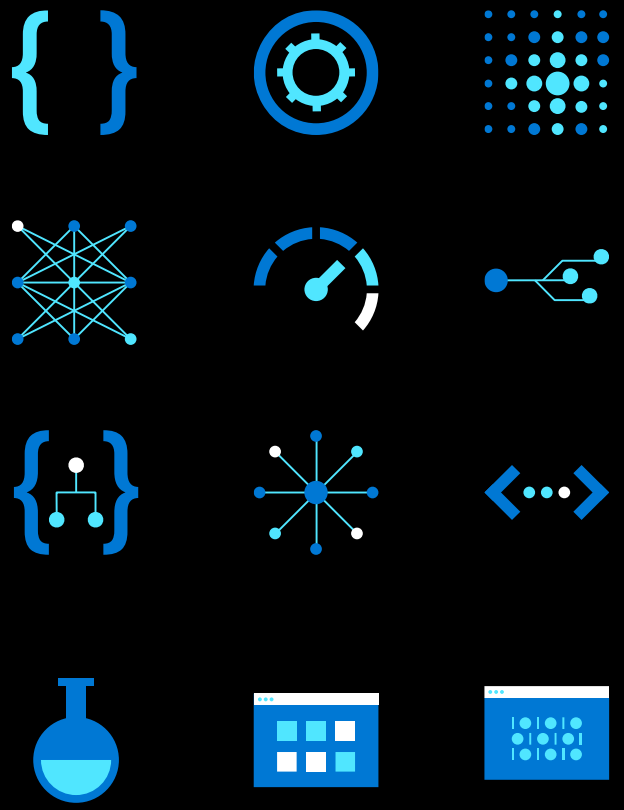
Microsoft Azure

Azure Training Day

Migrating .NET applications to Azure



Microsoft

Azure

Migrate to Azure SQL

Part 4 of 5 in the Migrate web apps to Azure series

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Oct 2019

About us...

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Prin Cloud Solution Architect

For questions or help with this series
MSUSDev@Microsoft.com

For the lab guides and sample code
https://github.com/MSUSDEV/Migrating-web-apps-to-Azure

Workshop Agenda – Hands On Labs

Learn by doing…

- **Module 2: Running Azure Infrastructure and execute Lift & Shift Migrations**
- *Lab 1: Deploy an Azure VM Infrastructure using ARM-Templates*

- **Module 3: Performing proper assessments to smooth Azure Migrations**
- *Lab 2: Using Azure assessment tools*

- **Module 4: Why and how migrating databases to Azure PaaS (You are here)**
- *Lab 3: Migrating SQL Databases to Azure using Database Migration Assistant*

- **Module 5: Migrating to Azure App Services – Azure Web Apps (.NET)**
- *Lab 4: Publishing application source code to Azure Web Apps using Visual Studio 2019*

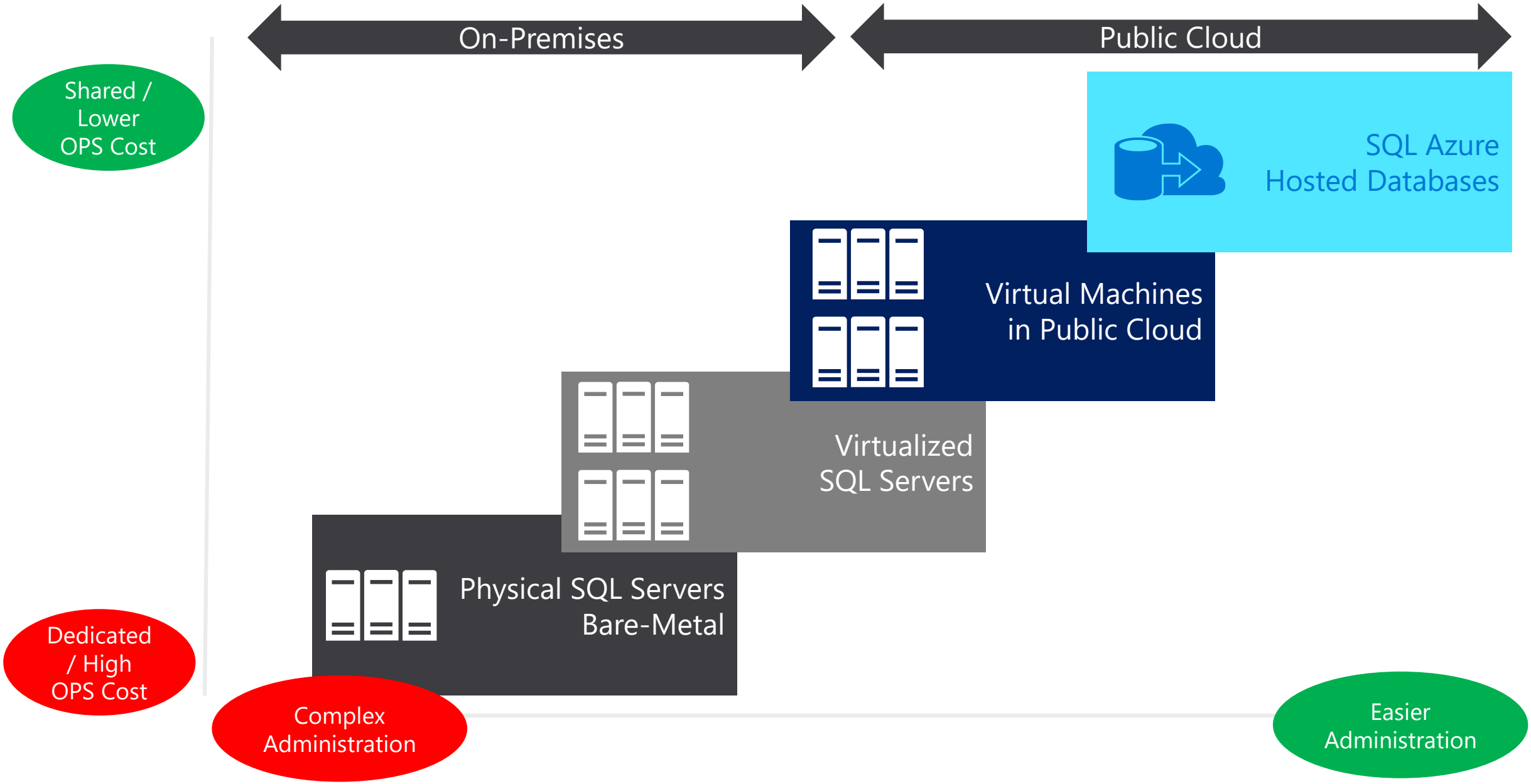
Key Objectives

What you will learn in this section

- Why migrating databases to Azure
- What is SQL Azure
- Migration Strategies for SQL workloads
- Optimizing and Securing SQL Azure

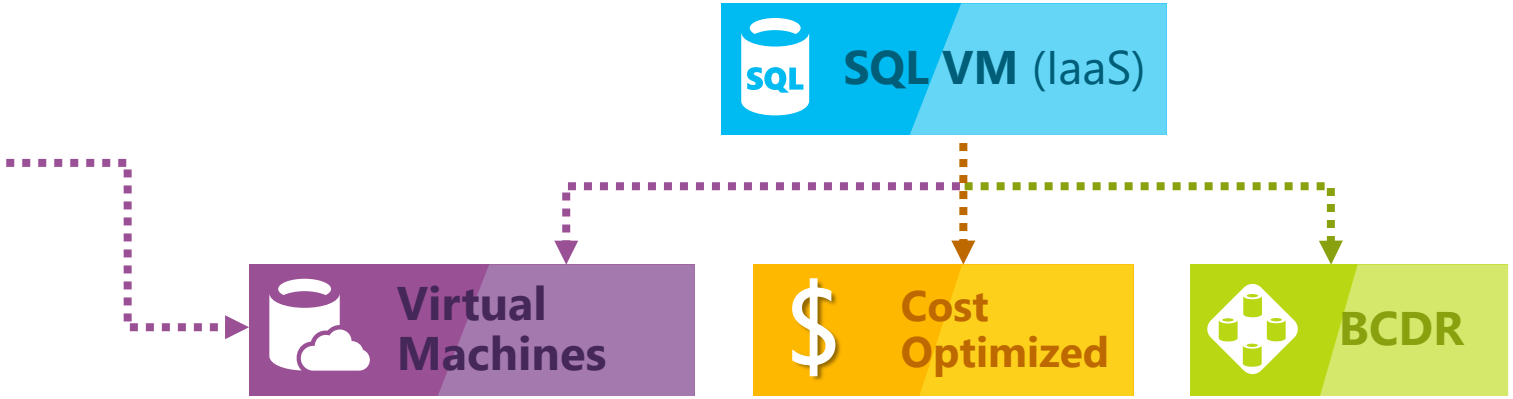
SQL Azure: Introduction

SQL Data Platform: Roadmap



SQL IaaS Options

A flavor of **SQL Virtual Machines**, running Windows or Linux OS, leveraging on all Azure IAAS features



Easy lift and shift

- Migrate your physical or virtualized VMs to Azure as-is

Fully managed IaaS

- Built on the Azure IaaS service offering full infrastructure
- All IaaS features

Full isolation and security

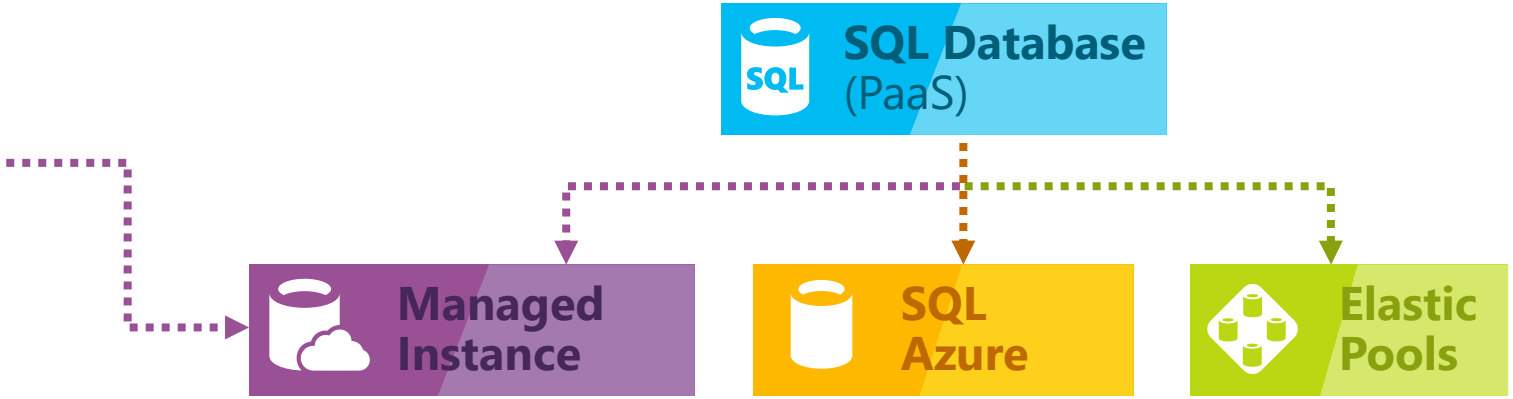
- Native VNET implementation
- Private IP addresses

High Availability

- Azure AVSet / ScaleSet
- SQL AlwaysOn Replication

SQL PaaS Options

A flavor of **SQL DB** designed to enable easy migration to fully managed PaaS, for almost any application!



Easy lift and shift

- Fully-fledged SQL instance with nearly 100% compat with on-prem

Fully managed PaaS

- Built on the same PaaS service infrastructure
- All PaaS features

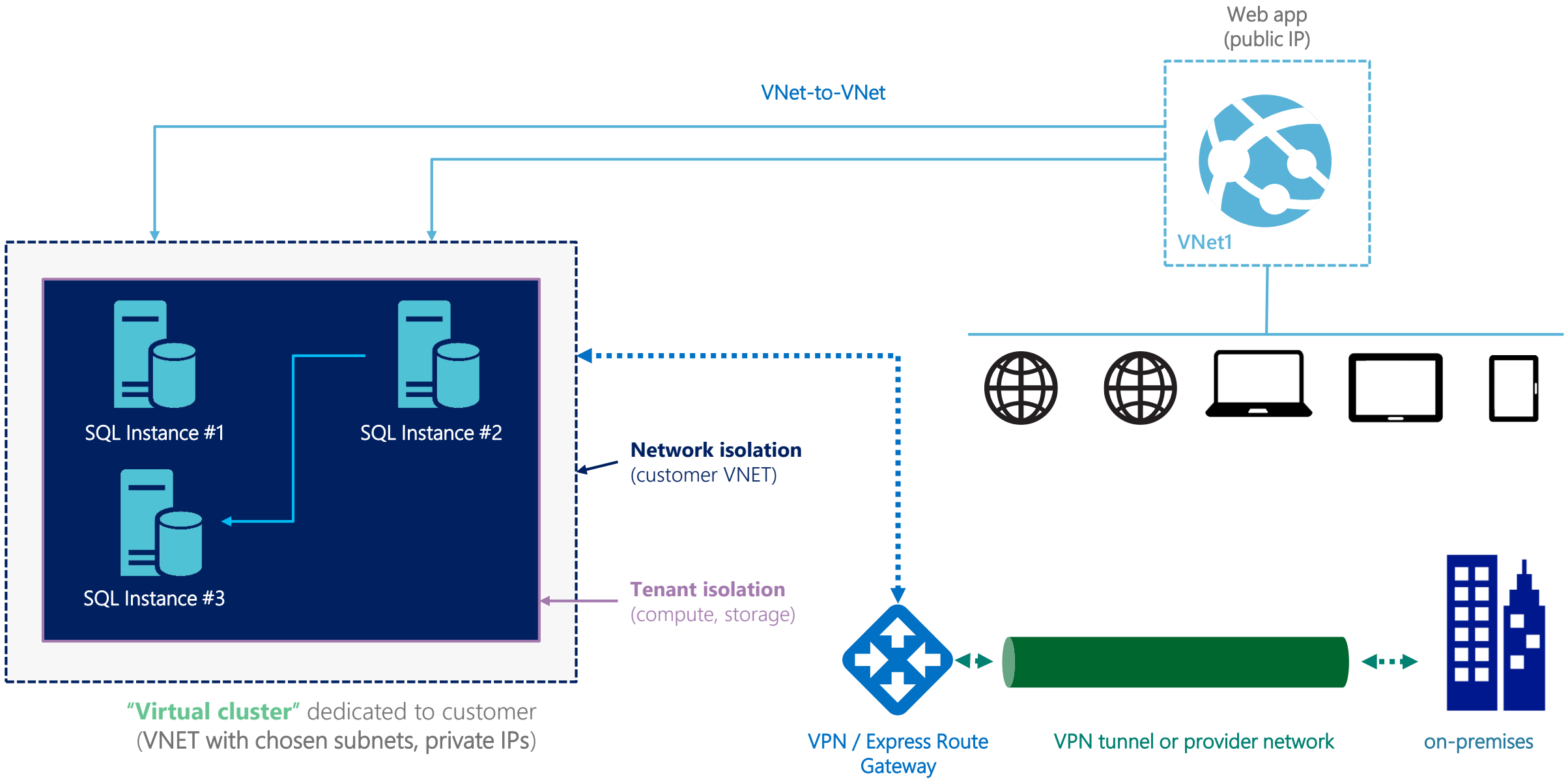
Full isolation and security

- Native VNET implementation
- Private IP addresses

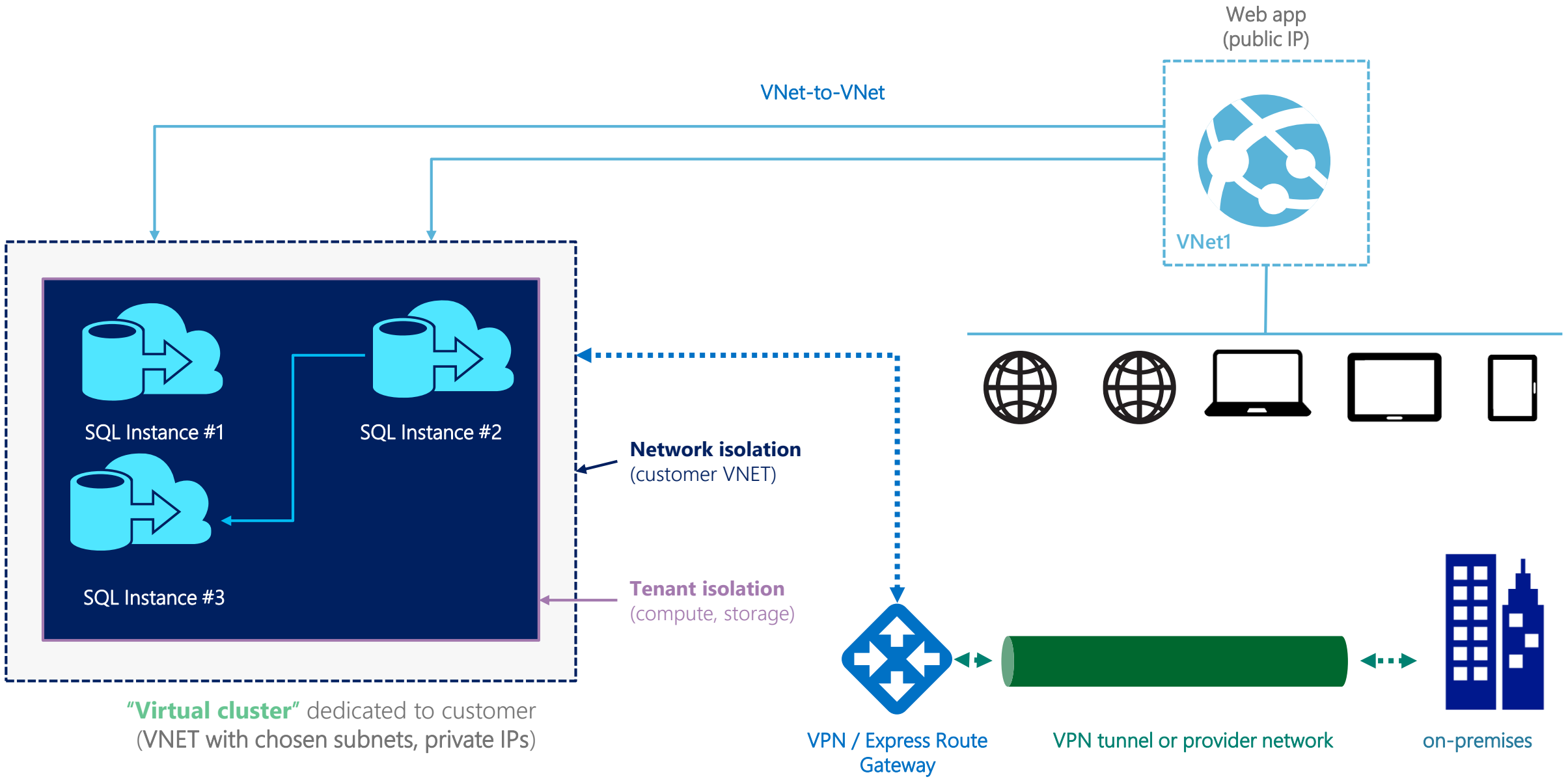
New business model

- Competitive
- Transparent
- Frictionless

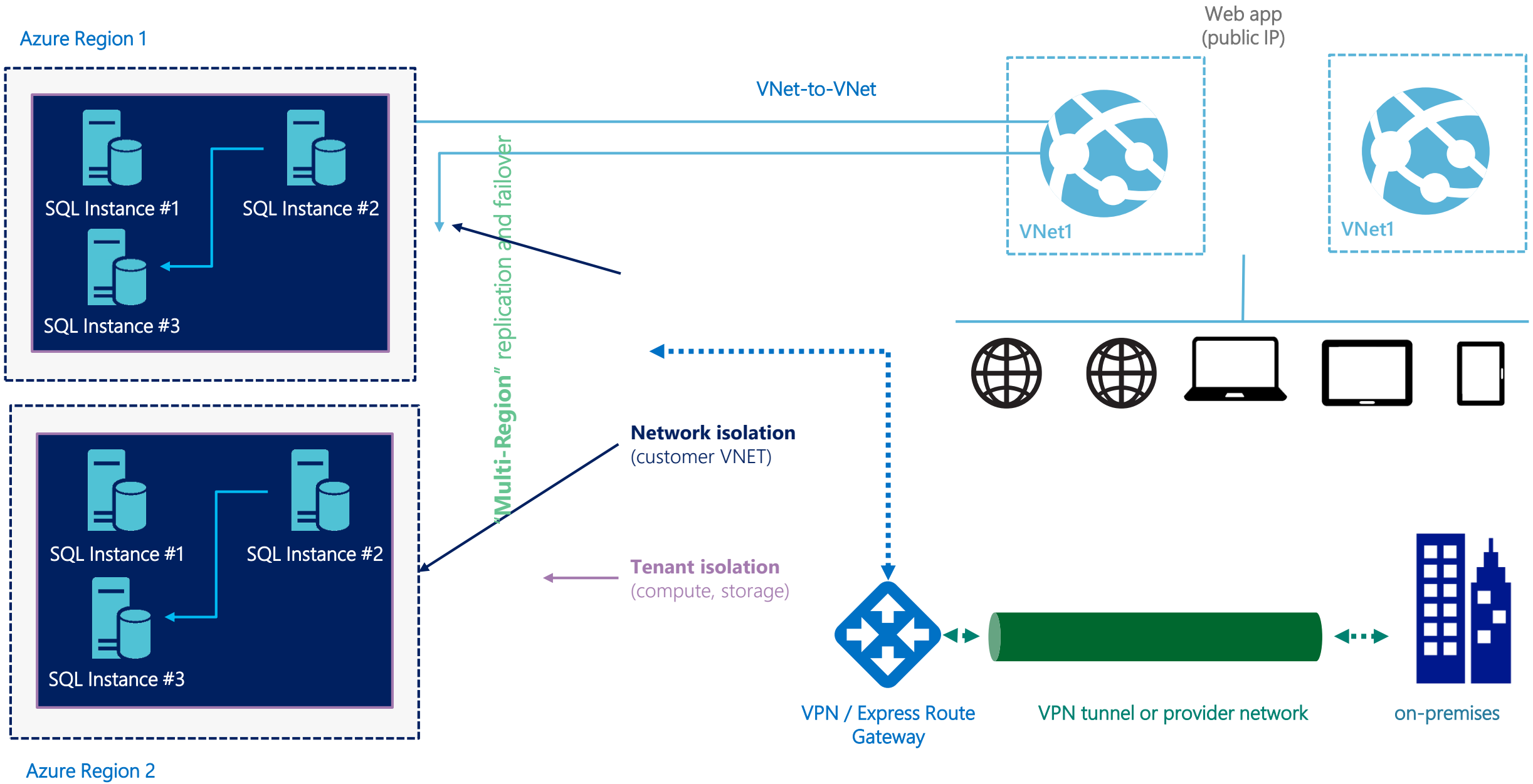
Removing security & isolation concerns (IaaS)



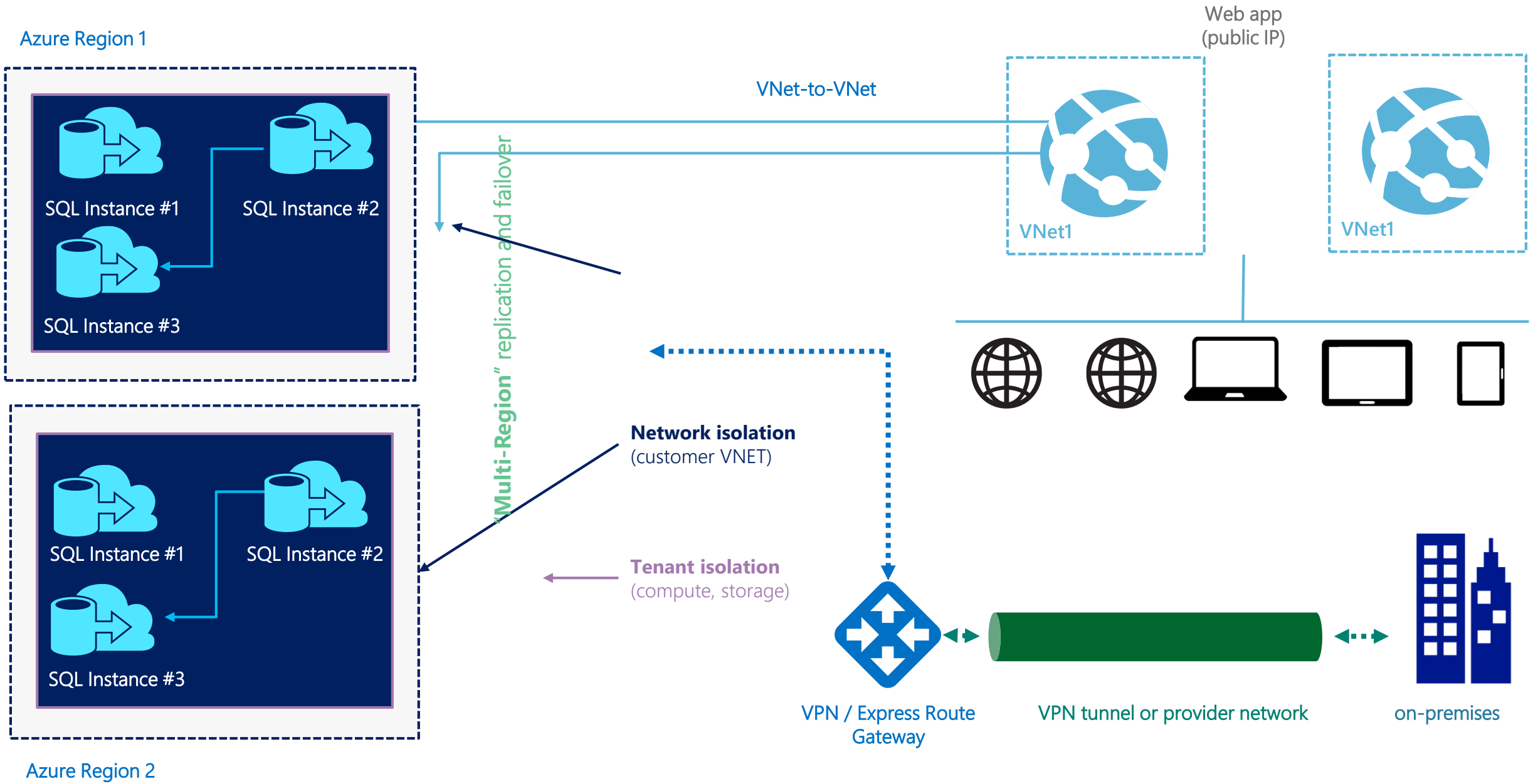
Removing security & isolation concerns (PaaS)



Integrate High Availability / Disaster Recovery (SQL IaaS)



Integrate High Availability / Disaster Recovery (SQL PaaS)



Azure SQL Database deployment

Demo

Deploying SQL Azure

Azure SQL Features…

Security

Azure Data Sync

Active Geo-Replicas

Performance Insight

Automated Tuning

Adaptive Query Processing

SQL PaaS Security Enhancements

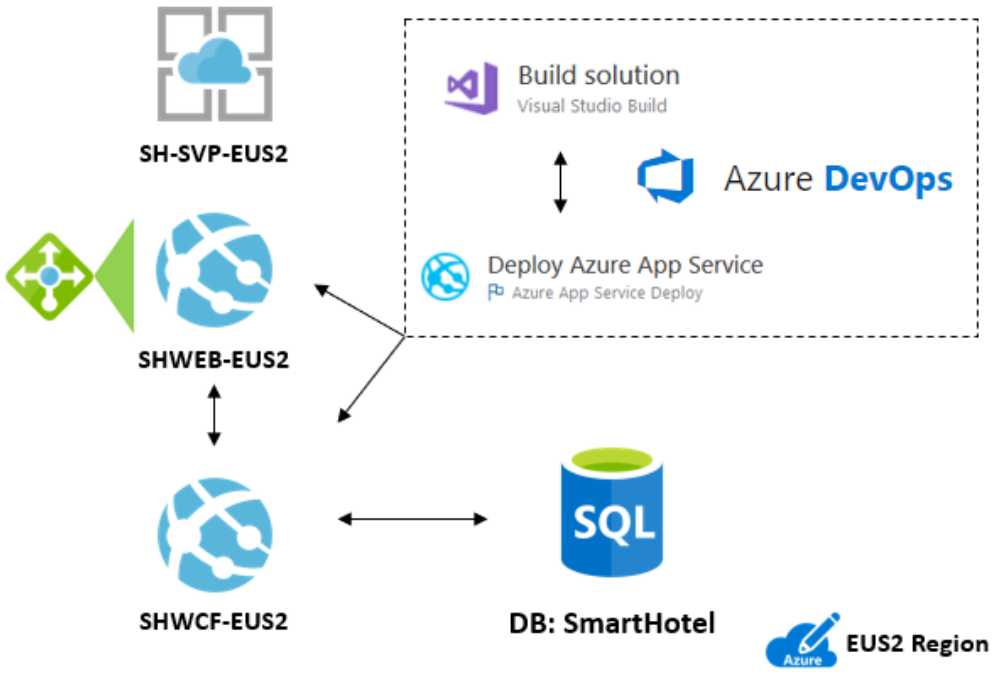
Demo

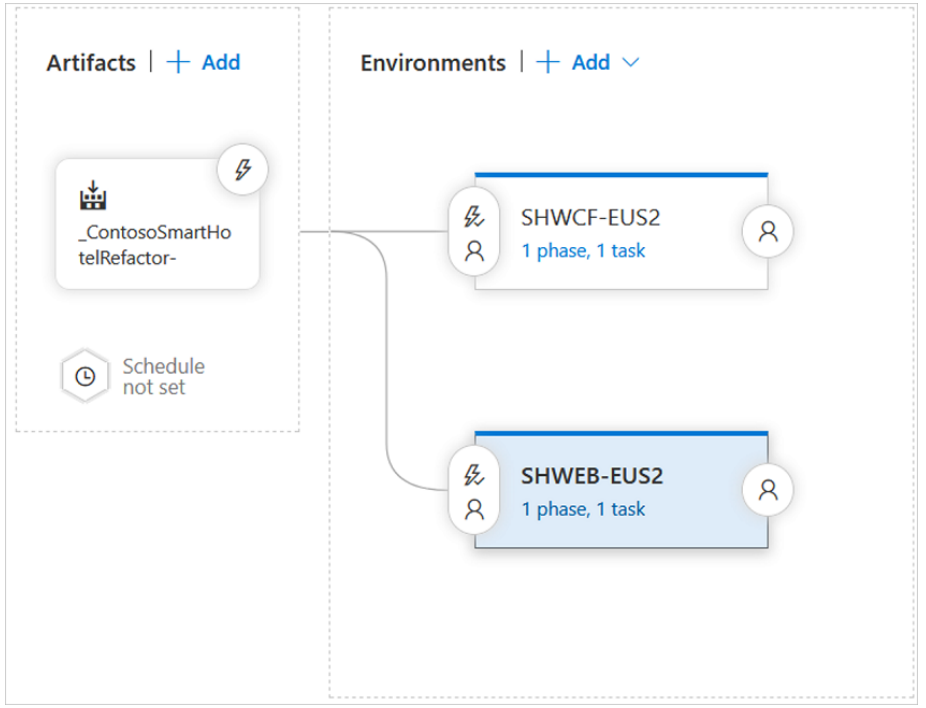
Deploying Azure SQL main feature highlights

Azure Database for SQL – Data Migration

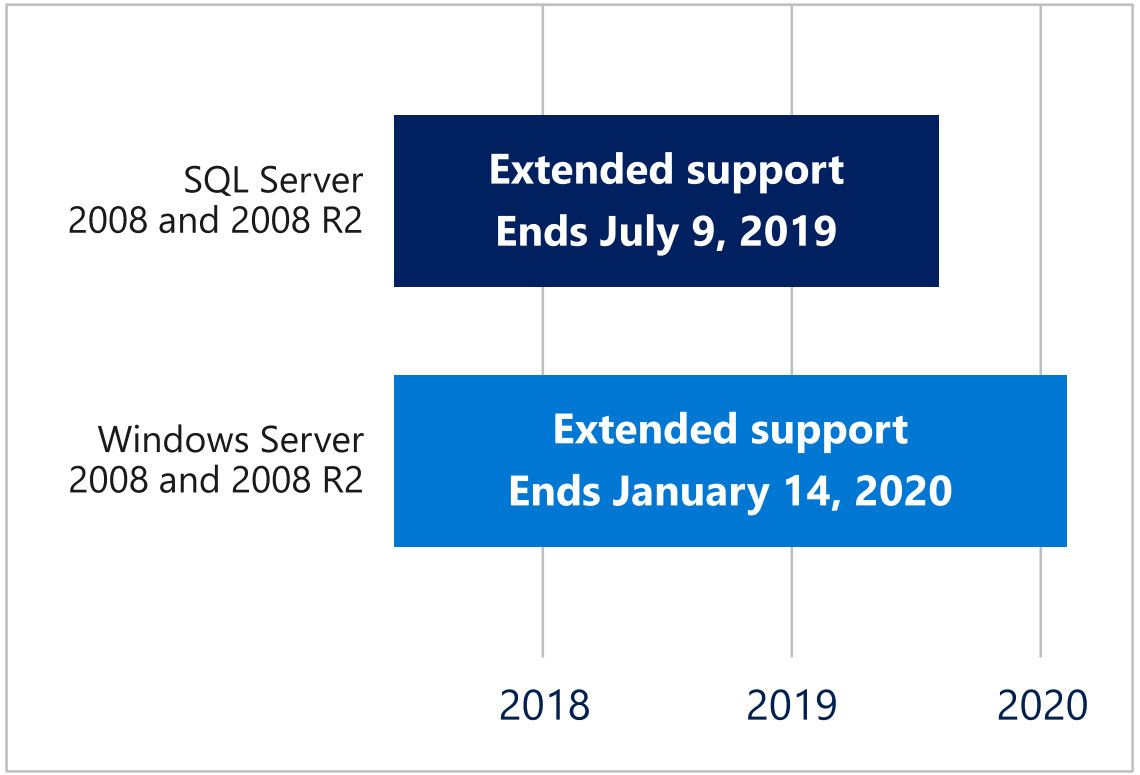
Refactor an on-premises app to an Azure Web App and Azure SQL database – Reference Architecture

- Web App and Service deployed to Azure App Services
- Database deployed to Azure SQL DB
- Solution is Built & Deployed using Azure DevOps Pipelines





Opportunity - Windows Server/SQL Server 2008/R2 EOS



Migrate to Azure

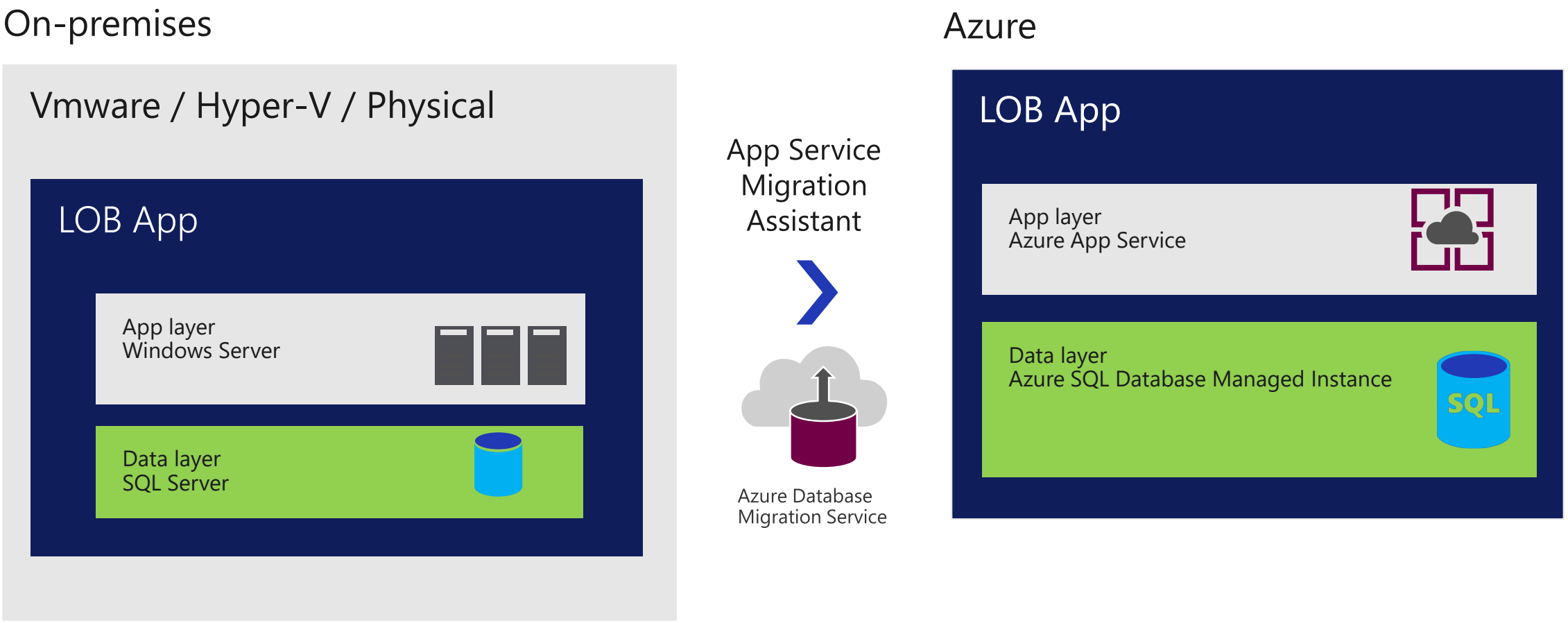
Free Extended Security Updates 2008/R2 versions 3 years past EOS deadline

Upgrade

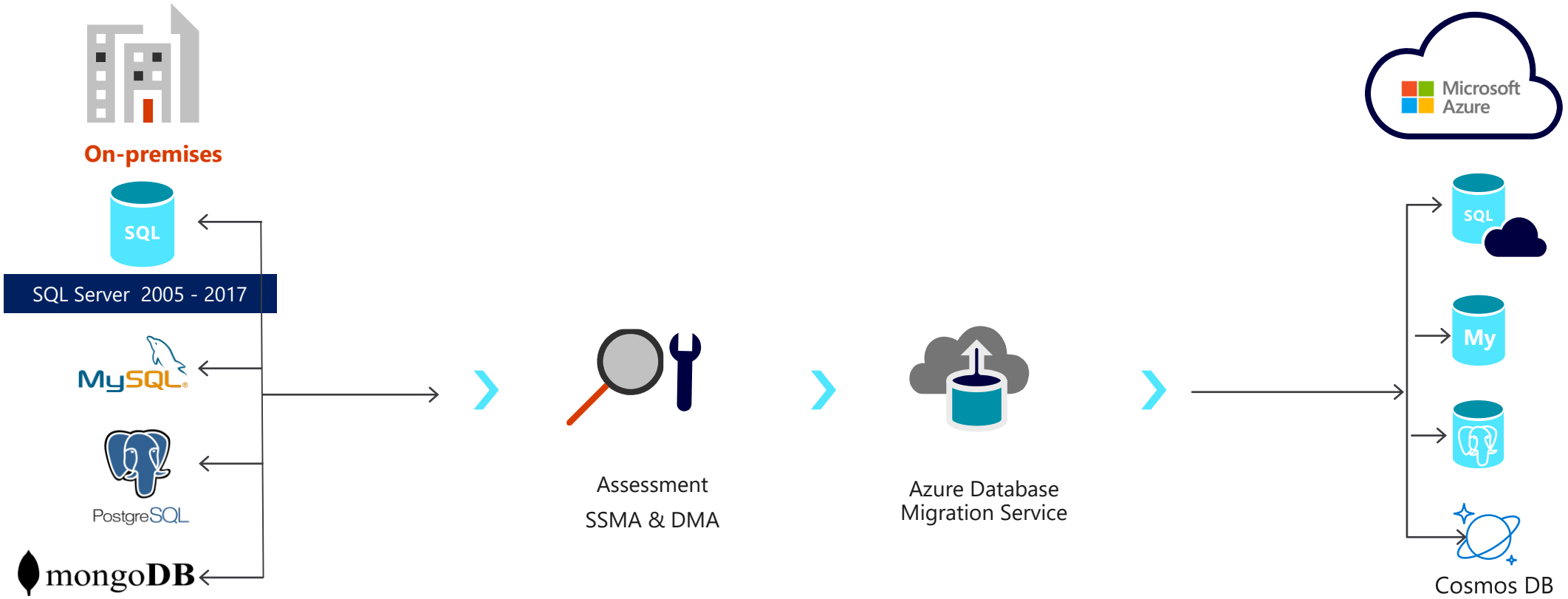
Move to current Windows Server/SQL Server versions

*Customers can also buy 3 more years of Extended Security Updates on 2008/R2 for on-premises use @ 0.75L pricing

ASP.NET Application Migration to Azure PaaS



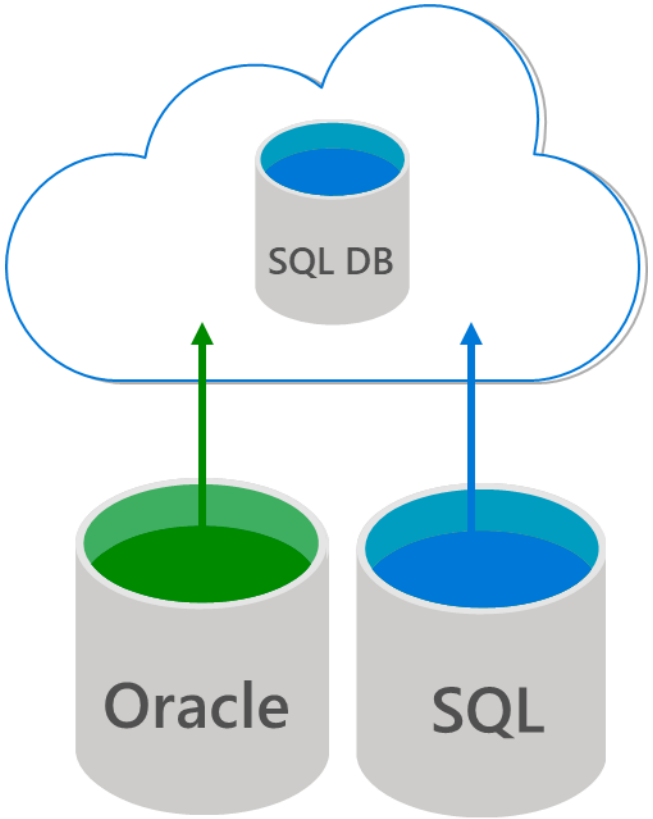
Migrate databases using Azure Database Migration Service



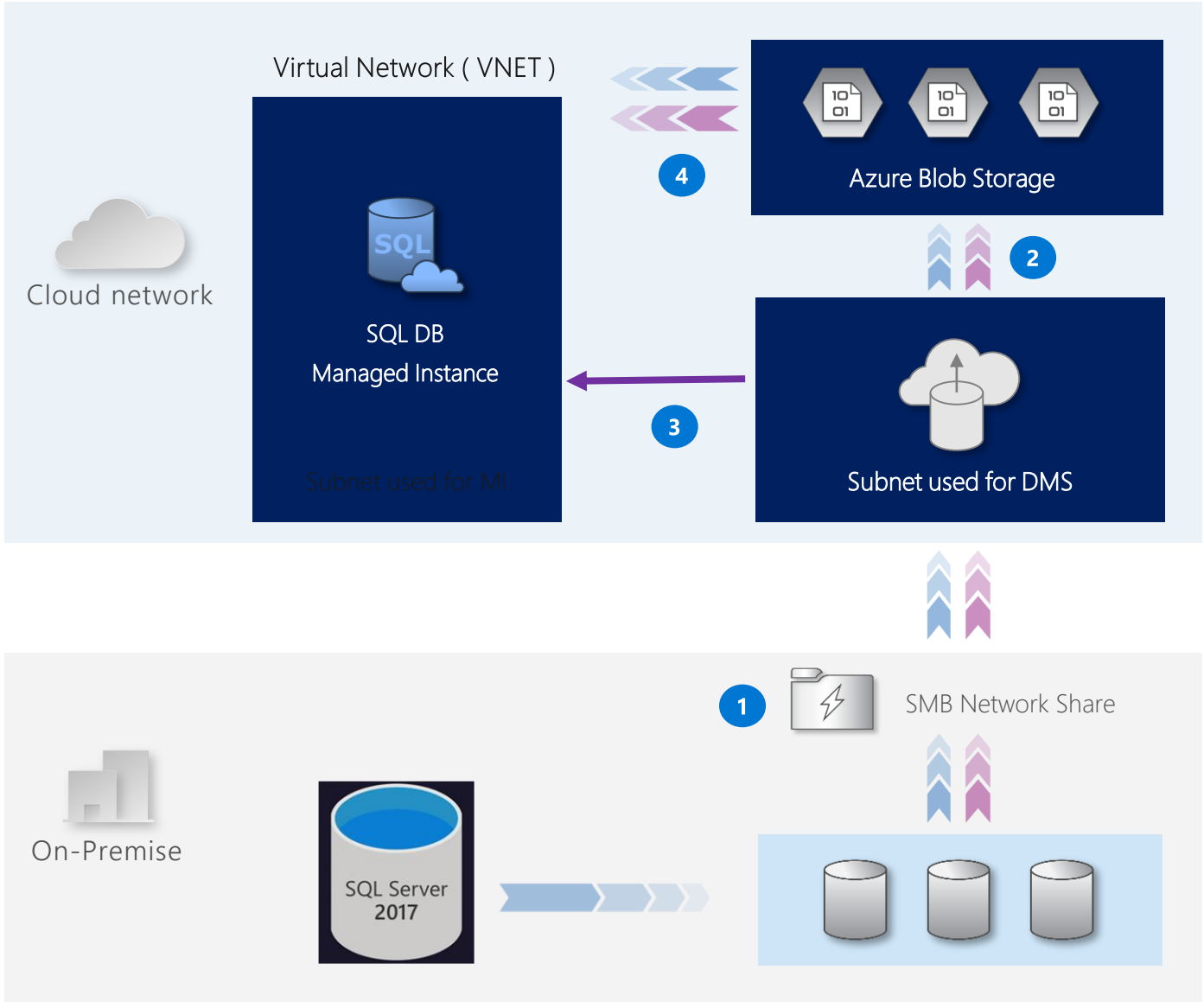
Seamless, end to end solution | Near-zero downtime | Migrate at-scale from multiple sources

Reliable and seamless migrations with Azure DMS (Database Migration Services)

- Fully managed database migration service for both operational databases and data warehouses
- Supports minimal down time migrations
- Supports both homogeneous and heterogeneous source-target pairs
- Initial focus on reliability and performance
- Iterative addition of source-target pairs
- Continued investment in friction-free competitive conversions



SQL Server to SQL DB Managed Instance online migration workflow



Legend

- Full Database backup files
- Transaction log backup files
- Site to site connectivity (VPN or ExpressRoute)

1. Provide existing backups in network share
2. DMS upload backup files to Azure storage
3. DMS initiate the migration to Azure SQL MI
4. Full backup restored and Transaction log backups continuously applied until cutover

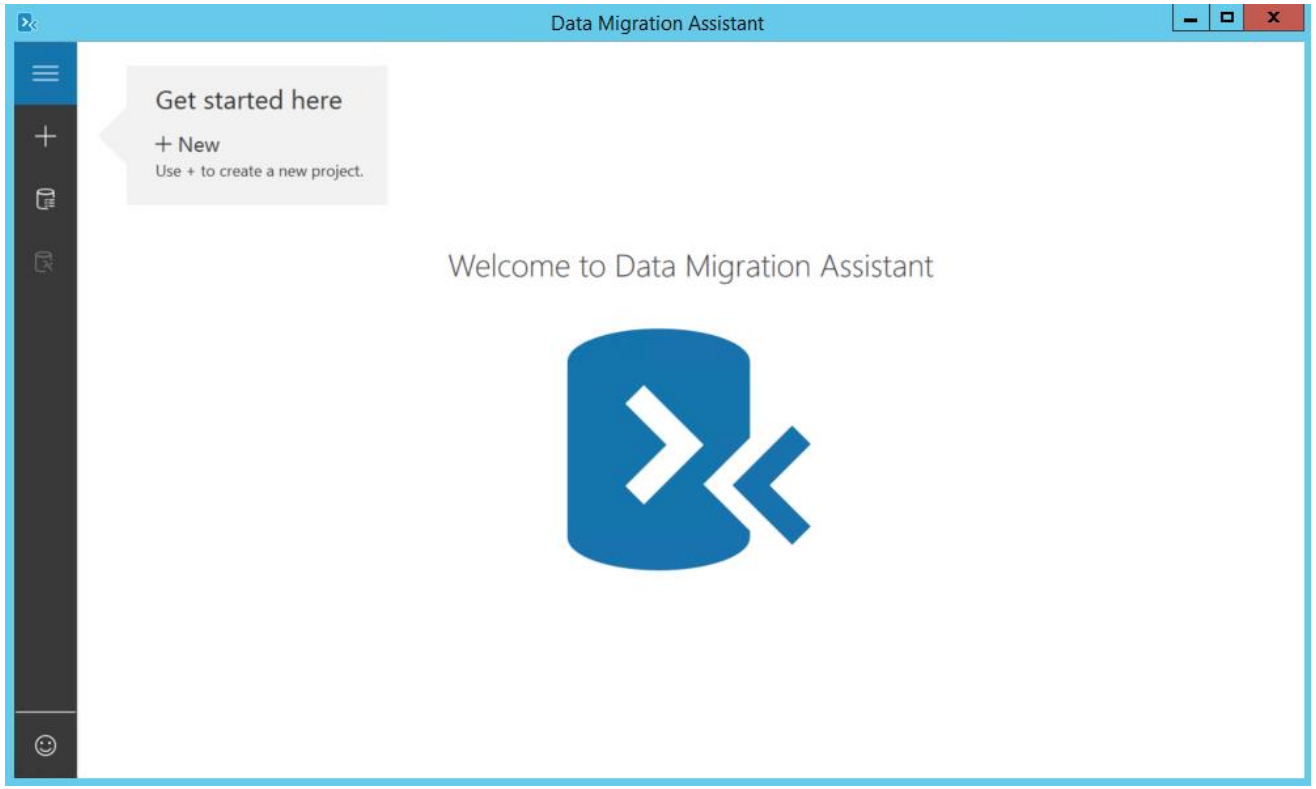
Provide Tail-Log backup, initiate cutover in DMS and change the application connection strings

SQL Data Migration Assistant

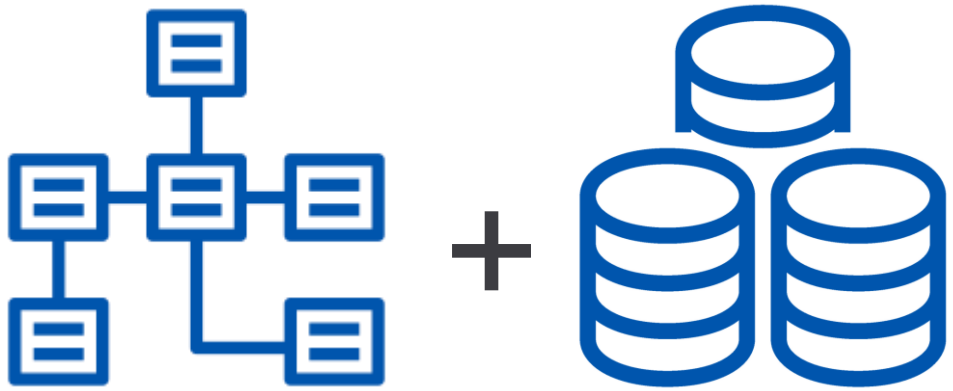
You can likely migrate some apps to Azure SQL Database, without any changes, already today…

Start migrating now:

- Download and run **Data Migration Assistant**
- Automated assessment will identify databases that are safe to move, w/o changes



Migrating Your Data To Azure SQL Database



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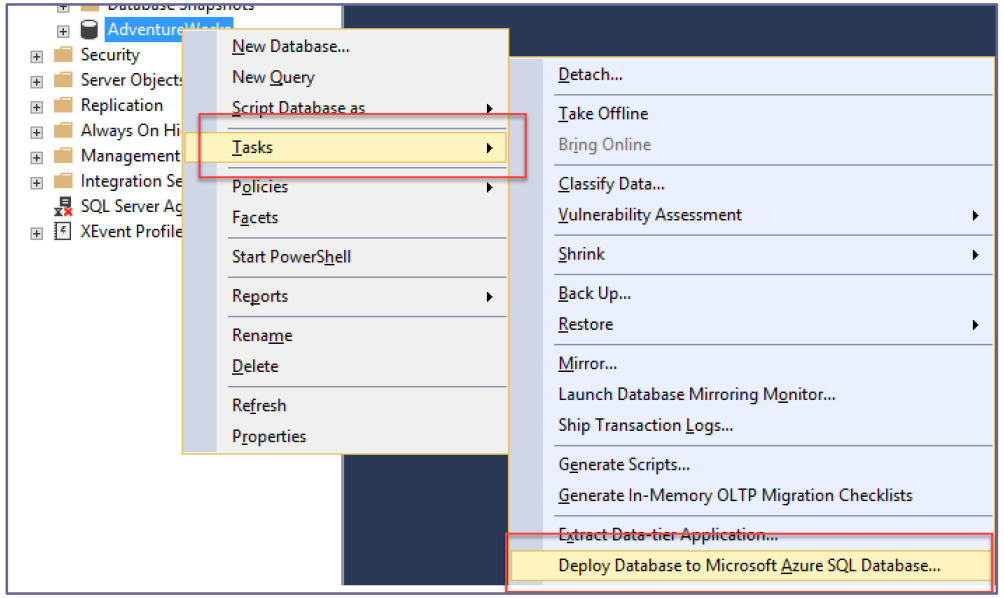
Schema + Data = Migration

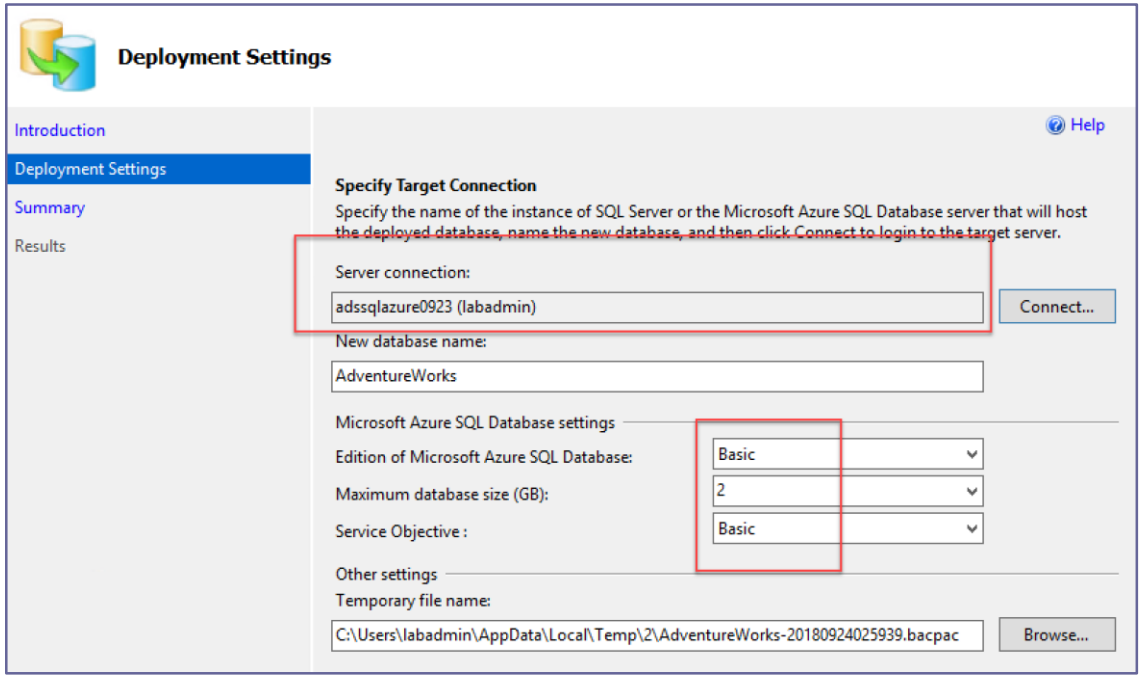
Demo

Migrating SQL Server using Database Migration Assistant

SQL Data Migration From SQL Management Studio

If your source database is fully compatible with SQL Azure, just migrate…





Start migrating now:

- From MSSMS, connect to both database endpoints
- Live migrate to SQL Azure

Demo

Migrating using SQL Server Mgmt Studio

Easy migration: nearly 100% like SQL Server

Data migration

- Native backup/restore
- Log shipping (DMS)

Security

- TDE
- SQL Audit
- Row level security
- Always Encrypted

Programmability

- Global temp tables
- Cross-database queries and transactions
- Linked servers
- CLR modules

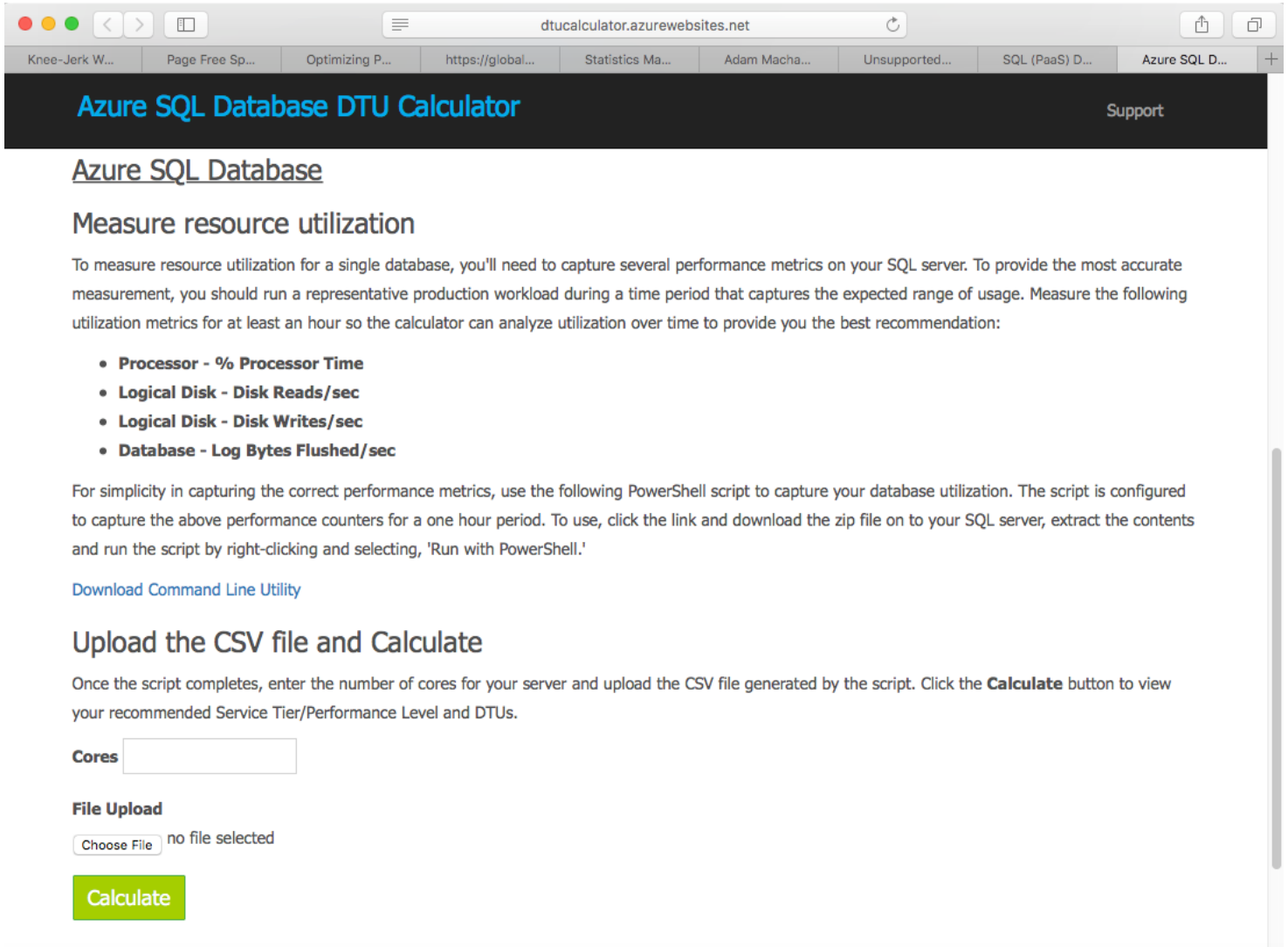
Operational

- DMVs & XEvents
- Query Store
- SQL Agent
- DB Mail (external SMTP)

Scenario enablers

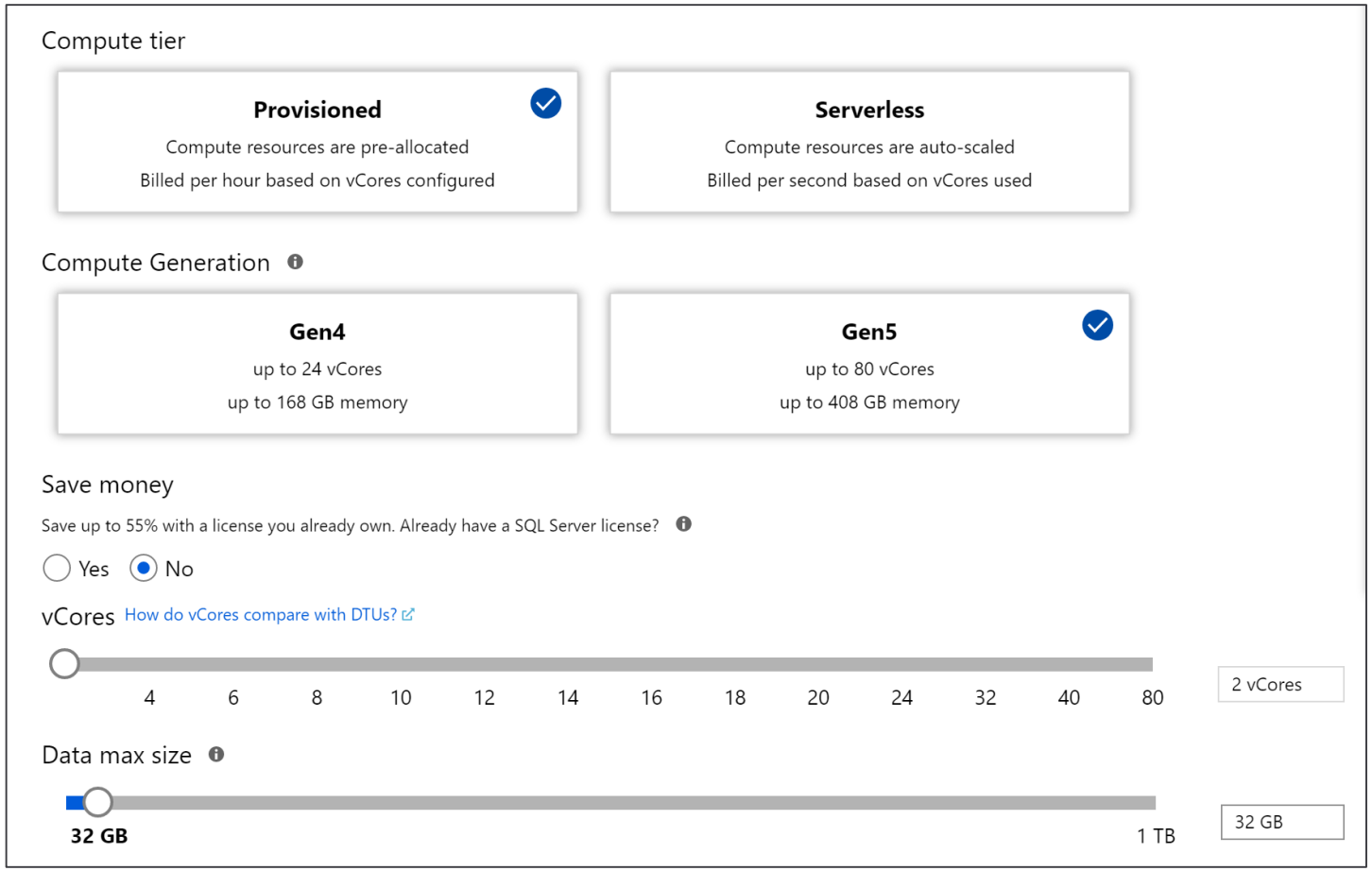
- Service Broker
- Change Data Capture
- Transactional Repl

Start from a correct sizing for Azure SQL (DTU Calculator)



Start from a correct sizing for Azure SQL (vCore Model)

Managed Instance does NOT support DTU for sizing, but uses the vCore model

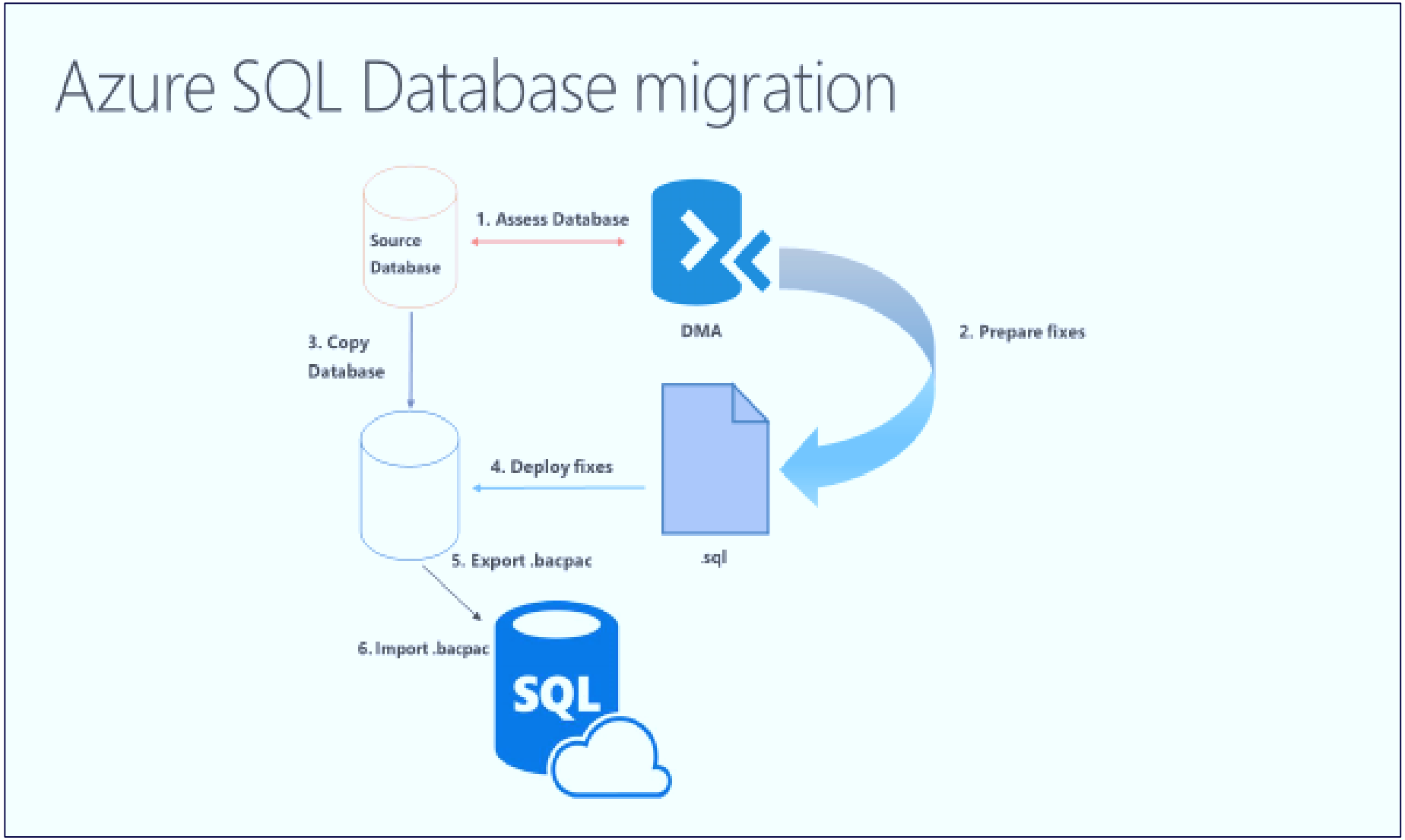


Options to Move Your Data…

BACKPAC

Transactional Replication

Migrations to Azure SQL Database



https://azure.microsoft.com/en-us/documentation/articles/sql-database-cloud-migrate/

Demo

Import SQL Databases from BacPac file

Easy Guide to Quickly Migrating Data

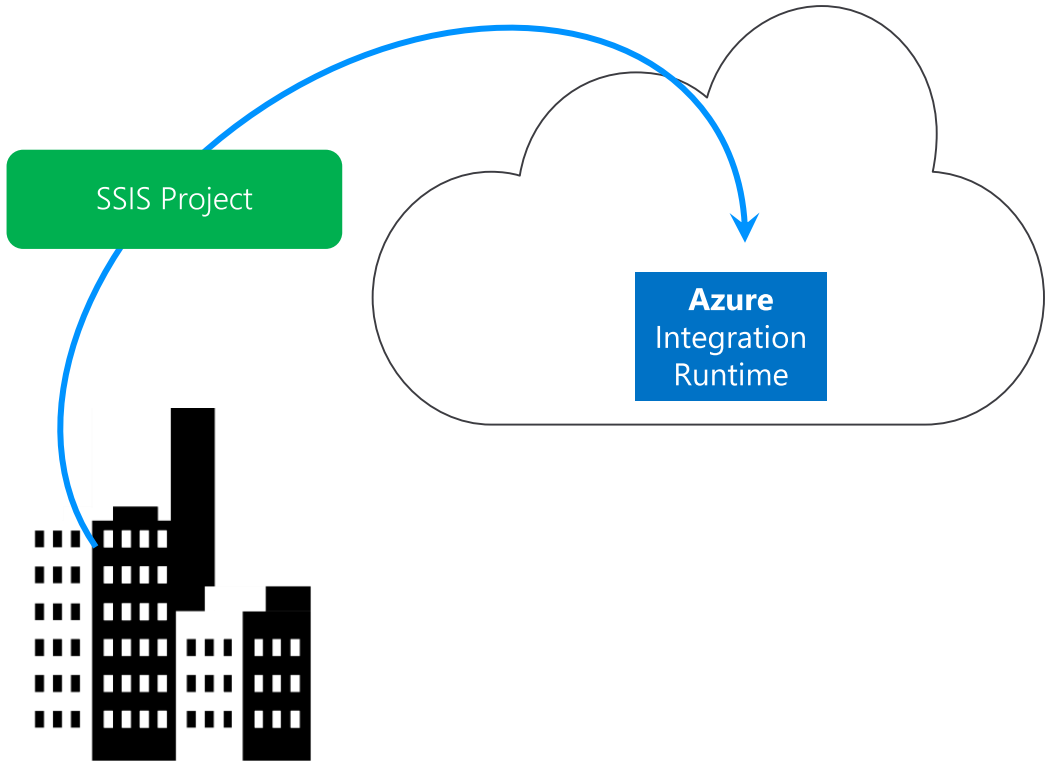
Easy migration – Other SQL Components: SSIS / SSAS / SSRS

Will not be installed side-by-side with SQL Managed Instance!!

- **Recommendation:**
- **move to PaaS model**
  - Migrate your SSIS packages to new SSIS on Azure Data Factory (PaaS service)
- **Migrate your OLAP models to Azure Analysis Services**
- **… or run these services in Azure virtual machines**

- **For SSRS: run in a virtual machine, or switch to Power BI**

Integration Runtime for SSIS



Managed Cloud Environment

Pick number of nodes & node size, resize later if needed

Compatible

Same SSIS runtime across Windows, Linux, Azure Cloud

SSIS + SQL Server

SQL DB Managed instance + SSIS in cloud
Access on premises data via VNet

Get Started

Hourly pricing (no SQL Server license required)
Use existing license (coming soon)

Section Take-Aways

1. Azure offers different SQL flavors, both in IaaS and PaaS
2. Recommendation to move to SQL Azure (PaaS), or SQL Azure Managed Instance (PaaS)
3. SQL Data can be migrated in several ways, depending on source and target environment and requirements

Questions Landing Spot

"…If you want good answers,

ask better questions…"

Next Module...

Azure App Services (WebApps)

Microsoft

Thank You