



ARUNAI ENGINEERING COLLEGE

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

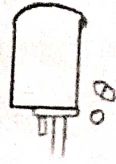
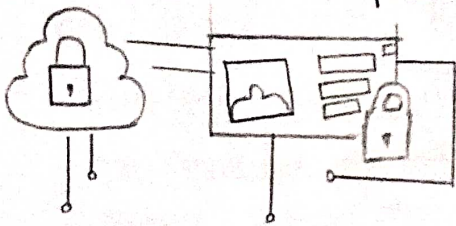
CS8791-CLOUD COMPUTING

MIND MAP



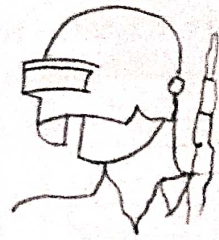
Cloud Computing Tutorial.

Fraud Detection & prevention



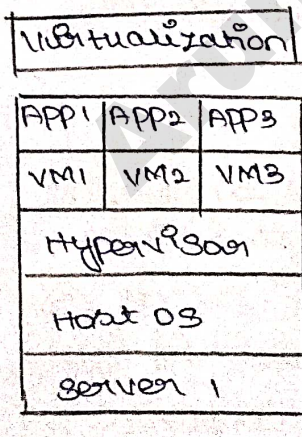
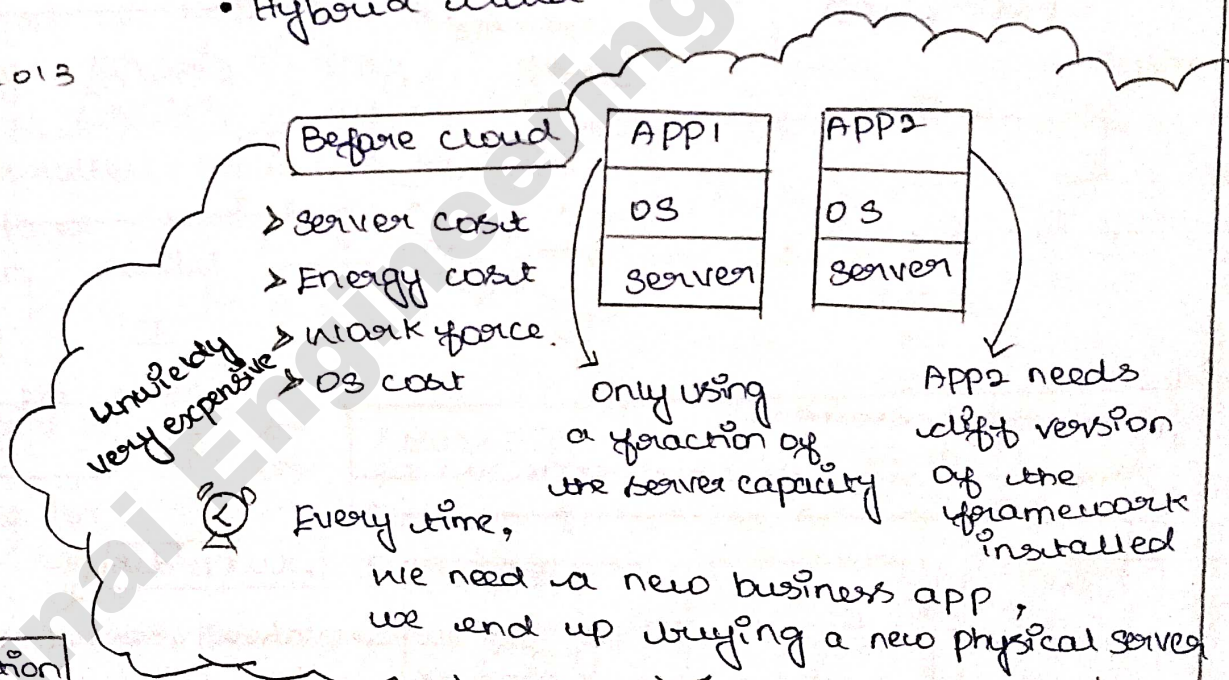
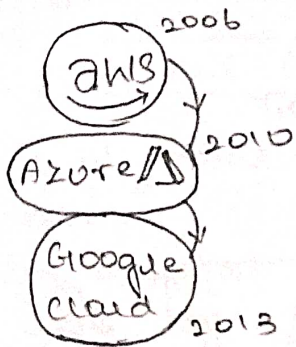
Personalized Treatments

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



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:

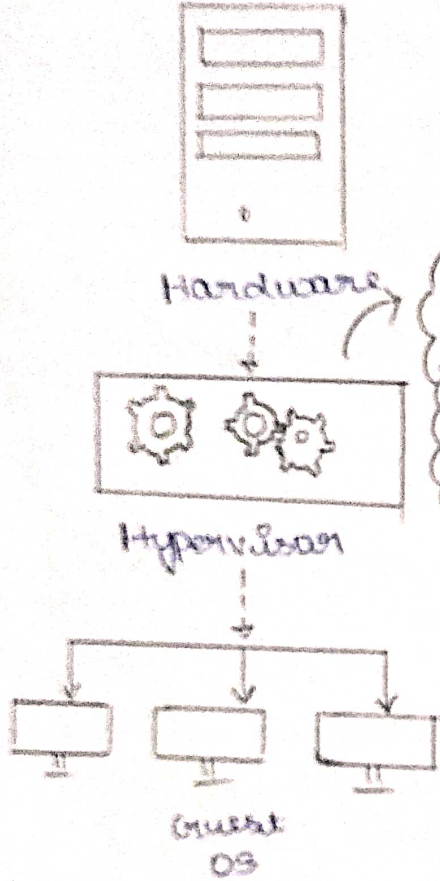
- space
- maintenance
- energy
- requirements

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

Hypervisor or Virtual Monitor (VMM)

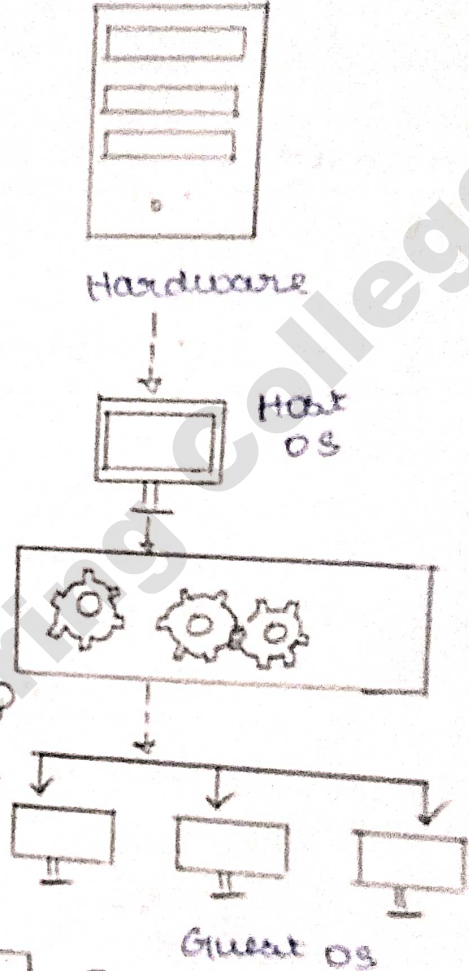
Type 1
Native (bare metal)

Type 2
Hosted

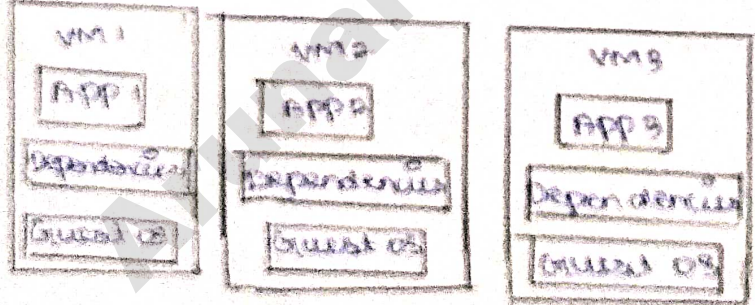


Act like a light weight OS & runs directly on the host OS hardware

Runs as a software layer on an OS, like a computer program

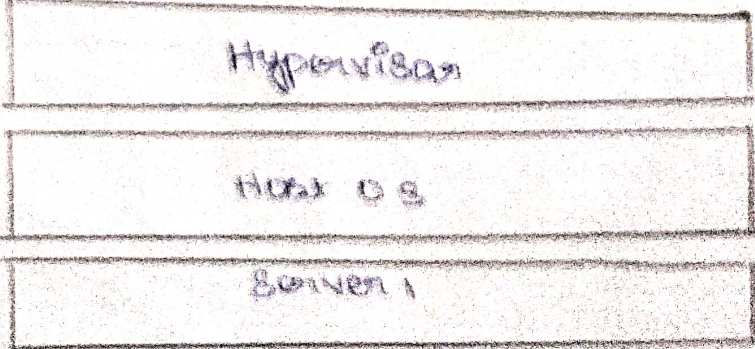


What are containers?
How are they different from VMs?



Containers

- ✓ Planned server downtime
- ✓ disk space
- memory
- processor
- ✓ Admin time to keep OS up to date
- ✓ OS license cost
- ✓ VM backup consumes time



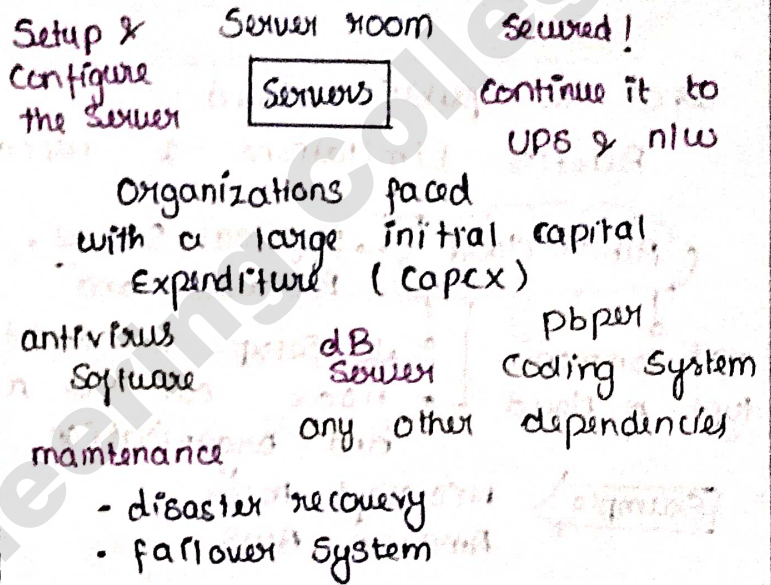
Containers virtualise the operating system

- 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

Scalability

Scale up ↑
Scale down ↓

Never run out of resources

Accessibility

accessed from virtually anywhere and anytime

Business Continuity

any errors do not result in data loss

Automatic updates

Self Service

Increased Collaboration

Risk of cloud computing

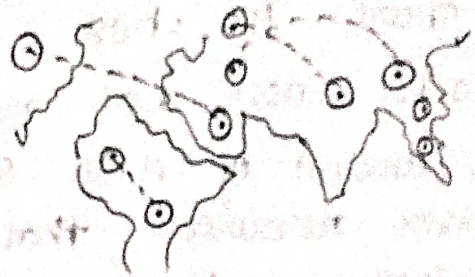
⇒ SLA'S
Service Level Agreement

Loss of cloud data and services

Data Security

Compliance and legal risks

Cost concerns



Local and international regulations
GDPR, HIPAA

What is public cloud

Benefits Limitations & Use cases

Public cloud (in a cloud shape)
Physical Servers, Storage, networking etc are procured and owned by the cloud service provider.
No Setup & maintenance worries.
Most common type of cloud.
No one can use a public cloud Individual and organisation.

Example → Microsoft Azure
Amazon AWS

Multi-tenancy

multiple 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

Use cases

unlimited scalability
Peak demands
fast growing businesses
Backup and disaster recovery solutions

Private cloud

located on-premise | can be hosted by third party
resources are used by one business

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

Usecase

highly regulated business
Tech Companies that requires complete
large companies custom solutions

Hybrid cloud

cloud Bursting

Private cloud: Security sensitive & business critical

Public cloud: high volume & lower security needs

Combination of public + private

Regular Demand

App continues to run in your own private cloud

Spike 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
Legal risks


Usecase

Private cloud 

Single organization
Corporate n/w

Public cloud 

Anywhere on internet

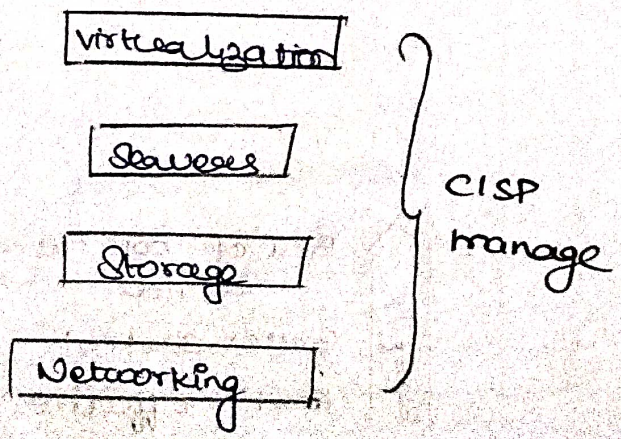
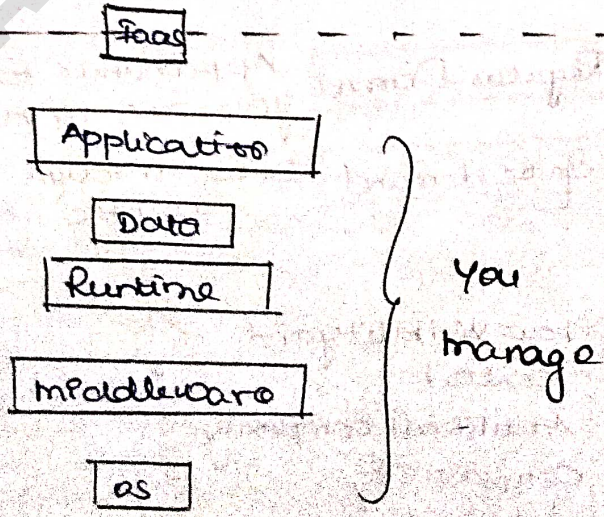
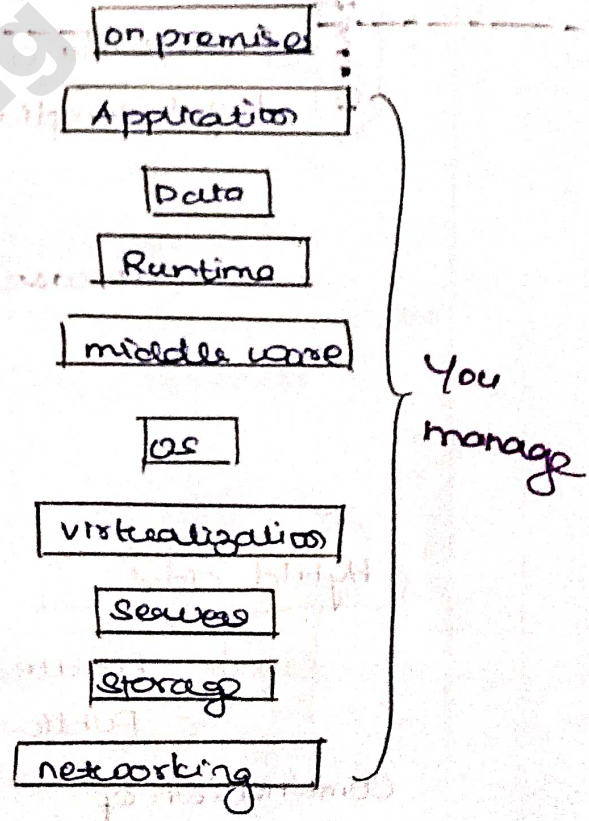
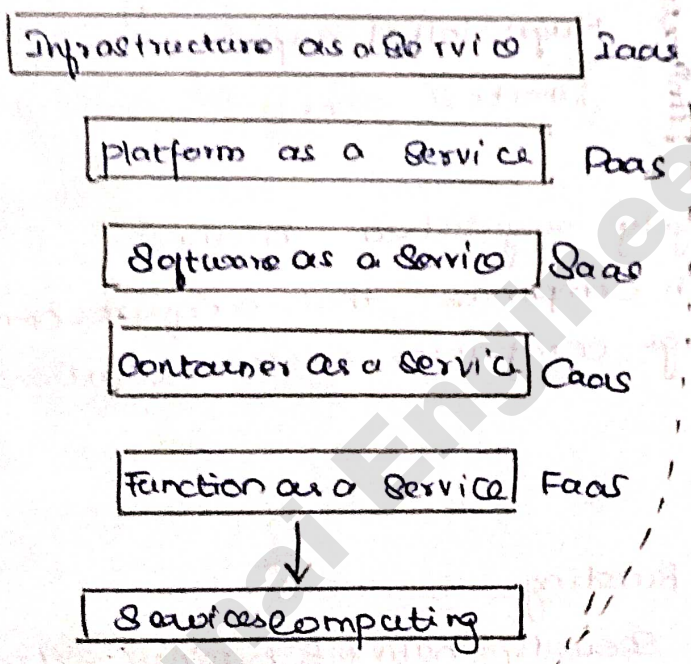
Hybrid cloud 

Inside corporate n/w
Anywhere on internet

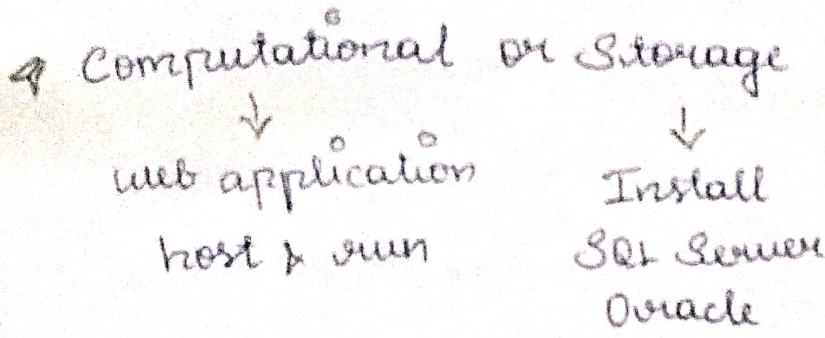
This organization that owns private cloud must purchase cloud hardware do single-tenancy

cloud service provider (Amazon or Microsoft) provides infrastructure multi-tenancy

Private cloud - provides hardware
cloud service - provides private public cloud
Single tenancy + multi tenancy



IaaS → Hardware as a Service (Haas)



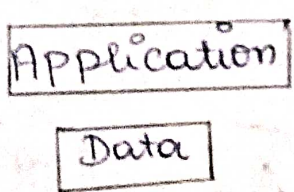
Infrastructure Teams
Software development Teams

Benefits

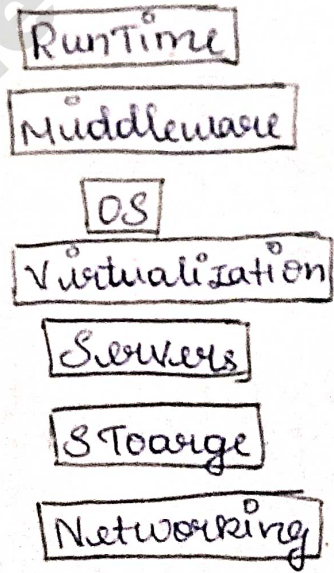
- Reduce Financial risk
- Deployment speed
- Geographical advantages
- Unlimited Scalability

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

PaaS



you Manage



CSP (cloud Service providers) Manage

platform for software Development

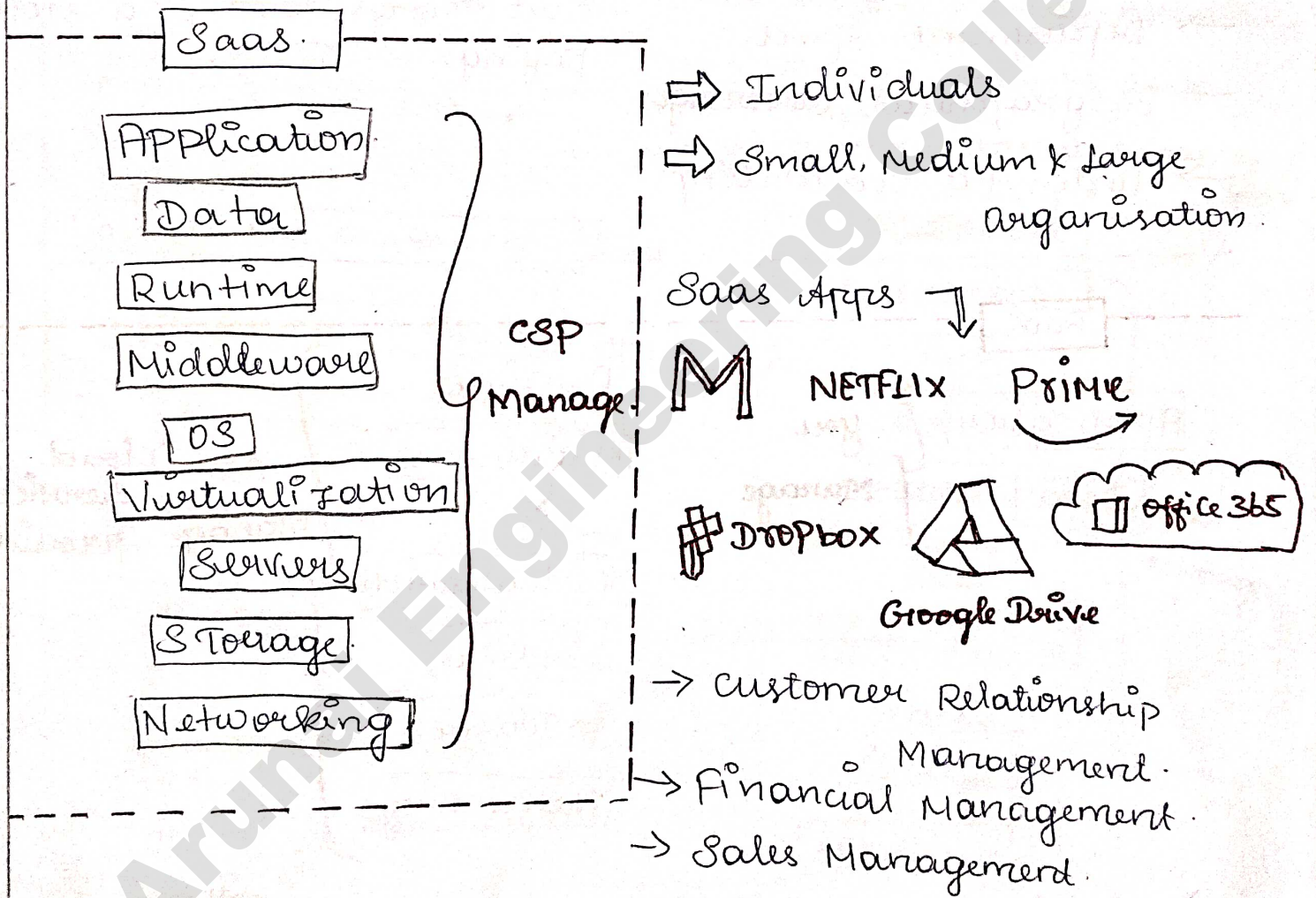
- Windows Azure
- AWS Elastic Beanstalk
- Google APP Engine.

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.
- * AutoScaling.

- * Reduces development Time
- * Support Global Team
- * Devel for multiplatform
- * Affordability.



By moving to cloud, you are improving security.

~ pragimtech.com/courses/learn-cloud-computing-from-scratch/

