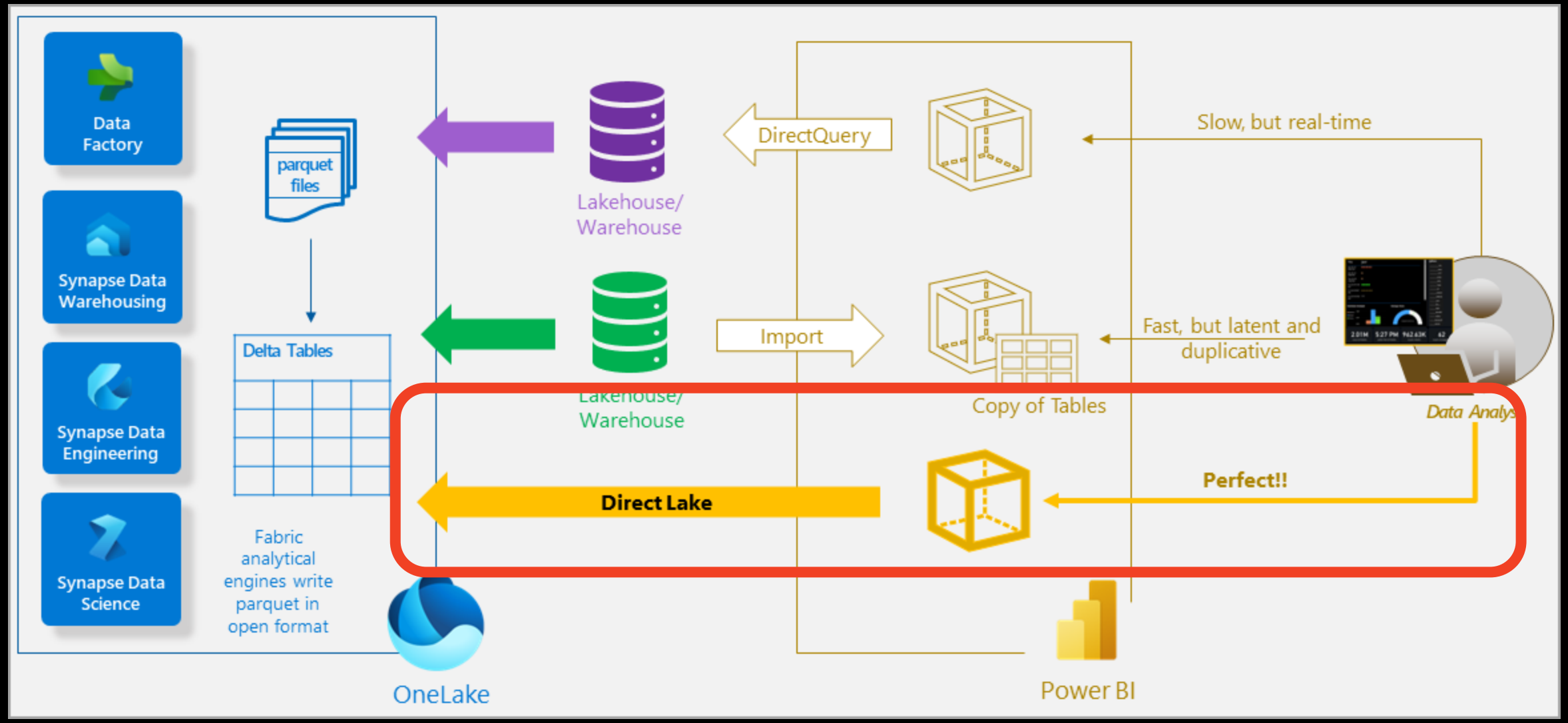
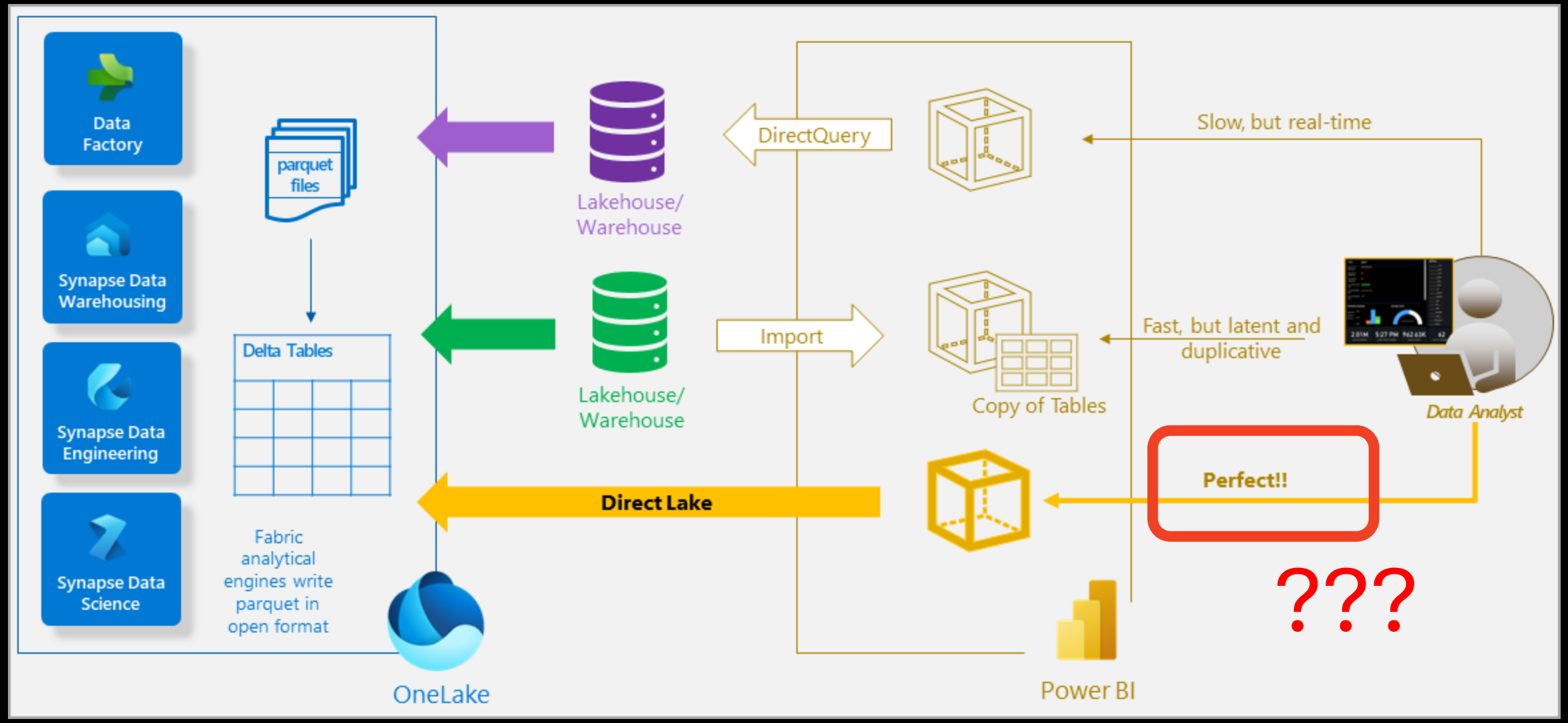
The Ecstasy and Agony of Direct Lake

Michael Johnson

Director at Cobalt Analytics

Microsoft Data Platform MVP


Data Factory
Synapse Data Warehousing
Synapse Data Engineering
Synapse Data Science
parquet files
Delta Tables
Fabric analytical engines write parquet in open format
OneLake
Lakehouse/ Warehouse
Lakehouse/ Warehouse
DirectQuery
Import
Direct Lake
Slow, but real-time
Fast, but latent and duplicative
Copy of Tables
Perfect!!
Power BI
Data Analys

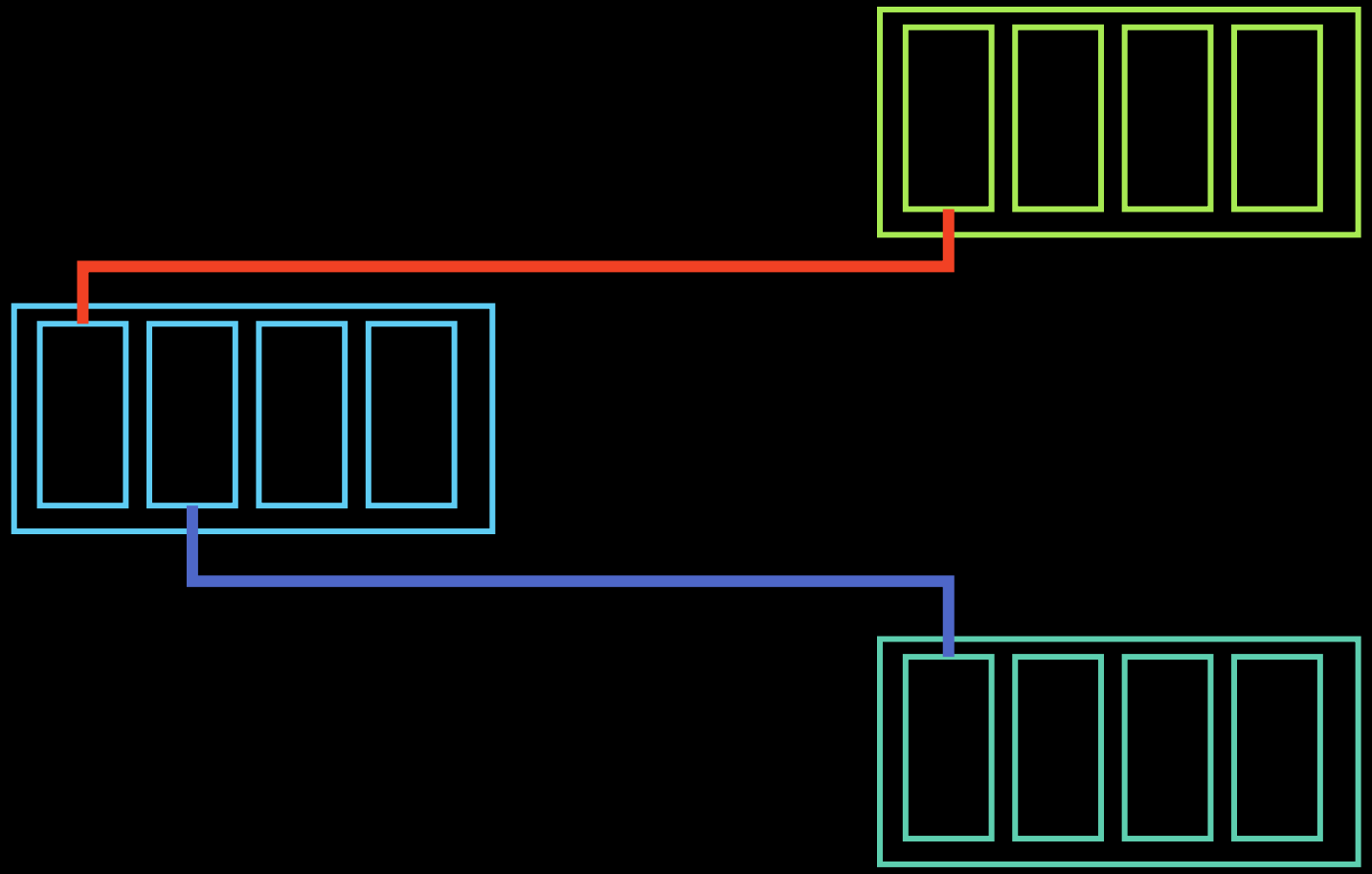

Data Factory
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Fast, but latent and duplicative
Copy of Tables
Data Analyst
Perfect!!
???
Power BI

Agenda

- Import Vs Direct Lake
- Framing
- Direct Lake Guard Rails
- Choosing between the two modes

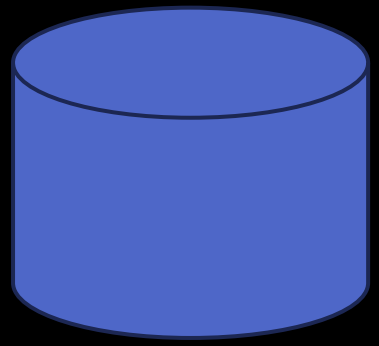
Import Vs Direct Lake

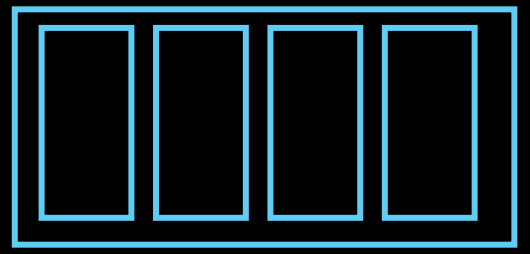
Power BI semantic model



Import Mode

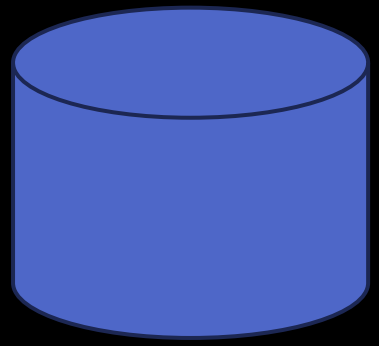
Import Mode

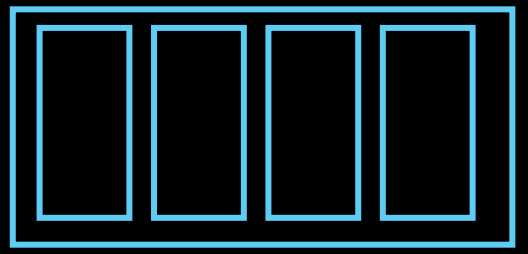




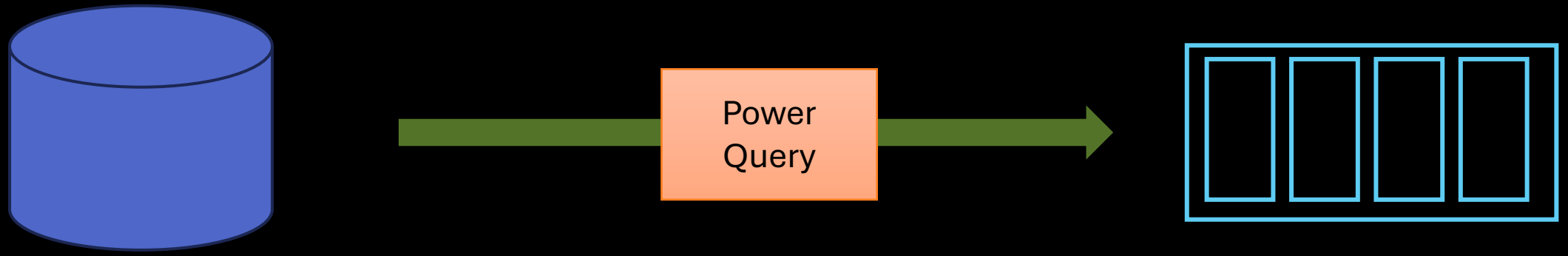
Import Mode

Refresh

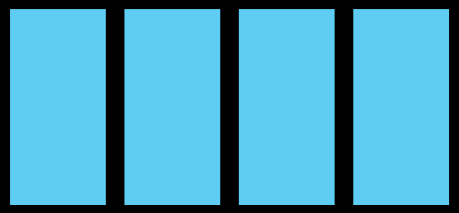


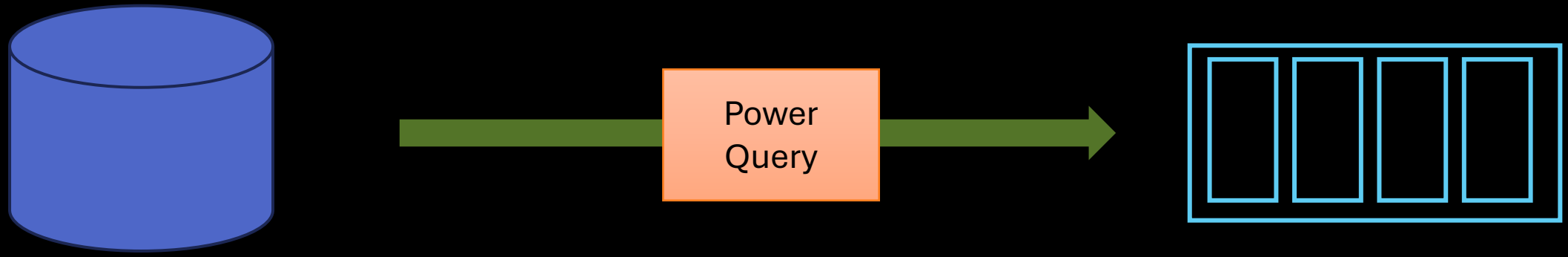


Import Mode

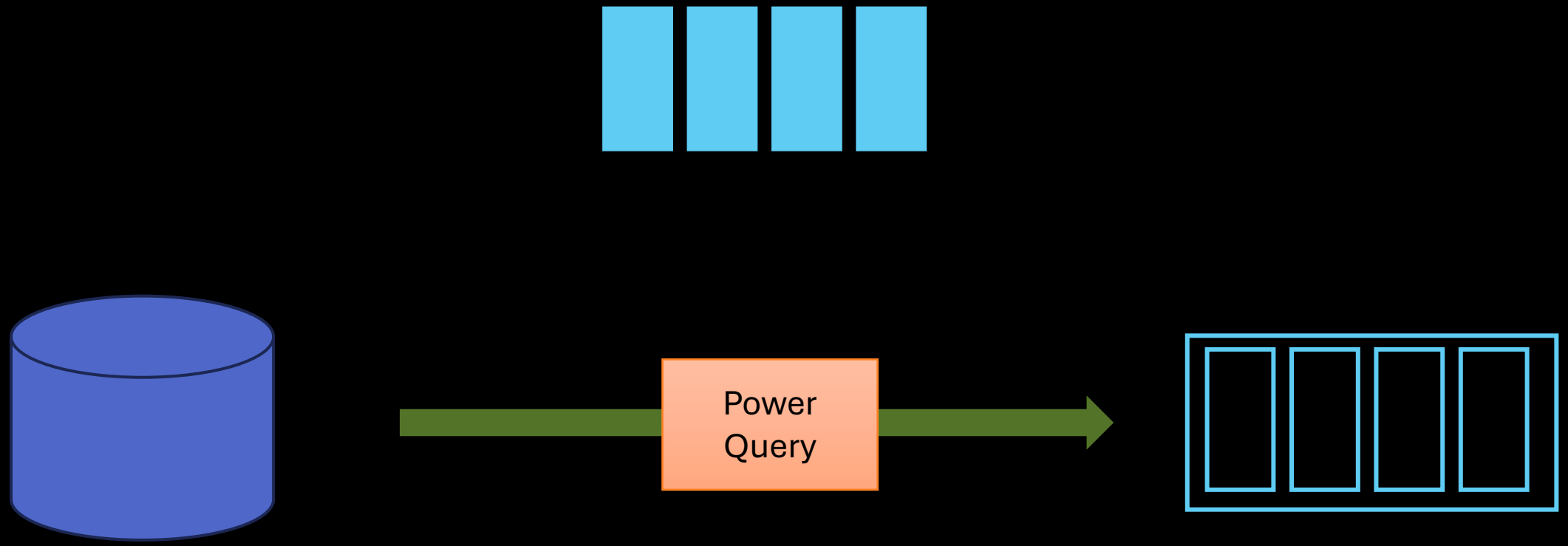


Import Mode

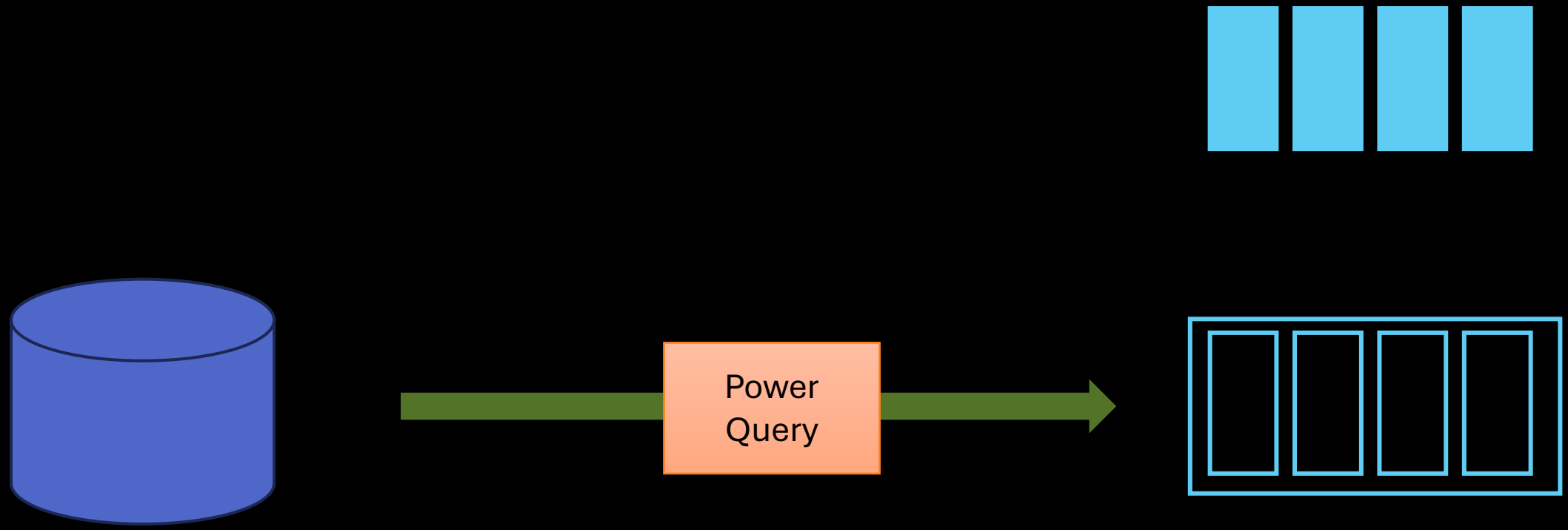




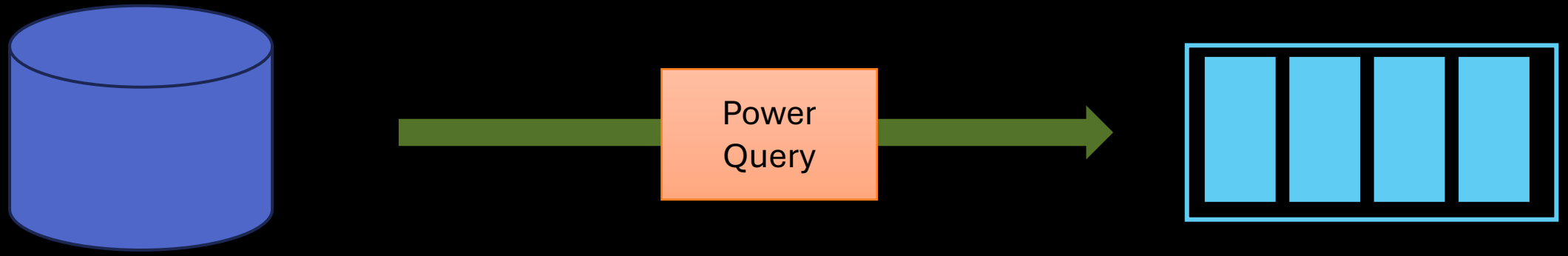
Import Mode



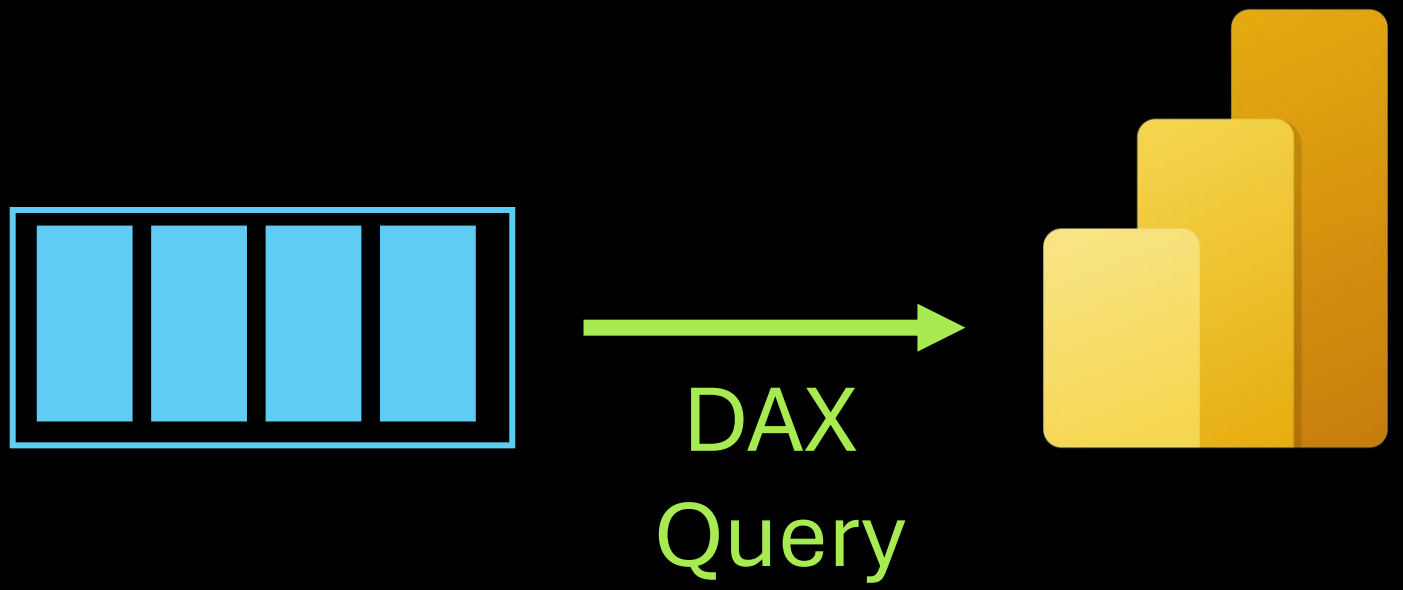
Import Mode



Import Mode

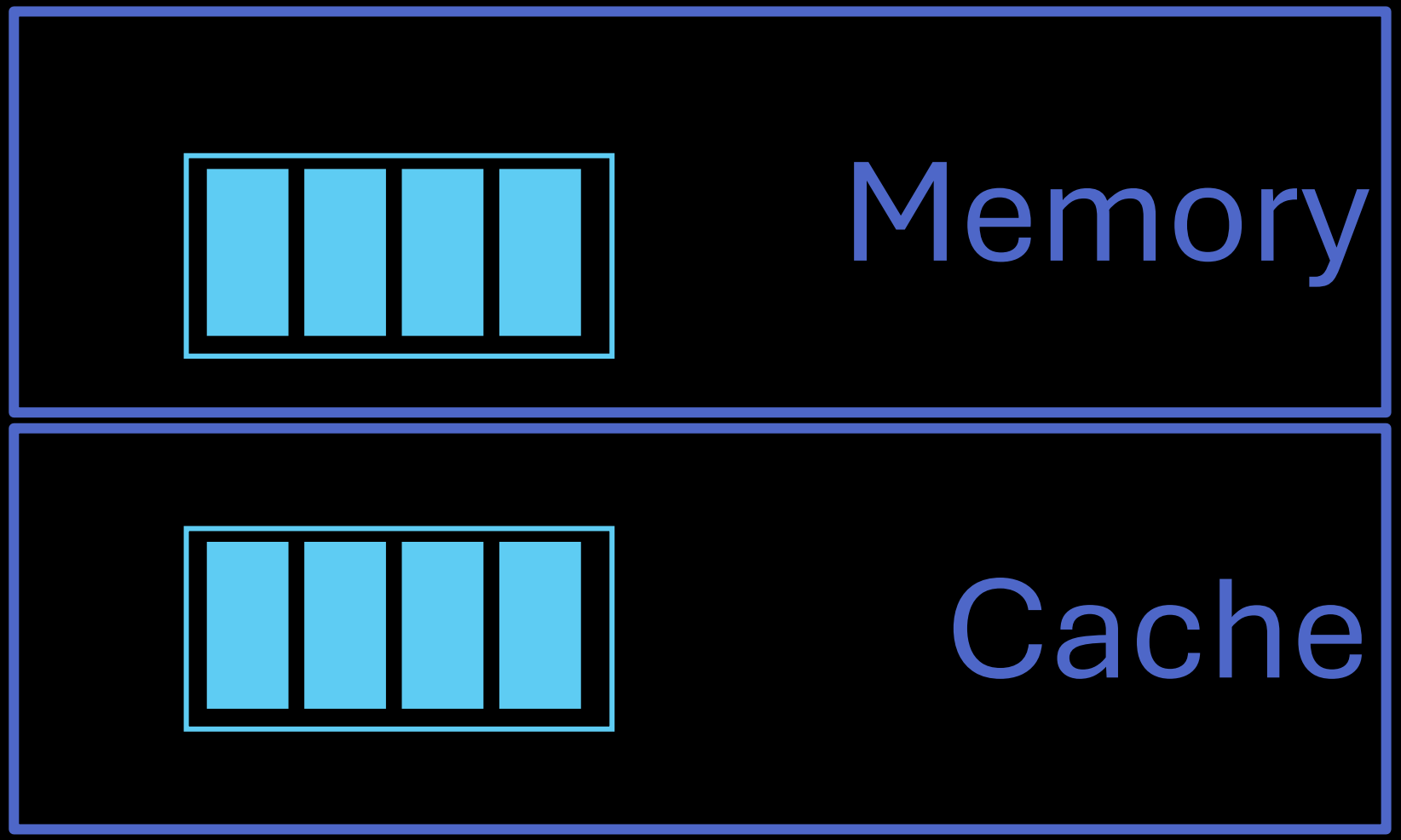


Import Mode

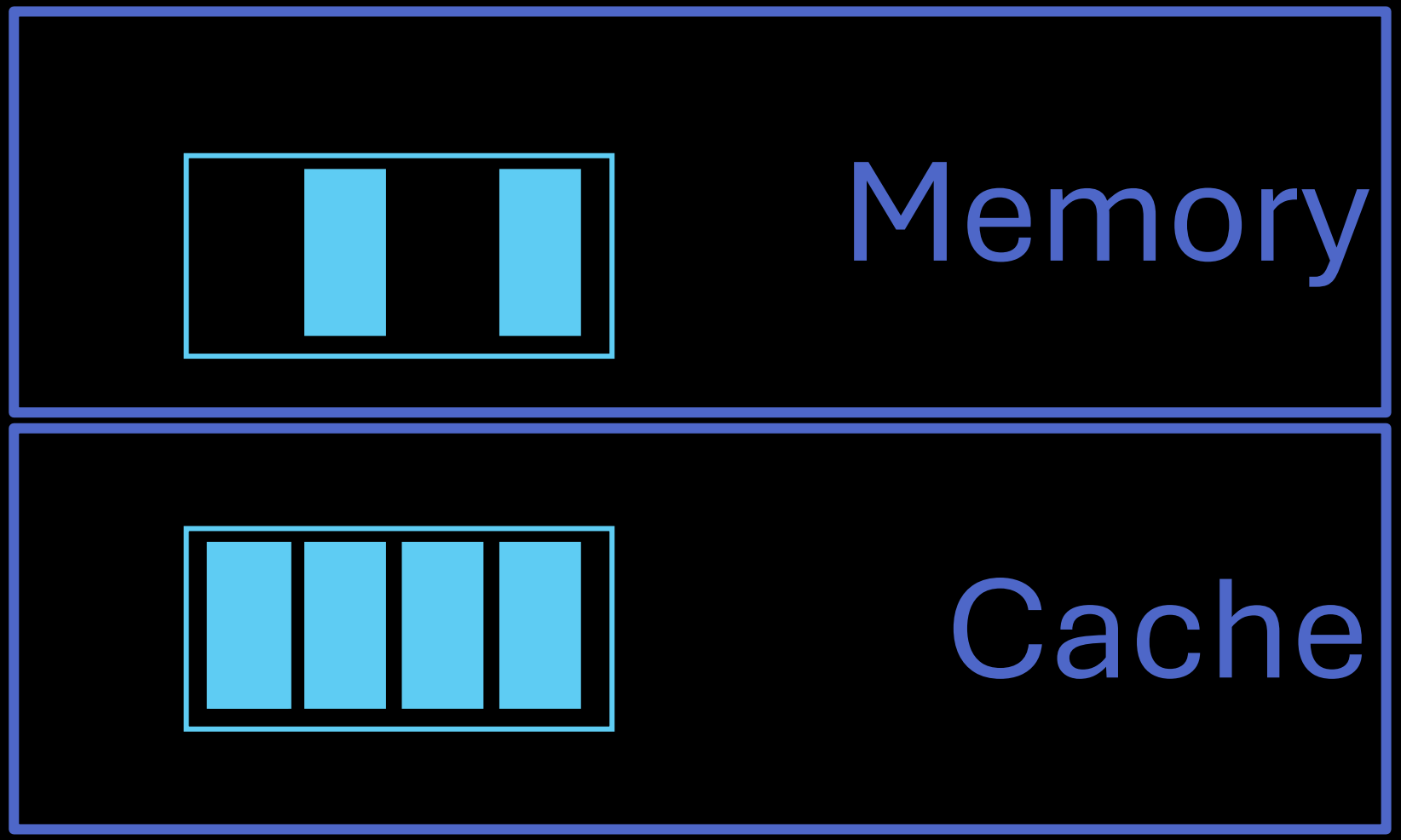


Large semantic model storage format

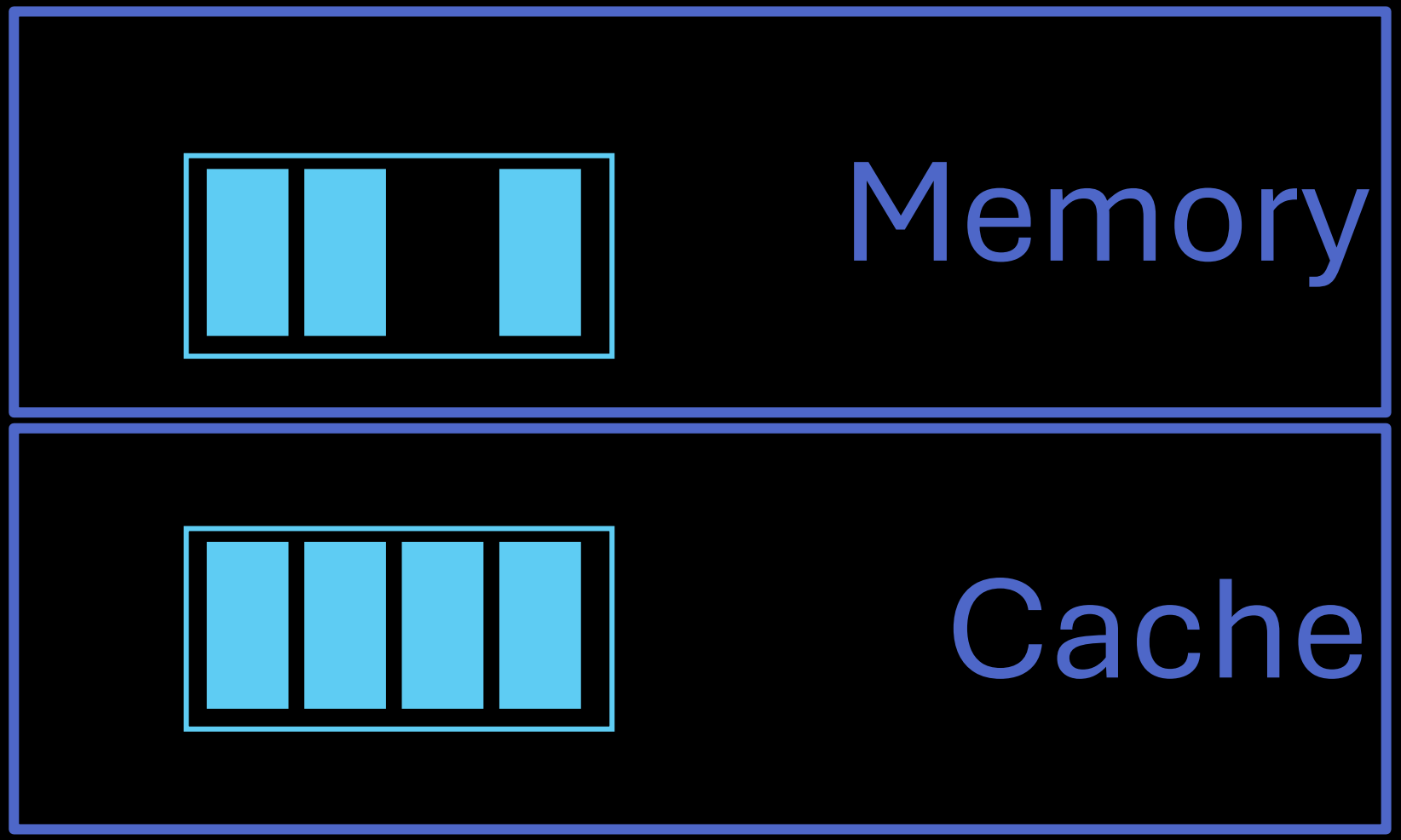
Import Mode – Large Models



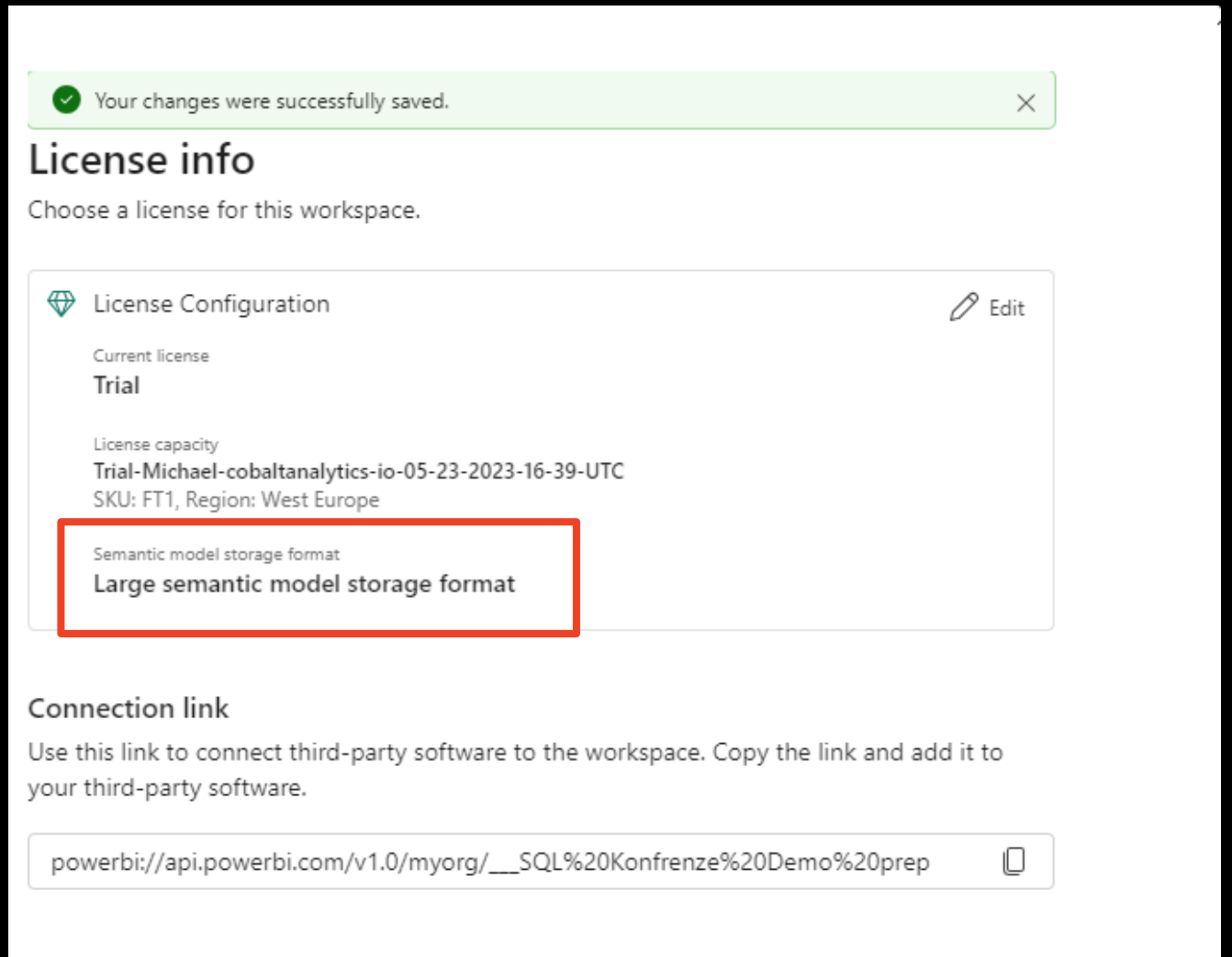
Import Mode – Large Models



Import Mode – Large Models

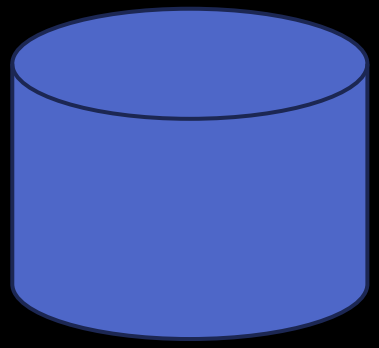


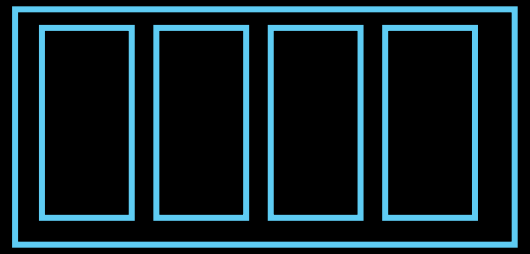
Enabling Large models semantic storage format



Direct Lake

Direct Lake Mode

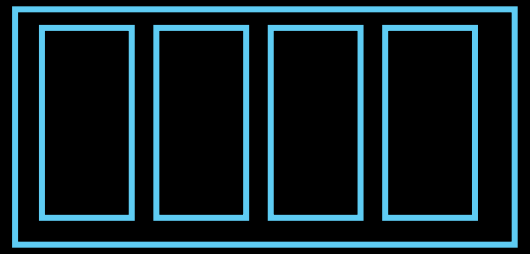




Direct Lake Mode

Fabric Lakehouse
Or
Warehouse



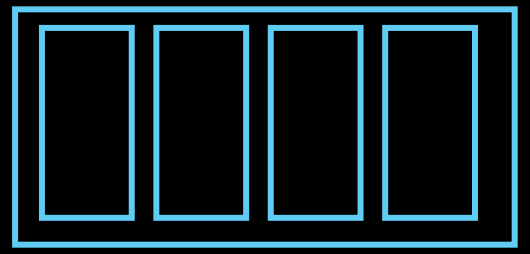


Direct Lake Mode

```
Query

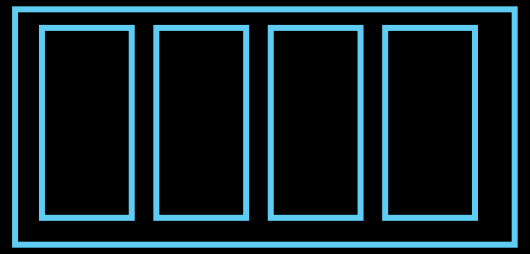
EVALUATE
ROW (
   "result",
            SUM ( factinternetsales[SalesAmount] )
)
```



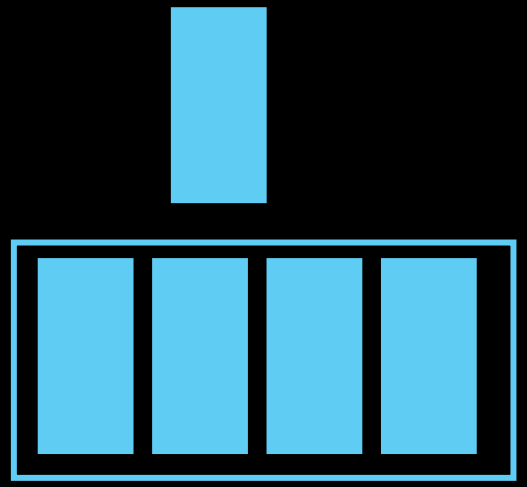


Direct Lake Mode

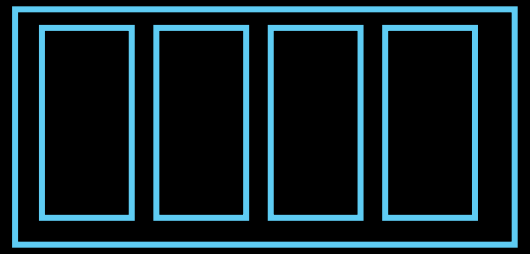




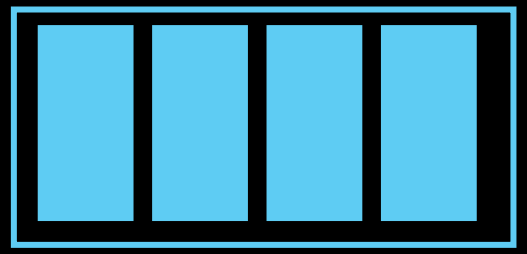
Direct Lake Mode





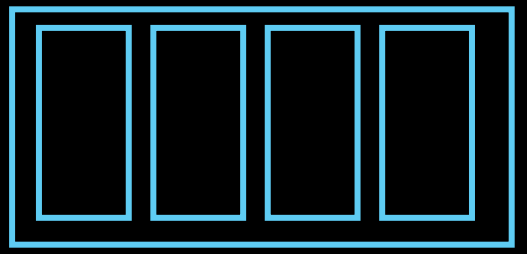


Direct Lake Mode



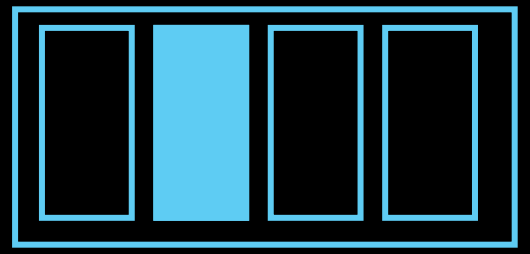






Direct Lake Mode



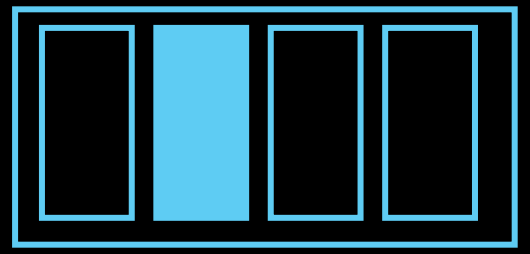


Direct Lake Mode

Query

```
EVALUATE
ADDCOLUMNS (
    VALUES ( dimproduct[Color] ),
    "SalesAmount", CALCULATE ( SUM ( factinternetsales[SalesAmount] ) )
)
```

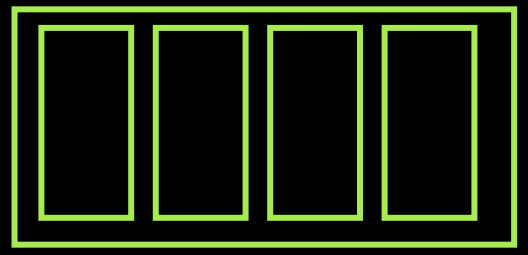




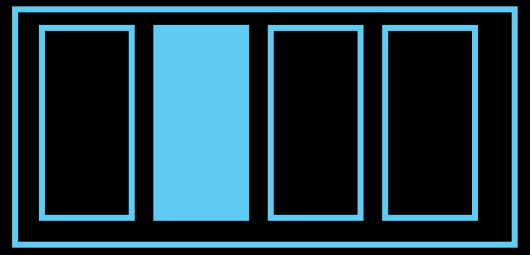
Direct Lake Mode



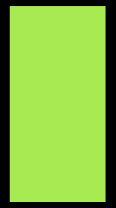
Cold cache



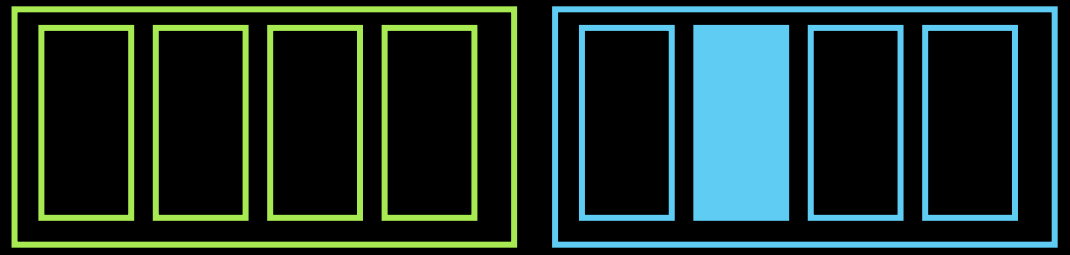
Hot cache



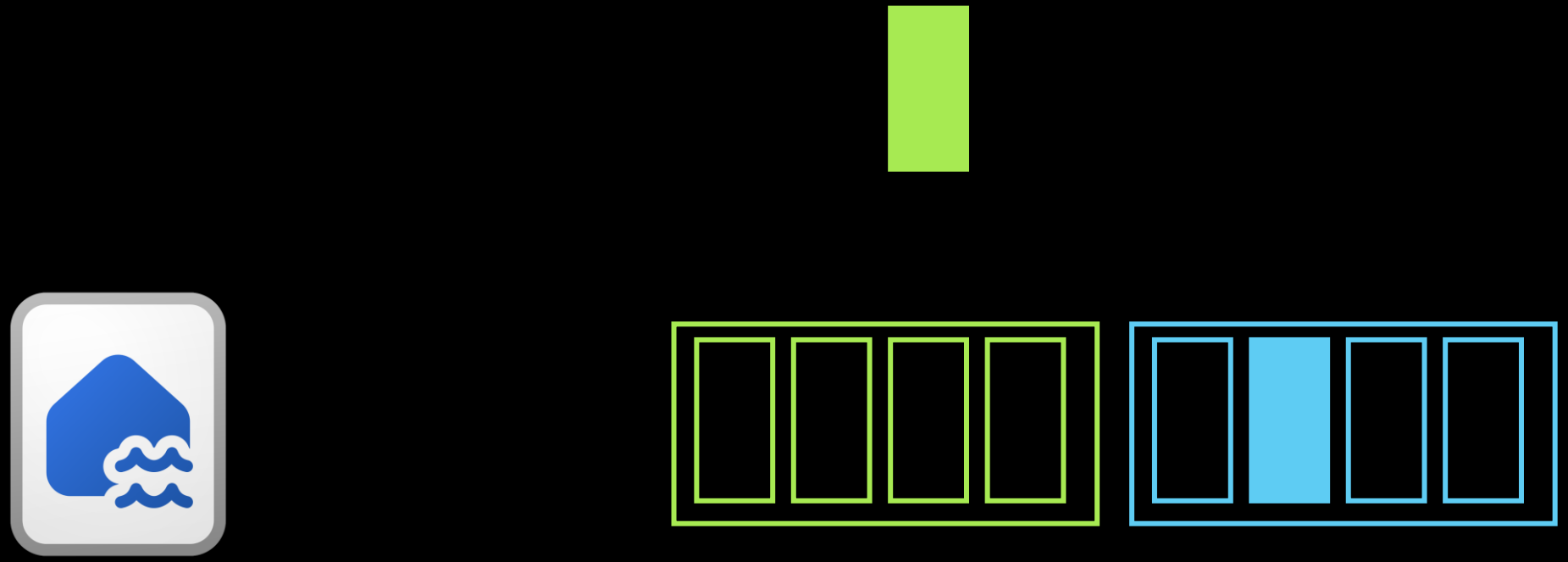
Direct Lake Mode





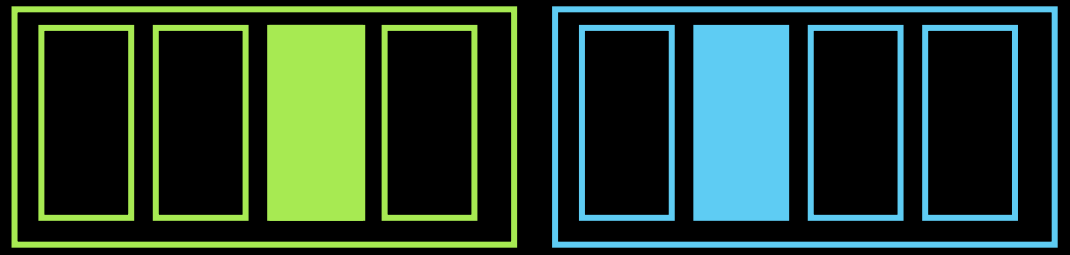


Direct Lake Mode



Direct Lake Mode





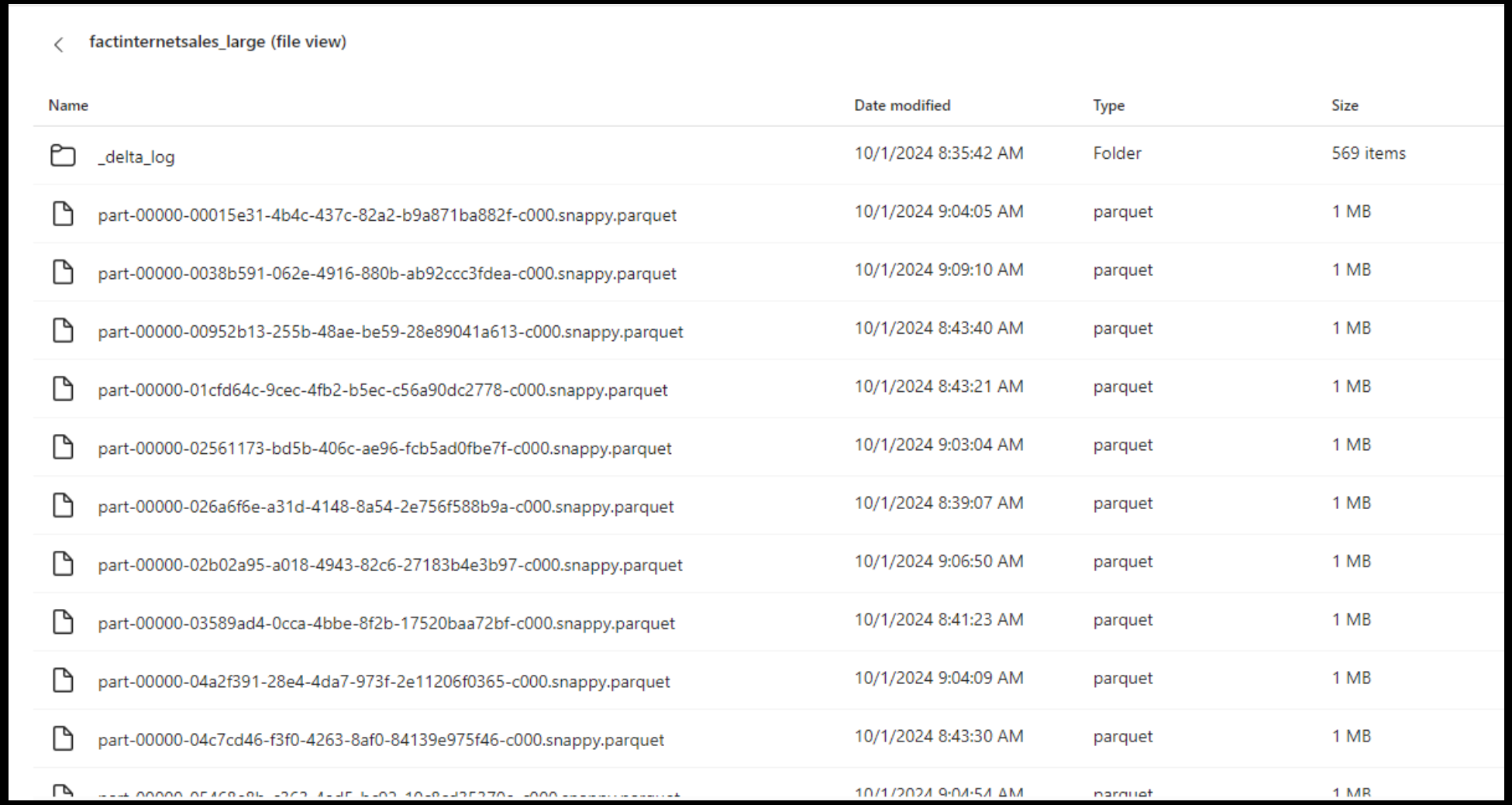
Demo

Framing

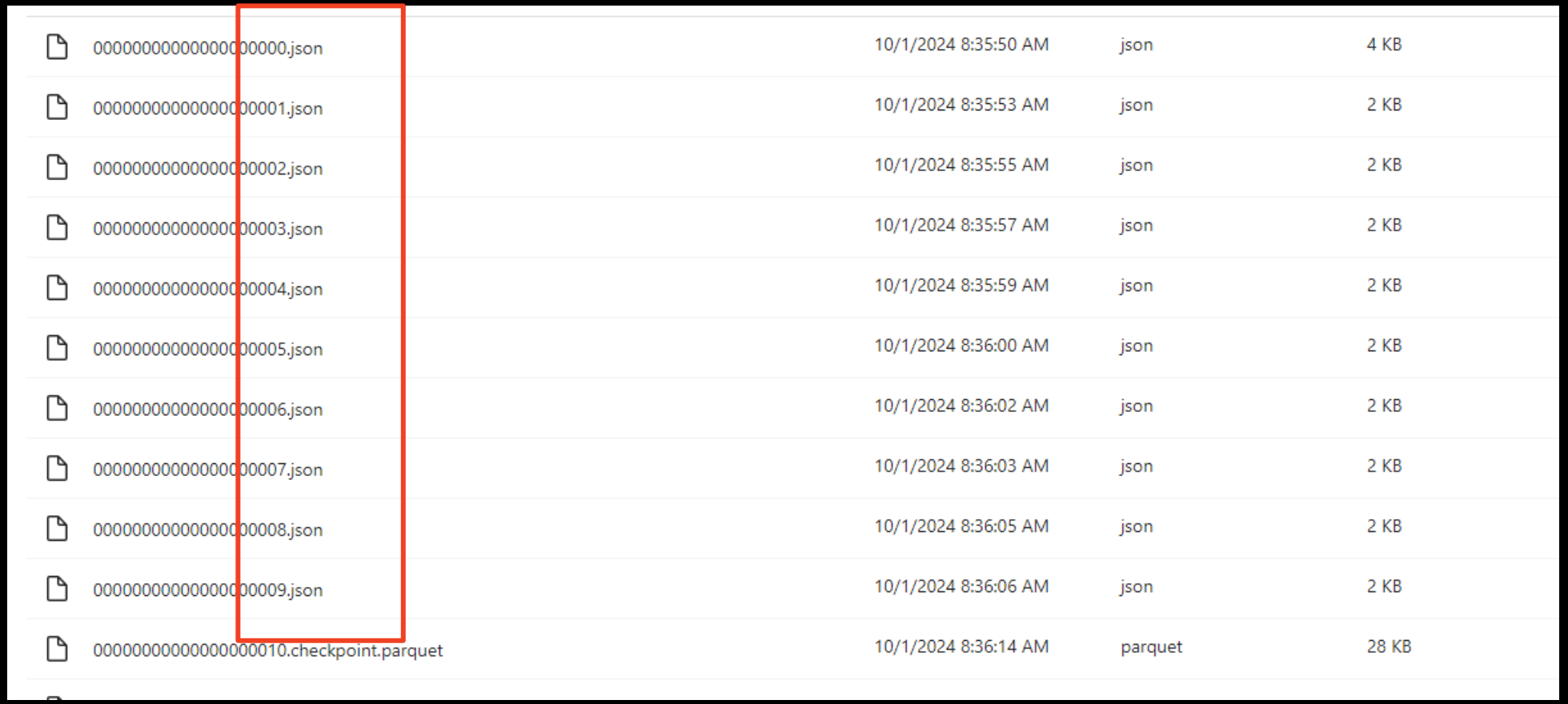
Delta lake (parquet)

- Parquet files
- Delta Log

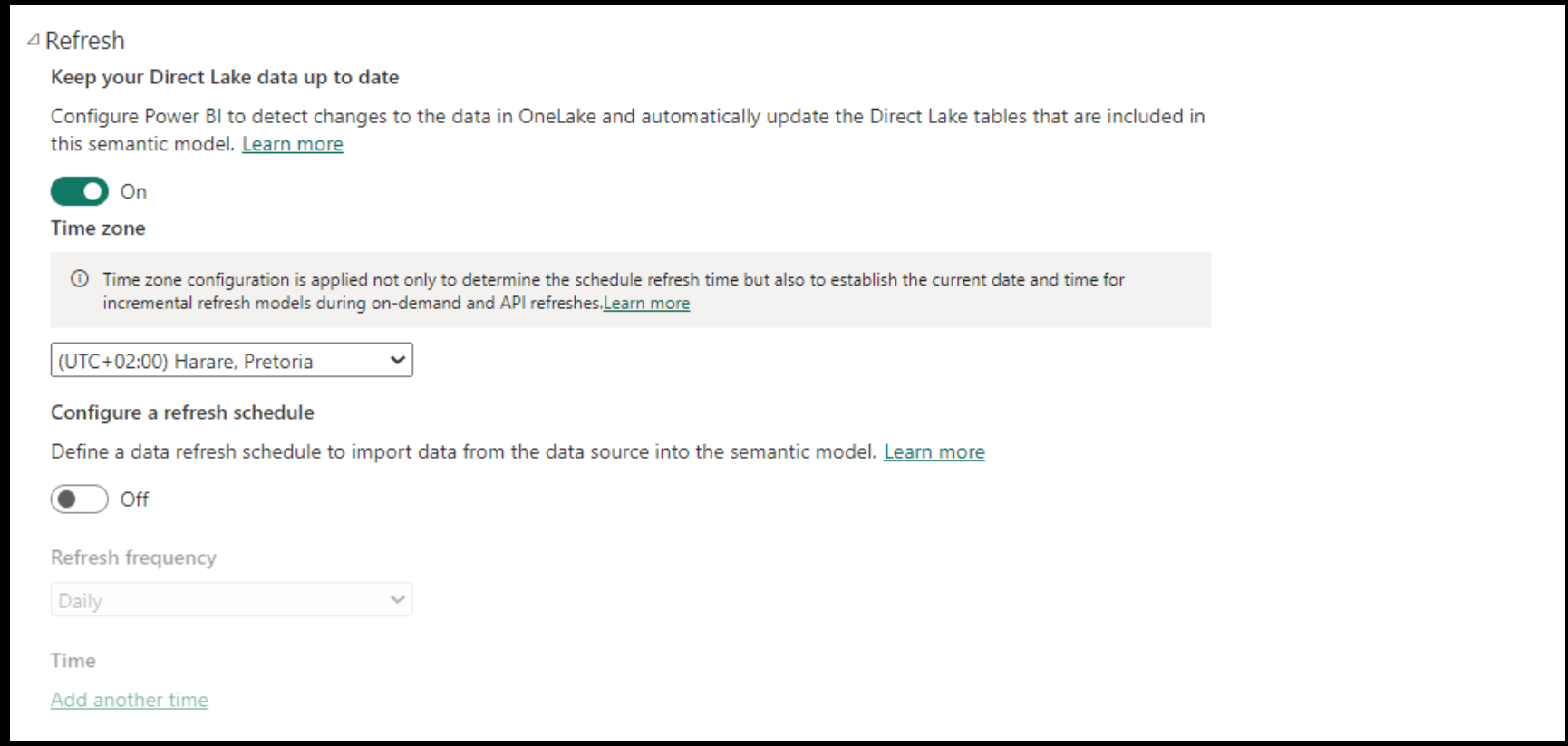
Delta lake - parquet



Delta lake – Delta log



Framing


Refresh
Keep your Direct Lake data up to date
Configure Power BI to detect changes to the data in OneLake and automatically update the Direct Lake tables that are included in this semantic model. Learn more
On
Time zone
Time zone configuration is applied not only to determine the schedule refresh time but also to establish the current date and time for incremental refresh models during on-demand and API refreshes.Learn more
(UTC+02:00) Harare, Pretoria
Configure a refresh schedule
Define a data refresh schedule to import data from the data source into the semantic model. Learn more
Off
Refresh frequency
Daily
Time
Add another time

Demo

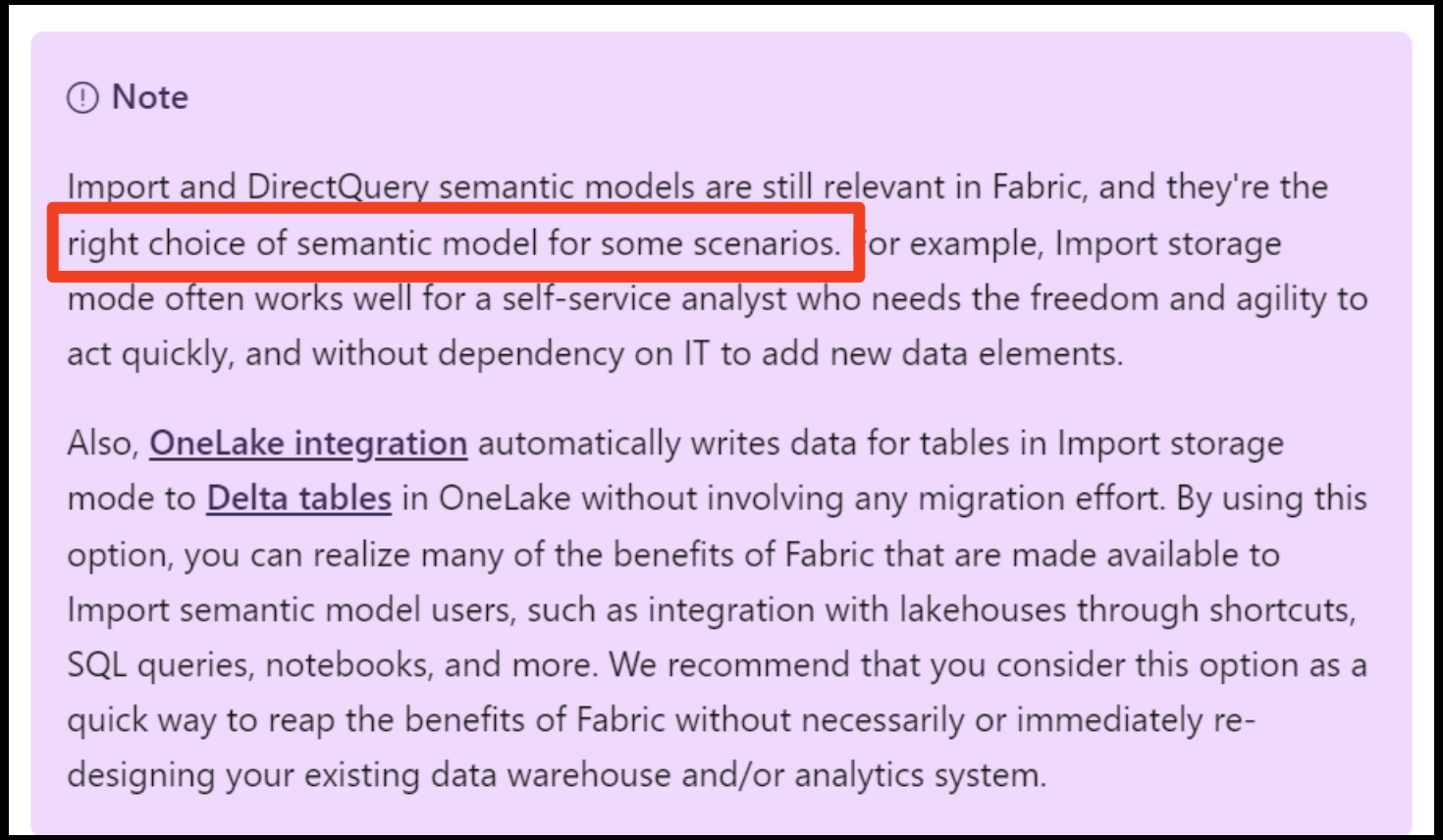
Guard Rails

Direct lake guard rails

Fabric SKU	Parquet files per table	Row groups per table	Rows per table (millions)	Max model size on disk/OneLake (GB)	Max memory
F2	1000	1000	300	10	3
F4	1000	1000	300	10	3
F8	1000	1000	300	10	3
F16	1000	1000	300	20	5
F32	1000	1000	300	40	10
F64/FT1/P1	5000	5000	1500	Unlimited	25
F128/P2	5000	5000	3000	Unlimited	50
F256/P3	5000	5000	6000	Unlimited	100
F512/P4	10000	10000	12000	Unlimited	200
F1024/P5	10000	10000	24000	Unlimited	400
F2048	10000	10000	24000	Unlimited	400

Demo

Conclusion



> **Note**
>
> Import and DirectQuery semantic models are still relevant in Fabric, and they're the right choice of semantic model for some scenarios. For example, Import storage mode often works well for a self-service analyst who needs the freedom and agility to act quickly, and without dependency on IT to add new data elements.
>
> Also, OneLake integration automatically writes data for tables in Import storage mode to Delta tables in OneLake without involving any migration effort. By using this option, you can realize many of the benefits of Fabric that are made available to Import semantic model users, such as integration with lakehouses through shortcuts, SQL queries, notebooks, and more. We recommend that you consider this option as a quick way to reap the benefits of Fabric without necessarily or immediately re-designing your existing data warehouse and/or analytics system.

Direct Lake overview - Microsoft Fabric | Microsoft Learn

Pros and Cons of Direct Lake

- Model size greater than total memory
- Refreshes appear faster
- Analise data changes in near real time

- Queries are faster in Import Mode
- Pre-caching may be required
- Direct lake has many modelling limitation that import does not have

Thank You

Questions?