Cloud Computing

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What is cloud computing?

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Cloud computing is a technology model that allows users to access and use computing resources (such as servers, storage, databases, networking, software) over the internet, often referred to as "the cloud." Instead of owning and maintaining physical hardware and software, users can rent or lease these resources from cloud service providers. Moving to the cloud basically means that the resources are owned and managed by a third-party provider, instead of the end-user. This means that you don’t need to worry about hard drives, main-frames, or the location of any of this hardware and software. As far as the user is concerned, they should be able to access it through the internet.

History of Cloud Computing (HCC)

Paikar

1960s - Precursors to Cloud Computing:

The notion of sharing computing resources and the evolution of time-sharing systems can be traced back to the 1960s.

1990s - Internet Boom:

As the internet became more widespread in the 1990s, companies began to explore ways to provide services and applications over the web. This led to the concept of Application Service Providers (ASPs), where companies offered software applications over the internet.

Mid-2000s - Rise of Virtualization:

Virtualization technologies became more widespread, allowing multiple virtual instances to run on a single physical machine. This made it easier to scale resources up or down based on demand.

2006 - Amazon Web Services (AWS):

Amazon launched AWS, a set of cloud computing services that allowed businesses to rent computing power and storage on a pay-as-you-go basis. This is considered a significant milestone in the history of cloud computing.

2010s - Cloud Dominance and Diversification:

Throughout the 2010s, cloud computing became a dominant paradigm for delivering computing services. Major players, including Microsoft Azure and Google Cloud Platform, entered the market, offering a variety of services beyond just computing and storage, such as machine learning and analytics.

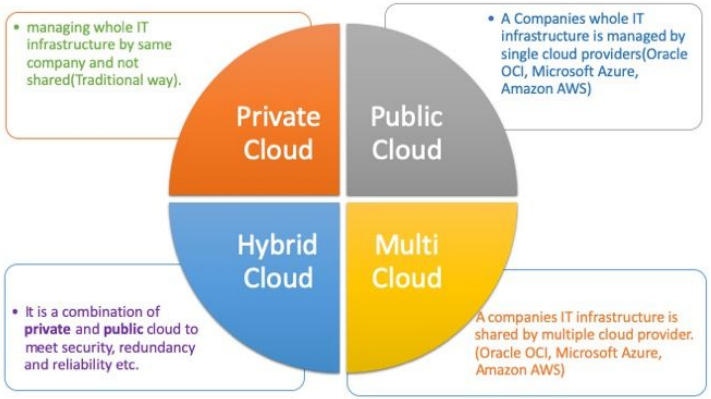
2020s - Continued Innovation:

Cloud computing continued to evolve, with a focus on innovations like serverless computing, edge computing, and increased emphasis on security and compliance.

Types of Cloud Computing

Four Main Types of Cloud Computing

- Public Clouds - Computing services offered by third-party providers over the public Internet.
- Private Clouds - A cloud computing environment dedicated to a single organization
- Hybrid Clouds - A computing environment that combines an on-premises datacenter (also called a private cloud) with a public cloud, allowing data and applications to be shared between them
- Multi Clouds - When an organization uses cloud computing services from at least two cloud providers to run their applications



Types of Cloud Computing Services

Infrastructure-as-a-Service (IaaS) - provides virtualized computing resources over the internet(AWS, Google Cloud, IBM Cloud)

Platforms-as-a-Service (PaaS) - cloud computing service model that provides a platform and environment for developers to build, deploy, and manage applications. (Google App Engine and Microsoft Azure App Service)

Software-as-a-Service (SaaS). - a cloud computing service model that delivers software applications over the internet on a subscription basis. (Microsoft Office 365 and Zoom)

Pros

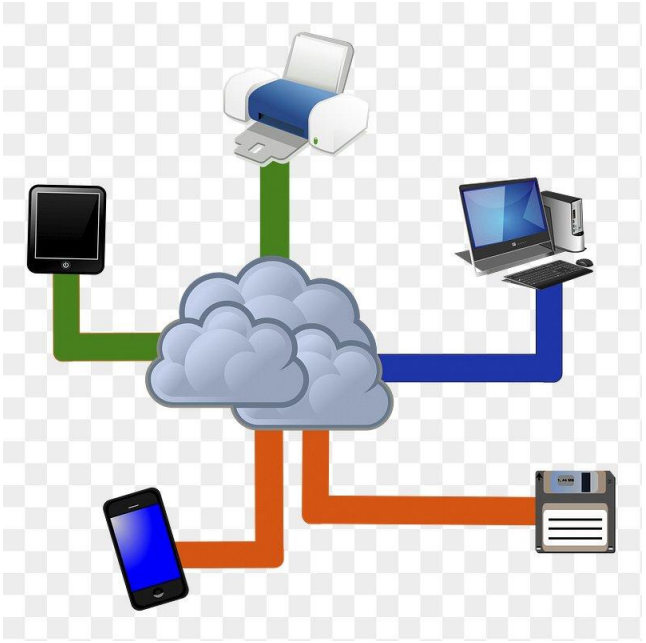
- Cost
  - Lowers IT costs that would go to the effort of purchasing, installing, configuring, and managing your on-premise infrastructure. Ideally with cloud application you'd be paying for the resources being used
- Scalability
  - Cloud provides elasticity, in which you could scale capacity up and down based on traffic, rather than buying excess capacity for extra bandwidth, computing power, or storage space.
- Accessibility
  - Organizations can easily use cloud applications in minutes rather than working with IT over weeks and months to configure the application
  - Can be further scaled to reach global audiences in minutes
- Security
  - By using encryption, information is less accessible by hackers or anyone not authorized to view your data. As an added security measure, with most cloud-based services, different security settings can be set based on the user

Pros (Cont'd)

- Mobility
  - Allows users to access corporate data from any device, anywhere at any time using the internet
- Increased Collaboration
  - Cloud applications allows businesses to seamlessly communicate and securely access and share information, making collaboration simple and hassle-free
  - Empowers multiple user to edit documents and/or work on files simultaneously
- Disaster recovery
  - Major cloud vendors are well-equipped to withstand unforeseen disruptive events like hardware/software failure, natural disasters and power outages, ensuring high application availability and business continuity.

Cloud Computing Cons

- Security Concerns:
  - Data Breaches
- Internet Dependency:
  - Require a stable internet connection
- Limited Control Over Data
- Performance Variability:
  - Shared Resources
- Limited Customization



Key Takeaways/Conclusion

Cloud computing has revolutionized the way organizations manage their IT resources. With its roots dating back to the 1960s and the popularization of the term in the late 1990s, it has become an integral part of the modern tech landscape. Cloud computing offers diverse service models which enable organizations to access powerful computing resources, develop applications, and use software on-demand. Therefore, organizations must balance these advantages with careful security measures and performance optimization to fully harness the potential of cloud computing.

Resources

https://www.futurelearn.com/info/blog/introduction-to-cloud-computing

https://www.knowledgehut.com/blog/cloud-computing/what-is-cloud-computing#what-is-cloud-computing?

https://www.zdnet.com/article/what-is-cloud-computing-everything-you-need-to-know-about-the-cloud/

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https://www.salesforce.com/products/platform/best-practices/benefits-of-cloud-computing/