

Cloud Computing
Unit Test - I

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IT - "A"

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PART - A.

1. Cloud Offers better insight.

Cloud helps Collaboration

Cloud drives better engagement

Speed

Cloud benefits are measurable and pay for themselves.

2. Evolutionary Trend:

Clusters, MPSS, P2P Networks,

Grids, Clouds, Web Services, And

Internet of Things.

3. Yes. The above statement is true. Cluster Computing is the base of all distributed Computing paradigm, it aggregates the resources locally and shares the load.

Grid Computing is the extended version of Cluster in which resources are provisioned through internet.

4. Advantages:

- * Lowers Costs through economies of scale
- * Configurations can be done while leaving underlying codebase unchanged.
- * Vendors have a vested interest in making sure everything runs smoothly.

5. Public Cloud:

- * Ultimate Scalability - Vast on demand resources are available.
- * Cost effective - Brings greater level of resources together.

Hybrid Cloud:

- * Speed; It is fast, portable with maximum flexibility.
- * lightweight Applications.

PART-B.

1. Different Services Offered By Cloud:-

1. SaaS
2. PaaS
3. IaaS.

SaaS (Software As A Service):

- * Provides off the shelf applications offered over the internet.
- * It is a method for delivering software applications over the internet as per the demand and on a subscription basis.
- * SaaS helps you to Host and manage the software application and underlying infrastructure and handle any maintenance.

Pros:-

- * Accessible from any Computer or device.
- * Software available facilitates working.

Cons:-

- * Off shelf products non-flexible.
- * Cannot provide add-ons or customize them.
(eg) Google Apps, Dropbox, Salesforce,
Cisco WebEx, GoTo Meeting.

(ii) IaaS:-

Infrastructure As A Service.

- * Cloud service that allows existing applications to run on its hardware.
- * Puts out resources dynamically wherever they are needed.
- * Pay - As - You Go Model.

Services:-

1. Compute Servers.
2. Data Storage.
3. Firewall
4. Load Balancer.

(eg) Digital Ocean, Linode, Rackspace,
AWS.

3. PaaS:-

Product As A Service

- * Refers to the supply on-demand environment for developing, testing, delivering and managing software application.
- * It is designed to quickly create web & mobile apps without worrying about setting up or managing the underlying infrastructure of servers, storage, network and databases needed for development.

(Ex) AWS Elastic Beanstalk,
Windows Azure,
Heroku.

4. Computing Paradigms:

1. Centralized Computing:

All computer resources are centralized in one physical system.

2. Parallel Computing:

All processors are either tightly coupled with central shared memory or loosely coupled with distributed memory.

3. Distributed Computing:

A distributed system consists of multiple autonomous computers, each with its own private memory communicating over a network.

4. Cloud Computing:

An internet cloud of resources that maybe either centralized or decentralized. The cloud applies to parallel or distributed or may be built from physical or virtualized resources.

Different System Models for Distributed Computing:-

Types Of Distributed Systems:

* Distributed Computing Systems:-

- Cluster Computing
- Grid Computing

* Distributed Information Systems-

* Distributed Pervasive Systems.

1. Distributed Computing Systems:

Goal is to provide high performance computing tasks.

Cluster Computing Systems:

A "Supercomputer" built from "Off the shelf" Computer in a high speed network (LAN).

Most Common Use:- A single program is run in single or multiple machines.

Grid Computing Systems:-

Contrary to Clusters, Grids are usually composed of different types of computers (hardware, OS, network security etc.)

Resources from different organizations are brought together to allow collaboration.

(g) WWW.

2. Distributed Information Systems:

Goal is to distribute information across several servers.

3. Distributed Pervasive Systems:

These are the distributed systems involving mobile and embedded computer devices like small, wireless, battery-powered devices (PDAs, Smart phones, Sensors etc.).

Cloud Computing;

Characteristics of A Cloud Are;

1. Pay-Per-Use
2. Elastic Capacity.
3. Illusion of Infinite Resources.
4. Self-Service Interface
5. Resources that are abstracted or virtualized
6. Provide API And Development Tools for Developers To Build Scalable Applications On Their Services

Cloud Is Used For Following Reasons:

1. Dynamically Scalable.
2. Device Independent
3. Cost Efficient:
 - (i) Task-Centrisim
 - (ii) Private Server Cost.

Virtuatus

Virtualization:-

- * Under utilization of resources.
- * Divide up the resources.
- * Maintenance required Controlling job flow.

Deployment Models of A Cloud:

1. Private / Enterprise .
2. Dedicated .
3. Hybrid / Mixed .
4. Cloud / Public .

5. Cloud Computing Services:-

1. Software As A Service (SAAS).
2. Platform As A Service (PAAS).
3. Infrastructure As A Service (IAAS).

(i) Software As A Service:-

- * It is a method for delivering software applications over the internet as per the demand and on a subscription basis.
- * It helps you host and manage the software application and underlying infrastructure and handle any maintenance (software upgrades and security patching).
- * Provides off-the-shelf applications offered over the internet.

(ii) Product Platform As A Service:-

- # Platform as a service refers to the supply an on-demand environment for developing, testing, delivering and managing software applications.
- # It is designed to quickly create web or mobile applications without worrying about setting up or managing the underlying infrastructure of servers, storage, network and databases needed for development.
- # Offers a computing platform and solution stack for users.

Features :-

Programming Languages:-

→ Python

→ Java

→ .Net Languages.

→ Ruby.

Advantages Of SaaS:-

1. Accessible from any Computer or device.
2. Software available facilitates Collaborative working

Disadvantages Of SaaS:-

1. Off shelf products non-flexible.
2. Cannot provide add-ons or customize them.

(eg) 1. Google Apps.
2. Dropbox.
3. Salesforce.

Programming Frameworks:

- Ruby On Rails.
- Spring
- Java EE
- .Net

Programming Models:

- * A PAAS Cloud should be able to support various programming models for different types of programming.
- * Programming large datasets in Clusters of Computers (MapReduce)
- * Development of request-based web services and applications.
- * Orchestration of a business process in the form of workflows (Workflow Model).
- * High-performance distributed execution of tasks.

Advantages of PAAS:-

1. Rapid Deployment
2. Low Cost
3. Private or Public Deployment

Disadvantages of PAAS:-

1. Not much freedom.
2. Choices of tools are limited.
3. Vendor lock-in.

- (eg) 1. Google Apps Engine.
2. Windows Azure Platform.
3. Force.com.

(iii) Infrastructure As A Service:-

- * It is the most basic category of Cloud Computing services that allows you rent IT infrastructure (servers or virtual machines) from a Cloud provider on a pay-as-you-go basis.
- * Allows Existing Applications to run on its hardware
- * rents out resources dynamically whenever they are needed.

Services:

1. Compute Servers.
2. Data Storage.
3. Firewall
4. Load Balancer.

Geographical Presence;

- * Responsiveness
- * Availability.

User Interfaces And Access To Servers:

- * Providing means of accessing their cloud.
- * GUI
- * CLI
- * Web Services.

Advance Reservation of Capacity

- * Time - Frame Reservation

Automatic Scaling And Load Balancing

- * Elasticity of the service.
- * One of the most desirable features of an IAAS Cloud.
- * Traffic distribution.

Service Level Agreement:-

* As with all services, parties must sign a agreement.

Metrics :-

Uptime, Performance Measures.

Hypervisor And Operating System Choice

* Xen

* VMWare, rCloud, Citrix Cloud Center.

(Q) 1. DigitalOcean

2. Linode

3. Rackspace.