UNIT-2

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Cloud computing Fundamentals

The need for cloud computing :-

* The main reason for the need and use cloud computing are convinence and reliability.
* In the past if we want to bring a file, we would have to save it to a Universal serial Bus (USB) flash drive, external hard drive, or compact Disk (CD) and bring that device to a different place.
* Instead saving a file to the cloud (ex:- use of cloud application Drop box) ensure that we will be able to access it with any computer that has an Internet connection.
* The cloud also makes it much easier to share a file with friends, making it possible to colloberate to over the web.
* while using the cloud, lossing out data/ file is much less likely.
* However, just like anything online, there is always a risk that some one may try to gain access to our personal data, and therefore it is important to choose an access control with a strong password and pay attention

to any privacy settings for the cloud service that we are using

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cloud computing is a service :-

The simplest thing that any computer does is allow us to store and retriere information
→ we can store our family photographs, our favourite songs, or even save movies on it, which is also the most basic service offered by cloud computing.
→ Let us Look at the example of a popular application called Flickr to illustrate the meaning of this section.
→ while Flickr started with an example on sharing photos and images, it has emerged as a great place to store those images.
→ In many ways, it is superior to storing the images on your computer :

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~~Flickr~~.

1) First, Flickr allows us to easily access our images no matter where we are or what type of device we are using. while we might upload the photos of our vacation from our home computer, later, we can easily access them from our laptop at the office.

2) second, Flickr lets us share the images. There is no need to burn them to a CD or save them on a flash drive. We can just send some one our Flickr address to share these photos or images.

3) Third, Flickr provides data security. By uploading the images to Flickr, we are Providing ourselves with data security by creating a backup on the web. And, while it is always best to keep a local copy - either on a computer, a CD, or a flash drive - the truth is that we are far more likely to lose the images that we store locally that Flickr is of losing our images.

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cloud computing is a platform:

→ The World wide web (WWW) can be considered as the operating system for all our Internet-based applications. However, one has to understand that we will always need a local operating system in our computer to access web-based applications.

→ The basic meaning of the term "platform" is that it is the support on which applications run or give results to the users.

→ For example, Microsoft windows is a platform. But, a platform does not have to be an operating system.

→ Java is a platform even though it is not an operating system.

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→ Through cloud computing, the web is becoming a platform.

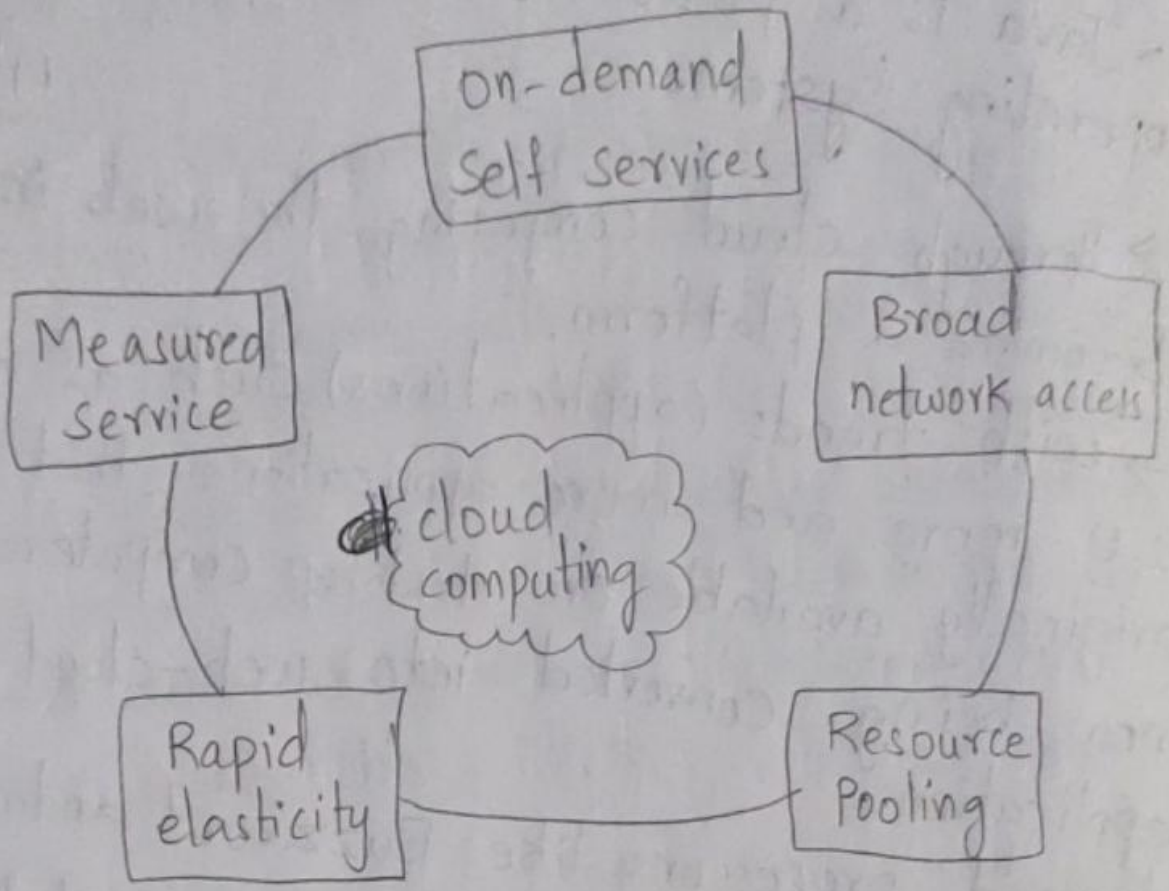
→ with trends (applications) such as office 2.0, more and more applications that were originally available on desktop computers are now being converted into web-cloud applications.

→ word processors like Buzzword and office suites like Google Docs are now available in the cloud as their desktop counter-parts.

→ All these kinds of trends in providing applications via the cloud are turning cloud computing into a platform or to act as a platform.

5-4-3 principles of cloud computing :-

Five essential characteristics :-



1) **on demand self-service :-** A consumer can unilaterally provision computing capabilities, such as service time and network storage, as needed automatically without requiring human interaction with each services provider.

2) **Broad network access :-** Capabilities are available over the network and accessed through standard mechanisms that promoted use by heterogeneous thin or thick client platforms. (e.g., mobile phones, laptops and personal digital assistants [PDAs].)

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3) Elastic Resource pooling :-

→ The provider's computing resources are pooled to serve multiple consumers using a multitenant model.

→ Many users can access the same location resources.

→ The resources are assigned dynamically according to demand.

→ The customer has no knowledge over the exact location of the provided resources.

4) Rapid Elasticity :-

→ capabilities can be rapidly scale out and rapidly scale in.

→ consumers benefit from rapid elasticity because they can expand or reduce their resources.

5) Measured service :-

→ Resource usage can be monitored, controlled, and reported providing transparency for both the provider and consumer of the utilized service.

Four cloud Deployment Models:-

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→ Deployment models describe the ways with which the cloud services can be deployed or made available to its customers.

→ Four deployment models are usually distinguished, namely, public, private, community, and hybrid cloud service usage:

1) private cloud :- The cloud infrastructure is Provisioned for exclusive use by a single organization comprising multiple consumers (e.g., organization, a third party, or some Combination of them, and it may exist on or off premises.

2) Public cloud :- The cloud infrastructure is Provisioned for open use by the general public. It may be owned, managed, and operated by a business, academic, or government organization, or some combination of them. It exists on the premises of the cloud provider.

3) Community cloud :- The cloud infrastructure is shared by several organizations and supports a specific community that has

shared concerns (e.g., mission, security requirements, Policy, and compliance considerations). It may be managed by the organizations or a third party and may exist on premise or off Premise.

4) Hybrid cloud :- The cloud infrastructure is a composition of two or more distinct cloud infrastructures (private, community or public) that remain unique entities but are bound together by standardized or proprietary technology that enables data and application portability (e.g., cloud bursting for load balancing between clouds).