



# APAC Partners Bootcamp BI and Analytics

Hands-on Lab

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# Purpose of this workshop

This workshop aims to guide participants through the fundamental setup of Microsoft Fabric for seamless integration with Dataverse while mastering key components of Microsoft Fabric. Throughout the workshop, participants will actively engage in hands-on activities to gain proficiency in the following areas:

- Linking Dataverse with Microsoft Fabric
  - Learn the process of establishing a connection between Dataverse and Microsoft Fabric.
- Microsoft Fabric – Serverless SQL Endpoint
  - Gain practical experience in utilizing Microsoft Fabric's Serverless SQL Endpoint for data management and retrieval.
- Microsoft Fabric – Power BI Semantic Model and Visualization
  - Explore the functionalities of Microsoft Fabric in creating a Power BI Semantic Model and visualization for enhanced data representation.
- Microsoft Fabric – Notebook
  - Familiarize yourself with Microsoft Fabric's Notebook feature, understanding its ETL capabilities.
- Bringing Insights back to Dataverse via Virtual Entity
  - Transferring insights generated in Microsoft Fabric back to Dataverse using Virtual Entity.

# Prerequisites

Please follow the instructions here: [BI Bootcamp Exercises Pre-requisites](#) to complete the prerequisites.

## Workspace creation

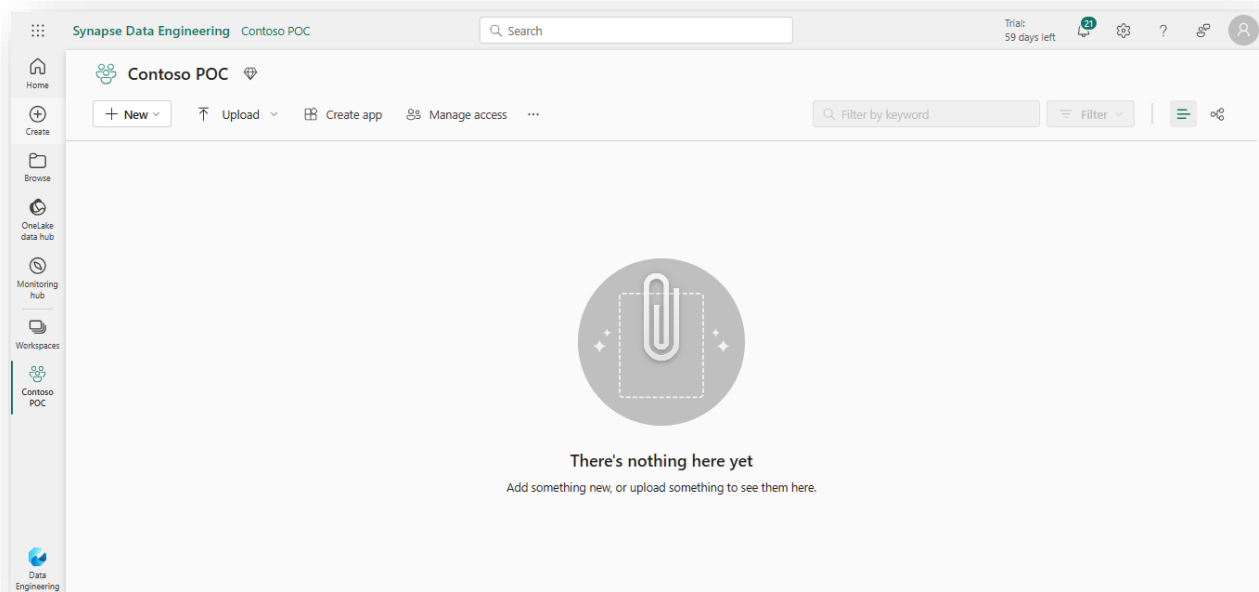
### Estimated Time to Complete

5 minutes for the following steps

### Steps:

1. Navigate to <https://app.fabric.microsoft.com/> with your credentials.
2. Select (Click) **Synapse Data Science** as Persona.
3. In the left pane click **Workspaces** -> **+ New Workspaces**
4. Input **Name** ("Contoso POC") for the workspace then click **Apply**.

A new workspace should be established with empty items, as outlined below:



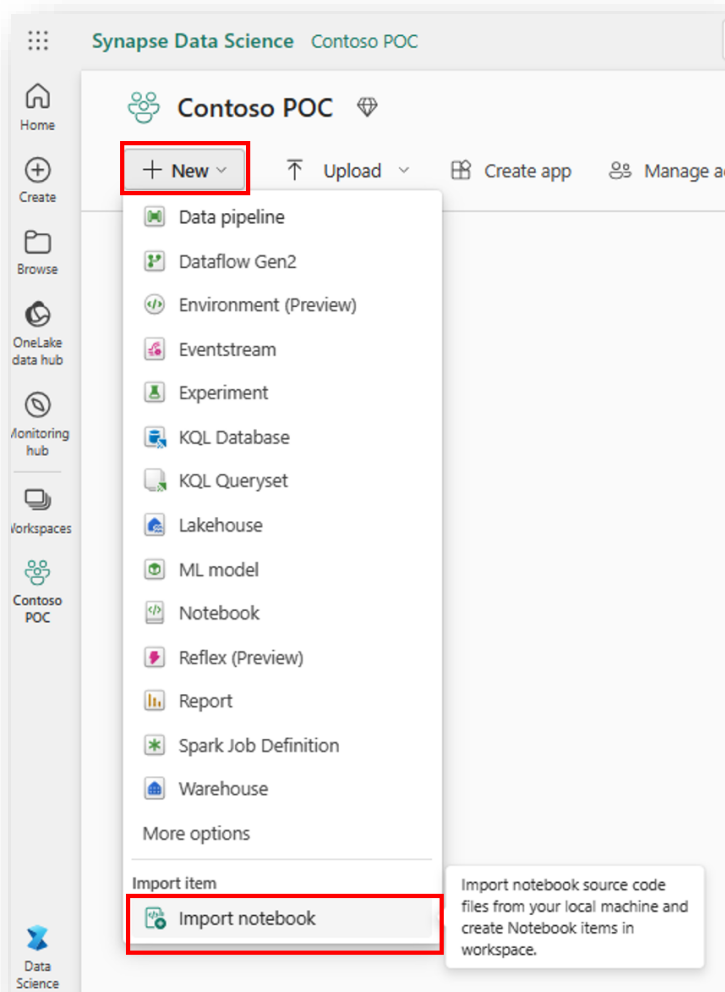
# Notebook

## Estimated Time to Complete

25 minutes for the following steps

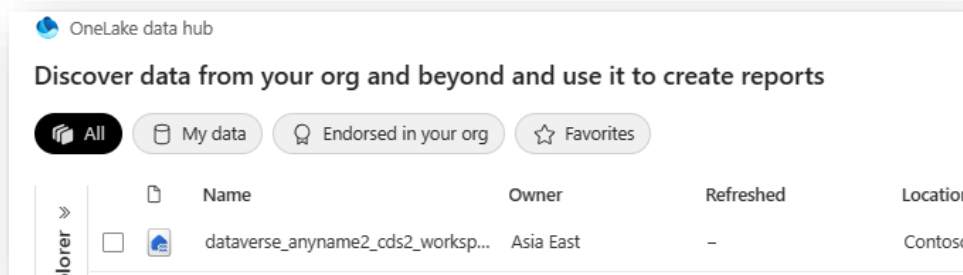
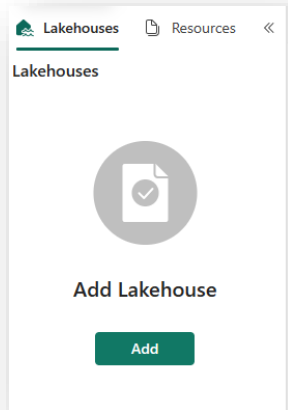
## Steps:

1. Download the Lab Notebook from [Dynamics-365-FastTrack-Implementation-Assets/Analytics/DataaverseLink/BI\\_Bootcamp\\_Hands-on-Notebook.ipynb](#) at master · microsoft/Dynamics-365-FastTrack-Implementation-Assets · GitHub
2. In workspace, click New -> Import notebook.



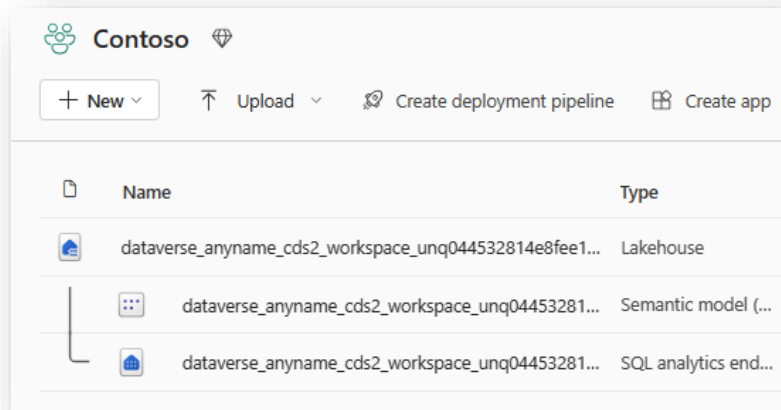
3. **Upload** the Notebook downloaded from step 1.
4. Open the Notebook by clicking the **Name**.

5. **Add Lakehouse -> Existing lakehouse** which connects to your Dynamics 365



**Hint:** Dynamics 365 Link to Microsoft Fabric will by default create the following structure which will contain one Lakehouse, One SQL analytics endpoint and one Semantic Model with the following naming conventions.

dataverse\_environmentname\_cds2\_workspace\_environmentuniqueid



6. Expand the cell and follow the provided instructions to execute the cell sequentially and successfully complete the lab.

The screenshot shows a Databricks notebook with the following components:

- Top Bar:** Includes tabs for Home, Edit, Run, Data, and View. It also shows the current language as PySpark (Python) and the environment as Workspace default.
- Left Sidebar:** Displays a file explorer for 'Lakehouses' and 'Tables'. The 'Tables' section is expanded, showing a list of tables including 'account', 'accountleads', 'actioncard', etc.
- Main Content Area:**
  - Lab background:** A section with a title and two paragraphs of text. The first paragraph describes Contoso's online shopping platform. The second paragraph explains the goal of the lab: to establish a robust BI solution using Microsoft Fabric.
  - Scenario 1: Visualize sales trends associated with each employee:** A section header for the first scenario.
  - Data Preparation:** A section header for the data preparation steps.
  - 1. Import orders from the internet in CSV format:** A numbered step in the data preparation section.
- Code Cell:** A code cell containing Python code to import a CSV file. The code is as follows:
 

```

1 # Import necessary libraries
2 import pandas as pd
3
4 # URL of the CSV File
5 orders_url = "https://raw.githubusercontent.com/microsoft/PowerApps-Samples/master/ai-builder/order.csv"
6
7 # Use pandas to load the CSV file
8 orders_pd = pd.read_csv(orders_url)
9
10 orders_pd.head()
11

```
- Execution Status:** Below the code cell, it shows the execution status: "[1] ✓ -Apache Spark session ready in 10 sec 317 ms. Command executed in 3 sec 56 ms by Asia East on 12:18:06 PM, 12/11/23".
- Table Header:** At the bottom, a table header is visible with columns: 'order\_id', 'customer\_id', 'product\_id', 'price', 'freight\_value', 'order\_status', and 'order\_purchase\_time'.

**Hint:** Notebooks consist of Code Cells and Markdown Cells. Code cells are executable blocks where you can use various languages, such as Pyspark and Spark SQL, to accomplish tasks. Markdown cells, on the other hand, are primarily used for documentation purposes.



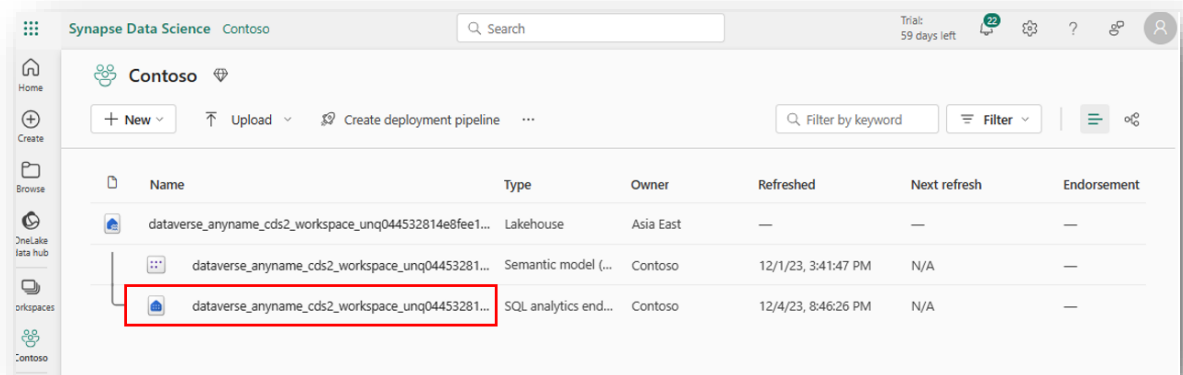
# Serverless SQL Endpoint

## Estimated Time to Complete

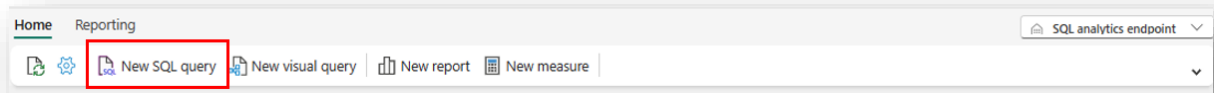
10 minutes for the following steps

## Steps:

1. Click Workspace in the left Pane then select the workspace you create during the prerequisite which connects to your Dynamics 365.
2. Click SQL analytics endpoint.



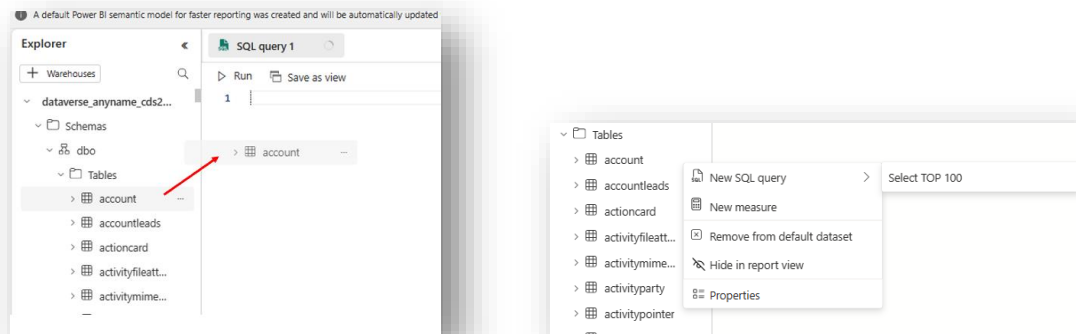
3. Click on "New SQL query" in the top pane to initiate the exploration of SQL queries on the serverless endpoint.



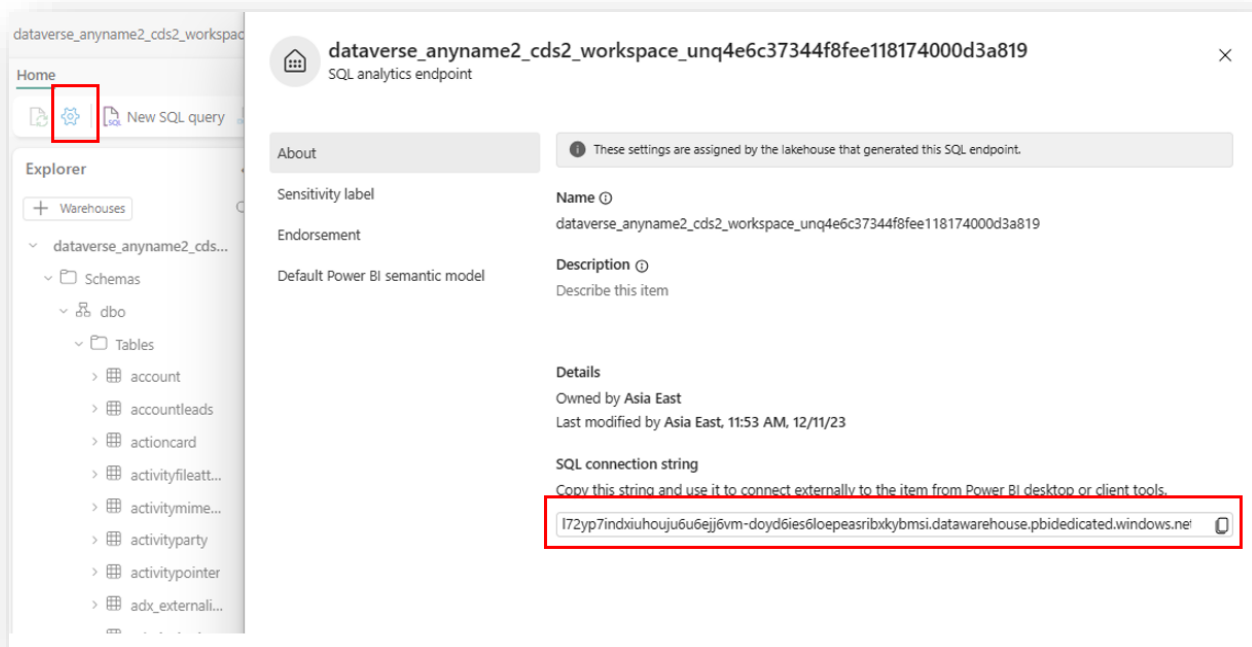
4. Query the tables "orders\_with\_contacts\_agg" and "shopper\_intentions\_with\_contacts" were created during the execution of the notebook to assess the completeness of the loading process.

```
SELECT count(*) from  
[YourWorkspaceName].[dbo].[shopper_intentions_with_contacts]
```

**Hint:** You can load a table onto the canvas by dragging it, or alternatively, click on the [...] icon next to the table, then select **"New SQL Query"** -> **"Select TOP 100"** to swiftly initialize a query.



**Hint:** Retrieve the SQL Connection string from the settings and utilize it to establish a connection to the Serverless endpoint using the tool of your choice.



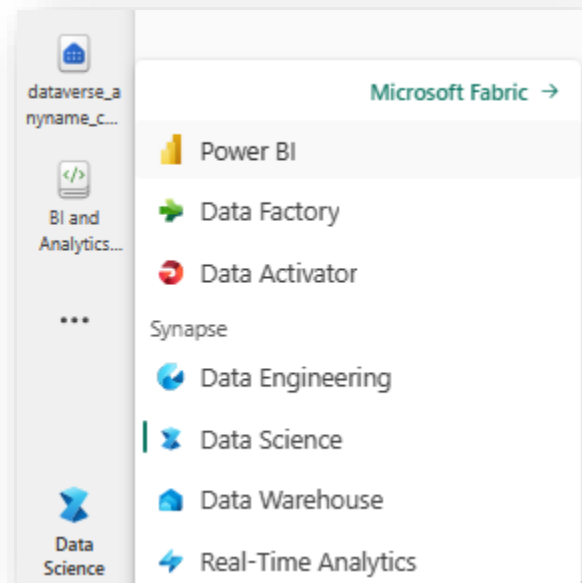
# Power BI Model/Visualization

## Estimated Time to Complete

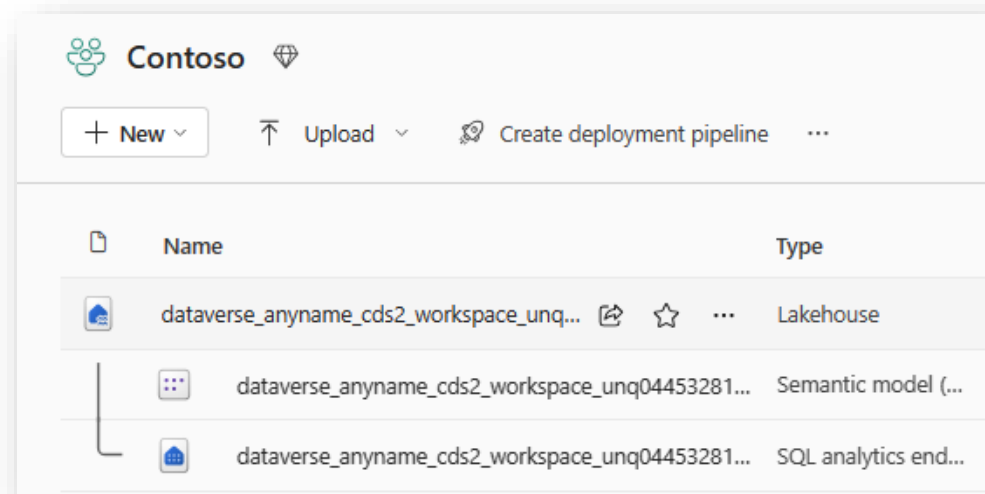
15 minutes for the following steps

## Steps:

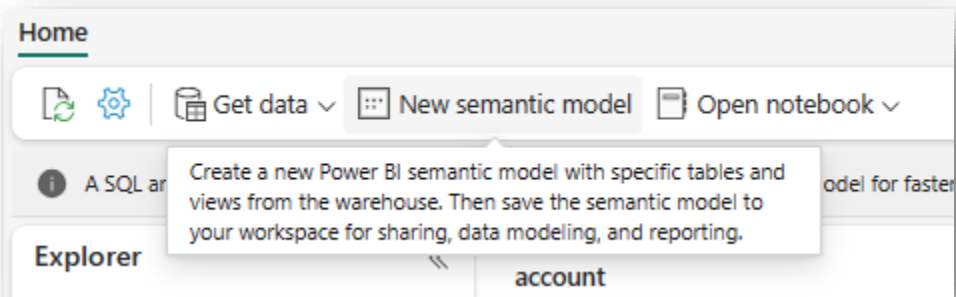
1. In the left bottom, Switch the Persona to Power BI.



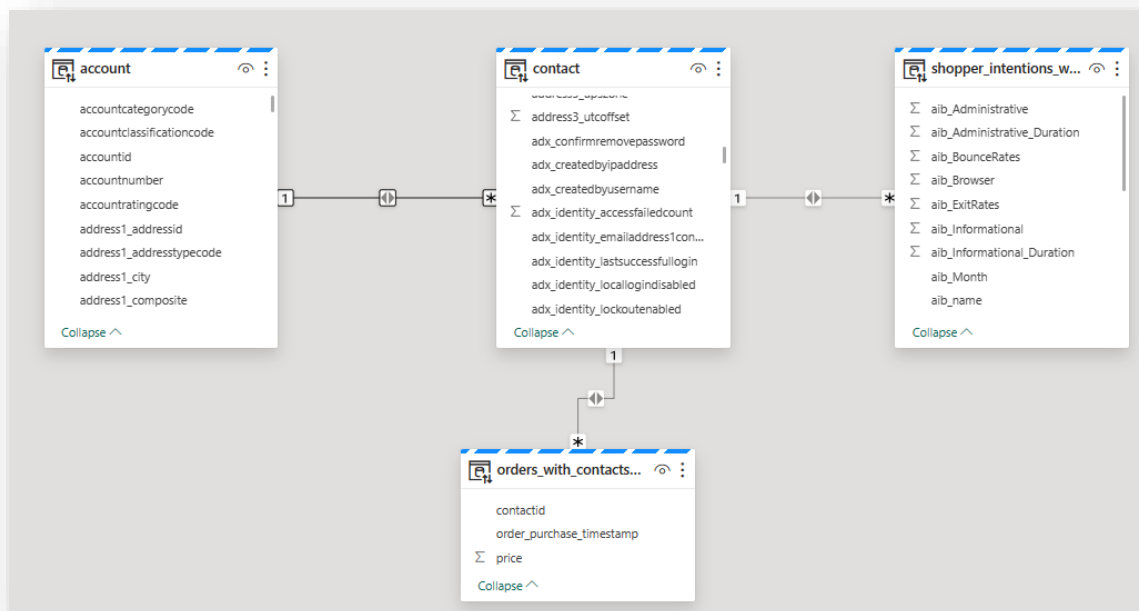
2. Click Workspace in the left Pane then select the workspace you create during the prerequisite which connects to your Dynamics 365.
3. Click the Name of the Lakehouse to open it.



4. In the top Pane, click "New semantic model."



5. In the "New semantic model" window, Select the following tables and confirm.
- account
  - contact
  - orders\_with\_contacts\_agg
  - shopper\_intentions\_with\_contacts
6. With the data modeling window open, in the Lab we will create three relationships between the tables.



**Hint:** You can establish relationships by clicking on "Manage relationships" in the top pane, then selecting "+New relationship." Alternatively, you can simply drag a column from one table to the corresponding column in another table.

Relationship between "account" and "contact".

Edit relationship

×

Select tables and columns that are related.

From table

contact

parentcustomerid	parentcustom...	parentcustom...	parentcustom...	parentcustom...	participatesin...	Pai

To table

account

accountcateg...	accountclassif...	accountid	accountnumb...	accountrating...	address1_add...	address1_

Cardinality

Many to one (\*:1)

Cross filter direction

Both

☒ Make this relationship active

☐ Assume referential integrity. [Learn more](#)

Ok

Cancel

Relationship between "contact" and "orders\_with\_contacts\_agg".

From table

orders\_with\_contacts\_agg

contactid	order_purcha...	price

To table

contact

contactid	cr3f1_countof...	cr3f1_countof...	cr3f1_countof...	createdby	createdby_en...	createdby

Cardinality

Many to one (\*:1)

Cross filter direction

Both

☒ Make this relationship active

☐ Assume referential integrity. [Learn more](#)

Relationship between "contact" and "shopper\_intentions\_with\_contacts"

**From table**  
shopper\_intentions\_with\_contacts

evenue	aib_SpecialDay	aib_TrafficType	aib_VisitorType	aib_Weekend	contactid	Exit_Rates

**To table**  
contact

contactid	cr3f1_countof...	cr3f1_countof...	cr3f1_countof...	createdby	createdby_en...	createdby...

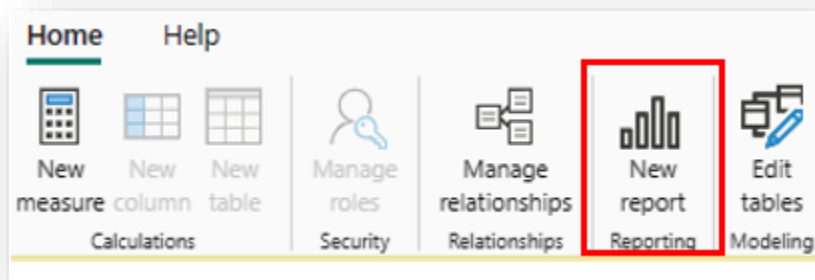
**Cardinality**  
Many to one (\*:1)

**Cross filter direction**  
Both

☒ Make this relationship active

☐ Assume referential integrity. [Learn more](#)

- Click on **"New report"** in the top Pane to create a report from scratch. Alternatively, you can navigate back to the workspace item list, click on the [...] icon next to the semantic model you just created, and choose "Auto-Create Report." A sample report will be generated for you to explore and customize as needed.



+ New
Upload
Create deployment pipeline
Create app
...

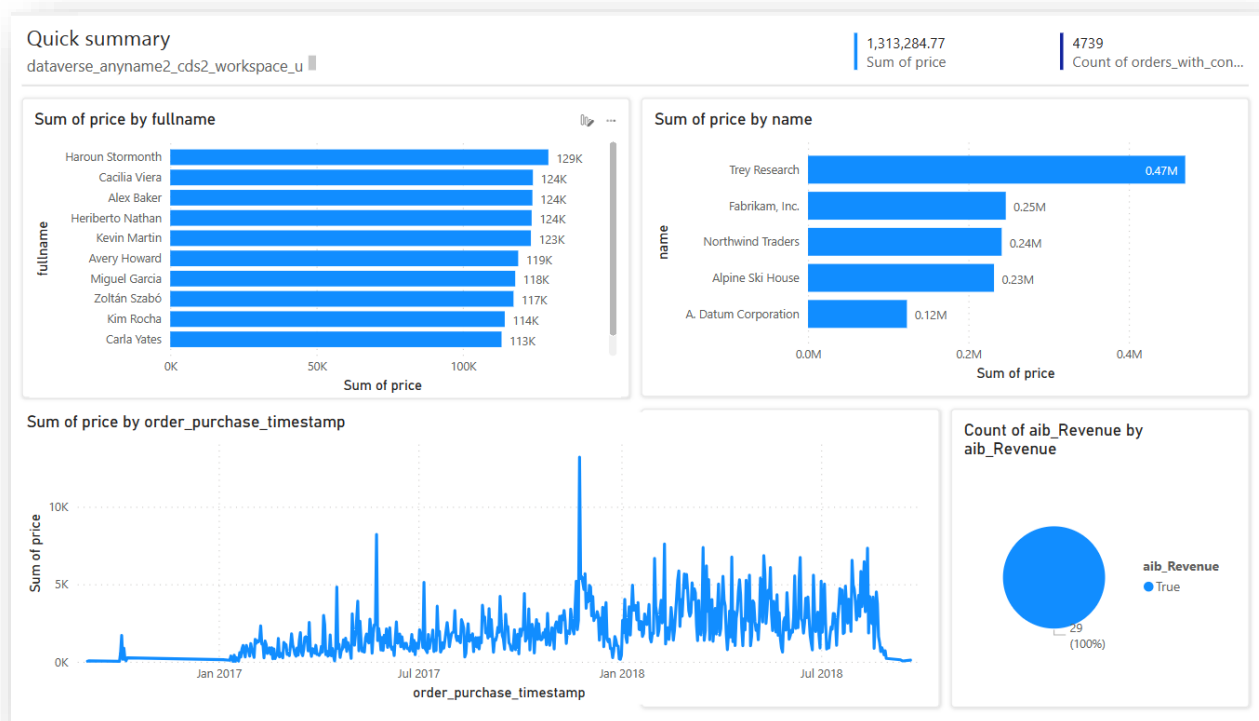
	Name	Type	Owner
	dataverse_anyname_cds2_workspace_unq044532814e8fee1...	Lakehouse	Asia East
	dataverse_anyname_cds2_workspace_unq04453281...	Semantic model (...)	Contoso
	dataverse_anyname_cds2_workspace_unq04453281...	SQL analytics end...	Contoso
	dataverse_anyname_cds2_workspace_unq...	...	Semantic model

Explore this data (preview)

Analyze in Excel

Create report

Auto-create report



# Bring insights back to Dataverse via Virtual Entity

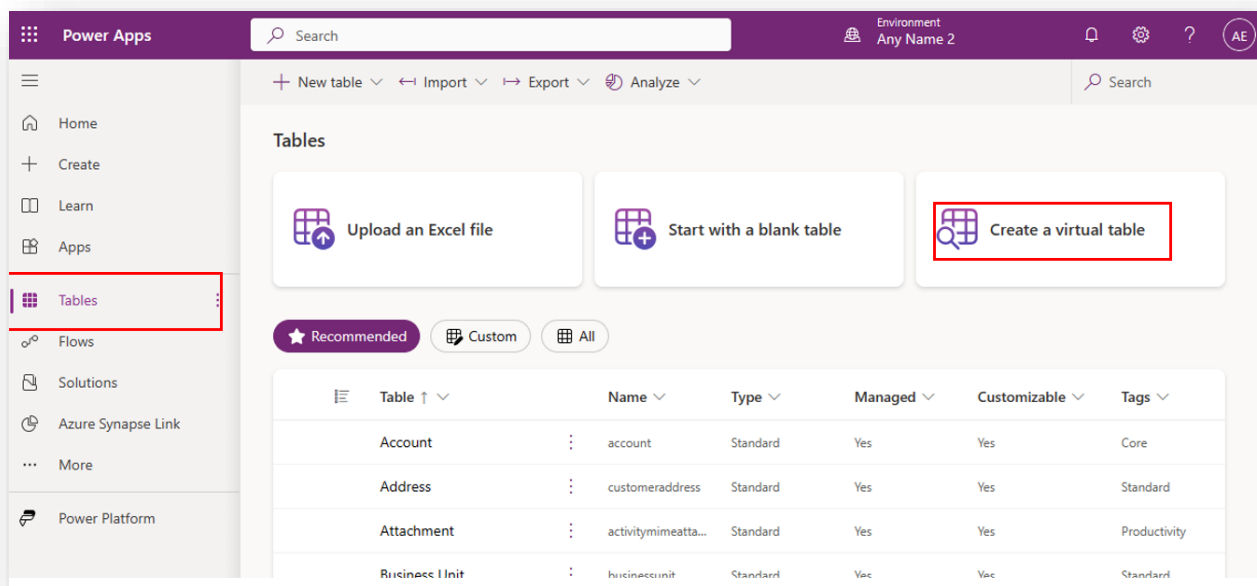
**Note:** This feature is under public preview.

## Estimated Time to Complete

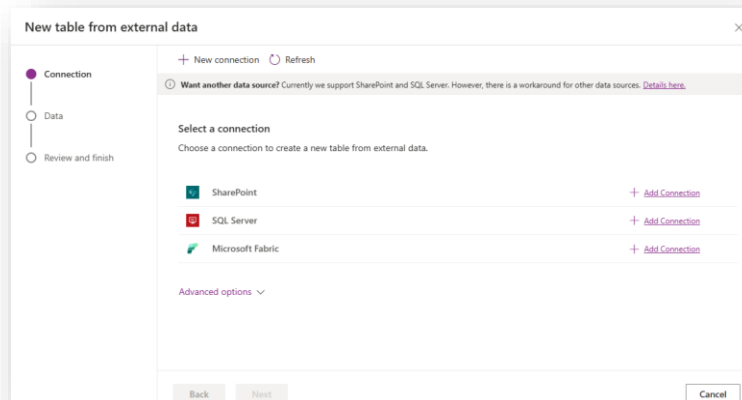
5 minutes for the following steps

## Steps:

1. Navigate to <https://make.powerapps.com/> and select the environment you created for this Lab.
2. Click “Tables” then “Create a virtual table.”

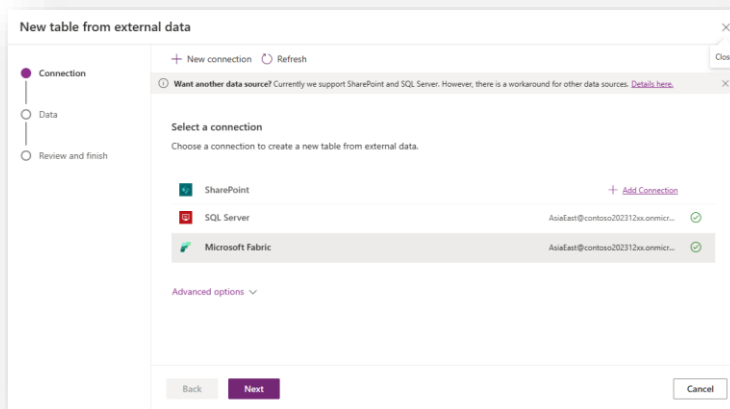
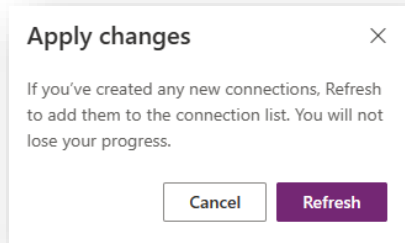


3. Click “Add Connection” next to “Microsoft Fabric”, A Sign in windows popup, Sign in with your credentials.

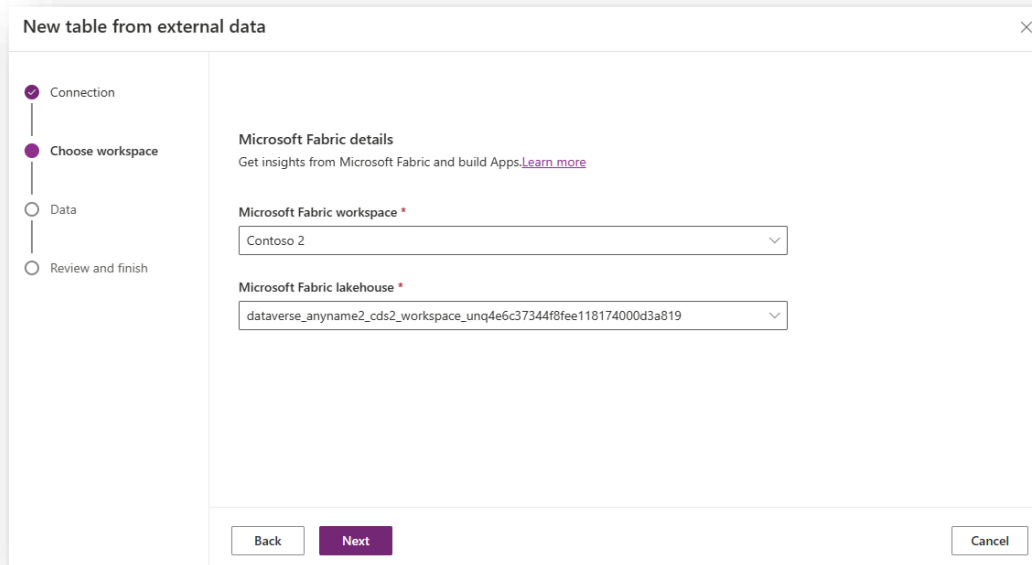




4. **Refresh** to Apply the changes then select "**Microsoft Fabric.**" then **Next.**



5. Select the **Microsoft Fabric workspace** and its **Lakehouse** which contains the table you want to bring in to Dataverse. Then click **Next.**



6. Select the table then click **Next**. \* **orders\_with\_contacts\_agg** for example.

**New table from external data**

Connection

Choose workspace

**Data**

Review and finish

Refresh

**External table**  
Choose which table to access through Dataverse

orders\_with\_contacts\_agg

orders\_with\_contacts\_agg

☒ Configure table and column names that will be used in Dataverse

Back Next Cancel

7. Most of the inputs are automatically filled for your convenience; proceed by clicking "**Next**."

Note: Change the **primary key** to UniqueInt, **Primary field** to Key.

**New table from external data**

Connection

Choose workspace

Data

**Configuration**

Review and finish

Quick format names

**Configuration**  
Update the table name and details of the table columns before it is created in Dataverse

**Display name \***  
orders\_with\_contacts\_agg

**Plural name \***  
orders\_with\_contacts\_aggs

**Schema name \***  
cr3f1\_ orders\_with\_contacts\_agg

**Primary field \***  
Key

**Primary key \***  
UniqueInt

External column	Display name *	Schema name *
contactid	contactid	cr3f1_ contactid
order_purchase_timestamp	order_purchase_timestamp	cr3f1_ orderpurchasetimestamp
price	price	cr3f1_ price
Key	Key	cr3f1_ Key
UniqueInt	UniqueInt	cr3f1_ externalprimarykey

Back Next Cancel

## 8. Review and finish the creation of virtual entity.

The screenshot shows the 'New table from external data' dialog box in the Microsoft Fabric interface, specifically the 'Review and finish' step. The left sidebar shows a progress bar with steps: Connection, Choose workspace, Data, Configuration, and Review and finish (current). The main area is titled 'Review and finish' and contains two panels. The left panel, 'External data source', shows 'Microsoft Fabric' as the source, 'Contoso 2' as the workspace, and a Lakehouse path. The right panel, 'Dataverse table', shows the table name 'orders\_with\_contacts\_agg', plural name 'orders\_with\_contacts\_aggs', schema name 'cr3f1\_orders\_with\_contacts\_agg', primary column 'Key', and number of columns '5'. At the bottom are 'Back', 'Finish', and 'Cancel' buttons.

**New table from external data**

**Review and finish**

Confirm the details of the data source, and how it will be displayed in Dataverse.

**External data source**

Microsoft Fabric

The external data source that Dataverse will connect to:

**Workspace**  
Contoso 2

**Lakehouse**  
dataverse\_anyname2\_c3b2\_workspace\_unq  
4e6c37344ff9ee118174000d3a019

**Dataverse table**

Microsoft Dataverse

The table we'll create as a result of the connection to the external data source:

**Display name**  
orders\_with\_contacts\_agg

**Plural name**  
orders\_with\_contacts\_aggs

**Schema name**  
cr3f1\_orders\_with\_contacts\_agg

**Primary column**  
Key

**Number of columns**  
5

[Choose a different table](#) [Edit configuration of table](#)

[Back](#) [Finish](#) [Cancel](#)

Data retrieval through the Microsoft Fabric connection was successful, as demonstrated below.

The screenshot shows the 'orders\_with\_contacts\_agg' table view in the Microsoft Fabric interface. The top bar shows 'Tables > orders\_with\_contacts\_agg'. Below the table name are tabs for 'Table properties', 'Schema', 'Data experiences', and 'Customizations'. The 'Table properties' tab is active, showing the table name, primary column, description, type, and last modified date. The 'Schema' tab shows the table's schema. The 'Data experiences' tab shows the table's data experiences. The 'Customizations' tab shows the table's customizations. The table view shows a list of records with columns: contactid, price, and orders\_with\_contacts\_agg. The table is sorted by contactid in ascending order. The table has 10 rows of data.

**Table properties**

Name	Primary column	Description
orders_with_contacts_agg	Key	Custom Entity
Type	Last modified	
Virtual	15 seconds ago	

**Schema**

Columns

Relationships

Keys

**Data experiences**

Forms

Views

Dashboards

**Customizations**

Business rules

Commands

**orders\_with\_contacts\_agg columns and data**

contactid	price	orders_with_contacts_agg
075de5a8-56d0-ea11-a812-000d...	10.00	49.90
075de5a8-56d0-ea11-a812-000d...	54.00	49.90
075de5a8-56d0-ea11-a812-000d...	268.00	49.90
075de5a8-56d0-ea11-a812-000d...	179.00	49.90
075de5a8-56d0-ea11-a812-000d...	69.00	49.90
075de5a8-56d0-ea11-a812-000d...	1.00	8.90
075de5a8-56d0-ea11-a812-000d...	0.00	29.99
075de5a8-56d0-ea11-a812-000d...	2.00	380.00
075de5a8-56d0-ea11-a812-000d...	32.00	49.90
075de5a8-56d0-ea11-a812-000d...	154.00	49.90