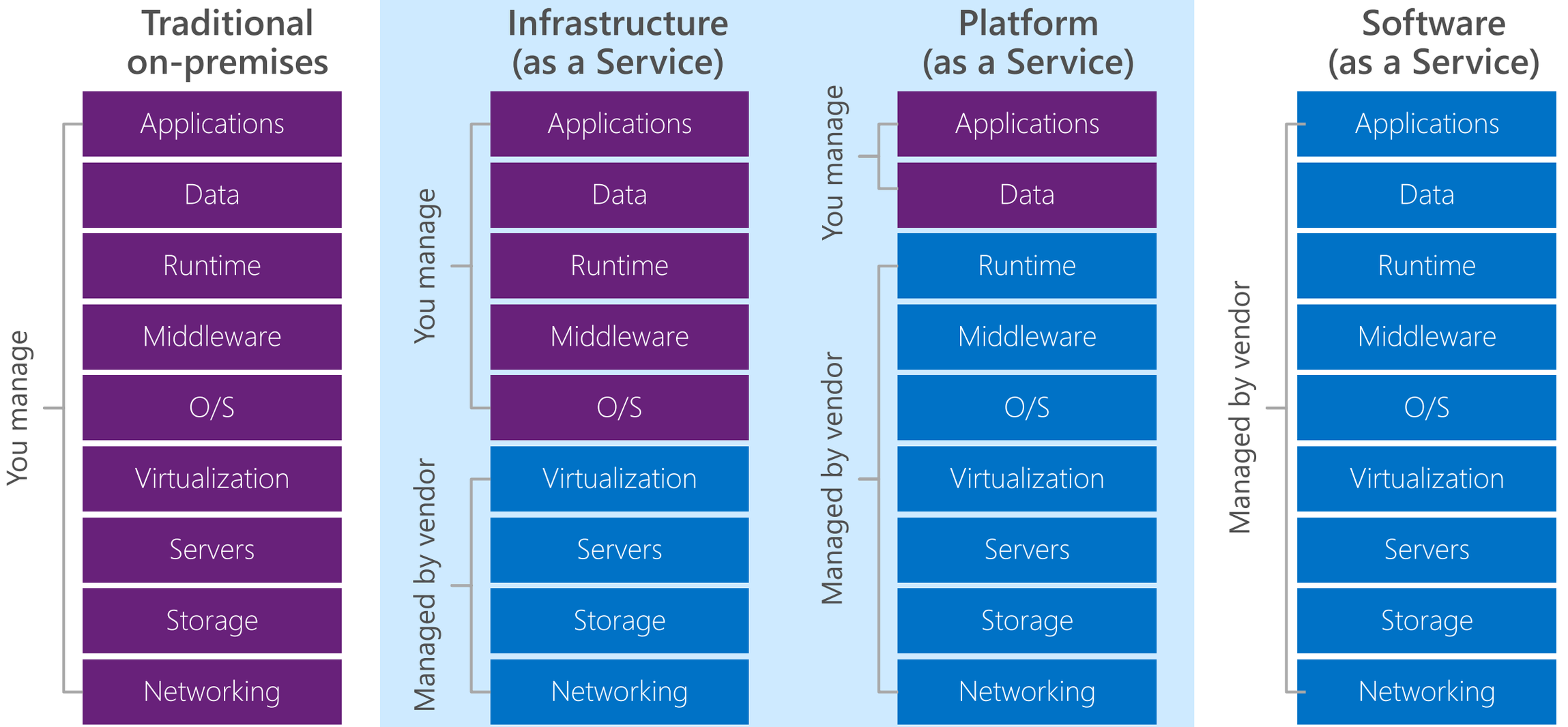
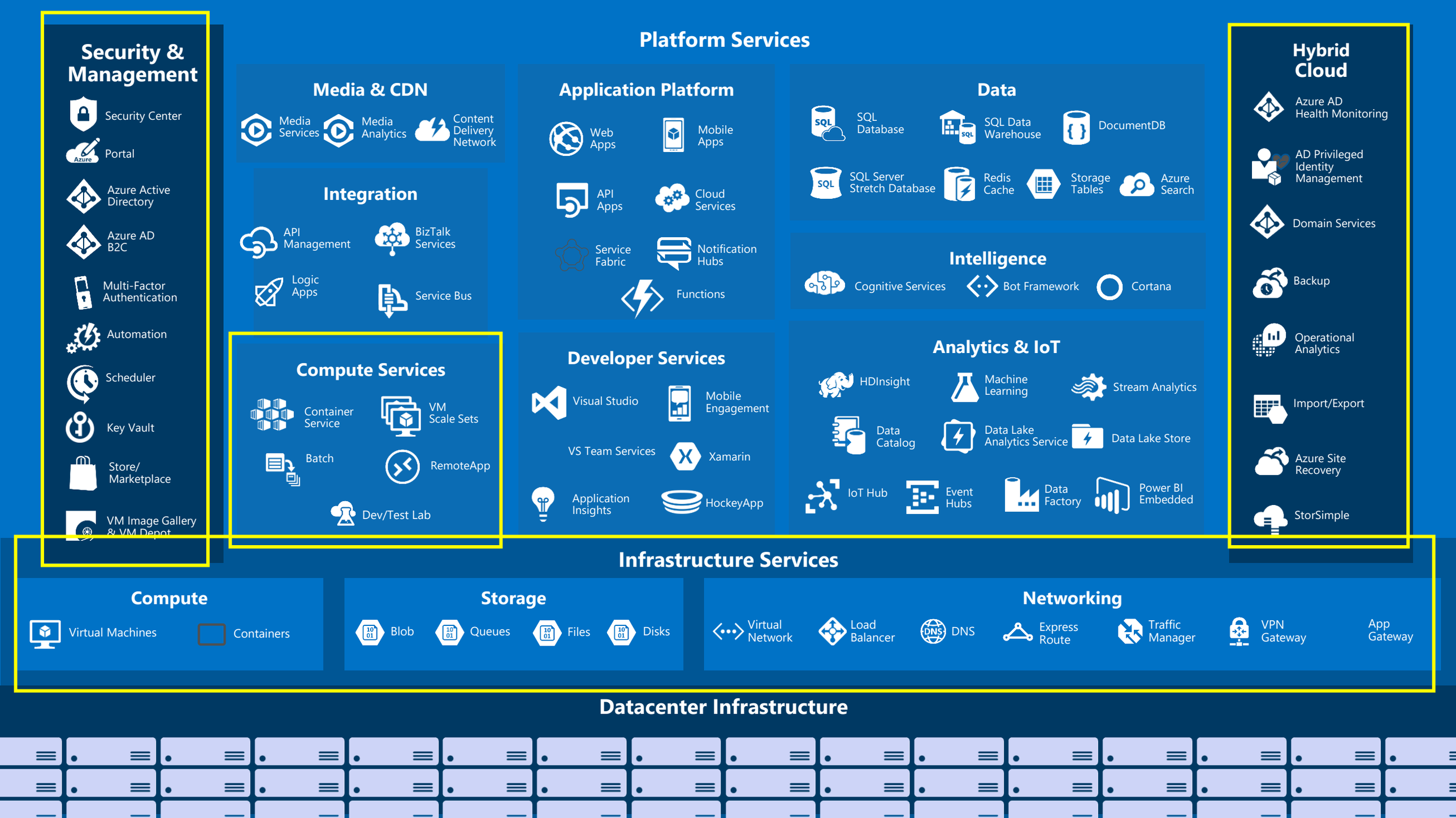
Introduction to Microsoft Azure

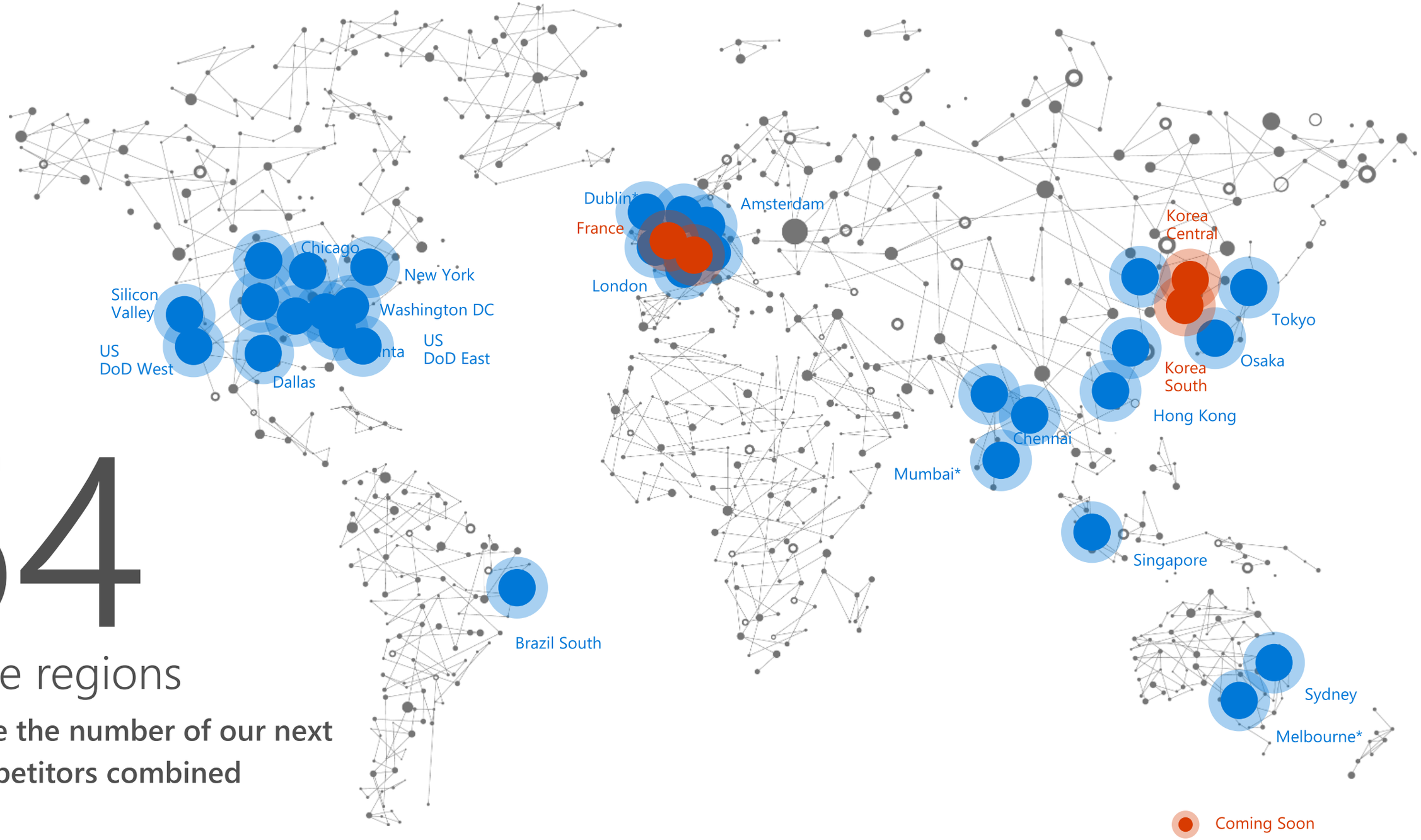
Bunty Ranu – Cloud Solution Architect, Azure Infrastructure

Microsoft

Cloud service models




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
Platform Services
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



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Azure regions

Double the number of our next 2 competitors combined

Azure Compliance

The largest compliance portfolio in the industry

Industry

- ISO 27001
- SOC 1 Type 2
- SOC 2 Type 2
- PCI DSS Level 1
- Cloud Controls Matrix
- ISO 27018
- Content Delivery and Security Association
- Shared Assessments

United States

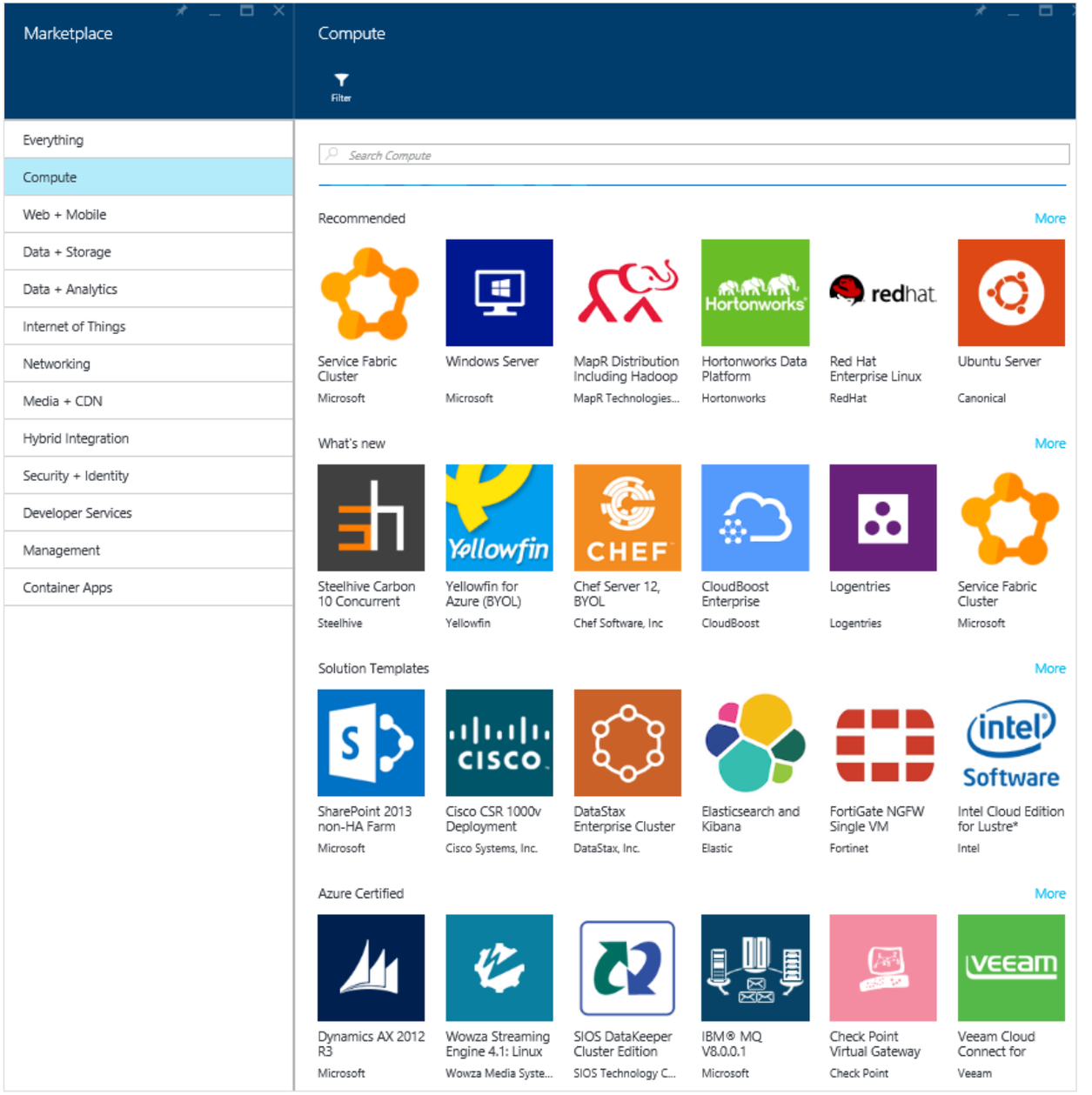
- FedRAMP JAB P-ATO
- HIPAA / HITECH
- FIPS 140-2
- 21 CFR Part 11
- FERPA
- DISA Level 2
- CJIS
- IRS 1075
- ITAR-ready
- Section 508 VPAT

Regional

- European Union Model Clauses
- EU Safe Harbor
- United Kingdom G-Cloud
- China Multi Layer Protection Scheme
- China GB 18030
- China CCCPPF
- Singapore MTCS Level 3
- Australian Signals Directorate
- New Zealand GCIO
- Japan Financial Services
- ENISA IAF

>4000

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



IaaS Services

Core services of Azure IaaS

Compute

Virtual machines

VM Scale Sets

Availability sets

Availability zones

Storage

Disks (Standard, premium)

Blob storage (Hot, cool)

Files

Networking

Virtual networks

VPN, ExpressRoute

Load Balancer

DNS, Traffic Manager

Management

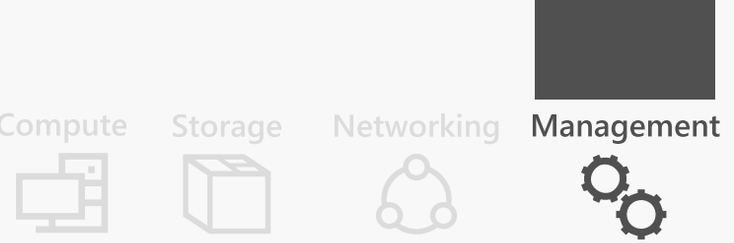
Azure Resource Manager (ARM)

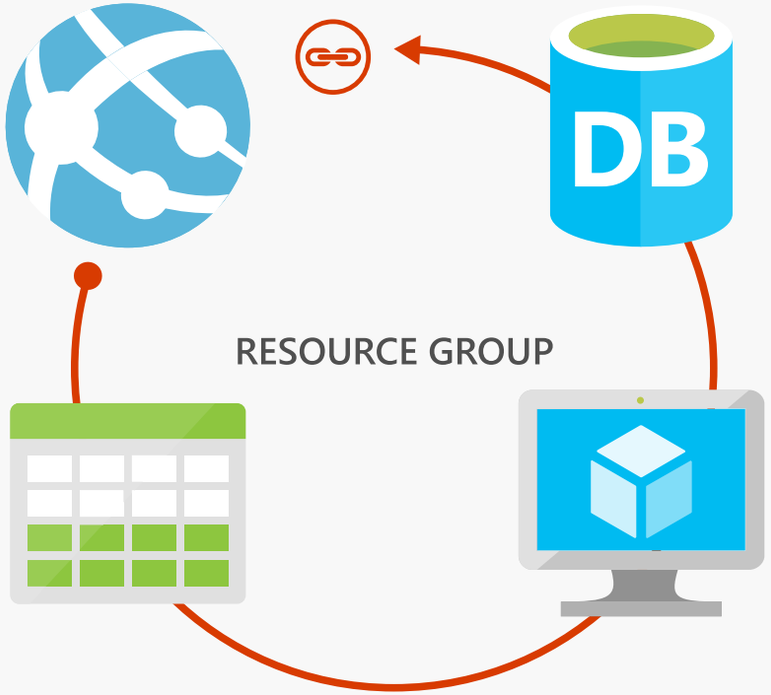
Azure Active Directory

Portal

KeyVault

Azure Resource Manager (ARM)





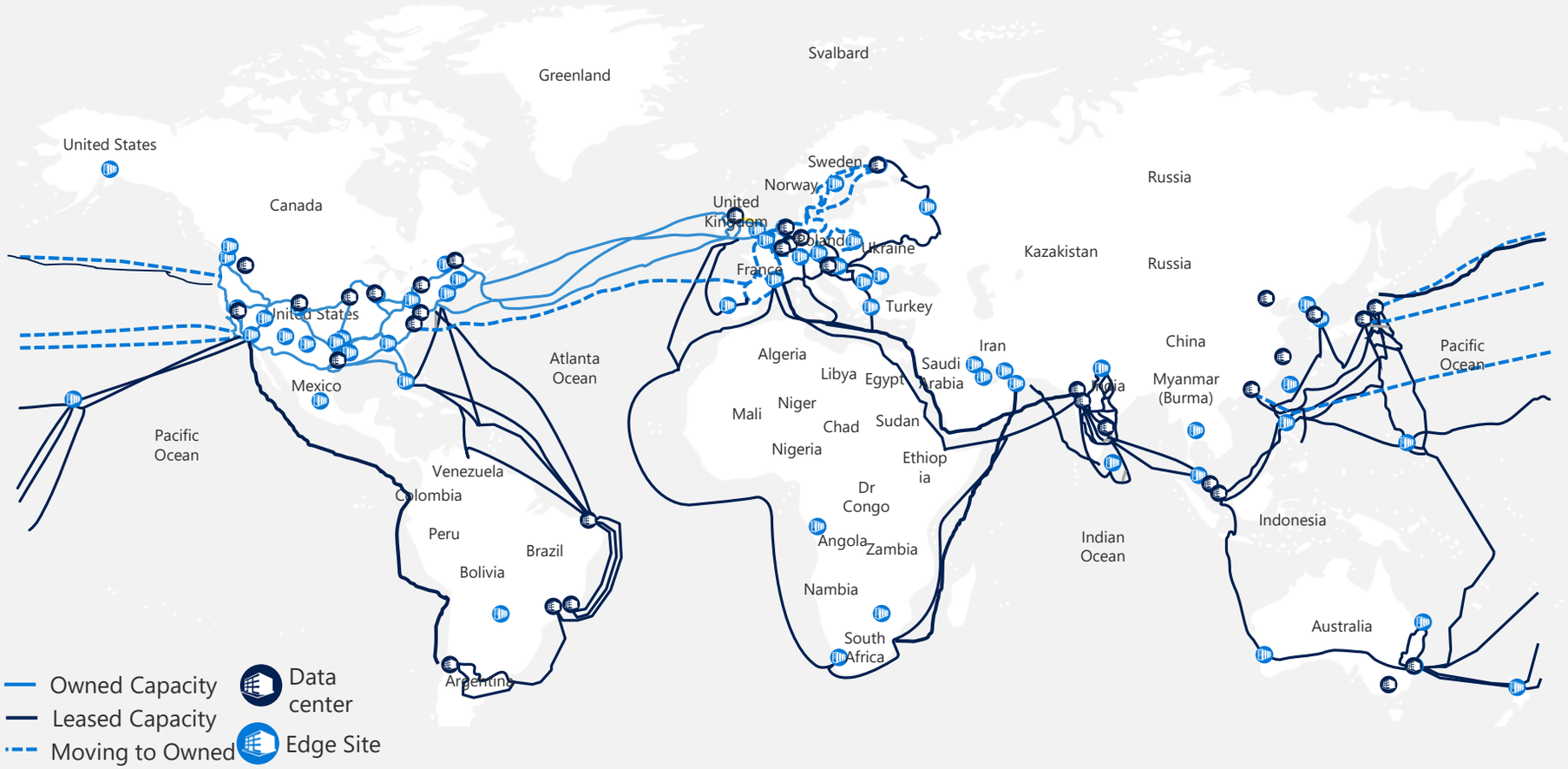
- Enable application management within Azure
- Resource groups are containers that can contain multiple IaaS + PaaS resources
- Support lifecycle management with integrated Role Based Access Control (RBAC)
- Templatize application deployment and configuration, supports DevOps

Microsoft Global Network

One of the largest private networks in the world

- 8,000+ ISP sessions
- 130+ edge sites
- 44 ExpressRoute locations
- 33,000 miles of lit fiber
- SDN Managed (SWAN, OLS)

DCs and Network sites not exhaustive



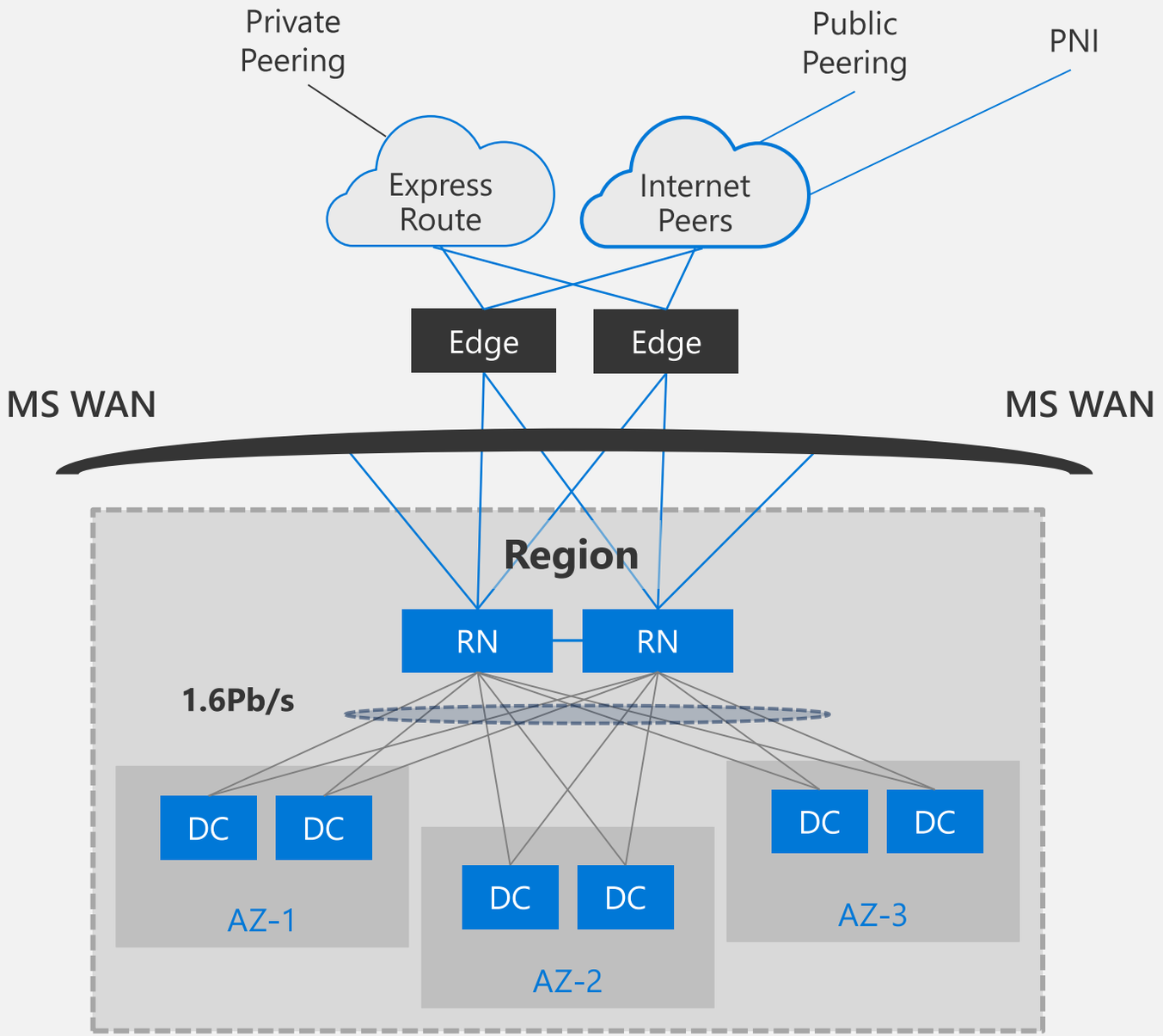
Regional Networks

High Availability Design

Regional network gateway

Massively parallel, hyper scale DC interconnect (up to 1.6 Pb/s)

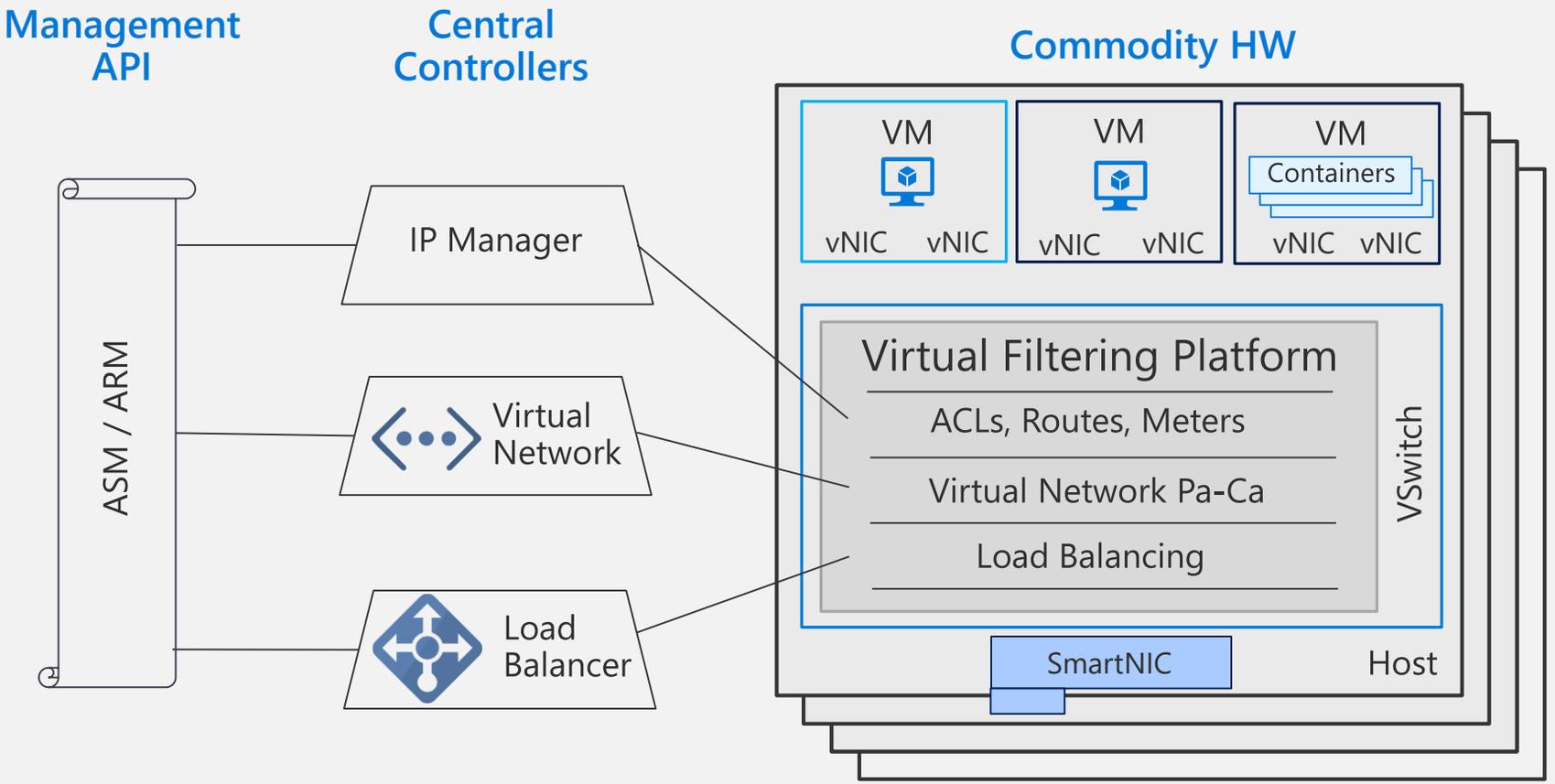
Space and power protected



Software Defined Networking (SDN)

Azure SDN
Basis of all NW virtualization in our datacenters

Decoupled
SDN allows compute to evolve and converge to a single allocator



Key to flexibility and scale is Host SDN

Robust networking infrastructure services

Virtual Network

Provision private networks, optionally connect to on premise datacenters. NSG, User Defined Routes, & IP addresses.

Load Balancer

Deliver high availability and network performance to your applications

Application Gateway/WAF

Build scalable and highly-available web front ends in Azure

DDoS Protection

Protect your Azure resources from DDoS attacks

VPN Gateway

Establish secure, cross-premise connectivity

Azure DNS

Host your DNS domain in Azure

Content Delivery Network

Ensure secure, reliable content delivery with broad global reach

Traffic Manager

Route incoming traffic for high performance and availability

ExpressRoute

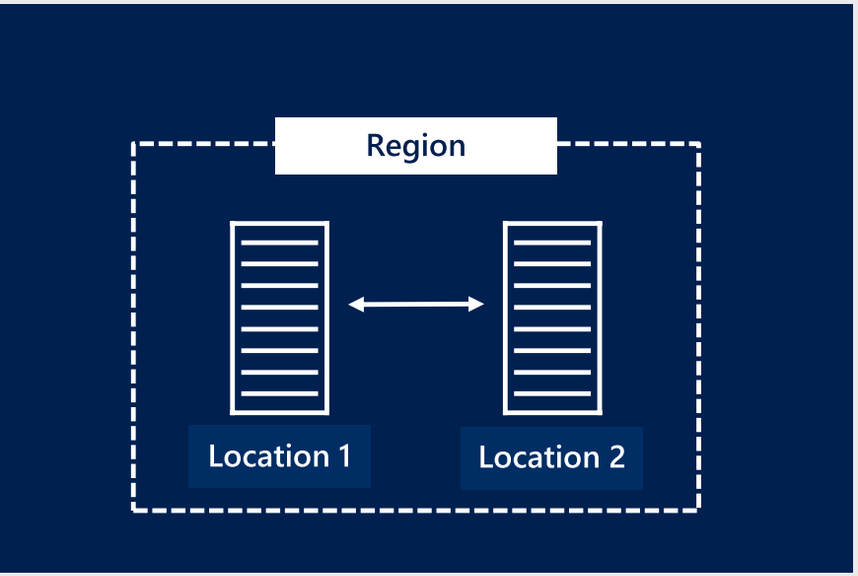
Dedicated private network fiber connections to Azure

Network Watcher

Network performance monitoring and diagnostics solution

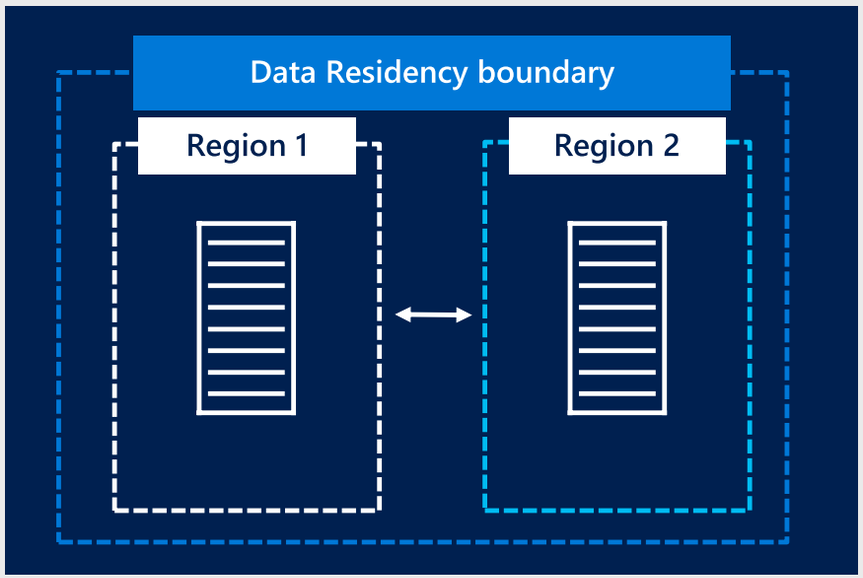
Azure business continuity

From mission critical applications to backup



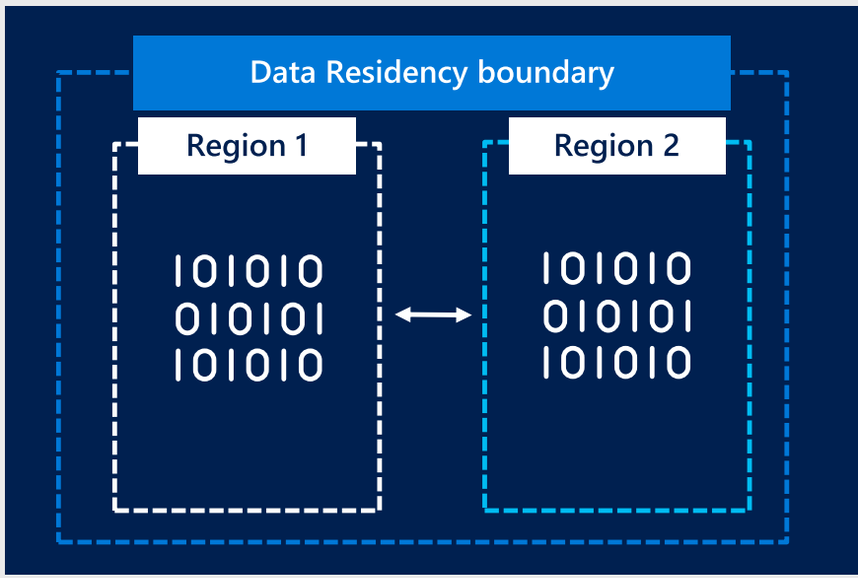
High Availability

Data is replicated to a minimum of one additional location at low latency so data and application uptime is preserved.



Disaster Recovery

Asynchronous replication from one region to another, with standby VMs in the other region. Azure offers protection between regions within data residency boundaries. SLA 99.99%

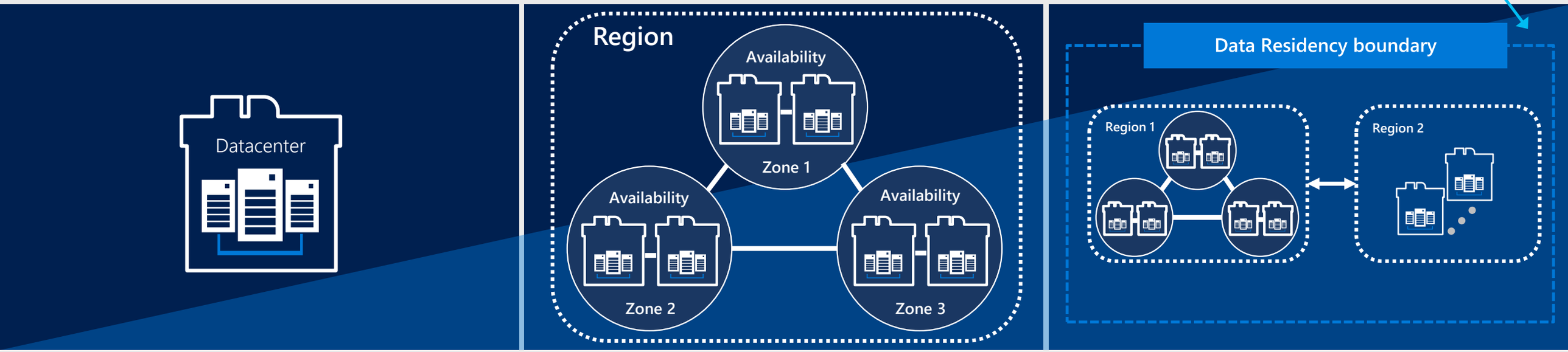


Backup

Data is asynchronously replicated and stored for redundancy purposes with data residency options.

Azure protection options for all scenarios

Introducing Availability Zones, protecting from datacenter level failures



Availability Sets

High Availability protection from hardware failures in a datacenter. SLA 99.95%

Availability Zones

High Availability protection against loss of datacenters. Multiple datacenters per physically separated zone. Each zone features independent network, cooling, and power. SLA 99.99%

Region Pairs

Protection for your data and applications from the loss of an entire region with Geo-redundant storage (GRS) and Azure Site Recovery.

Doubled compute sizes in 2016

Compute Storage Networking Management

Entry Level VMs

Dev/Test workloads

General Purpose VMs

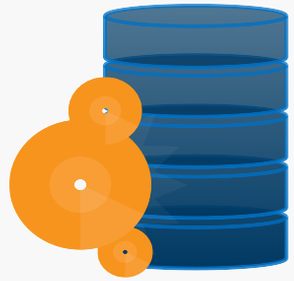
Common applications, web servers, etc.

Compute Optimized VMs

Gaming, analytics

Large Memory VMs

Large databases



80,000 IOPs Premium Storage

Low latency, high throughput apps

High Performance VMs

Batch processing, fluid dynamics, Monte Carlo simulation

Storage optimized VMs

No SQL databases (Cassandra, MongoDB), data warehousing

GPU-enabled VMs

Graphic based applications, remote visualization

SAP HANA Large instances

OLTP, OLAP

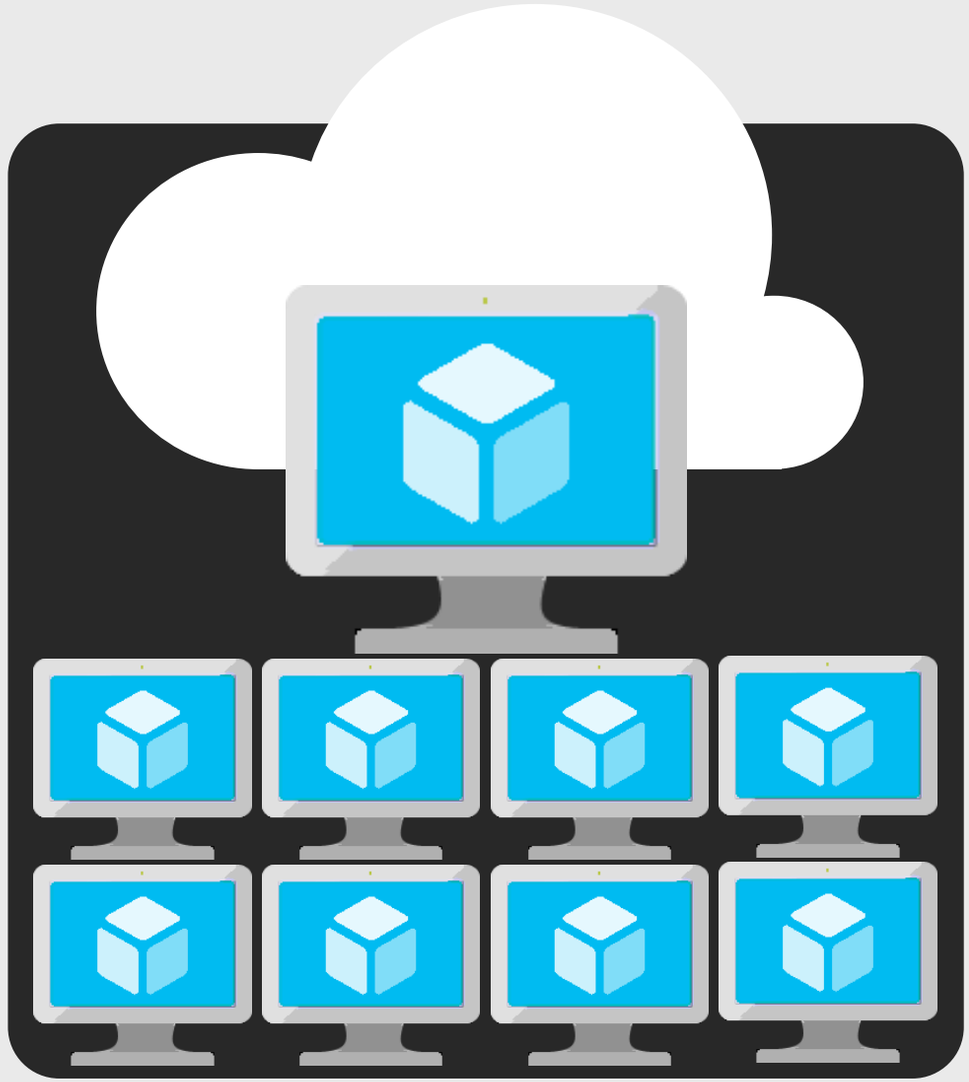
VM Scale Sets

A single resource to provision up to 1000 VMs

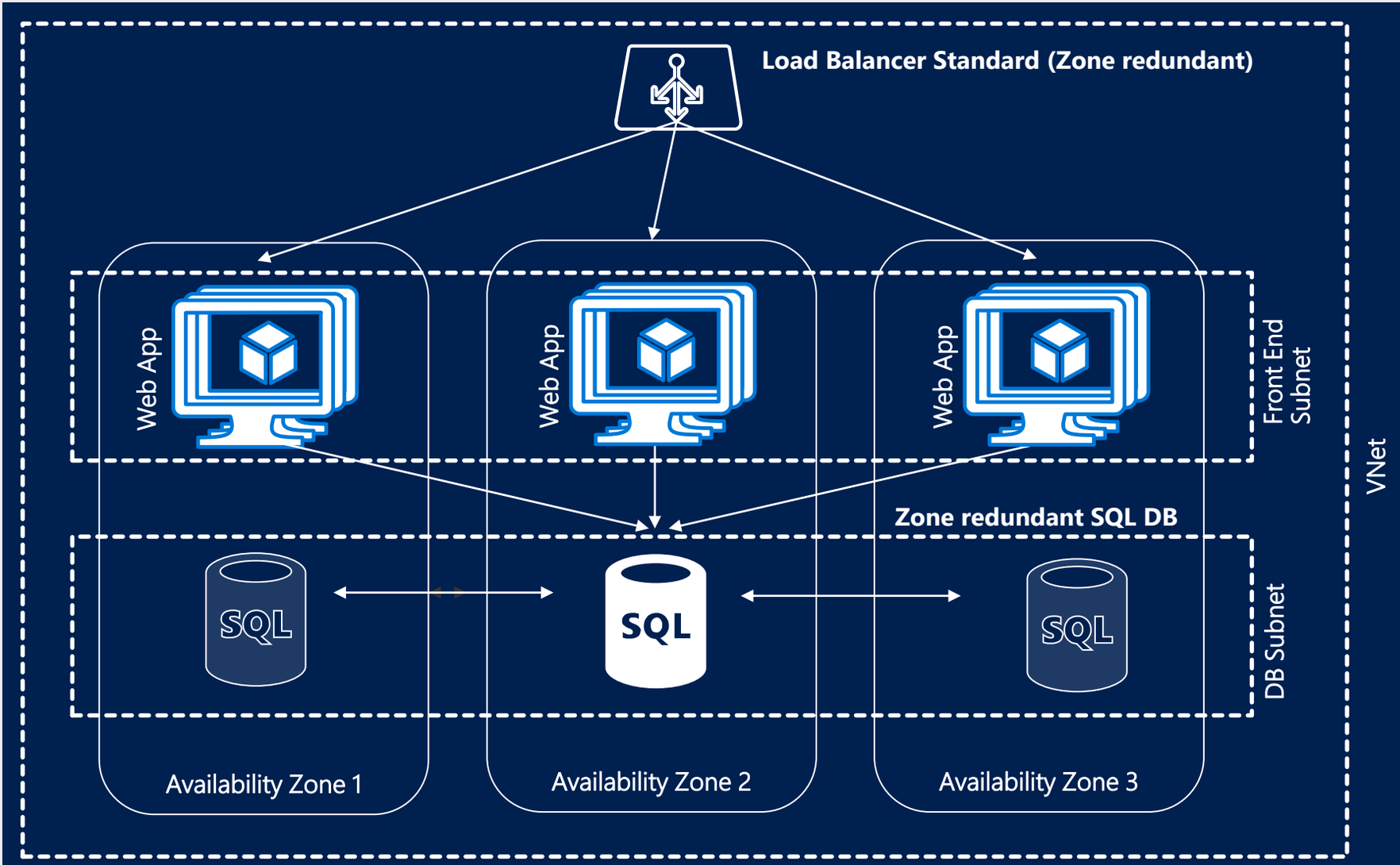
Auto-configuration at scale

Auto-scale based on schedule and resource metrics

NEW: Span Availability Zones



Reference Architecture: Web App with Availability Zones



1. Create Zone redundant load balancer
2. Create front-end subnet
3. Create DB subnet
4. Create VMs in three Availability Zones
5. Configure zone-redundant SQL DB
6. Add VMs to the load balancer's back-end pool
7. Deploy your application on VMs for redundancy and high availability

Azure Storage

Disk Storage

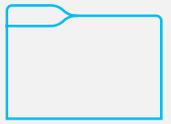
Premium
Standard

Reliable, persistent, high performing storage for Virtual Machines

Object Storage

Azure Blobs

Secure, centralized storage target for backup/disaster recovery



File storage

Azure Files
Azure NetApp Files

Lift and shift of legacy applications that require file shares to the cloud

Data Transport

Azure Import/Export
Azure DataBox

Move or migrate data into Azure

Hybrid Storage

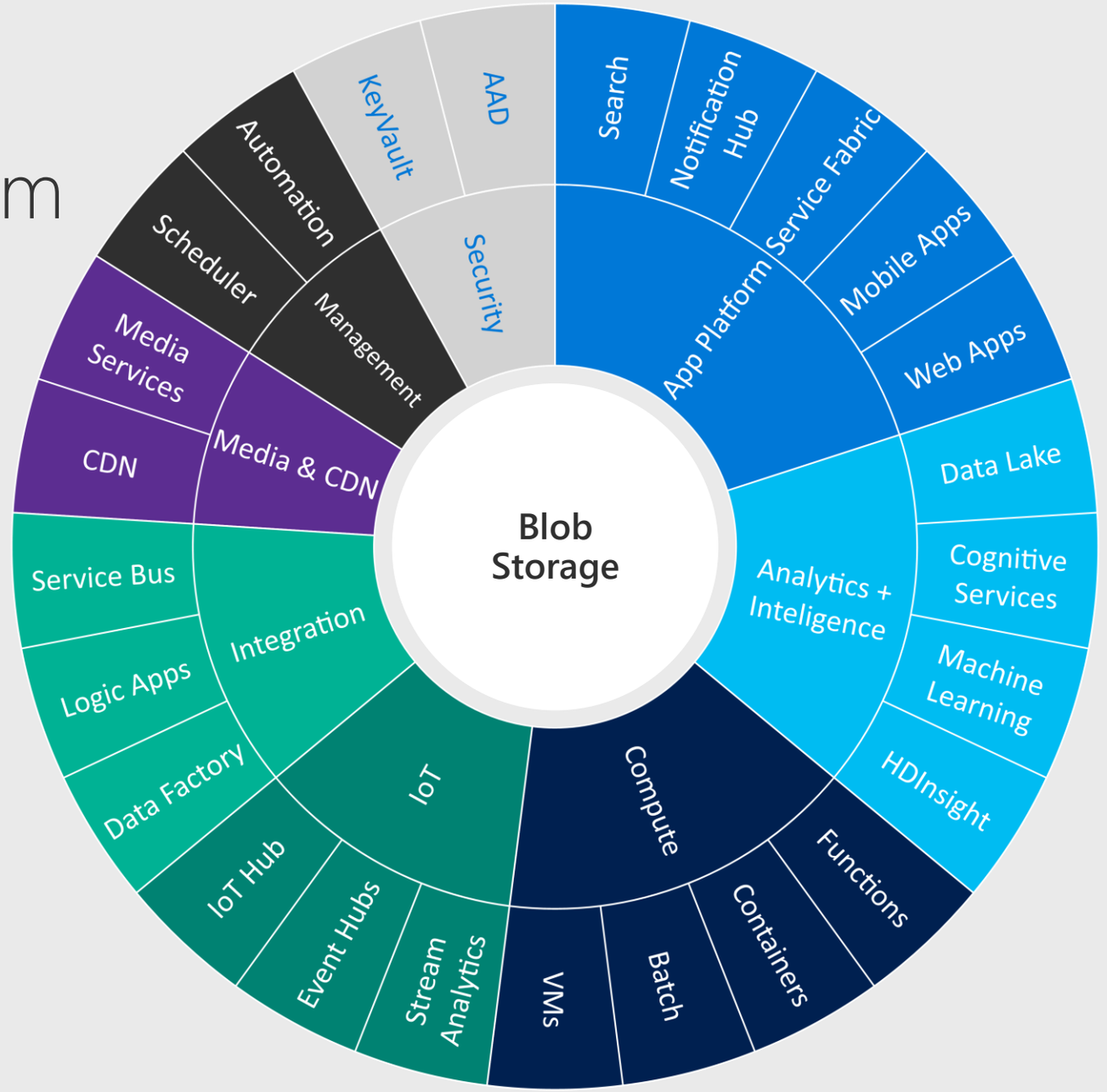
Azure StorSimple
Azure File Sync

Secure, intelligent data tiering between on-premises and cloud storage

Azure Blob Storage

Azure's Object Storage platform

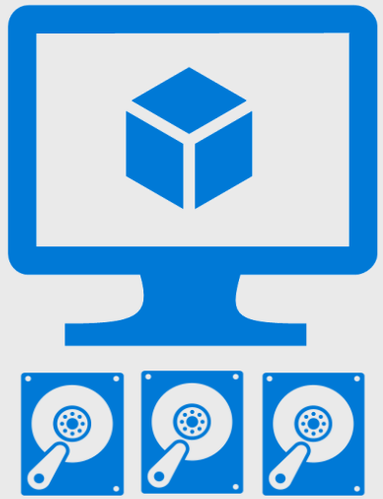
- Store and serve unstructured data
  - App and Web scale data
  - Backups and Archive
  - Big Data from IoT



Azure Disks

Performance Tiers

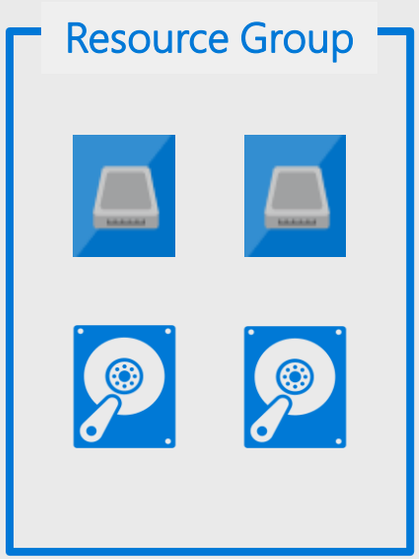
Premium Disks (SSD)



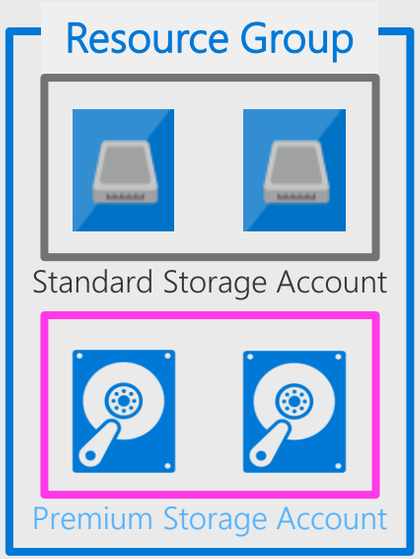
Standard Disks (HDD)

- ✓ Premium Disks: SSD based, provisioned performance
- ✓ Standard Disks: HDD based, cost effective

Management Options



Managed Disks



Unmanaged Disks /Page Blob

- ✓ Managed Disks: highly available & manageable
- ✓ Unmanaged Disks: legacy with Storage Account

Azure Files

Lift and Shift

Variety of clients/protocols

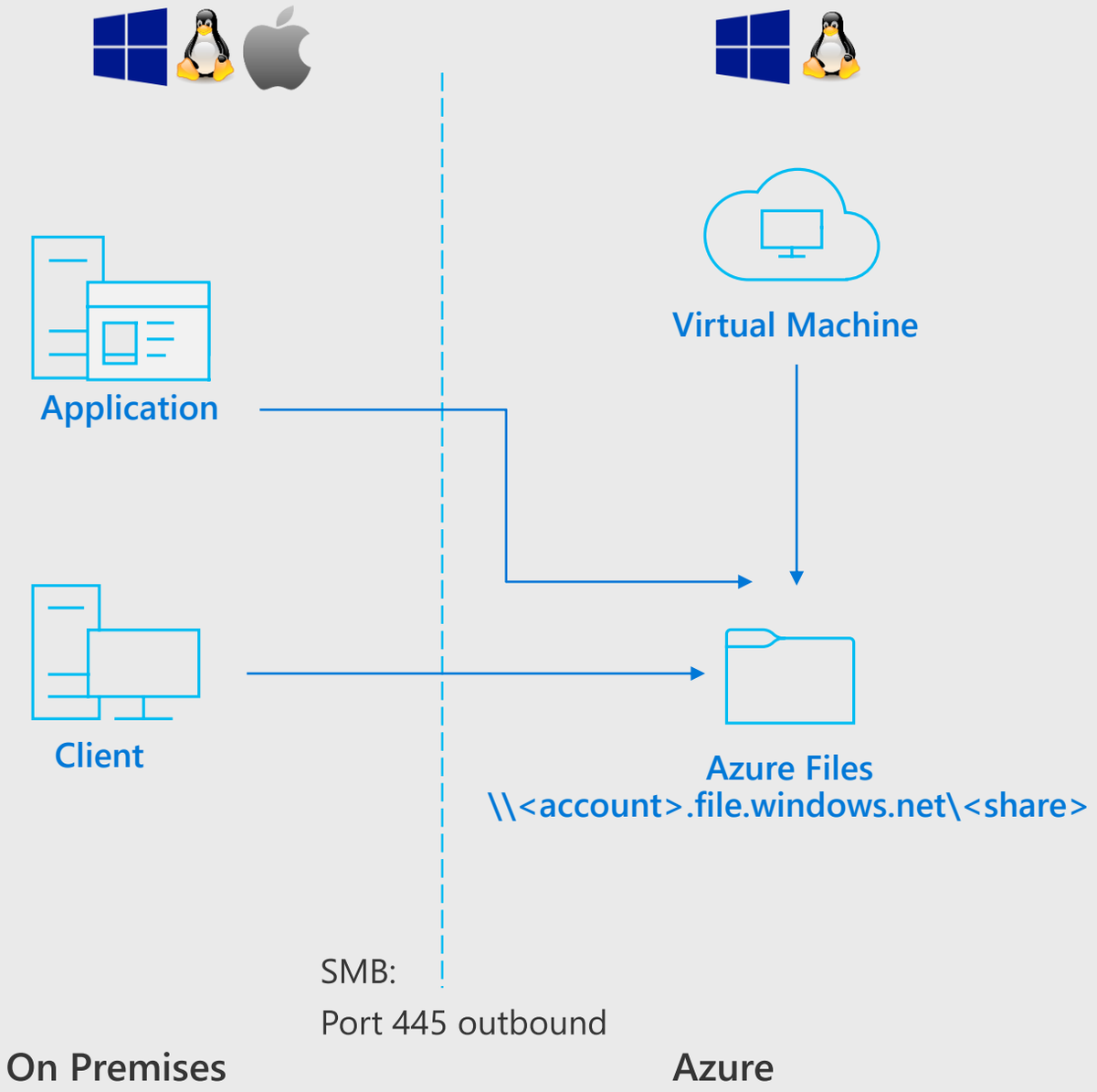
- SMB 2.1, 3.0, REST
- Windows, Linux, Mac OS
- Azure and on premises access

Secure

- Encryption at rest
- Secure communication over SMB

Sync

- Multi-site access
- Cloud tiering



Demo – Let’s create a VM!