

Q1. Discuss architecture of Openstack. List various components of Openstack.

OpenStack is a free open standard cloud computing platform. It is deployed as Infrastructure as-a-service (IaaS) in both public and private clouds where virtual resources are made available to the users.

In Openstack, the tools which are used to build this platform are referred to as "projects". These projects handle a large number of services including computing, networking, and storage services.

Openstack Architecture :-

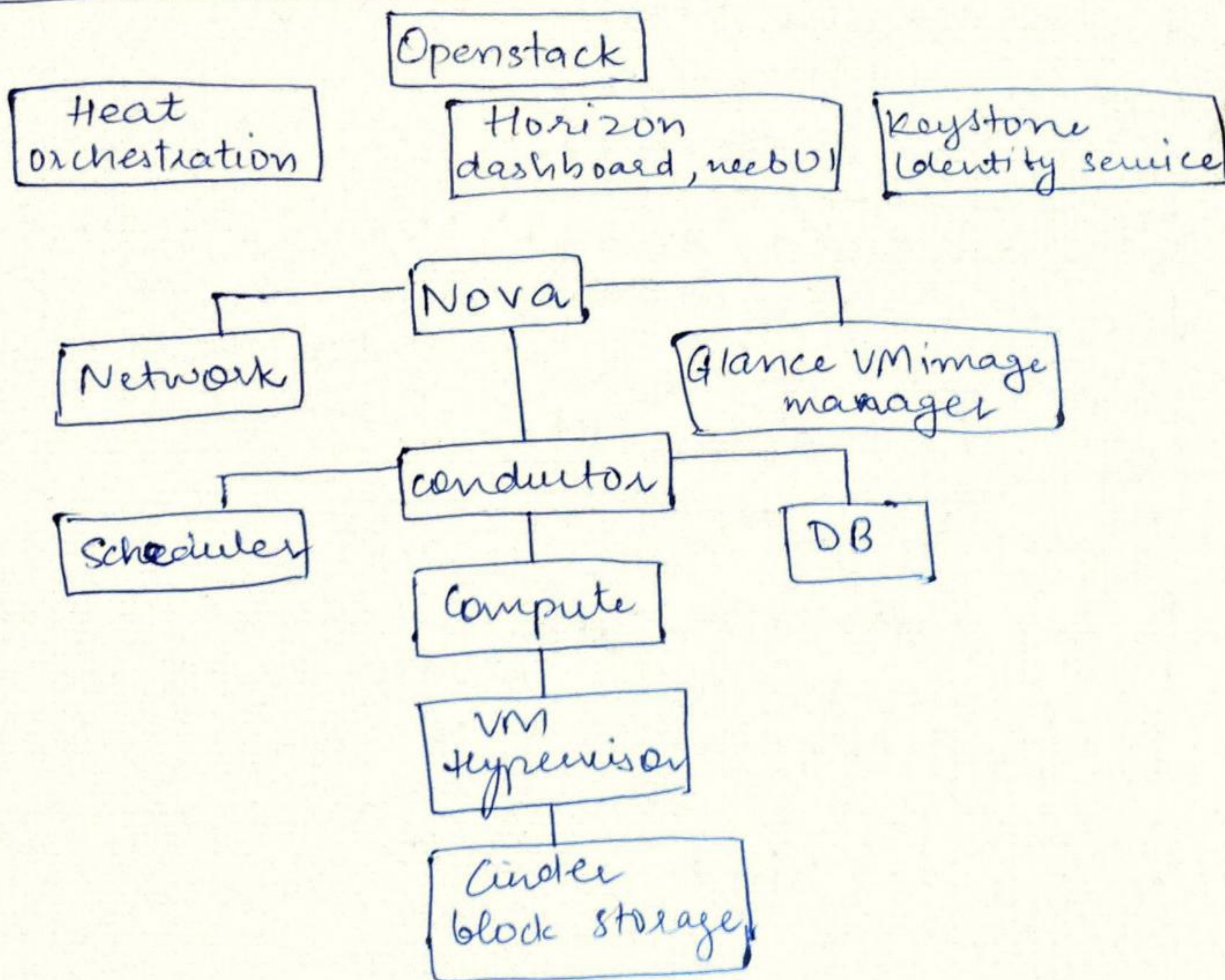


Fig:- Architecture of Openstack.

Openstack components :-

There are nine major services namely Nova, Neutron, Swift, Cinder, Keystone, Horizon, Ceilometer and Heat.

1. Nova (Compute Service) :-

It manages the compute resources like creating, deleting and handling the scheduling. It can be seen as a program dedicated to automation of resources that are responsible for initialization of services and high-performance computing.

2. Neutron (Networking service) :-

It is responsible for connecting all the networks across OpenStack. It is an API driven service that manages all networks and IP addresses.

3. Swift (Object storage) :-

It is an object storage service with high fault tolerance capabilities and it is used to retrieve unstructured data objects with the help of Restful API.

4. Cinder (Block storage) :-

It is responsible for providing persistent block storage that is made accessible using an API (self-service). It allows users to define and manage amount of cloud storage required.

5. Keystone (Identity Service Provider) :-

It is responsible for all types of authentication and authorizations in OpenStack services. It is a directory based service that uses a central repository to map correct

services with correct users.

Glance (Image Service provider) :-

It is responsible for registering, storing, and retrieving virtual disk images from a complete network. These images are stored in a wide range of back-end systems.

Horizon (dashboard) :-

It is responsible for registering, ~~providing~~ providing a web-based interface for OpenStack services. It is used to manage, provision and monitor cloud resources.

Ceilometer (telemetry) :-

It is responsible for metering and billing of services used. Also it is used to generate alarms when a certain threshold is exceeded.

Heat (orchestration) :-

It is used for on-demand service provisioning with auto-scaling for cloud resources. It works in coordination with the ceilometer.

How object storage and block storage is used to store information in cloud?

Cloud object storage is format for storing unstructured data in cloud. Object storage is considered a good fit for cloud because it is elastic, flexible and it can more easily scale into multiple petabytes to support unlimited data growth. The architecture stores and manages data as objects. Objects may be spread across multiple data centres located

in different parts of world. The object storage...
based data can be found without user
knowing the specific physical location.
Objects are stored in a flat address space,
which eliminates complexity and scalability
challenges. Object storage systems, through
the use of object IDs, can access any
piece of data without needing to know
which physical storage device, file system
or directory it resides.

Block storage is used to store data files on
Storage Area Networks or cloud-based storage
environments. It gives fast, efficient and
reliable data transportation.

It breaks up data into blocks and then
stores these blocks as separate pieces,
each with a unique identifier. The storage
Area Network places those blocks of data
wherever it is most efficient.

Block storage allows for creation of raw
storage volumes, which server-based
operating systems can connect to. It is
a storage scheme in which each volume
acts as a separate hard drive, configured
by storage administrator. Data is stored in
fixed-size blocks.