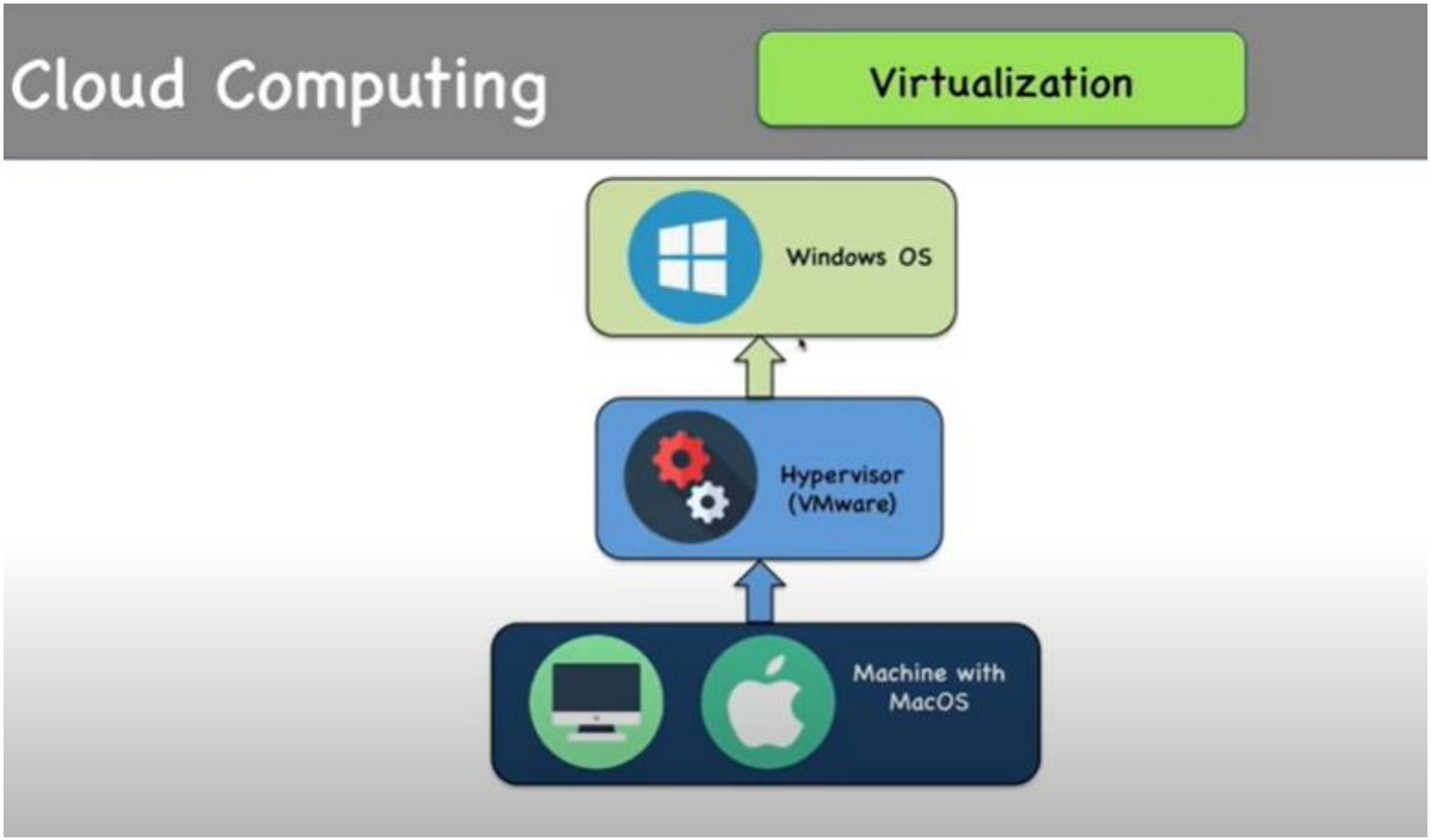
Virtualization

Virtualization

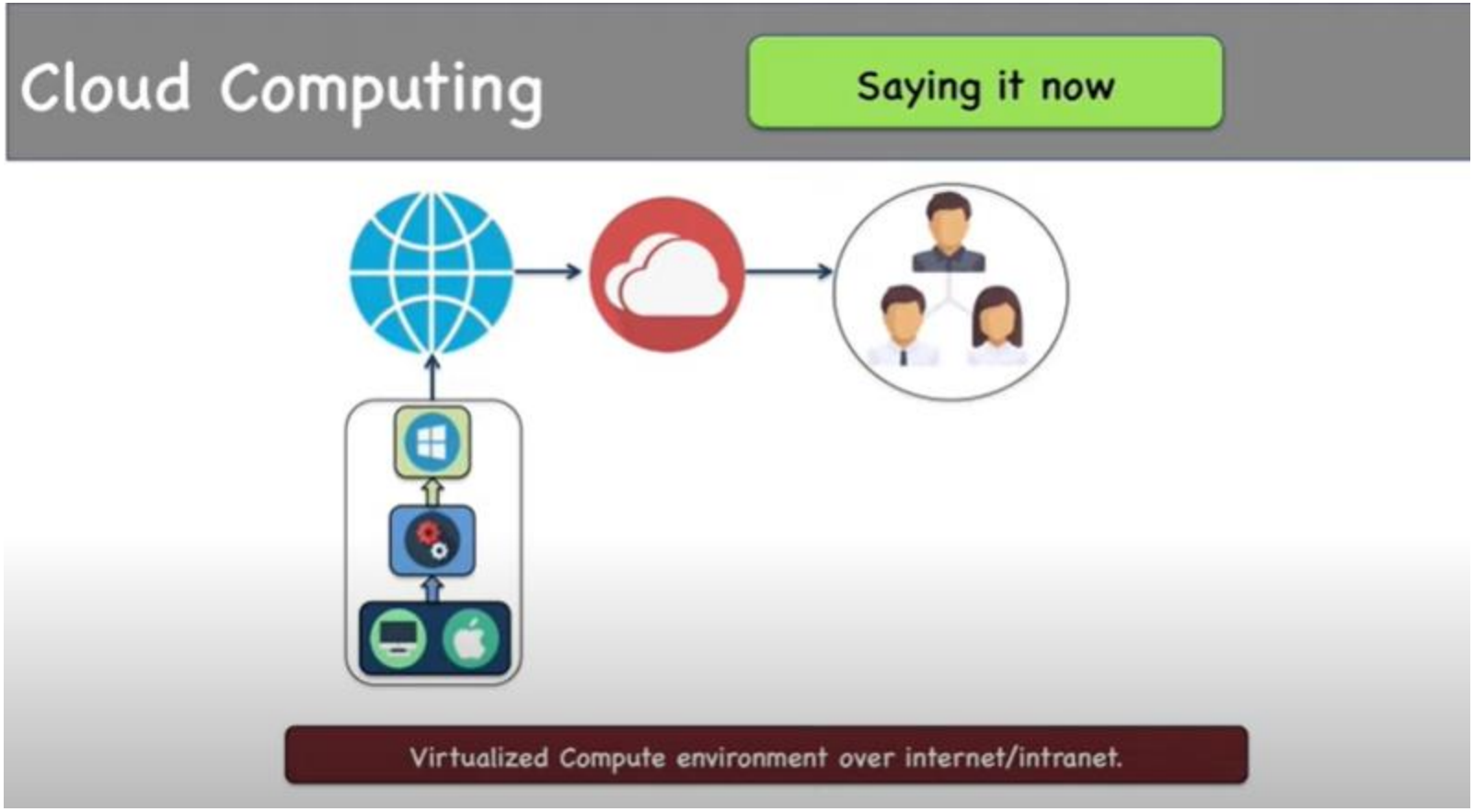


Virtualization

- The machine on which the virtual machine is created is known as host machine
- Virtual machine ->guest machine.
- This virtual machine is managed by a software or firmware, which is known as hypervisor.

Cloud Computing

- Cloud Computing =Virtualization +Internet



Virtualization

Virtualization is the ability that allows sharing the physical instance of a single application or resource among multiple organizations or users.

Types of virtualization

- Hardware Virtualization
  - CPU
  - Storage
  - Memory
  - Server
  - Network devices
- Software Virtualization
  - OS
  - Application
  - Services

Virtualization Software

Marketplace offerings

Freely Available

- Sun's Virtual Box
- Microsoft Virtual Pc
- Xen 3.0 (open source)
- Wine
- DOSBox

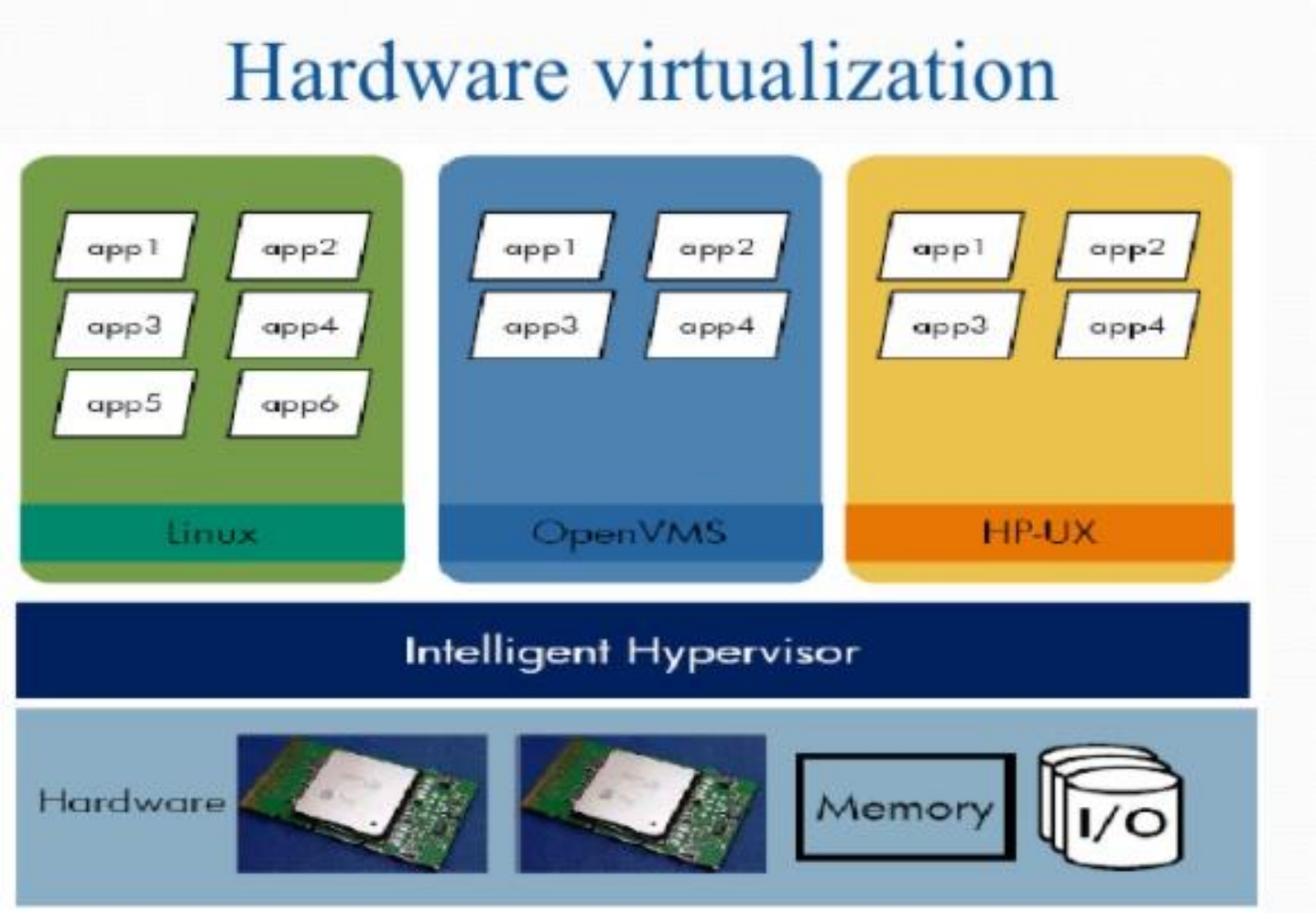
Commercial

- Microsoft Virtual Server
- Vmware Workstation
- Vmware Server

Hardware virtualization

- Virtualization uses software to create an abstraction layer over computer hardware that allows the hardware elements of a single computer—processors, memory, storage and more—to be divided into multiple virtual computers, commonly called virtual machines (VMs).
- It consists of a **hypervisor** which use to control and monitor the process, memory, and other hardware resources.
- After the completion of hardware virtualization process, the user can install the different operating system in it and with this platform different application can use.

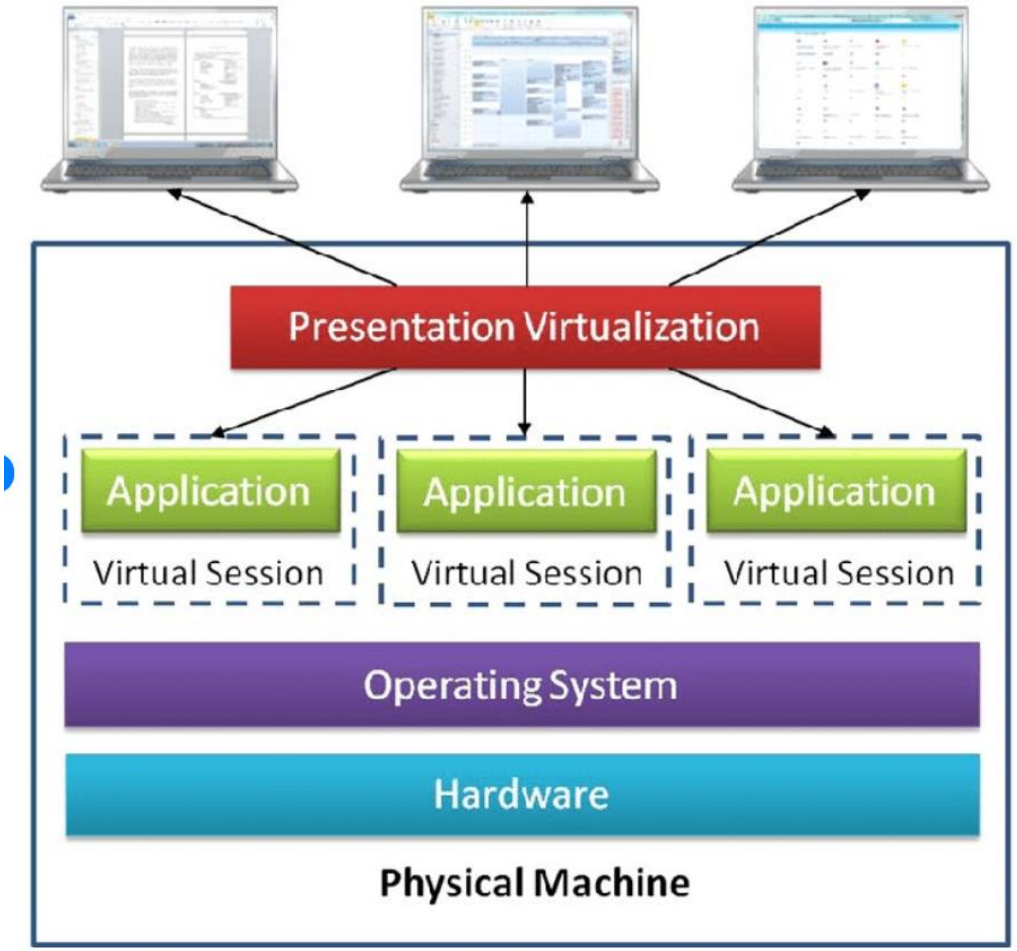
Hardware virtualization



Software virtualization

- Single computer server to run one or more virtual environments.
- It is quite similar to virtualizations but here it abstracts the software installation procedure and creates a virtual software out of it.
- In software virtualizations, an application will be installed which will perform the further task.
- One software is physical while others are virtual as it allows 2 or more operating system using only one computer.

Software(Application) virtualization



Virtualization Vs Cloud

- Cloud technology requires the concept of virtualization. Virtualization is a technology - it can also be treated as software that can manipulate hardware.
- At the same time, cloud computing is a service that is the result of Virtualization.
- Virtualization is the foundation element of cloud computing, whereas Cloud technology is the delivery of shared resources as a service-on-demand via the internet.
- Cloud is essentially made-up of the concept of virtualization

Advantage of Virtualization

- The number of servers gets reduced by the use of the virtualization concept
- Improve the ability of technology
- The business continuity was also raised due to the use of virtualization.
- Increase efficiency for the development and test environment.
- Lowers Total Cost of Ownership

Features Virtualization

- **Partitioning**: Multiple virtual servers can run on a physical server at the same time.
- **Encapsulation of data**: All data on the virtual server is encapsulated in a file format.
- **Isolation**: The Virtual server running on the physical server is safely separated and don't affect each other.
- **Hardware Independence**: When the virtual server runs, it can migrate to a different hardware platform

Hypervisors

Types of Hypervisor

- TYPE-2 (Hosted)

- TYPE-1 (Native/Bare Metal)

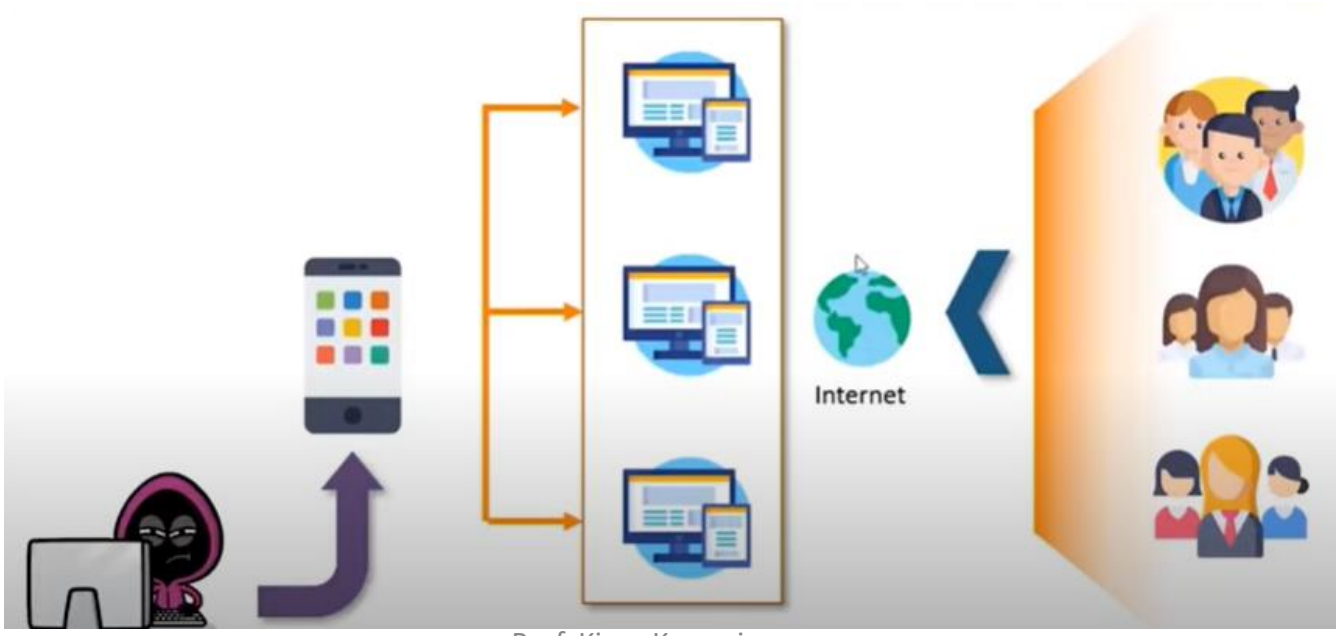
Hypervisors

Hypervisor Types

- Type 1: native (bare-metal) hypervisors
  - The Hypervisor runs directly on the host's hardware to control the hardware and to manage guest operating systems.
  - E.g., Xen, VMWare ESXi, Microsoft Hyper-V
- Type 2: hosted hypervisors
  - These hypervisors run on a conventional operating system just as other computer programs do.
  - E.g., VMWare Workstation, VirtualBox

Role of Cloud Service Providers

- Any app/website needs to purchase a server and create all configurations. Need a teem to manage these servers. Need to increase the server as no of users increases. To avoid all these: we will go to cloud and launch stack of servers. No need to buy, we can rent them. No infra headache, can focus on app development. AWS will manage scalability, security patch, networking, up gradation of hardware. Cost is also low.



Cloud Service Providers

Cloud Products

NETFLIX

airbnb

amazon

prime video

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