
Azure
Your vision, your results, your cloud
Microsoft

Microsoft Cloud Dienste

5.8+ Milliarden
Suchanfragen pro Monat weltweit
bing

250+ Millionen
aktive Nutzer
OneDrive

400+ Millionen
aktive Nutzer
Outlook.com

2.4+ Millionen
emails pro Tag
Microsoft Exchange Hosted Services

10+ Trillionen
Objekte in Microsoft Azure Speicher
Microsoft Azure

48+ Millionen
Nutzer in 41 Märkten
XBOX LIVE

50+ Millionen
aktive Nutzer
Microsoft Office Web Apps

1 von 4
Unternehmenskunden
Office 365

50+ Milliarden
Verbindungsminuten jeden Monat
skype

200+ Cloud Dienste

1+ Milliarde Kunden · 20+ Millionen Unternehmen · 90+ Märkte weltweit

Die Cloud – was ist das?

- IaaS - Infrastructure-as-a-Service

  Hardware: Computing, Server, Speicher, Firewall

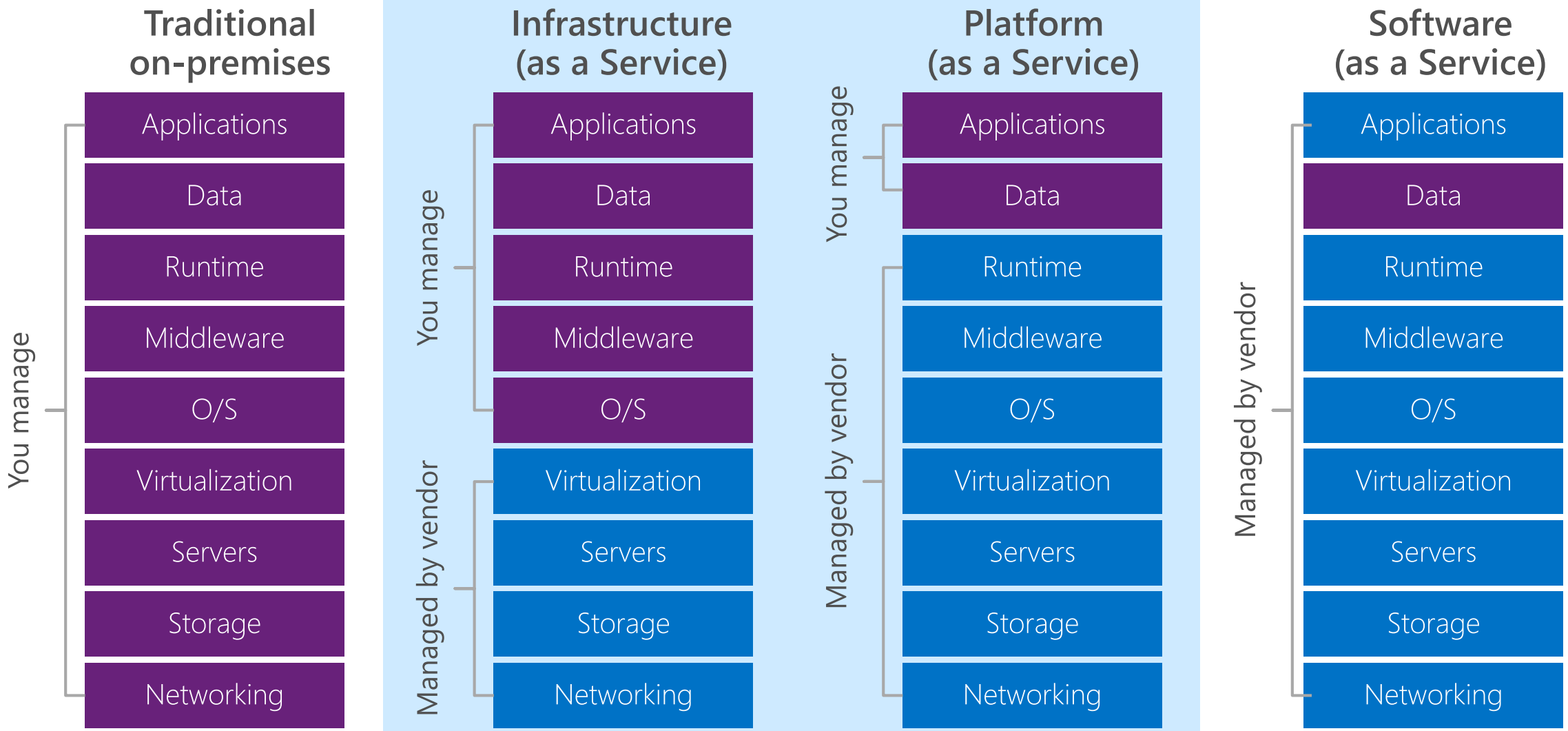
- PaaS - Platform-as-a-Service

  Middleware, Entwicklungstools, BI-Dienste, Datenbanken (SQL), Web-Server, …

- SaaS - Software-as-a-Service

  Gehostete Anwendungen: E-Mail-, Kalender, .. (O365), CRM

Cloud service models




Datacenter and beyond


East US


East US

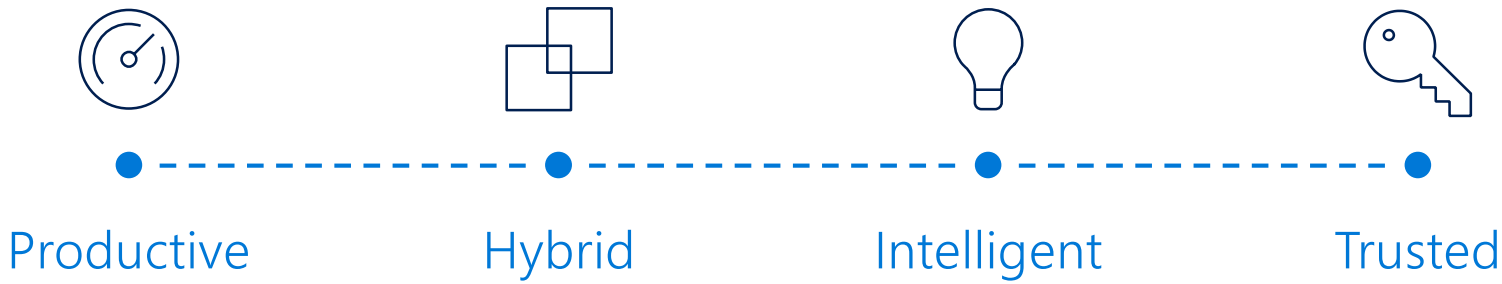

Microsoft

Azure Regions

50 regions worldwide

140 available in 140 countries

Azure—cloud for all



Productive

Hybrid

Intelligent

Trusted

Unparalleled developer productivity

Integrated tooling

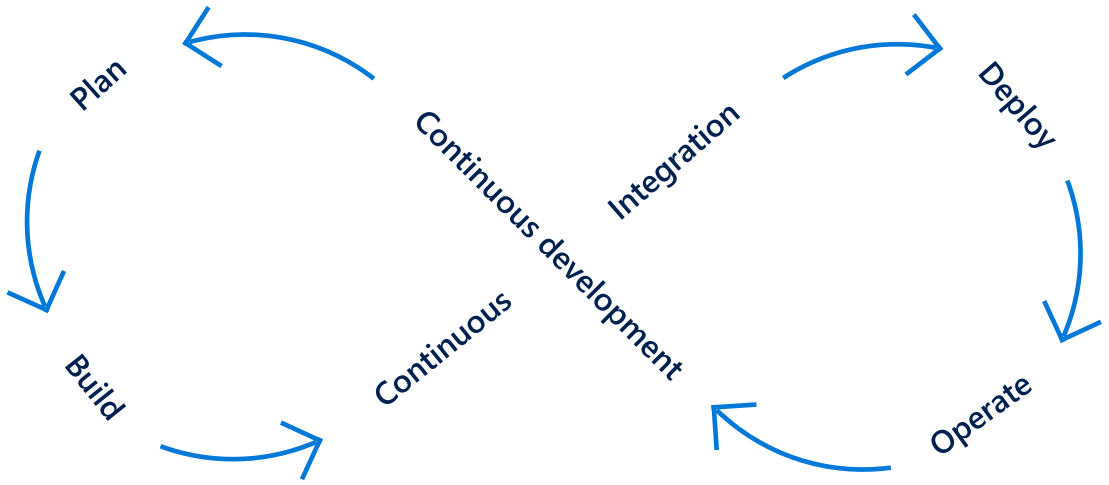
Visual Studio
third–parties | DevOps

100+ services

Azure functions
Kubernetes | Logic apps

Unified management

Single cloud | Policy
and Governance



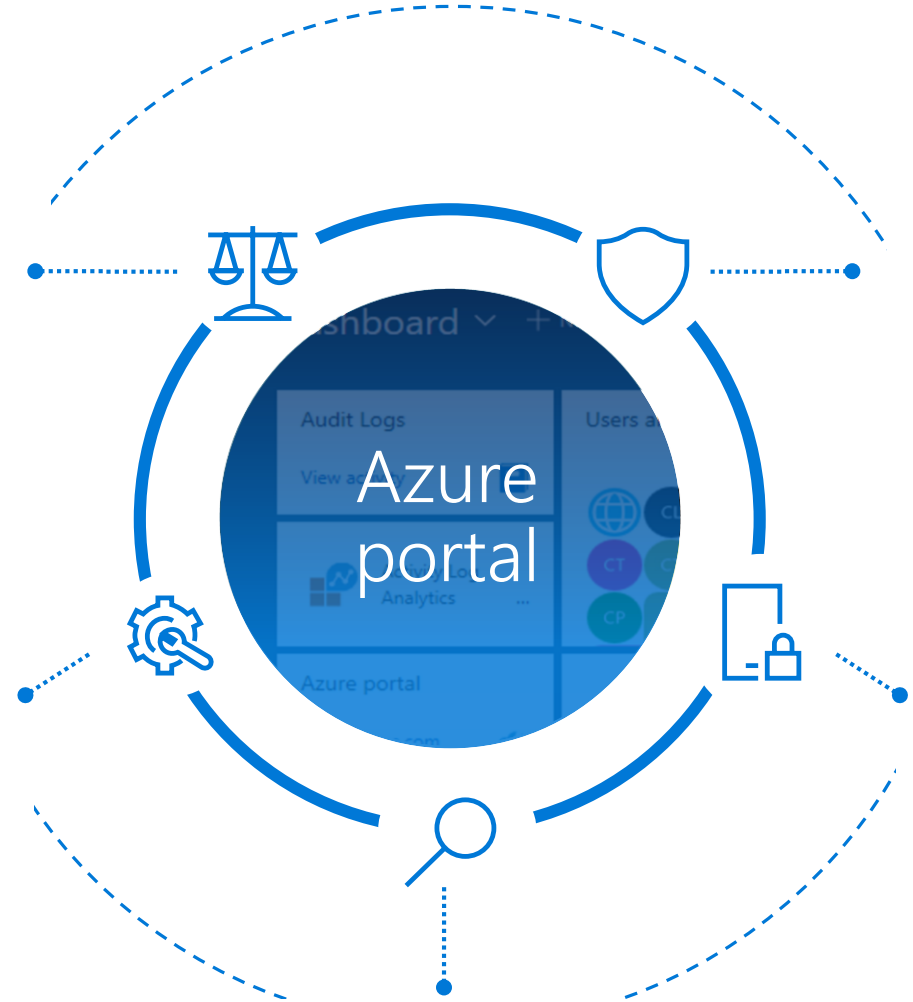
Secure and well—managed for IT

Productive

Hybrid

Intelligent

Trusted



Govern
Policy management
Cost management

Secure
Security management
Threat protection

Configure
Update management, scripting automation, configuration

Protect
Backup and disaster recovery

Monitor
App, infrastructure and network monitoring log analytics and diagnostics

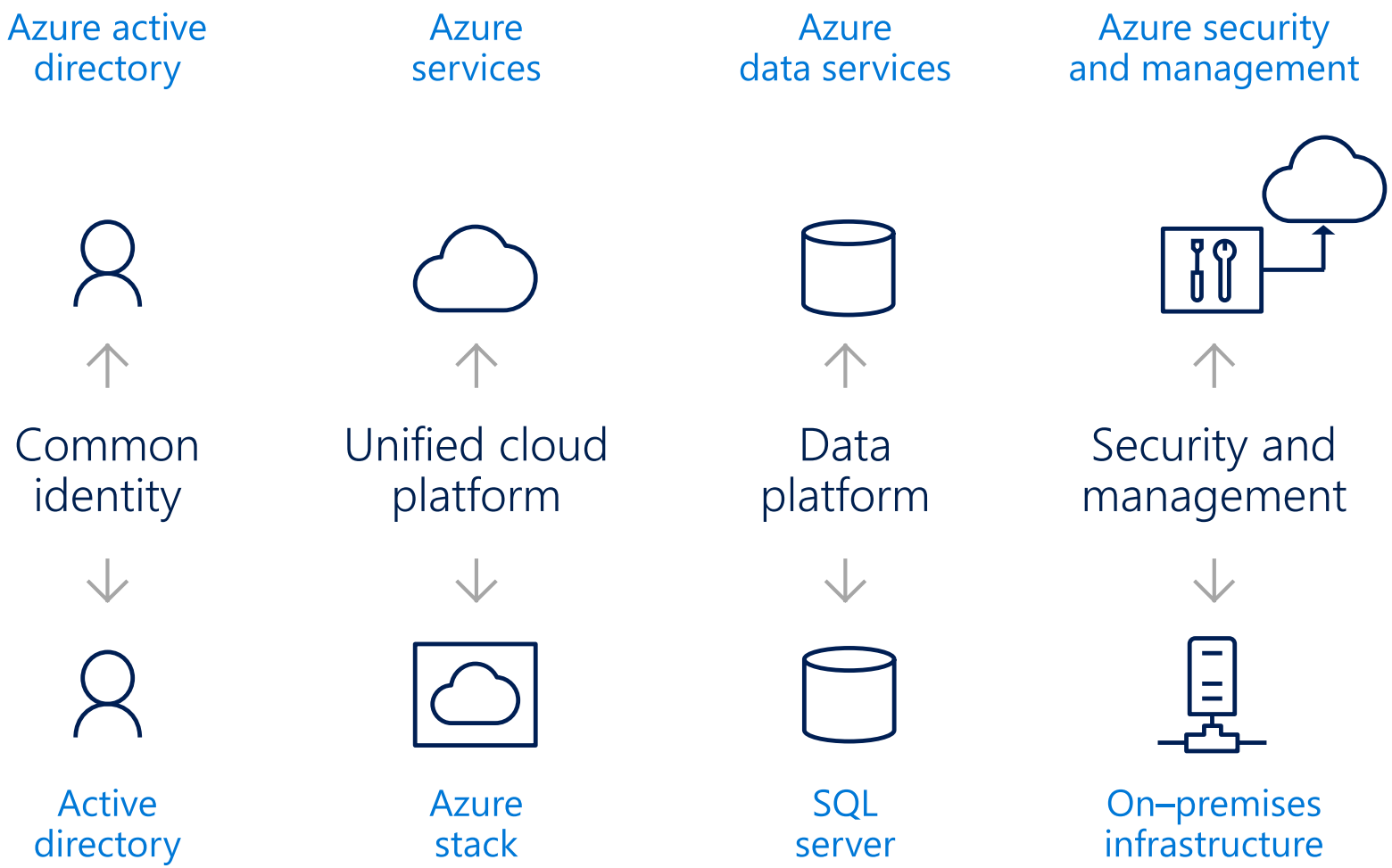
Productive

Hybrid

Intelligent

Trusted

The only consistent, hybrid cloud



Productive

Hybrid

Intelligent

Trusted

Azure Stack—an extension of Azure

At the edge
and disconnected

Meet every regulatory
requirement

Cloud application
model on–premises

Productive

Hybrid

Intelligent

Trusted

Machine learning workbench

Language APIs

Azure SQL DB

AI for every developer and every scenario

Azure machine learning

Azure Bot service

Vison API

Productive

Hybrid

Intelligent

Trusted

More certifications than any cloud provider

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
- CSA STAR attestation

Industry

- PCI DSS level 1
- CDSA
- MPAA
- FACT UK
- Shared assessments
- FISC Japan
- HIPAA / HITECH Act
- HITRUST
- GxP 21 CFR Part 11
- MARS-E
- IG Toolkit UK
- FERPA
- GLBA
- FFIEC

Regional

- Argentina PDPA
- EU model clauses
- UK G-Cloud
- China DJCP
- 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

Unsere Microsoft Cloud-Prinzipien

Sicherheit

Strenge Sicherheit Schutz gegen Hacker und nichtautorisierten Zugriff durch Verwendung von Technologie, Prozessen und Zertifizierungen nach dem Stand der Industrie.

Datenschutz

Die Kunden kontrollieren den Inhalt und den Zugang. Sie können zu jeder Zeit auf ihre Daten zugreifen, sie extrahieren / löschen, oder auch wenn sie den Vertrag beenden

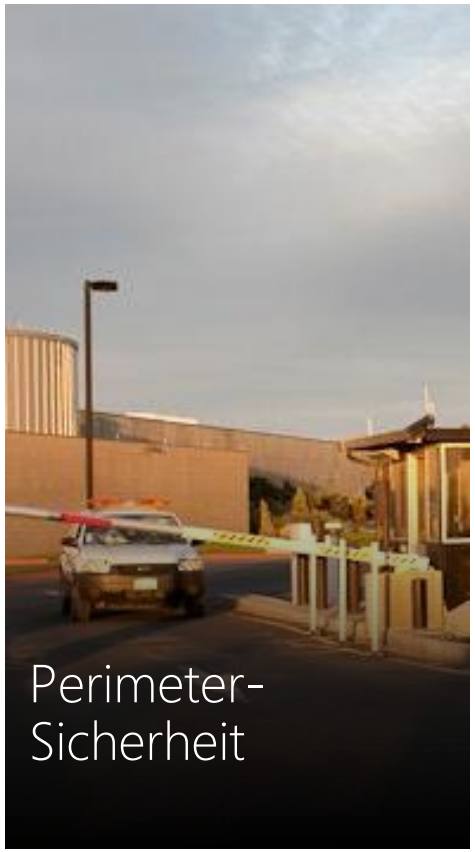
Transparenz

Die Kunden wissen, was mit ihren Inhalten passiert. Microsoft erklärt in klarer, einfacher Sprache, wie der Cloud-Anbieter die Inhalte verwendet, verwaltet und sichert.

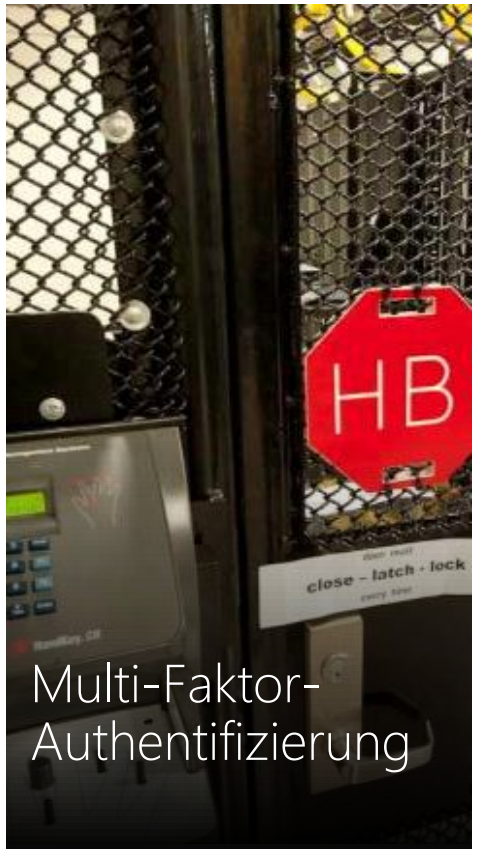
Compliance

Kunden können ihre Inhalte unter Einhaltung ihrer Verpflichtungen und des anwendbaren Rechts sowie anderer Regelungen und zentraler internationaler Standards speichern und verwalten.

Schutzmaßnahmen gegen physischen Zugriff


Perimeter-Sicherheit


Brandbekämpfung



Multi-Faktor-Authentifizierung


Video-überwachung

Seismischer Schutz

24x7 Vor-Ort-Sicherheitspersonal

Tage an Backup-Stromversorgung

Zehntausende von Servern

Microsoft

Datenschutz von Grund auf

Datenschutz „by design“	Beschränkter Datenzugriff & -nutzung	Vertragliche Verpflichtungen
Datenschutz-kontrollen sind im Azure Design und Betrieb eingebaut	Kundendaten werden nur für den geleitesten Service genutzt und nicht für Werbezwecke	Datenverarbeitungs-vereinbarungen, EU Model Clauses, Bestätigung AG Artikel 29

Datensicherheit

Möglichkeiten zur Datenverschlüsselung

Datentrennung

Datenlokation und Redundanz

Datenvernichtung

Transparenz & unabhängige Prüfung

WIR HELFEN KUNDEN SICHERHEITS- & COMPLIANCE-VERPFLICHTUNGEN EINZUHALTEN

Infrastructure as Code – Azure Resource Manager

Consistent Management Layer

Tools

Microsoft Azure + Command Line + Visual Studio

AZURE RESOURCE MANAGER API

RESOURCE MANAGER

Cloud + On-Premises

ADFS

AAD

RESOURCE PROVIDER CONTRACT

Provider Rest Points

Azure Resource Manager Concepts

Resource Groups

Resource Groups act as a container to hold arbitrary resources
A resource live on exactly one Resource Group

Resources

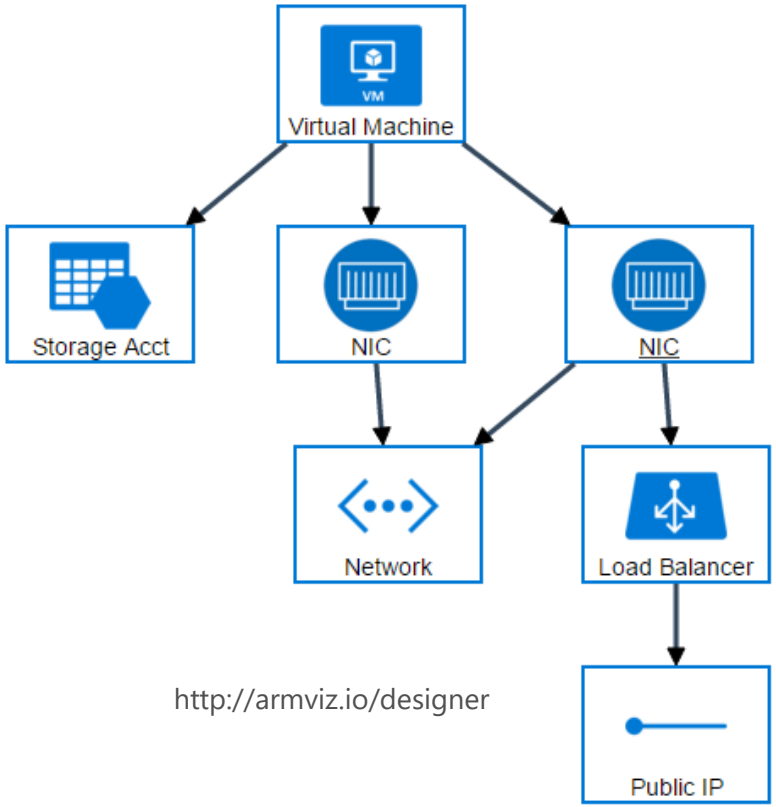
A component/service/feature that can be deployed in Azure

Dependencies

Resources can depend on each other
Dependency graph defines execution order

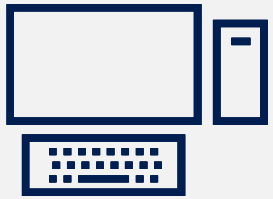
Templates

Declarative definition of infrastructure/service
Deployment of one or more Resources to a Resource Group



http://armviz.io/designer

Core infrastructure



Compute

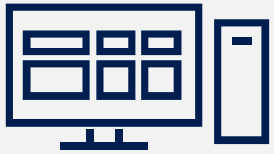
Virtual machines
Availability sets
VM scale sets
Controlled maintenance

Storage

Disks
Blob storage
File sync
Hot and cold

Networking

Virtual networks
VPN, ExpressRoute
Load balancer
DNS, Traffic Manager



Management

Log Analytics
Cloud Shell
Site Recovery
Security Center

RECENT FEATURES

[Azure Cost Management]

[Azure availability zones]

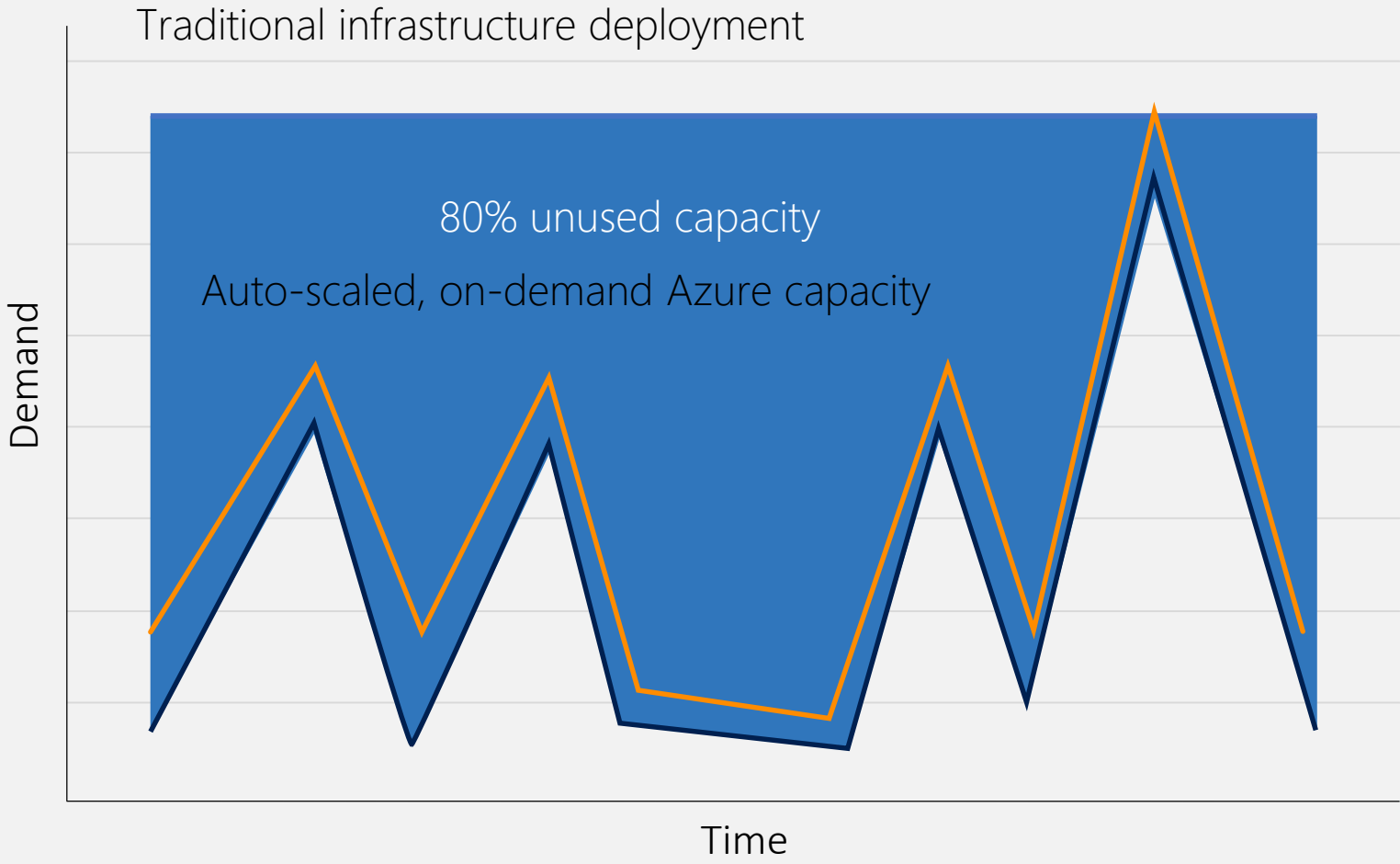
[Reserved VM instances]

Development and Test

Azure DevTest opportunity

50%

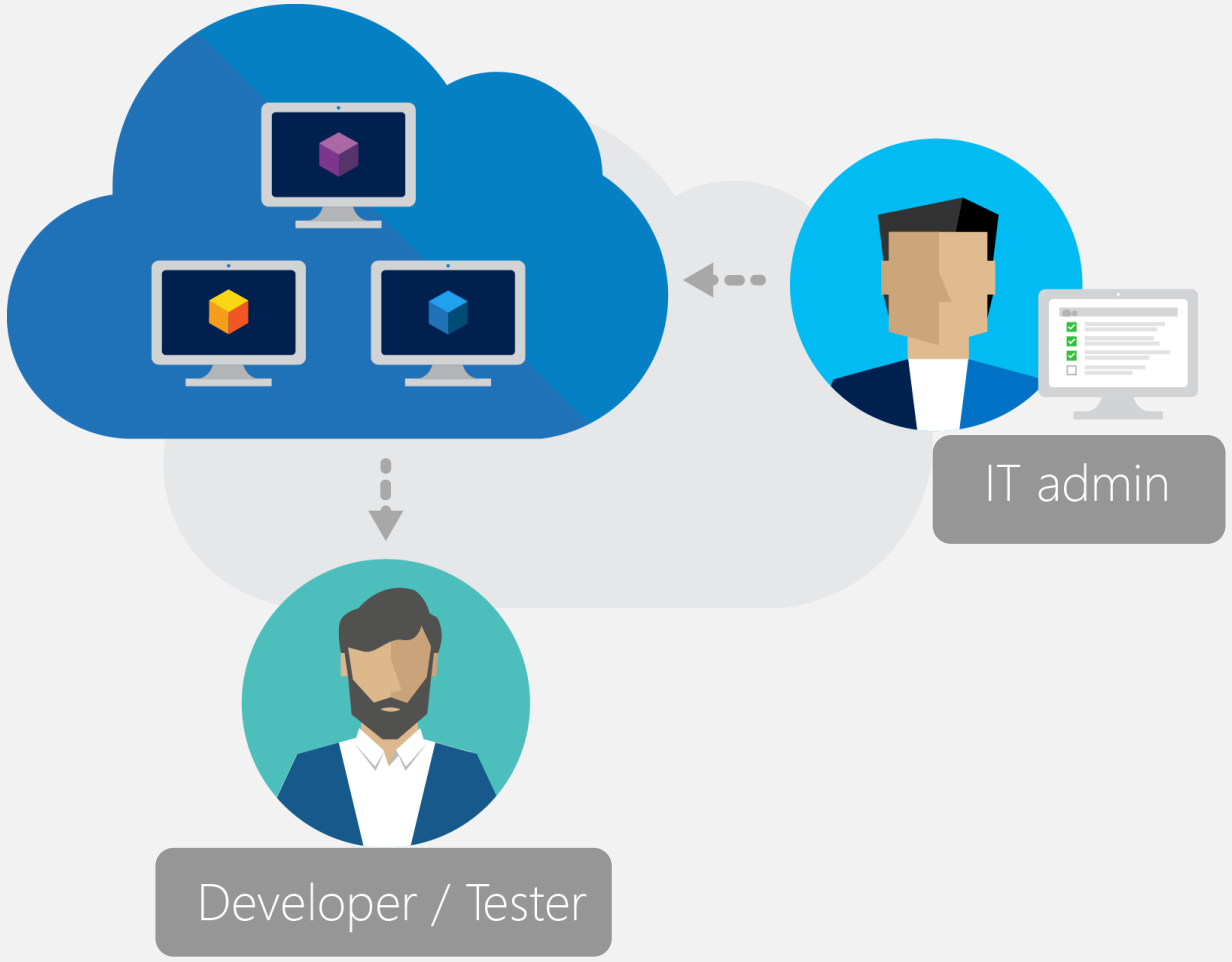
of infrastructure spent on non-production

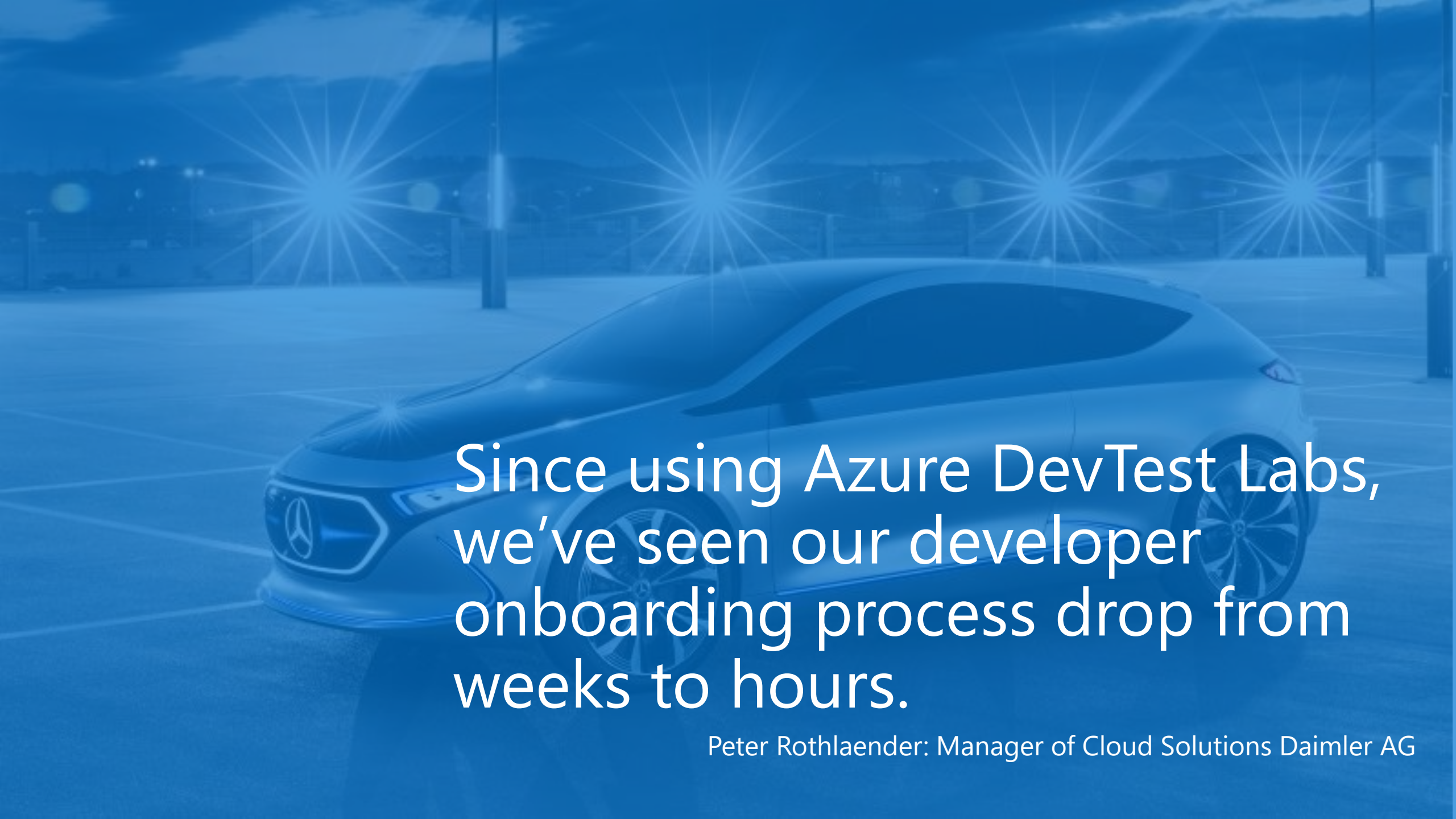


Azure DevTest Labs

Solution for fast, easy, and agile dev-test environments in Azure.

- Fast provisioning
- Automation & self-service
- Cost control and governance





Since using Azure DevTest Labs, we've seen our developer onboarding process drop from weeks to hours.

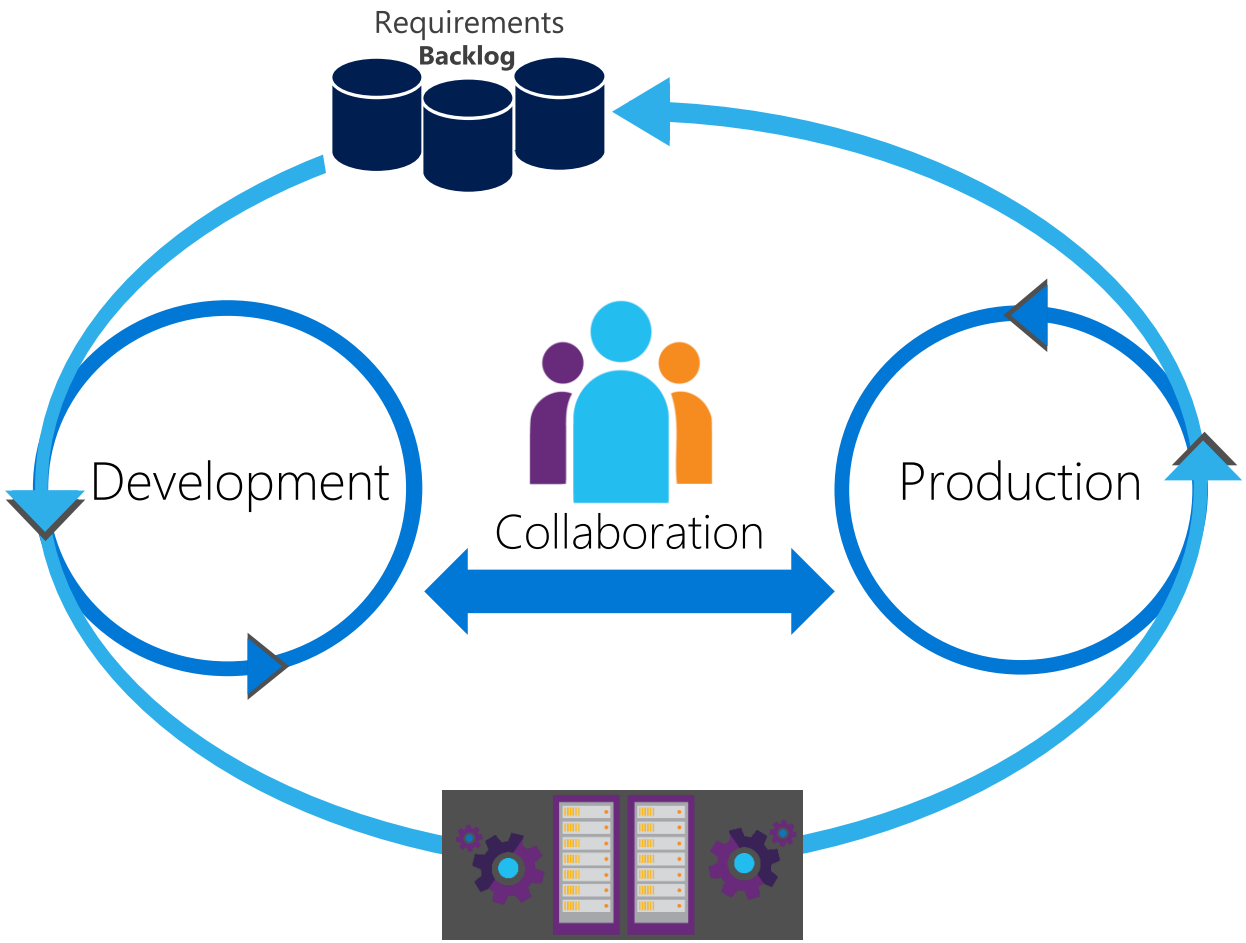
Peter Rothlaender: Manager of Cloud Solutions Daimler AG

DEMO
DevTest Lab

Development and DevOps

Welche Prozesse / Methoden setzen Sie in der Software-Entwicklung ein?

Faster Value Delivery

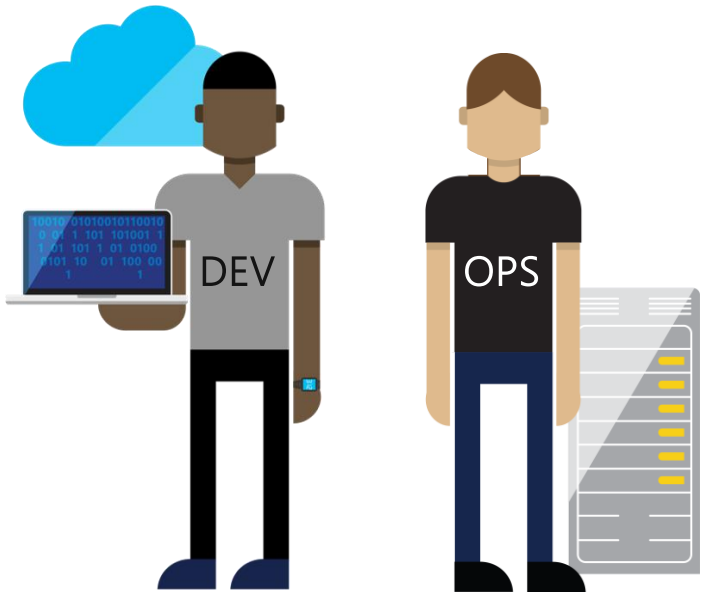


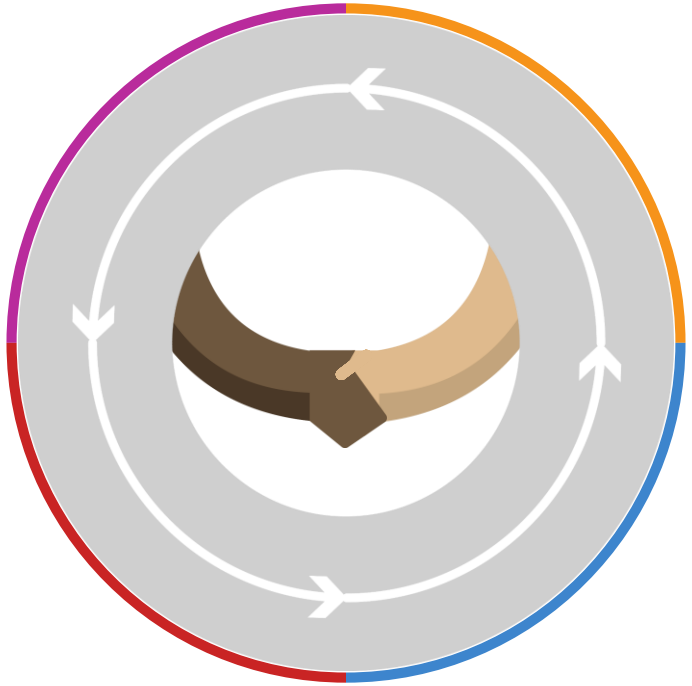
Increase flow of business value

Shorten cycle times

Reduce re-work costs

DevOps: the three stage conversation



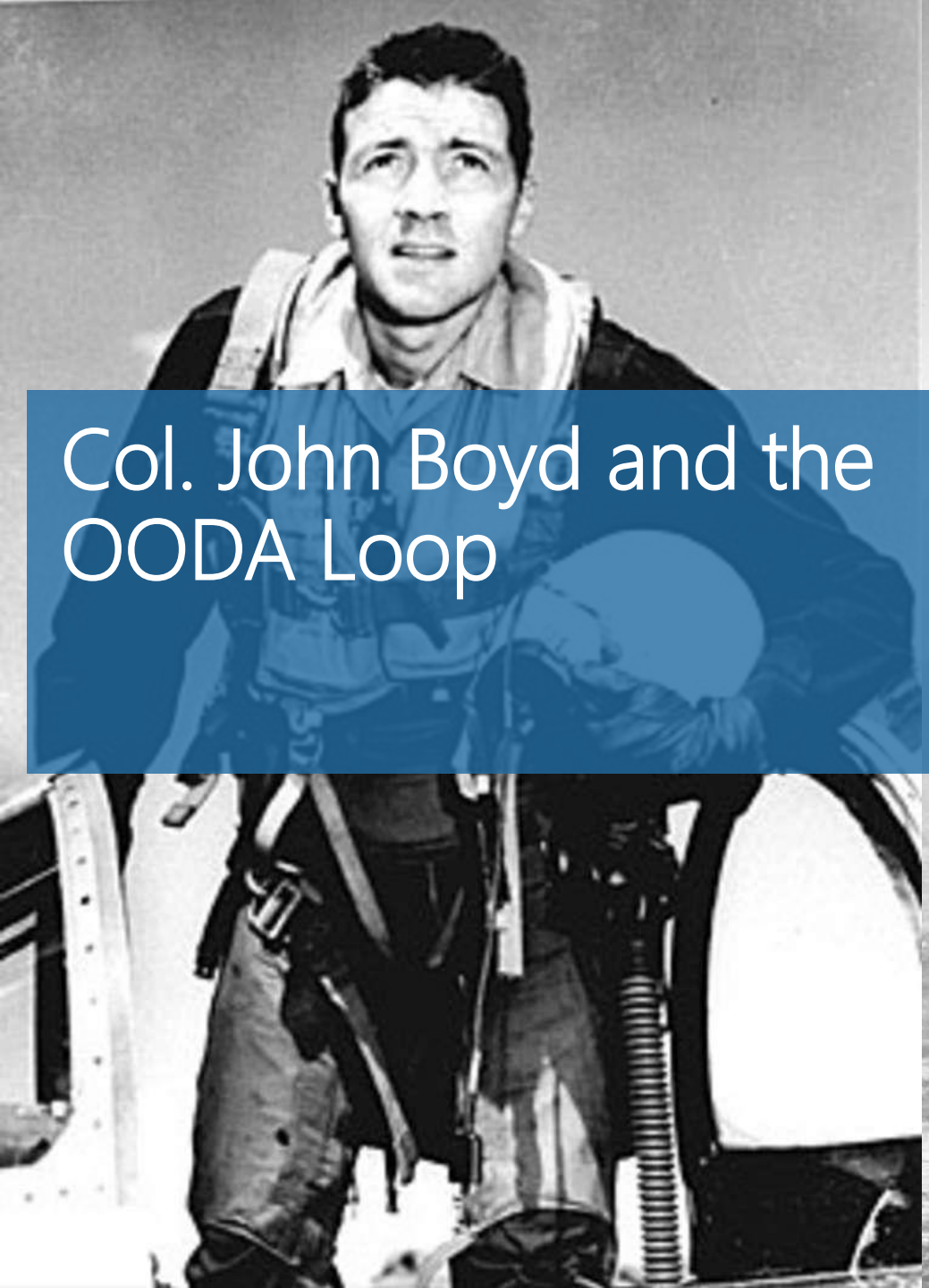


1	People

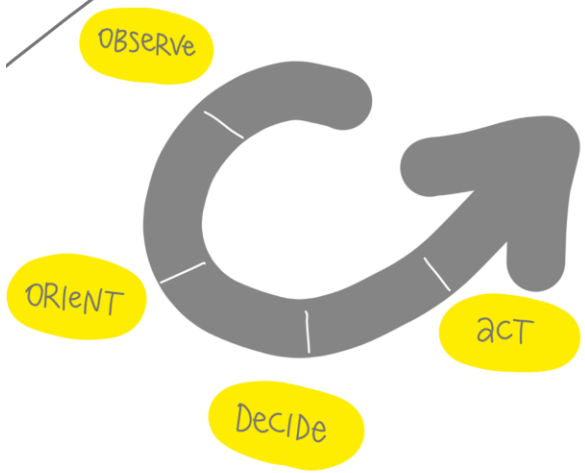
2	Process

3	Products

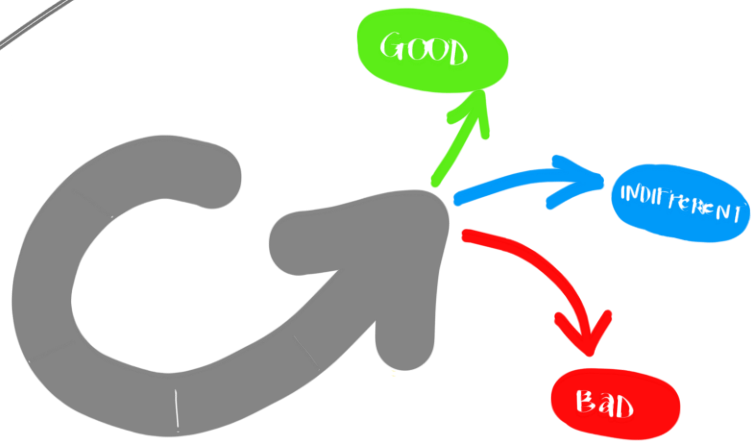
Col. John Boyd and the OODA Loop



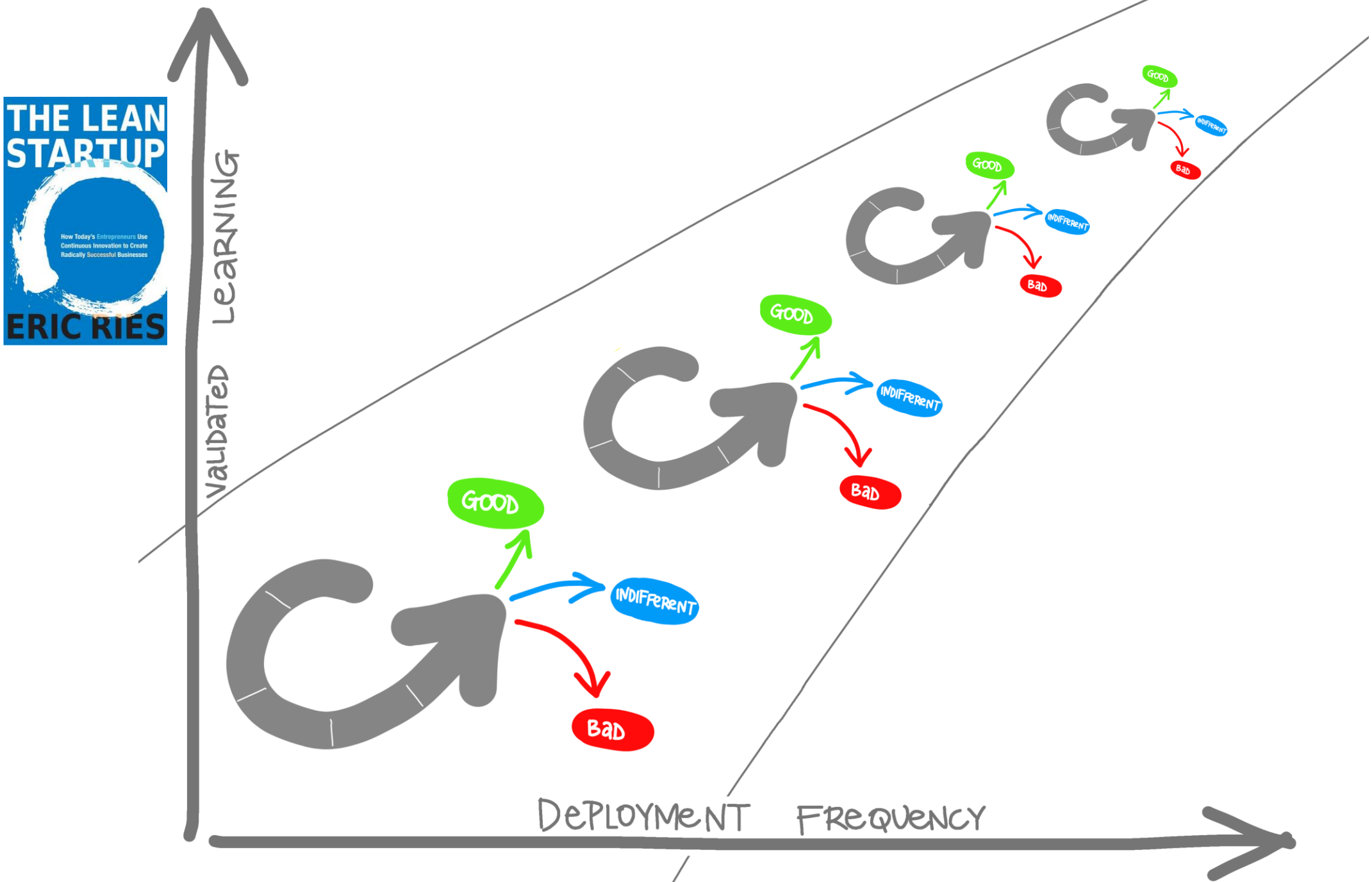
OODA Loop

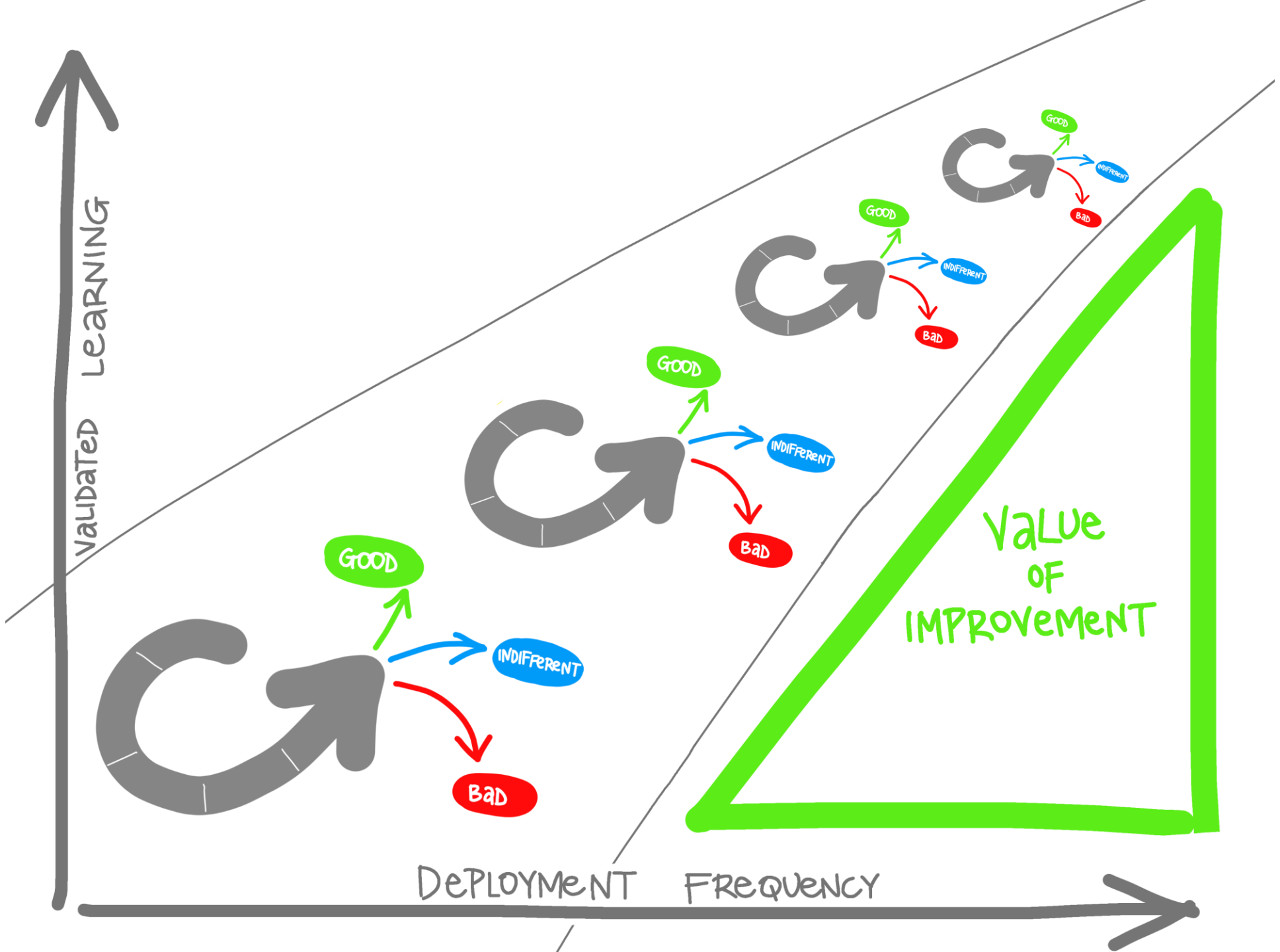


Innovation after one decision



Was hat die OODA Loop mit Software-Entwicklung zu tun?


THE LEAN STARTUP
How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses
ERIC RIES
VALIDATED LEARNING
DEPLOYMENT FREQUENCY
GOOD
INDIFFERENT
BAD


VALIDATED LEARNING
DEPLOYMENT FREQUENCY
GOOD
INDIFFERENT
BAD
VALUE OF IMPROVEMENT

Welche Herausforderungen und Blocker sehen Sie in Ihrem Unternehmen?


Culture eats strategy for breakfast

Wie verändert die Cloud die Art der Software-Entwicklung?

Our DevOps Transformation – the story so far

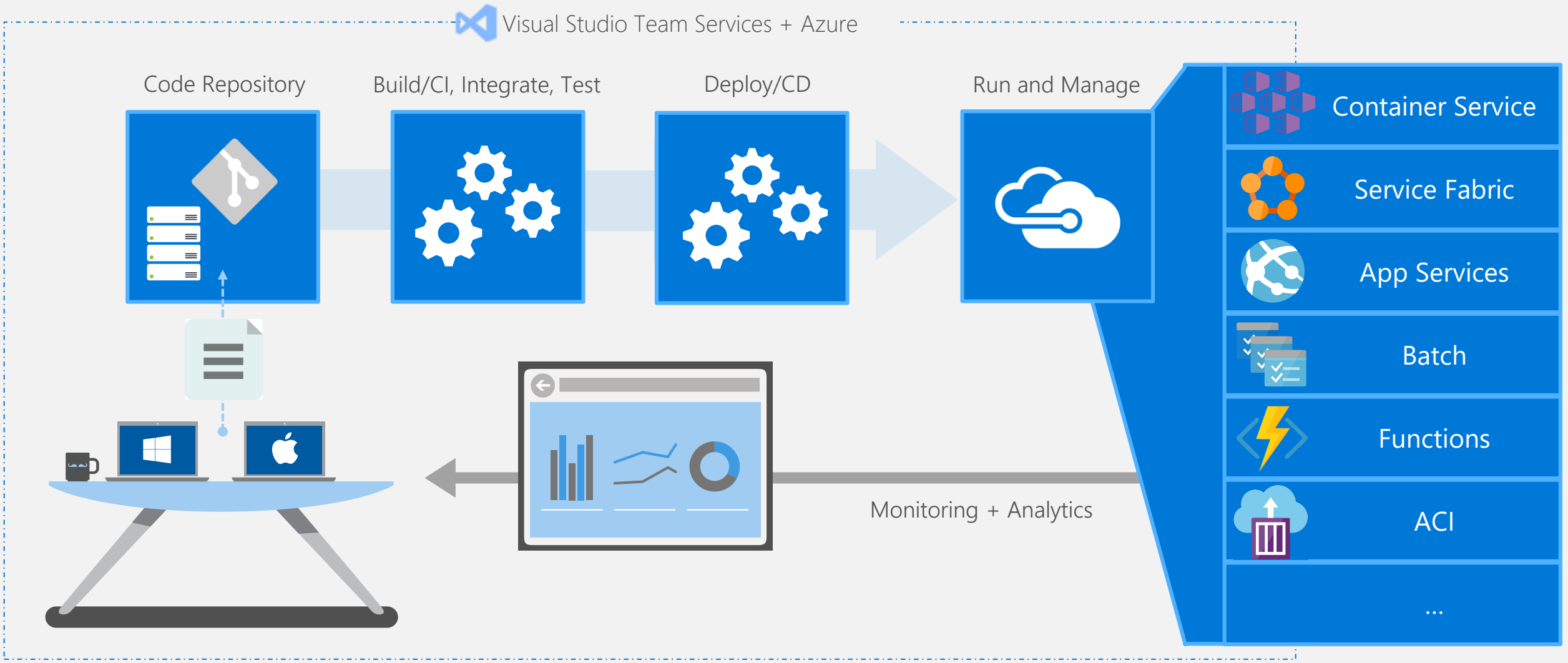
Before

- 4-6 month milestones
- Horizontal teams
- Personal offices
- Long planning cycles
- PM, Dev, Test
- Yearly customer engagement
- Feature branches
- 20+ person teams
- Secret roadmap
- Bug debt
- 100 page spec documents
- Private repositories
- Deep organizational hierarchy
- Success is a measure of install numbers
- Features shipped once a year

After

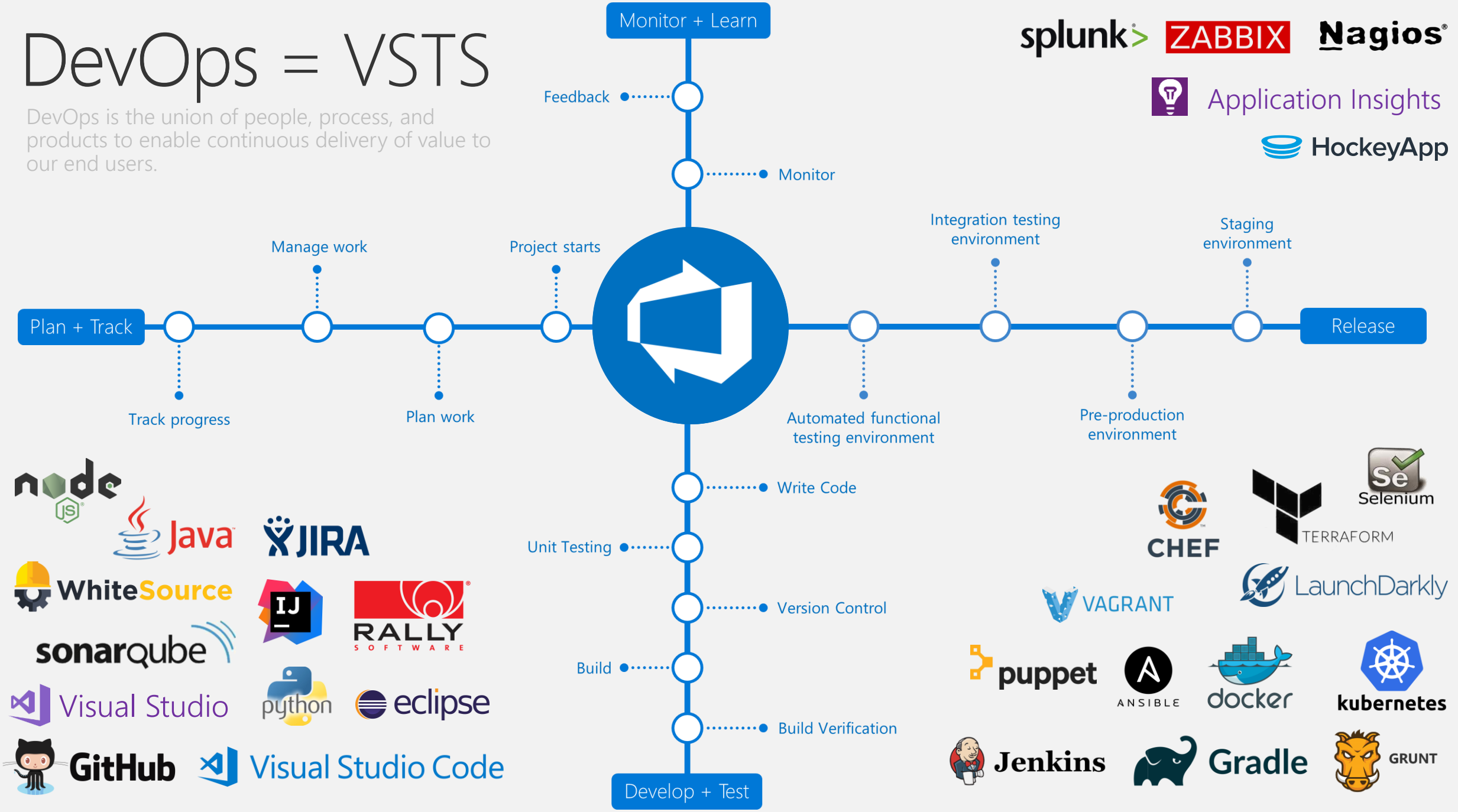
- 3-week sprints
- Vertical teams
- Team rooms
- Continual Planning & Learning
- PM & Engineering
- Continual customer engagement
- Everyone in master
- 8-12 person teams
- Publicly shared roadmap
- Zero debt
- Mockups in PPT
- Inner source
- Flattened organization hierarchy
- User satisfaction determines success
- Features shipped every sprint

Modern methodologies and automation



DevOps = VSTS

DevOps is the union of people, process, and products to enable continuous delivery of value to our end users.



splunk> ZABBIX Nagios

Application Insights

HockeyApp

node Java JIRA

WhiteSource

sonarqube

Visual Studio

GitHub

Visual Studio Code

RALLY SOFTWARE

python eclipse

Selenium

CHEF

TERRAFORM

LaunchDarkly

VAGRANT

puppet

ANSIBLE

docker

kubernetes

Jenkins

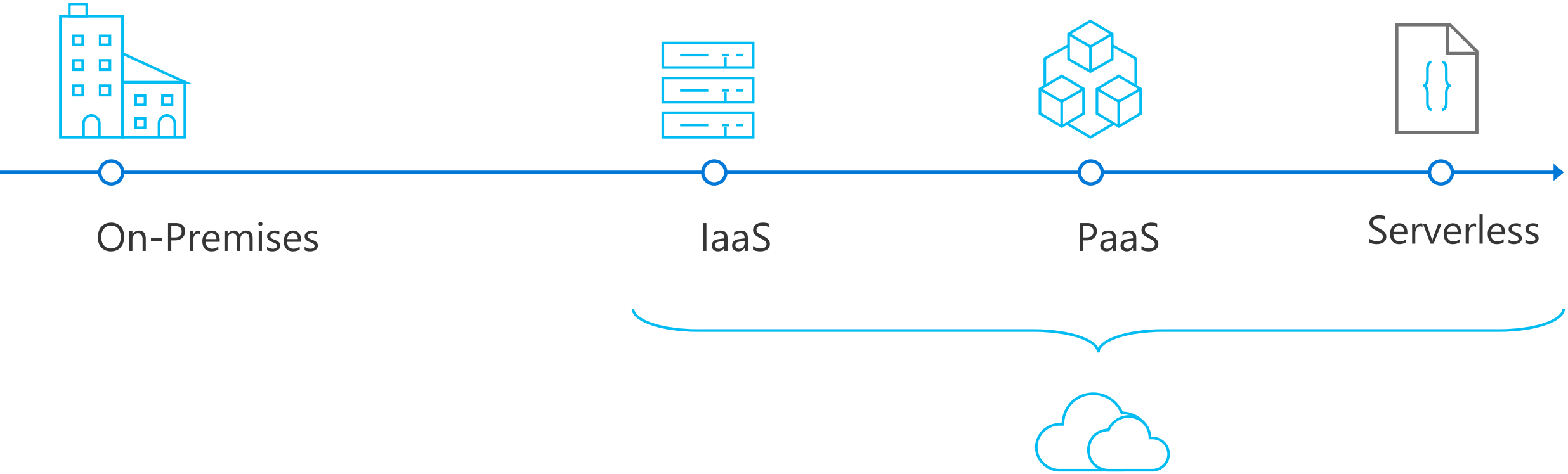
Gradle

GRUNT

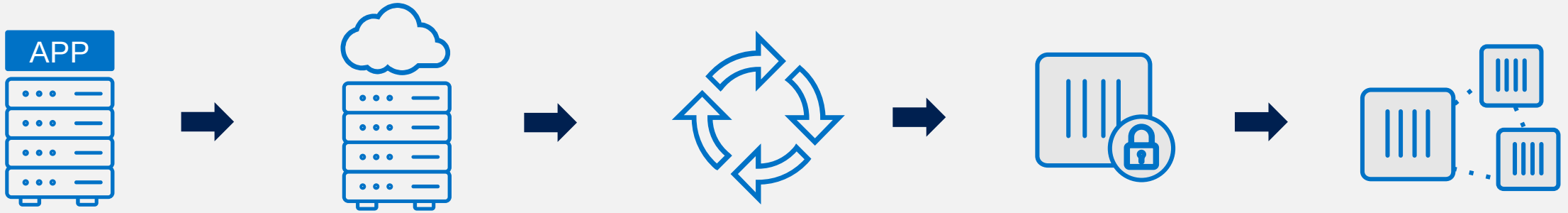
Azure unterstützt OpenSource

DEMO
Engineering live in Redmond

The landscape of application platforms



From traditional app to modern app



Existing Application

Modern Infrastructure

Move to the cloud as VMs or Containers or refresh HW.

Modern Methodologies

Implement CI/CD and automation.

Containerize Applications

Re-architect apps for scale with containers.

Modern Microservices

Add new services or start peeling off services from monolithic code.

Catalog of Services

COMPUTE

Virtual Machines
Get full control over a server in the cloud and maintain it as your business requires

Cloud Services
Managed virtual machines with stateless web and worker roles

Service Fabric
Build highly scalable, reliable stateless and stateful applications composed of microservices

Batch
For running large scale parallel and high performance computing (HPC) applications

Scheduler
Create jobs that run reliably on simple or complex schedules to invoke any type of service

Remote App
Access Windows apps from any device and any location that run within Remote App VMs

NETWORKING

Virtual Network
Provision and manage VPNs in Azure and securely link to your on-premises IT infrastructure

Express Route
Connect on-premises and cloud datacenters directly through dedicated, non-internet lines

Traffic Manager
Load-balance incoming global traffic across multiple services running in multiple datacenters

IDENTITY & ACCESS

Active Directory
Identity and access management for cloud applications and ability to link to on-premises Server AD

Multi-Factor Authentication
Safeguard access to data and apps with additional physical layer of security control

MEDIA & CDN

Media Services
Range of services that support video on-demand and live streaming workflows

CDN
Cache content for your apps in Content Delivery Network (CDN) at 100's of edge locations to improve user experiences

WEB & MOBILE

Web Apps
Managed web platform, get started for free and scale as you go using many tools/ languages

Mobile Apps
Add backend capabilities to mobile apps, with native client support on most device platforms

API Apps
Create and surface your app logic as APIs for other services and apps to consume

Logic Apps
Build/execute business processes by linking your own custom API's with an API Gallery/Marketplace

API Management
Publish and manage APIs to developers, partners and employees securely and at scale

Notification Hubs
Deliver millions of cross platform push notifications from any application backend, anywhere

ANALYTICS

HDInsight
Big Data (based on Apache Hadoop) analytics that integrate easily with Microsoft Office

Machine Learning
Mine historical data with compute power to predict future trends or behavior

Stream Analytics
Process data streams in real-time to discover and react to trends

Data Factory
Ingest data from multiple sources to combine into a cloud based data warehouse

Event Hubs
Ingest, persist, process millions of events per second from millions of devices

Mobile Engagement
Real-time actionable analytics on user behavior to increase app usage

STORAGE & BACKUP

Storage Blobs & Files
Store binary application data and web content – store for dedicated and shared virtual disks for VM's

Backup
Managed service that handles backup/restore of Windows Server machines/backup agent

Import / Export
For massive data transfer – ship encrypted disks to move data in/out of blob storage

Site Recovery
Coordinate replication and recovery of System Center private clouds

StorSimple
Automated, policy driven solution to extend on-premises primary storage for backup and disaster recovery

DATA

SQL Database
Managed relational database service with high availability and selectable performance levels

DocumentDB
Store/retrieve millions of JSON objects from a highly scalable NoSQL document database

Redis Cache
Make applications scale and be more responsive under load by keeping data closer to app logic

Search
Managed, scalable search service for your apps. Create tunable search results and ranking models

Tables
Massive scale for semi-structured key/value type data in this schema-less NoSQL store

DEVELOPER SERVICES

Visual Studio Online
Store code, plan and track projects, build, deploy and test apps in the cloud collaboratively

Application Insights
Analyze app usage, availability and performance to detect issues and solve problems proactively

HYBRID INTEGRATION

Storage Queues
Simple message queue for application de-coupling architecture for scale out

BizTalk Services
Build EDI and Enterprise App Integration (EAI) solutions in the cloud

Hybrid Connections
Connect apps in Azure with on-premises resources without a VPN or dedicated line

Service Bus
Messaging capabilities (pub/sub, queues) and on-premises to cloud connectivity solution

MANAGEMENT

Automation
Run durable PowerShell scripts to automate frequent, long running, complex Azure tasks

Portal
Web based experience to provision, control and monitor all Azure services

Key Vault
Safeguard and control keys and secrets in cloud scale hardware security modules

Operational Insights
Analyze and troubleshoot on-premises IT infrastructure without using instrumented code

COMMERCE

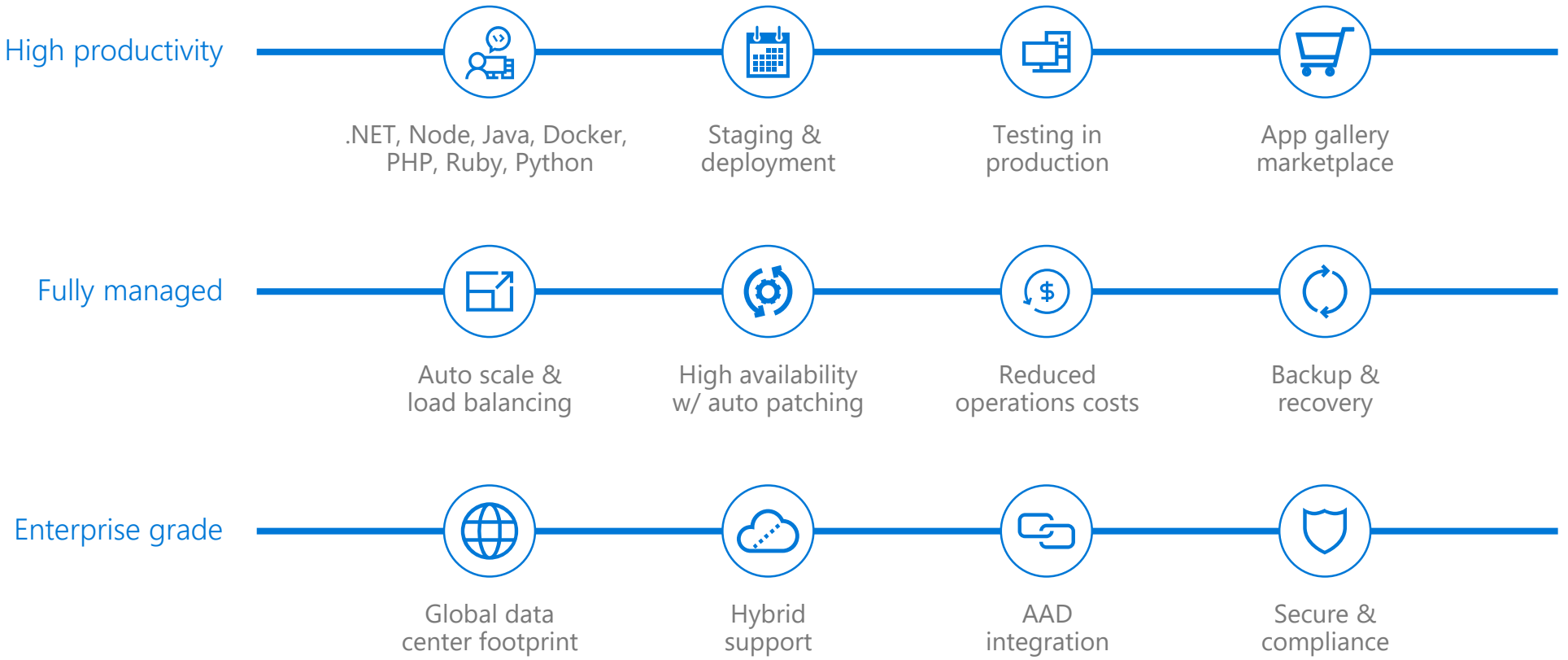
Store / Marketplace
Find and manage other services provided by third parties

VMDepot
Find free open source VM images that you can download and run in Azure Virtual Machines

From IIS to Azure App Service

Azure App Service

Quickly build, deploy and scale powerful cloud applications without worrying about infrastructure



App Service features & capabilities

High productivity

- Remote debugging with Visual Studio
- Site staging slots
- Testing in production
- Continuous integration/deployment
- Git, Visual Studio, Docker Hub, and GitHub
- App and site diagnostics
- OS and framework patching
- Site extensions gallery
- NET, PHP, Python, Node, Ruby, Java
- Framework installer
- Browser-based editing
- Auto-healing
- Logging and auditing
- Admin-site
- Support site extension
- Remote debugging

Fully managed

- Automated deployment
- AutoScale
- Built-in load balancing
- WW datacenter coverage
- End point monitoring and alerts
- App gallery
- DR site support
- WildCard support
- Dedicated IP address
- HTTP compression
- CDN support for websites
- Premium WordPress
- App Services Environments

Enterprise grade

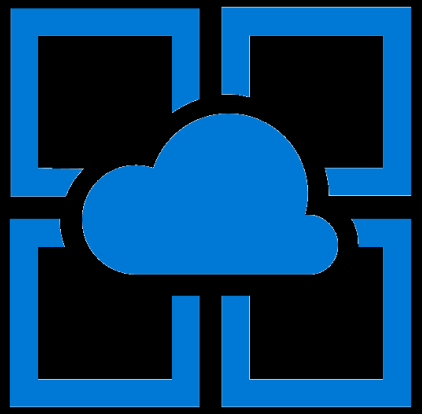
- Hybrid connections/VPN support
- Scheduled backup
- Azure Active Directory Integration
- Site resiliency, HA, and DR
- Web jobs
- Role base access control
- Audit/compliance
- Enterprise migration
- Client certs
- Cache
- IP restrictions/SSL
- Web sockets
- SQL, MySQL, DocDB, and Mongo
- Sticky sessions
- Authorization/authentication
- MSI

Across Multiple Service Offerings

Multitenant
Free, Basic, Standard, Premium

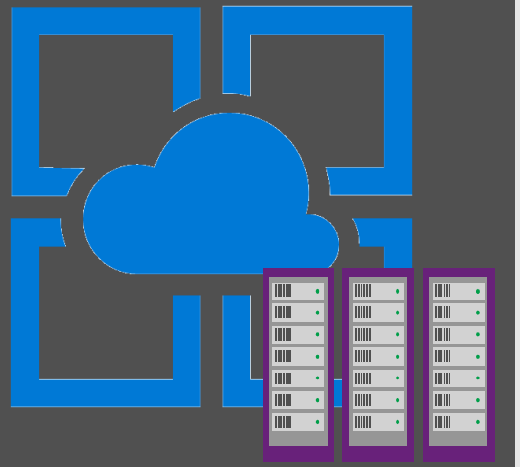
Get your API, Mobile App or Web App created in seconds in the cloud. We provide the infrastructure, you provide your application code.

Isolated
App Service Environment



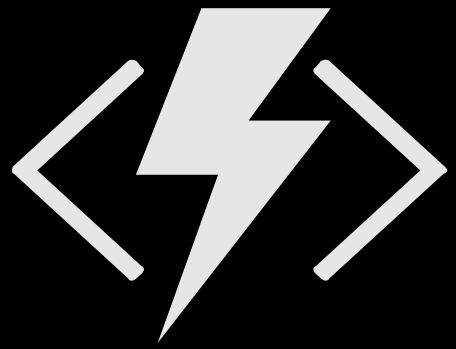
Your own dedicated cloud environment with network isolation for apps, higher scale, and the ability to connect securely to local vNets.

On Premise
Azure Stack



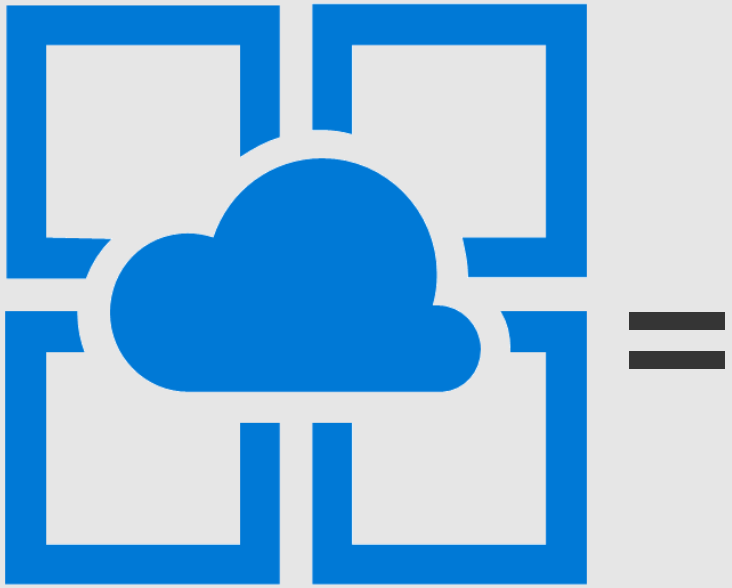
Leverage cloud innovations in on-premises infrastructure. App Service on Azure Stack brings the power of Azure App Service to your own data centers

On Demand
Azure Functions on App Service



Run your Azure Functions on a App Service plan. All the advantages of Functions with the SLA and 'always on' features of an App Service plan.

Azure App Service – App Types



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Web apps

Web apps that scale with your business

Mobile apps

Mobile apps and back-ends for any device

Functions

A serverless event based experience to accelerate your development.

API apps

Easily build and consume APIs in the cloud

DEMO

Serverless

What is Serverless?

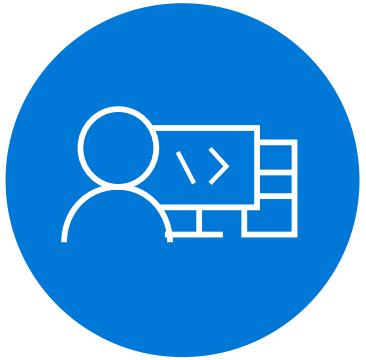
Abstraction
of servers

Event-driven/
instant scale

Micro-billing

Benefits of Serverless

Manage apps not servers



Reduced DevOps

Faster time to market

Code Azure Functions Events + data

Inspired by Chris Anderson @ Microsoft

Azure Functions

Events

React to timers, HTTP, or events from your favorite Azure services, with more on the way

Code

Author functions in C#, F#, Node.JS, **Java**, and more

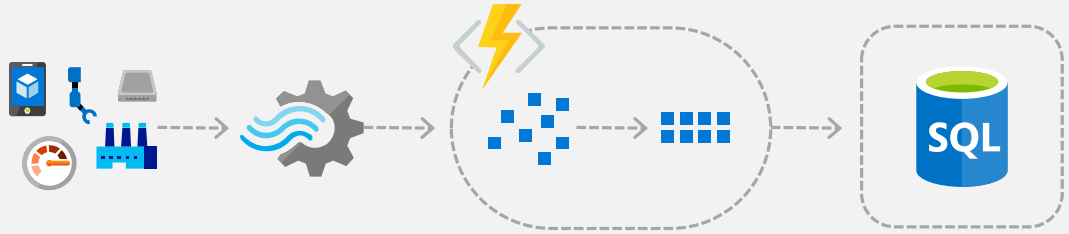
Outputs

Send results to an ever-growing collection of services

Scenarios

Anything that needs to respond to events

Real-time stream processing

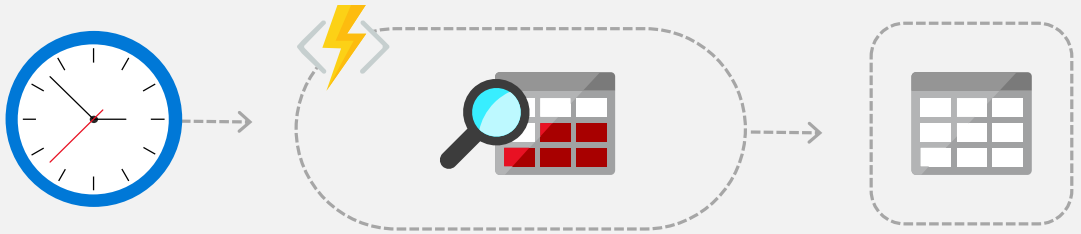


Millions of devices feed into Stream Analytics

Transform to structured data

Store data in Cosmos DB

Timer-based processing



Every 15 minutes

Find and clean invalid data

Clean table

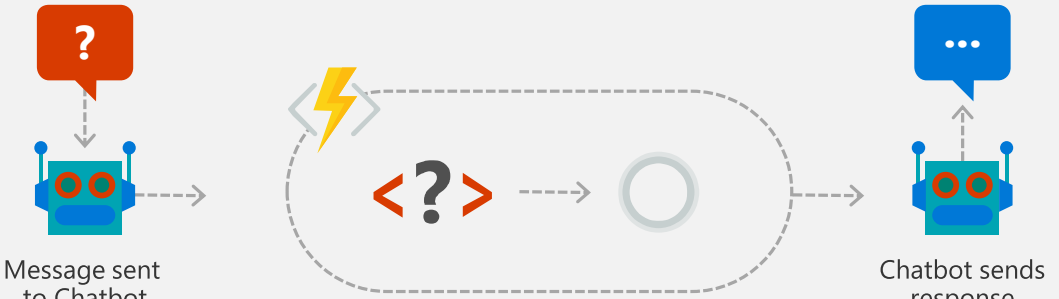
Mobile app backends

Photo taken and WebHook called

Stores in blob storage

Produces scaled images

Real-time bot messaging



Message sent to Chatbot

Cortana Analytics answers questions

Chatbot sends response

Inherit from / Build on top of App Services

Full control of dependencies and connectors

Choose your fav language and coding environment

Powerful integration into your existing Azure apps

Choose from a wide variety of triggers

100% operated

Open sourced

Azure Functions

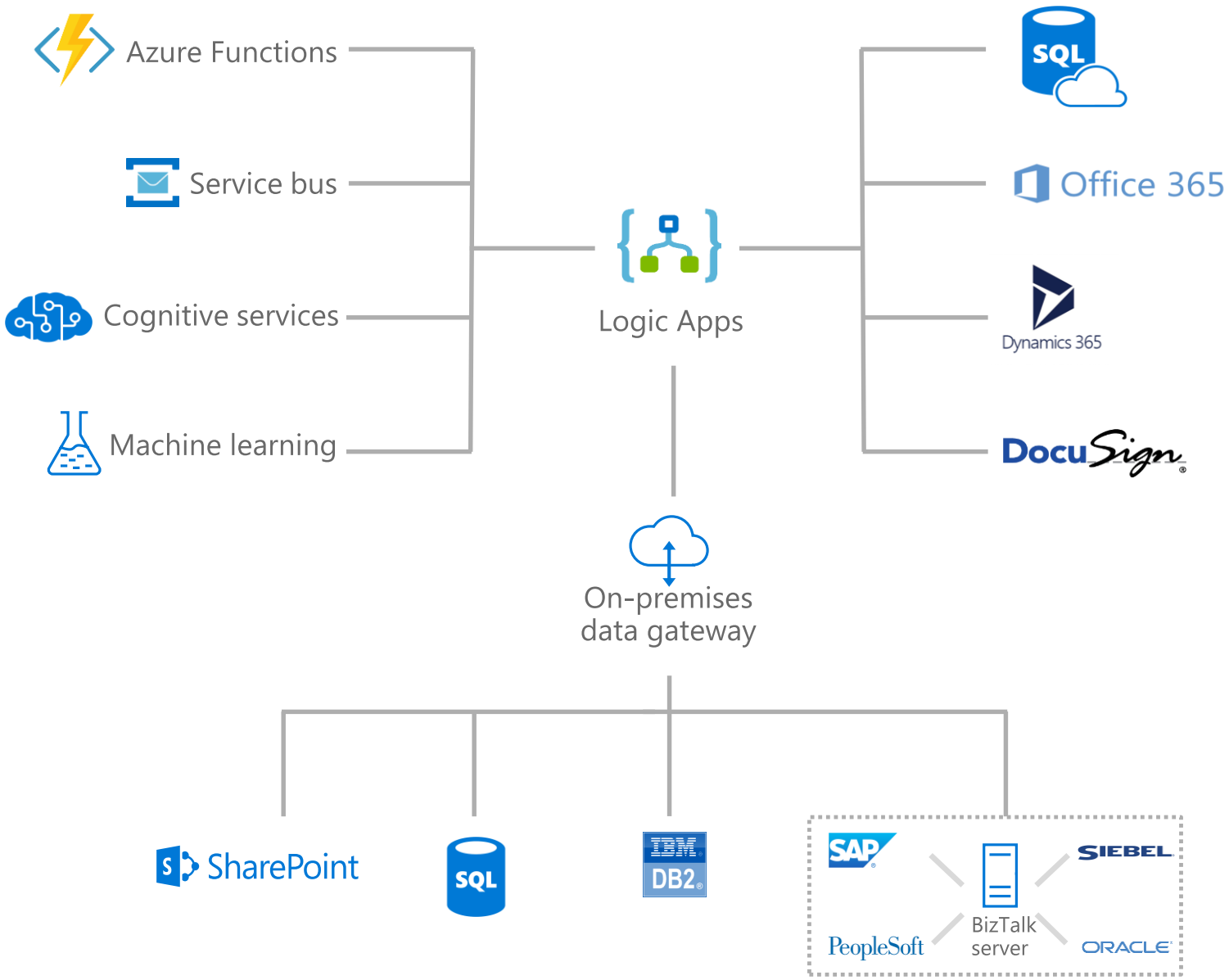
Consumption plan

- ✓ Automatic allocation of compute power during runtime
- ✓ Auto scaling
- ✓ No paying for idle VMs
- ✓ Default timeout for functions 5 minutes (extendable up to 10 minutes)
- ✓ Each instance of the function is limited to 1.5 GB of memory

AppService plan

- ✓ Function is running on dedicated VMs
- ✓ Support for functions on Linux
- ✓ Need more CPU or memory than provided by Consumption plan

Logic Apps connects everything



Logic Apps Workflow Designer

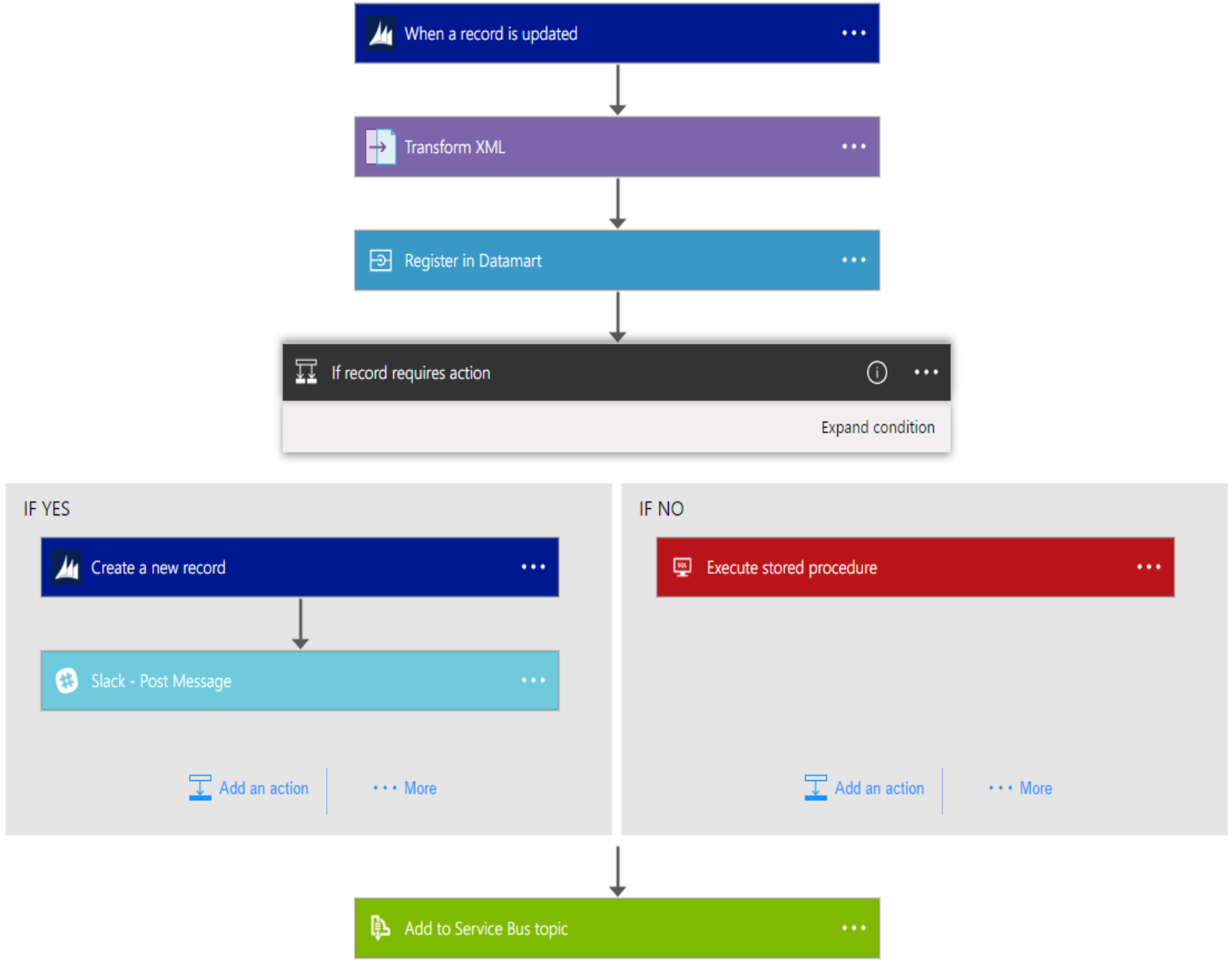
Workflow in the cloud

Powerful control flow

Connect disparate applications

No code designer for rapid creation

Also works within Visual Studio for added CI/CD



Logic Apps

Cloud APIs and platform functionality

- Over 170 built-in connectors
- Hosted and managed within the platform
- Scales to meet your needs
- First class designer experience
- Rapid development

API connections

- Authenticate once and reuse
- Differentiate connection configuration
- Simple to deploy
- Portal experience for managing API Connections

SaaS

- appFigures
- Asana
- Azure API Management
- Azure App Services
- Azure Automation
- Azure Cognitive Face API
- Azure Cognitive LUIS
- Azure Cognitive Text Analytics
- Azure Cognitive Vision
- Azure Data Lake Store
- Azure Document DB
- Azure Event Hub
- Azure Functions
- Azure Machine Learning
- Azure Resource Manager
- Azure Service Bus
- Azure SQL
- Azure Storage Blob
- Azure Storage Queues
- Basecamp
- Bing Search
- BitBucket
- Bitly
- Blogger
- Box
- Buffer
- Campfire
- Chatter
- Common Data Service
- Disqus
- DocuSign
- Dropbox
- Dynamics AX Online
- Dynamics CRM Online
- Dynamics CRM Service Bus
- Dynamics Financials
- Dynamics Operations
- Easy Redmine
- Eventbrite
- Facebook
- FreshBooks
- Freshdesk
- GitHub
- Gmail
- Google Calendar
- Google Contacts
- Google Drive
- Google Sheets
- Google Tasks
- GoTo Meeting
- GoTo Training
- GoTo Webinar
- Harvest
- HelloSign
- Infusionsoft
- JIRA
- Insightly
- Instagram
- Instapaper
- MailChimp
- Mandrill
- Medium
- Microsoft Project Online
- Microsoft Translator
- MSN Weather
- Muhimbi PDF
- Office 365
- Office 365 Users
- Office 365 Video
- OneDrive
- OneDrive for Business
- OneNote
- Outlook.com
- Outlook Tasks
- PagerDuty
- Pinterest
- Pipedrive
- Pivotal Tracker
- Power BI
- Project Online
- Redmine
- Salesforce
- Salesforce Chatter
- SendGrid
- SharePoint Online
- Slack
- SmartSheet
- SparkPost
- Stripe
- Survey Monkey
- Todoist
- Toodledo
- Trello
- Twilio
- Twitter
- Typeform
- UserVoice
- VS Team Services
- Webmerge
- Wordpress
- Wunderlist
- Yammer
- YouTube
- Zendesk

Protocols/native

- HTTP, HTTPS
- HTTP Webhook
- FTP, SFTP
- SMTP
- RSS
- Compose, Query, Parse JSON
- Wait
- Terminate
- Workflow

XML and EDI

- XML Validation
- Transform XML (+Mapper)
- Flat File Encode
- Flat File Decode
- X12
- EDIFACT
- AS2
- Integration Account Artifact Lookup

Hybrid

- BizTalk Server
- File System
- IBM DB2
- Informix
- Oracle DB
- SharePoint Server
- SQL Server
- SAP
- Websphere MQ

Azure Event Grid

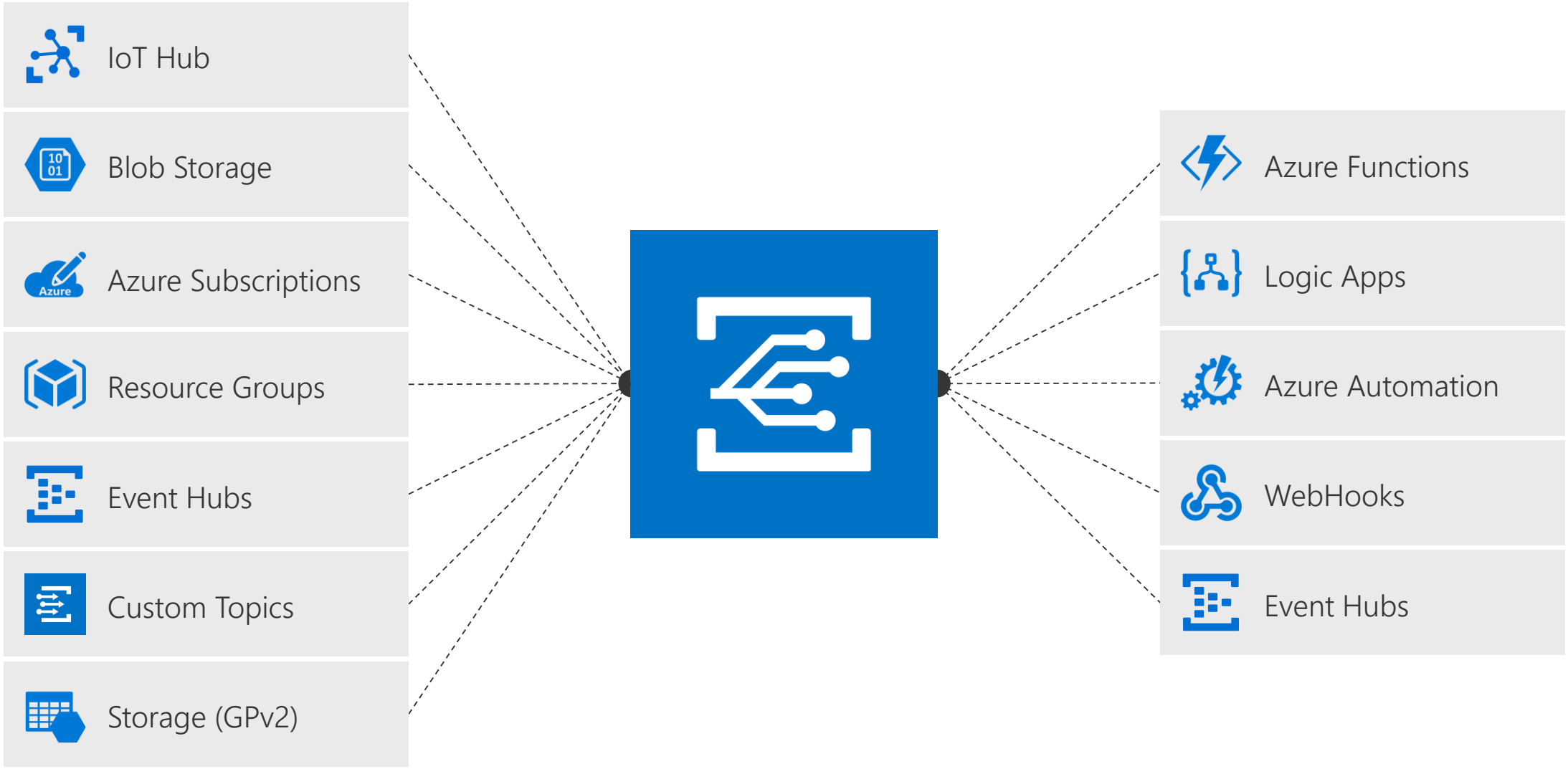
Fully-managed
event routing

Near real-time event
delivery at scale

Broad coverage within
Azure and beyond

Backbone of event-driven computing

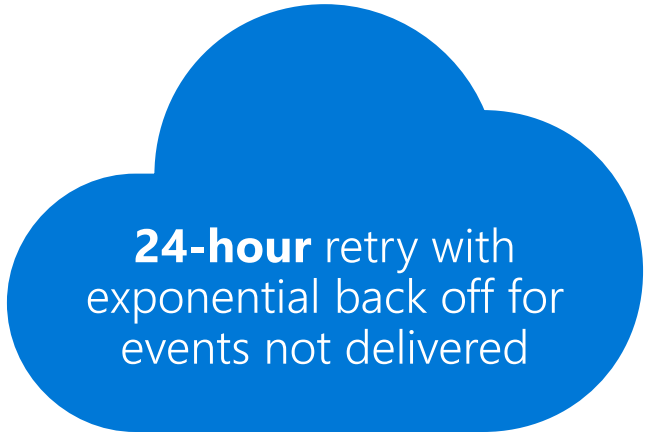
Manage all events in one place



Ensure reliability and performance in your apps

High availability

Massive scale-out

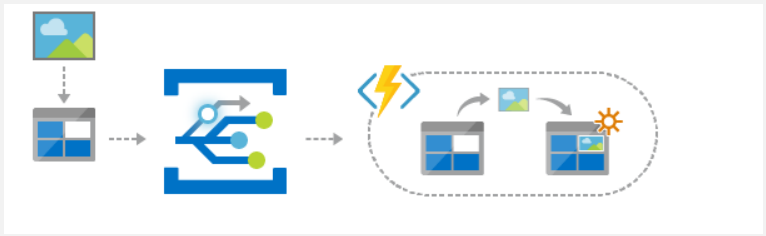


High reliability

Scenarios

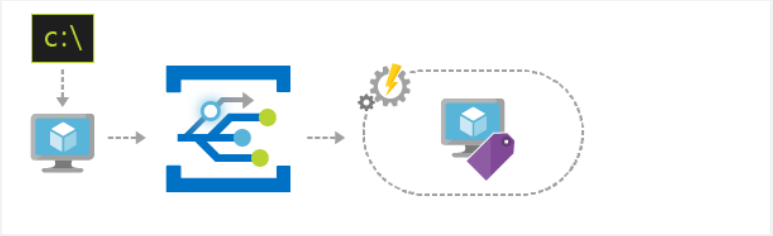
Serverless apps

Instantly trigger a serverless function to run analysis when a new file is added to a blob storage container.



Ops automation

Speed up automation and simplify policy enforcement by notifying Azure Automation when underlying infrastructure is provisioned



Application integration

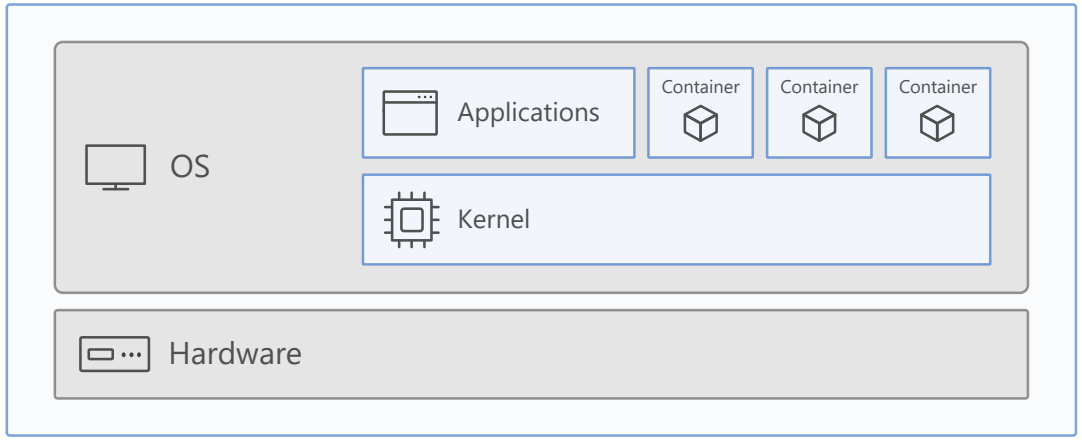
Connect your app with other services. Create an application topic to route your app's event data to any desired destination

From VM to Container

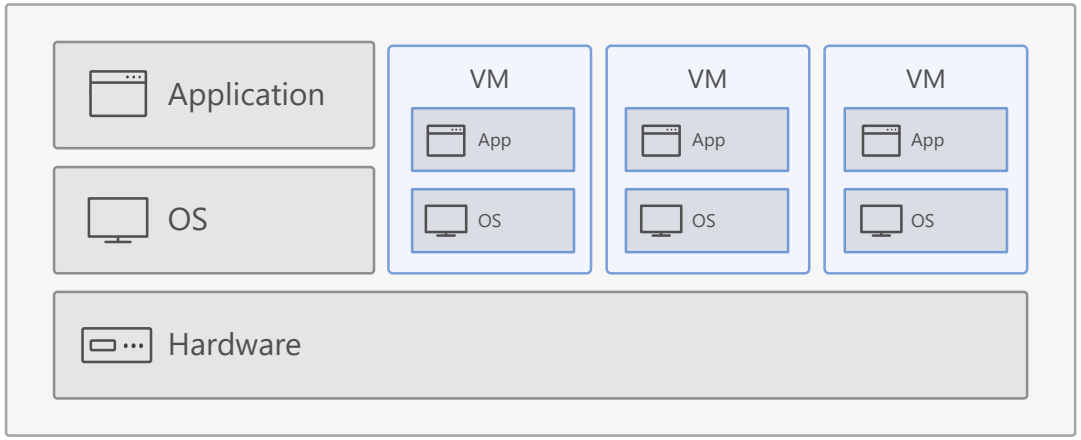
What is a **container**?

What is a **container**?

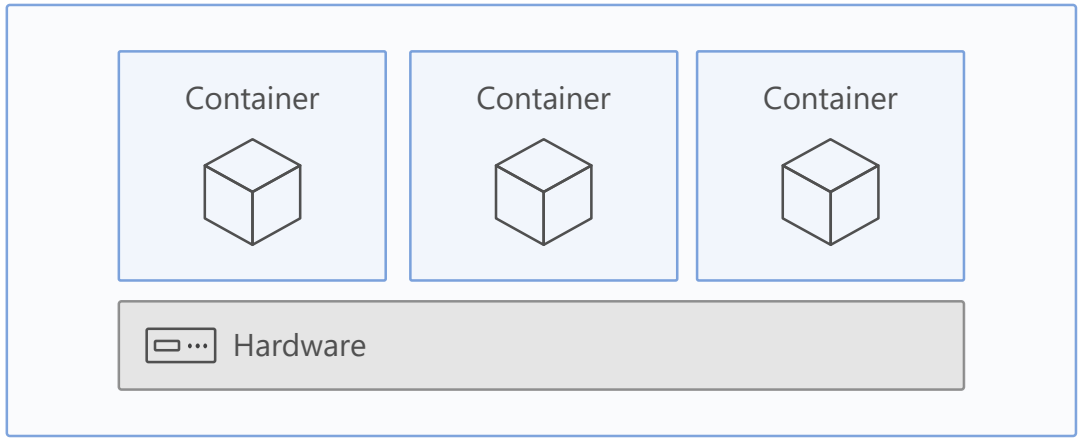
Containers = operating system virtualization



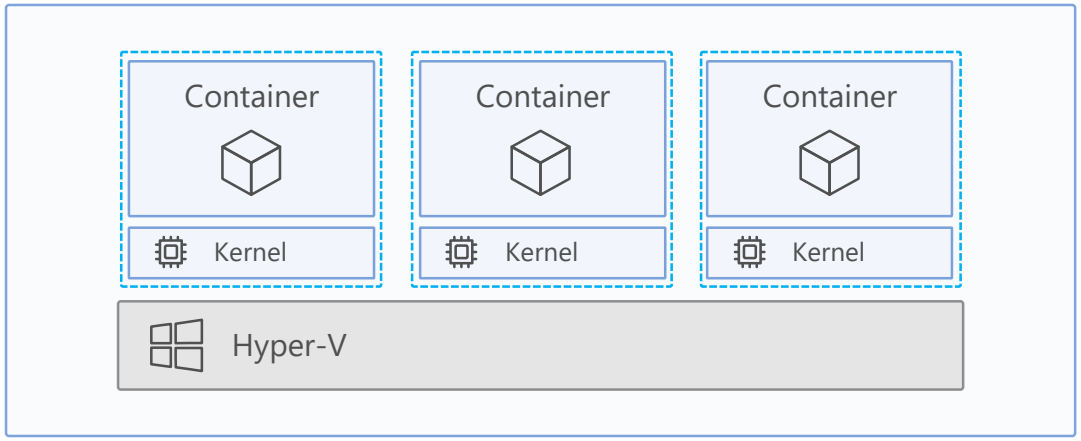
Traditional virtual machines = hardware virtualization



Windows Server containers: maximum speed and density



Hyper-V containers: isolation plus performance

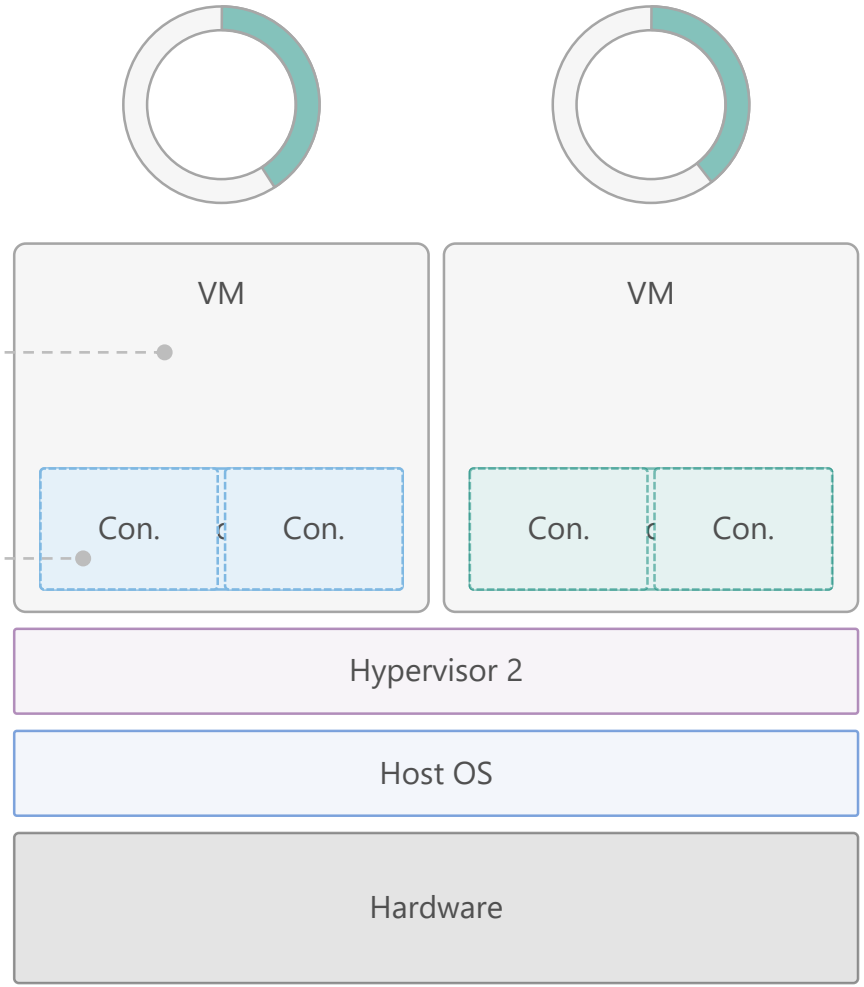


The container **advantage**

Traditional virtualized environment

Low utilization of container resources

Containerization of applications and their dependencies

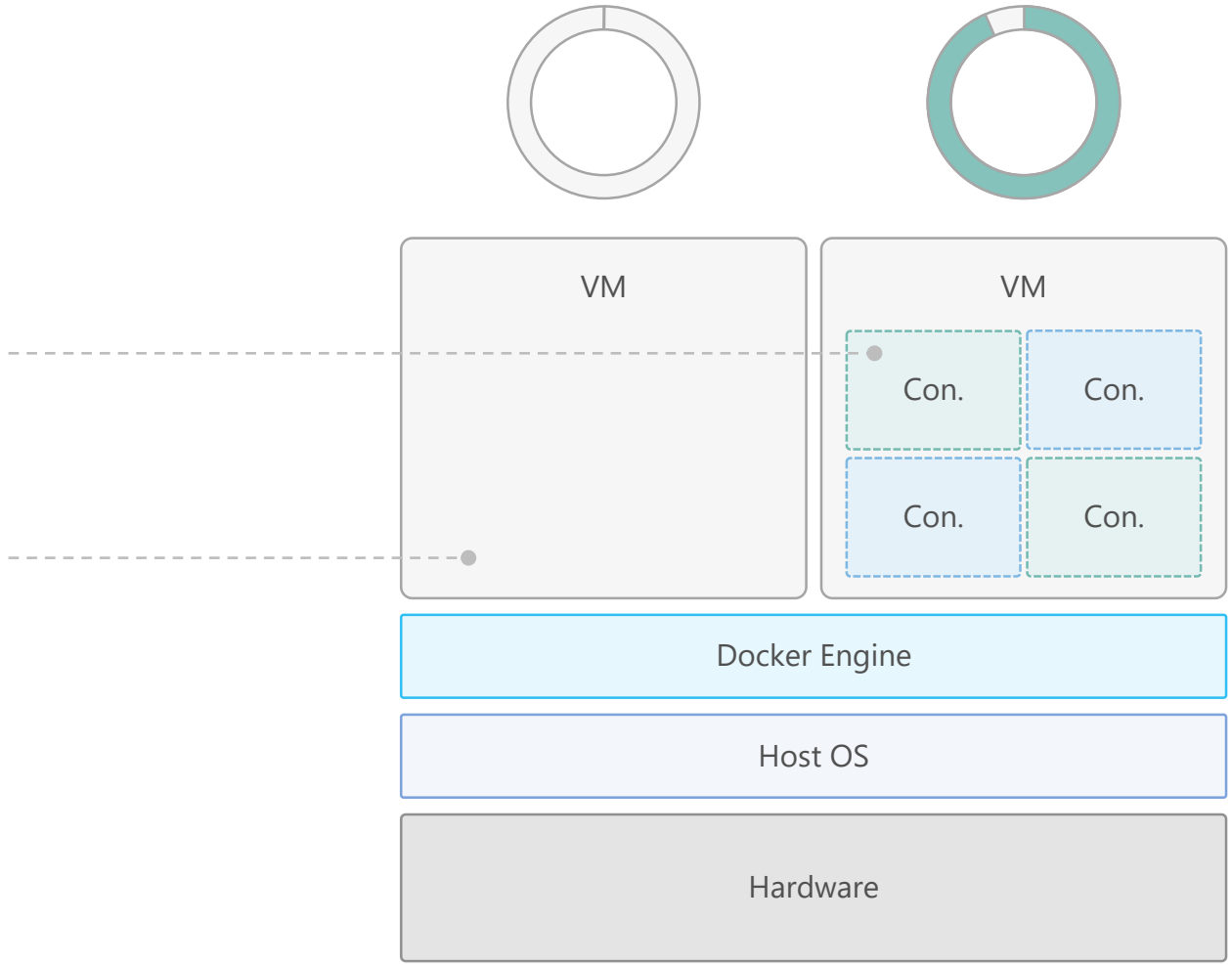


The container **advantage**

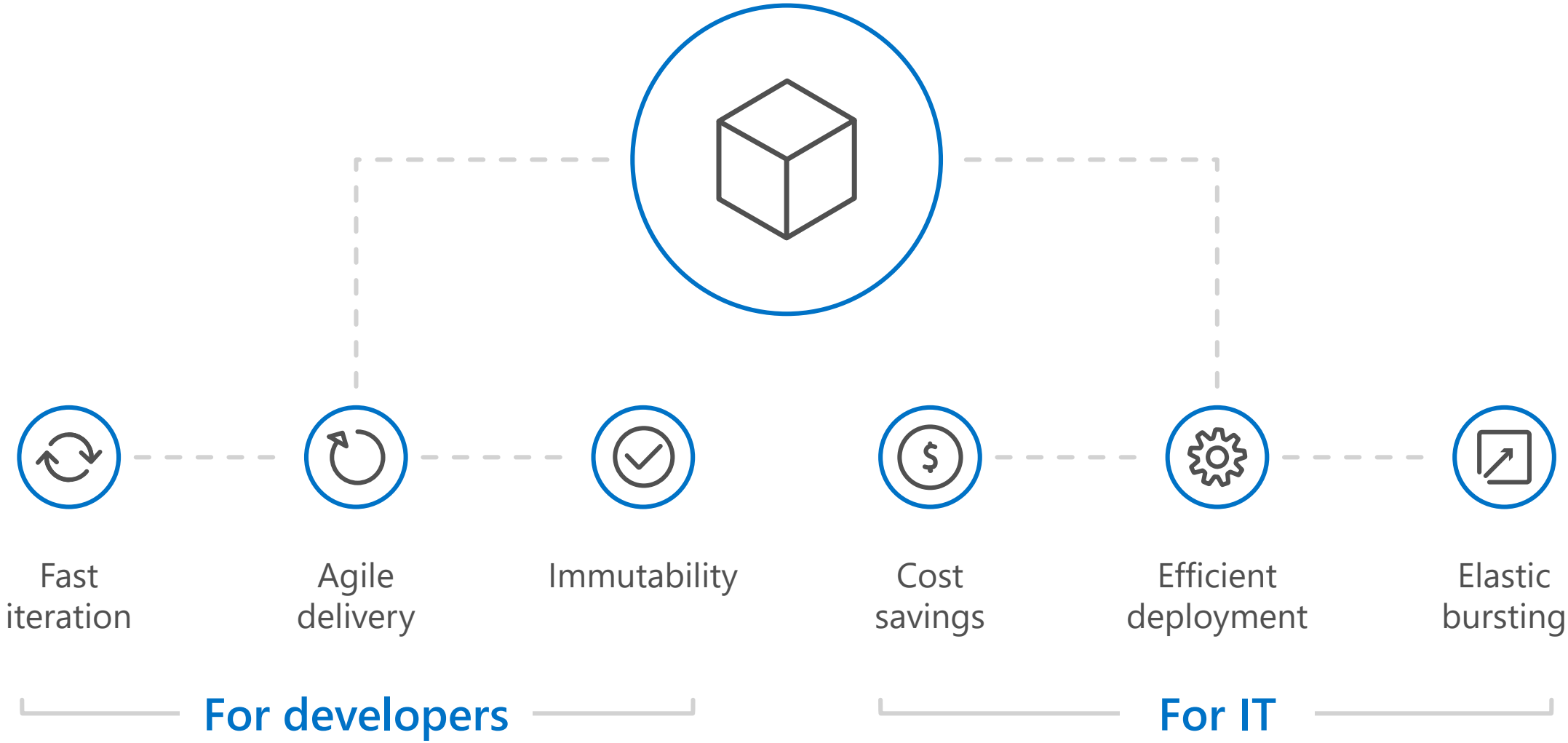
Containerized environment

Migrate containers and their dependencies to underutilized VMs for improved density and isolation

Decommission unused resources for efficiency gains and cost savings

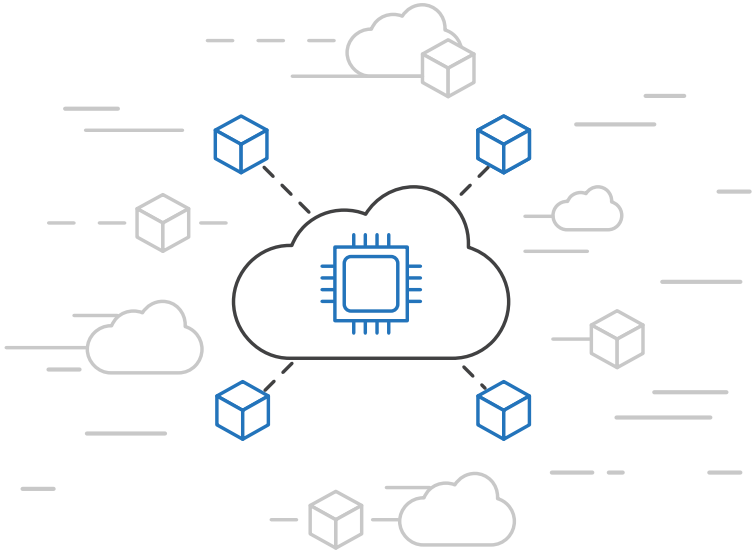


The container **advantage**

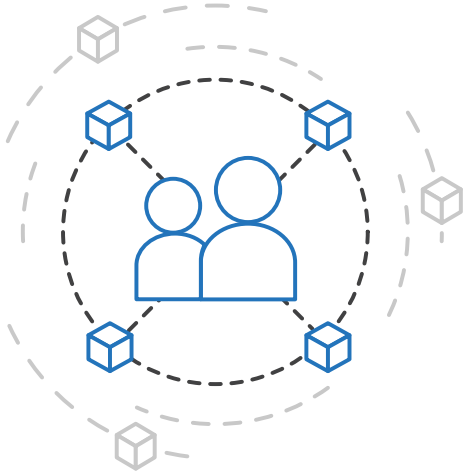


Azure container **strategy**

Embrace containers as ubiquitous

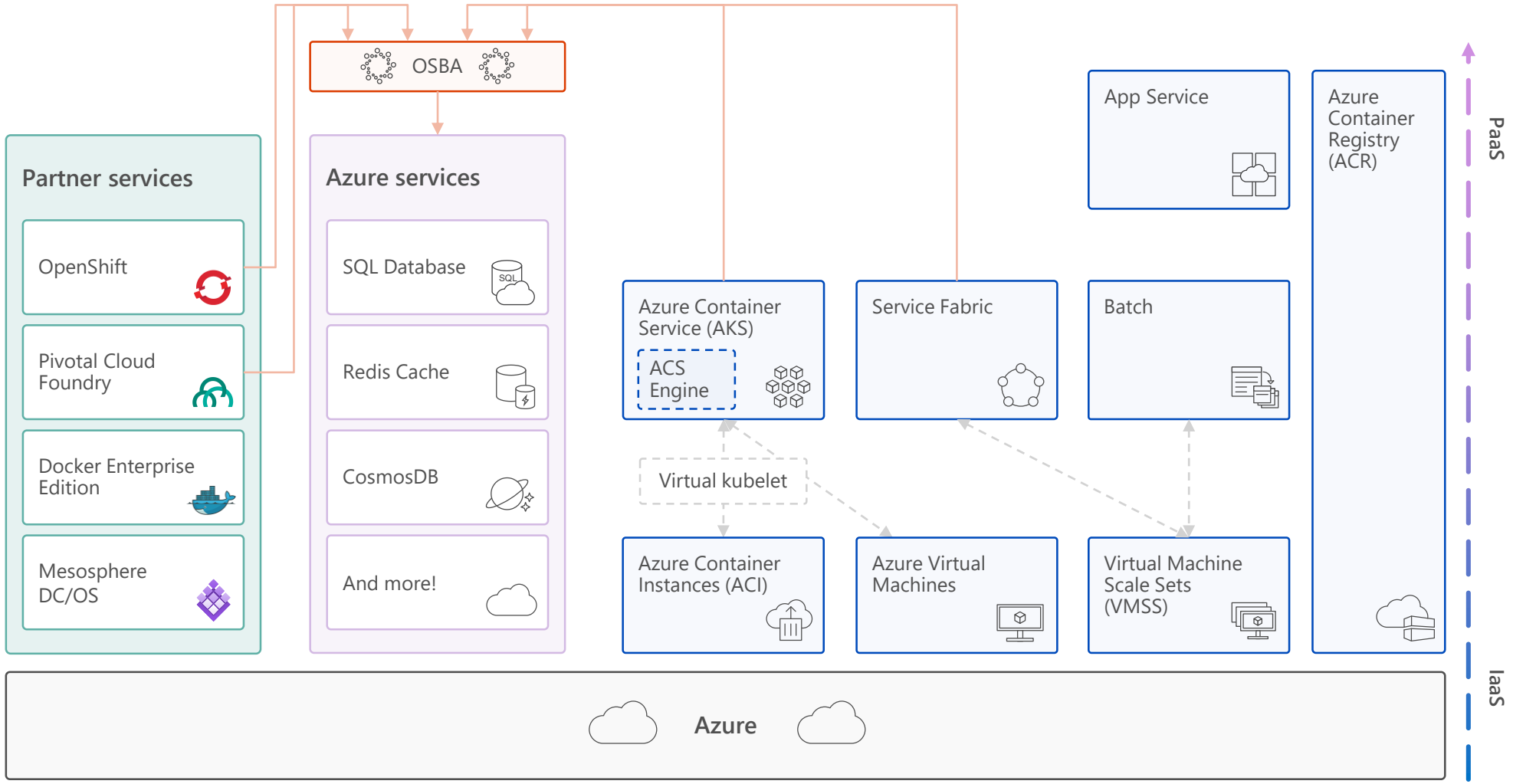


Support containers across the compute portfolio



Democratize container technology

Azure container **ecosystem**



What is Container Image Registry

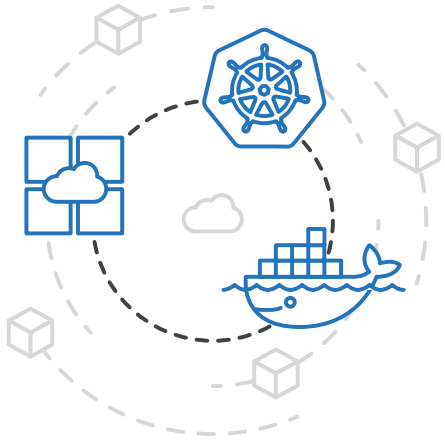
What is a registry?

Stores container images

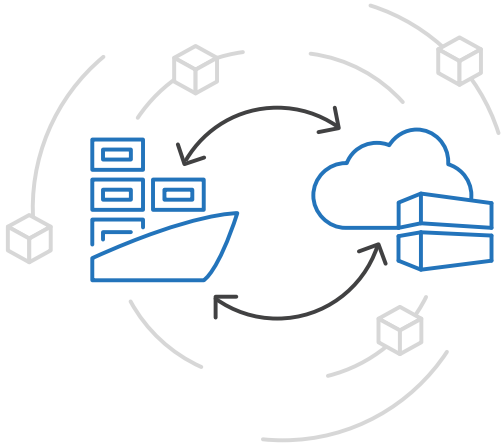
- Images are **Pushed** into a registry
- Images are **Pulled** from a registry
- Images are **Searched** for within a registry

Azure Container Registry

Manage a Docker private registry as a first-class Azure resource



Manage images for all types of containers



Use familiar, open-source Docker CLI tools

Azure Container Registry geo-replication

Web App for containers

App Service based on Linux

- Support for docker based images
- Benefits of App Services (auto-scaling, high availability, AAD-integration, …)
- High-productivity experience across deployment, CI/CD and scaling
- Low to no infrastructure maintenance

If you build hyperscale web applications, desire multi-cloud or access to underlying VMs -> think about ACS or AKS

The elements of **orchestration**

Scheduling

Affinity/anti-affinity

Health monitoring

Failover

Scaling

Networking

Service discovery

Coordinated app upgrades

Kubernetes: the de-facto orchestrator

Portable

Public, private, hybrid, multi-cloud

Extensible

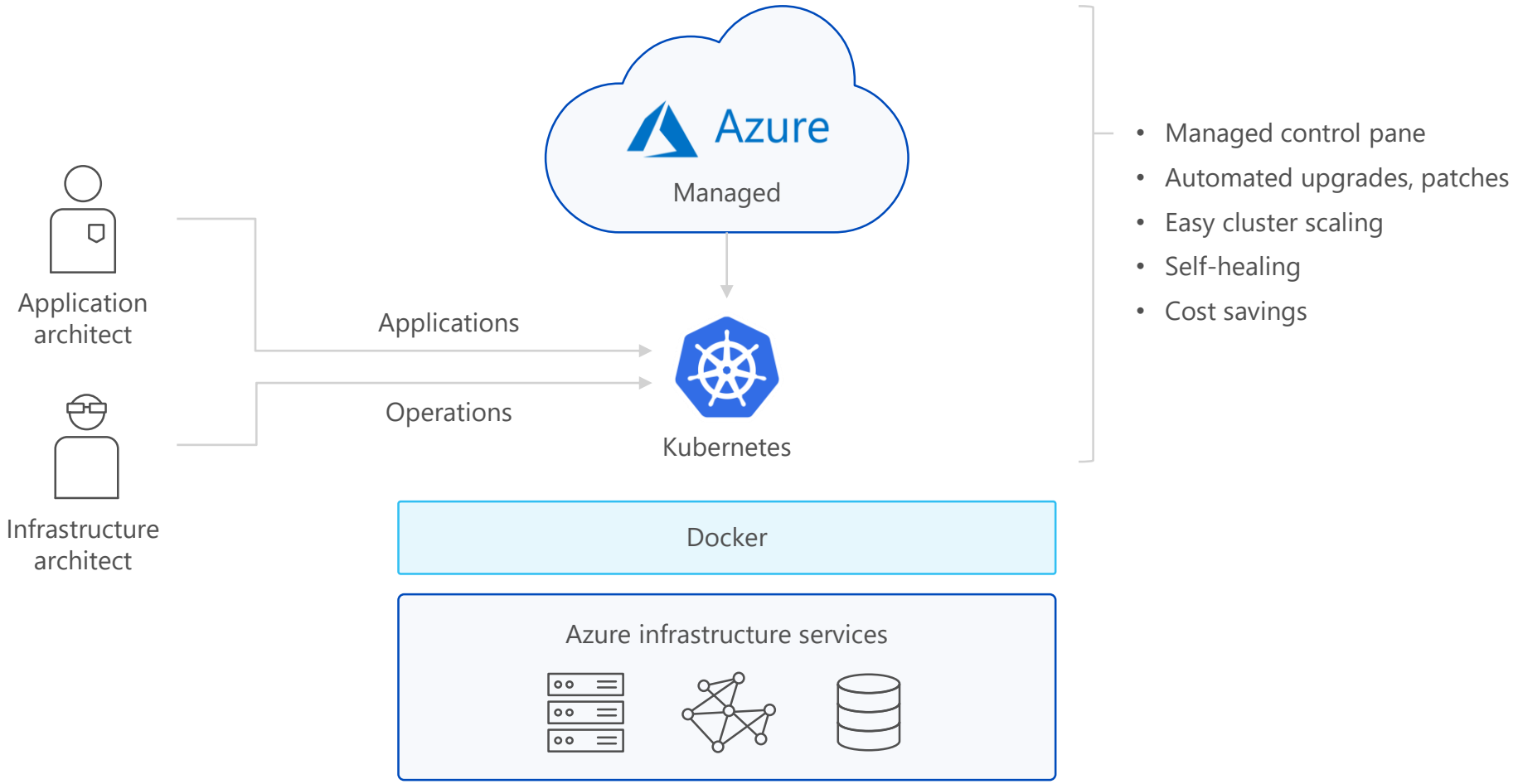
Modular, pluggable, hookable, composable

Self-healing

Auto-placement, auto-restart, auto-replication, auto-scaling

Azure Container Service (AKS)

A fully managed Kubernetes cluster



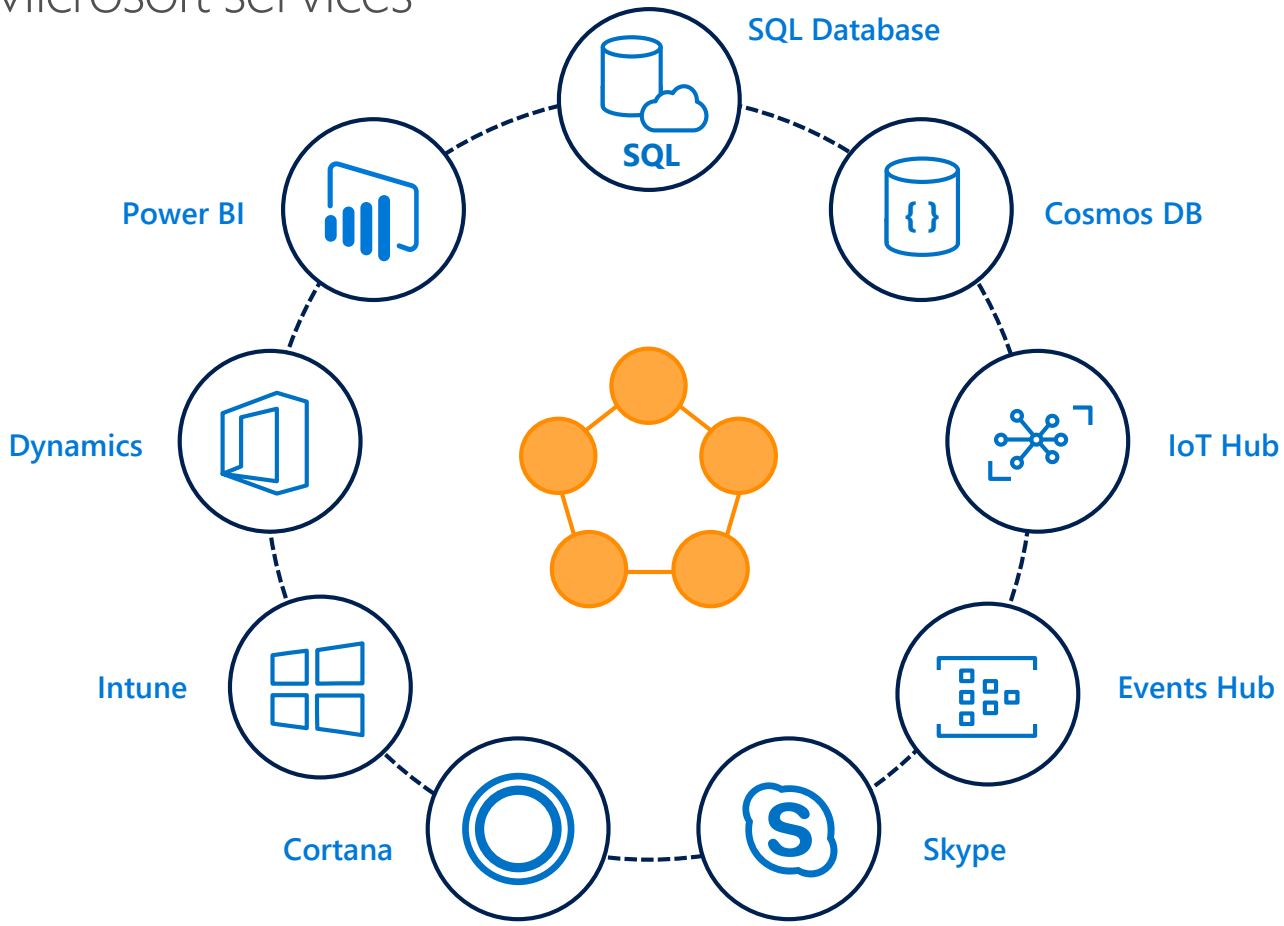
- Managed control pane
- Automated upgrades, patches
- Easy cluster scaling
- Self-healing
- Cost savings

DEMO

Azure Service Fabric

Proven platform powering core Azure and Microsoft services

- Microsoft has **deep expertise** in running global services such as Corana, Skype & Cosmos DB
- Service Fabric is the **foundational technology** powering these services & core Azure infra
- Sample scale of one of these services**: 60 billion events per day** with millions of databases



Build: data-aware microservices

Programming Models

Dev & Ops Tooling

Orchestration

Lifecycle Management

Health & Monitoring

Always On Availability

Auto Scaling

Reliable Actors

Use familiar tools: Visual Studio + Team Services for .NET or Jenkins + Yeomen for Java

Reliable Services

Manage state reliability without a database, lowering latency

Guest Executables

Run existing code and orchestrate life cycle using service fabric

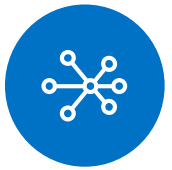
Containers

Orchestrate your Windows Server or Linux containers reliably at scale

.NET or Java …

Built-in ASP.NET core integration; work with VS and VSTS or Eclipse and Jenkins

Deploy: any code on any OS



Programming Models

Dev & Ops Tooling

Orchestration

Lifecycle Management

Health & Monitoring

Always On Availability

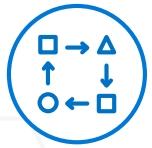
Auto Scaling

CI/CD

Maximize uptime and scalability with isolated compute threads running concurrently

Docker Compose

Orchestrate existing container applications natively



Automate

Deploy or remove applications using PowerShell, CLI, Visual Studio, and other APIs

Rolling upgrades

Upgrade non-disruptively and roll-back in case of failures, automate with PowerShell

Monitor and diagnose

Generate, aggregate, and analyze events with built-in tooling and integration with Azure services

Operate: on any cloud at any scale

Programming Models

Dev & Ops Tooling

Orchestration

Lifecycle Management

Health & Monitoring

Always On Availability

Auto Scaling

Use familiar tools

Such as Splunk, OMS, ELK, or AppInsights to gain deep insights or monitor application health

Use controlled chaos

Test graceful and ungraceful failure scenarios

Recover gracefully

Recover from node or service failure gracefully; replicate data automatically

Secure at scale

Secure node-to-node communication and user access using built-in capabilities

Scale programmatically

Use PowerShell, CLI, or APIs to scale programmatically achieving very high densities

Scenarios powered by Service Fabric

Empowering customers of all sizes to achieve more

Lift & shift to containers

Mission-critical business SaaS

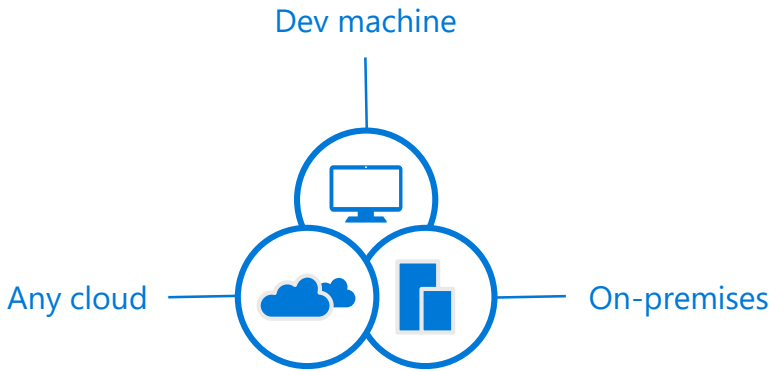
IoT data processing

Low-latency data processing apps

New cloud-native apps

…one powerful Microservices platform for Windows Server and Linux containers

Announcing.Azure Service Fabric Mesh



Service Fabric Standalone

Bring your own infrastructure

Azure Service Fabric Mesh

Fully Azure managed

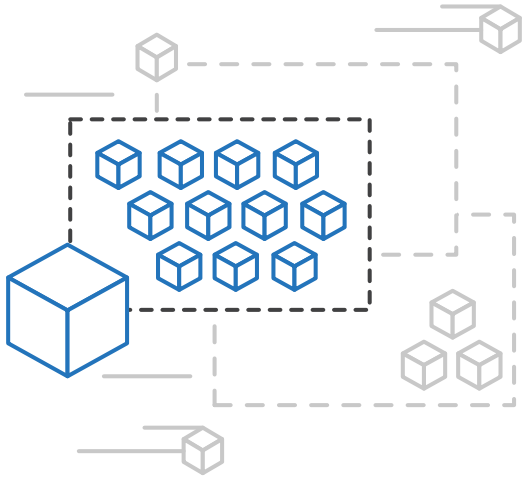
Dedicated clusters

microservices platform

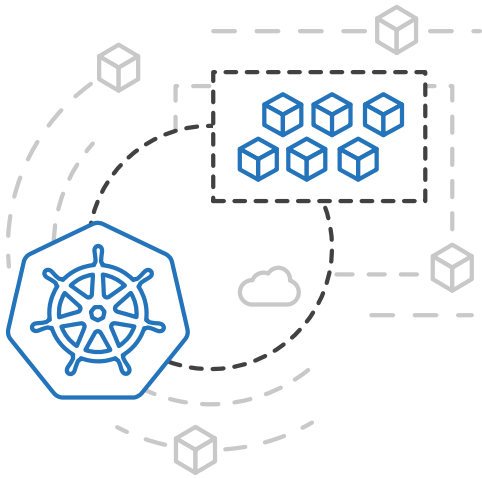
Service Fabric

Azure Container Instances (ACI)

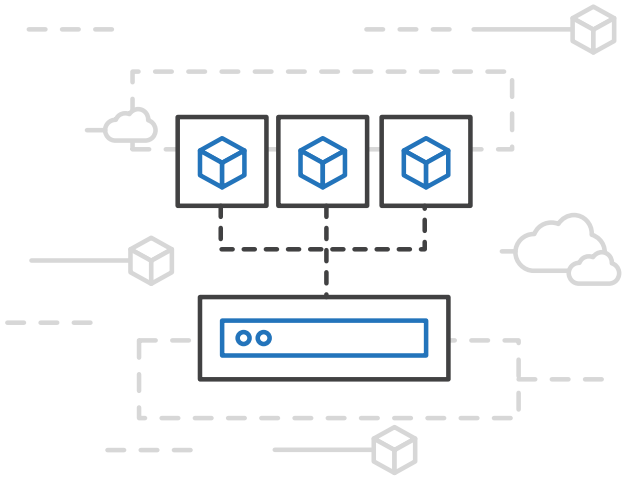
Easily run containers on demand without managing servers



Run containers without managing servers



Increase infrastructure agility with containers on demand



Secure applications with hypervisor isolation

What can you build with ACI today?

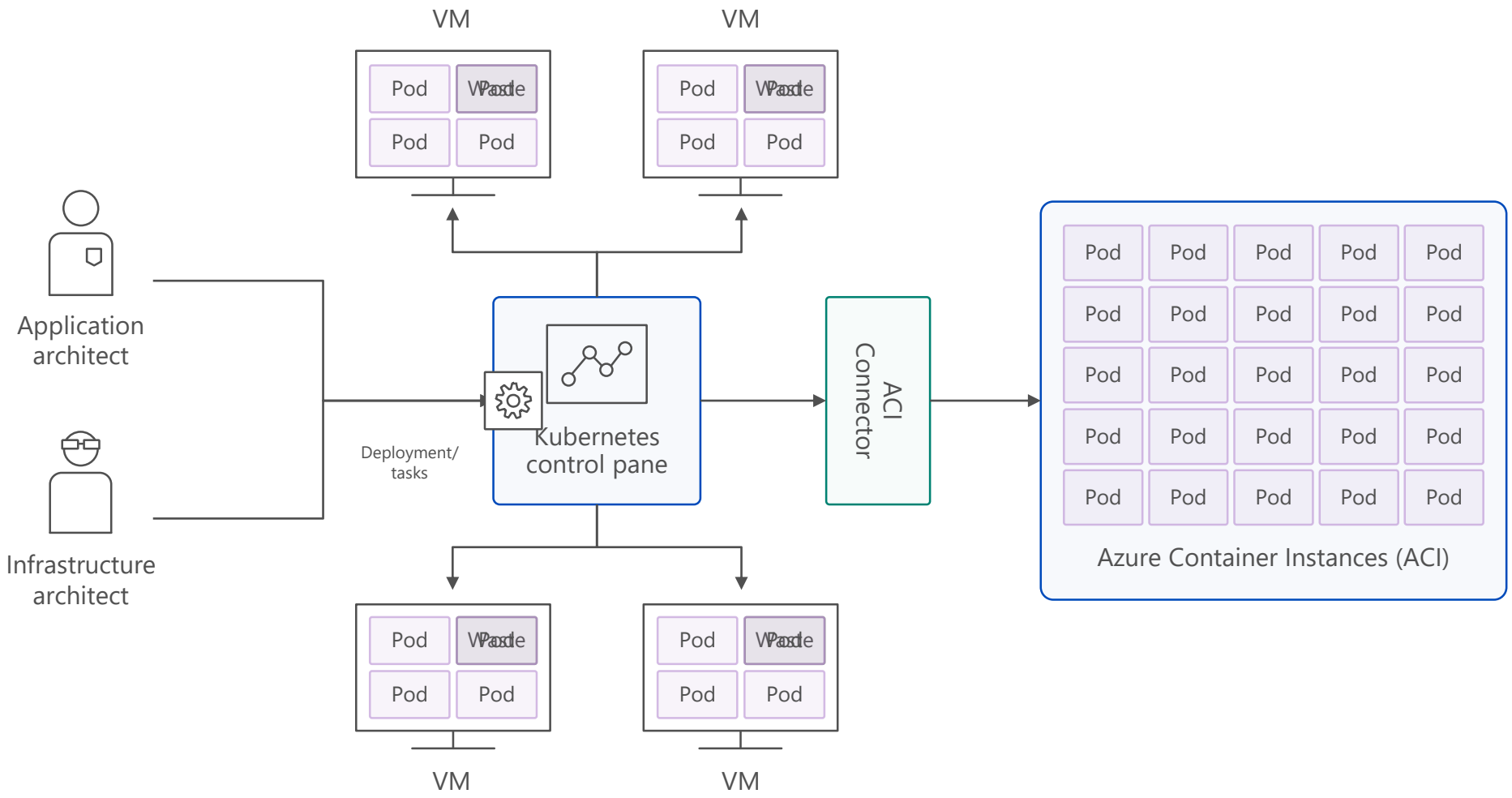
Elastic Bursting

Event-Driven Apps

Data Processing Jobs

Azure Container Instances (ACI)

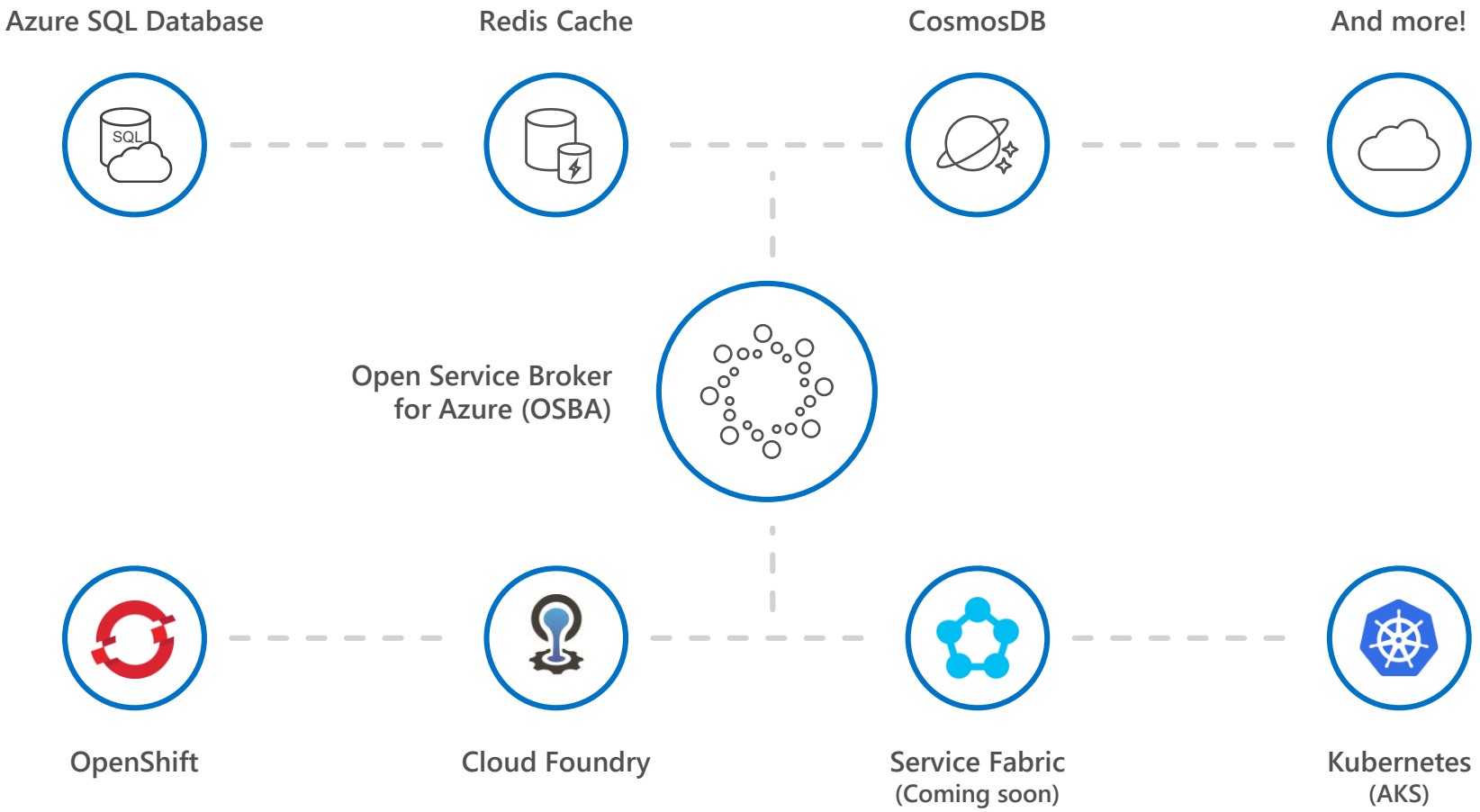
Bursting with the ACI Connector



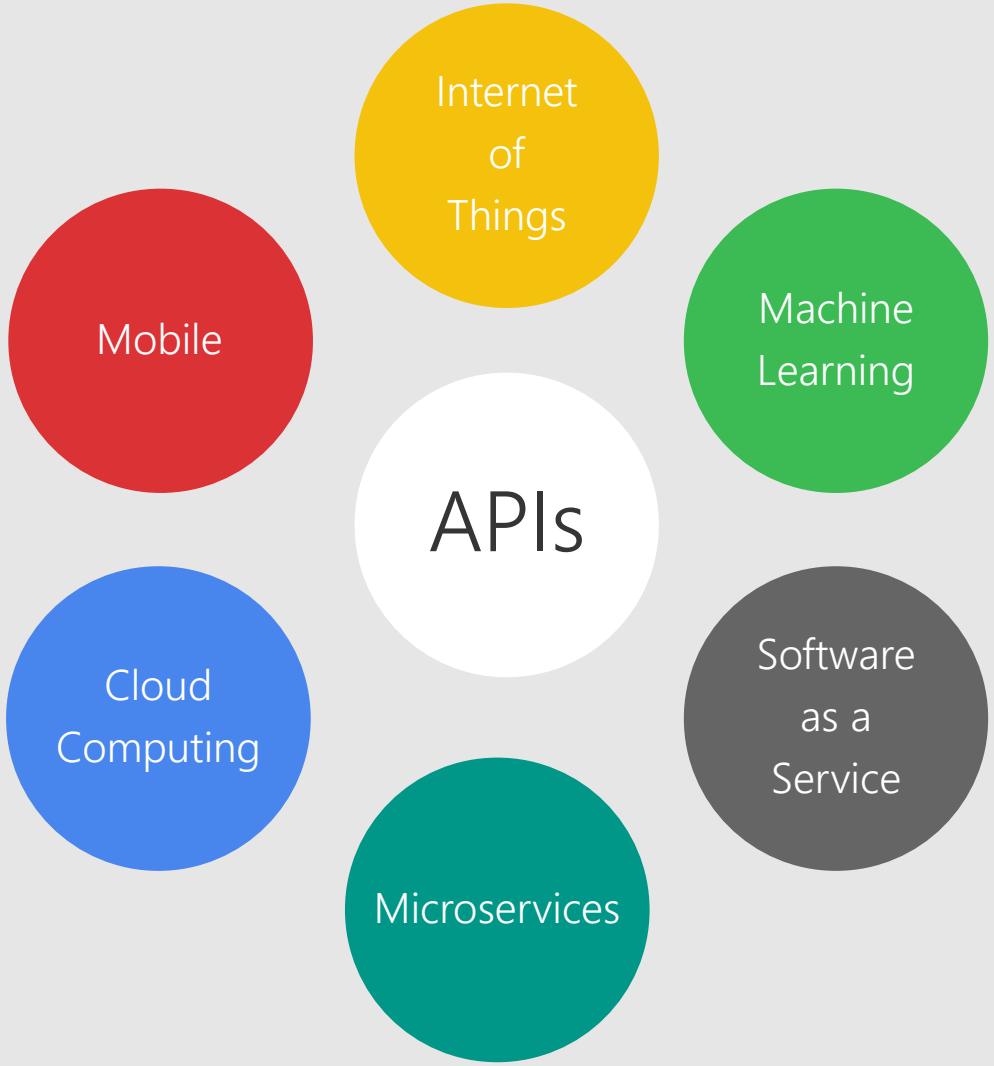
DEMO

Open Service Broker for Azure (OSBA)

An implementation of the Open Service Broker API



What's in common?

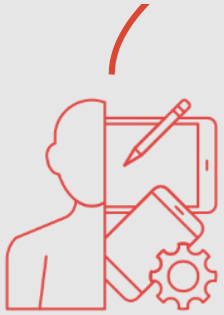


Why API management?

- How do you project your backend API?
- How do you secure your APIs?
- How do you protect your APIs from misuse and abuse?
- How do you engage with developers?
- How do you onboard developers?
- How do you monitor the use of your APIs and measure their impact?

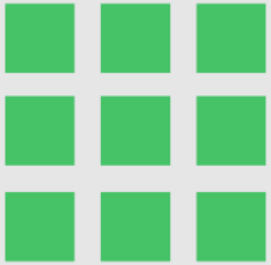
API Management - a hub for enterprise APIs

Discover
Learn
On-board
Try
Get support
SDKs and samples



App developers

1st and 3rd party apps



Consume

Developer portal

Mediate

Gateway

Publish

Azure portal

Abstract
Secure & protect
Evolve
Monitor
Analyze
Productize
Monetize

API managers and developers

APIs on Azure and outside

Façade and front door

1st and 3rd party apps

api.contoso.com/foo

Gateway

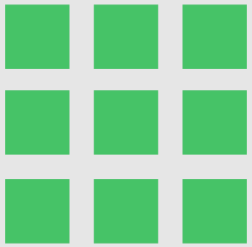
Mediate

contosoapi-bar.azurewebsites.com

Security and protection

App developers

- Username/Password
- Microsoft account
- Google account
- Facebook account
- Twitter account
- Azure AD (Premium)
- Azure AD B2C (Premium)
- Delegated



1st and 3rd party apps

- Key
- OAuth 2
- OpenID Connect
- Client certificate
- IP filter
- Rate limits and quotas

API managers and developers

- Azure account
- RBAC

Developer portal

Consume

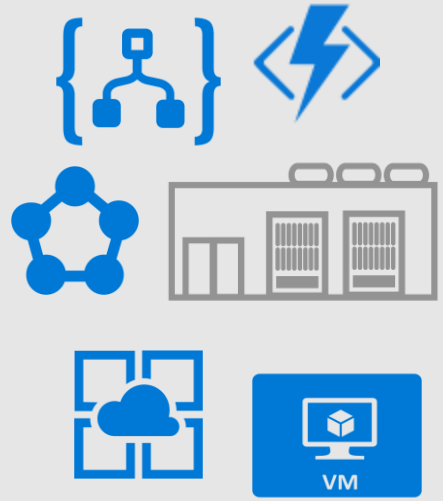
Gateway

Mediate

Azure portal

Publish

- HTTP Basic
- Mutual certificate
- Shared secret
- IP filter
- VNET/NSG



APIs on Azure and outside

AZURE SQL DATABASE

THE INTELLIGENT RELATIONAL CLOUD DATABASE SERVICE

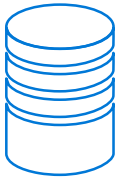
Learns & adapts

Realize automatic performance improvements from continuous assessments

Scales on the fly

Change service tiers, performance levels, and storage dynamically with minimal downtime.

Enables multi-tenant SaaS apps



Easily manage and monitor multitenant apps, and benefit from database isolation

Works in your environment

Develop your app and connect to SQL Database with the tools and platforms you prefer

Secures & protects

Build security-enhanced, highly compliant apps with built-in protection and intelligent Threat Detection

MIGRATION RESOURCES FOR FAST DEPLOYMENTS

ACCELERATE YOUR JOURNEY TO THE CLOUD

SQL Server Migration Assistant (SSMA)
Automates database migration to SQL Server from Microsoft Access, DB2, MySQL, Oracle, and SAP ASE.

Data Migration Assistant (DMA)
Enables upgrade SQL Server and Azure SQL Database.

Azure Database Migration Service (preview)
A seamless, end-to-end solution for moving on-premises SQL Server, Oracle, and other relational databases to the cloud.

Works in your environment

AZURE DATABASE SERVICES FOR MYSQL, POSTGRESQL, AND MARIADB

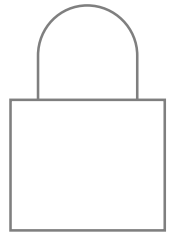
More choices and full integration into Azure's ecosystem and services

Managed community MySQL, PostgreSQL, and MariaDB

Languages and frameworks of your choice

Scale in seconds with built-in high availability

Secure and compliant

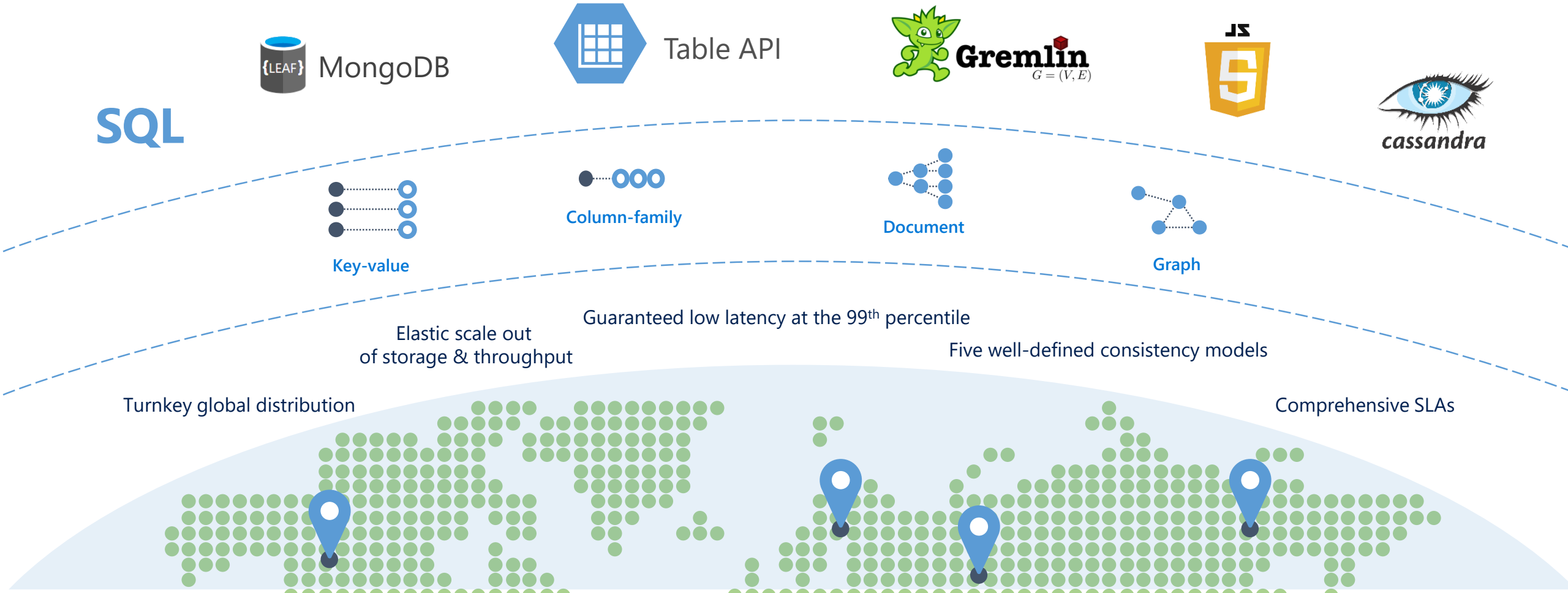


Industry-leading global reach

Easy Lift and Shift ← → **Enterprise Ready**

Azure Cosmos DB

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



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

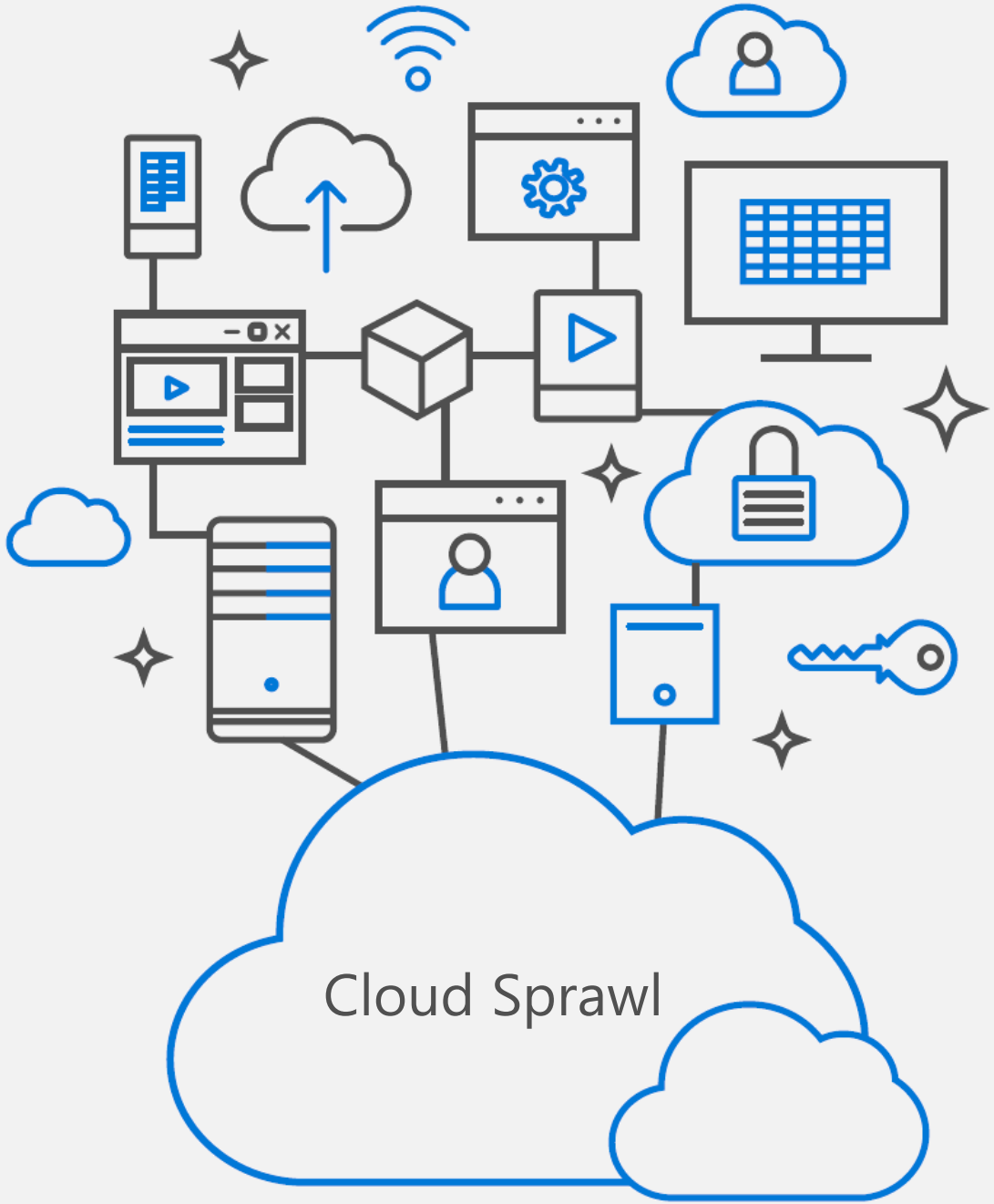
Reliable queues at scale for cloud services

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

Built on a unified Distributed Storage System

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

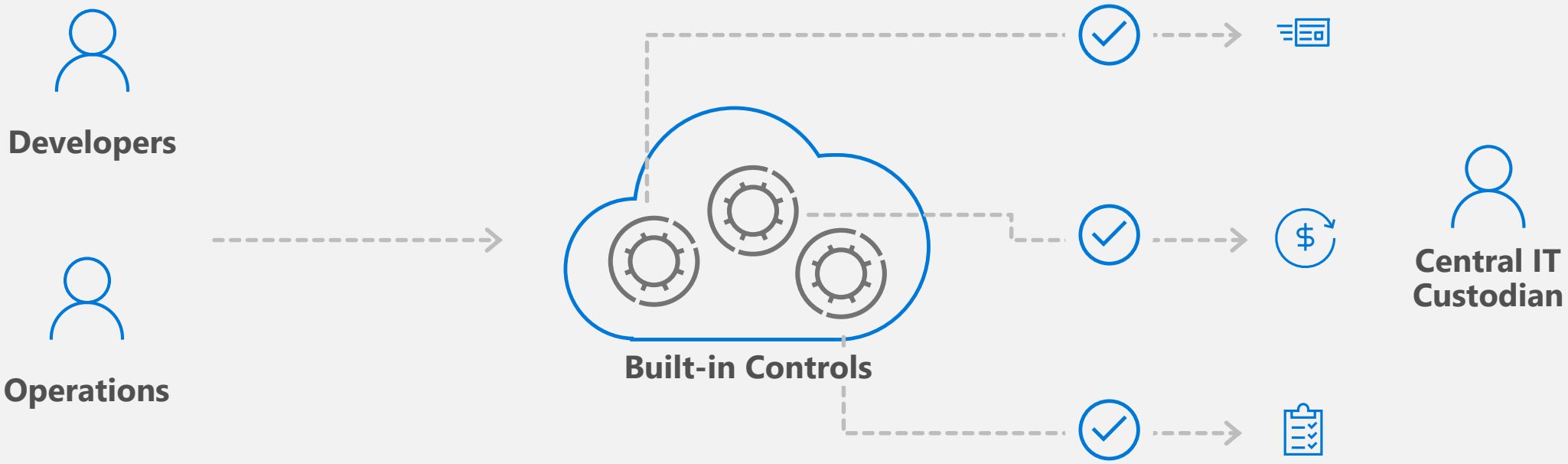
Governance & Compliance



Free eBook available: https://azure.microsoft.com/en-us/resources/your-guide-to-managing-cloud-sprawl/

Cloud-native governance

Removing barriers to compliance and enabling velocity



Governance for the cloud

Assess and enforce enterprise-wide governing standards across your cloud environment for proper control and compliance

Policy-based management

Monitor cloud spend, drive organizational accountability, and optimize cloud efficiency

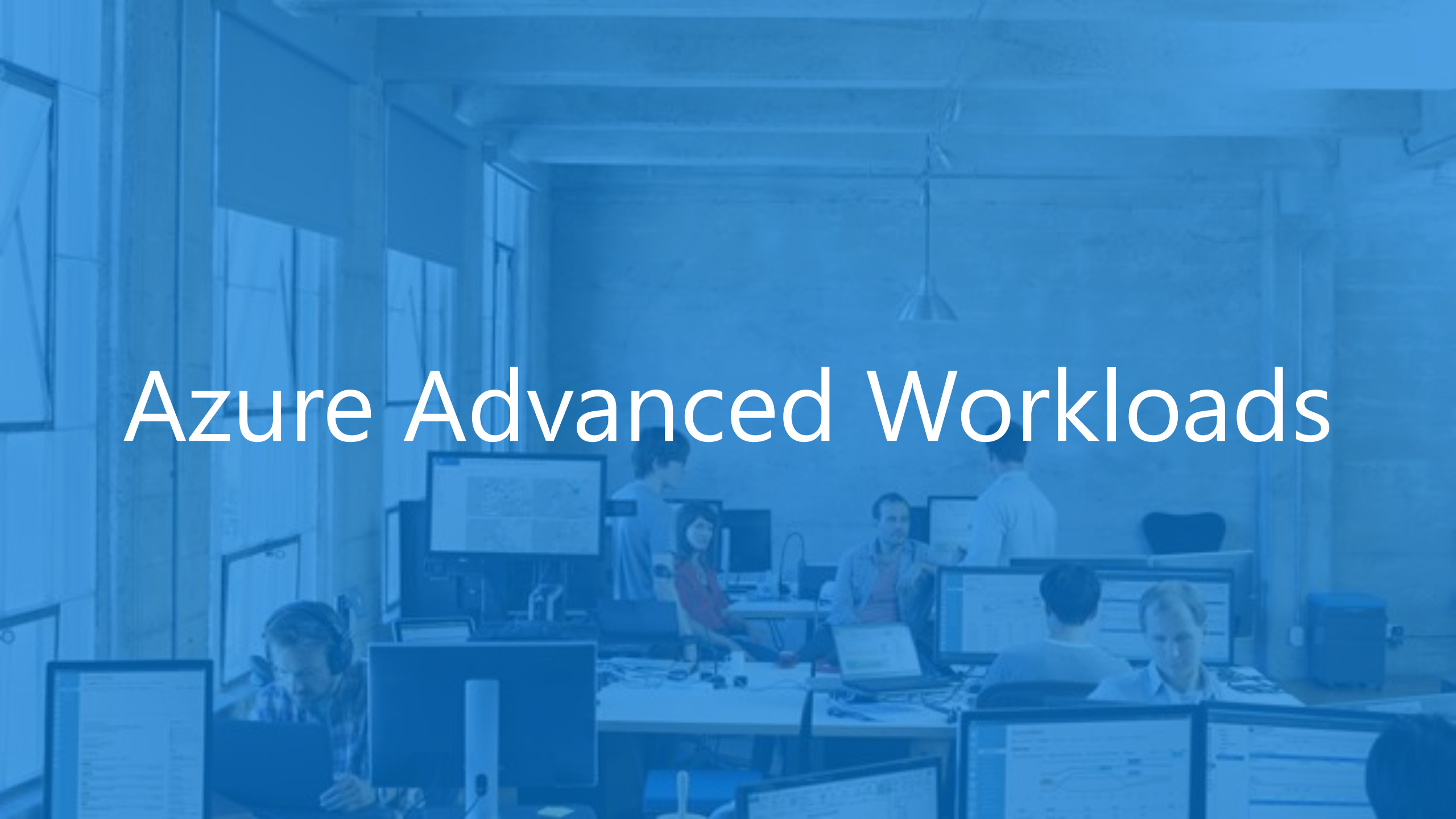
Cost management and optimization

Quickly search and find resources across your organization and their relationships with query-based exploration

Resource visibility

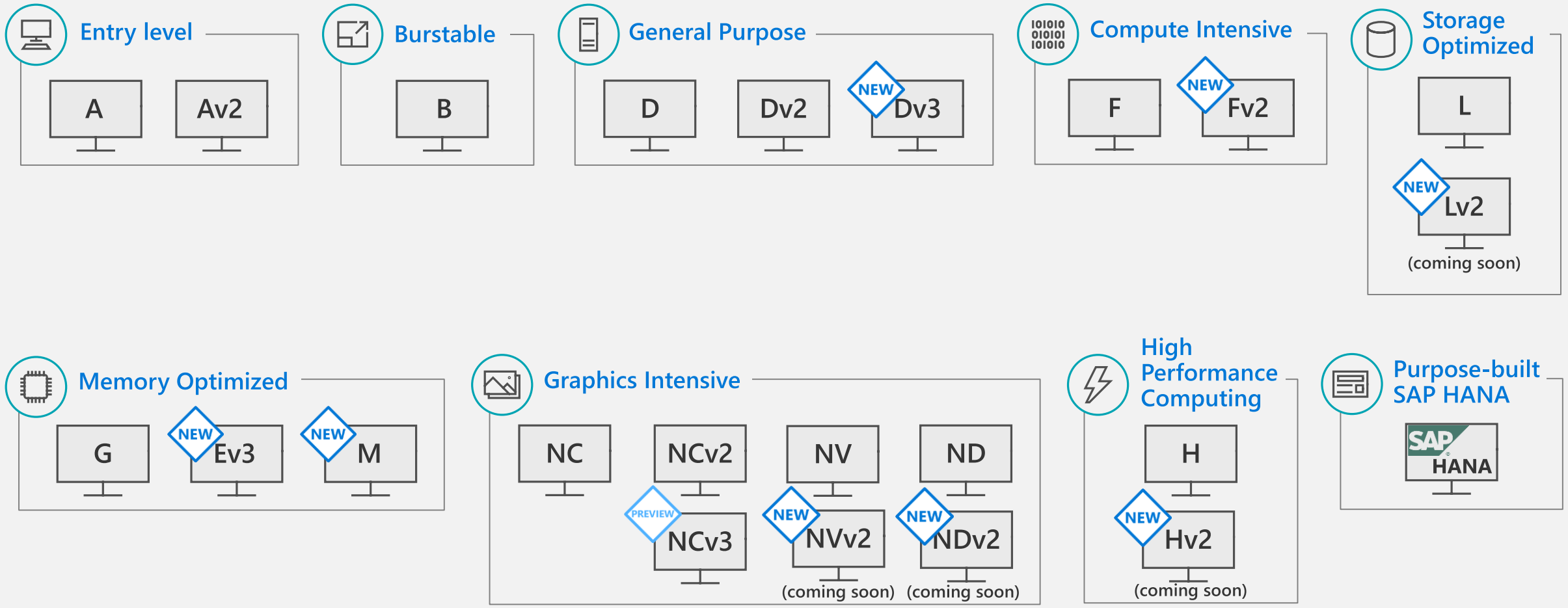
Create easy-to-use pre-defined templates for DevOps teams that meet organizational security and compliance requirements

Subscription governance



Azure Advanced Workloads

Compute options for all types of apps



Big Compute on IaaS

Virtual Machines

High Performance VMs

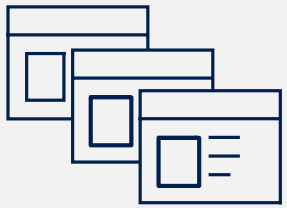
Batch processing, fluid dynamics, monte carlo simulation

GPU-enabled VMs

NV -Graphic based applications
NC – Advanced simulation
ND– Artificial Intelligence

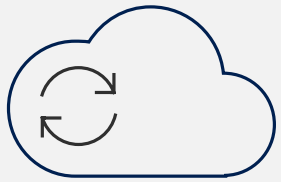
Cray in Azure

Dedicated supercomputer on the Azure Virtual Network



Azure Batch

Create cloud-native HPC applications
Batch AI
Batch Rendering



CycleCloud

Manage HPC clusters and hybrid workflows

AVERE

Avere Systems

Performant storage for HPC workloads

SAP on Azure

Deep partnership between SAP and Microsoft

20+ year partnership

SAP is betting on Azure for SuccessFactors

Azure is **SAP certified** for NetWeaver Suite and SAP HANA

Building a **strong SI ecosystem** together

Microsoft is investing in creating **in-house SAP expertise**

Most powerful and scalable cloud for SAP HANA

Differentiated strategy spanning VMs and purpose-built infrastructure

Largest SAP HANA workloads (up to 20TB of RAM) of any hyperscale public cloud provider, bigger than AWS

Scaling out to **60 TB RAM for HANA OLAP**, with single-node support up to **20 TB for HANA OLTP**

Enterprise-proven + most secure

Largest compliance portfolio— 54 compliance certifications

Best platform for digital transformation—take advantage of high-level services like IoT, data, ML, Power BI for insights

Broad Database support: As you prepare for HANA, you can bring in your existing applications using Oracle or SQL Server

SAP on Azure – Scenarios and benefits

Scenarios

Development and Test

Quick provisioning of development and test environments with the ability to stop the environments any time

Production environments

"All in". Deploy entire SAP system landscapes to Azure and deliver on cloud-first vision

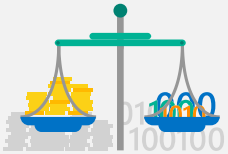
Disaster Recovery

Keep environments for recovery purposes without additional cost

Archiving

Archive data and the corresponding SAP systems audit-proof without running costs and always available

Benefits



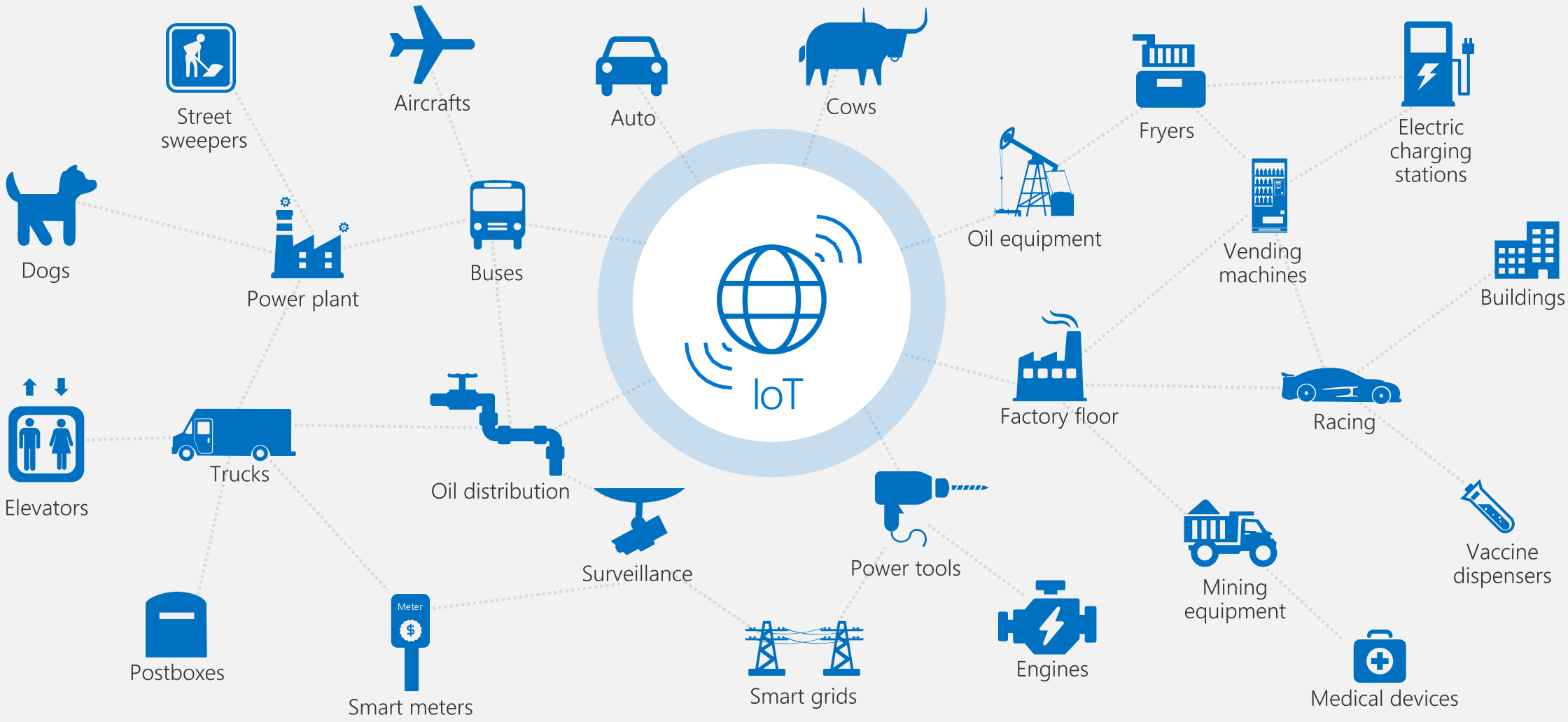
40-75%
TCO cost savings

Minutes instead of days
faster provisioning

60%
less storage costs

Higher Agility	Lower Costs	Less Complexity	Higher Innovation

Innovation at work – real IoT use cases



"The Microsoft Azure platform makes it a lot easier for us to deliver on our vision without getting stuck on the individual IT components. We can focus on our end solution and delivering real value to customers rather than on managing the infrastructure."

Richard Beesley
Senior Enterprise Architect Data Services
Rolls Royce

Microsoft is simplifying IoT

On-premises and hybrid cloud

Azure IoT Edge

Securely distribute cloud intelligence locally, quickly, and at scale

Platform as a Service

Azure IoT Suite

Preconfigured solutions to help accelerate the most common scenarios

Software as a Service

Microsoft IoT Central

A fully managed SaaS solution for the Internet of Things

What's next?

MTC

Microsoft Technology Center

Azure architectural design sessions

Ask the experts

Technology Deep Dive

Hands-On Experience

End-to-end scenarios

Ask the experts

EBC

Executive Briefing Center

Meet Microsoft Executives

Discuss your business strategy

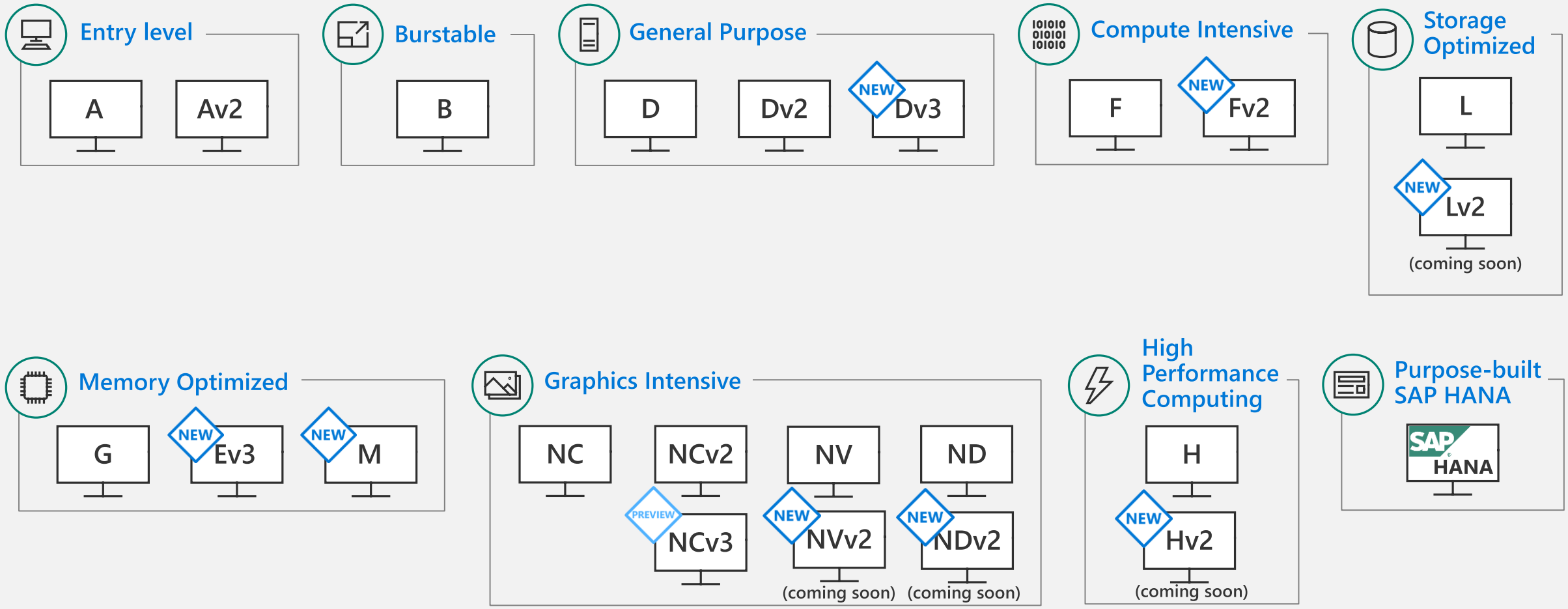
Links

GitHub: AKS Kubernetes Hands-On Lab
https://github.com/denniszielke/phoenix

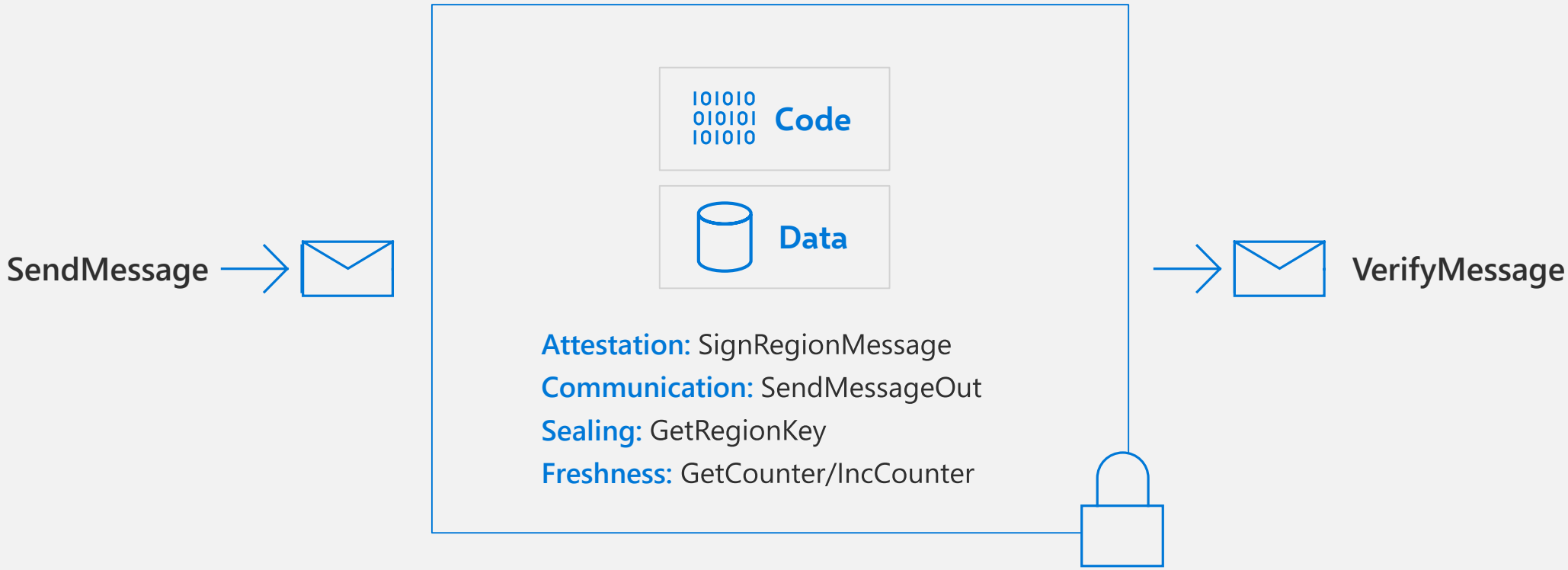
GitHub: DevOps Essentials Hands-On Lab
https://github.com/DanielMeixner/DevOpsHackEssentials

Compute

Compute options for all types of apps



Confidential Computing



A new abstraction layer

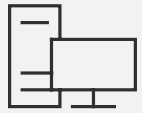
Implemented with hardware/software

- Virtual Secure Mode (VSM)
- Secure hardware (Intel SGX)

Most comprehensive resiliency and best SLA

INDUSTRY-ONLY

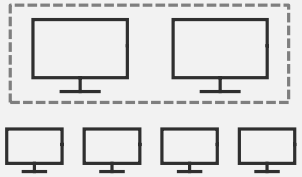
VM SLA
99.9%



SINGLE VM
Protection with Premium Storage

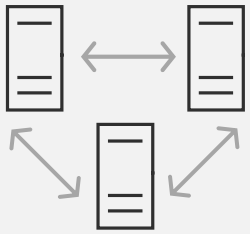
INDUSTRY-LEADING HIGH AVAILABILITY SLA

VM SLA
99.95%



AVAILABILITY SETS
Protection against failures within datacenters

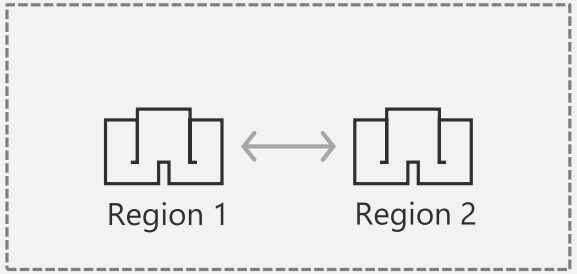
VM SLA
99.99%



AVAILABILITY ZONES
Protection from entire datacenter failures

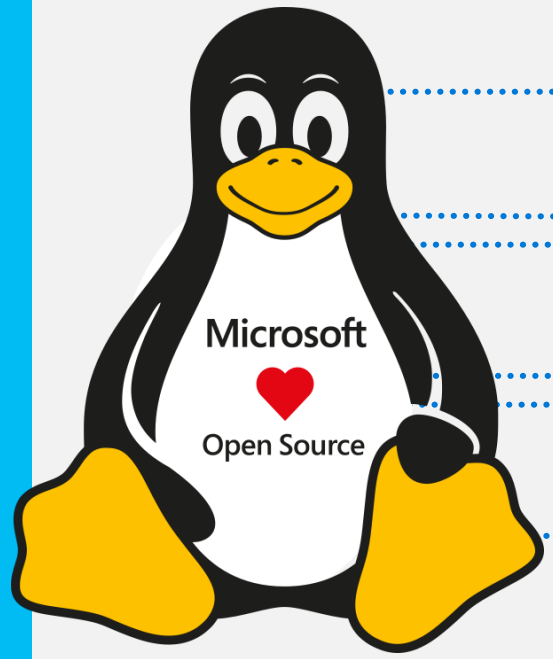
INDUSTRY-LEADING DISASTER RECOVERY

REGIONS
42



REGION PAIRS
Protection from disaster with Data Residency compliance

Linux, Open Source, and Red Hat



40% Azure VMs running Linux

60% of solutions in Azure Marketplace Linux based

Strategic partnerships with OSS providers

In-portal customer experience for PAYG deployments

Co-located support with Red Hat on-site team

Integrated support, available 24x7

redhat®

Beyond on-demand infrastructure

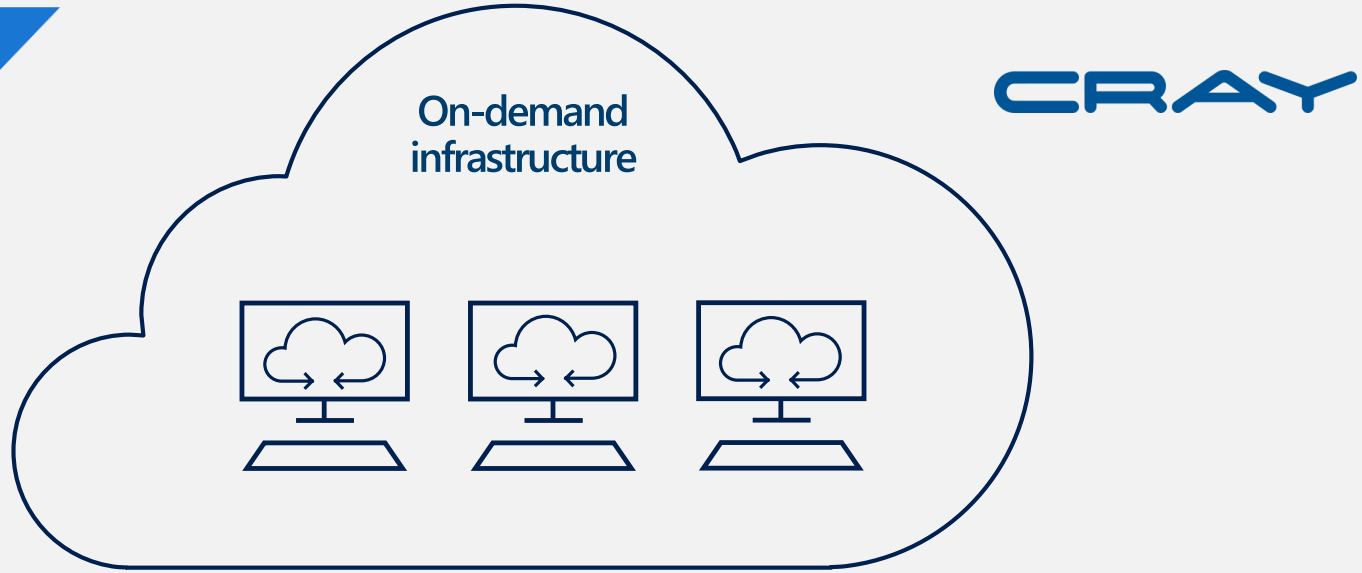
Purpose-built infrastructure for specialized workloads

vmware®

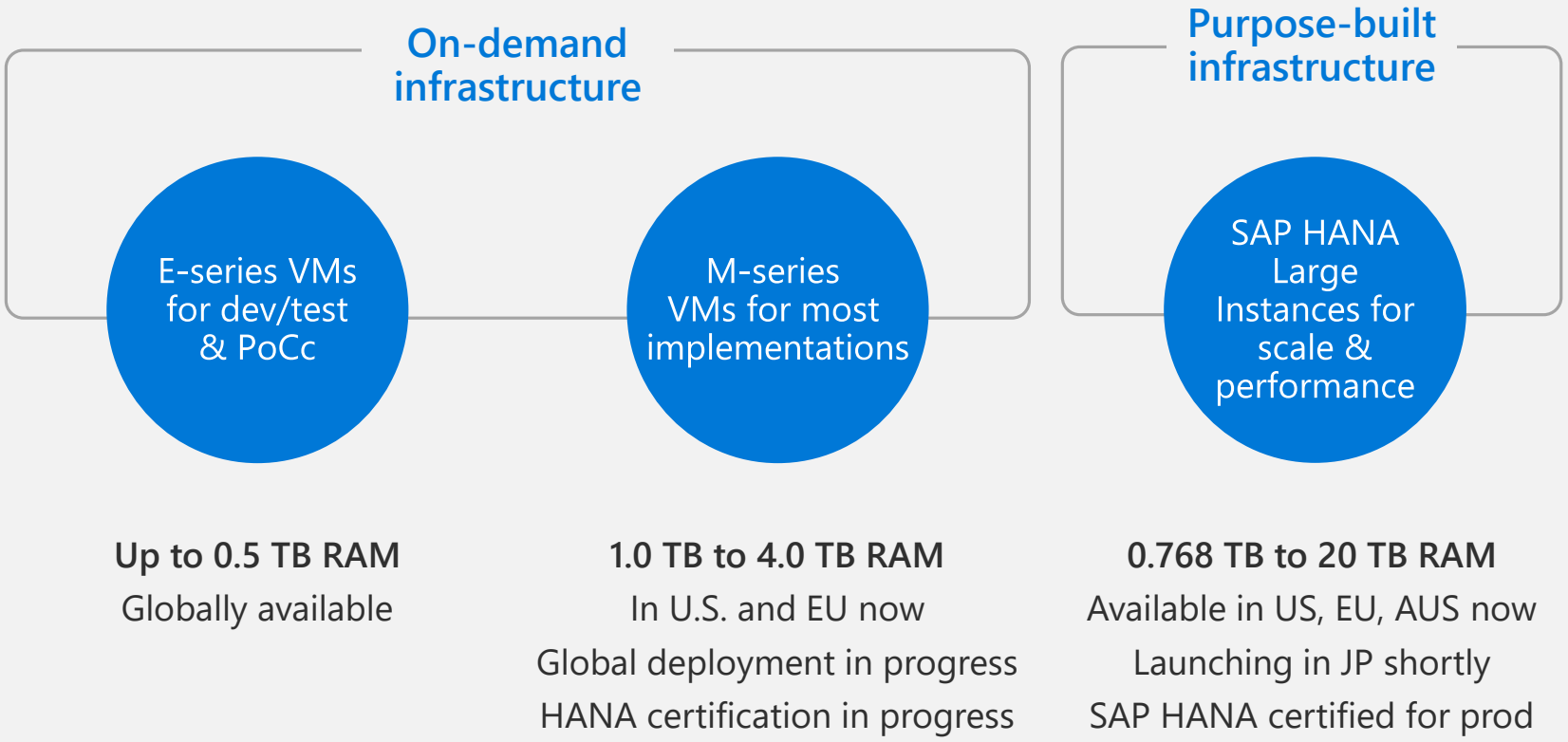
NetApp™

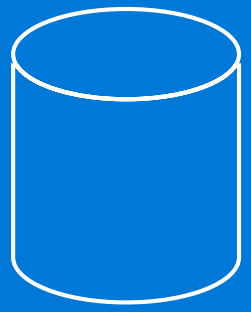
SAP

CRAY



SAP HANA Infrastructure on Azure





Storage

Azure provides a unified distributed storage system offering durability, **encryption at rest**, strongly consistent **replication**, and auto load-balancing

Secure, scalable and highly available storage options for every use case

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

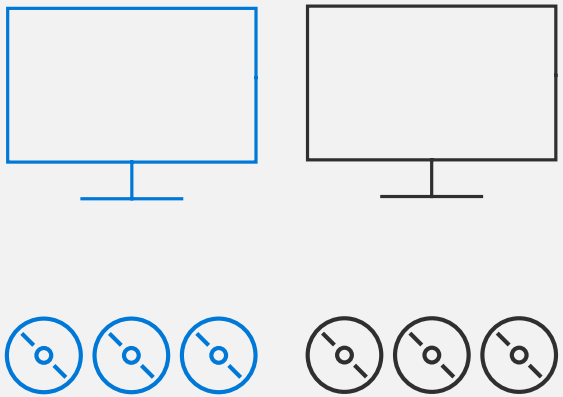
Move or migrate data into Azure

Hybrid Storage

Azure StorSimple
Azure File Sync
Avere*
Secure, intelligent data tiering between on-premises and cloud storage

Azure Disks

Performance Tiers

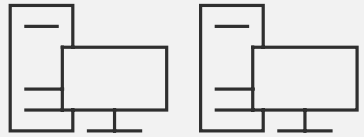


Premium Disks
SSD based, provisioned performance

Standard Disks
HDD based, cost effective

Management Options

Resource Group



Managed Disks
Highly available and manageable

Industry leading **ZERO %** Annual Failure Rate

Enterprise grade durability with 3 replicas

< 1ms latency for cached operations

Blob Cache technology
Up to 160,000 IOPS

Best in class High IOPS/BW

80,000 IOPS & 2,000 MB/s Disk throughput per VM

Azure Files

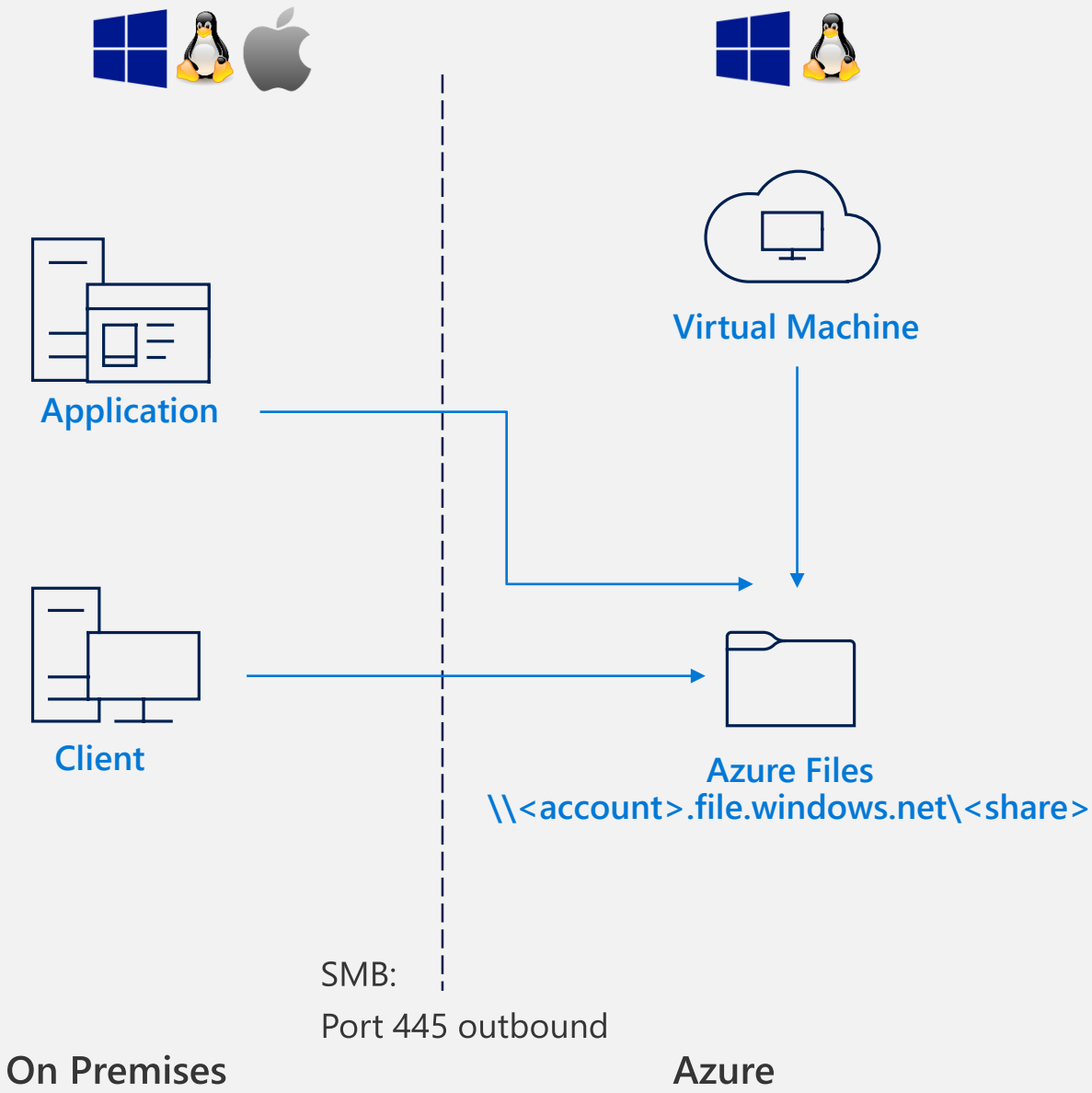
Lift and Shift

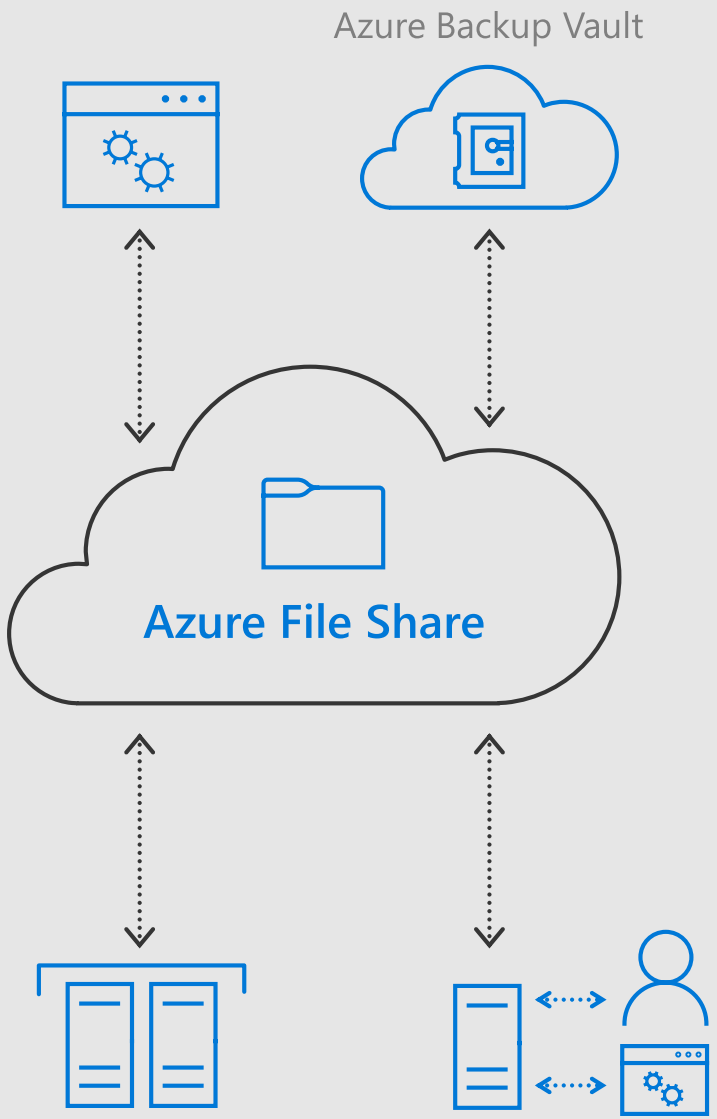
Variety of clients/protocols

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

Secure

- Encryption at rest
- Secure communication over SMB





Azure File Sync

PREVIEW

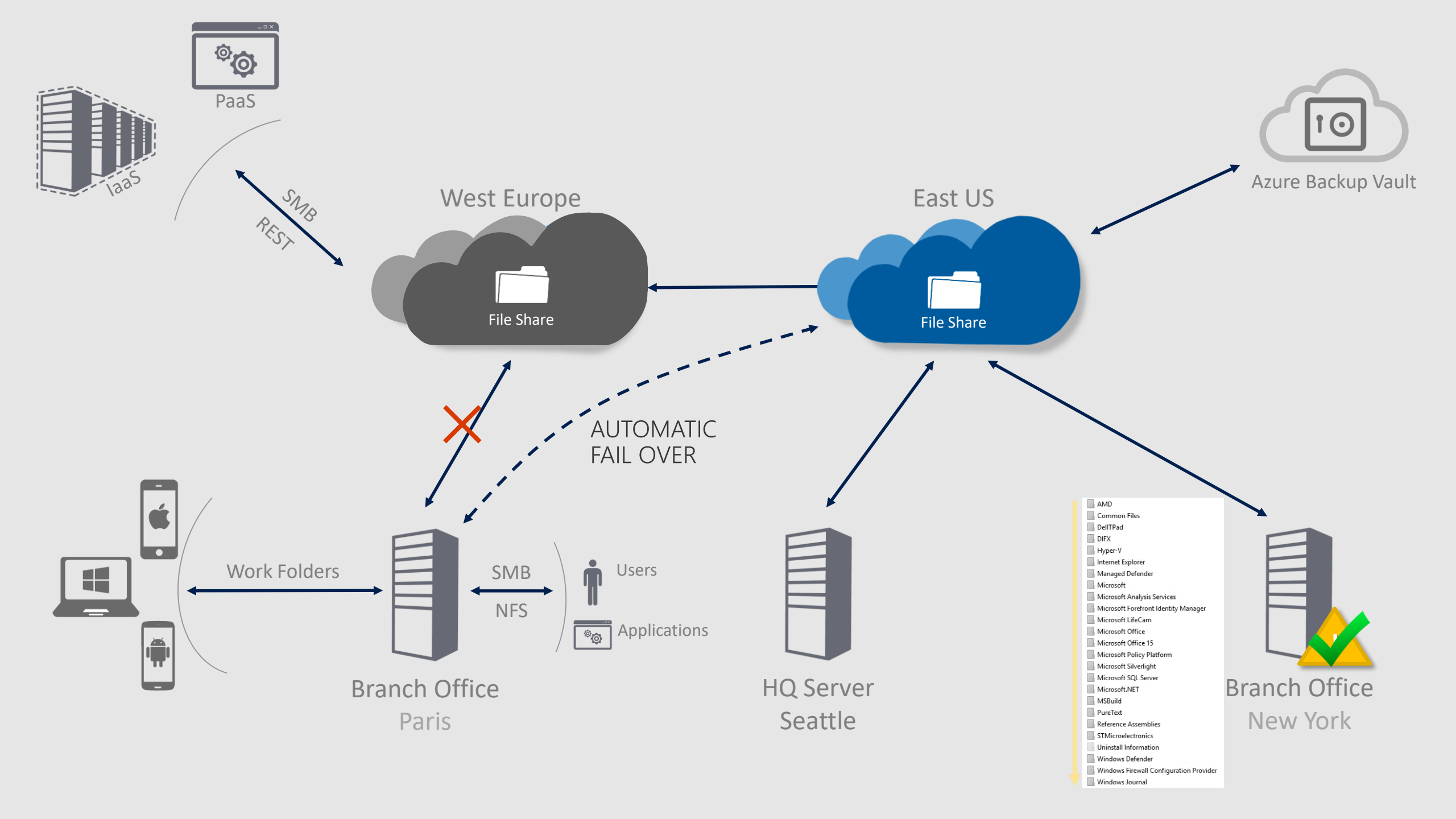
Multi-site access

Cloud Tiering

Direct Cloud Access

Integrated cloud backup

Rapid File Server DR


PaaS
IaaS
SMB
REST
West Europe
File Share
East US
File Share
Azure Backup Vault
AUTOMATIC
FAIL OVER
Work Folders
SMB
NFS
Users
Applications
Branch Office
Paris
HQ Server
Seattle
Branch Office
New York
AMD
Common Files
DellTPad
DIFX
Hyper-V
Internet Explorer
Managed Defender
Microsoft
Microsoft Analysis Services
Microsoft Forefront Identity Manager
Microsoft LifeCam
Microsoft Office
Microsoft Office 15
Microsoft Policy Platform
Microsoft Silverlight
Microsoft SQL Server
Microsoft.NET
MSBuild
PureText
Reference Assemblies
STMicroelectronics
Uninstall Information
Windows Defender
Windows Firewall Configuration Provider
Windows Journal

Blob Storage

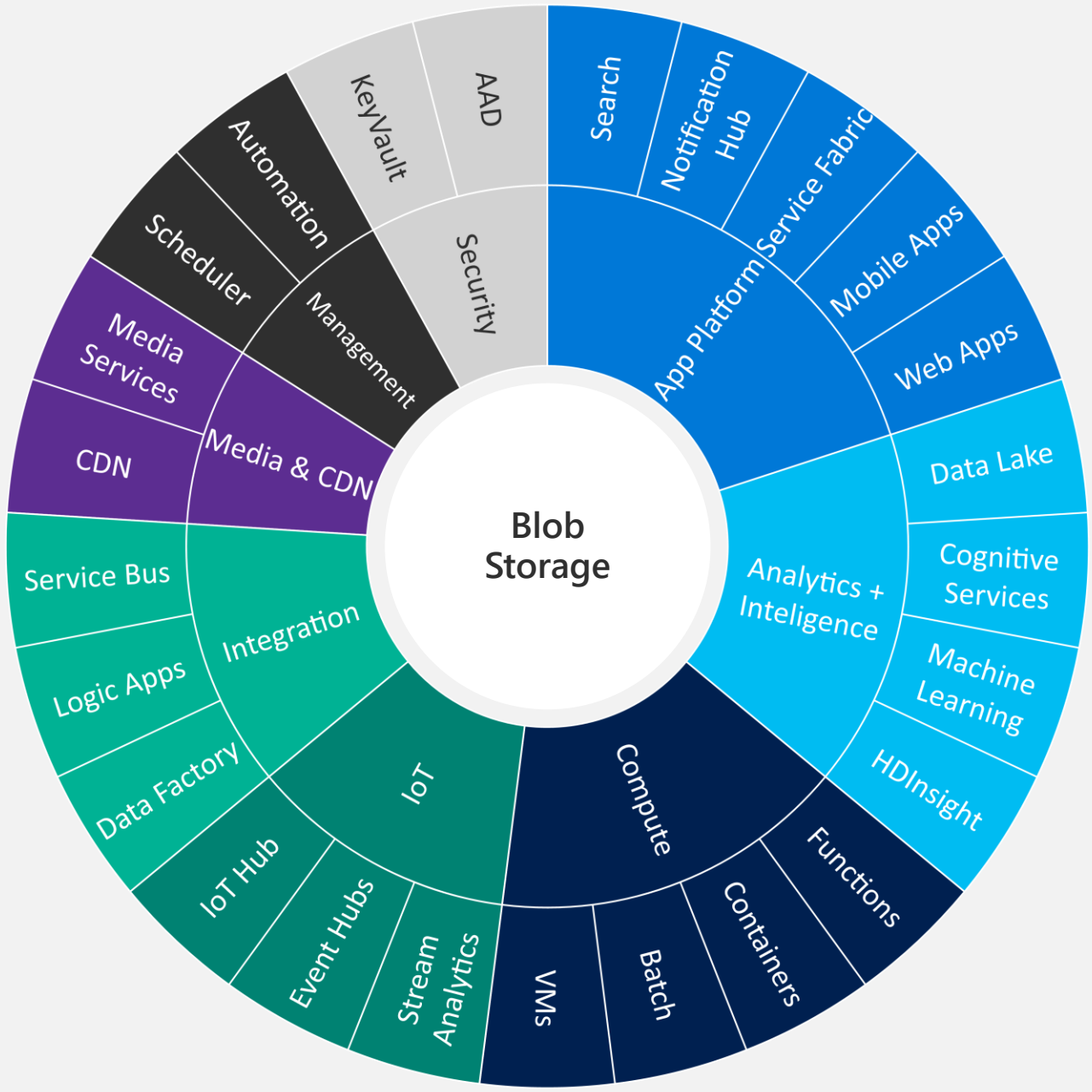
Blob Storage - Azure's Object Storage platform

Store and serve unstructured data

- App and Web scale data
- Backups and Archive
- Big Data from IoT, Genomics, etc.

Broad integration for Blobs across Azure services

Enables many scenarios



Object storage for every use case

Azure Blob

	Hot	Cool	Archive
	Frequently accessed data	Less frequently accessed data	Rarely accessed data
PER TB PER MONTH	$18.40	$10.00	$2.00
PER 10K WRITE OPERATIONS	$0.05	$0.10	$0.10
RETRIEVAL TIMES	Immediate	Immediate	Hours
USE CASES	Cloud native application data storage	Repository for server backups	Medical records archiving

New Blob Level Tiering

Introducing Blob-Level Tiering

- Individual blobs can move between tiers
- All tiers co-exist in the same storage account

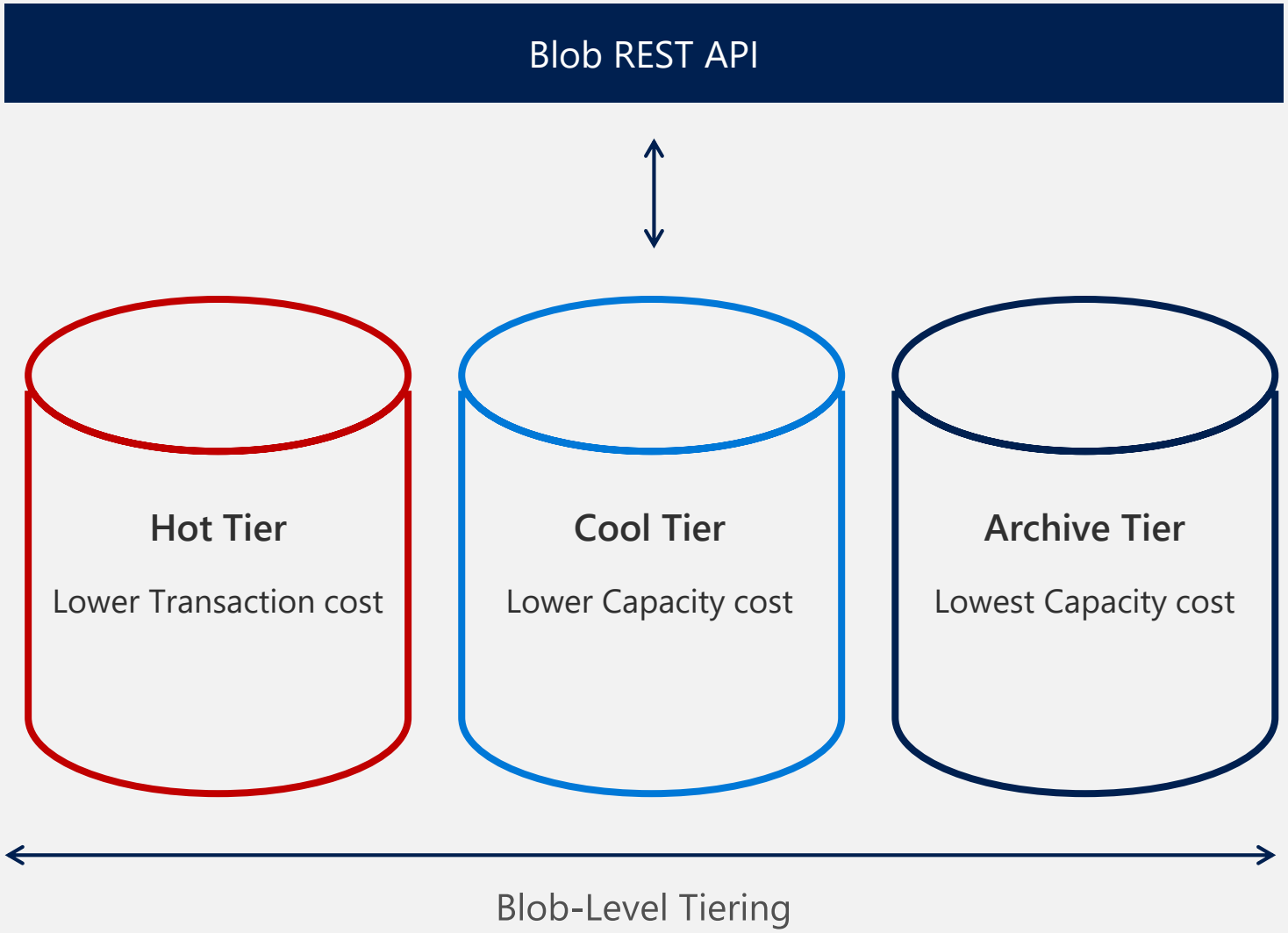
New API to set blob tier: *SetBlobTier*

- Acknowledged immediately from service

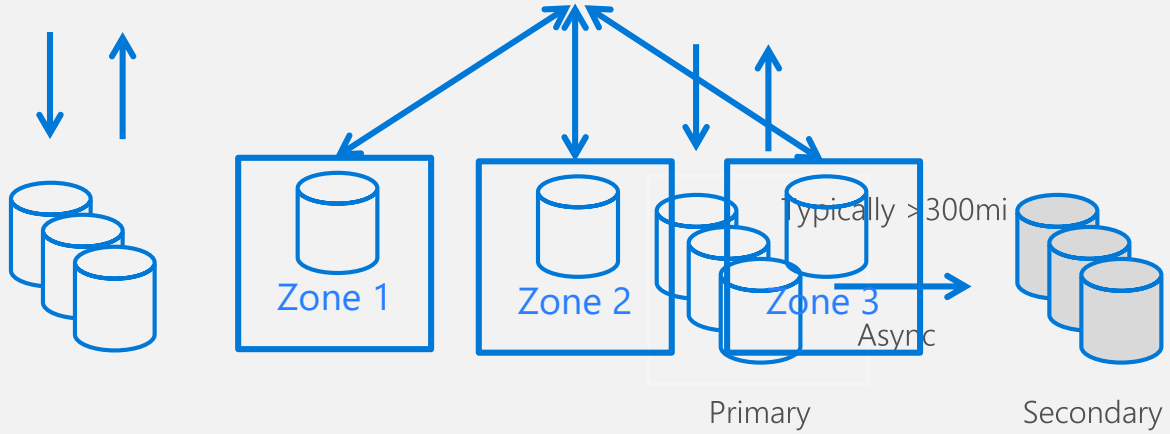
Get APIs *(GetBlobProperties and ListBlobs)* return current tier and archive status

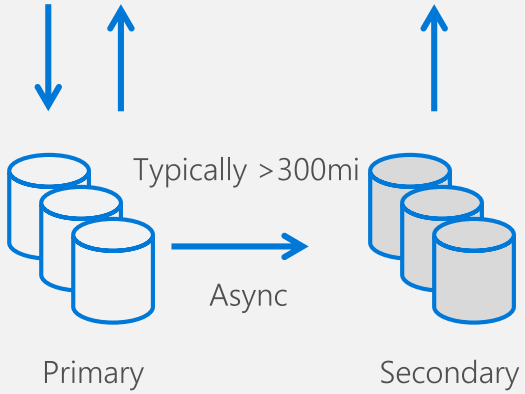
- New headers "*x-ms-access-tier*" and "*x-ms-archive-status*"

Future: Automated Lifecycle Management



Azure Storage Durability





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

ZRS V2

3 replicas **across 3 Zones**

Protect against disk, node, rack and **zone** failures

Synchronous writes to all 3 zones

Private preview now

GA – End of Q1/Early Q2 in 4 regions

GRS

6 replicas, 2 regions (3/region)

Protects against major regional disasters

Asynchronous to secondary

RA-GRS

GRS + Read access to secondary

Separate secondary endpoint

RPO delay to secondary can be queried

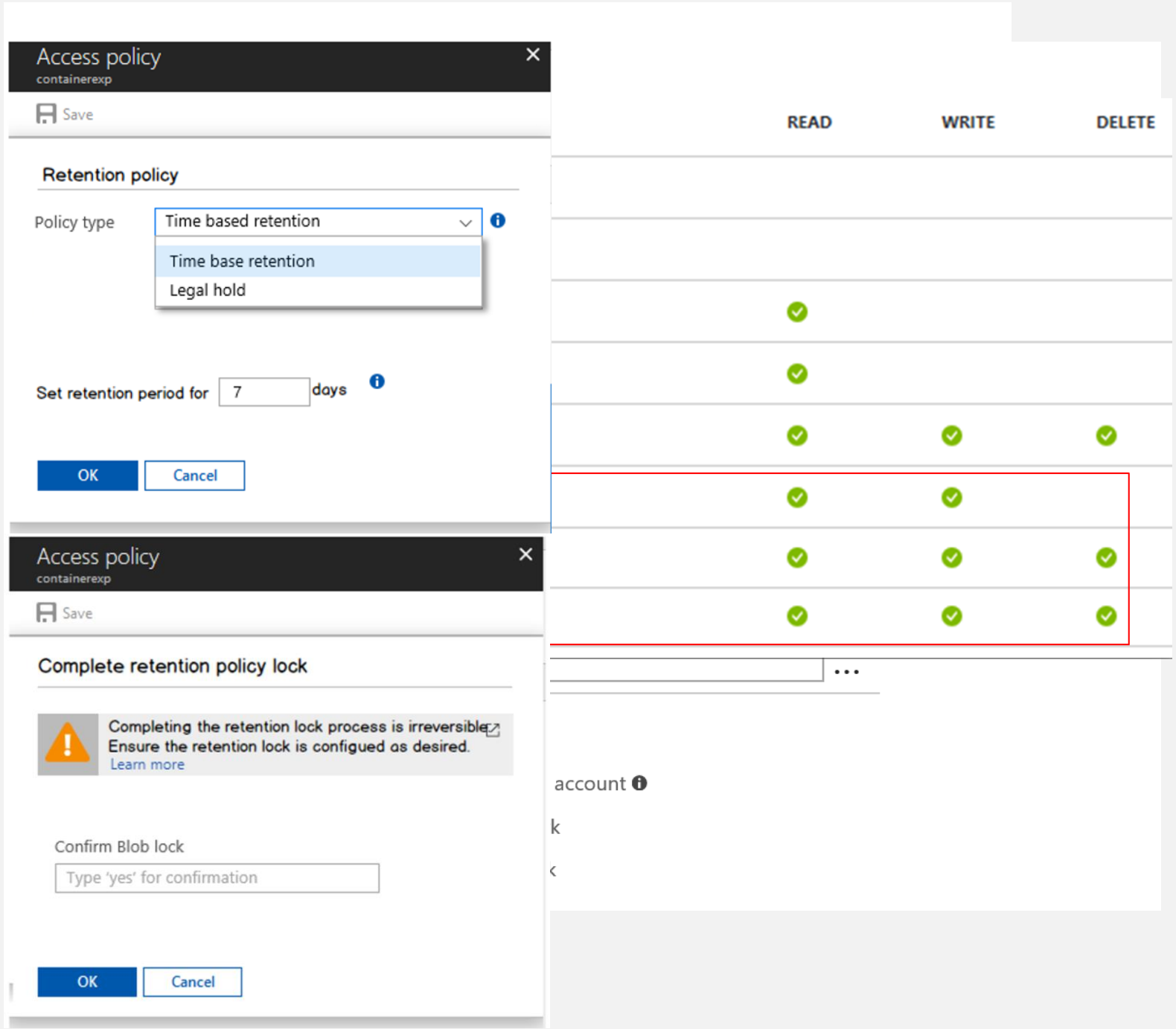
Azure Storage
Security & Compliance

Encryption at Rest
- Always on with MS keys
- Customer supplied keys – GA in Q1 CY18

Firewalls and Virtual Networks
- Restrict access from public internet – GA 02/18

AAD, OAuth and RBAC
- AAD creds for Auth instead of Shared key/SAS
- Full RBAC at container level
- Preview H1 CY18; GA – H2 CY18

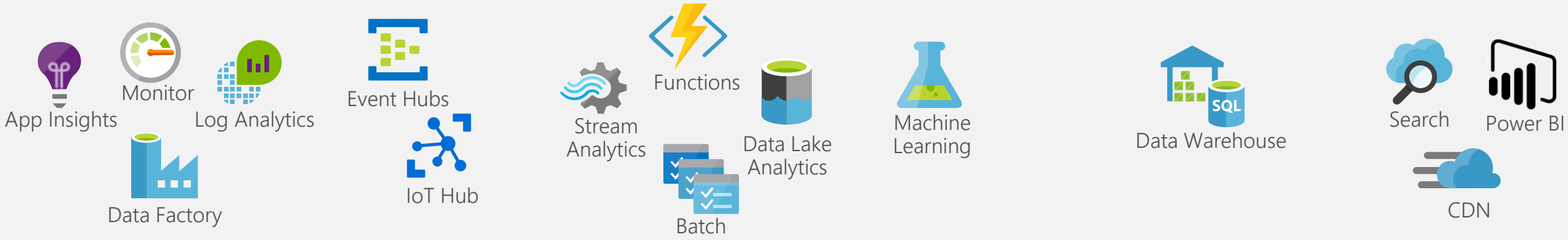
WORM
- SEC 17a-4(f) compliant
- Across all Storage tiers
- Preview – Late Q1/Early Q2 CY18, GA H1 CY18



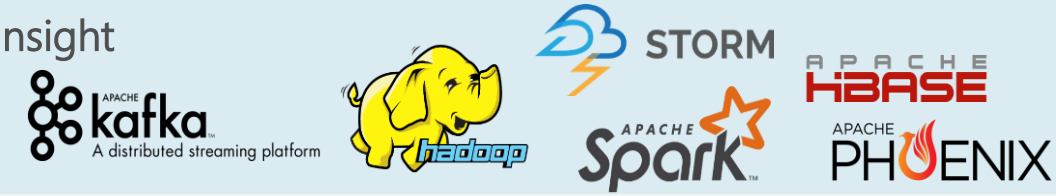
Azure Storage & Big Data

Big Data Use Cases

Ingest & ETL | Streaming | **Analytics & Machine Learning** | Data Aggregation | Presentation



Azure HDInsight



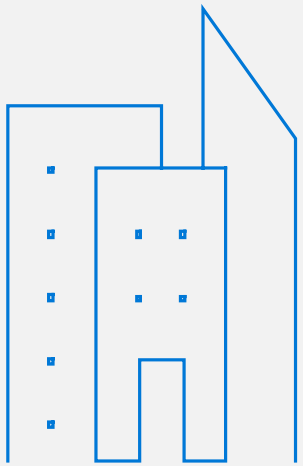
Blob REST API | HDFS API | Other APIs...

Hierarchical Namespace

Open & Interoperable | Manageable & Cost Efficient | Scalable & Performant | Secure & Compliant | Durable & Available

Manageable & Cost Efficient | Scalable & Performant | Secure & Compliant

Moving Data to Azure



Customer datacenter

Strategies

Move workloads

Moving the workload to Azure

OR

Ongoing data move

Initial bulk move, then move ongoing data generated

Orchestration

Active Data

Microsoft: ASR, MAB, SQL, Azure Migrate, …

ISV/HSV: Commvault, Peer, Veeam, …

OR

Static Data

AZcopy

Aspera

Robocopy

Scripts

…

Data Transport

Online

Express Route

Data Box Edge

Network

OR

Offline

Disk Import

Disk Rental

Data Box 100

Data Box 1 PB

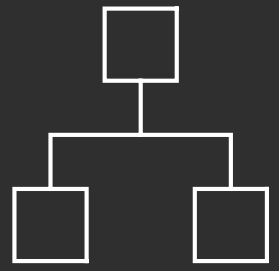
Azure datacenter

Regardless of a company's datacenter migration requirements, there is *always* a path to Azure

Azure Storage - Device Transport Options

				
	Disk Import	Disk Rental	Data Box – 100 TB	Data Box – 1 PB
Specifications	- Capacity: <10TB - Customer supplied disk - USB/SATA Interface - Ships in tamper resistant case - High capacity with Super Transport	- Capacity: <10TB - Azure leased service - Tamper resistant - Low complexity - USB - Low cost	- Capacity: 100TB - Human scale: < 50 lbs. - Ruggedized, tamper, water resistant - SMB Interface - Large Fleet Size - Automated Ordering and Managed Service in Azure	- Capacity: ~1PB - Same features as Data Box with larger capacity - White-glove fleet management
Availability	Currently Available	Preview Mid-year ‘18	Currently in Preview	Preview Mid-year ‘18

A continually expanding universe of Storage Partners



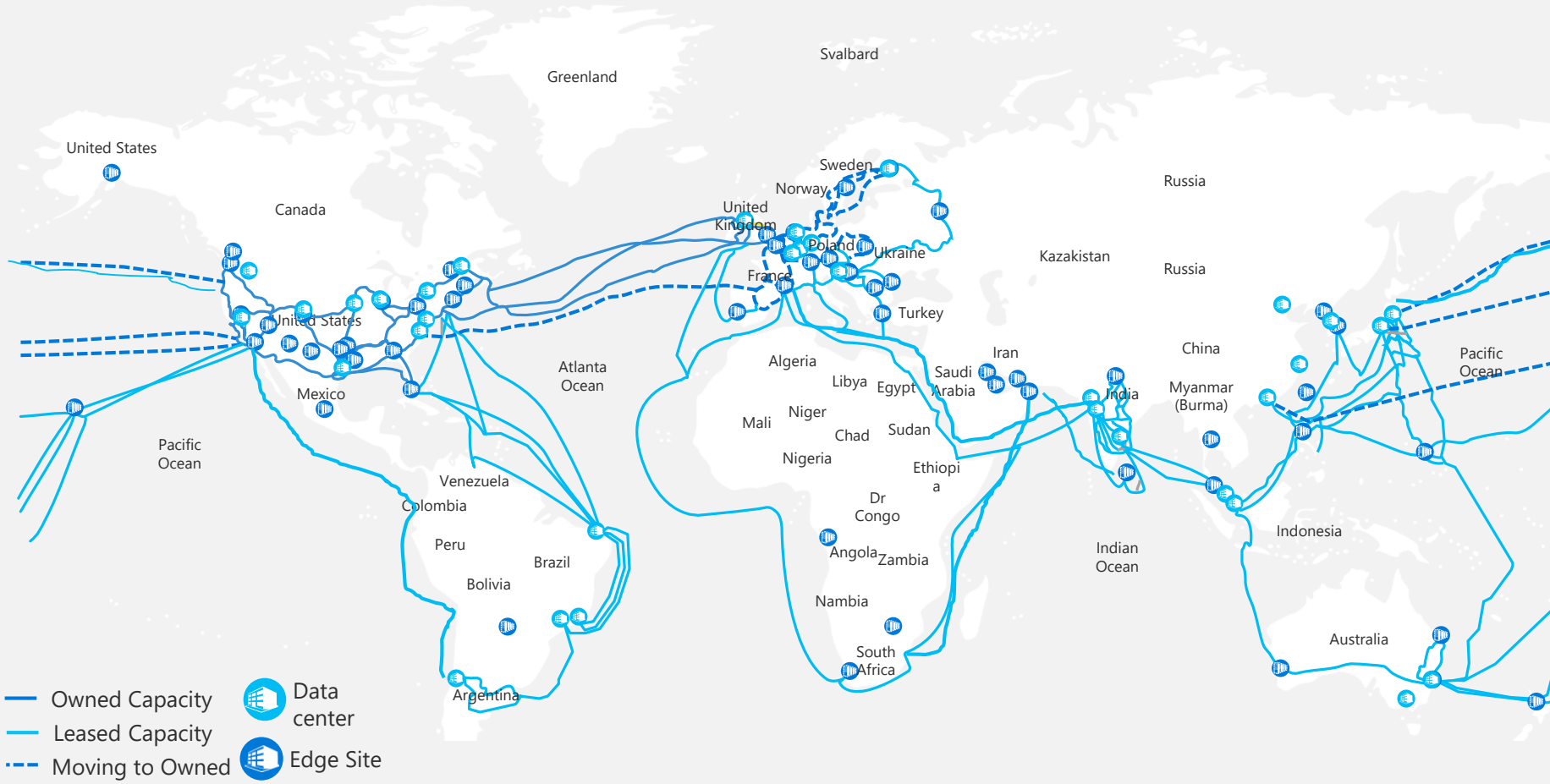
Networking

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

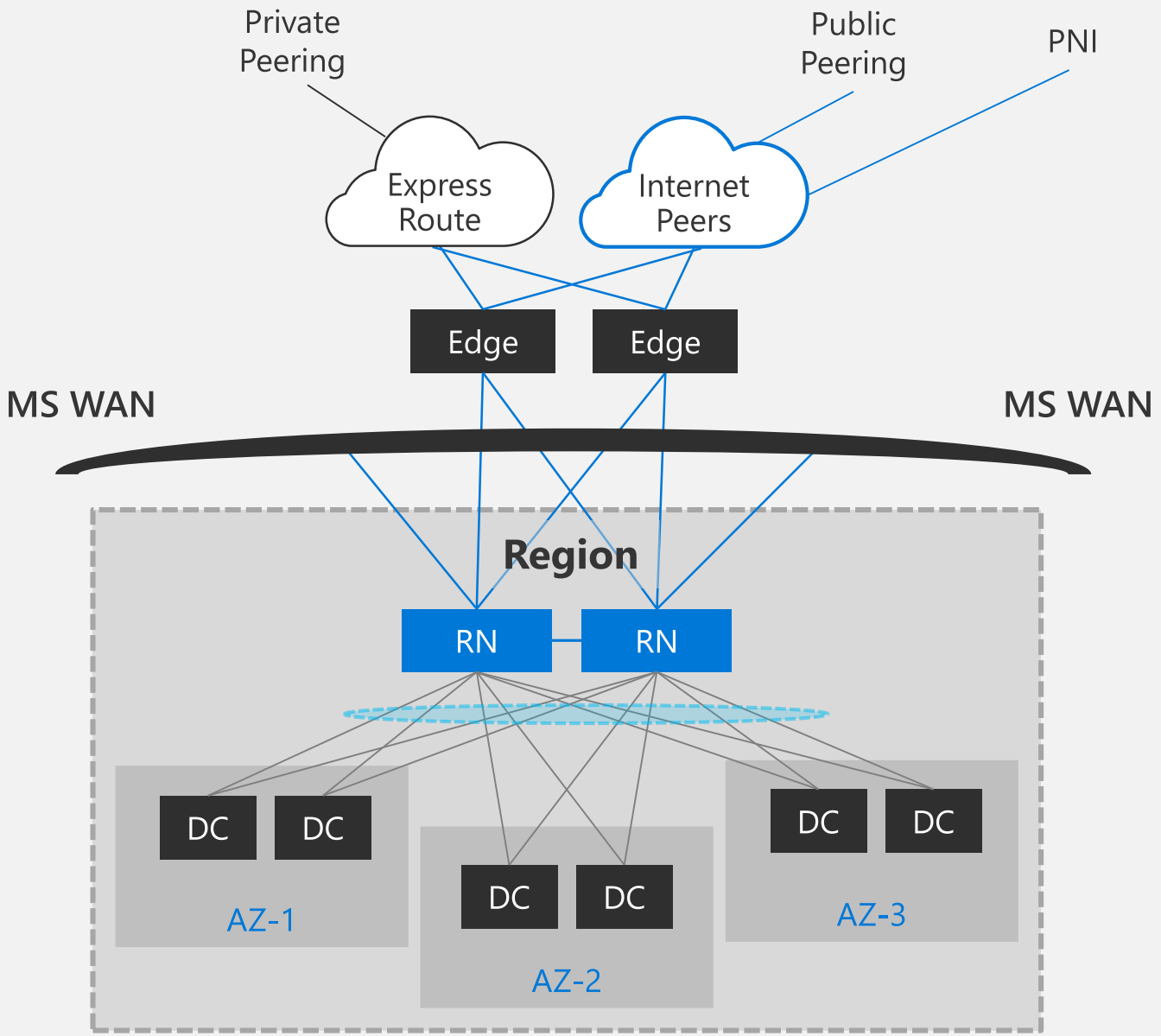
Space and power protected

RNG data centers

T-shirt sized (S,M, L, XL)

Contains server racks, DC NW

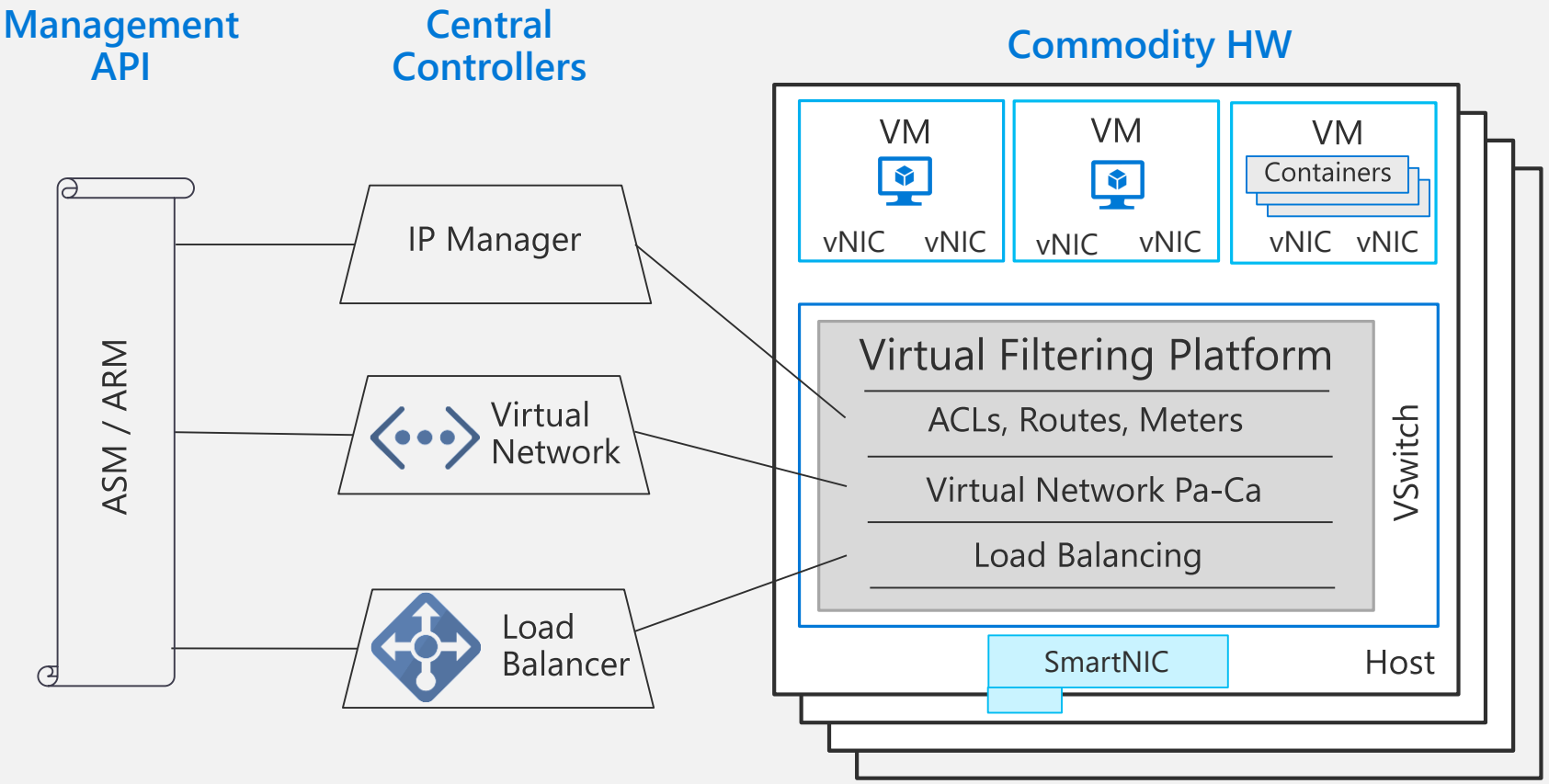
RNGs are sized to support growing the region by adding data centers



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

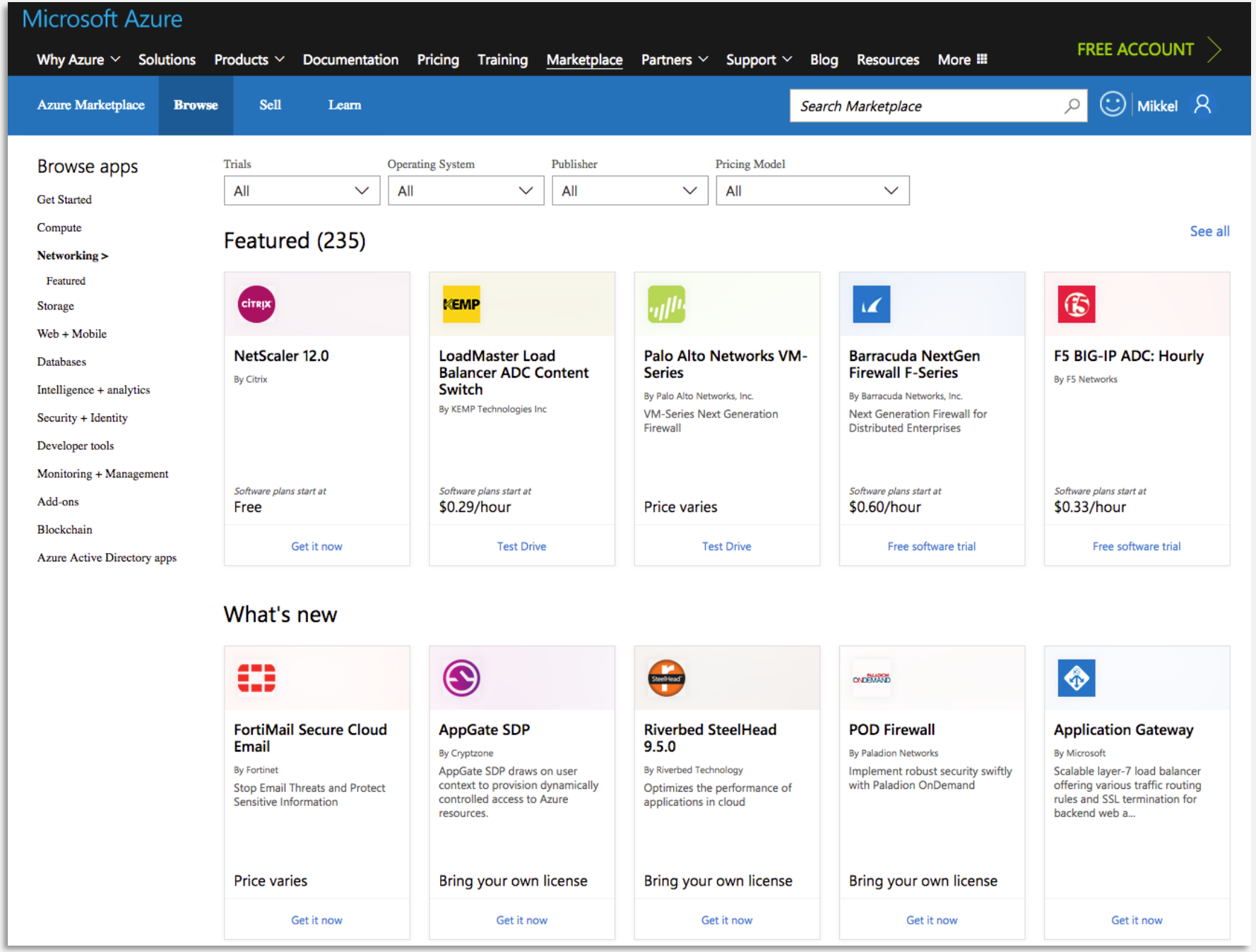
Network performance monitoring and diagnostics solution

Network Virtual Appliances

Best-of-breed partner appliances through the Azure Marketplace

Extend on premises to Azure using a familiar feel

Easy to deploy, configure and manage

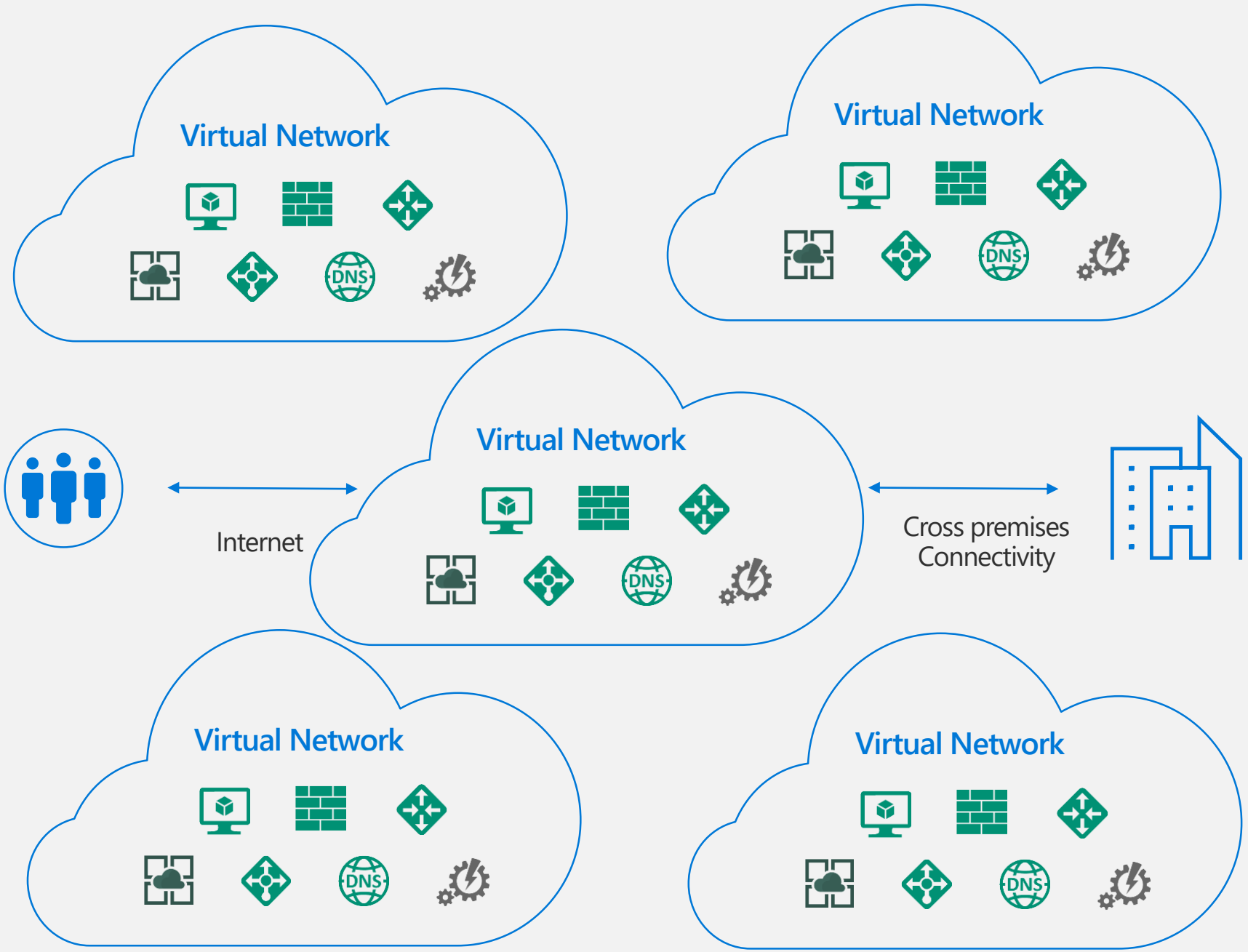


Your Network in Azure

Secure per customer virtual datacenter in the cloud

Instantiate and configure complex topologies in minutes

Rich security and networking services



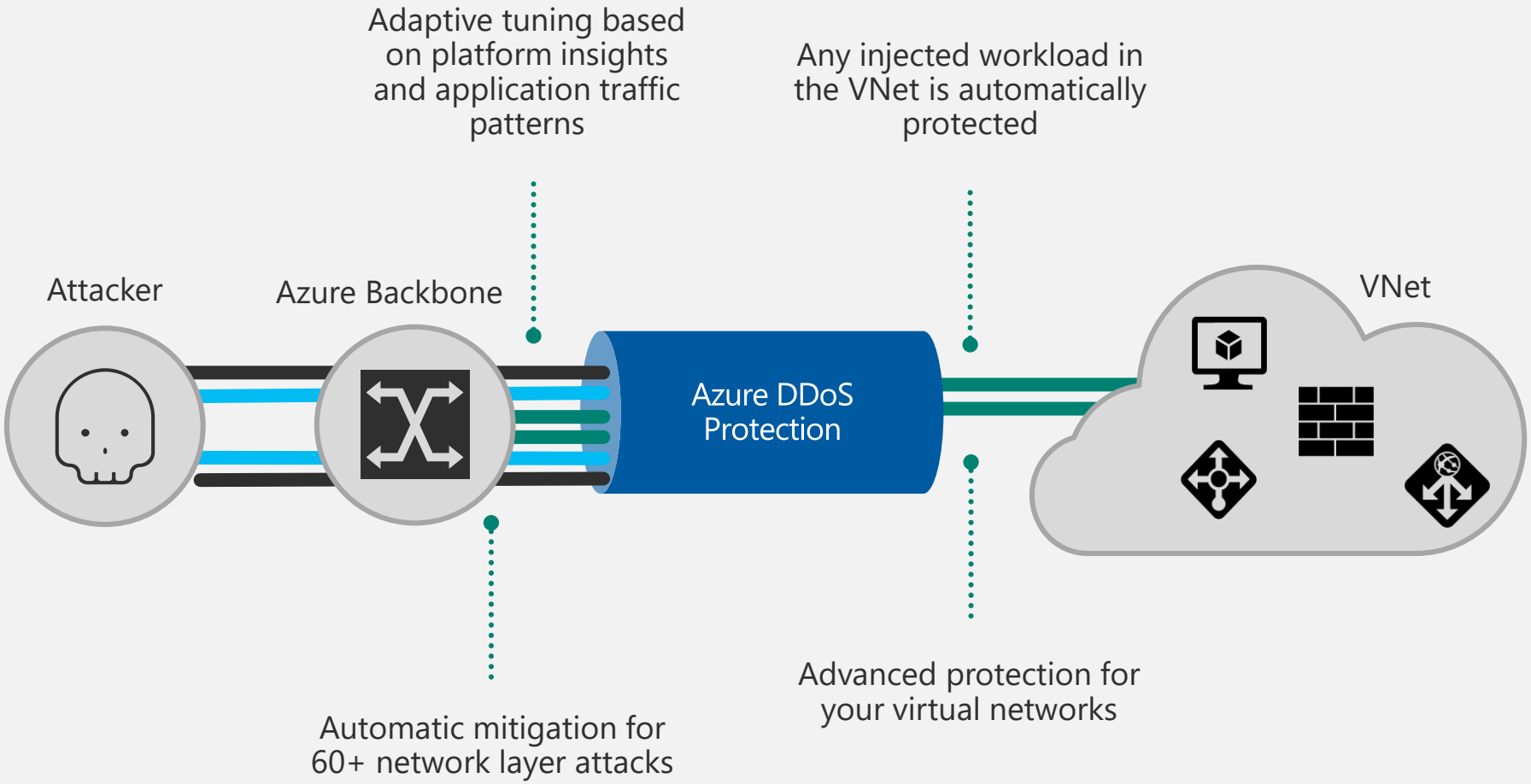
Protecting your application

From the Internet

Within the VNet

Within Azure

DDOS Protection



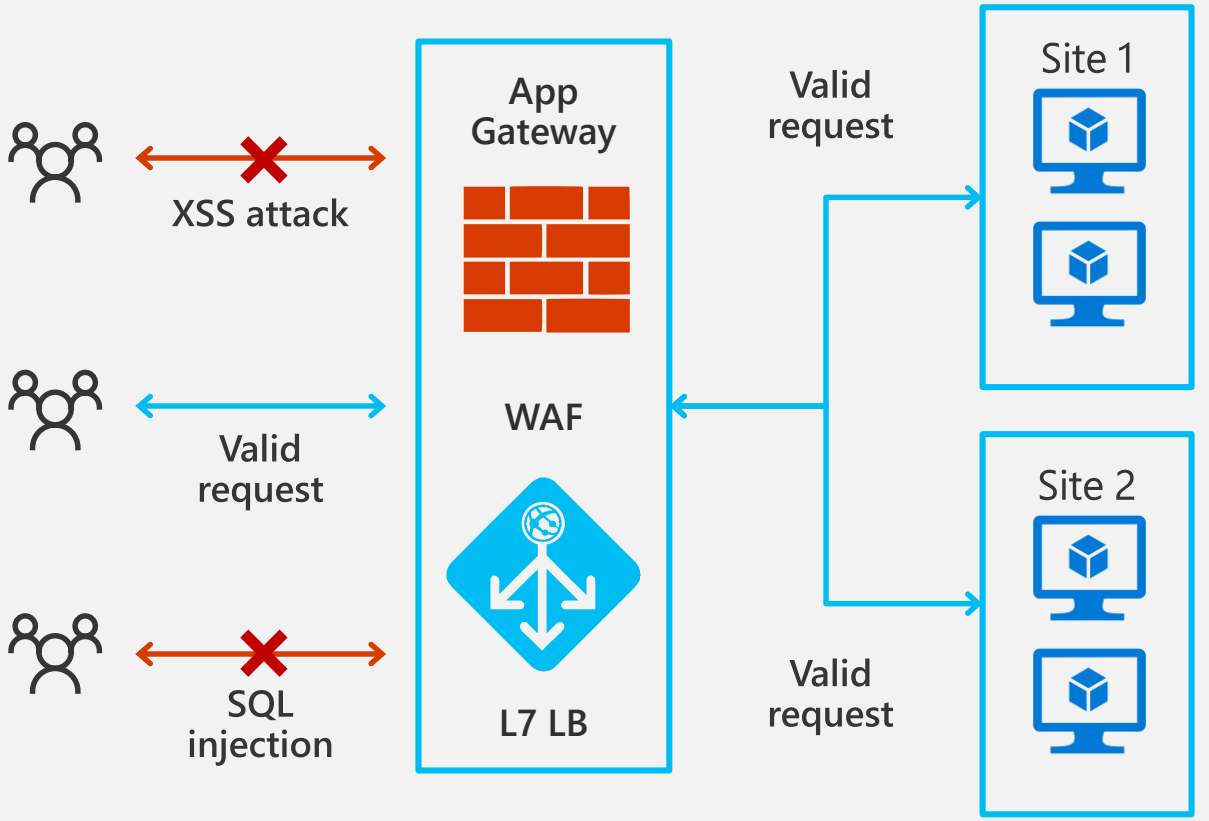
Protecting your application

From the Internet

Within the VNet

Within Azure

Web Application Firewall



Protect your app against prevalent X- Site Scripting and SQL Injection attacks

Blocks threats based on Top 10 OWASP signatures

Integrated with Azure Security Center

Real-time logging with Azure Monitor

Platform managed, scalable and highly available

Protecting your application

From the Internet

Within the VNet

Within Azure

Simplified Security Group Management

Network Security Groups (NSG)

IP based network ACL

Attach: Subnet and NICs

Service Tags

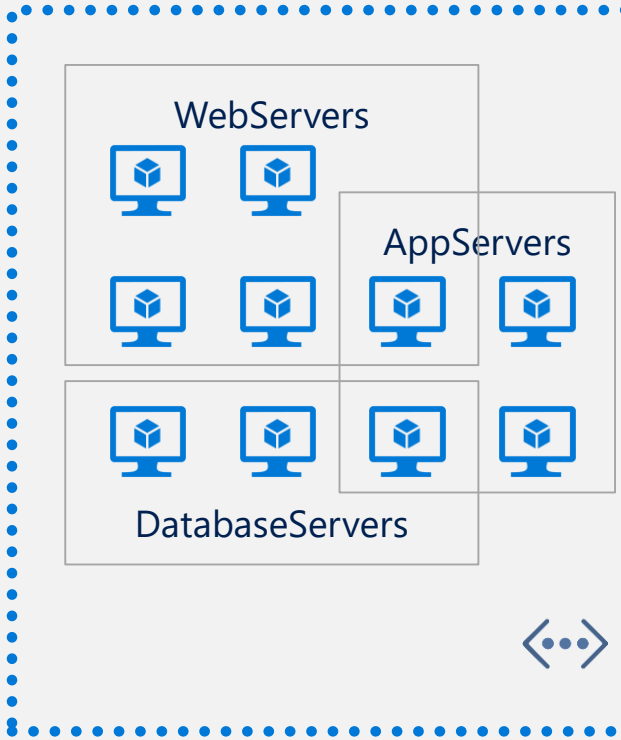
Named monikers for Azure service IPs

SQL, Storage, Traffic Manager supported

Application Security Groups (ASG)

Named monikers for custom grouping of VMs

Natural expression of application security



	Name	Source	Destination	Port
Allow	AllowInternetToWeb	Internet	WebServers	80,8080 (HTTP)
Allow	AllowAppToOnPrem	AppServers	10.10.128.0/22, 10.20.36.0/20, 192.168.65.0/20, 192.168.10.0/24	22, (SSH) 21, (FTP) 3389, (RDP) 3306 (MySQL)
Allow	AllowAppToExternalAPI	AppServers	148.234.0.0/16, 190.22.33.8/30	443 (HTTPS)
Allow	AllowDBServerToStorage	DatabaseServers	Storage	Any
Deny	DenyAll	Any	Any	Any

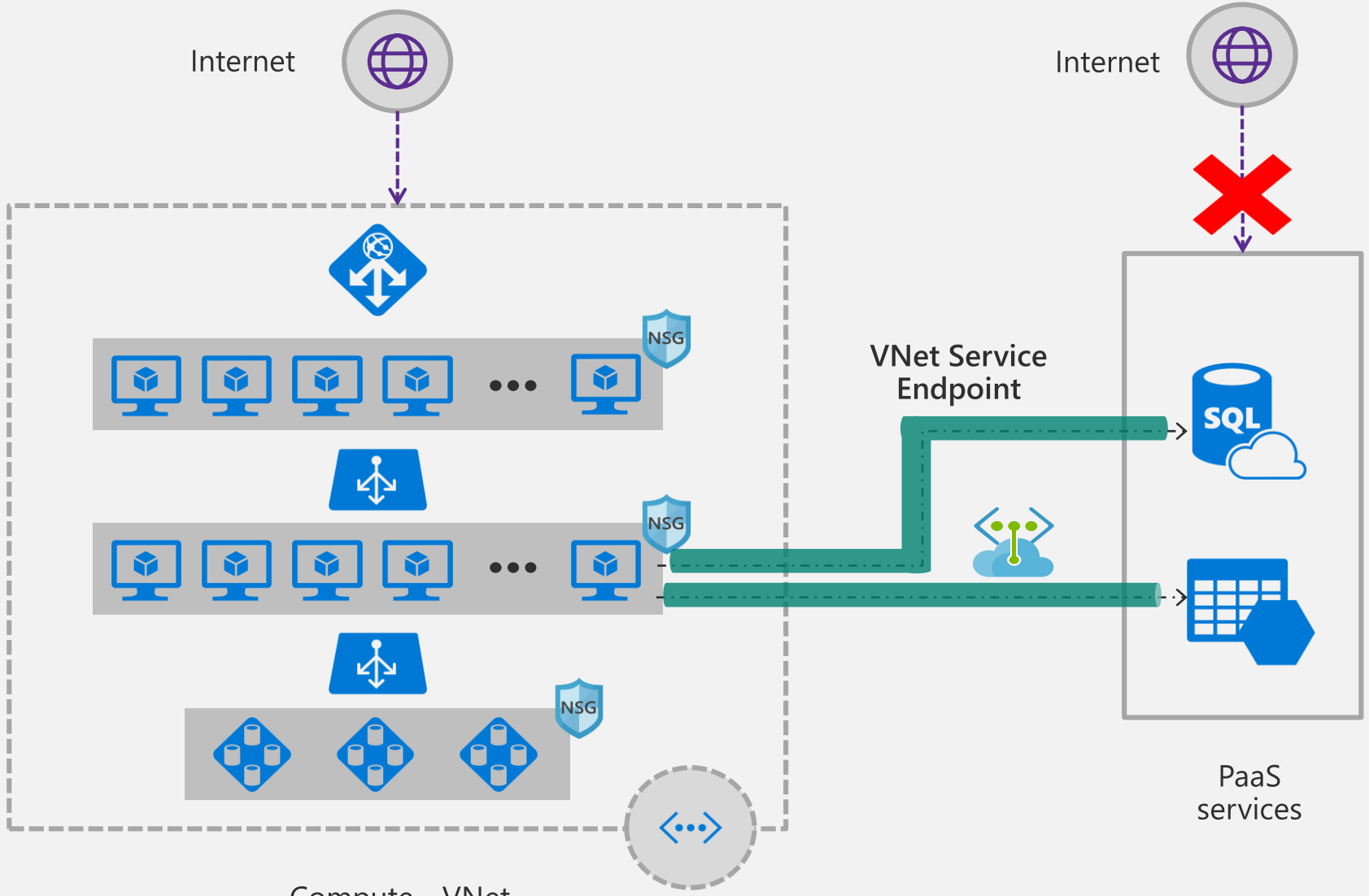
Protecting your application

From the Internet

Within the VNet

Within Azure

Securing PaaS Services



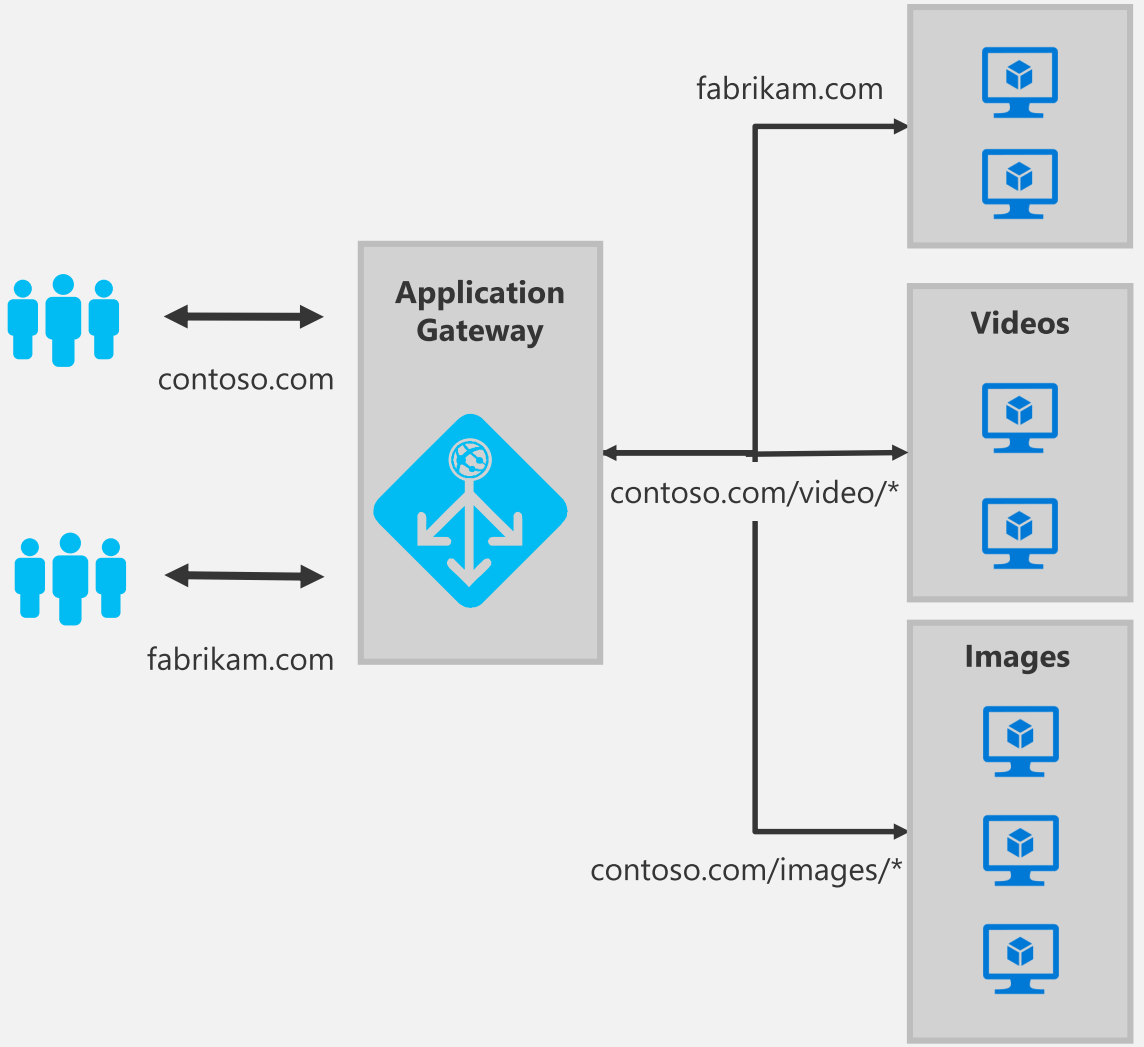
Availability

Application

Network

Zones

App Gateway



Layer 7 Routing

- HTTP round robin
- Cookie based session affinity
- Multi-site hosting
- URL based routing
- Support Web Apps
- Redirection

Security

- SSL termination
- SSL Policy (protocol and cipher)
- End to end SSL

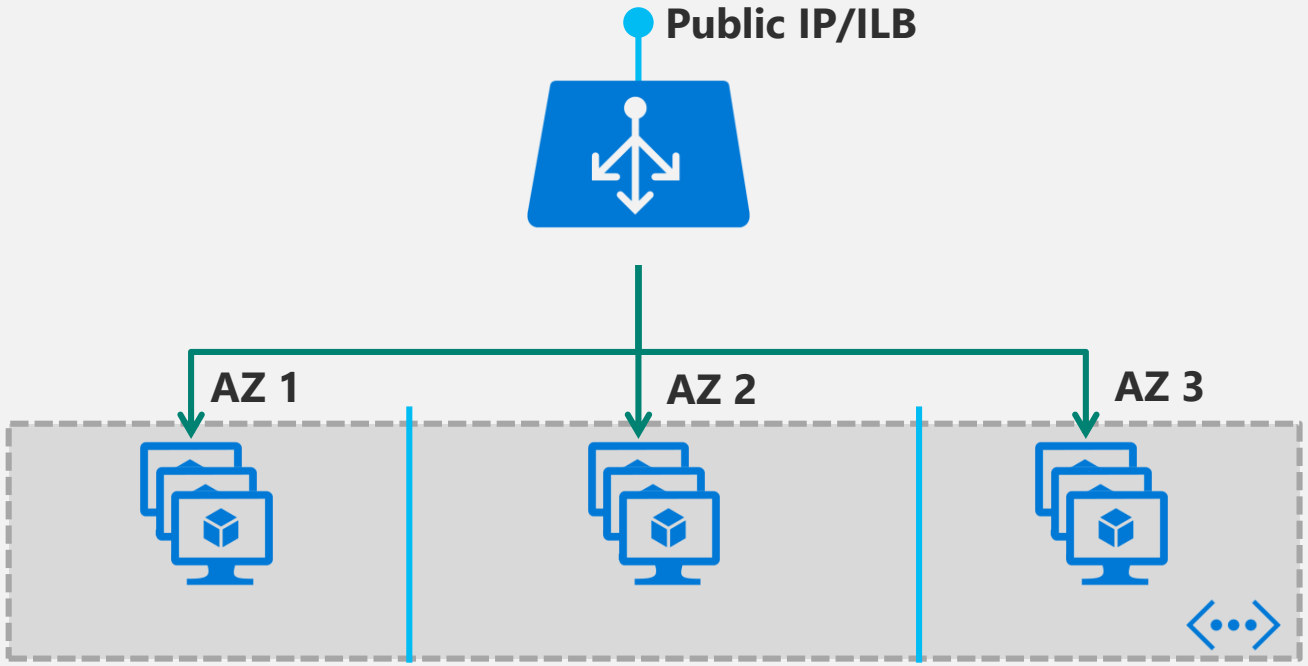
Availability

Application

Network

Zones

Standard Load Balancer



10x scale improvements—Increase from 100 to 1000 backend VMs

High availability through regional *anycast* IPs — single IP across AZs

Drastically simplified NVA Resiliency — HA Ports

Extensive health and diagnostic metrics

Availability

Application

Network

Zones

Availability Zones with Traffic Manager & Load Balancer

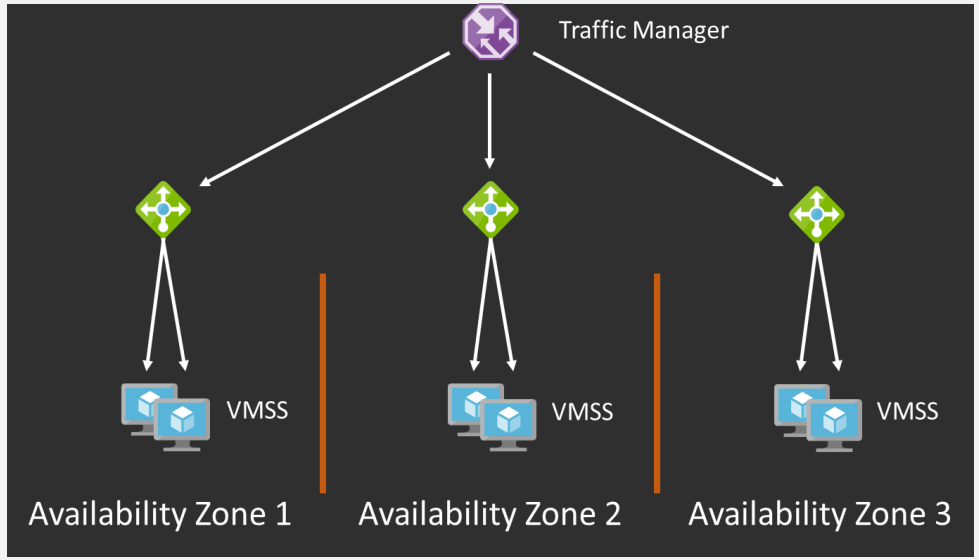
Traffic Manager

VMSS per Zone

TM profile for High Availability

Zonal VIP / VMSS

DNS name for cross-zone VMSS



Load Balancer - Standard

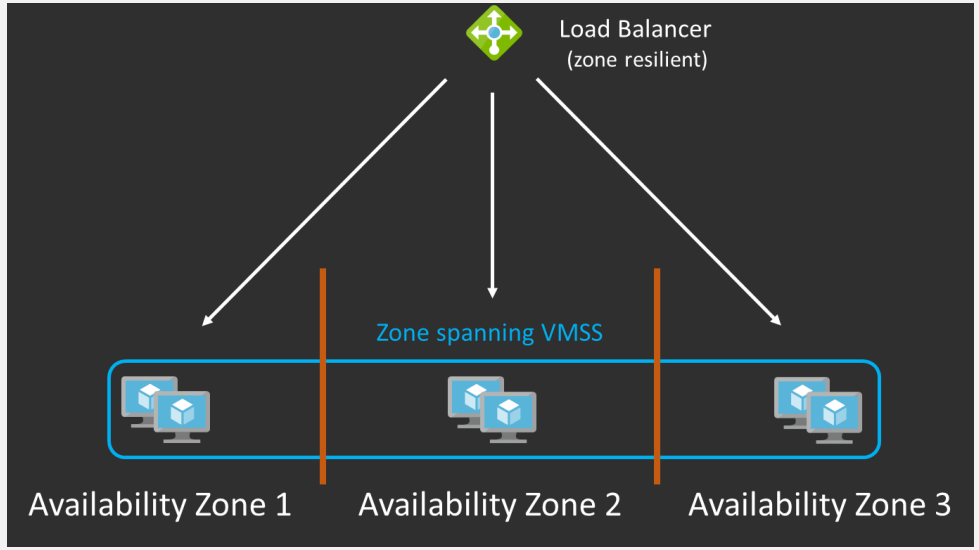
VMSS spans Zones

Load balancing across zones

Zone resilient VIPs

Single DNS name

VMSS limited to 1000 instances

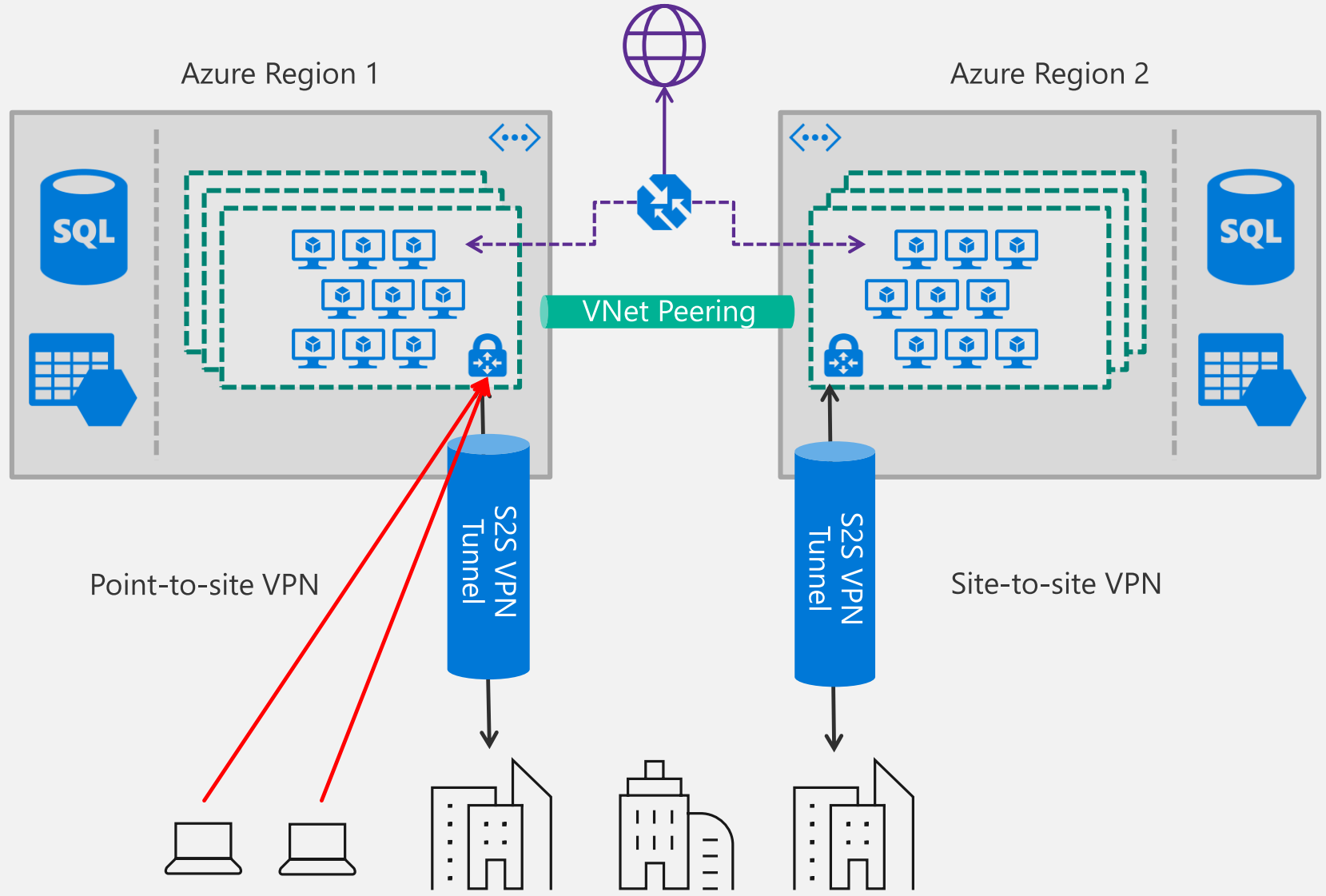


Connectivity

From on-premises

Within Azure

VPN and Point-to-site (P2S)

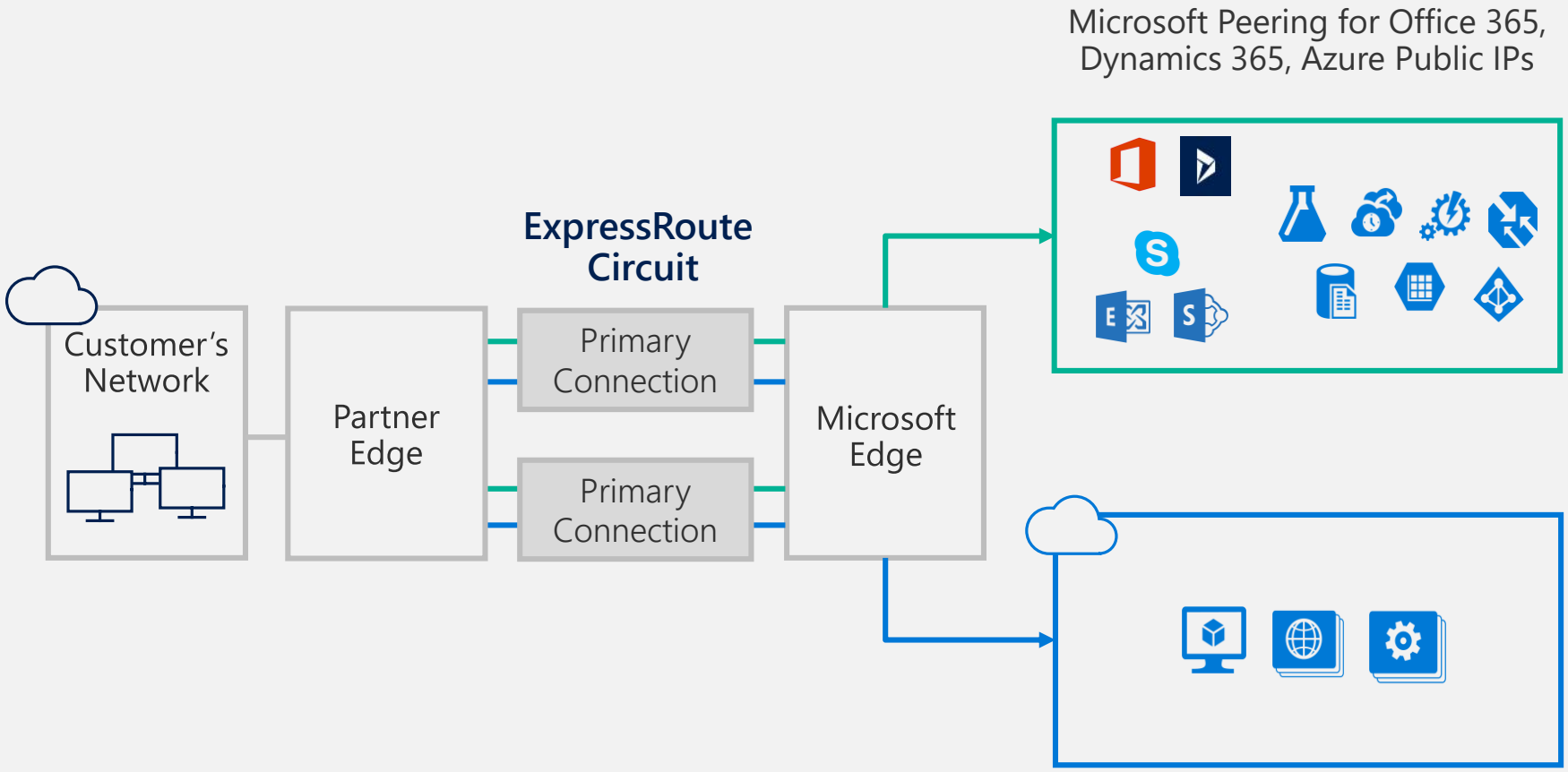


Connectivity

From on-premises

Within Azure

ExpressRoute



Private connectivity to Microsoft bypassing the Internet

Predictable performance

Enterprise-grade resiliency with SLA

Large and growing ExpressRoute partner ecosystem

Connectivity

From on-premises

Within Azure

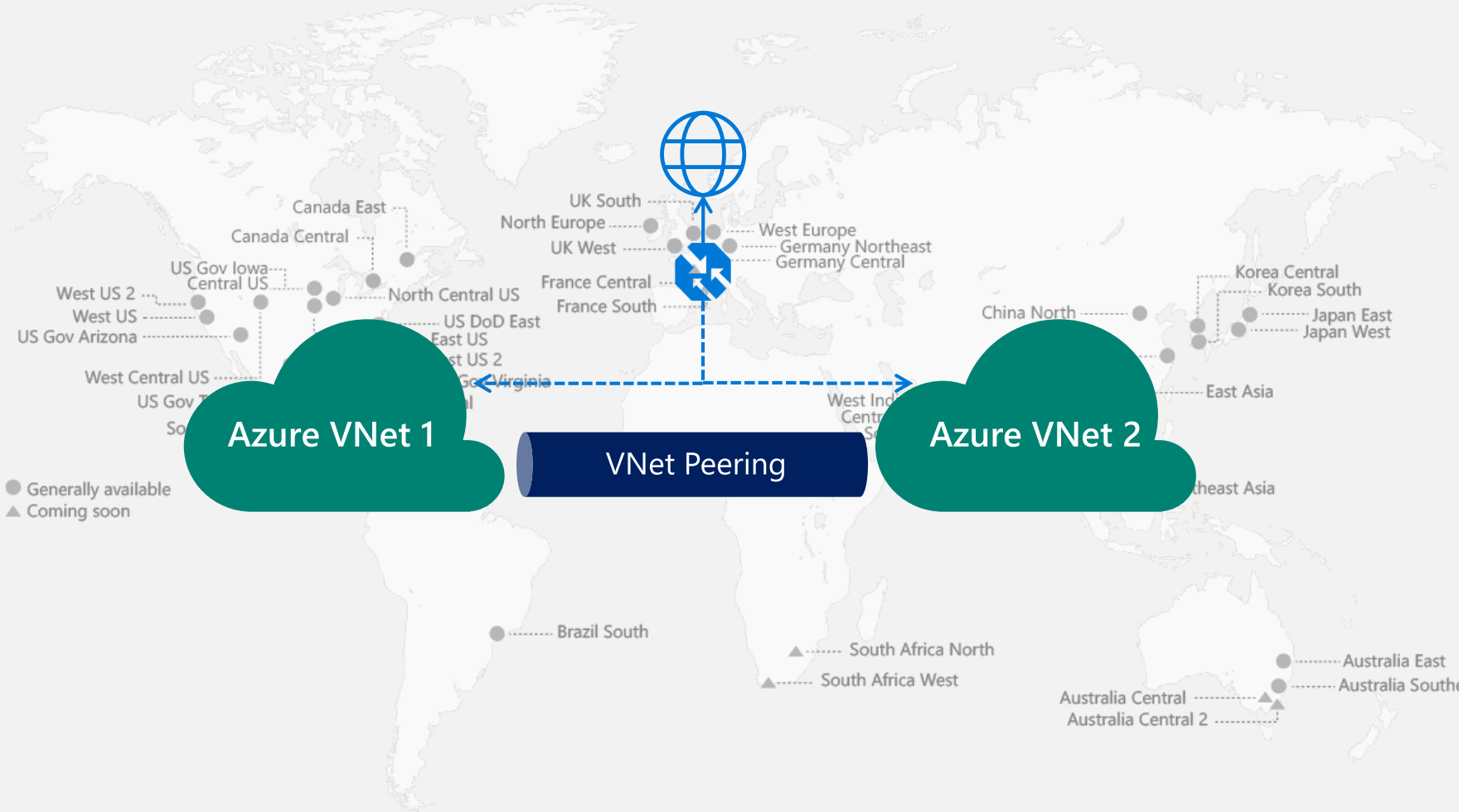
ExpressRoute | 100+ Partners

Connectivity

From on-premises

Within Azure

Global VNet Peering



VNets in different regions can now be peered directly

Simple and quick to configure

Routed through the Azure backbone

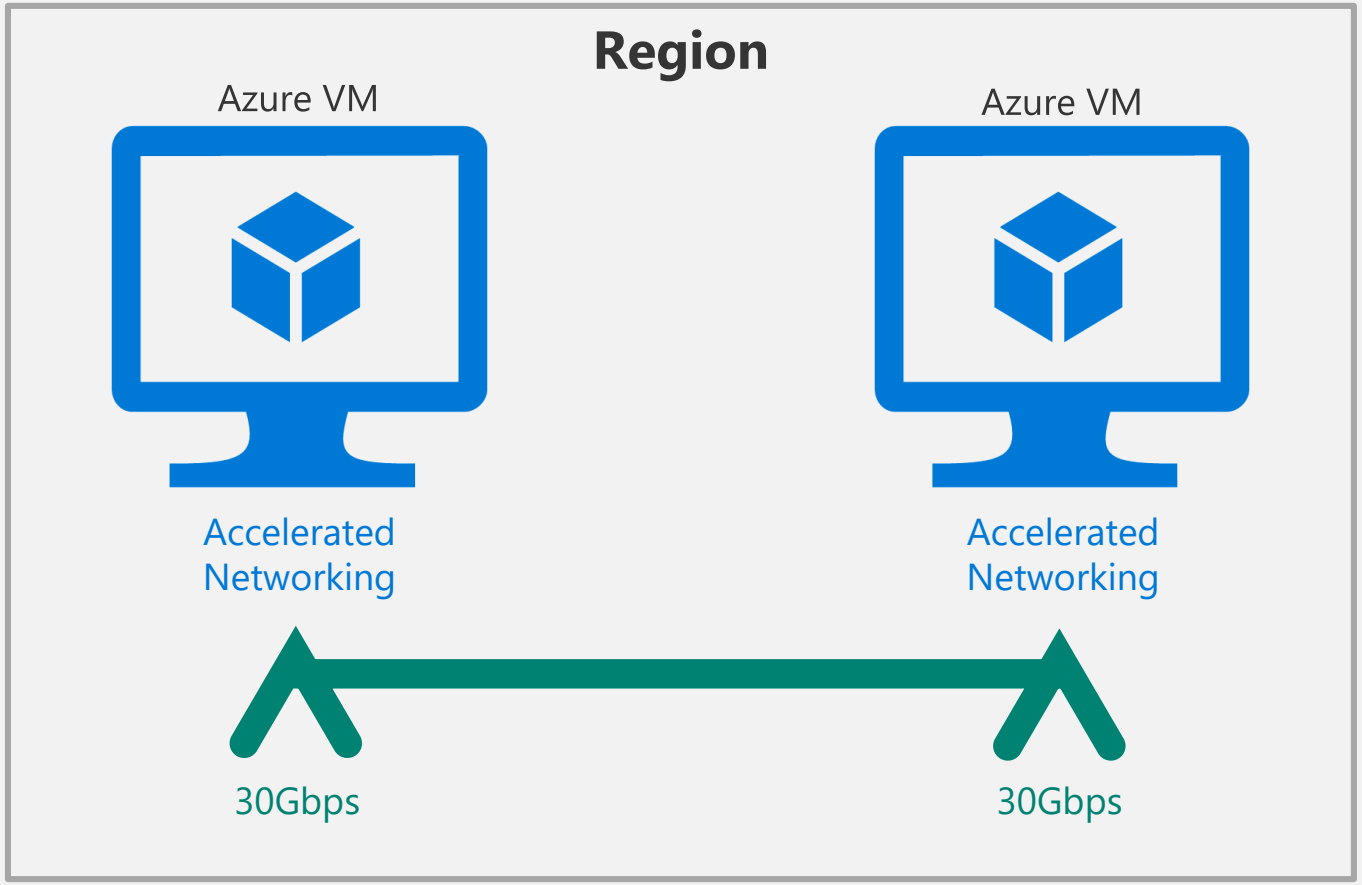
Performance and Monitoring

Performance

Monitoring

Accelerated Networking

30 Gbps VM to VM bandwidth!



Performance and Monitoring

Performance

Monitoring

Monitoring your resources with Azure Monitor

Public IP Address

06 AM

AVAILABILITY (AVG)	BYTE COUNT (SUM)	PACKET COUNT (SUM)	SYN COUNT (SUM)
WEBSITEIP	WEBSITEIP	WEBSITEIP	WEBSITEIP
99.99	157.06 G	19.27 M	105.59 k

Audit Logs

Available for all resources

Load Balancer

BYTE COUNT (COUNT)	DIP AVAILABILITY ...	PACKET COUNT (COU...	SNAT CONNECTION C...	SYN COUNT (COUNT)
WEBSITELOADBALANCER	WEBSITELOADBALANCER	WEBSITELOADBALANCER	WEBSITELOADBALANCER	WEBSITELOADBALANCER
102.95 k	25.78 k	102.95 k	257.56 k	102.95 k

Virtual network gateway

TUNNEL BANDWIDTH ...	TUNNEL EGRESS BYT...	TUNNEL EGRESS PAC...	TUNNEL EGRESS TS ...	TUNNEL INGRESS BY...	TUNNEL INGRESS PA...	TUNNEL INGRESS TS...
DEMOVNET1GW	DEMOVNET1GW	DEMOVNET1GW	DEMOVNET1GW	DEMOVNET1GW	DEMOVNET1GW	DEMOVNET1GW
2 B/s	98.3 KB	2.88 k	0	92.2 KB	2.96 k	0

Application Gateway

THROUGHPUT (AVG)
REGION-APPGW-0
260 B/s

Traffic Manager

ENDPOINT STATUS B...	QUERIES BY ENDPOI...
DMO2017IGNITE	DMO2017IGNITE
1	6

Network Interface Card

BYTES RECEIVED (S...	BYTES SENT (SUM)
WEBSITE859	WEBSITE859
428.65 M	18 G

Performance and Monitoring

Performance

Monitoring

Diagnose & Visualize Scenarios with Network Watcher