

$\frac{10}{100} \rightarrow 100$

CLOUD COMPUTING

refer to the "servers" that are accessed over the internet. (present at remote location).

In Simple Terms,

It means storing, managing and accessing the data & programs on the remote servers that are hosted on internet instead of computer's hard drive.

or

Cloud Computing is the on-demand availability of computer system resources, especially data storage / cloud storage & computing power) without direct active management by the user.

In short, we store, manage & process data on remote servers.

Service providers

- + Google Cloud
- + AWS (Amazon Web Services)
- + Microsoft Azure
- + IBM Cloud
- + Alibaba Cloud, etc.

Types of Cloud

- 1) Public → accessible to all
- 2) Private
- 3) Hybrid → services accessible within an org.
- 4) Community → public + private cloud features
services accessible by a group of organizations.

(public me jese gmail hogya example, private me jese Accenture ke employee ke liye hi h, hubrid me having both aur community me jese Accenture, Infosys, Microsoft ye 3 me aapas me kar rhe as private).

CHARACTERISTICS of CLOUD COMPUTING

- 1) On demand self service means that a consumer can request & receive access to a service offering, without an administrator or some sort of support staff having to fulfill the request manually.
- 2) Broad network access
i.e. the services can be accessed from any location (using any type of device).
i.e. anywhere access & anytime.

Resource Pooling

(resource can be storage, memory, n/w bandwidth, virtual machines) i.e. it can be any service which can be consumed by cloud users.

Resource Pooling

resource pooling means that multiple customers are serviced from the same physical resources.

- 4) Measured Services
pay according to the services you use.
- 5) Rapid Elasticity & Scalability
One of the great things about cloud computing is the ability to quickly provision resources in the cloud as the organizations need them, (& then to remove them when they don't need them).
- 6) No maintenance/easy maintenance.
- 7) Security → copy of our data on various servers. If 1 fails, data is safe on the other.

Benefits ADVANTAGES & DISADVANTAGES CLOUD COMPUTING.

- (i) resources accessible anywhere, any time.
- (ii) on-demand self service - no third party in between like our receptionist.
- (iii) reduced IT cost (we need not purchase hardware, no maintenance, etc.)

(iv) Scalability (if traffic on website ↑ we can scale up anytime) & similarly scale down also.

etc..

"pay as per use"

⇒ collaboration - people sitting in different countries can do a project.

⇒ offers security - (recovery from failure) as data stored at many places.

Disadvantages

- 1) Network Connection Dependency
→ internet is a must.
- 2) Lack of Support
(eg unable to access your data before a meeting, etc.)
so choose the provider carefully.
- 3) May not get all the features
- Not all cloud service providers are same.
etc.

1.

VENDOR LOCK-IN Problem in CLOUD COMPUTING

It is the situation where customers are dependent (i.e. locked-in) on a single cloud provider technology, implementation & cannot easily move in the future to a different vendor without substantial costs, legal constraints, or technical incompatibilities.

2.

or

Organization may face problem when transferring their services from one vendor to another.

As different vendors provide different platform & services, they can cause difficulty in moving from 1 cloud vendor to another.

3.

Types of Vendor Lock-In Risks

i) Data Transfer Risk - it is not easy to move data from one CSP to another

a lot of ques arises:

(i) who is responsible for extracting the data from the databases.

(ii) in what format the data will be?

what will be the format of the new CSP.

etc.

4.

2) Application Transfer Risk

If we build one CSP that leverages many of its offerings,

the reconfiguration of this application to run natively on another provider can be an extremely expensive & difficult process.

(eg) an appli is built on Azure.. we have used Azure's data analytics & bot services.
we will have to make a lot of changes to the application (b/c these services may not be there or can be different in other CSP).

Reason for this difficulty is lack of standard interfaces & open APIs. Every CSP has their own standards.

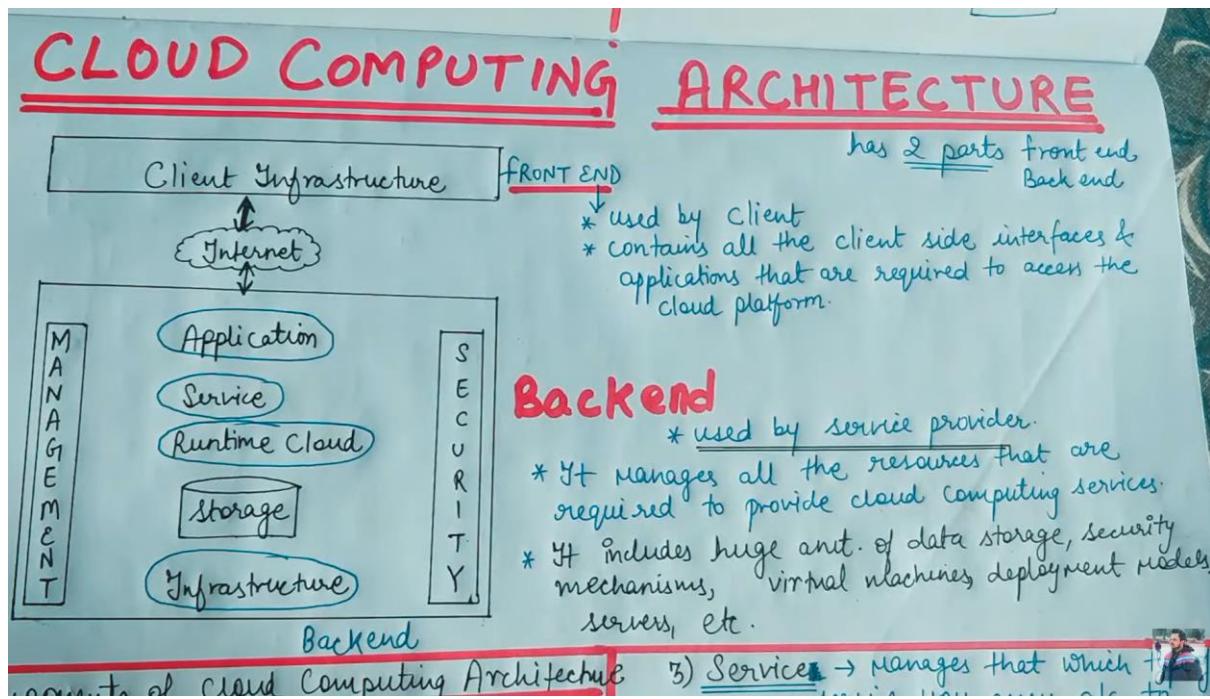
5.

3) Human resource knowledge risk

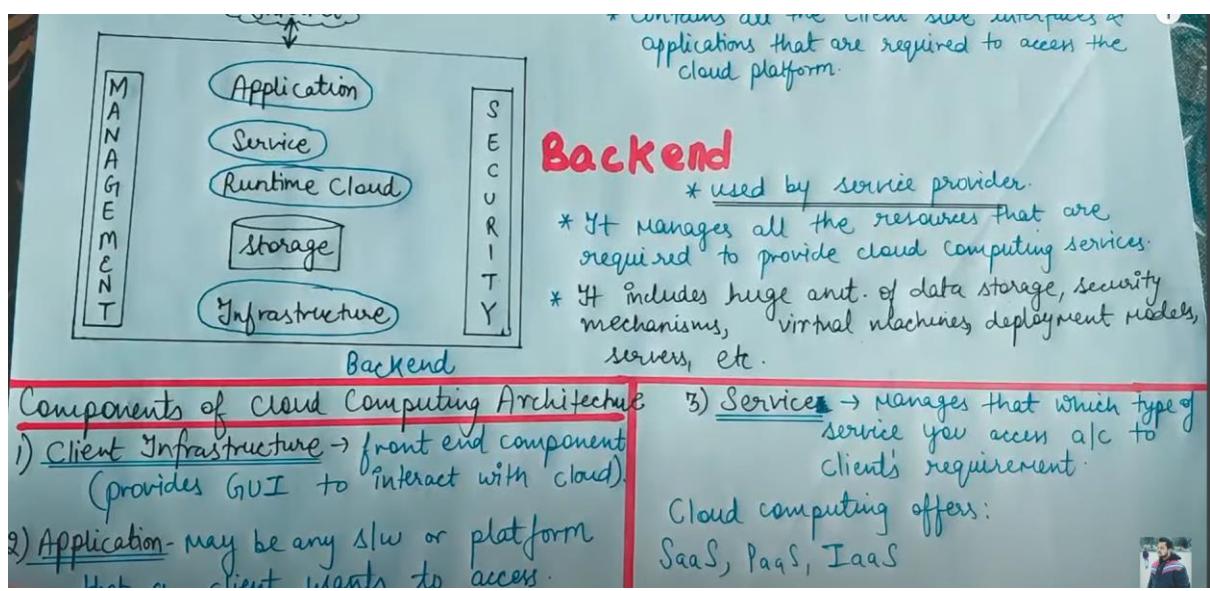
If we are working with one CSP, our team has gained a lot of knowledge about that provider's tools & configurations.

If we move to another CSP, people will have to learn all the tools, implementation processes & so on....

1.



2.



3.

- 4) Runtime Cloud - provides "execution & runtime environment" to the virtual machines.
- 5) Storage - one of the most important components.
It provides a huge amount of storage capacity in the cloud to store & manage data.
- 6) Infrastructure -
cloud infrastructure includes h/w & sw components such as "servers, storage, nw devices, virtualization software & other resources needed for cloud computing model.

Management - manages components (like application, service, infrastructure).

1.

SaaS SOFTWARE AS A SERVICE CLOUD COMPUTING

To exit full screen, press Esc

SaaS
PaaS
IaaS

* It is a type of Cloud Computing Services.

* It is a way of delivering services and applications over the internet.

* maintenance of s/w done by the vendor & hardware

* we neednot install the s/w in our machine.

* so, it removes the cost of h/w and s/w maintenance.

* generally used by end users

Characteristics

available over internet

LIKE

(ye basic hota isme bas gmail jese vercel ya kahi pe upload kardo aur har log baki har jagah se access kar sakte h)

(v) can be scaled up or scaled down anytime acc to our need.

(vi) works on shared model. One s/w is used by multiple clients.

(vii) s/w are automatically upgraded. → efficient use of s/w license

Benefits

(i) platform independence to the user (we can use android, mac, windows, etc.)

(ii) multitenant solutions

(iii) scale up or scale down

(iv) Accessible anytime, anywhere.

(v) reduced time (we can use appli. directly from browser).

2.

SaaS SOFTWARE AS A SERVICE CLOUD COMPUTING

To exit full screen, press Esc

* It is a way of delivering services and applications over the internet.

* maintenance of s/w done by the vendor & hardware

* we neednot install the s/w in our machine.

* so, it removes the cost of h/w and s/w maintenance.

* generally used by end users

Characteristics

available over internet

LIKE

(i) it makes the s/w available over internet

(ii) s/w appli. maintained by the vendors.

(iii) cost effective (pay as per use)

(iv) available on demand.

(v) can be scaled up or scaled down anytime acc to our need.

(vi) works on shared model. One s/w is used by multiple clients.

(vii) s/w are automatically upgraded. → efficient use of s/w license

Benefits

(i) platform independence to the user (we can use android, mac, windows, etc.)

(ii) multitenant solutions

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(iv) Accessible anytime, anywhere.

(v) reduced time (we can use appli. directly from browser).

(vi) cost effective (pay as per use).
eg) Dropbox, Cisco Webex, Salesforce, Google Office 365, Google Drive, etc.

1.

PaaS PLATFORM AS A SERVICE IN CLOUD COMPUTING

- developers use it.
- It provides a platform & environment (i.e. runtime envt.) to allow developers to build applications & services over the internet.
- offers development and deployment tools required to develop applications.
- PaaS Services are hosted in the cloud & accessed by users via web browser.
- no control over the infrastructure. We will interact with the UI only and O.S will be provided by vendor.

our infrastructure.

We do not have control over the cloud infrastructure including network, servers, O.S., or storage, but we have control over the deployed applications and possibly configuration settings for the application-hosting environment.

Advantages

- (i) cost effective (pay as per use)
- (ii) no need to purchase expensive servers, SW or data storage
- (iii) scale up/down anytime.
- (iv) SW management (i.e. updates, failover, etc.)

(PaaS me hume jo mila h jese windows mila h ya linux to hume ussi pe kaam karna hoga, ye basically saas se thora alaag h wha pe user use karte the aur yha pe developers use karte h kyuki yha pe environment and platform dono mil jata h code likh ke dekh lu ki ha run ho rha h)-(run time environment mil gaya)

2.

- developers use it.
- It provides a platform & environment (i.e. runtime envt.) to allow developers to build applications & services over the internet.
- offers development and deployment tools required to develop applications.
- PaaS Services are hosted in the cloud & accessed by users via web browser.
- no control over the infrastructure. We will interact with the UI only and O.S will be provided by vendor.
- we do not have control over it.
- PaaS provider hosts the h/w & s/w on its

our infrastructure.

We do not have control over the cloud infrastructure including network, servers, O.S., or storage, but we have control over the deployed applications and possibly configuration settings for the application-hosting environment.

Advantages

- (i) cost effective (pay as per use)
- (ii) no need to purchase expensive servers, SW or data storage
- (iii) scale up/down anytime.
- (iv) SW management (i.e. updates, failover, etc.) managed by the provider.
- (v) easy deployment of web applications.

1.

IaaS INFRASTRUCTURE AS A SERVICE IN CLOUD COMPUTING

* provides us infrastructure.
* It is a type of Cloud Computing Service used by system administrators, network architects.
* It simply provides the underlying O.S., security, networking, and servers for developing the applications.
* It provides access to fundamental resources such as physical machines, virtual machines, virtual storage, etc.
or
It is a form of cloud computing that delivers the fundamental compute, network & storage resources to the consumer on demand, over the internet & on a pay as you go basis.

* we can scale up & shrink the resources as per requirement

IaaS also offers
→ virtual machine disk storage
→ IP addresses
→ VLANs (virtual local area network)
→ load balancers - - -

AWS → Compute → EC2 { we can get virtual server, machine etc. }
Web Service
We have full control over computing resources through administrative access to VMs. (Benefit)

Tags IBM cloud | AWS | Oracle cloud Infrastructure | Google cloud | More control than P

(yha pe IaaS me baki dono ki chije to rahengi hi but also kuch added functionality bhi hongi)

(jesse isme main specific bol diya ki nhi mujhe code windows me nhi linus me karna h, ye chije paas me nhi bol pata tha, aur saas me to code hi nhi kar pata)

2.

* It is a type of Cloud Computing Service used by system administrators, network architects.
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(google app engine is a PaaS)

VIRTUALIZATION IN CLOUD COMPUTING

It is a technique which allows to share single physical instance of an application or resource among multiple organizations or customers.

* All virtual resources will work independently

* **HOST Machine**

→ machine on which virtual machine is going to be built.

Guest Machine → virtual machine

HYPERVISOR (VMM)

↓
s/w that creates & runs the VMs (virtual machines).
i.e. creates virtualization on physical

VMware
Hyper-V
virtual m/c monitor

Hypervisors are of 2 Types

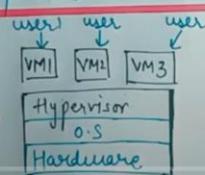
- 1) Type 1 hypervisor (bare metal or native hypervisor)
- 2) Type 2 hypervisor (hosted or embedded ").

BENEFITS of Virtualization

- (i) better resource utilization
- (ii) lowers the cost of IT infrastructure
- (iii) remote access
- (iv) pay per use of the IT infrastructure on demand.

- (v) enables running multiple O.S.
- (vi) if one virtual machine is not working or having any problem, others will not be affected.

LIKE :)
SUBSCRIBE



(ye to aata hi tumko!!)

(isme bas ek point remember jese wo 1gb game ka h to 100mb me hi chl rha to hum baki ko dediye 900 mb me apna kuch kuch karlo, to resource utilization increase hogyi!)

SERVERLESS COMPUTING

or serverless services

Serverless computing is a cloud computing execution model in which the cloud service provider allocates resources on demand, taking care of the servers on behalf of their customers.

→ * no infrastructure management } managed by cloud provider
→ * auto scaling based on incoming requests }

→ Reduces cost / cost effective (no charge for idle time).

Note → It enables developers to focus more on code / business logic (as we don't worry about infrastructure).

NO SERVERS?

→ Servers are there.

Note → When the app is not in use, there are no computing resources allocated to the app.

i.e. runs for a short duration only when invoked

IMP

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A serverless architecture is a way to build & run applications & services without having to manage infrastructure.

Your appli. still runs on servers but all the service management is done by the provider.

⇒ You no longer have to provision, scale & maintain servers to run your applications, DBs & storage systems.

HAVE FAITH 🌟 ✨