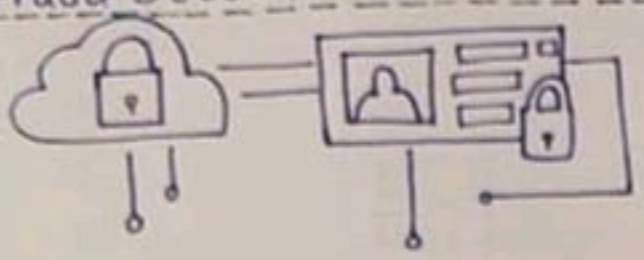
Cloud Computing Tutorial

SUN, Oct 17

* Fraud Detection & Prevention

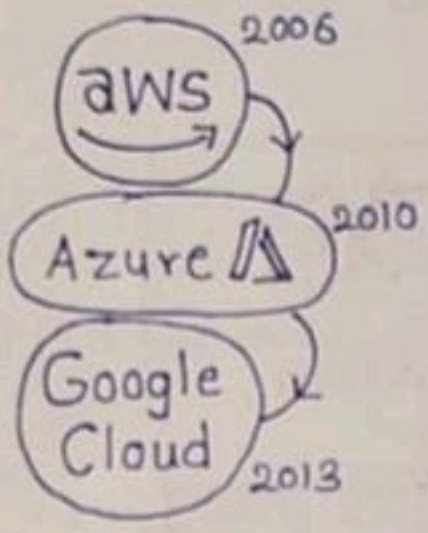


* Personalized Treatments

* Online Games.

Cloud related Service

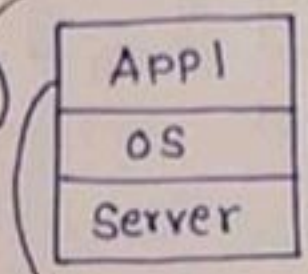
- Infrastructure as a service (IaaS)
- Platform as a service (PaaS)
- Softwaare as a service (SaaS)
- Private cloud
- Public cloud
- Hybrid cloud



Before cloud

- Server cost
- Energy cost
- Workforce
- OS cost

Unwieldy
Very expensive

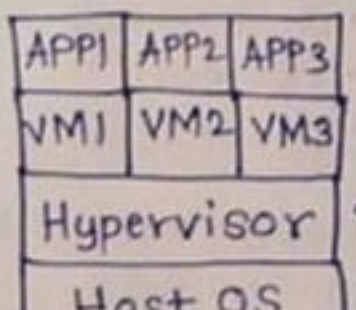


Only using a fraction of the server capacity

App2 needs diff. version of the framework installed

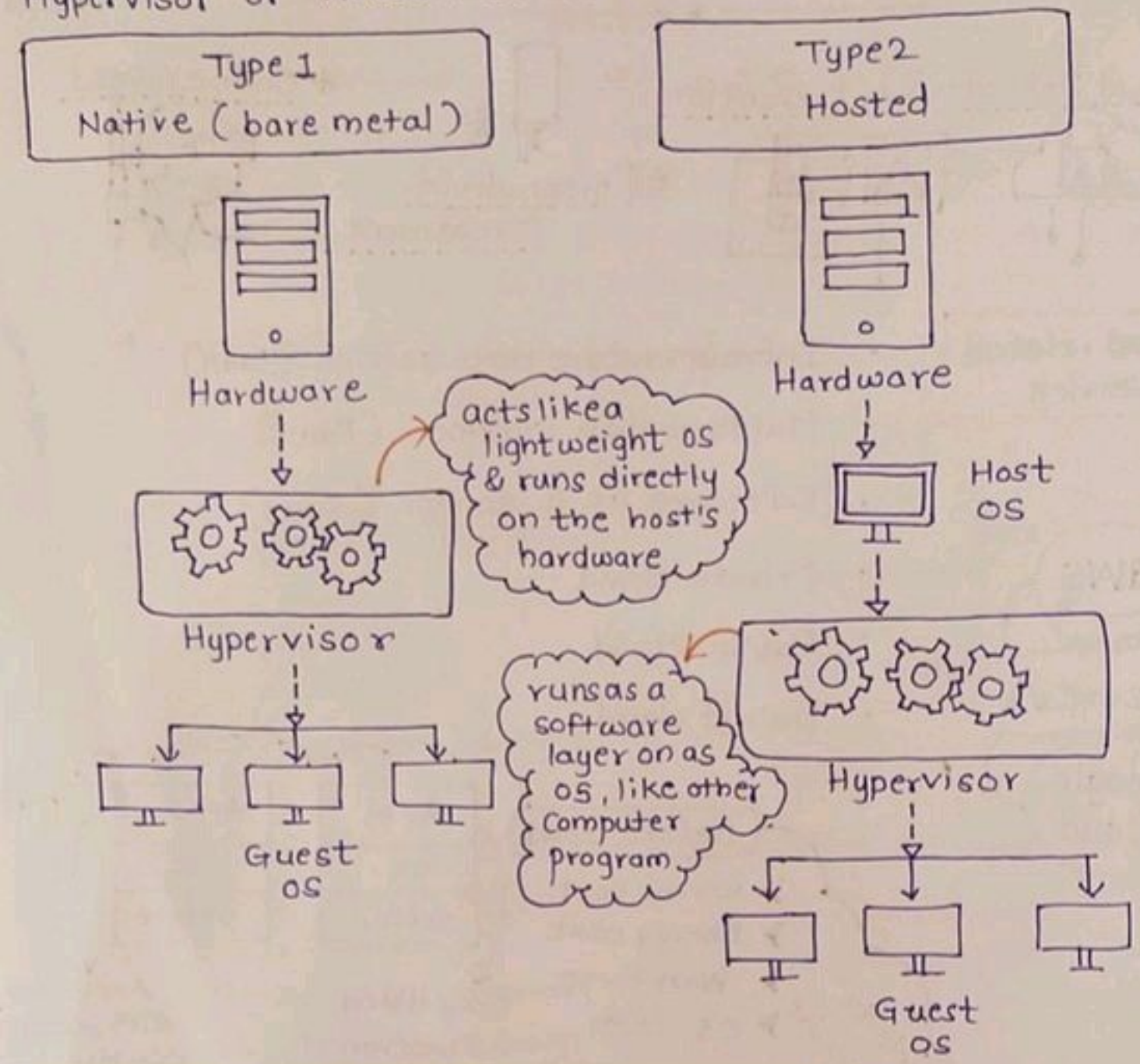
Every time, We need a new business app, we end up buying a new physical server

Virtualization

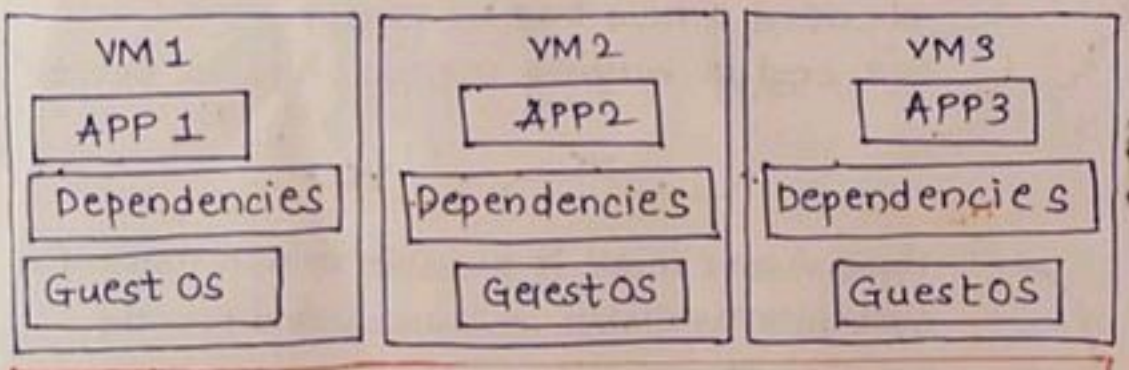


Hypervisors make it possible to use more of a system's available resources and provide greater IT mobility since the guest VMs are independent of the host hardware. This means they can be easily moved betweer

Hypervisor or Virtual Machine Monitor (VMM)



What are containers ?
How are they different from VMs ?



Downsides

- Wasted server resou
  - disk space
  - memory
  - processor
- Admin time to keep os

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 it's dependencies togther.

* 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 work force server rooms or data centers.

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

pay as you go

You will pay for what you use.

Cloud resources are metered

Scalability

scale up ⇧

scale down ⇩

Never run out of resources.

Accessibility

accessed From virtually anywhere and anytime.

Business continuity

any crisis do not result in data loss

Automatic Updates

Increased collaboration

Self service

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.

public cloud
- physical servers, storage, networking etc are procured and owned by the cloud service.
- No setup & maitenance worries
- Most common type of cloud
- Anyone can use a public cloud Individuals and organisations

examples → Microsoft Azure
Amazon AWS

Multi-tenancy
Multi organisations share cloud resources.

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

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

- Unlimited scalability

Private Cloud

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

private to a specific organisation

→ 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°
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.

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 Intenet

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 thehardware

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

On Premise

Application

Data

Runtime

Middleware

OS

Virtualization

Servers

Storage

Networking

You manage

Iaas

Application

Data

You manage

Virtualization

servers

CSP

IaaS ➡ Hardwar as a Service (HaaS)

Computational or Storage

↓ web application host & run

↓ install SQL server oracle

Infrastructure Teams

Software Developmen 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 ----▷

Data driven web app

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

Windows Azure

AWS Elastic Beanstalk

Google App Engine

SaaS

- Application
- Data
- Runtime
- Middleware
- OS
- Virtualization
- Servers
- Storage
- Networking

CSP manages

⇨ Individuals

⇨ Small, Medium & Large Organisat°

SaaS Apps ↘

M · NETFLIX · prime

Dropbox · Google Drive · Office 365

→ 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

Encryption ↘

Auditing ↑

Two-factor authenticat° ↓

Reviewing and rotating access keys and credentials

pragimtech.com/courses/learn-cloud-computing-From-Scratch/