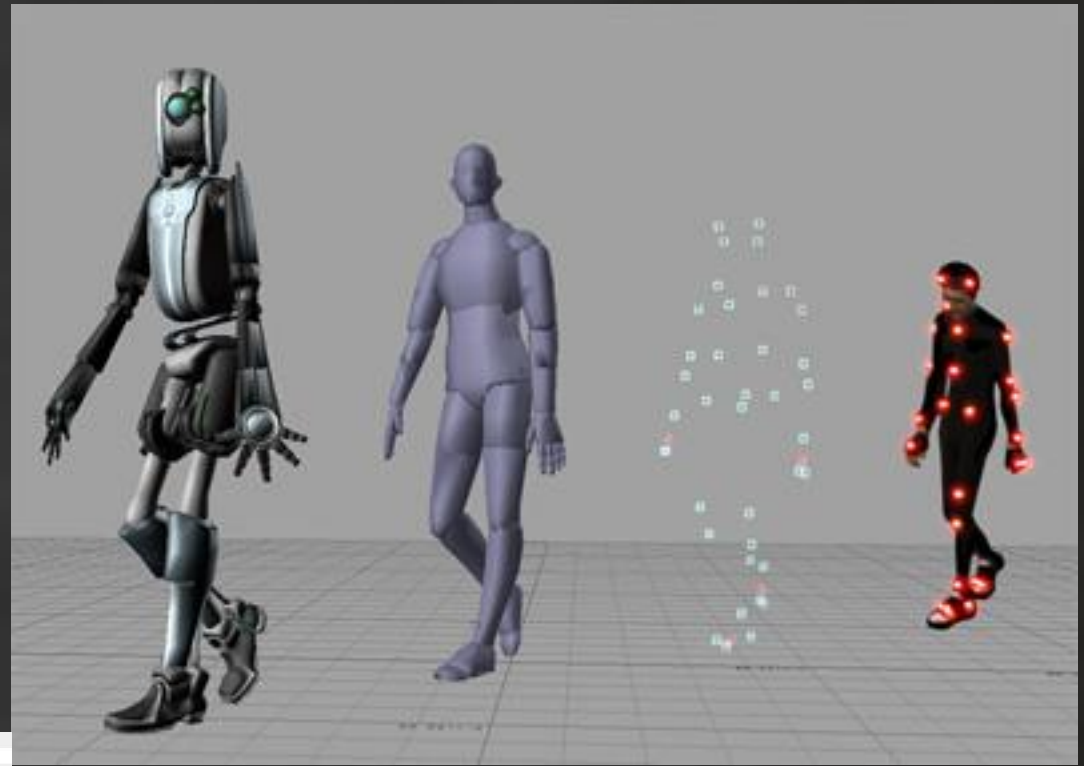
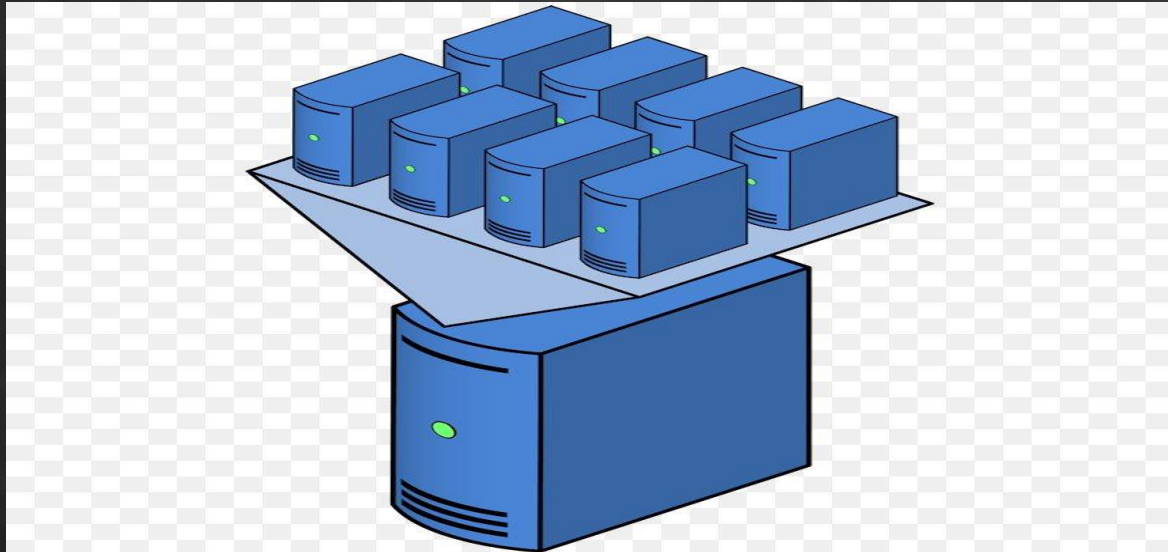


The Journey to the Cloud

- ✓ Virtualization technology
- ✓ Data center virtualization
 - ✓ Then Cloud computing
- ✓ Cloud Native Technologies

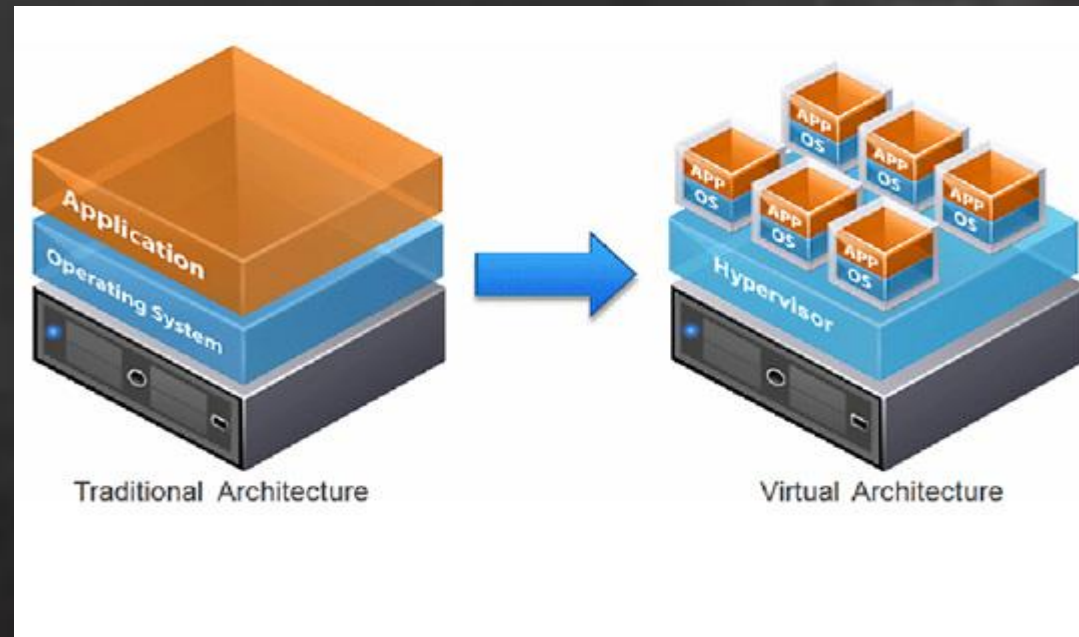
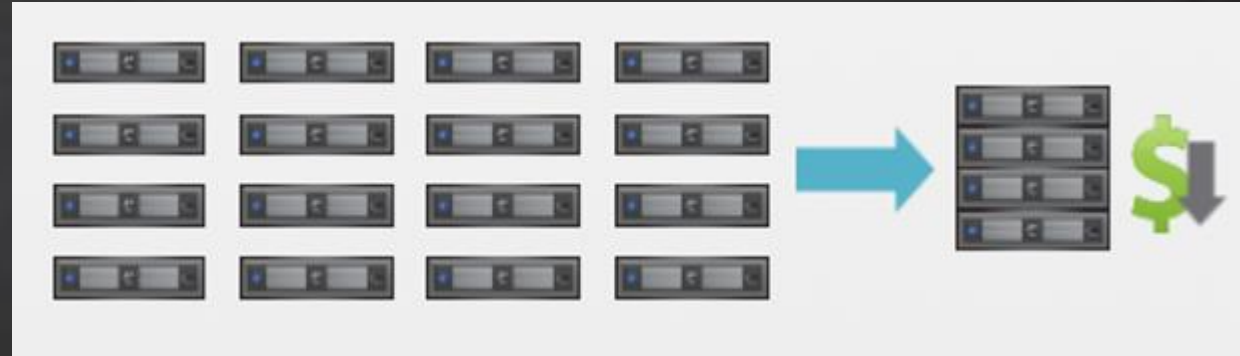
Virtualization Overview

- Virtualization is the process of creating virtual versions of physical components



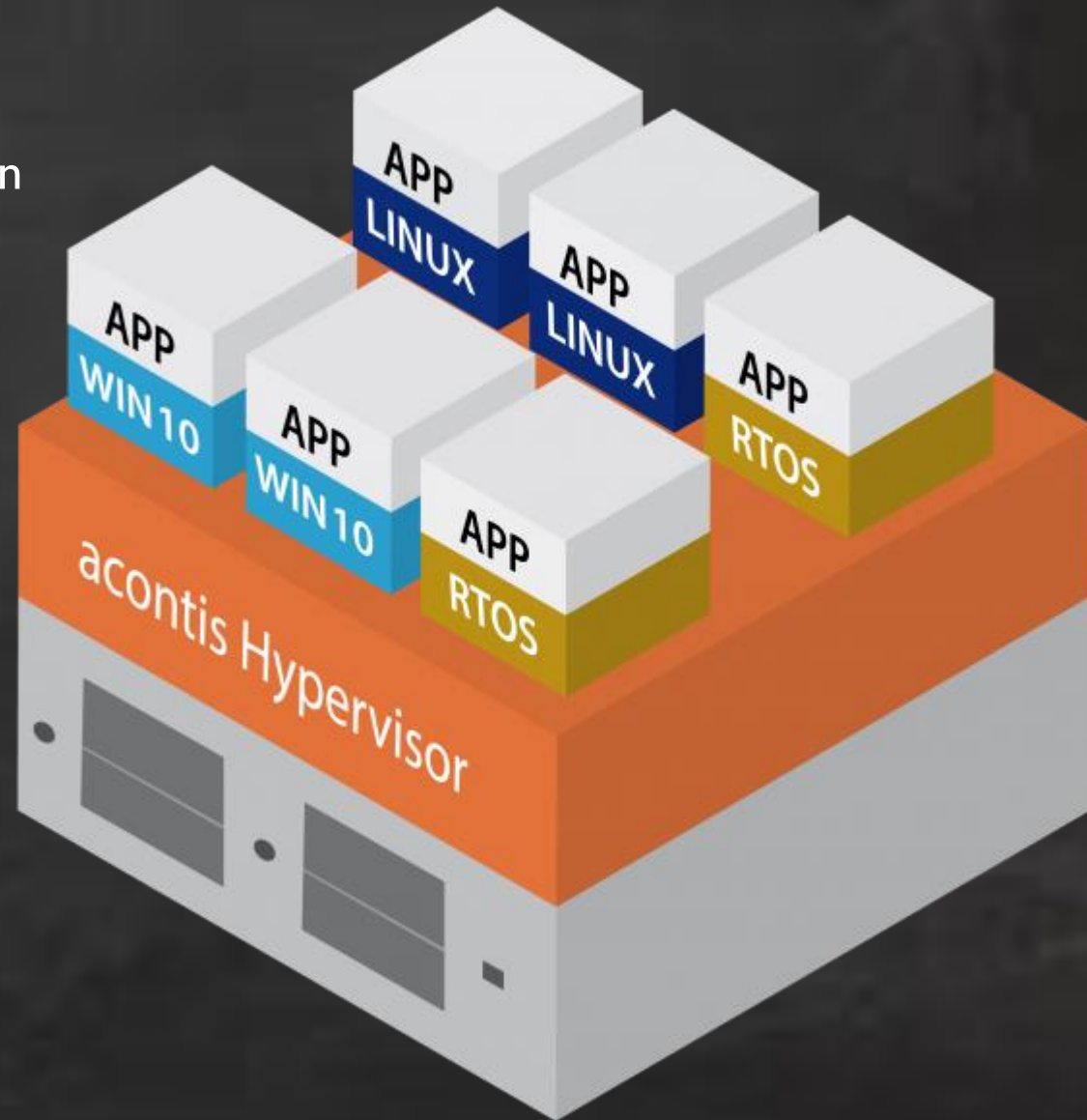
Benefits of Virtualization

- Hardware consolidation
- Reduced cost
- Multiple OS and applications on a single server, hence, greater efficiency
- Minimized or eliminated downtime

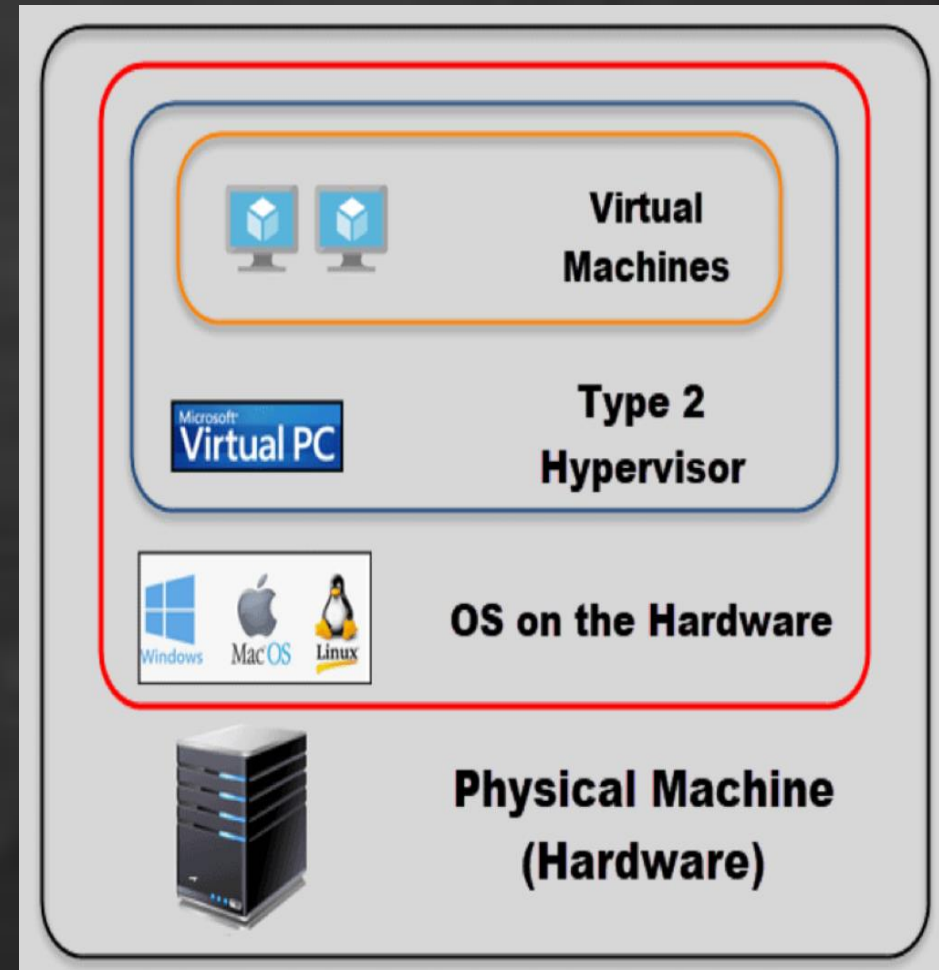
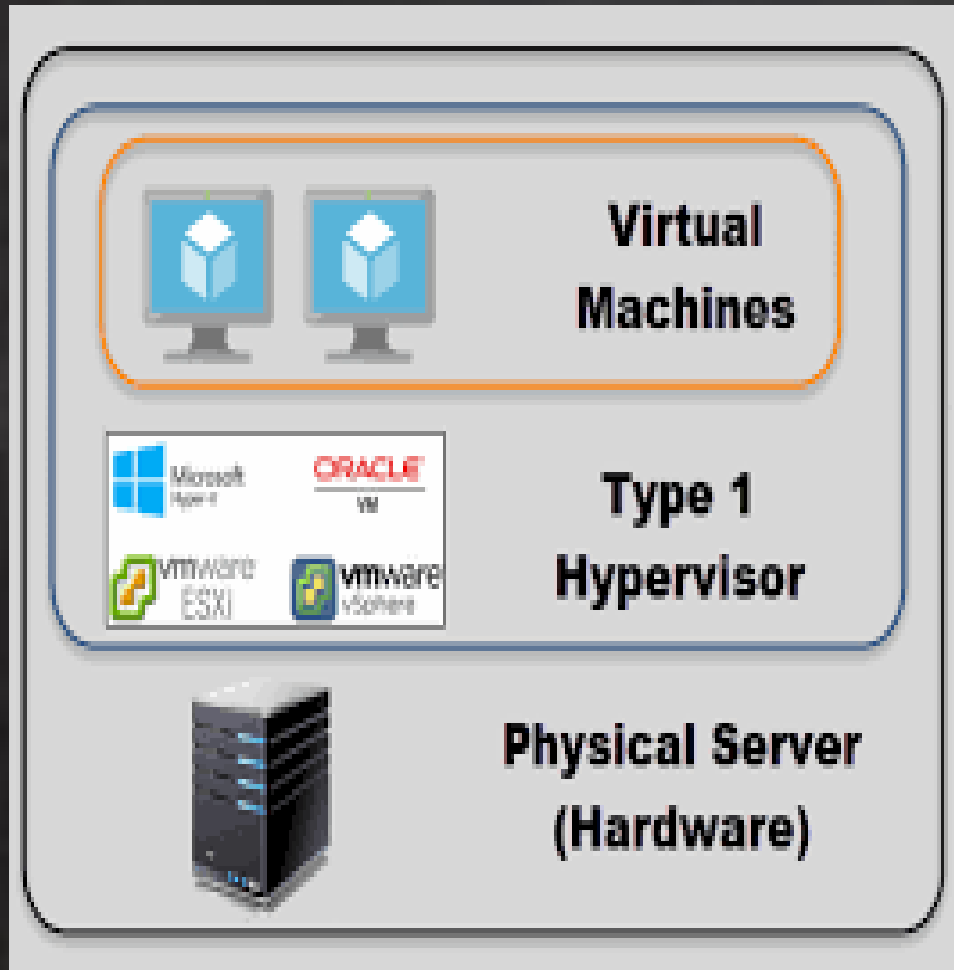


Hypervisor

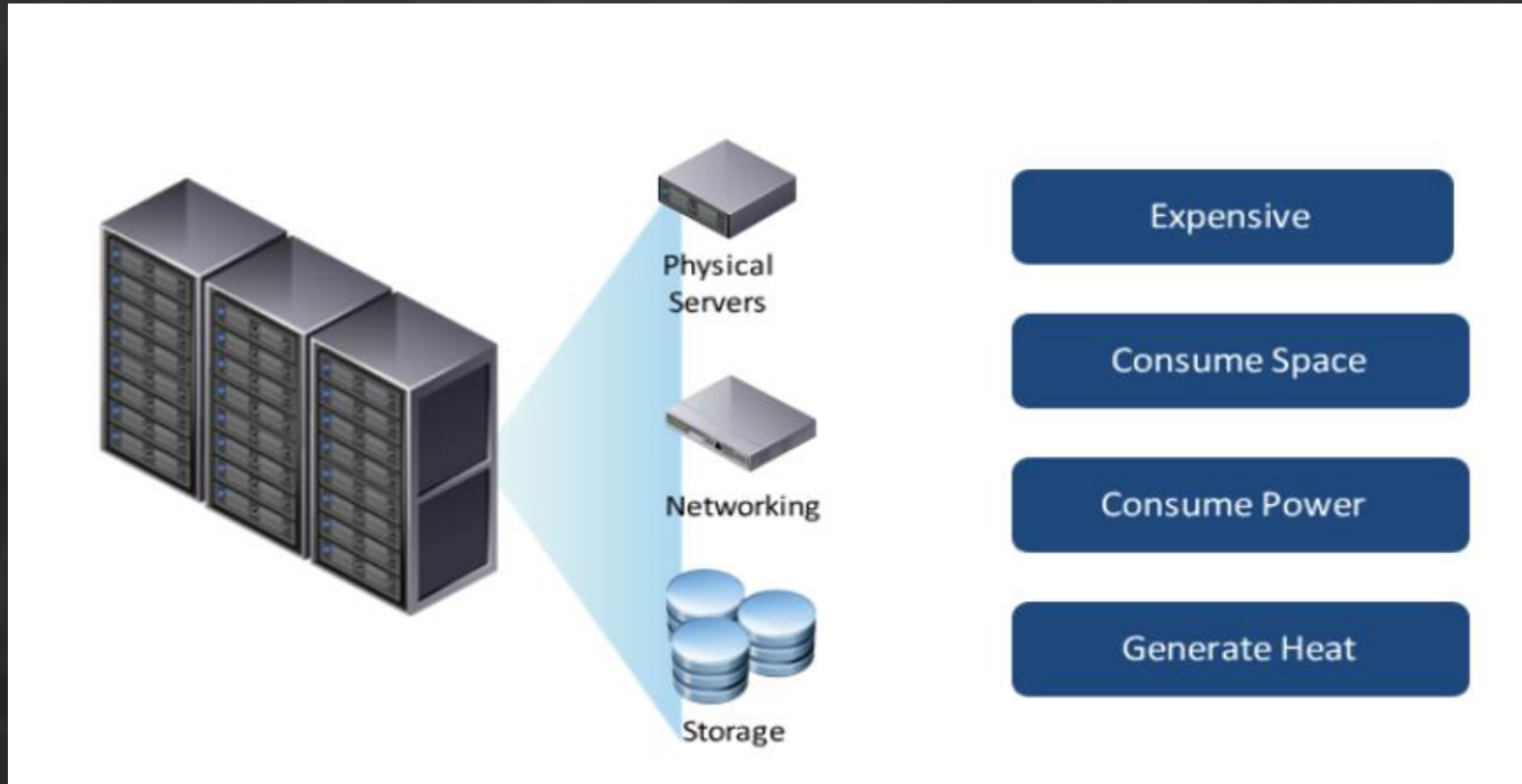
- The software engine that enables virtualization



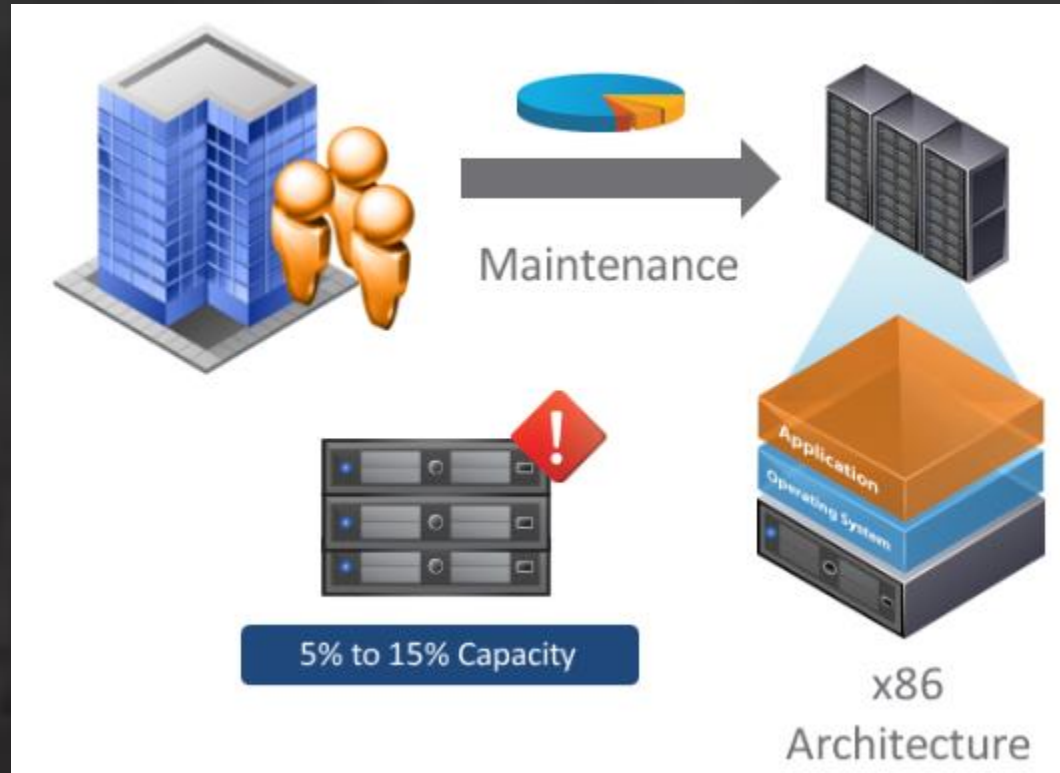
Hypervisor Types



The Problem with the Traditional Hardware



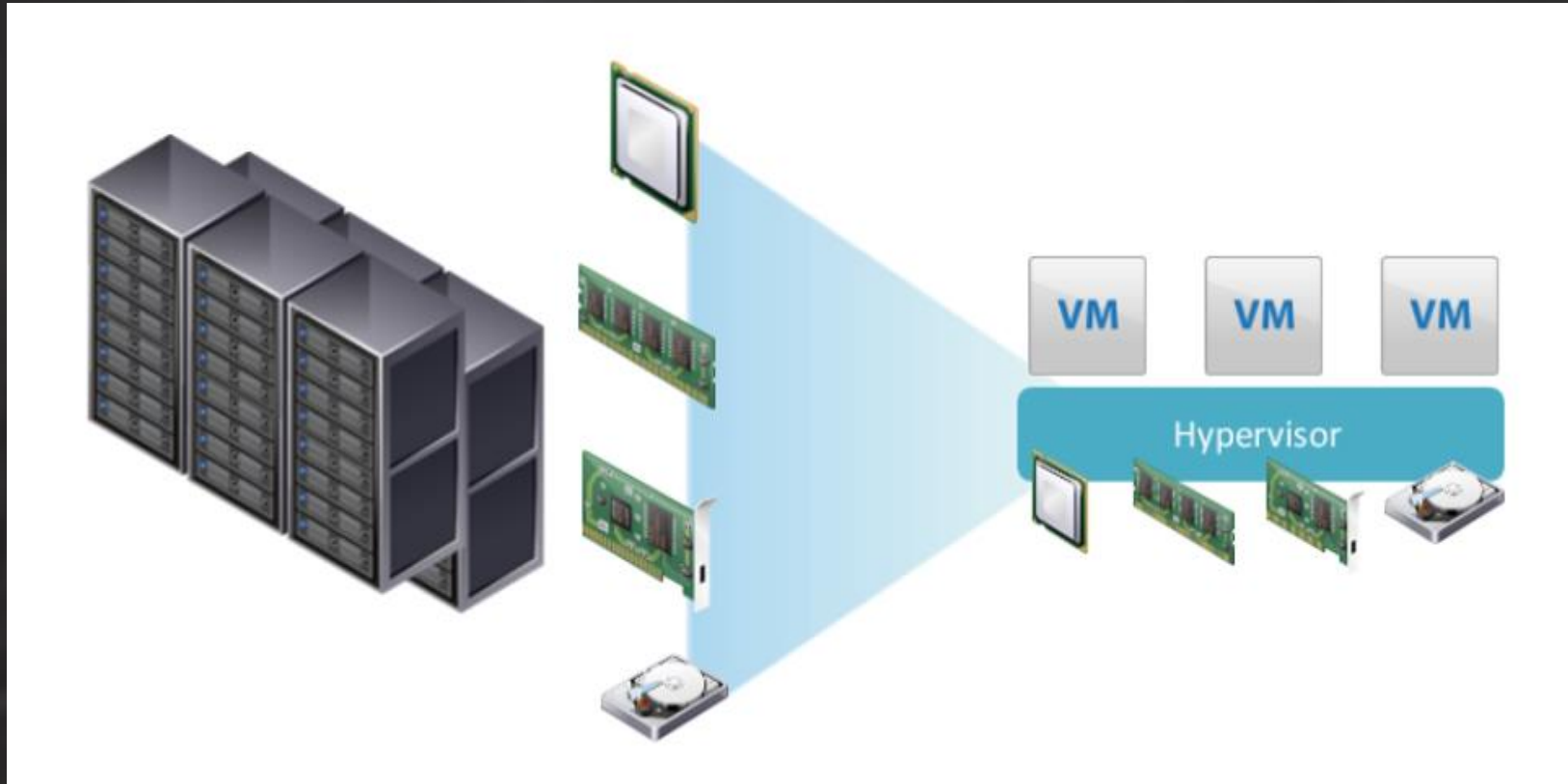
Traditional Data center Challenges



- In a pure physical server environment, each OS and App requires separate server, with capacity usage of 5% to 15% per server, hence capacity waste and in-efficiency.
- Even small data centers have to deploy many servers.
- This is highly inefficient by any standard. Virtualization solves this.

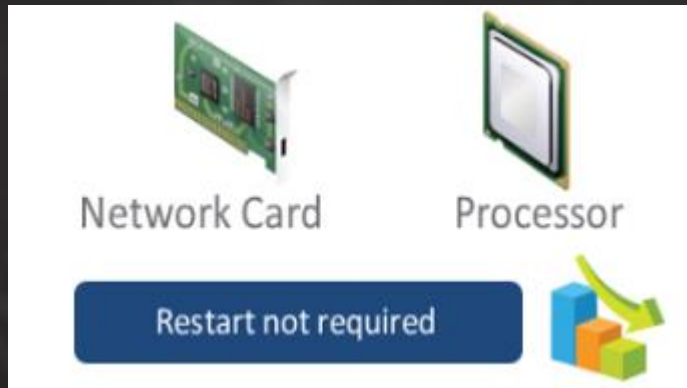
Data Center Virtualization

- From traditional way → SDDC



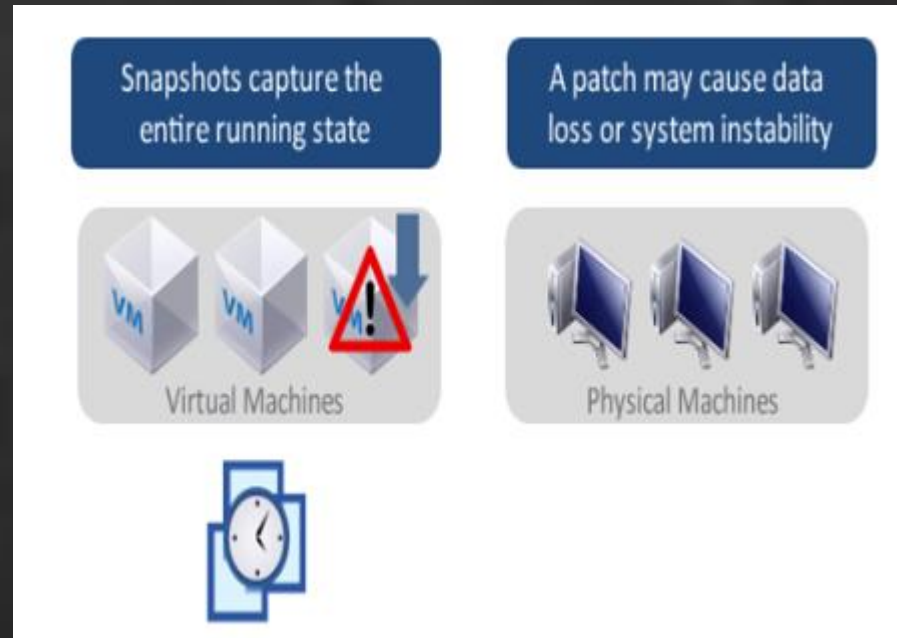
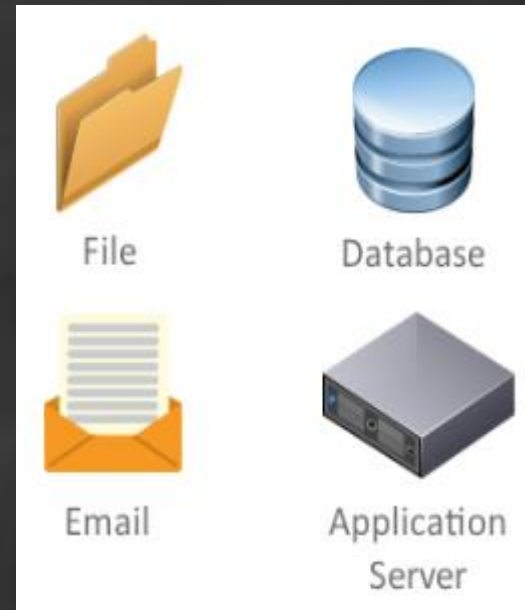
Virtual Machines (VM)

- A software computer that runs an operating system and applications
- It is the **heart** of virtualization
- Share the hardware of the physical server on which they are mounted
- Allow you to quickly replace or upgrade components
- Allow you to install OS and Apps in the same way as a physical server
- Allow you to add components, without **rebooting** the virtual machine



Virtual Machine Capabilities

- VMs can be used to host any application
- Provisioning of new VM is quick
- Provide additional capabilities compared to physical machines





The Cloud Computing

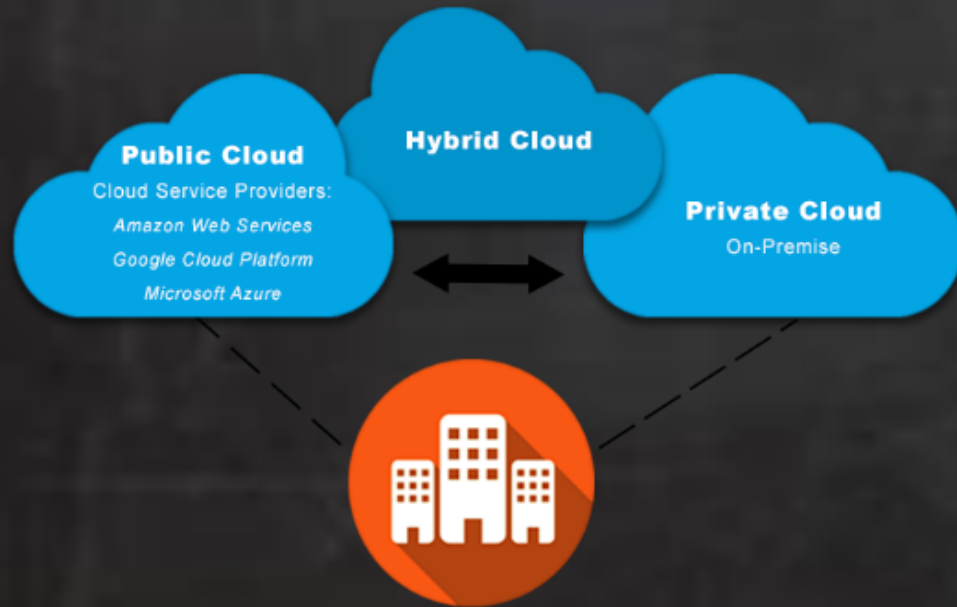
Cloud Technology

- Simply put, cloud computing is the delivery of:
 - Computing services—servers
 - Storage
 - Databases
 - Networking
 - Software and
- More over the Internet (the cloud)

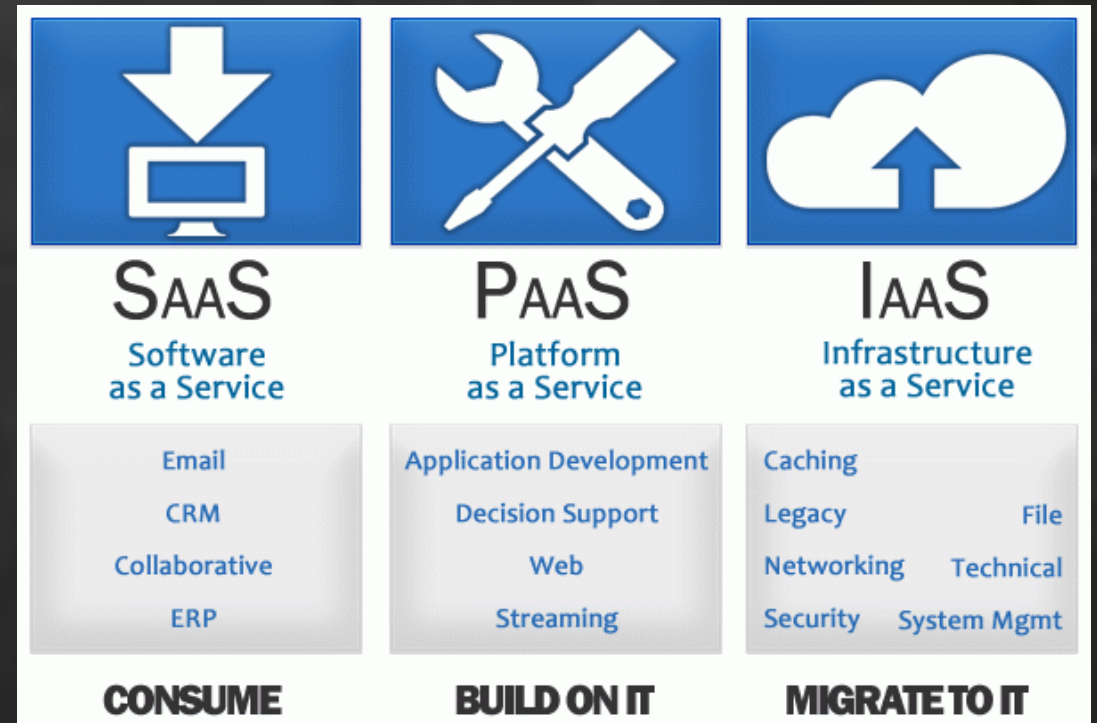


Types of Cloud Computing

- Based on deployments/ architecture:
 - **Public, Private and Hybrid**

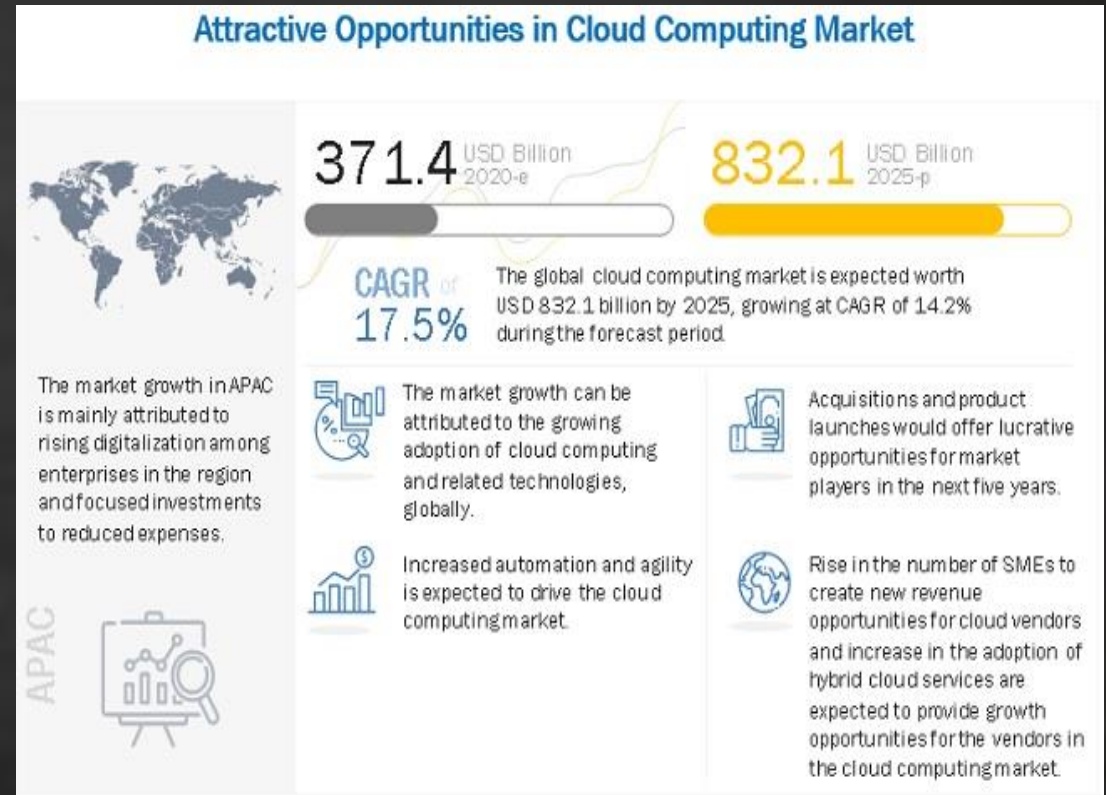


- Based on services:
 - **IaaS, PaaS and SaaS**



Cloud Industry Growth

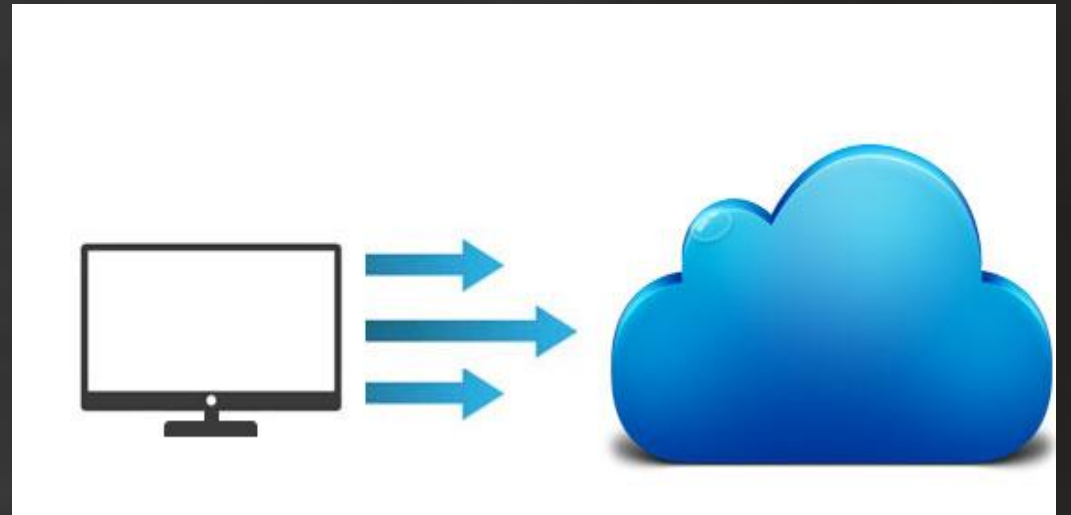
- According to research studies, the global Cloud Computing Market is:
- Estimated at **\$371.4** Billion in 2020
- Expected to reach **\$832.1** Billion by 2025
- @ compound annual growth rate (CAGR) of 17.5%



Why to the Cloud?

▪ Lower Cost of Entry

- Eliminate cost of Power, Cooling and Space.
- Stop buying software and reduce the complexity of licensing and annual renewals.
- Eliminate cost of repairing or replacing equipment.
- No more long purchase order



Why to the Cloud?



▪ Redundancy

- When you run your own servers, you need to buy more hardware just in case of system failure or crash
- Cloud service providers use several datacenters for replication



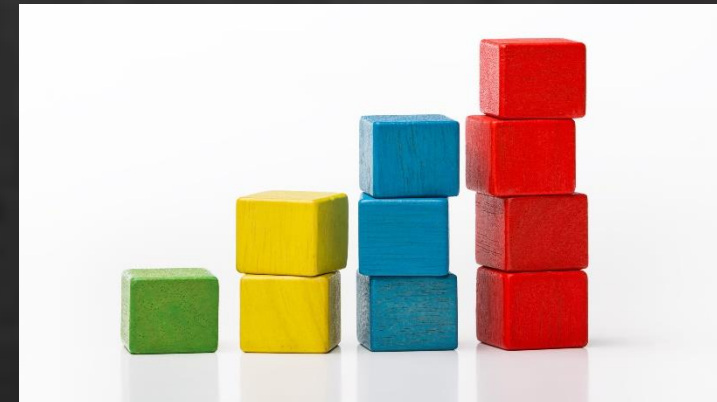
Why to the Cloud?

- **Speed of Deployment**

- Computing resources can be provisioned in minutes
- Typically with just a few mouse clicks
- This gives businesses a lot of flexibility

- **Global Scale**

- Ability to scale elastically



Why Should You Migrate to the Cloud?

- Automated Updates
- Easily manageable



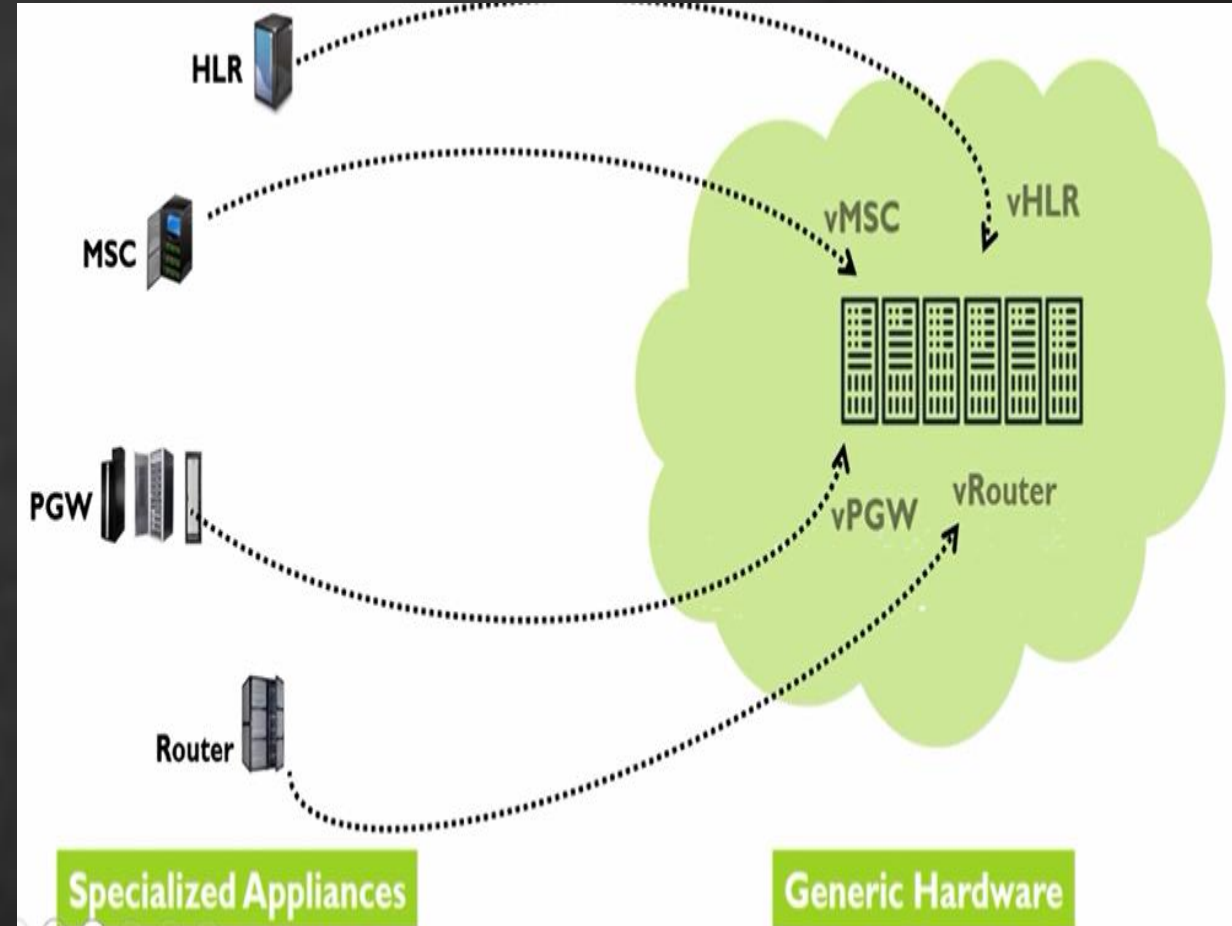
The Cloud and Tomorrow's Telecom Industry

▪ Telco cloud – from 5G

- Software defined **open RAN**
- Software defined Core
- Orchestration from single glass of pane
- Reduced time-to-market
- Independent from specific vendors (no more closed boxes of **2G**, **3G** & **4G** from specific vendors and interoperability issues)
- Shift from vertical hardware into applications (**VNF or containers**) that run on top of virtual infrastructure
- This is agile, less expensive to deploy and much quicker



The Cloud and Tomorrow's Telecom Industry



The Cloud and Tomorrow's Telecom Industry

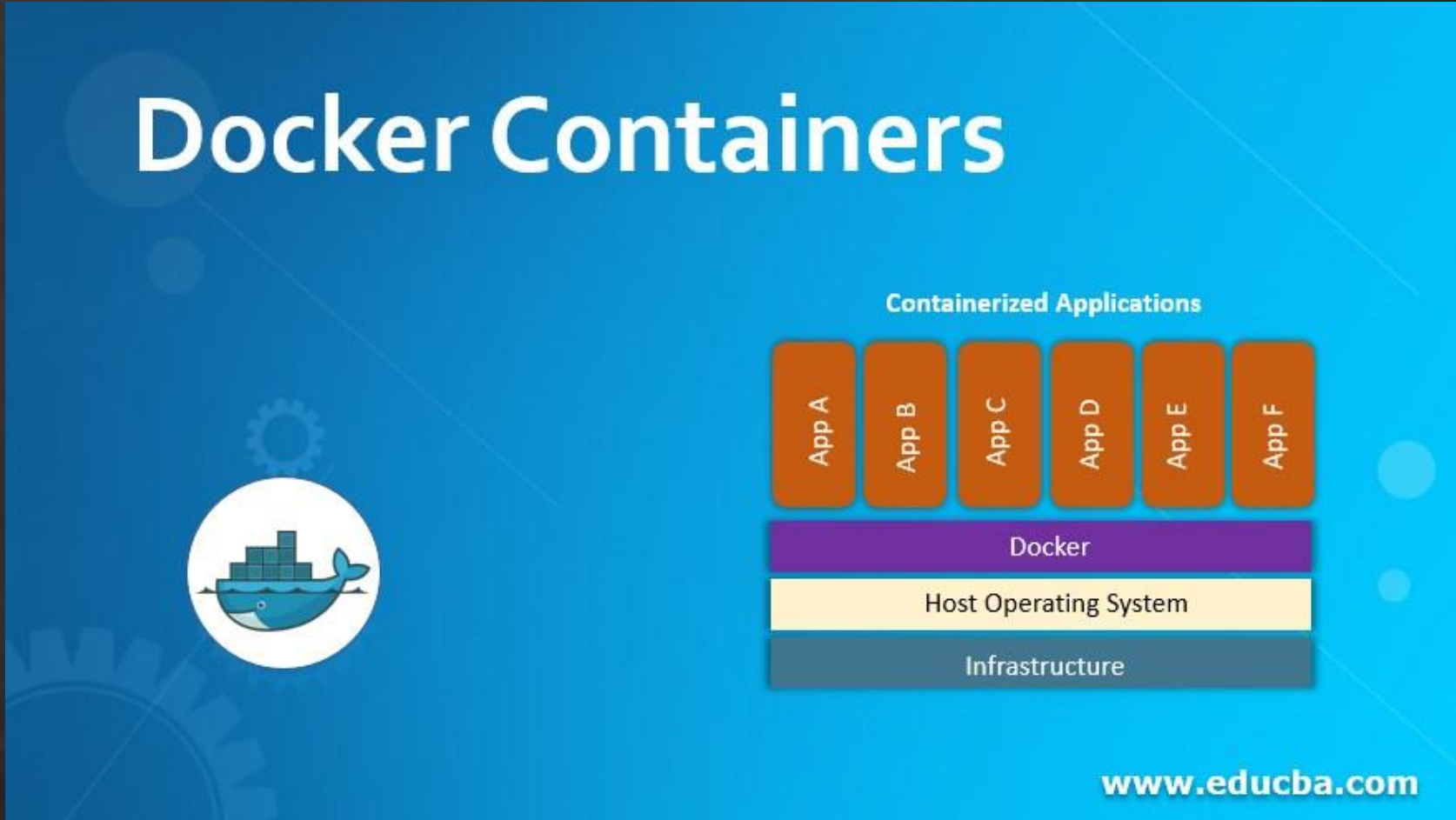
Ecosystem of Certified VNFs

Ensuring Rapid Service Onboarding and Deployment



Containerization

Docker -> Containers -> Kubernetes



Thank You

Engr. Yasir Mohamud Karar