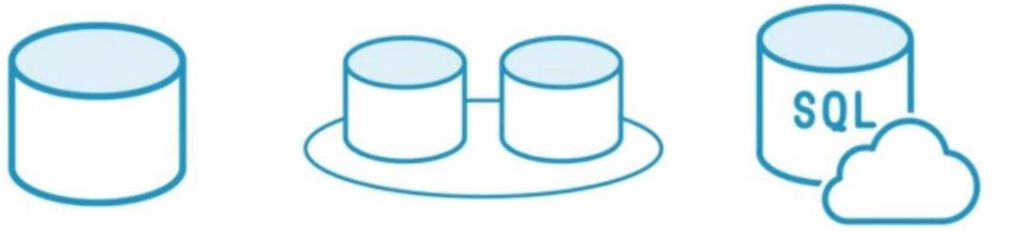
Azure SQL Database

Vineela

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 APIs

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

SQL Server on Azure VMs

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Azure SQL Database

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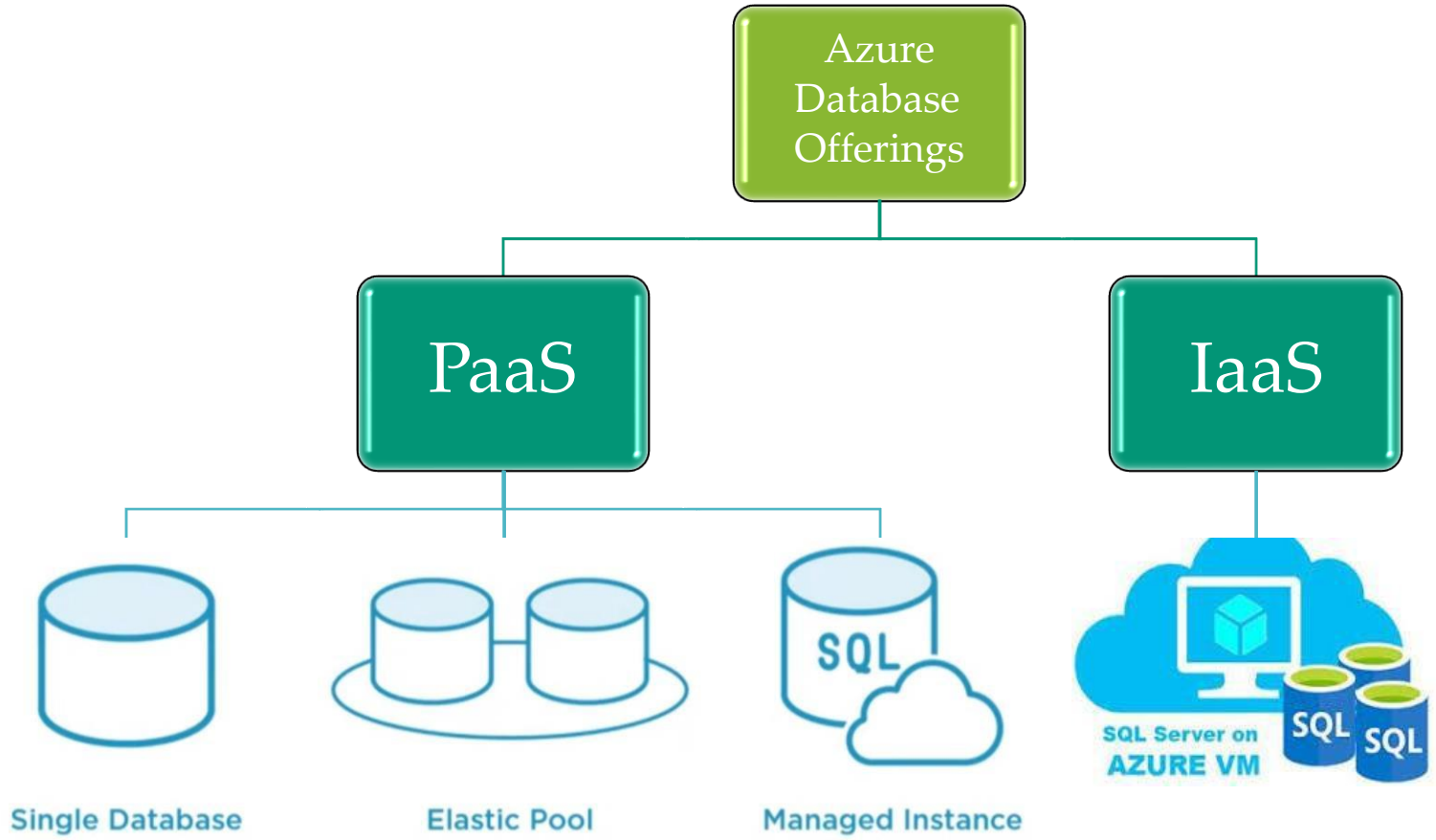
Azure Database Deployment options



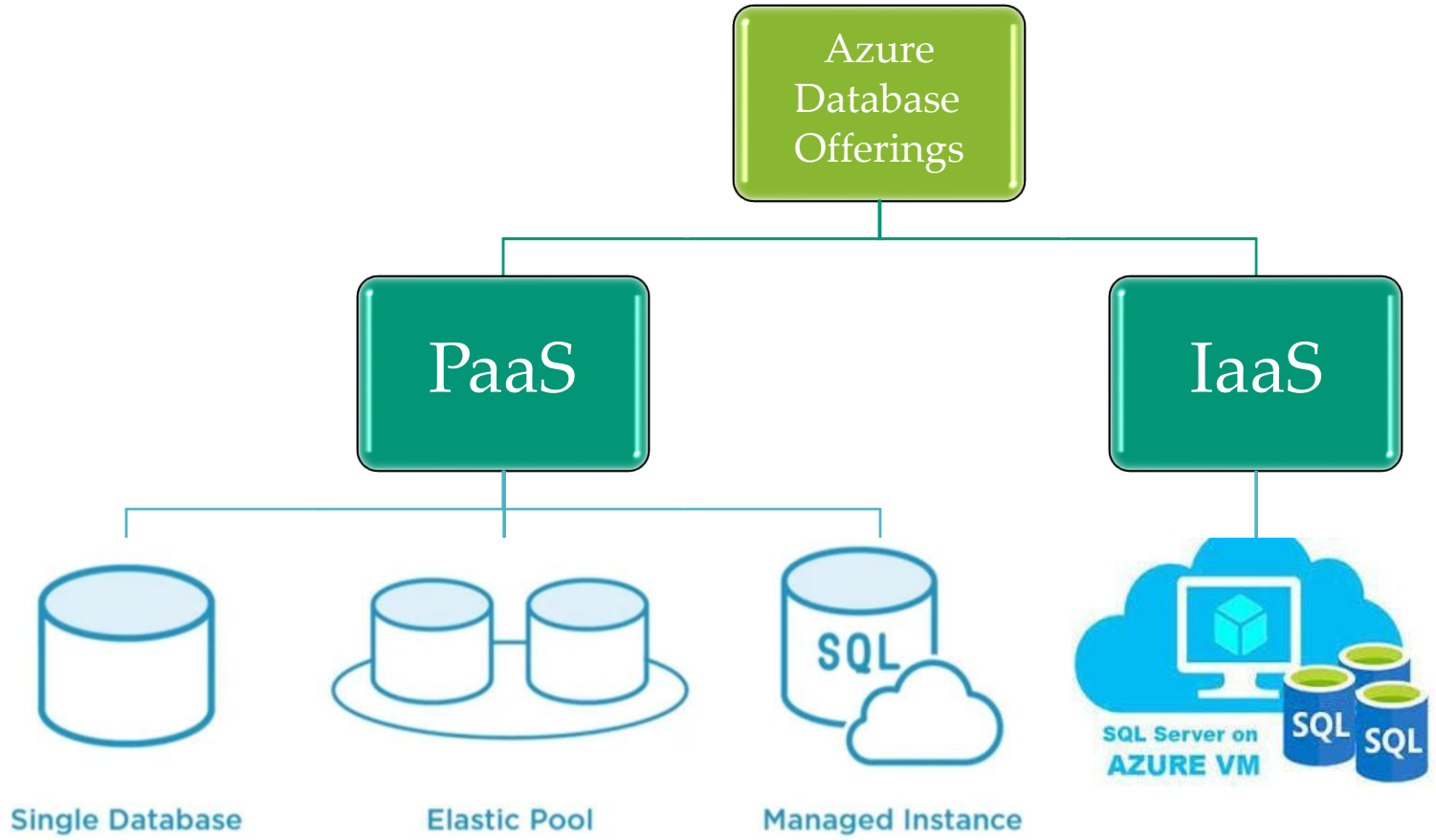
SQL Server(PaaS) Deployment Options

Single Database

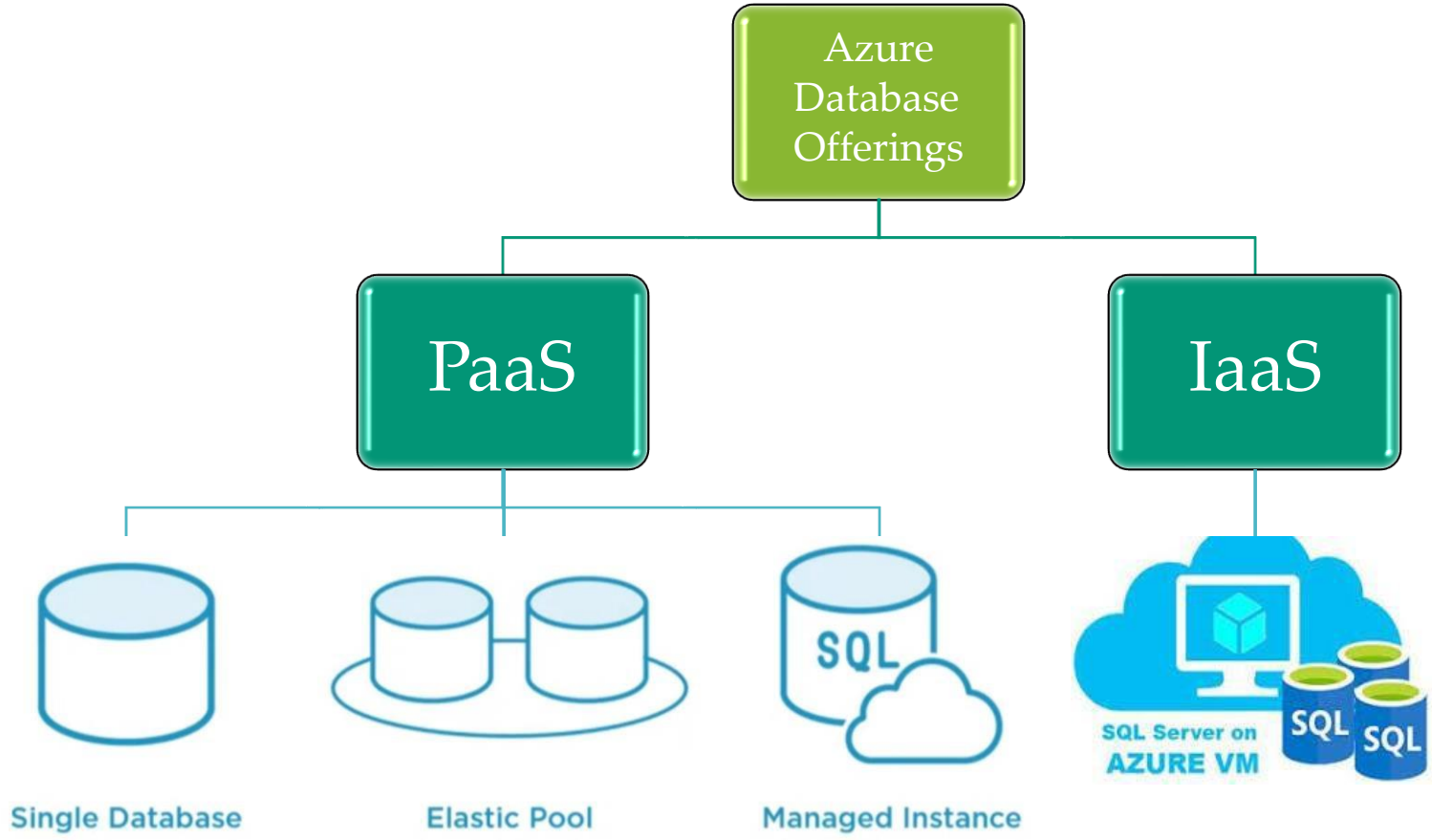
Managed Instance

Single database	Elastic pool	Managed instance
Each DB with its own guaranteed compute, memory, and storage	Fixed resources will be shared by all databases in the pool	Each managed instance has its guaranteed resources

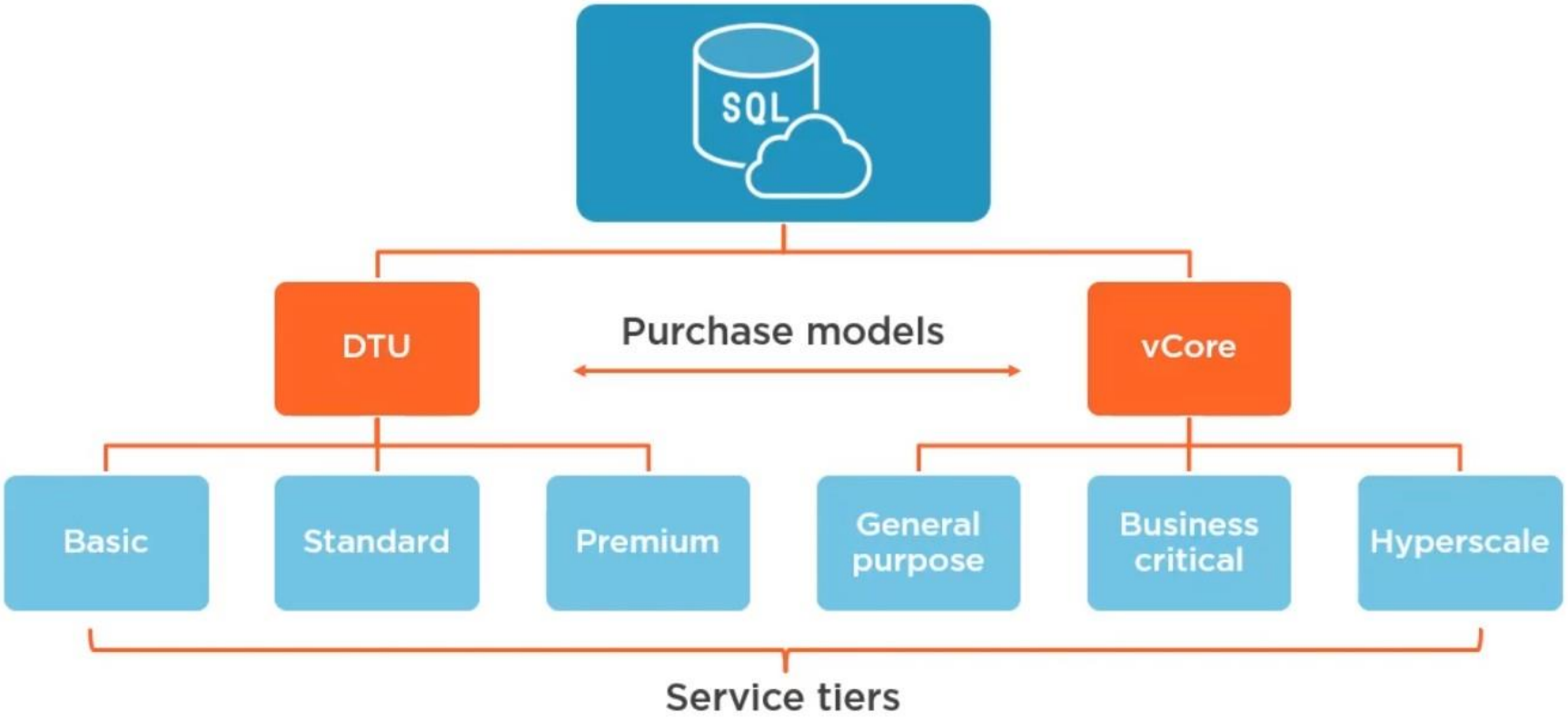
Azure Database Deployment options



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

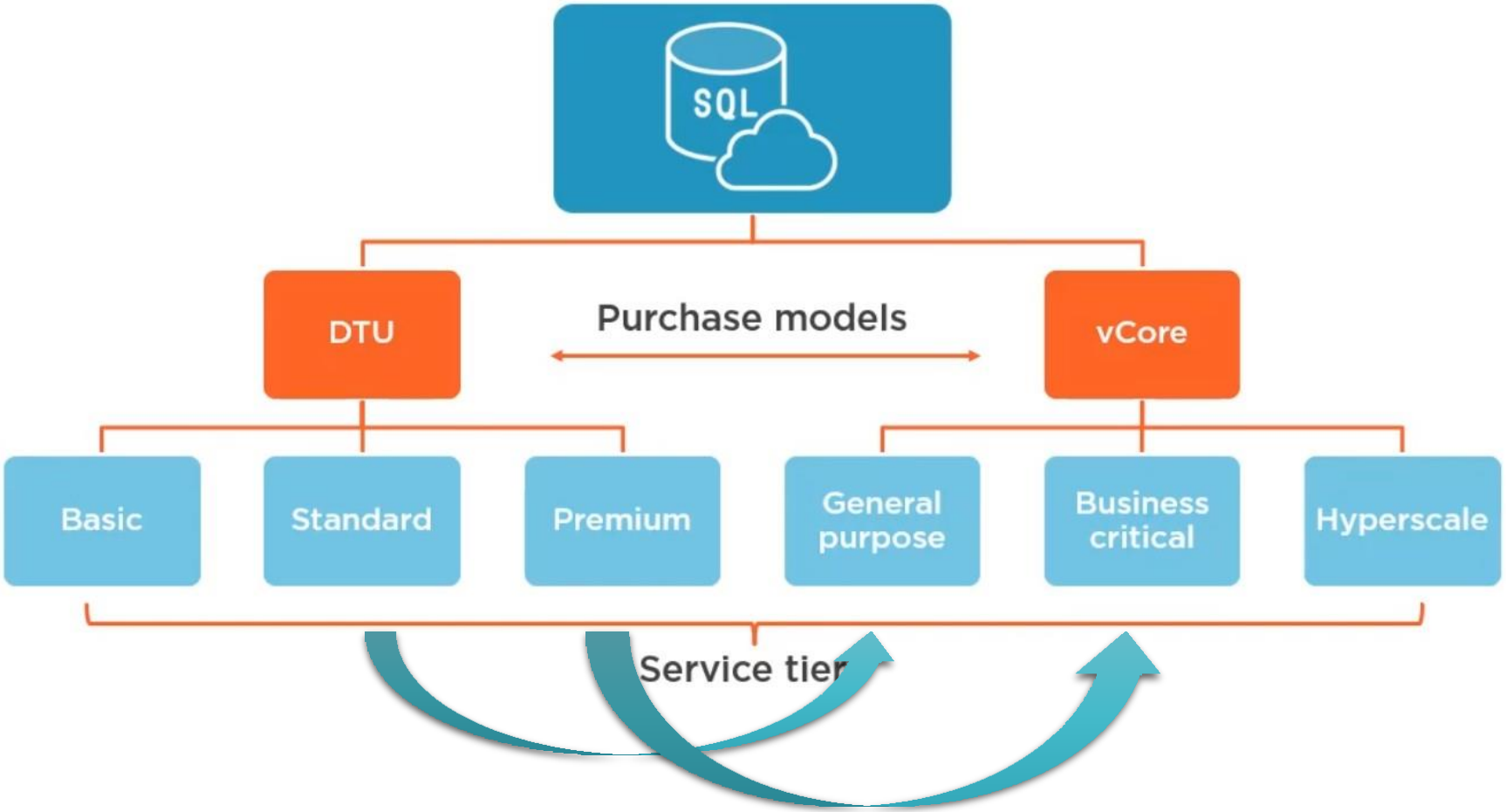
DTU-based

- 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

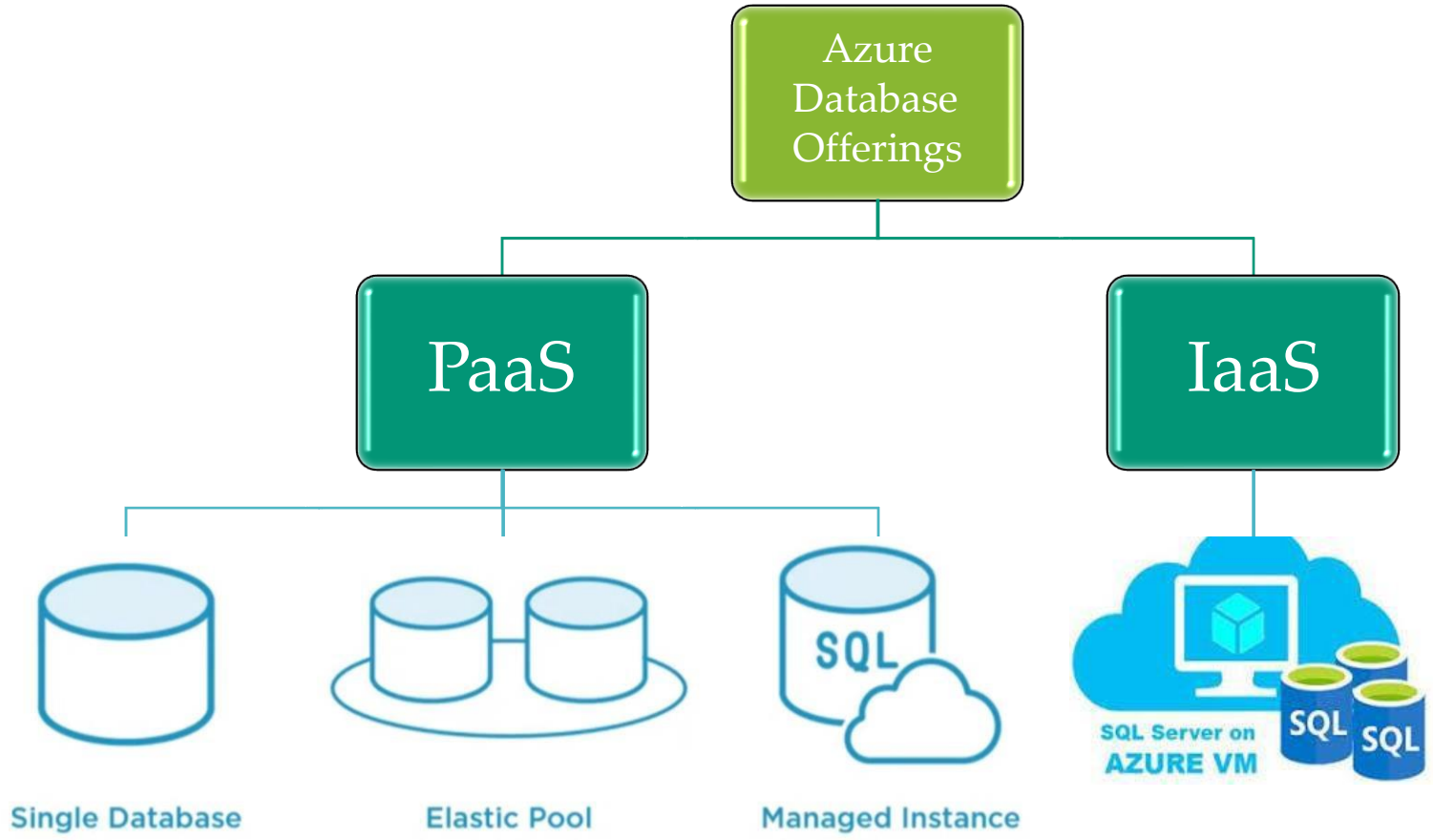
- If you single database or elastic pool consumes more than 300 DTUs, converting to the vCore-based model might reduce your costs
- You can use API of your choice or Azure Portal to convert to vCore based model with ‘no downtime’.
- Azure SQL Database managed instance only supports vCore-based purchasing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

Azure SQL Database Service Tiers



Azure SQL Database Options

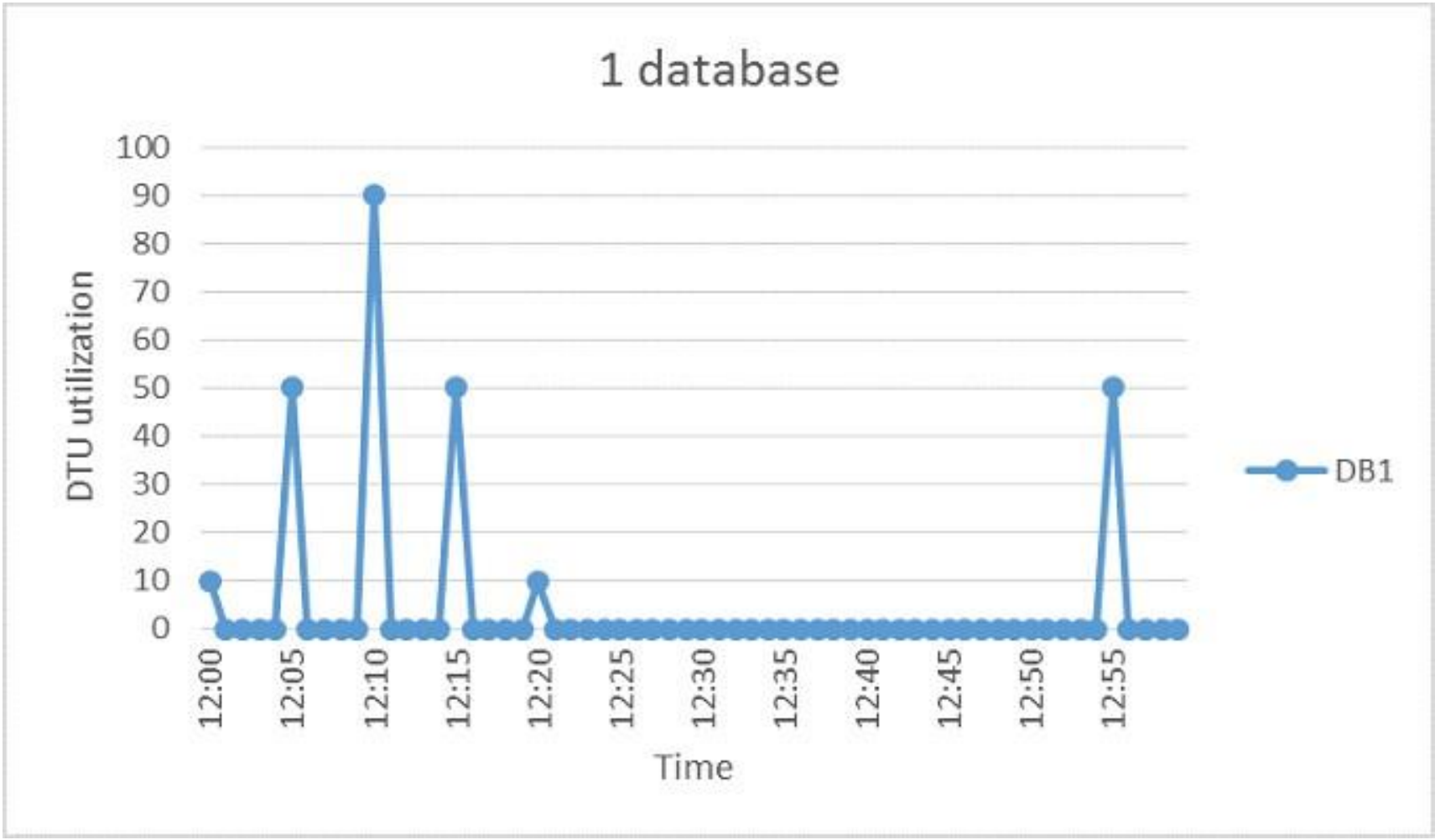
Azure Database Elastic Pool

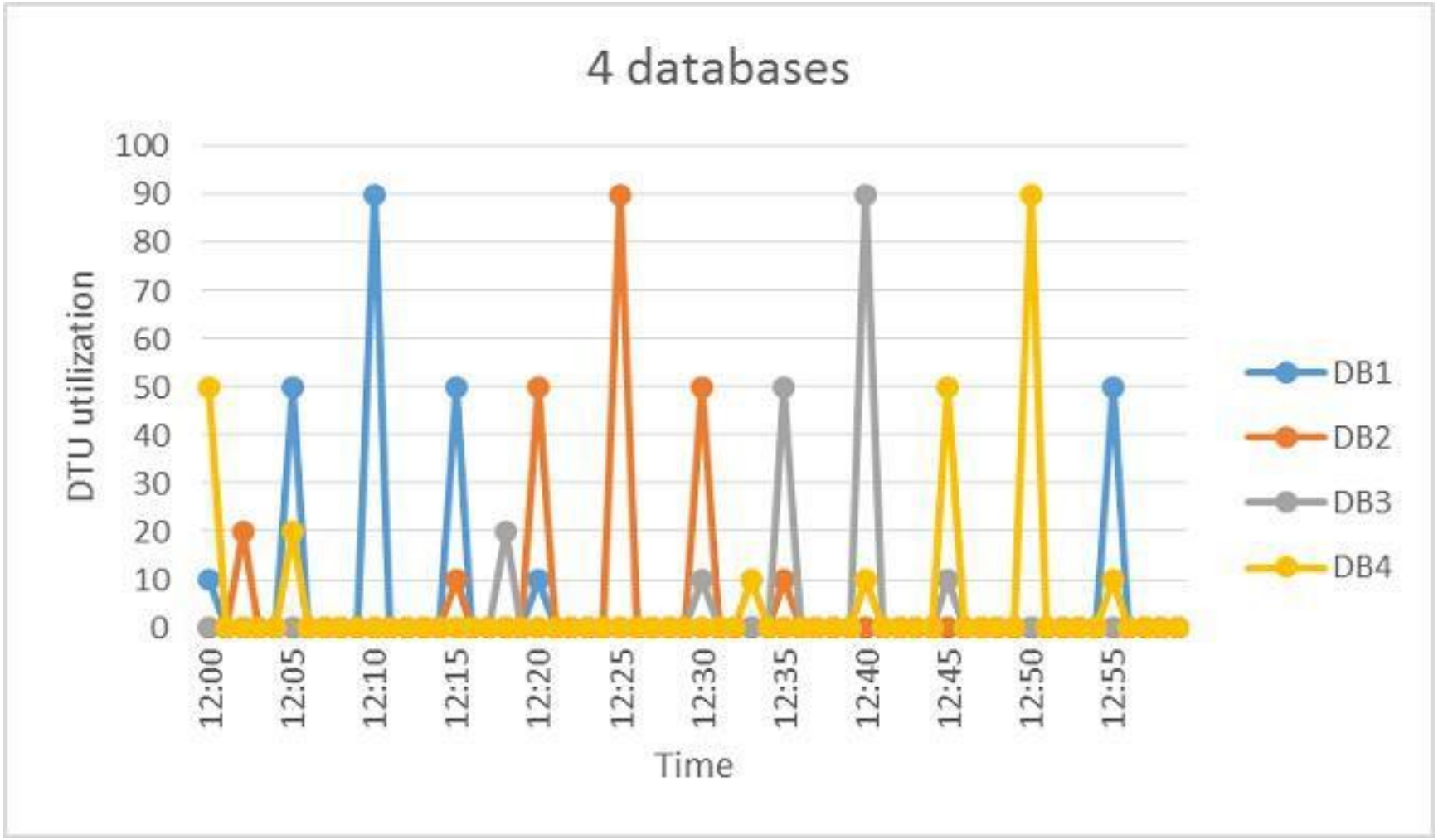


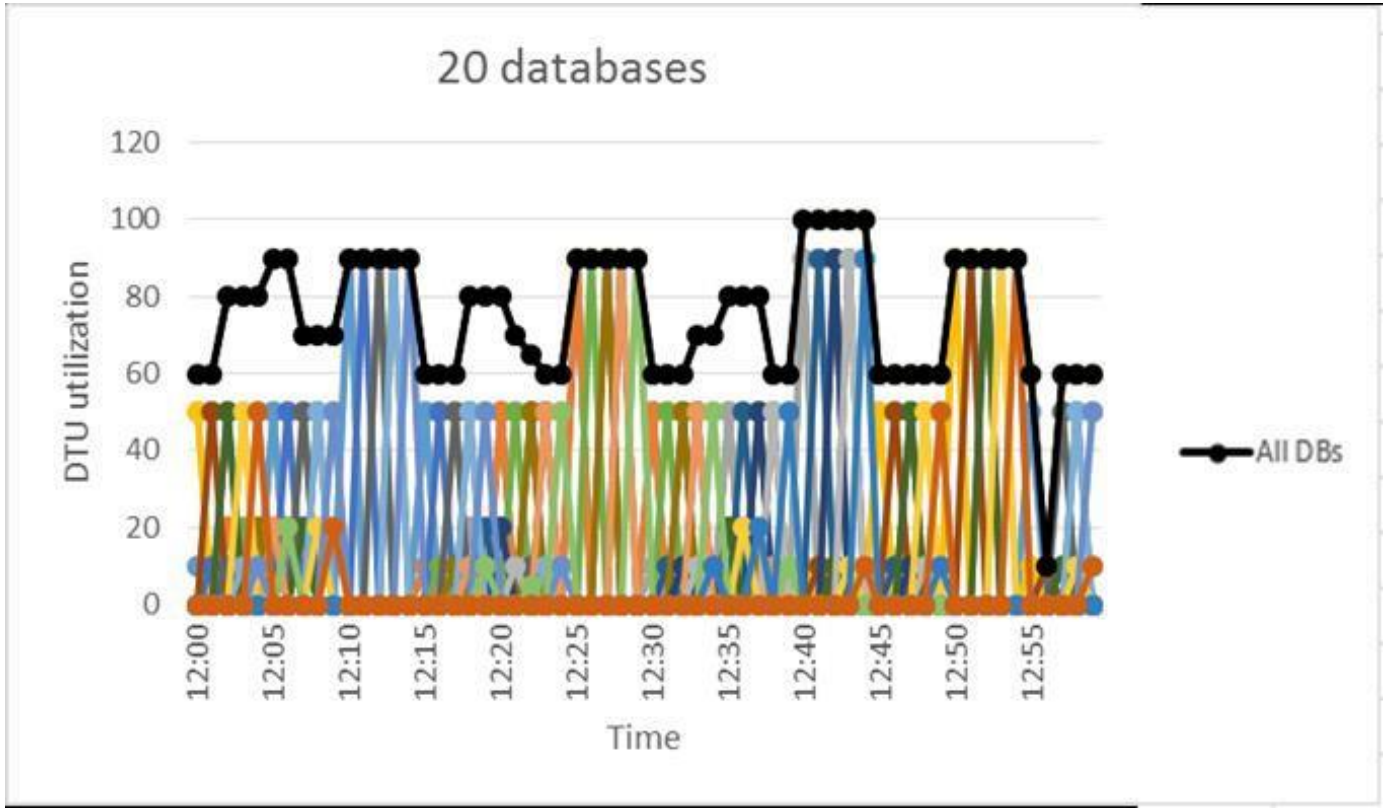
SQL Database Elastic Pools

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

Database Challenges


1 database
DTU utilization
100
90
80
70
60
50
40
30
20
10
0
12:00
12:05
12:10
12:15
12:20
12:25
12:30
12:35
12:40
12:45
12:50
12:55
Time
DB1

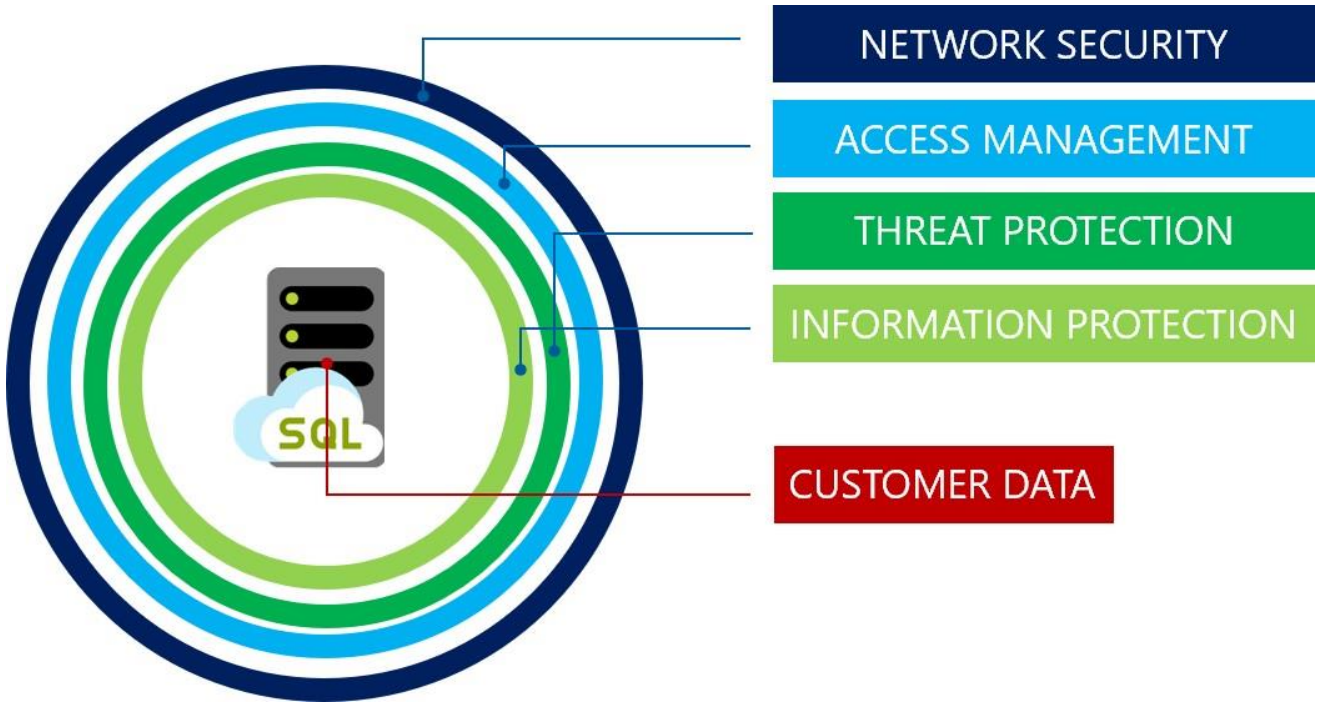

4 databases
DTU utilization
100
90
80
70
60
50
40
30
20
10
0
12:00
12:05
12:10
12:15
12:20
12:25
12:30
12:35
12:40
12:45
12:50
12:55
Time
DB1
DB2
DB3
DB4


20 databases
120
100
80
60
40
20
0
DTU utilization
12:00
12:05
12:10
12:15
12:20
12:25
12:30
12:35
12:40
12:45
12:50
12:55
Time
All DBs

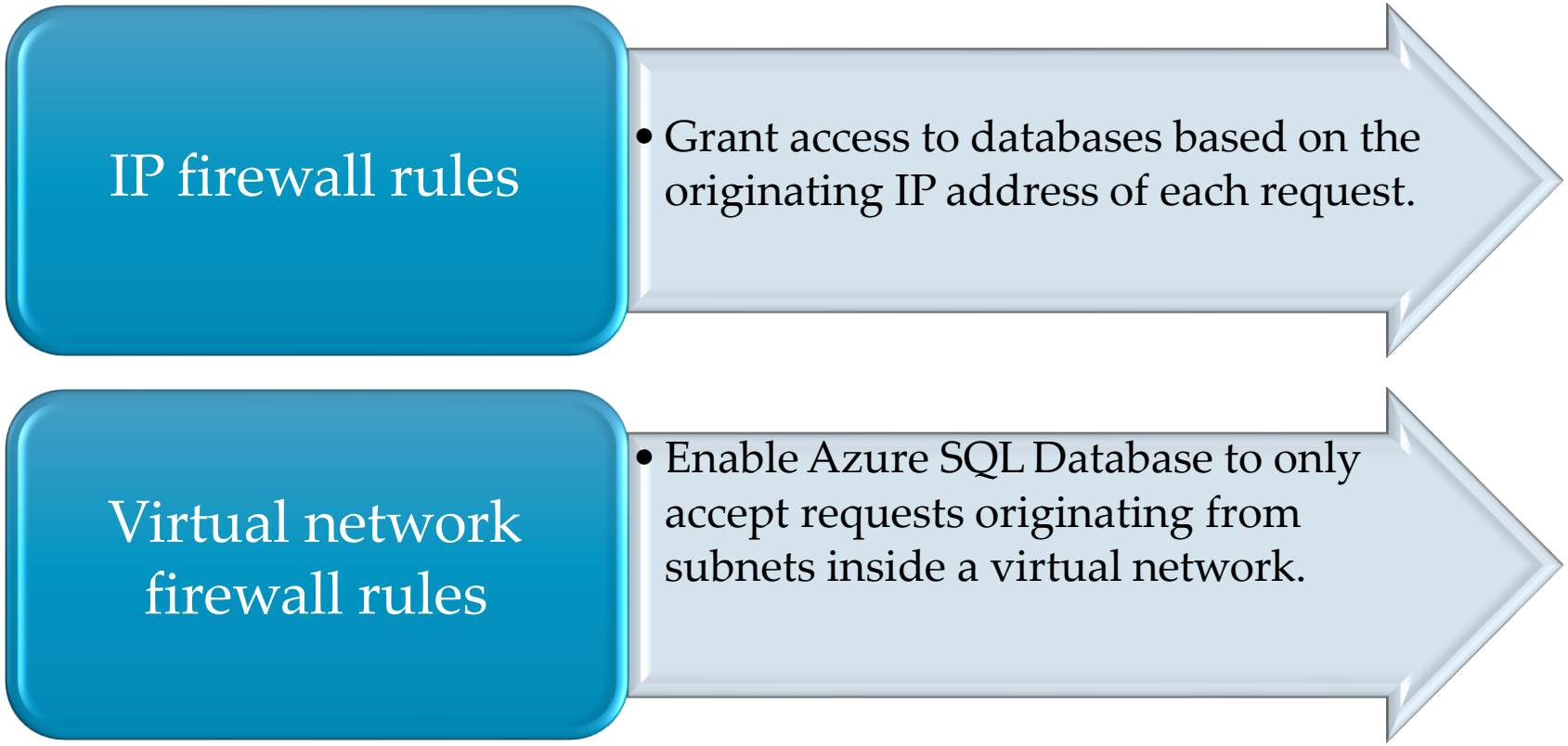
Azure SQL Database Elastic Pool

- 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.

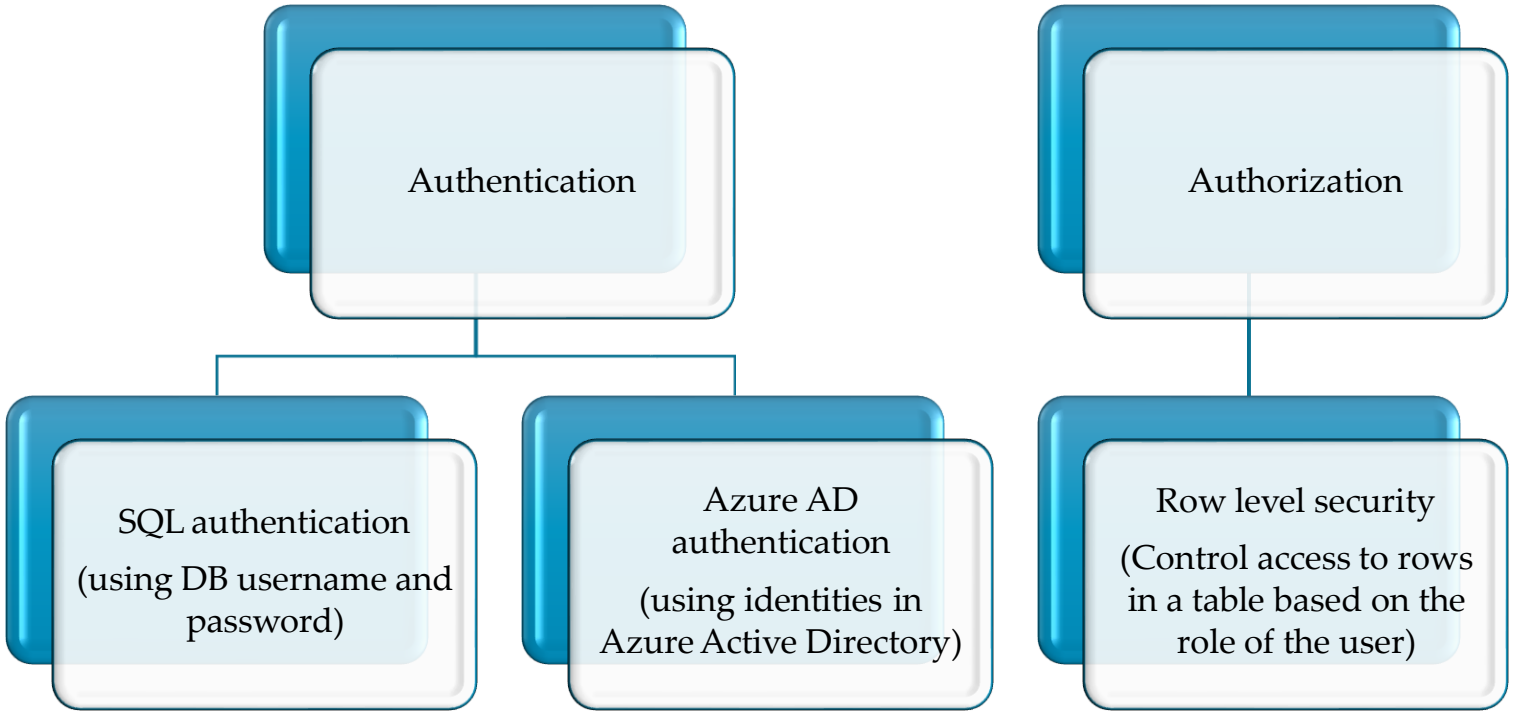
Security


NETWORK SECURITY
ACCESS MANAGEMENT
THREAT PROTECTION
INFORMATION PROTECTION
CUSTOMER DATA
SQL

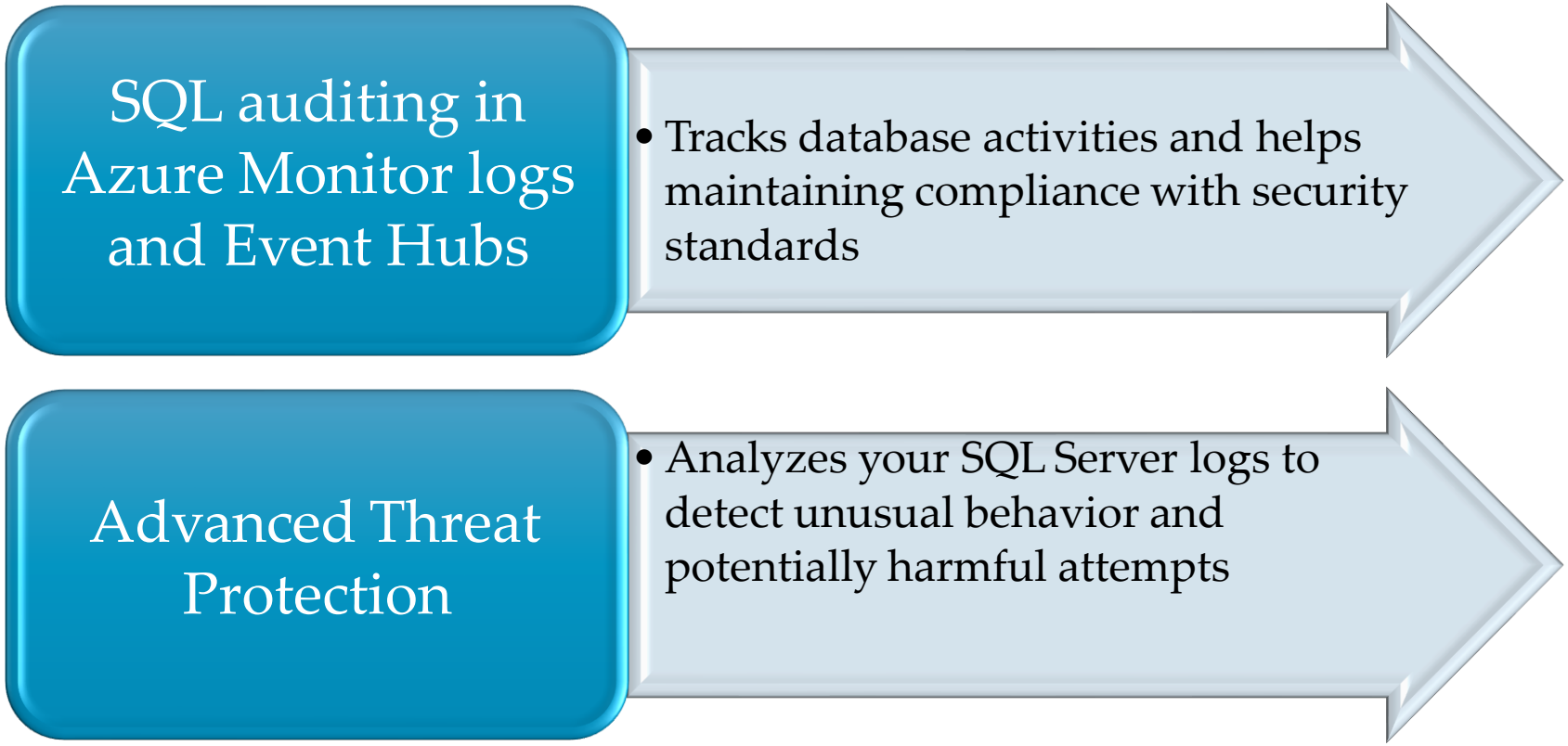
Network security



Access Management



Threat Protection



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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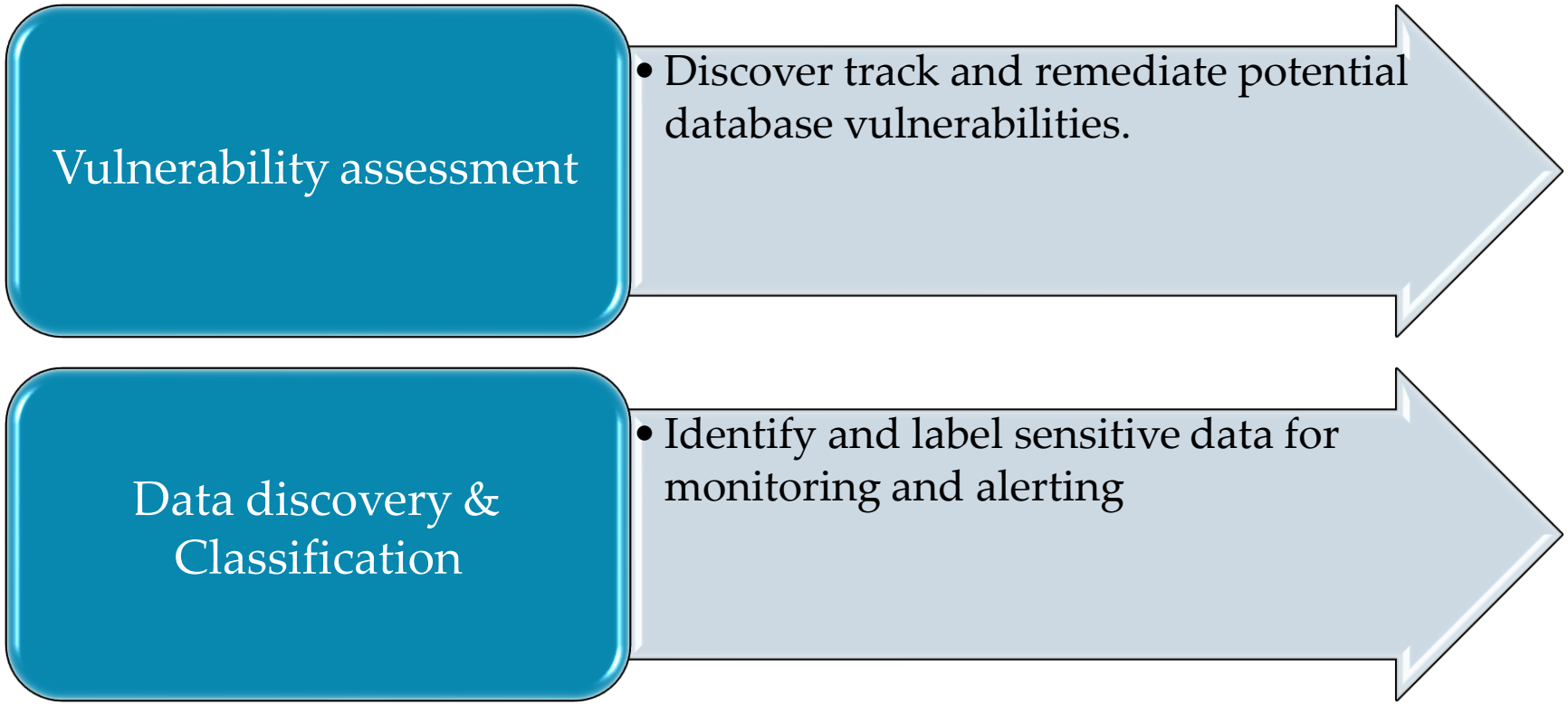
Security Management



Managed Instance Advance Security

- Native virtual network implementation and connectivity to your on-premises environment using Azure Express Route or VPN Gateway.
- In a default deployment, SQL endpoint is exposed only through a private IP address, allowing safe connectivity from private Azure or hybrid networks.
- Single-tenant with dedicated underlying infrastructure (compute, storage).

Q&A