Chad Green

Getting Started with Azure SQL Database

CodeStock
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Who is Chad Green

- Director of Software Development at ScholarRx

- Community Involvement

  - Code PaLOUsa Conference Chair

  - Louisville .NET Meetup Organizer

  - Louisville Tech Leaders Meetup Co-Organizer

  - Louisville Tech Ladies Committee Member
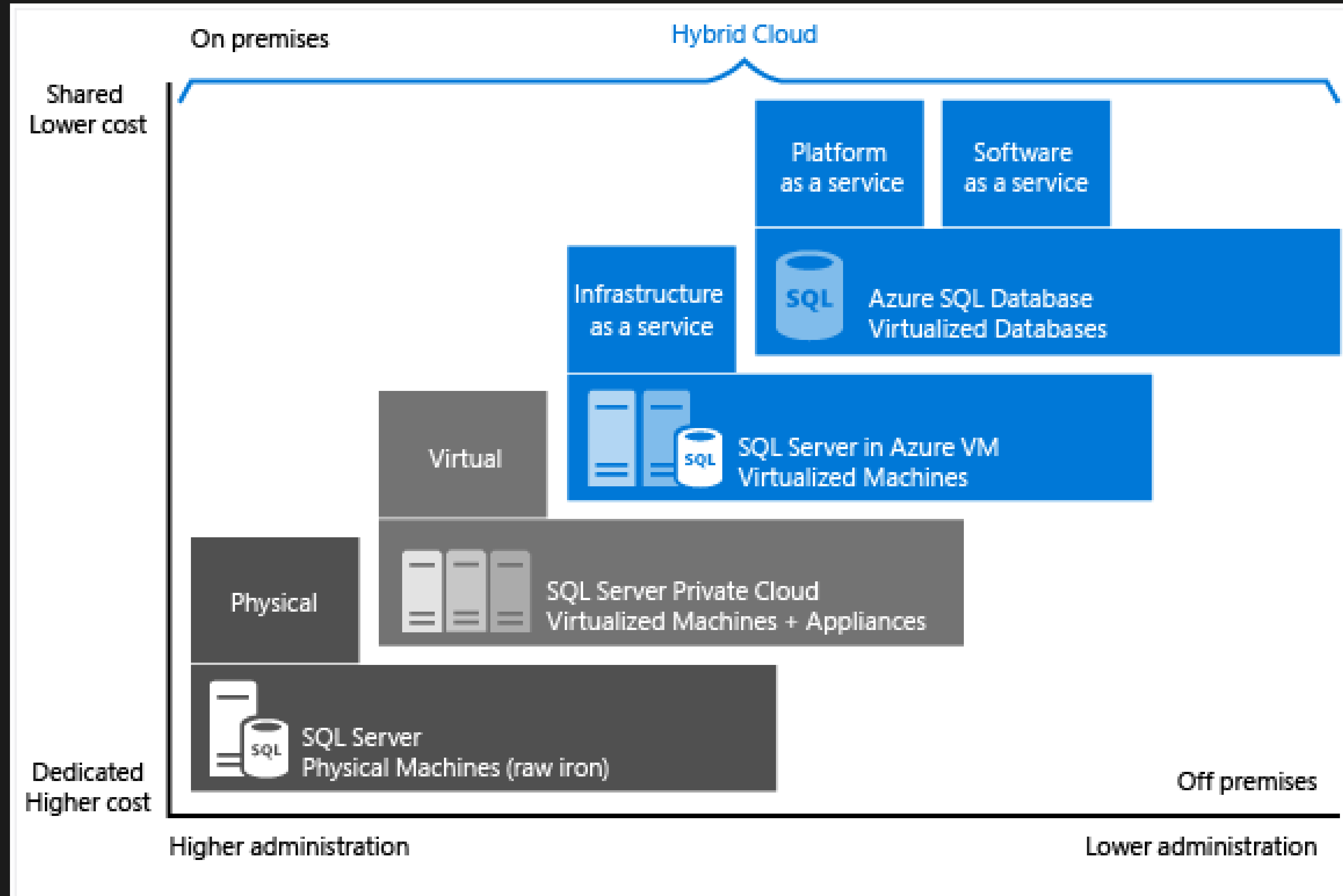
- Contact Information

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Microsoft's Data Platform

Database as a Service

Cloud computing service model that provides users with some form of access to a database without the need for setting up physical hardware, installing software

What is Azure SQL Database

Azure SQL Database is a cloud-based relational database service, built on the Microsoft SQL Server engine designed to deliver predictable performance and scalability, with virtually no downtime and near-zero administration.
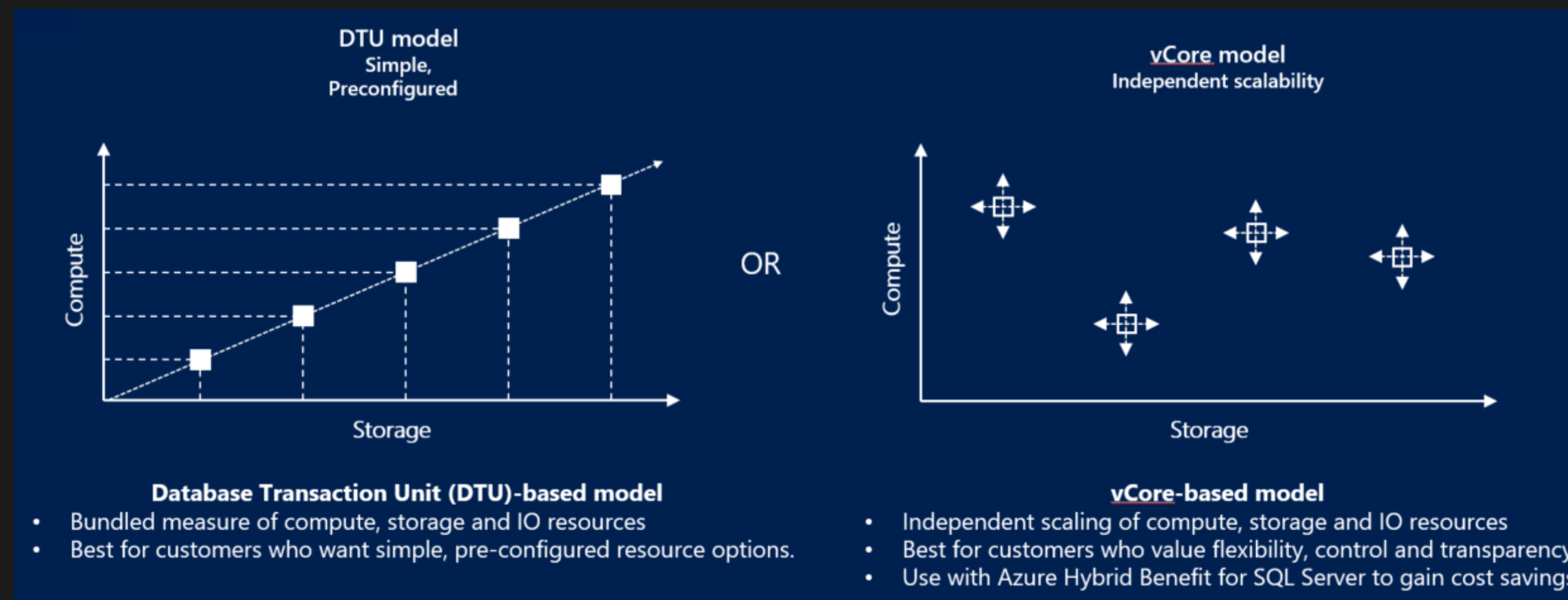
SQL Server with out the administration headaches!

Azure SQL Database Purchasing Models

DTU

- Bundled measure of compute, storage, and IO resources
- Database Transaction Units (DTUs)
- Elastic Database Transaction Units (eDTUs)
- Simple, pre-configured resource options

vCore

- Independently choose compute and storage resources
- Azure Hybrid Benefit for SQL Server
- Flexibility, control, and transparency

DTU model
Simple,
Preconfigured

vCore model
Independent scalability

OR

Compute / Storage

Compute / Storage

Database Transaction Unit (DTU)-based model
- Bundled measure of compute, storage and IO resources
- Best for customers who want simple, pre-configured resource options.

vCore-based model
- Independent scaling of compute, storage and IO resources
- Best for customers who value flexibility, control and transparency
- Use with Azure Hybrid Benefit for SQL Server to gain cost savings

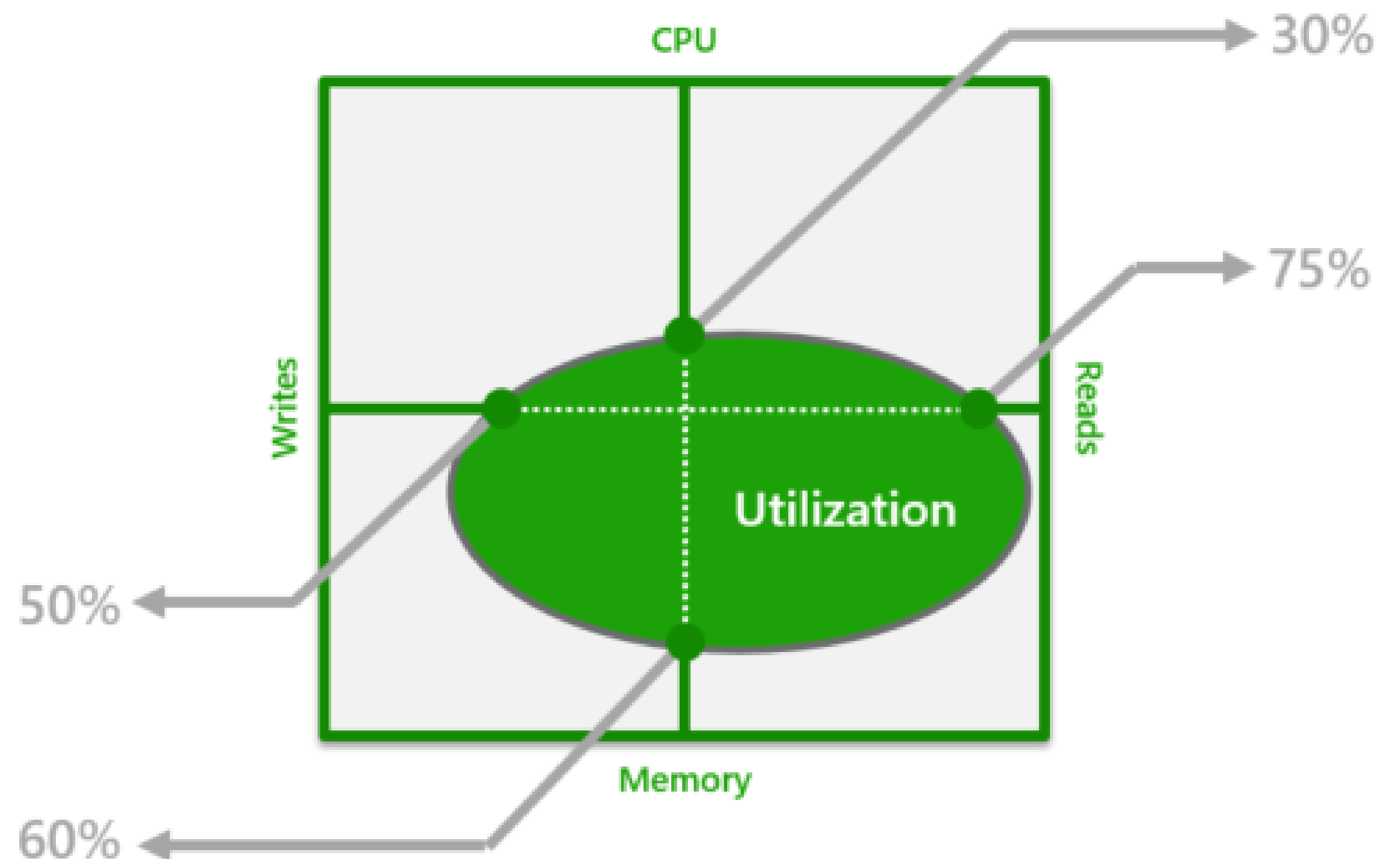# Database Transaction Unit – DTU

Bounding box

Monitoring database workload utilization within bounding box

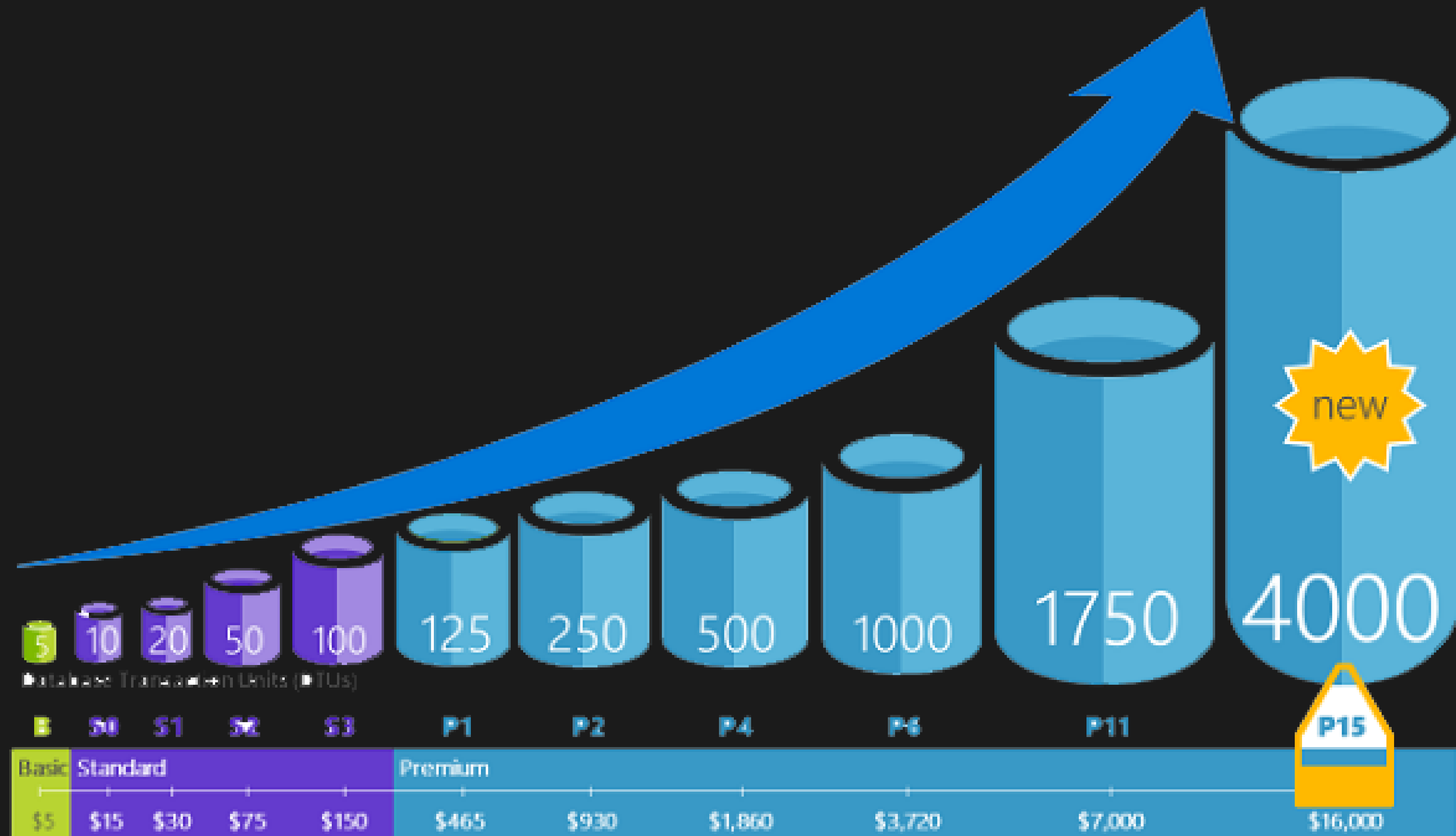Represents the relative power (resources) assigned to the database

Blended measure of CPU, memory, and read-write rates
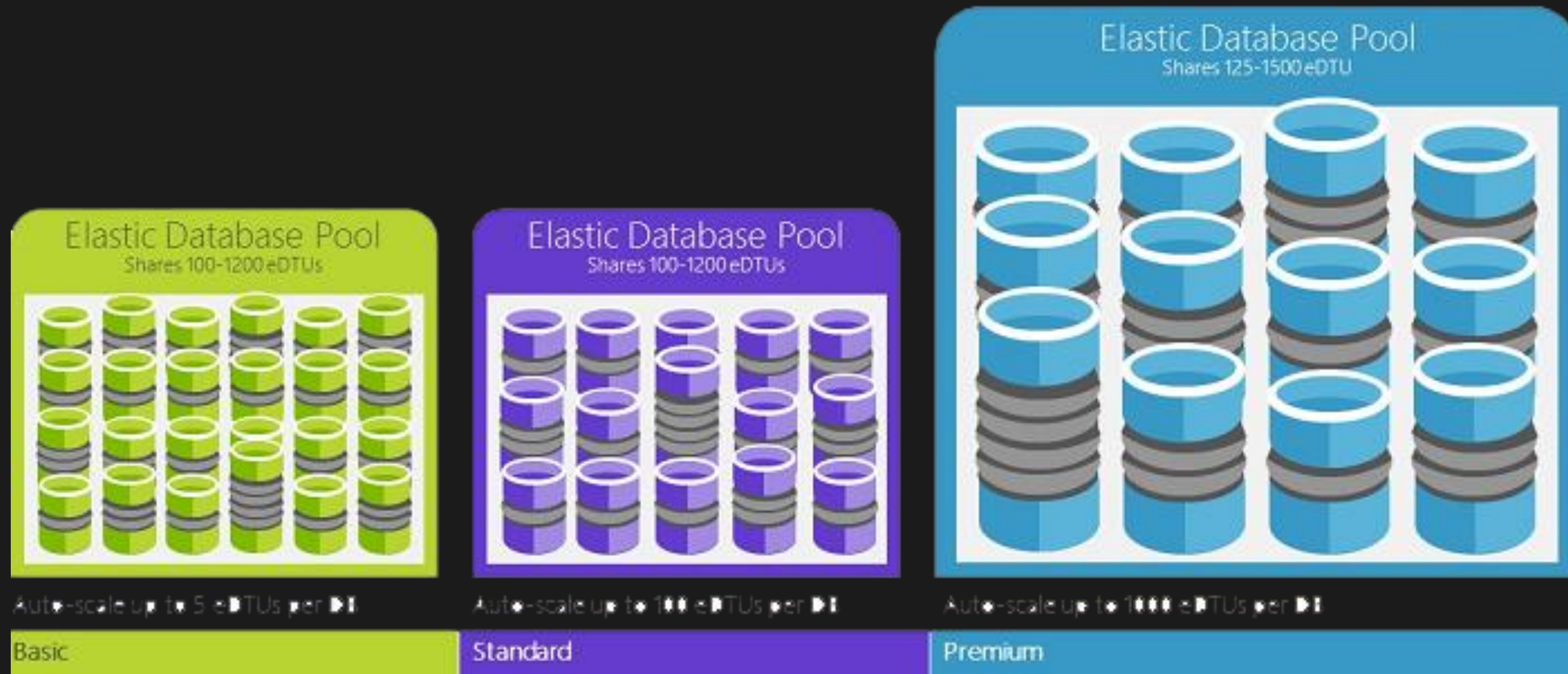
Compare the power across performance levels

Simplifies talking about performance, think IOPS vs. %

CPU

30%

75%

Writes

Reads

Utilization

50%

Memory

60%

What are DTUs

Database Transaction Units (DTUs)

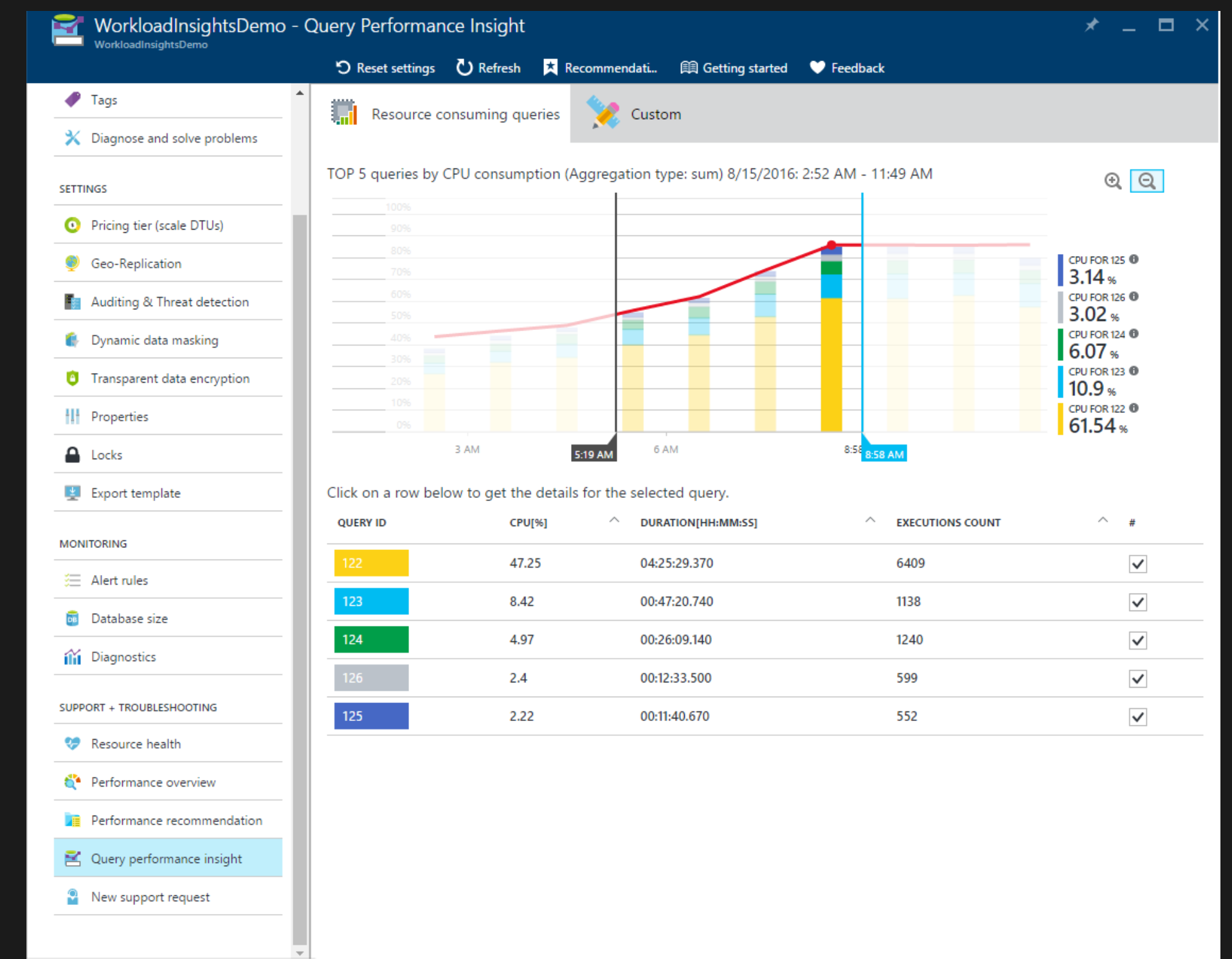|	B	S0	S1	S2	S3	P1	P2	P4	P6	P11	P15
	Basic	Standard				Premium					
	$5	$15	$30	$75	$150	$465	$930	$1,860	$3,720	$7,000	$16,000

What are eDTUs

How Many DTUs Do I Need?

- Migration
  - DTU Calculator – dtucalculator.azurewebsites.net
- Existing Azure SQL Database workloads
  - SQL Database Query Performance Insight
  - sys.dm_db_resource_stats
  - sys.resource_stats

What about vCore?

- Represents the logical CPU offered with an option to choose between generations of hardware

- Flexibility, control, transparency of individual resource consumption, and straightforward way to translate on-premises workload requirements to the cloud

- Allows you to scale compute, memory, and storage

- Pay for
  - Compute (service tier + number of vCores + generation of hardware)
  - Type and amount of data and log storage
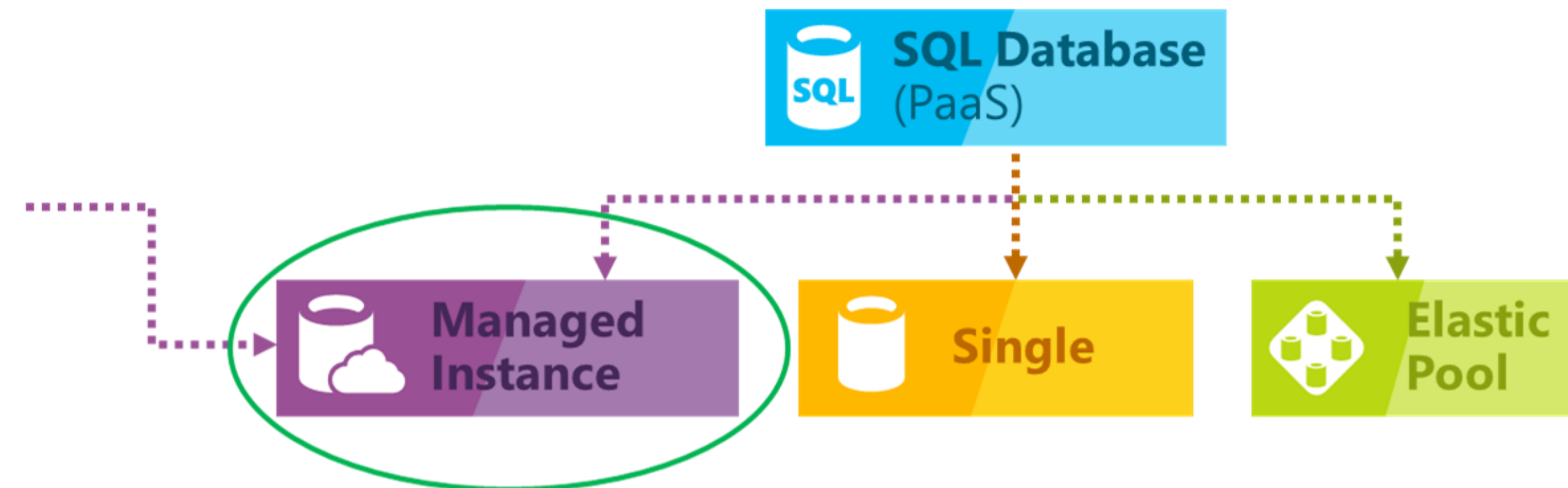 - Number of IOs
  - Backup storage (RA-GRS)

Deployment Options
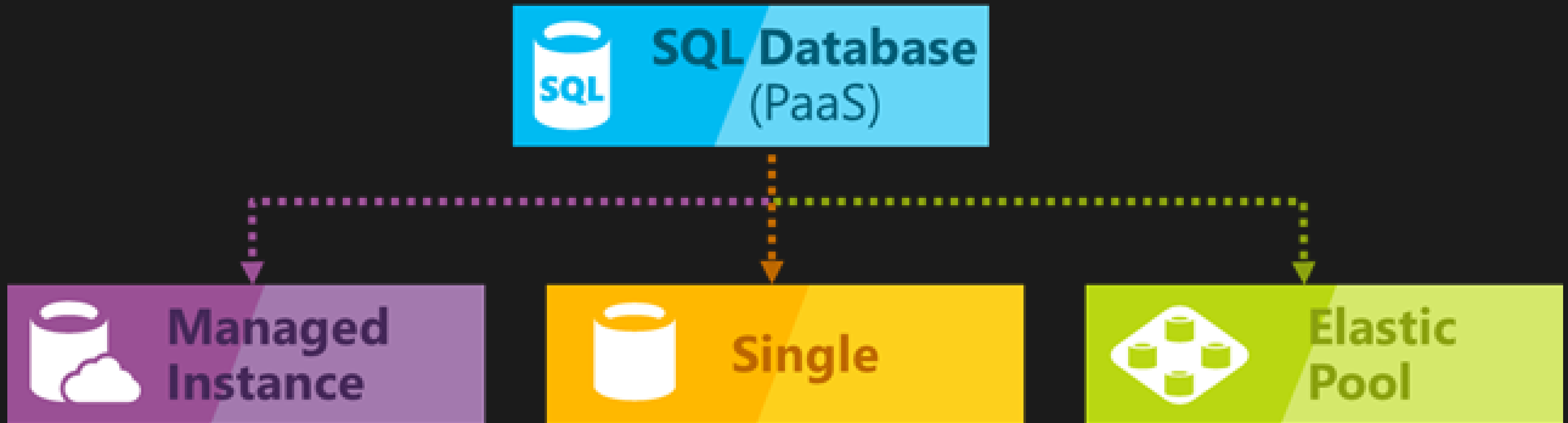
Deployment Options

What is SQL Database Managed Instance?

New deployment option that enables **frictionless migration** for SQL apps and **modernization** in a fully managed service

SQL Database (PaaS)

Managed Instance

Single

Elastic Pool

Easy lift and shift	Fully managed PaaS	Full isolation and security	New business model
• Fully-fledged SQL instance with nearly 100% compat with on-prem	• Built on the same PaaS service infrastructure • All PaaS features	• Native VNET implementation • Private IP addresses	• Competitive • Transparent • Frictionless

Choose a Version of Azure SQL

SQL Server on VM

- Full control
- Up to 99.95% availability
- Full parity with on-premises
- Fixed database version
- Easy migration
- Private IP Address
- Ability to host apps on same VM

Managed Instance

- Highly compatibility
- 99.99% availability
- Built-in backups, patching, recovery
- Latest stable version
- Easy migration
- Private IP address
- Built-in advanced intelligence and security
- Online change of resources

Single Database

- Most commonly used features
- 99.99% availability
- Built-in backups, patching, recovery
- Latest stable version
- Ability to assign necessary resources to individual databases
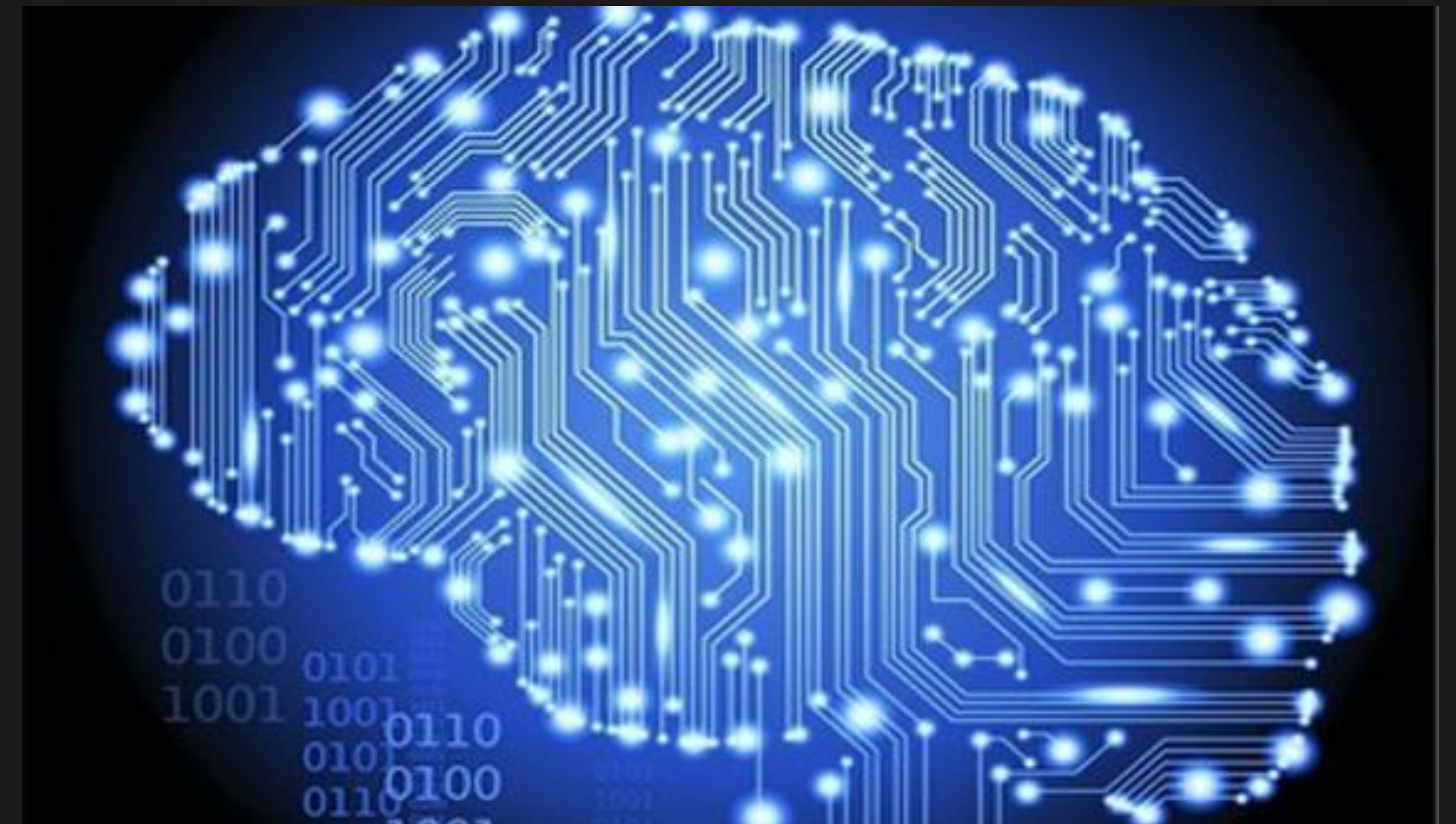- Online change of resources

Built-In Intelligence

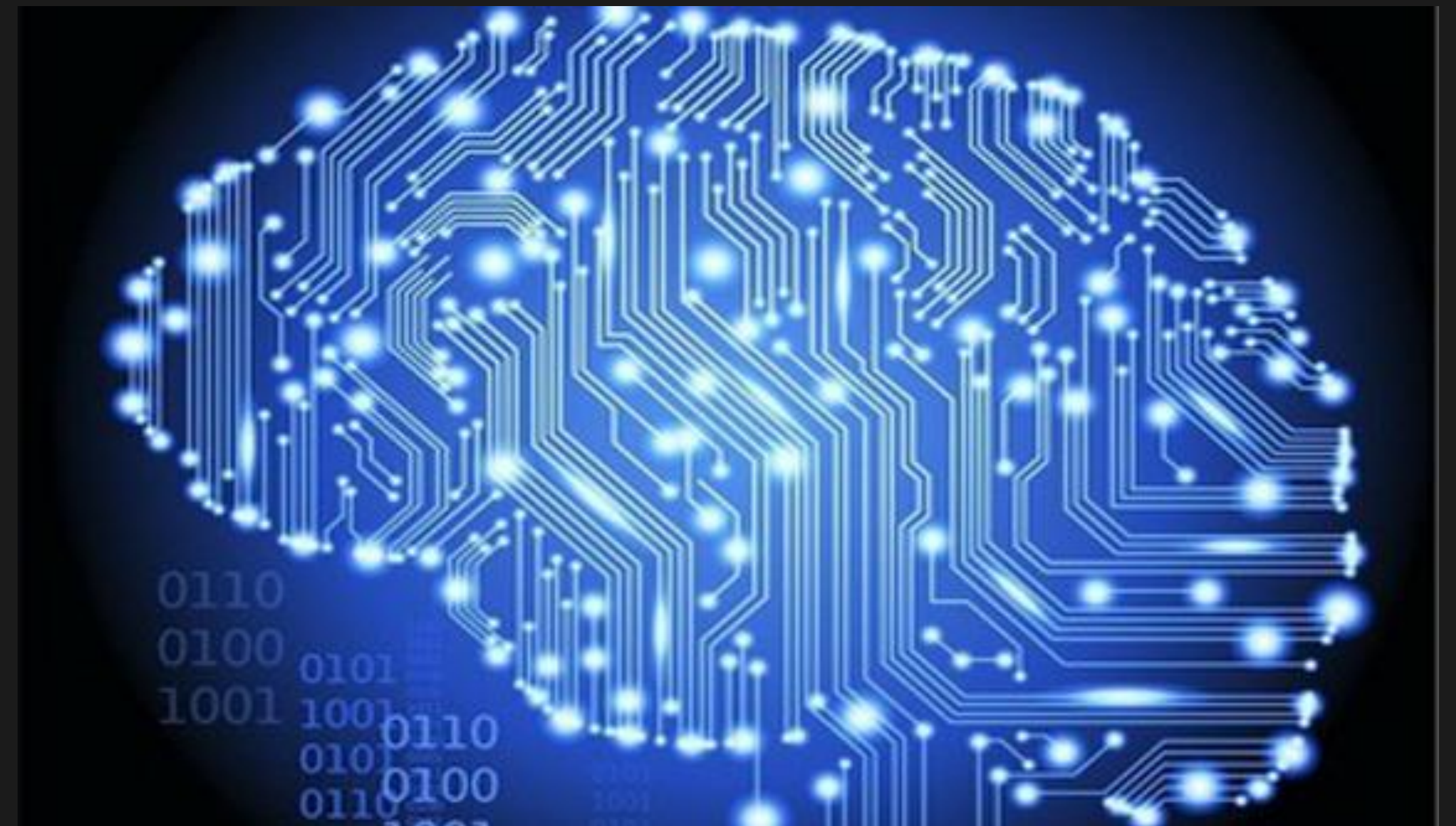Getting Started with Azure SQL Database

Built-In Intelligence

- Automatic performance monitoring and tuning
  - Automatic Index Management
  - Automatic Plan Correction
- Adaptive Query Processing
- Intelligent Threat Detection

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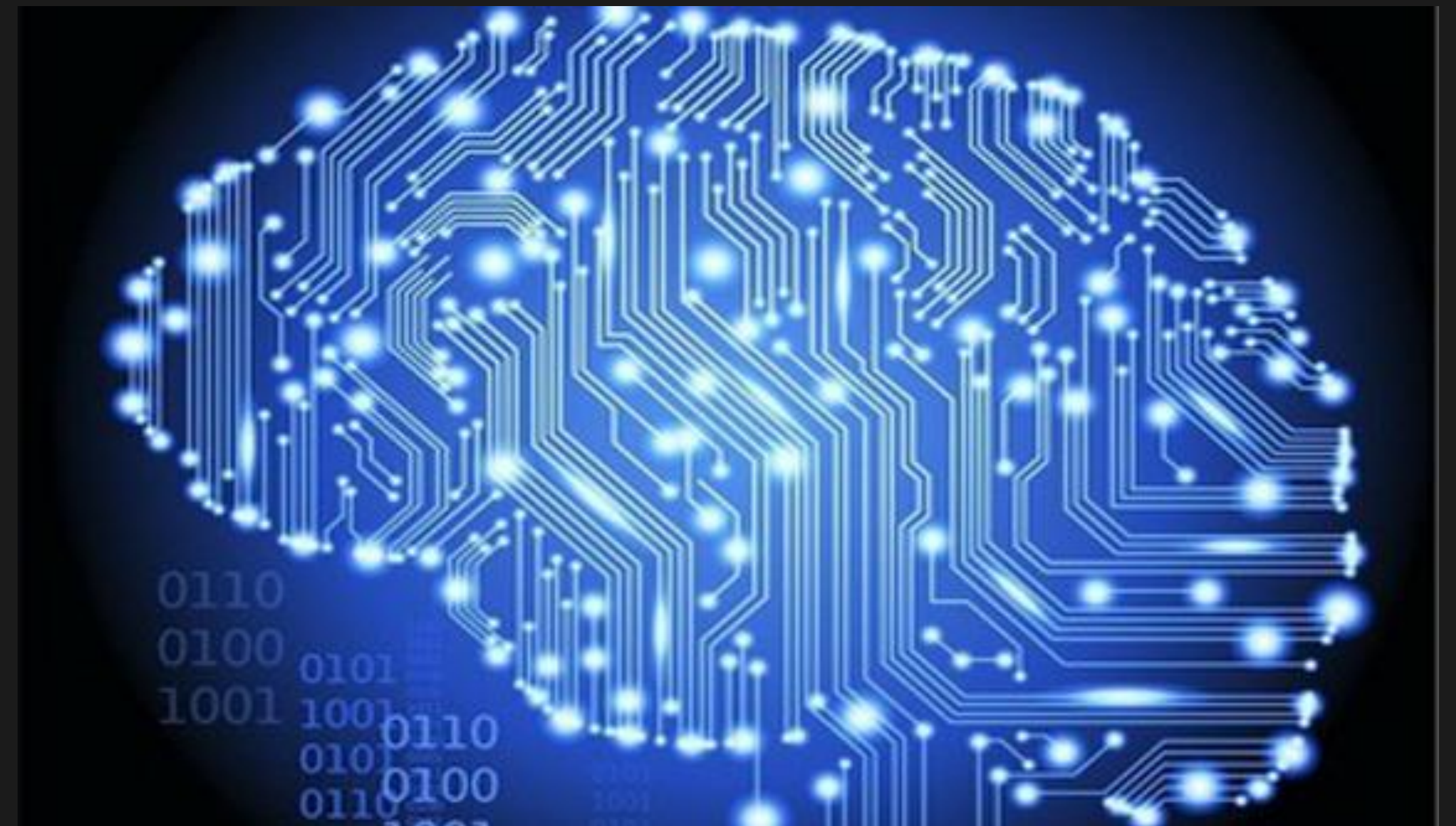- Intelligent Threat Detection

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Advanced Security and Compliance

Getting Started with Azure SQL Database

Advanced Security and Compliance

- Auditing for compliance and security
- Data encryption at rest
- Data encryption in motion
- Dynamic data masking
- Row-level security (RLS)
- Azure Active Directory integration and multi-factor authentication
- Compliance certification

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Microsoft Azure Compliance Offerings

Demos

Getting Started with Azure SQL Database

Questions

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Slides: bit.ly/CS19AzureSQL