COMMUNITY SUMMIT

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Power BI Dataflows? Why you need to use them!

Benni De Jagere

Benni De Jagere?

Senior Data Insights Consultant

dataMinds.be, Co-leader

@BenniDeJagere

/bennidejagere

#SayNoToPieCharts

REALDOLMEN
a Gfi Group company

Dataflows?

- ~~(Google) Cloud Dataflow~~
- ~~TensorFlow Dataflow~~
- ~~SSIS Data Flows~~
- ~~Microsoft Flow~~
- ~~ADFv2~~
  - ~~Mapping Data Flows~~
  - ~~Wrangling Data Flows~~
- ~~PowerApps Dataflows~~

Power BI Dataflows!

Who?

Who should be using Dataflows

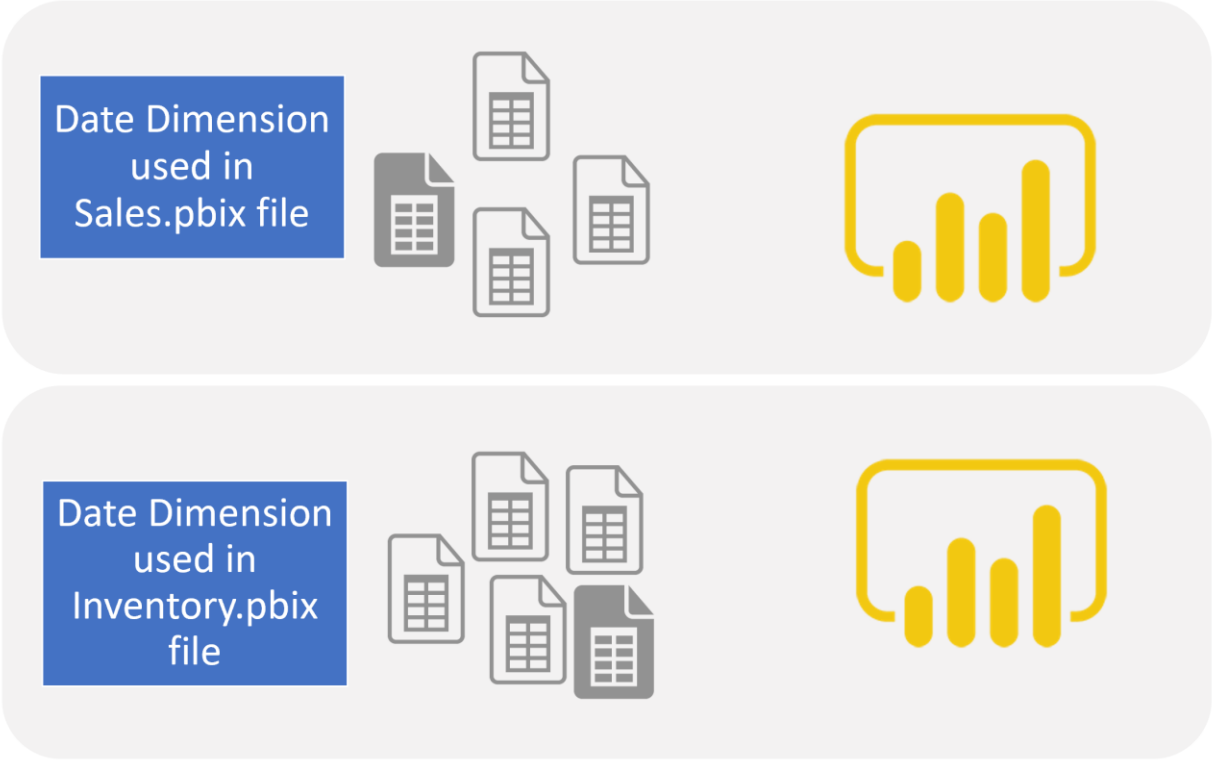
- (Financial) Power Users
- Business Analysts
- Tech savvy Users
- Everyone else ☺

What?

Ony Entity, Many Datasets

- Lack of semantic model will create many versions
- Re-use of queries across datasets is limited
- Shared Datasets is all or nothing approach

Ony Entity, Many Datasets



Date Dimension transformation executed multiple times, when only once is needed

Ony Entity, Many Datasets

Date Dimension transformation executed only once, and then used multiple times

Why?

Enter, Power BI Dataflows!

- Preview Late 2018, GA April 2019
- Cloud based PowerQuery experience
- Self-Service Data Preparation
- Non-technical user personas

Enter, Power BI Dataflows

- Build reusable Data Entities
- **Not a replacement for a DWH Solution**
- Manageable and securable like all Power BI Objects
- Managed CDM Folders

Demo: Dataflows

New York Citibikes

- www.citibikenyc.com/system-data
- Public Open Data
- Starts June 2013
- Information about every trip
  - Longer than 60 seconds
  - Starts at public station
- Masterdata

https://i0.wp.com/thenypost.files.wordpress.com/2013/12/citibike1.jpg?quality=90&strip=all&ssl=1

How?

Common Data Model

Common Data Model

- Unified metadata layer for Cloud Apps and Services
- Shared
  - Data Language
  - Storage Format and Location
  - Set of Default Entities
- Extend Entities for all consumers
- Simplified integration and disambiguation of data

Decision Makers, Business analysts ⟷ Data scientists, Data engineers

No code, low code

Low to high code

Dynamics 365

Power BI

Common Data Service

Power BI dataflows

ISV partners

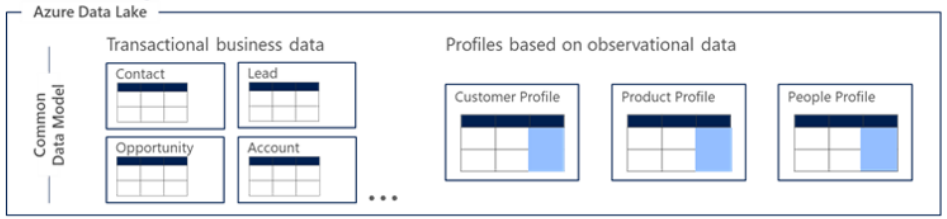
Custom
LOB +
Developer resources

Azure Data Services

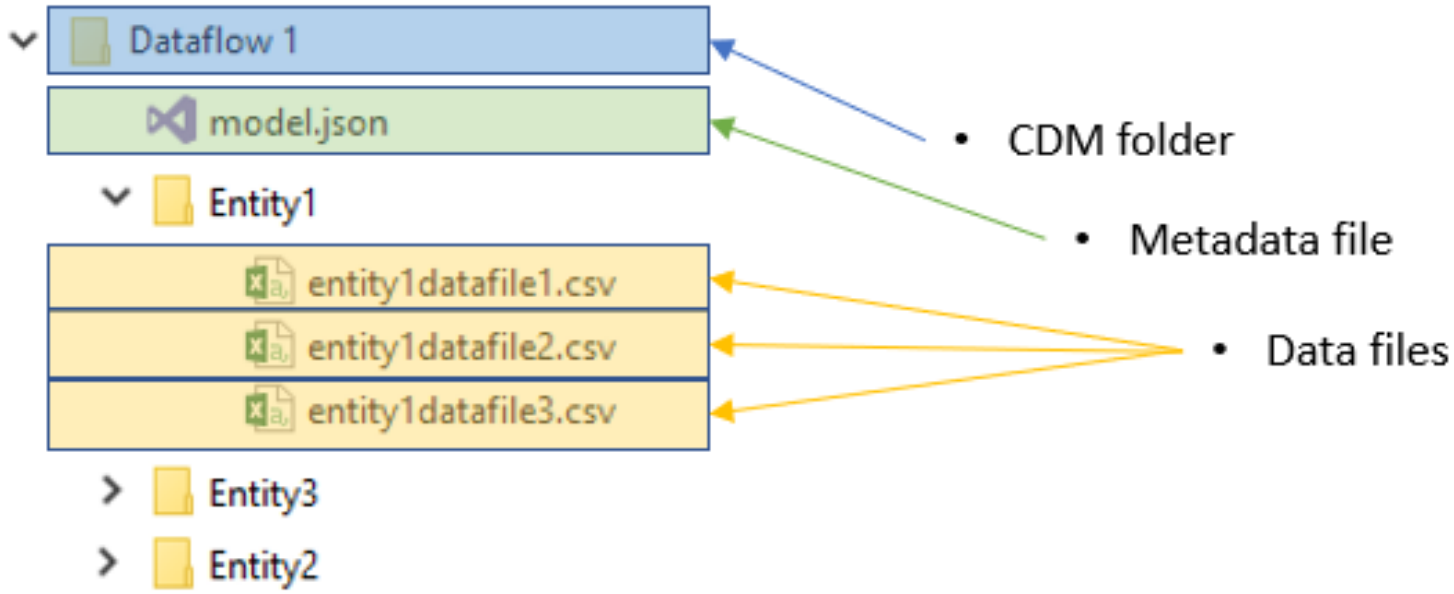
data ingest, data prep, AI,
machine learning, data warehousing

Azure Data Lake Storage Gen2

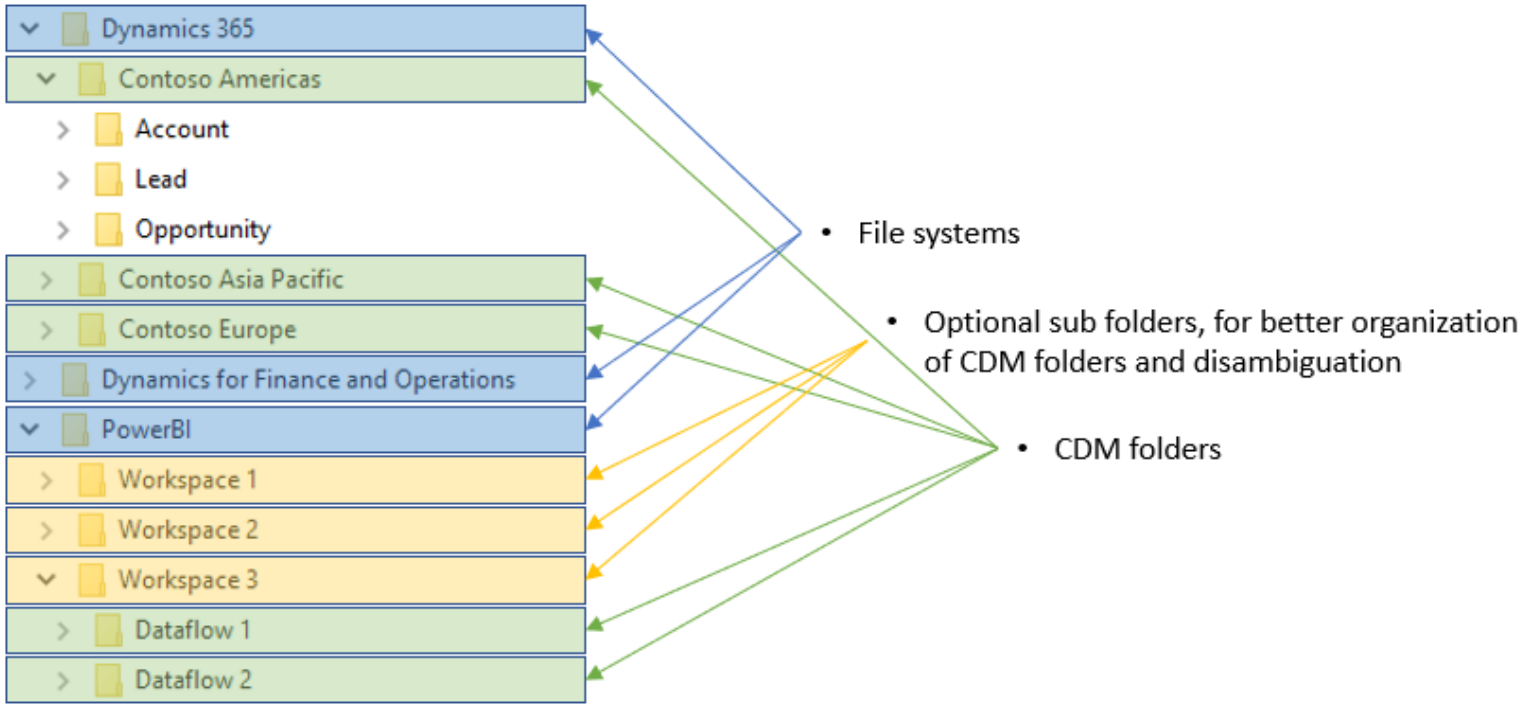
"CDM folders"



Common Data Model



Common Data Model



How?

Data Refresh

Data Refresh

- Trigger Manual refresh in the UI
- Scheduled refresh comparable to Power BI Datasets
- Refresh History offers an interesting view
- Automatically refreshes any dataflows it is dependent on
- Incremental Refresh is Premium Only (for now?)

Demo: Scheduled Refresh

How?

Query Reusage

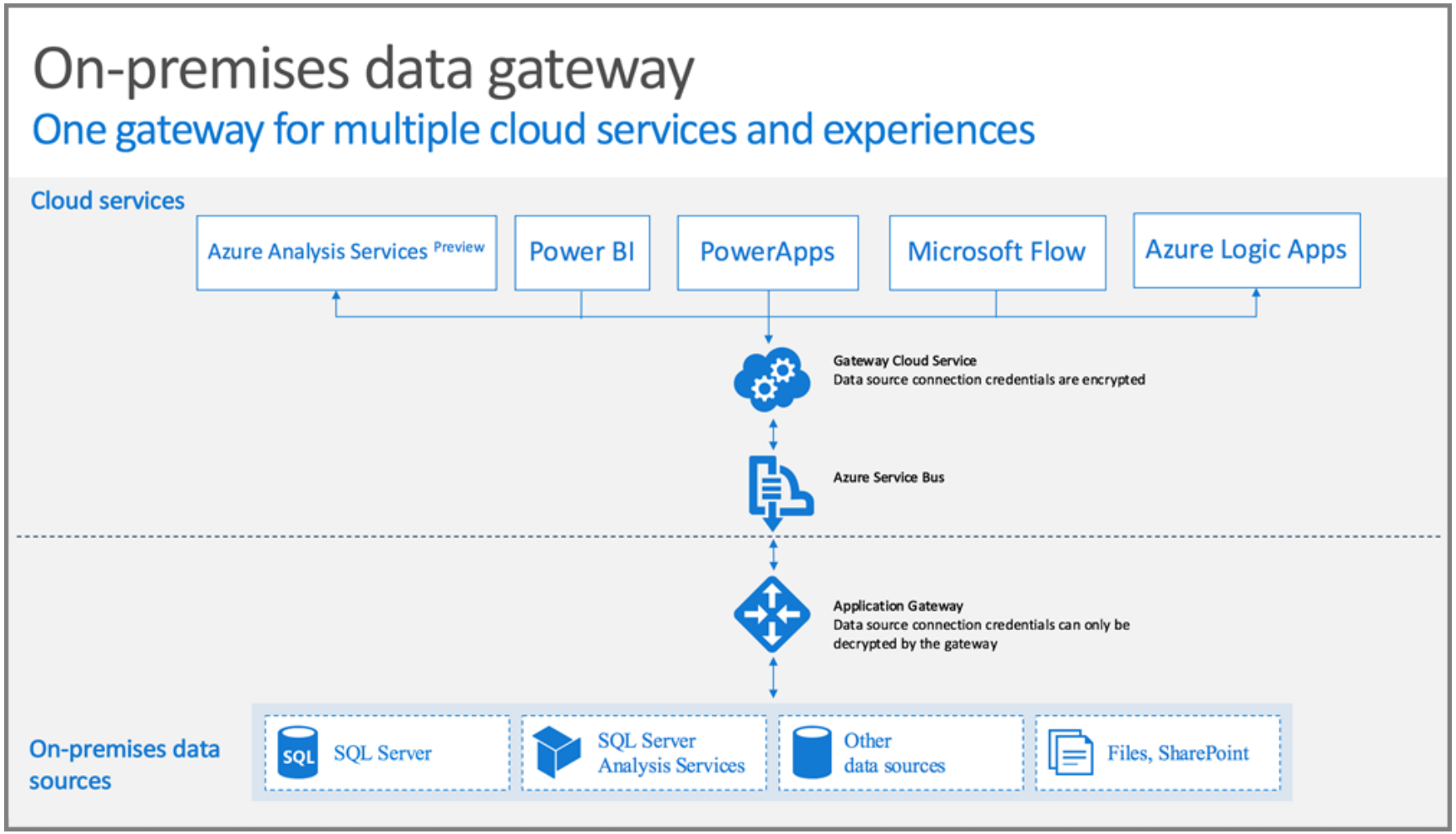
Query Reusability

- No developer experience in Power BI Desktop
  - Copy/Paste queries between environments
- Linked/Computed Entities (Premium Only)
  - In-lake Compute, which requires dedicated capacity
  - Can Reference any Entity in any Workspace
  - Data is only stored in the original Entity
- Reference Query, Append or Merge
  - Create a query, and mark 'Disable for load'
  - Reference this query, in the same workspace
  - Logic is reused, and data is duplicated every time the query is referenced

Demo: Query Reusage

Gateway & Security

On-Premises Datasources



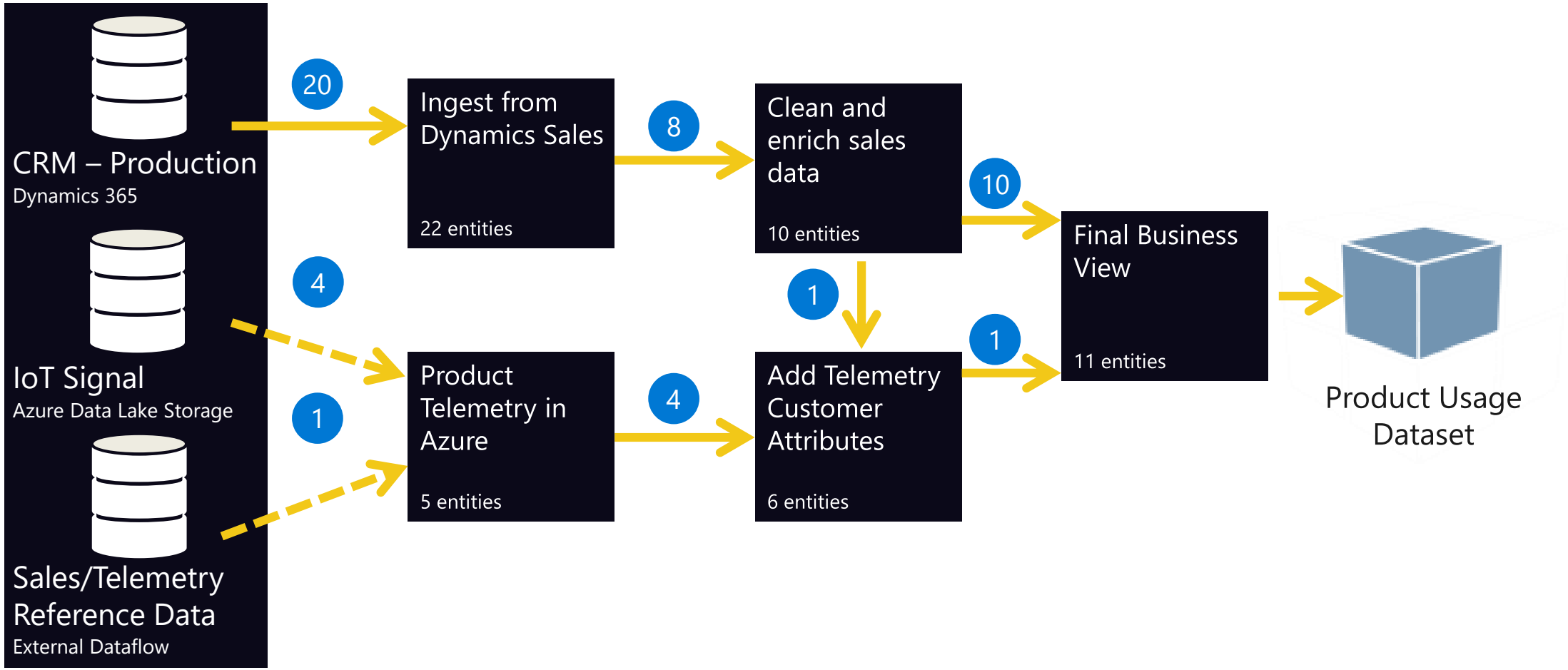
Securing Dataflows

- Dataflows reside in Workspaces
- Secure/Hide Linked Entities by disabling load
- Datasets using Dataflows will always be Import Mode
  - Security is the responsibility of the dataset designer!

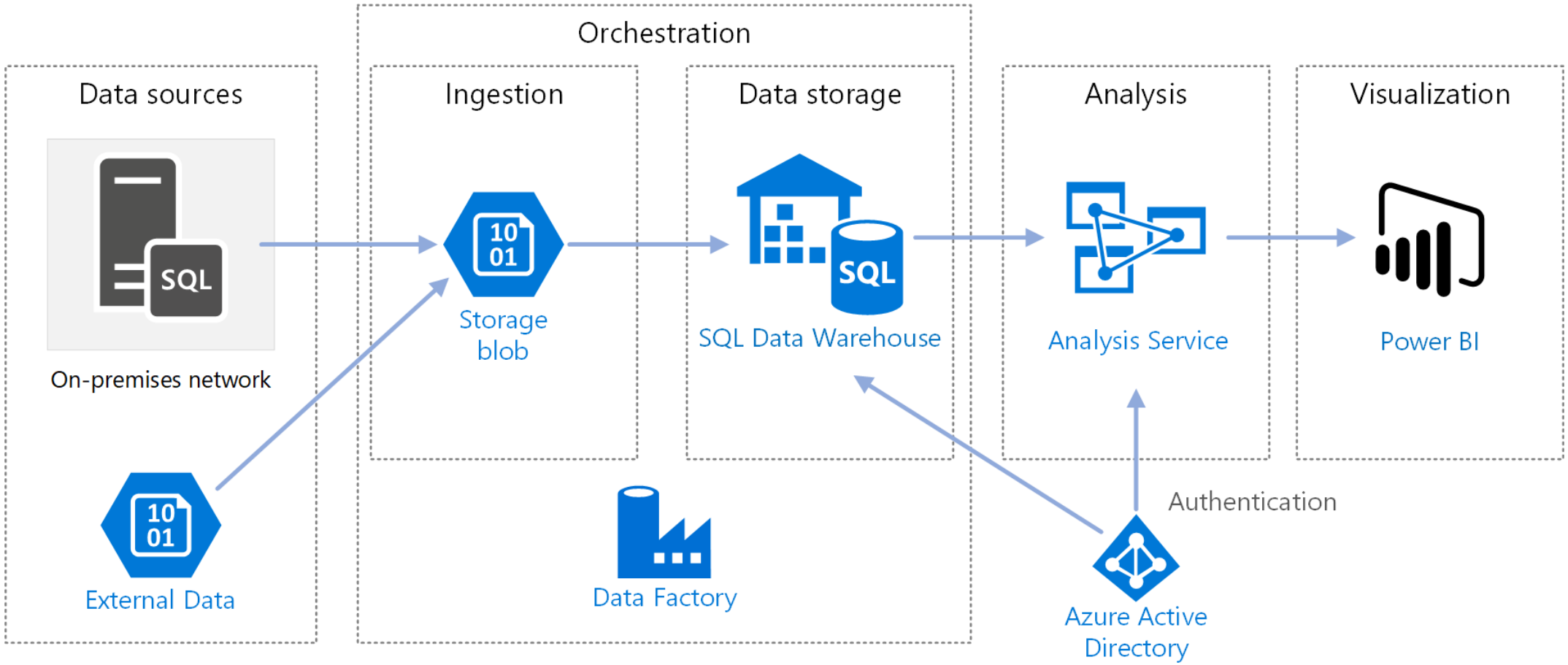
Demo:
Gateway & Security

The Big Picture

The Big Picture



The Big Picture



Why?

Where do Dataflows fit in?

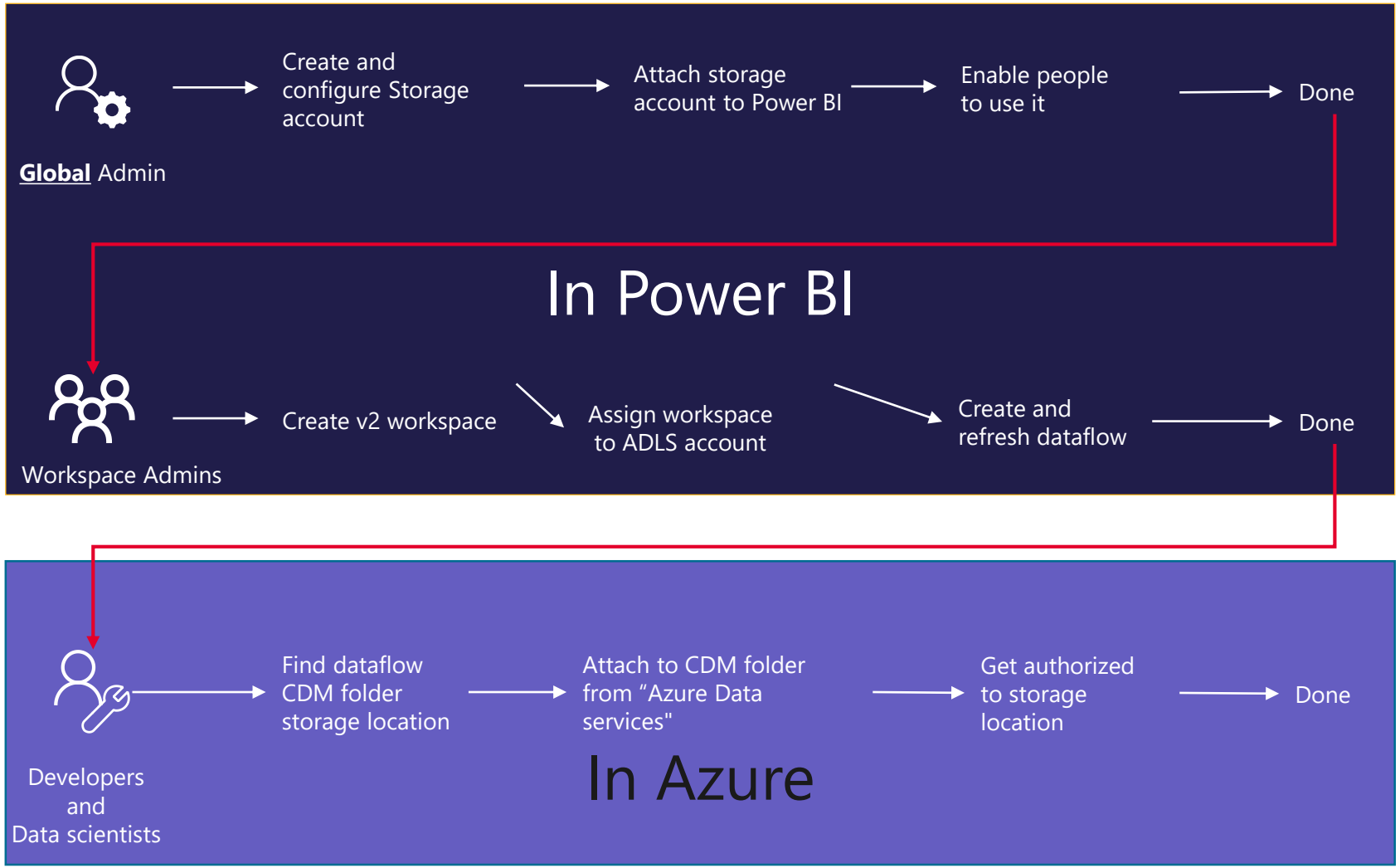
- Without dataflows, users might
  - Be blocked on IT involvement
  - Use Excel and manual processes
  - Require 3rd party data preparation tools
- Dataflows are for Power Query users
  - Easy to build reusable data entities
  - Easier to compose and orchestrate
  - Multi-stage, multi-user data prep workflows
  - Dataflows fill a self-service gap in the end-to-end story

Extending Dataflows

Bring your own Storage Account

- Use your organizational ADLSg2 resource and attach it to Power BI
- A Global Admin and an Azure subscription is required
- Once a dataflow storage location is configured, it cannot be changed
- By default, only owners of a dataflow stored in Azure Data Lake Storage Gen2 can access its data
- To authorize additional users to the dataflows stored in Azure, you must add them to the dataflow's CDM folder
- Creating dataflows with linked entities is only possible when they are stored in the same storage account

Bring your own Storage Account



What "done" means:
Workspace Admins can now configure workspace to store its dataflows in ADLS account Global Admin configured
Dataflow CDM folder is stored in ADLS and is accessible by its creator ONLY.
Other people in workspace can get data if they are authorized to the CDM folder outside of Power BI
Now data can be read from CDM Folder via Azure Data Services or LOB solutions that are CDM folder aware

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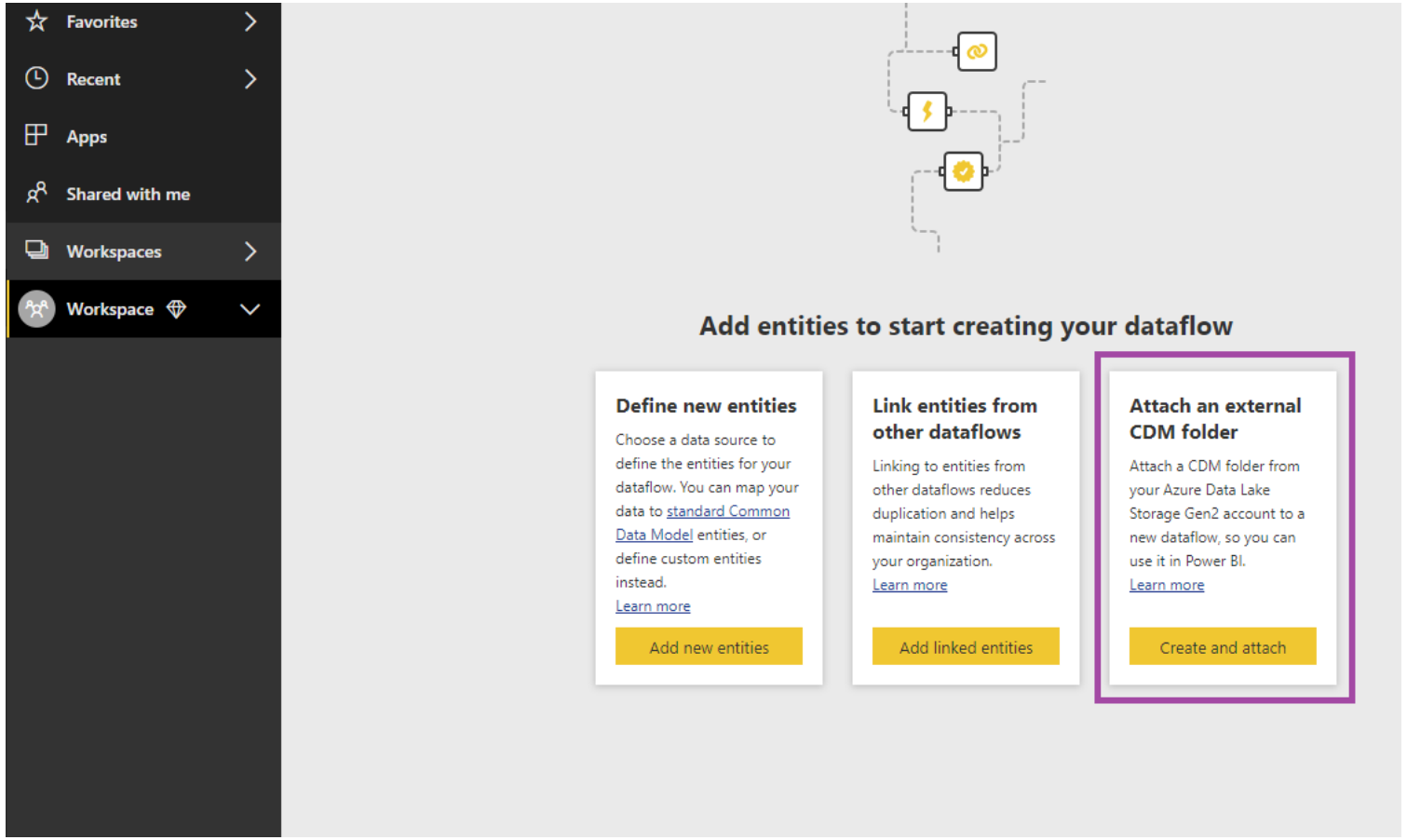
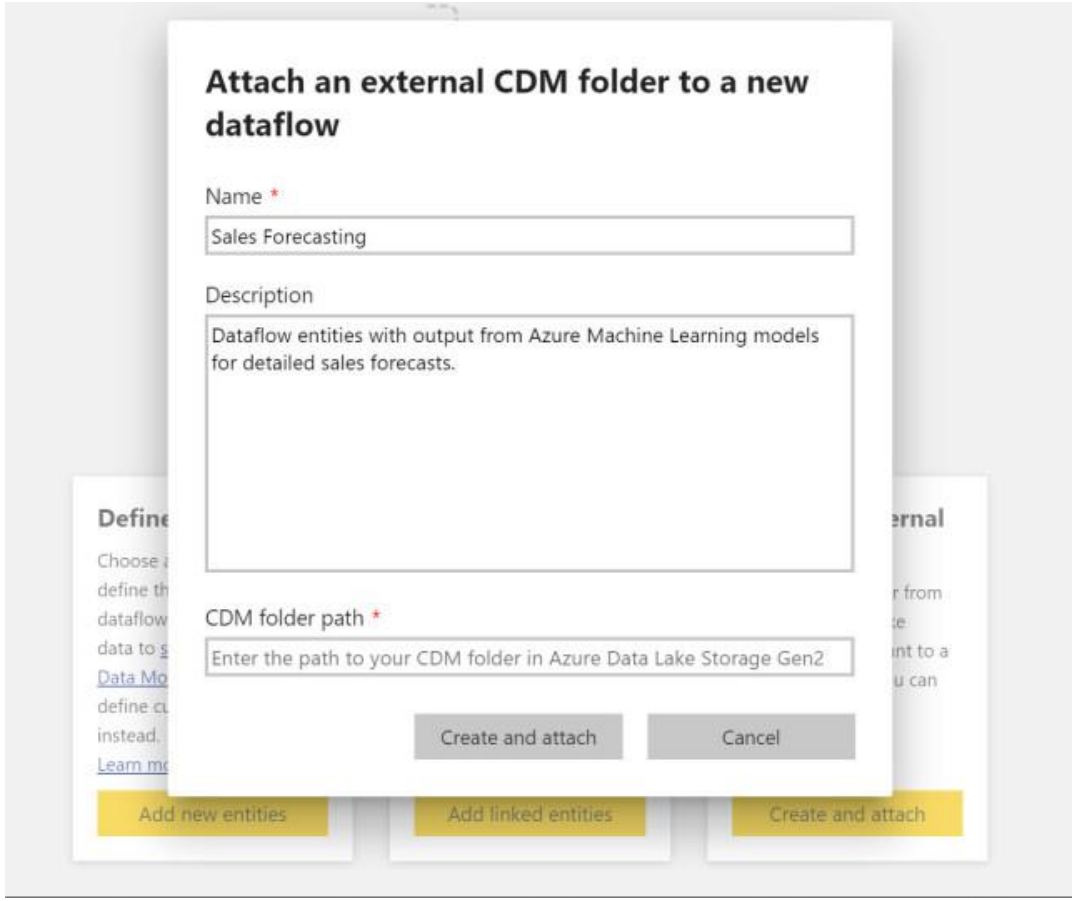
External CDM Folders

- CDM Folders is an open standard
- Any tool that can access ADLSg2, and output JSON
- Link External CDM Folder in Power BI
- Done!

External CDM Folders



External CDM Folders



BONUS!

Power BI dataflows sort-of-FAQ

- A capability for self-service data preparation in Power BI
- Delivered in a familiar Power Query experience
- Built on the foundation of Azure Data Lake Storage gen2
- Utilize the CDM folder format for data storage
- A tool for business users to drive data reuse without requiring IT involvement
- Enable Excel-like data lineage and orchestration

- NOT a replacement for datasets
- NOT a replacement for a data warehouse
- NOT a replacement for Azure Data Factory or SSIS
- NOT a Premium-only feature
- NOT an additional cost or fee
- NOT spelled with a space or any capital letters

Recap

Why you should use it!

- Business Driven Initiatives
- Fill existing gaps
- Quick prototyping
- Strive for IT handover to operationalize later on
- Configure your own ADLSg2 Storage

The Self-Service BI Hoax

- “Products and technology don’t enable Self-Service BI, people and methodologies do”

- Nimrod Avissar on LinkedIn Pulse

Resources

- https://docs.microsoft.com/en-us/power-bi/service-dataflows-best-practices
- https://powerbi.microsoft.com/en-us/blog/power-bi-dataflows-and-azure-data-lake-storage-gen2-integration-preview/
- https://docs.microsoft.com/en-us/power-bi/service-dataflows-overview
- https://docs.microsoft.com/en-us/azure/architecture/reference-architectures/data/enterprise-bi-adf
- https://docs.microsoft.com/en-us/common-data-model/

Resources

- https://ssbipolar.com/2018/10/23/dataflows-in-power-bi/
- https://www.sqlchick.com/entries/2019/3/28/three-ways-to-use-power-bi-dataflows
- https://prologika.com/dataflows-the-good-the-bad-the-ugly/
- https://exceleratorbi.com.au/power-bi-dataflows-and-why-you-should-care/
- https://www.jamesserra.com/archive/2018/08/power-bi-dataflows/
  https://ssbipolar.com/2019/10/14/power-bite-dataflows-vs-datasets/
- https://radacad.com/what-are-the-use-cases-of-dataflow-for-you-in-power-bi

Resources

- Dataflows Whitepaper – Amir Netz
- Release Notes & Roadmap
- CDM Tutorial
- CDM Documentation
- Dataflows and CDM Sessions at MBAS

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THANK YOU!

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