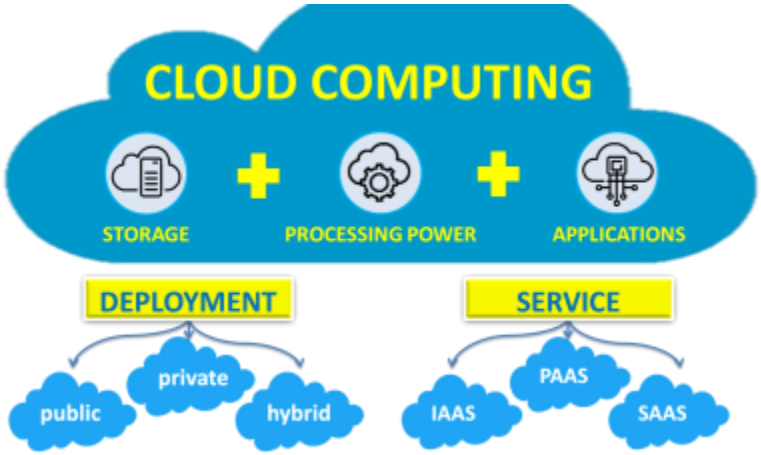
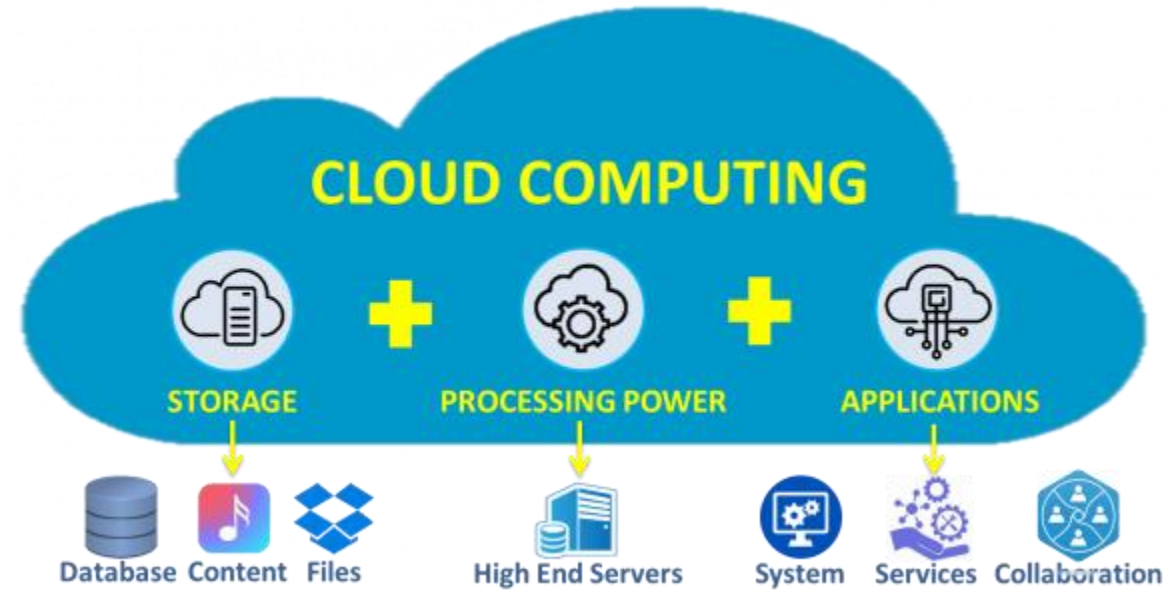
Cloud Computing



Cloud Computing is nothing but **availability of processing power, storage and applications** delivered on demand to the customers over the internet . For example when we say processing power, that is the High End servers which are made available for hosting your sites, running your enterprise applications and more. Or when we say storage it is a place to keep your data, Music, photographs and other media online like on MySQL database or Google Drive.
When we talk of applications they are all the applications you use over internet This could be system software like virus checking or providing some services like Netflix or Roblox or collaboration apps like Microsoft teams, Gmail etc.



Companies like Google, Amazon, Microsoft, IBM and many others provide you such Cloud Platforms.

Why do we need cloud computing?

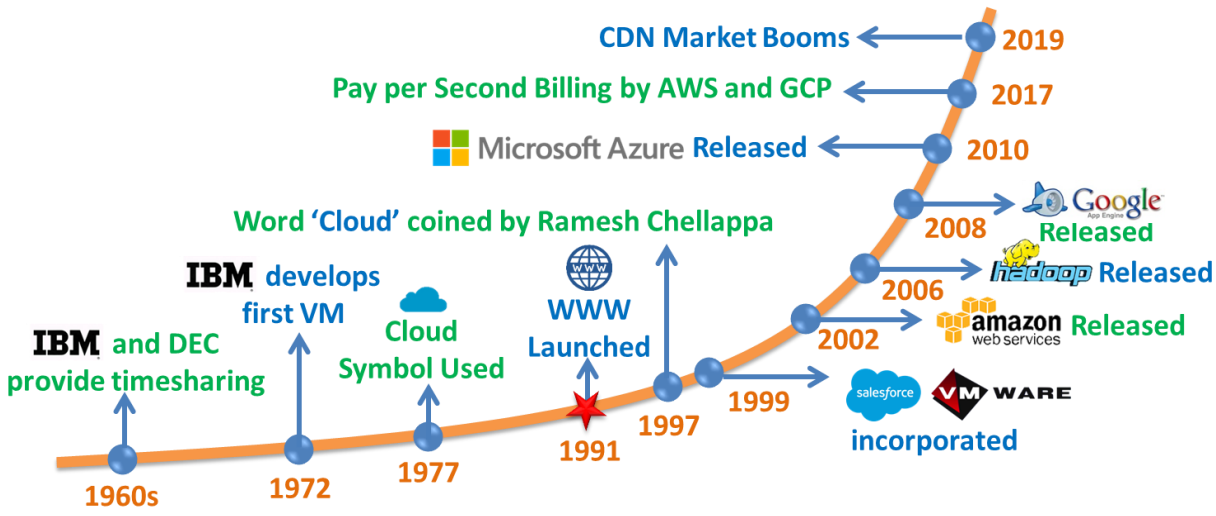
Before the internet became popular, most companies had **In-premise installation**. This means if they needed computer they had to buy one. On top of investing in the **hardware**, they also had to invest in **software, electricity for power and cooling, security, data backup, disaster recovery and maintenance** too. So in other words cost just kept on going up! On top of it most of the time the **computing power remained unused** and was utilized only 30%-40%.

Benefit Of Cloud Computing

- The benefit of cloud computing is lower cost of ownership i.e. rather than owning their own computing infrastructure or data centres, companies can rent anything from storage to application from a cloud service provider.
- In this way they don't have to worry about upgrades, and maintenance.
- They get offsite storage which increases collaboration amongst employees.
- They avoid the upfront cost and they pay only for what they use.

History Of Cloud Computing

- If you look back at history, in **1960s** when the computers were very expensive, IBM and DEC used to provide their computers for timesharing. You could submit jobs to be run on IBM mainframes.
- In **1972** IBM developed the **first Virtual Machine**.
- The **cloud symbol was used** way back in **1977**.
- Once the **internet** and **world wide web** came into picture, Many telecommunication companies offered VPN or Virtual Private network and Compaq started offering online disk space were you could keep files.
- The **word cloud** itself was coined by Ramesh Chellappa in **1997**. The word cloud was used as a metaphor for the Internet and cloud symbol was used to represent network of computing equipment.
- In **1999** Cloud companies such as **Salesforce and VM** Ware were **incorporated**.
- In **2002** Amazon launched **Amazon Web Services**, In **2006 Hadoop** was Released.
- In **2008** Google launched **Google App Engine**
- n **2010** Mirosoft released **Microsoft Azure** and in next few years almost everyone jumped onto cloud computing bandwagon.



Types of Cloud Computing

B**ased upon deployment model**, cloud services can be leveraged in three different ways, **public**, **private** and **hybrid**.

Difference Between Public, Private And Hybrid

To understand the Difference Between them, lets take an example. Suppose you need to travel. **A Bus, Private Car and Rental Car can be used to explain Public, Private and Hybrid Cloud Computing.**

- **Bus** is a public transport which is widely available but you need to share it with others. It is cheaper and you only pay for the distance you travel.
- On the other side you can opt to buy your own **car.** You put the upfront money to buy the car and also pay for regular maintenance of it. The plus side is the privacy and flexibility you get along with it which is not possible in public transport.

- A middle path is **taxi** service. For a higher fee you do get your privacy while using the car but you do not own the car. This is the hybrid model.

Public

Bus

-
  Share with others
- Cheaper
- Pay only for distance you travel
- No maintenance

Private

Private Car

- Upfront funding
- Maintenance Charges
- Privacy
- Flexibility

Hybrid

Rental Car

- Higher fee
- Privacy
- Flexibility
- No maintenance

Comparison Between Different Types of Cloud

Public

- Infrastructure Owned And Operated By Cloud Service Provider
- Pay only for what you use
- Reduced Complexity
- Quicker Setup
- Lesser Security
- Limited Flexibility

Private

- Self Owned Data Centres and software for private use
- Dedicated
- Secure
- Regulation Compliant
- Highly customizable
- Higher Investment
- Maintenance cost

Hybrid

- Mix and match Public and Private Cloud based upon requirements
- Improved security
- Minimal security risk
- High flexibility
- Expensive in long run
- Complexity is high

Types of Cloud Computing

From services perspective, there are three types of cloud, IAAS which is Infrastructure as a service, PAAS which is Platform as a serviceand SAAS which is software as a service.

Based upon who handles what responsibility, IAAS, PAAS and SAAS Cloud can be represented as shown.

- Similarly primary thing that differentiates the three main categories of cloud computing from one another is who manages the different pieces of the IT stack.
- In traditional On-premise means that a company has invested on setting up its own IT environment, means it has setup its hardware and software locally and does its maintenance on its own.

1. **Infrastructure as a service(IaaS) :**
    -
    - The cloud provider provides the infrastructure and serves the complete data center framework on pay as you go model, eliminating the need for resource-intensive, on-site installations.
    - You will still have to take care of the complete software setup part of it starting from OS to middleware, databases and applications that are needed for your business.
2. **Platform as a service(PaaS) :**
    -
    - The cloud service provider serves a web-based environment where developers can build or deploy cloud apps.
    - It maintains the Operating system, database and programming language that organizations can use to develop cloud-based software, without having to maintain the underlying elements.
3. **Software as a service (SAAS) :**
    -
    - It is cloud-based software available for purchase on a subscription basis.

- The cloud service provider provides variety of services, such as applications for mail, collaboration, Data storage, backup and a lot more.