Kubernetes

(Avinash Pandey)

* It is a open source Container managment tool which automets Containers deployment. Container scaling & load balancing.
* It schedules, run and manages isolated Containers which or run on virtual/ physical / cloud ~~Meter~~ Machiens.
* All the top cloud providers supports Kubernets.

HISTORY

* Google ~~dopto~~ developed on internial syetem Called "borg" (latex named as omega) to deploy and manage thousands google application and service on their cluster.
* In 2014, google introduced Kubernetes on open source plateform written in 'go lang' and letter donated to "CNCF" Cloud Native Computing foundation

Online Platform for K8S

→ Kubernets playground
→ Play with K8s
→ Play with Kubernets classroom

Date :

Cloud Based K8s service

→ GKE Google Kubernets service
→ AKS Azure
→ Amazon EKS Elastica Kubernets service.

Kubernets installation tool

→ Minikube
→ Kubeadm

Problems with scaling UP the Containers

→ Containers cannot comunicate with each other.
→ Autoscalling and Load balancing was not possible.
→ Containers had to be mangged carefully.

Feture of Kubenetes

→ Orchestration (clulting of any no. of containers running on diffrent h/w)
→ Autoscalling. (vertical, Horizantal)

Page :
Date :

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→ Auto - Healing (vertical , Horizontal)

→ Load Balancing

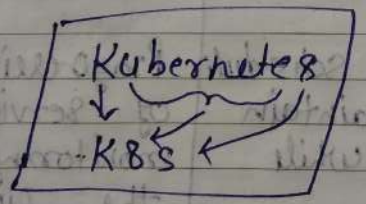
→ Platform independent (cloud / virtual / physical)

→ Fault tolerance (Node / POD failure)

→ Roll back (going back to privious version).

→ Health Monitoring of containers.

→ Back Execution (one time , Sequential , Parallel)



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Date:

(Avi)

Fetatures	Rubernetes	Docker Swarm
Installation and cluster Configuration	Complicated and time Conuming	Fast and Easy
Supports	K8s work with almost all Container type like Rocket, Docker, ContainerD	Work with Docker Only.
GUI	Available	NOT Available
Data Volumes	Only share with Containers with same pod	Can be shared with any other Containers.
Update & Rollback	Process scheduling to maintain service while updating	Progressive update of service health monitoring throut the update.
Autoscalling	Supports vertical and Horizantal Autoscalling.	not Support Autoscalling
Logging and Monitoring	In built tool present in for monitoring	Need 3rd Party tools like Splunk.

General Arch of K8s

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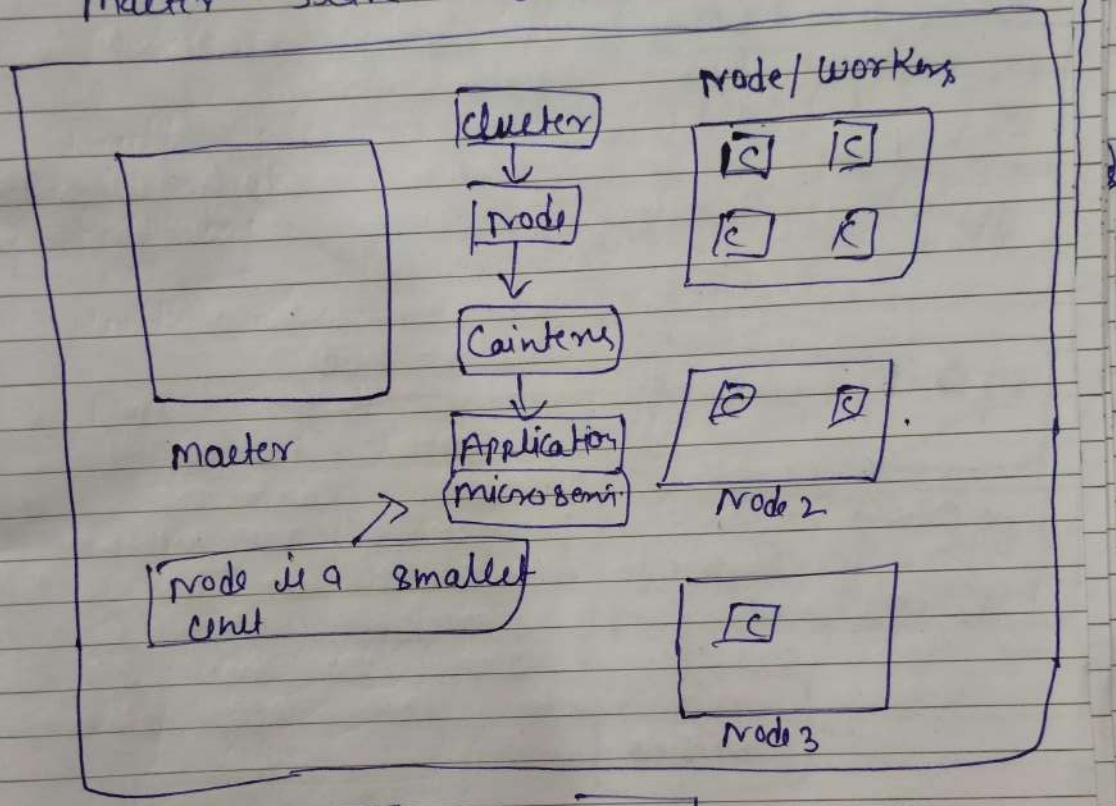
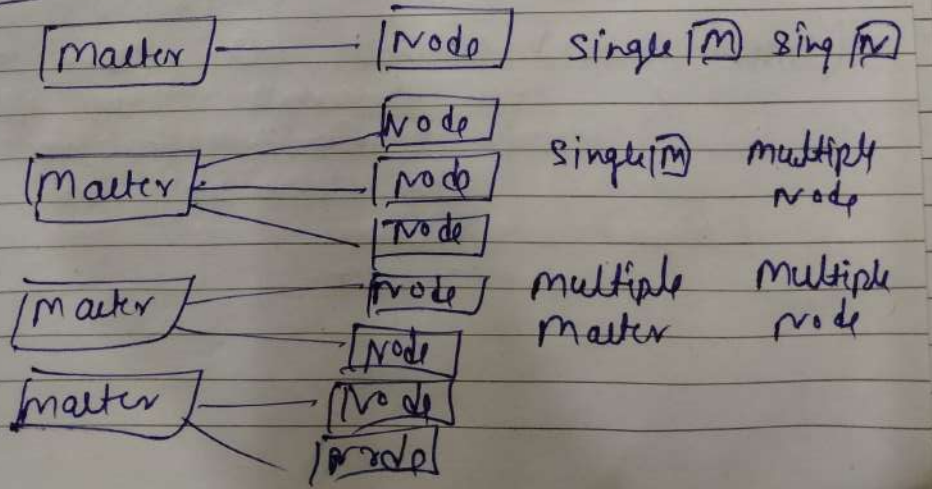
Master – Slave Client – Server





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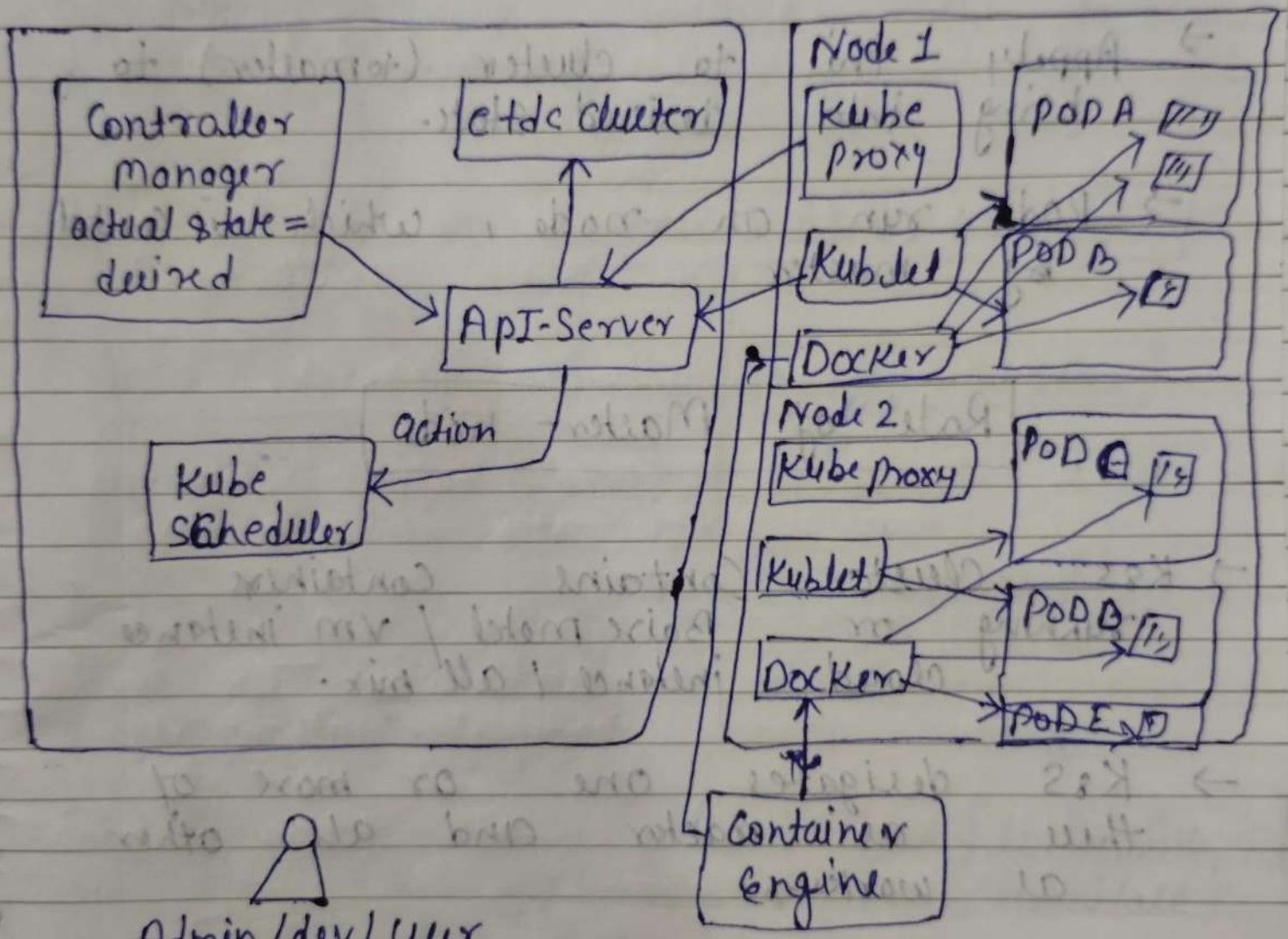
Architecture of K8s

(Avinash Pandey notes)

Master (Control Plane)



Admin / dev / user (Kublet)

Manifest (.yaml / .yml)

Actual state = desired state

(Avinash Rai)