**Cloud computing**

**Module -1**

1. Cloud computing refers to the on-demand availability of computing resources such as storage, infrastructure, and computing power over the internet.

2. Certainly Cloud computing deployment models define how cloud solutions are delivered to and accessed by end users. Here are the main types:

**Public Cloud**: In a public cloud, services are provided by third party vendors over the internet. These services are available to anyone who wants to use them. Public clouds are cost effective and scalable, making them ideal for general workloads.

**Private Cloud**: A private cloud is dedicated to a single organization. It’s hosted either on premises or by a third-party provider. Private clouds offer more control, security, and customization but can be more expensive.

**Hybrid Cloud**: Hybrid clouds combine public and private clouds. Organizations use a mix of both to optimize performance, security, and cost. For example, sensitive data can be stored in a private cloud, while less sensitive workloads run in a public cloud.

**Community Cloud**: Community clouds serve multiple organizations with shared interests .They provide a collaborative platform while maintaining some level of isolation.

3.Front End:

User Interface: This is what you interact with when using cloud services (e.g., Gmail or Outlook).

Software: Includes applications and web browsers (e.g., Chrome, Firefox, Safari).

Client Devices: These can be on-premises PCs, remote desktops, laptops, tablets, or mobile phones.

Back End:

Hardware: Even in the cloud, there are actual servers, storage, routers, and switches managed by the cloud service provider.

Software: The behind-the-scenes technology running the cloud.

Network:

Connects front-end and back-end components.

Includes the Internet, Intranet, or Intercloud.

Cloud-Based Delivery Platform:

Abstracts, pools, and shares scalable resources across one or more cloud environments.

4. **ADVANTAGES:**

**Faster Time to Market**: Cloud services allow you to spin up new instances or retire them in seconds, accelerating development and innovation. Testing new ideas and designing applications becomes easier without hardware limitations or slow procurement processes.

**Scalability and Flexibility**: Cloud computing provides flexibility. You can adjust compute and storage resources rapidly without upfront infrastructure costs. Whether you choose public, private, or hybrid cloud deployments, you gain control over scalability.

**Cost-Efficiency**: Cloud computing is cost-efficient. It’s the most economical way to use, maintain, and upgrade resources. While the initial setup may be costly, long-term savings come from reduced expenses.

**Almost Unlimited Storage**: Cloud services offer virtually limitless storage capacity. You can scale up as your data grows without worrying about physical limitations.

**Backup and Recovery**: Cloud providers ensure data redundancy and disaster recovery. Your critical data remains safe even if hardware fails.

**Easy Access to Information**: Cloud-based resources are accessible from anywhere with an internet connection. Collaborate, share, and work remotely effortlessly.

**Quick Deployment**: Deploying applications and services in the cloud is swift, enabling rapid go-to-market strategies.

**DISADVANTAGE:**

[**Downtime**: Cloud services can experience occasional server downtime, disrupting operations and limiting access to critical data](https://www.cloudwards.net/disadvantages-of-cloud-computing/).

**Security and Privacy Concerns**: Storing data off-site raises security and privacy questions. [Organizations must trust cloud providers to safeguard sensitive information](https://www.cloudwards.net/disadvantages-of-cloud-computing/).

**Vulnerability to Attacks**: Cloud environments are susceptible to cyber threats. [Proper security measures are crucial to prevent breaches](https://www.cloudwards.net/disadvantages-of-cloud-computing/).

**Limited Control and Flexibility**: Businesses may lack control over the entire cloud infrastructure. [Customization options can be restricted](https://www.cloudwards.net/disadvantages-of-cloud-computing/).

[**Vendor Lock-In**: Migrating away from a specific cloud provider can be challenging due to proprietary technologies and data formats](https://www.cloudwards.net/disadvantages-of-cloud-computing/).

**Cost Concerns**: While cloud services offer cost savings, unexpected expenses can arise. [Organizations must manage costs effectively](https://www.cloudwards.net/disadvantages-of-cloud-computing/).

[**Latency Issues**: Data transfer delays can impact performance, especially for real-time applications](https://www.cloudwards.net/disadvantages-of-cloud-computing/).

**Internet Dependency**: Cloud services require constant internet access. [Offline scenarios can hinder productivity](https://www.cloudwards.net/disadvantages-of-cloud-computing/).

[**Technical Issues**: Glitches, compatibility problems, and software bugs may occur](https://www.cloudwards.net/disadvantages-of-cloud-computing/).