

Kubernetes:

Basics:

Orchestration -> Management

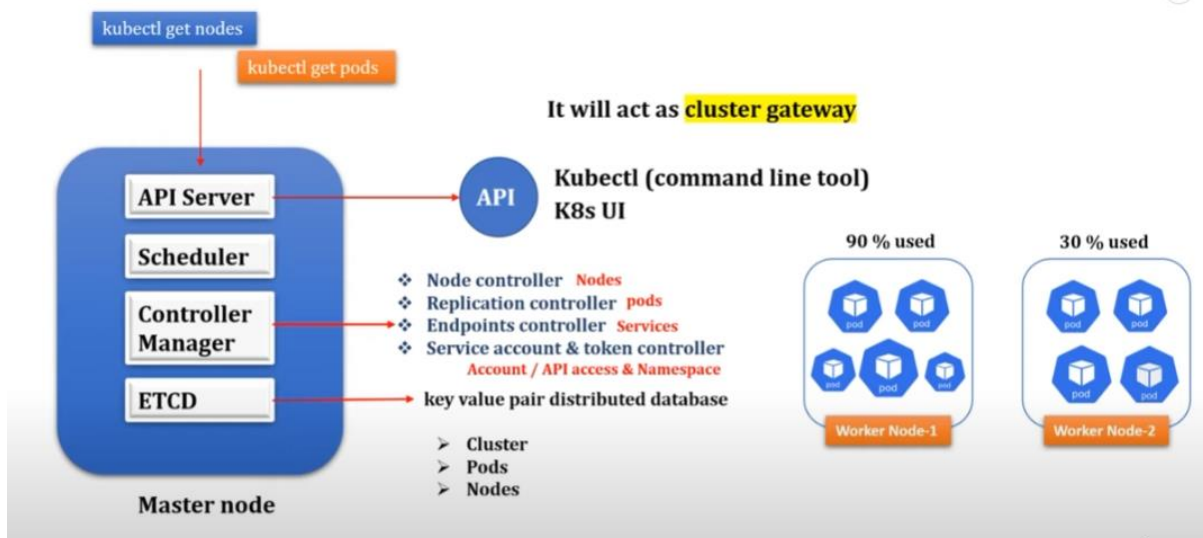
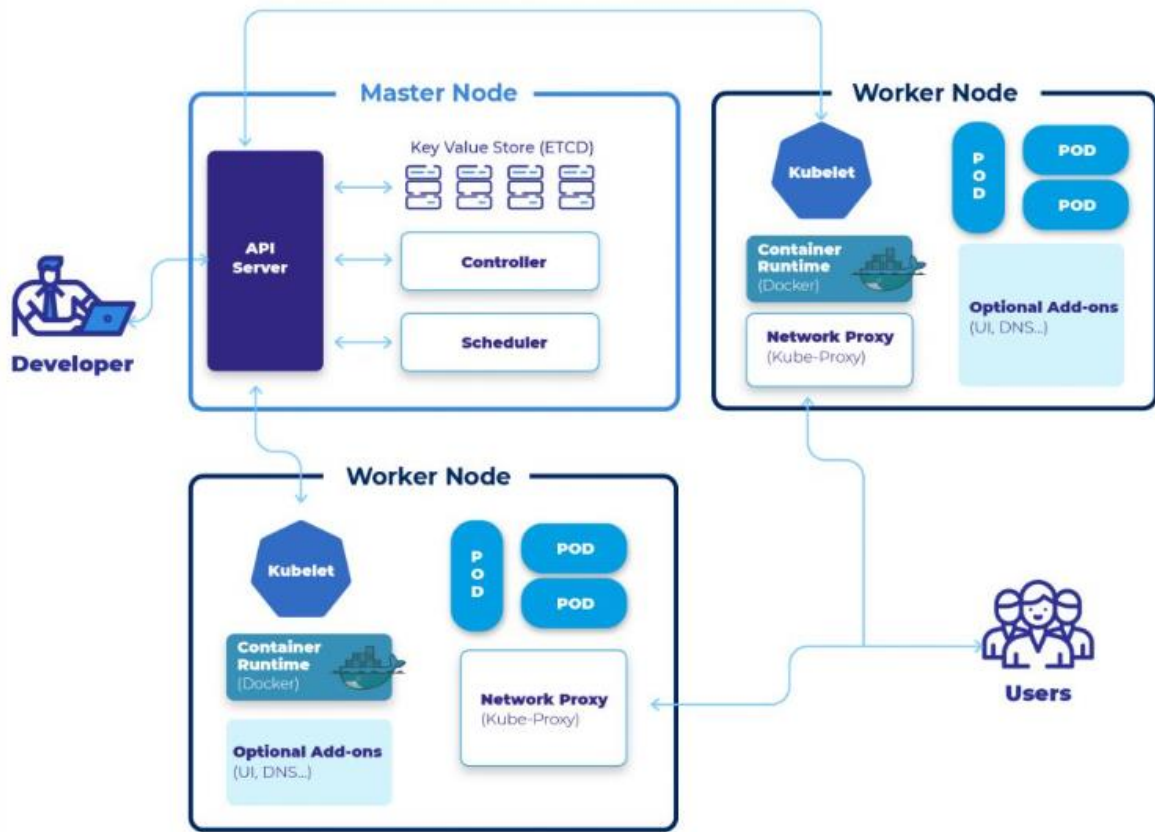
We shall manage all the containerized application using Kubernetes orchestration engine and it is open-source platform and upgraded version of docker. It is replacement of docker swam(while creating cluster)

Advantages:



Architecture:

Kubernetes Architecture Diagram



Worker Node

kubelet

Kubelet is an agent running on each node, and kubelet communicates with the master node using the API Server.

The kubelet works in terms of a PodSpec. A PodSpec is a YAML or JSON object that describes your pods.

The kubelet doesn't manage containers which were not created by Kubernetes

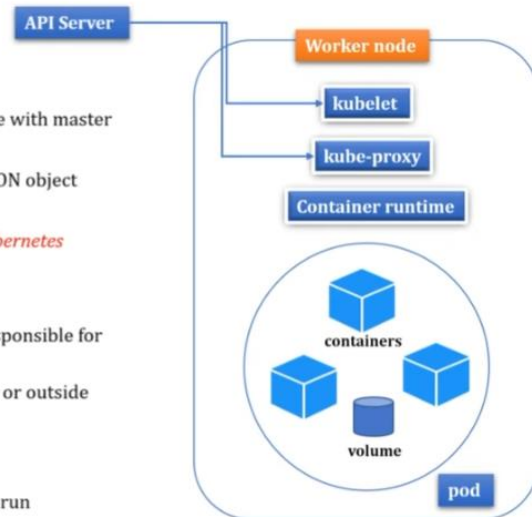
Kube-proxy

Kube-proxy is a network agent which runs on each node and is responsible for maintaining network configuration & rules.

These rules allow network communication to your Pods from inside or outside of your cluster.

Container runtime

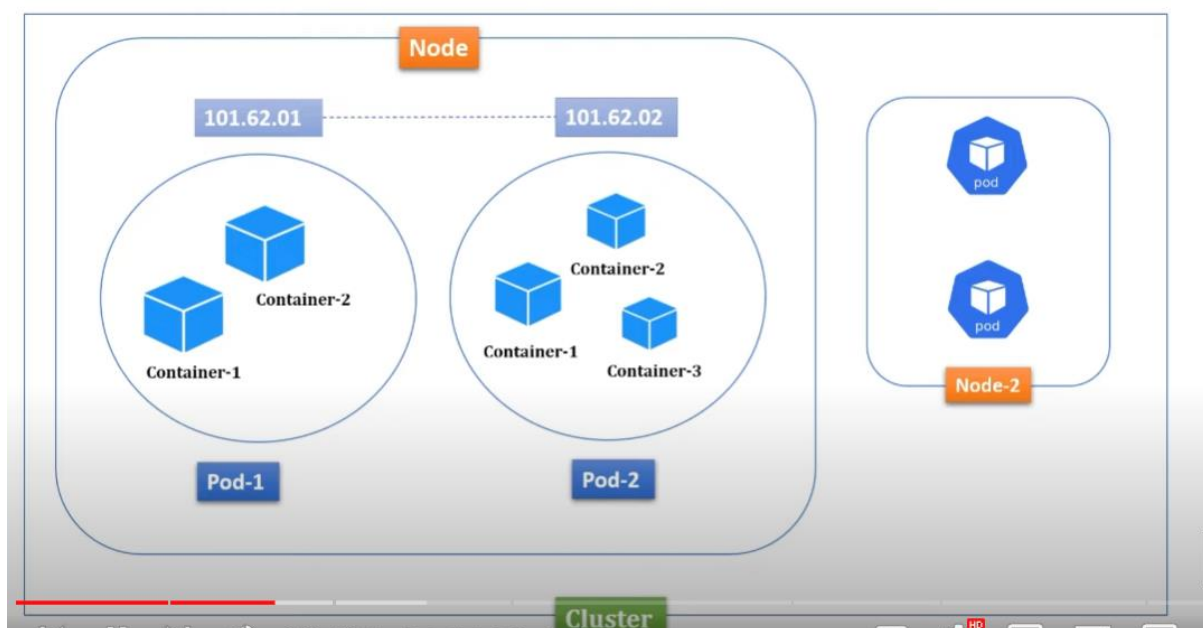
A container runtime, also known as container engine, and it helps to run containers inside pods.



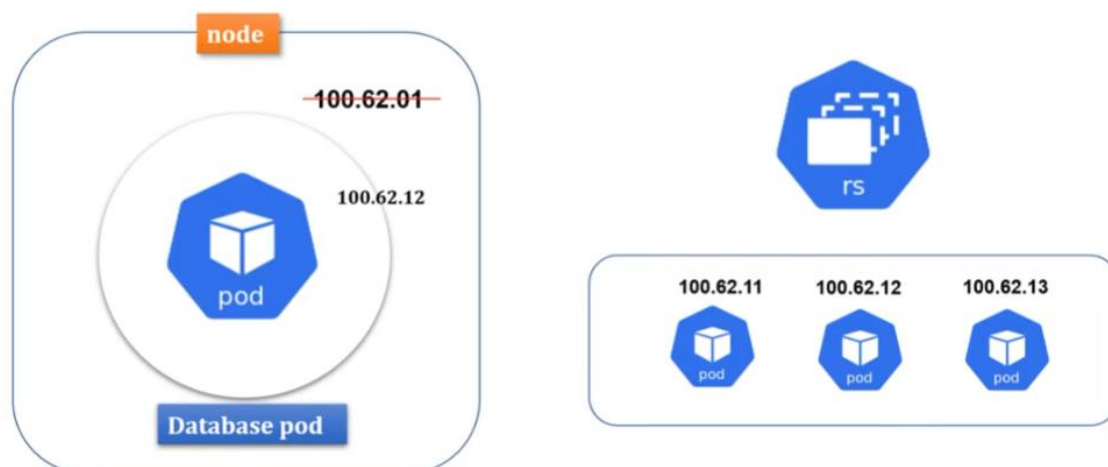
Components:

K8s Components

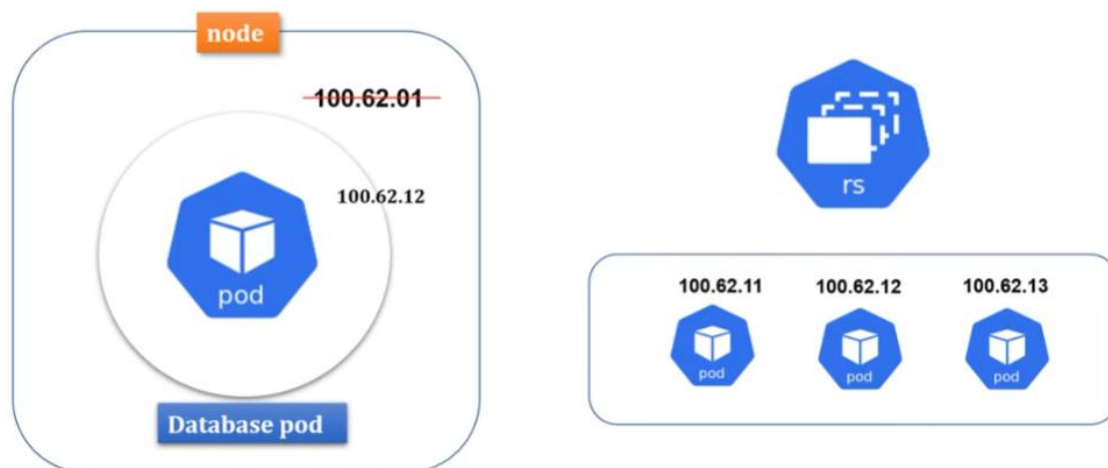




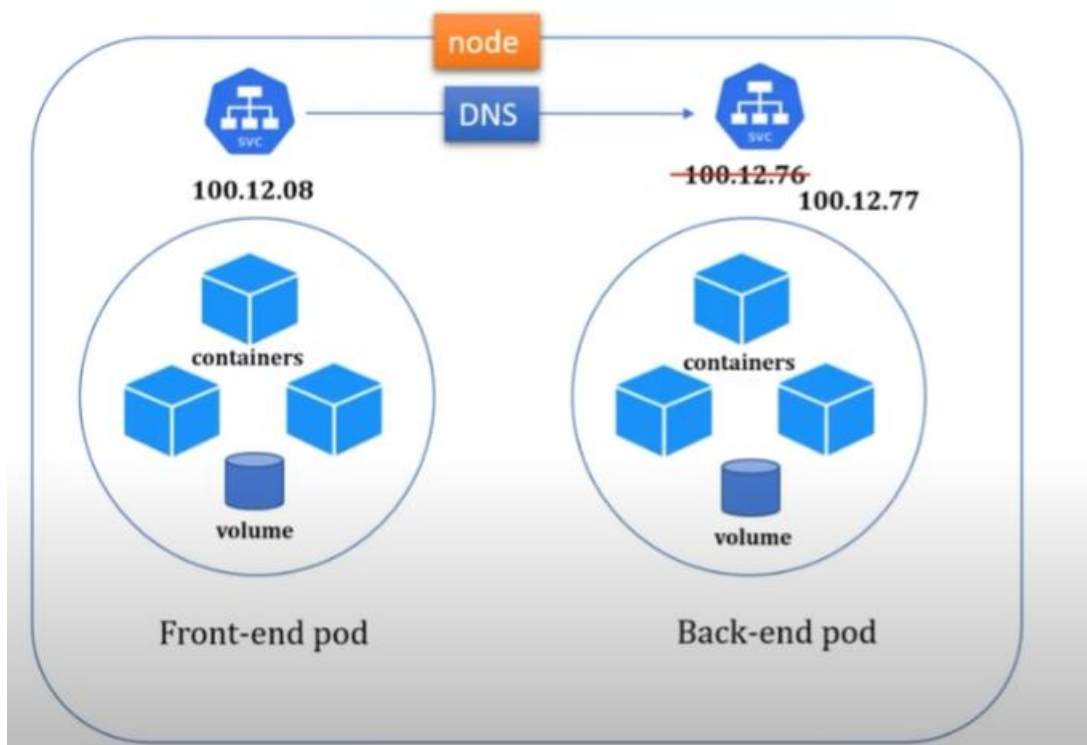
Replication Controller / Replica sets



Replication Controller / Replica sets



Service



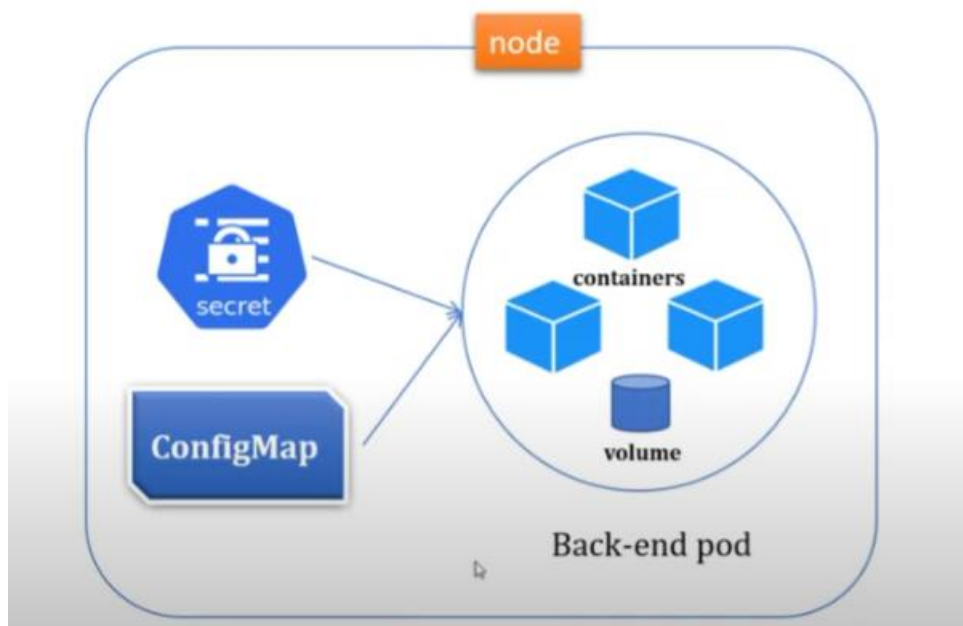
Deployment

- Deployments are Kubernetes objects that are used for managing pods.
- you can scale your application by increasing the number of running pods, or update the running application using Deployment object

```
kubectl create deployment first-deployment --  
image=<DOCKER_IMAGE_NAME> --port=8080 --replicas=4
```



Secrets & ConfigMap



ETCD

,Share & Subscr

- Kubernetes uses etcd as a key-value database store. It stores the configuration of the Kubernetes cluster in etcd.
- It stores all the secret and ConfigMap data inside etcd database

Max limit is 1 mb to store secrets

Setup:

<https://minikube.sigs.k8s.io/docs/start/>

Command:

- 1) minikube version
- 2) minikube start --driver=docker

1. Minikube Cluster Commands:

- **minikube start:** Start a local Minikube cluster.
- **minikube stop:** Stop the running Minikube cluster.
- **minikube delete:** Delete the Minikube cluster.
- **minikube status:** Display the status of the Minikube cluster.
- **minikube dashboard:** Open the Kubernetes dashboard in a web browser.

2. Minikube Configuration Commands:

- **minikube config set <property> <value>:** Set a configuration property for Minikube.
- **minikube config get <property>:** Get the value of a specific configuration property.
- **minikube config delete <property>:** Delete a configuration property.
- **minikube config view:** View the current Minikube configuration.

3. Minikube Add-On Commands:

- **minikube addons list:** List all available Minikube add-ons.
- **minikube addons enable <addon>:** Enable a specific Minikube add-on.
- **minikube addons disable <addon>:** Disable a specific Minikube add-on.

4. Minikube Networking Commands:

- **minikube service <service-name>:** Open a service in a web browser.
- **minikube ip:** Get the IP address of the Minikube cluster.
- **minikube ssh:** SSH into the Minikube VM.

5. Minikube Cluster Interactions:

- **kubectl:** The standard Kubernetes command-line tool for interacting with the cluster. All **kubectl** commands can be used with Minikube.

6. Minikube Updates and Upgrades:

- **minikube update-check:** Check for available updates for Minikube.
- **minikube update:** Update Minikube to the latest version.
- **minikube upgrade:** Upgrade the Minikube cluster to the latest Kubernetes version.

7. Minikube Troubleshooting:

- **minikube logs:** Print the logs of the Minikube cluster.
- **minikube ssh:** SSH into the Minikube VM for troubleshooting purposes.

3) <https://www.blumatador.com/learn/kubectl-cheatsheet>

4)