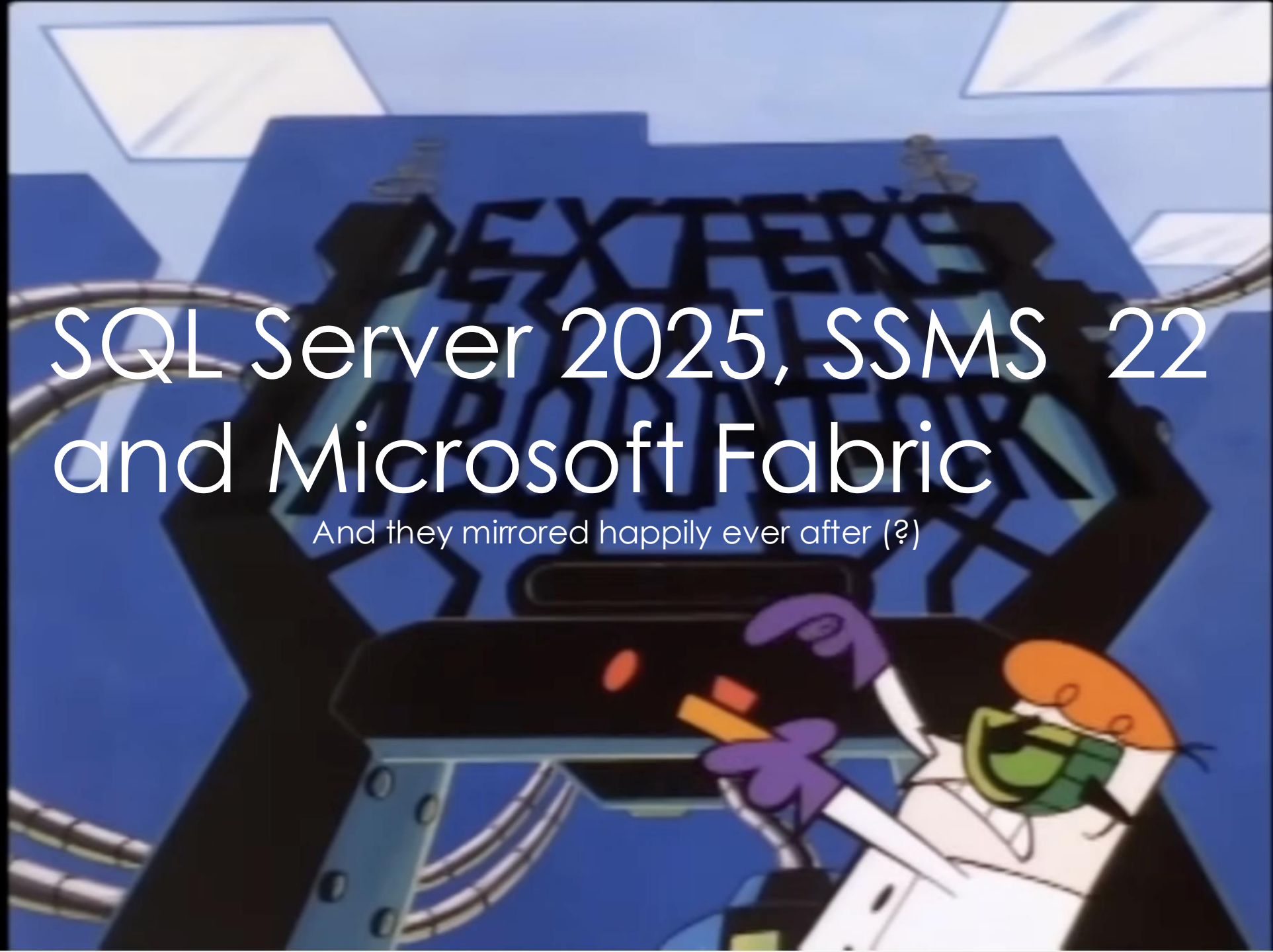


SQL Server 2025, SSMS 22 and Microsoft Fabric

And they mirrored happily ever after (?)

Thank you sponsors!

























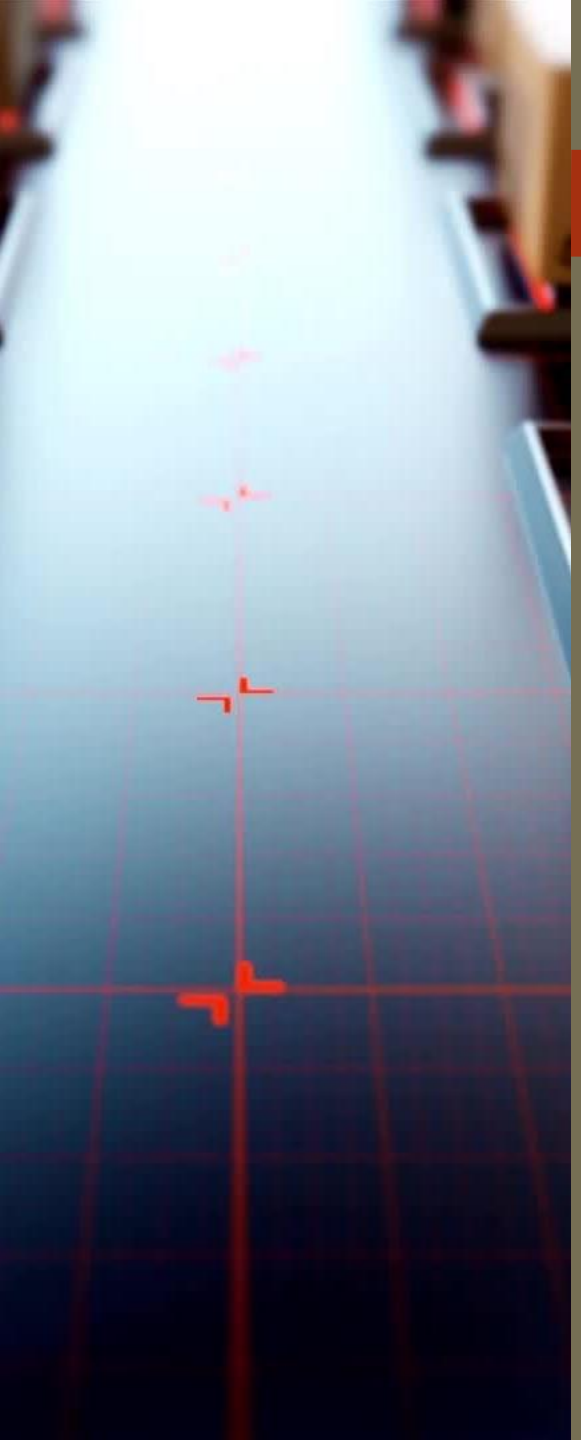
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Introduction to mirroring

And other ways of SQL Server data replication

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ITS BEEN 84 YEARS.



Choices

- High Availability and Disaster Recovery
- Log Shipping
- Managed Instance Link
- Replication
- Change Data Capture
- Change Tracking

Wait a minute, where's the mirroring gone?

- Deprecated since 2012

- Confusing naming alert!
  - Fabric Mirroring != SQL Mirroring
  - It's called replication in Fabric, but it's not SQL Replication
  - SQL 2016 – 2022: CDC, 2025: change event streaming and change feed



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Reitse Eskens

Technical Consultant

Axians Business Analytics NL



Reitse.Eskens@axians.com

/in/reitseeskens

https://sqlreitse.com

@2meterDBA

axians

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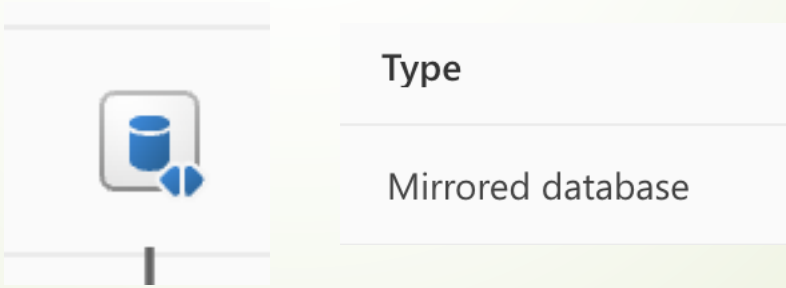
Microsoft CERTIFIED TRAINER MCT

Fabric Featured Partner Microsoft

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New kid on the block

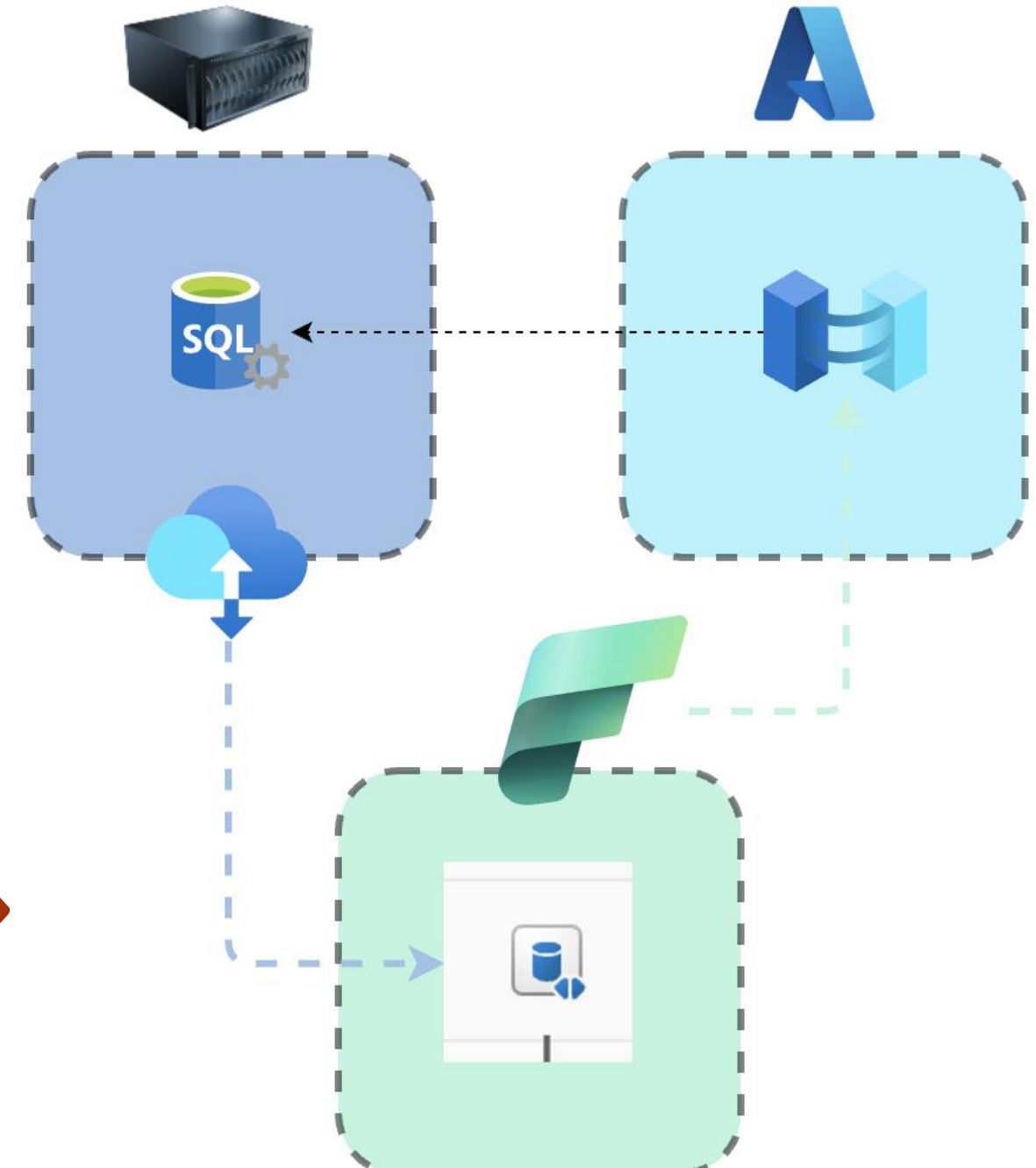
- Fabric mirroring
- Integrates seamlessly into Microsoft Fabric
- Only from read-write databases



The moving parts

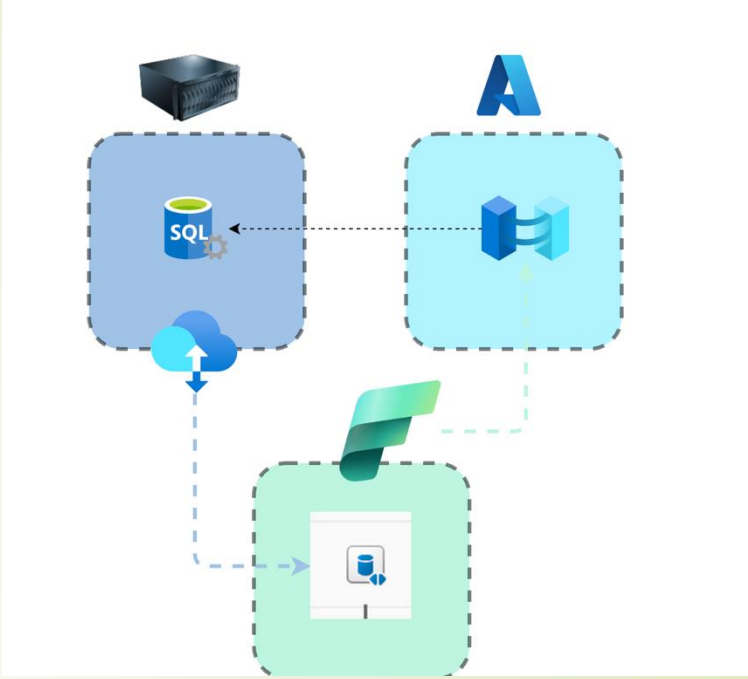
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The Architecture



Moving parts

- SQL Server
- Azure Arc
- On-Premises Data Gateway (OPDGW)
- Fabric Mirrored Database



The main setup





SQL 2016-2022

- Create an account with sufficient privileges (a member of the sysadmin role)
- Enable CDC
- Install the On-Premises Data Gateway (OPDG)
- Create a connection from Fabric to the database
- Create your mirrored database

- Once CDC is set up, enabling Mirroring only requires CONNECT at the server level, and SELECT and CONNECT permissions at the database level to replicate the data.



SQL 2025

- In Azure, start the Azure Arc for SQL process
- Run the PowerShell Script on the server hosting SQL Server
- This creates an Azure Arc resource for the server and the instance(s)
- Enable the System Assigned Managed Identity on the server and the database(!)
- Add the SAMI to the workspace
- Create a connection from Fabric to the database, using the OPDG
- Create your mirrored database resource



Checks

- Fabric portal is a bit, minimal
- SQL Server?
- The procedures are a bit hidden
  - Synpapse link?
  - Some are more hidden than others

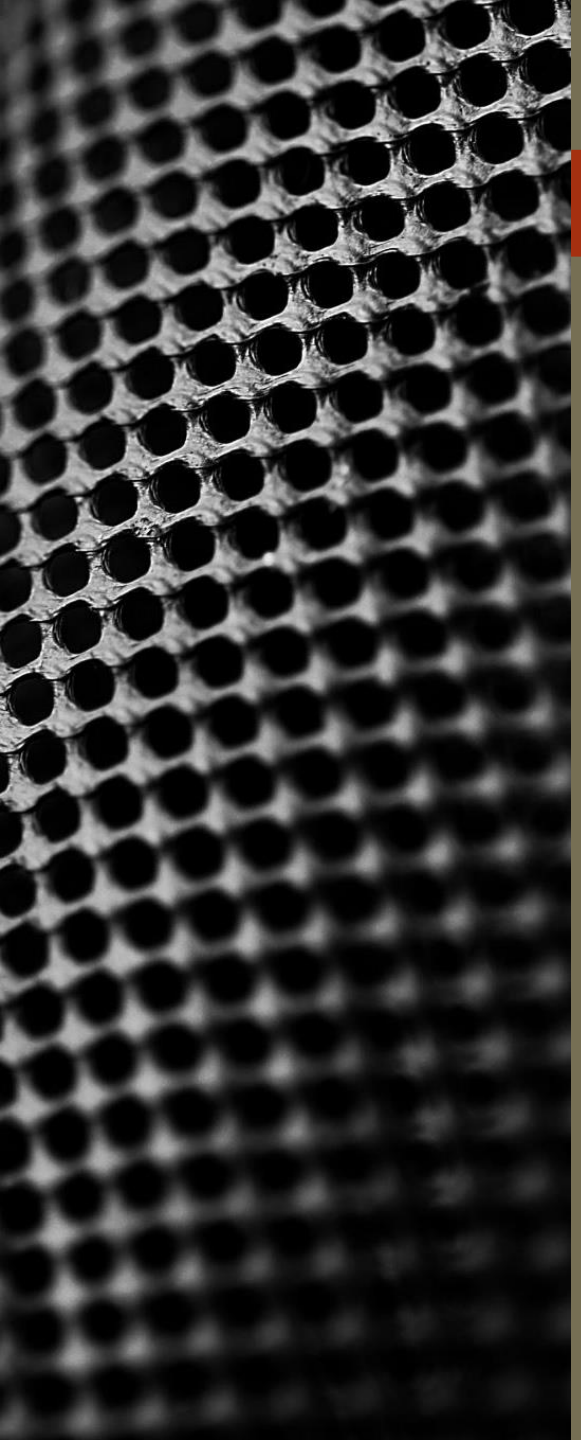
The initial process

- Initiate from Fabric
- SQL Server sends snapshot to Fabric landing zone
- Fabric creates parquet with delta
- Database is mirrored



The update process

- Every 5 seconds, SQL Server checks on changes in the log file
- Changes are pushed to Fabric Landing zone (CSV)
- Fabric reads the CSV and creates the new parquet files
- Files are added to the delta, data is available



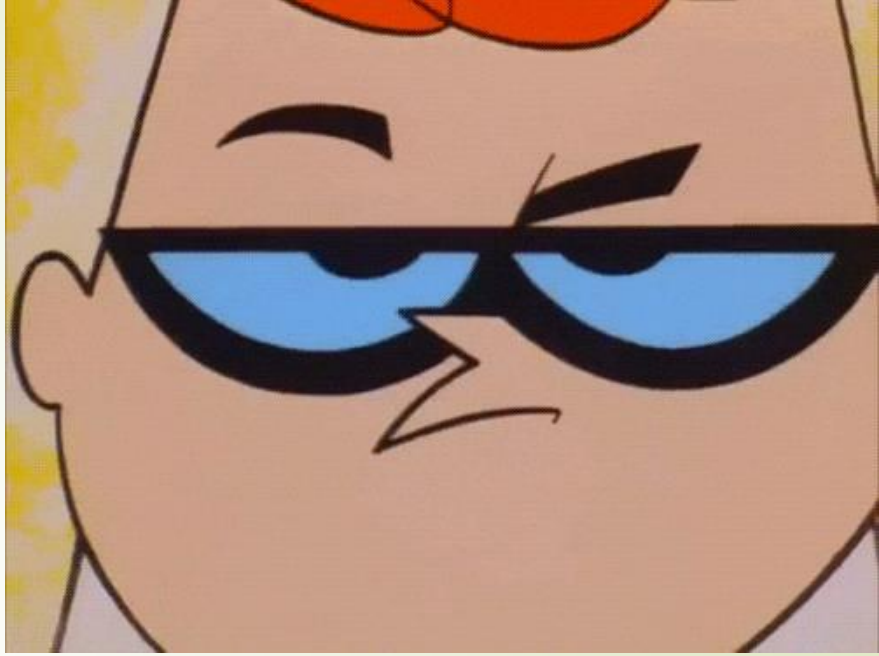
The cost

- SQL Server
  - CPU Cycles (single threaded)
  - Memory
- Network bandwidth
- Possible Fabric storage
- Fabric capacity when **reading** from the mirrored database



Complexity

- Arc
  - Specific installation requirements
  - Azure domain admins
- SQL Server
  - Highly privileged roles
  - CISO will have questions (that can be answered)



Security

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- To set-up, highly privileged roles necessary
  - Owner on the Azure subscription
  - Administrator on the Fabric Workspace
  - Admin permission on the Server
- To maintain, someone needs these roles
- The account used to connect to the database determines the data available

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- create login mirrordemo with password = 'P@ssw0rd';
- create user mirrordemo for login mirrordemo;
- --Run in the user database

- GRANT SELECT, ALTER ANY EXTERNAL MIRROR, VIEW DATABASE PERFORMANCE STATE, VIEW DATABASE SECURITY STATE TO mirrordemo;

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Demo

Let's do this live (Sure? Sure…)



Seeing the moving parts

As, hopefully, seen in the demos

https://www.youtube.com/watch?v=Z_kViNEHHyw



SQL Server

- Extended Events
- Sys.dm_exec_process
- Resource governor to limit the impact on your running system
- DMV's

Microsoft Fabric

- OneLake Explorer
- Fabric monitor



Limitations

https://learn.microsoft.com/en-us/fabric/mirroring/sql-server-limitations?wt.mc_id=MVP_311370

When it breaks



Restart from Fabric

- It will create a new snapshot
- Increments will be based in that snapshot

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Restart from SQL?

- It might not be the best idea
- The system stored procedures are available, but you really have to know what you're doing
- Make sure the full back-ups are running regularly to prevent a full log file
  - Or worse, disk
    - … and don't put that one on the C:\ drive

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Alternatives



Different ways to load data into Fabric

- Copy Job
- Copy data activity
- Dataflow Gen2 (CI/CD enabled)
- DAB + Notebooks
- DBT or other external toolsets

Looking in the mirror



Personal, and professional, opinion

- Try it out on your dev/test environment
- Check the load, and decide if it's ok on your system
- Make an honest comparison with the alternatives
  - External access
  - Less predictable, probably heavier loads
  - Higher Fabric costs



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Slides

Feedback

SQL 2025, SSMS 22 and Fabric. And they mirrored happily ever after?



THANK YOU!