

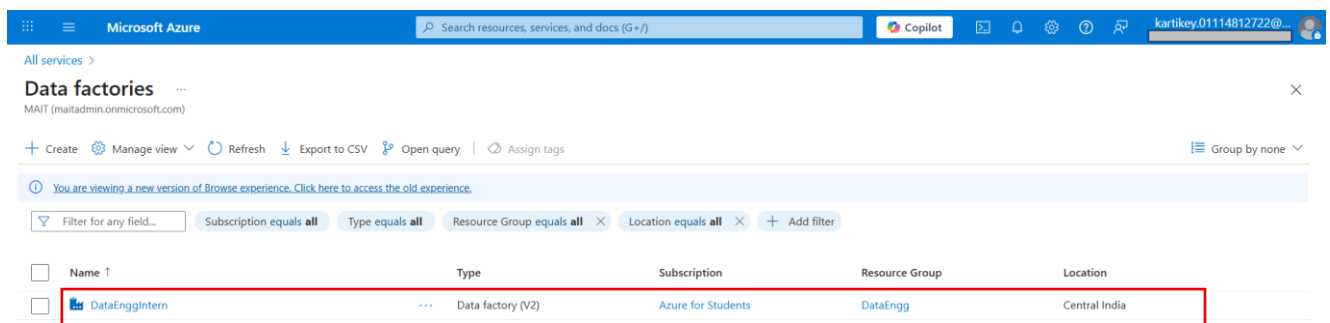
TASK 1

Configure Self-hosted Integration Runtime to Extract Data from Local Server and Load into Azure SQL Database: Set up a Self-hosted Integration Runtime (SHIR) in Azure Data Factory to securely connect to an on-premises server. Extract data from the local environment and load it into an Azure SQL Database to enable cloud-based analytics and processing.

Steps to to set up Self-hosted Integration Runtime(SHIR) in ADF and securely connect to an on-premise server, extract data, and load it into Azure SQL Database:

Step 1: Data Factory

1. Create an ADF instance, click + **Create** to create a new Data Factory resource:
 - Choose subscription, resource group, and region
 - Name your factory
 - Version: select **V2**
 - Click **Review + Create**, then **Create**

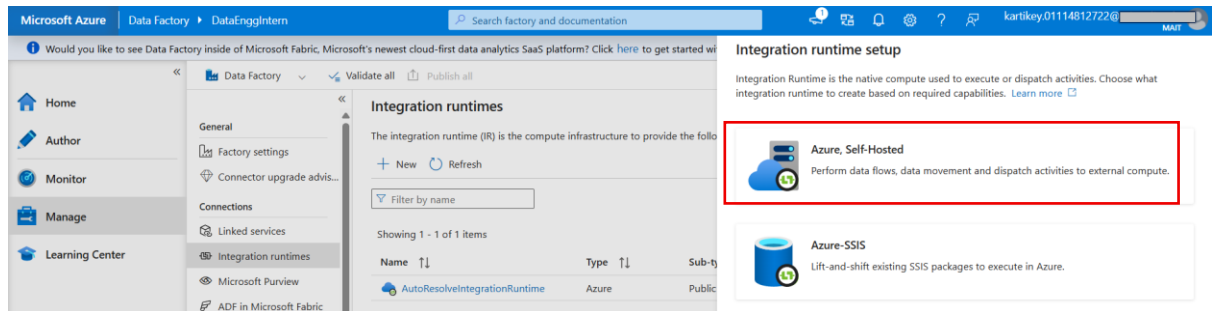
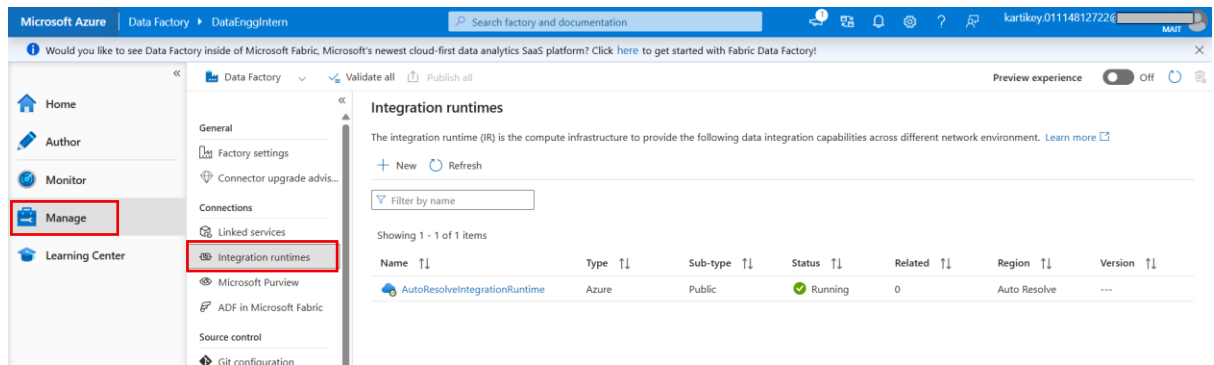


Step 2: Launch the ADF Authoring Interface

1. Inside your Data Factory resource page, click "**Launch Studio**"

Step 3: Go to Integration Runtimes

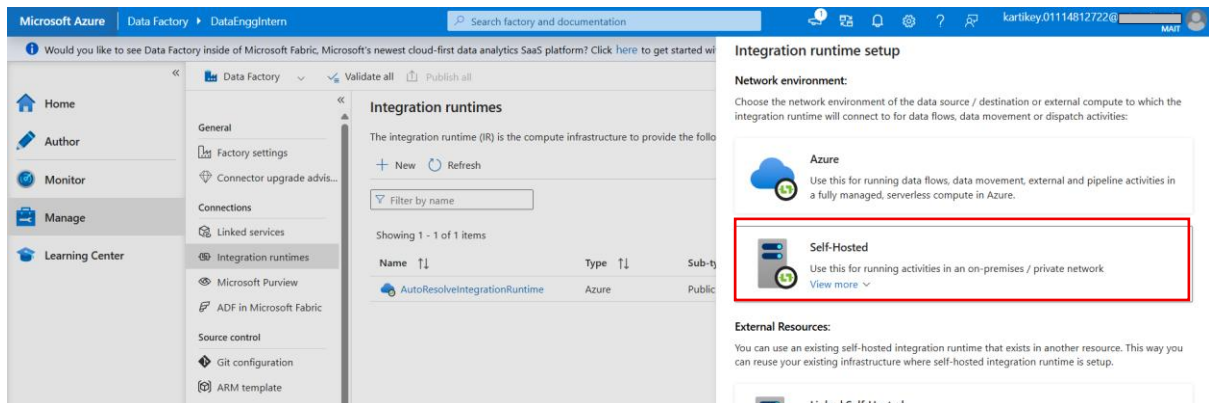
1. In **ADF Studio**, go to the left-hand panel and click on the **Manage**.
2. Under **Connections**, choose **Integration Runtimes**.
3. Click + **New**.



Step 4: Set Up Self-hosted Integration Runtime (SHIR)

1. In the popup, choose:

- **Self-hosted, Click Continue**



2. Give it a name and click **Create**.

Integration runtime setup

Private network support is realized by installing integration runtime to machines in the same on-premises network/VNET as the resource the integration runtime is connecting to. Follow below steps to register and install integration runtime on your self-hosted machines.

Name * ⓘ
SQLOnPrem

Description
Enter description here...

Type
Self-Hosted

Create Back Cancel

3. After creation, ADF will give you:

- A **download link** for the SHIR installer
- An **authentication key**

Integration runtime setup

Settings Nodes Auto update

Successfully saved
Successfully saved SQLOnPrem (Integration runtime).

Install integration runtime on Windows machine or add further nodes using the Authentication Key.

Name ⓘ
SQLOnPrem

Self-contained interactive authoring ⓘ
☒ Disable ☐ Enable

Option 1: Express setup
[Click here to launch the express setup for this computer](#)

Option 2: Manual setup
Step 1: [Download and install integration runtime](#)

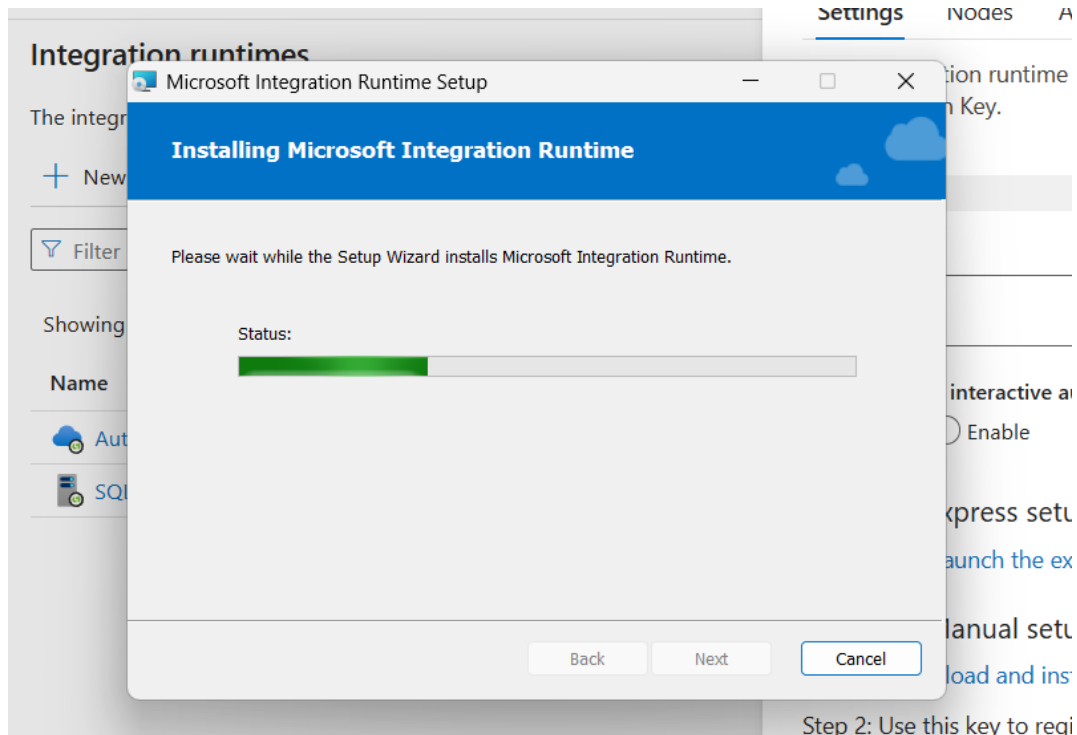
Step 2: Use this key to register your integration runtime

Name	Authentication key
Key1	<input type="text"/>
Key2	<input type="text"/>

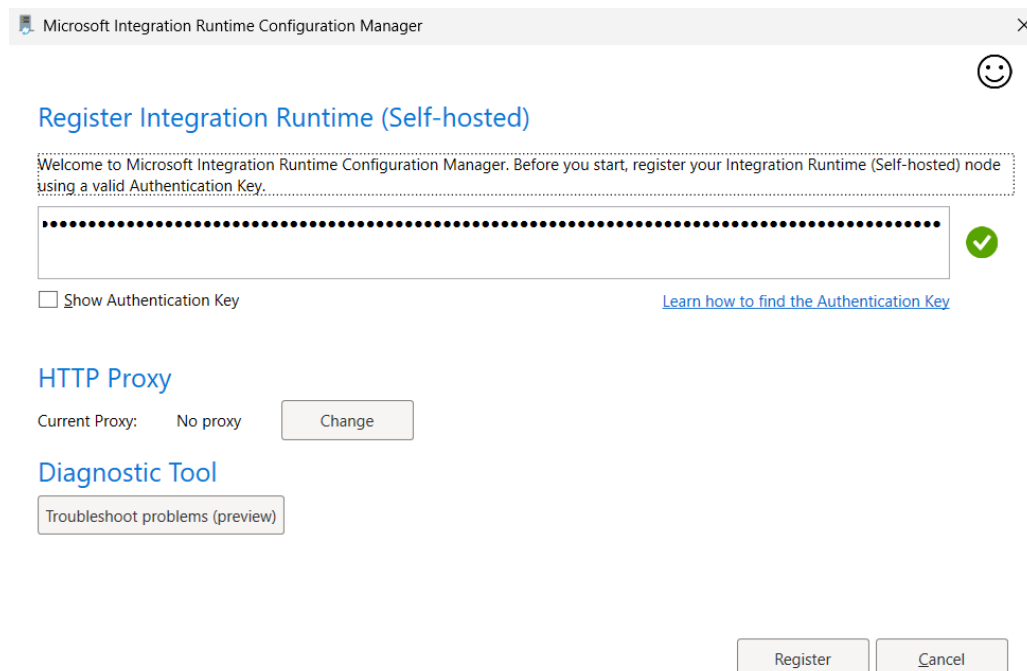
Close

Step 5: Install SHIR on Your Local Server

1. Go to your **on-prem server or VM**.
2. Download the SHIR installer using the link.




3. Run the installer and choose “**Register a new self-hosted integration runtime**”.
4. Paste the **authentication key** you got from ADF.




Microsoft Integration Runtime Configuration Manager - New Node

New Integration Runtime (Self-hosted) Node

Integration Runtime (Self-hosted) node name: 

Below is the list of Integration Runtime (Self-hosted) Nodes:


SQLOnPrem KARTIKEY : Current New Node
--

☐ Enable remote access from intranet 


Microsoft Integration Runtime Configuration Manager

Register Integration Runtime (Self-hosted)

Welcome to Microsoft Integration Runtime Configuration Manager. Before you start, register your Integration Runtime (Self-hosted) node using a valid Authentication Key.



☐ Show Authentication Key [Learn how to find the Authentication Key](#)

 Integration Runtime (Self-hosted) node has been registered successfully.

Note: You can associate up to 4 physical nodes with a Self-hosted Integration Runtime. This enables high availability and scalability for the Self-hosted Integration Runtime. We recommend you setup at least 2 nodes for higher availability. [See Integration Runtime \(Self-hosted\) article for details.](#)

HTTP Proxy

Current Proxy: No proxy

Diagnostic Tool

5. Finish the install — SHIR is now ready to securely connect your on-prem data to the cloud.

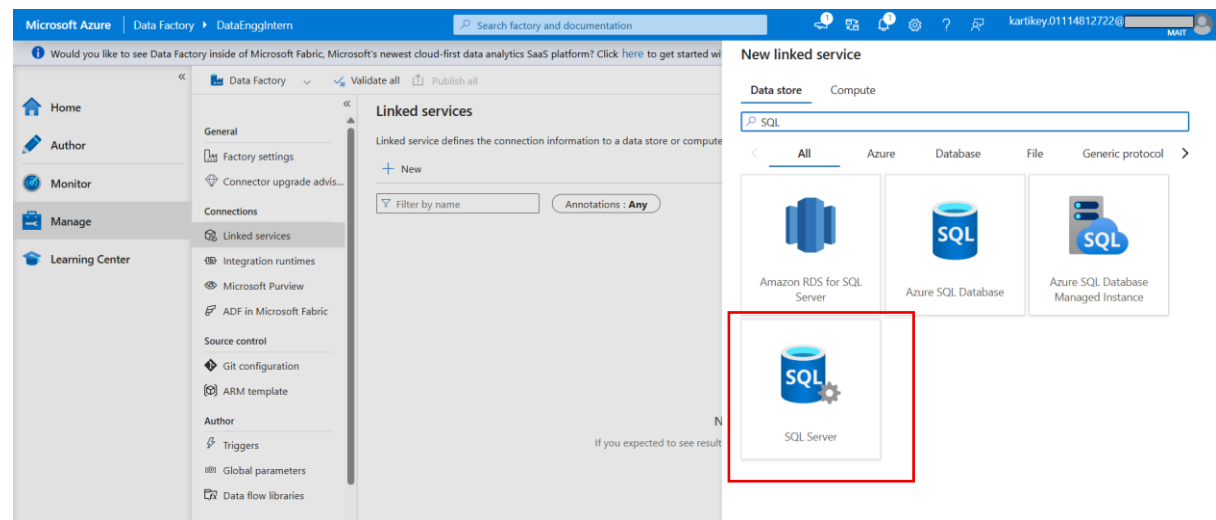
Step 6: Create Linked Services (Connections)

We'll create two linked services:

- One for your **on-prem SQL Server** (using SHIR)
- One for **Azure SQL Database**

A. Creating Linked Service for On-Premises SQL Server

1. Go to **Manage > Linked Services > Click + New**.
2. In the search box, type **SQL Server**, then select it and click **Continue**.



3. Fill in the details:
 - **Name:** <name>
 - **Server name:** local server hostname or IP address
 - **Database name:** <db_name>
 - **Authentication:** **SQL Authentication** (enter username/password)
 - **Integration Runtime:** Choose your **Self-hosted IR**
4. Click **Test Connection** (make sure it's green).
5. Click **Create**.

New linked service

SQL Server [Learn more](#)

Connect via integration runtime

SQLOnPrem

The credentials are stored in the machines of self-hosted integration runtime if you don't choose to store them in Azure Key Vault.

Version

☒ 2.0 (Recommended) ☐ 1.0

Import from connection string

Server name *

localhost

Database name *

bikeStores

Authentication type

SQL authentication

User name *

sa

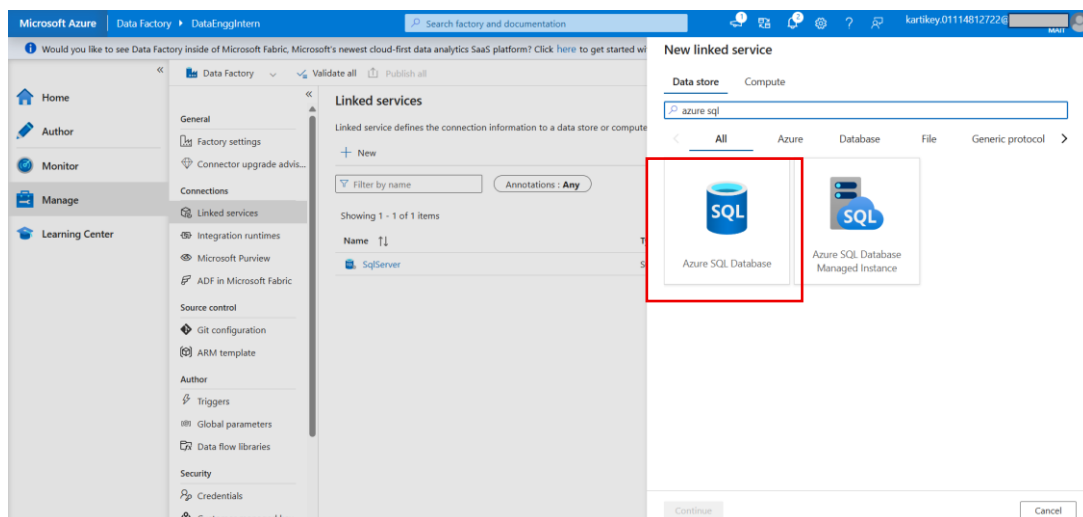
Password *

Always encrypted ☐

☒ Connection successful

B. Creating Linked Service for Azure SQL Database

1. Click + **New** in Linked Services.
2. Search for **Azure SQL Database**, then select it and click **Continue**.



3. Fill in:

- **Name:** <name>
- **Server name:** <Server must be present in Azure SQL>
- **Database name:** <db_name>
- **Authentication method:** Choose SQL Auth or Managed Identity
- **Username / Password:** (if using SQL Auth)
- **Integration Runtime:** Use **AutoResolveIntegrationRuntime** or **Self-hosted IR**

4. Click **Test Connection** > then **Create**.

The screenshot shows the 'New linked service' configuration window in Azure Data Studio. The window is titled 'New linked service' and has a blue header bar with the user's email 'kartikey.01114812722@' and a 'MAIT' button. The main content area is divided into several sections:

- Name ***: A text input field containing 'AzureSQLDatabase'.
- Description**: A large text area for additional information.
- Connect via integration runtime ***: A dropdown menu showing 'SQLOnPrem' with a green checkmark.
- Version**: Radio buttons for '2.0 (Recommended)' (selected) and '1.0'.
- Account selection method**: Radio buttons for 'From Azure subscription' (selected) and 'Enter manually'.
- Azure subscription**: A dropdown menu showing 'Azure for Students'.
- Server name ***: A dropdown menu showing 'deci'.

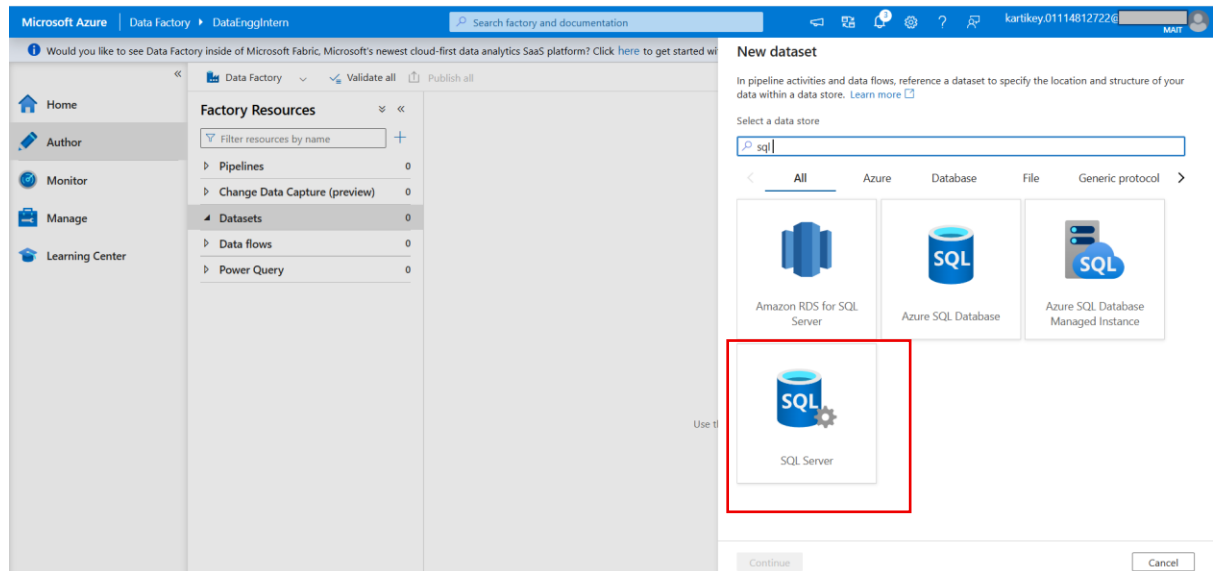
At the bottom of the window, there is a 'Create' button and a 'Back' button. To the right of these buttons, a status message indicates 'Connection successful' with a green checkmark. Below this message are two buttons: 'Test connection' and 'Cancel'.

Step 7: Create Datasets

These datasets define the structure and source/target of the data being moved.

A. Create Source Dataset (On-Prem SQL Server)

1. Go to **Author** > **Datasets** > **+ New dataset**.



2. Choose:
 - **SQL Server**
 - Linked Service: <service_name>
3. Name it: <table_name>
4. Choose:
 - **Table** or use a custom **SQL query**
 - Import schema (optional)
5. Click **OK**.

Set properties

Name

Linked service *

Connect via integration runtime * ⓘ



Table name

production.categories

production.products

production.stocks

sales.customers

sales.order_items

sales.orders

sales.staffs

sales.stores

Use the

OK

Back

Cancel

DATA PREVIEW

Inside of Microsoft Fabric. Microsoft's newest cloud-first data analytics SaaS platform? Click [here](#) to get started with Fabric Data Factory!

Data Factory

Factory Resources

- Filter resources by
- Pipelines
- Change Data Capture
- Datasets**
 - sales_staffs
- Data flows
- Power Query

Preview data

Linked service: SqlServer

Object: sales.staffs

	staff_id	first_name	last_name	email	phone	active	store_id	manager_id
1	1	Fabiola	Jackson	fabiola.jackson@bikes.shop	(831) 555-5554	1	1	
2	2	Mireya	Copeland	mireya.copeland@bikes.shop	(831) 555-5555	1	1	1
3	3	Genna	Serrano	genna.serrano@bikes.shop	(831) 555-5556	1	1	2
4	4	Virgie	Wiggins	virgie.wiggins@bikes.shop	(831) 555-5557	1	1	2
5	5	Jannette	David	jannette.david@bikes.shop	(516) 379-4444	1	2	1
					(516)			

Properties

General Related

Name *

sales_staffs

Description

Annotations

+ New

B. Create Sink Dataset (Azure SQL Database)

1. Click **+ New dataset**.
2. Choose:
 - **Azure SQL Database**
 - Linked Service: <service_name>
3. Name it: <table_name>
4. Select the target table name (can be pre-created or we can let ADF create it).
5. Click **OK**.

entation

Click [here](#) to get started with

Set properties

Name

sales_staff

Linked service *

AzureSQLDatabase

Connect via integration runtime * ⓘ

SQLOnPrem

Table name

sales . staff

☒ Enter manually

Import schema

☒ From connection/store ☐ None

SqlServer

+ New [Learn more](#)

SQLOnPrem

sales.staffs

☐ Enter manually

OK Back Cancel

Step 8: Create a Copy Pipeline

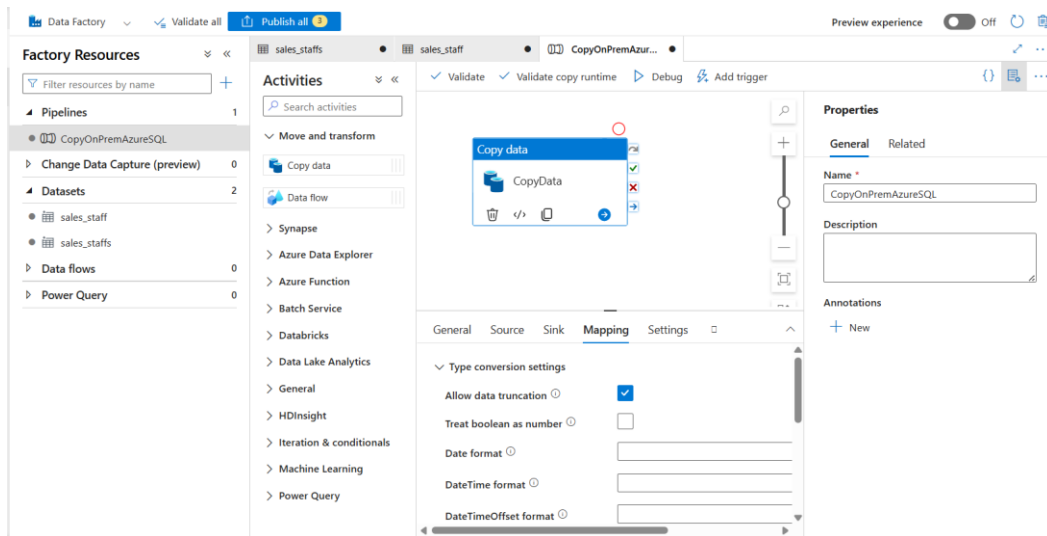
A. Creating the Pipeline

1. In **Author**, click **Pipeline**.
2. Name the pipeline: PL_CopyOnPremToAzureSQL.

B. Add a Copy Data Activity

1. Drag **Copy Data** from the Activities pane to the pipeline canvas.
2. Select it and configure:
 - **Source tab:**
 - Dataset: <table_name>
 - Query/table: double-check settings
 - **Sink tab:**

- Dataset: <table_name>
- We can auto-create the table or map columns manually in the **Mapping** tab



TESTING THE PIPELINE

The screenshot shows the Azure Data Factory (ADF) interface. On the left, the 'Factory Resources' pane lists 'Pipelines' and 'Datasets'. The 'CopyOnPremAzureSQL' pipeline is selected. The main canvas shows a 'Copy data' activity with a 'CopyData' icon. The 'Pipeline status' is 'Succeeded'. The 'Output' tab shows the 'Pipeline run ID' and 'Pipeline status'. The 'Properties' pane on the right shows the 'Name' and 'Description' of the pipeline.

Activity name	Activity st...	Activit...	Run start	Dur
CopyData	Succeeded	Copy data	7/14/2025, 12:52:35 AM	17s

DATA COPIED SUCCESSFULLY IN AZURE SQL

The screenshot shows the Azure SQL Query editor. The query is 'SELECT TOP (1000) * FROM [sales].[staff]'. The results are displayed in a table with columns: staff_id, first_name, last_name, email, phone, active, and store. The results show 4 rows of data.

staff_id	first_name	last_name	email	phone	active	store
1	Fabiola	Jackson	fabiola.jackson@bik...	(831) 555-5554	1	1
2	Mireya	Copeland	mireya.copeland@bi...	(831) 555-5555	1	1
3	Genna	Serrano	genna.serrano@bike...	(831) 555-5556	1	1
4	Virgie	Wiggins	virgie.wiggins@bikes...	(831) 555-5557	1	1