



Azure SQL Database Managed Instance

Migrate SQL Servers easily to a fully managed cloud service

Chris Seferlis, Practice Manager – NE/NY, Pragmatic Works

Who am I?

- Practice Manager at Pragmatic Works for NE/NY
- Former CIO for 2 Seafood Manufacturing Companies over 9 year span and 20+ years of IT
- Speak, Blog, General Data Enthusiast
- Run, Cycle, Ski and drag the family along

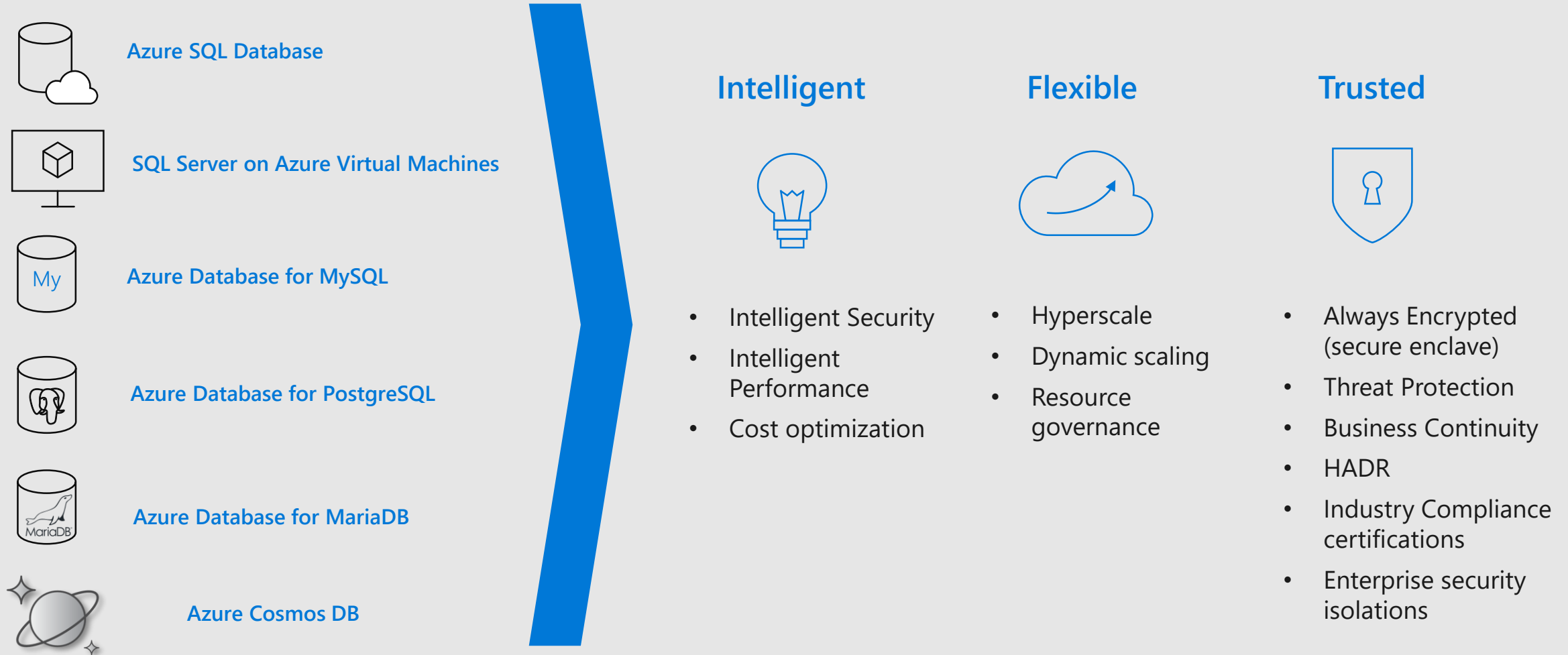


Key takeaways:

- Managed Instance is enterprise-ready
- With Managed Instance, you easily migrate SQL Server to cloud, and get all the benefits of a fully-managed service
- Managed Instance is a PaaS offering meaning replication, backup, HA, and DR geo-replication

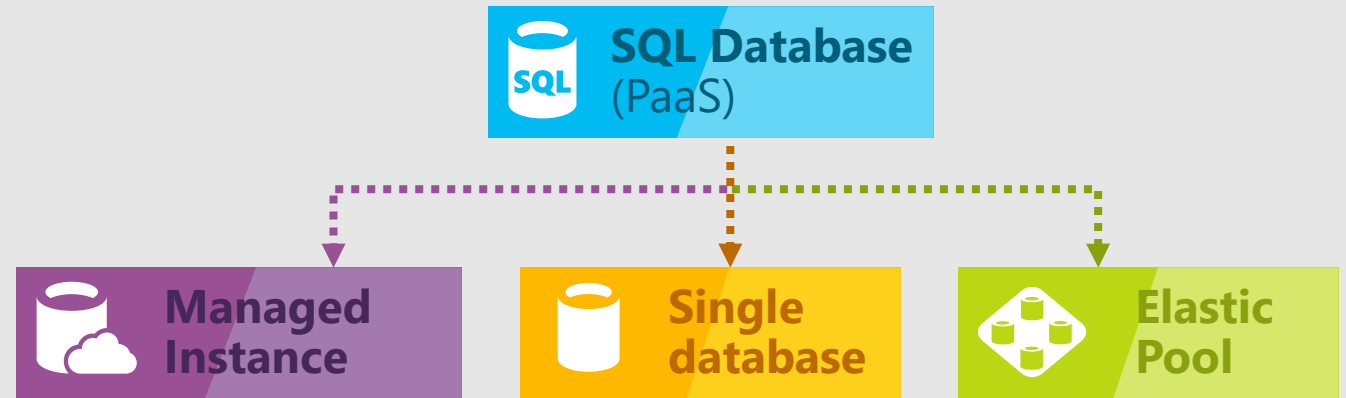
Microsoft for your modern data estate

Leverage a single programming surface for a consistent experience across on-premise and cloud



What is SQL Database Managed Instance?

New deployment option enabling friction-free migration of SQL Server workloads to a fully-managed service



Fully-managed service

- Built on the same infrastructure as SQL Database
- Provides the same benefits (PaaS)

SQL Server compatibility

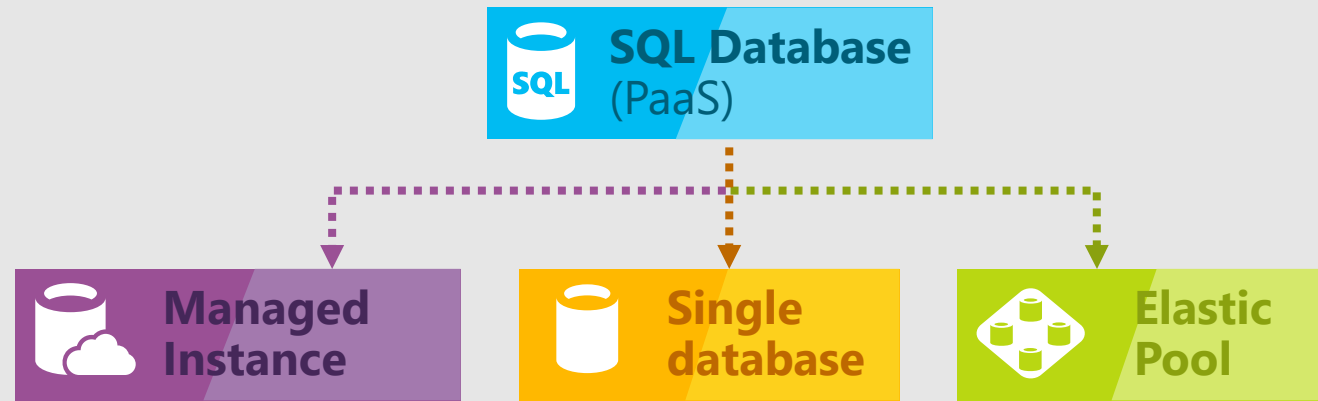
- Fully-fledged SQL instance with nearly 100% compatible with on-premises

Full isolation and security

- Contained within your VNet
- Private IP addresses
- Express Route / VPN connectivity

New purchasing options

- Transparent
- Frictionless
- Competitive



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Put your DBs on autopilot and focus on your business...

Tired of managing hardware, software & business continuity?

You can stop doing it, Managed Instance has it built-in



Compute & storage provisioned on demand
Fast & online scaling
Full stack updates and patches



Backups with health checks
Point-in-time restore (configurable retention 7-35 days)



99.99% availability with automatic failover
Disaster recovery with geo-replication

Put your DBs on autopilot and focus on your business...

Is it hard to secure data and ensure standards compliance?

Is it hard to monitor and tune all your workloads?

It's much easier with the Managed Instance



Compliance with all major industry standards
Threat detection with automatic alerting

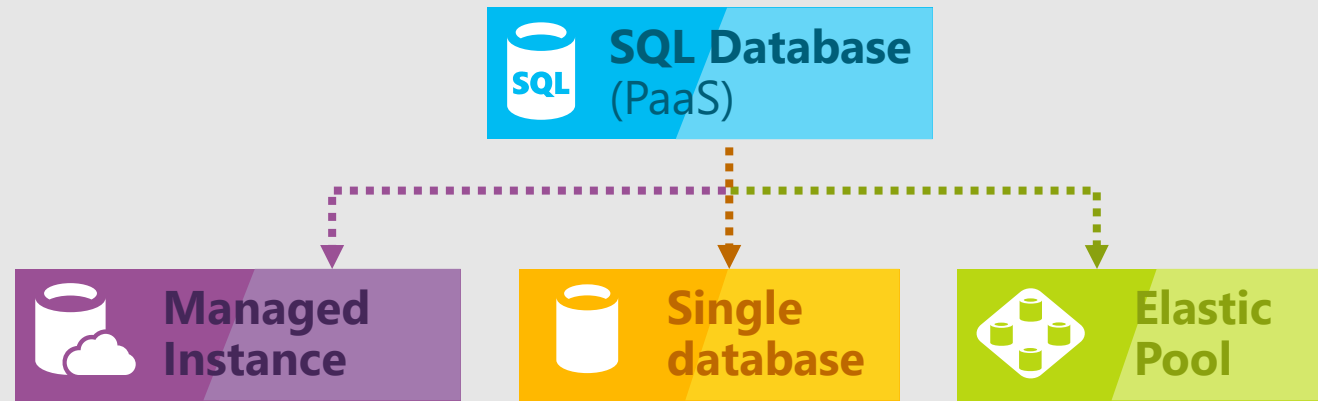


Intelligent query processing
Automatic performance tuning*



Monitoring at scale with Intelligent Insights
Data discovery and classification*
Vulnerability assessment

* - features coming soon



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Easily migrate from SQL Server & modernize

How many of your applications could migrate today?

Easily migrate from SQL Server & modernize

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Most of them, because Managed Instance is compatible



Cross-DB queries & transactions, linked servers to SQL
.NET CLR modules
Service Broker
Change Data Capture
Transactional Replication

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Choice of instance collations
Instance time zone*
R services*

* - features coming soon

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✓	Cross-DB queries & transactions, linked servers to SQL .NET CLR modules Service Broker Change Data Capture Transactional Replication
✓	Choice of instance collations Instance time zone* R services*
⌚	MSDTC for distributed transactions Filestream / Filetable, Polybase

* - features coming soon

Easily migrate from SQL Server & modernize

Will your IT face a steep learning curve or feel loss of control?

Easily migrate from SQL Server & modernize

Will your IT face a steep learning curve or feel loss of control?

No, because Managed Instance lets you modernize at your pace



DMVs, XEvents, Query Store
SQL Agent and DB Mail
sysadmin privileges and Resource Governor



Built-in HA replaces on-prem setups
Replace MDW with OMS monitoring

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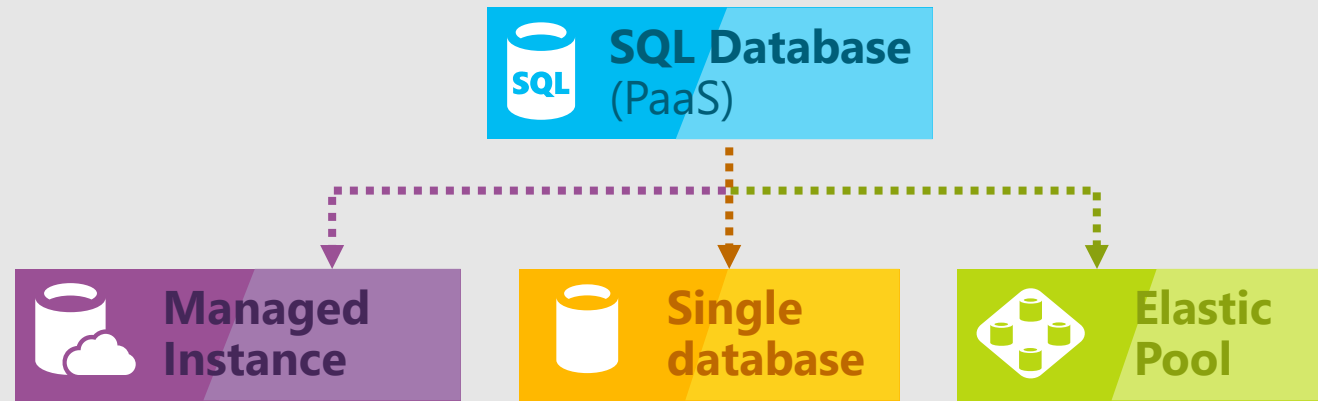
Built-in HA replaces on-prem setups
Replace MDW with OMS monitoring



SQL Auditing, Row Level Security
TDE, Always Encrypted, and Dynamic Data Masking



Network security with VNETs and private IPs
Integrated auth. with Azure AD



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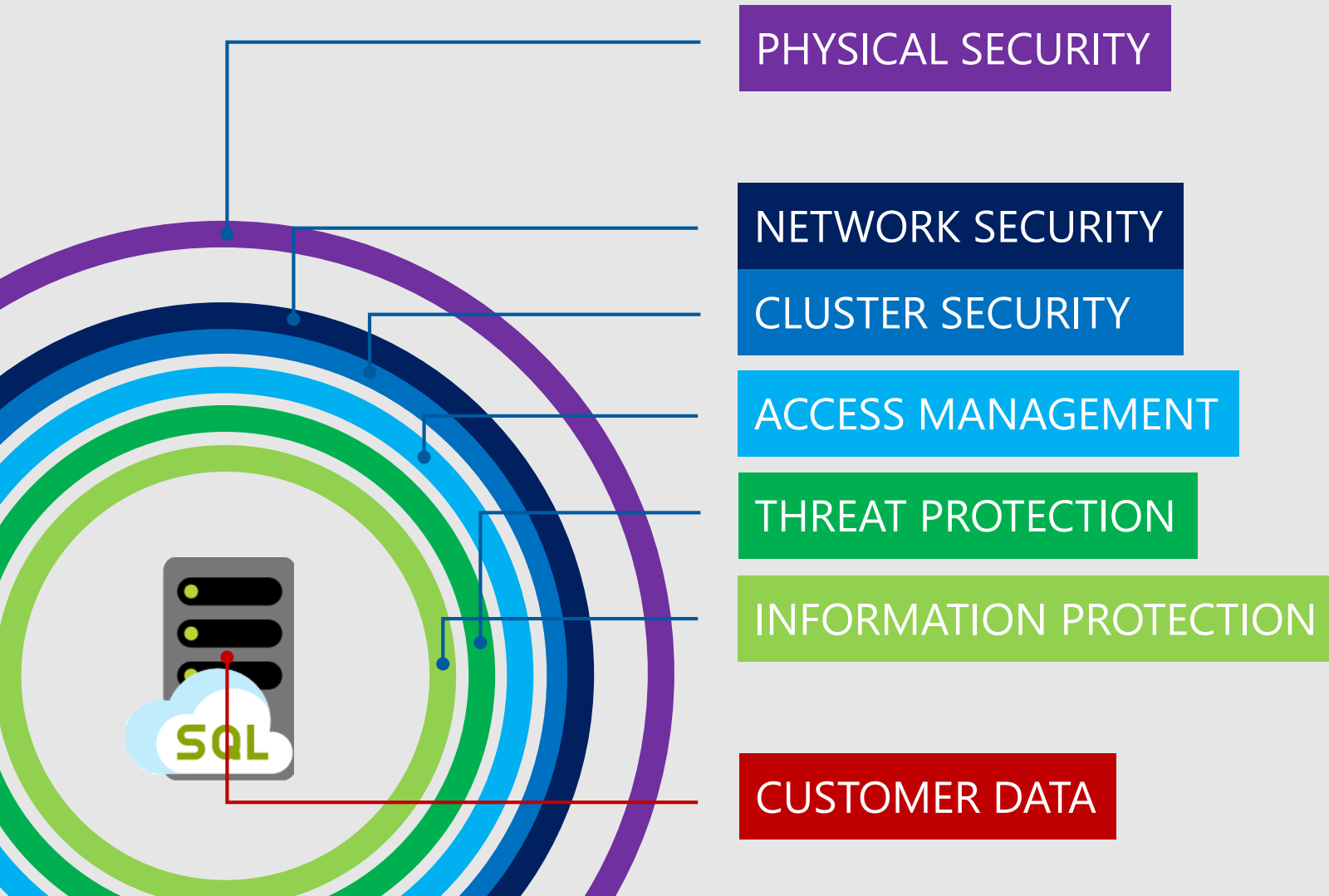
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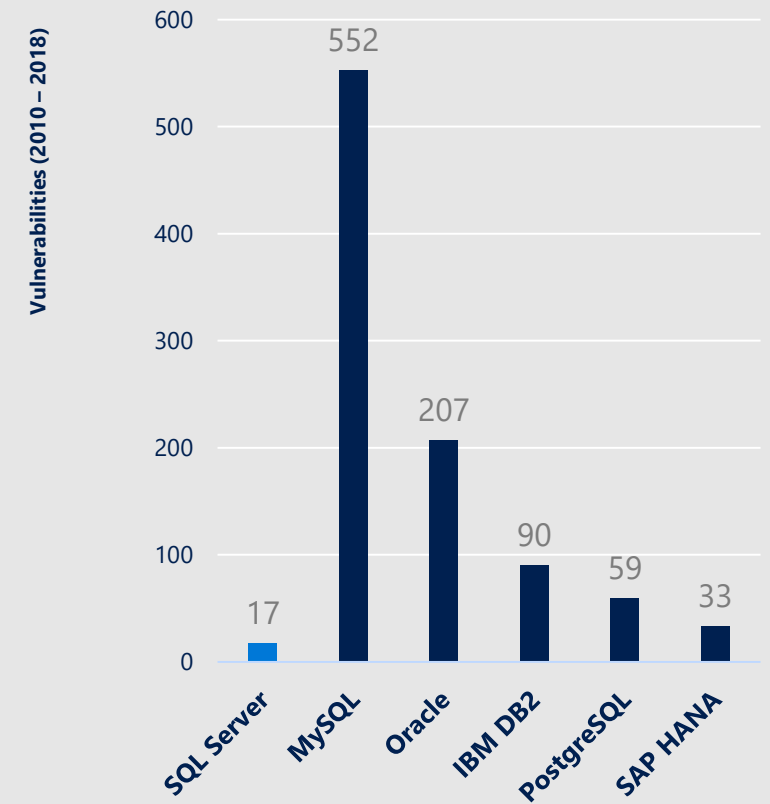
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Enterprise-grade security that is easy to use

Defense-in-depth

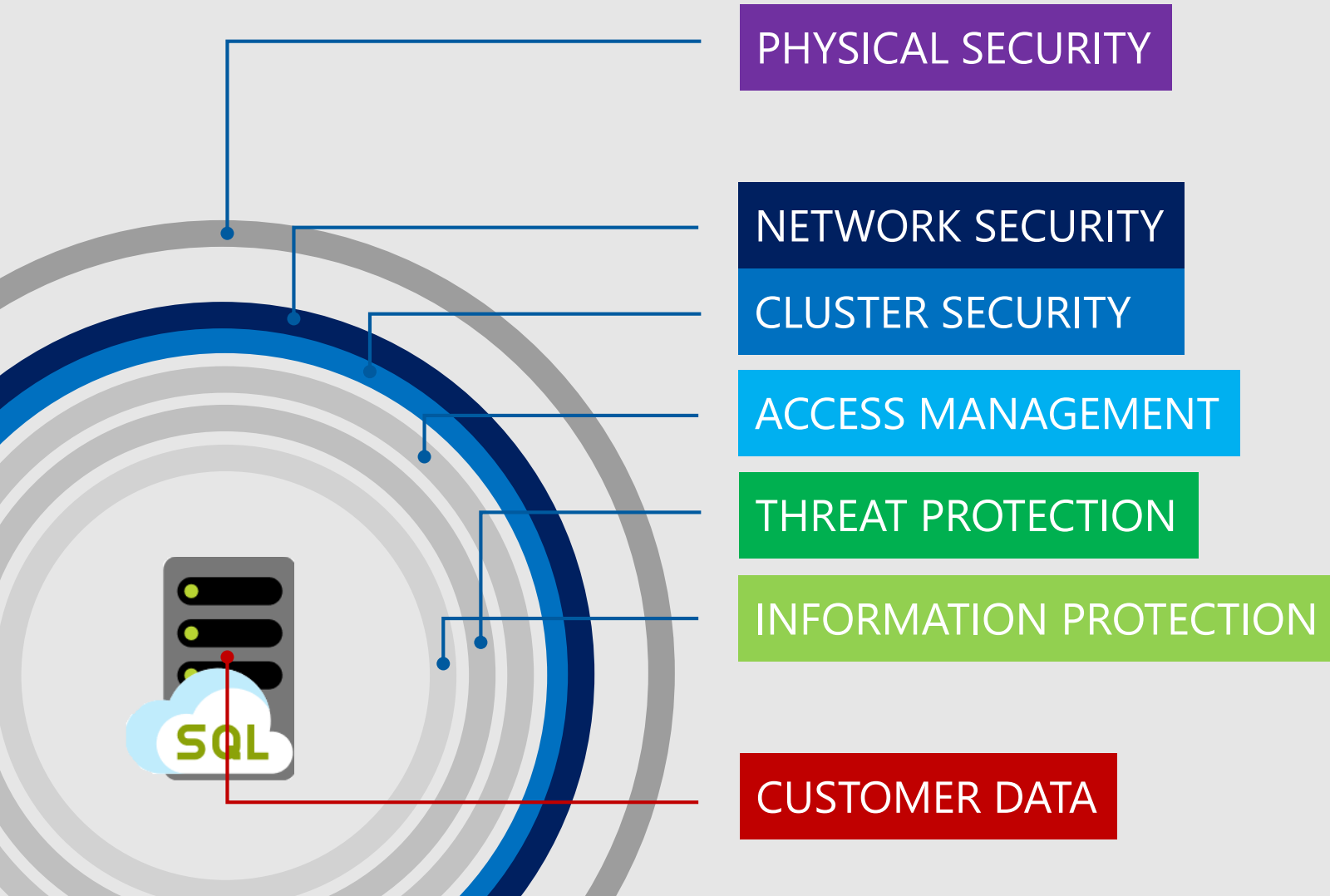


Trusted: most secure over last 7 years

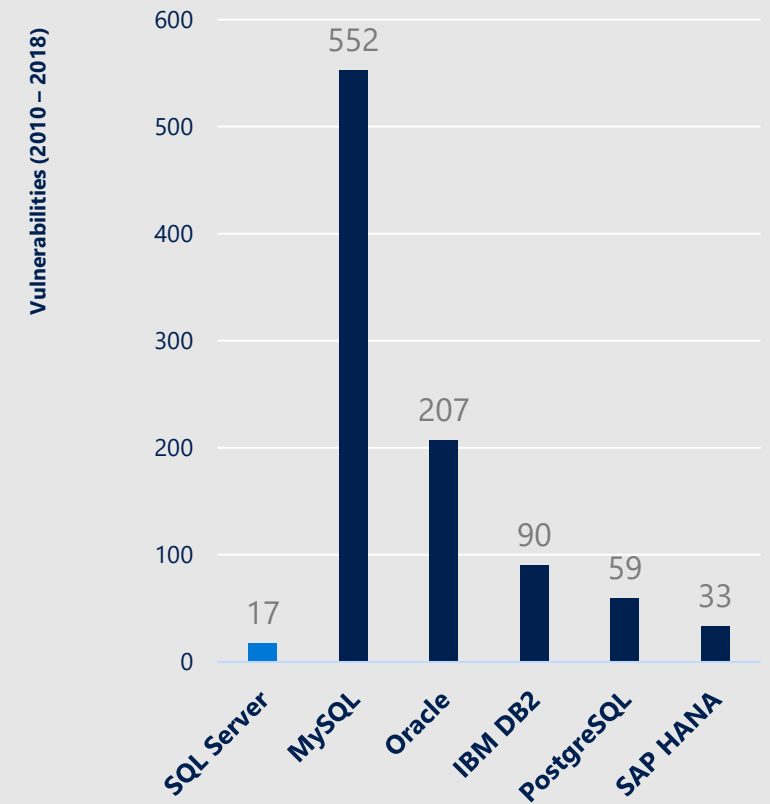


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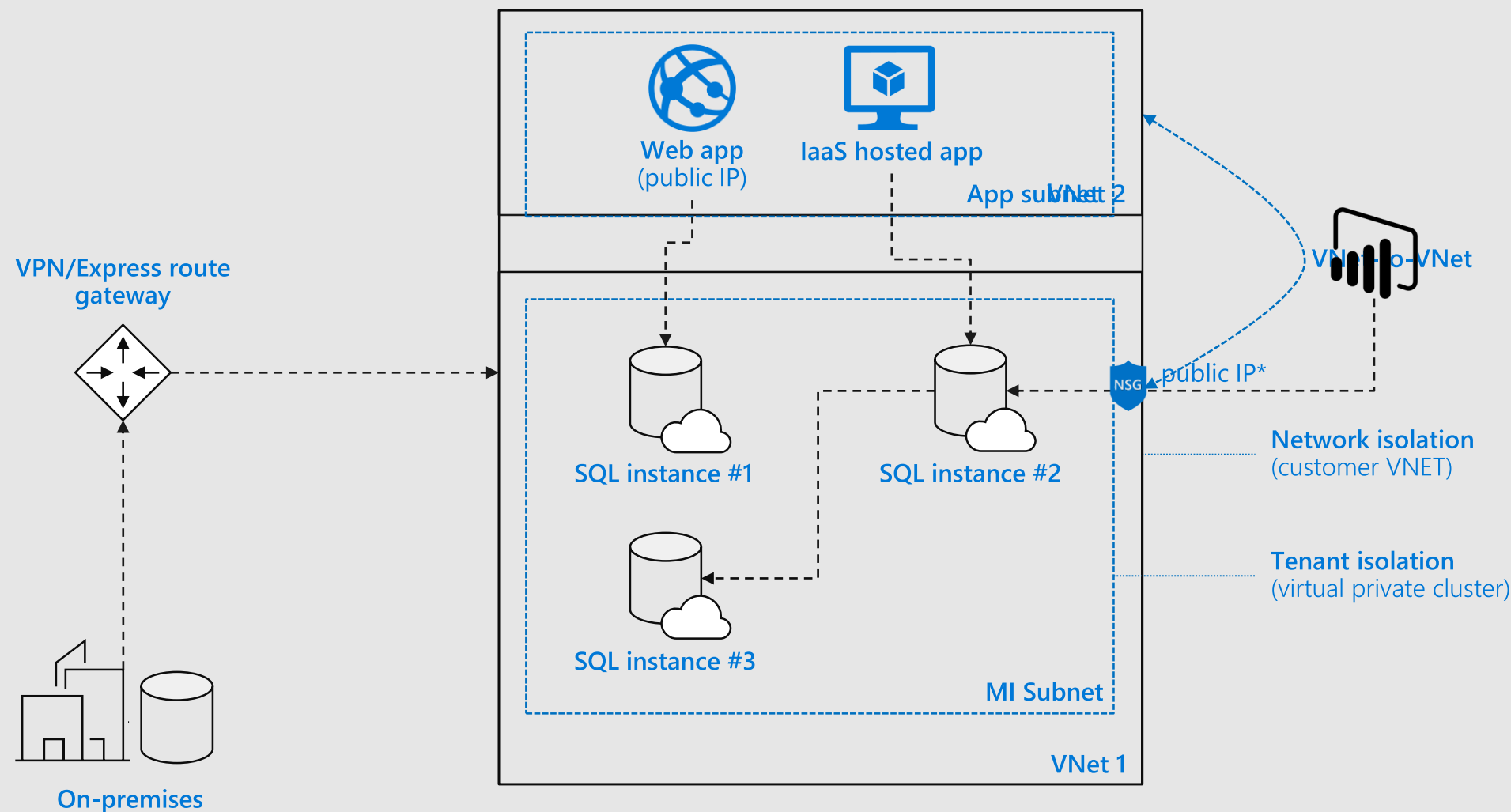
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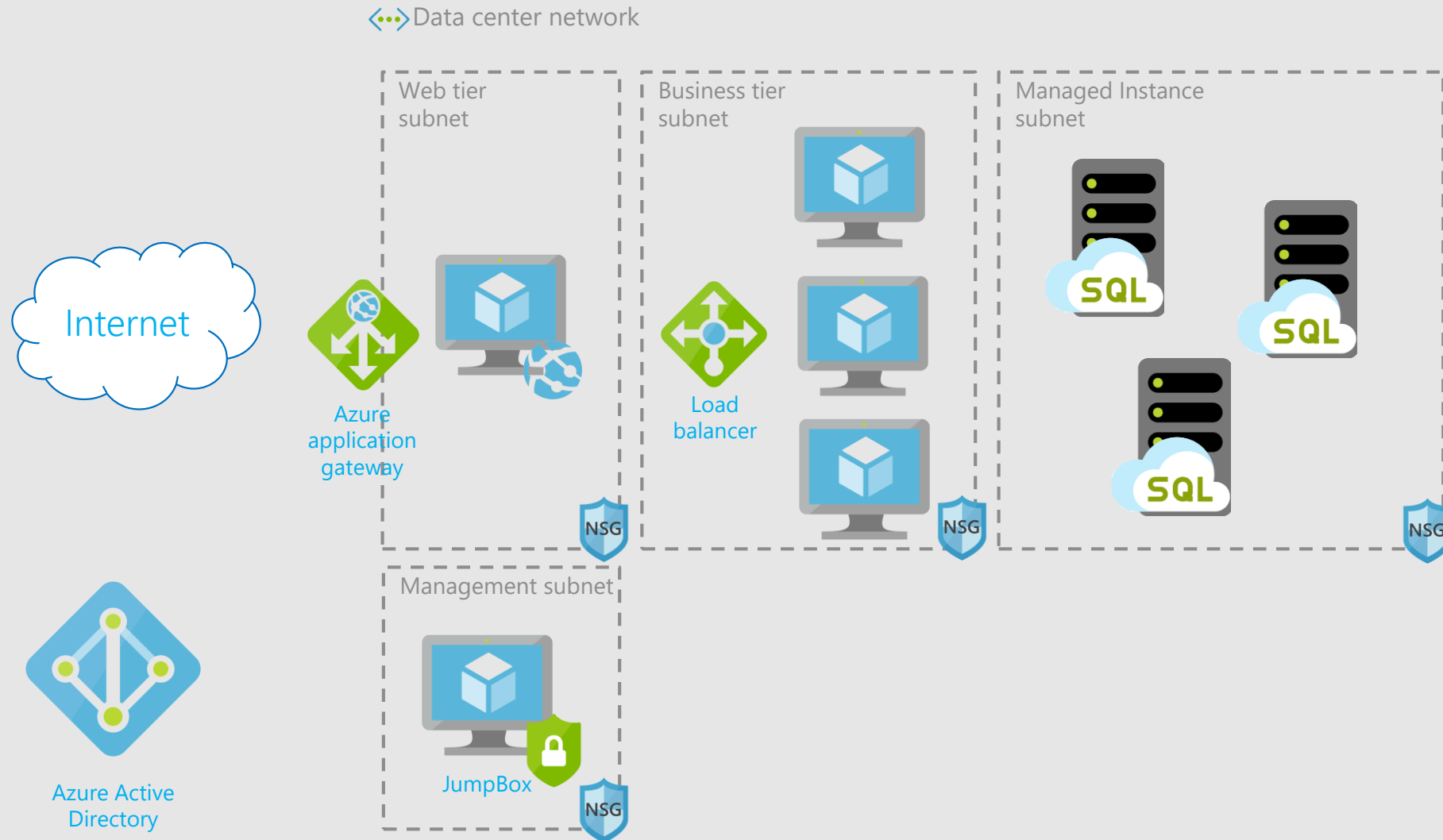
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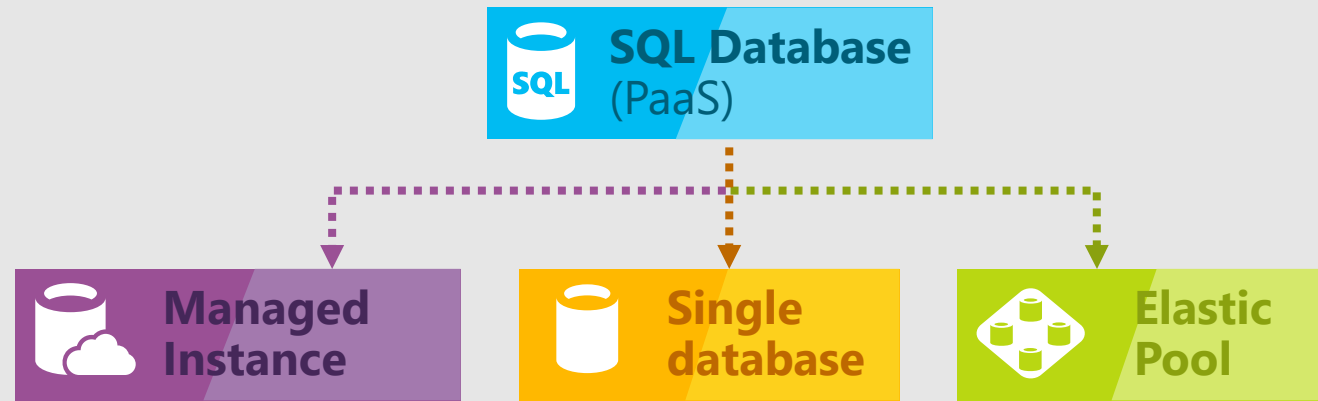


Isolation and connectivity of Managed Instance



N-tier Architecture in Azure





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Managed Instance: Service Tiers

Capability \ Service tier	General Purpose (GA)	Business Critical (GA)
Best for	Apps with typical availability and common IO latency requirements	Apps with highest availability and lowest IO latency requirements.
Compute (vCores)	8, 16, 24, 34, 40, 64, 80	8, 16, 24, 34, 40, 64, 80
HA / Recovery Time Objective	Remote storage based / Good	Always On AG based / Better
Storage type / size	Fast remote (Azure Premium) / Up to 8 TB	Super-fast local SSD / Up to 4 TB

Managed Instance: Service Tiers

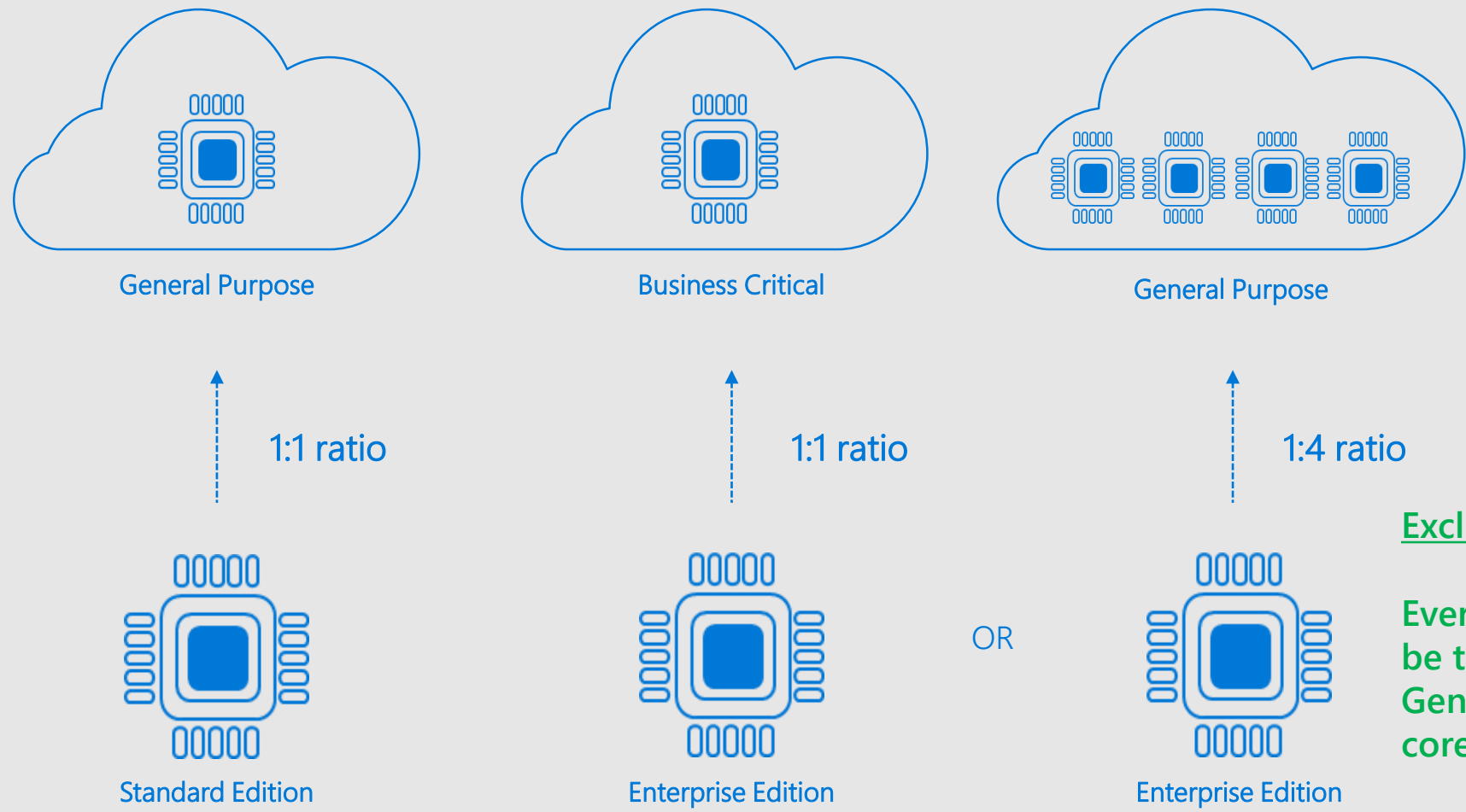
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Read scale out (read-only replica)	No	Yes
In-Memory OLTP	No	Yes

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In-Memory OLTP	No	Yes
Price competitive with AWS?	Yes, ~33% lower (license included)	Yes, ~46% lower (license included)

Note: pricing for an Azure SQL DB Managed Instance on US East price, under fully priced model (license included), on Sept 14, 2018. Comparable AWS RDS SQL is db.r3.2xlarge. AWS prices based on US East (N. Virginia). SE single AZ in AWS RDS compared to SQL MI General Purpose. EE multi-AZ in AWS RDS compared to SQL MI Business Critical.

Save money with Azure Hybrid Benefit for SQL Server



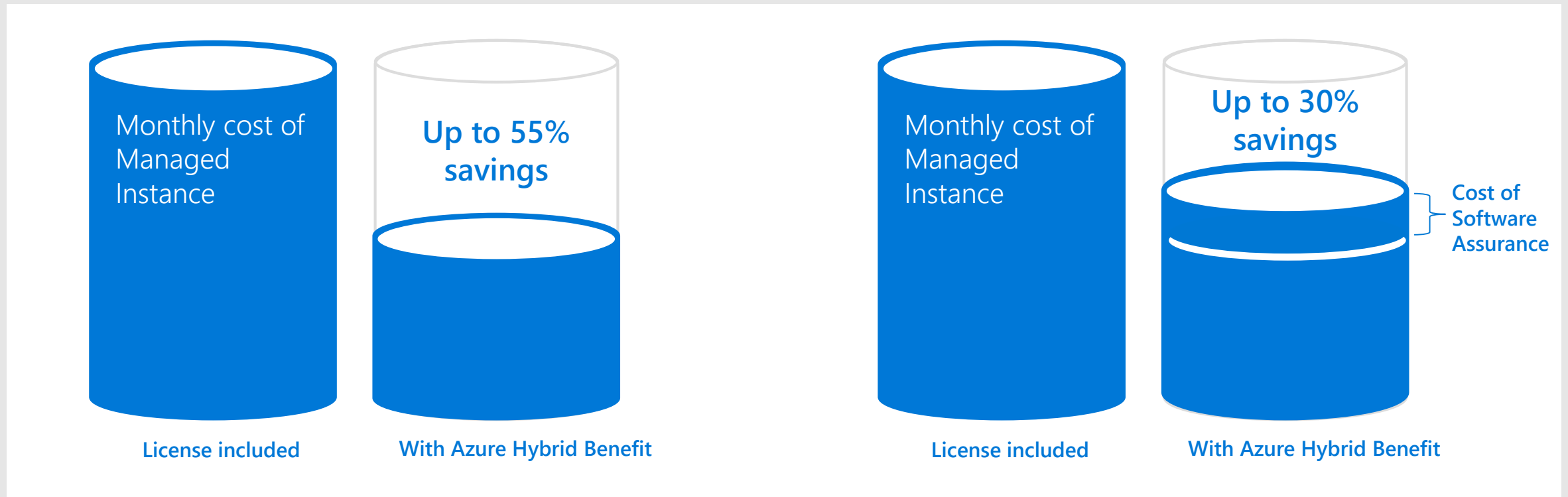
Exclusive on Azure

Every EE core can be traded for 4 General Purpose cores in the cloud!

Save up to 55 % with AHB for SQL Server

Not accounting for Software Assurance

With Software Assurance accounted for



Savings depend on service tier and region, as well as terms of the Enterprise Agreement

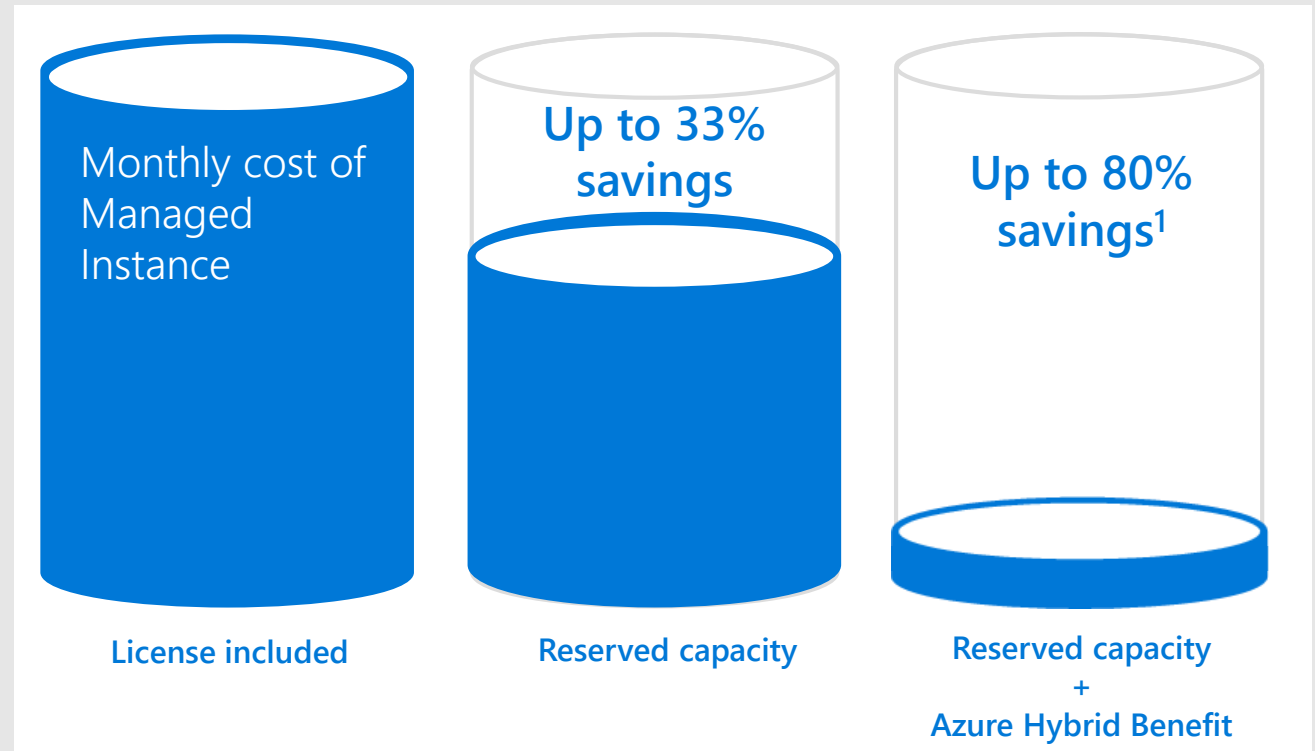
Save up to 80% with SQL Database reserved capacity combined with AHB

Up to 33% savings by pre-paying compute resources for 1 or 3 years

Up to 80% when combined with AHB

Single reservation for one or multiple subscriptions

Reservation applies to any number of databases, elastic pools or managed instances in the same service tier



¹ Savings based on three-year commitment. Savings do not account for SA costs which may vary based on terms of the EA. Savings vary depending on the service tier, and region.



From SQL to Managed Instance

Migrate SQL Servers easily to a fully managed cloud service

SAVE TIME WITH FAMILIAR SQL SERVER TOOLS AND RESOURCES

Eliminate app changes with full SQL Server programming surface

Use familiar SQL Server features in SQL Database Managed Instance

Native backup and restore

Cross-database queries and transactions

Broad security features including Transparent Data Encryption, SQL Audit, Always Encrypted and Dynamic Data Masking

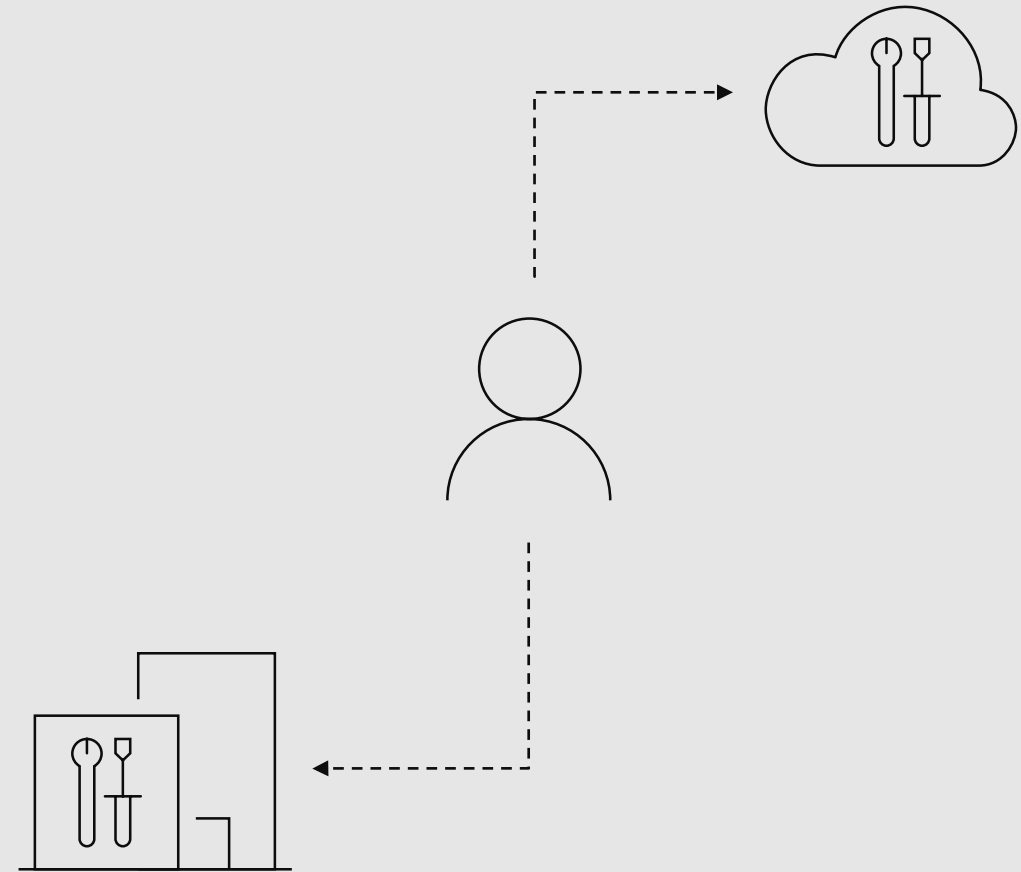
SQL Agent, DBMail, and Alerts for workload orchestration improved awareness

Scenario enablers including Change Data Capture, Service Broker, Transactional Replication, and CLR

DMVs, XEvents, and Query Store for troubleshooting



Full compatibility with SQL Server 2005+

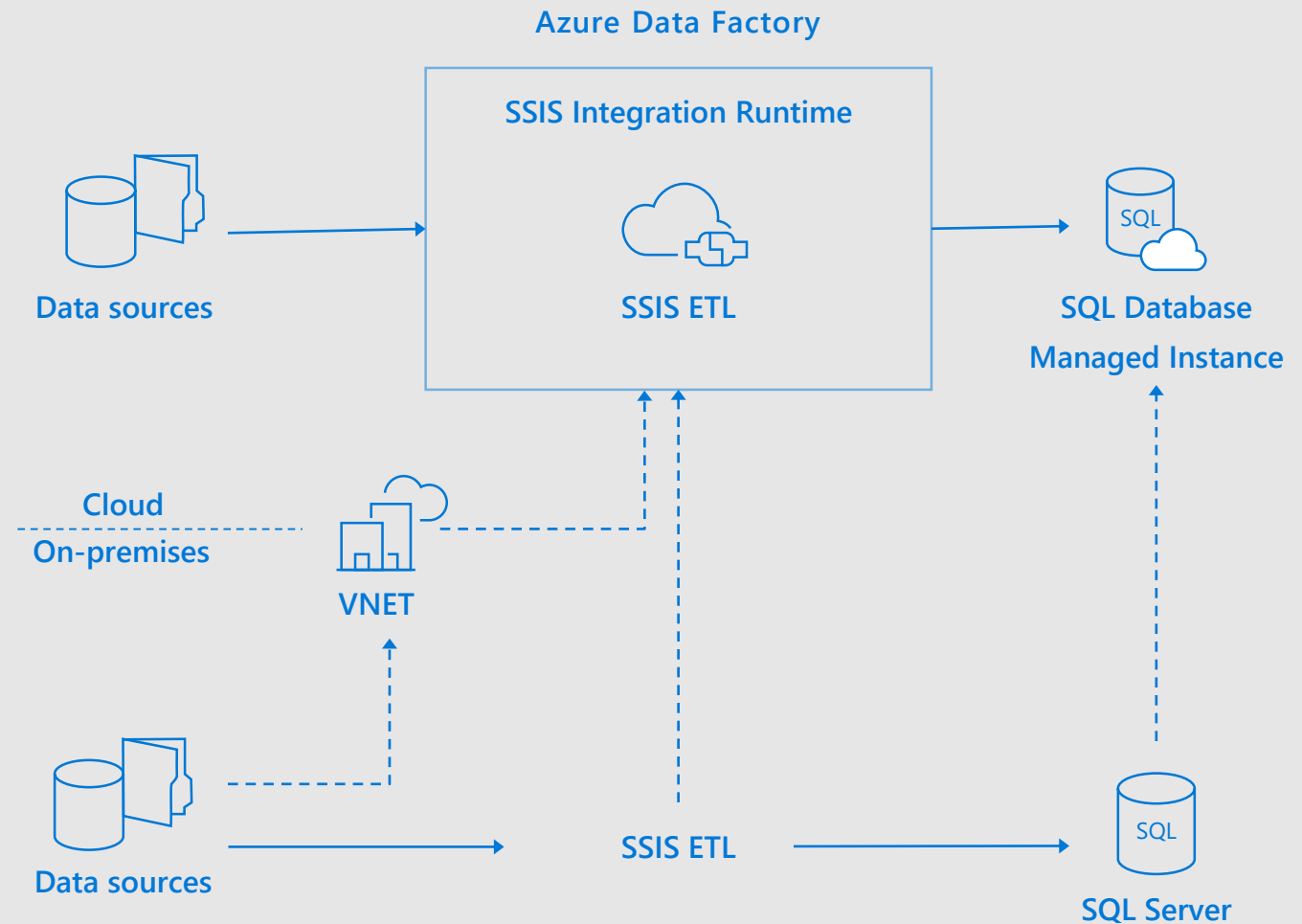


LIFT YOUR SQL SERVER INTEGRATION SERVICES (SSIS) PACKAGES TO AZURE

Easily execute and schedule your SQL Server Integration Services (SSIS) packages in managed execution environment for SSIS in Azure Data Factory (ADF)

Gain high availability, scalability and lower TCO by lifting your SSIS packages to Azure

Continue to build, monitor and manage packages with existing tools like SQL Server Management Studio (SSMS) & SQL Server Data Tools (SSDT)





CHOOSE THE BEST OPTION FOR YOUR WORKLOADS

- Choose compute resources and storage independently
- Balance SLA requirements and price with two service tiers
- Customers pay for:
- Compute (vCores)
 - Type and amount of storage
 - Number of IO (in GA)
 - Back-ups (in GA)
 -



Two Managed Instance options

	 GENERAL PURPOSE	 BUSINESS CRITICAL
Best for	Data applications with common IO and availability requirements	Business critical data applications with fast IO and high availability requirements
Compute tiers	8, 16, 24, 32, 40 vCores	8, 16, 24, 32, 40 vCores
Storage	Fast remote storage 32GB – 8TB per instance	Super-fast local SSD storage 32GB – 4TB per instance
Availability	1 replica, no read-scale	3 replicas, 1 read-scale
Surface area	Full (except In-memory OLTP)	Full

ACCELERATING YOUR JOURNEY TO THE CLOUD

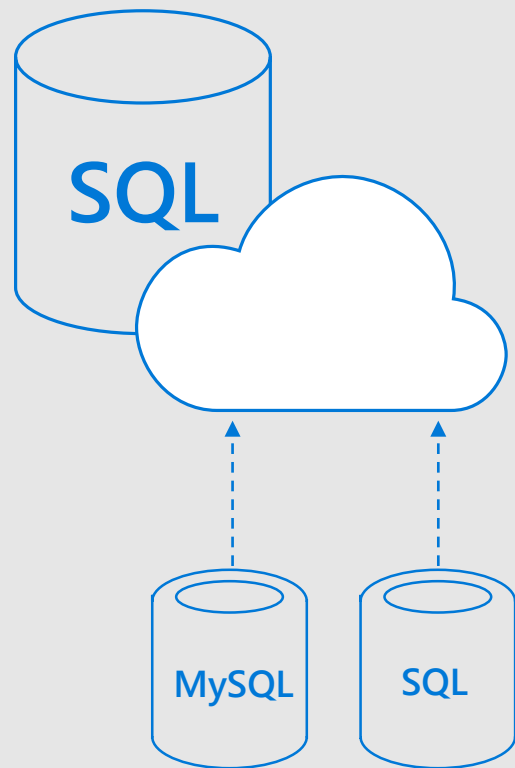
Fully managed database migration service for both operational databases and data warehouses

Enables reliable and seamless migrations to the cloud *at scale and minimal downtime*

Migrate SQL Server & 3rd party databases to Azure SQL Database



Azure Database Migration Service



SQL Server	Azure SQL Database single, elastic pools and Managed Instance
MySQL	Azure Database for MySQL
PostgreSQL	Azure Database for PostgreSQL
Oracle, ...	Azure SQL Database & Managed Instance
Netezza, ...	Azure SQL Data Warehouse

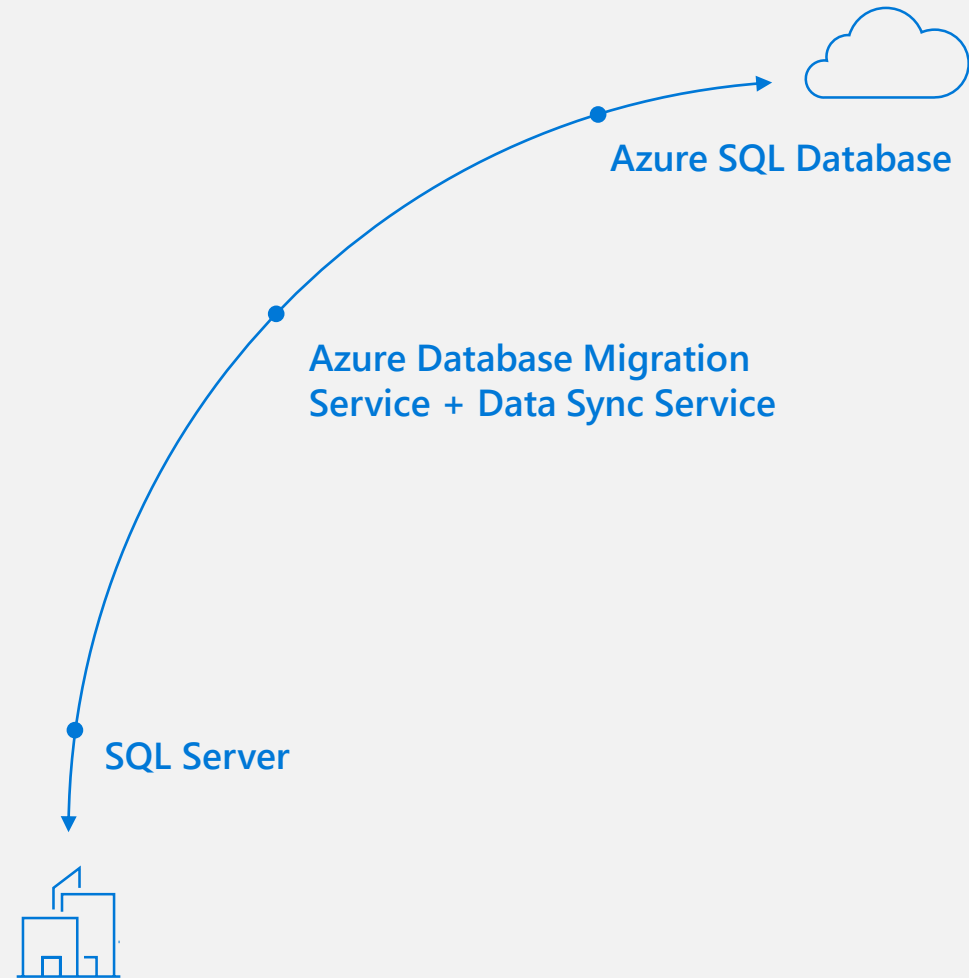
A hybrid Journey to the Cloud

Seamless hybrid deployment with integrated data synchronization

Reliable migration at scale

Lift and shift to the cloud with no code changes

Up to 55% cost savings



Roadmap (partial and approximate)

Q4 2018

- Business Critical service tier – GA
- Managed Instance with Hyperscale – Public Preview
- All features marked with a " * " on previous slides

H1 2019

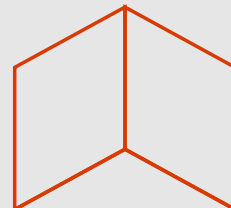
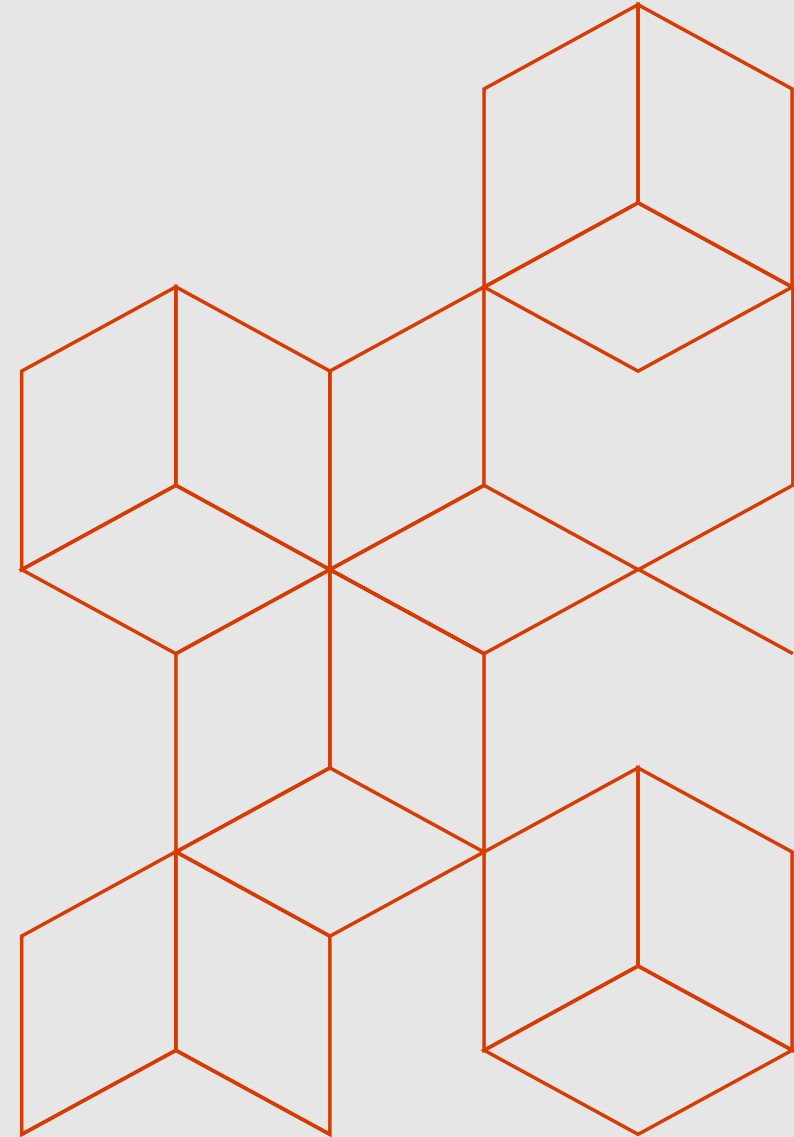
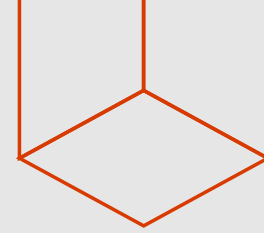
- Sovereign/government clouds support
- Further pricing options
 - Instances smaller than 8 vCores
 - Dev/test pricing discounts
- Custom maintenance windows
- and more...

Key takeaways

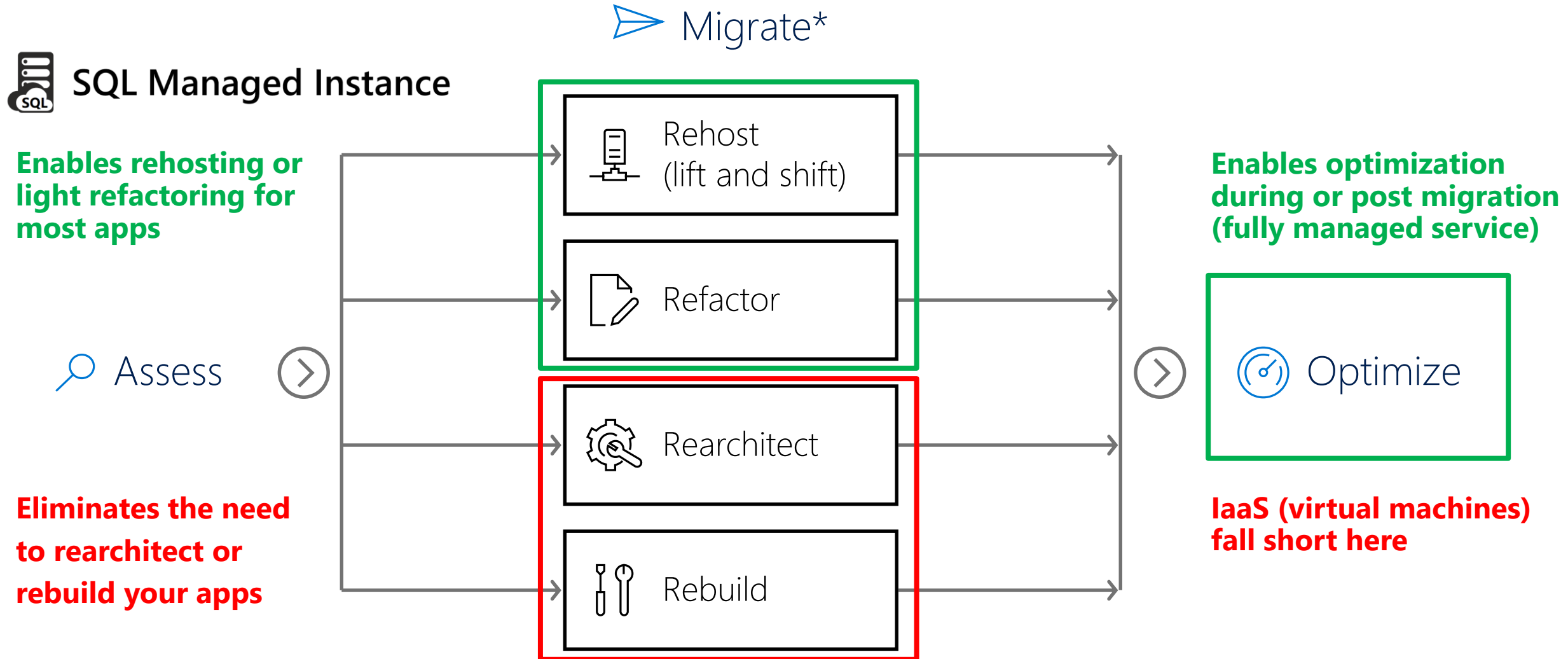
- Managed Instance is Generally Available!
- Managed Instance is Enterprise-Ready!
- With Managed Instance, you easily migrate SQL Server to cloud, and get all the benefits of a fully-managed service

Migrate to a SQL Managed Instance and get instant PaaS benefits

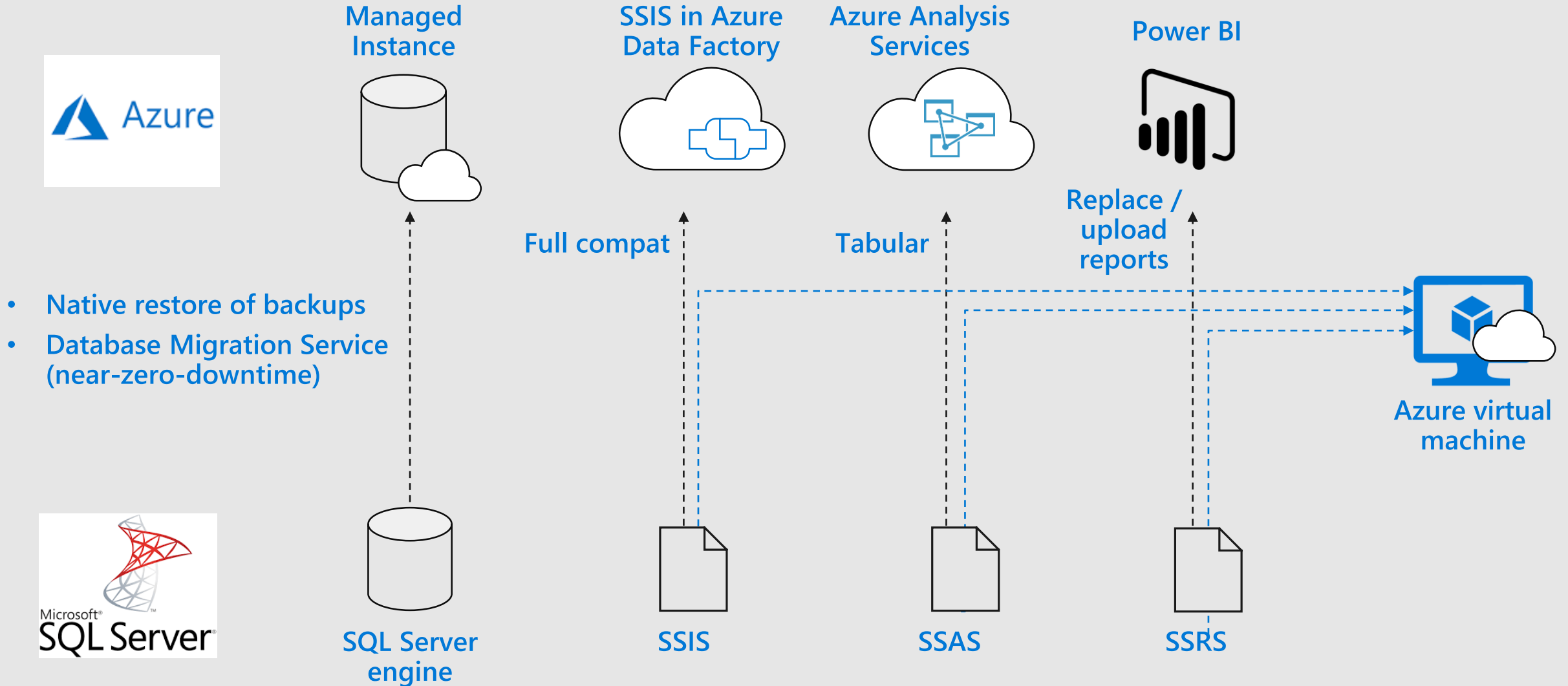
Assess options using Database Migration Assessment tool
Lift-and-shift using Database Migration Service (DMS)
PaaS features walkthrough



How to easily migrate and get benefits of cloud?



Migration of SQL Server to Azure



Data Migration Guide (<http://aka.ms/datamigration>)



Microsoft 365

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SQL

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Azure Database Migration Guide

Step-by-step guidance for modernizing your data assets [Migration overview](#)

Select your source and target below [Need a recommendation?](#)

Microsoft
SQL Server

ORACLE®

DB2



Most commonly used guides

[SQL Server → Azure SQL Database](#)

[SQL Server → SQL Server](#)

[Oracle → SQL Server](#)

[DB2 → Azure SQL Database](#)

Case studies

Partner tools



Floatel International

Maritime Firm Improves Insight and Efficiency with Microsoft Solution



Attunity Replicate

Attunity Replicate empowers organizations to accelerate data replication across a wide range of heterogeneous databases.



Striim

Striim's real-time platform enables companies the power of in-memory streaming data integration and intelligence into Azure.



Ispirer

Ispirer offers migration tools and services for Microsoft SQL Server and others.



Datometry Hyper-Q

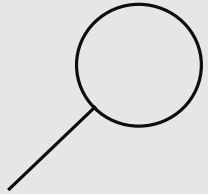
Datometry Hyper-Q simplifies how enterprises manage existing, and develop new applications on cloud databases.



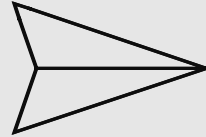
Morphis Transformer

Morphis helps with transforming an application into a new language; or modernize into a multi-tier architecture.

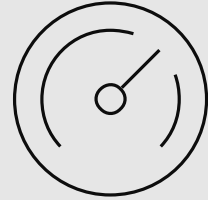
Azure database migration journey



Assess

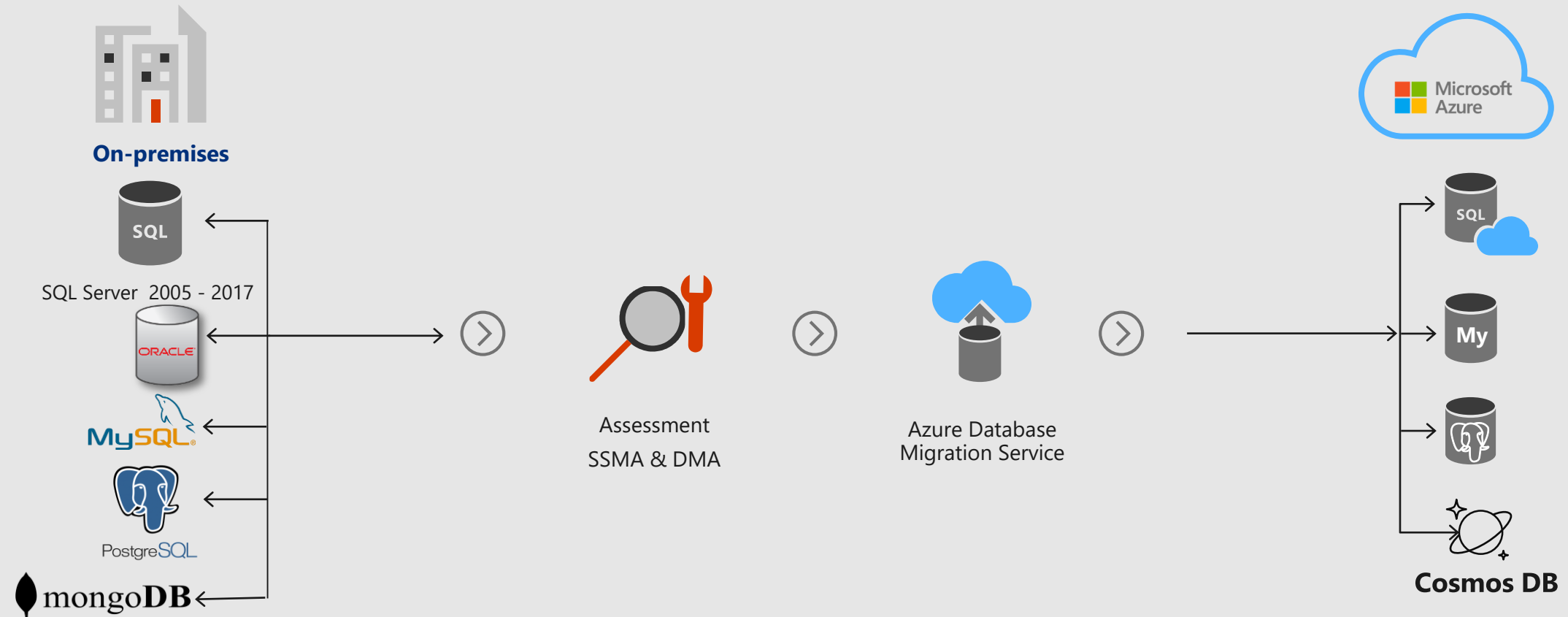


Migrate



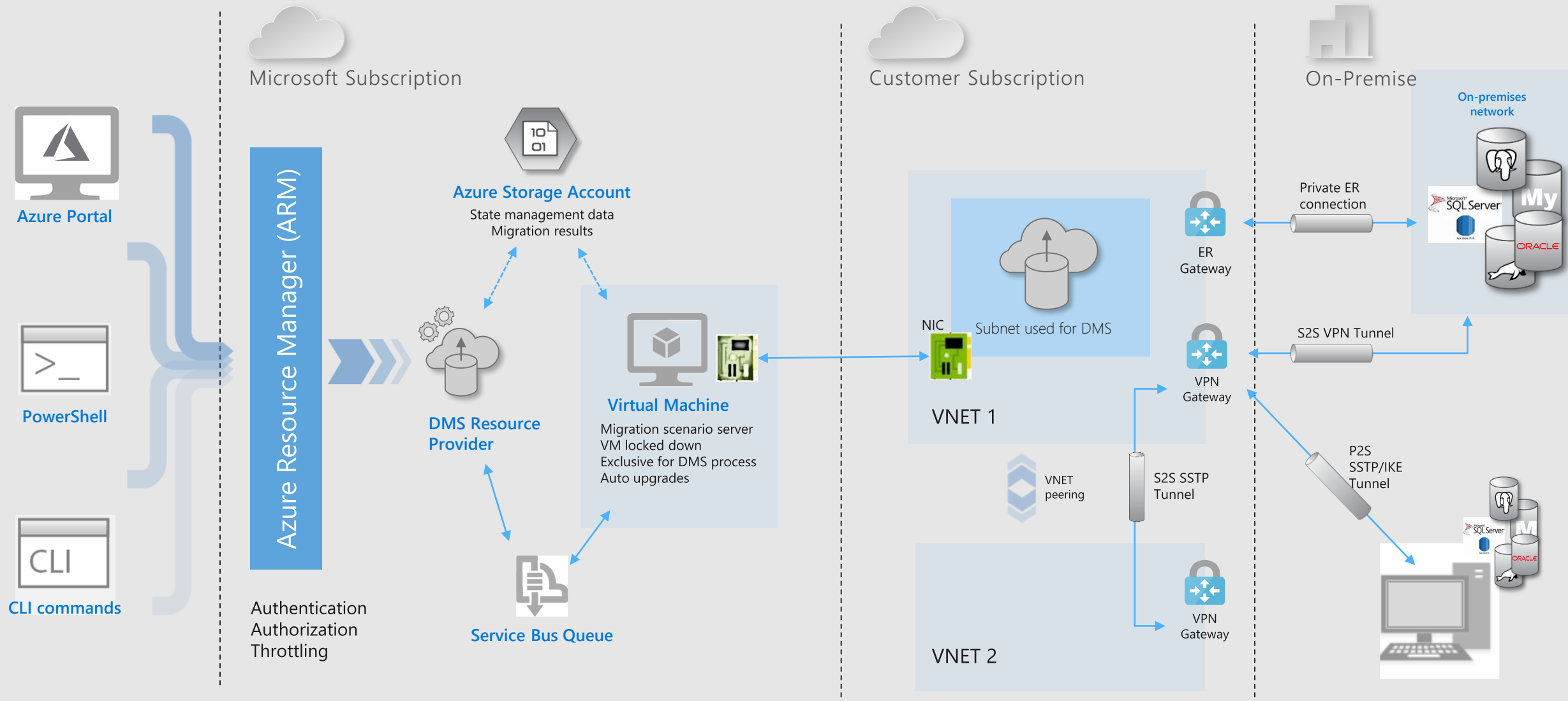
Optimize

Migrate databases using Azure Database Migration Service

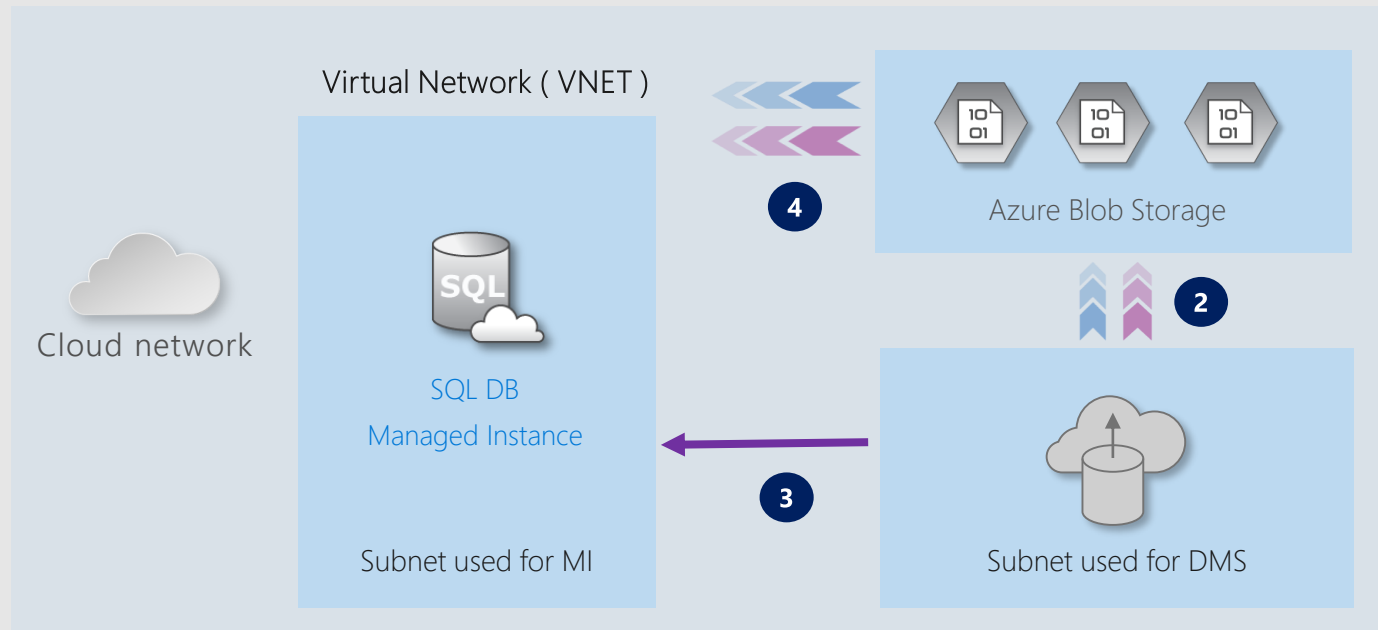


Seamless, end to end solution | Near-zero downtime | Resilient | Migrate at-scale from multiple sources

Azure Database Migration Service



SQL –SQL DB MI 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

Azure Database Migration Service Roadmap

Target	Source	Offline (One-time)			Online (Continuous sync)		
		Private Preview	Public Preview	General Availability	Private Preview	Public Preview	General Availability
Azure SQL DB	SQL Server			✓		✓	FY19Q2
	RDS SQL			✓		FY19Q3	FY19Q3
	Oracle	✓	FY19Q2	FY19Q3	FY19Q1	FY19Q2	FY19Q3
Azure SQL DB MI	SQL Server			✓	✓	FY19Q2	FY19Q3
	RDS SQL	✓	FY19Q1	FY19Q2		FY19Q3	FY19Q3
	Oracle	✓	FY19Q2	FY19Q3	FY19Q1	FY19Q2	FY19Q3
Azure SQL VM	SQL Server	✓	FY19Q2	FY19Q3	✓	FY19Q3	FY19Q3
	Oracle	✓	FY19Q2	FY19Q3	FY19Q1	FY19Q2	FY19Q3
Cosmos DB	MongoDB	✓	FY19Q2	FY19Q3	FY19Q2	FY19Q2	FY19Q3
Azure DB for MySQL	MySQL	FY19Q1	FY19Q2	FY19Q3	✓	✓	FY19Q3
	RDS MySQL	FY19Q1	FY19Q2	FY19Q3	✓	✓	FY19Q3
Azure DB for PostgreSQL	PostgreSQL	FY19Q1	FY19Q2	FY19Q3	✓	FY19Q1	FY19Q3
	RDS PostgreSQL	FY19Q1	FY19Q2	FY19Q3		FY19Q2	FY19Q3