alphaus
CLOUD SIMPLIFIED

Introduction to Cloud Computing

About me

- CTO of Alphaus, Inc.
- Proud Boholano (taga Cortes)
- https://flowerinthenight.com/ for more info.

What is cloud computing?

alphaus
CLOUD SIMPLIFIED

alphaus
CLOUD SIMPLIFIED

What is cloud computing?

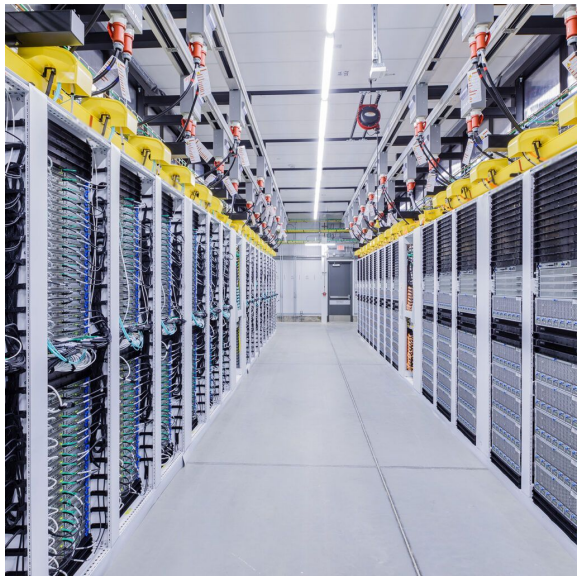
Cloud computing is the **on-demand availability of computing resources** (compute, storage, databases, etc.), **as services over the internet**. It eliminates the need for individuals and businesses to self-manage physical resources themselves, and only pay for what they use.

alphaus
CLOUD SIMPLIFIED

What is cloud computing?

Instead of managing your own racks of servers at home, or in your office;

What is cloud computing?



You pay somebody else to run those resources for you.

See also FB's DC here.

What’s in it for me? Why would I care?

alphaus
CLOUD SIMPLIFIED

What's in it for me? Why would I care?

- Valuable if you're planning to start your own startup.

alphaus
CLOUD SIMPLIFIED

What's in it for me? Why would I care?

- Valuable if you're planning to start your own startup.
- Employment opportunities.

alphaus
CLOUD SIMPLIFIED

What's in it for me? Why would I care?

- Valuable if you're planning to start your own startup.
- Employment opportunities.
- It's ubiquitous in the IT landscape. Valuable knowledge.

alphaus
CLOUD SIMPLIFIED

What's in it for me? Why would I care?

- Valuable if you're planning to start your own startup.
- Employment opportunities.
- It's ubiquitous in the IT landscape. Valuable knowledge.
- Reference on how to design systems, and scale.

alphaus
CLOUD SIMPLIFIED

What's in it for me? Why would I care?

- Valuable if you're planning to start your own startup.
- Employment opportunities.
- It's ubiquitous in the IT landscape. Valuable knowledge.
- Reference on how to design systems, and scale.
- Access to modern technology otherwise inaccessible.

Benefits of cloud computing

alphaus
CLOUD SIMPLIFIED

alphaus
CLOUD SIMPLIFIED

Benefits of cloud computing

Costs. Cloud computing eliminates the capital expense of buying hardware and software and setting up and running onsite datacenters - the racks of servers, the round-the-clock electricity for power and cooling, and the IT experts for managing the infrastructure.

Benefits of cloud computing

Costs. Cloud computing eliminates the capital expense of buying hardware and software and setting up and running onsite datacenters - the racks of servers, the round-the-clock electricity for power and cooling, and the IT experts for managing the infrastructure.

Flexibility. Businesses and their users can access cloud services from anywhere with an internet connection, scaling services up or down as needed.

alphaus
CLOUD SIMPLIFIED

Benefits of cloud computing

Costs. Cloud computing eliminates the capital expense of buying hardware and software and setting up and running onsite datacenters - the racks of servers, the round-the-clock electricity for power and cooling, and the IT experts for managing the infrastructure.

Flexibility. Businesses and their users can access cloud services from anywhere with an internet connection, scaling services up or down as needed.

Speed. Most cloud computing services are provided self service and on demand, so even vast amounts of computing resources can be provisioned in minutes, typically with just a few mouse clicks.

Benefits of cloud computing

Security. Many cloud providers offer a broad set of policies, technologies, and controls that strengthen your security posture overall, helping protect your data, apps, and infrastructure from potential threats.

alphaus
CLOUD SIMPLIFIED

Benefits of cloud computing

Security. Many cloud providers offer a broad set of policies, technologies, and controls that strengthen your security posture overall, helping protect your data, apps, and infrastructure from potential threats.

Reliability. Cloud computing makes data backup, disaster recovery, and business continuity easier and less expensive because data can be mirrored at multiple redundant sites on the cloud provider's network.

Disadvantages of cloud computing

Disadvantages of cloud computing

Vendor lock-in. Organizations may find it difficult to migrate their services from one vendor to another. Differences between vendor platforms may create difficulties in migrating from one cloud platform to another, which could equate to additional costs and configuration complexities.

alphaus
CLOUD SIMPLIFIED

Disadvantages of cloud computing

Vendor lock-in. Organizations may find it difficult to migrate their services from one vendor to another. Differences between vendor platforms may create difficulties in migrating from one cloud platform to another, which could equate to additional costs and configuration complexities.

Downtime. Since cloud computing systems are internet-based, service outages are always an unfortunate possibility and can occur for any reason, at any given time.

Disadvantages of cloud computing

Privacy. Storing data and important files on external service providers always opens up risks. Any discussion involving data must address security and privacy, especially when it comes to managing sensitive data.

Disadvantages of cloud computing

Privacy. Storing data and important files on external service providers always opens up risks. Any discussion involving data must address security and privacy, especially when it comes to managing sensitive data.

Limited control. Since the cloud infrastructure is entirely owned, managed, and monitored by the cloud service provider, cloud users may find they have less control over the function and execution of their services.

Disadvantages of cloud computing

Complex pricing. With hundreds of services available, each with different pricing and discount schemes, it's easy to get overwhelmed with how much you need to pay. This is the reason why companies like Alphaus exist; to help other companies make sense of their cloud spending. (Had to do the plug.)

Types of cloud computing

alphaus
CLOUD SIMPLIFIED

alphaus
CLOUD SIMPLIFIED

Types of cloud computing

Public Cloud - Owned and operated by third-party cloud providers. The big three are AWS, GCP, and Azure. There are also other providers such as Alibaba, Oracle, IBM, DigitalOcean, Salesforce, among others.

alphaus
CLOUD SIMPLIFIED

Types of cloud computing

Public Cloud - Owned and operated by third-party cloud providers. The big three are AWS, GCP, and Azure. There are also other providers such as Alibaba, Oracle, IBM, DigitalOcean, Salesforce, among others.

Private Cloud - Also called “on-premises” or “on-prem”. These are private resources built, managed, and owned by a single organization and privately hosted in their own data centers.

alphaus
CLOUD SIMPLIFIED

Types of cloud computing

Public Cloud - Owned and operated by third-party cloud providers. The big three are AWS, GCP, and Azure. There are also other providers such as Alibaba, Oracle, IBM, DigitalOcean, Salesforce, among others.

Private Cloud - Also called “on-premises” or “on-prem”. These are private resources built, managed, and owned by a single organization and privately hosted in their own data centers.

Hybrid Cloud - Combines public and private clouds, bound together by technology that allows data and applications to be shared between them.

Types of cloud services

alphaus
CLOUD SIMPLIFIED

Types of cloud services

IaaS - Allows control over infrastructure such as compute, storage, and network.

alphaus
CLOUD SIMPLIFIED

Types of cloud services

IaaS - Allows control over infrastructure such as compute, storage, and network.

PaaS - Abstracts hardware and software resources into platforms, allowing more focus on app development without the burden of maintaining infrastructure.

alphaus
CLOUD SIMPLIFIED

Types of cloud services

IaaS - Allows control over infrastructure such as compute, storage, and network.

PaaS - Abstracts hardware and software resources into platforms, allowing more focus on app development without the burden of maintaining infrastructure.

SaaS - Delivers the whole application stack as a service.

alphaus
CLOUD SIMPLIFIED

Types of cloud services

IaaS - Allows control over infrastructure such as compute, storage, and network.

PaaS - Abstracts hardware and software resources into platforms, allowing more focus on app development without the burden of maintaining infrastructure.

SaaS - Delivers the whole application stack as a service.

Serverless - Somewhat similar to PaaS, but abstracted up to function or trigger level. Usually event-driven.

alphaus
CLOUD SIMPLIFIED

Examples of cloud services

alphaus
CLOUD SIMPLIFIED

Examples of cloud services

	aws	Azure	Google Cloud
Compute	EC2	Azure VM	Compute Engine

alphaus
CLOUD SIMPLIFIED

Examples of cloud services

			
Compute	EC2	Azure VM	Compute Engine
Storage	S3	Blob Storage	Cloud Storage

alphaus
CLOUD SIMPLIFIED

Examples of cloud services

			
Compute	EC2	Azure VM	Compute Engine
Storage	S3	Blob Storage	Cloud Storage
Database	Aurora, RDS	Azure SQL	Spanner, Cloud SQL

alphaus
CLOUD SIMPLIFIED

Examples of cloud services

			
Compute	EC2	Azure VM	Compute Engine
Storage	S3	Blob Storage	Cloud Storage
Database	Aurora, RDS	Azure SQL	Spanner, Cloud SQL
Warehouse	Redshift	Synapse	BigQuery

alphaus
CLOUD SIMPLIFIED

Examples of cloud services

			
Compute	EC2	Azure VM	Compute Engine
Storage	S3	Blob Storage	Cloud Storage
Database	Aurora, RDS	Azure SQL	Spanner, Cloud SQL
Warehouse	Redshift	Synapse	BigQuery
Serverless	Lambda	Functions	Functions

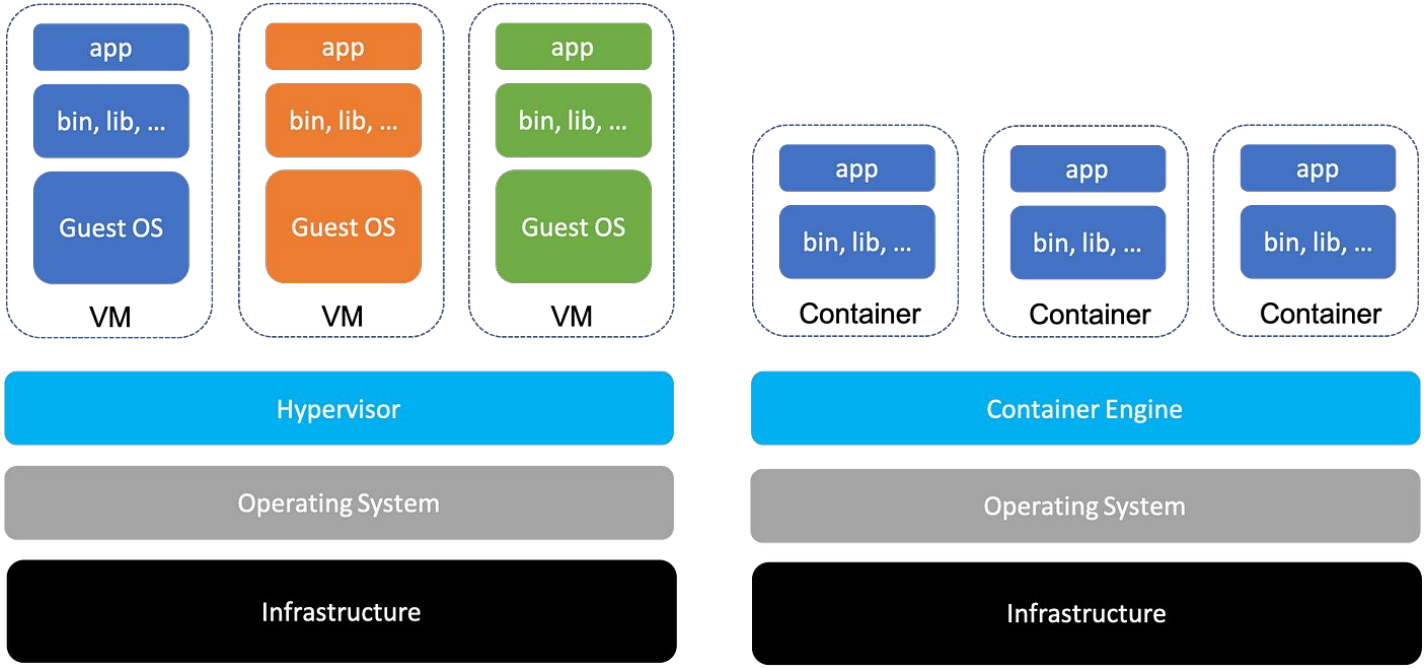
alphaus
CLOUD SIMPLIFIED

Examples of cloud services

	aws	Azure	Google Cloud
Compute	EC2	Azure VM	Compute Engine
Storage	S3	Blob Storage	Cloud Storage
Database	Aurora, RDS	Azure SQL	Spanner, Cloud SQL
Warehouse	Redshift	Synapse	BigQuery
Serverless	Lambda	Functions	Functions
AI/ML	Bedrock, Q	OpenAI, ChatGPT	Vertex AI, Gemini

alphaus
CLOUD SIMPLIFIED

Virtualization



(a) Virtual Machine architecture

(b) Container architecture

Demo

https://github.com/alphauslabs/20241106-intro-cloud/