**Kubernetes**

**Section 2:**

**Cluster Architecture:**

1. Kubernetes Architecture
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Use real time analogy to understand the kubernetes by using shipping

There are two types:

* cargo ships used to carry the container across the sea and control ships.
* Another one is a control ship that is responsible for controlling and monitoring the cargo ships.

The K8s contains a set of nodes which may be physical or virtual , on premise or on cloud that host applications in the form of containers. This will lead to the cargo ships. The worker nodes that can load containers, but somebody needs to load the containers on the ships and not just load , plan how to load , Identify the right ships, store information about the ships, monitor and track the location of containers on the ships, manage the whole loading process ,et cetera.

This is done by control ships that host different officers and departments , Monitoring equipment, communication equipment, cranes for moving containers between ships , et cetera.

The control ship relates to the master node in K8s , the master node is responsible for managing the kubernetes cluster , storing information regarding the different nodes, planning which container goes where, monitoring the nodes and containers on them etc..

The master node does all of these using a set of components together known as control playing components. We will look at each of these components. There are many containers being loaded and unloaded from the ship on a daily basis and so you need to maintain the information about the different ships, what container is on which ship, and what time it was loaded , etc .

All of these are stored in a highly available key value store, known as **ETCD**.

**ETCD is a database that stores information in a key value format.**

When ships arrive , you load containers on them using cranes. The cranes identify the containers that need to be placed on ships.It identifies the right ship based on its size,its capacity , the number of containers already on the ship and any other conditions such as the destination of the ship, the type of containers it is allowed to carry , etc …

So these are schedulers in a k8s cluster. A scheduler identifies the right node to palace a container based on the container's resource requirements, such as worker node capacity or any other policies or constraints, such as taints and tolerations or node affinity rules that are on them.