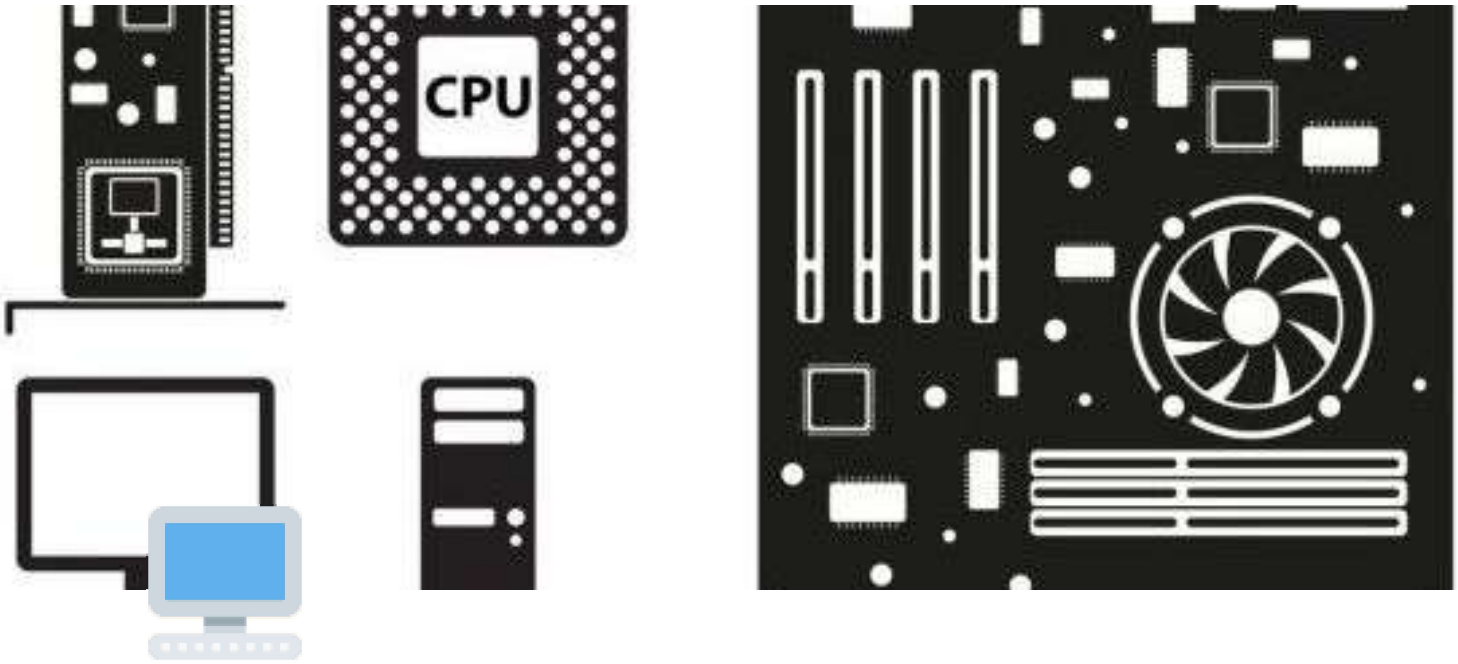

Basic Idea About Computer Working

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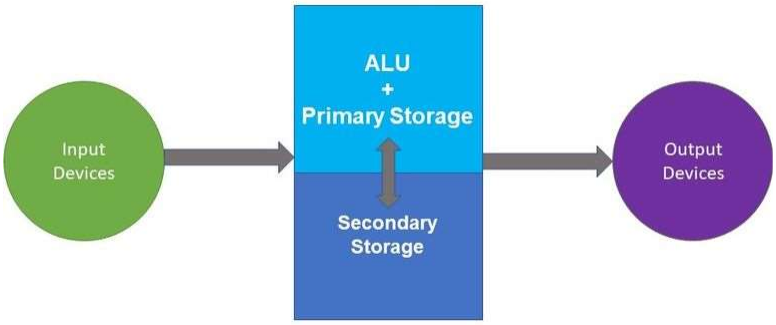
Basic structure :

- There are three main unit in PC , Input → Processor → Output
- Input and output devices are peripherals.
- Processor is mainly ALU (Arithmetic Logic Unit).
- Processor also consist some memory Primary memory , apart from that there are secondary memory units also.
- All components are places over mother board which is main chip and components are connected to each other with BUS (wires).



ALU :

- Most computer operations done in this part.
- Load operands into memory , bring them to processor from memory.
- ALU stores result of any program , calculation to memory.
- Control Unit in processor controls all operations .

GPU :

- It is graphical processes unit . These are most advanced processor mainly dedicated for graphical processing.
- It is optimized for graphical calculations . It is stronger version of CPU.

Network Interface controller :

- It is controller for all network environments of PC.
- Mainly there are two interfaces 1: Ethernet 2: WIFI

OS component :

- OS is operating system of PC. It is basically environment for all operations of computer.
- There are almost 5 types of OS .
- Popular OS for computer are a. Windows b. Linux based OS c. MAC (ios)
- Kernel - Core code part of OS , which boots OS in memory .
- File system - Access the files in HDD and file handling operations .
- User Interface - CLI emulators , Outlook for windows .
- Networking - Network drivers.

Virtual Systems :-

Virtualization is act of creating fake environment within another system for executing different programs. Like installing Kali in V box in Windows system is example of virtualization.

It is very useful for limited hardware & testing , usage purposes .

- **Benefits :**
    1. Efficiency - More efficient restoration , distraction & usage of resources .
    2. Cost - Cost is reduce on hardware.
    3. Redundancy - Easier to Backup .
    4. Versality - Simultaneously you can use two OS or more.

Hypervisor :-

Piece of software capable of virtualizing hardware components & maintaining virtual environment.

- **Host machine** : Host machine is main , basic hardware where hypervisor installed.

Bad idea to give more resources to hypervisor from host machine. Give recommended only .

- **Guest machine** : Virtual environment installed in hypervisor. Mostly another OS.

Types Of Hypervisors :-

1. Type 2 :

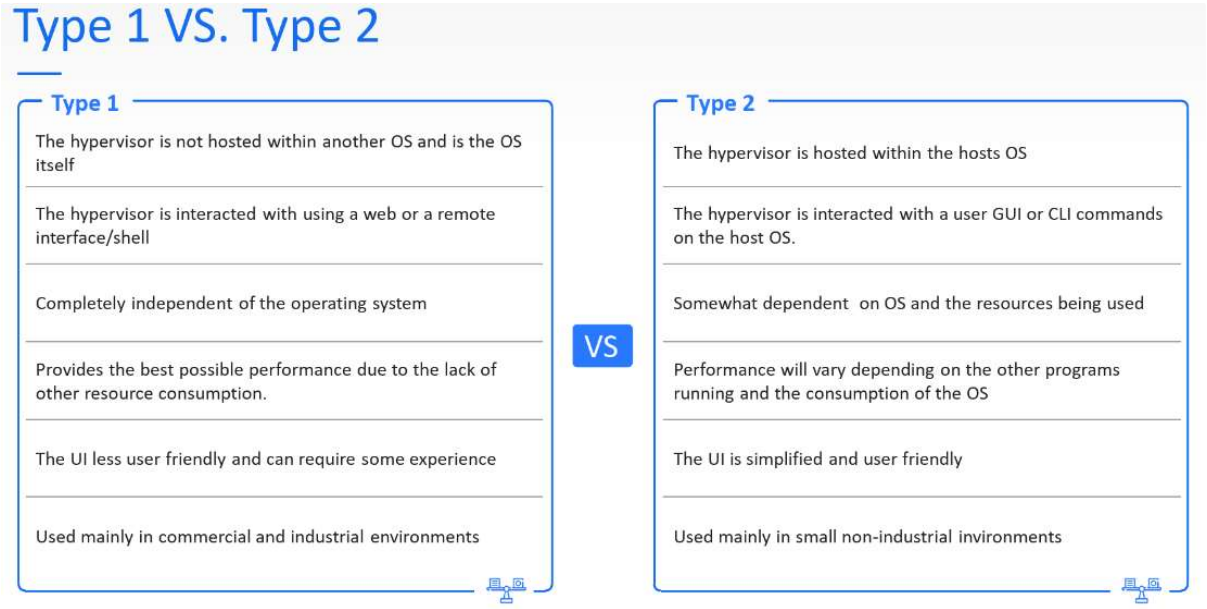
Application hypervisors run on top of installed OS & host the virtual environment on top of host kernel. Best for usage and also it is very efficient . Recommended to use this .

Examples → Microsoft Virtual PC, Oracle Virtual Box, VMware Workstation, Oracle Solaris Zones, VMware Fusion, Oracle VM Server etc.

2. Type 1 :

Bare metal hypervisors special computer run the hypervisors as OS itself. Dedicated for virtualization. It is not for special services or GUI like it is not useful for running applications on it.

Example → VMware ESXI, Microsoft Hyper-V, Apple Boot Camp , XEN servers for Linux systems.



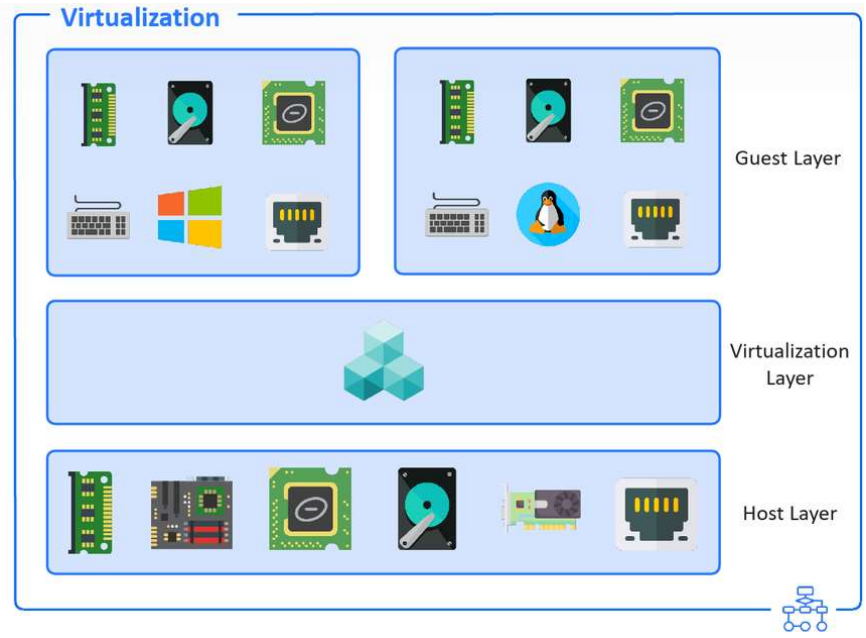
- **Kernel integrated hypervisors** :

Hyper-V platform is free prebuild with Windows servers , running on windows kernel , easy to use. KVM another Linux based kernel preloaded hypervisor , free to use , developed by Red Hat organization.

Working Of Hypervisor :

Works by allocating resources from host machine to guest machine. The resources includes drive space , RAM & network.

RAM & hardware , drive space are represented by files on host machine while network is actual hardware.


Virtualization
Guest Layer
Virtualization Layer
Host Layer