



Cloud Computing Explained: The Beginner's Guide

Cloud computing allows the users to store their data on internet instead of storing in local storage device. This makes it a lot easier to manage and store data from anywhere in the world. Today, Cloud computing has become important part of modern era.

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Introduction

In today's modern era, cloud computing has become a significant part of digital technology. Most of the services we use daily such as web applications, streaming platforms and online storage, depend on cloud-based systems. Cloud computing enables the users to store, manage, and retrieve their data over the internet instead of using storing your data on personal PC or local servers.

As technology continues to evolve, cloud computing plays key role in enhancing availability, flexibility and efficiency. It allows the individuals or organizations to manage their data more efficiently as they don't have to worry about the physical storage. As an IT student, understanding cloud computing has become very essential for future advancements.

"Cloud is the digital wonderland of Internet of things, powered by Artificial Intelligence and Big Data."

~Enamul Haque

Technology Overview

Cloud computing is made up of multiple technologies that work together to deliver services over the internet. These technologies include data centers, virtualization, distributed computing systems and networking systems. These technologies together make the cloud model to store, manage and process large amounts of data effectively and efficiently.

The most important technology is virtualization. It enables multiple virtual systems to run on a single physical server. This helps in improving resource utilization and reducing the need of physical hardware. Data centers are another key component as it manages large number of servers.

Cloud computing also heavily depends on the high-speed networks. High-speed network ensures that you can access your data from anywhere in the world rapidly. In addition, distributed systems allows the data to be distributed on multiple systems, increasing performance, scalability and saving time.

All these technologies work together to develop a powerful computing model that manages our data efficiently and provide digital services effectively.



Figure 1: Visuals of technology components in cloud computing

Types of Cloud Computing

Cloud computing has been generally categorized into three main parts, based on how services are delivered and how data is managed: Public cloud, Private cloud and Hybrid cloud.

Public cloud: In public cloud, services are owned by third-party service provider and are open to use for general public. Public cloud computing services are provided over the internet and are available to anyone who wants to use them. These services are typically owned by third-party. If you want to access resources such as storage or applications, you have to purchase them from the provider. You can just pay for the services you need. That's why, public cloud is cost effective and used for general purposes.

The drawback of public cloud is that it is shared with multiple users which may raise security concerns, especially for sensitive data. Examples include Microsoft Azure, Amazon web services (AWS) and Google Drive.

Private cloud: Private cloud is specialized, custom-made for single organization or user and is not shared with others. It provides more control and security over your data than public cloud. Private cloud is mostly used by the organizations that handle confidential and sensitive data.

The disadvantage of private cloud is that it is expensive as it is specially built for specific person. Examples include On-premise datacenters. Large organizations and Banks mostly use private cloud for cloud services.



Hybrid cloud: It is the combination of both public and private cloud. It allows the companies to use the benefits of both private and public cloud. It enables data and applications to be shared using public cloud but sensitive information is stored on private cloud, providing more control and security.

For example, a company uses public cloud for daily tasks while private cloud is used for storing and managing confidential information.

Cloud Services Models

Cloud computing models are generally divided into three sections: IaaS, PaaS and SaaS.

Infrastructure as a service: IaaS is the computing model that provides basic computing resources such as virtual machine, storage and networking. It is best suitable for organizations that want to use the cloud services but don't want to purchase physical hardware reducing capital expenditure. It provides high level control over data allowing the user to manage operating system, applications and configurations depending on their needs. It is cost efficient, highly available and low maintenance.

Example of IaaS is Microsoft Azure and AWS.

Platform as a service: It provides the platform for developers to design, test and deploy their applications without managing underlying infrastructure and physical devices. It contains frameworks, tools and development environments that simplify application development process. This is best suitable for the developers who want to focus on their coding rather than management of system.

Heroku and Google App Engine are the examples of PaaS.

Software as a service: SaaS is the software delivery model where ready-to-use software are provided over the internet and can be accessed via subscription, eliminating local installation and maintenance. Users don't have to install or manage the software as it is controlled and managed by the service provider. This model is most widely used because it is most efficient, convenient, easy-to-use and accessible.

Dropbox, Microsoft 365 and Google Docs are some examples of software as a service model.

Key Findings and Impacts

This discussion highlights that cloud computing has become the most vital part of modern technology by providing scalable, flexible and cost efficient solutions for data storage and management. It shows that different cloud computing models including IaaS, PaaS and SaaS has separated our environments based on our priorities. Service models play fundamental role in meeting the different requirements and needs of individuals.

The impact of cloud computing is huge as it allows the users and companies to store, manage and access their data from anywhere in the world ensuring business growth and customer trust. It also enables developers to build and deploy applications without worrying about infrastructure.

Overall, cloud computing transformed our use of technology by making digital service more accessible, faster and reliable.

What's Next?

As cloud computing continues to grow, its role in digital era has also become more and more important. With the increased demand of easy storage, remote access and scalable systems, cloud computing is going to



drive innovation across industries. It will continue to support these cutting-edge technologies such as big data, artificial intelligence and Internet of things.

For students and new learners, the next step should be learning the basis of cloud computing model, virtualization technique and understanding cloud models and services to keep up with the advancements in this technological world. Gaining hand-on experience with the help of small projects and applications can help you to understand how cloud computing works in real-world.

About the Author

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