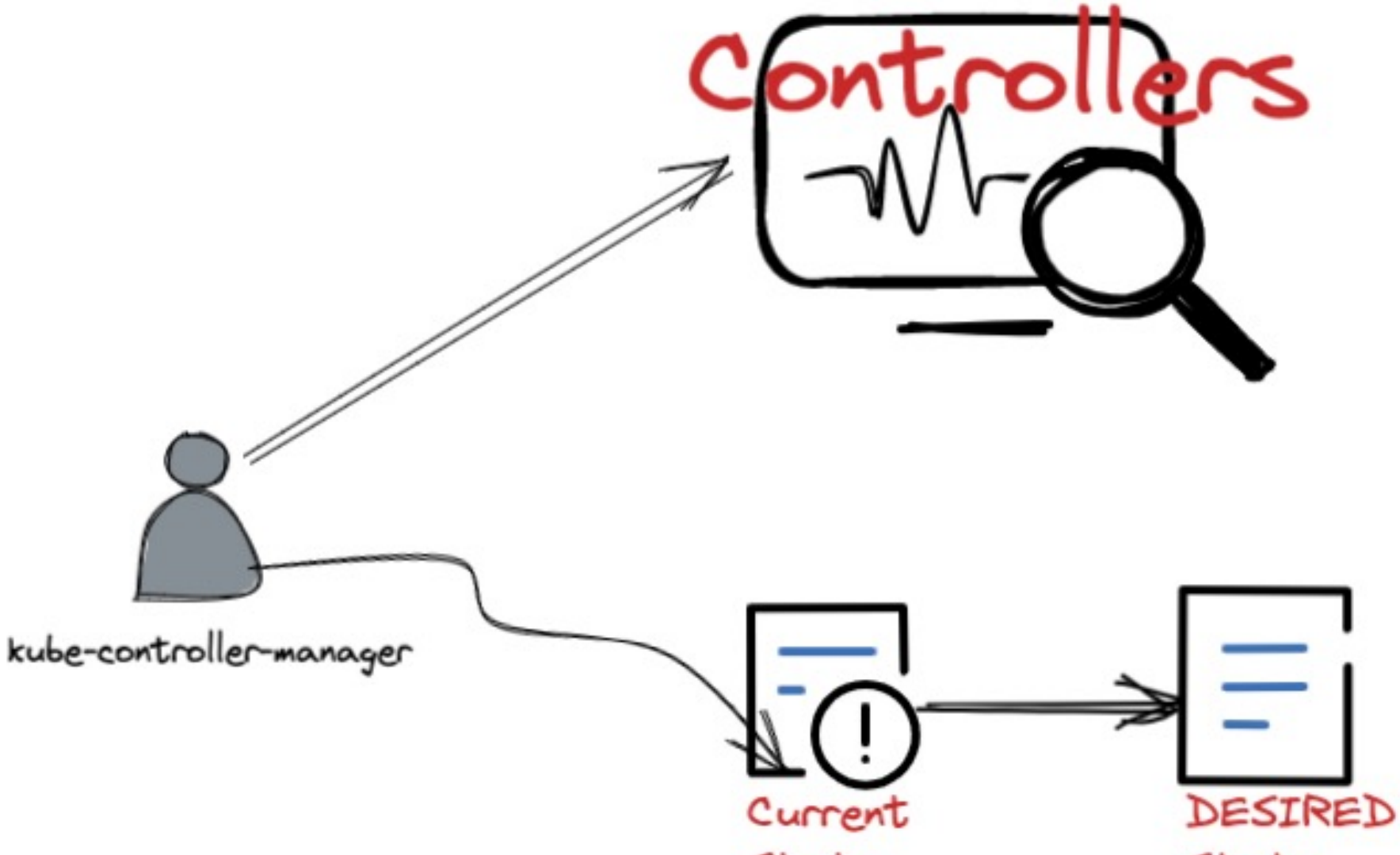
KUBERNETES: kube-controller-manager

Just One Concept

@ABC

kube-controller-manager



kube-controller-manager

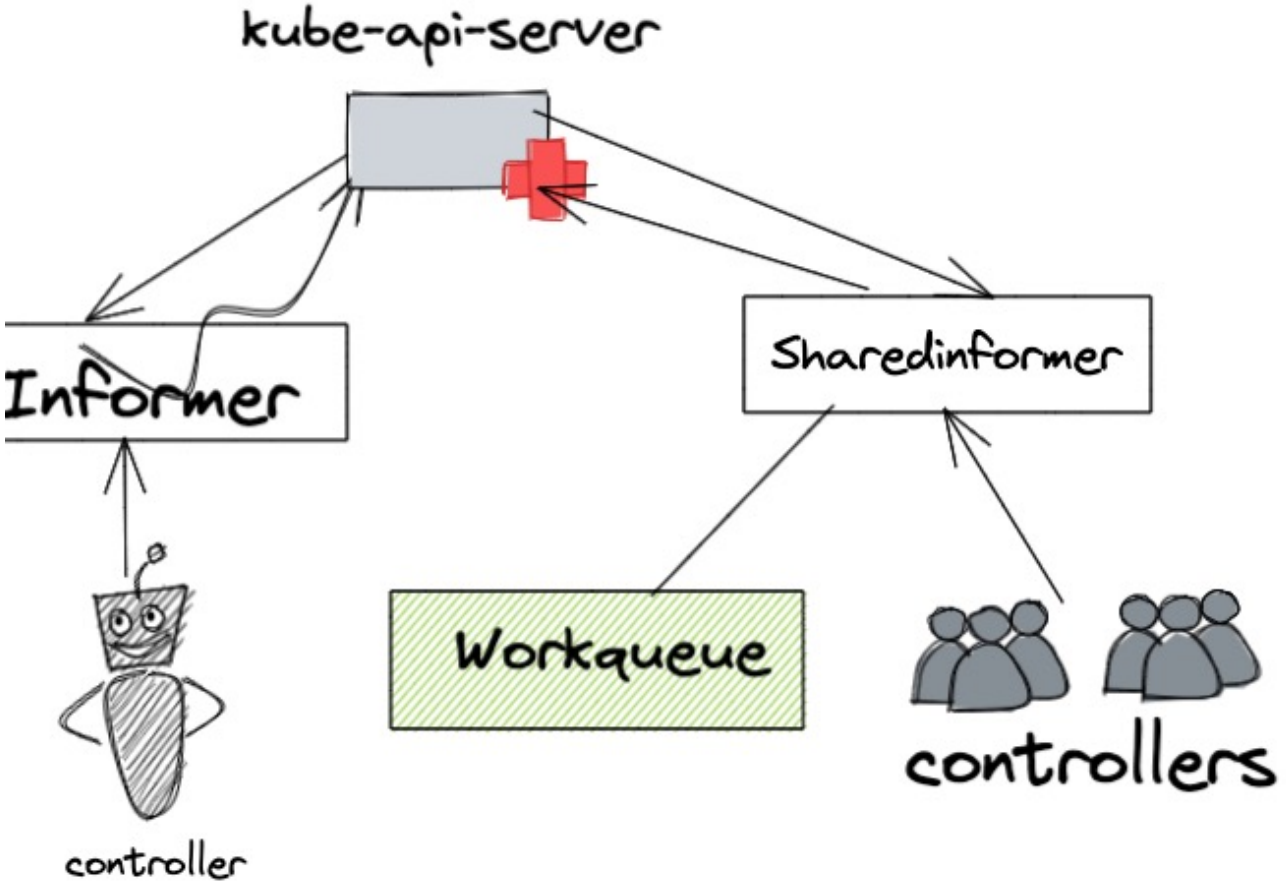
The Kubernetes controller manager is a daemon that embeds the core control loops shipped with Kubernetes

“the process that keeps your Kubernetes cluster in its desired state”

- Responsible for manage various controllers
- Continuously watching the state of the cluster (via api-server) or particular resource
- Responsible of moving current state to desired state
- Controller manager uses leader election for quorum

Core Components

- Informer
- Shared Informer
  - Workqueue

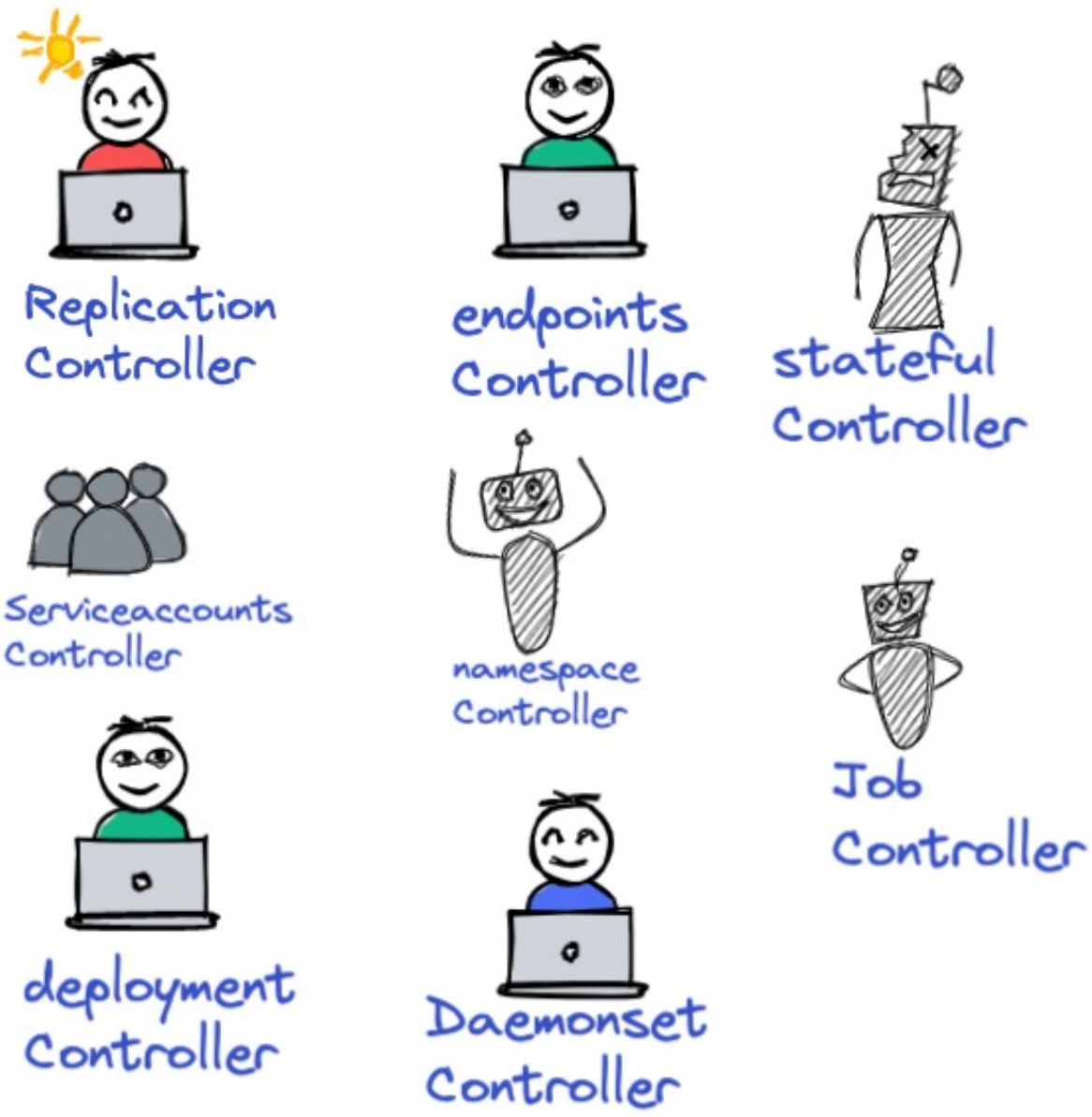


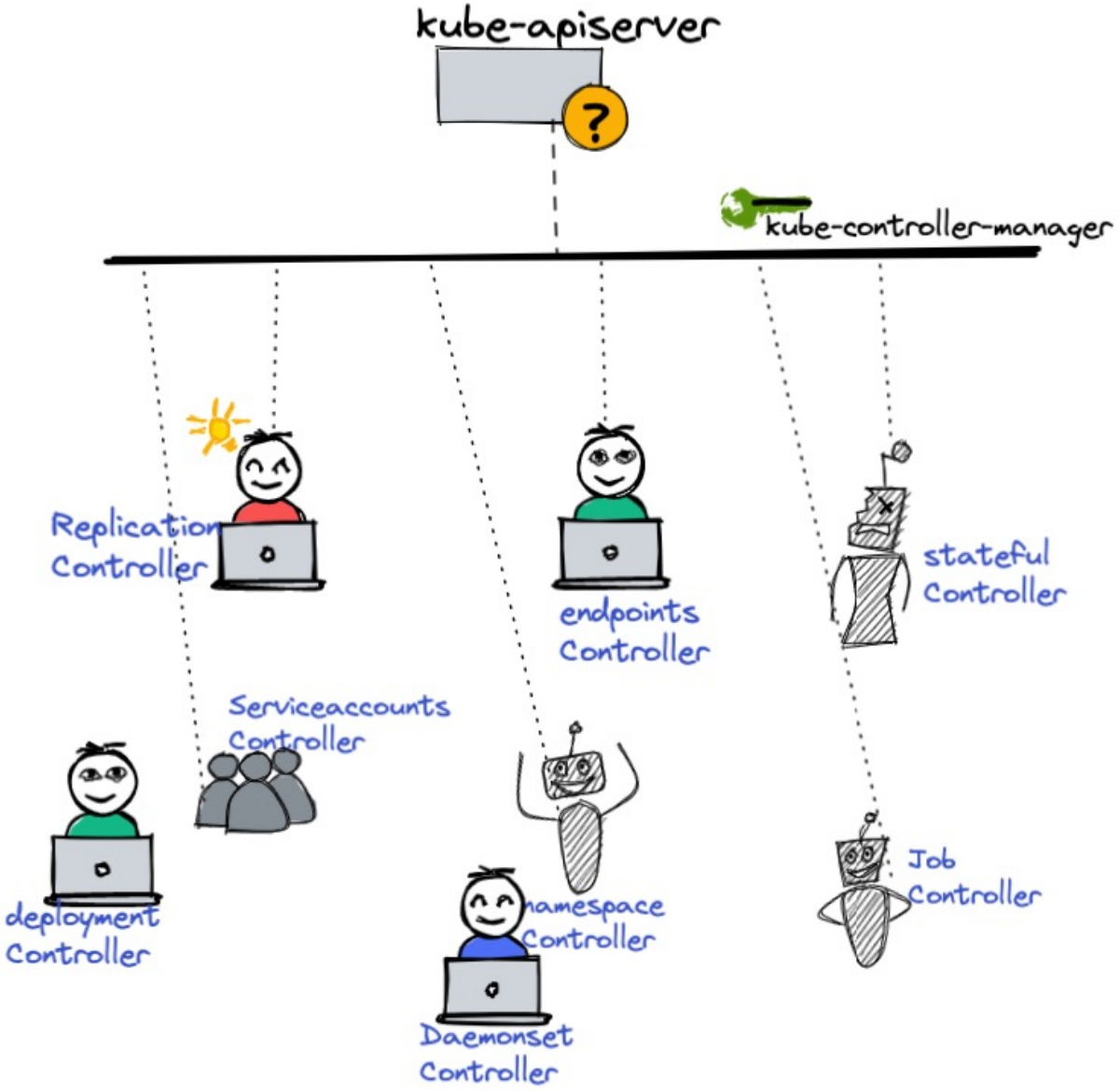
- Informer: As multiple http request to the API server can be expensive, informer acts like a cache for the controller. It starts watching the particular resource continuously & alerts the controller, if any change of the state.

- Shared Informer, is the shared cache resource which can be used by multiple controllers for watching a single resource
  - Workqueue is an external queue of the shared informer to track activities of each controller

Types of controllers

- Replication Controller
- Endpoints Controller
- Serviceaccounts Controller
- Namespace Controller
- Job Controller
- Daemonset Controller
- Deployment Controller
- Stateful Controller
- CResourceset controller




kube-apiserver
?
kube-controller-manager
Replication Controller
endpoints Controller
stateful Controller
Serviceaccounts Controller
deployment Controller
namespace Controller
Job Controller
Daemonset Controller

Replicaset Controller

- Trying to achieve desired number of replicas
- A *ReplicationController* ensures that a specified number of pod replicas are running at any one time

Deployment Controller

- Watching for new deployments
- Once deployment is created, controller creates a replicateset to satisfy the desired state of deployment
- Performs rolling update (version)
- Pause & Resume Rollout/Rollback functions & scaling

Node Controller

- Assigning CIDR block to the node
- Keeping the node controller’s internal list of nodes up to date with machine availabilities.
- Monitoring Node’s health