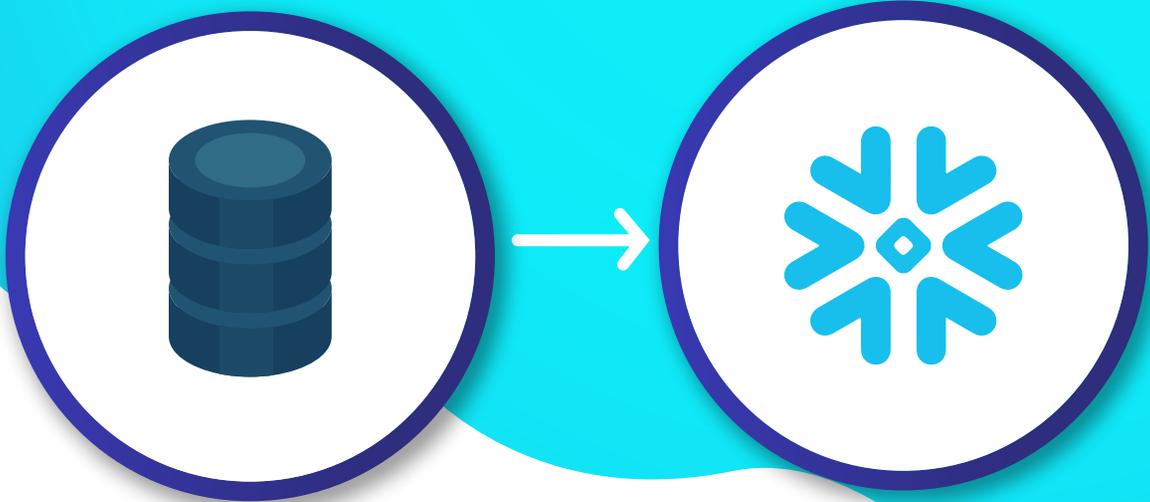


DATABASE MIGRATION TO SNOWFLAKE:

A Complete How-to Guide





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Introduction

This guide will show you how to migrate¹ a relational database from Microsoft SQL Server 2019 for example, to Snowflake.

Then how to manually manage your SAP BusinessObjects content:

- Universe(s) and their connections to Snowflake

And if necessary, how to:

- Repoint your Web Intelligence document(s) to your Snowflake Universe(s)
- Repoint your Crystal Reports document(s) to your Snowflake ODBC



1. Identify which Universes, Reports, and Users will be impacted by repointing the database connectivity to Snowflake.

This step can also be used to identify and document which tables and columns in your databases are used (and not used) by SAP BusinessObjects. This can help identify the data that needs to be migrated, in which order or not at all.

2. This is the migration step by the customer.
3. There are two scenarios:

¹ More definitions here: <https://mssql.tosnowflake.com/>



- a. Simply repointing the Universe Connection to Snowflake works, the Universe passes all integrity checks, you can start the validation of the Webi reports (step 5).

If you have Crystal Reports pointing directly at the database and not via a Universe, they will need to be updated with the new database connections (step 4).

- b. Due to changes in the Snowflake Schema, Column Type or just vendor-specific SQL inside the Universe means that we need to make changes to the Universe.

This step is also applicable if you are converting from a UNV to a UNX.

Here we will work with a copy of the existing Universe and apply the necessary changes so they are fully operational. Depending on your strategy, you may need to later repoint all the documents that use the old Universe to the new one (step 4).

4. Back-up: before making any changes to your content, make sure that you have a reliable and performant back-up.
5. Repointing Webi and Crystal Documents ([tutorial video here](#)) to the new / updated universes.
6. Testing and Validation: ensure user satisfaction and meet regulatory needs by testing the data, its security, the layout of the documents, the network connectivity and performance of your documents.

Disclaimer

This blog demonstrates the concepts of a database migration and how to manage SAP BusinessObjects content affected by this project. Every case is different and the steps mentioned here may not be the same for you. Here we took the example of a migration from a Microsoft SQL Server to Snowflake, but this guide can apply to a multitude of different databases.

For completeness of this document we are simulating the workflow where migrating the database will require changes to the schema: database name, table names therefore involving changes in the Universe(s).



Scenario 1: Lift and Shift

- Source: Relational database
- No schema transformation
- Universes need no modification

What you need:

- Pre-migration assessment
 - Impact Analysis
- Validate
 - Data regression
 - Performance



Scenario 2: Transformation Project

- Source: Non-relational database
- Relational with schema changes
- New Universes and new Reports

What you need:

- Pre-migration assessment
 - Data Inventory
- Validate
 - Performance



Scenario 3: Lift and Shift-Advanced

- Snowflake schema is not identical
- Universe needs significant update
- Universe is a UNV

What you need:

- Pre-migration assessment
- Bulk update repair the Universes
- Back-up your Documents
- Bulk reposit Webi and Crystal
- Validate
 - Data regression
 - Performance

This guide will cover the Lift & Shift Advanced scenario showing all the steps involved when simply changing the Universe connection is not sufficient.

Readme.txt

Before any migration project, it is important to carry out a Pre-Migration Impact Analysis first in order to decide what needs to be migrated over. You should also analyze what will be impacted by this project to help avoid any risks during the whole process.

Examples:

- Universes:
 - List of Connections pointing to the database(s) to Migrate
 - List of Universes pointing to these Universe Connections
 - List of Universe Restrictions (aka overloads)
 - Document Universes Usage / Non-Usage
 - Document Universe Objects (dimensions, details, measure) Usage / Non-Usage

- Content:
 - List of Web Intelligence, Crystal Reports and other documents pointing to these Universes
 - List of Web Intelligence, Crystal Reports and other documents directly pointing to these database(s). E.g. Crystal Reports 2016
 - Document Web Intelligence formulas that might be affected
 - Document impacted content Usage / Non-Usage
 - Document Instances impacted by this migration

- Users:
 - Document users impacted (based on actions and ownership) - For better communication

- Data:
 - Document Database Tables to be migrated based on Impact Analysis and Usage / Non-Usage
 - Document Columns in Tables to be migrated based on Impact Analysis and Usage / Non-Usage



Pre-Requisites

This blog assumes you have [SAP BusinessObjects 4.2 SP08](#) or higher as it is the earliest release officially supporting Snowflake.

It also assumes you have Universe(s), Web Intelligence and Crystal Reports documents pointing to a Microsoft SQL Server Database. This scenario can similarly be applied to any relational database.

Also, you need to have Snowflake ODBC and/or JDBC connectivity configured for SAP BusinessObjects. See this blog for more details:

<https://blogs.sap.com/2020/03/12/snowflake-for-sap-businessobjects-4.2-sp08/>

Microsoft SQL Server

Version: Microsoft SQL Server 2019

Database to Migrate: AdventureWorks2017

(<https://docs.microsoft.com/en-us/sql/samples/adventureworks-install-configure?view=sql-server-ver15>)

Database Size: 336 MB (71 Tables for over 760k rows)

\\SQLEXPRESS (SQL Server 15.0.2000 - [redacted])\Administrator\Databases\AdventureWorks2017\Tables		
Name	Schema	Create Date
Address	Person	27/10/2017 14:33
AddressType	Person	27/10/2017 14:33
AWBuildVersion	dbo	27/10/2017 14:33
BillOfMaterials	Production	27/10/2017 14:33
BusinessEntity	Person	27/10/2017 14:33
BusinessEntityAddress	Person	27/10/2017 14:33
BusinessEntityContact	Person	27/10/2017 14:33
ContactType	Person	27/10/2017 14:33
CountryRegion	Person	27/10/2017 14:33
CountryRegionCurrency	Sales	27/10/2017 14:33
CreditCard	Sales	27/10/2017 14:33
Culture	Production	27/10/2017 14:33
Currency	Sales	27/10/2017 14:33
CurrencyRate	Sales	27/10/2017 14:33
Customer	Sales	27/10/2017 14:33
DatabaseLog	dbo	27/10/2017 14:33
Department	HumanResources	27/10/2017 14:33
Document	Production	27/10/2017 14:33
EmailAddress	Person	27/10/2017 14:33
Employee	HumanResources	27/10/2017 14:33
EmployeeDepartmentHistory	HumanResources	27/10/2017 14:33

Snowflake

Create an empty database in Snowflake

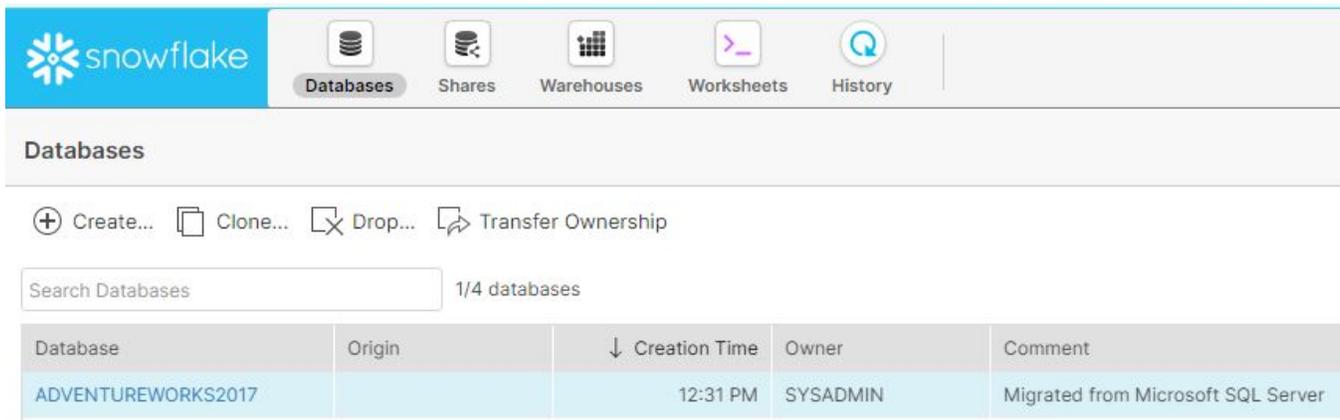
Database Name: AdventureWorks2017

SQL

```

1 CREATE DATABASE AdventureWorks2017 COMMENT = 'Migrated from Microsoft SQL
  Server';
    
```

Note: Unless you create tables and columns using double-quotes (therefore case sensitive) these identifiers will be displayed in uppercase but are case-insensitive. Suggested Reading: [Identifiers in Snowflake](#)



Databases

Search Databases 1/4 databases

Database	Origin	↓ Creation Time	Owner	Comment
ADVENTUREWORKS2017		12:31 PM	SYSADMIN	Migrated from Microsoft SQL Server

Schema (PUBLIC) available:



Databases



Shares



Warehouses



Worksheets



History

Databases > ADVENTUREWORKS2017

Tables

Views

Schemas

Stages

File Formats

Sequences

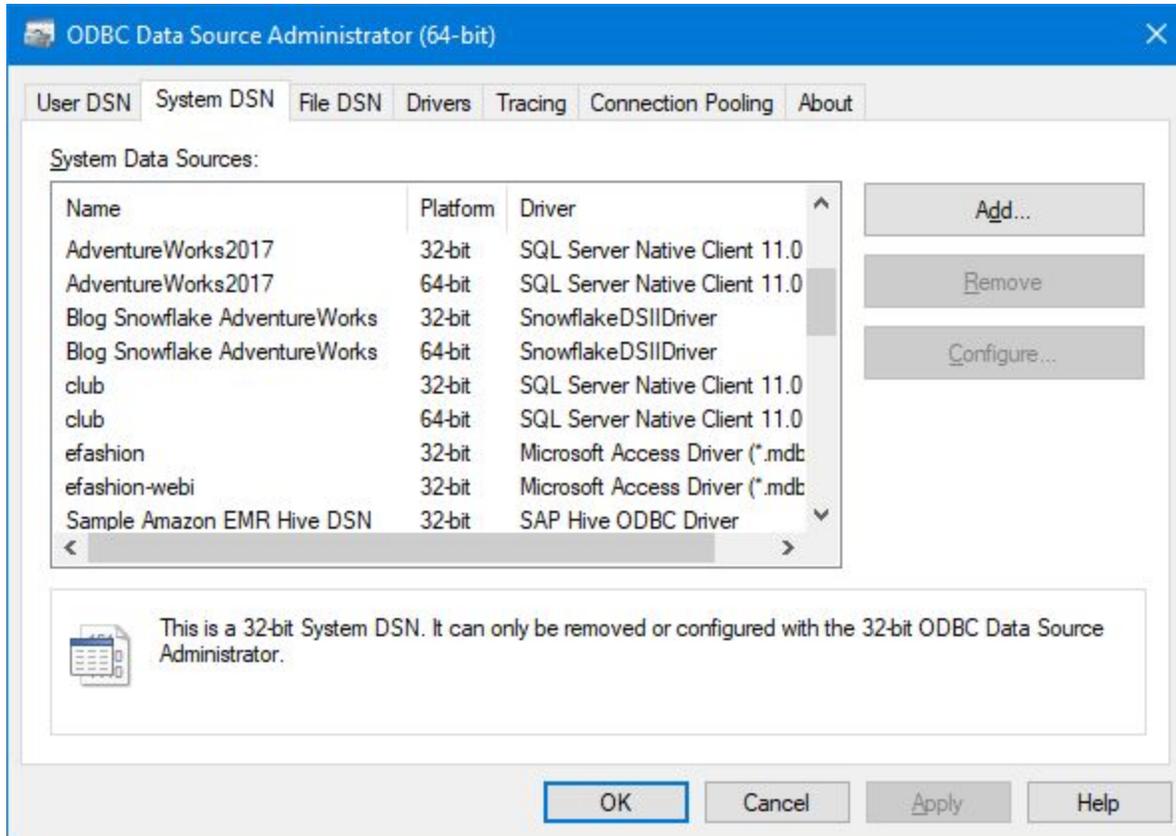
+ Create... Clone... Alter... Drop... Transfer Ownership

Schema	Creation Time ▼	Owner	Managed Access	Comment
INFORMATION_SCHEMA	3:16:23 PM			Views describing the contents of schemas in this database
PUBLIC	12:31:53 PM	SYSADMIN		

Create identical 32-bit and 64-bit ODBC connections to Snowflake

Note: See this blog for more details:

<https://blogs.sap.com/2020/03/12/snowflake-for-sap-businessobjects-4.2-sp08/>



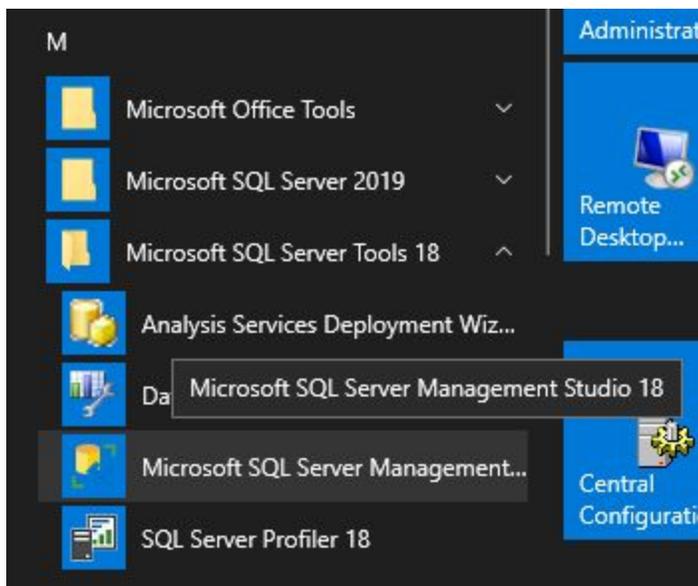
Note: You can use JDBC connections if you prefer. Please refer to the blog above.

Migrating the Database

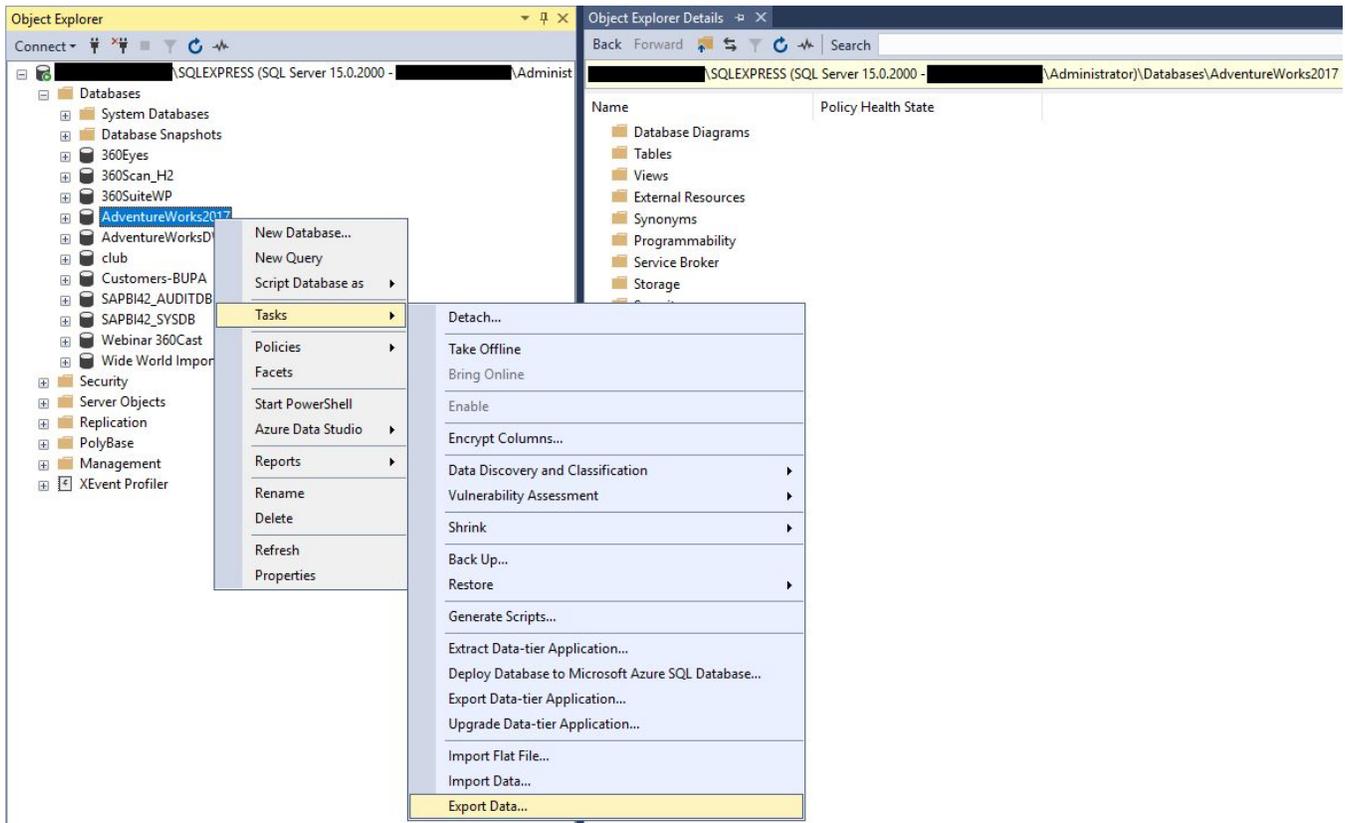
Move the database from Microsoft SQL Server to Snowflake

There are many strategies to run this task. In this blog, we'll use the *SQL Server Import and Export Wizard* via SQL Server Integration Services (SSIS) to generate Comma Separated Values (CSV) file and manually import them into Snowflake.

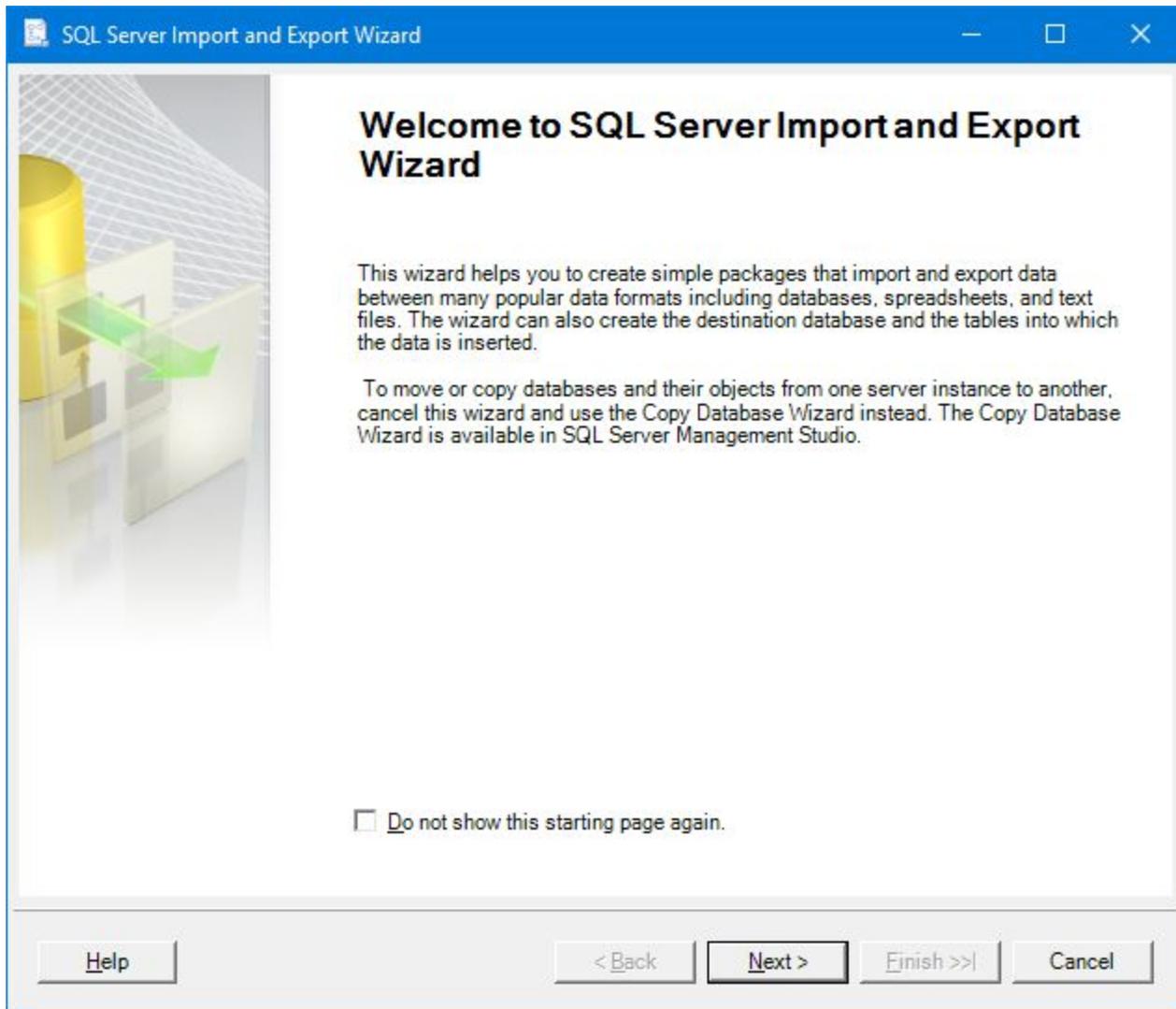
Open Microsoft SQL Server Management Studio



Select the database to migrate (e.g.: AdventureWorks2017)

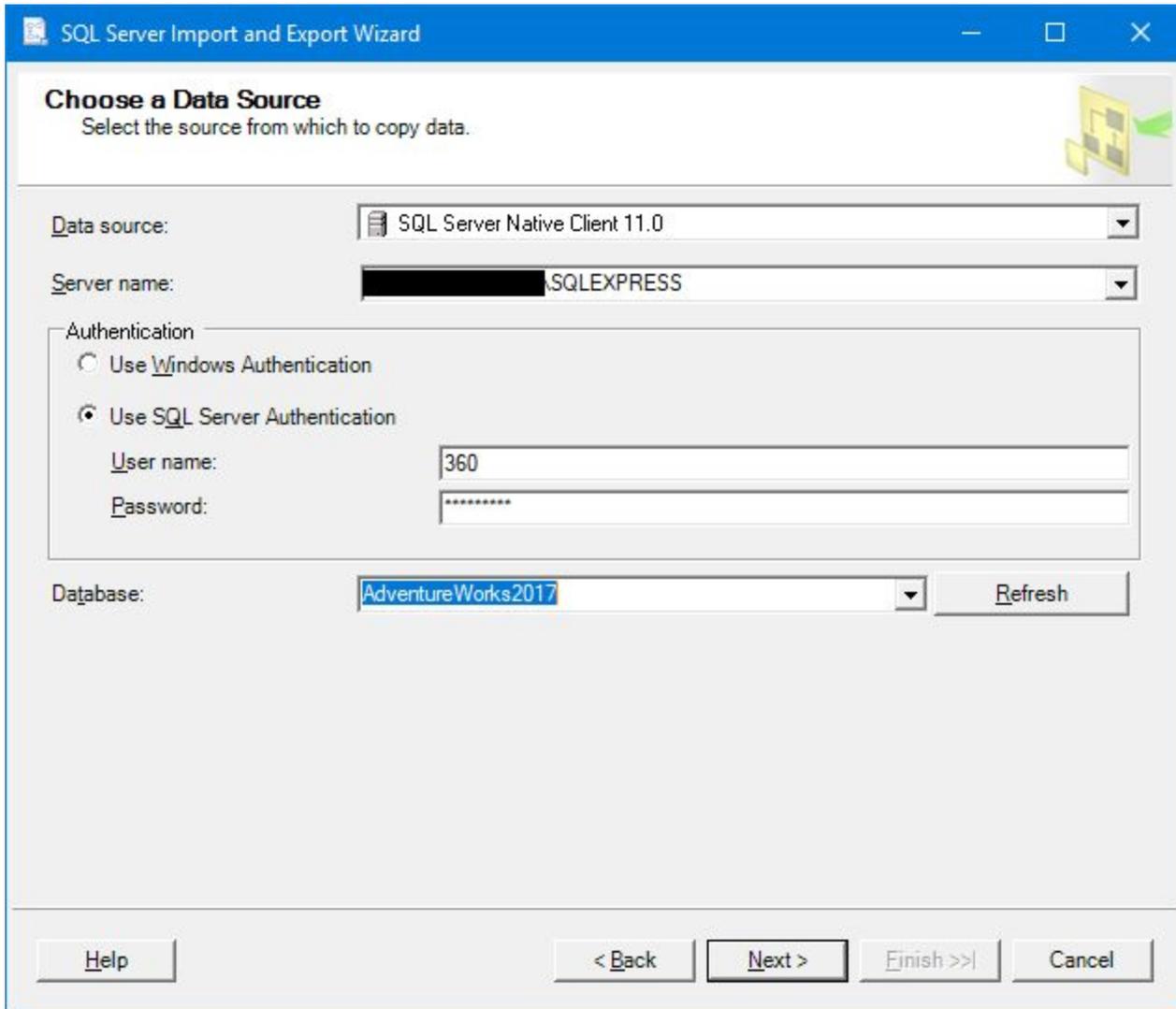


Right-Click > Tasks > Export Data...



Click: Next

Choose a Data Source



The screenshot shows the 'SQL Server Import and Export Wizard' window. The title bar reads 'SQL Server Import and Export Wizard'. The main heading is 'Choose a Data Source' with the instruction 'Select the source from which to copy data.' Below this, there are several input fields: 'Data source:' is set to 'SQL Server Native Client 11.0'; 'Server name:' is set to '[REDACTED].SQLEXPRESS'; 'Authentication' has 'Use SQL Server Authentication' selected, with 'User name:' set to '360' and 'Password:' masked with asterisks; 'Database:' is set to 'AdventureWorks2017'. At the bottom, there are buttons for 'Help', '< Back', 'Next >', 'Finish >>', and 'Cancel'.

Data source: SQL Server Native Client 11.0

Server name: [ENTER YOUR SERVER NAME / INSTANCE]

Authentication: [ENTER YOUR CREDENTIALS]

Database: [ENTER YOUR DATABASE] (E.g.: AdventureWorks2017)

Click: Next

Choose a Destination

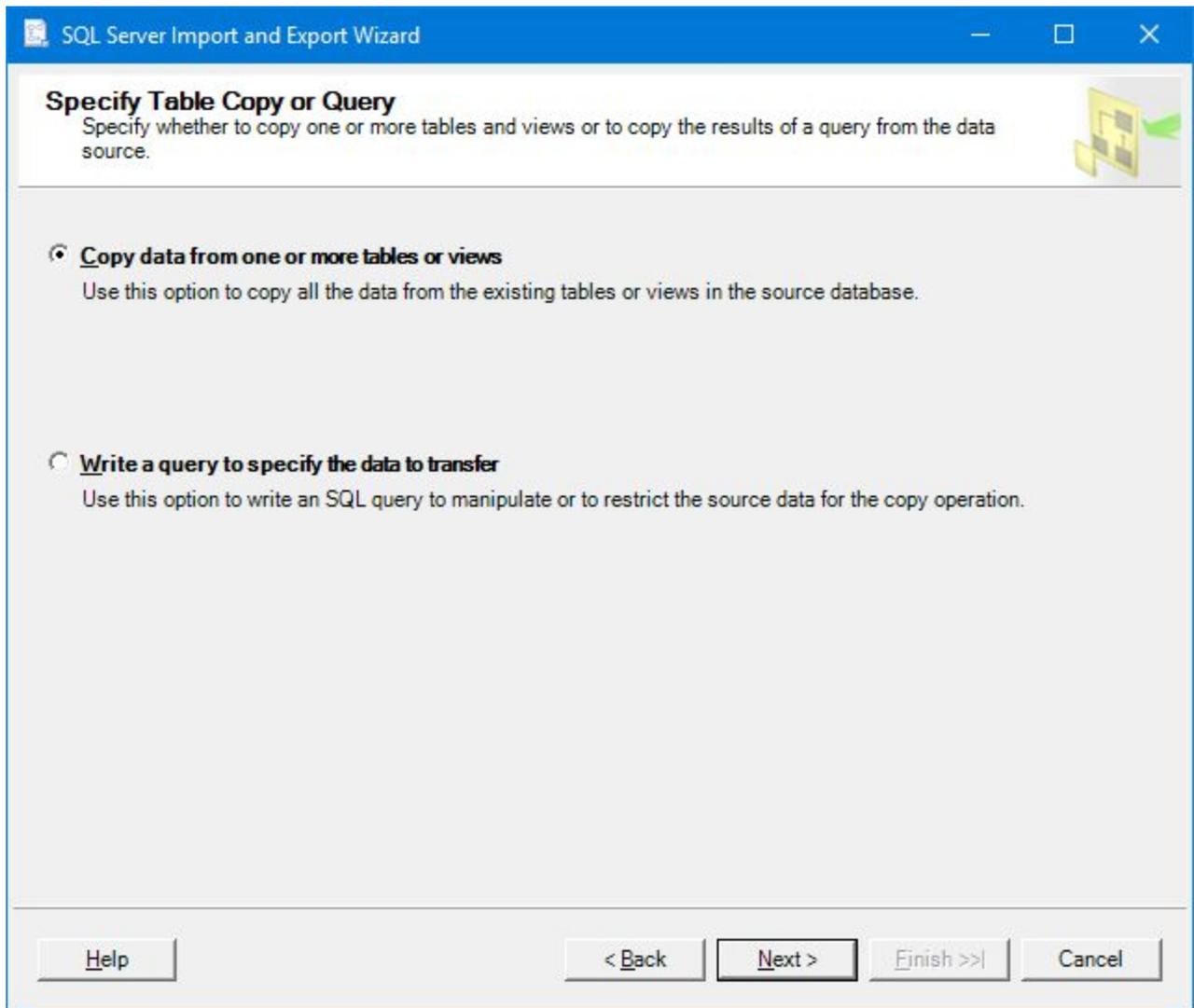
The screenshot shows the 'Choose a Destination' step of the SQL Server Import and Export Wizard. The window title is 'SQL Server Import and Export Wizard'. The main heading is 'Choose a Destination' with the instruction 'Specify where to copy data to.' The 'Destination' dropdown is set to 'Flat File Destination'. Below this, the instruction is 'Select a file and specify the file properties and the file format.' The 'File name' field contains 'C:\Users\Administrator\Downloads\Customer.txt' with a 'Browse...' button to its right. The 'Locale' dropdown is set to 'English (United Kingdom)' and the 'Unicode' checkbox is unchecked. The 'Code page' dropdown is set to '1252 (ANSI - Latin I)'. The 'Format' dropdown is set to 'Delimited' and the 'Text qualifier' field contains '<none>'. The 'Column names in the first data row' checkbox is checked. At the bottom, there are buttons for 'Help', '< Back', 'Next >', 'Finish >>', and 'Cancel'.

Destination: Flat File Destination

File name: [BROWSE TO PATH AND ENTER A FILE NAME]

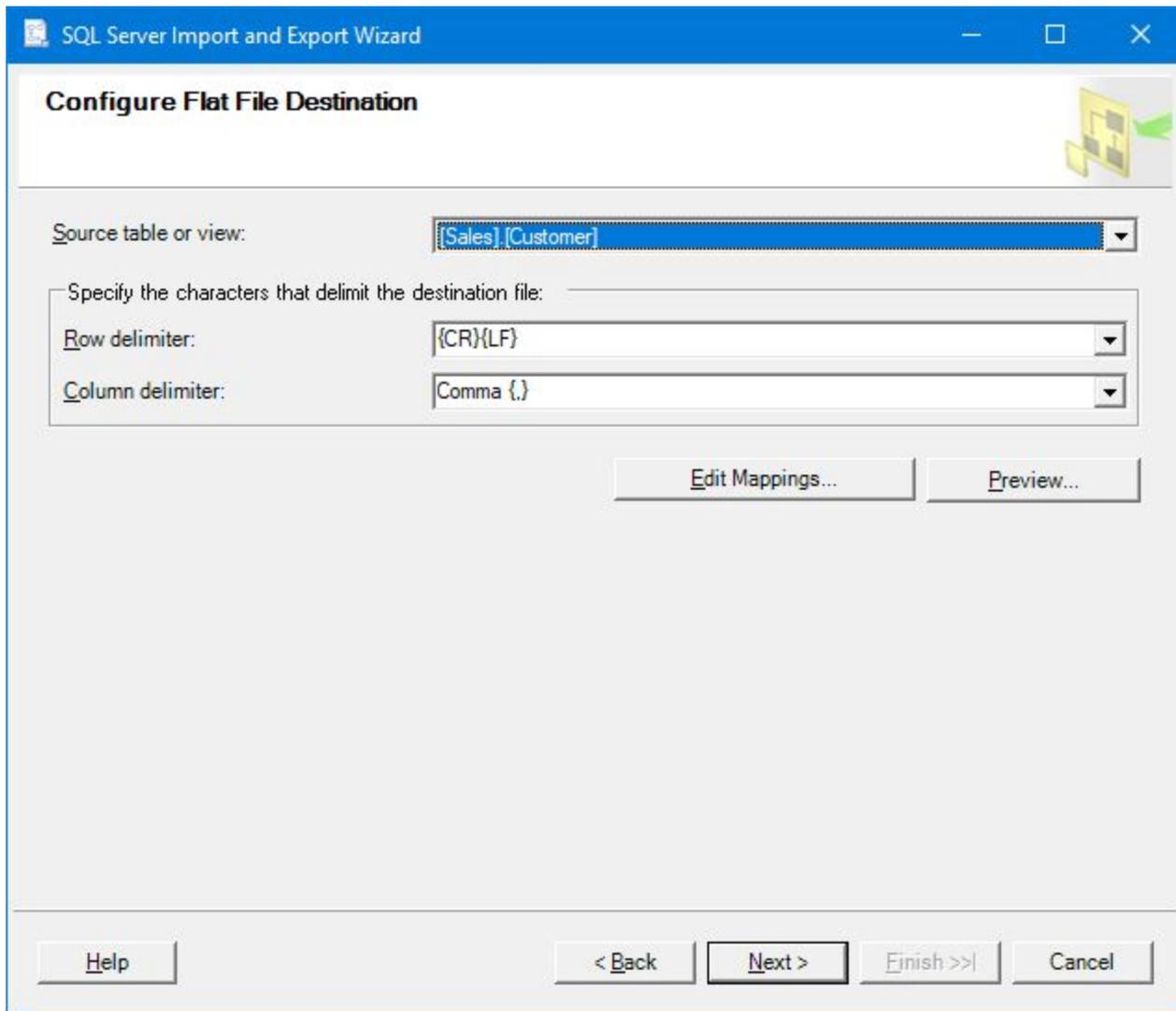
Click: Next

Specify Table Copy or Query



Click: Next

Configure Flat File Destination



The screenshot shows the 'Configure Flat File Destination' dialog box within the 'SQL Server Import and Export Wizard'. The 'Source table or view' dropdown is set to '[Sales].[Customer]'. Under the 'Specify the characters that delimit the destination file:' section, the 'Row delimiter' is set to '{CR}{LF}' and the 'Column delimiter' is set to 'Comma (,)'.

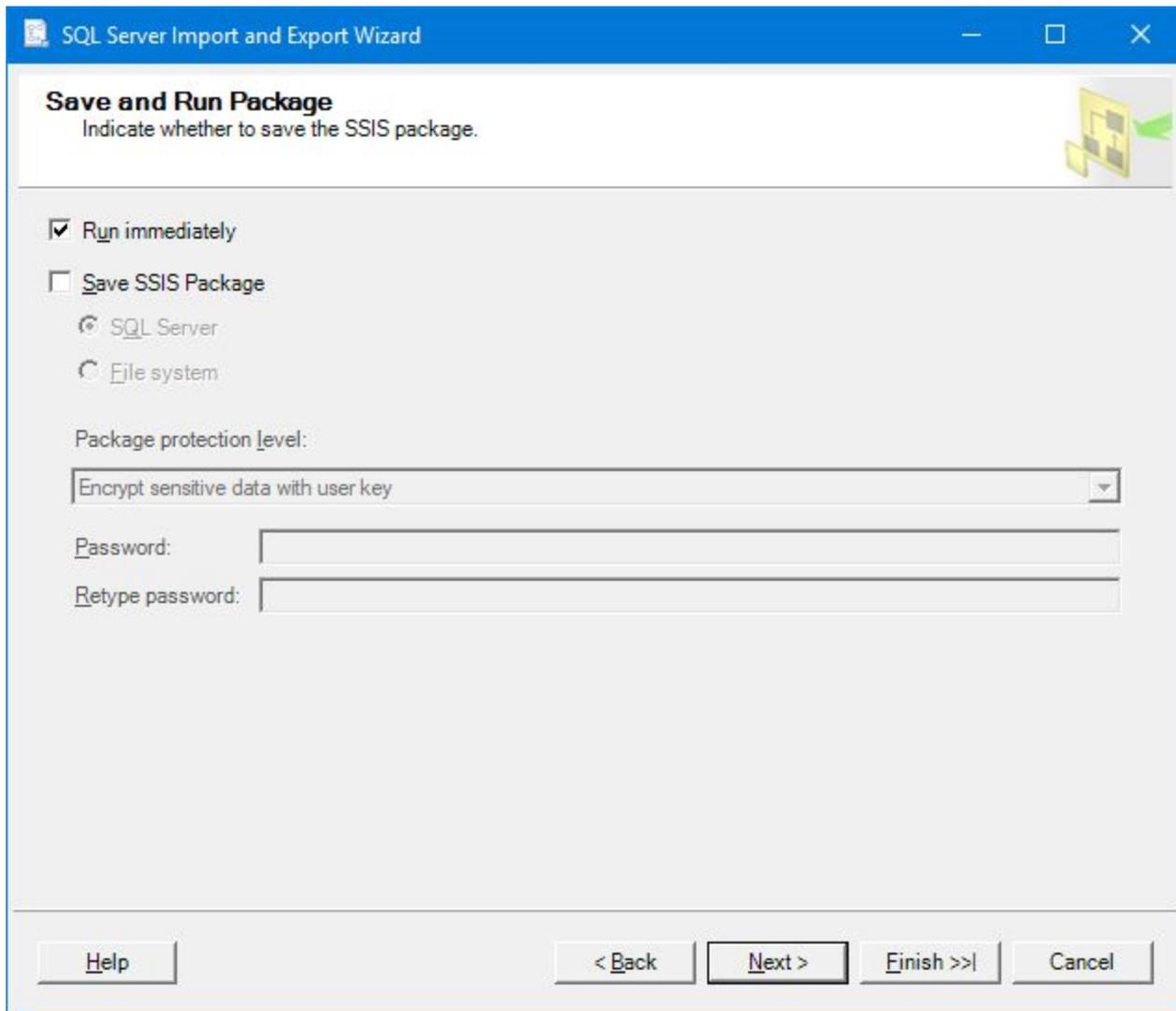
Buttons visible in the dialog include: 'Edit Mappings...', 'Preview...', 'Help', '< Back', 'Next >', 'Finish >>', and 'Cancel'.

Select: [Sales].[Customer]

Note: These are the tables used in our SAP BusinessObjects Universe.

Click: Next

Save and Run Package



The screenshot shows the 'Save and Run Package' step of the SQL Server Import and Export Wizard. The window title is 'SQL Server Import and Export Wizard'. The main heading is 'Save and Run Package' with the instruction 'Indicate whether to save the SSIS package.' and a small icon of a package being saved.

Options:

- Run immediately
- Save SSIS Package
 - SQL Server
 - File system

Package protection level:

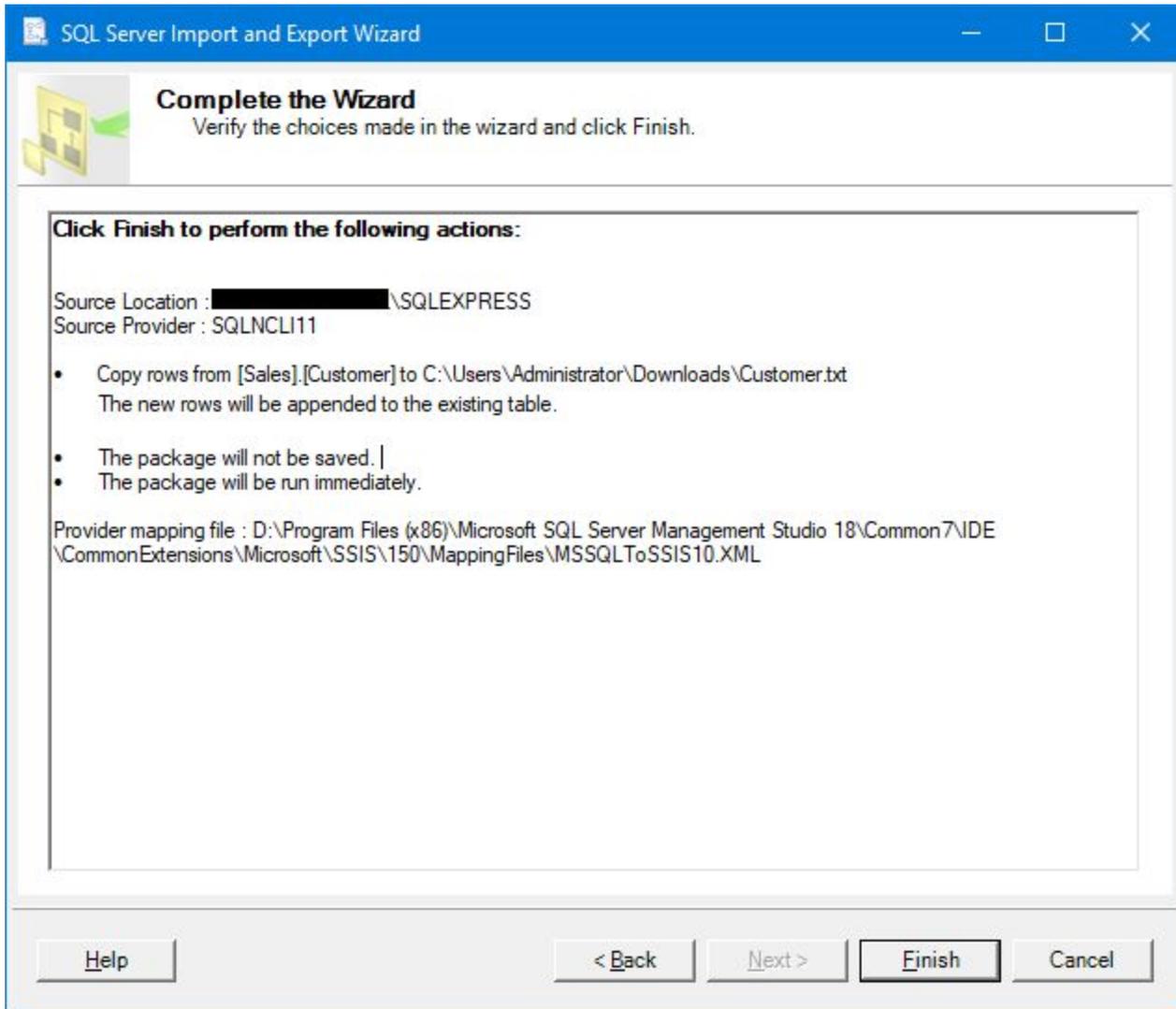
Password:

Retype password:

Buttons:

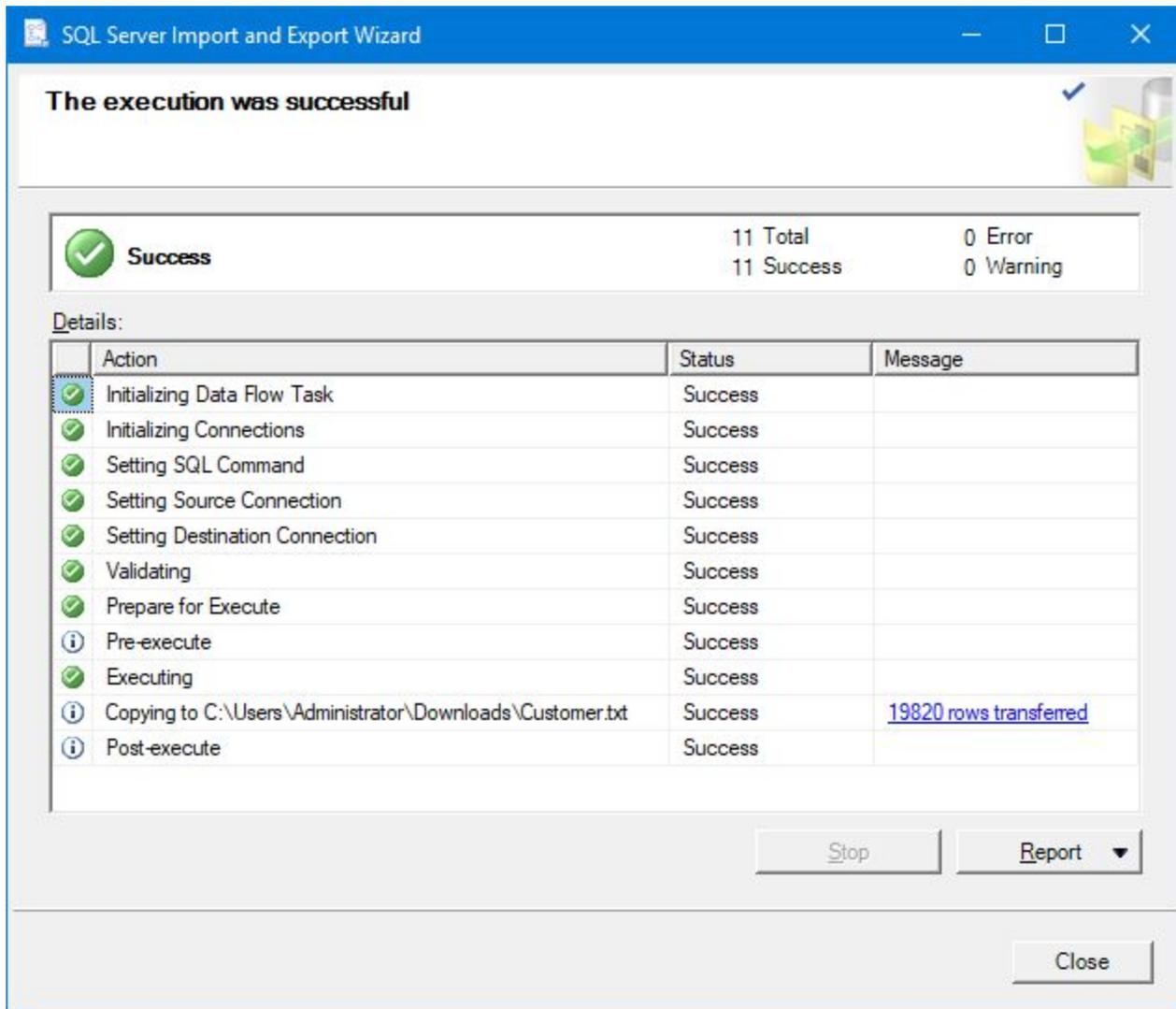
Click: Next

Complete the Wizard



Click: Finish

The execution was successful



SQL Server Import and Export Wizard

The execution was successful

Success 11 Total 0 Error
11 Success 0 Warning

Details:

	Action	Status	Message
<input checked="" type="checkbox"/>	Initializing Data Flow Task	Success	
<input checked="" type="checkbox"/>	Initializing Connections	Success	
<input checked="" type="checkbox"/>	Setting SQL Command	Success	
<input checked="" type="checkbox"/>	Setting Source Connection	Success	
<input checked="" type="checkbox"/>	Setting Destination Connection	Success	
<input checked="" type="checkbox"/>	Validating	Success	
<input checked="" type="checkbox"/>	Prepare for Execute	Success	
<input type="checkbox"/>	Pre-execute	Success	
<input checked="" type="checkbox"/>	Executing	Success	
<input type="checkbox"/>	Copying to C:\Users\Administrator\Downloads\Customer.txt	Success	19820 rows transferred
<input type="checkbox"/>	Post-execute	Success	

Buttons: Stop, Report, Close

Click: Close

Repeat for SalesOrderDetail and SalesOrderHeader

SQL Server Import and Export Wizard

The execution was successful

 **Success** 11 Total
11 Success
0 Error
0 Warning

Details:

Action	Status	Message
 Initializing Data Flow Task	Success	
 Initializing Connections	Success	
 Setting SQL Command	Success	
 Setting Source Connection	Success	
 Setting Destination Connection	Success	
 Validating	Success	
 Prepare for Execute	Success	
 Pre-execute	Success	
 Executing	Success	
 Copying to C:\Users\Administrator\Downloads\SalesOrderDetail.txt	Success	121317 rows transf...
 Post-execute	Success	

SQL Server Import and Export Wizard

The execution was successful

 **Success** 11 Total 0 Error
11 Success 0 Warning

Details:

Action	Status	Message
 Initializing Data Flow Task	Success	
 Initializing Connections	Success	
 Setting SQL Command	Success	
 Setting Source Connection	Success	
 Setting Destination Connection	Success	
 Validating	Success	
 Prepare for Execute	Success	
 Pre-execute	Success	
 Executing	Success	
 Copying to C:\Users\Administrator\Downloads\SalesOrderHeader.txt	Success	31465 rows transferred
 Post-execute	Success	

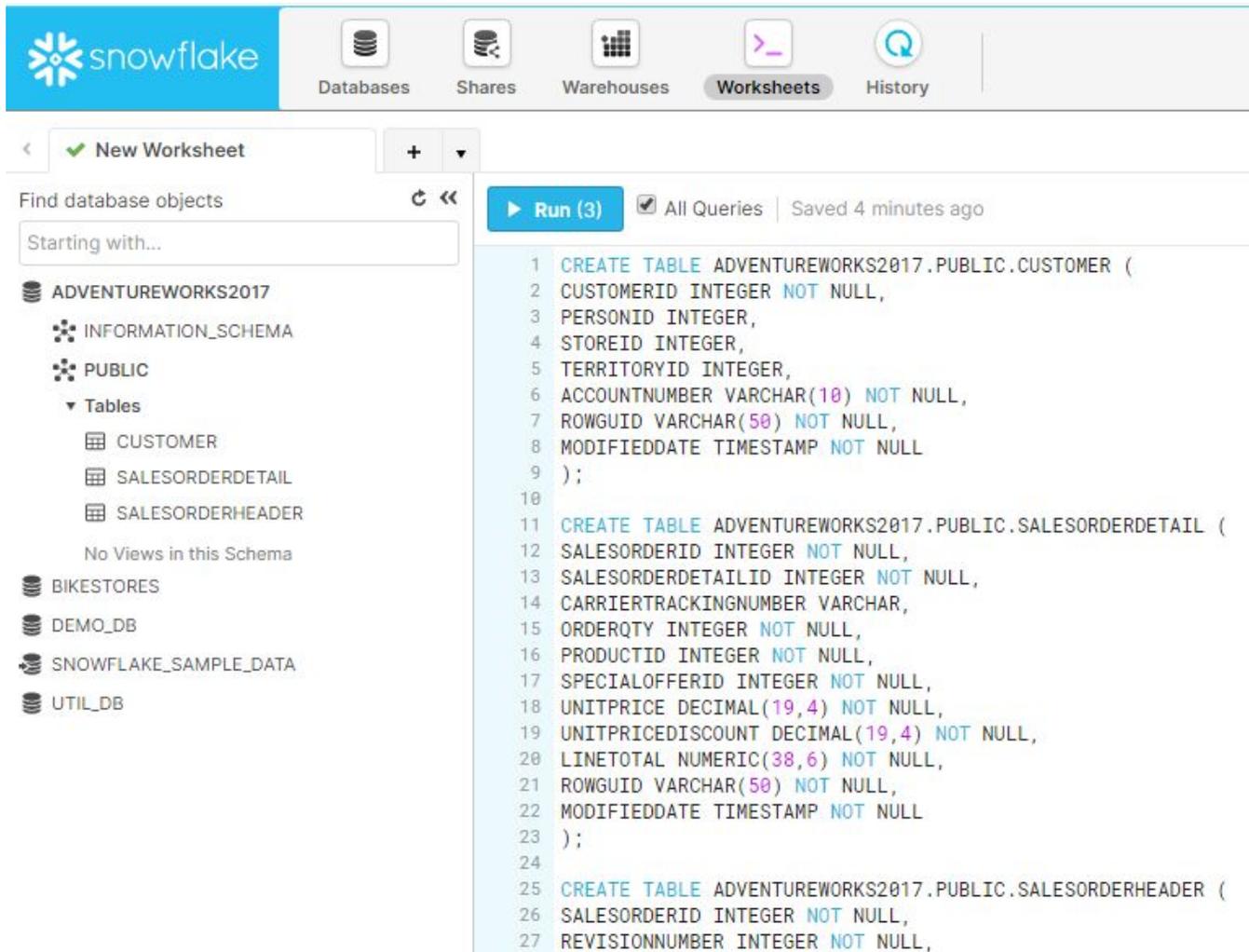
 ▼

 Customer.txt	30/03/2020 13:35	Text Document	1,852 KB
 SalesOrderDetail.txt	30/03/2020 11:17	Text Document	12,648 KB
 SalesOrderHeader.txt	30/03/2020 11:19	Text Document	7,323 KB

Create Tables in Snowflake

Logon to Snowflake

Click: Worksheets



The screenshot shows the Snowflake web interface. At the top, there's a navigation bar with icons for Databases, Shares, Warehouses, Worksheets (selected), and History. Below this, a 'New Worksheet' tab is active. On the left, a sidebar shows a tree view of database objects under 'ADVENTUREWORKS2017', including 'PUBLIC' schema and its tables: 'CUSTOMER', 'SALESORDERDETAIL', and 'SALESORDERHEADER'. The main area displays a SQL query with line numbers 1 through 27. The query consists of three 'CREATE TABLE' statements. The first creates the 'CUSTOMER' table with columns: CUSTOMERID (INTEGER NOT NULL), PERSONID (INTEGER), STOREID (INTEGER), TERRITORYID (INTEGER), ACCOUNTNUMBER (VARCHAR(10) NOT NULL), ROWGUID (VARCHAR(50) NOT NULL), and MODIFIEDDATE (TIMESTAMP NOT NULL). The second creates the 'SALESORDERDETAIL' table with columns: SALESORDERID (INTEGER NOT NULL), SALESORDERDETAILID (INTEGER NOT NULL), CARRIERTRACKINGNUMBER (VARCHAR), ORDERQTY (INTEGER NOT NULL), PRODUCTID (INTEGER NOT NULL), SPECIALOFFERID (INTEGER NOT NULL), UNITPRICE (DECIMAL(19,4) NOT NULL), UNITPRICEDISCOUNT (DECIMAL(19,4) NOT NULL), LINETOTAL (NUMERIC(38,6) NOT NULL), ROWGUID (VARCHAR(50) NOT NULL), and MODIFIEDDATE (TIMESTAMP NOT NULL). The third creates the 'SALESORDERHEADER' table with columns: SALESORDERID (INTEGER NOT NULL) and REVISIONNUMBER (INTEGER NOT NULL). Above the query, there's a 'Run (3)' button and a status bar indicating 'All Queries' and 'Saved 4 minutes ago'.



Copy / Paste this SQL Query to create the new tables:

```
CREATE TABLE ADVENTUREWORKS2017.PUBLIC.CUSTOMER (  
CUSTOMERID INTEGER NOT NULL,  
PERSONID INTEGER,  
STOREID INTEGER,  
TERRITORYID INTEGER,  
ACCOUNTNUMBER VARCHAR(10) NOT NULL,  
ROWGUID VARCHAR(50) NOT NULL,  
MODIFIEDDATE TIMESTAMP NOT NULL  
);
```

```
CREATE TABLE ADVENTUREWORKS2017.PUBLIC.SALESORDERDETAIL (  
SALESORDERID INTEGER NOT NULL,  
SALESORDERDETAILID INTEGER NOT NULL,  
CARRIERTRACKINGNUMBER VARCHAR,  
ORDERQTY INTEGER NOT NULL,  
PRODUCTID INTEGER NOT NULL,  
SPECIALOFFERID INTEGER NOT NULL,  
UNITPRICE DECIMAL(19,4) NOT NULL,  
UNITPRICEDISCOUNT DECIMAL(19,4) NOT NULL,  
LINETOTAL NUMERIC(38,6) NOT NULL,  
ROWGUID VARCHAR(50) NOT NULL,  
MODIFIEDDATE TIMESTAMP NOT NULL  
);
```

```
CREATE TABLE ADVENTUREWORKS2017.PUBLIC.SALESORDERHEADER (  
SALESORDERID INTEGER NOT NULL,  
REVISIONNUMBER INTEGER NOT NULL,  
ORDERDATE TIMESTAMP NOT NULL,  
DUEDATE TIMESTAMP NOT NULL,  
SHIPDATE TIMESTAMP,  
STATUS INTEGER NOT NULL,  
ONLINEORDERFLAG BOOLEAN NOT NULL,  
SALESORDERNUMBER VARCHAR NOT NULL,  
PURCHASEORDERNUMBER VARCHAR,  
ACCOUNTNUMBER VARCHAR,  
CUSTOMERID INTEGER NOT NULL,  
SALESPERSONID INTEGER,
```



```
TERRITORYID INTEGER,  
BILLTOADDRESSID INTEGER NOT NULL,  
SHIPTOADDRESSID INTEGER NOT NULL,  
SHIPMETHODID INTEGER NOT NULL,  
CREDITCARDID INTEGER,  
CREDITCARDAPPROVALCODE VARCHAR(15),  
CURRENCYRATEID INTEGER,  
SUBTOTAL DECIMAL(19,4) NOT NULL,  
TAXAMT DECIMAL(19,4) NOT NULL,  
FREIGHT DECIMAL(19,4) NOT NULL,  
TOTALDUE DECIMAL(19,4) NOT NULL,  
COMMENT VARCHAR,  
ROWGUID VARCHAR(50) NOT NULL,  
MODIFIEDDATE TIMESTAMP NOT NULL  
);
```

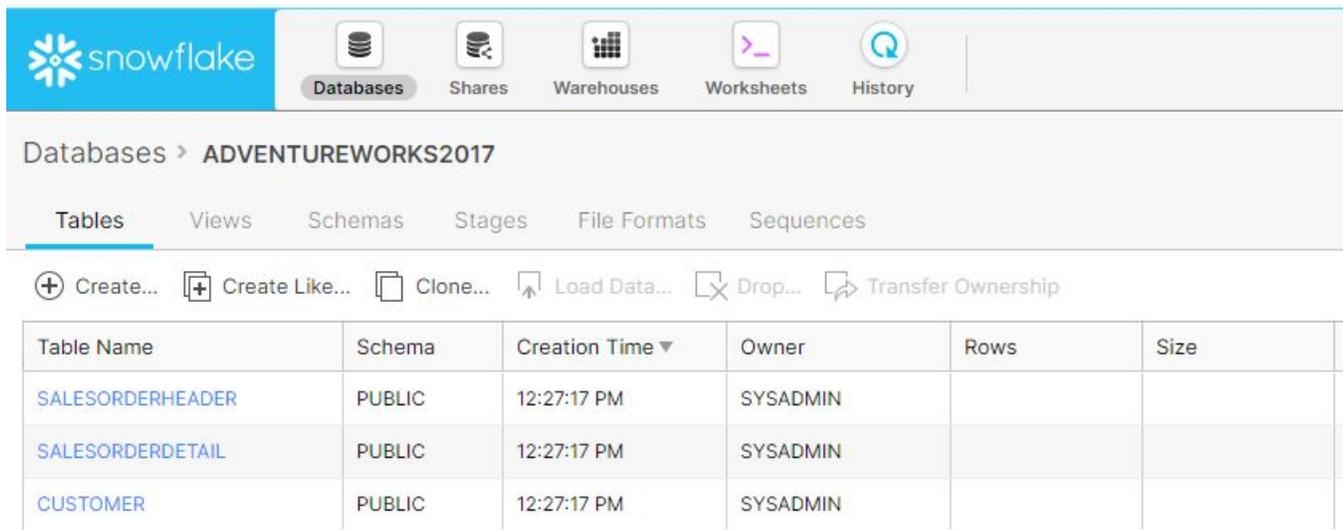
Click: Run

Import Data via CSV into Snowflake

Logon to Snowflake

Click: Databases

Click: ADVENTUREWORKS2017



The screenshot shows the Snowflake web interface. At the top, there is a navigation bar with the Snowflake logo and icons for Databases, Shares, Warehouses, Worksheets, and History. Below this, the breadcrumb path is 'Databases > ADVENTUREWORKS2017'. A secondary navigation bar includes 'Tables', 'Views', 'Schemas', 'Stages', 'File Formats', and 'Sequences'. Below the navigation, there are action buttons: '+ Create...', '+ Create Like...', 'Clone...', 'Load Data...', 'Drop...', and 'Transfer Ownership'. The main content is a table with the following data:

Table Name	Schema	Creation Time ▼	Owner	Rows	Size
SALESORDERHEADER	PUBLIC	12:27:17 PM	SYSADMIN		
SALESORDERDETAIL	PUBLIC	12:27:17 PM	SYSADMIN		
CUSTOMER	PUBLIC	12:27:17 PM	SYSADMIN		

Select: CUSTOMER

Click: Load Data...

Load Data - Warehouse

Load Data

Warehouse Source Files File Format Load Options

Which warehouse do you want to use to load the files?

COMPUTE_WH

Cancel Next

Click: Next

Load Data - Source Files

Click: Select Files...

Browse: customer.txt

Load Data

Warehouse **Source Files** File Format Load Options

From where do you want to load files?

Load files from your computer

Customer.txt (text/plain) - 3.6MB, last modified: 3/30/2020, 11:36:13 AM

Load files from external stage

Stage

Path

Click: Next

Load Data - File Format

Click: +

Load Data

Warehouse Source Files **File Format** Load Options

▼ +

[Show SQL](#)

Name: [ENTER A NAME]

Header lines to skip: Change 0 to 1

Create File Format

Name*

Schema Name ▼

Format Type ▼

Compression Method ▼ ?

Column separator ▼ ?

Row separator ▼ ?

Header lines to skip ▲ ▼ ?

Field optionally enclosed by ▼ ?

Null String ▼ ?

Trim space before and after ?

[Show SQL](#)

Click: Finish



Load Data

Warehouse Source Files **File Format** Load Options

CSV_NO_HEADER ▾ +

[Show SQL](#) Cancel Back Next **Load**

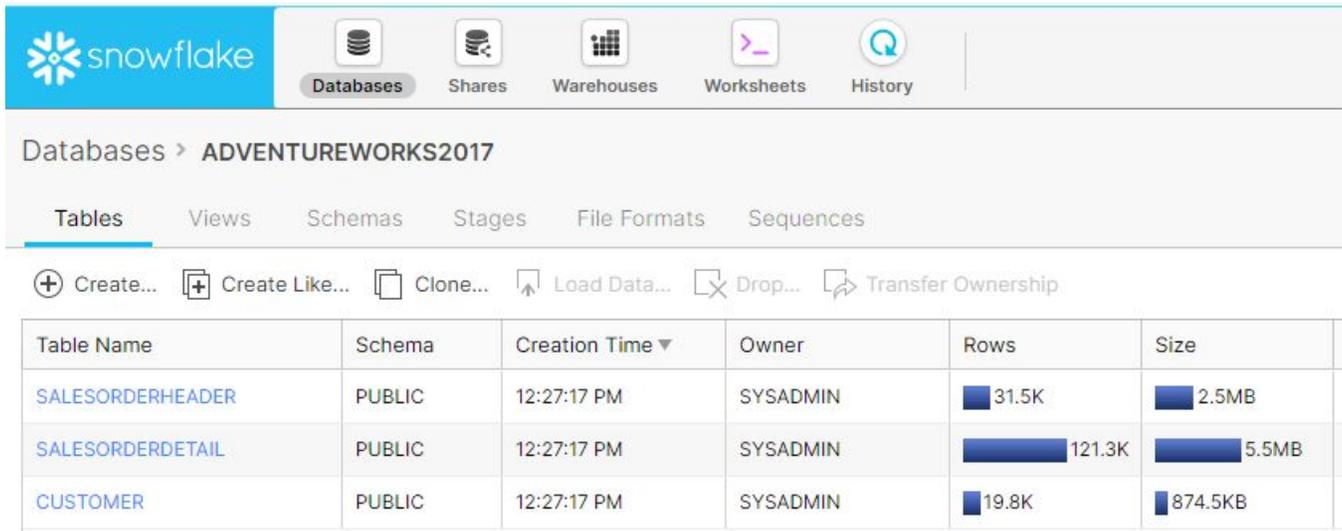
Click: Load

Load Results

Loaded	File	Rows Parsed	Rows Loaded
✓	Customer.txt	19820	19820

OK

Repeat for SALESORDERDETAIL and SALESORDERHEADER



Databases > ADVENTUREWORKS2017

Tables Views Schemas Stages File Formats Sequences

+ Create... + Create Like... Clone... Load Data... Drop... Transfer Ownership

Table Name	Schema	Creation Time ▼	Owner	Rows	Size
SALESORDERHEADER	PUBLIC	12:27:17 PM	SYSADMIN	31.5K	2.5MB
SALESORDERDETAIL	PUBLIC	12:27:17 PM	SYSADMIN	121.3K	5.5MB
CUSTOMER	PUBLIC	12:27:17 PM	SYSADMIN	19.8K	874.5KB

What's Next?

Now that we have our data into Snowflake, we need to work with SAP BusinessObjects to make its content e.g.: Universes and Connections, Web Intelligence and Crystal Reports point to the new data source.

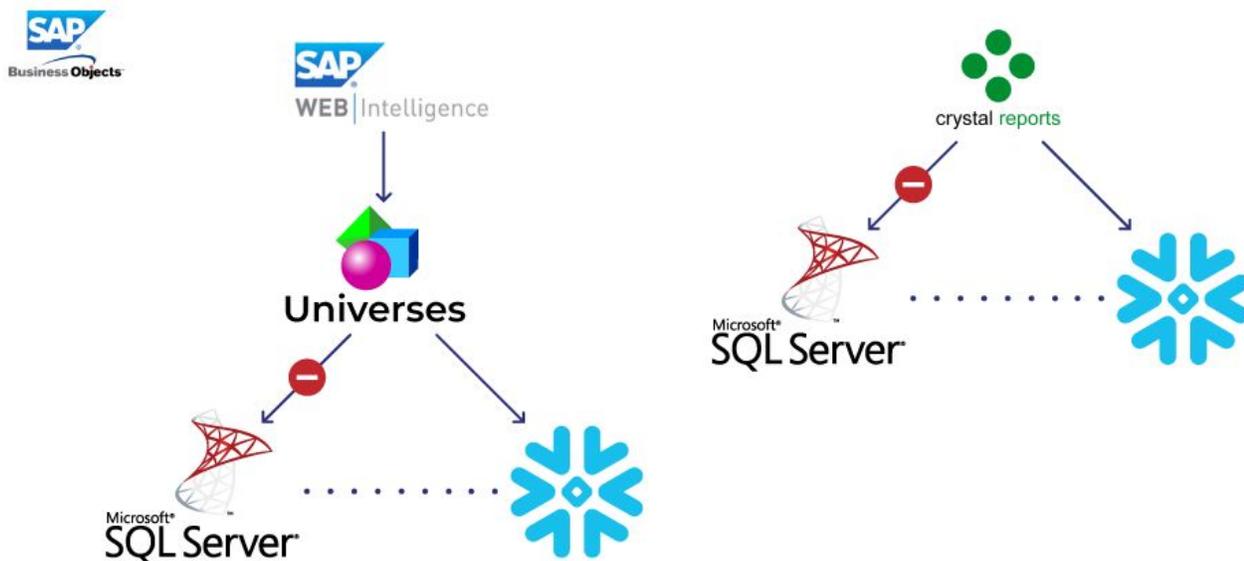
As mentioned in the introduction, some of you will only be required to repoint the Universe Connection to Snowflake. This may be true if there are no changes to the owners, qualifiers, schema or presence of vendor specific SQL in the Universes.

Others for reasons mentioned above will need first to make a copy of the existing Universe to not affect Production before repointing it to Snowflake. Next is to repair the Universes where required. Finally and based on your scenario, you may have to repoint all content to this new Universe.

The next sections will demonstrate this use case. Not all steps may be applicable to your project.

These steps can be done manually and/or via automated solutions by [360Suite](#) to reduce time, cost, and risks.

Finally, it is important to perform enough functional, data, and performance testing to ensure the project is successful.



Updating SAP BusinessObjects

Copying Universes

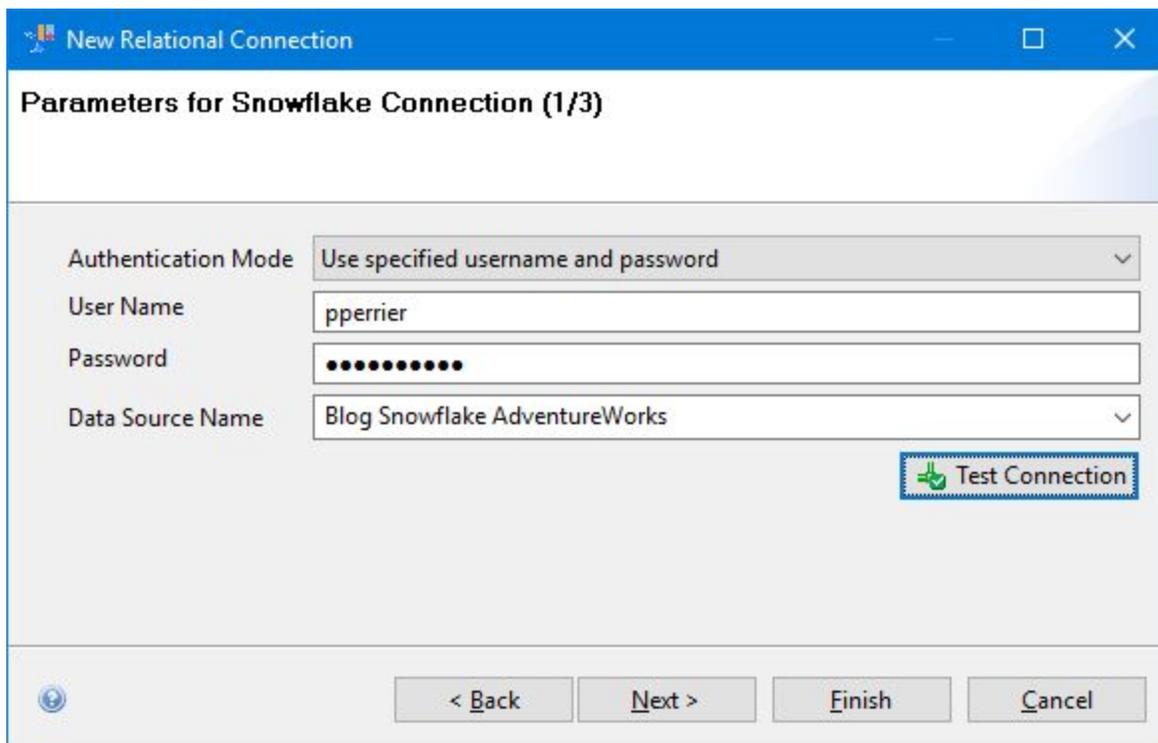
The first step is to create a copy of the existing *AdventureWorks2017* currently pointing to Microsoft SQL Server and make it use the new Snowflake database.

By the end of this section, before you repoint your documents (e.g.: Web Intelligence, Crystal Reports) you want to make sure the Universe is working correctly by performing a *Check Integrity*.

It may highlight vendor specific SQL syntax that won't work with Snowflake. Issues with data type, etc. In case there are a lot of objects to repair, we suggest doing this in bulk to save time and avoid mistakes using 360Univ.

Create a Universe Connection to Snowflake

This step can be done using the 32-bit ODBC or JDBC connection you did earlier in this document.



The screenshot shows a 'New Relational Connection' dialog box with the following parameters for a Snowflake connection:

- Authentication Mode: Use specified username and password
- User Name: pperrier
- Password: [Masked with dots]
- Data Source Name: Blog Snowflake AdventureWorks

A 'Test Connection' button is highlighted with a red dashed box. At the bottom, there are navigation buttons: '< Back', 'Next >', 'Finish', and 'Cancel'.

Test Result

Test Successful

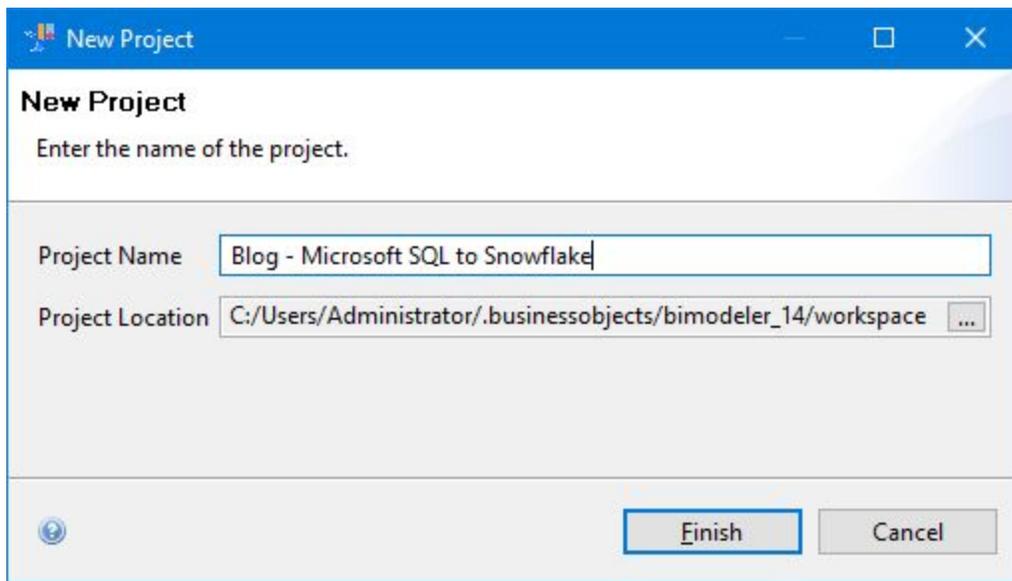
Name	Value
BusinessObjects Configuration	
Version	3.4.0.0
Build	14.2.8.3426
Network Layer	ODBC
DBMS Engine	Snowflake
Language	en
Charset	
Library	D:\Program Files (x86)\SAP BusinessObjects\SAP BusinessObjects Enterprise XI 4.0\dataAccess\connectionServer\drivers\lib64\dbd_wodbc3.dll
SBO	D:\Program Files (x86)\SAP BusinessObjects\SAP BusinessObjects Enterprise XI 4.0\dataAccess\connectionServer\odbc\snowflake.sbo
RSS	D:\Program Files (x86)\SAP BusinessObjects\SAP BusinessObjects Enterprise XI 4.0\dataAccess\connectionServer\odbc\snowflake.rss
PRM	D:\Program Files (x86)\SAP BusinessObjects\SAP BusinessObjects Enterprise XI 4.0\dataAccess\connectionServer\odbc\snowflake.prm
Strategies	Not Defined
Middleware and DBMS Configuration	
Driver architecture	64
Charset	UCS2
Driver version	2.20.2
Driver API level	03.80
ODBC Manager version	03.81.17763.0000
ODBC Manager API level	03.80.0000
DBMS name	Snowflake
DBMS version	4.10.2

▲ Hide Details Close

Note: See this blog for more details:

<https://blogs.sap.com/2020/03/12/snowflake-for-sap-businessobjects-4.2-sp08/>

Create a New Local Project



New Project
Enter the name of the project.

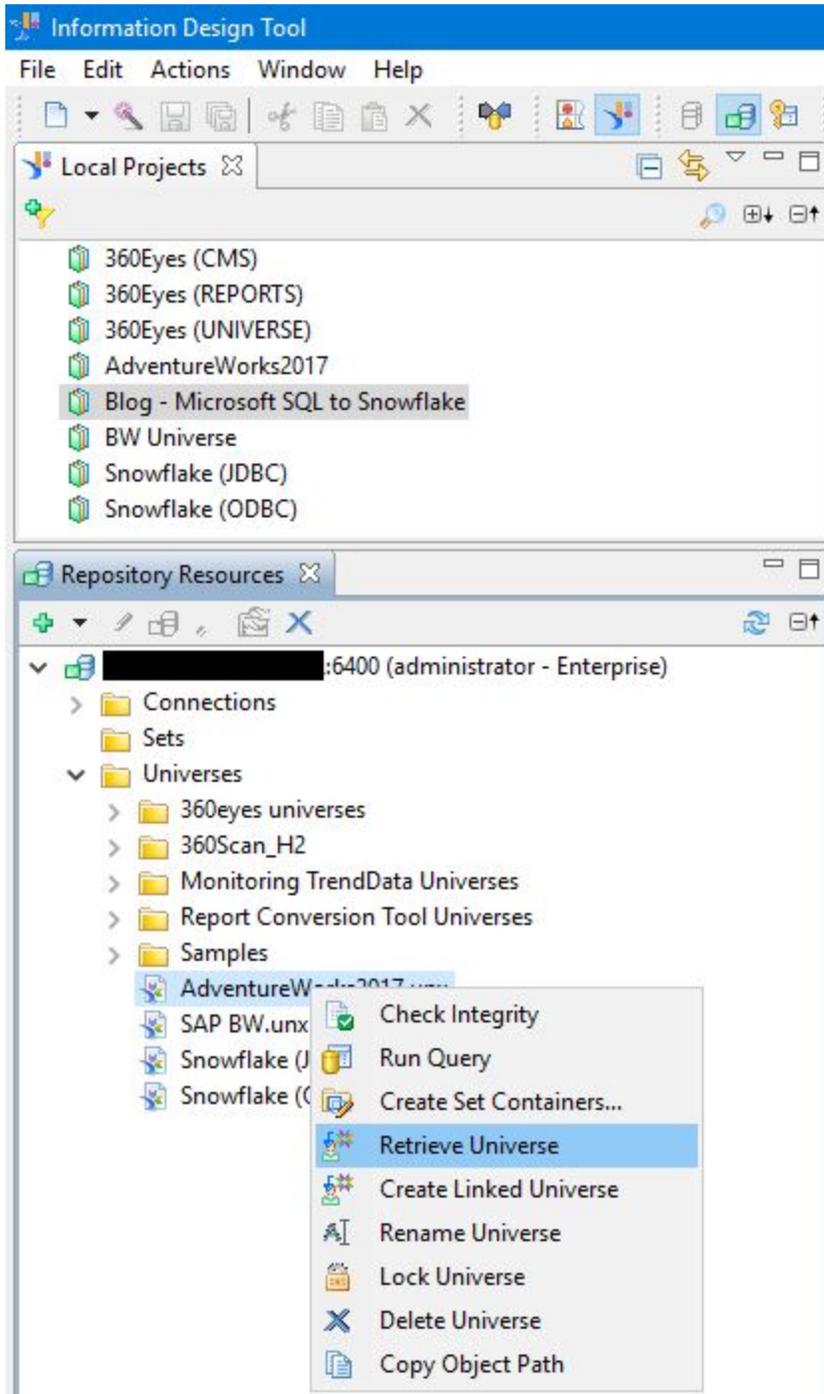
Project Name

Project Location

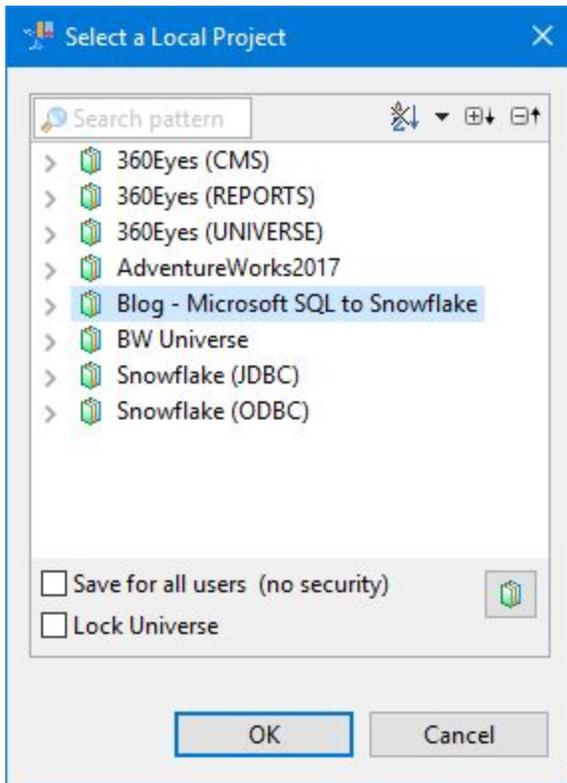
Project Name: Blog - Microsoft SQL to Snowflake

Click: Finish

Retrieve the Universe

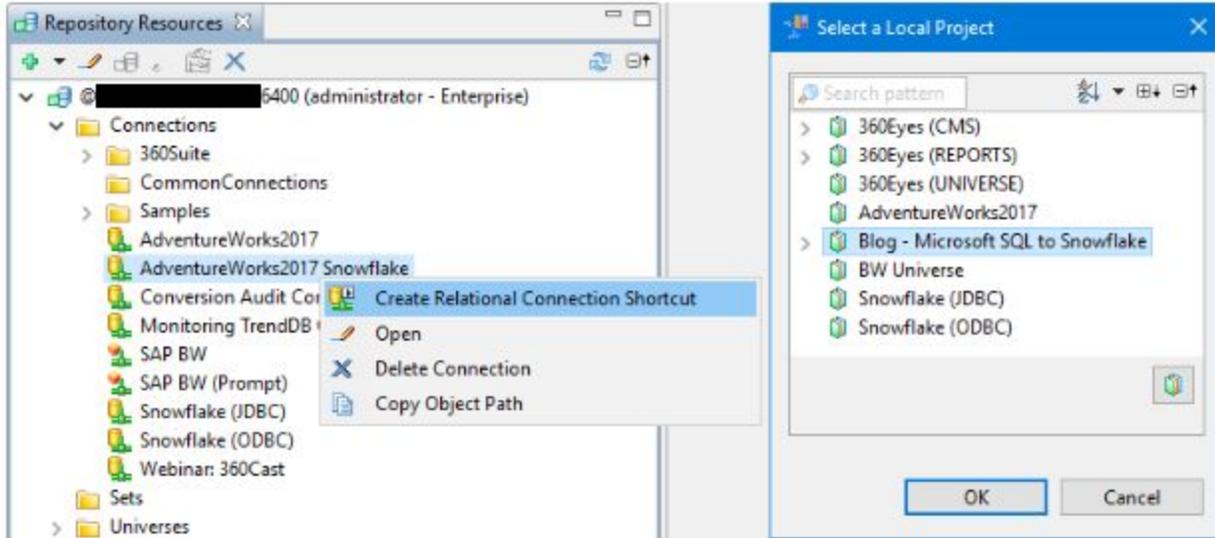


Select a Local Project



Click: OK

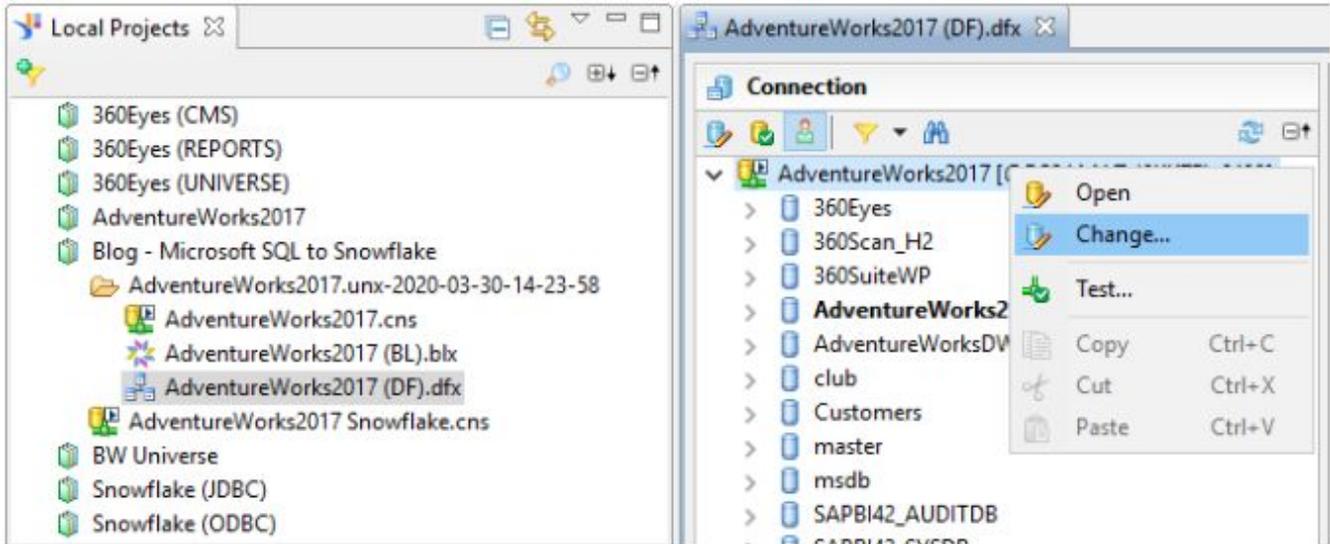
Create a Relational Connection Shortcut



1. Right-Click AdventureWorks2017 Snowflake
2. Click: Create Relational Connection Shortcut
3. Select a Local Project: Blog - Microsoft SQL to Snowflake
4. Click: OK

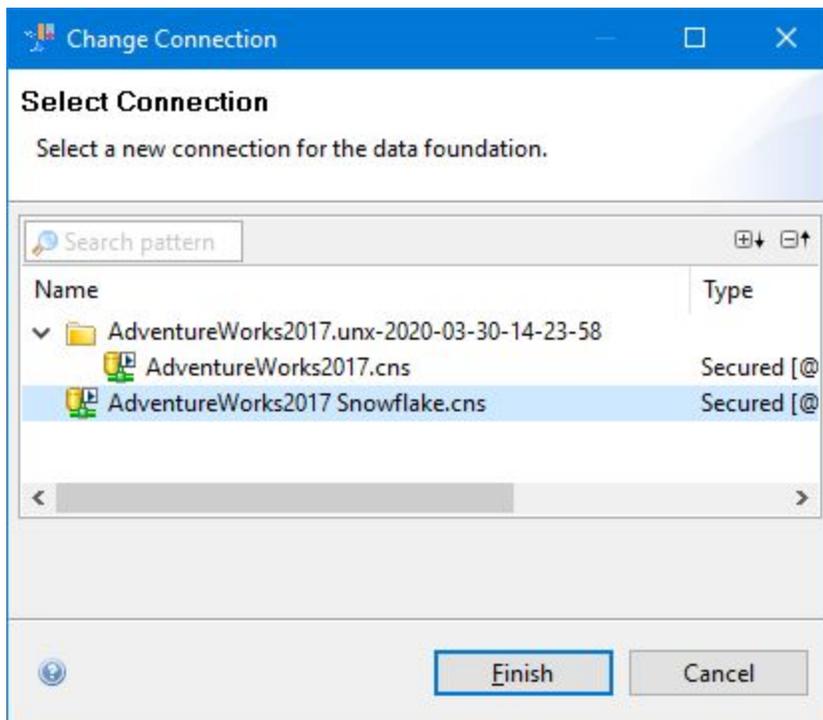
Repoint the Data Foundation to the Snowflake Connection

1. Open AdventureWorks2017 (DF).dfx



Under Connection > Right-Click AdventureWorks2017
Click: Change...

2. Select: AdventureWorks2017 Snowflake.cns

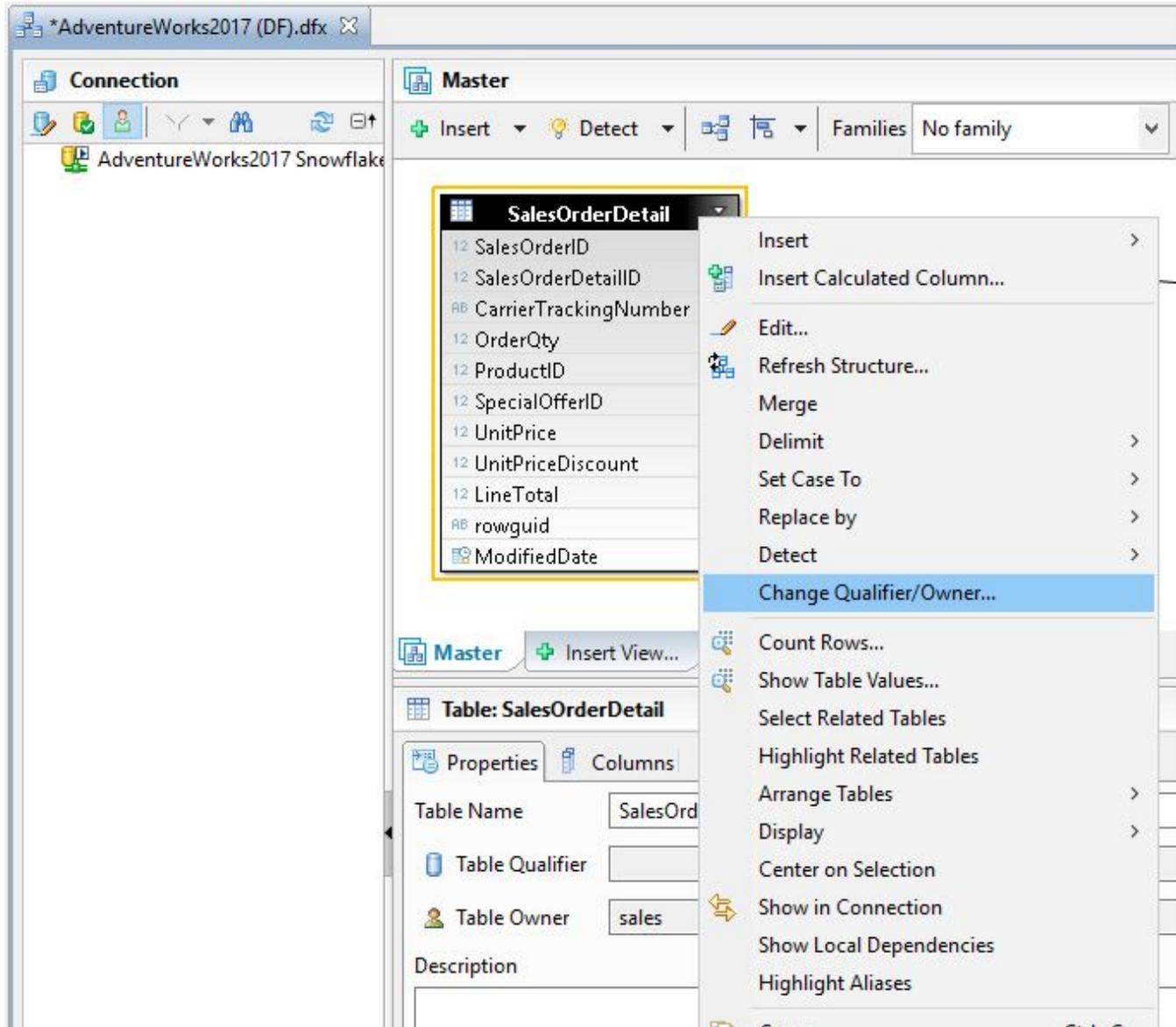


3. Click: Finish

4. Save the Data Foundation

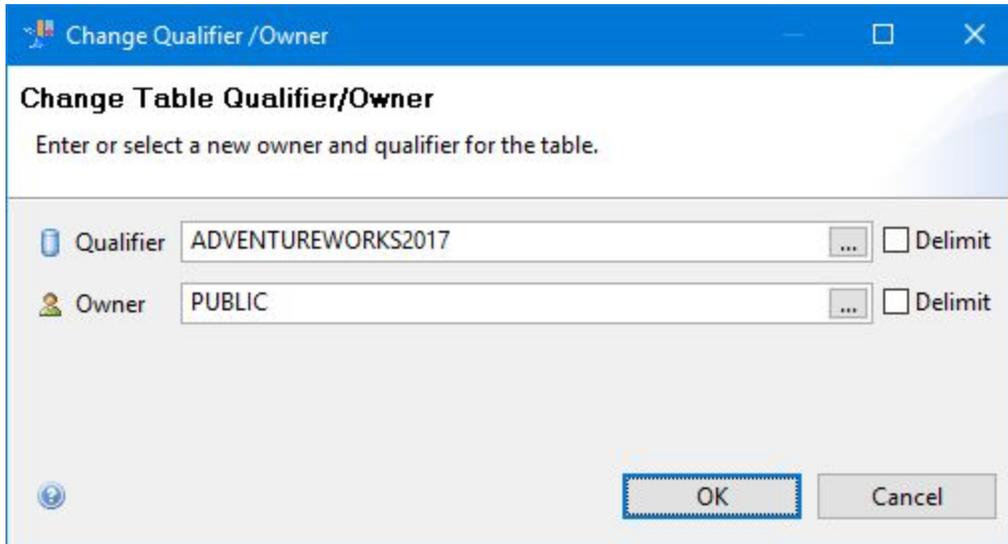
Change the Qualifier/Owner of the Tables in the Data Foundation

1. Open AdventureWorks2017 (DF).dfx



Under Master > Right-Click: SalesOrderDetail table
Select Change Qualifier/Owner...

2. Change Table Qualifier/Owner



Enter Qualifier: ADVENTUREWORKS2017

Enter Owner: PUBLIC

Click: OK

3. Repeat for tables: SalesOrderHeader and Customer

Note: You can multiple select tables and change qualifiers in bulk.

4. Save the Data Foundation

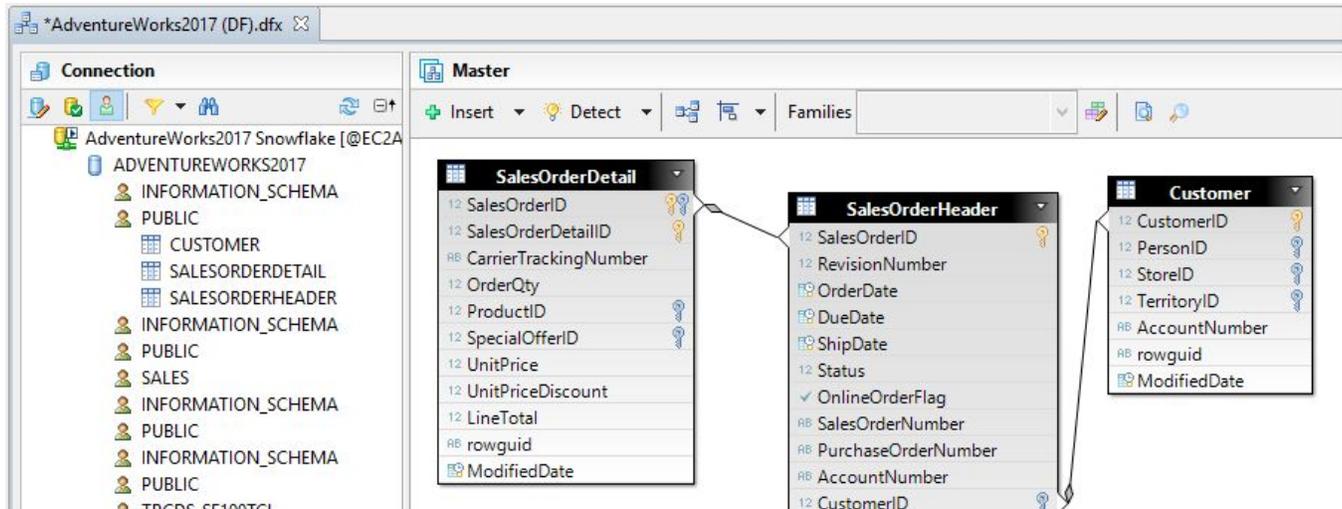
Note: At this stage you are able to preview data from the tables in the Data Foundation using “Show Table Values”.

12	SalesOrderID	12	SalesOrderDetailID	AB	CarrierTrackingNumber
	43659.0		1.0		4911-403C-98
	43659.0		2.0		4911-403C-98

Set the Tables and Columns Case

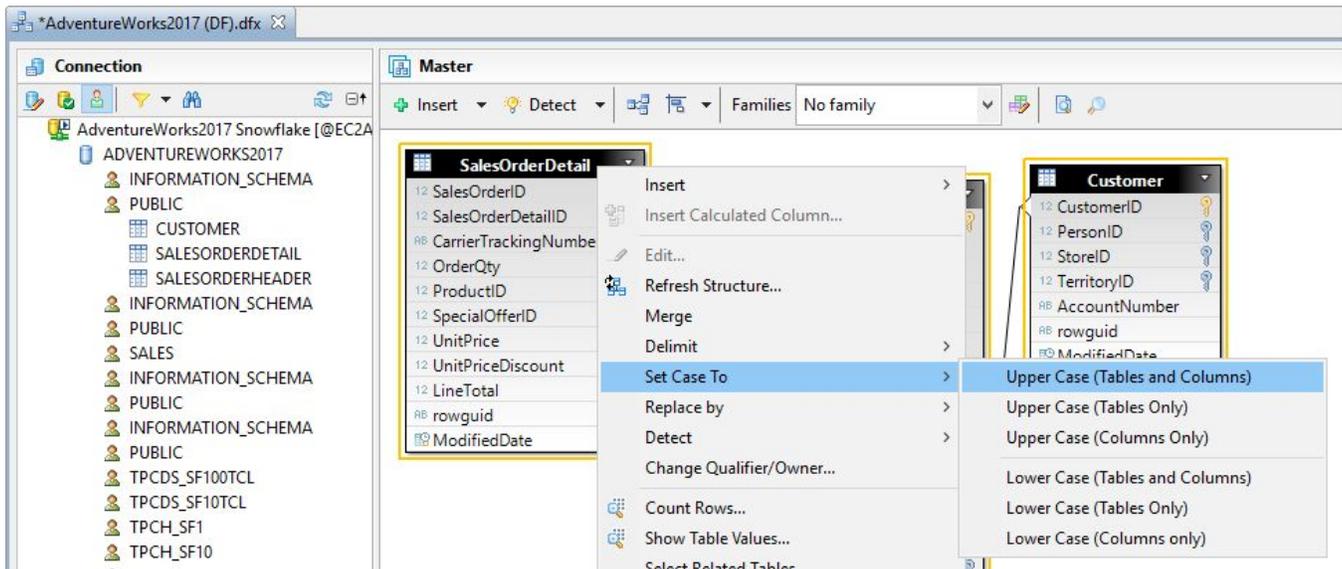
Although you can now preview data, the Information Design Tool doesn't correctly identify the tables in uppercase under Connection (left) with the tables in mixed case under Master (right).

As mentioned in the introduction, this is because the identifiers in Snowflake are case-insensitive but displayed in uppercase.



The following step could be seen as optional as at this stage, the Universe is functional. But if you check the integrity of the Universe it will fail because of this.

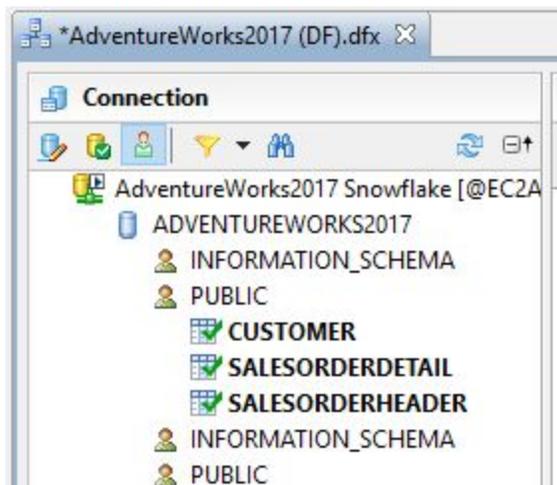
5. Open AdventureWorks2017 (DF).dfx



Under Master > Right-Click: SalesOrderDetail table
Click: Set Cast To > Upper Case (Tables and Columns)

6. Repeat for tables: SalesOrderHeader and Customer

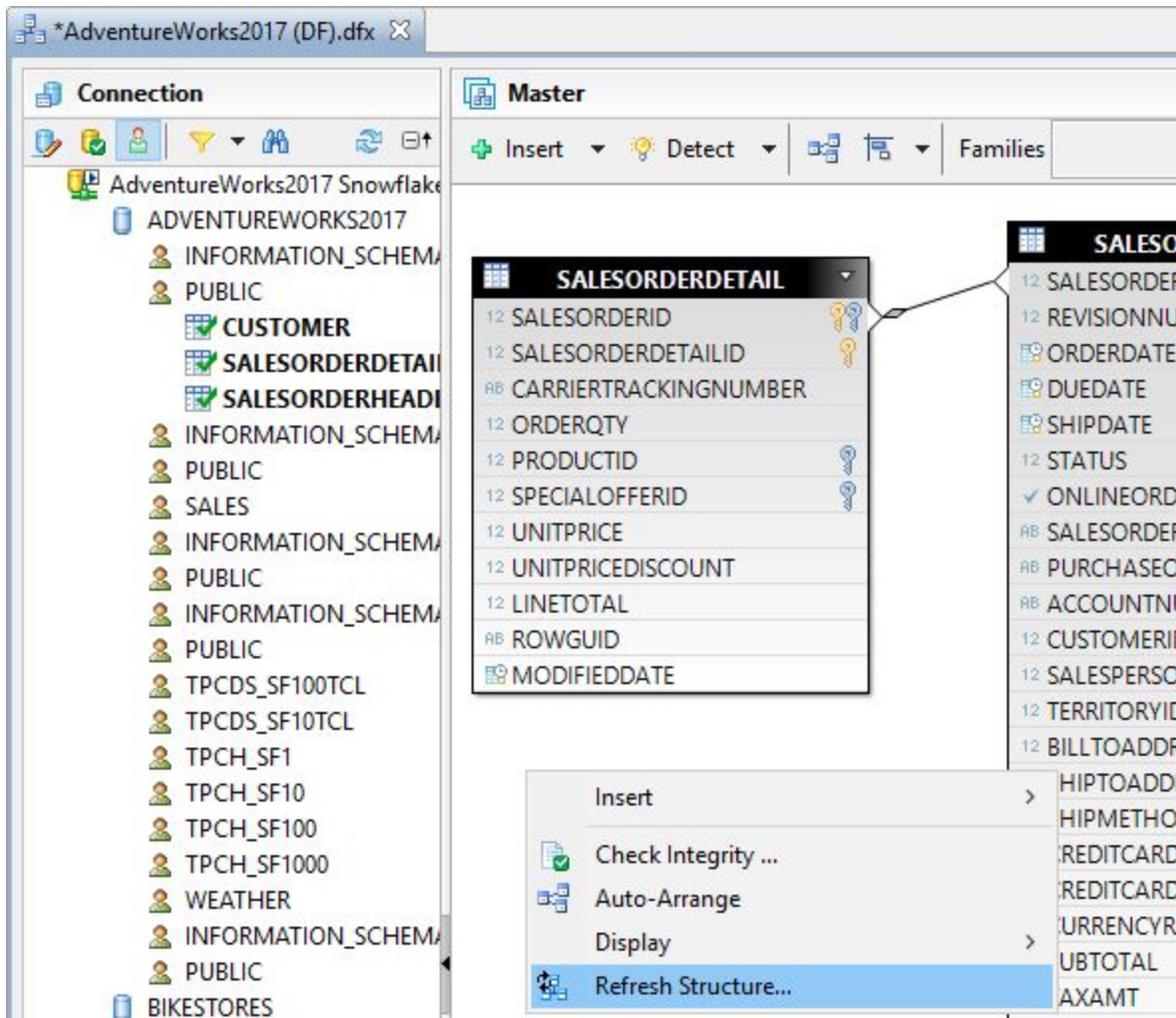
Note: You can multiple select tables and change qualifiers in bulk.



7. Save the Data Foundation

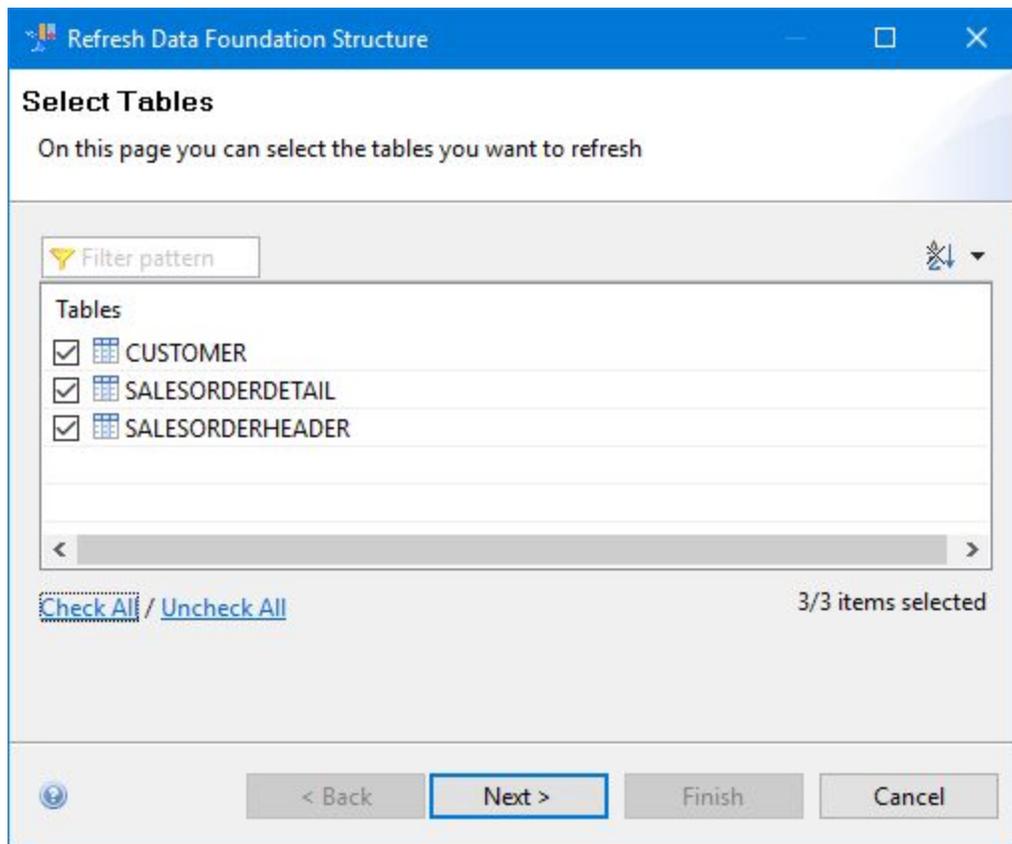
Refresh Universe Foundation Structure

1. Open AdventureWorks2017 (DF).dfx



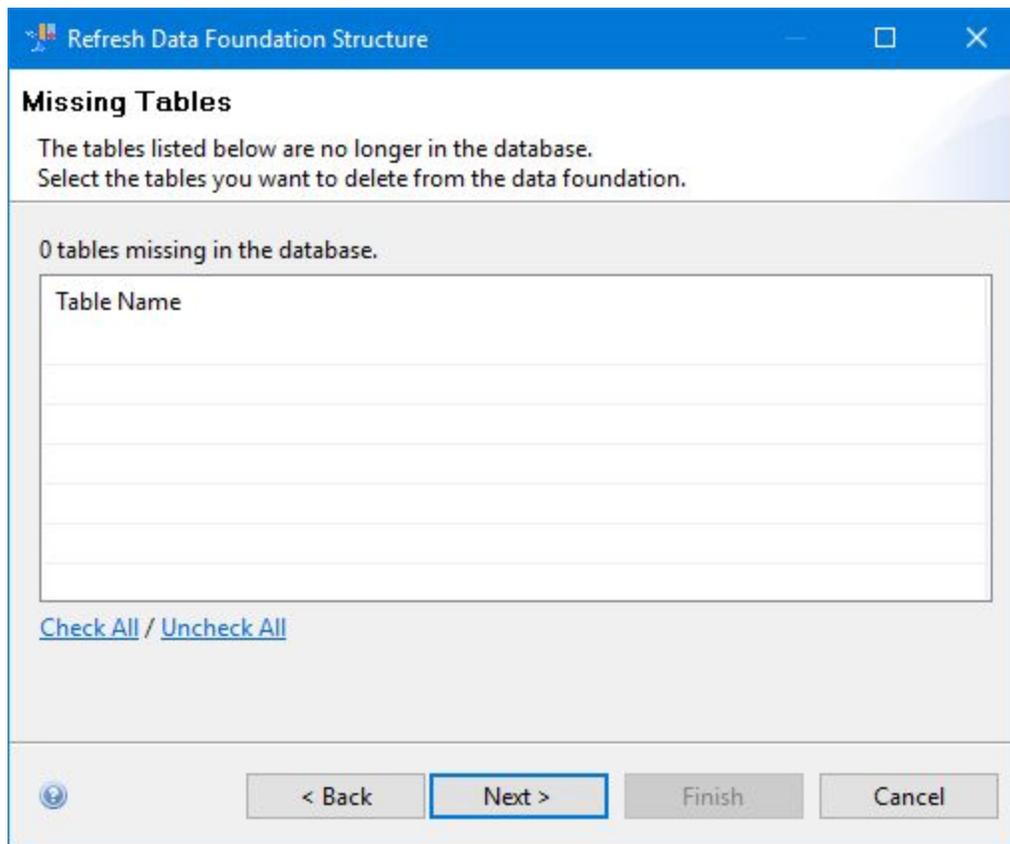
Under Master > Right-Click in the white area
Click: Refresh Structure...

2. Select Tables



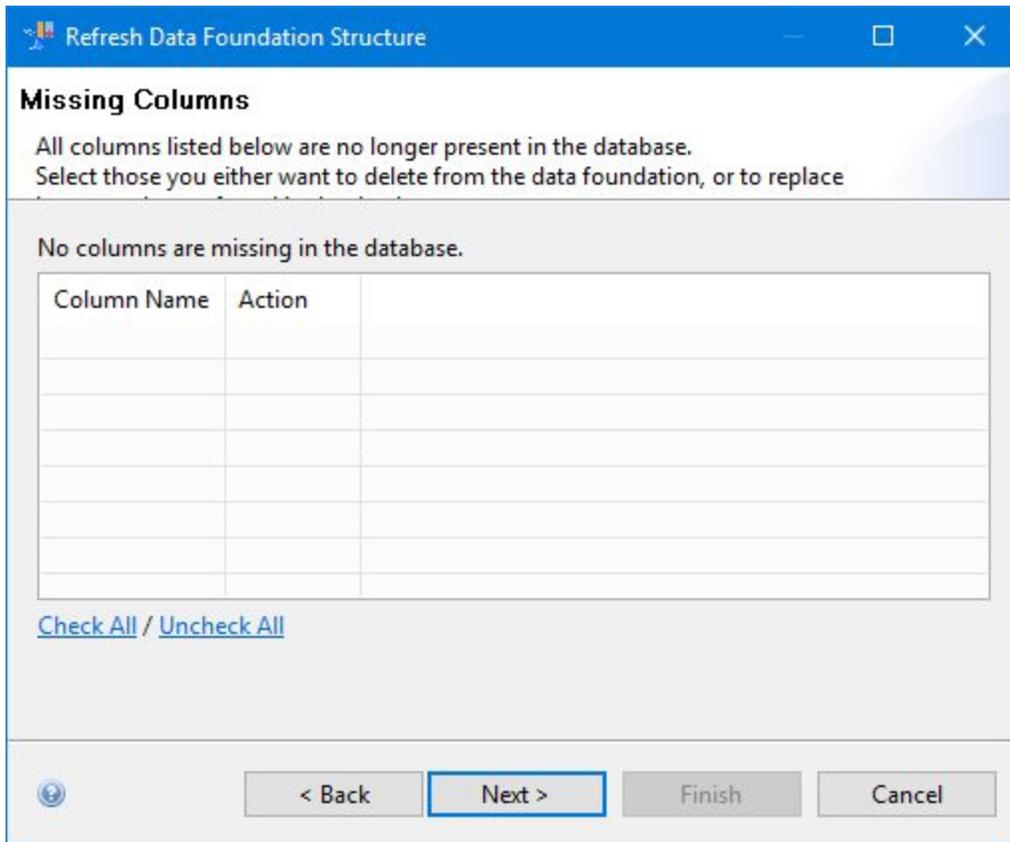
Click: Next

3. Missing Tables



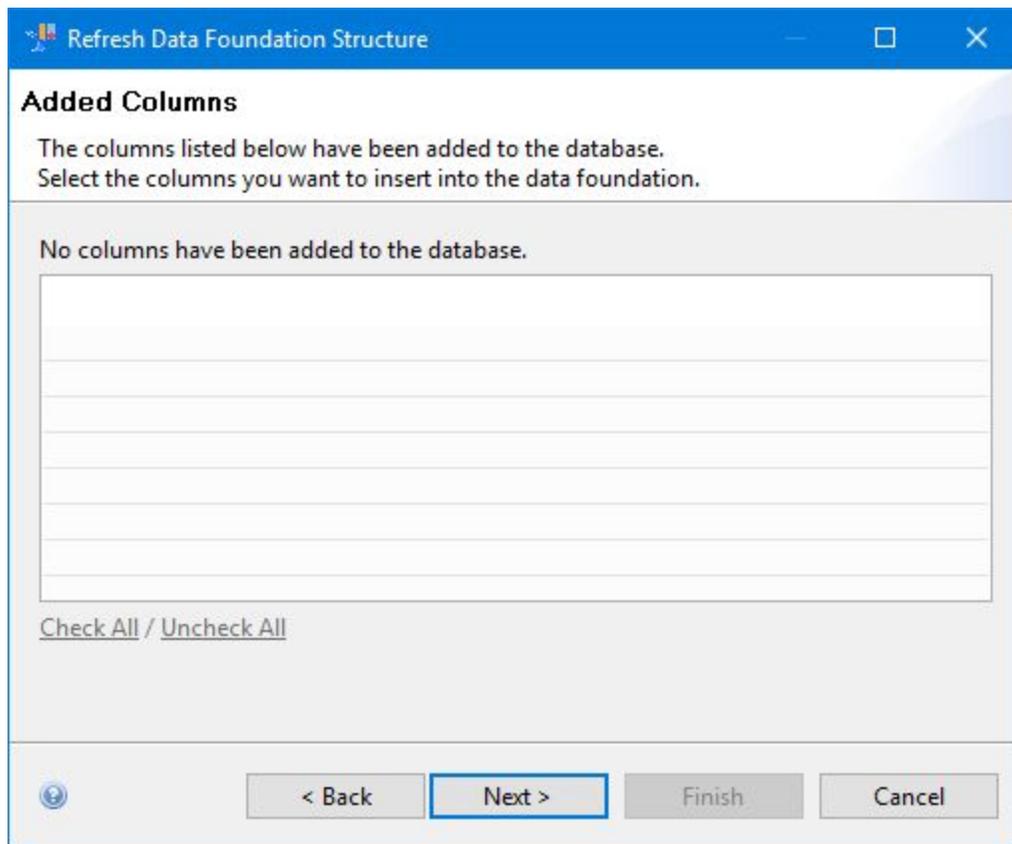
Click: Next

4. Missing Columns



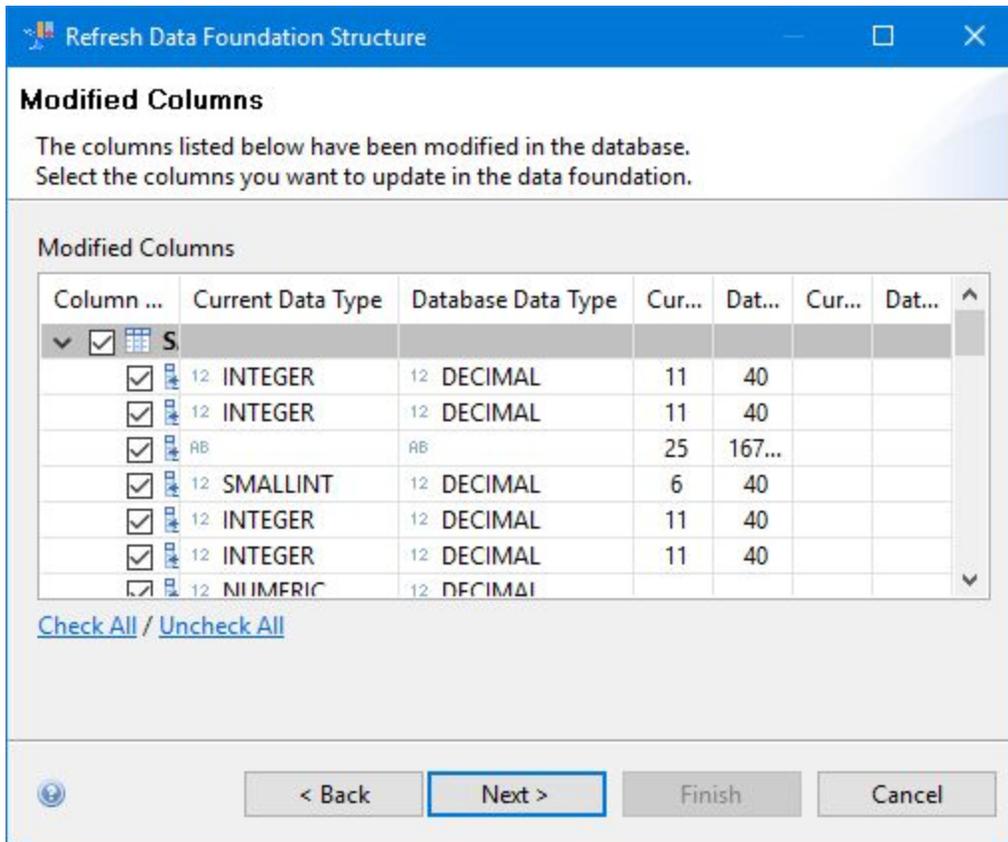
Click: Next

5. Added Columns



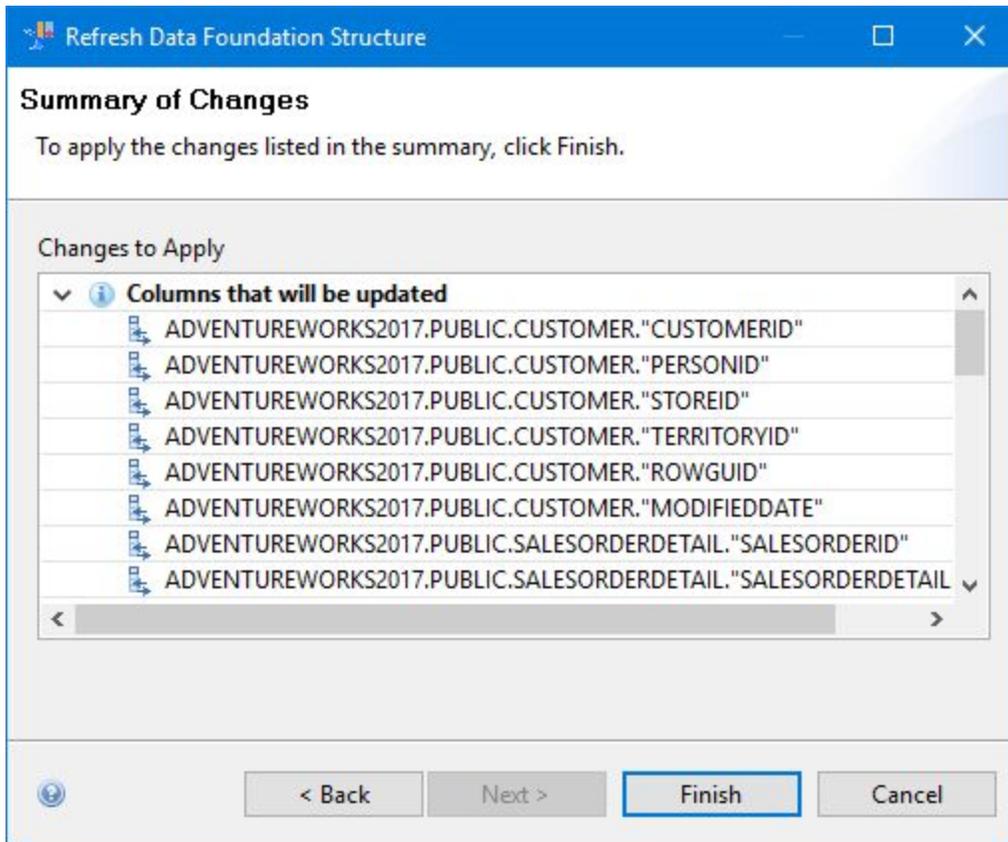
Click: Next

6. Modified Columns



Click: Next

7. Summary of Changes

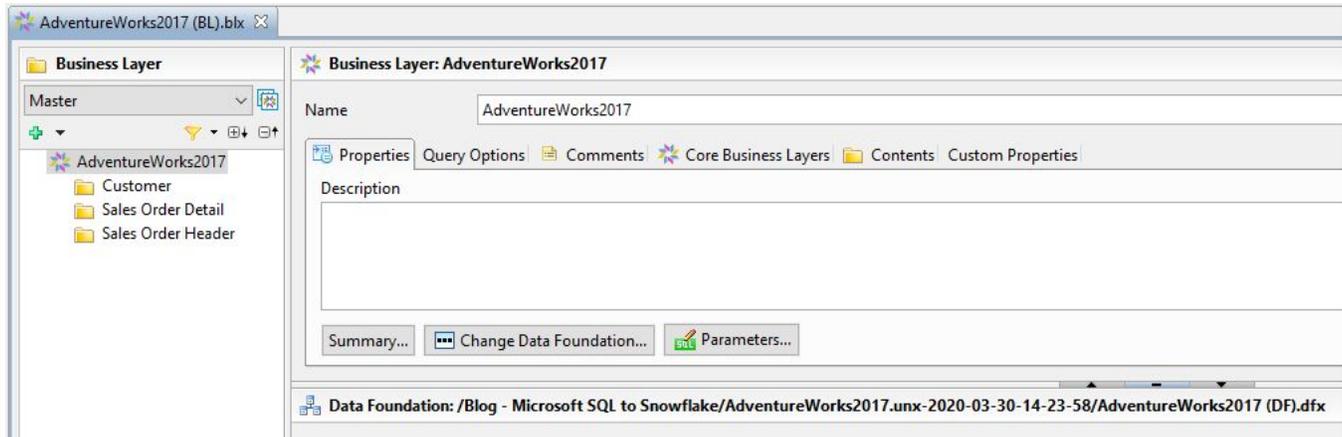


Click: Finish

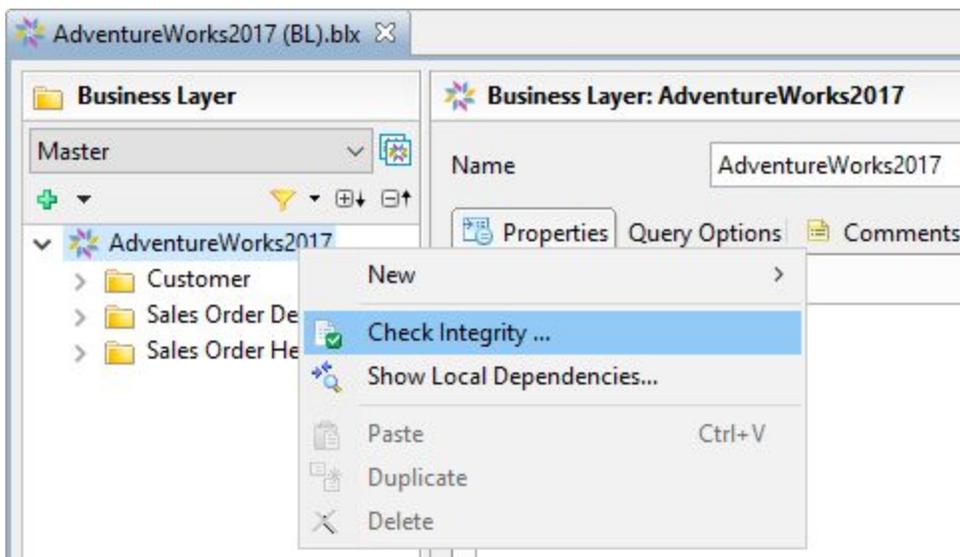
8. Save the Data Foundation

Validate the Business Layer with the Snowflake Data Foundation

1. Open AdventureWorks2017 (BL).blx

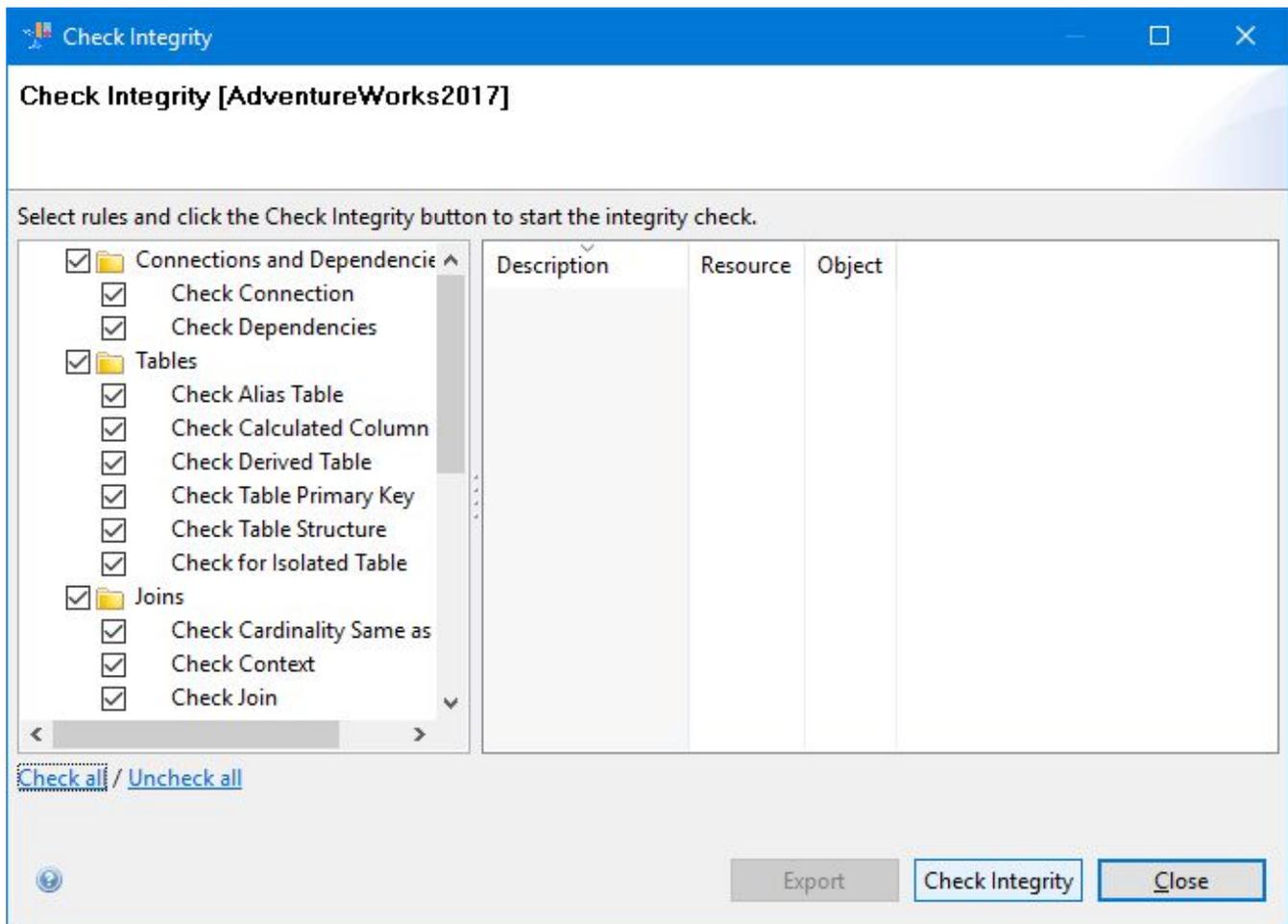


2. Check Integrity...



Under Business Layer > Right-Click Adventureworks2017
Click: Check Integrity...

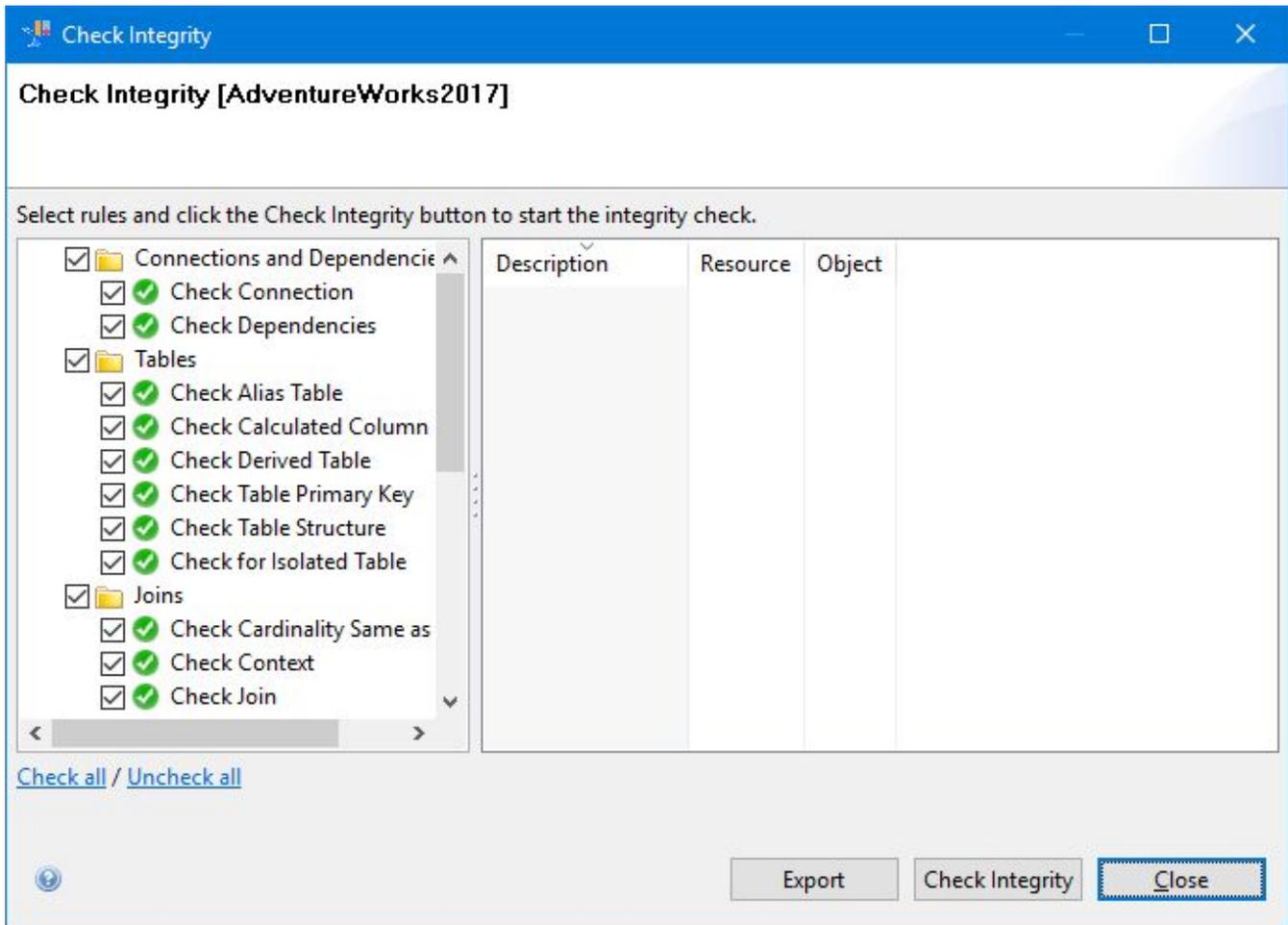
3. Check Integrity



Click: Check all

Click: Check Integrity

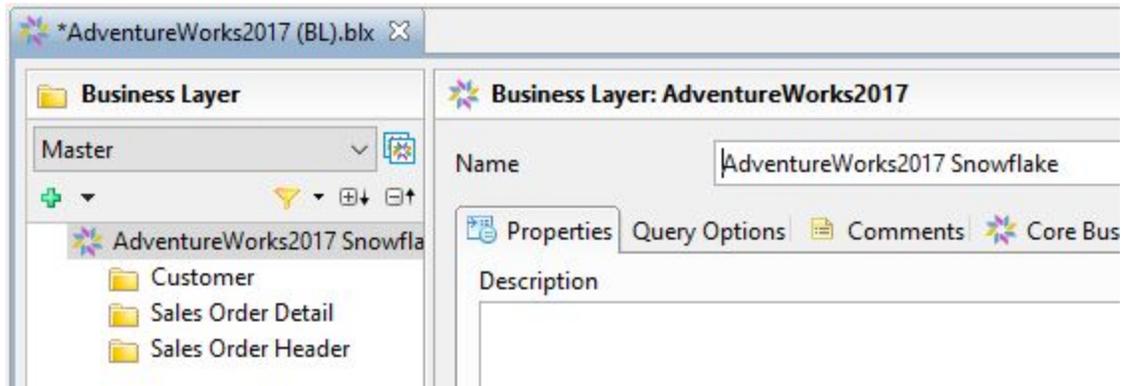
4. Confirm Results



Click: Close

Rename the Universe

1. Open AdventureWorks2017 (BL).blx

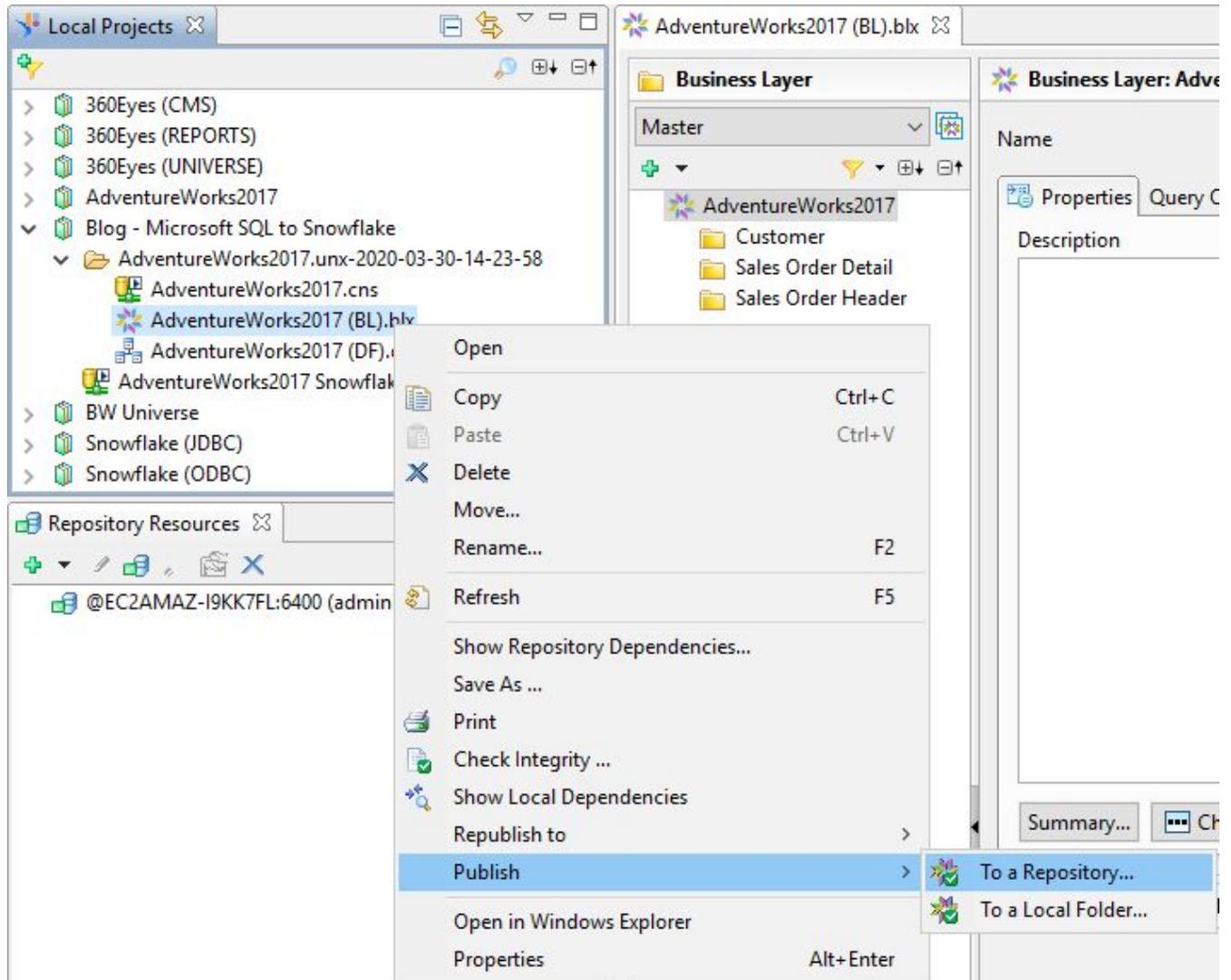


Name: [ENTER NEW NAME] E.g. AdventureWorks2017 Snowflake

2. Save the Business Layer

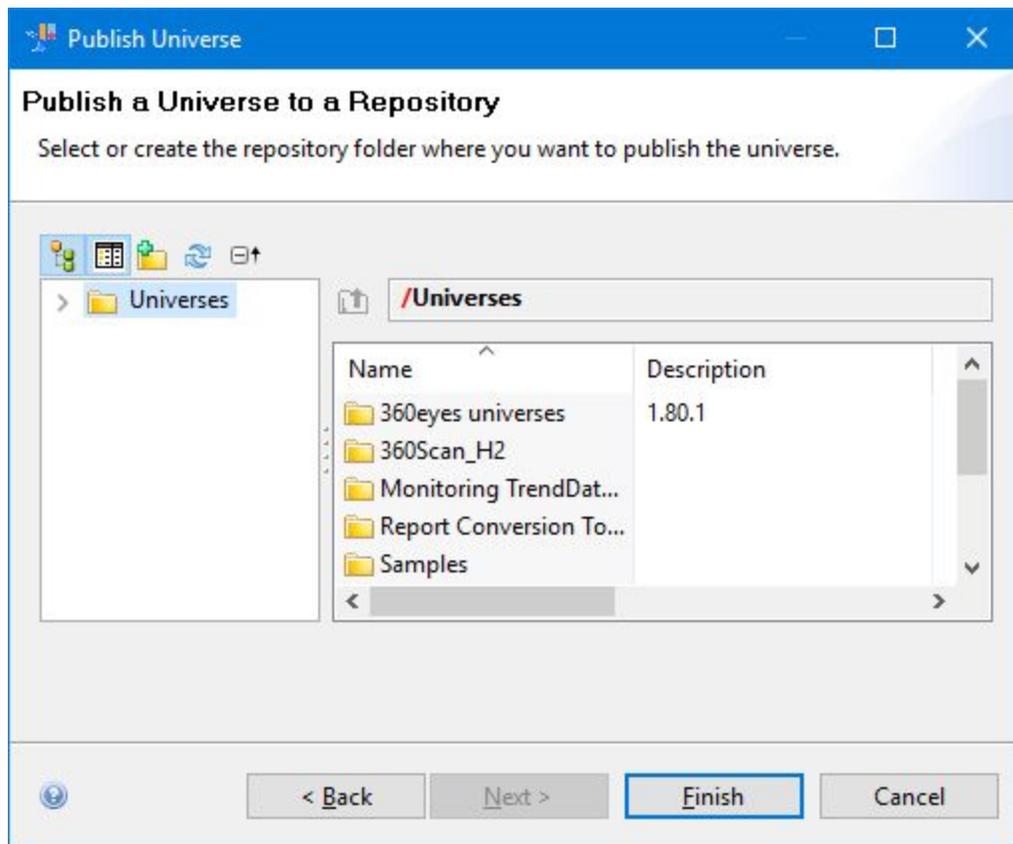
Publish the Business Layer with the Snowflake Data Foundation

1. Open AdventureWorks2017 (BL).blx

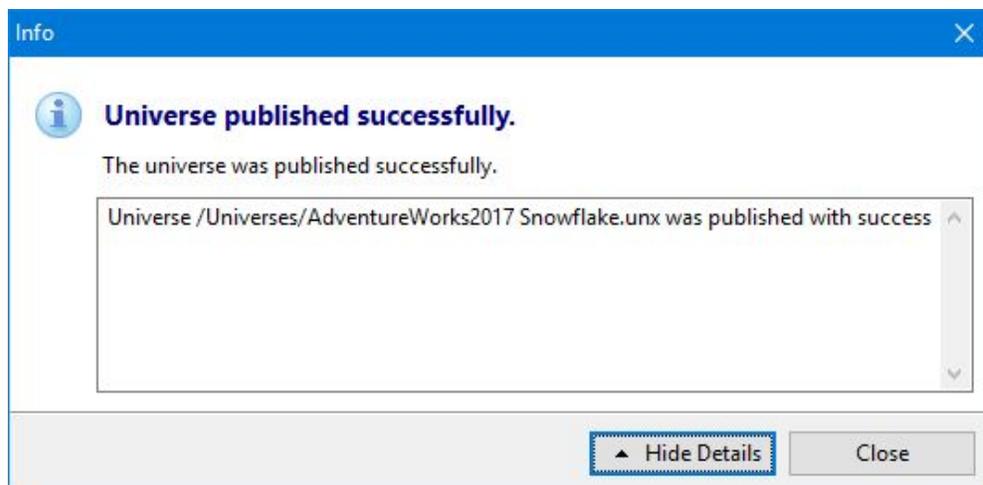


Under Local Projects > Right-Click Adventureworks2017 (BL).blx
 Click: Publish > To a Repository
 Click: Next

Select where you want to save the Universe



Click: Finish



Click: Close

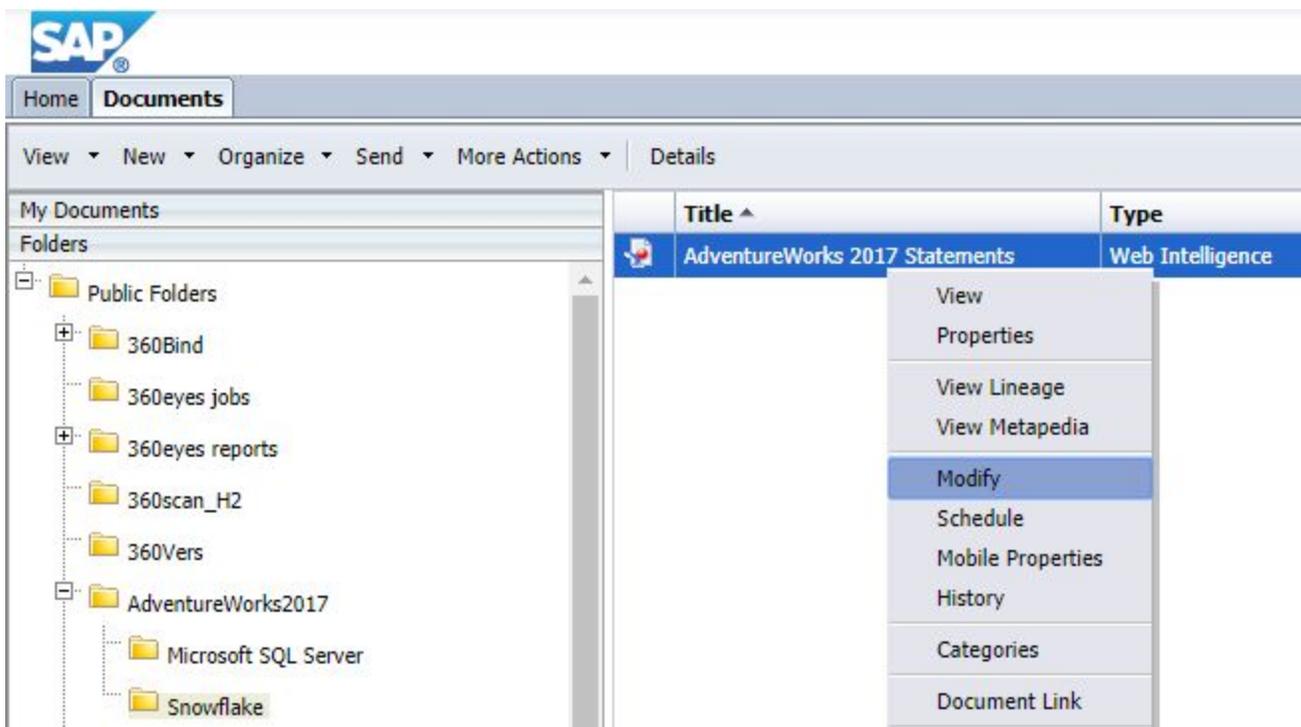
Updating Web Intelligence

These steps are to update your Web Intelligence documents to point to the new Snowflake Universe.

You can do this either within your current report or as we will do here, make a copy (backup) first and then modify the new one.

Note: These steps are to be repeated for every document.

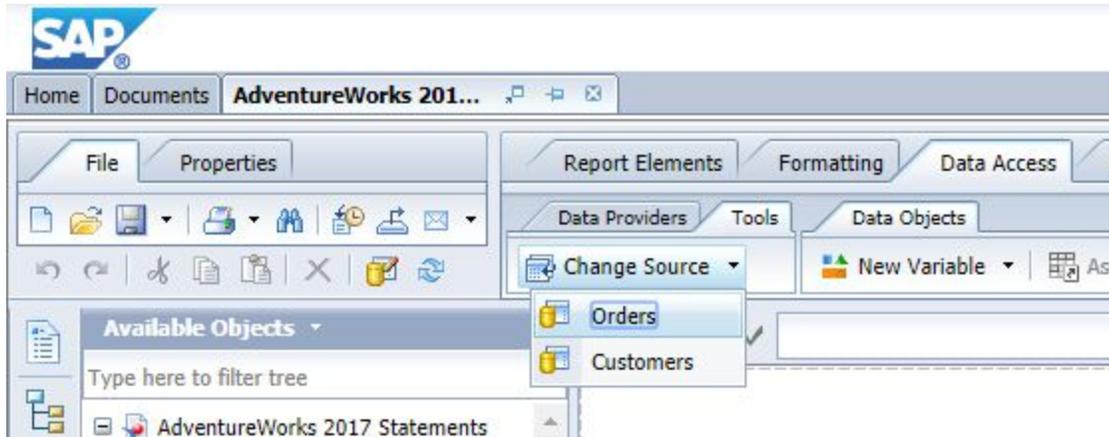
Modify your Web Intelligence



Right-Click the Web Intelligence
Click: Modify

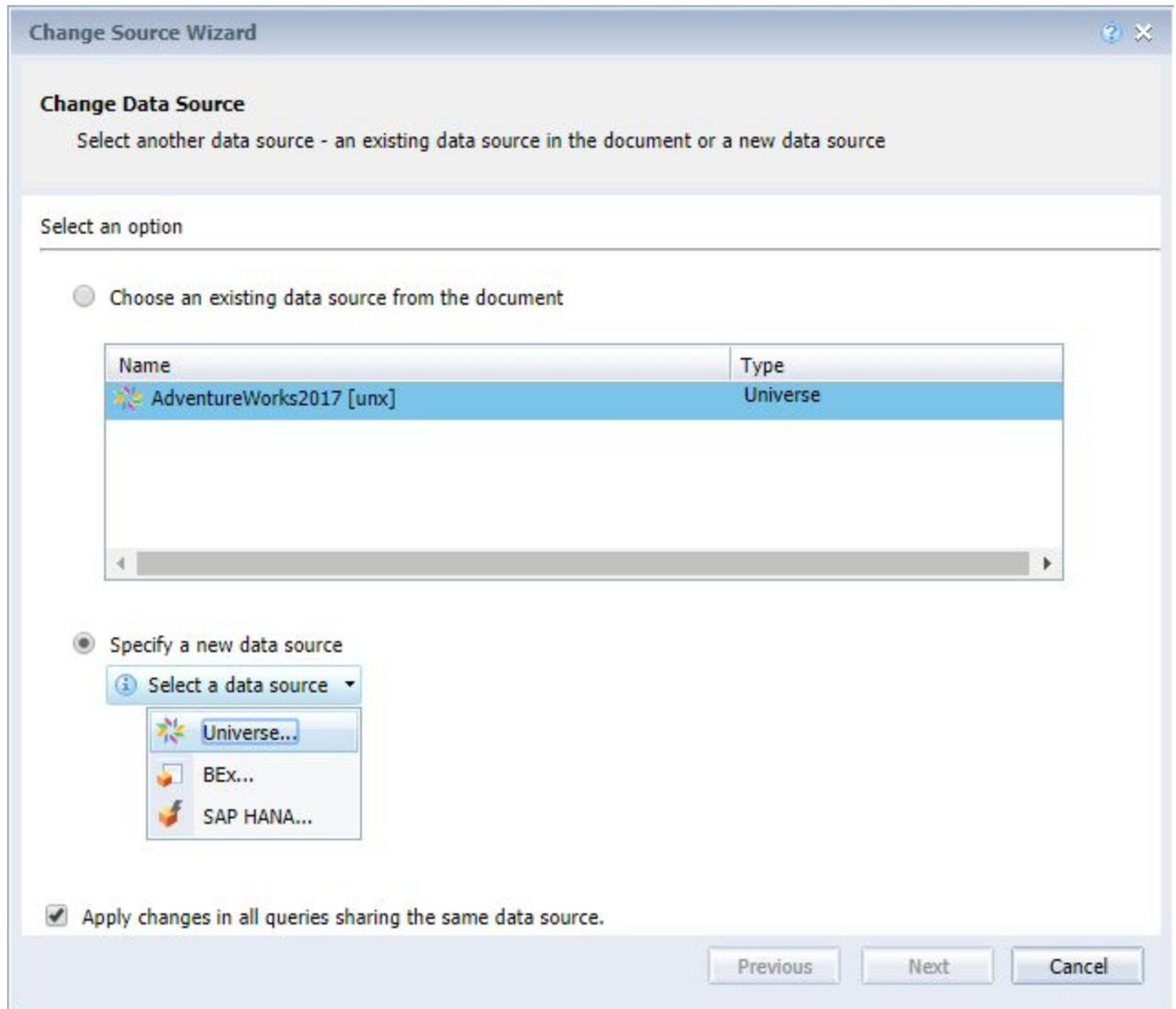
Change Data Source

1. Change Source



Click Data Access tab > Tools tab > Change Source
Click: Orders (this is the query to modify)

2. Change Source Wizard



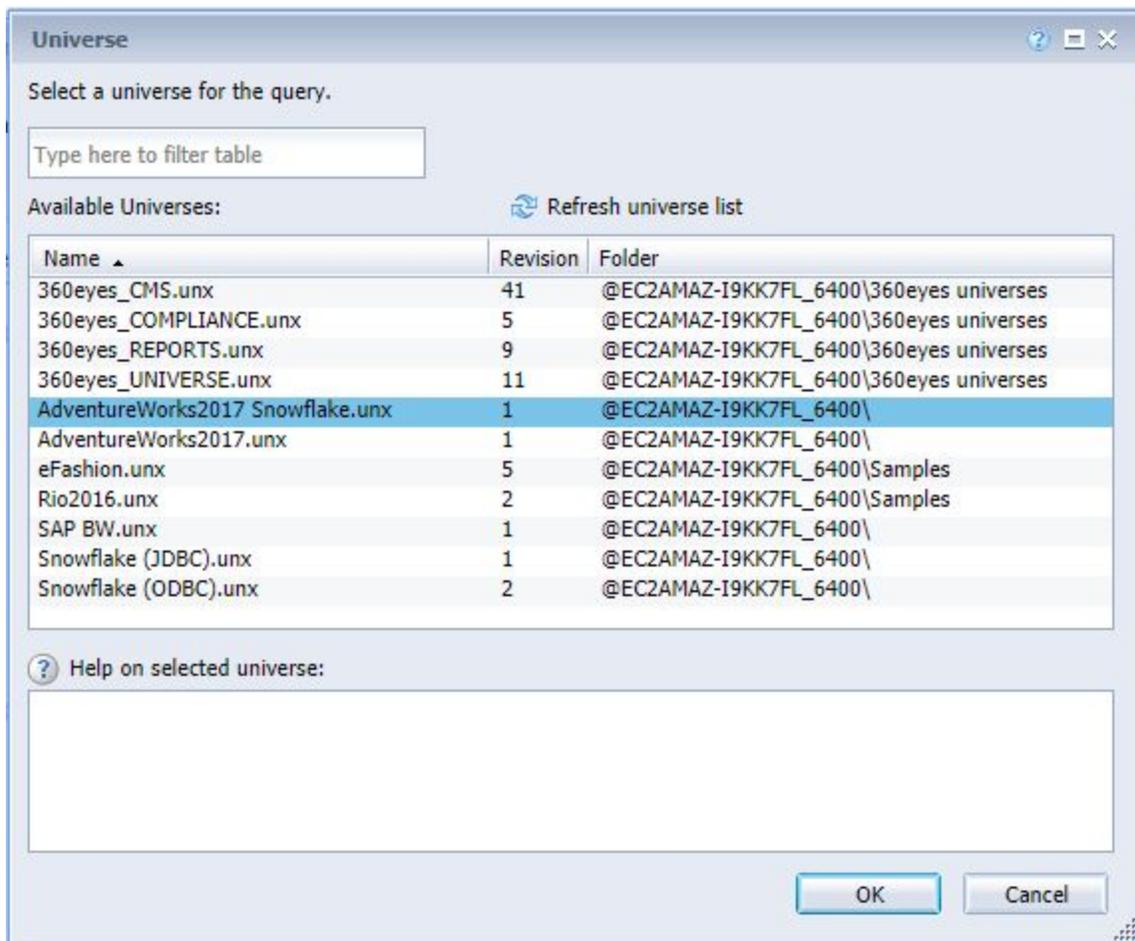
Click: Specify a new data source

Check: Apply changes in all queries sharing the same data source.

Click: Universe...

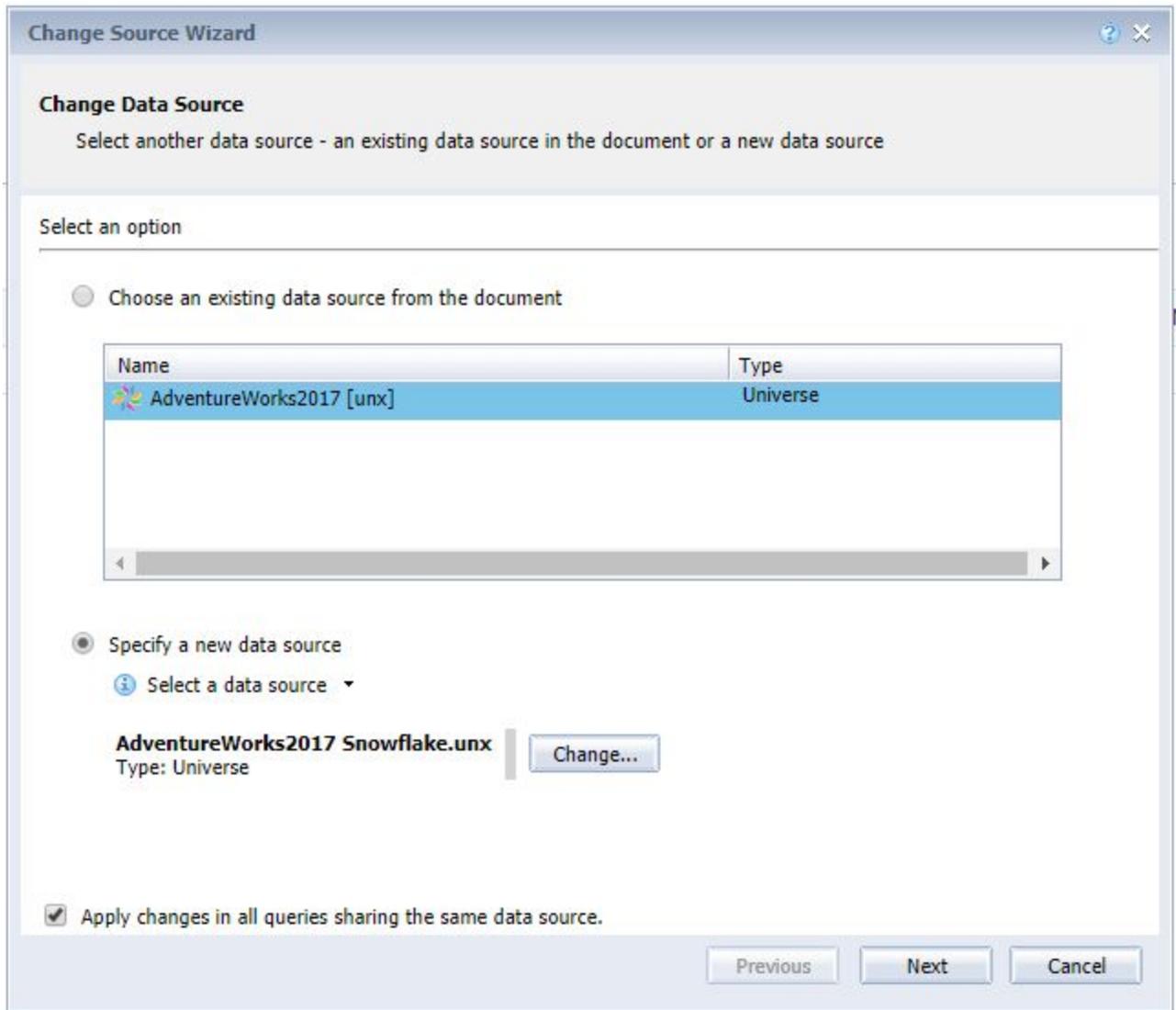
Note: You will need to repeat these steps for queries not sharing the same data source.

3. Select a universe for the query



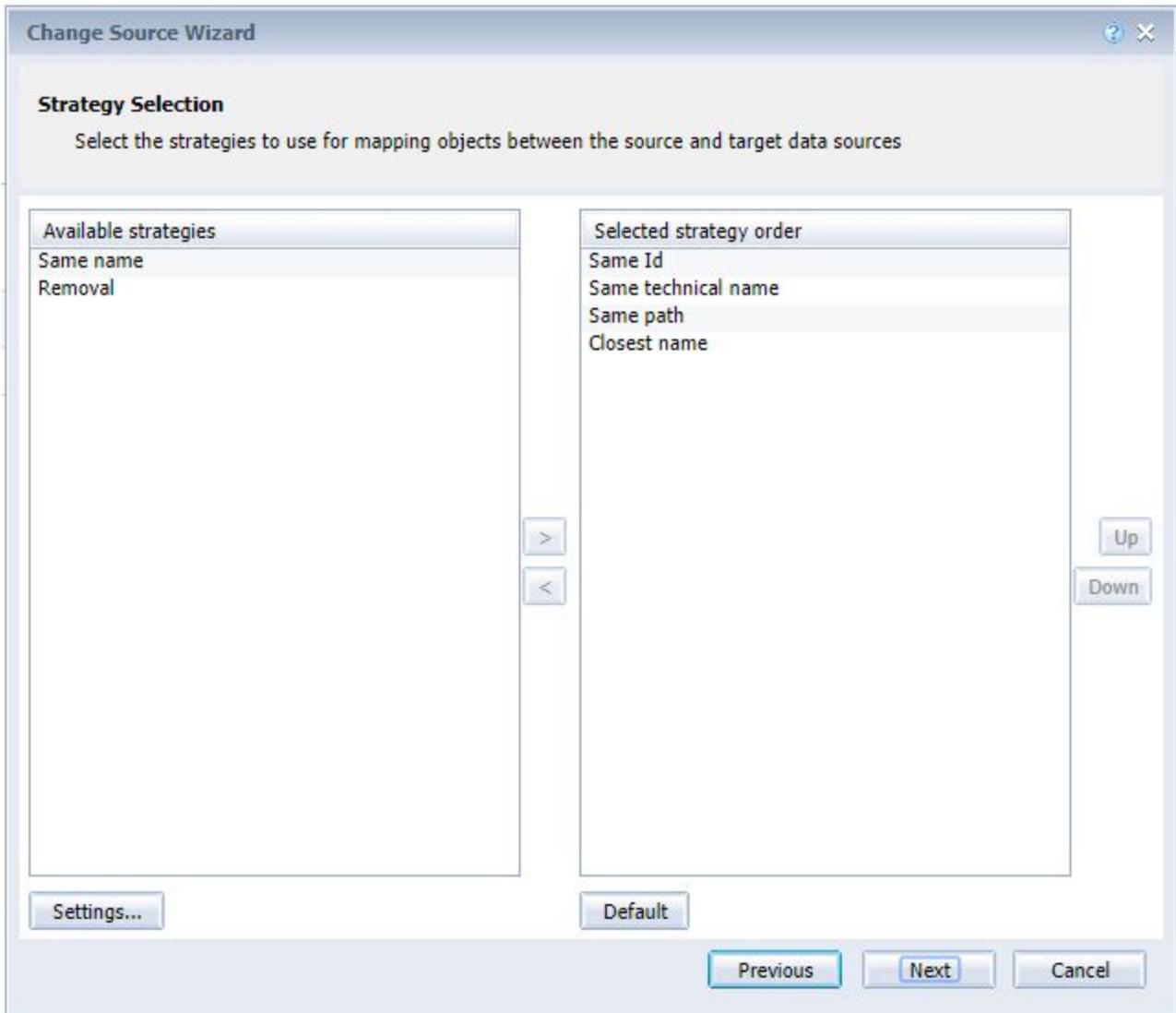
Click: AdventureWorks2017 Snowflake.unx

Click: OK



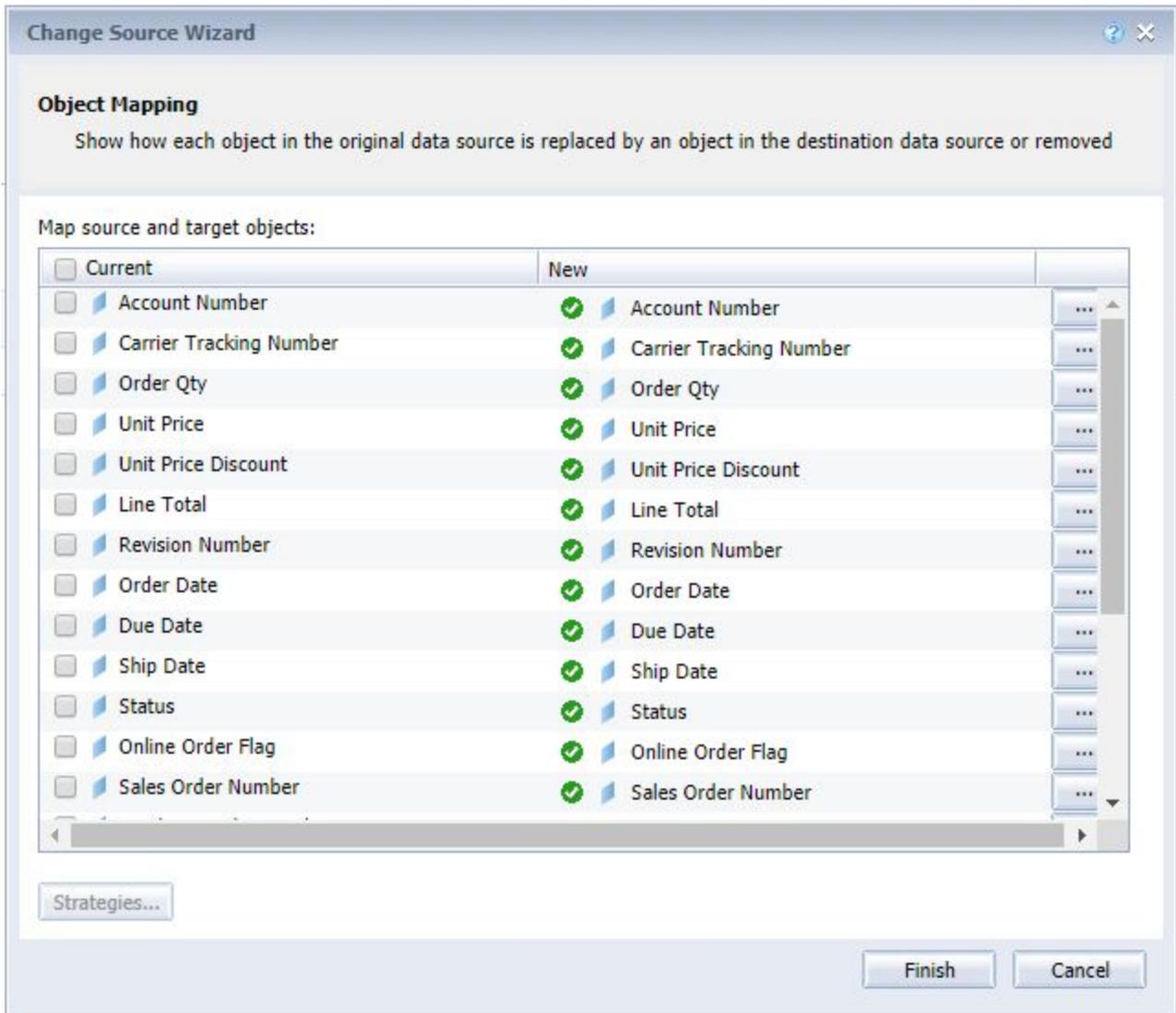
Click: Next

4. Strategy Selection



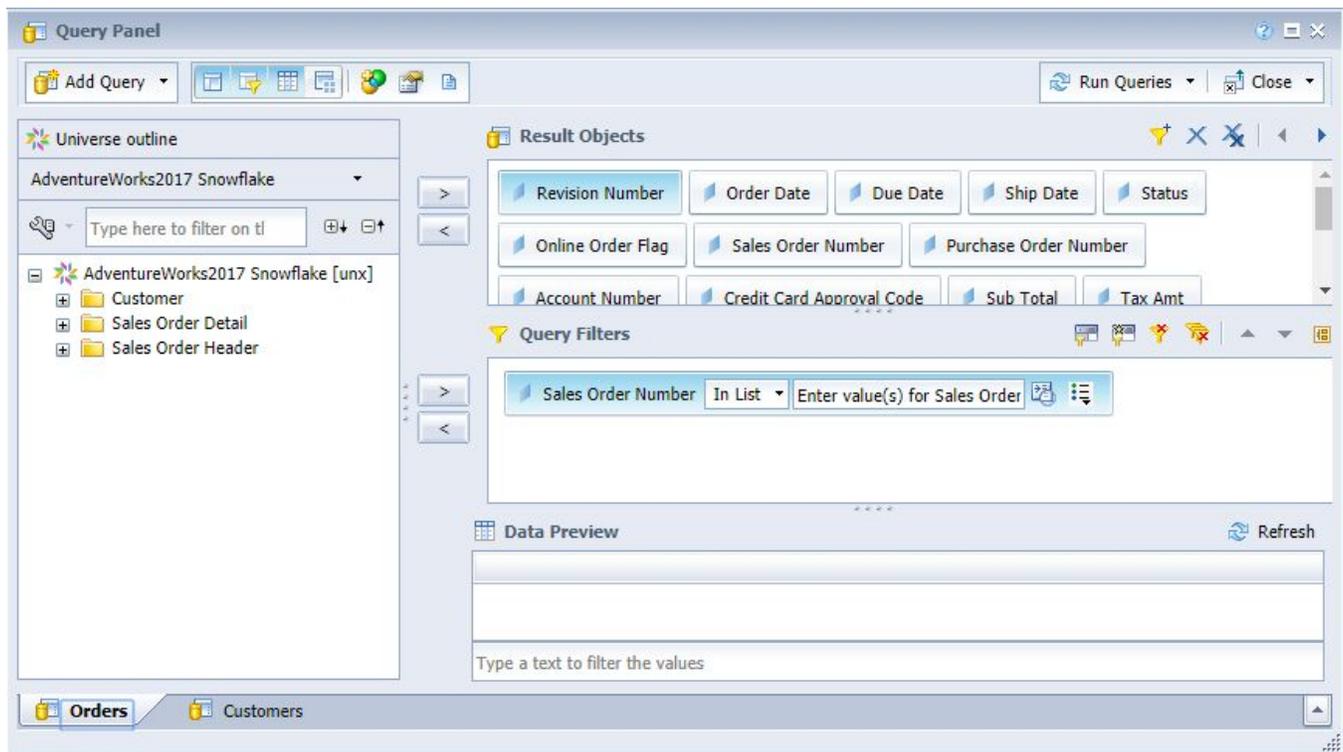
Click: Next

5. Object Mapping



Click: Finish

6. Query Panel



Click: Run Queries

7. Save the Web Intelligence document



Updating Crystal Reports

These steps are to update your Crystal Reports documents to update the database connection string(s) within the reports.

You can do this either within your current report or as we will do here, make a copy (backup) first and then modify the new one.

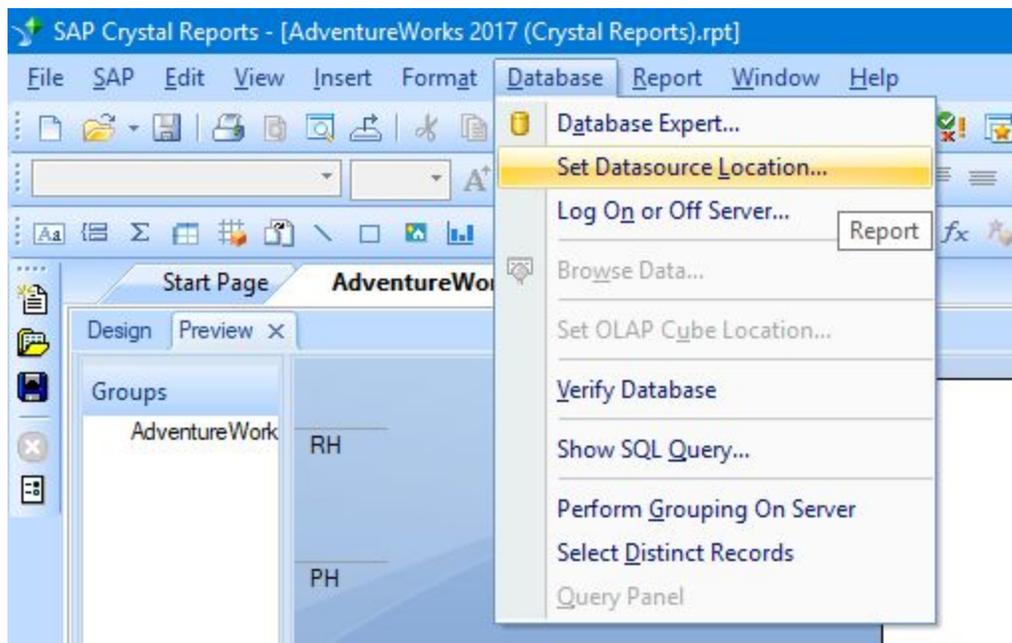
There are two methods:

1. In Crystal Reports “Desktop”
2. In the Central Management Console (CMC)

Note: These steps are to be repeated for every document.

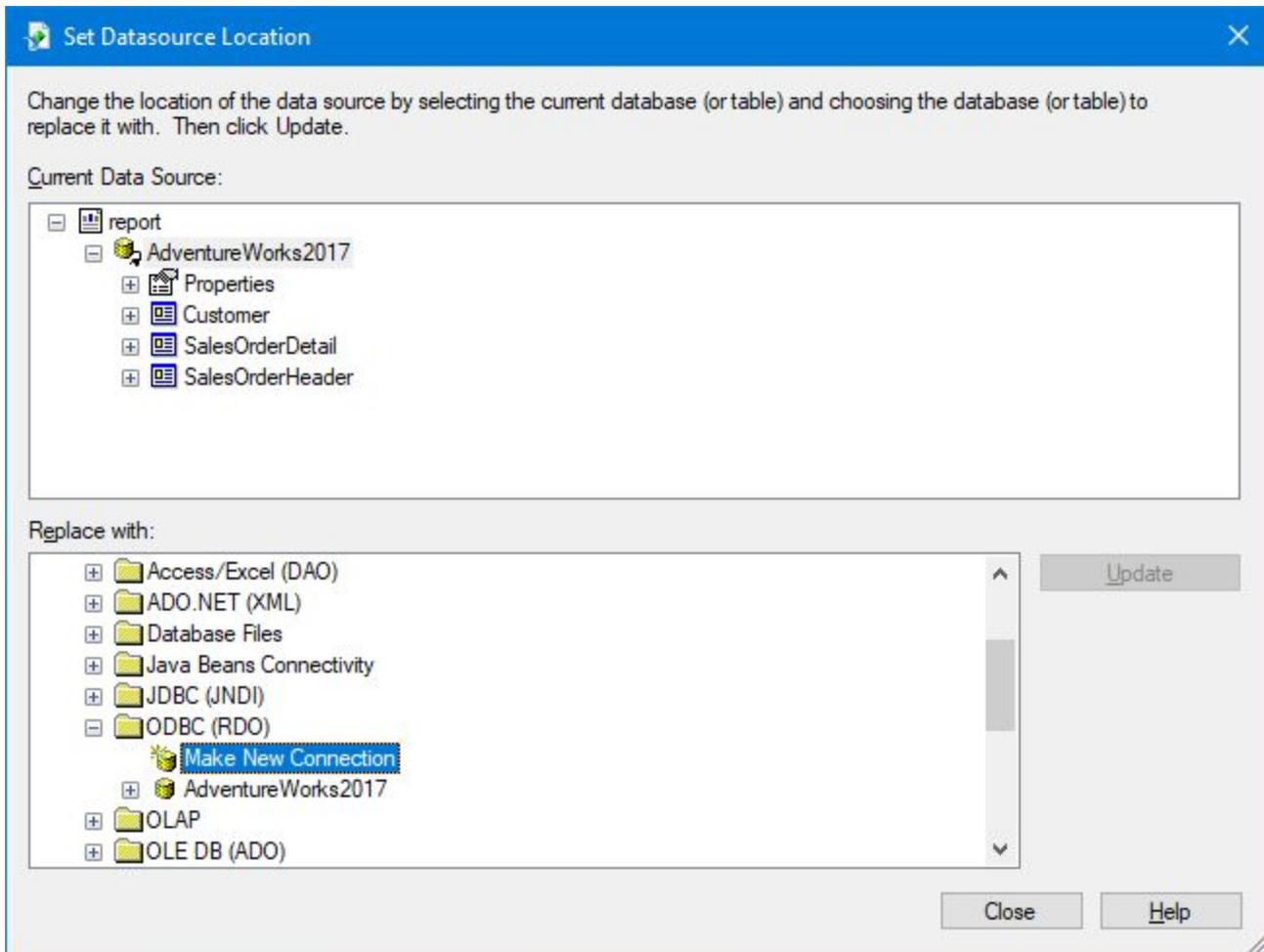
Crystal Reports “Desktop”

1. Open your Crystal Reports

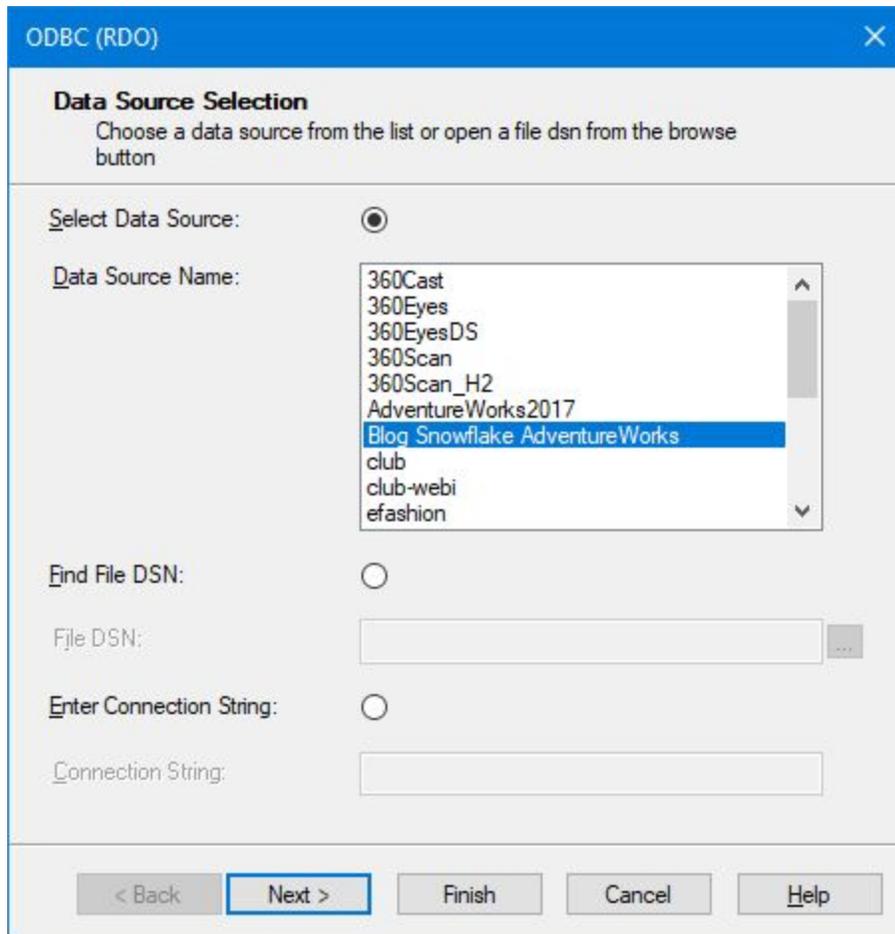


Under Database
Select: Set Datasource Location...

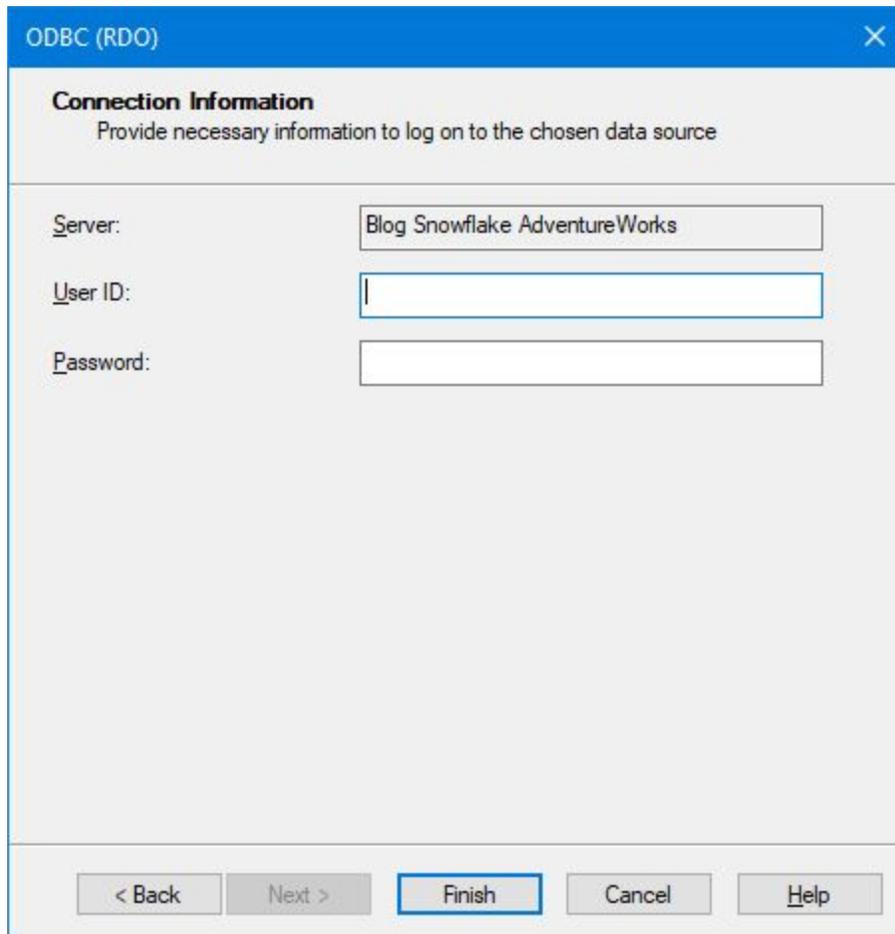
2. Set Datasource Location



Under ODBC (RDO)
Select: Make a New Connection



Select: Blog Snowflake AdventureWorks
Click: Next



ODBC (RDO)

Connection Information
Provide necessary information to log on to the chosen data source

Server: Blog Snowflake AdventureWorks

User ID: |

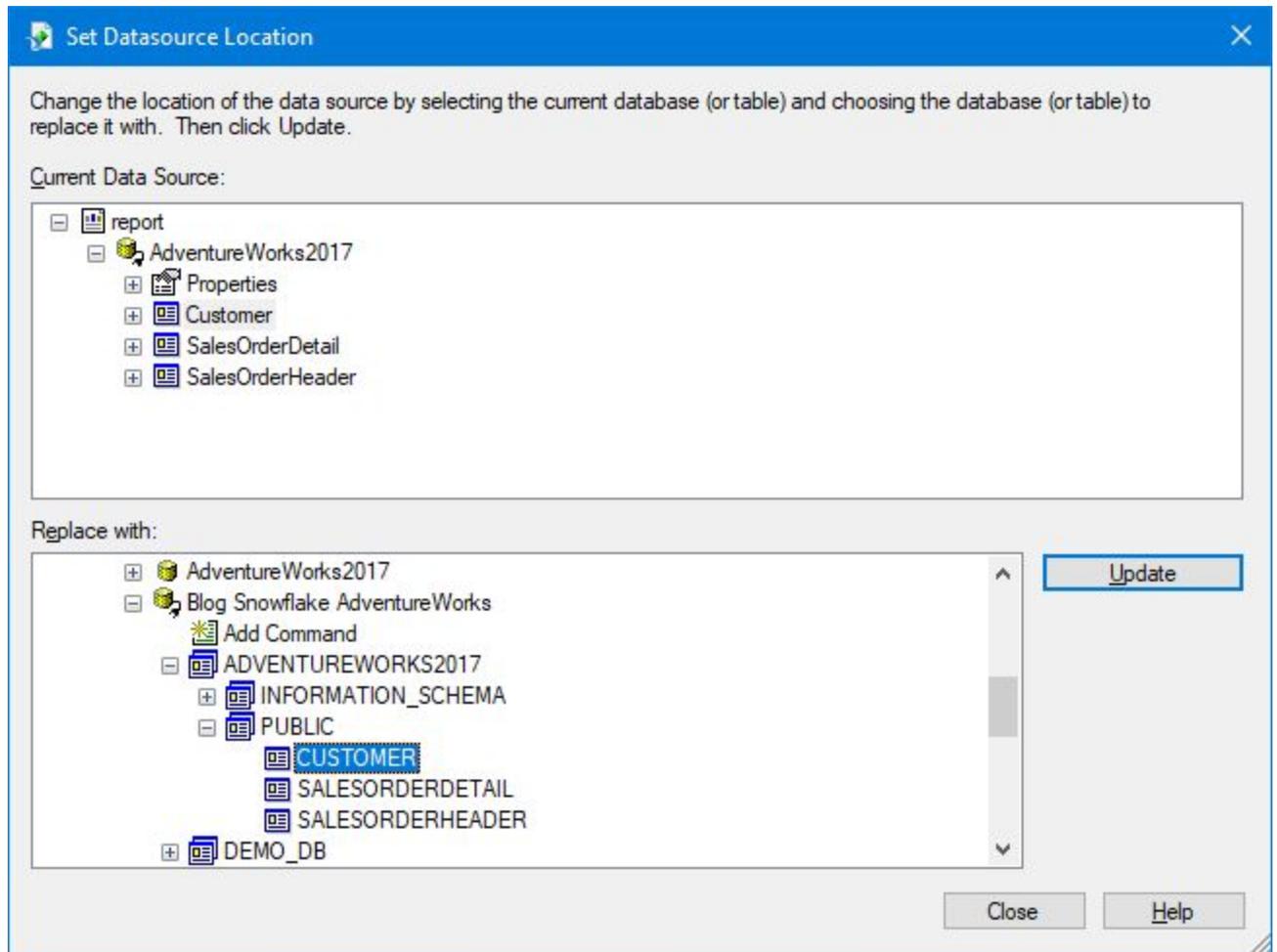
Password:

< Back Next > **Finish** Cancel Help

Enter: User ID

Enter: Password

Click: Finish



If your table names are identical you can simply map the database name.

In this case, the tables are in uppercase so we need to map the tables individually:

Under Current Data Source

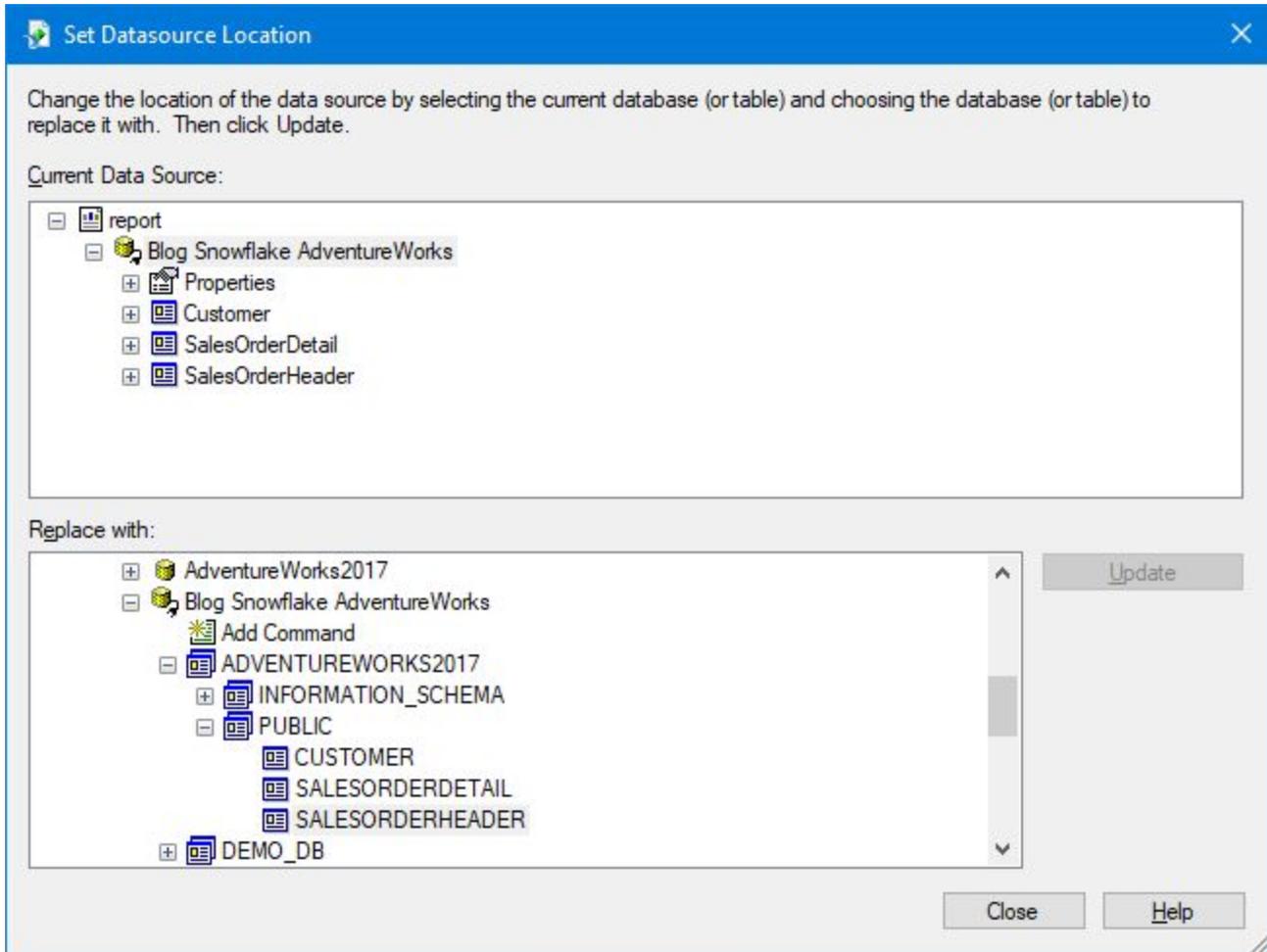
Select: Customer

Under Replace with

Select CUSTOMER

Click Update

Repeat for tables SalesOrderDetail and SalesOrderHeader.



Tables are now remapped to Blog Snowflake Adventure Works

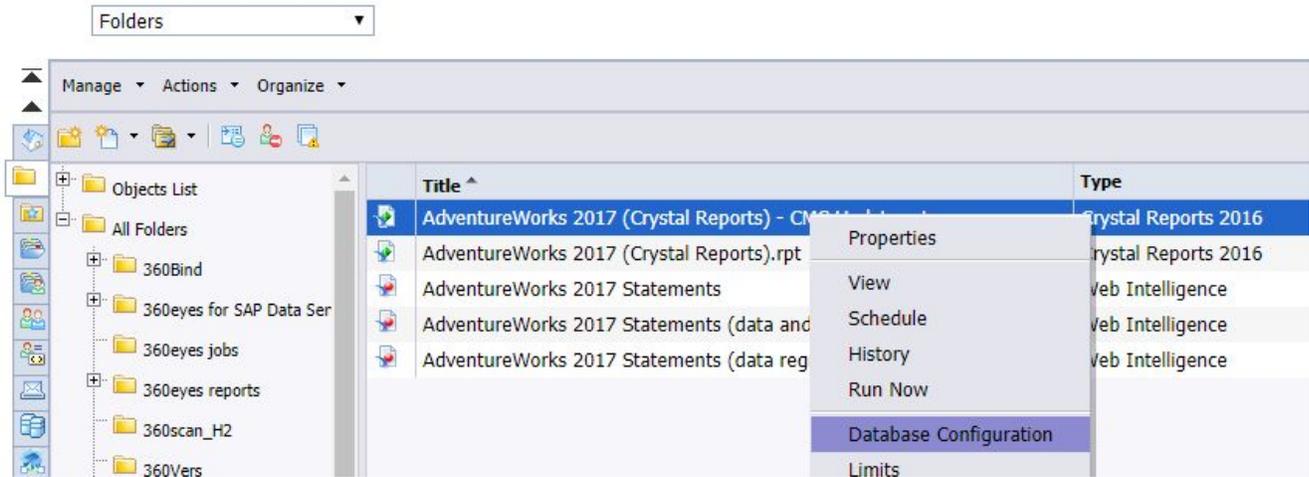
Click: Close

3. Save the Crystal Reports

Central Management Console (CMC)

1. Logon to the Central Management Console (CMC)

Central Management Console



Find your Crystal Reports
Right-Click > Database Configuration

3. Database Configuration

Default Settings: AdventureWorks 2017 (Crystal Reports) - CMC Update.rpt

Hide Navigation

- ▼ Default Settings
 - Recurrence
 - Schedule For
 - Notification
 - Database Configuration
 - Filters
 - Formats
 - Destinations
 - Print Settings
 - Events
 - Scheduling Server C
 - Viewing Server Gro
 - Extensions
 - Thumbnail
 - Languages
- Properties
- Categories
- Mobile Properties
- Schedule
- User Security
- History
- Limits

Data Sources: AdventureWorks2017

When viewing and scheduling report: Use same database logon as when report is run

Database logon information:

Use original database logon information from the report.

Server: AdventureWorks2017

Database: AdventureWorks2017

User: 360

Password:

Use custom database logon information specified here.

Database Type: Select a database driver

ODBC

Specify a custom driver

Server: Blog Snowflake AdventureWorks

Database:

User: test360suite

Password:

Table Prefix: AdventureWorks2017.Sales.

Use default table prefix

Specify a custom table prefix

ADVENTUREWORKS2017.PUBLIC.

Select: Use custom database logon information specified here.

Enter: Server: Blog Snowflake AdventureWorks

Enter: Table Prefix > Specify a custom table prefix

ADVENTUREWORKS.PUBLIC.

Click: Save



Note: If the name (and case) of your tables are not exactly the same, you cannot update your Crystal Reports this way and you will need to use the method described previously, in Crystal Reports “Desktop”.

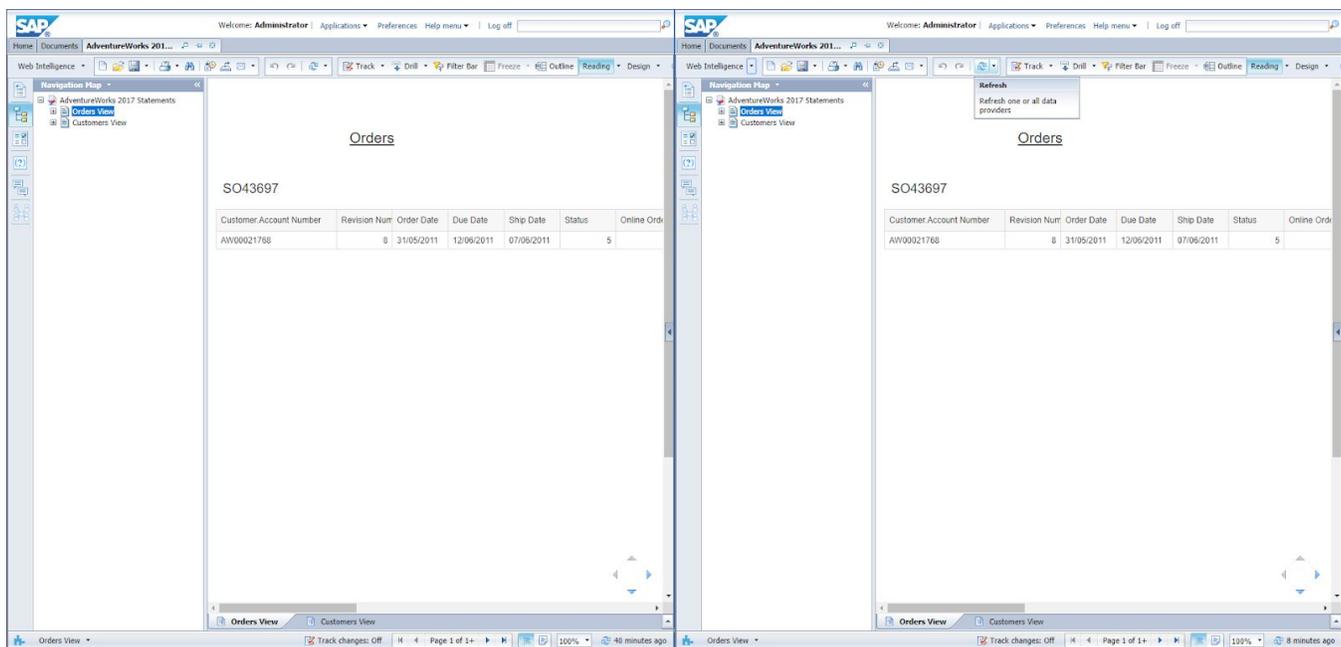
Testing Content

If you have made a copy of your Web Intelligence documents, you can do side by side comparisons.

In this section, we will validate that the documents appear to be the same and compare the refresh time between Microsoft SQL Server and Snowflake.

Comparing Data

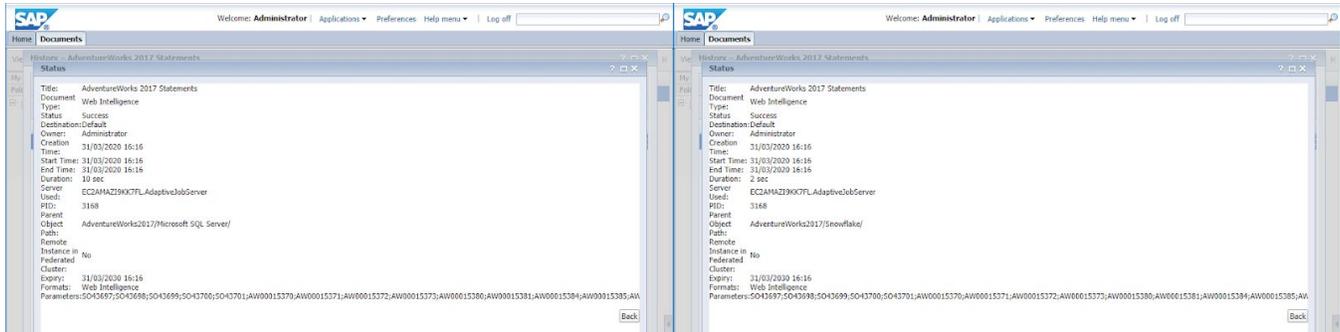
Unfortunately, using SAP BusinessObjects, this manual task involves opening both Web Intelligence documents and comparing values.



Note: As this task is manual (i.e. not automated), it will be time-consuming to execute therefore you will likely only test a subset of your reports. Mistakes are very likely as documents will have a lot of tables, columns, rows over many pages. It will be difficult to document evidence of testing and accuracy of these tests.

Comparing Performance

Unfortunately, once again using SAP BusinessObjects, this manual task is to schedule both Web Intelligence documents and compare running times.



Note: As this task is manual (i.e. not automated), it will be time-consuming to execute therefore you will likely only test a subset of your reports. It will be difficult to document.



With 360Suite Automation: Reducing time, cost and risks



Pre-Migration Assessment

Identify what will be impacted by repointing the database connectivity to Snowflake. This helps you prevent hidden side effects and helps you define the scope of the migration.



Universe Update

Required in most migration projects, you'll need to apply the necessary changes to the universes (tables, columns, measures, SELECT, WHERE).



Back-up

Make sure to have a reliable back-up before making any changes.



Document Update

Bulk repoint your Webi and Crystal reports to the new, updated universes.



Validation

Automate your testing and identify the regressions (layout, data, performance, connectivity) in order to fix your documents and universes. Avoid any risk and validate the migration.

Schedule Your Pre-Migration Assessment With Us



Request Your Trial



360Suite is an official Snowflake technology partner

360suite.io