

## Assignment - 3

### QY Open Source IaaS Software

→ Infrastructure as a Service is a service model where an organization outsources the equipment used to support storage, hardware, servers and networking components.

→ Open Stack is an Open Source cloud computing project to provide an infrastructure as a service (IaaS). This integration is facilitated through API's that each service offers.

→ Open Stack controls large pool of compute, storage and networking resources throughout a data center, all managed through a data dashboard thus gives administrators control while empowering their users to provision resources through a web interface if delivery a massive scale cloud operating system.

→ The technology consists of a service connected projects that controls pool of processing, storage and networking resources throughout a data center all managed through a dashboard that gives admin control while empowering it's users to provision resources through a web interface.

Open Stack

Heart  
orchestrationHorizon  
(Dashboard)Key value  
identity service

Noun

Network

Conductor

Orbital

Scheduler

Compute

DB

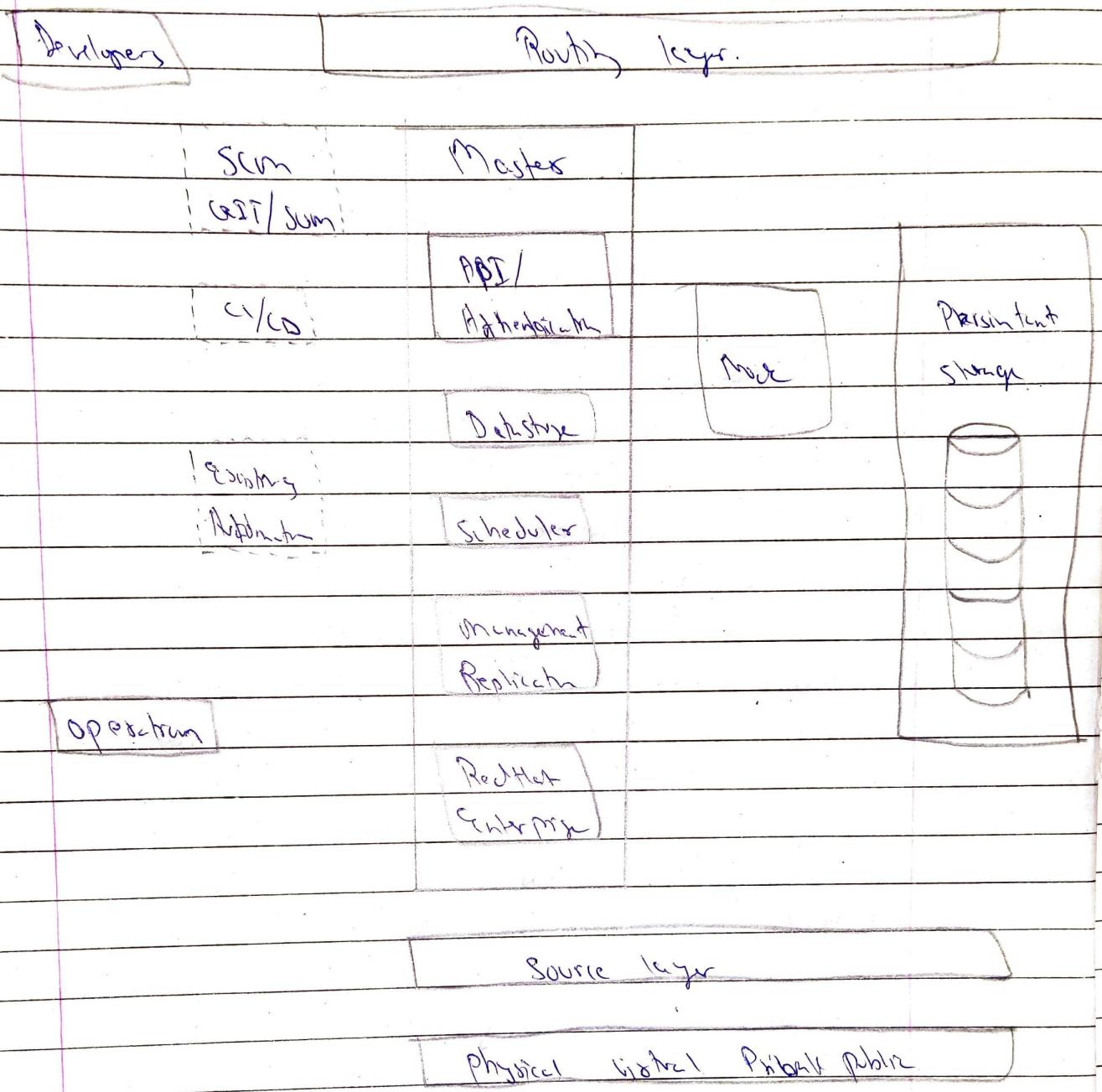
Vm Hypervisor

Center  
block storage

## (Q2) Open Source PaaS Software.

- Platform as a Service is a category of cloud computing services which offer a way to support the compute lifecycle of delivering web application and services via the cloud.
- OpenShift (known as openshift origin) is a free cloud computing platform as a service product from Red Hat. It is an application platform whose application developers and teams can build, test, deploy and run their applications. OpenShift takes care of Infrastructure, middleware and management so that developer can focus on their app.
- OpenShift enables you to create, deploy and manage applications within the cloud. It provides direct access to CPU resources, memory, network connectivity and an Apache or Tomcat server. Depending on the type of application being deployed a template file system layout is provided. OpenShift also generates a limited DNS so your application is accessible online.
- It provides support for a wide variety of languages and dot layers. Including Java, EBC, Ruby, PHP, Python, Perl.

## ④ DKO Architecture



## Q) Open Source SaaS Software.

- SaaS is a distribution model where third party is charged with the responsibility of hosting application and make them available for customers with the help.
- Clarity is an open source cloud orchestration framework. It helps in the customization of the entire lifecycle of an application.
- Cloud enables users to deploy the application in two ways,
  - (i) By opting for CI only
  - (ii) By opting for the Voudit Manager
- Application Configuration can be defined through blueprints that are developed on same DSL configuration files. These blueprints have complete information regarding the application's lifecycle.

### Features:

- Local Blueprints
- IT Governance and Security
- Blueprint modeling
- TOSCA orchestration
- Building node types

## Q4) Open Source cloud simulator software.

- **CloudSim** :- CloudSim is a now highly generalized and extensible Java base simulation Toolkit and is actually regard as Software framework.

It supports several core functionalities like querying and processing of event, the creation of CloudSim entities, communication among components and the management of the simulation clock.

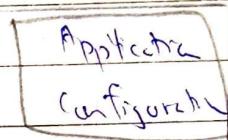
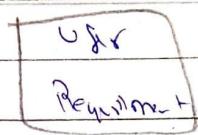
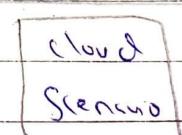
- CloudSim has been developed by the clouds laboratory of the computer science and software engineering department of the university of melbourne.

### Features :

- > Support modeling and simulation of large scale cloud computing data centers.
- > Support modeling and simulation of virtualized server host along with customizable ~~host~~ policies for provisioning host resources to virtual machines.
- > Supports dynamic inclusion of simulation events.
- > Support the creation of various data center Network topologies, Message passing Application.

## USER

Simulation  
Specification



Scheduling  
Policy

User or data center Broken.

## CloudSim

User Interface

Cloud

Virtual Machine

SIMulator

VM

Services

Cloud

Executive

Un management.

Cloud  
Services

VM  
provisioning

CPU  
Allocation

Memory  
Allocation

Storage  
Allocation

Bandwidth  
Allocation

Cloud  
Resources

Events

Handling

Sensor

Cloud  
Coordinate

Data  
center

Network

Network

Topology

Message Delay  
Calculation

Cloud Sim

Simulation Engine

## (Q) Open Source Distributed System Software

- The Apache Hadoop Project develops open source software for flexible, scalable, distributed computing.
- The Apache Hadoop software library is a framework that allows for distributed processing of large data sets across clusters by computer using simple programming models.
- It is designed to scale up from single servers to thousands of machines, each offering local computation and storage rather than rely heavily on hardware. To deliver high availability, the library itself is designed to detect and handle failures at the application layer.

Hadoop Common :- The common utilities that support the other Hadoop modules

Hadoop Distributed file system :- HDFS is a distributed file system that provides high throughput access to application data.

- Hadoop Mapreduce : A Java based system for parallel processing of large data sets.
- Hadoop ozone :- An object store for hadoop.

Mapreduce Layer | HDFS Layer

	Task Tracker		Name Node
Sub Tracker		Data Node	

	Task Tracker		Data Node