kubernetes

- Kubernetes is a orchestration tool
- By using this we can achieve high
    1. availability
    2. scalability
    3. Desired state

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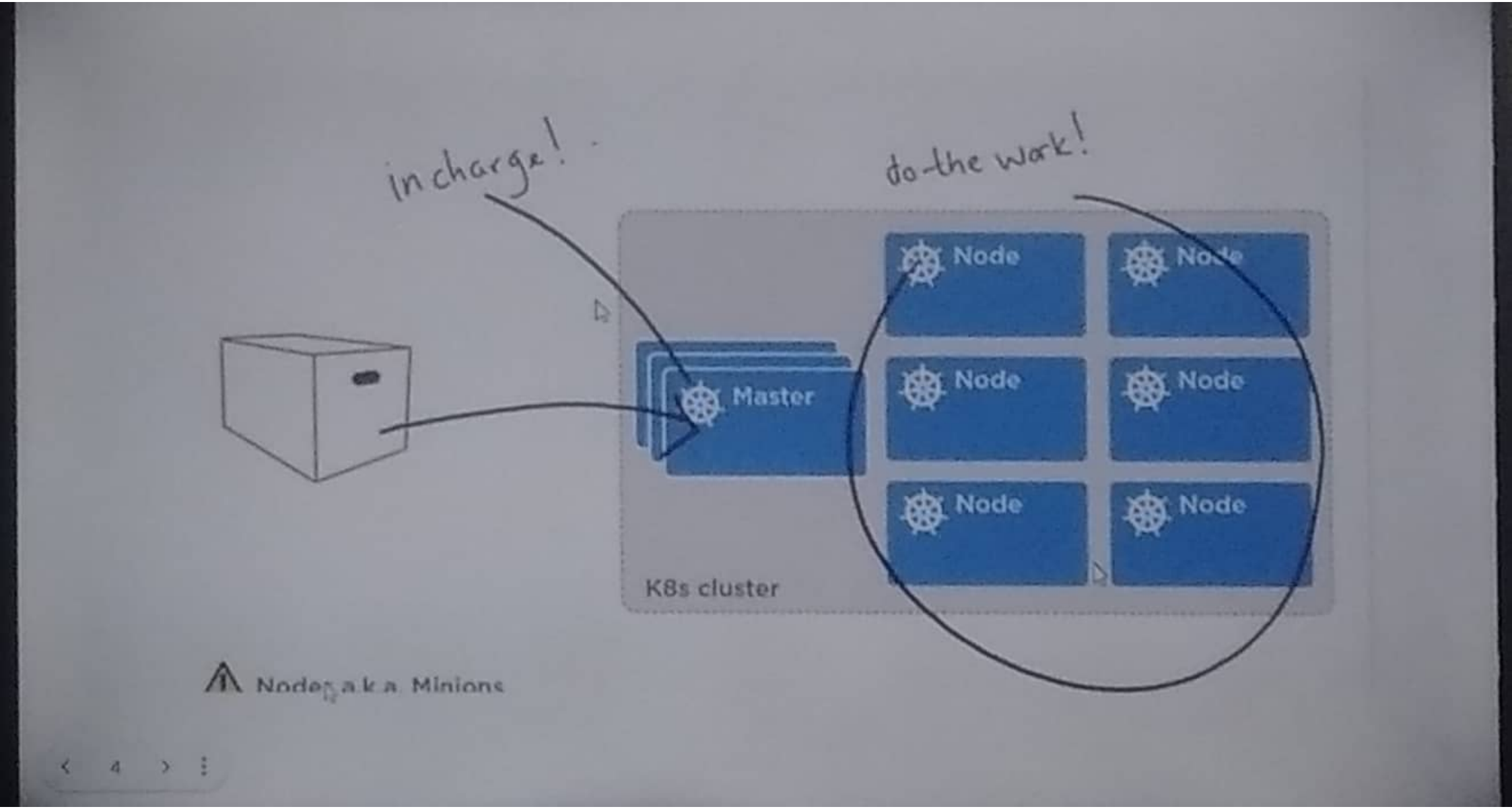

Node a.k.a Minions

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Four Components

API Server:Authentication person make a decision

Cluster Storage: memory

Controller: Monitoring

Scheduler: Work Assign to Nodes

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Cluster store

Persistent storage

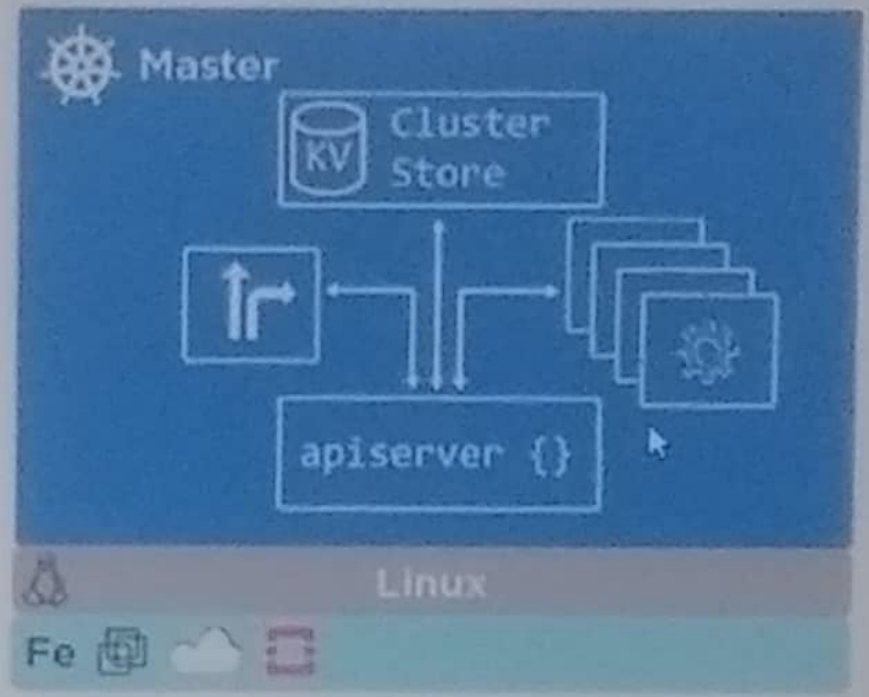
Cluster state and config

Uses etcd

Distributed, consistent, watchable...

The *"source of truth"* for the cluster

Have a backup plan for it!



Cluster Storage keep every information in cluster as a Key:Value

E.g apiserver is a brain which takes decision based on memory

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kube-controller-manager

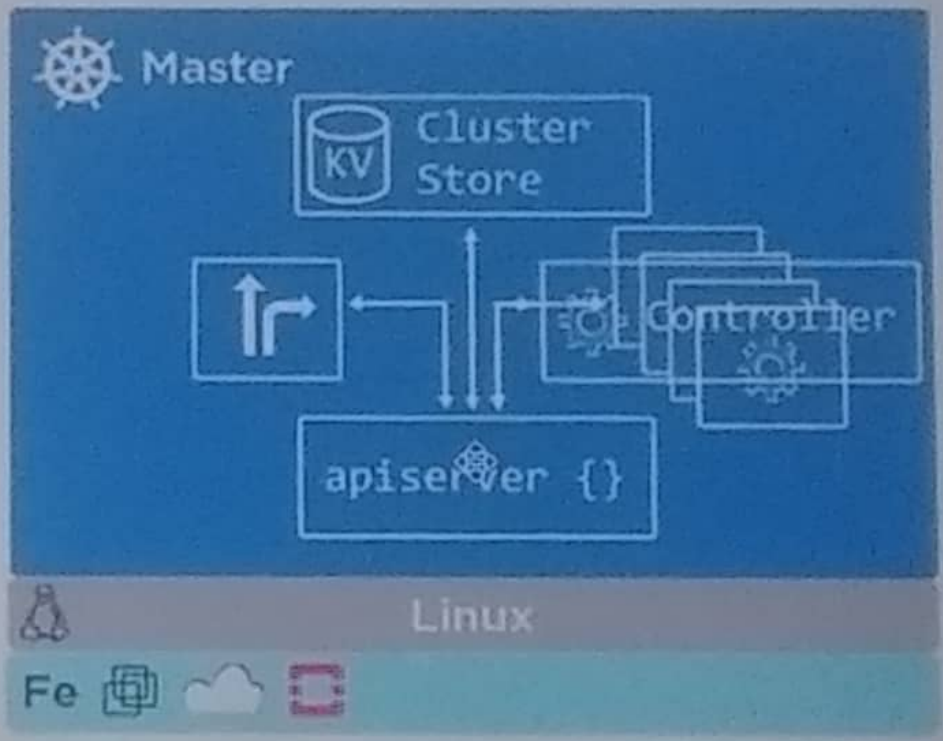
Monitoring

Controller of controllers

- Node controller
- Endpoints controller
- Namespace controller
- ...

Watches for changes

Helps maintain *desired state*



Kubernetes Controller If any changes takes update cluster Storage as a Key:value

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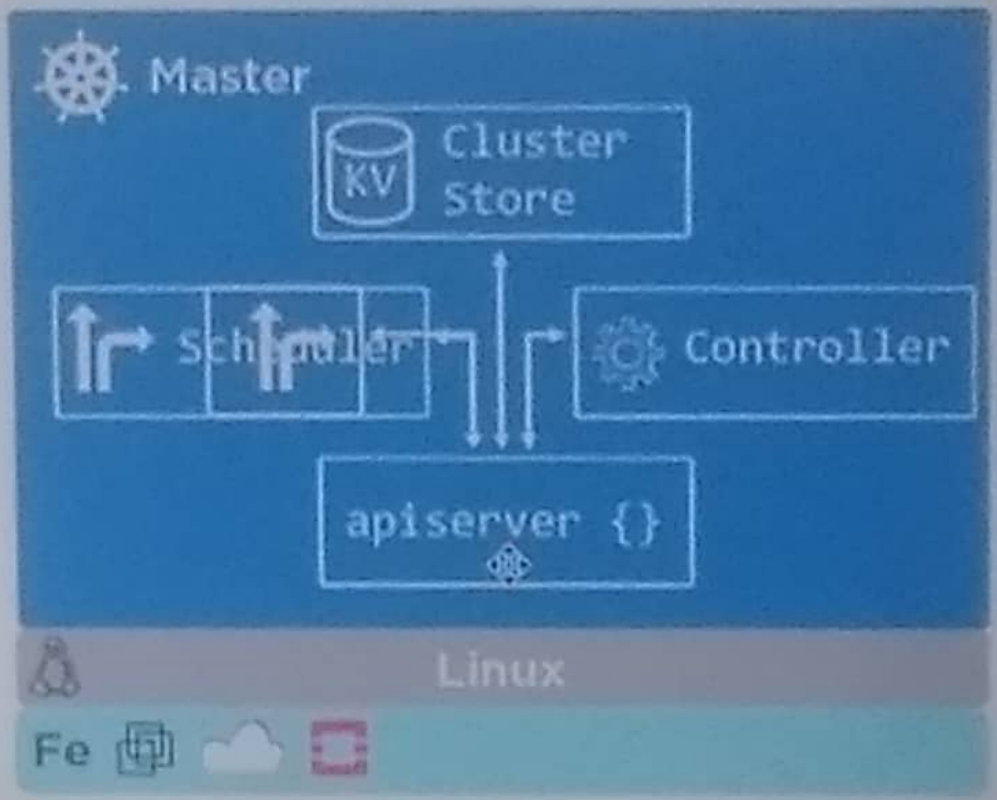
kube-scheduler

Watches apiserver for new pods

Assigns work to nodes

- affinity/anti-affinity
- constraints
- resources
- ...



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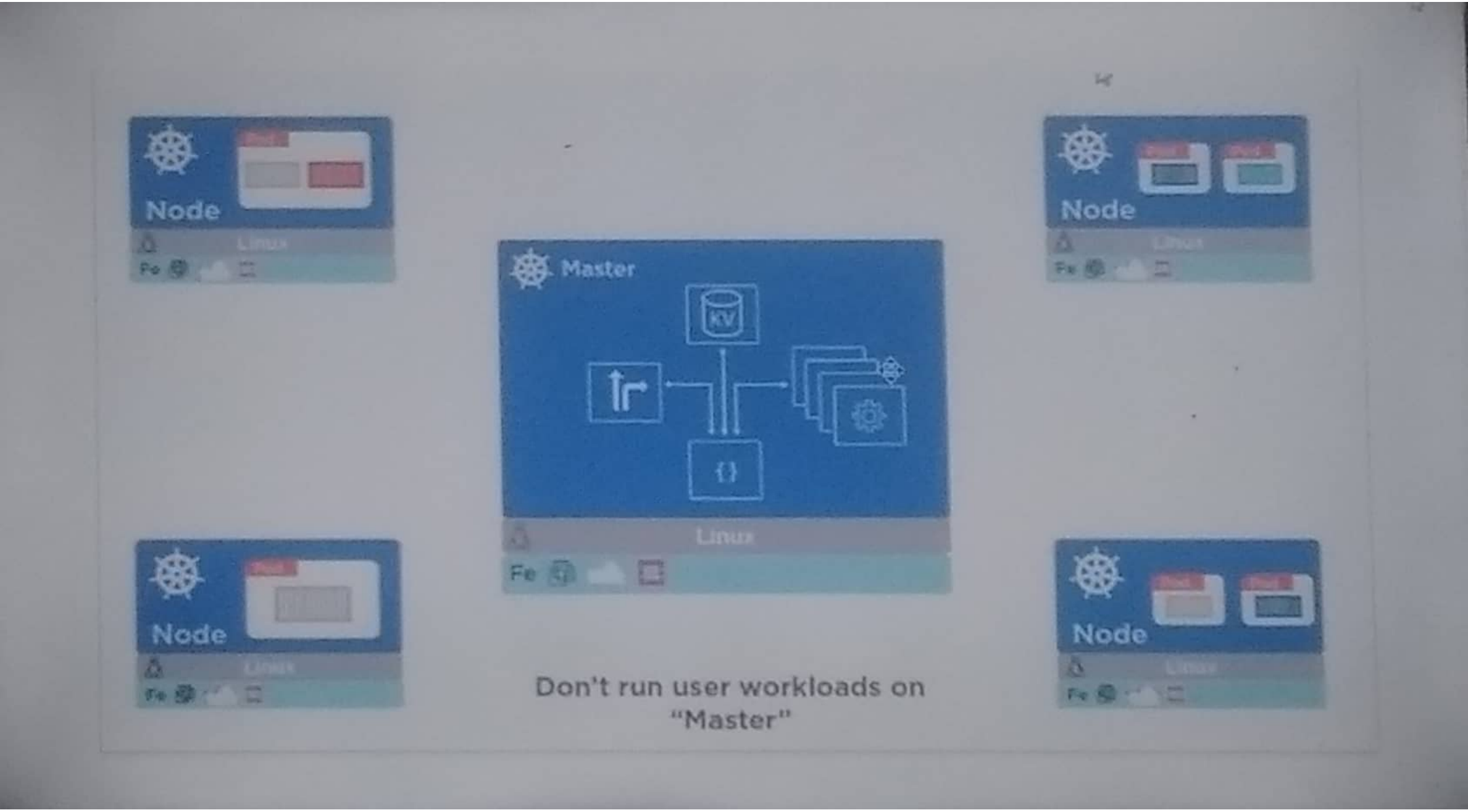

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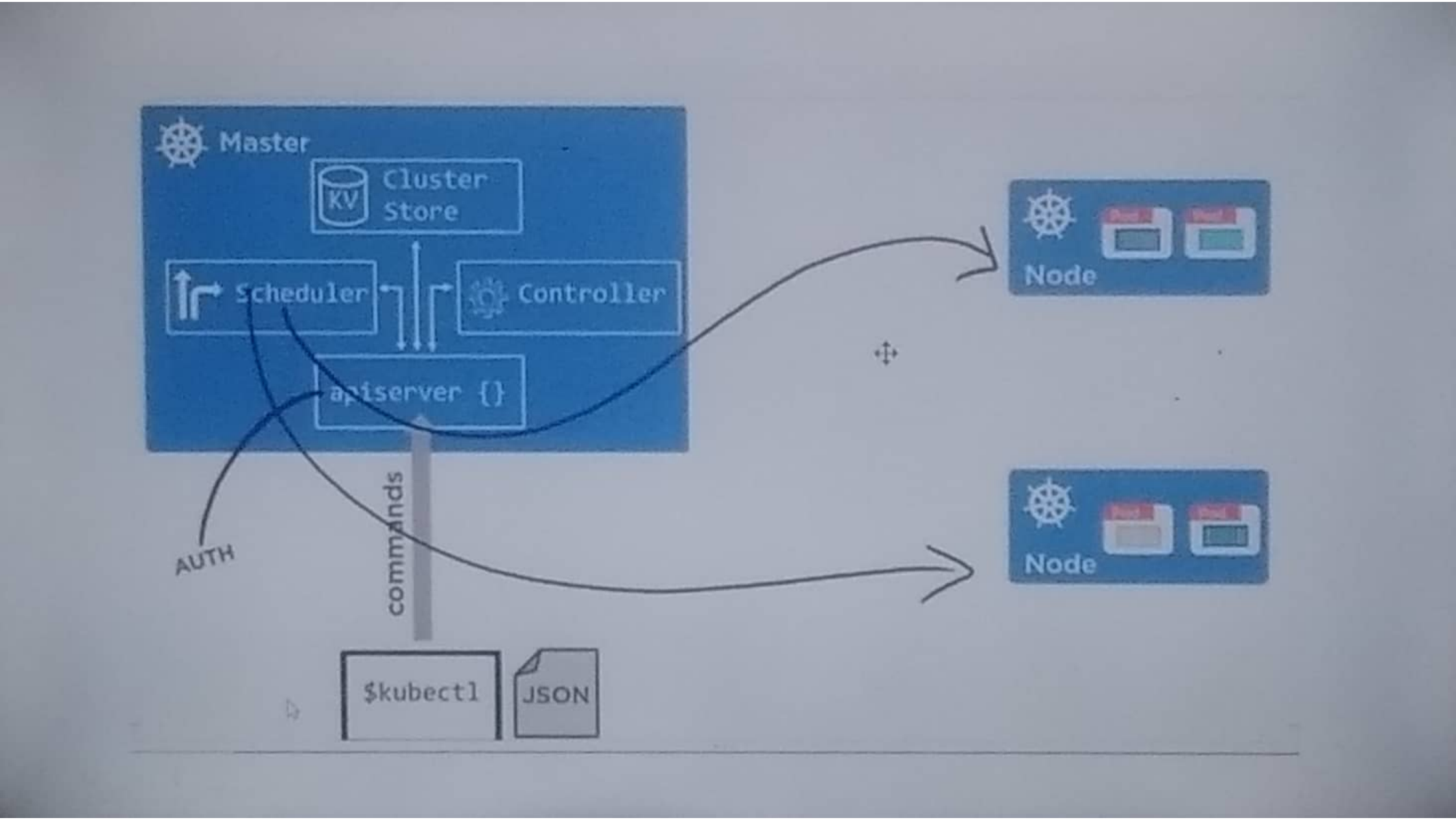

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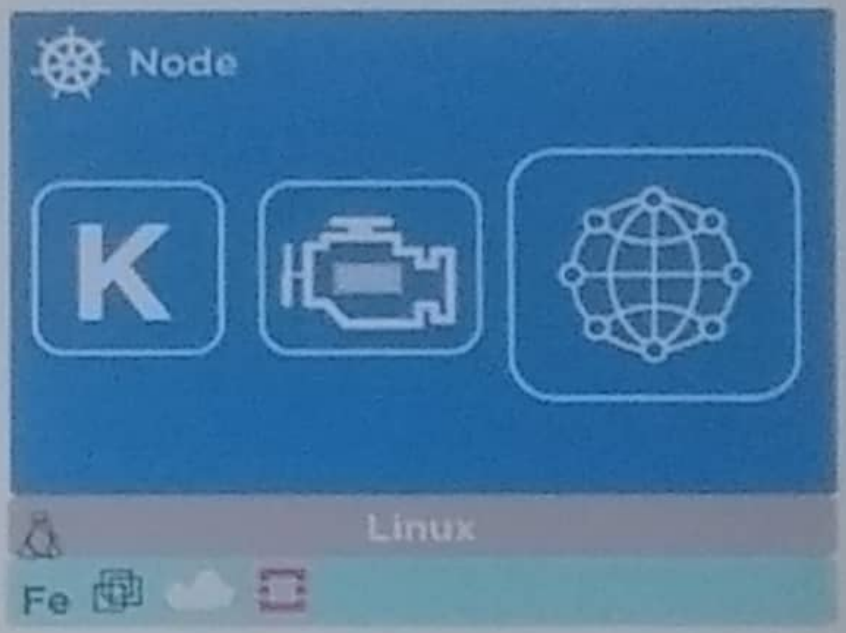
Node

Kubelet
Main Kubernetes agent

Container engine
Docker or rkt

kube-proxy
Kubernetes networking



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Declarative Model
&
Desired State

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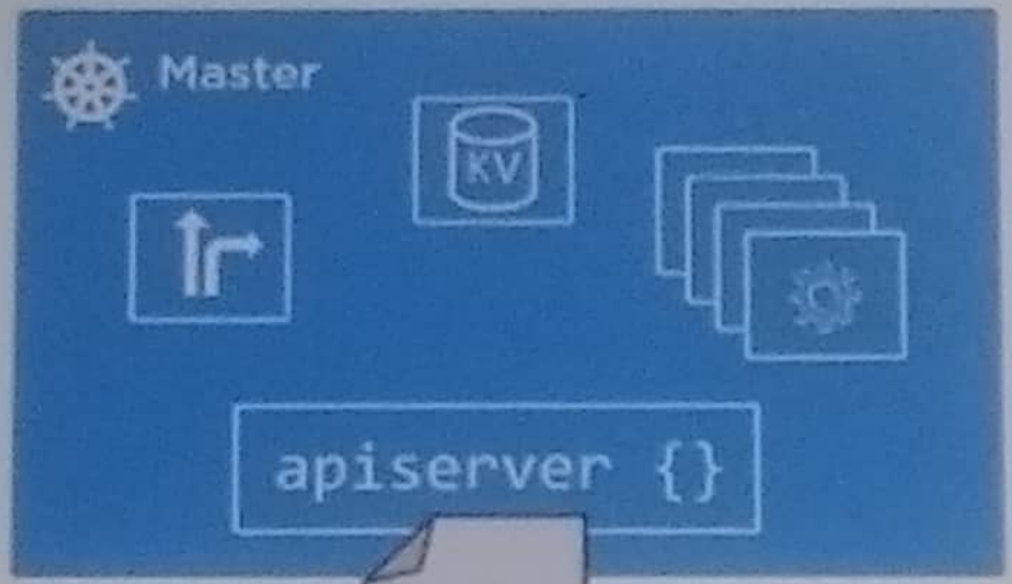

YAML or JSON

Describe desired

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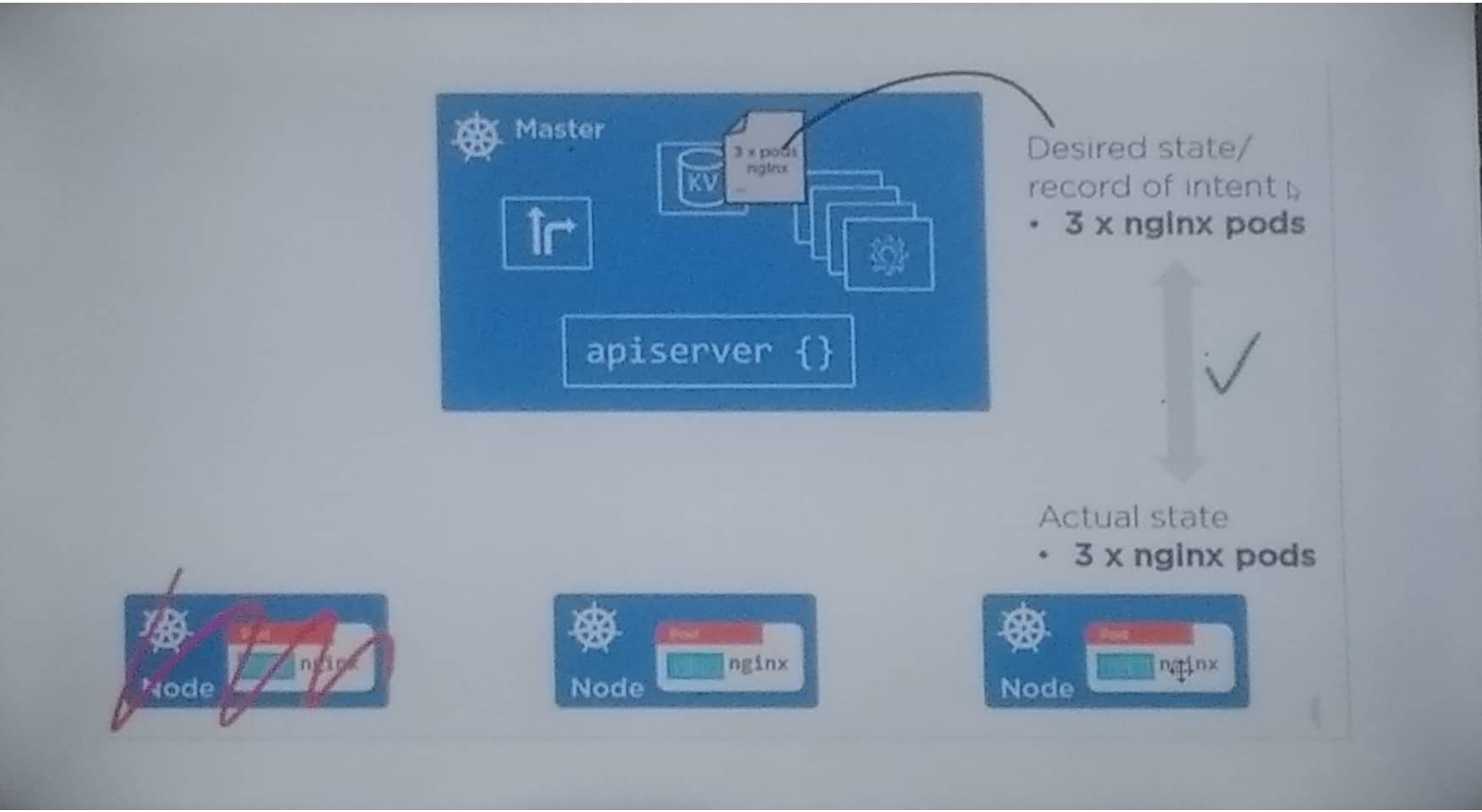

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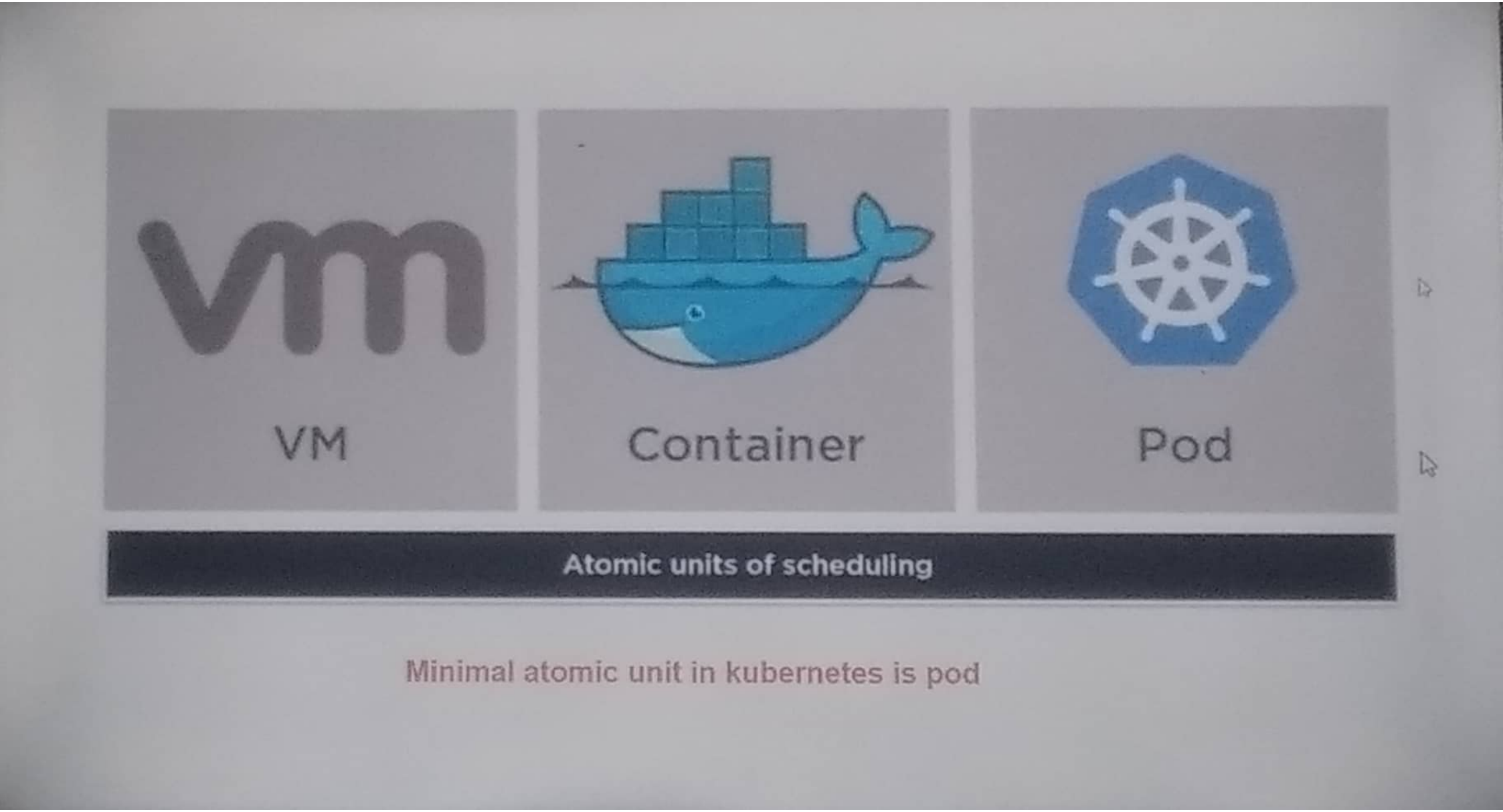

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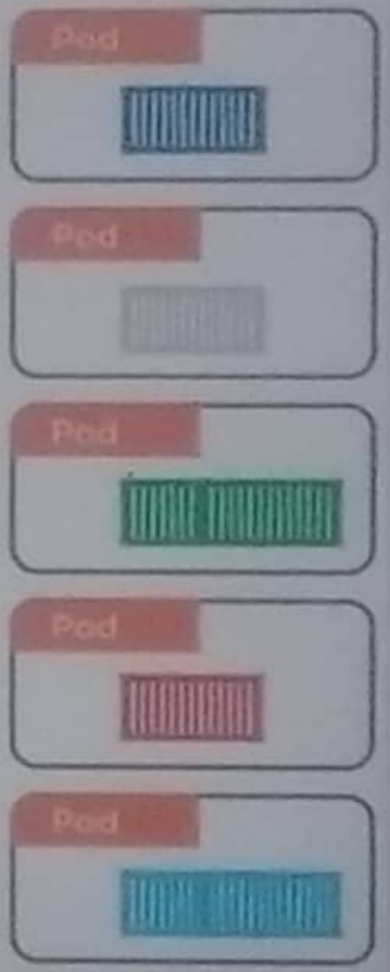
Containers always run inside of pods

Pods can have multiple containers
(advanced use-case)



We Recommend only one container in one pod

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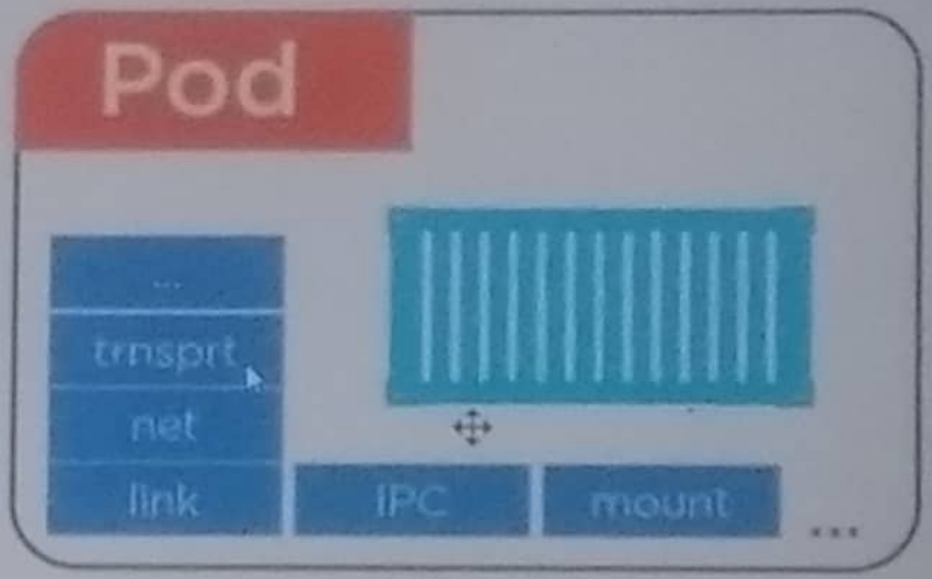
Ring-fenced environment

- Network stack
- Kernel namespaces
- ...

n containers

All containers in pod share the pod environment



We Recommend only one container in one pod

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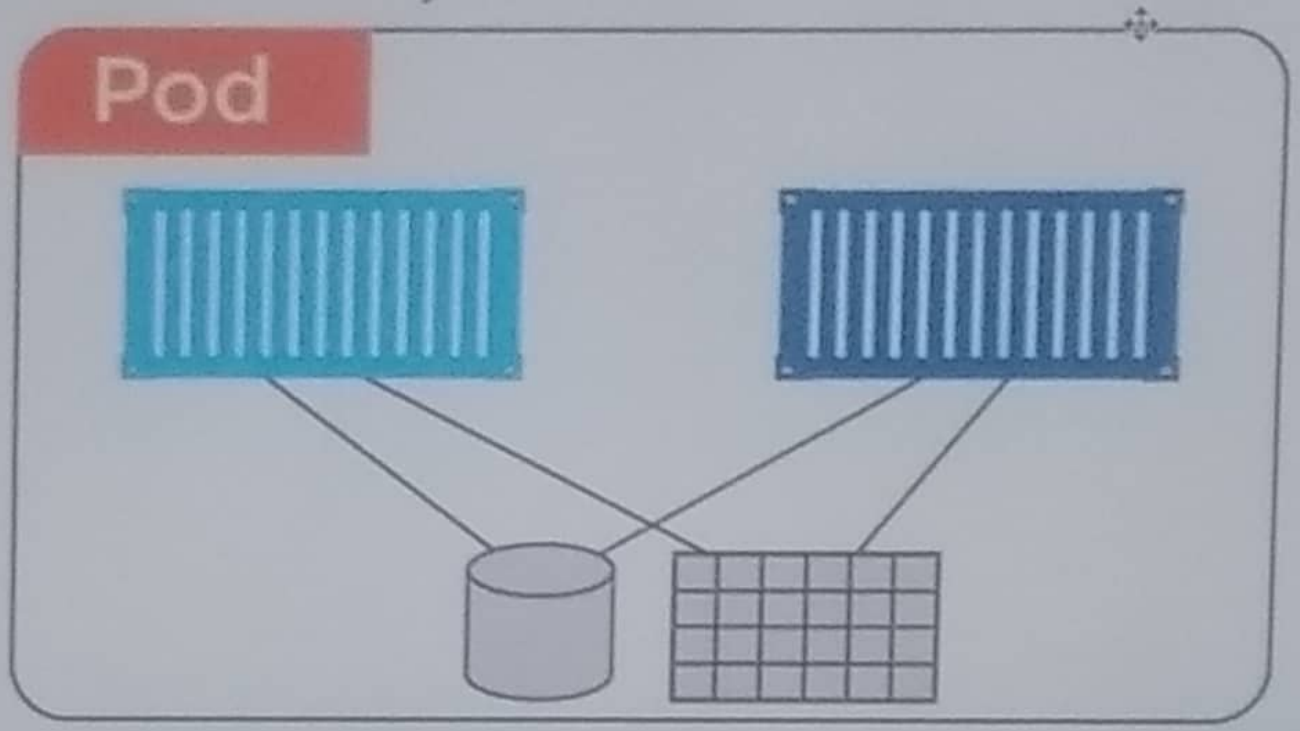
Tight Coupling



In Tight couple if any wrong in one container it affects second container

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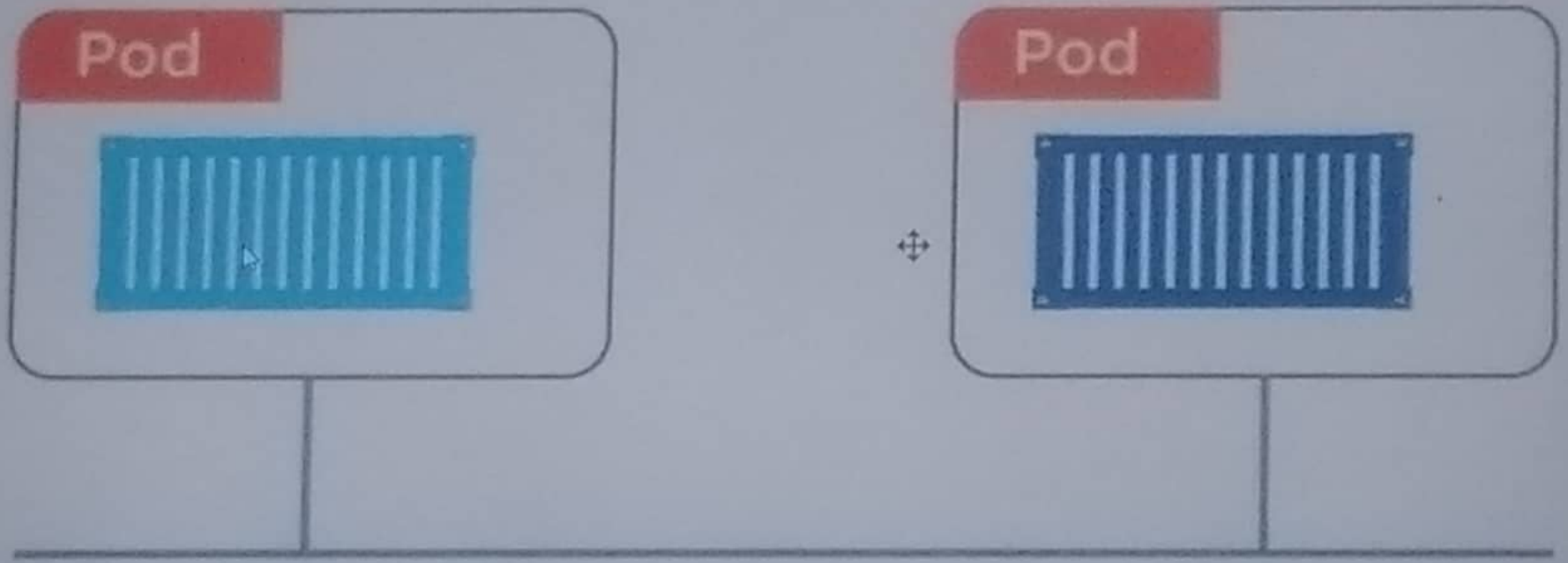
Loose Coupling



Most Recommend Method

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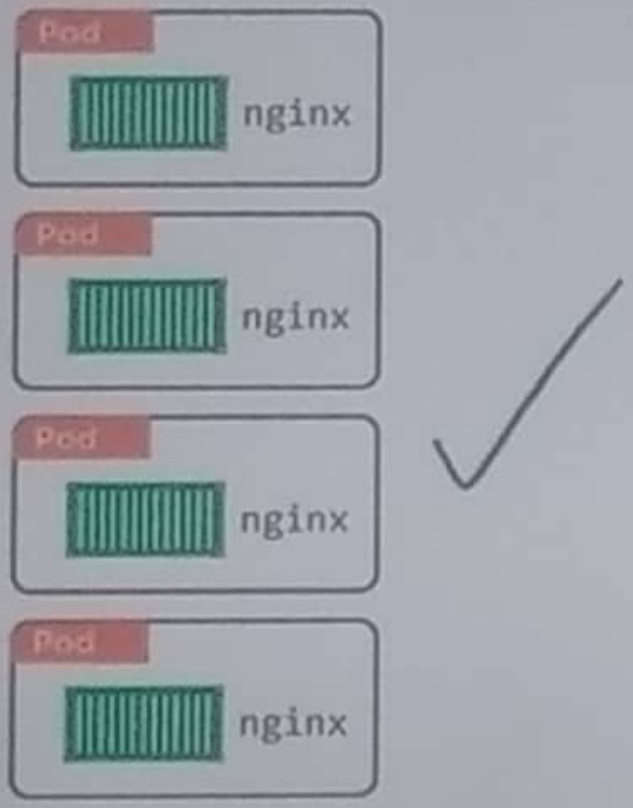
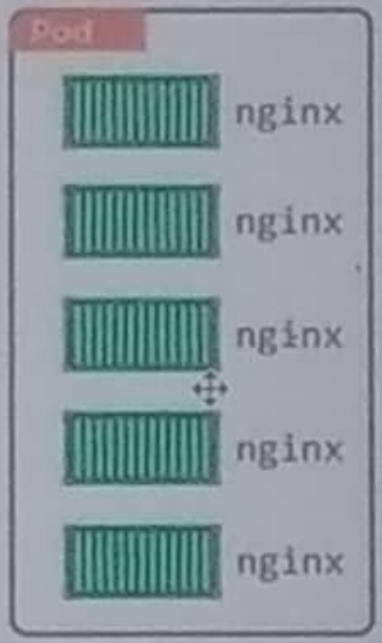
Pods and Scaling



Most Recommend



Not Recommend

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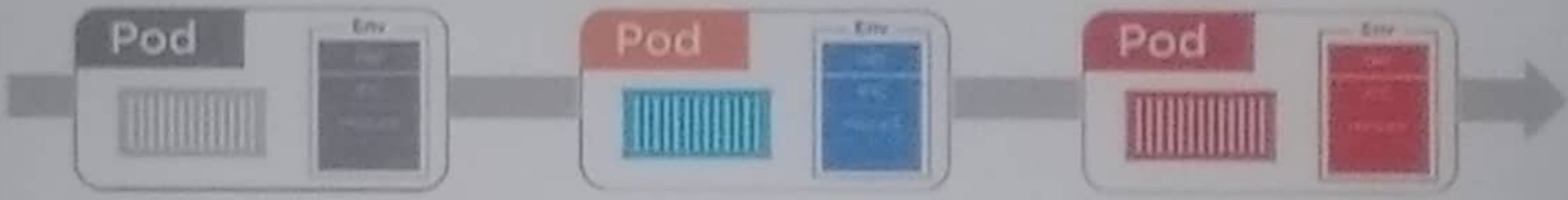
Pod Lifecycle



Phase: pending

Phase: running

Phase: succeeded/failed

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To setup cluster we need

1. To implement this we need three service : One master and two nods
2. On master and each node we have to install Docker
3. Install Kubernetes on master and each node
    1. Kubeadm
    2. Kubelet
    3. kubectl
4. After Installing Kubernetes one should be master and 2 Nodes by running init kubeadm unit on master we get a document by using this document we can configure this cluster

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