Collabera®

Value. Accelerated.

INTRODUCTION TO VIRTUALIZATION

ROADMAP

- What is virtualization?
- Virtualization and cloud computing
- Types of virtualization
- Virtualization terminologies
- Hypervisor
- Benefits
- Vendors

WHAT IS VIRTUALIZATION

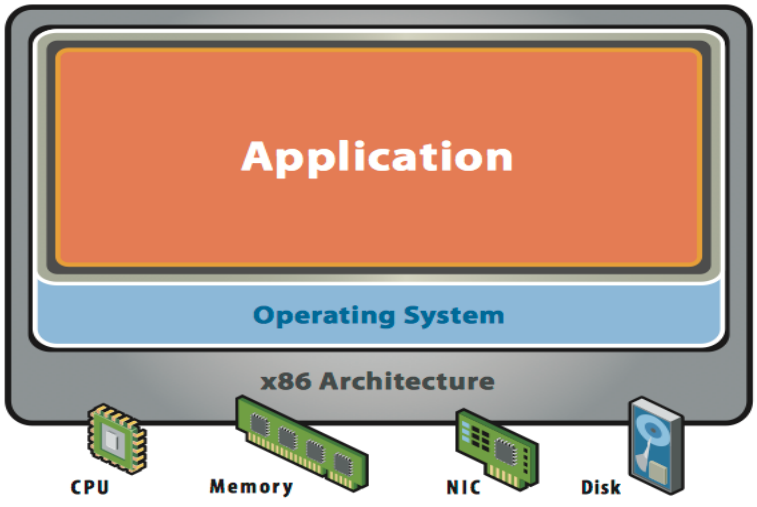
Virtualization is a technology to run multiple same or different operating systems which is completely isolated from each other.

Ex: Run both Windows and Linux on the same machine

HOW IT IS DIFFERENT FROM DUAL BOOT?

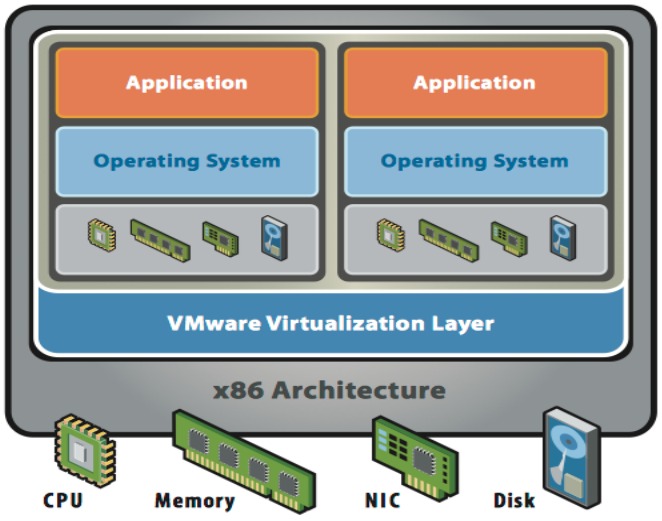
Both OSes run simultaneously.

Before AND AFTER VIRTUALIZATION



Before Virtualization:

- Single OS image per machine
- Software and hardware tightly coupled
- Running multiple applications on same machine often creates conflict
- Underutilized resources
- Inflexible and costly infrastructure



After Virtualization:

- Hardware-independence of operating system and applications
- Virtual machines can be provisioned to any system
- Can manage OS and application as a single unit by encapsulating them into virtual machines

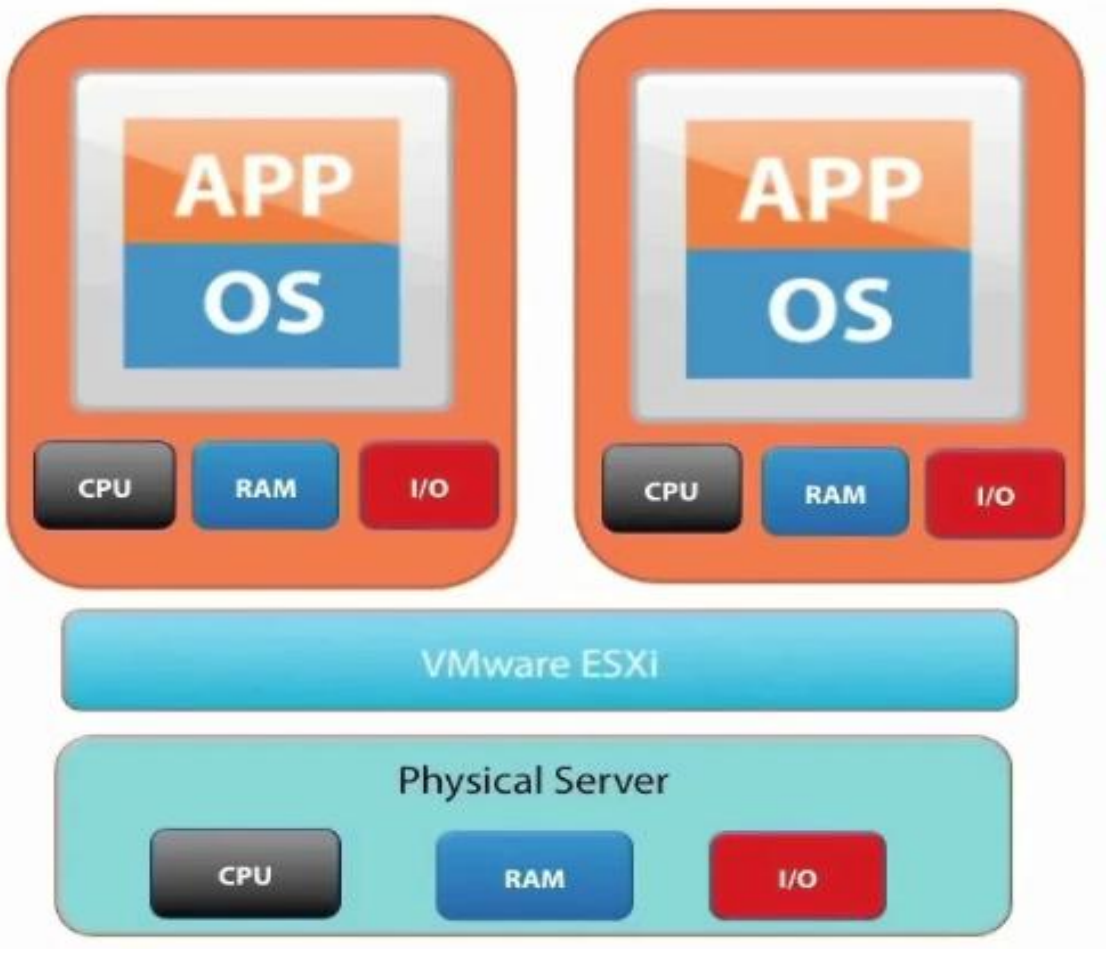
VIRTUALIZATION AND CLOUD COMPUTING

- Virtualization is a technology where as Cloud Computing is a service.
- No virtualization then there is no Cloud Computing.
- Cloud Computing is built on top of Virtualization.

WHAT IS HYPERVISOR

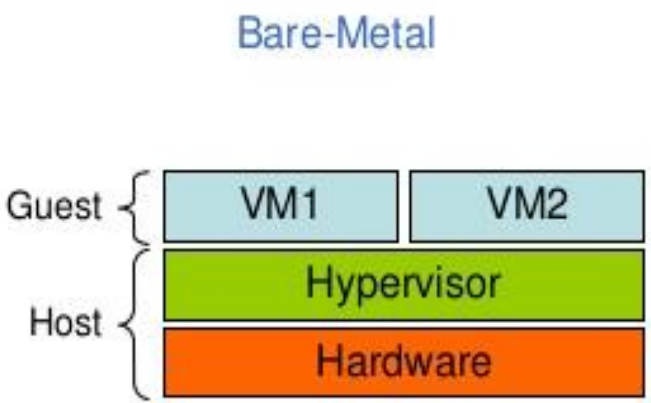
Hypervisor is a software layer sits between Hardware and OSes which will interact with hardware and resources and provide an interface to share the available resources to virtual containers.

Virtualization Defined

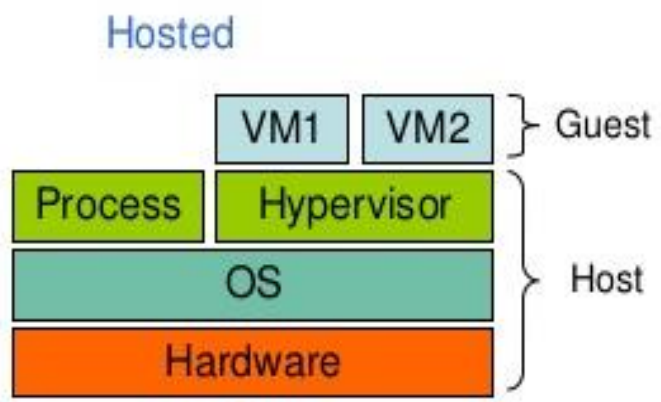


TYPES OF VIRTUALIZATION

- Bare-Metal
- Hosted



VMware ESX, Microsoft Hyper-V, Citrix XenServer



VMware Workstation, Microsoft Virtual PC, Sun VirtualBox, QEMU, KVM

VIRTUALIZATION TERMINOLOGIES

- **Bare Metal Hypervisor**
  A Hypervisor that runs directly on a host, e.g.: VMware ESX Server, Citrix XenServer, Microsoft Hyper-V Server and Oracle Virtual Iron. Also known as a “Type 1” or “Native” Hypervisor.
- **Para virtualization**
  A virtualization technique involving the modification of an Operating System through the removal of non-virtualizable instructions in an effort to improve performance when running in a Virtual Machine.
- **Host**
  The physical machine on which the Hypervisor and the Virtual Machines run on.
- **Host Operating System**
  The base operating system installed on a physical machine which interacts with the underlying hardware and, on top of which, Guest Operating Systems are installed in Virtual Machines. In a virtualization context, the Host Operating System is a Hypervisor.

VIRTUALIZATION TERMINOLOGIES

- **Virtual Machine Monitor**
  The component of a hypervisor that implements the abstraction of the host hardware and manages the operation of a Virtual Machine and the Guest Operating System running in it.
- **Guest Operating System**
  The Operating System installed in a Virtual Machine.
- **Snapshot**
  The capture of the state of a Virtual Machine at a specific point in time, including all the Guest Operating System data and the Virtual Machine configuration.
- **OVF (Open Virtualization Format)**
  A vendor-neutral packaging standard that allows a Virtual Machine to be run on any hypervisor. It is a platform independent, efficient, extensible, and open specification for the packaging and distribution of virtual appliances composed of one or more virtual machines.
- **Virtual Appliance**
  A pre-defined, ready-to-run Guest Operating System and Application combination packaged and distributed as a Virtual Machine

VIRTUALIZATION BENEFITS

- Virtualization offers major savings in data center operations.
- Virtualization makes possible significant reductions in the costs of managing data centers, with simplification of systems management tasks.
- Virtualization offers back-up and increased redundancy for delivery of high performance and high availability services.
- Virtualization is a step in the direction of “cloud computing”.
- Centralized management

VENDORS

Thank you