

what is Cloud Computing

- * Cloud Computing means Storing & accessing data Programs over the internet instead of your computer hardware
- * we can Create, Configure & customize application on.
- * with Cloud Computing users can access cloud resources from anywhere in the world. you just need an access to the internet.
- * Cloud Computing is both a combination of ~~Cloud~~ & the based Computing resources delivered as a network service

Models for Cloud computing

- There are Some Model working behind making cloud computing feasible & accessible.
- ① Deployment models = Public, Private, Hybrid, compu
- ② Service models = IaaS, PaaS, SaaS

Public = all resources & instances which you have configured are accessible to public over the internet.

→ it is less secure eg. web mail.

Private => all instances are accessible only to your organization.

=> it is more secure.

Community => your instances are accessible to some groups of organization.

Hybrid,

is basically a mixture of Private & public cloud resources.

Service Models

(IaaS)

- => Provides Virtualized Computing resources over the internet.
- => Provides access to fundamental resources such as Physical machines, Virtual machines, V. storage etc.
- => usually billed on usage.

(PaaS) as the name suggests, it provides you computing platforms which typically include operating system, database, web server etc.

(SaaS)

- => allow to use Software application as a service to end user.
- => SaaS is a Software delivery methodology that provides licensed multitenant access to software & its functions remotely as a web based service.

e.g.: (Remote desktop services)

(NIST)

Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access of shared pool of configurable computing resources

(e.g., network, servers, storage, applications and services)

Characteristics according NIST

- * On-demand Self-service - user can get complete control over application etc.
- * Broad network access - access from anywhere
- * Resource Pooling - used multiple customer sometime
- * Rapid elasticity
- * measured Service - automatically control & optimize resource

Cluster

collection of interconnected stand-alone computers

Important

- * scalability
- * High availability & fault tolerance
- * use of commodity computers

Grid

Integrated computing infrastructure for bringing together computers to create a large collection of computer

Virtualization:

- * It is a technology used to enhance the utilization of computing resources.
- * A single hardware machine is multiplexed among multiple Virtual machine (VMs)
- * A Software based virtual machine monitor manager (VMM) or hypervisor is a program that manages the hardware resources for the VMs.

Virtualization Levels

- (1) Instruction Set Architecture (ISA)
- (2) Hardware abstraction layer (HAL)
- (3) Operating System Level
- (4) Library Support (User -Level API)
- (5) Application Level.

VM Architecture

We know that virtualization layer transforms the physical hardware into virtual hardware. There are three classes of VM architecture.

Hypervisor transforms the physical hardware into virtual hardware.

- (1) Hypervisor architecture
- (2) Full virtualization

- (3) Para-virtualization architecture.

Types of Virtualization

- (1) Operating System virtualization
- (2) Hardware virtualization
- (3) Server " "
- (4) Storage "

Benefits of Virtualization

- (1) Security
- (2) flexible operations
- (3) economical
- (4) eliminates the risk of system failure
- (5) flexible transfer of data.
- 6. Reduced Investment.
- 7. Increase Scalability.
- 8. Increase availability & Reliability.

Cloud Architecture

[Client infrastructure]



[Internet]



Services

↓
applications

↓
Storage

↓
Security

↓
Infrastructure

↓
management

Cloud Storage

- Cloud storage is a service to the computer & mobile device user to store data or files.
- The data center can be located anywhere in the world.

• dropbox onedrive , google drive PCloud,

Cloud computing

Advantages

- (1) cost
- (2) accessibility
- (3) Recovery
- (4) Syncing & updating
- (5) security

Data storage

disadvantages

- Internet connection costs additional Hard drives Support Privacy