

★ Kubernetes Components - 14/08/2024

- ⇒ When you deploy Kubernetes, you get a cluster.
- ⇒ A Kubernetes ~~cluster~~ cluster consists of a set of worker machines called nodes, that run containerized apps. Every cluster has atleast one worker node.
- ⇒ The worker nodes host the pods that are components of the application workload.

The control plane manages the worker nodes and the pods in the cluster.

C-C-m → Cloud controller manager

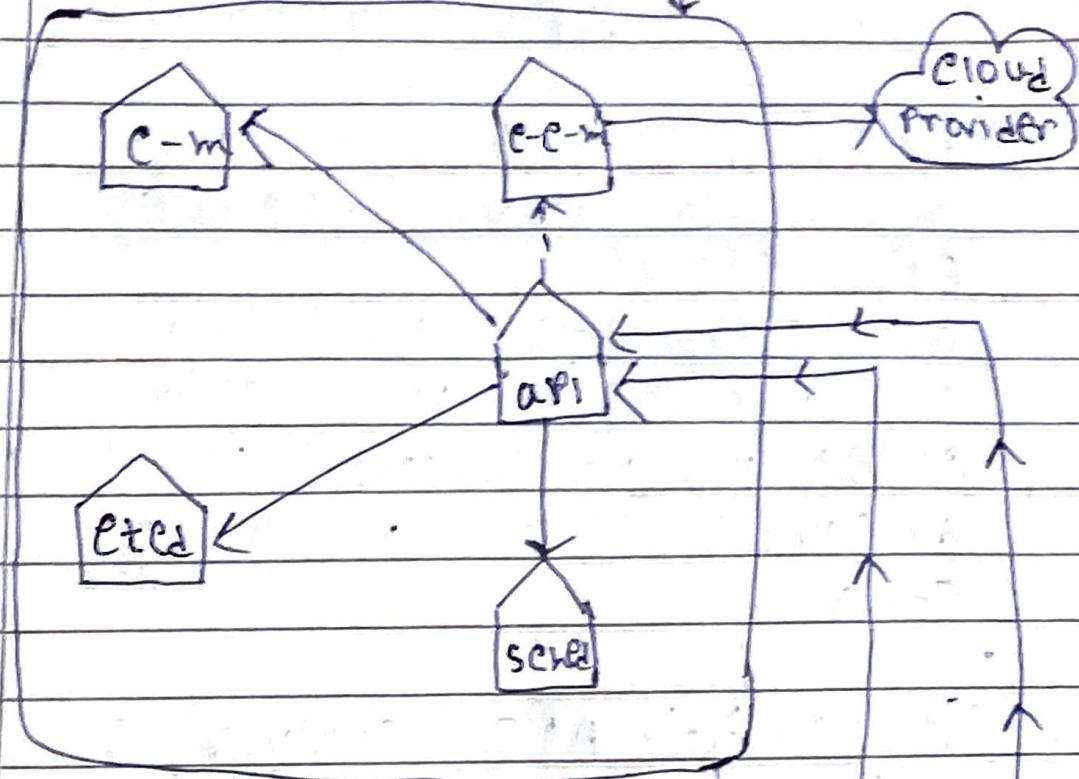
C-m → Controller manager

etcd → Persistence store

Sched → Scheduler

K-proxy → kube proxy.

Control Plane



① (c-m) → API server :-

⇒ Arrow shows that the controller manager communicates with API server.

The CM uses the API server to manage the state of the cluster, ensuring that the desired state matching actual state.

② (c-c-m,) → API server :-

⇒ CCM interacts with the API server to manage resources in the cloud environment (like nodes, load balancers).

③ etcd → API server :-

⇒ The arrow here shows that etcd stores all the cluster data, and the API server processes this data to manage clusters state.

Etcd is database.

④ API server → sched :-

⇒ This arrow indicates that the API server sends scheduling tasks to scheduler.

Sched decides which node should run a new pod based on resource availability and other factors.

⑤ API server → nodes (kubelet) :-

⇒ Multiple arrows from API serve to each nodes kubelet show that API server communicates directly with the kubelet on each node.

This communication involves sending instructions on which pods to run and collecting status of node.

⑥ Kubelet :-



⇒ An agent that runs on each node in the Kubernetes cluster. Its primary job is to ensure that the containers defined by API server are running & healthy.

⇒ Working —



① ⇒ Communication with API server.

② ⇒ Managing containers.

③ ⇒ Monitoring Health.

④ ⇒ Handling configuration.

⑦ Kube-Proxy :-



⇒ It is a network proxy that runs on each node in the Kubernetes cluster.

Its primary function is to manage the network rules that allow communication between different services & pods within cluster.