

Migration in Action

Speaker Name



PostgreSQL Migrations



Overview

PostgreSQL Sources



- Managed service built into PostgreSQL - Flexible Server
- Connection established from target to source



**Azure Database for
PostgreSQL – Flexible Server**

Key Features

Managed Migration Service	<ul style="list-style-type: none">• Simplifies the migration process by automating complex tasks
Pre-Migration Validation	<ul style="list-style-type: none">• Identify Potential Issues Early• Run Different Rules Against the Source• Identify Breaking Changes
Runtime Server	<ul style="list-style-type: none">• Used when migrating from private IPs or private endpoints to a private endpoint-enabled Flexible server
User, Roles and Permissions	<ul style="list-style-type: none">• Supported for Single server as source• Migrates all the different roles, users and permissions
Schema Migration support	<ul style="list-style-type: none">• Migrates the entire schema, including extensions, views, tables, and other objects from the source PostgreSQL instance
Migration Mode	<ul style="list-style-type: none">• Support for both Offline and Online migration modes

Core Advantages



Effortless Setup

No complex setup or prerequisites required



User-Friendly Interface

Simple to use portal-based or CLI migration experience



Scalability

No limitations in terms of the size of databases it can handle



Extensions Support

Support for popular extension migrations like timescale DB, postgis



Enhanced Migration Capabilities

Supporting schema and data migrations



Use of open-source

Leverages open-source technology, pgcopydb, for migrations

Benefits over Azure DMS(classic)

Can migrate >1TB of databases into Azure

Schema migration support

Supports migration for the latest PostgreSQL version (DMS classic supports up to 14.9)

Enhanced optimization and parallelization with pgcopydb

Database readiness check before performing migration

Overcomes JSON limitations in Azure DMS (classic)

Migration of large objects

Overcomes other limitations of Azure DMS (classic)

Ways to Access Migration Service

Select migration scenario and Database Migration Service

Migration scenario

Tell us about your migration scenario, the source database type and target database type, and based on that we will recommend the best Database Migration Service.

Source server type * ⓘ AWS RDS for PostgreSQL

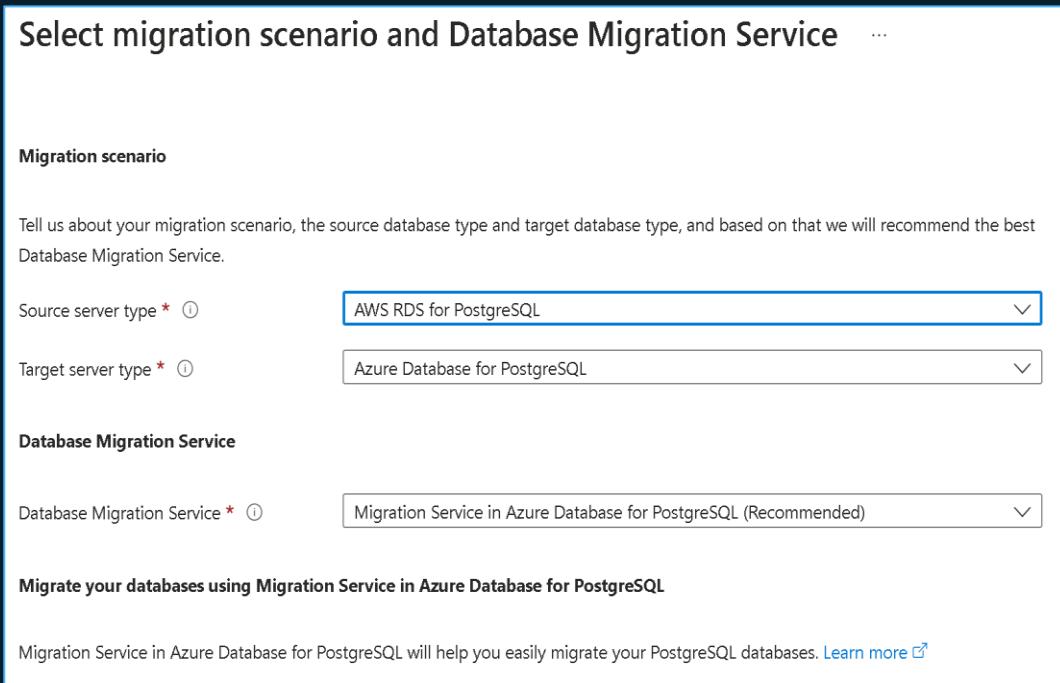
Target server type * ⓘ Azure Database for PostgreSQL

Database Migration Service

Database Migration Service * ⓘ Migration Service in Azure Database for PostgreSQL (Recommended)

Migrate your databases using Migration Service in Azure Database for PostgreSQL

Migration Service in Azure Database for PostgreSQL will help you easily migrate your PostgreSQL databases. [Learn more](#)



Azure DMS(classic)

target-pe-flexible | Migration

Azure Database for PostgreSQL flexible server

Search

+ Create Cancel Refresh Feedback

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Resource visualizer

Migration

Settings

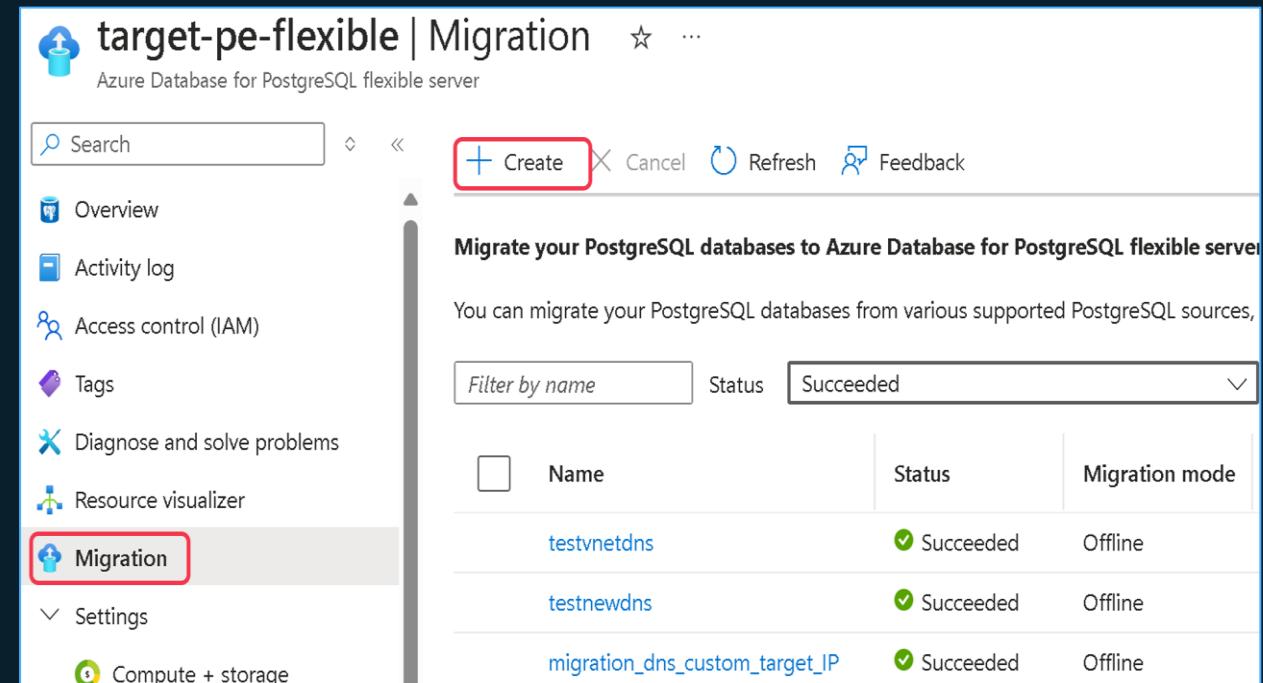
Compute + storage

Migrate your PostgreSQL databases to Azure Database for PostgreSQL flexible server

You can migrate your PostgreSQL databases from various supported PostgreSQL sources,

Filter by name Status Succeeded

Name	Status	Migration mode
testvnetdns	Succeeded	Offline
testnewdns	Succeeded	Offline
migration_dns_custom_target_IP	Succeeded	Offline



Azure Database for PostgreSQL – Flexible Server



Azure CLI



Azure SDK

Comprehensive Pre-migration Validation

- Rules-based assessment of source systems to determine compatibility for migration for Azure Database for PostgreSQL.
- Can be done while the source system is online, recommended to run prior to migration to identify and remediate issues

Offline

- ✓ Authentication And Connectivity Validation
- ✓ Source Version Validation
- ✓ Server Parameters validation
- ✓ SKU validation
- ✓ Extensions validation
- ✓ Schema validation
- ✓ Collation validation
- ✓ Microsoft Entra Id Validation
- ✓ AuthPermissionsValidation

Online

- ✓ Online Settings Validation
- ✓ Replication Role Permission Validation:
- ✓ Missing Primary Keys Validation

Migrate PostgreSQL to Azure database for PostgreSQL Flexible Server ...

Microsoft

1 Setup 2 Connect to source 3 Select migration target 4 Select database(s) for migration 5 Summary

Provide unique migration name, source type, migration option and mode.

Migration name * ⓘ

Source server type *

Migration option * ⓘ

Migration mode * ⓘ

Migration pre-requisites

Before you start your migration, check the [list of pre-requisites required for migrations into Azure Database for PostgreSQL](#).

- Source PostgreSQL version must be greater than 9.5
- Ensure the source server is reachable from target server. [Learn more ↗](#)
- To use the same extensions as in the source, modify the "azure.extensions" parameter on the "Server parameters" page of the target. [How to do? ↗](#)
- Use a user account that has admin privileges in both source and target PostgreSQL servers.

i For more details about migrations to Azure Database for PostgreSQL. [see the tutorial ↗](#)

Migration

- Initiated from Azure Database for PostgreSQL (Portal, CLI or ARM)
- Schema and Data migration happens in the same schedule

The screenshot shows the Azure Portal interface for managing a PostgreSQL flexible server named "flexible-mrdw". The left sidebar includes links for Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, and Migration, with the Migration link highlighted by a red box. The main content area displays a "Create" button (also highlighted with a red box) and instructions for migrating databases to the Azure Database for PostgreSQL flexible server. A table below lists migration details such as Name, Status, Migration mode, Migration type, Source server, and Source server type.

Name	Status	Migration mode	Migration type	Source server	Source server type

```
az postgres flexible-server migration create --subscription 11111111-1111-1111-1111-111111111111 --resource-group my-learning-rg --name myflexibleserver --migration-name migration1 --migration-mode offline --migration-option ValidateAndMigrate --properties "C:\migration-cli\migration_body.json"
```

Common CLI commands: create, show, list, cancel

Migration Setup

Migrate PostgreSQL to Azure Database for PostgreSQL Flexible Server

Microsoft

- 1 Setup 2 Select Runtime Server 3 Connect to source 4 Select migration target 5 Select database(s) for migration

Provide unique migration name, source type, migration option and mode.

Migration name * ①

Migration_1



Source server type *

On-premise Server



Migration option * ①

Validate and Migrate



Migration mode * ①

Offline



Migration pre-requisites

Before you start your migration, check the list of pre-requisites below for migrations into Azure Database for PostgreSQL.

- Source PostgreSQL version must be greater than 9.5
- Ensure the source server is reachable from target server. [Learn more](#)
- To use the same extensions as in the source, modify the "azure.extensions" parameter on the "Server parameters" page of the target. [How to do?](#)
- Use a user account that has admin privileges in both source and target PostgreSQL servers.

i For more details about migrations to Azure Database for PostgreSQL. [see the tutorial](#)

Migrate PostgreSQL to Azure Database for PostgreSQL Flexible Server

Microsoft

- ✓ Setup 2 Select Runtime Server 3 Connect to source 4 Select migration target 5 Select database(s) for migration

You must create a Runtime server before you can use it for certain migration scenarios. Runtime server is a separate Azure Database for PostgreSQL - Flexible server, independent of target. It will perform the migration between source and target. Source, Runtime Server and Target needs to be connected with Azure networking concepts. [Learn more](#)

Use Runtime Server *

Yes No

i Runtime Server is required for following scenarios

- Source with private endpoint/private IP with no public access and target with private endpoint.

Delete this Runtime Server post successful migration as it will incur potential cost.

< Previous

Next : Connect to source >

Migration connectivity

Migrate PostgreSQL to Azure Database for PostgreSQL Flexible Server

Microsoft

✓ Setup ✓ Select Runtime Server ③ Connect to source ④ Select migration target ⑤ Select database(s) for migration ⑥

Source Database server details

Server name * ⓘ	20.66.25.58	✓
Port * ⓘ	5432	✓
Server admin login name * ⓘ	postgres	✓
Password * ⓘ	*****	✓
SSL mode * ⓘ	Prefer	✓

Test Connection * ⓘ [Connect to source](#)

✓ Connection successful. Click 'Next' to continue.

< Previous

Next : Select migration target >

Migrate PostgreSQL to Azure Database for PostgreSQL Flexible Server

Microsoft

✓ Setup ✓ Select Runtime Server ✓ Connect to source ④ Select migration target ⑤ Select database(s) for migration ⑥

Target Database server details

Subscription * ⓘ	Orcas PM team
Resource group * ⓘ	Aditya_PM
Server name * ⓘ	flex-public.postgres.database.azure.com
Location ⓘ	northeurope
PostgreSQL version ⓘ	15
Authentication method *	<input checked="" type="radio"/> PostgreSQL authentication only <input type="radio"/> Microsoft Entra authentication only
Admin username * ⓘ	epguser
Password * ⓘ	*****

Test Connection * ⓘ [Connect to target](#)

✓ Connection successful. Click 'Next' to continue.

< Previous

Next : Select database(s) for migration >

Database selection

Migrate PostgreSQL to Azure Database for PostgreSQL Flexible Server

Microsoft

✓ Setup ✓ Select Runtime Server ✓ Connect to source ✓ Select migration target 5 Select database(s) for migration 6 Select validation and migration settings

Database(s) for migration

Click [here](#) to refresh the databases

Choose databases to migrate (up to 8) *

Filter by name...

Database name

circular

db_mrdw

inventorydb

postgres

salesdb

ticketdb

i I authorize to overwrite the below databases. The migration process will overwrite the data in the selected databases which are already created in target server. *

- db_mrdw
- inventorydb
- salesdb

Migrate PostgreSQL to Azure Database for PostgreSQL Flexible Server

Microsoft

✓ Setup ✓ Select Runtime Server ✓ Connect to source ✓ Select migration target ✓ Select database(s) for migration ✓ Summary

Setup

Migration name	Migration_1
Migration option	ValidateAndMigrate
Source server type	OnPremises
Migration mode	Offline

Source Server details

Server name	20.66.25.58
Port	5432
Server admin login name	postgres

Migration target details

Subscription	Orcas PM team
Resource group	Aditya_PM
Server name	flex-public.postgres.database.azure.com
Location	northeurope
PostgreSQL version	15
Server admin login name	epguser
Authorize DB overwrite	Yes

Database(s) for migration

Selected databases to migrate circular, db_mrdw, inventorydb, salesdb, ticketdb

[Start Validation and Migration](#)

< Previous

Migration execution summary

Migration_1

Migration

[Download validation report](#) [Refresh](#) [Feedback](#)

Essentials

Migration option	: Validate and Migrate	Target Server Name	: flexible-mrdw
Source Server Name	: 20.66.25.58:5432@postgres	Target Server Subscription	: Orcas PM team
Selected databases to migrate	: inventorydb, salesdb, ticketdb		
Validation status	: ✓ Succeeded	Target Server Location	: North Europe
Validation start time	: 2023-12-15 13:24:33 UTC	Migration mode	: Offline
		Migration status	: ✓ Succeeded
		Migration start time	: 2023-12-15 13:25:04 UTC

Validation details for instance

Validation Name	Validation status	Duration (hh:mm:ss)	Start time (UTC)	End time (UTC)
AuthenticationAndConnectivi...	✓ Succeeded	00:00:32	2023-12-15 13:24:33	2023-12-15 13:25:04
SourceVersionValidation	✓ Succeeded	00:00:32	2023-12-15 13:24:33	2023-12-15 13:25:04
ServerParametersValidation	✓ Succeeded	00:00:32	2023-12-15 13:24:33	2023-12-15 13:25:04

Validation and migration details for databases

Validation status All Migration status All

Database Name	Validation status	Migration status	Migration Details	Duration (hh:mm:ss)	Start time (UTC)	End time (UTC)
inventorydb	✓ 3 Succeeded	✓ Succeeded	Completed	00:00:57	2023-12-15 13:25:33	2023-12-15 13:26:29
salesdb	✓ 3 Succeeded	✓ Succeeded	Completed	00:00:57	2023-12-15 13:25:33	2023-12-15 13:26:29
ticketdb	✓ 3 Succeeded	✓ Succeeded	Completed	00:00:57	2023-12-15 13:25:33	2023-12-15 13:26:29

Migration service in Azure Database for PostgreSQL

Benefits:

-  Fast, Reliable Migration.
-  Simple UI Wizard in Azure Portal with minimum parameters.
-  Automation via CLI/ARM Templates
-  Comprehensive Migration: Schema, Data, Users/Roles, Privileges, etc.
-  Offline and Online Migration Options Available.
-  Validation Feature to Assess Business Rules and Identify Limitations.

Cons:

Couple of scenarios are restricted:

-  4 extensions which broke backward compatibility are restricted and only migrated on case by case basis.
-  Only 8 databases can be migrated at a time through portal (any number of databases can be scheduled through CLI).

Modes of migration supported using migration service in Azure Database for PostgreSQL

Mode	PROs	CONs	Recommended For
Offline	<ul style="list-style-type: none">Simple, easy, and less complex to execute.Very few chances of failure.No restrictions regarding database objects it can handle	<ul style="list-style-type: none">Downtime to applications.	<ul style="list-style-type: none">Best for scenarios where simplicity and a high success rate are essential.Ideal for scenarios where the database can be taken offline without significant impact on business operations.Suitable for databases when the migration process can be completed within a planned maintenance window.
Online	<ul style="list-style-type: none">Very minimal downtime to application.Ideal for large databases and customers having limited downtime requirements.	<ul style="list-style-type: none">Replication used in online migration has multiple restrictions (e.g. Primary Keys needed in all tables).Complex to execute than offline migration.Greater chances of failure due to the complexity of migration.There's an impact on the source instance's storage and computing if the migration runs for a long time.	<ul style="list-style-type: none">Best suited for businesses where continuity is critical, and downtime must be kept to an absolute minimum.

Resources

Documentation - [Migration service in Azure Database for PostgreSQL - Azure Database for PostgreSQL - Flexible Server | Microsoft Learn](#)

Blog - [Migration to Azure made easy: Upgrade Your PostgreSQL Experience \(microsoft.com\)](#)

Auto Migrations - [Automigration - Azure Database for PostgreSQL - Flexible Server | Microsoft Learn](#)

PostgreSQL Learning Path - <https://learn.microsoft.com/training/paths/microsoft-learn-azure-database-for-postgresql/>

GOLD LAYER : DELTA TABLES/ PARQUET FILES IN AZURE PG

Blog : [Making Postgres inserts faster on Azure | Microsoft Learn](#)

- Initial Load using COPY command
 - [PostgreSQL: Documentation: 17: COPY](#)
- Partition Table
- SSD v2(80k IOPS, 1500 MBps) + Intel v5(2x throughput vs v4)
- Suggested merge Command for better perf
- Server Params
 - Shared Buffer to 40%
 - `log_min_duration_statement : 60000`

MERGE	INSERT ON CONFLICT
<ul style="list-style-type: none">Unique index or constraint is not required, however for query to be performant need index created on the join/where clause.Change row criteria is evaluated by joining the data source to target table.Consume more resources as join to be evaluated.<i>Observation: Better performant, higher throughput could be achieved.</i> <i>Approx 20-25% higher throughput.</i>	<ul style="list-style-type: none">Unique index or constraint is required.Change row criteria is evaluated by raising a unique violation or exclusion constraint violation errorConsume less resources.Less performant, as compared to MERGE.

BENCHMARK RESULTS

Operation	Observed Throughput k/s	INDEX	Partition	Partition Keys
COPY	350	NO	NO	-
COPY	350	NO	HASH	key_source, source_code, key_name
COPY	350	NO	HASH	mdp_individual_id
COPY	350	NO	LIST	Key_name
INSERT ON CONFLICT	5	YES	NO	-
MERGE INTO	0.1	NO	HASH	key_source, source_code, key_name
MERGE INTO	35	YES	HASH	key_source, source_code, key_name
MERGE INTO	20	YES	HASH	mdp_individual_id
MERGE INTO	30	YES	HASH	Key_name
MERGE INTO	35	YES	LIST	Key_name

BENCHMARK RESULTS

Observed Throughput k/s	Parallel Jobs	CPU	INDEX	Partition	Partition Keys
11.6	32	11%	YES	LIST	Key_name
22.5	64	21%	YES	LIST	Key_name
51.2	128	27%	YES	LIST	Key_name
45	256	40%	YES	LIST	Key_name
11.1	32	11%	YES	HASH	Key_name
22.1	64	20%	YES	HASH	Key_name
41.3	128	26%	YES	HASH	Key_name
37.45	256	40%	YES	HASH	Key_name

MORE IMPROVEMENTS

Blog : [Azure Database for PostgreSQL Blog | Microsoft Community Hub](#)

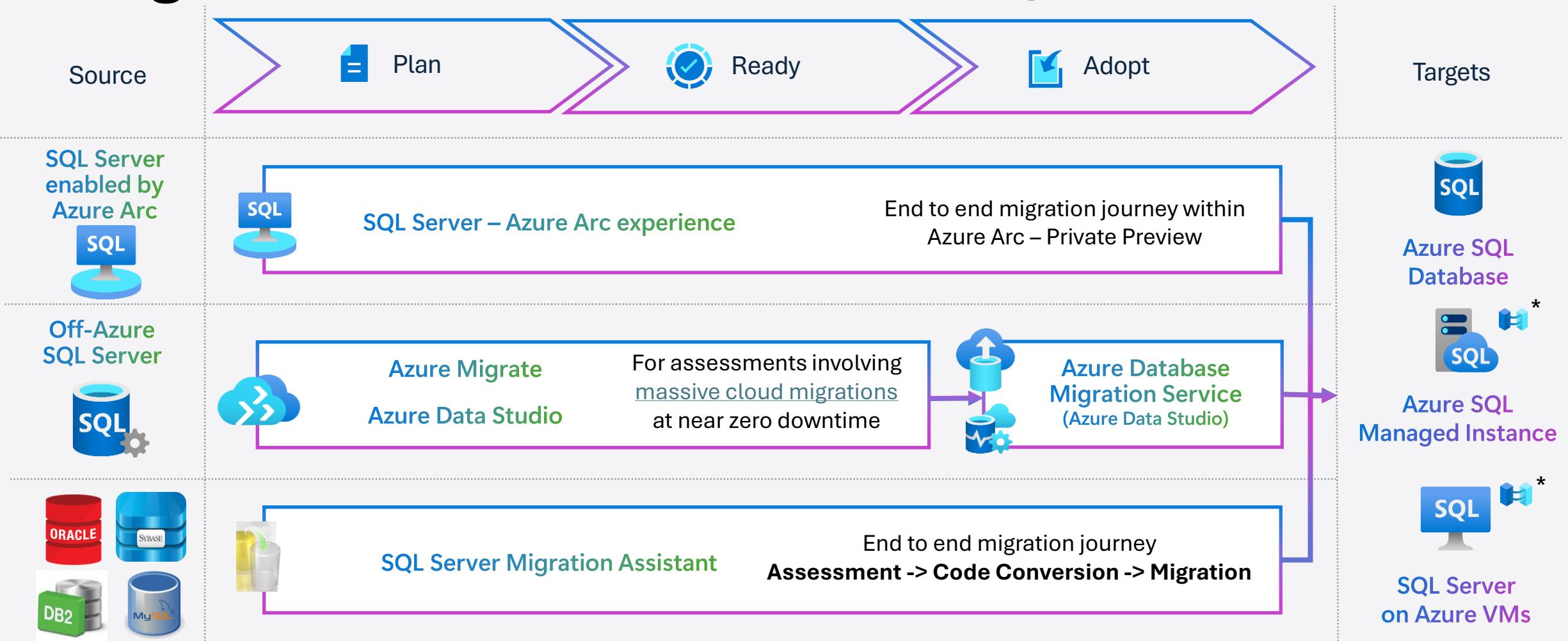
- Ultra-Disk (400k IOPS, 10GBps)
- E-series VM SKU(672 GB memory – to reduce IOPS)
- Move to PG17 : [Postgres 17 Query Performance Improvements | Microsoft Community Hub](#)

Operation	Throughput k/s	IOPS	CPU	Memory	Date	Start Time	Run Duration Minutes	Run Status	Spark Partition
INSERT – Initial load	432.6	4600	68%	29%	25-Mar-25	01:30:00 PM IST	104.4	SUCCESS	mdp_individual_id
MERGE – Initial load	103.5	192000	80%	31%	26-Mar-25	03:40:00 PM IST	376.5	SUCCESS	mdp_individual_id

Migrations to Azure SQL



Migration scenarios to Azure SQL



* Use Azure Arc to enable the same services in your datacenter or on the cloud of your choice, when a hybrid or multi-cloud approach is required

Begin your journey with [Azure Migrate](#) to assess on-premises databases for migration and rehost SQL Server to Azure VMs

Database migration guide: <https://aka.ms/datamigration>



Demo: Copilot Assistant in Arc Migrations

- How to sign up?
 - Fill out the request form at
<https://aka.ms/arc-migrations-preview>
-]



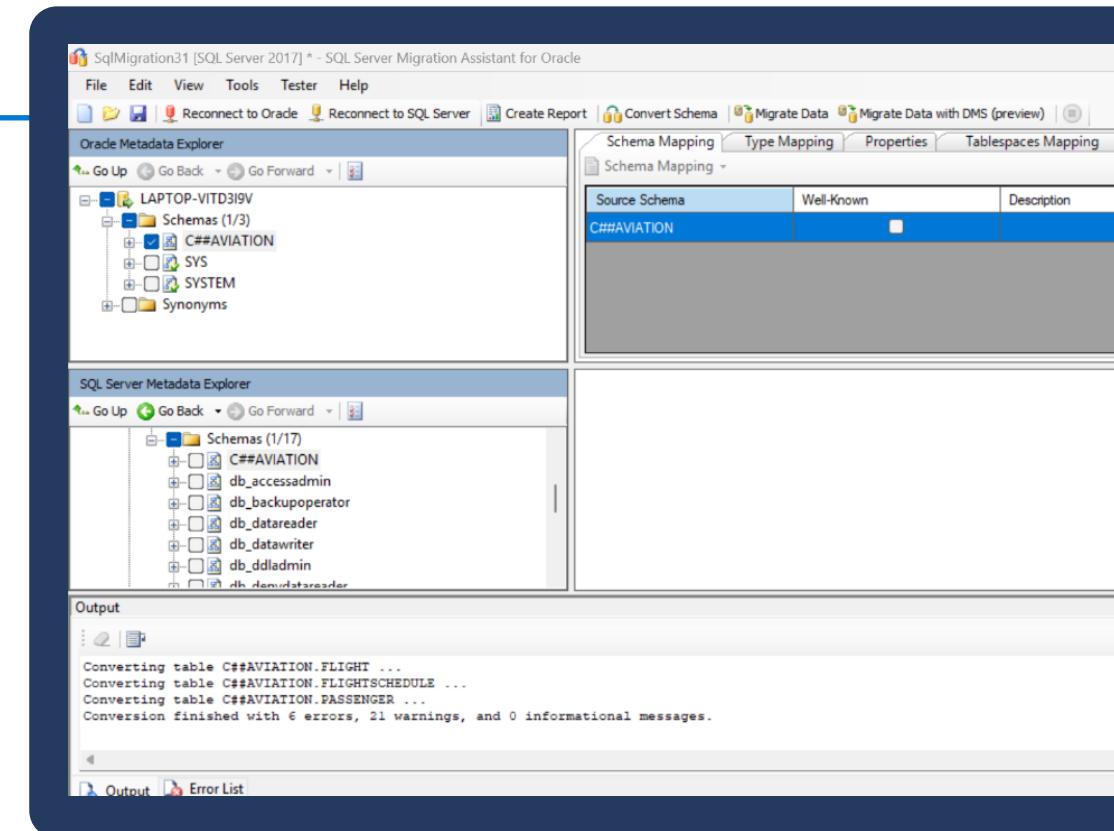
SQL Server Migration Assistant (SSMA) for Oracle

Free, Microsoft supported database migration tool for Oracle to Azure SQL*

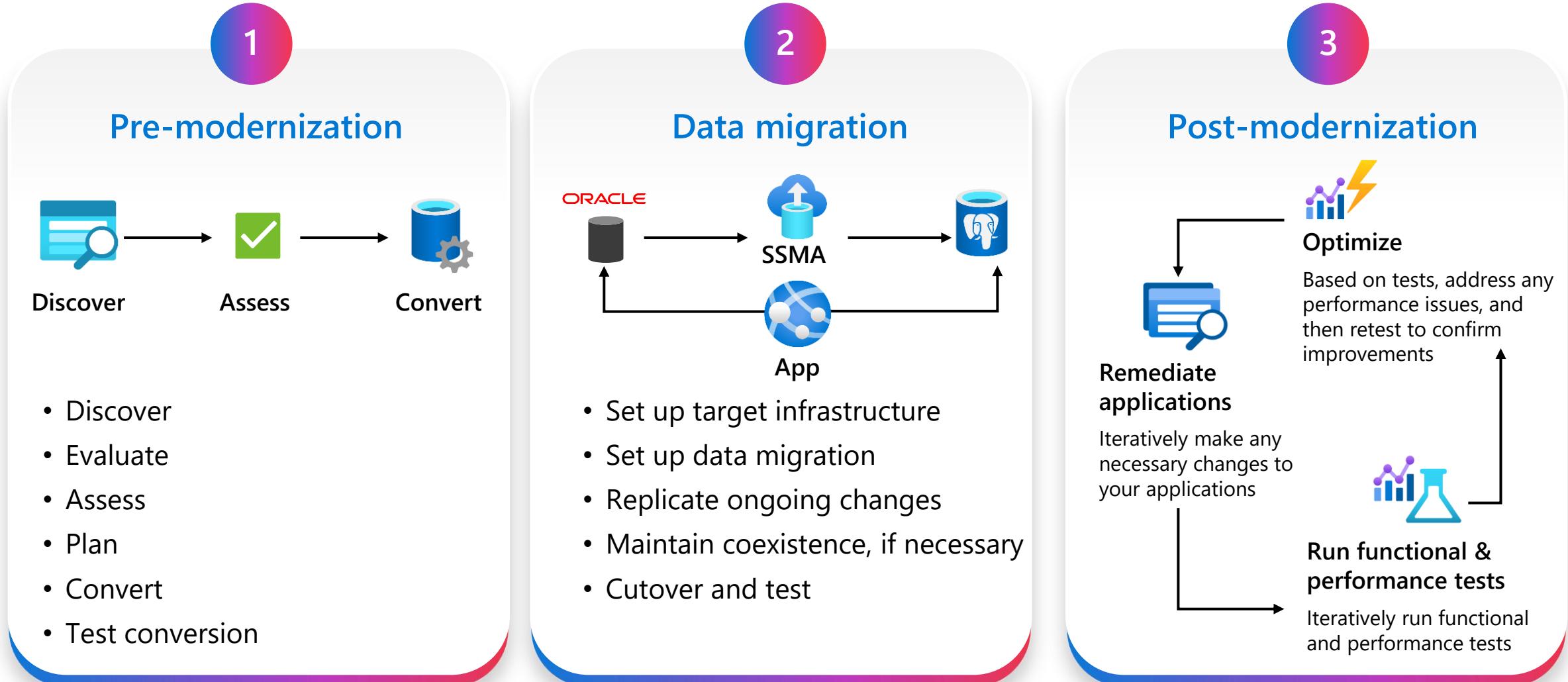
SSMA for Oracle supports

- ✔ Assessment
- ✔ Schema Conversion
- ✔ Data Migration
- ✔ Validation

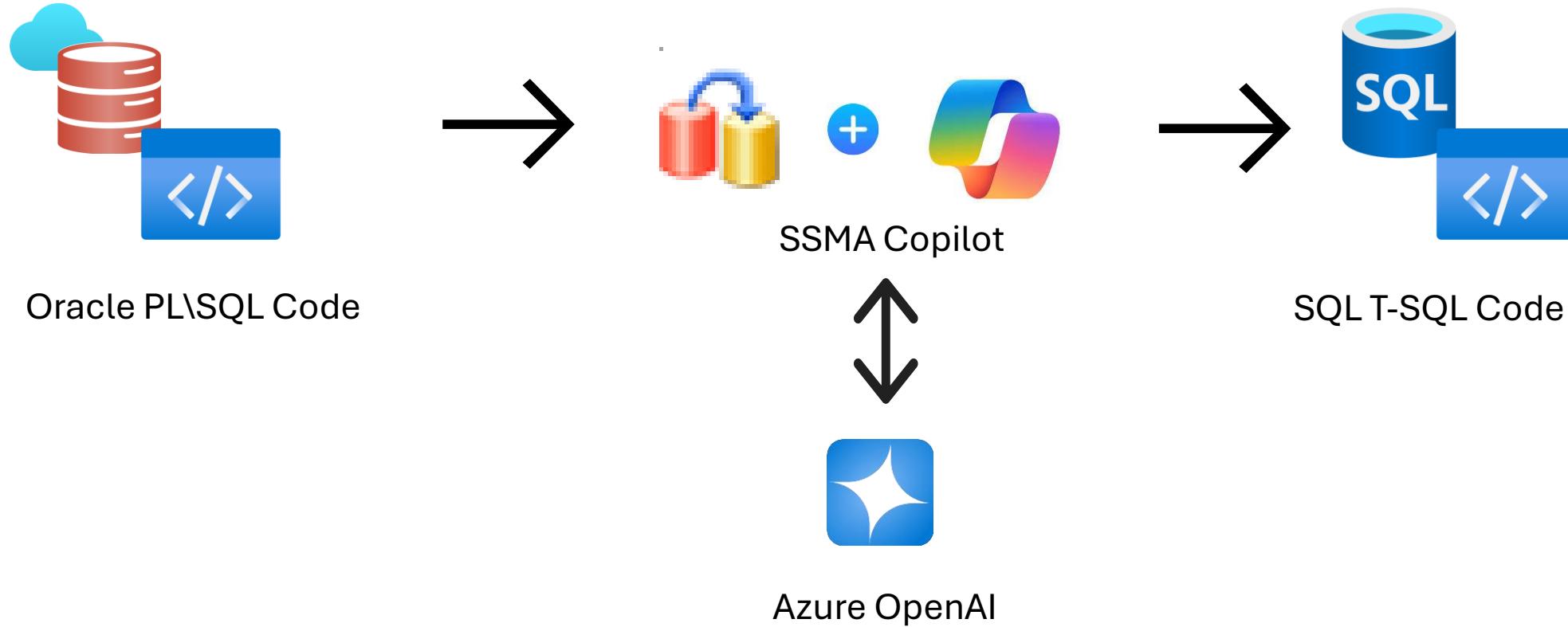
Step-by-step guidance can be found in the
[Azure Database Migration Guides](#)



Modernization process to Azure SQL



Code Conversion Copilot (Oracle to SQL)



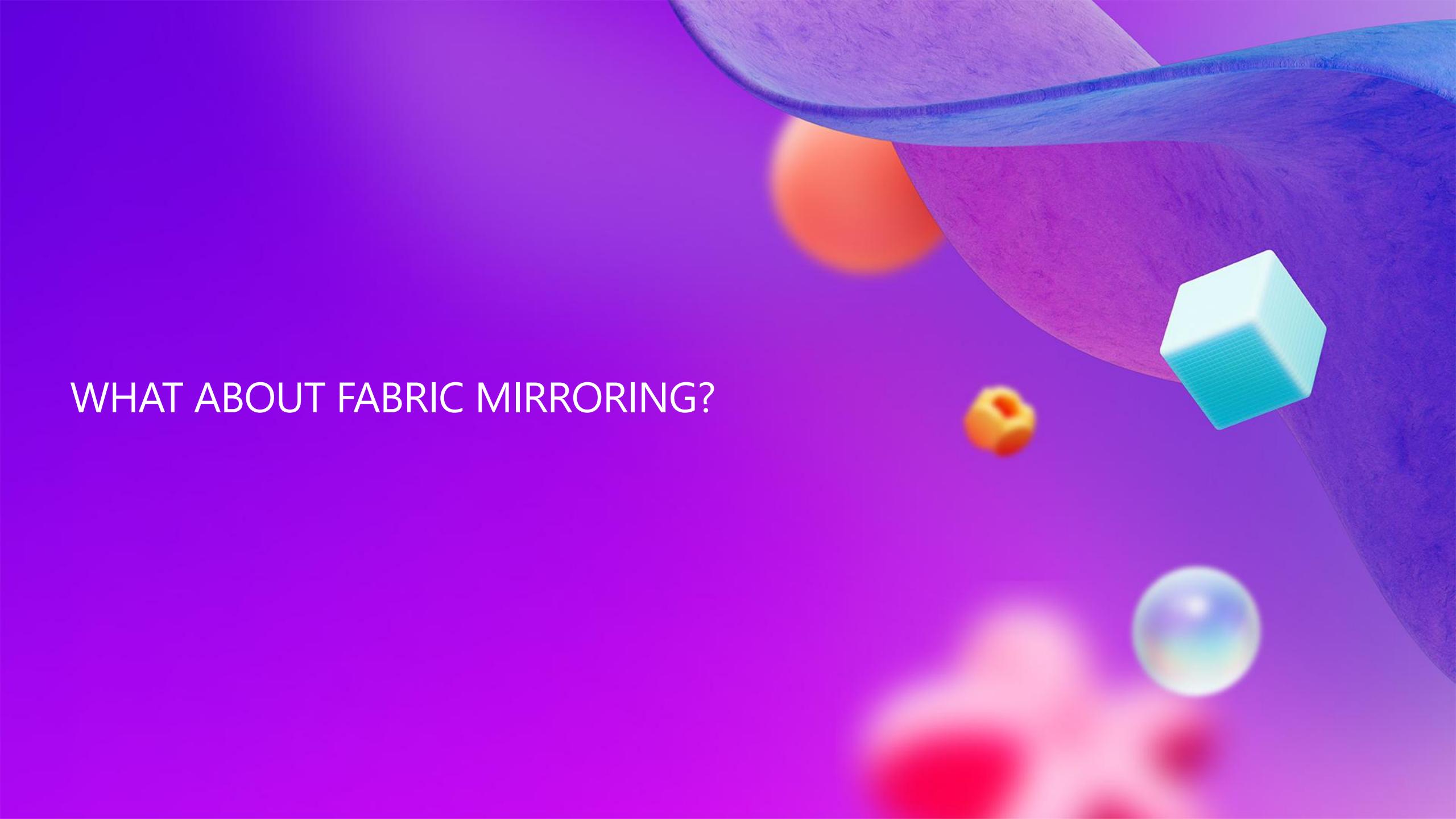
SQL Server Migration Assistant (SSMA) Rule Engine and **Copilot** can convert Oracle PL/SQL code to SQL T-SQL code efficiently

Database Migration Guide

<https://datamigration.microsoft.com/>

Demo



The background features a vibrant purple fabric texture with a subtle woven pattern. Several abstract geometric shapes are suspended in the air: a large orange sphere, a smaller orange cube, a teal hexagon, and a blue sphere. The lighting is soft, creating a dreamlike atmosphere.

WHAT ABOUT FABRIC MIRRORING?

Database Mirroring in Fabric

Automatically reflect data into OneLake

Snowflake

Mirroring for
Snowflake



Mirroring for
Azure SQL DB



Mirroring for
Cosmos DB



Mirroring for
Azure SQL MI



Mirrored Azure
Databricks Catalog

New!



Mirroring for
SQL Server



Mirroring for SQL
Server 2025



Mirroring for
Azure PostgreSQL



Mirroring for
Oracle

Get insights by Mirroring SQL data to Microsoft Fabric

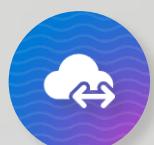
Zero EL, zero code and free Mirroring storage for replicas!



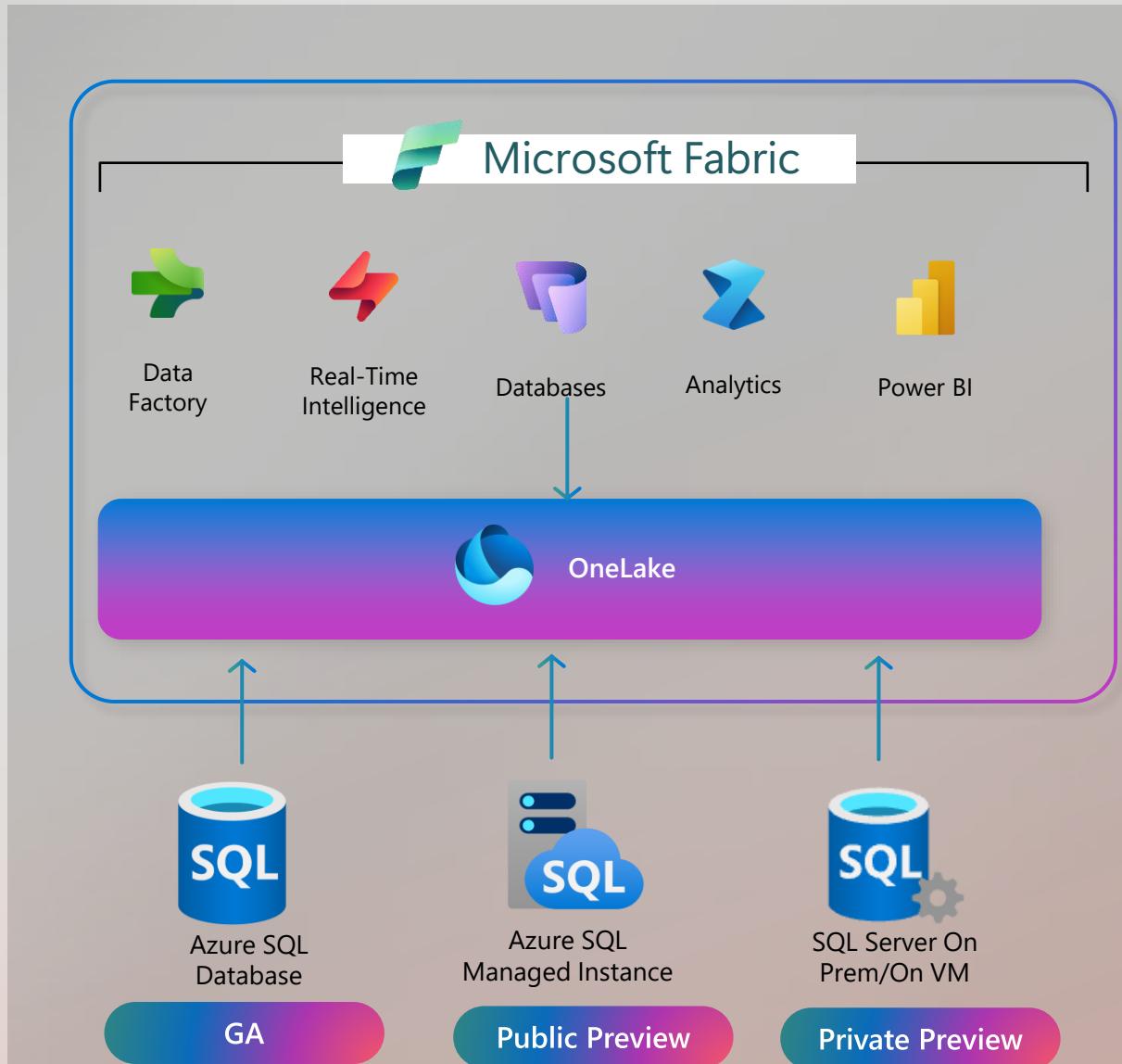
Replicate your existing SQL databases to Microsoft Fabric with free mirrored storage*. Reduce your TCO.



Near real-time data replication into OneLake

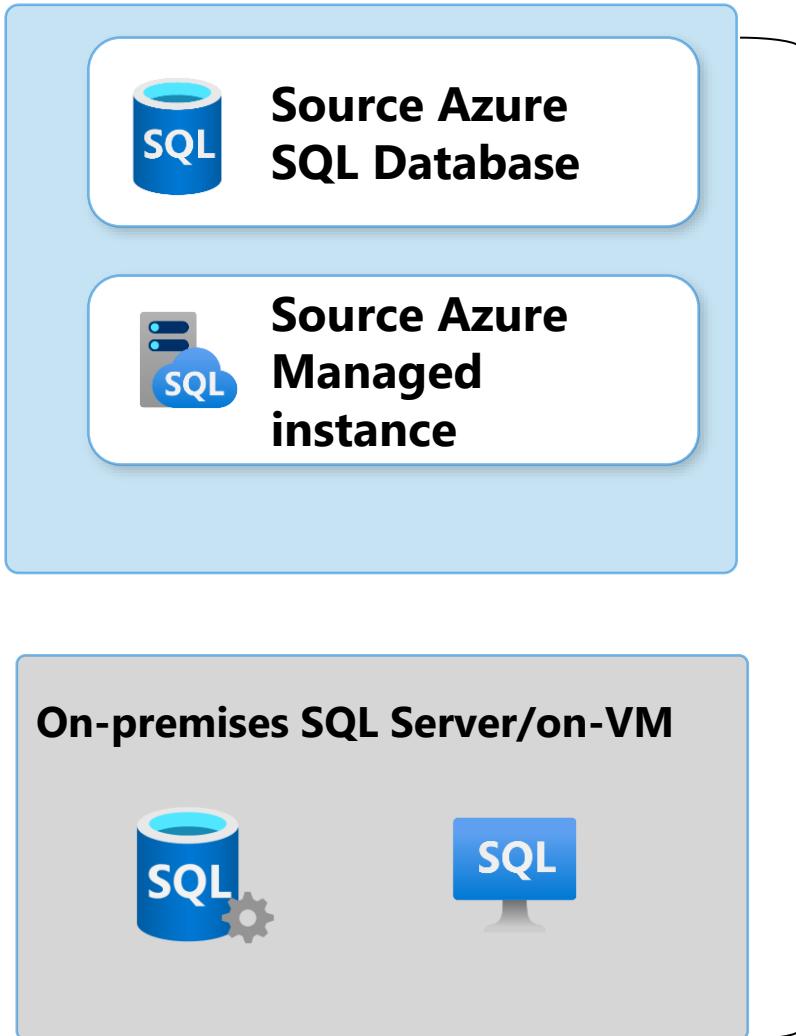


Enjoy Fabric experiences that work instantly with OneLake





Azure

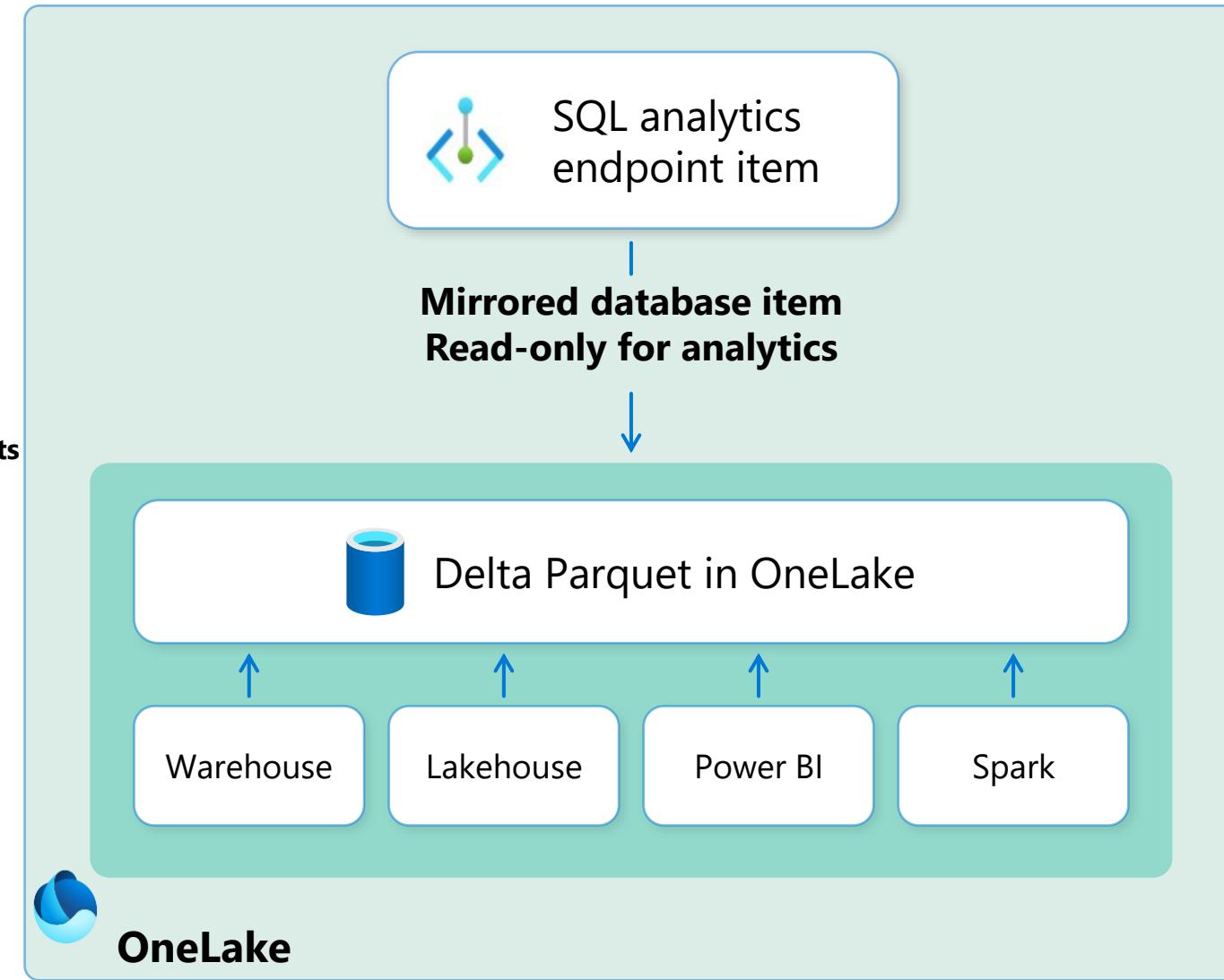


Fabric mirroring -Near real-time

Incremental replication inserts/updates/deletes



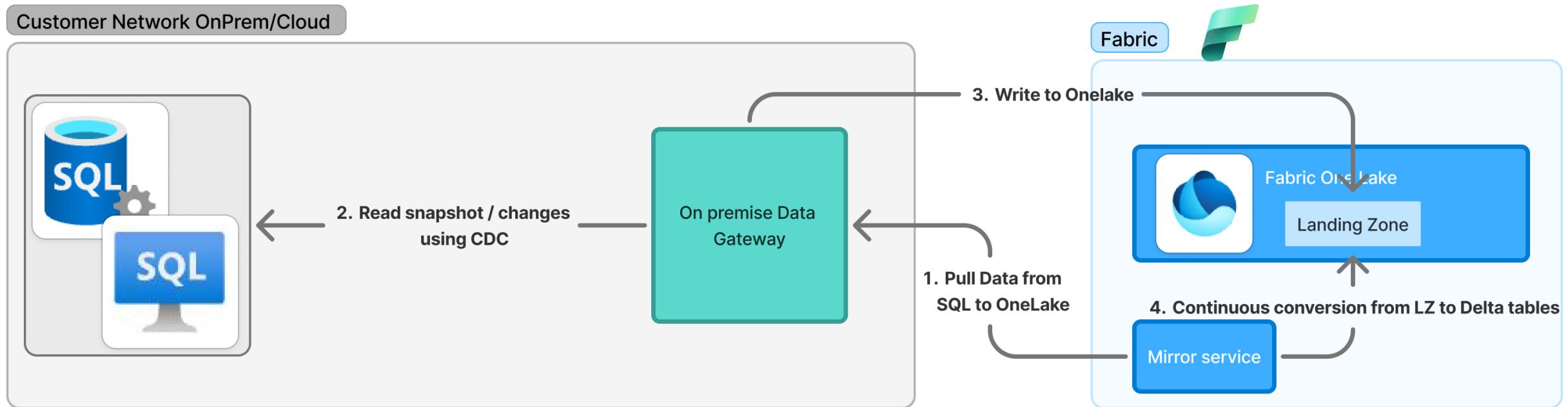
Fabric



In Preview

Fabric mirroring -Near real-time SQL Server [2016-2022]

Incremental replication inserts/updates/deletes



File Edit View Git Project Tools Extensions Window Help | Search | Solution1

MAIN

Object Explorer

Connect . (SQL Server 17.0.500.4 - NORTHAMERICA\bobward) .\sql2022 (SQL Server 16.0.1135.2 - NORTHAMERICA\bobward)

Databases

- System Databases
- Database Snapshots
- AdventureWorksLT2022**
- Database Diagrams
- Tables
- System Tables
- FileTables
- External Tables
- Graph Tables
- dbo.ErrorLog
- SalesLT.Product
- SalesLT.ProductCategory
- SalesLT.ProductDescription
- SalesLT.ProductModel
- Dropped Ledger Tables
- Views
- External Resources
- Synonyms
- Programmability
- Service Broker
- Storage
- Security
- Security
- Server Objects
- Replication
- Always On High Availability
- Management
- SQL Server Agent
- XEvent Profiler

New Query Execute

Ready

Microsoft Edge Microsoft Store Windows Update File Explorer Task View

 Home Create Browse OneLake catalog Apps Metrics Monitor Learn Real-Time Workloads Workspaces adwonpremspace

...

 adwonpremspace [+ New item](#)[New folder](#) [Import](#)[Create app](#) [Manage access](#) [Workspace settings](#)[Filter by keyword](#)[Filter](#)[More](#)**Choose from predefined task flows or add a task to build one (preview)**

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

[Select a predefined task flow](#)[Add a task](#)**There's nothing here yet**

Add something new, or upload something to see them here.

Home

Stop replication Configure replication

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

Details for AdwProducts

 Mirrored database ID
bc78e9a8-5924-4146-9e6a-00a4c8ac2d4f Source
SQL server Source connection
cpc-bobwa-t6xl\sql2022\AdventureWorksLT2022

Query this data

Use T-SQL to query and analyze mirrored data.

Query in T-SQL

Monitor replication

Here are the tables from the source. After replication is complete, the tables are then synced to the mirrored item's SQL analytics endpoint.

Status

Running

Refresh

Filter by keyword

Filter

Name	Status	Rows replicated	Last completed
[SalesLT].[ProductModel]	Running	128	3/23/2025, 3:24 PM
[SalesLT].[ProductCategory]	Running	41	3/23/2025, 3:24 PM
[SalesLT].[Product]	Running	295	3/23/2025, 3:24 PM
[SalesLT].[ProductDescription]	Running	762	3/23/2025, 3:24 PM

 Home
 Create
 Browse
 OneLake catalog
 Apps
 Metrics
 Monitor
 Learn
 Real-Time
 Workloads
 Workspaces
 adwonprem space
 AdwProducts
 ...

Home Reporting

[New SQL query](#) [Query activity](#) [Model layouts](#) [Download SQL database project](#) [Copilot](#)

This warehouse has a default Power BI semantic model. To automatically add objects, go to warehouse settings. To manually add objects, use Manage default semantic model. [Learn more](#)

Explorer

- [+ Warehouses](#)
- [AdwProducts](#)
 - [Schemas](#)
 - [dbo](#)
 - [INFORMATION_SCHEMA](#)
 - [queryinsights](#)
 - [SalesLT](#)
 - [Tables](#)
 - [Product](#)
 - [ProductCategory](#)
 - [ProductDescription](#)
 - [ProductModel](#)
 - [Views](#)
 - [Functions](#)
 - [Stored Procedures](#)
 - [sys](#)
 - [Security](#)
 - [Queries](#)
 - [My queries](#)
 - [SQL query 1](#)
 - [Shared queries](#)

Model layouts

SQL query 1

-- Step 1: We need to join the Product table with the ProductCategory and ProductModel tables.
-- Step 2: We will group the results by the ProductCategory name and ProductModel name.
-- Step 3: We will count the number of products in each category and model.
-- Step 4: Finally, we will select the relevant columns and order the results for better readability.

```

SELECT
    PC.Name AS ProductCategory, -- Selecting the name of the product category
    PM.Name AS ProductModel, -- Selecting the name of the product model
    COUNT(P.ProductID) AS ProductCount -- Counting the number of products
FROM
    [AdwProducts].[SalesLT].[Product] AS P -- From the Product table
JOIN
    [AdwProducts].[SalesLT].[ProductCategory] AS PC -- Joining with ProductCategory
ON
    P.ProductCategoryID = PC.ProductCategoryID
JOIN
    [AdwProducts].[SalesLT].[ProductModel] AS PM -- Joining with ProductModel
ON
    P.ProductModelID = PM.ProductModelID
GROUP BY
    PC.Name, -- Grouping by ProductCategory name

```

Messages Results ...

[Copy](#) [Search](#)

ABC ProductCategory	ABC ProductModel	123 ProductCount
1 Bib-Shorts	Men's Bib-Shorts	3
2 Bike Racks	Hitch Rack - 4-Bike	1
3 Bike Stands	All-Purpose Bike Stand	1
4 Bottles and Cages	Mountain Bottle Cage	1
5 Bottles and Cages	Road Bottle Cage	1
6 Bottles and Cages	Water Bottle	1
7 Bottom Brackets	HL Bottom Bracket	1
8 Bottom Brackets	LL Bottom Bracket	1
9 Bottom Brackets	ML Bottom Bracket	1
10 Brakes	Front Brakes	1
11 Brakes	Rear Brakes	1
12 Caps	Cycling Cap	1
13 Chains	Chain	1
14 Cleaners	Bike Wash	1

Succeeded (8 sec 575 ms)

Copilot completions: On

Copilot completions: Ready

Columns: 3 Rows: 119

Copilot Preview

Let's work with your data

Select a category to get started.

Help
What can Copilot do?

Monitor
Monitor my running queries.

Ask
What can I ask to help me identify trends and strategic opportunities?

Show me the number of products in each product category by model

SQL

```

SELECT
    PC.Name AS ProductCategory,
    PM.Name AS ProductModel,
    COUNT(P.ProductID) AS ProductCount
FROM

```

Is this response helpful?

[View prompts](#)

Ask me anything about this warehouse, or tell me how I can help.

0 / 500

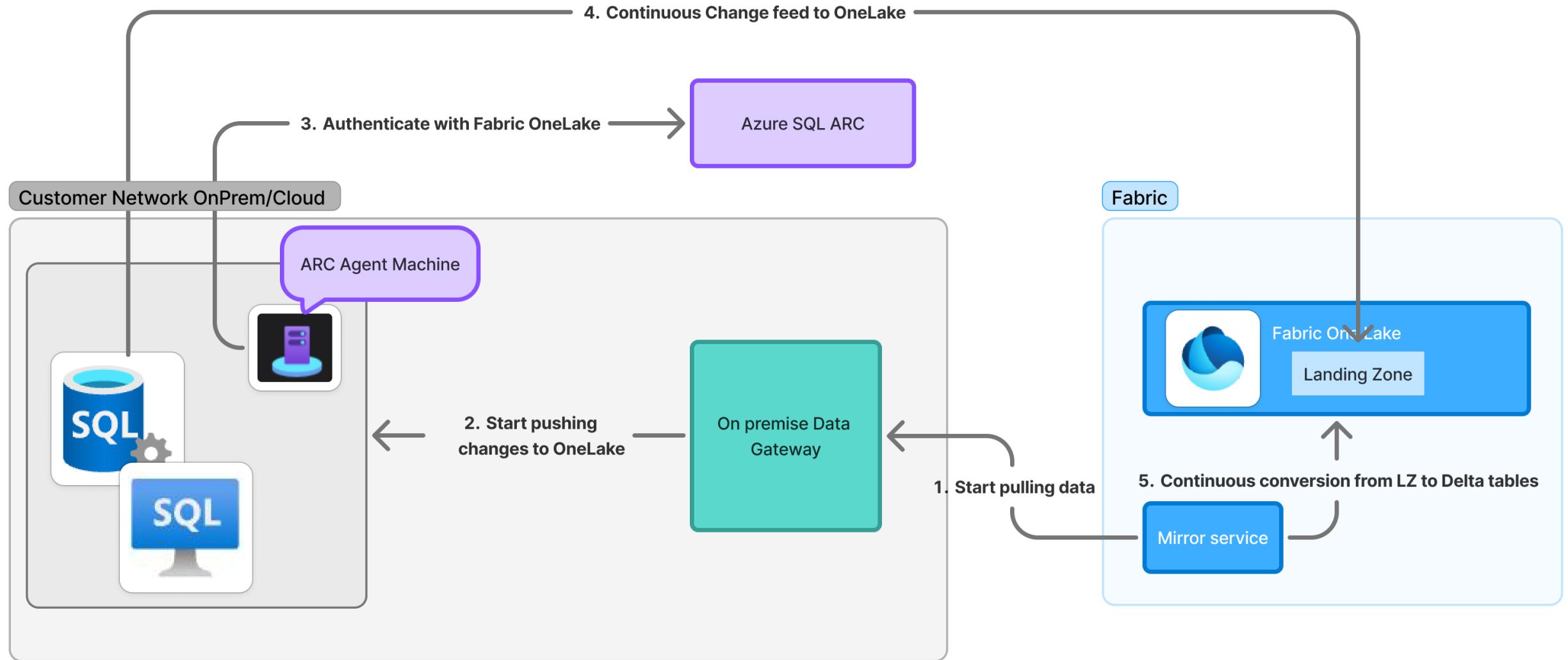
AI-generated content can have mistakes. Make sure it's accurate and appropriate before using it. [Review terms](#)

Mirroring SQL in Fabric – Tech stack comparison

	SQL Server 2016-2022	SQL Server 2025	Azure SQL
Capture incremental changes	Use "Change Data Capture (CDC)"	Use "Change Feed" method	Use "Change Feed" method
Uses Arc Agent	Not required	Arc Agent provide System managed identity for outbound authentication	Uses System managed identity auto created for Azure SQL
SQL Server Agent	CDC relies on SQL Server Agent for key functions of change captures	Not required	Not required
On- premises Data Gateway (OPDG)	OPDG writes data into OneLake	OPDG is control and command SQL Server directly writes to OneLake	OPDG is required only when Azure SQL is configured in private network.

Fabric mirroring -Near real-time SQL Server 2025

Incremental replication inserts/updates/deletes



Private Preview

Object Explorer

Connect

- [-] . (SQL Server 17.0.500.4 - NORTHAM)
 - [+] Databases
 - [+] System Databases
 - [+] Database Snapshots
 - [+] AdventureWorksLT
 - [+] Database Diagrams
 - [+] Tables
 - [+] System Tables
 - [+] FileTables
 - [+] External Tables
 - [+] Graph Tables
 - [+] SalesLT.Address
 - [+] SalesLT.Customer
 - [+] SalesLT.CustomerAddress
 - [+] SalesLT.SalesOrderDetail
 - [+] SalesLT.SalesOrderHeader
 - [+] Dropped Ledger Tables
 - [+] Views
 - [+] External Resources
 - [+] Synonyms
 - [+] Programmability
 - [+] Service Broker
 - [+] Storage
 - [+] Security
 - [+] Security
 - [+] Server Objects
 - [+] Replication
 - [+] Always On High Availability
 - [+] Management
 - SQL Server Agent (Agent XPs disabled)
 - XEvent Profiler

XEvent Profiler

 TSQL

.\sql2022 (SQL Server 16.0.1135.2 - NORTHAMERICA)

 Ready

adwonpremspace

[+ New item](#) [New folder](#) [Import](#)[Create deployment pipeline](#) [Create app](#) [Manage access](#) [Workspace settings](#) Filter by keyword

Filter



Choose from predefined task flows or add a task to build one (preview)

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

[Select a predefined task flow](#)[Add a task](#)

Name	Type	Task	Owner	Refreshed	Next refresh	Endorsement	Sensitivity	Included in app
AdwProducts	Mirrored database	—	Bob Ward	—	—	—	Confidential\Micro...	①
AdwProducts	Semantic model (d...)	—	adwonpremspace	3/23/2025, 3:21:47 PM	N/A	—	Confidential\Micro...	①
AdwProducts	SQL analytics endp...	—	Bob Ward	—	—	—	Confidential\Micro...	①

[Home](#)[Create](#)[Browse](#)[OneLake catalog](#)[Apps](#)[Metrics](#)[Monitor](#)[Learn](#)[Real-Time](#)[Workloads](#)[Workspaces](#)[adwonpremspace](#)[...](#)[Power BI](#)

Home

  Stop replication  Configure replication

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

Details for AdventureWorksLT

 Mirrored database ID
871a64f0-8637-4973-822e-584842d8aad3  Source
SQL server Source connection
cpc-bobwa-t6xli;AdventureWorksLT

Query this data

Use T-SQL to query and analyze mirrored data.

Query in T-SQL

Monitor replication

Here are the tables from the source. After replication is complete, the tables are then synced to the mirrored item's SQL analytics endpoint.

Status

 Running Refresh Filter by keyword Filter

Name	Status	Rows replicated	Last completed
[SalesLT].[SalesOrderDetail]	 Running	542	3/23/2025, 4:57 PM
[SalesLT].[SalesOrderHeader]	 Running	32	3/23/2025, 4:57 PM
[SalesLT].[Customer]	 Running	847	3/23/2025, 4:58 PM
[SalesLT].[Address]	 Running	450	3/23/2025, 4:58 PM
[SalesLT].[CustomerAddress]	 Running	417	3/23/2025, 4:57 PM



Home



Create



Browse



OneLake catalog



Apps



Metrics



Monitor



Learn



Real-Time



Workloads



Workspaces



adwonprem space



Adventure WorksLT

...



Power BI

 adwonpremspace [+ New item](#) [New folder](#) [Import](#)[Create deployment pipeline](#) [Create app](#) [Manage access](#) [Workspace settings](#) Filter by keyword[Filter](#)

Choose from predefined task flows or add a task to build one (preview)

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

[Select a predefined task flow](#)[Add a task](#)

Name	Type	Task	Owner	Refreshed	Next refresh	Endorsement	Sensitivity	Included in app
AdventureWorksLT	Mirrored database	—	Bob Ward	—	—	—	Confidential\Micro...	
AdventureWorksLT	Semantic model (d...)	—	adwonpremspace	3/23/2025, 4:56:37 PM	N/A	—	Confidential\Micro...	
AdventureWorksLT	SQL analytics endp...	—	Bob Ward	—	—	—	Confidential\Micro...	
AdwProducts	Mirrored database	—	Bob Ward	—	—	—	Confidential\Micro...	
AdwProducts	Semantic model (d...)	—	adwonpremspace	3/23/2025, 3:21:47 PM	N/A	—	Confidential\Micro...	
AdwProducts	SQL analytics endp...	—	Bob Ward	—	—	—	Confidential\Micro...	

[Home](#)[Create](#)[Browse](#)[OneLake catalog](#)[Apps](#)[Metrics](#)[Monitor](#)[Learn](#)[Real-Time](#)[Workloads](#)[Workspaces](#)[adwonpremspace](#)[AdventureWorksLT](#)[AdventureWorksLT](#)[...](#)[Power BI](#)



Home



Explorer

Product

Showing 295 rows

Search tables

AdventureWorks

Tables

Address

Customer

CustomerAddress

Product

ProductCategory

ProductDescription

ProductModel

SalesOrderDetail

SalesOrderHeader

Files

	123 ProductID	ABC Name	ABC Produ...	... ABC Color	{ } StandardCost	{ } ListPrice	ABC Size	{ } Weight	123 ProductCat...	123 ProductMo...	SellStartDate	SellEndDate	Discontinue...
1	815	LL Mountain Fro...	FW-M423	Black	26.9708	60.7450			21	42	7/1/2006 12:00:0...	6/30/2007 12:00:...	
2	816	ML Mountain Fr...	FW-M762	Black	92.8071	209.0250			21	45	7/1/2006 12:00:0...	6/30/2007 12:00:...	
3	817	HL Mountain Fro...	FW-M928	Black	133.2955	300.2150			21	46	7/1/2006 12:00:0...	6/30/2007 12:00:...	
4	821	Touring Front W...	FW-T905	Black	96.7964	218.0100			21	44	7/1/2006 12:00:0...	6/30/2007 12:00:...	
5	823	LL Mountain Rea...	RW-M423	Black	38.9588	87.7450			21	123	7/1/2006 12:00:0...	6/30/2007 12:00:...	
6	824	ML Mountain Re...	RW-M762	Black	104.7951	236.0250			21	124	7/1/2006 12:00:0...	6/30/2007 12:00:...	
7	825	HL Mountain Re...	RW-M928	Black	145.2835	327.2150			21	125	7/1/2006 12:00:0...	6/30/2007 12:00:...	
8	829	Touring Rear Wh...	RW-T905	Black	108.7844	245.0100			21	43	7/1/2006 12:00:0...	6/30/2007 12:00:...	
9	713	Long-Sleeve Log...	LJ-0192-S	Multi	38.4923	49.9900	S		25	11	7/1/2005 12:00:0...		
10	714	Long-Sleeve Log...	LJ-0192-M	Multi	38.4923	49.9900	M		25	11	7/1/2005 12:00:0...		
11	715	Long-Sleeve Log...	LJ-0192-L	Multi	38.4923	49.9900	L		25	11	7/1/2005 12:00:0...		
12	716	Long-Sleeve Log...	LJ-0192-X	Multi	38.4923	49.9900	XL		25	11	7/1/2005 12:00:0...		
13	802	LL Fork	FK-1639		65.8097	148.2200			14	104	7/1/2006 12:00:0...	6/30/2007 12:00:...	
14	803	ML Fork	FK-5136		77.9176	175.4900			14	105	7/1/2006 12:00:0...	6/30/2007 12:00:...	
15	804	HL Fork	FK-9939		101.8936	229.4900			14	106	7/1/2006 12:00:0...	6/30/2007 12:00:...	
16	808	LL Mountain Ha...	HB-M243		19.7758	44.5400			8	52	7/1/2006 12:00:0...		
17	841	Men's Sports Sh...	SH-M897-S	Black	24.7459	59.9900	S		26	13	7/1/2006 12:00:0...	6/30/2007 12:00:...	
18	843	Cable Lock	LO-C100		10.3125	25.0000			38	115	7/1/2006 12:00:0...	6/30/2007 12:00:...	
19	844	Minipump	PU-0452		8.2459	19.9900			40	116	7/1/2006 12:00:0...	6/30/2007 12:00:...	
20	845	Mountain Pump	PU-M044		10.3084	24.9900			40	117	7/1/2006 12:00:0...	6/30/2007 12:00:...	
21	846	Taillights - Batter...	LT-T990		5.7709	13.9900			37	108	7/1/2006 12:00:0...	6/30/2007 12:00:...	
22	847	Headlights - Du...	LT-H902		14.4334	34.9900			37	109	7/1/2006 12:00:0...	6/30/2007 12:00:...	
23	848	Headlights - We...	LT-H903		18.5584	44.9900			37	110	7/1/2006 12:00:0...	6/30/2007 12:00:...	
24	849	Men's Sports Sh...	SH-M897-M	Black	24.7459	59.9900	M		26	13	7/1/2006 12:00:0...	6/30/2007 12:00:...	
25	850	Men's Sports Sh...	SH-M897-L	Black	24.7459	59.9900	L		26	13	7/1/2006 12:00:0...	6/30/2007 12:00:...	
26	851	Men's Sports Sh...	SH-M897-X	Black	24.7459	59.9900	XL		26	13	7/1/2006 12:00:0...	6/30/2007 12:00:...	
27	867	Women's Mount...	SH-W890-S	Black	26.1763	69.9900	S		26	37	7/1/2007 12:00:0...		
28	868	Women's Mount...	SH-W890-M	Black	26.1763	69.9900	M		26	37	7/1/2007 12:00:0...		
29	869	Women's Mount...	SH-W890-L	Black	26.1763	69.9900	L		26	37	7/1/2007 12:00:0...		
30	870	Water Bottle - 3...	WB-H098		1.8663	4.9900			32	111	7/1/2007 12:00:0...		
31	872	Road Bottle Cage	BC-R205		3.3623	8.9900			32	113	7/1/2007 12:00:0...		
32	873	Patch Kit/8 Patc...	PK-7098		0.8565	2.2900			41	114	7/1/2007 12:00:0...		
33	881	Short-Sleeve Cl...	SJ-0194-S	Yellow	41.5723	53.9900	S		25	32	7/1/2007 12:00:0...		
34	882	Short-Sleeve Cl...	SJ-0194-M	Yellow	41.5723	53.9900	M		25	32	7/1/2007 12:00:0...		

Succeeded (7 sec 921 ms)

Columns 17 Rows 295

adwonpremspace

[+ New item](#) [New folder](#) [Import](#)[Create deployment pipeline](#) [Create app](#) [Manage access](#) [Workspace settings](#) Filter by keyword

Filter



Choose from predefined task flows or add a task to build one (preview)

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

[Select a predefined task flow](#)[Add a task](#)

- Home
- Create
- Browse
- OneLake catalog
- Apps
- Metrics
- Monitor
- Learn
- Real-Time
- Workloads
- Workspaces
- adwonpremspace
- Untitled report
- ...
- Power BI

AdventureWorks | Confidential\Microsoft Extended

Search

Trial:
20 days left

Lakehouse Share

Home

Get data New semantic model Open notebook Manage OneLake data access (preview)

Explorer

Search tables

- AdventureWorks
 - Tables
 - Address
 - Customer
 - CustomerAddress
 - Product
 - ProductCategory
 - ProductDescription
 - ProductModel
 - SalesOrderDetail
 - SalesOrderHeader
 - Files

Address

Showing 450 rows

#	AddressID	AddressLine1	AddressLine2	City	StateProvince	CountryRegion	PostalCode	rowguid	ModifiedDate
1	635	93-2501, Blackfriars Road,		London	England	United Kingdom	SE1 8HL	00e75f99-488c-462d-a0bc-...	9/1/2006 12:00:00 /
2	636	Science Park South, Birchw...	Stanford House	Warrington	England	United Kingdom	WA3 7BH	c0fc2d5b-88e7-4b60-8447-...	7/1/2007 12:00:00 /
3	637	Phoenix Way, Cirencester		Gloucestershire	England	United Kingdom	GL7 1RY	10a3d496-881e-4042-bbd0...	9/1/2007 12:00:00 /
4	638	255 Irving Street		London	England	United Kingdom	C2H 7AU	d8a77424-94ae-43ab-a011...	8/1/2007 12:00:00 /
5	639	Garamonde Drive, Wymbush	PO Box 4023	Milton Keynes	England	United Kingdom	MK8 8ZD	8f34cedd-fb6e-4814-b509-...	9/1/2007 12:00:00 /
6	640	251 The Metro Center		Wokingham	England	United Kingdom	RG41 1QW	0e4ac5bb-be0d-4a96-a58e...	9/1/2007 12:00:00 /
7	641	Bradford		W. York	England	United Kingdom	BD1 4SJ	f7b99541-1ce1-4ab6-ae0d...	8/1/2006 12:00:00 /
8	642	Galashiels		Liverpool	England	United Kingdom	L4 4HB	3593cdf3-38ec-4847-ad42...	9/1/2007 12:00:00 /
9	643	Banbury		Oxon	England	United Kingdom	OX16 8RS	99ff4c64-b405-4ac1-85ed...	9/1/2006 12:00:00 /
10	644	Bradford	Raven House, Kingsgate	W. York	England	United Kingdom	BD1 4SJ	65684e2e-d39c-4ef7-80d8...	8/1/2007 12:00:00 /
11	645	Garamonde Drive, Wymbush	P.O. Box 803	Milton Keynes	England	United Kingdom	MK8 8ZD	6ef999e7-5510-4b02-b89e...	7/1/2007 12:00:00 /
12	646	Butterfield Hse, 7-251 Chap...		Lancaster	England	United Kingdom	LA1 1LN	bce1f4b3-a9c0-413e-ac8d...	8/1/2006 12:00:00 /
13	647	Wade Road		Basingstoke Hants	England	United Kingdom	RG24 8PL	578c2529-f11c-4bf3-8084...	7/1/2007 12:00:00 /
14	648	586 Fulham Road,		London	England	United Kingdom	SW6 SBY	0da65673-2a35-4e6a-a607...	8/1/2007 12:00:00 /
15	649	Knaves Beech Ind.		High Wycombe	England	United Kingdom	HP10 9QY	11fcff74-5c80-4b37-a842-4...	9/1/2007 12:00:00 /
16	650	Elmhurst Road, Goring		Reading	England	United Kingdom	RG7 5H7	e4c0c239-182f-45b7-a6bb...	7/1/2006 12:00:00 /
17	651	New Millhouse, 2583 Milto...		Abingdon	England	United Kingdom	OX14 4SE	e844b847-b0b3-491d-a4f1...	9/1/2007 12:00:00 /
18	652	Wymbush		Milton Keynes	England	United Kingdom	MK8 8DF	54e20963-b0e9-41cf-ab7e...	9/1/2006 12:00:00 /
19	653	Burgess Hill	Edward Way	West Sussex	England	United Kingdom	RH15 9UD	38cc8647-b4b4-4669-b21d...	9/1/2006 12:00:00 /
20	654	308-3250 Casting Road		York	England	United Kingdom	Y024 1GF	9d67c322-8698-440a-8f3e...	8/1/2007 12:00:00 /
21	655	Wharfdale Road		Berkshire	England	United Kingdom	RG11 5TP	d0e03fcf-b116-4ad2-8b17...	8/1/2006 12:00:00 /
22	656	7 Pioneer Business Park		York	England	United Kingdom	Y03 4TN	48865e15-033a-40ff-8327...	8/1/2007 12:00:00 /
23	657	Unit 99a Battery Retail Pk		Birmingham	England	United Kingdom	B29 6SL	371a70e0-5802-4df9-bb28...	8/1/2006 12:00:00 /
24	658	Ellesfield Ave		Bracknell	England	United Kingdom	RG12 8TB	bc28152f-8005-4c0e-98ff-5...	8/1/2006 12:00:00 /
25	659	Warrington Ldc Unit 25/2		Woolston	England	United Kingdom	WA1 4SY	f44a7d0d-9bc5-427e-b3ae...	9/1/2007 12:00:00 /
26	660	6 The Farm, Liberty Road		Maidenhead	England	United Kingdom	SL67RJ	e22d616b-ea06-48e9-a00f...	9/1/2007 12:00:00 /
27	661	725a The Arches		Berks	England	United Kingdom	SL4 1RH	38f5f598-e9bb-499c-b90d...	8/1/2006 12:00:00 /
28	662	Paramount House		London	England	United Kingdom	W1N 9FA	e50d1077-d135-41cc-a0b1...	9/1/2006 12:00:00 /
29	663	2524 Barlby Road		London	England	United Kingdom	W10 6BL	d8e96eba-258c-4f6c-83b3...	8/1/2007 12:00:00 /
30	664	99-3 Forest Works		London	England	United Kingdom	E17 6JF	eb46af5a-ec2b-41ff-914e...	7/1/2006 12:00:00 /
31	665	46-44 Albemarle Street		London	England	United Kingdom	W1X3SE	1b01b172-96ce-4601-ad19...	8/1/2007 12:00:00 /
32	666	399 Clearing Green		London	England	United Kingdom	EC1R 0DU	bab4b0a1-055a-4581-a93f...	8/1/2006 12:00:00 /
33	667	997b Tradescant Road		London	England	United Kingdom	SW8 1XD	0a318015-4fbe-479a-b2da...	8/1/2006 12:00:00 /
34	668	2574 Milton Park		Oxford	England	United Kingdom	OX14 4SE	62d0c689-cf44-4ab3-9c3e...	8/1/2007 12:00:00 /

Succeeded (7 sec 681 ms) Columns 9 Rows 450