



Informatica™

Informatica® PowerExchange for Snowflake
10.2

User Guide for PowerCenter

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Preface

The *Informatica PowerExchange for Snowflake User Guide for PowerCenter* provides information about extracting data from and loading data to Snowflake. This guide is written for database administrators and developers who are responsible for developing mappings, sessions, and workflows that extract data from and load data to Snowflake. This guide assumes you have knowledge of Snowflake and PowerCenter.

Informatica Resources

Informatica Network

Informatica Network hosts Informatica Global Customer Support, the Informatica Knowledge Base, and other product resources. To access Informatica Network, visit <https://network.informatica.com>.

As a member, you can:

- Access all of your Informatica resources in one place.
- Search the Knowledge Base for product resources, including documentation, FAQs, and best practices.
- View product availability information.
- Review your support cases.
- Find your local Informatica User Group Network and collaborate with your peers.

Informatica Knowledge Base

Use the Informatica Knowledge Base to search Informatica Network for product resources such as documentation, how-to articles, best practices, and PAMs.

To access the Knowledge Base, visit <https://kb.informatica.com>. If you have questions, comments, or ideas about the Knowledge Base, contact the Informatica Knowledge Base team at KB_Feedback@informatica.com.

Informatica Documentation

To get the latest documentation for your product, browse the Informatica Knowledge Base at https://kb.informatica.com/_layouts/ProductDocumentation/Page/ProductDocumentSearch.aspx.

If you have questions, comments, or ideas about this documentation, contact the Informatica Documentation team through email at infa_documentation@informatica.com.

Informatica Product Availability Matrixes

Product Availability Matrixes (PAMs) indicate the versions of operating systems, databases, and other types of data sources and targets that a product release supports. If you are an Informatica Network member, you can access PAMs at

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Informatica Velocity

Informatica Velocity is a collection of tips and best practices developed by Informatica Professional Services. Developed from the real-world experience of hundreds of data management projects, Informatica Velocity represents the collective knowledge of our consultants who have worked with organizations from around the world to plan, develop, deploy, and maintain successful data management solutions.

If you are an Informatica Network member, you can access Informatica Velocity resources at <http://velocity.informatica.com>.

If you have questions, comments, or ideas about Informatica Velocity, contact Informatica Professional Services at ips@informatica.com.

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To find your local Informatica Global Customer Support telephone number, visit the Informatica website at the following link:

<http://www.informatica.com/us/services-and-training/support-services/global-support-centers>.

If you are an Informatica Network member, you can use Online Support at <http://network.informatica.com>.

CHAPTER 1

Introduction to PowerExchange for Snowflake

This chapter includes the following topics:

- [PowerExchange for Snowflake Overview, 8](#)
- [Introduction to Snowflake, 8](#)

PowerExchange for Snowflake Overview

You can use PowerExchange for Snowflake to extract data from and load data to Snowflake. You can extract data from other applications, databases, and flat files, and use PowerExchange for Snowflake to load the data to Snowflake.

You can import Snowflake objects as sources and targets to create mappings, and run a session to extract data from or load data to Snowflake. When you use Snowflake objects in mappings, you must configure properties specific to Snowflake.

Example

An enterprise application uses an Oracle database to store the product transaction details such as transactionID, customerID, productID, quantity, and order date. You need to analyze the completed transactions, pending transactions, and availability of stock. Use PowerExchange for Snowflake to create a mapping to extract all the transaction records from the Oracle source, and load the records to a Snowflake target for data analysis.

Introduction to Snowflake

Snowflake is a cloud data warehouse service that organizations can use to store and analyze data.

Snowflake is a Software-as-a-Service (SaaS) application that uses an SQL database engine with an architecture designed for the cloud. Apart from the features of other enterprise data warehouses, Snowflake has additional functionalities and capabilities.

The Snowflake architecture comprises three layers:

- **Database Storage.** When you load data to Snowflake, Snowflake reorganizes and stores the data in the Snowflake database. You can access the data stored in the Snowflake database through SQL query operations that you run by using Snowflake.
- **Query Processing.** Snowflake processes all queries in the query processing layer. The processing layer contains all the compute resources that Snowflake needs to execute queries. For example, Snowflake uses CPU, memory, and temporary storage to execute queries.
- **Cloud Services.** The cloud services layer contains all the different components that Snowflake needs to process the user requests. For example, Snowflake uses authentication, infrastructure management, and access control services to process user requests.

CHAPTER 2

PowerExchange for Snowflake Installation and Configuration

This chapter includes the following topics:

- [PowerExchange for Snowflake Installation and Configuration Overview, 10](#)
- [Installing PowerExchange for Snowflake, 11](#)
- [Registering the PowerExchange for Snowflake Plug-in , 13](#)

PowerExchange for Snowflake Installation and Configuration Overview

You can install PowerExchange for Snowflake on a Windows 64-bit, or Red Hat Enterprise Linux 64-bit machines.

When you install the PowerExchange for Snowflake server component, you enable the PowerCenter Integration Service to read data from or write data to Snowflake.

Prerequisites

Before you install PowerExchange for Snowflake, complete the following tasks:

- Install or upgrade Informatica services. For more information about the PowerCenter versions that PowerExchange for Snowflake is compatible with, see the Product Availability Matrix on Informatica Network.
- Apply Informatica EBF-11048.
The EBF is available on the TSFTP server at: <https://tsftp.informatica.com/>. Download the EBF from the following directory on the TSFTP server: /updates/Informatica10/10.2.0/EBF-11048

For more information, contact Informatica Global Customer Support.

- Verify that you have read and write permissions on the following directories on each machine that runs the PowerCenter Integration Service and PowerCenter Repository Service:

- <Informatica installation directory>\server\connectors\cci\plugins

- <Informatica installation directory>\server\bin\Plugin

- <Informatica installation directory>\connectors\thirdparty

The installer must be able to add and overwrite files in these directories.

- Verify that you have read and write permissions on the following directories on each machine where you installed the PowerCenter Client:

- <Informatica installation directory>\clients\PowerCenterClient

- <Informatica installation directory>\clients\PowerCenterClient\bin\Help\<language>

The installer must be able to add and overwrite files in these directories.

For more information about product requirements and supported platforms, see the Product Availability Matrix on Informatica Network:

<https://network.informatica.com/community/informatica-network/product-availability-matrices>.

Installing and Configuring PowerExchange for Snowflake

To install and configure PowerExchange for Snowflake, complete the following steps:

1. Install the PowerExchange for Snowflake client and server components.
2. Register the PowerExchange for Snowflake plug-in.

Installing PowerExchange for Snowflake

When you install or upgrade PowerExchange for Snowflake, you install or upgrade the following components that allow PowerCenter to access the Snowflake database:

- Client component. Allows you to import definitions, create mappings, and create connection objects with the PowerCenter Client.
- Server component. Allows the PowerCenter Repository Service to store and access the Snowflake metadata in the repository and the PowerCenter Integration Service to run Snowflake sessions.

Installing the Client Component

Install the Client component on each PowerCenter Client machine where you want to create or access the Snowflake database.

1. Run `install.bat` from the installation package.
2. Click **Next**.
3. Select the Informatica installation directory.

By default, the client is installed in the following location:

```
C:\Informatica\<version folder>
```

4. Click **Next**.
5. Click **Install** to begin the installation.
6. Click **Done** when the installation is complete.

The client component is installed.

Installing the Server Component

The PowerExchange for Snowflake server component installs the PowerCenter Integration Service and PowerCenter Repository Service components.

If the PowerCenter Integration Service or PowerCenter Repository Service is configured to run on primary and backup nodes, install the PowerExchange for Snowflake server component on each node configured to run the PowerCenter Integration Service or PowerCenter Repository Service.

If the PowerCenter Integration Service is configured to run on a grid, install the PowerExchange for Snowflake server component on each node configured to run on the grid. If you cannot install the PowerExchange for Snowflake server component on each node in the grid, create a resource in the domain and assign it to each node where you installed the PowerExchange for Snowflake server component. When you create a session, configure the session to use the resource.

For example, create a custom resource called Snowflake. When you create a session, you can require the session to use the resource Snowflake. The Load Balancer dispatches the session to nodes that has the resource.

Installing the Server Component on Windows

Install the PowerExchange for Snowflake server component on Windows when the PowerCenter Integration Service or PowerCenter Repository Service runs on Windows.

1. Run `install.bat` from the installation package.
2. Click **Next**.
3. Select the Informatica installation directory.
By default, the server components are installed in the following directory:

```
C:\<Informatica installation directory>\<version folder>
```
4. Click **Next**.
5. Click **Install** to begin the installation.
6. Click **Done** when the installation is complete.

Installing the Server Component on UNIX

Install the PowerExchange for Snowflake server component on UNIX when the PowerCenter Integration Service or PowerCenter Repository Service runs on UNIX.

To install the PowerExchange for Snowflake server component on UNIX platforms that support the graphical user interface, perform the same steps that you use to install the server components on Windows.

To install the PowerExchange for Snowflake server component on UNIX platforms that use the command line interface, perform the following steps:

1. Enter `sh install.sh` at the prompt.
2. Enter the path to the Informatica installation directory.
By default, the server components are installed in the following directory:

```
<User Home Directory>/Informatica/<version folder>
```

Registering the PowerExchange for Snowflake Plug-in

After you complete the installation, register the PowerExchange for Snowflake plug-in with the repository.

To register the plug-in, the repository must be running in exclusive mode. Use the Administrator tool or the `pmrep RegisterPlugin` command line program to register the plug-in. If you do not have the correct privileges to register the plug-in, contact the user who manages the PowerCenter Repository Service.

The plug-in file is an `.xml` file that defines the functionality of the adapter. When you install the server component, the installer copies the plug-in file to the following directory:

```
<Informatica installation directory>/server/bin/Plugin
```

The name of the plug-in file for PowerExchange for Snowflake is `SnowflakeCloudDataWarehousePlugin.xml`.

Registering the Plug-in from the Administrator Tool

Register a repository plug-in to add its functionality to the repository.

1. Run the PowerCenter Repository Service in exclusive mode.
2. In the **Navigator**, select the PowerCenter Repository Service to which you want to add the plug-in.
3. In the **Contents** panel, click the **Plug-ins** view.
4. In the **Actions** menu of the **Domain** tab, select **Register Plug-in**.
5. On the **Register Plugin** page, click the **Browse** button to locate the plug-in file.
6. Enter your user name and password.
7. Click **OK**.

The PowerCenter Repository Service registers the plug-in with the repository. The results of the registration operation appear in the activity log.

8. Run the PowerCenter Repository Service in normal mode.

Registering the Plug-in from the Command Line Interface

You can use the `pmrep RegisterPlugin` command to register the plug-in from the command line interface.

1. Run the PowerCenter Repository Service in exclusive mode.
2. Run the `pmrep Connect` command to connect to the Repository Service with a user account that has the Administrator Repository privilege.

The `RegisterPlugin` command uses the following syntax:

```
pmrep connect -r <repository name> -d <domain_name> -n <domain user name> -x  
<domain_password>
```

3. Find `<adaptername>.xml` in the following directory:

```
<Informatica installation directory>\server\bin\Plugin
```

4. Run the `pmrep RegisterPlugin` command to update the repository.

The `RegisterPlugin` command uses the following syntax:

```
pmrep registerplugin -i <Informatica installation directory>\server\bin\Plugin  
\SnowflakeCloudDataWarehousePlugin.xml -e
```

CHAPTER 3

Snowflake Sources and Targets

This chapter includes the following topics:

- [Snowflake Sources and Targets Overview, 14](#)
- [Import Snowflake Source and Target Definitions, 14](#)

Snowflake Sources and Targets Overview

You can create a mapping with a Snowflake source to extract data from Snowflake. You can create a mapping with any source and a Snowflake target to load data to Snowflake.

When the PowerCenter Integration Service extracts data from the source or loads data to the target, it converts the data based on the data types associated with the source or the target.

Import Snowflake Source and Target Definitions

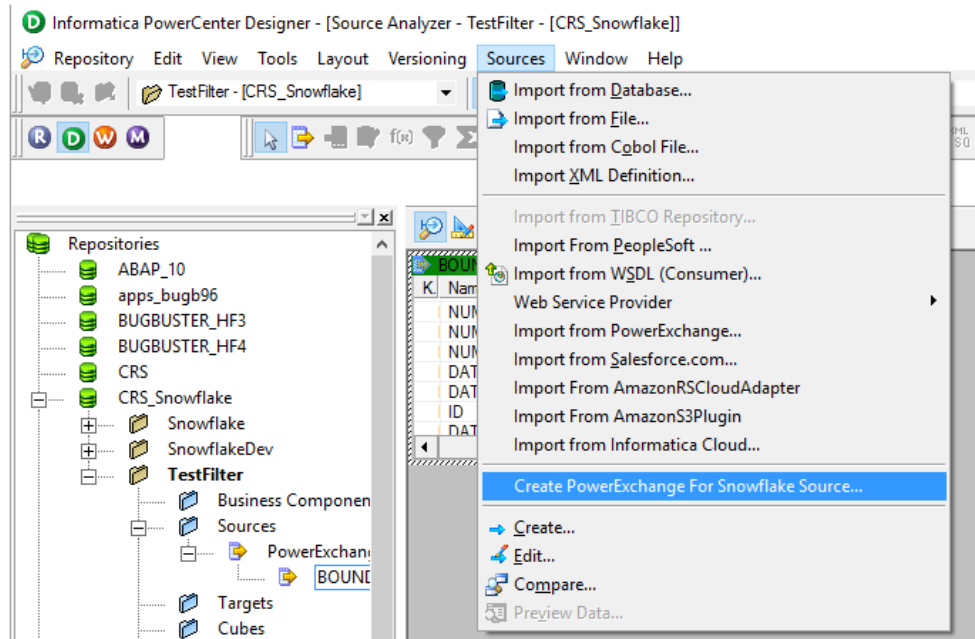
Use the **Create PowerExchange For Snowflake Source** or **Create PowerExchange For Snowflake Target** wizard to import Snowflake source and target definitions into the PowerCenter repository.

You must import Snowflake source and target objects before you create a mapping.

1. Start PowerCenter Designer, and connect to a PowerCenter repository configured with a Snowflake instance.
2. Open a source or target folder.

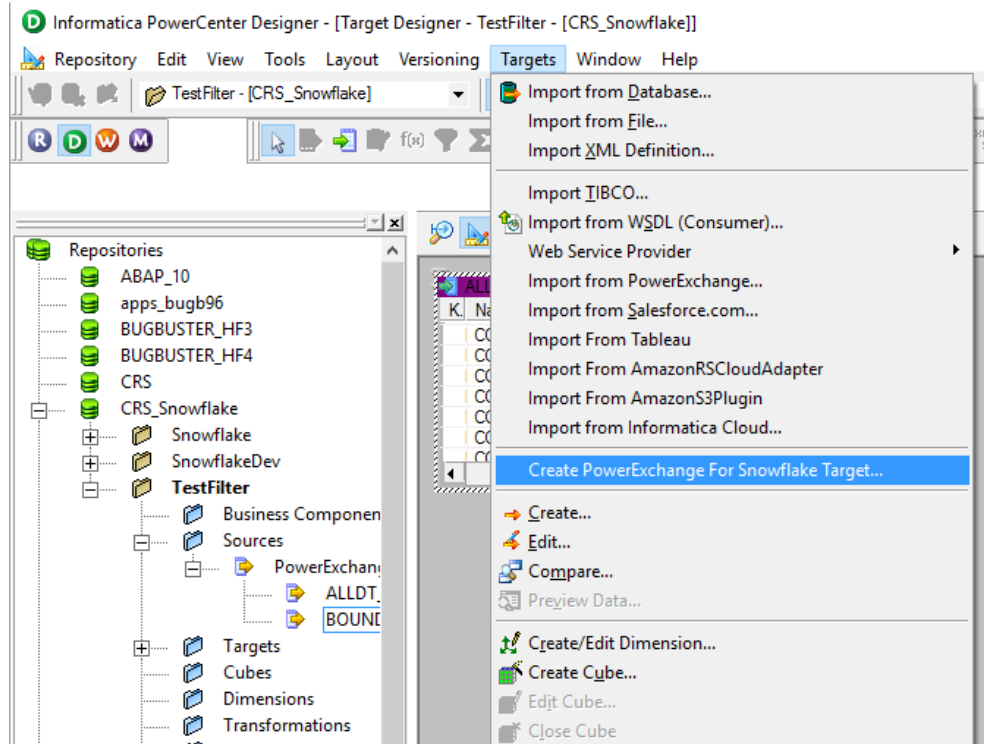
3. Select **Source Analyzer** or **Target Designer**.

- In the Source Analyzer, click **Sources > Create PowerExchange For Snowflake Source** as shown in the following image:



The **Select Connection for** wizard appears.

- In the Target Analyzer, click **Targets > Create PowerExchange For Snowflake Target** as shown in the following image:



The **Select Connection for** wizard appears.

4. Click **Import from a new connection**.
The **Connection details** dialog box appears.
5. Configure the following connection parameters:

Connection Parameter	Description
Username	Enter the user name to connect to the Snowflake account.
Password	Enter the password to connect to the Snowflake account.
Account	Enter the name of the Snowflake account. In the Snowflake URL, your account name is the first segment in the domain.
Warehouse	Enter the Snowflake warehouse name.
Role	Specify the Snowflake role assigned to the user.
Additional JDBC URL Parameters	Enter one or more JDBC connection parameters in the following format: <code><param1>=<value>&&<param2>=<value>&&<param3>=<value>...</code> For example: <code>user=jon&warehouse=mywh&db=mydb&schema=public</code>

6. Click **Test** to test the connection.

7. Click **Save Connection** or **Finish** to add the connection.

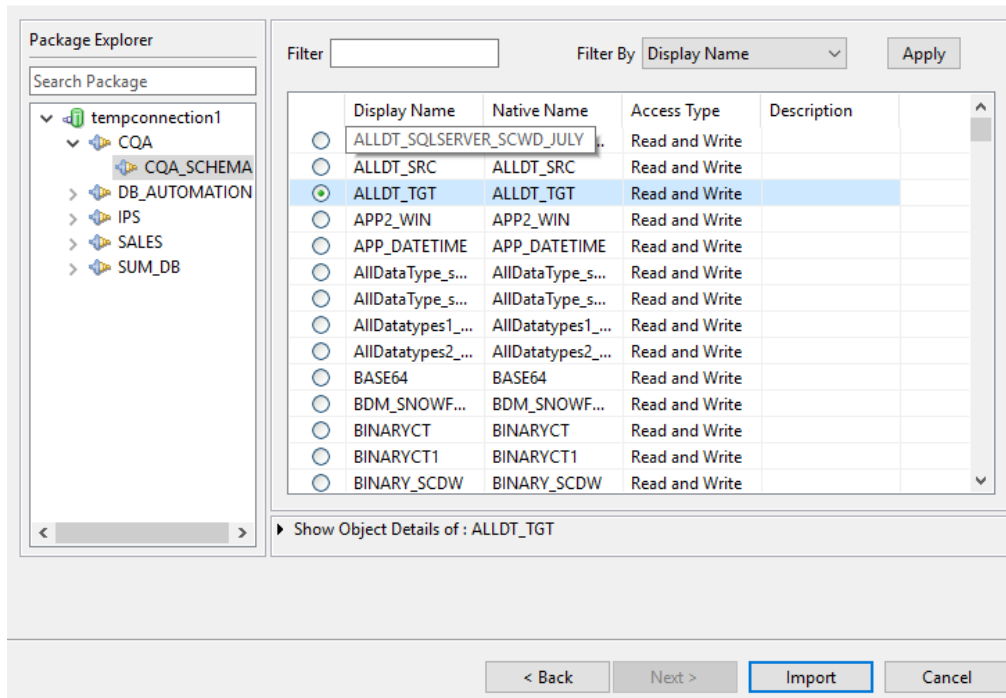
Note: The connection you create is temporary and you cannot edit the connection after you add it.

8. Click **Next**.

The **Select Objects from** tab appears.

9. Select the database and schema in **Package Explorer**.

A list of table appears as shown in the following image:



10. Select the table that you want to import, and then click **Import**.

To view the table metadata, select the table, and double-click the table name.

CHAPTER 4

Snowflake Mappings

This chapter includes the following topics:

- [Snowflake Mappings Overview, 18](#)
- [Snowflake Mapping Example, 20](#)

Snowflake Mappings Overview

After you import a Snowflake source or target definition into the PowerCenter repository, you can create a mapping to extract data from a Snowflake source or load data to a Snowflake target.

You can extract data from one or more Snowflake sources, and load data to one or more Snowflake targets.

You can enter a filter condition to reduce the number of source rows the PowerCenter Integration Service returns from Snowflake sources. You can enter a single filter condition or a series of conditions.

Source Filter

You can enter a filter condition to reduce the number of source rows the PowerCenter Integration Service returns from Snowflake sources. You can enter a single filter condition or a series of conditions.

Use the source filter in the **Application Source Qualifier** to retrieve rows from an entity that meet a condition.

You can provide a source filter to improve the performance when you read from Snowflake.

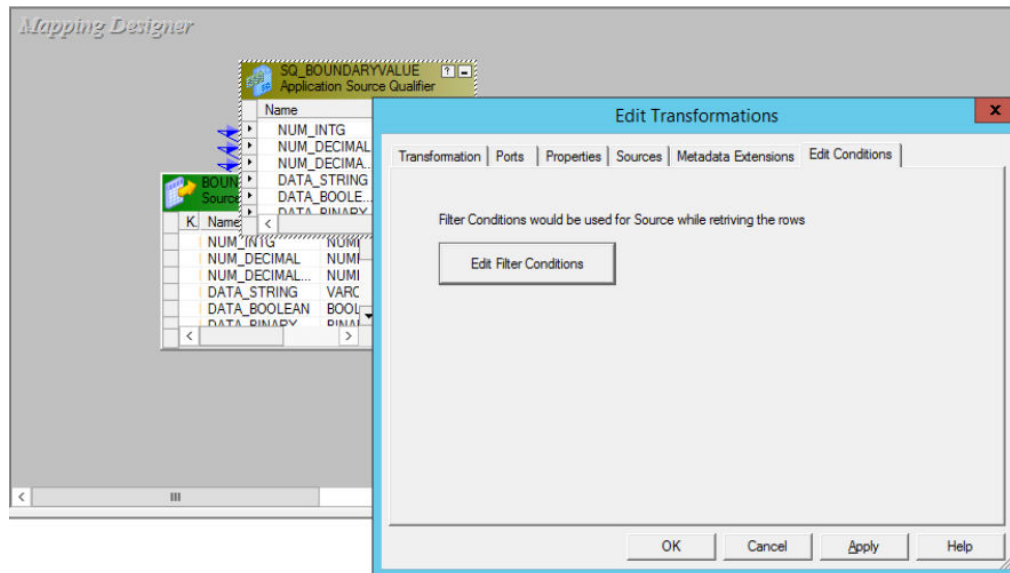
Note: You cannot apply filter on Snowflake data of Binary or Time data type.

Configuring a Source Filter

Configure a source filter from the **Application Source Qualifier**.

1. In the **Mapping Designer**, double-click the **Application Source Qualifier**.

The **Edit Transformation** tab appears as shown in the following image:



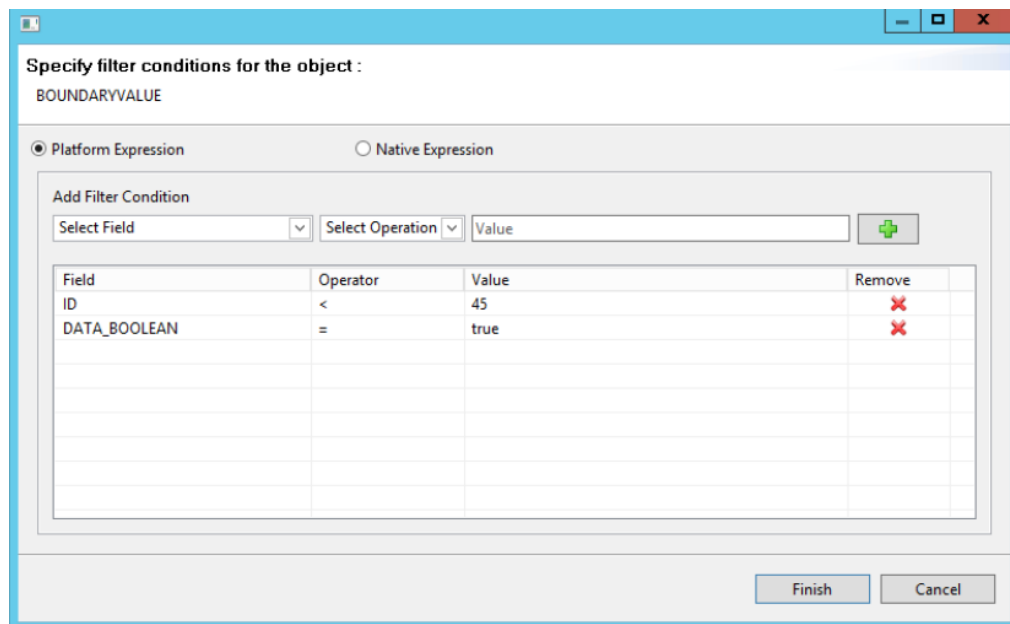
2. Click the **Edit Conditions** tab.

3. Click **Edit Filter Conditions**.

The **Add Filter Condition** dialog box appears.

4. Select the filter field and operator that you want to specify in the condition, enter a value for the condition, and click **Add Condition**.

The condition appears in the Filter Expression pane as shown in the following image:



5. Click **Finish** to add the filter condition.

6. Click **OK**.

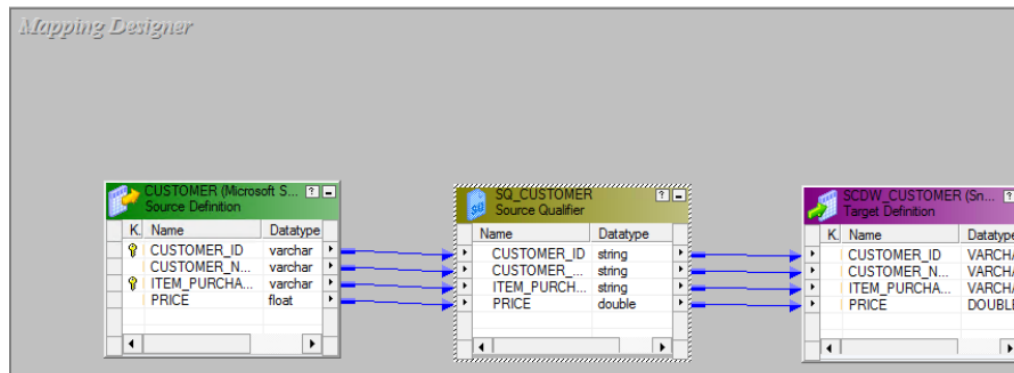
Snowflake Mapping Example

An enterprise application uses the SQL server to store the customer transaction details. You use the Snowflake data warehouse to analyze the customer ID, customer name, item purchased, and price. You extract the customer transaction details from an SQL server source, and load the transactions to the target table in Snowflake.

The following procedure shows how to move data from the SQL server to Snowflake:

1. Import the SQL server source.
2. Import a Snowflake target.
3. Create a mapping with an SQL server source and a Snowflake target.

The following image shows the example mapping:



4. Create a session and configure it to load the data to the Snowflake target.

The mapping contains the following objects:

Source Definition

The mapping source definition is a relational SQL database. In the **Source Analyzer**, import the SQL server source. The PowerCenter Integration Service reads the customer transaction details from the SQL server source.

The following table describes the structure of the source definition called CUSTOMER:

Field	Data Type
CUSTOMER_ID	Varchar
CUSTOMER_NAME	Varchar
ITEM_PURCHASED	Varchar
PRICE	Float

Mapping Target

The mapping contains a Snowflake target definition.

In the **Target Designer**, import a Snowflake target definition.

The following table describes the structure of the target definition called SCDW_CUSTOMER:

Field	Data Type
CUSTOMER_ID	Varchar
CUSTOMER_NAME	Varchar
ITEM_PURCHASED	Varchar
PRICE	Double

CHAPTER 5

Snowflake Sessions

This chapter includes the following topics:

- [Snowflake Sessions Overview, 22](#)
- [Snowflake Connection Properties, 22](#)
- [Configure Snowflake Source Session Properties, 23](#)
- [Configure Snowflake Target Session Properties, 24](#)
- [Rules and Guidelines for Snowflake Sessions, 25](#)

Snowflake Sessions Overview

After you create mappings, you can create a session to extract and load data.

You must configure a Snowflake connection in the **Workflow Manager** to extract data from or load data to a Snowflake table. You can define properties in a session to determine how the PowerCenter Integration Service must extract data from a Snowflake source or load data to a Snowflake target.

Snowflake Connection Properties

When you configure a Snowflake connection, you define the connection attributes that the PowerCenter Integration Service uses to connect to the Snowflake database.

The following table describes the Snowflake connection properties:

Connection Property	Description
Username	Enter the user name to connect to the Snowflake account.
Password	Enter the password to connect to the Snowflake account.
Account	Enter the name of the Snowflake account.
Warehouse	Enter the Snowflake warehouse name.
Role	Specify the Snowflake role assigned to the user.

Connection Property	Description
Additional JDBC URL Parameters	<p>Enter one or more JDBC connection parameters in the following format:</p> <pre><param1>=<value>&<param2>=<value>&<param3>=<value>...</pre> <p>For example:</p> <pre>user=jon&warehouse=mywh&db=mydb&schema=public</pre>
Database/Schema	<p>Enter the database and schema name in the following format:</p> <pre><database name>/<schema name></pre> <p>Note: You must specify both the database and schema name. If you specify only the database name or only the schema name, the session fails as it cannot access the table.</p>

Configuring a Snowflake Connection

Configure a Snowflake connection in the Workflow Manager to define the connection attributes that the PowerCenter Integration Service uses to connect to the Snowflake database.

- In the Workflow Manager, click **Connections > Application**.
The **Application Connection Browser** dialog box appears.
- Click **New**.
The **Select Subtype** dialog box appears.
- Select **SnowflakeCloudDataWarehouse** and click **OK**.
The **Application Connection Editor** dialog box appears.
- Enter a name for the Snowflake connection.
- Enter the application properties for the connection.
- Enter the Snowflake connection attributes.
- Click **OK** to create a Snowflake connection.

Configure Snowflake Source Session Properties

You can configure the session properties for a Snowflake source on the **Workflow Manager** tab. Define the properties for the source instance in the session.

The following table describes the session properties that you can configure for a Snowflake source session:

Session Property	Description
Database	Overrides the database name specified in the connection.
Schema	Overrides the schema name specified in the connection.
Warehouse	Overrides the Snowflake warehouse name specified in the connection.

Session Property	Description
Role	Overrides the Snowflake user role specified in the connection. Note: The PowerCenter Integration Service ignores the role you specify in a source transformation.
Pre SQL	SQL statement that the PowerCenter Integration Service executes before extracting data from the source. For example, if you want to update records in the database before you extract the records from the table, specify a Pre-SQL statement.
Post SQL	SQL statement that the PowerCenter Integration Service executes after extracting data from the source. For example, if you want to delete some records after the latest records load, specify a Post-SQL statement.

Configure Snowflake Target Session Properties

You can configure the session properties for a Snowflake target on the **Workflow Manager** tab. Define the properties for the target instance in the session.

The following table describes the session properties that you can configure for a Snowflake target session:

Session Property	Description
Database	Overrides the database name specified in the connection.
Schema	Overrides the schema name specified in the connection.
Warehouse	Overrides the Snowflake warehouse name specified in the connection.
Role	Overrides the Snowflake user role specified in the connection. Note: The PowerCenter Integration Service ignores the role you specify in a target transformation.
Pre SQL	SQL statement that the PowerCenter Integration Service executes before extracting data from the source. For example, if you want to assign sequence object to a primary key field of the target table before you load data to the table, specify a Pre-SQL.
Post SQL	SQL statement that the PowerCenter Integration Service executes after extracting data from the source. For example, if you want to alter the table created by using create target option and assign constraints to the table before you load data to the table, specify a Post-SQL.
Number of local staging files	Enter the number of local staging files. The PowerCenter Integration Service writes data to the target after the specified number of local staging files are created.
Truncate Target Table	Truncates the database target table before inserting new rows. Select one of the following options: <ul style="list-style-type: none"> - True. Truncates the target table before inserting all rows. - False. Inserts new rows without truncating the target table. Default is false.

Session Property	Description
Additional Write Runtime Parameters	Specify additional run-time parameters. For example: <code>remoteStage=CQA.CQA_SCHEMA.CQA_STAGE</code> Separate multiple runtime parameters with &.
INSERT	Inserts all rows to the Snowflake target. You must select the INSERT option before you run a session. Default is true.
DELETE	Deletes rows from the Snowflake target. If you select DELETE, you need to select Delete for the Treat Source Rows As session property in the Properties page.
UPDATE	Updates rows in the Snowflake target. If you select UPDATE, you need to select Update for the Treat Source Rows As session property in the Properties page. Note: You can perform Update as update or Update else insert operation.
Success File Directory	Not supported.
Error File Directory	Not supported.
UpdateMode	Loads data to the target based on the mode you specify.

Rules and Guidelines for Snowflake Sessions

Use the following rules and guidelines when you create a session:

- Ensure that the source and target table names contain only uppercase letters.
- You cannot use the OR operator in a filter condition.
- You must define a primary key in the target table.
If you do not define a primary key in the target table, the mapping fails to delete record from or update record in the target table.

APPENDIX A

Snowflake Data Type Reference

This appendix includes the following topics:

- [Data Type Reference Overview, 26](#)
- [Snowflake and Transformation Data Types, 26](#)

Data Type Reference Overview

PowerCenter uses the following data types in Snowflake mappings:

- Snowflake native data types. Snowflake data types appear in Snowflake definitions in a mapping.
- Transformation data types. Set of data types that appear in the transformations. They are internal data types based on ANSI SQL-92 generic data types, which the PowerCenter Integration Service uses to move data across platforms. They appear in all transformations in a mapping.

When the PowerCenter Integration Service reads source data, it converts the native data types to the comparable transformation data types before transforming the data. When the PowerCenter Integration Service writes to a target, it converts the transformation data types to the comparable native data types.

Snowflake and Transformation Data Types

The following table lists the Snowflake data types that PowerCenter supports and the corresponding transformation data types:

Snowflake Data Type	Transformation Data Type	Range and Description
BINARY (VARBINARY)	Binary	Maximum value: 8,388,60 Default value is 8,388,60.
BOOLEAN	String	A Boolean attribute.
DATE	Datetime	Date and time values.

Snowflake Data Type	Transformation Data Type	Range and Description
FLOAT (DOUBLE, DOUBLE PRECISION, REAL, FLOAT, FLOAT4, FLOAT8)	Double	Floating point numbers with double-precision (64 bit). Maximum value: 1.7976931348623158e+307 Minimum value: -1.79769313486231E+307
NUMBER (DECIMAL, NUMERIC)	Decimal	Number with 38-bit precision and scale.
NUMBER (INT, INTEGER, BIGINT, SMALLINT, TINYINT, BYTEINT)	Decimal	Number with 38-bit precision and scale as 0. Maximum value: 9.999999999999999E+37 Minimum value: -9.999999999999999E+36
TIME	Datetime	Date and time values.
TIMESTAMP_LTZ	Datetime	Date and time values.
TIMESTAMP_NTZ (TIMESTAMP_NTZ, datetime)	Datetime	Date and time values.
TIMESTAMP_TZ	Datetime	Date and time values.
VARCHAR (TEXT, CHAR, CHARACTER, STRING)	String	Maximum value: 16,777,216 Default value is 16,777,216.

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