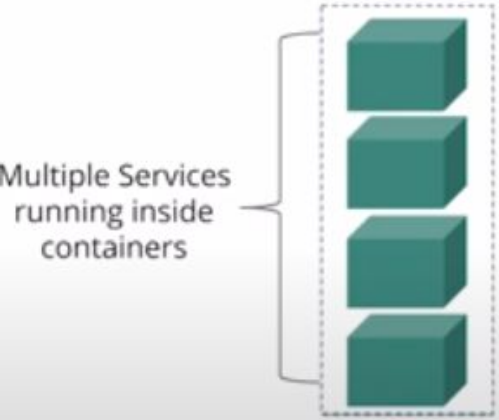
Agenda


Challenges Without Container Orchestration
Docker Swarm or Kubernetes
What is Kubernetes?
Hands-on: Deployment with Kubernetes
Kubernetes Architecture
Kubernetes Features

Challenges Without Container Orchestration

Without Container Orchestration

Orchestration platform is especially beneficial when running microservices in containers

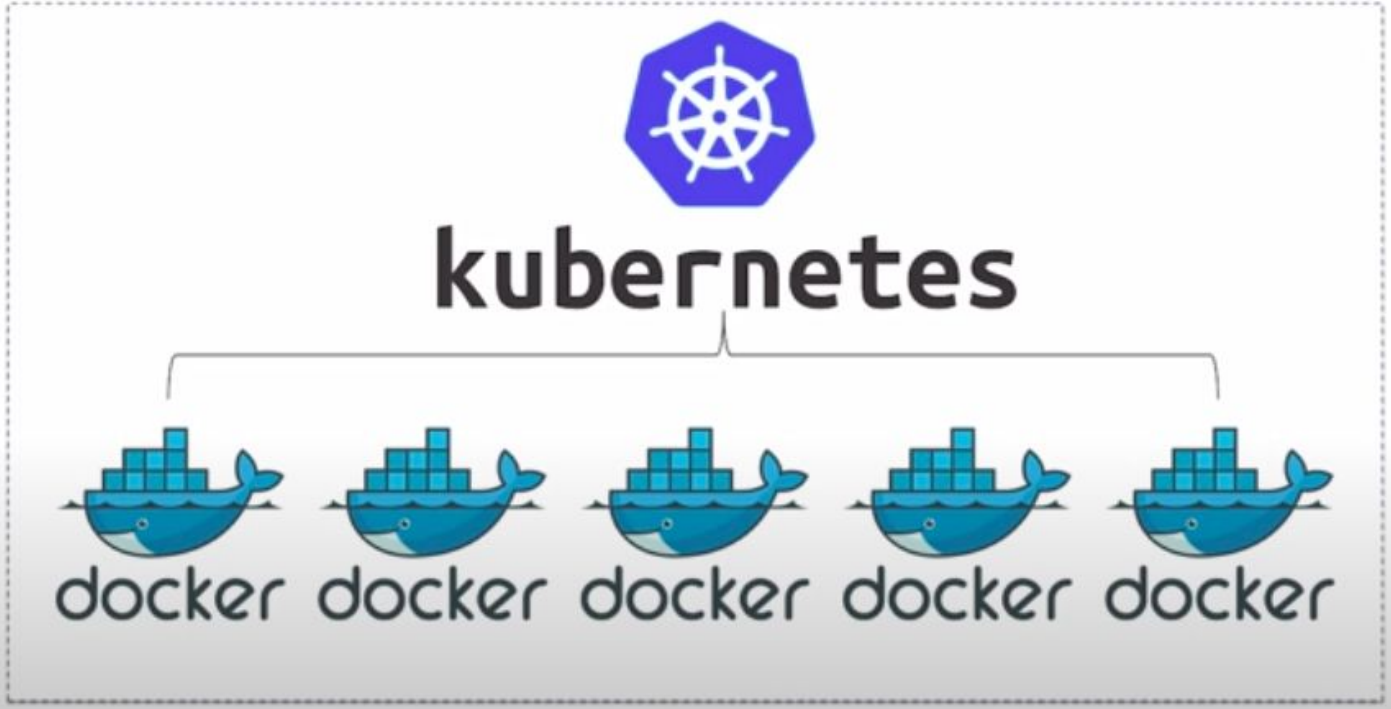


Challenges without Container Orchestration

Solution – Orchestration Engine

Kubernetes

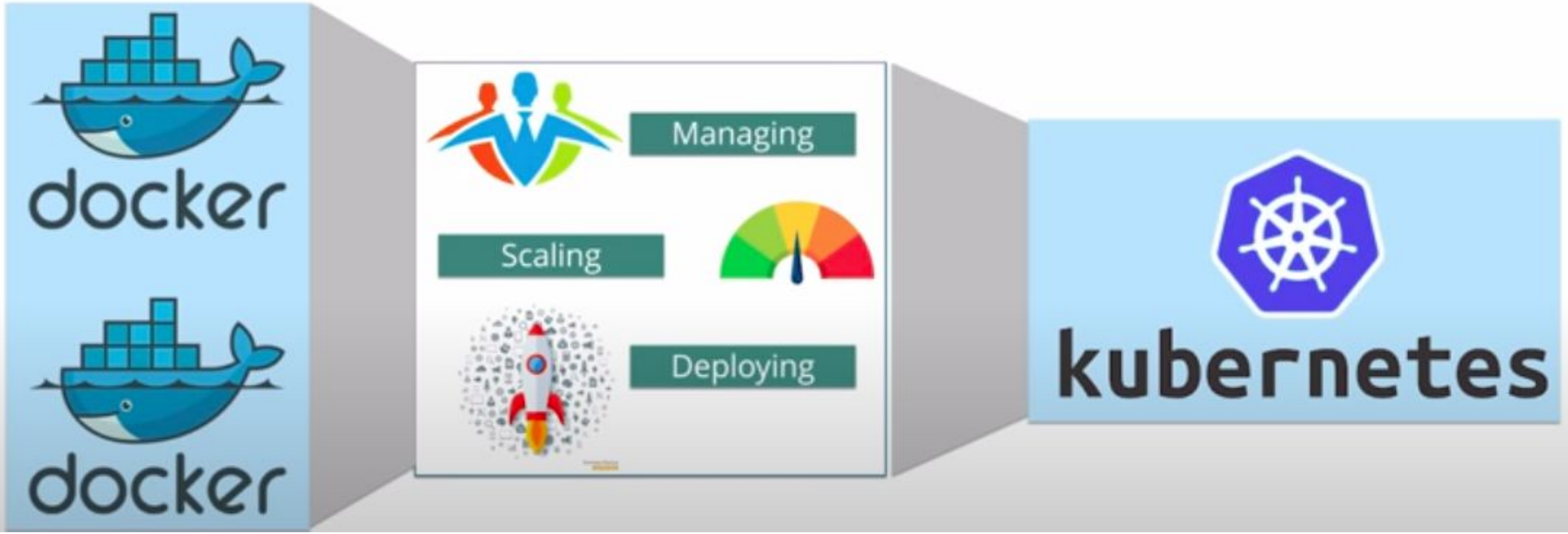
1. Auto Scaling
2. Manually configure your Load Balancing settings
3. K8s perform rolling updates to Pods as a whole
4. Shares storage volumes between multiple containers inside the same Pod
5. Provides in-built tools for logging and monitoring



Containers need to be managed and connected to the outside world for tasks such as scheduling, load balancing, and distribution, and this is where a container orchestration tool like Kubernetes comes into its own

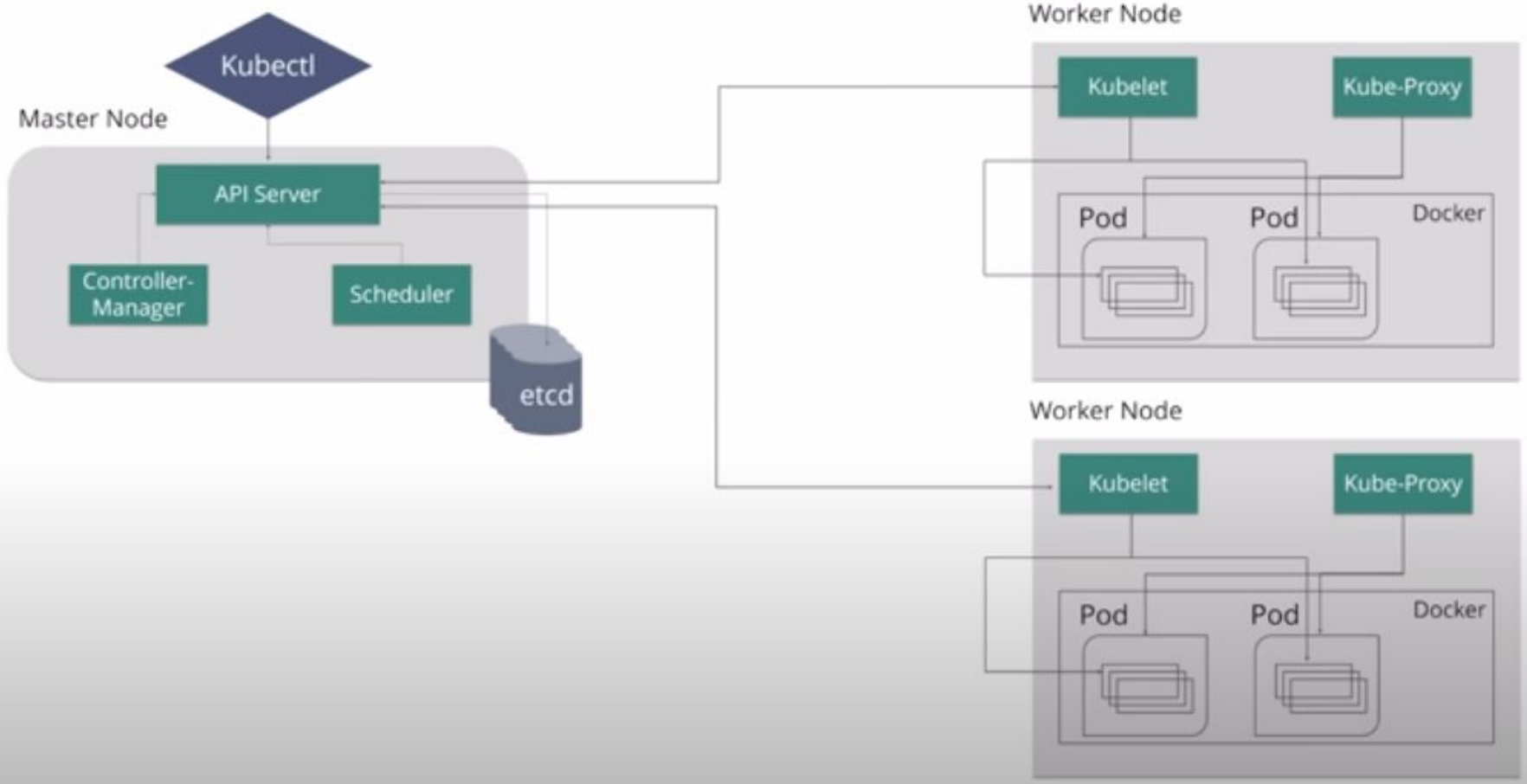
What is Kubernetes?

Kubernetes handles the work of scheduling containers onto a compute cluster and manages the workloads to ensure they run as the user Intended



Kubernetes Features

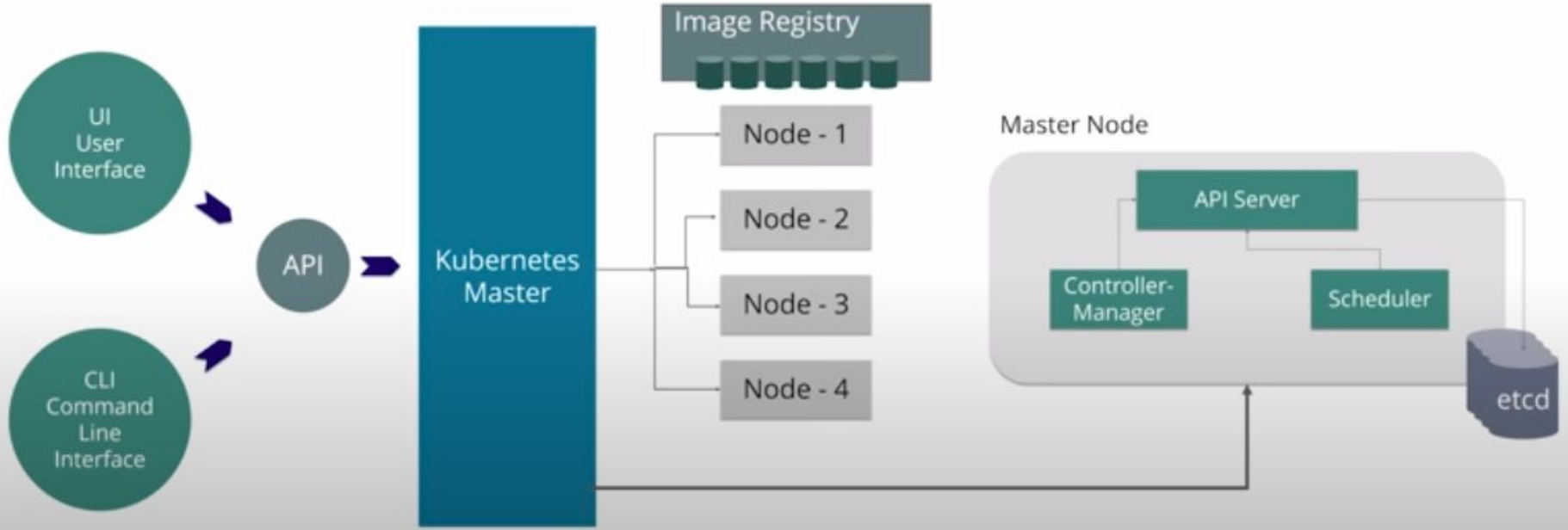
Kubernetes Architecture




Kubernetes Master

Kubernetes Master Node

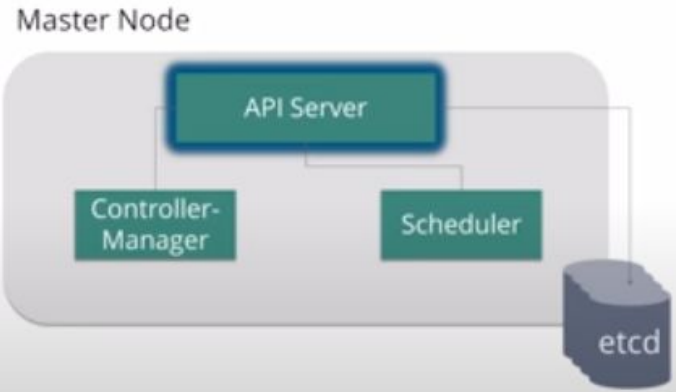
The master node is responsible for the management of Kubernetes cluster. This is the entry point of all administrative tasks. The master node is the one taking care of orchestrating the worker nodes, where the actual services are running.

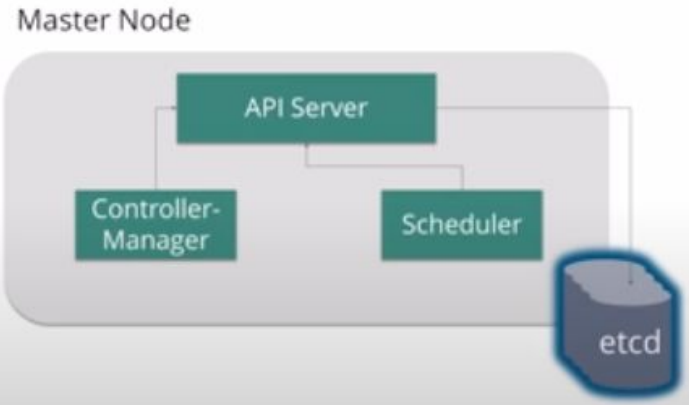


Kubernetes API Server and ETCD

The API server is the entry points for all the REST commands used to control the cluster

It is a simple, distributed, consistent key-value store. It's mainly used for shared configuration and service discovery

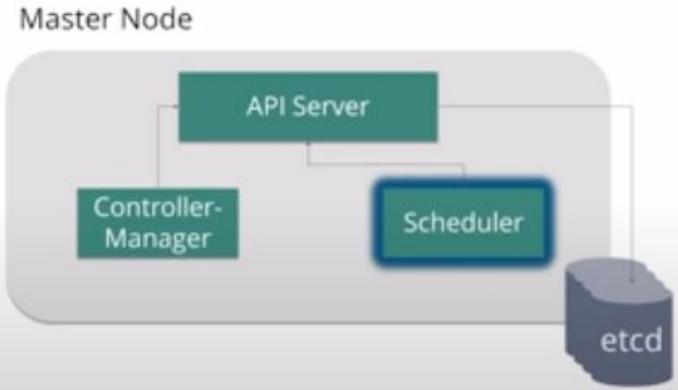


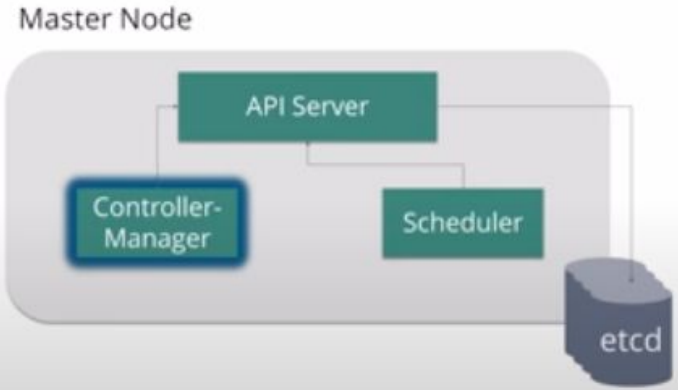


Kubernetes Scheduler and Controller-Manager

It is responsible for deployment of Pods and services onto the nodes

It allows you to run different controllers inside the master node

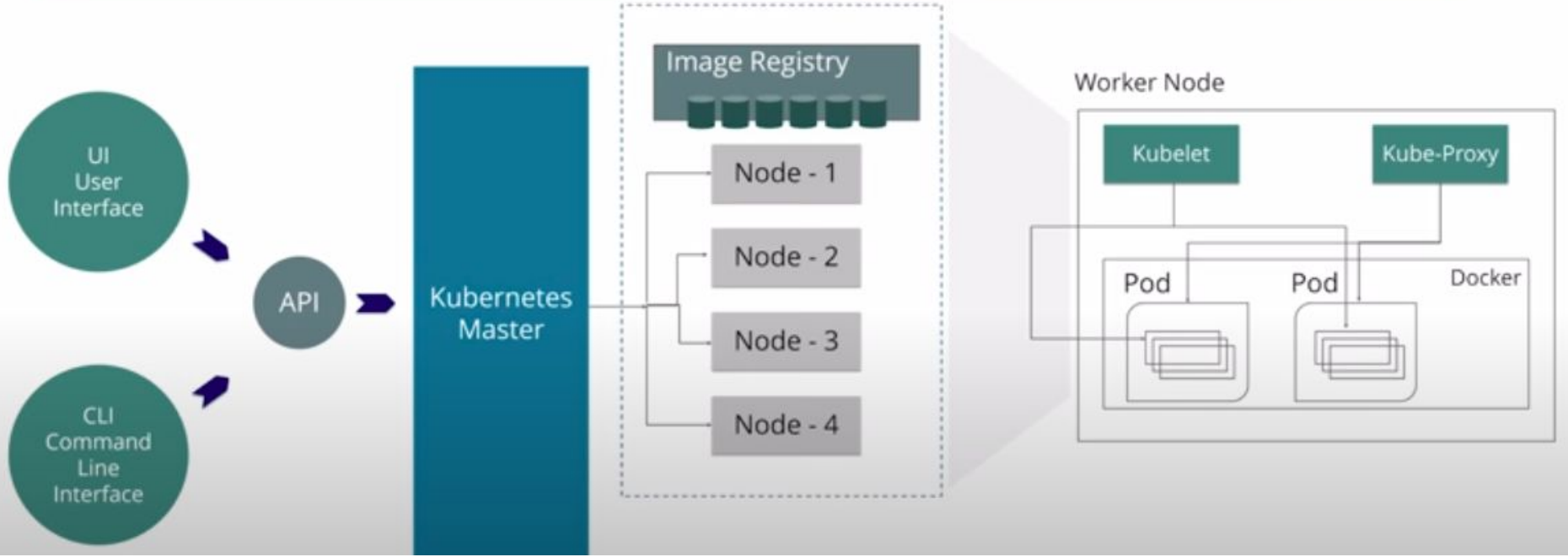





Kubernetes Worker

Kubernetes Worker Node

Worker nodes contains all the necessary services to manage the networking between the containers, communicate with the master node, and assign resources to the containers scheduled



Kubernetes : Kube-Proxy and Kubelet

It acts as a network proxy and a load balancer for a service on a single worker node

It is a command line tool to communicate with the API service and send commands to the master node