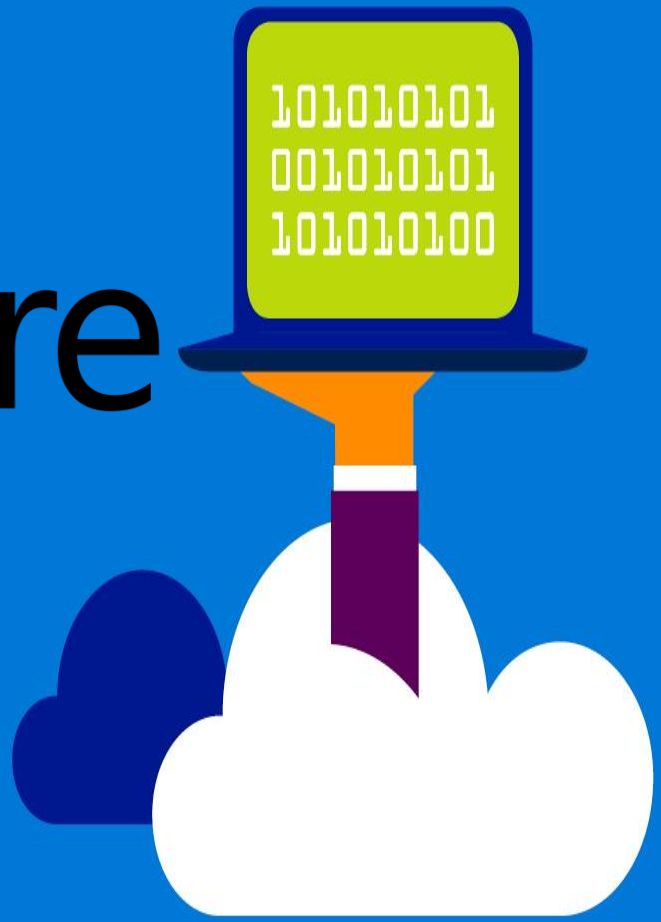
Microsoft Azure

PRESENTER – JITENDRA SINGH TOMAR



Today's Agenda

- ✓Introduction to Cloud Computing
- ✓Why Cloud Computing is a better option?
- ✓How does Could Computing works?
- ✓Services provided by Cloud.
- ✓Cloud computing model – What's best?
- ✓Cloud vendors in market.
- ✓What is Microsoft Azure?
- ✓Global foot print of Azure.

Introduction to Cloud Computing

- ✓Cloud computing can be called a technology through which things like software, processing, and data storage are outsourced.

- ✓There is only a need for an **internet connection**, an updated **web browser** and a compatible device for using a cloud computing service.

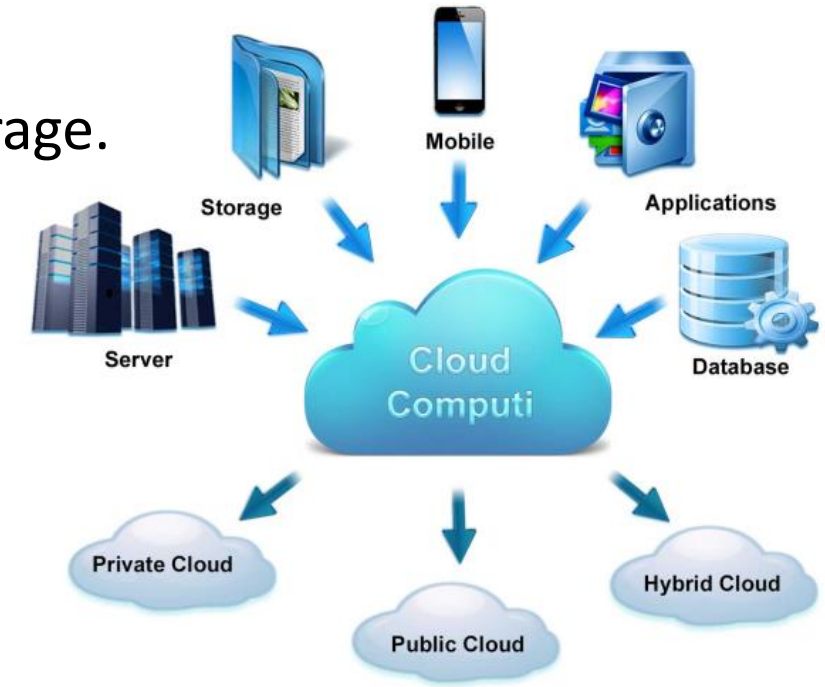
- ✓Cloud computing makes computer system resources, especially storage and computing power, available on demand without direct active management by the user. [**By Wikipedia**]

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. [By **NIST**]

Cloud Computing

- ✓Central data center for providing services.
- ✓On-demand, scalable, unlimited computation & storage.
- ✓It's basically a data center.
- ✓4 characteristics of a Cloud:
  - Everything is a Service (backup, firewall, network…)
  - Elasticity in nature
  - HA – 99.99% SLA
  - Unlimited computation power.
- ✓Any DC that provides above 4 chars is a cloud



High availability

Availability %	Downtime per year[note 1]	Downtime per month	Downtime per week	Downtime per day
55.5555555% ("nine fives")	162.33 days	13.53 days	74.92 hours	10.67 hours
90% ("one nine")	**36.53 days**	**73.05 hours**	**16.80 hours**	**2.40 hours**
95% ("one and a half nines")	18.26 days	36.53 hours	8.40 hours	1.20 hours
97%	10.96 days	21.92 hours	5.04 hours	43.20 minutes
98%	7.31 days	14.61 hours	3.36 hours	28.80 minutes
99% ("two nines")	**3.65 days**	**7.31 hours**	**1.68 hours**	**14.40 minutes**
99.5% ("two and a half nines")	1.83 days	3.65 hours	50.40 minutes	7.20 minutes
99.8%	17.53 hours	87.66 minutes	20.16 minutes	2.88 minutes
99.9% ("three nines")	**8.77 hours**	**43.83 minutes**	**10.08 minutes**	**1.44 minutes**
99.95% ("three and a half nines")	4.38 hours	21.92 minutes	5.04 minutes	43.20 seconds
99.99% ("four nines")	**52.60 minutes**	**4.38 minutes**	**1.01 minutes**	**8.64 seconds**
99.995% ("four and a half nines")	26.30 minutes	2.19 minutes	30.24 seconds	4.32 seconds
99.999% ("five nines")	**5.26 minutes**	**26.30 seconds**	**6.05 seconds**	**864.00 milliseconds**
99.9999% ("six nines")	**31.56 seconds**	**2.63 seconds**	**604.80 milliseconds**	**86.40 milliseconds**
99.99999% ("seven nines")	**3.16 seconds**	**262.98 milliseconds**	**60.48 milliseconds**	**8.64 milliseconds**
99.999999% ("eight nines")	**315.58 milliseconds**	**26.30 milliseconds**	**6.05 milliseconds**	**864.00 microseconds**
99.9999999% ("nine nines")	**31.56 milliseconds**	**2.63 milliseconds**	**604.80 microseconds**	**86.40 microseconds**

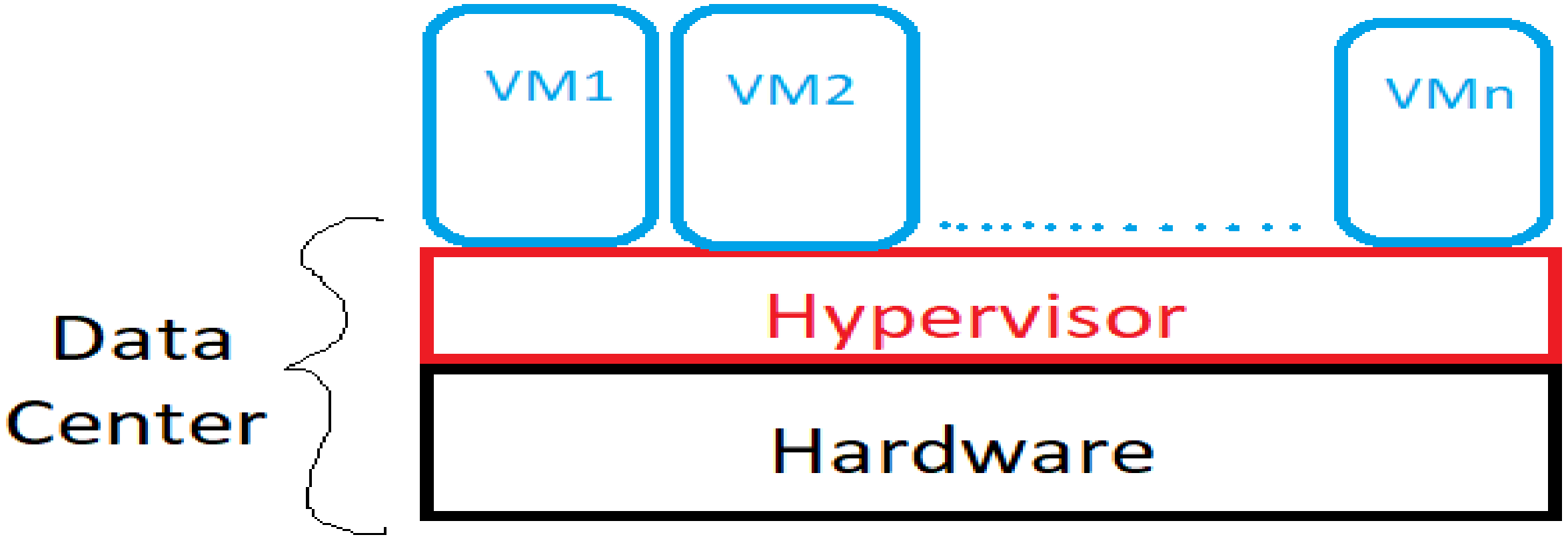
Generation-1/On-Premises DC

- ✓Power supply
- ✓Network devices
- ✓Storage devices
- ✓Server racks
- ✓Space
- ✓Scalable options
- ✓Administrators for Servers, Networks, etc..

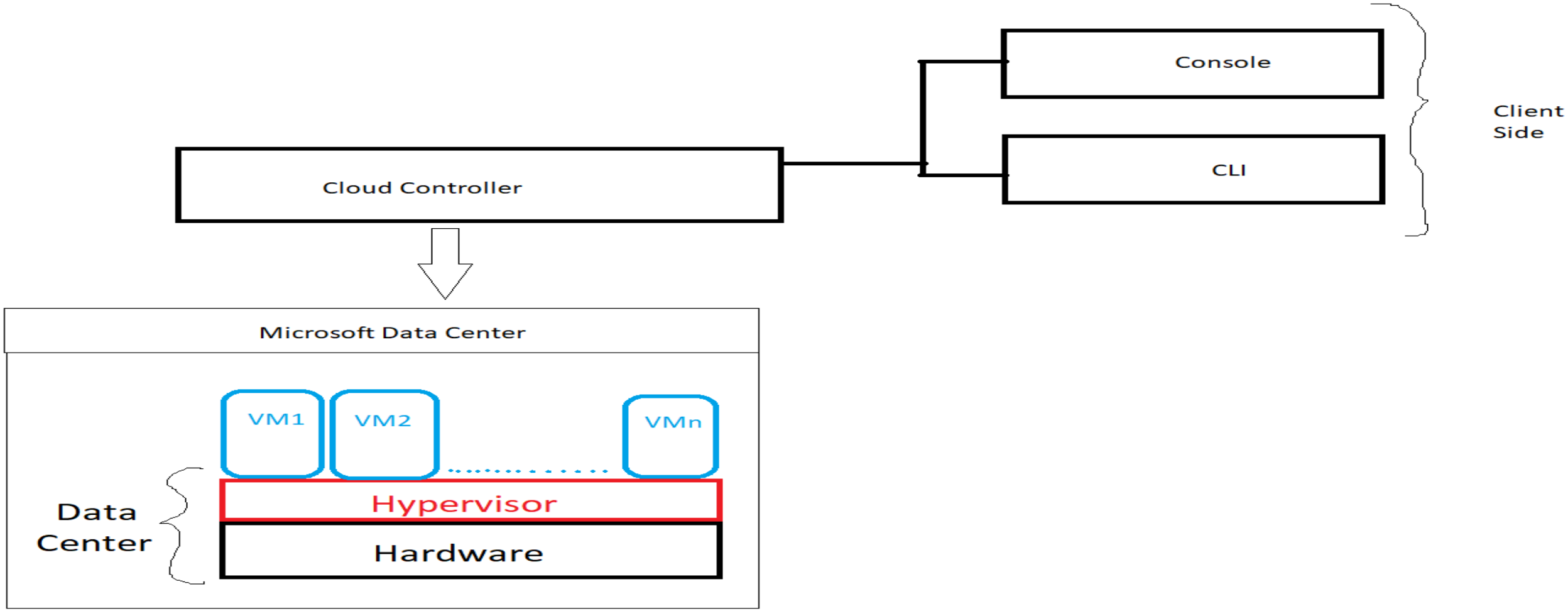
Generation-2/Virtualized DC

- ✓Achieved using tool called “Hypervisor”.
- ✓ Advantages of using virtualization:
  - No maximum limit for a VM.
  - Centralized monitoring.
  - Software defined.
- ✓There are different types of Virtualization”
  - Hardware virtualization
  - Network virtualization
  - Desktop virtualization
  - Storage virtualization

Generation-2/Virtualized DC



Generation 2 to cloud.

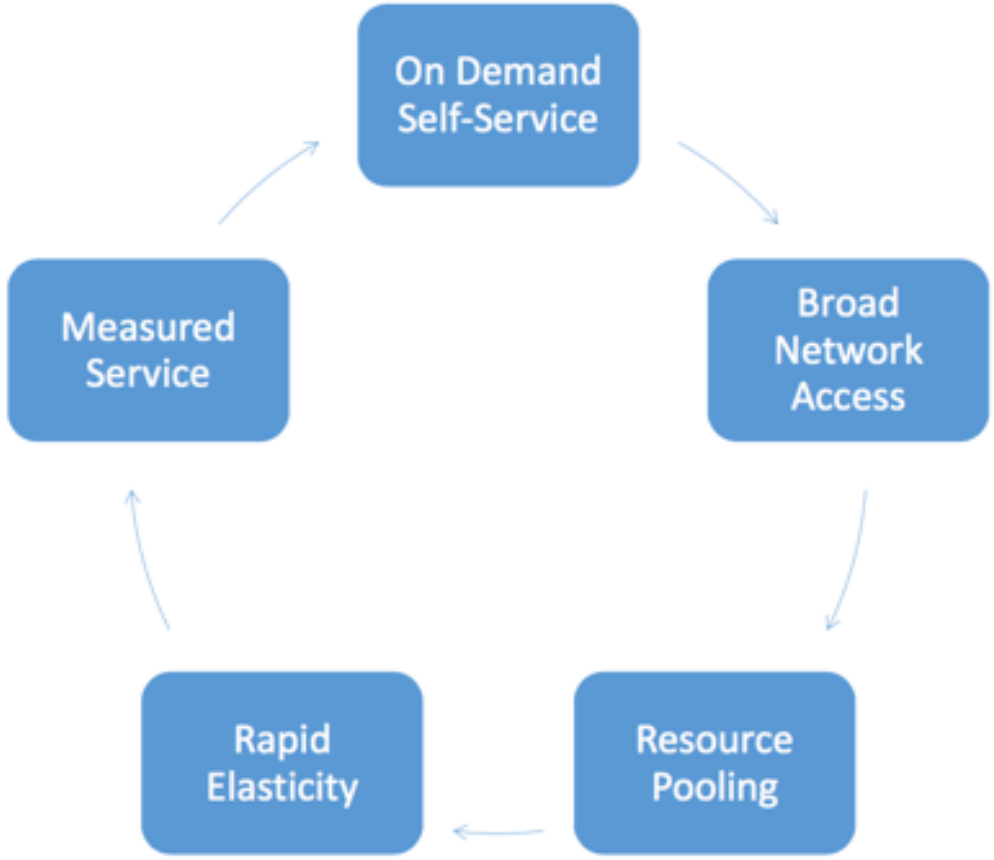


Why cloud computing is a better option?

- ✓Highly scalable and flexible
- ✓Low-cost solution
- ✓Faster and secure
- ✓Global Access
- ✓Productive
- ✓Hybrid
- ✓Intelligent

Five Essential Characteristics of Cloud

- ✓On-demand self-service
- ✓Broad network access
- ✓Resource pooling
- ✓Rapid elasticity
- ✓Measured service



Five Essential Characteristics of Cloud

1. **On-demand self-service**
   - ✓Resources are instantly available when needed.
2. **Broad network access**
   - ✓Access anytime or anywhere a connection to the Internet exists.
3. **Resource pooling**
   - ✓Data center resources are pooled together optimizing quality of service.
4. **Rapid elasticity**
   - ✓The ability to add or remove computing resources based on need.
5. **Measured service**
   - ✓The ability to measure resource usage and charge customers.

Services provided by Cloud

- ✓Infrastructure as a Service (**IaaS**)
- ✓Platform as a Service (**PaaS**)
- ✓Software as a Service (**SaaS**)

Infrastructure as a Service (**IaaS**)

- ✓IaaS is a fully self-service model that delivers infrastructure resources via virtualization technologies.
- ✓IaaS comprises scalable computing, storage, and security capabilities accessed on an API or dashboard.
- ✓Examples of IaaS
  - Amazon Web Services (AWS)
  - HP Cloud Services
  - Microsoft Windows Azure
  - Rackspace Cloud
  - IBM Smart Cloud
  - VMware
  - GoGrid

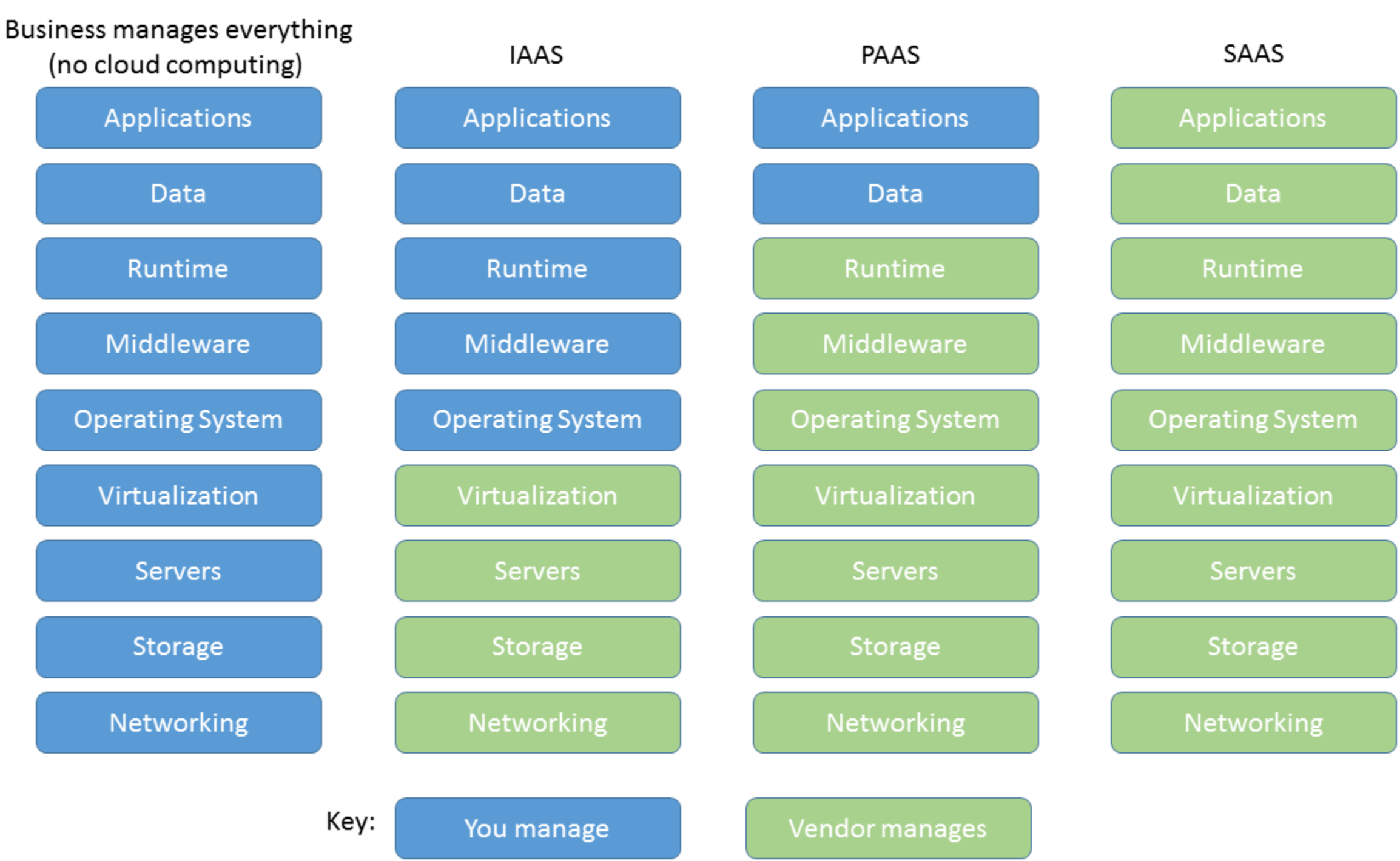
Platform as a Service (**PaaS**)

- ✓PAAS provides a framework for developers to create their own applications. Essential, PaaS gives developers an online platform to create and manage software without worrying about maintaining everything else.
- ✓Examples of PaaS
  - Amazon Web Services (AWS)
  - Microsoft Windows Azure
  - Google App
  - IBM SmartCloud Application services
  - Force.com

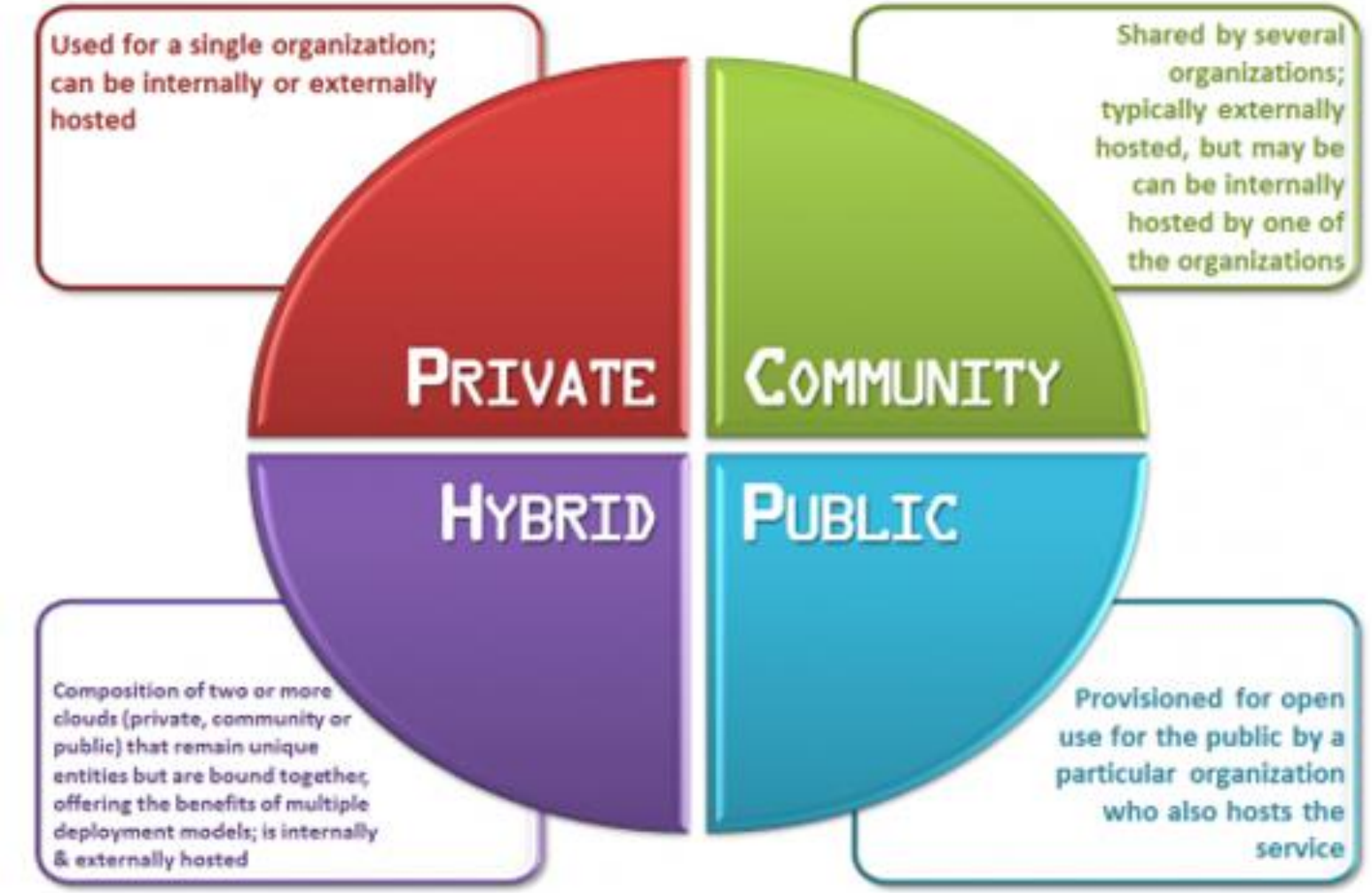
Software as a Service (**SaaS**)

- ✓SAAS is the most common cloud deployment model. SaaS refers to applications delivered over the Internet that a third party manages.
- ✓In easy words, the user doesn't have to worry about hosting, downloading, or updating any software. SaaS applications are typically accessed and ran via a Web browser, eliminating the need to download software onto a user's machines.
- ✓Examples of SaaS
  - Salesforce CRM
  - Basecamp
  - Intuit QuickBooks
  - Constant Contact
  - NetSuite
  - Google Docs

Pizza as a Service


Business manages everything
(no cloud computing)
Applications
Data
Runtime
Middleware
Operating System
Virtualization
Servers
Storage
Networking
IAAS
Applications
Data
Runtime
Middleware
Operating System
Virtualization
Servers
Storage
Networking
PAAS
Applications
Data
Runtime
Middleware
Operating System
Virtualization
Servers
Storage
Networking
SAAS
Applications
Data
Runtime
Middleware
Operating System
Virtualization
Servers
Storage
Networking
Key:
You manage
Vendor manages

Cloud Deployment Models



Cloud Deployment Models:

- ✓**Public cloud**
  - You use shared (isolated/without knowing others) resources.
  - Secure in nature.
- ✓**Private cloud**
  - You OWN the resources & not sharing with others.
  - More secure, More costly.
- ✓**Hybrid cloud**
  - Public cloud + Private cloud
  - Could be used the scenario where security is bit of a concern.
  - Private cloud will store: confidential info
  - Public cloud will be used to share the info among limited people.

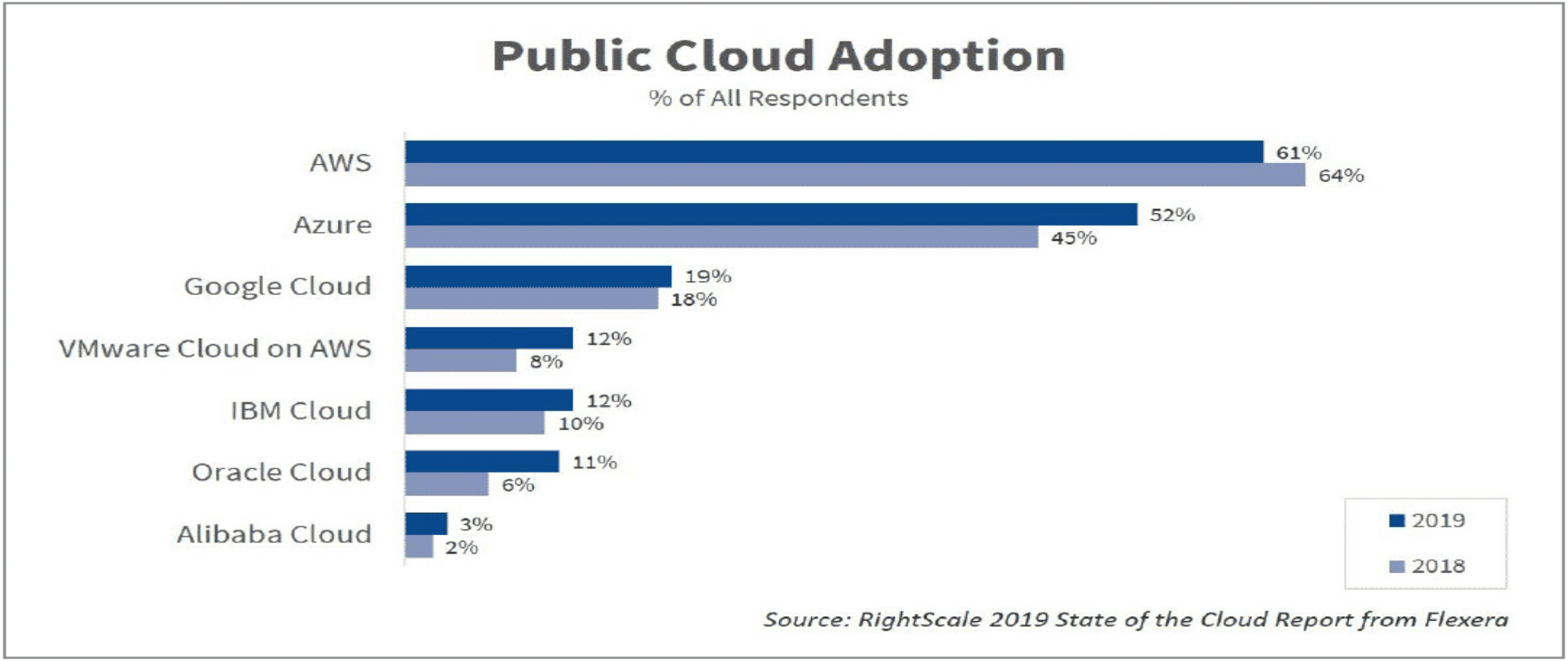
Benefits of Cloud computing

- ✓ **Cost**
  - No h/w, s/w, on-prem data centers
- ✓ **Global scale**
  - Elastic in nature (any time scale-in/out).
- ✓ **Performance**
  - Reduced n/w latency.
- ✓ **Speed**
  - Self-service, on-demand, flexibility.
- ✓ **Productivity**
  - No racks & stacks, no h/w setup, no s/w patching.
- ✓ **Reliability**
  - Data backup, easy & cheap DR, redundant.

Why should I move to the cloud?

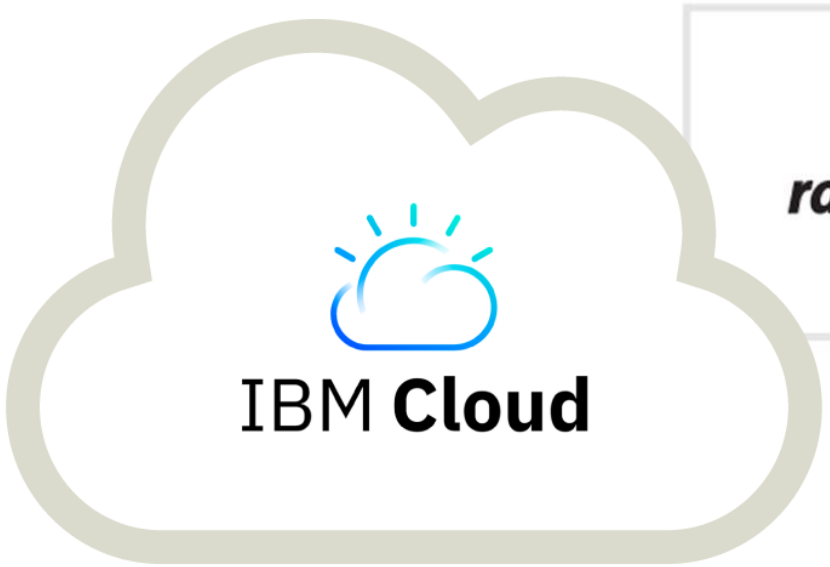
- ✓A nearly limitless pool of raw compute, storage, and networking components.
- ✓Speech recognition and other cognitive services that help make your application stand out from the crowd.
- ✓Analytics services that enable you to make sense of telemetry data coming back from your software and devices.

Cloud Adoption - 2019



Cloud vendors in market

- ✓AWS
- ✓Azure
- ✓Google Cloud
- ✓Alibaba
- ✓IBM
- ✓VMWare
- ✓Rackspace
- ✓Adobe



What is Microsoft Azure?

- ✓Microsoft Azure is an ever-expanding set of cloud services to help your organization meet your business challenges.

- ✓It’s the freedom to build, manage, and deploy applications on a massive, global network using your favorite tools and frameworks.

- ✓Microsoft Azure (formerly Windows Azure) is a cloud computing service created by Microsoft for building, testing, deploying, and managing applications and services through Microsoft-managed data centers.

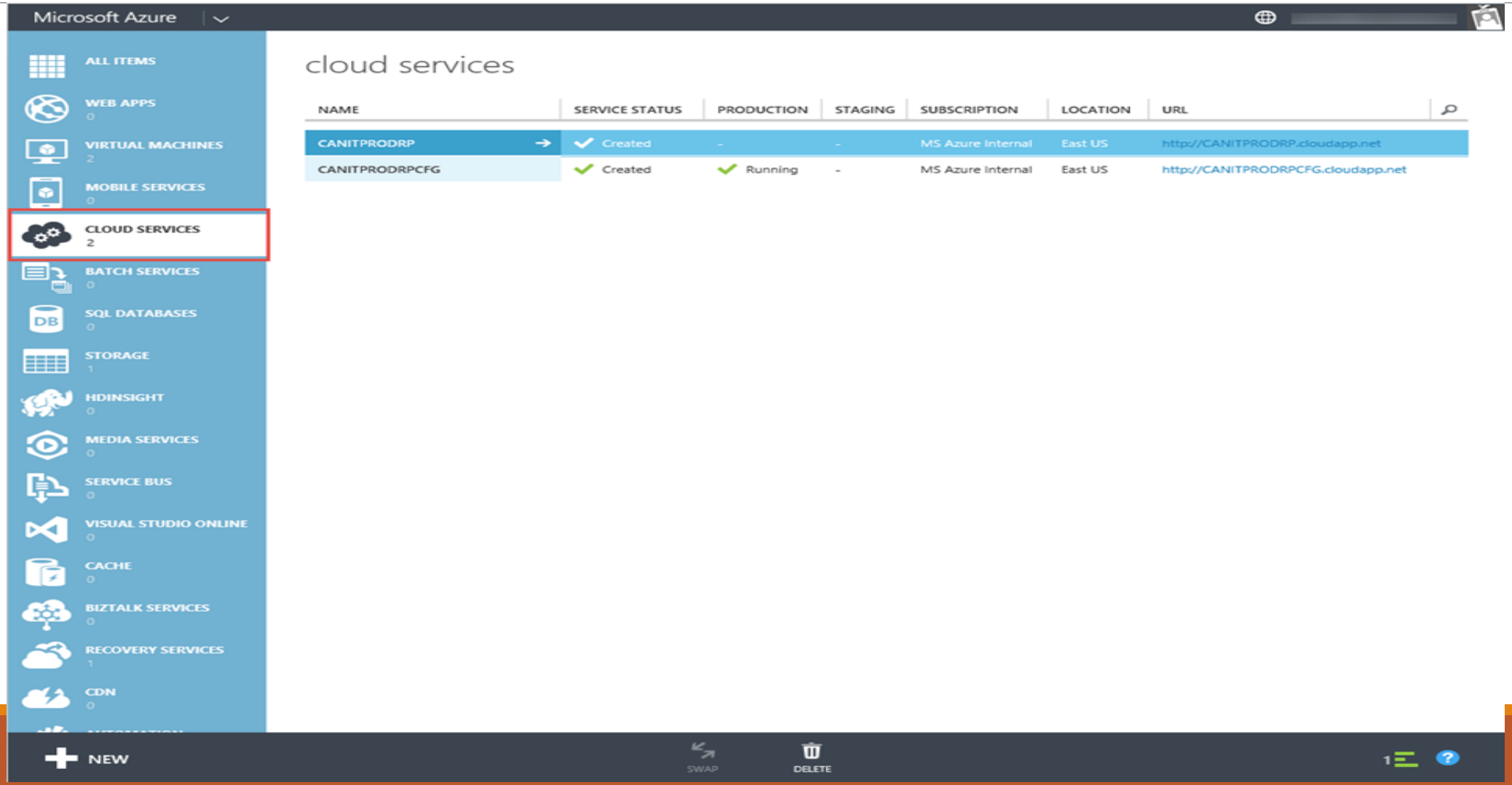
Global footprint - Azure regions

55 regions worldwide available in **140** countries

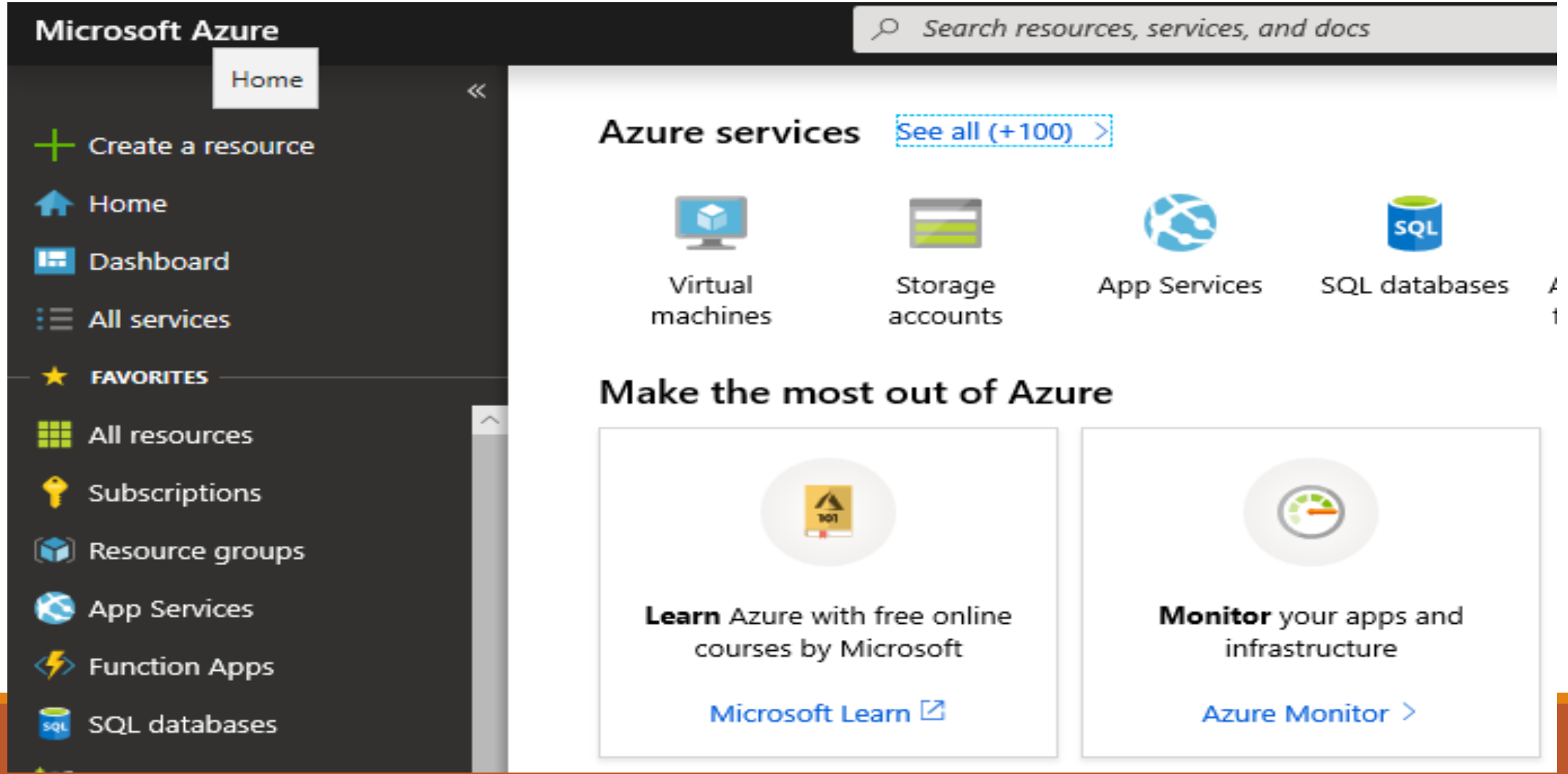
Accessing Azure

- ✓GUI – New (ARM)
- ✓GUI – Old (ASM)
- ✓PowerShell
- ✓Azure cloud shell
- ✓REST API

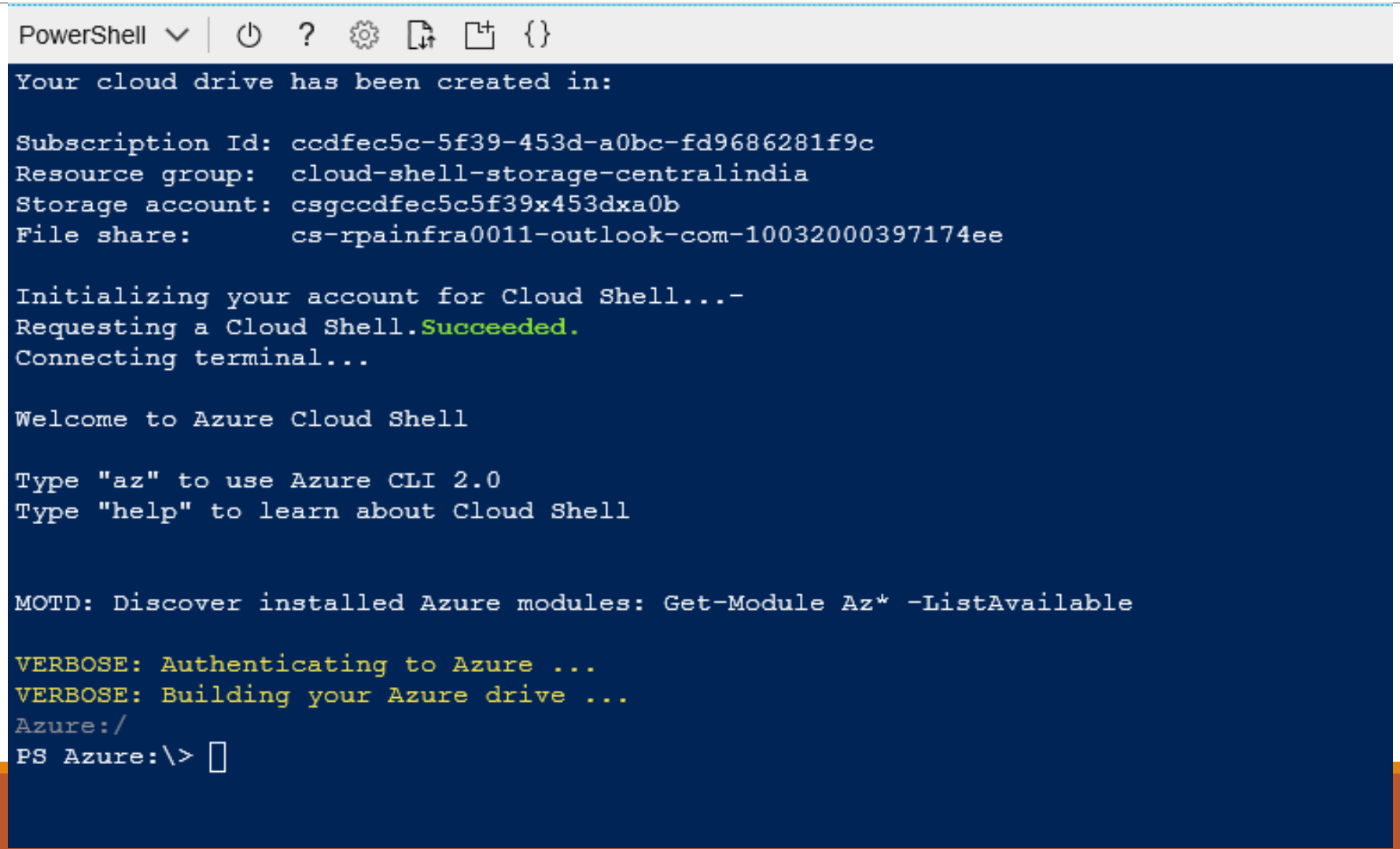
Old Portal – Azure Service Manager (ASM)



New Portal – Azure Resource Manager (ARM)



Accessing azure (Cloud Shell)

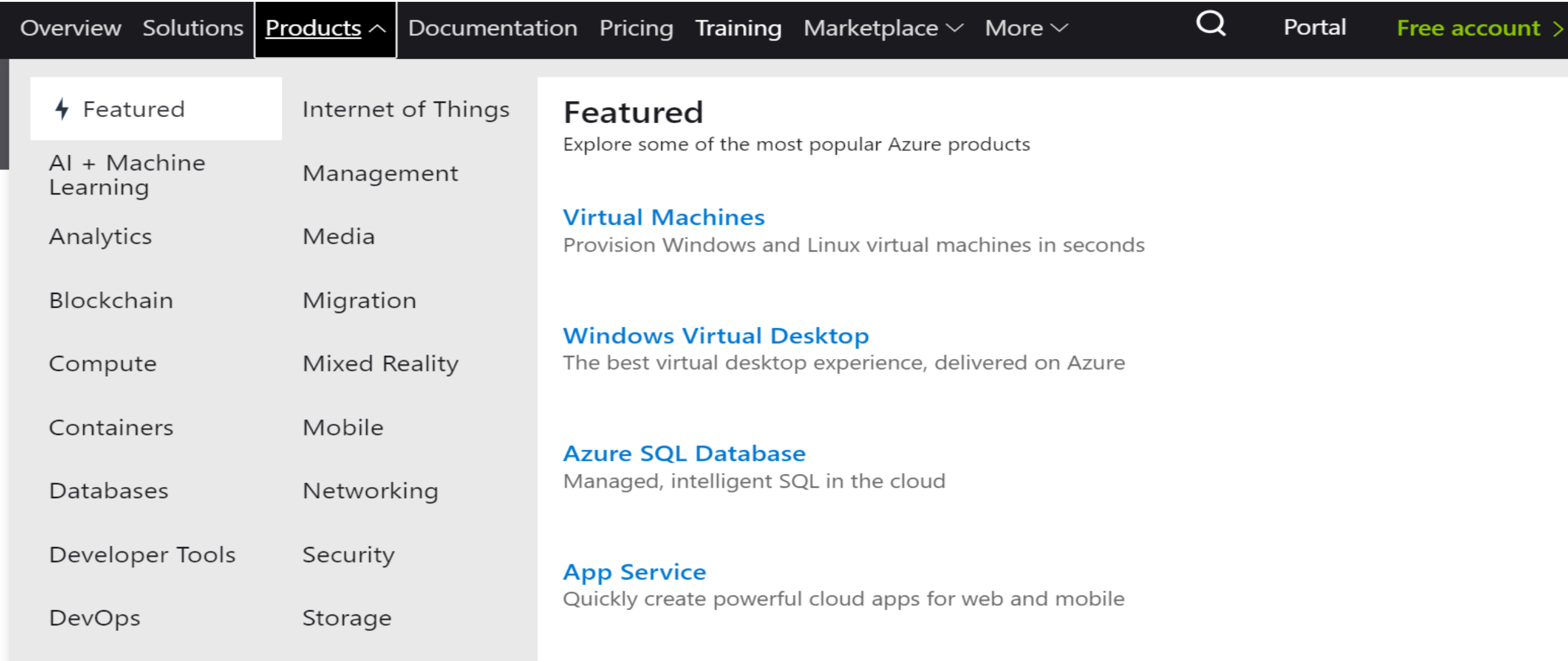


Accessing azure (PowerShell)

```
PS C:\scripts> Get-AzSubscription | fl


Id                             : [redacted]
Name                           : MSDN Platforms
State                          : Enabled
SubscriptionId                 : [redacted]
TenantId                       : [redacted]
CurrentStorageAccountName      :
ExtendedProperties             : {[Account, jeetu.singh5591@hotmail.com], [Tenants, [redacted]],
                                 [Environment, AzureCloud]}
CurrentStorageAccount          :
```

Azure services



Free services (for 12 months)

▪ Linux Virtual Machines (750Hrs)	▪ Windows Virtual Machines (750Hrs)
▪ Managed Disks (64 GB x 2)	▪ Blob Storage (5 GB)
▪ File Storage (5 GB)	▪ SQL Database (250 GB)
▪ Azure Cosmos DB (5 GB)	▪ Bandwidth (Data Transfer) (15 GB)
▪ Computer Vision (AI + MACHINE LEARNING/5,000 transactions)	▪ Personalizer (AI + MACHINE LEARNING / 50,000 transactions)
▪ Translator Text (AI + MACHINE LEARNING / 2,000,000 characters)	▪ Anomaly Detector (AI + MACHINE LEARNING / 20,000 transactions)
▪ Form Recognizer (AI + MACHINE LEARNING / 500 pages)	▪ QnA Maker (AI + MACHINE LEARNING / 3 days)

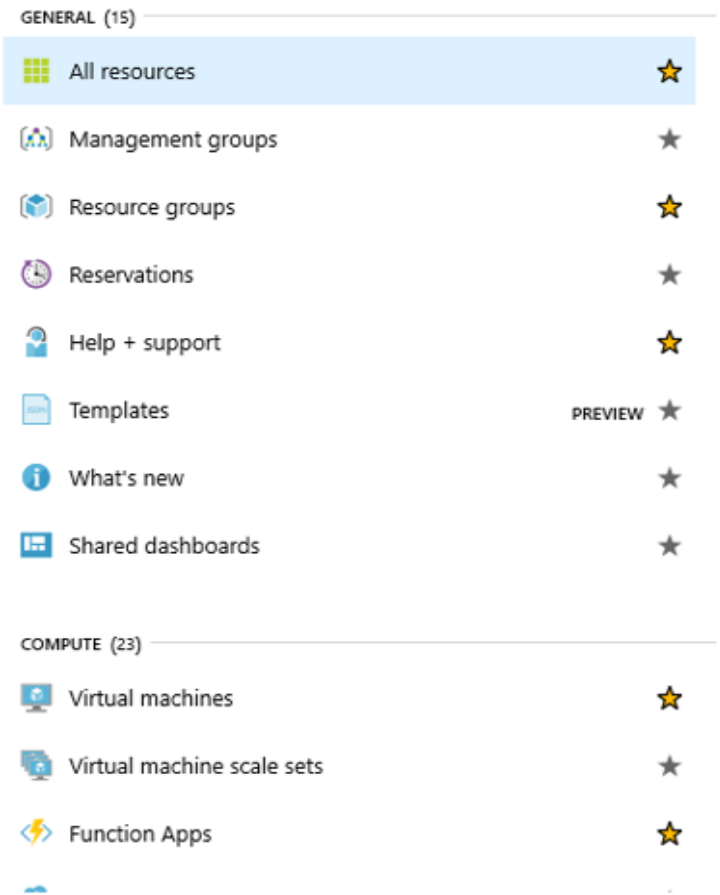
Products that are always free

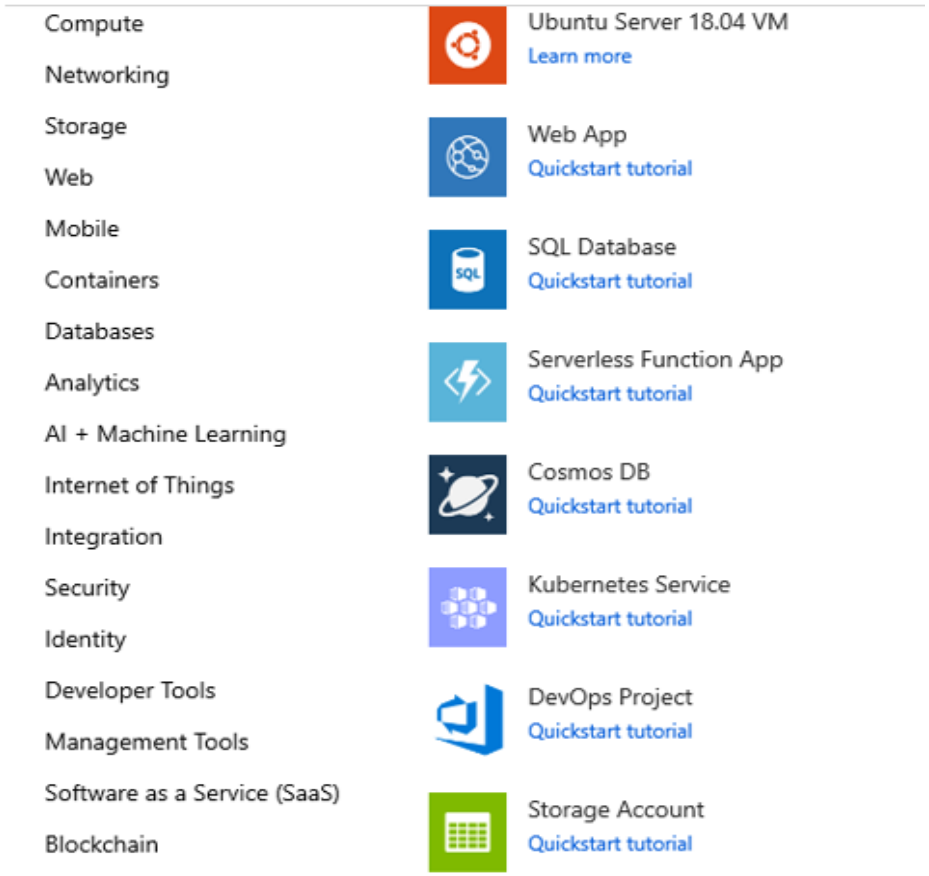
- App Service (10)
- Functions (1,000,000 requests per month)
- Event Grid (INTEGRATION, 100,000)
- Azure Kubernetes Service (AKS)
- DevTest Labs
- Active Directory B2C (50,000, authentications per month)

Azure Subscriptions

- ✓Pay-As-You-Go
- ✓12-Months-Plan (Prepaid)
- ✓Developer Support
- ✓Professional Direct Support
- ✓Standard Support
- ✓Enterprise

What can be deployed to Azure?





Requirements to run an environment

✓Similar to an on-premises data center, Azure also have some requirements to run an environment.

✓Few of them are as follows:

- VNet
- Storage
- Specific port rules (3389,22)
- Resource Group
- DNS
- Etc..

SLA for azure resources

✓**Virtual Machines**
- 99.9% SLA for Single instance
- 99.99% SLA for VMs deployed in same Azure region. (AS)

✓**Storage Durability**
- Read: 99.9% (LRS, ZRS, GRS)
- Write: 99.9% (LRS, ZRS, GRS) ,RA-GRS : 99.99%

✓**App service**
- 99.95% for customer subscription, No SLA is provided for Apps under either the Free or Shared tiers.

✓**Azure Active Directory**
- 99.9% availability of the Azure Active Directory Basic and Premium services

Migrate on-premises machines to Azure

- ✓Supported setup:
  - VMware VMs.
  - Physical servers.
  - Hyper-V VMs.
- ✓Replication policy
- ✓Enable replication

Azure calculator

Virtual Machines

REGION:

West US

OPERATING SYSTEM:

Windows

TYPE:

(OS Only)

TIER:

Standard

INSTANCE:

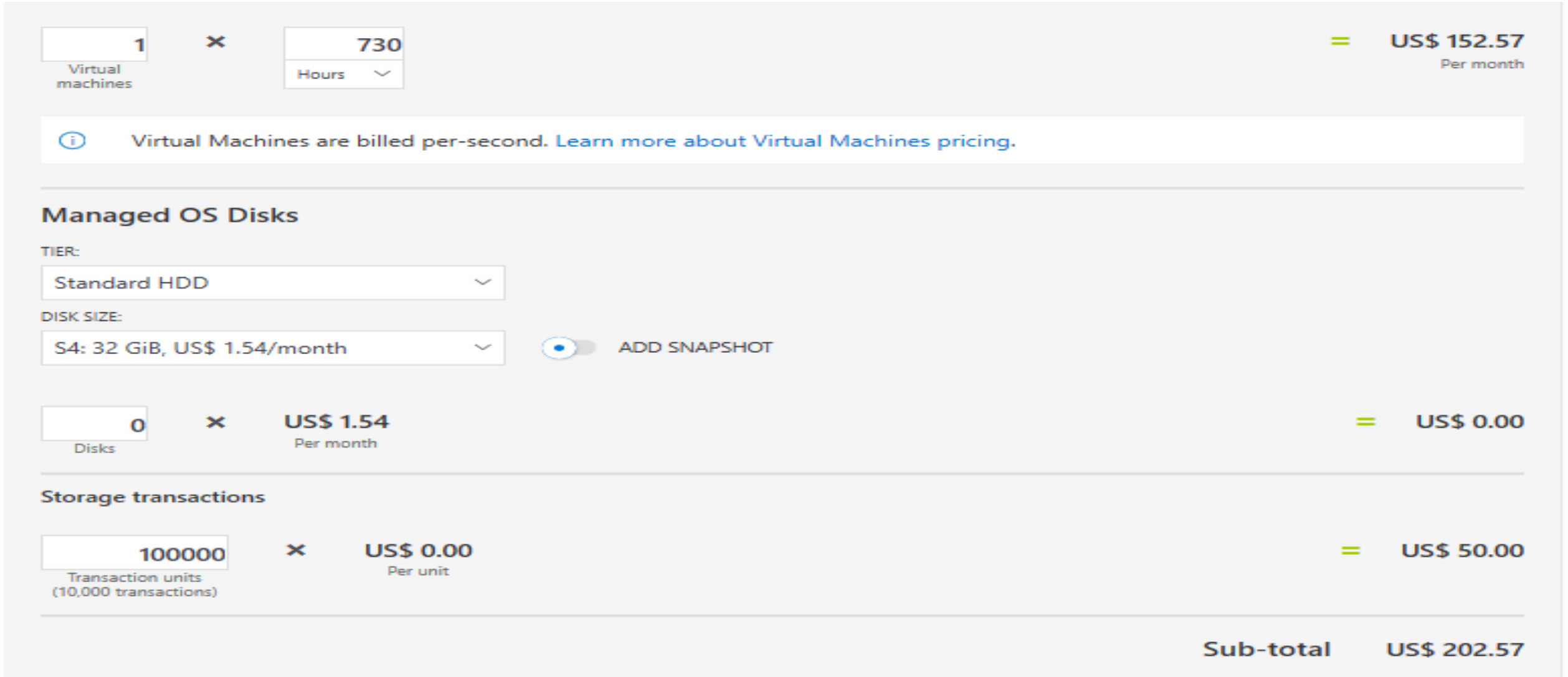
D2 v3: 2 vCPU(s), 8 GB RAM, 50 GB Temporary storage, US$ 0.21/hour

Billing Option

Save up to 72% on pay-as-you-go prices with 1-year or 3-year Reserved Virtual Machine Instances. Reserved Instances are great for applications with steady-state usage and applications that require reserved capacity. Learn more about Reserved VM Instances pricing.

- (•) Pay as you go
- ( ) 1 year reserved (~18% savings)
- ( ) 3 year reserved (~32% savings)

Azure calculator



Azure Updates

December 2019

30 Dec

Service-aided subnet configuration for managed instance in Azure SQL Database is now available

NOW AVAILABLE

To address customer security and manageability requirements, managed instance, a deployment capability of Azure SQL Database, is transitioning from a manual to service-aided subnet configuration.

Azure SQL Database | Managed Instance

26 Dec

Azure Migrate now supports assessment of physical servers

IN PREVIEW

TARGET AVAILABILITY: Q4 2019

Support to assess physical servers is now available in Azure preview, in addition to existing support for VMware and Hyper-V servers. The appliance for physical servers can be installed on an existing Windows server. This feature can be used to assess virtual machines where there is no access to the hypervisor, as well as virtual machines on any cloud. For more details, refer to the documentation

Azure Status

Refresh every

2 minutes

✓ Good ⓘ Information ⚠ Warning ⓧ Critical

Americas | Europe | Asia Pacific | Middle East and Africa | Azure Government | Azure China

PRODUCTS AND SERVICES	*NON-REGIONAL	EAST US	EAST US 2	CENTRAL US	NORTH CENTRAL US	SOUTH CENTRAL US	WEST CENTRAL US	WEST US	WEST US 2	CANADA EAST	CANADA CENTRAL	BRAZIL SOUTH
COMPUTE												
Azure VMware Solution by CloudSimple		✓						✓				
Virtual Machines		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SAP HANA on Azure Large Instances		✓						✓	✓			
Windows Virtual Desktop	✓											
Virtual Machine Scale Sets		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Azure Functions		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Service Fabric		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Batch		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cloud Services		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Azure Spring Cloud		✓							✓			

Useful Links

- **FastTrack updates:** https://azure.microsoft.com/en-in/updates/fasttrack-for-azure/
- **Updates:** https://azure.microsoft.com/en-in/blog/topics/updates/
- **Status:** https://azure.microsoft.com/en-us/status/
- **Pricing calculator:** https://azure.microsoft.com/en-in/pricing/calculator/
- **EDX**: https://www.edx.org/learn/azure
- **YouTube Azure Friday:** https://www.youtube.com/playlist?list=PLLasX02E8BPDT2Z2pdCHNCkENpcQWy5n6
- **Azure Friday:** https://channel9.msdn.com/Shows/Azure-Friday


That's all Folks!