



## GURU NANAK DEV ENGINEERING COLLEGE, LUDHIANA

(AN AUTONOMOUS COLLEGE u/s 2(f) & 12(B) OF UGC ACT - 1956  
AICTE Approved, Punjab Govt, Aided Status ISO : 9001:2008 Certified Affiliated to I.K. Gujral PTU Jalandhar  
IEI Accredited UG Programmes, Institute Accredited by NAAC (A Grade) & TCS

Dated 26.9.22 Class D4IT Sec A2

Class Roll No. 1921049

Subject Cloud

University Roll. No.	Signature of Invigilator
1905345	<i>J</i>

Q. No.	1	2	3	4	5	6	7	Total Marks	Sig. of Examiner
Marks	2	2	4	4	4	7		23	<i>PS</i>

⑥

### Different types of cloud

Cloud computing is the on demand delivery of computing resources as storage, network bandwidth to the intended users.

Eg:- Amazon web services

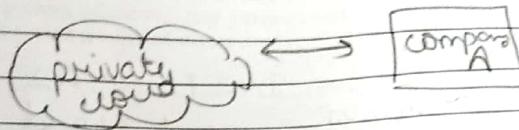
### Various types :-

- ① public cloud :-(i) it is internet based computing available to everyone.  
(ii) In this, resources are open source, available to all for storing, accessing and processing of data.  
(iii) It provides less security to it has more privacy risk.  
(iv) It is accessed using web browser client, company A, company B, client B

Eg:- gmail

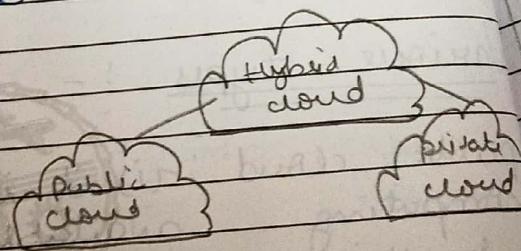
- ② private cloud :-(i) it is internet based computing for a particular organisation.  
(ii) It is pay per use strategy available for particular organisation or human.  
(iii) As it has more security so user privacy risk is there.

Eg:- Microsoft Azure.



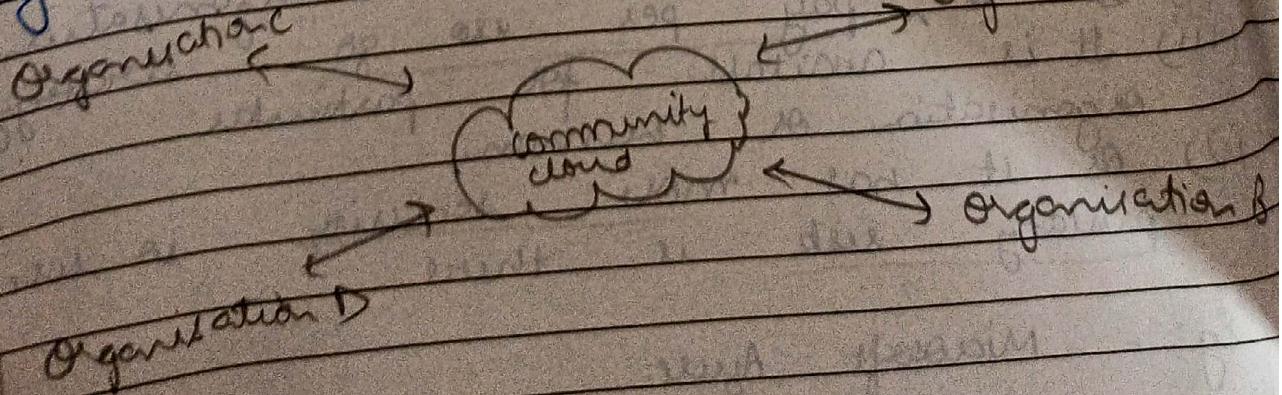
- Hybrid cloud :-
- (i) Hybrid cloud is a heterogeneous mixture of both public and private cloud.
  - (ii) It is ~~not~~ made for a particular organization or human.
  - (iii) It provides security and efficiency to the user.
  - (iv) If it is used where we need security for some data and for some data we need it to be available for public.

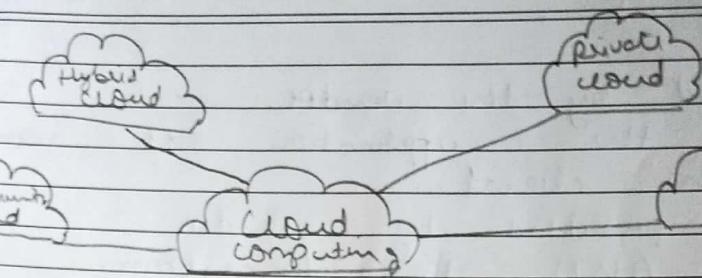
Eg:- google drive



- ④ Community cloud :-
- (i) It is internet based computing for a group of organisations.
  - (ii) In this, infrastructure is being shared by all the organisations.
  - (iii) In this, security is managed by the all organisations.

Eg:- IBM softlayer cloud





### Service models of cloud

#### 1. Software as a Service :-

- i) It is a service model in which application is made available to the clients for use.
- ii) All the infrastructure like resources, memory, storage, hardware, software, OS, network bandwidth are managed by cloud provider.
- iii) User doesn't need to install any software or hardware on its PC.
- (iv) User can access it using web browser.
- (v) It has pay per use model.
- (vi) It uses only one instance of software so it provides multi-tenancy.

Eg:- gmail, google drive

#### 2. Platform as a Service :-

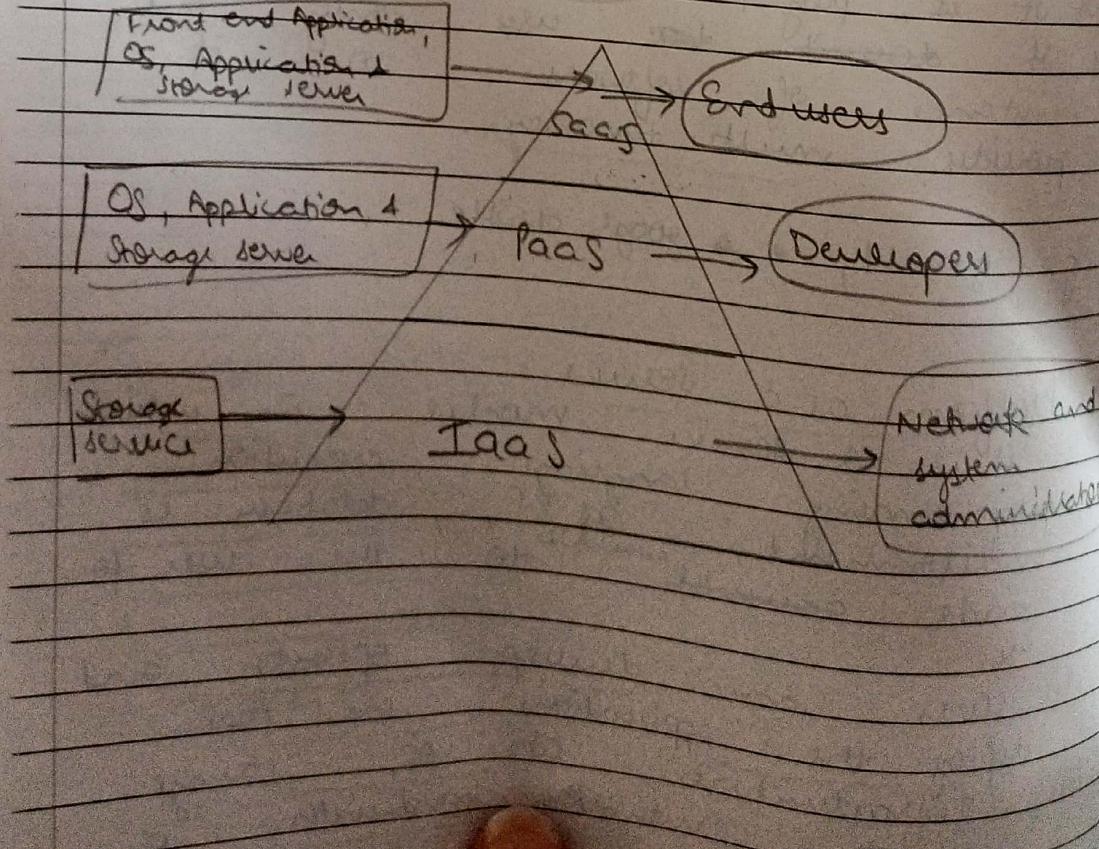
- (i) It is a service model in which programming language, execution environment, database is made available to the user for use.
- (ii) Users can develop, operate and deploy the applications in PaaS.
- (iii) Infrastructures like OS, storage, memory, network bandwidth is



- (iii) managed by the vendor.
- (iv) Only the application is managed by the client.
- (v) OS is provided by vendor.  
Eg:- AWS, ~~apple~~ force.com.

### ③ Infrastructure as a Service :-

- (i) it is a service model in which virtual resources are provided to the client to make a whole environment for execution.
- (ii) storage, virtualisation and servers are managed by cloud vendor.
- (iii) load Application, etc are managed by the client.
- (iv) It gives full authentication and authorisation access to the client.
- (v) It provides selected services by client  
Eg:- Amazon EC2



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Dated 26.9.22 Class DYIT Sec A2  
 Class Roll No. 1921049 Subject CLOUD

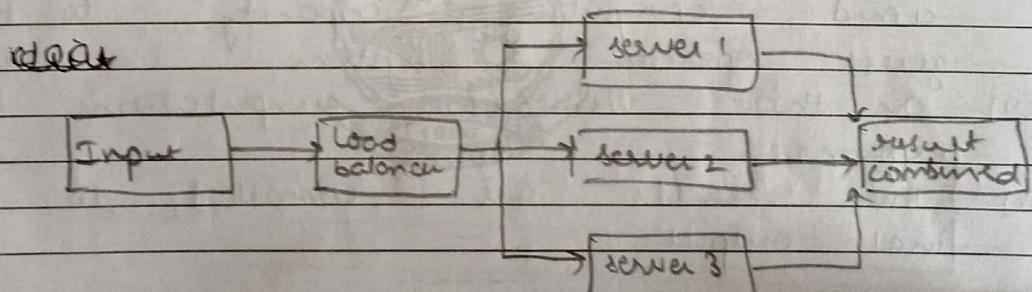
University Roll. No.	Signature of Invigilator
<u>1905345</u>	<u>JW</u>

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Marks									

(5)

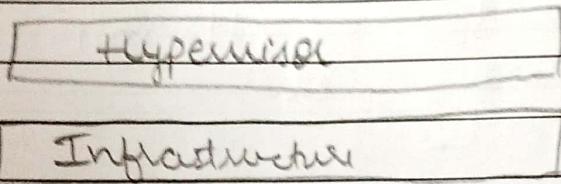
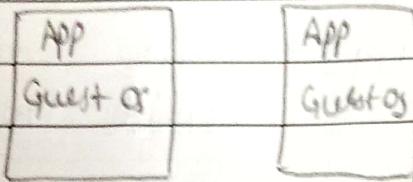
## load balancing

- (i) load balancing is the procedure of proper division of work to various servers.
- (ii) without load balancing, servers will be overprovisioned and underutilized.
- (iii) load balancer divides the task to all the servers and then combine the result to provide to the end user.



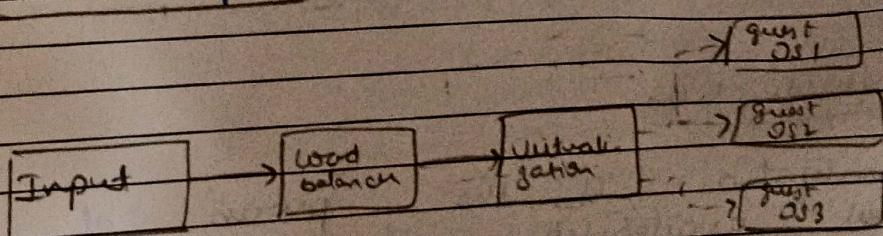
## Virtualization

- (i) Virtualization is the process of shared availability of virtual resources like software, hardware, network bandwidth, storage etc.
- (ii) Virtual machines are deployed on host operating system.
- (iii) Guest OS is used on host OS.
- (iv) Virtualization helps to run various application on same host OS.



## Correlation between load balancing and Virtualization

- (i) There is a correlation between load balancing and virtualization as former cannot be achieved by latter.
- (ii) Load balancer divides the task into various servers by the help of virtualization.
- (iii) Load balancer distributes the cloud computing capacity to the guest operating system i.e. VMware.
- (iv) On that VMware's computations are performed.
- (v) Then results are compiled to give final output.



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## Open Stack

Open stack is the open source platform for virtual resources pooling and providing the resources to the end user as per their demand.

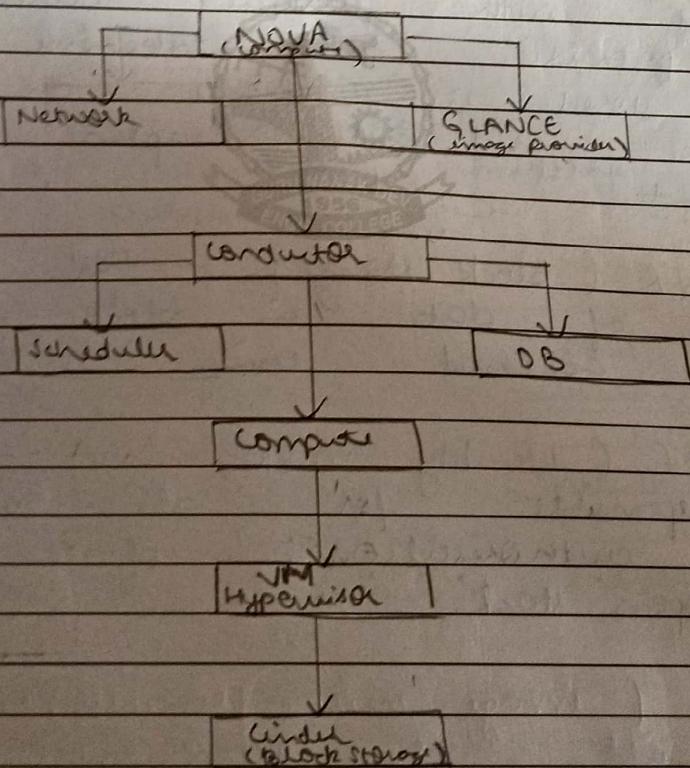
The tools of open stack are used for computing are called projects.

### [ Open Stack ]

[ HEAT  
(orchestration) ]

[ HORIZON  
(dashboard, web) ]

[ KEYSTONE  
(Identity service) ]



OPEN STACK ARCHITECTURE

## Various components of Open Stack

- ① NOVA (compute) :- It is used to provide compute service like creating, deleting and handling the scheduling.
- ② NEUTRON (networking) :- It is used to combine all the networks of the open stack. It provides the network range and also provides IP addresses.
- ③ SWIFT (object storage) :- It provides helps to the store store data in objects with unique identifier. It provides fault tolerance as data is stored in objects on various servers and its replicas are present.
- ④ CINDER (block storage) :- It provides the storage of data in blocks and it can be accessed using APIs.
- ⑤ KEYSTONE (identity management) :- It is responsible for all authentication and authorisation of data in the open stack.
- ⑥ GLANCE (image service provider) :- It is responsible for registering, storing and retrieving of the virtual disk images.
- ⑦ HORIZON (dashboard) :- Horizon provides the web user interface for all the services available for use to the user.

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④ It is used to manage, handle and monitor the services available in open stack.

⑤ CLOUD METERING (Telemetry) :- Cloud metering is used for metering and billing of the services used by the client.

⑥ HEAT (Orchestration) :- Heat is used to provide on demand availability of the resources required by the client. It helps to scale up or scale down the resources.

⑦ Utility Computing :- Utility computing is the service provisioning model used to provide the resources like hardware, software, network bandwidth, storage and memory to the user as per their requirement.

It works on pay per use model as users consumes pay only for that resources that they require.

Example

① Train reservation in train/plane :- we book only that seats, that we require and pay only for that.

(2) Online e-commerce (Amazon/ Flipkart) business users order only those clothes that they require and pay for those companies require more resources like server so they scale up their resources and scale down when they don't require it.

### Process

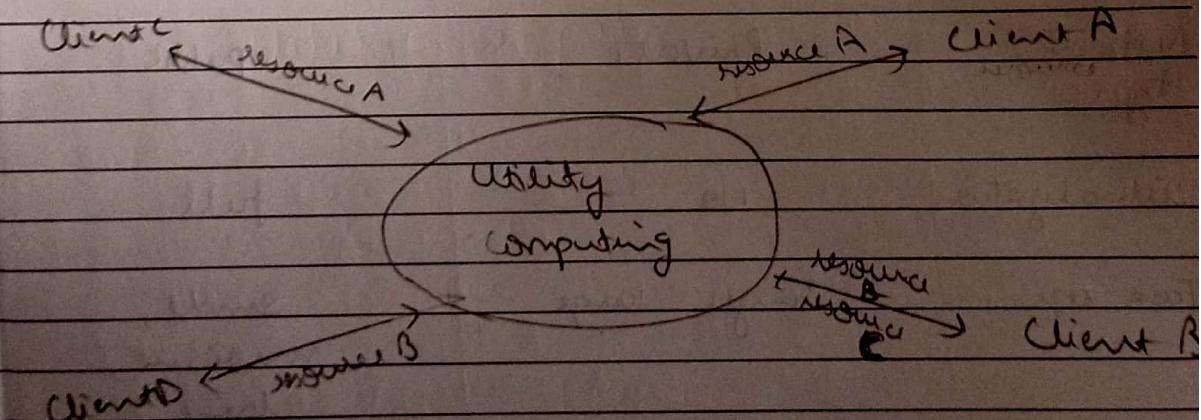
- (1) Determining the need :- Service provider should understand that what all resources would be required by the client and in which amount.
- (2) Evaluating service provider's claim :- In this, it is checked whether the resources provided by the service provider would be sufficient to make good results of them. They check at what level of resources they can provide to the client.
- (3) Access the health of computer resources :- It is important to install resource monitoring tools to check whether the ~~service~~ resource is working fine and to check dynamic resource configuration requirements. It is mainly to check the network failures, system and application fail.
- (4) Identifying the resource provisioning requirements :- It tells ~~about~~ the service provider's capacity to provide the resources and at how much customisation be provided, provided that no resource is unprovisioned or under-

missioned.

Report a time frame :- It is the time required by to be specified, that a resource is required for how much time and in what amount.

### Best practices

- ① Assess the current workload
- ② Identify a suitable utility service provider
- ③ Make transparency of shared resources
- ④ Clear all formalities with service provider.
- ⑤ Check the access properties of the resource.
- ⑥ Sanitize security agreement.
- ⑦ Leverage automation



Q

Cluster computing :- In cluster computing, various computers connected together to act as a single entity.

Cloud computing :- In cloud computing on-demand resources are provided to the consumer according to its needs and pay accordingly.

Properties	Cluster	Cloud
Resource handling	Centralised	Centralised and distributed
Scalability	No	Yes
Reliability	No	full
Network type	Private	public
Virtualization	No	full
Task size	Single large	Small, medium, large
Eg	<del>Sony playstation cluster</del>	gmail
diagram	<pre> graph TD     C1 --- Server     C2 --- Server     C3 --- Server     C4 --- Server     Server --- AppStorage     AppStorage --- Client1     AppStorage --- Client2     AppStorage --- Client3     </pre>	

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## 1 Cloud computing

Cloud computing is the on-demand availability of the resources required by the cloud provider. Resources are like storage, hardware, software, memory and network bandwidth.

## Various cloud computing platform databases

MongoDB, firebase, Amazon EC2, IBM DB2, Microsoft Azure, Alibaba cloud DB

