1. What is Kubernetes?

Kubernetes is also known by its abbreviation “K8s”, it is and open source container orchestration tool. Originally it was created by Google, in march 2016 it was donated to cloud native computing foundation (CNCF). Kubernetes manages a “Cluster” of multiple hosts that are used to deploy, monitor and scale containers.

K8s is a declarative system, this means you can create and updates “resources”. Which containers to run, how to configure them and how to route network traffic to them.

Kubernetes, continuously updates and monitor the cluster to ensure it matches the desired state, including auto-restart, re-scheduling and replication to ensure application start and remain running

Kubernetes is available as a standalone installation via cloud providers like, Google, Amazon, & Microsoft, or in a variety of distributions including Red Hat Open Shift.

1. Kubernetes key Concept?

Kubernetes is declarative, getting started in kubernetes mostly means understanding what resources we can create and how they are used to deploy and configure containers in the cluster.

Mostly we define the resources using YAML Format, for each resource may change with new kubernetes version. So its double checks the API reference for your version to know what’s available. It’s very important to us the correct apiVersion, that matches your version of kubernetes.

1. Kubernetes Architecture?

Client/user

kubectl

Master Node

container

container

kubelet

Kube-apiserver

pod

pod

pod

pod

pod

Docker

Kube - proxy

Ip tables

etcd

kube scheduler

Kube controller manager

A kubernetes cluster is a set of physical or virtual machines and other infrastructure resources that are used to run applications. The machines that manages cluster are called masters, and the machines that run the containers are called nodes.

* What is Master?

The master runs services that manage the cluster. The most important is Kube-apiserver, which is the primary service that clients and nodes use to query and modify the resources running in the cluster.

The API server is assisted by: etcd, a distributed key-value store used to record cluster state.

Kube-controller-manager, a monitoring program that decides what changes to make when resources are added, changed, or removed.

Kube-scheduler, a program that decides where to run pods based on the available nodes and their configuration.

In a highly-available kubernetes installation, there will be multiple masters, with one acting as the primary and the others are replicas.

* What is Node?

A Node is a physical or virtual machine with the necessary services to run containers. A kubernetes cluster should have as many nodes as necessary for all the required pods. Each node has two kubernetes services: Kubelet, which receives commands to run containers and uses the container engine (e.g. docker) to run them: and the kube-proxy, which manages networking rules so connections to service IP addresses are correctly routed to pods.

Each node can run multiple pods, and each pod can include one or more containers. The pod is purely a kubernetes concept: and the kubelet configure and the container engine to place multiple containers in the same network namespace so those containers share an IP address.