# kubernetes

Kubernetes, also known as K8s, is an **open-source system for automating deployment, scaling, and management of** containerized applications.

**Cluster**

A Kubernetes cluster is **a set of nodes that run containerized applicationsmaste node components**

## api server

The API (application programming interface) server determines if a request is valid and then processes it

## etcd

Consistent and highly-available key value store used as Kubernetes' backing store for all cluster data.

## kube-scheduler

Control plane component that watches for newly created Pods with no assigned node, and selects a node for them to run on.

## kube-controller-manager

Control plane component that runs controller processes.

- Node controller: Responsible for noticing and responding when nodes go down.
- Job controller: Watches for Job objects that represent one-off tasks, then creates Pods to run those tasks to completion.
- EndpointSlice controller: Populates EndpointSlice objects (to provide a link between Services and Pods).
- ServiceAccount controller: Create default ServiceAccounts for new namespaces.

## worker node component

## kubelet

An agent that runs on each node in the cluster. It makes sure that containers are running in a Pod.

it communicates between worker node and master node

## kube-proxy

kube-proxy maintains network rules on nodes. These network rules allow network communication to your Pods from network sessions inside or outside of your cluster.

## Container runtime/engine

A fundamental component that empowers Kubernetes to run containers effectively

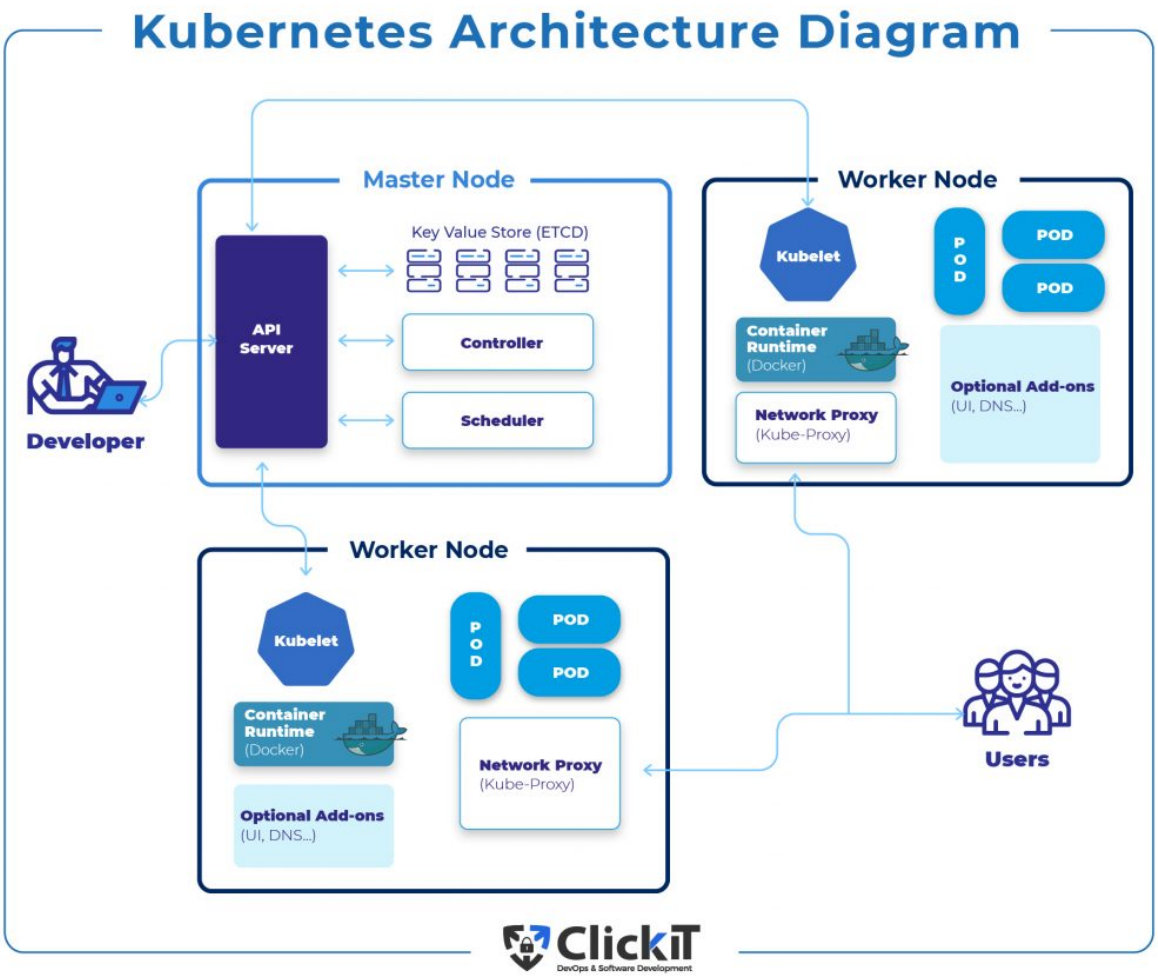
## pods

it wrap ups containers

.....

## nodes

A node may be a virtual or physical machine, depending on the cluster. Each node is managed by the control plane and contains the services necessary to run Pods.


Kubernetes Architecture Diagram
Master Node
Key Value Store (ETCD)
API Server
Controller
Scheduler
Developer
Worker Node
Kubelet
POD
POD
POD
Container Runtime (Docker)
Network Proxy (Kube-Proxy)
Optional Add-ons (UI, DNS...)
Worker Node
Kubelet
POD
POD
POD
Container Runtime (Docker)
Network Proxy (Kube-Proxy)
Optional Add-ons (UI, DNS...)
Users
ClickIT
DevOps & Software Development