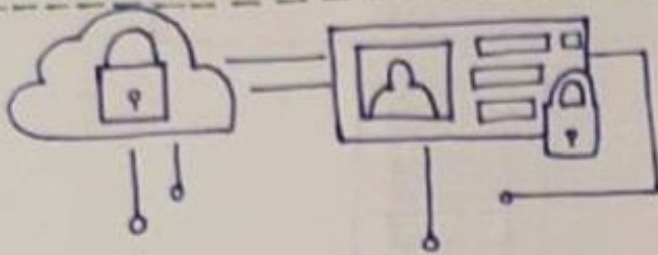


## \* Fraud Detection & Prevention



## \* Personalized Treatments

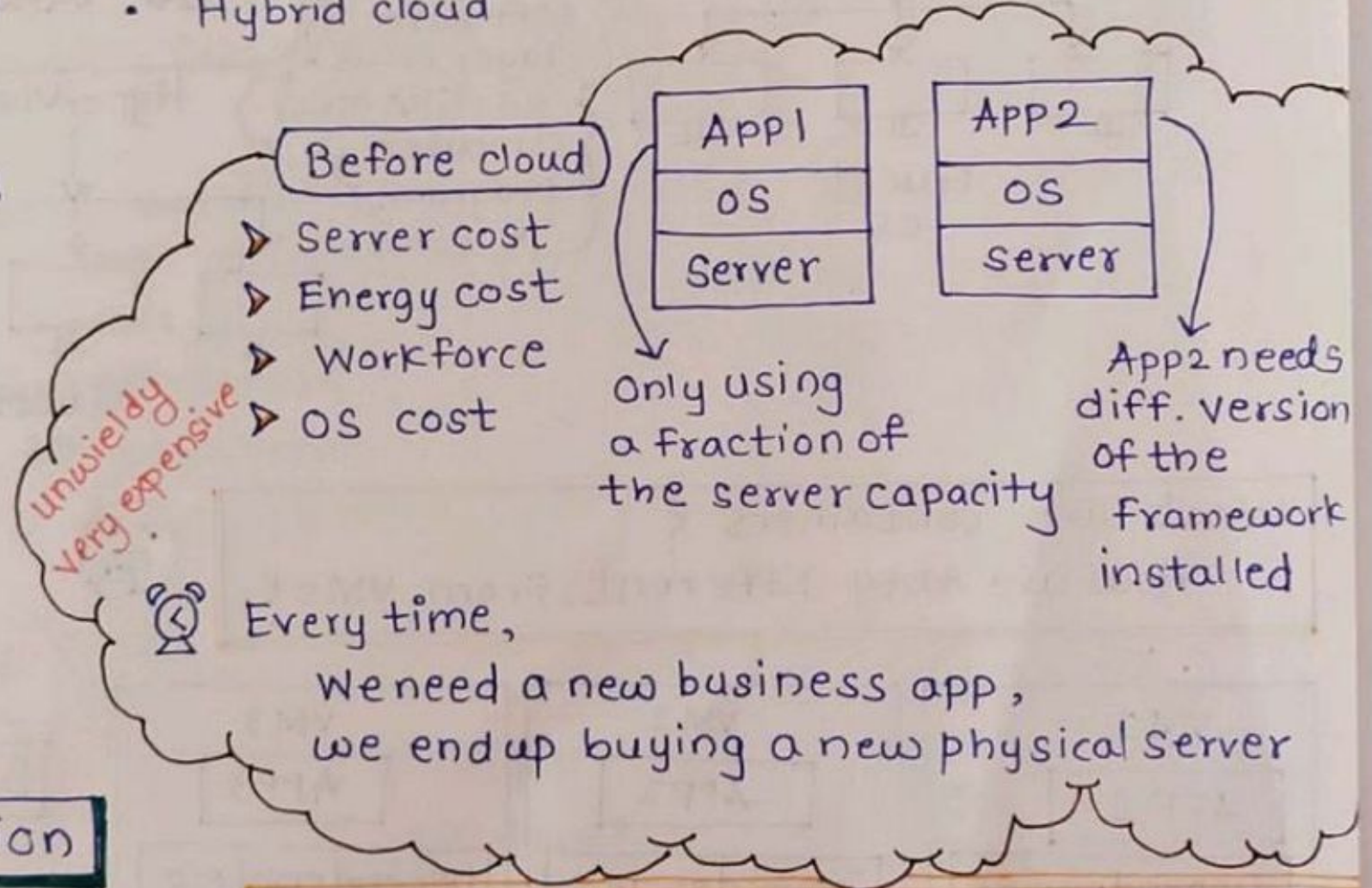
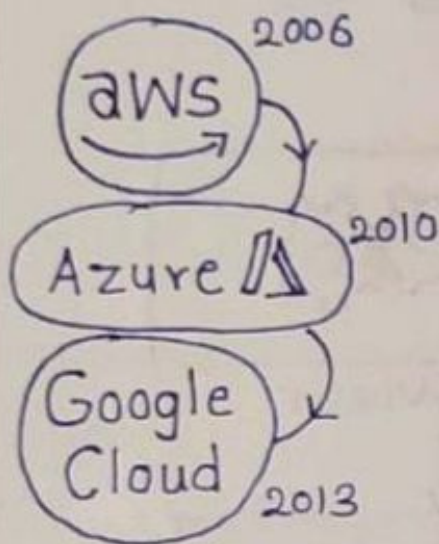


## \* Online Games

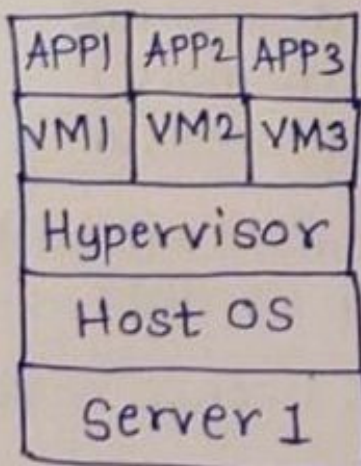


### cloud related Service

- Infrastructure as a service (IaaS)
- Platform as a service (PaaS)
- Software as a service (SaaS)
- Private cloud
- Public cloud
- Hybrid cloud



### Virtualization



Hypervisors make it possible to use more of a system's available resources and provide greater IT mobility since the guest VMs are independent of the host hardware. This means they can be easily moved between different servers.

a hypervisor reduces:

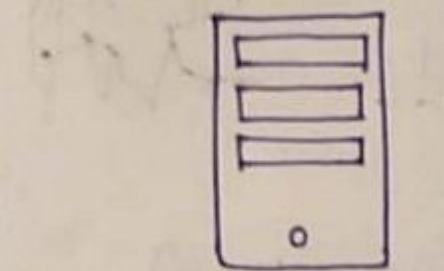
- space
- energy
- Maintenance requirements

In reality, Apps are running on the same physical server but on a dedicated virtual machine.

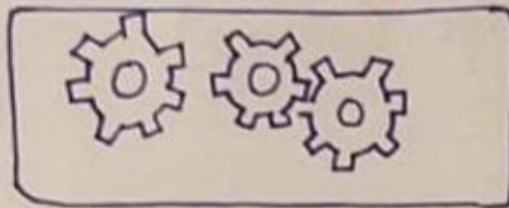


# Hypervisor or Virtual Machine Monitor (VMM)

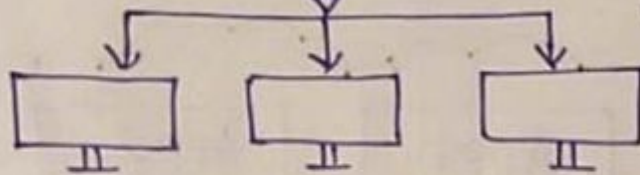
Type 1  
Native (bare metal)



Hardware



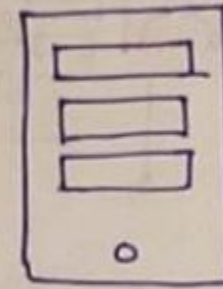
Hypervisor



Guest OS

acts like a lightweight OS & runs directly on the host's hardware

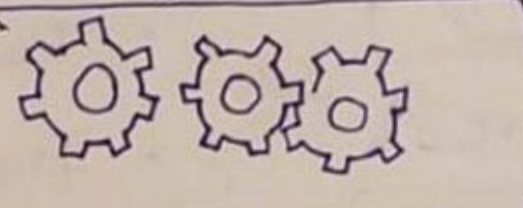
Type 2  
Hosted



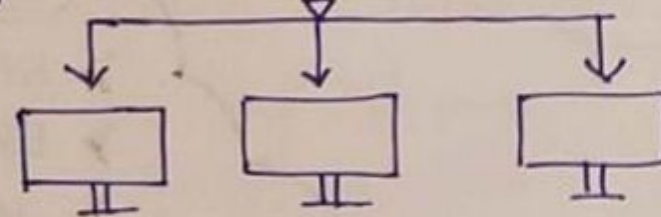
Hardware



Host OS



Hypervisor



Guest OS

runs as a software layer on an OS, like other computer program

What are containers ?

How are they different from VMs ?



Hypervisor

Host OS

Server 1

Downsides

- Wasted server resources
  - disk space
  - memory
  - processor
- Admin time to keep OS up to date
- OS license cost
- VM bootup consumes time



Containers Virtualizes the operating system

- abstraction at the operating system level
- Multiple containers can run on the same machine
- can share the host operating system kernel.
- container does not require its own operating system.
  - The amount of disk space, RAM, processor time and other server resources that are saved.
- container, packages your application code and its dependencies together.

### \* Benefits of cloud computing

#### Reduce costs

- ✓ cloud reduces both capex and opex.
- ✓ organization no longer have to spend huge amount of money on physical servers, related IT infrastructure specialized IT workforce server rooms or data centers.

#### pay as you go

You will pay for what you use.

cloud resources are metered

#### Business continuity

any crisis do not result in data loss

#### Scalability

scale up ↑  
scale down ↓

Never run out of resources.

#### Automatic Updates

#### Self service

#### Accessibility

accessed From virtually anywhere and anytime.

#### Increased collaboration

Setup & configure the server

Server room secured!

Servers

connect it to UPS & n/w

organizations faced with a large initial capital expenditure (Capex)

antivirus software

db server

proper cooling system

Maintenance any other dependencies

- disaster recovery
- failover system



## Risk of cloud computing

Loss of cloud data and services

Data security

Compliance and legal risks

cost concerns

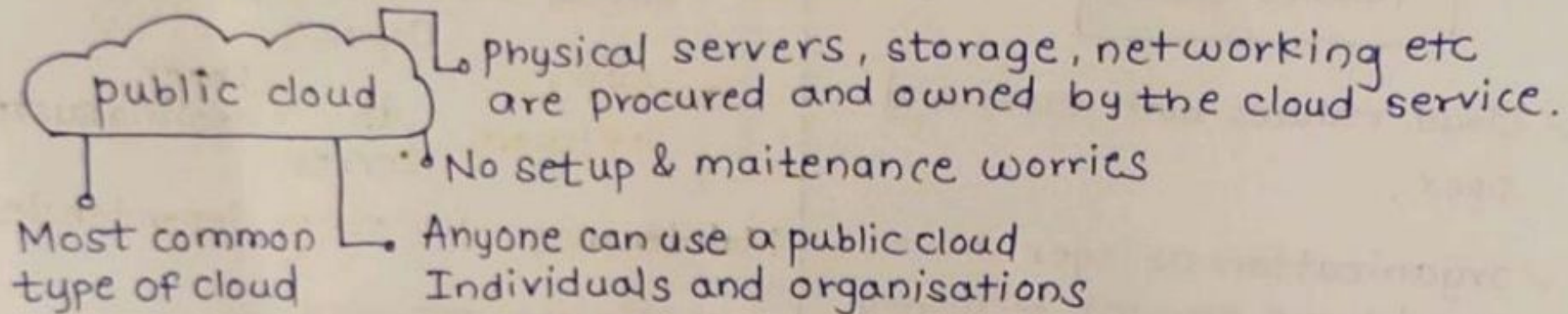
⇒ SLA's  
Service Level Agreement



Local and international regulations  
GDPR, HIPAA

What is a Public Cloud.

Benefits, Limitations & Usecases.



examples → Microsoft Azure  
Amazon AWS

Multi-tenancy

Manage the cloud services and resources using cloud provider web portal.

Multiorganisations share cloud resources.

pay-as-you-go like water or electricity bills

Benefits

- No upfront capex
- pay as you go
- No maintenance
- Highly scalable
- Highly reliable

Limitations

Low visibility and control  
compliance and legal risks  
cost concerns

usecase

unlimited scalability  
varying peak demands  
Fast growing businesses  
Backup and disaster recovery solutions.



## Private Cloud

- located on-premise | can be hosted by a third party service provider.
- resources are used by one private to a specific organisation business or organisations.

→ easy to customise a private cloud

→ used by government agencies  
financial institutions

### Benefits

Better security  
Better control  
Predictable costs  
Legal compliances

### Limitations

Limited scalability  
Huge initial capex  
Limited access

### Use case

Highly regulated business  
Tech companies that require complete control  
Large companies that require custom solutions.

## Hybrid Cloud

cloud Bursting

private cloud : security sensitive & business-critical operat<sup>n</sup>  
public cloud : High-volume & lower security needs.  
combination of private + public

### Regular Demand

App continue to run in your own private cloud.

### Spike in Demand

Burst through to the public cloud.

### Benefits


Best of both the worlds  
Better Control  
Cost-effective

### Limitations

Low visibility and control  
Additional complexity  
Compliance and legal risks  
cost concerns


### Use Case



private cloud 


Inside organization's corporate n/w

The organisation that owns the private cloud must purchase the cloud hardware  
single-tenancy

public cloud 

Anywhere on the Internet

cloud service provider (Amazon or Microsoft) provides the infrastructure.  
Multi-tenancy

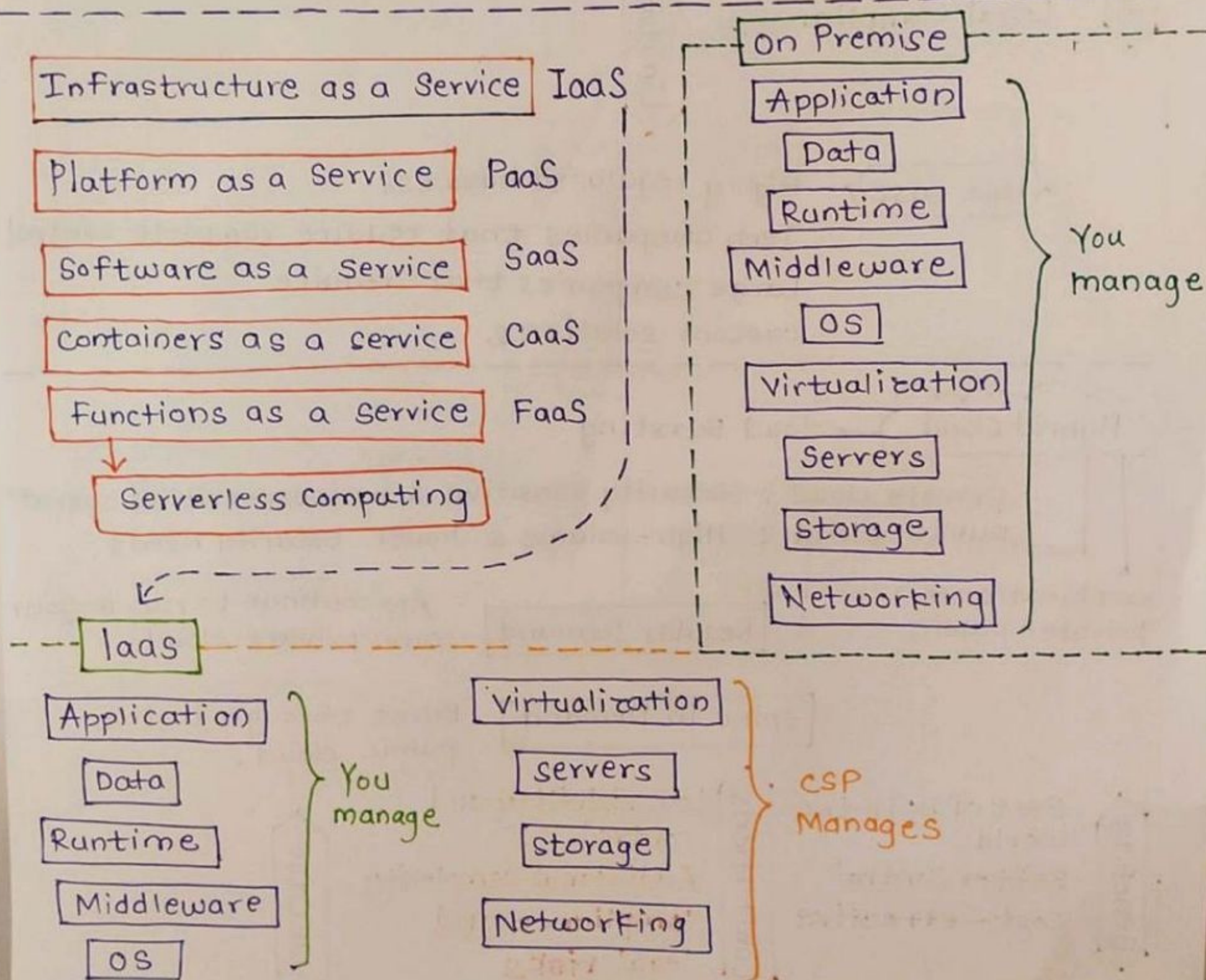
Hybrid cloud 

Inside corporate n/w or

Anywhere on the internet

private cloud - Your organisation provides the hardware

cloud service provider provides for the public cloud.  
single-tenancy + Multi-tenancy





# IaaS → Hardware as a Service (HaaS)

→ Computational or Storage

↓  
web application  
host & run

↓  
install SQL server  
oracle

Infrastructure  
Teams

Software Development  
Teams

## Benefits

- Reduce financial risk
- Deployment speed
- Geographical advantages
- Unlimited scalability.

If your new product launch, well and good.  
If it doesn't shut things down and  
stop paying.

## PaaS

Applications

Data

You  
manage

Runtime

Middleware

OS

Virtualization

Servers

Storage

Networking

CSP (cloud service  
providers)  
Manages

→ platform for software  
Development

Windows Azure

AWS Elastic Beanstalk

Google App Engine

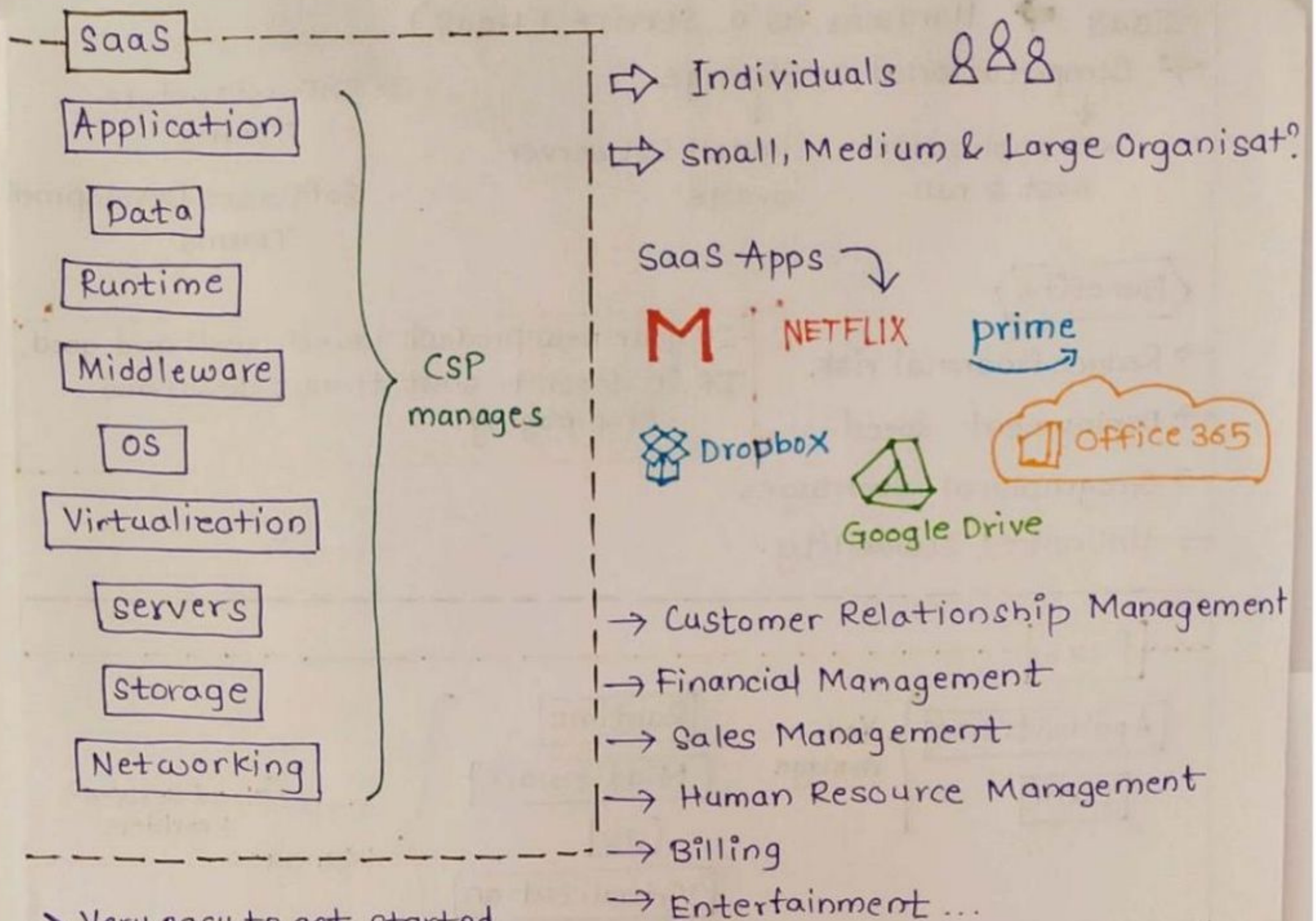
Data driven web app

- ◇ ASP.NET Core or Java
- ◇ SQL Server or Oracle
- ◇ Web Server

PaaS Benefits = IaaS + PaaS Benefits

- Reduce financial risk
- Deployment speed
- Geographic location adv.
- Auto scaling
- Reduce development time
- Support global team
- Develop for multiplatform
- Affordability





- Very easy to get started
- Accessibility
- Automatic updates
- Flexible usage-based pricing
- Reduced financial risk
- Affordability

By moving to cloud, you are improving Security

[pragimtech.com/courses/learn-cloud-computing-from-scratch/](https://pragimtech.com/courses/learn-cloud-computing-from-scratch/)

