



Microsoft Azure Training Day: Developing Cloud Native Applications



Options for Data in the Cloud

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Software Technical Director

Agenda

- 1 | What is Important to Tailwind Traders
- 2 | Choosing a Data Storage Approach
- 3 | Benefits of storing files in Azure Blob Storage
- 4 | Moving to SQL Server in the Cloud
- 5 | Migrating from Mongo DB to Cosmos DB

What Is Important to Tailwind Traders?

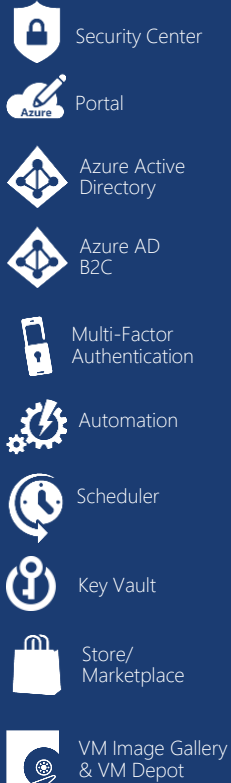
What Is Important to Tailwind Traders?

- Being able provision new services quickly
- Limit the impact of new services on existing environments
- Putting as much control as possible in the hands of the developers
- Dynamically scale storage without significant operational overhead
- Being able to leverage the right tool for the job

The Importance of a Storage Strategy

- Facilitates upgrading legacy operations processes
- Allows for more velocity creating new products and features
- Breaks services and features down into more manageable pieces
- Maintain security and strategy posture.

Security & Management



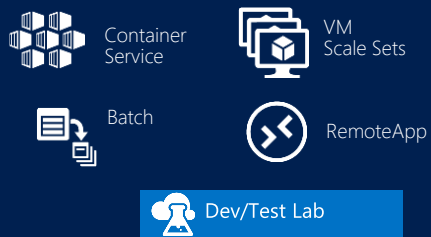
Media & CDN



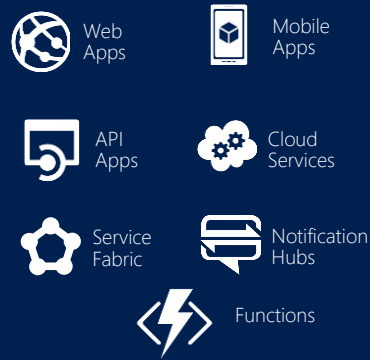
Integration



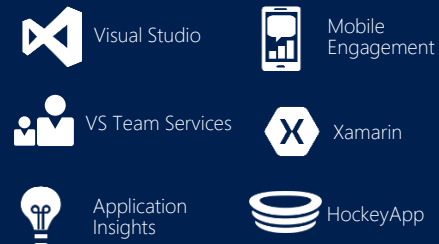
Compute Services



Application Platform

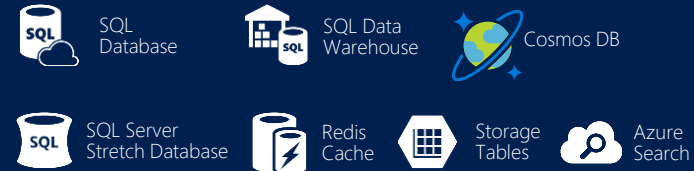


Developer Services



Platform Services

Data



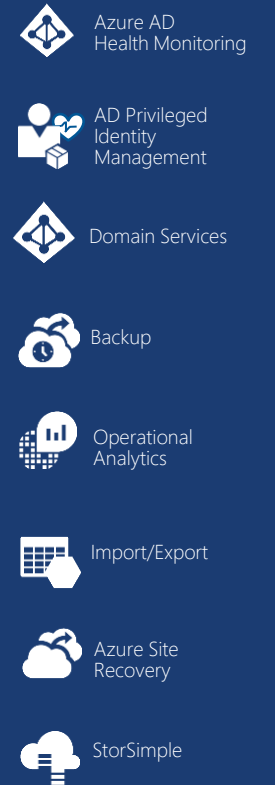
Intelligence



Analytics & IoT



Hybrid Cloud



Infrastructure Services

Compute



Storage



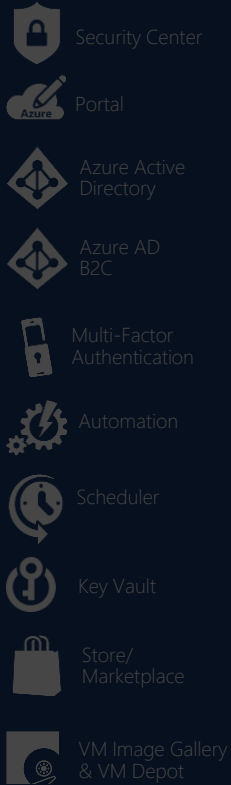
Networking



Datacenter Infrastructure (42 Regions Announced, 36 Online)



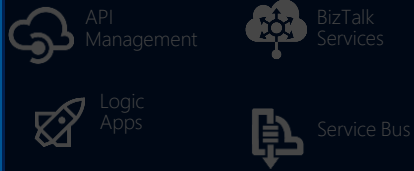
Security & Management



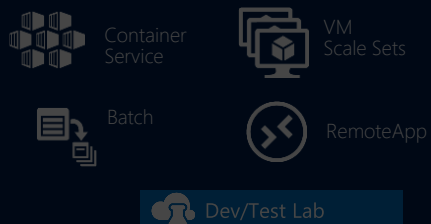
Media & CDN



Integration

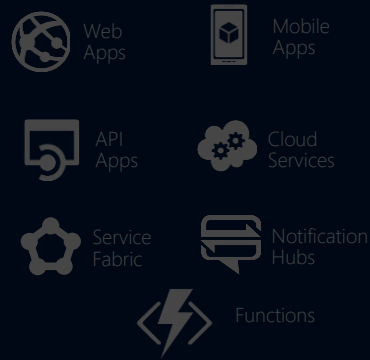


Compute Services

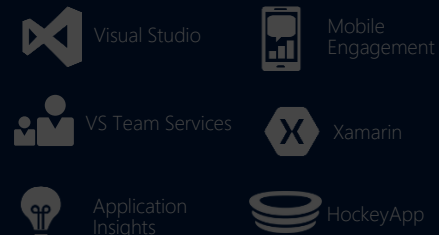


Platform Services

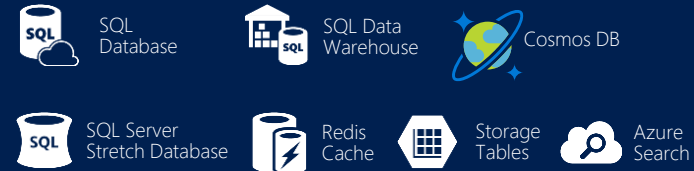
Application Platform



Developer Services



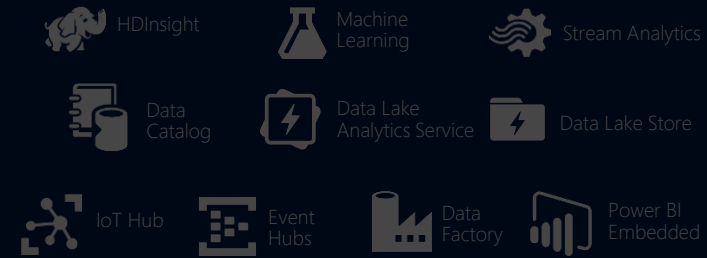
Data



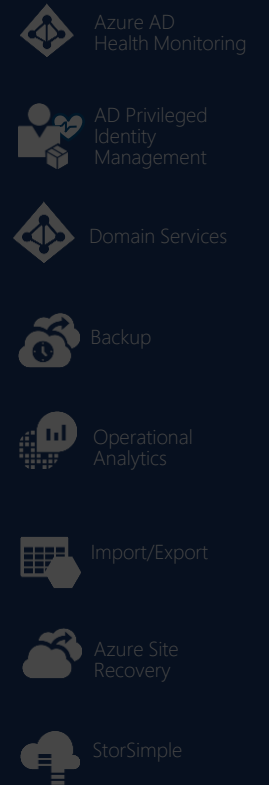
Intelligence



Analytics & IoT

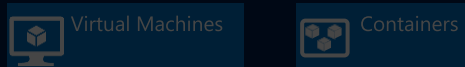


Hybrid Cloud



Infrastructure Services

Compute



Storage

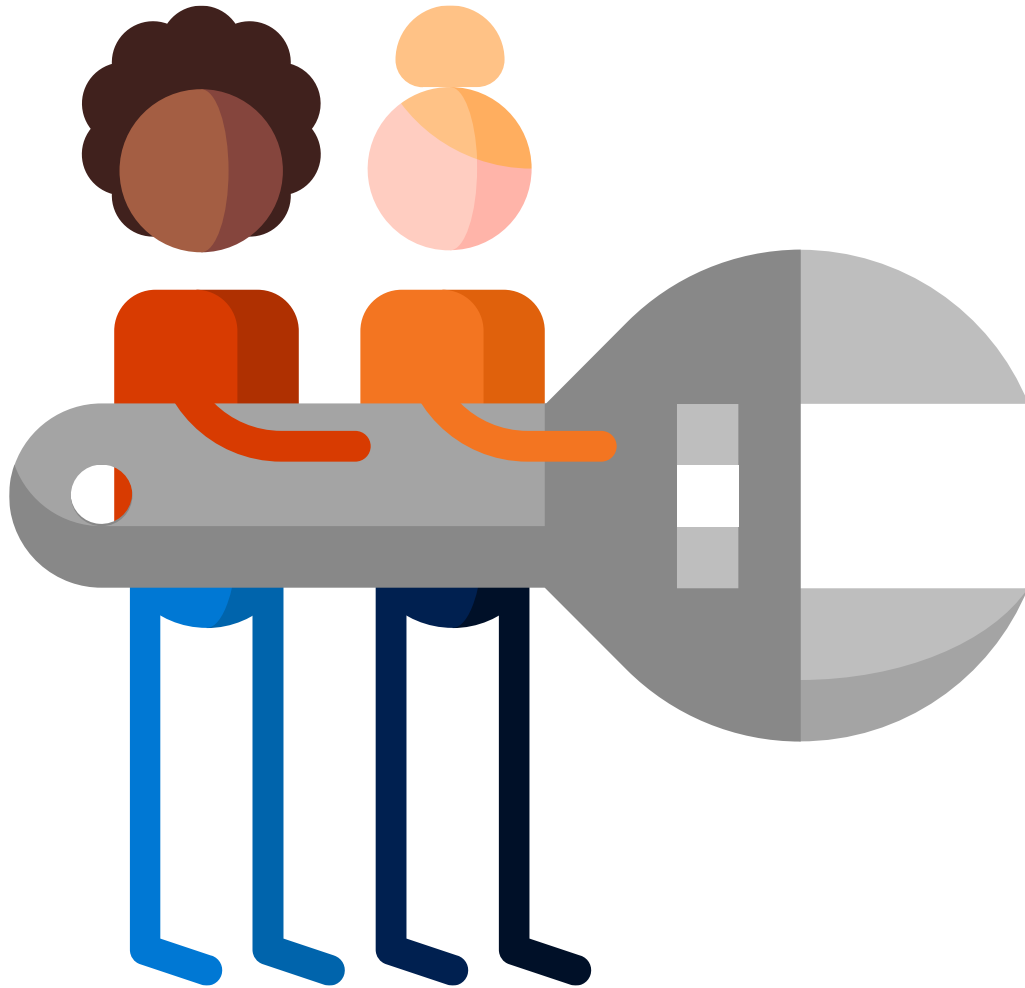


Networking



Datacenter Infrastructure (42 Regions Announced, 36 Online)

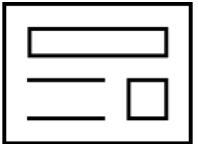




Which option
do you pick?

It Depends TM

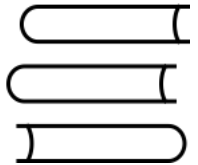
How much data do you have?



Structured Data

101010
010101
101010

Unstructured Data



Semi-structured Data

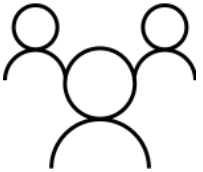
How much data do you have?



Volume



Velocity

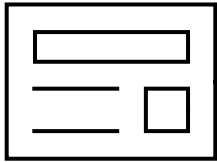


Variety

Data from Tailwind Traders

Product Catalog

Structured Data



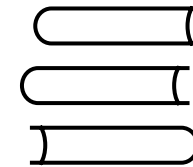
Product Photos

Unstructured

101010
010101
101010

Sales Data

Semi-Structured



Storing Files in Azure Blob Storage

Azure Storage Services

IaaS



Storage



Virtual
machines



Networking

PaaS



Existing
frameworks



Web
and mobile



Microservices



Serverless
Compute

Disks

Persistent disks for
Azure IaaS VMs

Standard Storage Disks:
Magnetic disk based, low
IOPS, moderate latency

Premium Storage Disks:
SSD based, high IOPS,
low latency

Managed Disks

Files

Fully Managed File
Shares in the Cloud

SMB and REST access

“Lift and shift” legacy
apps

Blobs

Highly scalable, REST
based cloud object
store

Block Blobs: Sequential
I/O, Hot, Cool and
Archive Tiers

Page Blobs: Random-
write pattern data

Append Blobs

Tables

Massive auto-scaling
NoSQL store

Dynamic scaling based
on load

Scale to PBs of table data

Fast key/value lookups

Queues

Reliable queues at
scale for cloud
services

Decouple and scale
components
Message visibility
timeout and update
message to protect
against unreliable
dequeueers

Built on a Unified Distributed Storage System

Durability, Encryption at Rest, Strongly Consistent Replication, Fault Tolerance, Auto Load-Balancing



Global



60+ Azure regions

Largest geographical footprint of any cloud provider with more than **60+** Azure regions



Secure



Microsoft Cyber Defense Operations Center

>3,500 full-time security professionals

6.5 trillion global signals daily

\$1 billion annual cybersecurity investment



Compliant

93 Compliance offerings

GLOBAL

- ISO 27001:2013
- ISO 27017:2015
- ISO 27018:2014
- ISO 22301:2012
- ISO/IEC 27701:2019
- ISO 9001:2015
- ISO 20000-1:2011
- SOC 1 Type 2
- SOC 2 Type 2
- SOC 3
- CIS Benchmark
- CSA STAR Certification
- CSA STAR Attestation
- CSA STAR Self-Assessment
- WCAG 2.0 (ISO 40500:2012)

U.S. GOVT

- FedRAMP High
- FedRAMP Moderate
- EAR
- ITAR
- DoD DISA SRG Level 5
- DoD DISA SRG Level 4
- DoD DISA SRG Level 2
- DFARS
- DoE 10 CFR Part 810
- NIST SP 800-171
- NIST CSF
- Section 508 VPATs
- FIPS 140-2
- CJIS
- IRS 1075
- CNSSI 1253

INDUSTRY

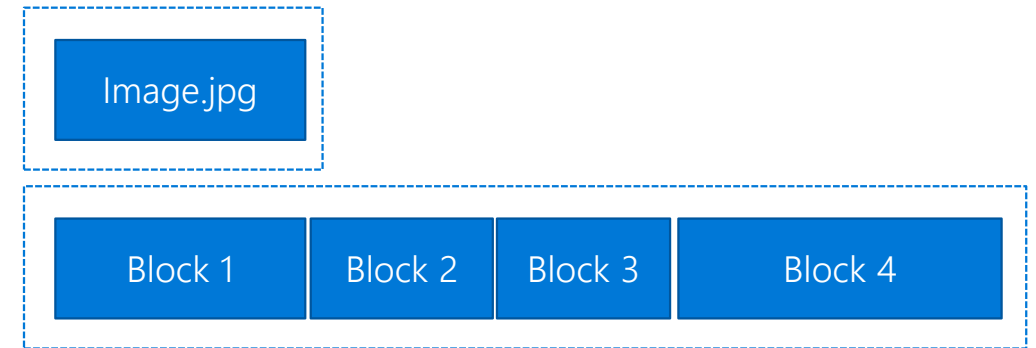
- PCI DSS Level 1
- GLBA (US)
- FFIEC (US)
- Shared Assessments (US)
- SEC 17a-4 (US)
- CFTC 1.31 (US)
- FINRA 4511 (US)
- SOX (US)
- 23 NYCRR 500 (US)
- OSFI (Canada)
- FCA + PRA (UK)
- APRA (Australia)
- FINMA (Switzerland)
- FSA (Denmark)
- RBI + IRDAI (India)
- MAS + ABS (Singapore)
- NBB + FSMA (Belgium)
- AFM + DNB (Netherlands)
- AMF + ACPR (France)
- KNF (Poland)
- European Banking Authority (EBA)
- FISC (Japan)
- HIPAA BAA (US)
- HITRUST Certification
- GxP (FDA 21 CFR Part 11)
- MARS-E (US)
- NHS IG Toolkit (UK)
- NEN 7510:2011 (Netherlands)
- FERPA (US)
- CDSA
- MPAA (US)
- FACT (UK)
- DPP (UK)
- GSMA

REGIONAL

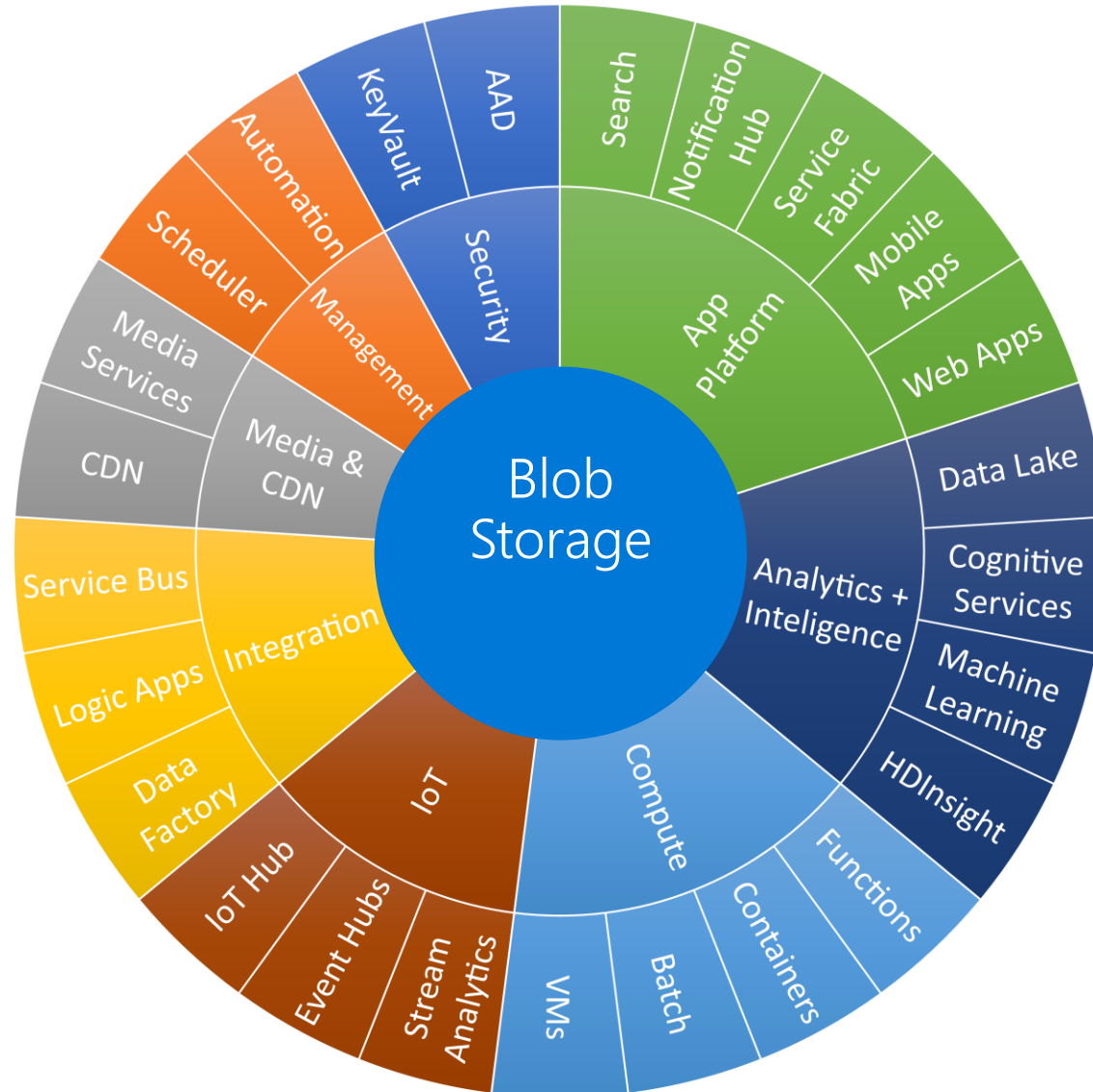
- Argentina PDPA
- Australia IRAP Unclassified
- Australia IRAP PROTECTED
- Canada Privacy Laws
- China GB 18030:2005
- China DJCP (MLPS) Level 3
- China TRUCS / CCCPPF
- EU EN 301 549
- EU ENISA IAF
- EU Model Clauses
- EU – US Privacy Shield
- GDPR
- Germany CS
- Germany IT-Grundschutz workbook
- India MeitY
- Japan CS Mark Gold
- Japan My Number Act
- Netherlands BIR 2012
- New Zealand Gov CIO Framework
- Singapore MTCS Level 3
- Spain ENS High
- Spain DPA
- UK Cyber Essentials Plus
- UK G-Cloud
- UK PASF

What is the Blob Storage Service?

- Azure's Object Storage platform
 - Store and serve unstructured data
 - App and Web scale data
 - Backups and Archive
 - Big Data from IoT, Genomics, etc.



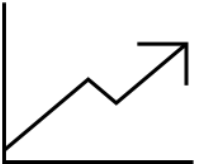
Azure Ecosystem and Blob Storage



Broad integration for Blobs
across Azure services

Enables many scenarios

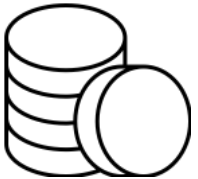
Blob Storage is Ideal for Cloud workloads



Limitless Scale



Globally Accessible

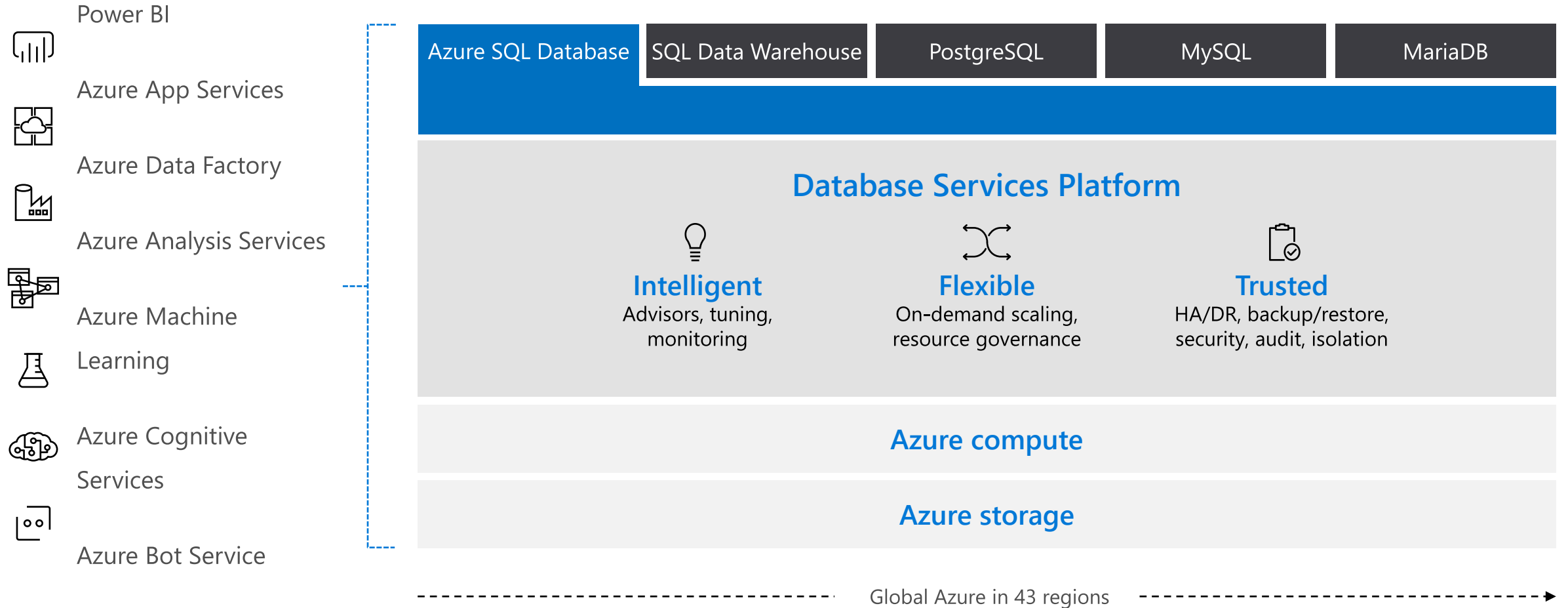


Cost Efficient

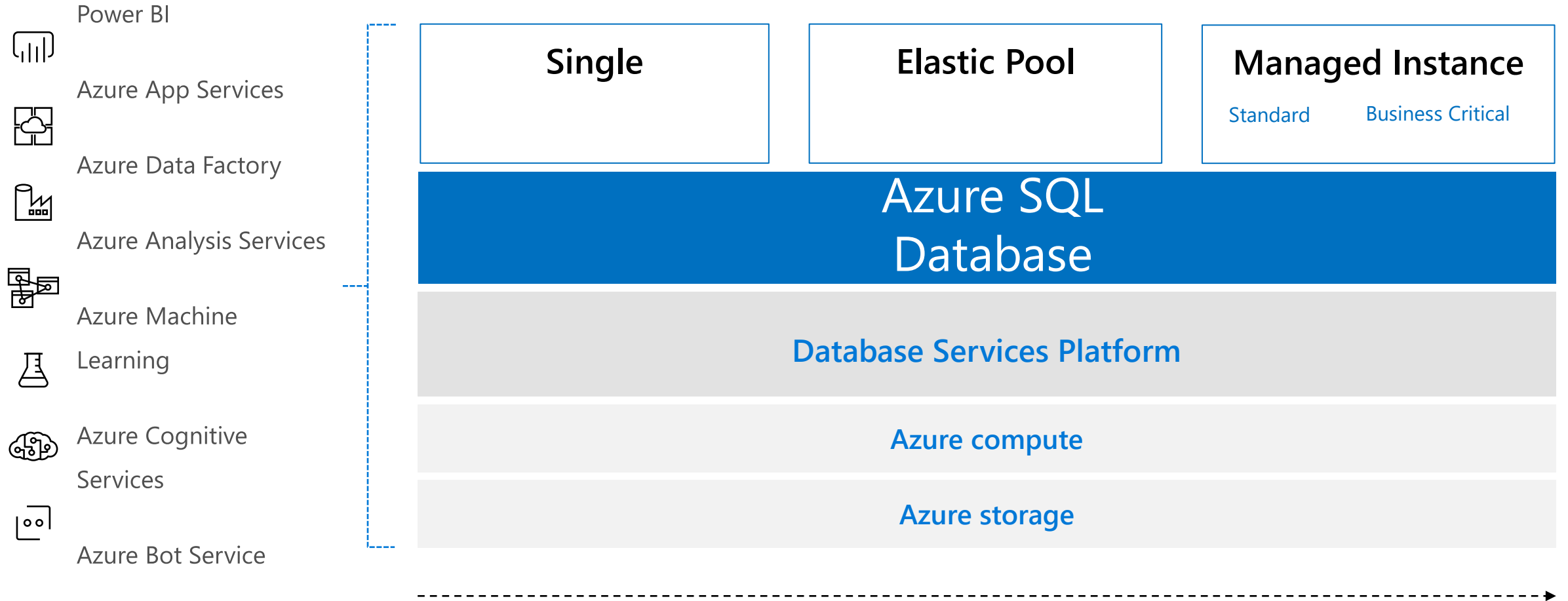
Demo: Blob Storage

Relational Databases in Azure

Azure relational database platform



Azure relational database platform



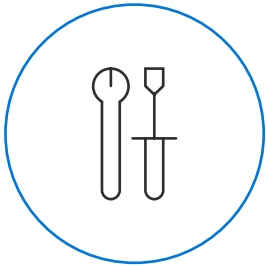
Azure SQL Database compatibility



Familiarity



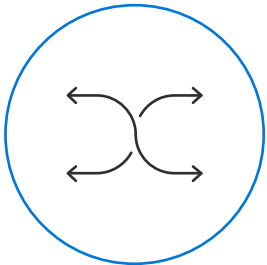
No new syntax or changes in queries



Tools



Choice of management tools:
APIs, Azure Management Portal with HTML5 support, or SQL Server Management Studio



Flexibility

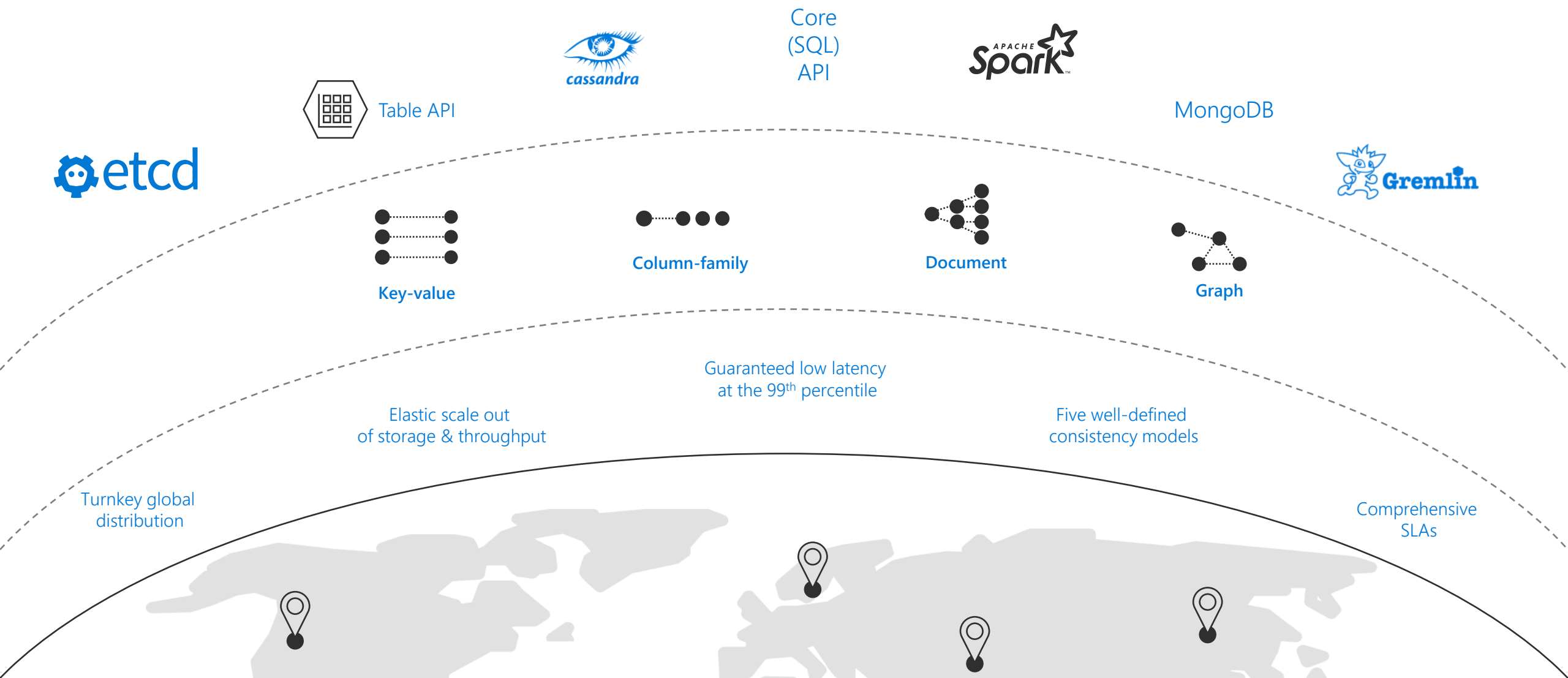


Support seamless development online, offline, and across on-premises and cloud-designed apps with Visual Studio. Extend existing applications to the cloud with DAC framework support

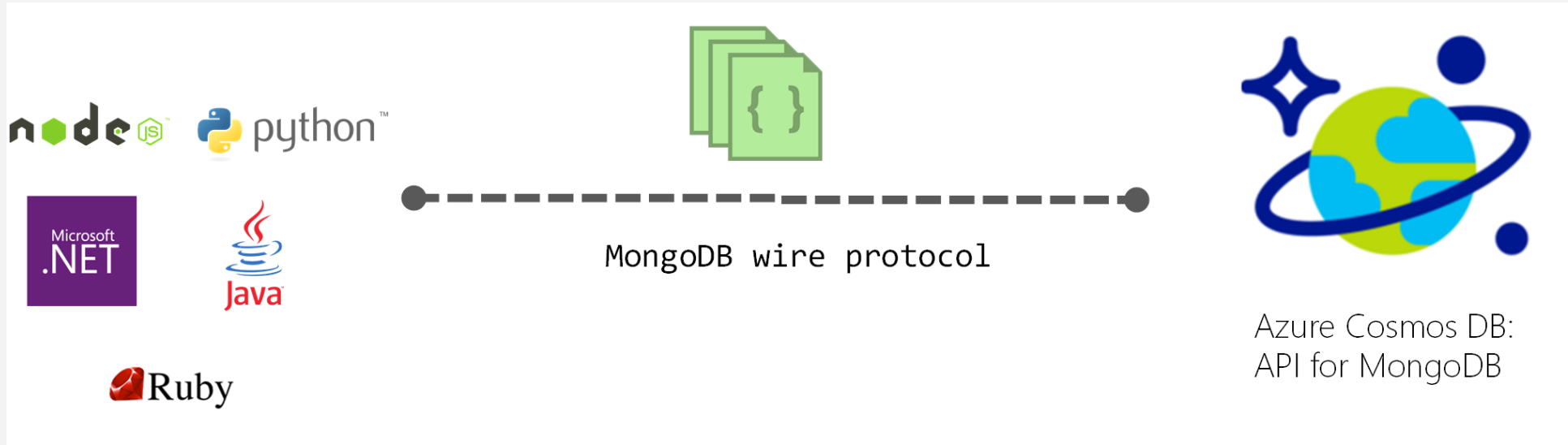
Migrating from Mongo DB to Cosmos DB

Azure Cosmos DB

A globally-distributed, massively-scalable, multi-model database service



Wire protocol compatibility



New Cosmos RU Calculator



- Calculator: <https://cosmos.azure.com/capacitycalculator/>
- Takes into account more settings that affect RU & cost

Microsoft Azure

Cosmos > Capacity Calculator

The calculator below offers you a quick estimate of the workload cost on [Cosmos DB](#). For a more precise estimate and ability to tweak more parameters, please [sign in](#) with an account you use for Azure.

Cosmos Account Settings

The simplified Azure Cosmos calculator assumes commonly used settings for indexing policy, consistency, and other parameters. For a more accurate estimate, please [sign in](#) to provide your workload details.

Number of regions

1

Multi-region writes

☒ Disabled ☐ Enabled

Workload per region

For a more accurate cost estimate based on your own data, please [sign in](#) and upload your data items.

Total data stored

10

GB

Item size

1 KB

Reads/sec per region

100

Writes/sec per region

100

Calculate

Cost Estimate

Storage

Cost per GB/month

0.250 USD

Total Data stored per region

x 10

GB

EST. STORAGE COST PER MONTH

2.50 USD

Workload

Cost per 100 RU/s per hour

0.008 USD

EST. THROUGHPUT REQUIRED [Show Details](#)

x 595 RU/s

EST. WORKLOAD COST/MONTH

34.75 USD

Number of regions

x 1

EST. TOTAL COST/MONTH

37.25 USD

Sign in to save estimate

SAVE UP TO 65% WITH RESERVED CAPACITY

[See here for more details](#)













YOU WILL SAVE UP TO 70% TCO WITH COSMOS

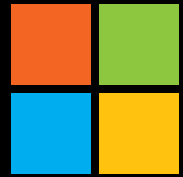
[Learn more about Cosmos TCO](#)

/Docs alert

Explore overviews,
tutorials, samples, and
more.

<https://aka.ms/apps20ignite>

Get Started	Products	SDKs/Tools	Architecture
All	 Azure SQL Database Managed relational SQL Database as a service	 Azure Cosmos DB Globally distributed, multi-model database for any scale	 SQL Data Warehouse Elastic data warehouse as a service with enterprise-class features
AI + Machine Learning			
Analytics			
Blockchain			
Compute			
Containers			
Databases	 Data Factory Orchestrate and manage data transformation and movement	 Azure Data Explorer Fast and highly scalable data exploration service for log and telemetry data	 Azure Cache for Redis Power applications with high-throughput, low-latency data access
Developer Tools			
DevOps			
Identity			
Integration	 SQL Server Stretch Database Dynamically stretch on-premises SQL Server databases to Azure	 SQL Server on Virtual Machines Host enterprise SQL Server apps in the cloud	 Table Storage NoSQL key-value store using semi-structured datasets
Internet of Things			
Management and Governance			
Media			
Microsoft Azure Stack	 Azure Database for PostgreSQL Managed PostgreSQL database service for app developers	 Azure Database for MySQL Managed MySQL database service for app developers	 Azure Database for MariaDB Managed MariaDB database service for app developers
Migration			
Mixed Reality			



Microsoft Azure

Invent with purpose.