

- Virtualization support and disaster recovery:
- One very distinguishing feature of cloud computing infrastructure is the use of system virtualization & the modification to provisioning tools.
 - As the VMs are the containers of cloud services, the provisioning tools will first find the corresponding physical machines & deploy the VMs to those nodes before scheduling the service to run on the virtual nodes.

Hardware Virtualization:

In many cloud computing systems, virtualization soft. is used to virtualize the hardware. System virtualization soft. is a special kind of soft. which simulates the execution of hardware & runs even unmodified operating systems. Cloud computing systems use virtualization soft. as the running env. for legacy soft. such as old operating systems and unusual applications. Virtualization soft. is also used as the platform for developing new cloud applications that enable developers to use any operating systems & programming env. they like. The development environment & deployment environment can now be the same, which eliminates some routine problem.

Infrastructure service

Mission
manag.

System
manag.

User
manag.

System
prov.

Account
billing

Virtualized Infrastructure

Virtualized Integrated manager

Load
manag.

Resource
deployment

Security
manag.

Data
manag.

Resource
provision

White box manag.

Virtual solution
A

Virtual solution
B

AGENT

Virtual
mach.

AGENT

Virtual
mach.

AGENT

Virtual
mach.

AGENT

Virtual
mach.

AGENT

Virtual
mach.

Virtualized
platform

Virtualized
platform

Virt. platform

Virt.
platform

Virtualized servers, storage & network from cloud platf. const.

Virtualization Support in Public clouds : Three public clouds in the context of virtualization support : AWS, Microsoft azure, & GAE, AWS provides extreme flexibility (VMs) for users to execute their own applications. GAE provides limited application-level virtualization for users to build application only based on the services that are created by Google. Microsoft provides programming-level virtualization (.NET Virtualization) for users to build their applications.

The XenEnterprise tool applies only to Xen-based servers. Everyone is interested in the cloud; the entire IT industry is moving toward the vision of the cloud.

*ii) Storage Virtualization for green data centres :

Recent surveys from both IDC & Gartner confirm the fact that virtualization had a great impact on cost reduction from reduced power consumption in physical computing systems. This alarming situation has made the IT industry become more energy-aware. With little evolution of alternate energy resources, there is an imminent need to conserve power in all computers. Virtualization & server consolidation have already proven handy in this aspect. Green data centres & benefits of storage virtualization are considered to further strengthen the synergy of green computing.