



ECS 2026

2 POWER BI STORAGE MODES, 1 DATAVERSE: TIPS AND TRICKS TO OPTIMIZE YOUR REPORTS

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Laura Graham-Brown





AGENDA

- The Recipe for a Good Report 🧑🍳 🧑🍳 🍷
- Dataverse and the Options:
 - **1** Import
 - **2** DirectQuery
 - **3** Composite
- Demo Time! 🎥
- Closing Thoughts 🤔
- Q&A 🙋 🙋

Meet the Presenters

Agentologist, trainer,
#PowerPlatformFreak,
#ProjectOperationsLover, geek,
cheesecake consumer



Joe Griffin
CEO @ proMX UK Limited





WHAT MAKES FOR A GOOD REPORT?

- It's all in the ingredients... 🍓 🍄 🥚
 - Whip together a good base sauce by choosing the most optimal storage mode.
 - Use the right ingredients to create something delicious:
 - Fact tables + Dimension tables = Star Schema 😊
 - Don't order off the menu:
 - If real-time access isn't needed, why implement it?
 - Cook like Joel Robuchon 👨‍🍳, not Ronald McDonald 🤖
 - SELECT * is the enemy...
 - ...WHERE is your best friend



DATA MODELLING TECHNIQUES

Fact tables are activities or events

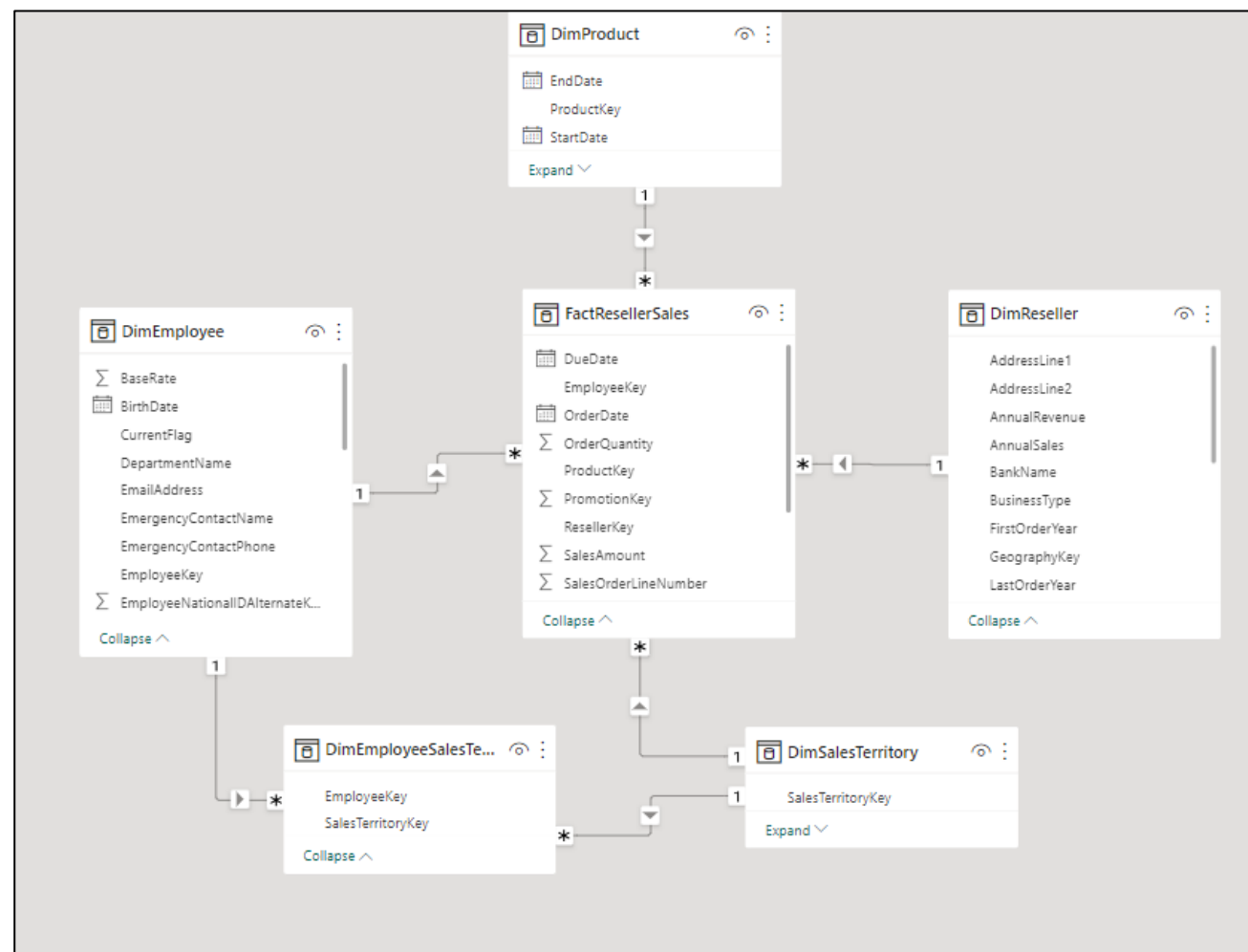
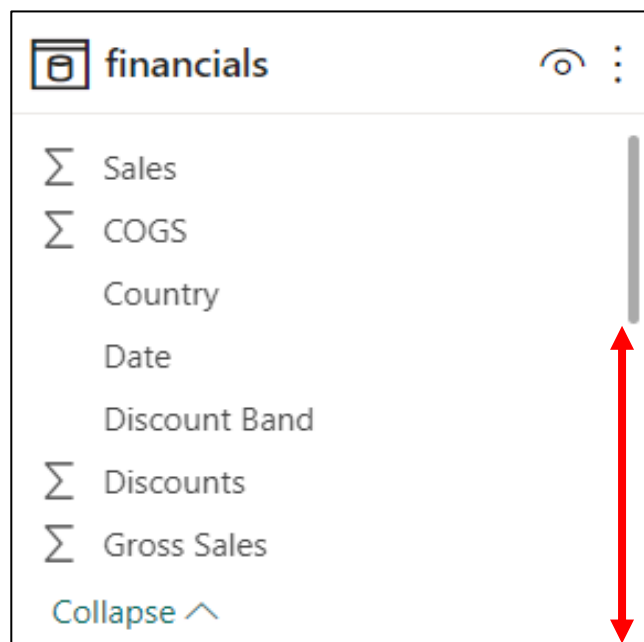
FactResellerSales	
DueDate	
EmployeeKey	
OrderDate	
OrderQuantity	
ProductKey	
PromotionKey	
ResellerKey	
SalesAmount	
SalesOrderLineNumber	

Dimension tables provide the details.

DimEmployee	
BaseRate	
BirthDate	
CurrentFlag	
DepartmentName	
EmailAddress	
EmergencyContactName	
EmergencyContactPhone	
EmployeeKey	
EmployeeNationalIDAlternateK...	



UNDERSTANDING STAR SCHEMAS



Resources

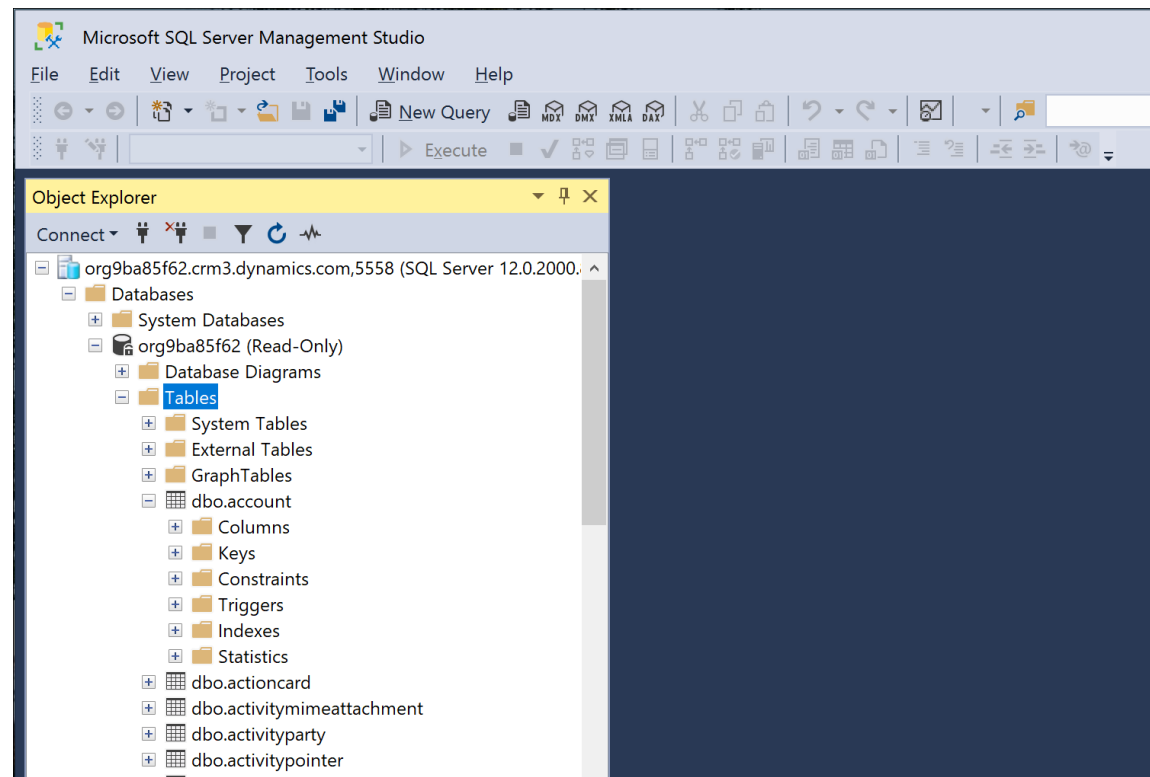
<https://www.sqlbi.com/articles/the-importance-of-star-schemas-in-power-bi/>

<https://learn.microsoft.com/en-us/power-bi/guidance/star-schema>



TABULAR DATA STREAM (TDS) ENDPOINT FOR DATAVERSE

- Allows you to connect to Dataverse and work with T-SQL queries against your data using the following applications:
 - SQL Server Management Studio (SSMS)
 - Power BI (Desktop / Online)
- Looks and feels like a SQL Server, but it *isn't*:
 - No support for UPDATE, DELETE etc. statements
 - No ability to work with stored procedures, functions etc.



TDS endpoint

Enables connecting from Power BI using Tabular Data Stream(TDS) Protocol. [Learn more](#)

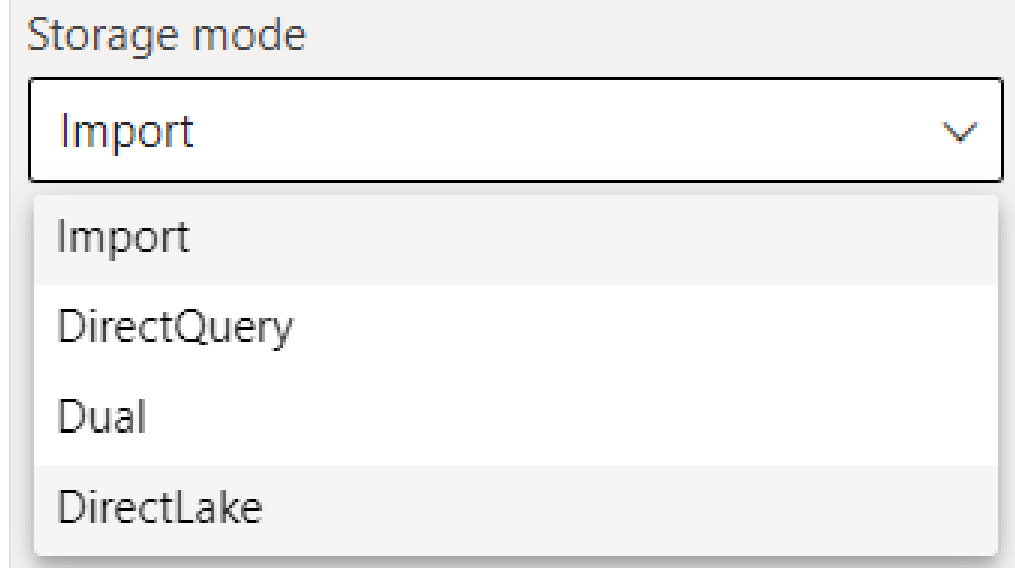
Enable TDS endpoint

On



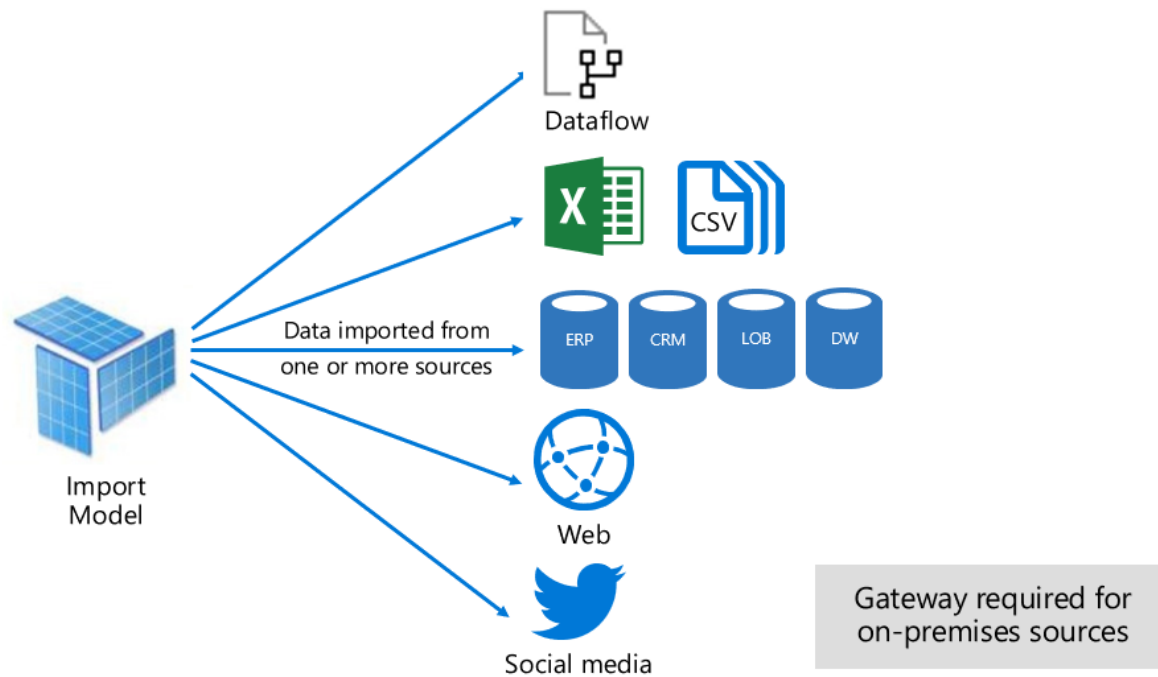
CHOOSING A STORAGE MODE

- Storage mode affects
 - Available transformations
 - Report performance
- Not all sources support all modes
- Reference
 - <https://learn.microsoft.com/en-us/power-bi/connect-data/service-dataset-modes-understand>





INTRODUCTION TO IMPORT MODE

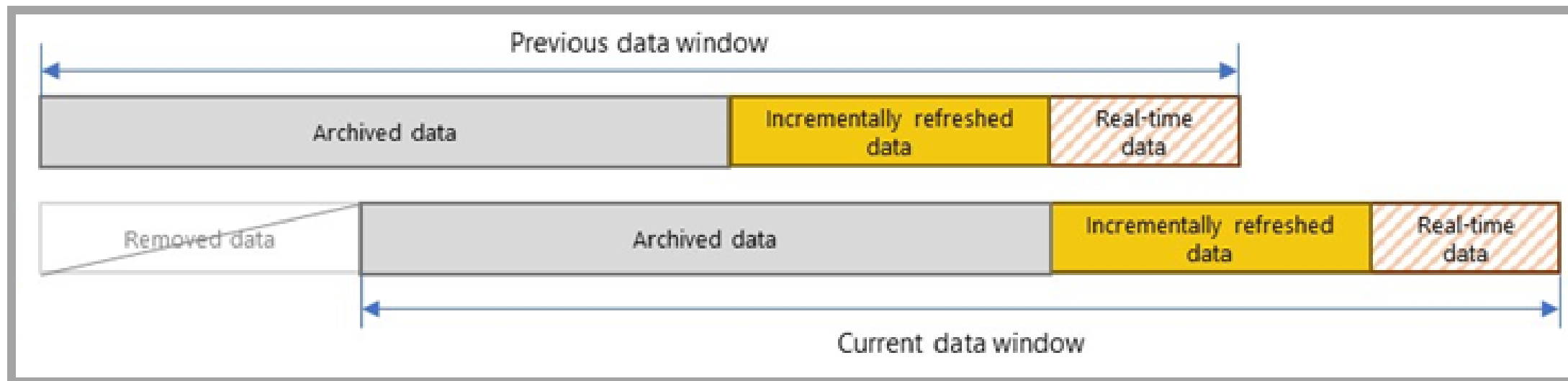


- Definition
- In-memory performance
- Default choice
- Stored data
- Design flexibility
- Refresh requirements

Query happens on the scheduled refresh



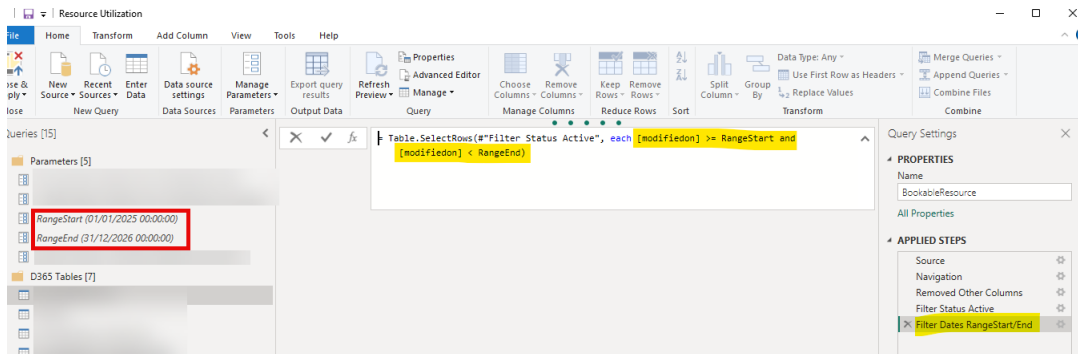
WORKING WITH INCREMENTAL REFRESH



- Refreshes only **new or updated portions** of a dataset
- Use parameters to control the start (RangeStart) and end (RangeEnd)
- Faster refresh time and lower resource consumption? Yes, please! 🙏
- Possible to also retrieve fetch real-time data (Premium only)



CONFIGURING INCREMENTAL REFRESH



References

<https://learn.microsoft.com/en-us/power-bi/connect-data/incremental-refresh-overview>

Incremental refresh and real-time data

Refresh large tables faster with incremental refresh. Plus, get the latest data in real time with DirectQuery (Premium only). [Learn more](#)

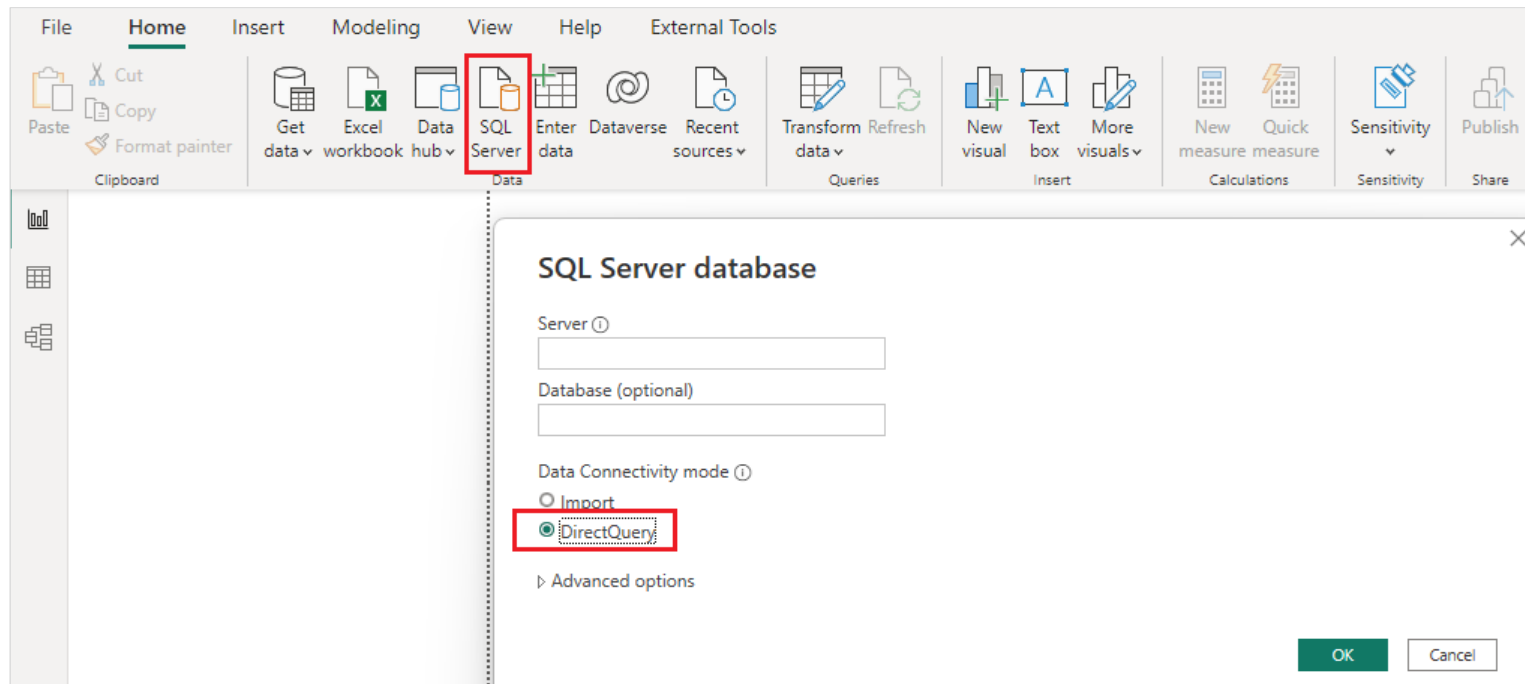
Combining import and DirectQuery makes this a hybrid table. Set your related tables, to dual mode to speed up their performance with hybrid tables. [Learn more](#)

These settings will apply when you publish the dataset to the Power BI service. Once you do that, you won't be able to download it back to Power BI Desktop. [Learn more](#)

1. Select table
2. Set import and refresh ranges
 - Incrementally refresh this table
 - Archive data starting before refresh date
 - Data imported from 01/01/2021 to 15/01/2026 (inclusive)
 - Incrementally refresh data starting before refresh date
 - Data will be incrementally refreshed from 16/01/2026 to 18/01/2026 (inclusive)
3. Choose optional settings
 - Get the latest data in real time with DirectQuery (Premium only) [Learn more](#)
 - Real-Time data will be from 19/01/2026 (inclusive) onwards



Introduction to DirectQuery



Query happens anytime the filter or data requested changes

<https://learn.microsoft.com/en-us/power-bi/connect-data/desktop-use-directquery>



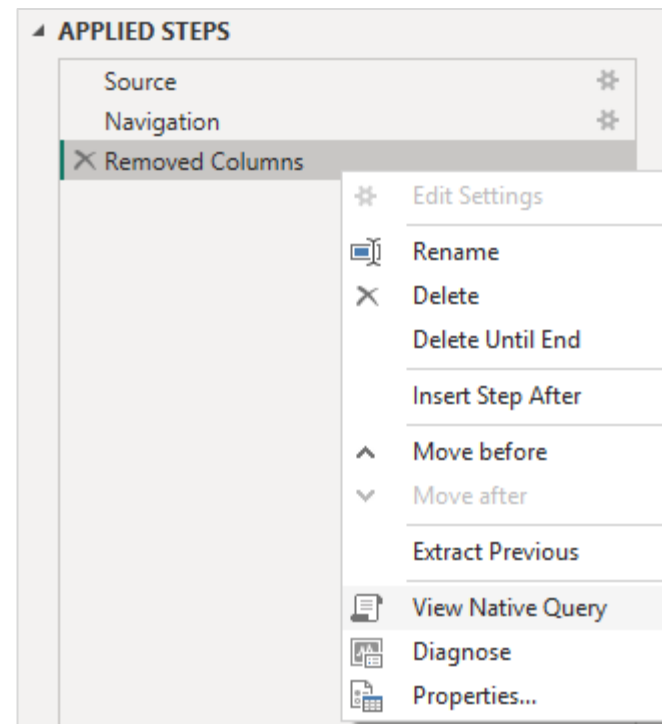
IMPLICATIONS OF USING DIRECTQUERY

Benefits	Limitations
Frequently changing data	Dependent on data source performance
Need near real-time	Security between source and destination
Large data volumes	Limited modeling capabilities
Multi-dimensional data	Limited transformation features
Permissions	



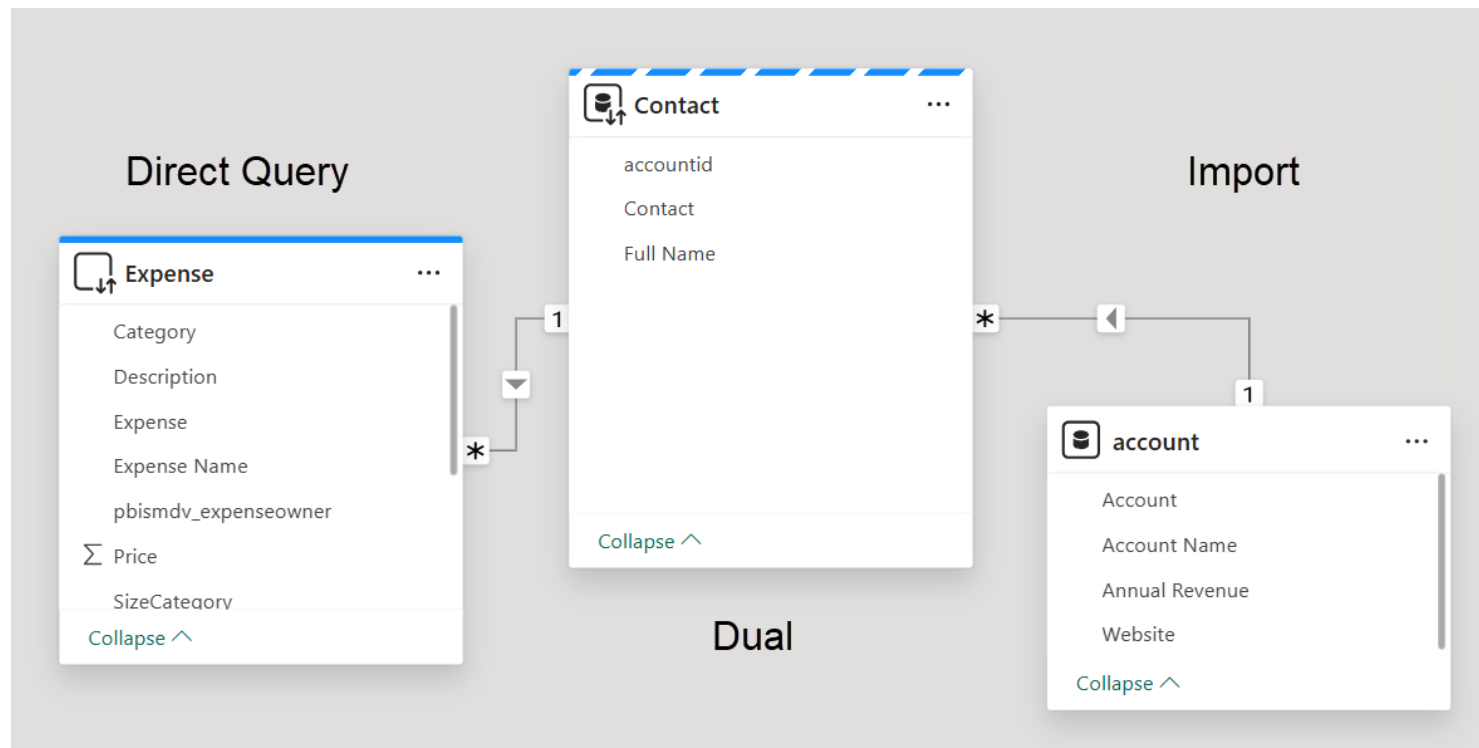
Query folding

- Pushes data transformations to the source for better performance and efficiency.
- Supported sources
 - Relational databases
 - OData feeds
 - Active Directory
- Direct Query only works on queries that fold.
- Reference
 - <https://learn.microsoft.com/en-us/power-query/query-folding-basics>





INTRODUCTION TO COMPOSITE MODE



Query happens depending on storage mode

<https://learn.microsoft.com/en-us/power-bi/transform-model/desktop-composite-models>



KEY SCENARIOS

- Balance performance and data freshness
- More complex data blending (multi-source and on-premise)
- Large scale analytics
- Semantic model re-use
- Optimize premium capacity use

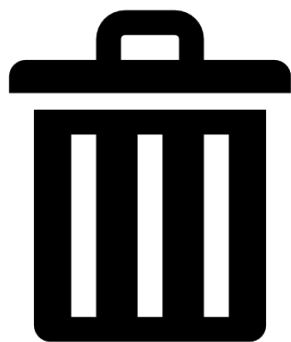


OTHER CONSIDERATIONS

- Query folding
- Data quality in Direct Query
- Query Analyzer
- Bravo
- DAX Studio
- Generate Dataverse URL column
- Visual interactions
- M:M Relationships (native) and Dataverse



Data Quality





DaxStudio - 2.13.1

File Home Advanced Help

Run Cancel Clear Cache Output Query Builder View Edit Format Query To Upper To Lower Swap Delimiters Comment Uncomment Merge XML Find Replace Load Perf Data All Queries Query Plan Server Timings Connect Refresh Metadata

Query1.dax* X

Metadata

62a3f084-d80d-491d-8910

Model

Customer Date Product Reseller Sales Sales Order Sales Territory

1 EVALUATE Customer

100 %

Results

CustomerKey	Customer ID	Customer	City	State-Province	Country-Region	Postal Code
11024	AW00011024	Russell Xie	Concord	California	United States	94519
11081	AW00011081	Savannah Baker	Concord	California	United States	94519
11160	AW00011160	Maurice Tang	Concord	California	United States	94519
11161	AW00011161	Emily Wood	Concord	California	United States	94519
11184	AW00011184	Meghan Hernandez	Concord	California	United States	94519
11295	AW00011295	Taylor Lewis	Concord	California	United States	94519
11329	AW00011329	Andy Alvarez	Concord	California	United States	94519
11499	AW00011499	Pedro Vance	Concord	California	United States	94519
11539	AW00011539	Justin Washington	Concord	California	United States	94519
11655	AW00011655	Tamara Sharma	Concord	California	United States	94519
11733	AW00011733	Kristi Schmidt	Concord	California	United States	94519
11851	AW00011851	Jada Mitchell	Concord	California	United States	94519
11853	AW00011853	Grace Jones	Concord	California	United States	94519
11945	AW00011945	Dennis Huang	Concord	California	United States	94519
12146	AW00012146	Xavier Thomas	Concord	California	United States	94519
12411	AW00012411	Kevin Alexander	Concord	California	United States	94519
12429	AW00012429	Melvin Black	Concord	California	United States	94519
13017	AW00013017	Xavier Alexander	Concord	California	United States	94519

Metadata Functions DMV Output Results Query History

Ready Ln 1, Col 1 localhost:27137 15.1.63.25 78 18485 rows 00:00.0

<https://daxstudio.org/>



CLOSING THOUGHTS

- Just because you CAN do something, doesn't mean you shouldn't 😊
 - Is real-time **really** required?
 - Consider refresh frequency (esp. for Premium)
 - Performance > real-time access
- DirectQuery for Dataverse, without proper optimization, performs poorly versus import mode
- DirectQuery is great for:
 - Smaller datasets
 - Highly optimized database environments



Q&A

THANK YOU,
YOU ARE AWESOME 🧡

PLEASE RATE THIS SESSION
IN THE MOBILE APP.

Don't forget to connect with me here 🙌

