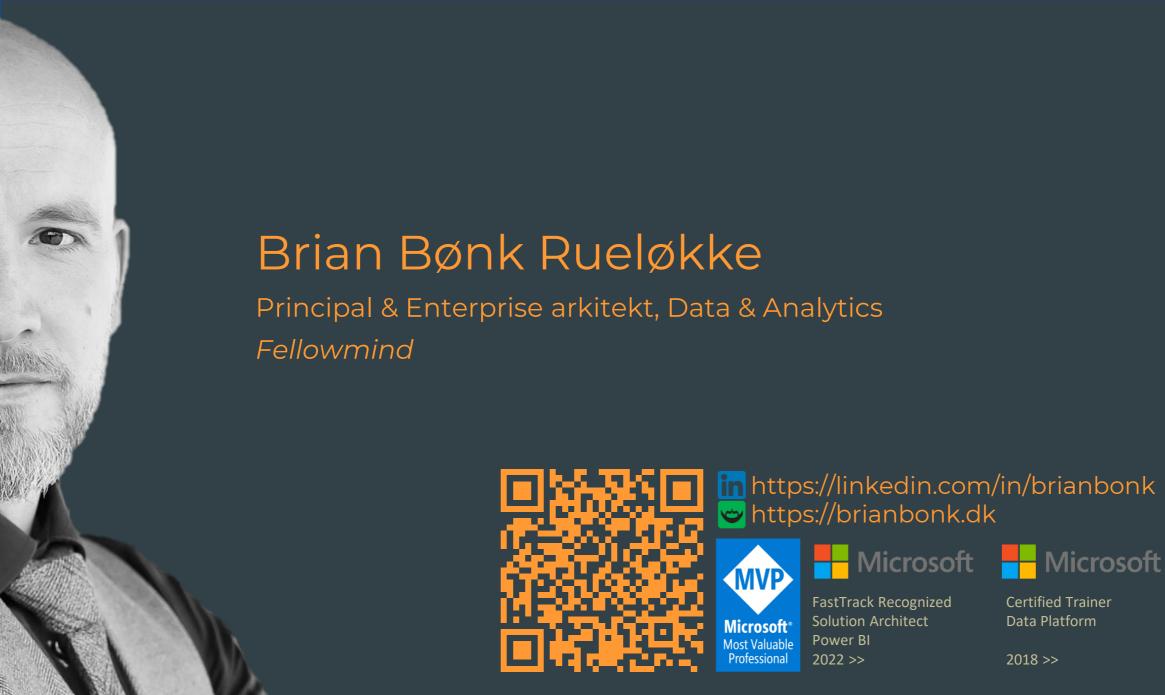
#### Intro to Serverless SQL in Azure Synapse



#### Agenda

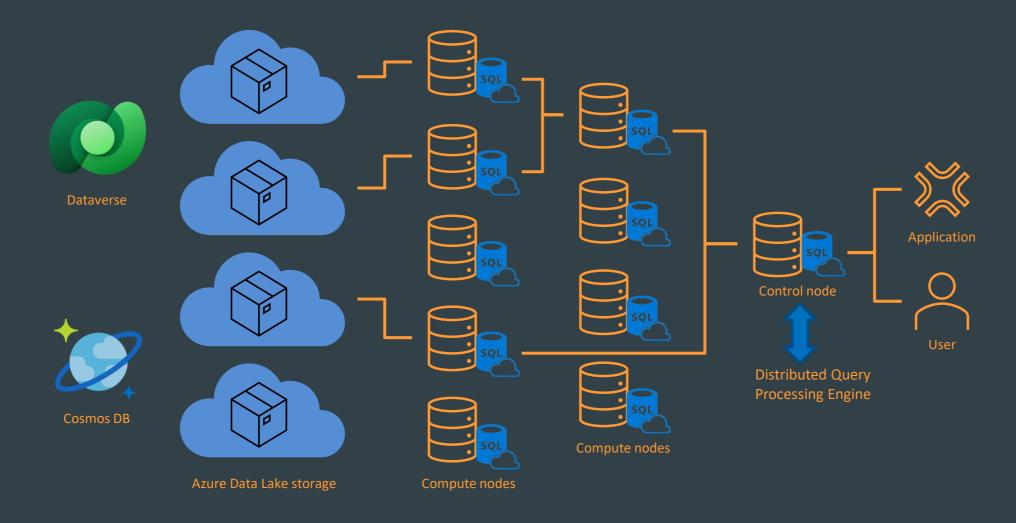
- Overview of the Serverless SQL pool
- Create the Synapse Workspace in Azure
- Walkthrough of the Synapse Workspace
- Analyse data using the Serverless SQL Pool
  - CSV, Parquet, JSON
  - Tips and tricks
- Next steps to try yourself



#### The Serverless SQL Pool

- A part of every Synapse Analytics Workspace
- Enables you to query data from Azure Data Lake, Cosmos DB and Dataverse
- Using familiar T-SQL syntax to query data in place without the need to move or copy the data
- What about the cost?
- Pay-per-use setup approx. 5\$ pr TB processed data

#### The Serverless SQL Pool - architecture



#### Benefits







Basic discovery and exploration

Logical Data Warehouse Simple data transformations

#### Benefits



Data Engineers can explore the lake, transform and prepare data using this service, and simplify their data transformation pipelines.



Data Scientists can quickly reason about the contents and structure of the data in the lake, thanks to features such as OPENROWSET and automatic schema inference.



Data Analysts can explore data and Spark external tables created by Data Scientists or Data Engineers using familiar T-SQL language or their favourite tools, which can connect to serverless SQL pool.



BI Professionals can quickly create Power BI reports on top of data in the lake and Spark tables.

#### T-SQL support

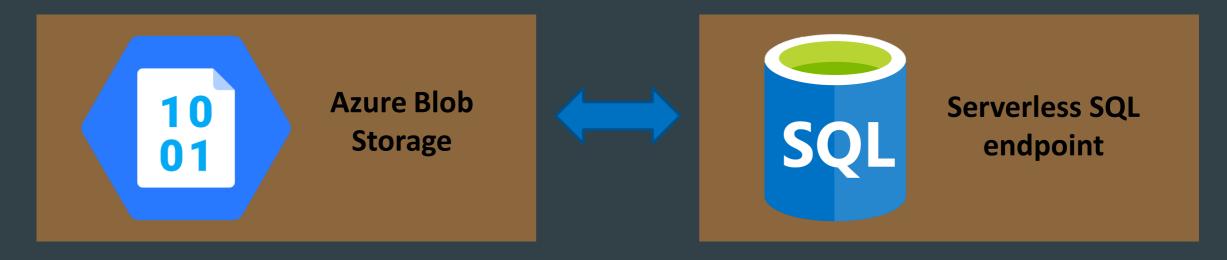
- DDL: Databases, Schemas, Views and Stored Procedures -> No Tables, Materialized Views and Functions!
- Security: Logins and users, Credentials, Grant/Deny on object level,
   AAD integration
- SELECT: (almost) full SELECT support a minor subset of features are not (yet) available

OFW.

## Create Synapse Workspace

#### The initial setup





OFW.

### A quick walkthrough of the Synapse workspace

#### Query data using Synapse SQL Serverless

```
eated_at,entry_id,field1,field2,field3
019-07-26 12:50:13,102771,27.3,29.8,45.0,
2019-07-26 13:00:13,102772,26.9,28.3,44.0,
2019-07-26 13:10:13,102773,28.0,28.3,41.0,
2019-07-26 13:20:13,102774,27.8,28.3,39.0,
2019-07-26 13:30:13,102775,27.0,28.3,40.0,
2019-07-26 13:40:13,102776,26.8,28.3,42.0,
2019-07-26 13:50:13,102777,27.0,28.3,42.0,
2019-07-26 14:00:14,102778,26.8,27.2,42.0,
2019-07-26 14:10:13,102779,27.0,27.2,42.0,
2019-07-26 14:20:13,102780,26.8,27.2,43.0,
2019-07-26 14:40:13,102781,26.4,27.2,44.0,
2019-07-26 14:40:13,102782,27.1,27.2,42.0,
019-07-26 14:50:13,102783,26.2,27.2,43.0,
019-07-26 14:50:13,102783,26.2,27.2,43.0,
```



```
"id": 12635853,
"name": "json-viewer",
"full_name": "tulios/json-viewer",
"owner": {
    "login": "tulios",
    "id": 33231,
    "avatar_url": "https://avatars.githubusercontent
    "gravatar_id": "",
    "url": "https://api.github.com/users/tulios",
    "html_url": "https://github.com/tulios",
    "followers_url": "https://api.github.com/users/tulios",
    "following_url": "https://api.github.com/users/tulios",
    "following_url": "https://api.github.com/users/tulios",
    "gists_url": "https://api.github.com/users/tulios
```

**CSV** 

Parquet

**JSON** 

OEW,

# Query CSV, JSON and Parquet data

#### **CSV PARSER VERSIONS**

#### CSV parser version 1.0 specifics:

- Following options aren't supported: HEADER\_ROW.
- Default terminators are \r\n, \n and \r.
- If you specify \n (newline) as the row terminator, it will be automatically prefixed with a \r (carriage return) character, which results in a row terminator of \r\n.

#### CSV parser version 2.0 specifics:

- Not all data types are supported.
- Maximum character column length is 8000.
- Maximum row size limit is 8 MB.
- Following options aren't supported: DATA\_COMPRESSION.
- Quoted empty string ("") is interpreted as empty string.
- DATEFORMAT SET option is not honored.
- Supported format for DATE data type: YYYY-MM-DD
- Supported format for TIME data type: HH:MM:SS[.fractional seconds]
- Supported format for DATETIME2 data type: YYYY-MM-DD HH:MM:SS[.fractional seconds]
- Default terminators are \r\n and \n.

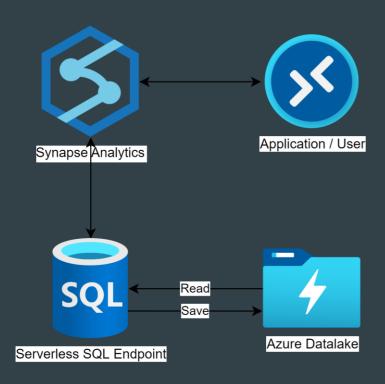
#### **CETAS**

Synapse SQL also provides the ability to save a coded view from the DataLake to a physical file.

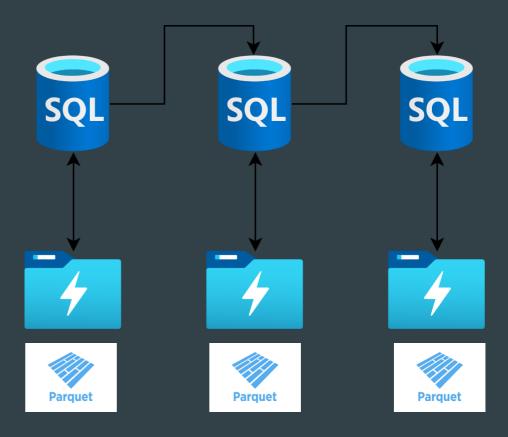
This process is called a CETAS – <u>C</u>reate <u>E</u>xternal <u>T</u>able <u>AS</u>. It saves a Parquet file in the DataLake in a specified folder.

The usage of this could be to provide precalculated dataset to an application or end user with very little wait time. The precalculation happens in the creation of the CETAS.

#### **CETAS**



#### Virtual Data Warehouse



#### Tips & Tricks

- If your CSV file is UTF-8 formatted, then use a UTF-8 collation when creating the database this helps and removes and lot frustration
- Try to use PARSER VERSION 2 when reading CSV it is much faster, but demands specific formatting in the CSV file read more in the addendum slides.

## Try it out for yourself

https://github.com/brianbonk/public/tree/master/Speaks/2023

#### Demo data and scripts

- All demo data and scripts will be provided.
- You need to change the "address" to the storage account, to point to your own account.
- Data is free to use and comes from the public Taxi data endpoint from NY Taxi website (Parquet and CSV) and my own blog (JSON).

#### Want more?

#### Then these two videos could be the next step into the Synapse world

Supercharge Power BI with Azure Synapse Analytics (with Mathias Halkjær) – Havens Consulting



https://www.youtube.com/live/CgSuTHKJH60

Azure Synapse Serverless SQL Pools - CETAS vs Views vs Parquet — Data Toboggan



https://www.youtube.com/watch?v=f3uQCbJO16U