Microsoft

softline®

Microsoft Azure Fundamentals

Workshop

Mihaly Kileber

Senior Azure Engineer

Agenda for today

Overview of Azure

- What is Microsoft Azure?
- What is Cloud Computing?
- Why Microsoft?
- Security and Compliance
- Azure Marketplace
- Azure Resource Manager
- Cloud service models (IaaS, PaaS, SaaS)

What is Microsoft Azure?

Microsoft Azure is Microsoft's public cloud service

It provides infrastructure and platform services to everyone on the planet

NIST public cloud definition

Defined by National Institute of Standards and Technology

Essential characteristics:

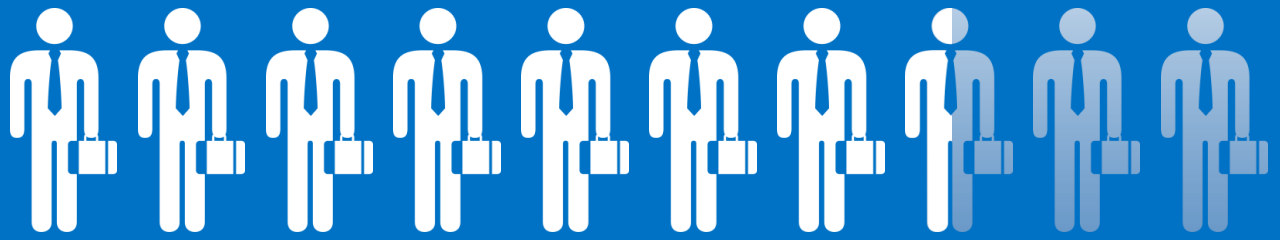
On-demand self-service - Request and control resources with no human interaction

Broad network access - Can be accessed over the network with standard protocols

Resource pooling - Physical resources are dynamically assigned and reassigned to customers based on demand (multi-tenant model)

Rapid elasticity – Option to up/downscale on demand (even automatically)

Measured service - Usage is monitored, controlled and reported; pay-as-you-go



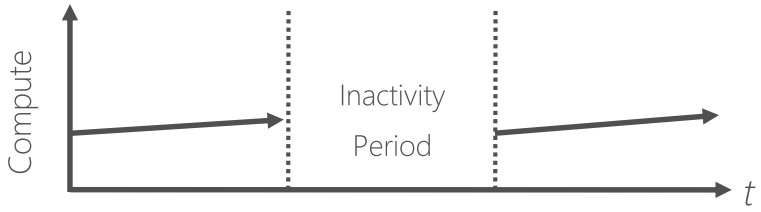
75%

75% of IT Managers report that they are using or evaluating Cloud Computing.

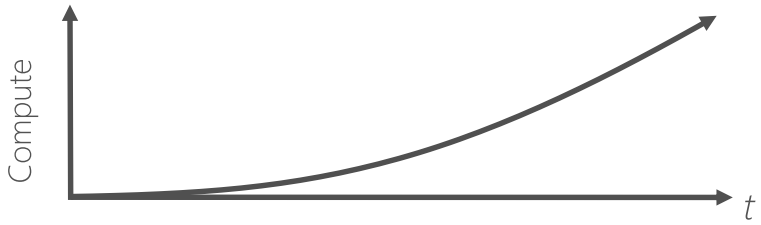
Source: IDC IT Manager Study 2014

WHY?

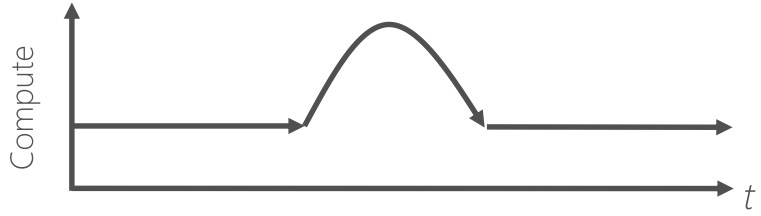
It's all About Scale



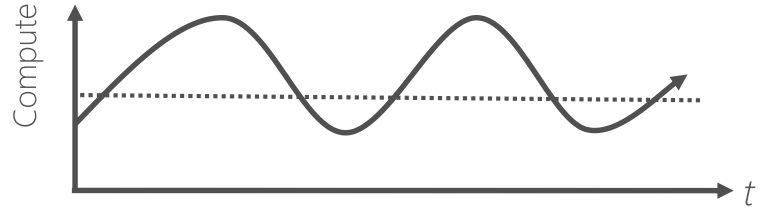
"On & Off"



"Growing Fast"

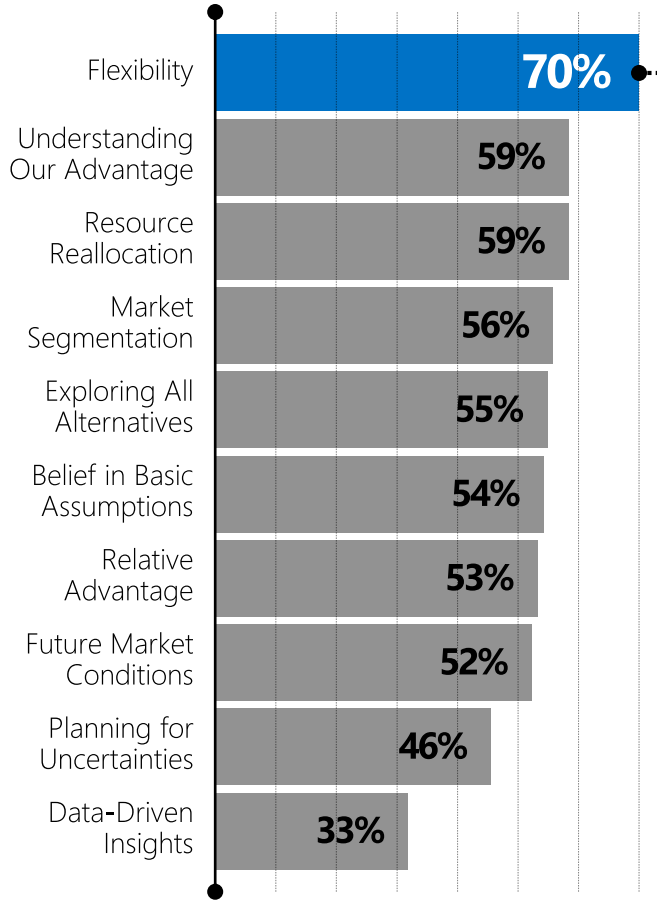


"Unpredictable Bursting"



"Predictable Bursting"

The Top Answer is… Agility



"No-regret moves that will pay off whatever happens, and real options that involve relatively low costs now but can be elevated to a higher level of commitment as conditions change."

Agility is the **#1** element of corporate strategy today!

% of respondents indicating their firms strategy is based on …

Source: McKinsey Global Survey Results, "Putting Strategy to the Test"

Azure regions

Azure has more global regions than any other cloud provider—offering the scale needed to bring applications closer to users around the world, preserving data residency, and offering comprehensive compliance and resiliency options for customers.

54 regions worldwide **140** available in 140 countries

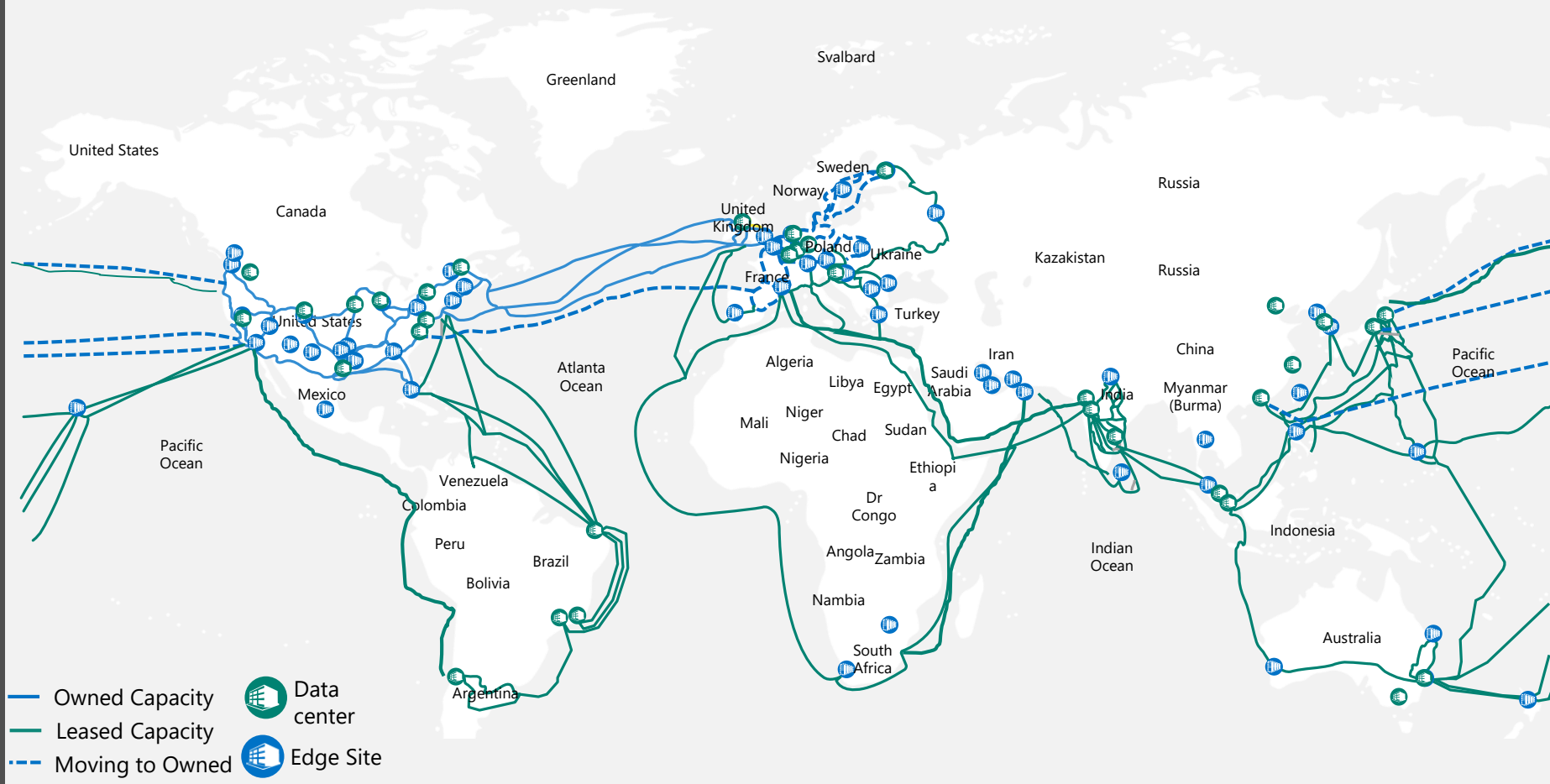
* Two Azure Government Secret region locations undisclosed

Microsoft Global Network

One of the largest private networks in the world

- 100K+ miles of lit fiber
- 130+ edge sites
- 8,000+ ISP sessions
- 44 ExpressRoute locations
- 200+ ExpressRoute Partners
- SDN Managed (SWAN, OLS)

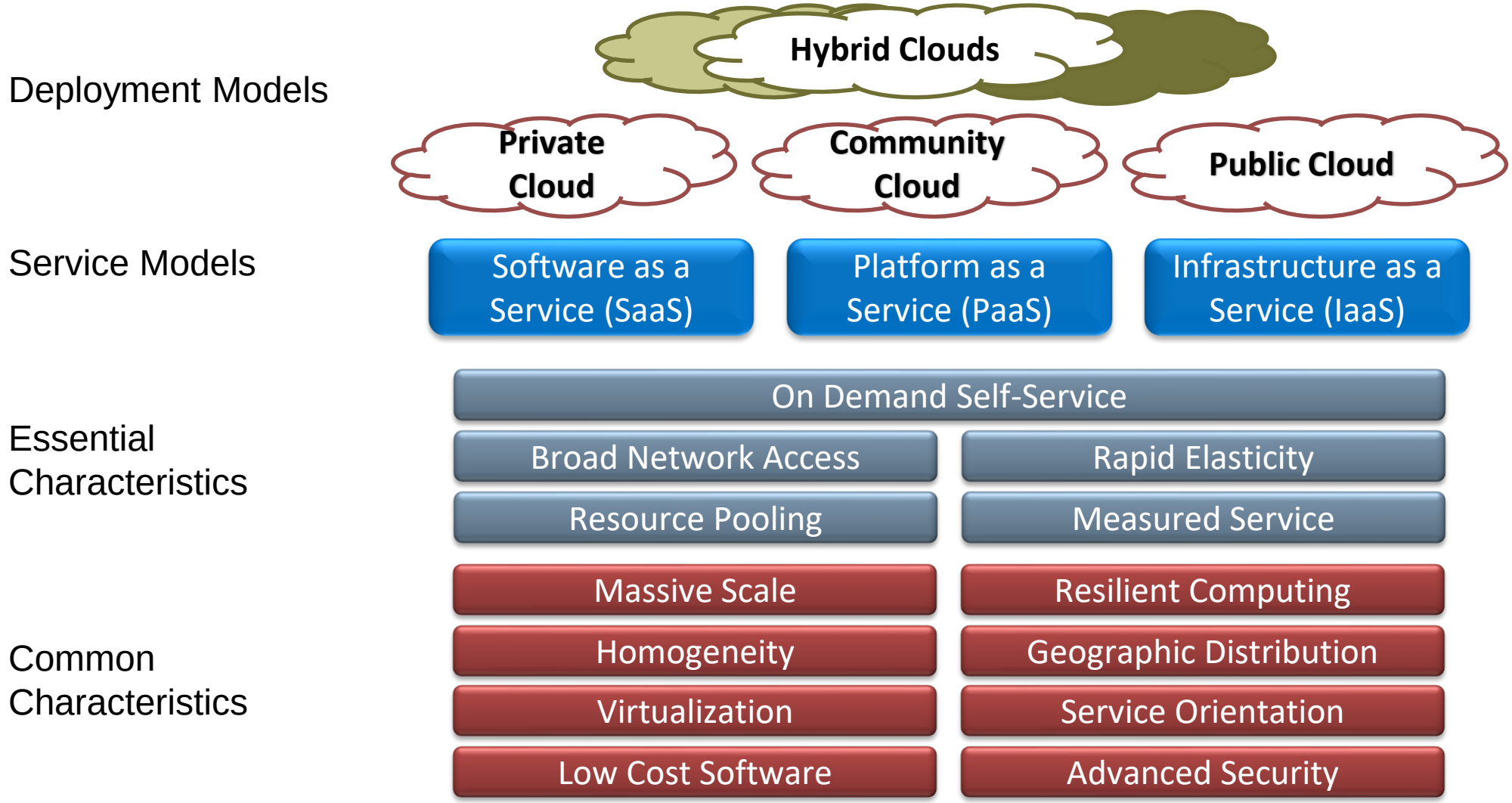
DCs and Network sites not exhaustive



What is Cloud Computing?

The NIST Cloud Definition Framework

(U.S. National Institute of Standards and Technology)



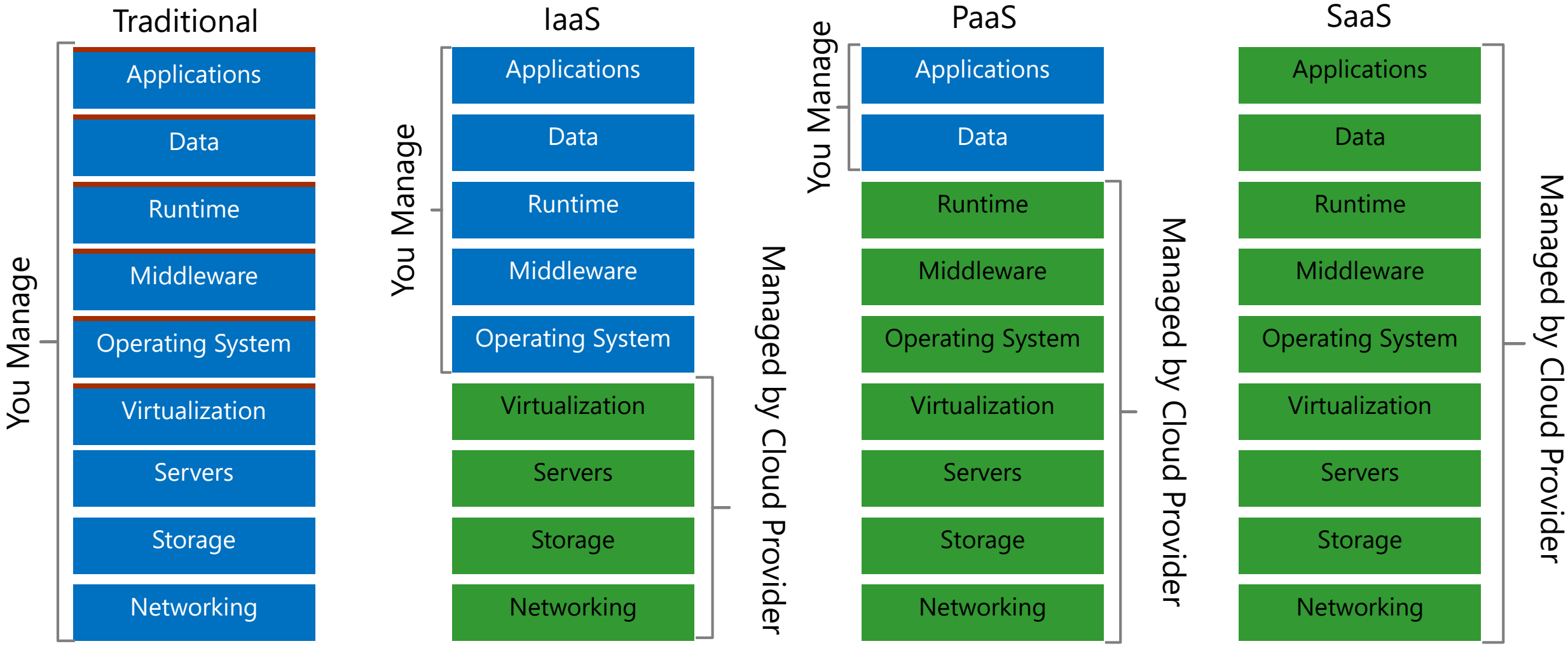
The NIST Definition of Cloud Computing
(U.S. National Institute of Standards and Technology)

- **National Institute of Standards and Technology (NIST), U.S. Department of Commerce** - Special Publication 800-145, September 2011 – *The NIST Definition of Cloud Computing*

- *Cloud computing is a model for enabling ubiquitous, convenient,* ***on-demand network access*** *to a* ***shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services)*** *that can be* ***rapidly provisioned*** *and* ***released*** *with* ***minimal management effort*** *or* ***service provider interaction****.*

- *This* ***cloud model*** *is composed of* ***five essential characteristics****,* ***three service models****, and* ***four deployment models****.*

Service Models



Windows Server

Windows Azure Virtual Machines
Windows Server Hyper-V

Windows Azure WebApps/ DB

Office 365
Dynamics CRM

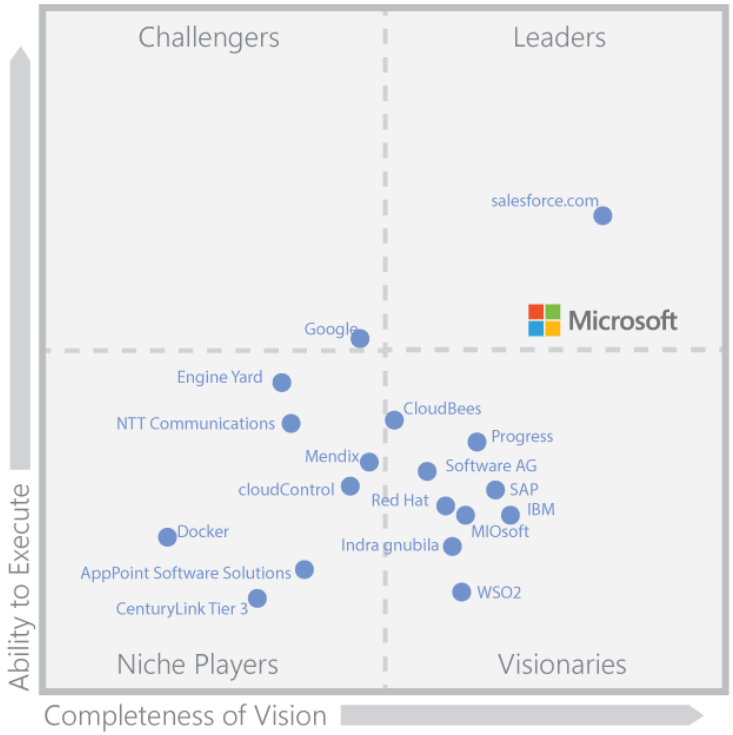
Why Microsoft?

Microsoft is a Leader

- Microsoft is the **ONLY** leader in Cloud IaaS, PaaS, and Virtualization

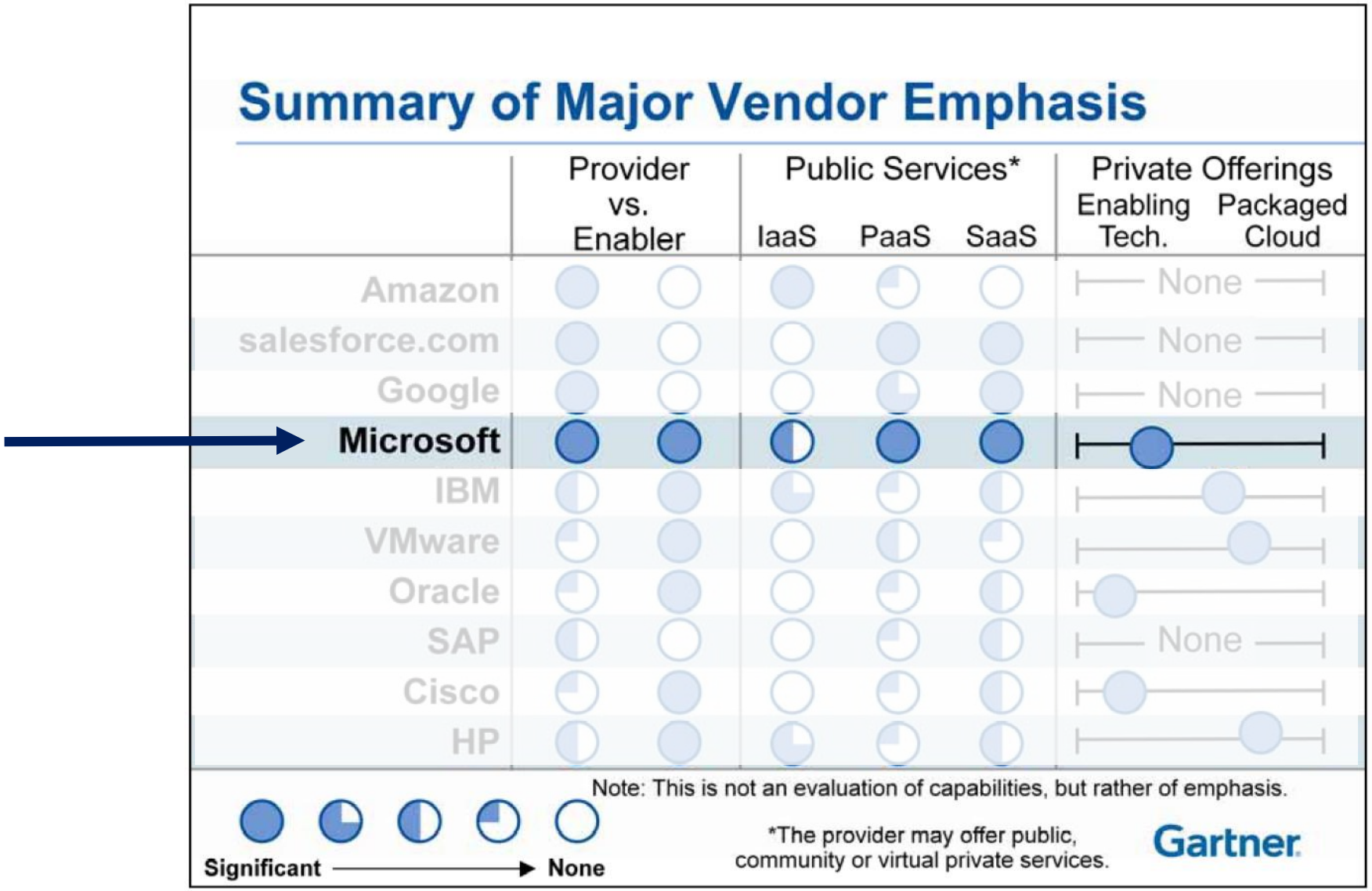
Cloud IaaS

Cloud PaaS

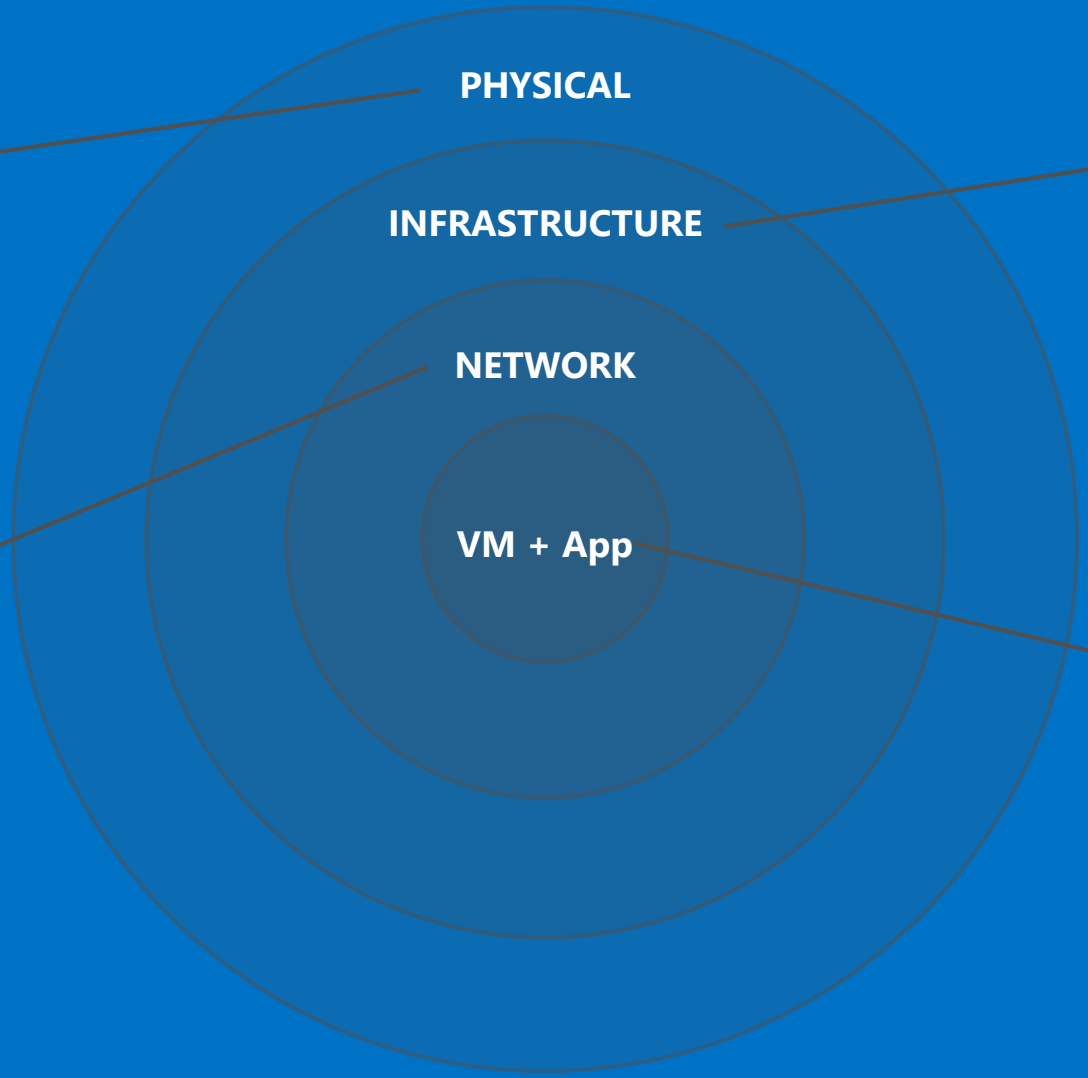


Virtualization

Microsoft is a provider AND an enabler



Trust and control



Cameras / Alarms

24X7 security staff

Barriers / Fencing

Two-factor access control

Days of backup power

Secure By Design

Operation Security Controls

Compliance Certifications

Penetration Testing

DDOS protection, Forensics

Secure and Isolated VNets

Subnet ACLs

Forced Tunneling

Security Appliances

Multiple virtual NICs

Anti-Malware

KeyVault

Role-Based Access Controls

Logging / Auditing

VM Disk, Storage Encryption

Azure Security Center

Azure compliance

Azure has the largest compliance portfolio in the industry

INDUSTRY

- ISO 27001
- SOC 1 Type 2
- SOC 2 Type 2
- SOC 3
- PCI DSS Level 1
- ISO 27018
- Content Delivery and Security Assoc.
- ISA/IEC 27017
- Cloud Controls Matrix v3.0.1
- MPAA
- Shared Assessments
- ISO/IEC 22301:2012

UNITED STATES

- FedRAMP JAB P-ATO
- HIPAA /HITECH
- FIPS 140-2
- 21 CFR Part 11
- FERPA
- DISA Level 2 (DIACAP)
- CJIS
- IRS 1075
- ITAR-ready
- Section 508 VPATs
- FISMA
- NIST 800-171
- MARS-E
- GxP
- DIACAP

REGIONAL

- Argentine Data Protection Act 25.326
- European Union Model Clauses
- United Kingdom G-Cloud
- Canadian Privacy Laws
- China GB 18030
- China TRUCS
- Singapore MTCS Level 3
- Australian Signals Directorate
- New Zealand GCIO
- Japan Financial Services
- ENISA IAF
- Cloud Security Mark Gold
- Spain ENS
- FACT
- EU-US Privacy Shield
- NZCC Framework
- China Multi Layer Protection Scheme
- Japan My Number Act
- IT-Grundschutz Workbook

Platform Services

Security & Management

- Service Creation & Configuration
- User/Group Directory Store
- Identity Sign-Up and sign-in
- Multi-Factor Authentication
- Scheduled Service Management
- Task Scheduler
- Encryption Key Store
- Software/Solution Marketplace
- Pre-Build VM Images

Services Compute

- Stateless Compute
- Distributed Compute
- Scheduled Compute Jobs
- Virtual App Streaming

Integration

- Simple Queuing
- B2B Integration
- Hybrid Connections
- Pub/Sub Queuing

Media & CDN

- Live & OD Media Streaming
- Content Delivery Network (CDN)

Web and Mobile

- Web Apps Infrastructure
- API App Infrastructure
- Mobile Backends
- Business Process Automation
- API Management
- Push Notifications

Developer Services

- Development Tools
- Software Development Kits
- Software Lifecycle Management
- Application Instrumentation

Data

- Relational SQL Database
- Data Warehouse
- Document Database Service
- Distributed In-Memory Cache
- Search
- Simple Key/Value Store

Analytics & IoT

- Big Data Analytics
- Predictive Analytics
- Data Stream Analytics
- Big Data Storage
- Data Pipelines
- Device Data Collection
- Data Source Management
- IoT Device Management
- Mobile Analytics

Hybrid Operations

- Directory Health Monitoring
- Privileged Identity Management
- Domain Join & Policy Management
- Server Data Backup
- Operational Analytics
- Bulk Data Import And Export
- Disaster Recovery
- Hybrid/Intelligent Data Backup

Infrastructure Services

OS/Server Compute

- Virtual Servers
- Containers

Storage

- Disk based Object/File Storage
- Shared Storage
- SSD based Object/File Storage

Networking

- Virtual Network
- VM Load Balancer
- DNS
- Direct Network Connections
- Traffic Distribution
- VPN Gateway
- HTTP Load Balancer

Datacenter Infrastructure (54 Regions, 46 Online)

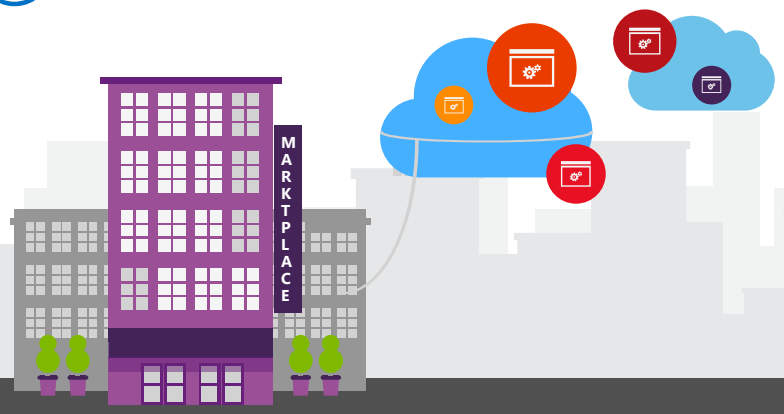
Management Portals

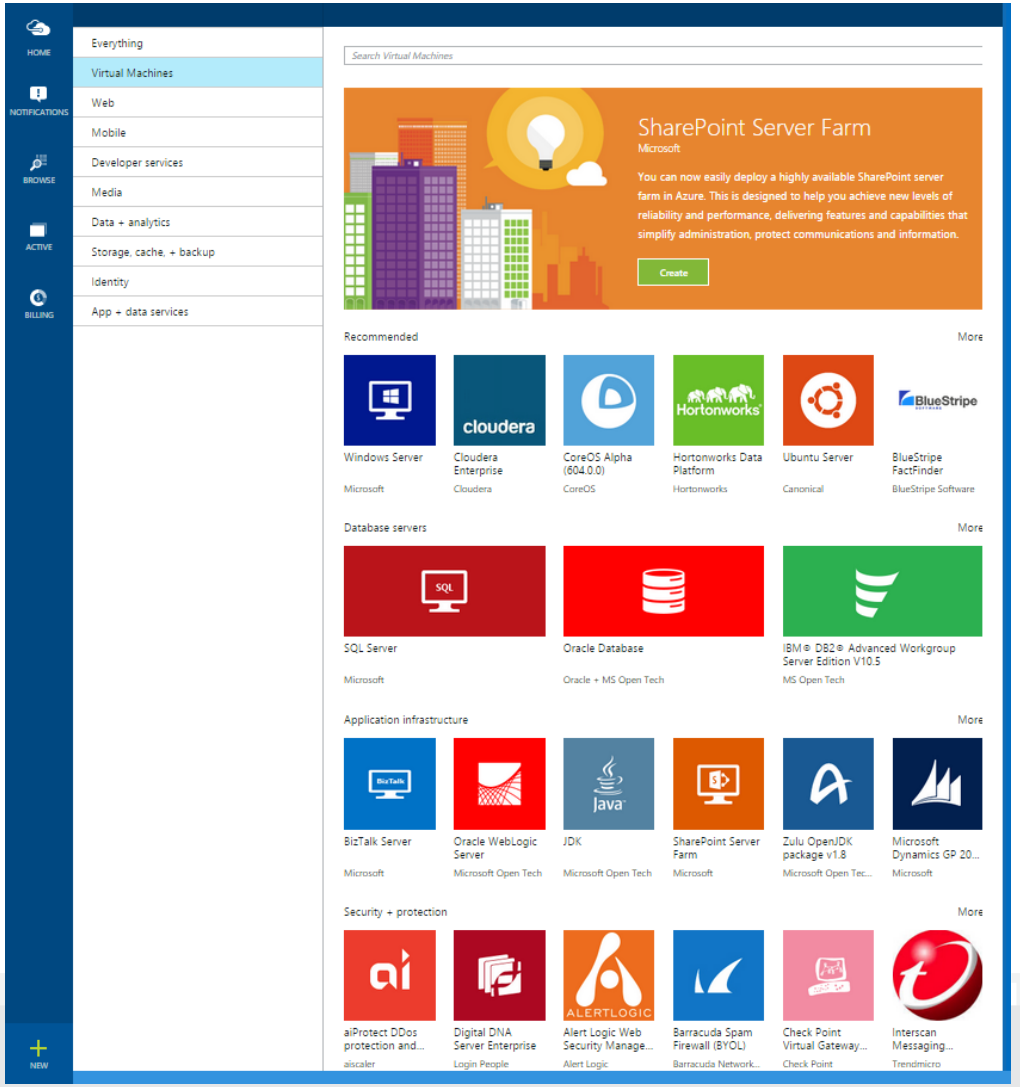
- Enrollment: https://ea.azure.com
- Account: https://account.azure.com
- Azure Management: https://portal.azure.com
- Azure Active Directory: https://aad.portal.azure.com
- Office 365: https://office.com

Microsoft Azure Marketplace

An online store for highly optimized and integrated applications and services ready to deploy on Microsoft Azure

- Growing ecosystem of 3,000+ virtual machine and SaaS offers
- Reduced implementation time with pre-configured, ready-to-run applications and services
- Streamlined configuration, deployment, and management
- Integrated platform experience





Extending the value of Microsoft Azure

Broad ecosystem of third party offerings that expand Azure functionality

Microsoft Azure

Azure Marketplace*

ORACLE
IBM
McAfee
Microsoft Dynamics
XTREMEDATA
puppet labs
TREND MICRO
SAP
Seagate
Barracuda
DATASTAX
cloudera
CloudLink
Symantec
commvault
veeam
DELL Software
bitnami
CITRIX
NGINX
PTV GROUP the mind of movement
MetaVis TECHNOLOGIES
SoftNAS #1 NAS in the Cloud
LIEBERMANSOFTWARE
BlueStripe SOFTWARE
LoginPeople
Boxless
waratek
Hortonworks
New Relic.
CoreOS
KASPERSKY lab
aras corp
SendGrid
VISION SOLUTIONS
cohesiveFT

*List of offers is not comprehensive.

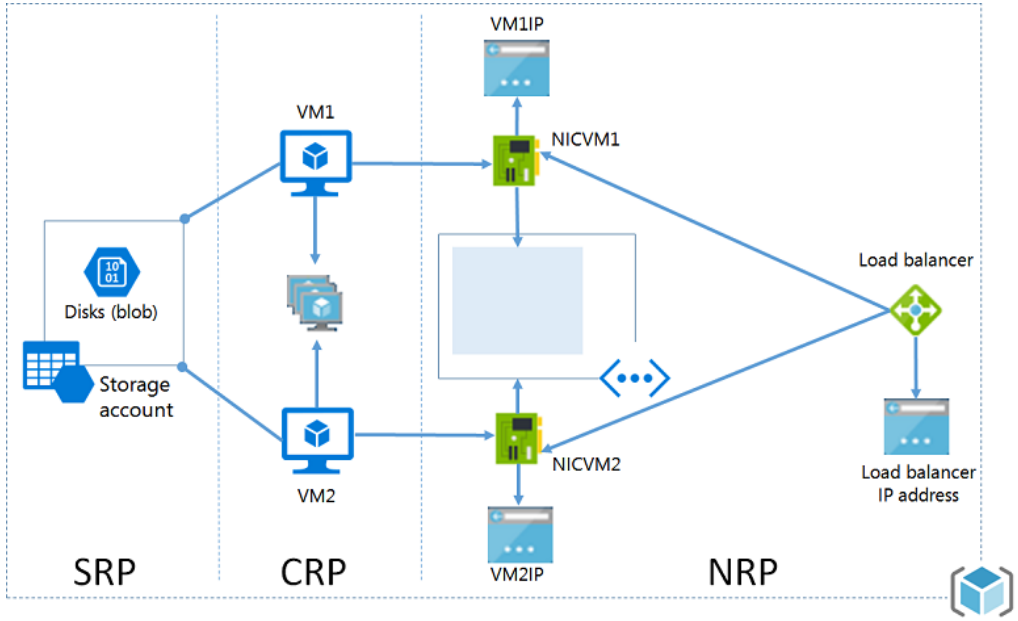
Azure Resource Manager

You can deploy, manage, and monitor all of the resources for your solution **as a group**, rather than handling these resources individually.

You can define the **dependencies** between resources so they are deployed in the correct order.

You can **repeatedly** deploy your solution throughout the development lifecycle and have confidence your resources are deployed in a consistent state.

You can use **declarative templates** to define your deployment.



You can apply access control to all services in your resource group because **Role-Based Access Control** (RBAC) is natively integrated into the management platform.

You can apply **tags** to resources to logically organize all of the resources in your subscription.

You can **clarify billing** for your organization by viewing the rolled-up costs for the entire group or for a group of resources sharing the same tag.

Cloud Computing

IaaS

Infrastructure-as-a-Service

host

PaaS

Platform-as-a-Service

build

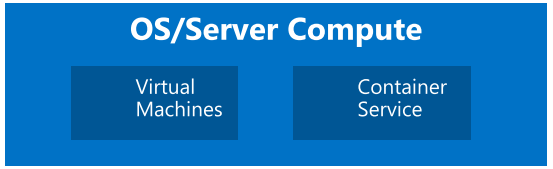
SaaS

Software-as-a-Service

consume

IaaS (Infrastructure as a Service)

Compute



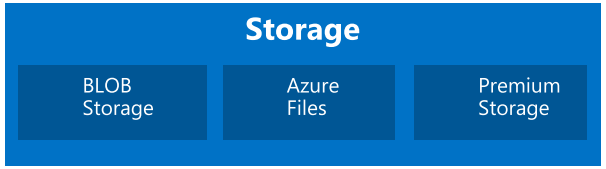
Virtual machines

- Running on Windows Server Hyper-V
- Windows and Linux operating systems (RHEL, CentOS, CoreOS, Ubuntu, Suse…)
- Can include additional software (Oracle DB, IBM DB2, Chef, SharePoint, Dynamics, Hortonworks…)
- Multiple VM sizes
- Pay-per-use model

Containers

- Create, configure, and manage a cluster of virtual machines that are preconfigured to run containerized applications; using Docker container format
- It uses an optimized configuration of popular open-source scheduling and orchestration tools

Storage



Standard storage

- Blob – for binary data (docs, media files, application binaries)
- Table – NoSQL data store for structured datasets
- Queue – reliable messaging store for workflow processing/communication
- Multiple availability options – locally redundant, zone redundant, geo redundant, read-only geo redundant

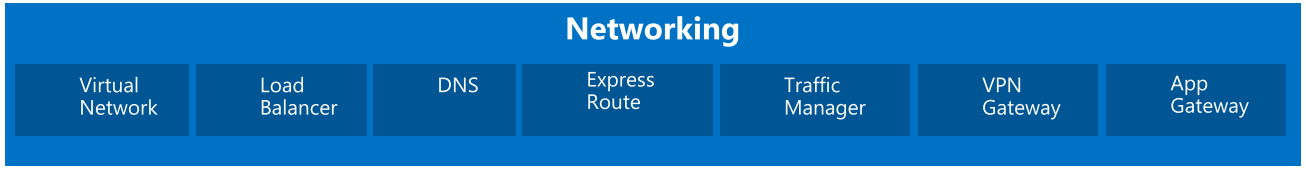
Premium storage

- For low latency, high-performance
- SSD-based, max 64TB per VM, 80000 IOPS, 2000MB/s throughput
- Requires DS/GS series VM's if used for VM disks

Azure Files

- File server as a service
- An SMB file share accessible from the cloud and from the public Internet

Networking



Virtual networks

- An Azure virtual network (VNet) is a representation of your own network in the cloud.

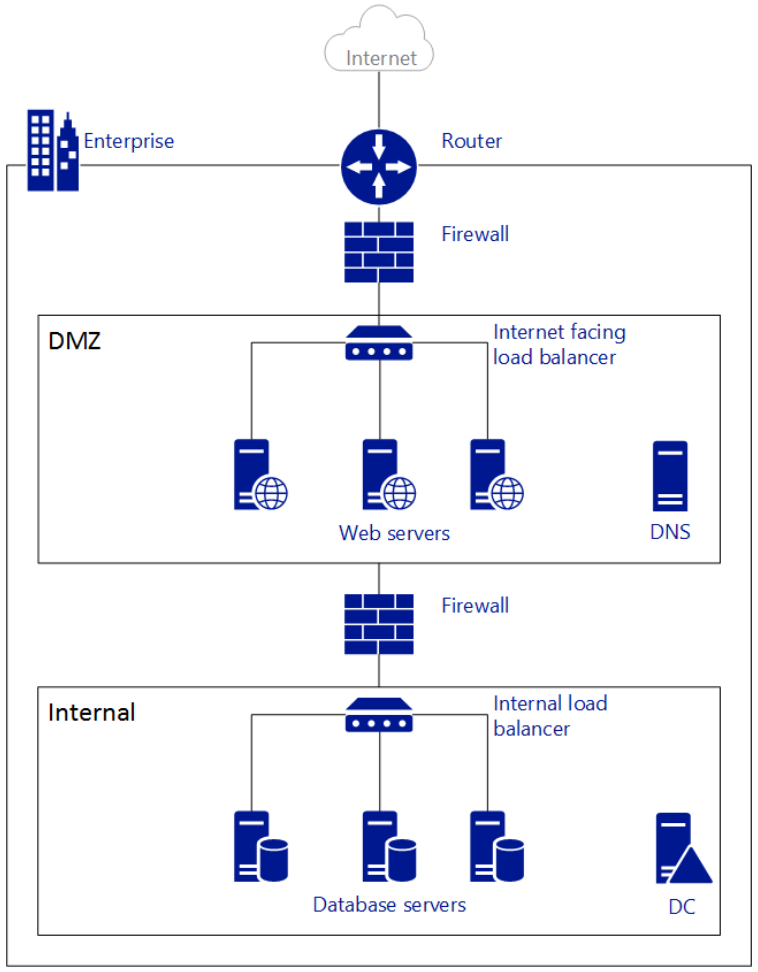
Load balancer

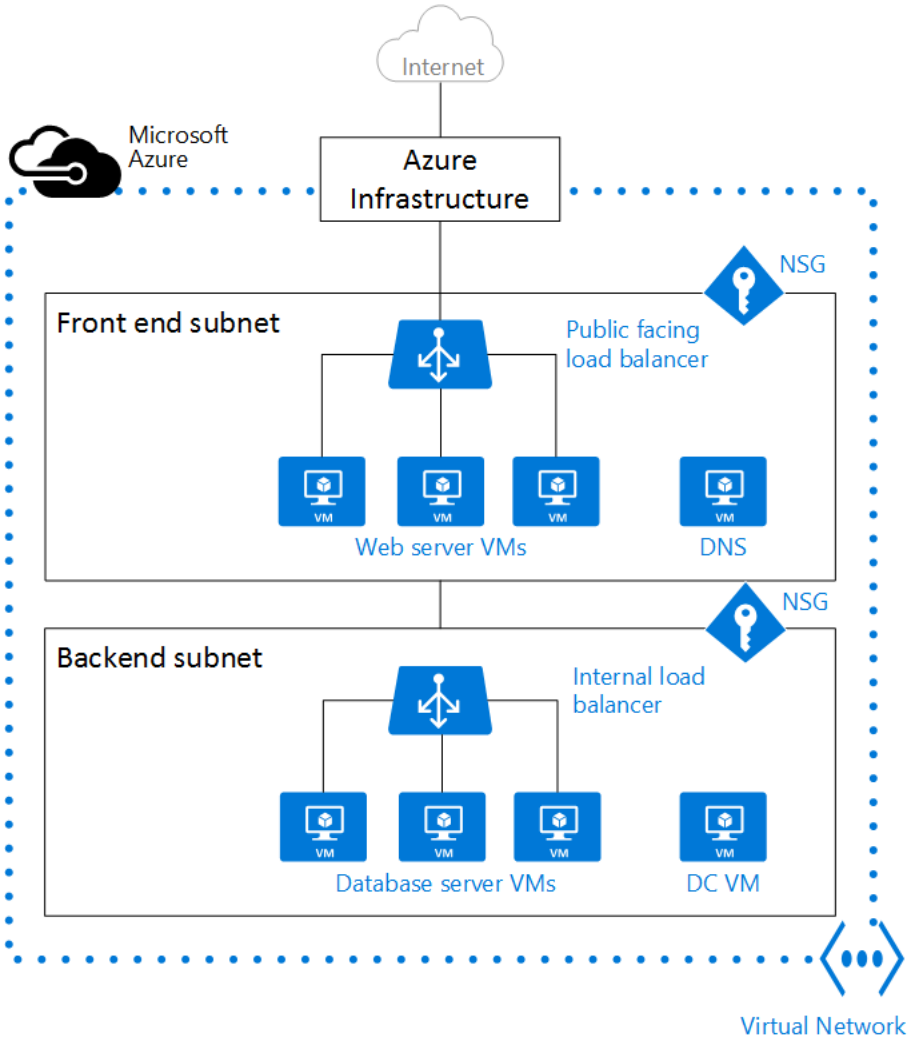
- For Internet-facing and internal load balancing

VPN/ExpressRoute

- To provide connectivity to on-premises environments

It Could Be Same





PaaS
(Platform as a Service)

Common PaaS scenarios

Organizations typically use PaaS for these scenarios:

Development framework. PaaS provides a framework that developers can build upon to develop or customize cloud-based applications. Similar to the way you create an Excel macro, PaaS lets developers create applications using built-in software components. Cloud features such as scalability, high-availability, and multi-tenant capability are included, reducing the amount of coding that developers must do.

Analytics or business intelligence. Tools provided as a service with PaaS allow organizations to analyze and mine their data, finding insights and patterns and predicting outcomes to improve forecasting, product design decisions, investment returns, and other business decisions.

Additional services. PaaS providers may offer other services that enhance applications, such as workflow, directory, security, and scheduling.

Advantages of PaaS

By delivering infrastructure as a service, PaaS offers the same advantages as IaaS. But its additional features—middleware, development tools, and other business tools—give you more advantages:

Cut coding time. PaaS development tools can cut the time it takes to code new apps with pre-coded application components built into the platform, such as workflow, directory services, security features, search, and so on.

Add development capabilities without adding staff. Platform as a Service components can give your development team new capabilities without your needing to add staff having the required skills.

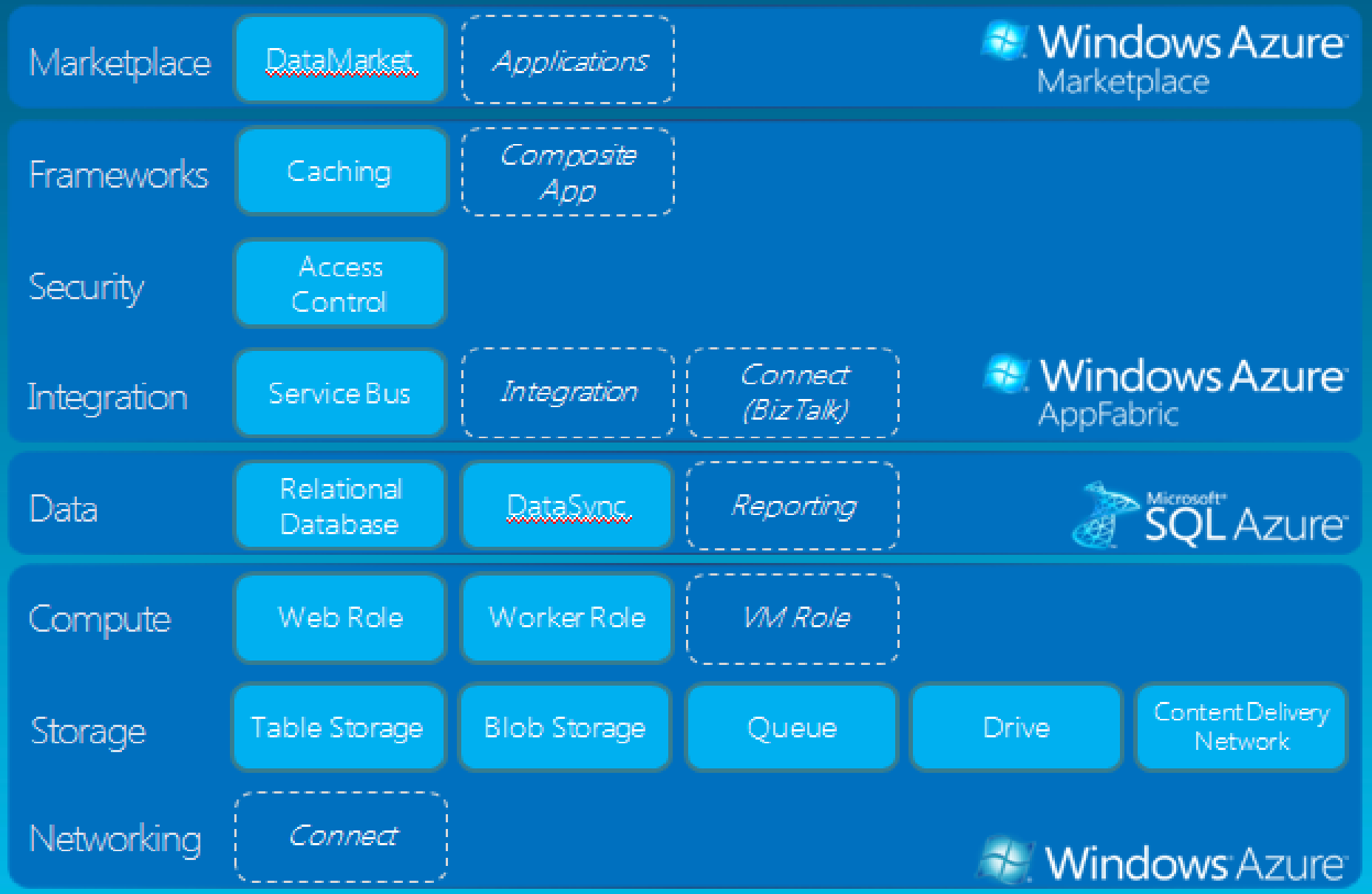
Develop for multiple platforms—including mobile—more easily. Some service providers give you development options for multiple platforms, such as computers, mobile devices, and browsers making cross-platform apps quicker and easier to develop.

Use sophisticated tools affordably. A pay-as-you-go model makes it possible for individuals or organizations to use sophisticated development software and business intelligence and analytics tools that they could not afford to purchase outright.

Support geographically distributed development teams. Because the development environment is accessed over the Internet, development teams can work together on projects even when team members are in remote locations.

Efficiently manage the application lifecycle. PaaS provides all of the capabilities that you need to support the complete web application lifecycle: building, testing, deploying, managing, and updating within the same integrated environment.

Platform as a Service



SaaS (Software as a Service)

Common SaaS scenarios

If you've used a web-based email service such as Outlook, Hotmail, or Yahoo! Mail, then you've already used a form of SaaS. With these services, you log into your account over the Internet, often from a web browser. The email software is located on the service provider's network, and your messages are stored there as well. You can access your email and stored messages from a web browser on any computer or Internet-connected device.

The previous examples are free services for personal use. For organizational use, you can rent productivity apps, such as email, collaboration, and calendaring; and sophisticated business applications such as customer relationship management (CRM), enterprise resource planning (ERP), and document management. You pay for the use of these apps by subscription or according to the level of use.

Advantages of SaaS

Gain access to sophisticated applications. To provide SaaS apps to users, you don't need to purchase, install, update, or maintain any hardware, middleware, or software. SaaS makes even sophisticated enterprise applications, such as ERP and CRM, affordable for organizations that lack the resources to buy, deploy, and manage the required infrastructure and software themselves.

Pay only for what you use. You also save money because the SaaS service automatically scales up and down according to the level of usage.

Use free client software. Users can run most SaaS apps directly from their web browser without needing to download and install any software, although some apps require plugins. This means that you don't need to purchase and install special software for your users.

Mobilize your workforce easily. SaaS makes it easy to "mobilize" your workforce because users can access SaaS apps and data from any Internet-connected computer or mobile device. You don't need to worry about developing apps to run on different types of computers and devices because the service provider has already done so. In addition, you don't need to bring special expertise onboard to manage the security issues inherent in mobile computing. A carefully chosen service provider will ensure the security of your data, regardless of the type of device consuming it.

Access app data from anywhere. With data stored in the cloud, users can access their information from any Internet-connected computer or mobile device. And when app data is stored in the cloud, no data is lost if a user's computer or device fails.


SaaS
SOFTWARE AS A SERVICE

GO GLOBAL

GO CLOUD

GO INNOVATIVE