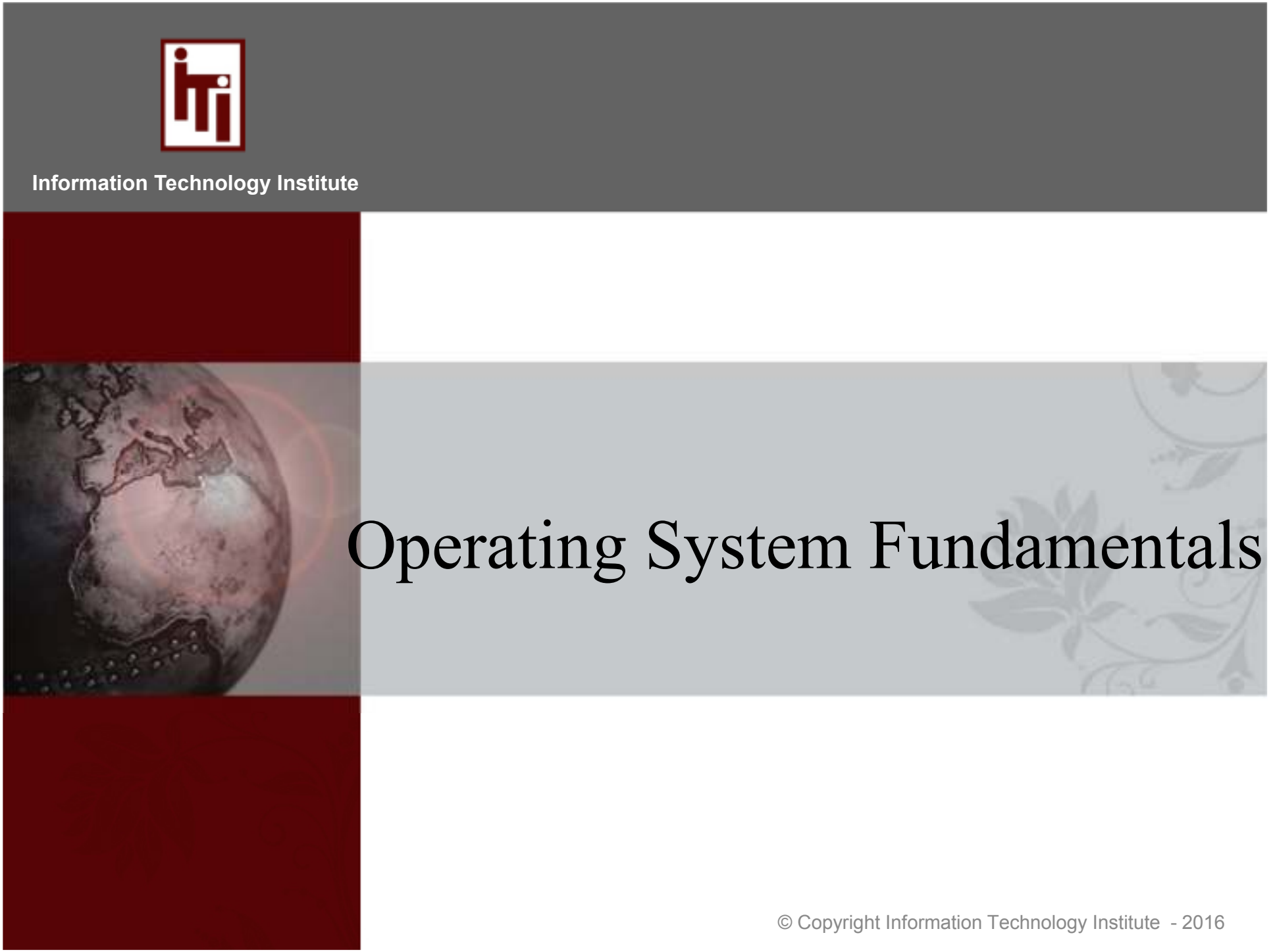
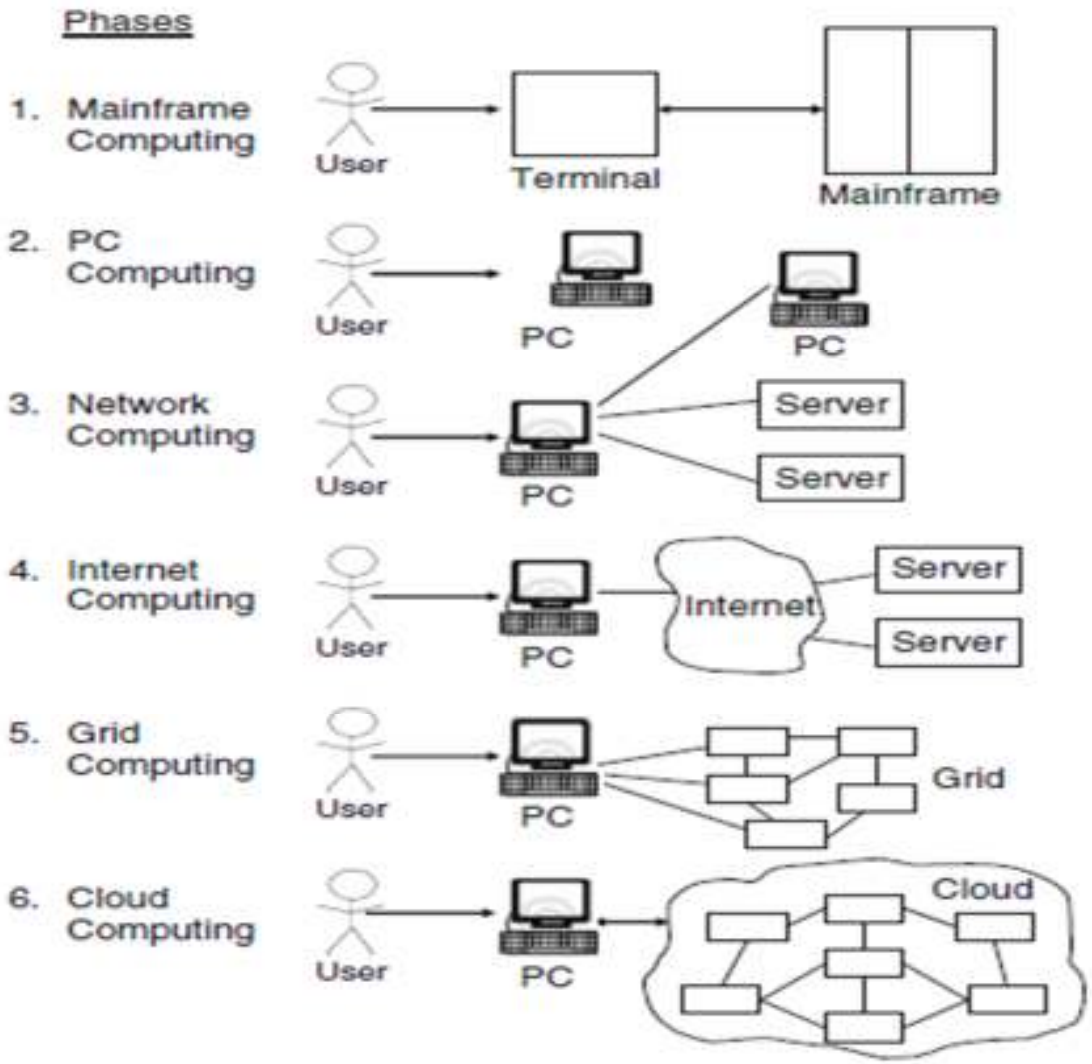


CLOUD COMPUTING OVERVIEW

Table of Content

INTRODUCTION

Computing History



Cloud Computing History

- Concept evaluated in 1950(IBM) called RJE (Remote Job Entry Process).
- In 2006 Amazon provided first public cloud AWS (Amazon Web Service).

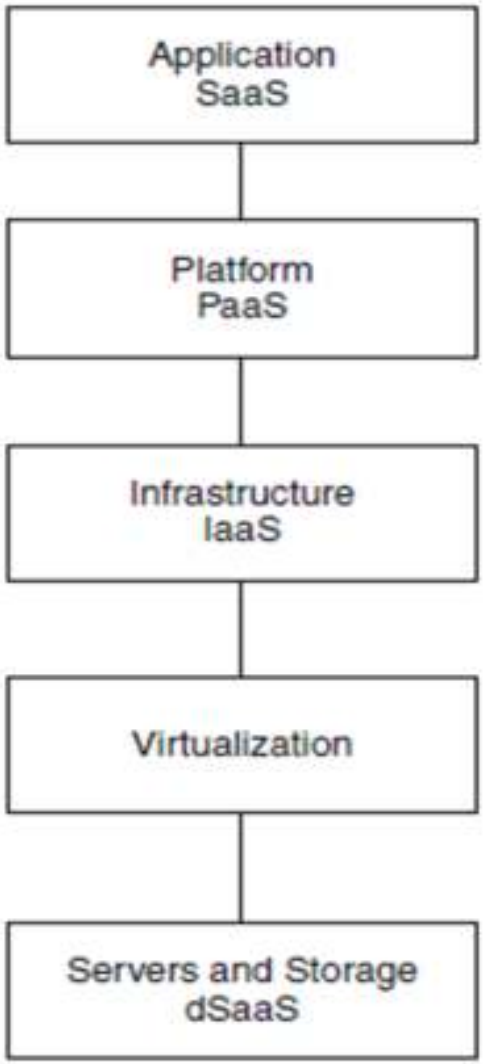
What is Cloud?

- The term cloud refers to Network or Internet. Something that is present in at remote location.
- Cloud can provide
  - Services over network (on Public networks or on Private networks).
  - Applications such as email, web conferencing, customer relationship management (CRM)

What is Cloud Computing?

- Cloud computing can be defined as a new style of computing in which dynamically scalable and often virtualized resources are provided as a services over the Internet.
- Cloud computing refers to manipulating, configuring, and accessing the application online. It offers online data storage, infrastructure and application.
- Cloud computing is both combination of software and hardware based computing resources delivered as a network service.

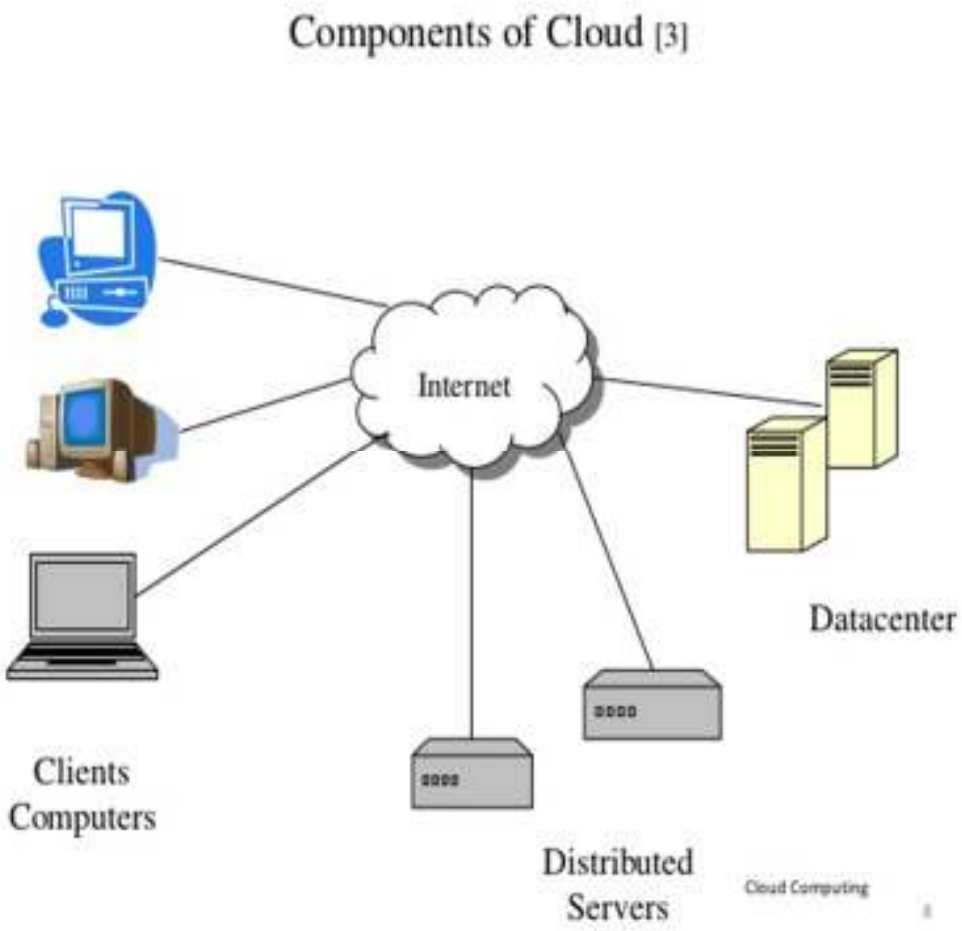
Cloud Computing Layered Architecture



Cloud Computing Architecture

Cloud Components

- Client computers
- Datacenters
- Distributed Servers



Clients

- Clients are the devices that the end user interact with cloud.
- Clients can be:
  - Thick
  - Thin
  - Mobile

Datacenter & Distributed Servers

- Datacenter is a collection of servers where applications is placed and is accessed via internet.

- Distributed Servers are in different places geographically, but they are working as if they are next to each other.

Central Server

- It administrates the system such as monitoring traffic, clients requests to ensure everything runs smoothly.
- It uses a special type of software called middleware.
- Middleware software allows computers to communicate with each other.

Models for Cloud Computing

- Deployment models
- Service models

Deployment Models

- Deployment models define the type of access to the cloud.
- There are four types of access
  - Public
  - Private
  - Hybrid
  - Community

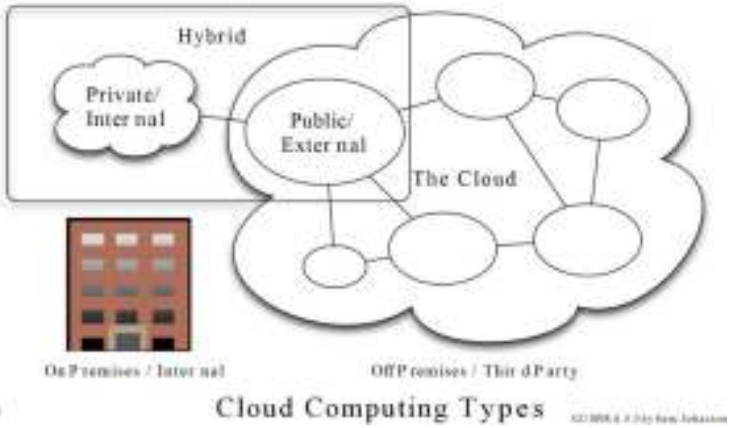
Deployment Models cont'd

- Public cloud
  - It allows systems and services to be accessible to the general public.
  - It may be less secure due to its openness (email).
- Private cloud
  - It allows systems and services to be accessible within an organization
  - It is more secure due to its private nature

Deployment Models cont'd

- Hybrid cloud
  - It is a mixture

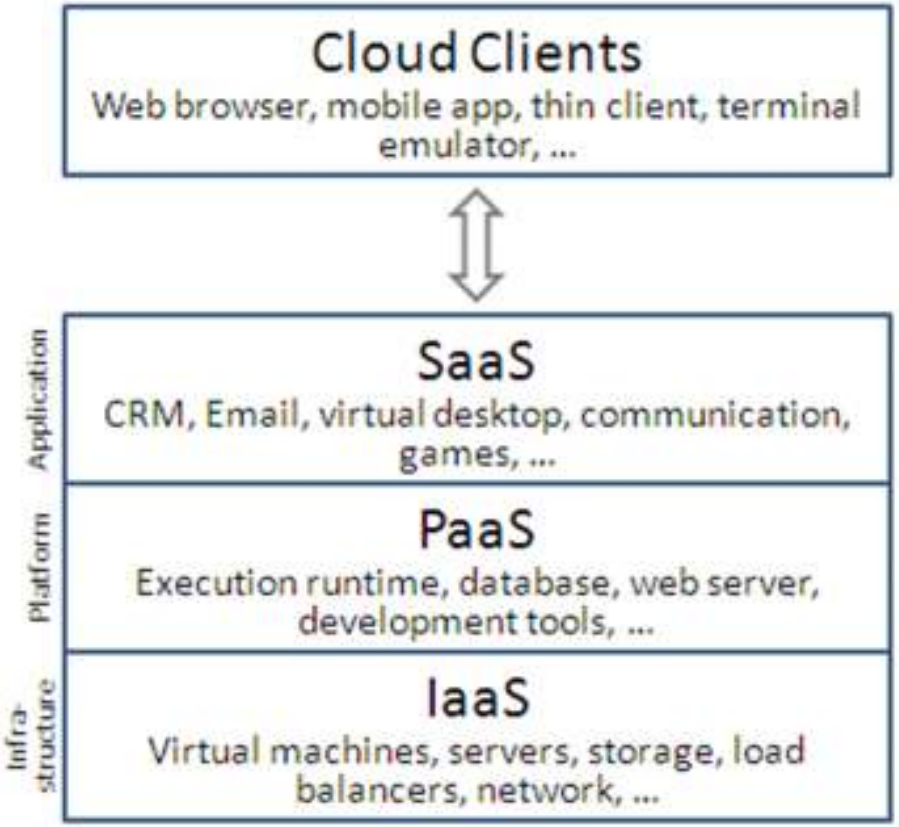
    of public and private cloud.



  - The critical activities are performed using private cloud while non critical activities are performed using public cloud.
- Community cloud
  - It allows systems and services to be accessible by a group of organizations

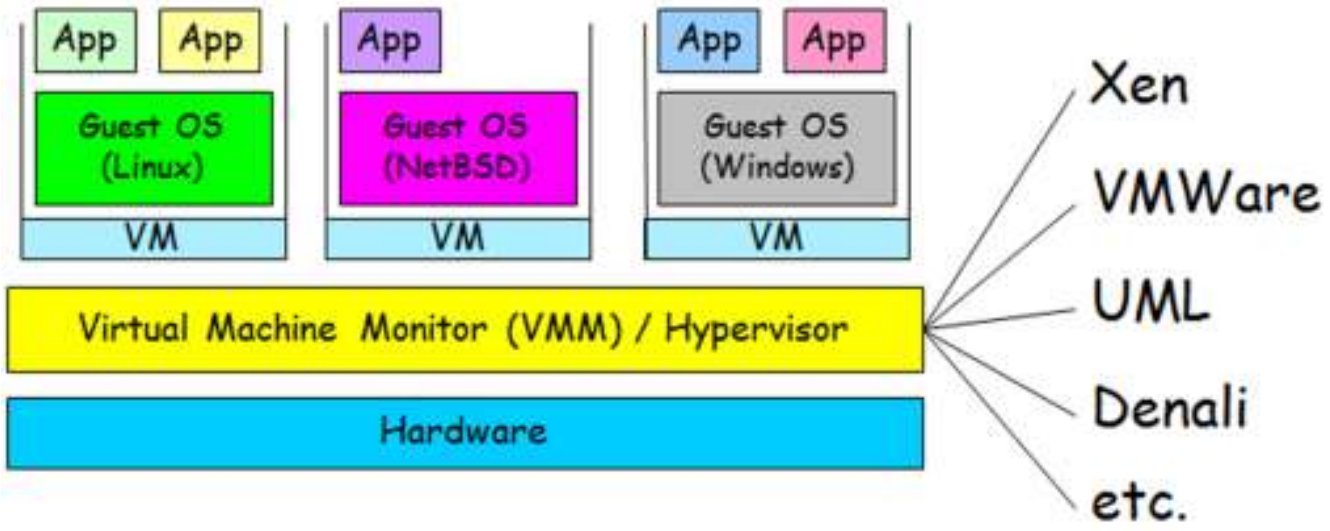
Service Models

- Infrastructure (IaaS)
- Platform (PaaS)
- Software (SaaS)
- Network (NaaS)
- Database (DBaaS)

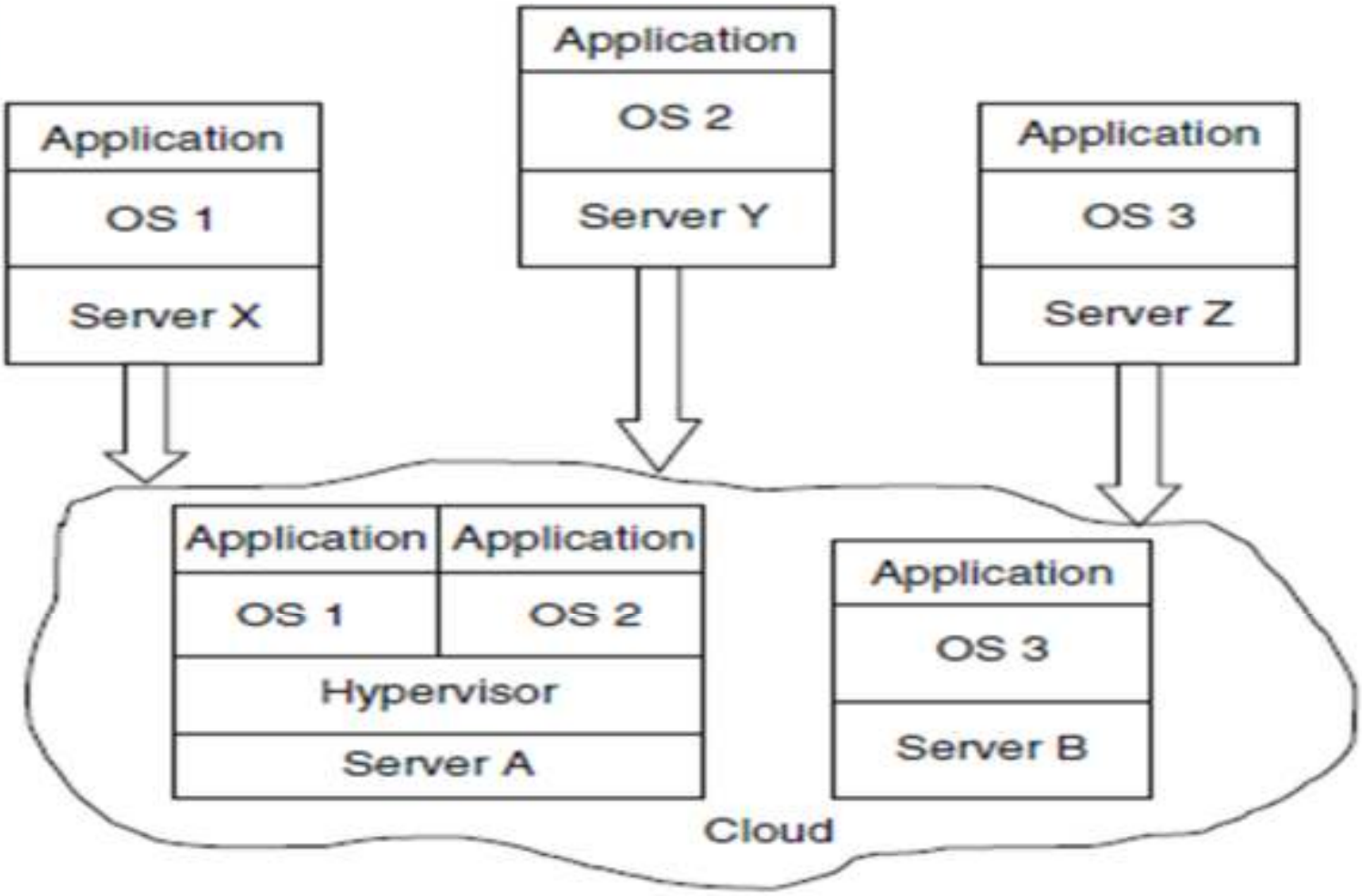


Virtualization

- VM technology allows multiple virtual machines to run on a single physical machine



Virtualization



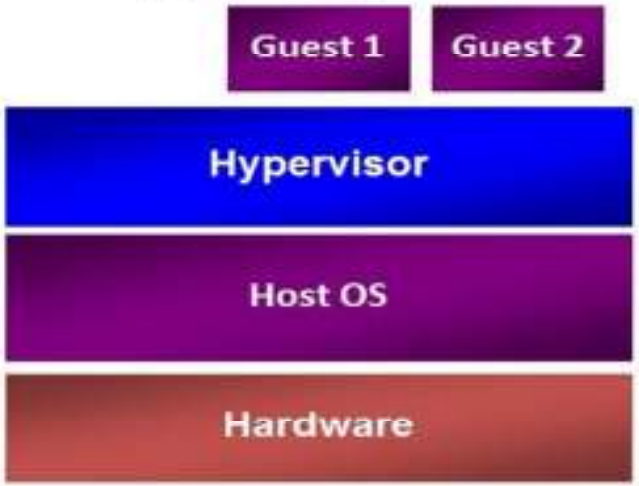
Hypervisor Types

Hypervisor Design:

Two approaches

Hosted

Type 2 Hypervisor

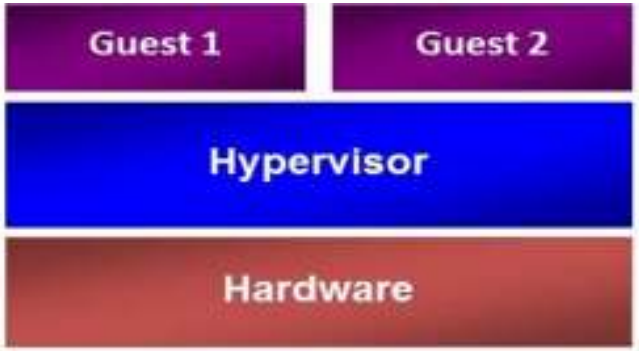


Examples:

- Virtual PC & Virtual Server
- VMware Workstation
- KVM

Bare Metal

Type 1 Hypervisor



Examples:

- Hyper-V
- Xen
- VMware ESX

Virtualization

Advantages of virtual machines:

- Run operating systems where the physical hardware is unavailable.
- Easier to create new machines, backup machines, etc.
- Software testing using “clean” installs of operating systems and software.
- Emulate more machines than are physically available.
- Timeshare lightly loaded systems on one host.
- Debug problems (suspend and resume the problem machine).
- Easy migration of virtual machines (shutdown needed or not)
- Run legacy systems!

Cloud Computing Features

- Scalability and on-demand services
- User-centric interface
- Guaranteed Quality of Service (QoS)
- Autonomous system
- Pricing

Cloud Computing Challenges

- **Performance**
- **Security and Privacy**
- **Control**
- **Bandwidth Costs**
- **Reliability**