**Let’s Orchestrate with Kubernetes**

**What is Kubernetes?**

Kubernetes is an open source orchestration tool. It is used for managing containerized/dockerised applications easily across multiple hosts. It forms a cluster of VMs with atleast one master and one agent node present so that master can coordinate with all the agent nodes and deploy the containerized applications on the fly. This cluster is often called as K8 or Kubernetes cluster. It provides us basic mechanisms like –

1. Deployment
2. Scaling
3. Maintenance
4. Logging/Monitoring
5. Service Naming & Discovery
6. Load Balancing
7. Application Health Checks

With Kubernetes, we can deploy as many containers of an application on a cluster by replicating them and Kubernetes take care of decisions like containers will go to which VMs.

It has been incubated and designed by Google and that’s why it has huge community support and is considered to be production ready. Its designing has been done in such a way that it is compatible with any container engine, but currently it supports docker only from what I observed and checked.  
  
The basic components of Kubernetes Cluster are :

1. Pods: They are group of docker containers with shared volumes. Inside the Kubernetes, they are considered the smallest deployable units. They can be created separately but its always recommended to create and manage them through replication controllers. The no. of pods for a service represents the number of instances running for that service which can be scaled up or down easily.
2. Services: They provide names, stability to set of pods. They fundamentally act as basic Load Balancers.
3. Replication Controllers: They play an important role in managing the lifecycle of pods. They make sure that certain amount of pods are always running at a particular time by creating or killing pods.
4. Clusters: These are the compute resources on top of which are containers run. Kubernetes cluster can be build as a mixture of VMs running on cloud, on-premise etc.
5. Master: The managing node of cluster that looks after the agent(slave) nodes.
6. Agent: It runs the tasks given delegated by master and the user.