

Kubernetes interview questions - PART 2 - Cluster and Architecture

🕒 Created	@October 31, 2023 6:12 PM
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📂 Topic	Kubernetes Cluster and Architecture
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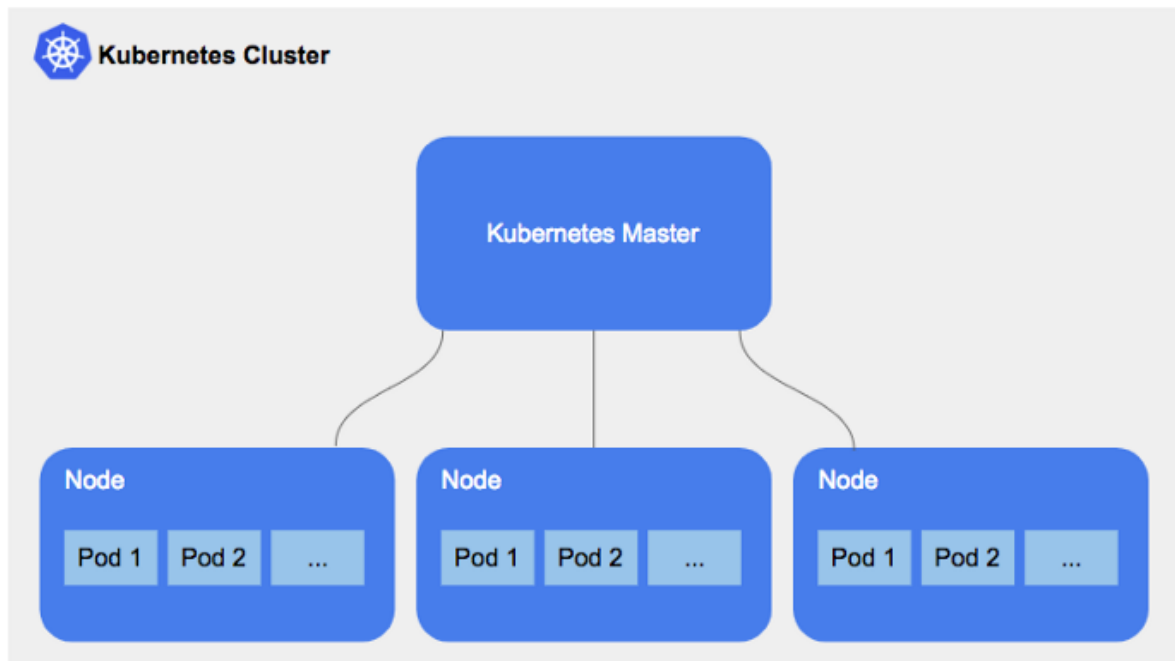




kubernetes

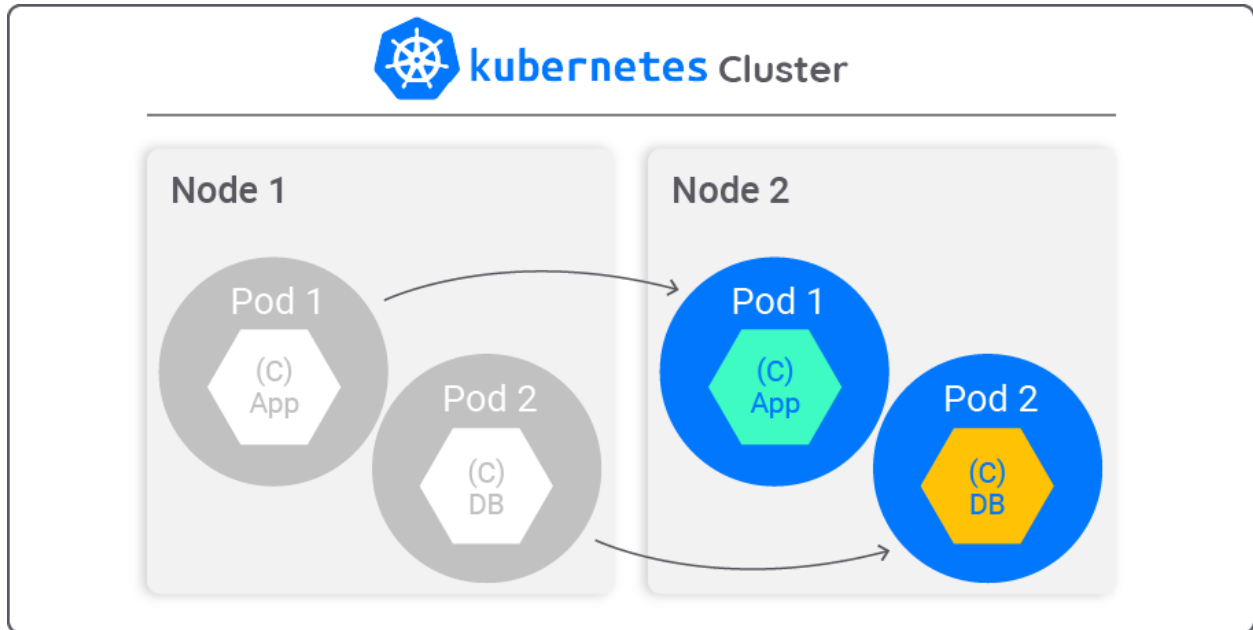
1. What is a Kubernetes Cluster?

A Kubernetes cluster is a set of node machines for running containerized applications. If you're running Kubernetes, you're running a cluster. At a minimum, a cluster contains a worker node and a master node



2. What is a Node?

A node is a virtual or a physical machine that serves as a worker for running the applications. It's recommended to have at least 3 nodes in a production environment.



3. What the master node is responsible for?

The master coordinates all the workflows in the cluster:

- Scheduling applications
- Managing desired state
- Rolling out new updates

4. Describe shortly and in high-level, what happens when you run:: `kubectl get nodes`

- Your user is getting authenticated

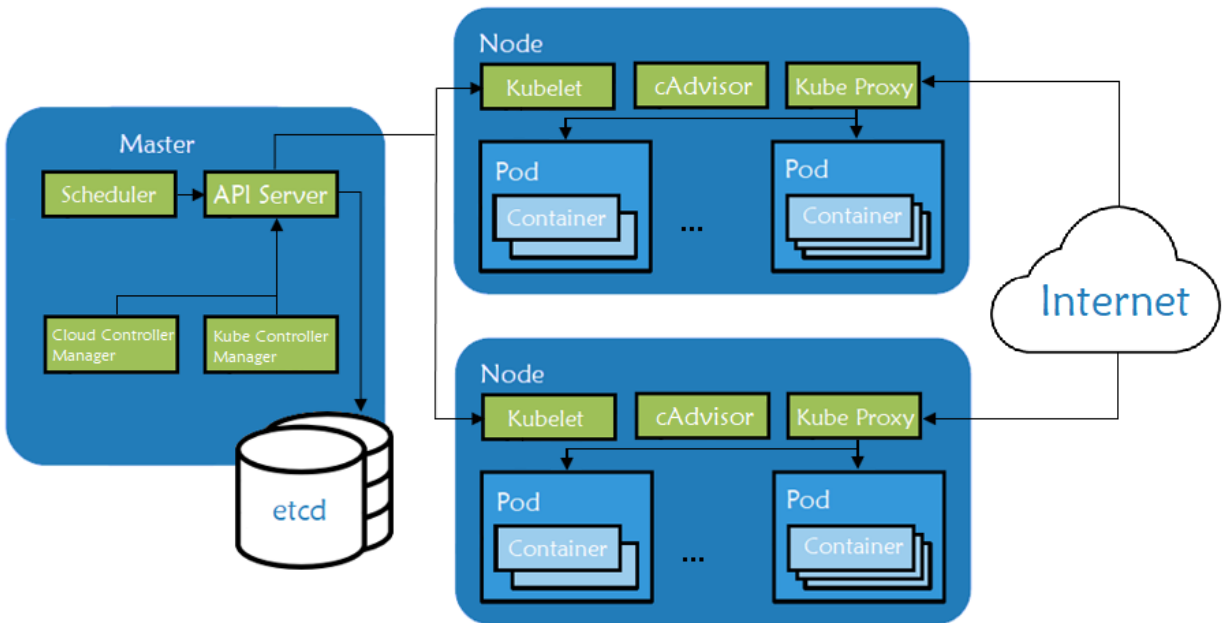
- Request is validated by the kube-apiserver
- Data is retrieved from etcd

5. True or False? Every cluster must have 0 or more master nodes and at least 1 worker

False. A Kubernetes cluster consists of at least 1 master and can have 0 workers (although that wouldn't be very useful...)

6. What are the components of the master node (aka control plane)?

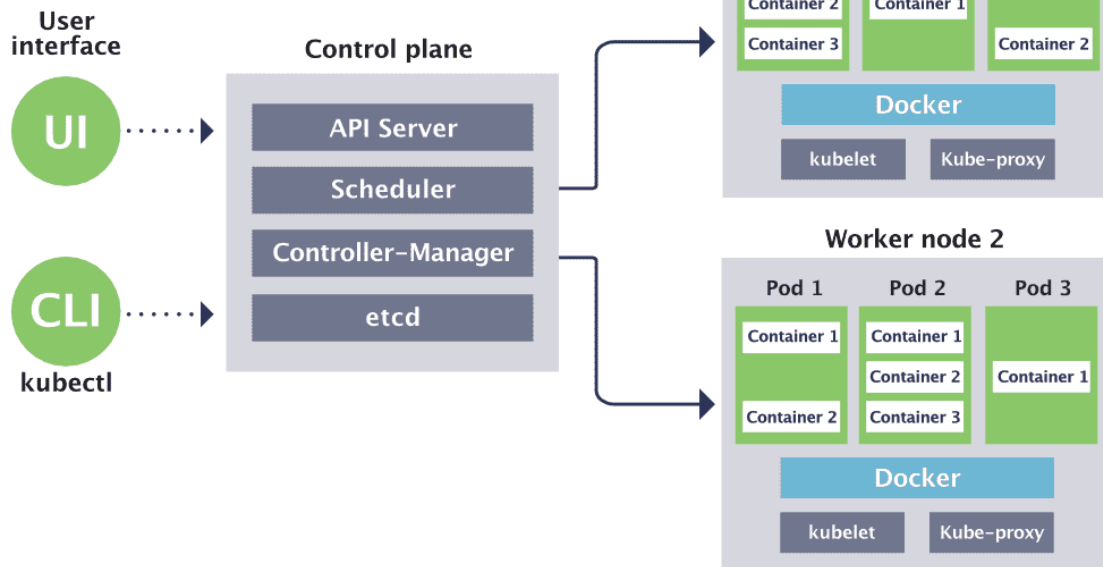
- API Server - the Kubernetes API. All cluster components communicate through it
- Scheduler - assigns an application with a worker node it can run on
- Controller Manager - cluster maintenance (replications, node failures, etc.)
- etcd - stores cluster configuration



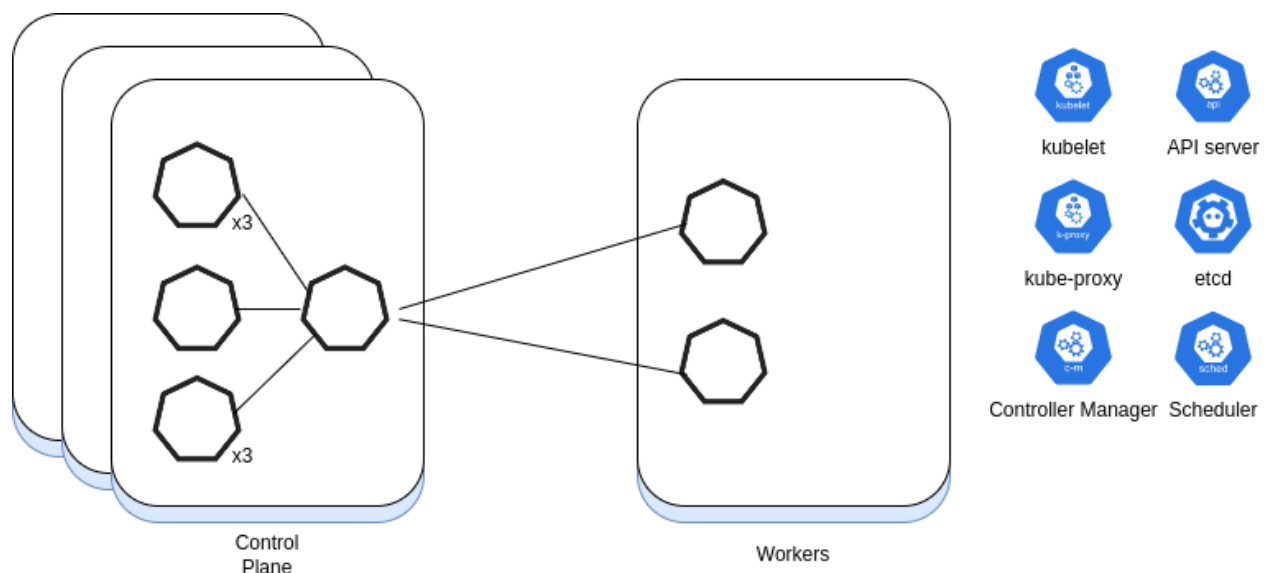
7. What are the components of a worker node (aka data plane)?

- **Kubelet** - an agent responsible for node communication with the master
- **Kube-proxy** - load balancing traffic between app components
- **Container runtime** - the engine runs the containers (Podman, Docker, ...)

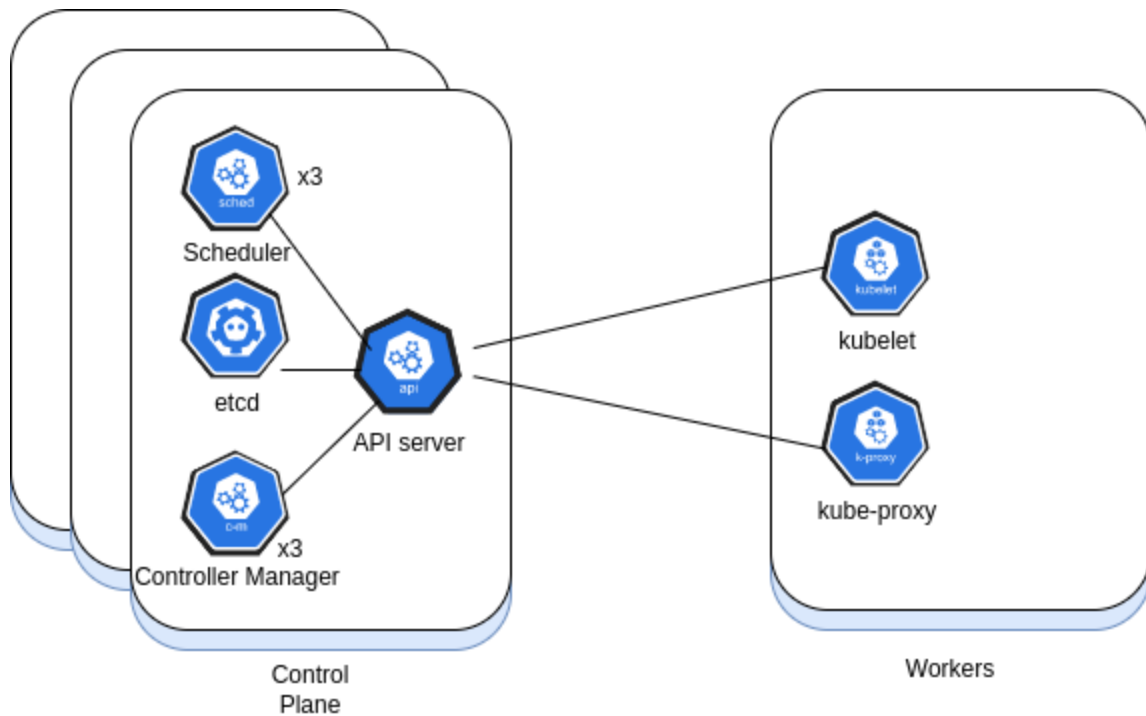
Kubernetes architecture



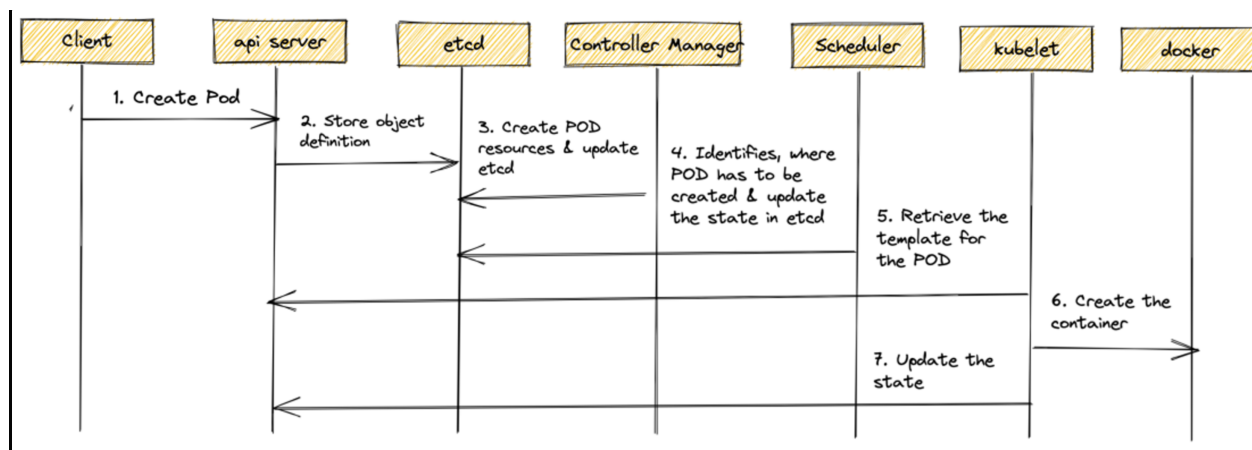
8. (Quiz) Place the components on the right side of the image in the right place in the drawing



▼ Answer



9. Components flow diagram



10 . You are managing multiple Kubernetes clusters. How do you quickly change between the clusters using kubectl?

```
kubectl config use-context
```

11 . How do you prevent high memory usage in your Kubernetes cluster and possibly issues like memory leak and OOM?

Apply requests and limits, especially on third party applications (where the uncertainty is even bigger)

12 . Do you have experience with deploying a Kubernetes cluster? If so, can you describe the process in high-level?

- Create multiple instances you will use as Kubernetes *nodes/workers*. Create also an instance to act as the *Master*. The instances can be provisioned in a cloud or they can be virtual machines on bare metal hosts.
- Provision a *certificate authority* that will be used to generate TLS certificates for the different components of a Kubernetes cluster (kubelet, etcd, ...)
- Generate a *certificate and private key* for the different components
- Generate *kubeconfigs* so the different clients of Kubernetes can locate the API servers and authenticate.
- Generate *encryption key* that will be used for encrypting the cluster data
- Create an *etcd* cluster

13 . Which command will list all the object types in a cluster?

```
kubectl api-resources
```

14 . What `kubectl get componentstatus` does?

Outputs the status of each of the control plane components.

15 . Create a list of all nodes in JSON format and store it in a file called "some_nodes.json"

```
kubectl get nodes -o json > some_nodes.json
```

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*Thank
you!*