

Cloud Computing



MODULE CODE: CIS435

MODULE NAME: CLOUD COMPUTING

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What is Cloud Computing?

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Cloud computing is Internet based computing where virtual shared servers provide software, infrastructure, platform, devices and other resources and hosting to customers on a pay-as-you-use basis.

Access to Cloud Computing-1

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All information that a digitized system has to offer is provided as a service in the cloud computing model. Users can access these services available on the "Internet cloud" without having any previous know-how on managing the resources involved.

Access to Cloud Computing-2

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History

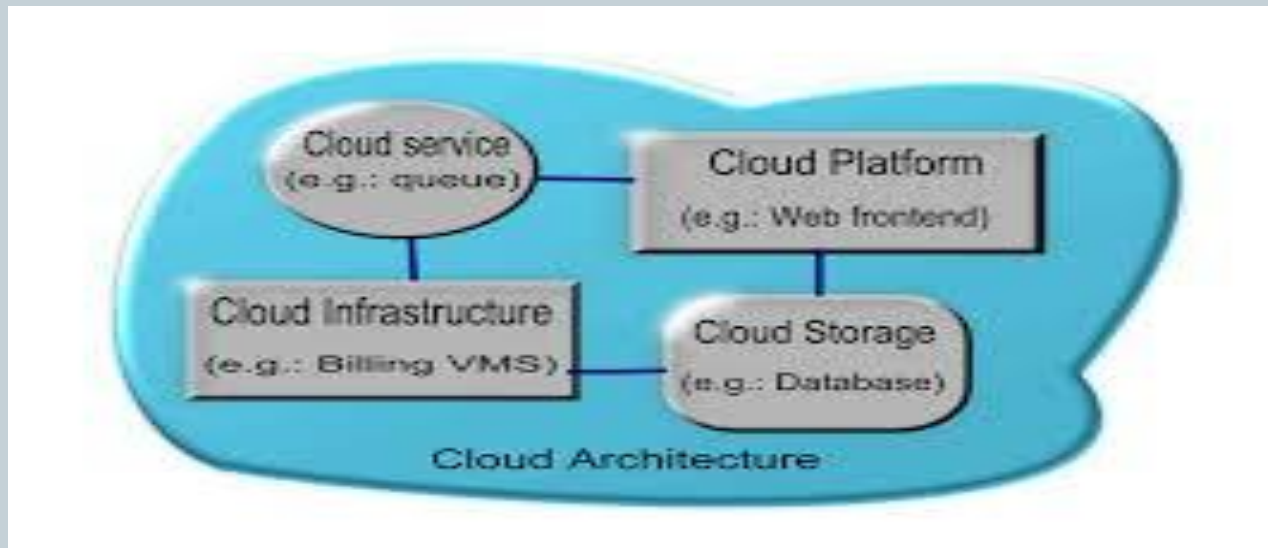
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- Concept originated from telecommunication companies changing to VPN
- 1999:Salesforce. com - Delivery of applications via web
- 2002: Amazon launches Amazon Web Services (AWS)
- 2006: Google Docs, Amazon Elastic Compute Cloud (EC2)
- 2008: Eucalyptus
- 2009: Microsoft Azure

Architecture

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- Cloud architecture, the systems architecture of the software systems involved in the delivery of cloud computing, typically involves multiple cloud components communicating with each other over application programming interfaces, usually web services.



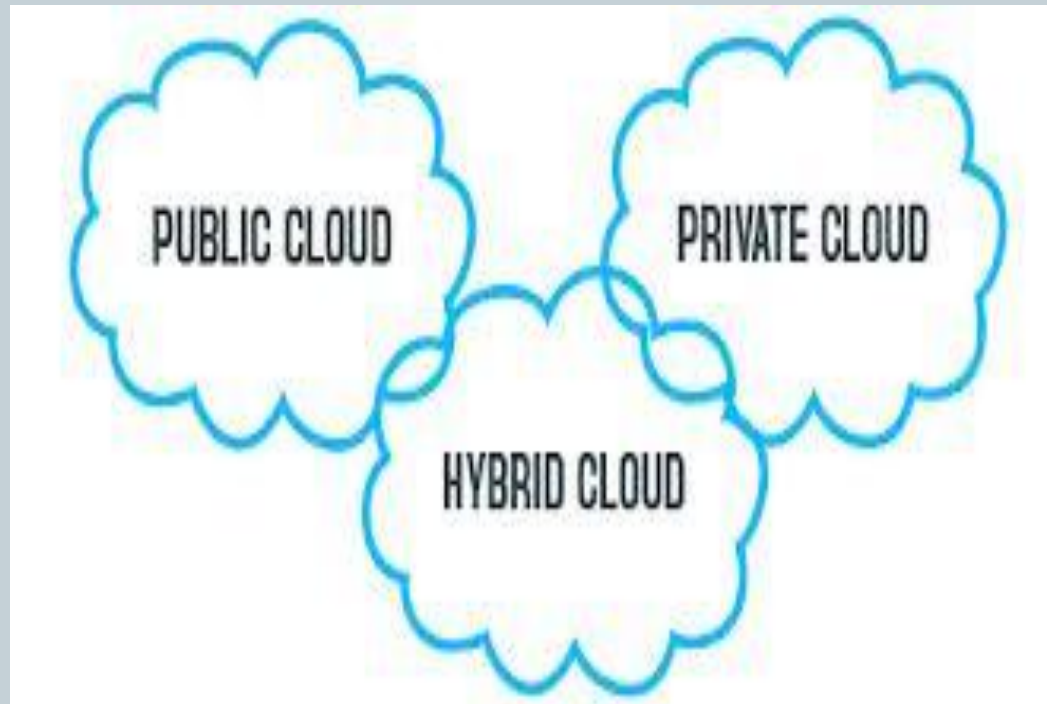
Cloud Components

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- **SaaS (software as a service):** SaaS refers to software that's made available as a web-based service.
- **Utility computing:** The predecessor of cloud computing, utility computing provides the ability to access storage and virtual servers on demand.
- **Cloud-based web services:** Similar to SaaS, web services in the cloud allow you to offer services online, such as credit card processing services, employee payroll processing or viewing an interactive map.
- **MSP (managed service providers):** The grandfather of cloud computing, an MSP delivers applications to IT instead of end-users.
- **IaaS (infrastructure as a service):** IaaS refers to computer infrastructure (e.g., virtualization) that's delivered as a service.

Cloud Deployment Models

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Public Cloud

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- Public clouds are made available to the general public by a service provider who hosts the cloud infrastructure. Generally, public cloud providers like Amazon AWS, Microsoft and Google own and operate the infrastructure and offer access over the Internet.
- With this model, customers have no visibility or control over where the infrastructure is located.
- It is important to note that all customers on public clouds share the same infrastructure pool with limited configuration, security protections and availability variances.

Private Cloud

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- Private cloud is cloud infrastructure dedicated to a particular organization. Private clouds allow businesses to host applications in the cloud, while addressing concerns regarding data security and control, which is often lacking in a public cloud environment.
- It is not shared with other organizations, whether managed internally or by a third-party, and it can be hosted internally or externally.

Hybrid Cloud

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- Hybrid Clouds are a composition of two or more clouds (private, or public) that remain unique entities but are bound together offering the advantages of multiple deployment models.
- In a hybrid cloud, you can leverage third party cloud providers in either a full or partial manner; increasing the flexibility of computing.
- Augmenting a traditional private cloud with the resources of a public cloud can be used to manage any unexpected surges in workload.

Summary of Deployment Models

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Cloud computing deployment models

Private

A cloud computing model in which an enterprise uses a proprietary architecture and runs cloud servers within its own data center.

CHARACTERISTICS:

- Single-tenant architecture
- On-premises hardware
- Direct control of underlying cloud infrastructure

TOP VENDORS:

HPE, VMware, Dell EMC, IBM, Red Hat, Microsoft, OpenStack

Hybrid

A cloud computing model that includes a mix of on-premises, private cloud and third-party public cloud services with orchestration between the two platforms.

CHARACTERISTICS:

- Cloud bursting capabilities
- Benefits of both public and private environments

TOP VENDORS:

A combination of both public and private cloud providers

Public

A cloud computing model in which a third-party provider makes compute resources available to the general public over the internet. With public cloud, enterprises do not have to set up and maintain their own cloud servers in house.

CHARACTERISTICS:

- Multi-tenant architecture
- Pay-as-you-go pricing model

TOP VENDORS:

AWS, Microsoft Azure, Google Cloud Platform

Advantages of Cloud Computing

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- **Increased Storage Capacity** :Increased Storage Capacity is another benefit of the cloud computing, as it can store more data as compared to a personal computer.
- **Easy to Learn and Understand**: Since people are quiet used to cloud applications like GMail, Google Docs, so anything related to the same is most likely to be understood by the users.
- **Automatic Updating** :It saves companies time and effort to update multiples server.
- **Customize Setting** :Cloud computing also allows you to customize your business applications.

Disadvantages of Cloud Computing

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- **Dependency** :One major disadvantages of cloud computing is user's dependency on the provider.
- **Risk** :Cloud computing services means taking services from remote servers.
- **Requires a Constant internet connection** :The most obvious disadvantage is that Cloud computing completely relies on network connections.
- **Security** :Security and privacy are the biggest concerns about cloud computing.
- **Migration Issue** :Migration problem is also a big concern about cloud computing.