

Azure Readiness Day

für HTLs

Thomas Vater, Technical Solution Professional
Martin Pöckl, Technical Solution Professional

Wien, 6.5.2019

1| 10:00

Begrüßung

2| 10:00 – 13:00

Session Teil 1

- Azure Fundamentals (Compute, Storage, Networking)
- Einführung ins Azure Portal
- Development & Test Umgebungen für Studenten

3| 13:00 – 14:00

Mittagspause

7| 14:00 – 17:00

Session Teil 2

- Azure Data Services
- Cognitive Services
- Datenbanken

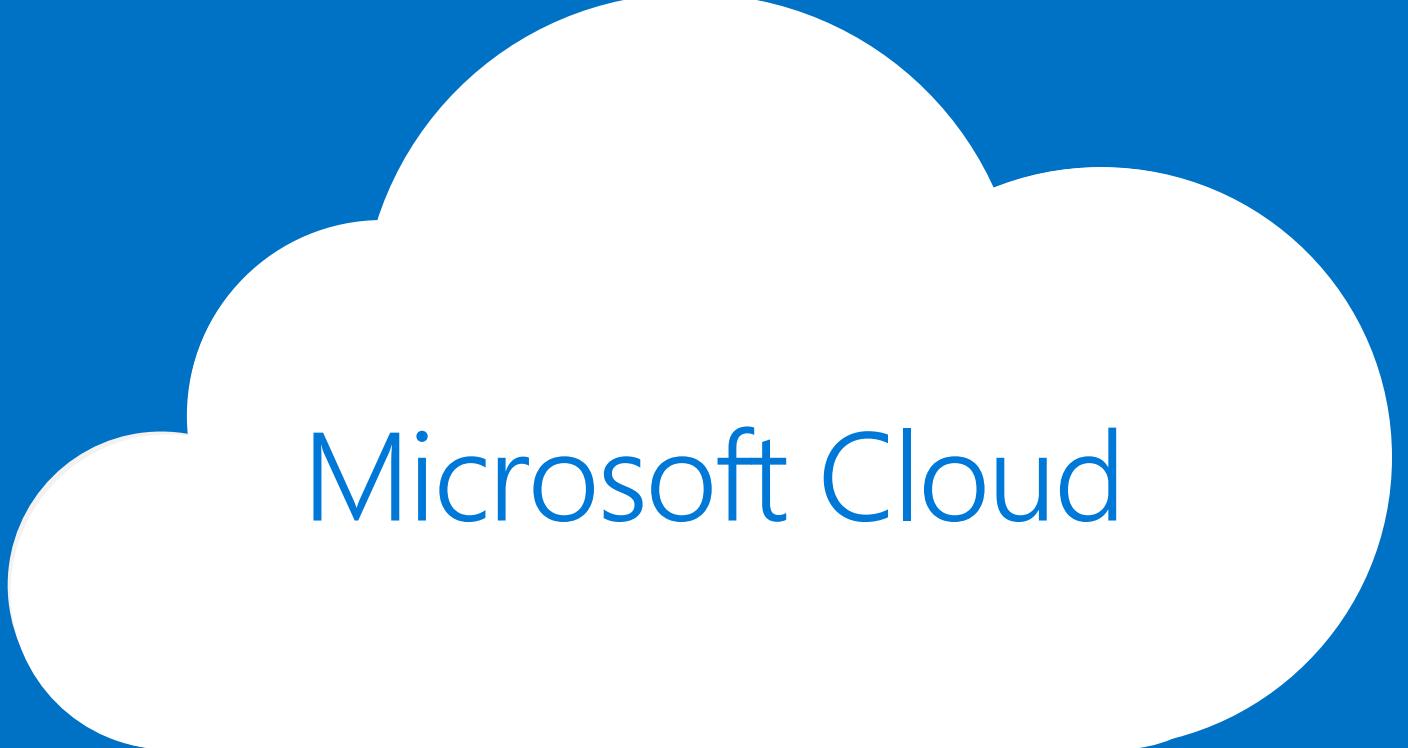


Azure

Dynamics
365

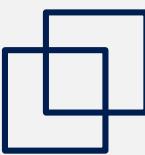
Office
365

Windows



Microsoft Cloud

Microsoft Azure



Hybrid



Productive

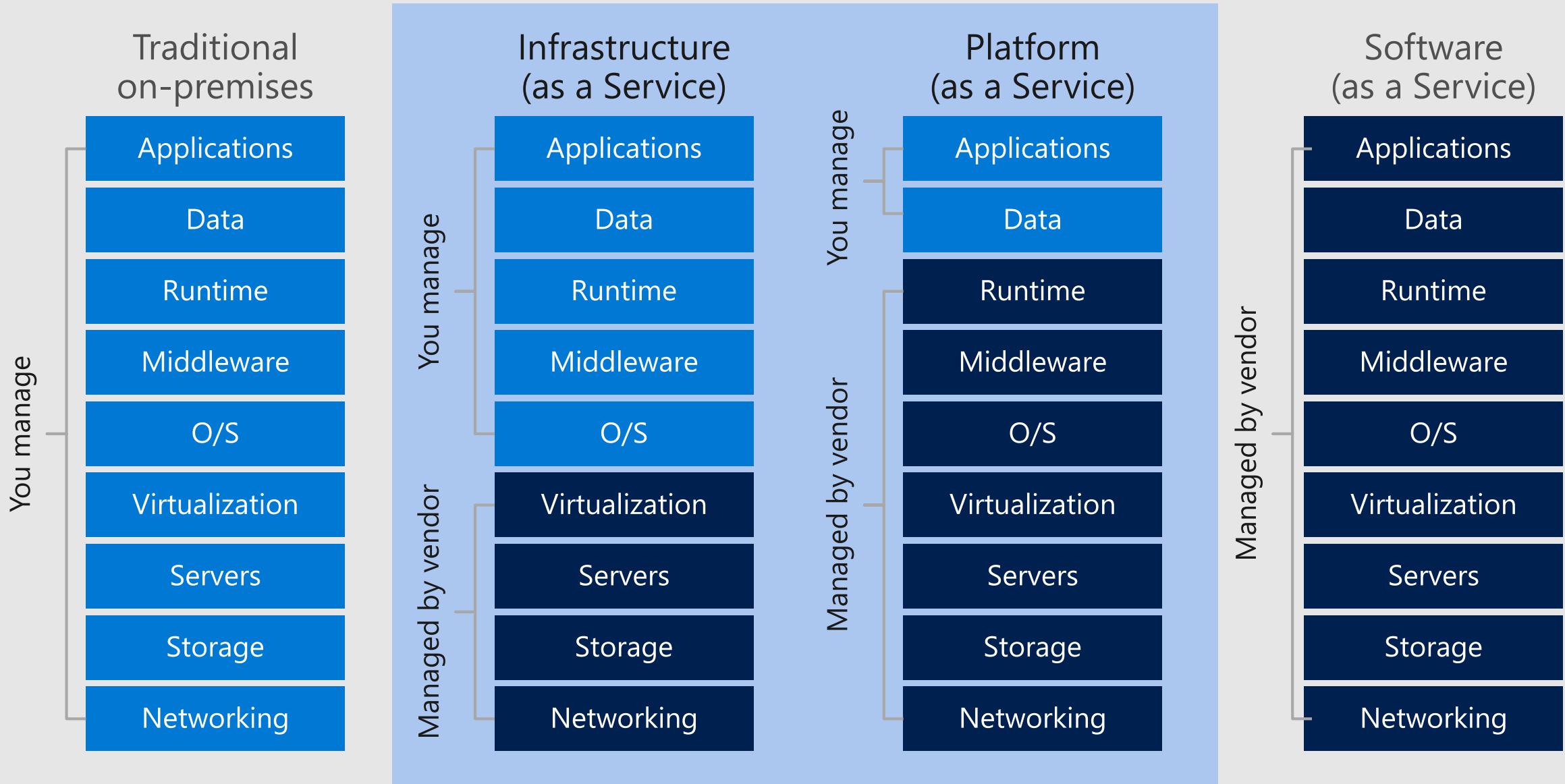


Intelligent



Trusted

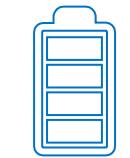
Azure cloud service models



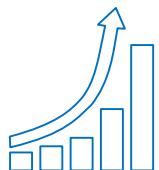
Challenges in maintaining your own infrastructure



Cost, time and complexity



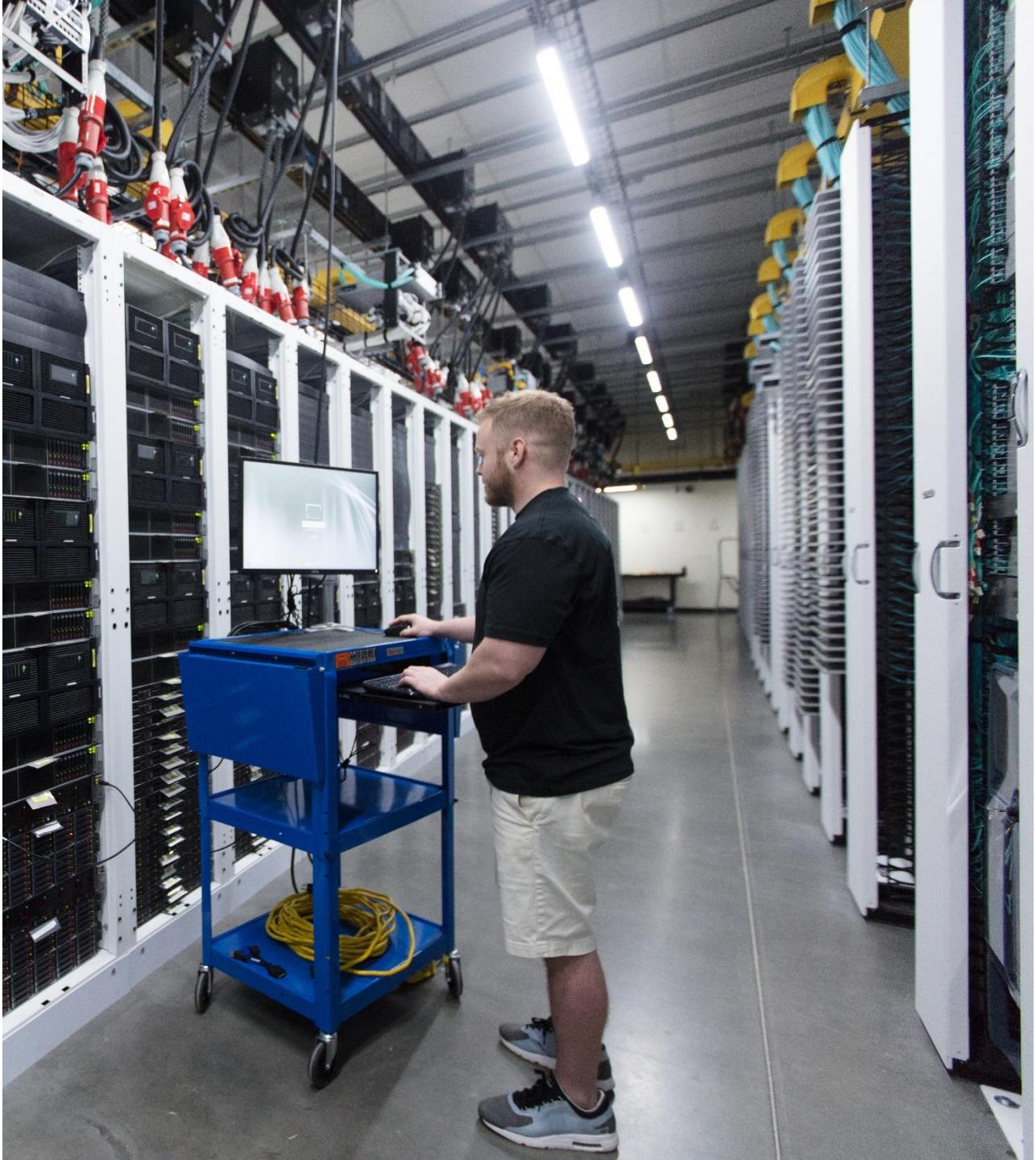
Lack of flexibility



Data explosion



Efficient energy use



Journey to the Cloud

Migrate

Application Modernization

SaaS

Rehost

Refactor

Rearchitect

Rebuild

Replace



On-Premises

Infrastructure Platform



IaaS

Infrastructure Platform
"lift & shift"



Containers

Managed Container Platform



PaaS/Serverless

Application Platform



SaaS

Microsoft Azure

TOOLS

Visual Studio + Visual Studio Code + Visual Studio Team Services (DevOps)

ADVANCED WORKLOADS

Web + Mobile

Identity Management

Microservices & Container

Data + Analytics

Serverless

Cognitive Services

Workflow & Integration

High Performance Compute

API Management

Internet of Things

CORE INFRASTRUCTURE

Compute Storage Networking Security

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



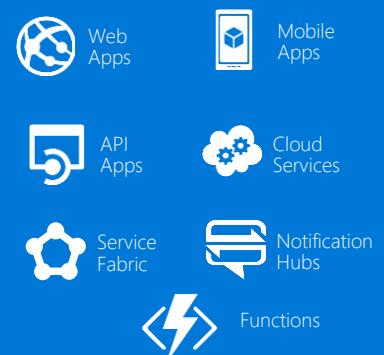
Integration



Compute Services



Application Platform



Data



Intelligence



Analytics & IoT



Hybrid Cloud

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

Compute



Storage



Datacenter Infrastructure (54 Regions)

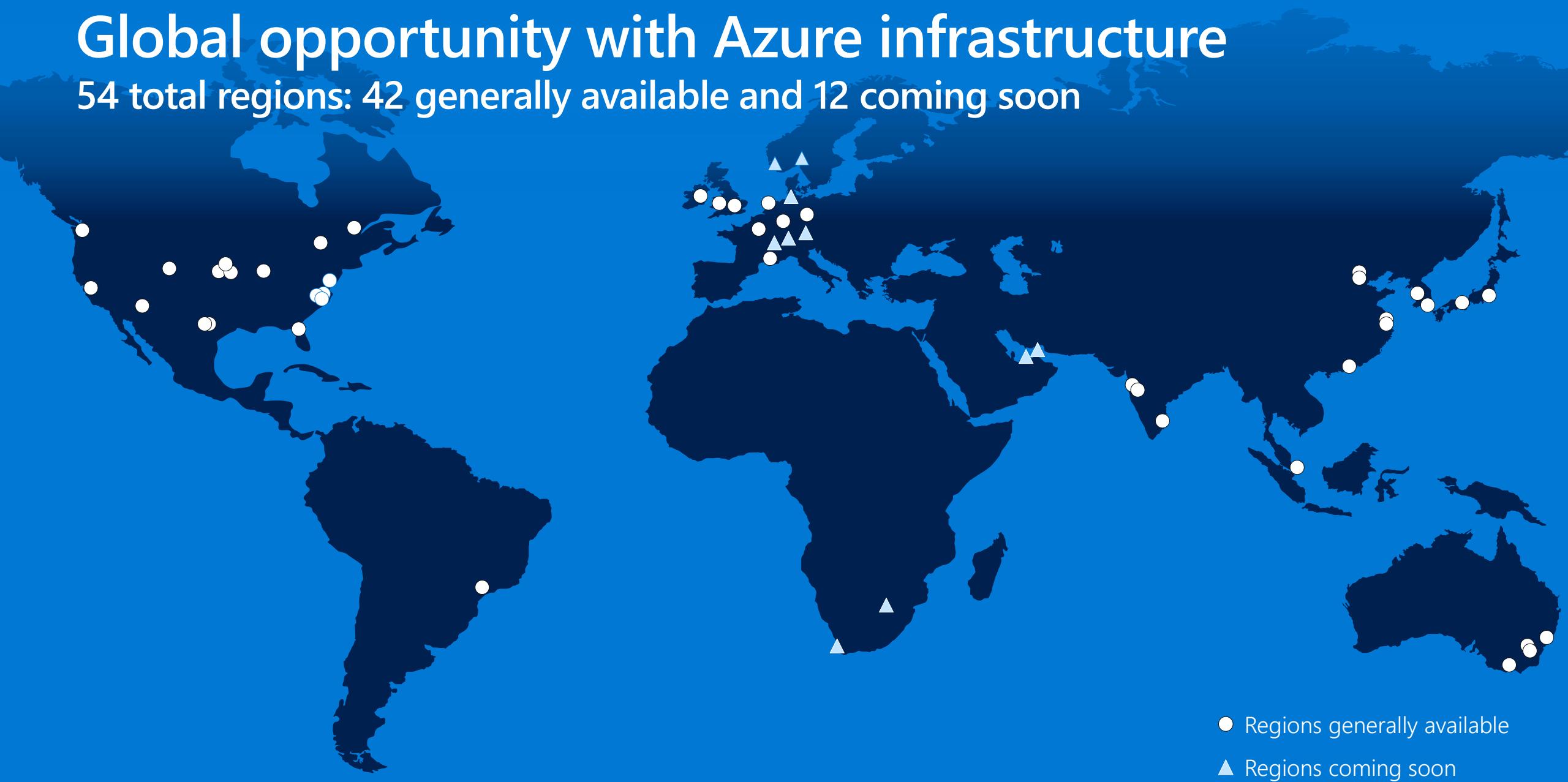
Azure solutions



Security and compliance

Global opportunity with Azure infrastructure

54 total regions: 42 generally available and 12 coming soon



Quincy, WA

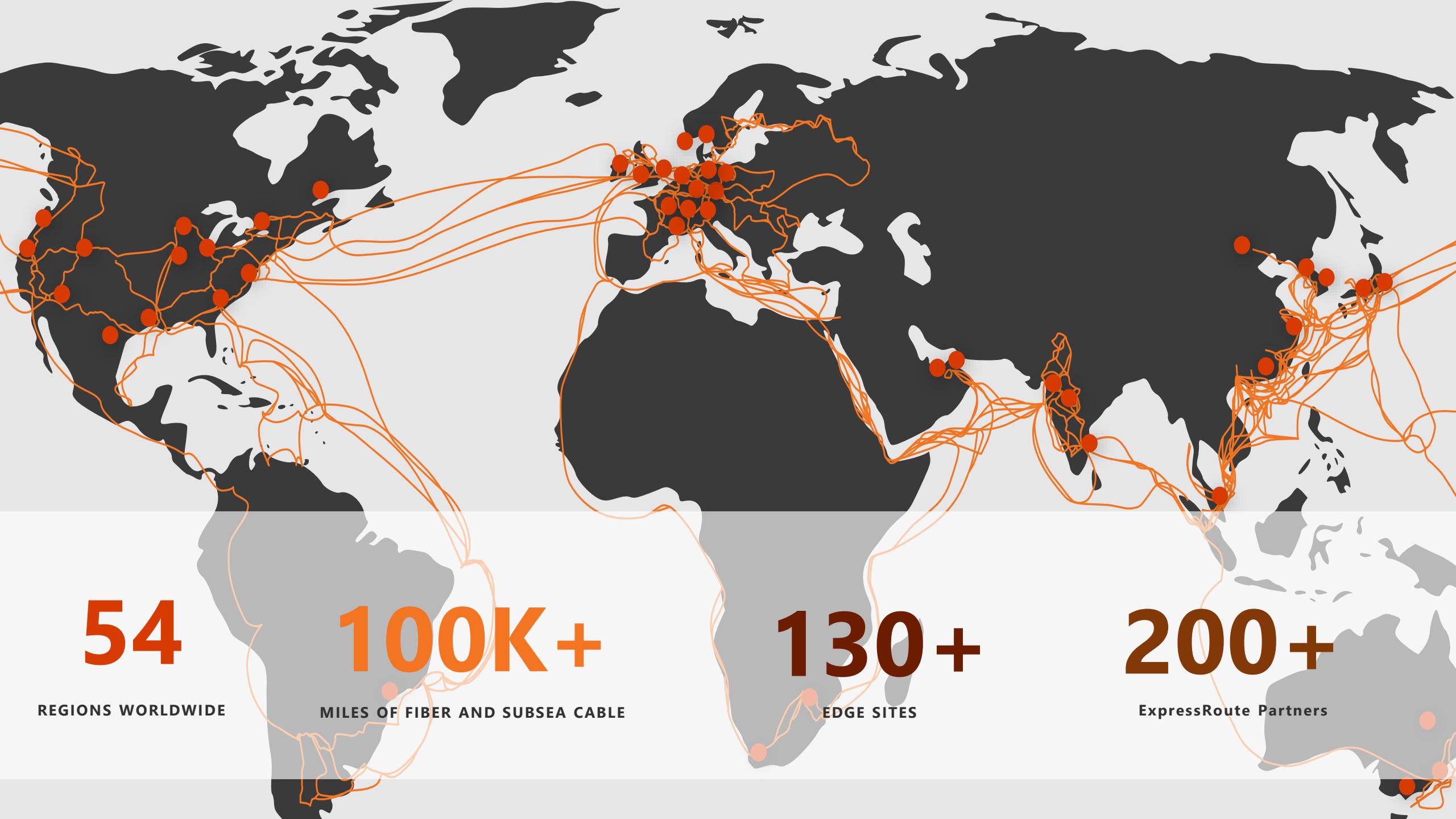


Cheyenne, WY



Dublin, Ireland







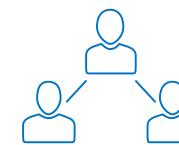
One of the largest networks on the planet



Inter and intra regional connectivity



Terrestrial & subsea network

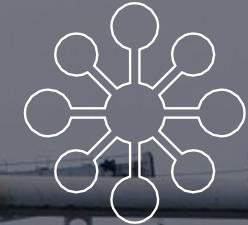


Interconnection

Terrestrial and Subsea Cable



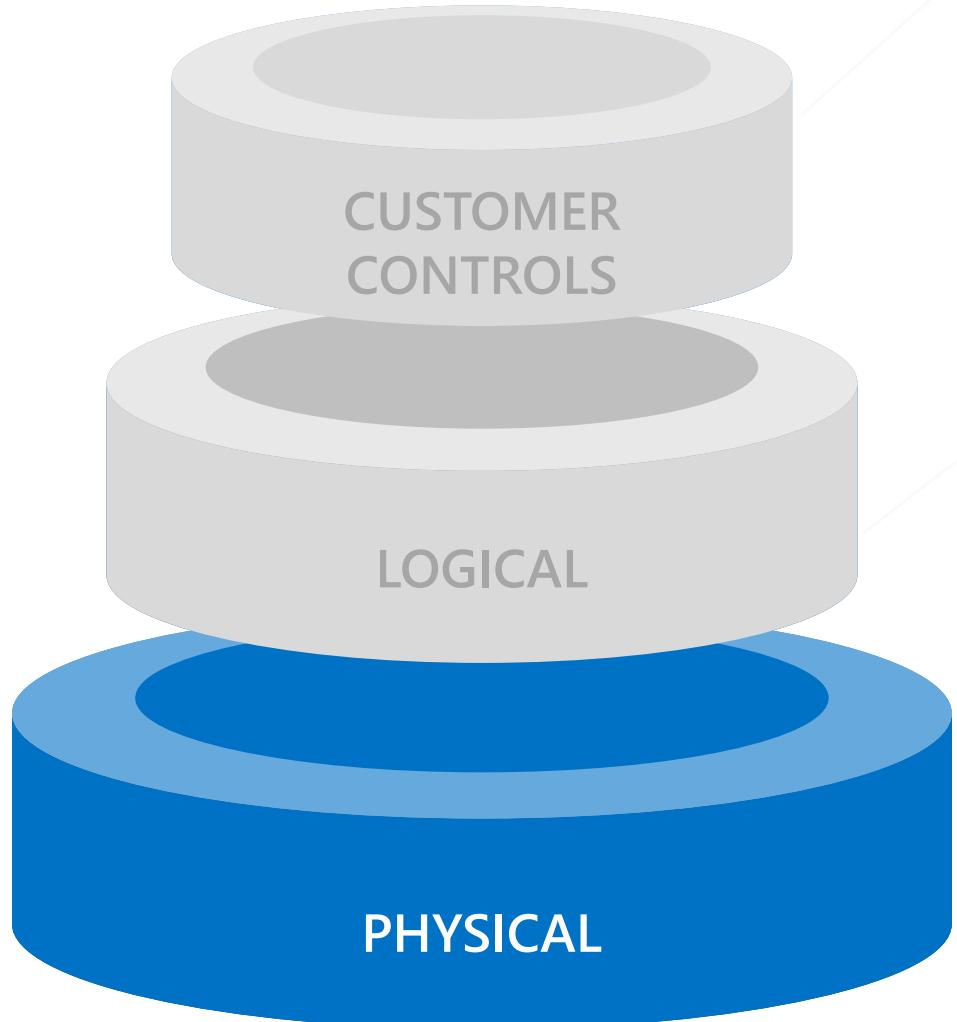
Proactive investment
enables agile expansion



Network innovation supports
the growth of cloud services



Layered security approach



CUSTOMER MANAGED

- Azure Security Center
- Azure Active Directory
- Express Route
- VPN
- Encryption

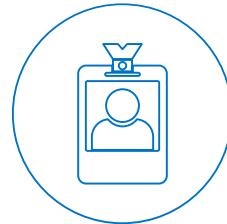
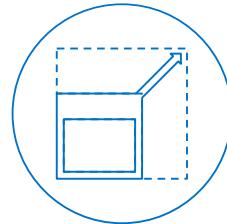
MICROSOFT MANAGED

- Secure Development Lifecycle
- DDos protection
- Multi-tenancy
- Incident response/CDOC

- Access approval
- Perimeter
- Building
- Server environment
- Data-bearing device controls

Defense in depth

Massive investment in physical security – people, process, technology

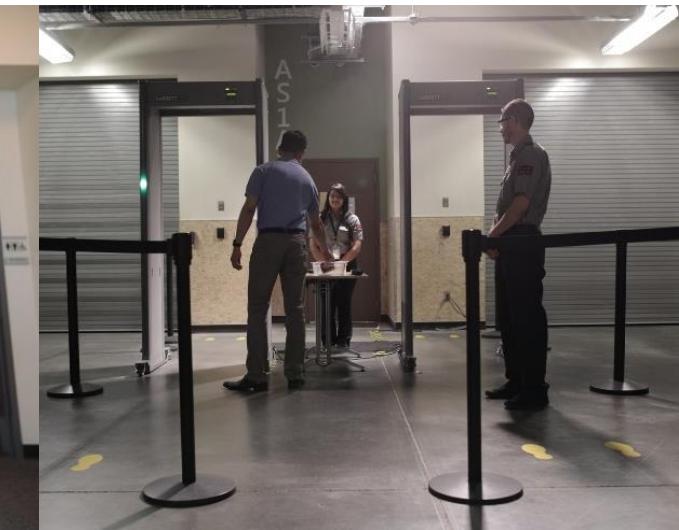


Access approval

Perimeter

Building

Server
environment



The most trusted and compliant cloud

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
Moderate JAB P-ATO	High JAB P-ATO	DoD DISA SRG Level 2	DoD DISA SRG Level 4	SP 800-171	FIPS 140-2	Section 508 VPAT	ITAR	CJIS	IRS 1075
PCI DSS Level 1	CDSA	MPAA	FACT UK	Shared Assessments	FISC Japan	HIPAA /HITECH Act	GxP 21 CFR Part 11	MARS-E	IG Toolkit UK
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
India MeitY	Canada Privacy Laws	Privacy Shield	Germany IT Grundschutz workbook						

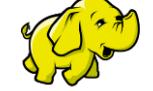
Azure covers 85 compliance offerings

The deepest and most comprehensive compliance coverage in the industry

Global	ISO 27001:2013 ISO 27017:2015 ISO 27018:2014	ISO 22301:2012 ISO 9001:2015 ISO 20000-1:2011	SOC 1 Type 2 SOC 2 Type 2 SOC 3 CIS Benchmark	CSA STAR Certification CSA STAR Attestation CSA STAR Self-Assessment WCAG 2.0 (ISO 40500:2012)
US Gov	FedRAMP High FedRAMP Moderate EAR ITAR	DoD DISA SRG Level 5 DoD DISA SRG Level 4 DoD DISA SRG Level 2 DFARS	DoE 10 CFR Part 810 NIST SP 800-171 NIST CSF Section 508 VPATs	FIPS 140-2 CJIS IRS 1075
Industry	PCI DSS Level 1 GLBA (US) FFIEC (US) Shared Assessments (US) SEC 17a-4 (US) CFTC 1.31 (US) FINRA 4511 (US) SOX (US)	23 NYCRR 500 (US) OSFI (Canada) FCA + PRA (UK) APRA (Australia) FINMA (Switzerland) FSA (Denmark) RBI + IRDAI (India) MAS + ABS (Singapore)	NBB + FSMA (Belgium) AFM + DNB (Netherlands) European Banking Authority (EBA) FISC (Japan) HIPAA BAA (US) HITRUST Certification GxP (FDA 21 CFR Part 11) MARS-E (US)	NHS IG Toolkit (UK) NEN 7510:2011 (Netherlands) FERPA (US) CDSA MPAA (US) FACT (UK) DPP (UK)
Regional	Argentina PDPA Australia IRAP Unclassified Australia IRAP PROTECTED Canada Privacy Laws China GB 18030:2005 China DJCP (MLPS) Level 3	China TRUCS / CCCPPF EU EN 301 549 EU ENISA IAF EU Model Clauses EU – US Privacy Shield GDPR Germany C5	Germany IT-Grundschutz workbook India MeitY Japan CS Mark Gold Japan My Number Act Netherlands BIR 2012 New Zealand Gov CIO Framework	Singapore MTCS Level 3 Spain ENS High Spain DPA UK Cyber Essentials Plus UK G-Cloud UK PASF

Tools

Build and innovate with choice and flexibility

DevOps	 Nagios®	 VAGRANT	 ANSIBLE	 GRUNT	 Hadoop	 Android	 Xamarin	 OpenShift
Management	 CHEF™	 puppet labs	 ANSIBLE	 SALTSTACK	 Redis	 mist.io	 libcloud	 SCALR CLOUD MANAGEMENT
Applications	 WordPress	 Joomla!	 Drupal™	 GitHub	 APPRENDA	 Docker	 CloudBees	
App frameworks & tools	 PHP	 nodeJS	 Python	 JS	 Ruby	 IntelliJ IDEA	 Eclipse	
Databases & middleware	 Hadoop	 redis	 CLEARDB	 cloudera	 MySQL™	 MongoDB	 Couchbase	
Infrastructure	 Ubuntu	 Ubuntu Server	 Red Hat	 SUSE	 Debian	 bitnami	 Oracle Linux	 Docker

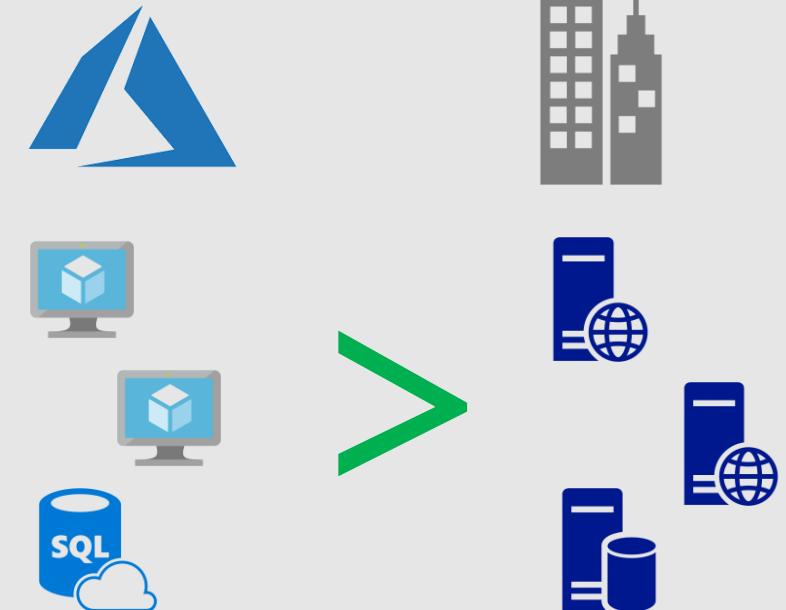
Core infrastructure

Drive cost and operational efficiencies

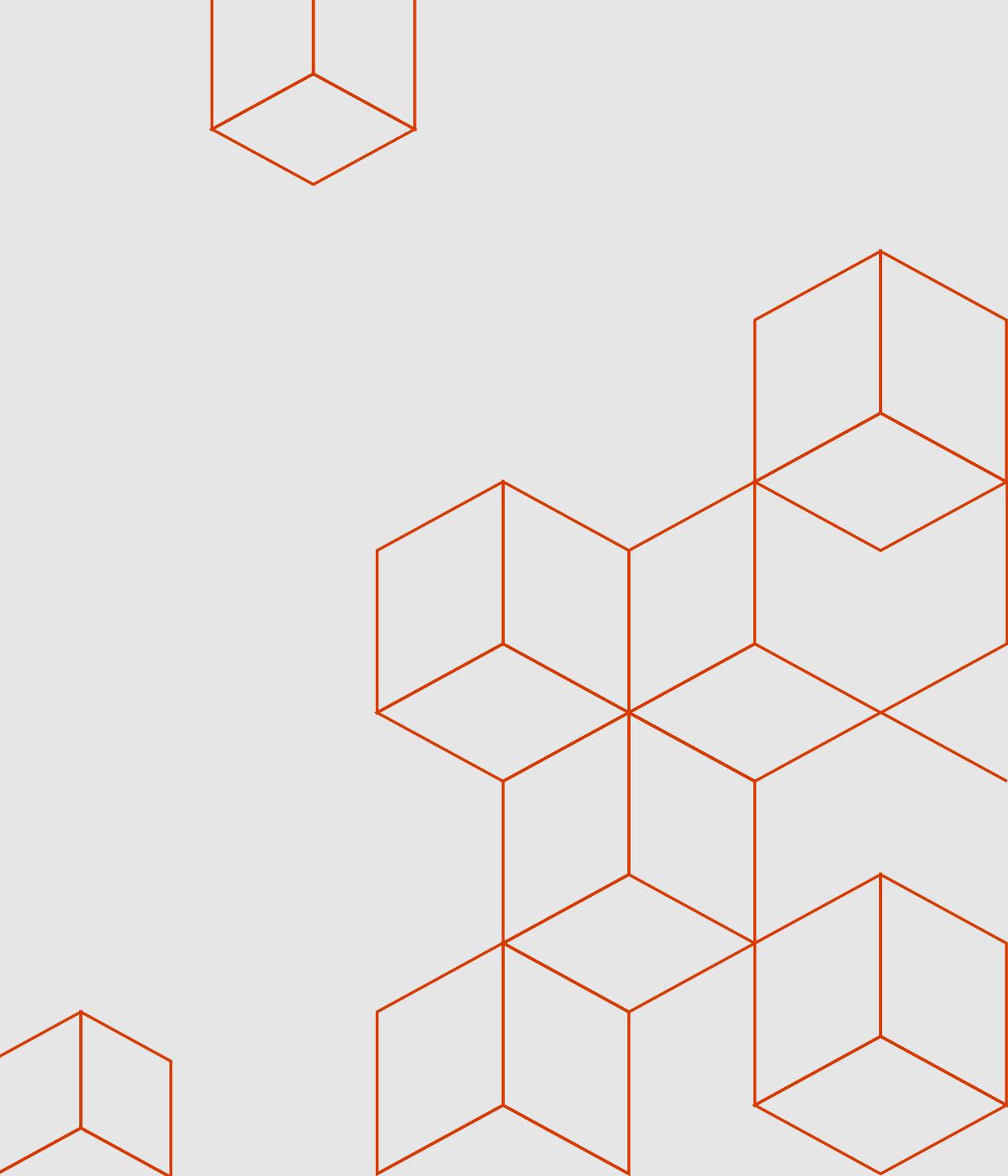
Azure IaaS offers vastly improved capabilities in optimization and agility capabilities than todays on-premises environments

Take advantage of the benefits

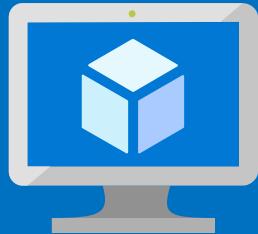
- Smaller gap in existing skills
- Microsoft manages the hardware
- Only pay for what you use
- Automated provisioning and de-provisioning of infrastructure
- Management and monitoring efficiency



Azure Compute

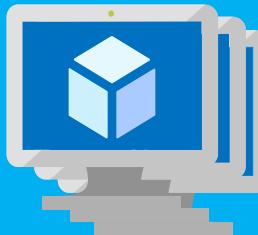


Virtual Machines & Scale Sets



Virtual Machines

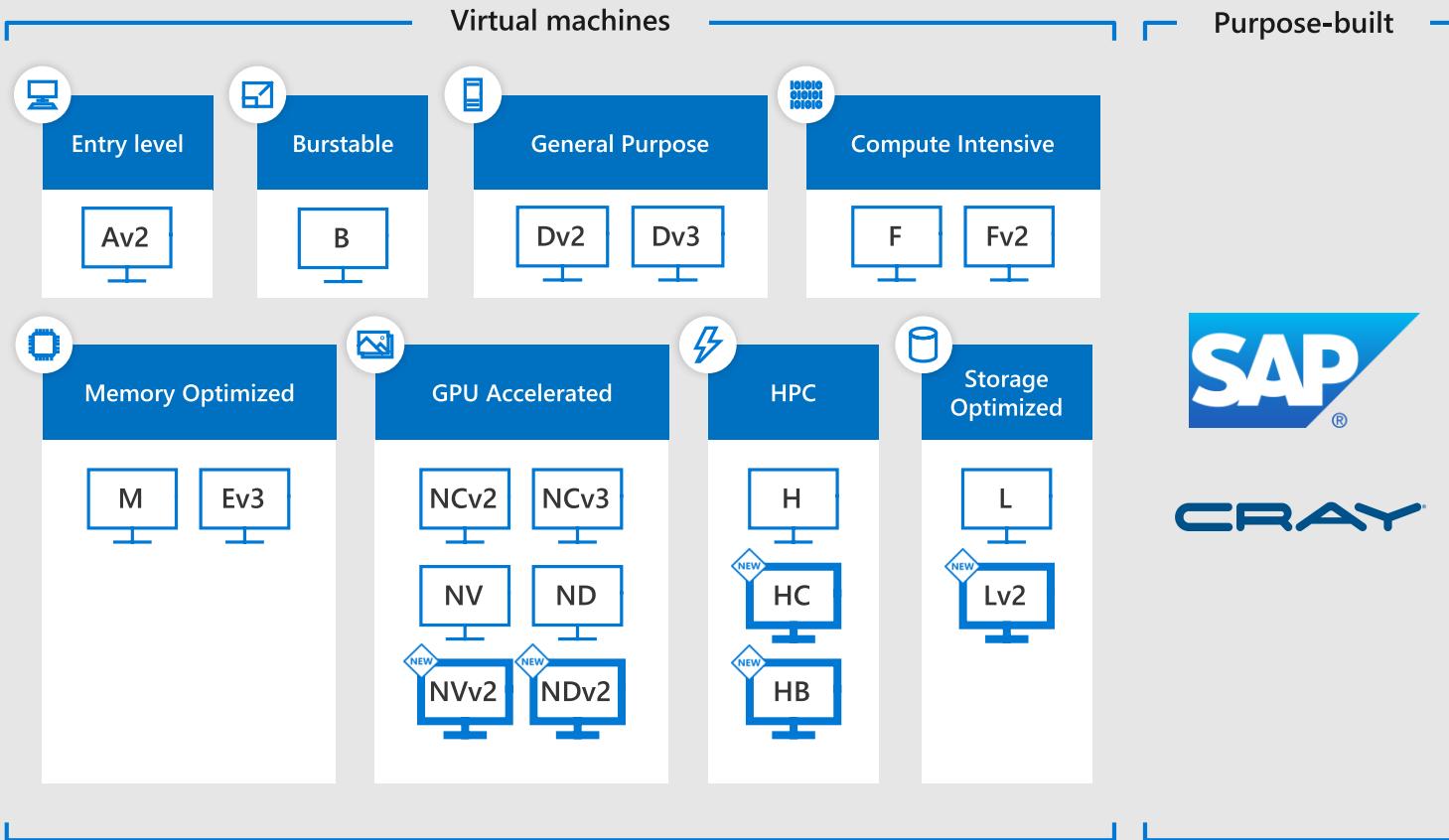
- Minimal learning curve for existing virtualization pros
- Run most Windows or Linux-based workloads
- Easiest target for migrating to the cloud
- Flexible instance sizes – use the best fit for your workload
- Advanced networking and storage capabilities



Virtual Machine Scale Sets

- All of the power and flexibility of a Virtual Machine
- Designed for high-end workloads
- Automatically scale up (or down) to 1000 instances

Compute options for *every* workload



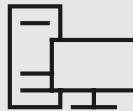
What's new and on the roadmap?

- NVv2 for graphic intensive applications in Preview
- NDv2 accelerate machine training and HPC New Ev3 and Esv3
- Lv2 VMs currently in limited public preview.
- H-series VMs coming soon:
- HC for computationally intensive workloads
- HB for memory bandwidth driven workloads

High availability options

Industry-only

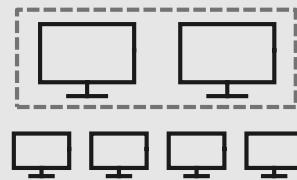
VM SLA
99.9%



Single VM

Protection with
Premium Storage

VM SLA
99.95%

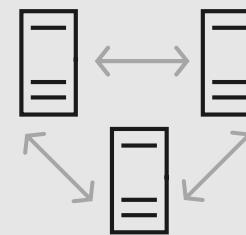


Availability sets

Protection against failures
within datacenters

High availability SLA

VM SLA
99.99%

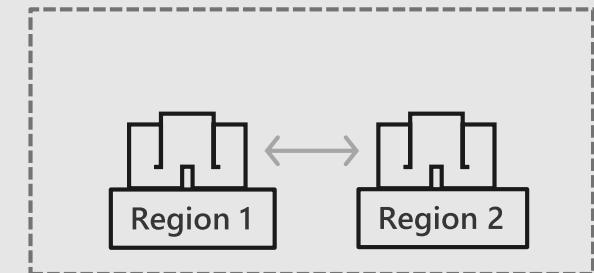


Availability zones

Protection from entire
datacenter failures

Disaster recovery

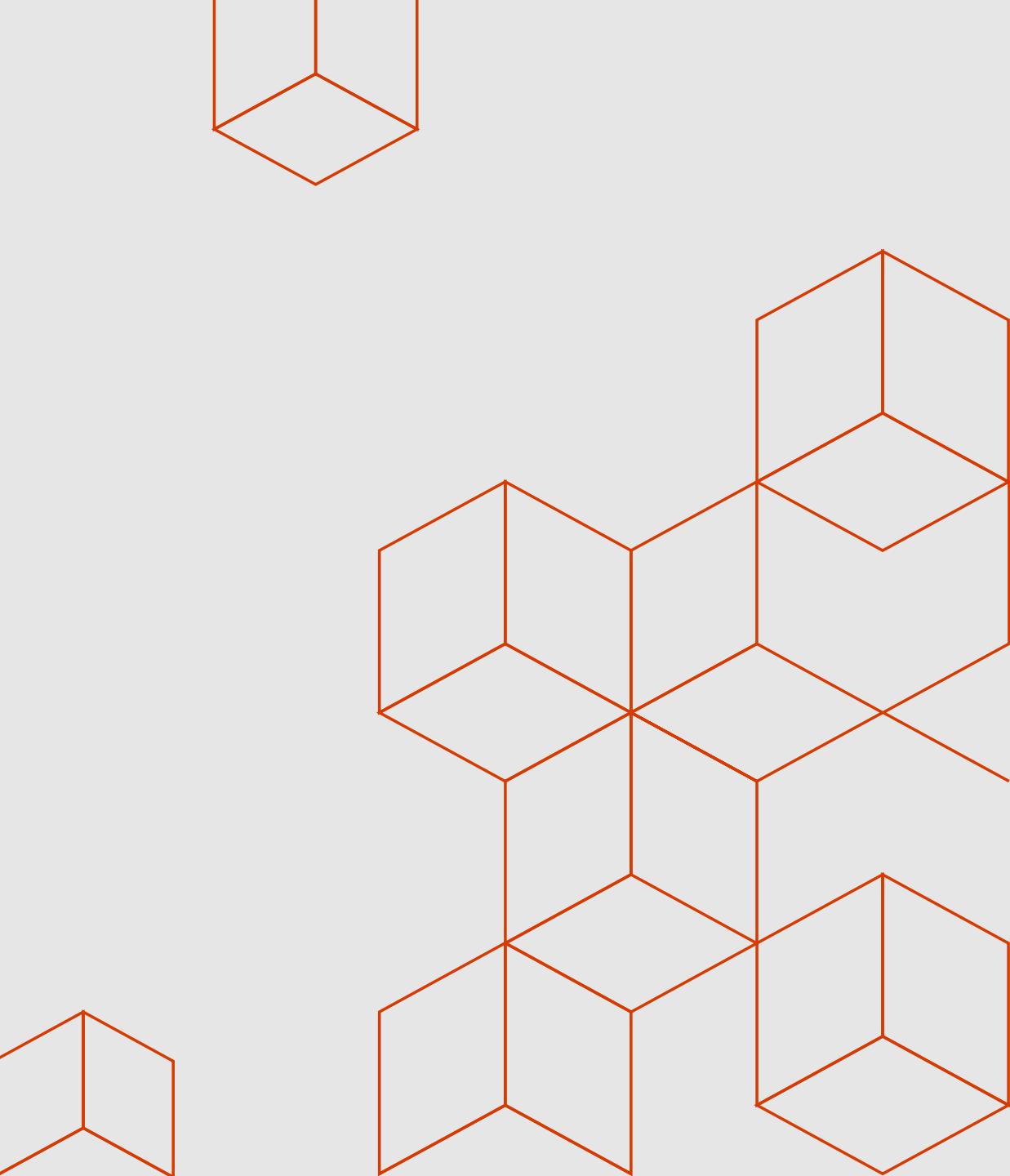
Regions
54



Region pairs

Protection from disaster with
Data Residency compliance

Storage



Azure Storage Options

Disks

Persistent disks for Azure IaaS VMs

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

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 file I/O
Cool Tier Available
Page Blobs: Random-write pattern data
Append Blobs

Hybrid

Azure File Sync
StorSimple

Transport

Storage Explorer
Command Line
Import / Export
Data Box

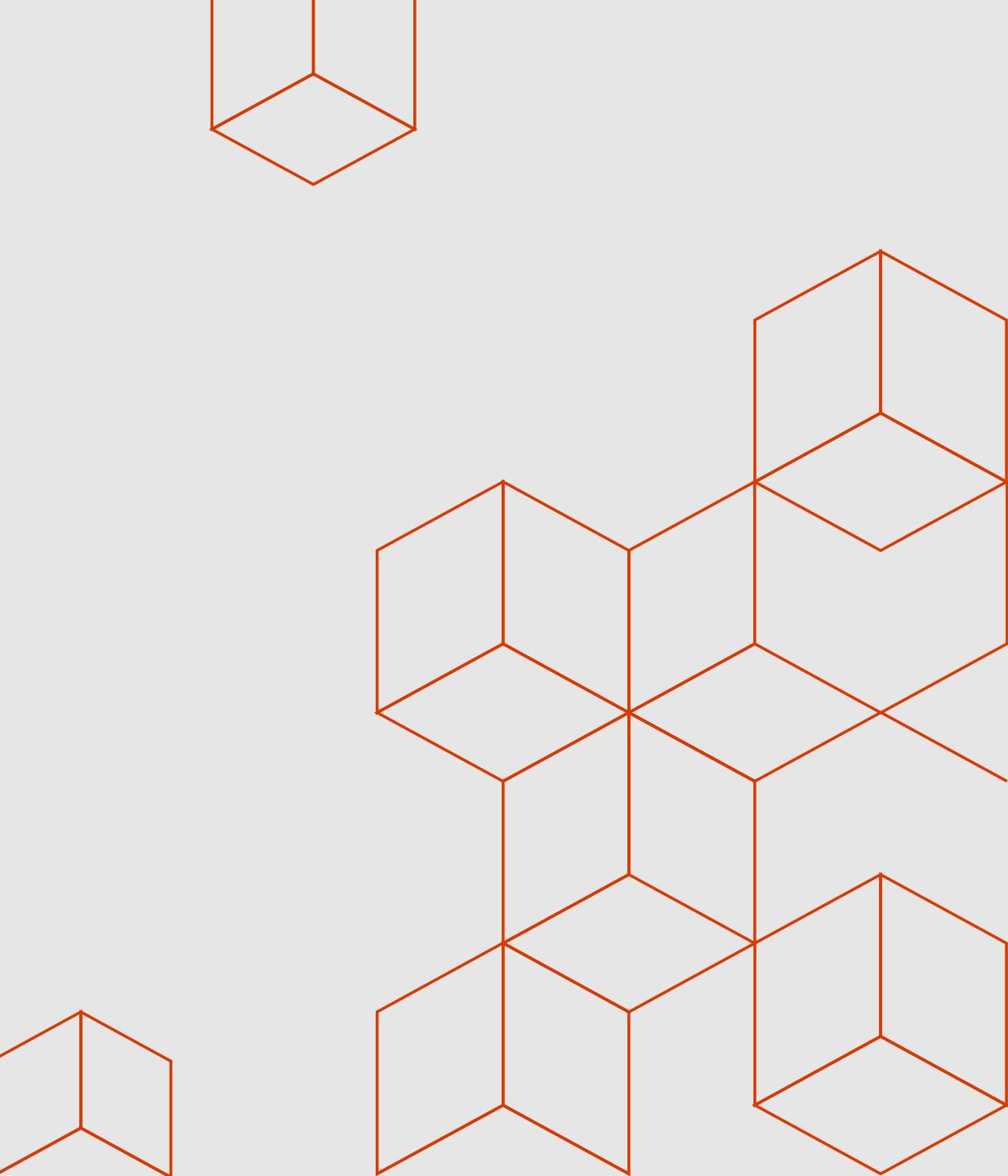
Built on a unified Distributed Storage System

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

Virtual Machine Disk Storage

Single disk max value	Standard HDD	Now GA	Premium SSD	Preview (NEW)
				
	Standard HDD	Now GA	Premium SSD	Ultra SSD
	Low-cost storage	Consistent performance	High performance	Sub-millisecond latency
	32TiB	32TiB	32TiB	64TiB
SIZE	2,000	2,000	20,000	80,000 – 160,000
IOPS	500 MBps	500 MBps	750 MBps	2,000 MBps
BANDWIDTH				

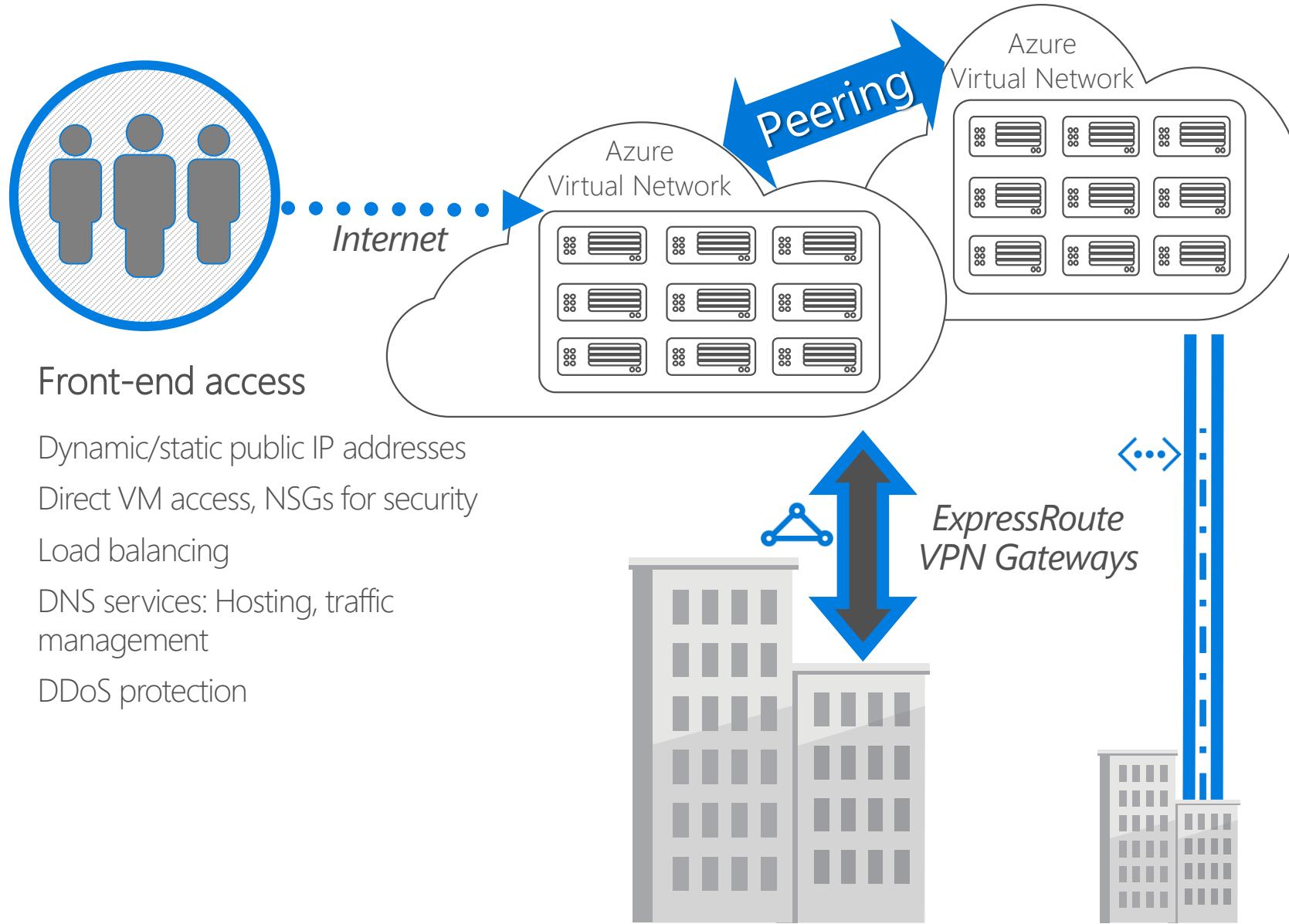
Azure Networking



Hybrid Connectivity

	Secure point-to-site connectivity		<ul style="list-style-type: none">• POC Efforts• Small scale deployments• Connect from anywhere
	Secure site-to-site VPN connectivity		<ul style="list-style-type: none">• Connect to Azure compute from on-premises or another Azure region
	VNet Peering within region		<ul style="list-style-type: none">• In-region VNet-to-VNet connectivity• Direct VM-to-VM connectivity• Peer VNets for routing and transit
	ExpressRoute private connectivity		<ul style="list-style-type: none">• Private connectivity from your on-premises data center to Azure virtual networks and PaaS Services

The big (network) picture



Virtual Network

"Bring Your Own Network"

Segment with subnets and security groups

Control traffic flow with user-defined routes

VNet peering

Back-end connectivity

Point-to-site for dev/test

Peering for cross -VNet connectivity in the same region

VPN Gateways for secure cross region connectivity

ExpressRoute for private enterprise grade connectivity

Front-end access

Dynamic/static public IP addresses

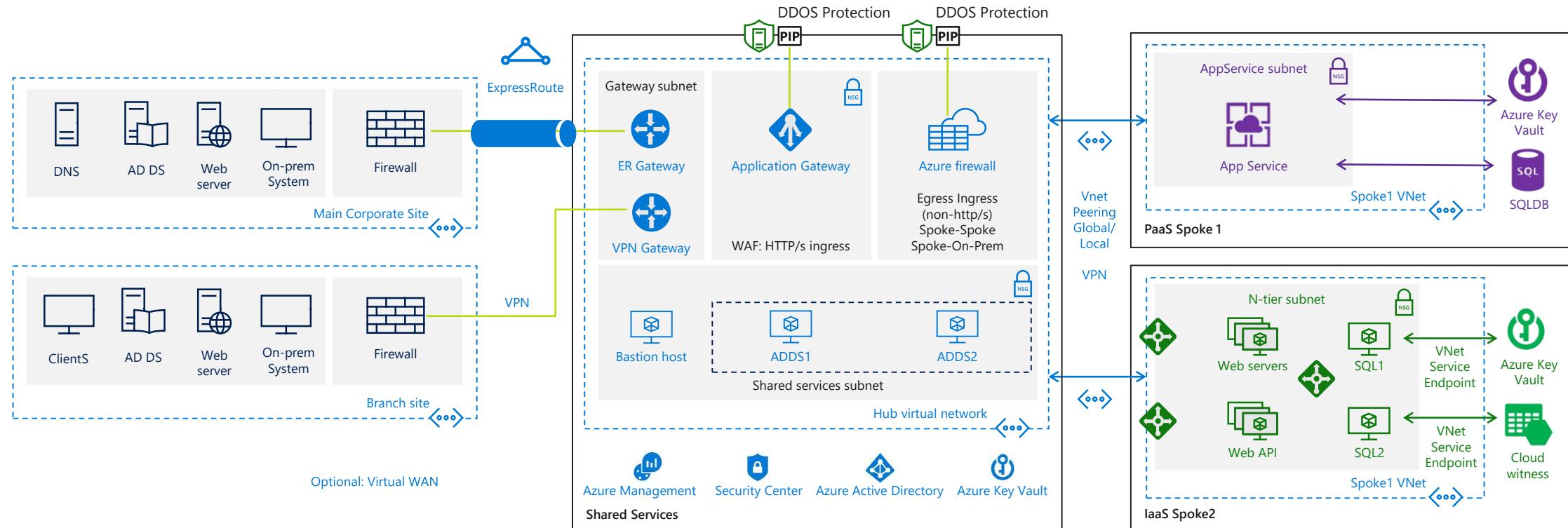
Direct VM access, NSGs for security

Load balancing

DNS services: Hosting, traffic management

DDoS protection

Sample Network Architecture



Connect

- Virtual Network
- Virtual WAN
- VPN : Site-to-site / Point-to-Site
- ExpressRoute
- DNS, User Defined Routes

Protect

- DDoS Protection
- Firewall / Web Application Firewall
- Network Security Group
- Virtual Network Endpoints
- Virtual Appliances

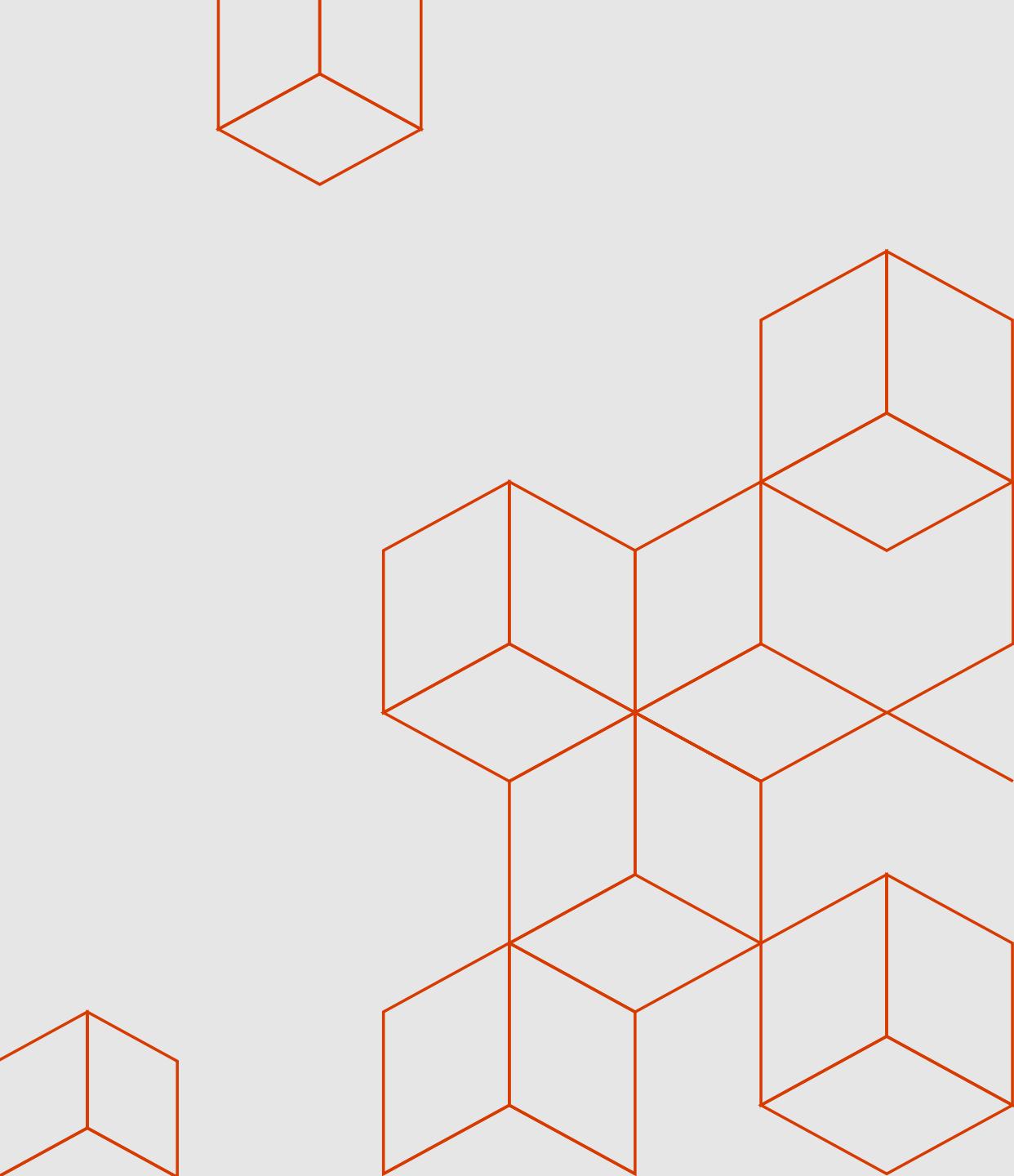
Deliver

- CDN
- Front Door
- Traffic Manager
- Application Gateway
- Load Balancer

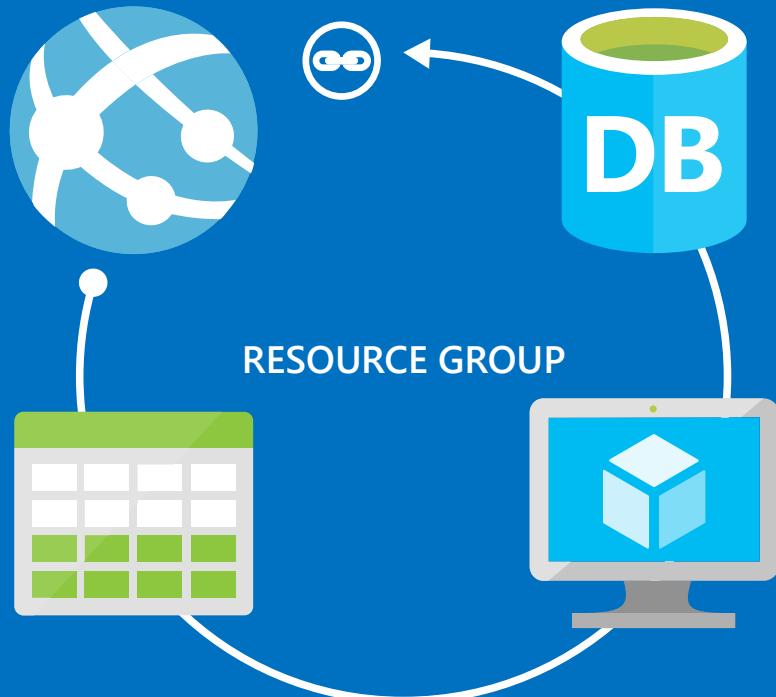
Monitor

- Network Watcher
- ExpressRoute Monitor
- Azure Monitor
- Virtual Network TAP

Management



Azure Resource Manager



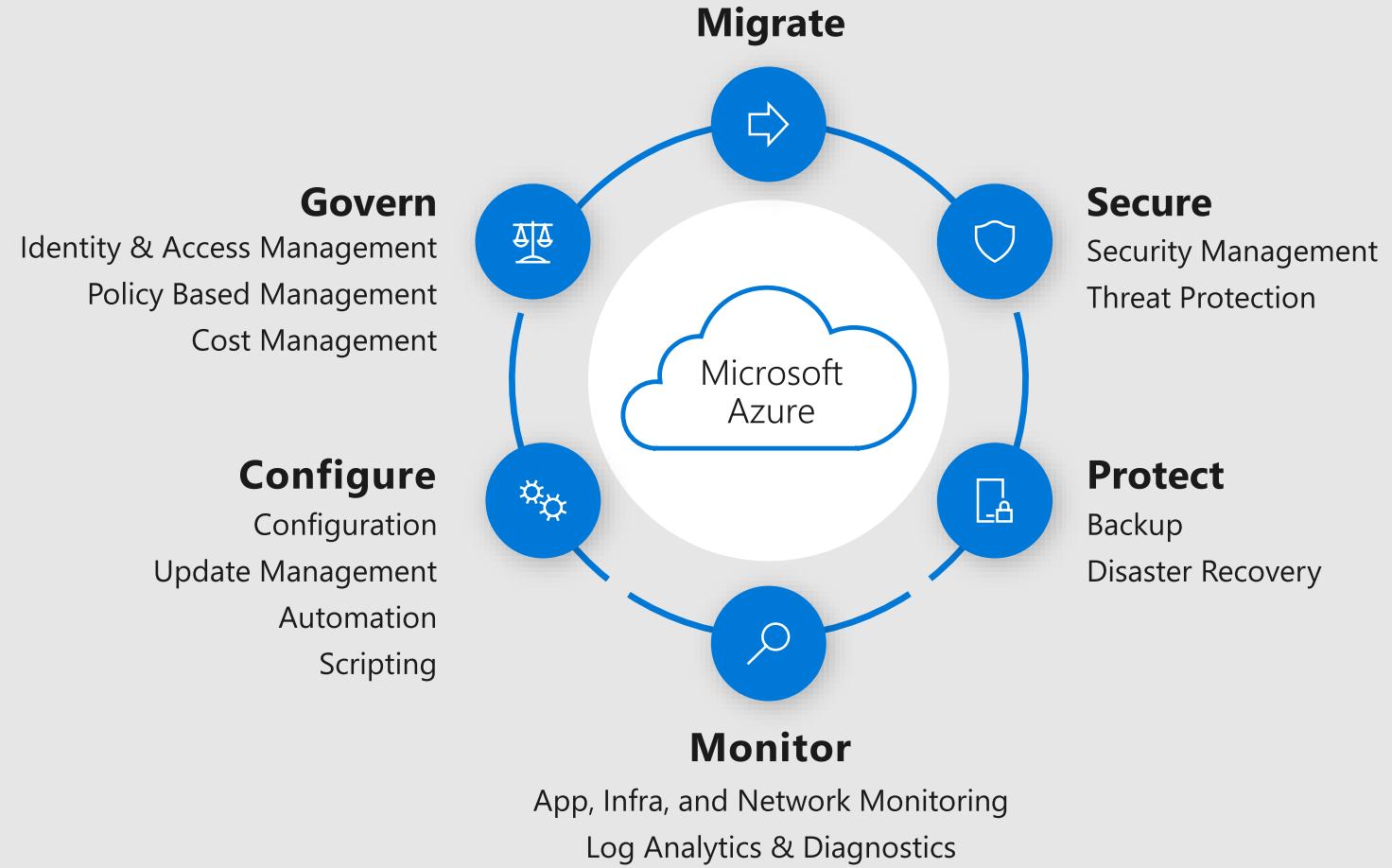
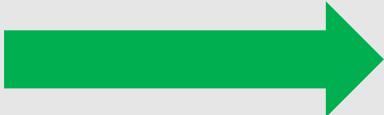
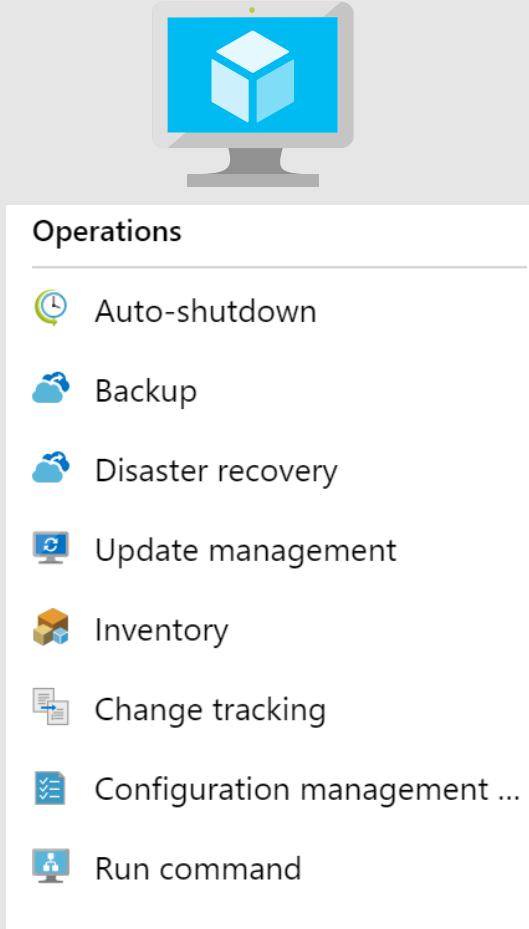
Enable application management within Azure

Resource groups are containers that can contain multiple IaaS + PaaS resources

Templatize application deployment and configuration, supports DevOps

Governance and control with Role Based Access Control (RBAC), policies and resource locks

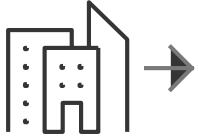
Enterprise Grade Cloud Management



Simplified VM Management to Comprehensive Cloud Services

Migration

Summarizing cloud migration strategies

	 Rehost (lift & shift)	 Refactor	 Rearchitect	 Rebuild
Description	Redeploy as-is to cloud	Minimally alter to take better advantage of cloud	Materially alter/decompose application to services	New code written with cloud native approach
Drivers	<ul style="list-style-type: none">Reduce CapexFree up datacenter spaceQuick cloud ROI	<ul style="list-style-type: none">Faster, shorter, updatesCode portabilityGreater cloud efficiency (resources, speed, cost)	<ul style="list-style-type: none">App scale and agilityEasier adoption of new cloud capabilitiesMix technology stacks	<ul style="list-style-type: none">Accelerate innovationBuild apps fasterReduce operational cost
Technologies	IaaS	Containers PaaS		PaaS Serverless Microservices

Choice of tools for every stage and every requirement



Azure Migrate

Data Migration Assistant

SQL Server Migration Assistant

Microsoft



Azure Site Recovery

Azure Database Migration Service

Azure Data Box



Optimize

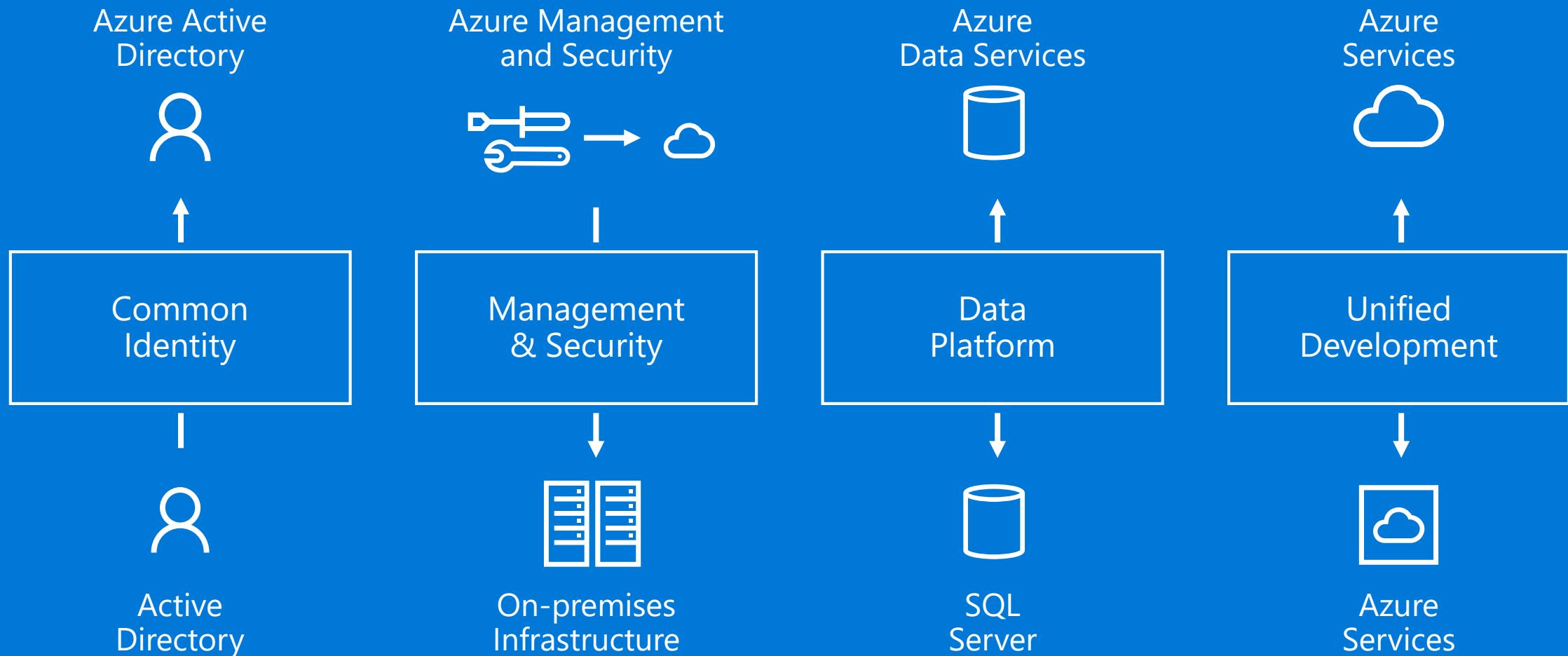
Azure security and management
(security, backup, monitoring,
cost management)

Partners



Azure Stack + hybrid

Overcome complexity with consistent, hybrid cloud



Truly consistent hybrid cloud platform

Bring the agility and innovation of the cloud to your datacenter



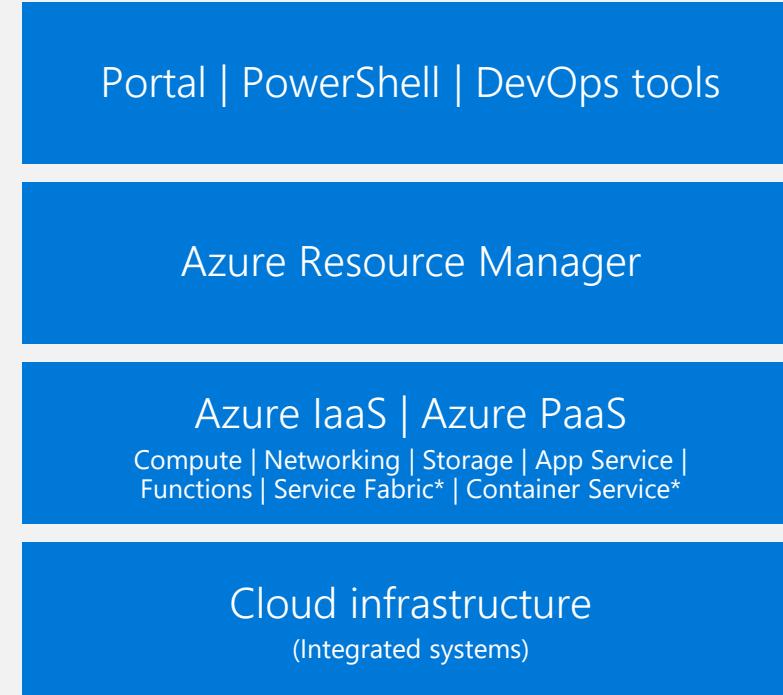
Edge and disconnected solutions



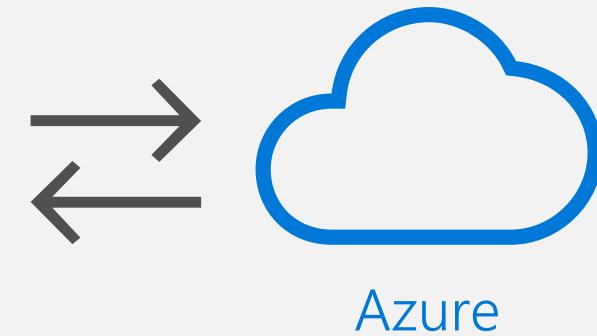
Cloud applications that meet every regulation



Modern applications across cloud and on-premises



Azure Stack



Advanced workloads

Microsoft Azure

TOOLS

Visual Studio + Visual Studio Code + Visual Studio Team Services (DevOps)

ADVANCED WORKLOADS

Web + Mobile

Identity Management

Microservices & Container

Data + Analytics

Serverless

Cognitive Services

Workflow & Integration

High Performance Compute

API Management

Internet of Things

CORE INFRASTRUCTURE

Compute Storage Networking Security

Choice + Flexibility

DevOps



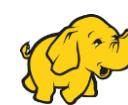
Applications



App Frameworks



Databases & Middleware



Infrastructure



Azure is an open cloud

DevOps



Clients



Management



Applications



PaaS &
DevOps



App Frameworks
& Tools



Databases &
Middleware



Infrastructure



Build with a platform designed for future growth



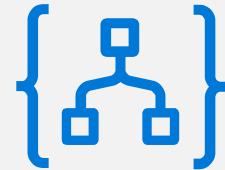
App service

Web, mobile,
and API apps



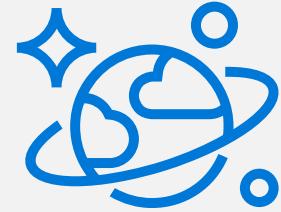
DevTest Labs

Integrate with your
existing toolchain



Logic apps

Workflow &
integration



Cosmos DB

Globally distributed,
multi-model database service

RECENT ANNOUNCEMENTS

Data Lake Storage
and Analytics

[Azure Container
Instances service](#)

Azure Container Service
(AKS)

Add a natural, human touch with Cognitive Services

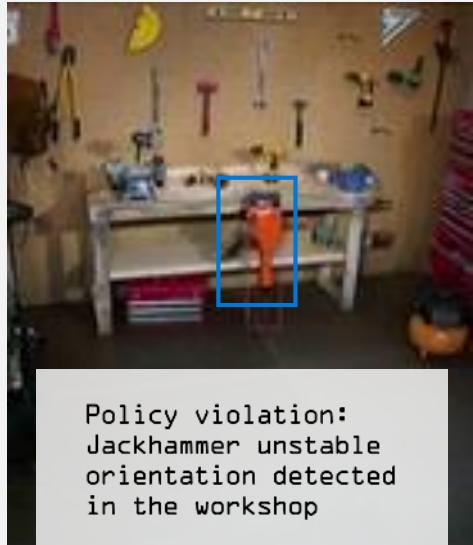
Vision

Computer Vision

Listening...



Object
recognition...



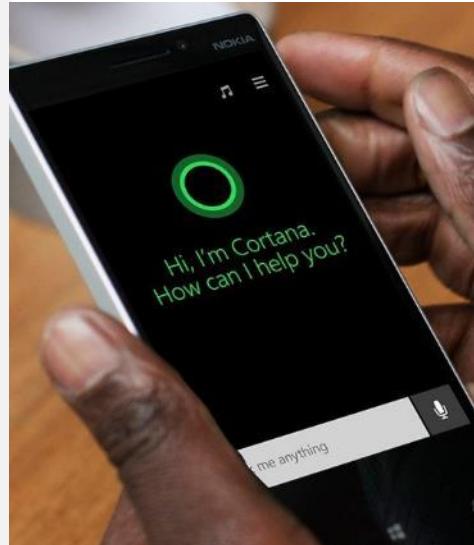
Speech

Speech-to-text and
text-to-speech service

Listening...



Convert this text to
speech please...



Language

Natural Language
Processing

Listening...



Play today's
conference call...

Natural Language Processing

Intent: PlayCall
Content: Customer#
DateTime.date: today



Now Playing

11/29/2016 Customer Call

Knowledge

Knowledge
Exploration Service

Listening...



Top publications
in AI...

Genetic Algorithms in Search, Optimization
Learning

1989, David E Goldberg

Cited 18,910 times

Induction of Decision Trees

1986, Machine Learning

J R Quinlan

decision tree expert system machine learning compute

Cited 4,819 times

Outline of a New Approach to the Analysis
of Complex Adaptive Systems and Decision Processes

1973, IEEE Transactions on Systems, Man, and Cybernetics, issue 1
Lotfi A Zadeh (University Of California Berkeley)

fuzzy set complex systems artificial neural network com

puter science machine learning artificial intelligence computer science

Cited 2,602 times

Search

Bing Search

Listening...



Fraud prevention
results...

How ID theft victims' ir

nment documents or benefits

Credit card fraud

Phone or utilities fraud

Bank fraud

Employment-related fraud

Attempted identity theft

Loan fraud

Other

sion Consumer Sentinel Network Data Book,

Simplify IoT with preconfigured solutions



Azure IoT Suite

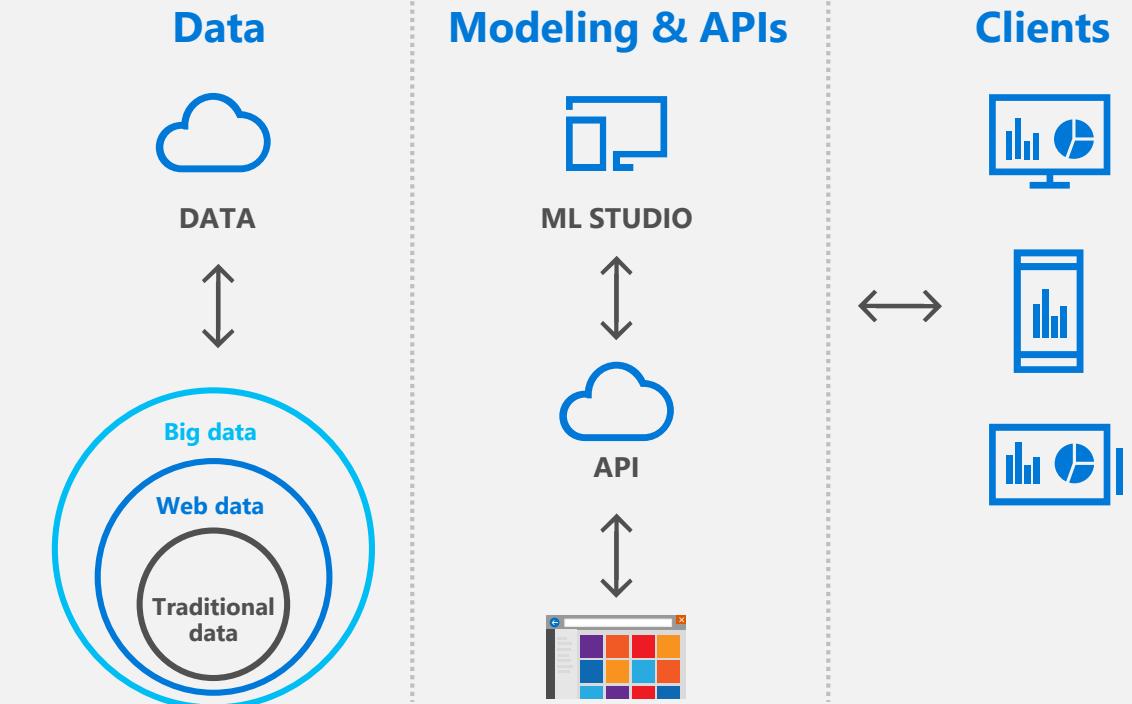
-
- Device connectivity & management
 - Data ingestion and command & control
 - Stream processing & predictive analytics
 - Workflow automation and integration
 - Dashboards and visualization
 - Preconfigured solutions
 - Remote monitoring
 - Predictive maintenance
 - Connected factory (new)

Predict customer needs with powerful tools

Azure Machine Learning templates

- ↗ Demand forecasting
- 🔧 Predictive maintenance
- 🚗 Vehicle telemetry

Azure Machine Learning services





Thank You!

ευχαριστώ

Salamat Po

متشکرم

شکرًا

Grazie

благодаря

ありがとうございます

Kiitos Teşekkürler

謝謝

ឧបករណ៍

Obrigado

شکریہ

Terima Kasih Dziękuję

Hvala

Köszönöm

Tak

Dank u Wel

дякую

Tack

Mulțumesc

спасибо

Danke

Cám ơn

Gracias

多謝晒

Ďakujem

תודה

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Děkuji

감사합니다