DEPARTMENT OF STATISTICS MCA, PU

CS-44 Unit 5

Virtualization Basic in Cloud Computing

It is the "creation of a virtual (rather than actual) version of something, such as a server, a desktop, a storage device, an operating system or network resources". In other words, Virtualization is a technique, which allows to share a single physical instance of a resource or an application among multiple customers and organizations. It does by assigning a logical name to a physical storage and providing a pointer to that physical resource when demanded. Our Creation of a virtual machine over existing operating system and hardware is known as Hardware Virtualization. A Virtual machine provides an environment that is logically separated from the underlying hardware.

Types of Virtualization:

1. Hardware Virtualization.
2. Operating system Virtualization.
3. Server Virtualization.
4. Storage Virtualization.

Hardware Virtualization

When the virtual machine software or virtual machine manager *(VMM) is directly installed on the hardware system* is known as hardware virtualization. The main job of hypervisor is to control and monitoring the processor, memory and other hardware resources. After virtualization of hardware system we can install different operating system on it and run different applications on those OS.

Usage:

Hardware virtualization is mainly done for the server platforms, because controlling virtual machines is much easier than controlling a physical server.

Operating System Virtualization

When the virtual machine software or virtual machine manager *(VMM) is installed on the Host operating system* instead of directly on the hardware system is known as operating system virtualization.

Usage:

Operating System Virtualization is mainly used for testing the applications on different platforms of OS.

Server Virtualization

When the virtual machine software or **virtual machine manager** *(VMM) is directly installed on the Server system* is known as server virtualization.

Usage:

Server virtualization is done because a single physical server can be divided into multiple servers on the demand basis and for balancing the load.

Storage Virtualization

Storage virtualization is the *process of grouping the physical storage from multiple network storage devices so that it looks like a single storage device*.

Storage virtualization is also implemented by using software applications.

Usage:

Storage virtualization is mainly done for back-up and recovery purposes.

Advantages of Data Virtualization

1. It provides various security mechanism that allows users to safely store their personal and professional information.
2. It reduces costs by removing data replication.

3. It provides a user-friendly interface to develop customized views.
4. It provides various simple and fast deployment resources.
5. It increases business user efficiency by providing data in real-time.

Disadvantages of Data Virtualization

1. It creates availability issues, because availability is maintained by third-party providers.
2. It required a high implementation cost.
3. It creates the availability and scalability issues.
4. Although it saves time during the implementation phase of virtualization but it consumes more time to generate the appropriate result.