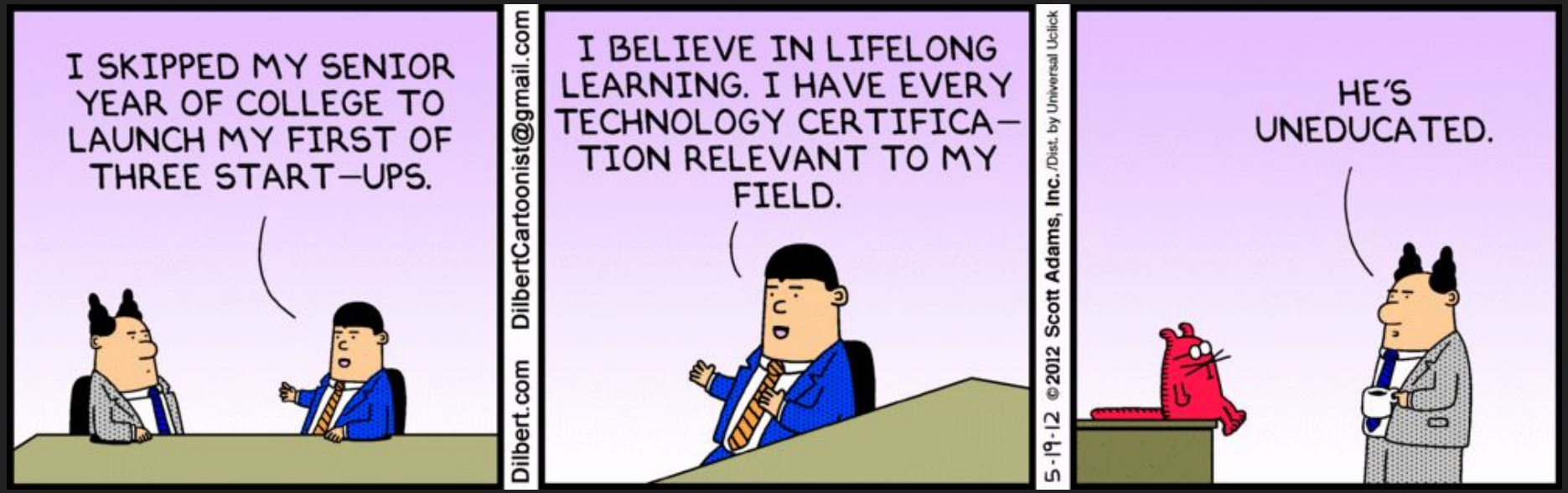
Waiting ROOM fun - Class will start
in next 2 minutes



Virtual Machine and Hypervisor

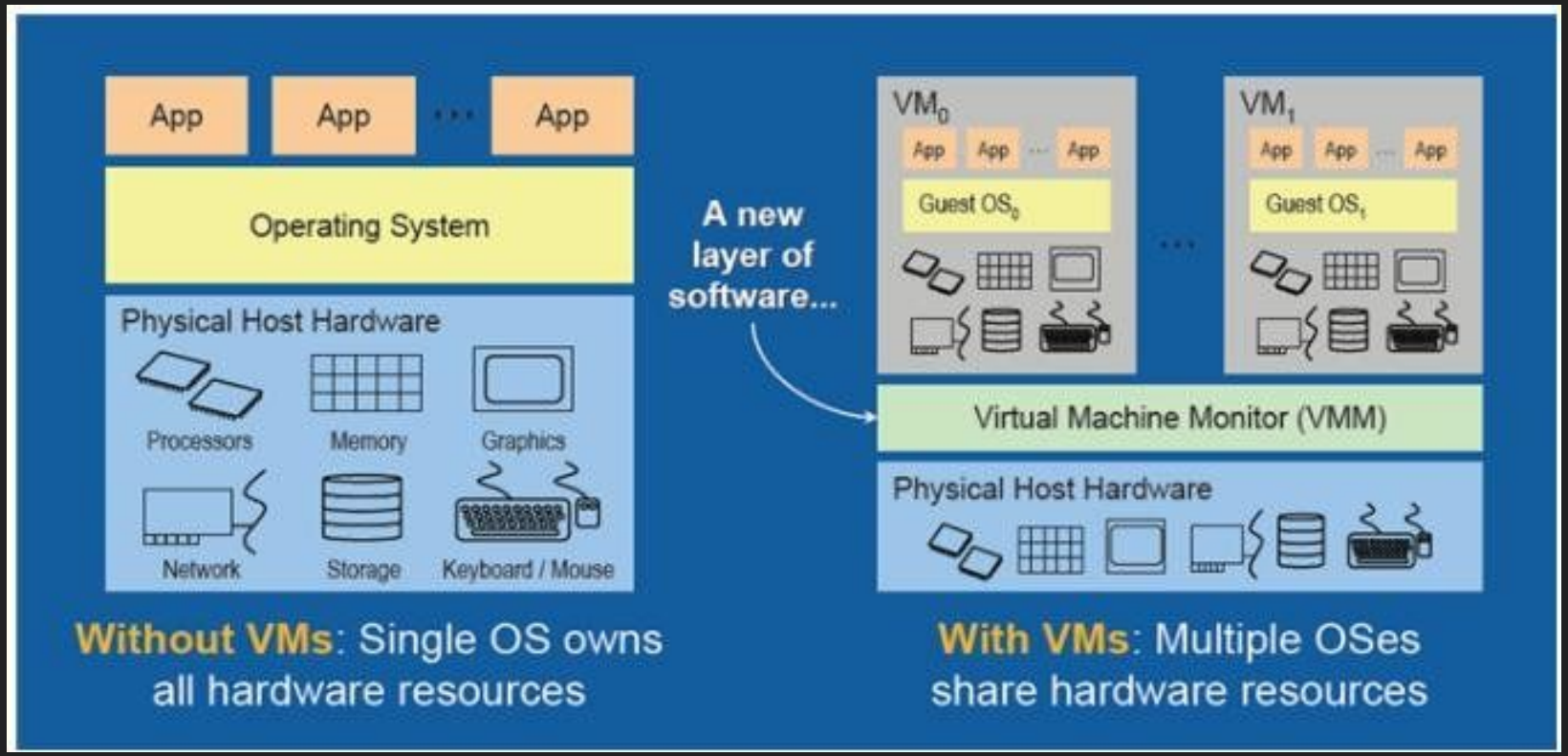
Fundamentals

Asst. Prof. Ashwini Mathur

Virtual Machine ?

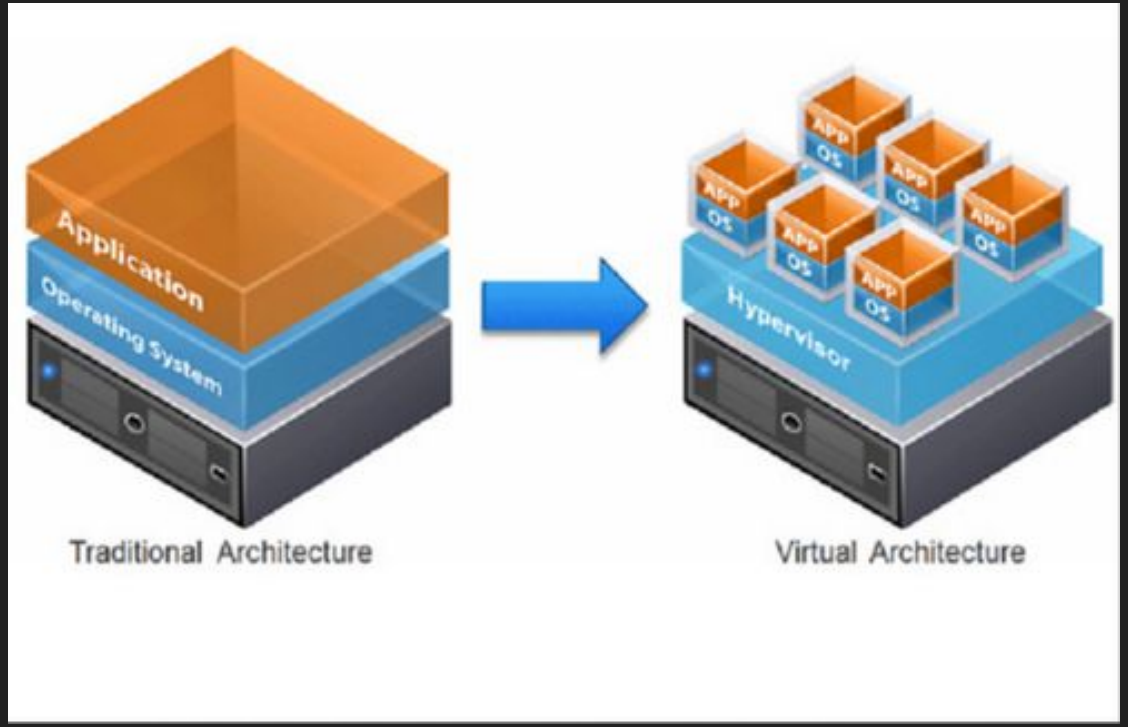
A virtual machine (VM) is a virtual environment that functions as a virtual computer system with its own CPU, memory, network interface, and storage, created on a physical hardware system (located off- or on-premises).

Software called a hypervisor separates the machine's resources from the hardware and provisions them appropriately so they can be used by the VM.



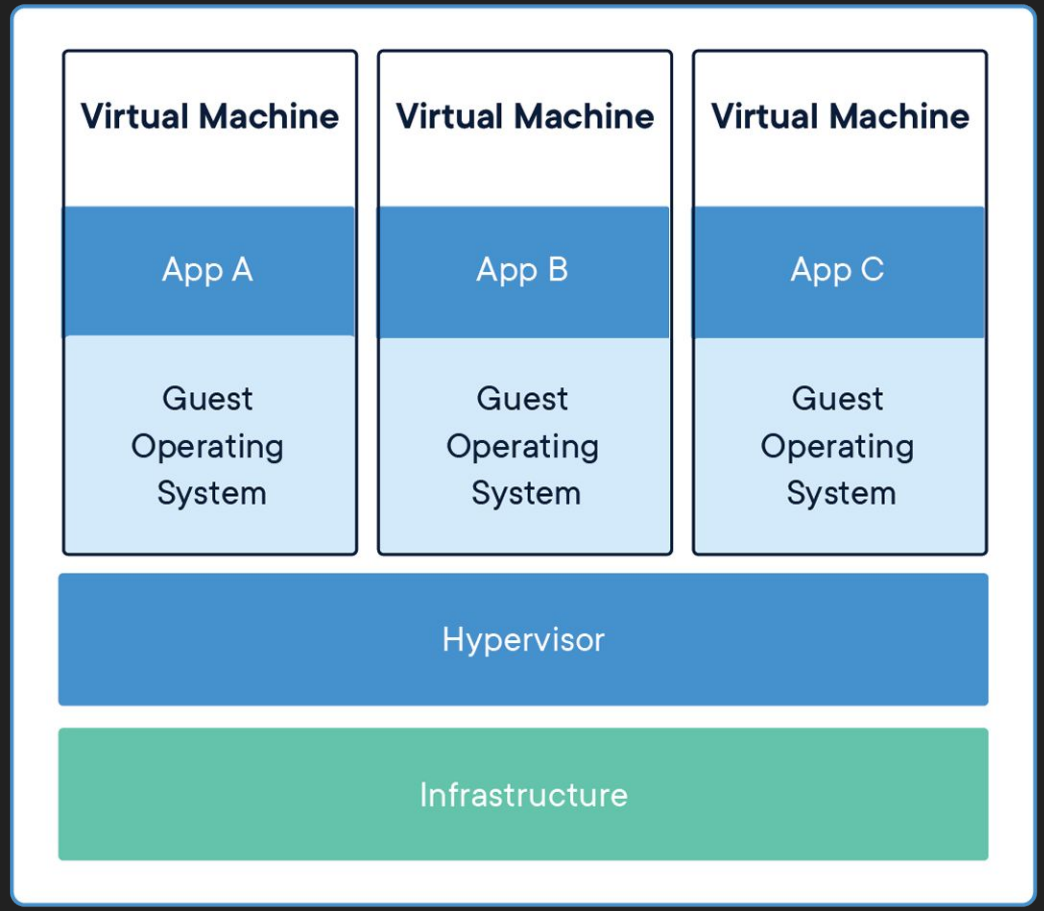
Source: software.intel.com

Comparision b/w Traditional and virtual Architecture



Source: VMware

Hypervisor ?



devkube.blogsopt.com

The hypervisor manages the hardware and separates the physical resources from the virtual environments. Resources are partitioned as needed from the physical environment to the VMs.

How VM works ?

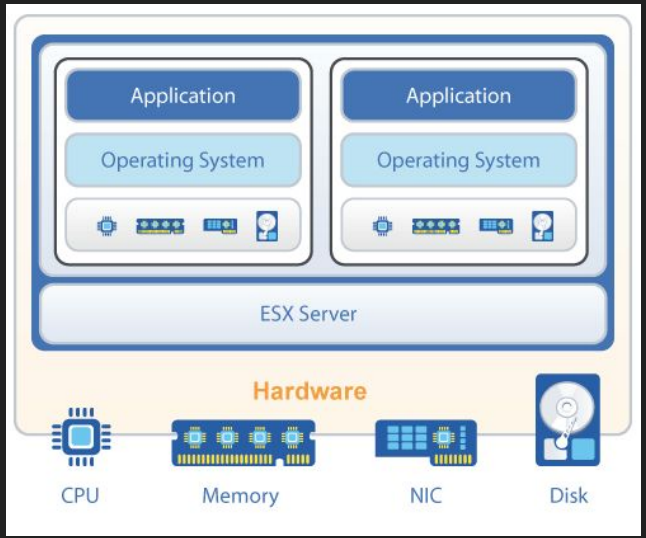
When the VM is running and a user or program issues an instruction that requires additional resources from the physical environment, the hypervisor schedules the request to the physical system’s resources so that the virtual machine’s operating system and applications can access the shared pool of physical resources.

Types of Hypervisor

There are 2 different types of hypervisors that can be used for virtualization.

Type 1

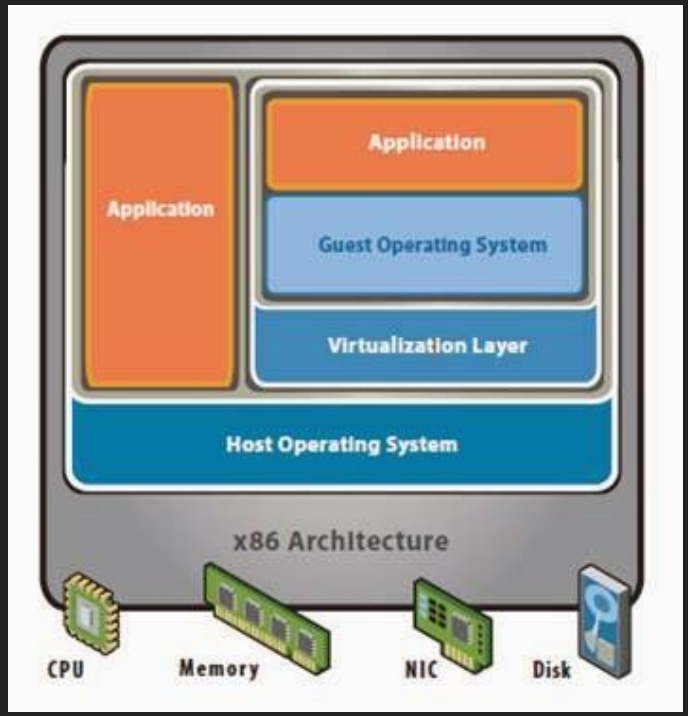
A type 1 hypervisor is on bare metal. VM resources are scheduled directly to the hardware by the hypervisor. ESX is an example of a type 1 hypervisor.



Source: vgyan.in

Type 2

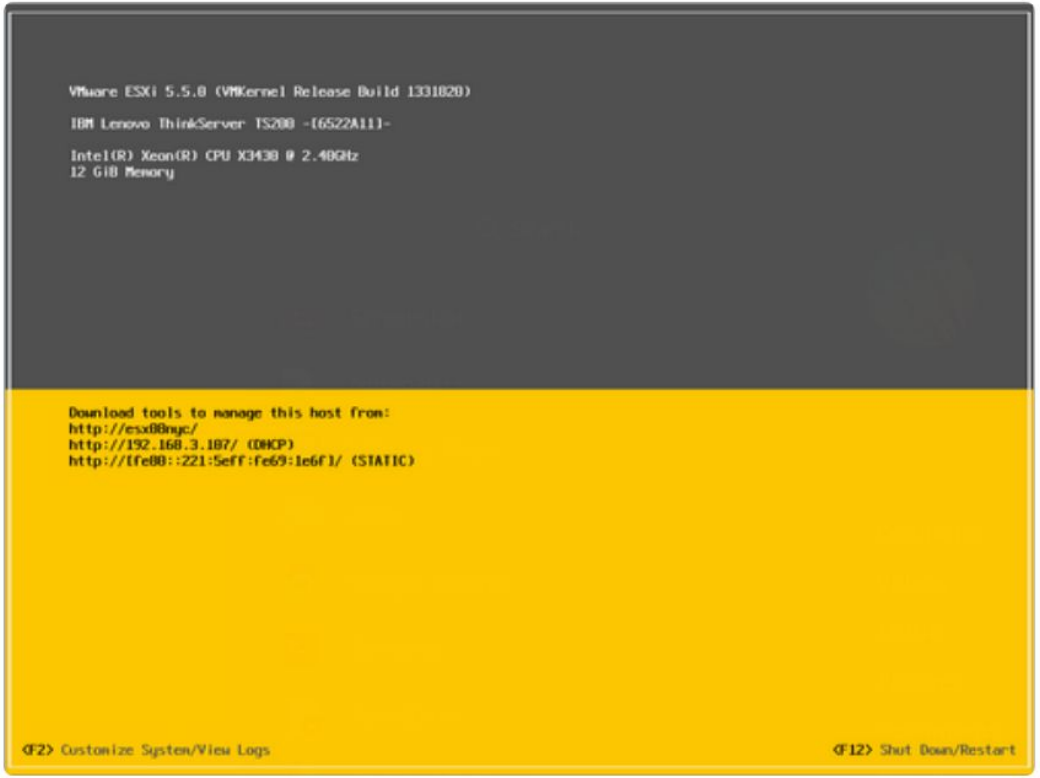
A type 2 hypervisor is hosted. VM resources are scheduled against a host operating system, which is then executed against the hardware. VMware Workstation and Oracle VirtualBox are examples of type 2 hypervisors.



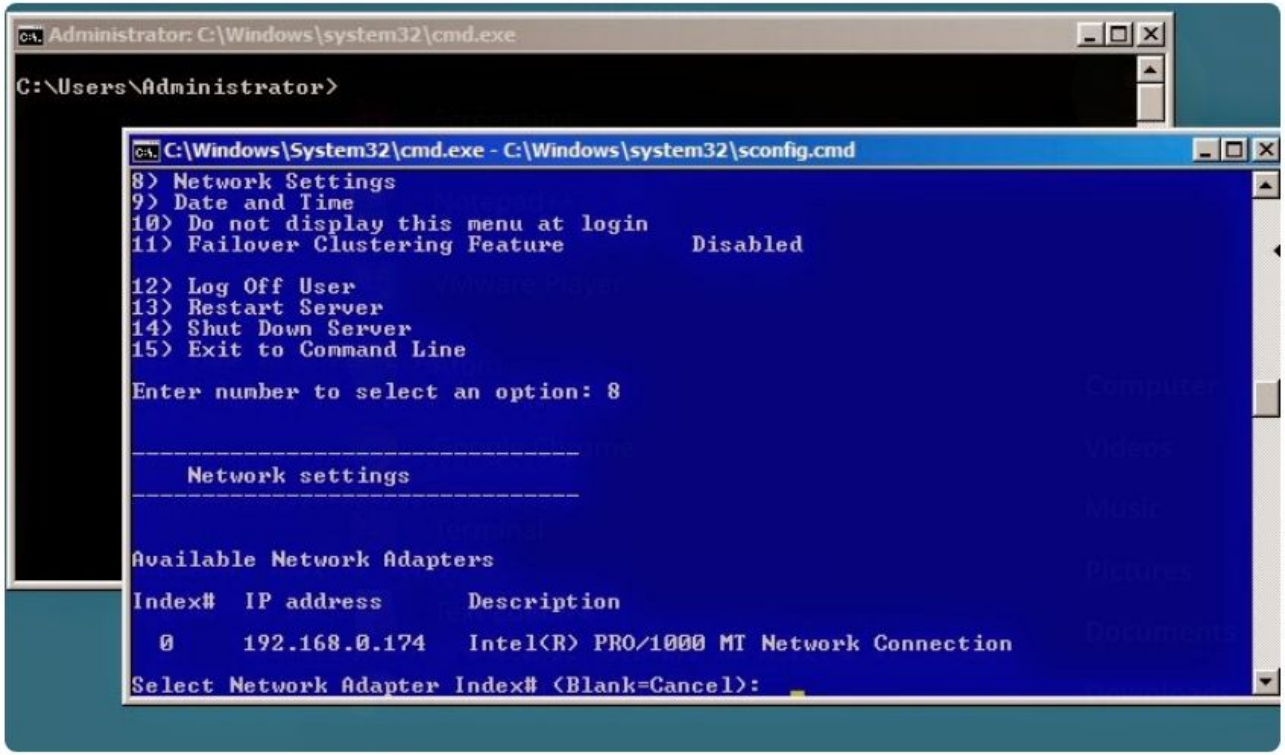
Source: VMware

Examples of Type 1 - Hypervisor

VMware ESXi Server,



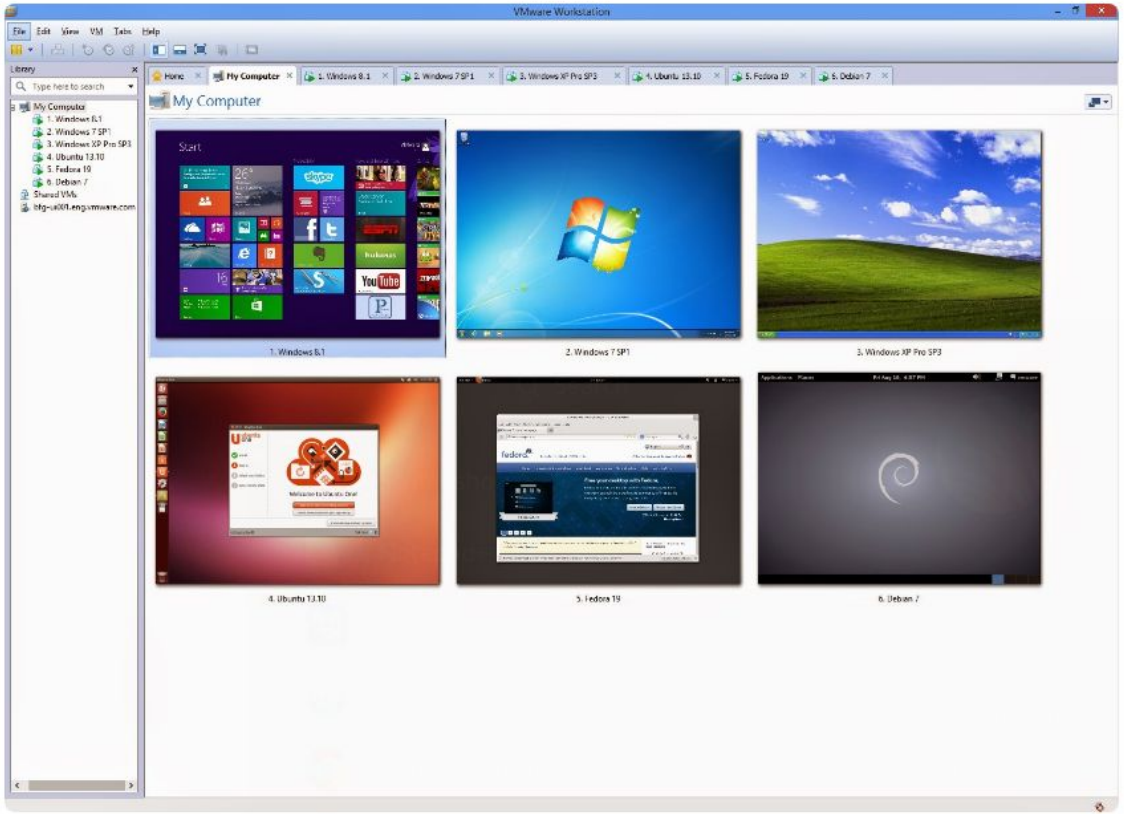
Microsoft Hyper-V,



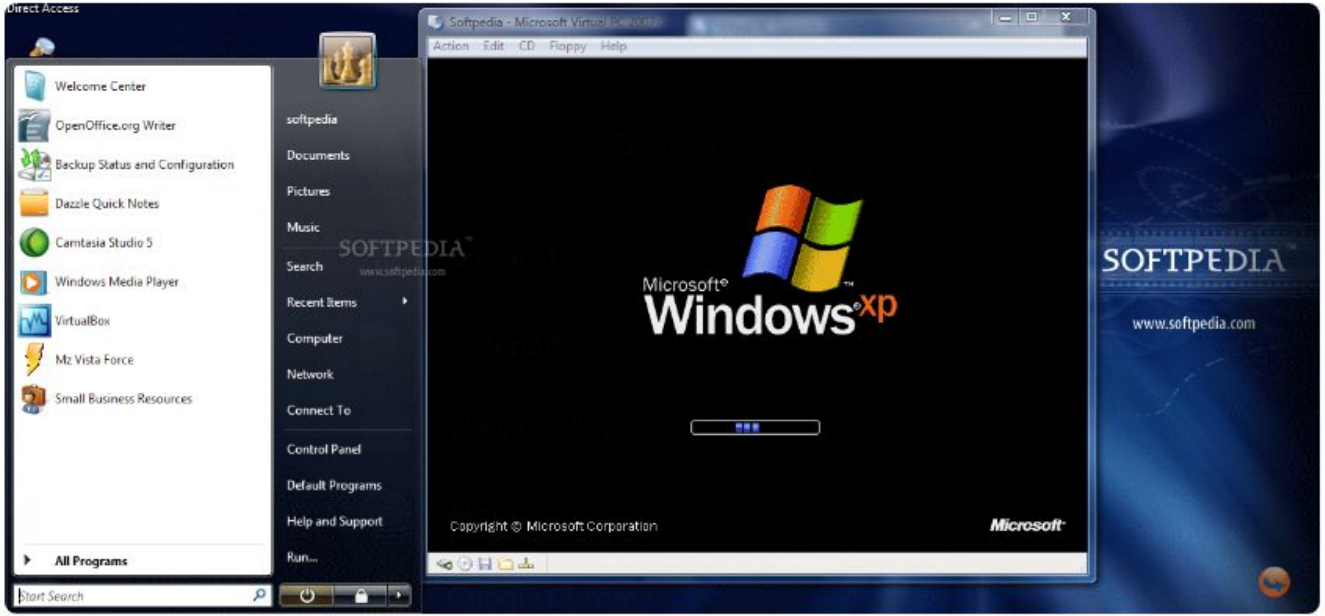
Citrix/Xen Server,

Example of Type 2 - Hypervisor

VMware Workstation,

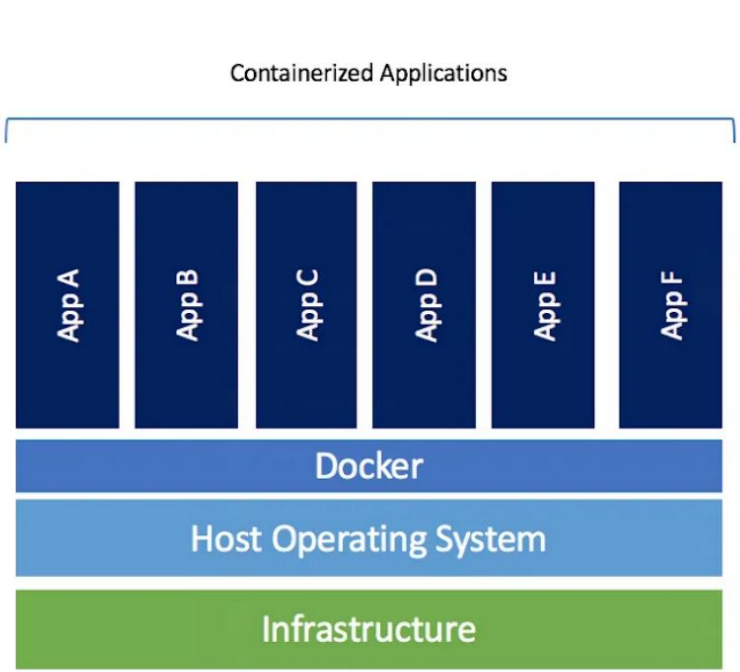


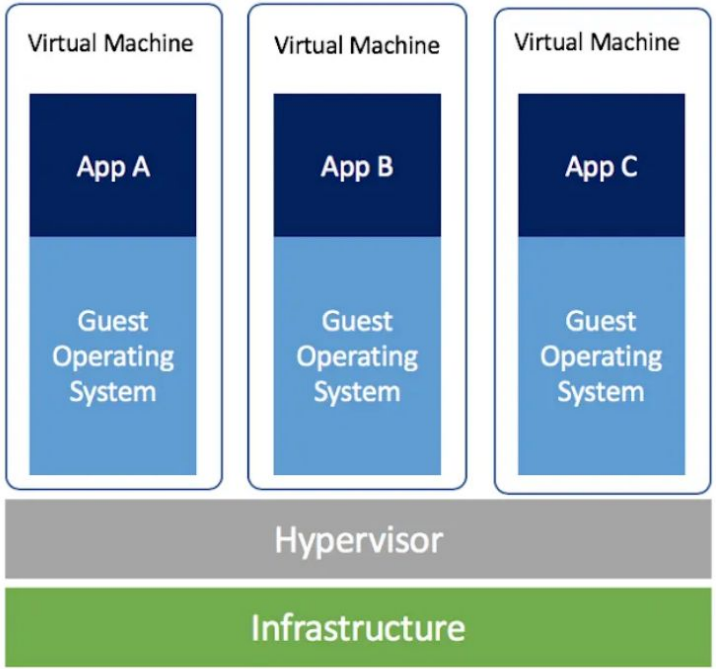
Microsoft Virtual PC,



Oracle Virtual Box,

VM | Container [Difference]


Containerized Applications
App A
App B
App C
App D
App E
App F
Docker
Host Operating System
Infrastructure


Virtual Machine
App A
Guest Operating System
Virtual Machine
App B
Guest Operating System
Virtual Machine
App C
Guest Operating System
Hypervisor
Infrastructure