# **DATABASE MIGRATION IGRATION IOSNOWFLAKE:** A Complete How-to Guide



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# Introduction

This guide will show you how to migrate<sup>1</sup> 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:

<sup>&</sup>lt;sup>1</sup> More definitions here: <u>https://mssql.tosnowflake.com/</u>



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 (<u>tutorial video here</u>) 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).



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 <u>SAP BusinessObjects 4.2 SP08</u> 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: <u>https://blogs.sap.com/2020/03/12/snowflake-for-sap-businessobjects-4.2-sp08/</u>



# Microsoft SQL Server

Version: Microsoft SQL Server 2019

Database to Migrate: AdventureWorks2017 (<u>https://docs.microsoft.com/en-us/sql/samples/adventureworks-install-configure?vie</u> w=sql-server-ver15)

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

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



# Snowflake

Create an empty database in Snowflake

Database Name: AdventureWorks2017

-	Server';	/ COMMENT = Migrated from	ΜΙΟΓΟΣΟΤΤ ΣΟΓ
		Select SOI	Close

Note: Unless you create tables and columns using double-quotes (therefore case sensitive) these identifiers will be displayed in uppercase but are case-<u>in</u>sensitive. Suggested Reading: <u>Identifiers in Snowflake</u>

<b>*</b> snowflake	Databases	Shares	Warehouses	> Worksheets	Q History		
Databases							
+ Create 📋 Clone	Drop	Trar	nsfer Ownership				
Search Databases		] 1/4 dat	abases				
Database	Origin		↓ Cre	ation Time	Owner	3	Comment
ADVENTUREWORKS2017				12:31 PM	SYSADMIN		Migrated from Microsoft SQL Server

Schema (PUBLIC) available:



Ø

<b>**</b> snowflake	Databases S	Shares Ward	ehouses Workshee	ts History
Databases > ADVER	TUREWORKS2	017		
Tables Views	Schemas	Stages F	ile Formats Seq	uences
🕂 Create 📋 Clone	🗹 Alter [	X Drop L	Transfer Ownersh	ip
Schema	Creation Time <b>v</b>	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/

System Da	ata Sources:								
Name			Platform	Driver			^	A <u>d</u> d	
Adventu	reWorks2017		32-bit	SQL S	Server Native	Client 11	.0		
Adventu	reWorks2017		64-bit	SQL S	Server Native	Client 11	.0	Remove	
Blog Sno	owflake Advent	ureWorks	32-bit	Snow	flakeDSIIDriv	er			
Blog Sno	wflake Advent	ureWorks	64-bit	Snow	flakeDSIIDriv	er		Configure	
club			32-bit	SQL S	Server Native	Client 11.	.0		
club			64-bit	SQL S	Server Native	Client 11.	.0		
efashion	H.		32-bit	Micros	soft Access [	river (*.m	db		
efashion	-webi		32-bit	Micros	soft Access [	river (*.m	db		
Sample	Amazon EMR H	live DSN	32-bit	SAP H	live ODBC D	river	~		
<						3	>		
	This is a 32-b Administrator.	it System D	SN. It can	only be n	emoved or co	onfigured v	with the 32-b	vit ODBC D <mark>a</mark> ta Sour	се

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...



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🛄 SQL Server Import and Expor	t Wizard — 🗆 🗙
	Welcome to SQL Server Import and Export Wizard
	This wizard helps you to create simple packages that import and export data between many popular data formats including databases, spreadsheets, and text files. The wizard can also create the destination database and the tables into which the data is inserted. To move or copy databases and their objects from one server instance to another, cancel this wizard and use the Copy Database Wizard instead. The Copy Database Wizard is available in SQL Server Management Studio.
	□ <u>D</u> o not show this starting page again.
Help	< <u>Back</u> <u>Next&gt;</u> <u>Finish&gt;&gt; </u> Cancel



#### Choose a Data Source

🛄 SQL Server Import and Ex	port Wizard					×
Choose a Data Source Select the source from w	<b>e</b> hich to copy data.				Cherry Cherry	10-10
Data source:	SQL Server Native	e Client 11.0				•
Server name:	je se	QLEXPRESS				•
Authentication						_
C Use Windows Authen	ication					
Use SQL Server Auth	entication					
<u>U</u> ser name:	360					
Password:						
Da <u>t</u> abase:	AdventureWorks2017			<b>.</b>	<u>R</u> efresh	
Help		< <u>B</u> ack	Next >	<u>Finish &gt;&gt; </u>	Cano	:el

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)



### Choose a Destination

📃 SQL Server Impo	ort and Export Wizard —			×
Choose a Des Specify where	<b>stination</b> to copy data to.			-
Destination:	Flat File Destination		-	·
Select a file and s	pecify the file properties and the file format.			
File name:	C:\Users\Administrator\Downloads\Customer.txt	Br	o <u>w</u> se	]
Locale:	English (United Kingdom)		Unicode	
Code page:	1252 (ANSI - Latin I)		-	]
For <u>m</u> at:	Delimited		<u> </u>	]
Text <u>q</u> ualifier:	<none></none>			1
I Column n <u>a</u> r	nes in the first data row			
Help	< <u>B</u> ack <u>N</u> ext > <u>Finish &gt;&gt;</u>		Cancel	

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

## Specify Table Copy or Query

🛄 SQL Server Import and Export Wizard 🦳 —		×
Specify Table Copy or Query Specify whether to copy one or more tables and views or to copy the results of a query from the data source.	- and	<u>N</u>
Copy data from one or more tables or views		
Use this option to copy all the data from the existing tables or views in the source database.		
$\bigcirc$ <u>W</u> rite a query to specify the data to transfer		
Use this option to write an SQL query to manipulate or to restrict the source data for the copy operatio	n.	
Help < <u>Back</u> <u>Next &gt;</u> Finish >>	Cano	xel

## Configure Flat File Destination

🛄 SQL Server Import and Expor	t Wizard			<u>1997</u> )	□ ×	
Configure Flat File Dest	ination					
Source table or view:	[Sales].[Custon	ner]			-	
Specify the characters that del	imit the destination file:					
<u>R</u> ow delimiter:	{CR}{LF}				•	
<u>C</u> olumn delimiter:	Comma {.}				•	
			<u>E</u> dit Mappings	<u>P</u> re	eview	
Help		< <u>B</u> ack	<u>N</u> ext >	<u>F</u> inish >>	Cancel	

Select: [Sales].[Customer]

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



### Save and Run Package

🔜 SQL Server Import and Export Wizard	- 🗆 X
Save and Run Package Indicate whether to save the SSIS package.	
✓ Run immediately	
☐ <u>S</u> ave SSIS Package	
© SQL Server	
C Eile system	
Package protection level:	
Password:	
Retype password:	
	2
Help < <u>Back</u> <u>N</u> ext >	<u>Finish &gt;&gt; </u> Cancel



## Complete the Wizard

🛄 SQL Server Import and Export Wizard			×
Complete the Wizard Verify the choices made in the wizard and click Finish.			
Click Finish to perform the following actions:			
Source Location : SQLNCLI11			
<ul> <li>Copy rows from [Sales].[Customer] to C:\Users\Administrator\Downloads\Customer.txt The new rows will be appended to the existing table.</li> </ul>			
<ul> <li>The package will not be saved.  </li> <li>The package will be run immediately.</li> </ul>			
Provider mapping file : D:\Program Files (x86)\Microsoft SQL Server Management Studio 18\Common \CommonExtensions\Microsoft\SSIS\150\MappingFiles\MSSQLToSSIS10.XML	7∖IDE		
Help < <u>Back</u> <u>Next&gt;</u> Einis	ih	Canc	el

Click: Finish

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### The execution was successful

2	Success	11 Total 11 Succes	S	0 Erro 0 War	or ming
etai	ls:				
	Action	Status	Messa	ge	
2	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\Customer.txt	Success	19820	rows tran	nsferred
)	Post-execute	Success			

Click: Close



### Repeat for SalesOrderDetail and SalesOrderHeader

	Success	11 Total 11 Success	0 Erro s 0 Wa	or rning
tai	ils:			
	Action	Status	Message	
>	Initializing Data Flow Task	Success	1.1.1	
	Initializing Connections	Success		
	Setting SQL Command	Success		
	Setting Source Connection	Success		
	Setting Destination Connection	Success		
	Validating	Success		
1	Prepare for Execute	Success		
)	Pre-execute	Success		
	Executing	Success		
)	Copying to C:\Users\Administrator\Downloads\SalesOrderDetail.txt	Success	121317 rows trans	sf
)	Post-execute	Success		



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Success	11 Success	
		0 Warning
ction	Status	Message
nitializing Data Flow Task	Success	
nitializing Connections	Success	
etting SQL Command	Success	
etting Source Connection	Success	
etting Destination Connection	Success	
/alidating	Success	
repare for Execute	Success	
're-execute	Success	
xecuting	Success	
opying to C:\Users\Administrator\Downloads\SalesOrderHeader.txt	Success	31465 rows transferred
'ost-execute	Success	
	ation itializing Data Flow Task itializing Connections etting SQL Command etting Source Connection etting Destination Connection alidating repare for Execute re-execute re-execute xecuting opying to C:\Users\Administrator\Downloads\SalesOrderHeader.txt ost-execute	Status           itializing Data Flow Task         Success           itializing Connections         Success           etting SQL Command         Success           etting Destination Connection         Success           alidating         Success           repare for Execute         Success           re-execute         Success           actual of C.\Users\Administrator\Downloads\SalesOrderHeader.txt         Success           opying to C:\Users\Administrator\Downloads\SalesOrderHeader.txt         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



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# Create Tables in Snowflake

Logon to Snowflake Click: Worksheets

snowflake Datab	ases Shares Warehouses Worksheets History
< Vew Worksheet Find database objects	+ ↓ C ≪ ► Run (3) C All Queries Saved 4 minutes ago
Starting with ADVENTUREWORKS2017 INFORMATION_SCHEMA PUBLIC Tables CUSTOMER SALESORDERDETAIL SALESORDERHEADER NO Views in this Schema BIKESTORES DEMO_DB SNOWFLAKE_SAMPLE_DATA UTIL_DB	<pre>1 CREATE TABLE ADVENTUREWORKS2017.PUBLIC.CUSTOMER ( 2 CUSTOMERID INTEGER NOT NULL, 3 PERSONID INTEGER, 4 STOREID INTEGER, 5 TERRITORYID INTEGER, 6 ACCOUNTNUMBER VARCHAR(10) NOT NULL, 7 ROWGUID VARCHAR(50) NOT NULL, 8 MODIFIEDDATE TIMESTAMP NOT NULL, 9 ); 10 11 CREATE TABLE ADVENTUREWORKS2017.PUBLIC.SALESORDERDETAIL 12 SALESORDERID INTEGER NOT NULL, 13 SALESORDERDETAILID INTEGER NOT NULL, 14 CARRIERTRACKINGNUMBER VARCHAR, 15 ORDERQTY INTEGER NOT NULL, 16 PRODUCTID INTEGER NOT NULL, 17 SPECIALOFFERID INTEGER NOT NULL, 18 UNITPRICE DECIMAL(19,4) NOT NULL, 19 UNITPRICEDISCOUNT DECIMAL(19,4) NOT NULL, 20 LINETOTAL NUMERIC(38,6) NOT NULL, 21 ROWGUID VARCHAR(50) NOT NULL, 22 MODIFIEDDATE TIMESTAMP NOT NULL, 23 ); 24 25 CREATE TABLE ADVENTUREWORKS2017.PUBLIC.SALESORDERHEADER 26 SALESORDERID INTEGER NOT NULL, 27 REVISIONNUMBER INTEGER NOT NULL, 28 CREATE TABLE ADVENTUREWORKS2017.PUBLIC.SALESORDERHEADER 26 SALESORDERID INTEGER NOT NULL, 27 REVISIONNUMBER INTEGER NOT NULL, 27 REVISIONNUMBER INTEGER NOT NULL, 27 REVISIONNUMBER INTEGER NOT NULL, 28 CREATE TABLE ADVENTUREWORKS2017.PUBLIC.SALESORDERHEADER 26 SALESORDERID INTEGER NOT NULL, 27 REVISIONNUMBER INTEGER NOT NULL,</pre>



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, ROWGUID VARCHAR(50) NOT NULL, MODIFIEDDATE TIMESTAMP NOT NULL );

Click: Run



# Import Data via CSV into Snowflake

Logon to Snowflake Click: Databases Click: ADVENTUREWORKS2017

<b>*</b> snowflake	Databases Sha	Re III ares Warehouses	Worksheets	) y		
Databases > ADVENTU	REWORKS20	17				
Tables Views S	Schemas St	ages File Formats	Sequences			
🕂 Create 手 Create Li	ke [] Clone	📊 Load Data [	🕺 Drop 🗔 Tra	nsfer Ownership		
Table Name	Schema	Creation Time <b>v</b>	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

do you want to u	se to load	the files?	
			*



#### Load Data - Source Files

Click: Select Files... Browse: customer.txt

	Warehouse	Source Files	File Format	Load Options	
rom where	e do you want	to load files?			
Load file	s from your con	puter			
1					
-	Select Files				
Custom	Select Files er.txt (text/plair	n) - 3.6MB, last m	nodified: 3/30/2	020, 11:36:13 AM	1
Custom	Select Files <b>er.txt (</b> text/plair s from external	n) - 3.6MB, last m stage	nodified: 3/30/2	020, 11:36:13 AM	1
Custom Load file Stage	Select Files er.txt (text/plair s from external	n) - 3.6MB, last m stage	nodified: 3/30/2	020, 11:36:13 AM	+
Custom Load file Stage	Select Files er.txt (text/plair s from external	n) - 3.6MB, last m stage	nodified: 3/30/2	020, 11:36:13 AM	+
Custom Load file Stage Path	Select Files er.txt (text/plair s from external	n) - 3.6MB, last m	nodified: 3/30/2	020, 11:36:13 AM	+
Custom ) Load file Stage Path	Select Files er.txt (text/plair s from external	n) - 3.6MB, last m	nodified: 3/30/2	020, 11:36:13 AM	+



### Load Data - File Format

Click: +

C	Warehouse	Source Files	File Format	Load Options	1
					× +



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Name: [ENTER A NAME]

Header lines to skip: Change 0 to 1

Name *	CSV_No_Header	
Schema Name	PUBLIC	~
Format Type	csv	~
Compression Method	AUTO	~
Column separator	. r	~
Row separator	١n	~
Header lines to skip	1	×
Field optionally enclosed by	NONE	~
Null String	١N	×
	Trim space before and after ?	

Click: Finish

		0 File				
E	warehouse	Source Files	File Format	Load Options	1	
CSV_NO_HE	ADER				*	+

Click: Load



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### Repeat for SALESORDERDETAIL and SALESORDERHEADER

<b>*</b> snowflake	Databases Sh	Re III ares Warehouses	Worksheets	y l	
Databases > ADVENTI	JREWORKS20	17			
Tables Views	Schemas St	tages File Formats	Sequences		
+ Create + Create Li	ke [] Clone	🚡 Load Data [	🗙 Drop 🏳 Trai	nsfer 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 <u>360Suite</u> 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.

📲 New Relational Connec	tion		-		×
Parameters for Snow	flake Connection (1	/3)		1	P
Authentication Mode	Use specified username	and password			~
Password	•••••				
Data Source Name	Blog Snowflake Advent	ureWorks	-	Test Connecti	~ ion
0	< <u>B</u> ack	<u>N</u> ext >	<u>F</u> inish	Cancel	

Name	Value
BusinessObjects Configuration	
Version	3400
Build	14.2.8.3426
Network Laver	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.d
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 Configura	tion
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

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				×
New Project Enter the name of	the project.			N
Project Name Project Location	Blog - Microsoft SQL to Snowflake C:/Users/Administrator/.businessobjects/bimodele	r_14/woi	rkspace	
0	<u> </u>		Cance	el 🔤

Project Name: Blog - Microsoft SQL to Snowflake

Click: Finish



# Retrieve the Universe



#### Select a Local Project

<b>D</b> S	earch pattern	<u>*</u>	, ▼ ⊕↓	01
	360Eyes (CMS	6)		
	360Eyes (REPO	ORTS)		
	360Eyes (UNIV	/ERSE)		
	AdventureWo	rks2017		
	Blog - Micros	oft SQL to Snow	vflake	
	BW Universe			
	Snowflake (JD	BC)		
	Snowflake (Ol	DBC)		
	ave for all users	(no security)		
10	JCK UNIVERSE			

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

Connection	A Master		
▶ Contraction	Insert • • Detect •          SalesOrderDetail         12       SalesOrderID         12       SalesOrderDetailID         12       SalesOrderDetailID         12       SalesOrderDetailID         12       SalesOrderDetailID         12       SalesOrderDetailID         12       OrderQty         12       ProductID         12       SpecialOfferID         12       UnitPrice         12       UnitPriceDiscount         12       LineTotal         AB       rowguid	Families Insert Insert Insert Calculated Edit Refresh Structure Merge Delimit Set Case To Replace by Data	No family
	Image: Insert View         Image: Image	Change Qualifie Count Rows Show Table Valu Select Related Ta Highlight Relate Arrange Tables Display Center on Select Show in Connec Show Local Dep Highlight Aliases	r/Owner es ibles d Tables > > ion tion endencies s

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

2. Change Table Qualifier/Owner

🌿 Change Qu	ualifier /Owner	– 🗆 🗙
Change Tal	ble Qualifier/Owner t a new owner and qualifier for the table.	
📋 Qualifier	ADVENTUREWORKS2017	Delimit
3 Owner	PUBLIC	Delimit
ø	ОК	Cancel

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".

AdventureWorks20	)17 (DF).dfx	💐 Show values	; in table SalesOrderDetail. 🛛	
Show values in ta	ble SalesOrder	rDetail 200 row	s (5641 ms)	1
🔠 Raw Data 🛅 Di	stinct values	Analysis		
Y Enter your filter	Filtered row	/s: 200/200		
12 SalesOrderID	12 SalesOr	rderDetaillD	CarrierTrackingNumber	
43659.0	1.0	4	911-403C-98	
43659.0	2.0	4	911-403C-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

🗏 Refresh Data Foundation Structure			×
Select Tables			
On this page you can select the tables you want to refresh			
Y Filter pattern			<u>≱</u> ↓ -
Tables			
-			
<			>
Check All / Uncheck All	3/3	items sel	ected
Rack Next > Finish	816 D	Cane	-1



ø

#### 3. Missing Tables

🧏 Refresh Data Foundation Structure —		×
Missing Tables		10
The tables listed below are no longer in the database. Select the tables you want to delete from the data foundation.		
0 tables missing in the database.		
Table Name		
-		_
Check All / Uncheck All		
Kext > Finish	Cance	el



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#### 4. Missing Columns

📲 Refresh Data Fo	oundation Str	ucture			×
Missing Column All columns listed Select those you e	<b>ns</b> below are no ither want to	longer present in the delete from the data f	database. oundation, or to replac	e	1
No columns are n	nissing in the	database.			
Column Name	Action				
Check All / Unche	eck All < Bac	: Next >	Finish	Cance	el



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## 5. Added Columns

📲 Refresh Data Foundation Structure	- 0	×
Added Columns		10
The columns listed below have been added to the database. Select the columns you want to insert into the data foundation.		
No columns have been added to the database.		
Check All / Uncheck All		
Kext > Finish	Cance	el 🛛



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#### 6. Modified Columns

. D . T		2023	122	12753	192	182
ent Data Type	Database Data Type	Cur	Dat	Cur	Dat	^
ITEGER	12 DECIMAL	11	40			
ITEGER	12 DECIMAL	11	40			
	AB	25	167			
MALLINT	12 DECIMAL	6	40			
ITEGER	12 DECIMAL	11	40			
TEGER	12 DECIMAL	11	40			
IMERIC						Y
	ITEGER ITEGER MALLINT ITEGER ITEGER UMERIC	ITEGER 12 DECIMAL ITEGER 12 DECIMAL AB MALLINT 12 DECIMAL ITEGER 12 DECIMAL ITEGER 12 DECIMAL ITEGER 12 DECIMAL	ITEGER 12 DECIMAL 11 ITEGER 12 DECIMAL 11 AB 25 MALLINT 12 DECIMAL 6 ITEGER 12 DECIMAL 11 ITEGER 12 DECIMAL 11 ITEGER 12 DECIMAL 11 IMFRIC 12 DECIMAL	ITEGER         12 DECIMAL         11         40           ITEGER         12 DECIMAL         11         40           ITEGER         12 DECIMAL         11         40           INFROM         12 DECIMAL         11         40           INFROM         12 DECIMAL         11         40           ITEGER         12 DECIMAL         6         40           ITEGER         12 DECIMAL         11         40           ITEGER         12 DECIMAL         11         40           ITEGER         12 DECIMAL         11         40	ITEGER 12 DECIMAL 11 40 ITEGER 12 DECIMAL 11 40 AB 25 167 MALLINT 12 DECIMAL 6 40 ITEGER 12 DECIMAL 11 40 ITEGER 12 DECIMAL 11 40 ITEGER 12 DECIMAL 11 40	ITEGER       12 DECIMAL       11       40         ITEGER       12 DECIMAL       11       40         AB       25       167         MALLINT       12 DECIMAL       6       40         ITEGER       12 DECIMAL       11       40         ITEGER       12 DECIMAL       6       40         ITEGER       12 DECIMAL       11       40         ITEGER       12 DECIMAL       11       40         ITEGER       12 DECIMAL       11       40



#### 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

Business Layer	🔆 Business Layer: AdventureWorks2017
Master ✓ 100	Name     AdventureWorks2017       Properties     Query Options     Comments     Core Business Layers     Contents     Custom Properties       Description     Image: Content of Custom Properties     Image: Content of Custom Properties     Image: Content of Custom Properties
	Summary Change Data Foundation Parameters

2. Check Integrity...



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



## 3. Check Integrity

📲 Check Integrity					- 0	×
Check Integrity [AdventureWorks201	7]					P
Select rules and click the Check Integrity button	to start the integ	rity <mark>check.</mark>				
Check Connections and Dependencie Check Connection Check Dependencies Tables Check Alias Table Check Calculated Column Check Derived Table Check Table Primary Key Check Table Structure Check for Isolated Table Doins Check Context Check Context Check Join	Description	Resource	Object			
Check all / Uncheck all		Ex	port	Check Integrit	y <u>C</u> los	ie i

Click: Check all Click: Check Integrity



#### 4. Confirm Results

Select rules and click the Check Integrity butto	n to start the inter	with check			
Connections and Dependencie  Connections and Dependencie  Check Connection  Check Dependencies  Check Alias Table  Check Alias Table  Check Calculated Column  Check Calculated Column  Check Table Primary Key  Check Table Structure  Check for Isolated Table  Check for Isolated Table  Check Cardinality Same as  Check Context  Check Context  Check Join  Check Join	Description	Resource	Object		

Click: Close



## Rename the Universe

1. Open AdventureWorks2017 (BL).blx

📔 Business Layer	2 Business Layer: AdventureWorks2017
Master ✓ 🕅	Name AdventureWorks2017 Snowflake
AdventureWorks2017 Snowfla Customer Sales Order Detail Sales Order Header	Properties Query Options 🖻 Comments 💥 Core Bus

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

🍾 🗊 🏠 🌫 🖯			
> 🛅 Universes	Universes /Universes		
	Name 360eyes universes 360Scan_H2 Monitoring TrendDat Report Conversion To Samples	Description 1.80.1	<
	<		>

#### Click: Finish

nfo		×
<b>i</b>	Universe published successfully.	
	The universe was published successfully.	
	Universe /Universes/AdventureWorks2017 Snowflake.unx was published with success	^
		~
	▲ Hide Details Close	

0 Suite -

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

Sel elect a	lect another data source - an existing data sourc an option	ce in the document or a new data source	
0	Choose an existing data source from the docur	nent	
	Name	Туре	
۲	Specify a new data source Select a data source		
۲	Specify a new data source     ③ Select a data source     ⑦ Universe	•	
۲	Specify a new data source       ③ Select a data source       ⑦ Universe       ⑧ BEx		

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

Type here to filter table		
wailable Universes:	🔁 Refr	esh universe list
Name 🔺	Revision	Folder
360eyes_CMS.unx	41	@EC2AMAZ-I9KK7FL_6400\360eyes universes
360eyes_COMPLIANCE.unx	5	@EC2AMAZ-I9KK7FL_6400\360eyes universes
360eyes_REPORTS.unx	9	@EC2AMAZ-I9KK7FL_6400\360eyes universes
360eyes_UNIVERSE.unx	11	@EC2AMAZ-I9KK7FL_6400\360eyes universes
AdventureWorks2017 Snowflake.unx	1	@EC2AMAZ-I9KK7FL_6400\
AdventureWorks2017.unx	1	@EC2AMAZ-I9KK7FL_6400\
eFashion.unx	5	<pre>@EC2AMAZ-I9KK7FL_6400\Samples</pre>
Rio2016.unx	2	<pre>@EC2AMAZ-I9KK7FL_6400\Samples</pre>
SAP BW.unx	1	@EC2AMAZ-I9KK7FL_6400\
Snowflake (JDBC).unx	1	@EC2AMAZ-I9KK7FL_6400\
Snowflake (ODBC).unx	2	@EC2AMAZ-I9KK7FL_6400\
Help on selected universe:		

Click: AdventureWorks2017 Snowflake.unx Click: OK



lect a	an option		
0	Choose an existing data source from the document		
	Name	Туре	
	AdventureWorks2017 [unx]	Universe	
۲	Specify a new data source Select a data source AdventureWorks2017 Snowflake.unx Type: Universe Chan	ge	Þ



#### 4. Strategy Selection

Change Source Wizard		(?) ×
Strategy Selection Select the strategies to use for	napping objects between the source and target data sources	
Available strategies Same name Removal	Selected strategy order Same Id Same technical name Same path Closest name	Up Down
Settings	Default Previous Next	Cancel



## 5. Object Mapping

ap source and target objects:				
Current	New			
🧾 🥬 Account Number	0	1	Account Number	
📃 🥖 Carrier Tracking Number	0	1	Carrier Tracking Number	
📄 🥖 Order Qty	0	1	Order Qty	
📄 🧯 Unit Price	0	1	Unit Price	
📄 🥖 Unit Price Discount	0	#	Unit Price Discount	
🔲 🥖 Line Total	0	1	Line Total	
📃 🥖 Revision Number	0		Revision Number	
📄 🥖 Order Date	0	1	Order Date	
🗐 🥖 Due Date	0	1	Due Date	
📄 🥖 Ship Date	0	-	Ship Date	
🔲 🥖 S <mark>t</mark> atus	0	1	Status	
📄 🥖 Online Order Flag	0	1	Online Order Flag	
📄 🥖 Sales Order Number	0	#	Sales Order Number	
<b></b>				

Click: Finish



#### 6. Query Panel

Uuery Panel		② ⊑ ×
🚰 Add Query 👻 📰 📰 🔛 🤣 🖀 🗈		🔁 Run Queries ▼   🛃 Close ▼
🔆 Universe outline	📅 Result Objects	🕈 × ¾   ← →
AdventureWorks2017 Snowflake	Revision Number Order Date Due Date	p Date 🔰 Status
Image: Weight of the second secon	🖉 🖉 Online Order Flag 🔰 Sales Order Number 🔰 Purchase O	order Number
<ul> <li>AdventureWorks2017 Snowflake [unx]</li> <li>Customer</li> <li>Sales Order Detail</li> <li>Sales Order Header</li> </ul>	Account Number Credit Card Approval Code Sub T Query Filters  Sales Order Number In List  Enter value(s) for Sales Order	otal Tax Amt
	Data Preview	₽ Refresh
	Type a text to filter the values	
Customers		· · · · · · · · · · · · · · · · · · ·

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



🦻 Set Datasource Location	×
Change the location of the data source by selecting the current database ( replace it with. Then click Update.	(or table) and choosing the database (or table) to
Current Data Source	
Preport     AdventureWorks2017	
Properties	
⊞ Customer	
🗄 🛄 SalesOrderDetail	
🕀 🛄 SalesOrderHeader	
Replace with:	
	∧ <u>U</u> pdate
🕀 🧰 ADO.NET (XML)	
🕀 🧰 Database Files	
🕀 🦲 Java Beans Connectivity	
🕀 🦲 JDBC (JNDI)	
Make New Connection	
	×
	Class

Under ODBC (RDO) Select: Make a New Connection


Select Data Source:	۲	
<u>D</u> ata Source Name:	360Cast 360Eyes 360EyesDS 360Scan 360Scan_H2 AdventureWorks2017 Blog Snowflake AdventureWorks club club-webi	
and File DSN:	efashion	*
File DSN:		
Enter Connection String:	0	
Connection Chines		

Select: Blog Snowflake AdventureWorks Click: Next



Ø

<u>S</u> erver:	Blog Snowflake AdventureWorks	
<u>U</u> ser <mark>I</mark> D:	l	
<u>P</u> assword:		

Enter: User ID Enter: Password Click: Finish



eplace it with. Then click Update.		
urrent Data Source:		
E Preport		
🖃 🔩 Adventure Works2017		
eplace with:		
eplace with:	<u>^</u>	<u>U</u> pdate
eplace with: 	^	<u>U</u> pdate
eplace with:	^	<u>U</u> pdate
eplace with:	^	<u>U</u> pdate
eplace with:	^	<u>U</u> pdate
eplace with:	^	<u>U</u> pdate
eplace with:	^	<u>U</u> pdate
Image: Separate with:         Image: Separate with: <t< td=""><td>^</td><td><u>U</u>pdate</td></t<>	^	<u>U</u> pdate

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.

ace it with. Then click Update.		
ent Data Source:		
i report		
🖃 🚳 Blog Snowflake AdventureWorks		
🕀 🎬 Properties		
🕀 🛄 Customer		
🕀 🛄 SalesOrderDetail		
🕀 🛄 SalesOrderHeader		
ace with:	^	Update
lace with:	^	Update
lace with:	^	<u>U</u> pdate
lace with:	^	<u>U</u> pdate
lace with:	^	Update
lace with:	^	<u>U</u> pdate
lace with:	^	<u>U</u> pdate
AdventureWorks2017  AdventureWorks2017  Add Command  Add Command  ADVENTUREWORKS2017  M INFORMATION_SCHEMA  P UBLIC  CUSTOMER  SALESORDERDETAIL  SALESORDERHEADER	^	<u>U</u> pdate

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**

Manage • Actions • Organize •				
🖆 🎦 • 🖻 •   🖽 🖧 🔽				
🗄 💼 Objects List 📩		Title *		Туре
🗄 💼 All Folders	-2	AdventureWorks 2017 (Crystal Reports) - CM	Descrition	Grystal Reports 2016
	•	AdventureWorks 2017 (Crystal Reports).rpt	Properties	rystal Reports 2016
E Souding	-	AdventureWorks 2017 Statements	View	veb Intelligence
360eyes for SAP Data Ser	-	AdventureWorks 2017 Statements (data and	Schedule	veb Intelligence
360eyes jobs	-	AdventureWorks 2017 Statements (data reg	History	veb Intelligence
🛨 💼 360eyes reports			Run Now	
🔁 360scan_H2			Database Configuration	
			Limits	

Find your Crystal Reports Right-Click > Database Configuration



#### 3. Database Configuration

Default Settings: Adven	tureWorks 2017 (Crystal R	eports) - CMC Update.rpt			
Hide Navigation					
<ul> <li>Default Settings</li> <li>Recurrence</li> </ul>	Data Sources AdventureWo	orks2017 🔹			
Schedule For Notification	When viewing and scheduling	g report: Use same database logon as when report is run 🔻			
Database Configura	Database logon information:	÷			
Filters	Use original datab	pase logon information from the report.			
Formats	-				
Destinations Print Settings	Server:	AdventureWorks2017			
Print Settings	Database	Adventure)Works2017			
Events	Dalabase.	Adventureworks2017			
Scheduling Server (	User:	360			
Viewing Server Gro	Password:				
Extensions					
Thumbnail	Use custom data	base logon information specified here.			
Languages					
Properties	Database Ty	vpe: 💿 Select a database driver			
Categories		ODBC 🔻			
Mobile Properties		Specify a custom driver			
Schedule					
User Security					
History	Server:	Blog Snowflake AdventureWorks			
Limits	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

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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.

SAP	Welcome: Administrator   Applications ▼ Preferences Help menu ▼   Log off	SAP	Welcome: Administrator   Applications - Preferences Help menu -   Log off
Home Documents AdventureWorks 201 🖓 🕏	· 0	Home Documents AdventureWorks 201 🖓 😕	0
Web Intelligence • 🗋 🧀 🖓 • 🕅	🌮 🚠 🔄 • 👘 🖓 🖉 • 😨 Track • 🤿 Drill • 🌠 Filter Bar 🔲 Freeze • 😥 Outline 🛛 Reading • Design •	Web Intelligence 🔹 🖻 🧀 🖓 • 🕅	19 🖾 🖂 🔹 🐑 🍅 🞯 🔹 🧱 Track • 😨 Drill • 🌮 Filter Bar 🥅 Freeze - 🗐 Outline 🛛 Reading • Design •
Navigation Map - «		Navigation Map - « AdventureWorks 2017 Statements AdventureWorks 2017 Statements Customers View	Referab Referab one or all data providers
	Urgers		Urders
<u>–</u>	SO43697		SO43697
<u>86</u>	Customer.Account Number Revision Num Order Date Due Date Ship Date Status Online Orde	36	Customer.Account Number Revision Num Order Date Due Date Ship Date Status Online Orde
	AW00021768 8 31/05/2011 12/06/2011 07/06/2011 5		AW00021768 8 31/05/2011 12/06/2011 07/06/2011 5
	4		x
	Orders View Dustomers View		Orders View Customers View
- Orders View *	😰 Track changes: Off 🛛 H 🤞 Page 1 of 1+ 🕨 🕅 🏬 📴 100% 🔹 🥲 40 minutes ago	- Orders View •	😰 Track changes: Off 🛛 H 🔸 Page 1 of 1+ 🕨 🕅 💽 100% 🔹 🚭 8 minutes ago

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.

Welcome: Administrator   Applications - Preferences Help menu -   Log off	Ø	AP,	Welcome: Administrator   Applications - Preferences Help menu -   Log off	5
me Documents	ſ	me Doc	cuments	
Pickners.         Averbankloks 2017 Statements         2         2           Visitaria         2         2         2           Tele         Averbankloks 2017 Statements         2         2           Ower:         Admittation         2         2           State         3         2         2         2           State         10         2         2         2           State         12         2         2         2	H	ne Doc Stat Stat Doc Title Doc Typ Stat Des Doc Title Doc Title Doc Title Doc Title Doc Title Doc Title Doc Title Doc Typ Stat Doc Stat Doc Typ Stat Doc Stat Stat Doc Stat Stat Doc Stat Stat Stat Stat Stat Stat Stat Sta	caments  caments  caments  caments  caments  cament  c	
Istatare No. Teatrated Clater Source: 31/02/2020 Is15 Denny: Weitelense Parameters:50/0597;50/0599;50/0599;50/0790;50/0701;50/05015370;AW00015370;AW00015372;AW00015370;AW00015380;AW00015381;AW00015384;AW00015380;AW00015370;AW0000000;AW000000;AW00000;AW0000000;AW000000;AW000000;AW000000;AW0000000;AW0000;AW00000000	R	Inst Fed Clus Expi Forr Pari	ансе III инт. III (2020) 16-16 инт. III (	

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