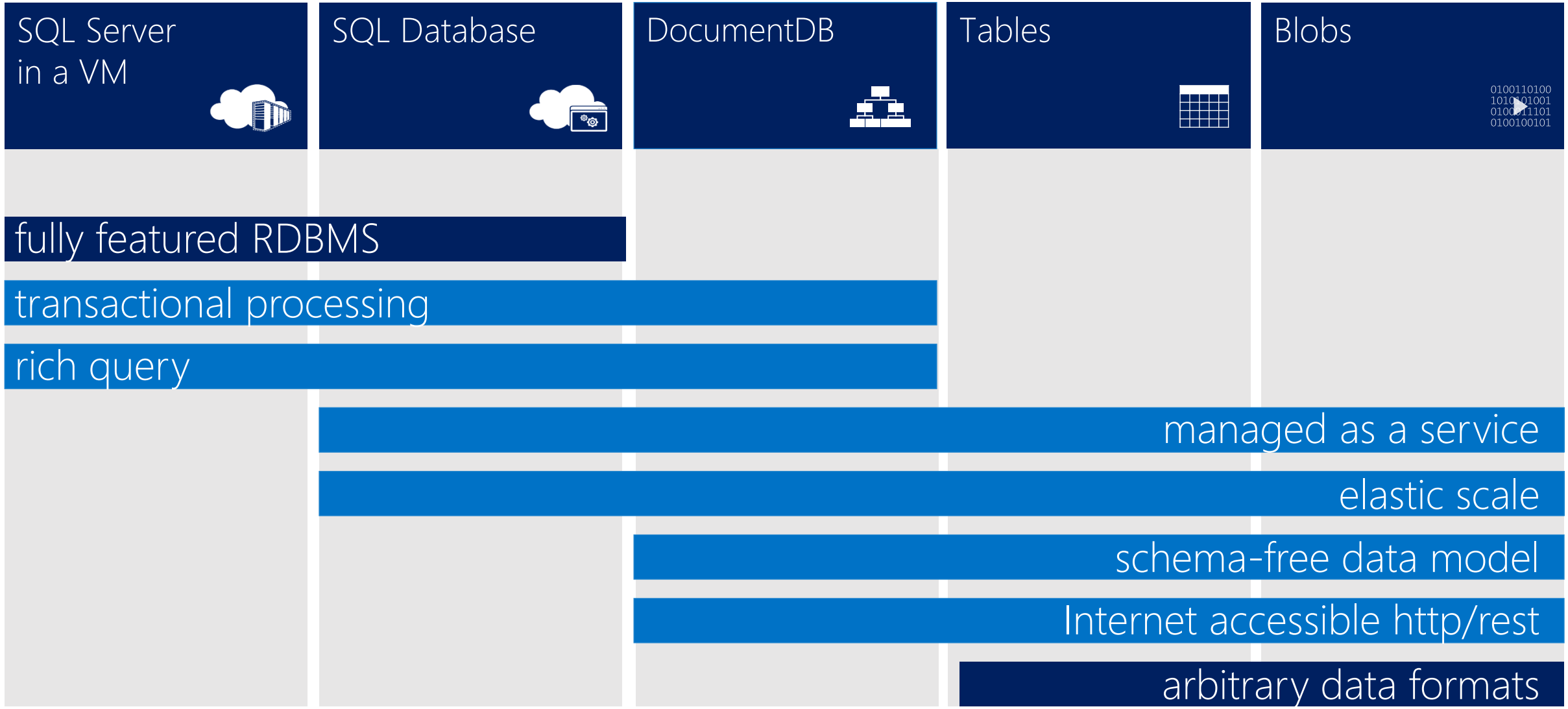
AZURE SQL Database

Microsoft Azure Data Services



Azure SQL Family

- **Azure SQL Database**: Managed database service, that includes serverless compute.

- **Azure SQL Managed Instance**: Almost 100% feature parity with the SQL Server database engine

- **SQL Server on Azure VMs**: 100% SQL Server compatibility and operating system-level access.

Azure SQL Database

- Relational database-as-a-service (DBaaS) hosted in Azure
- A fully-managed SQL database engine, based on the latest stable Enterprise Edition of SQL Server
- Pay-as-you-go with options to scale up or out for greater power
- Features that are not available in SQL Server, such as built-in high availability.

Azure SQL Database deployment options:

- As a **single database** with its own set of resources managed via a logical SQL server
  - Hyperscale and serverless options are available.
  - Cloud-born workloads
- **Elastic pool**, which is a collection of databases with a shared set of resources managed via a logical SQL server.

Azure SQL Managed Instance

- Collection of system and user databases with a shared set of resources

SQL Server on Azure VM

- Infrastructure-as-a-Service (IaaS)
- Full administrative control over the SQL Server instance and underlying OS for migration to Azure.
- Pay-as-you-go for a SQL Server license already included in a SQL Server image or easily use an existing license.
- Stop or resume the VM as needed
- Windows Server or Linux virtual machines

Comparison

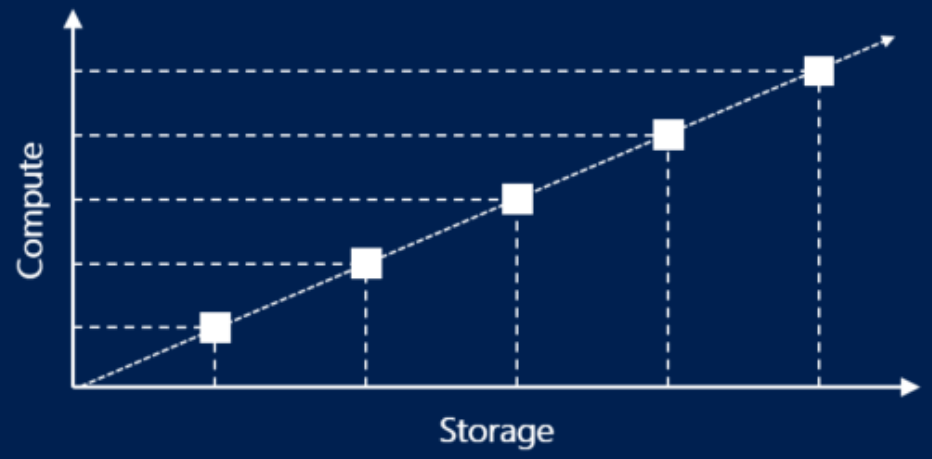
- SQL Database and SQL Managed Instance, the database software is automatically configured, patched, and upgraded by Azure
- Availability
  - Azure SQL Database 99.995%
  - Azure SQL Managed Instance (99.99%)
  - SQL Server on VM (99.99%)
- Database Size
  - Azure SQL Database up to 100TB
  - Azure SQL Managed Instance Up to 8 TB
  - SQL Server on VM 256 TB

Purchasing Model

- Virtual core (vCore)-based purchasing model
  - Available for both Azure SQL Database and Azure SQL Managed Instance
  - Independently choose compute and storage resources.
- Database transaction unit (DTU)-based purchasing model.
  - Only available for Azure SQL Database.
  - Compute sizes are expressed in DTUs for single databases and in elastic database transaction units (eDTUs)

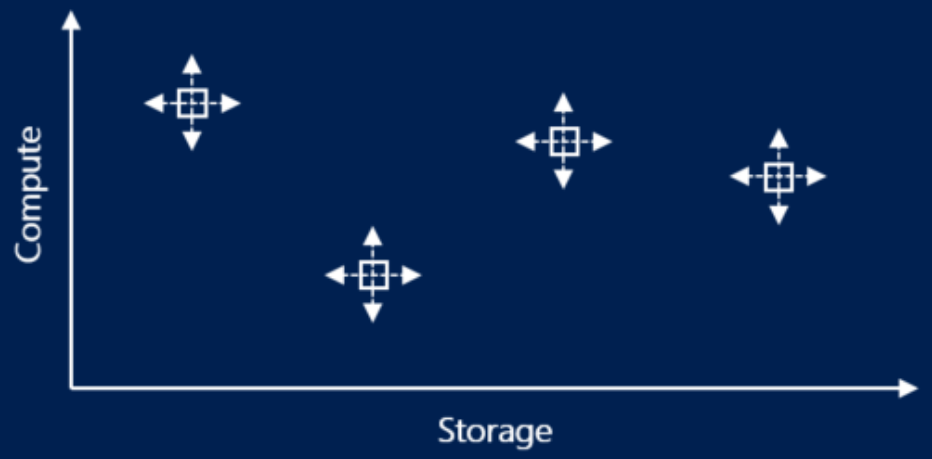
Azure SQL purchasing models:

DTU model
Simple,
Preconfigured



OR

vCore model
Independent scalability



Database Transaction Unit (DTU)-based model

- Bundled measure of compute, storage and IO resources
- Best for customers who want simple, pre-configured resource options.

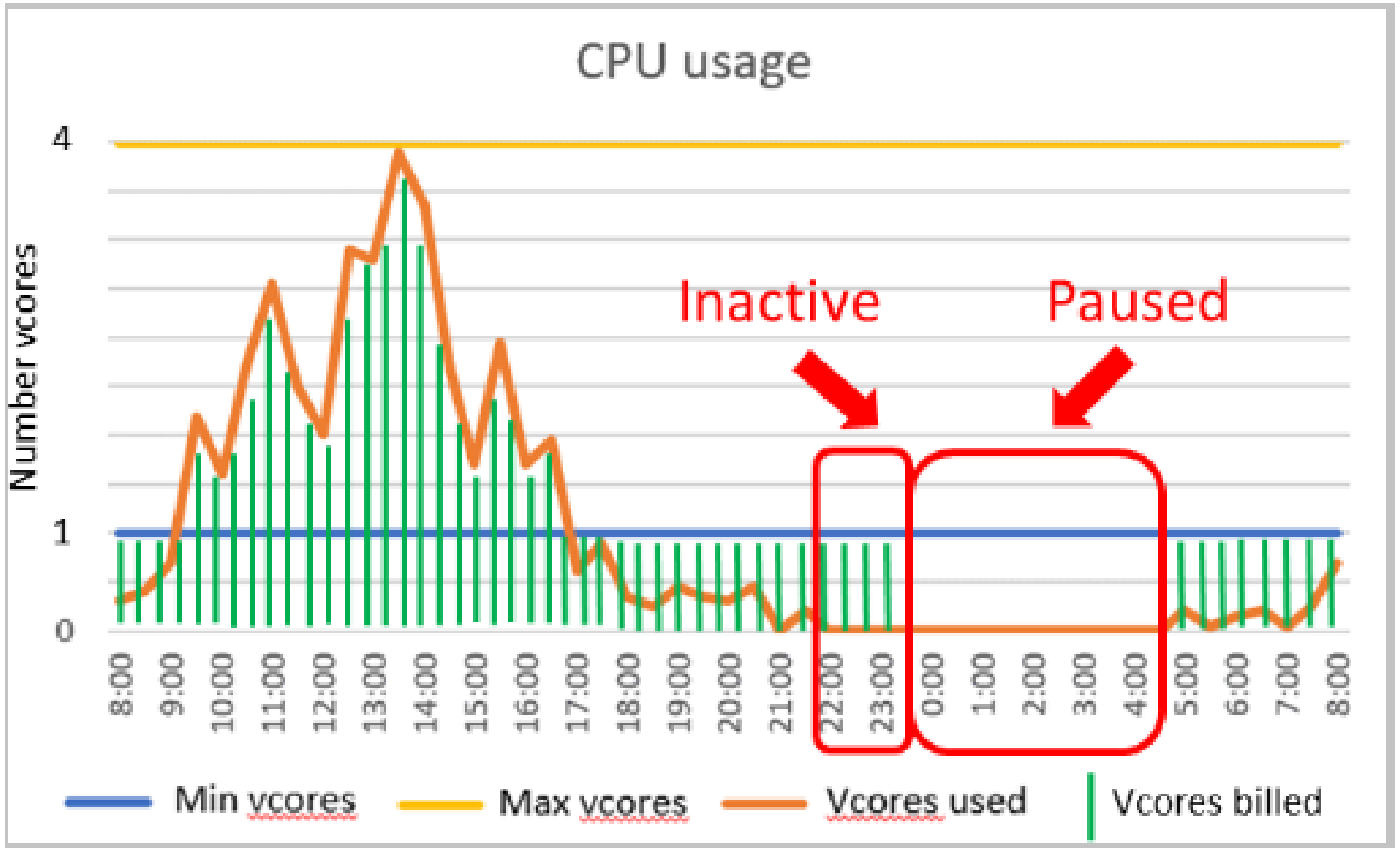
vCore-based model

- 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

Cost

- Provisioned compute costs
  - Cost reflects the total compute capacity that is provisioned for the application.
- Serverless compute costs
  - Bills for the amount of compute used per second
  - Automatically pauses databases during inactive periods when only storage is billed
  - Automatically scales compute based on workload demand and bills for the amount of compute used per second

Serverless compute tier



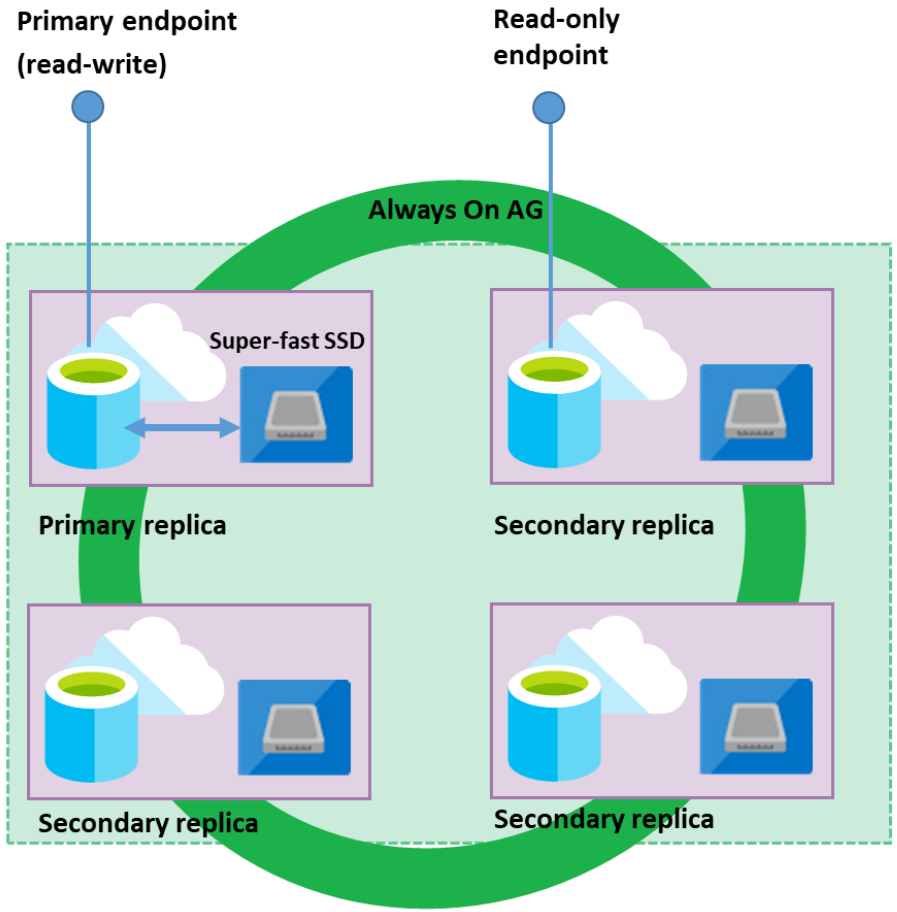
Purchasing Model

- Virtual core (vCore)-based purchasing model
  - Available for both Azure SQL Database and Azure SQL Managed Instance
  - Independently choose compute and storage resources.
  - Choose the exact amount of compute resources that are always provisioned for your workload.
- Database transaction unit (DTU)-based purchasing model.
  - Only available for Azure SQL Database.
  - Compute sizes are expressed in DTUs for single databases and in elastic database transaction units (eDTUs)
  - Bundled compute and storage packages

vCore-based service tiers

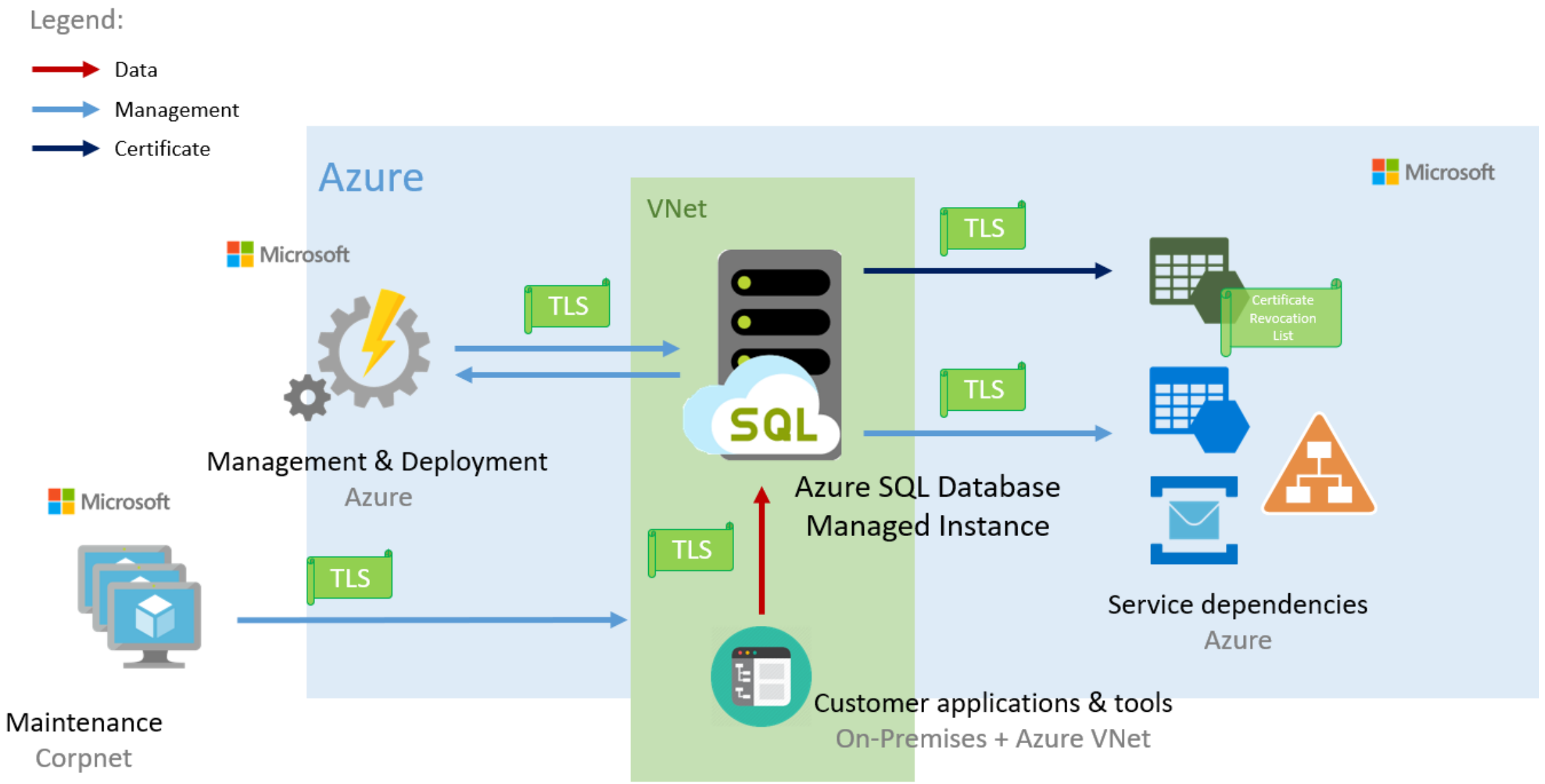
- General Purpose
  - Storage < 10 TB (depends on provisioned, serverless, MI)
  - 1 Replica / No read-scale replicas
  - Remote storage
- Business Critical
  - Storage 4 TB
  - 3 replicas
  - Zone redundant
  - Local SD
- Hyperscale
  - Storage 100 TB
  - 1 read-write replicas, 0-4 read scale replicas

Premium Model

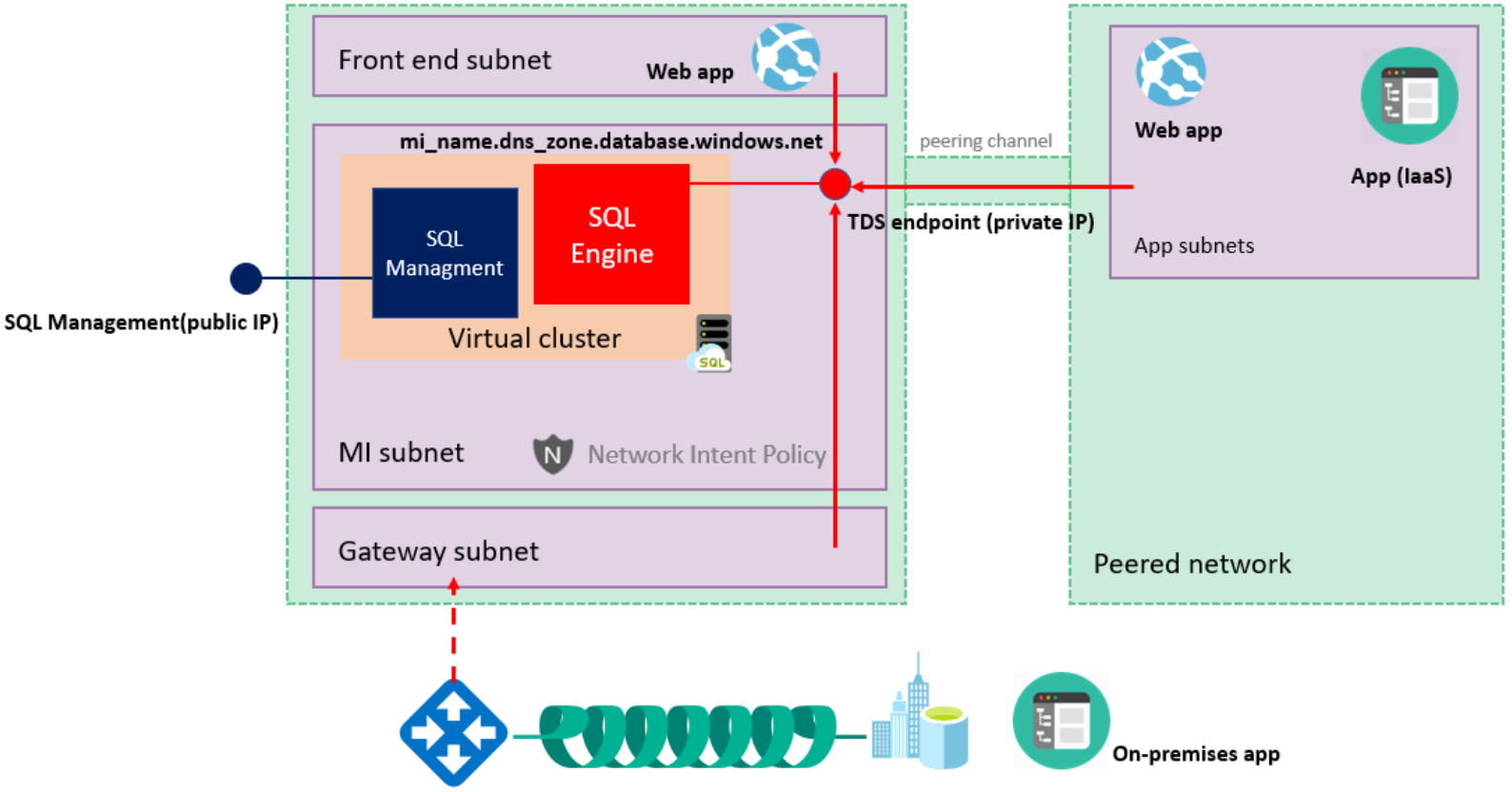


Business Critical service tier: collocated compute and storage

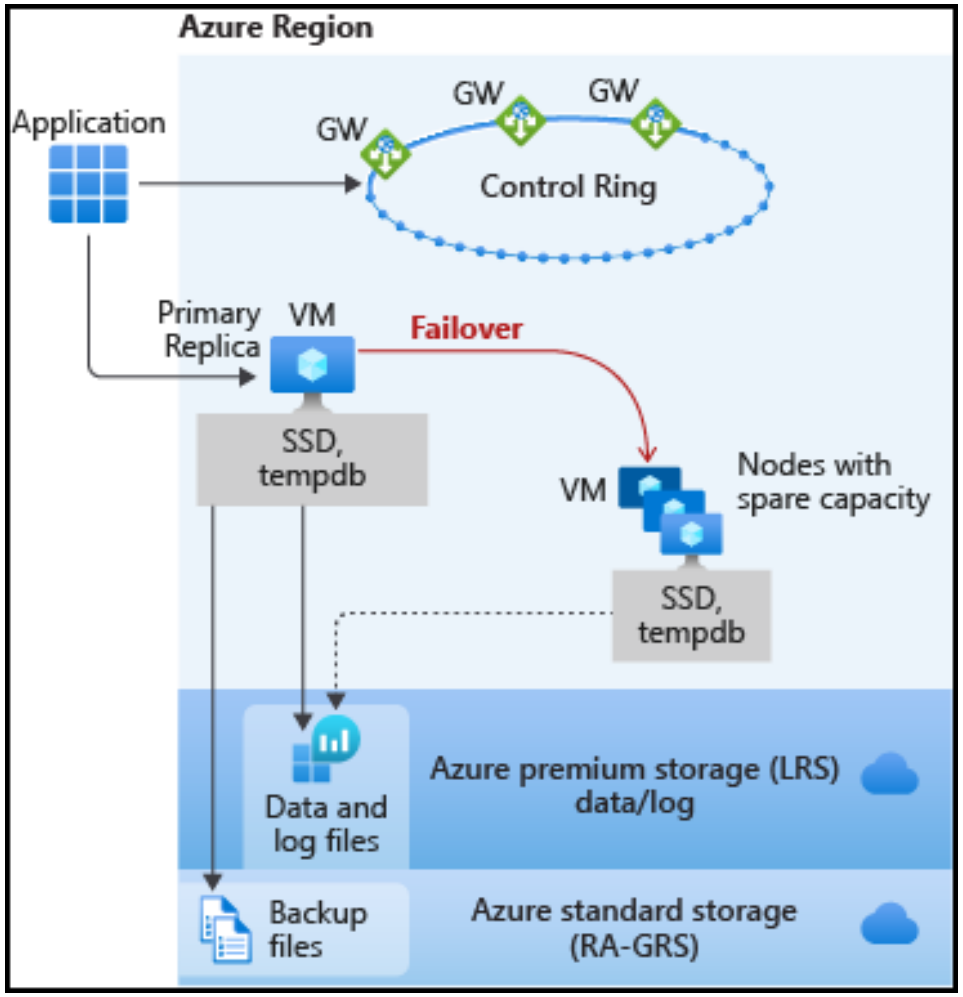
Managed Instances



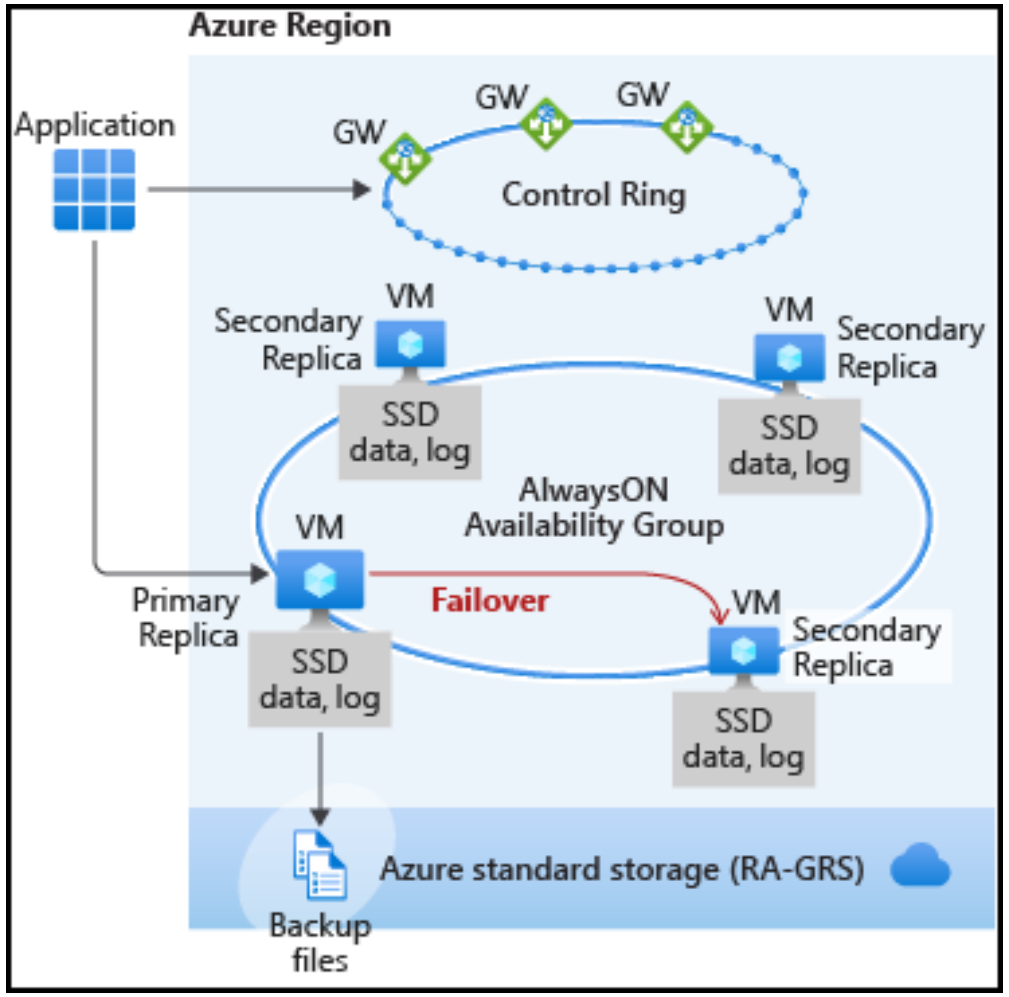
High-level connectivity architecture



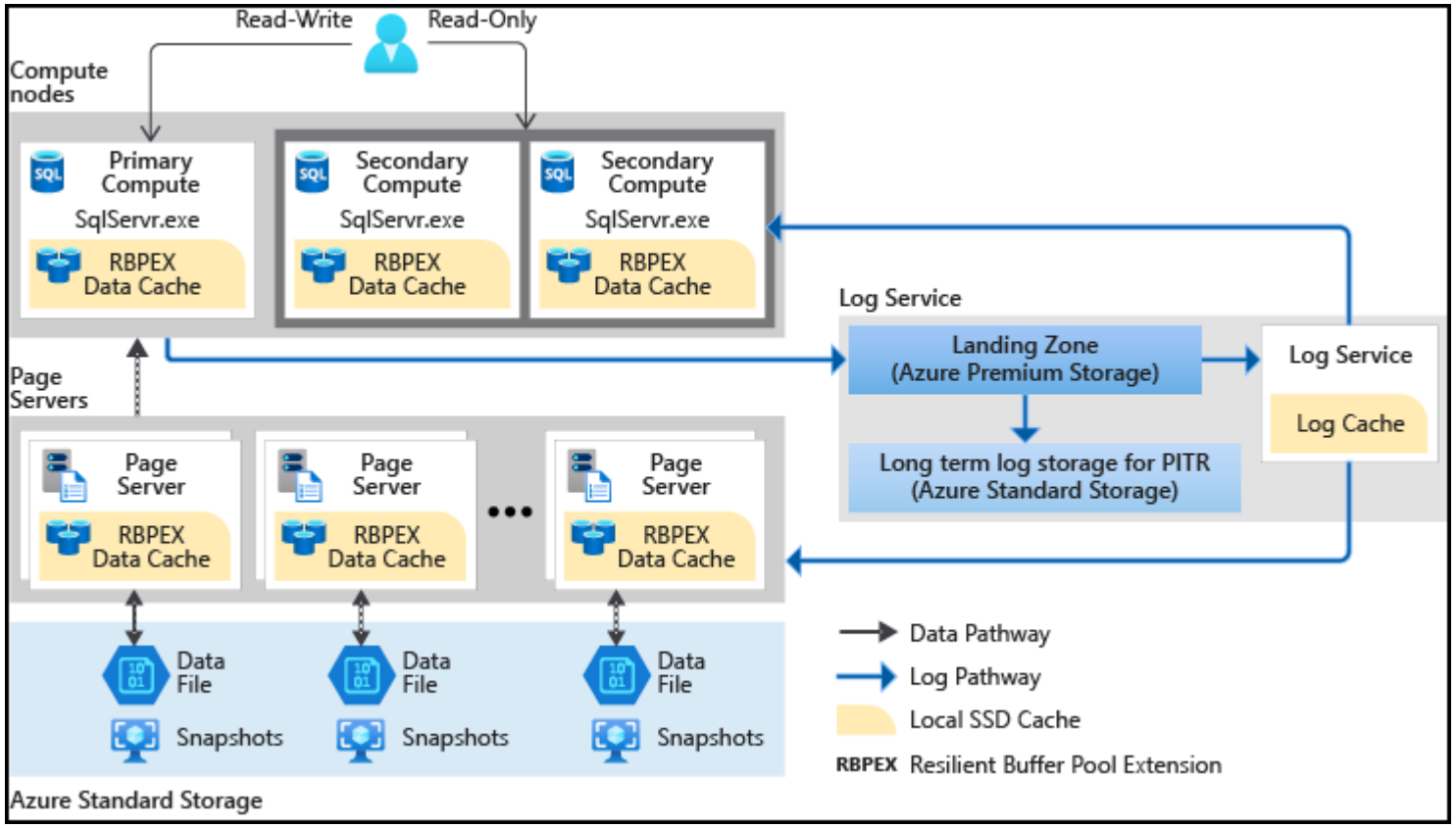
Availability Basic, Standard, and General Purpose



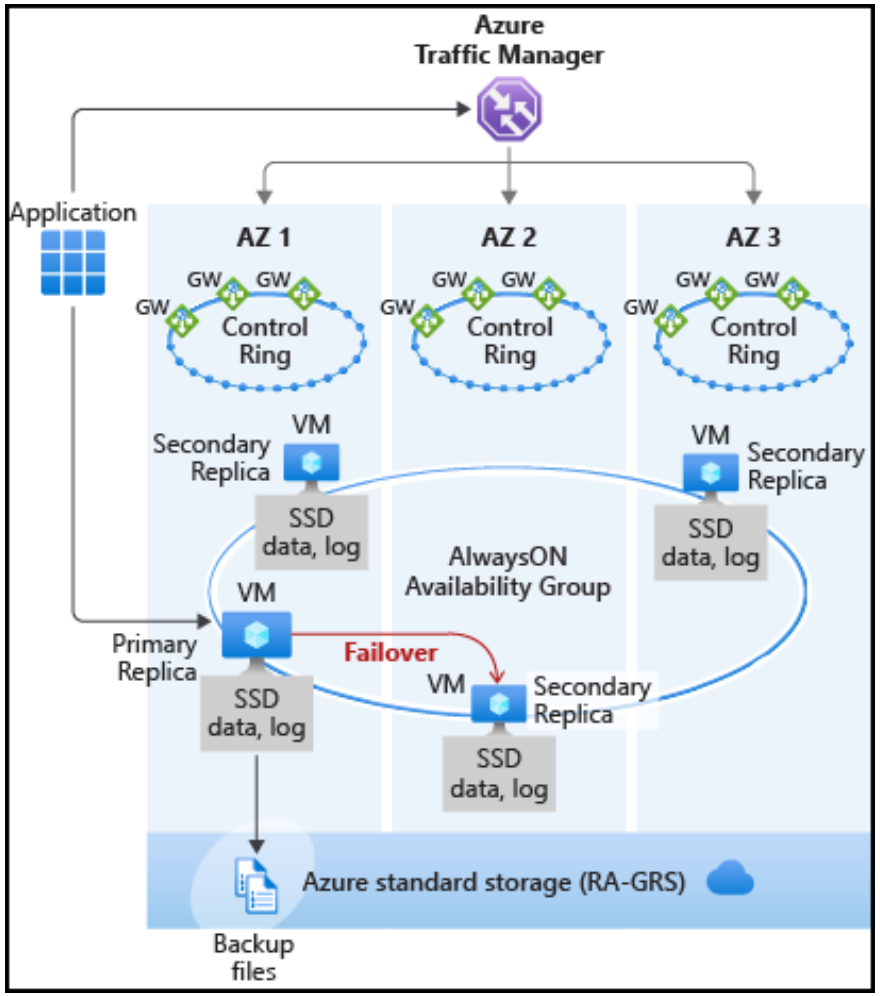
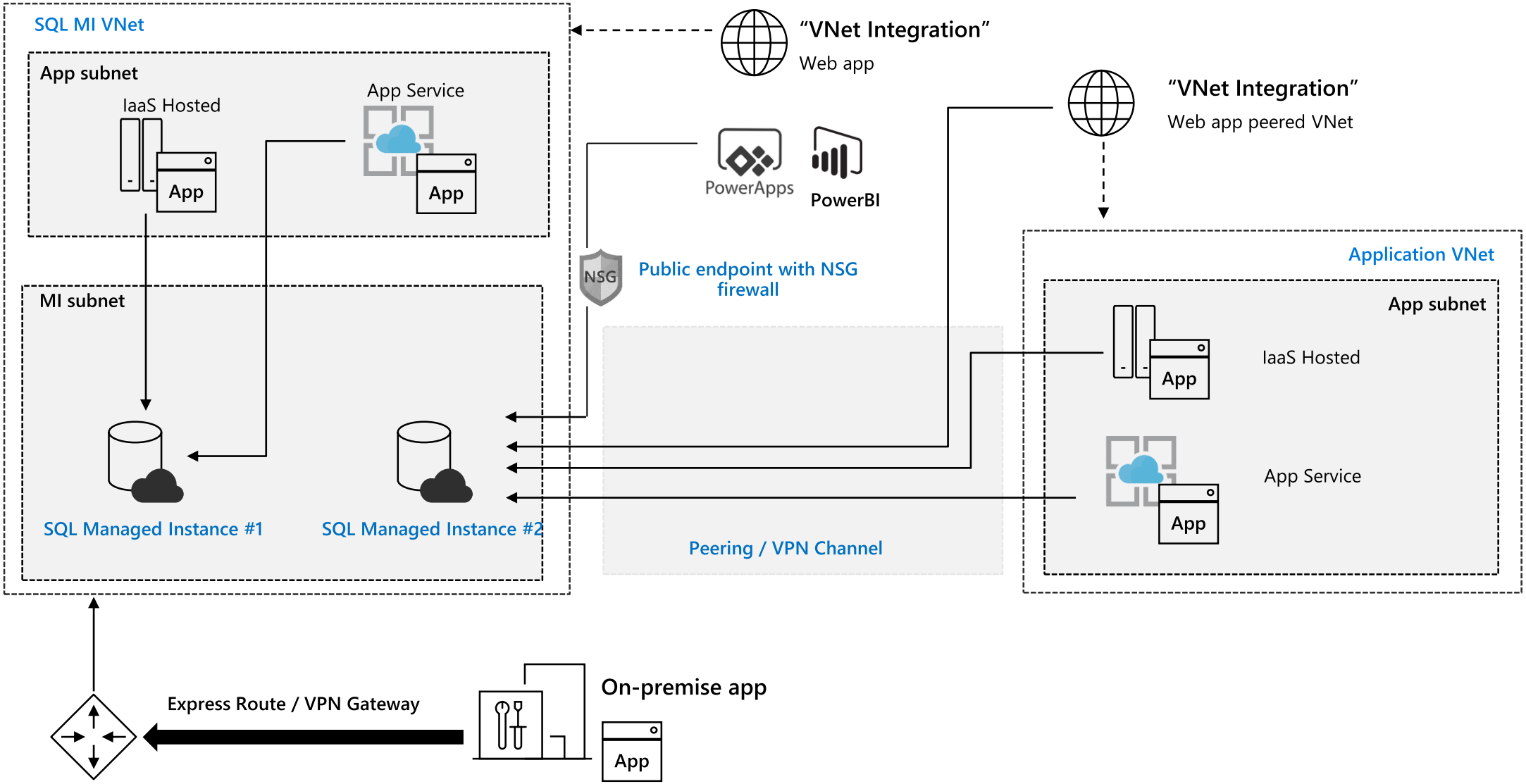
Premium and Business Critical



Hyperscale service tier availability



Zone Redundant Version



Deploy your application in the cloud or keep on-premises