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



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Product Manager, Microsoft
/sasapopovic



Agenda

Q&A

SQL Databases in Fabric

Fabric Mirroring

Introduction





Introduction



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

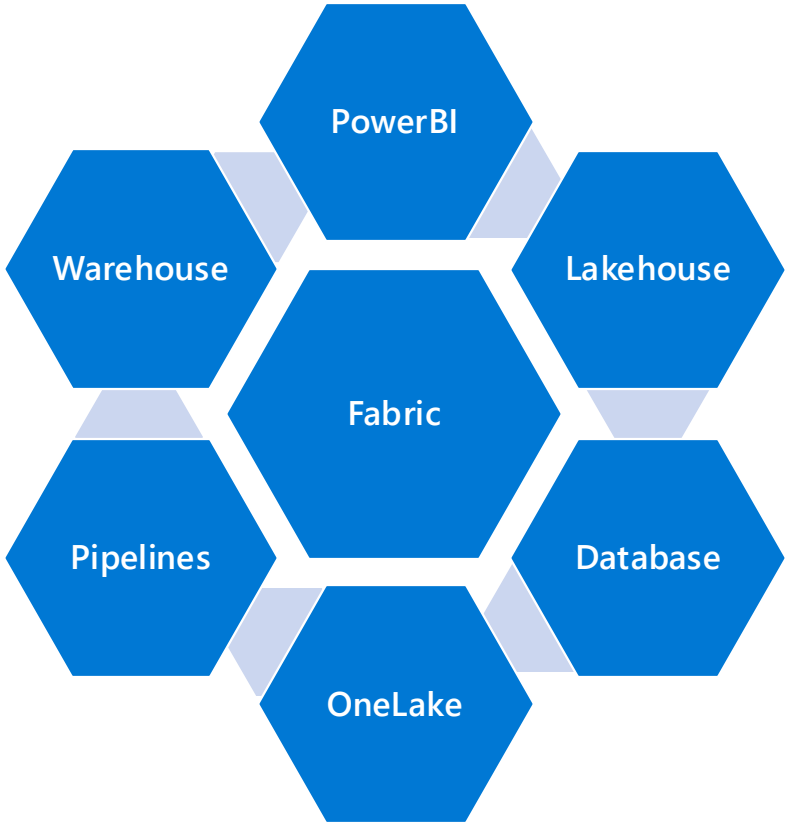


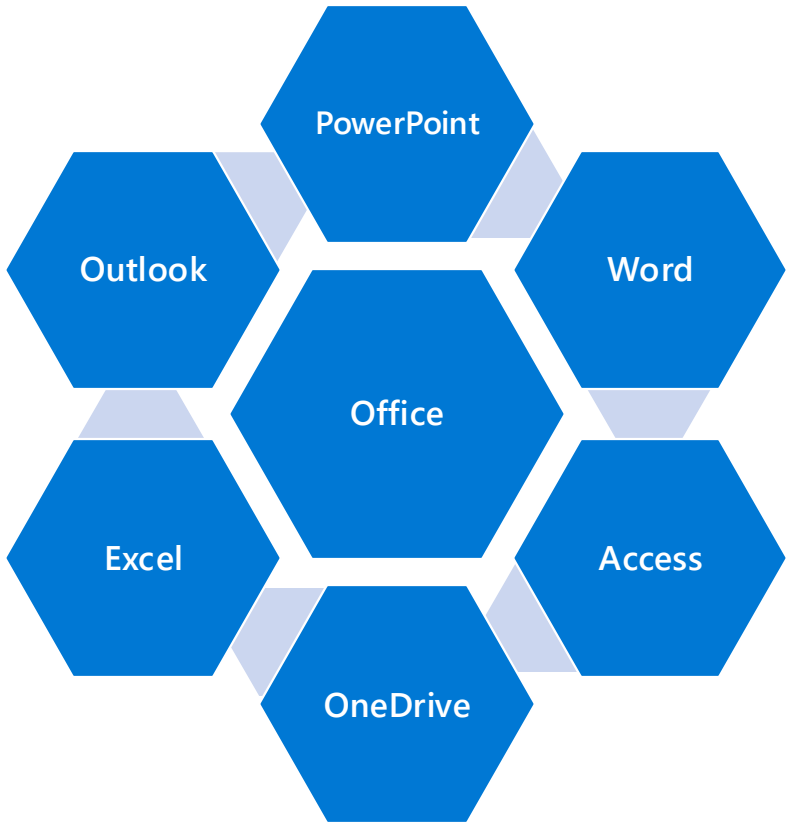
OneLake



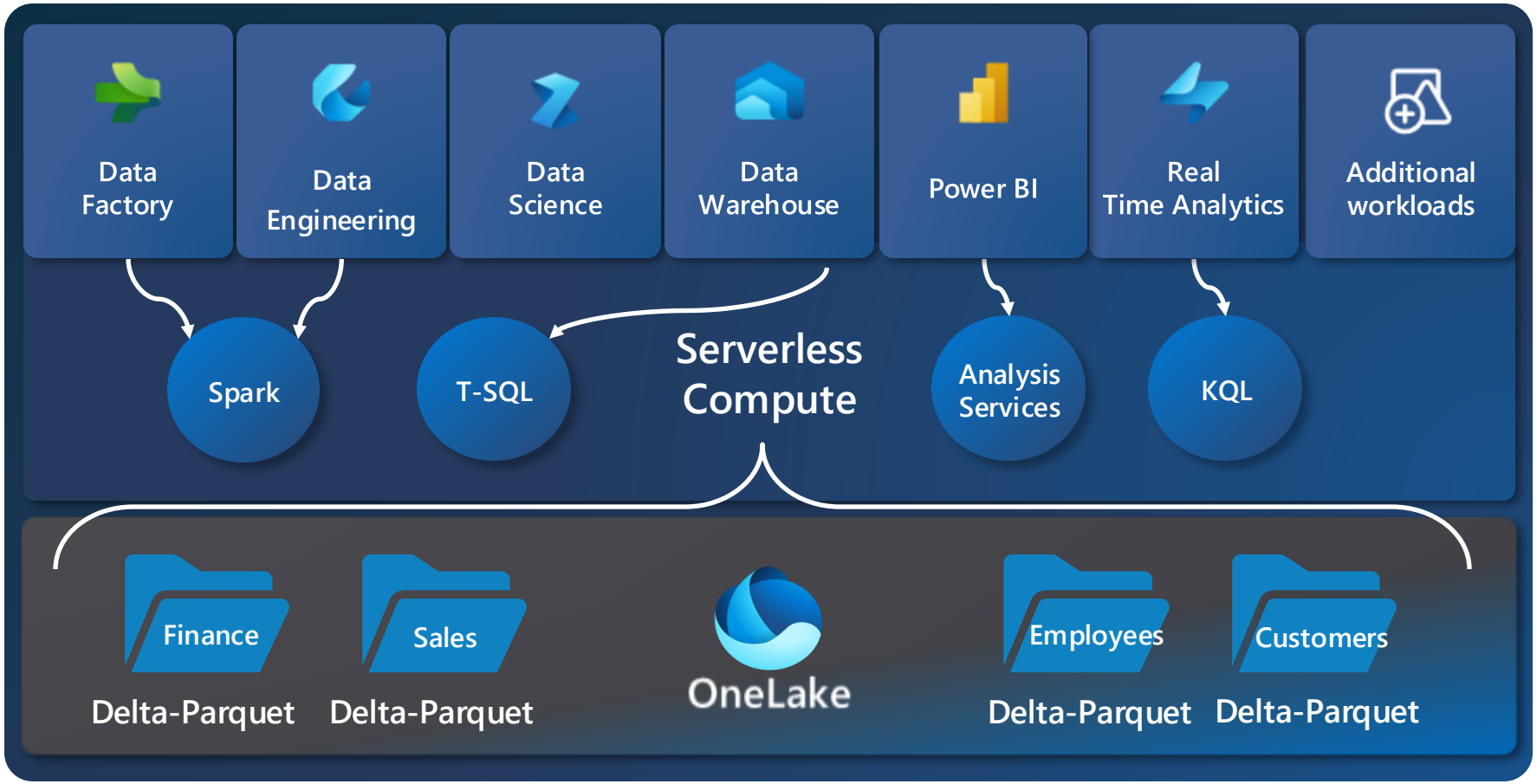
Microsoft Purview

No, really, what's Fabric?





Microsoft Fabric



How to get data into Fabric

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.



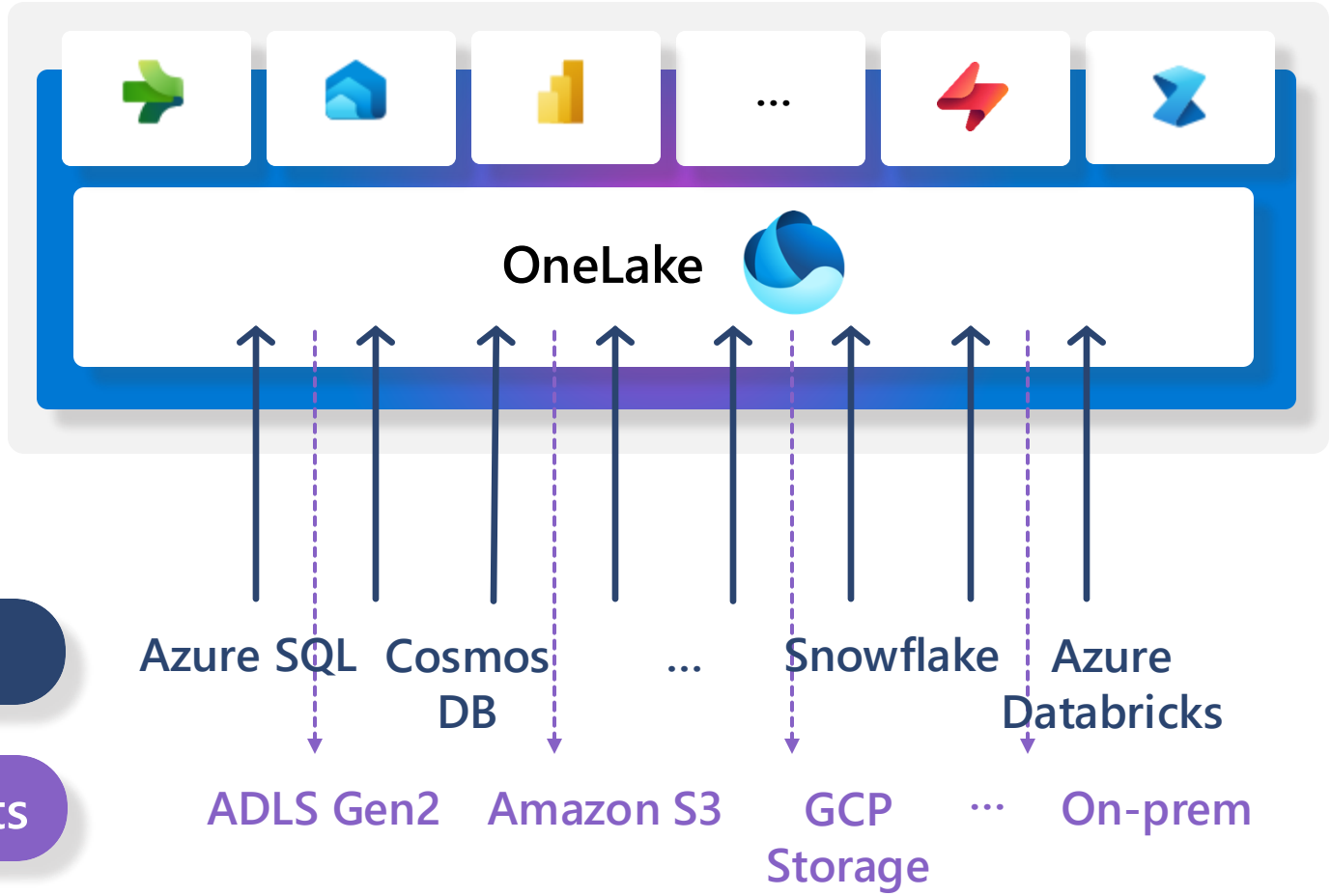
Shortcuts

Pointer or **"link" to files** in a storage location.

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



Data sources



Fabric Mirroring

OneLake Shortcuts

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

Ignite 2024

GA



Azure SQL Database

Ignite 2024

Preview



Azure SQL Managed Instance

Ignite 2024

Private Preview



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

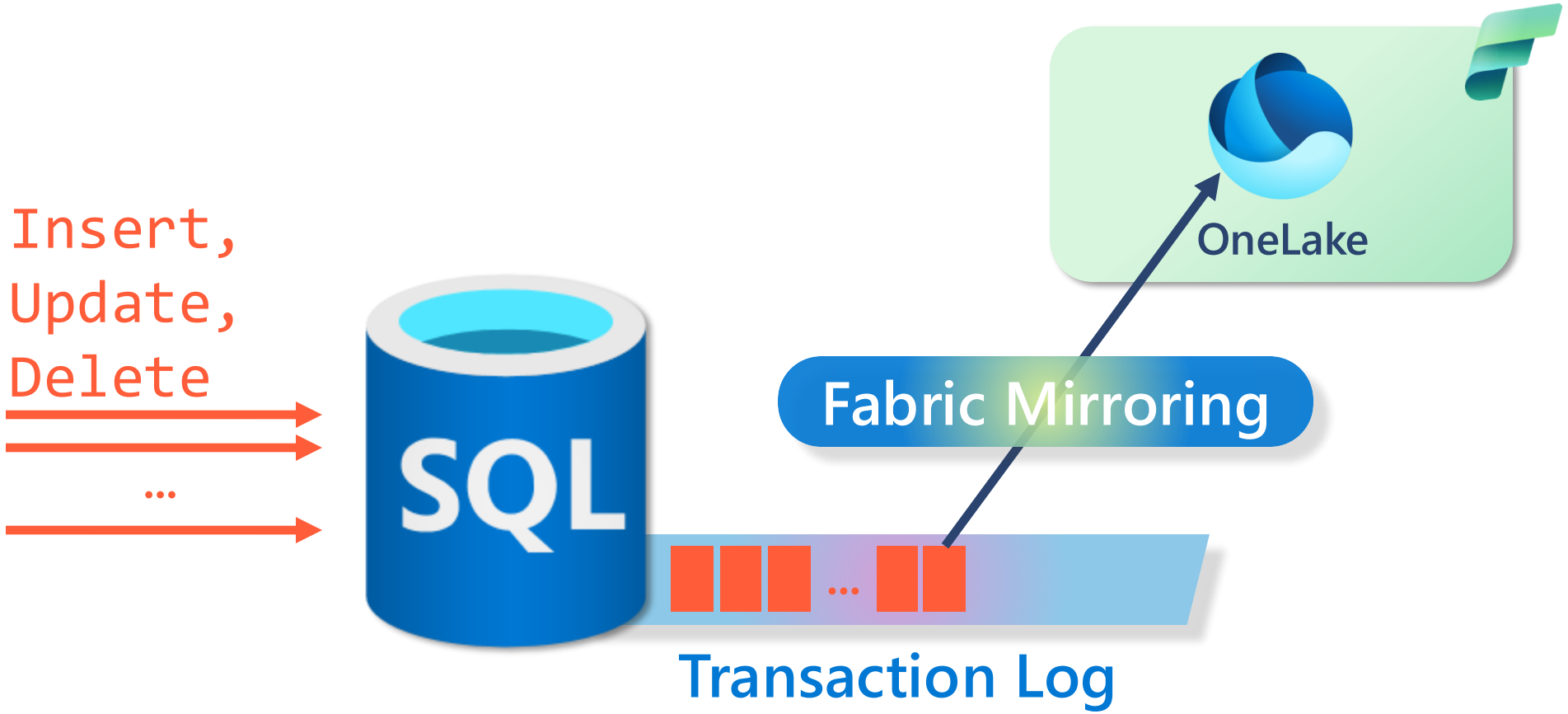
Failover Groups

Data integration

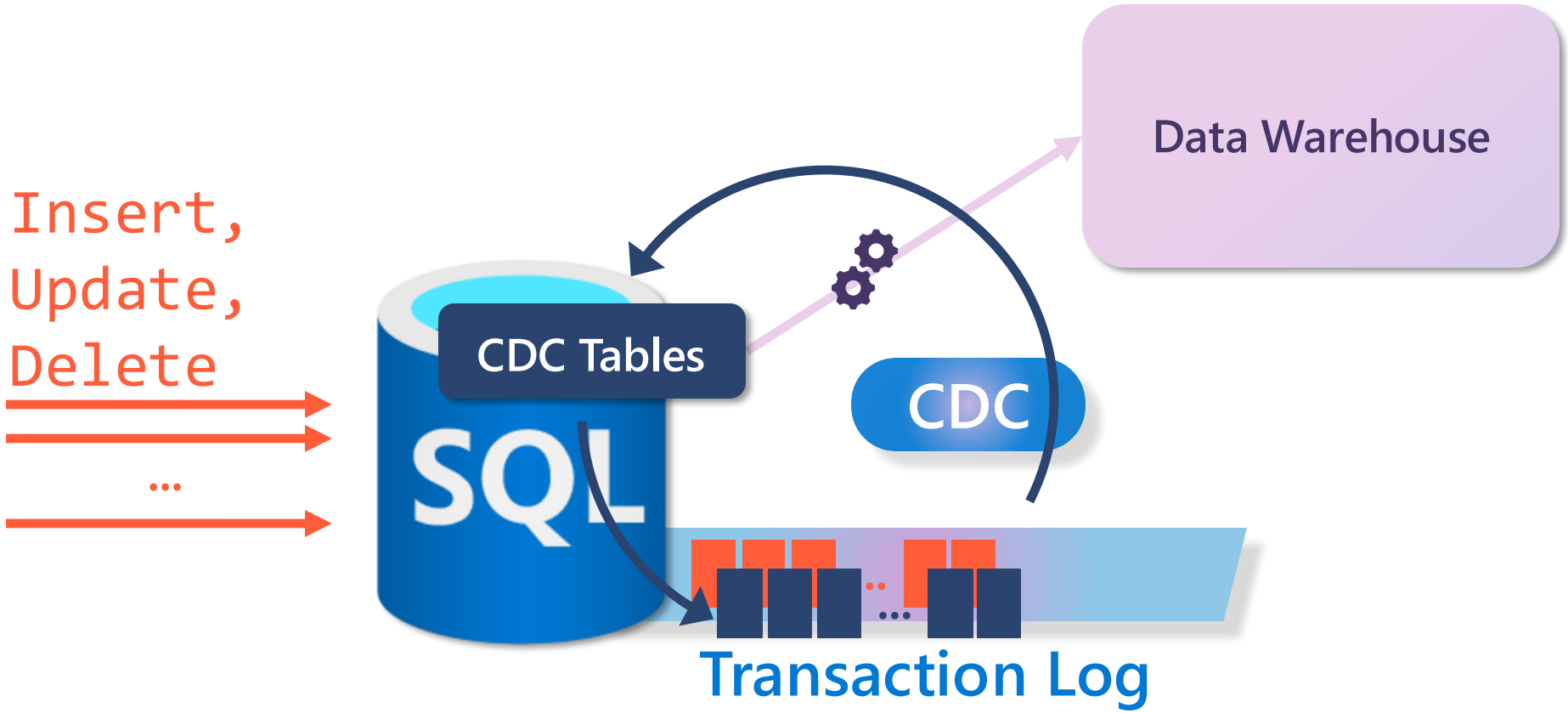
For various reasons and use cases, data from different sources and systems needs to be in the same report, warehouse or system.

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

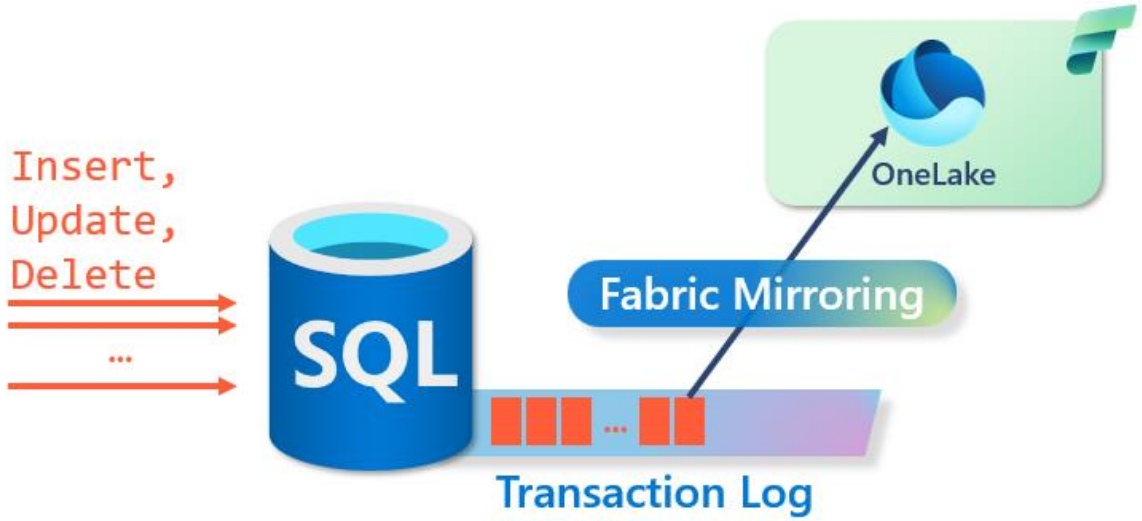
Azure SQL & SQL Server Fabric Mirroring

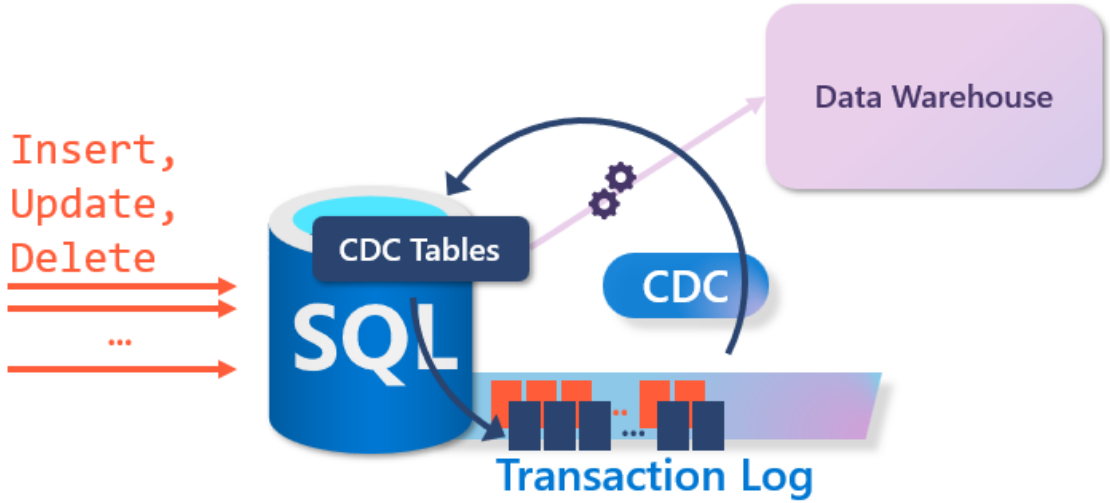


Alternatives: Change Data Capture (CDC)



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



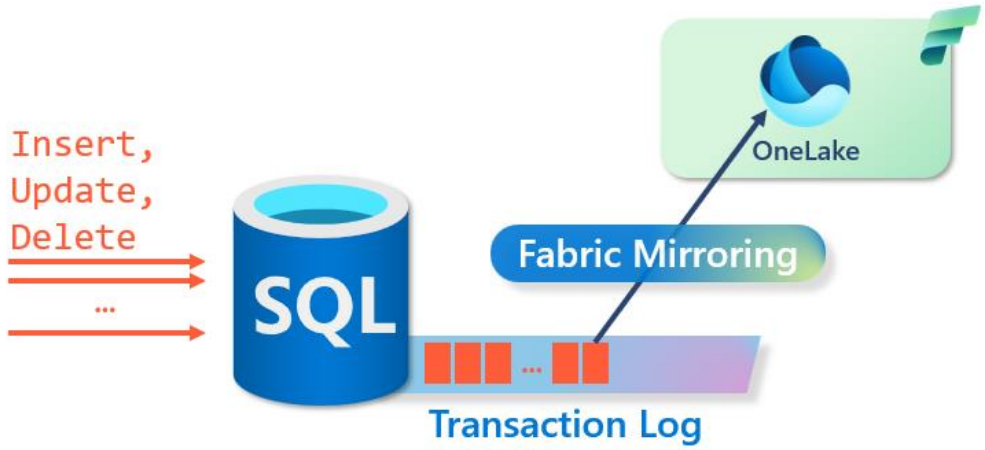


Fabric Mirroring

CDC

4. Mirroring supports add/drop/alter column

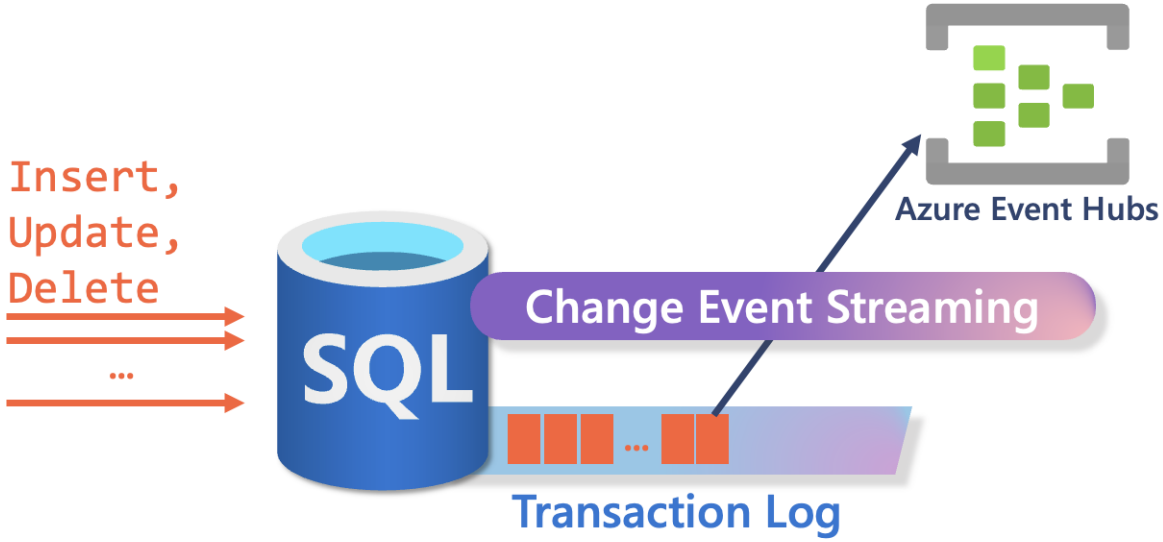
New!



Fabric Mirroring

Apply for private preview at

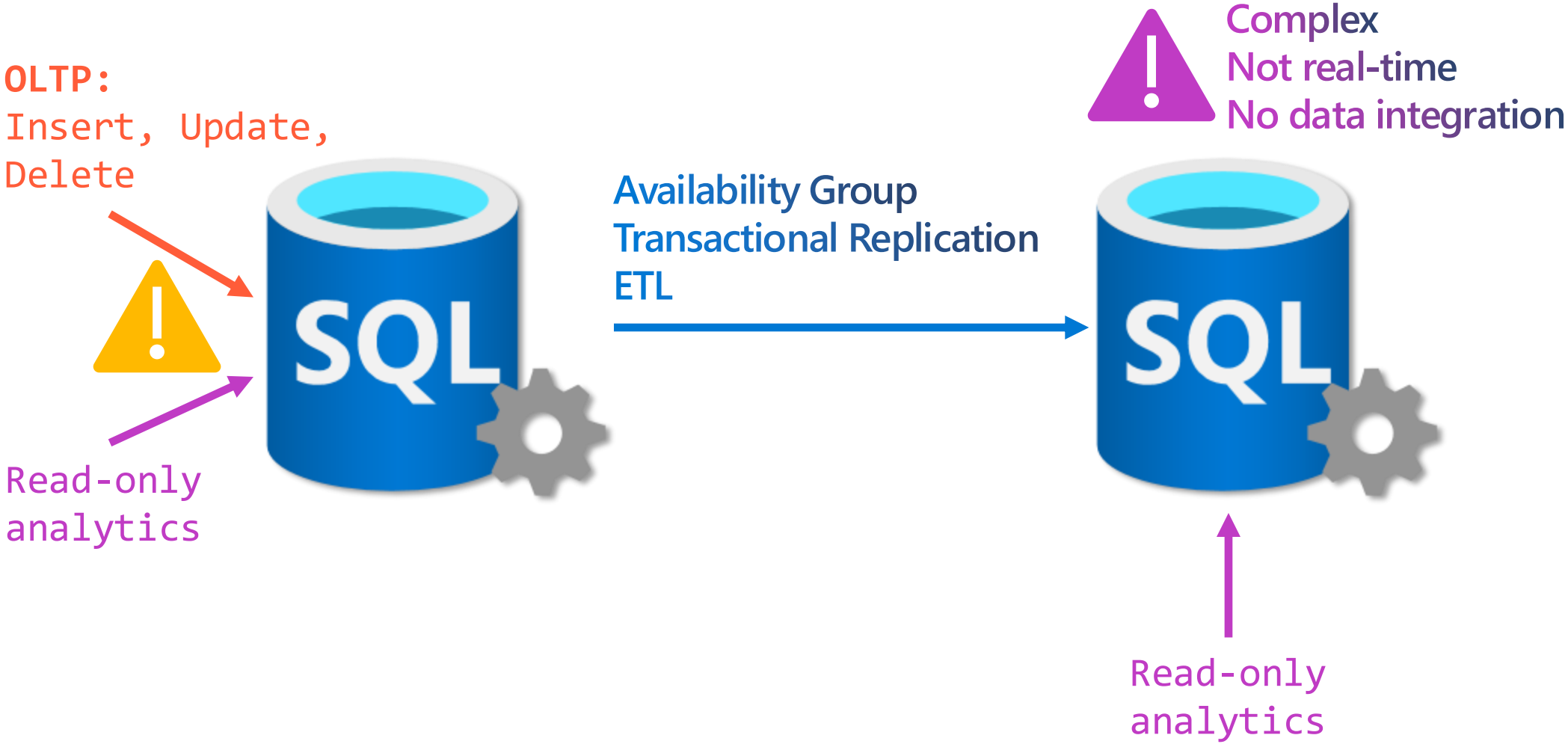
aka.ms/sql-ces



Change Event Streaming

Stream changes from SQL
directly into Azure Event Hubs.

Alternatives: AGs, Tran Repl, ETL



Microsoft | Fabric azuresqlfabricdemo

Search

14

azuresqlfabricdemo

Create app | Manage access | Workspace settings

Home
Workspaces
OneLake
Monitor
Real-Time
Workloads
azuresqlfabricdemo
...
Fabric

New item | New folder | Import

Filter by keyword | Filter



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

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



There's nothing here yet

Home
Workspaces
OneLake
Monitor
Real-Time
Workloads
azuresqlfabricdemo
SalesLT-2024
Fabric

azuresqlfabricdemo

Create deployment pipeline | Create app | Manage access | Workspace settings

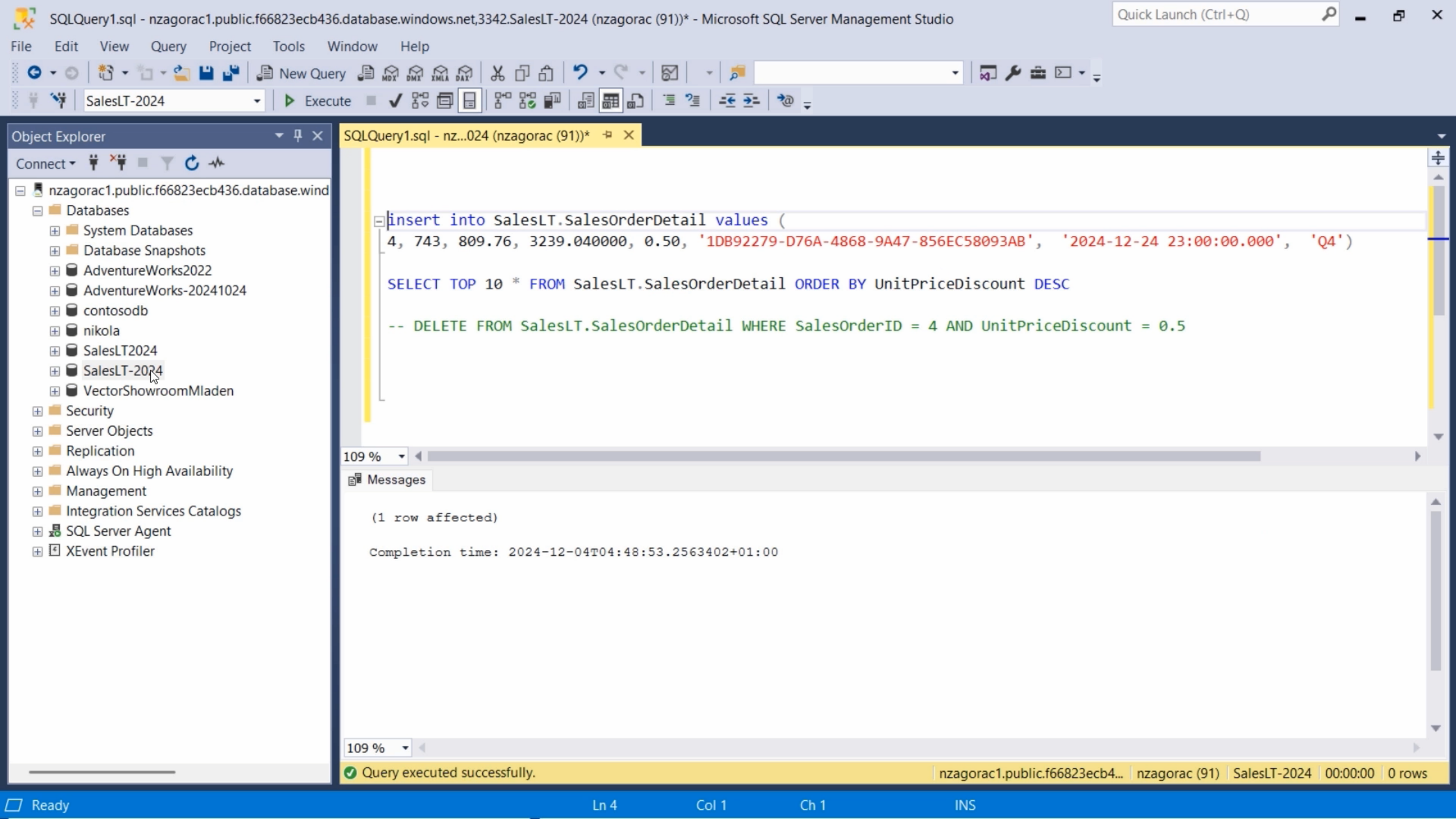
New item | New folder | Import | Filter by keyword | Filter

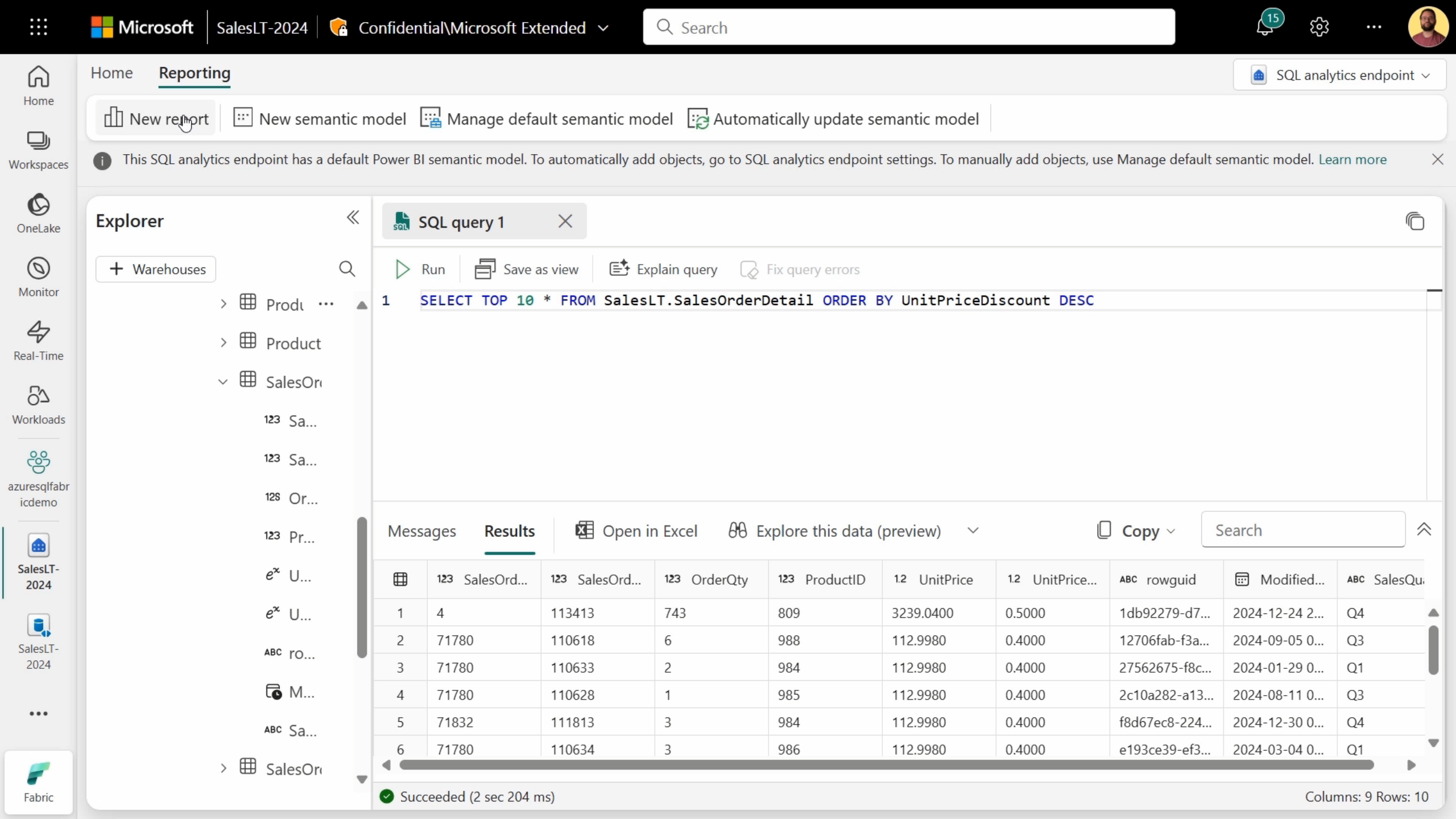


Choose from predesigned task flows or add a task to build one (preview)

Select from one of Microsoft's predesigned 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
New Query
SalesLT-2024
Execute
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
SQLQuery1.sql - nz...024 (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.f66823ecb4...
nzagorac (91)
SalesLT-2024
00:00:00
0 rows
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
Product
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
SalesOrd... SalesOrd... OrderQty ProductID UnitPrice UnitPrice... rowguid Modified... 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
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Workspaces
OneLake
Monitor
Real-Time
Workloads
azuresqlfabricdemo
SalesLT-2024
SalesLT-2024
Fabric

Fabric workloads 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

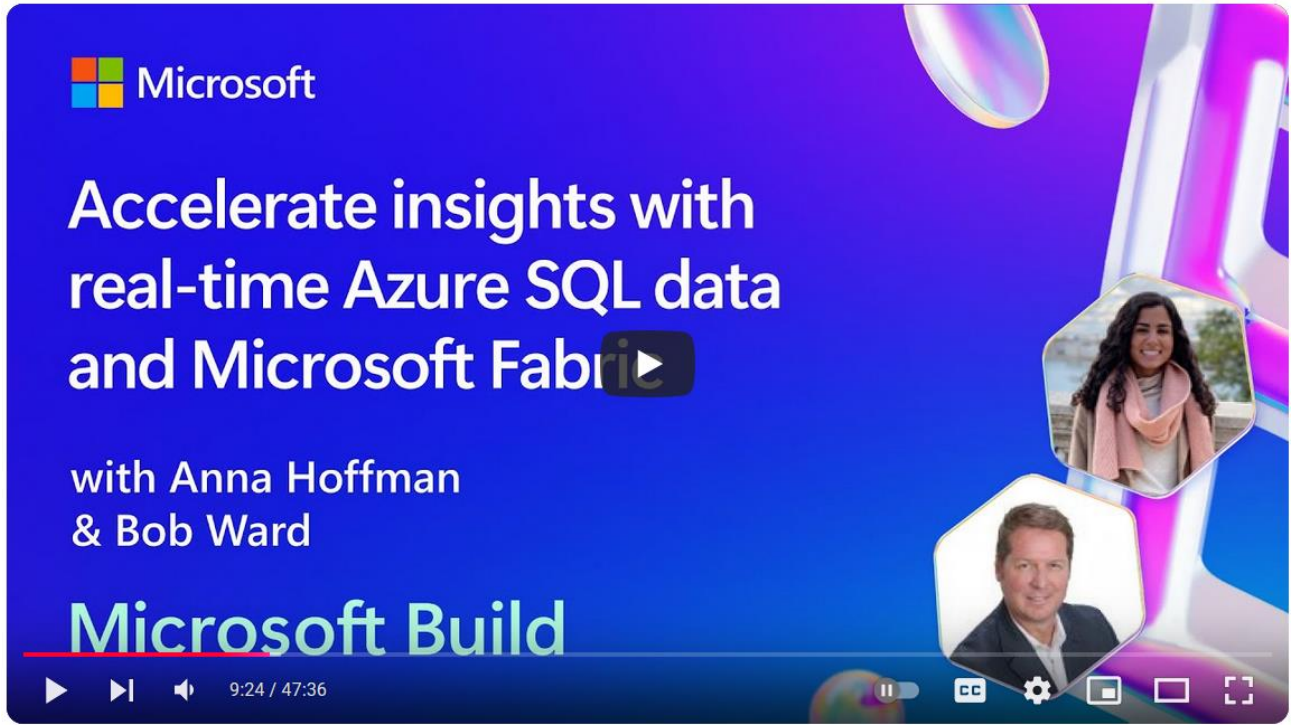
Discover insights from your streaming data. Quickly ingest, index, and partition any data source or format, then query the data and create visualizations. You can also create alerts to flag anomalies.

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.



aka.ms/ig24-sqlfab

What's coming?

APIs for mirroring management.

More DDL operations: **truncate table**.

Mirror tables with **no primary keys**.

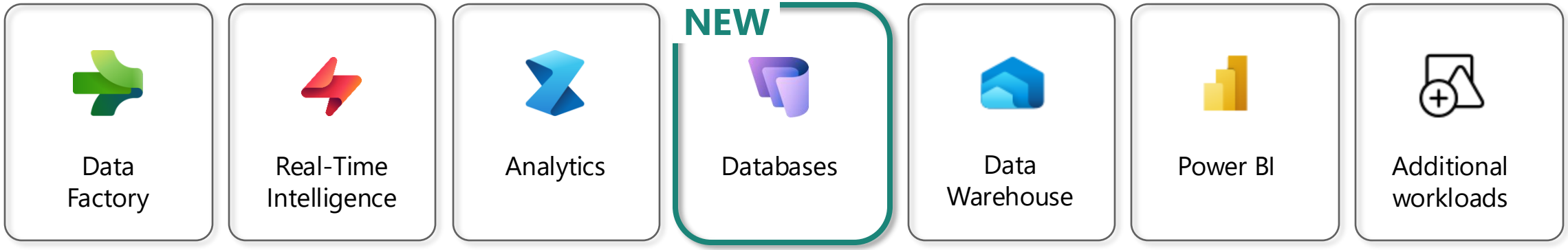
Additional **datatypes**.

...and more!





Databases in Microsoft Fabric



SQL database in Fabric

Build AI apps faster and easier than ever



Simple



Autonomous and secure



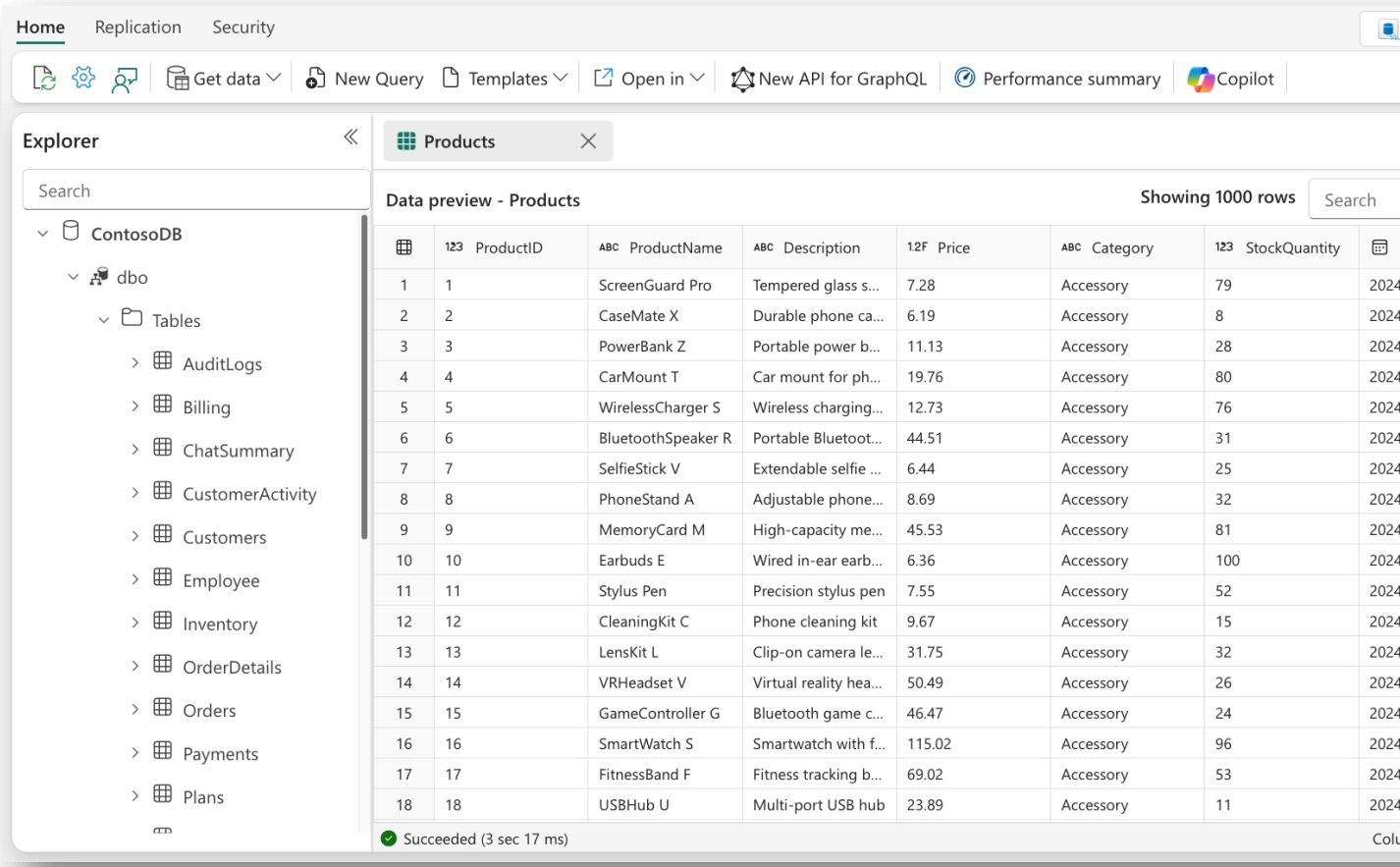
Optimized for AI

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**



Autonomous capabilities manage your workloads

Challenge

Making the right choices and managing databases is complex.

Solution

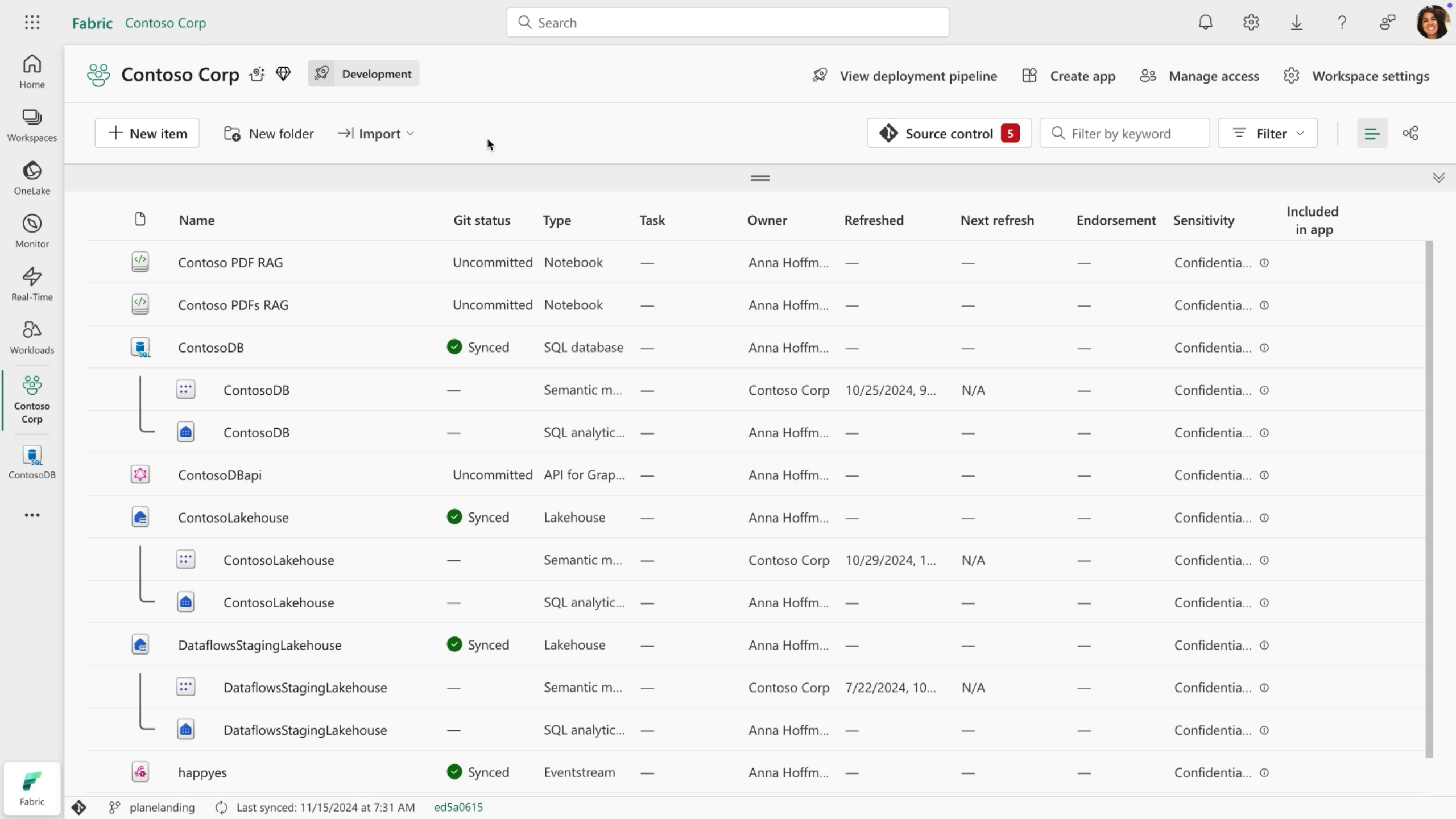
SQL database in Fabric enables you to get the best security, availability, and performance configurations

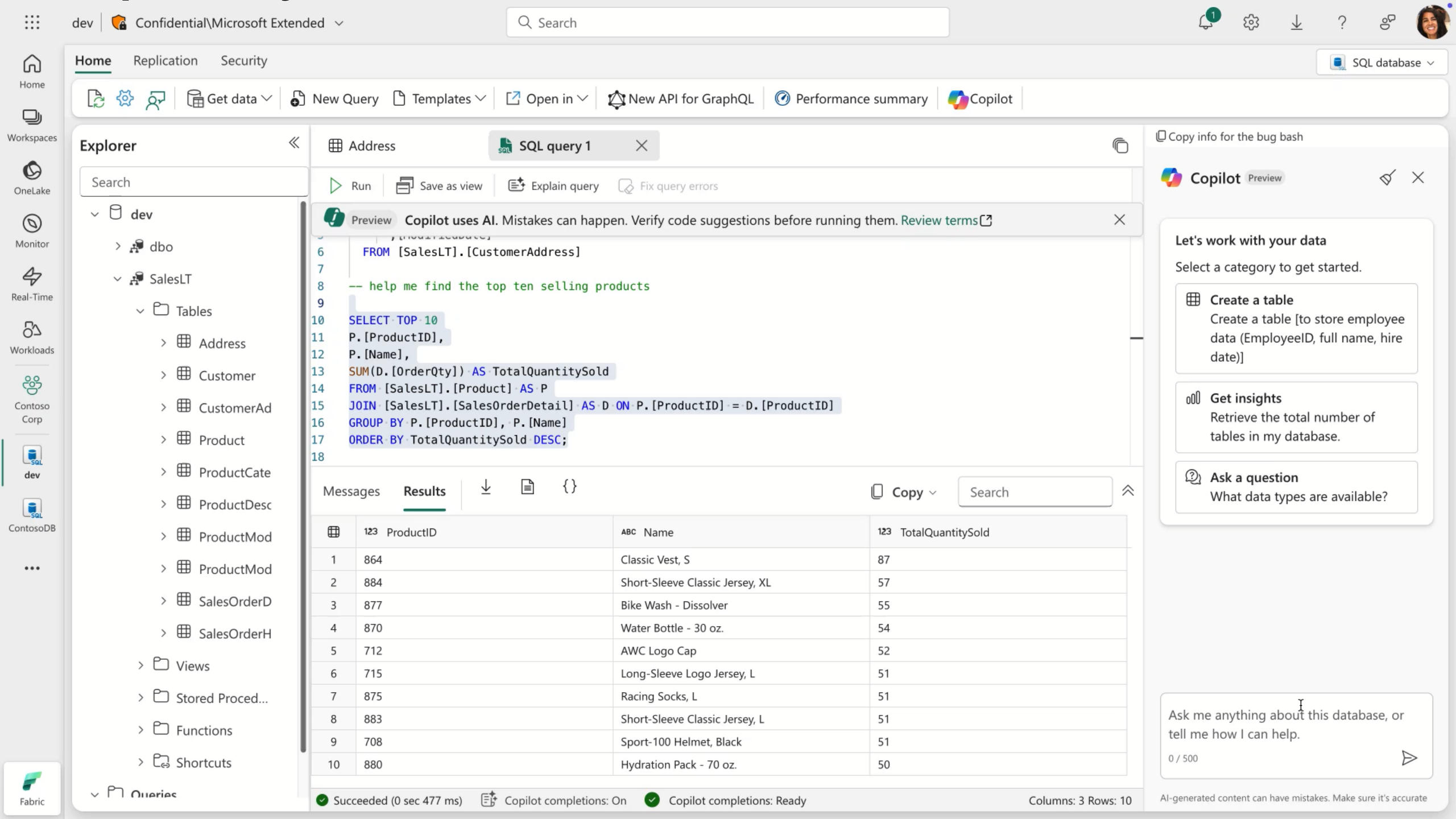
Secure by default

Auto-HA with Zone Redundancy

Auto-scaling and auto-optimized



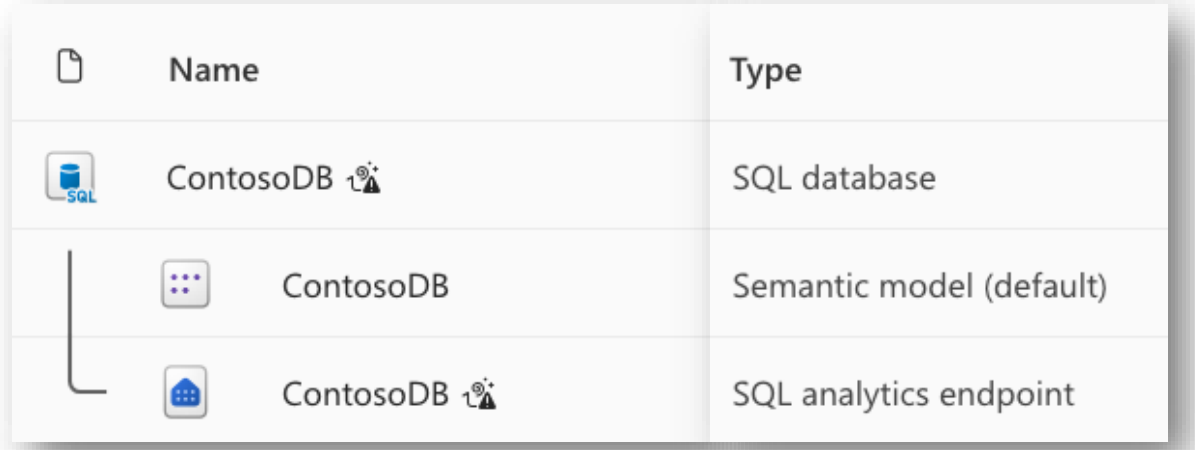

Fabric Contoso Corp
Search
Contoso Corp
Development
View deployment pipeline
Create app
Manage access
Workspace settings
New item
New folder
Import
Source control 5
Filter by keyword
Filter
Home
Workspaces
OneLake
Monitor
Real-Time
Workloads
Contoso Corp
ContosoDB
Fabric
Name
Git status
Type
Task
Owner
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

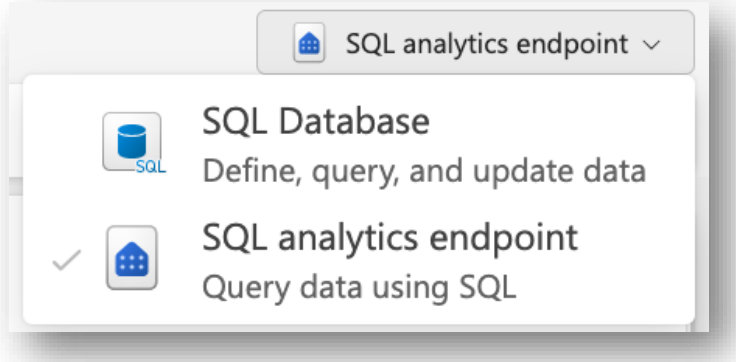

dev
Confidential\Microsoft Extended
Search
Home
Replication
Security
SQL database
Get data
New Query
Templates
Open in
New API for GraphQL
Performance summary
Copilot
Explorer
Search
dev
dbo
SalesLT
Tables
Address
Customer
CustomerAd
Product
ProductCate
ProductDesc
ProductMod
ProductMod
SalesOrderD
SalesOrderH
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
ProductID
Name
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
Copy info for the bug bash
Copilot Preview
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





Build new AI apps with SQL database in Fabric

Vector datatype and RAG support

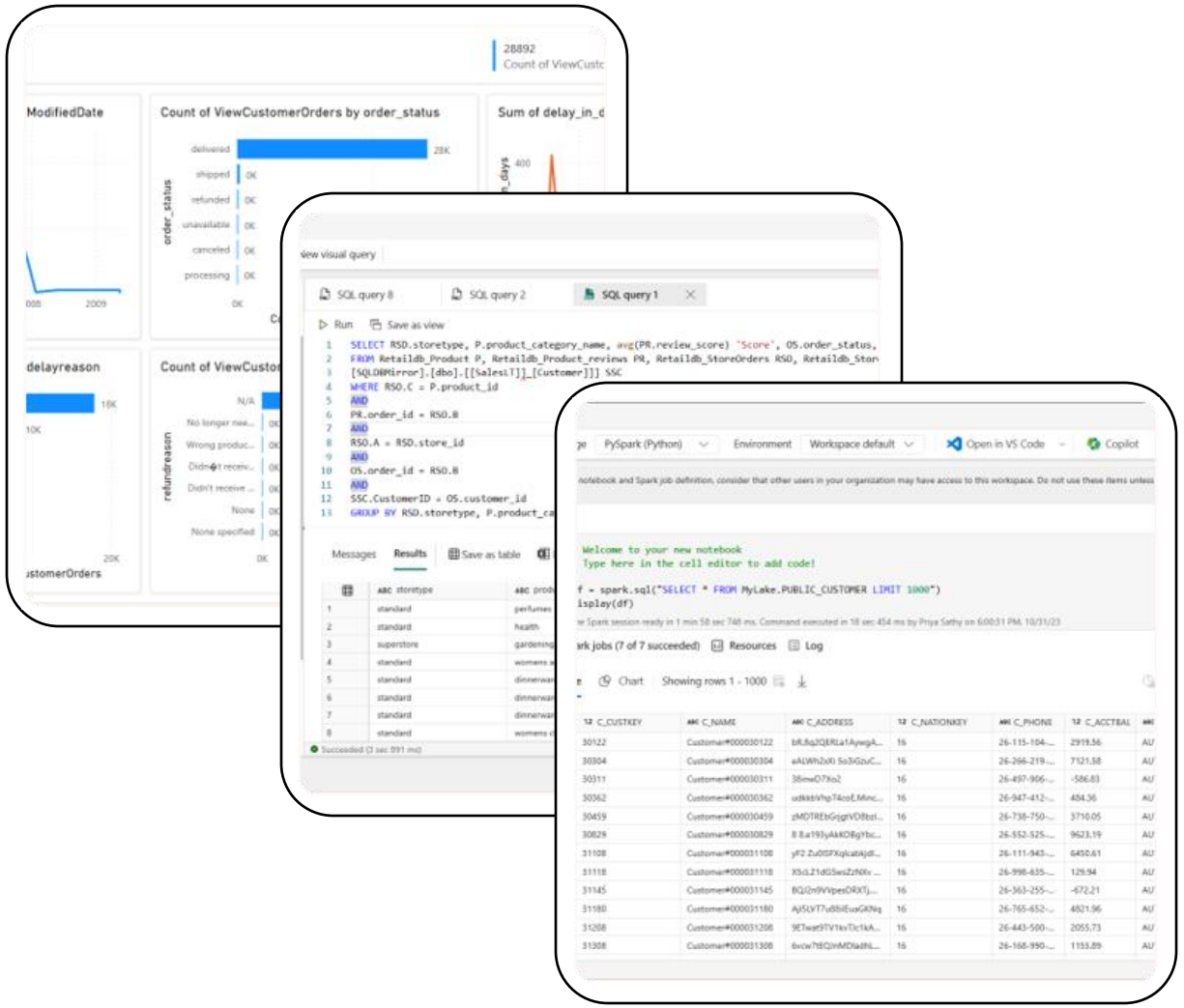
Integration with Azure AI services and Azure AI Foundry.

Cross-database querying with multi-cloud shortcuts

Data Science experiences with notebooks

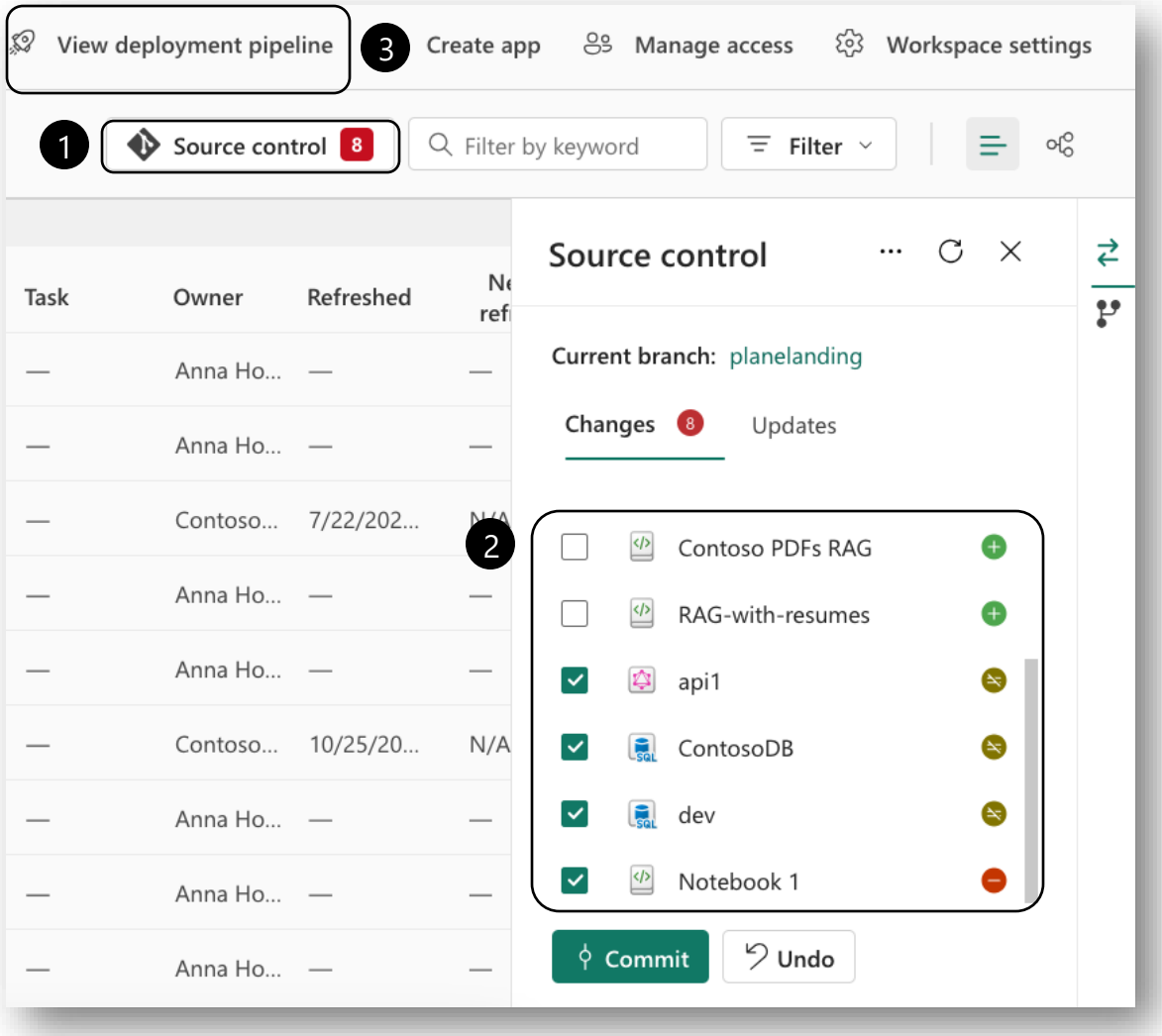
Integration with AI skills (coming soon)

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



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**

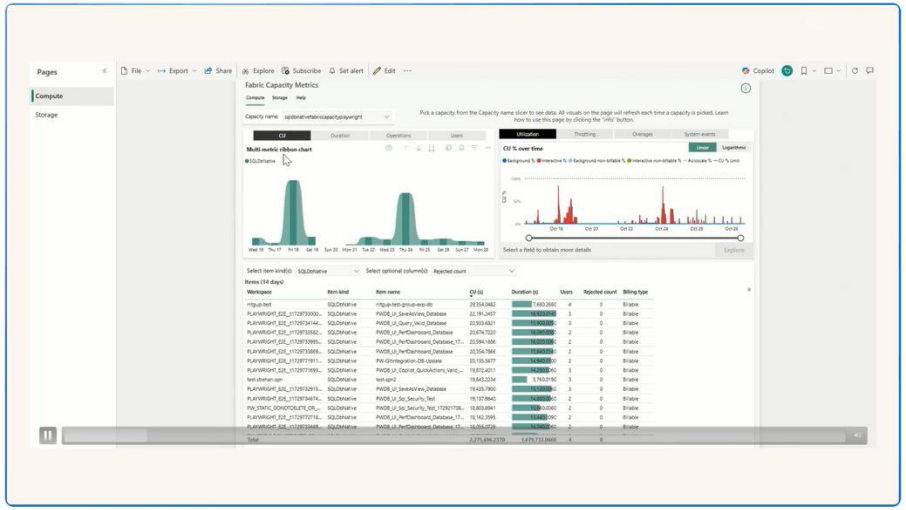
aka.ms/sqldb-fabricdb

SQL database in Fabric billing- started on Feb 1st

Database backups billing
will start on April 1st.

Learn more:
aka.ms/sqldb-fabric

Explainer video for billing
aka.ms/sqldbfab-billingyt

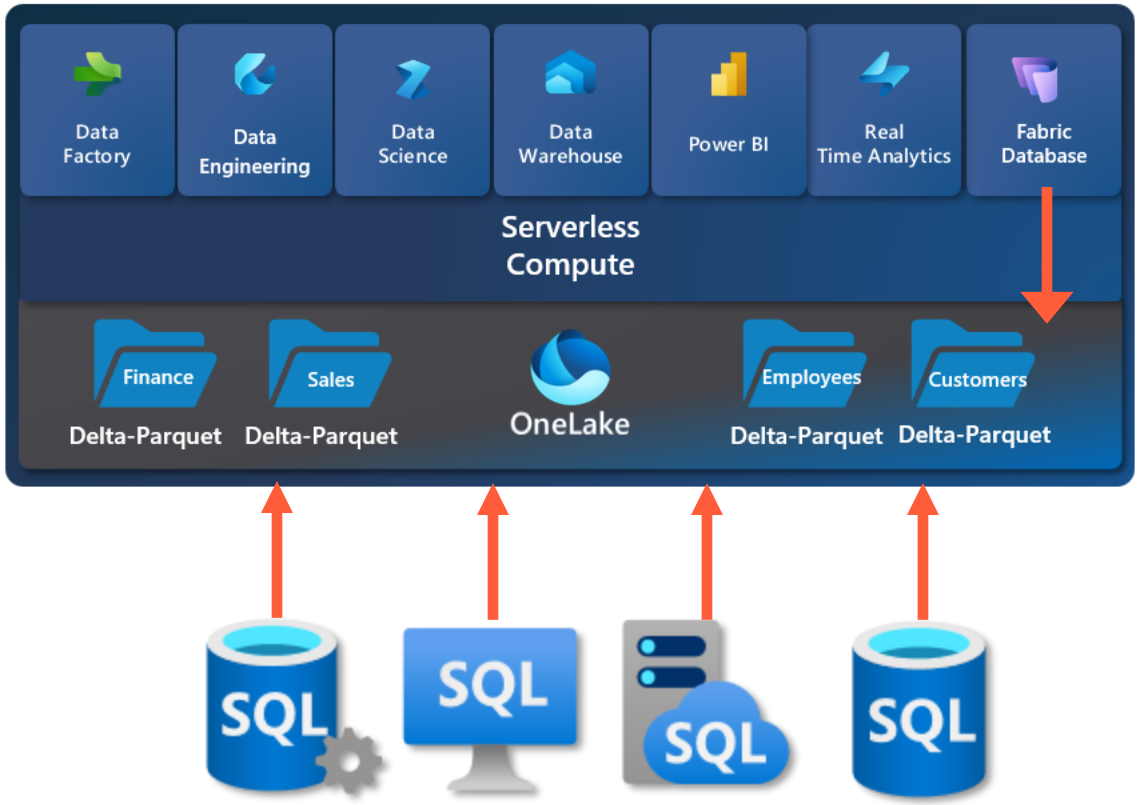


Strategic capacity monitoring and cost analysis for SQL database in Fabric | Data Exposed

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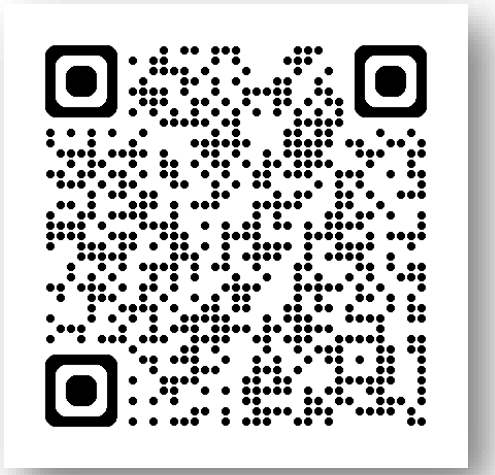
Summary

Whether you're running your SQL workloads on-premises, in Azure or Fabric – Mirroring gets your operational data into OneLake, so it can be used it in various analytics scenarios.



Free offers. Get started today!

Free Azure SQL



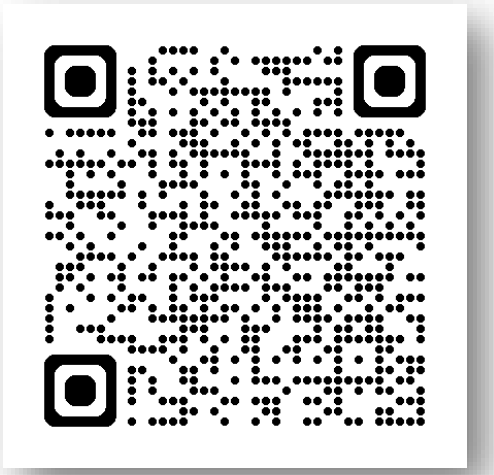
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aka.ms/sqlmi-free

aka.ms/azuresqldocs

aka.ms/LearnAzureSQL

Free Microsoft Fabric

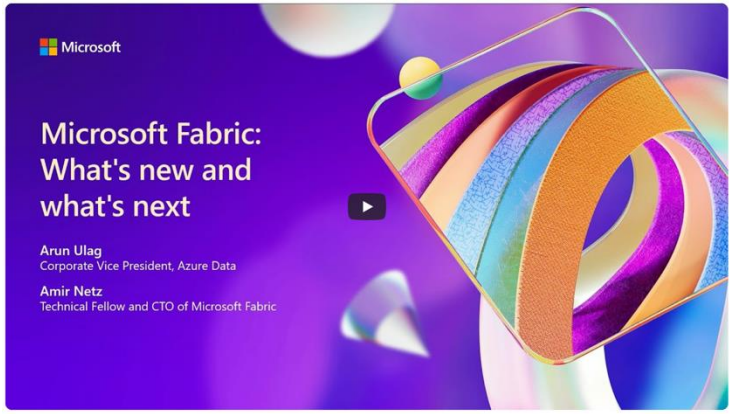


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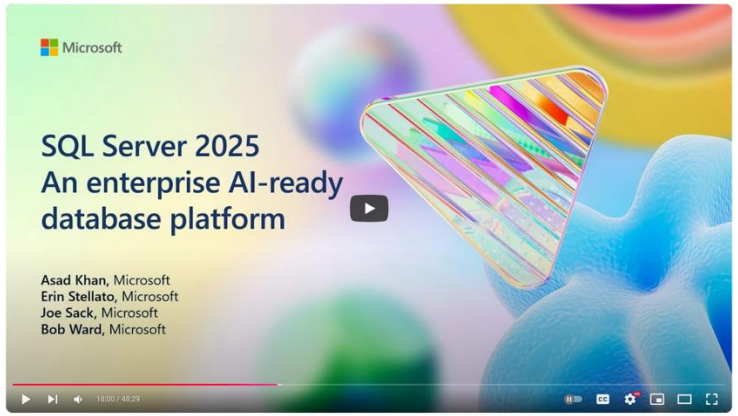
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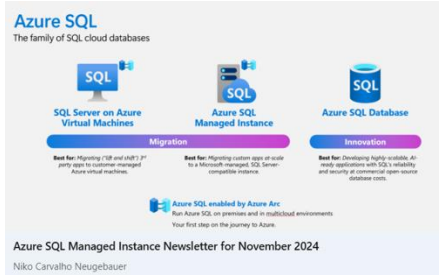
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Thank you!



Sasa Popovic
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Feedback is important!

