

PHYSICS PRACTICAL SHEETS

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1. Explain the cloud computing architecture in details.
 cloud computing is utility-oriented and internet centric way of delivering IT services on demand.

Cloud computing architecture includes

- i) Infrastructure as a service
- ii) Platform as service
- iii) Software as a service

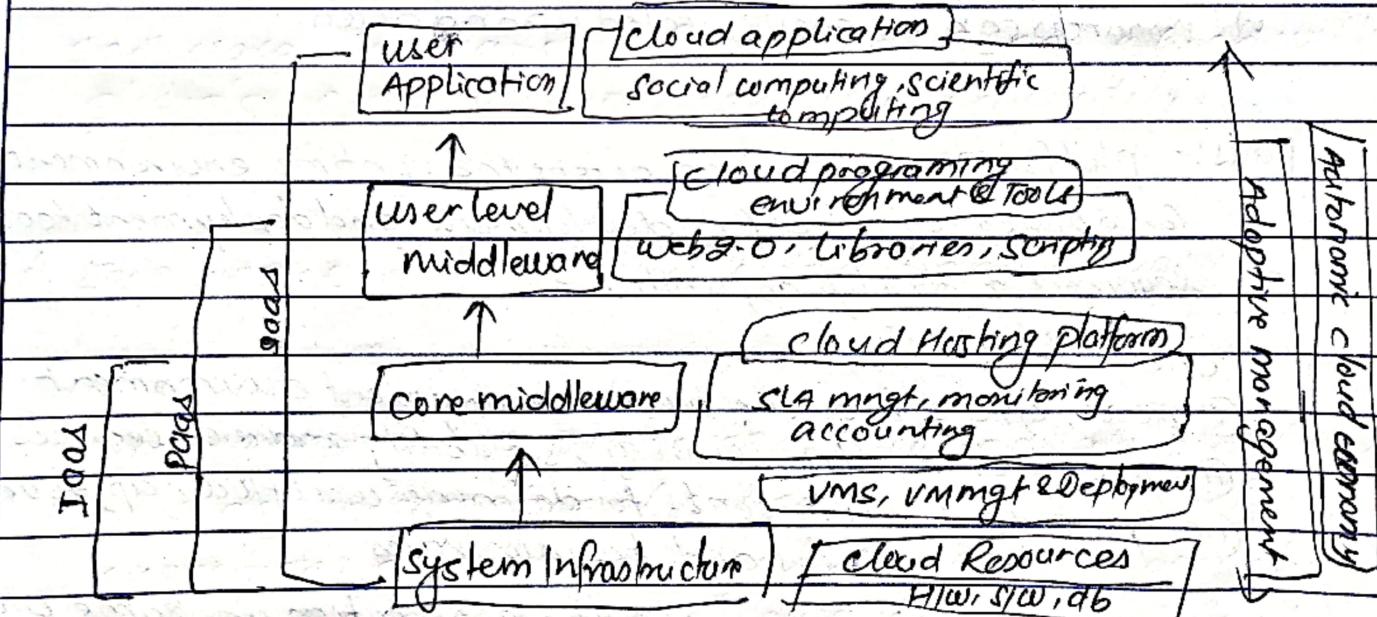


fig: cloud computing architecture .

From figure above, we will discuss about

- ① IaaS ② PaaS ③ User-level middleware
- ④ SaaS ⑤ User application ⑥ Core middleware
- vii) System Infrastructure.

IaaS:

It provides access to fundamental resources such as physical machines, virtual machines, virtual storage etc.

Characteristics:

- i) virtual machines with pre-install OS
- ii) virtual machines with preinstall OS
- iii) on-demand availability of resources
- iv) Allow to copy the particular data at different locations.
- v) resources can be easily scaled up and down.

PaaS:- platform as a service offers the runtime environment for application. It offers development and deployment tools required to develop application.

Characteristics:-

- ① PaaS offers browser based development environment.
- ② provides built-in security, scalability and web services
- ③ provides built-in tools for defining workflows, approval process and business rules
- ④ easy to integrate with other application on some platforms
- v) provides web services interface to connect applications outside the platform.

3 SaaS:-

Allows to provide s/w application as a service to the end users. s/w is deployed on host service and is accessible via internet.

Characteristics:-

- i) s/w available in internet
- ii) s/w application are maintained by vendors
- iii) License to s/w may be sup. subscription based.
- iv) cost effective
- v) Available on demand.

4. User applications:-

- i) It includes cloud application through which end user get interact
- ii) there may be different application like scientific, gaming
- iii) eg: gmail, facebook.com etc.

5. user level middleware:

- i) includes cloud application programming environment and tools
- ii) different types of programming and tools depends on user application
- iii) eg web2.0, libraries, scripting etc.

6. core middleware:-

- i) includes cloud hosting platforms.
- ii) manage quality of services
- iii) execution management
- iv) virtual machines

7. system architecture infrastructure:-

- i) includes cloud resources
- ii) storage h/w, db
- iv) databases, servers etc. are part of it.

Q. Discuss the different deployment models of cloud.

There are mainly ⁴ deployment models.

i) cloud public cloud:-

It provides a shared platform that is accessible to general public through an internet connection.

e.g.: EC2, Microsoft Azure etc.

Advantages:-

- i) easy access of data
- ii) flexibility to add and reduce capability
- iii) cost effective
- iv) 24x7 running
- v) scalability

disadvantages:-

- (i) data security and privacy
- (ii) compromised reliability
- iii) lack of individual support.

ii) private cloud:-

It allows systems and services to be accessible within an organization. It is operated only within single organization. It is also known as internal cloud.

Advantages:-

- (i) individual development. (ii) storage and I/O components are customizable.
- iii) high control over corporate information
- iv) high security privacy and reliability

Disadvantages:-

- i) cost intensiveness entail expenses on hardware and staff training
- ii) not in choice of small and medium organization
- iii) only suitable for company that seek to safeguard mission critical operation.

iii) Hybrid cloud:-

Mixture of hybrid public and private cloud. Non critical activities are performed using public and critical activities are performed using private cloud.

Advantages:-

- (i) improved security and privacy
- (ii) enhanced scalability and reliability
- iii) reasonable price

Disadvantages:-

only suitable of company can split data into mission critical and non critical data.

iv) Community cloud:

Community cloud allows system and services to be accessible by group of organizations. It shares the infrastructure between several organization.

Advantages:

- i) cost reduction
- ii) improved security reliability and privacy
- iii) ease of sharing and collaboration.

Disadvantages:-

- i) high cost than public
- ii) sharing of fixed storage and bandwidth capacity
- iii) not widespread so far.

3. How can you design and implement the cloud using SOA.

Service oriented architecture defines a way to make s/w component reusable, interoperable via service interface.

features of soa:-

- i) standard service infrastructure
- ii) loosely coupled
- iii) Reusable
- iv) standard common services.

We use SOA in cloud to achieve following:-

- i) Achieve flexibility in agile business
- ii) Achieve efficiency in real time Business
- iii) Affinity with Business modeling which helps on focus on business and maintainability and reuse services.

Elasticity, self-service provisioning standards based interfaces and pay-as-you-go are some of major characteristics of cloud. To achieve these kinds of engineering, cloud basis must be properly conceived and properly architected. Cloud services and businesses by bringing SOA's best practices and business process emphasis to next level. To offer services with desired level of flexibility and scalability, cloud service provider must develop solutions using a SOA. SOA is more than just technology strategy and technique for developing IT system. SOA concepts helps to improve understanding between business and IT to assist business change. SOA uses separation of concern (SOC) which will divide problems and handles it separately.

4. Explain the term security, trust and privacy.

privacy:-

privacy entails the protection and appropriate use of the personal information of customer and meeting of expectations of customer about its use. privacy also entails the application of laws, policies, standards and processes by which personal information is collection, use and disclosure of their personal information.

Security:-

Security is defined as "preservation of confidentiality, integrity, and availability of information. In addition other properties such as authenticity, accountability, non-repudiation and reliability can be involved. It has some responsibility to make sure the outsourced uses "reasonable security" to protect those data."

Trust:-

Trust is a broader notion than security as it includes subjective criteria and experience. Correspondingly there exist both hard (security oriented) and soft trust (re: non-security oriented trust) solutions. 'Hard' trust involves the aspects like, authenticity, encryption and security in transactions whereas 'soft' trust involves human psychology, brand loyalty and user friendships/ friendliness.

Cloud providers needs to safeguard the privacy and security of personal and confidential data that they hold on behalf of organizations and users.

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