

Pod

The end goal is to deploy our applications in containers. It is the concept of containerization but Kubernetes don't deploy our application as container but it deploys it as a pod.

What is POD? And why we should deploy our container as a pod why can't we directly deploy as a container kubernetes?

Let's say in Docker, whenever we want to run a container what we would do is basically we would write `docker run -d -t or -it -p 3000:3000 "followed by the name of the container"` then we would pass the network detail and so on. So, in Docker we are basically passing all of these arguments in command line to run a container. Whereas in Kubernetes we will pass those specifications in the pod.yaml file. So, in Kubernetes we basically have a wrapper or you basically have a concept that is similar to container but it abstracts the user defined commands in pod.yaml.

Instead of container we will deploy a pod. A pod can be a single container or it can be multiple containers. Let us just go with a single container. So, assume we are building a pod with one single container.

So inside the yaml file we will write something like: APIVersion, kind, metadata, spec and all. Then we'll provide the name of this container of this pod and all of these things. Then we will provide the specification. So, inside the specification we will provide all of the details of the container.

Pod is nothing but one or group of containers so why it has to be one or group of containers so most of the times a pod is a single container but there are some cases where you have some you know sidecar containers. So, the things like these are the things that support your axle container. For an example let's say, we have a container we have our application deployed in a container and this wants to read some config files or we know this wants to read some user related files from another container so in such cases what we will do is instead of creating two different pods in kubernetes you can put both of the containers in a single pod.

The advantages, if we put group of containers in a single pod are:

Let's say you have container A and container B and if you put both of them in one single pod in kubernetes. Then kubernetes will allow you shared networking shared storage. So, this way container A and container B inside a single pod can talk to each other using localhost that means to say if container A wants to talk to container B, we put port 3000 so it can simply be accessed using localhost 3000. Application can be directly accessed and the information can be retrieved or if both of them wants to share some files.

So, basically what kubernetes does is it allocates a Cluster IP address to this pod and we can access the applications inside the containers using this pod Cluster IP address.

Basically, a pod is basically a wrapper that kubernetes has created for a container. Because when we try to deal with containers like hundreds of containers or thousands of containers in production if you have a wrapper like pod. Then we can define everything in a yaml file. The pod.yaml file. The developer will understand everything about the container. Like, this container and the application is running inside it on Port 80. The volume mount it has and so on.