Change your Skills

from an on-premise DBA to a cloud DBA

Thank you to our Sponsor

Explore

Everything our User Group Has To Offer

Get involved in our Meetup

https://bit.ly/3auvRnD

Follow our page on Facebook

https://bit.ly/2P9sqLy

Join the conversation on our Facebook group

https://bit.ly/2QqAWX4

Follow our Videos on Youtube

https://bit.ly/3n8l5bP

Björn Peters

Kramer&Crew
Senior Consultant Microsoft Data-Platform

SQL Server since version 6.5
Azure Meetup Hamburg Organizer
PASS Deutschland e.V. Member
Volunteer, Speaker, MVP
Father, Husband, Snowboarder, Cyclist, Geek

www.sql-aus-hamburg.de
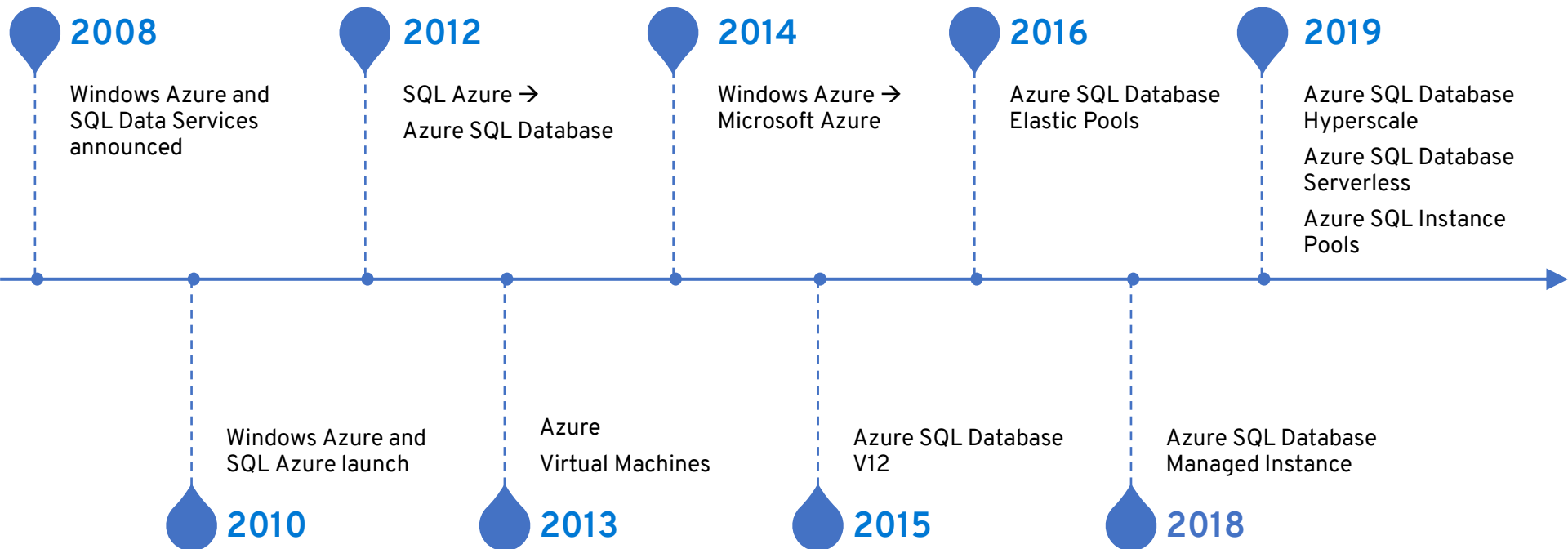
Nothing special
No Differences

Just a SQL Server ;-)

Agenda

- **Introduction to SQL (Server) on Azure**
- **Deploy & Configure**
- **Security**
- **Performance & Availability**
- **Learning & Certification**

Malta
Microsoft Data Platform
User Group

Introduction to Azure SQL

2008

Windows Azure and
SQL Data Services
announced

2012

SQL Azure →
Azure SQL Database

2014

Windows Azure →
Microsoft Azure

2016

Azure SQL Database
Elastic Pools

2019

Azure SQL Database
Hyperscale

Azure SQL Database
Serverless

Azure SQL Instance
Pools

Windows Azure and
SQL Azure launch

2010

Azure
Virtual Machines

2013

Azure SQL Database
V12

2015

Azure SQL Database
Managed Instance

2018

Azure Ecosystem

Azure Accounts and Subscriptions	Azure Portal	Azure Marketplace	Azure APIs and CLIs
Azure Resource Manager	Azure Monitor	Azure Regions and Datacenters	Azure SLA, Compliance, and Trust

Azure SQL

SQL Server on Azure Virtual Machines

Best for re-hosting and apps requiring OS-level access and control

Automated manageability features and OS-level access

Infrastructure as a Service

Azure SQL

SQL Server on Azure Virtual Machines

Best for re-hosting and apps requiring OS-level access and control

Automated manageability features and OS-level access

Infrastructure as a Service

Azure SQL Managed Instance

Best for modernizing existing apps

Offers high compatibility with SQL Server and native VNET support

Platform as a Service

Azure SQL

SQL Server on Azure Virtual Machines

Best for re-hosting and apps requiring OS-level access and control

Automated manageability features and OS-level access

Infrastructure as a Service

Azure SQL Managed Instance

Best for modernizing existing apps

Offers high compatibility with SQL Server and native VNET support

Platform as a Service

Azure SQL Database

Best for building new apps in the cloud

Pre-provisioned or serverless compute and Hyperscale storage to meet demanding workload requirements

IaaS vs PaaS

- Business continuity
- High availability
- Automated backups
- Long term backup retention
- Geo-replication

- Scale
- Advanced security
- Version-less
- Built-in monitoring
- Built-in intelligence

New deployment vs. Migration

Data Saturday

New?

Existing?

Pre-migration

Discover
Inventory database assets, and application stack discovery

Assess
Assess workloads and fix recommendations

Convert
Convert the source schema to work in the target environment. This is only relevant for heterogeneous migrations.

Migration

Migrate schema, data & objects
Migrate the source schema, and then migrate the source data to the target

Data sync
Sync your target schema and data with the source. This is only relevant for minimal-downtime migrations

Cutover
Cut over from the source to the target environment. This is only relevant for minimal-downtime migrations.

Post-migration

Optimize
Based on the tests you performed, address any performance issues, and then retest to confirm the performance improvements

Remediate applications
Iteratively make any necessary changes to your applications

Run functional & performance tests
Iteratively run functional and performance tests

Malta
Microsoft Data Platform
User Group

That's
Azure
SQL

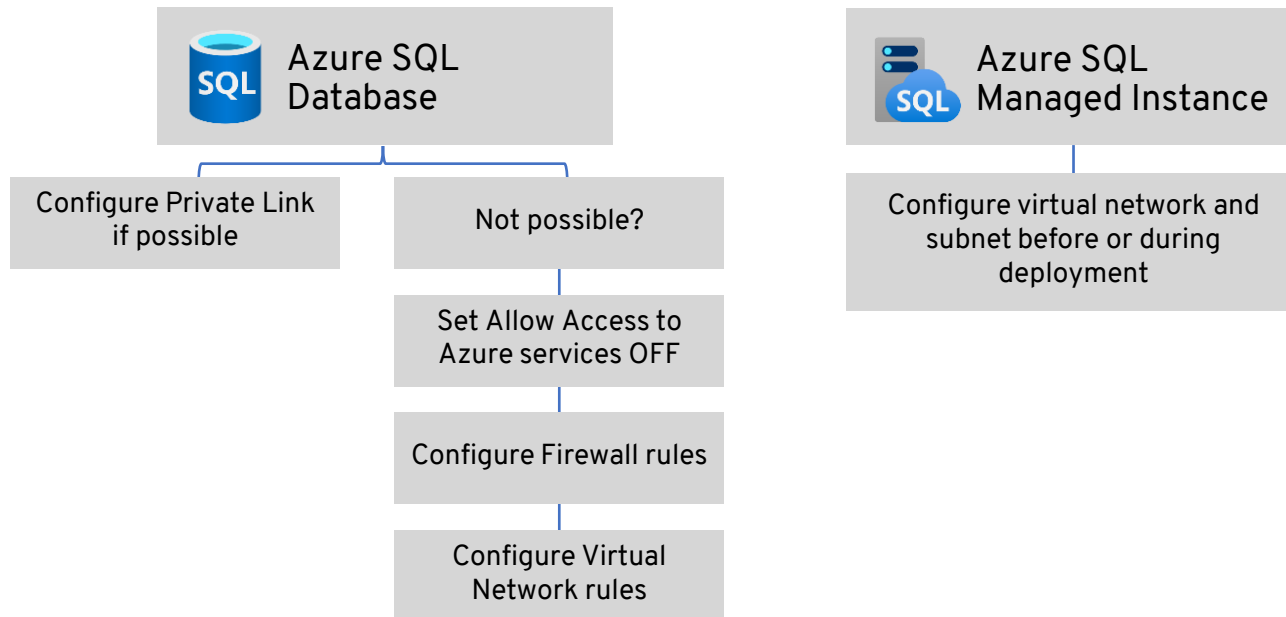# Security capabilities and tasks

Security capabilities

- Active Directory Authentication
- Azure RBAC and locks
- Auditing
- Data encryption
- Dynamic Data Masking
- Advanced Data Security

Security tasks

- Setup and configure network Security
- Setup and configure data protection
- Setup and configure authentication and authorization
- Monitoring security

Setup and configure network security

Azure SQL Database

Configure Private Link if possible

Not possible?

Set Allow Access to Azure services OFF

Configure Firewall rules

Configure Virtual Network rules

Azure SQL Managed Instance

Configure virtual network and subnet before or during deployment

Follow standard networking practices to enable connectivity

Setup and configure authentication and authorization

Deploy with a SQL server admin

Create other admins

Admins can create users

Grant access just like SQL

# Monitoring and Troubleshooting Performance

- Azure Monitor Metrics, Alerts, and Logs
- Dynamic Management Views
- Extended Events
- Lightweight Query Profiling on by default
- Query Plan Debugging with SET statements
- Query Store on by default
- Performance Visualizations in portal

Queries → SQL Database / SQL Managed Instance → Query store → Deeper insight
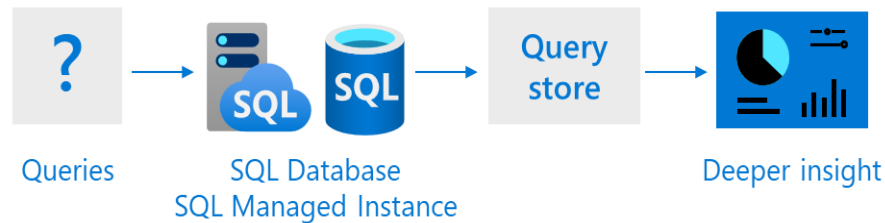
Automatic Tuning with Azure SQL Database

- Index Recommendations

- ML approach based on DMVs and Query Store

- Parameterized Query Recommendations

- View in DMVs and Azure Portal
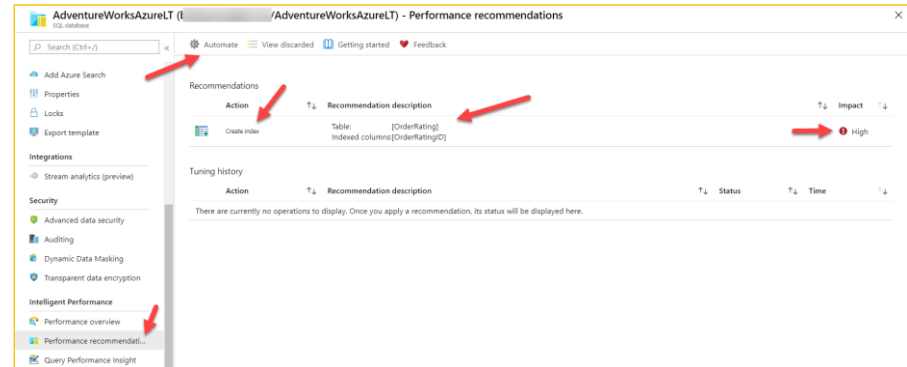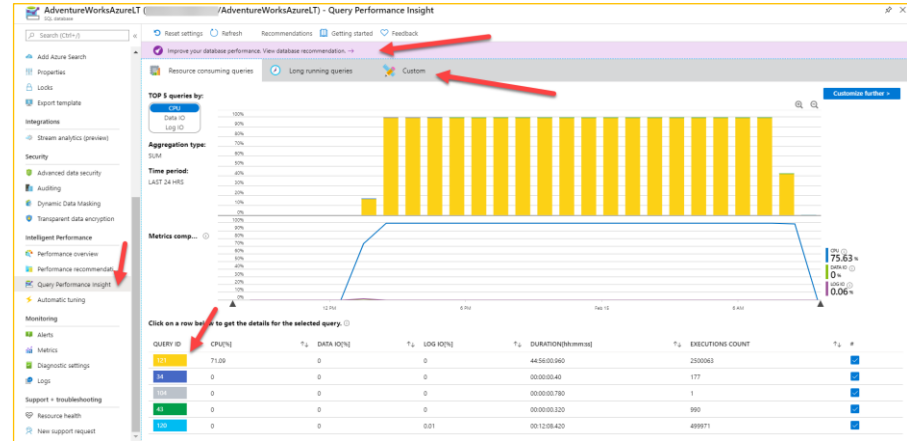
Backup and restore

- Auto backups and Point in Time Restore (PITR)
  - Full Database backup once a week
  - Log Backups every 5-10 minutes
  - Differential Backups every 12 hours
  - Backup files on Azure storage with RA-GRS replicated
  - Backup Integrity checks
  - Restore to new database
  - Long-term retention (up to 10 years) of backups
  - Geo-restore of databases if primary region down
  - Restore backups of deleted databases

- Manual COPY_ONLY Backup/Restore with Managed Instance

Backups retained for 7/35 days

Time

Now ——————————————→ -7 days

Self-service restore to a point in time

DB1

DB1
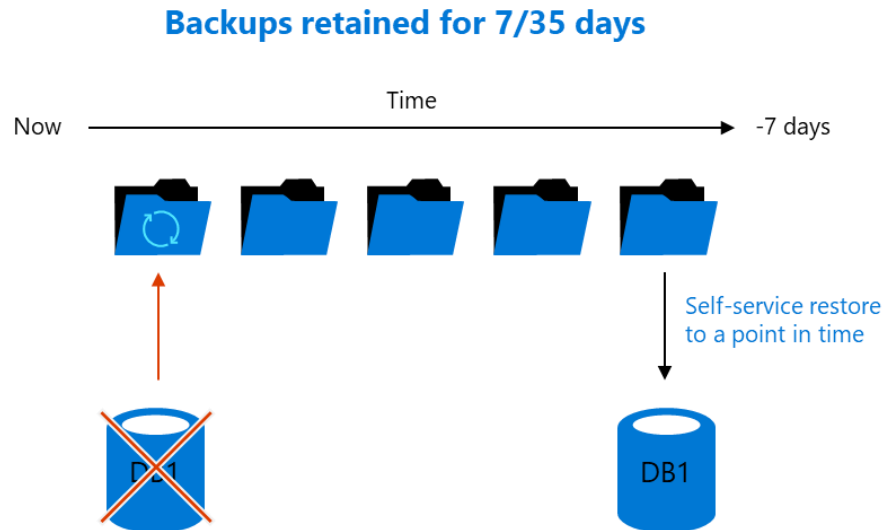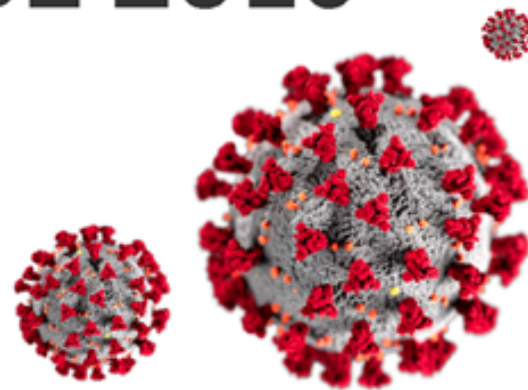
Levels

Fundamental

Associate

Expert

Thank you to our Sponsor

Resources

Microsoft Learn: Azure SQL fundamentals learning path
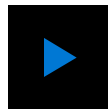**aka.ms/azuresqlfundamentals**

Select the Azure SQL Workshop
aka.ms/sqlworkshops

How to choose tool
aka.ms/chooseazuresql

Azure SQL documentation
aka.ms/azuresqldocs

More videos from our team
aka.ms/dataexposed

Björn Peters

@sql_aus_hh

www.sql-aus-hamburg.de