Microsoft

Azure

Azure Developer Series

Application Migration to Azure

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CEO & Lead Technical Trainer at
007FFFLearning.com

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About Me…

Peter De Tender – MCT, Azure MVP

- CEO and Lead Technical Trainer of 007FFFLearning.com, +20 years IT experience, mainly datacenters and Microsoft Infrastructure background
- Full-time in Azure since 2013 (Readiness & Architect)
- Azure Advisor, Azure Certified Architect
- Technical Writer, Book author, Courseware Creator
- Living in Belgium, but traveling worldwide 90% of my time, helping larger Microsoft Partners, customers and Microsoft FTEs in learning about and using Azure, by providing workshops with passion

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Setting the scene

Overview of the workshop

About the workshop content…

About:

In this workshop, you will learn how to build a proof of concept (POC) that will transform an existing ASP.NET-based Web application to a container-based application. This POC will deliver a multi-tiered web app solution from a Virtual Machine architecture into Azure, leveraging Azure WebApps and different Azure container solutions available today. You will also migrate the underlying database from a SQL 2014 Virtual Machine architecture to SQL Azure. Easter Bonus: Every now and then, we will showcase similar steps using a Node.JS and MongoDB, migrating to Azure Web Apps, Containers and CosmosDB.

At the end of this workshop, you will have a good understanding of container concepts, Docker architecture and operations, Azure Container Services, Azure Kubernetes Services and SQL Azure PaaS solutioning.

Target Audience:

The workshop is targeted to Cloud Architects, Cloud Solution designers, developers and IT sysadmins, CIO's, CTO's and anybody else who is interested in learning about Azure, containers, application cloud migration and digital transformation.

Focus of the workshop (40%) is getting hands-on experience, complemented with presentations and whiteboard sessions (if in-person delivery).

Time Estimate:

16 hours (+/- 10 hours presentations, 6 hours of optional hands-on labs for attendees)

Workshop Agenda - Presentations

What we will talk about…

- Module 1: Digital App Transformation with Azure
- Module 2: Infrastructure as Code using ARM templates
- Module 3: Azure Database Solutions – SQL Azure
- Module 4: Azure App Services – Azure Web Apps (.NET)
- Module 5: Introduction to Docker
- Module 6: Deploying Azure Container Registry / Azure Container Instance
- Module 7: Migrating Apps to Azure Container Services / Kubernetes Services
- Module 8: ACS / AKS Management and Monitoring

Workshop Agenda – Hands-On-Labs

Learn by doing…

- **Module 2: Infrastructure as Code using ARM templates**
  - **Lab 1:** Setup your Azure subscription and deploy the source Virtual Machine environment with Visual Studio 2017
- **Module 3: Azure Database Solutions – SQL Azure**
  - **Lab 2:** Migrating a SQL VM database to SQL Azure using SQL Management Studio
- **Module 4: Azure App Services – Azure Web Apps**
  - **Lab 3:** Migrating your legacy ASP.NET application to Azure Web Apps with Visual Studio 2017
- **Module 5: Introduction to Docker**
  - **Lab 4:** Containerizing your legacy ASP.NET application with Docker CE for Windows

Technical Requirements

What you need…

<Could vary based on the actual delivery-method>, but overall:

- Client workstation running recent Windows, Linux or Mac OS and latest internet browser
- Access to ports 80 (HTTP), 443 (HTTPS) and 3389 (Remote Desktop)
- Full Azure subscription (MSDN, AzurePass, Paid subscription, AE, CSP,…)

- Lab consumption estimate: $15-35 (when shutdown all resources)

Questions and HOL support

msdevseriessupport@007FFFLearning.com

Subject: Azure Developer Series – Containers

Response Time: within 4-8 hours

Check GitHub for FAQ and Updates:
http://www.github.com/007FFFLearning/MSDevSeriesSupport

Microsoft

Azure

Application Migration

SQL Azure – Migrating databases to Azure PaaS

Peter De Tender

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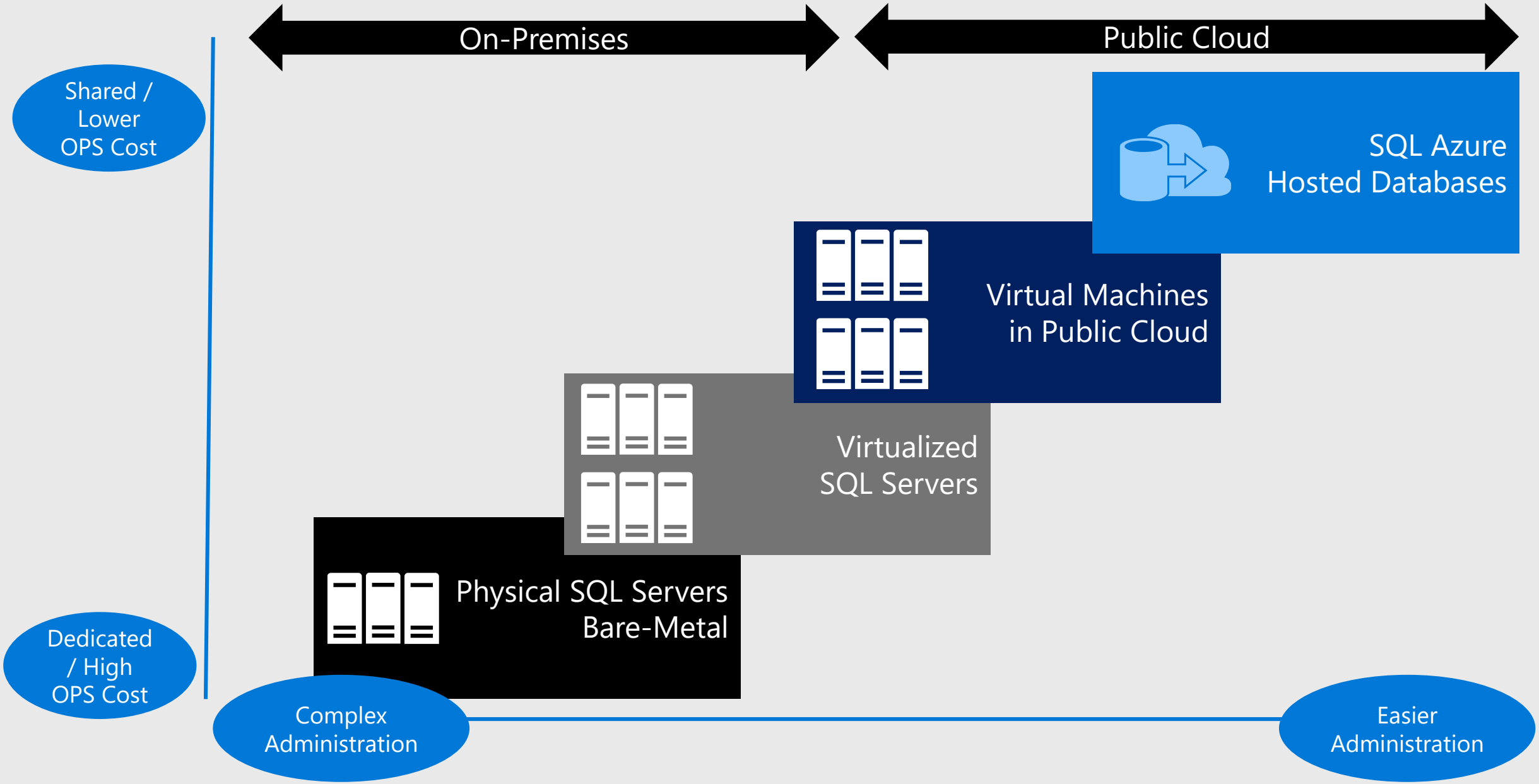
Key Objectives

What you will learn in this section

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

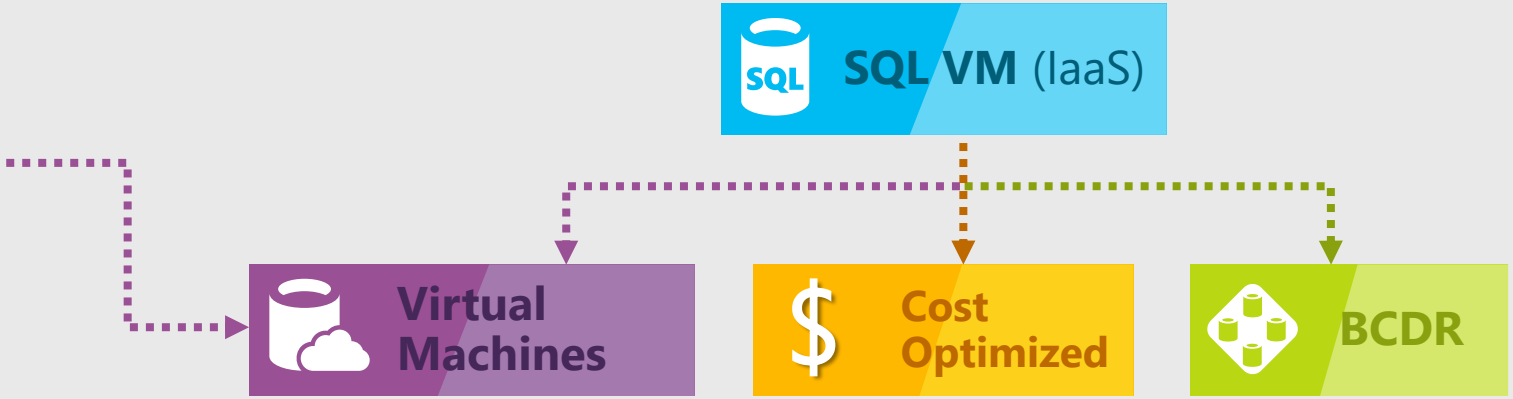
SQL Azure: Introduction

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

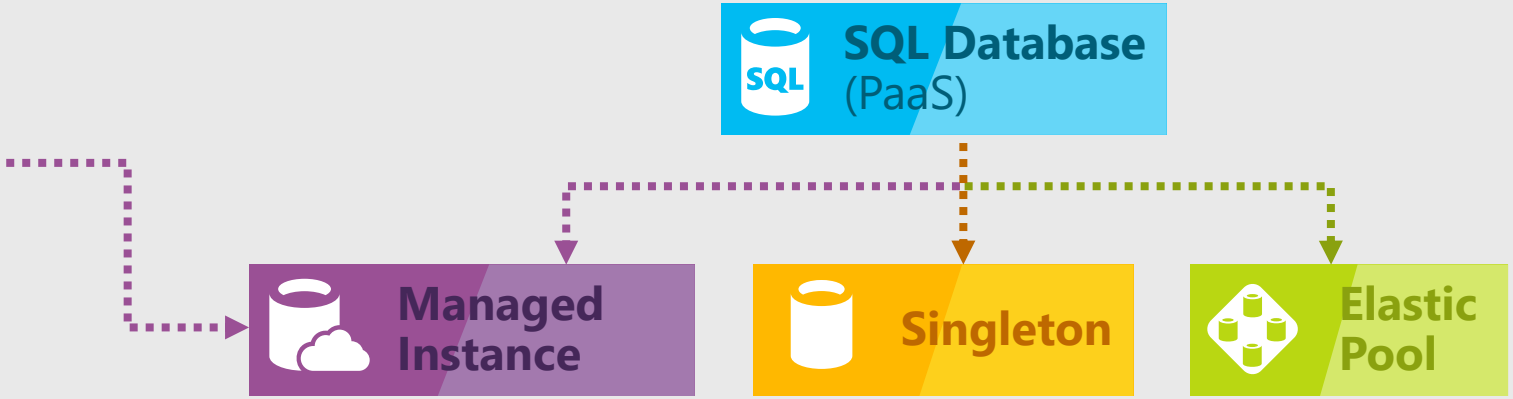
- Native VNET implementation
- Private IP addresses

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

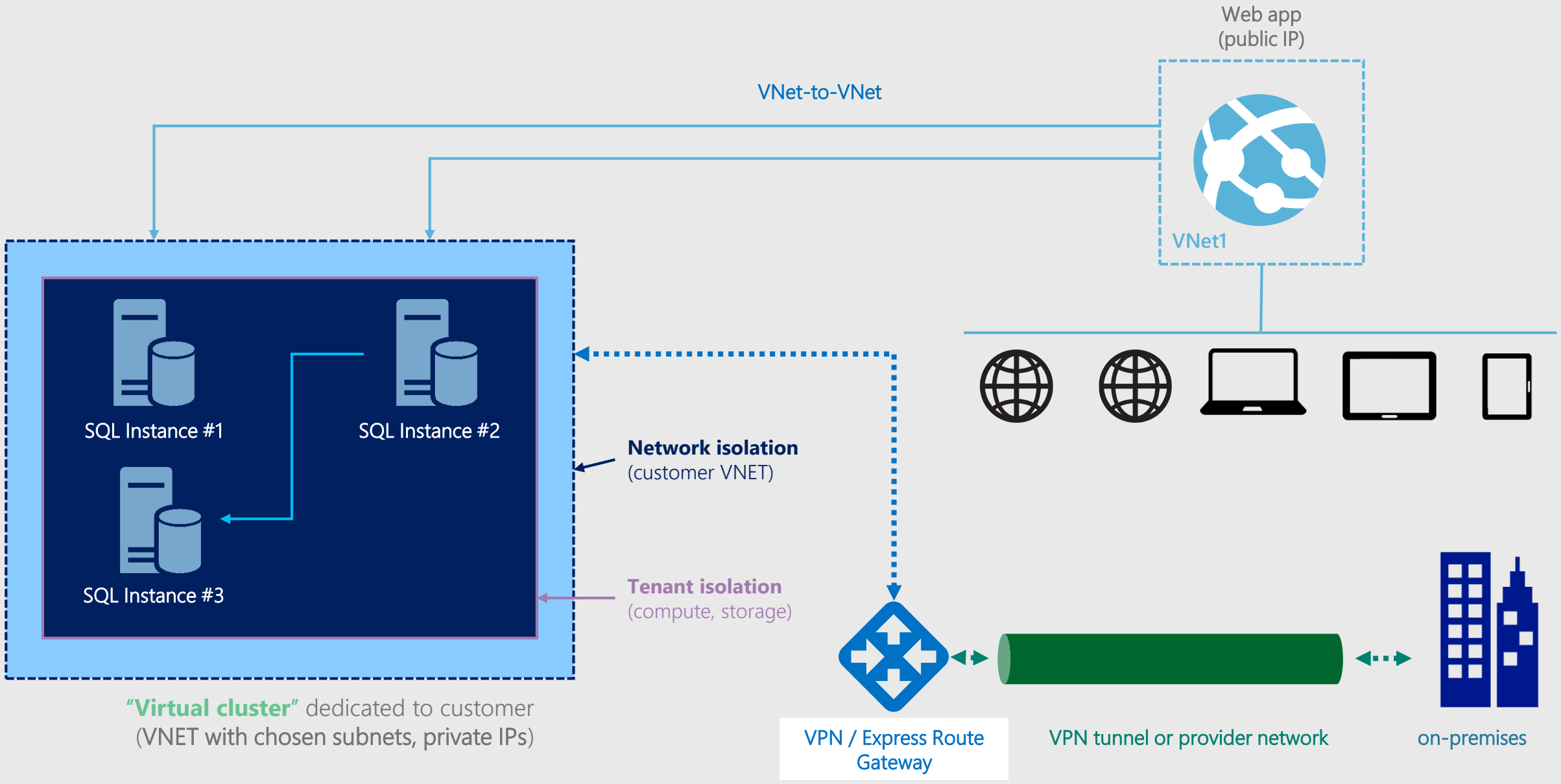
Full isolation and security

- Native VNET implementation
- Private IP addresses

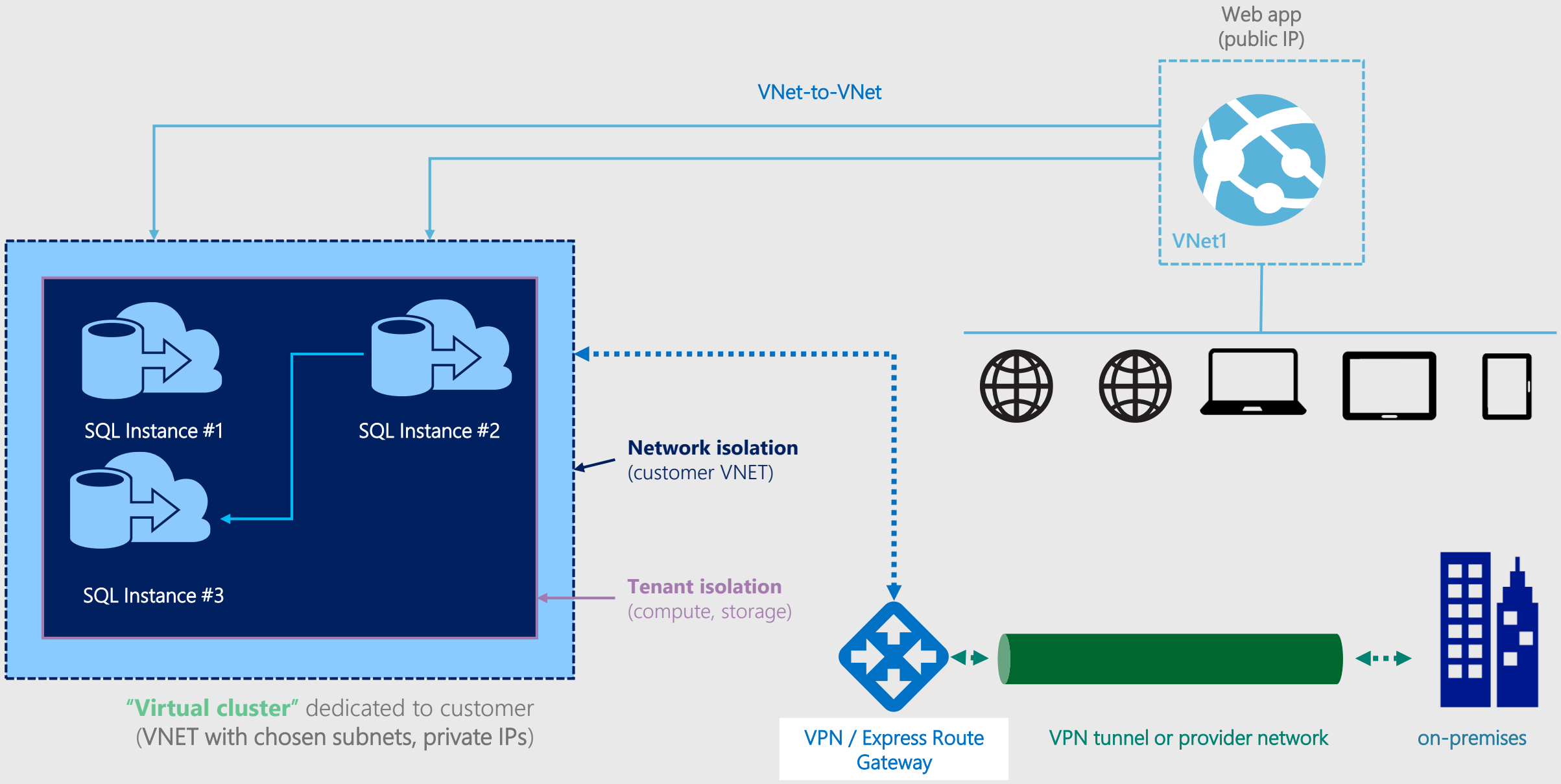
New business model

- Competitive
- Transparent
- Frictionless

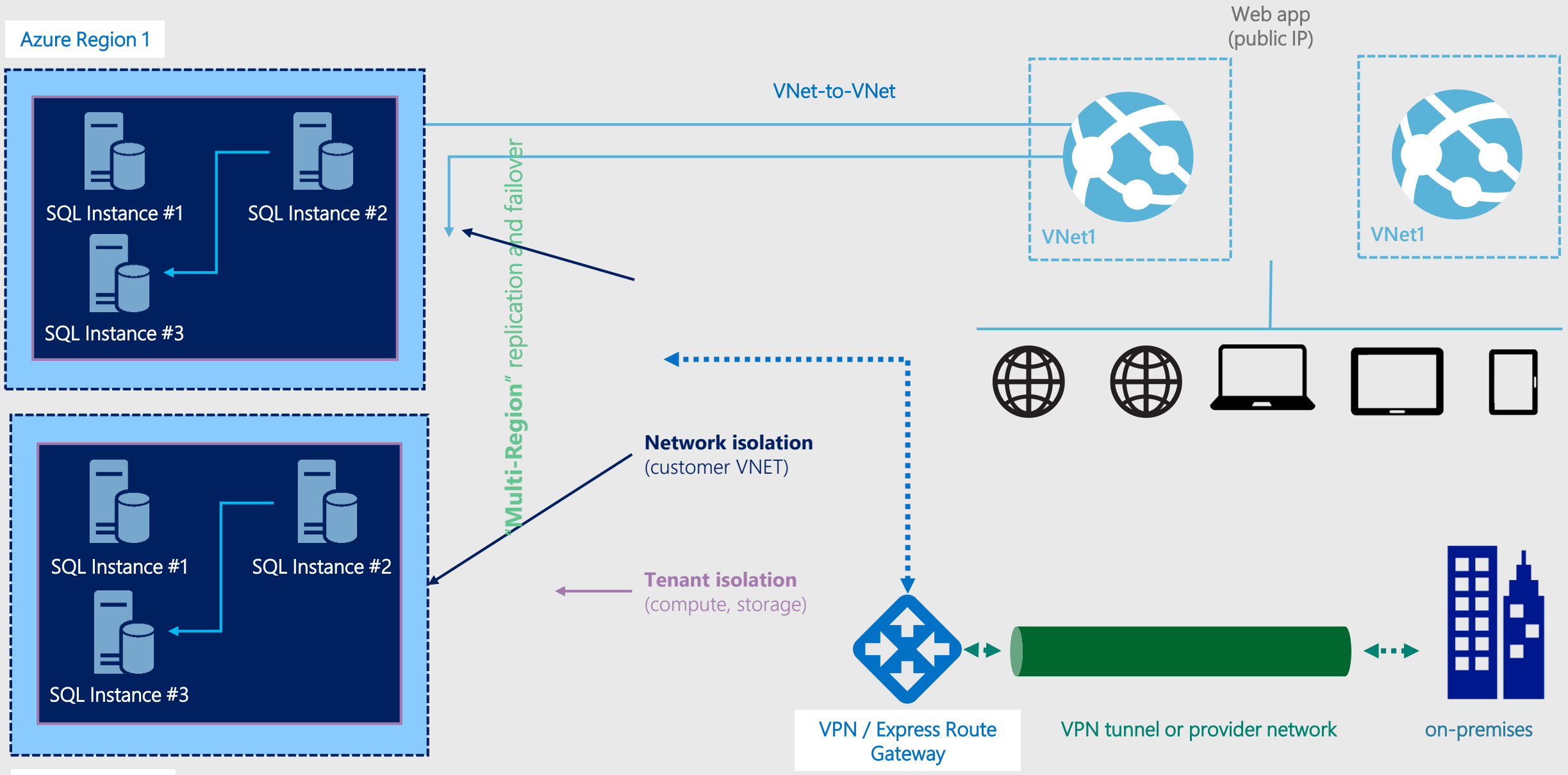
Removing security & isolation concerns (IaaS)



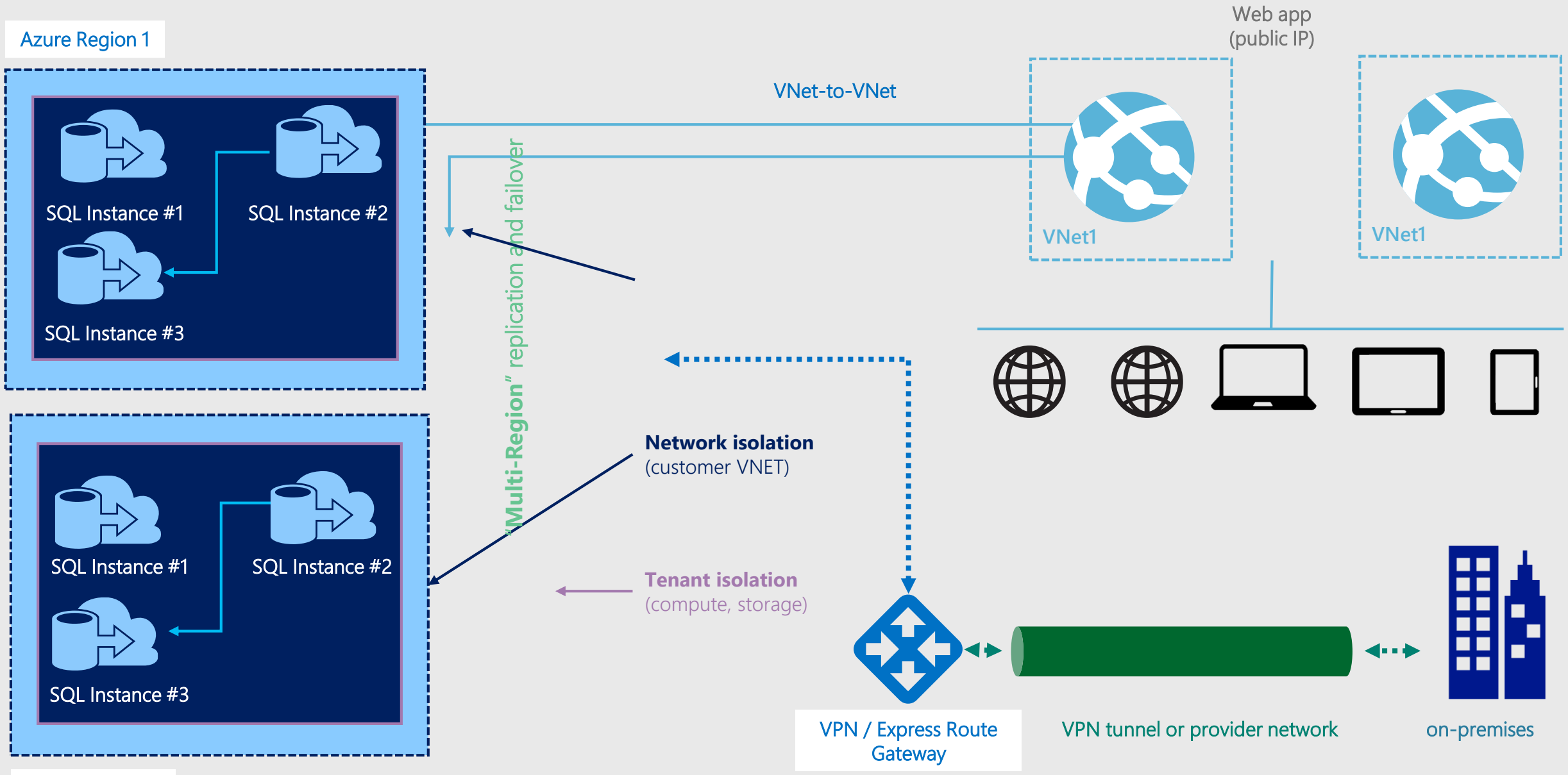
Removing security & isolation concerns (PaaS)



Integrate High Availability / Disaster Recovery (IaaS)



Integrate High Availability / Disaster Recovery (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

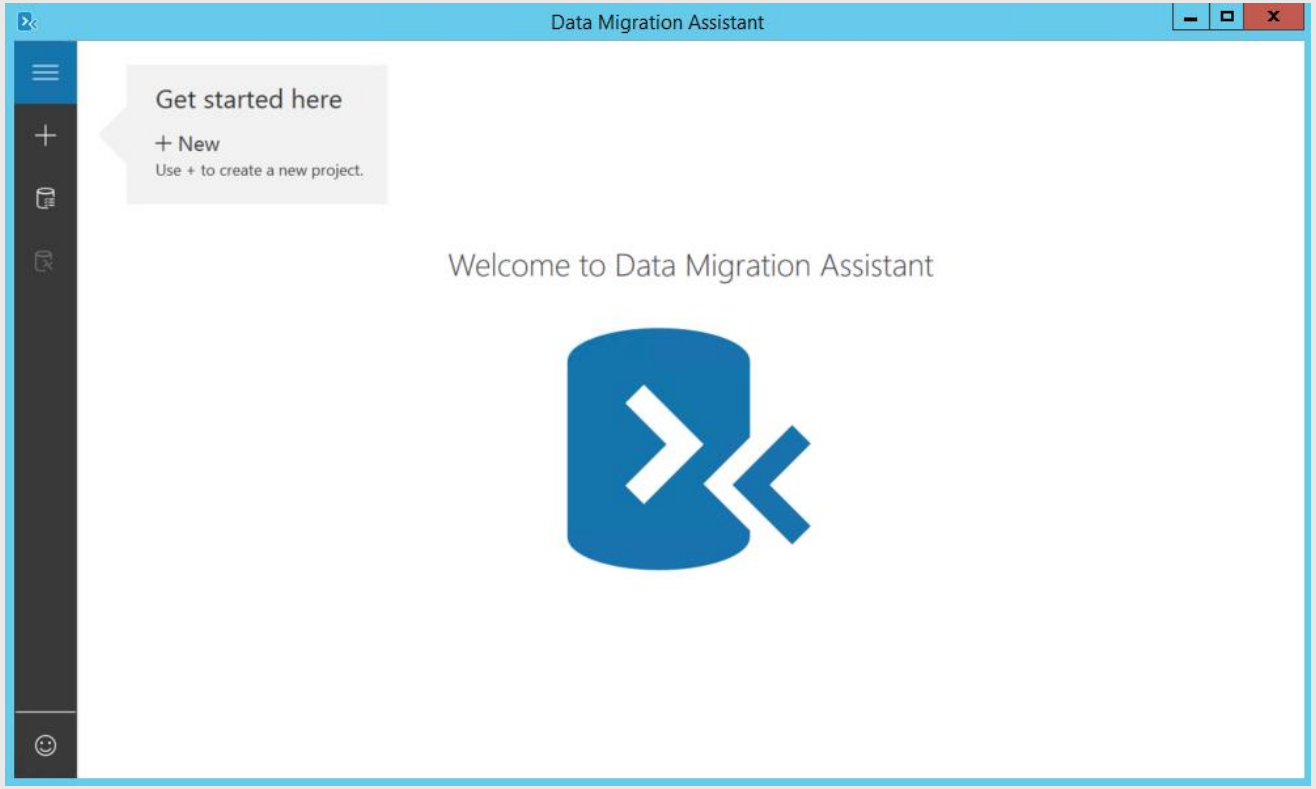
Azure Database for SQL – Data Migration

SQL Data Migration Assistant

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

Start migrating now:

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



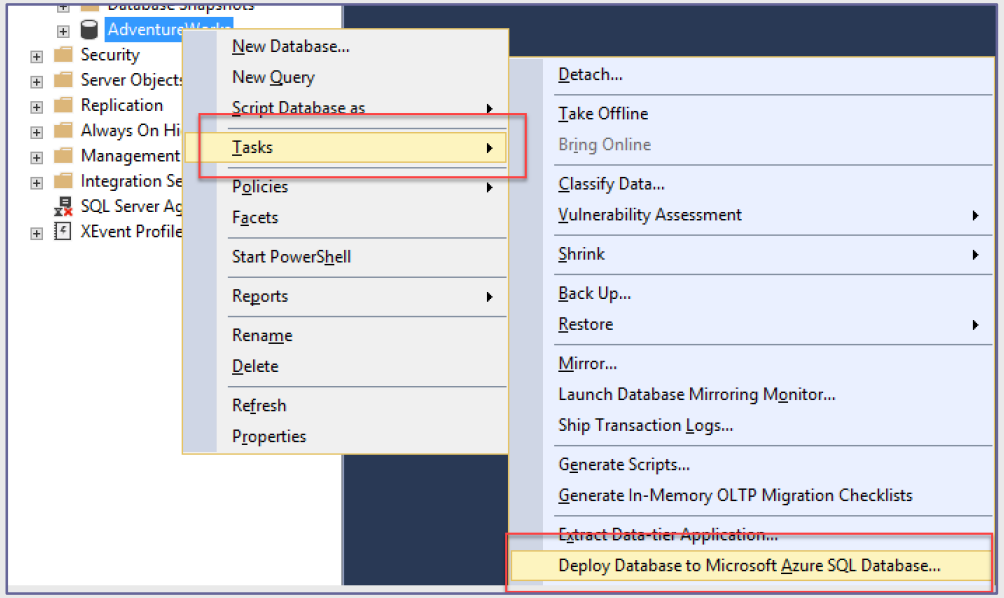
Migrating Your Data To Azure SQL Database

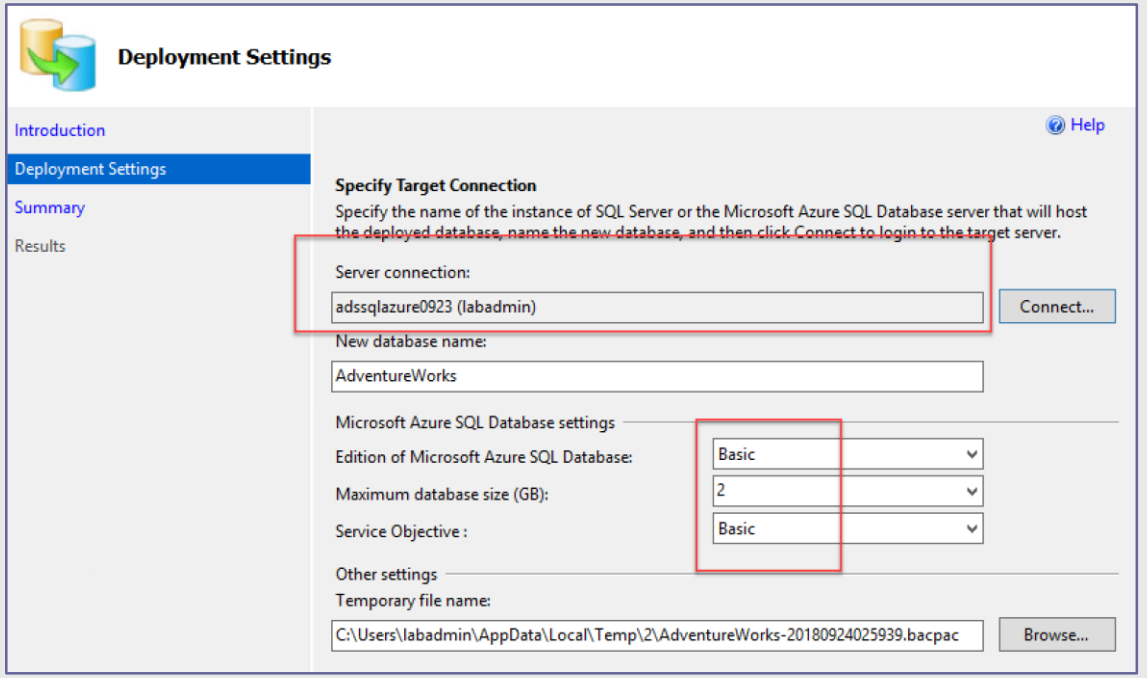
Demo

Migrating 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)

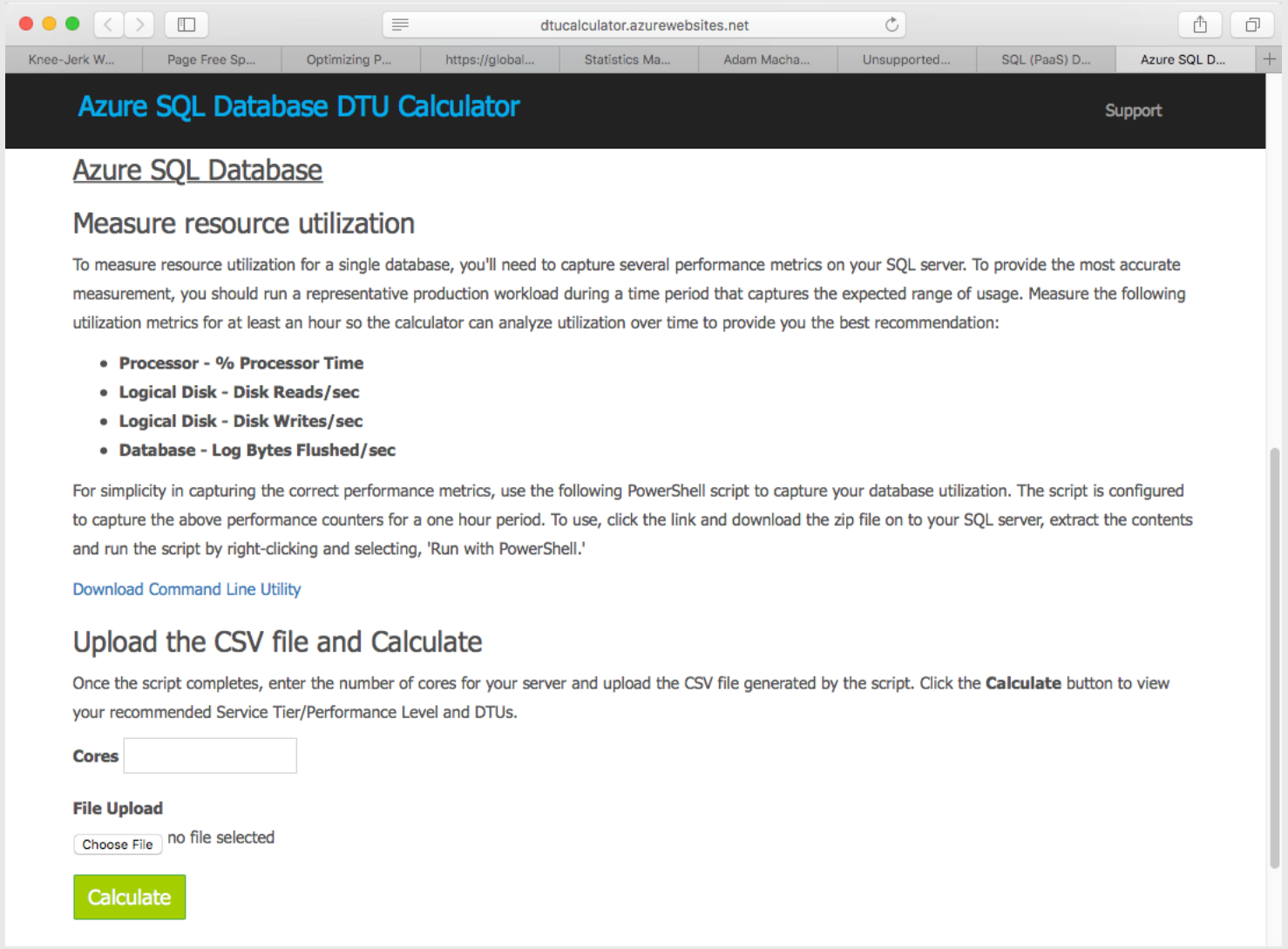
Security
- TDE
- SQL Audit
- Row level security
- Always Encrypted

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 (DTU Calculator)

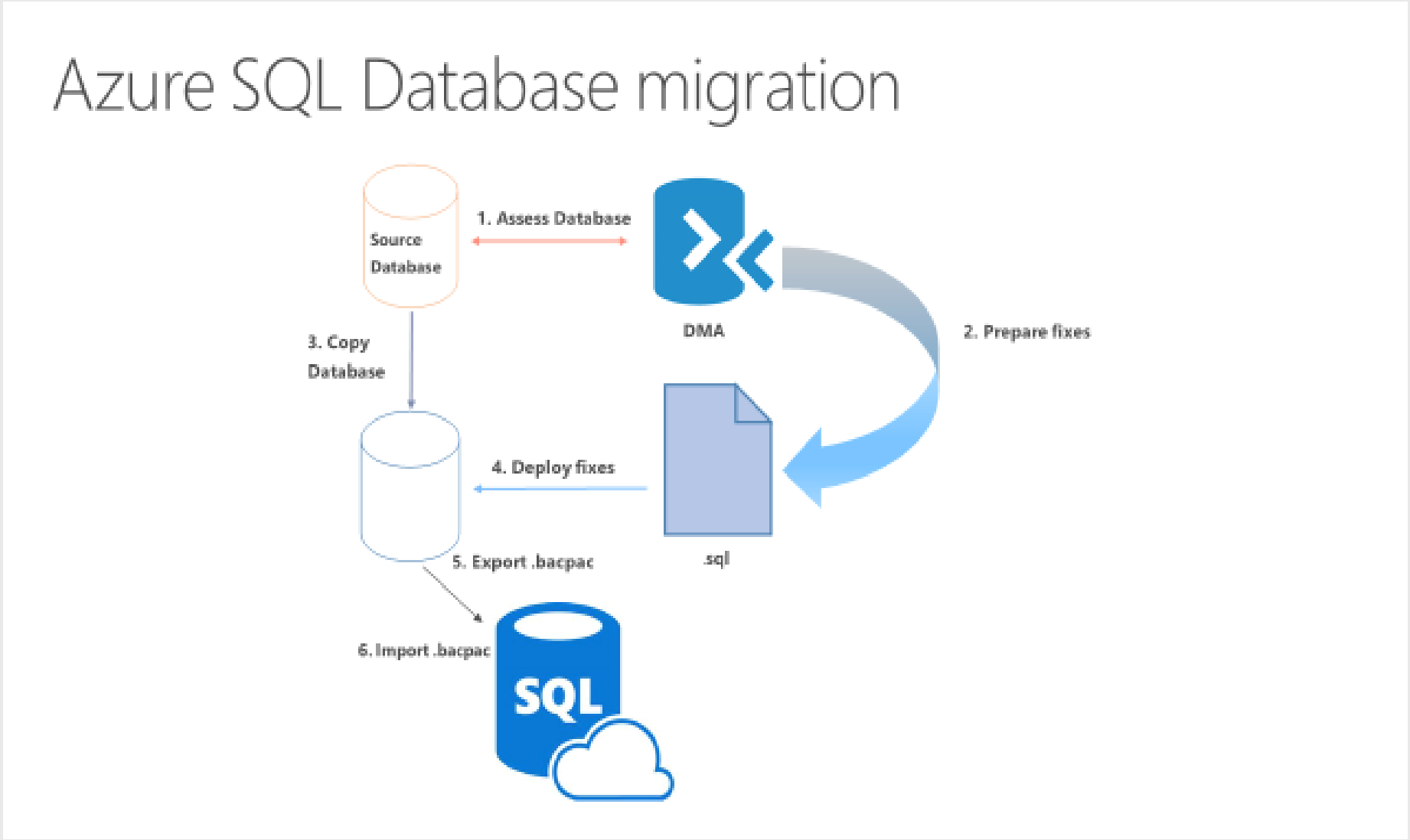


Options to Move Your Data…

BACKPAC

Transactional Replication

Migrations to Azure SQL Database



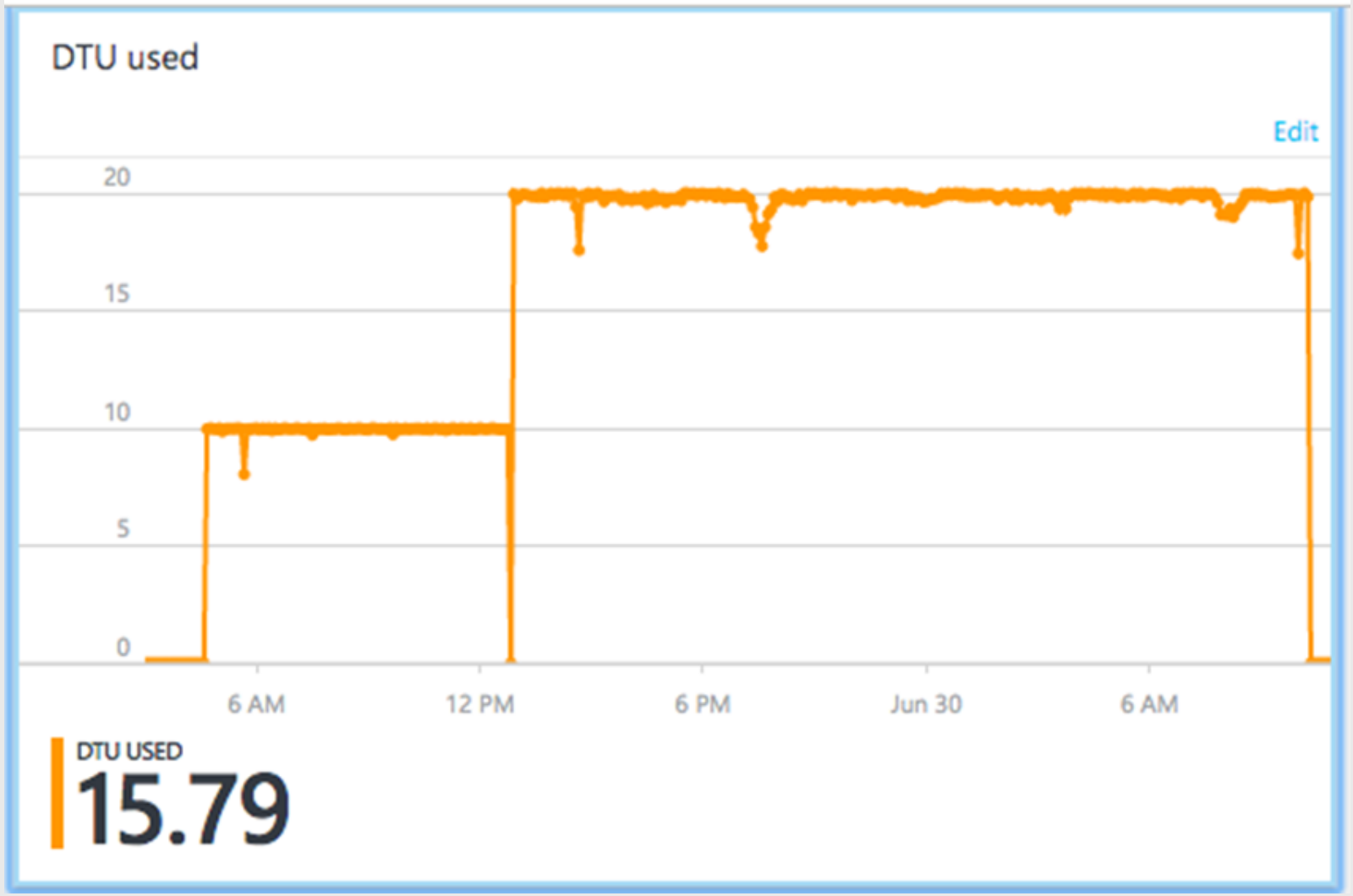
https://azure.microsoft.com/en-us/documentation/articles/sql-database-cloud-migrate/

Demo

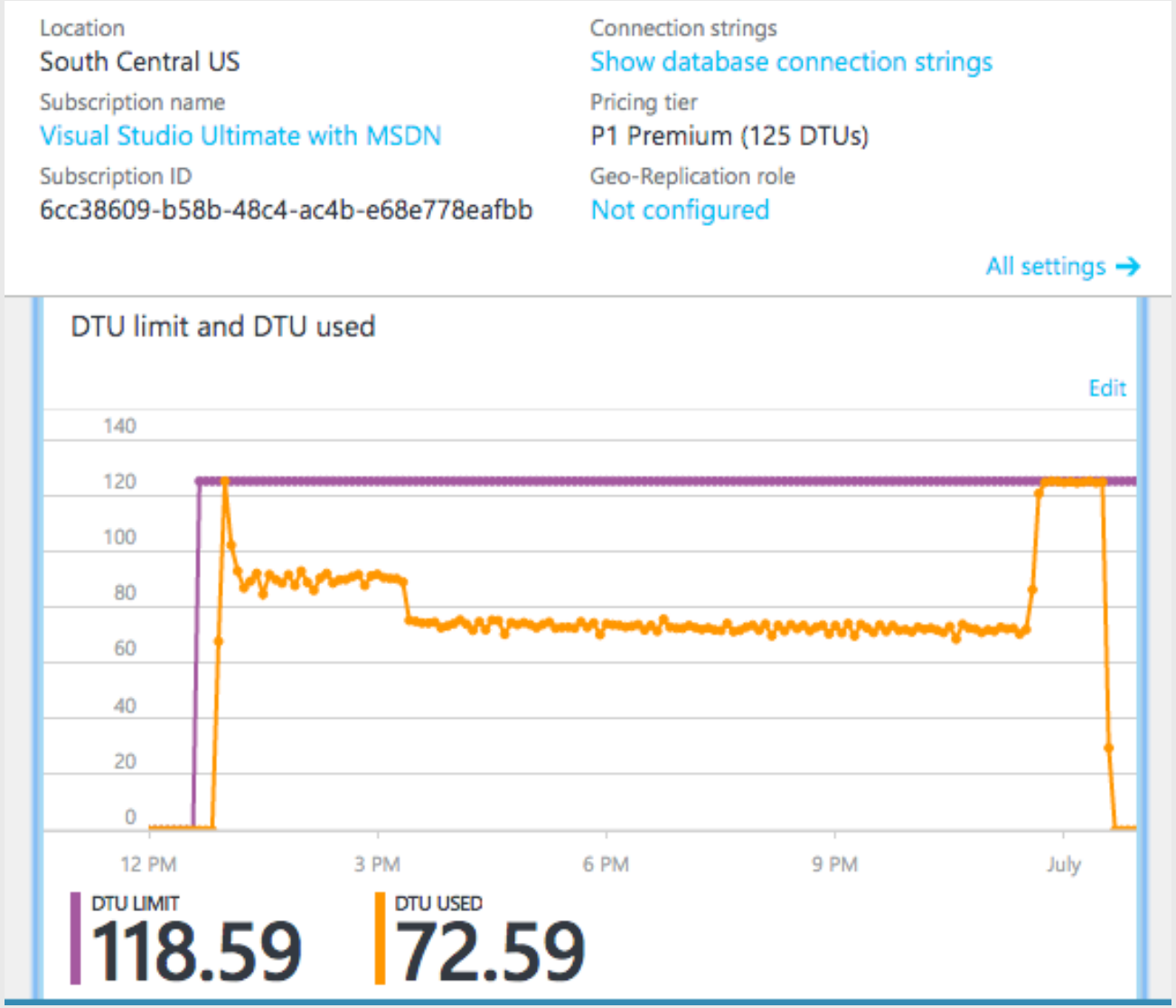
Import SQL Databases from BacPac file

Easy Guide to Quickly Migrating Data

Migrating 60GB Database with S0



Migrating a 60gb Database to P1



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

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

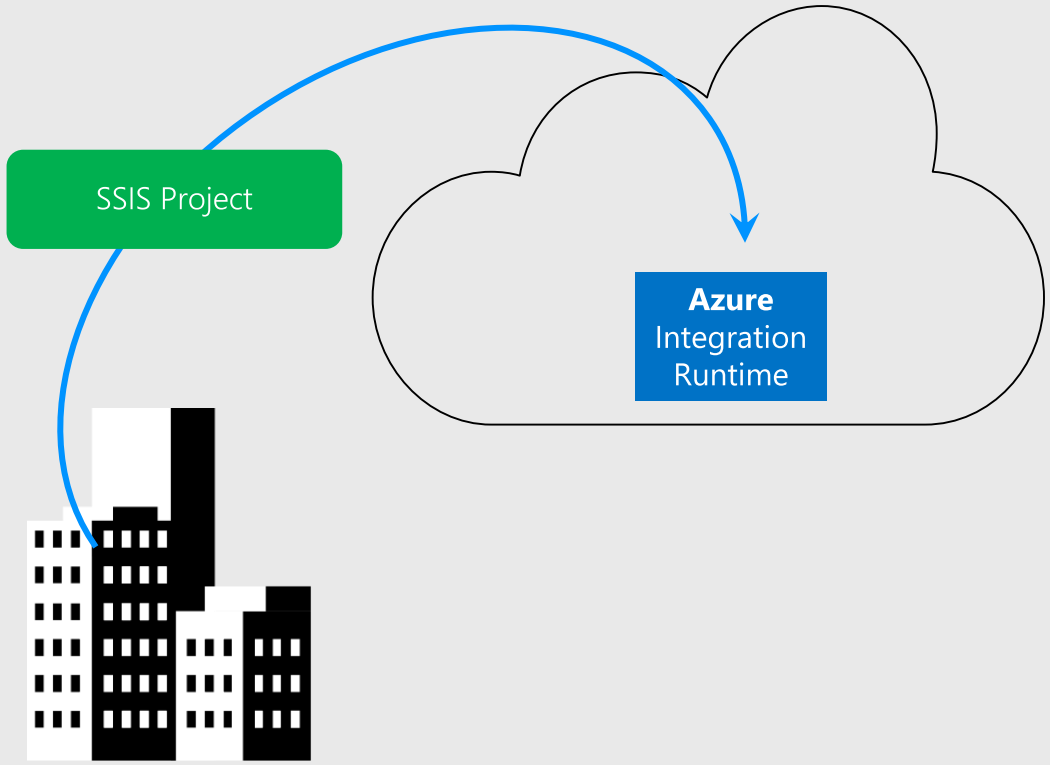
Recommendation: move to PaaS model

- 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)

Lab

Deploying Azure SQL and database migration

https://github.com/007FFFLearning/MSDevSeriesSupport

Lab 2 – Quick Instructions

1. (Assumption is you finished Lab 1)
2. Download the “Lab 2” Guide from GitHub (PDF)
3. Task 1: Deploy a SQL Azure instance
4. Task 2: Migrate a SQL database using SQL Management Studio
5. Task 3: Establish Hybrid Web VM – SQL Azure database connection
6. When having questions: msdevseriessupport@007FFFLearning.com

Section Take-Aways

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

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Questions?

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Next Module...

Azure Web Apps

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