GETTING STARTED
WITH
HYPERVISIORS

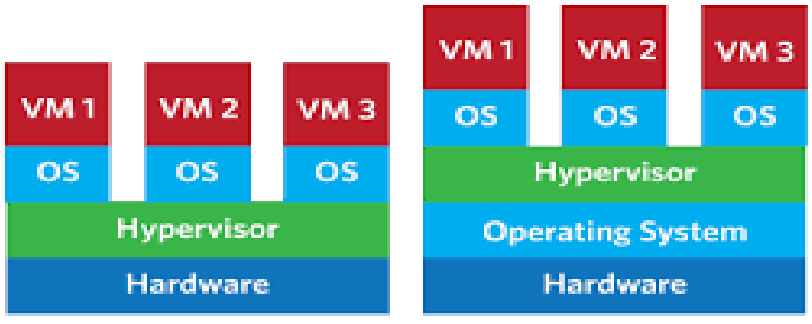
➢ HYPERVISORS:

- Hypervisors are software or firmware components that can virtualize system resources.
- A hypervisor is a hardware virtualization technique that allows multiple guest operating systems (OS) to run on a single host system at the same time.
- The guest OS shares the hardware of the host computer, have its own processor, memory and other hardware resources.
- A hypervisor is also known as a **virtual machine manager** (**VMM**).
- For the most part, cloud computing entails you being able to access a virtual machine for you to be able to do what you need to do anywhere.

HYPERVISOR TYPES:

- **TYPE-1:**
  - Type 1 hypervisors can run directly on the system hardware.
  - **Example:** VMware ESXI, Citrix XenServer, Microsoft Hyper-V, Linux KVM.

- **TYPE-2:**
  - Type 2 hypervisors run on a host operating system that provides virtualization services, such as I/O device support and memory management.
  - **Example:** VMware workstation, VMware player, Oracle virtual box.



Type 1 Hypervisor Type 2 Hypervisor

➢ VIRTUALIZATION:

- Virtualization is the process of creating a software-based, or virtual, representation of something, such as virtual applications, servers, storage and networks.
- It is the single most effective way to reduce IT expenses while boosting efficiency and agility for all size businesses.
- Virtualization can increase IT agility, flexibility and scalability while creating significant cost savings.

➢ VIRTUAL MACHINE (VM):

- A representation of a real machine using software that provides an operating environment which can run or host a guest operating system.

GUEST OPERATING SYSTEM:

- An operating system running in a virtual machine environment that would otherwise run directly on a separate physical system.

KEY PROPERTIES OF VIRTUAL MACHINES:

PARTITIONING:

- Run multiple operating systems on one physical machine.
- Divide system resources between virtual machines.

ISOLATION:

- Provide fault and security isolation at the hardware level.
- Preserve performance with advanced resource controls.

ENCAPSULATION:

- Save the entire state of a virtual machine to files.
- Move and copy virtual machines as easily as moving and copying files.

HARDWARE INDEPENDENCE:

- Provision or migrate any virtual machine to any physical server.

➢ HOST SYSTEM & HOST OPERATING SYSTEM:

- The physical computer on which you install Workstation Pro is called the **Host System** and its operating system is called the **host operating system**.

HOST SYSTEM REQUIREMENTS:

- **64-BIT PROCESSORS:**
  - AMD CPU with **AMD-V** support
  - Intel CPU with **VT-x** support
- **MEMORY:**
  - Minimum memory **2 GB**. **4 GB** and above is recommended.

VMWARE WORKSTATION PRO:

- VMware Workstation Pro is the industry standard for running multiple operating systems as virtual machines (VMs) on a single Linux/Windows.
- It helps you to create, configure, and manage virtual machines.

ORACLE VIRTUAL BOX:

- Oracle VM VirtualBox is cross-platform virtualization software.
- It allows users to extend their existing computer to run multiple operating systems including Microsoft Windows, Mac OS X, Linux, and Oracle Solaris, at the same time.
- It is designed for IT professionals and developers, Oracle VM VirtualBox is ideal for testing, developing, demonstrating, and deploying solutions across multiple platforms from one machine.

➢ RED HAT ENTERPRISE LINUX 9 (RHEL 9) INSTALLATION:

CREATE A NEW VM:

- To create a virtual machine using VMware Workstation / Oracle VirtualBox with given Configuration.

  - **Storage** **:** 20GB
  - **RAM** **:** 2GB
  - **Processor** **:** 1core

RECOMMENDED PARTITIONING SCHEME:

- Red Hat recommends that you create separate file systems at the following mount points.

  - /boot : 1G
  - / :8G
  - /home :3G
  - Swap :4G (2 times the amount of RAM size)

NOTE: However, if required, you can also create the file systems at **/usr, /var, and /tmp** mount points.