

What is Cloud Computing?



- Cloud computing is the on-demand delivery of compute power, database storage, applications, and other IT resources
- Through a cloud services platform with pay-as-you-go pricing
- You can provision exactly the right type and size of computing resources you need
- You can access as many resources as you need, almost instantly
- Simple way to access servers, storage, databases and a set of application services
- Amazon Web Services owns and maintains the network-connected hardware required for these application services, while you provision and use what you need via a web application.

The Deployment Models of the Cloud

Private Cloud:

- Cloud services used by a single organization, not exposed to the public.
- Complete control
- Security for sensitive applications
- Meet specific business needs



Public Cloud:

- Cloud resources owned and operated by a third-party cloud service provider delivered over the Internet.
- Six Advantages of Cloud Computing



Hybrid Cloud:

- Keep some servers on premises and extend some capabilities to the Cloud
- Control over sensitive assets in your private infrastructure
- Flexibility and cost-effectiveness of the public cloud



The Five Characteristics of Cloud Computing

- On-demand self service:
 - Users can provision resources and use them without human interaction from the service provider
- Broad network access:
 - Resources available over the network, and can be accessed by diverse client platforms
- Multi-tenancy and resource pooling:
 - Multiple customers can share the same infrastructure and applications with security and privacy
 - Multiple customers are serviced from the same physical resources
- Rapid elasticity and scalability:
 - Automatically and quickly acquire and dispose resources when needed
 - Quickly and easily scale based on demand
- Measured service:
 - Usage is measured, users pay correctly for what they have used

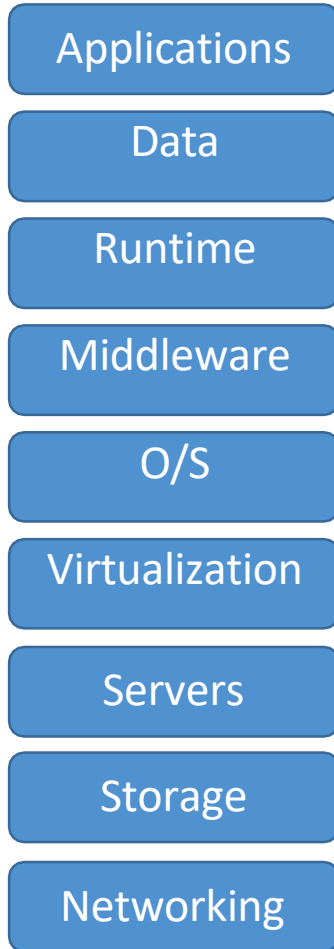
Six Advantages of Cloud Computing

- Trade capital expense (CAPEX) for operational expense (OPEX)
 - Pay On-Demand: don't own hardware
 - Reduced Total Cost of Ownership (TCO) & Operational Expense (OPEX)
- Benefit from massive economies of scale
 - Prices are reduced as AWS is more efficient due to large scale
- Stop guessing capacity
 - Scale based on actual measured usage
- Increase speed and agility
- Stop spending money running and maintaining data centers
- Go global in minutes: leverage the AWS global infrastructure

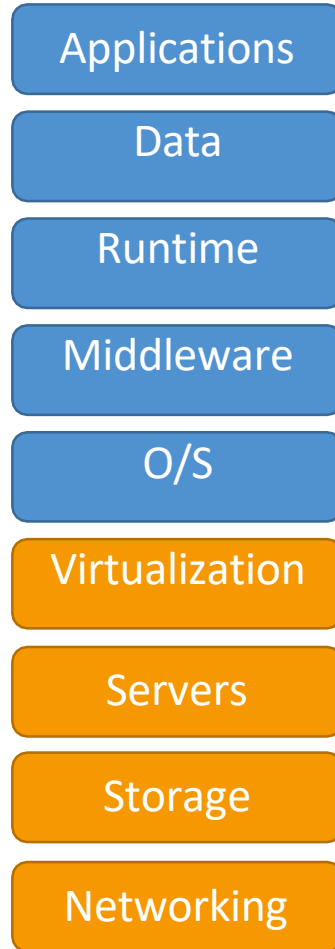
Types of Cloud Computing

- Infrastructure as a Service (IaaS)
 - Provide building blocks for cloud IT
 - Provides networking, computers, data storage space
 - Highest level of flexibility
 - Easy parallel with traditional on-premises IT
- Platform as a Service (PaaS)
 - Removes the need for your organization to manage the underlying infrastructure
 - Focus on the deployment and management of your applications
- Software as a Service (SaaS)
 - Completed product that is run and managed by the service provider

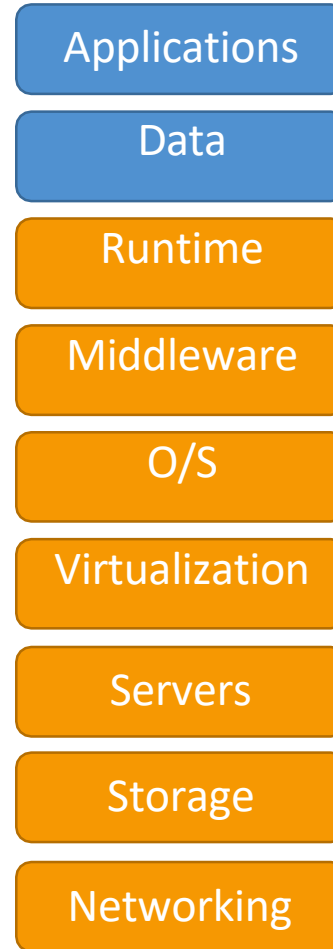
On-premises



Infrastructure as a Service (IaaS)



Platform as a Service (PaaS)



Software as a Service (SaaS)



Managed by you

Managed by others

Example of Cloud Computing Types

- Infrastructure as a Service:
 - Amazon EC2 (on AWS)
 - GCP, Azure, Digital Ocean,
- Platform as a Service:
 - Elastic Beanstalk (on AWS)
- Software as a Service:
 - Many AWS services (ex: Rekognition for Machine Learning)
 - Google Apps (Gmail), Dropbox, Zoom



AWS Cloud Use Cases

- AWS enables you to build sophisticated, scalable applications
- Applicable to a diverse set of industries
- Use cases include
 - Enterprise IT, Backup & Storage, Big Data analytics
 - Website hosting, Mobile & Social Apps
 - Gaming



AWS Global Infrastructure

- AWS Regions
- AWS Availability Zones
- AWS Data Centers
- AWS Edge Locations / Points of Presence
- <https://infrastructure.aws/>



AWS Regions

- AWS has Regions all around the world
- Names can be us-east-1, eu-west-3 ...
- A region is a cluster of data centers
- Most AWS services are region-scoped



<https://aws.amazon.com/about-aws/global-infrastructure/>

US East (N. Virginia) us-east-1

US East (Ohio) us-east-2

US West (N. California) us-west-1

US West (Oregon) us-west-2

Africa (Cape Town) af-south-1

Asia Pacific (Hong Kong) ap-east-1

Asia Pacific (Mumbai) ap-south-1

Asia Pacific (Seoul) ap-northeast-2

Asia Pacific (Singapore) ap-southeast-1

Asia Pacific (Sydney) ap-southeast-2

Asia Pacific (Tokyo) ap-northeast-1

Canada (Central) ca-central-1

Europe (Frankfurt) eu-central-1

Europe (Ireland) eu-west-1

Europe (London) eu-west-2

Europe (Paris) eu-west-3

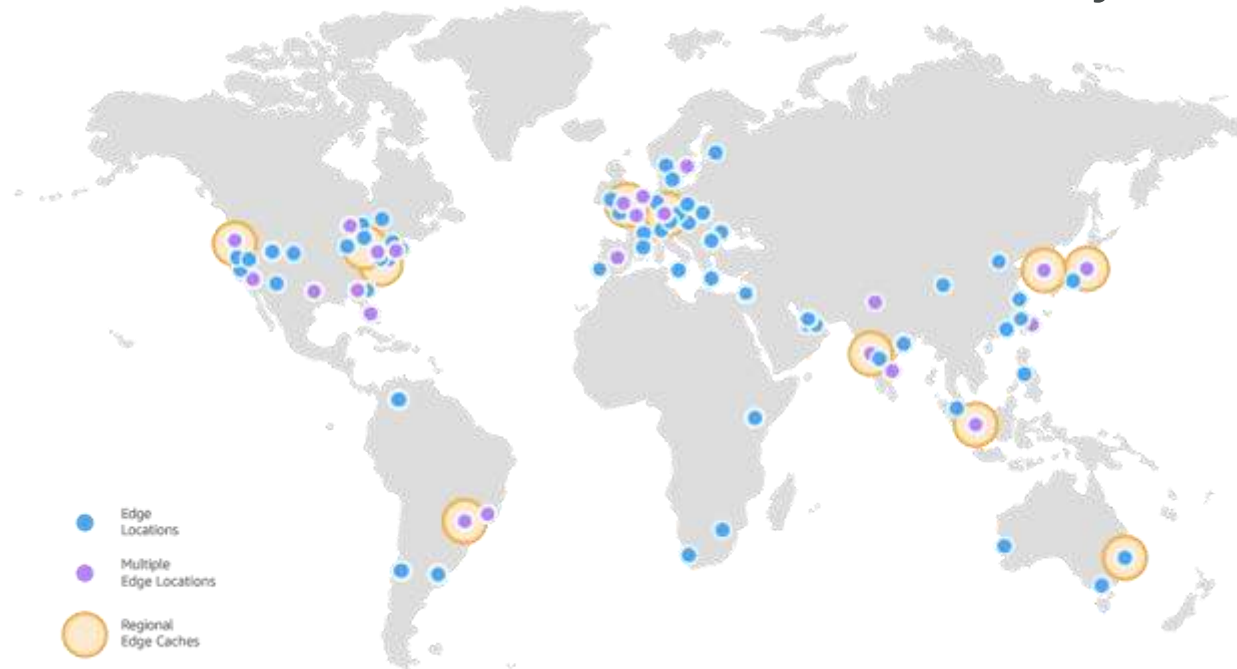
Europe (Stockholm) eu-north-1

Middle East (Bahrain) me-south-1

South America (São Paulo) sa-east-1

AWS Points of Presence (Edge Locations)

- Amazon has 216 Points of Presence (205 Edge Locations & 11 Regional Caches) in 84 cities across 42 countries
- Content is delivered to end users with lower latency



<https://aws.amazon.com/cloudfront/features/>