

Nowadays, **Cloud computing** is adopted by every company, whether it is an MNC or a startup many are still migrating towards it because of the cost-cutting, lesser maintenance, and the increased capacity of the data with the help of servers maintained by the cloud providers.

**Cloud Computing** means storing and accessing the data and programs on remote servers 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 Cloud Computing Works?

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

- **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.

### Origins Of Cloud Computing

Mainframe computing in the 1950s and the internet explosion in the 1990s came together to give rise to cloud computing. Since businesses like Amazon, Google, and Salesforce started providing web-based services in the early 2000s. The term "cloud computing" has gained popularity. Scalability, adaptability, and cost-effectiveness are to be facilitated by the concept's on-demand internet-based access to computational resources.

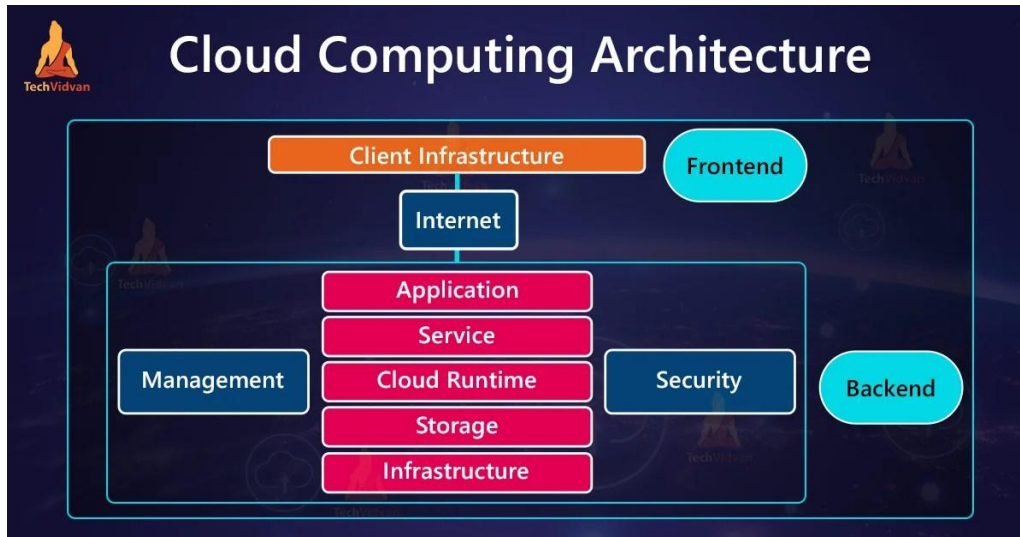
These days, cloud computing is pervasive, driving a wide range of services across markets and transforming the processing, storage, and retrieval of data

### Architecture Of Cloud Computing

[Cloud computing architecture](#) refers to the components and sub-components required for cloud computing. These components typically refer to:

1. Front end ( Fat client, Thin client)

2. Back-end platforms ( Servers, Storage )
3. Cloud-based delivery and a network ( Internet, Intranet, Intercloud )



### 1. Front End ( User Interaction Enhancement )

The User Interface of Cloud Computing consists of 2 sections of clients. The Thin clients are the ones that use web browsers facilitating portable and lightweight accessibilities and others are known as Fat Clients that use many functionalities for offering a strong user experience.

### 2. Back-end Platforms ( Cloud Computing Engine )

The core of cloud computing is made at back-end platforms with several servers for storage and processing computing. Management of Applications logic is managed through servers and effective data handling is provided by storage. The combination of these platforms at the backend offers the processing power, and capacity to manage and store data behind the cloud.

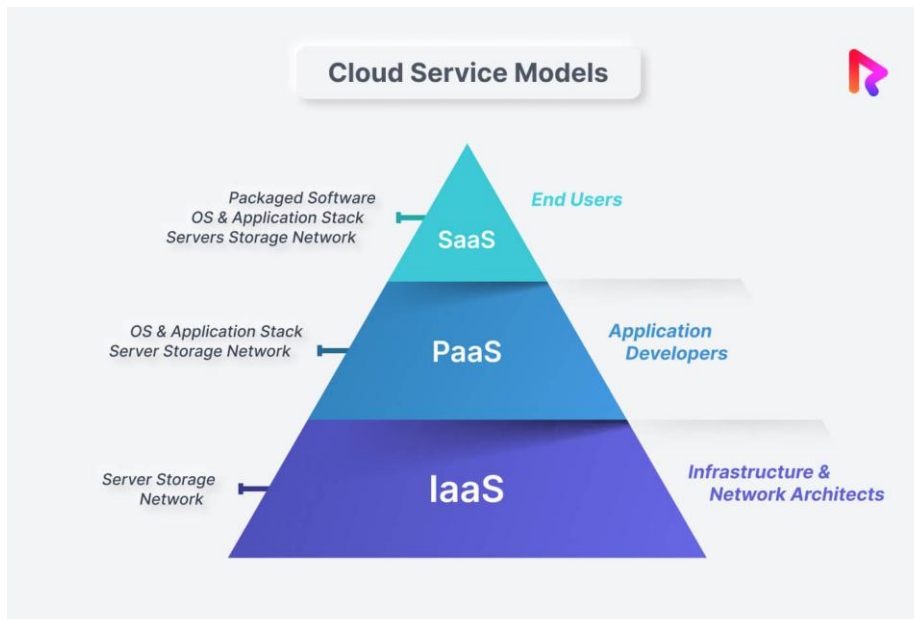
### 3. Cloud-Based Delivery and Network

On-demand access to the computer and resources is provided over the Internet, Intranet, and Intercloud. The Internet comes with global accessibility, the [Intranet](#) helps in internal communications of the services within the organization and the [Intercloud](#) enables interoperability across various cloud services. This dynamic network connectivity ensures an essential component of cloud computing architecture on guaranteeing easy access and data transfer.

The following are the types of Cloud Computing:

1. [Infrastructure as a Service \(IaaS\)](#)

2. [Platform as a Service \(PaaS\)](#)
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 Service ( 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. SaaS (software as a service)

- **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.

### Characteristics Of Cloud Computing

The following are the characteristics of Cloud Computing:

1. Scalability
2. Save Money
3. Reliability
4. Physical Security
5. Outsource Management

### Top leading Cloud Computing Companies

The following tables show the top leading cloud computing companies along with key details about their cloud services:

Company	Cloud Service Name	Key Offerings
1. Amazon	<a href="#">AWS (Amazon Web Services)</a>	Compute, Storage, AI/ML, Databases, Networking
2. Microsoft	<a href="#">Azure</a>	Cloud computing, AI, Analytics, Hybrid Cloud

Company	Cloud Service Name	Key Offerings
3. Google	<a href="#">Google Cloud Platform (GCP)</a>	AI/ML, Big Data, Kubernetes, Cloud Storage
4. Alibaba	Alibaba Cloud	IaaS, AI, Big Data, Cloud Security, CDN
5. Oracle	Oracle Cloud	Enterprise Cloud, Databases, SaaS, PaaS
6. IBM	IBM Cloud	AI, Quantum Computing, Hybrid Cloud, Security
7. Salesforce	Salesforce Cloud	CRM, SaaS, AI, Analytics
8. Tencent	Tencent Cloud	AI, Gaming Cloud, IoT, Big Data