



Introduction to Azure SQL

Module 1



Learning Units covered in this Module

- Lesson 1: Basic concepts of Azure SQL
- Lesson 2: Create an Azure SQL Database
- Lesson 3: Working with Managed Instances

Lesson 1: Basic concepts of Azure SQL

Objectives

After completing this learning, you will be able to:

- Describe the basic concept and architecture
- Describe the difference between the purchase models.
- Describe the service tiers compute and hardware generation of the Azure SQL Database.



What is Microsoft Azure?

Microsoft Azure is Microsoft's public cloud computing platform

Over 140 countries across 60 regions worldwide

Windows and Linux

Scale globally

- Reach more locations, faster, with the performance and reliability of a vast global infrastructure.

Safeguard data

- Rely on industry-leading data security in the region and across our network.

Promote sustainability

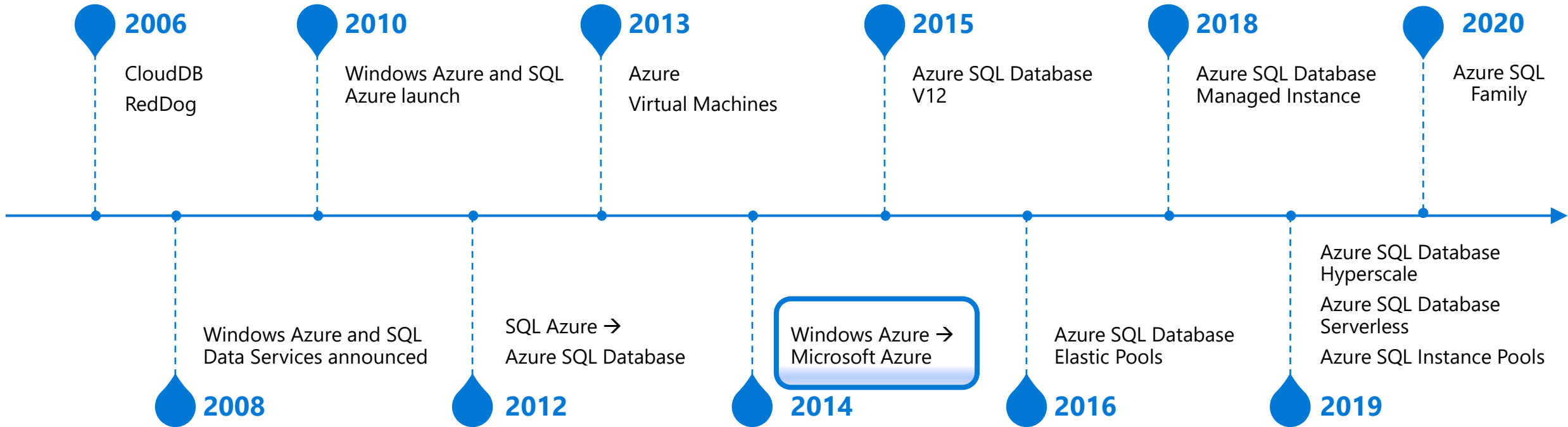
- Help build a clean-energy future and accelerate progress toward your sustainability goals.

What is Microsoft Azure?

<https://azure.microsoft.com/en-us/global-infrastructure/regions/>



Azure SQL has come a long way



Hosting Models

Managed by customer

Managed by Microsoft

On-premises costs tend to be driven by hardware and data center management costs

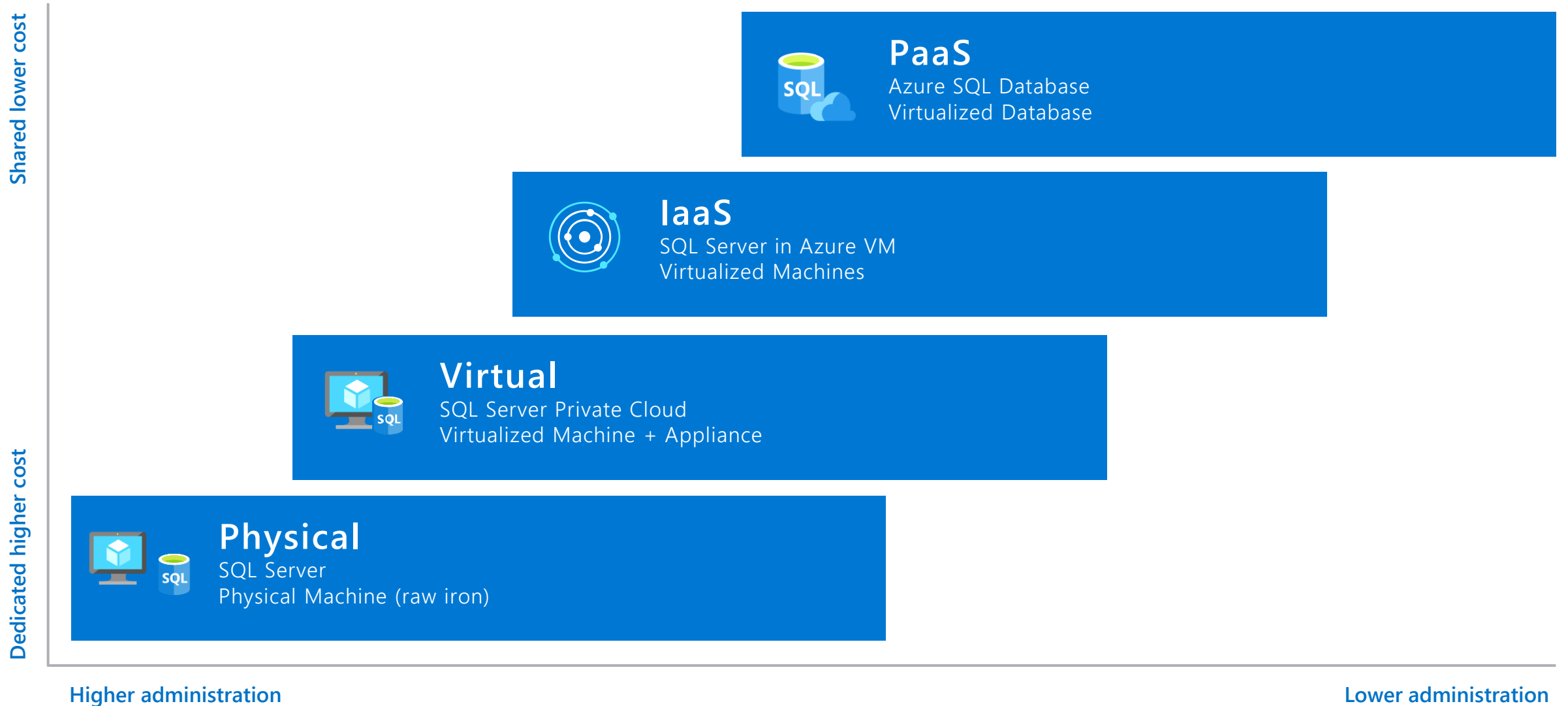
Infrastructure-as-a-Service reduces cost categories related to data center and compute

Platform-as-a-Service off-loads customers' most administrative tasks to Azure, further improving efficiency with machine-learning capabilities for performance and security

- **Managed Instance:** instance-level deployment for lift-shift existing apps to Azure, fully backward compatible
- **Single database:** database-level deployment for new apps

On-premises	Infrastructure (as a Service)	Platform (as a Service)
Applications	Applications	Applications
Data	Data	Data
High availability /DR/Backups	High availability /DR/Backups	High Availability/ DR/Backups
Database Provision/ Patch/Scaling	Database Provision/ Patch/Scaling	Database Provision/ Patch/Scaling
O/S provision /patching	O/S	O/S
Virtualization	Virtualization	Virtualization
Hardware	Hardware	Hardware
Datacenter Management	Datacenter Management	Datacenter Management
SQL Server 2017/2019	Azure SQL VMs	Azure SQL Database SQL Managed Instance

Data platform continuum



Azure SQL Family

Explore Azure SQL database services



SQL Server on Azure Virtual Machines

Migrate your SQL workloads to Azure with ease while maintaining complete SQL Server compatibility and operating system-level access

[Learn more >](#)



Azure SQL Managed Instance

Modernize your existing SQL Server applications at scale with an intelligent, fully managed service

[Learn more >](#)



Azure SQL Database

Support modern cloud applications on an intelligent, fully managed service that includes serverless compute

[Learn more >](#)

A closer look... Best for

SQL Server in Azure VM

- Existing applications that require fast migration to the cloud with minimal changes or no changes.
- Teams that can configure, fine tune, customize, and manage high availability, disaster recovery, and patching for SQL Server.
- You need a customized environment with full administrative rights.
- SQL Server instances with up to 64 TB of storage. The instance can support as many databases as needed.

Managed Instance

- New applications or existing on-premises applications that want to use the latest stable SQL Server features and that are migrated to the cloud with minimal changes.
- Teams that need built-in high availability, disaster recovery, and upgrade for the database.
- Teams that do not want to manage the underlying operating system and configuration settings.
- Databases of up to 8 TB, or larger databases that can be horizontally or vertically partitioned using a scale-out pattern.

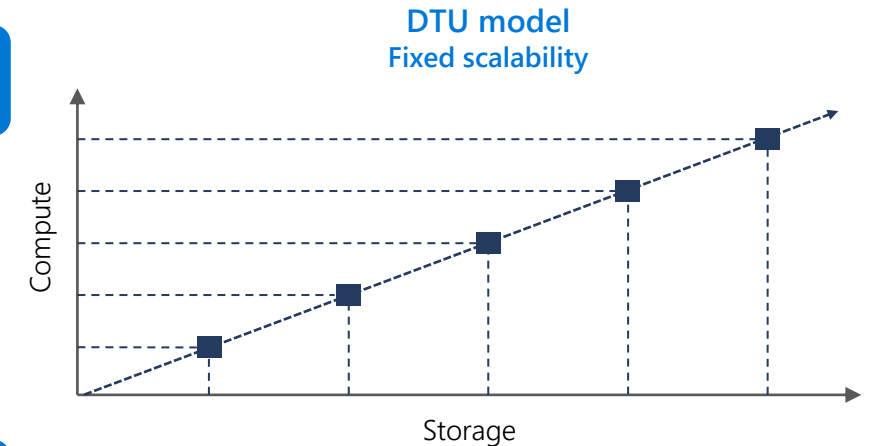
Azure SQL Database

- New cloud-designed applications that want to use the latest stable SQL Server features and have time constraints in development and marketing.
- Teams that need built-in high availability, disaster recovery, and upgrade for the database.
- Teams that do not want to manage the underlying operating system and configuration settings.
- Databases of up to 4 TB, or larger databases that can be horizontally or vertically partitioned using a scale-out pattern.

Azure SQL Database Purchasing models and resources

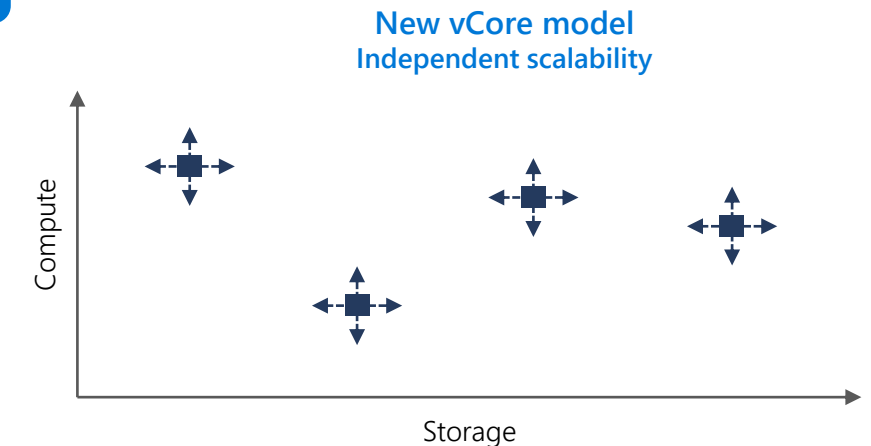
Database Transaction Unit (DTU) model

- 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.
- Blended measure of CPU, memory, and read-write rates.



vCore model

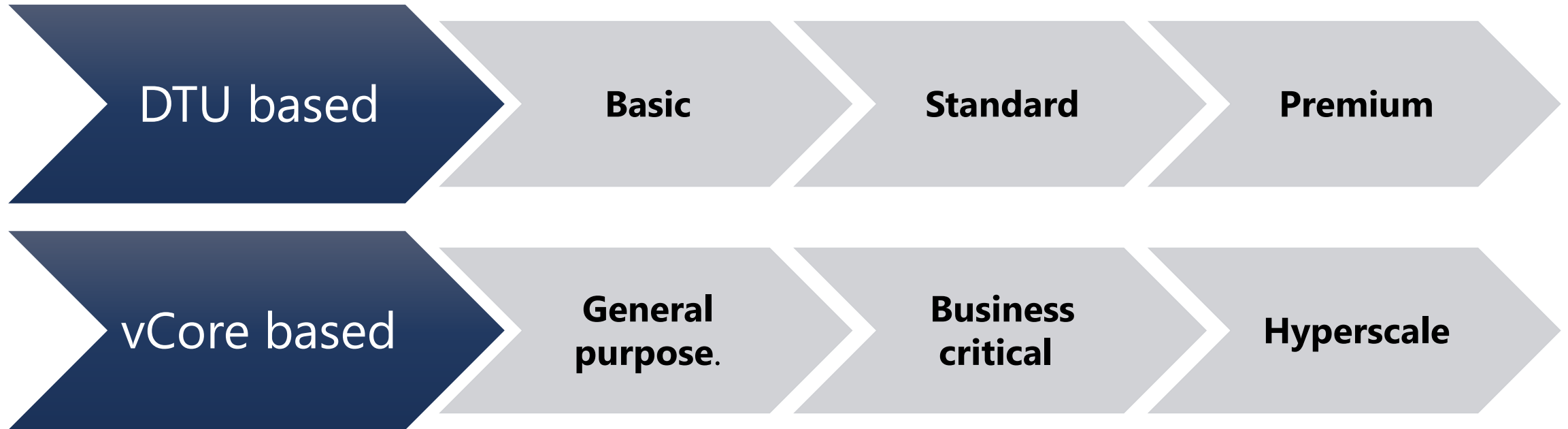
- À La carte approach deconstructs the DTU model into separate parts.
- Customers can select compute and storage independently.
- Allows customers to right-size their compute requirements in the cloud.
- vCore sizing offers flexibility of choice.
- Provides a choice between a **provisioned compute tier** and a **serverless compute tier**.



Purchasing models available for Azure SQL Database deployment:

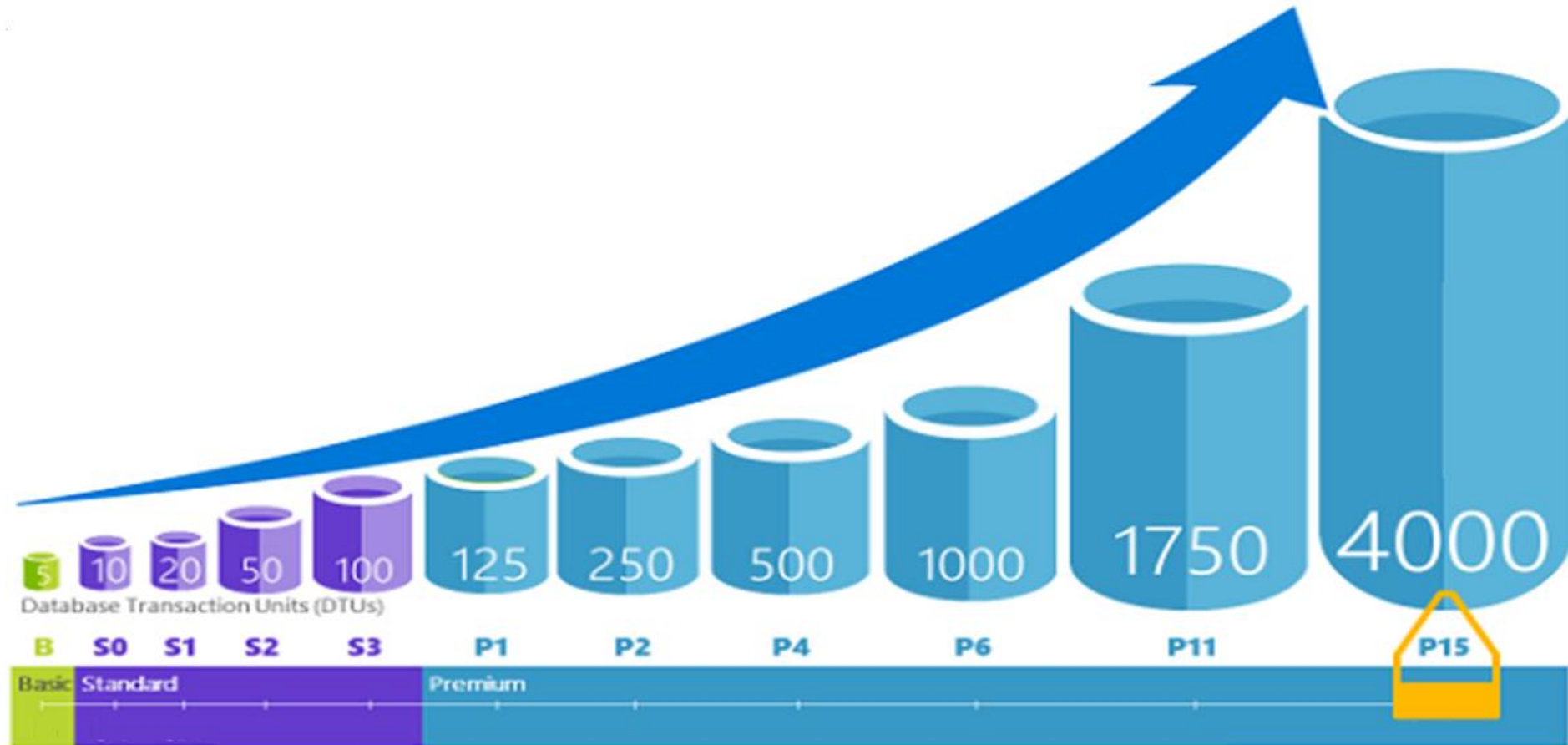
Purchasing model/ Deployment model	DTU based	vCore based
Single Database	✓	✓
Elastic Pool	✓	✓
Managed Instance	✗	✓
Hyperscale service tier (single databases)	✗	✓

Overview Service Tiers



Standard 100DTUs = 1vCore
Premium 125DTUs = 1vCore

Database Transaction Units (DTUs)



DTU-based model: Service Tiers

	Basic	Standard									Premium					
		S0	S1	S2	S3	S4	S6	S7	S9	S12	P1	P2	P4	P6	P11	P15
Built for	Light transactional workloads	Medium transactional workloads									Heavy transactional workloads					
Available SLA	99.99%															
Database max. size	2 GB	250 GB			1 TB									4 TB		
Point-in-time restore ("oops" recovery)	Any point within 7 days	7-35 days (7 days by default)														
Business continuity	Active geo-replication, up to four readable secondary backups															
Security	Auditing, row-level security, dynamic data masking, Advanced Threat Protection															
Performance objectives	Transactions per hour	Transactions per minute									Transactions per second					
Database transaction units (DTUs)	5	10	20	50	100	200	400	800	1,600	3,000	125	250	500	1,000	1,750	4,000


\$
\$\$\$

Resource limits for single databases using the DTU-based purchasing model

Changing Performance Levels (DTU)

PowerShell

- Set-AzSqlDatabase

REST

- Update database

Azure CLI

- az sql db update

T-SQL

- ALTER DATABASE ... MODIFY
(EDITION = ...)

Service and compute tier

Select from the available tiers based on the needs of your workload. The vCore model provides a wide range of configuration controls and offers Hyperscale and Serverless to automatically scale your database based on your workload needs. Alternately, the DTU model provides set price/performance packages to choose from for easy configuration. [Learn more](#)

Service tier

Basic (For less demanding workloads)

DTUs [Compare DTU options](#)

5 (Basic)

Data max size (GB)

vCore-based purchasing model

General Purpose (Scalable compute and storage options)

Hyperscale (On-demand scalable storage)

Business Critical (High transaction rate and high resiliency)

DTU-based purchasing model

Basic (For less demanding workloads)

Standard (For workloads with typical performance requirements)

Premium (For IO-intensive workloads)

Changing Performance Levels (vCore)

PowerShell

- Set-AzSqlDatabase

REST

- Update database

Azure CLI

- az sql db update

T-SQL

- ALTER DATABASE ... MODIFY (EDITION = ...)

Service and compute tier

Select from the available tiers based on the needs of your workload. The vCore model provides a wide range of configuration controls and offers Hyperscale and Serverless to automatically scale your database based on your workload needs. Alternately, the DTU model provides set price/performance packages to choose from for easy configuration. [Learn more](#)

Service tier

General Purpose (Scalable compute and storage options) ▼

Compute tier

vCore-based purchasing model

General Purpose (Scalable compute and storage options)

Hyperscale (On-demand scalable storage)

Business Critical (High transaction rate and high resiliency)

DTU-based purchasing model

Basic (For less demanding workloads)

Standard (For workloads with typical performance requirements)

Premium (For IO-intensive workloads)

up to 80 vCores, up to 408 GB memory

[Change configuration](#)

Compute Hardware

Select the hardware configuration based on confidential computing hardware depends on

Hardware Configuration

Save money

Already have a SQL Server License? Save with a license you already own with Azure Hybrid Benefit. Actual savings may vary based on region and performance tier. [Learn more](#)

☐ Yes ☒ No

vCores [Compare vCore options](#)



2

Data max size (GB) ⓘ



32

Changing Compute Tier and Hardware (vCore)

Service and compute tier

Select from the available tiers based on the needs of your workload. The vCore model provides a wide range of configuration controls and offers Hyperscale and Serverless to automatically scale your database based on your workload needs. Alternately, the DTU model provides set price/performance packages to choose from for easy configuration. [Learn more](#)

Service tier

General Purpose (Scalable compute and storage options) ▼

[Compare service tiers](#) ↗

Compute tier

- ☒ **Provisioned** - Compute resources are pre-allocated. Billed per hour based on vCores configured.
- ☐ **Serverless** - Compute resources are auto-scaled. Billed per second based on vCores used.

Compute Hardware

Select the hardware configuration based on your workload requirements. Availability of compute optimized, memory optimized, and confidential computing hardware depends on the region, service tier, and compute tier.




Hardware Configuration

Gen5

up to 80 vCores, up to 408 GB memory

[Change configuration](#)

vCore-based purchasing model: Provisioned compute tier

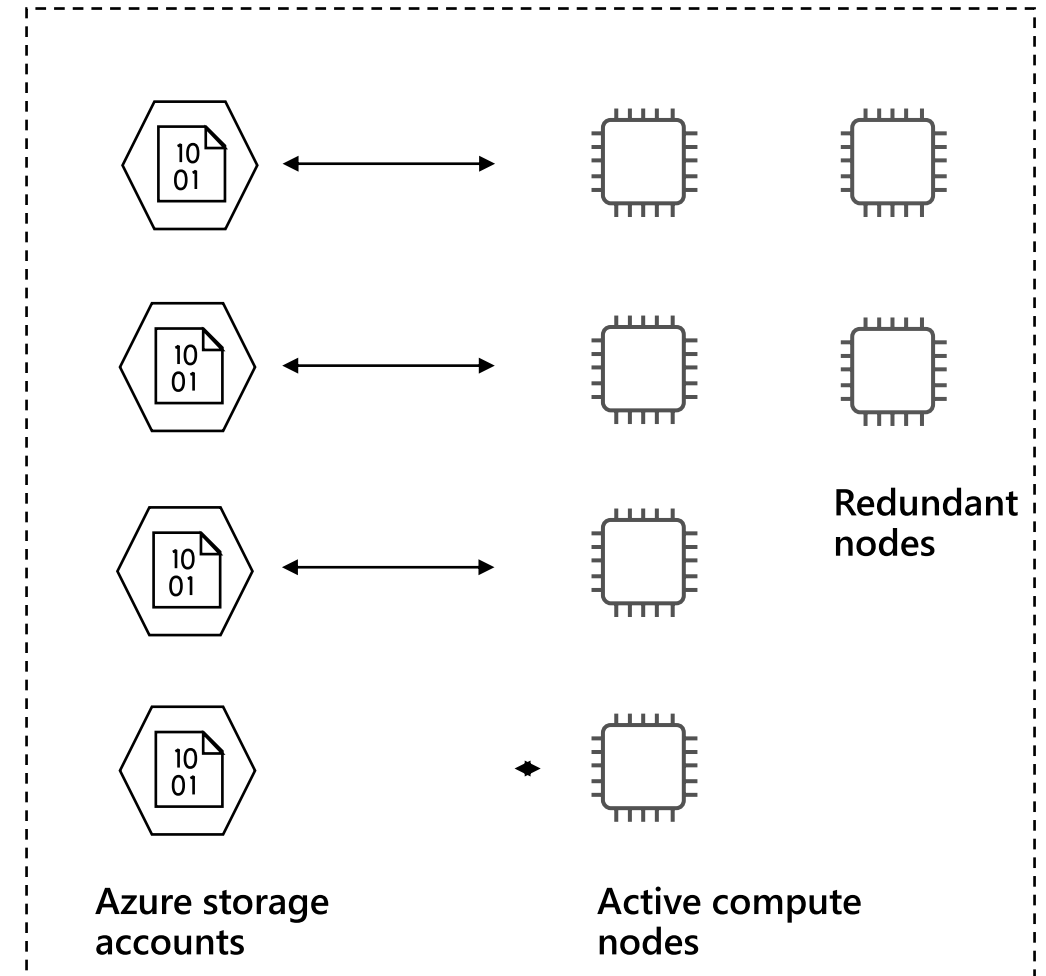
Service tier	 General purpose		 Business critical		 Hyperscale
Best for	Most budget-oriented workloads		Critical business applications with high IO requirements.		VLDB OLTP and HTAP workloads with highly scalable storage and read-scale requirements.
Deployment option	Single / Elastic Pools Managed Instance		Single / Elastic Pools Managed Instance		Single
Compute tiers	Gen5: 2 to 80 vCore Fsv2-series*: 72 vCore Serverless: 0.5 to 16 vCore		Gen5: 4 to 80 vCore	Gen5: 2 to 80 vCore M-series*: 128 vCore	Gen5: 4 to 80 vCore
Storage	Premium remote		Local SSD		Local SSD Cache
	5GB – 4TB per instance	32GB – 16TB per instance	5GB – 4TB per instance	32GB – 16TB per instance	Scale from 5GB to 100TB of storage in 1GB increments
In-Memory	Not supported		Supported		Not supported
Read-write IO	~2ms for all data access		<0.5ms for all data access		<0.5ms for hot data access ~2ms otherwise
Availability	1 replica, no read-scale replicas		3 read replicas, zone-redundant HA	3 replicas, 1 read-scale replica, zone-redundant HA	Primary read/write replica + up to 4 read replicas
Backups	RA-GRS, 7-35 days (7 days by default)		RA-GRS, 7-35 days (7 days by default)		LRS, ZRS, RA-GRS, 7-35 days (7 days by default)

For latest information reference: <https://azure.microsoft.com/en-us/pricing/details/sql-database/>

* Fsv2-series and M-series are currently in preview.

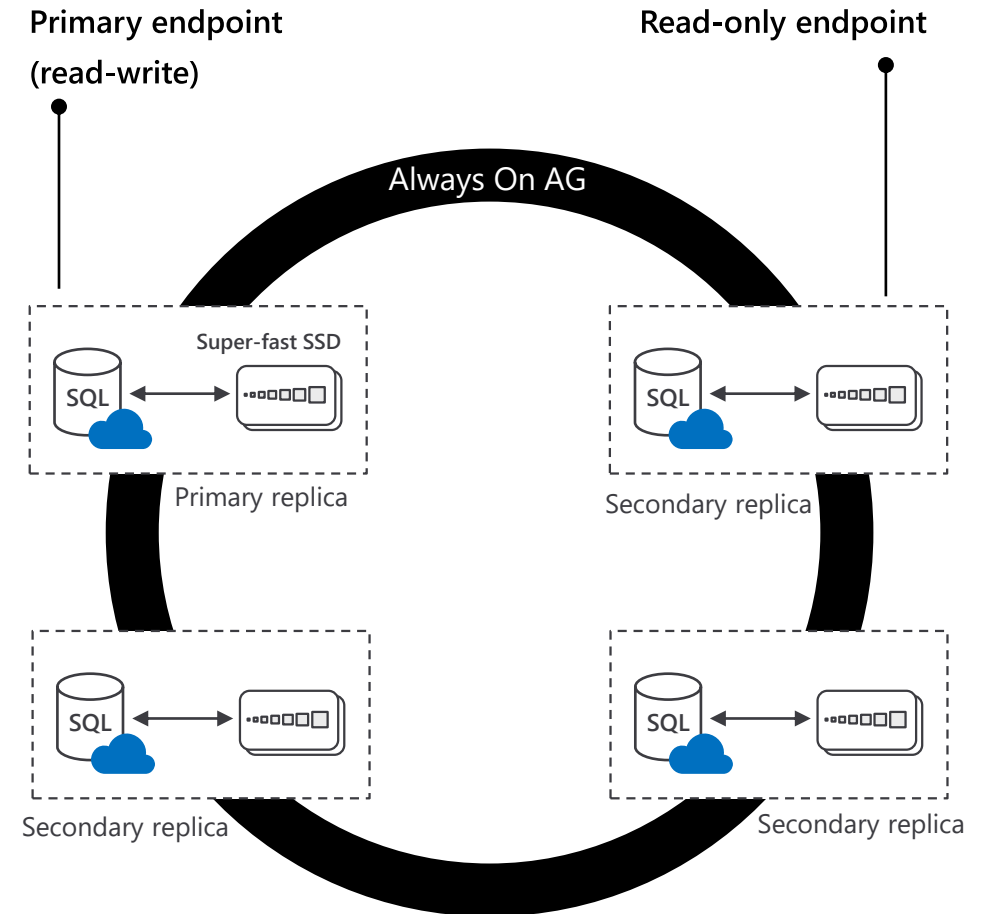
General Purpose

Feature	Description
Number of vCores	8, 16, 24 (Gen 4) 8, 16, 24, 32, 40, 64, 80 (Gen 5) 72 (Fsv2-series)
SQL Server version / build	SQL Server (latest available)
Min storage size	32 GB
Max storage size	8 TB
Max storage per database	Determined by the max storage size per instance
Expected storage IOPS	500-7500 IOPS per data file (depends on data file). See Premium Storage
Number of data files (ROWS) per the database	Multiple
Number of log files (LOG) per database	1
Managed automated backups	Yes
HA	Based on remote storage and Azure Service Fabric
Built-in instance and database monitoring and metrics	Yes
Automatic software patching	Yes
VNet - Azure Resource Manager deployment	Yes
VNet - Classic deployment model	No
Portal support	Yes



Business Critical

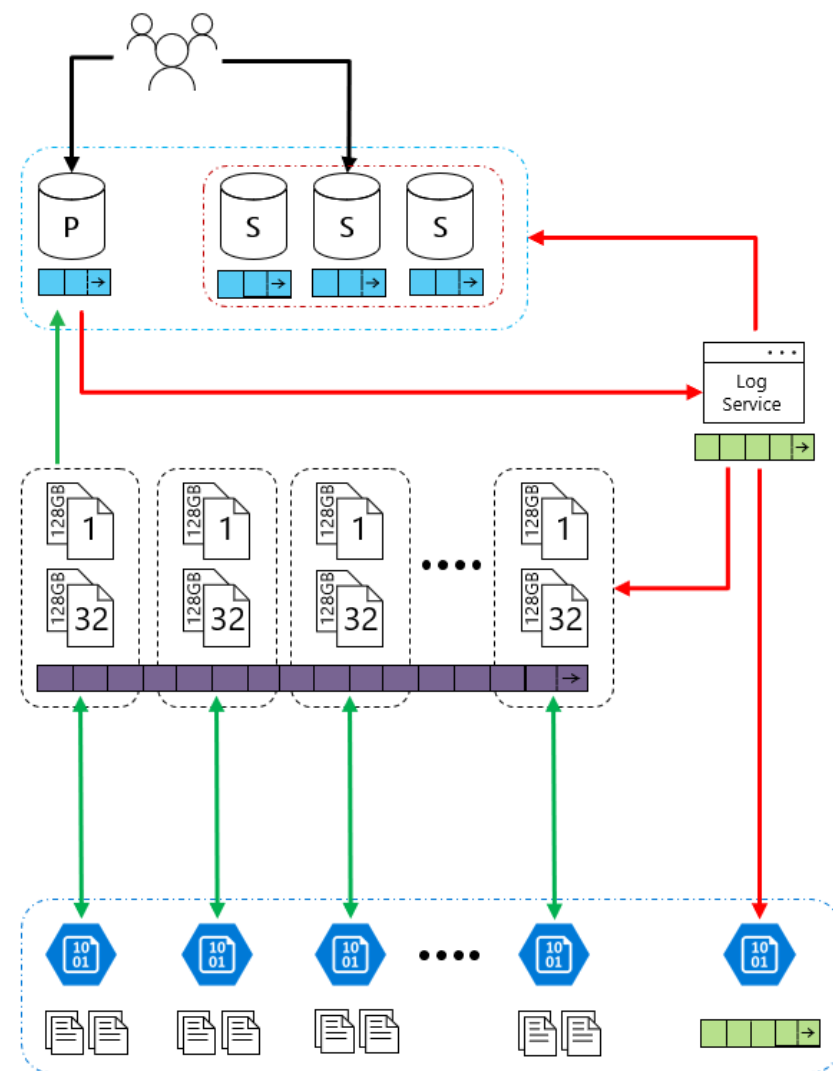
Feature	Description
Number of vCores	8, 16, 24, 32 (Gen 4) 8, 16, 24, 32, 40, 64, 80 (Gen 5) 128 (M-series)
SQL Server version / build	SQL Server (latest available)
Additional features	In-Memory OLTP 1 additional read-only replica (Read Scale-Out)
Min storage size	32 GB
Max storage size	Gen 4: 1 TB (all vCore sizes) Gen 5: 1 TB for 8, 16 vCores 2 TB for 24 vCores 4 TB for 32, 40, 64, 80 vCores
Max storage per database	Determined by the max storage size per instance
Number of data files (ROWS) per the database	Multiple
Number of log files (LOG) per database	1
Managed automated backups	Yes
HA	Based on Always On Availability Groups and Azure Service Fabric
Built-in instance and database monitoring and metrics	Yes
Automatic software patching	Yes
VNet - Azure Resource Manager deployment	Yes
VNet - Classic deployment model	No
Portal support	Yes



Business Critical service tier: collocated compute and storage

Hyperscale

Feature	Description
Number of vCores	Gen4: 1 to 24 vCore Gen5: 2 to 80 vCore
SQL Server version/build	SQL Server (latest available)
Additional features	4 read-scale replicas 100TB Data Support Constant Time Operations
Min storage size	4 GB
Max storage size	100TB Grows as customer data grows
Max storage per database	Determined by the max storage size per instance
Number of data files (ROWS) per the database	Multiple
Number of log files (LOG) per database	1
Managed automated backups	Yes
HA	High Availability is ensured on the storage layer
Built-in instance and database monitoring and metrics	Yes
Automatic software patching	Yes
VNet - Azure Resource Manager deployment	Yes
VNet - Classic deployment model	No
Portal support	Yes



Hyperscale Service Tier – Availability of Storage

Choose from hardware generations

	Gen 5	Fsv2-series	M-series	DC-Series
Hardware	Intel E5-2673 v4 (Broadwell) 2.3 GHz processors, fast eNVM SSD vCore=1 LP (hyper-thread)	Intel Xeon Platinum 8168 (SkyLake) processors	Intel Xeon E7-8890 v3 2.5 GHz processors	Intel® XEON E-2288G processors. Featuring Intel Software Guard Extension (Intel SGX))
Performance levels	1 to 80 vCores	72 vCores (1 vCore = 1 hyper-thread)	128 vCores (1 vCore = 1 hyper-thread)	Provision up to 8 vCores (physical)
Memory	5.1 GB per vCore for provisioned compute Up to 24 GB per vCore for serverless compute	1.9 GB per vCore	29 GB per vCore	4.5 GB per vCore
Storage	Up to 4TB remote SSD storage Up to 4TB local SSD storage	Up to 4TB remote SSD storage	Up to 4TB local SSD storage	Up to 4TB remote SSD storage

- Balance performance requirements and price with two hardware generations
- Match your on-premises application behavior
- Fsv2, M, and DC series are Generally available but in limited regions

vCore-based purchasing model: Serverless compute tier



On-demand flexible scale

Operate at the true rhythm of your business.

Adapts compute resources to the workload without sacrificing performance.

Automatically pauses and resumes.



Cost-effective

Pay for performance. Period.

Pay only for compute resources you consume, on a per-second basis.

Further optimize costs with configurable compute thresholds.



Fully managed & intelligent
Focus on your applications, not your infrastructure

Fully-managed and intelligent database service.

Built-in 99.99% availability.

Best for unpredictable and intermittent workloads on single databases, such as:



Dev/test



Line of Business



E-commerce

Provisioned compute and serverless meet different needs

Optimize compute provisioning and billing for your workload

Databases with provisioned compute...

Provision compute resources upfront.

Bill on an hourly basis.

Common scenarios

Workloads with regular and substantial compute utilization.

Multiple databases with bursty usage patterns that can be consolidated into a single server and use *elastic pools* for better price optimization.



Serverless databases...

Scale up or down to meet workload requirements, instead of pre-provisioning.

Bill on a per-second basis.

Common scenarios

Workloads with unpredictable and intermittent usage patterns or performance requirements .

Workloads where the requirements are unknown, and you can delegate compute sizing to the service.



Serverless price to performance with per-second billing

Compute resources scale dynamically up or down based on workload requirements.

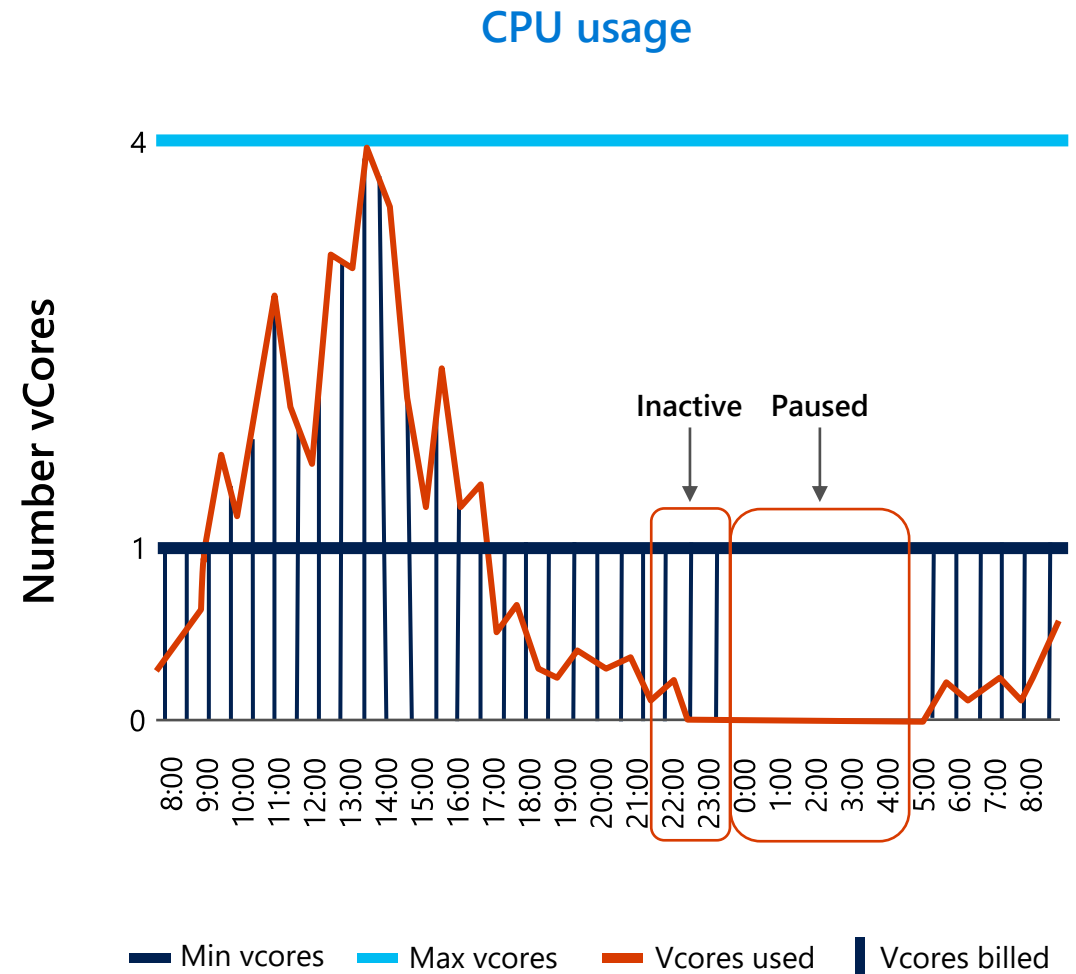
Configure minimum and maximum vCores to define the range of available compute capacity.

Use auto-pause delay to define the time period the dataset must be inactive before pausing.

The database is automatically resumed when the next login or other activity occurs.

Pay for compute based on the vCores and memory used per second, with lowest billing based on configured vCore minimum.

When the database is paused, the compute cost is zero and only storage costs are incurred.



Lesson 2: How to create Azure SQL Database

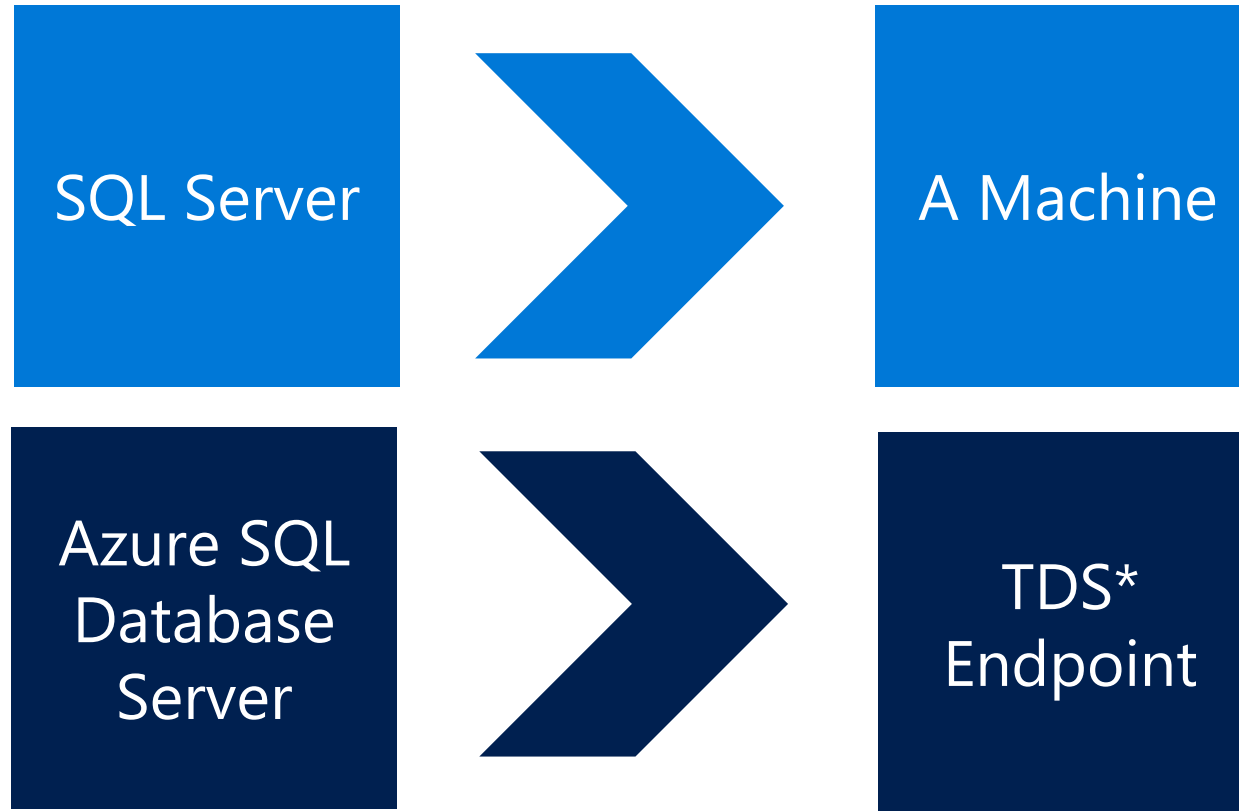
Objectives

After completing this learning, you will be able to:

- Know which prerequisites are needed before you can create an Azure SQL Database.
- Create your first Azure SQL Database.



Azure SQL Database Server is not a machine...



*TDS = Tabular Data Stream

Server Provisioning

Service head that contains databases

Connect via Fully Qualified Domain Name

Initially contains only a **master** database

Create SQL Database Server

Microsoft

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * ⓘ PFE Subscription ▼

Resource group * ⓘ (New) AzureSQLDatabaseRG ▼
[Create new](#)

Server details

Enter required settings for this server, including providing a name and location.

Server name * dbssql essentials ✓
.database.windows.net

Location * (US) East US ▼

Authentication

Select your preferred authentication methods for accessing this server. Create a server admin login and password to access your server with SQL authentication, select only Azure AD authentication [Learn more](#) using an existing Azure AD user, group, or application as Azure AD admin [Learn more](#), or select both SQL and Azure AD authentication.

Authentication method

☒ Use SQL authentication

☐ Use only Azure Active Directory (Azure AD) authentication

☐ Use both SQL and Azure AD authentication

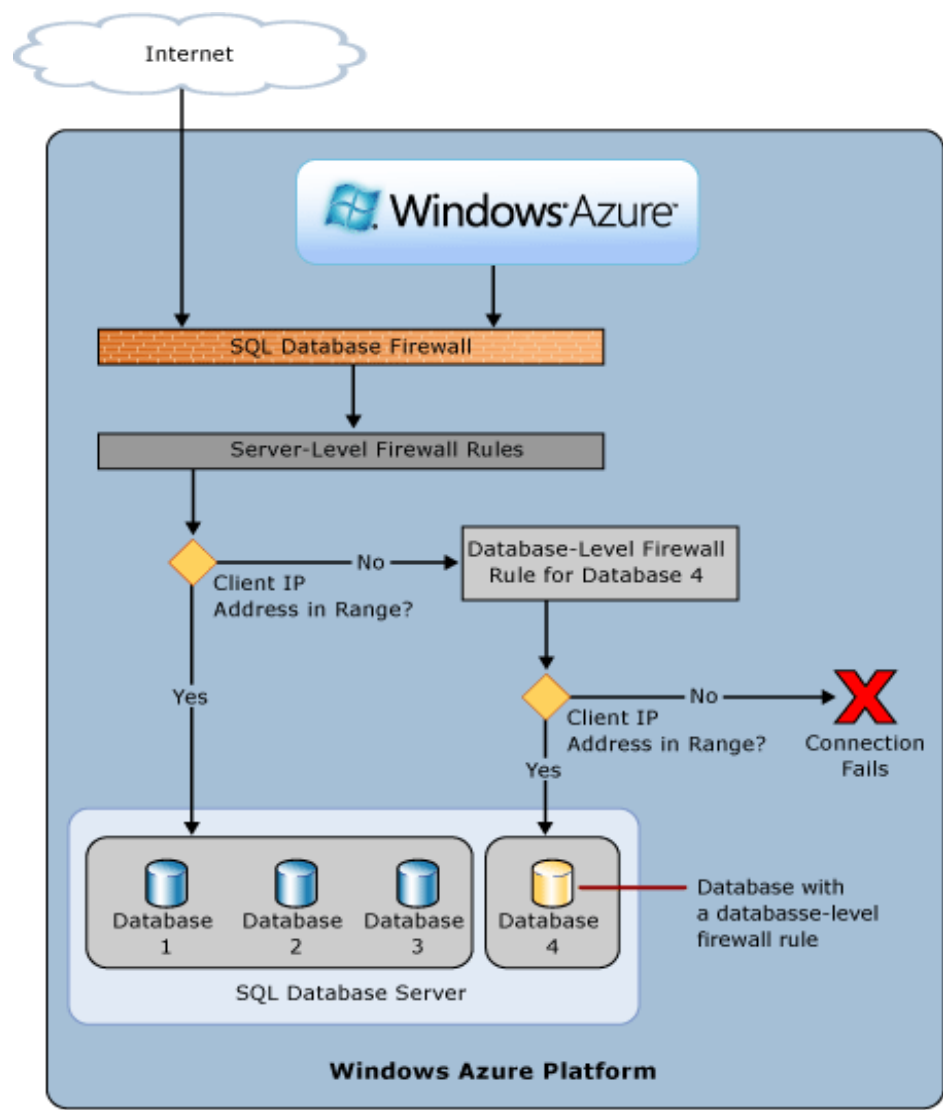
Server admin login * sqlserveradmin ✓

Password * ✓

Confirm password * ✓

[Review + create](#) [Next : Networking >](#)

Azure SQL Database Firewall



IP Address-based access control for SQL Database

Rules at the server and/or database level

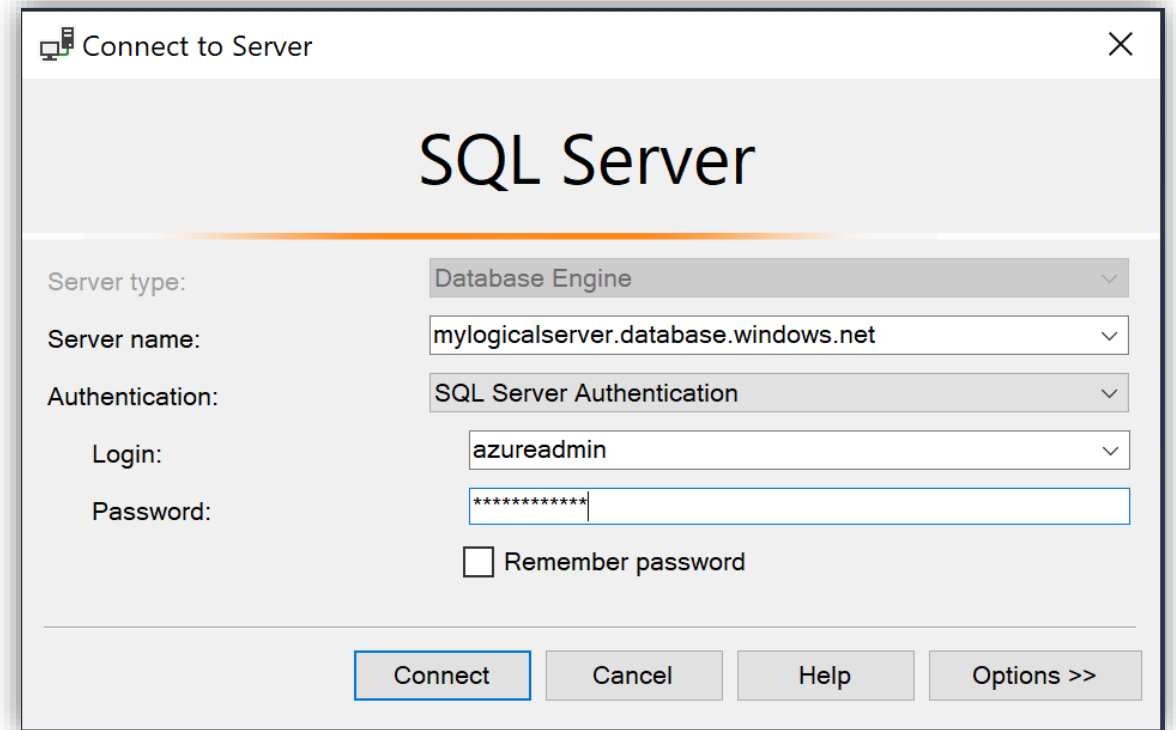
No IP authorized by default, not even Azure itself

SQL Server Management Studio

Download
the latest
version of
SSMS.

Get the fully
qualified
domain
name of
your Azure
SQL Server.

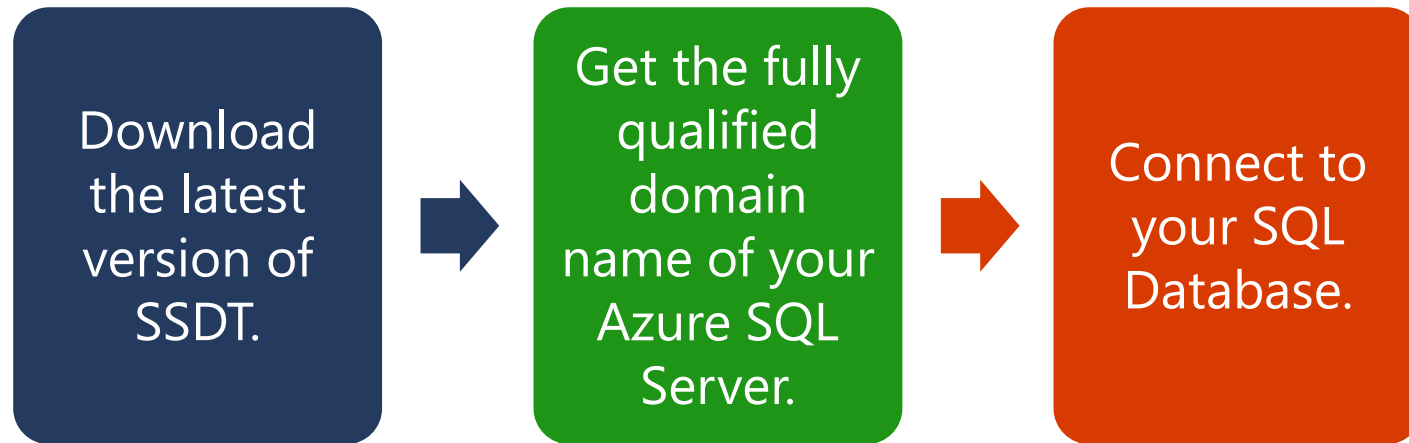
Connect to
your SQL
Database.



The screenshot shows the 'Connect to Server' dialog box with the following fields and options:

- Server type:** Database Engine (dropdown menu)
- Server name:** mylogicalserver.database.windows.net (text box)
- Authentication:** SQL Server Authentication (dropdown menu)
- Login:** azureadmin (text box)
- Password:** (text box with masked characters)
- ☐ Remember password
- Buttons:** Connect, Cancel, Help, Options >>

SQL Server Data Tools



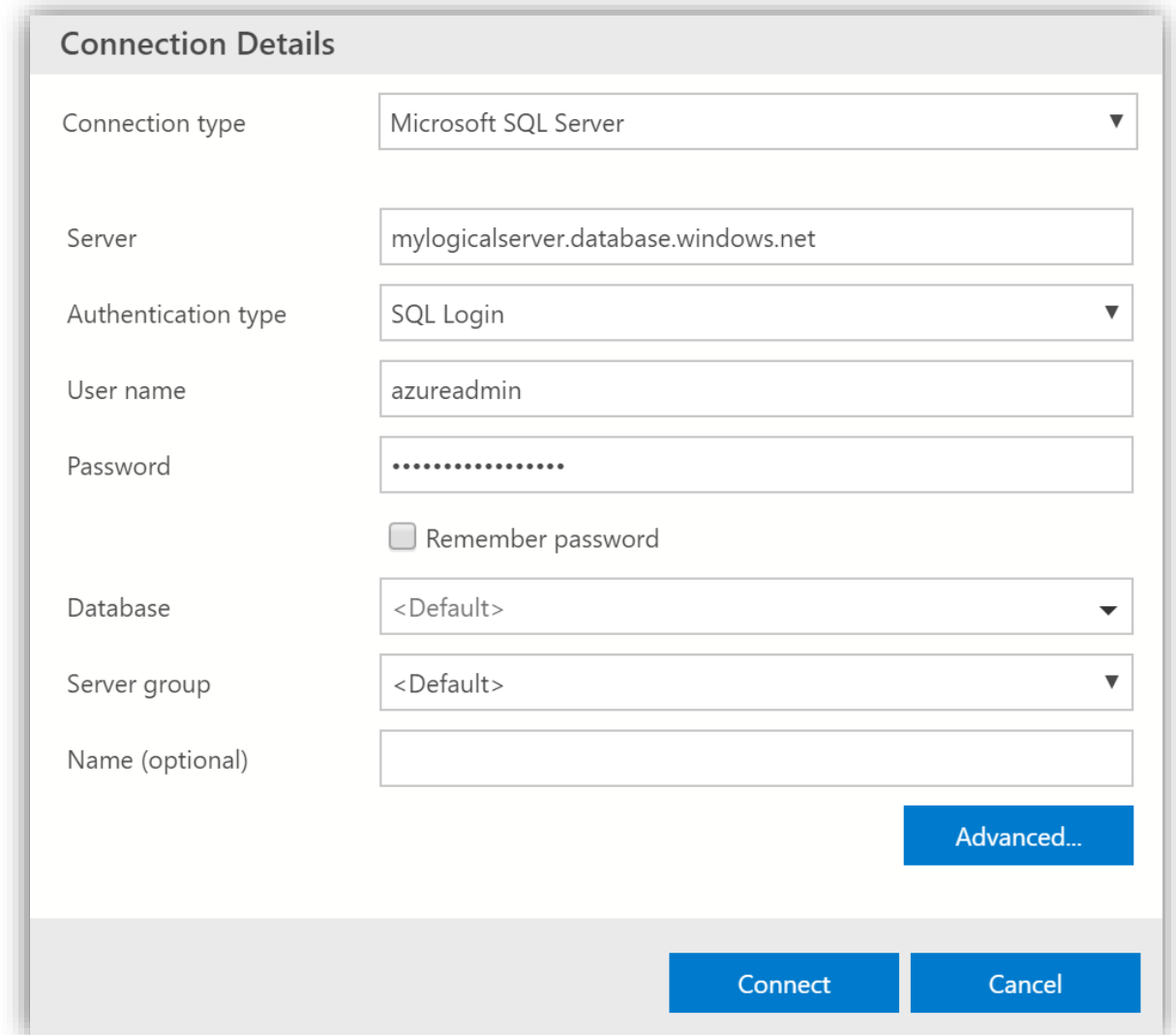
The screenshot shows the 'Connect' dialog box in SQL Server Data Tools. The 'Browse' tab is selected, showing a search bar and a tree view with 'Local', 'Network', and 'Azure' options. Below the tree view, the 'Server Name' field is populated with 'mylogicalserver.database.windows.net'. The 'Authentication' dropdown is set to 'SQL Server Authentication'. The 'User Name' field is populated with 'azureadmin'. The 'Password' field is masked with dots. There is a 'Remember Password' checkbox which is unchecked. The 'Database Name' dropdown is set to '<default>'. At the bottom right, there is a link for 'Advanced...' and two buttons: 'Connect' and 'Cancel'.

Azure Data Studio

Download the latest version of Azure Data Studio.

Get the fully qualified domain name of your Azure SQL Server.

Connect to your SQL Database.

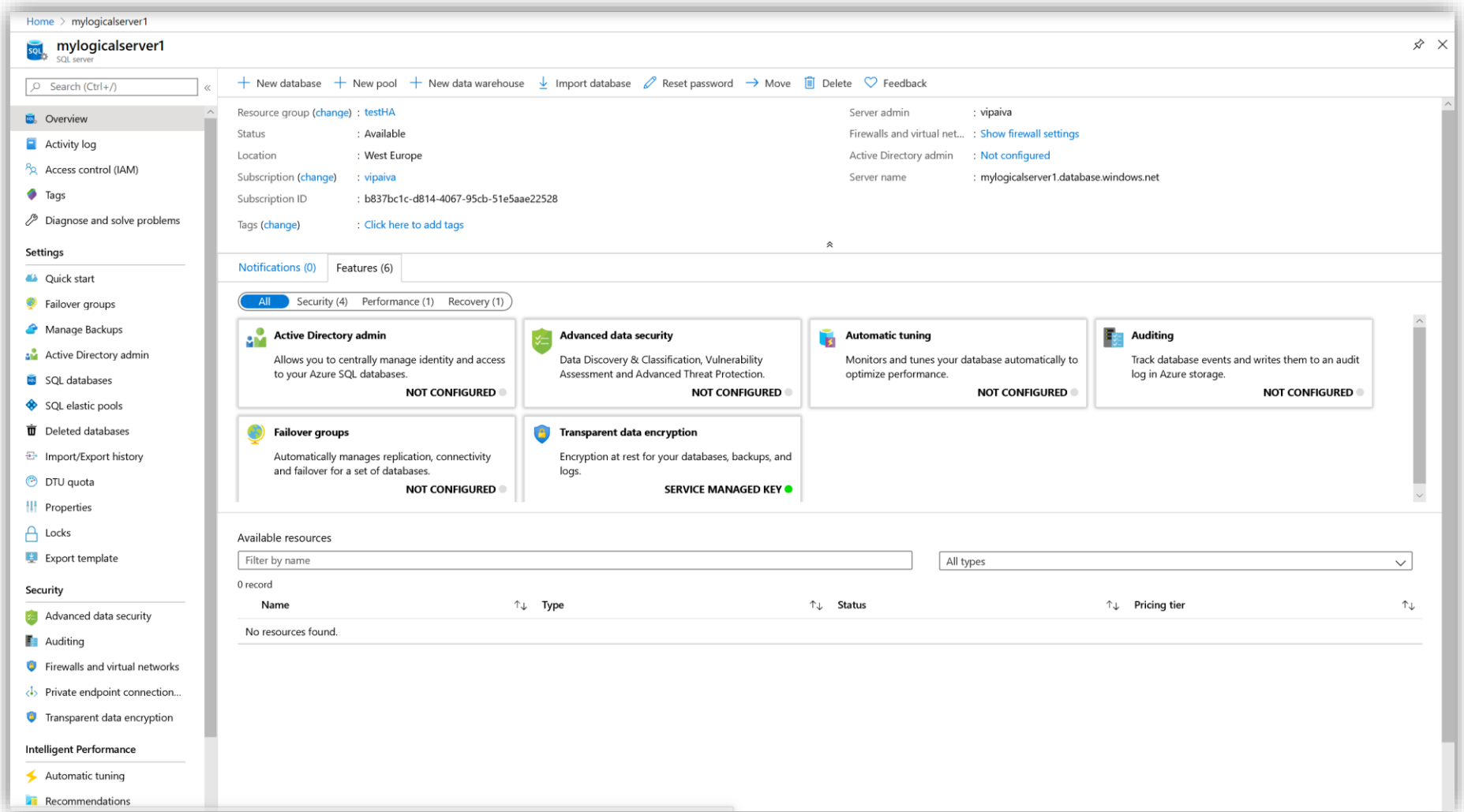


The screenshot shows the 'Connection Details' dialog box in Azure Data Studio. It contains the following fields and options:

- Connection type:** A dropdown menu set to 'Microsoft SQL Server'.
- Server:** A text box containing 'mylogicalserver.database.windows.net'.
- Authentication type:** A dropdown menu set to 'SQL Login'.
- User name:** A text box containing 'azureadmin'.
- Password:** A text box with masked characters (dots). Below it is a checkbox labeled 'Remember password' which is currently unchecked.
- Database:** A dropdown menu set to '<Default>'.
- Server group:** A dropdown menu set to '<Default>'.
- Name (optional):** An empty text box.

At the bottom right of the dialog, there are three buttons: 'Advanced...' (in a blue box), 'Connect' (in a blue box), and 'Cancel' (in a blue box).

Azure Portal



Demonstration

Create your first Azure SQL Database

- Create a new server, configure the firewall rules and create an Azure SQL Database (DTU based).



Lesson 3: Working with Managed Instances

Azure SQL Managed Instance



SQL Server on Azure Virtual Machines

Best for lift and shift and workloads requiring OS access

Infrastructure-as-a-Service



Azure SQL Managed Instance

Best for modernizing existing apps

Platform-as-a-Service



Azure SQL Database

Best for supporting modern cloud apps



Azure SQL Edge

Best for extending apps to IoT edge

Edge Computing

Azure SQL Managed Instance release?

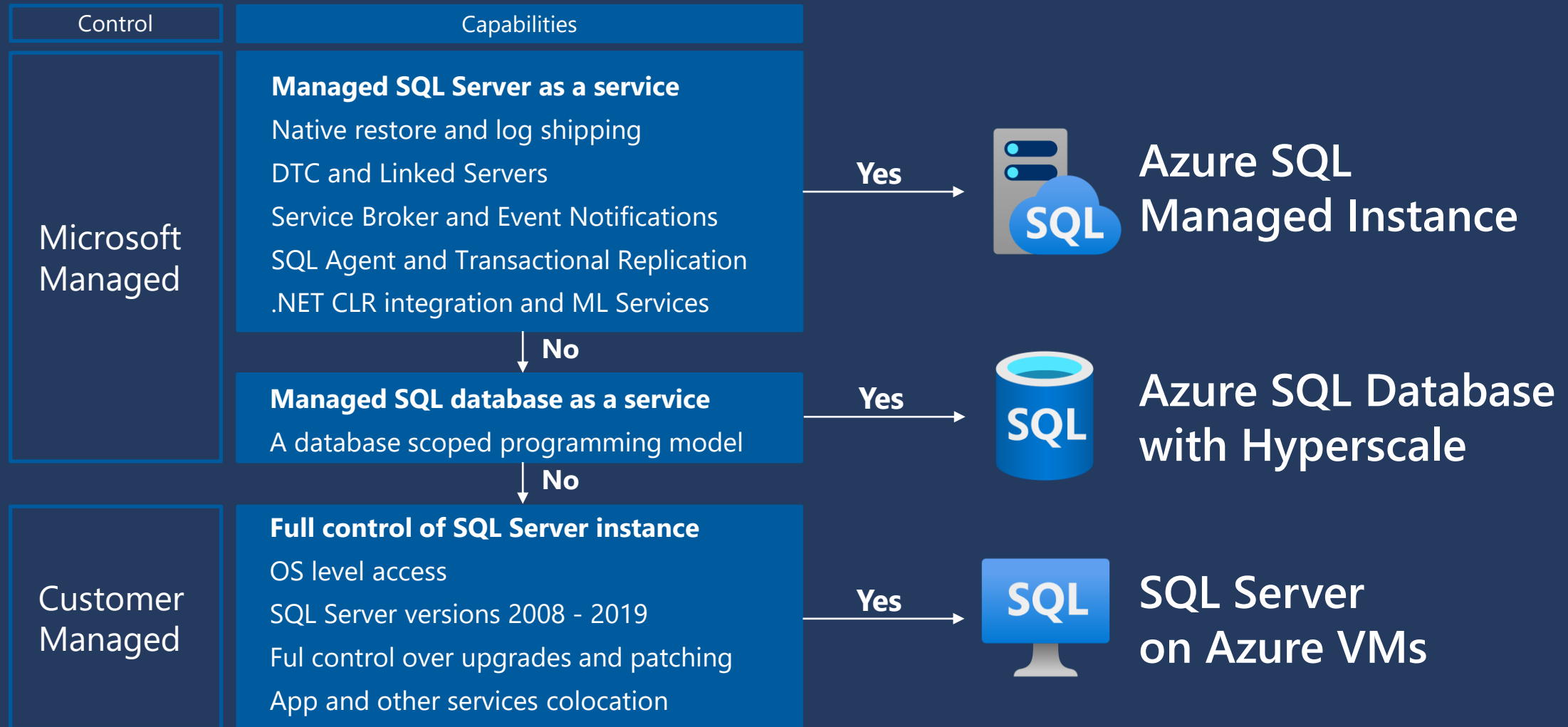


Oct 1st, 2018 – GA of General Purpose

Dec 4th, 2018 – GA or Business Critical

Azure SQL Database launched in 2010

Which Azure SQL offering is right for you?



Service tiers

General purpose (GP) service tier

Great for most business workloads.

Remote storage
IOPS
\$
Built-in HA

 P 16TB

Business critical (BC) service tier

For workloads that require low latency, In-Memory, readable secondary.

Local SSD storage
IOPS++
\$\$\$
Built-in HA
In-Memory

 P  S  S  R 16TB

Resource limits

Memory
Max Log Size
I/O throughput and latency
Size of TempDB
Max concurrent workers
Backup Retention

Service tiers

General purpose (GP) service tier

Great for most business workloads.

Remote storage
IOPS
\$
Built-in HA

 16TB

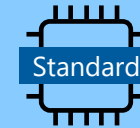
Business critical (BC) service tier

For workloads that require low latency, In-Memory, readable secondary.

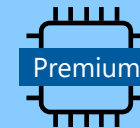
Local SSD storage
IOPS++
\$\$\$
Built-in HA
In-Memory

    16TB

Hardware options



Standard series
80 vCores
5 GB per vCore

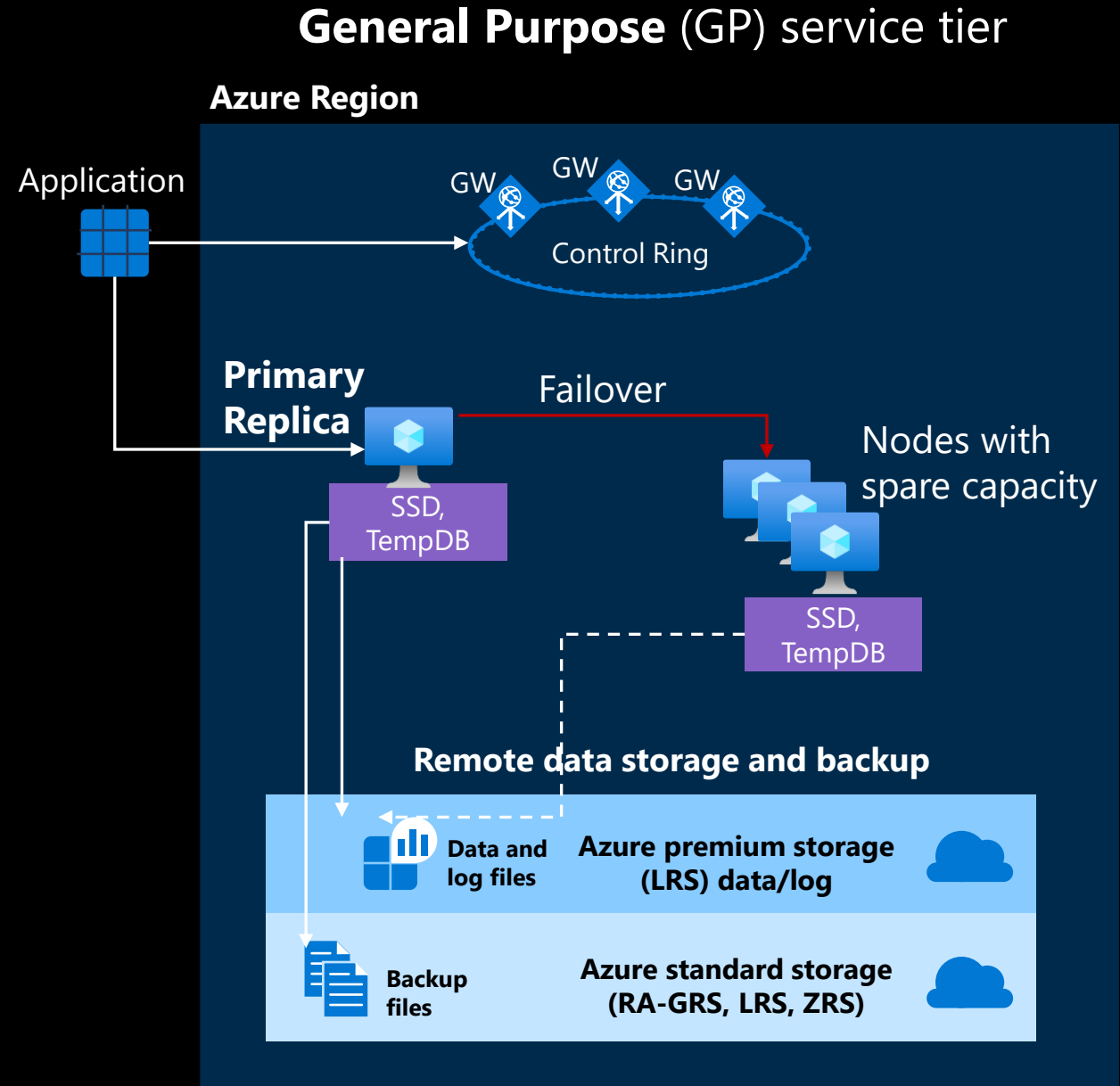


Premium series
80 vCores
7 GB per vCore

Memory optimized
64 vCores
13.6 GB per vCore

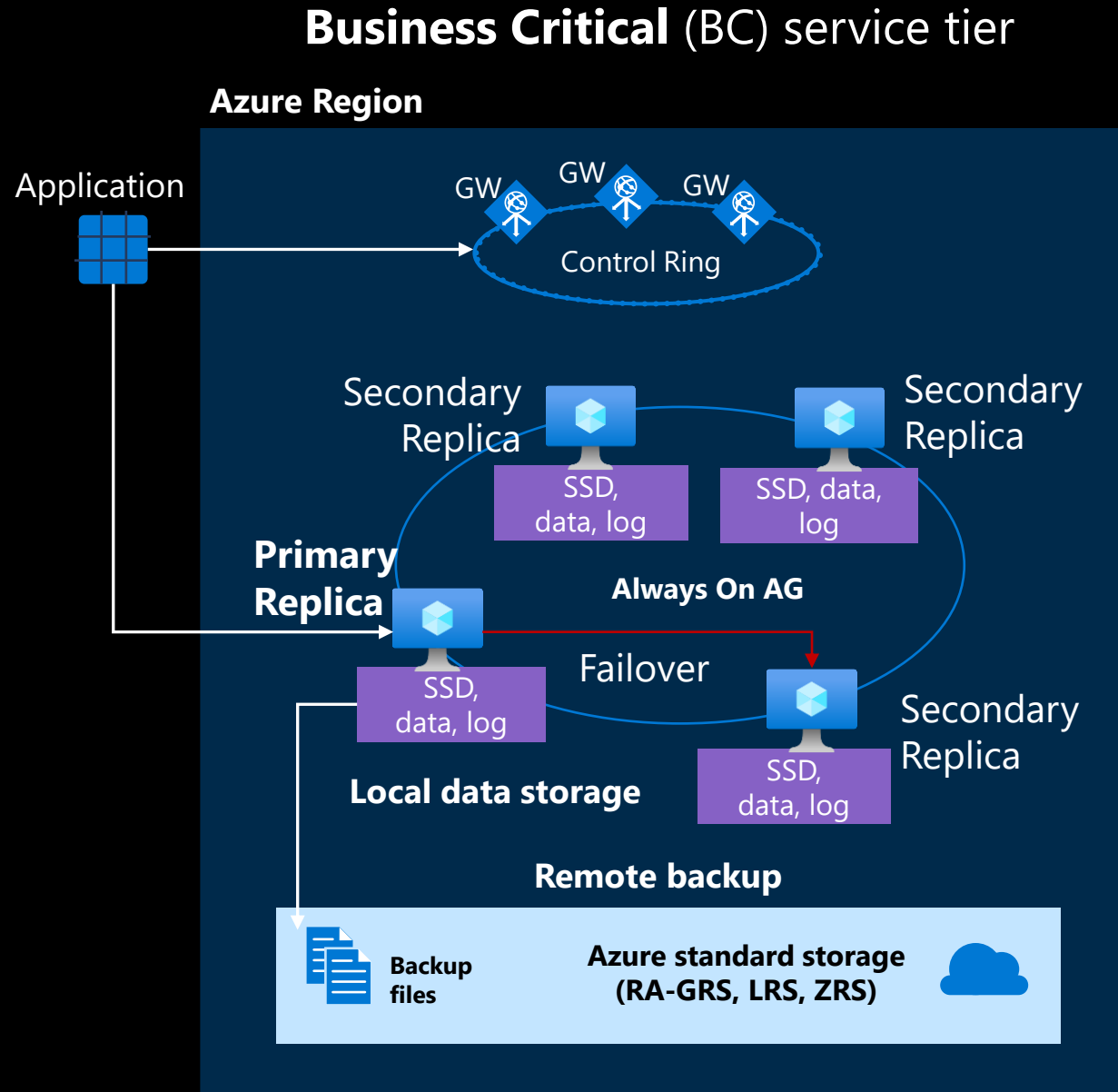
General Purpose High Availability

- Behaves like Failover Cluster Instance (FCI)
- Remote storage provides data redundancy within a datacenter
- Backup files are in a different location with geo-redundancy
- Failover decisions based on SQL and Service Fabric
- Recovery time depends on spare capacity
- Connectivity redirection built-in



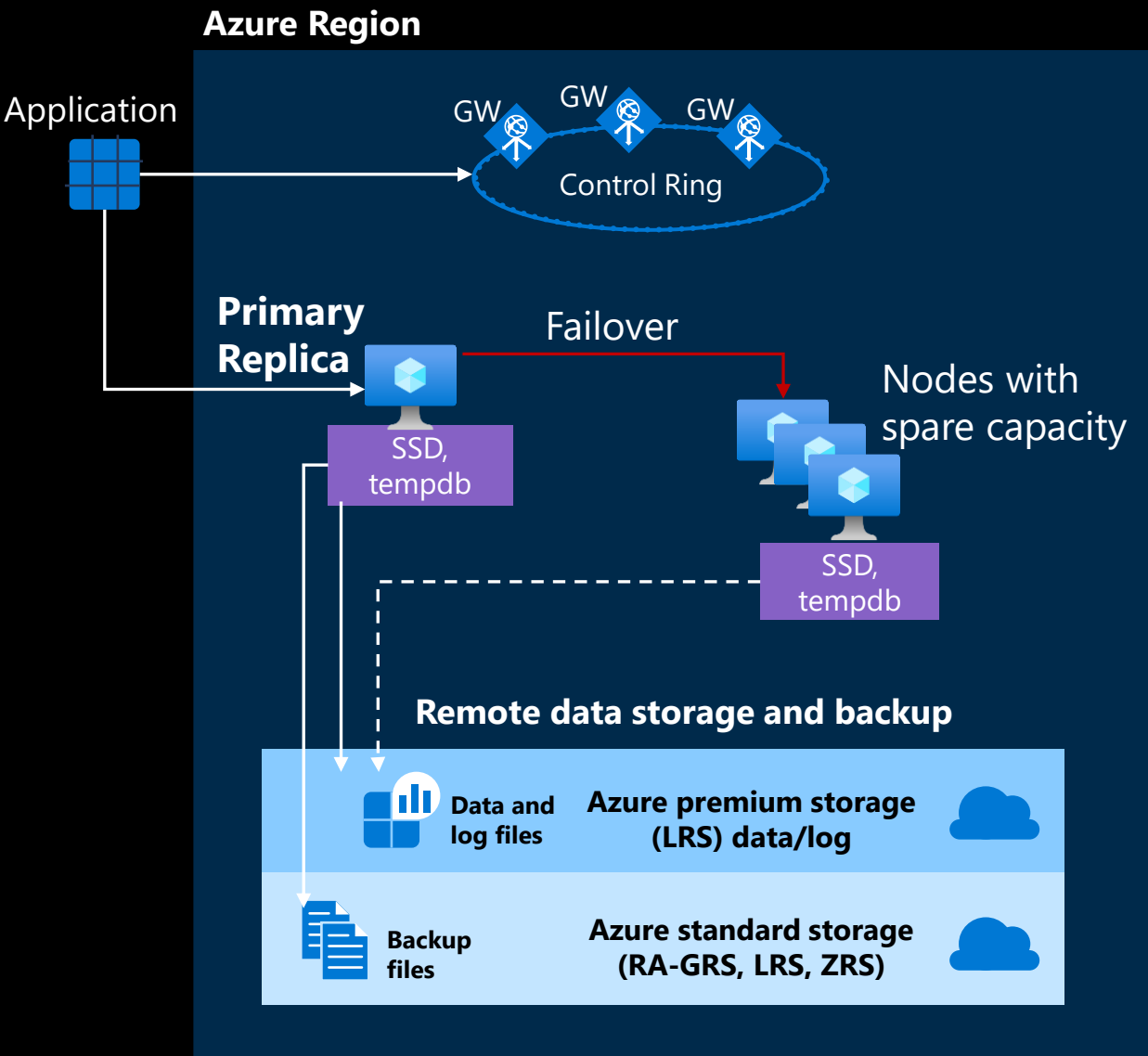
Business Critical High Availability

- Based on Always On Availability Groups
- 3 secondary replicas automatically created
- Four replicas kept available
- Backup files in a different location with geo-redundancy
- At least one secondary must sync for commits
- Automatic failover based on SQL and Service Fabric
- Recovery time extremely fast
- Connectivity redirection built-in
- Read Scale-Out from one of the replicas

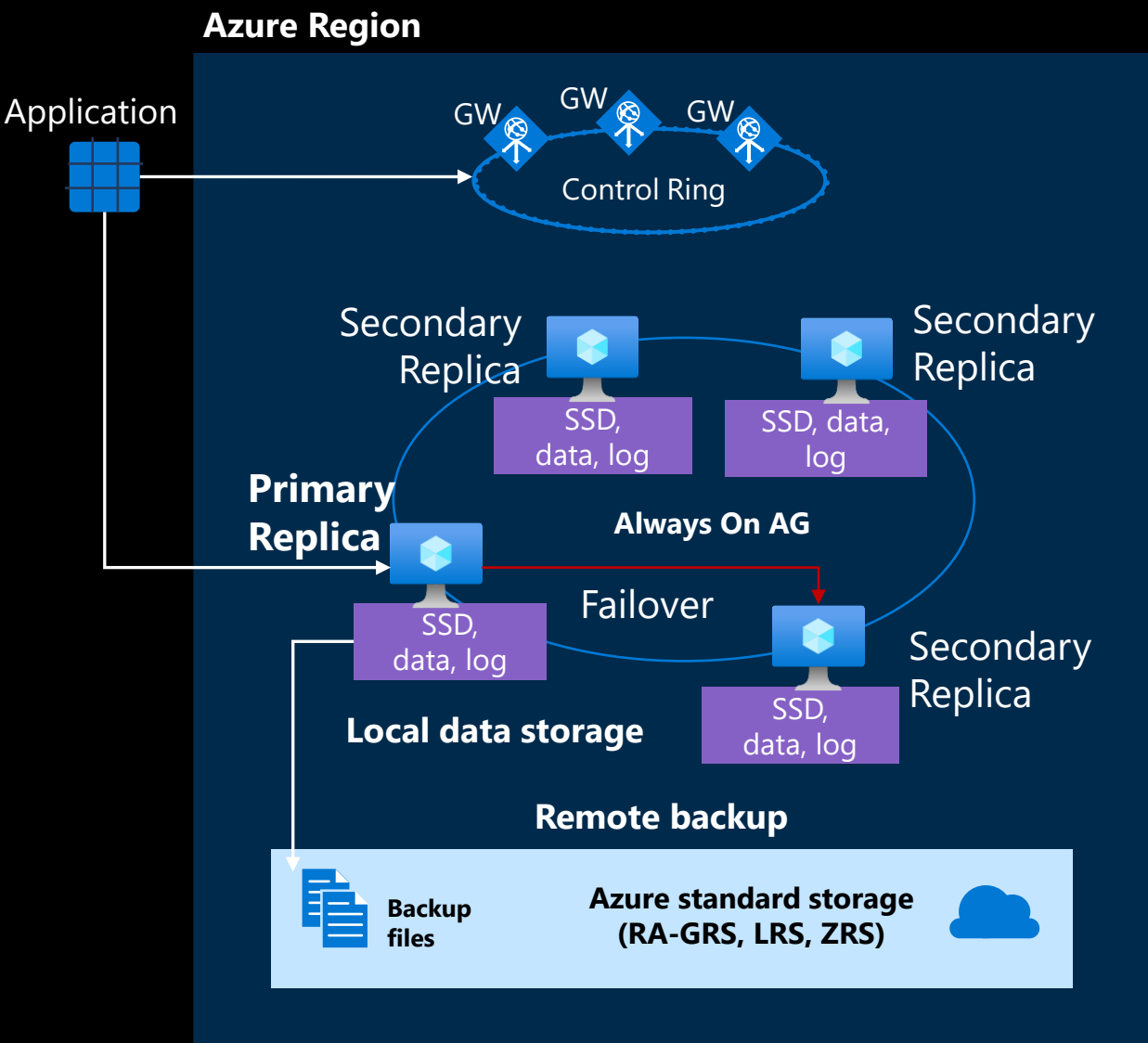


Side by side comparison

General Purpose (GP) service tier



Business Critical (BC) service tier



SQL MI New HW Generations

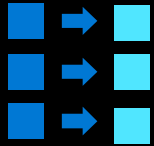
Standard-series (Gen 5)	Premium-series	Premium-series Mem Optimized
<ul style="list-style-type: none">• CPU: Intel Broadwell, Skylake and Cascade Lake, 2.3-2.5 GHz• vCore range: 4 – 80• Memory / vCore: 5.1 GB• Max instance memory: 408 GB• Max instance storage<ul style="list-style-type: none">• General Purpose: 16 TB• Business Critical: 4 TB	<ul style="list-style-type: none">• CPU: Latest 3rd Gen Intel 8370C (Ice Lake), 2.8 GHz• vCore range: 4 – 80• Memory / vCore: 7 GB• Max instance memory: 560 GB• Max instance storage<ul style="list-style-type: none">• General Purpose: 16 TB• Business Critical: 5.5 TB	<ul style="list-style-type: none">• CPU: Latest 3rd Gen Intel 8370C (Ice Lake), 2.8 GHz• vCore range: 4 - 64• Memory / vCore: 13.6 GB• Max instance memory: 870 GB• Max instance storage<ul style="list-style-type: none">• General Purpose: 16 TB• Business Critical: 16 TB

Modernize SQL Server apps on Azure

Azure SQL Managed Instance is best for modernizing existing apps at scale



Operates on the **latest / "evergreen" version** of SQL



Provides **maximum compatibility** with SQL Server on-prem for **low-cost** app modernization



Fully-managed service optimized for **DBA productivity** *



Secures data at **compute** and **networking** levels



New! Enables **SQL Server running anywhere to get connected to Azure** for auto-DR, read scale, and online migration scenarios



* projected ROI **230% over 3 years** according to [Forrester Total Economic Impact study](#)

Deploy, Connect, Configure



Deploy

Choose region, service tier, vCores, and Max Storage
You choose Max Storage for instance based on possible max size
Choose hardware options NEW
Service-aided subnet configuration



Connect

Inside the virtual network with Private IP
Outside using public endpoint/port with NSG



Configure

Configure outside of SQL with the portal or CLI
Change tier, vCores, max storage, maintenance windows NEW
Configure inside SQL with T-SQL or SSMS



What's different?

No OS or file system access
No manual restarts or SQL Server Config Manager
Tempdb managed
Some global trace flags allowed



Evergreen version of SQL



Get rid of perpetual SQL
major version upgrades

Newest / Azure-only
features

This is the LAST SQL
Server upgrade that
you ever perform

Leverage latest SQL
Server innovation
available as “cloud-first”

NEW: Database format alignment with SQL Server 2022



Fully-managed for DBA productivity



Industry-leading high availability (99.99%, financially backed up)



Industry-leading support by SQL Server Engineering team 24x7



Geo-replicated automatic-backups with built-in point-in-time restore



Configurable short and long-time retention



Easy to configure, auto-managed disaster recovery 50+ Azure regions



Automatic full stack software updates without downtime



Built-in compliance



Advanced Threat Protection



Monitoring at scale and automatic tuning

When SQL Managed Instance **might not** be an optimal choice?



- When 3rd party vendors **did not certify / support** their apps for Azure SQL
- When customers require **strict control** over all aspects of their platform: OS access, SQL Server version, patching cadence, ability to install 3rd party components side-by-side SQL Engine, etc.
- When customers want to **fully customize** every single aspect of their environment



Do not miss to use **Azure SQL on Virtual Machines** as the next best choice, optimally positioned for future modernization into Azure SQL Managed Instances!

