

Lab Title: Copy Data from Azure SQL Warehouse to Delta Table in Fabric Lakehouse

Objective:

To extract data from an Azure SQL Warehouse table and load it into a **Delta table** in a Fabric Lakehouse using **Copy Data activity**.

Pre-requisites:

Requirement	Details
Azure SQL Warehouse Table with sample data (e.g., SalesData)	
Microsoft Fabric	Workspace with Lakehouse , Pipeline , and Dataflow Gen2 enabled
Linked Services	Connections to Azure SQL Database and Fabric Lakehouse

☐ Lab Tasks:

☒ Task 1: Prepare Source Table in Azure SQL Warehouse

Run this SQL script in Azure SQL Warehouse (or Synapse Dedicated Pool):

```
sql
CopyEdit
CREATE TABLE SalesData (
    Sale_ID INT PRIMARY KEY,
    Product NVARCHAR(100),
    Quantity INT,
    Sale_Amount DECIMAL(10, 2),
    Sale_Date DATE
);

INSERT INTO SalesData VALUES
(1, 'Laptop', 5, 3500.00, '2024-01-01'),
(2, 'Monitor', 3, 900.00, '2024-01-03'),
(3, 'Keyboard', 10, 500.00, '2024-01-05');
```

☒ Task 2: Create or Use Existing Fabric Lakehouse

1. Go to your **Microsoft Fabric Workspace**.
2. Create a **Lakehouse** named SalesLakehouse.
3. Create an empty **Delta table** (or let the copy activity create it during write).

☒ Task 3: Set Up a New Pipeline

1. Open **Data Engineering experience** → Go to **Pipelines**.
 2. Click “+ **New pipeline**” → Name it `Copy_Sales_Warehouse_To_Lakehouse`.
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☒ Task 4: Add Copy Activity

1. Drag and drop **Copy Data** activity onto canvas.
 2. **Source** tab:
 - Select **New connection** → Azure SQL Database
 - Provide details: server name, database name, authentication
 - Choose table: `SalesData`
 3. **Sink** tab:
 - Choose **Lakehouse**
 - Select your `SalesLakehouse`
 - Destination table: `delta_salesdata` (new or existing)
 - Write mode: **Overwrite** or **Append**
 4. **Mapping** tab:
 - Ensure correct column mapping (auto-detected or manual)
 5. Save the activity.
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☒ Task 5: Add Validation Step (Optional)

Add a **Stored Procedure** or **Validation script** to compare:

```
sql
CopyEdit
-- Record Count Validation
SELECT COUNT(*) FROM SalesData;           -- On Source
SELECT COUNT(*) FROM delta_salesdata;     -- On Destination
```

☒ Task 6: Run the Pipeline

1. Click **Publish** the pipeline.
 2. Click **Trigger now** → Wait for run to complete.
 3. Go to **Lakehouse > Tables** and verify `delta_salesdata` has data.
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☒ Expected Outcome

- A new **Delta table** `delta_salesdata` is created in Fabric Lakehouse.
- Data from Azure SQL Warehouse `SalesData` is copied successfully.
- You can now query the table using SQL Analytics endpoint or use it in Power BI.

Lab Exercise Questions

1. What table format is used in the Fabric Lakehouse?
2. What are the differences between `Append` and `Overwrite` modes in copy activity?
3. Write a validation query to compare `Sale_Amount` total from source and delta table.