CLOUD DEPLOYMENT MODEL

ASSIGNMENT-2

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What is Chef?

❏ Chef is an open source technology developed by opscode .

❏ It is a configuration management technology used to automate the infrastructure provisioning.

❏ It is developed on the basis of Ruby DSL language.

❏ In DevOps, we use Chef to deploy and manage servers and applications in-house and on the cloud.

FEATURES OF CHEF

❏ Chef uses popular Ruby language to create a domain-specific Language.

❏ Chef does not make assumptions on the current status of a node. It uses its mechanisms to get the current status of Machine.

❏ Chef is ideal for deploying and managing the cloud server, storage, and software.

Chef Architecture
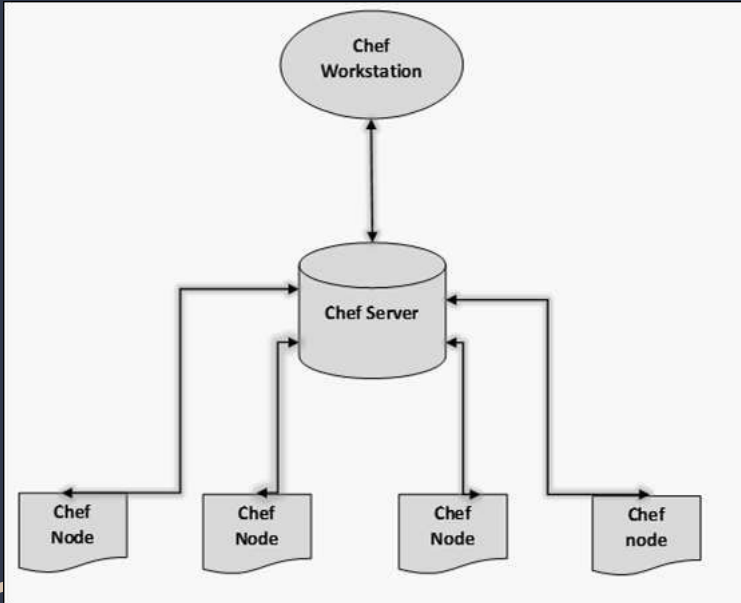
Chef Workstation

This is the location where all the configurations are developed. Chef workstation is installed on the local machine.

Chef Server

This works as a centralized working unit of Chef setup, where all the configuration files are uploaded post development.

Chef Nodes

They are the actual machines which are going to be managed by the Chef server. All the nodes can have different kinds of setup as per requirement.

Key Building Blocks Of Chef
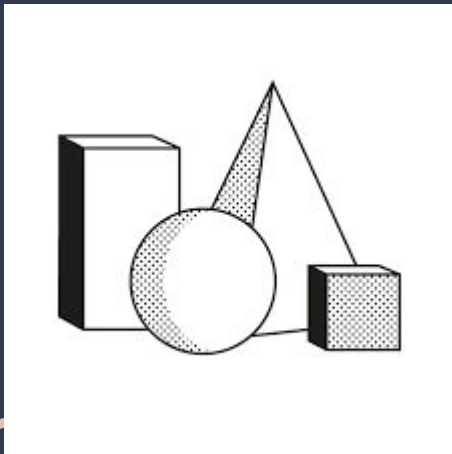
Recipe

It can be defined as a collection of attributes which are used to manage the infrastructure.

Cookbook

A cookbook is a collection of recipes.

Resource

It is the basic component of a recipe used to manage the infrastructure with different kind of states.
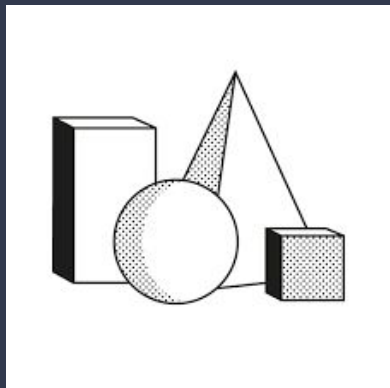
Attribute

They can be thought of as a key value pair of anything which one wants to use in the cookbook.

File

It's a subdirectory within the cookbook that contains any static file which will be placed on the nodes that uses the cookbooks.

Other Terms

Ansible

Ansible is a radically simple IT automation platform that makes your applications and systems easier to deploy.

Templates

They are similar to files, but they are not static.

Metadata.rb

It is used to manage the metadata about the package.

Puppet

Puppet provides a standard way of delivering and operating software, no matter where it runs.

SaltStack

SaltStack is used for data-driven configuration.

Fabric

Fabric is a Python-based programming language, which is developed as an API of Python which needs to be imported in Python code in order to configure and manage an infrastructure.

What is Openstack?

OpenStack is an open source platform that uses pooled virtual resources to build and manage private and public clouds. The tools that comprise the OpenStack platform, called "projects," handle the core cloud-computing services of compute, networking, storage, identity, and image services. More than a dozen optional projects can also be bundled together to create unique, deployable clouds.
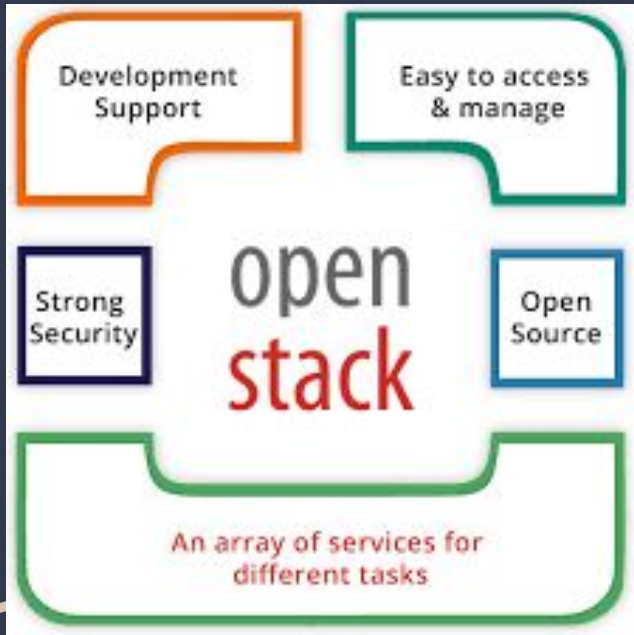
Openstack Components
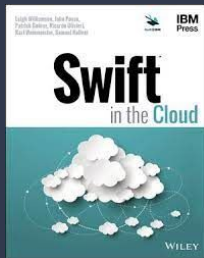
- ❏ Nova
- ❏ Neutron
- ❏ Swift
- ❏ Cinder
- ❏ Keystone
- ❏ Glance
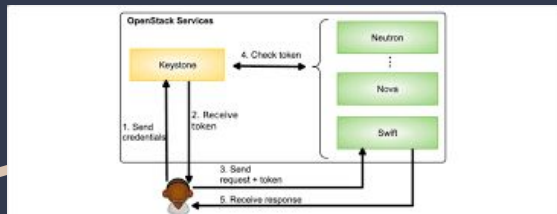
Openstack Benefits

- ❏ Easy scalability
- ❏ Easy automation
- ❏ Fast development
- ❏ Strong Community
- ❏ Ready-Made

SERVICES USED IN PROJECT

- ❏ Keystone
- ❏ Glance
- ❏ Cinder
- ❏ Heat
- ❏ Qinling
- ❏ Chef

KEYSTONE & GLANCE

Keystone: - Keystone maintains a central user list that is mapped to all of the OpenStack services that they can utilise. It connects with current backend services like LDAP while serving as a centralised authentication mechanism for cloud computing.

Glance: - Discovering, registering, and restoring virtual machine images are all possible with the OpenStack image service. Glance is built on a client-server architecture and provides a user REST API that allows users to query virtual machine image metadata as well as retrieve the actual picture. Glance uses the cached pictures as templates when deploying new virtual machine instances.

CINDER, HEAT & QINLING

Cinder: - OpenStack Cinder provides application-specific block-level storage devices for OpenStack compute instances. By combining block storage volumes with Dashboard and Nova, a cloud user can control their storage demands.

Heat: - Heat is a service that uses the AWS CloudFormation template format to coordinate many composite cloud applications using the CloudFormation-compatible Query API and the OpenStack-native REST API.

Qinling: - Qinling is an OpenStack Function as a Service. The goal of this project is to create a platform for serverless functions (like AWS Lambda). Qinling's plugin structure allows it to handle a variety of container orchestration platforms (Kubernetes/Swarm, for example) and function package storage backends (local/Swift/S3).

WORKING OF THE PROJECT – USE CASE

First of all we will make our roles using Keystone services. Then we will use Glance and Cinder to store our image and data. We will store our image using Glance and using Cinder we will store our text data that will be used in our use case further. we will write our code in python language and store it using Qinling service of OpenStack and generate API's as well. To call API's in our use case we will use Heat services. Now we will have to get the image stored recognised and for that also we will use Glance service of OpenStack. And we will use Chef to combine and deploy the services; being open source chef is the best platform to deploy cloud models.

THANK YOU!