



From SQL to Insights: Unlocking the Power of Azure SQL & Microsoft Fabric



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DATA SATURDAY SLOVENIA 2024

Thank you to our AWESOME sponsors!



Agenda



Introduction



Azure

SQL

Mirroring

OneLake

Fabric

What is SQL Server?

Microsoft's flagship database product – an enterprise-grade relational database management system (RDBMS) designed to store, retrieve and manage data efficiently.



RDBMS engine with
built-in scalability
supporting



Built-in **security,**
performance, and
availability

1989

SQL Server 1.0 followed
by major releases every
~3 years on average



Hybrid
connectivity to
the cloud



Business intelligence
services with reporting
and analytics

Evaluation Edition

Evaluate all features for free
Time limit

Developer Edition

Develop for free
All features available

Standard Edition

Same feature surface area as EE
Best price per value
Resource limits

Enterprise Edition

Full feature set
Unlimited resources

The Modern SQL Server

SQL Server 2017

SQL Server on Linux
Containers
Adaptive query processing
Automatic tuning
Graph database
Machine learning services

SQL Server 2019

Data virtualization
Intelligent query processing
Accelerated database
recovery
Data classification

SQL Server 2022

Business continuity through
Azure with Link
Industry leading OLTP
performance
IQP NextGen
Ledger
Data Lakes

Azure SQL

The family of SQL cloud databases



SQL Server on Azure
Virtual Machines



Azure SQL
Managed Instance



Azure SQL
Database

Migration

Best for: **“Lift and shift” migrations** of apps requiring OS-level access to customer-managed Azure VMs.

Best for: **Migrating existing apps** at-scale to a Microsoft-managed, SQL Server-compatible instance with native VNET.

Innovation

Best for: **Developing new cloud apps** with SQL’s reliability and security at commercial open-source db costs.



Azure SQL enabled by Azure Arc

Run Azure SQL on premises and in multicloud environments. Your first step on the journey to Azure.



Microsoft Fabric – unified data platform



Data
Factory



Real-Time
Intelligence



Data
Warehouse



Analytics



Data
Engineering



Power BI



Additional
workloads



Copilot in Fabric

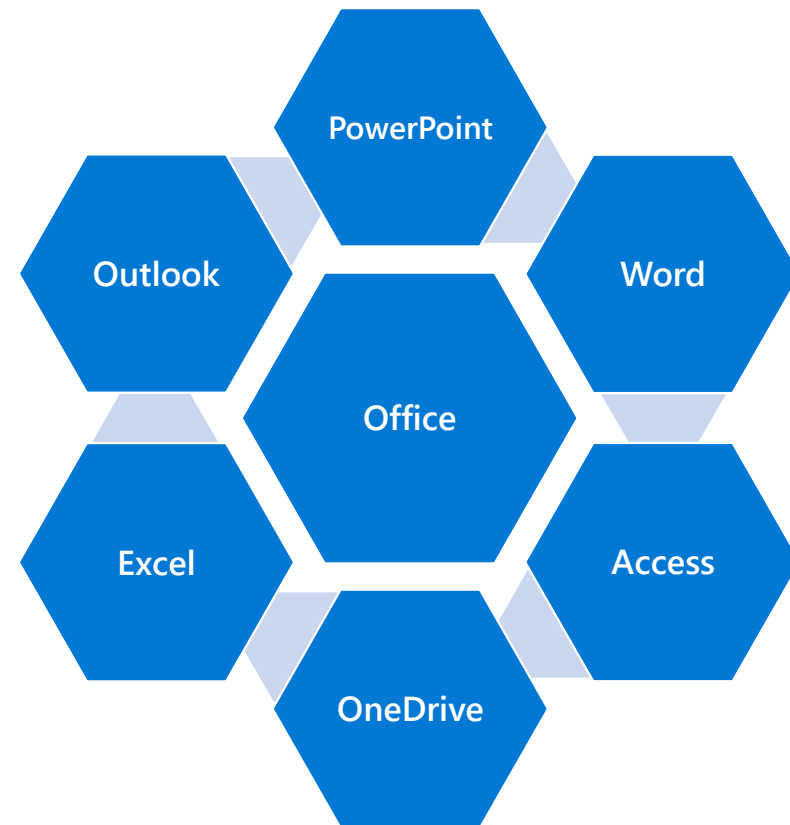
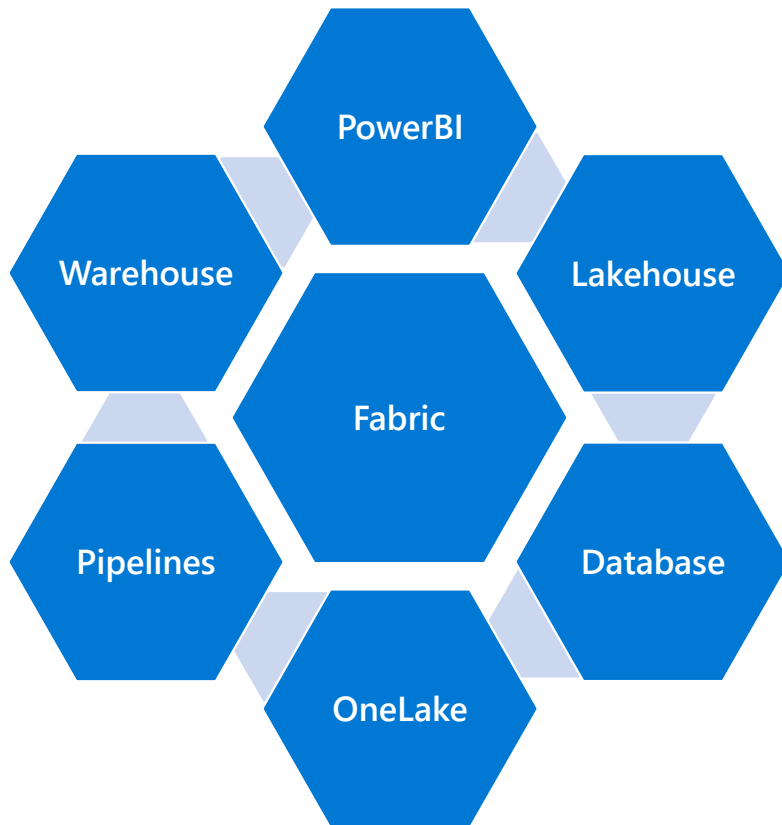


OneLake

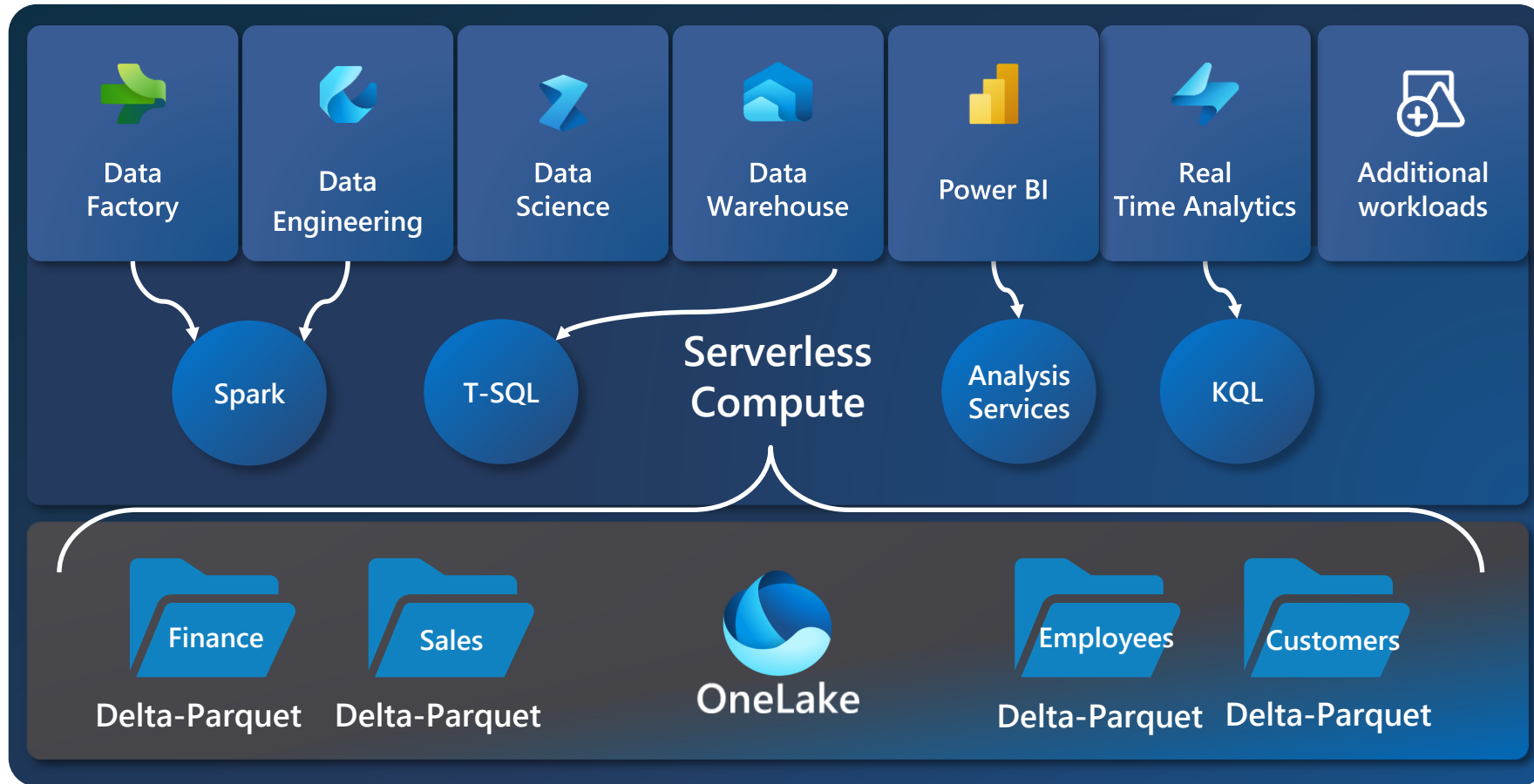


Microsoft Purview

No, really, what's Fabric?



Microsoft Fabric



Mirroring & Shortcuts

Mirroring

Low-latency, low-cost **data replication**.

Facilitates seamless data replication from an external source (e.g., Azure SQL Database) to OneLake in Microsoft Fabric.



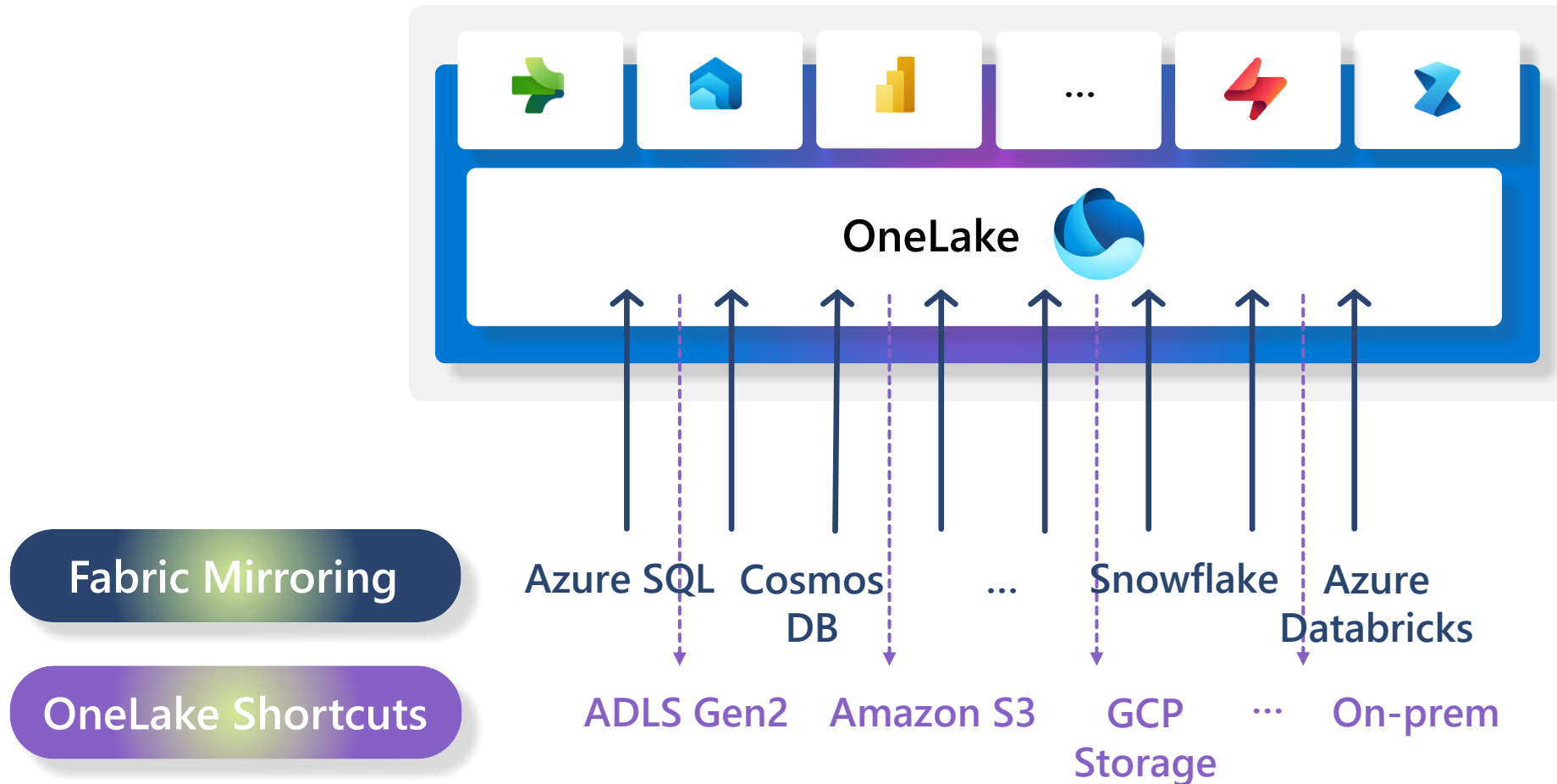
Shortcuts

Pointer or “**link**” to files in a storage location.

Enables a lightweight and virtual reference to data **without copying it**.



Data sources



Fabric Mirroring

Database mirroring

Replication of **entire databases and tables**, allowing you to bring data from various systems together

Metadata mirroring

Synchronizes metadata (such as catalog names, schemas, and tables) instead of physically moving the data.

Data remains in its source while **still being easily accessible** within Fabric.

Open mirroring

Designed to extend mirroring based on open Delta Lake table format.

This capability enables any developer to write their application's **change data directly into Microsoft Fabric**.

Fabric Mirroring for Azure SQL and SQL Server



Azure SQL
Database



Azure SQL
Managed Instance



SQL Server
2025

Apply for preview!

Ignite 2024

Private Preview



SQL Server
2025

Mirroring for SQL Server

aka.ms/mirroring/sql-server-prpr-signup

Preview of SQL Server 2025

aka.ms/SQL2025

Why mirroring?

Mixed workload challenges

Running **both OLTP and analytics** workloads on top of the same database is challenging.

Two workload types need different indexes, data organization, perf optimizations.

Existing solutions & workarounds

ETL

Change Data Capture

Change Tracking

Transactional Replication

Availability Groups

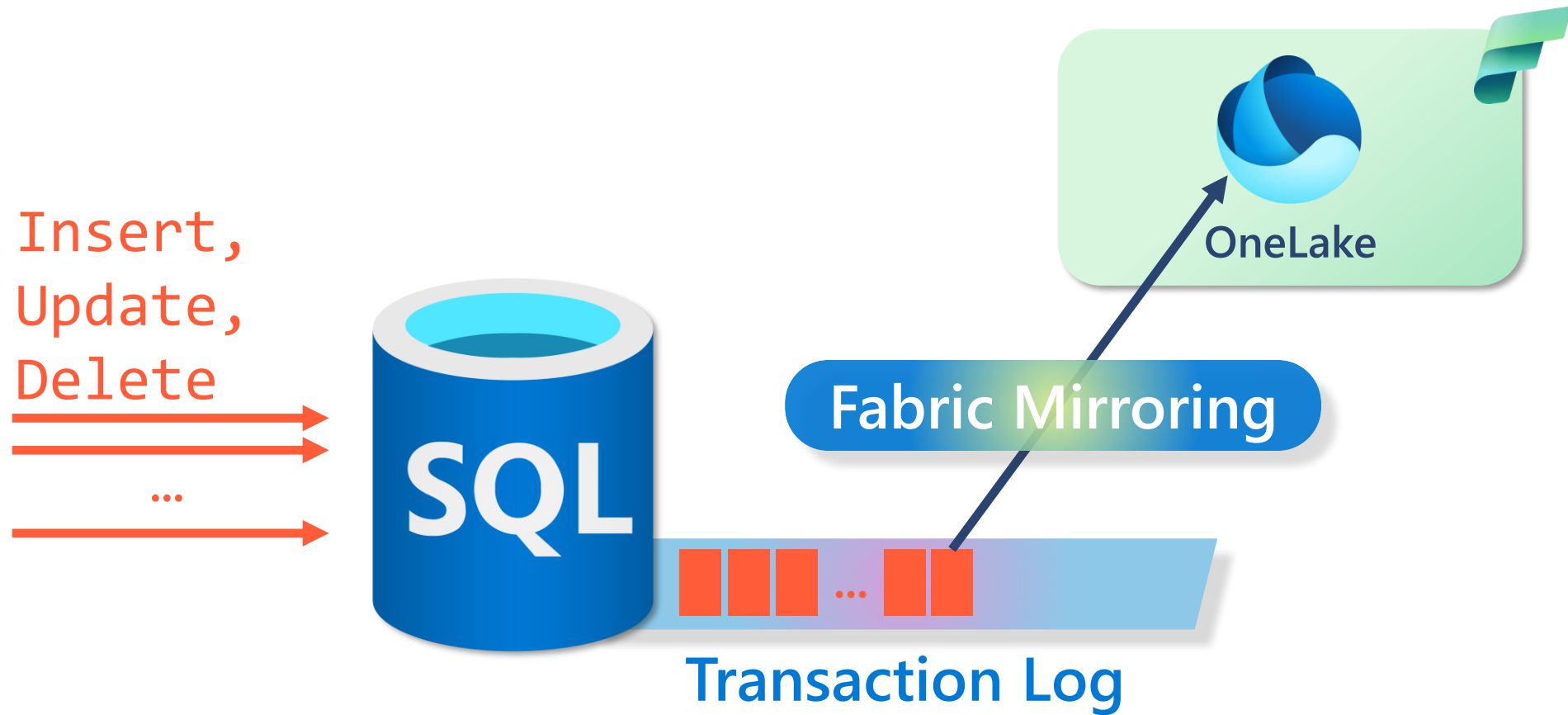
Failover Groups

Data integration

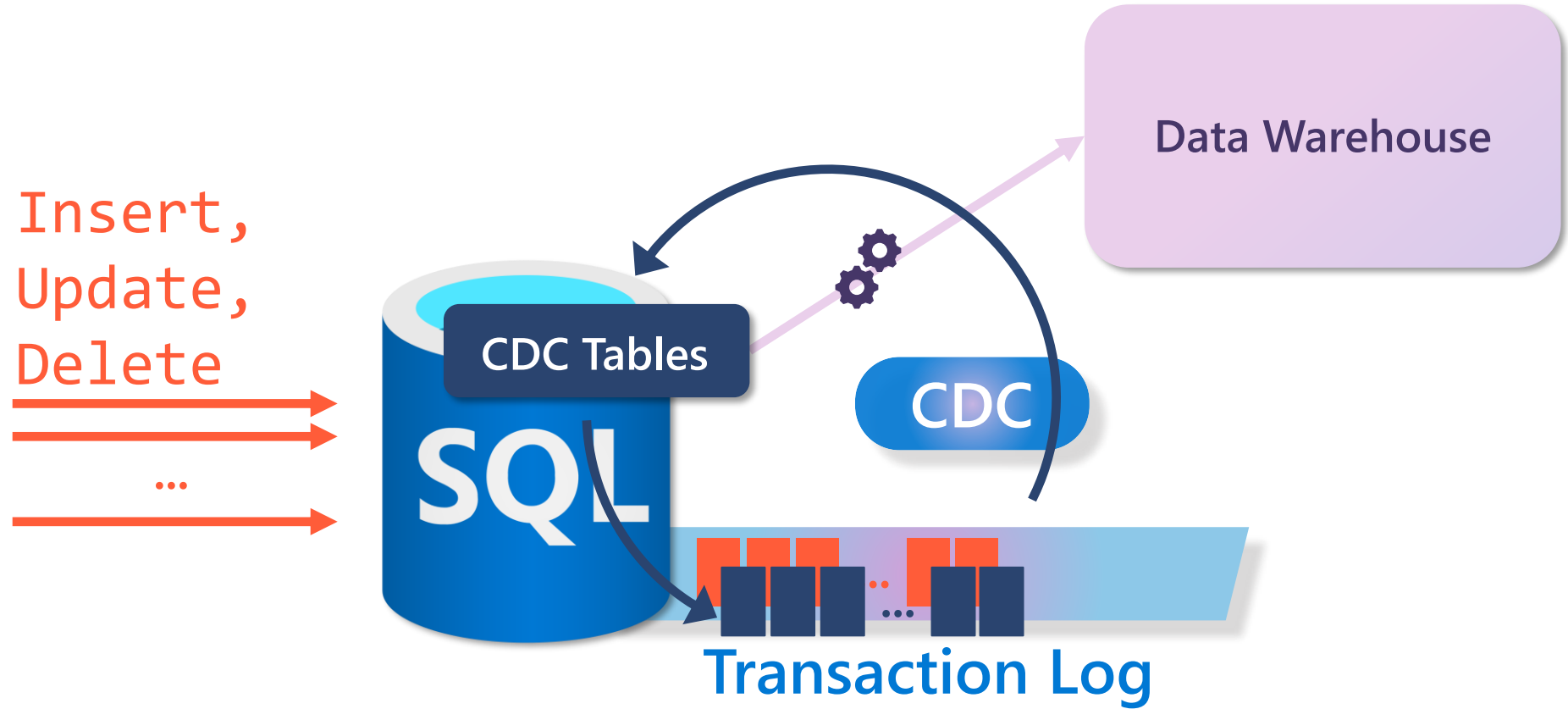
For various reasons and use cases, data from different sources and systems needs to be in the same report, warehouse or system.

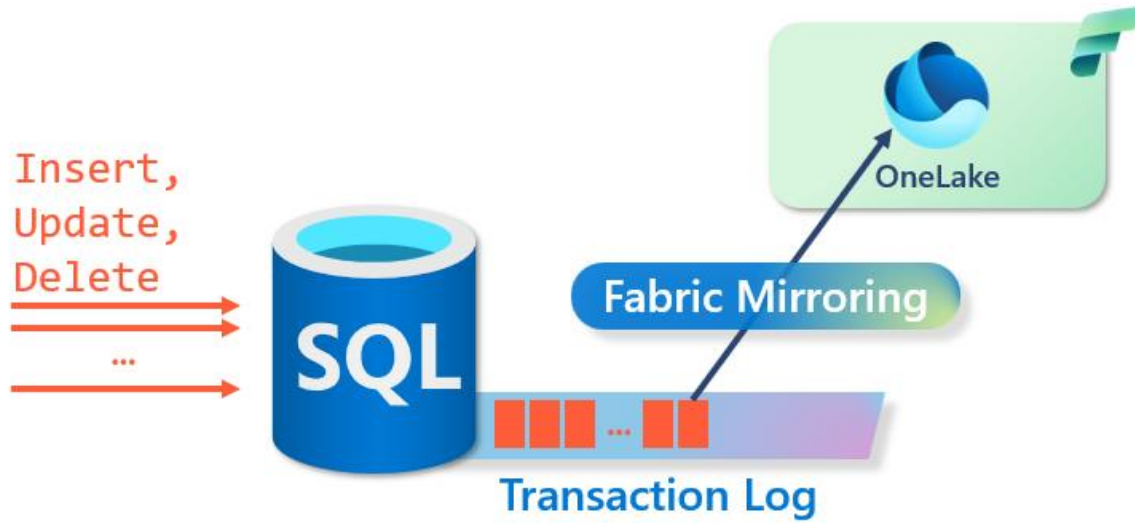
Fabric and mirroring are **designed for data integration**.

Azure SQL & SQL Server Fabric Mirroring



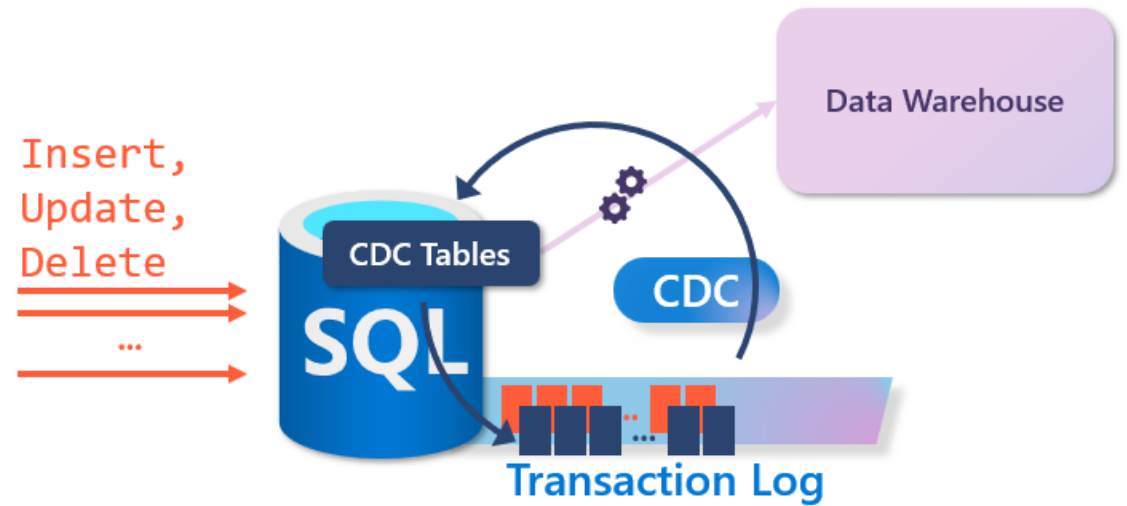
Alternatives: Change Data Capture (CDC)





Fabric Mirroring

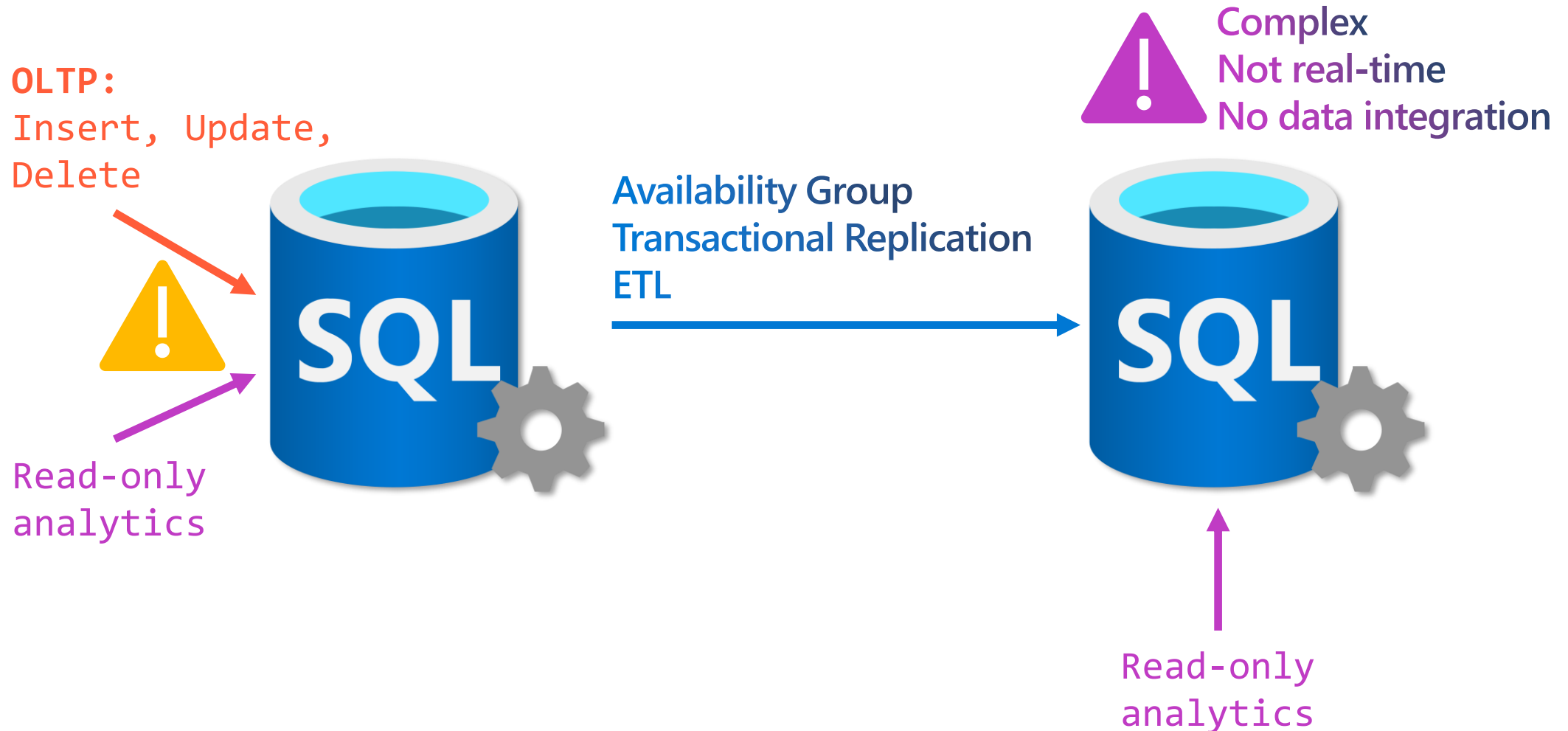
1. Additional TLog entries
2. Custom code for initial snapshot
3. Custom code for applying changes



CDC

4. Mirroring supports add/drop/alter column

Alternatives: AGs, Tran Repl, ETL





+ New item New folder → Import

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.



There's nothing here yet

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.

	Name	Type	Task	Owner	Refreshed	Next refresh	Endorseme	Sensitivity	Included in app
	SalesLT-2024	Mirrored ...	—	Sasa Pop...	—	—	—	Confiden... ⓘ	
	SalesLT-2024	Semantic ...	—	azuresqlfa...	12/4/2024, ...	N/A	—	Confiden... ⓘ	
	SalesLT-2024	SQL analy...	—	Sasa Pop...	—	—	—	—	

SQLQuery1.sql - nzagorac1.public.f66823ecb436.database.windows.net,3342.SalesLT-2024 (nzagorac (91))* - Microsoft SQL Server Management Studio

Quick Launch (Ctrl+Q)

File Edit View Query Project Tools Window Help

SQLQuery1.sql - nzagorac1.public.f66823ecb436.database.windows.net,3342.SalesLT-2024 (nzagorac (91))*

SQLQuery1.sql - nzagorac1.public.f66823ecb436.database.windows.net,3342.SalesLT-2024 (nzagorac (91))*

Insert into SalesLT.SalesOrderDetail values (

4, 743, 809.76, 3239.040000, 0.50, '1DB92279-D76A-4868-9A47-856EC58093AB', '2024-12-24 23:00:00.000', 'Q4')

SELECT TOP 10 * FROM SalesLT.SalesOrderDetail ORDER BY UnitPriceDiscount DESC

-- DELETE FROM SalesLT.SalesOrderDetail WHERE SalesOrderID = 4 AND UnitPriceDiscount = 0.5

109 %

Messages

(1 row affected)

Completion time: 2024-12-04T04:48:53.2563402+01:00

109 %

Query executed successfully.

nzagorac1.public.f66823ecb436.database.windows.net,3342.SalesLT-2024 (nzagorac (91)) | SalesLT-2024 | 00:00:00 | 0 rows

Object Explorer

Connect

nzagorac1.public.f66823ecb436.database.wind

Databases

System Databases

Database Snapshots

AdventureWorks2022

AdventureWorks-20241024

contosodb

nikola

SalesLT2024

SalesLT-2024

VectorShowroomMladen

Security

Server Objects

Replication

Always On High Availability

Management

Integration Services Catalogs

SQL Server Agent

XEvent Profiler

Ready

Ln 4 Col 1 Ch 1 INS

Microsoft

SalesLT-2024

Confidential\Microsoft Extended

Search

15

Home

Reporting

SQL analytics endpoint

New report

New semantic model

Manage default semantic model

Automatically update semantic model

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

Explorer

+ Warehouses

Prod...

Product

SalesOr...

123 Sa...

123 Sa...

128 Or...

123 Pr...

e^x U...

e^x U...

ABC ro...

M...

ABC Sa...

SalesOr...

SQL query 1

Run

Save as view

Explain query

Fix query errors

1 SELECT TOP 10 * FROM SalesLT.SalesOrderDetail ORDER BY UnitPriceDiscount DESC

Messages

Results

Open in Excel

Explore this data (preview)

Copy

Search

	123 SalesOrd...	123 SalesOrd...	123 OrderQty	123 ProductID	12 UnitPrice	12 UnitPrice...	ABC rowguid	Modified...	ABC SalesQu...
1	4	113413	743	809	3239.0400	0.5000	1db92279-d7...	2024-12-24 2...	Q4
2	71780	110618	6	988	112.9980	0.4000	12706fab-f3a...	2024-09-05 0...	Q3
3	71780	110633	2	984	112.9980	0.4000	27562675-f8c...	2024-01-29 0...	Q1
4	71780	110628	1	985	112.9980	0.4000	2c10a282-a13...	2024-08-11 0...	Q3
5	71832	111813	3	984	112.9980	0.4000	f8d67ec8-224...	2024-12-30 0...	Q4
6	71780	110634	3	986	112.9980	0.4000	e193ce39-ef3...	2024-03-04 0...	Q1

Succeeded (2 sec 204 ms)

Columns: 9 Rows: 10

Fabric experiences unlocked with Mirroring



Data Engineering Microsoft

Create a lakehouse and operationalize your workflow to build, transform, and share your data estate.



Data Factory Microsoft

Solve complex data ingestion, transformation, and orchestration scenarios using cloud-scale data movement and data transformation services.



Data Science Microsoft

Unlock powerful insights using AI and machine learning technology.



Data Warehouse Microsoft

Scale up your insights by storing and analyzing data in a secure SQL warehouse. Benefit from top-tier performance at petabyte scale in an open-data format.



Databases Microsoft

Create operational SQL databases seamlessly for transactional workloads.



Real-Time Intelligence Microsoft

Discover insights from your streaming data. Quickly ingest, index, and partition any data source or format, then query the data and create visualizations. You can also create alerts to flag anomalies.



Industry Solutions Microsoft

Use out-of-the-box industry data solutions and resources.



Power BI Microsoft

Find insights, track progress, and make decisions faster using rich visualizations.



Accelerate insights with real-time Azure SQL data and Microsoft Fabric

with Anna Hoffman
& Bob Ward

Microsoft Build

▶ ▶▶ 🔊 9:24 / 47:36



aka.ms/ig24-sqlfab

What's coming?

APIs for mirroring management.

More DDL operations: **truncate table**.

Mirror tables with **no primary keys**.

Additional **datatypes**.

...and more!



Anything else?

Drumroll...



Databases in Microsoft Fabric



Data
Factory



Real-Time
Intelligence



Analytics

NEW



Databases



Data
Warehouse



Power BI



Additional
workloads



OneLake



SQL database in Fabric

Build AI apps faster and easier than ever



Simple



**Autonomous
and secure**



**Optimized
for AI**

Built upon the familiar SQL Server/Azure SQL Database engine, in Microsoft Fabric

Simple, integrated developer experience

Focus on building your app!



Easy provisioning



AI assistance



Integrated editor



T-SQL support

The screenshot displays the Microsoft SQL Server Data Studio interface. The top navigation bar includes 'Home', 'Replication', and 'Security'. Below this is a toolbar with icons for 'Get data', 'New Query', 'Templates', 'Open in', 'New API for GraphQL', 'Performance summary', and 'Copilot'. The main workspace is divided into two panes. The left pane, titled 'Explorer', shows a tree view of the 'ContosoDB' database, including a 'dbo' schema with various tables like 'AuditLogs', 'Billing', 'ChatSummary', 'CustomerActivity', 'Customers', 'Employee', 'Inventory', 'OrderDetails', 'Orders', 'Payments', and 'Plans'. The right pane, titled 'Data preview - Products', shows a table with 18 rows of product data. The table has columns for ProductID, ProductName, Description, Price, Category, and StockQuantity. The status bar at the bottom indicates 'Succeeded (3 sec 17 ms)'.

	ProductID	ProductName	Description	Price	Category	StockQuantity
1	1	ScreenGuard Pro	Tempered glass s...	7.28	Accessory	79
2	2	CaseMate X	Durable phone ca...	6.19	Accessory	8
3	3	PowerBank Z	Portable power b...	11.13	Accessory	28
4	4	CarMount T	Car mount for ph...	19.76	Accessory	80
5	5	WirelessCharger S	Wireless charging...	12.73	Accessory	76
6	6	BluetoothSpeaker R	Portable Bluetoot...	44.51	Accessory	31
7	7	SelfieStick V	Extendable selfie ...	6.44	Accessory	25
8	8	PhoneStand A	Adjustable phone...	8.69	Accessory	32
9	9	MemoryCard M	High-capacity me...	45.53	Accessory	81
10	10	Earbuds E	Wired in-ear earb...	6.36	Accessory	100
11	11	Stylus Pen	Precision stylus pen	7.55	Accessory	52
12	12	CleaningKit C	Phone cleaning kit	9.67	Accessory	15
13	13	LensKit L	Clip-on camera le...	31.75	Accessory	32
14	14	VRHeadset V	Virtual reality hea...	50.49	Accessory	26
15	15	GameController G	Bluetooth game c...	46.47	Accessory	24
16	16	SmartWatch S	Smartwatch with f...	115.02	Accessory	96
17	17	FitnessBand F	Fitness tracking b...	69.02	Accessory	53
18	18	USBHub U	Multi-port USB hub	23.89	Accessory	11

Autonomous capabilities manage your workloads



Challenge

Making the right choices and managing databases is complex.



Solution

SQL database in Fabric enables you to get the best security, availability, and performance configurations

Secure by default

Auto-HA with Zone Redundancy

Auto-scaling and auto-optimized



Home

Workspaces

OneLake

Monitor

Real-Time

Workloads

Contoso Corp

ContosoDB

Fabric

Contoso Corp

Search

View deployment pipeline

Create app

Manage access

Workspace settings

+ New item

New folder

→|

Import

Source control

5

Filter by keyword

Filter

	Name	Git status	Type	Task	Owner	Refreshed	Next refresh	Endorsement	Sensitivity	Included in app
	Contoso PDF RAG	Uncommitted	Notebook	—	Anna Hoffm...	—	—	—	Confidentia... ⓘ	
	Contoso PDFs RAG	Uncommitted	Notebook	—	Anna Hoffm...	—	—	—	Confidentia... ⓘ	
	ContosoDB	✓ Synced	SQL database	—	Anna Hoffm...	—	—	—	Confidentia... ⓘ	
	ContosoDB	—	Semantic m...	—	Contoso Corp	10/25/2024, 9...	N/A	—	Confidentia... ⓘ	
	ContosoDB	—	SQL analytic...	—	Anna Hoffm...	—	—	—	Confidentia... ⓘ	
	ContosoDBapi	Uncommitted	API for Grap...	—	Anna Hoffm...	—	—	—	Confidentia... ⓘ	
	ContosoLakehouse	✓ Synced	Lakehouse	—	Anna Hoffm...	—	—	—	Confidentia... ⓘ	
	ContosoLakehouse	—	Semantic m...	—	Contoso Corp	10/29/2024, 1...	N/A	—	Confidentia... ⓘ	
	ContosoLakehouse	—	SQL analytic...	—	Anna Hoffm...	—	—	—	Confidentia... ⓘ	
	DataflowsStagingLakehouse	✓ Synced	Lakehouse	—	Anna Hoffm...	—	—	—	Confidentia... ⓘ	
	DataflowsStagingLakehouse	—	Semantic m...	—	Contoso Corp	7/22/2024, 10...	N/A	—	Confidentia... ⓘ	
	DataflowsStagingLakehouse	—	SQL analytic...	—	Anna Hoffm...	—	—	—	Confidentia... ⓘ	
	happyes	✓ Synced	Eventstream	—	Anna Hoffm...	—	—	—	Confidentia... ⓘ	

planelanding

Last synced: 11/15/2024 at 7:31 AM

ed5a0615

dev

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Search

1

Home

Replication

Security

SQL database

Get data

New Query

Templates

Open in

New API for GraphQL

Performance summary

Copilot

Explorer

Search

dev

dbo

SalesLT

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Address

Customer

CustomerAd

Product

ProductCate

ProductDesc

ProductMod

ProductMod

SalesOrderD

SalesOrderH

Views

Stored Proced...

Functions

Shortcuts

Queries

Address

SQL query 1

Run

Save as view

Explain query

Fix query errors

Preview

Copilot uses AI. Mistakes can happen. Verify code suggestions before running them. Review terms

FROM [SalesLT].[CustomerAddress]

-- help me find the top ten selling products

SELECT TOP 10

P.[ProductID],

P.[Name],

SUM(D.[OrderQty]) AS TotalQuantitySold

FROM [SalesLT].[Product] AS P

JOIN [SalesLT].[SalesOrderDetail] AS D ON P.[ProductID] = D.[ProductID]

GROUP BY P.[ProductID], P.[Name]

ORDER BY TotalQuantitySold DESC;

Messages

Results

Copy

Search

	123	ProductID	ABC	Name	123	TotalQuantitySold
1	864			Classic Vest, S	87	
2	884			Short-Sleeve Classic Jersey, XL	57	
3	877			Bike Wash - Dissolver	55	
4	870			Water Bottle - 30 oz.	54	
5	712			AWC Logo Cap	52	
6	715			Long-Sleeve Logo Jersey, L	51	
7	875			Racing Socks, L	51	
8	883			Short-Sleeve Classic Jersey, L	51	
9	708			Sport-100 Helmet, Black	51	
10	880			Hydration Pack - 70 oz.	50	

Succeeded (0 sec 477 ms) Copilot completions: On Copilot completions: Ready Columns: 3 Rows: 10

Copilot

Preview

Copy info for the bug bash

Let's work with your data

Select a category to get started.

Create a table

Create a table [to store employee data (EmployeeID, full name, hire date)]

Get insights

Retrieve the total number of tables in my database.

Ask a question

What data types are available?

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

0 / 500

AI-generated content can have mistakes. Make sure it's accurate

Replication to OneLake

Near real-time replication to OneLake by default









Unified operational and analytics




Data replicated to open-source
Delta Parquet




SQL analytics endpoint to query
data without copying it


	Name	Type
	ContosoDB 	SQL database
	ContosoDB	Semantic model (default)
	ContosoDB 	SQL analytics endpoint

SQL analytics endpoint ▾



SQL Database
Define, query, and update data



 SQL analytics endpoint
Query data using SQL

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OneLake

Monitor

Real-Time

Workloads

Contoso Corp

devapi

dev

ContosoDB

...

Fabric

ContosoDB

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AgentProperty1

Badges

Comments

LinkTypes

PostLinks

Posts

PostTypes

PropertyDetails

UsageData

Users

Votes

VoteTypes

Views

Stored Procedures

Functions

Query, preview, or connect your data

Interact with your data by starting a query, creating database objects with a template, or connecting the database to your app with a GraphQL API. You can also preview your data by opening a table or view.

+ New



Microsoft

ContosoDB



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Search

Trial:
8 days left



Home



Create



Browse



OneLake



Apps



Workspaces



demo-fabricsqlodb



ContosoDB



ContosoDB



ContosoDB



Power BI

Home **Reporting**

SQL analytics endpoint

New report New semantic model Manage default semantic model Automatically update semantic model

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

Explorer

+ Warehouses

ContosoDB

Schemas

dbo

INFORMATION_...

queryinsights

SalesLT

sys

Security

Queries

My queries

Shared queries

Model layouts



Query, model, or preview your data

To query your data, start a query. You can also open a table or view to preview your data.



New SQL query



Build new AI apps with SQL database in Fabric

Vector datatype and RAG support

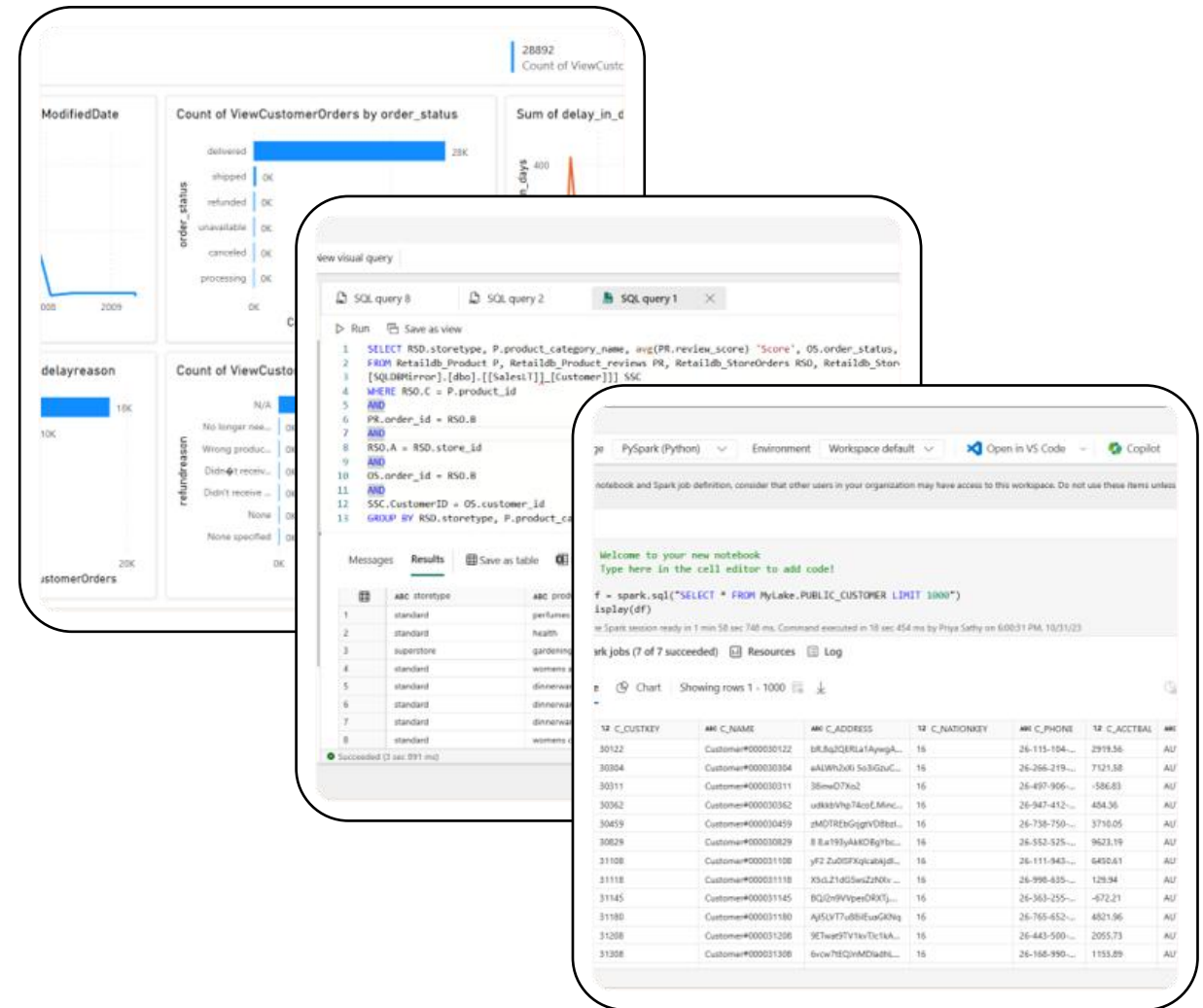
Integration with Azure AI services and Azure AI Foundry.

Cross-database querying with multi-cloud shortcuts

Data Science experiences with notebooks

Integration with AI skills (coming soon)

Data activator and Real-Time Intelligence



Game-changing capabilities



Every database under source control



Vector datatype and RAG support with Azure AI integration



Native integration with other Fabric workloads

View deployment pipeline **3** Create app Manage access Workspace settings

1 Source control **8** Filter

Task	Owner	Refreshed	Ne ref
—	Anna Ho...	—	—
—	Anna Ho...	—	—
—	Contoso...	7/22/202...	N/A
—	Anna Ho...	—	—
—	Anna Ho...	—	—
—	Contoso...	10/25/20...	N/A
—	Anna Ho...	—	—
—	Anna Ho...	—	—
—	Anna Ho...	—	—

Source control ...

Current branch: **planelanding**

Changes **8** Updates

- ☐ Contoso PDFs RAG
- ☐ RAG-with-resumes
- ☒ api1
- ☒ ContosoDB
- ☒ dev
- ☒ Notebook 1

Commit Undo

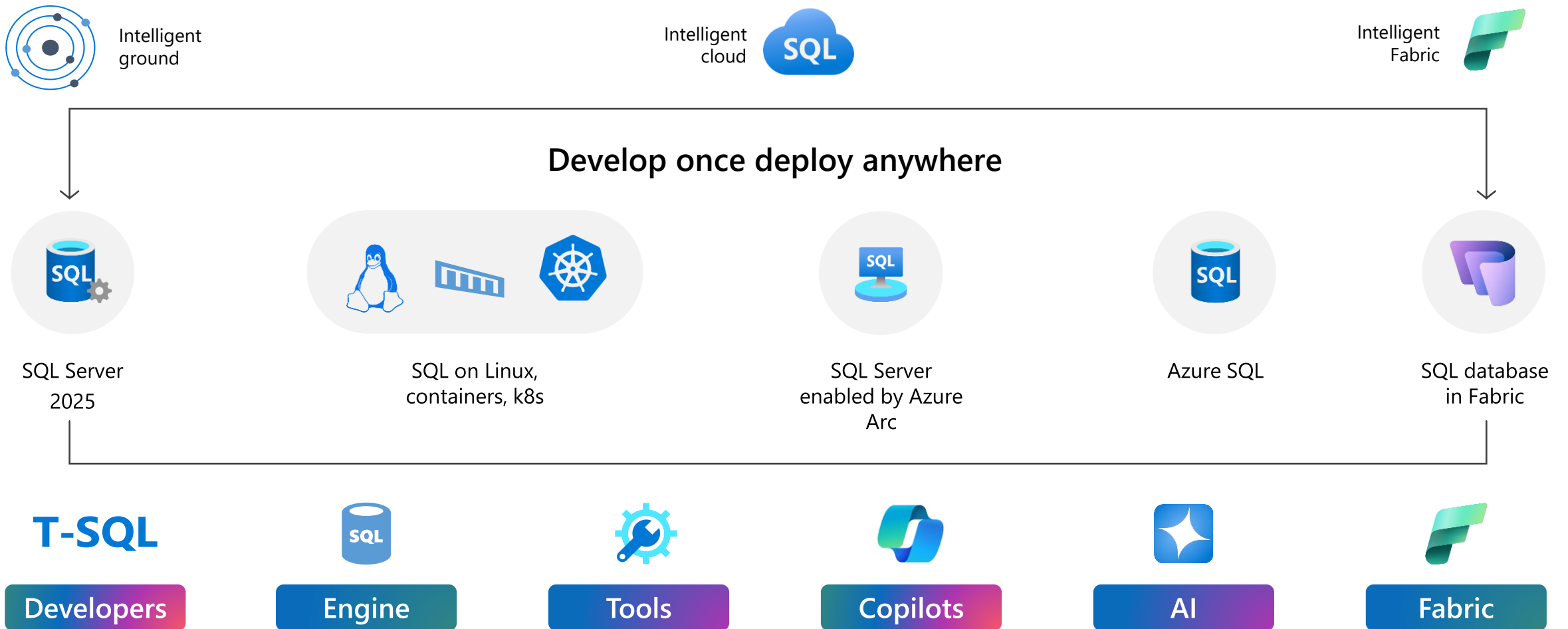
Azure SQL vs SQL database in Fabric comparison

Feature	Azure SQL	Fabric SQL database
Automatic backups	Up to 35 days	7 days
Azure CLI/PS	Yes	No
CCI	Yes	Yes, but no mirroring
Ledger	Yes	No
Long-term backups	Up to 10 years	No
OPENROWSET	Yes	No
Private links	Yes	No (yet)
Restore db from SQL Server	No, (BACPAC instead)	No (BACPAC instead)
Server-level roles	Yes	No
SQL Authentication	Yes	No
TDE Encryption	Yes	SMK only

aka.ms/sqlldb-fabricdb

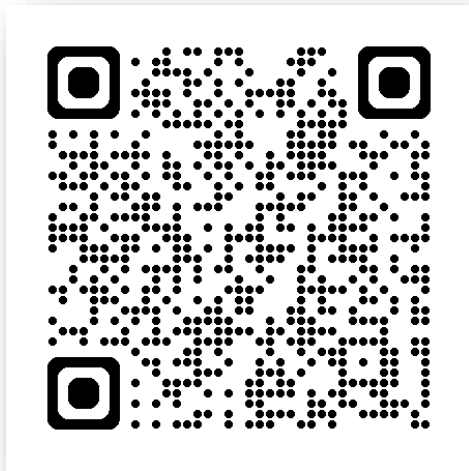
Microsoft SQL – ground to cloud

The next generation enterprise ready AI database



Free offers. Get started today!

Free Azure SQL



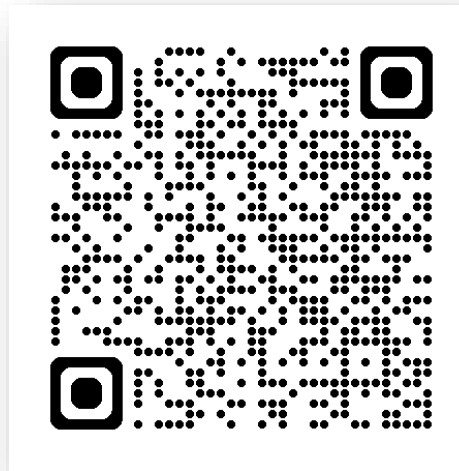
aka.ms/sqlldb-free

aka.ms/sqlmi-free

aka.ms/azuresqldocs

aka.ms/LearnAzureSQL

Free Microsoft Fabric

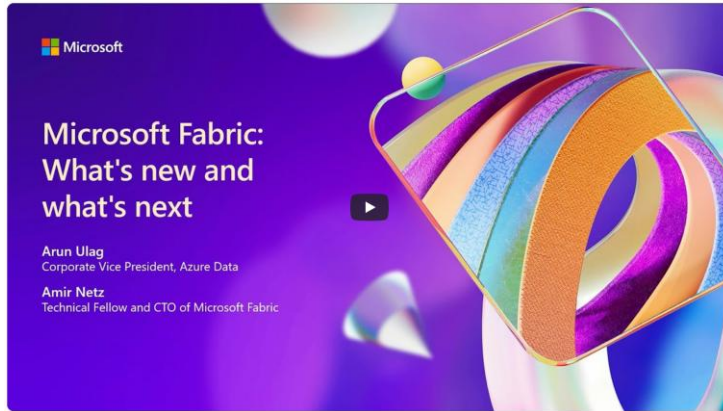


aka.ms/fabricsqldocs

aka.ms/LearnFabricDB

aka.ms/free-fabric-certification

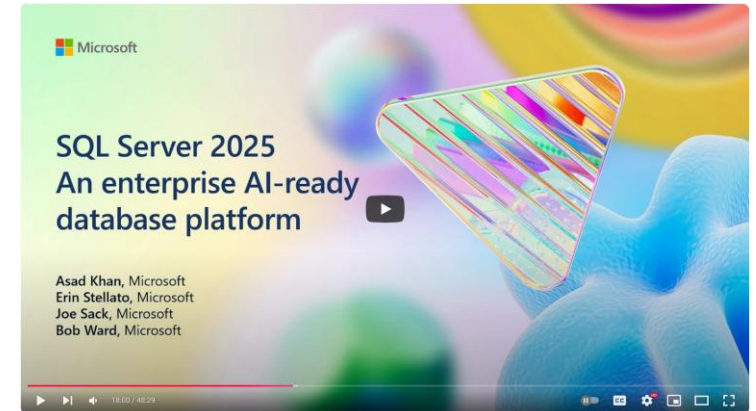
Learn more...



Fabric news
aka.ms/ig24-fabric



Azure SQL news
aka.ms/ig24-azuresql



SQL Server 2025
aka.ms/ig24-sqlserver

Check out also...
aka.ms/azuresql-yt





Thank you!



Strahinja Rodic

Product Manager, Microsoft



Sasa Popovic

Product Manager, Microsoft



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