CLOUD COMPUTING

Cloud: cloud is a global network of servers that are connected and work together as a single ecosystem. The cloud provides computing services, such as storage, servers, networking, and software, over the internet.

Computing: It refers to the process of using computer system to perform tasks or solve problems. It involves the manipulation, processing, storage and retrieul of data using hardware (physical devices) and software (programs and applications)

Cloud Computing: Cloud Computing means storing and accessing the data and programs on remote server that are hosted on the internet instead of the computer's hard drive or local server. Cloud computing is also referred to as Internet –based computing. It is a technology where the resource is provided as a service through the Internet to the user. The data that is stored can be files,images,documents,or any other storable document.

How it Works?

Cloud computing helps users in easily accessing computing resources like storage, and processing over internet rather than local hardwares. Here we are discussing how it works:

Infrastructure: Cloud Computing depends on remote network servers hosted on internet for store,manage,and process the data.

On-demand Access: Users can access cloud services and resources based on-demand they can scale up or down the without having to invest for physical hardware.

Types of Services: Cloud computing offers various benefits such as cost saving, scalability, reliability and accessibility it reduces capital expenditures, improves efficiency

Types of Cloud Computing Services

There are three types of Cloud Computing Services are there:

1.Infrastructure as a Service (IaaS)

2.Platform as a Services (PaaS)

3.Software as a Service (SaaS)

1.Infrastructure as a Service (IaaS):

Flexibility and Control: IaaS comes up with providing virtualized computing resources such as VMs, Storage, and networks facilitating users with control over the Operating system and applications.

Reducing Expenses of Hardware: IaaS provides business cost savings with the elimination of physical infrastructure investments making it cost-effective.

Scalability of Resources: The cloud provides in scaling of hardware resources up or down as per demand facilitating optimal performance with cost efficiency.

2.Platform as a Services (PaaS):

Simplifying the Development: Platform as a Service offers application development by keeping the underlying Infrastructure as an Abstraction. It helps the developers to completely focus on application logic (Code) and background operations are completely managed by the AWS platform.

Enhancing Efficiency and Productivity: PaaS lowers the Management of Infrastructure complexity, speeding up the Execution time and bringing the updates quickly to market by streamlining the development process.

Automation of Scaling: Management of resource scaling, guaranteeing the program's workload efficiency is ensured by PaaS.

3.Software as a Service (SaaS):

Collaboration And Accessibility: Software as a Service (SaaS) helps users to easily access applications without having the requirement of local installations. It is fully managed by the AWS Software working as a service over the internet encouraging effortless cooperation and ease of access.

Automation of Updates: SaaS providers manage the handling of software maintenance with automatic latest updates ensuring users gain experience with the latest features and security patches.

Cost Efficiency: SaaS acts as a cost-effective solution by reducing the overhead of IT support by eliminating the need for individual software licenses.

Cloud Deployment Models

The following are the Cloud Deployment Models:

1. Private Deployment Model

It provides an enhancement in protection and customization by cloud resource utilization as per particular specified requirements. It is perfect for companies which looking for security and compliance needs.

2. Public Deployment Model

It comes with offering a pay-as-you-go principle for scalability and accessibility of cloud resources for numerous users. it ensures cost-effectiveness by providing enterprise-needed services.

3. Hybrid Deployment Model

It comes up with a combination of elements of both private and public clouds providing seamless data and application processing in between environments. It offers flexibility in optimizing resources such as sensitive data in private clouds and important scalable applications in the public cloud.

Cloud Computing companies

1. Amazon Web Services (AWS)

One of the most successful cloud-based businesses is Amazon Web Services (AWS), which is an Infrastructure as a Service(Iaas) offering that pays rent for virtual computers on Amazon's infrastructure.

2. Microsoft Azure Cloud Platform

Microsoft is creating the Azure platform which enables the .NET Framework Application to run over the internet as an alternative platform for Microsoft developers. This is the classic Platform as a Service (PaaS).

3. Google Cloud Platform (GCP)

Google has built a worldwide network of data centers to service its search engine. From this service, Google has captured the world's advertising revenue. By using that revenue, Google offers free software to users based on infrastructure. This is called Software as a Service (SaaS).

Advantages of Cloud Computing

Cost Efficiency: Cloud Computing provides flexible pricing to the users with the principal pay-as-you-go model. It helps in lessening capital expenditures of Infrastructure, particularly for small and medium-sized businesses companies.

Flexibility and Scalability: Cloud services facilitate the scaling of resources based on demand. It ensures the efficiency of businesses in handling various workloads without the need for large amounts of investments in hardware during the periods of low demand.

Collaboration and Accessibility: Cloud computing provides easy access to data and applications from anywhere over the internet. This encourages collaborative team participation from different locations through shared documents and projects in real-time resulting in quality and productive outputs.

Automatic Maintenance and Updates: AWS Cloud takes care of the infrastructure management and keeping with the latest software automatically making updates they are new versions. Through this, AWS guarantee the companies always having access to the newest technologies to focus completely on business operations and innvoations.

Disadvantages Of Cloud Computing

Security Concerns: Storing of sensitive data on external servers raised more security concerns which is one of the main drawbacks of cloud computing.

Downtime and Reliability: Even though cloud services are usually dependable, they may also have unexpected interruptions and downtimes. These might be raised because of server problems, Network issues or maintenance disruptions in Cloud providers which negative effect on business operations, creating issues for users accessing their apps.

Dependency on Internet Connectivity: Cloud computing services heavily rely on Internet connectivity. For accessing the cloud resources the users should have a stable and high-speed internet connection for accessing and using cloud resources. In regions with limited internet connectivity, users may face challenges in accessing their data and applications.

Cost Management Complexity: The main benefit of cloud services is their pricing model that coming with Pay as you go but it also leads to cost management complexities. On without proper careful monitoring and utilization of resources optimization, Organizations may end up with unexpected costs as per their use scale. Understanding and Controlled usage of cloud services requires ongoing attention.

Use Cases of Cloud Computing

Cloud computing provides many use cases across industries and various applications:

Scalable Infrastructure: Infrastructure as a Service (IaaS) enables organizations to scale computing resources based on demand without investing in physical hardware.

Efficient Application Development: Platform as a Service (PaaS) simplifies application development, offering tools and environments for building, deploying, and managing applications.

Streamlined Software Access: Software as a Service (SaaS) provides subscription-based access to software applications over the internet, reducing the need for local installation and maintenance.

Data Analytics: Cloud-based platforms facilitate big data analytics, allowing organizations to process and derive insights from large datasets efficiently.

Disaster Recovery: Cloud-based disaster recovery solutions offer cost-effective data replication and backup, ensuring quick recovery in case of system failures or disasters.