> User guide > Work with data > Access external data > Data Source Connectors > Connect to Snowflake

Connect to Snowflake

This topic describes how to connect to Snowflake from Domino.

The easiest way to connect to Snowflake from Domino is to create a Domino data source as described below.

Prerequisites

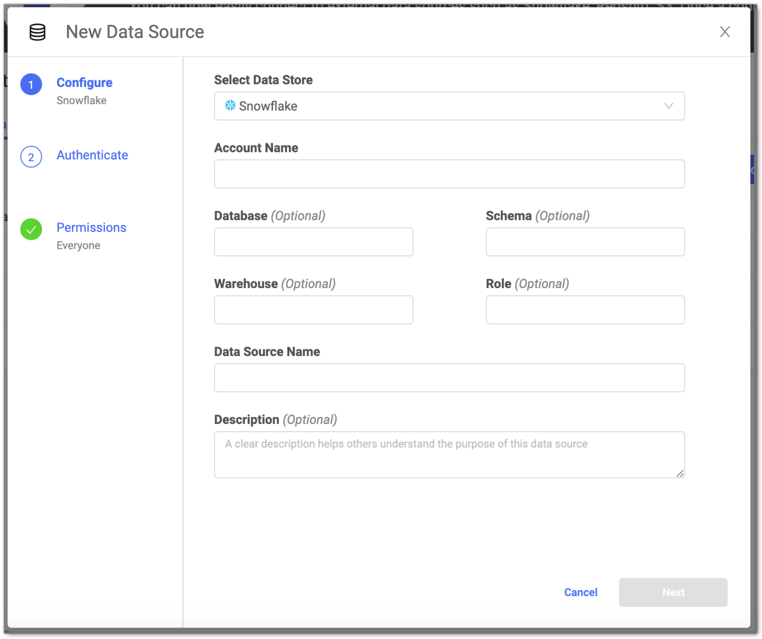
You must have network connectivity between Snowflake and your Domino deployment.

To use Snowflake code integrations, such as Snowpark, you must agree to the Snowflake third party terms. To agree to these terms, you must have a Snowflake account with the ORGADMIN role. If you don't have access to a Snowflake account with the ORGADMIN role, submit a Snowflake support ticket.

Create a Snowflake data source

Domino recommends that you use a Domino Data Source to connect to a Snowflake instance from Domino.

1. From the navigation pane, click **Data**.
2. Click **Create a Data Source**.
3. In the New Data Source window, from **Select Data Store**, select **Snowflake**.



New Data Source

Select Data Store: Snowflake

Account Name

Database (Optional)

Schema (Optional)

Warehouse (Optional)

Role (Optional)

Data Source Name

Description (Optional): A clear description helps others understand the purpose of this data source

Account Name
If the Domino deployment and Snowflake data source, are in the same region, enter the **Account Name** as `<account name>`. However, if the Domino deployment and Snowflake data source are in different regions, enter the **Account Name** as `<account name>.<region>`. For example, `abc.us-east`. (For Azure, these might take the form of `def.east-us-2.azure`.)

Optional: Database

Optional: Schema
The name of the active schema for the session.

Optional: Warehouse
The name of all the compute resource clusters that provide the resources in Snowflake.

Optional: Role
The role that has privileges to the data source.

Data Source Name
The name that identifies the data source.

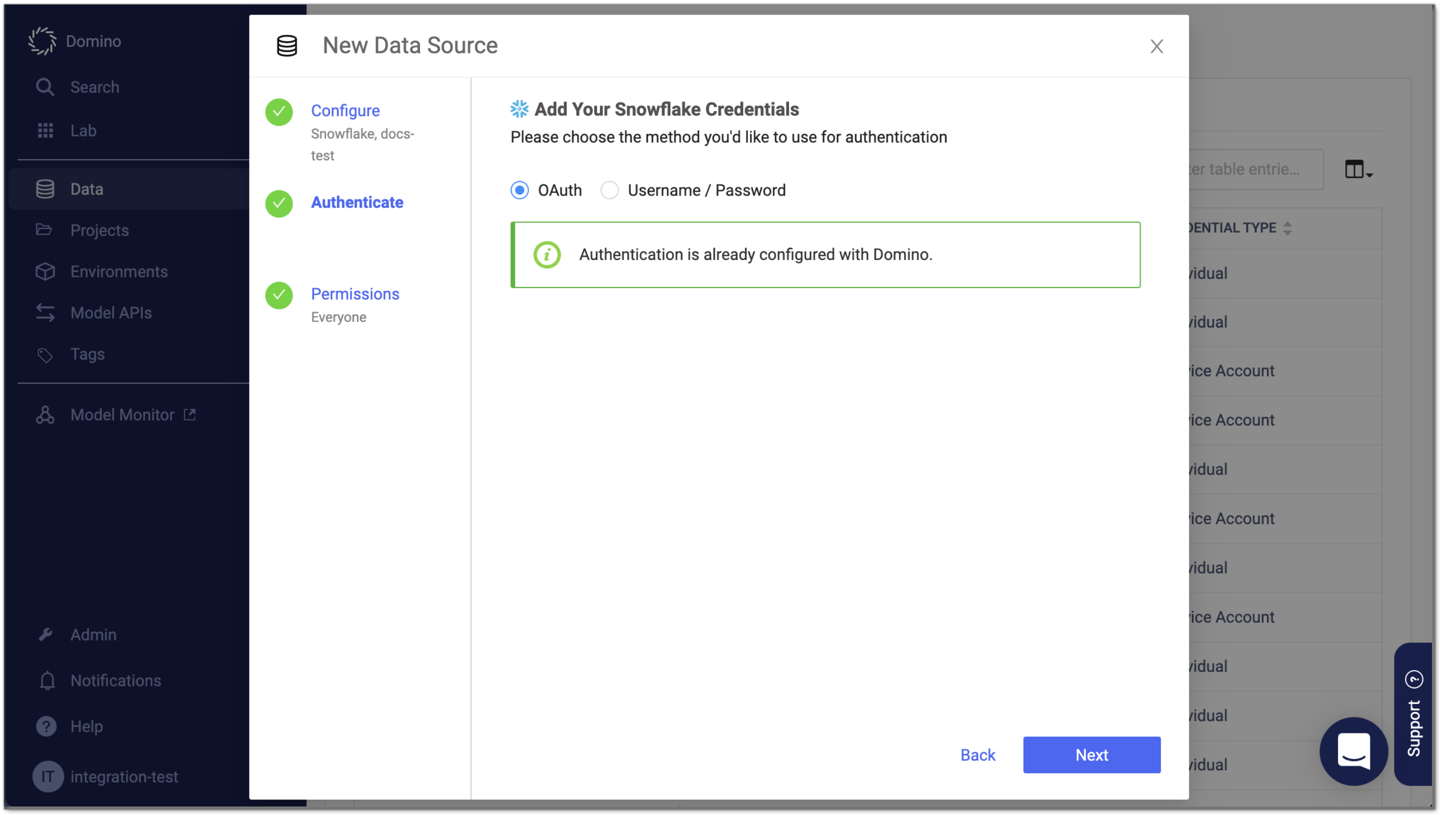
Optional: Description
The purpose for the data source.

4. Click **Next**.

5. Specify the credentials for authenticating to Snowflake.

   - **Basic authentication** is supported by default. The credentials are securely stored in the Domino secret store backed by HashiCorp Vault.

   - **OAuth authentication** is available if your administrator has enabled this option.



New Data Source

Configure: Snowflake, docs-test
Authenticate
Permissions: Everyone

Add Your Snowflake Credentials
Please choose the method you'd like to use for authentication

● OAuth ○ Username / Password

Authentication is already configured with Domino.

> **Note**
>
> OAuth-authenticated connections can be used for any execution type *except* Model APIs.

6. If you are using basic authentication, click **Test Credentials** to validation your username and password.

7. Click **Next** (or **Skip for Now** to configure authentication later).

8. Select who can view and use the data source in projects.

9. Click **Finish Setup**.

If your users have Domino permissions to use the data source and enter their credentials, they can now use the Domino Data API to retrieve data with the connector.

Alternate way to connect to a Snowflake data source

> ⚠ Warning
>
> This section describes an alternate method to connect to the Snowflake data source. Domino does not officially support this method.

1. Use the Snowflake Python connector (snowflake-connector-python).

2. Use the following Dockerfile instruction to install snowflake-connector-python and its dependencies in your environment.

   ```
   RUN apt-get install -y libssl-dev libffi-dev && \
     pip install -U pip && pip install --upgrade snowflake-connector-python
   ```

   If you encounter an error due to your Ubuntu version, use the following Dockerfile instruction:

   ```
   RUN pip install -U pip && pip install --upgrade snowflake-connector-python
   ```

3. Set the following Domino environment variables to store secure information about your Snowflake connection.

   - `SNOWFLAKE_USER`
   - `SNOWFLAKE_PASSWORD`
   - `SNOWFLAKE_ACCOUNT`

   See Secure Credential Storage to learn more about Domino environment variables.

4. See Using the Python Connector for information about how to use the package. The following is an example.

   ```
   import snowflake.connector
   import os

   # Gets the version
   ctx = snowflake.connector.connect(
    user=os.environ[’SNOWFLAKE_USER’],
    password=os.environ[’SNOWFLAKE_PASSWORD’],
    account=os.environ[’SNOWFLAKE_ACCOUNT’]

   cs = ctx.cursor()
   try:
    cs.execute(”SELECT current_version()”)
    one_row = cs.fetchone()
    print(one_row[0])
   finally:
    cs.close()
   ctx.close()
   ```

Write data back to Snowflake

```
sfStatement = ”””INSERT INTO my_table
            VALUES (col1 = 23, col2 = ’Domino’)”””
cs.execute(sfStatement)
```

Upload bulk data

The process for bulk uploads follows:

1. Write your dataframe into a .csv file.

2. Upload the .csv file to Snowflake into a table stage (or another stage).

3. Copy the data from the uploaded .csv file in the stage into the database table.

4. Delete the file from stage.

> Note
>
> The columns in the table that the data will be copied into must be in the same order and have the same column names as the data in the file that was uploaded. You might want to create a temporary table and load the data to its destination as a follow-up step.

For example:

```
# Note the use of a vertical bar (|) as separator instead of a comma
my_dataframe.to_csv(’/mnt/results/my-data-file.csv’, \
              index=False, sep=”|”)
cs.execute(”PUT file:///mnt/results/my-data-file.csv @%my_table”)
sfStatement = ”””COPY INTO my_table
             file_format = (type = csv
             field_delimiter = ’|’ skip_header = 1)”””
cs.execute(sfStatement)
```

You can also use generic Python JDBC or ODBC tools to connect to Snowflake. However, they are not specialized for use with Snowflake. They can have inferior performance and will require more time to set up.

See JDBC Driver and ODBC Driver for more information about JDBC and ODBC connections.

Next steps

- After connecting to your Data Source, learn how to Use Data Sources.

- Share this Data Source with your collaborators.