Oracle® Database

Oracle Autonomous Database Data Share Quick Start Guide

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Contents

1 Welcome to Oracle Data Sharing

What is Data Sharing? 1-1
Traditional ways to share data 1-2
The modern way of sharing data 1-2
Modern data sharing - how it works 1-3
How to Access and Enable the Data Share Tool 1-4

2 Share Data Versions Using Object Storage

Use Oracle as a Share Provider for Versioned Data 2-1
- High-Level Steps for Producing Shares for Versioned Data 2-1
- How-To Instructions for Producing Shares for Versioned Data 2-1

Use Oracle as a Data Share Recipient for Versioned Data 2-6
- High-Level Steps for Receiving Shares for Versioned Data 2-6
- How-To Instructions for Receiving Shares for Versioned Data 2-7

3 Share Live Data Using Direct Connection

Use Oracle as a Data Share Provider for Live Data 3-1
- High-Level Steps for Producing Shares for Live Data 3-1
- How-To Instructions for Producing Shares for Live Data 3-1

Use Oracle as a Data Share Consumer of Live Data 3-5
- High-Level Steps for Receiving Shares for Live Data 3-5
- How-To Instructions for Receiving Shares for Live Data 3-6

1

Welcome to Oracle Data Sharing

This Quick Start Guide familiarizes you with Data Share technology background, some of its benefits, and includes step-by-step How To's on using Oracle Autonomous Database as a data share provider and a data share recipient.

- What is Data Sharing?
  Data Sharing allows customers to improve their business and open up new opportunities. Examples are provided.
- Traditional ways to share data
  Sharing data is nothing new. Some examples of how users used to share data are given.
- The modern way of sharing data
  Modern data sharing must be open, secure, real-time, vendor-agnostic, and avoid the pitfalls of extracting and duplicating data for individual consumers of data in a collaborative environment.
- Modern data sharing - how it works
  The high level sequence of events is explained, for users consuming data made available through the delta sharing protocol.
- How to Access and Enable the Data Share Tool
  The Data Share tool is used to provide data shares and to consume data shares. This tool is included in the Oracle Autonomous Database Data Studio.

What is Data Sharing?

Data Sharing allows customers to improve their business and open up new opportunities.

Data Sharing scenarios:

- One organization shares data across lines of business (LOBs)
  For example, an HR department can share statistical employee data with the Financial department for cost analysis.
- Business to Business (B2B)
  For example, a retailer shares regional sales and inventory data with a supplier to help improve the supplier's production line and locations.
- Business to Customers (B2C)
  For example, a restaurant shares historical time-based pattern of busyness to allow customers to plan for their reservations.

Oracle Data Sharing offers the following sharing options:

- Versioned Data Sharing
  In this type of share, data is shared and published as well-defined, known, as-of-snapshots. At the time of publication, the tool generates and stores the data share as parquet files in the specified bucket. The recipient can directly access the share in the object store. See Share Data Versions Using Object Storage.
- Live Data Sharing

In this type of share the recipient accesses data directly from the remote Oracle table or view owned by the producer. This type of share gives the recipient the latest data. The advantage of this mode is that the data is up to date as of the time of query. See Share Live Data Using Direct Connection.

For further information on the Data Share tool usage and limitations, see The Data Share Tool.

Traditional ways to share data

Sharing data is nothing new and users did this before. Some examples of how users used to do data sharing in the past are:

- Send data via email
- Share data through an FTP server
- Use application-specific APIs for data extraction
- Leverage vendor specific tools to copy relevant data

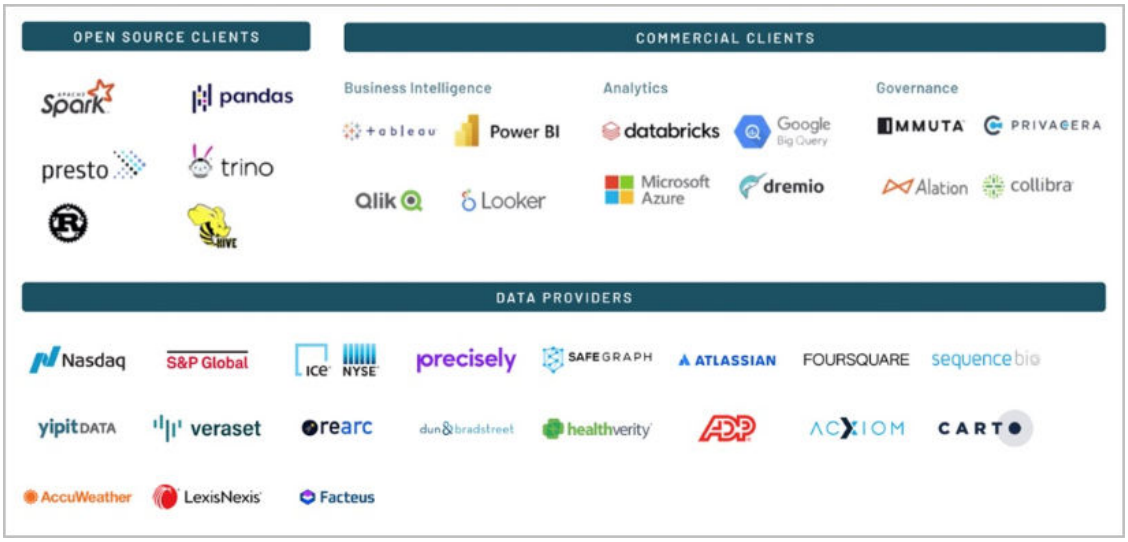
While these methods work in general, they come with certain drawbacks:

- Managing separate processes for data extraction, preparation or remote access are labor-intensive.
- Extracting and duplicating data is prone to data staleness.
- Architectures and processes can become very difficult to maintain and hard to scale.
- Redundant data extraction can introduce format compatibility issues.
- Data extraction and preparation must handle sensitive information properly.

The modern way of sharing data

Modern data sharing must be open, secure, real-time, vendor-agnostic, and avoid the pitfalls of extracting and duplicating data for individual consumers of data in a collaborative environment. Delta Sharing is an open protocol for secure real-time data exchange of large datasets that satisfies all these criteria, supported by multiple clients and program languages, and vendor agnostic.

The following graphic gives an overview of the open eco system as of June 2023 that supports delta sharing:



The open Delta Sharing protocol is aimed to solve the following problems:

- Share data without copying it to another system
- Producer controls the state of data (version of data)
- Be an open cross-platform solution
- Support a wide range of clients such as Power BI, Tableau, Apache Spark, pandas and Java
- Provide flexibility to consume data using the tools of choice for BI, machine learning and AI use cases
- Provide strong security, auditing, and governance
- Scale to massive data sets

Modern data sharing - how it works

You can share and consume versioned data, or live data.

Share Versioned Data Using Object Storage - how it works

At the high level, when a user consumes data made available through the delta sharing protocol, the following happens:

- The Delta Sharing Server creates a data share that consists of files from an object store.
- The Delta Sharing Server grants recipients access to the data share, and sends an invitation subscription email to Delta Sharing Clients.
- The Delta Sharing Client issues a request to the Delta Sharing Server and provides a bearer token. If the token is valid, the Delta Sharing Server authenticates the user and provides pre-authenticated links for the Delta Sharing Client.
- The Delta Sharing Client directly accesses the shared data - files in the object store – that correspond to the shared data, e.g., a table, using the pre-authenticated links from the Delta Sharing Server.

Share Live Data Using Direct Connection - how it works

At the high level, when a user consumes live data, the following happens:

- The live share producer, creates a share consisting of selected tables and views to be shared.
- The producer associates the data share with consumers and grants access to the data share.
- The consumer browses a list of available live shares, selects the live share they want to receive data from and subscribes to it.
- The consumer derives views from the tables in the selected share and queries the views to access to the underlying data.

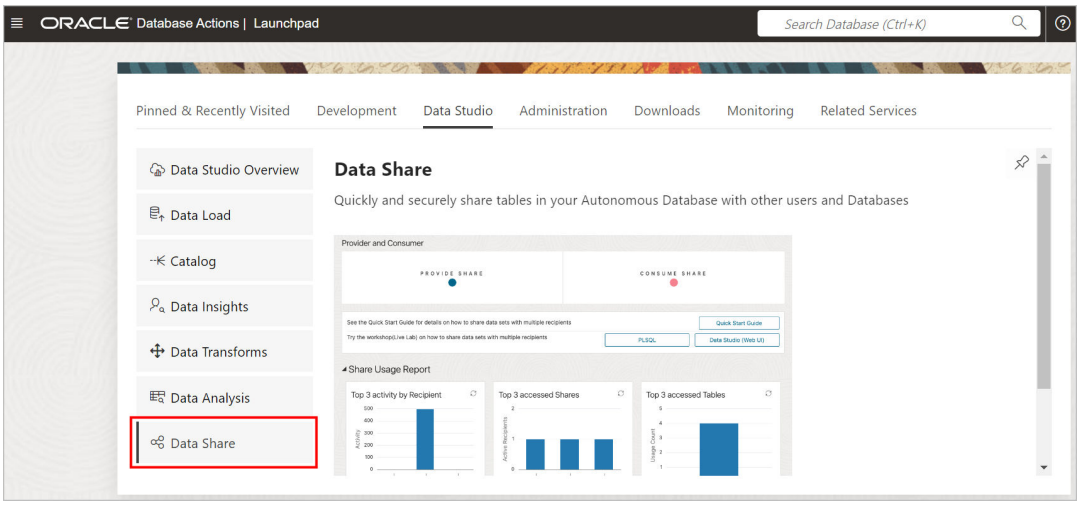
How to Access and Enable the Data Share Tool

The Data Share tool is used to provide data shares and to consume data shares. This tool is included in the Oracle Autonomous Database Data Studio.

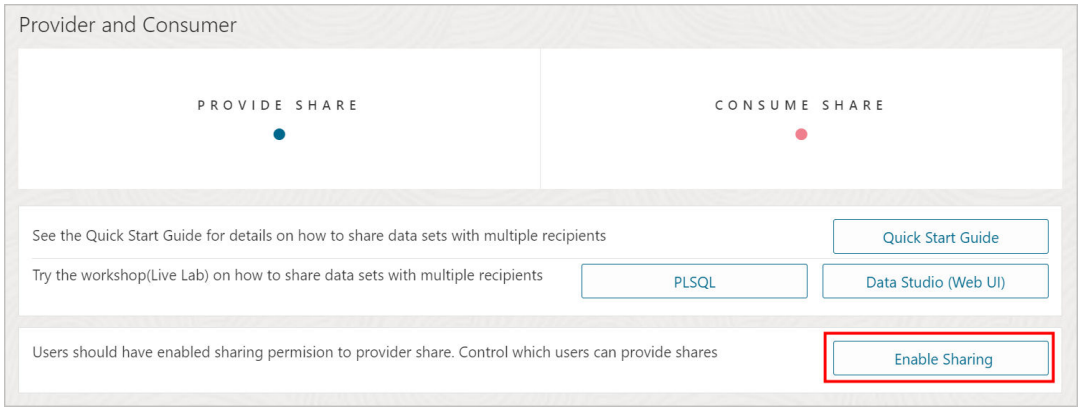
Before you can share or consume data using the Data Share tool, navigate to the Oracle Autonomous Database Data Studio, launch the Data Share tool and enable sharing.

Follow these steps:

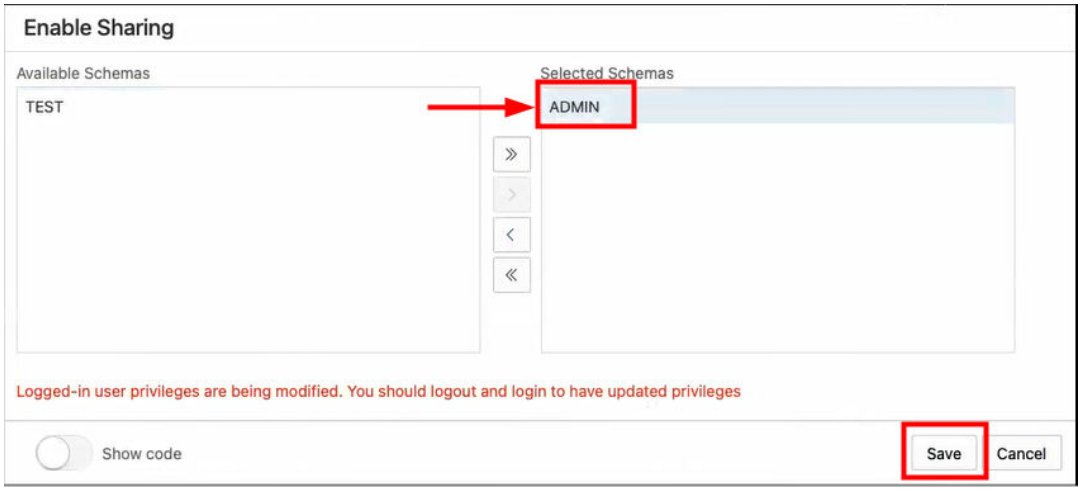
1. Navigate to the **Data Studio** on your Autonomous Database instance. See Data Studio Overview Page for further instructions.
2. Select **Data Share**.



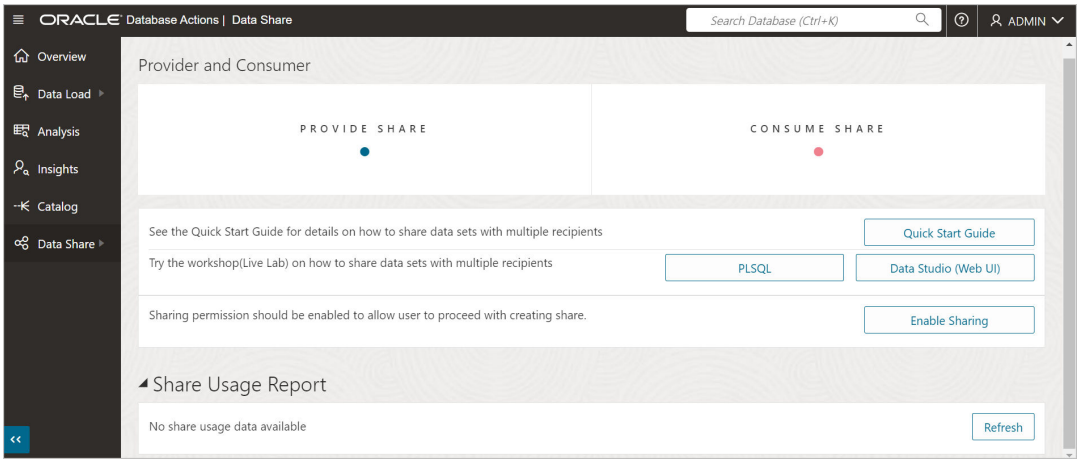
3. On the Data Share home page, click **Enable Sharing**.



4. From the Available Schemas column, select the user schema you want to enable and move it to the Selected Schemas column. Click **Save**.



5. Log out and log in again to update privileges.
6. Repeat previous steps to navigate to the Data Share tool. You can expand the tool on the left navigation menu to drill down to see details regarding provided shares and consumed shares.
    - To create a data share, select **Provide Share** at the top of the page. For instructions, see Use Oracle as a Share Provider for Versioned Data, and Use Oracle as a Data Share Provider for Live Data.
    - If you want to be the recipient of a data share, select **Consume Share**. For instructions, see Use Oracle as a Data Share Recipient for Versioned Data, and Use Oracle as a Data Share Consumer of Live Data.


ORACLE Database Actions | Data Share
Search Database (Ctrl+K)
ADMIN
Overview
Data Load
Analysis
Insights
Catalog
Data Share
Provider and Consumer
PROVIDE SHARE
CONSUME SHARE
See the Quick Start Guide for details on how to share data sets with multiple recipients
Quick Start Guide
Try the workshop(Live Lab) on how to share data sets with multiple recipients
PLSQL
Data Studio (Web UI)
Sharing permission should be enabled to allow user to proceed with creating share.
Enable Sharing
Share Usage Report
No share usage data available
Refresh

2

Share Data Versions Using Object Storage

Share data as a set of distinct versions, such as at the end of each day. The recipient will only see changes to the data when you publish a new version.

- Use Oracle as a Share Provider for Versioned Data
  Use the Create Share wizard to define data shares, and associate them with recipients.
- Use Oracle as a Data Share Recipient for Versioned Data
  Several simple steps are required to make shared data available to you within the Oracle Autonomous Database.

Use Oracle as a Share Provider for Versioned Data

Use the Create Share wizard to define data shares based on object storage data, and associate them with recipients. A single data share can consist of multiple shared objects that are shared with one or multiple recipients.

- High-Level Steps for Producing Shares for Versioned Data
  Providing access to shared data involves defining data shares and inviting recipients to consume from them.
- How-To Instructions for Producing Shares for Versioned Data
  Use the Data Share wizard to create and publish data shares for versioned data.

High-Level Steps for Producing Shares for Versioned Data

Providing access to shared versioned data involves defining data shares from object storage, selecting tables to include in the share, and inviting recipients to consume from them.

The high-level steps for providing data shares include:

High-Level Step	Description
1. Define general data share details	Provide a name and an optional description for the data share.
2. Specify the Object Storage location	Select the Object Storage for this data share from a drop down of available cloud locations.
3. Select the tables to share	Select the tables you want to share.
4. Associate the data share with recipients	Grant recipients access to the data share. Send an invitation subscription email to recipients.

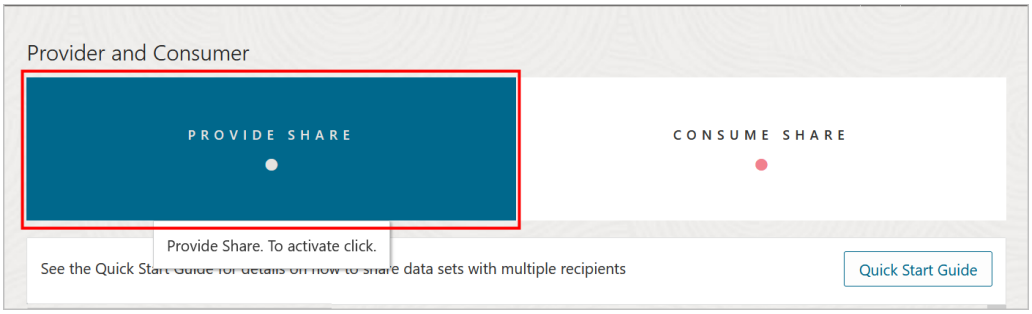
How-To Instructions for Producing Shares for Versioned Data

Use the Data Share wizard to create and publish shares for versioned data.

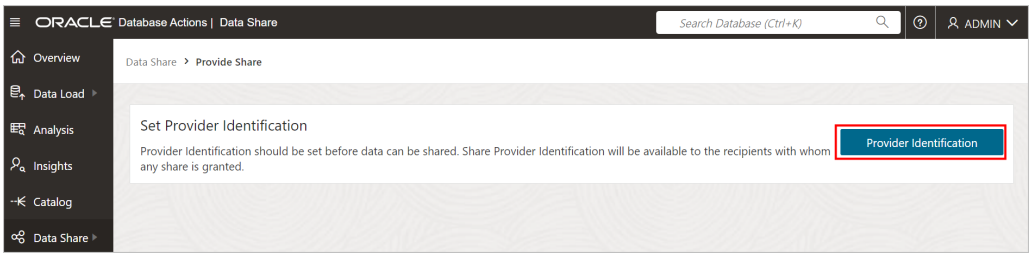
Follow these steps:

1. Define general data share details.
   a. Go to the Data Share Tool. See How to Access and Enable the Data Share Tool, for instructions.

b. Click **Provide Share**.

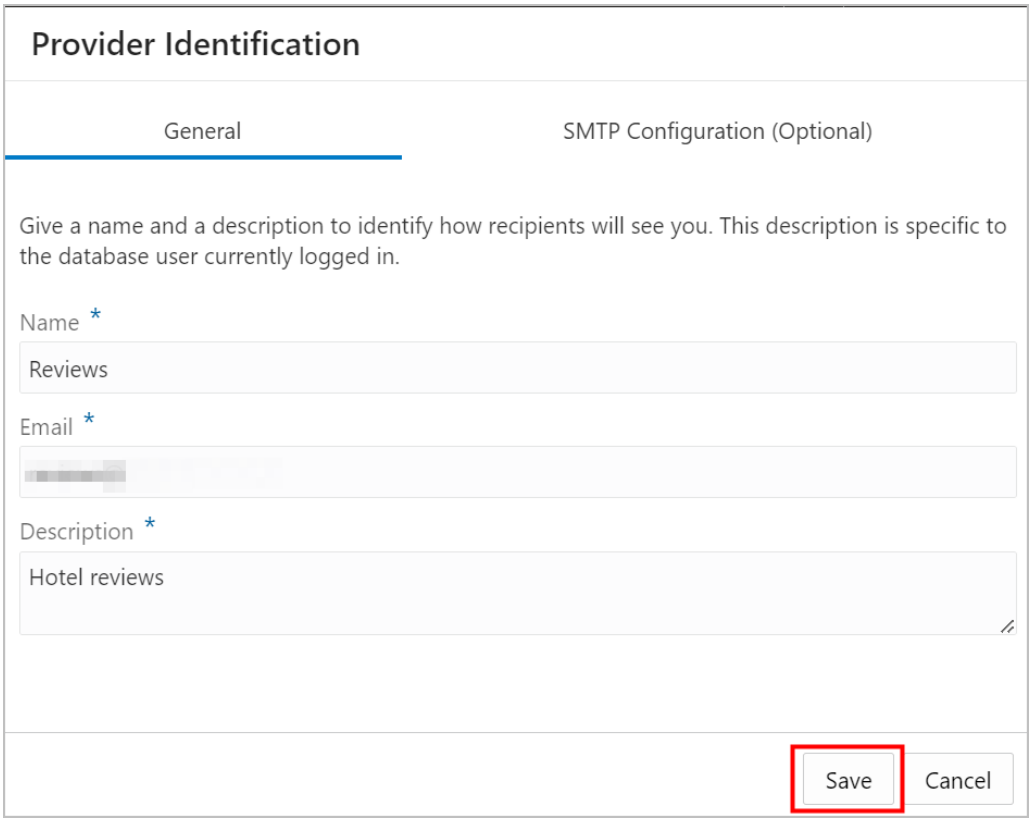


c. Click **Provider Identification**.



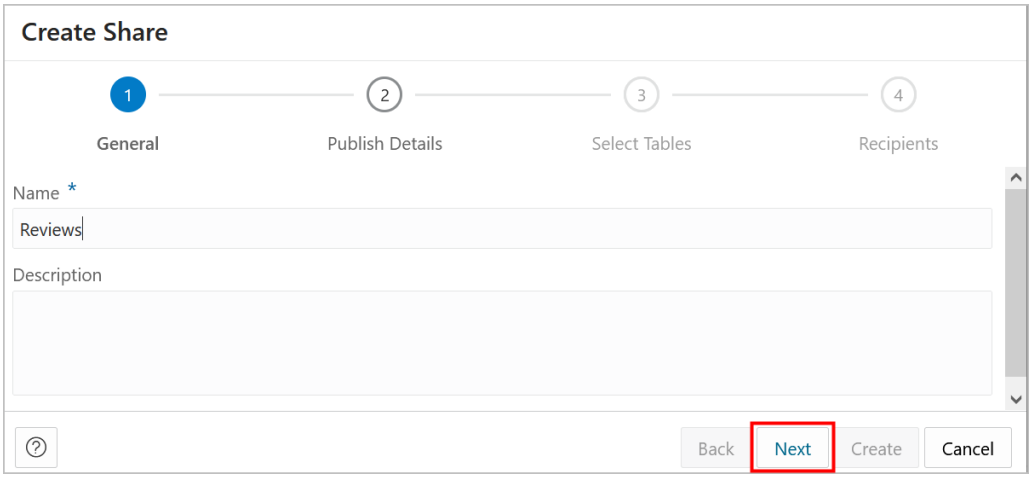
d. Enter a name for the share provider, the share provider email address and a description, then click **Save**. This example has the following entries:

- Name: Reviews
- Email: <*obscured*>
- Description: Hotel reviews



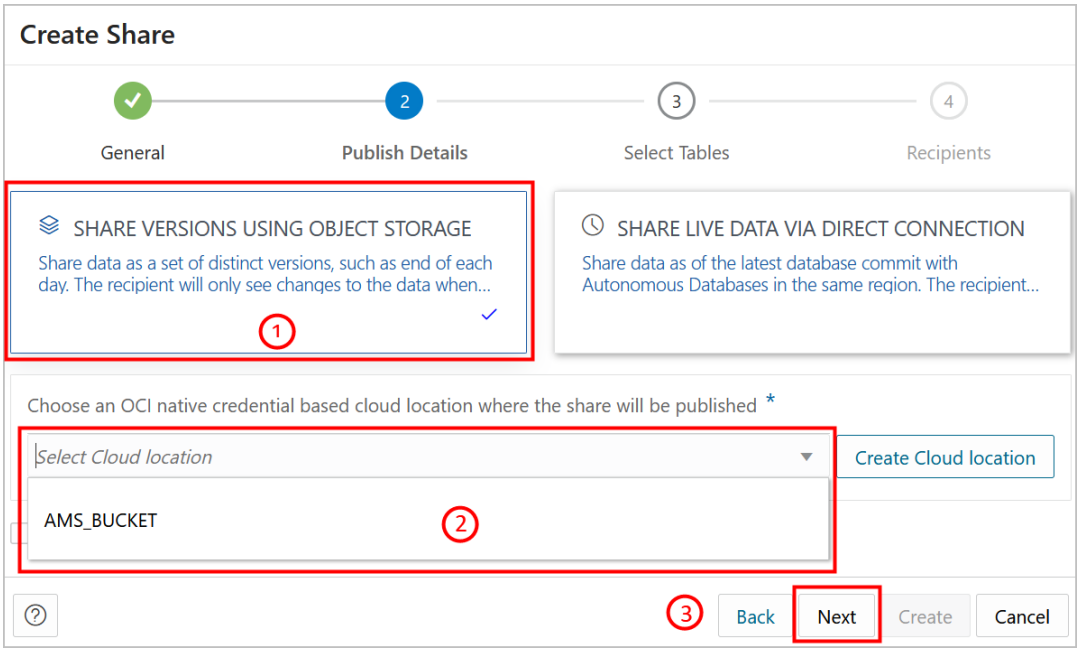
e. Click **Create Share**.

f. Enter the Name for the data share on the Create Share dialog, then click **Next**. This example uses **Reviews** for the Name.

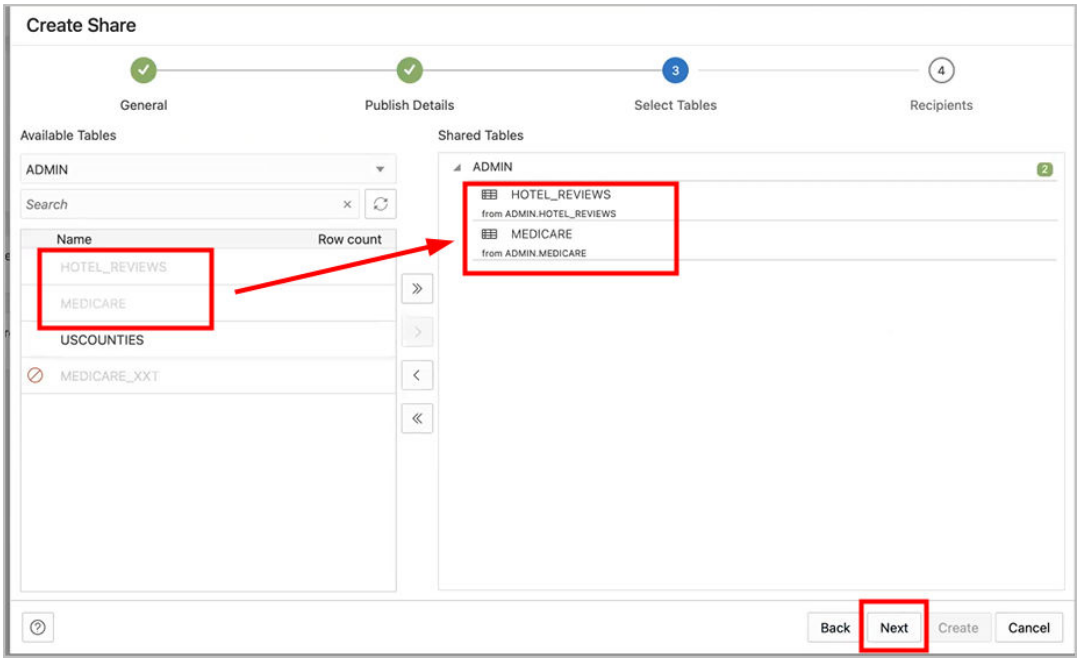


2. Specify the Object Storage location.
Select **SHARE VERSIONS USING OBJECT STORAGE**. Use the **Select Cloud Location** drop down to find the bucket you want to share. Select the bucket and click **Next**.

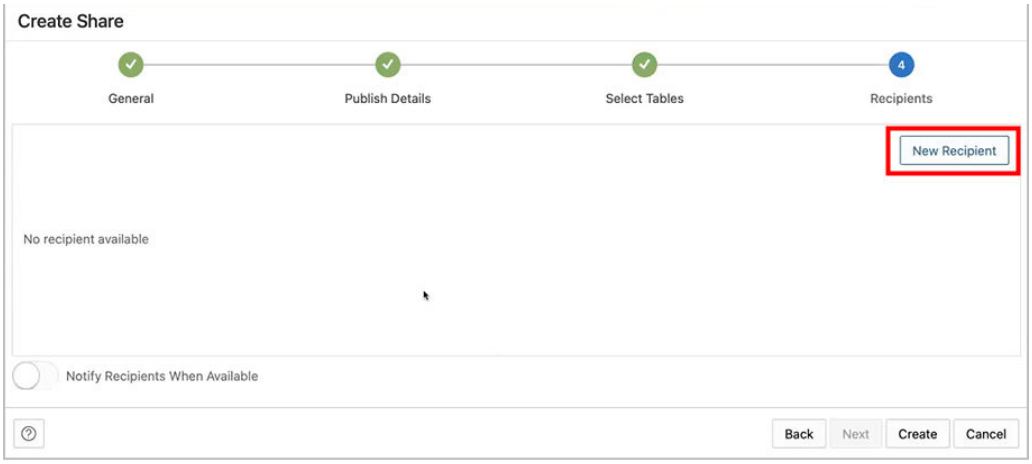
> **Note:**
>
> Data Share only supports OCI Native Credentials for Cloud Locations. To learn more about creating an OCI Cloud Store Location and the credential object needed to access the location, see Managing Cloud Storage Connections, and Create Oracle Cloud Infrastructure Native Credentials respectively.



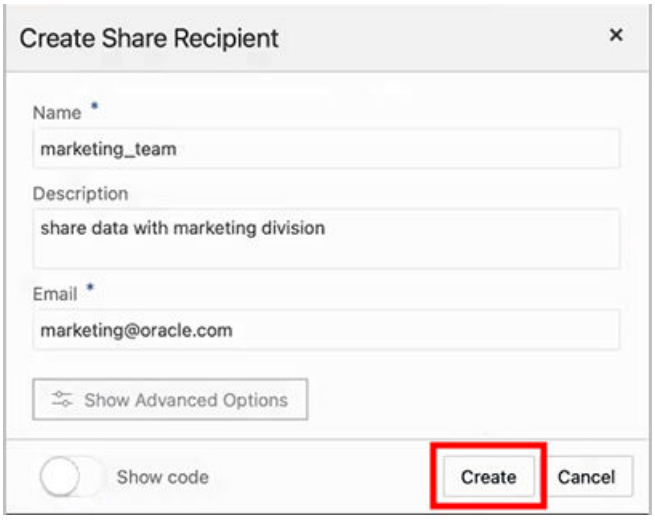
3. Select the table to include in the share.
Select the table or tables you want to add to the data share and click **Next**. In the following screenshot the **HOTEL_REVIEWS** table and **Medicare** table is added to the data share.



4. Associate the share with recipients.
   a. Click **New Recipient** to add recipients to the data share.



b. Enter the recipient's **Name**, **Description** (optional), **Email**, and click **Create**.



c. The new recipient is displayed in the list of recipients for this data share. Click the email icon next to the new recipient to email the activation link to the recipient. Click **Create** to finish creating the data share.

d. The Provide page is displayed and shows the number of data shares created and lists the data share details. When the data share is published, an email is sent to the recipient's email. In the example REVIEWS data share, the email is sent to the marketing email.

Use Oracle as a Data Share Recipient for Versioned Data

Several simple steps are required to make shared versioned data available to you within Oracle Autonomous Database.

- High-Level Steps for Receiving Shares for Versioned Data
  Data shared with you through Delta Sharing is not automatically available and discoverable in your Autonomous Database. You need to perform several basic steps to subscribe and access the provided data shares.
- How-To Instructions for Receiving Shares for Versioned Data
  Step-by-step instructions for accessing available shares for versioned data is described.

High-Level Steps for Receiving Shares for Versioned Data

Data shared with you through Delta Sharing is not automatically available and discoverable in your Autonomous Database. You need to perform several basic steps to subscribe and access the provided data shares.

The basic steps are described here. For step-by-step instructions, see How-To Instructions for Receiving Shares for Versioned Data

Here are the high-level steps you need to perform:

High-Level Step	Description
1. Download your share profile.	Profile files are JSON files containing a user's credentials to access a Delta Sharing Server. This enables you to authenticate yourself with the delta sharing server and to discover the data shares you are eligible to access. Download the profile using the URL included in the invitation email sent by the data share provider.
2. Subscribe to the data share provider.	Upload the JSON profile file and create a share provider subscription.
3. Register shares made available to you.	After successful authentication with the delta sharing server you can select individual or all available shares and register them as visible data objects.

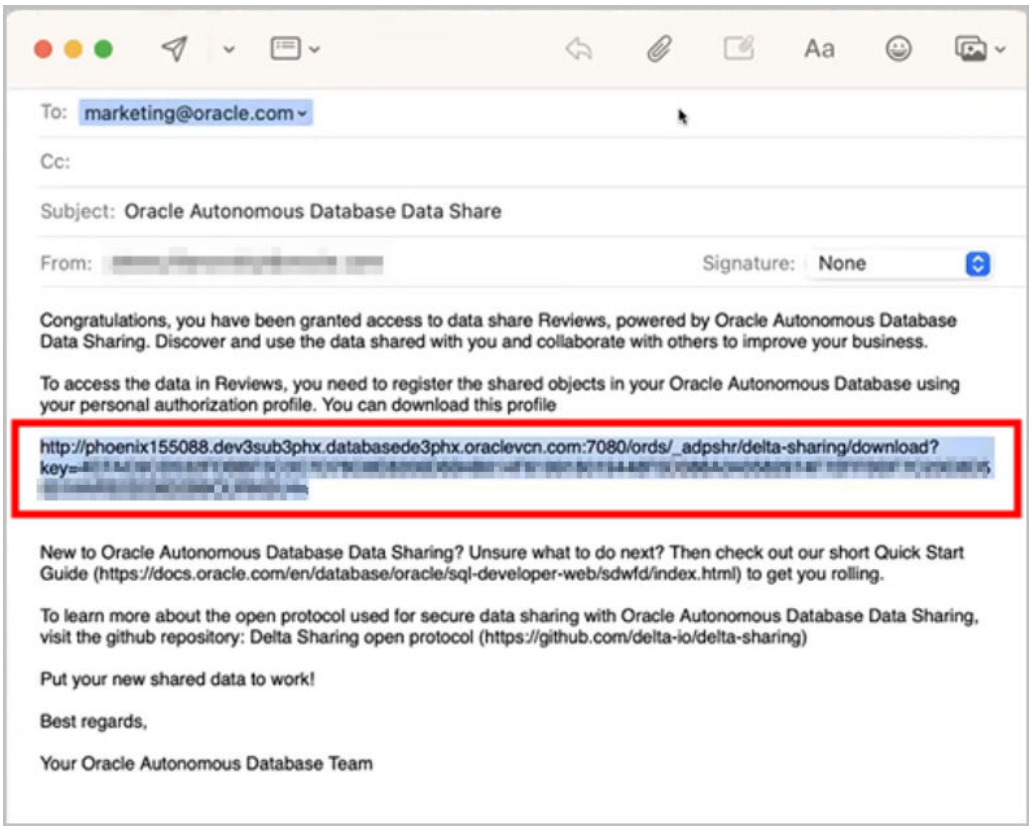
High-Level Step	Description
4. Create external tables on top of your shares.	External tables derived from the selected shares are created. These tables allow SQL access to the underlying data.

How-To Instructions for Receiving Shares for Versioned Data

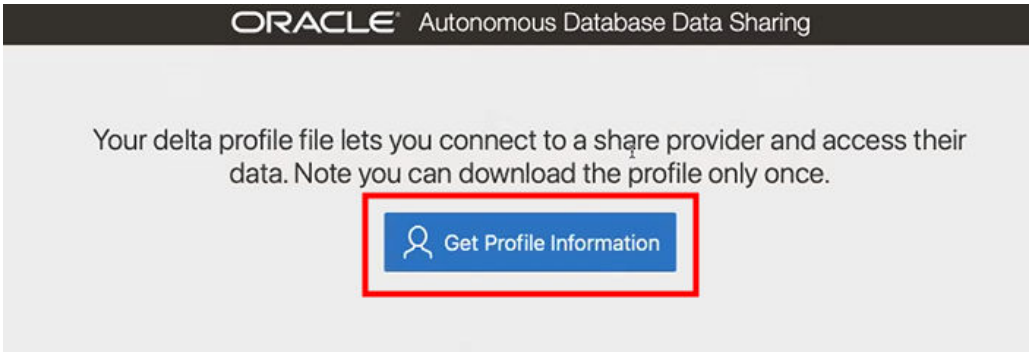
You need to perform several basic steps to subscribe to and access the provided versioned data shares.

Follow these steps:

1. Download your share profile.
   For the data share you want to receive, download your profile sent from the share provider.
   a. Open the invitation email you received from the data share provider, when the data share was published.
   b. Copy the **profile URL** from the email.



   c. Paste the URL into your browser and click **Get Profile Information**.

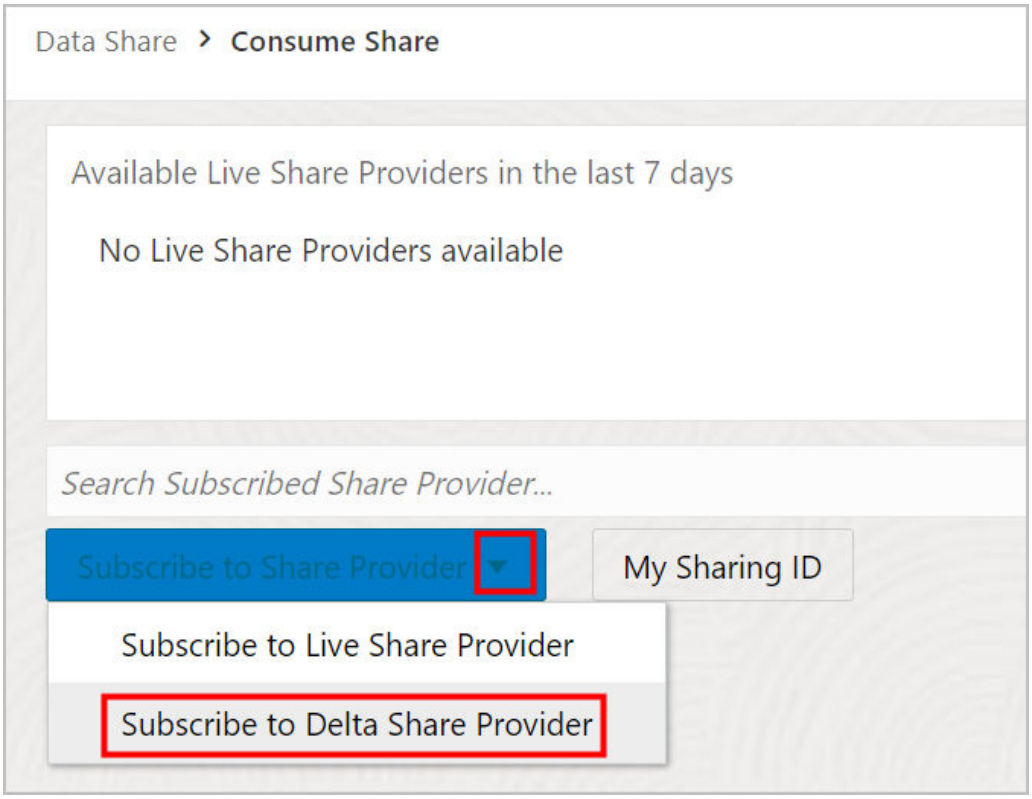


d. Your profile has been downloaded to your local machine. The Profile information downloaded message page is displayed.

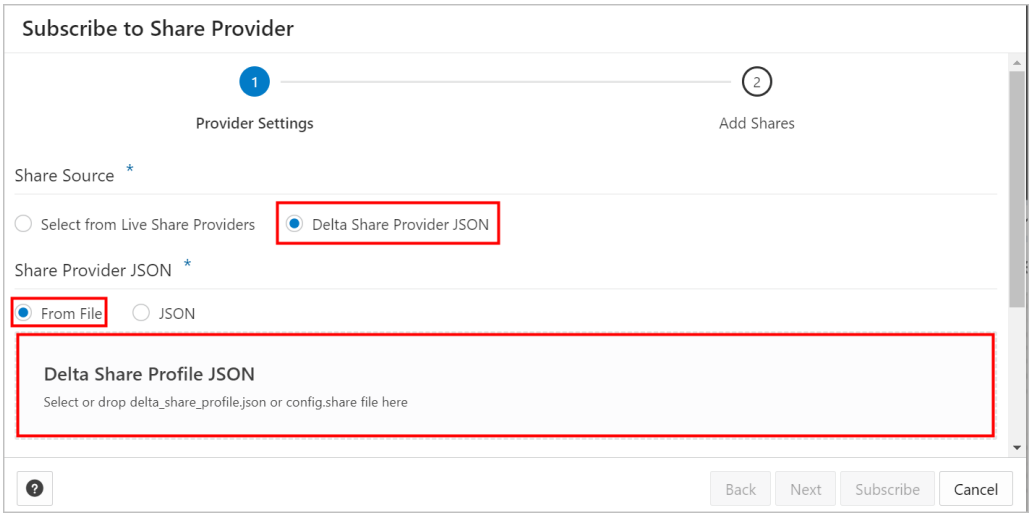
2. Subscribe to the data share provider.
To subscribe, you need to use the information contained in the uploaded JSON profile you received from the share provider. From the Consume Share feature of the Data Share tool, you upload the JSON profile and follow the subscribe wizard.

a. Go to the Data Share tool, and click **Consume Share**. See How to Access and Enable the Data Share Tool, for instructions.

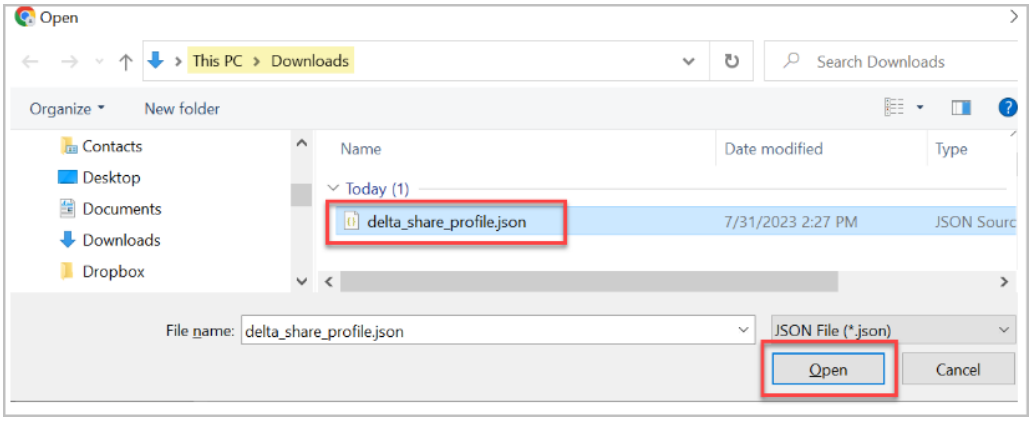
b. Click **Subscribe to Share Provider** drop down arrow, and select **Subscribe to Delta Share Provider** menu item.



c. Select **Delta Share Provider JSON**, accept the **From File** default option, and click the **Delta Share Profile JSON** field.

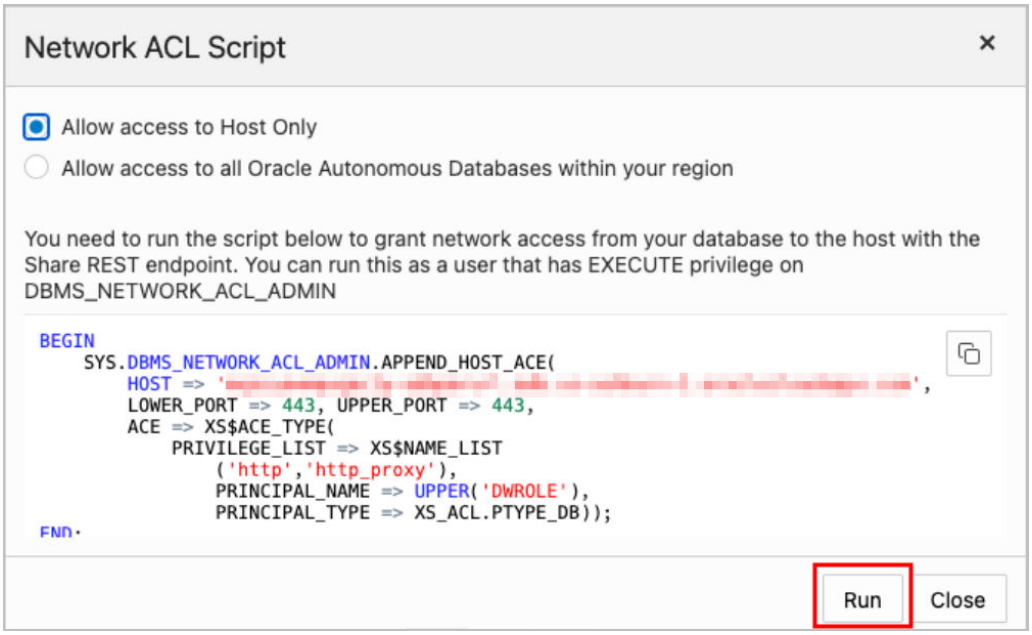


d. Navigate to and select the **JSON profile** you downloaded in a previous step. Click **OPEN**.



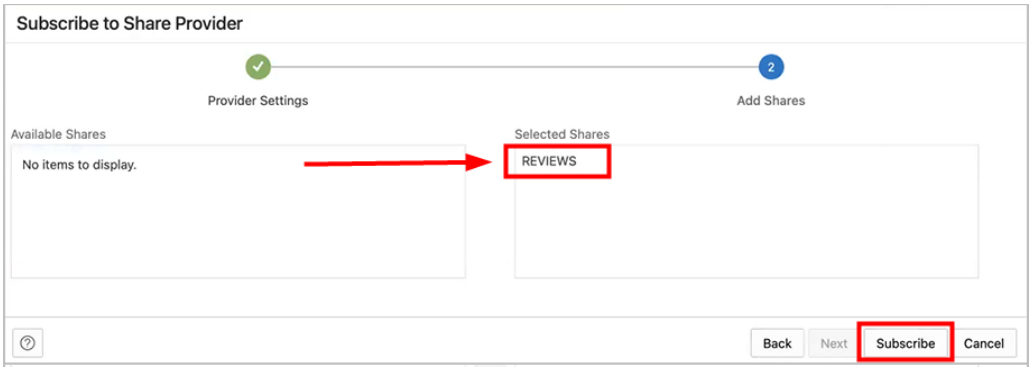
e. Enter the **Provider Name**, under Share Provider Details and click **Next**.
In this example, **Review_provider** is entered for the Provider Name.

f. Select the level of network access you want to allow from your database to the host with the Share REST endpoint, and click **Run**.
In this example, **Allow access to Host Only** is selected.



3. Register shares made available to you.

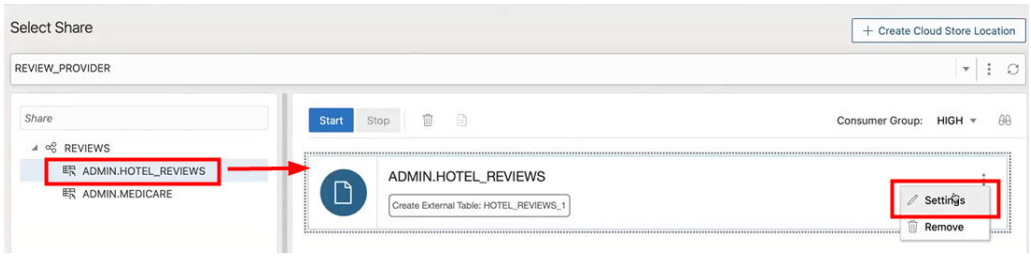
a. Move shares from **Available Shares** to **Selected Shares** and click **Subscribe**.
The screenshot below shows the **REVIEWS** share moved from **Available Share**s to **Selected Shares** before clicking **Subscribe**.



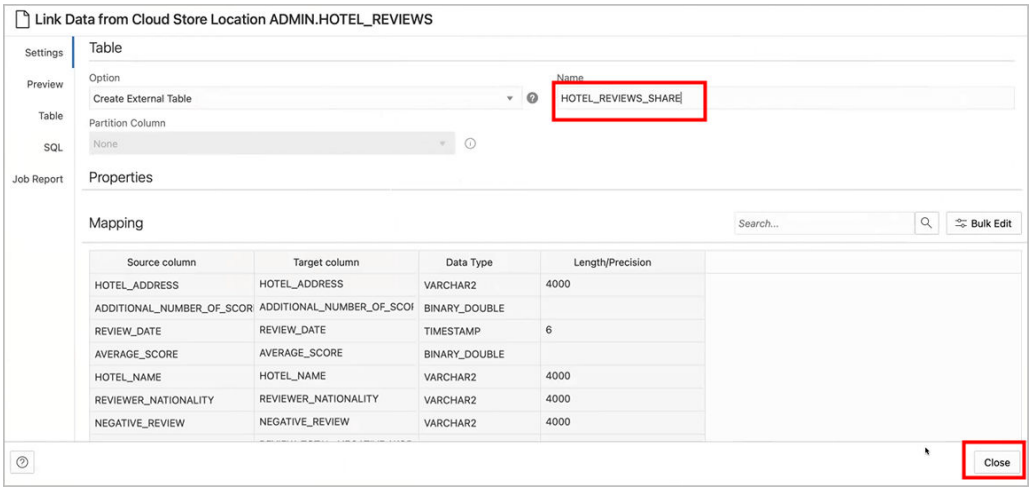
The Data Load page is displayed.

4. Create external tables derived from tables selected from the data share.

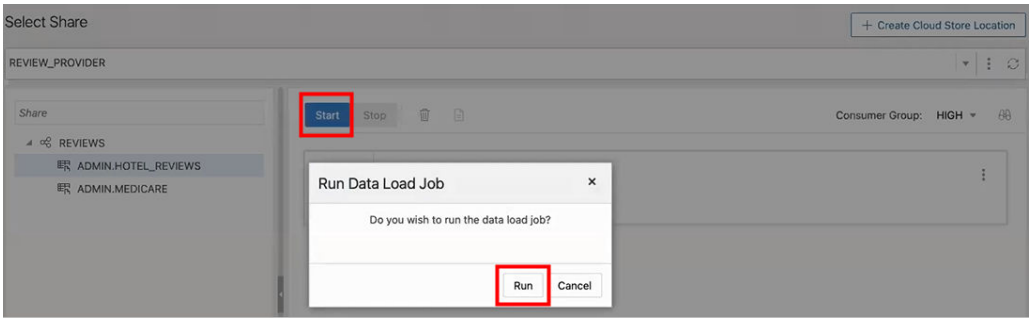
   a. Drag and drop tables from the selected share. You can optionally click **settings** to view the table details.
   In this example, the only table selected is **HOTEL_REVIEWS**.



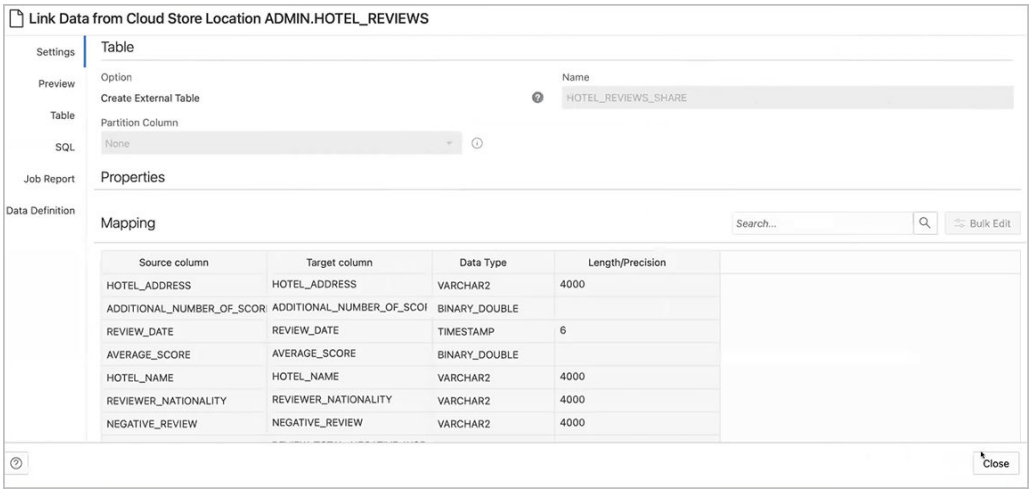
   b. You can optionally change the name of your table and click **Close**.
   In this example, the name is changed from **HOTEL_REVIEWS** to **HOTEL_REVIEWS_SHARE**.



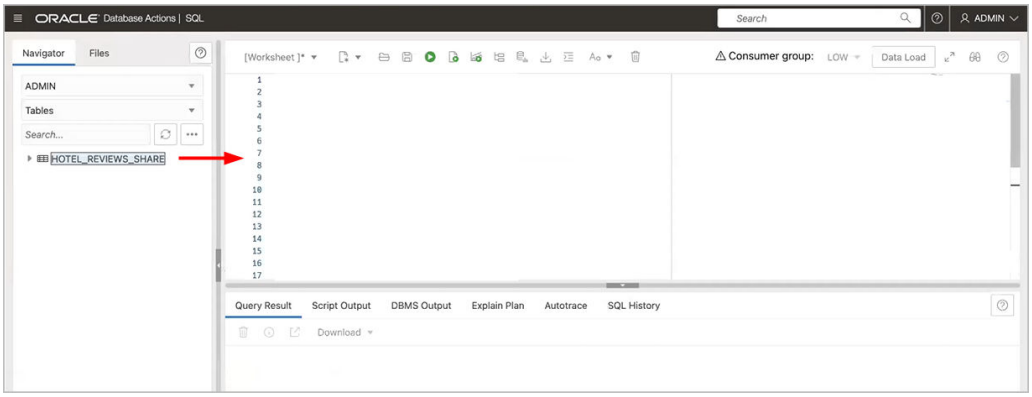
   c. Create the external table by clicking **Start**, on the Select Share page, and then clicking **Run** on the Run Data Load Job dialog.



d. When the external table creation is complete, click on the external table name to view the table details.

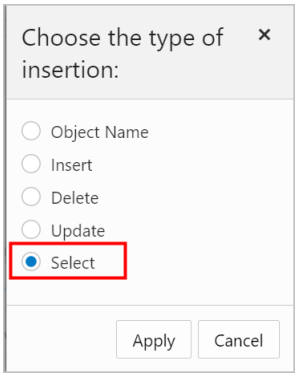


5. View the created tables from Database Actions.
   a. Click on **Database Actions**, in the breadcrumb.
   b. Select **Development** and then click **SQL**.
   c. Select the external table, then drag and drop it into the worksheet.



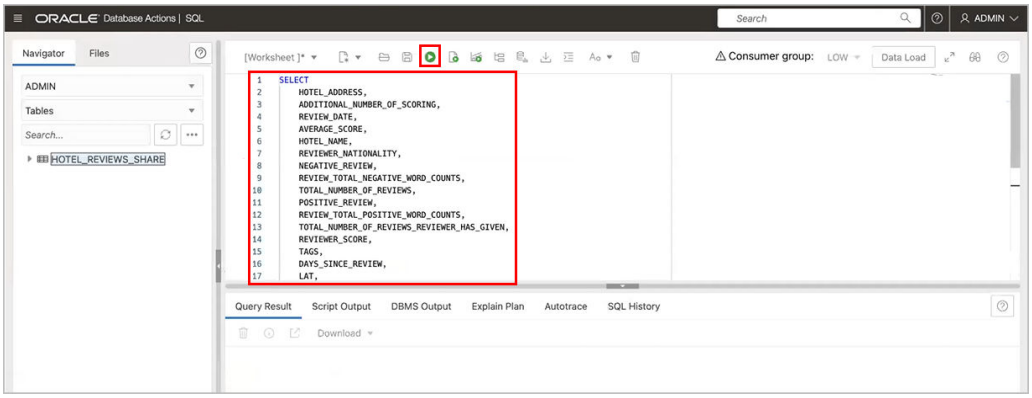
A dialog displays offering the types of available insertions.

   d. Choose **Select** as the type of insertion, and click **Apply**.



The SQL Select statement for the table appears in the worksheet.

e. Click **Run** (the arrow icon at the top of the worksheet).



The returned data displays under Query Results.

3

Share Live Data Using Direct Connection

Share data as of the latest database commit with Autonomous Databases in the same region. The recipient will always see the latest data.

- Use Oracle as a Data Share Provider for Live Data
  Share data as of the latest database commit with Autonomous Databases in the same region.
- Use Oracle as a Data Share Consumer of Live Data
  You need to perform several basic steps before you can query data available through live data shares.

Use Oracle as a Data Share Provider for Live Data

Share data as of the latest database commit with Autonomous Databases in the same region. The recipient will always see the latest data.

- High-Level Steps for Producing Shares for Live Data
  Providing access to live shared data involves defining data shares and granting recipients access to consume them.
- How-To Instructions for Producing Shares for Live Data
  Use the Data Share wizard to create and publish shares for live data.

High-Level Steps for Producing Shares for Live Data

Providing access to live shared data involves defining data shares and granting recipients access to consume them.

The high-level steps for providing shares for live data include:

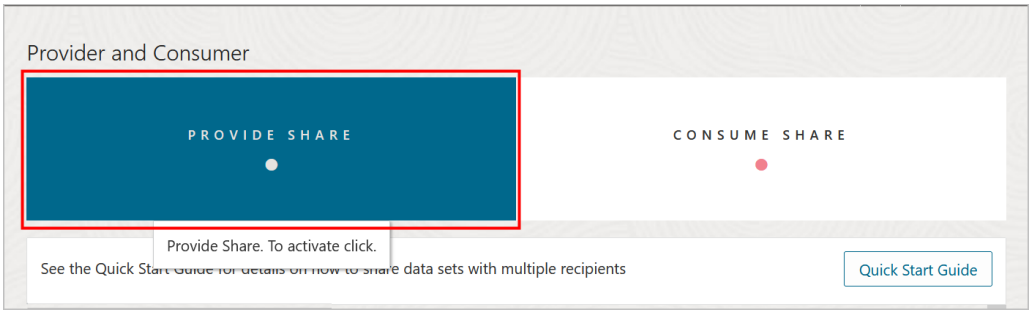
High-Level Step	Description
1. Produce a live data share	Provide a name and an optional description for the live data share.
2. Select the objects to share	Select the tables and views you want to share.
3. Associate the data share with recipients	Grant recipients access to the data share.

How-To Instructions for Producing Shares for Live Data

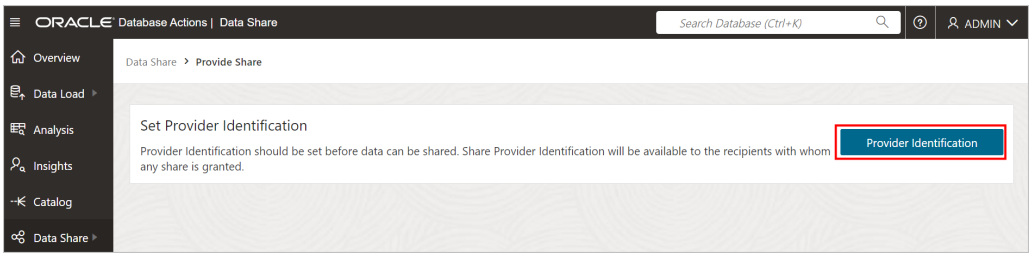
Use the Data Share wizard to create and publish shares for live data.

Follow these steps:

1. Produce a live data share.
   a. Go to the Data Share Tool. See How to Access and Enable the Data Share Tool, for instructions.
   b. Click **Provide Share**.

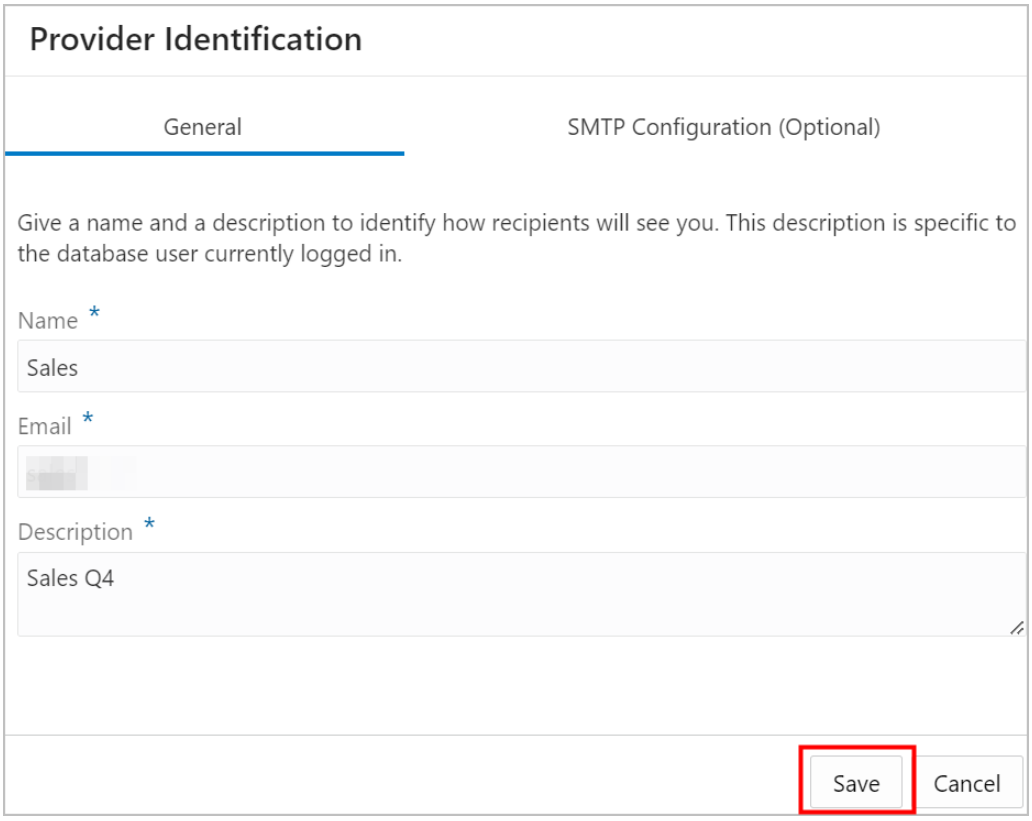


c. Click **Provider Identification**.



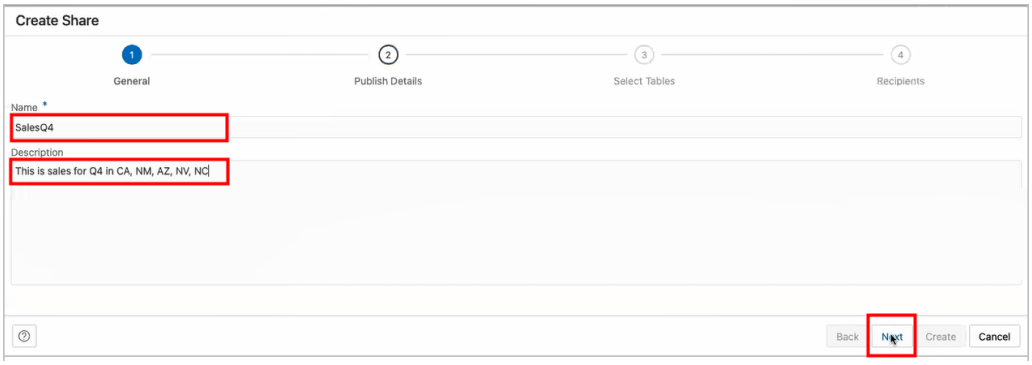
d. Enter a name for the share provider, the share provider email address and a description, then click **Save**. This example has the following entries:

- Name: Sales
- Email: <*obscured*>
- Description: Sales Q4

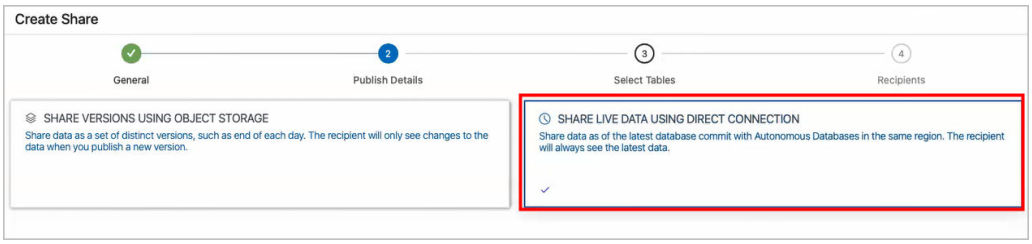


e. Click **Create Share**.

f. Enter the Name for the data share and an optional description on the Create Share dialog, then click **Next**.
This example uses **SalesQ4** for the Name.

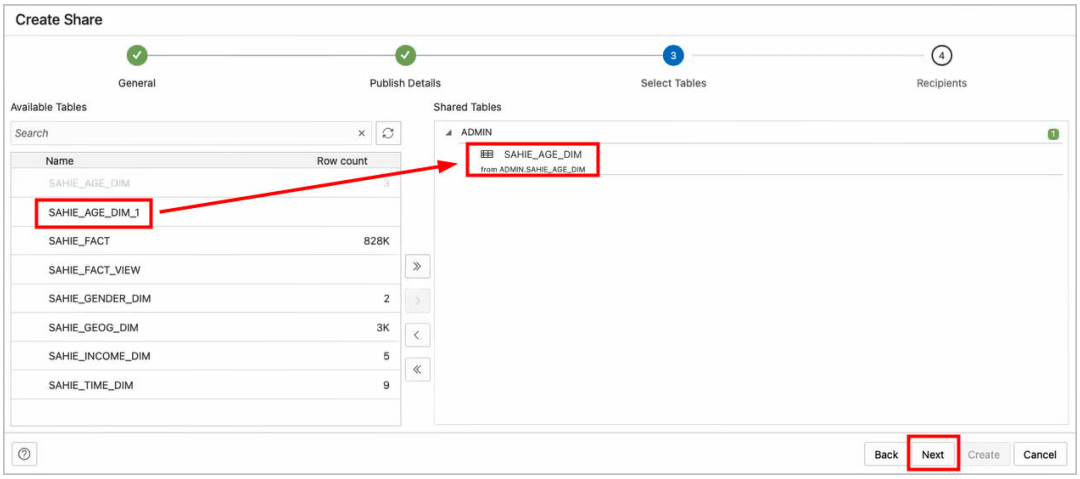


g. Select **SHARE LIVE DATA USING DIRECT CONNECTION**, then click **Next**.



2. Select the objects to share.
Select the tables and/or views you want to share from the **Available Tables** list on the left panel. Use the arrows to include the selected tables on the left **Shared Tables** panel and click **Next**.

In this example, the `SAHE_AGE_DIM` table is selected.

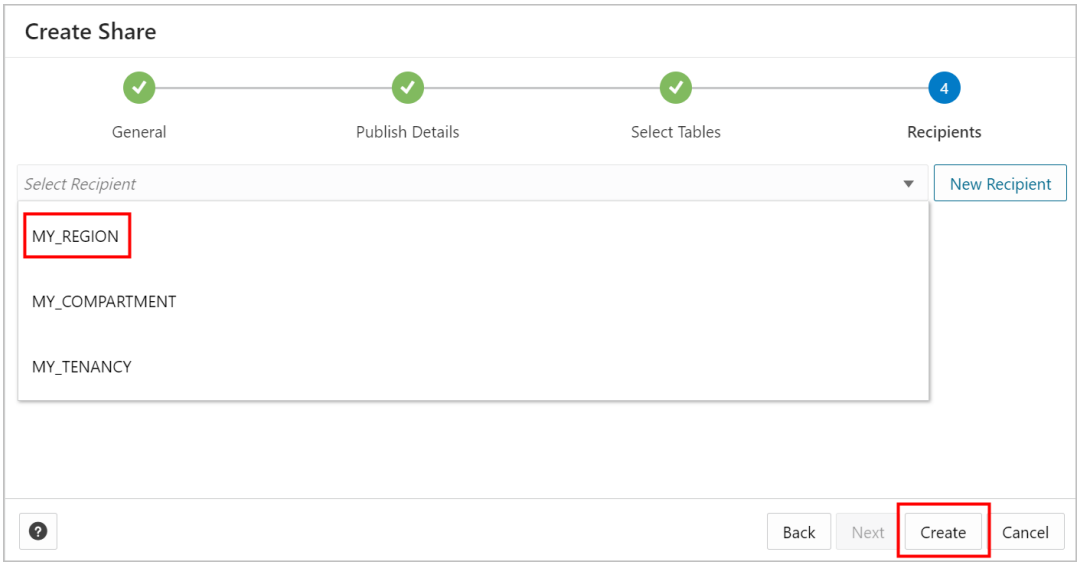


> **Note:**
>
> For live data, the Data Share tool supports 1 to 4 shared objects. If the live share data provider is sharing multiple tables which would normally be joined together by the consumer, it is recommended that the producer create a view that performs the joins and then only shares the view.

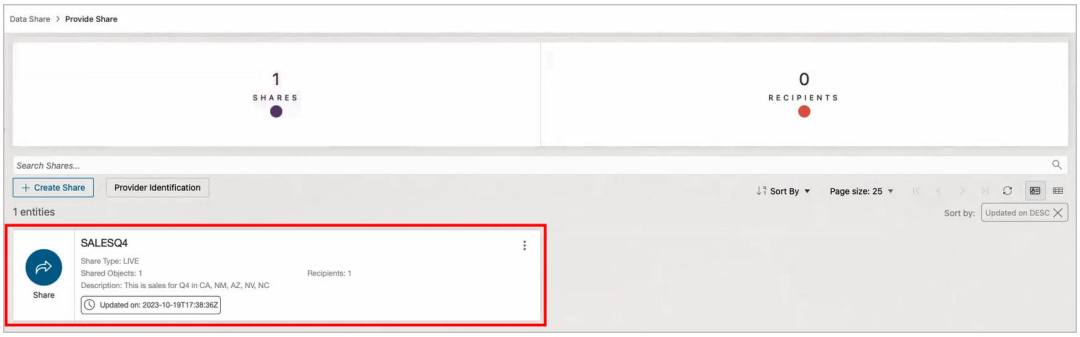
3. Associate the live data share with recipients.
   Click the drop down arrow for **Select Recipient** and select the recipient(s) for this share, then click **Create**.

   In this example, **MY_REGION** is selected, which means anyone in this region can potentially consume from this share.

> **Note:**
>
> If you want to create a new recipient, click the **New Recipient** button and complete the information displayed in the dialog box. For further information on creating a new recipient based on a consumer created Share ID, see The Data Share Tool.



The new Live Data Share is displayed.



Use Oracle as a Data Share Consumer of Live Data

You need to perform several basic steps before you can query data available through live data shares.

- High-Level Steps for Producing Shares for Live Data
  Live data shared with you through data sharing is not automatically available for consumption. You need to perform several basic steps to subscribe and access the provided live data shares.
- How-To Instructions for Producing Shares for Live Data
  To consume live data shares, you need to subscribe to them and create views of tables included in the live share.

High-Level Steps for Receiving Shares for Live Data

Data shared with you through live data shares is not automatically available for consumption. You need to perform several basic steps to subscribe and access the provided live data shares.

The basic steps are described here. For step-by-step instructions, see How-To Instructions for Receiving Shares for Live Data How-To Instructions for Receiving Shares for Live Data.

Here are the high-level steps you need to perform:

High-Level Step	Description
1. Browse available live data share providers.	Go to the consume menu and browse the list of available share providers.
2. Subscribe to the live data share provider.	Select the live share provider you want to receive data from and go through the subscribe wizard.
3. Create a view on top of tables in the live data share.	Views derived from the tables in the selected shares are created. These views allow SQL access to the underlying data.
4. Query live data share.	Run queries against views over the live data shares.

How-To Instructions for Receiving Shares for Live Data

To consume live data shares, you need to subscribe to them and create views of tables included in the live share. The views can be queried using SQL scripts.

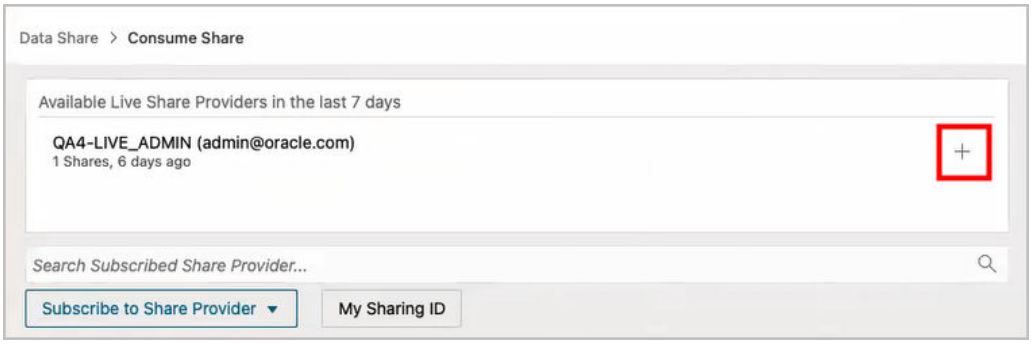
Follow these steps:

1. Browse available live shares.
   a. Go to the Data Share tool. See How to Access and Enable the Data Share Tool.
   b. Click **CONSUME SHARE**.

   A list of available live shares appears.

2. Subscribe to the live share provider.
   a. From the list of available live share providers, click the **+** icon to the right of the share provider you want to consume.

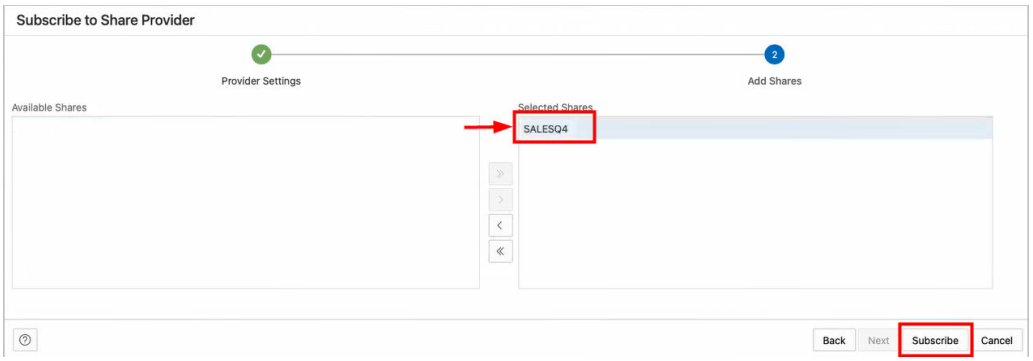
      In this example, the **QA4-LIVE_ADMIN** live share provider is selected.



   b. From the Subscribe to Share Provider page, you can make changes to the name and description or leave as is. Click **Next**.
      In this example, the defaults are kept.

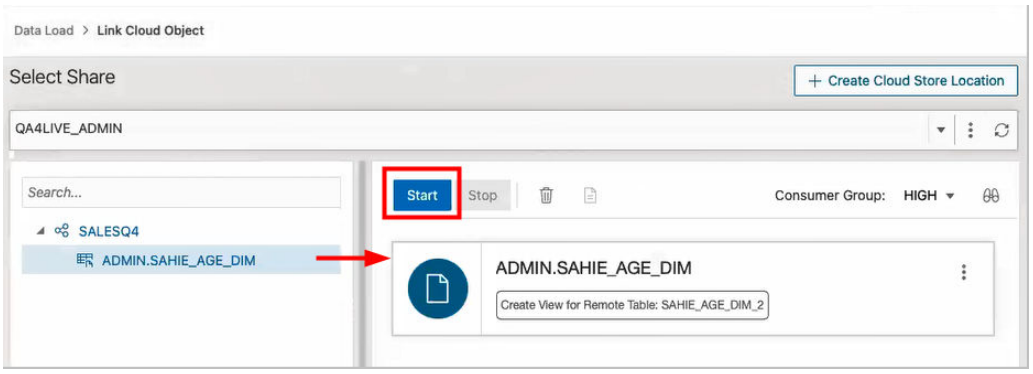
The list of Available Shares for this share provider displays.

c. Select the share you want to consume and move it to the **Selected Shares** section using the middle arrows. Click **Subscribe**.
In this example the SALESQ4 share is selected and moved.



3. Create a view on top of tables in your share.

a. Expand the live data share to view tables included in the share. Drag and drop the table you want to consume to the right panel. Click **Start**.
In this example, the SALESQ4 live share is expanded to display the SAHIE_AGE_DIM table. The table is dragged and dropped to the right panel.

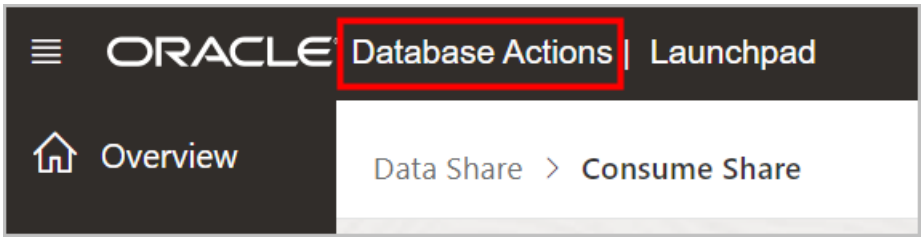


b. Click **Run**, in the dialog box that appears.

c. When the view has been created, the new view displays with status showing Complete.

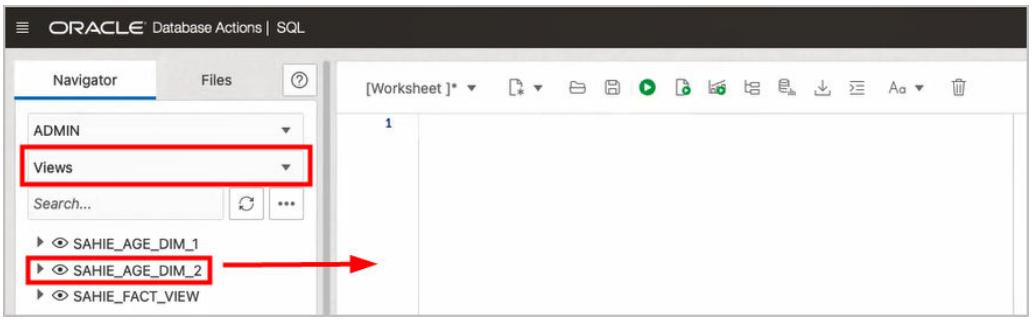
4. Query the live share data.

   a. Click **Database Actions** in the breadcrumb.



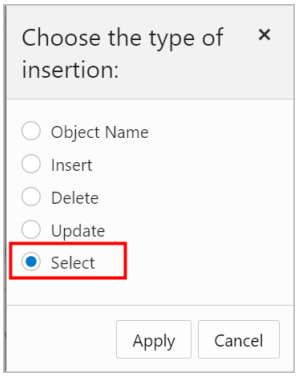
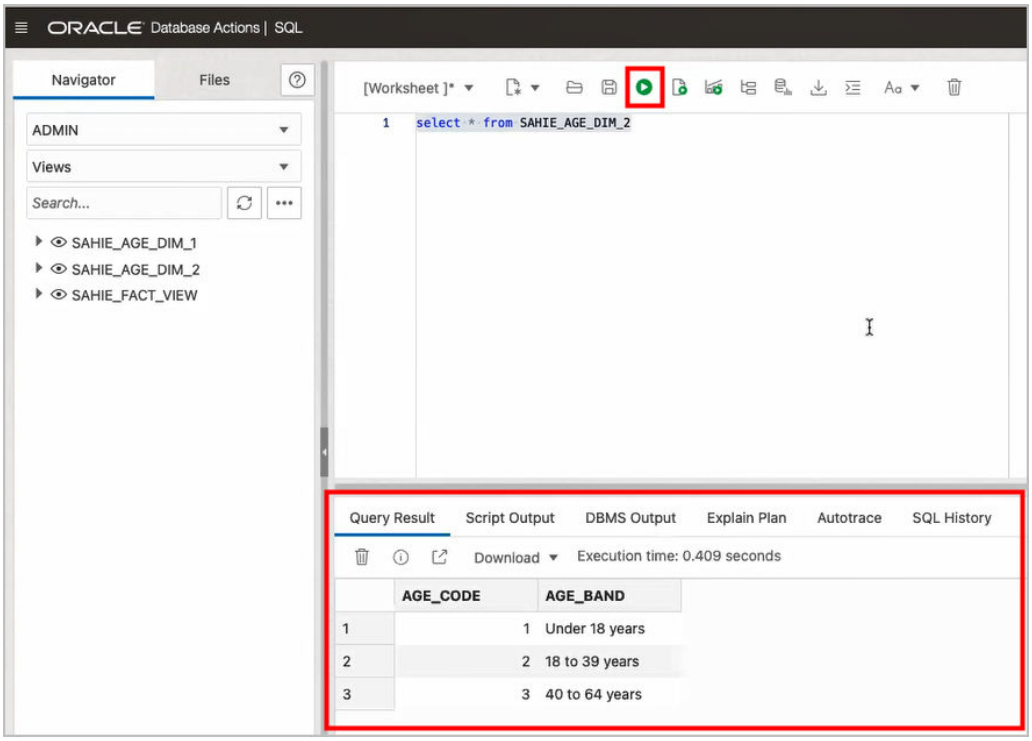
   b. Select **Development**, then click **SQL**.

   c. Select **Views**, on the left Navigator, from the object drop down. From the list of available views, drag and drop the **SAHIE_AGE_DIM_1** view to the worksheet.



   A dialog displays offering the types of available insertions.

   d. Click **Select**, then **Apply**.



e. Click **Run** (the arrow icon at the top of the worksheet). The returned data displays under Query Results.