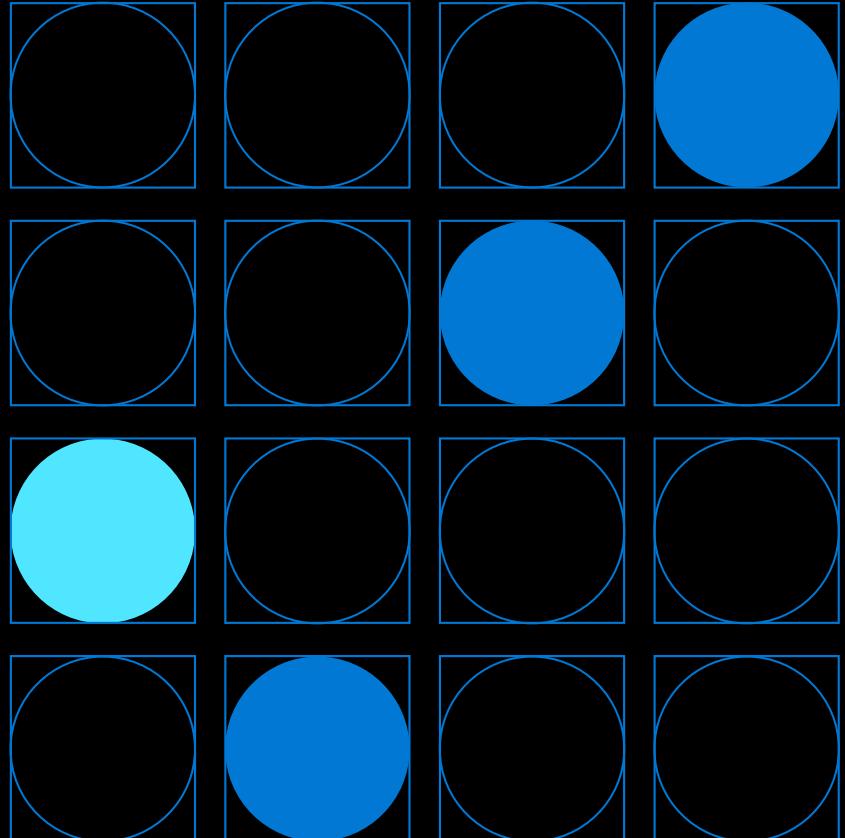


Microsoft Azure Training

Day:

Migrating Applications to the Cloud



Moving your database to Azure

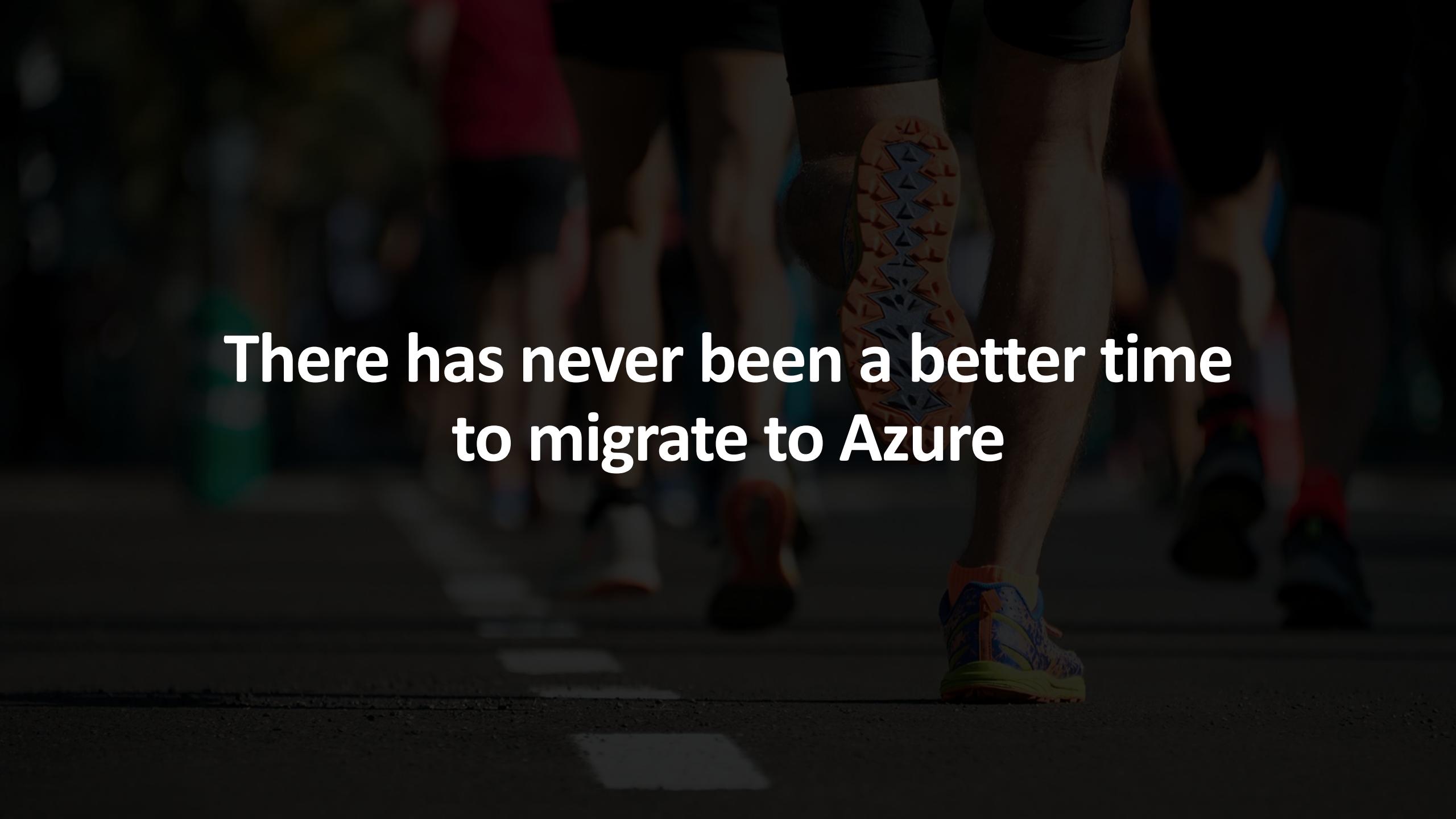
Abdul Rasheed Feroz Khan

Microsoft MVP - Azure

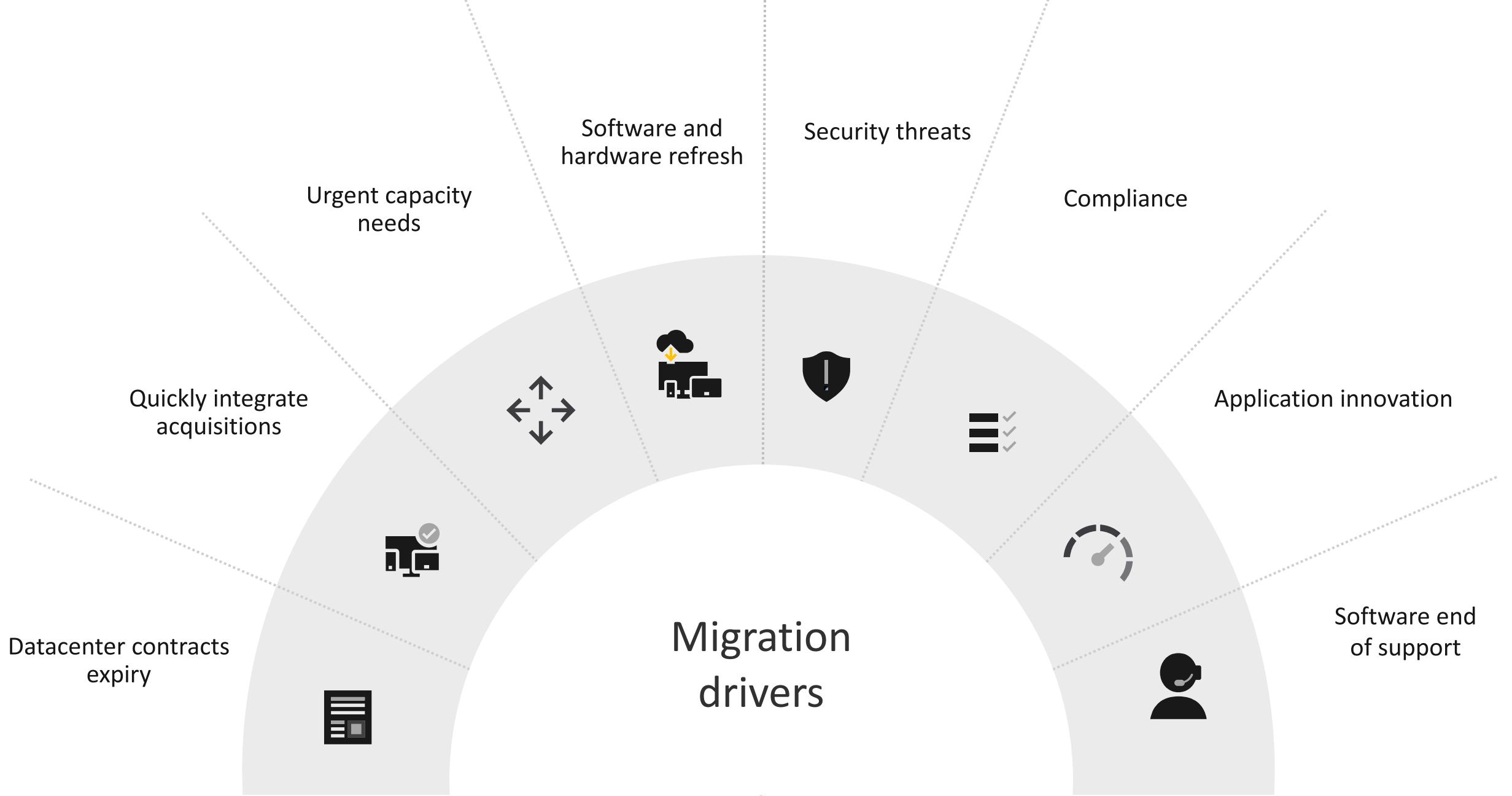
CTO – CodeSizzler

www.codesizzler.in

feroz@codesizzler.info

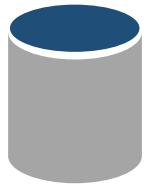
A dark, low-angle photograph showing the backs of several runners in a race. They are wearing various athletic shoes and clothing in shades of red, blue, and white. The scene is set outdoors, likely on a paved road or track.

**There has never been a better time
to migrate to Azure**





2008 | R2



Windows Server



Ends January 14, 2020



SQL Server



Ends July 9, 2019

Free

Extended security updates

Free security updates, only on IaaS Azure
3 years of security updates after support ends
75% of the license cost to buy standalone

Azure capabilities across apps, data, and infrastructure



Azure
Migrate



Java and Tomcat
support in Azure
app service



Azure Database for
PostgreSQL, MySQL



Azure Site
Recovery



kubernetes

Kubernetes on
app service



Azure SQL database
managed instance



Azure Database
Migration Service



Red Hat Enterprise
Linux support



Cassandra/MongoDB
on Azure Cosmos DB

Azure migration tools adoption over the last year

450K+

VMs

Discovered by
Azure Migrate

325K+

VMs

Assessed by
Azure Migrate

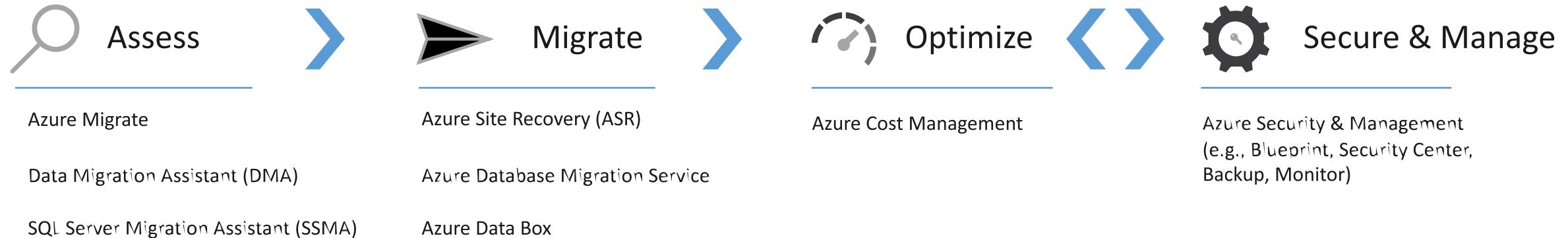
41K+

databases

Migrated by Azure
Database Migration Service

Choice of tools for every stage and every requirement

Goal is successful Azure migration: Pick the right tool for the job



We embrace ISV solutions



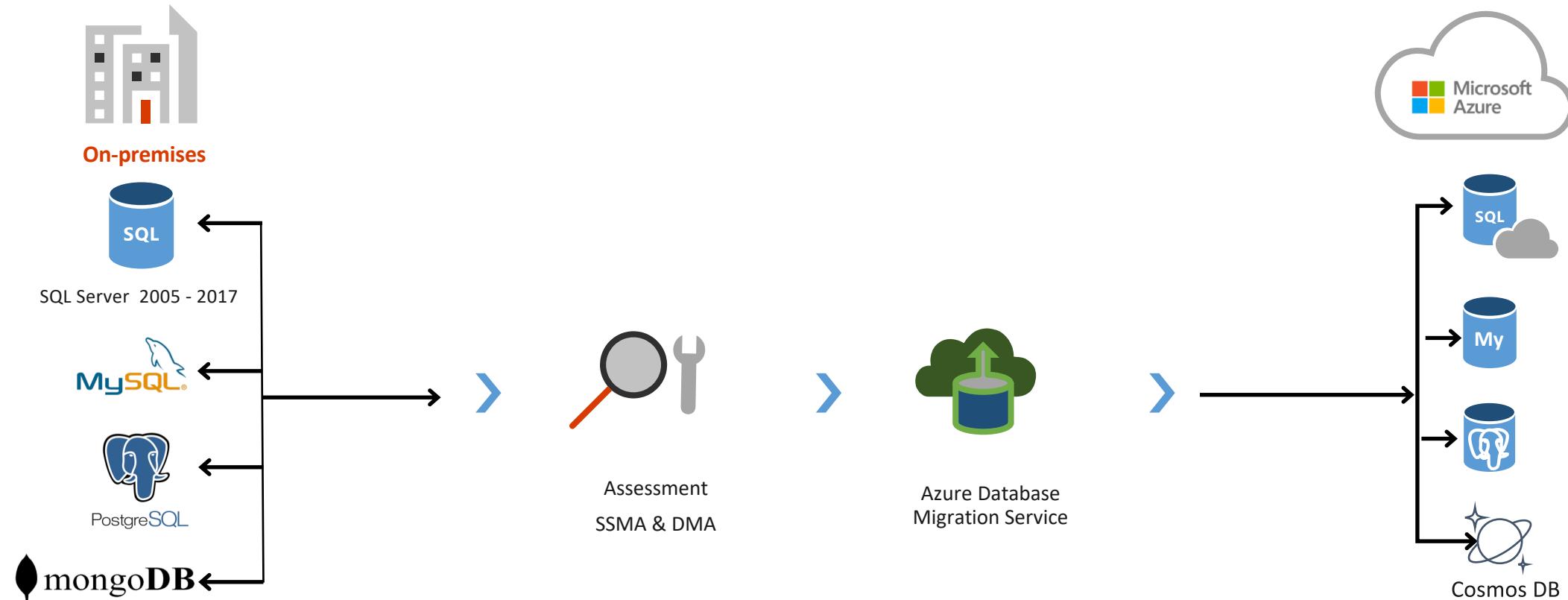
STRATOZONE®



Zerto



Migrate databases using Azure Database Migration Service



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



Assess



Migrate

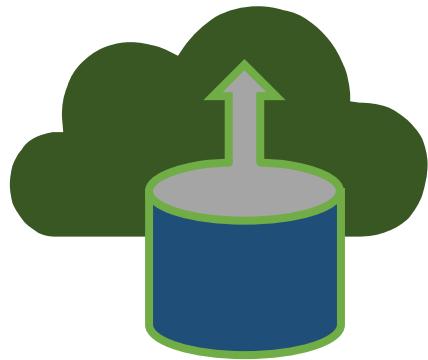


Optimize



Secure and manage

ANNOUNCING



Source	Target	Milestone
SQL Server	Azure SQL Database Managed Instance	Generally Available
MySQL	Azure Database for MySQL	Preview
PostgreSQL	Azure Database for PostgreSQL	Preview
MongoDB	Cosmos DB	Limited preview

Azure Database Migration Service: New migration scenarios

ANNOUNCING

Azure SQL Database Managed Instance – GA (General Purpose)

Migrate SQL Server to fully managed SQL in Azure

Fully compatible with SQL Server

Built-in HA, Failover, Geo-DR, Intelligence

NEW: Azure SQL Database Hyperscale – Preview

New, highly scalable service tier with built in intelligence

Migrate multi-TB databases to Azure

Auto-scale up to 100 TB per database



ANNOUNCING

Gateway



100 TB



Heavy (1 PB)



Azure Data Box family provides additional data migration options

Migrate large amounts of data quickly and securely

[Gateway](#)

[100 TB](#)

[Heavy \(1PB\)](#)

Preview

General Availability

Preview

Tailwind Traders acquires Northwind



REDMOND, WA December 06, 2018 Tailwind Traders, Inc announced that it has agreed to acquire Northwind Traders, the venerable "old guard" international foods company, in an effort to bolster its virtual hardware offerings with some international culinary flare. Tailwind agreed to acquire Northwind for an undisclosed sum and will assume control of all of Northwind's virtual assets, including the company's flagship product: *Aniseed Syrup*

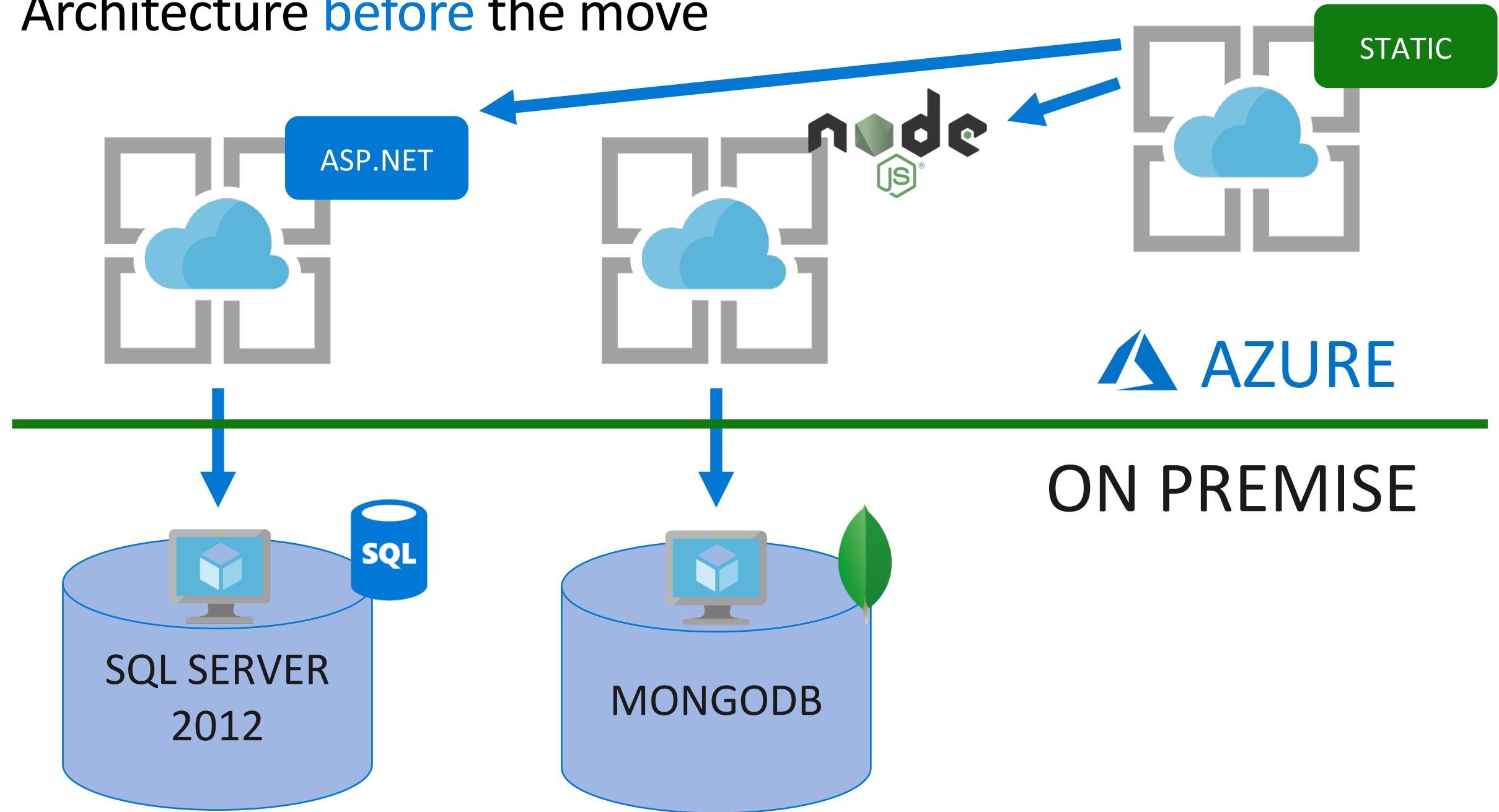
"This is a profoundly wonderful development for all involved, and will help to bring our food products to a whole new sector of the market" stated Nancy Daviolo, Executive Vice President of Operations. "We couldn't be happier with the arrangement". The recently-promoted Daviolo will join the Tailwind executive team along with two of her close associates, Margaret Peacock and Michael Suyama. Daviolo took over Northwind's sales operations in 2012 after Andrew Fuller was forced out of the company as a result of charges of fraud and embezzlement of more than 5,000 cases of Grandma's Boysenberry Spread.



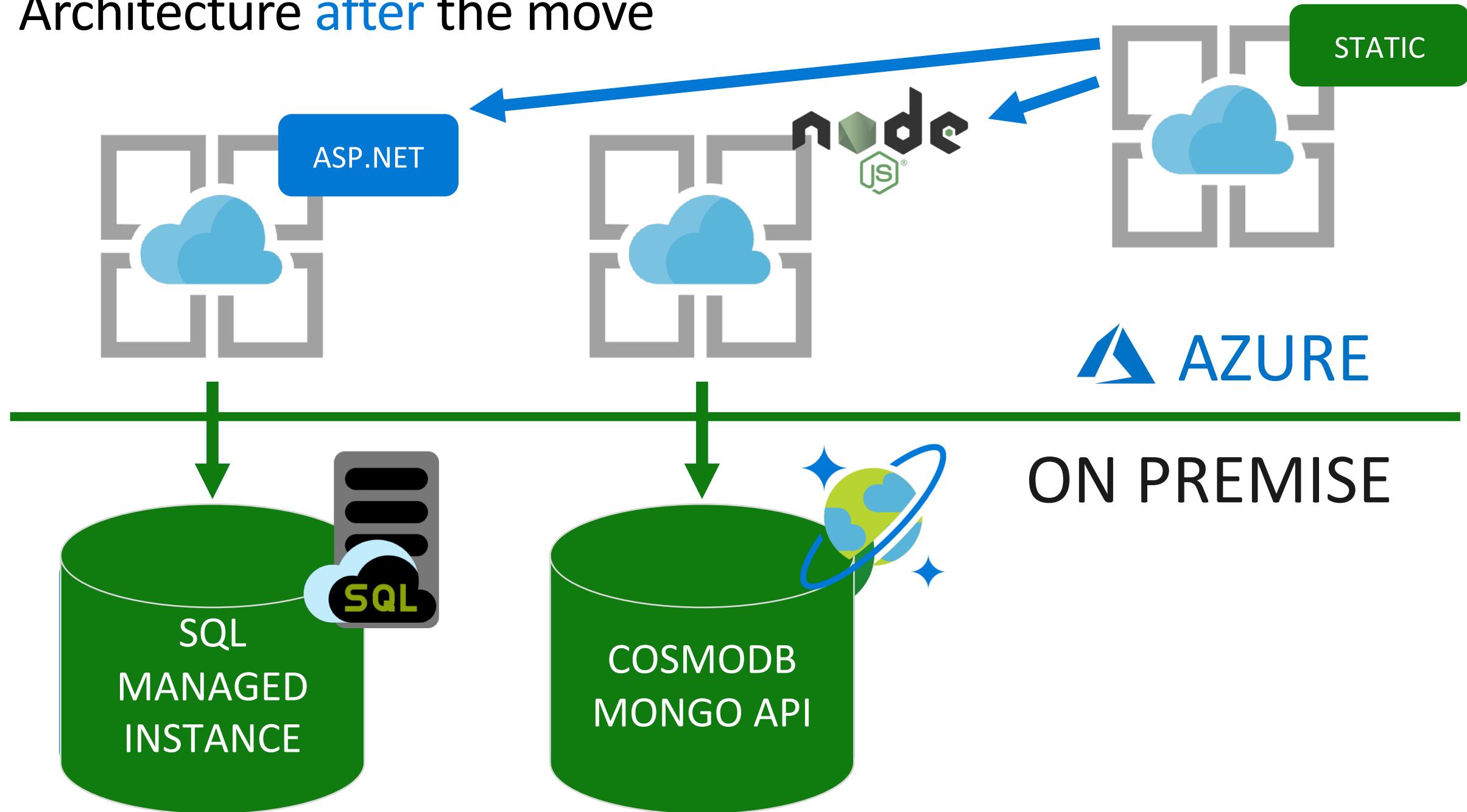
A rich catalog...

11	Unbranded Concrete Hat	VCIKWGXGDFXHNVQADJFZG	580.00	Mosciski - Cummings
12	Sleek Metal Shoes	AMSLVDYUBMBNOIXCEGVT	946.00	Hayes - Casper
13	Handcrafted Concrete Soap	WOPYRIESGMNIMVOKULSA	150.00	Connelly Inc
1	Incredible Frozen Chair	FTDQAYKRHMLQOEYTLXKO	291.00	Gibson - Bode
3	Ergonomic Plastic Tuna	BAAHUNJXFDDDBUAMQYQ	553.00	Pollich - Legros
14	Sleek Granite Car	KROAHUVSOTFDWFLKXYVF	374.00	Hickle, Heidenreich and...
51	Rustic Granite Car	UVHDNMOCRMIECGAGXCXU	131.00	Konopelski, Lesch and S...

Architecture before the move



Architecture after the move



Cloud Shell



```
Bash | ⚡ ? 🚂 { }

PowerShell g a Cloud Shell. Succeeded.
Connecting terminal...

Welcome to Azure Cloud Shell

Type "az" to use Azure CLI 2.0
Type "help" to learn about Cloud Shell

laurent@Azure:~$
```

Windows Subsystem for Linux (WSL)

The screenshot shows the Microsoft Store interface for the Windows Subsystem for Linux (WSL). At the top, there is a horizontal row of icons for various Linux distributions: Debian GNU/Linux (blue background with red logo), Kali Linux (blue background with white 'KALI' logo), Tux (yellow background with black penguin logo), Ubuntu (orange background with white logo), another Ubuntu icon (orange background with white logo), Deepin (dark blue background with green fish logo), and Manjaro (dark blue background with white cloud logo). A green progress bar is visible on the right.

Debian GNU/Linux

This product is installed.

Free

Launch ...

Ubuntu

Canonical Group Limited • Developer tools > Utilities

Share

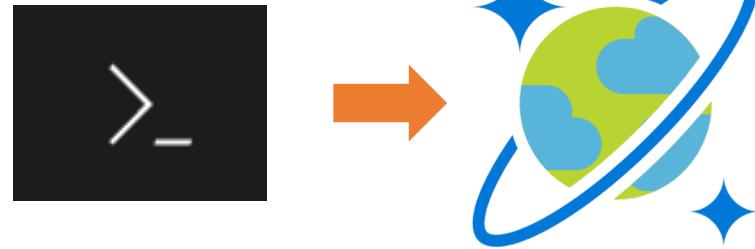
★★★★★ 14

Ubuntu on Windows allows one to use Ubuntu Terminal and run Ubuntu command line utilities including bash, ssh, git, apt and many more.

More

PEGI 3

The main card for Ubuntu shows its orange logo and the text "Ubuntu on Windows allows one to use Ubuntu Terminal and run Ubuntu command line utilities including bash, ssh, git, apt and many more." Below the card is a "More" link and a PEGI 3 rating.



Demo

Creating the CosmosDB instance



Azure Cosmos DB

Globally distributed database service



Azure Cosmos DB APIs



MongoDB

SQL

Table storage

Gremlin Graph

Spark

Now GA

Cassandra



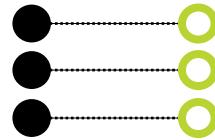


Azure Cosmos DB



more coming soon

Key-Value



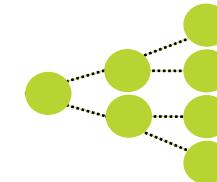
Global distribution

Column-family



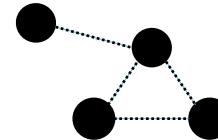
Elastic scale out

Documents



Guaranteed low latency

Graph



Five consistency models

Comprehensive SLAs

A globally-distributed, multi-model database service



Work with NoSQL data in Azure Cosmos DB

2 hr 27 min remaining - Learning Path - 4 Modules



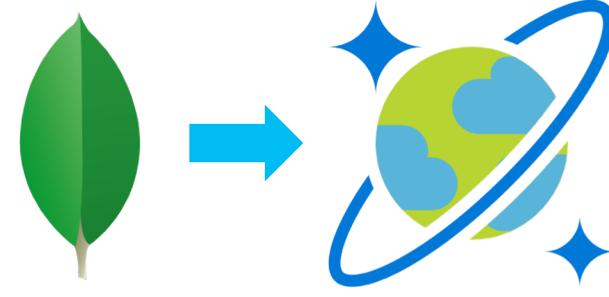
/Learn alert

Expository text about the learning path goes here. This text box wraps.

<http://gslb.ch/247s-MSIgniteTheTour>

The screenshot shows the Microsoft Learn homepage. At the top, there's a navigation bar with the Microsoft logo, 'Learn', 'Azure', 'Business Applications', 'About', 'Browse All', and 'Certifications'. To the right are links for 'All Microsoft', a search bar, and 'Sign in'. Below the navigation is a banner with various icons related to technology and learning. A prominent callout box on the right side highlights the 'Introduction to Azure' module, which consists of 6 units. It includes a thumbnail of a book icon labeled '101', a brief description, and a 'Start learning for free' button. The main content area features sections for 'Learning paths', 'Hands-on learning', and 'Learn for free'. Below these are sections for 'Start a learning path' (with a dropdown menu for 'Select your role') and 'Learn Azure' (with a description of exploring advanced Azure topics). A decorative graphic at the bottom shows a path of interconnected icons representing different learning paths.

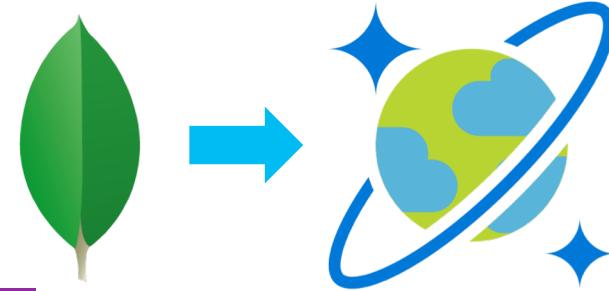
Mongo APIs: Dump



```
ssh '[USER]@[IPADDRESS]
```

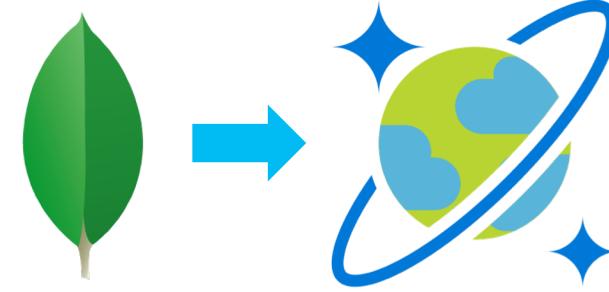
```
mongodump  
  --collection [COLLECTION]  
  --db [DATABASE]
```

Mongo APIs: Dump



```
azureuser@mongodb1: ~  
lbugnion@SurfaceLaurent:~$ ssh ' [REDACTED] '@ [REDACTED]  
Enter passphrase for key '/home/lbugnion/.ssh/id_rsa':  
Welcome to Ubuntu 16.04.5 LTS (GNU/Linux 4.15.0-1028-azure x86_64)  
  
* Documentation: https://help.ubuntu.com  
* Management: https://landscape.canonical.com  
* Support: https://ubuntu.com/advantage  
  
Get cloud support with Ubuntu Advantage Cloud Guest:  
http://www.ubuntu.com/business/services/cloud  
  
16 packages can be updated.  
0 updates are security updates.  
  
Last login: Fri Nov  2 21:58:21 2018 from [REDACTED]  
@mongodb1:~$ mongodump --collection [REDACTED] --db [REDACTED]  
2018-11-04T10:34:31.812+0000      writing [REDACTED] to [REDACTED]  
2018-11-04T10:34:31.817+0000      done dumping [REDACTED] (500 documents)  
@mongodb1:~$
```

Mongo APIs: Restore

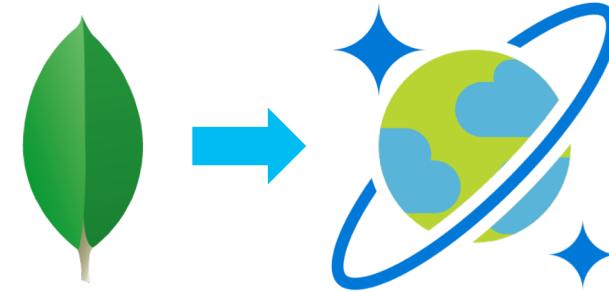


```
cd dump
```

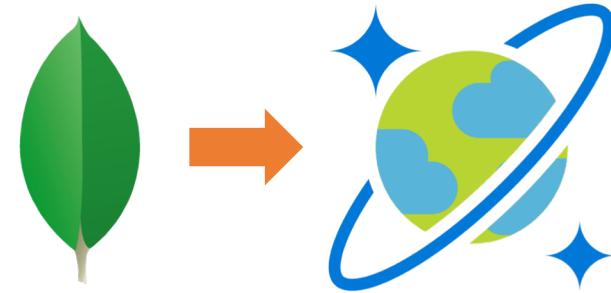
```
cd [DATABASENAME]
```

```
mongorestore --host [HOSTNAME]:10255  
  -u [USER] -p [PASSWORD]  
  --ssl --sslAllowInvalidCertificates  
  [BSONFILE].bson  
  --numInsertionWorkersPerCollection 4 --batchSize 24  
  --db [DATABASENAME] --collection [COLLECTIONNAME]
```

Mongo APIs: Restore



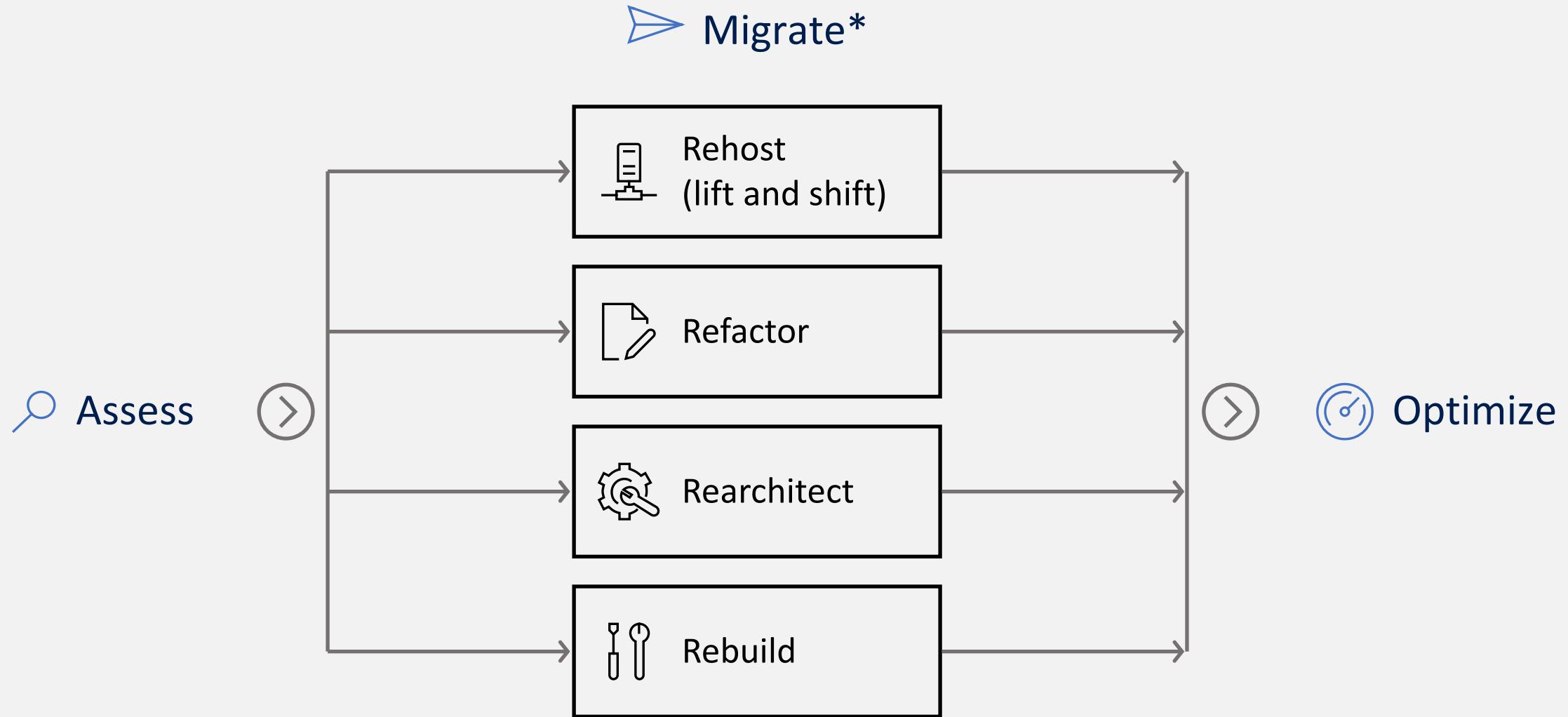
```
@mongodb1: ~/dump/  
@mongodb1:~$ cd dump  
@mongodb1:~/dump$ cd [REDACTED]  
@mongodb1:~/dump/ $ mongorestore --host [REDACTED]:10255 -u [REDACTED] -p [REDACTED]  
--ssl --sslAllowInvalidCertificate  
es [REDACTED].bson --numInsertionWorkersPerCollection 4 --batchSize 24 --db [REDACTED] --collection [REDACTED]  
2018-11-04T13:16:11.128+0000      checking for collection data in [REDACTED].bson  
2018-11-04T13:16:11.131+0000      reading metadata for [REDACTED] from [REDACTED].metadata.json  
2018-11-04T13:16:11.131+0000      restoring [REDACTED] from [REDACTED].bson
```

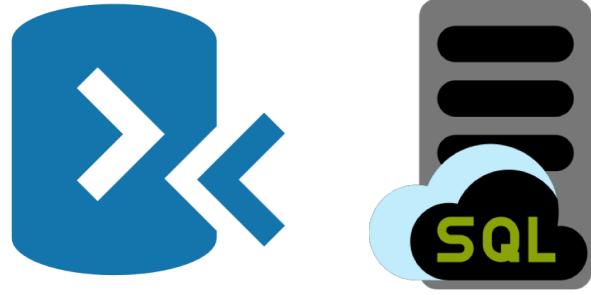


Demo

Migrating the MongoDB to CosmosDB

How to easily migrate and get benefits of cloud?





Demo

Assessing the Database before migration
with the Microsoft Data Migration Assistant

Migrating SQL Server to SQL Managed Instance
(Part 1)

SQL Managed Instance: Key takeaways



- **Managed Instance** is Generally Available from October 1!!!
- **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

How to easily migrate and get benefits of cloud?

SQL Managed Instance

Enables rehosting or light refactoring for most apps

Assess

Eliminates the need to rearchitect or rebuild your apps

Migrate*

Rehost
(lift and shift)

Refactor

Rearchitect

Rebuild

Enables optimization during or post migration (fully managed service)

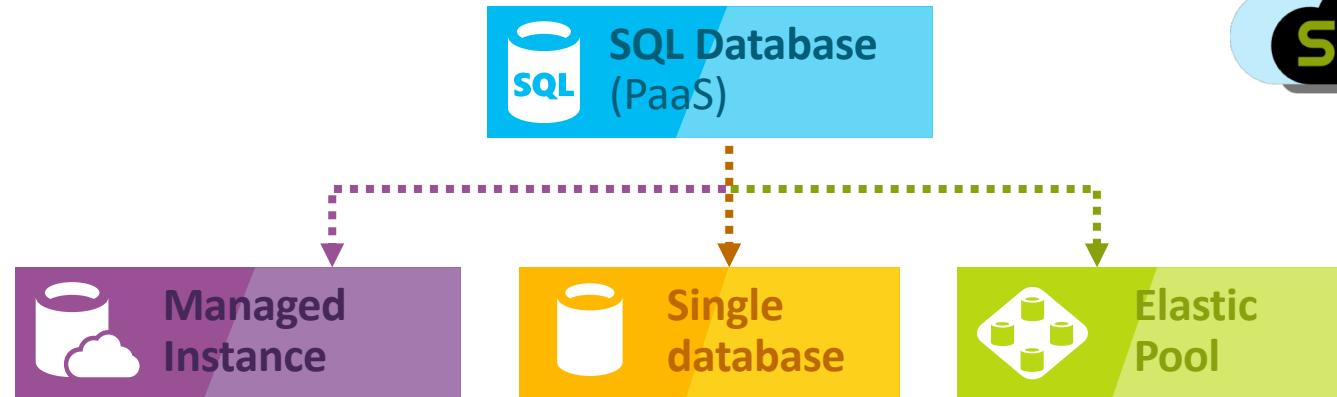
Optimize

IaaS (virtual machines) fall short here

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% compat with on-premise

Full isolation and security

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

New purchasing options

- Transparent
- Frictionless
- Competitive

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 *)
	99.99% availability with automatic failover Disaster recovery with single geo secondary (multiple*)

* - features coming soon

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



Work with relational data in Azure

2 hr 41 min remaining - Learning Path - 3 Modules



/Learn alert

Expository text about the learning path goes here. This text box wraps.

<http://gslb.ch/249s-MSIgniteTheTour>

The screenshot shows the Microsoft Learn homepage. At the top, there's a navigation bar with the Microsoft logo, 'Learn', 'Azure', 'Business Applications', 'About', 'Browse All', and 'Certifications'. To the right are links for 'All Microsoft', a search bar, and 'Sign in'. Below the navigation is a banner with the text 'WELCOME TO Microsoft Learn' and 'Introducing a new approach to learning'. It highlights that skills can be learned through hands-on learning, earning points, levels, and achievements. A call-to-action button says 'Start learning for free >'. Below the banner are three tabs: 'Learning paths' (which is selected), 'Hands-on learning', and 'Learn for free'. Under 'Learning paths', there's a section titled 'Start a learning path' with a dropdown menu labeled 'Select your role'. A description encourages users to use a learning path tailored to their needs. To the right, there's a diagram showing a sequence of icons connected by dashed lines, representing a learning journey. At the bottom, there's a section titled 'Learn Azure' with a description of exploring more advanced Azure topics through online courses.



Demo

Migrating SQL Server to SQL Managed Instance
(Part 2)

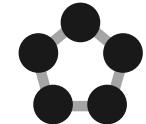
Refactor your apps using Azure container technologies and partners



Azure Container Instances



Azure Kubernetes Service (AKS)



Azure Service Fabric



Azure App Service

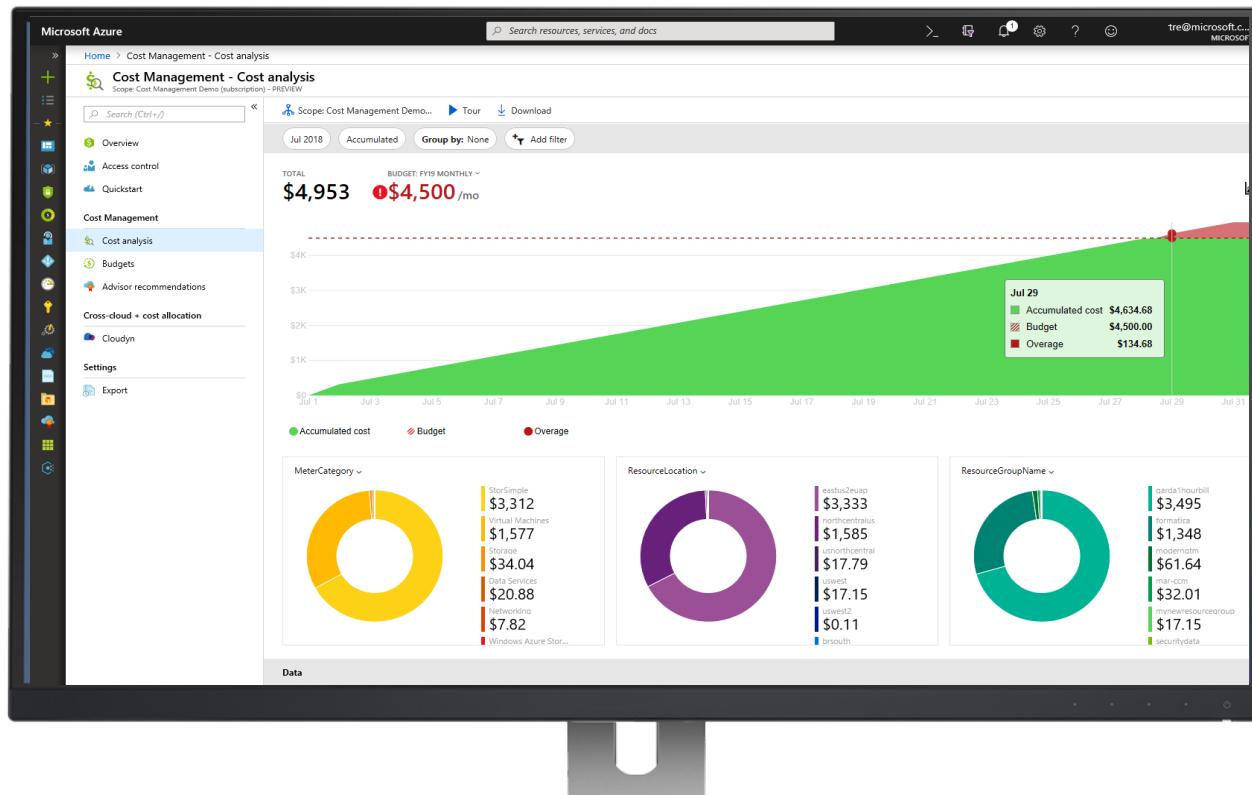
Continuously optimize migrated resources

Azure Cost Management

- Unified experience to optimize cloud spends
- Built-in best practice recommendations (e.g., turn off idle VMs)

Use Azure Hybrid Benefit and Azure Reserved Instances during or after migration

Modernize for longer term value



W



Secure your cloud data

3 hr 56 min remaining - Learning Path - 5 Modules



/Learn alert

Expository text about the learning path goes here. This text box wraps.

<http://gslb.ch/248s-MSIgniteTheTour>

The screenshot shows the Microsoft Learn homepage. At the top, there's a navigation bar with the Microsoft logo, 'Learn', 'Azure', 'Business Applications', 'About', 'Browse All', and 'Certifications'. On the far right are links for 'All Microsoft', 'Search', and 'Sign in'. Below the navigation is a banner with the text 'WELCOME TO Microsoft Learn' and 'Introducing a new approach to learning'. It highlights that skills can be learned through hands-on learning, earning points, levels, and achievements. A call-to-action button says 'Start learning for free >'. There are three main tabs at the bottom: 'Learning paths', 'Hands-on learning', and 'Learn for free'. The 'Learning paths' tab is selected. Below it, there's a section titled 'Start a learning path' with a sub-section for 'Learn Azure'. It encourages users to explore more advanced Azure topics with online courses. To the right, there's a decorative graphic of various Microsoft learning icons connected by dashed lines, forming a network. A specific learning path for 'Introduction to Azure' is highlighted, showing it consists of 6 units and providing a link to start learning.

Resources

Azure.com/Migration

All things migration

Guidance

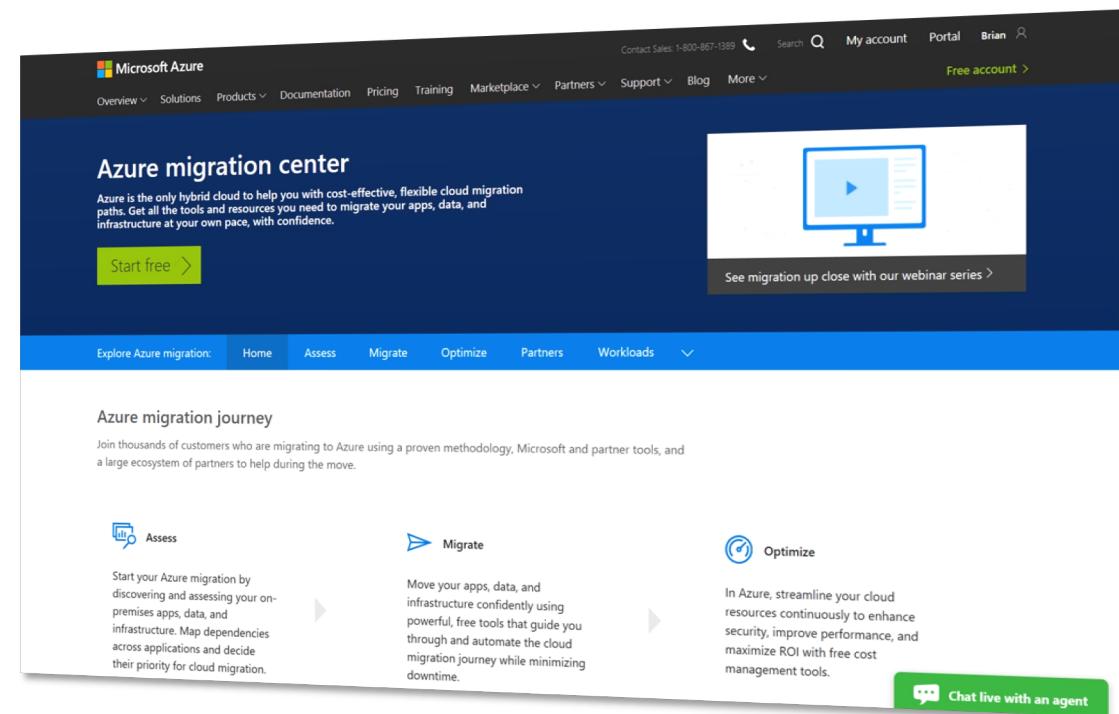
Migration journey and strategies

Tools

Right tools for the job

Partners

Migration experts



Keep up to date on your Azure skills as you migrate



[Microsoft.com/Learn](#)

Build skills quickly

Measure Azure skill proficiency

Role based certification & training

Announcing free migration course
Assessing and Planning Azure Migration

The screenshot shows the Microsoft Learn homepage. At the top right, there's a banner for a free migration course titled "Assessing and Planning Azure Migration". Below the banner, the main navigation bar includes "Learn", "Azure", "Business Applications", "About", "Browse All", and "Certifications". On the left, there's a sidebar with a profile picture and a "Welcome to Azure" section. The main content area features a "Start a learning path" section with a dropdown menu for "Select your role". Below this, there are several cards for different learning paths:

- Cloud Foundations**: 2hr - Path - 5 Units. Description: New to cloud computing? This is the place to start. Learn the benefits of cloud computing, tour Azure's services and gain an introduction to compute, data, security and networking.
- Administer infrastructure resources in Azure**: 2hr - Path - 5 Units. Description: Learn how to work with infrastructure services to build and manage virtual machines, via the Azure portal and Command Line Interface.
- Deploy a website with Azure App Service**: 2hr - Path - 5 Units. Description: Azure Web Apps allow you to publish and manage your website easily without having to work with the underlying servers, storage or network assets.
- Administer containers in Azure**: 18min - Module - 5 Units. Description: Explore containerization with Docker and Kubernetes, and learn how to administer containers in Azure Container Registry and Azure Kubernetes Service.
- Work with NoSQL data in Azure Cosmos DB**: 18min - Module - 5 Units. Description: Learn how to work with NoSQL databases in Azure Cosmos DB, including document, key-value, columnar, and graph databases.
- Architect great solutions in Azure**: 18min - Module - 5 Units. Description: Learn how to design and implement secure, reliable, and scalable solutions using Azure services.

At the bottom right, there's a section for "Additional Azure Training" with links to "Free Pluralsight Courses" and "Azure Certifications".

Build your case: Azure TCO calculator

[Azure.com/tco](https://www.azure.com/tco)

Total Cost of Ownership (TCO) Calculator
Estimate the cost savings you can realize by migrating your workloads to Azure

Welcome to the preview of the new TCO Calculator. Please [leave feedback.](#) X

1 Define your workloads 2 Adjust assumptions 3 View report

Define your workloads
Enter the details of your on-premises workloads. This information will be used to understand your current TCO and recommended services in Azure.

Servers
Enter the details of your on-premises server infrastructure. After adding a workload, select the workload type and enter the remaining details.

[+ Add server workload](#)

Databases
Enter the details of your on-premises database infrastructure. After adding a database, enter the details of your on-premises database infrastructure in the Source section. In the Destination section, select the Azure service you would like to use.

[+ Add database](#)

Storage
Enter the details of your on-premises storage infrastructure. After adding storage, select the storage type and enter the remaining details.

[+ Add storage](#)

Networking
Enter the amount of network bandwidth you currently consume in your on-premises environment.

Outbound bandwidth 1
GB 1
(1 - 2000)

[Next](#)

Get help: FastTrack for Azure can help you migrate quickly and confidently



Benefits

- Direct assistance from Azure engineers and program managers
- Use proven practices and tools from real customer experiences
- Accelerated deployment to full production of Azure solutions



Engagement phases

- **Discovery:** Validate project scope, vision, requirements and assess architectural needs
- **Solution Enablement:** Guidance on solution architecture design using proven practices and design principles
- **Deployment:** Support in-house customer and/or partner led deployment of Azure solution
- **Continuous Partnership:** Provide periodic check-ins and address additional workloads and deployment needs

FastTrack for Azure



Please visit Azure.com/FastTrack for more information

Get help: skilled migration partners



TATA
CONSULTANCY
SERVICES



Cognizant

Infosys®
Navigate your next



cloud
BESPIN GLOBAL



claranet



The Software Experts
Crayon

DATA COM



hanu™
100% CLOUD CLEAR



enso

SOGETI

MIRABEAU |*
A Cognizant Digital Business



NORDCLOUD

INTERCEPT
EMPOWERING AZURE

Progressive™
Experience Outcomes
Cloud | Digital | Operations



NEW SIGNATURE

protera
TECHNOLOGIES
Applications on the Cloud

SENTIA

Smartronix

[Click here to search for an Azure expert MSP in your region](#)

Get started today

1

**Assess migration
cost savings**

Azure.com/TCO

2

**Learn more, find a
migration partner**

Azure.com/Migration
Aka.ms/AzureExpertMSP

3

**Start your migration
project**

Azure.com/MigrateNow