

Oracle® Fusion Middleware

Using Oracle Data Transforms on Oracle Cloud Marketplace



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The Oracle logo, consisting of a solid red square with the word "ORACLE" in white, uppercase, sans-serif font centered within it.

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Oracle Fusion Middleware Using Oracle Data Transforms on Oracle Cloud Marketplace, 12.2.1.4.0

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Preface

This guide helps you to work with Oracle Data Transforms on Oracle Cloud Marketplace.

This preface contains the following topics:

- [Audience](#)
- [Documentation Accessibility](#)
- [Related Documents](#)
- [Conventions](#)

Audience

This document helps you to use Oracle Data Integrator on Oracle Cloud Marketplace.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

Related Documents

For more information, see the following documents in *Oracle Data Integrator Library*:

- *Release Notes for Oracle Data Integrator*
- *Understanding Oracle Data Integrator*
- *Developing Integration Projects with Oracle Data Integrator*
- *Installing and Configuring Oracle Data Integrator*
- *Upgrading Oracle Data Integrator*
- *Integrating Big Data with Oracle Data Integrator Guide*
- *Application Adapters Guide for Oracle Data Integrator*
- *Developing Knowledge Modules with Oracle Data Integrator*

- *Connectivity and Knowledge Modules Guide for Oracle Data Integrator Developer's Guide*
- *Oracle Data Integrator Tools Reference*
- *Data Services Java API Reference for Oracle Data Integrator*
- *Open Tools Java API Reference for Oracle Data Integrator*
- *Getting Started with SAP ABAP BW Adapter for Oracle Data Integrator*
- *Java API Reference for Oracle Data Integrator*
- *Getting Started with SAP ABAP ERP Adapter for Oracle Data Integrator*
- *Oracle Data Integrator 12c Online Help*, which is available in ODI Studio through the JDeveloper Help Center when you press **F1** or from the main menu by selecting **Help**, and then **Search** or **Table of Contents**.

Conventions

The following text conventions are used in this document:

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

1

Using Oracle Data Transforms

This chapter introduces Oracle Data Transforms on Oracle Cloud Marketplace and its concepts.

Note:

Oracle Data Transforms is available only when you select **Data Integrator : Web Edition** from the ODI product listing on Oracle Cloud Marketplace. For more details, see [Selecting Your Product](#).

It contains the following sections:

- [Introduction to Oracle Data Transforms](#)
- [Introduction to Oracle Data Transforms Administrator](#)
- [Introduction to Oracle Data Transforms Repositories](#)
- [Introduction to Oracle Data Transforms Run-Time Agent](#)

1.1 Introduction to Oracle Data Transforms

Oracle Data Transforms allows you to design graphical data transformations in the form of data flows and workflows. The data flows define how the data is moved and transformed between different systems, while the workflows define the sequence in which the data flows are executed.

Oracle Data Transforms provides an easy-to-use user interface to create your data flows and workflows, without requiring you to write any code. You can drag and drop the components, that is data entities and operators, such as Join, Split, and Aggregate, on the design canvas of the Oracle Data Transforms user interface and connect them to complete your data flows and workflows.

After your data flows and workflows are ready, you can execute them immediately or schedule to execute them at a later time. On execution, Oracle Data Transforms generates the code for you.

For detailed information on the terminologies associated with Oracle Data Transforms and their respective functions, see [Terminology Information](#).

1.2 Introduction to Oracle Data Transforms Administrator

Oracle Data Transforms Administrator allows you to prepare the components required for designing all your data flows through Oracle Data Transforms interface.

Use Oracle Data Transforms Administrator to:

- Manage users, by granting privileges to enforce security.

- Manage Repository (Creating, importing and exporting Master and Work Repositories)

For detailed information on the terminologies associated with Oracle Data Transforms Administrator and their respective functions, see Terminology Information.

1.3 Introduction to Oracle Data Transforms Repositories

The Oracle Data Transforms Repository is composed of a master repository and a work repository. Repositories are automatically setup at provisioning. Objects developed or configured by the users are stored in one of these repository types. There is usually only one master repository that stores the Security information, Connection information, and versioned and archived objects. The work repository is the one that contains actual developed objects.

1.4 Introduction to Oracle Data Transforms Run-Time Agent

Oracle Data Transforms run-time agent orchestrate the execution of jobs. For Oracle Data Transforms the run time engine is ODI Agent and it is automatically setup on your ODI Marketplace instance during provisioning. To know more about it, refer to Managing ODI Setup.

2

Working with Oracle Data Transforms

This chapter guides you to connect and work with the Oracle Data Transforms.

It contains the following sections:

- [Accessing Oracle Data Transforms](#)
- [Working with Connections](#)
- [Working with Data Entities](#)
- [Working with Projects](#)
- [Scheduling Data Flows or Workflows](#)
- [Managing Jobs](#)
- [Mapping Users](#)

For detailed information on the terminologies associated with Oracle Data Transforms and their respective functions, see Terminology Information.

2.1 Accessing Oracle Data Transforms

You can access Oracle Data Transforms interface on Oracle Cloud Marketplace by:

- [Navigating to Autonomous Database Data Tools Page](#)
For more details, refer to [Accessing Oracle Data Transforms From Database Actions page](#).
- Click the link in OCI Stack Details page available in the **Application Information** tab.
- In a web browser that has network access to the ODI Instance, type in `<ip address>:9999/oracle-data-transforms/` in the toolbar and click **Enter**.

You are navigated to the login page.

In the **Sign Into Oracle Data Integrator** page, enter the following login credentials and click **Connect**:

- Username - SUPERVISOR
- Password
 - For ADB - Use the password that you provided during the ODI stack provisioning.
 - For MySQL - Execute the following command to get the password -

```
python manageCredentials.py read odiSupervisorPassword
```

The Oracle Data Transforms interface appears allowing you to perform the data transformations.

2.2 Working with Connections

Connections help you to connect the Data Transforms to various technologies on Oracle Cloud Marketplace. To know about supported technologies, refer to the [List of Supported Technologies](#).


To create a new connection,

1. From the left pane of the Home page, click the **Connections** tab.
Connections page appears.
2. Click **Create Connection**.
Create Connection page slides in.
3. For **Select Type**,
 - In the **Name** field, enter the name of the newly created connection
 - Select the type of connection that you wish to create.
 - Oracle - Allows you to configure any connection type for Oracle technology
 - Other - Allows you to configure any connection type for other technology:
4. After selecting the required technology, Click **Next**.
5. For **Connection Details**, provide the connection details for the selected technology such as:
 - Connection -
 - JDBC URL
 - User
 - Password
 - Advanced Options
 - Array Fetch Size
 - Batch Update Size
 - Degree of Parallelism for Target

 **Note:**

Connection Details are technology specific and the above options vary based on the selected technology.

6. After providing all the required connection details, click **Create**.
The new connection is created.
7. Click **Test Connection**, to test the established connection.
The newly created connections are displayed in the **Connections** page.

Click the **Actions** icon () next to the selected connection to perform the following operations:

- Select **Edit**, to edit the provided connection details.
- Select **Test Connection**, to test the created connection.
- Select **Delete Schema**, to delete schemas.
- Select **Delete Connection**, to delete the created connection.

You can also search for the required Connection to know its details based on the following filters:

- **Name** of the Connection.
- **Technology** associated with the created Connection.

2.2.1 List of Supported Technologies

Below are the technologies supported for connecting to Data Transforms on Oracle Cloud Marketplace:

1. Oracle Technology:
 - Oracle
 - Oracle BI Cloud Connector
 - Oracle Sales Cloud
 - Oracle NetSuite
 - Oracle Marketing Cloud
 - Oracle Service Cloud
 - Oracle Analytics Cloud
 - MySQL
2. Other Technology:
 - Cassandra
 - Hypersonic SQL
 - IBM DB2 UDB
 - Informix
 - Microsoft SQL Server
 - Salesforce.com

2.3 Working with Data Entities

A Data Entity is a tabular representation of a data structure. It includes Database Tables or Files that can be used in a mapping as a source or target. They are simply the metadata for sources and targets. They are used in creating data flows. Data Entities are grouped into data models, which contain all declarative rules and constraints.

The easiest and most common way to create a Data Entity is by reverse-engineering its structure from the technology (for example, Oracle or MySQL database). However, you can create Data Entities for your newly created project in two other ways:


- [Importing Data Entities](#)
- [Creating Data Entities](#)

Importing Data Entities

To import existing Data Entities,

- From the left pane of the Home page, click the **Data Entities** tab. **Data Entities** page appears.
- Click **Import Data Entities**, to import the existing data entities. **Import Data Entities** page slides-in.
- Select the **Connection** followed by **Schema** and then finally select the **Type of Objects** you want to import.
- Choose a **Mask**/filter if you don't want to import every object in the schema. Depending on the Connection Type, you will be presented with further options for importing.
- After selecting all the required details, click **Start**.
A Job is created and the corresponding Job ID is displayed for you to track the session. Click the Job ID to view the details of the job.

Upon successful execution of the job, all the selected Data Entities are imported.

Click the Refresh icon  present at the right corner of the Data Entities page, to see the new imported Data Entities.

Creating Data Entities

Data entities should possess the corresponding objects in the source connection to be used as a source in a data flow. Usually the reverse engineering process makes sure that these objects are in coordination. However in some cases you can manually create or update the Data Entities through Oracle Data Transforms interface. Whenever you are creating or updating Data Entities always make sure to check if both the definitions are in coordination with each other.

When you use a Data Entity as a target then it doesn't have to exist previously in the target connection and can be created as a part of Data Flow execution.

To create a new Data Entity,

- From the left pane of the Home page, click the **Data Entities** tab. **Data Entities** page appears.
- Click **Create Data Entity**, to create a new data entity. **Create Data Entity** page appears.
- In the Name text box, enter the name of the new Data Entity that you are creating.
- From the **Connection** drop-down, select the required connection from which you wish to add the newly created Data Entity.
- In the **Schema** drop-down, all schema corresponding to the selected connection are listed in two groups.
 - New Database Schema (ones that you've not imported from before) and


- Existing Database Schema (ones that you've imported from before and are potentially replacing data entities).

From the **Schema** drop-down, select the required schema.

Click the + icon to add columns. For each column, you can specify the following parameters:

- Name
 - Data Type
 - Length
 - Scale
 - Not Null
- To define the table structure for the newly created Data Entity:
 - Click the '+' icon. Double click on the cell to configure a value for Name and Length fields.
 - Click the 'x' icon, to delete a row.
 - Click the Up and Down arrows to sort the table rows.
 - Click **Save**.
The new Data Entity is created.

All the newly created or imported Data Entities along with their details are displayed in the **Data Entities** page. The details include:

- **Name** of the Data Entity
- **Connection** for which the Data Entity was created
- **Schema** to which the Data Entity is associated
- Click the **Actions** icon () next to the selected Data Entity to perform the following operations:
 - Select **Edit**, to edit the existing details.
 - Select **Preview**, to preview the selected Data Entity.
 - Select **Delete**, to delete the selected Data Entity.
- To delete the Data Entities in bulk, in the Data Entities page, select the check boxes of the respective Data Entities and click **Delete**.
- You can also search for the required Data Entity to know its details based on the following filters:
 - **Name** of the Data Entity
 - **Connection** for which the Data Entity was created
 - **Schema** to which the Data Entity is associated

2.4 Working with Projects

A **Project** is the top-level container, which can include multiple folders to organize your data flows or work flows into logical groups. Projects page displays all the existing projects.

You can perform the following operations of a Project folder:

- View Details
- Edit the name
- Delete



Creating a Project

To create a new project:

1. Click **Create Project** on the Projects page.
2. On the **Create Project** page, provide a project name.
3. Click **Create**.
After creating the project, you're redirected to the **Projects** page.

Viewing Project Details

To view project details:

1. On the Projects page, select a project and click **View Details** from the project's **Actions** icon () or select a project to open its details page.
2. It displays all the resources associated to the selected project. It includes details such as **Data Flow Name** and **Folder** details for the selected project.
3. Click the **Actions** icon () of the respective data flow to edit, rename, copy, change folder, start or delete the required data flow of the selected project.


Deleting a Project

When you delete a project, you also delete the resources it contains. Once you delete a project, it cannot be restored.



Note:

Be sure to review all contained resources before you delete the project.

To delete a project, on the Projects page, select Delete from the **Actions** icon () for the project you want to delete or select a project to open its details page, and then click **Delete**.

In the **Delete Project** dialog, click **Delete** to confirm the delete operation.

2.4.1 Get Started with Data Flows

Perform the following steps to access the Data flow editor where you can start creating your data flows.

To start creating data flows:

- On the **Projects** page, click **Create Data Flow**.
Or

- Select an existing project and on the **Project Details** page, click **Create Data Flow**.

Note:

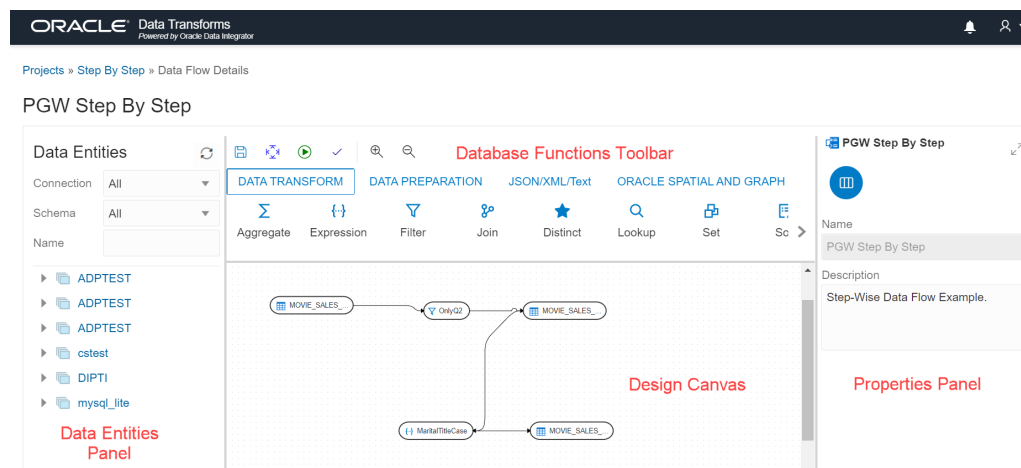
When you see a blank page while clicking **Create Data Flow**, clear your browser cache and refresh the page to navigate to the Data Flow Editor.

The Data Flow Editor appears allowing you to create a new data flow. For more information, see [About Data Flow Editor](#).

2.4.2 About Data Flow Editor







The Data flow editor is divided into four parts, the Data Entity Panel, the Transformations Toolbar, the Design Canvas, and the Properties Panel.

Figure 2-1 Data Flow Editor



- **Data Entities Panel:** The data entity panel displays the Data Entities that are available to use in your Data flows. The displayed list can be filtered using the Connection, Schema and / or Name fields. The results are displayed in the below tree nodes.
- **Database Functions Toolbar:** The Database Functions toolbar display the database functions that can be used in your data flows. Just like Data Entities, you can drag and drop the Database tools you want to use on the design canvas. For more details, see [Oracle Database Functions](#).
- **Design Canvas:** The design canvas is where you build your transformation logic. After adding the Data Entities and Database Functions to the design canvas, you can connect them in a logical order to complete your data flows.
- **Properties Panel:** The properties panel displays the properties of the selected object on the design canvas. The Properties Panel is grouped into four Tabs. **General, Attributes, Column Mapping, and Options**. Not all tabs are available as they vary based on the selected object.

After designing the required data flow,

- Click , to save the created/designed data flow.
- Click , to align the nodes of the designed data flow.
- Click , to execute the created data flow.
- Click , to validate the created data flow.
- Click  , to maximize or minimise the created data flow diagram in the design canvas.

2.4.2.1 Oracle Database Functions

Oracle Data Transforms supports the following components to perform various database functions:

1. Data Transformation

It contains the following components:

- Aggregate
- Expression
- Filter
- Join
- Distinct
- Lookup
- Set
- Sort
- Split
- Subquery Filter
- Table Function

2. Data Preparation

It contains the following components:

- Data Cleanse
- Substitution
- Binning
- Lead
- Lag
- Replace

3. JSON/XML/Text

It contains the following components:

- REGEXP COUNT
- REGEXP INSTR
- REGEXP SUBSTR

- REGEXP REPLACE
 - Edit Distance Similarity
 - Contains
4. **Oracle Spatial and Graph**
It contains the following components:
- Buffer Dim
 - Buffer Tol
 - Distance Dim
 - Distance Tol
 - Nearest
 - Simplify
 - Point
 - Spatial Join
 - Geocode Tools:

 **Note:**

The following Geocode Tools work only in non-ADW environment.

- Geocode As Geometry
- Geocode
- Geocode Address
- Geocode All
- Geocode Address All
- Reverse Geocode

2.4.3 Create a New Data Flow

A data flow defines how the data is moved and transformed between different systems.

To create a new data flow:

1. On the Projects page, click **Create Data Flow**.
Create Data Flow page appears:
2. In the **Name** field, enter a name for the new data flow.
3. Select **Create New Project**, if you wish to create new project folder for the newly created data flow.
4. Else, click **Add to Existing Projects**, if you wish to add the newly created data flow to an existing project folder.
5. If you have selected **Create New Project** for the previous option, in the **Project Name** field, enter the name of the newly created project.

6. Else, if you have selected **Add to Existing Projects** for the previous option, select the required project from the **Project Name** drop-down arrow.
7. In the **Description** field, enter a description for the newly created data flow.
8. Click **Create**.


A new data flow is created.

If you have already selected a project and wish to create a new data flow for this specific project, in the **Data Flows** page, click **Create Data Flow**.

Create Data Flow page appears, allowing you to provide the **Name** and **Description** of the newly created data flow.

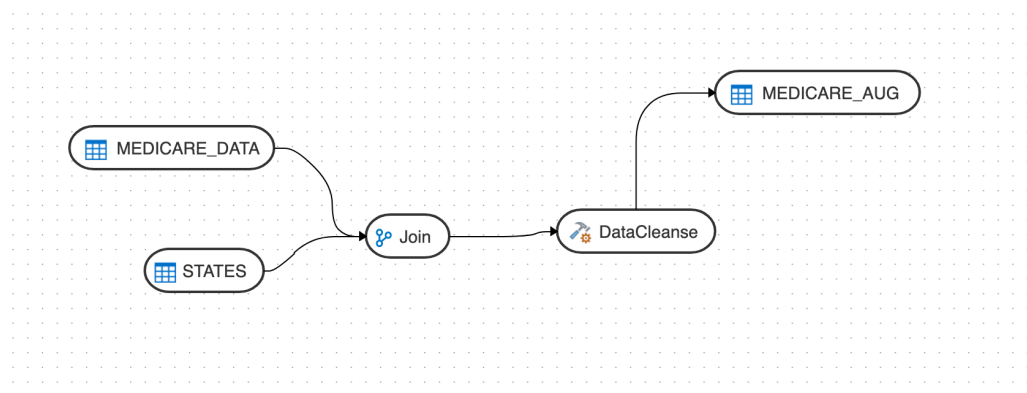
2.4.3.1 Add Components

To add components to your data flow:

1. In the **Data Entities** panel, use the Connection and Schema drop-downs to narrow down the list of Data Entities. Data Entities are organized by Schema in the list. You can narrow down the search further by entering the Name of the Data Entity.
2. Drag the required Data Entities that you want to use in the data flow and drop them on the design canvas.
3. From the **Transformations** toolbar, drag the transformation component that you want to use in the data flow and drop them on the design canvas.
4. Select an object on the design canvas, and drag the **Connector** icon () next to it to connect the components.
5. After saving the data flow, there may be a Transfer icon overlaid on one or more of the component connections. This indicates that ODI has detected an additional step and it is required to move the data between data servers. You can click on this Icon to view properties associated with this step.

For example:


Figure 2-2 Add Components



2.4.3.2 Map Data Columns

When you connect the source datastore with the target datastore, the column names are automatically mapped by the column names. You have a choice to map the columns by Position or by Name or map the columns manually using the Expression Editor.

To map columns by Position or by Name:

1. Select the target Data Entity.
2. Click the arrow icon present on the top right corner to expand the Properties Panel. This will give you more space to work with.
3. In the **Properties Panel**, click the **Column Mapping** icon ().
4. To map the columns by Position or by Name, from the **Auto Map** drop-down menu, select **By Position** or **By Name**.

To map the columns manually:

1. From the **Auto Map** drop-down menu, select **Clear** to clear the existing mappings.
2. Drag and drop the attributes from the tree on the left to map with the Expression column.
3. To edit an expression, click the **Edit** icon of the respective column. The **Expression Editor** appears allowing you to perform the required changes (for example, you can just add an expression-"UPPER" or open the Expression Editor to edit the expression).



Note:


Use the expression editor only if you have complex expressions for a particular column.

4. Click **OK**.

2.4.3.3 Creating Data Entities for Target Component

You can modify the data flow options that must be used for the target component during the data flow execution.

To modify the data flow options:



1. Select the target component on the design canvas.
2. Click the Add Data Entity icon  present on the top right corner of the target component.
3. **Add Data Entity** page appears allowing you to configure the following details of the target component:
General tab
 - In the **Name** text box, enter the name of the newly created Data Entity.
 - The **Alias** text box is auto-populated with the name of the newly created Data Entity.

- From the **Connection Type** drop-down, select the required connection from which you wish to add the newly created Data Entity.
- It loads the server name coined at the time of connection creation. From the **Server** drop-down, select the required server name from which you wish to add the newly created Data Entity.
- From the **Schema** drop-down, select the required schema.
- Click **Next**.

Columns tab

It allows you to create, remove or edit the column definitions.



- Click the  Add Columns icon, to add new columns to the newly created Data Entity.
A new column is added to the displayed table.
- The table displays the following columns:
 - Name
 - Data Type - Click the cell to configure the required Data Type.
 - Scale
 - Length
 - Actions - Click the cross icon to delete the created column.
- To delete the columns in bulk, select the columns and click the  Delete icon.
- To search for the required column details, in the Search text box enter the required column name and click enter. The details of the required column are displayed.
- Click **Next**.

Preview Data Entity tab

It displays a preview of all the created columns and their configured details.

4. Click **Save**.
The new target Data Entity is created.
5. Expand the **Properties Panel** in the right pane to view the following settings of the created components:
 - General - Displays the Name of the component along with its Connection and Schema details.
 - Attributes - Displays the details of all the attributes associated to the component.
 - Column Mapping - Click Auto Map to map all the columns automatically.
 - Preview - Click to have a preview of the component.
 - Options - Change the options as appropriate.

2.4.3.4 Validate and Execute a Data Flow

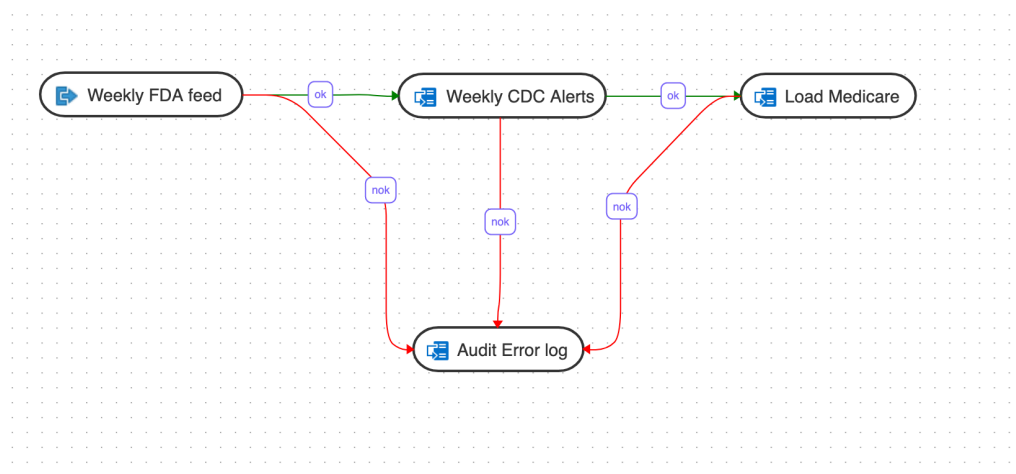
After your data flow is ready, do the following:

1. Click **Save**.
After saving, if data needs to be staged before transforming, Transfer button is added to one or more links. You can click these buttons to set more options, if available.
2. Click the **Validate** icon (✓) in the toolbar above the design canvas to validate the data flow.
3. After a successful validation, click the **Execute** icon (▶) next to the **Validate** icon to execute the data flow.
A message appears that displays the execution job ID and name that you can monitor on the Jobs page. For more information, see [Managing Jobs](#).

2.4.4 Introduction to Workflows

A workflow is made up of multiple data flows organized in a sequence in which they must be executed. Each data flow is executed as a step. When you execute a workflow, a data flow either succeeds or fails. Depending on whether the first data flow succeeds or fails, you can choose the next data flow that must be executed.

Here is an example of a workflow:



In this example, the workflow performs the following actions:

1. Execute the "Weekly FDA feed" data flow .
2. If the "Weekly FDA feed" data flow execution is successful, execute the "Weekly CDC alerts" data flow.
3. If the "Weekly CDC alerts" data flow execution is successful, execute the "Load Medicare" data flow.
4. If any of the above data flow fails, then execute the "Audit_error_log" data flow.


2.4.5 Create a New Workflow

To create a new workflow for your project:







1. On the **Home** page, click the required Project title .
You are navigated to the **Project Details** page.
2. In the left pane, click **Workflows**.

The Workflow page appears.

3. On the **Workflow** page, click **Create Workflow**.
The **Create Workflow** page appears.
4. In the **Name** field provide a name for the new workflow and click **Create**.
The new workflow is created and listed in the **Workflow** page with its **Name** and **Folder** details.
5. Click the Workflow to configure the **Workflow Details**.
6. Select either the ok (green arrow) icon, the not ok (red arrow) or the ok/not ok (black arrow) in the toolbar.
This defines the mode that subsequent links drawn on the canvas will be set to.
 - ok (green) defines the success path.
 - not ok (red) defines the failure path.
 - ok/not ok (black) defines a path that is followed on success or failure.

7. Select the data flow and click the **Connector** icon () next to it to connect it with the next data flow.

8. After defining all the required Workflow details,

- Click  , to save the created/designed workflow.
- Click  , to align the nodes of the designed workflow.
- Click  , to execute the created workflow.
- Select a single step in the canvas and click the **Execute Step** icon (), to execute only the selected data flow or workflow.
You can monitor the execution status on the Jobs page. For more information, see [Managing Jobs](#).
- Click   , to maximize or minimize the created workflow diagram in the design canvas.
The newly created workflows get listed in the Project Details page. The following details are displayed:

- Name of the Workflow
- Folder corresponding to the workflow - Default Folder

To view the details of a workflow, click the name of the workflow and you are navigated to the Workflow Details page.

In the left pane, you can search for the required Data Flow or Workflow using the Name filter. In the **Name** text box, enter the name of the required Data Flow or Workflow.

Select a step in the canvas and check the **Properties Panel** available at the right side of the design canvas to know the following properties of the selected step in a created Data Flow or Workflow:

- Name
- Linked Object

 **Note:**

You cannot edit this field.

- Step -
 - First Step - Select the **First Step** check-box, to execute the selected step as the first step for execution in a Data Flow or Workflow.

 **Note:**

You can select only a single step as a first step for execution in a Data Flow or Workflow.

- Number of attempts on Failure
- Time between attempts in seconds(s)
- Log steps in journal - Select any of the following options from the drop-down box:
 - Always
 - Never
 - Error

Clicking on each step displays properties like name,linked object(non editable) ,step ,, ,

2.5 Scheduling Data Flows or Workflows

You can schedule Workflows and Data Flows to run at specified time interval. Each schedule allows you to specify a start date and time, and execution frequency.

 **Note:**

- If you are creating a schedule plan through Oracle Data Transforms, to prevent from skipping schedules, set the browser timezone to match the repository configured timezone.
- Repository configured timezone is available as a part of master repository information and by default it is PST8PDT.

To schedule a data flow or a workflow:

1. In the left pane, click **Schedules**.
2. Click **Create Schedule**.
3. From the **Resource** drop-down menu, select **Data Flow** or **Workflow** as appropriate.
4. From the **Resource Name** drop-down list, select a data flow or workflow that you want to schedule.


- From the **Frequency** drop-down list, select the time frame in which you wish to execute the created schedule. You can schedule it On Startup, Simple, Daily, Hourly, Weekly, Monthly or Yearly. Based on the selected frequency, **Time** field appears allowing you to schedule the selected Data Flow or Workflow. For detailed information refer to the below table:

Frequency	Time Values
On Startup	NIL
Simple	Click Select Date Time icon next to Date and Time field, to select the required date and time in MM/DD/YY and HH:mm format.
Daily	Click the clock icon next to Time field, to select the required time in HH:mm format.
Hourly	Click up and down arrows next to Time field, to select the required time in Minutes:Seconds format.
Weekly	<ul style="list-style-type: none"> Run Every parameter appears with check-boxes for all the days of the week. Click the clock icon next to Time field, to select the required time in HH:mm format.
Monthly (day of the month)	<ul style="list-style-type: none"> Select the required date from the Monthly Date drop-down box. Click the clock icon next to Time field, to select the required time in HH:mm format.
Monthly (week day)	<ul style="list-style-type: none"> From the Monthly date drop down box select the required value. From the Week day drop-down box, select the required weekday in which you wish to schedule the job.
Yearly	<ul style="list-style-type: none"> From the Month drop down box, select the required month in which you wish to schedule the job. From the Monthly date drop down box, select the required date in which you wish to schedule the job. Click the clock icon next to Time field, to select the required time in HH:mm format.

- In the **Number of Attempts on Failure** text box, enter the required value or click the up or down arrows next to the text box, to select the required value. This value denotes the number of retry attempts that should happen after the schedule failure.
- Stop Execution After** field denotes the time after which the schedule has to stop after executing it. It can be in **Hours**, **Minutes** or **Seconds**. Select the value and its unit.
- Select the status of the scheduled Data Flow or Workflow from the **Status** options. It can be **Active**, **Inactive** or **Active for Period**. Through **Active for Period** option you can configure the exact time frame of the created schedule. It's Starting and

Ending Date with time, time interval in which you wish to run the schedule and exceptions, if any.

9. After configuring the above details, click **Save**.
The created schedules get listed in the **Schedules** page along with the following details:
 - Resource
 - Status
 - Frequency
 - Valid or Invalid

Click the Actions menu  of the respective schedule to perform the following operations:

- Click **Edit** to edit the details of the created schedule.
- Click **Disable** to disable the created schedule. The status of a schedule becomes inactive when you disable it and gets displayed in the Scheduled list. Select the schedule and click **Enable**, to enable it whenever required. You can enable it again for a specific period, through **Enable for Period** option.
- Click **Validate** to validate the created schedule.
- Click **Delete** to delete the created schedule. Upon confirmation the created schedule is deleted.

To schedule a data flow or a workflow specific to a project:

- Click the Project title displayed on the **Projects** page. **Project Details** page appears.
- In the left pane, click **Schedules**. **Schedules** page appears. It displays all the schedules pertaining to the selected project.

 **Note:**

This page is project specific and displays only the Data Flows and Workflows pertaining to the selected project.

- To create a new schedule, click **Create Schedule**.
- Enter all the required details and click **Save**.
The new schedule is created and is added to the existing list of schedules for the project.

2.6 Managing Jobs


On the Home page, click **Jobs** on the left pane to access the Jobs page. The **Jobs** page by default, lists the execution job sessions that are running and completed for the present day as `Date` parameter is set to `Today` by default. You can click on any of the instance id from the list to see its details.

To create a new job,

- Click **Create Job**.
The **Create Job** page slides-in.
- From the **Resource Type** drop-down, select the type of resource for which you wish to create a new job. It can be - Data Flow, Workflow or Schema.
- All the resources associated with the selected Resource Type get listed in the **Resource** field. From the **Resource** drop-down, select the required resource for which you wish to create a new job.
- Click **Create**.

A new job is created and is added to the existing list of jobs in the Jobs page.

For each session, you can see the Job Session **ID**, **Name**, **Status**, **Start Time** and

End Time for each of the jobs that are executed. Click the Actions menu  to **View Details** of the jobs, **Delete** and **Rerun** the jobs, if required. If any of the steps failed, you can click on them to see the error details.

To delete a job, select the check box of the respective job session and click **Delete**. Upon confirmation the selected job gets deleted.

You can also search for the required job session to know its details based on filters such as:

- **Name** - Name of the Job
- **Status** - Select the required session status from the list - All, Done, Error, Queued, Running, Waiting and Warning.
- **Date** - Select the date in which the required job session was executed - All, Today, Yesterday, Last Week, Last Month and Custom Range, which allows you to select specific From and To dates.

To view the job sessions pertaining to a specific project:

- Click the Project tile displayed in the Projects page.
Project Details page appears.
- In the left pane, click **Jobs**.
Jobs page appears. It displays all the jobs and their details pertaining to the selected project.

 **Note:**

This page is project specific and displays only the jobs pertaining to the selected project.

- To create a new job, click **Create Job**.
- Enter all the required details and click **Create**.
A new job is created and is added to the existing list of jobs for the project.

2.7 Mapping Users




The Administration tab of Oracle Data Transforms helps you to map the database user (created during ODI provisioning) to Oracle Data Transforms User. The administrator in Oracle Data Transforms is called the SUPERVISOR.

By mapping the users, you can directly access the Oracle Data Transforms application from Database Actions page. For more details, refer to Accessing Oracle Data Transforms From Database Actions page.

For mapping the users,

1. In the left pane, click **Administration**.
A warning message appears.
2. Click **Continue**.
User Mapping screen appears.
3. In the **Database URL** text box, enter the Database URL created during ADW instance creation, for example - `https://u6dx8gx07phfkil-db202003100909.adb.us-phoenix-1.oraclecloudapps.com/`.
To get this URL,
 - From OCI console, click the Hamburger icon and navigate to **Autonomous Database** and select the autonomous database instance for which you created the repository.
 - Click the **Service Console** and navigate to **Development** → **SQL Developer**. You can find the database URL here and copy it to the **Database URL** text box.



4. Click the  Add icon, to add a new column in the User Mapping table.
5. Double click the **Database User** column to create a user mapping for the required Database User.
6. Double click the **ODI User** column and click the drop-down arrow to list all the ODI users available for mapping in Oracle Data Transforms application.
7. From the **ODI User** drop-down select the required ODI user, to whom you wish to map the newly added Database user.
8. Click **Save**.
A confirmation message regarding the user mapping update appears.
9. Click the Refresh icon  next to the + icon, to see the newly created user mapping column in the User Mapping table.
10. If you wish to delete the created user mapping, select the user and click the Action icon  next to the user and select **Delete**.
11. For deleting user mappings in bulk, select the respective user check-boxes and click **Delete**.
Upon confirmation the selected user mappings are deleted.

You can search for the required user mapping from the User Mapping table, through Name filter.

- Enter the name of the user mapping that you are looking for in the **Name** text box. The respective user mapping column is displayed.

3

Administering Oracle Data Transforms

Before you begin using Oracle Data Transforms, you must perform the following tasks. After completing these tasks, the connections, models, and datastores created in Oracle Data Transforms Administrator are available for use in the Oracle Data Transforms.

It contains the following sections:

- [Accessing Oracle Data Transforms](#)
- [Creating Master and Work Repositories](#)
- [Connecting to Repository](#)
- [Managing Users](#)
- [Importing Repositories](#)
- [Exporting Repositories](#)
- [Enforcing Password Policies](#)
- [Cleaning up Unused Authorizations](#)

For detailed information on the terminologies associated with Oracle Data Transforms and their respective functions, see Terminology Information.

3.1 Accessing Oracle Data Transforms Administrator

To access the Oracle Data Transforms Administrator,

- Follow the steps listed in [Connecting to ODI Compute Instance](#) .
- From the Applications menu, navigate to Programming -> Oracle Data Transforms Administrator.
- Or, double click the launch Oracle Data Transforms Administrator shortcut icon available on your desktop.
- Or in your VNC, navigate to a terminal and launch the Oracle Data Transforms Administrator using the following commands:

```
$ cd $MW_HOME/odi/studio/bin
$ ./odi -clean
```

Oracle Data Transforms Administrator is launched allowing you to manage various aspects of your integration project.

Connect to the repository with already populated login credentials. The Login Name value varies based on the selected repository. For ADB repository, the Login Name is ODI_ADW_REPO and for MySQL Embedded repository it is ODISA_MYSQL.

3.2 Creating Master and Work Repositories

Repositories is already created during provisioning. Apart from the repository which is already created, if you wish to create a separate ODI Repository, follow the below steps:

ODI Master and Work Repositories can be created using Repository Creation Utility.

1. Using Oracle Data Transforms Administrator -

Before creating the ODI repositories, you have to create a schema for these repositories to work.

Follow the below commands to create a schema:

```
create user <odi_schema_user> identified by <odi_schema_password>;  
grant unlimited tablespace to <odi_schema_user> WITH ADMIN OPTION;  
grant CONNECT, RESOURCE to <odi_schema_user> WITH ADMIN OPTION;
```

2. Using Repository Creation Utility -

Use the repository creation utility (rcu) to create the repositories, if you want to setup J2EE agent/collocated agent.

Follow the below procedure to create repositories using the Repository Creation Utility:

- a. Find the repository creation utility executable available in the `$MW_HOME/oracle_common/bin` directory in the Fusion Middleware home and launch rcu.
- b. The first screen is just a welcome screen. Click **Next**.
- c. Accept the default values and click **Next**.
- d. Specify the database connection details. Once entered, you can see a dialog box showing the progress of the three checks carried out on the database, making sure that the connection is successful.
- e. Select the repository components to install. Some are selected by default. Make sure you select the Master and Work repository option. Click **Next**. You can now see a dialog box showing the progress of the checks carried out on the prerequisites for the components you selected
- f. If all the prerequisite checks pass, then enter the password for the schema users for the repositories. It's easiest to use the same passwords for all schemas, however, make sure you choose the option that conforms to your company security policy. Click **Next**.
- g. Enter the password for the Supervisor user, what type the work repository is, its name and the password for its user. Also specify the encryption algorithm. Click **Next**.
- h. Map the tablespaces. This is where you specify the name of the schema owners, and the default and temporary tablespace names for each component. You can accept the default names, or choose to specify your own. Click **Next**.
- i. The penultimate screen summarizes your selections, and from here, you create the repositories. Click **Create**. Note that it takes several minutes to create all the repositories.

- j. Click **Close** after you have reviewed the summary of the repositories just created.

Once you have created a master repository and at least one work repository, you then create a connection, log in to ODI, and connect to these repositories.

Refer to the tutorial, [Oracle Data Integrator 12c - Creating and Connecting to ODI Master and Work Repositories](#) for detailed steps on how to create your master and work repositories.

3.3 Connecting to Repository

Follow the steps to connect to Master and Work repositories in Oracle Data Transforms Administrator:

Once you have a master repository and a work repository, you can create a connection in Oracle Data Integrator.

1. Launch Oracle Data Transforms Administrator, and click **Connect to Repository**.
2. Enter Wallet Password if you are using the wallet. Enter the wallet password. Click **OK**.
3. Click **New** in the Oracle Data Integrator Login window.
The Repository Connection Information dialog displays.
4. Enter a name for the Login.

Note:

From 12.2.1.4.200618 version of ODI Marketplace release, short url with TNS_ADMIN is used in Oracle Data Transforms/Administrator login field.

5. Enter Supervisor as the user, and the password for it. (Note, it's what you entered when creating the repositories).
6. Enter the database connection details for the master repository.
7. Select the work repository.
8. Click **Test Connection**, to test the connection and upon successful test connection, click **OK**.

Note:

To configure repository of the ODI Agent/ODI Apps, refer to Switching Repositories of the ODI App Server.

Now you can log into ODI.

3.4 Managing Users


The **Users** tab of Oracle Data Transforms Administrator helps you to manage users of the application.

The way in which you manage users depends, in part, on where the user is defined. By default, a user corresponds to the login name used to connect to a repository and is persisted in the internal repository of Oracle Data Integrator. However, if external authentication is enabled for Oracle Data Integrator components:

- Users authenticated into Oracle Data Integrator are created and managed in an external identity store, such as Oracle Internet Directory. You use the tools and utilities provided with that store to create, update, and delete users.
- To let external users access Oracle Data Integrator, you can do any of the following:
 - Map the external user to an Oracle Data Integrator role.
 - Map any of the enterprise roles to which this external user belongs to an Oracle Data Integrator role.
 - Register the external user in Oracle Data Integrator using the Security Navigator as in prior releases.

Creating a New User

To create a user:

1. In the **Users** tab, expand the **Users** navigation tree.
2. Click **New User** icon  in the toolbar of the **Users** tile.
3. In the **Name** field, enter a name for your user.
4. Provide the **Initials** for this user.
5. Do one of the following:
 - If using internal authentication, click **Enter the Password** and provide a password for this user.
 - If using external authentication, click **Retrieve GUID** to associate the new user with a user from the external identity store. The user name in Oracle Data Integrator must match the user name in the identity store. If a match is found, a Global Unique ID appears in the **External GUID** field.
6. From the **File** main menu, select **Save**.

The new user appears in the **Users** navigation tree. From the User editor, an ODI supervisor user can disable other ODI user accounts including other supervisor accounts. In the New user screen, Supervisor checkbox is selected and disabled by default. Thus, all other profiles will be disabled.

WARNING:

At least one supervisor user account should be maintained at all times. If all supervisor user accounts expire, contact Oracle Support.

Deleting a User from the Internal Repository

To delete a user that is defined in the internal repository of Oracle Data Integrator:

1. In the **Users** tab expand the **Users** navigation tree.

2. From the list of users, select the user that you want to delete.
3. Right-click and select **Delete**.
4. Click **OK** in the confirmation window.

The deleted user disappears from the list.

Viewing User Connection Information

To view user connection information:

1. From the **Users** toolbar menu, select **Review User Activity....** The User Connections dialog appears.
2. Enter the filter criteria to view relevant user connection information and click **Filter**.


User connections are displayed in the Connections section, based on the set filter criteria.

3.5 Importing Repositories

At repository level you can export and import the master repository and the work repositories.

The master repository export/import procedure allows you to transfer the whole repository from one repository to another. It can be performed through the Users tab, to import the exported objects in an existing repository, or while creating a new master repository.

To import the exported master or work repository objects into an existing master or work repository:

1. From the toolbar menu above **Users** tab, click the Users menu icon  and select **Import**.
2. In the **Import Selection** dialog, select **Import the Master or Work Repository**.
3. Click **OK**.
4. In the Import dialog:
 - Select the **Import Mode**. Refer to Import Modes for more information.
 - Select whether you want to import the files **From a Folder** or **From a ZIP file**.
 - Enter the file import folder or zip file.
5. Click **OK**.
6. If prompted, enter the Export Key used when this object was exported. If you do not enter an Export Key, any encrypted sensitive (cipher) data will be stripped from the imported object. For more information about the Export Key, see: Export Keys.

The master or work repository contains now the objects you have imported.

 **Note:**


The import is not allowed if the source and target repositories have the same Internal ID and have different repository timestamps. This can only happen with 11g-compatible repositories, because 12c repositories have a unique Global ID.

If the target 11g-compatible repository has the same Internal ID as the source repository, you can renumber the repository. This operation should be performed with caution. See About Internal Identifiers (IDs) for more information on the risks, and how to renumber a repository is described in Renumbering Repositories.

3.6 Exporting Repositories

The objects that are exported when exporting the master repository are objects, methods, profiles, users, languages, versions (if option selected), solutions (if option selected), open tools, password policies, entities, links, fields, lookups, technologies, datatypes, datatypes conversions, logical agents, contexts and the child objects.

To export a master repository:

1. From the toolbar menu above **Users** tab, click the Users menu icon  and select **Export**.
2. In the Export Selection dialog, select **Export the Master Repository**.
3. Click OK.
4. In the **Export Master Repository** dialog, set the Export parameters as indicated in Table 24-3.

The master repository and its topology and security settings are either exported as .xml files directly into the directory, or as a zip file containing .xml files. If you want to generate a zip file, you need to select **Export to zip** file and enter the name of the zip file in the **Zip File Name** field.


5. Select **Export versions**, if you want to export all stored versions of objects that are stored in the repository. You may wish to unselect this option in order to reduce the size of the exported repository, and to avoid transferring irrelevant project work.
6. Select **Export solutions**, if you want to export all stored solutions that are stored in the repository. You may wish to unselect this option for similar reasons.
7. Click **OK**.

The export files are created in the specified export directory.

3.7 Enforcing Password Policies

The password policies consist of a set of rules applied to user passwords when using internal authentication. This set of rules is applied when the password is defined or modified by the user.

To define the password policy:

1. From the toolbar menu above **Users** tab, click the Users menu icon  and select **Password Policy...**
The Password Policy dialog appears. This dialog displays a list of rules.
2. If you want your password to expire automatically, check **Password are valid for (days)**, and set a number of days after which passwords need to be modified.
3. Click **Add a Policy**. The Policy Definition dialog appears. A policy is a set of conditions that are checked on passwords.
4. Set a **Name** and a **Description** for this new policy.
5. In the Rules section, add several conditions on the password text or length. You can define, for example, a minimum length for the passwords.
6. From the **Condition to match** list, select whether you want the password to meet at least one or all conditions
7. Click **OK**.
8. Add as many policies as necessary, and select **Active** for those of the rules that you want to keep active. Only passwords that meet all the policies are considered as valid for the current policy.
9. Click **OK** to update the password policy.

3.8 Cleaning up Unused Authorizations


Authorizations by object instance are stored in the master repository. However, if objects are deleted from all work repositories, the authorization are not necessarily deleted. You may wish to retain certain unused authorizations; for example, if they refer to objects currently stored in an exported file or in a stored solution.

You should use the Security Clean-up Tool periodically to remove these unused authorizations from the master repository. Unused authorizations are removed if they refer to objects that do not exist in the master repository or in any work repository.

Note:

All work repositories attached to the master repository must be accessible so that you can verify the existence of the objects in those repositories

To clean up unused authorizations:

1. From the toolbar menu above **Users** tab, click the Users menu icon  and select **Clean Up Security Settings....**
The Security Clean-up Tool dialog appears.
2. On the **Cleanable** tab, select **Clean** for the cleanable security settings you want to remove. The security settings that cannot be removed are shown on the **Non-cleanable** tab.
3. Click **OK** to clean up the selected security settings.