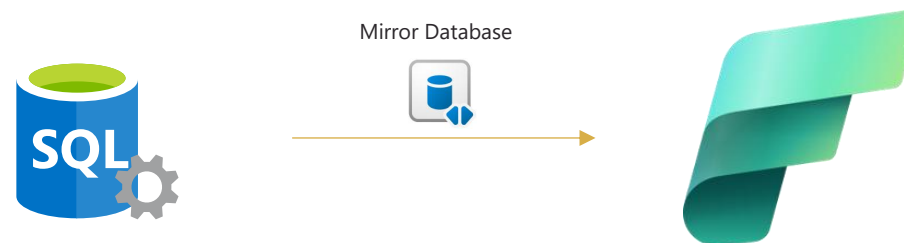


# Fabric Workshop

2025-02-27 and 2025-02-28

# Azure SQL Mirroring

Integrate your Azure SQL Database to Fabric, avoiding ETL operations while keeping your data near real-time.





# What is Mirroring?

Solution bring existing data from external sources into Fabric's One Lake. It is characterized for offering near real-time data replication with no ETL steps.

As data is now in Fabric's One Lake, it is available for other Fabric services such as notebooks or Power BI.

Shortly, you could say it is a synchronized copy of your data



Platform	Near real-time replication	Type of mirroring	End-to-end tutorial
<a href="#">Microsoft Fabric mirrored databases from Azure Cosmos DB (preview)</a>	Yes	Database mirroring	<a href="#">Tutorial: Azure Cosmos DB</a>
<a href="#">Microsoft Fabric mirrored databases from Azure Databricks (preview)</a>	Yes	Metadata mirroring	<a href="#">Tutorial: Azure Databricks</a>
<a href="#">Microsoft Fabric mirrored databases from Azure SQL Database</a>	Yes	Database mirroring	<a href="#">Tutorial: Azure SQL Database</a>
<a href="#">Microsoft Fabric mirrored databases from Azure SQL Managed Instance (preview)</a>	Yes	Database mirroring	<a href="#">Tutorial: Azure SQL Managed Instance</a>
<a href="#">Microsoft Fabric mirrored databases from Snowflake</a>	Yes	Database mirroring	<a href="#">Tutorial: Snowflake</a>
<a href="#">Open mirrored databases (preview)</a>	Yes	Open mirroring	<a href="#">Tutorial: Open mirroring</a>
<a href="#">Microsoft Fabric mirrored databases from Fabric SQL database (preview)</a>	Yes	Database mirroring	<a href="#">Automatically configured</a>



# Azure SQL Database Mirroring

**Continuous replication** of an existing Azure SQL Database into Fabric's One Lake. This is done through the conversion of data to Parquet.

Enables a **read-only SQL Analytics Endpoint**. Therefore, changing tables in Fabric, will not alter the Azure SQL Database.

It is an **incremental replication**.



# How Does it Work?

Mirroring reads data from the transaction log and write data to Fabric One Lake:

- 1. Change Data Capture (CDC):** Mirroring in Fabric leverages SQL's Change Data Capture (CDC) stack. CDC captures changes made to the database and stores them locally in the transaction log.
- 2. Replication:** The mirroring process reads the data from the transaction log and sends the change data to OneLake storage, ensuring that data is up to date.
- 3. Delta Tables:** The change data from the transaction log is transformed into delta tables in OneLake. These delta tables are optimized for analytics and can be queried without impacting the performance of the primary database.



# Azure SQL Database Requirements

## **Not supported**

- For Azure SQL Databases behind an Azure Virtual Network or Private Networking (Gateway Access is not supported).

## **Server Requirements**

- Firewall Rules must be in “Allow public network access” configuration.
- Enable “Allow Azure services” option for the desired Azure SQL Database.

## **Database Requirements**

- Single Database or Elastic Pool Database.
- All Service Tiers in Vcore pricing model are allowed.
- For DTU pricing model, the database must be at least 100 DTUs.
- Views, transient and external tables not supported.
- System Assigned Managed Identity (SAMI) Enabled



# Azure SQL Tables Requirements

## **Not supported**

- Calculated Columns: They will not be replicated to Fabric
- For Primary Key Constraints, the following column types are not defined: computed types, user-defined types, geometry, geography, hierarchy ID, SQL variant, timestamp, datetime2(7), datetimeoffset(7) or time(7).





# Fabric Requirements

**Fabric Capacity must be active** and running. Available for **every Fabric SKU**.

The following **tenant settings** must be enabled

- Service Principals can use Fabric APIs
- Users can access data stored in OneLake with apps external to Fabric



# From the Azure SQL Database Perspective

To check if a Azure SQL Database is being mirrored by Fabric, run the following query:

```
SELECT * FROM sys.dm_change_feed_log_scan_sessions
```

To stop/disable Mirroring, execute the following stored procedure:

```
exec sp_change_feed_disable_db;
```



# Pricing

- **Zero cost** for Mirroring into Fabric.
- **Storage** is free up to a **certain limit** based on your Fabric SKU capacity.
- If the Azure SQL database is in a **different region** from your Fabric capacity, data egress will be charged. What is data egress.



# Steps

1. Validate requirements:
  - a) Firewall Rules: Public Network Access
  - b) Allow Azure Services.
  - c) Enable SAMI
  - d) 100 DTUs or Vcore Pricing.
  - e) No Azure Virtual Network or Private Networking
2. Create Credentials: SQL Authentication, Microsoft Entra ID
3. Fabric Portal: Create an Azure SQL Database Mirroring Item
4. Enter credentials for the connection
5. Import Sales Order Header and Sales Order Detail

# Sources

- [Microsoft Fabric Mirrored Databases From Azure SQL Database - Microsoft Fabric | Microsoft Learn](#)
- [Frequently asked questions for Mirroring Azure SQL Database in Microsoft Fabric - Microsoft Fabric | Microsoft Learn](#)
- [Tutorial: Configure Microsoft Fabric Mirrored Databases From Azure SQL Database - Microsoft Fabric | Microsoft Learn](#)
- [Mirroring - Microsoft Fabric | Microsoft Learn](#)

# Shortcuts

Fabric objects which point to other storage location. The location could be internal or external





# What is a Shortcut?

Object which points to other storage locations. The storage location pointed to is known as “target path”, the location where the shortcut is created, it is known as “shortcut path”.

Any service, Fabric or non-Fabric can access Shortcuts, as long as they have access to the OneLake.

Shortly, you could say they are just links to the data. Deleting a shortcut will not affect the target location.



# Types of Shortcut

**Internal One Lake:** Reference data within other Fabric items. You can create shortcuts for items sharing a workspace or for items in different workspaces.

**External:** You can create shortcuts to non-Fabric objects. Some examples are:

- ADLS

- Google Cloud Storage

- Amazon S3

- Dataverse





# Where Can I Create Shortcuts in Fabric?

**Lakehouse:** You can create shortcuts in both, Tables and Files folder. For Table shortcuts, data must already be in a Delta format, therefore it is only used for internal shortcutting. External shortcuts are displayed in the Files folder.

**KQL Database:** Shortcuts will appear in a folder named as "Shortcuts" within the KQL Database. For querying data, the "external\_table" function is used in KQL.



# Limitations

- There is a limit of 100,000 shortcuts per Fabric item.
- Maximum number of shortcuts in a single OneLake path: 10
- Maximum number of direct shortcuts to shortcut links: 5
- The characters “%” or “+” are invalid for shortcut names.
- Shortcuts do not support non-Latin characters.



# Shortcut vs Mirroring

	Shortcut	Mirroring
Storage	Not in fabric, data is stored in the original storage location.	Data is copied into OneLake. In consequence, it is in a Delta Format.
Performance	Depends on the original storage location speed.	It is optimized for analytical queries. It is Fabric-dependant
Updates	Brings the latest data	From time to time, it synchronizes with the external source by making incremental updates.
Storage Requirements	As no data is copied, there is no storage requirements	Does require storage space in OneLake



# ADLS Shortcut

ADLS shortcuts must point to the DFS endpoint for the storage account.

## Requirements

Hierarchical Namespaces enabled in the ADLS: The files are now organized in directories and subdirectories. Like folders in a computer

The shortcut must be created in an existing Lakehouse.



# Steps

1. Validate requirements:
  - a) Lakehouse created in Fabric
  - b) Hierarchical Namespaces enabled
2. Copy the “.dfs” path of the storage account
3. Get Account Key
4. Enter credentials for the connection
5. Import Sales Order Header and Sales Order Detail

# Sources

- [Azure Data Lake Storage hierarchical namespace - Azure Storage | Microsoft Learn](#)
- [Create a storage account for Azure Data Lake Storage - Azure Storage | Microsoft Learn](#)
- [Create a OneLake shortcut - Microsoft Fabric | Microsoft Learn](#)
- [Create an Azure Data Lake Storage Gen2 shortcut - Microsoft Fabric | Microsoft Learn](#)