UNIT-1

UNDERSTANDING CLOUD CONCEPTS

#Characteristics of Cloud Computing :-

1) Agility - It shares resources among users and it works very fast.

2) High Availability & Reliability :- Availability of servers is high and more reliable, because chances of infrastructure failure are minimal.

3) High Scalability :- The resources should be highly scalable.

4) Multisharing :- Users can work efficiently by sharing resources.

5) Device & Location Independence :- It enables users to access resource regardless of which device they use & which location they are.

6) Maintenance :- Maintenance of cloud computing is less, and maintenance of cloud computing applications is easier.

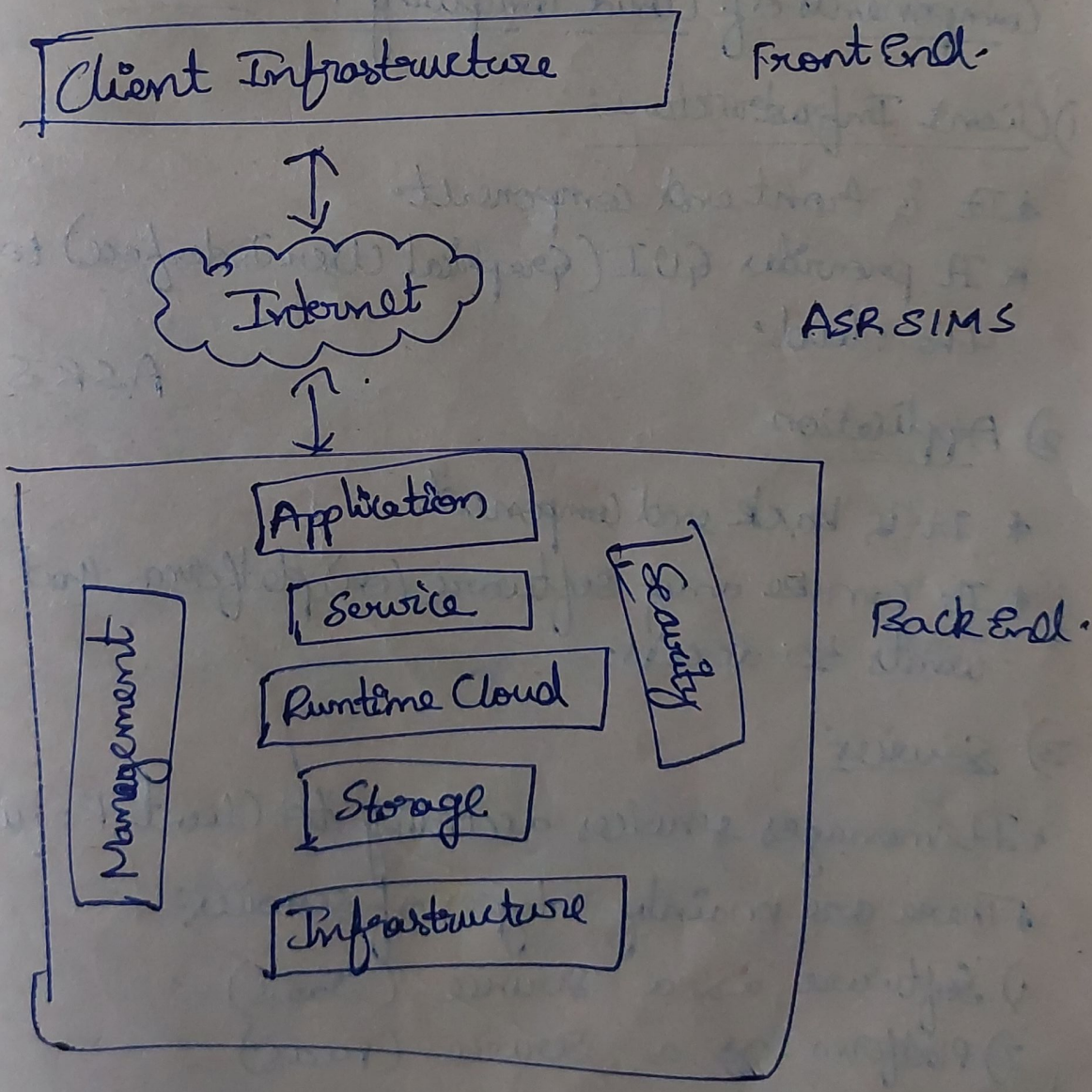
7) Low cost :- It provides services at low of cost that is mostly affordable by users.

8) Services in Pay-Per-Use Mode :- People can access resources by paying as per usage.

Architectural Framework:

* Cloud computing technology is used by both small and large organisations to store information in cloud and access it from anywhere at any time using Internet.

* The architecture is divided into 2 parts:
  1) Front End
  2) Back End.



Front End:

* It is used by client.
* It includes fat clients, thin clients, mobile devices -

Back End:

* It is used by service providers.
* It includes various servers, computers, virtual machines, etc.

Components of Cloud Computing Architecture:

1) Client Infrastructure:

* It is front end component.
* It provides GUI (Graphical User Interface) to interact with the cloud.

A.S.R.S.I.M.S

2) Application

* It is back end component.
* It can be any software (or) platform that a client wants to access.

3) Services:

* It manages services according to Client Requirement.
* There are mainly 3 types of services:
  1) Software as a Service (SaaS)
  2) Platform as a Service (PaaS)
  3) Infrastructure as a Service (IaaS)

4) Runtime Cloud:

* It offers execution and runtime environment to Virtual Machines.

5) Storage:

* It provides large amount of storage in Cloud to store and manage data.
* It is one of the most important component.

6) Infrastructure:

* It offers services on host level, network level and application level.
* It includes hardware and software components such as servers, storage, network devices, etc.

7) Management:

* It is used to manage components like application, service, runtime cloud, storage, etc.
* It establishes coordination between them.

8) Security:

* It is an inbuilt back end component.
* It implements security mechanism in back end.

9) Internet:

* It acts as a bridge between front end & back end.

Types of Cloud:

Cloud computing is a technology that uses internet and central remote servers to maintain data & applications.

There are mainly 4 types of Cloud:

- Public Cloud
- Private Cloud
- Hybrid Cloud
- Community Cloud.

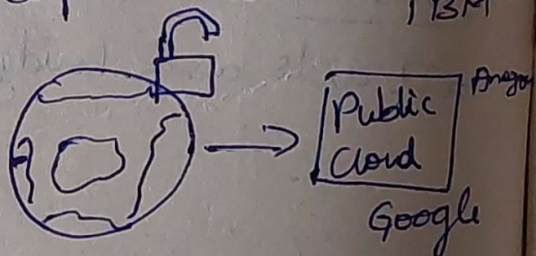
1) Public Cloud:

- It is open to all to store and access information via Internet.
- It is managed and operated by Cloud Service Provider.

Ex: Amazon Elastic Compute Cloud (EC_2), Microsoft, Windows Azure, etc.

Advantages:

- It is owned at lower cost compared to private and hybrid Cloud.
- It is maintained by Cloud service provider.
- It is easy to integrate.
- It is location independent.
- It is highly scalable.

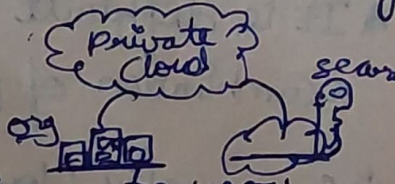


Disadvantages:

- It is less secure because resources are shared publically.
- It's performance depends on high speed internet.

2) Private Cloud:

- It is also known as Internal Cloud (or) Corporate Cloud.
- It is mostly used by organisations to build and manage their own data.



Advantages:

- It provides high level security and privacy to users.
- The organisation has full control over the cloud as it is maintained by organisation itself.
- It offers better performance with improved speed.

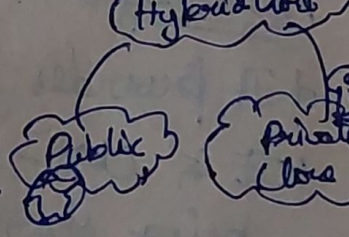
Disadvantages:

- It can be accessed only by skilled people.
- It can be accessed only within an organisation.

3) Hybrid Cloud:

- It is the combination of public cloud & private cloud.

∴ Public Cloud + Private Cloud = Hybrid Cloud.



- Ex: Amazon Web services, Office 365.

Advantages:

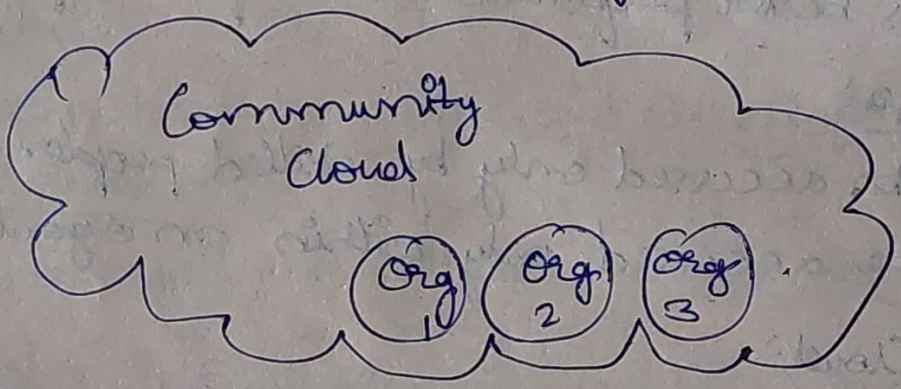
- It is suitable for organisations that require more security.
- It provides an excellent way to reduce risk.
- It helps to provides new products and services more quickly.

Disadvantages:

* Security is not good as private cloud.
* It is difficult to manage hybrid cloud because it is a combination of public cloud & private cloud.

4) Community Cloud:

* It is owned, managed and operated by one (or) more organisations in a community.
* Example: Health Care Community



Advantages:

* It provides better security than public cloud.
* It is cost-effective because the whole cloud is being shared by several organisations.
* It allows us to share cloud resources, infrastructure across several organisations.

Disadvantages:

* Security is not as good as private cloud.
* It is not a good choice for every organisation.