

Lab 1 - Create a Fabric workspace and data pipeline

Lab Guide

October 2024

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Lab overview

Creating a Fabric workspace and data pipeline is the foundational step for consolidating Contoso's and Litware Inc.'s data, enabling unified data management and streamlined analytics within the Azure ecosystem. This infrastructure lays the groundwork for efficient data ingestion, storage, and processing. It helps the organization's address data silos and fosters a cohesive data environment.

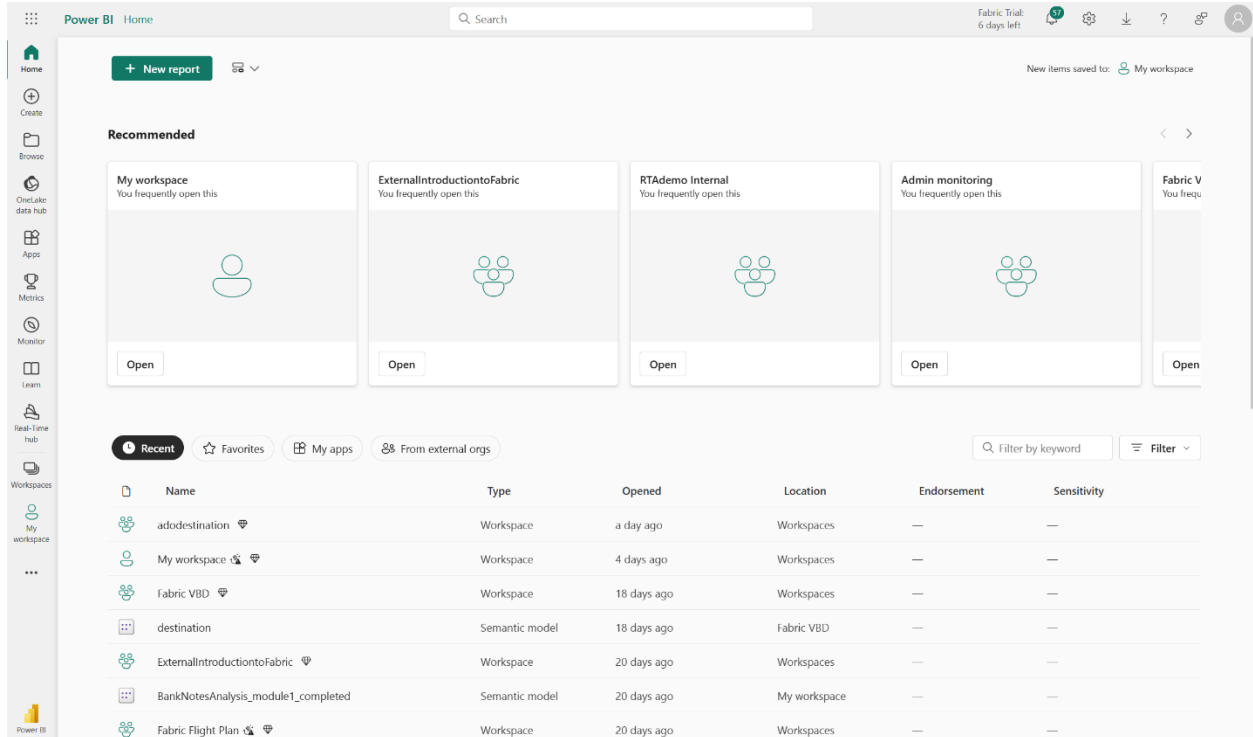
In this lab, you will perform the following tasks:

- **Create a Microsoft Fabric-enabled workspace:** You'll set up a workspace that uses Microsoft Fabric, enabling integration and management of data across various sources and platforms.
- **Create lakehouses:** You will create 3 lakehouses for the medallion architecture where your tables will be stored
- **Use data pipelines for data ingestion:** You'll implement data pipelines to efficiently ingest data into your lakehouse, ensuring a seamless flow of information for processing and analysis in the medallion architecture.

Contoso is setting up a Fabric-enabled workspace as the cornerstone for Contoso's data integration efforts, facilitating a seamless blend of disparate data sources.

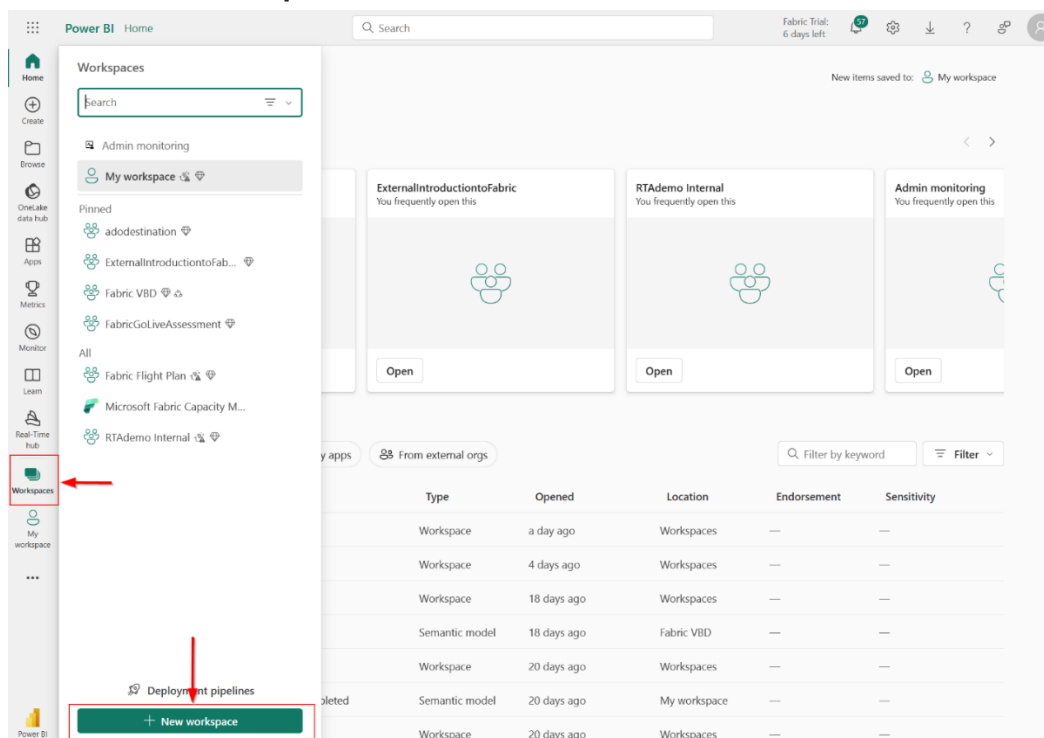
Task 1: Create a Fabric workspace

Open a new browser tab, go to <https://app.powerbi.com/> and sign in with your credentials.



You may see a message alerting you that you have been assigned a Microsoft Fabric (Free) license. Select **OK** to dismiss the message.

1. On the Power BI Home page, in the left navigation pane, select **Workspaces** and then select **+ New workspace**.



2. In the Name field, enter Fabric Training:

Create a workspace

×

Name *

Fabric Training

✔ This name is available

Description


Describe this workspace

Domain ⓘ

Assign to a domain (optional) ▾

Learn more about workspace settings ↗

Workspace image




↑ Upload

↶ Reset

Advanced ^

Contact list * ⓘ

 admin (Owner) ×

License mode ⓘ

☐ Pro

Select Pro to use basic Power BI features and collaborate on reports, dashboards, and scorecards. To access a Pro workspace, users need Pro per-user licenses. [Learn more](#) ↗

☐ Trial

Select the free trial per-user license to try all the new features and experiences in Microsoft Fabric for 60 days. A Microsoft Fabric trial license allows users to create Microsoft Fabric items and collaborate with others in a Microsoft Fabric trial capacity. Explore new capabilities in Power BI, Data Factory, Data Engineering, and Real-Time Intelligence, among others. [Learn more](#) ↗

Apply

Cancel

3. After Azure verifies that the name is available, select **Advanced**.

4. In the License mode section, verify that a **Fabric capacity** is selected if you have access to one or choose Trial. Then select **Apply**.

Create a workspace



Advanced ^

Contact list * ⓘ

admin (Owner) ×

License mode ⓘ

☐ Pro

Select Pro to use basic Power BI features and collaborate on reports, dashboards, and scorecards. To access a Pro workspace, users need Pro per-user licenses. [Learn more](#) ↗

☐ Trial

Select the free trial per-user license to try all the new features and experiences in Microsoft Fabric for 60 days. A Microsoft Fabric trial license allows users to create Microsoft Fabric items and collaborate with others in a Microsoft Fabric trial capacity. Explore new capabilities in Power BI, Data Factory, Data Engineering, and Real-Time Intelligence, among others. [Learn more](#) ↗

☐ Premium per-user

Select Premium per-user to collaborate using Power BI Premium features, including paginated reports, dataflows, and datamarts. To collaborate and share content in a Premium per-user workspace, users need Premium per-user licenses. [Learn more](#) ↗

☐ Premium capacity

Select premium capacity if the workspace will be hosted in a premium capacity. When you share, collaborate on, and distribute Power BI and Microsoft Fabric content, users in the viewer role can access this content without needing a Pro or Premium per-user license. [Learn more](#) ↗

☐ Embedded

Select embedded if the workspace will be hosted in an Azure embedded capacity. ISVs and developers use Power BI Embedded to embed visuals and analytics in their applications. [Learn more](#) ↗

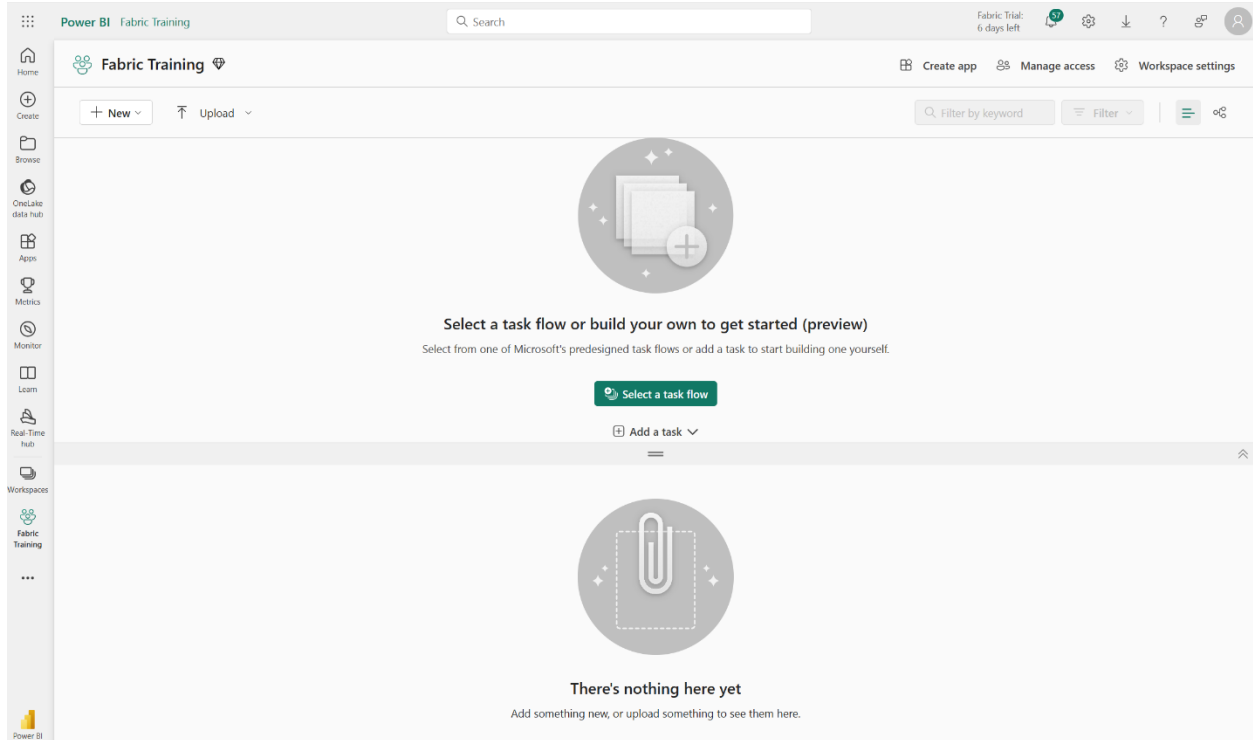
☒ Fabric capacity

Select Fabric capacity if the workspace will be hosted in a Microsoft Fabric capacity. With Fabric capacities, users can create Microsoft Fabric items and collaborate with others using Fabric features and experiences. Explore new capabilities in Power BI, Data Factory, Data Engineering, and Real-Time Intelligence, among others. [Learn more](#) ↗

Apply

Cancel

5. On the Power BI page, select **Workspaces** and verify that the Fabric Training workspace was created.

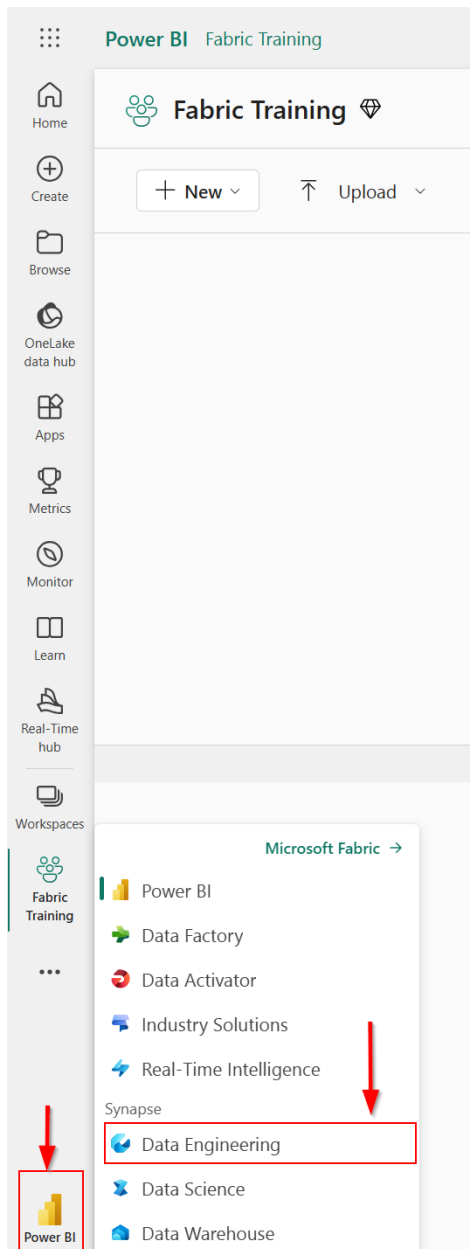


If the workspace was not created, repeat the steps in this task to create the workspace.

Task 2: Create Fabric Lakehouse

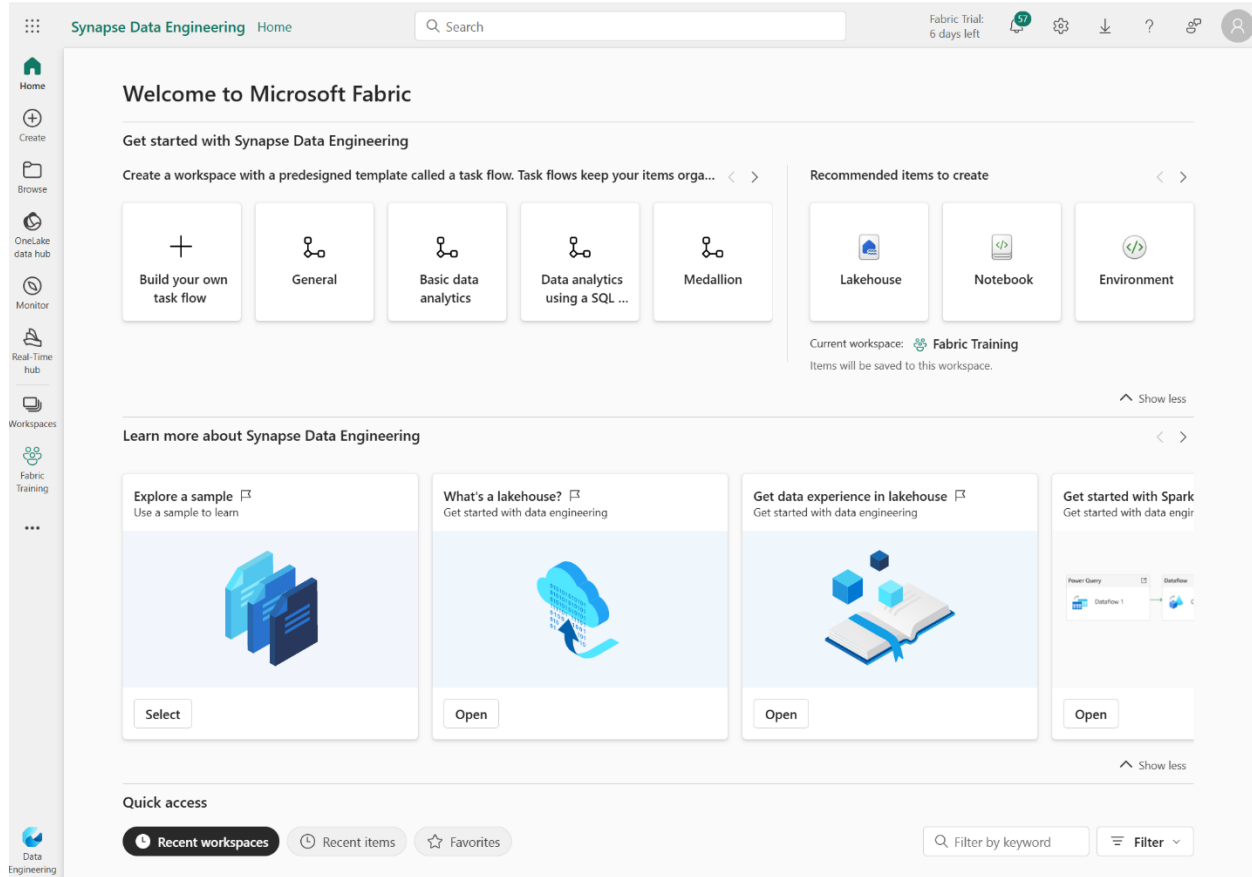
Now, let's see how each department in Contoso can easily create a Lakehouse in their workspace without any provisioning by simply providing the name, given the proper access rights, of course!

1. In the lower left of the navigation pane for the workspace, select **Power BI**. Then, in the Synapse section, select **Data Engineering**.

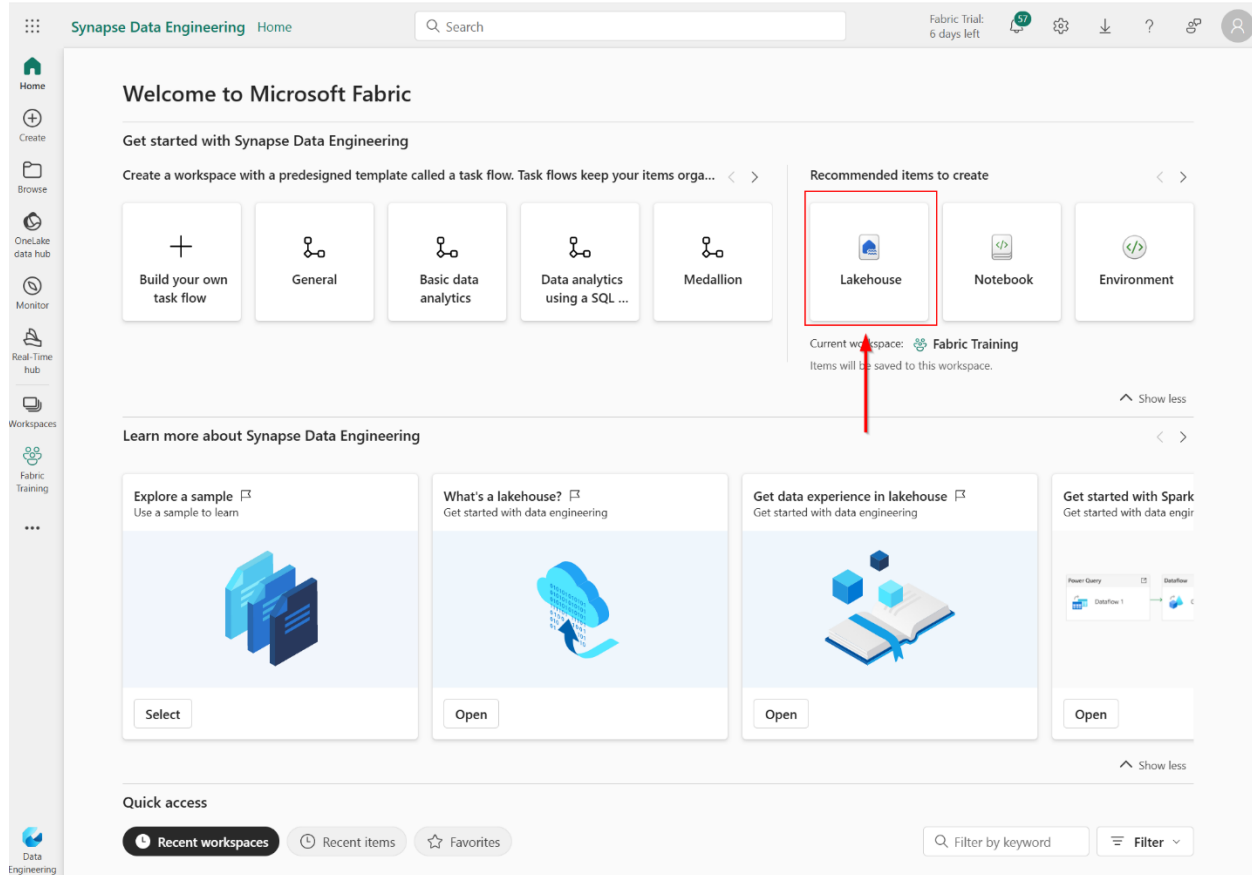


Selecting Data Engineering switches the context from reports and visualizations to data engineering.

You should see that the options presented in the left navigation pane change to reflect the change in context.



2. On the Synapse Data Engineering Home page, select the **Lakehouse** tile.



3. In the Name field, enter **bronze** and then select **Create**. The context switches to the bronze page.

New lakehouse

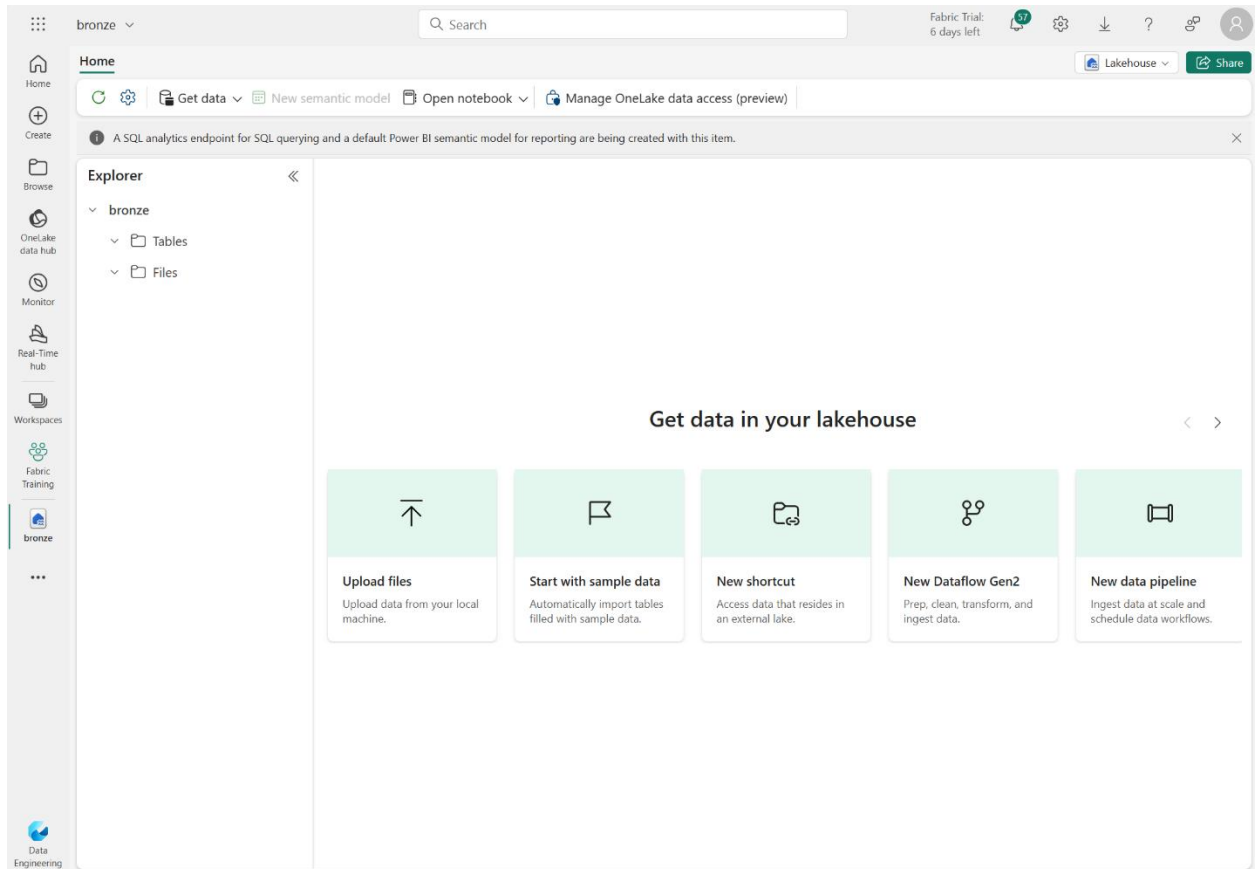
Name *

bronze

☐ Lakehouse schemas (Public Preview) ⓘ

Create

Cancel



- Repeat steps 2-3 to create two more lakehouses. You can either go to Home on the left pane and follow the same steps or go to your workspace and then click on New. Use the following names for the new lakehouses:

Lakehouse Name
silver
gold

- In the left navigation pane for the Synapse Data Engineering Home page, select your FabricTraining workspace. You should see the three lakehouses and related objects listed.

	Name	Type	Task	Owner	Refreshed	Next refresh	Endorsemen	Sensitivity	Included in app
	bronze	Lakehouse	—	System Ad...	—	—	—	—	
└─	bronze	Semantic ...	—	Fabric Train...	8/21/24, 3:1...	N/A	—	—	
	bronze	SQL analyti...	—	Fabric Train...	—	N/A	—	—	
	gold	Lakehouse	—	System Ad...	—	—	—	—	
└─	gold	Semantic ...	—	Fabric Train...	8/21/24, 3:1...	N/A	—	—	
	gold	SQL analyti...	—	Fabric Train...	—	N/A	—	—	
	silver	Lakehouse	—	System Ad...	—	—	—	—	
└─	silver	Semantic ...	—	Fabric Train...	8/21/24, 3:1...	N/A	—	—	
	silver	SQL analyti...	—	Fabric Train...	—	N/A	—	—	

Now you are ready to start data ingestion. You will first ingest the raw data in the bronze layer. After that, you will curate and enrich the data as you move the data to the silver and then gold layer.

Task 3: Create a data pipeline

Option 1: If you have created an Azure SQL database

There are multiple ways to ingest data into a Lakehouse, and in this exercise, Contoso focuses on using data pipelines

to efficiently funnel diverse datasets into their system, setting the stage for advanced analytics and insights.

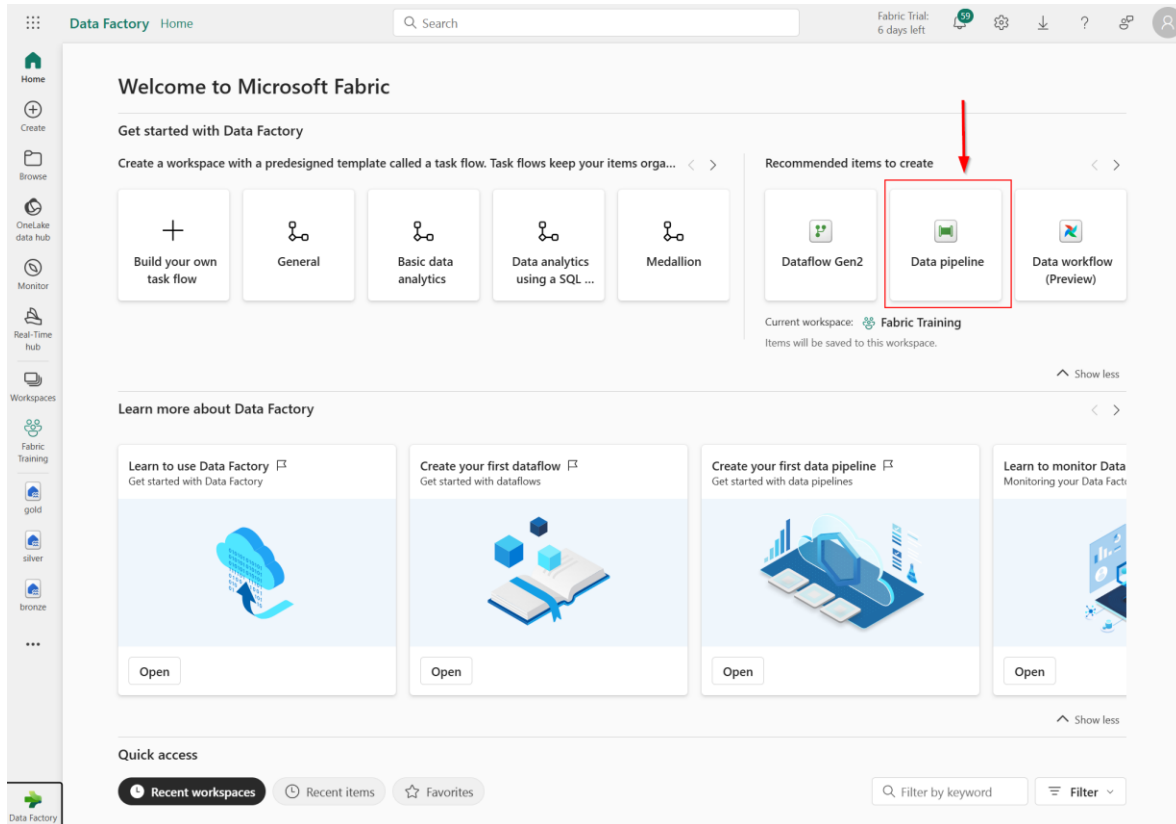
Please move to option 2 if you have downloaded the data from Sharepoint and you are not using Azure SQL DB.

1. In the lower left of the navigation pane for the workspace, select **Data Engineering** and then select **Data Factory**.

The screenshot shows the Synapse Data Engineering interface. On the left is a navigation pane with icons for Home, Create, Browse, OneLake data hub, Monitor, Real-Time hub, and Workspaces. Under Workspaces, there's a section for 'Fabric Training' with a list of data pipelines: bronze, gold, silver, and bronze. A red box highlights the 'Data Engineering' icon in the bottom left of the navigation pane. Another red box highlights the 'Data Factory' option in the dropdown menu that appears when 'Data Engineering' is selected. The main area of the interface shows a table of data pipelines with columns: Name, Type, Task, Owner, Refreshed, Next refresh, Endorsemen, Sensitivity, and Included in app. The table lists several pipelines, including 'bronze' (Lakehouse), 'bronze' (Semantic), 'bronze' (SQL analyti...), 'bronze' (Lakehouse), 'bronze' (Semantic), 'bronze' (SQL analyti...), 'bronze' (Lakehouse), 'bronze' (Semantic), and 'bronze' (SQL analyti...).

Name	Type	Task	Owner	Refreshed	Next refresh	Endorsemen	Sensitivity	Included in app
bronze	Lakehouse	—	System Ad...	—	—	—	—	—
bronze	Semantic ...	—	Fabric Train...	8/21/24, 3:1...	N/A	—	—	—
bronze	SQL analyti...	—	Fabric Train...	—	N/A	—	—	—
bronze	Lakehouse	—	System Ad...	—	—	—	—	—
bronze	Semantic ...	—	Fabric Train...	8/21/24, 3:1...	N/A	—	—	—
bronze	SQL analyti...	—	Fabric Train...	—	N/A	—	—	—
bronze	Lakehouse	—	System Ad...	—	—	—	—	—
bronze	Semantic ...	—	Fabric Train...	8/21/24, 3:1...	N/A	—	—	—
bronze	SQL analyti...	—	Fabric Train...	—	N/A	—	—	—

2. Select the **Data pipeline** tile.



3. Enter **Azure SQL DB Pipeline** for the pipeline name and then select **Create**.

New pipeline



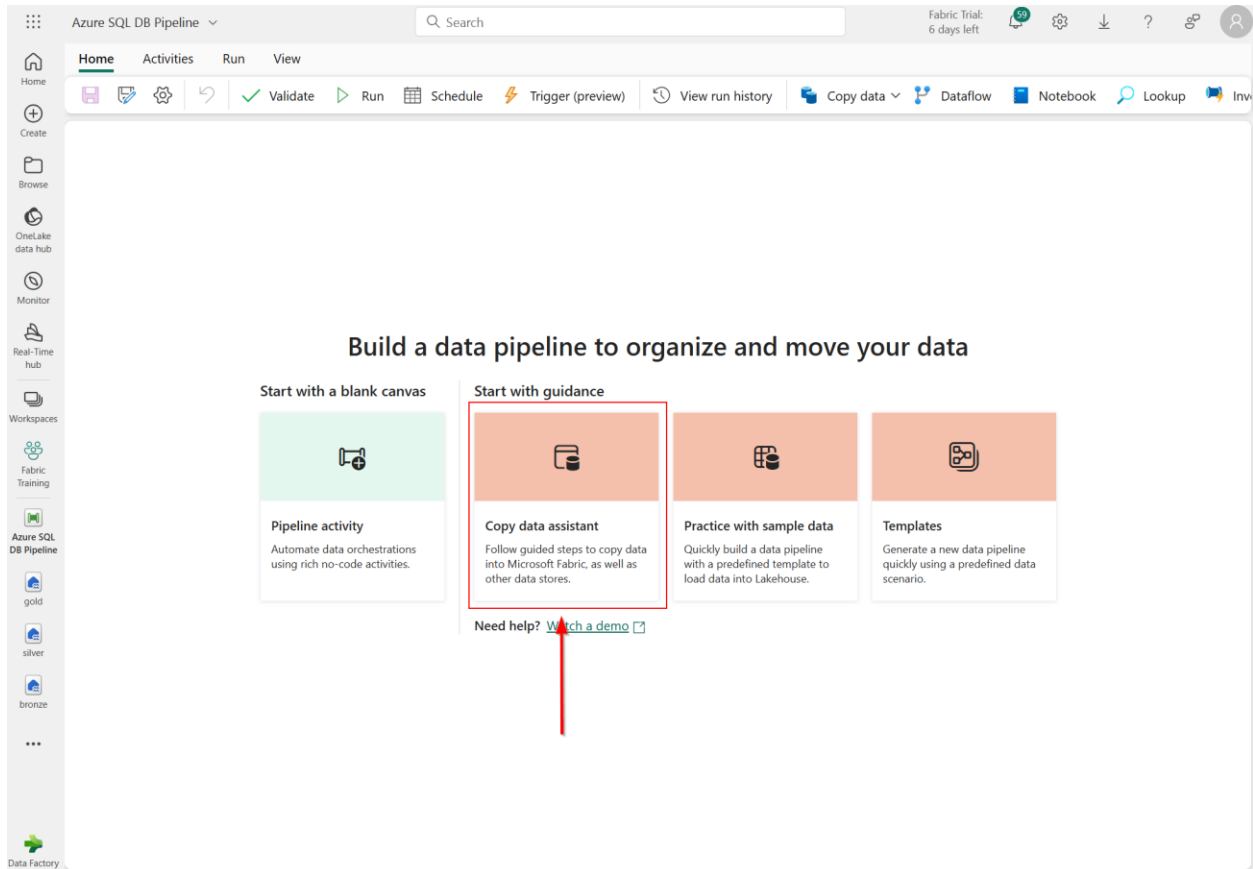
Name

Azure SQL DB Pipeline

Create

Cancel

4. Select the **Copy data assistant** tile.



5. On the Choose data source page, select **Azure SQL Database**. You may need to scroll down to see the Azure SQL Database option.

Copy data

- Choose data source**
Select a connector. Then enter the connection information.
- Connect to data source
- Choose data destination
- Connect to data destination
- Review + save

HomeOneLake data hubSample dataNewAzure

Search

New sourcesView more →

SQL Server database
Database

Dataverse
Power Platform

SharePoint Online list
Online services

**Azure SQL database
Azure**

Folder
File

OData
Other

OneLake data hubView more →

AllRecentRecommended

	Name	Type	Owner	Refreshed
	gold	Lakehouse	System Administrator	—
	silver	Lakehouse	System Administrator	—
	bronze	Lakehouse	System Administrator	—

- Configure the connection by using the values you configured for your Azure SQL db in Lab 0. Leave all other settings at their default values.

In case you have used a different server name in Lab 0, please find the server's name in the server overview information in the Azure portal:

fabricserver9
SQL server

✦
☆
⋮

⋄
⏪
+ Create database
+ New elastic pool
+ New dedicated SQL pool (formerly SQL DW)
⋮

SQL Overview

- Activity log
- Access control (IAM)
- Tags
- Quick start
- Diagnose and solve problems
- Settings
- Data management
- Security
- Intelligent performance
- Monitoring
- Automation
- Help

Essentials

Resource group [\(move\)](#)
[FabricUpskillingVBD](#)

Status
Available

Location
West Europe

Subscription [\(move\)](#)
[ME-MngEnvMCAP546077-pchristina-1](#)

Subscription ID
c73c2c4a-a2ac-46d3-9b74-4d0dfb91e0d9

Tags [\(edit\)](#)
[Add tags](#)

Server admin
labsqladmin

Networking
[Show networking settings](#)

Microsoft Entra admin
[Not configured](#)

Server name
fabricserver9.database.windows.net

JSON View

Notifications (0)

Features (6)

All

Security (4)

Performance (1)

Recovery (1)

Microsoft Entra admin

Allows you to centrally manage identity and access to your Azure SQL databases.

NOT CONFIGURED ●

Microsoft Defender for SQL

Vulnerability Assessment and Advanced Threat Protection.


CONFIGURED ●

Default	Value
Server	fabricserver9.database.windows.net Or the server name you chose in Lab 0
Database	Adventureworks
Authentication kind	Basic
Username	labsqladmin
Password	The password you chose in Lab 0

Copy data

- Choose data source**
Select a connector. Then enter the connection information.
- Connect to data source
- Choose data destination
- Connect to data destination
- Review + save

Connect to data source

**Azure SQL database**
Azure
[Learn more](#)

Connection settings

Server * ⓘ
fabricserver9.database.windows.net

Database
Adventureworks

Connection credentials

Connection
Create new connection ▼ ↻

Connection name
fabricserver9.database.windows.net;Adventureworks

Data gateway
(none) ▼ ↻

Authentication kind
Basic ▼

Username
labsqladmin

Password
..... 🔑

☒ Use encrypted connection

Back


Next

7. Select **Next**. Close any pop-up windows that display and wait for the connection to be created.
8. If you get the following window, choose the Adventureworks database – it may take some seconds for it to show up:

Copy data


- ☒ **Choose data source**
Select a connector. Then enter the connection information.
- ☐ Connect to data source
- ☐ Choose data destination
- ☐ Connect to data destination
- ☐ Review + save

Choose data source

**Azure SQL Database**
[Learn more](#)

Connection settings

Database
Adventureworks ▼

 Refresh

Back

Next

- On the Connect to data source dialog, in the Select a table section, select **Tables**.
- Select **Select all**. Clear the **dbo.BuildVersion** and **dbo.ErrorLog** checkboxes and select **Next**.

Copy data

Choose data source

Connect to data source

Select, preview, and choose the data.

Choose data destination

Connect to data destination

Review + save

Connect to data source

Select a table

(Connection: fabricserver9.database.window...)

Tables

Query

Search

Adventureworks

Select all

dbo.BuildVersion

dbo.ErrorLog

SalesLT.Address

SalesLT.Customer

SalesLT.CustomerAddress

SalesLT.Product

SalesLT.ProductCategory

SalesLT.ProductDescription

SalesLT.ProductModel

Preview data: SalesLT.Address

123	AddressID	abc	AddressLine1	abc	AddressLine2	abc	City	abc	StatePr
9			8713 Yosemite Ct.				Bothell		Washington
11			1318 Lasalle Street				Bothell		Washington
25			9178 Jumping St.				Dallas		Texas
28			9228 Via Del Sol				Phoenix		Arizona
32			26910 Indela Road				Montreal		Quebec
185			2681 Eagle Peak				Bellevue		Washington
297			7943 Walnut Ave				Renton		Washington
445			6388 Lake City Way				Burnaby		British Colu

Back

Next

11. On the Choose data destinations page, go to OneLake data hub and choose the bronze lakehouse you created earlier:

Copy data

- ✓ Choose data source
- ✓ Connect to data source
- Choose data destination
Define the data store as destination.
- Connect to data destination
- Review + save

HomeOneLake data hubNewAzureNew Fabric item

Search

AllMy dataEndorsed in your orgFavorites

FilterAll domains

Explorer

Name	Type	Owner	Refresh
gold	Lakehouse	System Administrator	—
silver	Lakehouse	System Administrator	—
bronze	Lakehouse	System Administrator	—
DataEng	Lakehouse	System Administrator	—
FirstLakehouse	Lakehouse	System Administrator	—
RTADemoLakehouse	Lakehouse	System Administrator	—
RTAdemo	KQL Database	Ⓐ	—
BronzeLakehouse	Lakehouse	System Administrator	—
ConvDestination	Lakehouse	System Administrator	—

Back

12. After you click on the bronze lakehouse, make sure to choose Files as root Folder and write AdventureWorks as File Path , Filename suffix as .csv. Click Next:

Copy data

- ✓ Choose data source
- ✓ Connect to data source
- ✓ Choose data destination
- Connect to data destination**
Select and map to folder path or table.
- Review + save

Connect to data destination

Connection

bronze


Root folder

☐ Tables ☒ Files

Folder path

If the identity you use to access the data store only has permission to subdirectory instead of the entire account, specify the path to browse.

AdventureWorks

 Browse

File name

File name is defined by source table name

> Advanced settings

File name suffix

.csv

Back

Next

13. Make sure delimited text is selected here and click Next:

Copy data

- ✓ Choose data source
- ✓ Connect to data source
- ✓ Choose data destination
- **Connect to data destination**
Select and map to folder path or table.
- Review + save

Connect to data destination

File format

DelimitedText

Column delimiter

Comma (,)

Row delimiter

Default (\r\n, or \r\n)

☒ Add header to file ⓘ

Compression type

Select...

Back

Next


14. Select **Next** and then Select **Save + Run**.

Copy data

- ✓ Choose data source
- ✓ Connect to data source
- ✓ Choose data destination
- ✓ Connect to data destination
- Review + save**
Confirm Copy summary


Review + save

Copy Summary



Azure SQL Database

→



DelimitedText

Source

Connection name

fabricserver9.database.windows.net a
dmin

Number of tables

13

Destination

Connection name

bronze

Options

☒ Start data transfer immediately ⓘ

Back

Save + Run

15. After a brief delay, the Pipeline Run window displays. Click **OK**. The pipeline will start processing.

Pipeline run

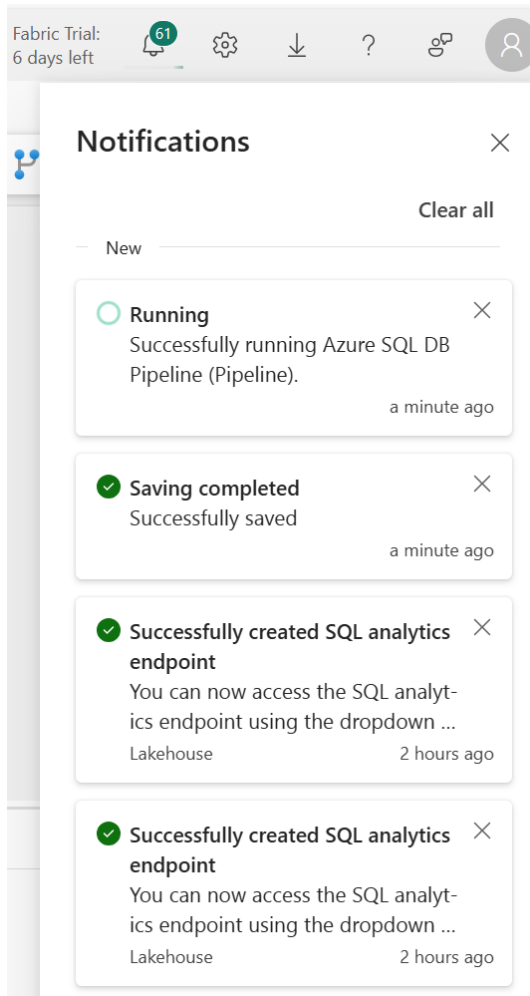
Parameters

Name	Type	Value
cw_items_ju4	Array	<input data-bbox="727 352 1002 382" type="text" value='[{"source":{"table":"Address"},...]'/>

OK

Cancel

16. On the upper-right of the page, select **Notifications**. You can use the Notifications area to monitor the pipeline. When the pipeline is completed, you will receive a notification there.



17. You can go to the **Monitor tab** on the left, choose the pipeline and see more information about the pipeline run:

Data Factory

Monitor

Search

Fabric Trial:
6 days left

?

Home

Create

Browse

OneLake data hub

Monitor

Real-time hub

Workspaces

Fabric Training

Azure SQL DB Pipeline

gold

silver

bronze

...

Data Factory

Monitor

View and track the status of the activities across all the workspaces for which you have permissions within Microsoft Fabric.

Refresh

Filter by keyword

Filter

Column Options

Clear all

To apply filters, select the values from the Filter dropdown menu.

Activity name	Status	Item type	Start time	Submitted by	Location
Azure SQL DB Pipeline	Succeeded	Data pipeline	5:31 PM, 8/21/24	System Administrator	Fabric Training
Purview Hub	Succeeded	Semantic model	8:34 PM, 8/20/24	Admin Monitoring	Admin monitoring
Feature Usage and Adoption	Succeeded	Semantic model	8:34 PM, 8/20/24	Admin Monitoring	Admin monitoring
pipeline16op[Succeeded	Data pipeline	4:23 PM, 8/16/24	System Administrator	My workspace
pipeline15	Succeeded	Data pipeline	4:08 PM, 8/16/24	System Administrator	My workspace
Fabric Capacity Metrics	Succeeded	Semantic model	12:00 AM, 8/12/24	System Administrator	Microsoft Fabric...
Notebook 2_d5416843-deb6-4398-a00a-489079...	Succeeded	Notebook	1:26 PM, 7/31/24	System Administrator	Fabric Flight Plan
Notebook 1_e4ba587a-5ce9-4130-8ca7-601549f...	Succeeded	Notebook	12:24 PM, 7/31/24	System Administrator	Fabric Flight Plan
Ingest Sales Data	Succeeded	Data pipeline	10:22 AM, 7/31/24	System Administrator	Fabric Flight Plan
Copy Address table	Succeeded	Data pipeline	4:45 PM, 7/23/24	System Administrator	RTAdemo Internal
Copy Address table	Succeeded	Data pipeline	4:44 PM, 7/23/24	System Administrator	RTAdemo Internal
Copy Address table	Cancelled	Data pipeline	4:42 PM, 7/23/24	System Administrator	RTAdemo Internal
Copy Address table	Succeeded	Data pipeline	4:37 PM, 7/23/24	System Administrator	RTAdemo Internal
Copy Address table	Succeeded	Data pipeline	4:32 PM, 7/23/24	System Administrator	RTAdemo Internal
Generate synthetic events(1_cab207ab-a4c3-48...	Succeeded	Notebook	4:10 PM, 7/23/24	System Administrator	RTAdemo Internal

Data Factory Monitoring hub > **Azure SQL DB Pipeline**

Search

Fabric Trial: 6 days left

Home, Create, Browse, OneLake data hub, Monitor, Real-Time hub, Workspaces, Fabric Training, Azure SQL DB Pipeline, gold, silver, bronze, Data Factory

Rerun, Cancel, Refresh, Update pipeline, List, Gantt

ForEach **ForEach_ju4**

Activities: Copy_ju4

Pipeline run details

Run by: System Administrator

Start time: 8/21/2024, 5:31:42 PM

End time: 8/21/2024, 5:33:33 PM

Status: **Succeeded**

Parameters: 1

Pipeline run ID: 59e117dd-fb46-4e26-855d-c8c4ef62728c

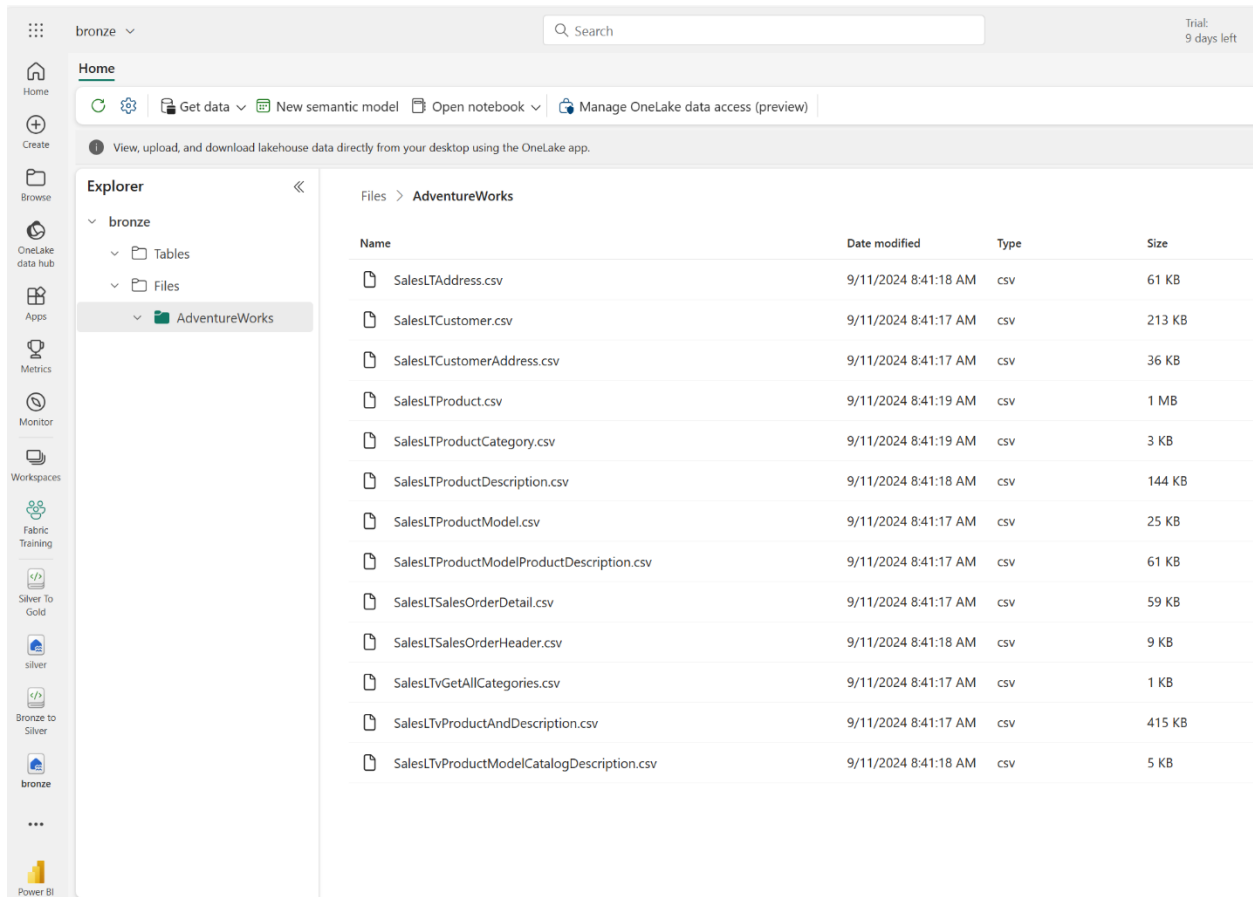
Activity runs

Export to CSV

Showing 14 items

Activity name	Activity status	Run start	Duration	Input	Output
ForEach_ju4	Succeeded	8/21/2024, 5:31:46 PM	1m 46s		
Copy_ju4	Succeeded	8/21/2024, 5:31:47 PM	23s		
Copy_ju4	Succeeded	8/21/2024, 5:31:47 PM	25s		
Copy_ju4	Succeeded	8/21/2024, 5:31:47 PM	23s		
Copy_ju4	Succeeded	8/21/2024, 5:31:47 PM	23s		
Copy_ju4	Succeeded	8/21/2024, 5:31:47 PM	22s		
Copy_ju4	Succeeded	8/21/2024, 5:31:47 PM	24s		

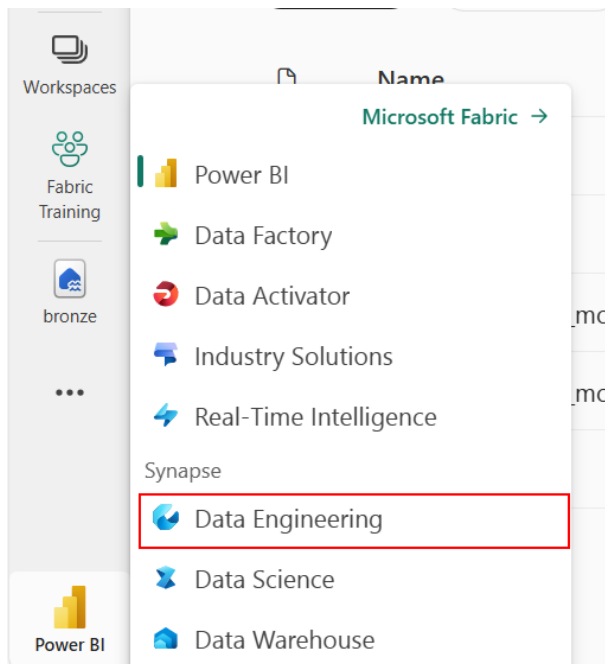
18. After the status shows **Succeeded**, your data has been transferred from Azure SQL Database to bronze lakehouse. You can go to your bronze lakehouse and verify that the files are moved:



Option 2: If you have downloaded the data from Sharepoint

In case you have followed Lab 0 – Option 2 and you have downloaded the files, please follow the instructions here to upload them directly into the Fabric lakehouse:

1. In the workspaces on the left bar select the Fabric Training one that you created before
2. Select Power BI at the bottom left and choose Data Engineering:



3. Then select the bronze lakehouse:

Synapse Data Engineering Fabric Training

Home Create Browse OneLake data hub Monitor Real-Time hub Workspaces Fabric Training

Fabric Training

Create deployment pipeline Create app

+ New → Import Filter by

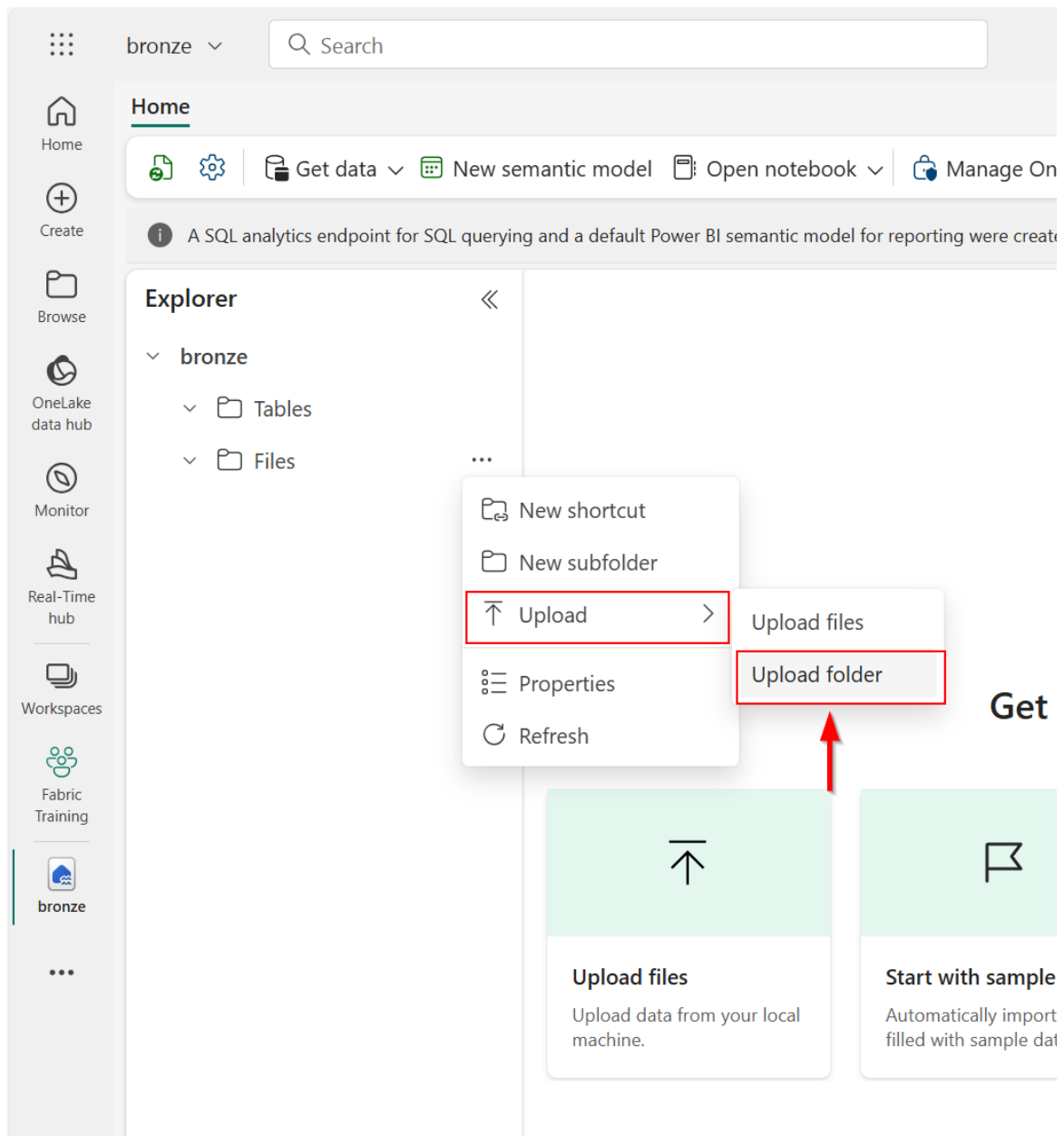
Choose from predefined task flows or add a task to build one

Select from one of Microsoft's predefined task flows or add a task to start building one

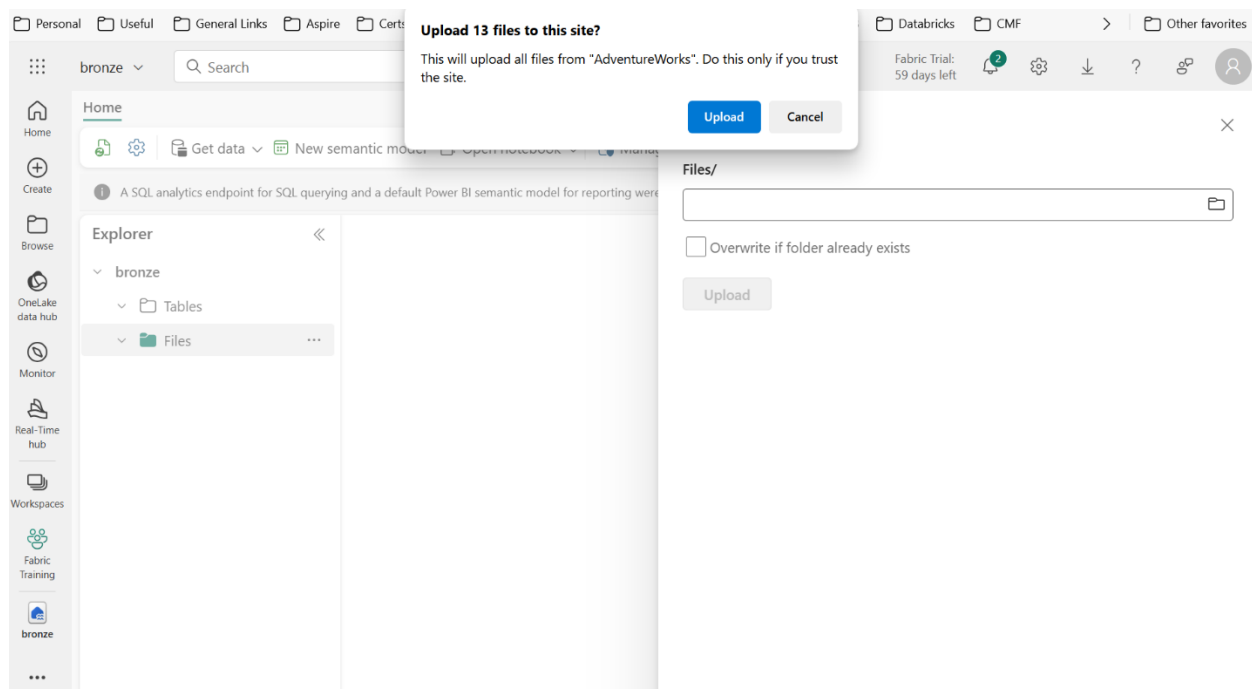
Select a predefined task flow Add a task

Name	Type	Task	Owner	Refreshed	Next refresh
bronze	Lakehouse	—	System A...	—	—
bronze	Semantic...	—	Fabric Tra...	10/10/24, ...	N/A
bronze	SQL anal...	—	Fabric Tra...	—	N/A

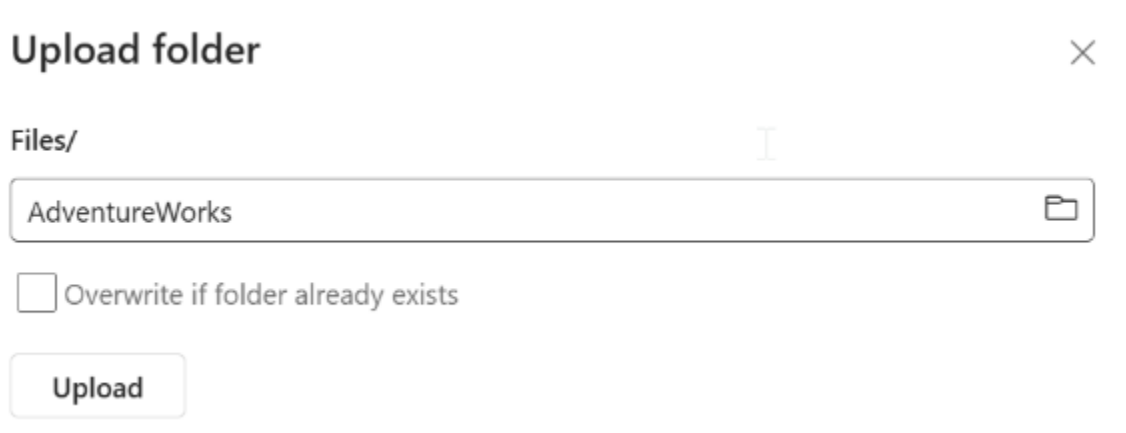
4. On the Bronze Lakehouse go to files, upload and hit upload folder.



5. Go to the Downloads folder on your laptop and locate the folder you unzipped after downloading it from SharePoint. When prompted, select upload:



When uploading a folder to Bronze lakehouse it should look like this:



6. Under the files you should see the Folder AdventureWorks and the CSV files for every table:

Home

Create

Browse

OneLake data hub

Monitor

Real-Time hub

Workspaces

Fabric Training

bronze

...

Home

Get data

New semantic model

Open notebook

Manage OneLake data access (preview)

A SQL analytics endpoint for SQL querying and a default Power BI semantic model for reporting were created with this item.

Explorer

bronze

Tables

Files

AdventureWorks

Files > AdventureWorks

Name	Date modified	Type	Size
SalesLTAddress.csv	10/10/2024 1...	csv	61 KB
SalesLTCustomer.csv	10/10/2024 1...	csv	213 KB
SalesLTCustomerAddress.csv	10/10/2024 1...	csv	36 KB
SalesLTProduct.csv	10/10/2024 1...	csv	1 MB
SalesLTProductCategory.csv	10/10/2024 1...	csv	3 KB
SalesLTProductDescription.csv	10/10/2024 1...	csv	144 KB
SalesLTProductModel.csv	10/10/2024 1...	csv	25 KB
SalesLTProductModelProductDescription.csv	10/10/2024 1...	csv	61 KB
SalesLTSalesOrderDetail.csv	10/10/2024 1...	csv	59 KB
SalesLTSalesOrderHeader.csv	10/10/2024 1...	csv	9 KB
SalesLTvGetAllCategories.csv	10/10/2024 1...	csv	1 KB
SalesLTvProductAndDescription.csv	10/10/2024 1...	csv	415 KB
SalesLTvProductModelCatalogDescription.csv	10/10/2024 1...	csv	5 KB

