Cloud Computing

- Cloud computing is a network of hardware and software to provide various computing services to end user over the Internet through various servers.

- It is a web based computing that allows users to use computing resources such as virtual machines, processing environment, memory, storage, databases, networking environment, software over the Internet.

- when we choose to set up a data centre/computing network in the organisation itself, organisation/company/institute is responsible for managing everything such as purchasing and installing hardware/software, configuring firewall, setting up network and storage. Organisation is also responsible for maintaining the set-up.

- To avoid all these activities, cloud computing can be used as a alternative to on-premises set up.

- In cloud computing, cloud vendor is responsible for software/hardware purchasing, network set up and maintenance.
- User can use any required services on rent.
- Services provided by cloud will be charged based on the usage.
- Microsoft Azure, VMware, Google cloud platform, Amazon Web Services, IBM cloud are some of the leading cloud service providers.

Advantages of cloud computing:

- Cost: It allows businesses to reduce the cost of data network set up and maintenance.
- On-demand services: Customers can start and stop the use of services as per requirements.
- Scalability: Resource requirements can be increased or decreased according to business requirements. No limit on number of users.
- Speed: Resources can be accessed in less time as many data centres are available at various locations.
- Availability: Cloud computing offers 24/7 resources availability.
- Reliability: Easy backup and recovery of data.
- Security: Data security is offered through a broad set of policies, technologies etc.

Types of cloud computing:

1. Public Cloud: Public cloud resources are owned and operated by third party cloud service provider over public network.

- Services are provided through Internet to all users. Public cloud is shared among multiple organisations and users.

- Public cloud services may be free of cost or charge minimal fees as per usage. Some of the popular examples of public cloud are Google docs, google drive, YouTube etc.

2. Private Cloud: In this computing, resources are made available over the public Internet but only authentic users those who have subscribed for the services can use/access it through private network.

- Services are deployed and maintained over a private network. Hardware and software are dedicated to private company.

- Compared to public cloud, user need to pay more for private cloud. E.g. Microsoft KVM, HP, Red Hat, VMWare etc.

Types of cloud computing:

3. Hybrid Cloud: It is a combination of public cloud and private cloud.

- It is mainly used in educational premises, finance and healthcare.
- Public and private clouds have their own data centres located at different locations and they communicate through encrypted connections.
- In this, private cloud is used to store and work with sensitive data and applications whereas public cloud can be used to for the less sensitive data transactions and resources to minimise the operational cost. E.g. Amazon, Cisco, Google, Microsoft etc.

Types of cloud services:

1. Software as a Service(SaaS): Cloud service provider provides software applications over the Internet as per the user demand and mostly on subscription basis.

- Software applications are centrally hosted on cloud, I.e. users need not install softwares on their own machine.
- User don’t need to manage or maintain software and hardware. It is done by cloud service provider only which reduces the maintenance cost.
- Gmail, outlook,one drive, Dropbox, office 360, Amazon Kindle etc. or any other programs run inside the browser are SaaS applications.
- These services are mostly used by home users.

2. Platform as a Service(PaaS): It provides user with complete development platform and environment to build their client centric applications and services.

- This service provides on-demand environment for developing, testing, delivering and managing software applications.
- Developer is responsible for the application and vendors is responsible to deploy and run it.
- It is used by software developers, large companies.

Types of cloud services:

3. Infrastructure as a Service(IaaS): Cloud provides entire IT infrastructure such as virtual machines, servers, storage, networks, operating system etc.

- User don’t need to care about hardware or software.
- IT administrators use these services.
- It save the cost of buying and maintaining expensive hardware