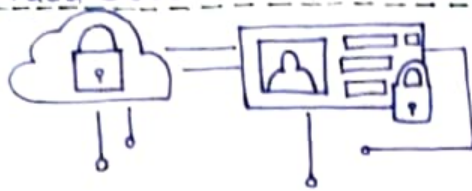


## \* Fraud Detection & Prevention



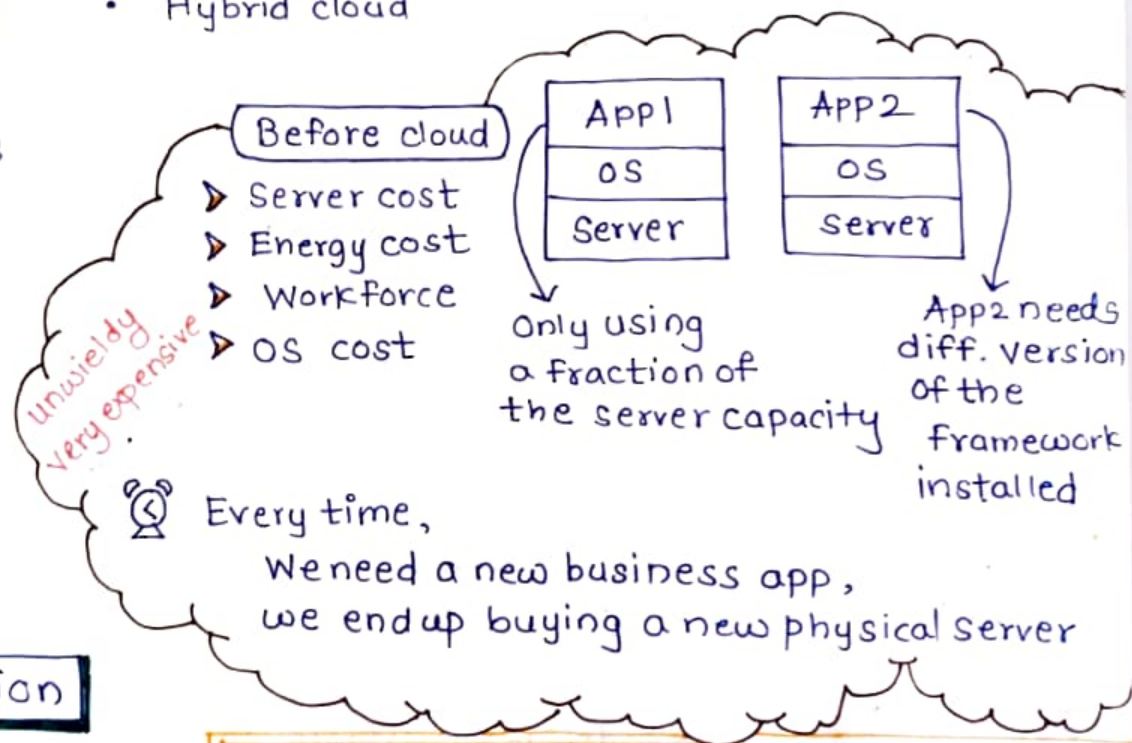
## \* Personalized Treatments

## \* Online Games

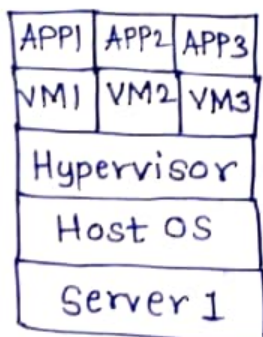


### Cloud related Service

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



### Virtualization



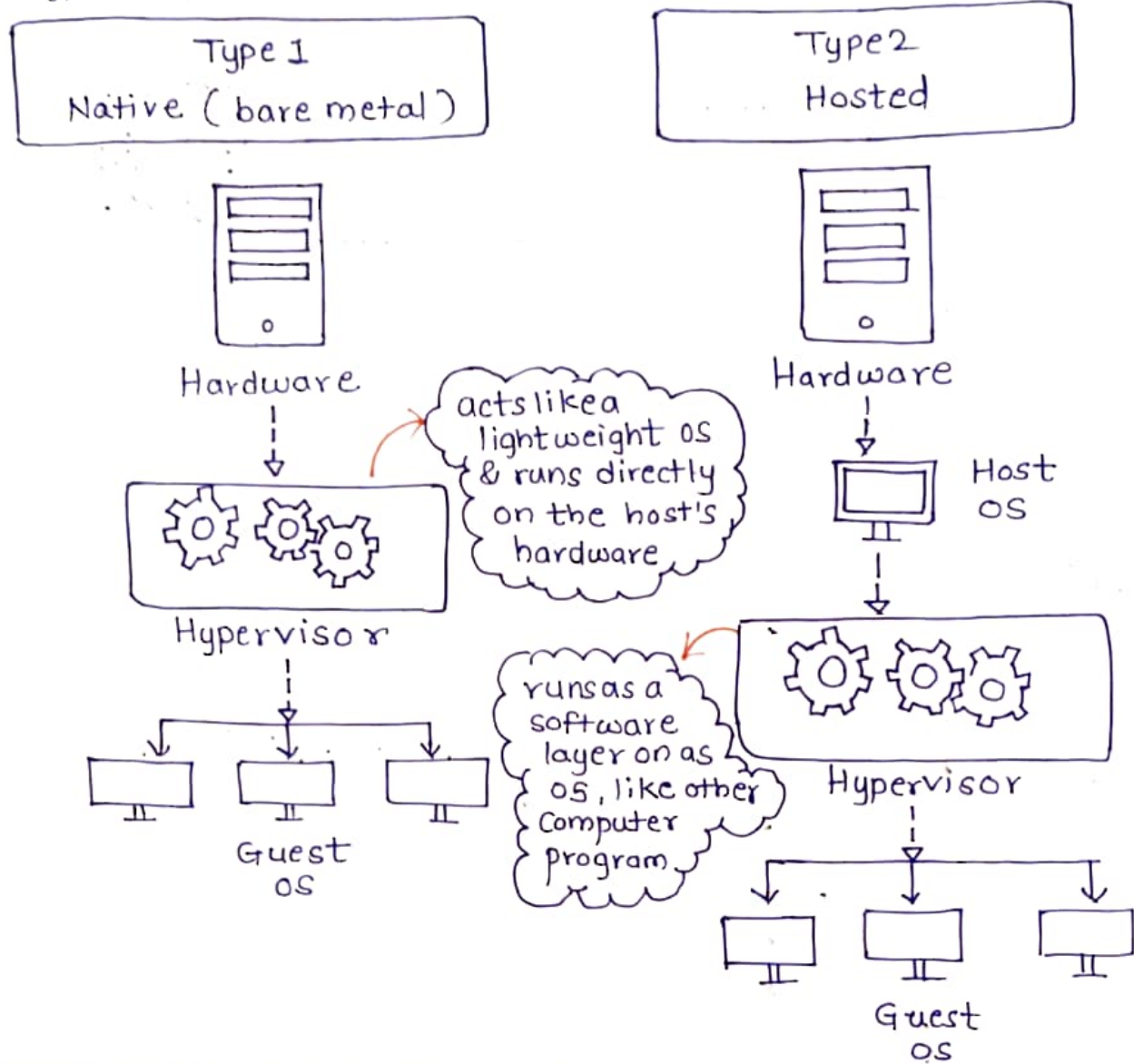
Hypervisors make it possible to use more of a system's available resources and provide greater IT mobility since the guest VMs are independent of the host hardware. This means they can be easily moved between different servers.

a hypervisor reduces:

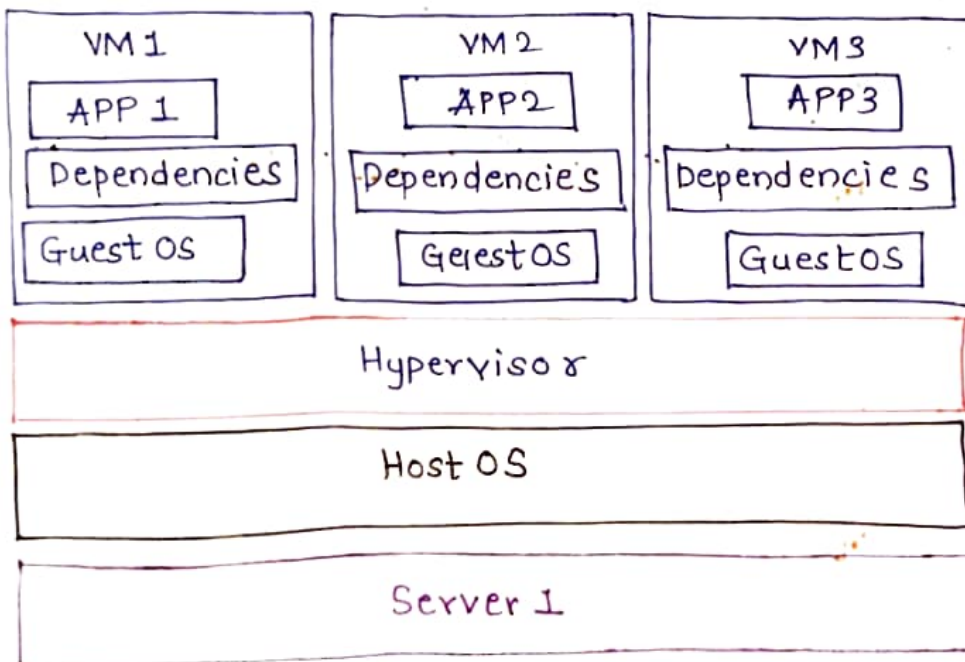
- space
- energy
- Maintenance requirements

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

# Hypervisor or Virtual Machine Monitor (VMM)



What are containers?  
How are they different from VMs?



## 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

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What is a Public Cloud.

Benefits, Limitations & Usecases.

public cloud

physical servers, storage, networking etc  
are procured and owned by the cloud service.

No setup & maintenance worries

Most common  
type of cloud

Anyone can use a public cloud  
Individuals and organisations


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 operations  
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

Infrastructure as a Service IaaS

Platform as a Service PaaS

Software as a Service SaaS

Containers as a service CaaS

Functions as a Service FaaS

Serverless Computing

IaaS

On Premise

Application

Data

Runtime

Middleware

OS

Virtualization

Servers

Storage

Networking

You manage

Application

Data

Runtime

Middleware

OS

You manage

Virtualization

servers

Storage

Networking

CSP Manages

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



SaaS

Application

Data

Runtime

Middleware

OS


Virtualization

servers

Storage

Networking

CSP  
manages

⇒ Individuals 

⇒ Small, Medium & Large Organisat<sup>n</sup>

SaaS Apps →

M

NETFLIX

prime



Dropbox



Google Drive



→ Customer Relationship Management

→ Financial Management

→ Sales Management

→ Human Resource Management

→ Billing

→ Entertainment ...

- 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/)

Encryption

Auditing

Two-Factor  
authenticat<sup>n</sup>

Reviewing and rotating  
access Keys and  
credentials