

# True Partnerships. Remarkable Outcomes.

Transforming the UK Public Sector





# Agenda

- Infrastructure & Security in the cloud
- Use cases & Data Management (e.g. Website Hosting, Back Up, Data Safe Haven)
- Hybrid Cloud options (e.g. Disaster Recovery, Business Continuity, resilience)
- Pricing and Cost Control models
- Questions







# Serving the UK Public Sector for over 30 years

Being 100% focused on the UK Public Sector, our mission is to deliver the outcomes that matter to their staff, citizens, patients, tenants and students.

Our customers are drawn from some of the UK's largest organisations including the NHS, emergency services, housing associations, universities and a number of large local authorities, as well as many smaller organisations such as schools and charities. We work across:



Schools & Academies



Colleges



Universities



Charities and non-profits



Housing Associations



Healthcare and NHS



Emergency Services



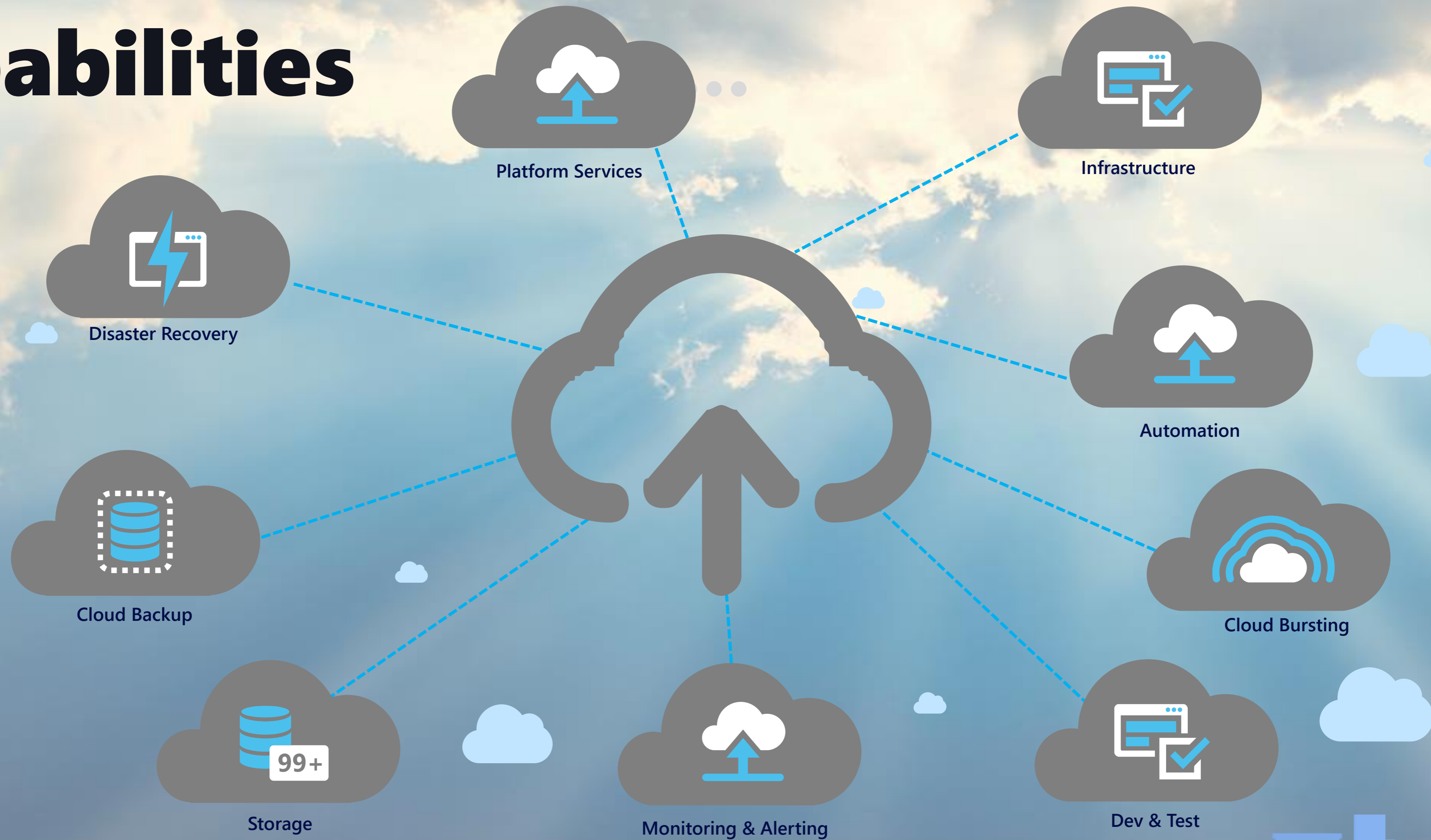
Local and Regional Government



Central Government



# Capabilities





# Microsoft's Commitment to Data Privacy & Security

1. Microsoft does not provide any government with direct, unfettered access to customers' data
2. Microsoft does not provide any government with encryption keys or assist their efforts to break our encryption
3. Microsoft does not engineer back doors into our products
4. Microsoft has never provided business or government data in response to a national security order
5. Microsoft will contest any attempt by the US government to disclose customer content stored exclusively overseas





# // TRUSTED CLOUD PRINCIPLES

A set of foundational beliefs that guide the way Microsoft does business in the cloud

Security



The confidentiality, integrity, and availability of your data is protected.

Privacy & Control



No one is able to use your data in a way that you do not approve.

Transparency



You have visibility into how your data is being handled and used.

Compliance



Your content is stored and managed in compliance with applicable laws, regulations and standards.



# Azure compliance

Azure has the deepest and most comprehensive [compliance coverage](#) in the industry

Global	 ISO 27001  ISO 27018  ISO 27017  ISO 22301  SOC 1 Type 2  SOC 2 Type 2  SOC 3  CSA STAR Self-Assessment  CSA STAR Certification
US Gov	 Moderate JAB P-ATO  High JAB P-ATO  DoD DISA SRG Level 2  DoD DISA SRG Level 4  SP 800-171  FIPS 140-2  Section 508 VPAT  ITAR  CJIS  IRS 1075
Industry	 PCI DSS Level 1  CDSA  MPAA  FACT UK  Shared Assessments  FISC Japan  HIPAA / HITECH Act  GxP 21 CFR Part 11  MARS-E  FERPA  GLBA  FFIEC
Regional	 Argentina PDPA  EU Model Clauses  UK G-Cloud  China MLPS  China GB 18030  China TRUCS  Singapore MTCS  Australia IRAP/CCSL  New Zealand GCIO  Japan My Number Act  ENISA IAF  Japan CS Mark Gold  Spain ENS  Spain DPA  India MeitY  Canada Privacy Laws  Privacy Shield  Germany IT Grundschutz workbook

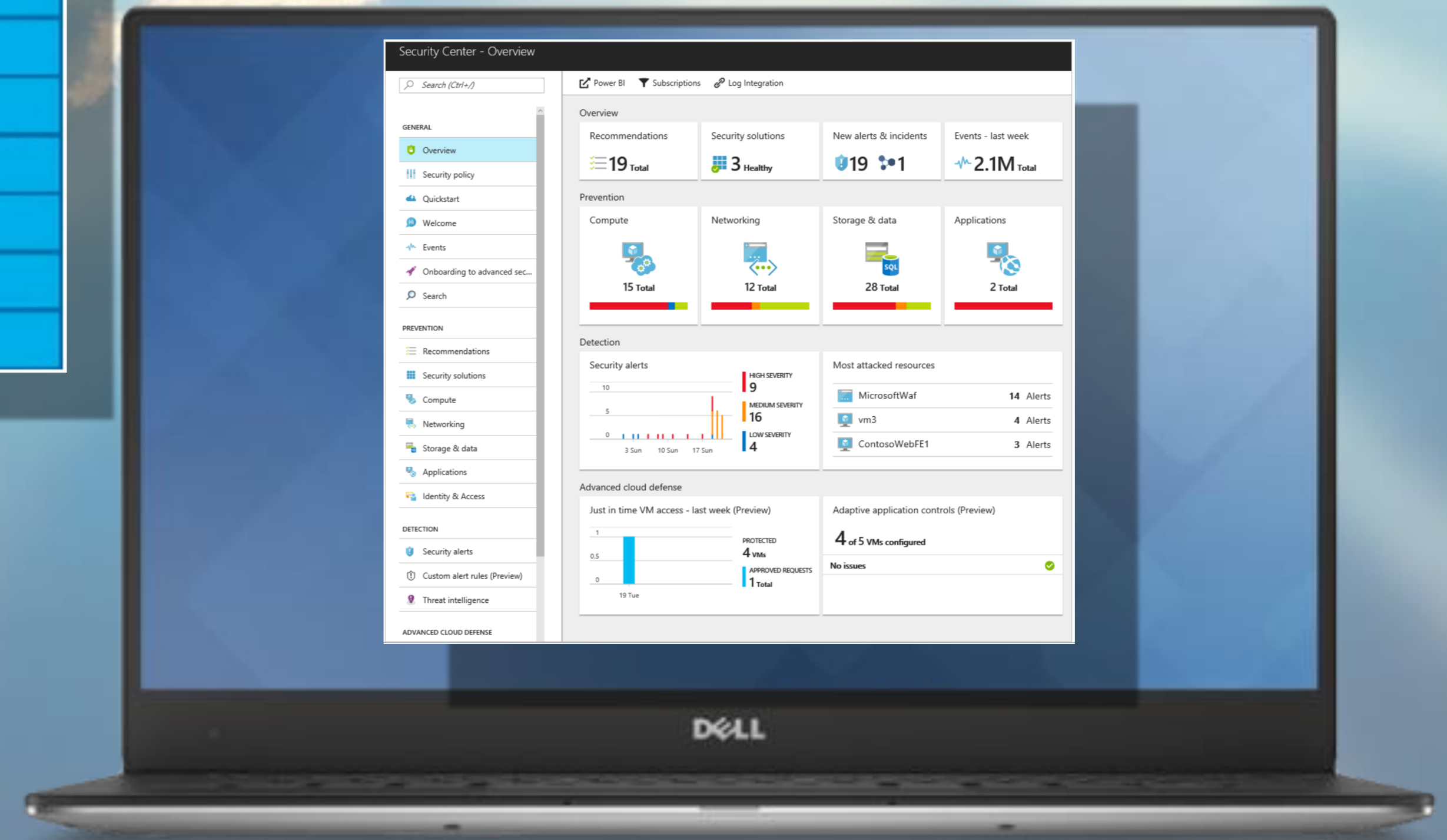


# Security responsibilities

On-Premises	IaaS	PaaS	SaaS
	Applications		
	Data		
	Runtime		
	Middleware		
	O/S		
	Virtualization		
	Servers		
	Storage		
	Networking		

\*Green indicates areas of customer responsibility

\*Blue areas are the responsibility of Microsoft





## Security & Management

- Security Center
- Portal
- Azure Active Directory
- Azure AD B2C
- Multi-Factor Authentication
- Automation
- Scheduler
- Key Vault
- Store/Marketplace
- VM Image Gallery & VM Depot

## Media & CDN

- Media Services
- Media Analytics
- Content Delivery Network

## Integration

- API Management
- BizTalk Services
- Logic Apps
- Service Bus

## Compute Services

- Container Service
- VM Scale Sets
- Batch
- RemoteApp
- Dev/Test Lab

## Application Platform

- Web Apps
- Mobile Apps
- API Apps
- Cloud Services
- Service Fabric
- Notification Hubs
- Functions

## Developer Services

- Visual Studio
- Mobile Engagement
- VS Team Services
- Xamarin
- Application Insights
- HockeyApp

## Data

- SQL Database
- SQL Data Warehouse
- DocumentDB
- SQL Server Stretch Database
- Redis Cache
- Storage Tables
- Azure Search

## Intelligence

- Cognitive Services
- Bot Framework
- Cortana

## Analytics & IoT

- HDInsight
- Machine Learning
- Stream Analytics
- Data Catalog
- Data Lake Analytics Service
- Data Lake Store
- IoT Hub
- Event Hubs
- Data Factory
- Power BI Embedded

## Hybrid Cloud

- Azure AD Health Monitoring
- AD Privileged Identity Management
- Domain Services
- Backup
- Operational Analytics
- Import/Export
- Azure Site Recovery
- StorSimple

## Infrastructure Services

### Compute

- Virtual Machines
- Containers

### Storage

- Blob
- Queues
- Files
- Disks

### Networking

- Virtual Network
- Load Balancer
- DNS
- Express Route
- Traffic Manager
- VPN Gateway
- App Gateway

## Datacenter Infrastructure



# Benefits of cloud computing



**TIME**



**CONFIDENCE**



**PERFORMANCE**













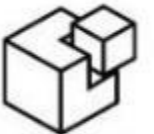











































- **Flexible Hyperscale Platform**
- **Cost Saving Techniques**
- **Reliable & Sustainable**
- **Free Up Internal Resources**
- **24 x 7 Support**
- **Refocus Efforts**
- **Disaster Recovery**





# Azure is an Open Cloud

## 3<sup>rd</sup> Parties are welcome

DevOps										
Management										
Applications										
App frameworks & tools										
Databases & middleware										
Infrastructure										



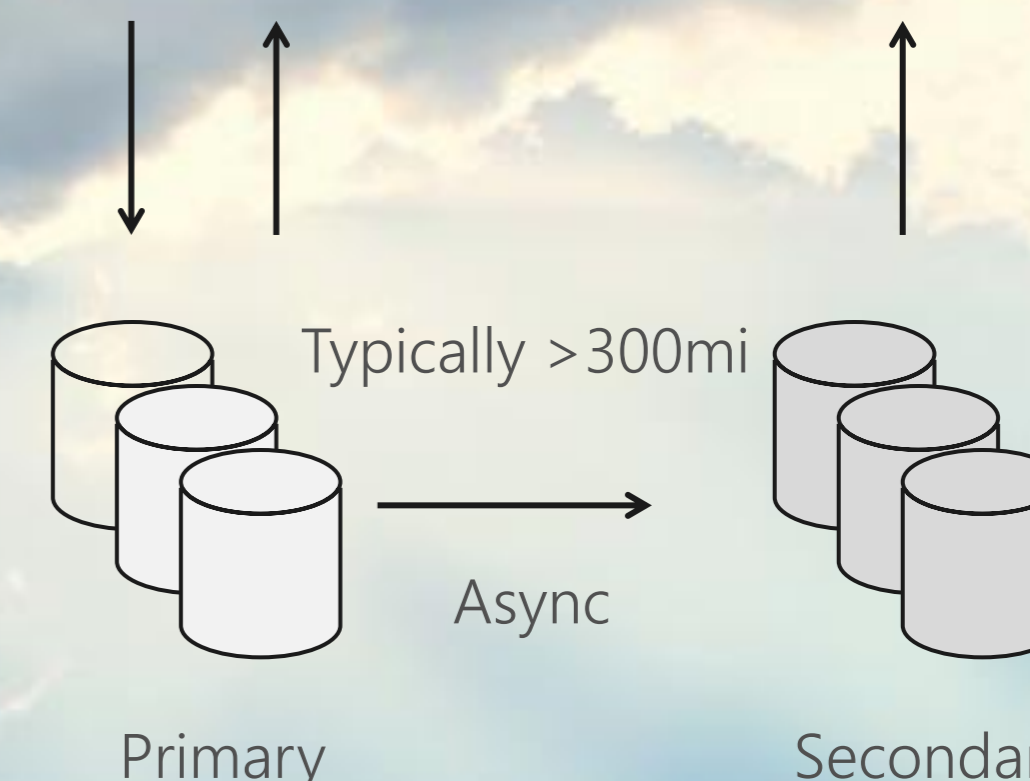
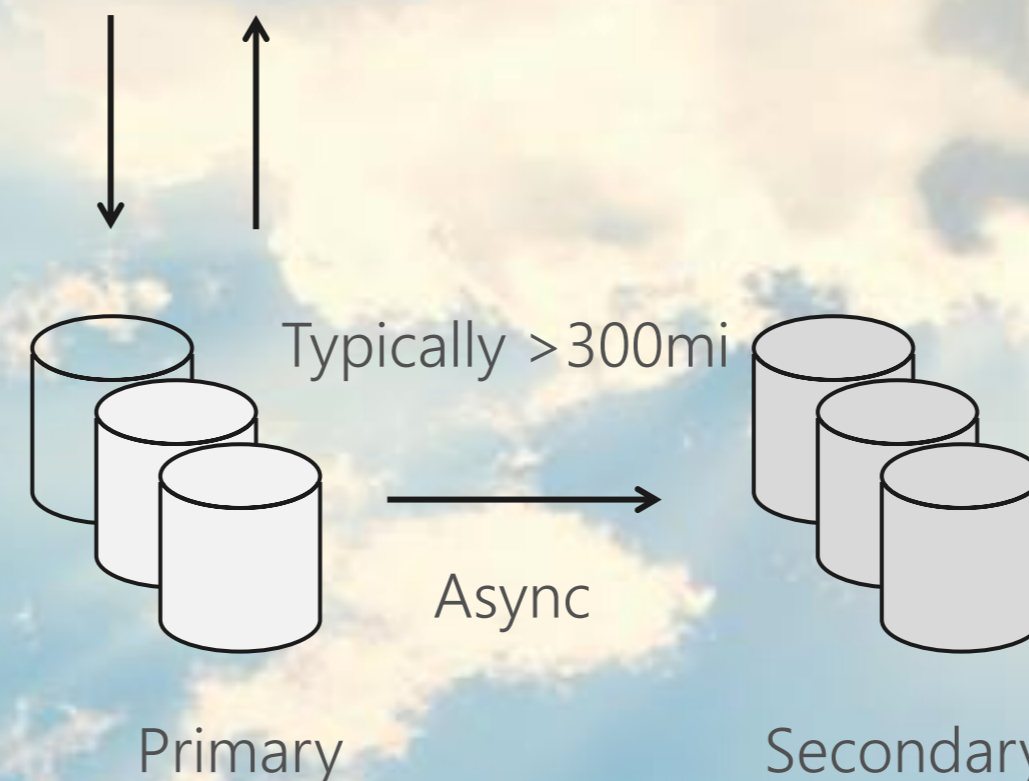
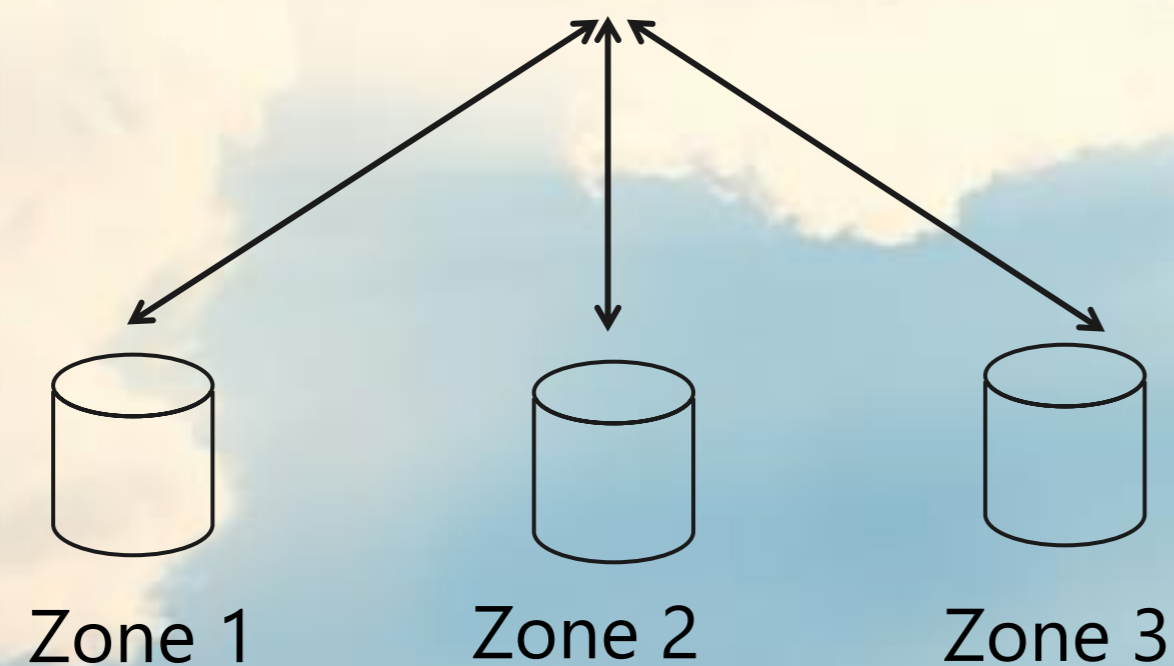
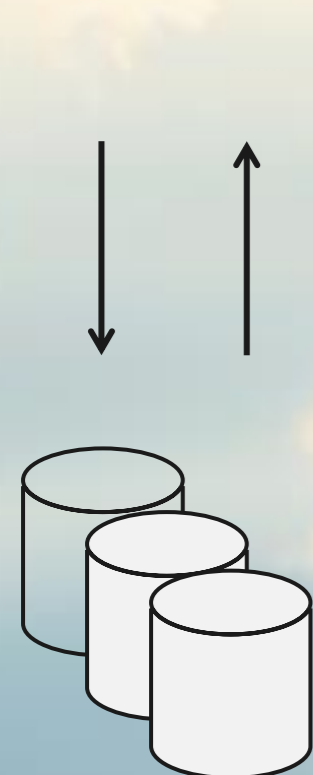
>4000

Certified, pre-configured for Microsoft Azure Solutions in Azure Marketplace

The screenshot displays the Azure Marketplace interface, specifically the 'Compute' section. The left sidebar shows navigation categories: Everything, Compute (selected), Web + Mobile, Data + Storage, Data + Analytics, Internet of Things, Networking, Media + CDN, Hybrid Integration, Security + Identity, Developer Services, Management, and Container Apps. The main content area is titled 'Compute' and includes a search bar labeled 'Search Compute'. Below the search bar, solutions are organized into four sections: 'Recommended', 'What's new', 'Solution Templates', and 'Azure Certified'. Each section contains a grid of solution cards, each with a logo, name, and provider. 'Recommended' includes Service Fabric Cluster (Microsoft), Windows Server (Microsoft), MapR Distribution Including Hadoop (MapR Technologies...), Hortonworks Data Platform (Hortonworks), Red Hat Enterprise Linux (RedHat), and Ubuntu Server (Canonical). 'What's new' includes Steelhive Carbon 10 Concurrent (Steelhive), Yellowfin for Azure (BYOL) (Yellowfin), Chef Server 12, BYOL (Chef Software, Inc), CloudBoost Enterprise (CloudBoost), Logentries (Logentries), and Service Fabric Cluster (Microsoft). 'Solution Templates' includes SharePoint 2013 non-HA Farm (Microsoft), Cisco CSR 1000v Deployment (Cisco Systems, Inc), DataStax Enterprise Cluster (DataStax, Inc), Elasticsearch and Kibana (Elastic), FortiGate NGFW Single VM (Fortinet), and Intel Cloud Edition for Lustre\* (Intel). 'Azure Certified' includes Dynamics AX 2012 R3 (Microsoft), Wowza Streaming Engine 4.1: Linux (Wowza Media Syste...), SIOS DataKeeper Cluster Edition (SIOS Technology C...), IBM® MQ V8.0.0.1 (Microsoft), Check Point Virtual Gateway (Check Point), and Veeam Cloud Connect for (Veeam).



# Azure Storage Replication Options



## LRS

3 replicas, 1 region  
Protect against disk, node, rack failures  
Write is ack'd when all replicas are committed  
Superior to dual-parity RAID  
11 9s of durability

## ZRS

3 replicas **across 3 Zones**  
Protect against disk, node, rack and **zone** failures  
**Synchronous writes** to all 3 zones  
12 9s of durability  
Available in 8 regions

## GRS

6 replicas, 2 regions (3/region)  
Protects against major regional disasters  
Asynchronous to secondary  
16 9s of durability

## RA-GRS

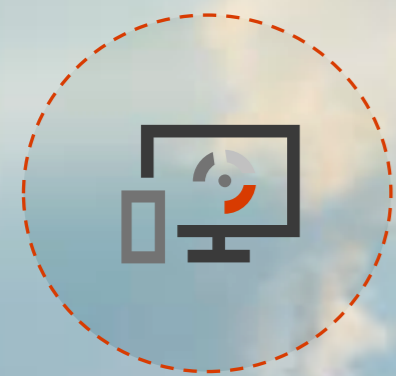
GRS + Read access to secondary  
Separate secondary endpoint  
RPO delay to secondary can be queried



# Computing options for every workload

## VIRTUAL MACHINES

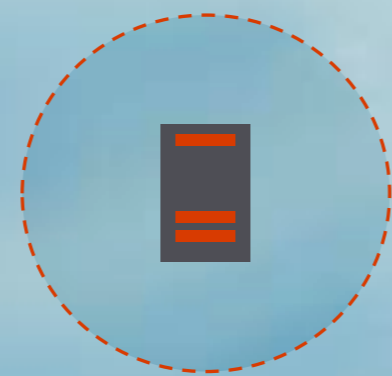
## PURPOSE-BUILT



Entry level



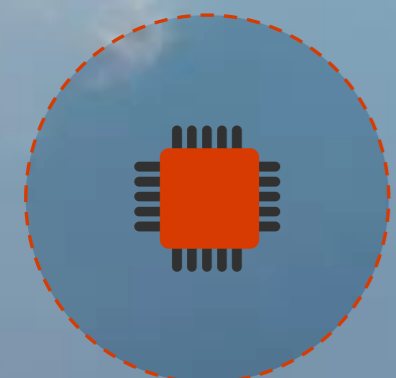
Burstable



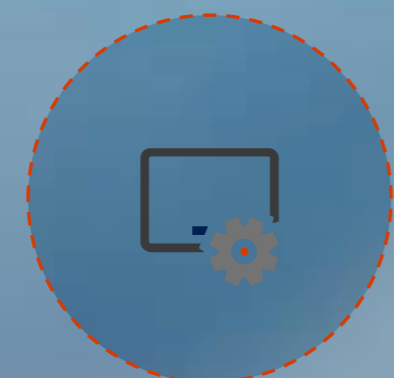
General Purpose



Compute intensive



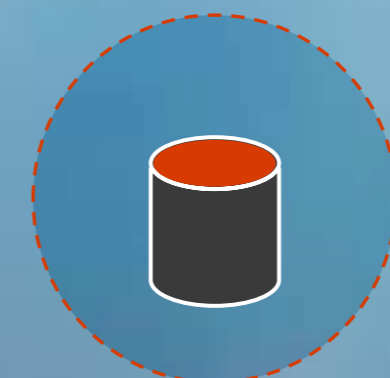
Memory optimized



GPU accelerated



High Performance Computing



Storage optimized





# Resiliency in Azure



Azure offers a comprehensive set of native business continuity solutions, providing high availability, disaster recovery, and backup to protect your mission critical applications and data.

## What is resiliency?

### High availability

Maintaining acceptable continuous performance despite temporary failures in services, hardware, datacenters, or fluctuations in load.

### Disaster recovery

Protection against loss of an entire region through asynchronous replication for failover of virtual machines and data using services such as Azure Site Recovery and geo-redundant storage (GRS).

### Backup

Replication of virtual machines and data to one or more regions using Azure Backup.

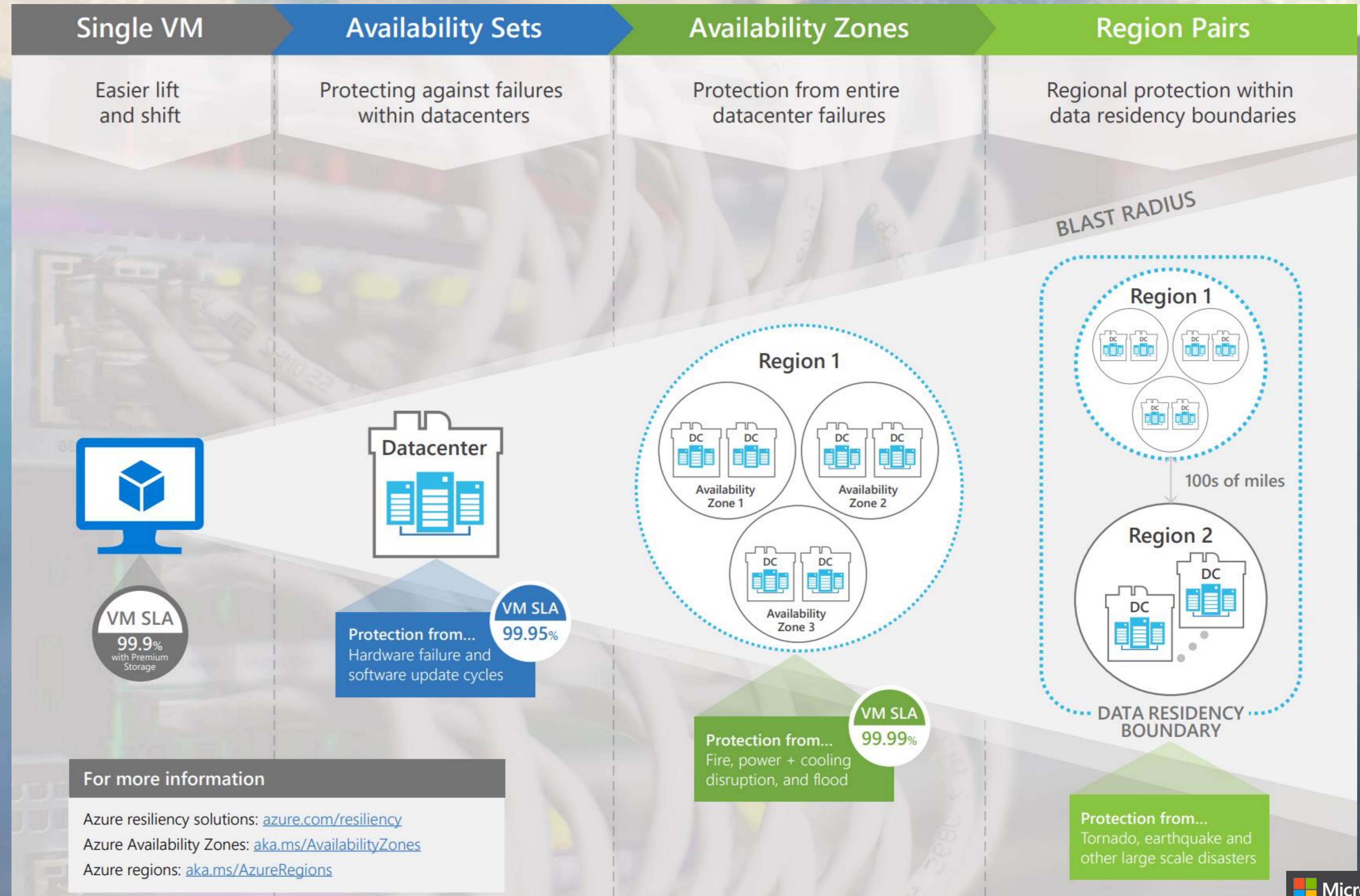
## Definitions

### Blast radius

The radius of protection for applications and data. For example, Availability Sets protect applications within a datacenter, and Availability Zones protect applications and data in an Azure region.

### Data residency boundary

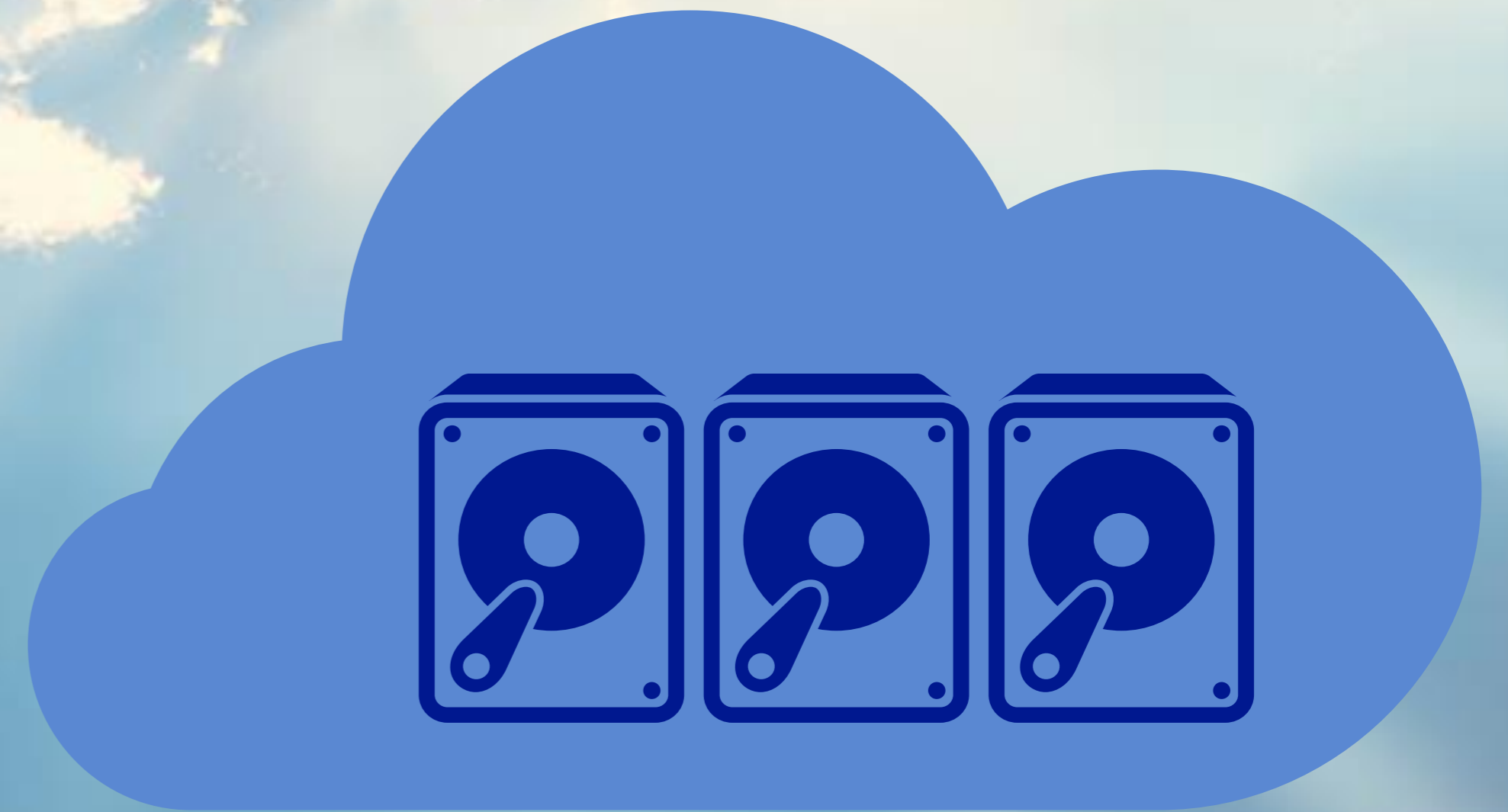
Two regions that share the same regulatory requirements for data replication and storage for the country or region in which they operate.





# Regions paired for geo-redundancy

Designed for high data availability, resiliency against regional disasters  
Geo-replicated data still within national boundaries for 8 countries



> 300 miles

UK  
West

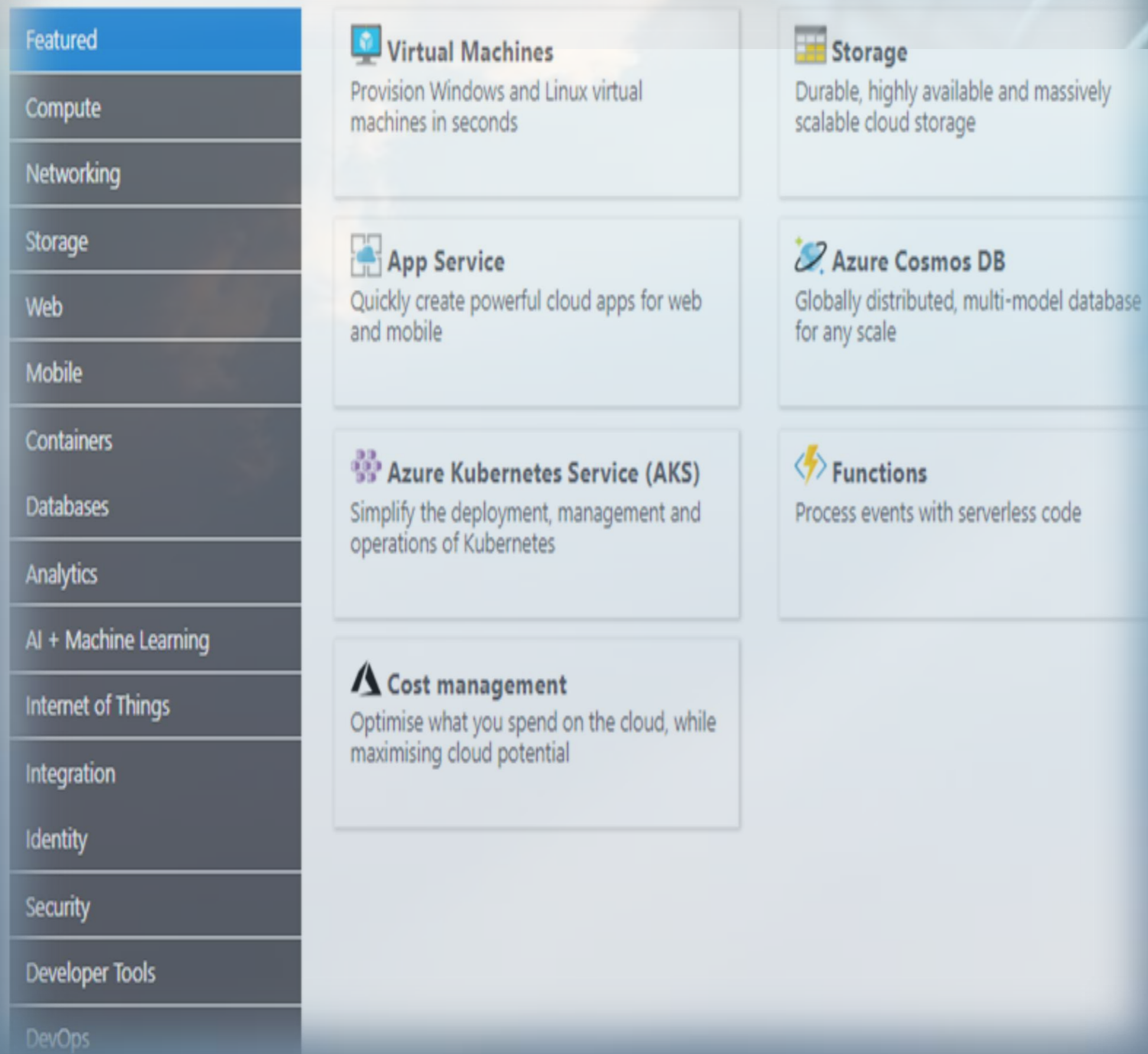


UK  
South

Geo replication



# Azure pricing calculator



The screenshot shows the Azure pricing calculator interface. On the left is a vertical navigation menu with categories: Featured, Compute, Networking, Storage, Web, Mobile, Containers, Databases, Analytics, AI + Machine Learning, Internet of Things, Integration, Identity, Security, Developer Tools, and DevOps. The main content area displays several service cards:

- Virtual Machines**: Provision Windows and Linux virtual machines in seconds
- Storage**: Durable, highly available and massively scalable cloud storage
- App Service**: Quickly create powerful cloud apps for web and mobile
- Azure Cosmos DB**: Globally distributed, multi-model database for any scale
- Azure Kubernetes Service (AKS)**: Simplify the deployment, management and operations of Kubernetes
- Functions**: Process events with serverless code
- Cost management**: Optimise what you spend on the cloud, while maximising cloud potential

- Understand cost options (including discounts)
- Generate cost model for entire Azure estate (TCO)
- Plan for future deployments
- Recognise component costs before deploying resources
- Determine region limitations in advance



# Cost Management & Billing

Microsoft Azure

Search resources, services, and docs

Home > Cost Management: Trey Research - Cost analysis

## Cost Management: Trey Research - Cost analysis

Management group

Search (Ctrl+)

Refresh Export

How satisfied are you with cost analysis? →

Scope: (A) Trey Res... Custom view Feb 2019 Granularity: Daily Group by: Provider Add filter

TOTAL \$184.7K BUDGET: NONE --

aws azure

Service name

amazon elastic com...	\$105.7K
virtual machines	\$37,082
expressroute	\$11,558
hdinsight	\$6,724
storage	\$4,706
azure app service	

Location

us-east-1	\$110.5K
br south	\$31,225
us west	\$13,752
us central	\$7,008
eu west	\$6,752
us west 2	

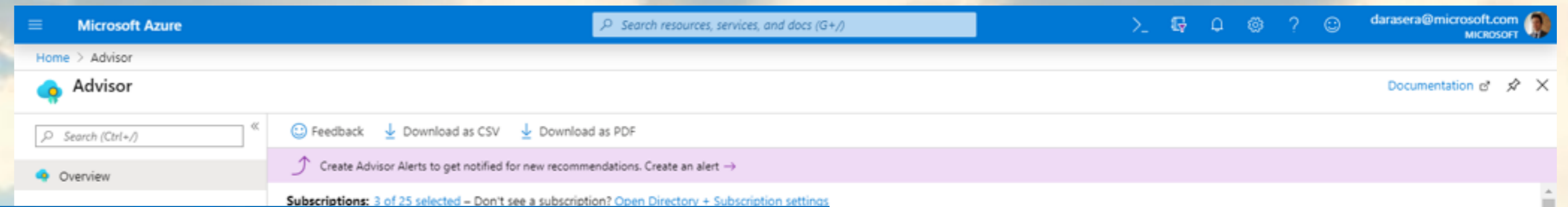
Subscription name

(00000000-0000-00)	\$111.4K
trey research finan	\$50,999
trey research delta	\$6,725
trey research ltded5	\$4,703
trey research alpha	\$3,440
trey research corpo	





# Azure Advisor



Microsoft Azure | Search resources, services, and docs

Home > Advisor recommendations > Shut down or resize your virtual machine

## Shut down or resize your virtual machine

Feedback | Download as CSV | Download as PDF | Configure recommendation r...

### Recommendation details

We've analyzed the usage patterns of your virtual machine over the past 14 days and identified virtual machines with low usage. While certain scenarios can result in low utilization by design, you can often save money by managing the size and number of virtual machines. [Learn more](#)

potential yearly savings\* **59,670.29 USD**

### Impacted resources

6 selected subscriptions | No grouping

Active (39) | Postponed & Dismissed (0)

Postpone | Dismiss

VIRTUAL MACHINE	RECOMMENDED ACTIONS	POTENTIAL SAVINGS*	SUBSCRIPTION	RECOMMENDATION RULE	UPDATED AT	ACTION
<input type="checkbox"/> SharonLoh	<a href="#">Resize the virtual machine</a> <a href="#">View Usage Patterns</a> <a href="#">Shut down the virtual machine</a>	2,249.86 USD	Azure Customer Success team	Average CPU < 5%	2/19/2019, 12:24:55 PM	<a href="#">Postpone</a>   <a href="#">Dismiss</a>
<input type="checkbox"/> testing	<a href="#">Resize the virtual machine</a> <a href="#">View Usage Patterns</a> <a href="#">Shut down the virtual machine</a>	1,044.58 USD	Azure CXP Community Internal Consumption	Average CPU < 15%	2/19/2019, 12:26:31 PM	<a href="#">Postpone</a>   <a href="#">Dismiss</a>
<input type="checkbox"/> testcrm	<a href="#">Resize the virtual machine</a> <a href="#">View Usage Patterns</a> <a href="#">Shut down the virtual machine</a>	1,678.46 USD	Azure CXP Community Internal Consumption	Average CPU < 15%	2/19/2019, 12:26:31 PM	<a href="#">Postpone</a>   <a href="#">Dismiss</a>
<input type="checkbox"/> bhannade-win-vm	<a href="#">Resize the virtual machine</a> <a href="#">View Usage Patterns</a> <a href="#">Shut down the virtual machine</a>	2,499.84 USD	Azure CXP Community Internal Consumption	Average CPU < 15%	2/19/2019, 12:26:31 PM	<a href="#">Postpone</a>   <a href="#">Dismiss</a>

Performance

3 Recommendations

1 High impact | 2 Medium impact | 0 Low impact

3 Impacted resources

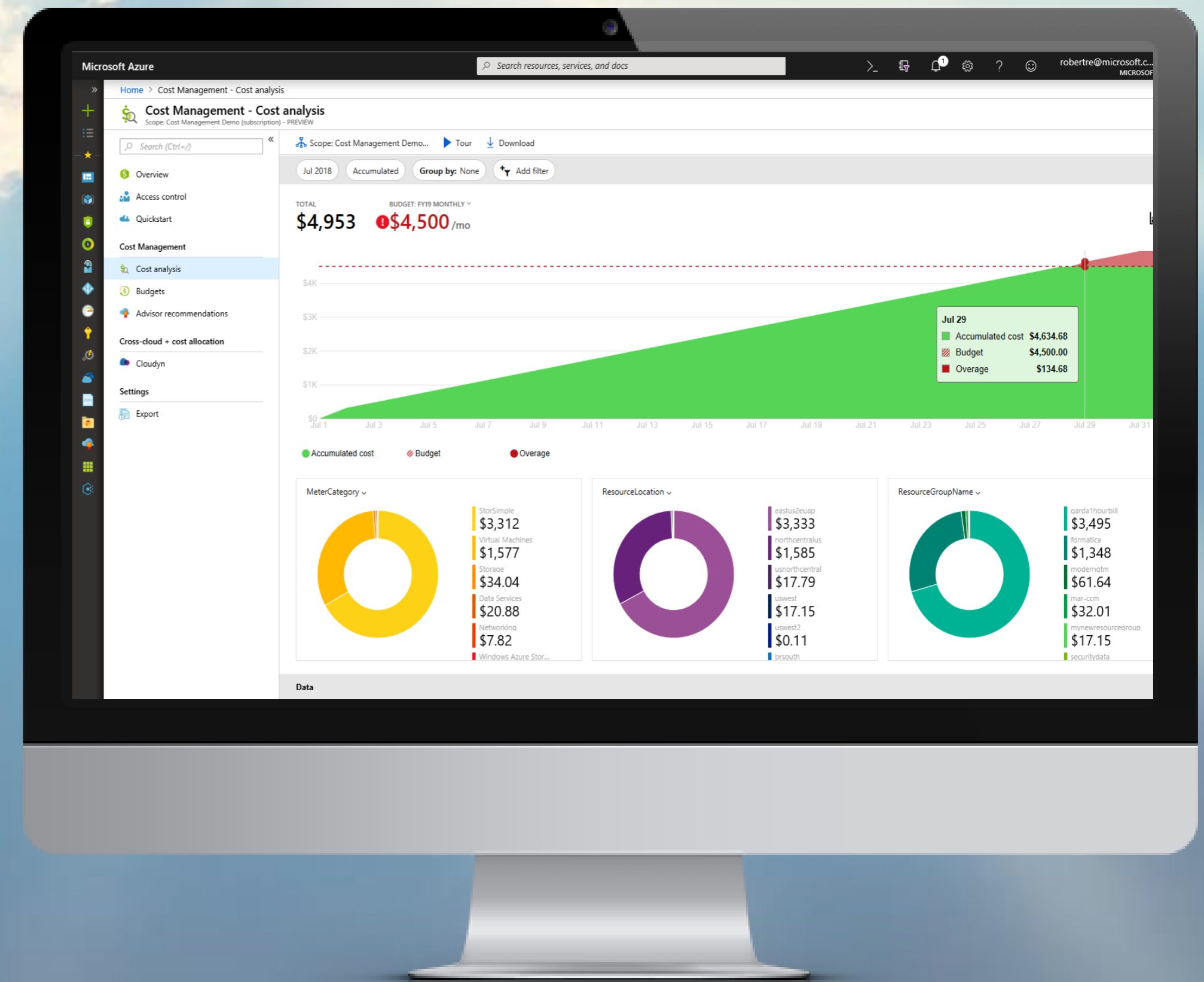
6 /yr\*

Is Advisor helpful?



# Cost optimisation methods

- ✓ Deallocation of virtual machines when not in use
- ✓ Consider autoscaling based on demand metrics
- ✓ Right-size virtual machine estate / storage
- ✓ Consolidate server roles
- ✓ Platform transformation
- ✓ Azure hybrid use benefit
- ✓ Azure reserved instances





# Phoenix - Microsoft Azure Capability

Help organisations understand what Azure is, use cases and assess existing infrastructure

## Strategy Planning Offerings

- Azure 101
- Data 101
- Ai 101
- Power Platform Workshop

## Assessment

- Surveyor 360
- Azure Fundamentals
- Azure Security Assessment
- Microsoft Solution Assessments
- Azure Essentials Managed Service

Managed Service, cost optimisation and Training - enable customers for successful and effective Azure usage

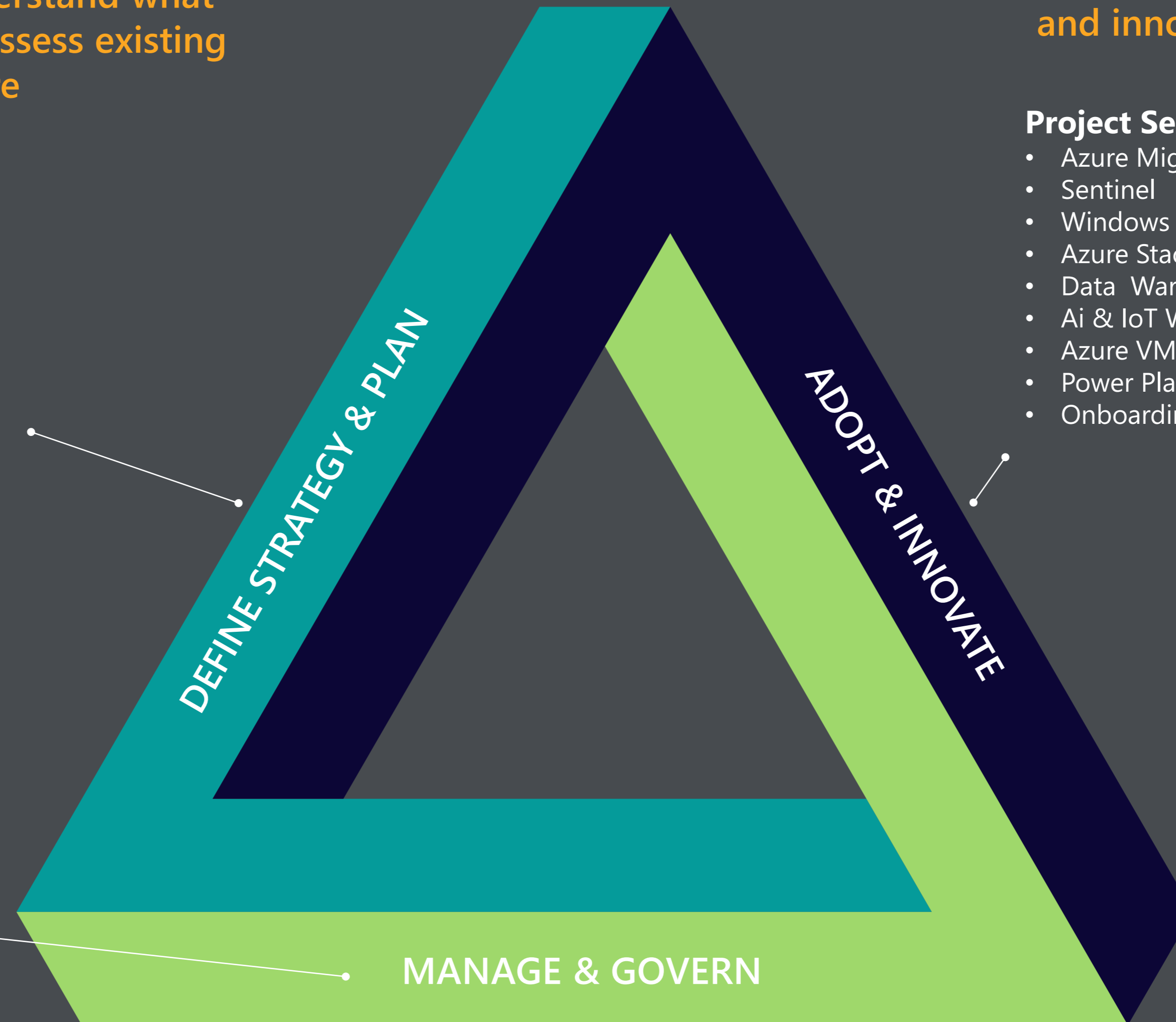
## Managed Services & Project Services

- Azure Essentials Managed Service
- Azure Cost Optimisation
- Health Check & Governance Assessment
- Azure Training & Adoption Support
- Data Managed Service

Migrate organisations to Azure after assessment, strategy defined and innovate with new workloads

## Project Services

- Azure Migration (AMP)
- Sentinel
- Windows Virtual Desktop (WVD)
- Azure Stack
- Data Warehousing in Azure
- Ai & IoT Workloads in Azure
- Azure VMWare Solution
- Power Platform Deployment
- Onboarding to Azure Essentials





# Questions

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