



# Topics

- What is Virtual Machine ?
- Types Of Virtual Machine
- Architecture Of Virtual Machine
- Pros And Cons Of VM
- Introducing Popular Virtual Machine






# What's Virtual Machine ?

- Virtual machine (VM):

A software implementation of a machine (computer) that executes programs like a physical machine.

A virtual machine provides an interface identical to the underlying bare hardware.

The operating system creates the illusion of multiple processes, each executing on its own processor with its own (virtual) memory.





# Types of virtual machine :

- ☐ System virtual machines - Hardware virtual machine

Provides a complete system platform environment which supports the execution of a complete operating system (OS).

- ☐ Process virtual machine - Application virtual machine

Provides a platform-independent programming environment that abstracts away details of the underlying hardware or operating system from software or application runtime.

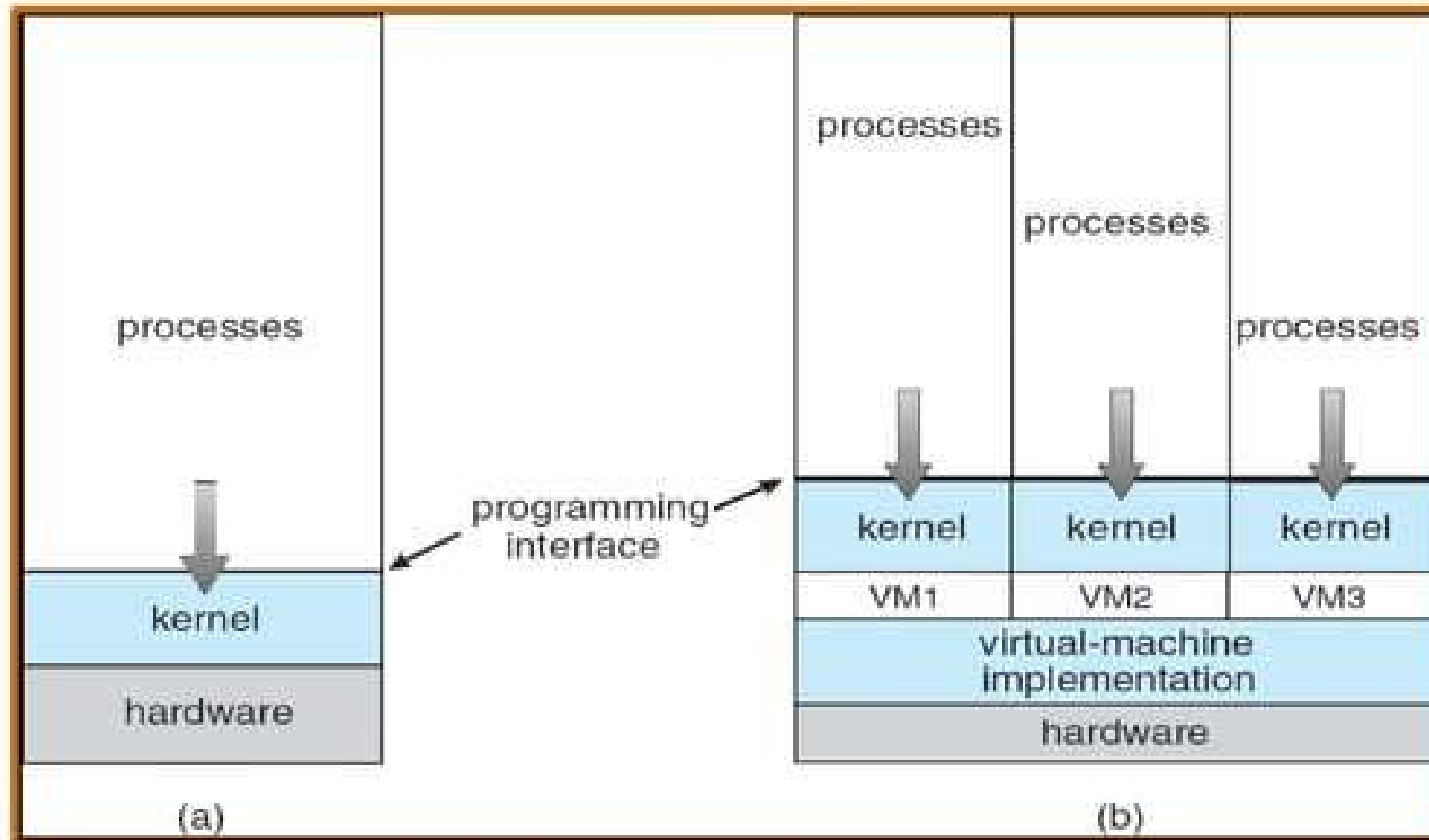
- Example:

- ☐ Hardware virtual machine: VMWare, Xen, VirtualBOX .

- ☐ Application virtual machine: Java Virtual Machine, .NET Framework

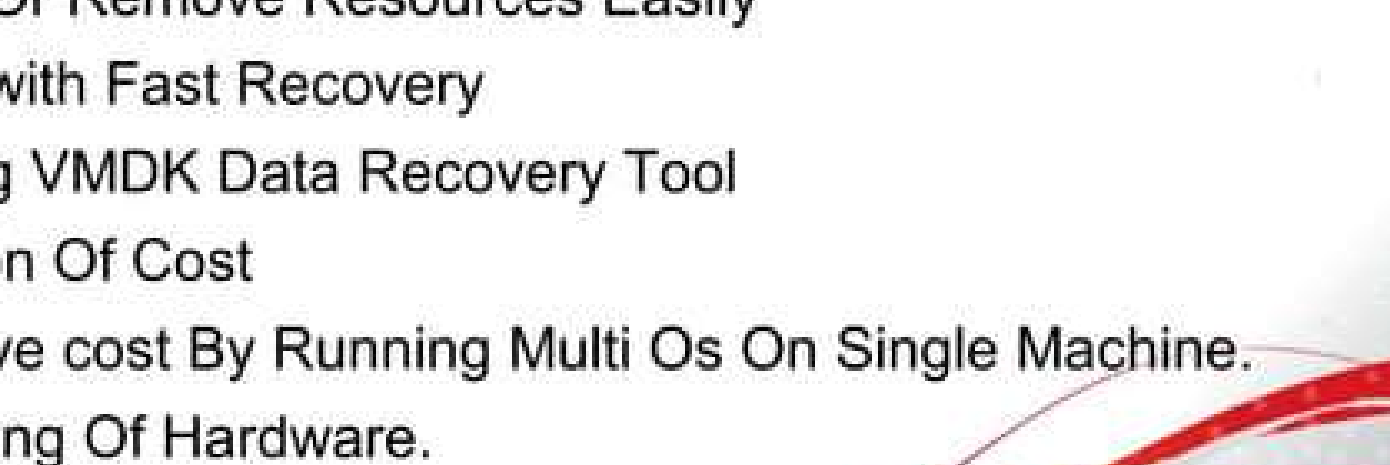


# Virtual Machine Architecture






# Advantages Of VM

- Familiar Interfaces
  - Isolation
    - Each OS Run Separately With Its Own Virtual Resources.
  - High Availability
    - If One Vm Server is Failed Then Easily Access Data From Another one.
  - Scalability
    - Add Or Remove Resources Easily
  - Backup with Fast Recovery
    - Using VMDK Data Recovery Tool
  - Reduction Of Cost
    - It Save cost By Running Multi Os On Single Machine.
    - Sharing Of Hardware.
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## **Disadvantages Of VM**

- Difficulty in direct access to hardware.
  - Great RAM consumption since each virtual machine will occupy a separate area of the Same.
  - Great use of disk space, since it takes all the files for each operating system installed on each virtual machine.
  - A virtual machine is less efficient than an actual machine when it accesses the host hard drive indirectly.
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# Introducing popular Virtual Machine Software

- VMware Workstation 
- XEN 
- Virtual BOX 
- Citrix 
- KVM



- VMware Workstation is the most dependable, high-performing, feature-rich virtualization platform for your Windows or Linux PC. It allows one physical PC to run multiple operating systems at the same time. No restarting or hard-drive partitioning is required.
- Software developers rely on Workstation to develop and test client-server, Web and cloud applications in a replica of their production environments.







## Library

Type here to search

- My Computer
- Shared VMs



Home

## VMware Workstation Beta

**Leave Feedback**

Leave feedback about this beta on our website.

**Create a New Virtual Machine**

Create a virtual machine on your local host.

**Open a Virtual Machine**

Open a local virtual machine.

**Connect to a Remote Server**

Open virtual machines on a remote server.

**Help**

View the help contents for VMware Workstation.

**Product Highlights****New User Interface**

The VMware Workstation user interface has been updated with new menus, toolbars, thumbnail views and a Virtual Machine Library. The library is a comprehensive list of all the virtual machines that a user creates, opens or remotely accesses and includes the ability to identify your true favorites and apply filters.

**What Happened to Teams?**

All of the features of a team still exist and can now be configured without the previous limitations. All Network Adapters can now throttle bandwidth and simulate packet loss, multiple virtual machines can be selected and powered on via the toolbar icon, the delay between VMs starting can be configured as a global setting and LAN segments can be implemented using traditional VMnets.

**Sharing Virtual Machines**

VMware Workstation now allows users to share virtual machines with their peers. Shared virtual machines are managed by the VMware Host Agent service which runs even when the user is not logged on to their machine. This service is the same service used by other VMware products such as VMware Server and vSphere and provides the security and permissions demanded by virtualization professional.

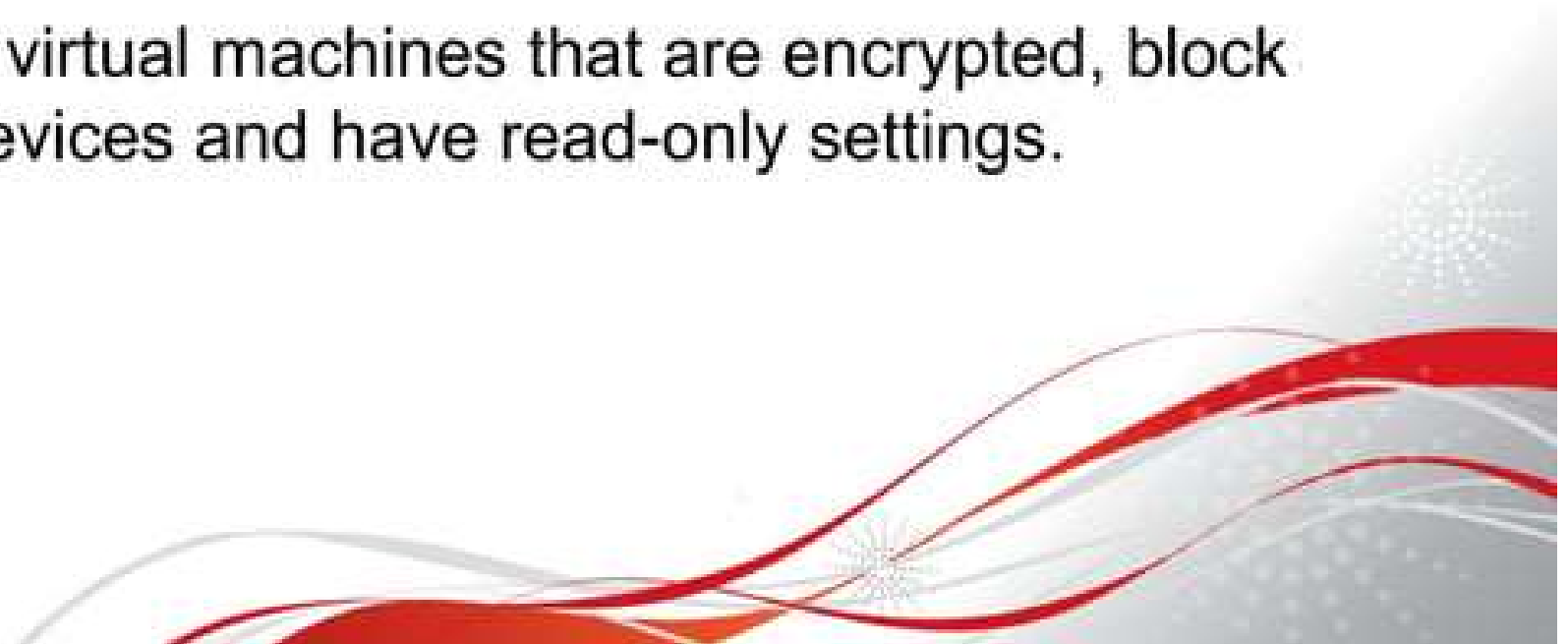
**Remote Connections**

VMware Workstation has a new Connect to Server feature that allows remote connections to hosts running Workstation, ESX 4.x and later as well as Virtual Center. After connecting to a vSphere host, try dragging a VM from the local My Computer section of the Virtual Machine Library to a vSphere host. Workstation users can now develop and test their virtual environments on their PC and simply drag them into production!



# Key Benefits Of VMWare

- Access anytime, anywhere
- Run applications in Windows, Linux and other systems at the same time without restarting.
- Remotely access virtual machines running on Vmware.
- Run as a server to host applications for your team, department or anyone in your organization.
- Create virtual machines that are encrypted, block USB devices and have read-only settings.

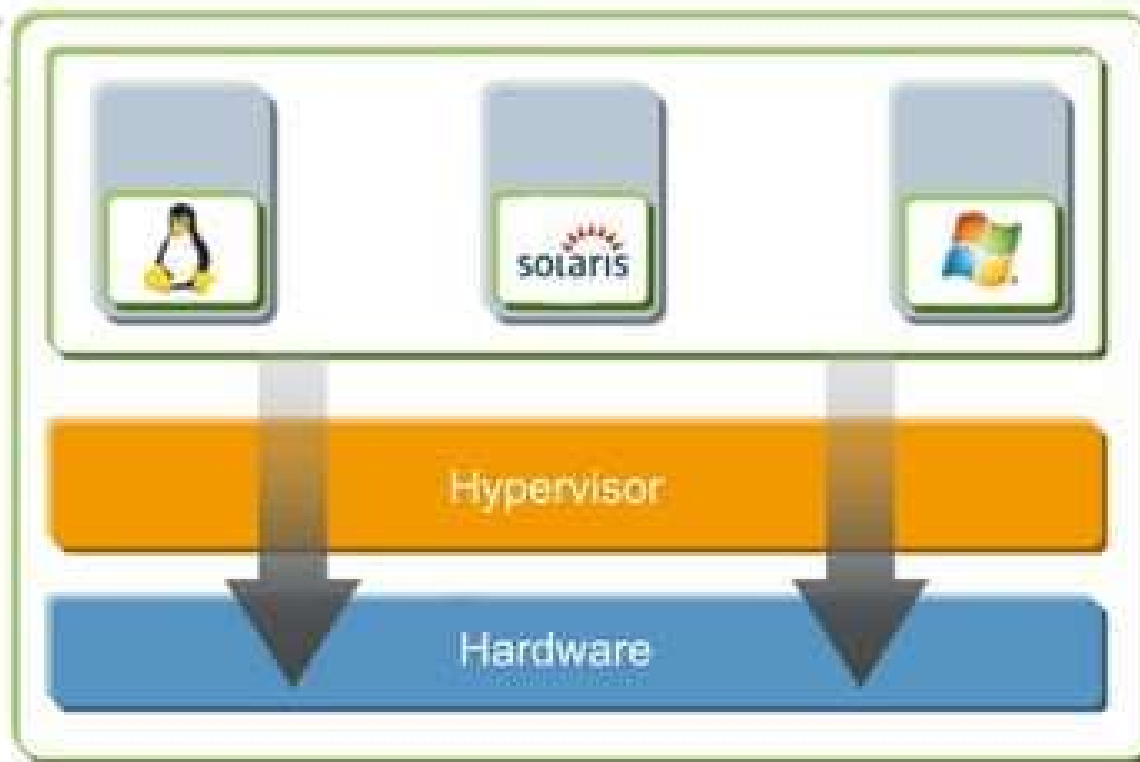




- Xen is a virtual machine monitor for IA-32 (x86, x86-64), IA-64 and PowerPC 970 architectures. It allows several guest operating systems to be executed on the same computer hardware concurrently.
- Xen was initially created by the University of Cambridge, Computer Laboratory and is now developed and maintained by the Xen community as free software, as well as Citrix XenServer Commercial version variant.
- A central part of Amazon.com's cloud computing platform, EC2 allows users to rent virtual computers on which to run their own computer applications.



# Xen Architecture



◇ Virtual machine layer

◇ Hypervisor layer

◇ Hardware/physical layer

## Hardware or physical layer:

Physical hardware components including memory, CPU, network cards, and disk drives.

## Hypervisor layer:

Thin layer of software that runs on top of the hardware. The Xen hypervisor gives each virtual machine a dedicated view of the hardware.

## Virtual machine layer:

Operating system hosted on the hypervisor and appearing to the user as a separate physical computer. However, the machine shares physical resources with other virtual machines, and it is portable because the virtual machine is abstracted from the physical hardware.



*Thank you*

