

CLOUD COMPUTING BASICS

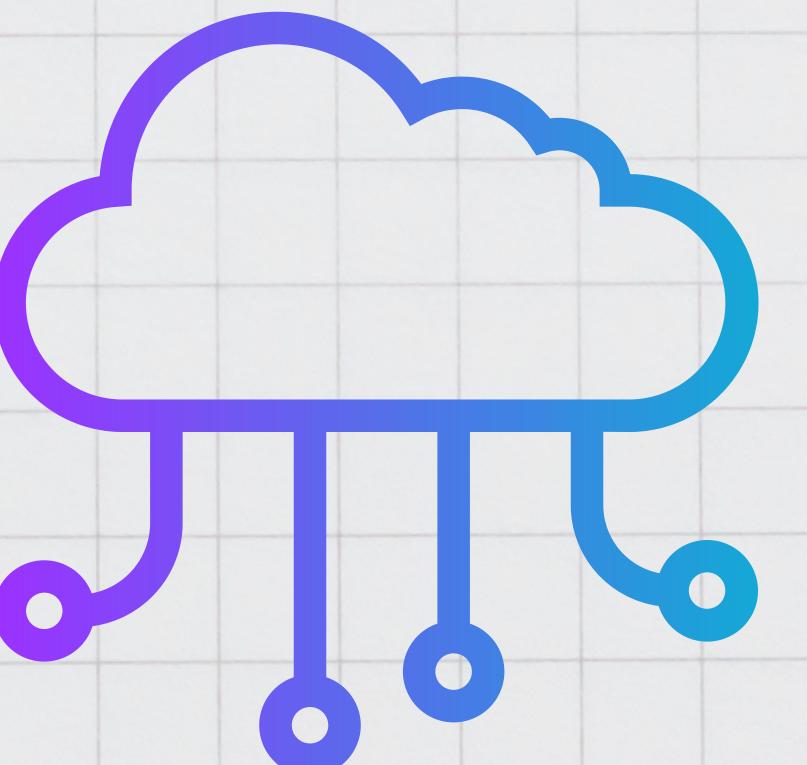


CLOUD COMPUTING WITH aws



From Zero to One

LEC - 1



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CLOUD COMPUTING BASICS

WHAT IS CLOUD COMPUTING ?

Cloud computing is the on-demand availability of computer system resources, especially data storage and computing power, without direct active management by the user. Large clouds often have functions distributed over multiple locations, each of which is a data center.





CLOUD COMPUTING BASICS

WHY WE GO FOR CLOUD COMPUTING?

- Lower Computing Cost
- Improved Performance
- Reduced Software Cost
- Instant Software Updates
- Unlimited Storage Capacity
- Increased Data Reliability
- Device Independence and the "always on!, anywhere and any place"
- Free From Maintenance and the "no-need-to-know"

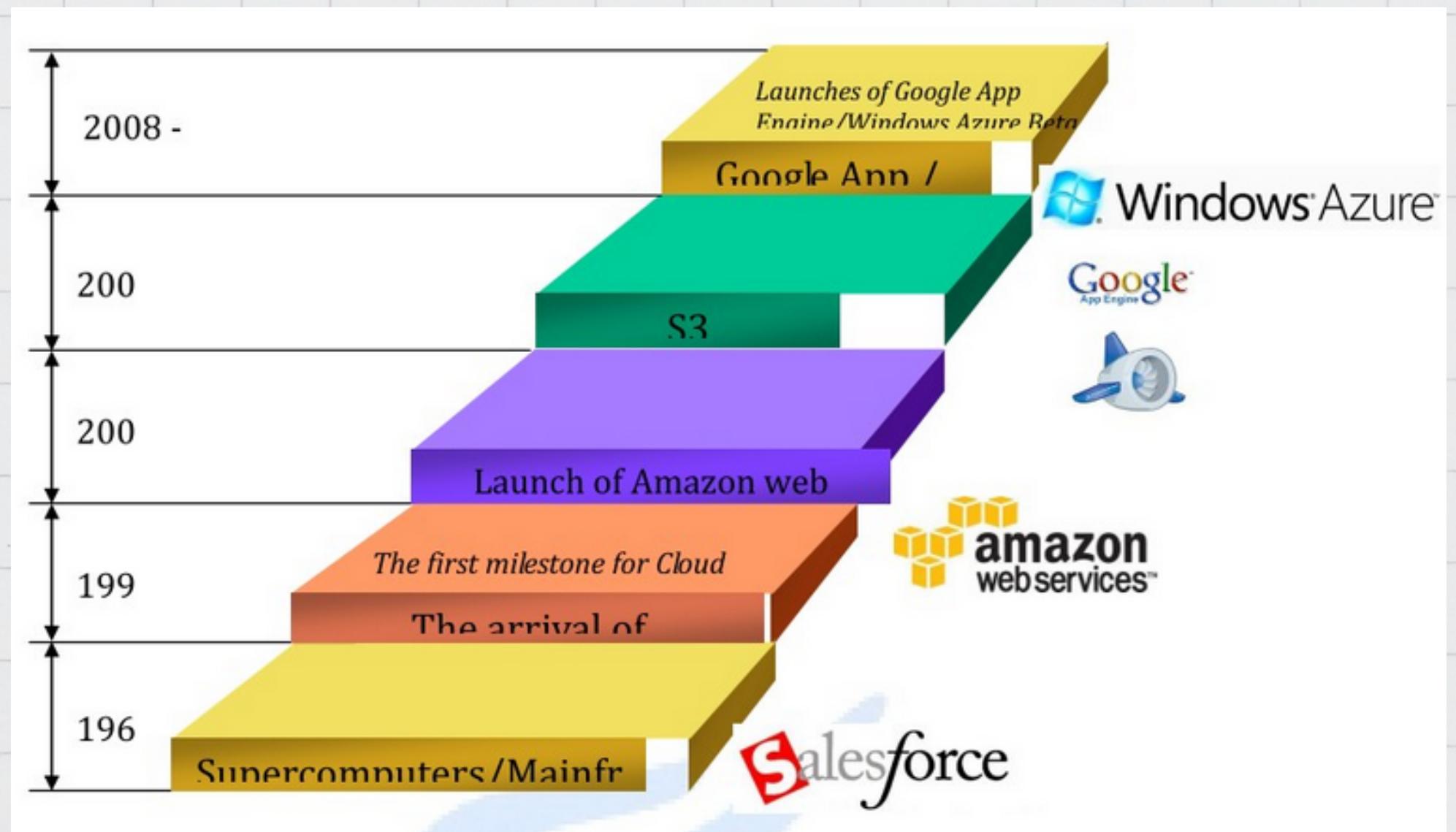


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CLOUD COMPUTING BASICS

HISTORY AND ORIGINS OF CLOUD COMPUTING

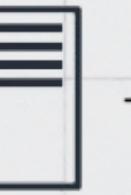
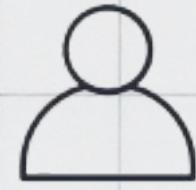
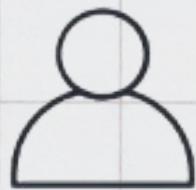


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THE EVOLUTION OF CLOUD HOSTING



The Cloud



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Dedicated Server

One physical machine dedicated to single business.
Runs a single web-app/site.

Very Expensive, High Maintenance, *High Security

Virtual Private Server (VPS)

One physical machine dedicated to a single business.
The physical machine is virtualized into sub-machines
Runs multiple web-apps/sites

Better Utilization and Isolation of Resources

Shared Hosting

One physical machine, shared by hundred of businesses
Relies on most tenants under-utilizing their resources.

Very Cheap, Limited functionality, Poor Isolation

Cloud Hosting

Multiple physical machines that act as one system.
The system is abstracted into multiple cloud services

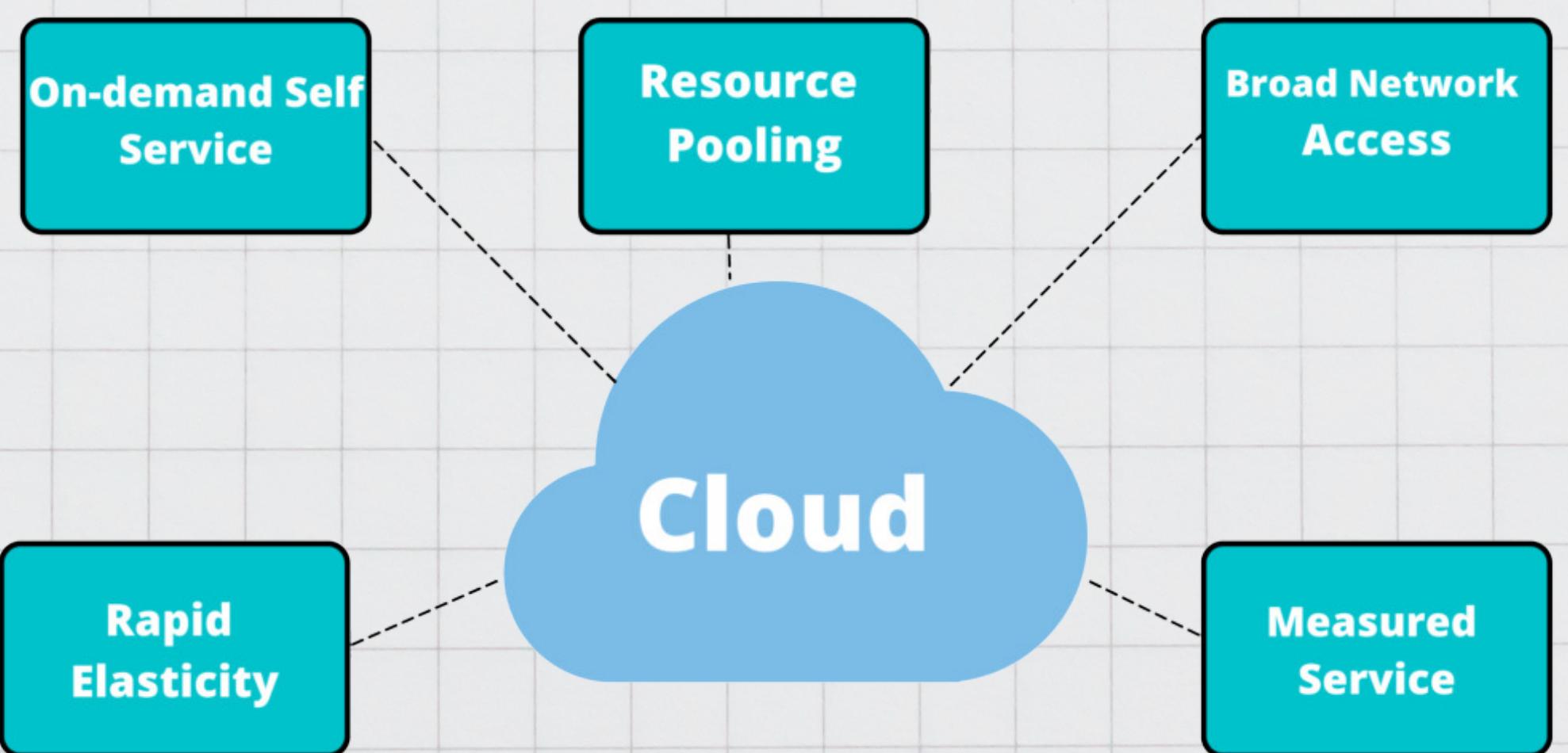
Flexible, Scalable, Secure, Cost-Effective, High Configurability





CLOUD COMPUTING BASICS

CHARACTERISTICS OF CLOUD COMPUTING



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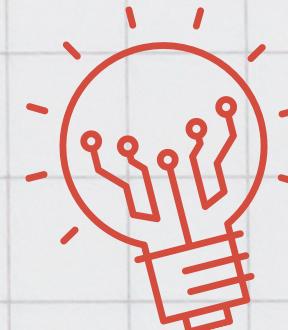


CLOUD COMPUTING BASICS

ON-DEMAND SELF-SERVICE

On-demand self-service is a key characteristic of cloud computing that allows users to independently access and manage computing resources without requiring human intervention.

- Ubiquitous network access
- Resource pooling (advanced virtualization)
- Rapid elasticity
- Flexible pricing - Pay per use



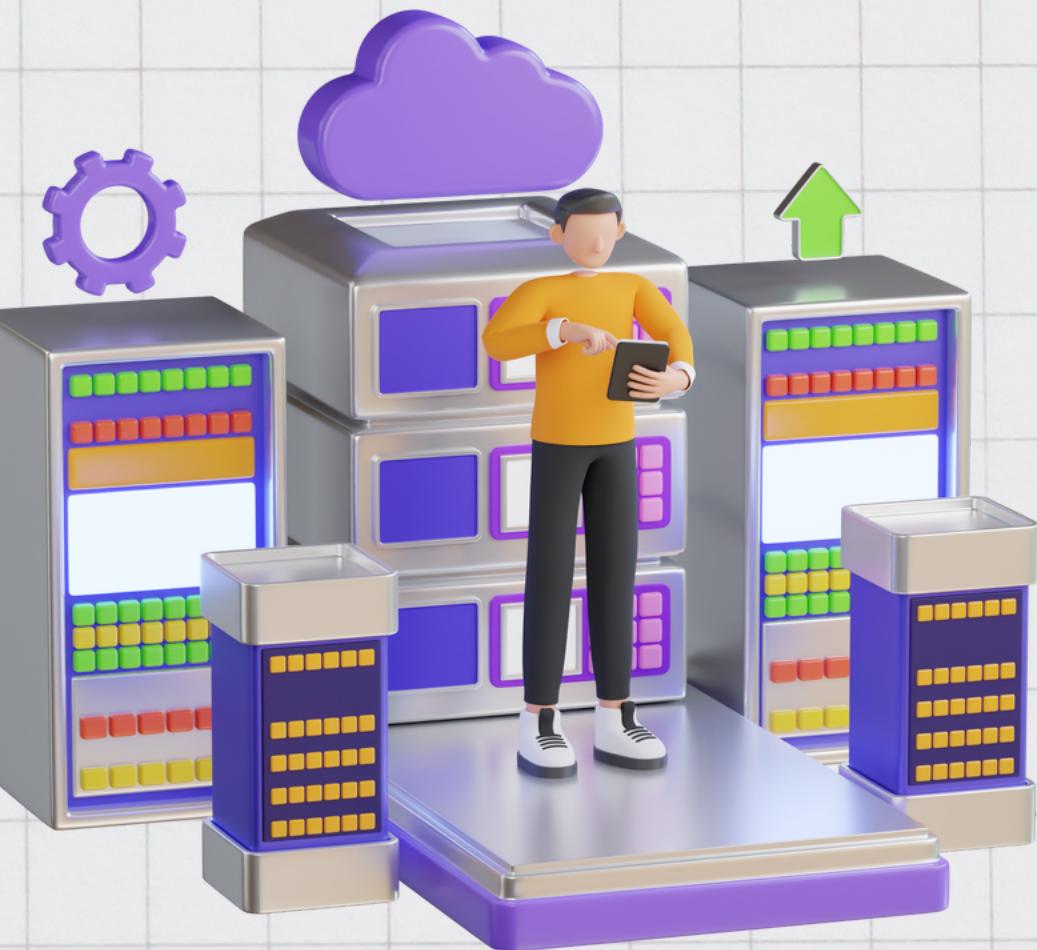


RESOURCE POOLING



Resource pooling refers to the practice of combining and sharing resources across multiple individuals, teams, or organizations.

- Efficiency
- Cost Savings
- Scalability
- Flexibility
- Risk mitigation



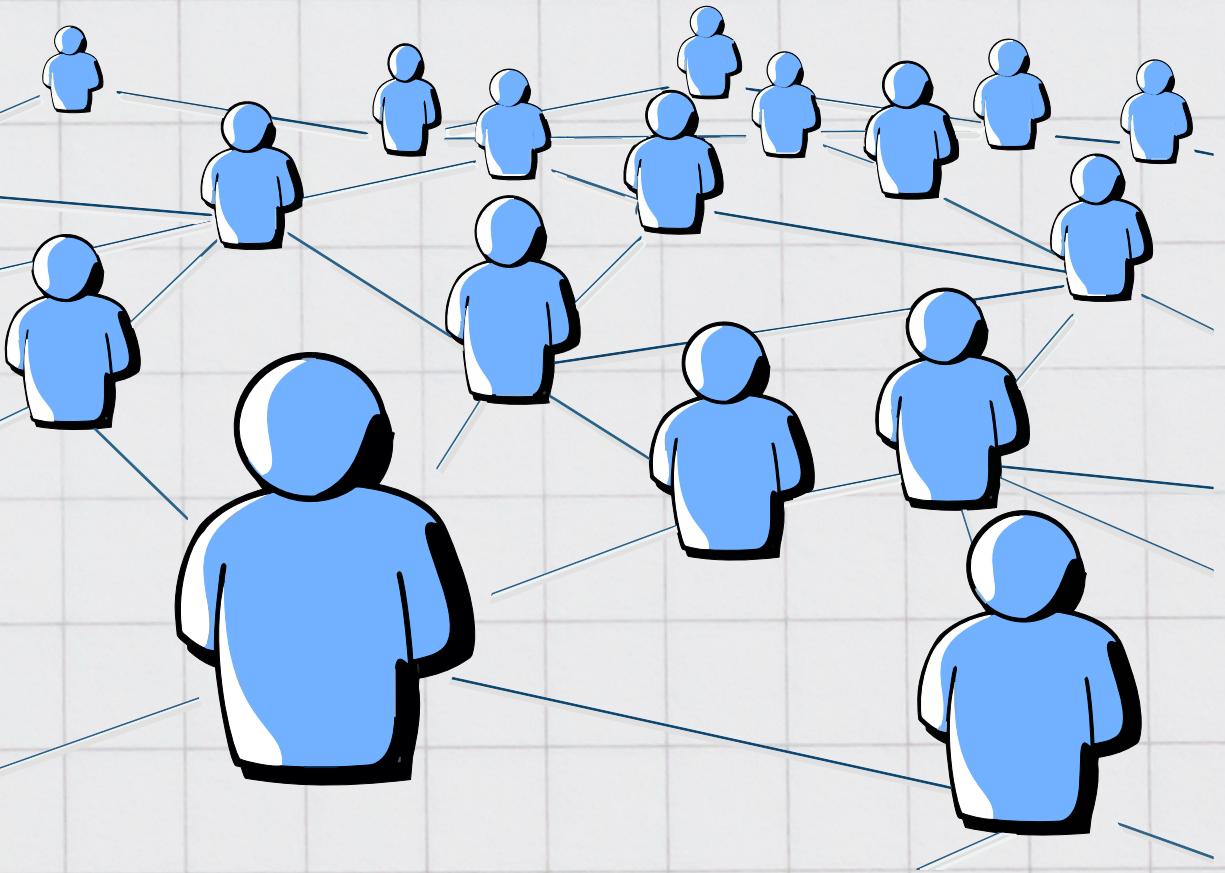
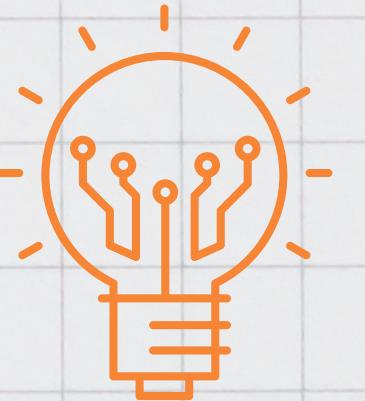


CLOUD COMPUTING BASICS

BROAD NETWORK ACCESS

Broad Network Access is a fundamental characteristic of cloud computing that enables ubiquitous access to cloud services over various network channels and devices.

- Device compatibility
- Network connectivity
- Location independence
- Multi-tenant architecture



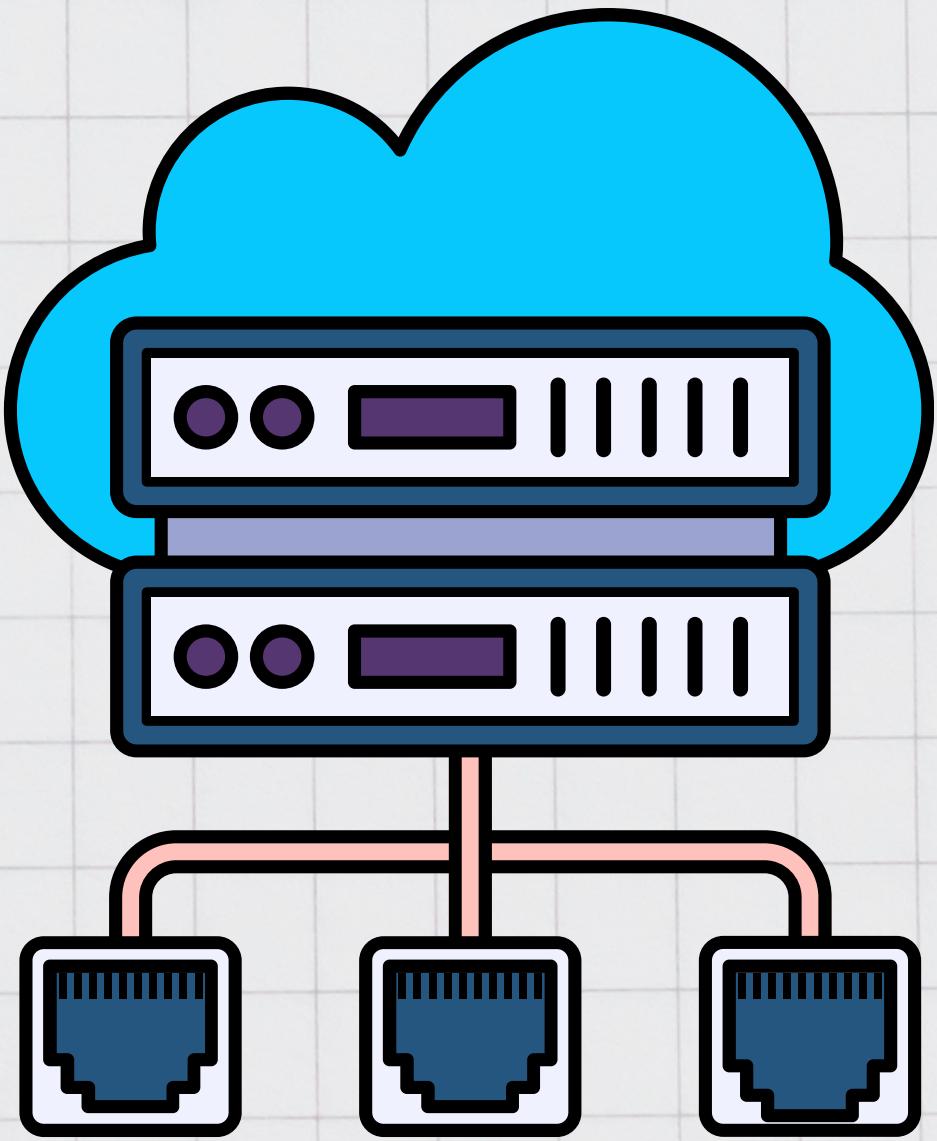


RAPID ELASTICITY

Rapid elasticity is a key characteristic of cloud computing that enables the dynamic scaling of computing resources to meet changing workload demands.



- On-demand resource allocation
- Automatic provisioning
- Scalability
- Pay-per-use model
- Time and cost savings
- Continuous availability



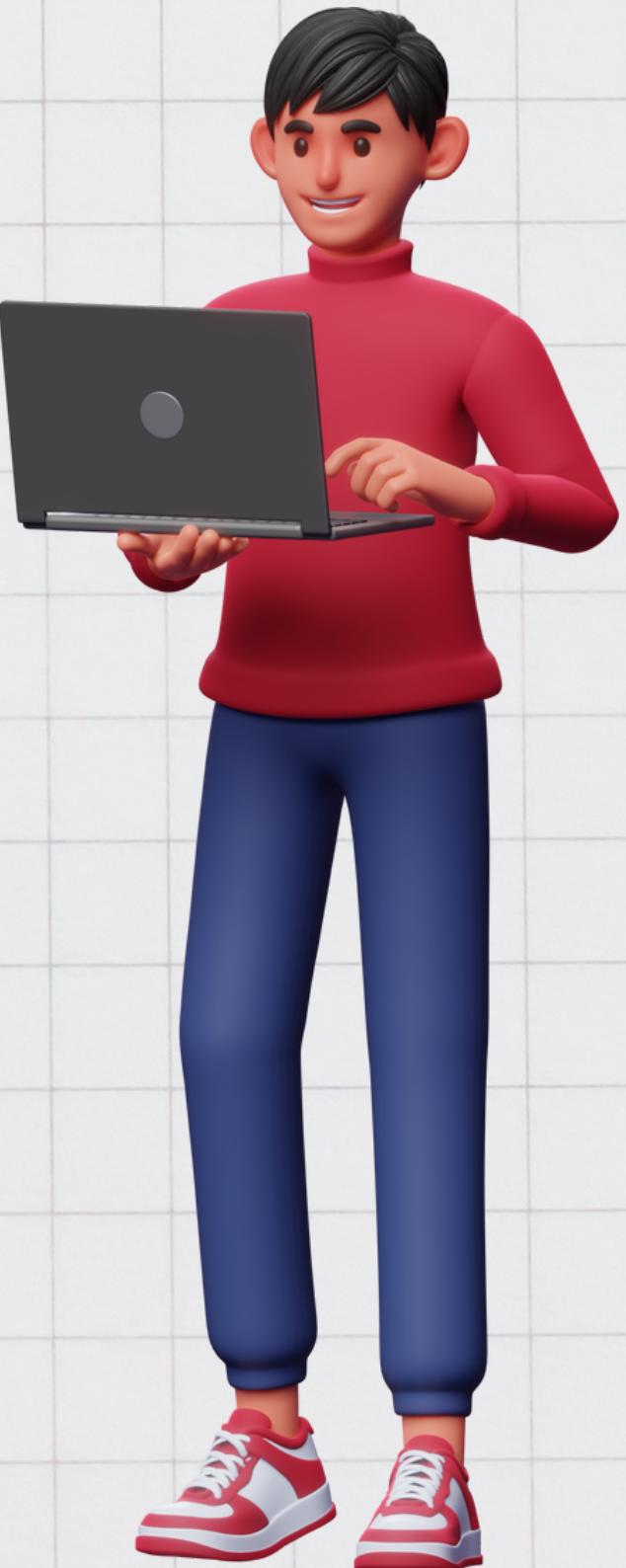
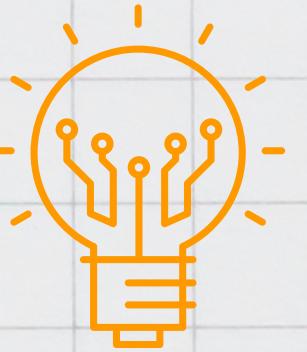


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MEASURED SERVICE

Measured service is a characteristic of cloud computing that enables the monitoring, control, and reporting of resource usage to facilitate transparency, billing, and optimization.

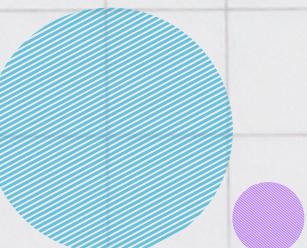
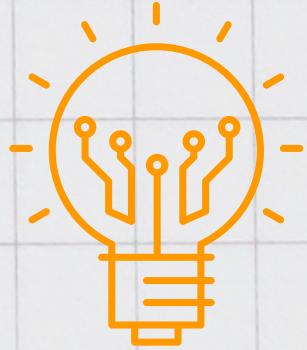
- Resource monitoring
- Usage tracking
- Cost transparency
- Capacity planning
- Billing and invoicing





BENEFITS OF CLOUD COMPUTING

- **Cost-effective** : You pay for what you consume, no up-front cost. Pay-as-you-go (PAYG) thousands of customers sharing the cost of the resource
- **Global** : Launch workloads anywhere in the world, Just choose a region
- **Secure** : Cloud provider takes care of physical security. Cloud services can b secure by default or you have the ability to configure access down to granular level.
- **Reliable** : data backup, disaster recovery, and data replication, and fault tolerance.
- **Scalable** : Increase or decrease resources and services based on demand
- **Elastic** : Automate scaling during spikes and drop in demand





CLOUD COMPUTING BASICS

TYPES OF CLOUD COMPUTING



SaaS (Software as a Service)

For Customers

A product that is run and managed by the service provider

*Don't worry about how the service is maintained.
It just works and remains available.*

PaaS (Platform as a Service)

For Developers

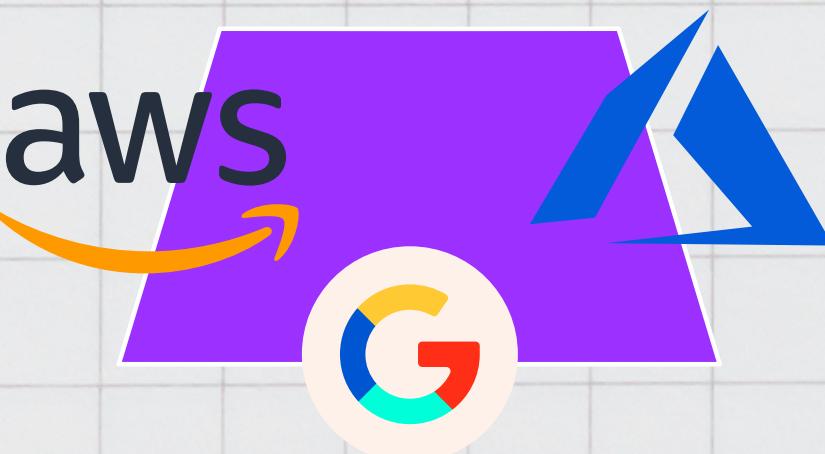
Focus on the deployment and management of your apps.

Don't worry about provisioning, configuring or understanding the hardware or OS.

IaaS (Infrastructure as a Service)

The basic building blocks for cloud IT. Provides access to networking features, computers and data storage space.

Don't worry about IT staff, data centers and hardware.





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TYPES OF CLOUD COMPUTING RESPONSIBILITIES

On-Premise



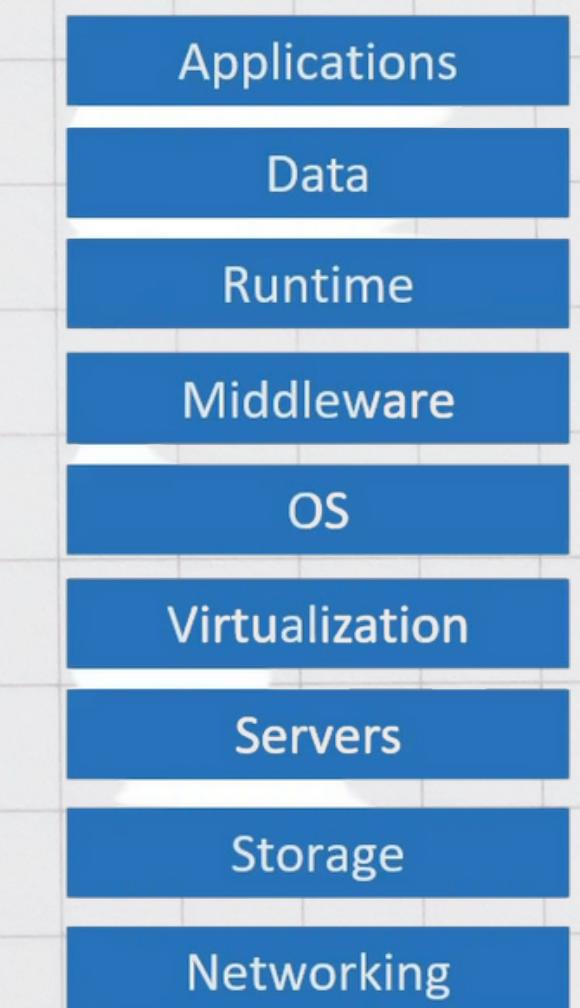
Infrastructure as a Service



Platform as a Service



Software as a Service



Legend:

Customer is Responsible

CSP is Responsible



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CLOUD COMPUTING BASICS

CLOUD DEPLOYMENT MODELS

PUBLIC CLOUD

- Owned and managed by service provider
- Made available to the general public or large industry group

PRIVATE CLOUD

- Operated solely for an organization
- May be managed by the organization or a third party

HYBRID CLOUD

- Composition of two or more clouds (private, community, or public) bound together by standardized or proprietary technology that enables data and application portability



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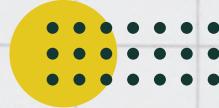
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CLOUD DEPLOYMENT MODELS



| | Cost | Security | Level of Configuration | Technical Knowledge |
|---------------|---|---|--|--|
| Public Cloud | 👍 Most cost-effective | 👍 Security Controls by Default 👎 Might not meet security requirements | 👎 Limited based on what the Cloud Service Provider exposes to you. | 👍 You don't need in-depth knowledge of underlying infrastructure |
| Private Cloud | 👎 Most expensive | 👎 no guarantee its secure 👍 can meet any security compliance requirement if you put in the work. | 👍 You can configure the infrastructure however you like. | 👎 You need to know in-depth how to configure all levels of your infrastructure |
| Hybrid | 👍👎 Could be more cost-effective based on what you offload to the cloud. | 👎 you now have to secure your connection to the cloud 👍 can meet all security requirements | 👍 You get the best of both worlds. | 👎 You need to know in-depth how to configure all levels of your infrastructure and know the CSPs services. |





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THANKS FOR WATCHING



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