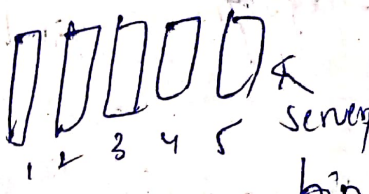
Kubernetes features :-

(1) Automatic bin packing :-

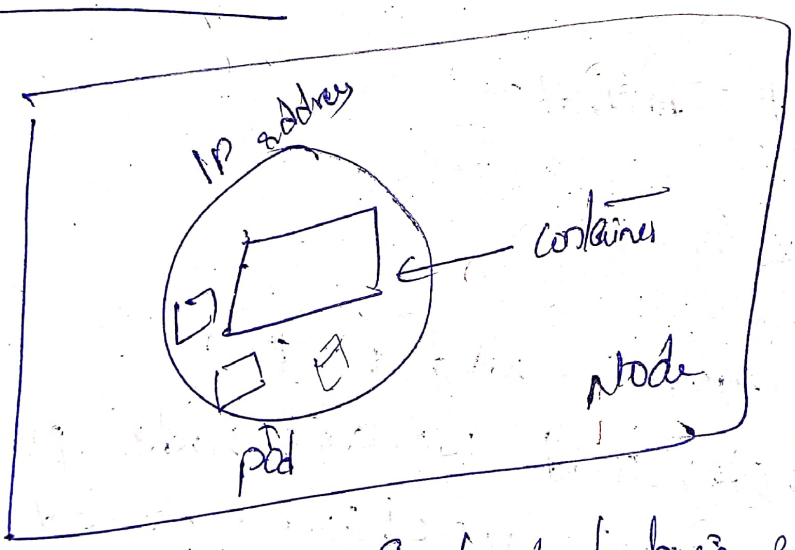
→ consider 5 servers (each server has 10GB of memory (RAM))



→ we have list of jobs to run on these 5 servers.

→ Every job has diff resources requirements.

pods & Nodes :-



(2) service discovery & Load balancing :-

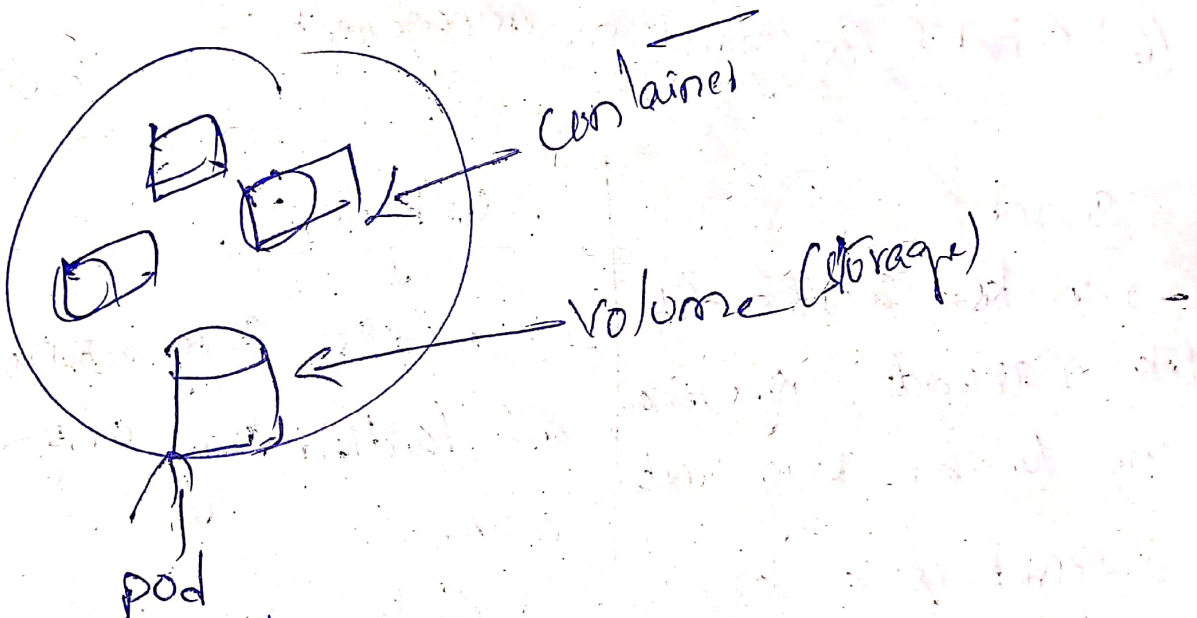
→ kubernetes does not run containers directly.

→ k8s Service is a "set of pods that work together".

Traffic
↓
Load balancer
↓
service
pod pod

③ storage orchestration :— Containers running inside pod may need to store data pods can have a storage volumes.

→ usually a single volume is shared within all the containers in a pod.



④ self-Healing :—

→ 1) If container fails → restarts container

2) If node dies → replaces & reschedule containers on other nodes.

3) If container does not respond to user defined health check → kills container

Replication Controller

⑤ Automated rollouts & rollbacks?—

Rollout: deploy changes to the application or its configuration.

Rollback: Revert the changes & restore the previous state.

⑥ Secret & Configuration management:—

Secret:

→ In k8s sensitive data like passwords, keys, tokens are handled using secrets.

→ secret is a k8s object.

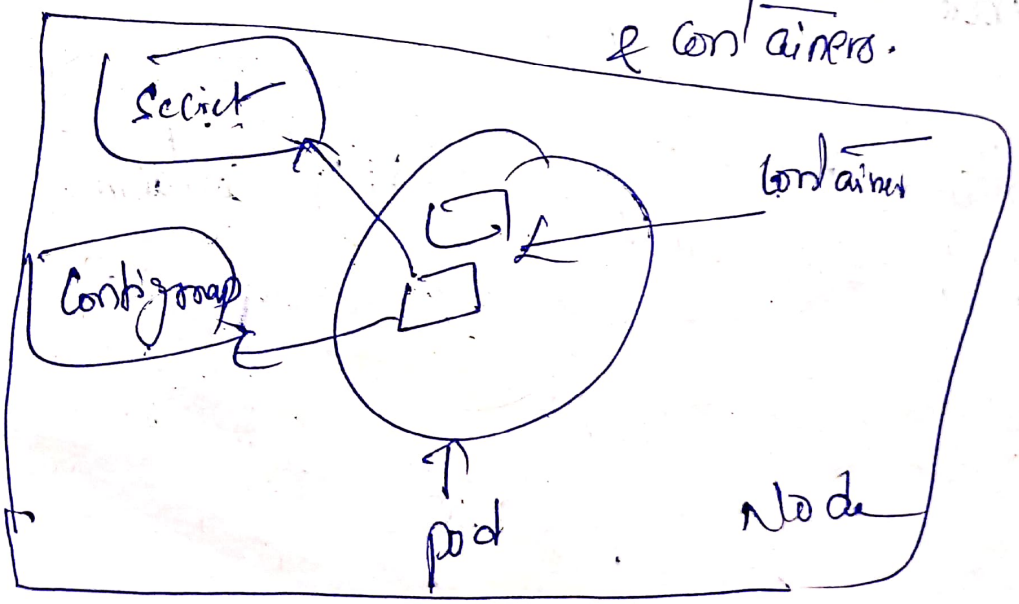
→ Created outside pods & containers

Configmap:

→ In k8s configurations are handled using config maps.

→ Config map is a k8s object.

→ Created outside pods & containers.



→ maximum size of secret is 1MB.

⑦ Batch execution :- K8s supports batch execution, long running jobs, and replaces failed containers.

⑧ Horizontal scaling :-

→ In K8s we can scale up or down the containers
scale up → creating the containers more replicas.
scale down → kill the ~~rep~~ containers. if not required.