Azure Sql

What's new?

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knowledge - experience - insights

E M C T

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SQL on Azure – Current Options and Names

- Azure SQL
  - Combination of all SQL Server database engine products available on Azure (alle further products)
- Azure SQL Database
  - Single SQL Database or Elastic Pool (PaaS)
- Azure SQL Managed Instance
  - Own product within Azure SQL Family, not just a deployment option
- SQL Server on Azure VM
  - Full installation of Microsoft SQL Server on a Windows (or Linux) VM
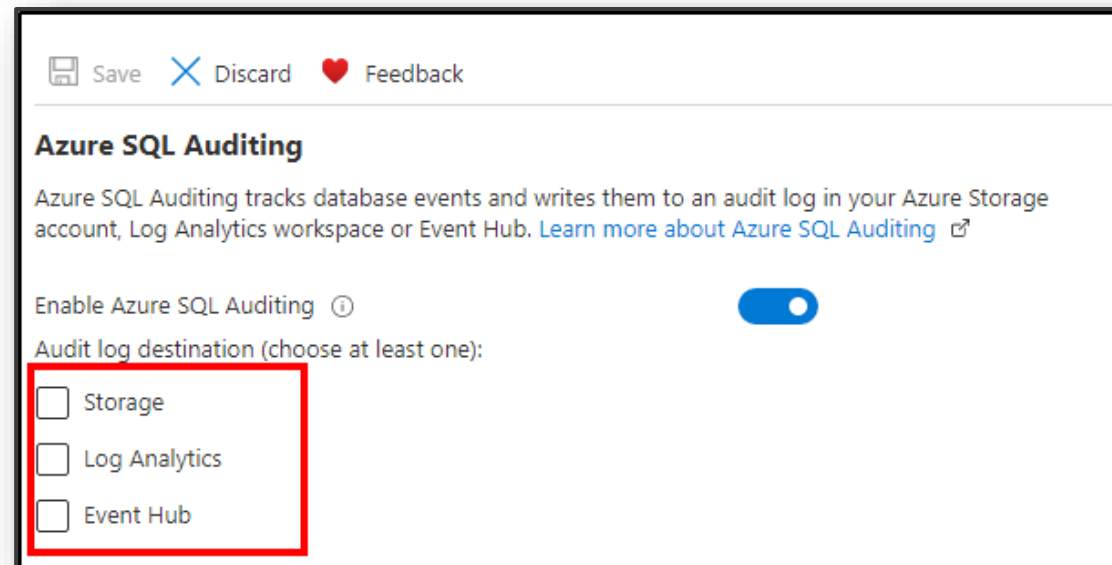
SQL Server 2012 EOL

- Extended Support for SQL Server 2012 ends July 2022
- Customers running SQL Server 2012 on Azure VMs will get Extended Security Updates for free!
- This also applies to
  - Azure Dedicated Host,
  - Azure VMWare Solution,
  - Azure Nutanix Solution and
  - Azure Stack (Hub, Edge, and HCI).

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Azure Data Studio

- New Azure SQL Migration extension powered by Azure Database Migration Service (Public Preview)

- Simple wizard-driven database migration

- Since Version 1.24.0, Serverless SQL Pools in Azure Synapse Analytics are supported

SQL Audit Logging (GA)

- Audit Logging for Azure SQL now support sending log data to Log Analytics Workspace and Event Hub!

Azure SQL Auditing of Microsoft Operations (GA)

- Azure SQL Database and Azure SQL MI allow to enable Auditing of Microsoft support operations

- It tracks operations done by Microsoft engineers done during support and writes them into defined destinations

Azure SQL Auditing for Azure SQL Database and Azure Synapse Analytics - Azure SQL Database

Auditing of Microsoft support operations

Auditing of Microsoft support operations tracks Microsoft support engineers' (DevOps) operations on your server and writes them to an audit log in your Azure Storage account, Log Analytics workspace or Event Hub. Learn more about Auditing of Microsoft support operations ⤢

Enable Auditing of Microsoft support operations ⓘ

Use different audit log destinations ⓘ

☐ Storage

☑ Log Analytics

Subscription *

Microsoft Azure Sponsorship ⌄

Log Analytics *

CentralDefaultLogging-law(westeurope) ⌄

☐ Event Hub

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# Azure Monitor SQL Insights (Public Preview)

- Supported for SQL Server VMs, Azure SQL DB and Azure SQL MI

- Needs Collector-VM to be deployed first

- Needs SQL credentials to be used by the VM

- No or limited support for:

  - Elastic Pools

  - Az SQL Low Service tiers (Basic, S0 – S2)

  - Az SQL Serverless

  - Secondary Replicas

  - Azure AD Auth

  - Non-Azure VMs
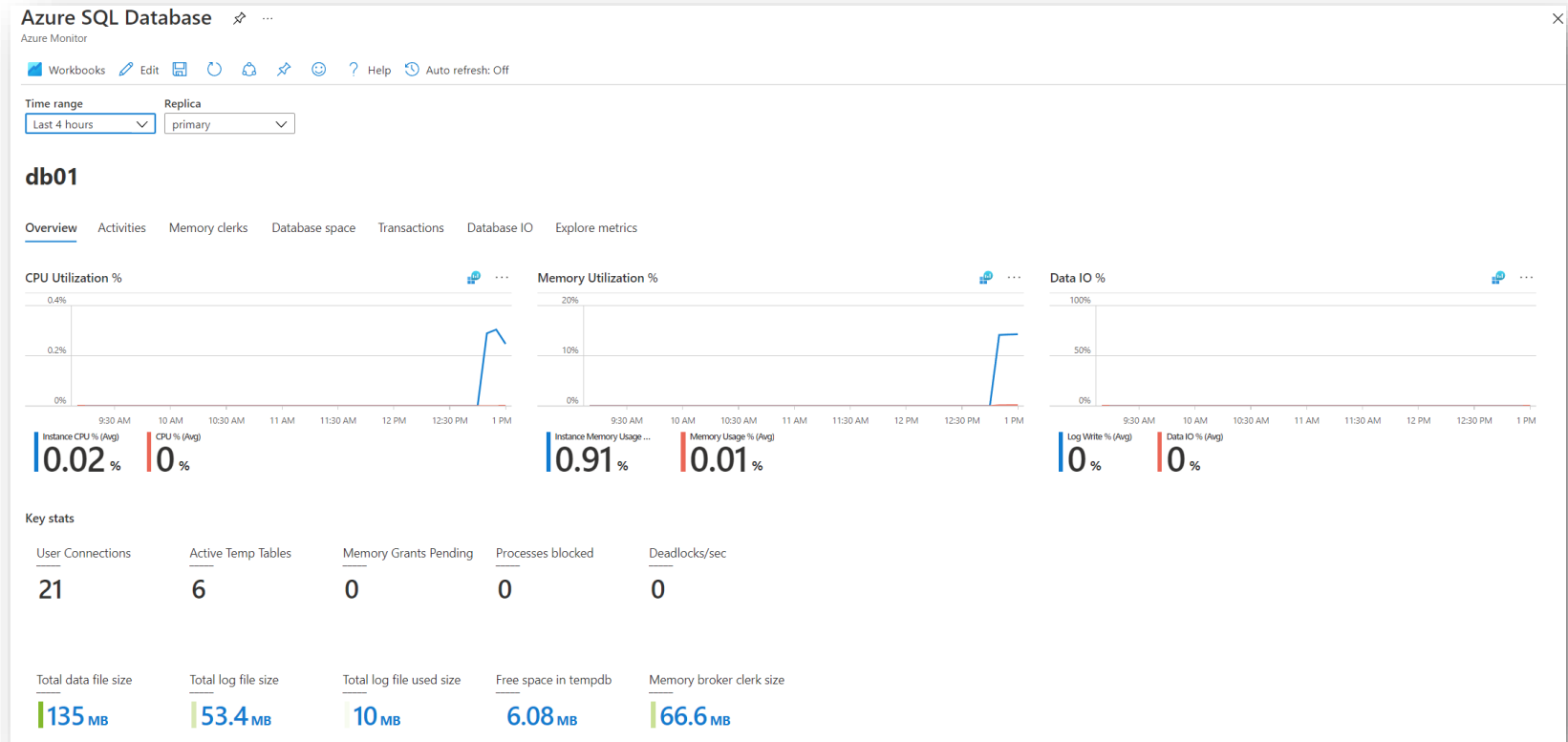
SQL Server VM Autoregistration

- In general, a VM running SQL Server is just a VM (if it was not deployed right from scratch as SQL Server VM)

- You can make it a „SQL virtual machine" to gain a lot mor features (i.a. SQL Server auto-patching, better backup, SQL hybrid benefit)
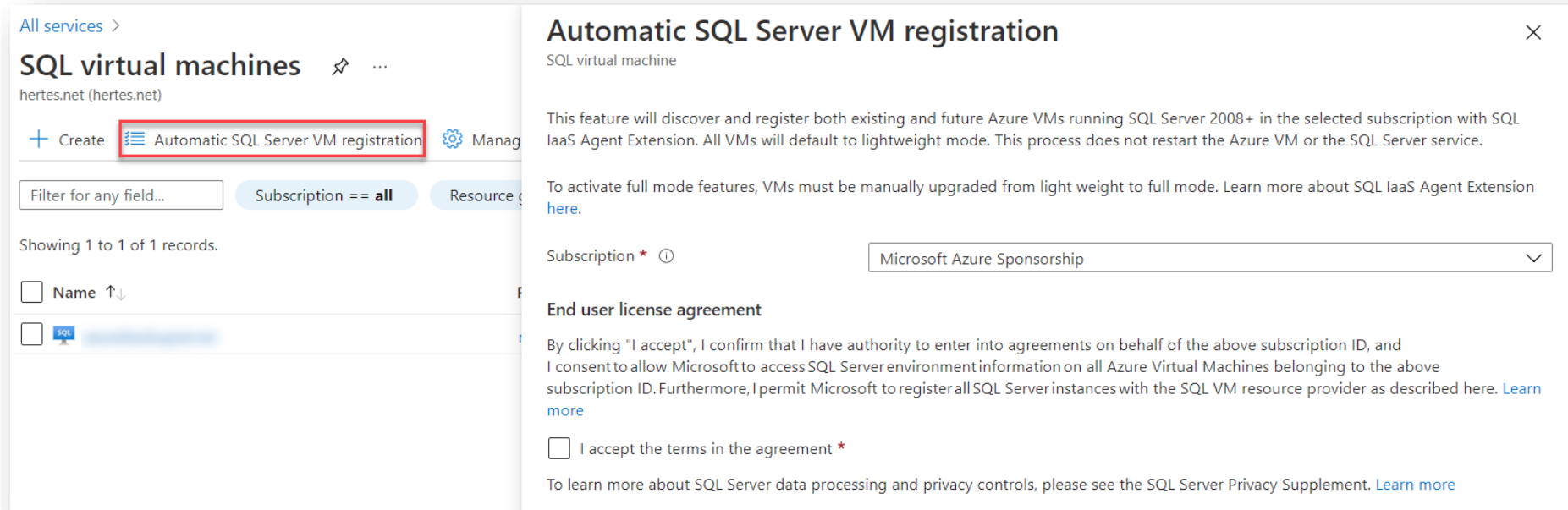
- SQL Server IaaS Agent extension can be installed automatically now

Azure Defender for SQL for SQL VMs

- The Azure Defender for SQL experience is now available (GA) from the SQL Virtual Machine blade

- Allows easier use of Security Center / Azure Defender Features right from the SQL VM

SQL Server VM Cluster from Portal (Public Preview)

- You can now create Windows Failover Clusters and Always On Availability Groups for SQL Virtual Machines right from the Portal
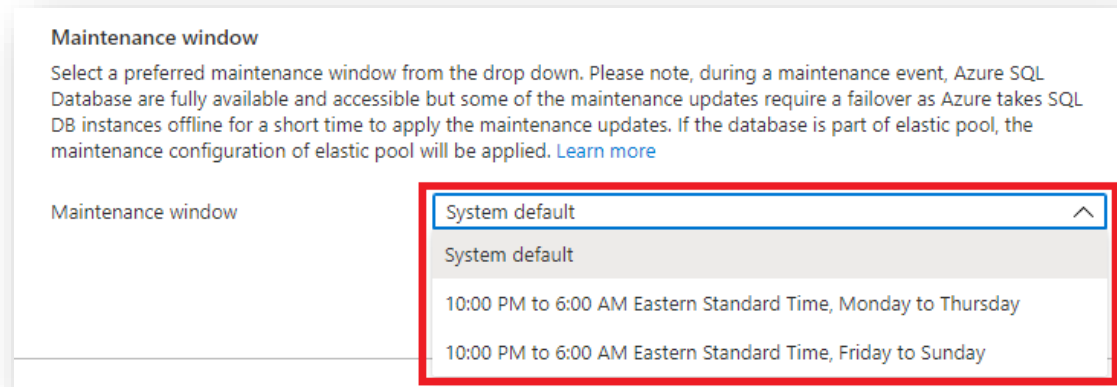
Configurable Maintenace Window (Public Preview)

- Azure periodically performs planned maintenance for all Azure SQL products except SQL Server VMs

- Sytem Default: Between 5PM and 8AM daily (local time of the used Azure region)

- Can be set to

    - 10PM-6AM Mon-Thur or

    - 10PM-6AM Fri-Sun

- Currently not available for these SLOs:

    - Hyperscale

    - Instance pools

    - Legacy Gen4 vCore

    - Basic, S0 and S1

    - DC, Fsv2, M-series

Maintenance window

Select a preferred maintenance window from the drop down. Please note, during a maintenance event, Azure SQL Database are fully available and accessible but some of the maintenance updates require a failover as Azure takes SQL DB instances offline for a short time to apply the maintenance updates. If the database is part of elastic pool, the maintenance configuration of elastic pool will be applied. Learn more

Maintenance window | System default

System default

10:00 PM to 6:00 AM Eastern Standard Time, Monday to Thursday

10:00 PM to 6:00 AM Eastern Standard Time, Friday to Sunday

Currently, only available for Pay-As-You-Go, Cloud Solution Provider (CSP), Microsoft Enterprise Agreement, or Microsoft Customer Agreement offer types!

Advance Notifications for Azure SQL DB (PP)

- Advance Notifications allows to prepare for planned maintenance events on Azure SQL DBs

- Is available for databases configured to use a non-default Maintenace Windows

- Not availble for SQL Managed Instance now

- Enables you to configure notifications to be sent up to 24 hours in advance of planned events

- Additional notifications are sent on maintenance begin and end

- Is configured through Service Health / Health Alerts

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ZRS for Azure Managed Disks (GA)

- Azure Disk Storage on Premium SSD and Standard SSD now supports ZRS in some first regions (i.e. WEU, NEU)

- This allows synchronous replication of the disk to 3 different availability zones (independant datacenters) within the region

- Single-instance VMs without application-level replication gain higher availability

- Also reduces data-loss risk

- ZRS disks can also be shared between zone-redundant VMs

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Machine Learning Services on Azure SQL MI (GA)

- Machine learning capabilities are enabled to operate your own R or Python runtime with increased performance on a preconfigured SQL Managed Instance

- Use Machine Learning Services with R or Python support in Azure SQL Managed Instance to:

  - Run R and Python scripts to do data preparation and general purpose data processing

  - Train machine learning models in database

  - Deploy your models and scripts into production in stored procedures.

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Dynamic data masking granular permissions (GA)
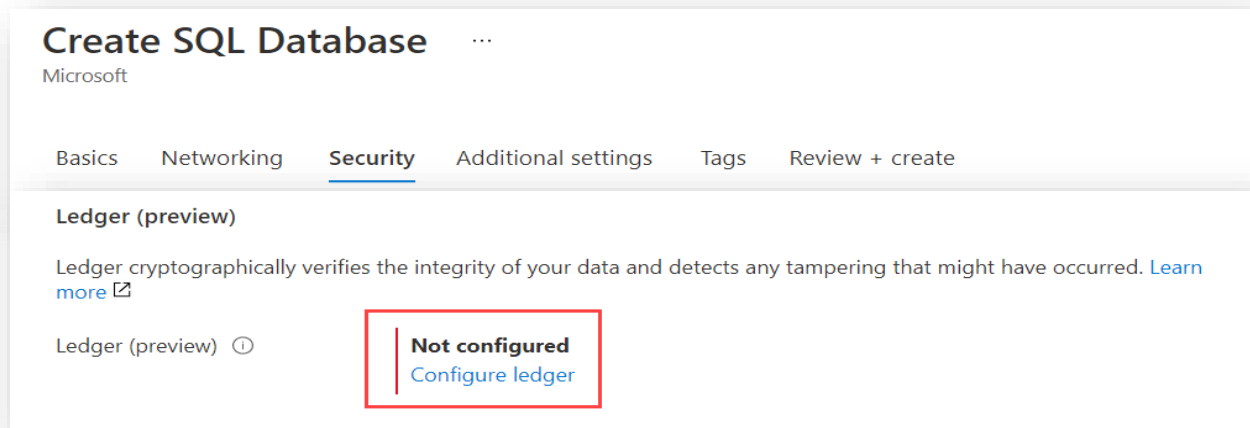
- Azure SQL Database, Azure Synapse Analytics, and Azure SQL Managed Instance now support setting granular permissions for DDM (Dynamic Data Masking)

- allows to grant and deny UNMASK permission at the schema-level, the table-level, and the column-level

- provides a more granular way to control and limit unauthorized access to SQL assets on Azure and improve data security management

Azure SQL Database Ledger (Public Preview)

- Ledger creates cryptographical hashes for each database transaction
- The hash uses the value of the current transaction along with the hash of the previous transaction
- This cryptographically links all transactions together, like in a blockchain
- Doing so, Ledger provides tamper-evidence capabilities
- You can proof, that your data hasn't been tampered with
- It protects against atackers as well as high-privileged users
- For every change, the previous value is kept

Announcing Azure
SQL Database ledger

Create SQL Database ···
Microsoft

Basics   Networking   **Security**   Additional settings   Tags   Review + create

Ledger (preview)

Ledger cryptographically verifies the integrity of your data and detects any tampering that might have occurred. Learn more

Ledger (preview) ⓘ

Not configured
Configure ledger

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Active geo-replication for Azure SQL Hyperscale (PP)

- Active geo-replication is an Azure SQL Database BCDR feature

- It allows customer applications to have a disaster recovery strategy and regional resiliency

- Some of the key benefits include:

  - Automatic asynchronous replication at the database level where data changes to the primary database are automatically replicated to a secondary database.

  - Cross-region redundancy allowing applications to recover from loss of a datacenter or an entire region.

  - Readable and online secondary databases that can be used for read-only workloads such as reporting.

Active geo-replication for Azure SQL Hyperscale

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Cross-region restore (CRR) for SQL/SAP HANA (GA)

- SQL Server and SAP HANA databases running on Azure VMs now both support cross-region restore

- Feature is already available for regular VMs since a while

- It allows the restore of data in a secondary region when replication is configured on the Recovery Services Vault (GRS)

- Can be used to

  - Conduct drills when there's an audit or compliance requirement

  - Restore the data if there's a disaster in the primary region

- As for the regular VMs, this feature currently cannot be disabled once it is enabled!

Soft delete for SQL Server / SAP HANA VM Backup

- Azure Backup soft-delete for SQL Server in Azure VMs and SAP HAN in Azure VMs is now available (GA)

- Helps to protect backup data that was accidentally or maliciously deleted

- Retains deleted data for 14 additional days

- Soft delete is enabled by default on newly created vaults

- Might need to enable it on pre-existing vaults

Azure Backup supports Archive tier for SQL VMs (GA)

- All Virtual Machines, including SQL Server VMs, using Azure Backup allow usage of Archive Tier now

- This reduces cost for keeping backups for longer durations

- When backups are moved from standard storage to archive storage, the incremental-forever backups are converted into full backups which will result in larger backup but still very low storage costs

SQL Database Backup Frequency (Public Preview)

- Azure SQL Databse and Azure SQL MI use SQL Server technology to create

  - full backups every week,

  - differential backups every 12-24 hours

  - and transaction log backups every 5 to 10 minutes

- This is for PITR (Point-in-time Restore)

- The frequency for differential backups used to be a 12-hours-only option

- Now you can also choose 24 hours frequency

- This allows to save some storage costs

- Be aware that recovery could take more time then!

Point-in-time-restore
Specify how long you want to keep your point-in-time backups. Learn more ⤢

How many days would you like PITR backups to be kept? ⓘ

[============○============================] 7

Differential backup frequency (preview)
Specify how often you want differential backups to be taken. Learn more ⤢

ⓘ Differential backup frequency is currently in preview. By using this preview feature, you confirm that you agree that your use of this feature is subject to the preview terms in the agreement under which you obtained Microsoft Azure Services. Learn more ⤢

Take a differential backup every:

12 Hours ⌄

12 Hours

24 Hours ention

g you want to keep your long-term retention backups. You may choose to keep yearly backups for up to 10 years. Learn more ⤢

Azure SQL Managed Instance

- Long-term backup retention (LTR) in Public Preview
  - This allows to keep backups beyond the 35 days provided by Azure SQL MI automatic backups

Azure SQL Managed Instance

- Backups are taken in parallel instead of one-file-at-a-time-only (Parallel backup for better performance in SQL Managed Instance General Purpose)

- Storage Limit increased to 16TB for MI with at least 16 vCores (Public Preview)
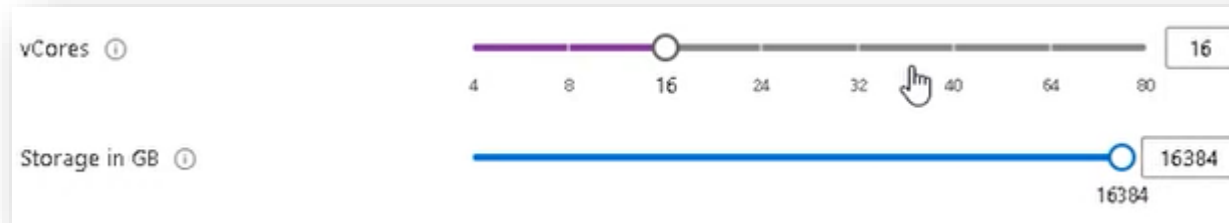

- Log Replay Service (LRS) Migration from SQL Server to Azure SQL MI (Public Preview) – based on same technology as Azure Database Migration Service, but more control, less downtime, no local installation, but no GUI!
(Migrate databases to SQL Managed Instance using Log Replay Service - Azure SQL Managed Instance)

Azure SQL Database

- Active Directory only Authentication (disables SQL Authentication once enabled) (Public Preview)
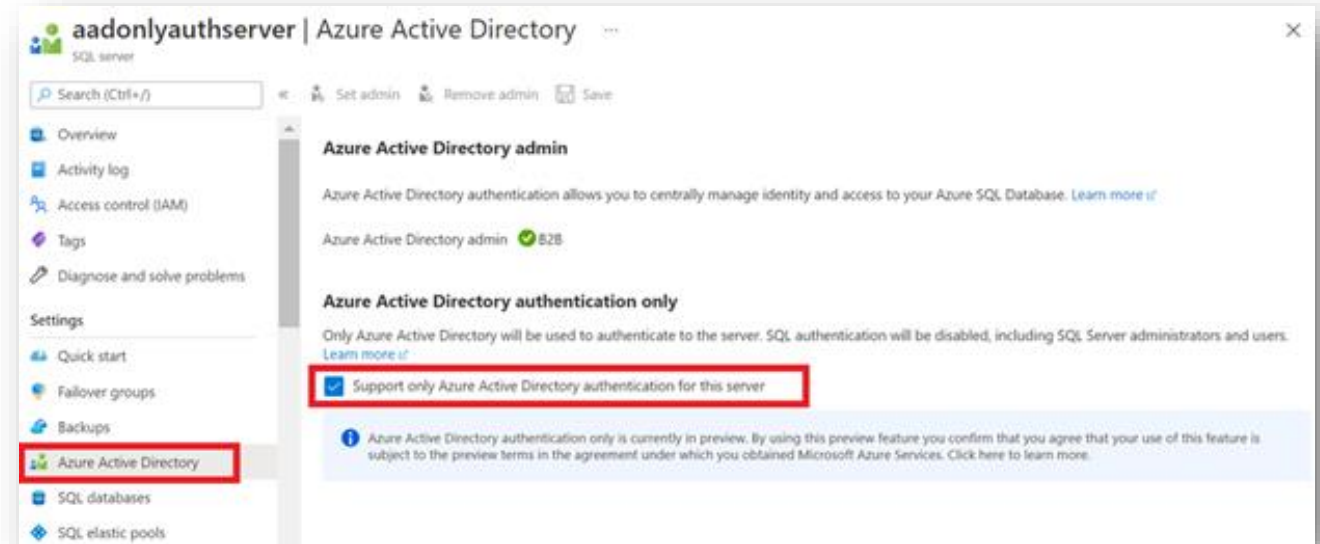
- Transparent Data Encryption (TDE) with customer-managed Key (BYOK) is GA for SQL Database Hyperscale

Azure Database for PostgreSQL

- Azure Database for PostgreSQL – Hyperscale (Citus) now supports latest Citus 10.1 Release (GA)

- Azure Database for PostgreSQL – Hyperscale (Citus) now available in Germany West Central (GA)

Azure DevOps Pipeline Support (Public Preview)

- Azure Database for MySQL and Azure Database for PostgreSQL – Flexible Server now support Azure CLI Tasks

- This can be used to update / deploy a database with either a SQL file or an inline SQL script against the DB

- This way, you can update the DB during CI/CD deployments

az mysql flexible-server execute

az postgres flexible-server execute

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Thank you!
Any questions?

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