Day - 15

Pod Lifecycle

→ pod phases :-

Pending: pod is taking time to up (pulling Img)

Running: At least one container is running.

Succeeded: All pods have terminated in success

Failed: All containers in pod terminated, one container is failed to terminate.

unknown: pod is not obtained and there is an issue with node where pod should be running.

→ container states :-

After Scheduler assigns a pod to a node and kubelet starts creating container for that pod using container runtime. There three possible states of container.

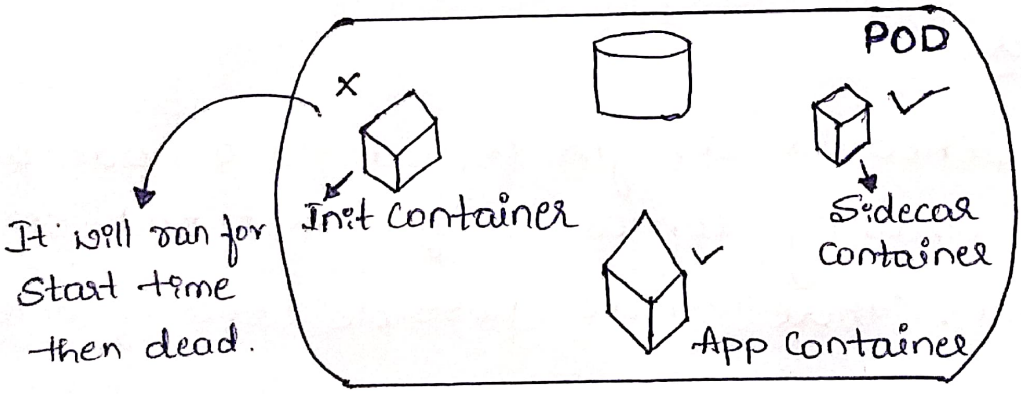
Waiting :- The container neither started nor terminated. There is a process running that needs to be complete to bring container running state.

Running :- The running status indicates that container running without any issues.

Terminated :- The container in the terminated state begins execution and then either ran into container or failed for some reason.

→ Types of containers in a pod :-

- Init containers :- Specialized containers that runs before app containers in a pod. These containers can contain utilities / setup scripts not present on app container.
- Sidecar Container :- These are secondary containers that run along with the main application container within the same pod. These are used to enhance / extend the main functionality of app container by providing additional services.
- App Containers :- The container where actual application image is running as the App Container.



→ The ideal use case would be one pod - one container but as mentioned we might have init / side car container as and when required.

- Pod Conditions:-

* podscheduled :- The pod has been Scheduled to a node.
* PodReadyToStartcontainers:- The pod sandbox has been Successfully created and network configured (beta feature)
* ContainersReady:- All Containers in the pod are ready.
* Intialised :- All init Containers are Completed Successfully
* Ready:- pod is healthy to Serve the request and Should be added to LB pools of matching Services.

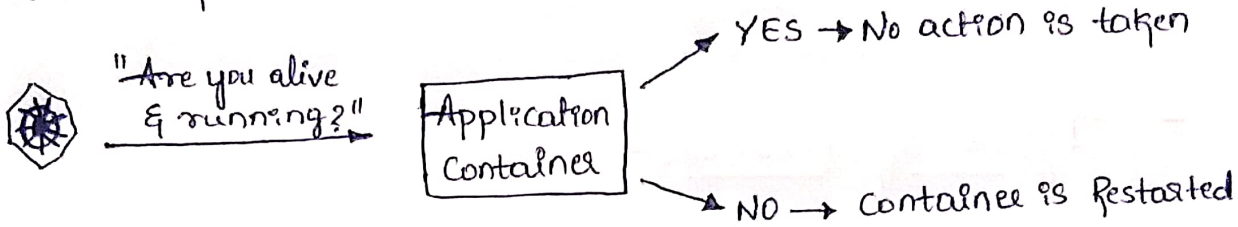
- Types of probes:-

* Liveness probe :- Indicate whether pod is running if it fails, Kubelet kills the Container and it is Subjected to it's restart policy. If Container doesn't provide a liveness probe, the default state is Success.
* Readiness probe:- Indicate whether the pod is ready to respond to requests, If the readiness probe fails, the endpoint Controller removes the pod's Ip address from the endpoint of all Services that matches the pod.
  - Default State before intial delay is Failure.
  - Default State if Container doesn't provid a readiness probe is Success.

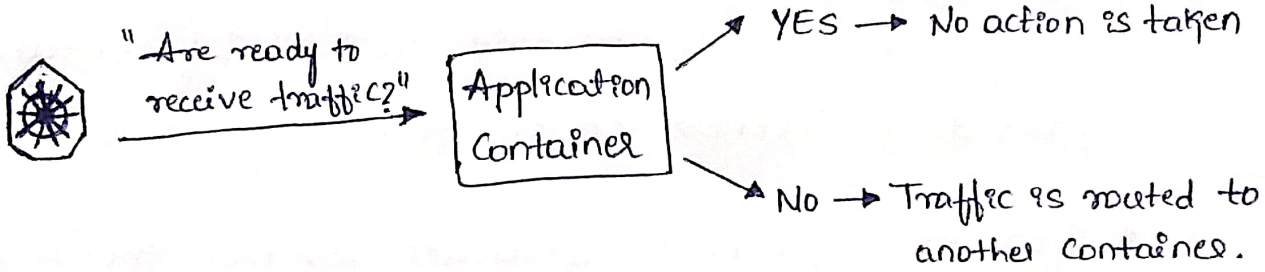
- Startup probe :- Indicates whether the application within container is started. All other probes are disabled if a startup probe is provided, until it succeeds. If the startup probe is failed, kubelet kills the container and container is subjected to restart policy. The default state is success.

Kubernetes probes Workflow

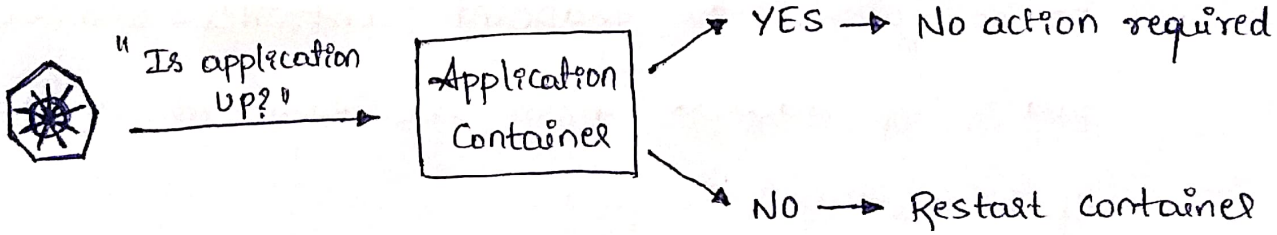
1. Liveness probe



2. Readiness probe



3. Startup probe



This is all about pod's lifecycle and different types of probes, For more details please visit kubernetes official documentation.