1. Introduction to Cloud Computing

Cloud Computing:

* Cloud computing is the on demand delivery of the computer power, database, storage, applications, and other IT resources over the internet.
* It’s a pay-as-you-go pricing instead of buying, owning and maintaining physical data centers and servers.
* So this is the simplest way to access servers, storage, databases and a set of application services.
* We actually rent these IT resources over the Internet from the Cloud.

There are 3 main Cloud service providers by which we can select the right type and size of computing resources we need on any cloud:

1. AWS by Amazon.
2. GCP by Google.
3. AZURE by Microsoft.

Why we need Cloud Computing?

* Using Cloud Computing for services is like switching on a light bulb by a button; we don’t have to look after the physical electronic requirements, maintenance, space, how electric power plant is established(data center in case of Cloud).
* The overall maintainability is handled by the Cloud Providers in exchange of the cost of services.
* They are scalable, reliable, fault tolerant and secure.
* In general terms, if we need 8GB of RAM, it is provided within a single click.
* And to cancel the requirement and switch back to 4GB, a single click can do the job.
* Due to these services provided with an ease, Cloud Computing is necessary.

Problems with traditional IT approach:

* Pay for the rent of the data center.
* Pay for power supply, cooling, maintenance.
* Adding and replacing hardware takes time.
* Scaling is limited.
* Hire 24/7 team to monitor the infrastructure.
* How to deal with disasters? (Earthquake, fire, power shutdown, etc.)

Proposed System over Existing System:

* In the time where cloud computing was not introduced to the world, the companies would have to physically set up the data centers, establish connection, maintain servers, databases.
* They needed support form IT, electrical, database department just to create and maintain the Data Center.
* For an instance, we could raise a situation where the traffic on their website is heavy, they would have to install required electrical devices like RAMs, SSD, to boost the load on the website. But when the traffic is decreased, there is no longer need of these electrical supplies, they take more space, plus the maintenance cost. The fluctuation in these requirements were unpredictable and more often.
* If any hardware crashes, it’s solely affecting the owner of the data center I.e. you and your company.
* This fluctuation in the usage and requirement would cost a lot more than needed.
* This requirement of handling the process in the back is done by these Cloud Providers in the present, with efficient cost at a period of time.
* Due to the Scalable and fault tolerance provided by Cloud Computing, it is in well demand in the IT sector.

Virtualization:

* Virtualization allows us to run a simulated digital Virtual Computer with the ability to use the computer hardware which is provided to the Virtual Computer.
* It can be easily accessed on any host Computer with the implemented hardware equipment.
* This can be solely done by using the cloud service provided in Cloud Computing.

Some disadvantages of Virtualization are:

1. Upfront cost of setting up a hardware to run the Virtual machine.
2. Maintenance cost.
3. Space for hardware.
4. Cooling systems to prevent damage to the parts.
5. Human resource for maintain of the limited physical requirements.

* These limitations would obviously be less, as compared to handle a large data center which controls the all over scalable undefinable requirements by the virtual server as well.