



# *Intro to Cloud Computing*

HackPrinceton 2023

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# *Agenda*

- 1. What is cloud computing?*
- 2. Virtualization*
- 3. What Existed Before the Cloud?*
- 4. Benefits of the Cloud*
- 5. Cloud Service Models*
- 6. Major Cloud Providers*
- 7. Geo-Replication*
- 8. Kubernetes and Containerization*
- 9. Challenges of the Cloud*
- 10. What can you take away from this session?**

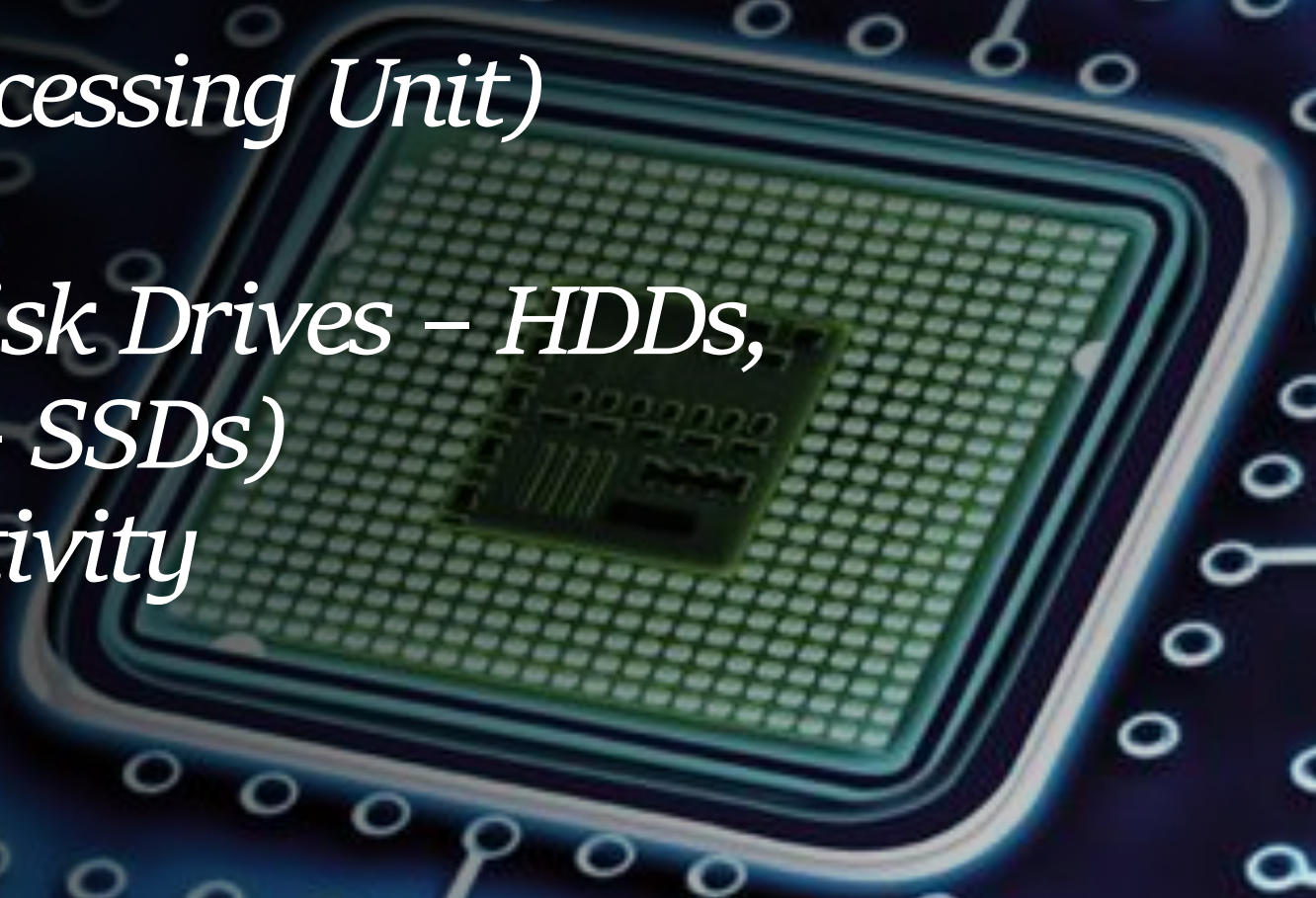


# *What is the Cloud*

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# ***What are Computing Resources***

- 1. CPU (Central Processing Unit)*
- 2. Memory (RAM)*
- 3. Storage (Hard Disk Drives – HDDs, Solid State Drives – SSDs)*
- 4. Network Connectivity*



# *What is the Cloud*

- *A pool of shared computing resources*

## cloud com·put·ing

[cloud computing] 🔊

NOUN

the practice of using a network of remote servers hosted on the internet to store, manage, and process data, rather than a local server or a personal computer.

# Virtualization

*We can put these core computing resources into a pool of shared resources (the cloud) and give people access to these shared resources through virtual machines*

*A virtual machine is a virtualized instance of a computer that can provide almost all the same functions as a computer.*



# *What Existed Before the Cloud*

*Individual Developer*



*On Premises Data Center*



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*The Cloud*



# *Cloud Analogy*





*1. Agility/Pay as you Go*

*2. Scalability*

*3. High Availability*

*4. Simplicity*

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***Why Choose The Cloud?***



# *IaaS, PaaS, SaaS*



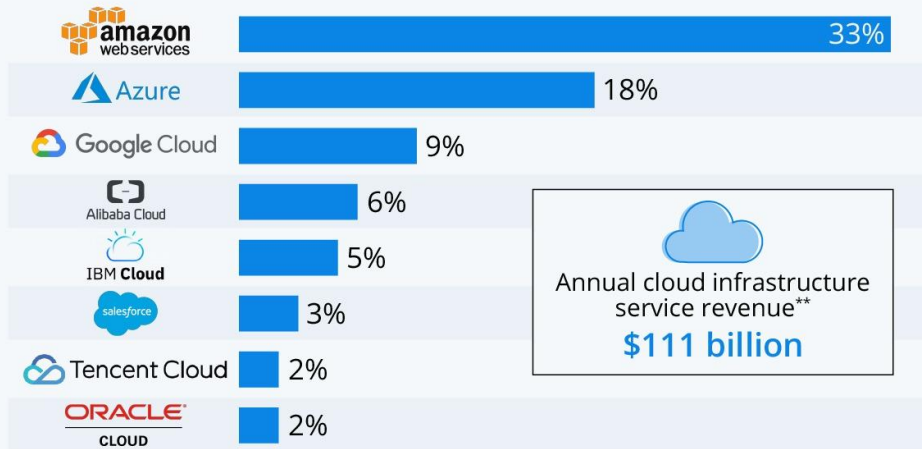
***Software as a Service (Excel)***  
*Accessible with Subscription*

***Platform as a Service (PowerApps)***  
*Only worry about the application*

***Infrastructure as a Service (Azure, AWS)***  
*Given Compute Resources but need to Deploy*

## Amazon Leads \$100 Billion Cloud Market

Worldwide market share of leading cloud infrastructure service providers in Q2 2020\*



\* includes platform as a service (PaaS) and infrastructure as a service (IaaS) as well as hosted private cloud services

\*\* 12 months ended June 30, 2020

Source: Synergy Research Group

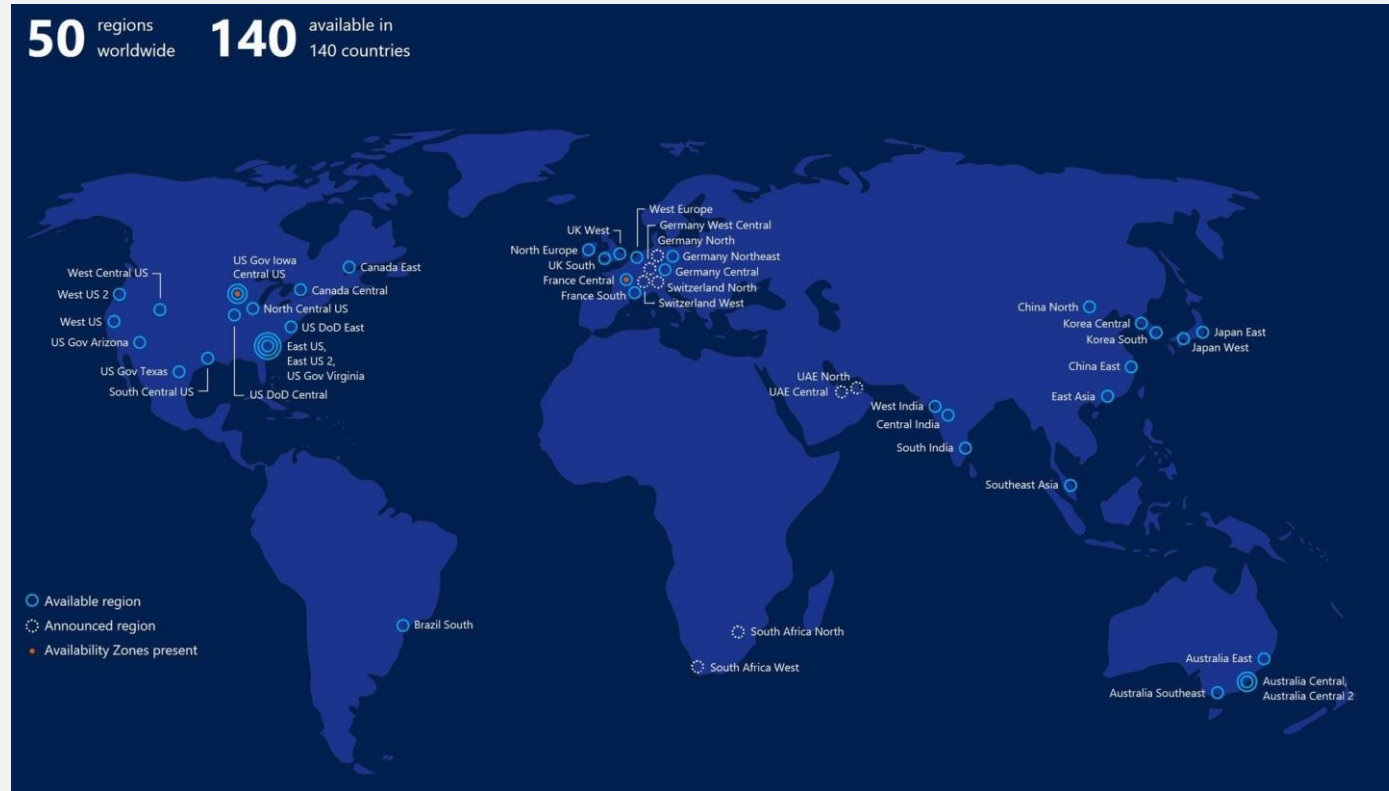


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## Core Cloud Service Providers

- Amazon/AWS
- **Microsoft Azure**
- Google Cloud
- Adobe Cloud
- IBM
- Alibaba

# *Where Azure Data Centers are Located*



*Azure Regions, Availability Zones, Geo-Replication and Disaster Recovery*

*How can we ensure we're  
getting agility and  
scalability?*

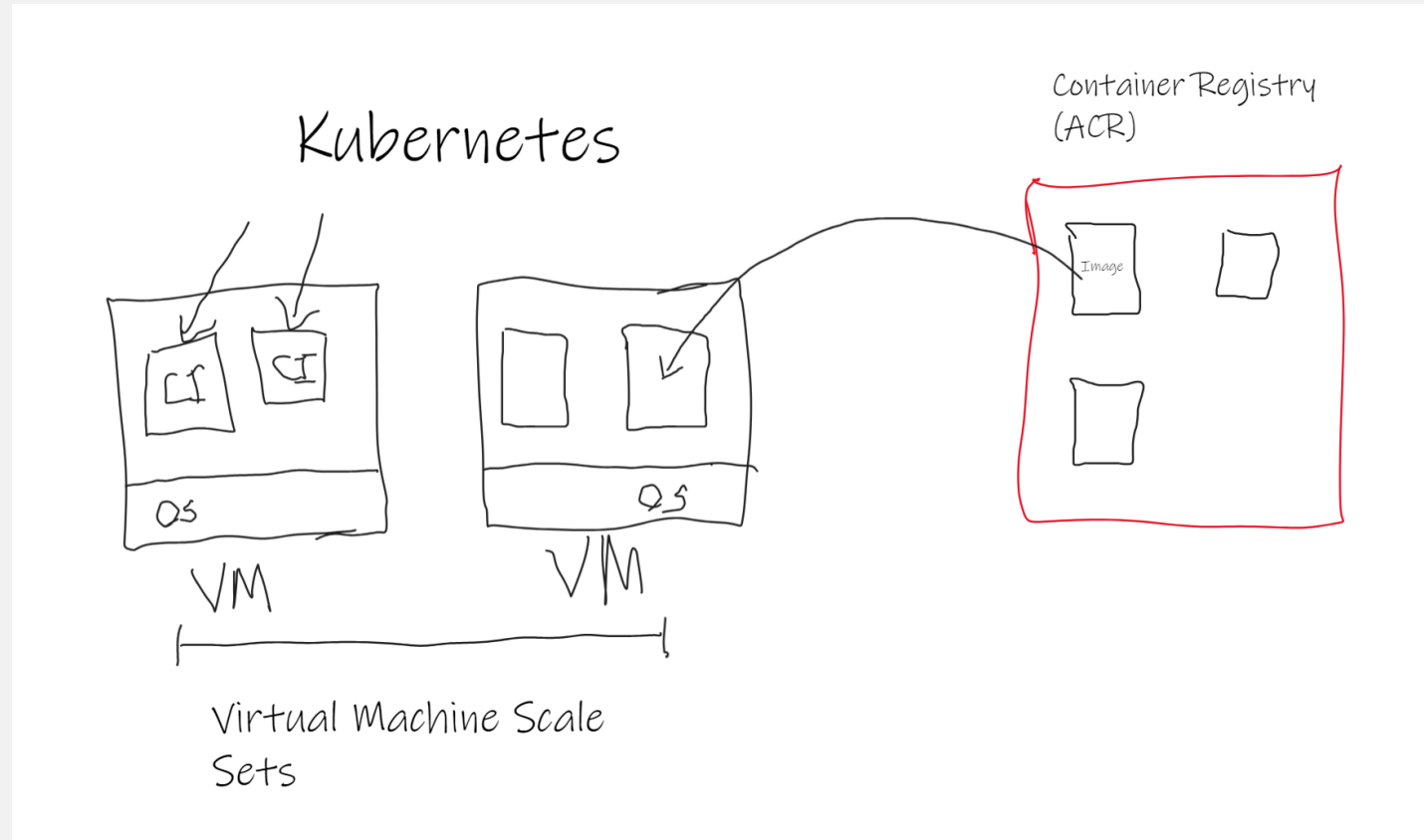
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# What are Kubernetes

*Kubernetes is a container orchestration system for automating software deployment, scaling, and management*



# *Purpose of Containerization*

- 1. Isolation of Runtime Environments/Portability*
- 2. Scalability*
- 3. Efficiency of Resources*
- 4. Easy Deployment*

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- *Data Privacy*
  - *Latency*
  - *Migration*
  - *Resource Overprovisioning*
  - *Costs for Large Companies*
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**Challenges/Security Concerns**

# *How Can Today's Session be Beneficial to You*

- 1. Understanding your hosting options when creating an application*
- 2. Getting a fundamental overview of what cloud computing concepts are*
- 3. Knowing when to use the cloud/what the benefits are*
- 4. Gaining insight on how servers and hardware works*



*Questions?*

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*Thank you!*

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