Virtual Machine (VM) Creation, Configuration and its Access

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What is Virtual?

- In computing, virtual is a digitally replicated version of something real. The replication, which is created with software, may not be an exact copy of the actual item, but it is similar enough in essence to be described as a digital rendition.

What is virtualization?

- Virtualization is the creation of a virtual -- rather than actual -- version of something, such as an operating system, a server, a storage device or network resources.

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Incomparable Treasures from The Jewellery Collection of the National Museum, New Delhi

Necklace (kanthi) *(1800 – 1900)*
by Unknown Artist
National Museum - New Delhi

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How virtualization is done?

- By using specially designed software, an administrator can convert one physical server into multiple virtual machines. Each virtual server acts like a unique physical device, capable of running its own operating system (OS).

What is a VM?

- A virtual machine is a computer file, typically called an image, which behaves like an actual computer. In other words, creating a computer within a computer.

TRADITIONAL AND VIRTUAL ARCHITECTURE

APPLICATION

OPERATING SYSTEM

TRADITIONAL ARCHITECTURE

APP   APP   APP

OS   OS   OS

VIRTUALIZATION LAYER

VIRTUAL ARCHITECTURE
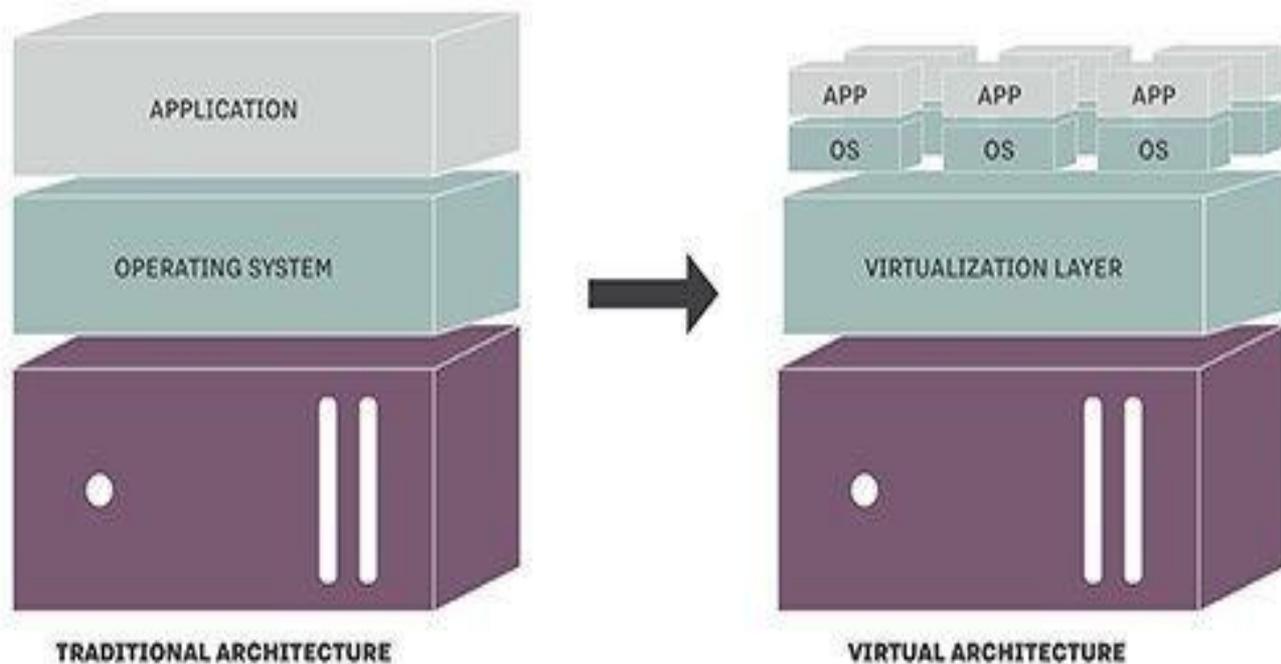
What is computer configuration?

- Computer configuration pertains to the choice of hardware, software, firmware, and documentation. The configuration affects system function and performance.

What is Hardware?

- Computer hardware includes the physical, tangible parts or components of a computer, such as the CPU, monitor, keyboard, data storage, graphic card, sound card, etc.
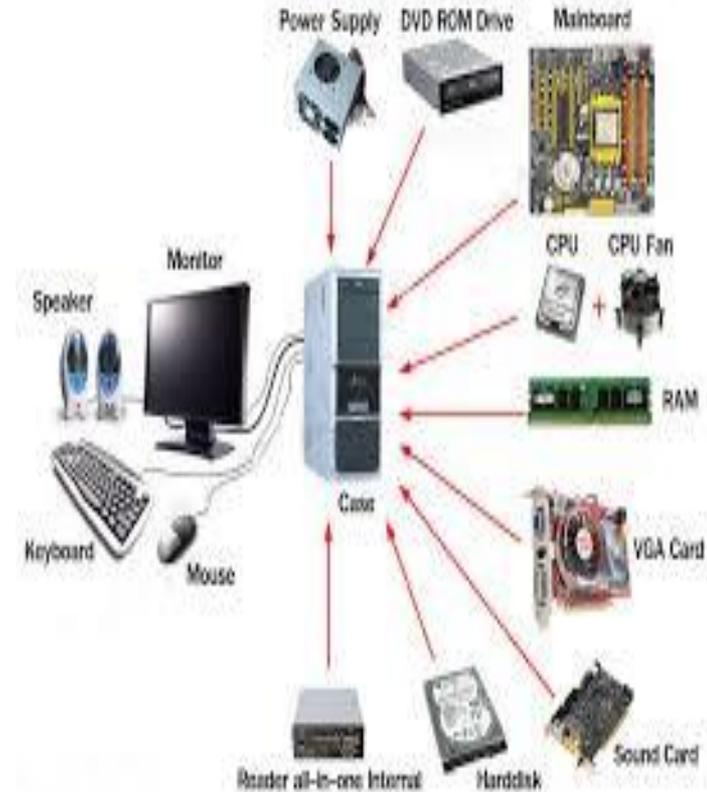
What is Software?

- **Computer software** (often called just **software**) is a set of instructions and associated data that tells a computer what to do or how to perform a task or it can mean all the software on a computer
  - System Software, Programming software, and application software

What is firmware?

- Firmware is any software controlling a device which is programmed once into ROM at the time of manufacture and cannot subsequently be changed except by a factory update. The program controlling the clock on a microwave is firmware.

What is a vCPU?

- A **vCPU** stands for virtual central processing unit. One or more **vCPUs** are assigned to every Virtual Machine (VM) within a cloud environment.

What is a Multi-core processor?

- A **multi-core processor** is a single computing component with two or more independent processing units called cores, which read and execute program instructions.
  - Dual / Quad core Processors

Google Computer Engine (GEC)

- GCE is the Infrastructure as a Service component of Google Cloud Platform which is built on the global infrastructure that runs Google's search engine, Gmail, YouTube and other services. GCE enables users to launch virtual machines on demand.

Demo of deploying software on Google Cloud Platform

Demo of Installing WordPress on a VM

Demo of creating a VM instance on Google Cloud Platform

Demo of accessing a VM instance on Google Cloud Platform

References

- https://en.wikipedia.org/wiki/Google_Compute_Engine
- https://www.youtube.com/watch?v=k0cXUf-ZSM0

Thank you!