



Azure SQL Database

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Introduction



Azure SQL Database Deployment Types



Single Database
Own set of resources



Elastic Pool
Collection of databases
sharing resources



Managed Instance
Dedicated engine
instance running
collection of databases

Why SQL Server in Azure?



Fully Managed



Predictable
performance
and pricing



Elastic pool for
unpredictable
workloads



99.99%
availability
built-in



Geo-replication
and restore
services



Supports existing SQL
Server tools, libraries,
and ADI



Scalability with no
downtime



Secure and compliant
for your sensitive data

Azure IaaS vs PaaS Database offerings?



SQL Server on Azure VMs
SQL Server inside a
fully-managed VM in Azure



Azure SQL Database
Database-as-a-service (DBaaS)
hosted in Azure

Responsibility comparison



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Benefits comparison



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Limitations comparison

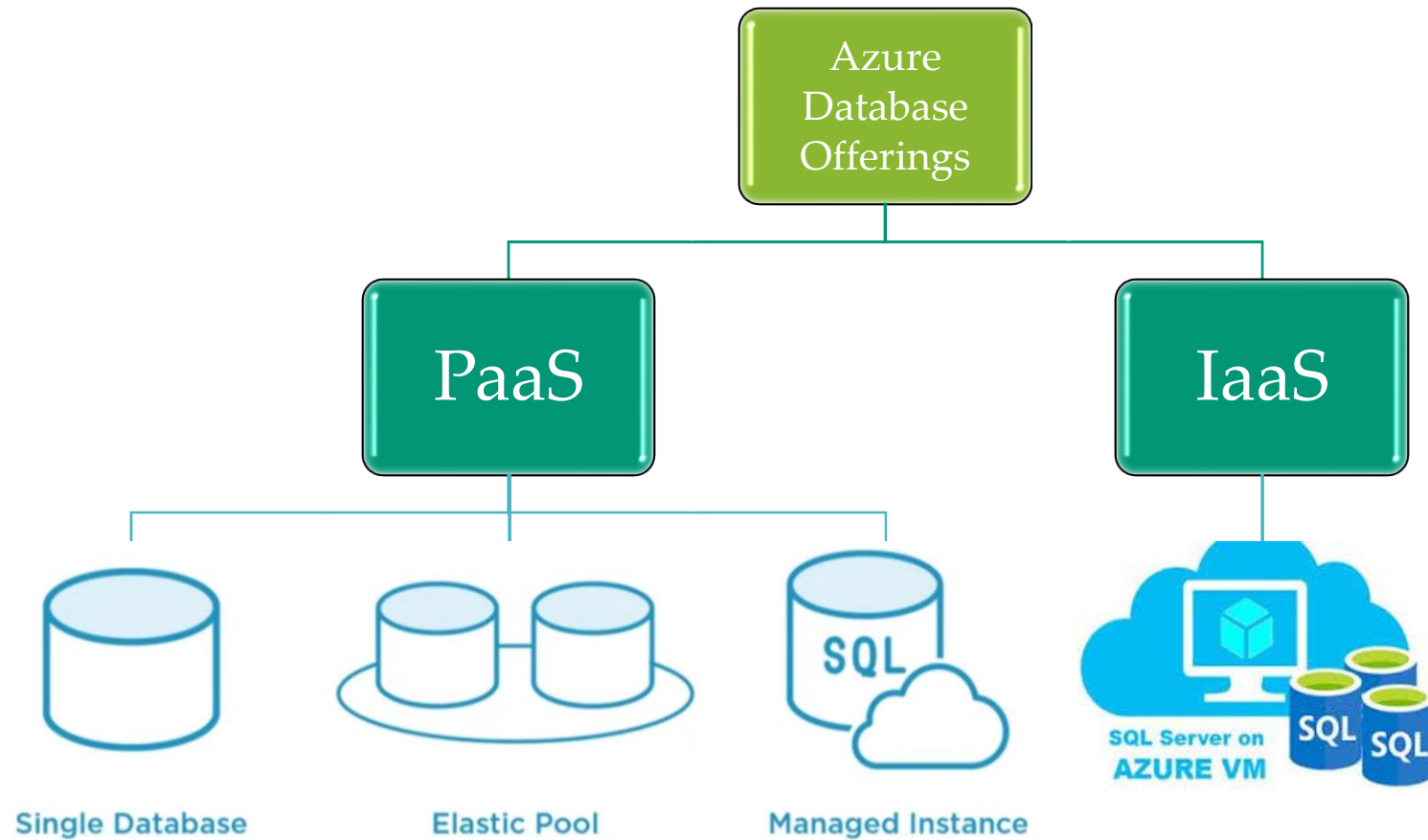


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Azure Database Deployment options



SQL Server(PaaS) Deployment Options



Single Database

Single database

Each DB with its own guaranteed compute, memory, and storage



Elastic pool

Fixed resources will be shared by all databases in the pool

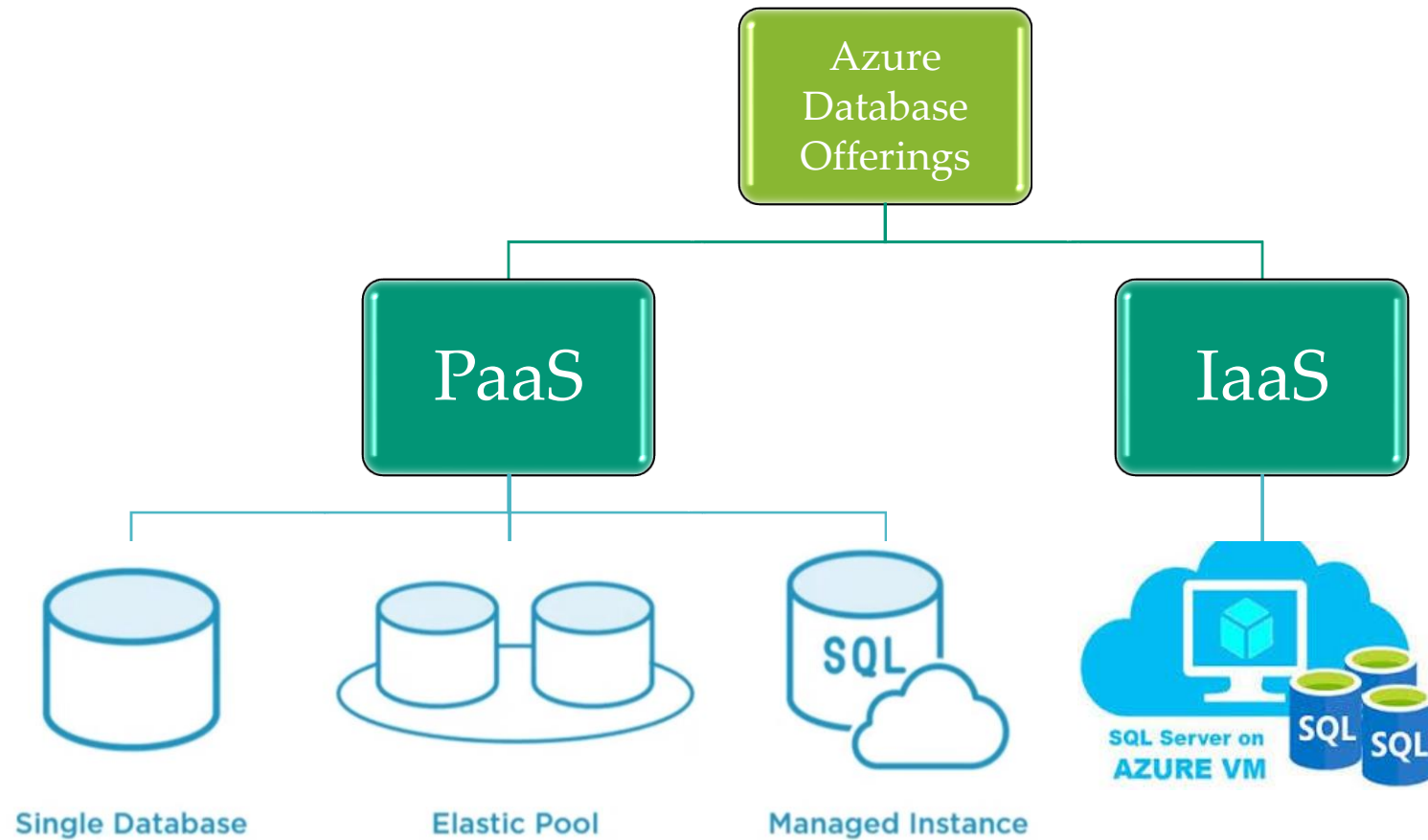


Managed Instance

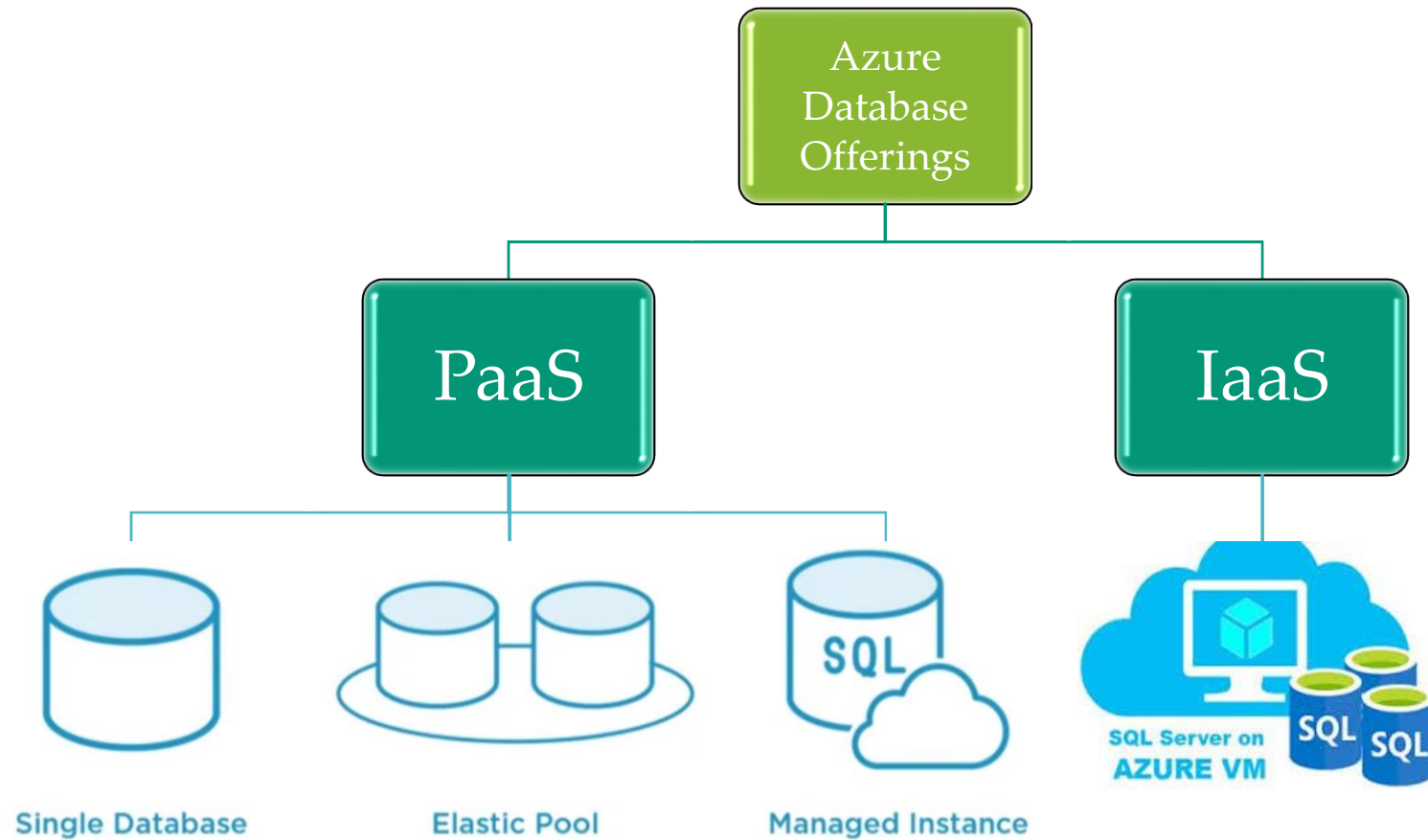
Managed instance

Each managed instance has its guaranteed resources

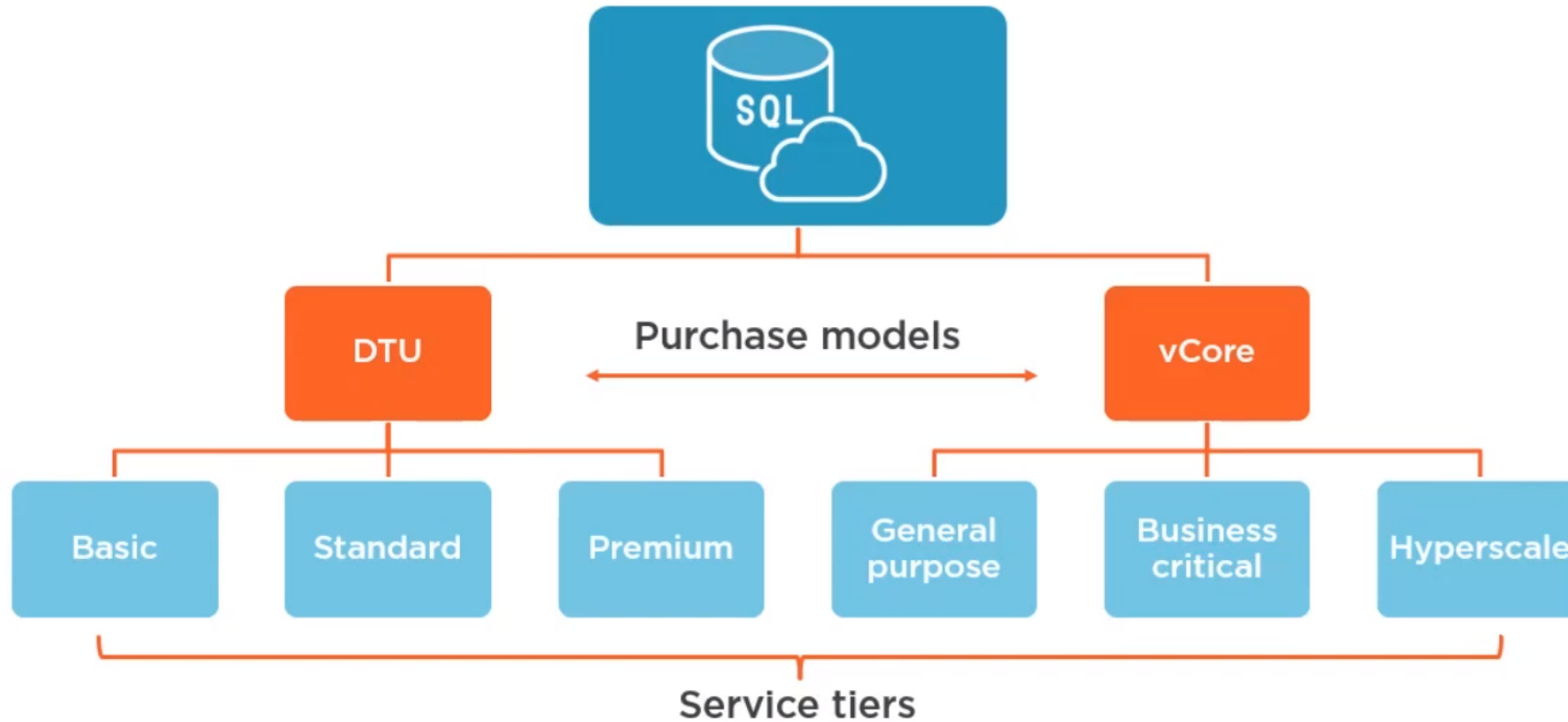
Azure Database Deployment options



Azure Database Deployment options



Azure SQL Database Service Tiers



vCore-based vs DTU-based Model

vCore-based

- For Single database, elastic pool and managed instance
- Best for customers who need flexibility, control, and transparency
- Straightforward way to translate on-premises workload to the cloud
- Microsoft recommends vCore-based model

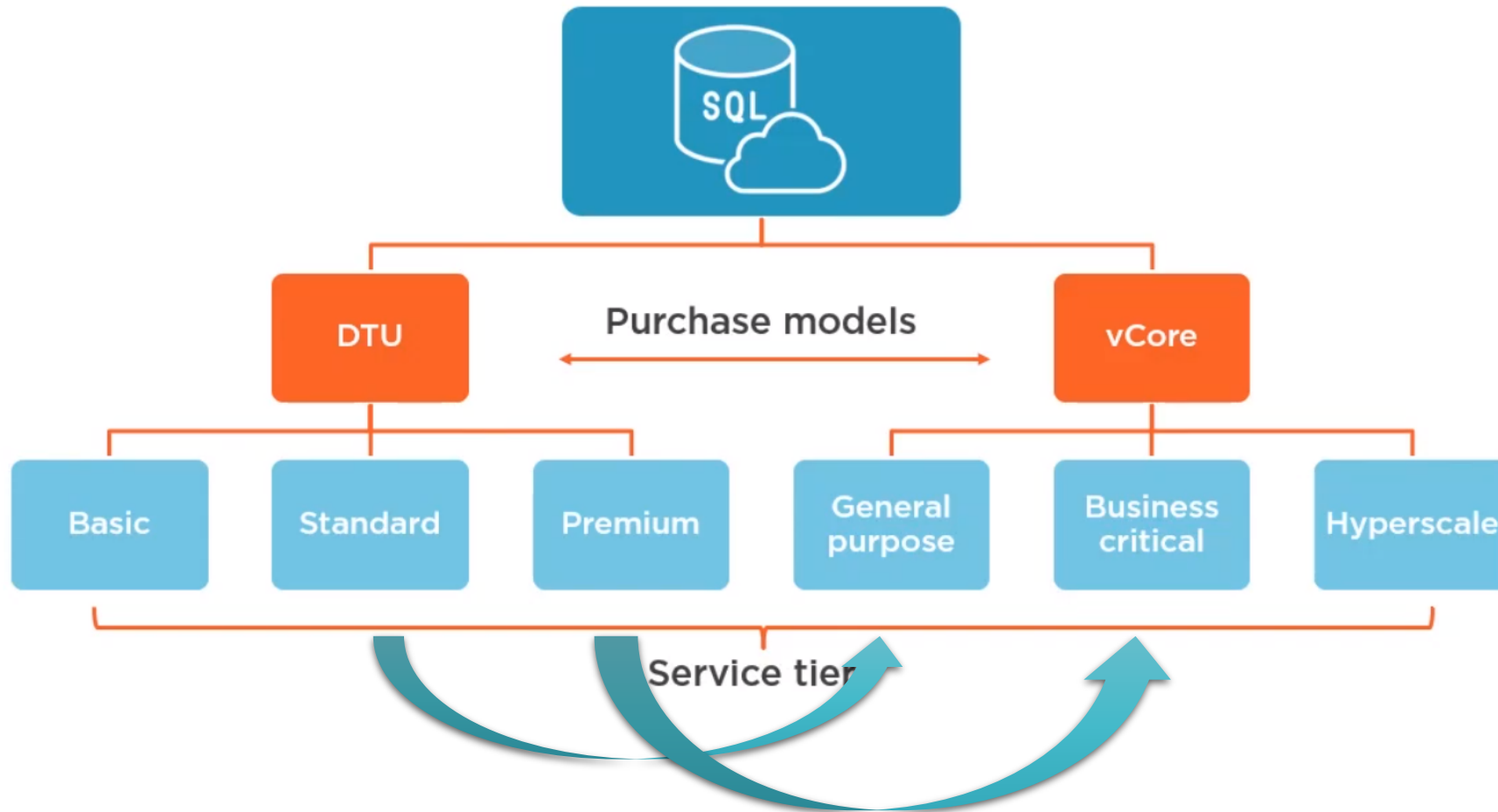
DTU-based

- Only for single database and elastic pool
- Best for customers who want single, preconfigured resource options
- Might need to calculate the needed DTUs before migration
- If the DTU-based purchasing model needs your performance and business requirements, you should continue using it.

Converting DTU-based Model to vCore-based

- If you single database or elastic pool consumes more than 300 DTUs, converting to the vCore-based model might reduce your costs
- You can use API of your choice or Azure Portal to convert to vCore based model with 'no downtime'.
- Azure SQL Database managed instance only supports vCore-based purchasing model.

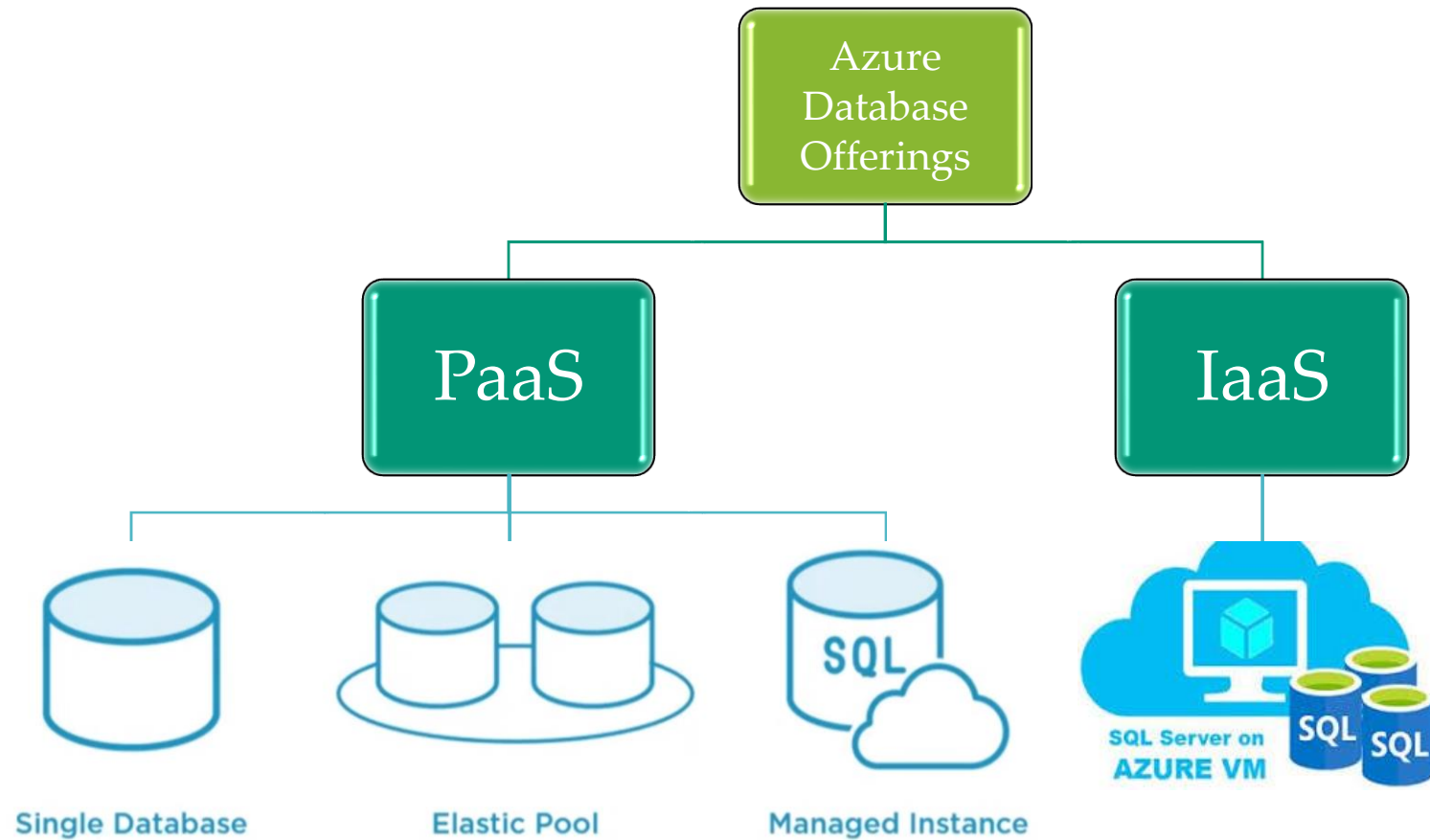
Azure SQL Database Service Tiers



Azure SQL Database Options



Azure Database Elastic Pool

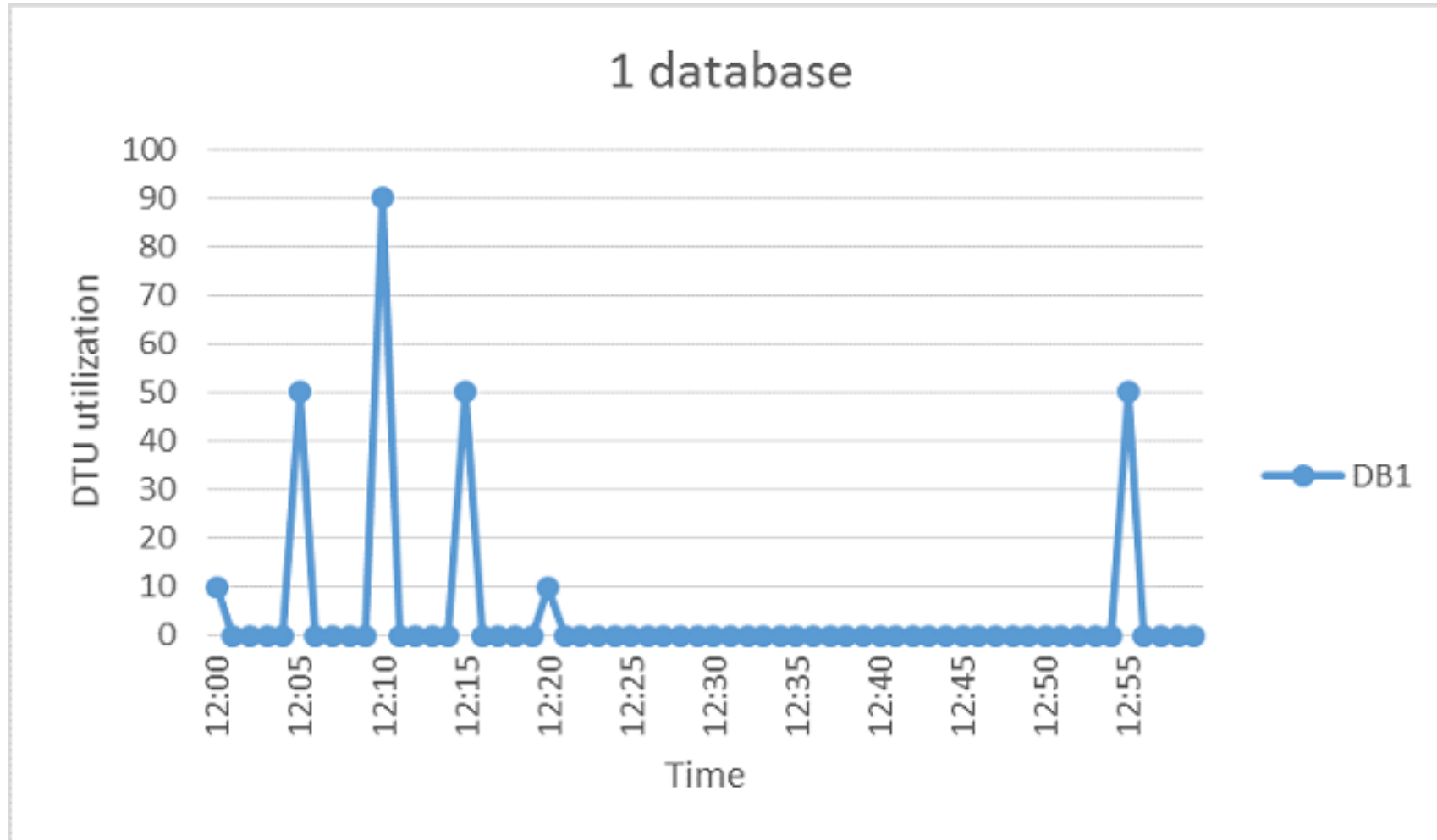


SQL Database Elastic Pools

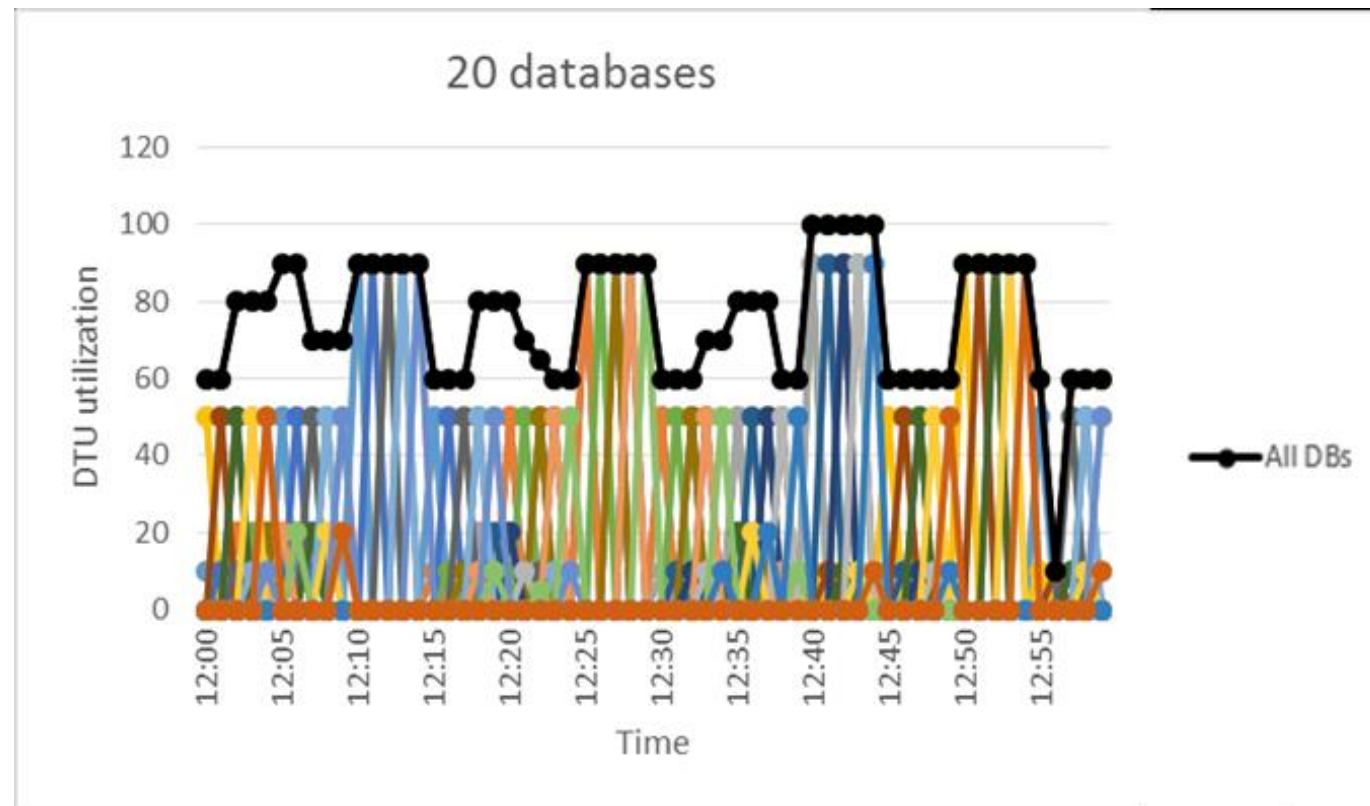
An Azure SQL Elastic Pool allows you to allocate a shared set of compute resources to a collection of Azure SQL databases,

Database Challenges









Azure SQL Database Elastic Pool



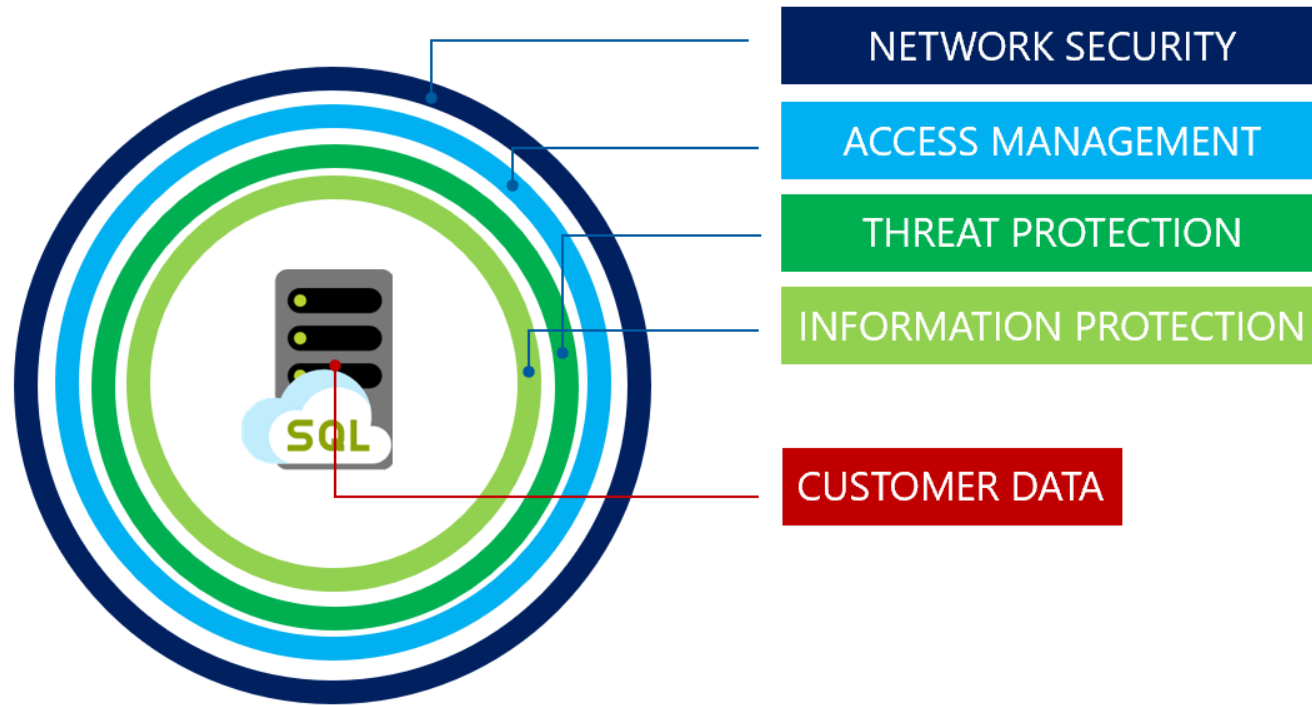
So Azure SQL elastic pool is a cost- effective solution for managing and scaling multiple databases that have varying and unpredictable usage demands.

The databases in an elastic pool are on a single Azure SQL Database server and share a set number of resources at a set price.

Elastic pool enables developers to optimize the price performance for a group of databases within a prescribed budget.

Elastic pools prevent over-provisioning or under-provisioning of resources.

Security



Network security

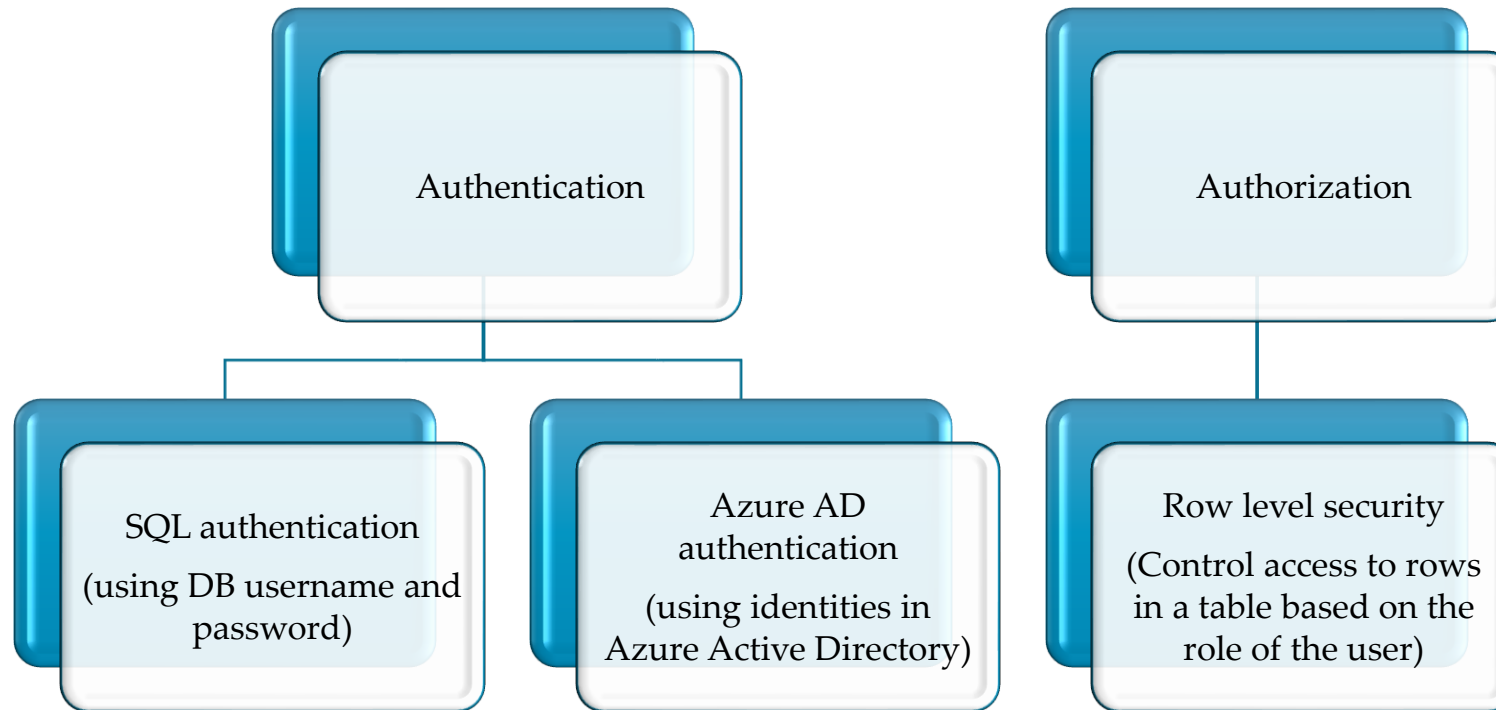
IP firewall rules

- Grant access to databases based on the originating IP address of each request.

Virtual network firewall rules

- Enable Azure SQL Database to only accept requests originating from subnets inside a virtual network.

Access Management



Threat Protection

SQL auditing in
Azure Monitor logs
and Event Hubs

- Tracks database activities and helps maintaining compliance with security standards

Advanced Threat
Protection

- Analyzes your SQL Server logs to detect unusual behavior and potentially harmful attempts

Information Protection

Transport Layer Security
TLS

- Always enforces encryption for all connections

Transparent Data
Encryption

- (Protects data at rest from offline access to raw files or backups)

Dynamic Data masking

- (Protects sensitive data by masking it for non-privileged users)

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Security Management

Vulnerability assessment

- Discover track and remediate potential database vulnerabilities.

Data discovery &
Classification

- Identify and label sensitive data for monitoring and alerting

Managed Instance Advance Security

