal table on Teradata database will be applied to the MDM temporal table. For more details, refer to the Teradata Documentation.

Table 25: Temporal Data Type Description

Temporal Data Types	Valid Time		Transaction Time	
	Data Type	Required	Data Type	Required
Temporal_Valid_Time_Date	Date	User defined	--	--
Temporal_Valid_Time_Timestamp	Timestamp	User defined	--	--
Temporal_TransactionTime	--	--	Timestamp (6) with timezone	Not Null
Bi_Temporal_Date	Date	User defined	Timestamp (6) with timezone	Not Null
Bi_Temporal_Timestamp	Timestamp	User defined	Timestamp (6) with timezone	Not Null

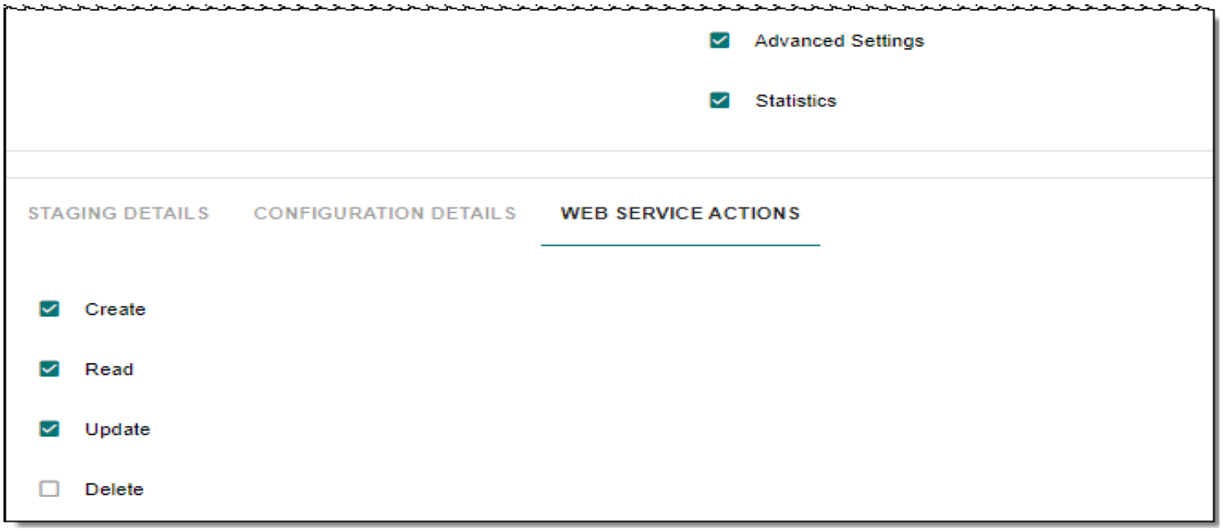
---

Unique Secondary Index (USI) should not be defined on Temporal tables as it may lead to DML failures. When converting RDM tables to Temporal, see the note in Section : “Logical Data Model.” in Chapter 15: “Manage Lookup Data.”

- **Web Service Actions** tab: with Web Service Actions tab selected, you can enable the web service components for the model being created. You can enable the CRUD (Create, Read, Update, and Delete) interfaces as in Figure 825.

In collapsed mode, files are packed in .war file format, updating the generated CRUD rules in the deployed .war file are restricted. So CRUD web service can only be generated in collocated mode and rule files can be ported manually in collapsed mode.

Figure 825: Model Details—Advanced Setting-Web Service Actions



☑ Advanced Settings

☑ Statistics

☑ Create

☑ Read

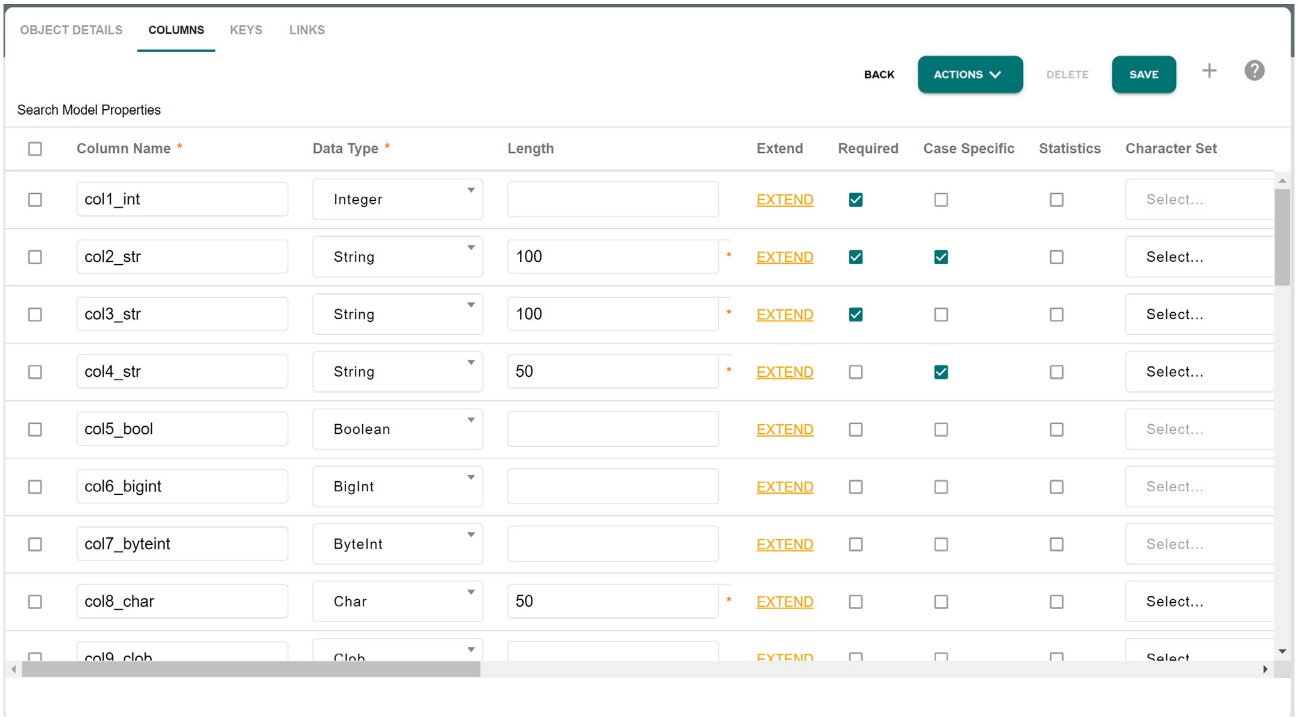
☑ Update

☐ Delete

3 On the **Model Details** page, select the **Columns** tab as in Figure 826,

- Click **Add** to add column names by entering the below details:

Figure 826: Model Details—Columns



☐	Column Name *	Data Type *	Length	Extend	Required	Case Specific	Statistics	Character Set
☐	col1_int	Integer		EXTEND	☑	☐	☐	Select...
☐	col2_str	String	100 *	EXTEND	☑	☑	☐	Select...
☐	col3_str	String	100 *	EXTEND	☑	☐	☐	Select...
☐	col4_str	String	50 *	EXTEND	☐	☑	☐	Select...
☐	col5_bool	Boolean		EXTEND	☐	☐	☐	Select...
☐	col6_bigint	BigInt		EXTEND	☐	☐	☐	Select...
☐	col7_byteint	ByteInt		EXTEND	☐	☐	☐	Select...
☐	col8_char	Char	50 *	EXTEND	☐	☐	☐	Select...
☐	col9_clob	Clob		EXTEND	☐	☐	☐	Select...

- **Column Name**—unique name of the column.

The maximum supported column and table name length is 100.

- **Data Type**—data type of the column. The data type can be (Boolean, Char, Clob, Date, Datetime, Decimal, Double, EncryptedString, File, Float, Integer, BigInt, PeriodDate, PeriodTimestamp, String, ST_geometry, Timestamp(0), Timestamp(6), VarByte, Xml and JSON)

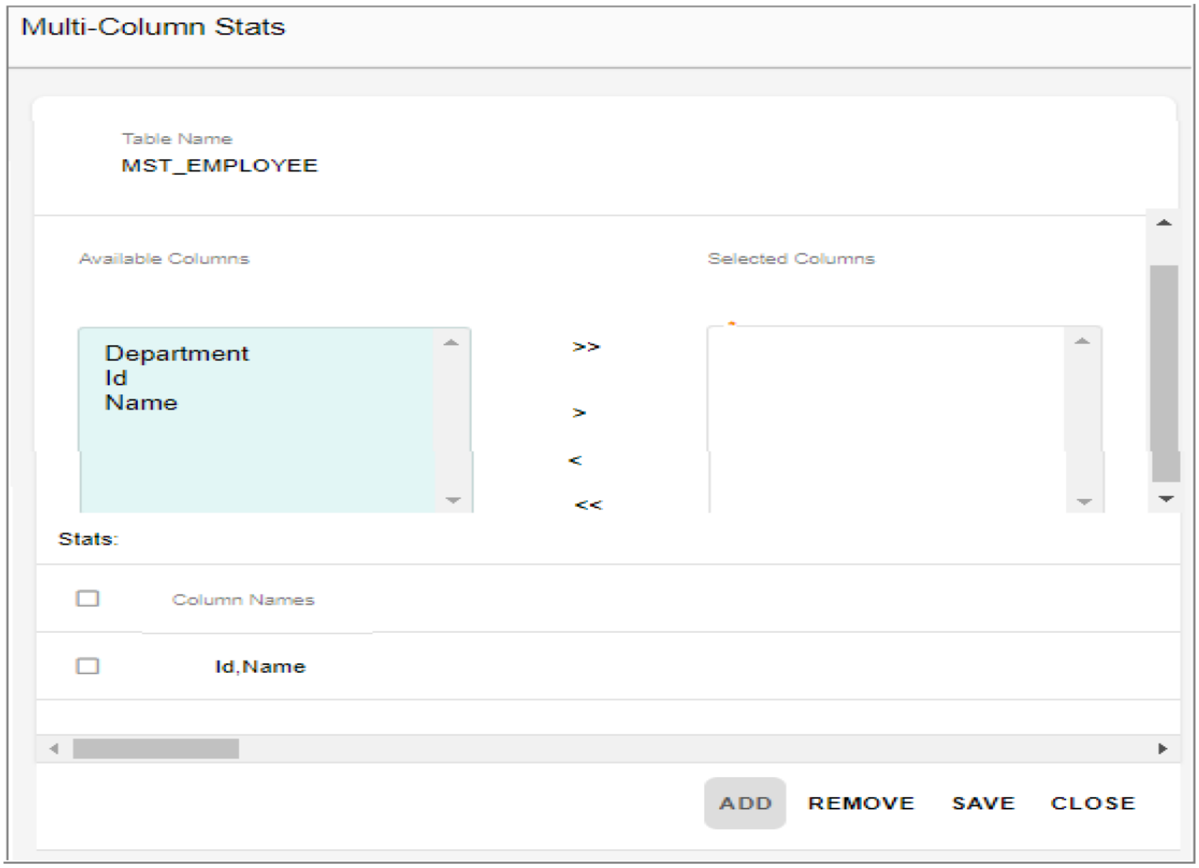
If the data type default value is defined as SYSTEM_DATE, SYSTEM_TIME and SYSTEM_TIMESTAMP, the default current date, time and timestamp would be taken as data value.

- **Length**—length of the data type. For decimal data type, number of digits after decimal can be specified by appending number with underscore and count of digits after decimal. For example: 30_5.
- **Extend**—using extend option, details of columns can be extended from a dictionary where it is already defined. On **Dictionary Data Type** popup, the **Folder Name** column is populated only for mtt migrated dictionaries.
- **Required**—select the checkbox, if you want the column to be a required field.
- **Case Specific**—select this checkbox if you want the column value to be case specific. By default, it is not case specific.

- Case specific is not supported on primary key columns.

- **Statistics**—select this checkbox if you want to enable column level statisticscollection. To define statistics on combination of columns, select **Multi-Column Stats** option from **Actions** dropdown. The **Multi-Column Stats** pop-up is displayed. On the **Multi-Column Stats** pop-up, select the column(s) on which you want to define statistics from the **Available Columns** list and move it to **Selected Columns** list and click **Add**. The selected column combinations will be displayed under the **Stats** section as in Figure 846. You can also delete the column combination using the **Remove** button. Once all the required column combinations are added, click **Save**.

Figure 827: Multi Columns Stats



- **Character Set**—the Character Set dropdown decides the character set for the column of the table. If LATIN is selected, the column character set will be set as Latin, this means it can accept only Latin characters. If UNICODE is selected, the column character set will be set as Unicode, this means it can accept any Unicode character. If no value is provided, by default LATIN is taken.
- **Default Value**—default value of the column if any.
- **Compression Statement**—Compression plays an important role in saving some space and increasing the performance of SQL query. COMPRESS practically eliminates the data storage of nulls (or 256 constant values) for fixed-length, non-primary index columns. To implement Compression, add COMPRESS with the column definition as in the below example.

  ```
  COMPRESS ('RAJ','KEVIN','OBAMA')
  COMPRESS
  COMPRESS ('HR','IT','FS')
  ```
- **Constraint**—you can define an expression based constraint that is evaluated dynamically at the database level. All the constraints must follow a rooted Boolean tree. If there is no root element present, by default AND is taken as the root element. For example to apply the constraint

  ((Role_ID > 50 AND Role_ID < 55) OR (Role_ID = 60)) you must add the constraint as:

OR

|

|____AND

| |

| |_____(Role_ID >50)

| |_____(Role_ID <55)

|

|_____Role_ID=60

- On the **Constraint** column, click Constraint link.

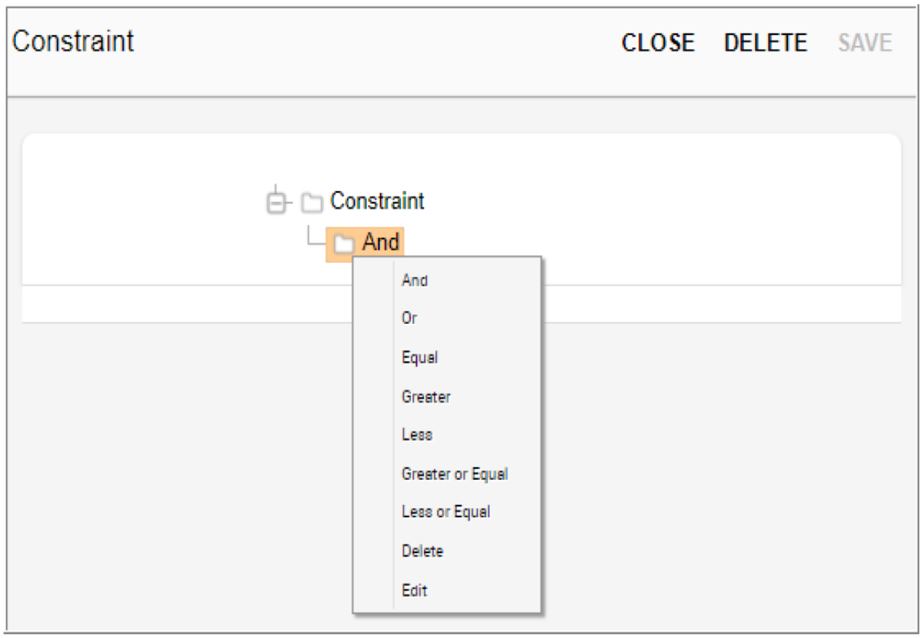
  The **Constraint** pop-up (Figure 828) is displayed.
- On the **Constraint** pop-up, right-click the Constraint, the (And/Or) list is displayed.
- Select And or Or to add under the constraints and right-click on any added And or Or.

  The Menu option with list of operations is displayed.
- Select the required option from menu. For example: Select Greater and enter the input value.

  The value gets added to the Constraint.
- Click **Save**.
- On the Model Builder—Columns UI, under Constraint column, the link is displayed as Defined.

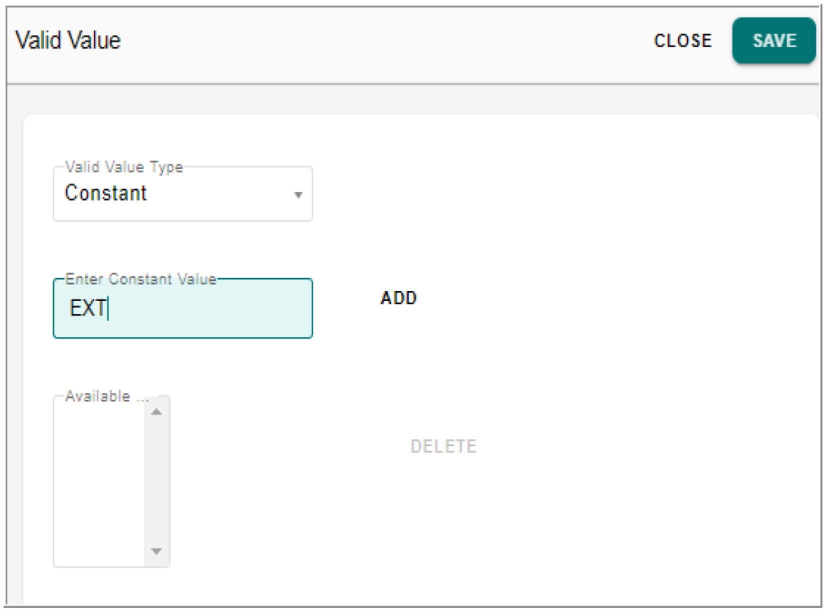
  You can click the Defined link to navigate to Constraint pop-up to modify the defined Constraints if required.

Figure 828: Constraint



- **Enum**—click Edit to provide the type of ENUM. The Valid Value popup is displayed as in Figure 829.

Figure 829: Valid Value—Constant

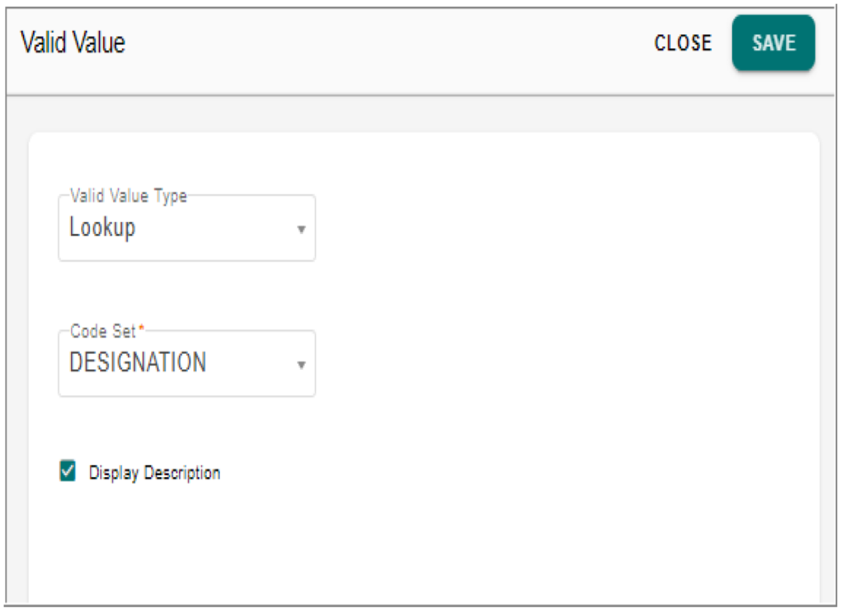


In the **Valid Value** popup, the valid value type can be Constant, Lookup or Reference type.

- If **Constant** type is selected, enter the constant values in the **Enter Constant Value** text field and click **Add** and then click **Save Model** as in Figure 829. The values will get added to the **Available Constant Values** list. You can delete the constant values using **Delete** button.
- If **Lookup** type is selected, select the code set and click **Save** as in Figure 830.

  For any code set used as a lookup, by default, on the UI, code value would be displayed in the dropdown. To display code value description instead of code value, select the **Display Description** checkbox.

Figure 830: Valid Value—Lookup



Valid Value Type: Lookup

Code Set*: DESIGNATION

☑ Display Description

- If **Reference** type is selected, enter the following and click **Save** as in Figure 831.

  Source Table: select the source table from which the data need to be fetched.

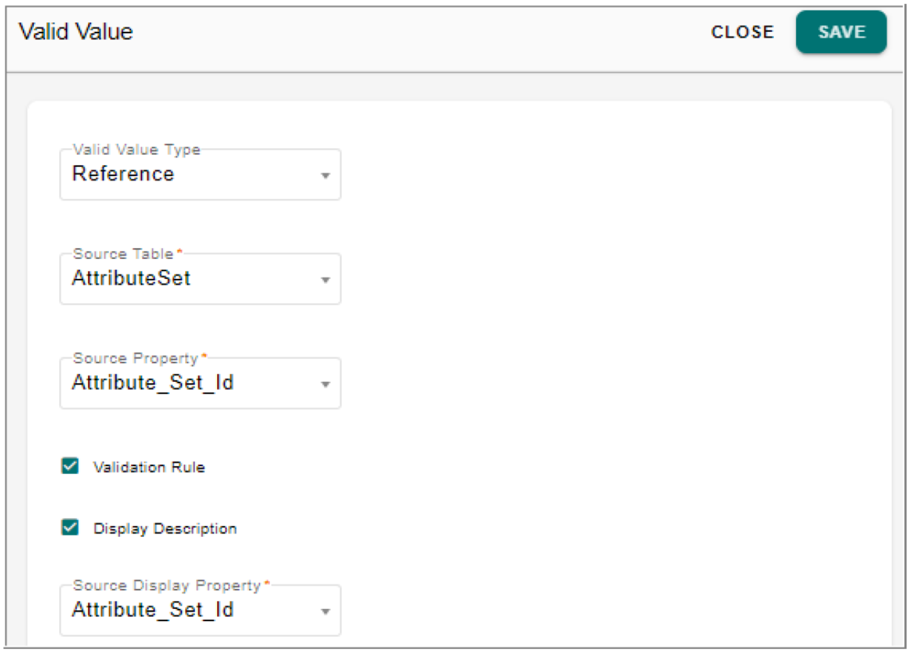
  Source Property: select the property of the source table from which the value need to be fetched.

  Display Description: by default, the source property is displayed on the UI. To display the description of the property, select Display Description checkbox.

  Source Display Property: select the property of the source table to be used as the description to be displayed.

  Validation Rule: select this checkbox to create referential integrity rules for links like reverse link, but without creating soft link in database. By default, this is not enabled. You can select either reverse link or validation rule option, but not both.

Figure 831: Valid Value—Reference



Valid Value

Valid Value Type: Reference

Source Table*: AttributeSet

Source Property*: Attribute_Set_Id

☑ Validation Rule

☑ Display Description

Source Display Property*: Attribute_Set_Id

- **Physical Column Name**—provide physical name of column
- **Column display Name**—provide display name of column.

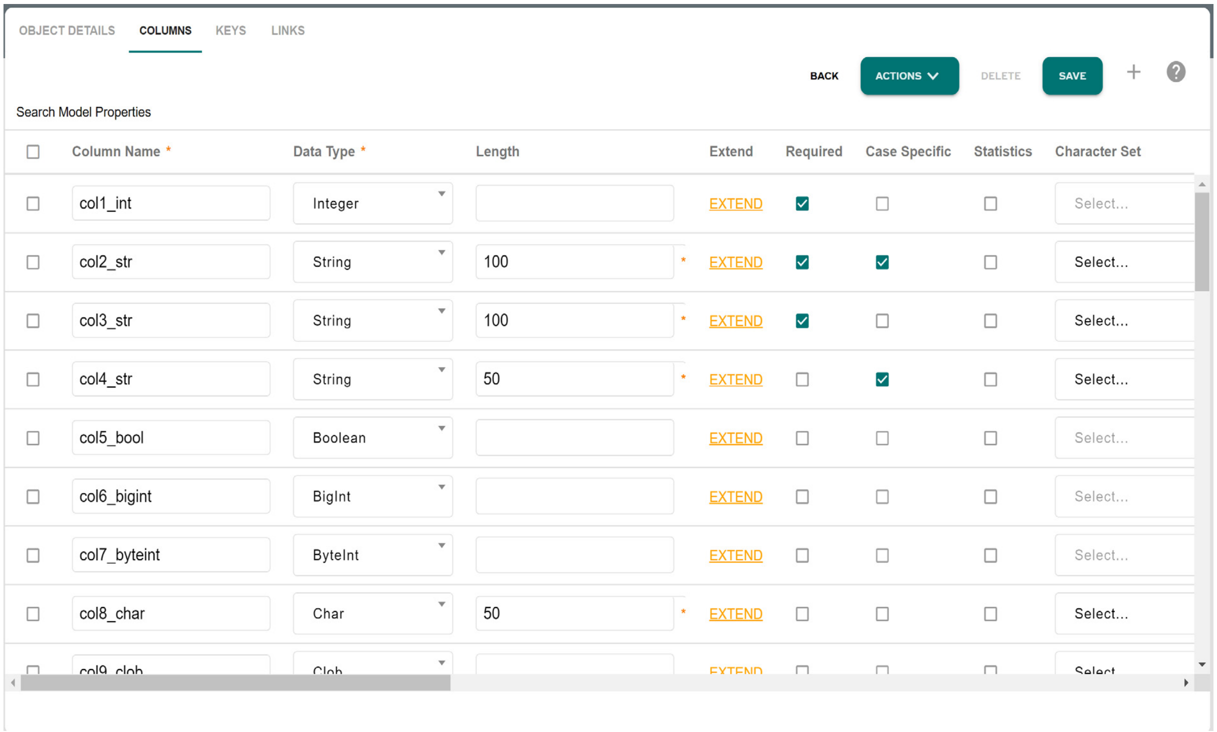
During model deployment, the column display name will not be honored in the database.

- **Description**—provide the description for the column.
- **Source**—select the source for the table column. Can be Master or Backend or both.
- **Editable**—select the checkbox if you want the column value to be editable.
- **No Wrap**—select the checkbox if you want the column value not to be wrapped to fit into a cell in table.
- **Sortable**—select the checkbox if you want the column value to be sortable.
- **Hidden**—select the checkbox if you want the column value to be hidden.
- **Searchable**—select the checkbox if you want the column value to be searchable.
- **I18nize**—select the checkbox if you want the column value to be i18nized.
- **Active**—By default, the column is selected as active. To deactivate the column, deselect the Active check box.
- **Constraint Value**—Column level constraint can be placed here and the only permitted value is CHECK: allows to specify the range of value or value constraints permissible in the column.

- **Manage Sequence**: the position of columns can be reordered within a table by using the **Manage Sequence** button under the **Columns** tab as in Figure 832. During ISG, the position of columns defined in Model Builder will be considered and auto generated configurable UI will be created. The auto generated configurable UI will have the columns in same order as defined through model builder.

  With the **Columns** tab selected, select the column(s) to be reordered and click **Manage Sequence** as in Figure 832.

Figure 832: Model Details—Columns Re-Order

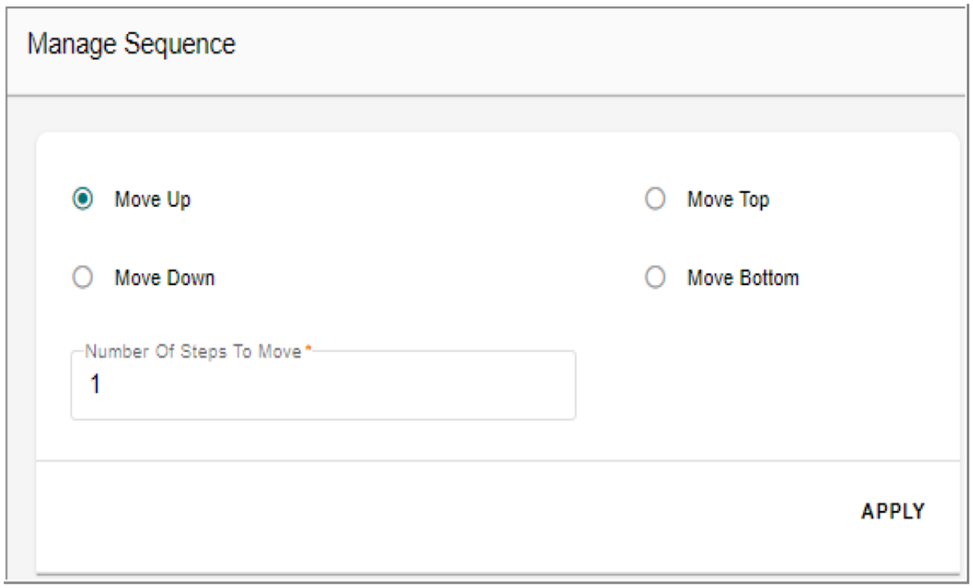


Search Model Properties

☐	Column Name *	Data Type *	Length	Extend	Required	Case Specific	Statistics	Character Set
☐	col1_int	Integer		EXTEND	☑	☐	☐	Select...
☐	col2_str	String	100 *	EXTEND	☑	☑	☐	Select...
☐	col3_str	String	100 *	EXTEND	☑	☐	☐	Select...
☐	col4_str	String	50 *	EXTEND	☐	☑	☐	Select...
☐	col5_bool	Boolean		EXTEND	☐	☐	☐	Select...
☐	col6_bigint	BigInt		EXTEND	☐	☐	☐	Select...
☐	col7_byteint	ByteInt		EXTEND	☐	☐	☐	Select...
☐	col8_char	Char	50 *	EXTEND	☐	☐	☐	Select...
☐	col9_clob	Clob		EXTEND	☐	☐	☐	Select

The **Manage Sequence** pop-up (Figure 833) is displayed.

Figure 833: Model Details—Columns Re-Order



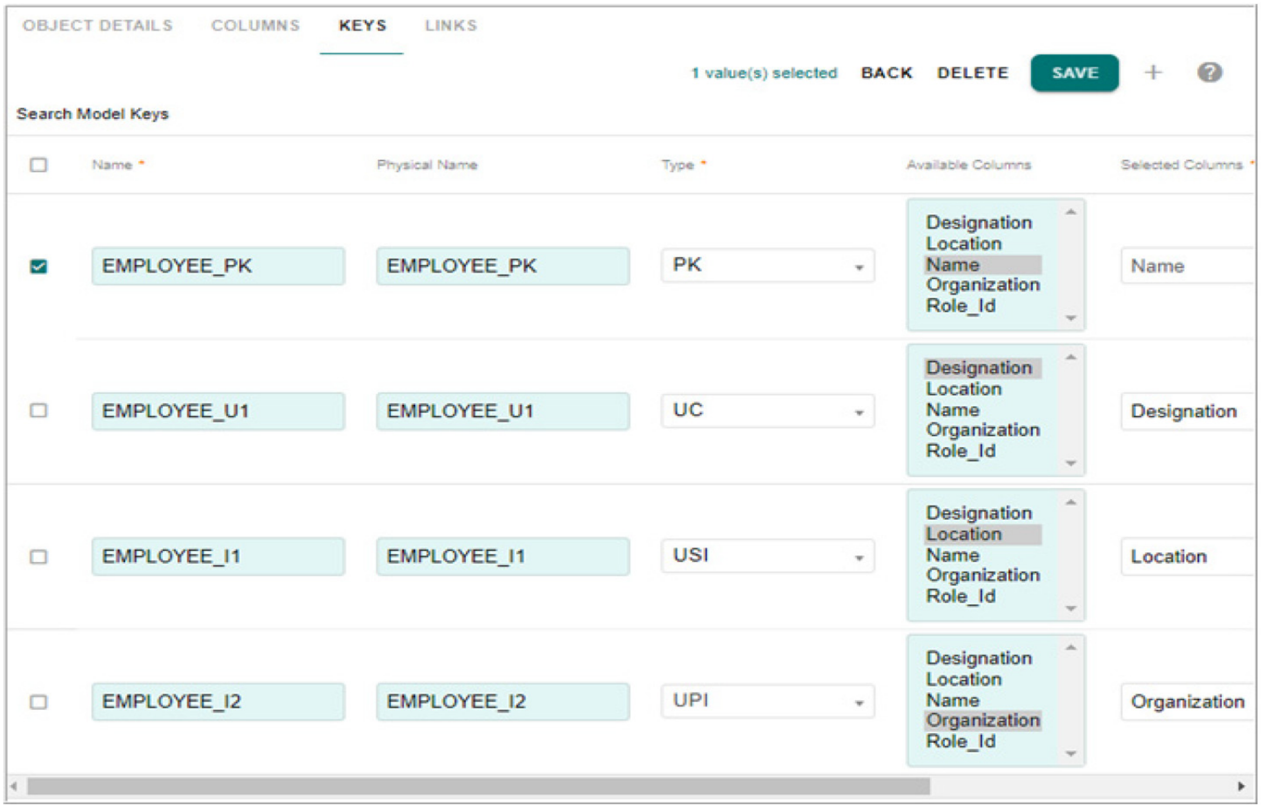
Number Of Steps To Move *
1

On the **Manage Sequence** pop-up (Figure 833), you can perform the following functions:

- **Move Up**: if the Move Up option is selected, the Number of Steps to Move text box is displayed. Enter the number of rows you want to move up and click Apply.
- **Move Down**: if the Move Down option is selected, the Number of Steps to Move text box is displayed. Enter the number of rows you want to move down and click Apply.
- **Move Top**: select this option to move the selected column to the top most row.
- **Move Bottom**: select this option to move the selected column to the last row.
- **Delete Columns**: delete the columns using the **Delete** button.

4 On the **Model Details** page, select the **Keys** tab as in Figure 834 and click **Add** to enter key values with the below details:

Figure 834: Model Details—Keys



☐	Name *	Physical Name	Type *	Available Columns	Selected Columns *
☑	EMPLOYEE_PK	EMPLOYEE_PK	PK	Designation Location Name Organization Role_Id	Name
☐	EMPLOYEE_U1	EMPLOYEE_U1	UC	Designation Location Name Organization Role_Id	Designation
☐	EMPLOYEE_I1	EMPLOYEE_I1	USI	Designation Location Name Organization Role_Id	Location
☐	EMPLOYEE_I2	EMPLOYEE_I2	UPI	Designation Location Name Organization Role_Id	Organization

- **Name**—unique name of the key. When you select the key type from **Type** drop-down, the Name and Physical Name field will be populated by default with a value as TABLENAME_KEYTYPEPREFIXINTEGER(number of occurrence of particular key type). For example, if the selected key type is UNIQUE and the table name is Employee, the Key Name and Physical Name will be EMPLOYEE_U1.

  You can change the default value if required. The below table displays the Key Prefix for different key types.

Key Type	Key Name
PRIMARY KEY	TABLENAME_PK
UNIQUE PRIMARY INDEX	TABLENAME_I
NON UNIQUE SECONDARY INDEX	TABLENAME_I
UNIQUE SECONDARY INDEX	TABLENAME_I
NON UNIQUE PRIMARY INDEX	TABLENAME_PI
UNIQUE CONSTRAINT	TABLENAME_PI

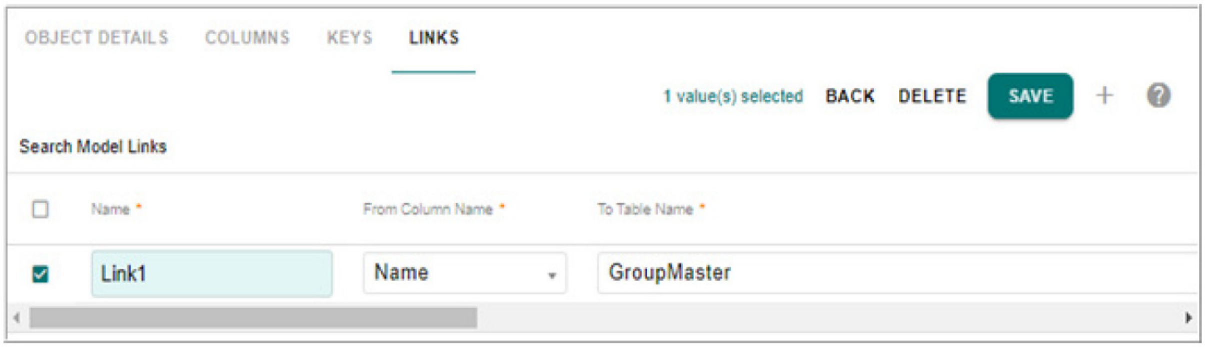
- **Physical Name**—physical name of the key. If the physical name is not provided, it will be derived from KEY NAME.

- **Type**—type of Key. The Key type can be (PRIMARY/UNIQUE/INDEX/ UNIQUE_INDEX/NUPI)

  Note: Ensure to have primary column or at least one column to be Not NULL.
- **Available Columns**—displays all the existing columns. Select the column name that will be part of this key.
- **Selected Columns**—displays the column name selected from Available Columns list.
- **Active**—By default the Active check box is selected. You can deactivate by deselecting the Active check box.
- **Statistics**— select this checkbox if you want to enable indexes level statistics collection.

5 Under the **Links** tab, click **Add** icon to create links to other documents in the model and enter the following:

Figure 835: Model Details—Links



Search Model Links

☐	Name *	From Column Name *	To Table Name *
☑	Link1	Name	GroupMaster

- **Name**—enter name of the Foreign Key (FK) link. Name should be unique.
- **From Column Name**—select the column name defined under Columns tab from which FK link needs to be created.
- **To Table Name**—select the table name to which FK link needs to be created.
- **To Column Name**—enter the logical name of the column to which FK link needs to be created.
- **Physical Name**—enter the physical name of the link.
- **Is Reverse Link**—Foreign keys can be defined with or without reverse links. Select this checkbox to create reverse link from the referenced table. If reverse link option is checked, a database foreign key constraint will get created with no check (soft referential integrity) option only and default business rules will generate. This will restrict the delete on parent table if references are found in child table. If reverse link is not checked, the database constraint is not created but the forward link will be available in the X-document.
- **Reserve Link Name**—enter a reverse link name. If no name is provided, it will be derived from link name.
- **Validation Rule**— select this checkbox to create referential integrity rules for links like reverse link, but without creating soft link in database. By default, this is not enabled. You can select either reverse link or validation rule option, but not both.

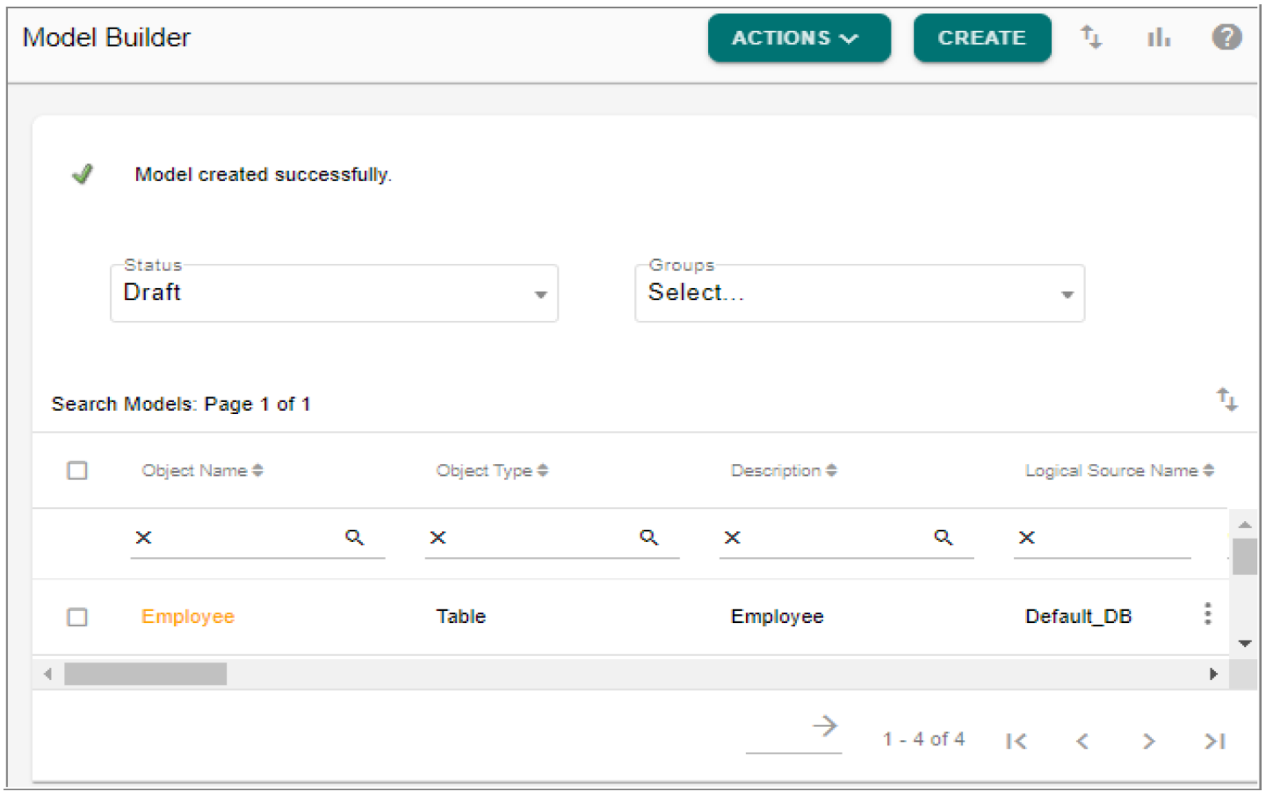
- **Active**—By default, the Active check box is selected. You can deactivate by deselecting the Active check box.

If you want to link columns on same table, you have to enter same link name for all the links on that table.

---

6 Once all the model details are entered, you can click on **Save**. The created model will be in the draft state as in Figure 836.

Figure 836: Model Builder



Model created successfully.

Status: Draft

Groups: Select...

Search Models: Page 1 of 1

☐	Object Name	Object Type	Description	Logical Source Name
☐	Employee	Table	Employee	Default_DB

Create Model using Excel Upload

On the Model Builder UI, excel upload facility is provided to model tables. You can define all the required properties of table (with details on logical/physical names, data types, PK/FK, PI, Character set, Table Subject Area etc.) in excel and upload it to create the table through ISG process. The uploaded table will be in DRAFT state. You can download excel template from the Model Builder UI.

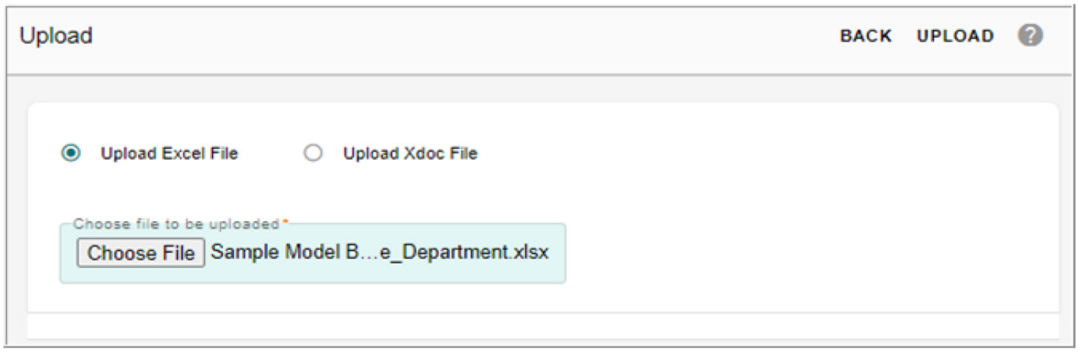
To upload an excel file:

1 Download the document template by clicking on ⇅ icon, fill in the required table data under different tabs for object details, columns, keys, links and facet documents.

For details on the various fields, see Section : “Template Guidelines”

2 On the **Model Builder** UI, select **Upload** from **Tasks** dropdown.

Figure 837: Upload File



● Upload Excel File ○ Upload Xdoc File

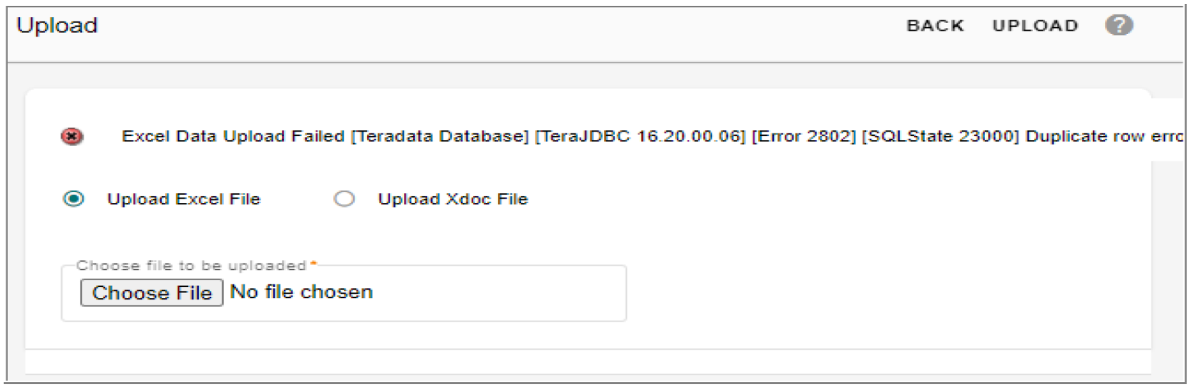
Choose file to be uploaded*
Choose File Sample Model B…e_Department.xlsx

3 On the **Upload File** UI, select **Upload Excel File** option and click **Choose File** to select the file and then click **Upload** as in Figure 837.

Message: “Data uploaded successfully” is displayed.

The uploaded model will be in the draft state if there were no errors in the excel file. If there were any errors in the excel file, the upload will fail and the below message would be displayed as in Figure 838. The error log can be viewed from **Utilities** -> **Logs UI** under Platform service.

Figure 838: Upload File—Error Message



Excel Data Upload Failed [Teradata Database] [TeraJDBC 16.20.00.06] [Error 2802] [SQLState 23000] Duplicate row err

● Upload Excel File ○ Upload Xdoc File

Choose file to be uploaded*
Choose File No file chosen

The following notes are applicable for table upload:

- Only one model at a time can be uploaded using excel upload template. You can upload multiple table metadata one by one and then run ISG for all of them at a time.

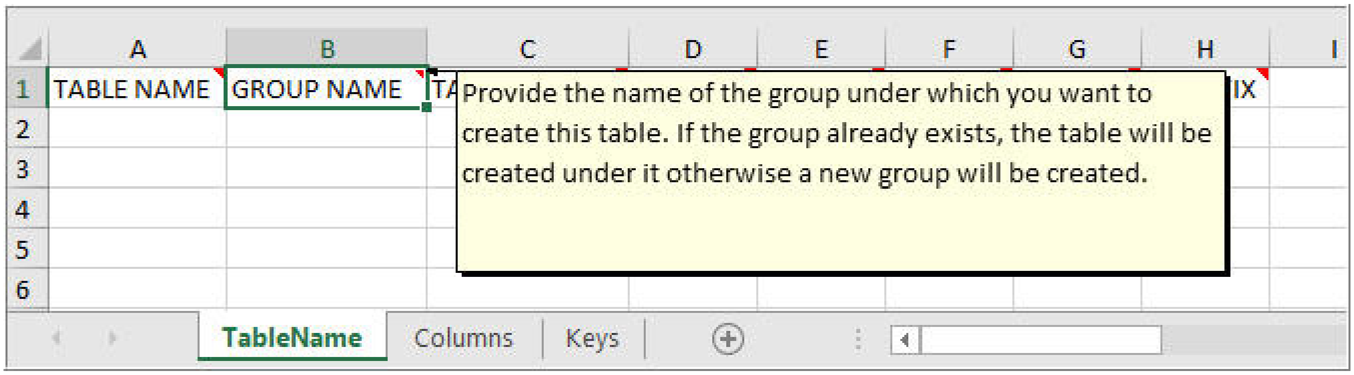
- Logical name and physical name are derived from display name if not provided.
- For specified property information, if column name for that property is not provided, the entire row will be skipped and other properties will be inserted.
- By default all entries in excel will be ACTIVE.

Template Guidelines

The Model Builder UI provides Simple Excel Template, Advanced Excel Template and Non MDM Template option to download the document template. The Simple Excel Template contains only the fields that are required for creating a table. Advanced Excel Template contains all fields that are supported for a table. The Non MDM Template contains all the fields that are supported for non MDM table.

In Simple Excel Template option, the template for upload of Tables definition contains the three required tabs (TableName, Columns and Keys) as in Figure 839. You can hover over on each column name in the excel sheet to see a brief description about the column name as in Figure 839.

Figure 839: Model Builder Template—Simple Template

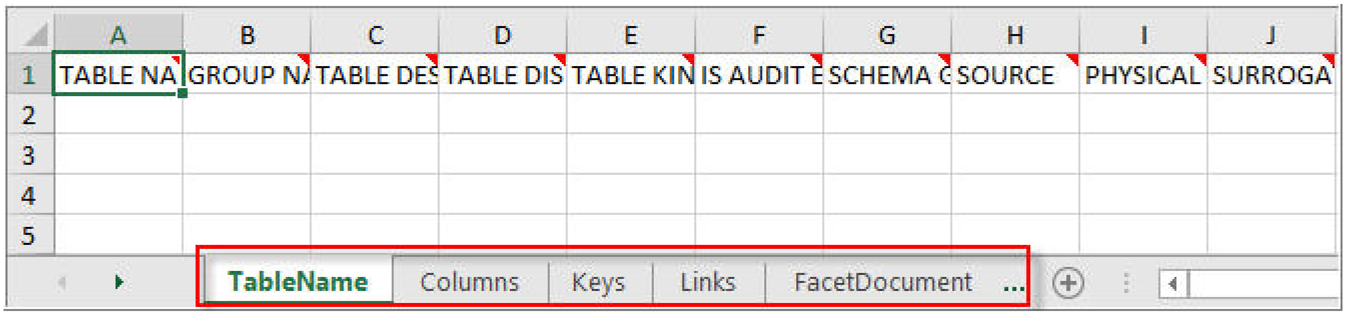


	A	B	C	D	E	F	G	H	I
1	TABLE NAME	GROUP NAME	TA					IX	
2									
3									
4									
5									
6									

Provide the name of the group under which you want to create this table. If the group already exists, the table will be created under it otherwise a new group will be created.

In Advance Excel Template option, the template for upload of Tables definition contains all the five tabs (TableName, Columns, Keys, Links and FacetDocument) as in Figure 840.

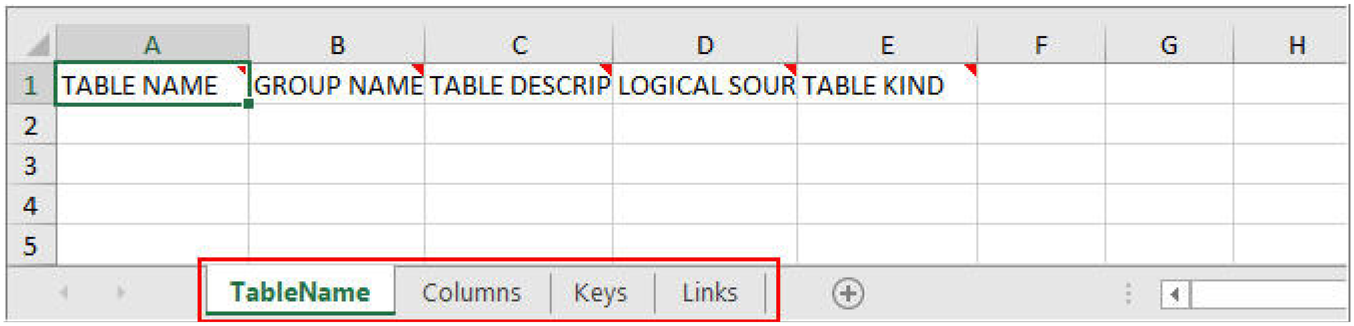
Figure 840: Model Builder Template—Advanced Template



	A	B	C	D	E	F	G	H	I	J
1	TABLE NA	GROUP N/	TABLE DES	TABLE DIS	TABLE KIN	IS AUDIT E	SCHEMA (	SOURCE	PHYSICAL	SURROGA
2										
3										
4										
5										

In Non MDM Template option, the template for upload of Tables definition contains four tabs (TableName, Columns, Keys and Links) as in Figure 841.

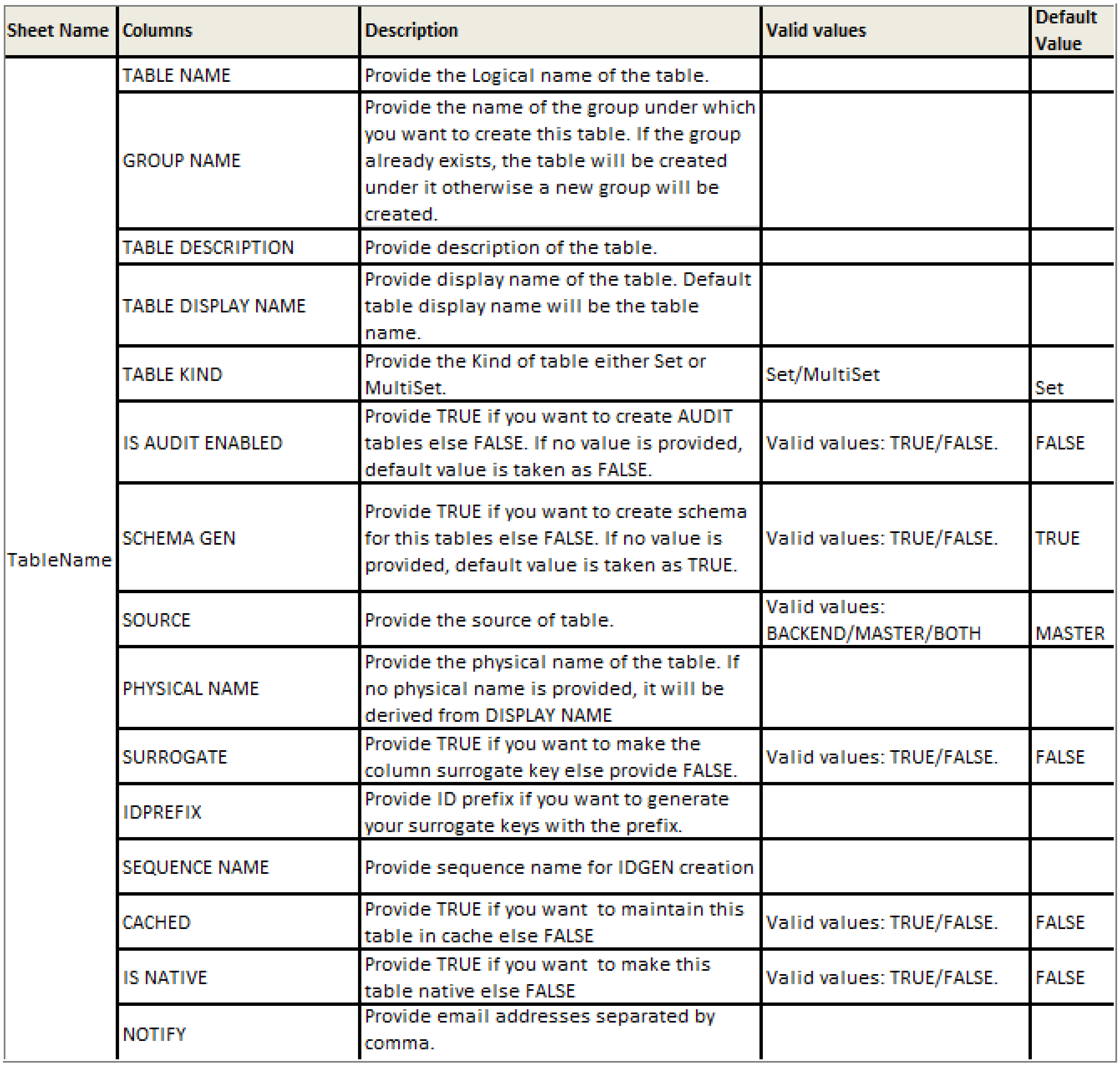
Figure 841: Model Builder Template—Non MDM Template



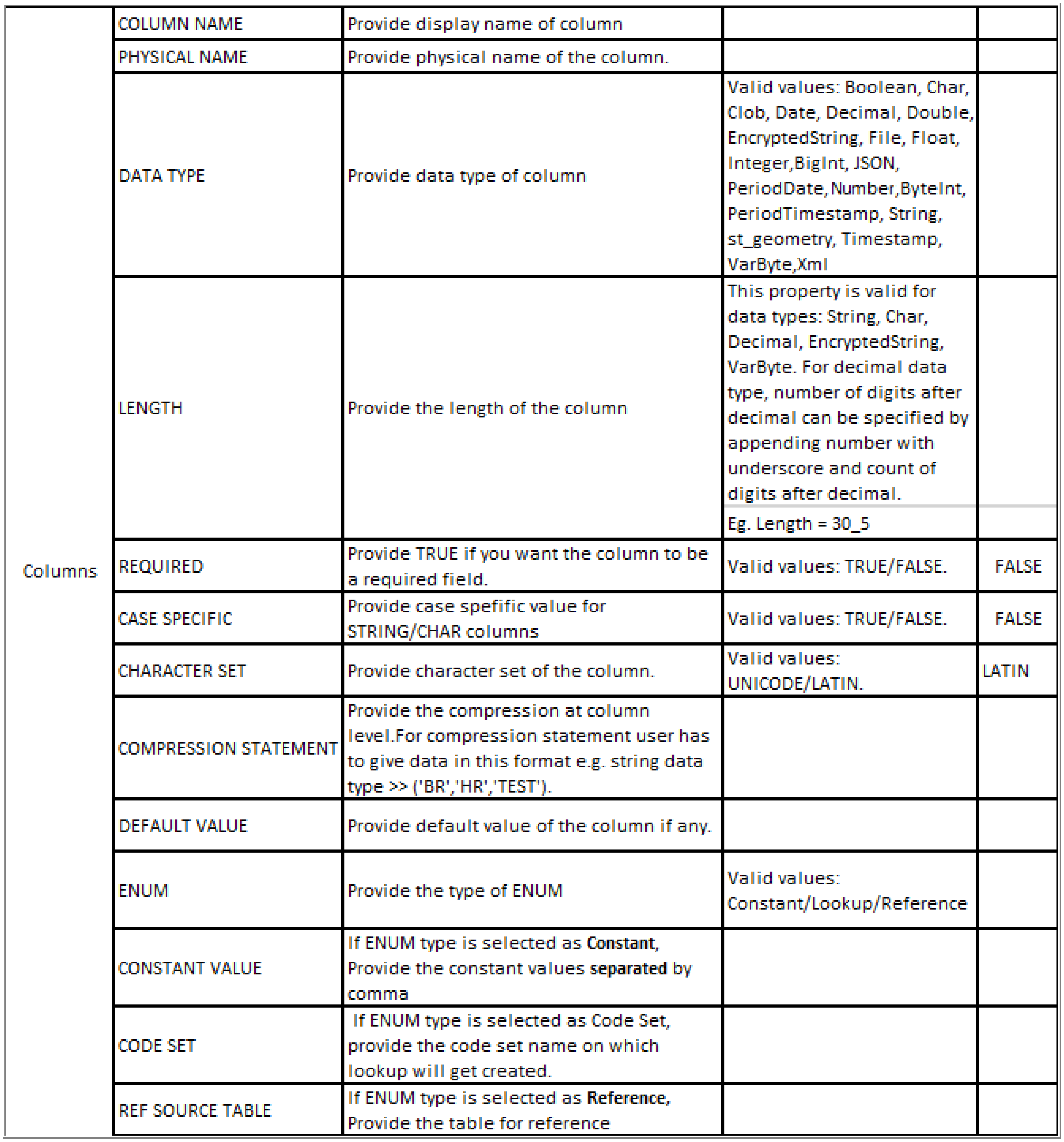
	A	B	C	D	E	F	G	H
1	TABLE NAME	GROUP NAME	TABLE DESCRIP	LOGICAL SOUR	TABLE KIND			
2								
3								
4								
5								

The following guidelines will help to fill in the template correctly. In the template guide table:

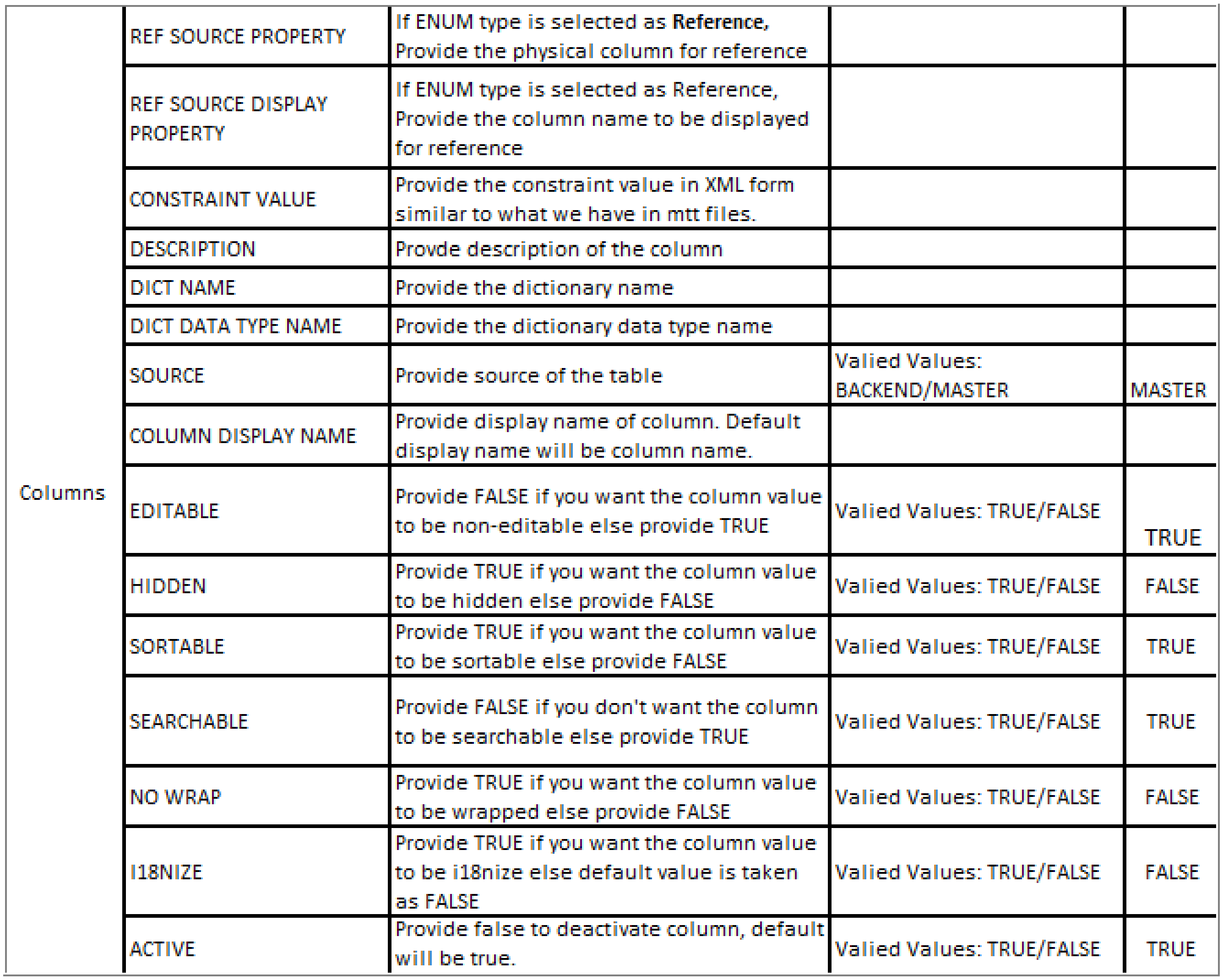
- **Sheet Name**: specifies the individual tabs in the excel template like table name, columns, keys, links and facet document.
- **Columns**: specifies the columns of individual tabs in the template. Columns that are marked in italics in the Excel template are not mandatory fields and even if these field values are not entered, default values will be populated.
- **Description**: specifies the description of the attributes or columns.
- **Valid Value**: specifies the valid values for the columns. Only the specified valid values will be accepted.
- **Default Value**: the specified default values will be taken if no valid values are entered.



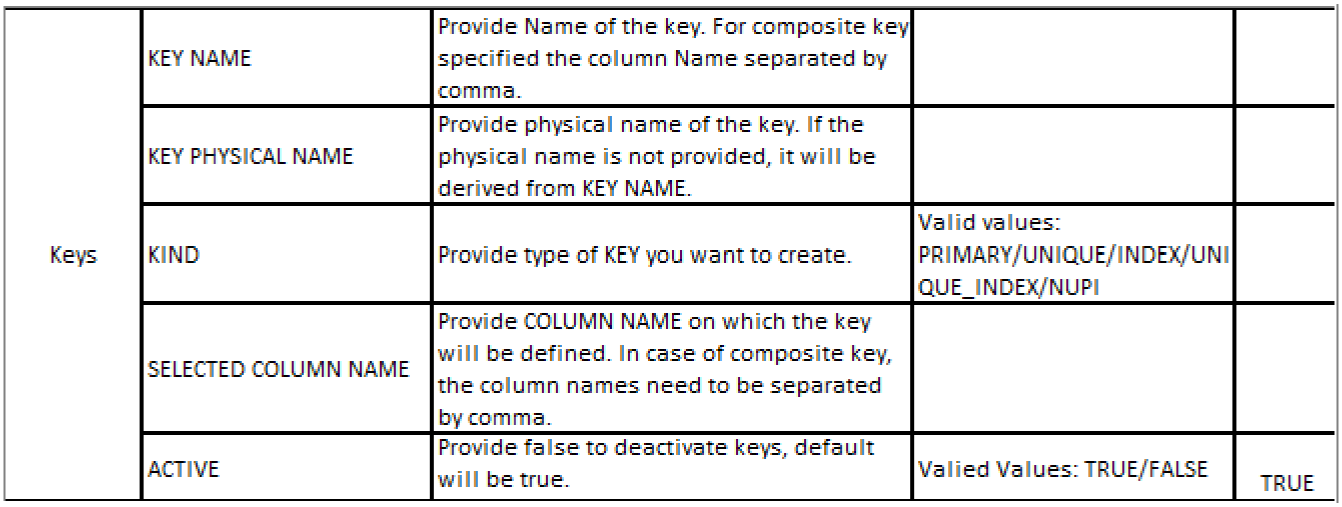
Sheet Name	Columns	Description	Valid values	Default Value
TableName	TABLE NAME	Provide the Logical name of the table.		
	GROUP NAME	Provide the name of the group under which you want to create this table. If the group already exists, the table will be created under it otherwise a new group will be created.		
	TABLE DESCRIPTION	Provide description of the table.		
	TABLE DISPLAY NAME	Provide display name of the table. Default table display name will be the table name.		
	TABLE KIND	Provide the Kind of table either Set or MultiSet.	Set/MultiSet	Set
	IS AUDIT ENABLED	Provide TRUE if you want to create AUDIT tables else FALSE. If no value is provided, default value is taken as FALSE.	Valid values: TRUE/FALSE.	FALSE
	SCHEMA GEN	Provide TRUE if you want to create schema for this tables else FALSE. If no value is provided, default value is taken as TRUE.	Valid values: TRUE/FALSE.	TRUE
	SOURCE	Provide the source of table.	Valid values: BACKEND/MASTER/BOTH	MASTER
	PHYSICAL NAME	Provide the physical name of the table. If no physical name is provided, it will be derived from DISPLAY NAME		
	SURROGATE	Provide TRUE if you want to make the column surrogate key else provide FALSE.	Valid values: TRUE/FALSE.	FALSE
	IDPREFIX	Provide ID prefix if you want to generate your surrogate keys with the prefix.		
	SEQUENCE NAME	Provide sequence name for IDGEN creation		
	CACHED	Provide TRUE if you want to maintain this table in cache else FALSE	Valid values: TRUE/FALSE.	FALSE
	IS NATIVE	Provide TRUE if you want to make this table native else FALSE	Valid values: TRUE/FALSE.	FALSE
	NOTIFY	Provide email addresses separated by comma.		



Columns	COLUMN NAME	Provide display name of column		
	PHYSICAL NAME	Provide physical name of the column.		
	DATA TYPE	Provide data type of column	Valid values: Boolean, Char, Clob, Date, Decimal, Double, EncryptedString, File, Float, Integer,BigInt, JSON, PeriodDate,Number,ByteInt, PeriodTimestamp, String, st_geometry, Timestamp, VarByte,Xml	
	LENGTH	Provide the length of the column	This property is valid for data types: String, Char, Decimal, EncryptedString, VarByte. For decimal data type, number of digits after decimal can be specified by appending number with underscore and count of digits after decimal. Eg. Length = 30_5	
	REQUIRED	Provide TRUE if you want the column to be a required field.	Valid values: TRUE/FALSE.	FALSE
	CASE SPECIFIC	Provide case spefific value for STRING/CHAR columns	Valid values: TRUE/FALSE.	FALSE
	CHARACTER SET	Provide character set of the column.	Valid values: UNICODE/LATIN.	LATIN
	COMPRESSION STATEMENT	Provide the compression at column level.For compression statement user has to give data in this format e.g. string data type >> ('BR','HR','TEST').		
	DEFAULT VALUE	Provide default value of the column if any.		
	ENUM	Provide the type of ENUM	Valid values: Constant/Lookup/Reference	
	CONSTANT VALUE	If ENUM type is selected as **Constant**, Provide the constant values **separated** by comma		
	CODE SET	If ENUM type is selected as Code Set, provide the code set name on which lookup will get created.		
	REF SOURCE TABLE	If ENUM type is selected as **Reference**, Provide the table for reference		



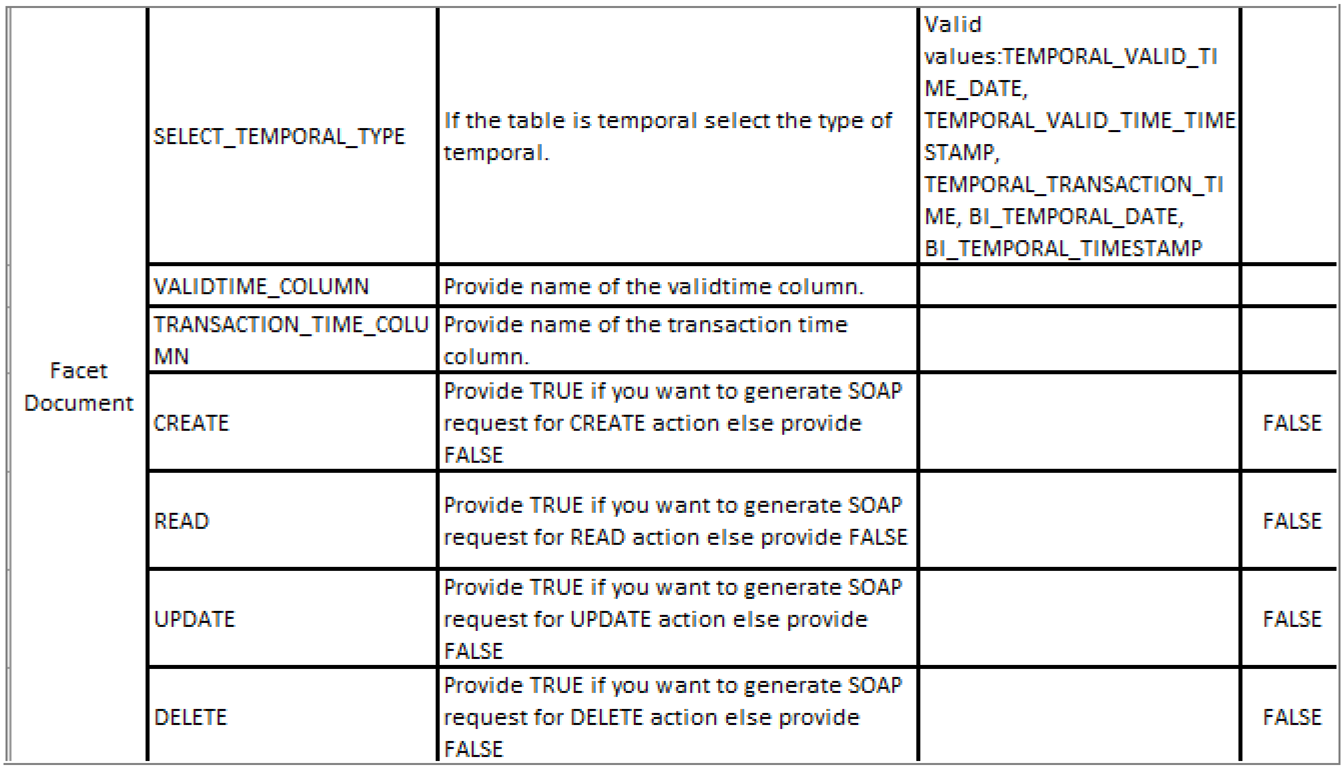
Columns	REF SOURCE PROPERTY	If ENUM type is selected as **Reference,** Provide the physical column for reference		
	REF SOURCE DISPLAY PROPERTY	If ENUM type is selected as Reference, Provide the column name to be displayed for reference		
	CONSTRAINT VALUE	Provide the constraint value in XML form similar to what we have in mtt files.		
	DESCRIPTION	Provde description of the column		
	DICT NAME	Provide the dictionary name		
	DICT DATA TYPE NAME	Provide the dictionary data type name		
	SOURCE	Provide source of the table	Valied Values: BACKEND/MASTER	MASTER
	COLUMN DISPLAY NAME	Provide display name of column. Default display name will be column name.		
	EDITABLE	Provide FALSE if you want the column value to be non-editable else provide TRUE	Valied Values: TRUE/FALSE	TRUE
	HIDDEN	Provide TRUE if you want the column value to be hidden else provide FALSE	Valied Values: TRUE/FALSE	FALSE
	SORTABLE	Provide TRUE if you want the column value to be sortable else provide FALSE	Valied Values: TRUE/FALSE	TRUE
	SEARCHABLE	Provide FALSE if you don't want the column to be searchable else provide TRUE	Valied Values: TRUE/FALSE	TRUE
	NO WRAP	Provide TRUE if you want the column value to be wrapped else provide FALSE	Valied Values: TRUE/FALSE	FALSE
	I18NIZE	Provide TRUE if you want the column value to be i18nize else default value is taken as FALSE	Valied Values: TRUE/FALSE	FALSE
	ACTIVE	Provide false to deactivate column, default will be true.	Valied Values: TRUE/FALSE	TRUE



Keys	KEY NAME	Provide Name of the key. For composite key specified the column Name separated by comma.		
	KEY PHYSICAL NAME	Provide physical name of the key. If the physical name is not provided, it will be derived from KEY NAME.		
	KIND	Provide type of KEY you want to create.	Valid values: PRIMARY/UNIQUE/INDEX/UNIQUE_INDEX/NUPI	
	SELECTED COLUMN NAME	Provide COLUMN NAME on which the key will be defined. In case of composite key, the column names need to be separated by comma.		
	ACTIVE	Provide false to deactivate keys, default will be true.	Valied Values: TRUE/FALSE	TRUE

Links	LINK NAME	Provide Name of the Foreign Key link. Name should be unique.		
	TO DOCUMENT NAME	Provide the Logical name of the table to which FK link needs to be created		
	FROM COLUMN NAME	Provide the column display name of the column which is specified in property tab **from** which FK link needs to be created.		
	TO COLUMN NAME	Provide the logical name of the column **to** which FK link needs to be created.		
	REVERSE LINK	Provide TRUE if reverse link needs to be created else provide FALSE	Valid values: TRUE/FALSE.	FALSE
	REVERSE LINK NAME	Provide a reverse link name. If no name is provided, it will be derived from link name.		
	VALIDATION RULE	Provide TRUE if referential integrity default validation rules needs to be created else default value is taken as FALSE. Valid values: TRUE/FALSE.		FALSE
	ACTIVE	Provide false to deactivate link, default will be true.	Valied Values: TRUE/FALSE	TRUE

Facet Document	INPUT_TABLE_NAME	Provide the name of the input staging table		IN_<TableName>
	ERROR_TABLE_NAME	Provide the name of the error staging table		ERR_<TableName>
	MASTER_TABLE_NAME	Provide the name of the master staging table		MST_<TableName>
	OUTPUT_TABLE_NAME	Provide the name of the output staging table		OUT_<TableName>
	NETCHANGE_TABLE_NAME	Provide the name of the netchange staging table		NC_<TableName>
	VERSION_TABLE_NAME	Provide the name of the version staging table		VER_<TableName>
	IS_HARD_DELETE_ENABLED	Provide TRUE to enable hard delete on the table else provide FALSE	Valid values: TRUE/FALSE.	FALSE
	IS_EXTENDABLE	Provide TRUE if you want to extend column, default value is FALSE	Valid values: TRUE/FALSE.	FALSE
	EXT_STR_ATTR_COUNT	Provide the number of extended string columns, Default value is 5. IS_EXTENDABLE should be set to TRUE for this.		
	EXT_DEC_ATTR_COUNT	Provide the number of extended decimal columns, Default value is 0. IS_EXTENDABLE should be set to TRUE for this.		
	EXT_DATE_ATTR_COUNT	Provide the number of extended date columns, Default value is 0. IS_EXTENDABLE should be set to TRUE for this.		
	IS_TEMPORAL	Provide TRUE to make the table temporal else provide FALSE	Valid values: TRUE/FALSE.	FALSE



Facet Document	SELECT_TEMPORAL_TYPE	If the table is temporal select the type of temporal.	Valid values:TEMPORAL_VALID_TIME_DATE, TEMPORAL_VALID_TIME_TIMESTAMP, TEMPORAL_TRANSACTION_TIME, BI_TEMPORAL_DATE, BI_TEMPORAL_TIMESTAMP	
	VALIDTIME_COLUMN	Provide name of the validtime column.		
	TRANSACTION_TIME_COLUMN	Provide name of the transaction time column.		
	CREATE	Provide TRUE if you want to generate SOAP request for CREATE action else provide FALSE		FALSE
	READ	Provide TRUE if you want to generate SOAP request for READ action else provide FALSE		FALSE
	UPDATE	Provide TRUE if you want to generate SOAP request for UPDATE action else provide FALSE		FALSE
	DELETE	Provide TRUE if you want to generate SOAP request for DELETE action else provide FALSE		FALSE

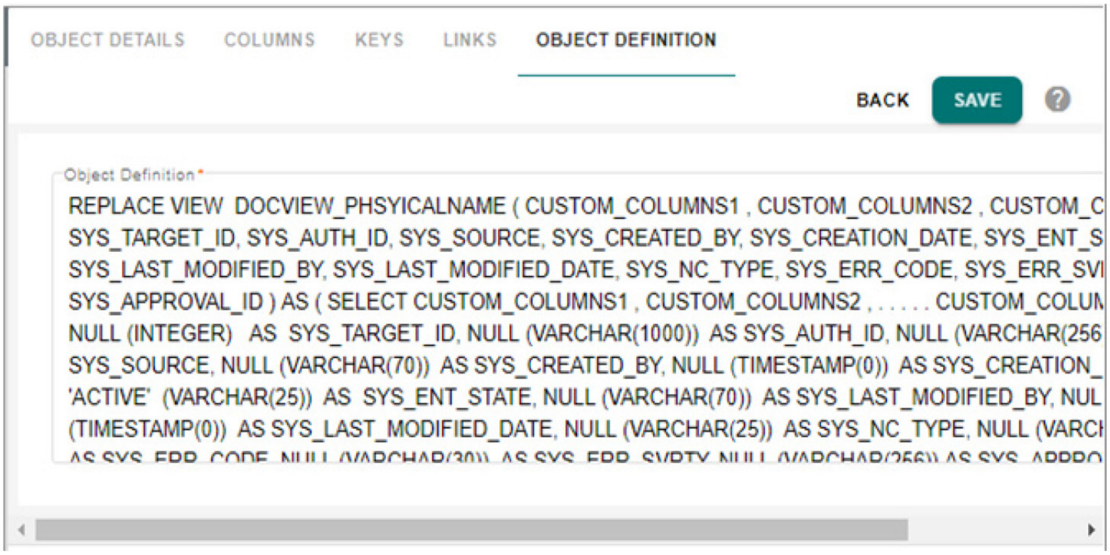
Create MDM Based View

MDM’s model builder feature supports creation of MDM based views that are used to reference multiple tables and other databases (external database in same database server as MDM database user). Views can be defined as simple view pointing to MDM table or complex view supporting joins to multiple tables.

Creation of MDM based view is similar to creation of tables as in the above section (Create Model using User Interface). Under the Object Details tab, select the Object type as View, an additional tab - View SQL is displayed as in Figure 842 wherein you can define the view details. The Figure 842 displays the sample view SQL.

The view details entered under **View SQL** tab is created during the schema generation process.

Figure 842: Model Builder—View SQL



```
REPLACE VIEW  DOCVIEW_PHSYICALNAME ( CUSTOM_COLUMNS1 , CUSTOM_COLUMNS2 , CUSTOM_C
SYS_TARGET_ID, SYS_AUTH_ID, SYS_SOURCE, SYS_CREATED_BY, SYS_CREATION_DATE, SYS_ENT_S
SYS_LAST_MODIFIED_BY, SYS_LAST_MODIFIED_DATE, SYS_NC_TYPE, SYS_ERR_CODE, SYS_ERR_SV
SYS_APPROVAL_ID ) AS ( SELECT CUSTOM_COLUMNS1 , CUSTOM_COLUMNS2 , . . . . . CUSTOM_COLU
NULL (INTEGER)   AS  SYS_TARGET_ID, NULL (VARCHAR(1000))  AS SYS_AUTH_ID, NULL (VARCHAR(256
SYS_SOURCE, NULL (VARCHAR(70))  AS SYS_CREATED_BY, NULL (TIMESTAMP(0))  AS SYS_CREATION_
'ACTIVE'  (VARCHAR(25))  AS  SYS_ENT_STATE, NULL (VARCHAR(70))  AS SYS_LAST_MODIFIED_BY, NUL
(TIMESTAMP(0))  AS SYS_LAST_MODIFIED_DATE, NULL (VARCHAR(25))  AS SYS_NC_TYPE, NULL (VARC
AS SYS_ERR_CODE, NULL (VARCHAR(30)) AS SYS_ERR_SVRTY, NULL (VARCHAR(256)) AS SYS_APPRO
```

The view definition must adhere to the below template for proper functioning of MDM based views.

```
REPLACE VIEW < VIEW NAME>
(
View Column list
SYS_Column_List
)
As
(
Select
Custom column list…
SYS_Column_List
From Tablename
);
```

Once the view is saved, it will be in draft state and you can validate and generate the model. For details, see section: Validate Model and Generate Model or Deploy Validated Models.

The view definition is not validated by Model Builder. It is user’s responsibility to verify and validate the view definition before entering the view details under View SQL tab.

Supported Operations on MDM Based Views

- Configurable UI can be created on document view. Search operation can be performed on the underlying view through configurable UI.
- The document view supports all standard X-commands.

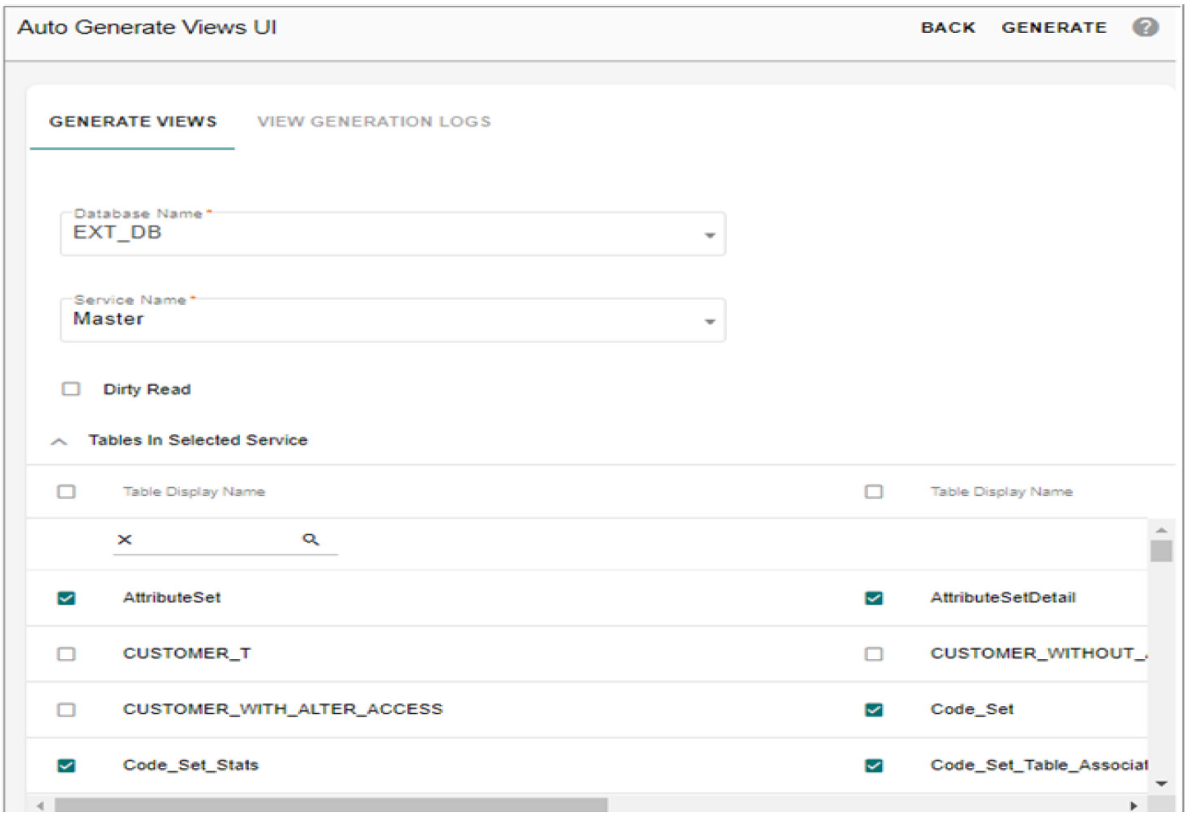
Auto Generate View

The Model Builder UI provides an option to auto generate view for the selected tables in a database on which the user has access to.

Perform the following steps to auto generate view:

1 On the **Model Builder** UI, select **Auto Generate Views** from **Tasks** dropdown.

Figure 843: Auto Generate Views UI



Database Name* EXT_DB

Service Name* Master

☐ Dirty Read

☐	Table Display Name	☐	Table Display Name
☑	AttributeSet	☑	AttributeSetDetail
☐	CUSTOMER_T	☐	CUSTOMER_WITHOUT_
☐	CUSTOMER_WITH_ALTER_ACCESS	☑	Code_Set
☑	Code_Set_Stats	☑	Code_Set_Table_Associat

2 On the **Auto Generate Views UI** (Figure 845), under the **Generate Views** tab:

- **Database Name**: the Database Name dropdown lists all the databases to which the user has create access (that is, the database user where MDM is installed should have create view access on the target database where the view needs to be deployed). Select the database name where the views need to be generated.
- **Service Name**: select the service name (Master, Error, Audit, Input, Netchange, Output or Version) from Service Name dropdown.

  The Tables pane displays the list of tables available in the selected service.
- In the Tables pane, select all the tables for which the view need to be generated.
- **Dirty Read**: two types of views can be generated.

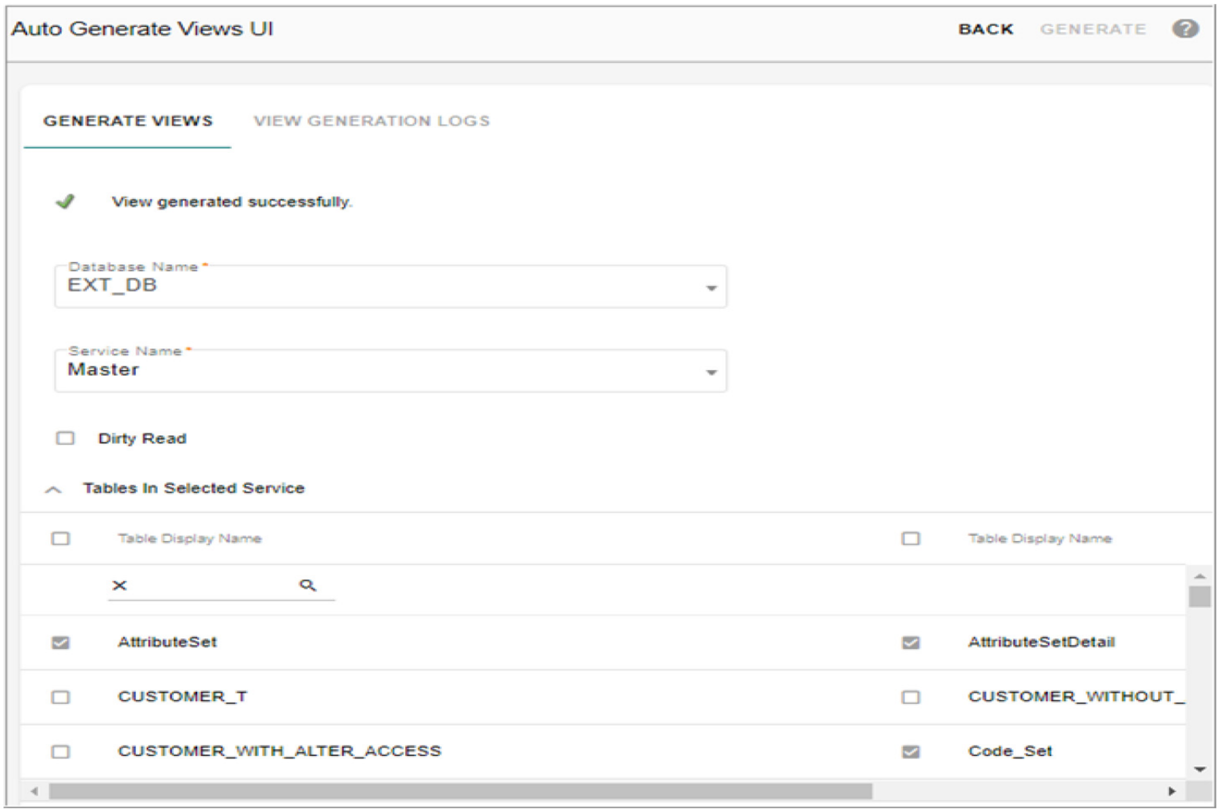
- With Locking Row Access in the DDL: select the Dirty Read checkbox to generate views with locking row access in DDL.
- Without Locking Row Access: if the Dirty Read option is not selected, Teradata (database) will apply a read lock when reading data from the view.

3 Click **Generate**.

Message: Views generated successfully is displayed.

On the **Auto Generate Views UI,** the checkboxes corresponding to the tables for which the views were generated will be selected by default and will not be editable as in Figure 845.

Figure 844: Auto Generate Views UI—View Generation Logs



✓ View generated successfully.

Database Name*: EXT_DB

Service Name*: Master

☐ Dirty Read

Tables In Selected Service

☐	Table Display Name	☐	Table Display Name
☑	AttributeSet	☑	AttributeSetDetail
☐	CUSTOMER_T	☐	CUSTOMER_WITHOUT_
☐	CUSTOMER_WITH_ALTER_ACCESS	☑	Code_Set

If the structure of a table for which view were already generated is modified or if ISG is executed for the table, then for the changes to be reflected in View, the view must be regenerated.

Known limitation on auto generate views:

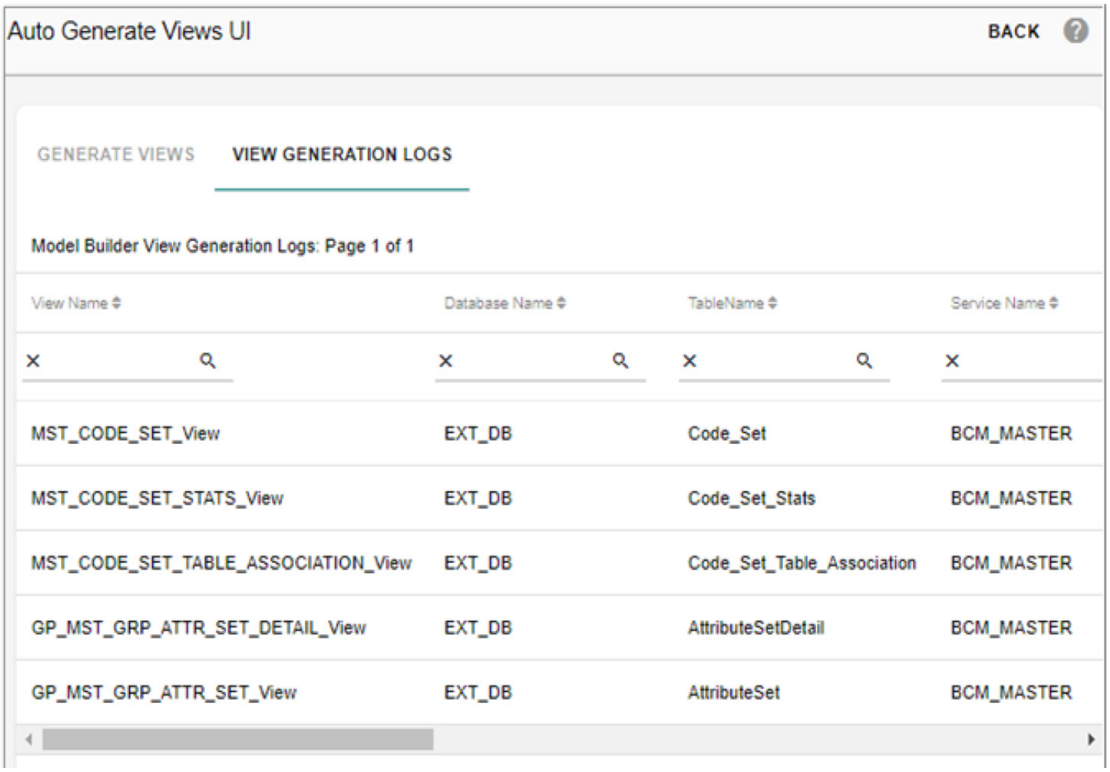
- Auto generate views does not provide option to create and deploy view in a different database server.
- Option to specify Join’s in view definition is not supported.

- All columns of the table will be part of the view created for that table and option to choose attributes is not available.

Auto Generate Views Log

Once the generation of views is completed successfully, click **View Generation Logs** tab to view the logs of the generated view as in Figure 845.

Figure 845: Auto Generate Views UI—View Generation Logs



Model Builder View Generation Logs: Page 1 of 1

View Name	Database Name	TableName	Service Name
MST_CODE_SET_View	EXT_DB	Code_Set	BCM_MASTER
MST_CODE_SET_STATS_View	EXT_DB	Code_Set_Stats	BCM_MASTER
MST_CODE_SET_TABLE_ASSOCIATION_View	EXT_DB	Code_Set_Table_Association	BCM_MASTER
GP_MST_GRP_ATTR_SET_DETAIL_View	EXT_DB	AttributeSetDetail	BCM_MASTER
GP_MST_GRP_ATTR_SET_View	EXT_DB	AttributeSet	BCM_MASTER

The View Generation Logs display all the view DDL execution details as below:

- View Name: the view name will be physical table name_view and the maximum size is 100.
- Database Name, Table Name and Service Name on which the views were generated.
- Created By and Creation Date: displays the view creator name and creation date and time.
- Refresh Date and Refreshed By: displays the refresh details when the views are regenerated.
- Status: if the view generation is completed successfully for that table, the status corresponding to that table name, service name and database name will be displayed as success. If the view generation failed for any table(s) then the status is displayed as failed for that table(s).

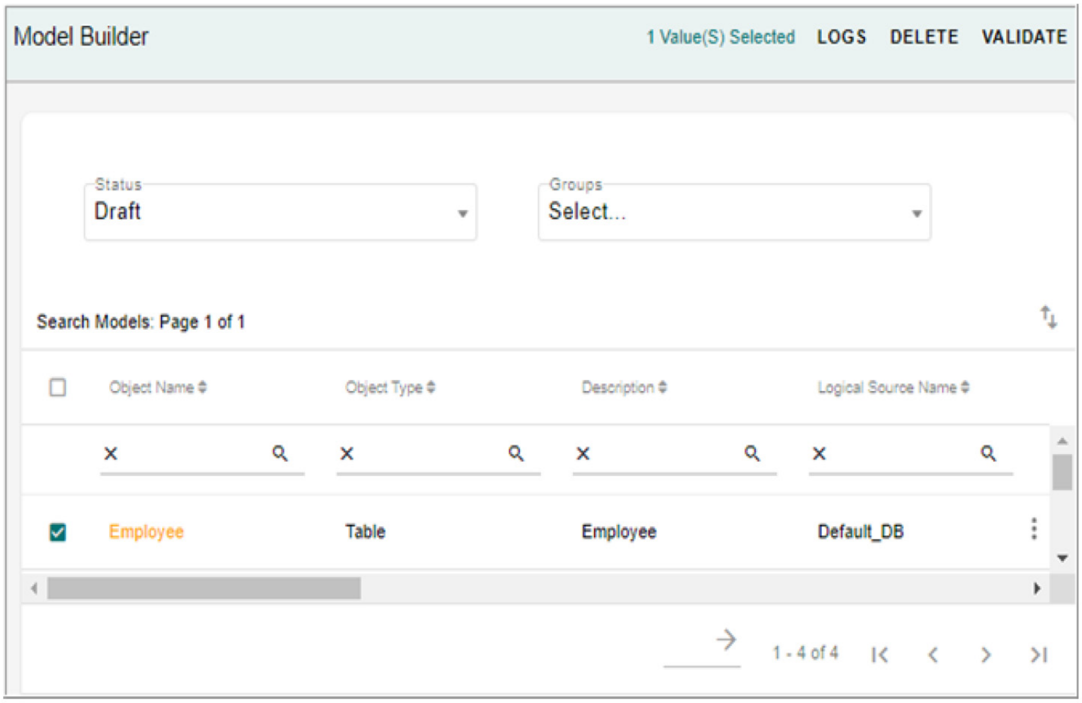
Validate Model

Any newly created model or updated model will be in draft state. Perform the following steps to validate the model.

1 On the Model Builder UI, with **Draft Models** radio button selected, you can select any model in the draft state and click **Validate Model** button to validate the model as in Figure 846.

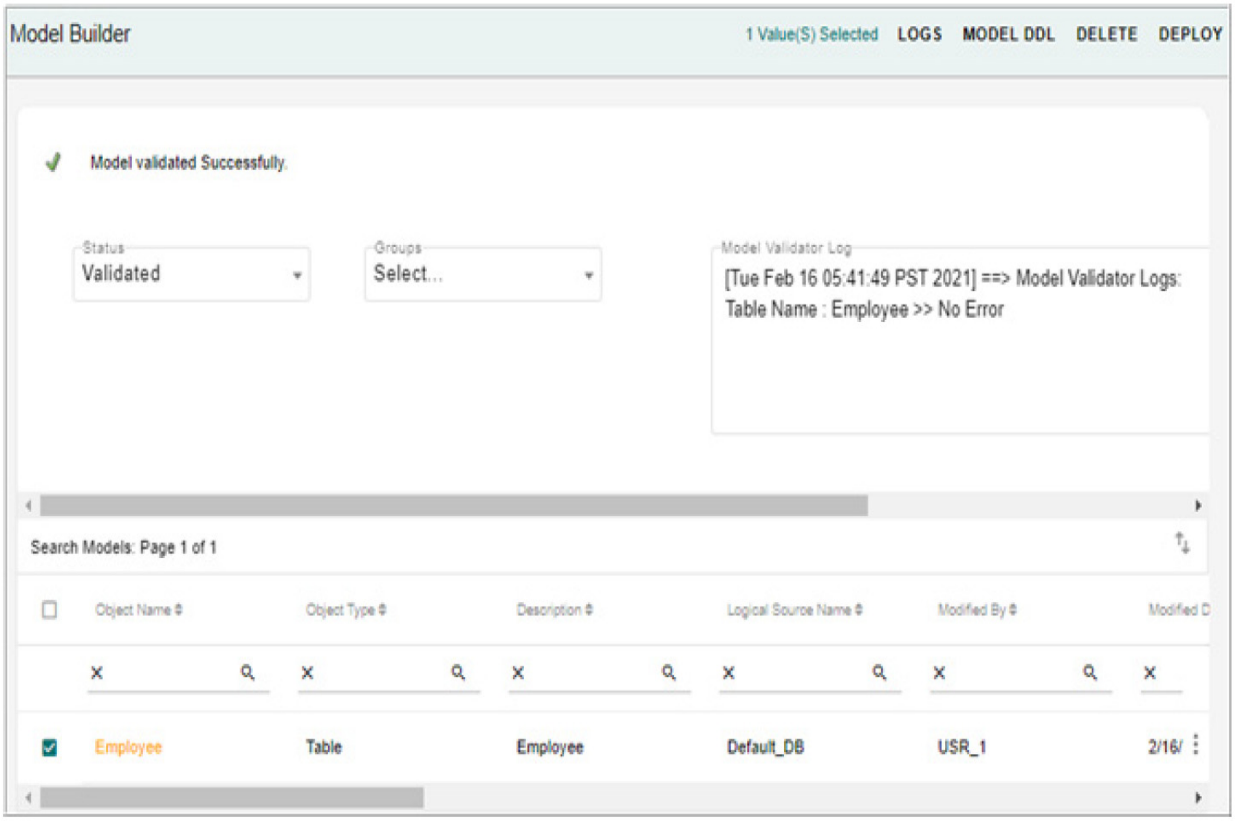
The Validate Model button will be available only for draft models.

Figure 846: Model Builder—Draft Models



A success message is displayed if there were no errors during the validation process and the model validator log information is also displayed as in Figure 847.

Figure 847: Model Builder—Validation Success Message



Model validated Successfully.

Status: Validated

Groups: Select...

Model Validator Log:

```
[Tue Feb 16 05:41:49 PST 2021] ==> Model Validator Logs:
Table Name : Employee >> No Error
```

Search Models: Page 1 of 1

☐	Object Name	Object Type	Description	Logical Source Name	Modified By	Modified D
☑	Employee	Table	Employee	Default_DB	USR_1	2/16/

A success message is displayed if there were no errors during the validation process and the model will be sent for approval if approval is enabled. The validator log information is also displayed.

If any error occurs while validating the model, an error message will be displayed. The model will be moved to Draft state.

Once the model is validated successfully, the model will be available under the Validated Models list

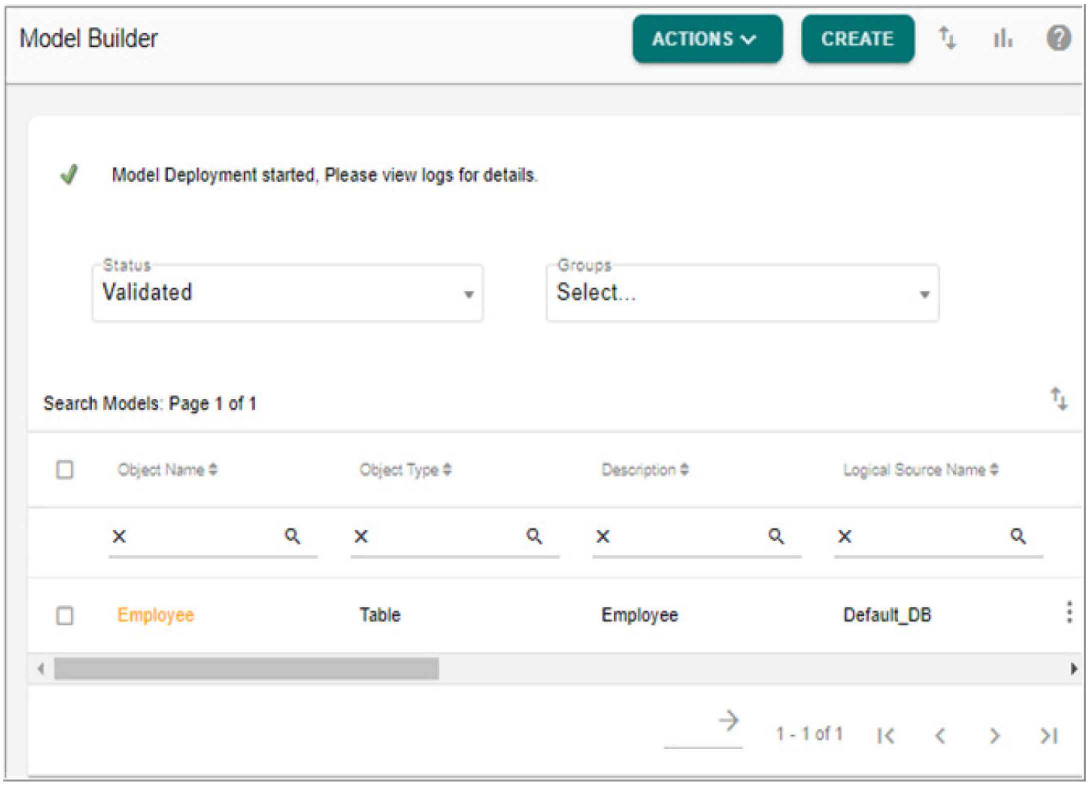
Generate Model or Deploy Validated Models

On the Model Builder UI, select Validated option from Status drop down to view all the models that are in Validated state. You can deploy all the validated models. Perform the following steps to generate the table:

1 On the **Model Builder** UI, with **Validated** status option selected, you can select any model in the validated state and click **Deploy** button to run incremental schema generation.

The Model Deployment message is displayed on the UI as in Figure 848. The deployment of model is an asynchronous process where you can perform any operation on the other models while the deployment is running in background. Any operations on tables involved in the deployment will fail. You cannot run multiple deployment at a time. The deployement process is truly incremental in nature. In case of any failure, entire changes will be reverted back so that existing tables work fine.

Figure 848: Model Builder—Deployment Startup Message



✓ Model Deployment started, Please view logs for details.

Status: Validated

Groups: Select...

Search Models: Page 1 of 1

☐	Object Name	Object Type	Description	Logical Source Name
☐	Employee	Table	Employee	Default_DB

When deployment is completed successfully the model status will be changed to Generated and will be available under Generated Models on the **Model Builder** UI as in Figure 848.

- Any changes performed using model builder like addition of links etc. will be reflected in the existing tables on the left navigation pane only when the user refreshes the MDM URL.
- In collapsed mode of installation, user must have required grant permission to create folders in application server for successful execution of Model Builder ISG.
- It is recommended to have sufficient disc space for successful execution of ISG.
- On the Model Builder UI, the select all checkbox will select only the models on the current page and not on the subsequent pages. To select more than 20 models or to pick models selectively for validation or ISG generation, use API methods.

Model Deployment Log

MDM's Model Builder UI provides an option to view the logs of Deployment triggered through Model Builder UI. Using the View Deployment Log button on the Model Builder UI, you can view logs of Deployment execution. You can also view the detailed Deployment logs of a particular Deployment using the View Detail button on the Deployment logs page. The Model Builder Deployment Log Details UI displays the log information incrementally for each Request or SQL executed by the Deployment process. That is after each request or SQL execution, the status for each request or SQL is updated with the results. This detailed log display enables the user to clearly view individual process execution and their status thereby providing an easy way to identity the SQLs that failed during Deployment process along with error details.

Perform the following steps to view the Deployment logs:

1. On the **Model Builder** UI, select the model and click **Logs** as in Figure 848.

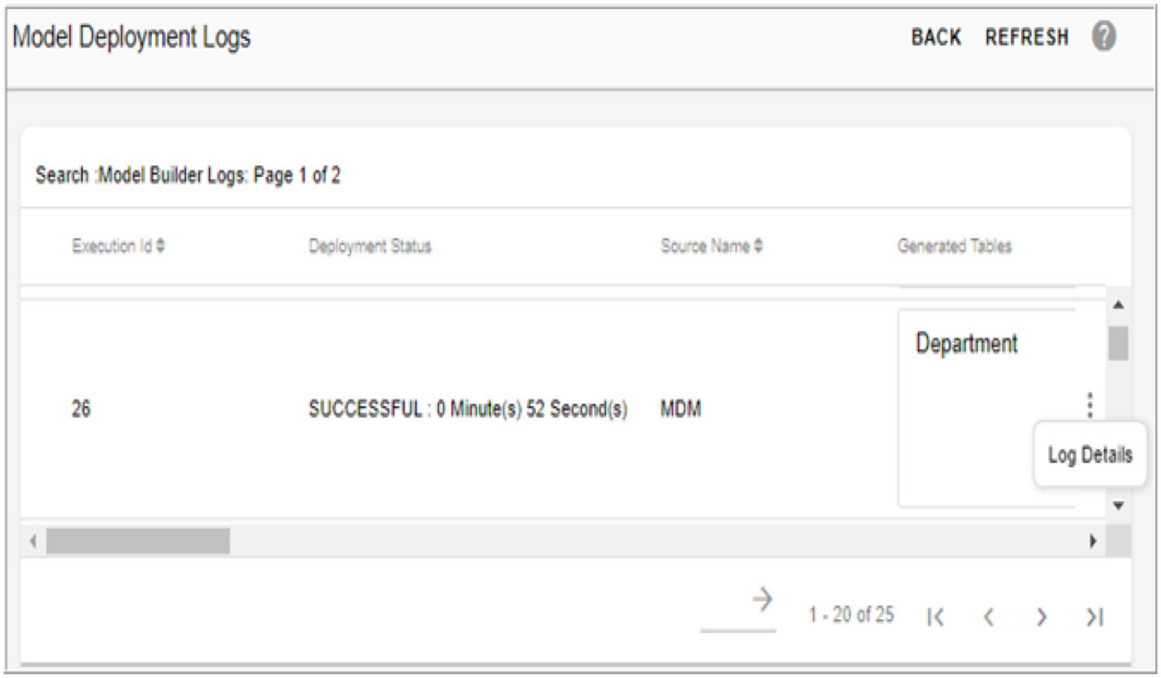
   If you select the model and click on **Log**, it displays only the logs of selected model. To view logs of all the Deployment execution, select **Logs** from **Actions** dropdown without selecting any model.

   The **Model DeploymentDeployment Logs** UI is displayed. Initially, the Deployment Status column displays the status as In progress and once the Deployment is completed successfully, the Deployment Status column displays as Successful and the duration of Deployment is displayed as in Figure 849. The model status will be changed to Generated and will be available under Generated Models on the Model Builder UI.

   The Model Builder Deployment Logs UI gets refreshed every 50 seconds automatically until the Deployment Status column is updated with either Successful or Failed status.

   In case of Deployment failure, the Deployment status column displays as Failed and the Error Detail column displays the error message. In the Error Detail column, on the error message link, you can mouse hover to see the complete error or click on the error message link, a pop-up displays the complete error as in Figure 850.

Figure 849: Model Builder Deployment Logs

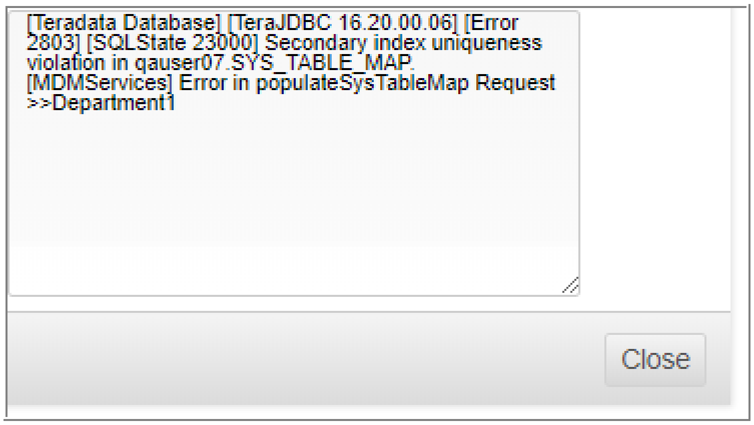


Model Deployment Logs

Search :Model Builder Logs: Page 1 of 2

Execution Id ⇕	Deployment Status	Source Name ⇕	Generated Tables
26	SUCCESSFUL : 0 Minute(s) 52 Second(s)	MDM	Department

Figure 850: Model Builder Deployment Error Message



```
[Teradata Database] [TeraJDBC 16.20.00.06] [Error
2803] [SQLState 23000] Secondary index uniqueness
violation in qauser07.SYS_TABLE_MAP.
[MDMServices] Error in populateSysTableMap Request
>>Department1
```

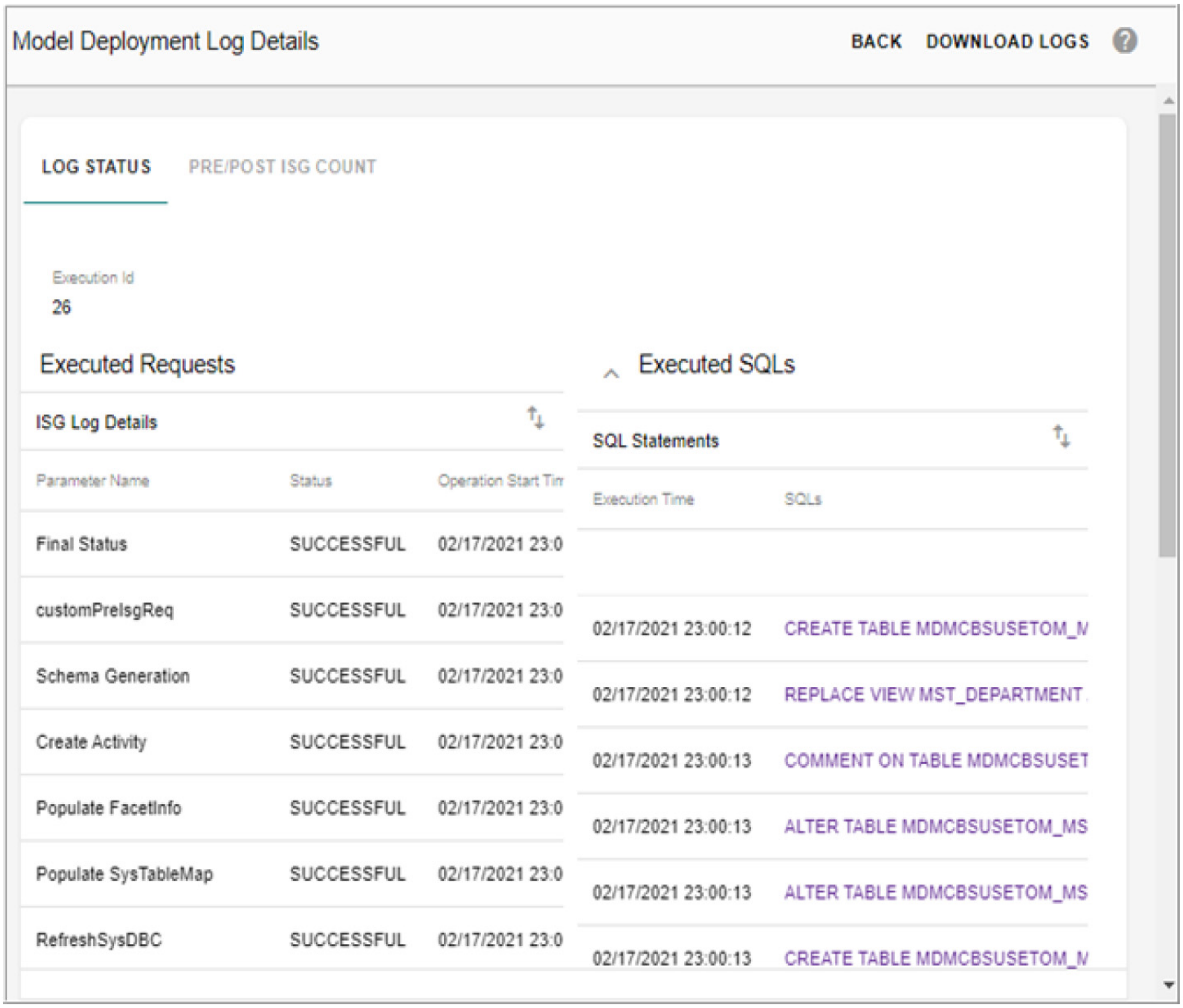
- To search Deployment log using the date time parameter, it is recommended to specify the date and time through date picker and not by manually entering the date and time due to framework limitations.
- For successful creation of model/view using the View SQLs, the commented line must be entered as new line.

2 On the **Model Deployment Logs** UI, click on the Menu icon corresponding to the required execution ID of the log and click **Log Detail** to view the complete Deployment log information.

The **Model Deployment Log Details** UI displays the log information incrementally for each request or SQL executed by the Deployment process. The details are displayed under two different tabs as **Log Status** and **Pre/Post ISG Count** as in Figure 851.

- **Log Status**: Log Status tab displays the log details for each request or SQL execution along with the status incrementally in two tabular sections as Executed Requests and Executed SQLs as in Figure 851.

Figure 851: Model Builder Deployment Log Details



Execution Id
26

Executed Requests

ISG Log Details

Parameter Name	Status	Operation Start Tir
Final Status	SUCCESSFUL	02/17/2021 23:0
customPreIsgReq	SUCCESSFUL	02/17/2021 23:0
Schema Generation	SUCCESSFUL	02/17/2021 23:0
Create Activity	SUCCESSFUL	02/17/2021 23:0
Populate FacetInfo	SUCCESSFUL	02/17/2021 23:0
Populate SysTableMap	SUCCESSFUL	02/17/2021 23:0
RefreshSysDBC	SUCCESSFUL	02/17/2021 23:0

Executed SQLs

SQL Statements

Execution Time	SQLs
02/17/2021 23:00:12	CREATE TABLE MDMCBSUSETOM_M
02/17/2021 23:00:12	REPLACE VIEW MST_DEPARTMENT
02/17/2021 23:00:13	COMMENT ON TABLE MDMCBSUSET
02/17/2021 23:00:13	ALTER TABLE MDMCBSUSETOM_MS
02/17/2021 23:00:13	ALTER TABLE MDMCBSUSETOM_MS
02/17/2021 23:00:13	CREATE TABLE MDMCBSUSETOM_M

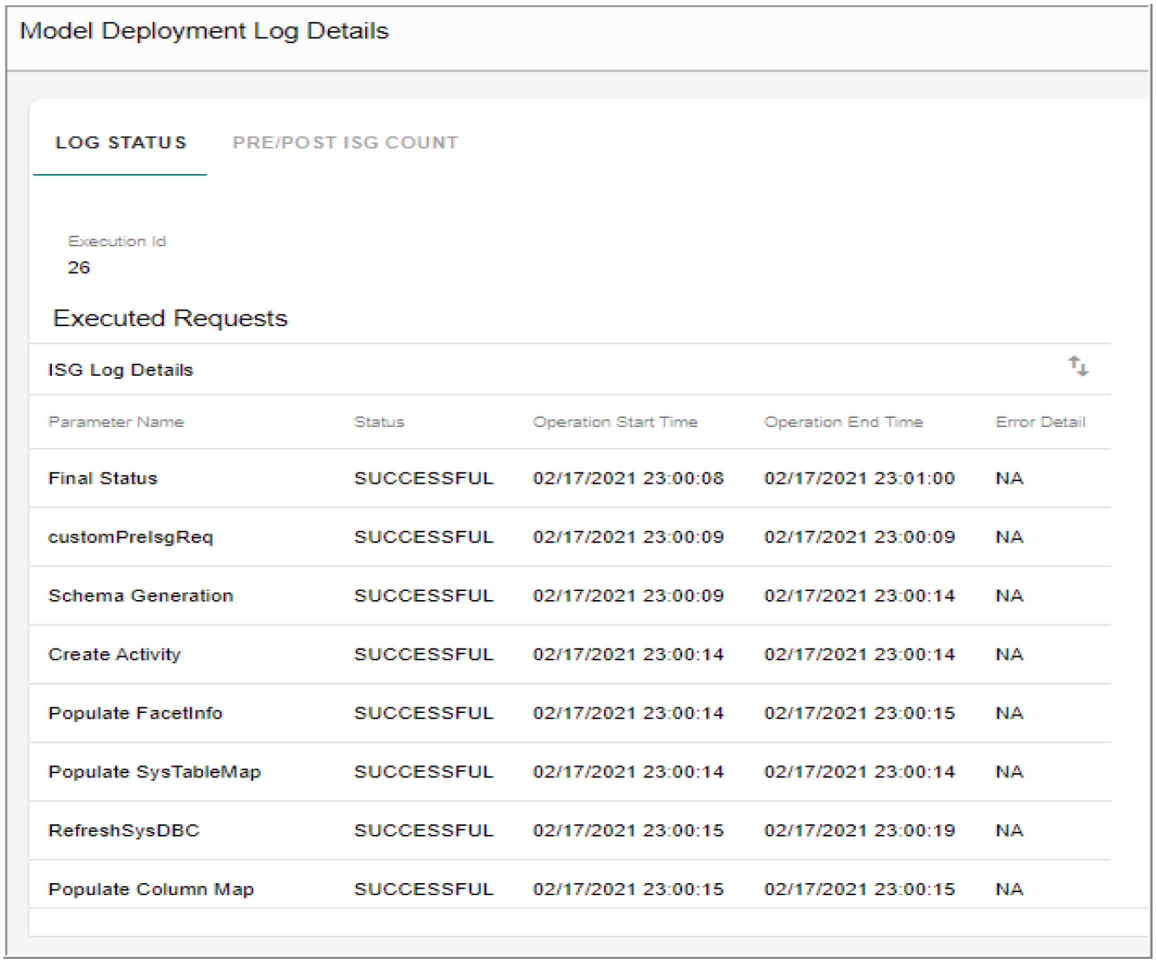
Executed Requests

The Executed Requests section displays the list of all the requests executed and provides the following details as in Figure 852.

- **Parameter Name**: displays the name of each request or step executed.

- **Status**: displays the status as either Successful or Failed based on the execution result. The “Successful” status indicates that the step was executed correctly without any errors. The “Failed” status indicates that an error had occurred during step execution. The status of each request execution is displayed as soon as its execution is complete. Once all the execution is completed, the Error Details column displays the total time taken for complete execution under the parameter name “FINAL_STATUS”.

Figure 852: Model Builder Deployment Log Details



Model Deployment Log Details

Execution Id
26

Executed Requests

ISG Log Details

Parameter Name	Status	Operation Start Time	Operation End Time	Error Detail
Final Status	SUCCESSFUL	02/17/2021 23:00:08	02/17/2021 23:01:00	NA
customPreIsgReq	SUCCESSFUL	02/17/2021 23:00:09	02/17/2021 23:00:09	NA
Schema Generation	SUCCESSFUL	02/17/2021 23:00:09	02/17/2021 23:00:14	NA
Create Activity	SUCCESSFUL	02/17/2021 23:00:14	02/17/2021 23:00:14	NA
Populate FacetInfo	SUCCESSFUL	02/17/2021 23:00:14	02/17/2021 23:00:15	NA
Populate SysTableMap	SUCCESSFUL	02/17/2021 23:00:14	02/17/2021 23:00:14	NA
RefreshSysDBC	SUCCESSFUL	02/17/2021 23:00:15	02/17/2021 23:00:19	NA
Populate Column Map	SUCCESSFUL	02/17/2021 23:00:15	02/17/2021 23:00:15	NA

- **Operation Start Time and End Time**: displays each request execution start and end time.
- **Error Detail**: in case of request execution failure, the Error Detail column displays the reason for execution failure.

  You can mouse hover the error message to see the complete error or click on the error message link, a pop-up displays the complete error.

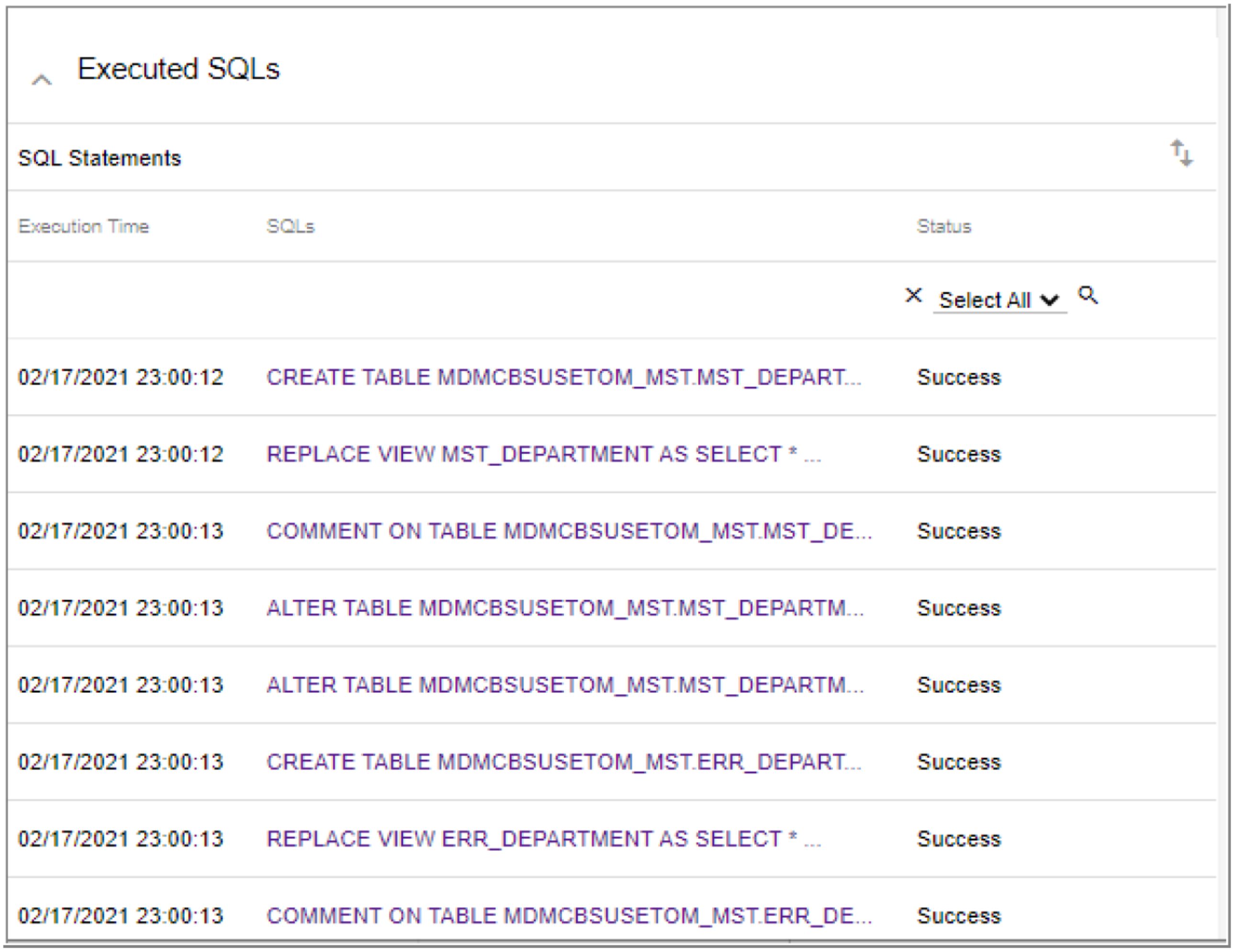
Executed SQLs

The Executed SQLs section displays the list of all the SQLs executed during Deployment process and provides the following details as in Figure 853.

- **Execution Time**: displays each SQL execution duration time and date.

  - **SQLs**: displays the SQL executed.
  - **Status**: displays the status as either Success or Failed based on the SQL execution result. The status of each SQL execution is displayed as soon as its execution is complete.

Figure 853: Model Builder Deployment Log Details



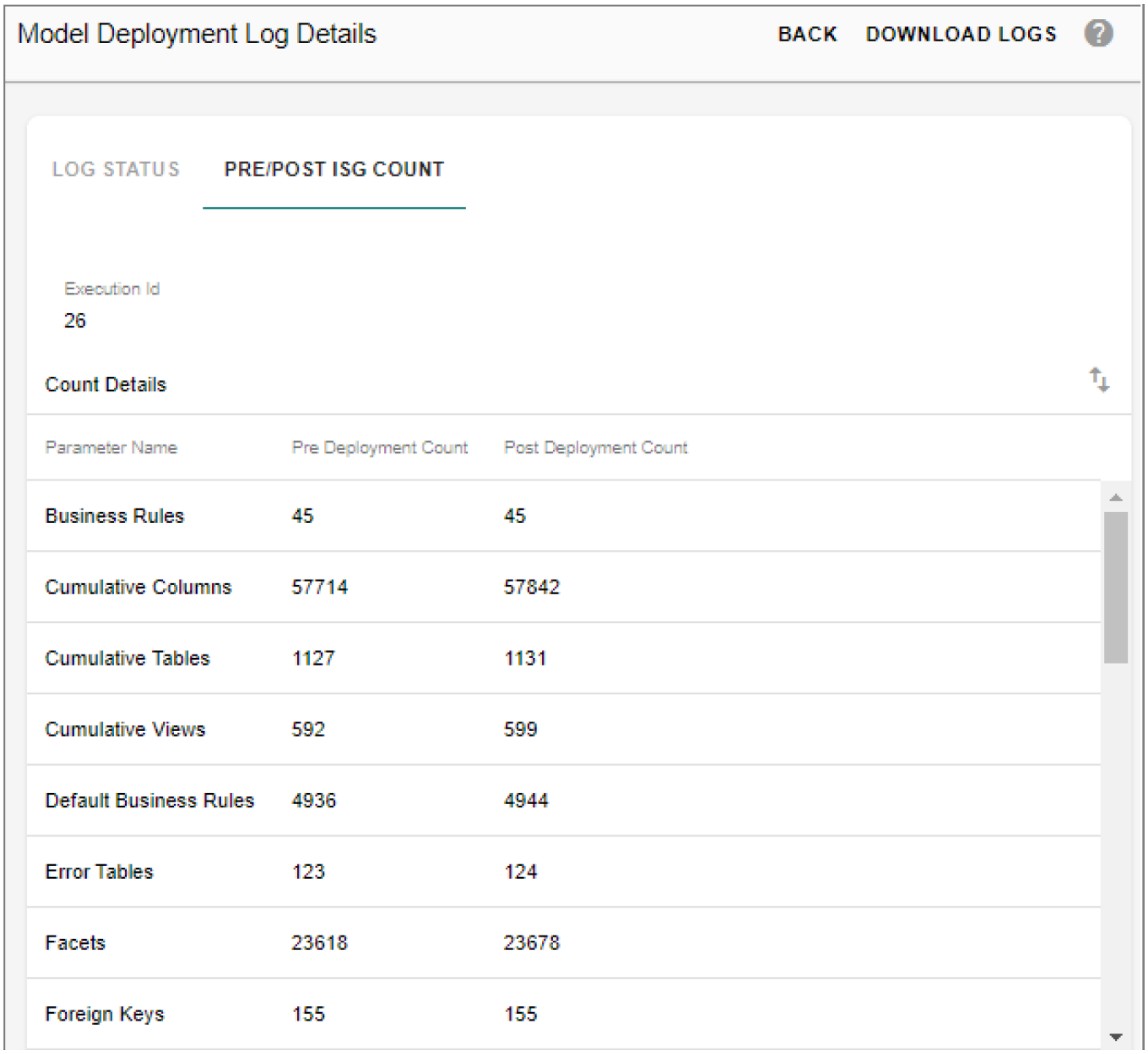
Executed SQLs

SQL Statements

Execution Time	SQLs	Status
		Select All
02/17/2021 23:00:12	CREATE TABLE MDMCBSUSETOM_MST.MST_DEPART...	Success
02/17/2021 23:00:12	REPLACE VIEW MST_DEPARTMENT AS SELECT * ...	Success
02/17/2021 23:00:13	COMMENT ON TABLE MDMCBSUSETOM_MST.MST_DE...	Success
02/17/2021 23:00:13	ALTER TABLE MDMCBSUSETOM_MST.MST_DEPARTM...	Success
02/17/2021 23:00:13	ALTER TABLE MDMCBSUSETOM_MST.MST_DEPARTM...	Success
02/17/2021 23:00:13	CREATE TABLE MDMCBSUSETOM_MST.ERR_DEPART...	Success
02/17/2021 23:00:13	REPLACE VIEW ERR_DEPARTMENT AS SELECT * ...	Success
02/17/2021 23:00:13	COMMENT ON TABLE MDMCBSUSETOM_MST.ERR_DE...	Success

- **Pre/Post ISG Count**: displays the list of the Pre-ISG count and Post-ISG count as in Figure 854. In case of any error in metadata count calculation, the status is displayed as error.
  - **Parameter Name**: displays the list of items involved in Deployment process like tables, views, left navigation entries, publication objects, indexes, stored procedures, user activities, business rules etc.,
  - **Pre ISG Count**: displays the count of each item involved in Deployment prior to Deployment execution.
  - **Post ISG Count**: displays the count of each item involved in Deployment after Deployment process.

Figure 854: Model Builder Deployment Log Details



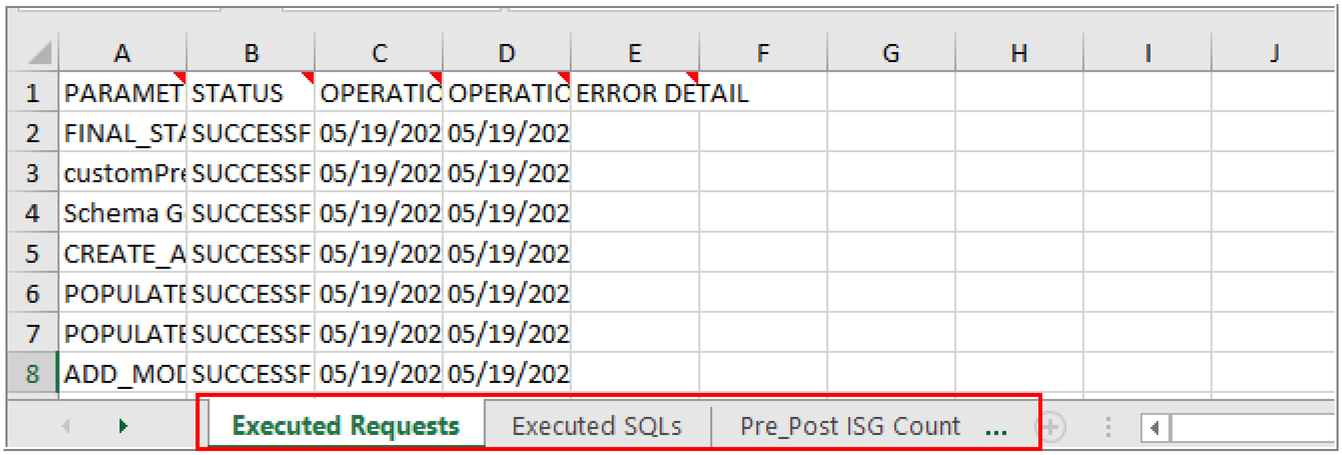
Execution Id
26

Count Details

Parameter Name	Pre Deployment Count	Post Deployment Count
Business Rules	45	45
Cumulative Columns	57714	57842
Cumulative Tables	1127	1131
Cumulative Views	592	599
Default Business Rules	4936	4944
Error Tables	123	124
Facets	23618	23678
Foreign Keys	155	155

- **Export to Excel:** using the export to excel option on **Executed Request UI** section, **Executed SQLs** UI section and on P**re/Post ISG Count** UI, you can export the log details individually to an excel file.
- **Download Logs**: using the **Download Logs** button, you can export all the log details in a single excel file under different tabs as in Figure 855. The Download Deployment Logs option is enabled only when the entire Deployment process is completed.

Figure 855: Model Builder Deployment Log Details—Exported to Excel



	A	B	C	D	E	F	G	H	I	J
1	PARAMET	STATUS	OPERATIC	OPERATIC	ERROR DETAIL					
2	FINAL_STA	SUCCESSF	05/19/202	05/19/202						
3	customPr	SUCCESSF	05/19/202	05/19/202						
4	Schema G	SUCCESSF	05/19/202	05/19/202						
5	CREATE_A	SUCCESSF	05/19/202	05/19/202						
6	POPULATE	SUCCESSF	05/19/202	05/19/202						
7	POPULATE	SUCCESSF	05/19/202	05/19/202						
8	ADD_MOD	SUCCESSF	05/19/202	05/19/202						

API to Validate and Generate Deployment

The following API requests are used to validate and generate Deployment for models created using model builder. The APIs are available in modelBuilderCustomRulesInDeployment.xml file at: *<MDM_Install_Directory>\cfg\xservice\mdmservices\modules\modelBuilder\rules*

- **API Request to Validate Draft Model**

```
<REQUEST Name="validateDraftModels_Req"
ServiceName="MDMServices">

<DOCUMENT Value="Employee"/>

</REQUEST>
```

- **Response for Validate Draft Model Request**

```
<RESPONSES Status="Success">

<RESPONSE Status="Success">

    <Status Value="Success"/>

    <Description Value="Model Validated Successfully"/>

    <SELECTED_IDS>

<SELECTED_ID Value="31"/>

</SELECTED_IDS>

    <modelValidatorLog Value="Fri Oct 06 15:29:59 IST 2017--&gt;
Model Validator Logs : TABLE NAME : Employee --&gt; Warning, Renaming
unique key name since original is already taken

 Details ...

   Unique Key : ::models/Toolkit Models/CCCVC [Unique Key] pk

   Note : Original name was, pk. New name is, pk0

Warning, Renaming unique key name since original is already taken

 Details ...

   Unique Key : ::models/Toolkit Models/CCCVC [Unique Key] pk
```

```
    Note : Original name was, pk. New name is, pk1
"/>
  </RESPONSE>
   </RESPONSES>
```

- **API to Generate Synchronous ISG for Model**

```
   <REQUEST Name="triggerModelBuilderISG_Req"
   ServiceName="MDMServices" AsynchronousFlag="true">
  <DOCUMENT Value="Employee"/>
  <DOCUMENT Value="Customer"/>
  <DOCUMENT Value="Organization"/>
   </REQUEST>
```

- **Response for Synchronous ISG Request**

```
   <RESPONSES Status="Success">
  <RESPONSE Status="Success">
    <Status Value="Success"/>
    <Description Value="ISG completed successfully."/>
    <SELECTED_IDS>
      <SELECTED_ID Value="1717"/>
    </SELECTED_IDS>
  </RESPONSE>
   </RESPONSES>
```

- **API to Generate Asynchronous ISG for Model**

```
   <REQUEST Name="triggerModelBuilderISG_Req"
   ServiceName="MDMServices" AsynchronousFlag="true">
  <DOCUMENT Value="Employee"/>
  <DOCUMENT Value="Customer"/>
  <DOCUMENT Value="Organization"/>
   </REQUEST>
```

- **Response for Asynchronous ISG Request**

```
   <RESPONSES Status="Success">
  <RESPONSE Status="Success">
    <Status Value="Success"/>
    <Description Value="ISG completed successfully."/>
    <SELECTED_IDS>
      <SELECTED_ID Value="1721"/>
    </SELECTED_IDS>
  </RESPONSE>
   </RESPONSES>
```

- **Error Response in case if other ISG is in Running State**

```
<RESPONSES Status="Success">
  <RESPONSE Status="Success">
    <Status Value="ERROR"/>
    <Description Value="Incremental Schema Generation is in
progress, Please try after some time."/>
  </RESPONSE>
</RESPONSES>
```

In all the above APIs, the input is the Model name provided in Document Value tag. Example `<DOCUMENT Value="Employee"/>`

Edit Model

You can modify the existing table in any of the model state (draft, validated or generated). If the table is modified from validated or generated state, it will be saved under draft.

ISG is not supported if an existing non-temporal model is updated to temporal model.

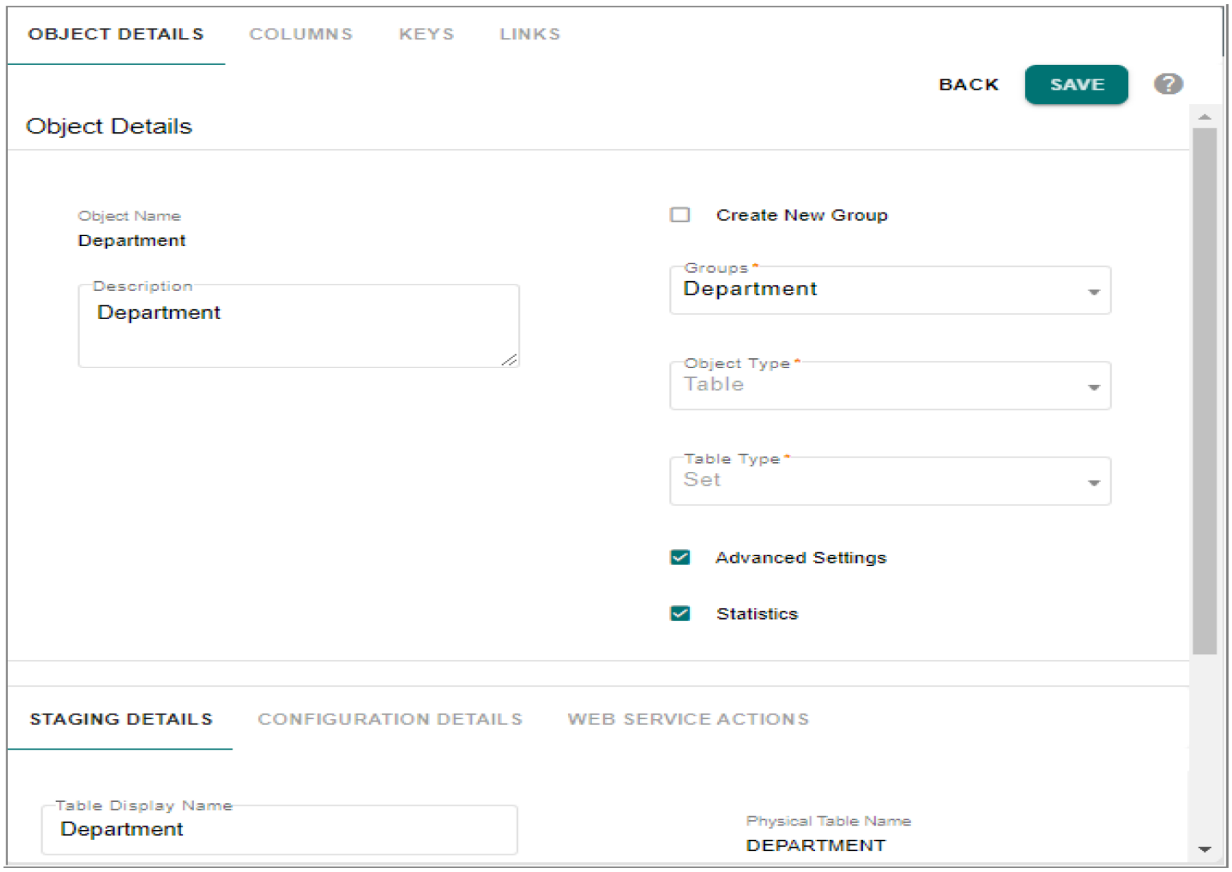
To edit existing data model:

1. On the **Model Builder** UI, select any data model and click **Edit**.

   The confirmation dialog is displayed.
2. On the confirmation dialog, click **Yes**.

   The **Model Builder** UI (Figure 856) is displayed.

Figure 856: Model Builder



Object Name: Department

Description: Department

☐ Create New Group

Groups*: Department

Object Type*: Table

Table Type*: Set

☑ Advanced Settings

☑ Statistics

Table Display Name: Department

Physical Table Name: DEPARTMENT

3 On the **Model Builder** UI (Figure 856), you can modify the values under different tabs and click **Save**.

Message: “Model updated successfully” is displayed.

Export Model

MDM’s Model builder UI provides an option to export any data model into excel format. You can export the model data from any of the model stage (draft, pending approval, validated, generated or deleted model state). To export model data, perform the following steps:

1 On the **Model Builder** UI, select any data model and click **Export.**

The confirmation pop-up displaying option to Open or Save the Tablename_model_data_export.xlsx is displayed.

2 On the confirmation pop-up, click **Open** to view the records in Excel or click **Save** to save the data in excel file.

For details on the various fields in excel file, see Section : “Template Guidelines”

- The export functionality is not supported for views.
- The case specific attribute on model column field is not supported in case of non mdm model export.

Modify Table Primary Key

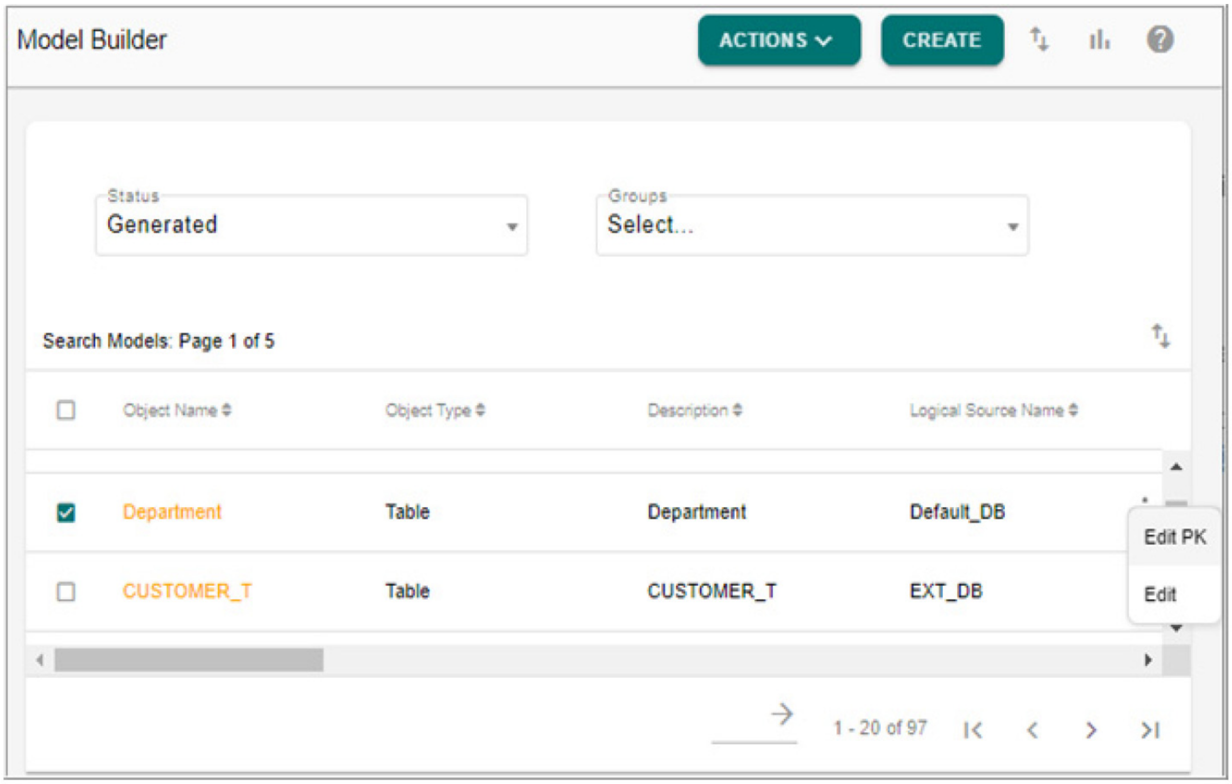
MDM's Model Builder UI provides an option to modify the primary key of the selected table. You can modify the primary key of a table in any model state (draft, validated or generated model state).

For any user to modify the Primary key of the table, the user must be assigned to a role for which the Model Builder Edit Primary Key Activity is added. The Edit PK option will not be displayed on the Model Builder UI if the Model Builder Edit Primary Key Activity is not assigned to the particular role.

Perform the following steps to modify the table PK value:

1 On the **Model Builder** UI, select any data model and click **Edit PK.**

Figure 857: Model Builder



Status: Generated
Groups: Select...

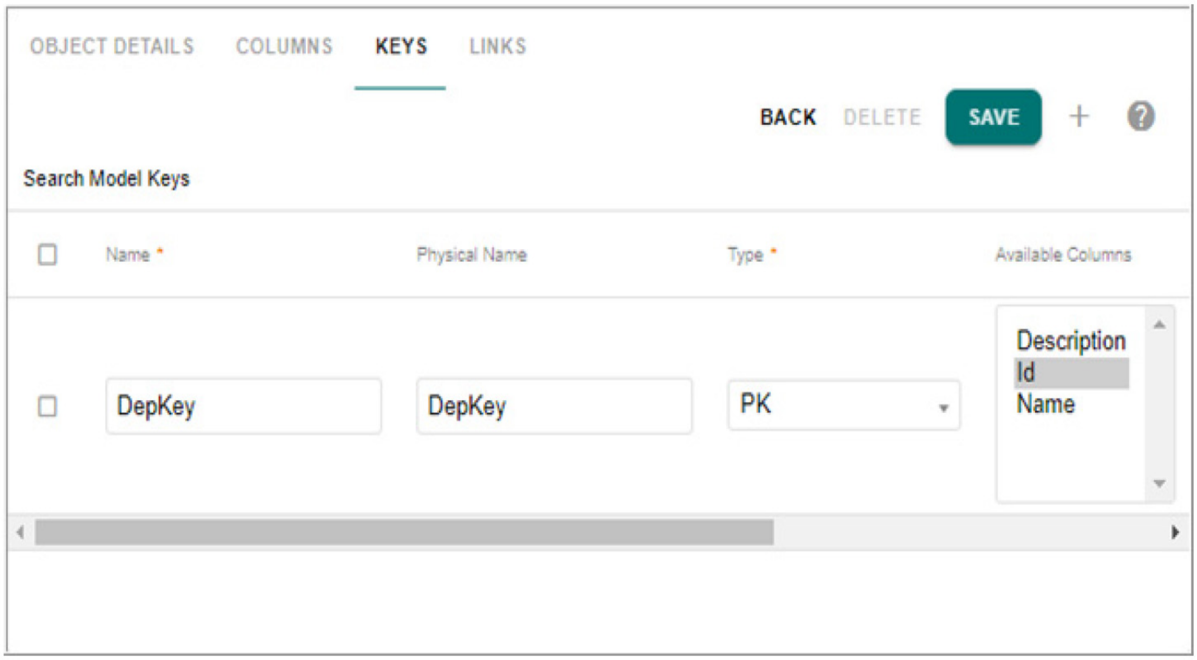
☐	Object Name	Object Type	Description	Logical Source Name
☑	Department	Table	Department	Default_DB
☐	CUSTOMER_T	Table	CUSTOMER_T	EXT_DB

The Object Details UI is displayed.

2 On the **Object Details** UI, click **Keys** tab.

The **Object Details—Keys** UI displays the existing PK of the selected table as in Figure 858.

Figure 858: Model Builder



3 The Object Details—Keys UI, you can modify the PK value and click **Save**.

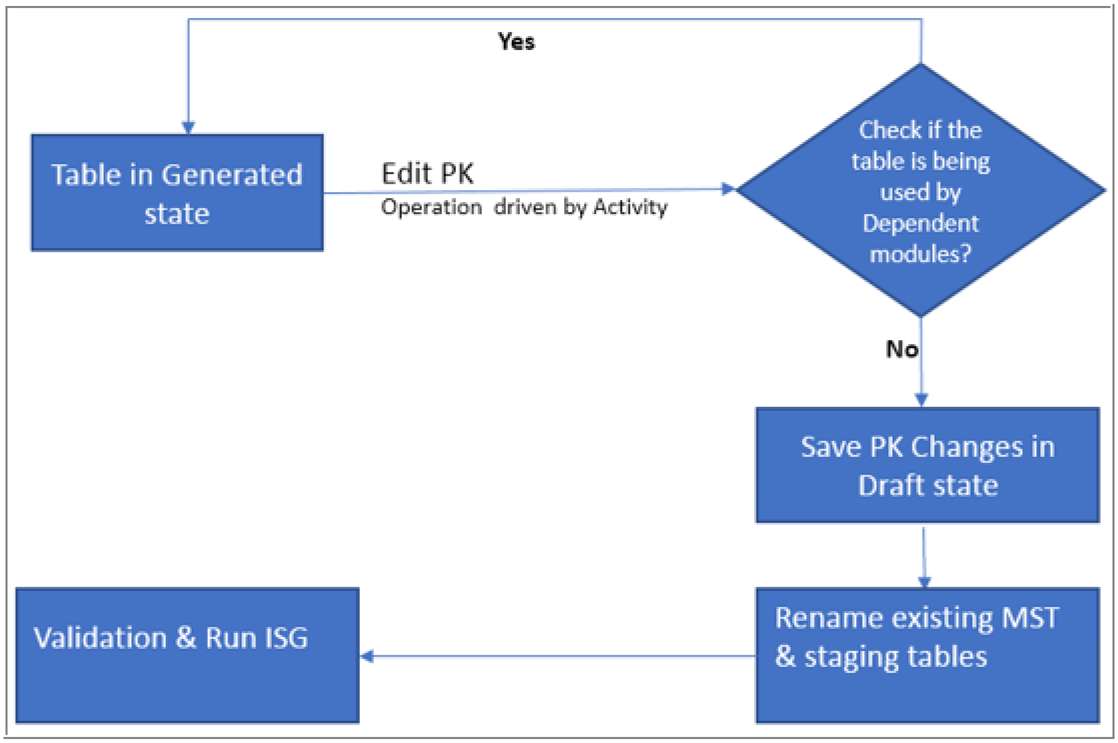
The following tasks are performed during save of PK changes:

- The existing master table and all its staging tables (Input, Netchange, Error, Master, Output, Version, Audit Trail and load tables) will be renamed.
- Clean-up of some existing meta-data of the master table. Backup will be created for all the staging tables (Input, Netchange, Error, Master, Output, Version, Audit Trail and load tables).

The model will now move to Draft state and you can perform regular validation process and run normal ISG to create fresh tables. For details, see section: Validate Model and Generate Model or Deploy Validated Models.

The Figure 859 displays the flow diagram of the Edit PK process.

Figure 859: Model Builder


Yes
Table in Generated state
Edit PK
Operation driven by Activity
Check if the table is being used by Dependent modules?
No
Save PK Changes in Draft state
Rename existing MST & staging tables
Validation & Run ISG

Scenarios where PK Change not Allowed

The below points list the scenarios where PK change is not allowed:

- **Approval**: if there are in-flight approval records for the table, PK change is not allowed. In-transit records have to be cleared before initiating PK change.
- **Matching**: if matching profiles are created on the table, PK change is not allowed.
- **Survivorship**: if survivorship profiles and ALCR are defined on the table, PK change is not allowed.
- **Hierarchy**: if RO is created on the table, PK change is not allowed.
- **Grouping**: if grouping is defined on the table, PK change is not allowed.
- **Publication**: if publication object is defined on the table, PK change is not allowed.

Scenarios not Handled in PK Change

The below points list the scenarios not handled in PK change:

- **Configurable UI**: customized configurable UI re-creation is not handled in edit PK process.
- **Business Rules**: custom business rules not handled in edit PK process.

  The out of the box Configurable UIs and Business rules are re-generated with ISG after the PK change is made.

Scenarios where PK Change is not Supported

The below points list the scenarios where PK change is not supported:

- The PK change is not supported on Hierarchy and LRDM template creation.

- The PK change is not supported on a table if the table has FK reference to any other tables. Though PK change UI may allow to edit and save PK, undesired issues may occur in modules that use the table or the parent/child table referred by it.

Scenarios where PK Change is Supported

The below points list the scenarios where PK change is supported:

- **Master Tables**: PK change is supported on standalone master tables.
- **Model Builder UI**: PK change is supported only through model builder UI. Excel upload or Import does not support PK change.

Points on Backup due to PK Change

The below points list some of the important information on backup data due to PK change:

- The data from the renamed tables must be restored manually.
- The backup tables need to be cleared before initiating another PK change else the rename of tables will not be allowed. Valid error message will be displayed to the user.

Delete Model and Delete Model Metadata

Model builder allows deletion of models in all states (Draft, Validated and Generated).

If models are in Draft and Validated states and were never generated, delete will simply soft delete the metadata of the models.

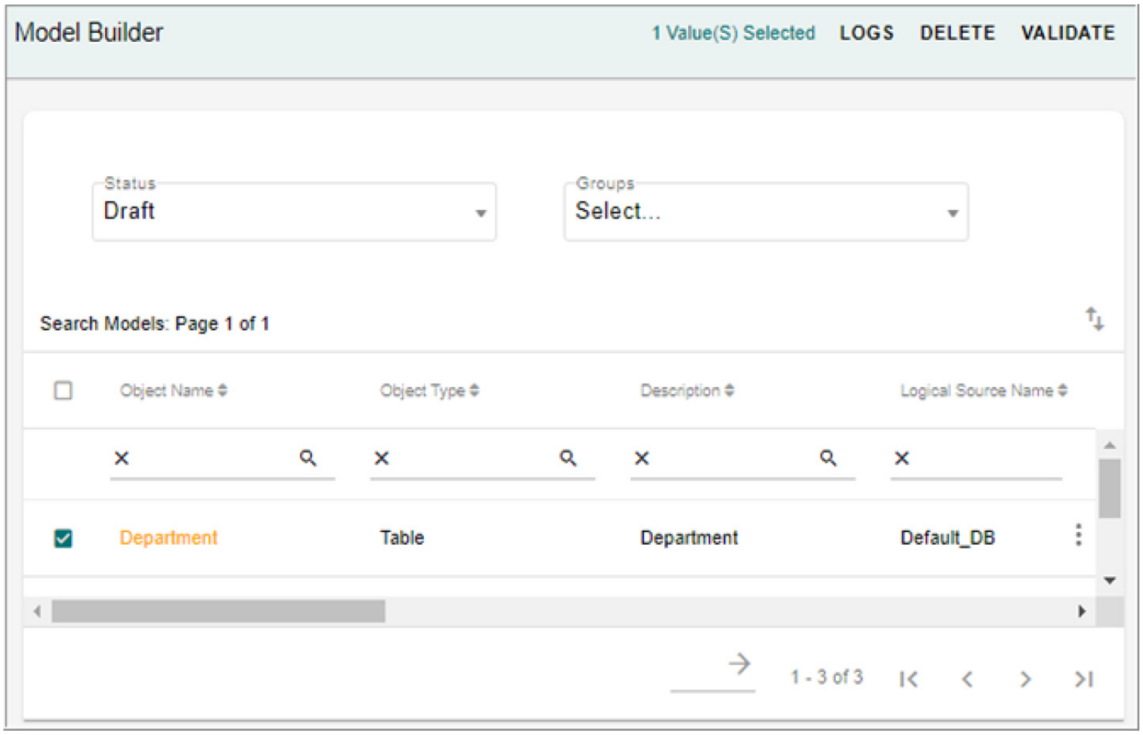
If models are in Draft, Validated or Generated state and underlying physical tables are generated, delete of these models will require delete metadata activity (Delete Table Metadata) to be added. On successful deletion, the underlying metadata and physical tables will be renamed and a new table with same name can be recreated later.

To delete a model:

1 On the **Model Builder** UI, select any data model and click **Delete** as in Figure 860.

- The Delete button is visible always on the Draft and Validated UI.
- Models with underlying physical tables cannot be deleted unless activity (Delete Table Metadata) to delete metadata is added to user role to perform metadata delete.

Figure 860: Model Builder



Status: Draft

Groups: Select...

Search Models: Page 1 of 1

☐	Object Name	Object Type	Description	Logical Source Name
☑	Department	Table	Department	Default_DB

1 - 3 of 3

2 On the **Confirmation Webpage** dialog, click **Yes**.

Message: “Model deleted successfully” is displayed.

Message: “Models deleted successfully. Check Email or Metadata Deletion logs for more details” is displayed if it is metadata delete.

If the table is not used by any MDM modules (Configurable UI, Business Rules, Business Entities, CLCR, Authorization, Approval, E2E, Matching, Survivorship, Publication and Hierarchy) deletion process is performed else an error message is displayed.

During the metadata delete, the table names of staging tables (Mater, Error, Audit trail, Version, Input staging, Netchange, Output staging) and load table will be renamed to tablename_timestamp. The logical name of the table will be renamed to TableName_MD_objectId. You can then create a new table with same name as that of a metadata deleted table.

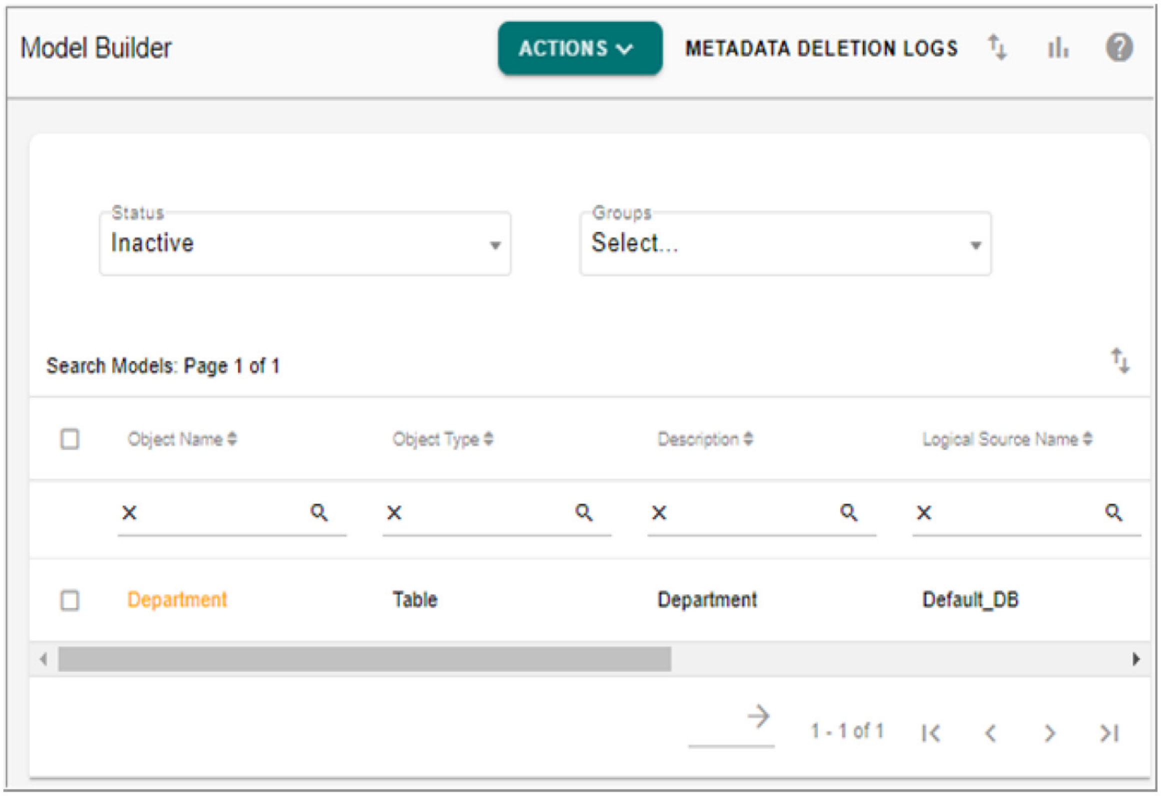
- Metadata deletion is not supported if the table (as Parent Table) has a foreign key link with a child table.
- Metadata deletion is not supported for template based master tables and OOTB tables.
- For metadata deletion on a temporal table, you must drop the join indexes if any created on temporal table through backend.
- Delete model will not check dependencies of external views or tables.

- For successful metadata deletion of model builder tables used in survivorship, you must delete the survivorship profile along with the relational object (RO) and cross references.

---

3 On the **Model Builder** UI, select the **Inactive** option from **Status** dropdown.

Figure 861: Model Builder

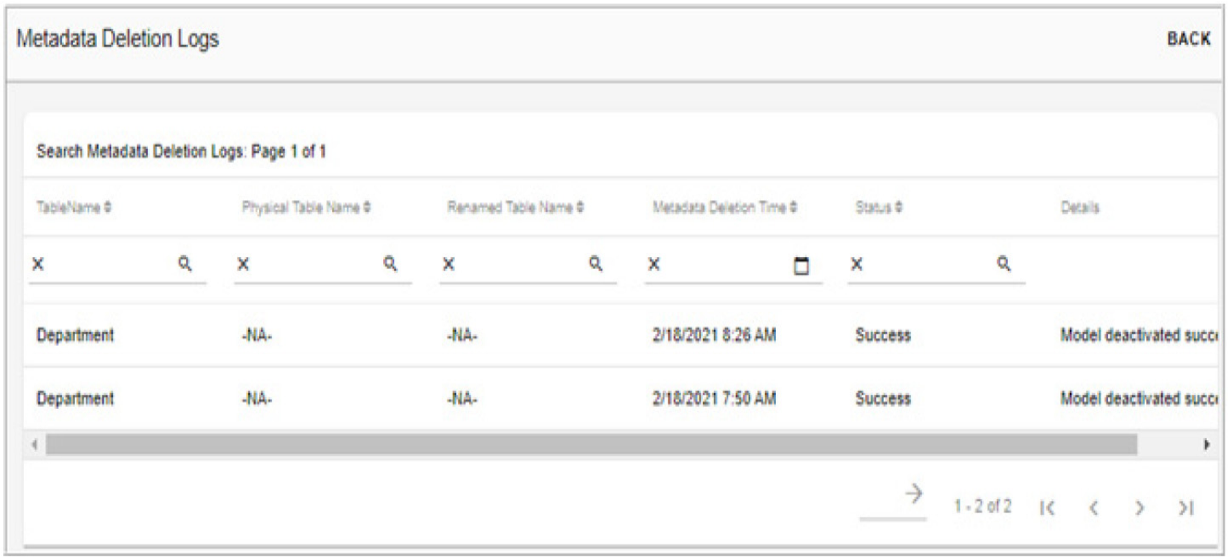


Status: Inactive

☐	Object Name	Object Type	Description	Logical Source Name
☐	Department	Table	Department	Default_DB

4 Click **Metadata Deletion Logs** to view the metadata deletion log details as in .

Figure 862: Metadata Deletion Logs



Metadata Deletion Logs

Search Metadata Deletion Logs: Page 1 of 1

TableName	Physical Table Name	Renamed Table Name	Metadata Deletion Time	Status	Details
Department	-NA-	-NA-	2/18/2021 8:26 AM	Success	Model deactivated succ
Department	-NA-	-NA-	2/18/2021 7:50 AM	Success	Model deactivated succ

On the Model Builder UI with Inactive option selected, the deleted models can also be activated and can also export the model details to an excel sheet.

5 To activate the deleted model, select the deleted model and click **Activate Model** to reactivate the model.

Message: “Model activated successfully” is displayed and the model will be displayed under Draft state.

The model names of reactivated models can be edited as per the requirement.

---

6 Click **Export** to export the model details to an excel file.

Table 26 displays the delete and metadata delete use case scenarios.

Table 26: Delete and Delete Metadata Use Cases

Object Type	Generated		Validated		Draft	
	Metadata Delete	Normal Delete	Metadata Delete	Normal Delete	Metadata Delete	Normal Delete

Table 26: Delete and Delete Metadata Use Cases

Object Type	Generated		Validated		Draft	
MDM Table	✓ If Metadata Deletion Activity is added	✖ If Metadata Deletion Activity is **Not** added	✓ If Metadata Deletion Activity is added	✓ If Metadata Deletion Activity is **Not** added	✓ If Metadata Deletion Activity is added	✓ If Metadata Deletion Activity is **Not** added
Non MDM Table/View	✖	✖	✖	✖	✖	✖
MDM View	✖	✖	✖	✓	✖	✓
Tables/Views deployed using secondary connection	✓ Only logical name of the table will be renamed	✖	✓ Only logical name of the table will be renamed	✓	✓ Only logical name of the table will be renamed	✓

Import from X-Document

Tables can be imported from X-document into model builder. On import, the tables will be available in Draft state. Default facet will be added to the model, which is required for Deployment through model builder. You can modify the required changes, validate and deploy model.

- You can import a table from X-document only once and incremental changes are not supported.
- The format of X-Document should be similar to MST X-Document file.
- During import from X-document, model column field attributes are treaded as non case specific.

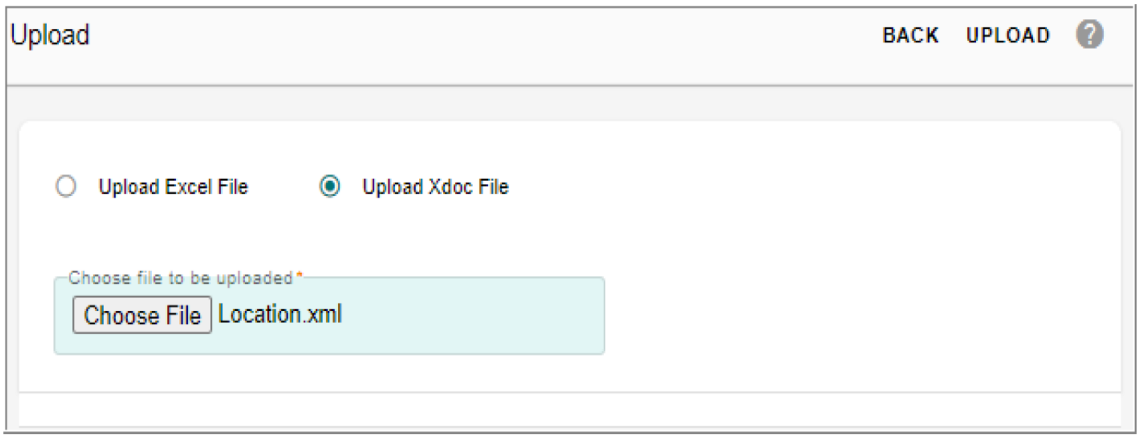
To import X-Document:

1 On the **Model Builder** UI, select **Upload** from **Tasks** drop-down.

The **Upload** UI is displayed.

2 On the **Upload** UI, select the “Upload Xdoc File” option, click **Browse** to select the X-doc file and then click **Upload** as in Figure 863.

Figure 863: Upload X-Doc File

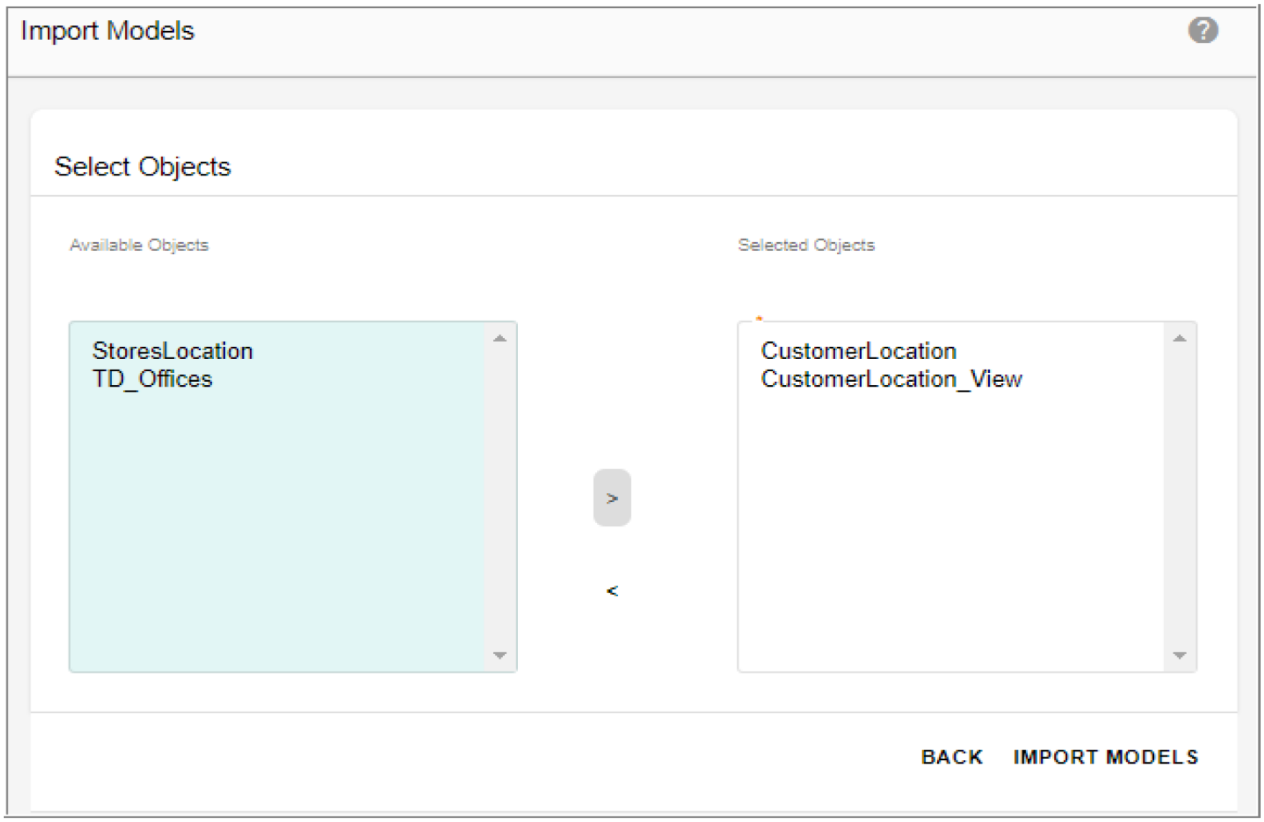


Location.xml

The **Import Models** UI is displayed. On the **Import Models** UI, the **Available Objects** list displays all the available tables in the selected X-doc file.

3 On the **Import Models** UI, select the required tables that you want to import from the **Available Objects** list and move it to **Selected Objects** list as in Figure 864

Figure 864: Import Models



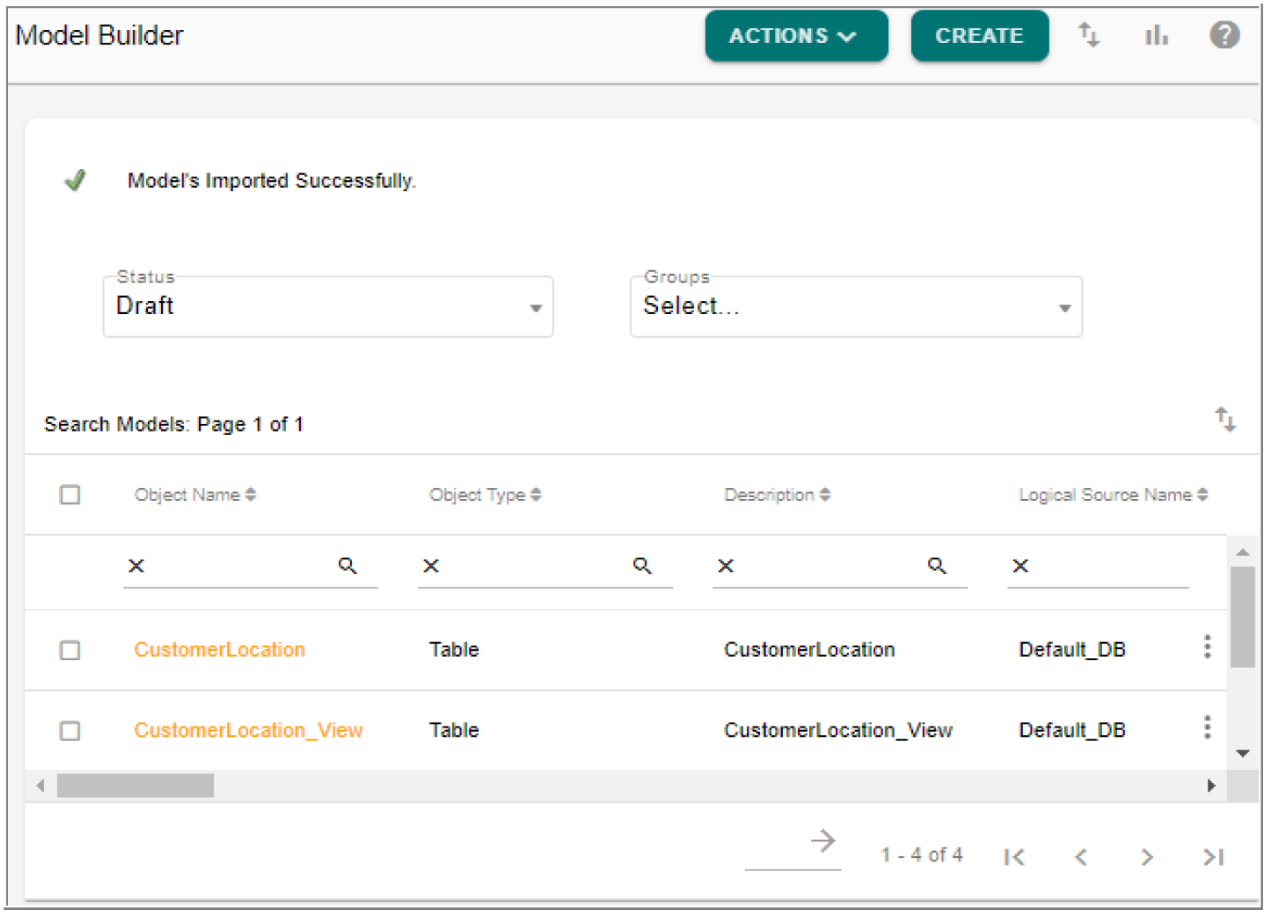
StoresLocation
TD_Offices

CustomerLocation
CustomerLocation_View

4 Click **Import Models**.

Message: “Model’s imported successfully” is displayed. The imported tables will be in Draft state as in Figure 865 and the subsequent steps to validate the tables and generate ISG for the tables remains the same. For details, see Section : “Validate Model” and Section : “Generate Model or Deploy Validated Models”.

Figure 865: Model Builder



Model's Imported Successfully.

Status: Draft

Search Models: Page 1 of 1

☐	Object Name	Object Type	Description	Logical Source Name
☐	CustomerLocation	Table	CustomerLocation	Default_DB
☐	CustomerLocation_View	Table	CustomerLocation_View	Default_DB

1 - 4 of 4

Manage Template

Model Builder supports generation of tables based on a pre-defined template. As part of MDM installation templates are created and stored as model builder metadata. You can select the template that needs to be instantiated from a list of available options, and generate the same. Once the tables are generated from templates, they can be used in respective modules for which they are designed. Model Builder supports the following templates:

- RDM Template: Reference Data Management is used to manage Code Sets of Organizations. MDM provides OOB tables to store different entities (Code Values, Mappings) of Code Sets. If you want to store the Entity details of every Code Sets in separate tables, you can use RDM template option. The RDM template has pre-defined templates to store Code Values, Mappings and Language Descriptions. These tables need to be pre-created before using them to create Code Sets. Once they are generated from Model Builder, they will appear in the drop downs of RDM UIs.

- Hierarchy Template: MDM supports an approach to create hierarchy on generic tables of Hierarchy nodes and relationships. The structures of tables for nodes and relationships are pre-defined and can be customized based on requirement. These tables need to be pre-created before using them to create hierarchy. Once they are generated from Model Builder, they will appear in the drop downs of Hierarchy UIs.
- Cross Reference Template: As part of Survivorship process, you can capture cross reference of master data to its contributing sources. By default, these cross references are captured in OOB table (ReferenceDataObject) available with the product. If you want to capture the Cross Reference in separate tables, you can use Cross Reference templates. These tables need to be pre-created before using them in Survivorship profiles. Once these tables are generated, they will appear in Select Cross Reference drop down of Create/Edit Survivorship profiles UI.

On the Model Builder UI, using the Manage Template option, you can navigate to Manage Template UI. On the Manage Template UI, select a template and generate as many number of the tables as required. One template can contain more than one table.

Creating tables using the Manage Template UI internally involves the following steps:

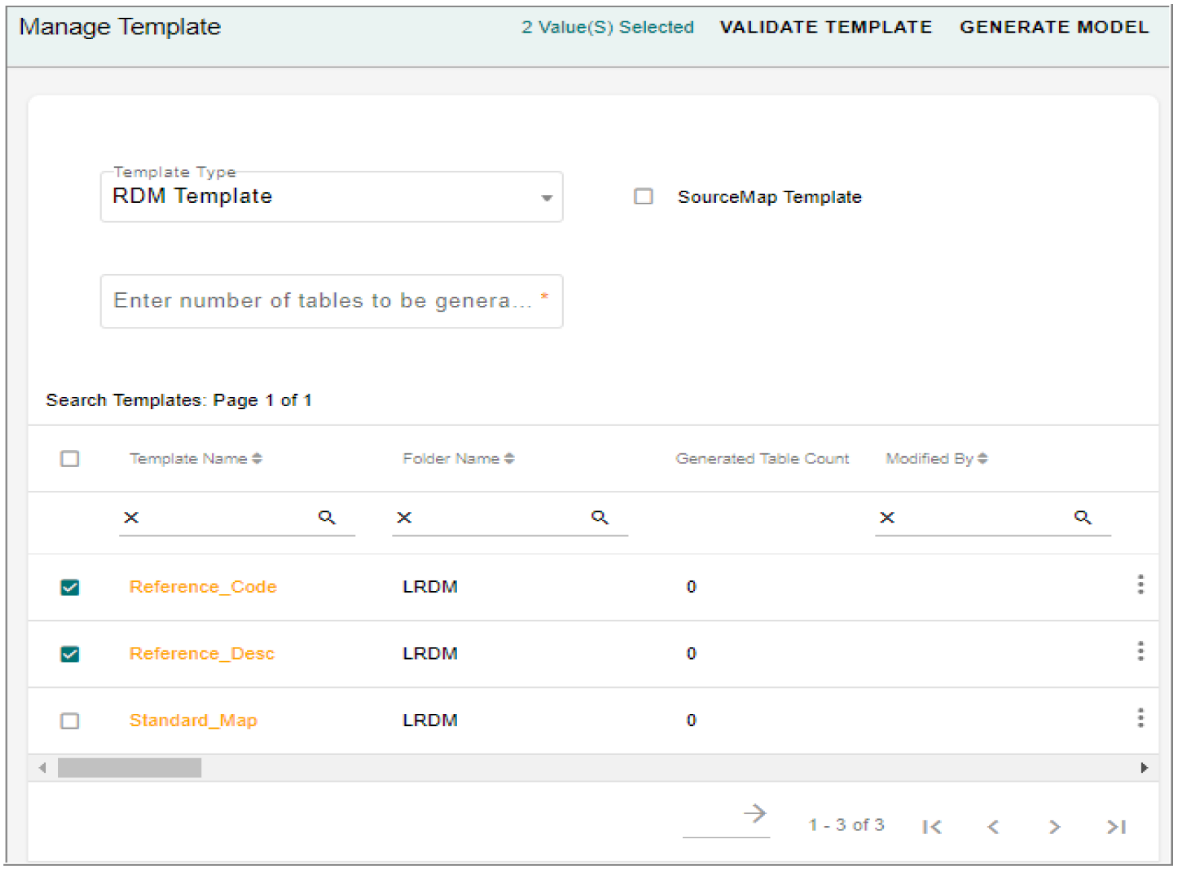
- Copy the template and create tables in draft state
- Validate the tables
- Deploy

On the **Manage Template** UI,

- By default the **RDM Template** option is selected and all the tables defined under the selected template is displayed in the Search Templates pane.

  When RDM Template option is selected, option to create Source Map table is provided in addition to the system tables of RDM. To create Source map tables, select the **SourceMap Template** checkbox and enter number of tables to be generated.
- The **Template Name** column displays the name of the template.
- The **Folder Name** column displays the source of model. It displays Self Generated Folder for models generated through model builder UI and it displays the source as Hierarchy Nodes or Hierarchy Relations for hierarchy models and LRDM for RDM models generated through model template.
- The **Generated Table Count** column displays the number of tables generated.

Figure 866: Manage Template



Template Type: RDM Template

☐ SourceMap Template

Search Templates: Page 1 of 1

☐	Template Name	Folder Name	Generated Table Count	Modified By
☑	Reference_Code	LRDM	0	
☑	Reference_Desc	LRDM	0	
☐	Standard_Map	LRDM	0	

On the Manage Template UI, you can perform the following:

- Validate Template and Generate Tables
- Edit Model Template Details

- For successful creation of RDM multi tables, approval on Business Rule should not be enabled.
- Approval is not honored for template based table creation.

Validate Template and Generate Tables

The Validation of template is required only if the templates details were modified using the Edit option.

To validate template:

1. On the **Model Builder** UI, select **Template** from **Actions** dropdown.
2. On the **Manage Template** UI, select the required Template type.
3. In the **Search Template** pane, select the template(s) to validate and click **Validate Template**.

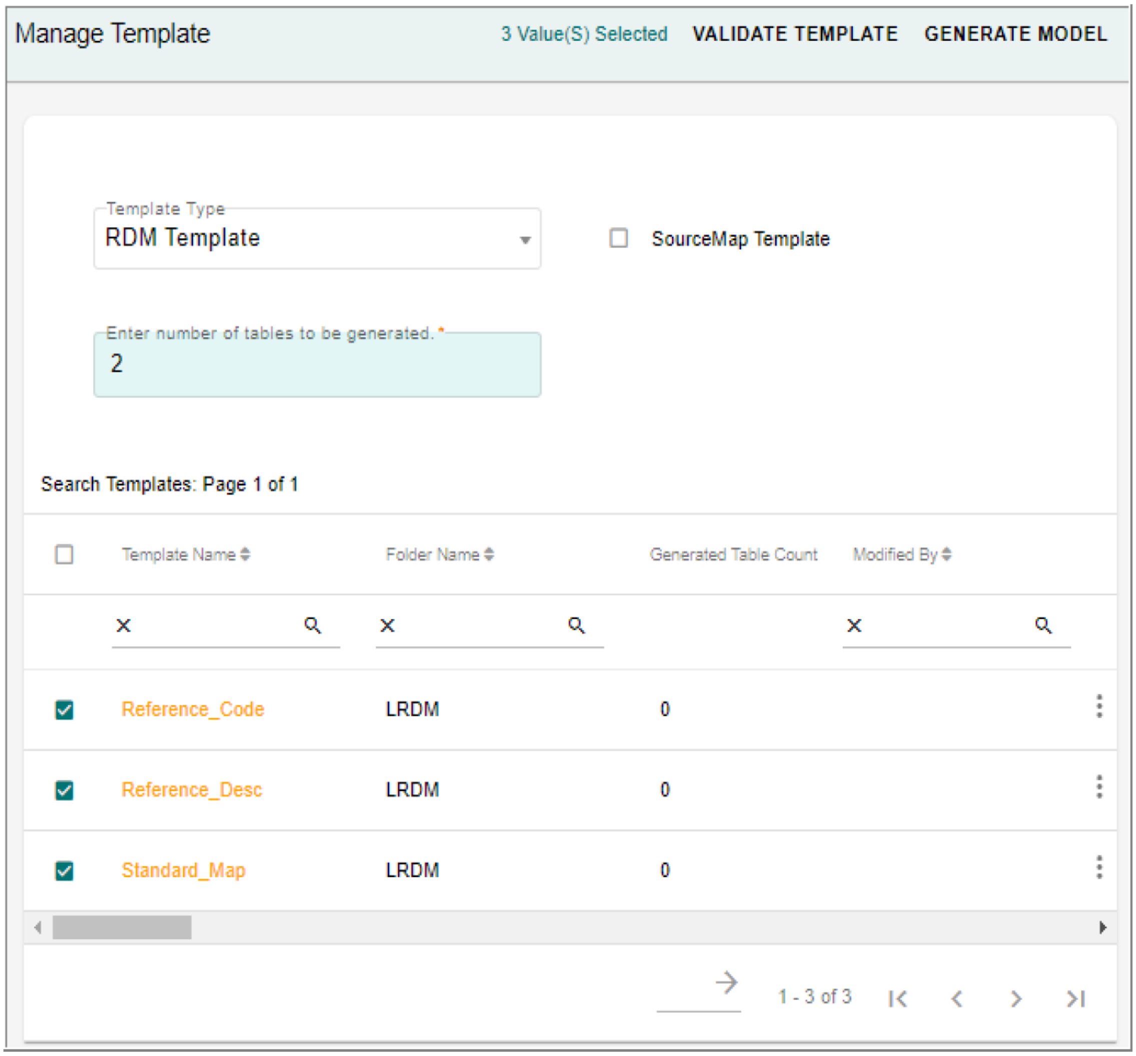
A success message is displayed if there were no errors during the validation process and the template validator log information is also displayed.

If any error occurs while validating the model, an error message and the corresponding log information will be displayed.

To generate tables:

1. On the **Manage Template** UI, select the template type and enter the number of tables to be generated in the **Enter number of tables to be generated** text field. The available templates that can be generated are:
   - RDM Template
   - Hierarchy Template
   - Cross Reference Template
2. Click **Generate Model**.

Figure 867: Manage Template



Template Type: RDM Template

☐ SourceMap Template

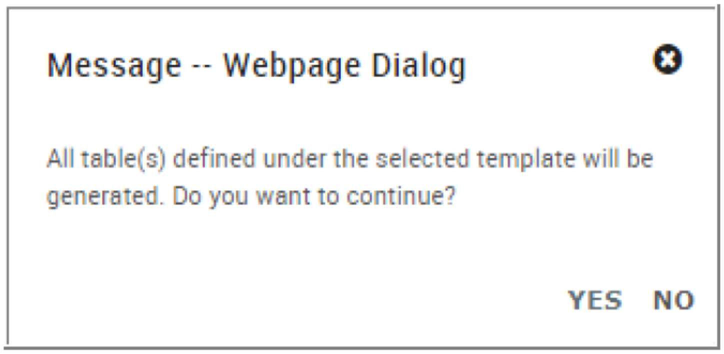
Enter number of tables to be generated.*: 2

Search Templates: Page 1 of 1

☐	Template Name	Folder Name	Generated Table Count	Modified By
☑	Reference_Code	LRDM	0	
☑	Reference_Desc	LRDM	0	
☑	Standard_Map	LRDM	0	

3. On the Confirmation dialog, click **Yes**.

Figure 868: Webpage Dialog



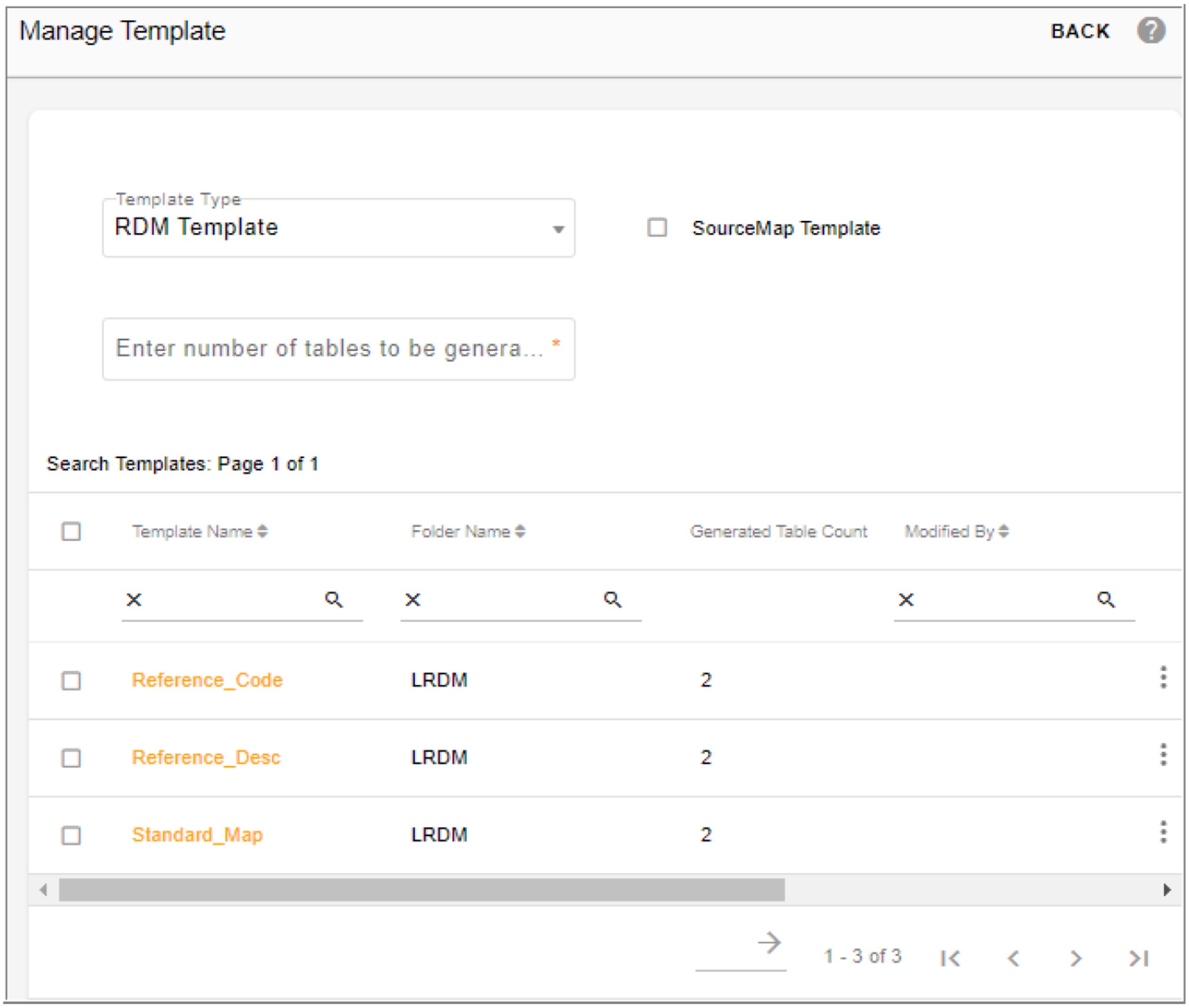
Message -- Webpage Dialog

All table(s) defined under the selected template will be generated. Do you want to continue?

A deployment started message is displayed on the UI. The process of model generation is an asynchronous process. An email will be sent to the user with the status of table generation. Maximum 50 templates can be generated at a time. In case of any error during table generation, entire changes will be rolled back.

When the deployment is completed successfully, the **Generated Count Table** displays the number of tables generated.

Figure 869: Manage Template—Table Count



Template Type: RDM Template

☐ SourceMap Template

Enter number of tables to be genera... *

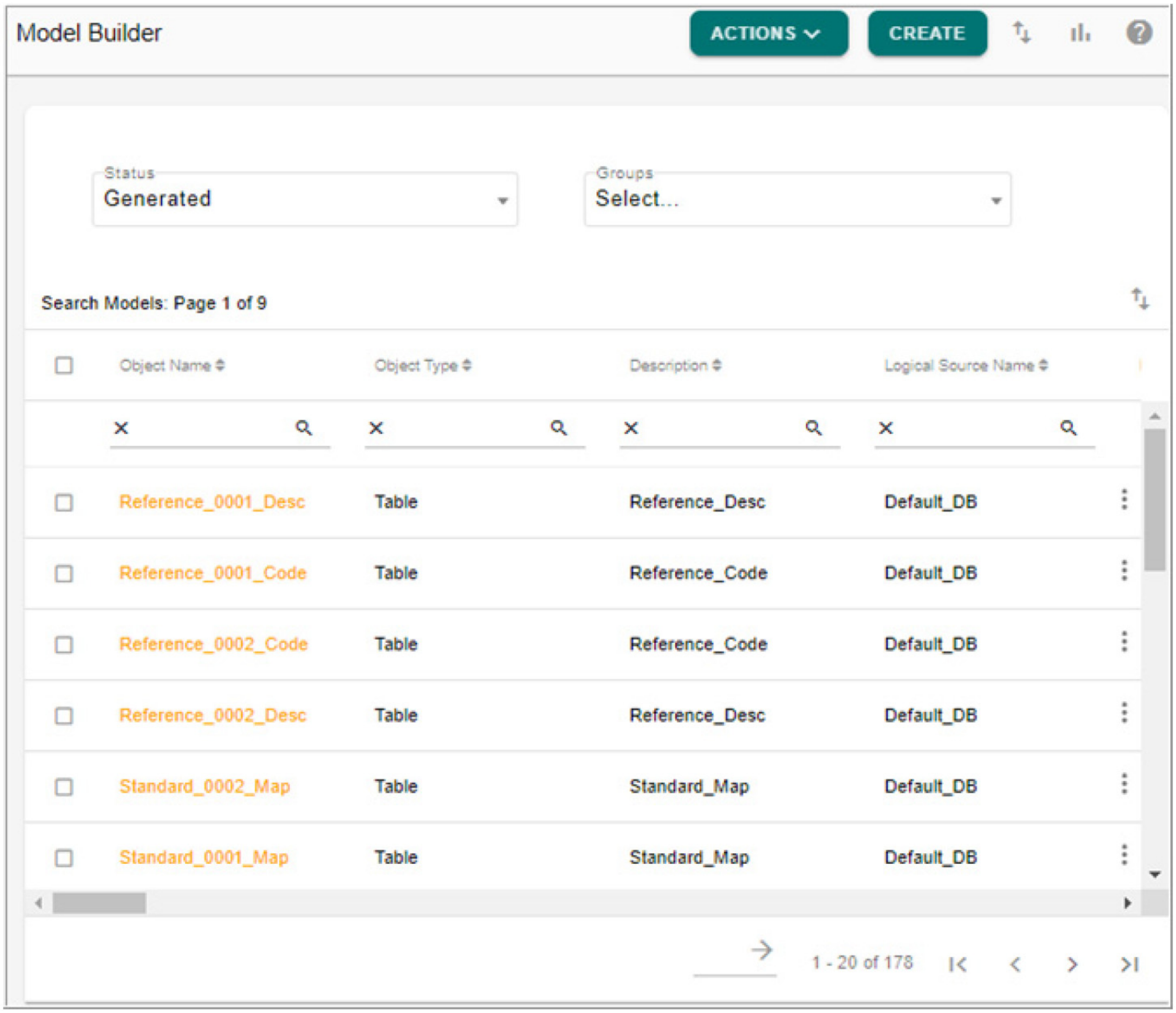
Search Templates: Page 1 of 1

☐	Template Name	Folder Name	Generated Table Count	Modified By
☐	Reference_Code	LRDM	2	
☐	Reference_Desc	LRDM	2	
☐	Standard_Map	LRDM	2	

4 On the **Model Builder** UI, select the **Generated** option from **Status** dropdown.

The **Search Models** pane displays all the generated models.

Figure 870: Model Builder—Generated Models



Model Builder

Status: Generated

Groups: Select...

Search Models: Page 1 of 9

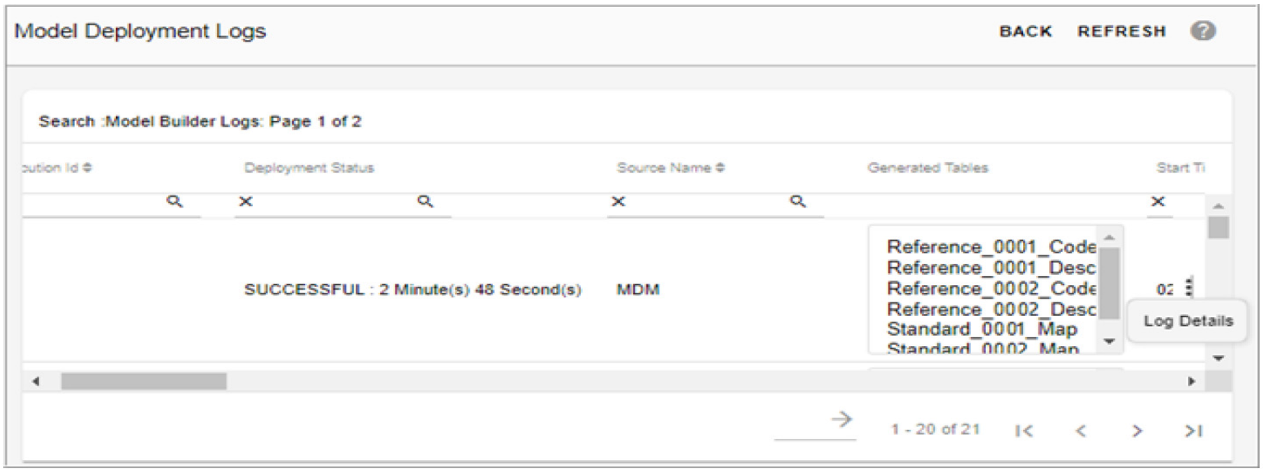
☐	Object Name	Object Type	Description	Logical Source Name
☐	Reference_0001_Desc	Table	Reference_Desc	Default_DB
☐	Reference_0001_Code	Table	Reference_Code	Default_DB
☐	Reference_0002_Code	Table	Reference_Code	Default_DB
☐	Reference_0002_Desc	Table	Reference_Desc	Default_DB
☐	Standard_0002_Map	Table	Standard_Map	Default_DB
☐	Standard_0001_Map	Table	Standard_Map	Default_DB

1 - 20 of 178

5 On the **Model Builder** UI, click **Logs** from **Actions** dropdown.

The **Model Deployment Logs** UI (Figure 871) is displayed.

Figure 871: Model Builder ISG Logs



Model Deployment Logs

Search :Model Builder Logs: Page 1 of 2

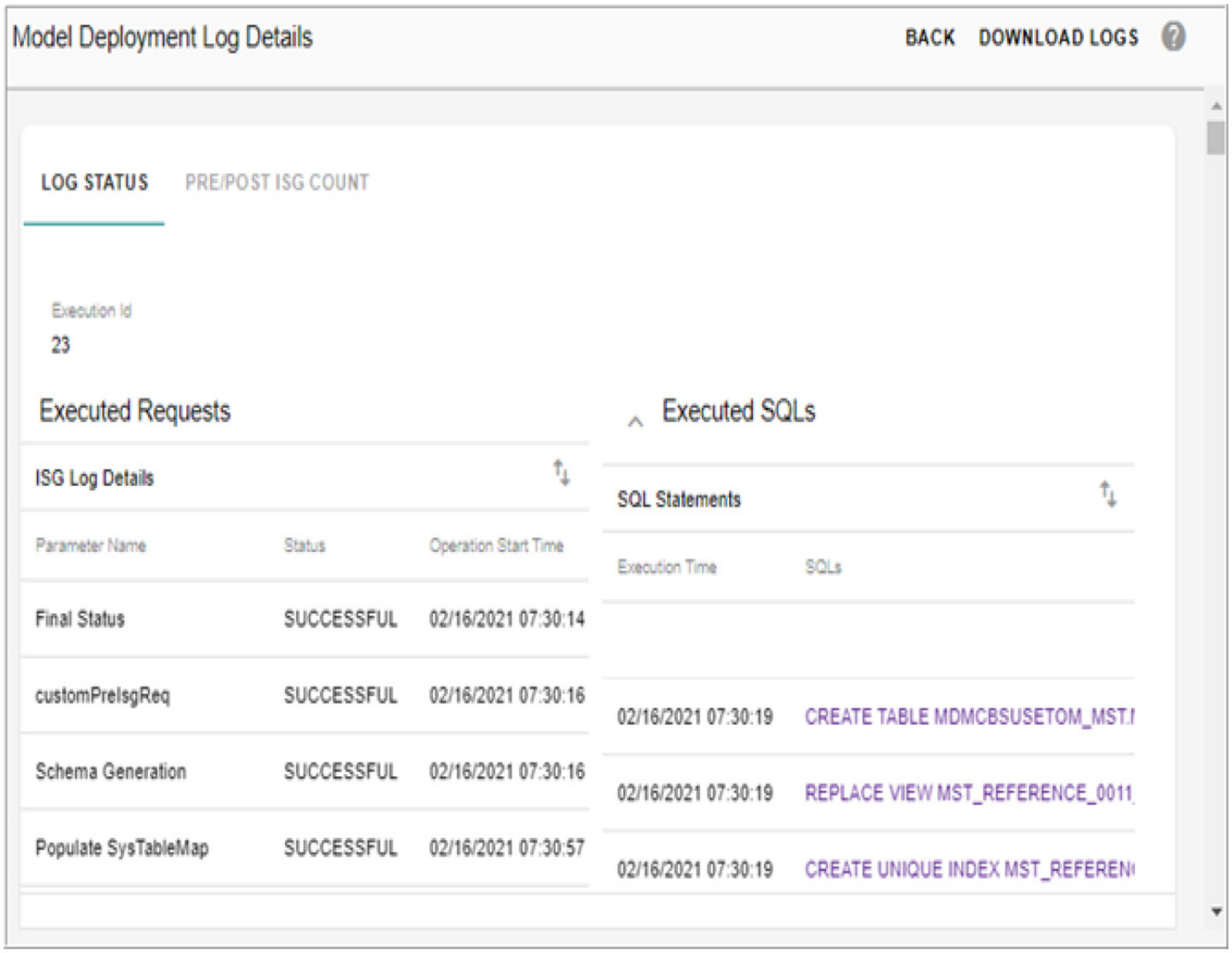
ution Id	Deployment Status	Source Name	Generated Tables	Start Ti
	SUCCESSFUL : 2 Minute(s) 48 Second(s)	MDM	Reference_0001_Code Reference_0001_Desc Reference_0002_Code Reference_0002_Desc Standard_0001_Map Standard_0002_Map	02

1 - 20 of 21

6 On the **Model Deployment Logs** UI, click on Menu icon corresponding to the required log and click **Log Detail** to view the complete deployment log information.

The **Model Deployment Log Details** UI (Figure 872) is displayed. For detailed description on ISG logs, see Section : “Model Deployment Log.”

Figure 872: Model Builder ISG Log Details



Execution Id
23

Executed Requests

ISG Log Details

Parameter Name	Status	Operation Start Time
Final Status	SUCCESSFUL	02/16/2021 07:30:14
customPreIsgReq	SUCCESSFUL	02/16/2021 07:30:16
Schema Generation	SUCCESSFUL	02/16/2021 07:30:16
Populate SysTableMap	SUCCESSFUL	02/16/2021 07:30:57

Executed SQLs

SQL Statements

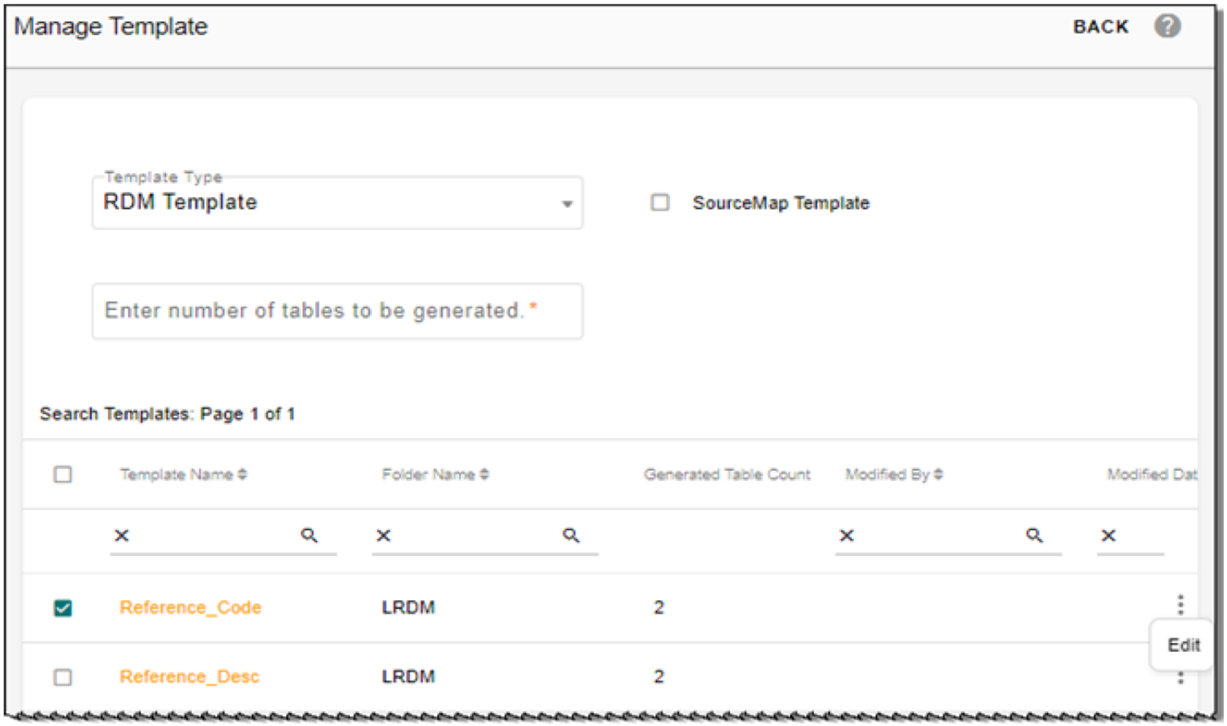
Execution Time	SQLs
02/16/2021 07:30:19	CREATE TABLE MDMCBSUSETOM_MST.I
02/16/2021 07:30:19	REPLACE VIEW MST_REFERENCE_0011
02/16/2021 07:30:19	CREATE UNIQUE INDEX MST_REFEREN

Edit Model Template Details

To edit model template details:

1 On the **Manage Template** UI, with RDM Template or Hierarchy Template or Cross Reference Template selected, select the required model template and click **Edit** as in Figure 873.

Figure 873: Manage Template



Template Type: RDM Template

☐ SourceMap Template

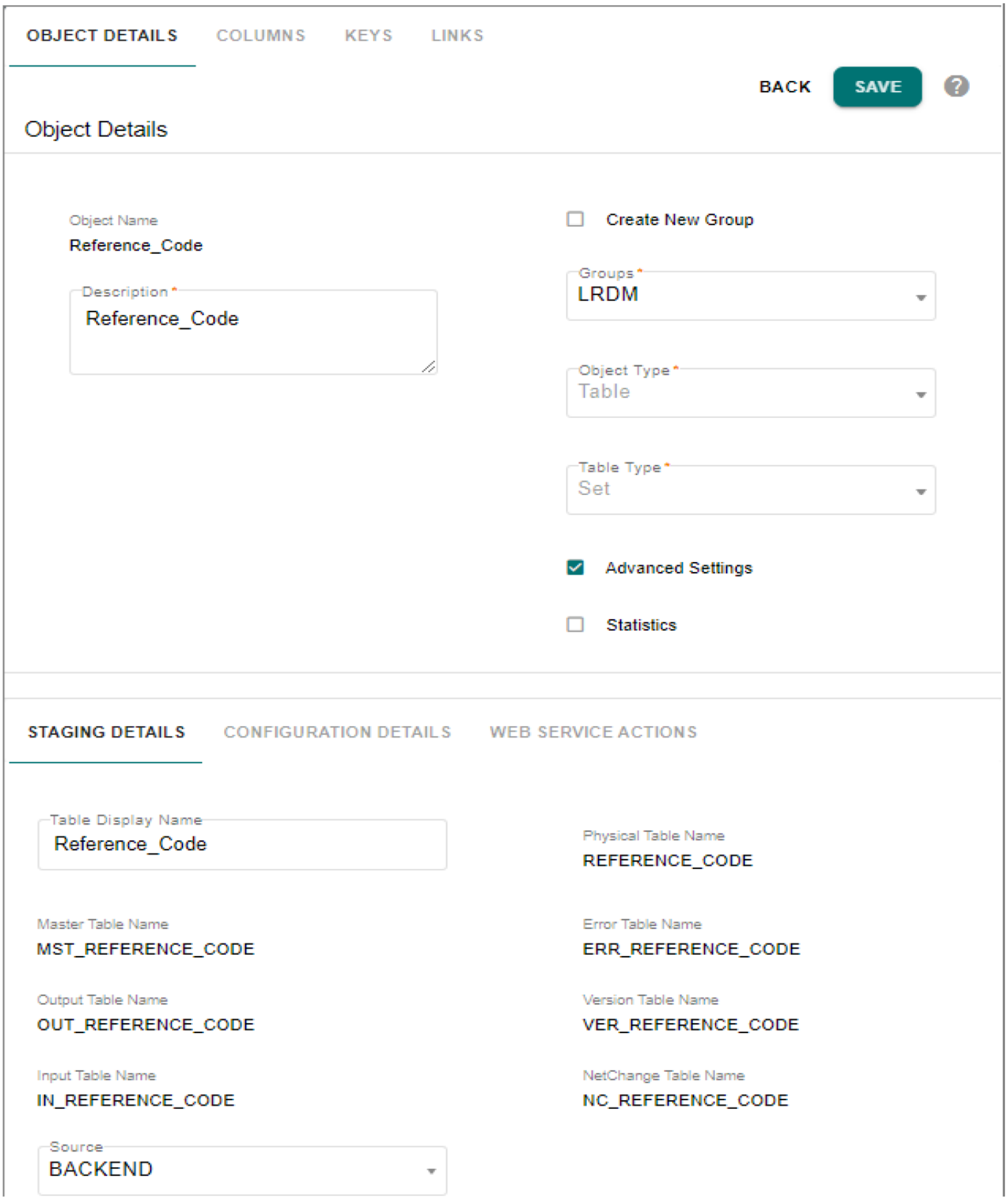
Enter number of tables to be generated. *

Search Templates: Page 1 of 1

☐	Template Name	Folder Name	Generated Table Count	Modified By	Modified Dat
☑	Reference_Code	LRDM	2		
☐	Reference_Desc	LRDM	2		

The **Model Builder** UI of the selected model is displayed as in Figure 874.

Figure 874: Model Details



Object Details

Object Name
Reference_Code

Description *
Reference_Code

☐ Create New Group

Groups *
LRDM

Object Type *
Table

Table Type *
Set

☑ Advanced Settings

☐ Statistics

Table Display Name
Reference_Code

Physical Table Name
REFERENCE_CODE

Master Table Name
MST_REFERENCE_CODE

Error Table Name
ERR_REFERENCE_CODE

Output Table Name
OUT_REFERENCE_CODE

Version Table Name
VER_REFERENCE_CODE

Input Table Name
IN_REFERENCE_CODE

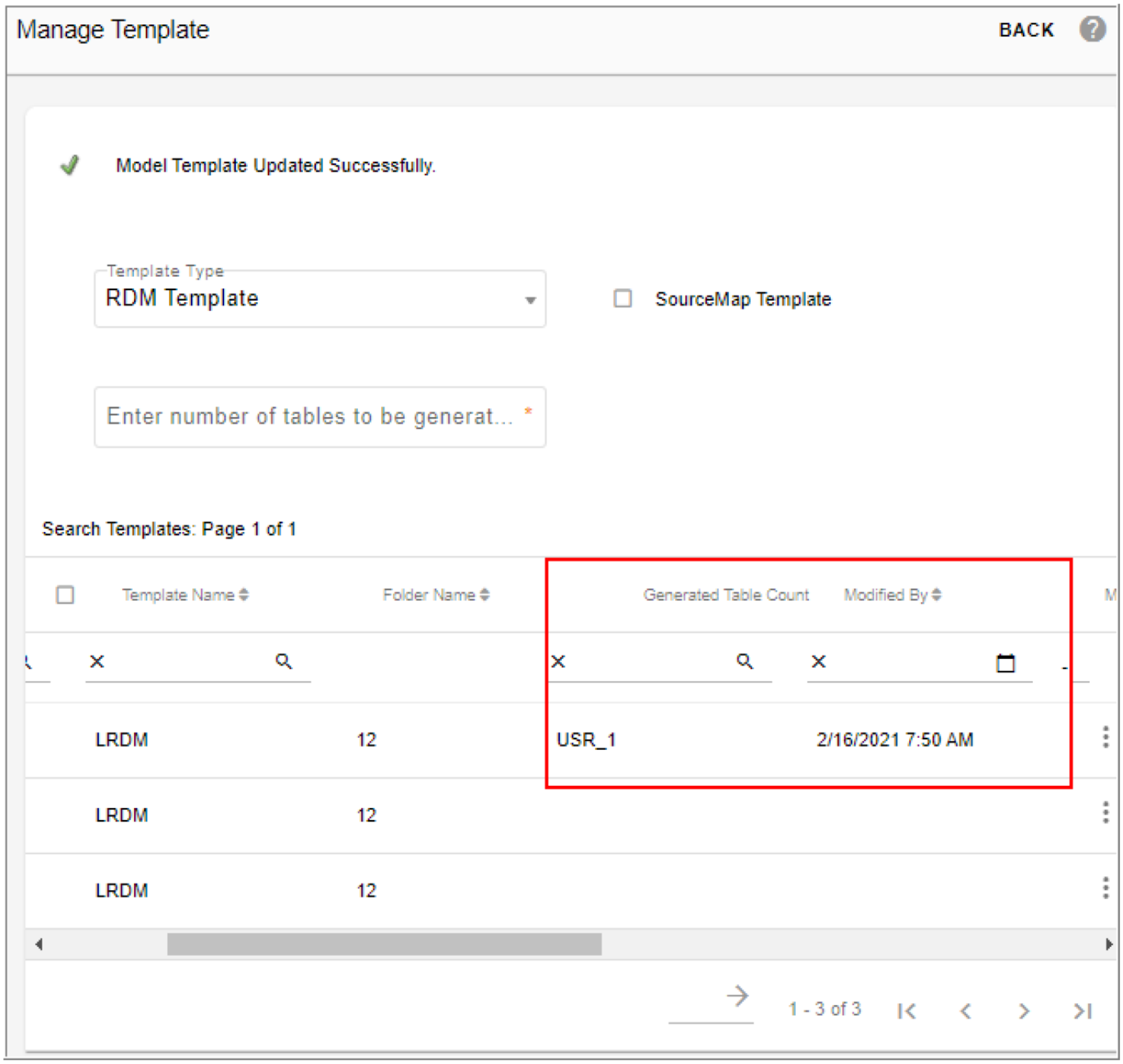
NetChange Table Name
NC_REFERENCE_CODE

Source
BACKEND

2 On the **Model Builder** UI, you can modify the values under different tabs and click **Save**. For details on different fields, see Section : “Template Guidelines”.

The **Manage Template** page is displayed. The **Modified By** and **Modified Date** column is updated as in Figure 875

Figure 875: Manage Template



✓ Model Template Updated Successfully.

Template Type: RDM Template

☐ SourceMap Template

Enter number of tables to be generat... *

Search Templates: Page 1 of 1

☐	Template Name	Folder Name	Generated Table Count	Modified By
	LRDM	12	USR_1	2/16/2021 7:50 AM
	LRDM	12		
	LRDM	12		

Manage Metadata Import

MDM provides the ability to import metadata of database objects (table, view, stored procedure, macro and function) from external database to MDM database.

Navigate to **Manage Metadata Import** UI from Model Builder UI by selecting **Metadata Import** from **Actions** dropdown.

On the **Manage Metadata Import** UI, you can perform the following:

- Import Metadata
- View Import Log Details

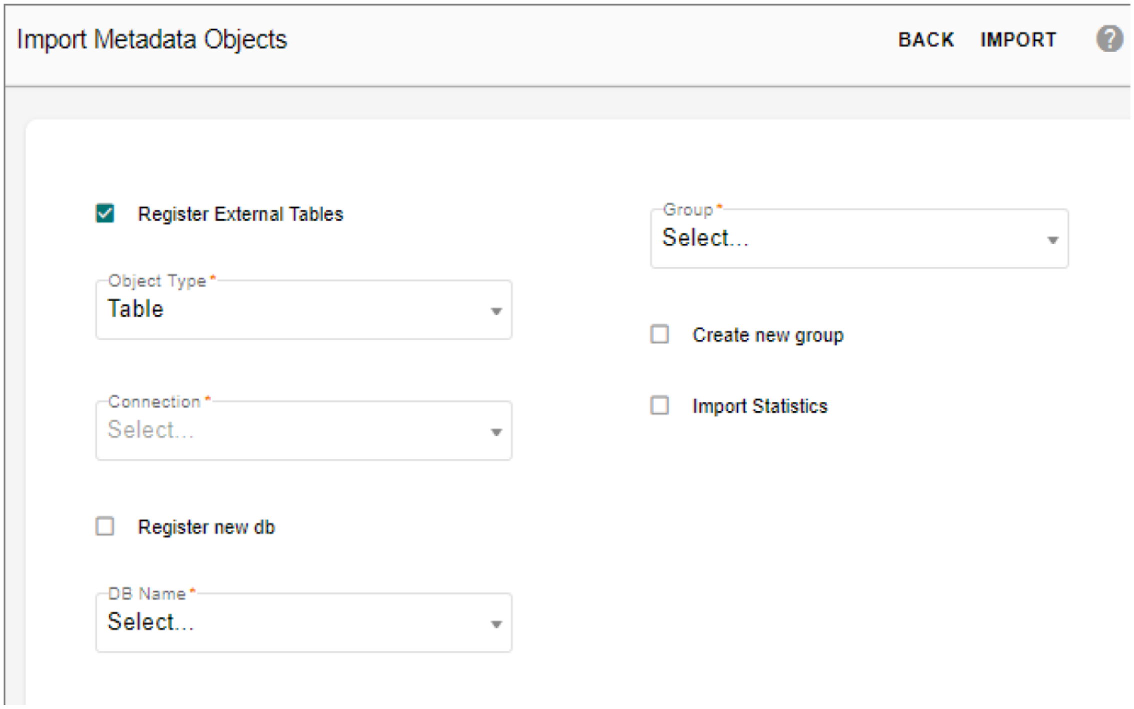
-

Import Metadata

To import metadata:

1 On the **Manage Metadata Import** UI, click **Import Metadata** from **Actions** dropdown.

Figure 876: Manage Metadata Import



Import Metadata Objects

☑ Register External Tables

Object Type* Table

Connection* Select...

☐ Register new db

DB Name* Select...

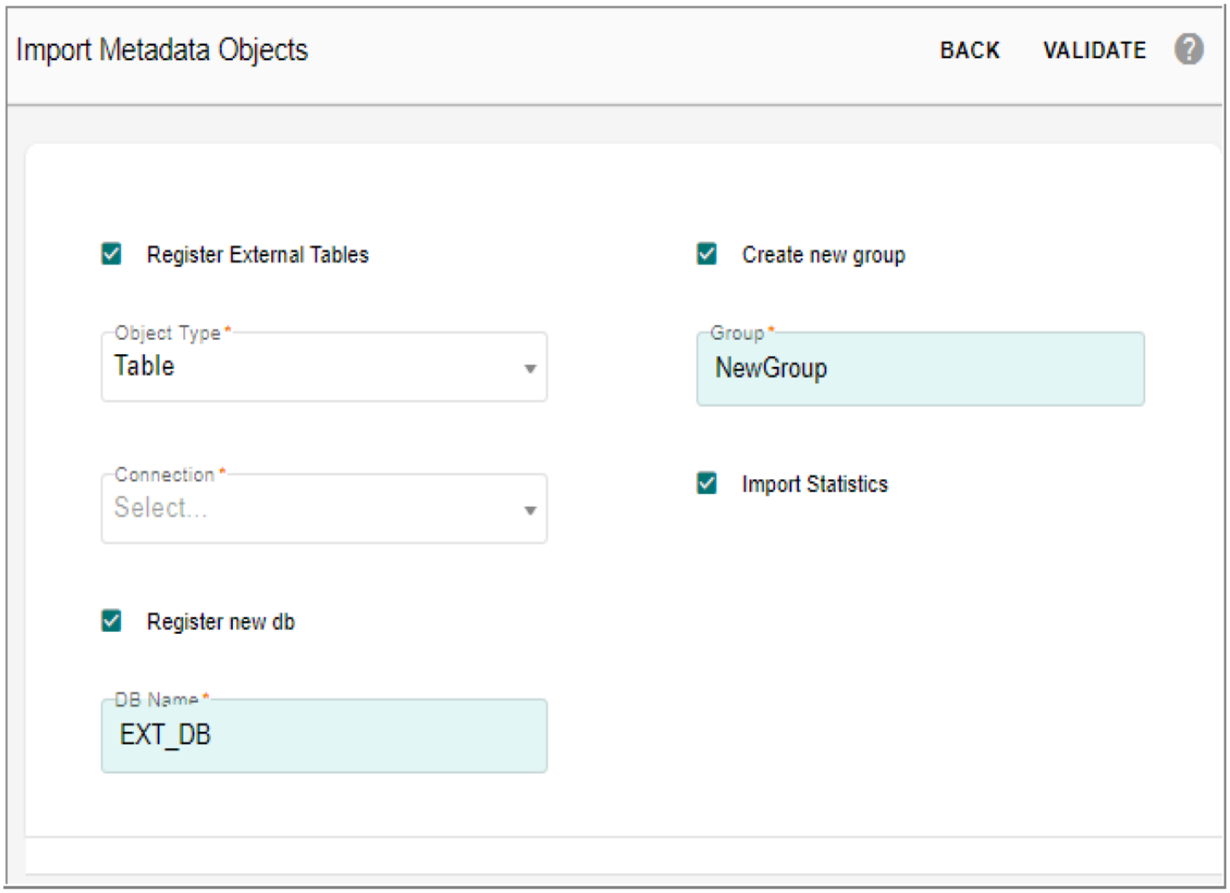
Group* Select...

☐ Create new group

☐ Import Statistics

The **Import Metadata Objects** UI (Figure 877) is displayed.

Figure 877: Import Metadata Objects



☑ Register External Tables

Object Type*: Table

Connection*: Select...

☑ Register new db

DB Name*: EXT_DB

☑ Create new group

Group*: NewGroup

☑ Import Statistics

2 On the **Import Metadata Objects** UI (Figure 877), enter the following details:

- **Object Type**: select the object type (table, view, stored procedure, macro or function) to import.
- **Create New Group**: select this checkbox to create a new group. If this checkbox is selected, the **Group** text field is displayed. Enter a name for the Group under which the table needs to be imported in the Group field.
- **Group**: displays the list of existing groups. Select a group, if you want to import a table under any of the existing group.
- **Import Statistics**: select this option to import the statistics details.
- **Connections**: displays the list of existing connections. Select the required connection from where you want to import the metadata objects. The Connection dropdown will be disabled if **Register External Tables** option is selected.
- **Register External Tables**: this option is selected by default. If this option is selected, the imported tables or views can be used as non-MDM table and this option is available only for tables and views. If this option is not enabled, the imported metadata of objects will be stored in the MDM metadata tables and can be viewed, but the tables cannot participate in the MDM process.

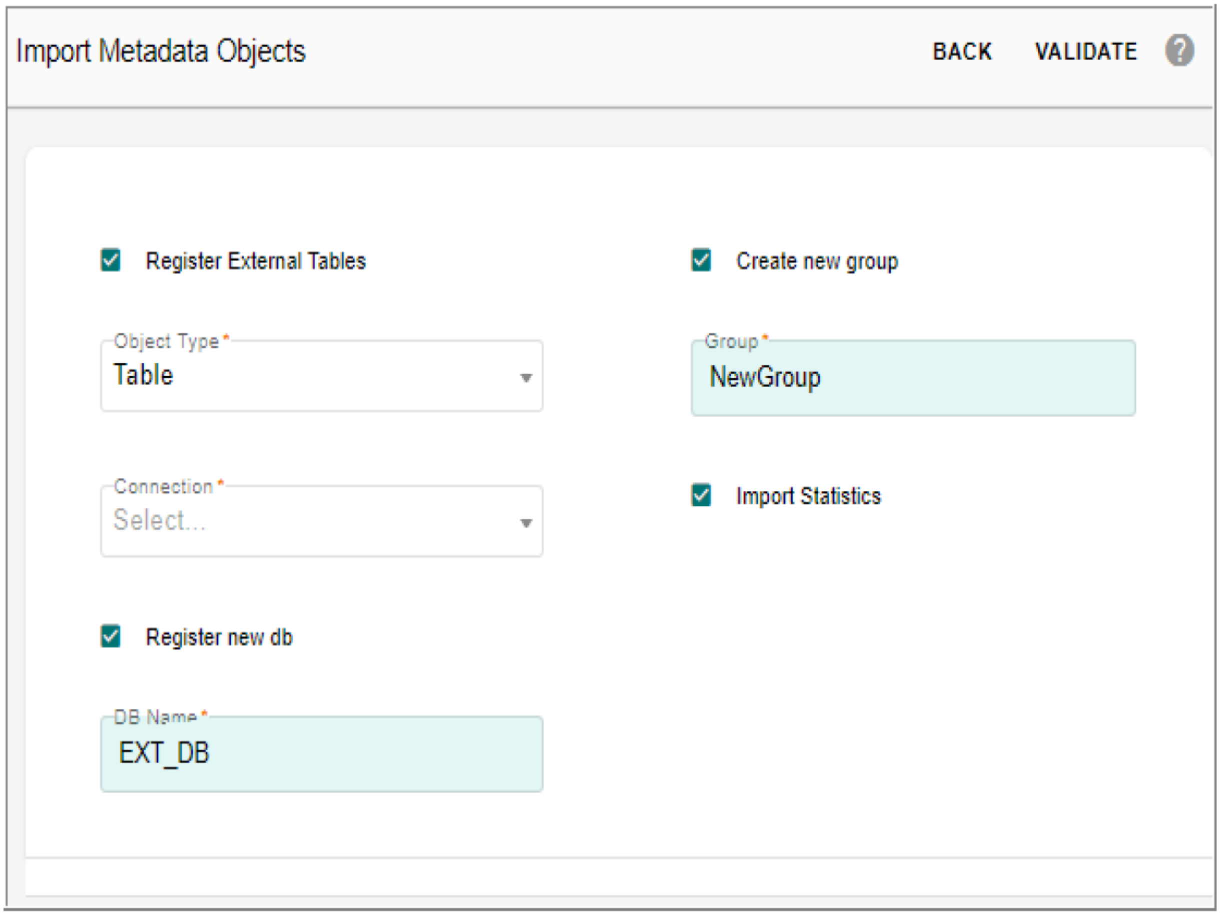
If the Register as Non-MDM Objects option is not selected, the following fields will be displayed:

If the Register as Non-MDM Objects option selected, the following fields will be displayed:

- **Register New DB**: select this option if the database that you want to register is not already registered. The DB Name field is displayed.
- **DB Name**: enter the database name that you want to register and click Validate. The database registered must be within the same database server where the MDM is installed.
- **DB Name** (drop-down): If the database is already registered, select the existing database from the dropdown.

- Select the option **Register External Tables**, select **Register New DB** option and enter the db name in **DB Name** field and click **Validate**.

Figure 878: Import Metadata Objects



Import Metadata Objects

☑ Register External Tables

Object Type*: Table

Connection*: Select...

☑ Register new db

DB Name*: EXT_DB

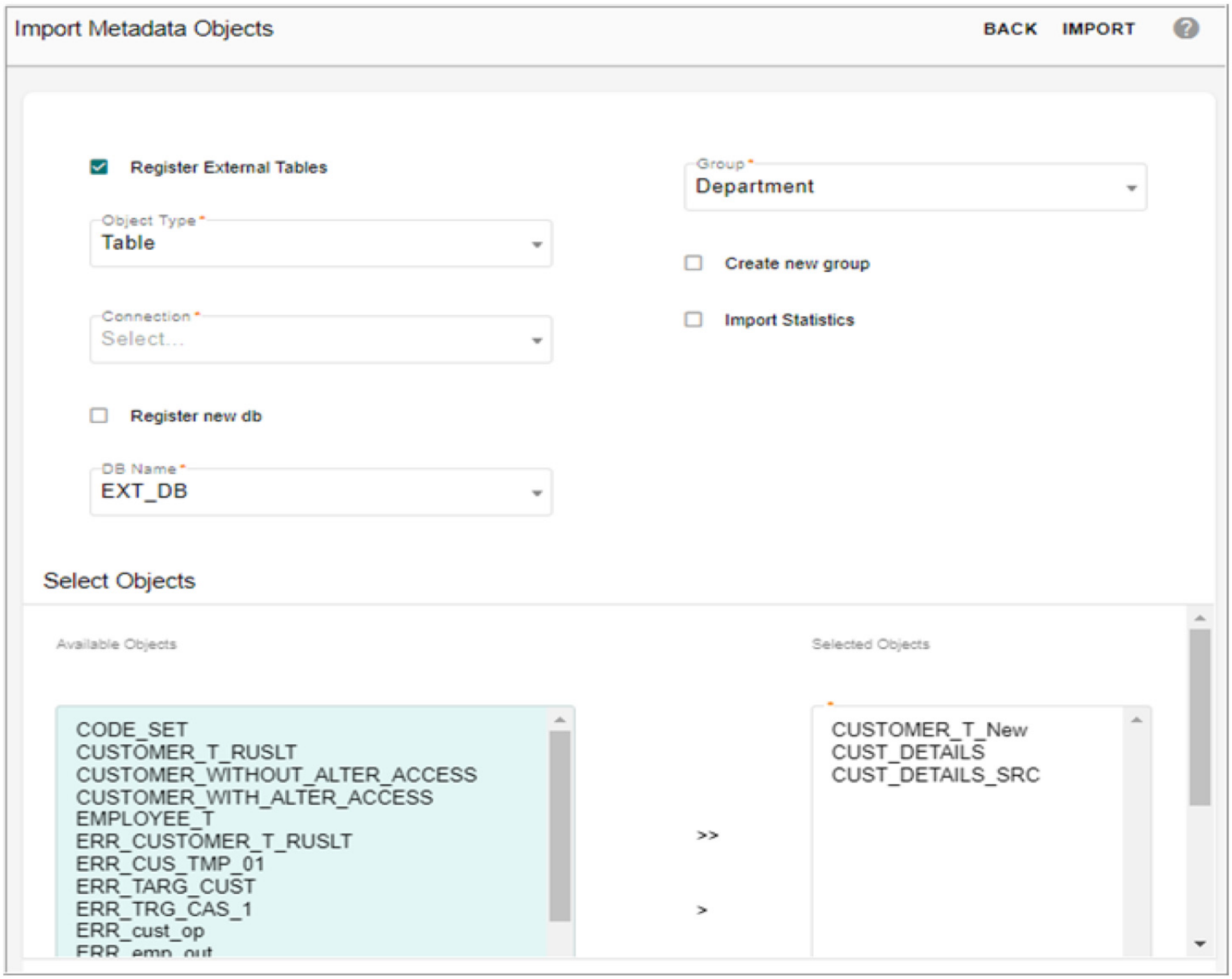
☑ Create new group

Group*: NewGroup

☑ Import Statistics

The **Select Objects** pane is displayed. On the **Select Objects** pane, the **Available Objects** list displays all the available objects of the selected database as in Figure 879.

Figure 879: Import Metadata Objects



Import Metadata Objects

☑ Register External Tables

Object Type*: Table

Connection*: Select...

☐ Register new db

DB Name*: EXT_DB

Group*: Department

☐ Create new group

☐ Import Statistics

Select Objects

Available Objects:
CODE_SET
CUSTOMER_T_RUSLT
CUSTOMER_WITHOUT_ALTER_ACCESS
CUSTOMER_WITH_ALTER_ACCESS
EMPLOYEE_T
ERR_CUSTOMER_T_RUSLT
ERR_CUS_TMP_01
ERR_TARG_CUST
ERR_TRG_CAS_1
ERR_cust_op

Selected Objects:
CUSTOMER_T_New
CUST_DETAILS
CUST_DETAILS_SRC

- On the **Select Objects** pane, select the required objects from **Available Objects** list and move it to **Selected Objects** list.

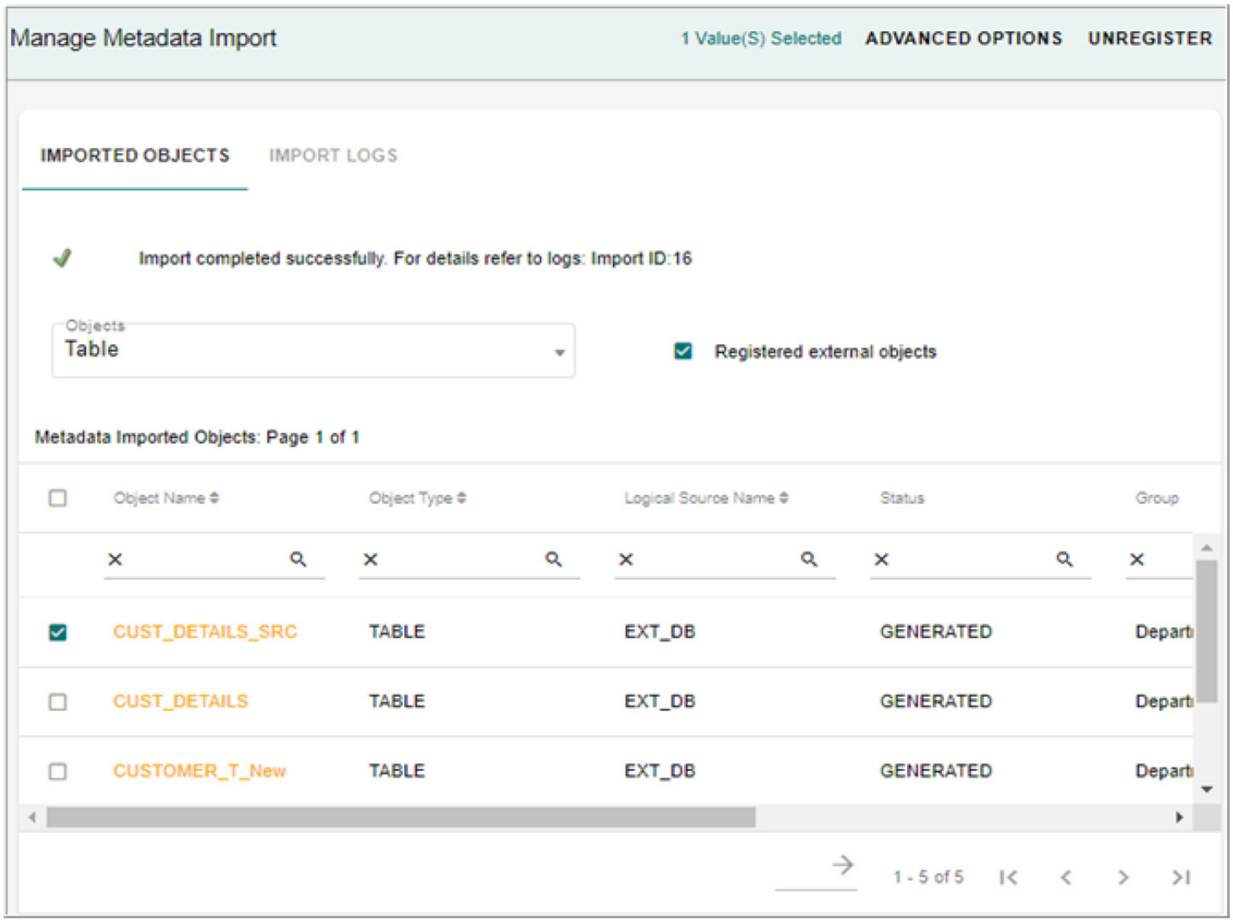
3 Click **Import**.

Message: “Import completed successfully. For details, refer to logs: Import ID: <Id no>." is displayed as in Figure 880.

Points on Import Metadata:

- If same object from same source is imported multiple times (Re-import), the additional attributes will be inserted and the deleted attributes will be made as ‘INACTIVE’.
- During model import, the column details of the database table like case specific, title and comment information will be populated in the imported model under columns tab on model builder UI in case specific, column display name and description columns respectively.

Figure 880: Import Metadata Objects



Import completed successfully. For details refer to logs: Import ID:16

Objects: Table

☑ Registered external objects

Metadata Imported Objects: Page 1 of 1

☐	Object Name	Object Type	Logical Source Name	Status	Group
☑	CUST_DETAILS_SRC	TABLE	EXT_DB	GENERATED	Departı
☐	CUST_DETAILS	TABLE	EXT_DB	GENERATED	Departı
☐	CUSTOMER_T_New	TABLE	EXT_DB	GENERATED	Departı

Other Functions on Manage Metadata Import

On Manage Metadata Import UI, you can perform the following tasks on imported objects:

- Set Advanced Options
- Unregister
- View

Points to remember while performing the above operations on Manage Metadata Import UI:

- MDM as well as non MDM database should reside in a single Teradata Box.
- The source database name must not contain any special characters except underscore(_), hash (#) and Dollar ($).
- You cannot register two sources with the same name.
- At one time, you can register/unregister maximum of 200 tables for the selected source.
- In Advanced Options setting, select single table from the registered list. If multiple tables selected, the Advanced Options for Primary key columns mapping and macro mapping would be performed on table selected in alphabetical order of precedence (ascending order).

- In the Advanced Options, when the Primary Key Column(s) tab is selected, the Non MDM table's Primary Key will be displayed by default in the Selected Column(s) pane.
- For Non MDM source (table or view), Key definition is a mandatory step if the table or view has no keys defined on it for successful execution of Survivorship/Matching process.
- If Primary Key (PK) of a table or view is changed via source registration advanced option, and matching and survivorship process needs to be executed followed by the change of PK, following order of steps needs to be followed for successful execution.
    - Refresh matching profile.
    - Execute matching profile.
    - Refresh Survivorship profile.
    - Execute Survivorship profile.

  The survivorship profile will be executed successfully to insert or update the master records, but the cross reference or relationship capturing will not be correct as the ROM will not be updated when the PK is changed.
- If any changes are made in the non MDM physical database objects that are registered to MDM, run REFRESH_SYS_DBC stored procedure manually for the changes to be reflected on the UI.
- When a table is unregistered and registered again, the mapped macro details on the Advanced Options UI will not be deleted and the UI displays the mapping details.
- If you delete the code set value under the RDM Source code set, the deleted code set value will not be available under **Source Name** drop-down on the Source Registration UI. The table/view(s) registered under the deleted source name will not be accessible, but the table/view(s) will continue to work with other RDM functionality.
- In case of AJAX error on source registration page, the page needs to be reloaded. The AJAX error is specific to Internet Explorer and appears when connection to server is closed. Connection might close when there is no net connection or local applications might be blocking server to access the required page.

Set Advanced Options

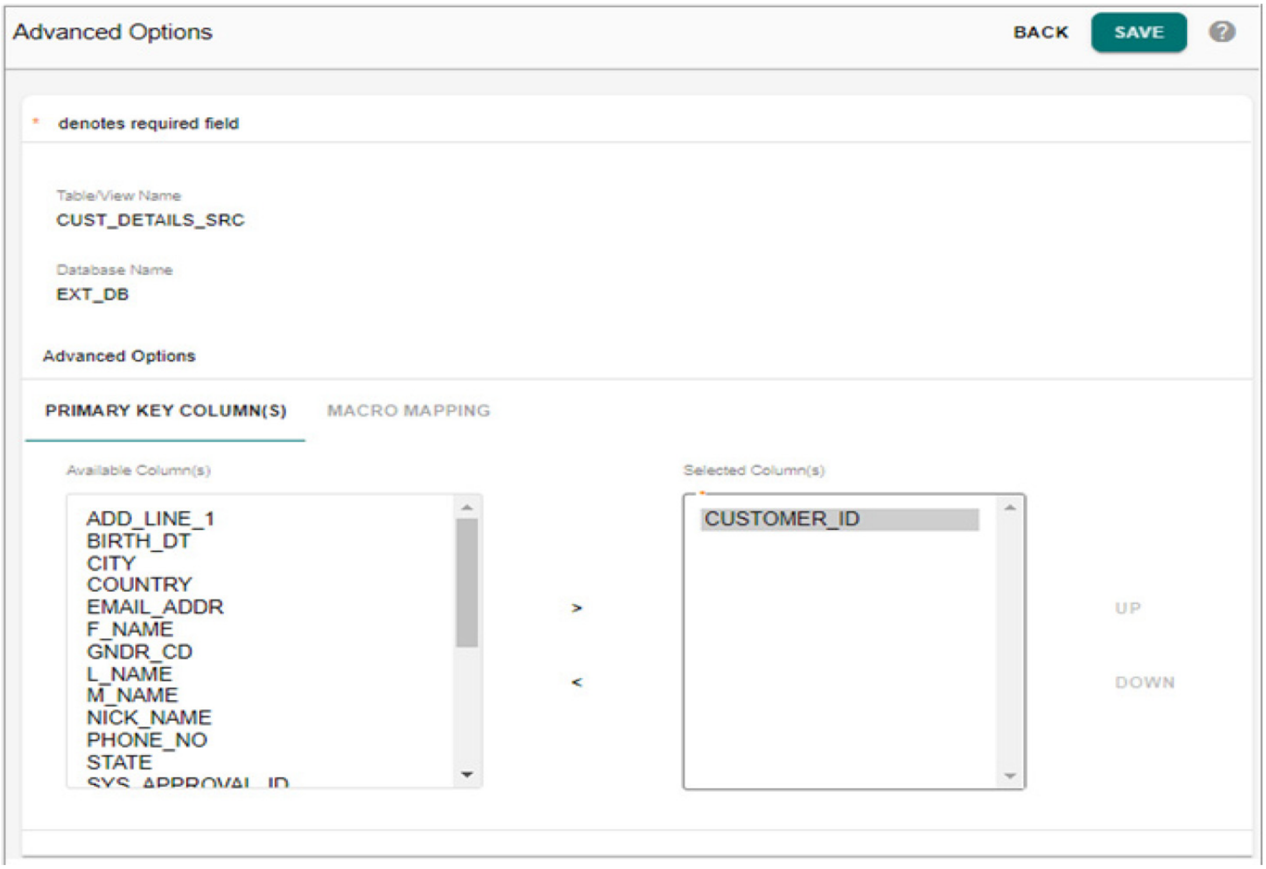
On Manage Metadata Import UI, perform the following steps to define key columns:

- Select an imported object and click **Advanced Objects** to define key columns as in Figure 880.

For configurable UI runtime RDM operations, map the database name with the corresponding macro for create, edit, and delete operations on configurable UI for the underlying table. For more details on configurable UIs, see *Chapter 8: “Configurable UI.”*

The **Advanced Options** page (Figure 881) is displayed. The **Advanced Options** page displays two tabs **Primary Key Column(s)** and **Macro Mapping**. By default, the Primary Key Column(s) tab is selected.

Figure 881: Advanced Options—Primary Key Column(s)



Advanced Options

* denotes required field

Table/View Name
CUST_DETAILS_SRC

Database Name
EXT_DB

Advanced Options

Available Column(s)
ADD_LINE_1
BIRTH_DT
CITY
COUNTRY
EMAIL_ADDR
F_NAME
GNDR_CD
L_NAME
M_NAME
NICK_NAME
PHONE_NO
STATE
SYS_APPROVAL_ID

Selected Column(s)
CUSTOMER_ID

- On the **Advanced Options** page (Figure 881), with the **Primary Key Column(s)** tab selected, the Available Column(s) list displays all the columns from the table or view, and Selected Column(s) list displays the key columns if the underlying table or view has primary keys defined.

  To add Primary Key column:

  - From the Available Column(s) list, select the required column and click **Add**.

    The selected column will be added to the Selected Column(s) list.

    To remove Primary Key column:

  - From the Selected Column(s) list, select the required column and click **Remove**.

    The selected column will be removed from the Selected Column(s) list.

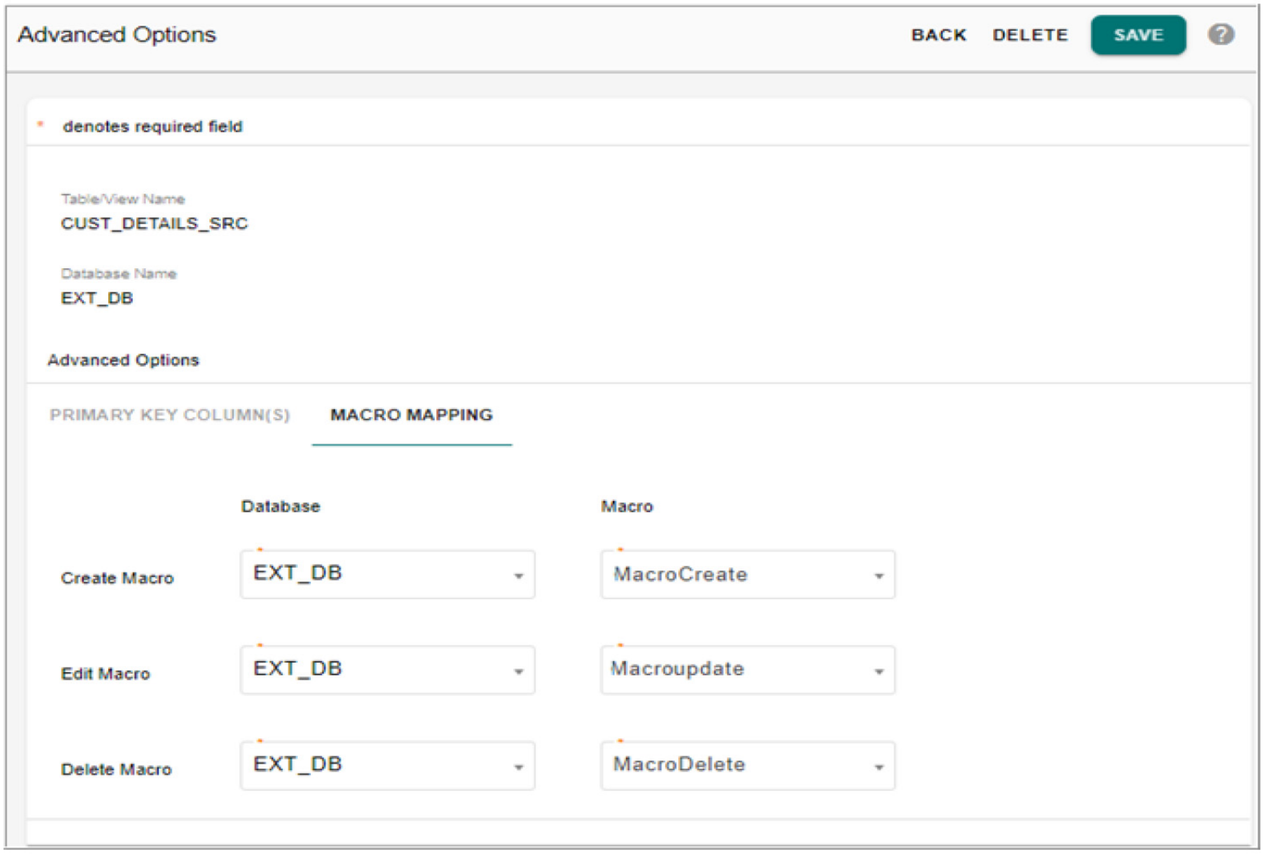
    Note: If a primary key column is updated (added/removed), a warning message is displayed if the corresponding table is used in any of the existing matching or survivorship profile.

    For the primary key changes to be reflected, the matching and survivorship profile must be refreshed (profile should be edited and saved).

- On the **Advanced Options** page, select **Macro Mapping** tab to map macro for configurable UI Create, Edit and Delete operations and click Save as in Figure 882.

  These macros will be used on the configurable runtime UI for the underlying table/view.

Figure 882: Advanced Options—Macro Mapping



Table/View Name
CUST_DETAILS_SRC

Database Name
EXT_DB

Advanced Options

	Database	Macro
Create Macro	EXT_DB	MacroCreate
Edit Macro	EXT_DB	Macroupdate
Delete Macro	EXT_DB	MacroDelete

Message: Macro mapping saved successfully is displayed. The user can update macro mapping by following the same above steps.

Unregister

On the **Manage Metadata Import** UI, select the imported object and click Unregister and on the confirmation pop-up, click **Yes**.

Impact of Unregistration of Tables

Unregistration of tables affects the following:

- Cleansing and Standardization Dashboard

  On Cleansing and Standardization Dashboard, all the details related to unregistered tables remains unchanged like the graph etc., but you cannot execute any cleansing and standardization rules.
- Business rules

  The unregistered tables will not be displayed in the list, but View Business Rules will still display the rules.

- Matching Profile

  On the Matching Profile, you can view the match profiles of the unregistered tables and view the execution log, but cannot execute the match profiles.
- Survivorship Profile

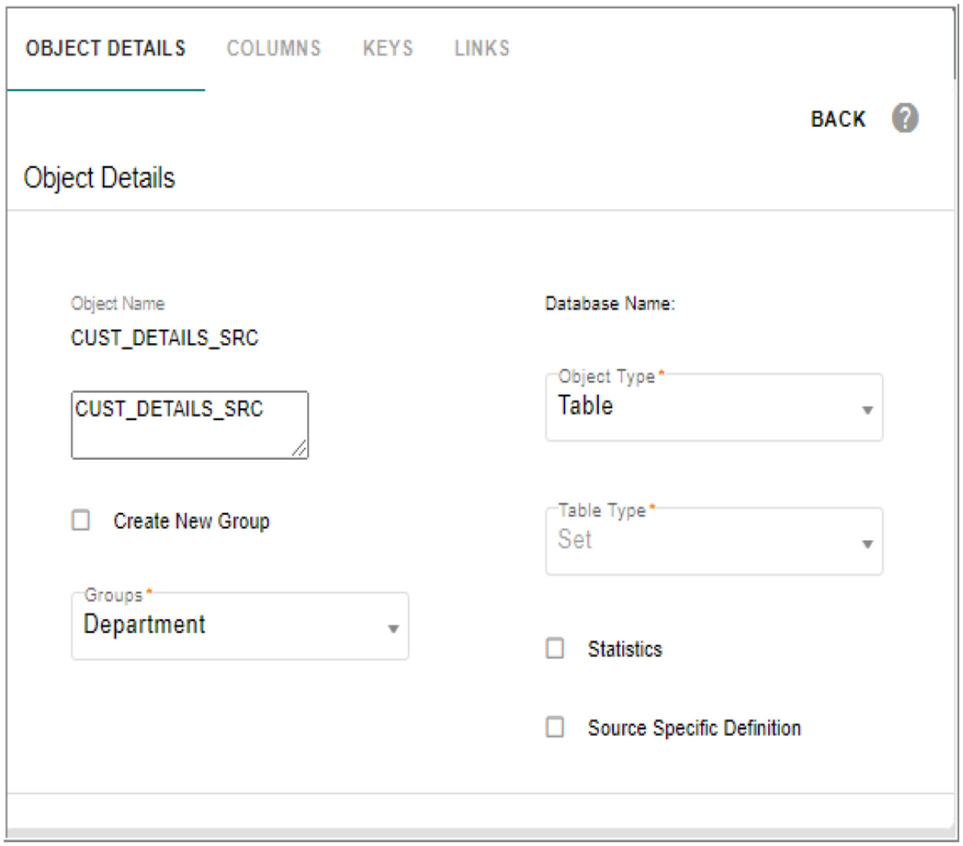
  On the Survivorship Profile, you can view the profiles of the unregistered tables and history of execution, but cannot execute the profiles.
- Configurable UI

  If a UI is created for the source and if the source is unregistered, you cannot perform any operation on the UI.
- Unregistration will delete all the Key mappings assigned to the table and the macro mappings will not be deleted and will be available if the same table is registered again.
- In Import Metadata, the existing group will be automatically deleted from the System once all the underlying tables are unregistered.

View

On the **Manage Metadata Import** UI, click on the hyperlink of the imported object to view the metadata of the selected object.

Figure 883: View Object Details



Object Details

Object Name
CUST_DETAILS_SRC

CUST_DETAILS_SRC

☐ Create New Group

Groups* Department

Database Name:

Object Type* Table

Table Type* Set

☐ Statistics

☐ Source Specific Definition

Configure

MDM Model Builder UI provides an option to configure an external table (Non-MDM table) available in the external database other than the MDM database so that the configured table can be used in the same manner as MDM Master table.

Configuring an external table can be done in the following two ways:

- Configure for non MDM Operations: tables configured using this option can be used in all MDM processes (Eg: Validation, Approval etc.). In this option, a reference to the actual tables in external database will be made in MDM server and database so that the tables can seamlessly be used in all MDM processes. The advantage of this process is that the underling data of the table can be managed using MDM processes similar to master tables of MDM. The database of the external table needs to be within same database server as that of MDM user.

  While Configuring for non MDM operations, you can select the option to either alter the external table and add System (SYS) columns required for MDM processes as part of the external table itself or select the option to not alter the external tables and add the SYS columns in a new table. For more details, see Configure for MDM Operations.
- Convert as MDM: Using this option the external database table can be converted as Master table of MDM. In this option, the external table will be re-created as Master table using the model builder UI. Once the table is created as Master table, the data from original external table needs to be copied to the Master table. There will not be any automatic sync-up of data available between the original table and Master table. For more details, see Convert As MDM.

Configure for MDM Operations

Prerequisite

The following access rights have to be granted to configure any external table to be used for MDM operations:

- To configure any external table with an option to alter the external table, the MDM user must have the following ALTER/INSERT/UPDATE access rights.

  An example of access SQL can be:
  - All access to the external table to user database.

    ```
    GRANT ALL ON <EXT_DB>.<EXT_TABLE> TO <USER_DB>
    ```
  - All access to the external table to user Master DB with grant option

    ```
    GRANT ALL ON <EXT_DB>.<EXT_TABLE> TO <USER_DB>_MST WITH GRANT
    OPTION
    ```
- To configure any external table without an option to alter the external table, the MDM user must have the SELECT/INSERT/UPDATE access and ALTER access is not required.

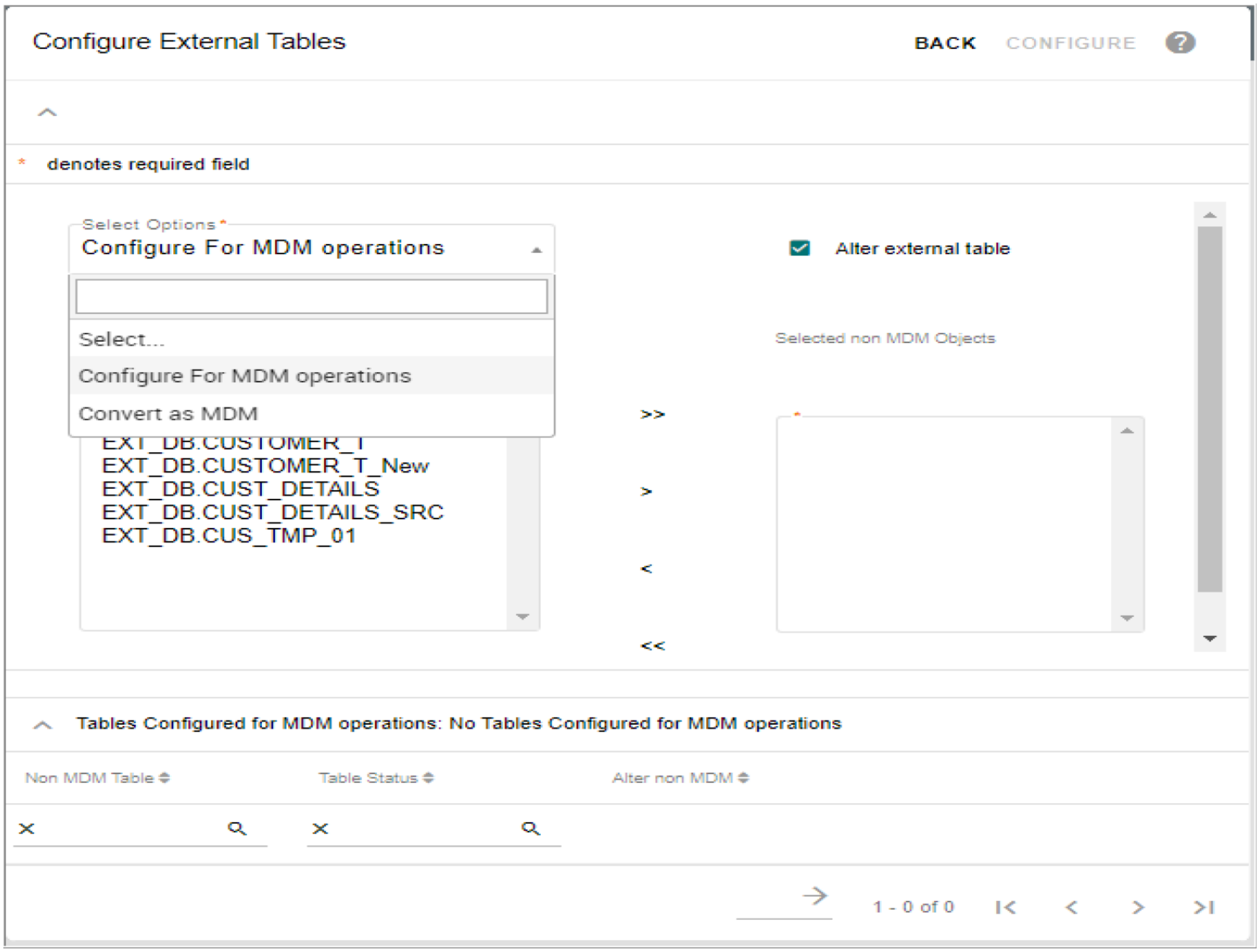
If the above access rights are not granted, an error will be displayed and cannot be proceeded further. Also, the tables will not be allowed to configure if it is used as non-MDM table in any features of MDM.

To configure non MDM tables for MDM operations:

1 On the **Manage Metadata Import** UI, click **Configure External Tables** from **Actions** dropdown.

The **Configure External Tables** UI is displayed.

Figure 884: Configure Non MDM Tables



Select Options *: Configure For MDM operations

☑ Alter external table

EXT_DB.CUSTOMER_T
EXT_DB.CUSTOMER_T_New
EXT_DB.CUST_DETAILS
EXT_DB.CUST_DETAILS_SRC
EXT_DB.CUS_TMP_01

Tables Configured for MDM operations: No Tables Configured for MDM operations

2 On the **Configure External Tables** UI, select the option **Configure for MDM Operations** from the **Select Options** drop down.

3 Select the Non MDM table from the **Available Non MDM Objects** list and move it to **Selected Non MDM Objects** list and click **Configure**. Tables imported as non-MDM objects will appear in **Available Non MDM Objects** list box.

4. **Alter Non MDM Table**: select this option if you want to alter the external table and add System (SYS) columns as part of the external table itself. By default, this option is selected. If this option is selected, after configuring, run the SQL:

```
update externalDb.externalTablename set sys_ent_state='ACTIVE'
```

   If this option is not selected, the System (SYS) columns will not be added as part of external table and MDM adds the SYS columns in a new table. If this option is not selected, after configuring, run the sql in the below format to insert data into the SYS columns table.

```
INSERT INTO masterDb.sysColumnsTableName(pkcolumns comma
   separated,SYS_ENT_STATE) select pkcolumns comma separated,
   'ACTIVE' from externalDb.externalTablename
```

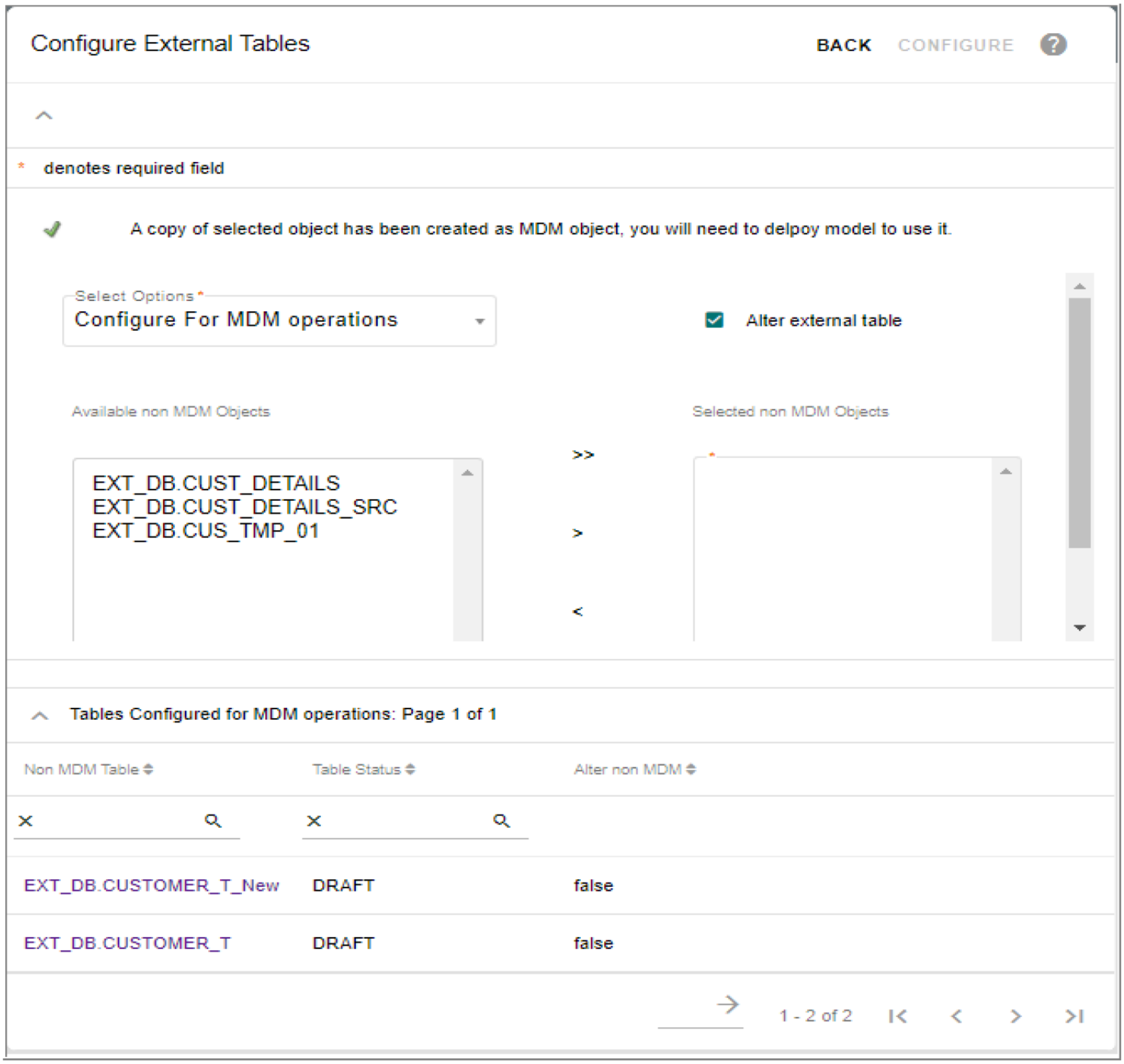
For example:

   INSERT INTO qauser01_mst.MST_CUSTOMER_TEST_NOALTERACCESS_SYS_COLUMNS(CUST_ID,SYS_ENT_STATE) select cust_id, 'ACTIVE' from ext_db.CUSTOMER_TEST_NOALTERACCESS

5. Click **Configure**.

   Message: “A copy of selected object has been created as MDM object, you will need to run ISG from Model Builder to use it.” is displayed and the configured table will be displayed in the Tables Configured for MDM operations section as in Figure 885.

Figure 885: Configure Non MDM Tables



* denotes required field

✓ A copy of selected object has been created as MDM object, you will need to delpoy model to use it.

Select Options*: Configure For MDM operations

☑ Alter external table

Available non MDM Objects:
EXT_DB.CUST_DETAILS
EXT_DB.CUST_DETAILS_SRC
EXT_DB.CUS_TMP_01

Selected non MDM Objects*

Tables Configured for MDM operations: Page 1 of 1

Non MDM Table	Table Status	Alter non MDM
EXT_DB.CUSTOMER_T_New	DRAFT	false
EXT_DB.CUSTOMER_T	DRAFT	false

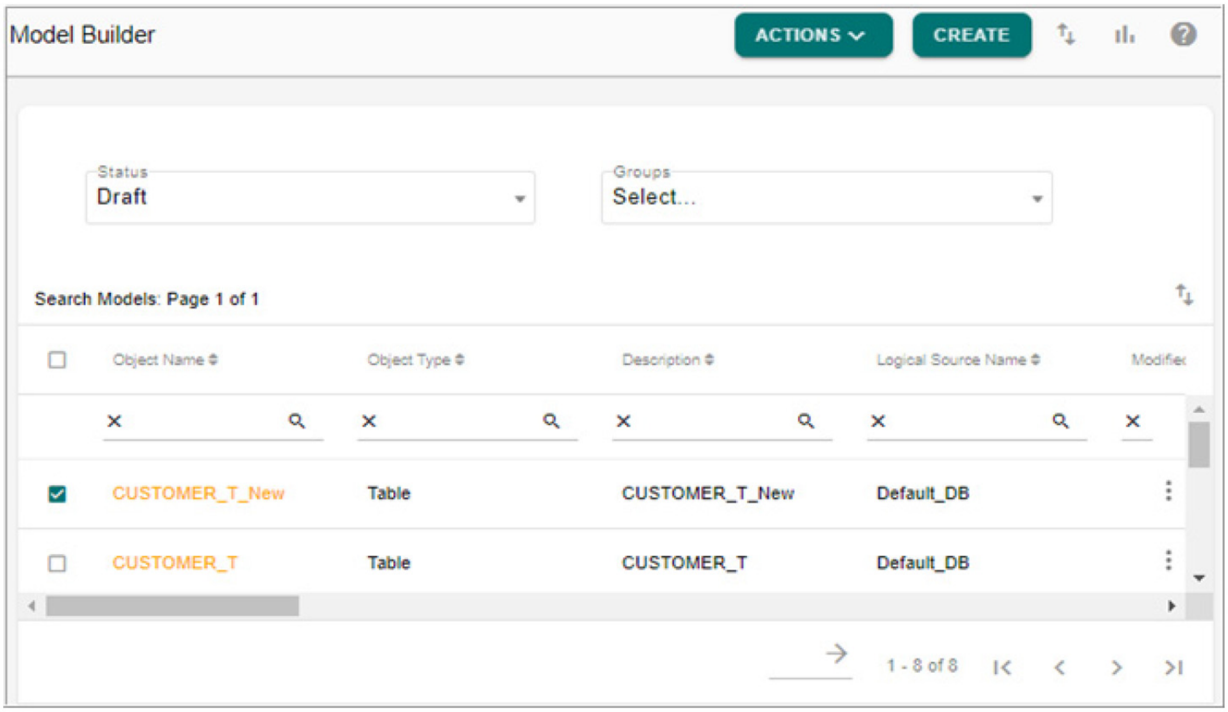
1 - 2 of 2

The metadata of the selected tables get copied in Model Builder and the tables will be available in draft state in the Model Builder UI as in Figure 886. You modify the table details and run ISG for the changes to be reflected. All data management activities happens directly on the table through MDM persistence framework.

On the draft model, you can update the column display name and facets details and cannot edit the object for any structural changes if the option to alter the external table is not selected while configuring the external table.

In case of configuring an external table with an option to alter the external table, you can update the table with all the required changes.

Figure 886: Model Builder



Status: Draft

Groups: Select...

Search Models: Page 1 of 1

☐	Object Name	Object Type	Description	Logical Source Name	Modifie
☑	CUSTOMER_T_New	Table	CUSTOMER_T_New	Default_DB	
☐	CUSTOMER_T	Table	CUSTOMER_T	Default_DB	

1 - 8 of 8

Some of the points to be noted while configuring the external table in Model Builder UI.

- The configured non MDM table may have columns with any data type as supported in the external database. Some of those data types may not be supported in MDM and those unsupported datatypes will be mapped as String data type during the configuration process. You can then modify the data types, facets and other details from the model builder UI as per the requirement. Once all the changes are done, you can run ISG to generate the table as any other MDM based tables from the Model Builder UI. Once the ISG is completed successfully, the generated table will appear under Master list and will not be displayed under non MDM list.
- The configured external table on the model builder UI supports the following features that are supported by MDM tables.
  - LookUp addition to any columns
  - Editable/non-Editable
  - Source selection as backend or Master
  - Surrogate Key

  - Audit
  - Hard Delete only if user has delete access to the external database
  - WebServices
- While defining the business rule on external table (without alter option), the sys columns cannot be updated by enrichment and transformation rules. In case of custom business rule, it is the user's responsibility to write the business rule accordingly to include the sys columns otherwise execution will fail.

In case of configuring an external table without an option to alter the external table, the Surrogate Key and Hard Delete will not be supported.

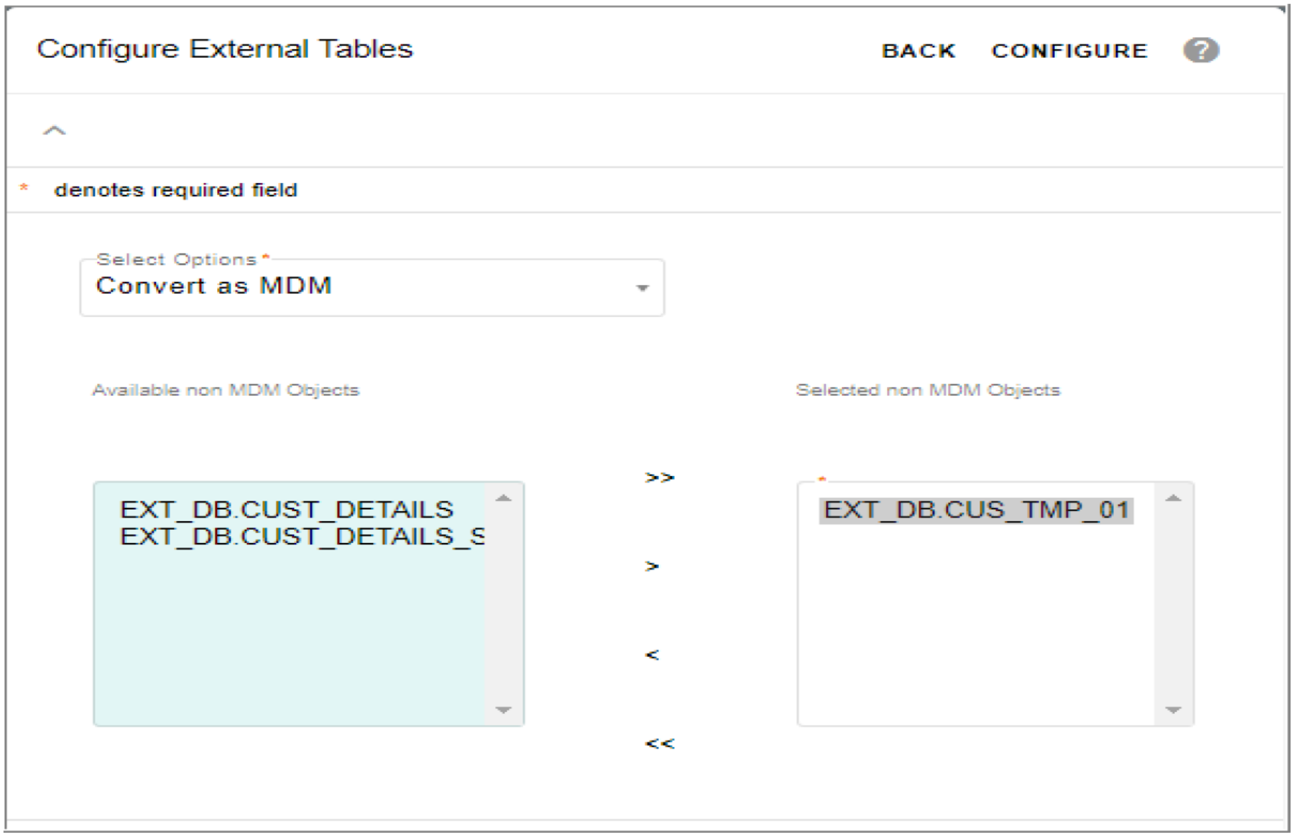
- Configured external table will not support the features: Extended Attributes and Conversion of non temporal to temporal

Convert As MDM

To covert a non MDM table to MDM table, perform the following steps:

1. On the **Configure Non MDM Tables** UI, select the option **Convert as MDM** from the **Select Options** dropdown.
2. Select the Non MDM table from the **Available Non MDM Objects** list and move it to **Selected Non MDM Objects** list and click **Configure** as in Figure 887.

Figure 887: Configure Non MDM Tables-Convert as MDM



Message: “A copy of selected object has been created as MDM object, you will need to run ISG from Model Builder to use it”

The metadata of the selected object gets copied as MDM based table in draft state. You can then modify the facets and other details from the model builder UI as per the requirement. Once the table is in Draft state, the subsequent steps to generate the table remains same as any other MDM based tables.

View Import Log Details

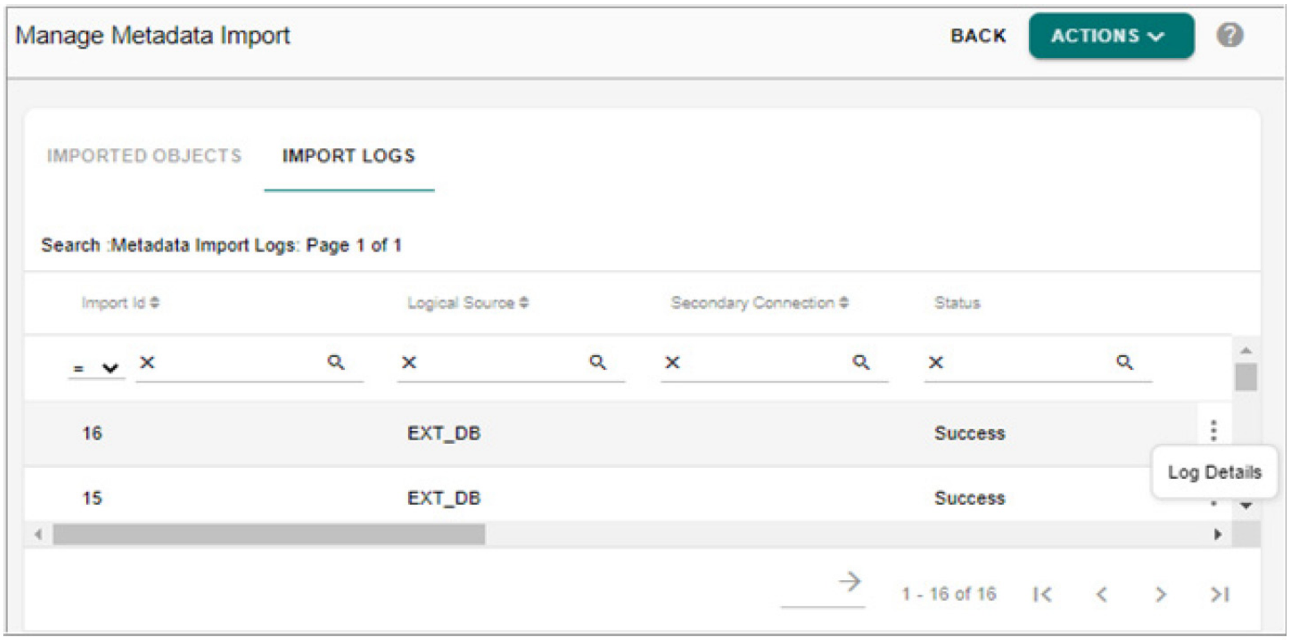
To view import log details:

1. On the **Manage Metadata Import** UI, click **Import Logs** tab.

   The Import Logs UI displays the list of logs of imported metadata as in Figure 888.

2. Click on the Menu icon corresponding to the required metadata import and click **Log Details**.

Figure 888: Manage Metadata Import

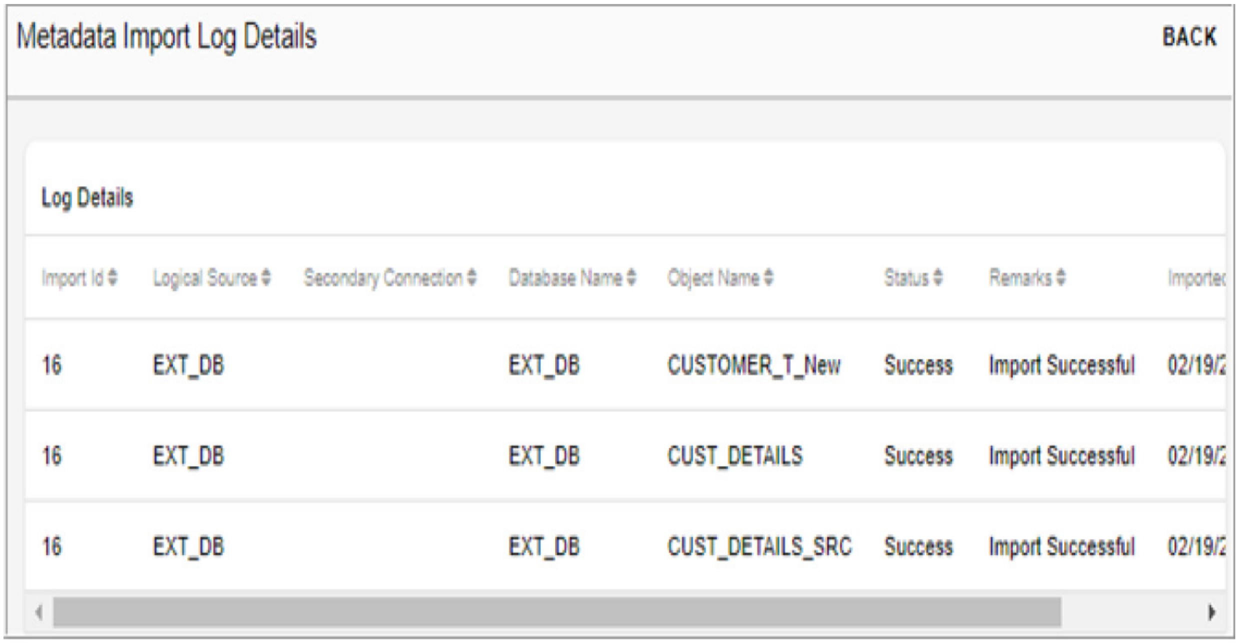


Search :Metadata Import Logs: Page 1 of 1

Import Id	Logical Source	Secondary Connection	Status
16	EXT_DB		Success
15	EXT_DB		Success

The **Metadata Import Log** UI (Figure 889) is displayed.

Figure 889: Metadata Import Log



Log Details

Import Id	Logical Source	Secondary Connection	Database Name	Object Name	Status	Remarks	Importe
16	EXT_DB		EXT_DB	CUSTOMER_T_New	Success	Import Successful	02/19/2
16	EXT_DB		EXT_DB	CUST_DETAILS	Success	Import Successful	02/19/2
16	EXT_DB		EXT_DB	CUST_DETAILS_SRC	Success	Import Successful	02/19/2

The **Metadata Import Log** UI displays the log details like Import ID, logical source name, source name, database name, object name, status, remarks and imported date.

Comprehensive Support for External Tables

An MDM table object will be created in model Builder with the extra SYS_COLUMNS needed for MDM

User can verify the model structure and can run ISG

While running ISG all the staging tables like IN,NC,VER,GT,ERR will be created on the corresponding child DB's except the master table.

Document Object will be created similar to a master table

The view under the parent DB will point to the external Table and will be used by the data retrieving and persisting APIs of MDM

MDM will be interacting with the external table through the document object and all the Master table operations should be supported

MDM will perform Insert and Update operations on the External object. If the External object is a complex view INSERT and UPDATES will fail, hence only External tables and simple views will be supported.

Source Specific Objects

MDM supports import and deployment of source specific objects (tables, views and stored procedures) across multiple databases in MDM. For source specific objects import and deployment, you need to define source specification configurations using the existing Manage Secondary UI, Manage Parameters and Manage Configurations UIs. Using the Manage Secondary Connections UI, define the required logical connections. Each of these logical connection names can have multiple physical connections defined. Using the Manage Parameters UI, define the parameter names and assign values to these parameters. For source specific features, the logical connection names will be defined as parameter names and the physical connection names will be defined as parameter values. Once the parameters are defined, you can create configurations to define the individual databases that will be linked. Once the configurations are defined, using the Model Builder UI, you can import or deploy source specific objects.

Below section explains import and deploy of source specific views. In the similar manner, you can import source specific stored procedures, Macro, Function and Join Index.

Source Specific Views

Perform the following steps to import and deploy source specific views:

- Create
-
-

Create Source Specific Configurations

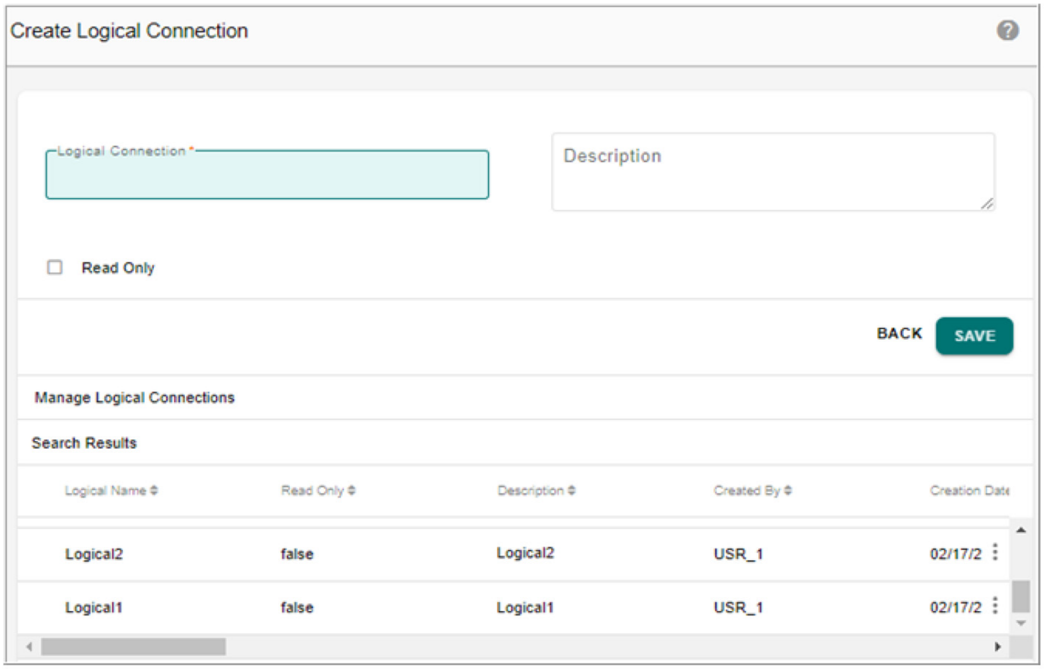
The below steps provide details for creating the given sample source specific configurations.

Configurations	**Logical Source Name**	**Connection**	**Database**
Configuration 1	Logical 1 Logical 2	Connection 1 Connection 2	CICBSUSETOM EASCBWINTOM
Configuration 2	Logical 1 Logical 2	Connection 1 Connection 2	MDMCBWINWL EASCBWINTOM

In the above sample configurations, in the configuration1, the Logical1 database is pointing to database CICBSUSETOM and in Configuration2, the Logical1 is pointing to MDMCBWINWL. Logical2 is pointing to database EASCBWINTOM in both the configurations. These configuration will be used to showcase import and deployment of source specific views

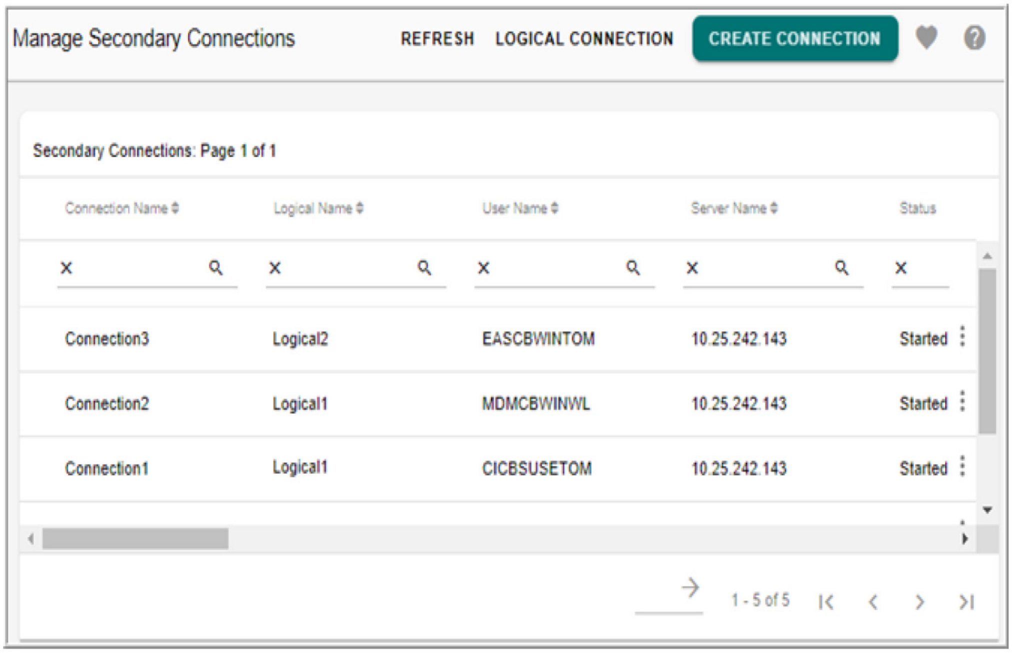
1 Navigate to Secondary Connections UI (Administration -> Secondary connections) and create logical source names and its connections.

Figure 890: Create Logical Connection



Logical Name	Read Only	Description	Created By	Creation Dat
Logical2	false	Logical2	USR_1	02/17/2
Logical1	false	Logical1	USR_1	02/17/2

Figure 891: Manage Secondary Connection

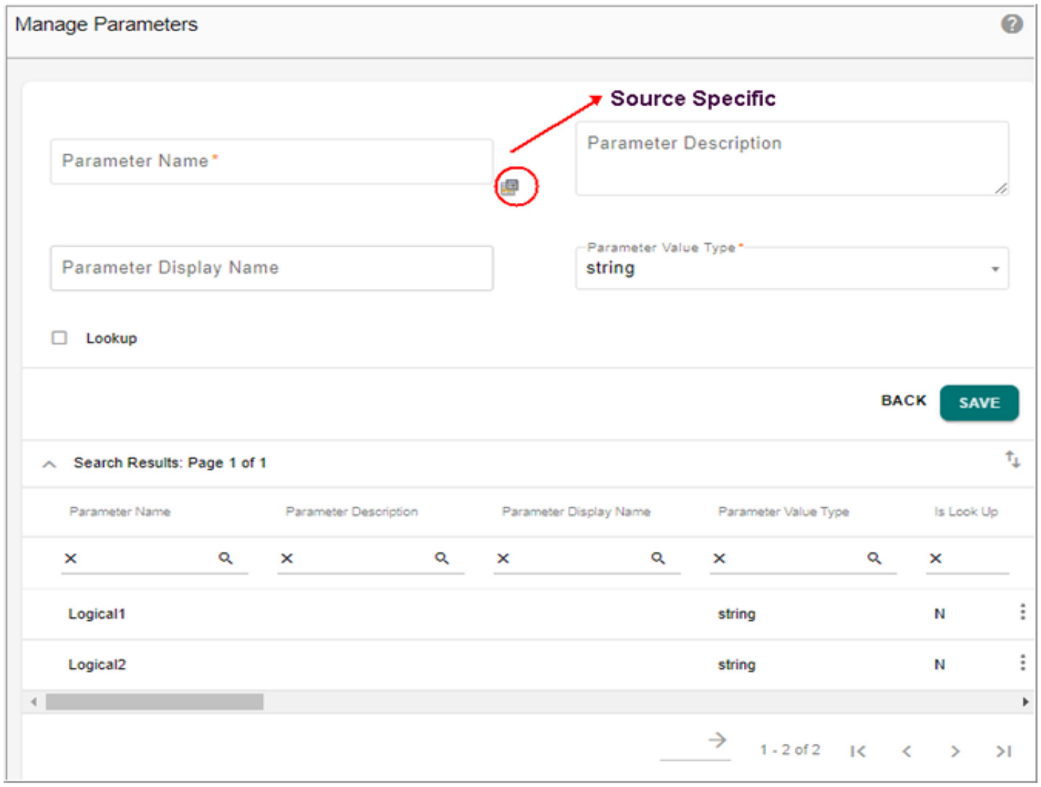


Secondary Connections: Page 1 of 1

Connection Name	Logical Name	User Name	Server Name	Status
Connection3	Logical2	EASCBWINTOM	10.25.242.143	Started
Connection2	Logical1	MDMCBWINWL	10.25.242.143	Started
Connection1	Logical1	CICBSUSETOM	10.25.242.143	Started

2 Navigate to Manage Configuration UI (Administration -> Manage Configurations) to define the required configurations. Before creating the configuration, parameters have to be defined. For Source Specific, on the Manage Parameters UI, click on the Source Specific icon, it displays all the logical names defined on the secondary connections UI. You can optionally enter the parameter display name same as the logical source names and click Save to create the required parameters.

Figure 892: Manage Parameters



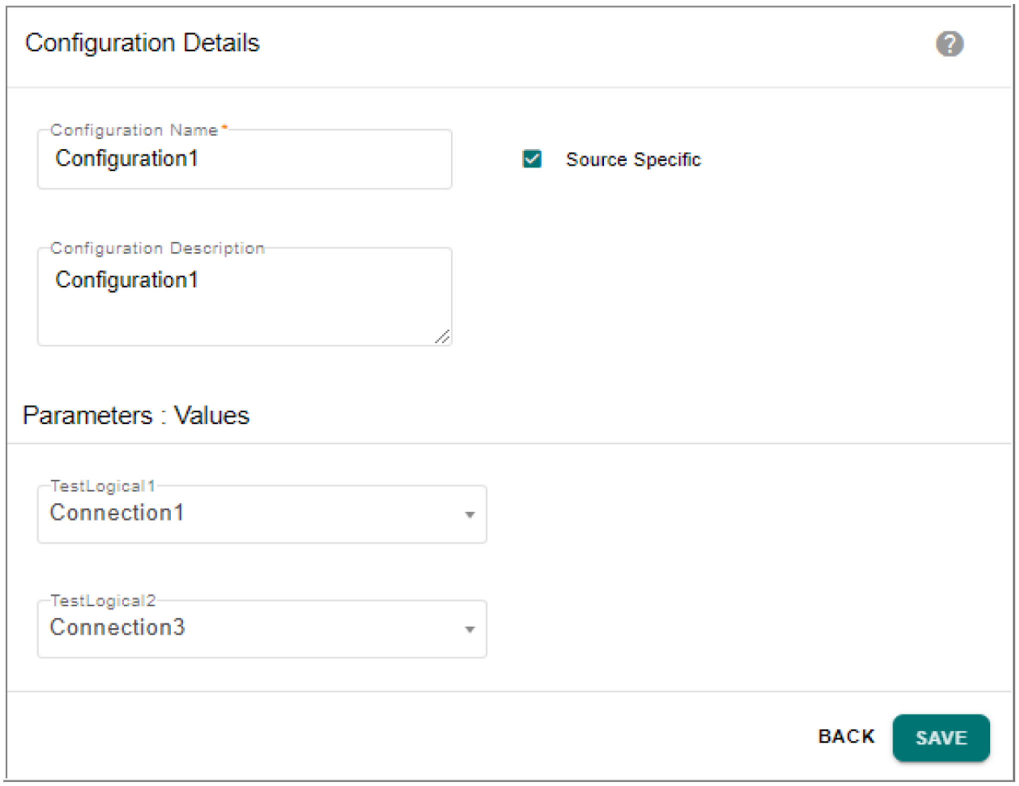
Parameter Value Type*: string

☐ Lookup

Parameter Name	Parameter Description	Parameter Display Name	Parameter Value Type	Is Look Up
Logical1			string	N
Logical2			string	N

3 On the Manage Configurations UI, create configurations. When the Source Specific checkbox is selected, the source specific parameters defined in step 3 will be displayed as parameter names. The parameters value dropdown displays the physical connection names defined for each logical connection.

Figure 893: Configuration Details



Configuration Details

Configuration Name*: Configuration1

☑ Source Specific

Configuration Description: Configuration1

Parameters : Values

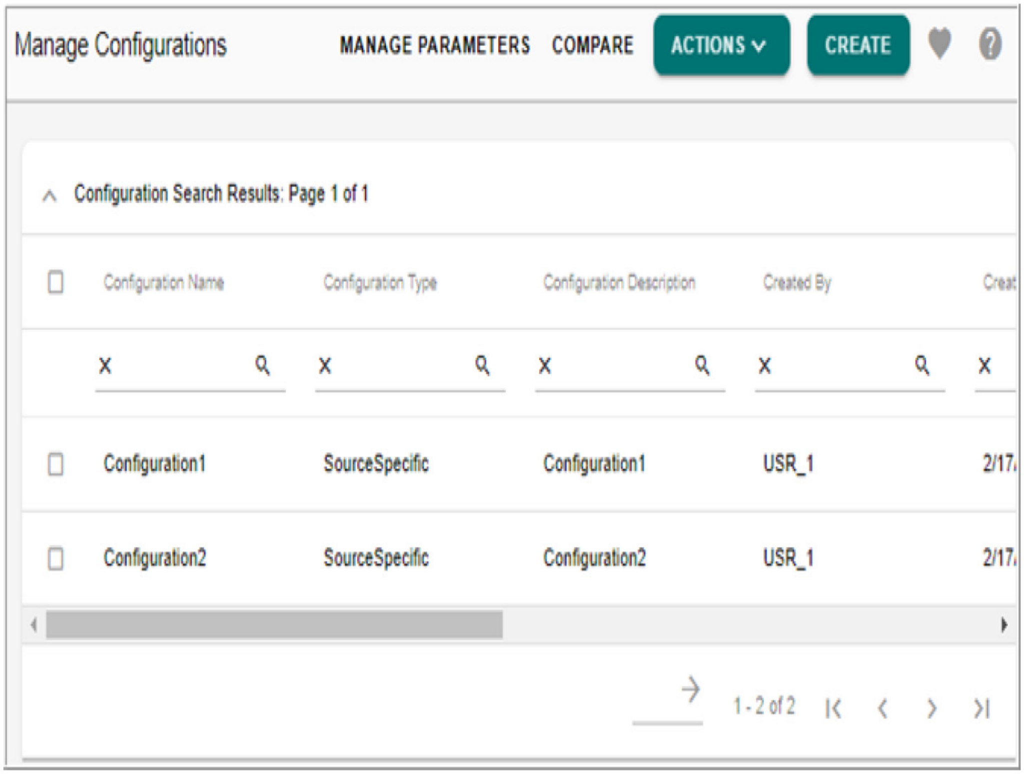
TestLogical1: Connection1

TestLogical2: Connection3

4 For each configuration being created, select the required connection names and click Save.

The configuration would be saved as per the selection. Figure 913 displays the configurations defined.

Figure 894: Manage Configuration



Configuration Search Results: Page 1 of 1

☐	Configuration Name	Configuration Type	Configuration Description	Created By	Creat
☐	Configuration1	SourceSpecific	Configuration1	USR_1	2/17.
☐	Configuration2	SourceSpecific	Configuration2	USR_1	2/17.

Import Source Specific Views

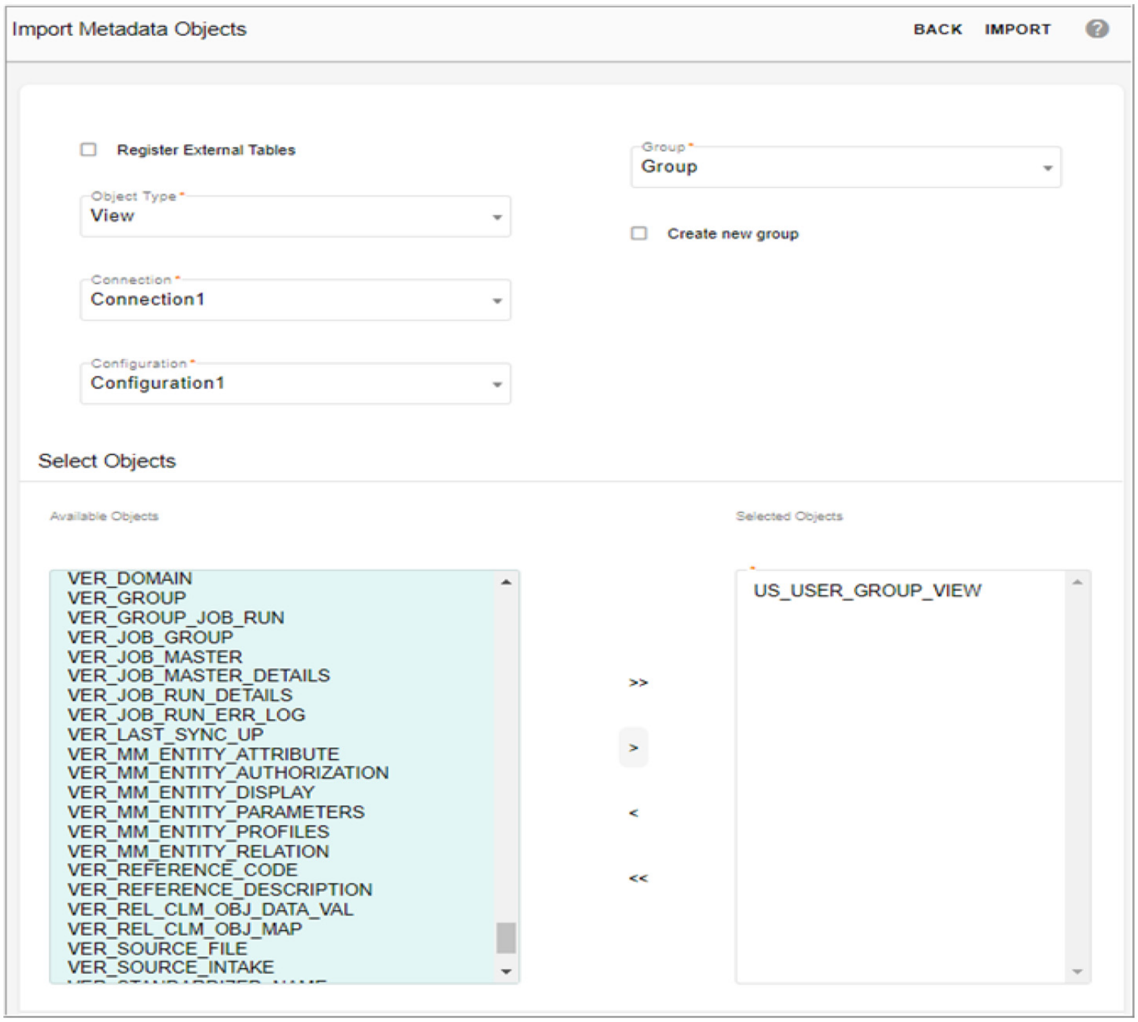
Perform the following steps to import source specific views:

1. Navigate to Import Metadata Objects UI (Model Setup ->Model Builder ->Manage Metadata Import-> Import Metadata) and select the object type as View, and the required logical source as in Figure 914. The Configuration dropdown will be displayed if Connection is used in Configuration.

   The Available Objects list displays all the objects available under the selected configuration database.

2. From the Available Objects list, select the required view to import and move it to Selected Objects list and click Import.

Figure 895: Import Metadata Objects



☐ Register External Tables

Object Type *: View

Connection *: Connection1

Configuration *: Configuration1

Group *: Group

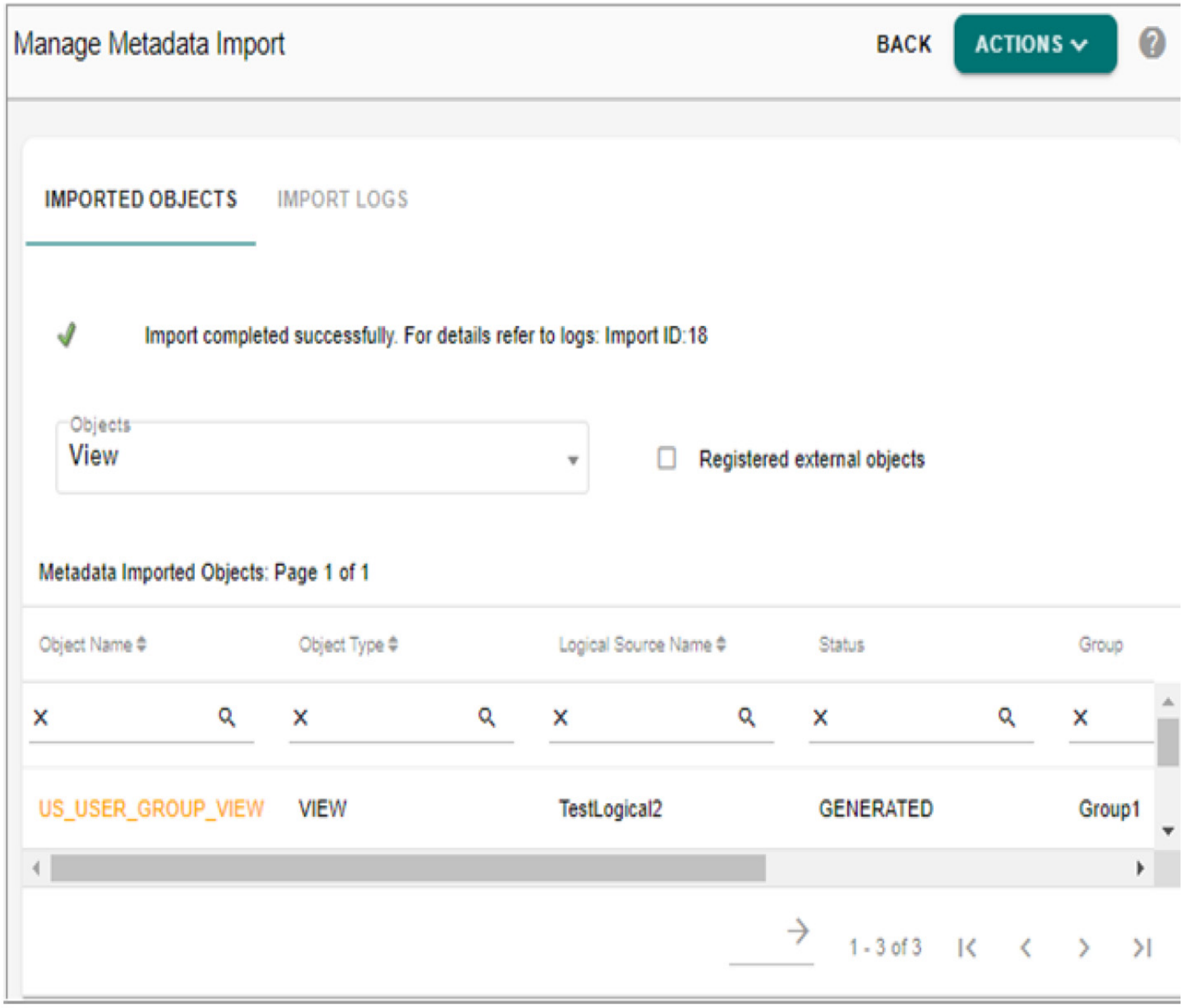
☐ Create new group

VER_DOMAIN
VER_GROUP
VER_GROUP_JOB_RUN
VER_JOB_GROUP
VER_JOB_MASTER
VER_JOB_MASTER_DETAILS
VER_JOB_RUN_DETAILS
VER_JOB_RUN_ERR_LOG
VER_LAST_SYNC_UP
VER_MM_ENTITY_ATTRIBUTE
VER_MM_ENTITY_AUTHORIZATION
VER_MM_ENTITY_DISPLAY
VER_MM_ENTITY_PARAMETERS
VER_MM_ENTITY_PROFILES
VER_MM_ENTITY_RELATION
VER_REFERENCE_CODE
VER_REFERENCE_DESCRIPTION
VER_REL_CLM_OBJ_DATA_VAL
VER_REL_CLM_OBJ_MAP
VER_SOURCE_FILE
VER_SOURCE_INTAKE

US_USER_GROUP_VIEW

Import success message is displayed as in Figure 915. The view definition will be imported as per the logical source name and the physical connection defined in the selected configuration. As per the selected configuration imported model object definition get changed and the database used in model definition will get replaced with logical source name.

Figure 896: Manage Metadata Import



✓ Import completed successfully. For details refer to logs: Import ID:18

Objects: View

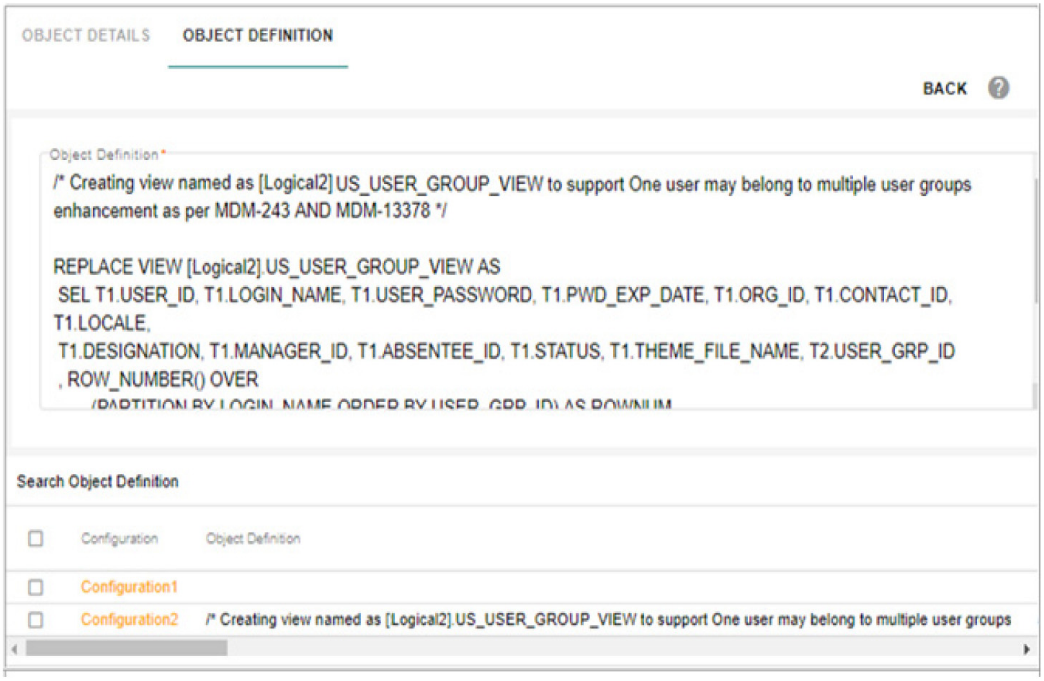
☐ Registered external objects

Metadata Imported Objects: Page 1 of 1

Object Name	Object Type	Logical Source Name	Status	Group
US_USER_GROUP_VIEW	VIEW	TestLogical2	GENERATED	Group1

1 - 3 of 3

Figure 897: Import Metadata Object: Object Definition



Object Definition*

```
/* Creating view named as [Logical2] US_USER_GROUP_VIEW to support One user may belong to multiple user groups
enhancement as per MDM-243 AND MDM-13378 */

REPLACE VIEW [Logical2].US_USER_GROUP_VIEW AS
 SEL T1.USER_ID, T1.LOGIN_NAME, T1.USER_PASSWORD, T1.PWD_EXP_DATE, T1.ORG_ID, T1.CONTACT_ID,
T1.LOCALE,
 T1.DESIGNATION, T1.MANAGER_ID, T1.ABSENTEE_ID, T1.STATUS, T1.THEME_FILE_NAME, T2.USER_GRP_ID
 , ROW_NUMBER() OVER
      (PARTITION BY LOGIN_NAME ORDER BY USER_GRP_ID) AS ROWNUM
```

Search Object Definition

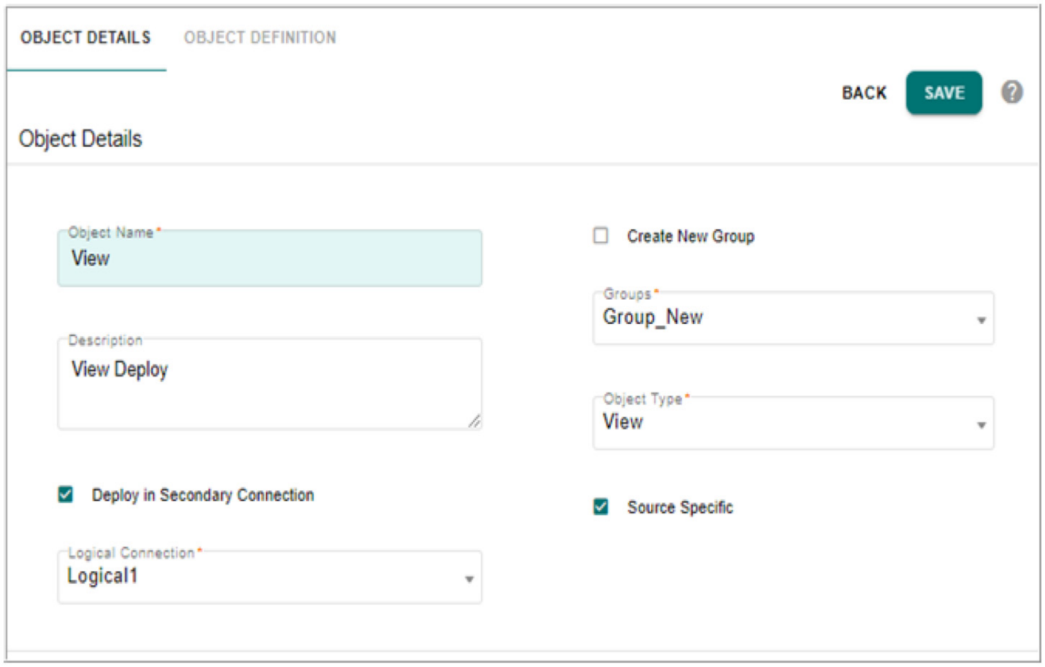
☐	Configuration	Object Definition
☐	Configuration1	
☐	Configuration2	/* Creating view named as [Logical2] US_USER_GROUP_VIEW to support One user may belong to multiple user groups

Create and Deploy Source Specific Views

Perform the following steps to create and deploy source specific views:

1 Navigate to Model Builder UI and click Create. Under the Object Details tab, enter or select the details. Select object type as View and select the Source Specific checkbox.

Figure 898: Model Builder Object Details



Object Details

Object Name*: View

Description: View Deploy

☑ Deploy in Secondary Connection

Logical Connection*: Logical1

☐ Create New Group

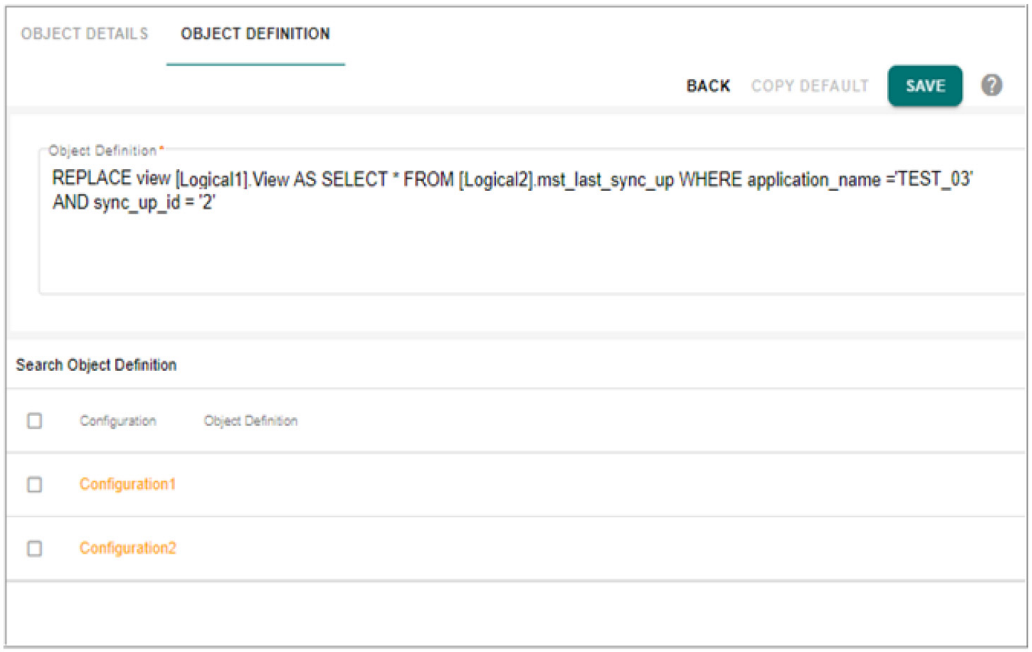
Groups*: Group_New

Object Type*: View

☑ Source Specific

2 On the Model Builder UI, click Object Definition tab and enter the default sql in the Object Definition textbox. As the Source Specific option is selected in step1, the existing configurations will be displayed in the Search Object Definition section.

Figure 899: Model builder-Object Definition



```
REPLACE view [Logical1].View AS SELECT * FROM [Logical2].mst_last_sync_up WHERE application_name ='TEST_03'
AND sync_up_id = '2'
```

Search Object Definition

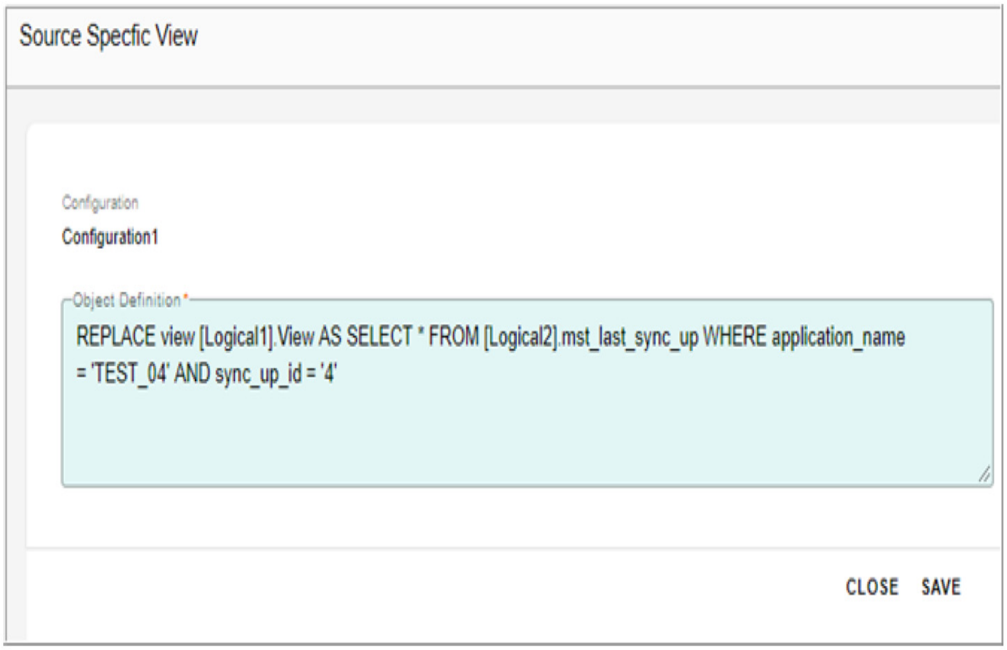
☐	Configuration	Object Definition
☐	Configuration1	
☐	Configuration2	

In the Search Object Definition section, by default, the Object Definition column will be null for all configurations

3 To update the configurations with the required DDL, in the Search Object Definition section, click on the Configuration link.

The Source Specific View pop-up is displayed.

Figure 900: Source Specific View



Configuration1

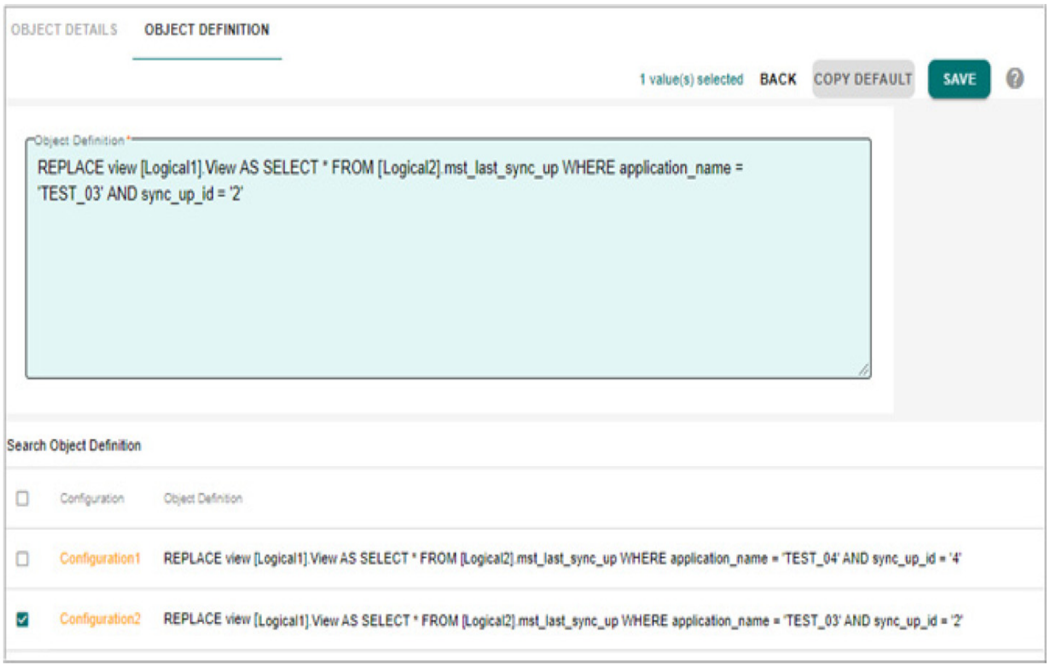
Object Definition*

```
REPLACE view [Logical1].View AS SELECT * FROM [Logical2].mst_last_sync_up WHERE application_name
= 'TEST_04' AND sync_up_id = '4'
```

4 On the Source Specific View pop-up, enter the sql with the required changes and click Save

The added SQLs will be displayed in the Object Definition column. If the configurations are not updated with the required DDL, the default Object Definition will be used for all the configurations during the deployment phase. If the view needs to be created for only one configuration, then the default configuration should be set to Null and only the required configuration must be updated with the DDL.

Figure 901: Object Definitions



Object Definition *

```
REPLACE view [Logical1].View AS SELECT * FROM [Logical2].mst_last_sync_up WHERE application_name =
'TEST_03' AND sync_up_id = '2'
```

Search Object Definition

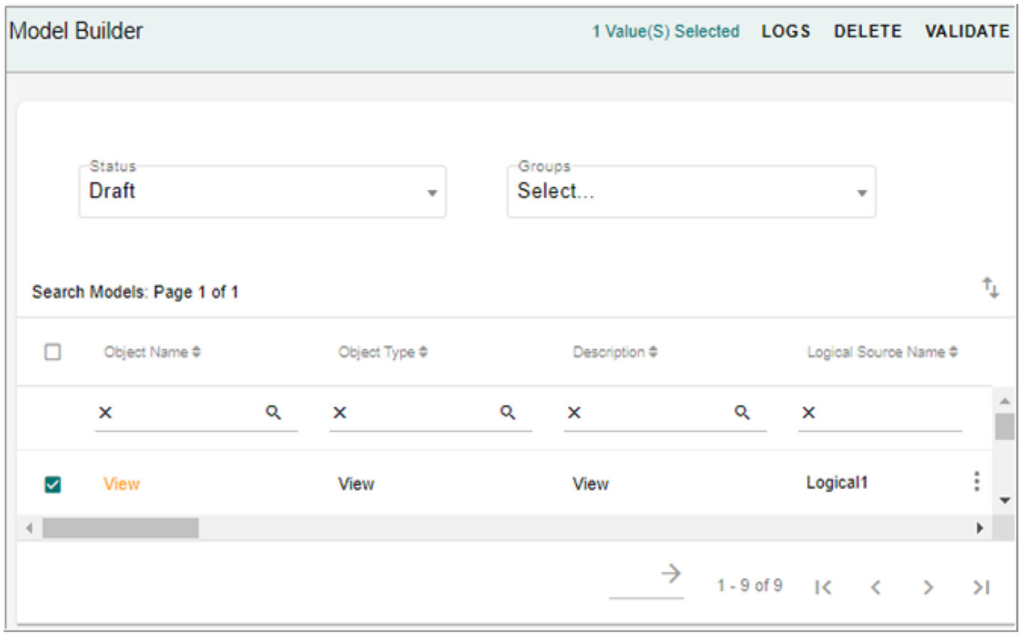
☐	Configuration	Object Definition
☐	Configuration1	REPLACE view [Logical1].View AS SELECT * FROM [Logical2].mst_last_sync_up WHERE application_name = 'TEST_04' AND sync_up_id = '4'
☑	Configuration2	REPLACE view [Logical1].View AS SELECT * FROM [Logical2].mst_last_sync_up WHERE application_name = 'TEST_03' AND sync_up_id = '2'

The Copy Default button can optionally be used to copy the default view definition to the existing configurations. To copy the default sql to specific configurations, select the checkbox(es) corresponding to the configurations and click Copy Default

5 On the Model Builder—Object Definition UI, click Save

The created view is displayed under Draft status

Figure 902: Draft Status



Status: Draft

Groups: Select...

Search Models: Page 1 of 1

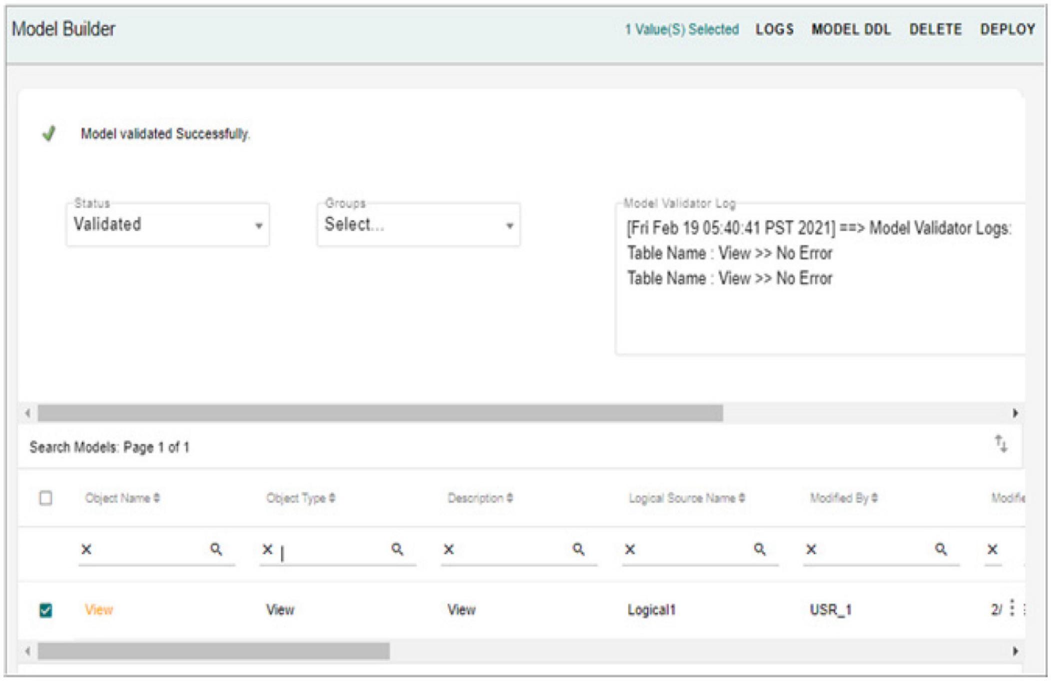
☐	Object Name	Object Type	Description	Logical Source Name
☑	View	View	View	Logical1

1 - 9 of 9

6 On the Model Builder UI (Figure 921), select the created view and click Validate to validate the model and then click Deploy to deploy the model.

During the model validation, the Model Builder feature checks if the view name used in the Object Definition field and the Object Name under the Object Details tab are same. If they are not same, an error message will be displayed and the view will remain in 'DRAFT' state.

Figure 903: Validation Status



✓ Model validated Successfully.

Status: Validated

Groups: Select...

Model Validator Log:

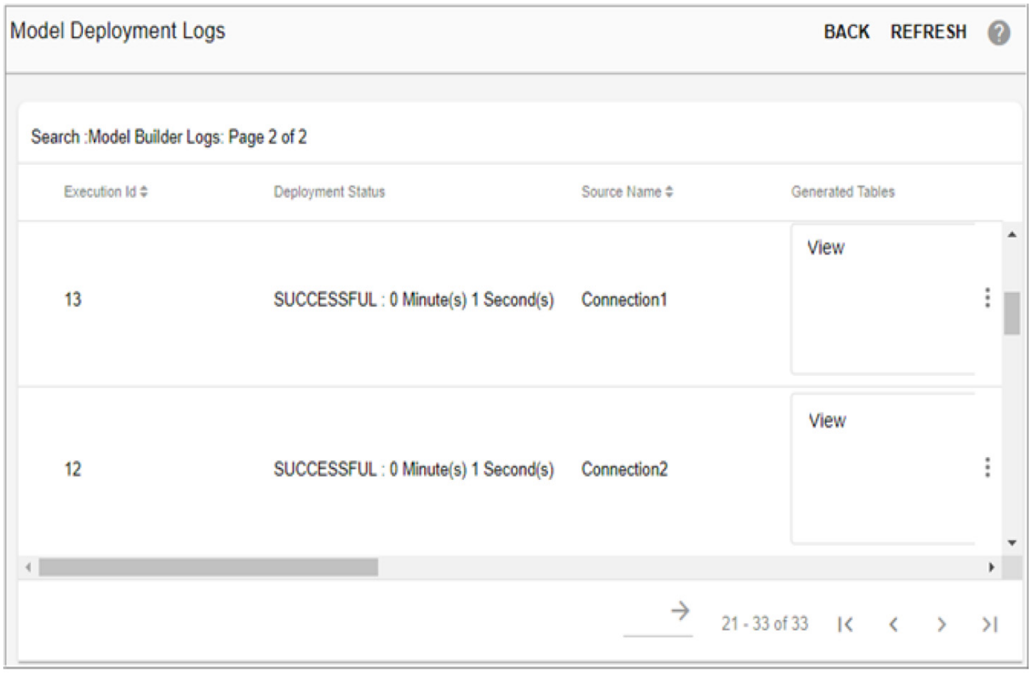
```
[Fri Feb 19 05:40:41 PST 2021] ==> Model Validator Logs:
Table Name : View >> No Error
Table Name : View >> No Error
```

Search Models: Page 1 of 1

☐	Object Name	Object Type	Description	Logical Source Name	Modified By	Modifie
☑	View	View	View	Logical1	USR_1	2/

The Model Deployment Logs UI displays the deployment log details. As the logical source had two connections defined, during the deployment, the view is created under both the connections.

Figure 904: Model Deployment Logs

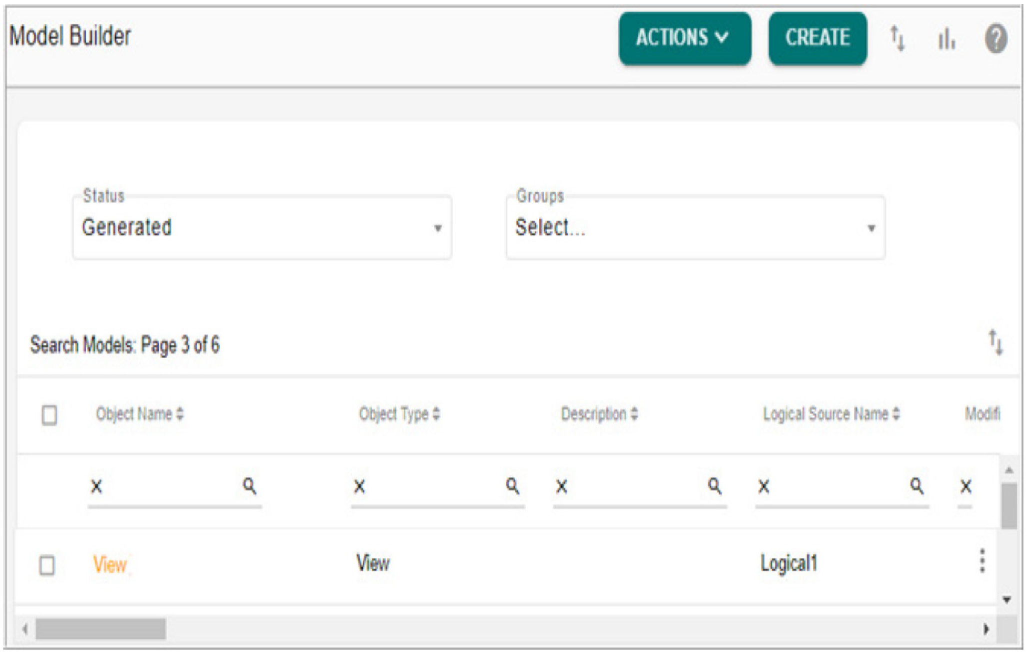


Search :Model Builder Logs: Page 2 of 2

Execution Id	Deployment Status	Source Name	Generated Tables
13	SUCCESSFUL : 0 Minute(s) 1 Second(s)	Connection1	View
12	SUCCESSFUL : 0 Minute(s) 1 Second(s)	Connection2	View

On the Model Builder UI, the created view is now available under the Generated status as in Figure 924 and the result of view creation can be viewed in the related databases. The logical source name will be replaced with physical database name and the view DDL is updated as per the configuration selected

Figure 905: Model Builder: Generated Status



Status: Generated

Groups: Select...

Search Models: Page 3 of 6

☐	Object Name	Object Type	Description	Logical Source Name	Modifi
☐	View	View		Logical1	

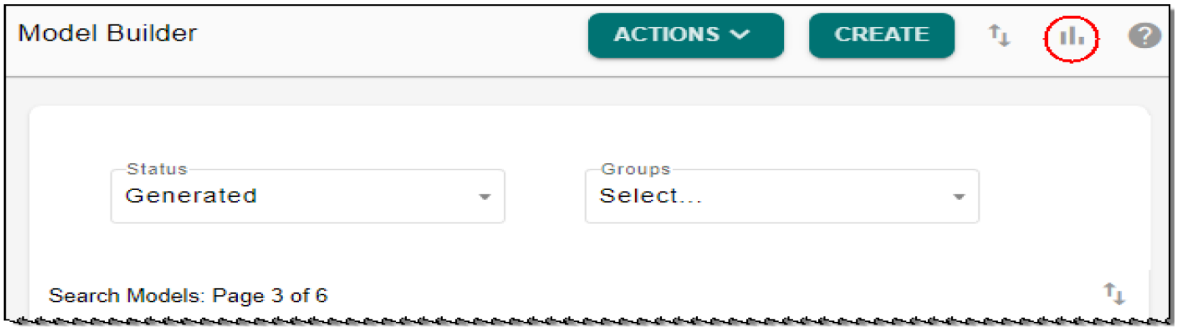
Model Builder Dashboard

Model Builder Dashboard provides a quick glance of end-to-end progress for each model created. For each model, the dashboard displays the Model Status, Groups of Models, recent ISG execution Logs and Model Configuration Details. Data administrator can track overall status of model builder tables using the Dashboard. Also, with the help of drill downs provided on Dashboard, users can track interested component as required.

The Model Builder Configuration on the dashboard helps to monitor the list of activities for all the modules configured for a specific table. Using the drill down option, you can navigate directly to the set-up pages of the selected module to resolve the missing components.

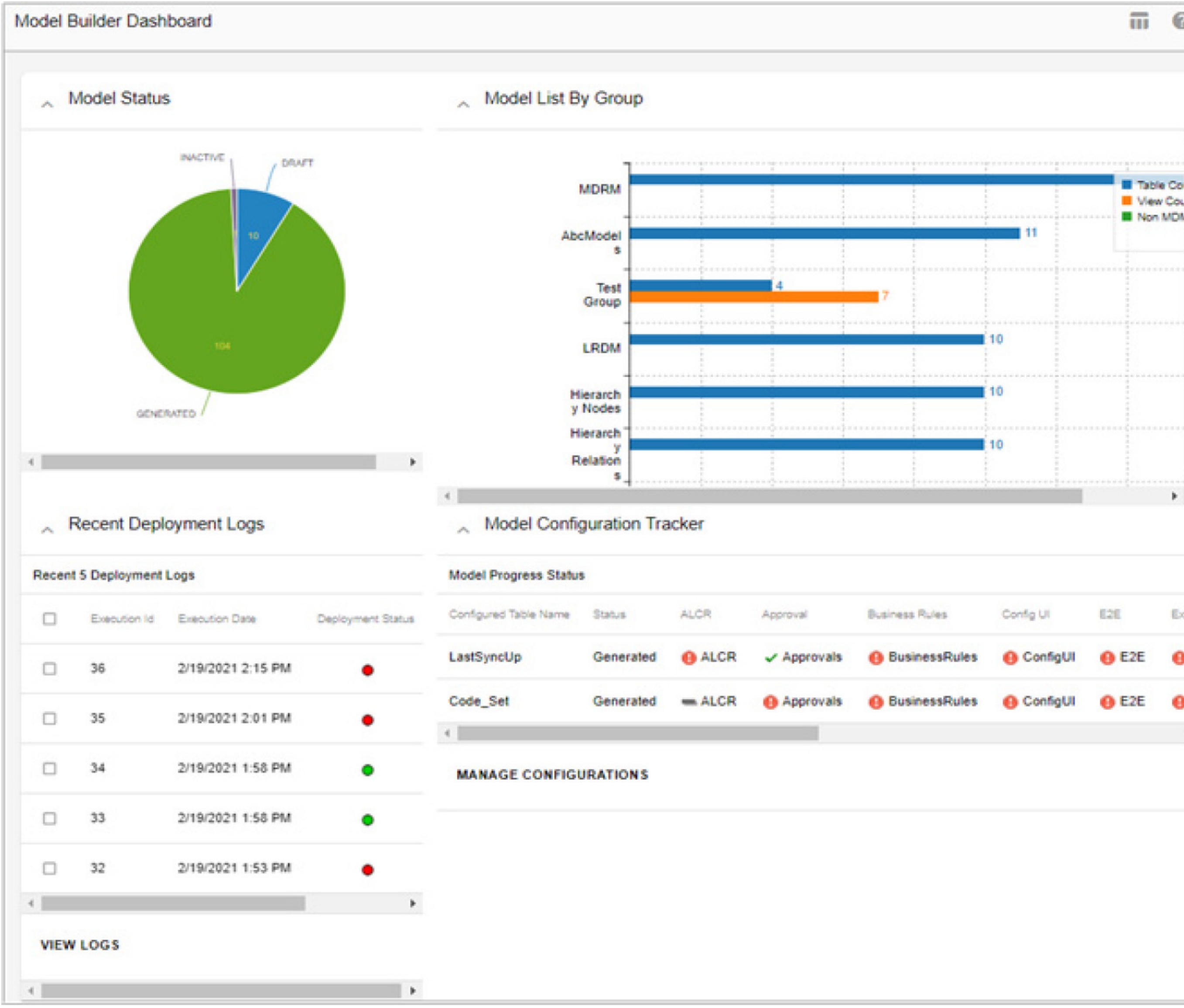
You can navigate to **Model Builder Dashboard** UI by clicking the graphical view icon on the **Model Builder** UI as in Figure 906.

Figure 906: Model Builder Dashboard



The **Model Builder Dashboard** (Figure 906) is displayed.

Figure 907: Model Builder Dashboard



Recent 5 Deployment Logs

☐	Execution Id	Execution Date	Deployment Status
☐	36	2/19/2021 2:15 PM	🔴
☐	35	2/19/2021 2:01 PM	🔴
☐	34	2/19/2021 1:58 PM	🟢
☐	33	2/19/2021 1:58 PM	🟢
☐	32	2/19/2021 1:53 PM	🔴

Model Progress Status

Configured Table Name	Status	ALCR	Approval	Business Rules	Config UI	E2E
LastSyncUp	Generated	❗ ALCR	✓ Approvals	❗ BusinessRules	❗ ConfigUI	❗ E2E
Code_Set	Generated	— ALCR	❗ Approvals	❗ BusinessRules	❗ ConfigUI	❗ E2E

The **Model Builder Dashboard** provides the following details:

- **Model Status**—a pie chart displays the total number of models under each model stages (Draft, Validated, Generated, Pending Approval and Inactive). Click on each model stage to drill down to model builder UI to edit, export, delete models and to validate and generate ISG.
- **Model List By Group**—a bar chart displays for each group of model, its table and view count group wise like the count of Non MDM Models, MDM Views and MDM Tables.
- **Recent Deployment Logs**—displays the recent five model builder deployment execution status. To view detail log of each execution, select the execution Id and click **View Logs** to navigate to **Model Deployment Logs** UI.

If you select the model and click on **View Logs**, it displays only the logs of selected model. To view logs of all the ISG execution, click on **View Logs** button without selecting any model. For detailed description of ISG logs, see Section : "Model Deployment Log."

- **Model Configuration Tracker**—the Model Configuration Tracker highlights the status of all the end to end activities of the different modules configured for each of the model created on Model Builder UI. A workflow or code set (MDM Modules) is used to configure what modules to be displayed on the configuration dashboard for each model.

  The Model Configuration Tracker pane displays the latest five configurations created along with the execution status in tabular form. Different execution status includes the following:

  ✓ shows that the module configuration is completed.

  ❗ shows that the module configuration is incomplete.

  ▬ shows that the module is not selected for configuration.

  An hyper link is provided on each of the module execution status that helps to navigate to the set-up pages of the specific module. For example, clicking on "Config UI" status link would redirect to Configurable UI to configure the missing left navigation components.

  For detailed description on Model Configurations, see Section : "Manage Model Configuration."

Manage Model Configuration

Every model created on the Model builder UI can be associated with different MDM modules like (ISG, Config UI creation, User Access, E2E Set-up etc.) using the **Manage Dashboard Configurations** UI. The Manage Dashboard Configurations UI provides an easy way to verify what all components were created or pending or missing for a table.

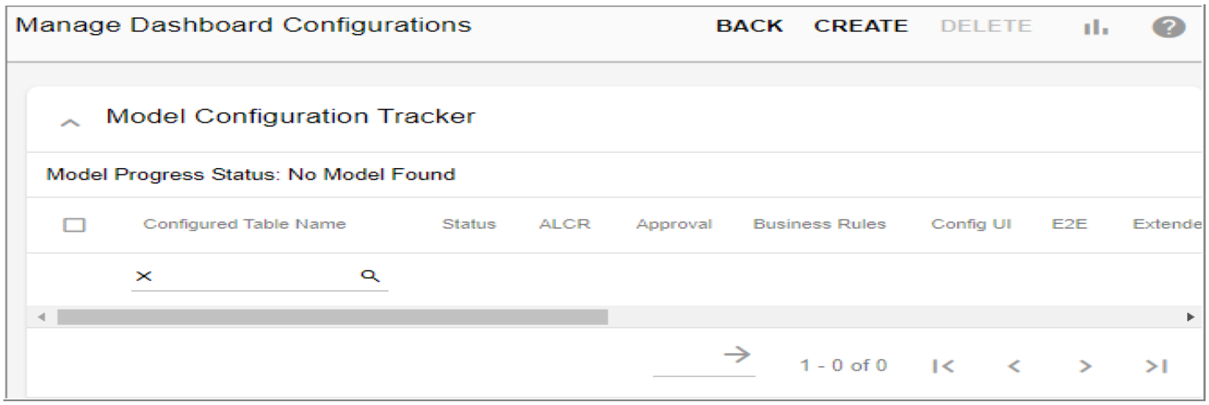
Navigate to **Manage Dashboard Configurations** UI from **Model Builder Dashboard** by clicking on **Manage Configurations** button under **Model Configuration Tracker** pane.

Create Model Configuration

Perform the following steps to create model configuration:

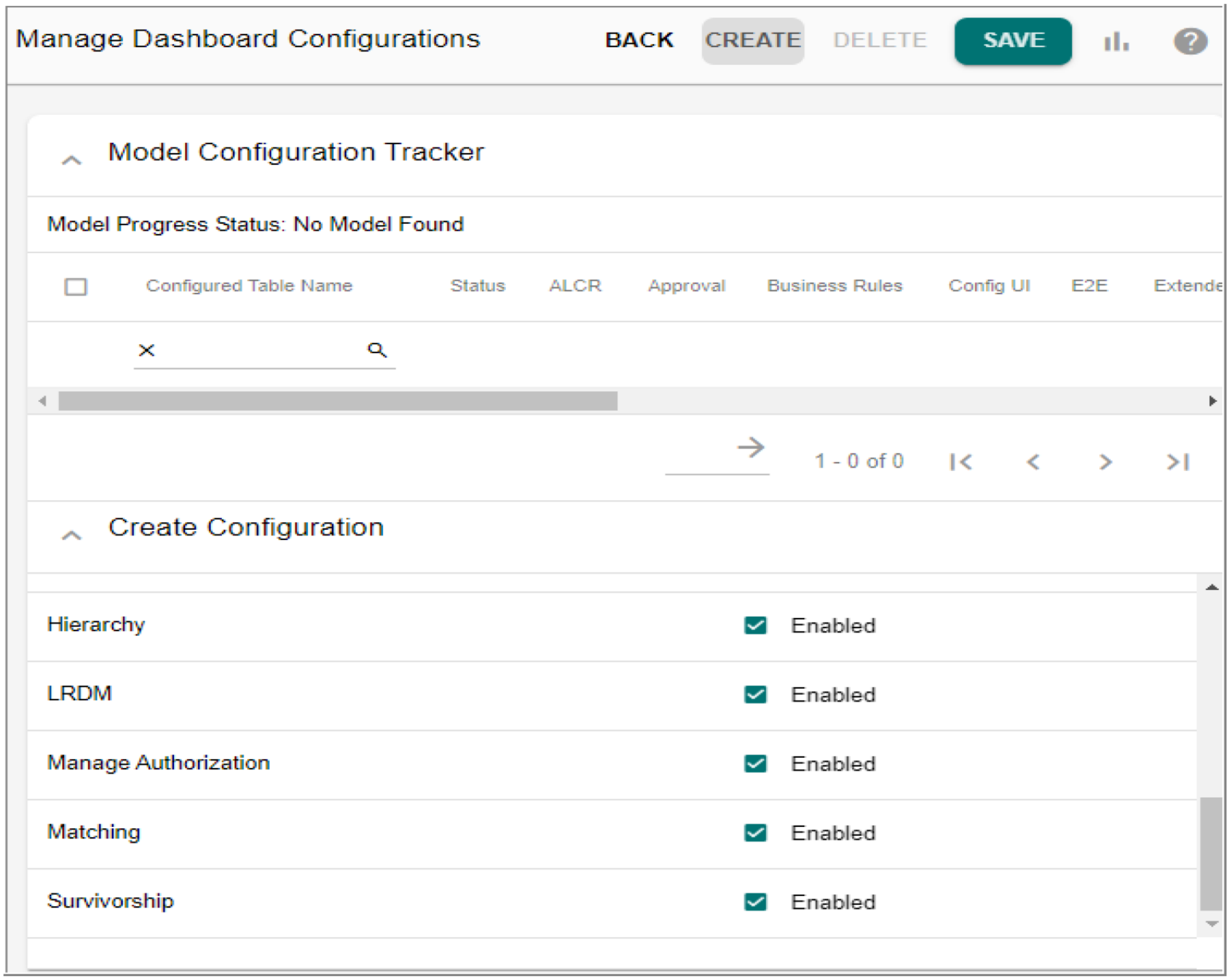
1 On the **Manage Dashboard Configurations** page (Figure 908), click **Create**.

Figure 908: Manage Dashboard Configurations



The **Create Configuration** pane is displayed as in Figure 909.

Figure 909: Manage Dashboard Configurations—Create Configuration



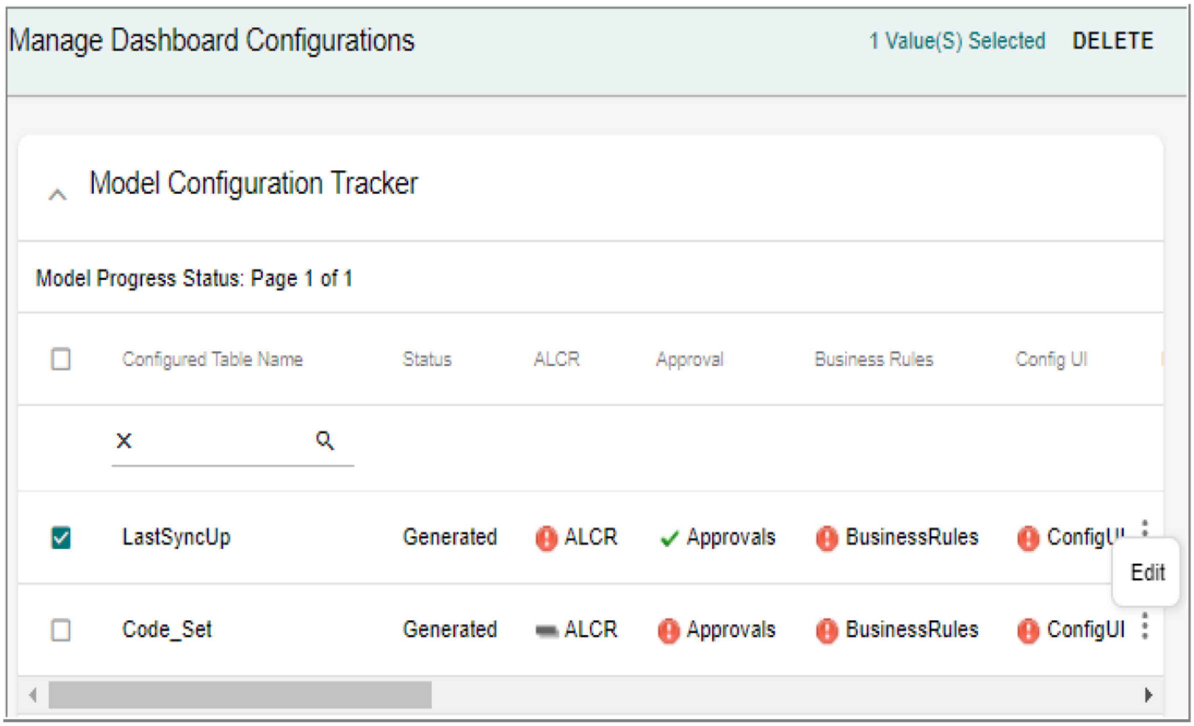
Hierarchy	☑ Enabled
LRDM	☑ Enabled
Manage Authorization	☑ Enabled
Matching	☑ Enabled
Survivorship	☑ Enabled

On the **Create Configuration** pane, the **Table Name** dropdown lists all the tables on which you can enable or disable different module configurations. By default, all the modules will be enabled.

2 On the **Create Configuration** pane, optionally deselect any module operation to be skipped in configuration and click **Save**.

Message: "Configuration created successfully" is displayed. and the status of each module is displayed as in Figure 910.

Figure 910: Manage Dashboard Configurations



Manage Dashboard Configurations

1 Value(S) Selected DELETE

Model Configuration Tracker

Model Progress Status: Page 1 of 1

☐	Configured Table Name	Status	ALCR	Approval	Business Rules	Config UI
☑	LastSyncUp	Generated	● ALCR	✓ Approvals	● BusinessRules	● ConfigU
☐	Code_Set	Generated	▬ ALCR	● Approvals	● BusinessRules	● ConfigUI

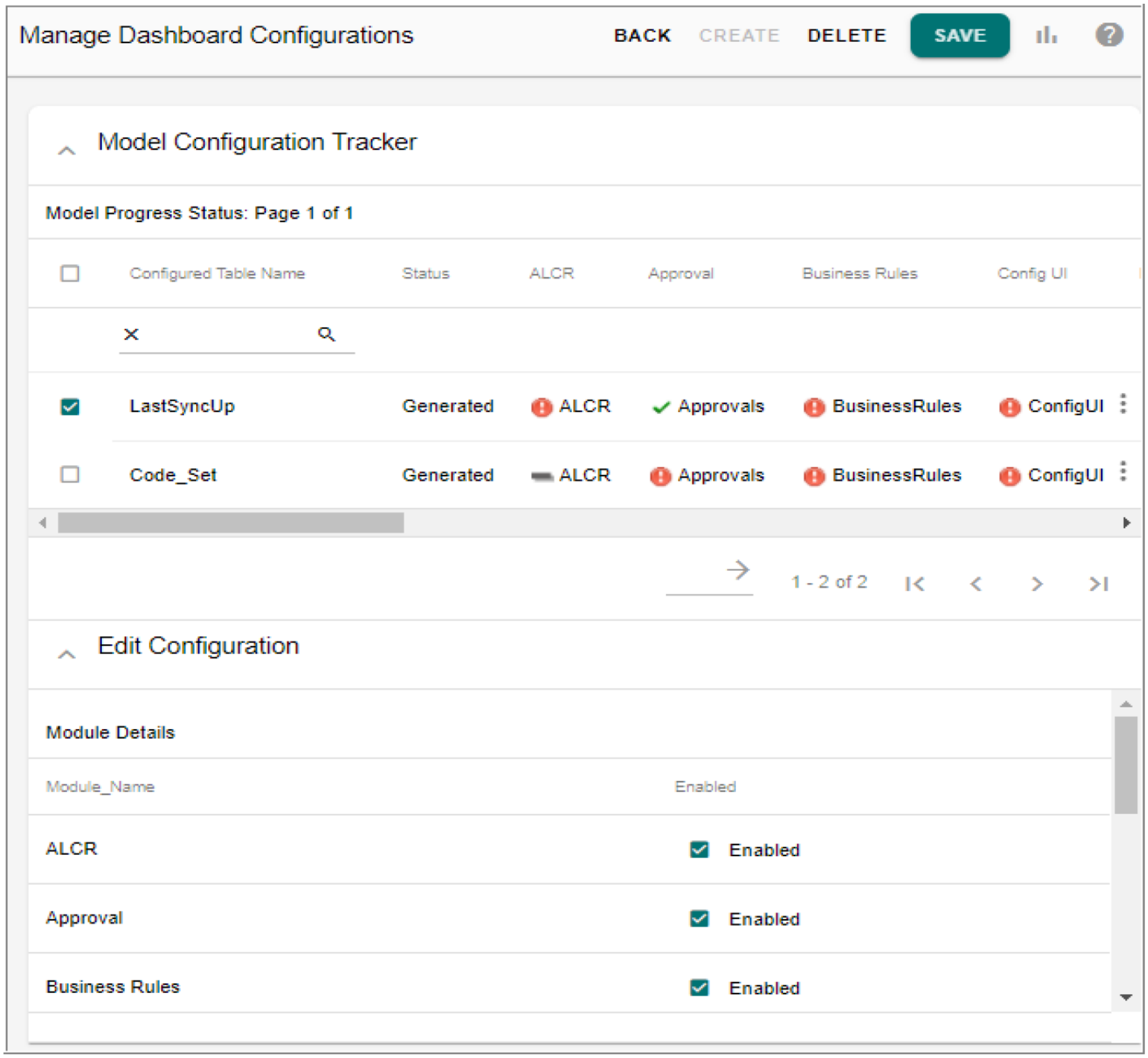
3 Click on each of the status icon to navigate to the corresponding set-up UI where you can configure all the missing components.

Edit Model Configuration

Perform the following steps to edit model configuration:

1 On the **Manage Dashboard Configurations** page (Figure 910), select the configuration and click **Edit**.

Figure 911: Manage Dashboard Configurations—Edit Configuration



Model Progress Status: Page 1 of 1

☐	Configured Table Name	Status	ALCR	Approval	Business Rules	Config UI
☑	LastSyncUp	Generated	❗ ALCR	✓ Approvals	❗ BusinessRules	❗ ConfigUI
☐	Code_Set	Generated	– ALCR	❗ Approvals	❗ BusinessRules	❗ ConfigUI

Module Details

Module_Name	Enabled
ALCR	☑ Enabled
Approval	☑ Enabled
Business Rules	☑ Enabled

2 On the **Edit Configuration** pane, optionally select / deselect any module operation and click **Save**.

Message: “Configuration updated successfully” is displayed.

Delete Model Configuration

Perform the following steps to delete model configuration:

1 On the **Manage Dashboard Configurations** page (Figure 910), click Menu icon corresponding to the required configurations and click **Delete**.

2 On the confirmation pop-up, click **Yes**.

Message: “Configuration deleted successfully” is displayed.

Manage DDP Configurations

MDM provides the capability to create and manage DDP configurations from MDM UI. The DDP configuration allows you to configure steps of execution within DDP. As part of DDP configuration, you will be able to skip optional steps and add pre and post hooks for each step of DDP. By default, an OOB Default configuration is added for all tables of MDM server, which can be modified as required. You can create new table specific configuration to override the default configuration.

Navigate to **Manage DDP Configurations** UI from **Model Builder** UI by selecting **DDP Configurations** from **Actions** drop-down.

The Manage DDP Configurations UI is displayed only for a user assigned to a role for which the Manage DDP Configuration Activity is enabled. A user assigned to role with this activity will be able to create and manage DDP configurations.

On the **Manage DDP Configurations** UI, you can perform the following:

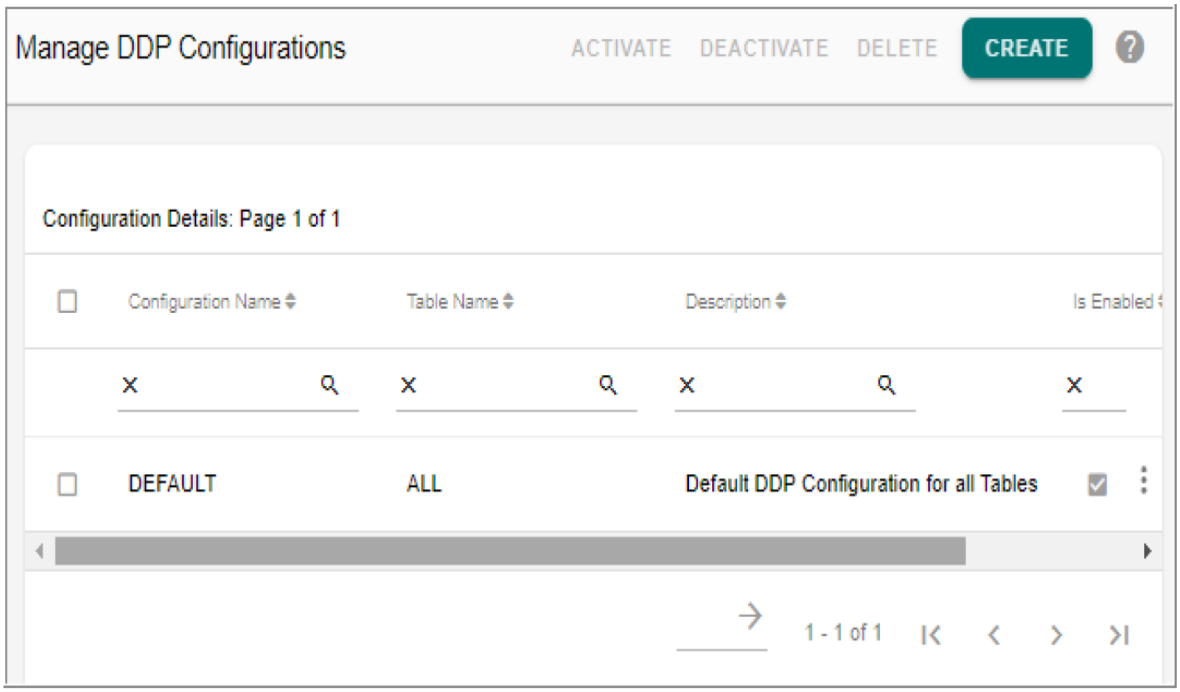
- Create DDP Configuration
- Edit DDP Configuration
- Activate or Deactivate DDP Configuration
- Delete DDP Configuration

Create DDP Configuration

To create new DDP configuration:

1 On the **Manage DDP Configurations** UI, click **Create** as in Figure 912.

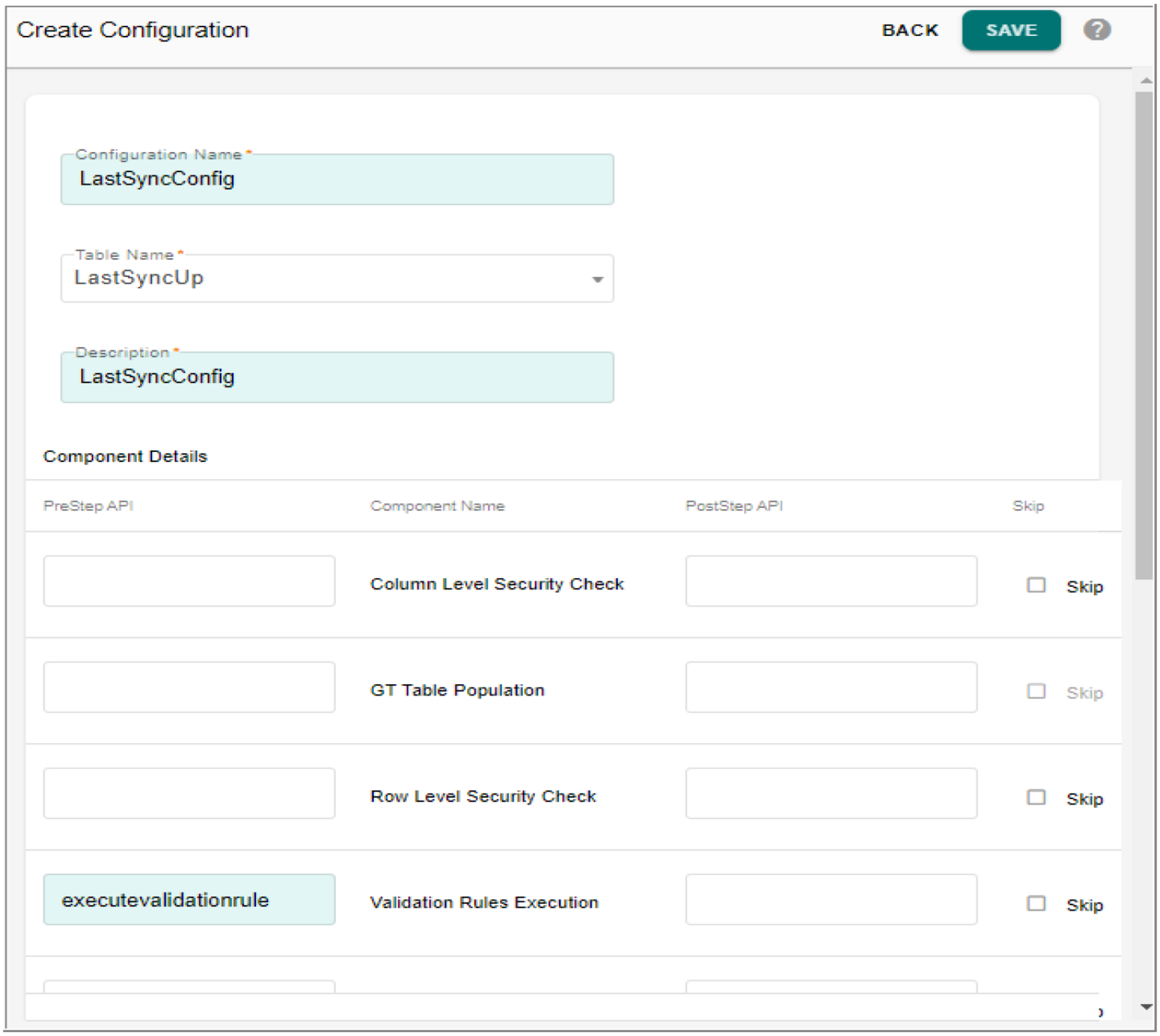
Figure 912: Manage DDP Configurations



☐	Configuration Name	Table Name	Description	Is Enabled
☐	DEFAULT	ALL	Default DDP Configuration for all Tables	☑

The **Create Configuration** UI (Figure 912) is displayed.

Figure 913: Create Configuration



Configuration Name *: LastSyncConfig

Table Name *: LastSyncUp

Description *: LastSyncConfig

Component Details

PreStep API	Component Name	PostStep API	Skip
	Column Level Security Check		☐ Skip
	GT Table Population		☐ Skip
	Row Level Security Check		☐ Skip
executevalidationrule	Validation Rules Execution		☐ Skip

On the **Create Configuration** UI, enter the following:

- **Configuration Name**: name of the configuration being created.
- **Table Name**: select the table on which the configuration to be applied.
- **Description**: enter a brief description of the configuration being created.
- **PreStepAPI** and **PostStepAPI**: optionally, you can enter a valid rule available in the BCM_Master service to be executed before and after each module.
- **Skip**: optionally you can select the skip option for any component or DDP step that needs to be excluded from DDP execution.

The GT Table Population and Master Table Population DDP step cannot be skipped.

2 Click **Save**.

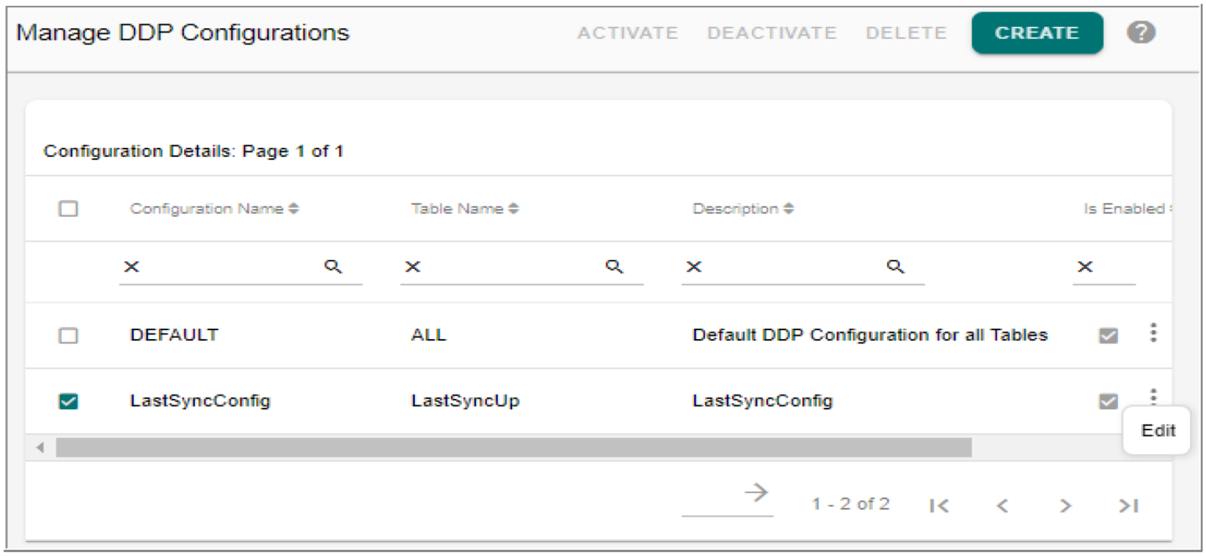
Message: "Configuration created successfully" is displayed.

Edit DDP Configuration

To edit existing DDP configuration:

1 On the **Manage DDP Configurations** UI, click on the Menu icon corresponding to the required DDP configuration and click **Edit**.

Figure 914: Manage DDP Configurations

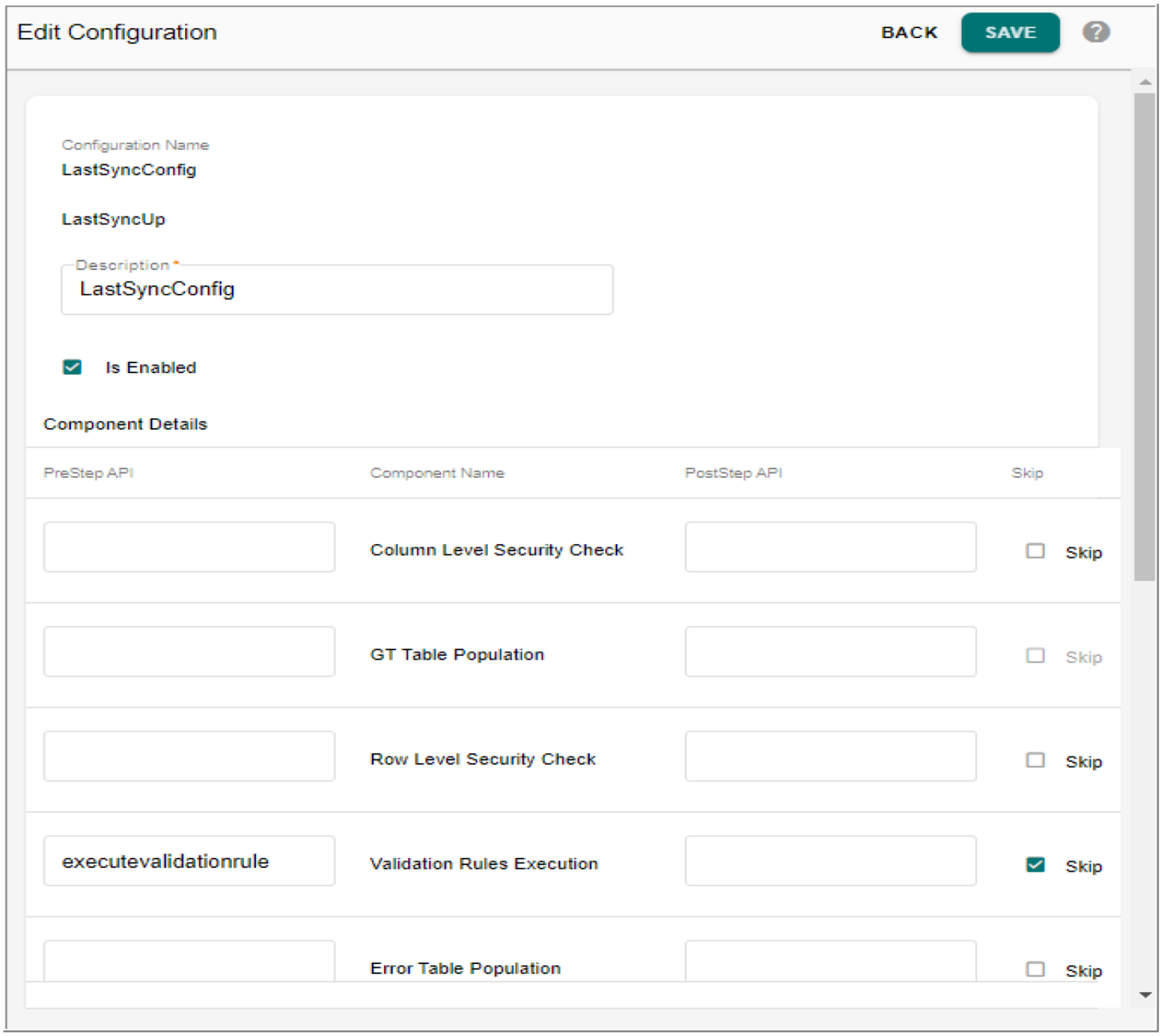


Configuration Details: Page 1 of 1

☐	Configuration Name	Table Name	Description	Is Enabled
☐	DEFAULT	ALL	Default DDP Configuration for all Tables	☑
☑	LastSyncConfig	LastSyncUp	LastSyncConfig	☑

The **Edit Configuration** UI (Figure 915) is displayed.

Figure 915: Edit Configuration



Configuration Name
LastSyncConfig

LastSyncUp

Description *
LastSyncConfig

☑ Is Enabled

Component Details

PreStep API	Component Name	PostStep API	Skip
	Column Level Security Check		☐ Skip
	GT Table Population		☐ Skip
	Row Level Security Check		☐ Skip
executevalidationrule	Validation Rules Execution		☑ Skip
	Error Table Population		☐ Skip

On the **Edit Configuration** UI, you can modify the following:

- **Configuration Name**: non-editable field.
- **Table Name**: non-editable field.
- **Description**: modify the description field.
- **Is Enabled**: by default, the created DDP configuration is activated. You can deactivate by deselecting the Is Enabled checkbox.
- **PreStepAPI** and **PostStepAPI**: add or remove any PreStep and PostStep APIs for each module.
- **Skip**: select the skip option for any component or DDP step that needs to be excluded from DDP execution or uncheck the already selected option to include the DDP step.

2 Click **Save**.

Message: “Configuration edited successfully” is displayed.

Activate or Deactivate DDP Configuration

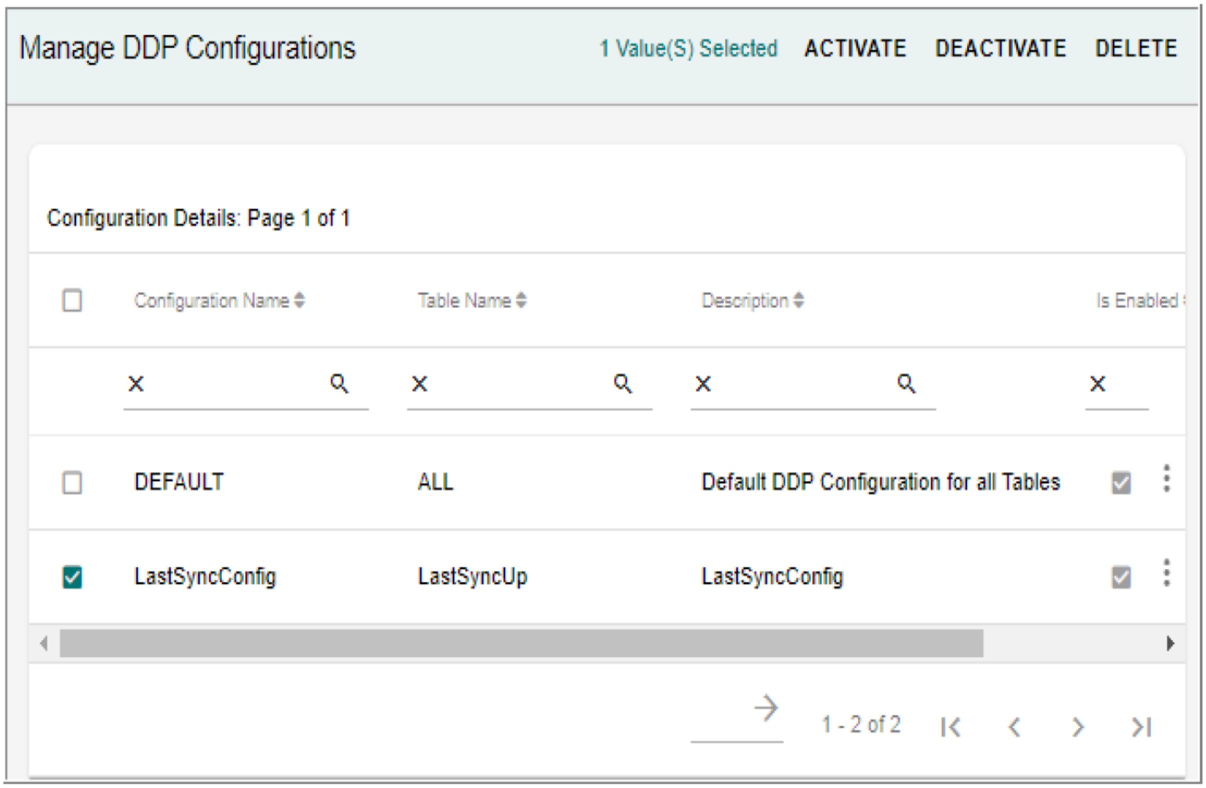
To activate or deactivate existing DDP configuration:

By default, newly created DDP configuration and the OOB default configuration is in active state.

1. On the **Manage DDP Configurations** UI, Select any deactivated DDP configuration and click **Activate** to enable the deactivated DDP configuration.

   Message: “Configuration activated successfully” is displayed.

Figure 916: Manage DDP Configurations



Configuration Details: Page 1 of 1

☐	Configuration Name	Table Name	Description	Is Enabled
☐	DEFAULT	ALL	Default DDP Configuration for all Tables	☑
☑	LastSyncConfig	LastSyncUp	LastSyncConfig	☑

2. Select any active configuration to be disabled and click **Deactivate**.

   Message: “Configuration deactivated successfully” is displayed.

Delete DDP Configuration

To delete existing DDP configuration:

1. On the **Manage DDP Configurations** UI , select the required configuration and click **Delete**.
2. On the Confirmation Webpage Dialog, click **Yes**.

   Message: “Configuration deleted successfully” is displayed.

The OOB default configuration cannot be deleted.

Review Model Builder SQLs Through Approval

In Model Builder, when ISG is triggered, internally DDLs gets generated and executed. MDM provides an option to review the DDLs on the UI and enable approval on the DDLs before executing the ISG.

Once the model is created or uploaded, the model is in Draft state. You can validate a model to check for any validation errors. If the validation passes successfully, the model enters into Pending approval state, if approval is enabled. If approval is not enabled, it enters into validated state. The Pending Approval state UI displays all the models waiting for approval. You can view the DDL details using the View Model DDL option before approving the model. Once the model is approved by the approver from corresponding Approval Inbox UI or by Admin from the Approval Monitor UI, the model enters the Validated state from where you can run ISG and view ISG log details.

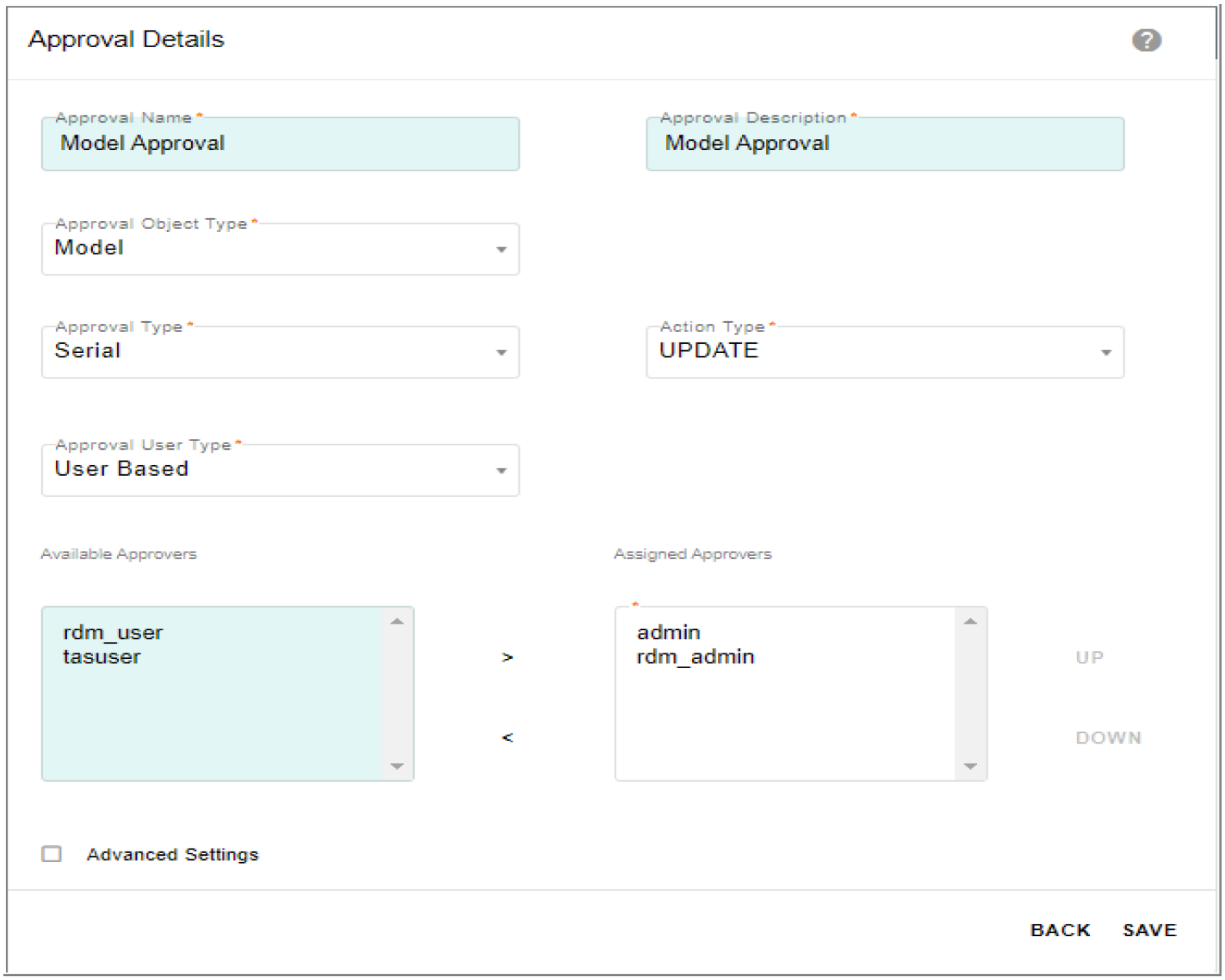
Points to remember on Model Builder Approval

- When a approval is generated on the model, the Action type will be Update only.
- You cannot run the ISG or perform any operation on the models on which approval is defined until the Approver accepts or rejects the request.
- If approver accepts the request for model, then it states get changed to VALIDATED and you can run ISG on that model. If request is rejected them model state get changed to DRAFT.
- Approval is not honored for models generated through Templates.

Perform the following steps to enable approval on Model Builder SQLs.

1 Navigate to Manage Approval UI and create approval with object type as Model as in Figure 917. By default, the action type for model will be Update.

Figure 917: Approval Details



Approval Details

Approval Name *: Model Approval

Approval Description *: Model Approval

Approval Object Type *: Model

Approval Type *: Serial

Action Type *: UPDATE

Approval User Type *: User Based

Available Approvers: rdm_user, tasuser

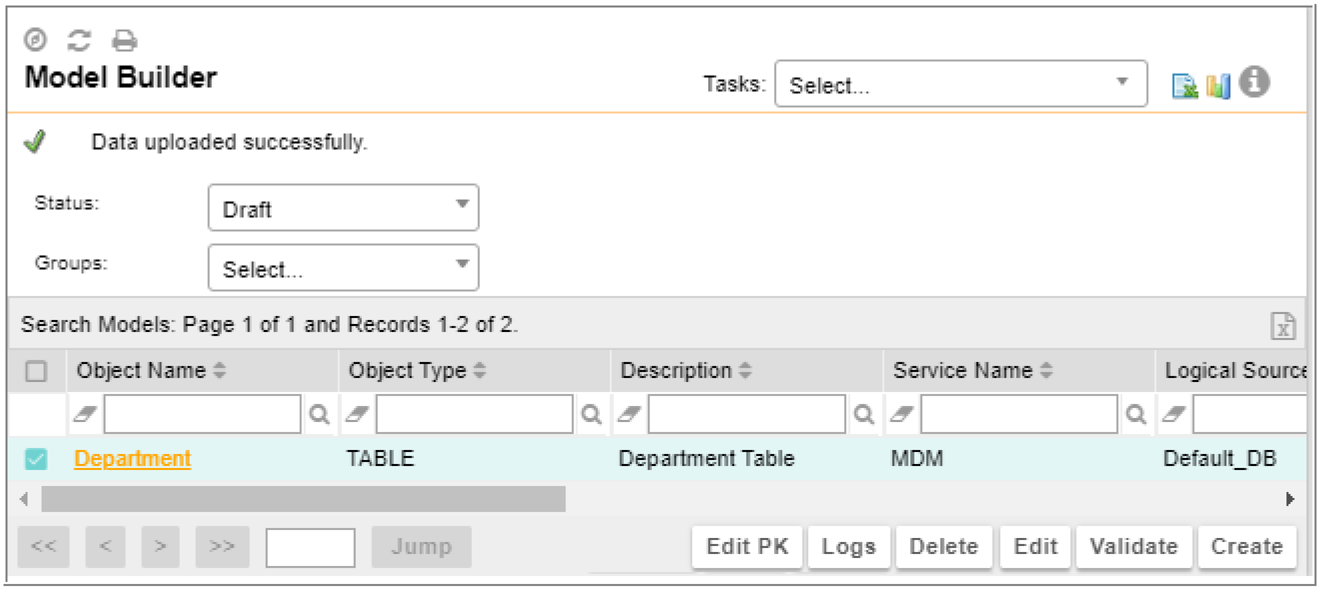
Assigned Approvers: admin, rdm_admin

☐ Advanced Settings

2 Create or upload a model using **Model Builder** UI.

For details, see Section : "Create or Upload Model." The created model will be in the draft state as in Figure 918.

Figure 918: Model Builder—Draft Models



✓ Data uploaded successfully.

Status: Draft

Groups: Select...

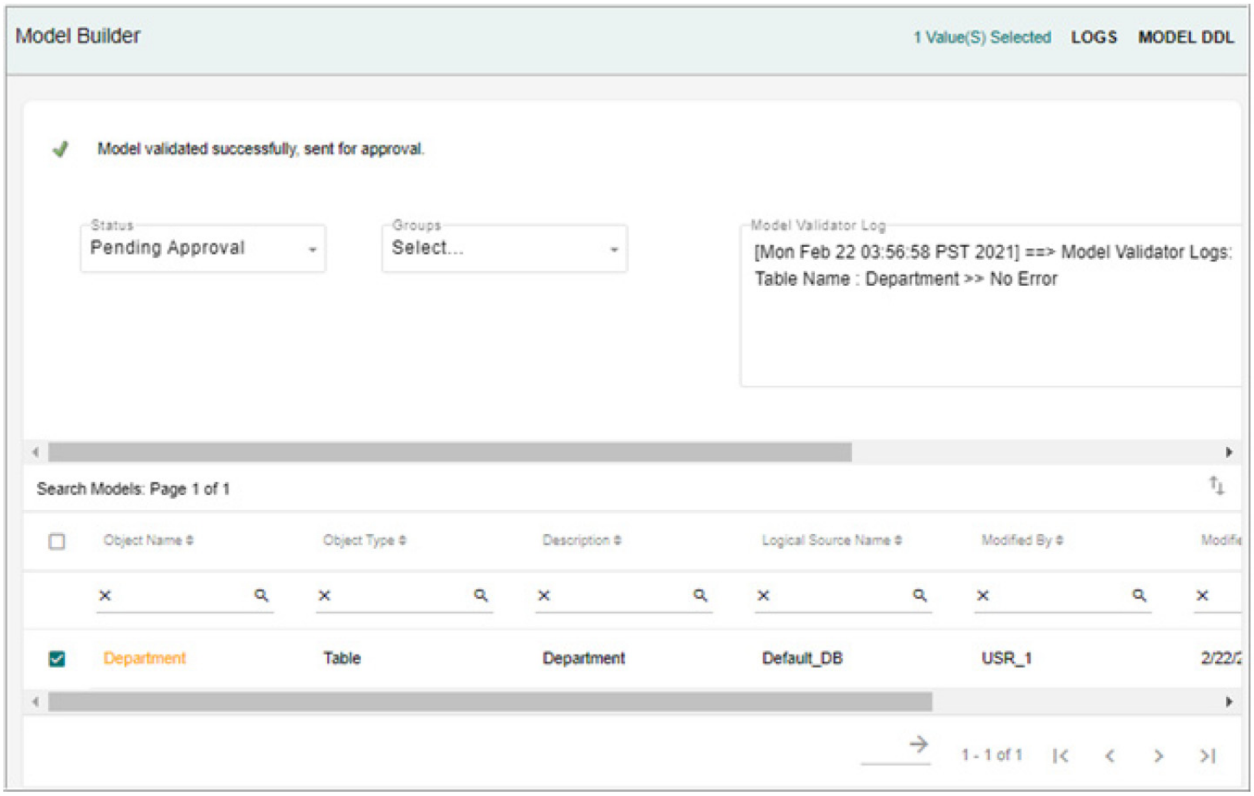
Search Models: Page 1 of 1 and Records 1-2 of 2.

☐	Object Name	Object Type	Description	Service Name	Logical Source
☑	Department	TABLE	Department Table	MDM	Default_DB

3 On the **Model Builder** UI, select the model and click **Validate Model**.

Message: “Model Validated successfully and model sent for approval” is displayed as in Figure 919.

Figure 919: Model Builder—Validation Log



✓ Model validated successfully, sent for approval.

Status: Pending Approval

Groups: Select...

Model Validator Log

```
[Mon Feb 22 03:56:58 PST 2021] ==> Model Validator Logs:
Table Name : Department >> No Error
```

Search Models: Page 1 of 1

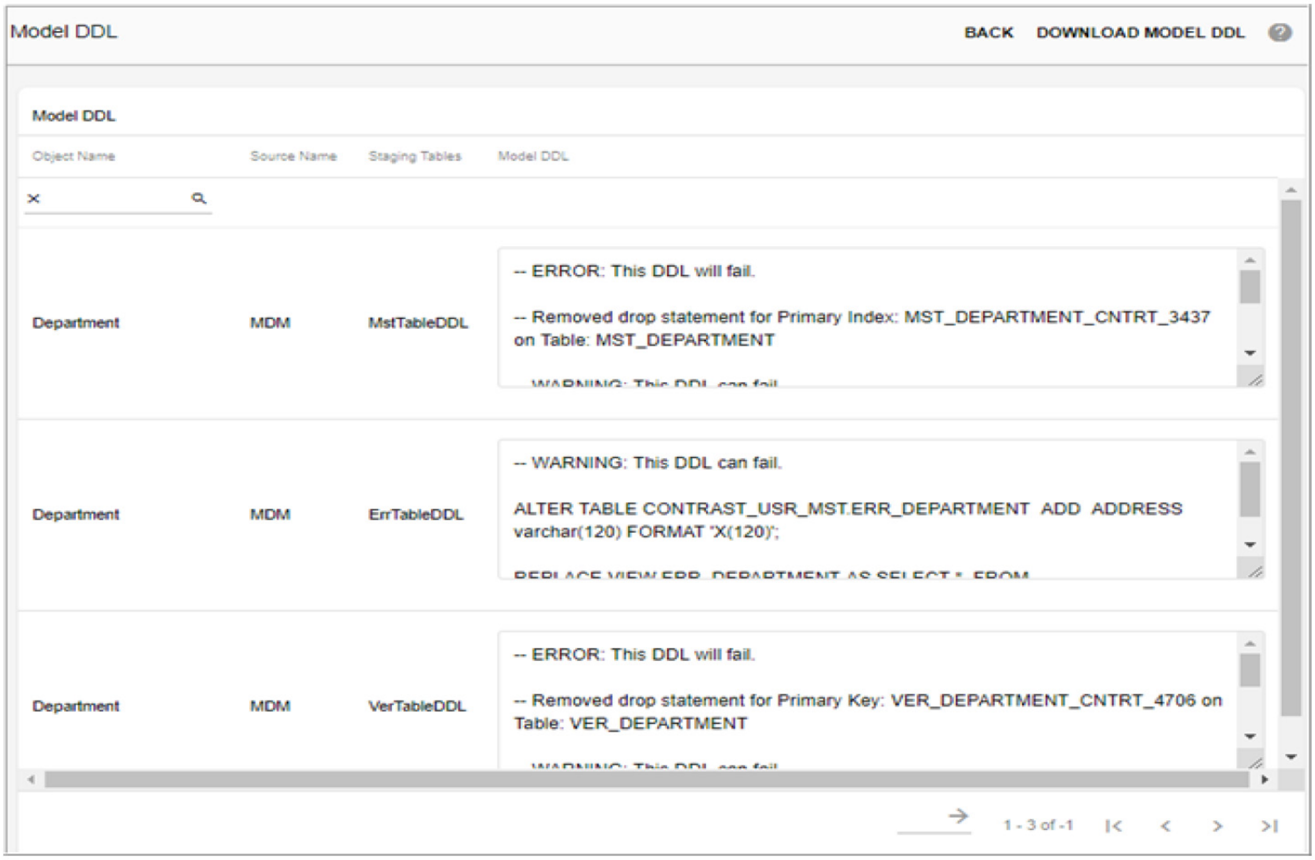
☐	Object Name	Object Type	Description	Logical Source Name	Modified By	Modifie
☑	Department	Table	Department	Default_DB	USR_1	2/22/

The Pending Approval state UI displays all the models waiting for approval. You can view the model DDL details using the View Model DDL option before approving the model.

4 On the **Model Builder** UI with Pending Approval Models option selected, select the model and click **Model DDL** .

The Model DDL displays details of different staging tables of the selected model. On the **Model DDL** UI, you can click on **Download Model DDL** to export DDLs.

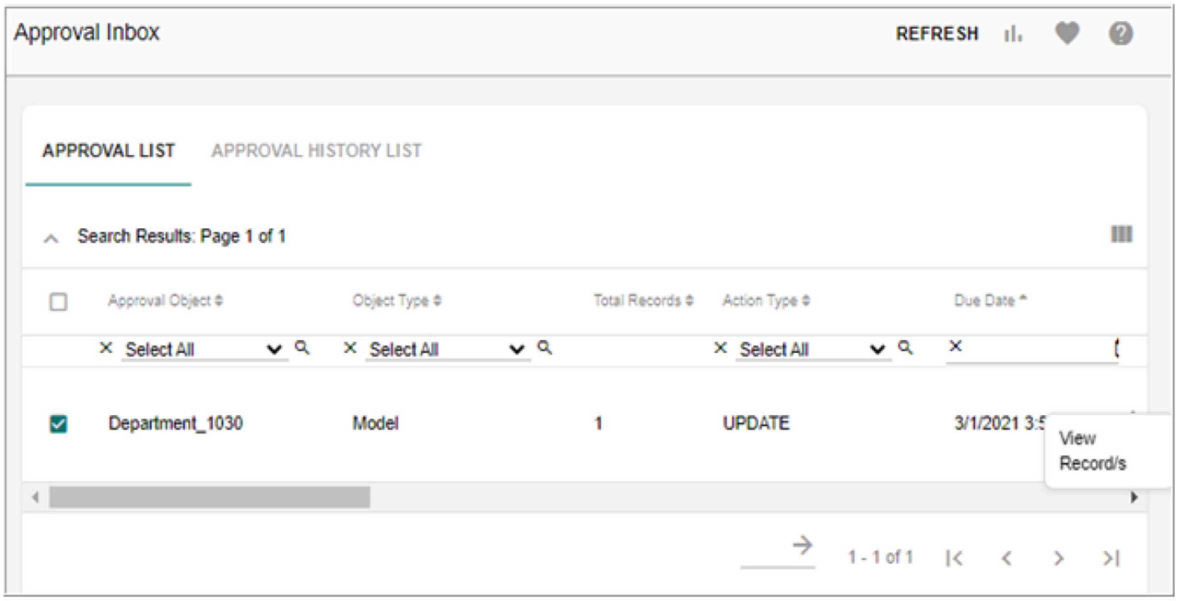
Figure 920: View Model DDL



Object Name	Source Name	Staging Tables	Model DDL
Department	MDM	MstTableDDL	-- ERROR: This DDL will fail. -- Removed drop statement for Primary Index: MST_DEPARTMENT_CNTRT_3437 on Table: MST_DEPARTMENT -- WARNING: This DDL can fail
Department	MDM	ErrTableDDL	-- WARNING: This DDL can fail. ALTER TABLE CONTRAST_USR_MST.ERR_DEPARTMENT ADD ADDRESS varchar(120) FORMAT 'X(120)'; REPLACE VIEW ERR_DEPARTMENT AS SELECT * FROM
Department	MDM	VerTableDDL	-- ERROR: This DDL will fail. -- Removed drop statement for Primary Key: VER_DEPARTMENT_CNTRT_4706 on Table: VER_DEPARTMENT -- WARNING: This DDL can fail

5 Navigate to **Approval Inbox** UI (select Approval Inbox from Settings Icon drop-down on MDM UI) to take action on the model.

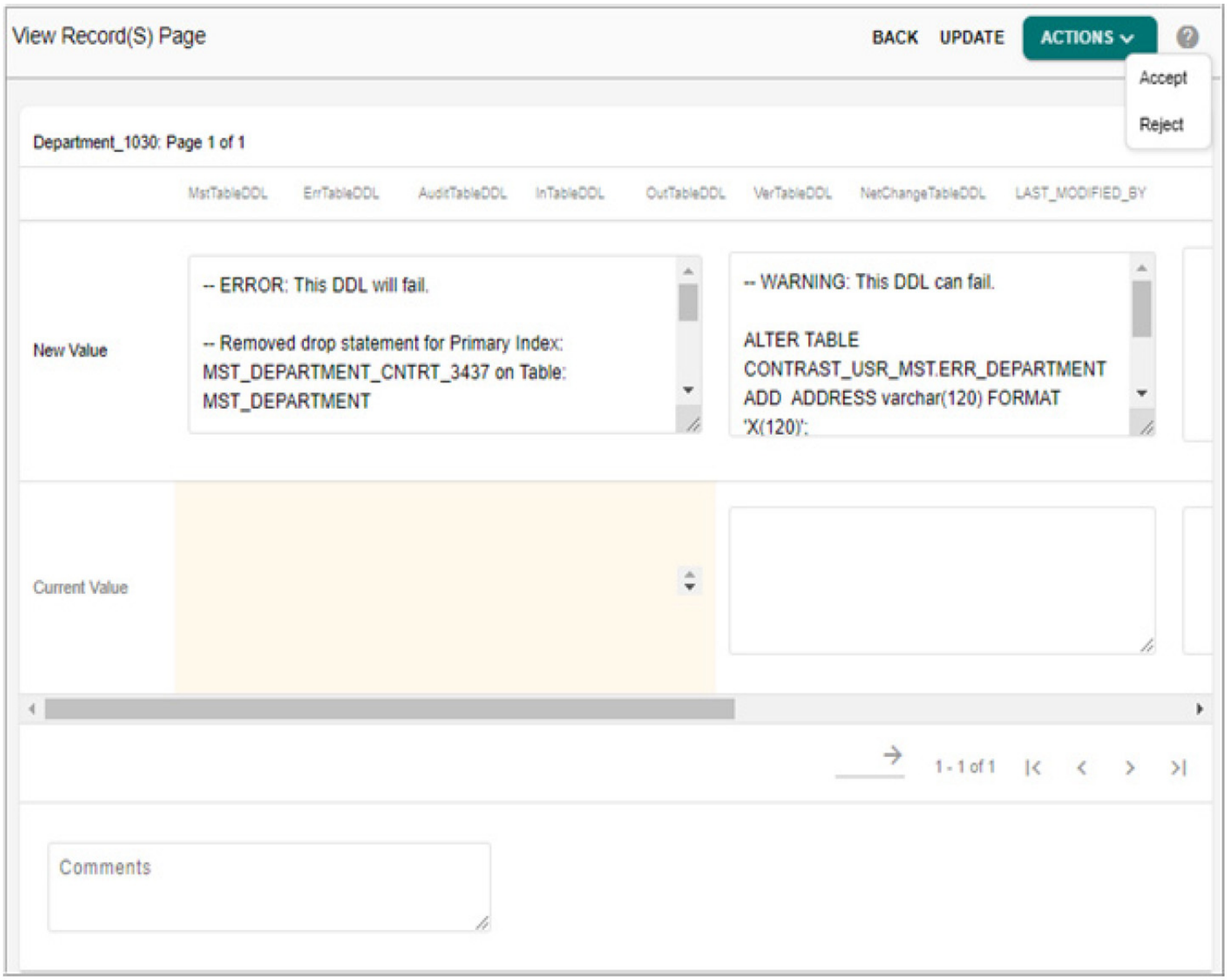
Figure 921: Approval Inbox



☐	Approval Object	Object Type	Total Records	Action Type	Due Date
☑	Department_1030	Model	1	UPDATE	3/1/2021 3:5

6 On the **Approval Inbox** UI (Figure 921), select the record and click **View Records** to view the DDL.

Figure 922: Approval Inbox—View Record(s)



Department_1030: Page 1 of 1

MstTableDDL ErrTableDDL AuditTableDDL InTableDDL OutTableDDL VerTableDDL NetChangeTableDDL LAST_MODIFIED_BY

New Value

```
-- ERROR: This DDL will fail.

-- Removed drop statement for Primary Index:
MST_DEPARTMENT_CNTRT_3437 on Table:
MST_DEPARTMENT
```

```
-- WARNING: This DDL can fail.

ALTER TABLE
CONTRAST_USR_MST.ERR_DEPARTMENT
ADD ADDRESS varchar(120) FORMAT
'X(120)';
```

Current Value

Once the model is approved, the model will be available under the Validated state on the Model Builder UI.

You can run ISG on the model and view ISG log details. For details, see Section : “Generate Model or Deploy Validated Models” and Section : “Model Deployment Log”.

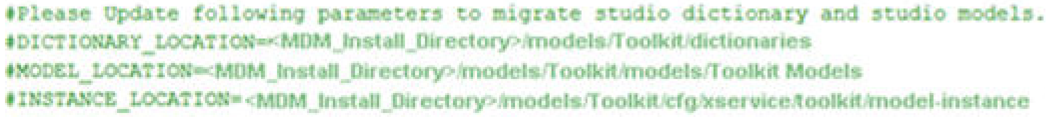
Migration of Studio Built Models and Dictionaries to Model Builder

Studio built models and dictionaries can be migrated into the model builder using migration scripts and then can be used using model builder UI.

Migration scripts will migrate studio built models and dictionaries to model builder. The scripts will read the MTT and model instance files from a given location and populate the metadata tables of model builder. The migrated tables and dictionaries will be in draft state. Once tables and dictionaries are successfully migrated to model builder, ISG can be performed from model builder for any changes in those tables.

Perform the following steps to migrate Studio dictionaries and models with model instance details to Model Builder:

1. Specify the dictionary, model and instance location in the property file migrateDictionary_Model_Props.properties available at: *<MDM_Install_Directory>\bin* as shown in the below sample.



```
#Please Update following parameters to migrate studio dictionary and studio models.
#DICTIONARY_LOCATION=<MDM_Install_Directory>/models/Toolkit/dictionaries
#MODEL_LOCATION=<MDM_Install_Directory>/models/Toolkit/models/Toolkit Models
#INSTANCE_LOCATION=<MDM_Install_Directory>/models/Toolkit/cfg/xservice/toolkit/model-instance
```

   Note: Both model and model-instance should have the same folder structure. For example, if MODEL_LOCATION=<ROOT_MODEL_LOC>\models\<MIG_MODELS> then model-instance location should be INSTANCE_LOCATION=<ROOT_MODEL_LOC>\cfg\xservice\toolkit\model-instance\models\ <MIG_MODELS>

2. Run the below batch files from *<MDM_Install_Directory>\bin*
   - MigrateStudioDictionaries.bat\.sh for migrating dictionary
   - MigrateStudioModels.bat\.sh for migrating models.

     Note: MDM Server must be running.

The log files (migrateDictionary.log and migrateModel.log) are created at: *<MDM_Install_Directory>\bin*

MDM server needs to be started from base MDM bin folder for Migration of Studio based models and dictionaries. Once the migration is successful, MDM server can be started from custom application bin folder and all table and dictionary metadata will be available in model builder.

Point on the migration process:

1. It is recommended to migrate the dictionaries first then the models as some of the models will be using the dictionary properties. This is applicable for OOTB models as well.
2. If two models have the same name it will throw error as “already existing table” and will skip the migration of that model.
3. Already generated models will have Status as ‘Generated’ else ‘Draft’.
4. Only Active models will be migrated. Inactive models will not get migrated and it will be specified in the log.
5. The mtt file from the models and from the model instance must be read simultaneously.
6. The information in the model-instance will have higher priority, that is, if any details is present in both model and model instance then the information in the model instance will override the information in the model.

7. If the model instance is not found at the specified location, the model instance migration will be ignored.
8. If a model has any error it will skip the migration of that model and will be logged in the log file.
9. The dictionary and model migration logs should be in the same format.
10. While migrating dictionary, if any path is provided for model-instance in the properties file then the path will be considered as dictionary's model-instance, the program will search for the model instance of the dictionary (and if it is not available) it will display the message as "system cannot find the path specified" but the migration will be successful.
11. If all the models in the specified location are migrated successfully then in the log it will be marked as "Migration completed successfully". If any models have any error then the message will be "Migration completed with errors".
12. Incremental Migration is not supported in case of dictionary migration. That is, if a already migrated dictionary is edited, the new changes will not be migrated. If the updated model needs to be migrated, delete the existing model and migrate it again to avoid any errors.
13. Post Migration,

    If the Table source is not set in the mtt file, by default in the migrated model, it is set as MASTER.

    If the Table Source is MASTER, for columns whose source are not set will be set as MASTER.

    If the Table Source is BACKEND, for columns whose source are not set will be set as BACKEND.

    If the Table Source is BOTH, at least for one column the source should be BACKEND otherwise migration script will throw error. For other columns whose source are not set will be set as MASTER.
14. The description for dictionary datatype is not set for column description when a column is extending that dictionary datatype.
15. In case of mtt migration, model column field attributes are treaded as non case specific.

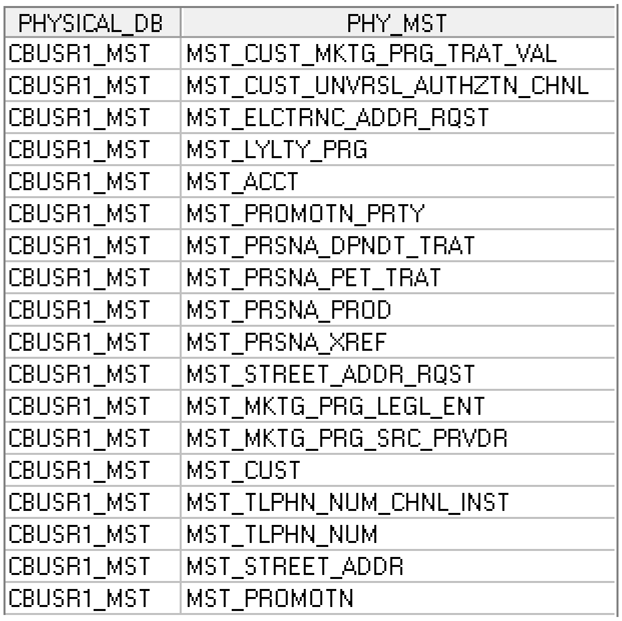
Report Monitoring

MDM provides report or monitoring mechanism to identify any discrepancy between database objects defined in Model builder and actual database. An OOTB macro (MB_MDM_OBJECT_DB_CHECK) is provided to give the details of generated tables for which physical tables do not exist.

You can execute the macro (MB_MDM_OBJECT_DB_CHECK.sql) from Teradata Administrator using Exec Statement. Syntax is "exec mb_mdm_object_db_check". The macro is also available at: *<MDM_Install_Directory>\lib\td-platform-services.jar\xservice\platform\modules\modelBuilder\macros\teradata\*

The results of query execution is displayed as in Figure 923. The PHYSICAL_DB column provide the list of physical database names. The PHY_MST column provide the list of master tables for which the metadata exist and the Physical table is not present in the database.

Figure 923: Macro Execution Results



PHYSICAL_DB	PHY_MST
CBUSR1_MST	MST_CUST_MKTG_PRG_TRAT_VAL
CBUSR1_MST	MST_CUST_UNVRSL_AUTHZTN_CHNL
CBUSR1_MST	MST_ELCTRNC_ADDR_RQST
CBUSR1_MST	MST_LYLTY_PRG
CBUSR1_MST	MST_ACCT
CBUSR1_MST	MST_PROMOTN_PRTY
CBUSR1_MST	MST_PRSNA_DPNDT_TRAT
CBUSR1_MST	MST_PRSNA_PET_TRAT
CBUSR1_MST	MST_PRSNA_PROD
CBUSR1_MST	MST_PRSNA_XREF
CBUSR1_MST	MST_STREET_ADDR_RQST
CBUSR1_MST	MST_MKTG_PRG_LEGL_ENT
CBUSR1_MST	MST_MKTG_PRG_SRC_PRVDR
CBUSR1_MST	MST_CUST
CBUSR1_MST	MST_TLPHN_NUM_CHNL_INST
CBUSR1_MST	MST_TLPHN_NUM
CBUSR1_MST	MST_STREET_ADDR
CBUSR1_MST	MST_PROMOTN

Collect Database Statistics

Statistics play a very important role in Teradata query execution. Teradata query optimizer makes better plans for the query that it needs to be executed based on various parameters and one of the key parameters is statistics collection and the freshness of the statistics collection. Statistics can be collected on individual columns or on group of columns and both these methods would have different efficiency on the query optimization. Columns used in join where conditions are better to be collected in groupModel Builder provides UI to manage Collect Statistics on MDM database user.

Most of the operational queries in MDM would be based on PK/PI but not all of them and MDM relies very heavily on the DBC metadata, with MDM having its own local copy DBC, hence its necessary that statistics be collected on custom tables as well as few key MDM metadata tables such as SYS_DBC_TABLES, SYS_DBC_COLUMNS, SYS_DBC_INDICES, SYS_DBC_ALL_RI_CHILDREN, SYS_DBC_DATABASES etc. on the frequently joined columns.

Apart from the SYS_DBC_*, few more MDM infra tables that might need statistics collection includes the following: SYS_TABLE_MAP, SYS_DB_MAP, MDRM tables, SYS_DEFAULT_RULES, User Profile tables etc. are the few more MDM infra tables that might:

The statistics collection is also recommended after MDM application goes through an upgrade and after schema generation/incremental schema generation.

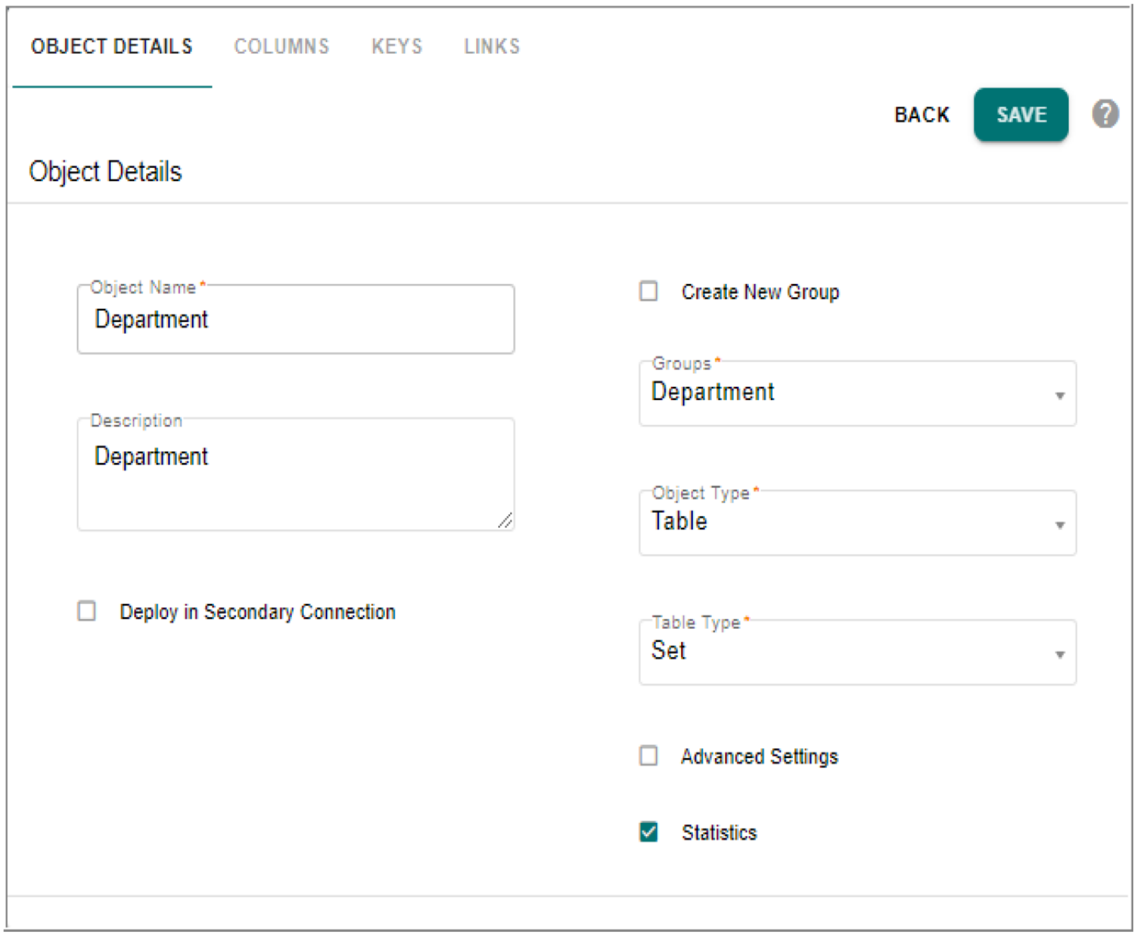
Model Builder UI provides option to manage Collect Statistics on MDM database user. You can define and collect statistics on tables/indexes/columns of underlying services (all staging areas of MDM) and store the summary in the Data Dictionary inside USER DBC.

Perform the following steps to collect database statistics:

1 During the creation of Model Builder table, you can select the option to collect statistics on table/columns/indexes and click Save to save the model.

2 To define table level statistics collection, select the **Statistics** checkbox on the **Object Details** UI.

Figure 924: Model Builder-Object Details UI



Object Details

Object Name*: Department

Description: Department

☐ Deploy in Secondary Connection

☐ Create New Group

Groups*: Department

Object Type*: Table

Table Type*: Set

☐ Advanced Settings

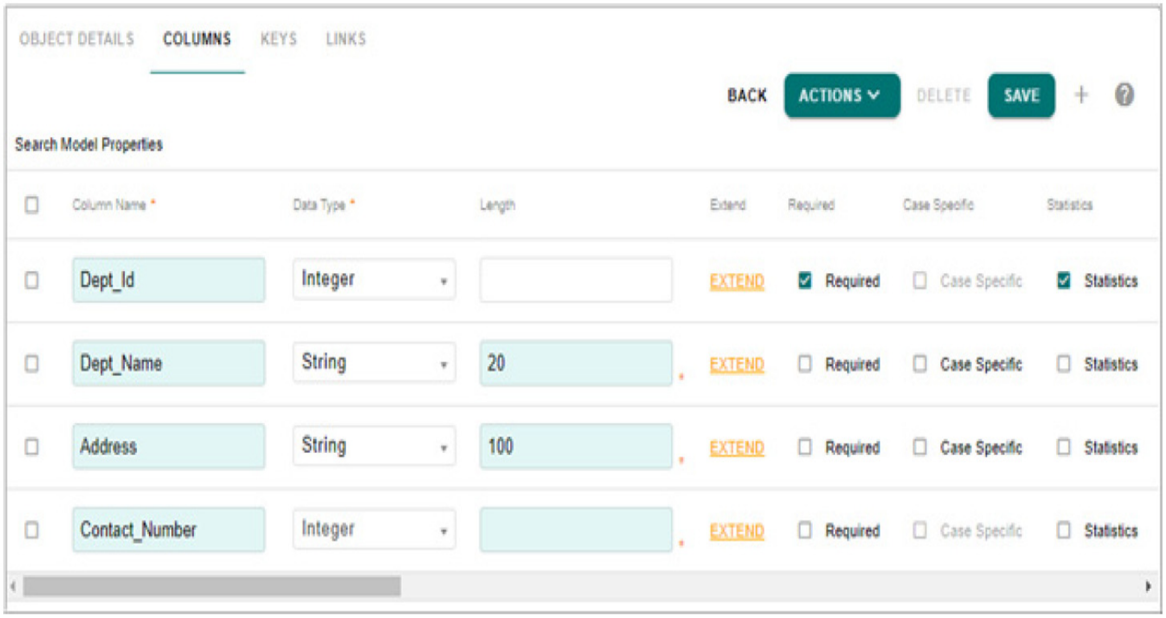
☑ Statistics

3 To define column level statistics, select the **Statistics** checkbox corresponding to the required columns under the **Columns** tab. Under the **Columns** tab, you can define statistics on combination of columns, to define multi column stats, select **Multi-Column Stats** option from **Actions** dropdown. The **Multi-Column Stats** pop-up is displayed. On the **Multi-Column Stats** pop-up, select the column(s) on which you want to define statistics from the **Available Columns** list and move it to **Selected Columns** list and click **Add**. The selected column combinations will be displayed under the **Stats** section. You can also delete the column combination using the **Remove** button. Once all the required column combinations are added, click **Save**.

4 To define indexes level statistics collection, select the **Statistics** checkbox corresponding to the required keys under the **Keys** tab and save the Model.

5 Click **Generate**/**Execute** buttons to generate or execute the Database statistics.

Figure 925: Model Builder Columns



Search Model Properties

☐	Column Name *	Data Type *	Length	Extend	Required	Case Specific	Statistics
☐	Dept_Id	Integer		EXTEND	☑ Required	☐ Case Specific	☑ Statistics
☐	Dept_Name	String	20	EXTEND	☐ Required	☐ Case Specific	☐ Statistics
☐	Address	String	100	EXTEND	☐ Required	☐ Case Specific	☐ Statistics
☐	Contact_Number	Integer		EXTEND	☐ Required	☐ Case Specific	☐ Statistics

NOS Integration for MDM

This section provides an overview to integrate Native Object Store (NOS), to perform read-only searches and query CSV or JSON format datasets located on external S3-compatible object storage platforms using standard Teradata SQL and APIs on MDM.

NOS enables you to do the following:

- Analyze data stored on an external object store
- Read data in CSV or JSON format on an external object store
- Join or aggregate external data to relational data stored in Advanced SQL Engine
- Query cold data offloaded to an external object store
- Load data from an external object store into the database using one SQL request

Prerequisite:

- Advanced SQL Engine Release 17.00 with Native Object Store (NOS)
- External object store on Teradata-supported external object storage. Supported external object storage platforms:
  - Amazon S3
- Storage location configuration:

- Amazon S3 bucket must begin with /S3 or /s3

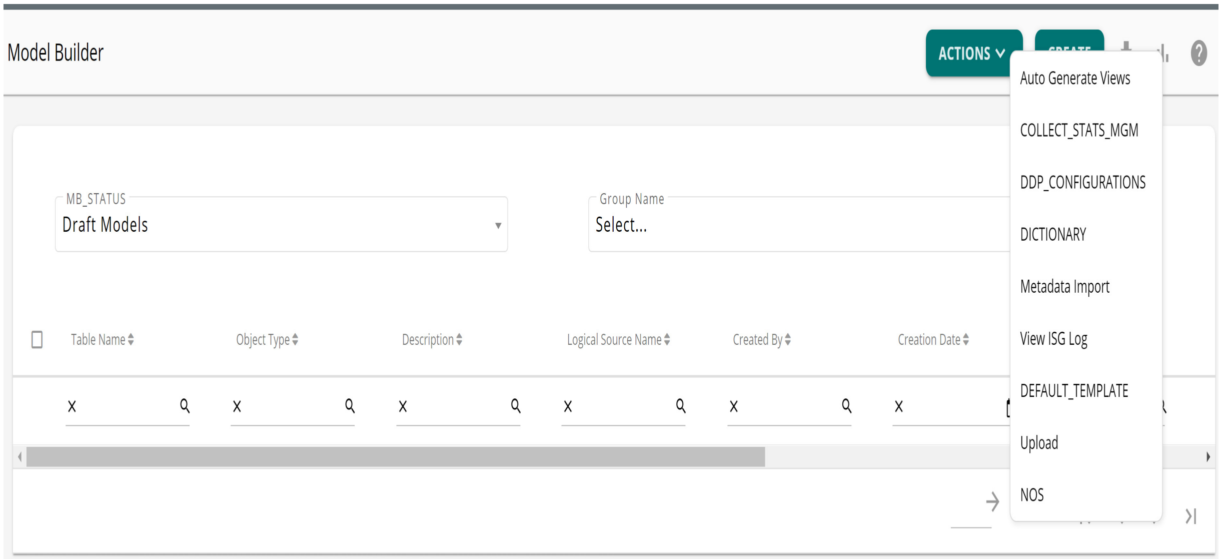
Register an Existing Authorization

Follow below steps to register an existing authorization object:

1 Navigate to **Model Setup** -> **Model Builder**.

2 Click **ACTIONS** and then click **NOS**.

Figure 926: NOS Selection



The **NOS objects list** page opens.

3 Click **AUTHORIZATION OBJECTS**.

The **Authorization objects list** page opens.

4 Click **REGISTER AUTHORIZATION**.

The **Register an existing authorization** window opens.

5 Enter the following information:

a **Existing authorization** name.

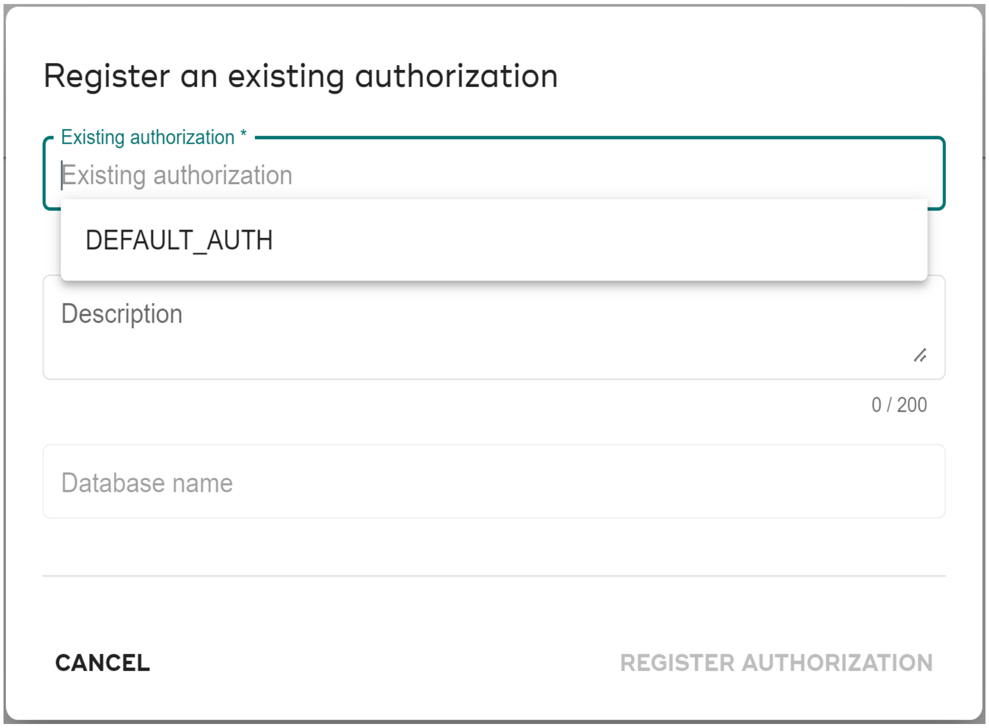
b **Description** for the authorization.

c **Database name** for the authorization.

6 To save the authorization, click **REGISTER AUTHORIZATION**.

The object details add and view on **Authorization objects list**.

Figure 927: Register an Existing Authorization



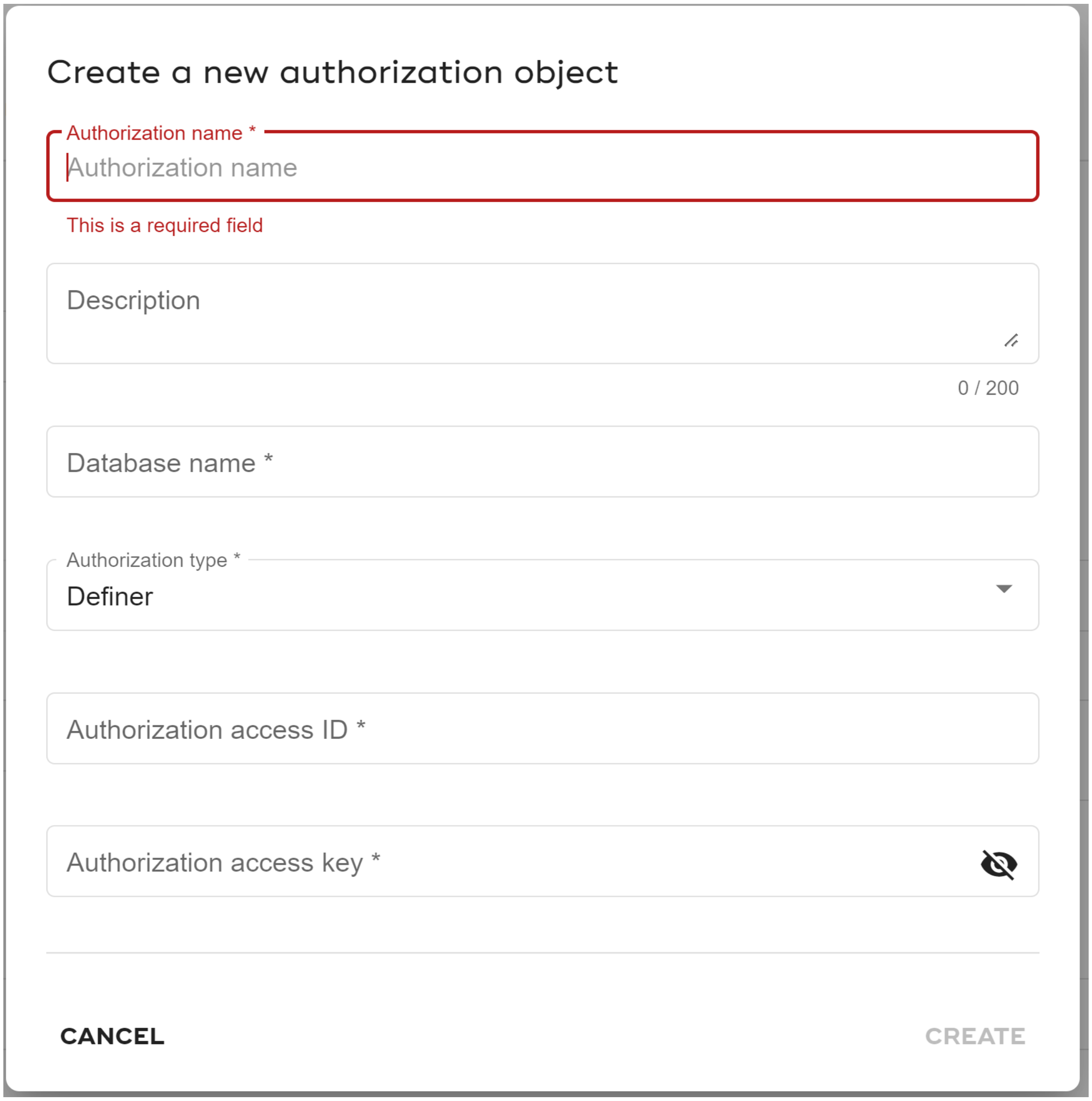
Register an existing authorization

Create a New Authorization Object

1 On **Authorization object list** page, click **CREATE**.

The **Create a new authorization object** window opens.

Figure 928: Create a New Authorization NOS Object



Create a new authorization object

Authorization name *

Authorization name

This is a required field

Description

0 / 200

Database name *

Authorization type *

Definer

Authorization access ID *

Authorization access key *

2 Enter the following information:

- **Authorization name**: Enter any name to define the Authorization name.
- **Description**: Describes the authorization which you have created
- **Database name**: Name of the database
- **Authorization type**: Type of the authorization
- **Authorization access ID**: Access ID of the authorization
- **Authorization access key**: Access key of the authorization

3 Click **CREATE**.

Delete an Authorization Object

Follow below steps to remove an authorization object:

1. On **Authorization object list** page, click the menu icon corresponding to the object you want to remove and click **Delete**.

   A confirmation message appears to delete the authorization object.
2. Click **DELETE**.

Create NOS Object

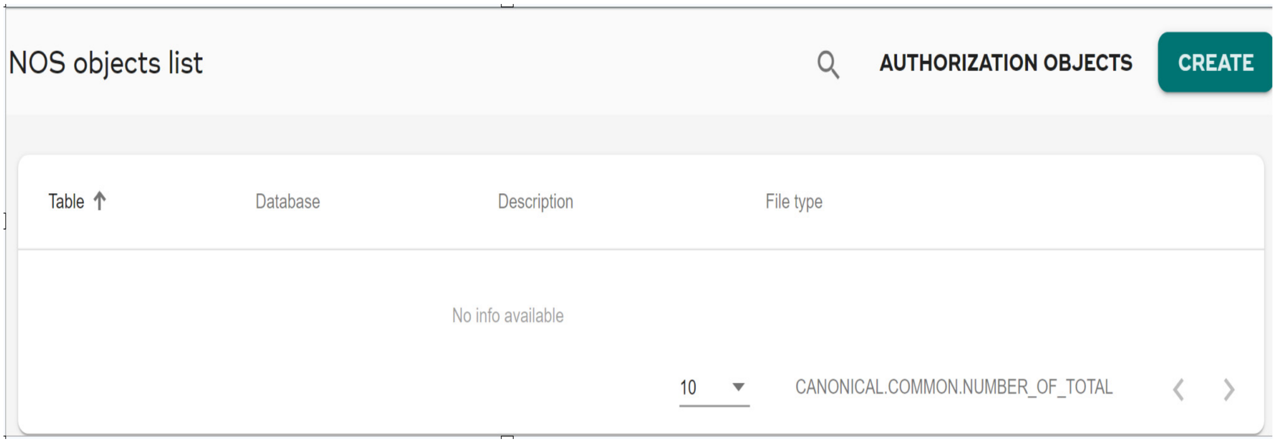
Once you create and register an authorization object, you can create NOS object.

Follow below steps to create a new object:

1. Navigate to **Model Builder** and click **ACTIONS** and select **NOS**.

   The **NOS object list** page opens.
2. Click **CREATE**.

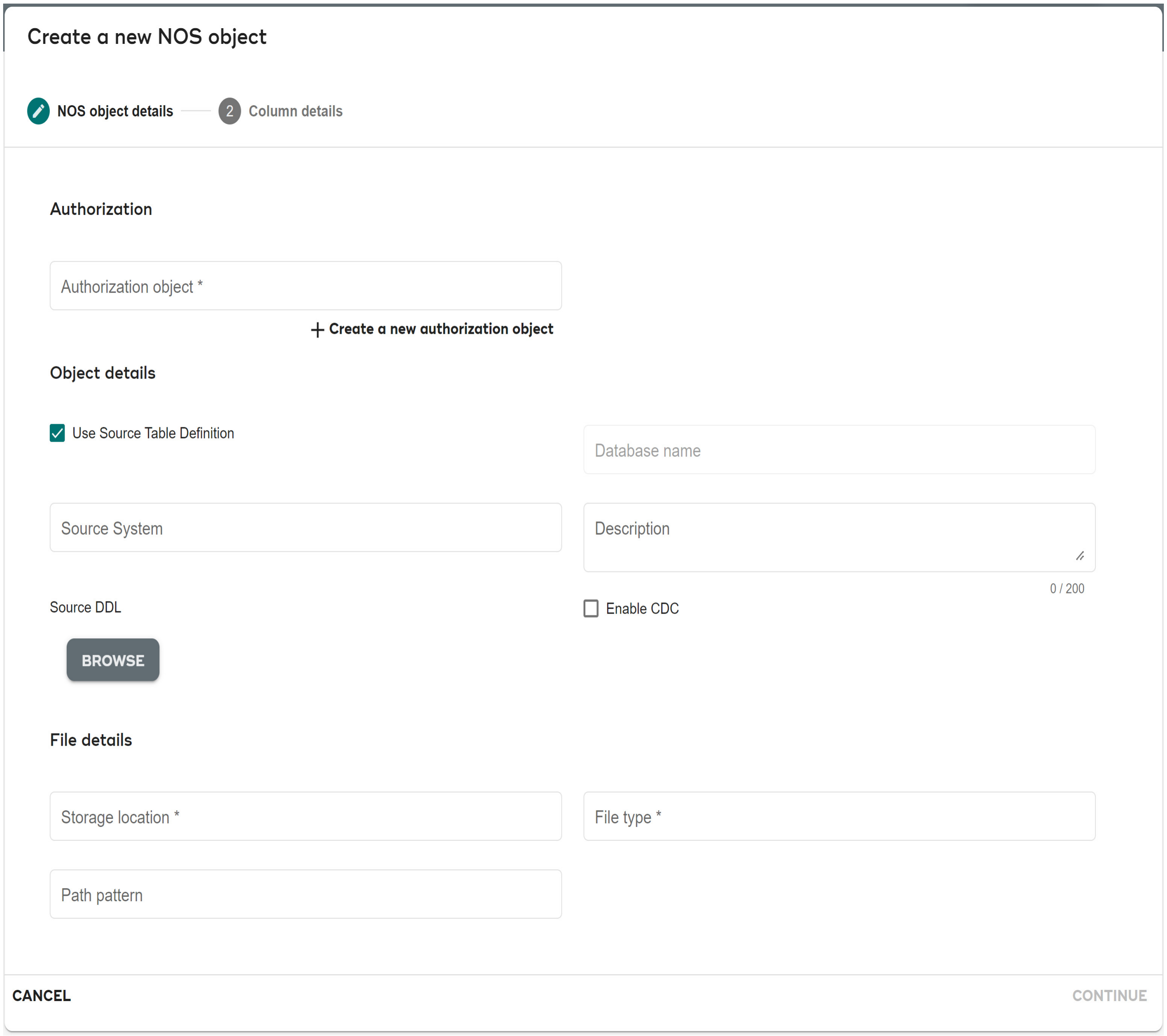
Figure 929: NOS Object Creation



   The **Create a new NOS object** page opens.
3. Under **Authorization**, on **NOS object details** page, enter the following information.
   a. Enter **Authorization object** details.
   b. Optionally, you can also create a new authorization object after clicking **Create a new authorization object**.

      For more information on creating a new authorization object, see Create a New Authorization Object.

Figure 930: NOS Object Creation



☑ Use Source Table Definition

☐ Enable CDC

4 Under **Object details**, enter the following information:

- To use the existing DDL, enable **Use Source Table Definition**.
  - i Add the related description in the Description field.
  - ii Select the database type under **Source System**.
  - iii Select the DDL. Under Source DDL, click Browse and navigate to the existing DDL.
- If you do not select the **Use Source Table Definition**, then provide the following:
  - i **Foreign table name**: Name of the Foreign table
  - ii **Foreign view name**: Name of the Foreign view
  - iii **Description**: Description of the NOS object.

- **Enable CDC**: When you enable the CDC, system creates the target table, temporary table and view.
    - **Target Table**: When you select the **Use Source Table Definition** option, system creates the target table based on the definition of the source table that user has provided. The data types in the source table are converted to its equivalent teradata types. This would have the same name as the source table name. When you do not select **Use Source Table Definition** option, system creates the target table based on the column names inferred from the NOS foreign table and creates the column names of type varchar.
    - **Temporary Table**: To store any rows that were added into the object store since the last load run. This object will be created as T_<TARGET TABLE NAME>.
    - **View**: This view will be created on top of the temporary table. This view is used to eliminate duplicates and return the current image of a row. This object will be created as T_<TARGET TABLE NAME>.

System automatically creates the temporary table and view.

- Enter the name of the target table when you enable CDC option.

  The system does not shows this option if you have select the Use Source Table Definition.

5 Under **File details** section, enter the following information:

- **Storage location**: Location of the file
- **File type**: Format type of the file
- **Path pattern**: Pattern of the file path

  The path pattern for the NOS foreign table must be '$env/$data_format/$erp/$sysid/$tbl/$activity/$year/$month/$day/$time'.

For CDC, S3 folder structure must be in the mentioned format:

S3://<bucket_name>//<erp_name>/<database_instance_name>/<table_name>/<activity>/<year>/<month>/<day>/<time>

where <activity> is the refresh (‘refr’) or CDC

For example:

S3 folder structure for refresh data,

s3://mdm-data-landing-zone/ecc/E01/vbup/refr/2022/08/15/183823.csv.gz

S3 folder structure for CDC data:

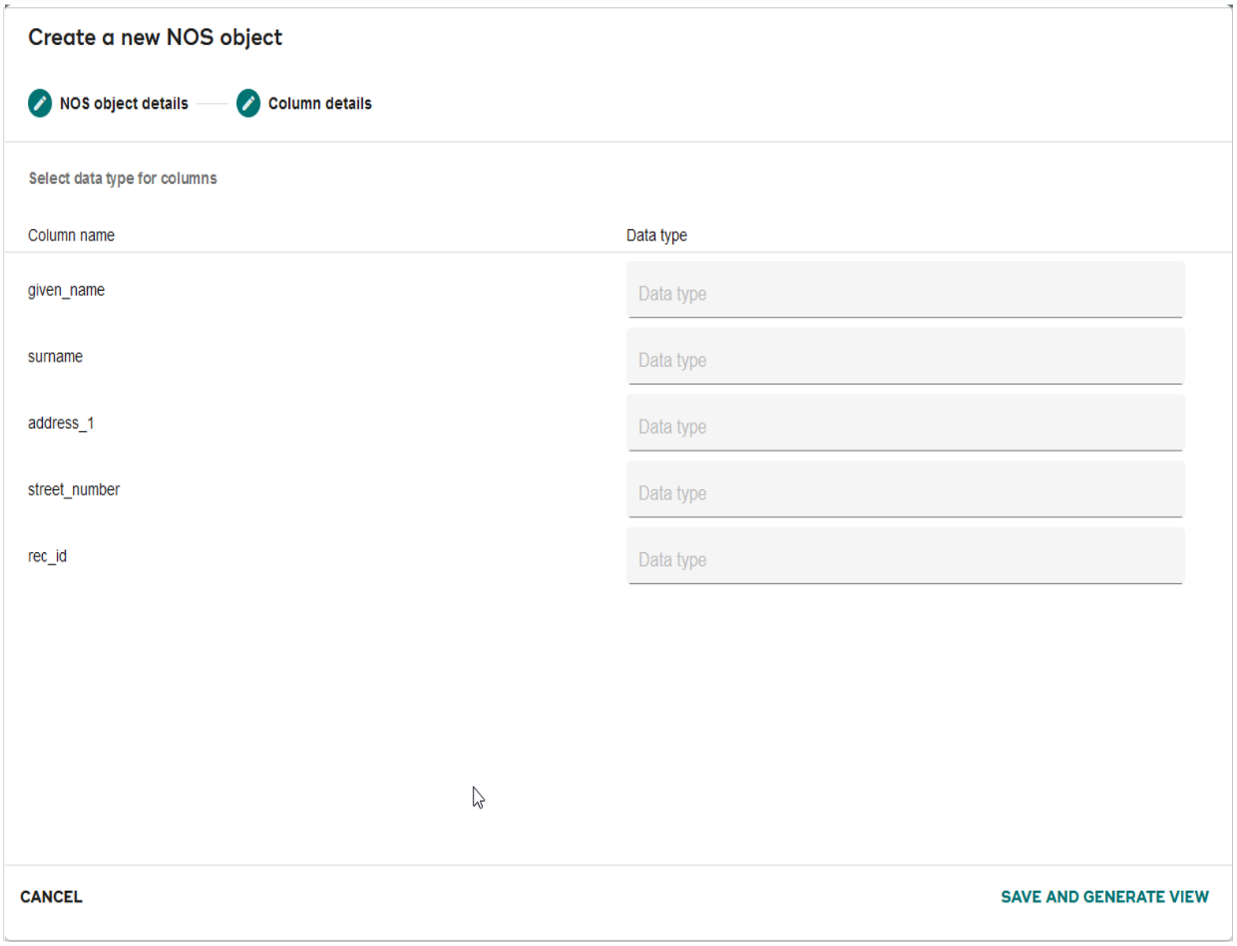
s3://mdm-data-landing-zone/ecc/E01/vbup/cdc/2022/09/14/020412.csv.gz

NOS API uses the path pattern for CDC. If the files are not mentioned in the specified format, the NOS CDC API will not work.

6 Click **CONTINUE** to navigate to the **Column details** tab.

7 Enter **Data type** for the available columns.

Figure 931: New NOS Object: Column Details



Create a new NOS object

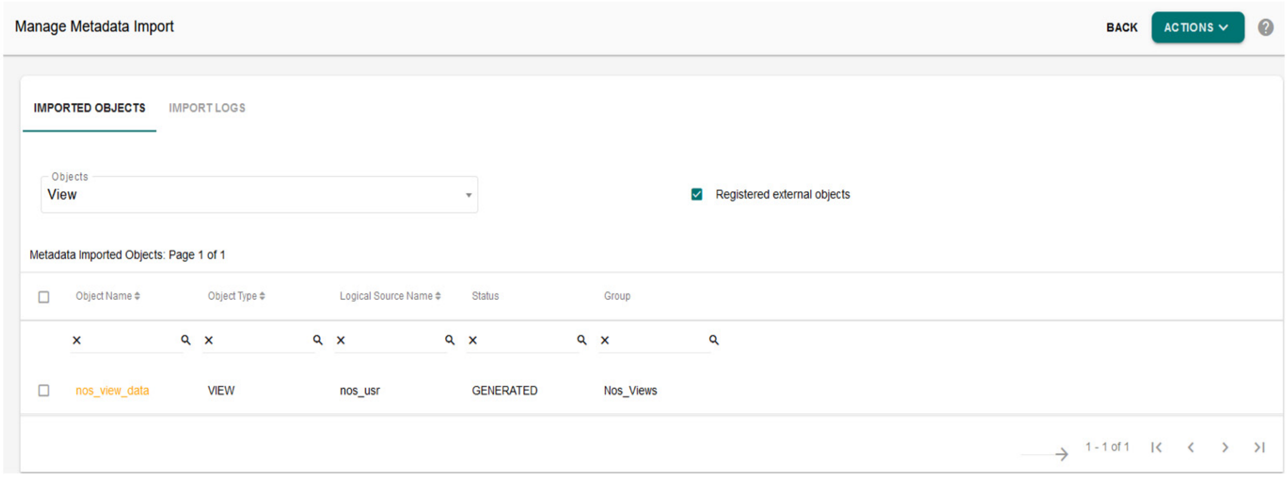
Select data type for columns

Column name	Data type
given_name	Data type
surname	Data type
address_1	Data type
street_number	Data type
rec_id	Data type

8 Click **SAVE AND GENERATE VIEW**.

The Imported views displays in **Manage Metadata Import** in Model Builder.

Figure 932: Manage Metadata Import: NOS Object



Objects: View

☑ Registered external objects

Metadata Imported Objects: Page 1 of 1

☐	Object Name	Object Type	Logical Source Name	Status	Group
☐	nos_view_data	VIEW	nos_usr	GENERATED	Nos_Views

1 - 1 of 1

If **Use Source Table Definition** is not enabled, the primary keys for the table/view must be selected in column details page befor clicking **Save and Generate Object** for successful loading of data from S3 to Target table.

Edit a NOS Object

Follow below steps to modify an NOS object:

1. On **NOS object list** page, click the menu icon corresponding to the object you want to remove and click **Edit**.
2. Modify the information under **NOS object details** and **Column details**.
3. Click **SAVE AND GENERATE OBJECT**.

Delete a NOS Object

Follow below steps to remove any NOS object:

1. On **NOS object list** page, click the menu icon corresponding to the object you want to remove and click **Delete**.

   A confirmation message appears to delete the authorization object.
2. Click **DELETE**.

Load Data From S3 to Target Table

For NOS, you can load the data incrementally from S3 to Target table using the Workflow Manager API:

You can load the data from S3 to Target table using the xrule node with the various parameters. Follow below steps:

1. Create a Workflow and use XRuleNode which has to be configured to use following details:
   - Service – PLATFORM
   - Request Name – loadNOSToRPL
   - Request Parameters: SECONDARY_CONNECTION_NAME=<SEC_CONN>#TABLE_NAME=<TAB_NAME>

   - SECONDARY_CONNECTION_NAME should be the one created previously for the Replication DB.
   - TABLE_NAME should be the Table for which data has to be processed.
   - Use “#” to separate both the parameters.

   To mention multiple tables, use a comma to separate the table names.

2. To load the data in target table, do the following:
   - Navigate to Execute workflows page and execute the workflow.
   - The status of the workflow execution can be observed from monitor workflows page or in workflow history.
   - When the workflow completes, data loads to the target table

CHAPTER 25 Metadata Search

What’s In This Chapter

This chapter provides information on the Metadata search functionality.

Topics:

Introduction

Metadata Search functionality in MDM provides business users the capability to search globally across data and metadata of MDM environment. Using Metadata Search, you can explore the data and related metadata without much technical knowledge about the implementation or features of MDM.

In Metadata Search, a global search option is provided where you can search for the text that you are looking to explore and view the matching results in tabular format. The results also displays the features or tables where the text was matched. To explore more details, you can navigate to the next level pages from the initial result page where the match result was found.

The search should be performed in an efficient manner for an enhanced user experience.

Key features of Metadata Search:

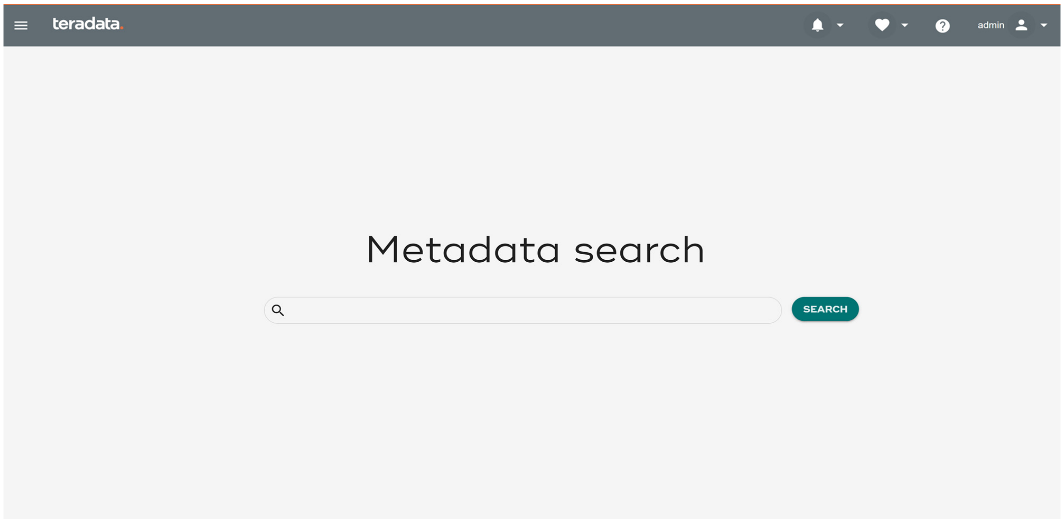
- Metadata Search provides global search option to explore the data with less technical knowledge about the features of MDM.
- Add/remove modules like Model Builder, Approvals, Business Rules etc for search.
- Provide the capability to clear or turn-off the list of modules as per the search relevance.
- capability of wild card search to support partial string match including end with, begin with, exact etc.
- Real time search functionality.
- Results show matched metadata contents along with the type.
- Ability to Tag/classify the searched metadata records.

Metadata Search

To search the records using metadata search option, follow the below steps:

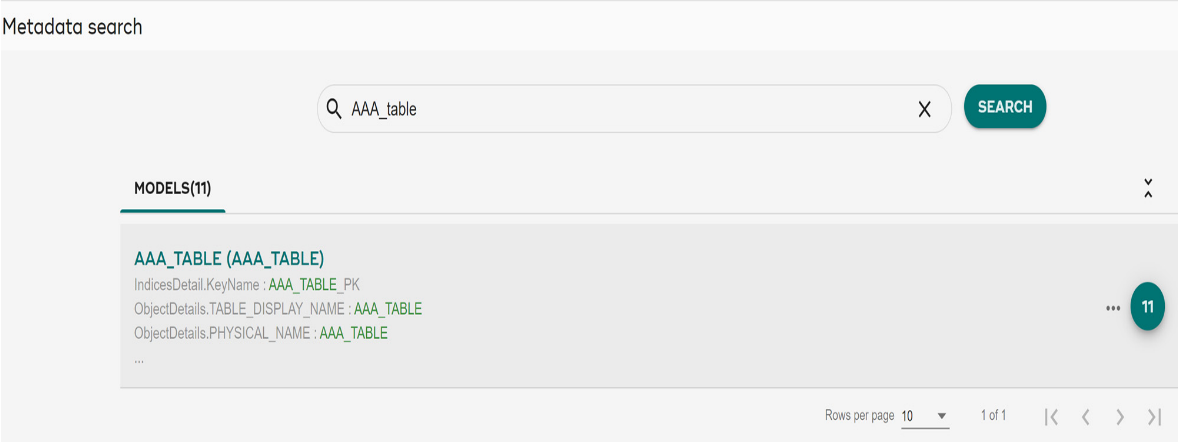
1. From left navigation pane on MDM, navigate to **Model setup** -> **Metadata search**.

   The **Metadata search** page opens.



2. Type the keyword for which you want to search.
3. Click **Search**.

   All the tables hyperlink related to the entered keyword displays along with count.



AAA_table

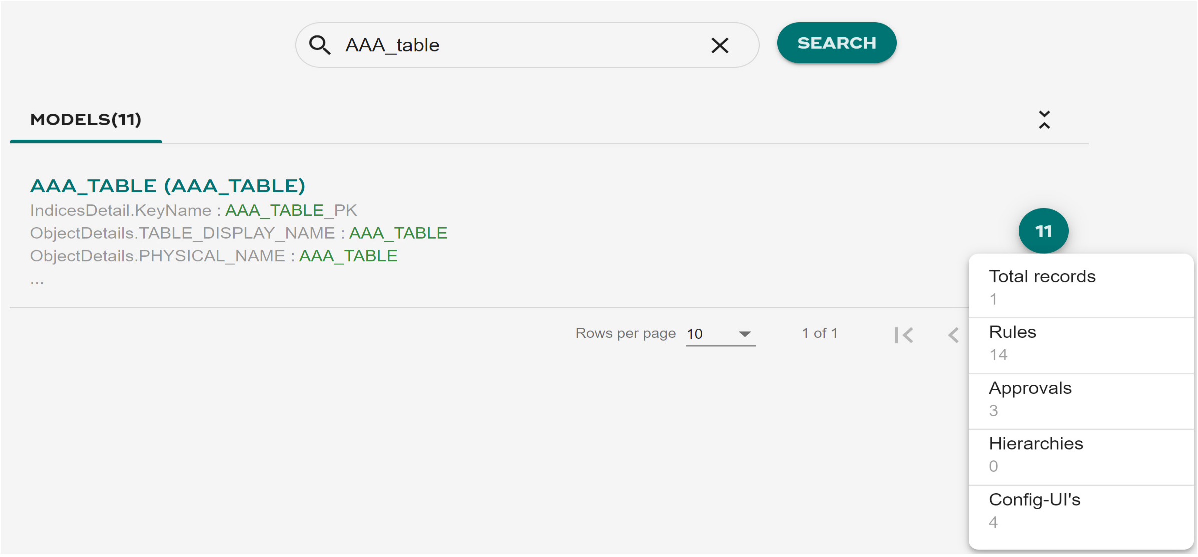
AAA_TABLE (AAA_TABLE)
IndicesDetail.KeyName : AAA_TABLE_PK
ObjectDetails.TABLE_DISPLAY_NAME : AAA_TABLE
ObjectDetails.PHYSICAL_NAME : AAA_TABLE
...

Rows per page 10

Use ˅˄ icon to hide or show the detailed information of the search results.

4. Click more details ••• icon corresponding to the selected model.

   The pop up shows the count of the selected model used in the particular module.



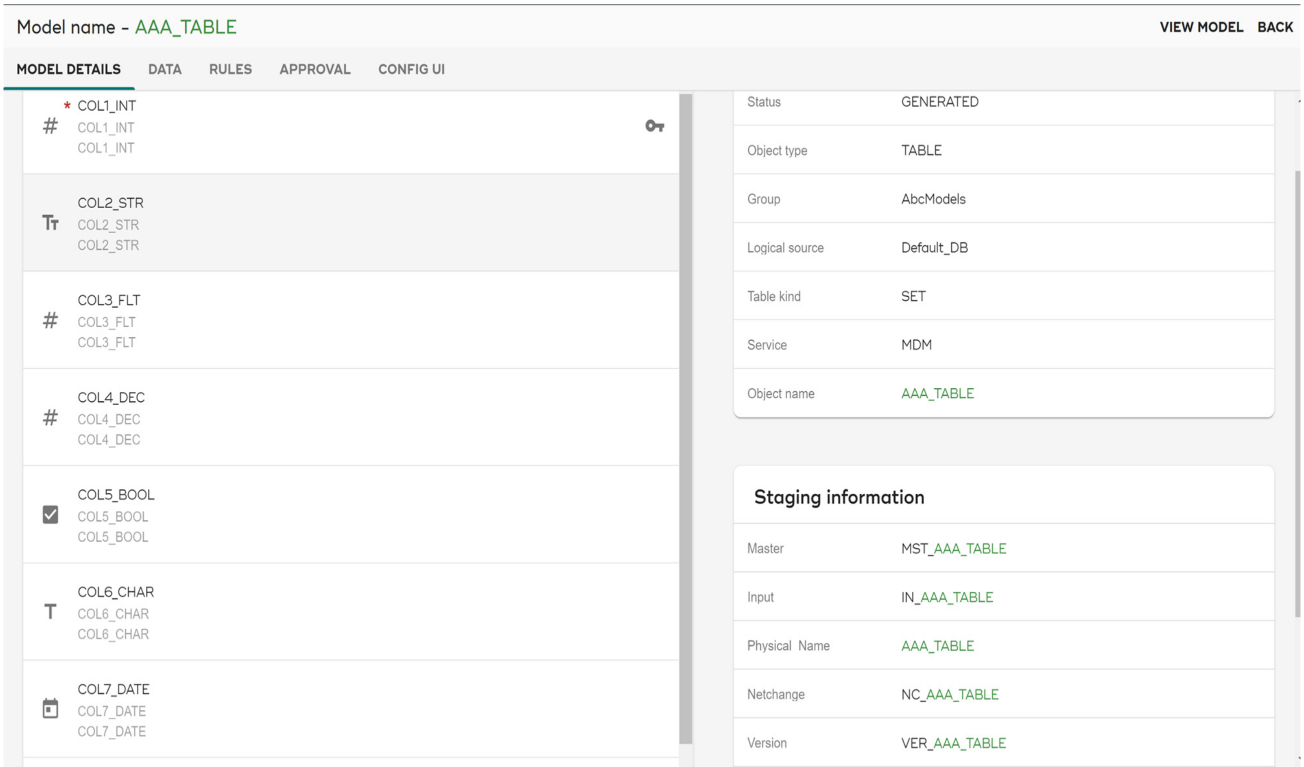
AAA_TABLE (AAA_TABLE)
IndicesDetail.KeyName : AAA_TABLE_PK
ObjectDetails.TABLE_DISPLAY_NAME : AAA_TABLE
ObjectDetails.PHYSICAL_NAME : AAA_TABLE
...

Rows per page 10 1 of 1

Total records	1
Rules	14
Approvals	3
Hierarchies	0
Config-UI's	4

5 Click the model name hyperlink to view the information in more detail.

The search result displays Model and Data details along with other modules tab.



* COL1_INT
COL1_INT
COL1_INT

COL2_STR
COL2_STR
COL2_STR

COL3_FLT
COL3_FLT
COL3_FLT

COL4_DEC
COL4_DEC
COL4_DEC

COL5_BOOL
COL5_BOOL
COL5_BOOL

COL6_CHAR
COL6_CHAR
COL6_CHAR

COL7_DATE
COL7_DATE
COL7_DATE

Status	GENERATED
Object type	TABLE
Group	AbcModels
Logical source	Default_DB
Table kind	SET
Service	MDM
Object name	AAA_TABLE

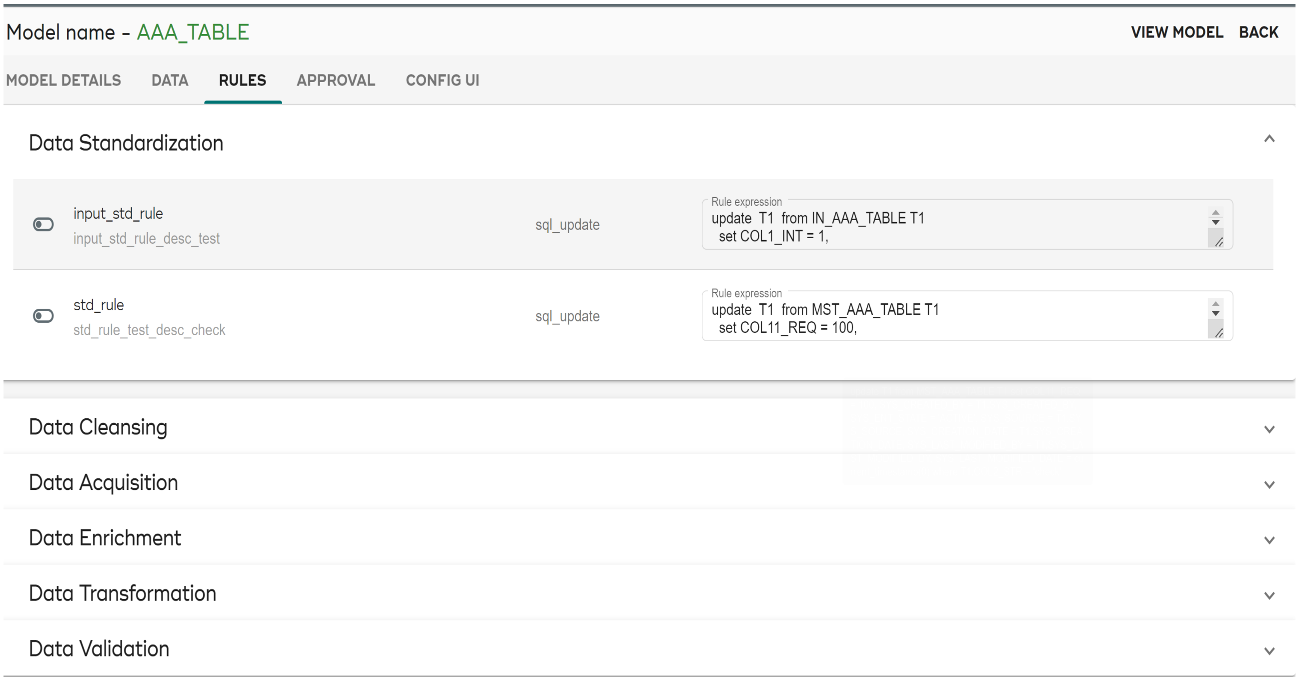
Staging information

Master	MST_AAA_TABLE
Input	IN_AAA_TABLE
Physical Name	AAA_TABLE
Netchange	NC_AAA_TABLE
Version	VER_AAA_TABLE

For example, if your search has been used in the Rules, Approvals, Hierarchies, and Config UIs modules, then the search result shows the following tabs

- **Model Details**: Under **MODEL DETAILS**, you can view multiple details for the selected model. For more information on model details, see Model Details

- **Data**: Under **DATA**, you can view data distribution details for the selected model. For more details on data, see Data Details
- **Rules**: Under rules tab, you can view Data details for Validation, Cleansing, Acquisition, Transformation, Standardization, and Data Enrichment for the model.



Model name - AAA_TABLE

Data Standardization

input_std_rule input_std_rule_desc_test	sql_update	Rule expression update T1 from IN_AAA_TABLE T1 set COL1_INT = 1,
std_rule std_rule_test_desc_check	sql_update	Rule expression update T1 from MST_AAA_TABLE T1 set COL11_REQ = 100,

Hover over the ● icon to view the rule status whether it is active or inactive.

Click the particular rule to view and edit the business rule. For more information on business rule, see Generate Business Rule and Edit Rule.

- **Hierarchy**: Under Hierarchy tab, click the specific model for which you want to view the hierarchy. For more information on Hierarchy, see Hierarchy Viewer.
- **Approval**: Under Approval tab, you can view approval details. Click on the particular model to view and edit approval information.

  Hover over the ● icon to view the rule status whether it is active or inactive.

  Click the particular model or respective icon for adding, updating and removing the approval details.

  For more information on Approval, see Approval Management Process
- **Config UI**: Under Config UI tab, you can view configurable UI details. Click on the particular model to view and update any model details.

  Hover over the ● icon to view the rule status whether it is active or inactive.

The search result always shows the Model details and the Data details for all the searches. The listing of other modules depend on the use of search keyword in those modules.

6 Clicking on the specific module shows you additional detail and the related operations you can perform.

You cannot view below details in Metadata search:

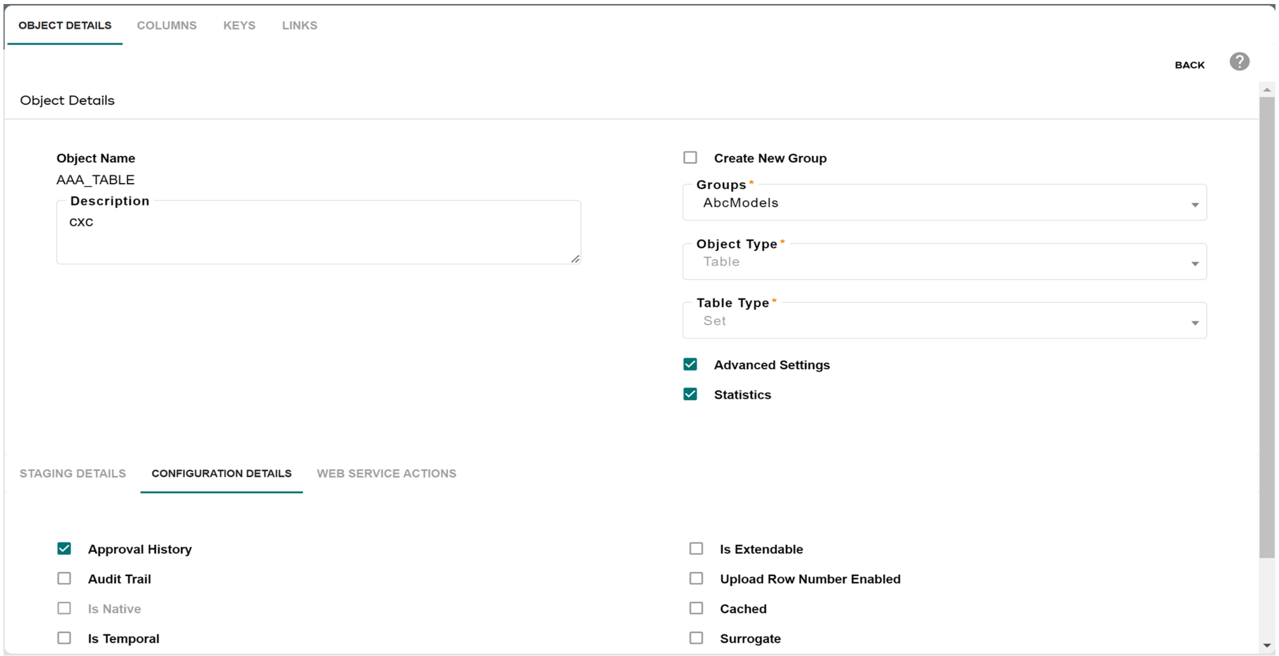
- Configuration details
- Statistics column symbol
- DDP component details
- View object definition
- Non MDM tables
- Log details
- Auto generated view
- Templates
- Model DDL
- Created and modified users and dates
- NOS
- Dictionaries which are not linked to any tables

Model Details

Model details displays the Attributes, Summary, Relations, and Staging information details for the selected model name.

Hovering on each row shows additional information. Other information you can view on the Model details:

- To view the key details, click key 🔑 icon.
- To view the data type information, click ▤ icon.
- To view the dictionary type and Code set details, click ☰ icon.
- To view the compress statement details, click ⇕ icon.
- To view the constraint statement details, click <··> icon.
- To view and modify the model details, click **VIEW MODEL**.



Object Details

Object Name
AAA_TABLE

Description
cxc

☐ Create New Group

Groups*
AbcModels

Object Type*
Table

Table Type*
Set

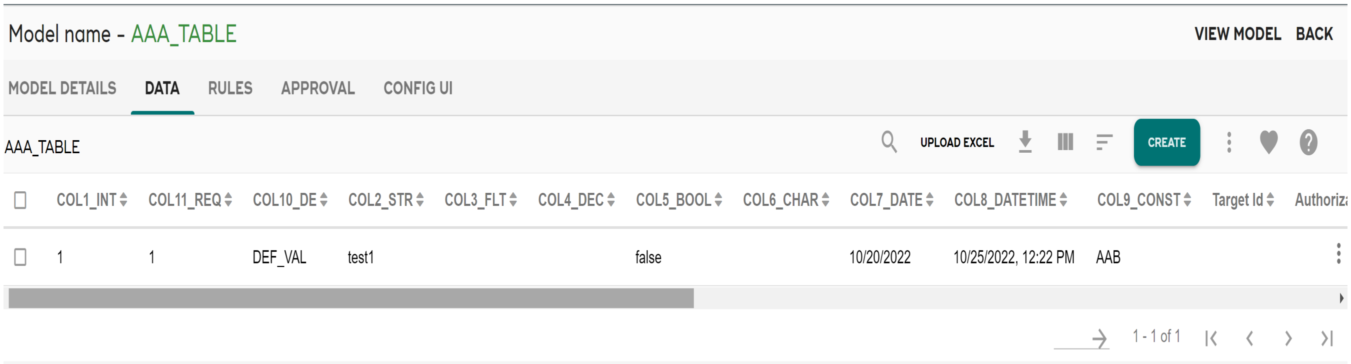
☑ Advanced Settings
☑ Statistics

☑ Approval History
☐ Audit Trail
☐ Is Native
☐ Is Temporal
☐ Is Extendable
☐ Upload Row Number Enabled
☐ Cached
☐ Surrogate

For more information on modify model details, see Create or Upload Model

Data Details

Under data tab, you can view data distribution details for selected model.



Model name - AAA_TABLE

AAA_TABLE

☐	COL1_INT	COL11_REQ	COL10_DE	COL2_STR	COL3_FLT	COL4_DEC	COL5_BOOL	COL6_CHAR	COL7_DATE	COL8_DATETIME	COL9_CONST	Target Id	Authoriz
☐	1	1	DEF_VAL	test1			false		10/20/2022	10/25/2022, 12:22 PM	AAB		

You can perform the following tasks under Data tab:

- View help file by clicking the Help ? icon.
- **Multi Column Sort**: perform multi column sorting, that is sort the records in each column either in ascending or descending order. Select the order in each column and click the Enable/Disable Multi Column Sort icon ≡ and click Multi Sort ⇅ icon and then

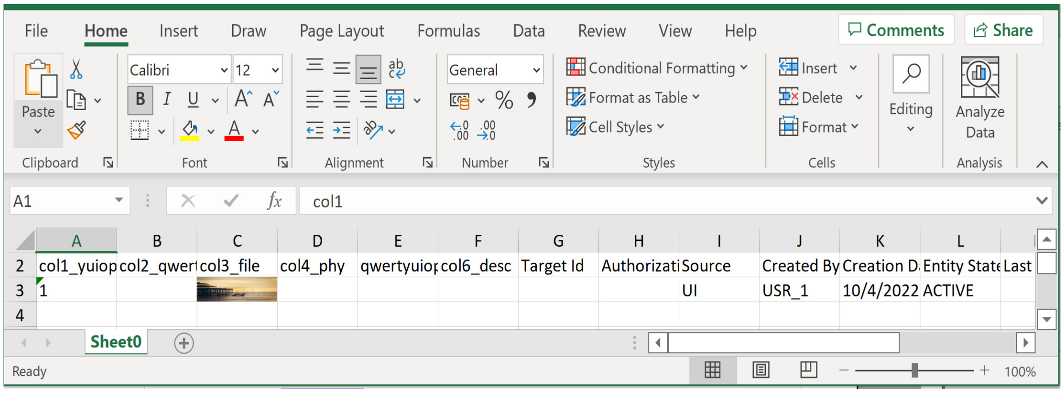
select the option **Sort**. You can also clear the sorting order by clicking on the Multi Sort icon and select the option **Clear sort.**

- **Configure Advanced Filter**

  Click the ⋮ icon and select the Advanced Filter option, which allows to define more granular and complex searches to filter the records to be displayed on the newly configured UIs. This acts as a conditional display of data configured during design time. For details on advanced filter, see Section : "Advanced Filters." in Chapter 6: "MDM UI Customization."

- **Download Template**: using the Download Template icon, you can download the corresponding document template in excel or xml format.

- **Export Records/Image to Excel**: Using the Export button, you can export the record details as well as full image to an excel file. The exported excel file will be saved with table name and local server current timestamp (<docname>_<local server timestamp>). For example: AttributeSet_1_10_2019 12_10AM.



	A	B	C	D	E	F	G	H	I	J	K	L
2	col1_yuiop	col2_qwert	col3_file	col4_phy	qwertyuiop	col6_desc	Target Id	Authorizati	Source	Created By	Creation D	Entity State Last
3	1								UI	USR_1	10/4/2022	ACTIVE
4												

While exporting the records with image, the image exports in the excel file instead image ID.

- **Show History**: the "SHOW HISTORY" button is available only on the Temporal tables. The Show History displays the history details of the selected record. The record history details are displayed in the descending order of TemporalValidTime, that is in the most recent updated order. You can click on the Hide History button to close the history details.

- **Customize Table** ▥ : for details on customize table, see in Chapter 6: "MDM UI Customization."

- **Create Favorite**: Favorites can be created at user level or role level on configurable UI using the create favorite icon ♥ . For details, see Section : "User Favorites." in Chapter 6: "MDM UI Customization."

CHAPTER 26 Manage Authorization

What’s In This Chapter

User authorization has been implemented at various levels in MDM. This includes read/write authorization in workflows (workflow security), data authorization, and authorization on new entities being created in MDM.

Topics include:

- Data Authorization
- Workflow Authorization

Data Authorization

MDM framework creates a master copy of all of the data and then subsequently manages the access to this data using the data authorization feature. It incorporates the capability of having Row Level Security (RLS) and Column Level Security (CLS) on tables and provide select, edit or delete access at row and column level. This integration ensures that each user will have access to only data and data attributes to which they are authorized. This feature offers a significant advantage as data under the control of the MDM Framework is now secured and users who do not have edit access to a set of records will be restricted from editing the records through standard out of the box data entry points of MDM like excel upload, configurable UI, E2E etc. Also any validation business rules defined on columns for which user does not have access to will not be executed.

To enable authorization feature to an user, on MDM UI, to Administration >> User Management >> Roles. Select the Role Name and click Role Details and click >> Add Activities >> Select the activity named Manage Authorization and click Save.

Logout from MDM and login again. A link “Data Authorization” gets displayed on the left navigation pane under Administration.

Enable Row Level Security (RLS)

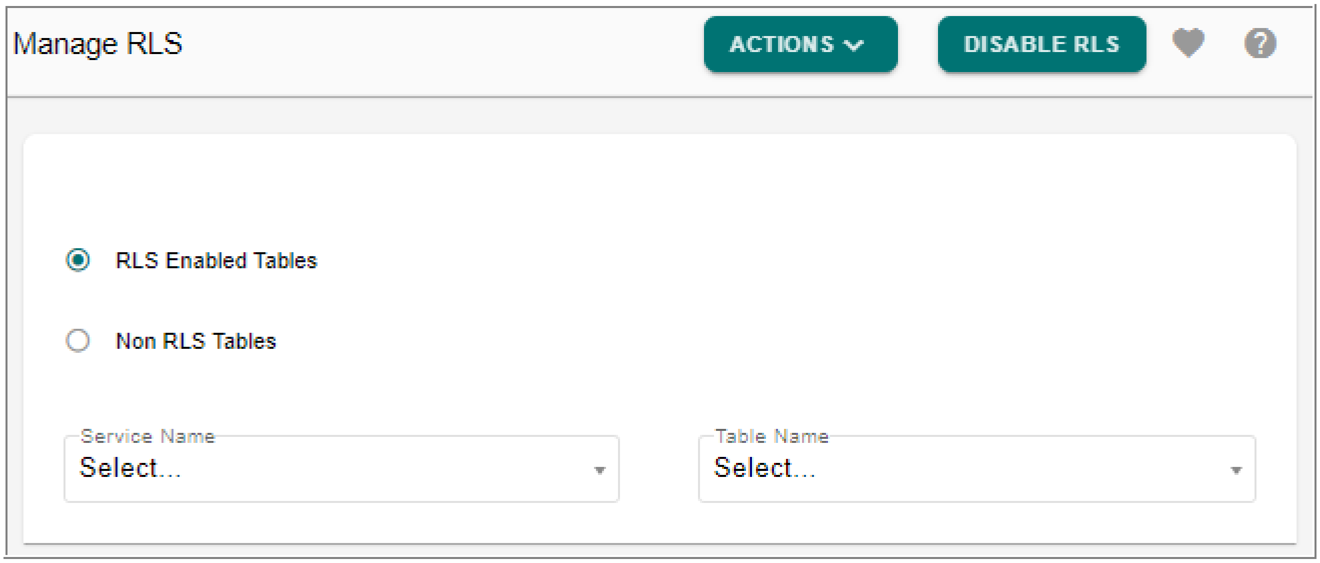
To enable row level security:

1 On the left navigation pane, click **Administration** -> **Data Authorization**.

2 On the **Manage CLS** UI, select **Manage RLS** from the **Actions** dropdown.

The **Manage RLS** UI (Figure 933) is displayed.

Figure 933: Manage RLS



● RLS Enabled Tables

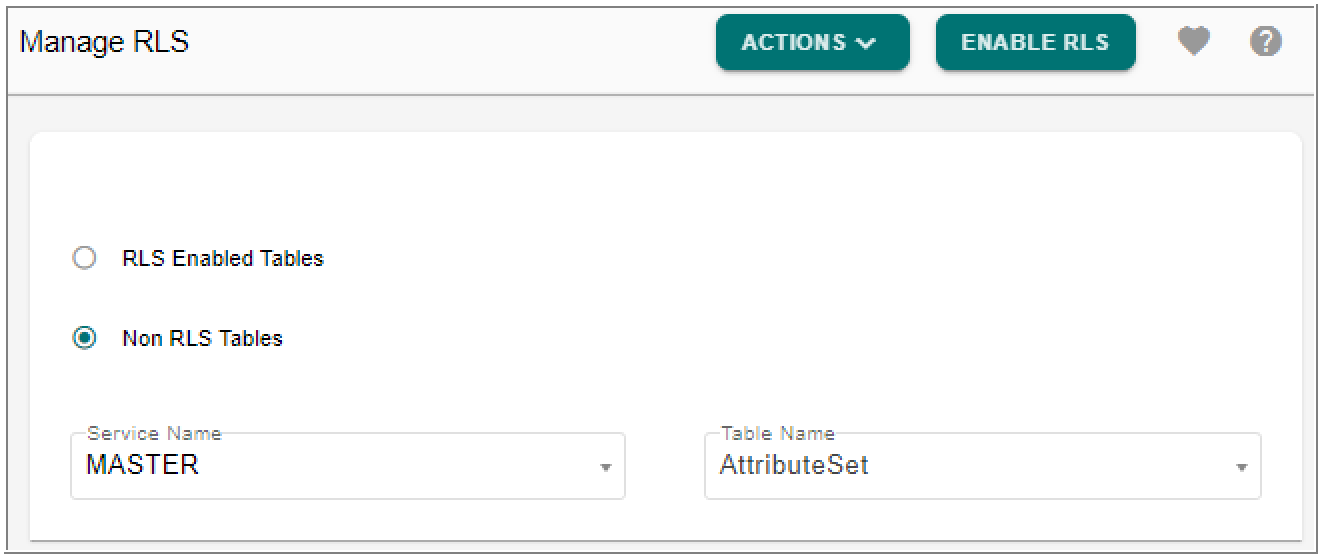
○ Non RLS Tables

Service Name: Select...

Table Name: Select...

3 On the **Manage RLS** UI (Figure 933), select the option **Non RLS Tables** and select the service from **Service Name** drop-down and table from the **Table Name** drop-down and click **Enable RLS** as in Figure 934.

Figure 934: Enable RLS



○ RLS Enabled Tables

● Non RLS Tables

Service Name: MASTER

Table Name: AttributeSet

Message: “RLS enabled for selected table” is displayed.

To enable RLS on DocView (Example: Party Sub-type) following points needs to be taken care of:

- The DocView should have a SYS_AUTH_ID column which should be mapped to any of the underlying master table of the doc view.
- While assigning roles for RLS, assign the roles to the master table whose SYS_AUTH_ID is used in the DocView.

CLS will work in the usual way.

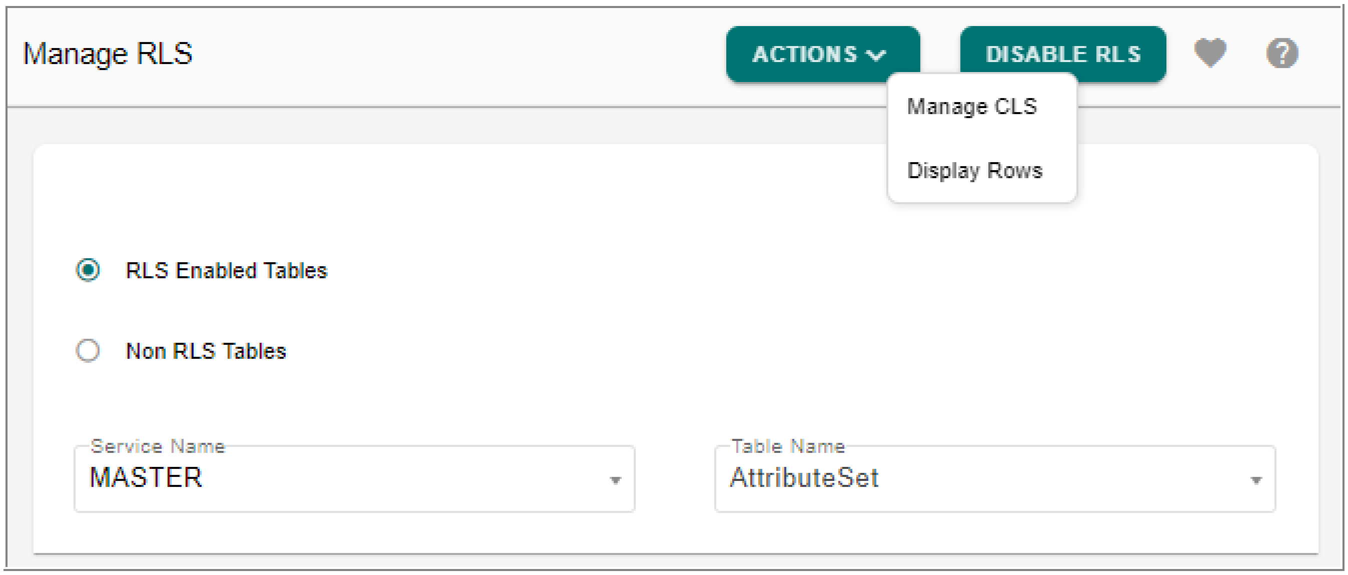
RLS Enabled Tables

To view RLS enabled tables:

1 On the **Manage RLS** UI (Figure 933), select the option **RLS Enabled Tables** and select the service from **Service Name** drop-down.

The **Table Name** dropdown displays the list of tables for which RLS is enabled as in Figure 935.

Figure 935: View RLS Enabled Tables



● RLS Enabled Tables

○ Non RLS Tables

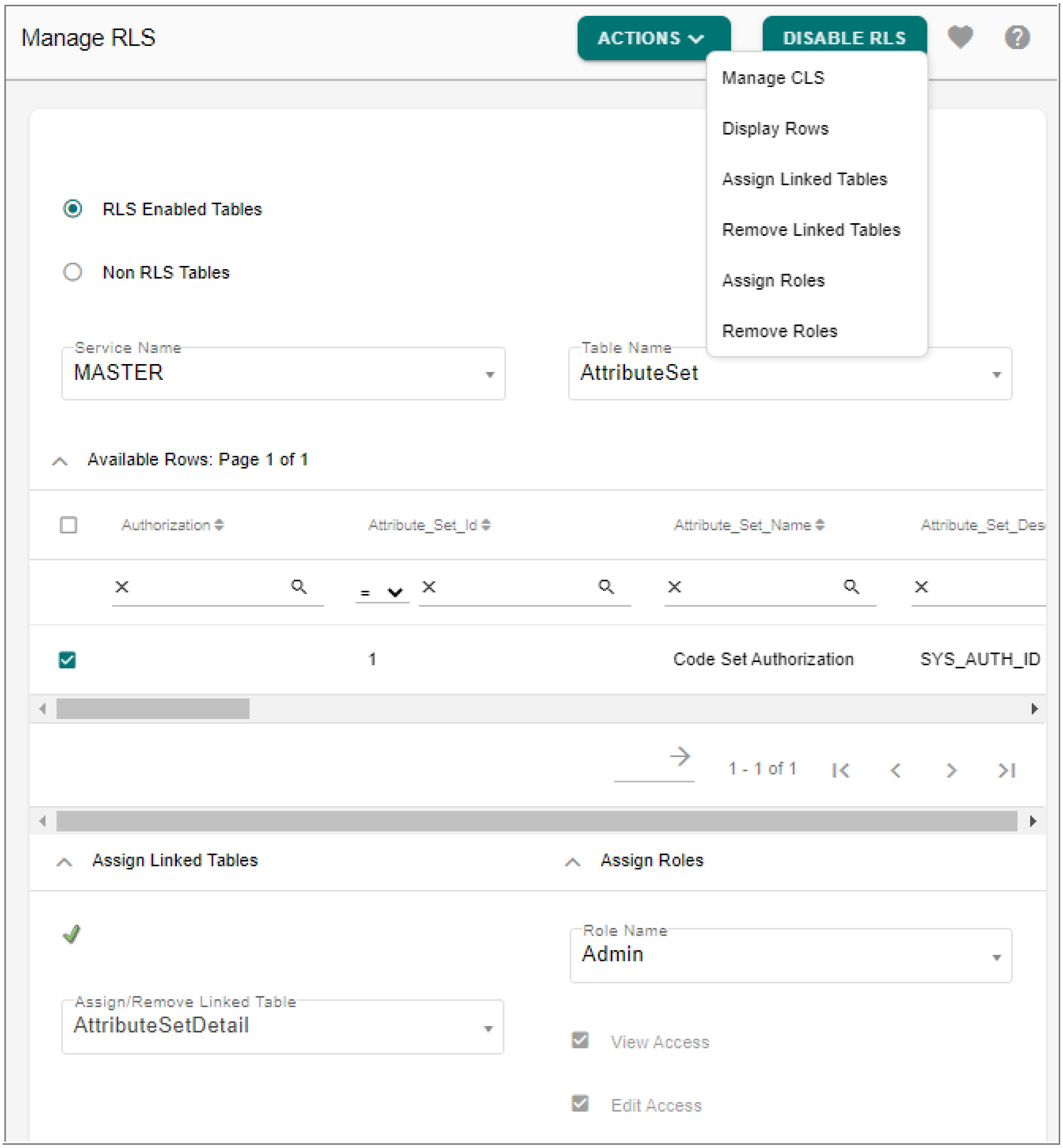
Service Name: MASTER

Table Name: AttributeSet

2 On the **Manage RLS** UI (Figure 935), select the required table and select **Display Rows** from **Actions** dropddown.

The **Manage RLS** UI refreshes to display all the available rows of the selected table as in Figure 936.

Figure 936: RLS Enabled Tables—Available Rows



● RLS Enabled Tables

○ Non RLS Tables

Service Name: MASTER

Table Name: AttributeSet

☐	Authorization	Attribute_Set_Id	Attribute_Set_Name	Attribute_Set_Des
☑		1	Code Set Authorization	SYS_AUTH_ID

Assign/Remove Linked Table: AttributeSetDetail

Role Name: Admin

☑ View Access

☑ Edit Access

On the **Manage RLS** UI (Figure 936), you can assign roles and remove roles for the selected rows using the **Assign Roles** and **Remove Roles** options from the **Actions** dropdown.

Roles having both View and Edit access will get both view and edit access to the RLS assigned rows. By default all roles will have read access. The edit access of roles can be removed or added from Manage Roles UI. For Details, see Section : “CLS Enabled Tables.”

You can also search for a particular row by specifying the required search parameter in the text box and click Apply Filter icon 🔍. Click Clear Filter icon to clear the filter condition.

To assign roles to rows:

3. On the **Manage RLS** UI, select the required rows by clicking the corresponding checkbox(es) and in the **Assign Roles** pane select the required role and select **Assign Roles** from **Actions** dropdown.

   Message: “Role assigned successfully.” is displayed.

4. Login as a user who has the role you have assigned the selected rows.
5. On the MDM left , click **Tables** and click on the required table.

   You will be able to see only those rows for which you have assigned the roles.

   To remove roles to rows:

6. On the **Manage RLS** UI, select the required rows by clicking the corresponding checkbox(es) and in the **Assign Roles** pane select the required role and select **Remove Roles** from **Actions** dropdown.

   Message: “Assigned role removed successfully.” is displayed.

   To assign linked table to rows:

   In case of piggybacked authorization that is, if you want the child table to have same row level authorization as that of its parent, assign parent tables for the rows.

7. On the **Manage RLS** UI, in the **Assign Linked Tables** pane, select the linked table from the **Assign/Remove Linked Table** dropdown and select **Assign Linked Tables** from **Actions** dropdown.

   Message: “Linked table assigned successfully” is displayed.

   To remove linked table assigned to rows:

8. On the **Manage RLS** UI, in the **Assign Linked Tables** pane, select the linked table from the **Assign/Remove Linked Table** dropdown and select **Remove Linked Tables** from **Actions** dropdown.

   Message: “Linked table removed successfully” is displayed.

Disable Row Level Security

To disable row level security:

1. On the **Manage RLS** UI, select the option **RLS Enabled Tables** and select the service from **Service Name** drop-down and table from the **Table Name** drop-down and click **Disable RLS**.

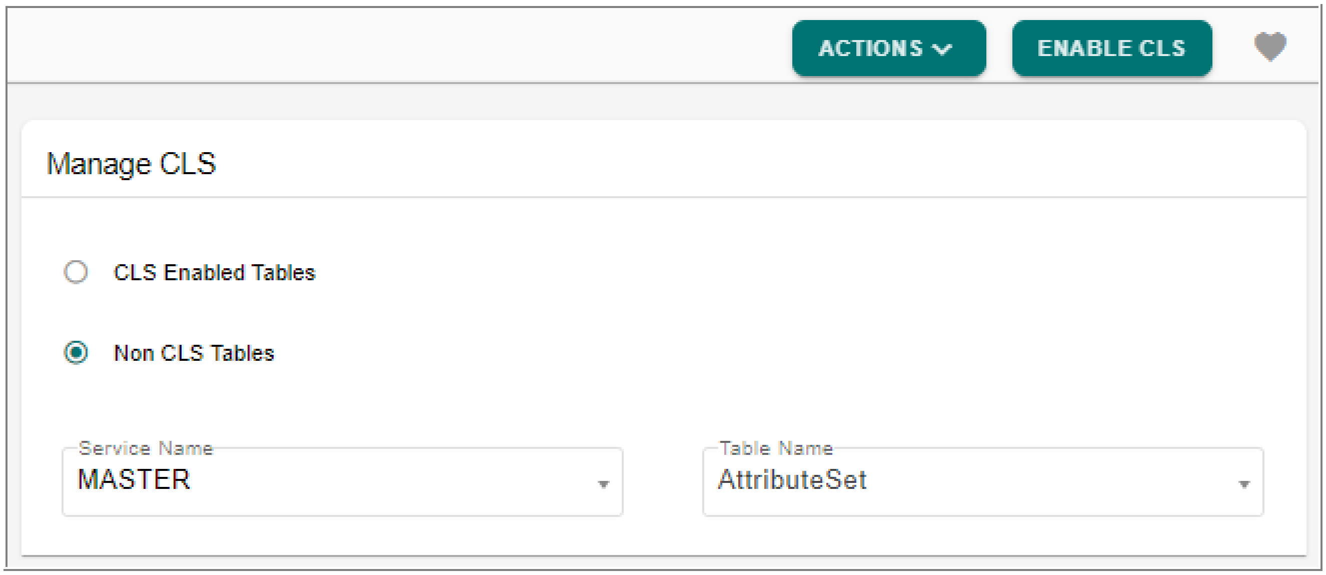
   Message: “RLS disabled for selected table” is displayed.

Enable Column Level Security (CLS)

To enable column level security:

1 On the left navigation pane, click **Administration** -> **Data Authorization.**

Figure 937: Manage CLS



○ CLS Enabled Tables

● Non CLS Tables

Service Name: MASTER

Table Name: AttributeSet

2 On the **Manage CLS** UI (Figure 937), select the option **Non CLS Tables** and select the service from **Service Name** drop-down and table from the **Table Name** drop-down and click **Enable CLS.**

Message: “CLS enabled for selected table” is displayed.

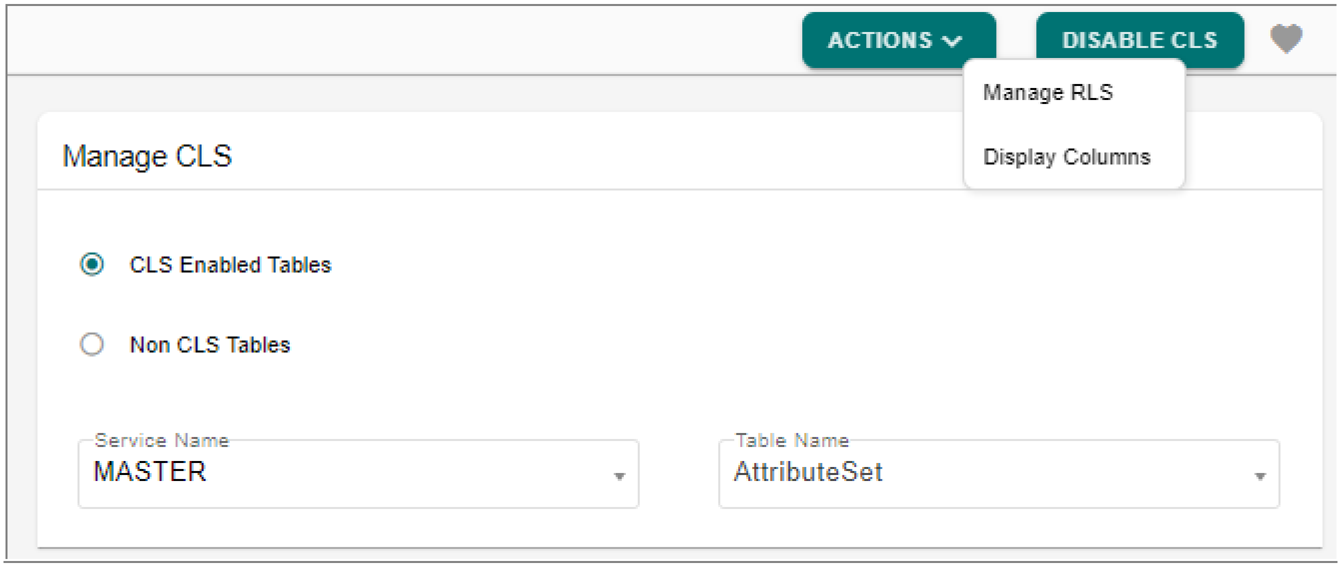
CLS Enabled Tables

To view CLS enabled tables:

1 On the **Manage CLS** UI (Figure 938), select the option **CLS Enabled Tables** and select the service from **Service Name** drop-down.

The **Table Name** dropdown displays the list of tables for which CLS is enabled as in Figure 938.

Figure 938: View RLS Enabled Tables



● CLS Enabled Tables

○ Non CLS Tables

Service Name: MASTER

Table Name: AttributeSet

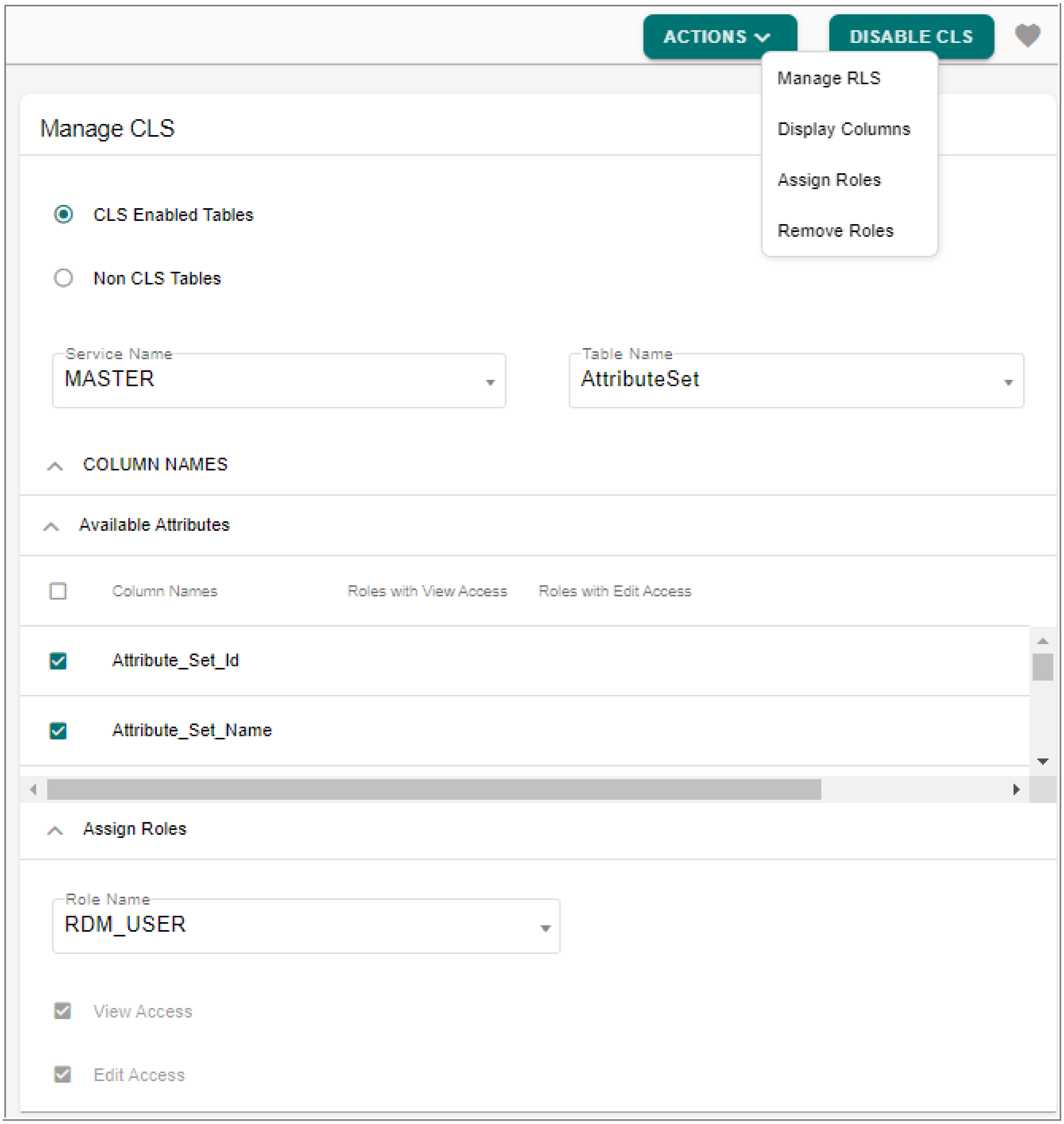
2 On the **Manage CLS** UI (Figure 938), select the required table and select **Display Columns** from **Actions** dropdown.

The Manage CLS UI refreshes to display all the available columns as in Figure 939.

3 In the **Available Attributes** pane, select the columns and in the **Assign Roles** section, you can assign roles to selected columns of the selected table by selecting role from **Role Name** dropdown and select **Assign Roles** from **Actions** dropdown as in Figure 939.

The checkboxes for View Access and Edit access options in Assign Roles pane are read only. By default, all the OOTB roles have read and edit access.

Figure 939: CLS Enabled Tables—Assign Roles



● CLS Enabled Tables

○ Non CLS Tables

Service Name: MASTER

Table Name: AttributeSet

☐ Column Names	Roles with View Access	Roles with Edit Access
☑ Attribute_Set_Id		
☑ Attribute_Set_Name		

Role Name: RDM_USER

☑ View Access

☑ Edit Access

The **Roles with View Access** and **Roles with Edit Access** columns display the assigned roles for the columns on which the view or edit access is assigned.

Message: “Roles assigned successfully” is displayed.

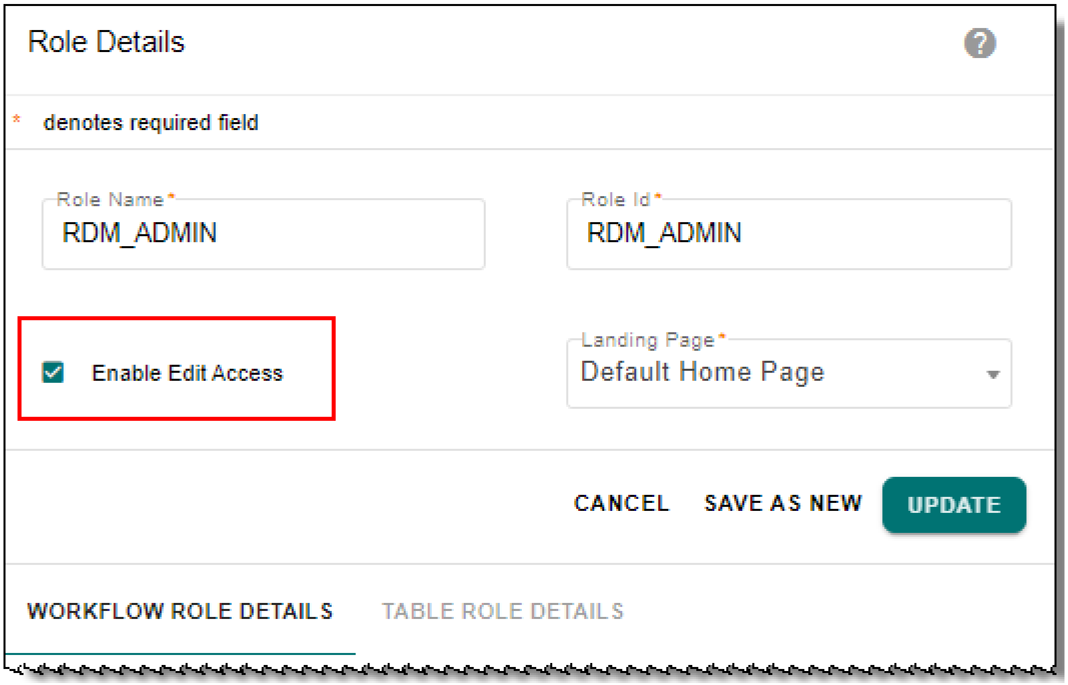
4 Login as a user who has the role you have assigned the selected columns.

5 On the MDM left navigation pane, click **Tables** and click on the required table.

You will be able to see only those columns for which you have assigned the roles.

6 You can remove the edit access of existing role from Role Details UI (Utilities -> User Management -> Roles. On the Manage Roles page, select the required role and click Role Details) and on the Role Details UI, disable the Enable Edit Access checkbox as in Figure 940.

Figure 940: Manage Roles



Role Details

* denotes required field

Role Name*: RDM_ADMIN

Role Id*: RDM_ADMIN

☑ Enable Edit Access

Landing Page*: Default Home Page

7 To remove roles, on the **Manage CLS** UI, select the required rows by clicking the corresponding checkbox(es) and in the **Assign Roles** pane select the required role and select **Remove Roles** from **Actions** dropdown.

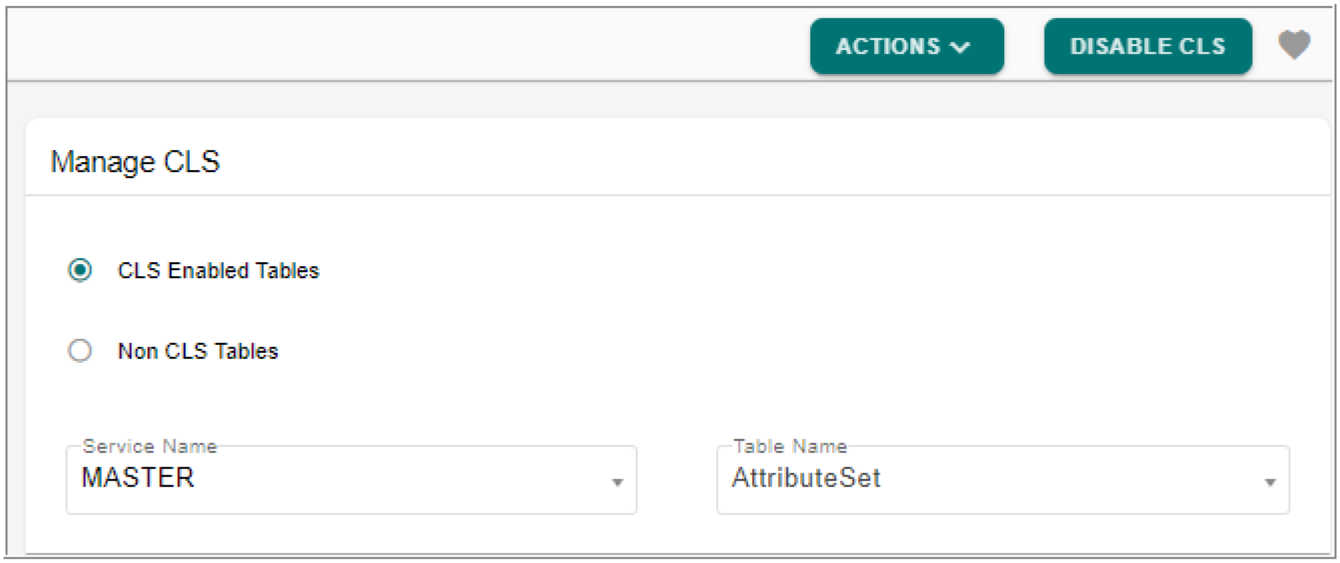
Message: “Assigned role removed successfully” is displayed.

Disable Column Level Security

To disable column level security:

1 On the **Manage CLS** UI (Figure 941), select the option **CLS Enabled Tables** and select the service from **Service Name** drop-down and table from the **Table Name** drop-down and click **Disable CLS**.

Figure 941: Manage CLS



● CLS Enabled Tables

○ Non CLS Tables

Service Name: MASTER

Table Name: AttributeSet

Message: “CLS disabled for selected table” is displayed.

Points to Remember

The following section provides the list of points related to RLS and CLS features:

- For each selected row or column, you can assign multiple roles.
- When a table is RLS enabled, by default user cannot see any rows of the table unless a role which belongs to the particular user, is assigned to the rows of the table. When a table is CLS enabled, by default user cannot see any columns of the table unless a role which belongs to the particular user, is assigned to the columns of the table.
- CLS Authorization cannot be enabled on System Properties table.
- If any of the column is masked by CLS, insert or update value into the column through excel upload, E2E, configurable UI will be prevented. Business validation rules will not be honored if any of the validation rules are defined on a column masked by CLS. The validation rules will be skipped only for those masked columns for which the user triggering the DDP does not have access.

  The best practice is, user should avoid creating validation rules on multiple columns, if the user wants to enable CLS for one of the columns involved in rule.
- Providing restricted access to Code_set/ Code_set_stats table might cause discrepancy in LRDM behavior.
- CLS implementation is not supported on Approval Inbox. An approver who does not have access to certain columns will still be able to see the columns in approval inbox for both new and edited records.
- By default, roles created earlier to 3.4 release have all access (that both View Access and Edit Access are enabled).
- If the Super User role does not have edit access, the Super User cannot assign rows to any one of the available users even if those users have edit access.

- RLS/CLS implementation is not supported on code set tables.

Workflow Authorization

You can specify role-based access levels for different workflows. This enables a workflow allowing different access levels based on the roles assigned to a user. For example, a role can be defined that will only allow view access on a certain workflow. If a user is assigned this role, the user cannot perform create/edit/delete in this workflow. For detailed information about assigning roles to different workflows, see Chapter 9: "User Management".

- If Audit trail enabled on a table where CLS is also configured, user must assign roles to NOT NULL column.
- If CLS is enabled on a table from the MDM Studio, then user must assign PKs and NOT NULL columns to the required roles from Manage Data Authorization -->Manage Column Level Security UI.

CHAPTER 27 Categorize Data

What's In This Chapter

This chapter provides detailed information on MDM's Categorize data feature.

Topics include:

Introduction

The Categorize Data feature provides the capability to group rows of a table and manage common attributes of the group. For example: you can create logical groups for code sets and assign members (individual code sets) to the groups. You can manage authorization for individual groups by assigning values of SYS_AUTH_ID with correct role names. You can as well review the code sets of a particular group at any point of time.

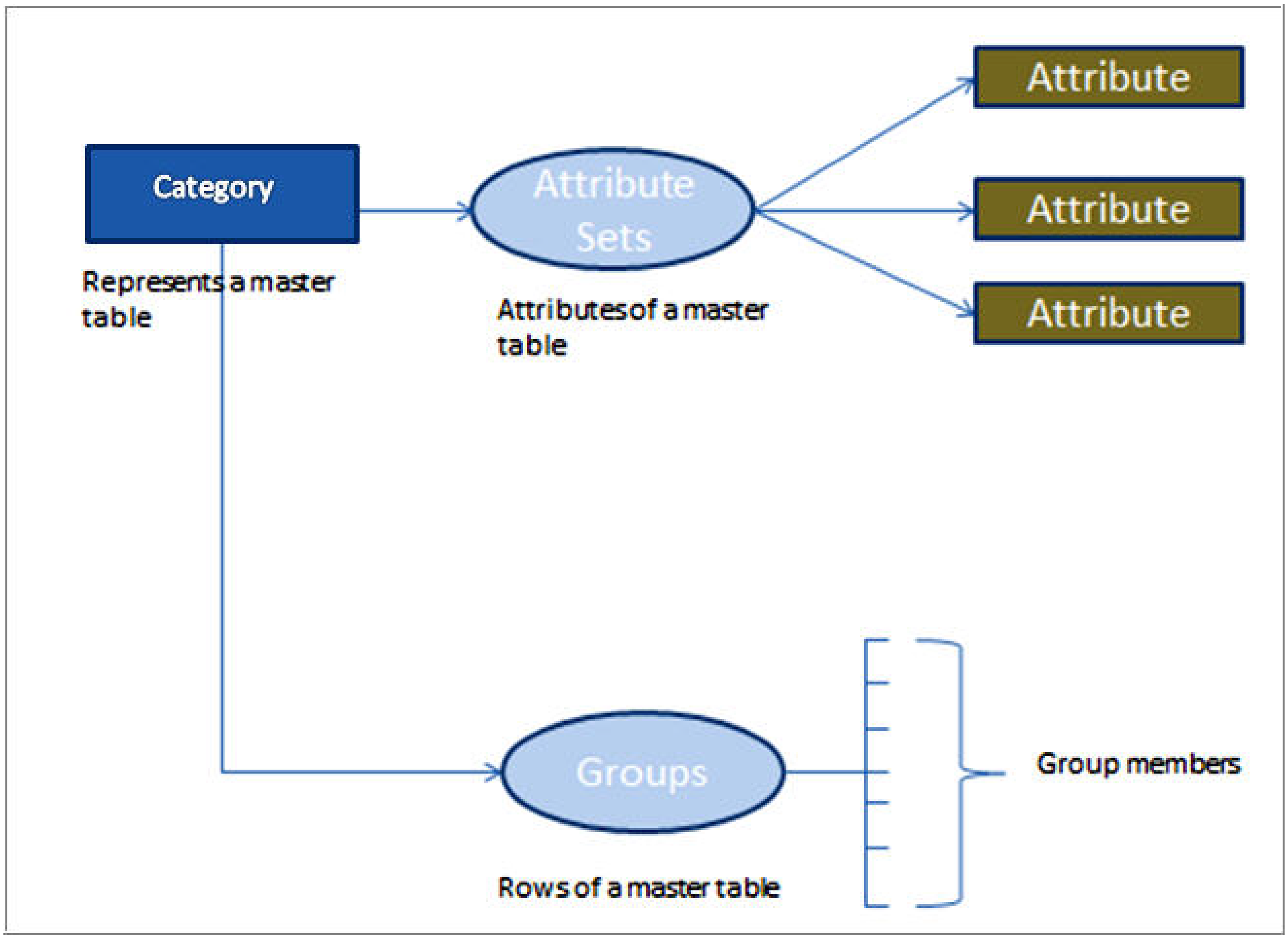
The Categorize Data feature contains three main blocks:

- Category: category is the representation of a master table. More than one Category can be created for a master table.
- Groups: group is a collection of specific rows of a table. Same row can co-exist in multiple groups. Each category can have multiple groups.
- Attribute Sets: attribute set is a collection of attributes of the category (table) it belongs to. An attribute set can have more than one attribute. One attribute can co-exist in multiple attribute sets of same table.

Categorize Data Architecture

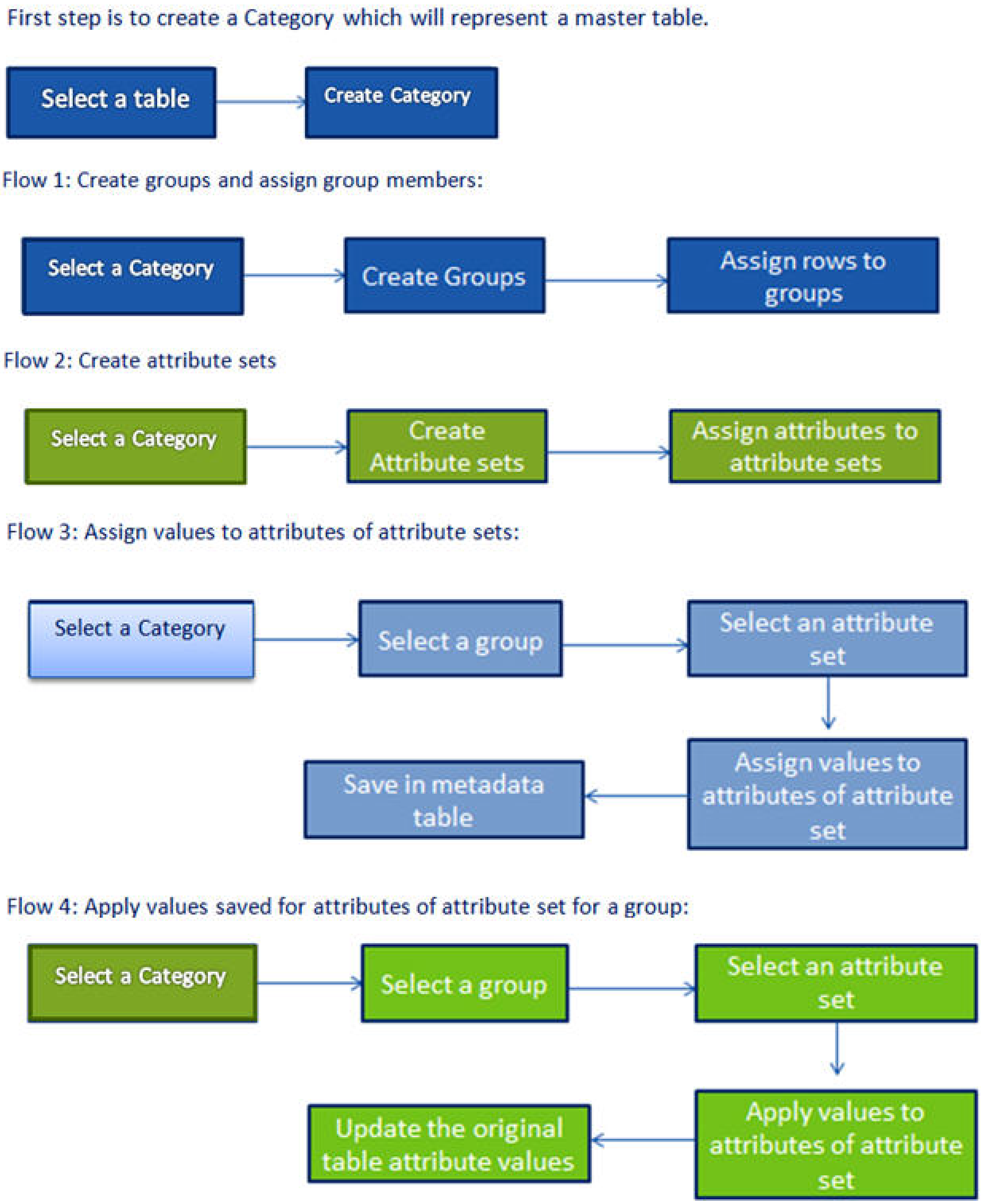
The Figure 942 illustrates the architecture of Categorize Data feature. The Categorize Data's data model stores the information of Category, groups, attribute sets, and attribute set values.

Figure 942: Categorize Data Architecture



The Figure 943 illustrates the different process involved in categorize data.

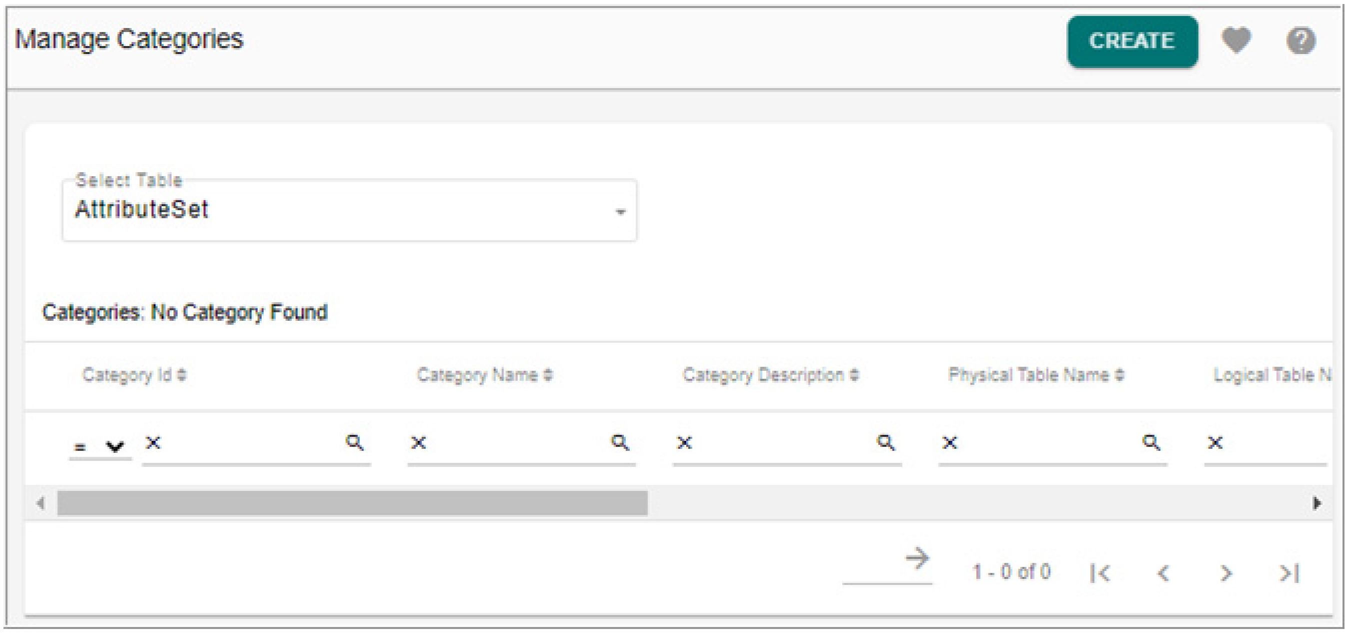
Figure 943: Categorize Data Process Flow


First step is to create a Category which will represent a master table.
Select a table
Create Category
Flow 1: Create groups and assign group members:
Select a Category
Create Groups
Assign rows to groups
Flow 2: Create attribute sets
Select a Category
Create Attribute sets
Assign attributes to attribute sets
Flow 3: Assign values to attributes of attribute sets:
Select a Category
Select a group
Select an attribute set
Assign values to attributes of attribute set
Save in metadata table
Flow 4: Apply values saved for attributes of attribute set for a group:
Select a Category
Select a group
Select an attribute set
Apply values to attributes of attribute set
Update the original table attribute values

Categorize Data UI

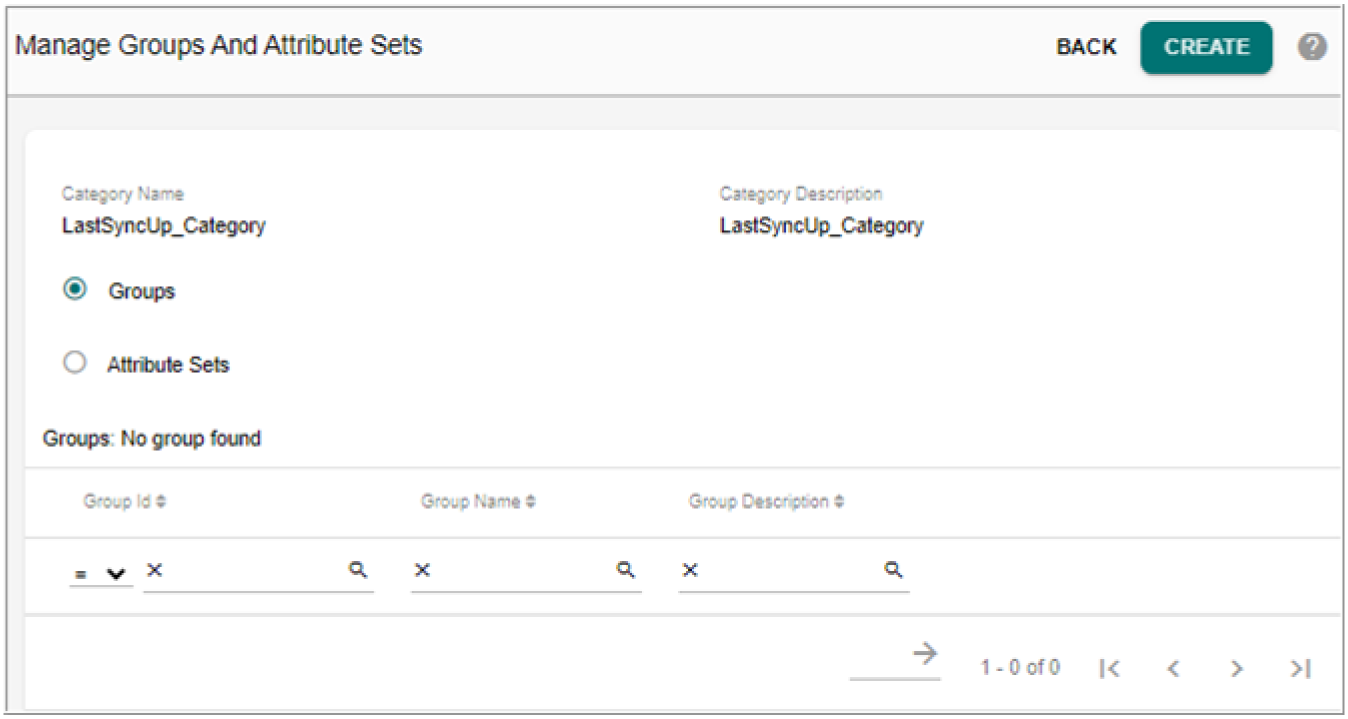
You can navigate to **Categorize Data** UI from **Model Setup** -> **Categorize Data**. The Figure 944 displays the Manage Categories UI.

Figure 944: Manage Categories



On the **Manage Categories** UI, select a table and create a category using the **Create Category** option. Once the category is created, on the **Manage Categories** UI, click on the Menu icon corresponding to the created category and select **Manage Groups** to navigate to Manage Groups UI. The Figure 945 displays the **Manage Groups and Attribute Sets** UI. On the **Manage Groups and Attribute Sets** UI, you can create groups and attribute sets, assign members, assign values and apply values.

Figure 945: Manage Groups and Attribute Sets



Manage Groups And Attribute Sets

Category Name: LastSyncUp_Category

Category Description: LastSyncUp_Category

● Groups

○ Attribute Sets

Groups: No group found

Tasks Performed on Manage Categories

Category is the logical group of one or more similar Groups. More than one category can be created on a MASTER table.

On the Manage Categories UI, you can perform the following:

- Create Category
- Edit Category
- Delete Category
- Manage Groups

Create Category

Perform the following steps to create category:

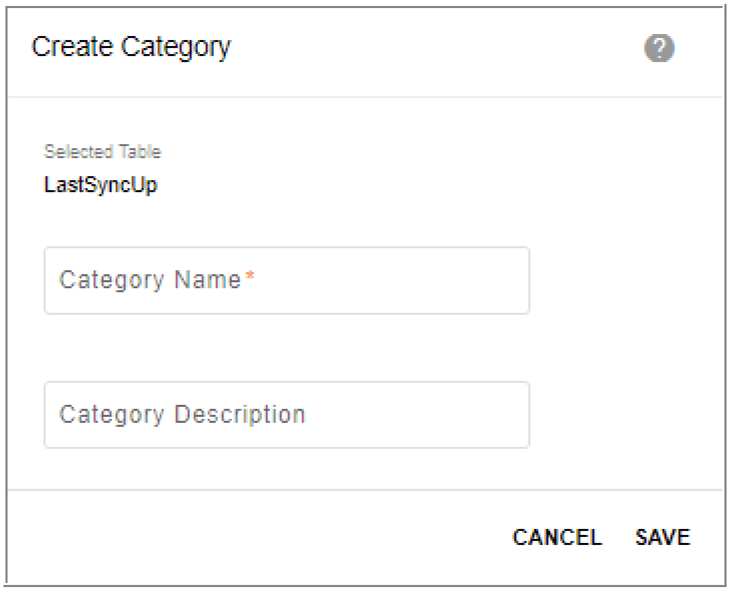
1. On the **Manage Categories** UI, select the table on which you want to create category from **Select Table** dropdown.

   The Categories pane displays all the existing categories of the selected table.

2. On the **Manage Categories** UI, click **Create**.

   The **Create Category** popup (Figure 946) is displayed.

Figure 946: Create Category



Create Category

Selected Table
LastSyncUp

3 On the **Create Category** popup (Figure 946), enter the category name and description in **Category Name** and **Category Description** field and click **Save**.

Message: “Category created successfully” is displayed.

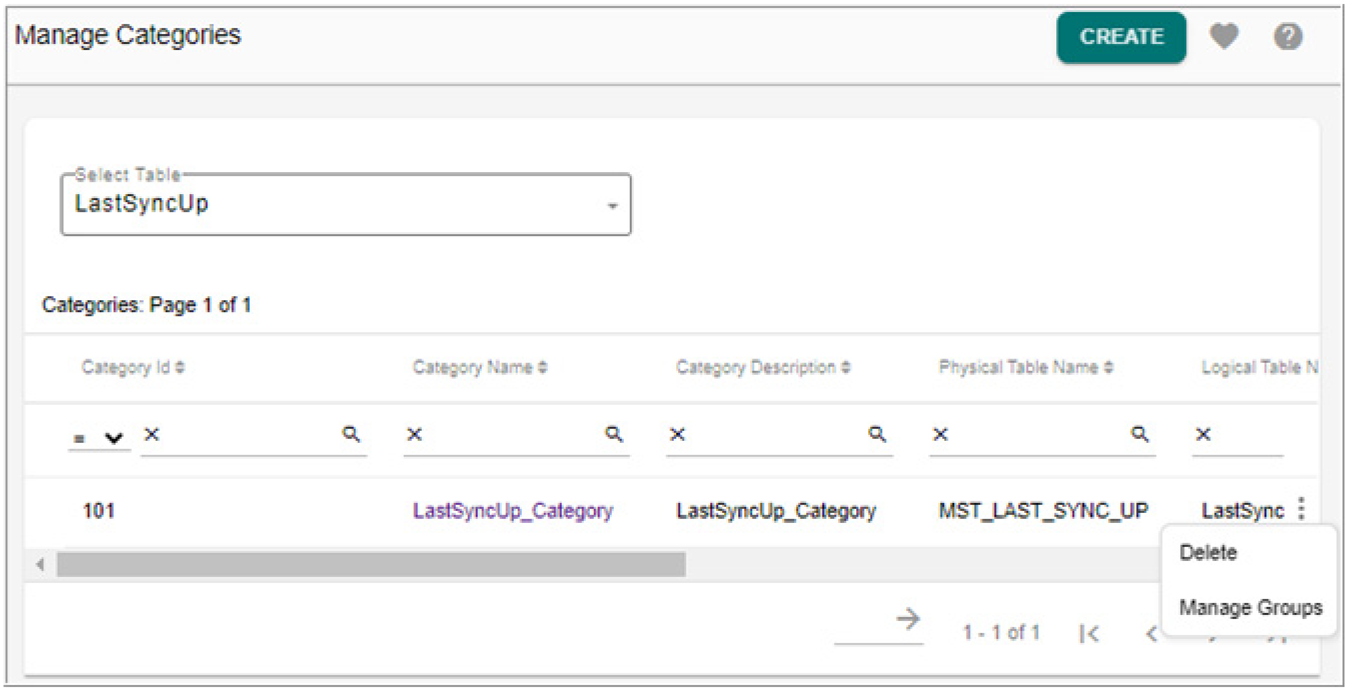
Edit Category

Perform the following steps to edit category:

1 On the **Manage Categories** UI, select the table from **Select Table** drop-down.

The Categories pane displays all the existing categories of the selected table.

Figure 947: Manage Category



Select Table: LastSyncUp

Categories: Page 1 of 1

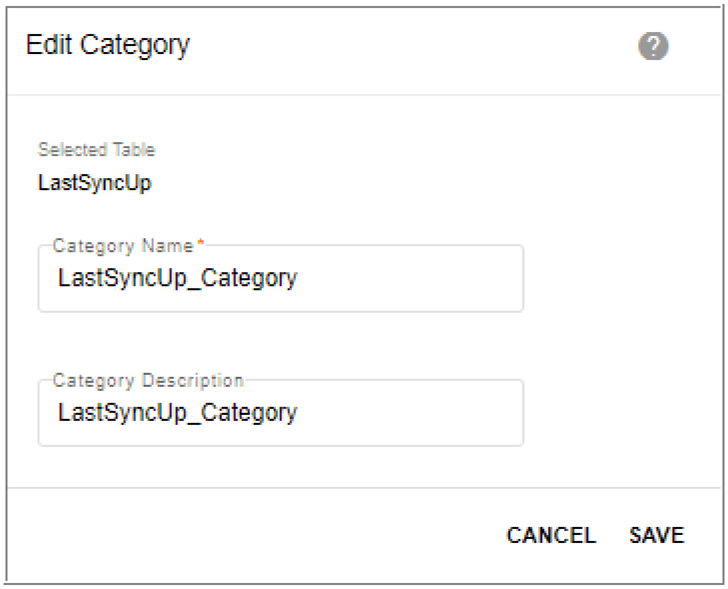
Category Id	Category Name	Category Description	Physical Table Name	Logical Table N
101	LastSyncUp_Category	LastSyncUp_Category	MST_LAST_SYNC_UP	LastSync

1 - 1 of 1

2 On the **Manage Categories** UI (Figure 947), click on the category name.

The **Edit Category** popup (Figure 948) is displayed.

Figure 948: Edit Category



Selected Table: LastSyncUp

Category Name*: LastSyncUp_Category

Category Description: LastSyncUp_Category

3 On the **Edit Category** popup (Figure 948), you can modify the category name and description and click **Save**.

Message: “Category edited successfully” is displayed.

Delete Category

Perform the following steps to delete category:

1. On the **Manage Categories** UI, select the table from **Select Table** dropdown.

   The Categories pane displays all the existing categories of the selected table.

2. On the **Manage Categories** UI, click on the Menu icon corresponding to the required category and click **Delete**.

   The **Confirmation Webpage** dialog is displayed.

3. On the **Confirmation Webpage** dialog, click **Yes**.

   Message: "Category deleted successfully" is displayed.

Manage Groups

Perform the following steps to manage groups:

1. On the **Manage Categories** UI, select the table from **Select Table** dropdown.

   The Categories pane displays all the existing categories of the selected table.

2. On the **Manage Categories** UI, click on the Menu icon corresponding to the required category and click **Manage Groups**.

   The **Manage Groups and Attributes Sets** page is displayed. For details on Manage Groups, see Section : "Tasks Performed on Manage Groups and Attribute Sets UI."

Tasks Performed on Manage Groups and Attribute Sets UI

Groups are the collection of rows of a MASTER table. Groups can be created under a Category. Specific common attributes of the members of a Group can be maintained. Group will give an easy view of all its members.

Attribute Sets are the group of attributes of a MASTER table that you want to maintain. You can assign and apply values of common attributes of a Group. Values of Attributes for a Group can be assigned either manually by UI button click or by using scheduler.

On the Manage Groups and Attribute Sets UI, you can perform the following:

- Create Group
- Assign Members
- Create Attribute Set
- Assign Values
- Apply Values
- Other Tasks Performed on Manage Groups UI

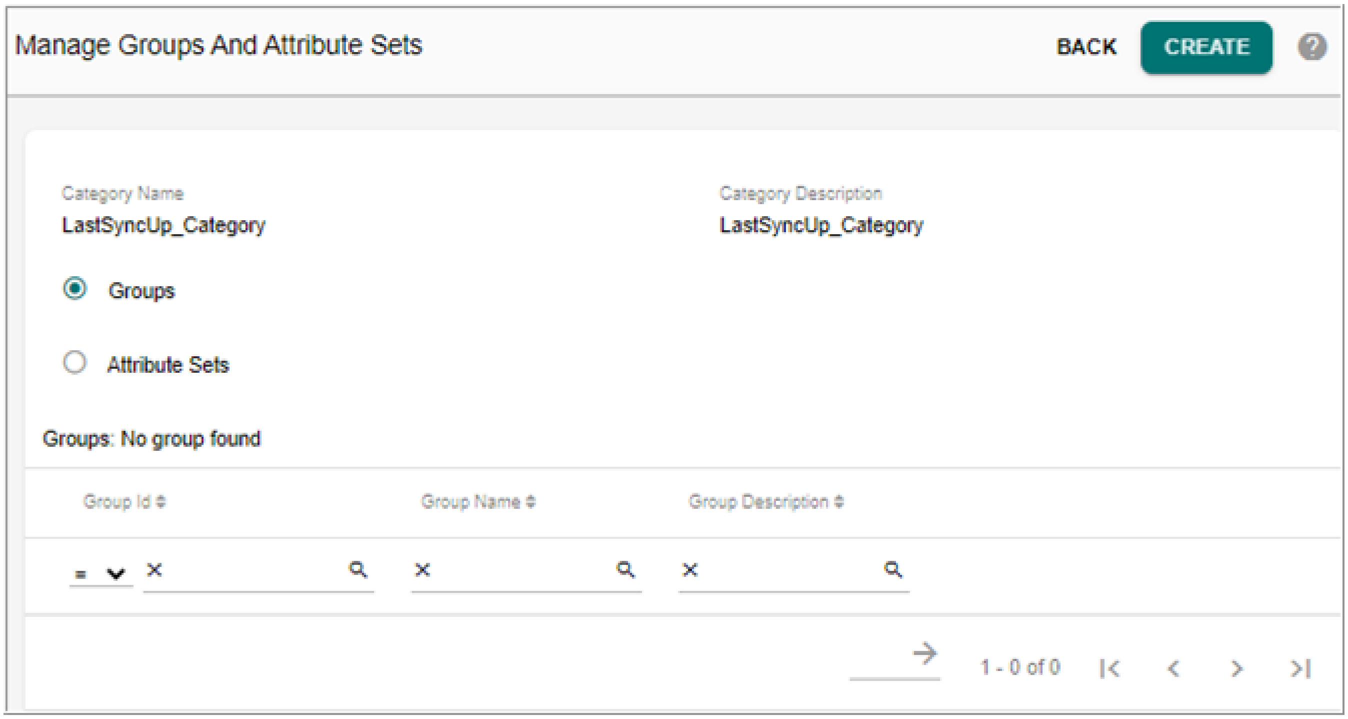
Create Group

On the Manage Groups and Attribute Sets UI, by default, Groups radio button is selected. The Groups pane displays all the existing groups of the selected category.

To create group:

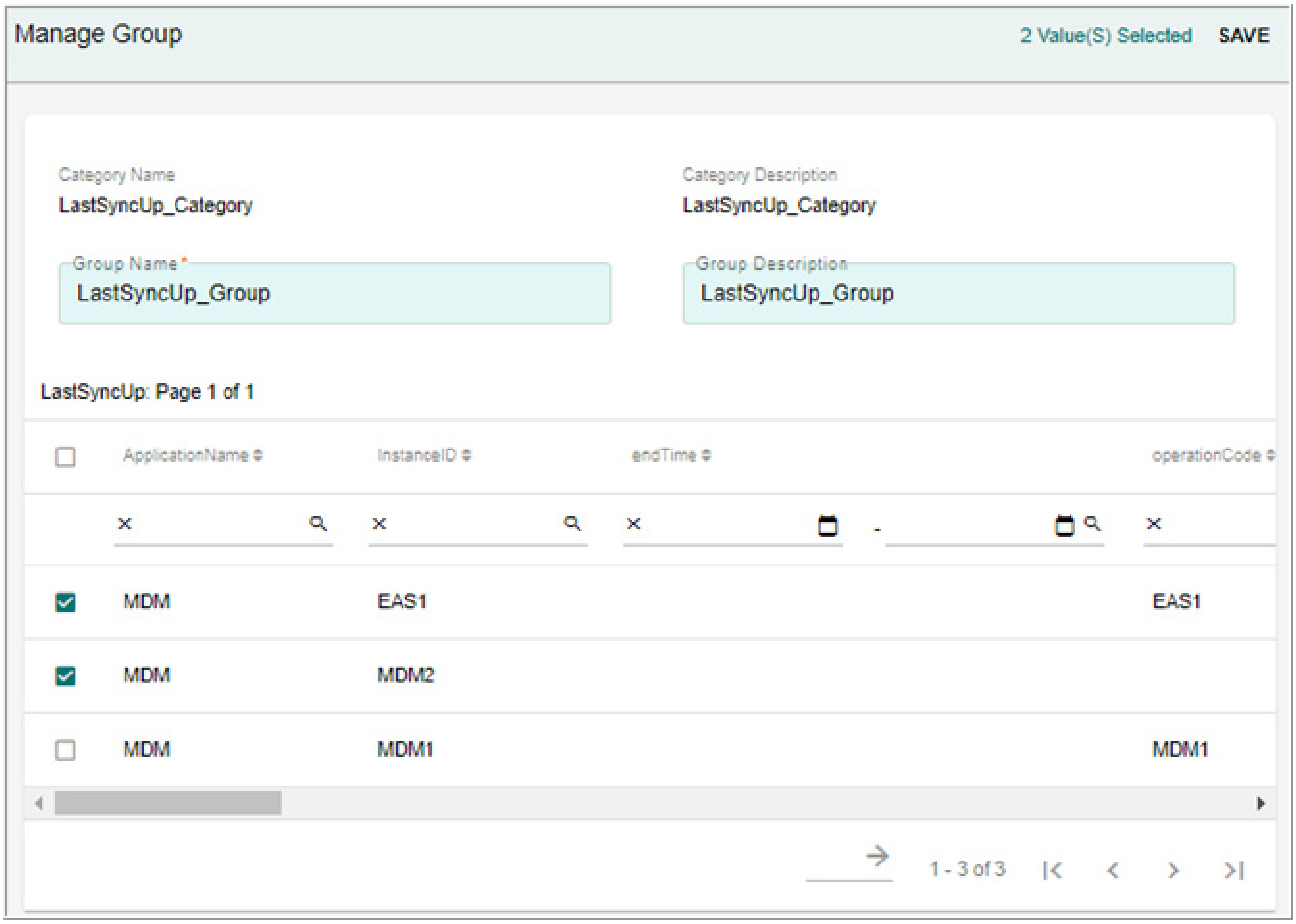
1. On the **Manage Groups and Attribute Sets** UI, click **Create** as in Figure 949.

Figure 949: Manage Groups and Attribute Sets



The **Manage Groups** UI (Figure 950) is displayed. It displays all the existing records or members of the selected table.

Figure 950: Manage Groups



Category Name: LastSyncUp_Category

Category Description: LastSyncUp_Category

Group Name*: LastSyncUp_Group

Group Description: LastSyncUp_Group

LastSyncUp: Page 1 of 1

☐	ApplicationName	InstanceID	endTime	operationCode
☑	MDM	EAS1		EAS1
☑	MDM	MDM2		
☐	MDM	MDM1		MDM1

2 On the **Manage Groups** UI (Figure 950), enter the group name and description in **Group Name** and **Group Description** field.

3 Select the required records or members to assign to the group and click **Save**.

Message: “New Group created successfully” is displayed.

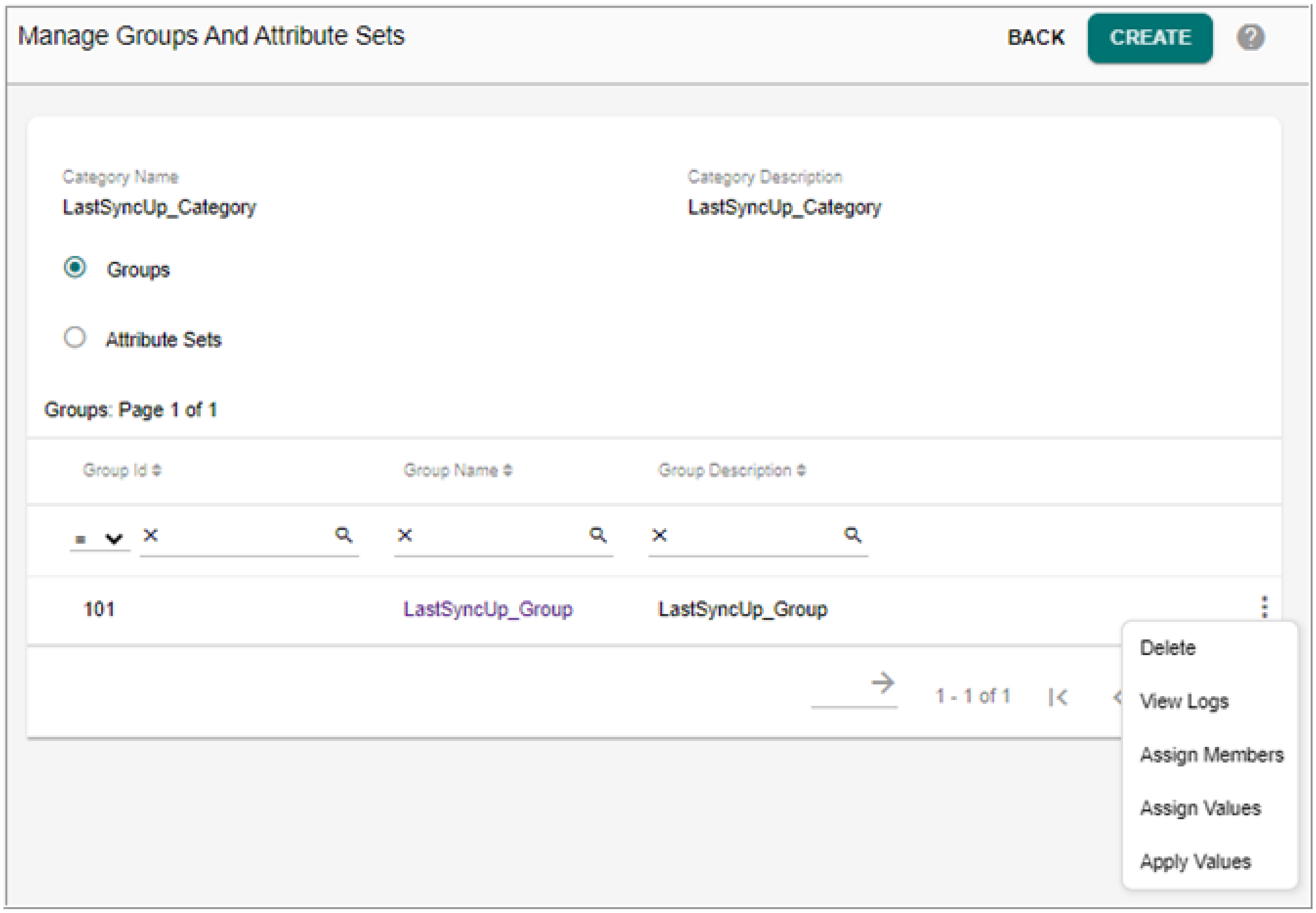
Assign Members

On the Manage Groups and Attribute Sets UI, by default, Groups radio button is selected. The Groups pane displays all the existing groups of the selected category.

To assign members to groups or add new members to the group:

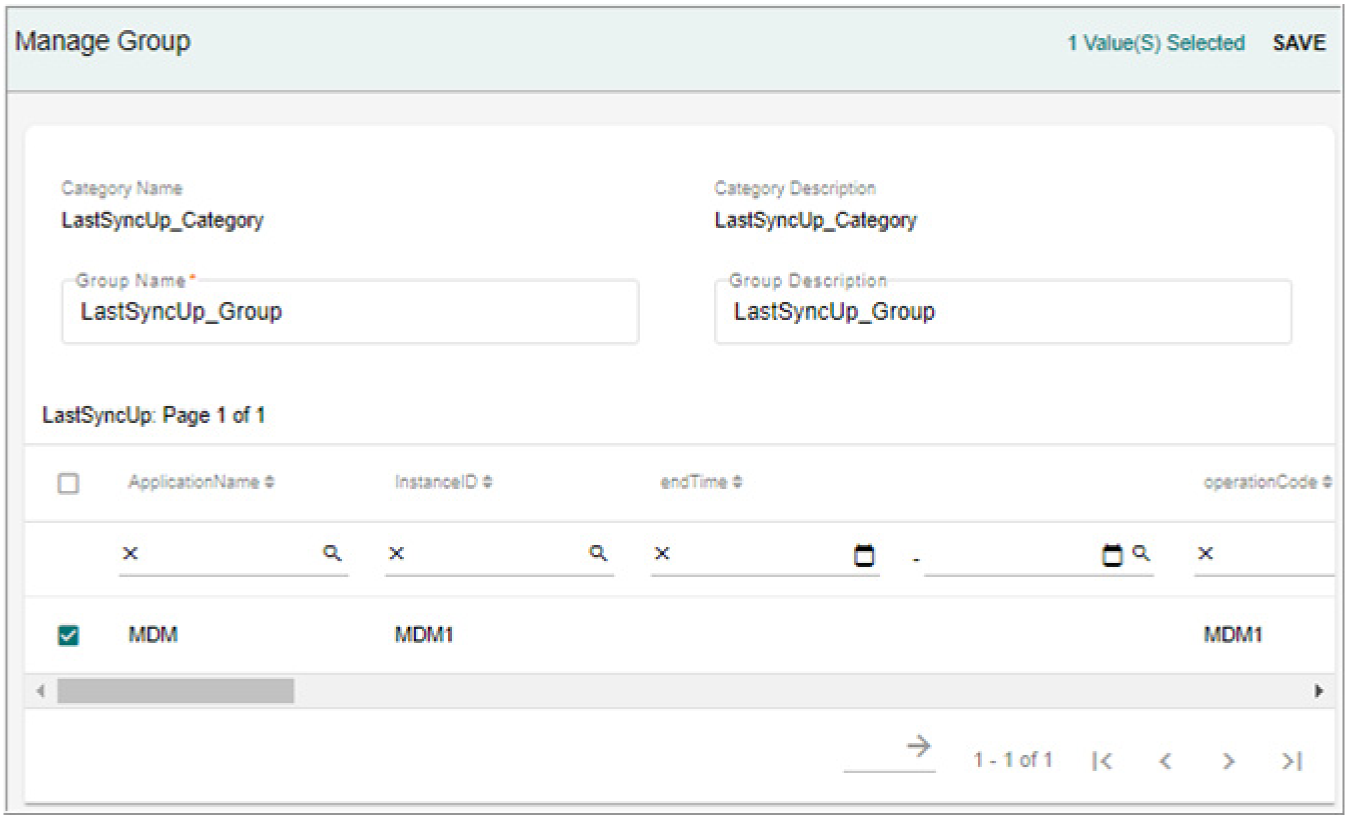
1 On the **Manage Groups and Attribute Sets** UI, click on the Menu icon corresponding to the required group and click **Assign Members** as in Figure 951.

Figure 951: Manage Groups and Attribute Sets



The **Manage Groups** UI (Figure 952) is displayed. It displays all the available Members.

Figure 952: Manage Groups



Category Name
LastSyncUp_Category

Category Description
LastSyncUp_Category

Group Name*
LastSyncUp_Group

Group Description
LastSyncUp_Group

LastSyncUp: Page 1 of 1

	ApplicationName	InstanceID	endTime	operationCode
☑	MDM	MDM1		MDM1

2 On the **Manage Groups** UI (Figure 950), select the required members and click **Save**.

Message: “New members assigned to the group successfully” is displayed.

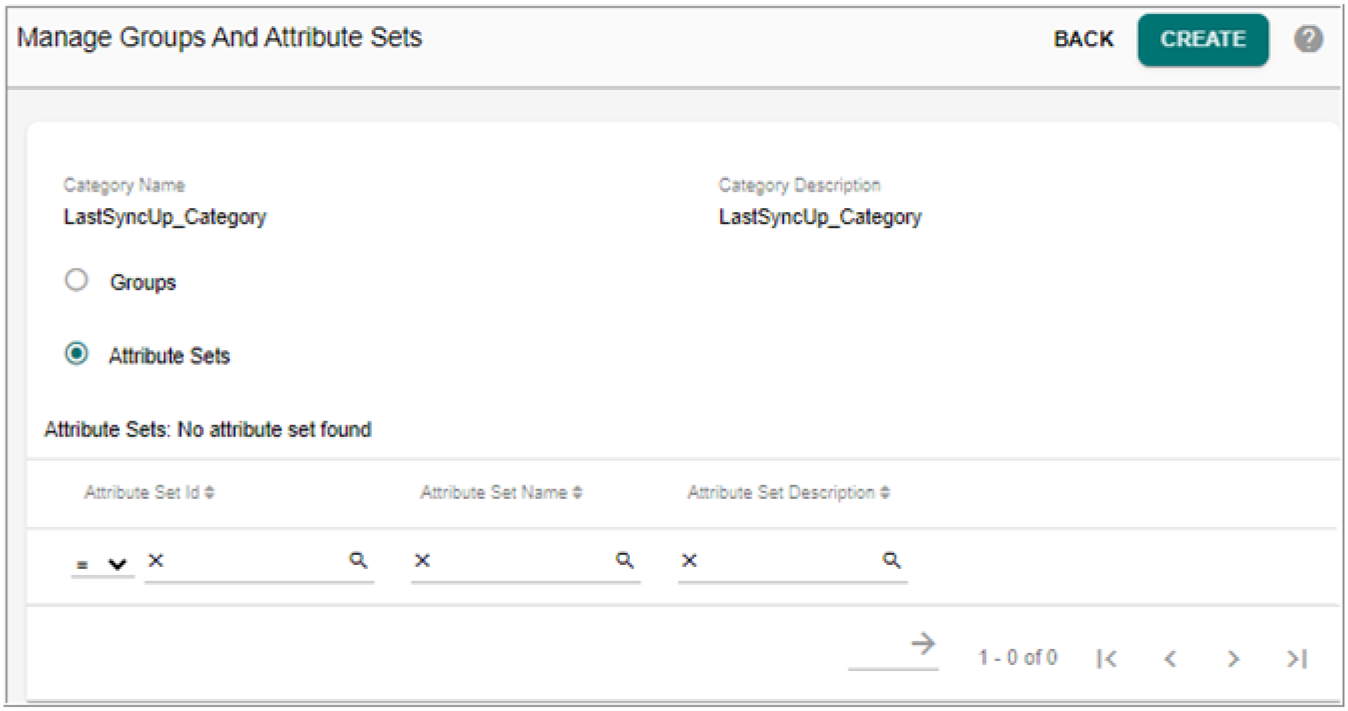
Create Attribute Set

To create attribute set:

1 On the **Manage Groups and Attribute Sets** UI, select the **Attribute Sets** radio button as in Figure 953.

The **Manage Groups and Attribute** Sets UI refreshes to display all the available attribute sets.

Figure 953: Manage Groups and Attribute Sets



Category Name
LastSyncUp_Category

Category Description
LastSyncUp_Category

○ Groups

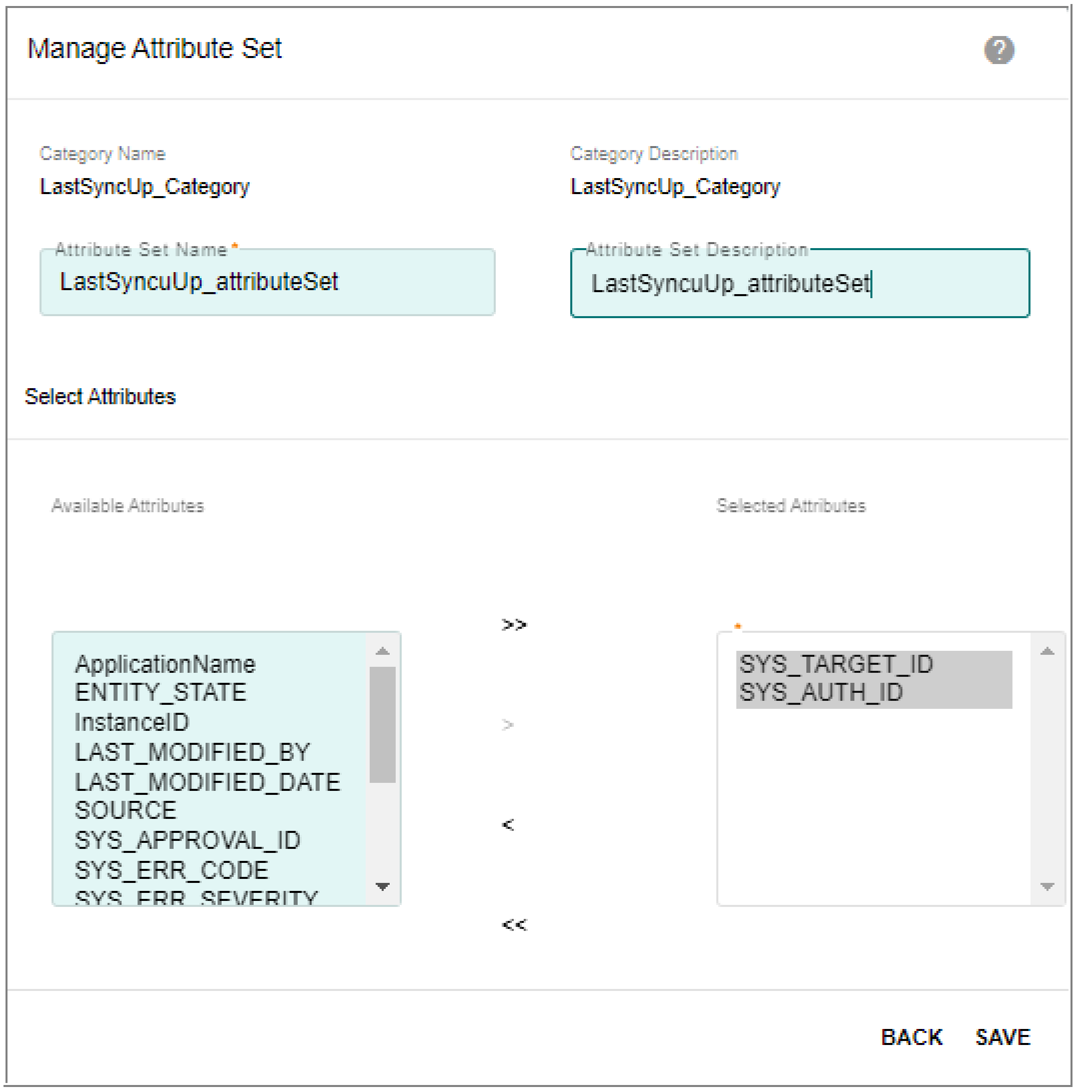
● Attribute Sets

Attribute Sets: No attribute set found

2 On the **Manage Groups and Attribute Sets** UI (Figure 953), click **Create**.

The **Manage Attribute Set** page is displayed.

Figure 954: Manage Attribute Set



Category Name: LastSyncUp_Category

Category Description: LastSyncUp_Category

Attribute Set Name*: LastSyncuUp_attributeSet

Attribute Set Description: LastSyncuUp_attributeSet

Available Attributes:
ApplicationName
ENTITY_STATE
InstanceID
LAST_MODIFIED_BY
LAST_MODIFIED_DATE
SOURCE
SYS_APPROVAL_ID
SYS_ERR_CODE
SYS_ERR_SEVERITY

Selected Attributes:
SYS_TARGET_ID
SYS_AUTH_ID

3 On the **Manage Attribute Set** UI, enter the attribute set name and description in **Attribute Set Name** and **Attribute Set Description** field as in Figure 954.

4 Select the required attributes from the **Available Attributes** list and move it to **Selected Attributes** list and click **Save**.

Message: “New Attribute Set created successfully” is displayed.

Assign Values

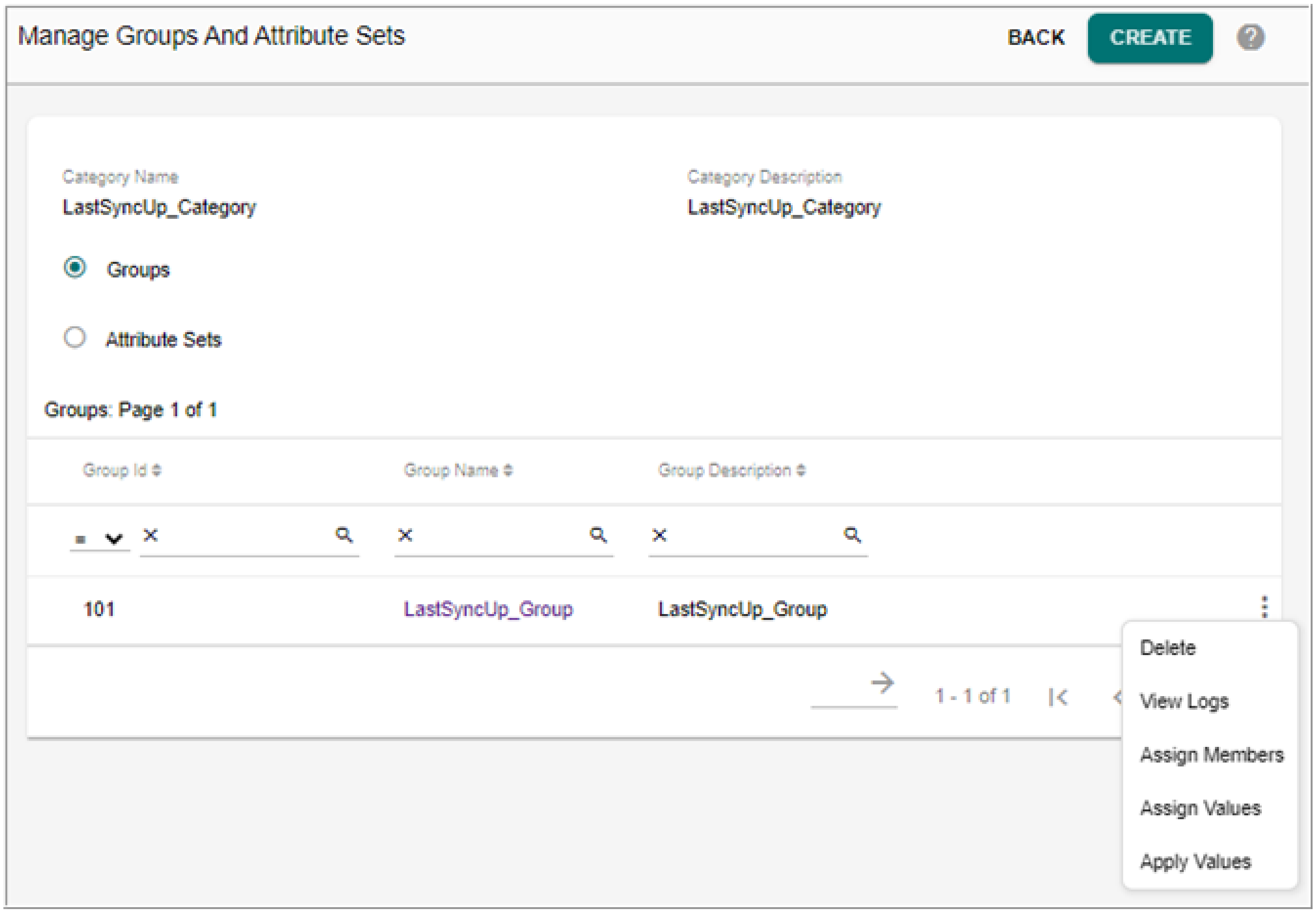
To assign values to attributes of attribute sets for a group:

1 On the **Manage Groups and Attribute Sets** UI, select the **Groups** radio button.

The Groups pane displays all the existing groups of the selected category.

2 On the **Manage Groups and Attribute Sets** UI, select the required group and click **Assign Values** as in Figure 955.

Figure 955: Manage Groups and Attribute Sets



Category Name
LastSyncUp_Category

Category Description
LastSyncUp_Category

● Groups

○ Attribute Sets

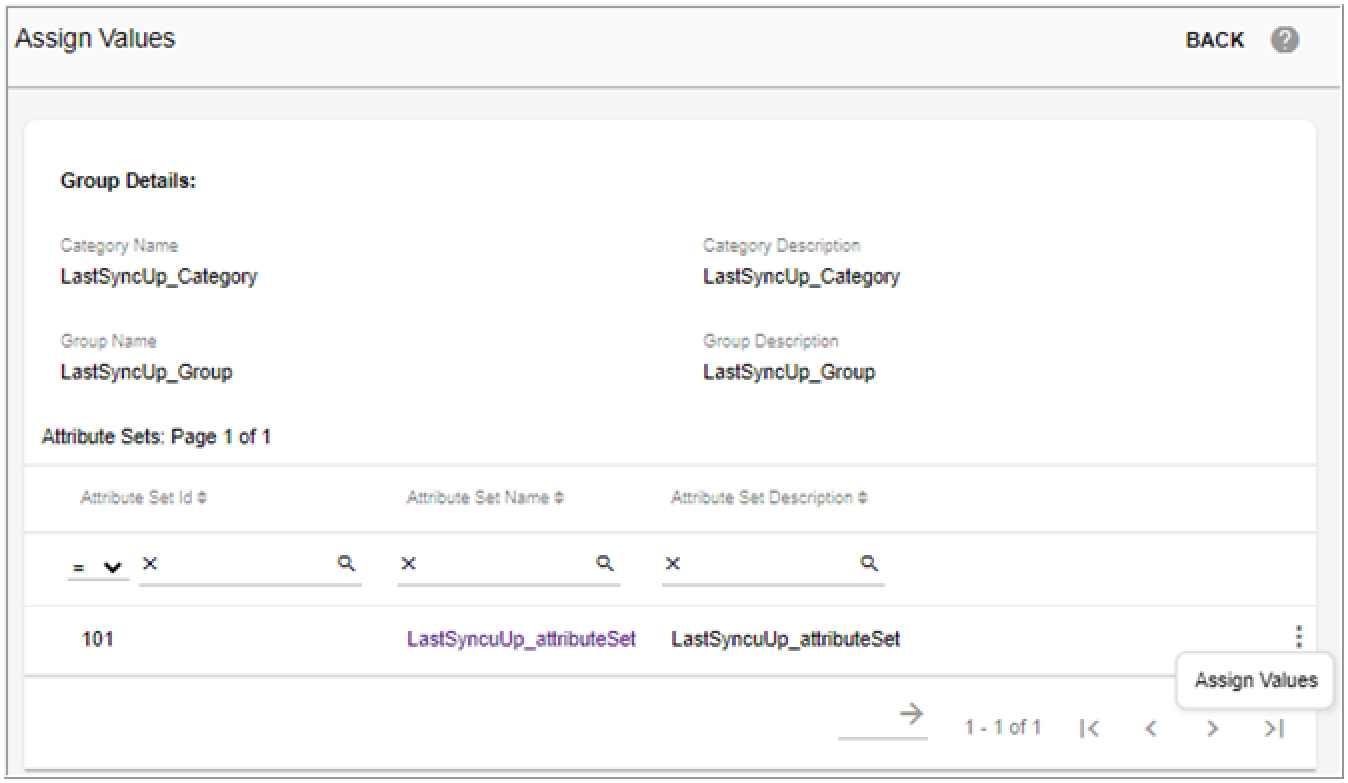
Groups: Page 1 of 1

Group Id	Group Name	Group Description
101	LastSyncUp_Group	LastSyncUp_Group

1 - 1 of 1

The **Assign Values** UI (Figure 956) is displayed. The Assign Values UI displays all the attribute sets of the group.

Figure 956: Assign Values



Group Details:

Category Name
LastSyncUp_Category

Category Description
LastSyncUp_Category

Group Name
LastSyncUp_Group

Group Description
LastSyncUp_Group

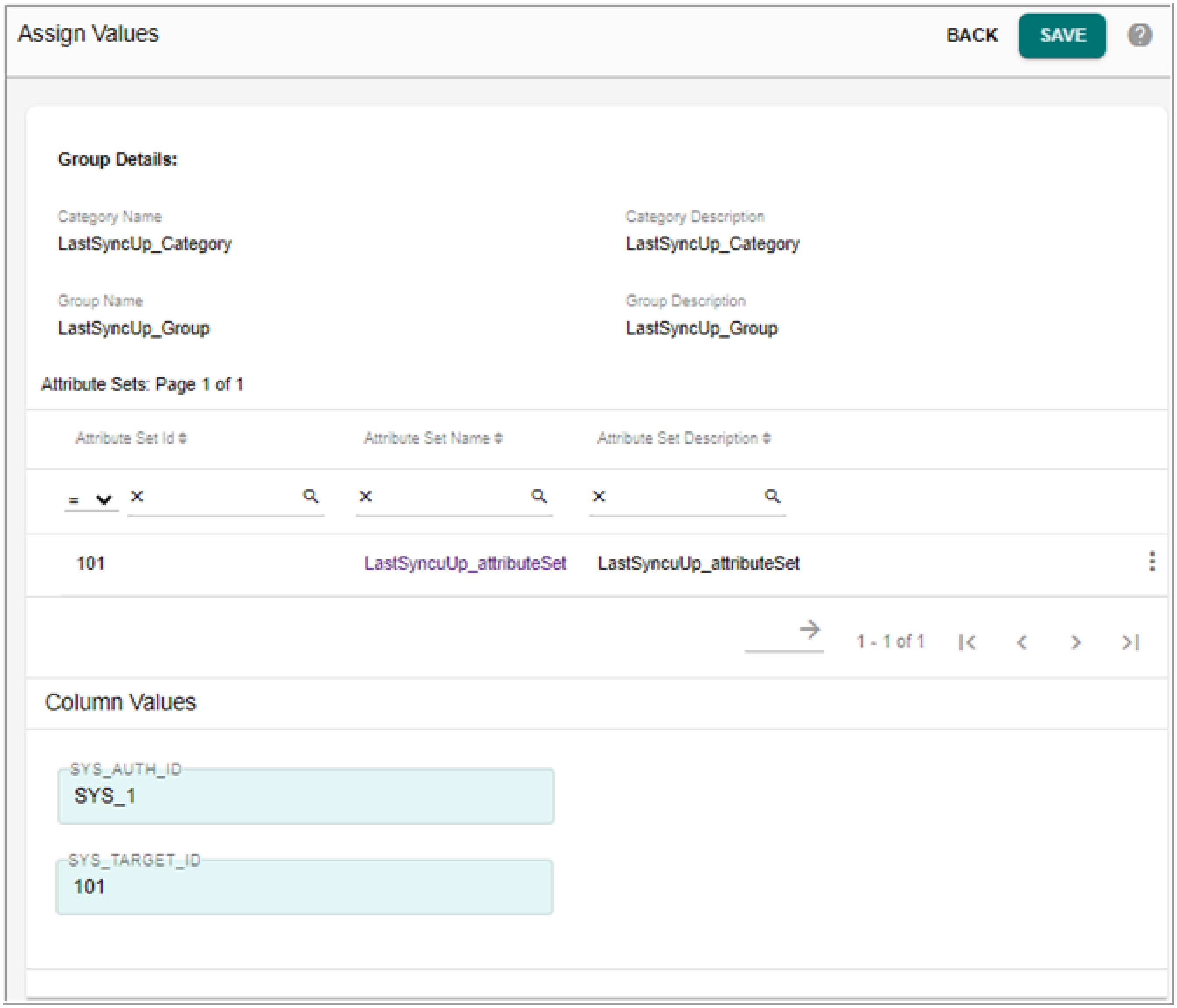
Attribute Sets: Page 1 of 1

Attribute Set Id	Attribute Set Name	Attribute Set Description
101	LastSyncuUp_attributeSet	LastSyncuUp_attributeSet

3 On the **Assign Values** UI (Figure 956), click on the Menu icon corresponding to the required attribute set and click **Assign Values**.

The **Assign Values** page refreshes to display all the column values text field of the selected attribute set as in Figure 957.

Figure 957: Assign Values



Group Details:

Category Name: LastSyncUp_Category

Category Description: LastSyncUp_Category

Group Name: LastSyncUp_Group

Group Description: LastSyncUp_Group

Attribute Sets: Page 1 of 1

Attribute Set Id	Attribute Set Name	Attribute Set Description
101	LastSyncuUp_attributeSet	LastSyncuUp_attributeSet

Column Values

SYS_AUTH_ID: SYS_1

SYS_TARGET_ID: 101

4 In the **Column Values** pane, enter the values for the attributes and click **Save**.

Message: “Values assigned to the Attribute Set successfully” is displayed.

The values will be saved in the metadata tables of grouping and the values will not be applied to the actual table.

Apply Values

To apply values of attributes on the table:

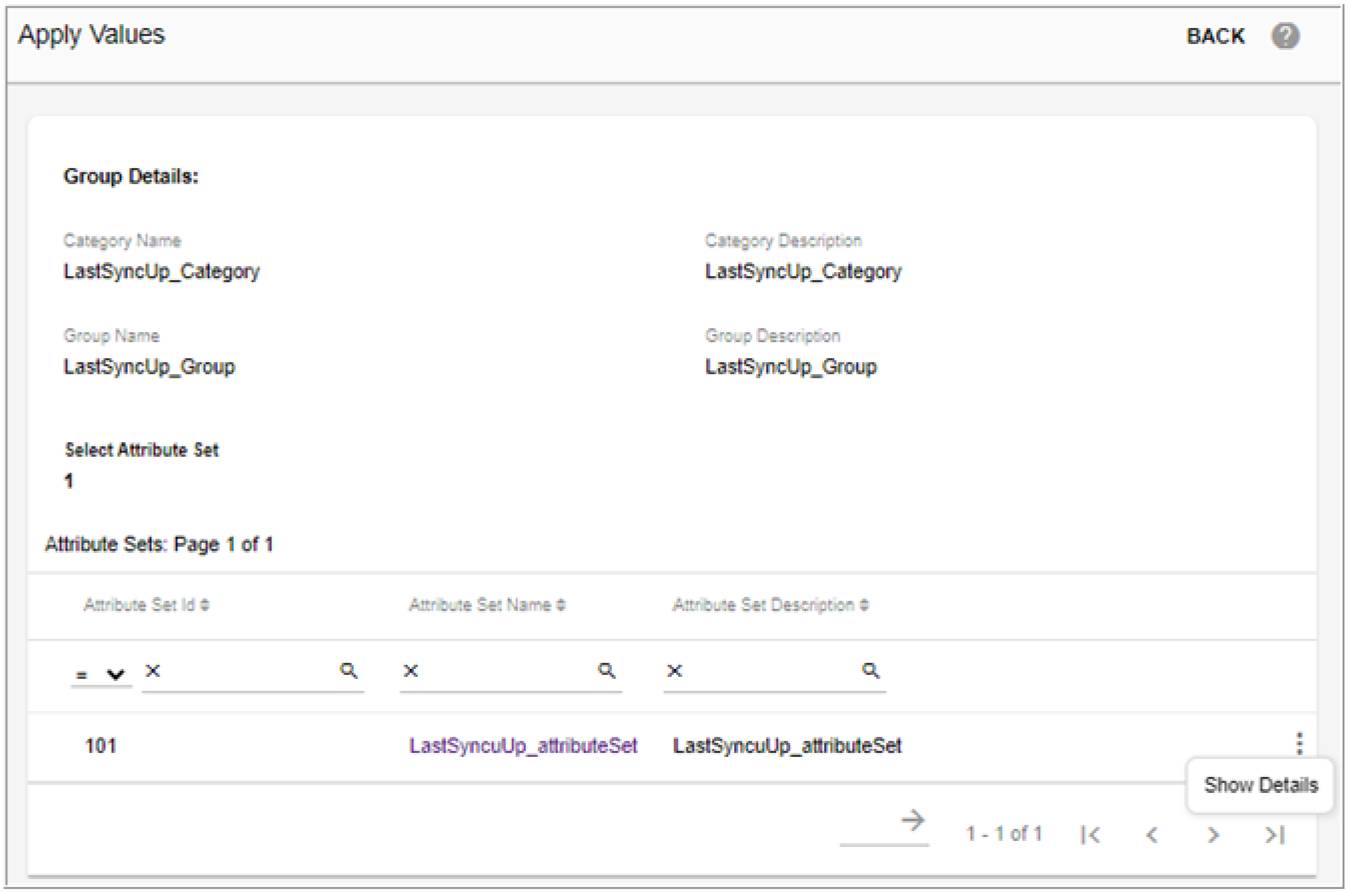
1 On the **Manage Groups and Attribute Sets** UI, select the **Groups** radio button.

The Groups pane displays all the existing groups of the selected category.

2 On the **Manage Groups and Attribute Sets** UI, select the required group and click **Apply Values** as in Figure 955.

The **Apply Values** UI (Figure 958) is displayed. The Apply values UI displays all the instances of available attribute sets of the group for which value is already set.

Figure 958: Apply Values



Group Details:

Category Name
LastSyncUp_Category

Category Description
LastSyncUp_Category

Group Name
LastSyncUp_Group

Group Description
LastSyncUp_Group

Select Attribute Set
1

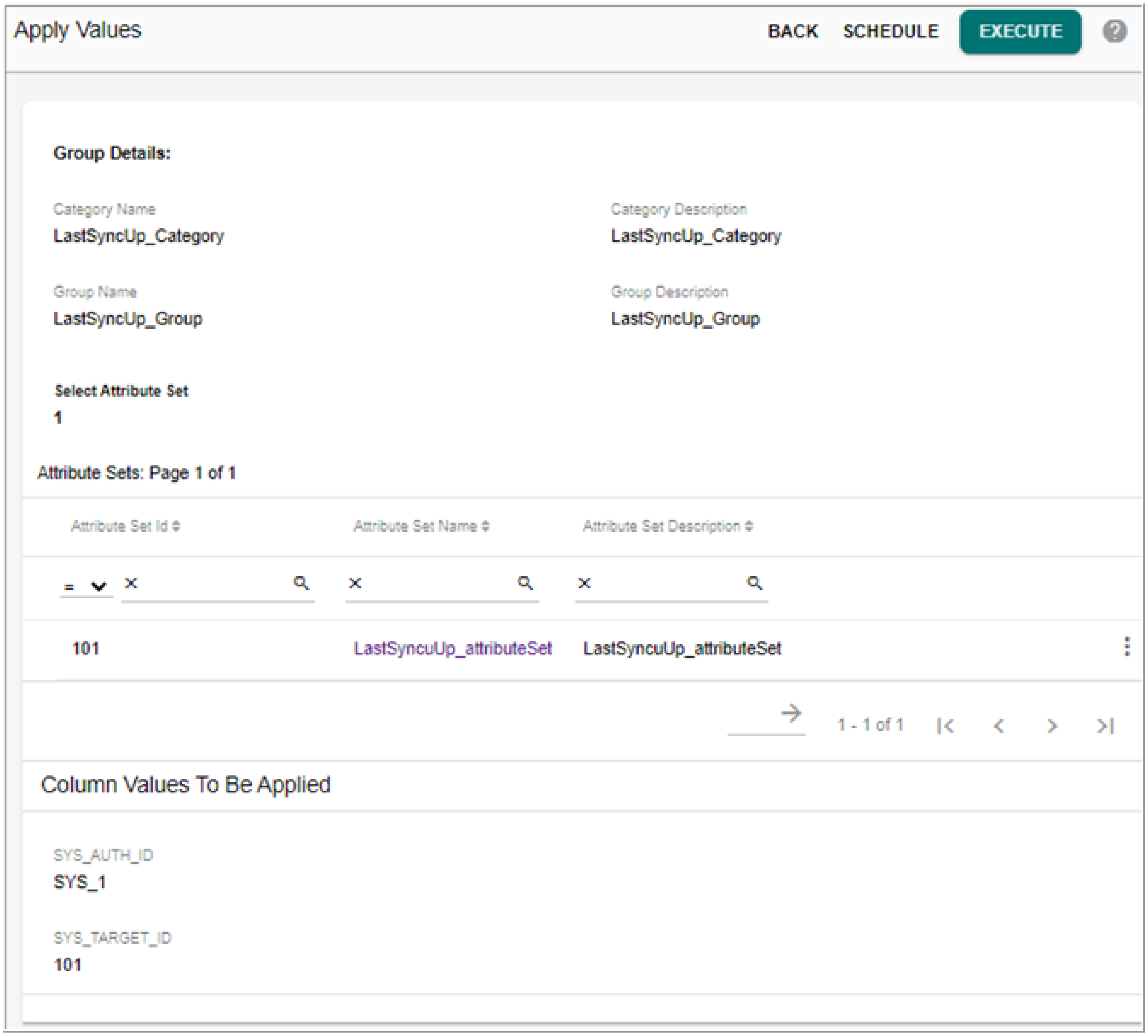
Attribute Sets: Page 1 of 1

Attribute Set Id	Attribute Set Name	Attribute Set Description
101	LastSyncuUp_attributeSet	LastSyncuUp_attributeSet

3 On the **Apply Values** UI (Figure 958), click on the Menu icon corresponding to the required instance of attribute set of the group and click **Show Details**.

The **Apply Values** page refreshes to display all the column values as in Figure 959.

Figure 959: Apply Values



Apply Values

Group Details:

Category Name
LastSyncUp_Category

Category Description
LastSyncUp_Category

Group Name
LastSyncUp_Group

Group Description
LastSyncUp_Group

Select Attribute Set
1

Attribute Sets: Page 1 of 1

Attribute Set Id	Attribute Set Name	Attribute Set Description
101	LastSyncuUp_attributeSet	LastSyncuUp_attributeSet

Column Values To Be Applied

SYS_AUTH_ID
SYS_1

SYS_TARGET_ID
101

4 In the **Column Values To Be Applied** pane, click **Execute** to apply the values of the attributes on the table.

Message: “Selected values will be applied” is displayed.

5 In the **Column Values To Be Applied** pane, click **Schedule** to create a schedule to apply the values of the attributes on the table.

The **Scheduler Details** page is displayed. For details on scheduler, *refer to Chapter Manage Scheduler.*

View Logs

To view group logs:

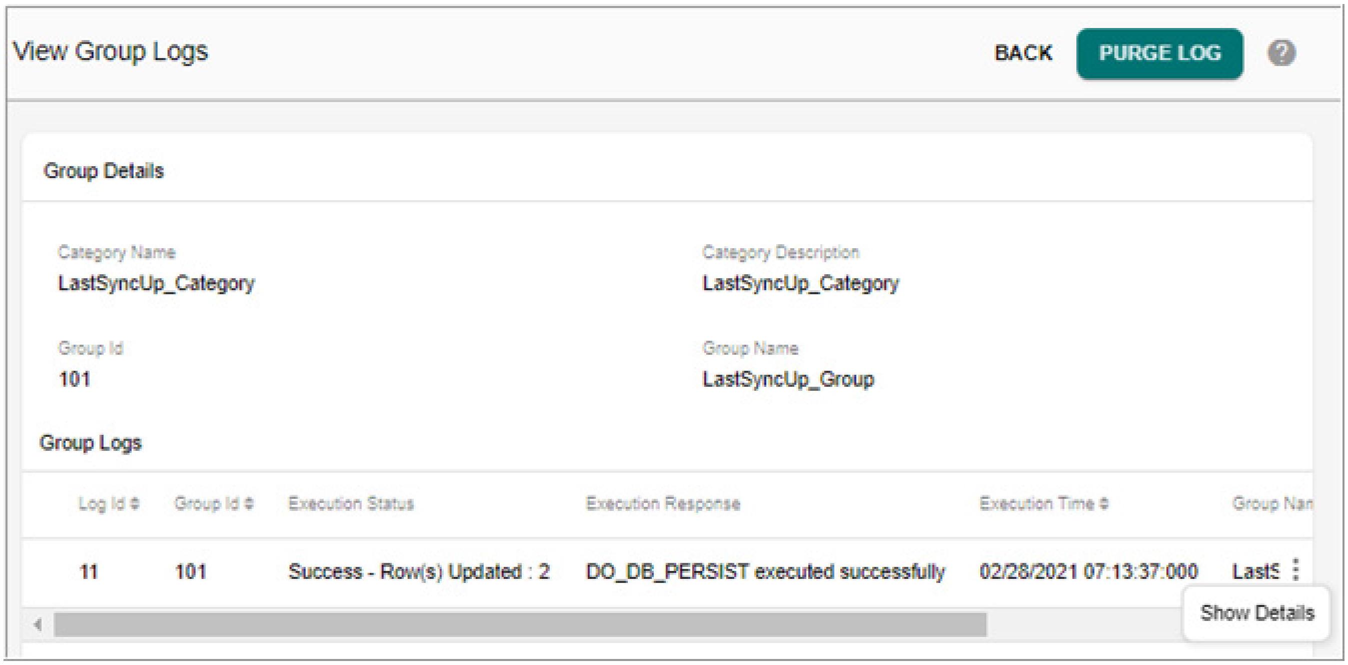
1 On the **Manage Groups and Attribute Sets** UI, select the **Groups** radio button.

The Groups pane displays all the existing groups of the selected category.

2 On the **Manage Groups and Attribute Sets** UI, click on the Menu icon corresponding to the required group and click **View Logs** as in Figure 955.

The **View Group Logs** UI (Figure 960) is displayed. The **View Group Log** displays the execution details of each group.

Figure 960: View Group Logs



Group Details

Category Name
LastSyncUp_Category

Category Description
LastSyncUp_Category

Group Id
101

Group Name
LastSyncUp_Group

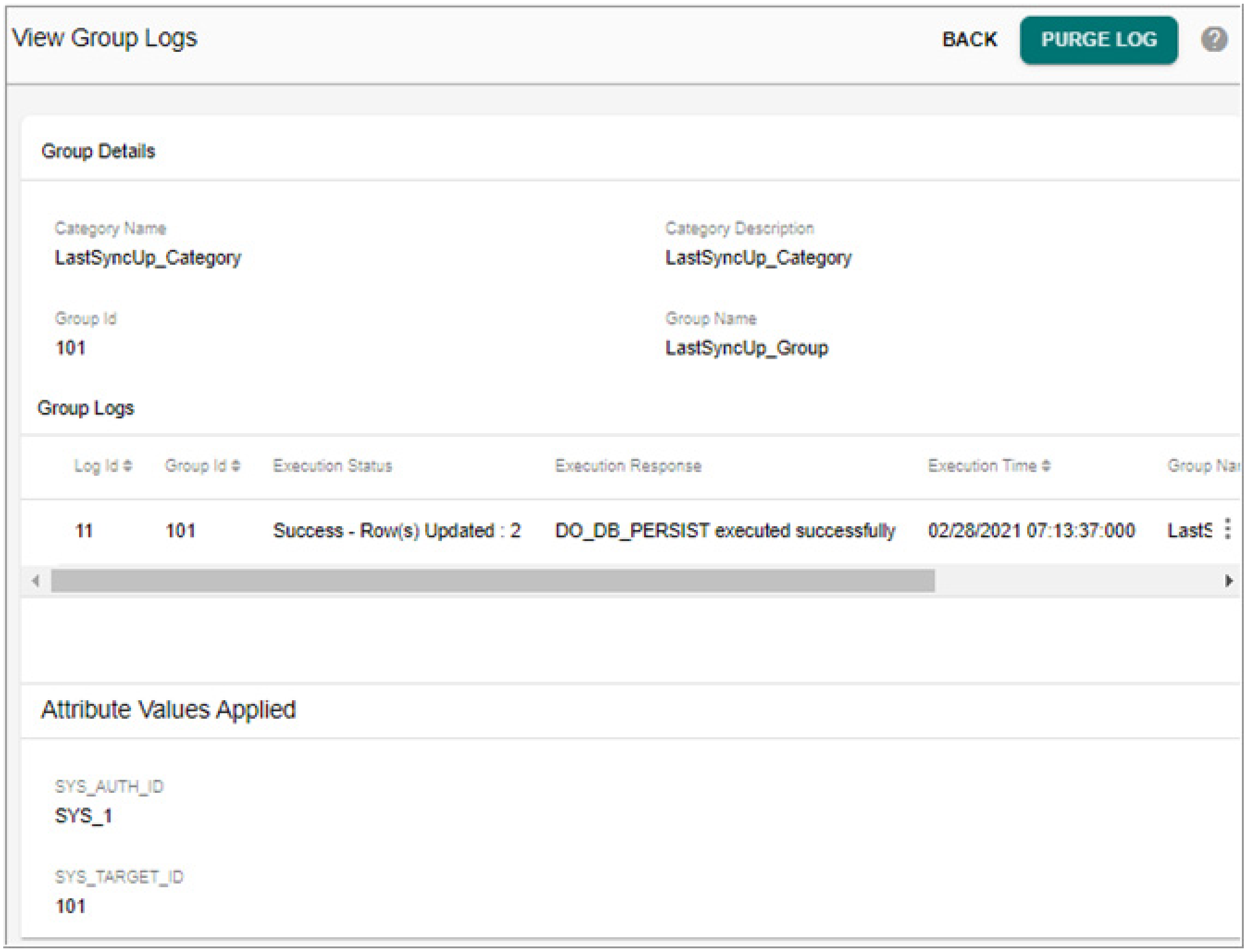
Group Logs

Log Id	Group Id	Execution Status	Execution Response	Execution Time	Group Nan
11	101	Success - Row(s) Updated : 2	DO_DB_PERSIST executed successfully	02/28/2021 07:13:37:000	LastS

3 On the **View Group Logs** UI (Figure 960), click on the Menu icon corresponding to the required group execution log and click **Show Details**.

The **View Group Logs** page refreshes to display all the applied attribute values.

Figure 961: View Group Logs



Group Details

Category Name
LastSyncUp_Category

Category Description
LastSyncUp_Category

Group Id
101

Group Name
LastSyncUp_Group

Group Logs

Log Id	Group Id	Execution Status	Execution Response	Execution Time	Group Na
11	101	Success - Row(s) Updated : 2	DO_DB_PERSIST executed successfully	02/28/2021 07:13:37:000	LastS

Attribute Values Applied

SYS_AUTH_ID
SYS_1

SYS_TARGET_ID
101

4 On the **View Group Logs** UI (Figure 961), click **Purge Log** to delete the log details.

5 On the **Confirmation Webpage** dialog, click **Yes**.

Message: “Logs purged successfully” is displayed.

Other Tasks Performed on Manage Groups UI

You can perform the following tasks on Manage Groups UI:

- Edit Group
- Delete Group
- Edit Attribute Set
- Delete Attribute Set

Edit Group

To edit group details:

1. On the **Manage Groups and Attribute Sets** UI, with Groups option selected, click on the Menu icon corresponding to the required group and click Assign Members or click on the Group Name link.

   The **Manage Groups** UI is displayed. It displays all the assigned members of the group
2. On the **Manage Groups** UI, you can perform the following:
   - modify the group name and description.
   - remove members from the group: deselect the required members checkbox and click Save.

     Message: “Group edited successfully” is displayed.
   - assign new members: click on Assign Members button.

     The Manage Groups UI refreshes to display all the available Members.
   - On the Manage Groups UI, select the required members and click Assign Members and then click Save.

     Message: “New members assigned to the group successfully” is displayed.

Delete Group

To delete group:

1. On the **Manage Groups and Attribute Sets** UI, with **Groups** option selected, click on the Menu icon corresponding to the required group and click **Delete**.

   The **Confirmation Webpage** dialog is displayed.
2. On the **Confirmation Webpage** dialog, click **Yes**.

   Message: “Group deleted successfully” is displayed.

Edit Attribute Set

To edit attribute set:

1. On the **Manage Groups and Attribute Sets** UI, with **Attributes Set** option selected, click on the required attribute set name link.

   The **Manage Attribute Set** page is displayed.
2. On the **Manage Attribute Set** UI, modify the attribute set name and description in **Attribute Set Name** and **Attribute Set Description** field.
3. Select new attributes from **Available Attributes** list and move it to **Selected Attributes** list and click **Save**.

   Message: “Attribute Set edited successfully” is displayed.

Delete Attribute Set

To delete attribute set:

1. On the **Manage Groups and Attribute Sets** UI, with **Attributes Set** option selected, click on the Menu icon corresponding to the required attribute and click **Delete**.

   The **Confirmation Webpage** dialog is displayed.
2. On the **Confirmation Webpage** dialog, click **Yes**.

Message: “Attribute Set deleted successfully” is displayed.

CHAPTER 28 Manage Queries

What’s In This Chapter

This functionality allows you to create custom SQL queries that can be executed against the MDM database.

Topics include:

- Introduction
- Manage Queries UI

Introduction

This section describes all the activities related to ad-hoc query management. Manage Query feature supports all types of SQL statements including DDL, DML and DCL.

Key features of Manage Queries module:

- The Manage Query feature can be used to maintain queries. Variable parameters are supported for the queries.
- Queries can be executed on MDM Server installation user or on any secondary database.
- Queries maintained in Manage Query feature can also be executed via REST web service calls.
- Profile Migration is supported on Manage Query feature to move queries from one environment to other.

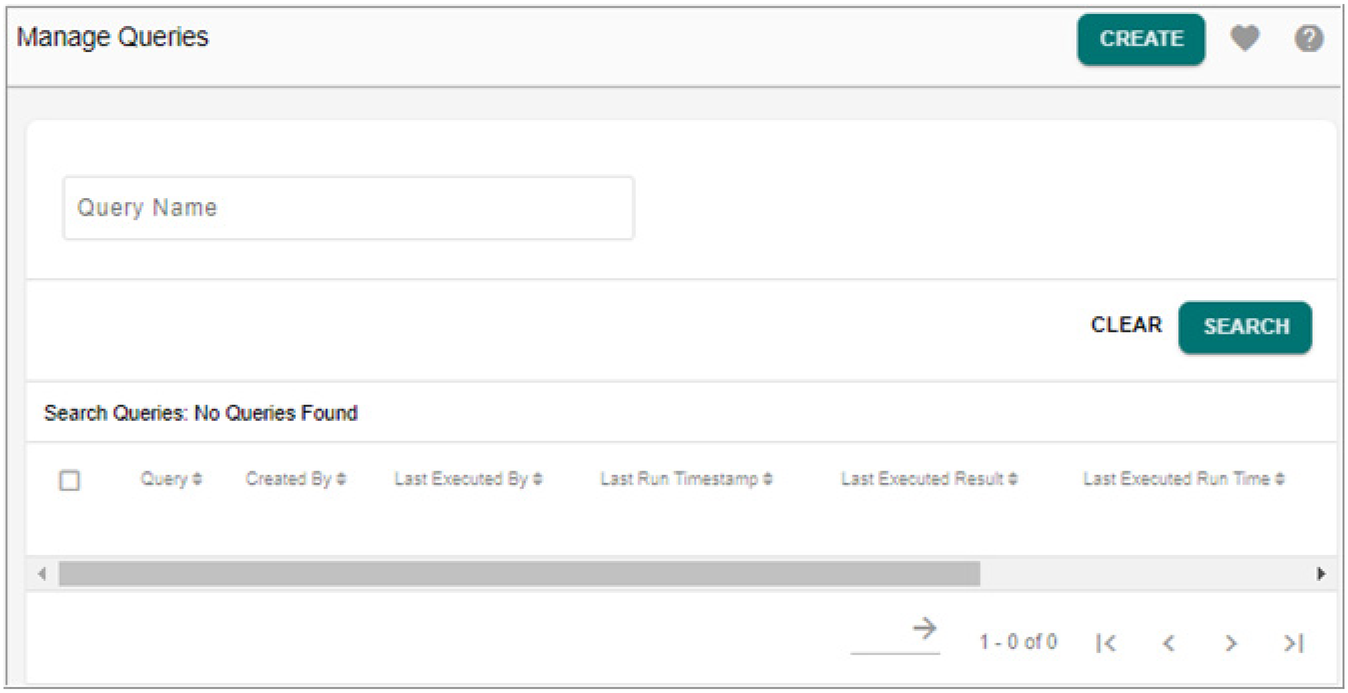
Manage Queries UI

Navigate to Manage Queries UI from left navigation pane **Administration** -> **Queries.**

The Figure 962 displays the Manage Queries UI. On the Manage Queries UI, you can perform the following:

- Create Query
- Search Query
- Edit Query
- Execute Query
- Query History
- Deleting Query

Figure 962: Manage Queries



Search Queries: No Queries Found

☐	Query ⇕	Created By ⇕	Last Executed By ⇕	Last Run Timestamp ⇕	Last Executed Result ⇕	Last Executed Run Time ⇕

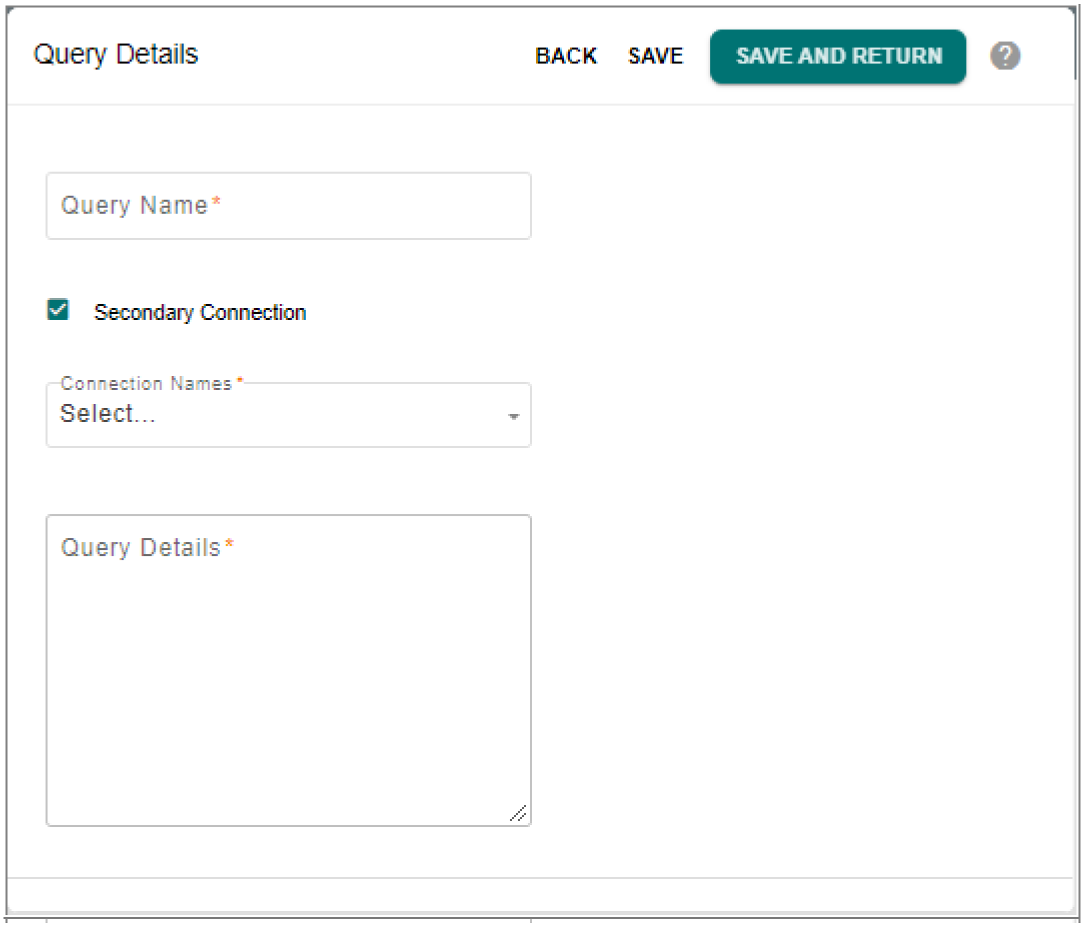
Create Query

To create queries:

1 On the **Manage Queries** page (Figure 962), click **Create**.

The **Query Details** page (Figure 963) is displayed.

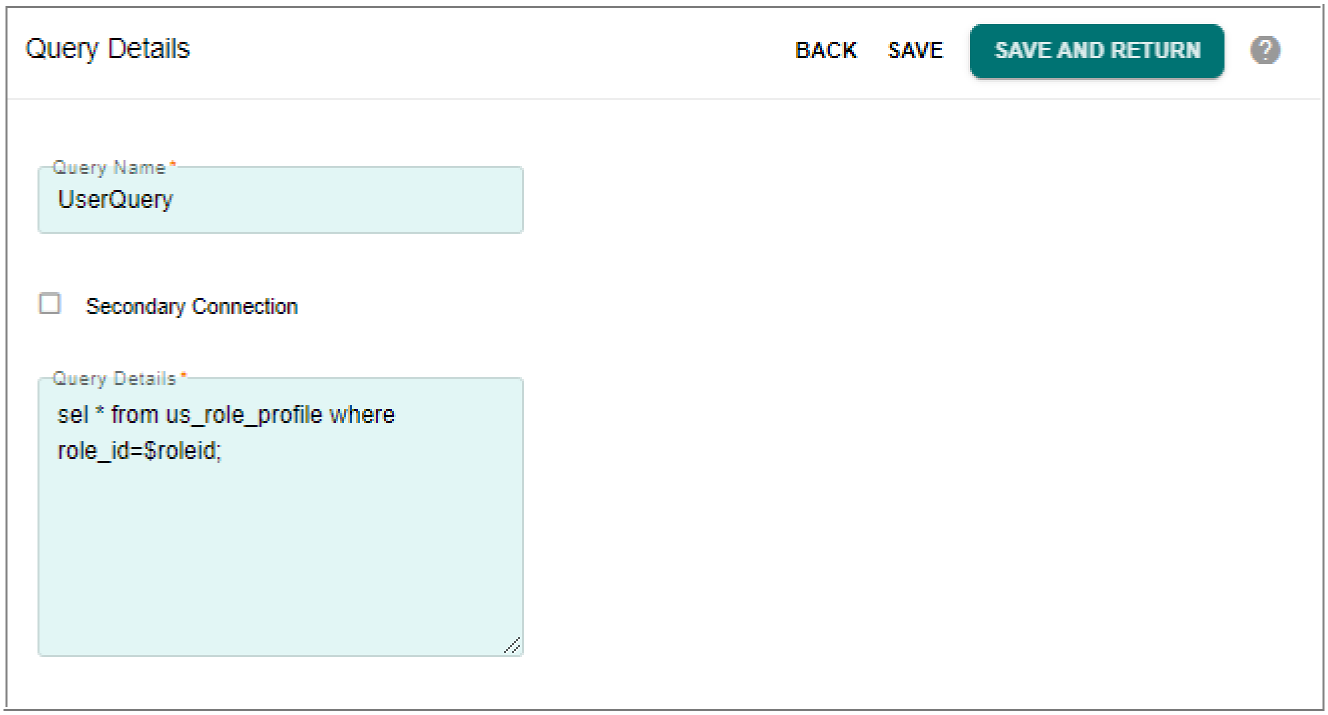
Figure 963: Query Details



2 On **Query Details** page, enter the following:

- **Query Name**: name of the query being created.
- **Secondary Connection**: select the checkbox if any secondary connection is enabled.
- **Connection Names**: if secondary connection is enabled, the Connection Names dropdown displays the list of existing secondary connections. Select the required connection name.
- **Query Detail**: enter the SQL query. The parameterized values must be provided with $ as in Figure 964 and the parameter variables must be added through Add Parameters option after creating the query.

Figure 964: Query Details



Query Name*
UserQuery

☐ Secondary Connection

Query Details*
sel * from us_role_profile where role_id=$roleid;

3 Click **Save** or **Save and Return**.

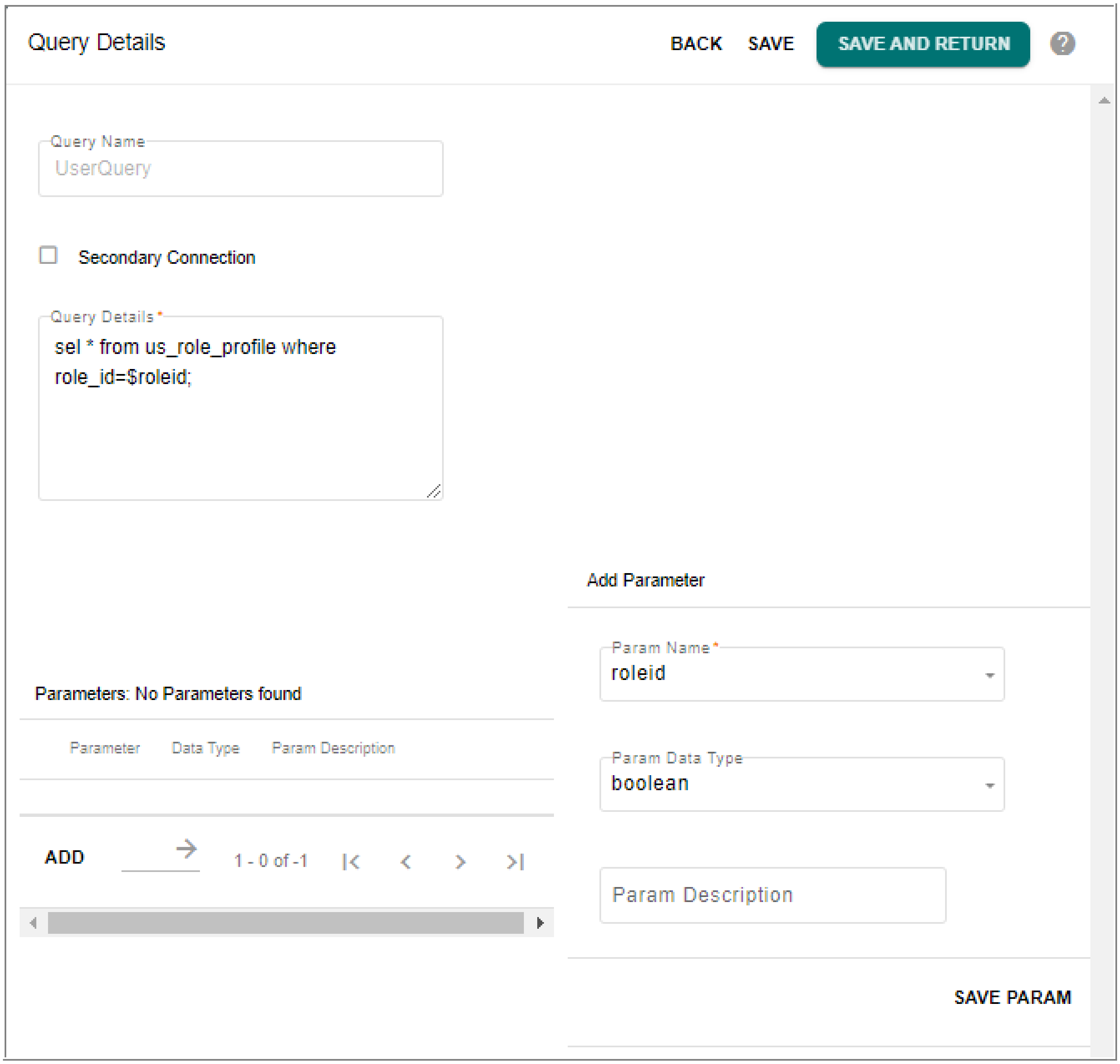
Message: “Query created successfully” is displayed.

To add parameters to a query:

a On the **Query Details** (Figure 965) page, in the **Parameters** pane, click **Add** to add runtime parameters.

The **Query Details** page refreshes to display **Add Parameter** pane.

Figure 965: Query Details—Add Parameters



Query Name: UserQuery

☐ Secondary Connection

Query Details*: sel * from us_role_profile where role_id=$roleid;

Param Name*: roleid

Param Data Type: boolean

Param Description

b In the **Add Parameter** pane,

- select the parameter from the **Param Name** dropdown.

  The **Param Name** drop down is populated based on the parameters defined in Query Details section.
- select parameter data type from **Param Data Type** dropdown.
- enter the parameter description in **Param Description** field and click **Save Param**.

Message: “Query parameter added successfully” is displayed.

To delete the runtime parameter, click on the Menu icon corresponding to the required parameter and click **Delete.**

When a query contains multiple variable parameters, while executing the query the values passed to them follow the sequence in which parameters are defined. The parameter with sequence 1 will provide parameter value for the first parameter in the query.

c Click **Save** or **Save and Return** to save the query details.

1.The system does not validate the query for any semantic or other system errors. The user creating the query is expected to design, develop and test the query in a development environment prior to making them available in production. During execution, the system throws an error message if there is a mismatch between expected list of parameters and the parameters added by you.

2. The Query Detail field should have only one valid query.

Search Query

To search queries:

1. On the left navigation pane, click **Administration** -> **Queries**.

   The **Manage Queries** page (Figure 962) is displayed.

2. On the **Manage Queries** page (Figure 962), enter the query name in the **Query Name** field and click **Search**.

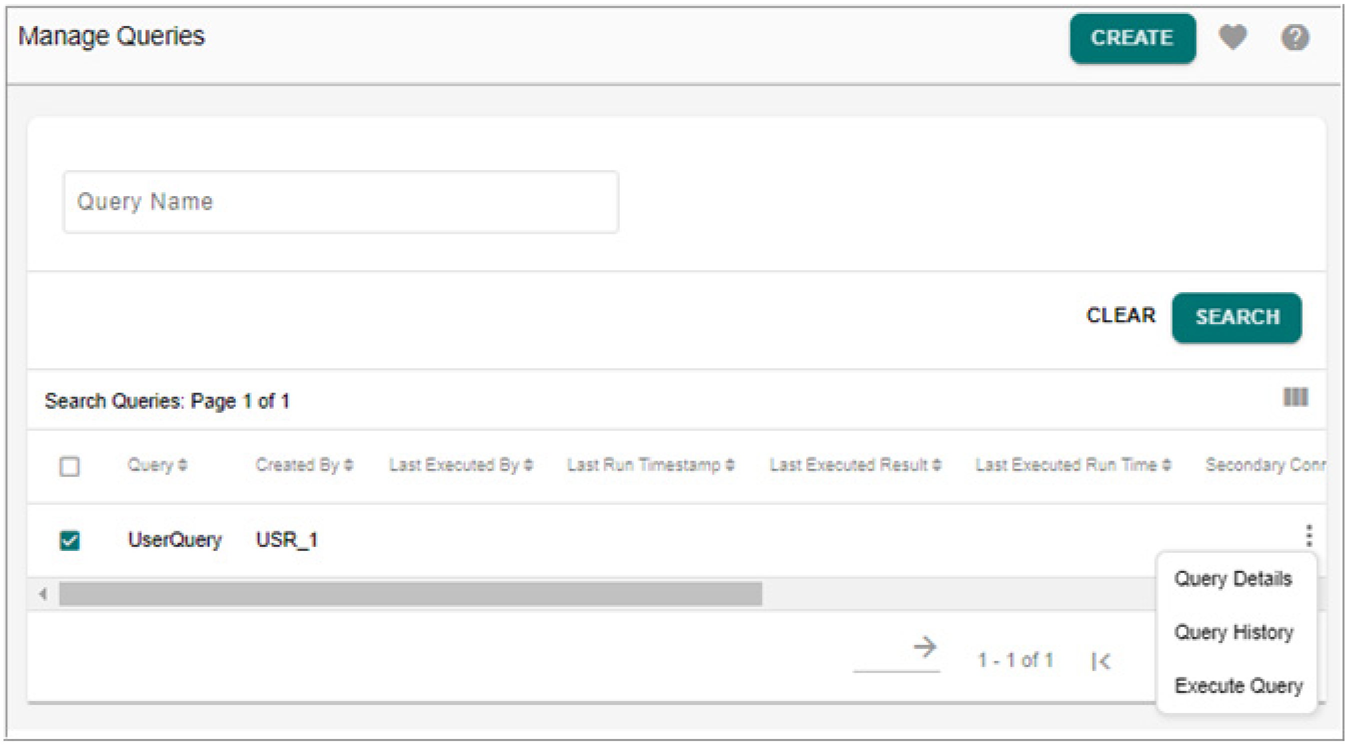
   The **Search Query** pane displays the results. Click on the arrow icon to sort the columns in ascending/descending order.

Edit Query

To edit query details:

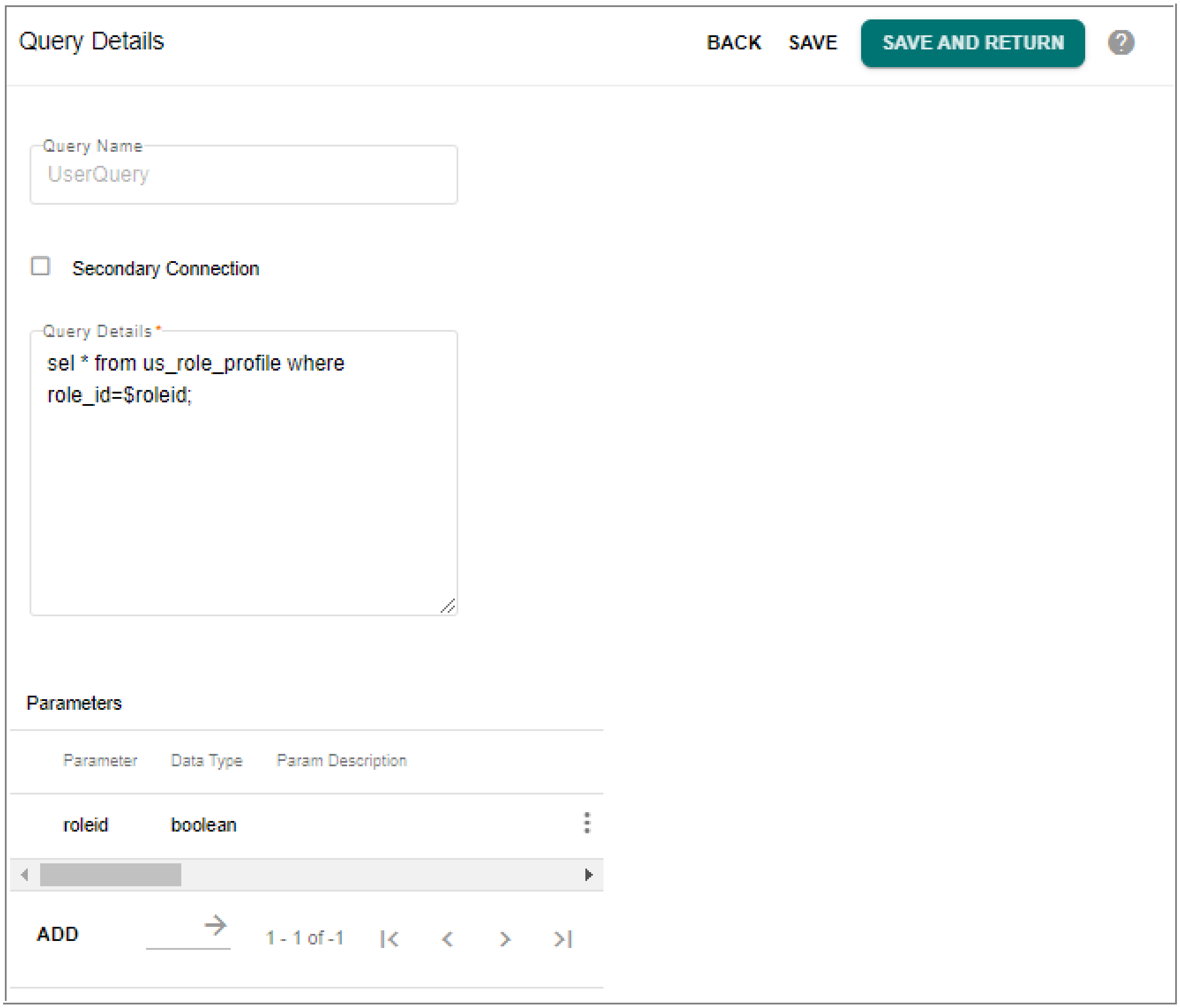
1. On the **Manage Queries** page (Figure 966), click on the Menu icon corresponding to the required query and click **Query Details**.

Figure 966: Manage Queries



The **Query Details** page displays the details of the selected query as in Figure 967.

Figure 967: Query Details—Edit



Query Name: UserQuery

☐ Secondary Connection

Query Details *:

```
sel * from us_role_profile where
role_id=$roleid;
```

Parameters

Parameter	Data Type	Param Description
roleid	boolean	

2 On the **Query Details** page (Figure 967), you can update the SQL query and add, delete or organize the parameters.

3 Click **Save** or **Save And Return** to save the query details.

Message: Query saved successfully is displayed.

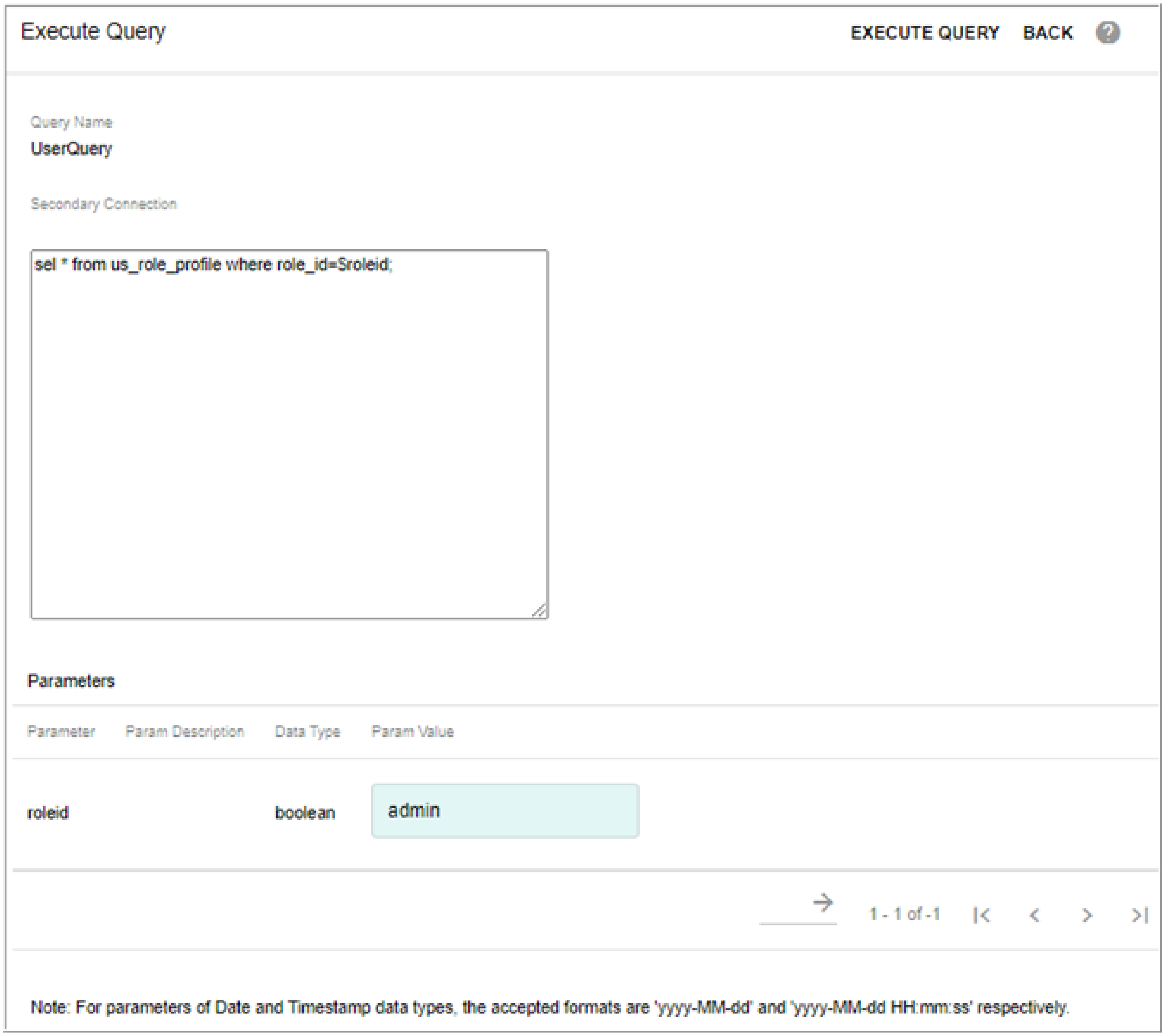
Execute Query

To execute a query:

1 On the **Manage Queries** page (Figure 966), click on the Menu icon corresponding to the required query and click **Execute Query**.

The **Execute Query** page (Figure 968) is displayed.

Figure 968: Execute Query



Query Name: UserQuery

```
sel * from us_role_profile where role_id=$roleid;
```

Parameter	Param Description	Data Type	Param Value
roleid		boolean	admin

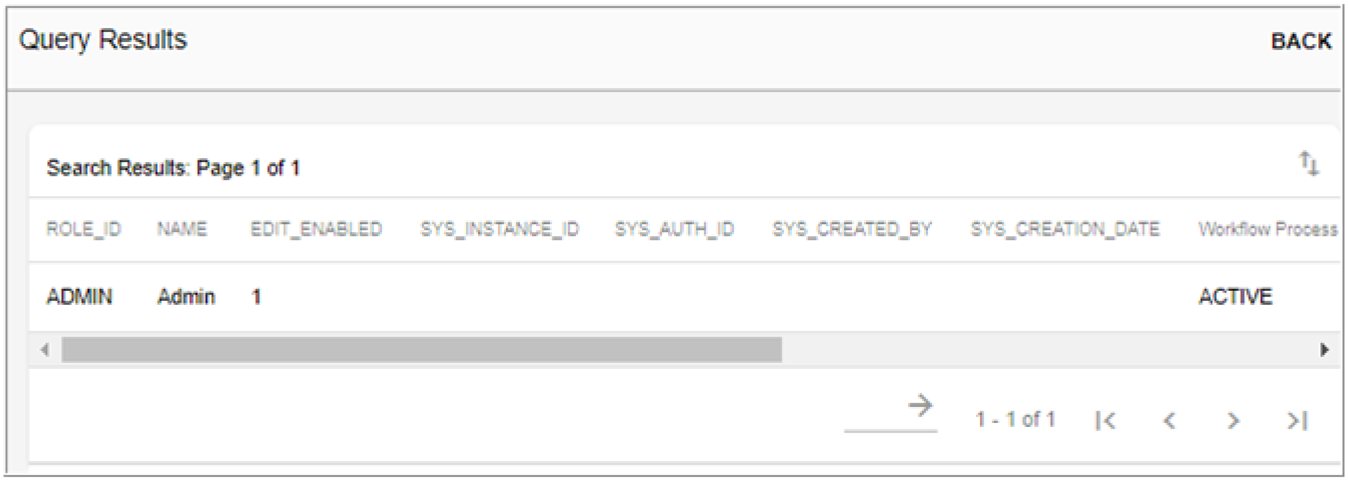
Note: For parameters of Date and Timestamp data types, the accepted formats are 'yyyy-MM-dd' and 'yyyy-MM-dd HH:mm:ss' respectively.

The **Execute Query** page (Figure 968) displays the query name, secondary connection name if enabled and the SQL query string. The **Parameters** table displays the runtime parameters if any.

2 On the **Execute Query** page, enter the values for each required parameter and click **Execute Query** as in Figure 968

The **Results** page (Figure 969) displays the query execution results.

Figure 969: Query Search Results



Query Results

Search Results: Page 1 of 1

ROLE_ID	NAME	EDIT_ENABLED	SYS_INSTANCE_ID	SYS_AUTH_ID	SYS_CREATED_BY	SYS_CREATION_DATE	Workflow Process
ADMIN	Admin	1					ACTIVE

1 - 1 of 1

Optionally, on the Results (Figure 969) page, you can click on Export To Excel icon to export the results to Excel.

You must not execute the stored procedure from the **Execute Query** page though you can create a stored procedure from the **Manage Queries** page. The stored procedure must be executed from the link: **Admin UI --> Stored Procedure** page.

Execute Queries Through REST Web Service

You can expose query build through Query Builder as restful web-service using GET command and also pass parameters to the query.

New service name “queries” is added to existing services. HATEOAS (Hypertext AS the Engine Of Application State) MDM resource include links to additional relevant information. Following URL can be used to discover available MDM query using Get command.

- `http://<host>:<port>/mdm/xcorexml/services/`

  New service named as queries has been added to existing MDM services.
- `http://<host>:<port>/mdm/xcorexml/services/queries`

  Lists all available queries, this can be enhanced in future to list only demanding user's executable queries.
- `http://<host>:<port>/mdm/xcorexml/services/queries/queryname?<paramname>=<paramvalue>&<paramname>=<paramvalue>`

  In the URL format, you can provide the actual parameter name and value. The parameter value can be passed only once even if it is used at multiple times.

  For example: the multiple param values were passed only once as below:

  `http://snlniev30:8080/mdm/xcorexml/services/queries/ap-vendor-top-10?source=NG2-800&company=1000&response=application/json`

- `http://<host>:<port>/mdm/xcorexml/services/queries/q1/properties`

  Display available parameters for query q1. If no parameters are available then respective message will be shown.

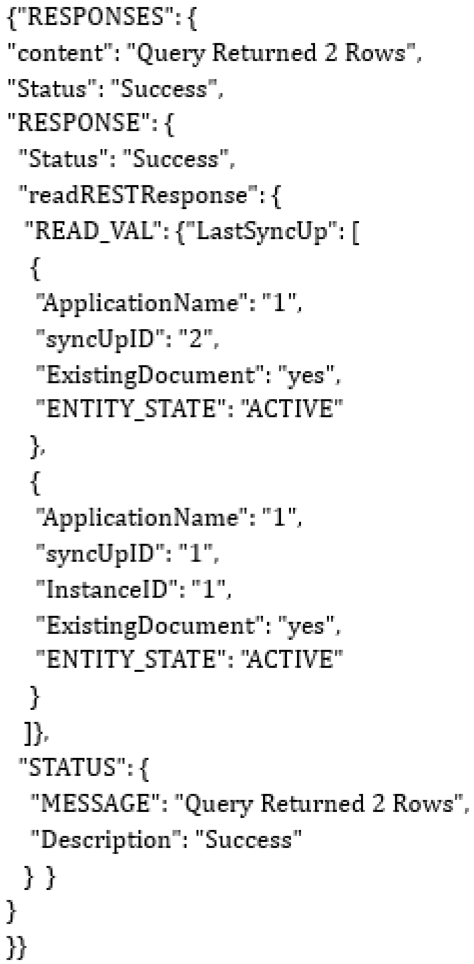
All the existing MDM REST features like response format in JSON, BSON, Exception handling, authentication etc., are applicable for exposing query builder queries as restful web service feature.

MDM REST server response can be switched to different formats and one possible formats includes JSON (JavaScript Object Notation). In MDM REST based web service if request contains special parameter "response" with value "application/json" or "JSON" then MDM REST web service switches the response format to JSON.

```
http://localhost:8080/mdm/xcorexml/services/
queries?response=application/json
```

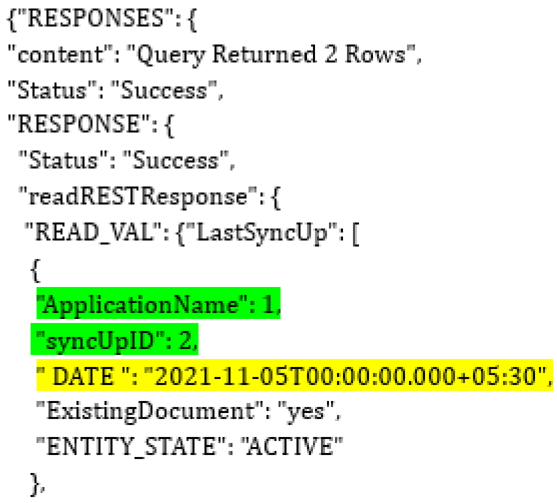
For example:

The below sample displays the REST JSON response format.



```
{"RESPONSES": {
"content": "Query Returned 2 Rows",
"Status": "Success",
"RESPONSE": {
 "Status": "Success",
 "readRESTResponse": {
  "READ_VAL": {"LastSyncUp": [
   {
    "ApplicationName": "1",
    "syncUpID": "2",
    "ExistingDocument": "yes",
    "ENTITY_STATE": "ACTIVE"
   },
   {
    "ApplicationName": "1",
    "syncUpID": "1",
    "InstanceID": "1",
    "ExistingDocument": "yes",
    "ENTITY_STATE": "ACTIVE"
   }
  ]},
 "STATUS": {
  "MESSAGE": "Query Returned 2 Rows",
  "Description": "Success"
  } }
}
}}
```

- In the response format, the number value will be returned as number and date will be returned as date as in the below sample code.



```
{"RESPONSES": {
"content": "Query Returned 2 Rows",
"Status": "Success",
"RESPONSE": {
 "Status": "Success",
 "readRESTResponse": {
  "READ_VAL": {"LastSyncUp": [
  {
   "ApplicationName": 1,
  "syncUpID": 2,
   " DATE ": "2021-11-05T00:00:00.000+05:30",
   "ExistingDocument": "yes",
   "ENTITY_STATE": "ACTIVE"
  },
```

Limitations

The SQL query is not validated before execution. Therefore, the following assumptions are made about the queries:

1. The query has been tested on the target database to be syntactically correct.
2. The query has been tested for acceptable performance. The query is executed synchronously and any resource-intensive query cannot be aborted once it is executed.
3. Secondary connection should be started before executing the query.

Note: Recommended practice when using constants.

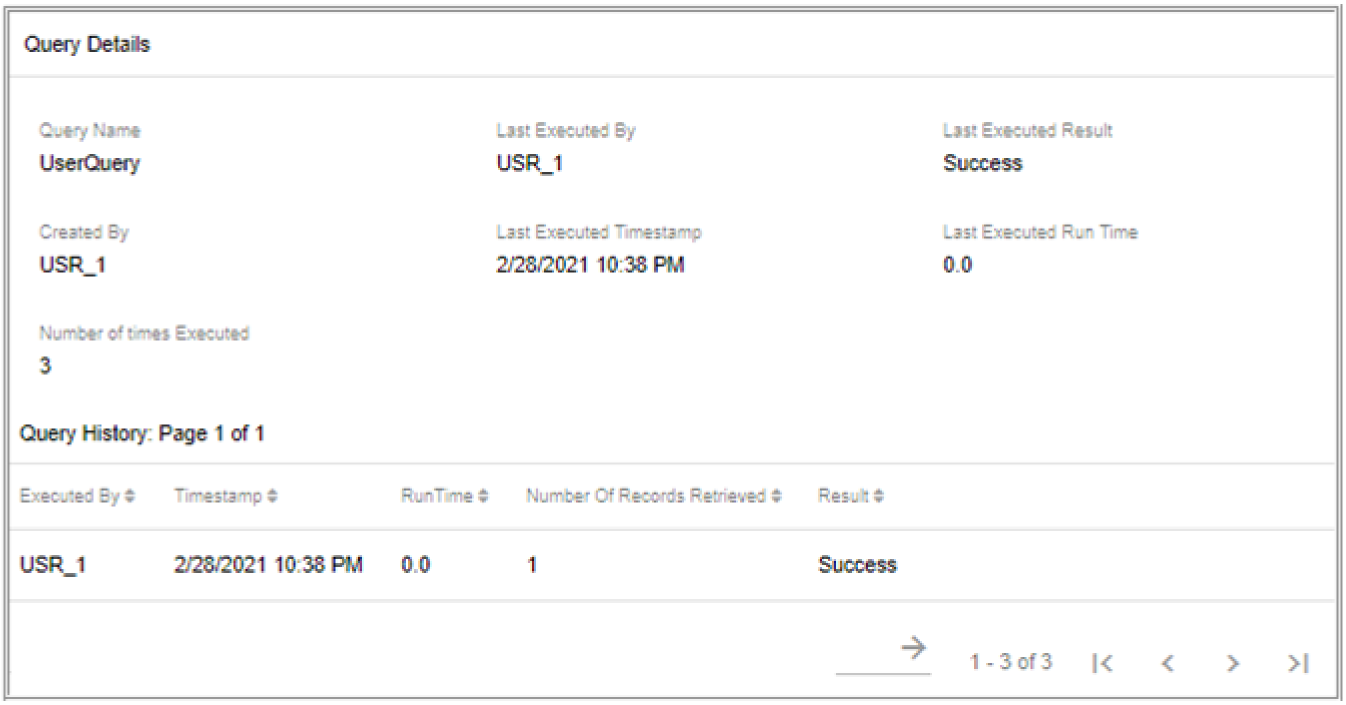
Write SQL like “Select ‘hello’ as hello”, it returns column name hello and it will run without errors.

Query History

To view query history:

1. On the **Manage Queries** page (Figure 966), click on the Menu icon corresponding to the required query and click **Query History.**

   The **Query History** page (Figure 970) is displayed.



Query Details

Query Name
UserQuery

Last Executed By
USR_1

Last Executed Result
Success

Created By
USR_1

Last Executed Timestamp
2/28/2021 10:38 PM

Last Executed Run Time
0.0

Number of times Executed
3

Query History: Page 1 of 1

Executed By	Timestamp	RunTime	Number Of Records Retrieved	Result
USR_1	2/28/2021 10:38 PM	0.0	1	Success

Figure 970: Query History

The **Query History** page (Figure 970) displays the query execution details like user who executed the query, timestamp, runtime, number of records retrieved and results.

Query history helps in identifying frequently executed queries. Administrators can optimize these queries to improve the performance of the query. It also helps administrators to identify queries that retrieve a large volume of data or require a large runtime.

Deleting Query

To delete a query:

1. On the **Manage Queries** page (Figure 966), select a query and click **Delete.**

   The Confirmation pop-up is displayed.

2. On the Confirmation pop-up, click **Yes**.

   Message: Selected query/queries deleted successfully is displayed.

APPENDIX A MDM Schema Generation Process

What's In This Appendix

This appendix provides details on the schema generation scripts provided as part of the Teradata Master Data Management (MDM) product.

Topics include:

- Introduction
- Schema Generation Flow Diagram
- Poster Calls Through REST Web Service
- Configuring SG/ISG
- ISG Validator
- Schema Generation Scripts
- Incremental Schema Generation
- Manually Executing SQLs Generated by MDM Schema Generation Process

Introduction

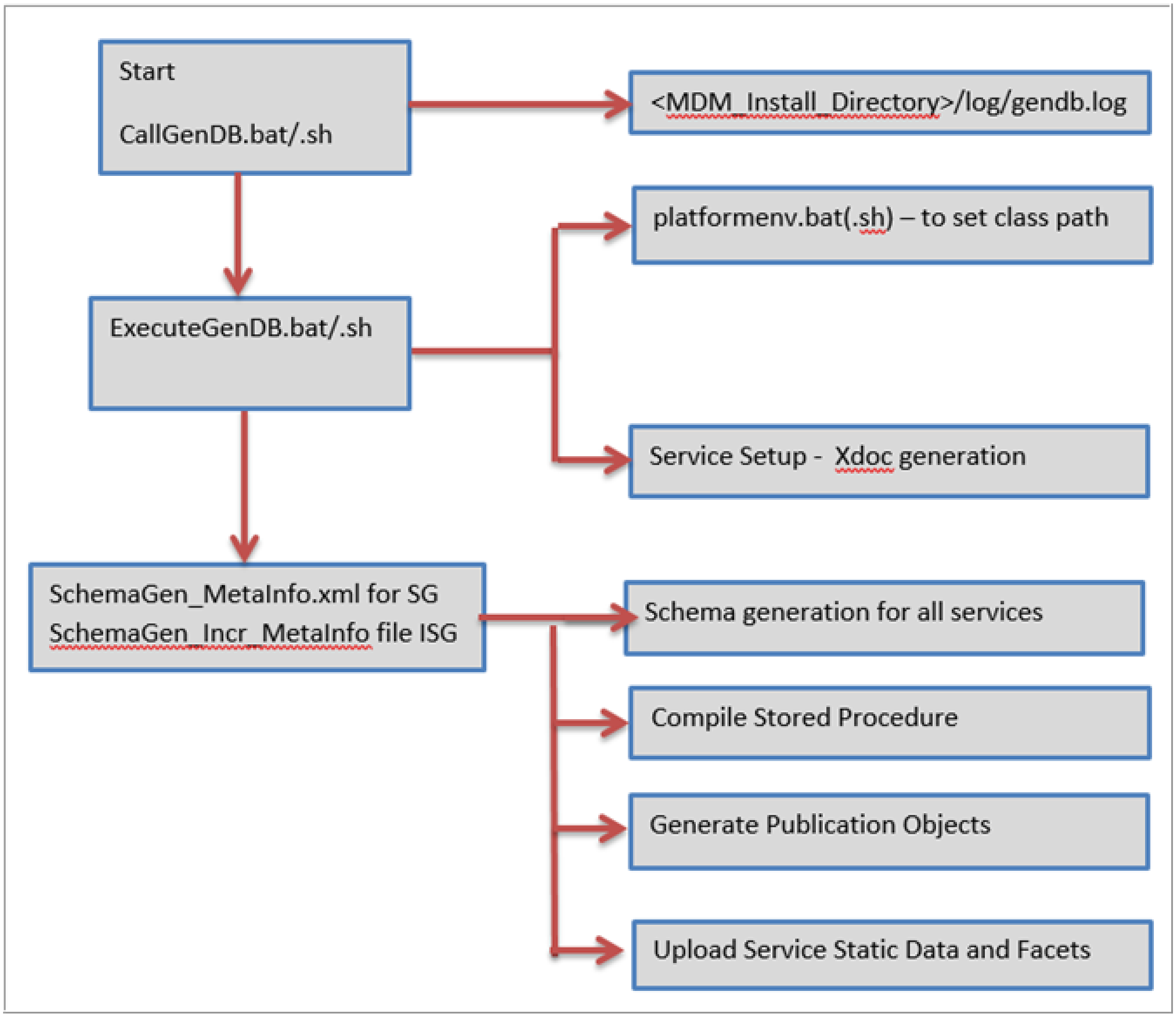
Teradata MDM provides the following methods to generate database schema.

1. Schema Generation (SG)—schema generation process performs generation of full database schema. In addition to generating database schema, it also compiles all stored procedures required for MDM features, generates publication objects and uploads the static data required to support different features of MDM.
2. Incremental Schema Generation (ISG)—incremental schema generation process performs incremental generation of database schema based on the schema differences between an existing schema in a database and schema documents in one or more MDM Services.

Schema Generation Flow Diagram

Figure 971 displays the flow diagram of the events performed by the schema generation scripts in the sequence of their execution.

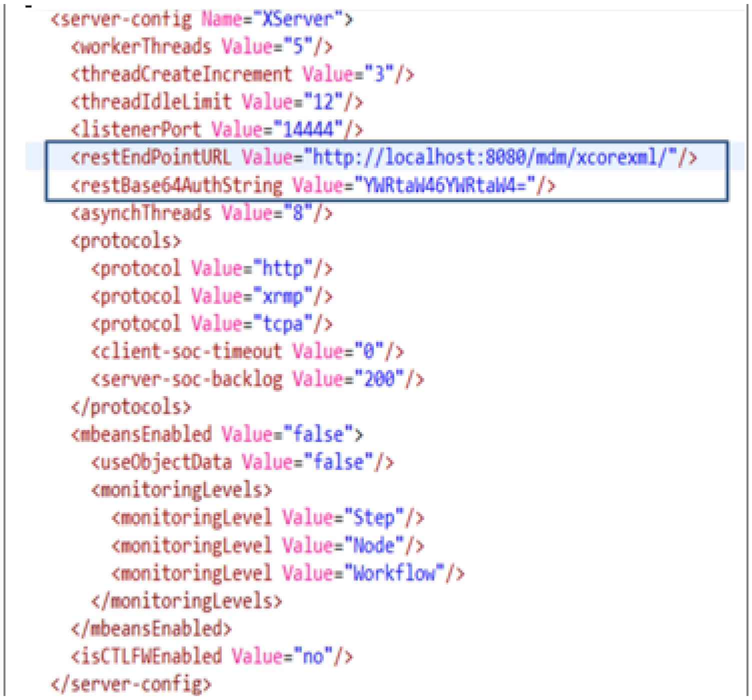
Figure 971: Schema Generation Flow Diagram


Start
CallGenDB.bat/.sh
<MDM_Install_Directory>/log/gendb.log
platformenv.bat(.sh) – to set class path
ExecuteGenDB.bat/.sh
Service Setup - Xdoc generation
SchemaGen_MetaInfo.xml for SG
SchemaGen_Incr_MetaInfo file ISG
Schema generation for all services
Compile Stored Procedure
Generate Publication Objects
Upload Service Static Data and Facets

Poster Calls Through REST Web Service

From MDM 4.0.0 release, the default support of Poster is removed and MDM provides the provision to make Poster calls through REST web service interface. The Poster calls through REST make these calls secured as it requests for username and password. All MDM out of the box scripts are modified to use new REST based poster calls both in collapsed and co-located mode of installation by making minimal changes in existing .bat/.sh files without any specify set-up. The external systems can use these scripts (.bat/.sh files), which in turn internally uses REST calls to contact MDM sever. The supported MDM Rest response will be in any of the formats like XML, JSON, BSON etc., The Rest clients for accessing web services requires “Rest URL endpoint”, “User ID” and “password”. The encrypted string is the combination of userId and password and must be in the format <username>:<password> example: admin:admin for superuser of MDM.

These parameters will be read from xserver.xml as restEndPointURL and restBase64AuthString parameters as in below code snippet.

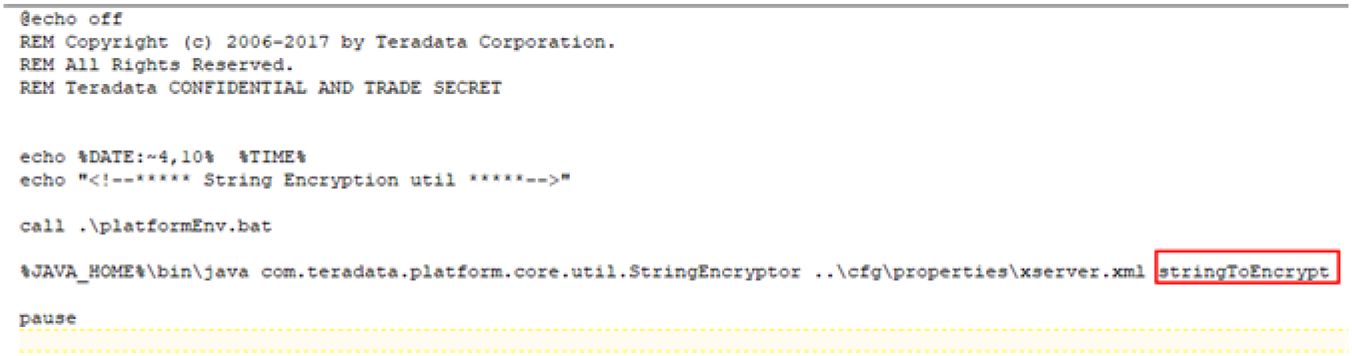


```
<server-config Name="XServer">
  <workerThreads Value="5"/>
  <threadCreateIncrement Value="3"/>
  <threadIdleLimit Value="12"/>
  <listenerPort Value="14444"/>
  <restEndPointURL Value="http://localhost:8080/mdm/xcorexml/"/>
  <restBase64AuthString Value="YWRtaW46YWRtaW4="/>
  <asynchThreads Value="8"/>
  <protocols>
    <protocol Value="http"/>
    <protocol Value="xrmp"/>
    <protocol Value="tcpa"/>
    <client-soc-timeout Value="0"/>
    <server-soc-backlog Value="200"/>
  </protocols>
  <mbeansEnabled Value="false">
    <useObjectData Value="false"/>
    <monitoringLevels>
      <monitoringLevel Value="Step"/>
      <monitoringLevel Value="Node"/>
      <monitoringLevel Value="Workflow"/>
    </monitoringLevels>
  </mbeansEnabled>
  <isCTLFWEnabled Value="no"/>
</server-config>
```

Note: The restEndPointURL parameter in Xserver\XserverWeb.xml should be updated if the context root\Port is changed in the URL for the RESTAPI calls to work. <restEndPointURL Value="http://localhost:8080/mdm/xcorexml/"/>

How to Encrypt the restBase64AuthString parameter value:

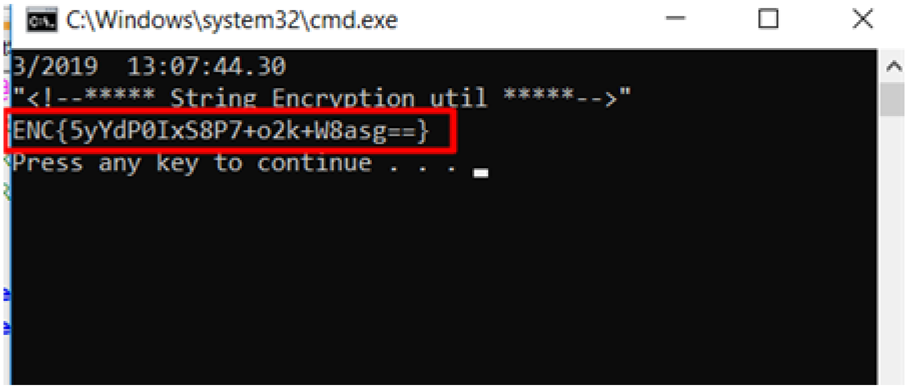
- Navigate to <MDM_Install_Directory>\bin and open the file encryptString.bat/.sh file.



```
@echo off
REM Copyright (c) 2006-2017 by Teradata Corporation.
REM All Rights Reserved.
REM Teradata CONFIDENTIAL AND TRADE SECRET


echo %DATE:~4,10%  %TIME%
echo "<!--***** String Encryption util *****-->"

call .\platformEnv.bat

%JAVA_HOME%\bin\java com.teradata.platform.core.util.StringEncryptor ..\cfg\properties\xserver.xml stringToEncrypt

pause
```

- Change the stringToEncrypt to the text to be encrypted.

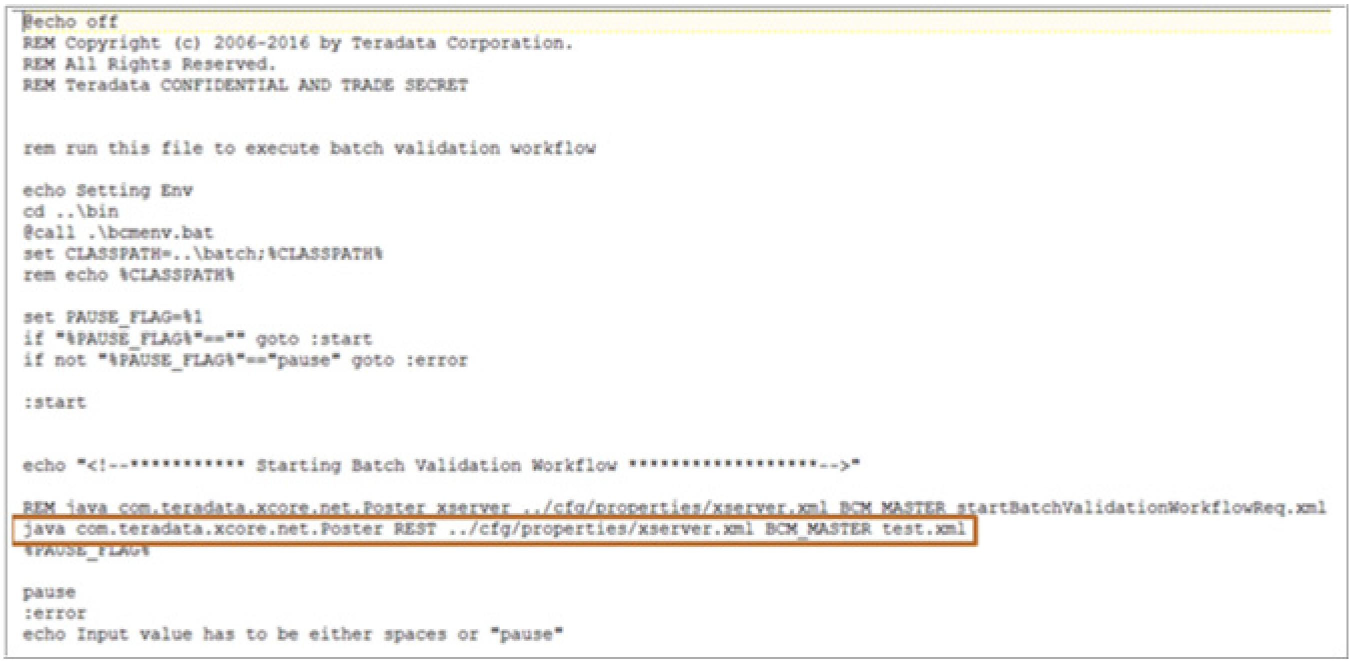
  The encrypted string will be displayed as below.



```
3/2019  13:07:44.30
"<!--***** String Encryption util *****-->"
ENC{5yYdP0IxS8P7+o2k+W8asg==}
Press any key to continue . . .
```

Convert Existing Poster Calls to Rest Calls

To convert existing poster calls to Rest calls, modify the parameters as in below code snippet.



```
@echo off
REM Copyright (c) 2006-2016 by Teradata Corporation.
REM All Rights Reserved.
REM Teradata CONFIDENTIAL AND TRADE SECRET


rem run this file to execute batch validation workflow

echo Setting Env
cd ..\bin
@call .\bcmenv.bat
set CLASSPATH=..\batch;%CLASSPATH%
rem echo %CLASSPATH%

set PAUSE_FLAG=%1
if "%PAUSE_FLAG%"=="" goto :start
if not "%PAUSE_FLAG%"=="pause" goto :error

:start


echo "<!--*********** Starting Batch Validation Workflow *****************-->"

REM java com.teradata.xcore.net.Poster xserver ../cfg/properties/xserver.xml BCM_MASTER startBatchValidationWorkflowReq.xml
java com.teradata.xcore.net.Poster REST ../cfg/properties/xserver.xml BCM_MASTER test.xml
%PAUSE_FLAG%

pause
:error
echo Input value has to be either spaces or "pause"
```

- REST parameter needs to be used to indicate it as Rest call from poster.
- A valid path string to xserver.xml (for reading restEndPointURL and restBase64AuthString values) needs to be provided.
- Service name under which input file is placed needs to be specified.
- A valid path string to input file, Rest client will read input file passed as parameter and includes the content in POST method. For example, in the above code sample, the path to input file is test.xml.

Configuring SG/ISG

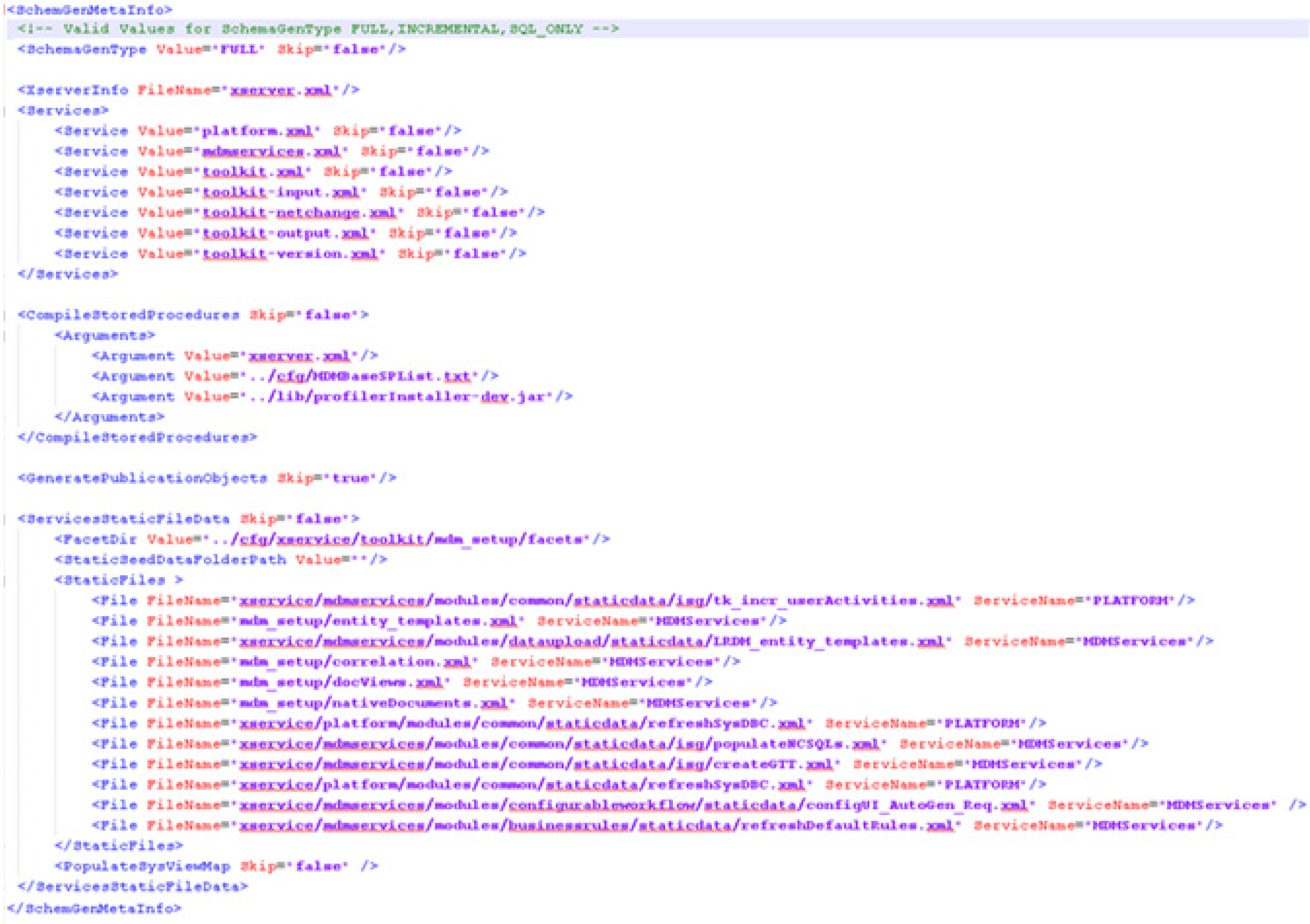
The schema generation process is configurable in a Meta XML file (SchemaGen_MetaInfo.xml for Full schema generation and SchemaGen_Incr_MetaInfo.xml for incremental schema generation Process) available at <MDM_Install_Directory>\cfg. For custom projects, the meta files will be custom_SchemaGen_MetaInfo.xml and custom_SchemaGen_Incr_MetaInfo.xml

The Meta XML file will have all the necessary details like which services to execute, list of static data files, arguments for Stored procedure compilation etc.

You can choose to run selective steps in the schema generation process. Stored Procedures Compilation, Publication Objects Generation, Static Data upload can be individually skipped by setting the 'Skip' attribute to 'true' in the meta xml file. By default, the Skip option is set to false. You can also add or delete services by editing the meta file.

Figure 972 displays SchemaGen_MetaInfo xml file.

Figure 972: SchemaGen_MetaInfo File



```
<SchemGenMetaInfo>
 <!-- Valid Values for SchemaGenType FULL,INCREMENTAL,SQL_ONLY -->
 <SchemaGenType Value='FULL' Skip='false'/>

 <XserverInfo FileName='xserver.xml'/>
 <Services>
     <Service Value='platform.xml' Skip='false'/>
     <Service Value='mdmservices.xml' Skip='false'/>
     <Service Value='toolkit.xml' Skip='false'/>
     <Service Value='toolkit-input.xml' Skip='false'/>
     <Service Value='toolkit-netchange.xml' Skip='false'/>
     <Service Value='toolkit-output.xml' Skip='false'/>
     <Service Value='toolkit-version.xml' Skip='false'/>
 </Services>

 <CompileStoredProcedures Skip='false'>
     <Arguments>
         <Argument Value='xserver.xml'/>
         <Argument Value='../cfg/MDMBaseSPList.txt'/>
         <Argument Value='../lib/profilerInstaller-dev.jar'/>
     </Arguments>
 </CompileStoredProcedures>

 <GeneratePublicationObjects Skip='true'/>

 <ServicesStaticFileData Skip='false'>
     <FacetDir Value='../cfg/xservice/toolkit/mdm_setup/facets'/>
     <StaticSeedDataFolderPath Value=''/>
     <StaticFiles >
         <File FileName='xservice/mdmservices/modules/common/staticdata/isg/tk_incr_userActivities.xml' ServiceName='PLATFORM'/>
         <File FileName='mdm_setup/entity_templates.xml' ServiceName='MDMServices'/>
         <File FileName='xservice/mdmservices/modules/dataupload/staticdata/LRDM_entity_templates.xml' ServiceName='MDMServices'/>
         <File FileName='mdm_setup/correlation.xml' ServiceName='MDMServices'/>
         <File FileName='mdm_setup/docViews.xml' ServiceName='MDMServices'/>
         <File FileName='mdm_setup/nativeDocuments.xml' ServiceName='MDMServices'/>
         <File FileName='xservice/platform/modules/common/staticdata/refreshSysDBC.xml' ServiceName='PLATFORM'/>
         <File FileName='xservice/mdmservices/modules/common/staticdata/isg/populateNCSQLs.xml' ServiceName='MDMServices'/>
         <File FileName='xservice/mdmservices/modules/common/staticdata/isg/createGTT.xml' ServiceName='MDMServices'/>
         <File FileName='xservice/platform/modules/common/staticdata/refreshSysDBC.xml' ServiceName='PLATFORM'/>
         <File FileName='xservice/mdmservices/modules/configurableworkflow/staticdata/configUI_AutoGen_Req.xml' ServiceName='MDMServices' />
         <File FileName='xservice/mdmservices/modules/businessrules/staticdata/refreshDefaultRules.xml' ServiceName='MDMServices'/>
     </StaticFiles>
     <PopulateSysViewMap Skip='false' />
 </ServicesStaticFileData>
</SchemGenMetaInfo>
```

In the SchemaGen_MetaInfo xml file:

- **SchemaGenType Value** tag can take any of the following values:
  - FULL: complete schema generation process will be performed.
  - INCREMENTAL: incremental schema generation process will be performed.
  - SQL_ONLY: only incremental SQL generation process will be performed.
- The **xserver** tag contains the xserver file name.
- The **Services** tag provides the list of x-service files. You can add any new service if required in the same format and will be included in the schema generation process.
- The **CompileStoredProcedures** tag provides the list of stored procedures to be executed. To change the list of stored procedure, you can modify in the second argument list. You can add new stored procedure at the end and the argument list sequence should be maintained.
- In the **GeneratePublicationObjects** tag, no inputs required and you can only set the Skip option to either true or false.
- The **ServicesStaticFileData** tag provides the list of static data files and facets directory details for upload. You can add any new static data file in the same format.
- In the **PopulateSysViewMap** tag, no inputs required and you can only set the Skip option to either true or false.

The configuration meta XML file structure is similar for both SG and ISG.

ISG Validator

The Incremental Schema Generation (ISG) validator validates the process of ISG involving the schema generation, stored procedures compilation, static data upload etc. The ISG validator performs pre and post ISG to verify whether the ISG process is executed properly or not.

The ISG validator stores the metadata information prior to ISG and post ISG execution, compares the recorded data and generates a report based on the recorded data at the end of ISG process. During the execution of ISG validator, it stores the metadata information (like facets count, template count, column count, table count etc.,) in database before and after ISG. It checks for the metadata count differences and highlights all the count difference and provides detailed report on all the steps executed and status (successful, skip, error etc.,) of each executed step in the ISG log file. The negative count difference indicates errors in ISG and for each step failed, it reports the reason for failure.

Execute ISG Validator

The ISG validator gets auto executed every time the ISG process is initiated either from runtime or from command line using ISG scripts.

If you want to skip the ISG validator, navigate to Meta Info file (SchemaGen_Incr_MetaInfo.xml or custom_SchemaGen_Incr_MetaInfo.xml file) available at: *<MDM_Install_Directory>\cfg* folder and add the “Isgvalidator” parameter and set its value as “false” as shown below:

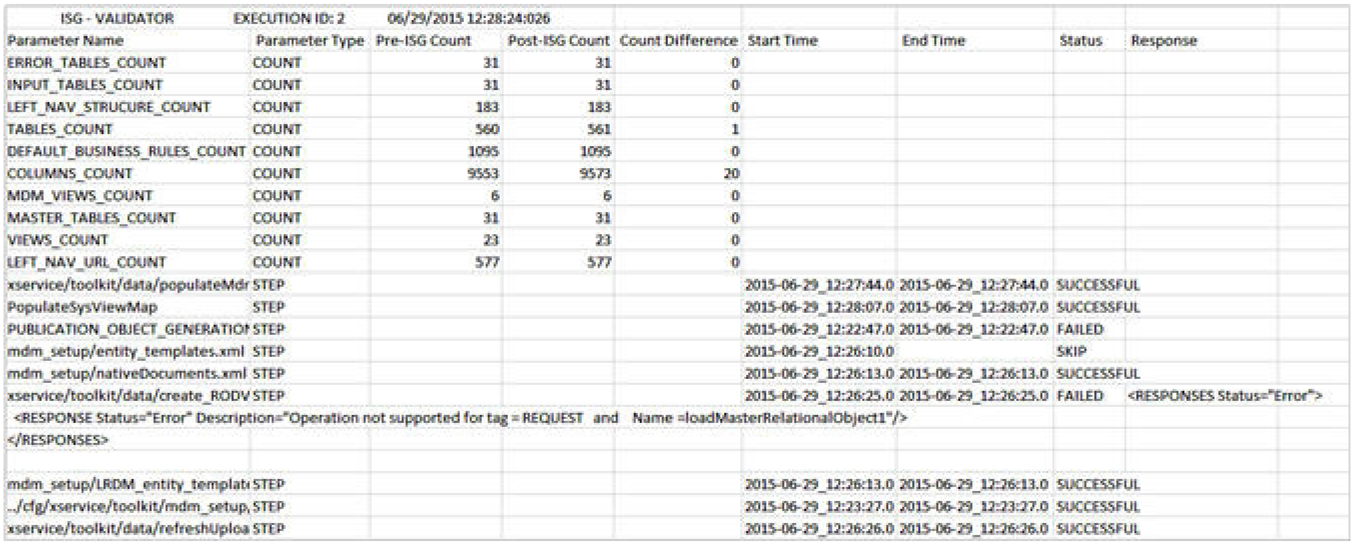
```
<SchemaGenType Value="INCREMENTAL" Isgvalidator="false"/>
```

By default, the “Isgvalidator” parameter is not available in the configuration file.

ISG Validator Report

ISG validator report is generated during the schema generation and provides detailed information about metadata count difference and execution steps. By default, the log details will be available in isg_validator.csv file at: *<MDM_Install_Directory>\log* in case of custom project, the log file is available at:
<MDM_Install_Directory>\custom\<custom_Project>\log.

The below screenshot displays the sample ISG validator report.



ISG - VALIDATOR	EXECUTION ID: 2	06/29/2015 12:28:24:026						
Parameter Name	Parameter Type	Pre-ISG Count	Post-ISG Count	Count Difference	Start Time	End Time	Status	Response
ERROR_TABLES_COUNT	COUNT	31	31	0				
INPUT_TABLES_COUNT	COUNT	31	31	0				
LEFT_NAV_STRUCURE_COUNT	COUNT	183	183	0				
TABLES_COUNT	COUNT	560	561	1				
DEFAULT_BUSINESS_RULES_COUNT	COUNT	1095	1095	0				
COLUMNS_COUNT	COUNT	9553	9573	20				
MDM_VIEWS_COUNT	COUNT	6	6	0				
MASTER_TABLES_COUNT	COUNT	31	31	0				
VIEWS_COUNT	COUNT	23	23	0				
LEFT_NAV_URL_COUNT	COUNT	577	577	0				
xservice/toolkit/data/populateMdr	STEP				2015-06-29_12:27:44.0	2015-06-29_12:27:44.0	SUCCESSFUL	
PopulateSysViewMap	STEP				2015-06-29_12:28:07.0	2015-06-29_12:28:07.0	SUCCESSFUL	
PUBLICATION_OBJECT_GENERATIOI	STEP				2015-06-29_12:22:47.0	2015-06-29_12:22:47.0	FAILED	
mdm_setup/entity_templates.xml	STEP				2015-06-29_12:26:10.0		SKIP	
mdm_setup/nativeDocuments.xml	STEP				2015-06-29_12:26:13.0	2015-06-29_12:26:13.0	SUCCESSFUL	
xservice/toolkit/data/create_RODV	STEP				2015-06-29_12:26:25.0	2015-06-29_12:26:25.0	FAILED	<RESPONSES Status="Error">
<RESPONSE Status="Error" Description="Operation not supported for tag = REQUEST and Name =loadMasterRelationalObject1"/>								
</RESPONSES>								
mdm_setup/LRDM_entity_templat	STEP				2015-06-29_12:26:13.0	2015-06-29_12:26:13.0	SUCCESSFUL	
../cfg/xservice/toolkit/mdm_setup,	STEP				2015-06-29_12:23:27.0	2015-06-29_12:23:27.0	SUCCESSFUL	
xservice/toolkit/data/refreshUploa	STEP				2015-06-29_12:26:26.0	2015-06-29_12:26:26.0	SUCCESSFUL	

In the ISG validator report,

- For parameter type “Count”, the PRE-ISG count, POST-ISG count and count difference is displayed. In case of any error in metadata count calculation, the status will be displayed as error.
- For parameter type “Step”, the following information is displayed.
    - Operation start time and end time.
    - The Status column displays the status as either SKIP/Successful/Failed based on the execution result. The “SKIP” status indicates that a particular step is not executed, the “Successful” status indicates that the step was executed correctly without any errors. The “Error” status indicates that an error had occurred during step execution.
    - Response column provides the reason for step execution failure.

Schema Generation Scripts

Perform the below step to perform schema generation:

1. Create schema without reviewing DDLs: callGenDB.bat (callGenDB.sh)

   The above script internally calls executeGenDB.bat/.sh, which calls SchemaGen_MetaInfo.xml in sequence to maintain the dependencies and data integrity during the Teradata MDM schema generation process. Refer to *<MDM_Install_Directory>\bin* folder for the above scripts.

   Note: While performing solution setup from Studio on empty schema, <servicename>.sql file will be generated for all the MDM services.

2. Review DDLs before creating schema:

   Manually execute the SQLs. For details, see Section : "Manually Executing SQLs Generated by MDM Schema Generation Process".

Note:

- To compile only stored procedure, in the SchemaGenMetaInfo file, set the parameter <CompileStoredProcedures skip = "false"> and for all other parameters set skip= "true".

  You can customize stored procedure list using MDMBaseSPList.txt file located at: <MDM_Install_Directory>\cfg.

- During SG/ISG process, if stored procedure compilation error is encountered, the SG/ISG process will not be stopped and the details of error can be viewed from log file (gendb/incr_gendb) available at: <MDM_Install_Directory>\log.
- A new parameter "ACCESS_LOCK_FOR_VIEWS" is added in Xserver.xml and in Xserverweb.xml. By default, this parameter is set to false. If it is set to true, all the MDM views generated as part of SG and ISG will have LOCKING ROW FOR ACCESS enabled.

Incremental Schema Generation

Incremental schema generation uses a similar set of scripts to generate incremental schema on top of the existing schema. Perform the below step to perform incremental schema generation:

1. Execute DDLs without review: callIncrGenDB.bat (callIncrGenDB.sh)

   The above script internally calls executeIncrGenDB.bat/.sh, which calls SchemaGen_Incr_MetaInfo.xml in sequence to maintain the dependencies and data integrity during the Teradata MDM schema generation process. Refer to *<MDM_Install_Directory>\bin* folder for the above listed scripts.

   The incremental schema generator method is used to generate SQL based on the schema differences between an existing schema in a database and schema documents in one or more MDM Services. The inputs to this script are essentially the Server configuration file (that contains the Database information whose schema that forms the baseline for comparison) and the service configuration file(s) (that have references to the MDM XDocuments that will be compared with the baseline).

   Note:

- To run incremental schema generation in command line, an out of the box script (*callIncrGenDB.bat/sh*) is provided at <*MDM_Install_Directory*>*\bin*. This script takes care of schema generation as well as generation of publication objects; reload of facets, correlation and upload templates, incremental load of user activities, creation of global tables and authorization views and upload of SQL validation rules defined through studio at design time.
- To validate or flag discrepancies in the model during service setup, refer to *Chapter Process Modelling, section Model Validator in Master Data Management Studio User Guide.*
- It is recommended to purge the S_E2E_LOG table at regular intervals.

2 Review DDLs before executing

To invoke SQL only schema generation, navigate to Meta Info file (SchemaGen_Incr_MetaInfo.xml) available at: <*MDM_Install_Directory*>*\cfg* folder and

set the SchemaGenType value as : <SchemaGenType Value= “SQL_ONLY” skip = “fasle”>

The output SQL script is written to the respective service file within the schemaGenerate tags. For example, if the service file had the following:

```
<schemaGenerate Value="true">
  <file Value="../db/em.sql"/>
  <generateTables Value="true"/>
</schemaGenerate>
```

Invoking the incremental schema generator will create the alter scripts in em.sql.

Note: Refer to the SQL file generated during the ISG/Solution Setup for comments of type Errors or Warnings. If there are comments for errors or warnings in the SQL file, resolve the errors or ensure that it does not lead to data loss.

Now Manually execute the SQLs. For details, see Section : “Manually Executing SQLs Generated by MDM Schema Generation Process”.

If you need to run/upload only static data, set <ServiceStaticFileData skip = “fasle”> and for all other parameters set skip = “true” in SchemaGen_Incr_MetaInfo.xml

Manually Executing SQLs Generated by MDM Schema Generation Process

By default, Schema generation process creates SQL files in <*MDM_Install_Directory*>*\db* folder containing DDLs, generates views at <*MDM_Install_Directory*>/cfg/xservice/<serviceName>/viewsql, generates stored procedures in respective modules. Each SQL file will correspond to each service participating in schema generation process. For example, for BCM_MASTER, the output SQL file will be generated in <*MDM_Install_Directory*>*\db* folder as below:

1. File name (../db/master.sql) as specified in the service files tag in <schemaGen_MetaInfo> file.

Review those SQL files and execute them on database using any database client like SQL Assistant or BTEQ.

Execution order of the SQL files should correspond to the following order of services:

- PLATFORM
- MDM SERVICE
- BCM_MASTER
- BCM_OUTPUT_STAGING
- BCM_INPUT_STAGING
- BCM_NET_CHANGE
- BCM_VERSION_STAGING

APPENDIX B ABC Framework

What's In This Appendix

This appendix provides details on the ABC Framework implementation details.

Topics include:

- Audit Balance and Check Groups

Audit Balance and Check Groups

The integration of Audit Balance & Check (ABC) model in MDM provides an enterprise view of logging mechanism for any of MDM OOTB processes and/or custom processes. It increases traceability, data quality, data lineage and exception handling.

The Audit Balance & Check (ABC) model in MDM captures all execution log of Cleansing and Standardization, Matching, Survivorship and any other batch execution performed from MDM server. These groups are created under MST_GROUP during the MDM installation. When a C & S, matching or survivorship profile is created either from UI or through Profile Migration Upload process, an ABC job is created in MST_JOB_MASTER with Job name same as the profile name and will be linked to the corresponding default group of that module as in the below list.

- DEFAULT_CS— the default ABC group created for C & S profiles.
- DEFAULT_MATCHING—the default ABC group created for Matching profiles.
- DEFAULT_SURVIVORSHIP—the default ABC group created for Survivorship profiles.

When any of the C&S or Matching or Survivorship profile is executed, the execution logs will be captured in MST_JOB_RUN_DETAILS.

- As per the current ABC implementation, every job in MST_JOB_MASTER must belong to any of the group defined in MST_GROUP.
- If a matching/survivorship/c&s profile is created from UI, a new job will be created and it will be assigned to the default group of that type (DEFAULT_CS, DEFAULT_MATCHING, DEFAULT_SURVIVORSHIP), with sequence id as 1 in MST_JOB_GROUP.

- Once ABC metadata is created initially, you can edit MST_GROUP to align to any custom groups with any sequences. Editing of profiles will not rewrite the ABC metadata.

The ABC Framework uses the below process for implementation within the MDM.

- ABC Data Model
- Administrative Configurable UIs
- ABC Modules or APIs

ABC Data Model

The ABC Data model in MDM maintains the Audit, Balance and Control information and uses the following ABC Metadata tables: Audit, Balance and Control tables for the implementation purpose.

Metadata Tables

Table 27 describes all the ABC Metadata tables used to maintain group, job level and status of ABC metadata.

Table 27: Metadata Tables

Database Name	Table Name	Description
MDM_MST	MST_GROUP	It defines a set of jobs that achieve a single purpose, either from a source entity or processing point of view. This table allows you to create multiple groups which abstract group level functionalities to orchestrate the overall process. Groups can be created such as source to pre-stage load, pre-stage to stage load E2E process, matching process, survivorship process, publishing process, etc. Group can be created by providing the following metadata values such as Group Id, Group Name, Parent Group Id.
MDM_MST	MST_JOB_MASTER	A job is a unit of execution that processes one source file or pre-stage table to load a stage or target table. It allows you to create multiple jobs/scripts within the group and repurpose jobs amongst different groups. A Job can be created by providing following metadata details such as Job Id, Job Name and Threshold Limit.
MDM_MST	MST_JOB_MASTER_DETAILS	This table allows you to create the details of Job(s), script(s), source(s) and target(s) and its associated tables, balance checks and sums scripts, DQ scripts.

Table 27: Metadata Tables

Database Name	Table Name	Description
MDM_MST	MST_JOB_GROUP	This table defines a group of master Jobs which will be run in a sequence within one group. To associate job(s) and its sequence with a Group, functionality to create an entry in MST_JOB_GROUP must be provided with values for Group Id, Job Id and Sequence.
MDM_MST	MST_STATUS	This table allows you to create multiple statuses for actual executions of daily routines.
MDM_MST	MST_SOURCE_FILE	This table allows you to create External metadata such as file based and Web API(s) based metadata. It defines the major classifications of files which are sent by sources defined in SOURCE_INTAKE entity. For example Filename, Filetype, Extension, Delimiter, SFTP details, Load Frequency (monthly, weekly, daily) with corresponding load frequency day of the month, day of week, etc.
MDM_MST	MST_SOURCE_INTAKE	This table defines the main classifications of sources. For example: Eclipse, SalesFource, WideOrbit, BridgeFiles, TIM, etc.

Audit and Error Tables

The Table 28 describes all the ABC Audit tables. Each time a job is run, the start and end time of the job and/or group along with number of records processed with job status is stored in ABC Audit tables.

Table 28: Audit and Error Tables

Database Name	Table Name	Description
MDM_MST	MST_GROUP_RUN	This table records the actual execution logs of daily routines such as group start timestamp, group end timestamp and number of records processed from all the jobs with in the group. It allows you to keep track of what all group(s) ran successfully and what all group(s) failed.
MDM_MST	MST_JOB_RUN_DETAILS	This table records the actual execution logs of daily routines such as job start timestamp, job end timestamp and number of records processed. It allows you to keep track of what all job(s) ran successfully and what all job(s) failed.

Balance Tables

Table 29 describes the ABC Balance tables. Each time MDM routines are run, the SQL scripts stored in these tables are used to compare the results between different layers such as Source, Pre-Staging, Staging and Master.

Table 29: Balance Tables

Database Name	Table Name	Description
MDM_MST	MST_JOB_MASTER_DETAILS	It allows you to maintain the list of SQL scripts which will be stored and run at pre-defined intervals to compare data checks and sums in between source(s) and target(s). The data quality SQL Scripts is run on the Staging Table. The scripts are dynamically read from MST_JOB_MASTER_DQ_SCRIPT and execute the DQ process. It will update the DQ Flag, DQ_Severity and DQ_ActionCode appropriately on the Staging tables.

Control Tables

Table 30 describes the ABC Control tables. Control tables maintain the schedule of MDM jobs as well as the re-startability of MDM routines in case of failures.

Table 30: Control Tables

Database Name	Table Name	Description
MDM_MST	MST_JOB_MASTER_DETAILS	The data quality SQL Scripts is run on the Staging Table. The scripts are dynamically read from MST_JOB_MASTER_DQ_SCRIPT and execute the DQ process. It will update the DQ Flag, DQ_Severity and DQ_ActionCode appropriately on the Staging tables.

Administrative Configurable UIs

The Administrative Configurable UI's are used to manage the ABC Metadata for MDM Functionalities/Processes. Using the Configurable UIs, you create/update the JOB information metadata and create/update the multiple Status information metadata.

ABC Modules or APIs

The ABC APIs are generic module to create/update the Audit, Balance and Control for Batch MDM Processes.

- This OOTB Module or API creates entries in Group Run details tables.
- Creates the foundation to support entries in group run and job run details for any MDM processes.

- Create Stored procedures to take input as Job Id and Status Id to create an entry in group run and Job run details.

```
START
Ensure the JOB_ID is valid
Ensure the GROUP_ID is valid if Job is associated to GROUP
Check if the Sequence of execution of particular JOB_ID in associated
GROUP Is 1
        If so, Assign Unique GROUP_RUN_ID
        Add the new entry for GROUP_RUN_ID, GROUP_ID with 'In
Progress" STATUS_ID
       Else, Continue
Ensure GROUP_ID has valid entry with 'In Progress" GROUP_RUN_ID
Check if this JOB_ID has any 'Running' JOB_RUN_ID
If so, exit with corresponding message
Else, continue
Assign Unique JOB_RUN_ID
Add the new entry for JOB_ID, GROUP_RUN_ID, JOB_RUN_ID
EXIT
```

- Creates an OOTB module within MDM to trigger the stored procedure to create a daily scheduled routine execution log entries.

ABC Stored Procedures

The Table 31 describes the ABC Stored Procedures.

Table 31: ABC Stored Procedures

Database Name	Stored Procedure	Description
MDM_MST	GENERATE_JOB_RUN_ID	This stored procedure generates a unique Job Run ID for a specific Job.
MDM_MST	GENERATE_GROUP_RUN_ID	This stored procedure generates Unique Job group Run ID for a specific group of Jobs.
MDM_MST	ABC_JOB_RUN_STATUS	This stored procedure is an initial trigger and will check the previous job run status and accordingly call subsequent stored procedures.
MDM_MST	INSERT_JOB_RUN_DETAILS	This stored procedure makes a log entry in MST_JOB_RUN_DETAILS table with status, start timestamp and end timestamp.
MDM_MST	UPDATE_JOB_RUN_DETAILS	This stored procedure updates the log entry in MST_JOB_RUN_DETAILS table with balance counts like source, target, insert, update, duplicate, error and warning counts.
MDM_MST	UPDATE_GROUP_JOB_RUN	This stored procedure inserts/updates a log entry in MST_GROUP_JOB_RUN table with status, start timestamp and end timestamp.

ABC APIs

The Table 32 describes the ABC APIs.

Table 32: ABC APIs

Stored Procedure	Description
pre_JobTrigger	This API logs a JOB RUN entry in MST_JOB_RUN_DETAILS and MST_GROUP_JOB_RUN tables.
prePost_JobComplete	This API updates the balance counts in corresponding log table MST_JOB_RUN_DETAILS.
post_JobComplete	This API updates the status with end timestamp in MST_JOB_RUN_DETAILS and MST_GROUP_JOB_RUN tables.

APPENDIX C Backup and Storage Guidelines

What's In This Appendix

This appendix provides recommendations and guidelines to take regular backups of MDM application and data.

Topics include:

- Overview
- Backup Process
- Backdown Procedure for MDM

Overview

Business Continuity Planning (BCP) is a concept used to create and validate a practiced logistical plan for how an organization will recover and restore partially or completely interrupted critical function(s) within a predetermined time after a disaster or extended disruption. In plain language, BCP is working out how to stay in business in the event of disaster. Business Continuity Plan for Teradata MDM provides user, guidelines and recommendation for steps and process to backup and restore system in the event of disaster or in case of system loss.

Main objective of BCP is to devise a regular and reliable backup process and restore application and other settings in the event of system loss. Backup methods include industry standard practices for Windows and Linux file system backup, Teradata backup, and restoring the application to get things on the run.

Backup Process

Organizations can have various tools and processes to take backups of application servers and file systems as part of disaster management policies for Windows and Linux based systems. Backup and storage policies ensure that in case of system failure or loss, the MDM application will be restored to its functional state based on backup files created.

It is recommended to take regular backups of the MDM application and schema in case of the following events:

- When you first install the MDM application.
- When you deploy custom applications on top of the MDM application.
- When you apply any patches to the MDM application.

- When any deployment manager installation occurs on the base MDM application.
- Weekly or monthly full backup of MDM application files.
- Any schema changes to existing model.

Note: Follow standard Teradata backup procedures in case of database backup of MDM application data.

Note: For more information on Windows Backup utility, refer to the below link: http://support.microsoft.com/kb/308422

Teradata MDM application components can be divided in to two categories:

1. Pre-runtime
2. Runtime

Pre-runtime

This section details the deployment structure of Teradata MDM and nature of each of the application resources (application and DB schema) to better understand backup and restore guidelines. It also describes custom application deployment and backup / restore guidelines for a custom application using deployment manager of MDM.

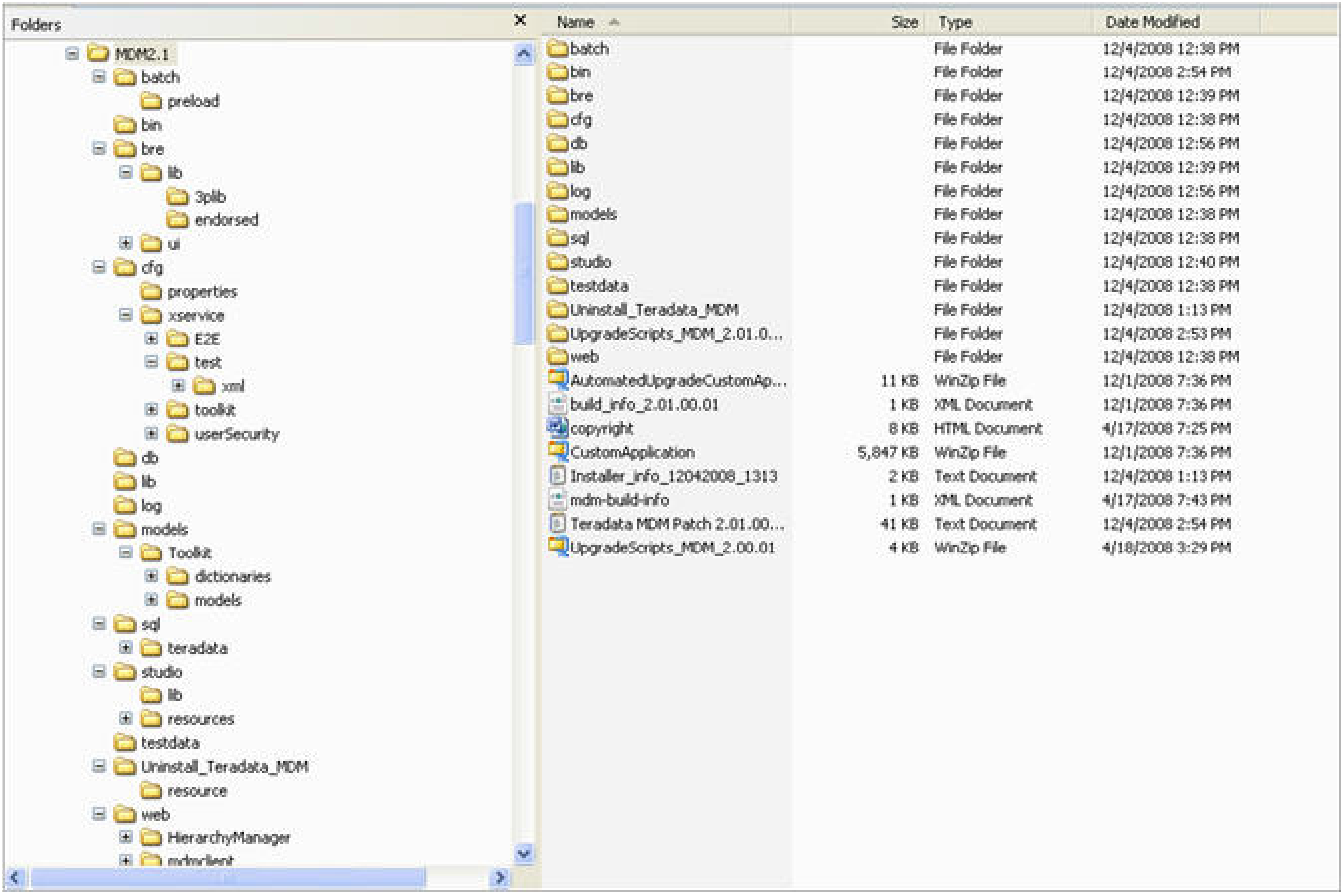
Teradata MDM has two deployment time components:

- MDM application resources (X-documents, data model, jar files, log files, SQL files etc).
- MDM database schema

MDM Application Resources

Figure 973 displays a deployed MDM application. This section details static and dynamic resources within a deployed MDM application which can be useful to devise backup policies.

Figure 973: MDM Application Deployment Folders



Name	Size	Type	Date Modified
batch		File Folder	12/4/2008 12:38 PM
bin		File Folder	12/4/2008 2:54 PM
bre		File Folder	12/4/2008 12:39 PM
cfg		File Folder	12/4/2008 12:38 PM
db		File Folder	12/4/2008 12:56 PM
lib		File Folder	12/4/2008 12:39 PM
log		File Folder	12/4/2008 12:56 PM
models		File Folder	12/4/2008 12:38 PM
sql		File Folder	12/4/2008 12:38 PM
studio		File Folder	12/4/2008 12:40 PM
testdata		File Folder	12/4/2008 12:38 PM
Uninstall_Teradata_MDM		File Folder	12/4/2008 1:13 PM
UpgradeScripts_MDM_2.01.0...		File Folder	12/4/2008 2:53 PM
web		File Folder	12/4/2008 12:38 PM
AutomatedUpgradeCustomAp...	11 KB	WinZip File	12/1/2008 7:36 PM
build_info_2.01.00.01	1 KB	XML Document	12/1/2008 7:36 PM
copyright	8 KB	HTML Document	4/17/2008 7:25 PM
CustomApplication	5,847 KB	WinZip File	12/1/2008 7:36 PM
Installer_info_12042008_1313	2 KB	Text Document	12/4/2008 1:13 PM
mdm-build-info	1 KB	XML Document	4/17/2008 7:43 PM
Teradata MDM Patch 2.01.00...	41 KB	Text Document	12/4/2008 2:54 PM
UpgradeScripts_MDM_2.00.01	4 KB	WinZip File	4/18/2008 3:29 PM

Static Resources

The following list provides the static resources:

- **batch**: batch contains executable for the data load workflow. It also contains executable for running the error correction workflow. These files are primarily static in nature and the user can change for any custom requirements.
- **bin**: this folder contains executable and configuration files for schematic process. It also contains scripts to start and stop MDM server. These scripts are primarily static in nature and you can change these files based on any custom requirements.
- **bre**: this folder contains third party jar files, UI resources and overridden library files.
- **cfg**: this folder contains xservice properties files and xservice resources (rules, workflows, model instance, xdocuments etc.). These resources play a major role in the deployed MDM application and runtime environment.

  This folder should be backed up regularly if there are frequent custom changes to the base MDM installation.
- **lib**: this folder contains MDM application library files and with MDM incremental releases, it might be upgraded with patch related changes.

  It is recommended to backup this folder before applying any patches to MDM installation.

- **model**: models contain MDM model and dictionaries. Primarily this folder is static but changes based on custom model changes and dictionary related changes may be made.

  It is recommended to backup this folder before and after changing base MDM models for custom changes.
- **sql**: this folder contains out of the box store procedures provided by MDM install. You can add any custom store procedure to be used by the MDM application.
- **studio**: studio contains the executable MDM studio and resources which are static in nature.
- **testdata**: testdata contains test data for MDM and Erwin models for reference.
- **web**: this folder contains the Web component deployed on the application server and other static resources. In addition, UI workflow service related resources can be found under this folder.

  It is recommended to backup this folder before and after any custom changes to the MDM application.

Dynamic Resources

The following list provides the dynamic resources:

- **db**: this folder contains SQL created by the SchemaGen or ISG process. Every SchemaGen or ISG run will overwrite previously created SQL.

  Before you run SchemaGen or ISG after installing MDM, take a backup of this folder to preserve SQL generated for the previous schema update processes.
- **log**: this folder contains log files for every MDM service running under the MDM server. By default MDM application logs every error and/or exception that occurred on the application. You can set log file size in xservice file which is 5 MB default. Application takes backup of log files if it grows beyond 5 MB or on every restart of MDM application server.

  If any MDM application process fails, log files will be very useful in identifying cause of error or failure of process.

  You must take regular backup of this folder to preserve status of error if any occurred while running MDM application.

Backup and Restore

All the above described MDM resources can be backed up using organization specific backup policy and tools and can be restored easily moving it to a new MDM installation. You need to update service files and properties based on database details. If planning to run SchemaGen or ISG process then, required configuration files need to be updated based on new database details.

After restoring base MDM, you can use Deployment Manager (DM) to restore custom application backed up to database.

It is always recommended (and industry standard) to backup application files to remote media such as remote servers, tape drive, DVDs, etc in case of disaster to the premise.

Note: You may have to restore archived MDM application resources to same folder structure while performing restore as executable scripts may have a specific path set for previous install.

Custom Application on MDM and Deployment Manager

You can deploy custom application on base MDM using Deployment Manager. This will add another folder, namely Custom, under the base MDM install which will contain custom application related resources.

It is a recommended practice to take a back up of the base MDM install before applying any patches or deploying custom application, because custom application or incremental patches may have changes to MDM application libraries and sometimes model changes.

You can backup Custom application using Deployment Manager within MDM Studio and can store it to database for backup. You can also use custom scripts or backup tools to backup MDM application before every patch or custom application changes.

MDM Database Schema

With the amount of data growing exponentially and with the increasing use of the data warehouse for real-time operations, business continuity is critical, and the recovery of data during loss incidents and data security is more important than ever. Without current or accessible data, companies cannot continue to function well.

Teradata database backups are generally performed periodically as per the Corporate Enterprise backup policy employing various types of Teradata solution being offered as well as any custom solution. In addition, a backup as part of the MDM application or database upgrade migration should be performed.

Backing up the MDM database should be no different and general setup/precautions must be carried out such as (these steps are just for illustration, there may be many more pre-requisites; refer to Teradata documentation for more details):

1. Disable all activities on MDM user and underlying databases.
2. Run your automated and/or your batch archive scripts to take backup on any external media.
3. Check the backed-up tape/media for its correctness, that is, no media errors etc.
4. If this is the first time you are attempting a backup verify this by restoring to any database.
5. Once your upgrade/migration is done, if you require your database to be reverted to pre MDM upgrade/migration stage, restore your data from the backed-up media
6. After restoration is done, run your validation scripts such as validate primary index, constraints, etc as applicable.

MDM Runtime Environment

While starting MDM, four major MDM runtime environments gets involved:

- MDM Application Server
- Web Application Server (WebLogic, WebSphere etc.)

- Database

It is a recommended practice to run MDM server using a load balancer having backup MDM server running for failover in case of system failure. It is also industry standard to run the Web application server in clustered mode to have load balancing and high availability of the application.

Note: Refer to Application Server specific documentation for configuring clustered environment for high availability and load balancing.

In case of system failure due to an unavoidable situation, MDM application stops operating under any of the following events:

- MDM Server crash
- Web Application Server crash
- Database down

1. Failure of MDM server can lead to MDM process failure and loss of data. In such events, unfinished MDM processes can give undesired results and user may need to run the process again to achieve desired results.

   MDM log files maintain error or exception details which occurred, if any, during or while the MDM application fails.
2. Application server (WebLogic, WebSphere) failure may lead to loss of data for the process that is running from the UI but user can recover system state by restarting the Application server and running the process again. Only unsaved data may be lost due to UI failure. Application server specific log files may provide detailed information regarding failure. If user has a clustered environment or load balancer in place for high availability, then failure of application and downtime can be avoided or will be lower.
3. Database failure may cause major data loss if one does not have backup policies in place and can cause longer downtime and risks of losing business data. It is always recommended to back up database based on the update frequency of the data.

   User can also refer to industry standard practices for high availability and failover of application server and databases.

Backdown Procedure for MDM

For details, refer to section *Backdown procedure for MDM* in chapter *MDM Upgrade of Master Data Management Installation Guide.pdf.*

APPENDIX D MDM Workflow Monitoring

What’s In This Appendix

This appendix provides information on MDM workflow monitoring using JMX and MBeans.

Topics include:

- Workflow Monitoring Using JMX
- Workflow Monitoring Using New Relic

Workflow Monitoring Using JMX

Workflow monitoring capabilities of MDM are improved and extended to support and comply with JMX (Java Management Extension) to provide the workflow information (the current running workflow name, it's current status/node, user invoking the workflow, workflow history, heap usage information etc). With 3.00.01 release, an OOTB, a listener is provided for workflow monitoring which listens to the workflow notification or node notification or step level notification and calls the respective stored procedures for further processing. The MDM xserver.xml is updated to support the required configuration related to JMX.

This appendix also describes the basic notification listener provided with the MDM 3.00.01.00 Installation to enlist various scenarios in which MDM workflow monitoring capabilities can be used.

MDM Workflow monitoring configuration is a two step process (MDM Configuration and MDM workflow monitoring using JMX console or monitoring using Listener client) as described in the following sections.

MDM Configuration

MDM workflow monitoring configuration is a two step process as described below. Perform the below listed configuration steps to allow the underlying MDM Server to send notifications at the Start/End of Workflow, Node and Steps defined within a Workflow. With MDM 3.00.01 release, these notifications are applied to all the workflows executing in the underlying MDM Server and cannot be enabled/disabled selectively for any specific workflow.

A pipeline variable of type String, _CUSTOM_MONITOR_VAR is added to pass any monitoring level information with the notification. With MDM 3.00.01.00 release, support for STEP level notification is provided to monitor lowest level of logical unit of work as required in the workflow. This can be achieved using a new <NOTIFY> statement in the underlying workflow.

Usage of <NOTIFY> statement:

```
<NOTIFY StepName="StepName" StepType="ENTRY|EXIT|EVENT"
Message="Custom Message"/>
```

StepName—is the required, unique and user defined name for STEP. StepName must be unique across the underlying workflow.

StepType—is the required attribute for STEP and value would be ENTRY, EXIT or EVENT.

Message—is the optional attribute to specify any user defined message for the STEP.

For every STEP of type ENTRY and/or EXIT should match with the corresponding ENTRY and/or EXIT type of STEP for the underlying STEP. Also, the step name should be same for the ENTRY/EXIT pair. EVENT type is one time notification which can be used to notify any specific event in the workflow.

Perform the following steps to enable or disable workflow monitoring:

1. To enable monitoring, enter mbeansEnabled value to “true” in the xserver.xml file as below. Default value of mbeansEnabled is 'false' and all the notifications are disabled.

```
<mbeansEnabled Value="true">
        <useObjectData Value="false"/>
        <monitoringLevels>
          <monitoringLevel Value="Step"/>
          <monitoringLevel Value="Node"/>
          <monitoringLevel Value="Workflow"/>
        </monitoringLevels>
</mbeansEnabled>
```

   This can be done manually or through MDM Studio under the panel name “Enable MBean Notification”.

   The following describes the parameters:

   mbeansEnabled—this parameter specifies whether monitoring is required on MDM.

   useObjectData—this parameter specifies whether notification data should be sent by MDM as Object or String. JConsole can read only String format and the OOTB monitoring client uses Object data format.

   MonitoringLevel Value = Workflow—enables workflow level notifications which are sent at Start/End of workflows executed in MDM.

   MonitoringLevel Value = Node—enables node level notifications which are sent at Start/End of Nodes of workflows executed in MDM.

   MonitoringLevel Value = Step—enables Step (User defined logical unit of work) level notifications which will be sent by using <NOTIFY> tag as mentioned above.

   Note: Remove required notification level from the Xserver.xml file to disable specific level of monitoring. You can also use <monitoringLevel Value="All"/> to enable all levels of monitoring. The monitoring levels defined in xserver.xml are the initial levels. The levels can be toggled at run time using JConsole. See Monitoring Using JMX Console section for details.

2. In the startservices.bat file, add the below parameters:

   ```
   -Dcom.sun.management.jmxremote -
   Dcom.sun.management.jmxremote.port=2332 -
   Dcom.sun.management.jmxremote.authenticate=false -
   Dcom.sun.management.jmxremote.ssl=false
   ```

   You can make different combinations on the above, refer to the below link for details:

   http://java.sun.com/j2se/1.5.0/docs/guide/management/agent.html

   Note: With MDM 3.00.01.00 release, if OOTB monitoring client is used, SSL feature is not supported and Dcom.sun.management.jmxremote.ssl attribute value should be false.

3. Start MDM Server.

MDM Workflow Monitoring Using JMX Console

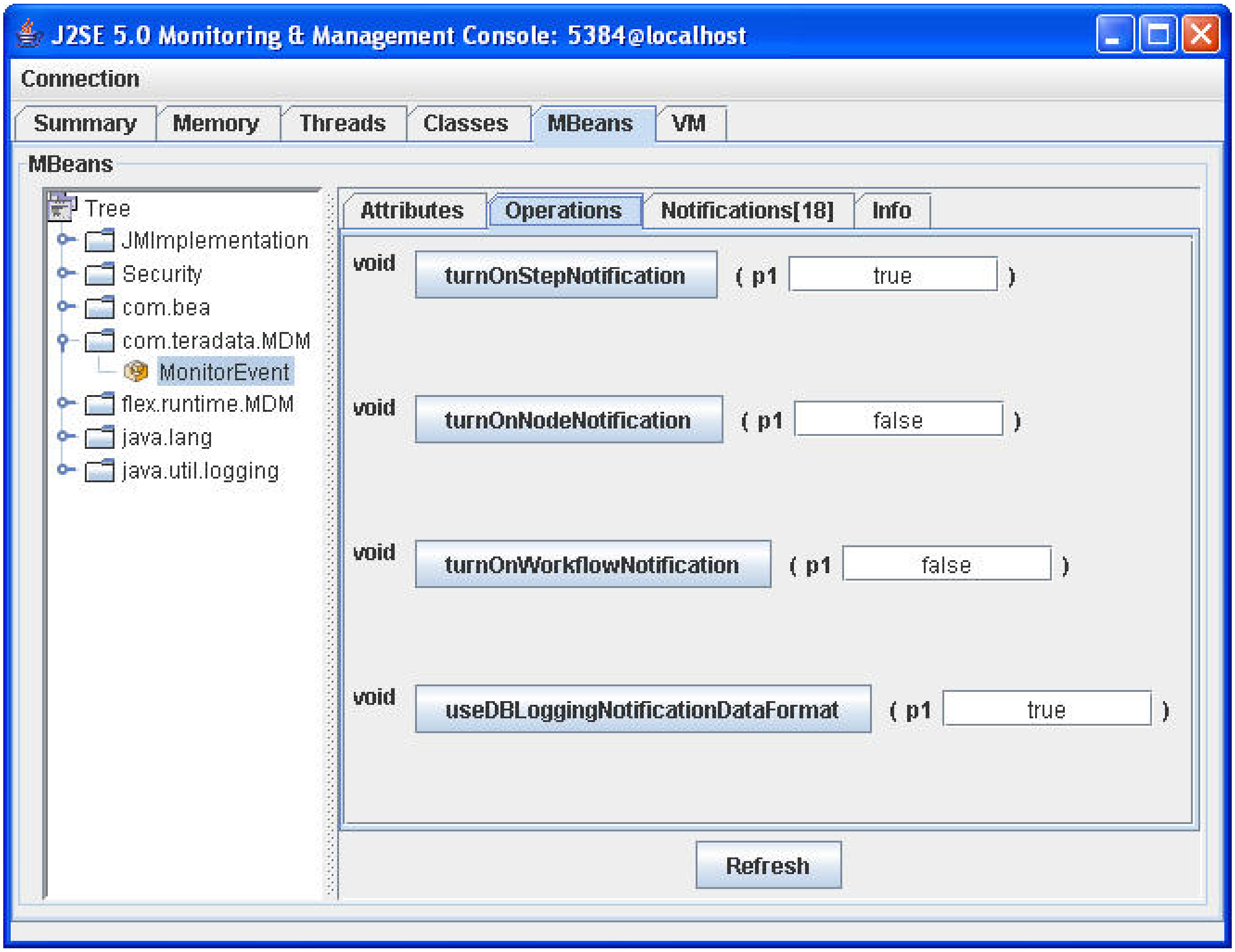
Perform the following steps to enable monitoring using JMX console:

1. Start JConsole (from JDK\bin) and try to connect using different combinations specified (local, remote).
2. Once connected, on the JConsole, click **MBeans** tab and select com.teradata.MDM from the left navigation tree.

   MDM workflow monitoring also provides capability to enable/disable the monitoring options from the JConsole at runtime. You can perform below operations from the JConsole:

   - Enable and/or disable specific level of notification and/or change the output notification format as in Figure 974.

Figure 974: JConsole Operation for Specific Level of Notification



void turnOnStepNotification (p1 true)

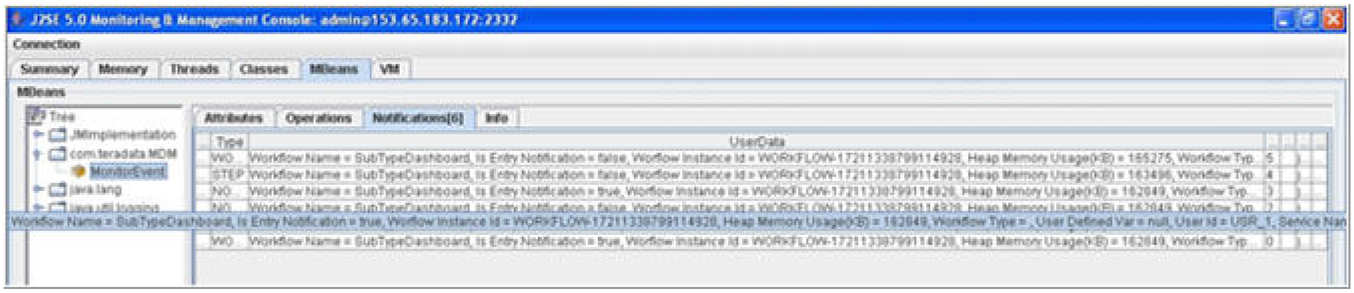
void turnOnNodeNotification (p1 false)

void turnOnWorkflowNotification (p1 false)

void useDBLoggingNotificationDataFormat (p1 true)

- Click on the **Notifications** tab and select Subscribe or UnSubscribe options as in Figure 975.

Figure 975: JConsole Notification Tab



- Execute any workflow on the MDM server and check the required values.

For detailed steps on using JConsole, refer to the following link: http://java.sun.com/j2se/1.5.0/docs/guide/management/jconsole.html

Note: You can perform workflow monitoring with MDM running inside Application Server (Collapsed mode deployment) too by adding the same parameters specified in step 2 in “MDM Configuration” to Application server startup file.

To enable monitoring on Tomcat Application Server add below mentioned parameter along with the parameters specified in step 2 in “MDM Configuration” in the catalina.bat/sh script on Tomcat Server.

-Djava.rmi.server.hostname=<hostname>

That is., set CATALINA_OPTS=%CATALINA_OPTS% -Dcom.sun.management.jmxremote -Dcom.sun.management.jmxremote.port=2332 -Dcom.sun.management.jmxremote.authenticate=false -Dcom.sun.management.jmxremote.ssl=false -Djava.rmi.server.hostname=localhost

Monitoring Using Listener Client

MDM Monitoring is designed in such a way as to provide hooks to the running MDM Server using JMX based listener client which can listen to the notifications sent by MDM Server.

MDM 3.00.01.00 provides a basic Listener which can be used to monitor underlying MDM Servers with JConsole and can be managed externally. User can define their own listener and extend the monitoring capabilities to achieve required functionalities such as reporting, monitoring multiple MDM Servers etc.

Components of Listener Client:

1. Monitoring-config.xml

   Monitoring-config.xml file is the configuration file available at *<MDM_Install_Directory>/Monitoring* to set up various options using monitoring client. You can set up options as below:

   - MDM Server

     ```
     <server Name="Server1">
     <jmxServiceUrl Value="service:jmx:rmi://localhost/jndi/rmi://
     localhost:12345/jmxrmi"/>
         <securityEnabled Value="true">
          <userid Value="monitorRole"/>
          <password Value="QED"/>
         </securityEnabled>
       </server>
     ```

     The following describes the tags:

     jmxServiceUrl—this tag defines the JMX URL where the listener will need to monitor the associated MDM Server.

     SecurityEnabled—security can be enabled by using 'securityEnabled' attribute and credentials can be specified in the <userid> and <password> attributes.

     You can define multiple MDM Servers associated with a common Monitoring Listener by defining multiple <server> tags. The server name should be unique.

   - To enable/disable monitoring at different levels, specify the below attributes:

     ```
     <database-logging-levels>
        <database-logging-level Value="Step"
     SPName="LOG_STEP_DATA_PROCEDURE"/>
     ```

```
   <database-logging-level Value="Node"
SPName="LOG_NODE_DATA_PROCEDURE"/>

   <database-logging-level Value="Workflow"
SPName="LOG_WORKFLOW_DATA_PROCEDURE"/>
 </database-logging-levels>
```

SPName—specify the target stored procedure that will be executed on the receipt of the MDM Workflow, Node and Step level notifications. You can specify different stored procedures for each of the monitoring level or can configure required actions on the receipt of these notifications.

Note: The monitoring levels are different than the server levels. The monitoring levels specify the level at which client will log the notifications, irrespective of the server level. Monitoring levels cannot be changed at the run time.

Please refer to the sample stored procedure definition for the information on the notifications sent and data types of various fields.

Below list of parameters passed to the stored procedures in the specified order:

```
NOTIFICATION_TYPE VARCHAR(8)
SEQUENCE_NUMBER BIGINT
NOTIFICATION_TIME TIMESTAMP(6)
PARENT_WF_INS_ID VARCHAR(128)
PARENT_WF_NAME VARCHAR(64)
PARENT_WF_SERVICE VARCHAR(64)
SERVICE_NAME VARCHAR(64)
USER_ID VARCHAR(64)
WF_INSTANCE_ID VARCHAR(128)
WF_NAME VARCHAR(64)
WF_TYPE VARCHAR(64)
NODE_ID VARCHAR(128)
NODE_NAME VARCHAR(64)
NODE_TYPE VARCHAR(64)
STEP_ID VARCHAR(128)
STEP_NAME VARCHAR(64)
STEP_TYPE VARCHAR(6)
STEP_MESSAGE VARCHAR(1000)
USER_DEFINED_VAR VARCHAR(1000)
SENDER_INSTALL_DIRECTORY VARCHAR(128)
SENDER_ADDRESS VARCHAR(64)
IS_ENTRY_NOTIFICATION CHAR(1)
```

- MDM notifications can be persisted in to the database if required notification table is created. You can specify database details as below:

```
<database-config>
  <userid Value="USER"/>
  <password Value="PASSWORD"/>
  <db-url Value="jdbc:teradata://batgirl/TMODE=TERA"/>
  <db-driver Value="com.teradata.jdbc.TeraDriver"/>
 </database-config>
```

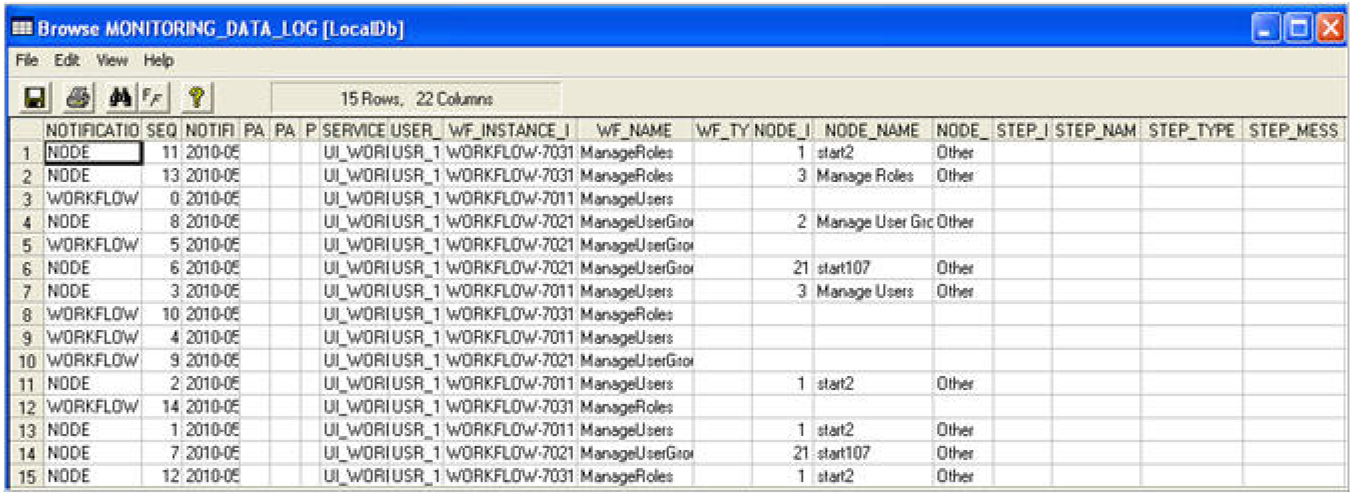
- Logging can be specified using the parameter `<log4j-config-file Value="log4j.properties" />`

  Please refer to log4j.properties for various logging options.

2 StartMonitorClient.bat

Execute the *startMonitorClient.bat* file from location *<MDM_Install_Directory>/ Monitoring* to bring up the Monitoring Client. This client is a java process that will listen to the specified port and based on the actions defined in the monitoring-config.xml file, will invoke Stored Procedure to persist notifications in the database as in Figure 976.

Figure 976: Monitoring Client



15 Rows, 22 Columns

	NOTIFICATIO	SEQ	NOTIFI	PA	PA	P	SERVICE	USER_	WF_INSTANCE_I	WF_NAME	WF_TY	NODE_I	NODE_NAME	NODE_	STEP_I	STEP_NAM	STEP_TYPE	STEP_MESS
1	NODE	11	2010-0E				UI_WORI	USR_1	WORKFLOW-7031	ManageRoles		1	start2	Other				
2	NODE	13	2010-0E				UI_WORI	USR_1	WORKFLOW-7031	ManageRoles		3	Manage Roles	Other				
3	WORKFLOW	0	2010-0E				UI_WORI	USR_1	WORKFLOW-7011	ManageUsers								
4	NODE	8	2010-0E				UI_WORI	USR_1	WORKFLOW-7021	ManageUserGro		2	Manage User Grc	Other				
5	WORKFLOW	5	2010-0E				UI_WORI	USR_1	WORKFLOW-7021	ManageUserGro								
6	NODE	6	2010-0E				UI_WORI	USR_1	WORKFLOW-7021	ManageUserGro		21	start107	Other				
7	NODE	3	2010-0E				UI_WORI	USR_1	WORKFLOW-7011	ManageUsers		3	Manage Users	Other				
8	WORKFLOW	10	2010-0E				UI_WORI	USR_1	WORKFLOW-7031	ManageRoles								
9	WORKFLOW	4	2010-0E				UI_WORI	USR_1	WORKFLOW-7011	ManageUsers								
10	WORKFLOW	9	2010-0E				UI_WORI	USR_1	WORKFLOW-7021	ManageUserGro								
11	NODE	2	2010-0E				UI_WORI	USR_1	WORKFLOW-7011	ManageUsers		1	start2	Other				
12	WORKFLOW	14	2010-0E				UI_WORI	USR_1	WORKFLOW-7031	ManageRoles								
13	NODE	1	2010-0E				UI_WORI	USR_1	WORKFLOW-7011	ManageUsers		1	start2	Other				
14	NODE	7	2010-0E				UI_WORI	USR_1	WORKFLOW-7021	ManageUserGro		21	start107	Other				
15	NODE	12	2010-0E				UI_WORI	USR_1	WORKFLOW-7031	ManageRoles		1	start2	Other				

Workflow Monitoring Using New Relic

New Relic is an Application Performance Management (APM) tool that lets you see performance from the end user experience, through servers, and down to the line of application code. In MDM, New Relic is used to monitor JSP and PGL pages.

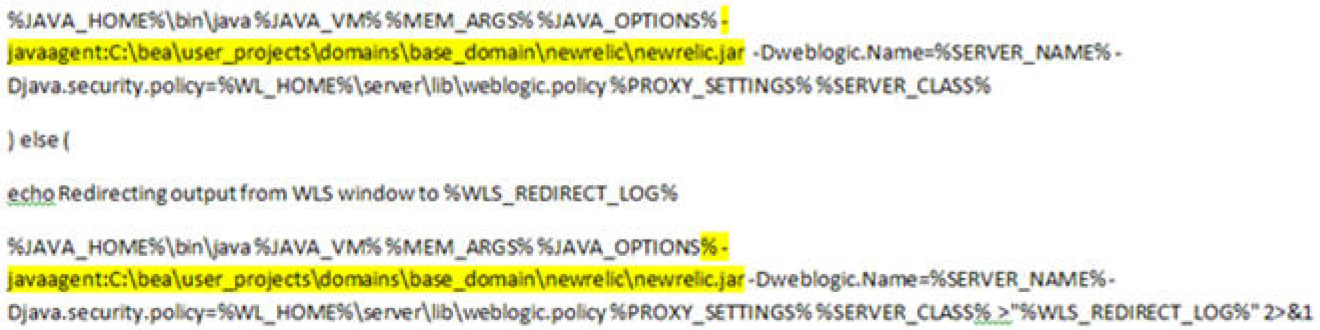
Perform the following steps to enable workflow monitoring using New Relic:

1. Launch New Relic website using the URL https://newrelic.com and create a user account and activate it.
2. Download Java Agent from https://newrelic.com.
3. Perform the below steps for Weblogic configuration:
    - Extract the Java agent jar file in the weblogic domain directory

      Example: c:\bea\user_projects\domains\mydomain\newrelic
    - Open Weblogic Startup file and add the below line

      -javaagent: c:\bea\user_projects\domains\base_domain\newrelic\newrelic.jar in the Java command.

      Change the jar path to your new relic location.



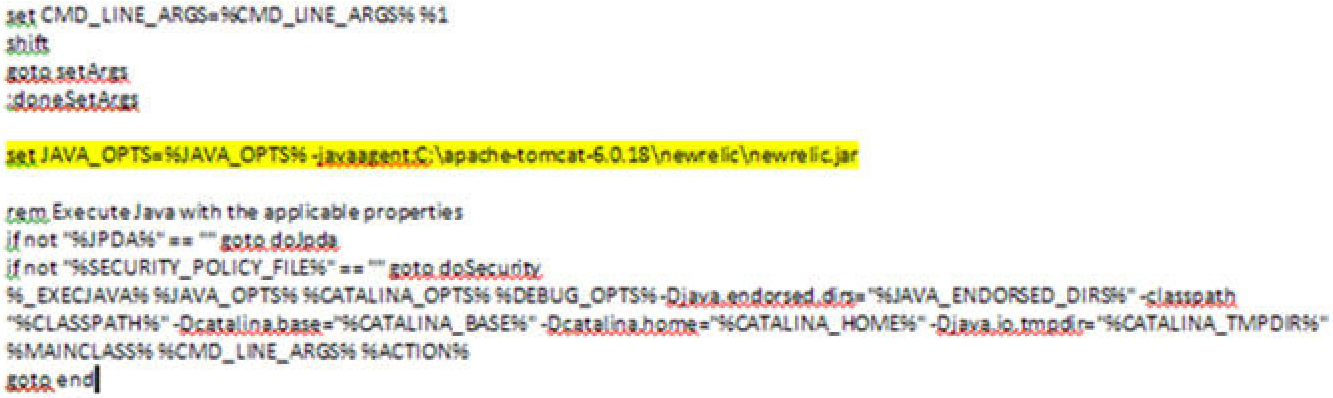
```
%JAVA_HOME%\bin\java %JAVA_VM% %MEM_ARGS% %JAVA_OPTIONS% -
javaagent:C:\bea\user_projects\domains\base_domain\newrelic\newrelic.jar -Dweblogic.Name=%SERVER_NAME% -
Djava.security.policy=%WL_HOME%\server\lib\weblogic.policy %PROXY_SETTINGS% %SERVER_CLASS%

) else (

echo Redirecting output from WLS window to %WLS_REDIRECT_LOG%

%JAVA_HOME%\bin\java %JAVA_VM% %MEM_ARGS% %JAVA_OPTIONS% -
javaagent:C:\bea\user_projects\domains\base_domain\newrelic\newrelic.jar -Dweblogic.Name=%SERVER_NAME% -
Djava.security.policy=%WL_HOME%\server\lib\weblogic.policy %PROXY_SETTINGS% %SERVER_CLASS% >"%WLS_REDIRECT_LOG%" 2>&1
```

4 Perform the below steps for Tomcat configuration:

- Extract the Java agent jar file in the tomcat domain directory

  Example: C:\apache-tomcat-6.0.18\newrelic
- Open Catalina file from bin folder and add the below line

  set JAVA_OPTS=%JAVA_OPTS% -javaagent:C:\apache-tomcat-6.0.18\newrelic\newrelic.jar



```
set CMD_LINE_ARGS=%CMD_LINE_ARGS% %1
shift
goto setArgs
:doneSetArgs

set JAVA_OPTS=%JAVA_OPTS% -javaagent:C:\apache-tomcat-6.0.18\newrelic\newrelic.jar

rem Execute Java with the applicable properties
if not "%JPDA%" == "" goto doJpda
if not "%SECURITY_POLICY_FILE%" == "" goto doSecurity
%_EXECJAVA% %JAVA_OPTS% %CATALINA_OPTS% %DEBUG_OPTS% -Djava.endorsed.dirs="%JAVA_ENDORSED_DIRS%" -classpath
"%CLASSPATH%" -Dcatalina.base="%CATALINA_BASE%" -Dcatalina.home="%CATALINA_HOME%" -Djava.io.tmpdir="%CATALINA_TMPDIR%"
%MAINCLASS% %CMD_LINE_ARGS% %ACTION%
goto end
```

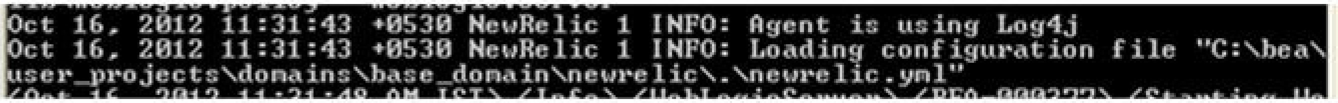
Note: Navigate to the newrelic location and set SSL to false in newrelic.yml file. By default, it is set to true.

Example path: <Application Server Installed Location>\newrelic\newrelic.yml

The application server may fail to work and newrelic displays the below error message "Failed to connect to collector.newrelic.com.:443 for <Application Name>" if the SSL is set to true.

5 Restart the application server.

The application server should read the files from New Relic as below.

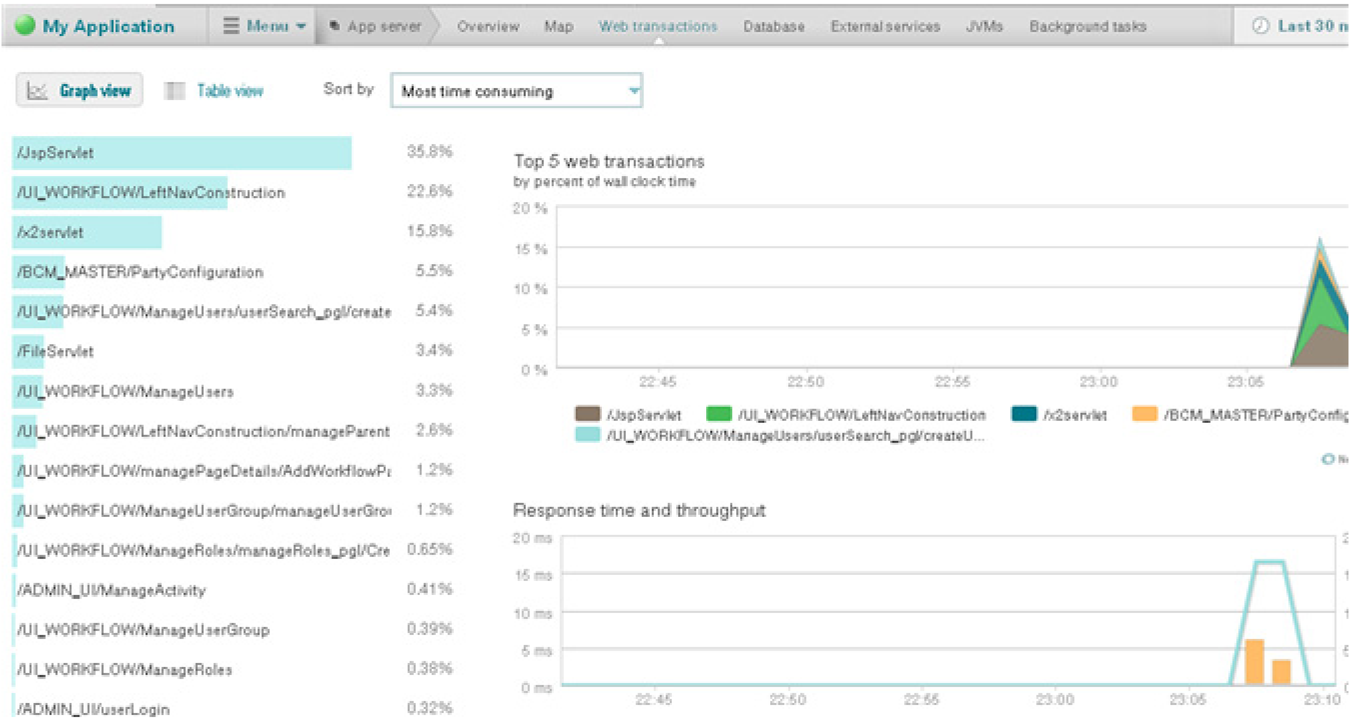


```
Oct 16, 2012 11:31:43 +0530 NewRelic 1 INFO: Agent is using Log4j
Oct 16, 2012 11:31:43 +0530 NewRelic 1 INFO: Loading configuration file "C:\bea\
user_projects\domains\base_domain\newrelic\.\newrelic.yml"
```

6 Login into MDM web application and perform some operations on the UI.

7 Login to New Relic and navigate to My Application section to view the performance logs of MDM as in Figure 977.

Figure 977: New Relic Monitoring



Sort by Most time consuming

/JspServlet	35.8%
/UI_WORKFLOW/LeftNavConstruction	22.6%
/x2servlet	15.8%
/BCM_MASTER/PartyConfiguration	5.5%
/UI_WORKFLOW/ManageUsers/userSearch_pgl/create	5.4%
/FileServlet	3.4%
/UI_WORKFLOW/ManageUsers	3.3%
/UI_WORKFLOW/LeftNavConstruction/manageParent	2.6%
/UI_WORKFLOW/managePageDetails/AddWorkflowPa	1.2%
/UI_WORKFLOW/ManageUserGroup/manageUserGro	1.2%
/UI_WORKFLOW/ManageRoles/manageRoles_pgl/Cre	0.65%
/ADMIN_UI/ManageActivity	0.41%
/UI_WORKFLOW/ManageUserGroup	0.39%
/UI_WORKFLOW/ManageRoles	0.38%
/ADMIN_UI/userLogin	0.32%

APPENDIX E Trillium Integration

What's In This Appendix

This appendix provides information about Trillium intergartion with MDM to enable survivorship process via MDM.

Topics include:

- Overview
- Integration Steps

Overview

MDM 3.02.00 release provides support for the integration of external Cleansing and Match processes such as Trillium and to enable Survivorship via MDM. APIs and workflows are provided to integrate the external match execution results into the Matching dashboards and KPIs, which can be used by data stewards for monitoring and reporting purposes. The external match results can then be used to perform Survivorship via MDM, which also provide dashboards and KPIs for reporting purposes.

Integration Steps

The following section provides the steps for Trillium integration with MDM.

1. Executed the Trillium project in the below order:
    - Global Router

      <Path>.project52\batch\scripts. runproject52.cmd
    - Cleansing and Standardization

      <Path>.project53\batch\scripts. runproject53.cmd
    - Trillium Matching

      <Path>.project54\batch\scripts. runproject54.cmd

   Note: Before running matching project upload the pattern code set values into MDM.
2. After successful matching execution, ensure all the required output tables are populated with correct data in the required MDM format in the below tables:
    - Cleanse_Output

      Contains the Trillium output after cleansing and standardization.

- Match_Output

  Contains the Trillium match results (with populated scores which can be used for threshold during profile creation)

3. Create the MDM external matching profile using the “Create External Profile” button displayed on the Matching workbench.
4. Enter all the required information in the below order:
   - Choose the master table from the list

     Select the target table used for matching in Trillium.
   - Source table - Cleanse Output table/view

     Select the source table or view that contains the Trillium output after Cleansing and Standardization
   - Result table - Match output table/view

     Select the result table or view that contains the Match result of the Trillium (tables should be as per MDM standards)
   - Map the key columns

     Mapping the result table columns against the Master and Source PK columns.
   - Provide the threshold details.

     Enter the threshold details as populated in the Trillium match result table.

   Note: Before creating external profile, Ensure Primary Keys are defined for the source tables via Source Registration advanced options.
5. Execute the External Match profile API with the below details:

   Since Matching is already executed using trillium, you need to populate the entry into FM_RUN_HISTORY table with the below details. These details are used by corresponding Dashboards and during Survivorship profile execution.

```
   <REQUESTS ServiceName="UI_WORKFLOW">
   <REQUEST Name="addHistoryDetails_ExternalProfile">
      <Run_Id Value="11"/>
       <Profile_Id Value="3"/>
       <Begin_Run_Time Value="05/30/2012 11:24"/>
       <End_Run_Time Value="05/30/2012 11:24"/>
      <Elapsed_Run_Time Value="0"/>
      <Status Value="Run Complete"/>
     <Source_Rows Value="1000"/>
     <Master_Rows Value="1000"/>
     <ExecutedBy Value="MDM User"/>
     <NO_OF_MATCHED_ROWS Value="3"/>
     <NO_OF_POTENTIAL_MATCH_ROWS Value="3"/>
     <NO_OF_NEW_ROWS Value="4"/>
   </REQUEST>
</REQUESTS>
```

6. Create the Survivorship profile created by mapping the External match profile and execute the profile to perform Create and Merge action based on the matching results.

   Note: Auto Create and Auto Merge will not be available for External Match profiles.

   For more details on cleansing, standardization, matching and survivoushing processes, see Chapter 12: “Data Harmonization Features”.

APPENDIX F Disaster Recovery

What's In This Appendix

This appendix provides an introduction to disaster recovery and recovery steps for MDM.

Topics include:

- Introduction
- MDM Components and Backup Plan

Introduction

Disaster Recovery (DR) is the process, policies and procedures that are related to preparing for recovery or continuation of technology infrastructure which are vital to an organization after a natural or human-induced disaster. Disaster recovery is a subset of business continuity. While business continuity involves planning for keeping all aspects of a business functioning in the midst of disruptive events, disaster recovery focuses on the IT or technology systems that support business functions.

Disasters can be classified in two broad categories.

- Natural disasters: natural disasters such as floods, hurricanes, tornadoes or earthquakes are difficult to prevent, measures such as good planning which includes mitigation measures can help reduce or avoid losses.
- Man-made disasters: man-made disasters includes hazardous material spills, infrastructure failure, or bio-terrorism. In these instances, surveillance and mitigation planning are invaluable towards avoiding or reducing losses from these events.

MDM Components and Backup Plan

The following section provides details of MDM components and their backup plans:

1. **Component: Installers**—MDM installer used for installation.

   Backup Plan: Customer is requested to have installer (.exe) file backup on some other physical system (Computer hardware) or secondary storage media (HDD, Tape drive, USB Memory Stick etc.). This backup can be used to do the installation again in case of any problem in future.

   Backup Frequency: One time backup.

2. **Component: MDM Software Installation**—MDM software installed location or path (<MDM_Install_Directory>/bin) example: C:\Teradata\MDM\3.02.01.

   Backup Plan: Customer is requested to have MDM installed on some other physical system (Computer hardware) or secondary storage media (HDD, Tape drive, USB Memory Stick etc.). This backup can be used to recover MDM installation again in case of any problem in future.

   Backup Frequency: One time backup.

3. **Component: Custom Application**—Customers will usually have their own Workflow/UI/database changes based on their business requirement, which are very important and critical in terms of their business and are called as custom application.

   Backup Plan: Custom application are developed in MDM Studio (Eclipse plug-in available in MDM complete installer package). Once custom application are developed they are saved to database before deployment to MDM base location.

   Customer is requested to take backup each time they do any change in their custom application. These include complete custom folder physical backup and database backup where custom application is installed.

   Backup Frequency: Periodic backup based on the customer frequency of modification of custom application workflow/UI/X-rule etc.

4. **Component: Database or Schema**—Teradata database version/server where MDM/Custom application schema is generated.

   Backup Plan: Teradata database tools can used to take backup of MDM and Custom application schema if any changes done by customer.

   Backup Frequency: Periodic backup based on the customer frequency of modification of custom application schema.

5. **Component: Customer Data or Records**— The schema will have customer master or analyzed data, which is very important and critical for running client business. Disaster recovery steps for customer data must be planned properly.

   Backup Plan: Records or data used by customer has to be archive or saved periodically to make sure business functions does not get impacted in case of disasters or any other situations.

   Backup Frequency: Periodic backup based on the customer frequency of modification of data or records. May be decided by customer with Database Administrator (DBA).

6. **Component:** Application Server—MDM application requires some deployment setting to be configured in application server such as Weblogic, Tomcat, Websphere for deploying the application.

   Backup Plan: Application server configuration files (such as deployment descriptor, classpath, java environment setting etc.) can be kept in document or backup the file in secondary storage device.

   Backup Frequency: One time backup.

Note: : Customer should have backup across different geographic region for better disaster recovery planning.

Recovery Steps for MDM Installation

Steps to be followed in case of MDM application installation is destroyed by any means of disasters:

1. Use the MDM installer from archive or saved location and do a fresh installation without schema.
2. Use deployment manager to deploy custom application from backed up database.
3. Run Incremental Schema Generation (ISG) from MDM installed location. For example: C:\Teradata\MDM\3.02.01\bin\call_incr_gendb.bat/sh to restore the schema.
4. Load the backup data or records taken by Teradata tools or DBA.
5. Install application sever and copy the deployment or configuration files.
6. Bring up the MDM Server and Application Server.
7. Access the MDM URL and login to the system.

Note: For more details, refer to *Master Data Management Installation Guide* and *Master Data Management Studio Guide.*

APPENDIX G UDF’s Execution Modes

What’s In This Appendix

This appendix provides information on UDF’s execution modes.

Topics include:

- Protected Vs Unprotected Modes

Protected Vs Unprotected Modes

By default, all UDFs are created to run in protected mode. Protected and secure modes (The difference between a protected mode server and a secure mode server is that a protected mode server process runs under the predefined OS user tdatuser, while a secure server process runs under the OS user specified by the UDF in its EXTERNAL SECURITY clause. The two processes are otherwise identical) are states in which each instance of a UDF runs in a separate process. This is done to protect the system from many common programming errors such as non valid pointers, corrupted stacks, and illegal computations such as divide by zero errors that would otherwise crash Teradata Database, produce problems with memory leakage, or cause other potentially damaging results.

These problems all cause Teradata Database to crash if they occur in unprotected mode. UDFs can also cause the database to crash in protected mode if they corrupt the shared data areas between the database and the protected mode UDF.

Protected mode is designed to be used for the following purposes only:

- Testing all UDFs that are in development.
- Running Java UDFs. (Java UDFs must be run in protected mode at all times. Because of this, they are slower than the equivalent C or C++ functions).
- Running any UDFs that cause the OS to consume system resources. (This includes anything that causes the OS to allocate system context, including open files, pipes, semaphores, tokens, threads (processes), and so on).

Do not use protected mode for production ready C or C++ functions that do not make OS system calls. This is because protected mode places additional processing burdens on the system that often result in performance degradation, while UDFs in unprotected mode run in the context of the AMP worker task that is already being used by that query step. If you run C or C++ UDFs in protected mode, they run more slowly.

The best practice is to develop and test your UDFs on a non production test system. You should run any newly created UDF several hundred times, both to ensure that it does not crash the system and to determine any performance issues that could be avoided by alternate function design and better coding techniques. Poorly designed UDFs can be a significant drain on system performance.

Table cardinality is an important factor in UDF performance, so any tests run against smaller test tables on a non production system might not scale to the same level of performance when run against significantly larger tables in production databases.

You can use the cufconfig utility to expand the number of protected mode servers from the default value of 2 to a maximum of 20 per AMP or PE vprocs (see Utilities and SQL External Routine Programming for details). The minimum is 0.

Protected mode servers consume disk resources for C and C++ functions as follows:

$$\text{Total swap space required} = \frac{\text{Number of vprocs}}{\text{Node}} \times \frac{\text{Number of protected mode servers}}{\text{vproc}} \times \frac{\text{256 K bytes}}{\text{server}}$$

In unprotected mode, a UDF is called directly by Teradata Database rather than running as a separate process. You should only alter a new C or C++ function that does not require the OS to allocate system context to run in unprotected mode after you have thoroughly tested and evaluated its robustness and performance impact. Once the newly created CPU operations only C or C++ UDF has passed your quality measures and is ready to be put into production use, you should alter it to run in unprotected mode.

Each Java server for UDFs requires roughly 30 Mbytes of memory for swap space, and there can be two such Java servers per node. A Java UDF multithreaded server for non secure mode Java UDFs uses a minimum of an additional 30 Mbytes,4 so each node requires approximately 100 Mbytes of swap space if all server flavors are used.

APPENDIX H System Properties

What's In This Appendix

This appendix provides details on MDM system properties.

Topics include:

- System Properties

System Properties

Any user with Admin rights can modify the system properties listed in Table 33.

Table 33: System Properties

Property Name	Userd In	Description
HierarchySeparator	Manage Hierarchy UI	Parameter to configure data separator used to retrieve hierarchy data.
ApprovalContactEmail	Approval Email Configurations	The email id from which the approvers get email. The default value is set to user@domain.com. If the default value is changed, then, this parameter appears in the email footer. If a valid email is not provided, email will be considered a spam and will be moved to spam folder.
CrossRefUnlinkAndCreate	Cross Reference Management UI	Once this parameter is enabled and unlink operation is performed, the existing linked master record will be unlinked and new master record will be linked to the source record.
DueDateDefaultDays	Approval Monitor UI	Approval request Due date. By default, each approval request will have current date + 7 days as approval due date. If required, user with Admin rights can modify the due date on the Approval Monitor UI for each request. The due date cannot be changed on the Approval Inbox UI. Note: If the due date value is changed to “0”, approval process will fail.

Table 33: System Properties

Property Name	**Userd In**	**Description**
LoggerTimerDuration	Manage Logger UI	LoggerTimerDuration is the parameter to set duration of Logger timer in days. Default value of this parameter is set to true and default value is 10 days.
DataStewardRoleID	Manage Lookup Data UI	Role Id of Data Steward to send email/alert to (default: Admin). By default MDM provides the data stewards every 6hrs once, the list of unknown (negative EDW) code values, if any in the Standard Map table (s), through email.
RecordInEmail	Approval Email Configurations	Flag to enable display of records in approval emails. The default value is set to true. If this parameter is set to false, then the email will not display the record that has been sent for approval.
PublicationTimerDuration	Publication UI	This parameter is used to set the duration of the Publishing timer in minutes. Default value is 30. By default, it is enabled and runs after every 30 minutes to execute any pending publishing request.
Separator	Relationship Management and hierarchy cross reference UI	Parameter to configure separator for Relationship Management and Cross Reference Data.
LoggerTimerEnabled	Manage Logger UI	Parameter to enable Logger timer. Default value is true. Logging is enabled by default.
DataStewardPollerDuration	Manage Lookup Data UI	Parameter to set duration of Data Steward Poller timer in minutes. Default: 360 that is 6 hours.
CasCadeDeleteEnabledForLRDM	Manage Lookup Data UI	By default, this parameter is set to true and deleting the code value will also delete the existing language descriptions and mappings. If this parameter is set to false, code value cannot be deleted if mapping or language description exists.
PollDataSteward	Manage Lookup Data UI	Parameter to enable Data Steward Poller monitoring process . If this parameter value is set to true, the poller monitoring will start. Default value is is false.

Table 33: System Properties

Property Name	Userd In	Description
Hierarchy_Prefetch_Threshold	Manage Hierarchy UI	Threshold value decides the mode (Prefetch/OnDemand) of loading hierarchy data in the Viewer. Default value is 1000. If the number of records is less than 1000 then it will load by Prefetch else it will load by OnDemand mode.
ApprovalLandingPage	Approval Inbox UI	By default, the Approval Inbox UI is displayed as Tabular View. You can configure the Approval Inbox landing page to be either as Tabular View or Dashboard.
SPLoggerEnabled_Survivorship	Manage Logger UI	Parameter to enable enable Stored Procedure Logger for Survivorship. Default value is true.
PublicationTimerEnabled	Publication UI	Parameter to enable Publishing timer. Default value is true.
SPLoggerEnabled	Manage Logger UI	Parameter to enable Stored Procedure Logger. Defualt value is false.
Survivorship_Realtime_Limit	Survivorship UI	Survivorship realtime limit to call realtime DDP. Default value is 1000. If the number of records is less than 1000, then row by row DODB process will be executed else bulk upload process will be executed.
HierarchyDefaultEndDate	Manage Hierarchy UI	Default End Date for Hierarchy Versions (Format is MM/DD/YYYY).
SPLoggerEnabled_DODB	Manage Logger UI	Parameter to enable Stored Procedure Logger for DODB. Defualt value is true.
MDMEnvironment	MDM Out of the Box Fetaures Email Configuration	The default value is set to <MDM_ENV>. If the default value is changed, only then, this parameter appears in the subject of the email. All the out going emails from MDM OOB product features can be configured by editing the the MDMEnvironment property value.
MDMMaintenanceEnabled	MDM URL	Parameter to find if the MDM url should be redirected to maintenance page. If the product is under maintenance, and if this parameter is set to “true” then it will redirect to the page which is under maintenance. Default value is false.
Excel_Upload_Realtime_Limit	Upload Documents UI	Excel upload realtime limit to call realtime DDP. Default value is 1000. If the number of records is less than 1000, then row by row DODB process will be executed else bulk upload process will be executed.

Index