DOCUMENT ON CLOUD COMPUTING

What is Cloud ?

Cloud computing is the delivery of computing services—like servers, storage, databases, networking, software, and analytics—over the internet, allowing users to access and store data and applications on remote servers instead of local computers. This approach provides flexibility, scalability, and cost efficiency, as users can access resources on demand and pay only for what they use.

How many types of clouds are there?

There are three main types of cloud deployment models in cloud computing:

1. Public Cloud : Services are provided over the internet and shared across multiple organizations. Examples include AWS, Microsoft Azure, and Google Cloud.

2. Private Cloud : Services are used exclusively by a single organization, often hosted on-premises or in a private network. This model offers greater control and security but can be more costly.

3. Hybrid Cloud : A combination of public and private clouds, allowing data and applications to be shared between them. This provides flexibility, as organizations can keep sensitive data on a private cloud while using the public cloud for less sensitive resources.

In addition, there's also Multi-Cloud, which refers to the use of multiple public cloud providers for different services, often to avoid dependency on a single provider and improve redundancy.

Differences between Public Cloud and Private Cloud?

A public cloud is managed by third-party providers (like AWS or Google Cloud) and offers shared resources over the internet to multiple organizations, providing flexibility and a pay-as-you-go pricing model that reduces upfront costs. This model is highly scalable, as resources can be added quickly based on demand, but it offers limited control over infrastructure and is generally suitable for businesses with flexible security and compliance needs. In contrast, a private cloud is dedicated to a single organization, offering greater control, security, and customization of the environment. Although private clouds often have higher initial costs, they provide enhanced security and compliance, making them ideal for organizations with strict regulatory requirements or sensitive data. Scalability is possible but limited to the organization’s infrastructure capacity.

Here are the top 10 cloud providers as of recent rankings:

1. Amazon Web Services (AWS) - A leading cloud provider offering a wide range of services, from compute to storage and AI.

2. Microsoft Azure - Known for its strong enterprise integrations, especially with Microsoft products.

3. Google Cloud Platform (GCP) - Offers advanced analytics and machine learning capabilities.

4. IBM Cloud - Focuses on hybrid cloud and AI solutions, with a strong enterprise presence.

5. Oracle Cloud - Known for its database services and enterprise applications.

6. Alibaba Cloud - Dominates the Asian market and offers comprehensive cloud services globally.

7. Salesforce Cloud - Specialized in customer relationship management (CRM) and SaaS offerings.

8. Tencent Cloud - Another significant player in Asia, providing extensive services for businesses and developers.

9. VMware Cloud- Well-regarded in virtualization and hybrid cloud, supporting multi-cloud strategies.

10. DigitalOcean - Known for simplicity, cost-effectiveness, and a strong focus on developers and small to mid-sized businesses.

Each of these providers offers unique strengths, such as specific integrations, regional dominance, or a focus on certain types of services, making them popular for different use cases.

What is Server?

A server is a computer or system that provides data, resources, or services to other computers, known as clients, over a network. Servers can perform various functions, such as hosting websites, managing databases, storing files, or handling applications. They are designed to process and respond to requests from clients, making resources available to users over local networks or the internet.

Servers come in different forms, including:

1. Web Servers: Host websites and deliver web pages to users.

2. Database Server : Store and manage data, allowing applications to retrieve and manipulate it.

3. File Server : Store and share files among users on a network.

4. Application Server : Run and manage applications, providing resources to clients.

Servers are often built with high-performance hardware and software to handle multiple requests simultaneously, ensuring reliability, stability, and efficient resource management for connected clients.

Difference between Server and the Cloud?

A server is a physical or virtual machine that provides computing services, often located on-premises or in a data center. It requires upfront investment in hardware, manual management of updates, backups, and scaling, which can be time-consuming and costly. In contrast, the cloud refers to a network of remote servers hosted by providers like AWS or Azure, offering services on a pay-as-you-go basis. The cloud is highly scalable, globally accessible, and requires minimal management as the provider handles updates, maintenance, and infrastructure security. While servers offer full control, they are limited by location and capacity, whereas the cloud ensures flexibility, reliability, and reduced IT overhead, making it ideal for dynamic workloads.

Cloud computing is the delivery of various computing services—such as storage, servers, databases, networking, and software—over the internet, allowing users to access resources on demand without owning physical infrastructure. These services are provided by companies like AWS, Microsoft Azure, and Google Cloud, offering a flexible, pay-as-you-go model.

Key features of cloud computing include on-demand access, scalability, cost-effectiveness, and remote accessibility. Users can scale resources up or down based on their needs and only pay for what they use. Cloud services are accessible from anywhere with an internet connection, making it highly convenient for businesses and individuals.

Cloud computing is typically categorized into three models:

1. Infrastructure as a Service (IaaS): Provides virtualized hardware like servers, storage, and networking (e.g., AWS EC2).

2. Platform as a Service (PaaS): Offers tools and platforms for application development (e.g., Google App Engine).

3. Software as a Service (SaaS): Delivers software applications over the internet (e.g., Gmail, Dropbox).

The benefits of cloud computing include reduced costs, as it eliminates the need for expensive on-premises infrastructure, and improved efficiency, as the cloud provider handles maintenance, updates, and security. It also enhances collaboration and accessibility, allowing users to work from anywhere.