

CS4205 – Cloud Computing

Unit - 3

Unit – 3

Virtualization

- The main enabling technology for Cloud Computing is Virtualization.
- Virtualization is a partitioning of single physical server into multiple logical servers. Once the physical server is divided, each logical server behaves like a physical server and can run an operating system and applications independently.
- Many popular companies's like VmWare and Microsoft provide virtualization services, where instead of using your personal PC for storage and computation, you use their virtual server. They are fast, cost-effective and less time consuming.

Virtualization

...contd.

- For software developers and testers virtualization comes very handy, as it allows developer to write code that runs in many different environments and more importantly to test that code.

Types of Virtualization

Virtualization is mainly used for three main purposes

- Network Virtualization
- Server Virtualization
- Storage Virtualization

Network Virtualization

- **Network Virtualization:** It is a method of combining the available resources in a network by splitting up the available bandwidth into channels, each of which is independent from the others and each channel is independent of others and can be assigned to a specific server or device in real time.

Storage Virtualization

Storage Virtualization: It is the pooling of physical storage from multiple network storage devices into what appears to be a single storage device that is managed from a central console. Storage virtualization is commonly used in storage area networks (SANs).

Server Virtualization

Server Virtualization: Server virtualization is the masking of server resources like processors, RAM, operating system etc, from server users. The intention of server virtualization is to increase the resource sharing and reduce the burden and complexity of computation from users.

Conclusion

Virtualization is the key to unlock the Cloud system, what makes virtualization so important for the cloud is that it decouples the software from the hardware. For example, PC's can use virtual memory to borrow extra memory from the hard disk. Usually hard disk has a lot more space than memory. Although virtual disks are slower than real memory, if managed properly the substitution works perfectly. Likewise, there is software which can imitate an entire computer, which means 1 computer can perform the functions equals to 20 computers.