Microsoft

Introduction to Azure SQL

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Agenda

Overview

SQL Server on Azure VMs

Azure SQL Managed Instance

Azure SQL Database

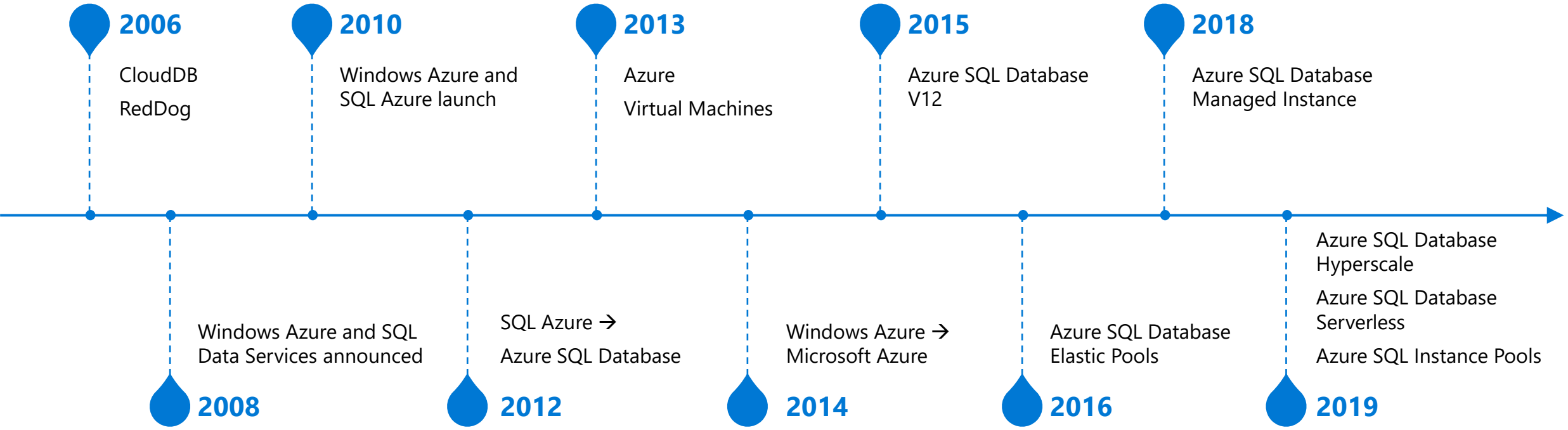
Comparison and summary

Quiz

Feedback

History of Azure SQL

Azure SQL has come a long way



Azure Ecosystem

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

Azure SQL

A unified SQL portfolio built on the industry-leading SQL Server engine

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

Azure SQL Managed Instance

Best for modernizing existing apps

Offers high compatibility with SQL Server and native VNET support

Azure SQL Database

Best for building new apps in the cloud

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

Infrastructure as a Service

Platform as a Service

SQL Server on Azure VMs provides the promise of the cloud while maintaining OS control

Customer challenge

I want to migrate to the cloud as fast as possible but maintain operating system control and complete SQL Server functionality

Solution

Get the combined performance, security, and analytics of SQL Server, backed by the flexibility, security, and hybrid connectivity of Azure

Key features

SQL Server and OS server access

Expansive SQL and OS versions

Windows, Linux, Containers

File stream, DTC, and Simple Recovery model

SSAS, SSRS, and SSIS

Azure differentiators

Free Extended Security Updates for SQL Server 2008/R2

Automated Backups and Security Updates

Point in Time Restore with Azure Backup

Accelerated storage performance with Azure Blob Caching

435 percent overall return on an Azure IaaS investment over five years[1]

Allscripts®

Healthcare software manufacturer saves costs when reusing licenses while moving 600 on-premises VMs to Azure

1. Forrester Consulting. The Total Economic Impact™ of Microsoft Azure SQL Database Managed Instance.

SQL Server on Azure Virtual Machines

Deployment Choices

Marketplace pre-installed SQL Server on Windows or Linux
Install your own SQL Server
Lift and Shift with Azure Migrate (Azure Site Recovery)

Resource Provider

Unlock Licensing and Edition Flexibility
Automated Backups and Security Updates
Manage VMs through Azure SQL in portal

Sizes and Storage Performance

Memory or Storage optimized sizes for best performance
Data and log on Premium Storage Managed Disks
Azure Blob Read Caching for data disks

Tempdb on local SSD
Ultra disks for extremely low latency needs

Networking and Security

Virtual Networks to integrate with on-premises
Advanced Data Security services (Preview)

HADR

Azure VM built-in HA
Azure Storage built-in DR
Azure Backup and Automated backups to Azure Blob Storage
File-Snapshot Backups

Failover Cluster Instance with Azure Premium File Share
Always On Availability Groups with Cloud Witness
Hybrid Availability Group Secondary replicas
HADR on RedHat Linux with Pacemaker and fencing

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

Azure SQL managed instance eases cloud migration

Customer challenge

I want to migrate to the cloud, remove management overhead, but I need instance-scoped features (Service Broker, SQL Server Agent, CLR…)

Solution

Managed instance combines leading security features with SQL Server compatibility and business model designed for on-premises customers

Key features

Single instance or instance pool

SQL Server surface area (vast majority)

Native virtual network support

Fully managed service

On-premise identities enabled with Azure AD and AD Connect

Azure differentiators

Near zero downtime migration using log shipping

Fully managed business continuity with failover groups

Projected return on investment of 212 percent over three years[1]

The best of SQL Server with the benefits of a managed service

KOMATSU

Komatsu easily migrated 1.5 TBs of data thanks to near complete compatibility with SQL Server, plus 49% cost reduction and 25-30% performance gains.

1. Forrester Consulting. The Total Economic Impact™ of Microsoft Azure SQL Database Managed Instance.

Azure SQL Database is built for modern cloud apps

Customer challenge

I want to build modern apps, potentially multi-tenanted, with the highest uptime and predictable performance

Solution

Azure SQL Database is a highly scalable cloud database service with built-in high availability and machine learning

Key features

Single database or elastic pool

Hyperscale storage (100TB+)

Serverless compute

Fully managed service

Private link support

High availability with AZ isolation

Azure differentiators

Industry highest availability SLA of 99.995%

Industry only business continuity SLA with 5 second RPO and 30 second RTO

Price-performance leader for mission-critical workloads while costing up to 86 percent less than AWS RDS (GigaOm)

AccuWeather uses Azure SQL Database to provide an automated, scalable weather prediction service

1. Forrester Consulting. The Total Economic Impact™ of Microsoft Azure SQL Database Managed Instance.

Azure SQL MI or DB?

Azure SQL managed instance

Single instance

SQL Server surface area (vast majority)

Native virtual network support

Fully managed service

Instance pool

Pre-provision compute resources for migration

Enables cost-efficient migration.

Ability to host smaller instances (2Vcore)

Currently in public preview

Azure SQL Database

Single database

Hyperscale storage (up to 100TB)

Serverless compute

Fully managed service

Elastic pool

Resource sharing between multiple databases to price optimize

Simplified performance management for multiple databases

Fully managed service

Service tiers – Managed Instance

General purpose	Business critical
Most business workloads	Workloads that require low latency, fast recovery, and a readable secondary

vCore model

Independent scalability

Remote storage	Local storage
IOPS $	IOPS++ $$$ In-memory
	

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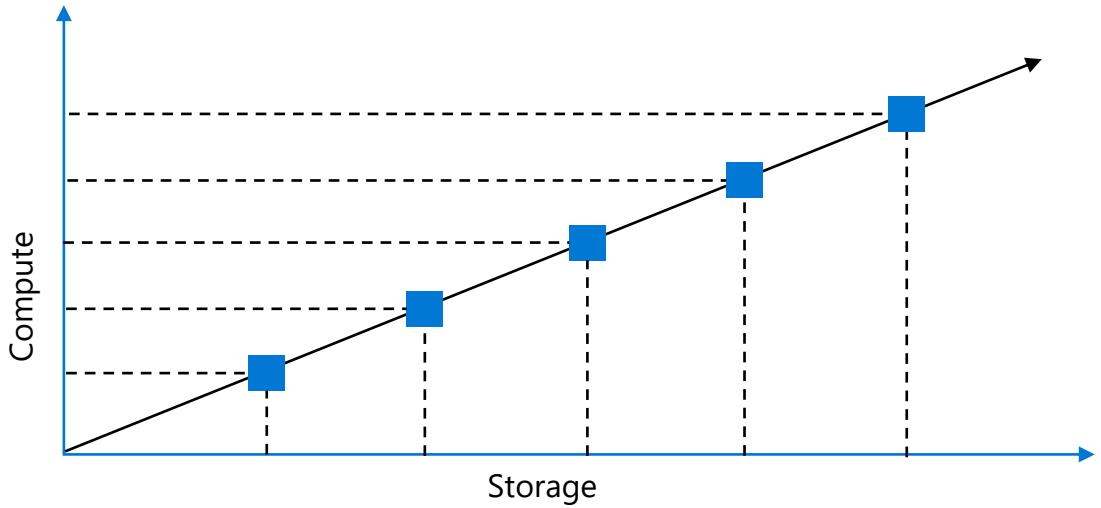
Purchasing models - Single Database

DTU model

Simple, preconfigured



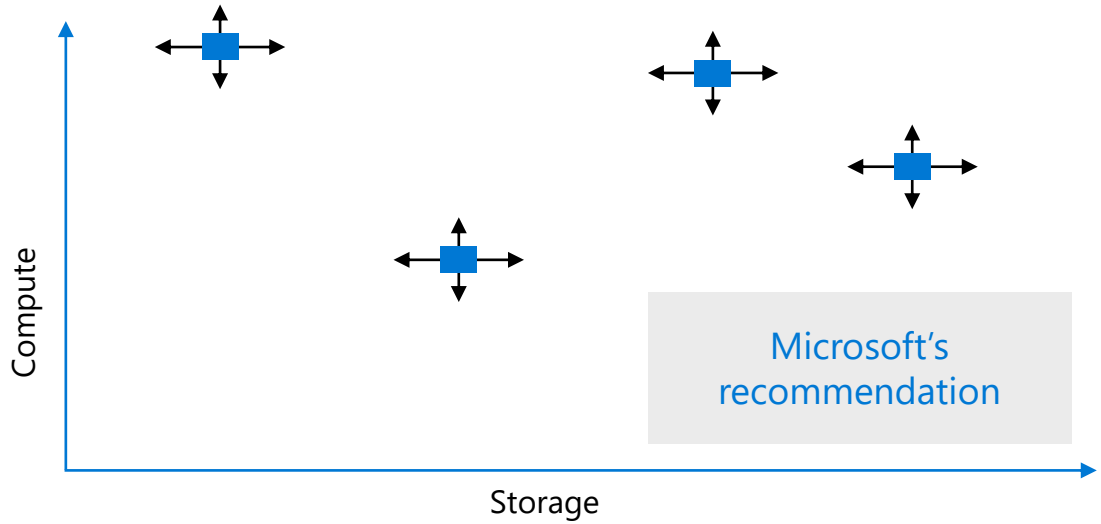
Pre-packaged, bundled unit that represents the database power

Designed for predictable performance, but somewhat inflexible and limited in options

DTU sizing offers simplicity of choice

vCore model

Independent scalability



This model allows you to independently choose compute and storage resources. It also allows you to use Azure Hybrid Benefit for SQL Server to gain cost savings.

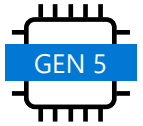
Best for customers who value flexibility, control and transparency

Service tiers – SQL Database

General purpose	Business critical	Hyperscale*
Most business workloads	Workloads that require low latency, fast recovery, and a readable secondary	Most business workloads with highly scalable storage and read-scale requirements
Remote storage IOPS $ Serverless* 	Local storage IOPS++ $$$ In-memory 	Local + remote storage IOPS+ $$ Unlimited storage 

*Not in managed instance

Hardware

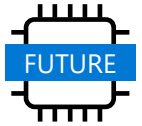


Gen5

80 vCore limit

Up to 4 TB of local storage

Accelerated Networking is guaranteed



Future

Future hardware generations

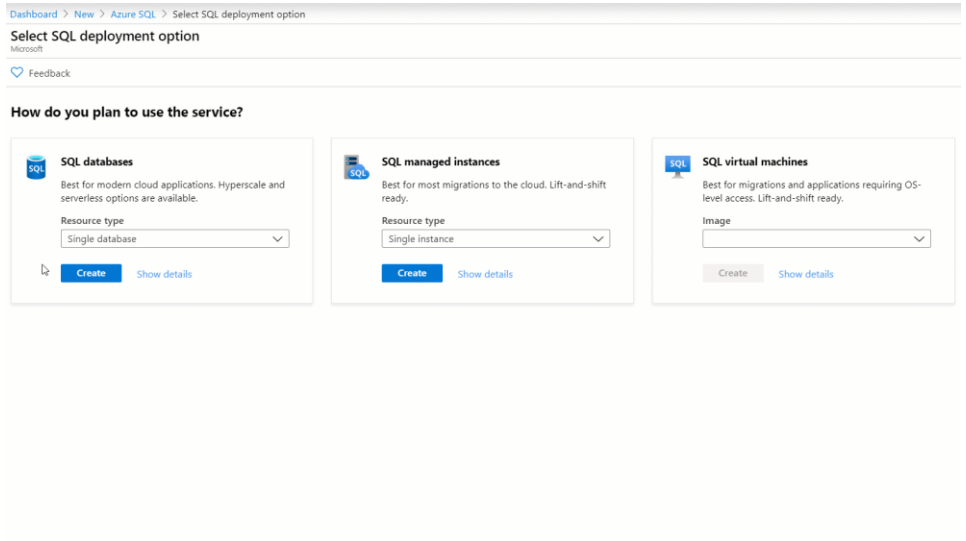
M-series (memory optimized)

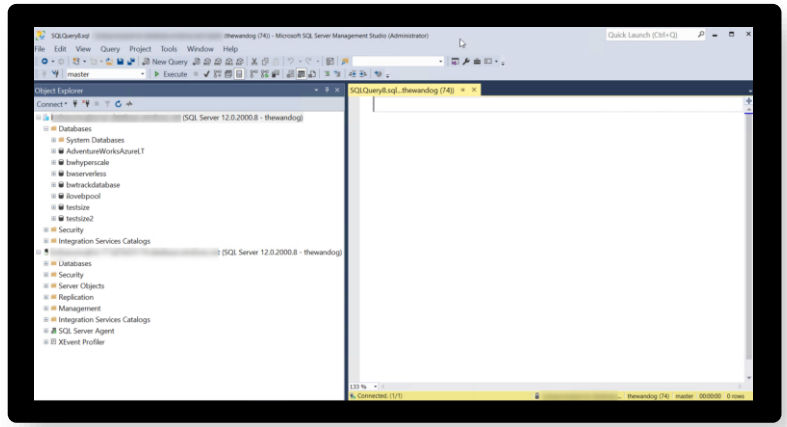
- 128 vCores (hyperthreaded)
- 3.8 TB memory
- Business critical (preview)

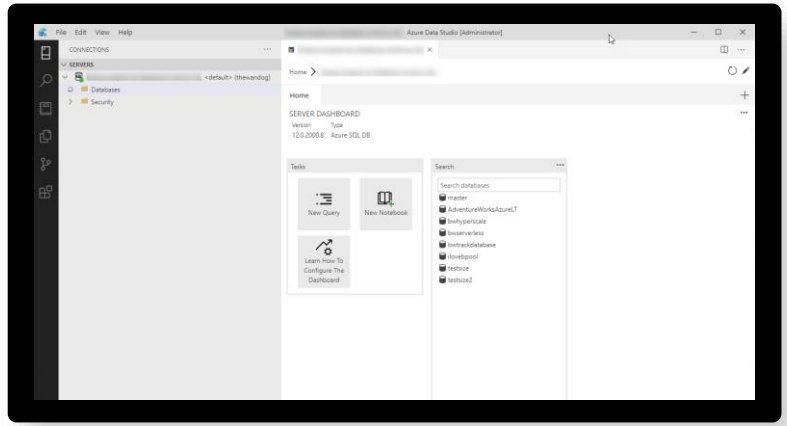
Fsv2-series (compute optimized)

- 72 vCores (hyperthreaded)
- 3.4 GHz sustained turbo clock speed
- General purpose (preview)

Interfaces for Azure SQL







T-SQL	Powershell	az cli
REST API	sqlcmd	bcp

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

Quiz

www.kahoot.it

Summary

- Azure SQL has evolved into **the world's database**
- **Azure SQL includes** Virtual machine, Managed Instance, and Database
- **SQL Server on Azure Virtual Machines** is best for 100% lift and shift
- **Azure SQL Managed Instances:** Database engine instance + power of PaaS
- **Azure SQL Database** for modern cloud apps providing you the most PaaS capabilities

Call to action

- Try it yourself
- Pick a workload
  - Start small
  - Decide what to use
- Do a proof of concept
  - Try your SQL Server “toolbox” in Azure SQL
- Azure is ready for you

Feedback Please!

Thank you!