What Is Cloud Computing?

Cloud computing refers to the delivery of computing services. This would include storage, processing power, and software over the Internet. Instead of owning and maintaining physical servers and infrastructure, users are now able to access and use computing resources on a pay-as-you-go basis from a remote provider. This model offers several advantages, including scalability, flexibility, cost efficiency, and the ability to access resources from virtually anywhere with an internet connection.

Some key characteristics of cloud computing include:

* On-Demand Self-Service: Users can provision and manage computing resources as needed, without requiring human intervention from the service provider.
* Broad Network Access: Services and resources are accessible over the network and can be accessed by a variety of devices, such as laptops, smartphones, and tablets.
* Resource Pooling: Multiple users share pooled computing resources, and the provider dynamically assigns and reallocates resources based on demand. This ensures efficiency and optimal resource utilization.
* Rapid Elasticity: Cloud resources can be quickly scaled up or down to accommodate changes in demand. This elasticity enables users to handle varying workloads efficiently.
* Measured Service: Cloud computing resources are metered, and users are billed based on their usage. This pay-as-you-go model provides cost savings and flexibility.

Cloud computing services are typically categorized into three main service models:

* Infrastructure as a Service (IaaS): Provides virtualized computing resources over the internet. Users can rent virtual machines, storage, and networking infrastructure on a pay-as-you-go basis. IaaS is like renting a virtual construction site. You don't have to buy land or build your own infrastructure; you can just lease it. In the context of technology, IaaS provides virtualized hardware resources like servers, storage, and networking. It's the foundation that PaaS and SaaS can be built upon. So, if you need a computer server but don't want to buy a physical one, you can rent it as part of an IaaS service.
* Platform as a Service (PaaS): Offers a platform that allows developers to build, deploy, and manage applications without dealing with the underlying infrastructure. PaaS provides a higher-level abstraction, simplifying the development process. This can be thought of as having a ready-made playground for building things. Imagine you want to build a sandcastle, and instead of getting the sand and tools yourself, you go to a sandbox that already has everything you need. PaaS provides tools and resources for developers to build and run their own software without worrying about the underlying infrastructure. It's like having a platform (or playground) for creating apps and websites.
* Software as a Service (SaaS): Delivers software applications over the internet on a subscription basis. Users can access these applications through a web browser without needing to install or maintain them locally. Think of SaaS as renting software on the internet. It's like using a program or an app without having to install it on your computer. For example, when you use Google Docs in your web browser, you're using SaaS. You don't need to download or install anything; you just log in and start working.

Some disadvantages to using cloud computing are:

* Downtime: outages are always possible since cloud computing is dependent on the internet
* Security: storing data on the public cloud is still considered dangerous if proper security measures are not implemented, which they always should. Hackers always find methods to infiltrate and steal data. Thus security professionals must stay ahead
* Infrastructure is always owned by someone else. Minimal control is given to the customer. Limits can be placed on the EULA

Major cloud service providers include Amazon Web Services (AWS), Microsoft Azure, Google Cloud Platform (GCP), and others, each offering a range of services to cater to different business needs.