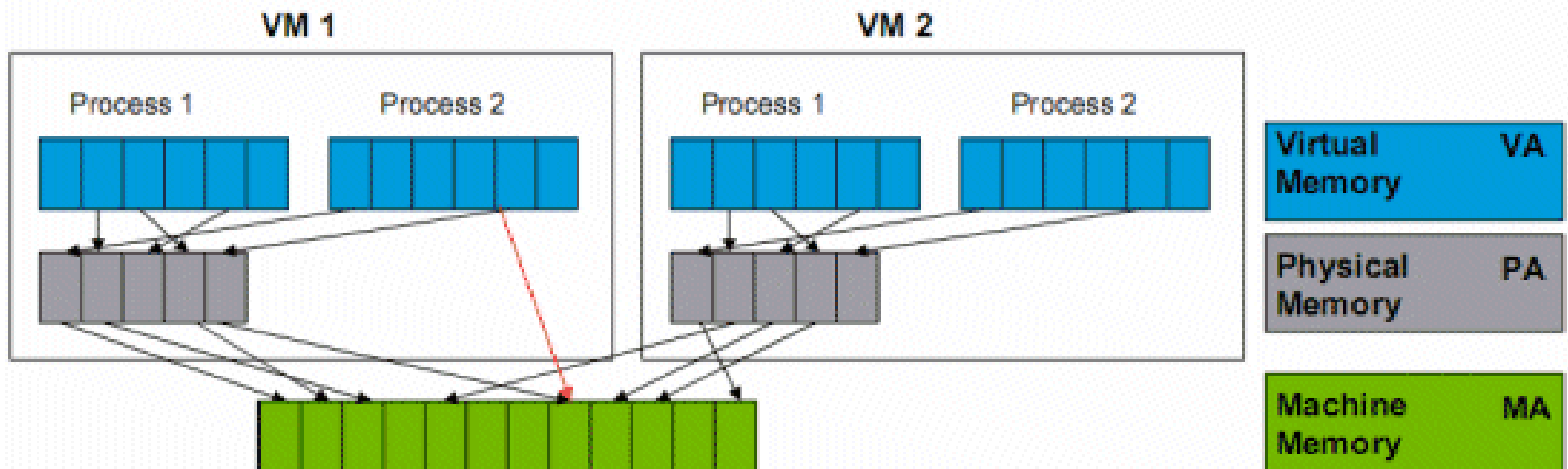**Memory virtualization**: This associates allotment of physical memory and dynamical allotment among all VMs.
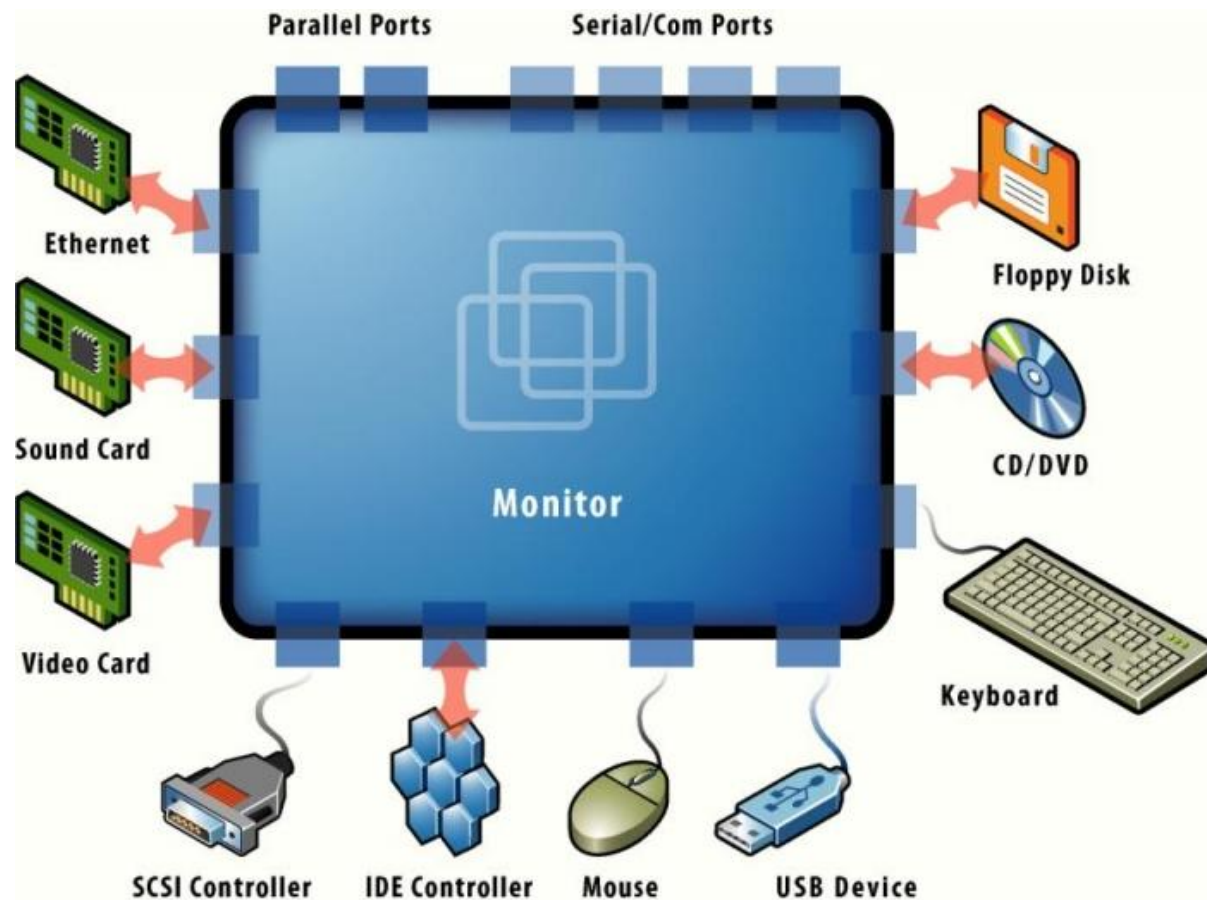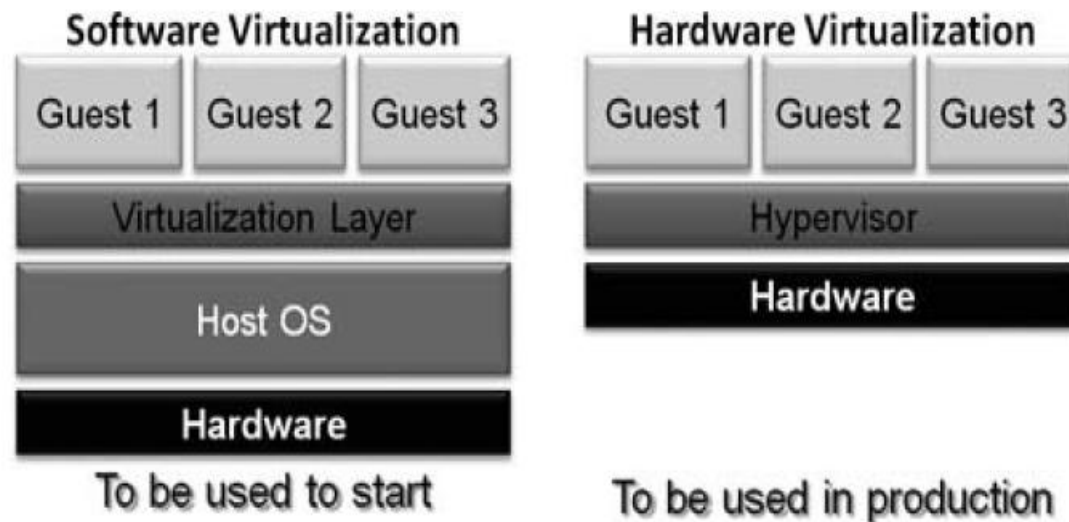
Device and I/O virtualization:

These include handling the routing of I/O requests between the shared physical hardware and virtual devices

Example: Virtual NICs

Network virtualization: When all the separate resources of a network are combined and the condition that allows the network administrator to share them among all network users.

Server virtualization:

Software Virtualization	Hardware Virtualization
Guest 1	Guest 2	Guest 3	Guest 1	Guest 2	Guest 3
Virtualization Layer	Hypervisor
Host OS	Hardware
Hardware	
To be used to start	To be used in production

The two different server virtualization models

- _____ model consists of the particular types of services that you can access on a cloud computing platform.
A) Service
B) Deployment
C) Application
D)None of the mentioned

Client or Desktop virtualization:

It is like a separation of PC desktop environment from a physical machine through the client server model of computing

There are 2 types:
i) Remote (server-hosted) : OS is hosted on a server in the data center
ii) Local (Client-hosted): OS runs locally on the user's PC hardware

Application Virtualization

It is the execution of running software from a remote server rather than the user's computer

Example: Dynamic link lib

Virtualization Products

Category of Virtualization products

i. Type I virtualization: directly runs on bare metal hardware, there is no need of installing OS, Type I hypervisor itself works like an OS
    example: Vmware ESX and ESXi, Citrix Xen server

i. Type II virtualization: runs directly on OS or any hosted OS
    example: Oracle VM virtual box, KVM (kernel based VM)

- . …… helps a user to have remote access to an application from a server.

a) Application virtualization

b) Network virtualization

c) Desktop virtualization

d) Storage virtualization

VmWare server: Company of making virtualization products

Benefits:
i. Extra servers
ii. Increase the CPU utilization
iii. Runs Linux, solaris, win, and applications on a simple physical server
iv. Transfers VMs from one physical server to another
v. Captures the full state of a VM
vi. Gives the choice to access enterprise class product software

Virtualization

(In comes virtualization, The Five step process)

Move to Virtualization..

- ▼ What is virtualization?
- ■ Why would we need it?
- ■ How can it improve my business?
- ■ What types of virtualization technologies exist?
- ■ Which terms should I be familiar with?
- ■ What is the cost/benefit ratio of virtualization?
- ■ What new challenges will it bring to the datacenter?
- ■ How should I structure my virtualization solution?
- ■ Which applications or services are good virtualization candidates?
- ■ Which server platforms or form factors are best suited to support virtualization?
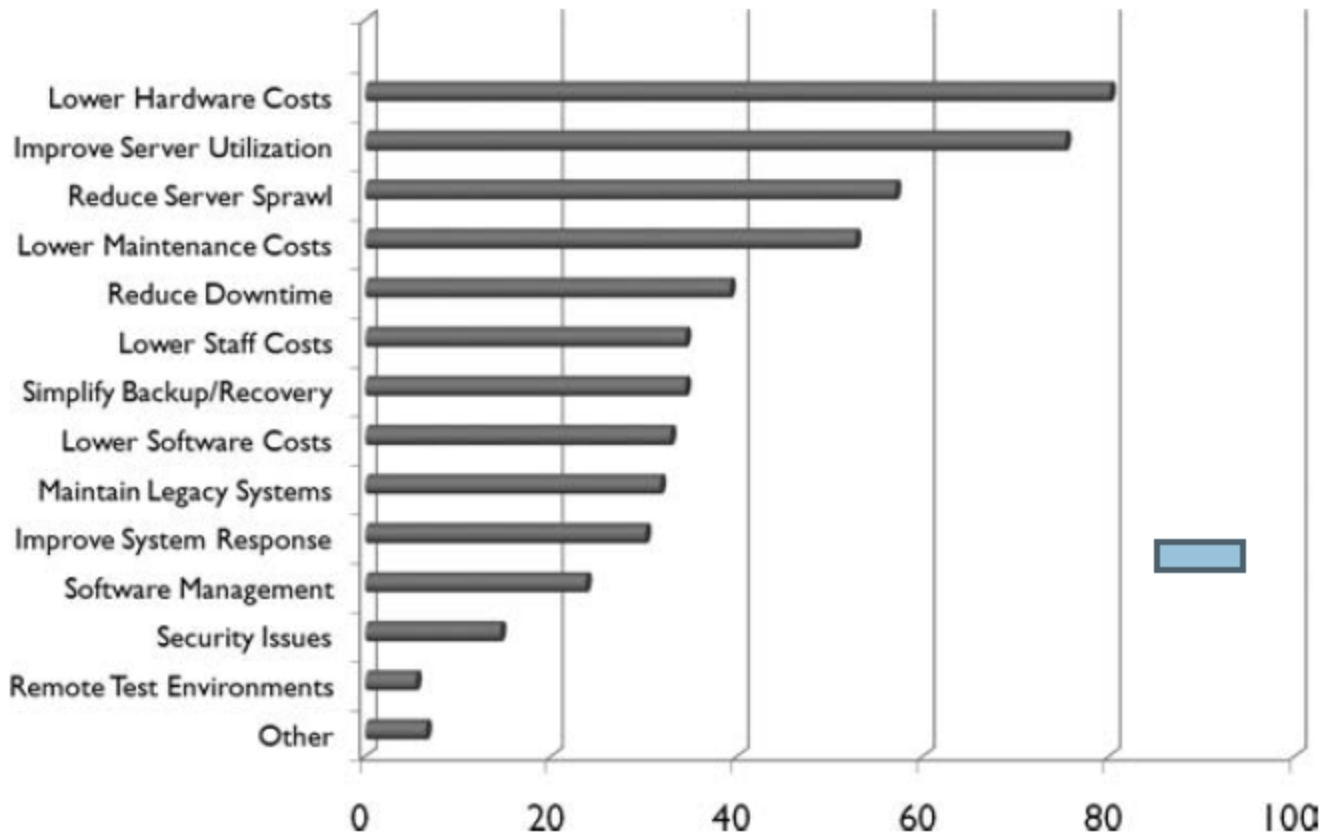
Move to Virtualization..

Figure 1-1. Common virtualization drivers

Green Technologies

- Greening the datacenter means more than just reducing the number of physical servers contained within it.

- It means moving forward with green policies and practices.

- One of the best of these is the acquisition practices in support of new machine purchases

A FIVE-STEP PROCESS

The move to virtualization relies on five key steps:

    1. **Discovery** The first step begins with datacenter inventories and the identification of potential virtualization candidates.

    2. **Virtualization** The second step focuses on gaining a complete understanding of the value choices that virtualization can offer.

    3. **Hardware maximization** The third step focuses on hardware recovery and how you can make judicial investments when adding new hardware or replacing older systems.

    4. **Architecture** The fourth step looks to the architecture you must prepare to properly introduce virtualization technologies into your datacenter practices.

    5. **Management** The last step focuses on the update of the management tools you use to maintain complete virtualization scenarios in your new dynamic datacenter.