Kubernetes

- Kubernetes we called k8s. It is having high demand because of it's high availability. And it contains many regions
- Why we're using K8S instead of Kubernetes, because of laziness. Ancient days Scientists don't like to

pronounce big words. So, they reduced to K8S. Not only Kubernetes they reduced lot of technical terms Relation between Docker & Kubernetes

- If you see the docker logo, ship contains containers. That means docker is used to create the containers
- For that created containers handle/managed by K8S. i.e. K8S controls the containers

That's why docker & k8s logos are very meaningful

History

- K8S was developed by GOOGLE using GO language
- In Google there is a specific tool called Borg, It is not open source. where they say that K8S is one of the part of Borg
- Borg is not a open source. So, the people at Google built a
- Google donated K8S to CNCF (Cloud Native Computing Foundation) in 2014 K8S
- first version was released in 2015

K8S

- It is an open-source container orchestration platform
  - Orchestration is used in Docker Swarm also
    -
- It is used to automate many of the manual processes like deploying the application, managing the containers and scaling containerized applications

(or)

- K8s is a popular open source platform for container orchestration. It enables developers to easily build containerized applications and services, as well as scale, schedule and monitor those containers

Container Orchestration :

It automates the deployment, management, scaling and networking of containers. Enterprises that need to deploy and manage hundreds (or) thousands of linux containers and hosts can benefit from container orchestration

WHY K8S ?

- Containers are a good and easy way to bundle and run your applications.
- In a production environment, you need to manage the containers that run the applications and ensure that there is no downtime
- In docker we used docker swarm for this, but any how docker has some drawbacks

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- K8S supports numerous container. Kubernetes services provide load balancing and simplify container management on multiple hosts.

So, that's the reason we moved to K8S

HOW K8S will help you with Docker Container ?

1. Scalability
   - Single docker container cannot serve millions of requests but with the help of k8s we can scale that particular docker container to serve millions of requests
2. Automate Docker Deployment
   - You can automate the docker container deployment inside your k8s cluster. So, you don't need to manually take are of the docker containers and inside our K8S cluster
3. Auto - healing
   - If a docker container is unhealthy then its responsibility of our k8s cluster to do the restart or do the fresh deployment of a docker container inside a K8S Cluster
   - So, K8S will delete the unhealthy container and can auto replace with healthy container
4. Rollout & Rollback
   - If there is something wrong with our docker container then K8S will help you to do the roll back and roll out of a new containers inside our K8S Cluster
   - So, K8S monitors the unhealthy docker container and restart unresponsive

The differences between Docker & K8S

1.Setup

- docker setup is very easy
- k8s setup is complex

2.Auto Scaling

- In docker - no autoscaling
- In k8s - Autoscaling

3.Community

- docker having community
- k8s is having greater community for users like documentation, customer support 24/7 and resources

4.GUI

- In docker there is no GUI (Portioner is not official gui)
- In k8s, we are having GUI

5.Single Host

- the docker platform basically relies on one single host
- In k8s, we are having cluster. Through cluster we can host our containers in multiple nodes

6.Auto healing

- In docker - no Auto healing, i.e. containers not able to heal automatically
- In k8s - Auto healing

7.Enterprise level

- Docker is an simple platform. By default, docker doesn't support enterprise level application support load balancer, firewall, Auto scale, Auto heal, API gateways these are enterprise level standards

So, docker has above drawbacks. And Docker never used in production because it's not a enterprise level solution because it doesn't have the above properties So, for above issues and problems we're using K8S