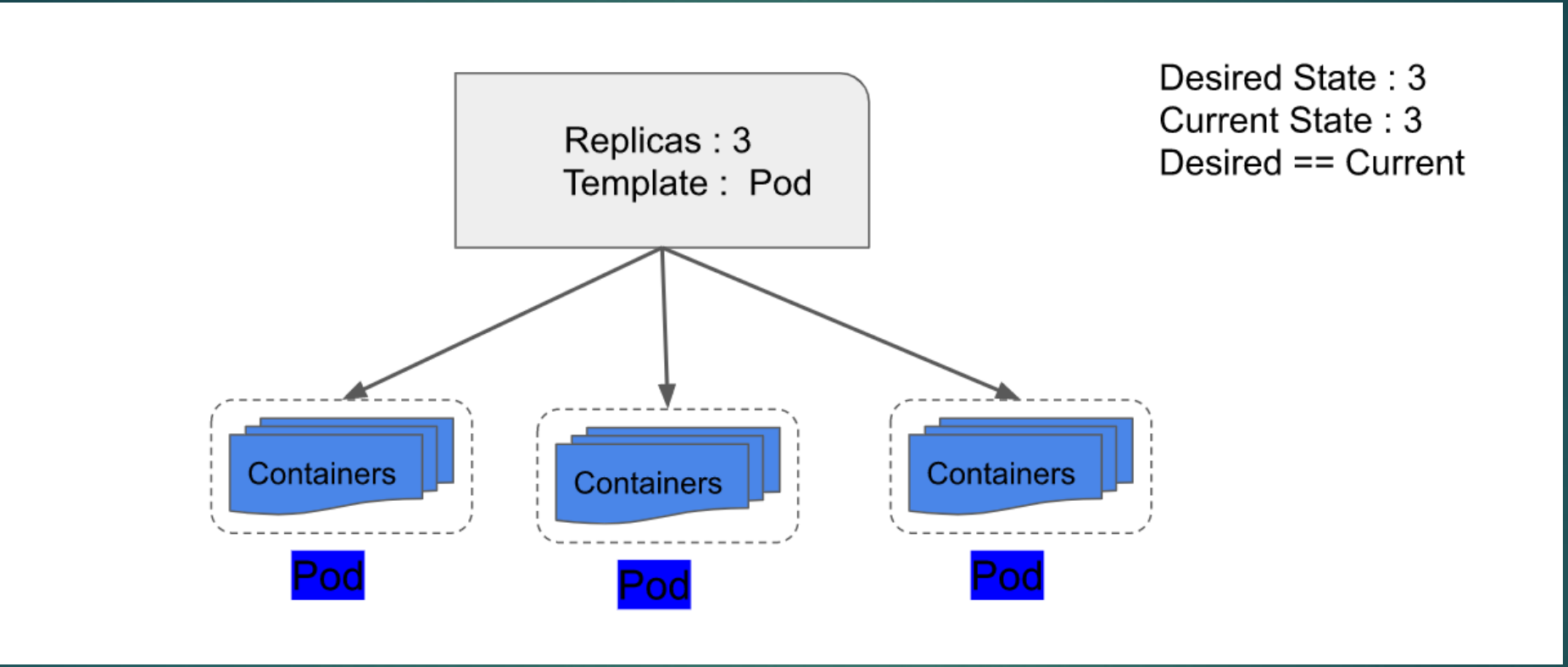
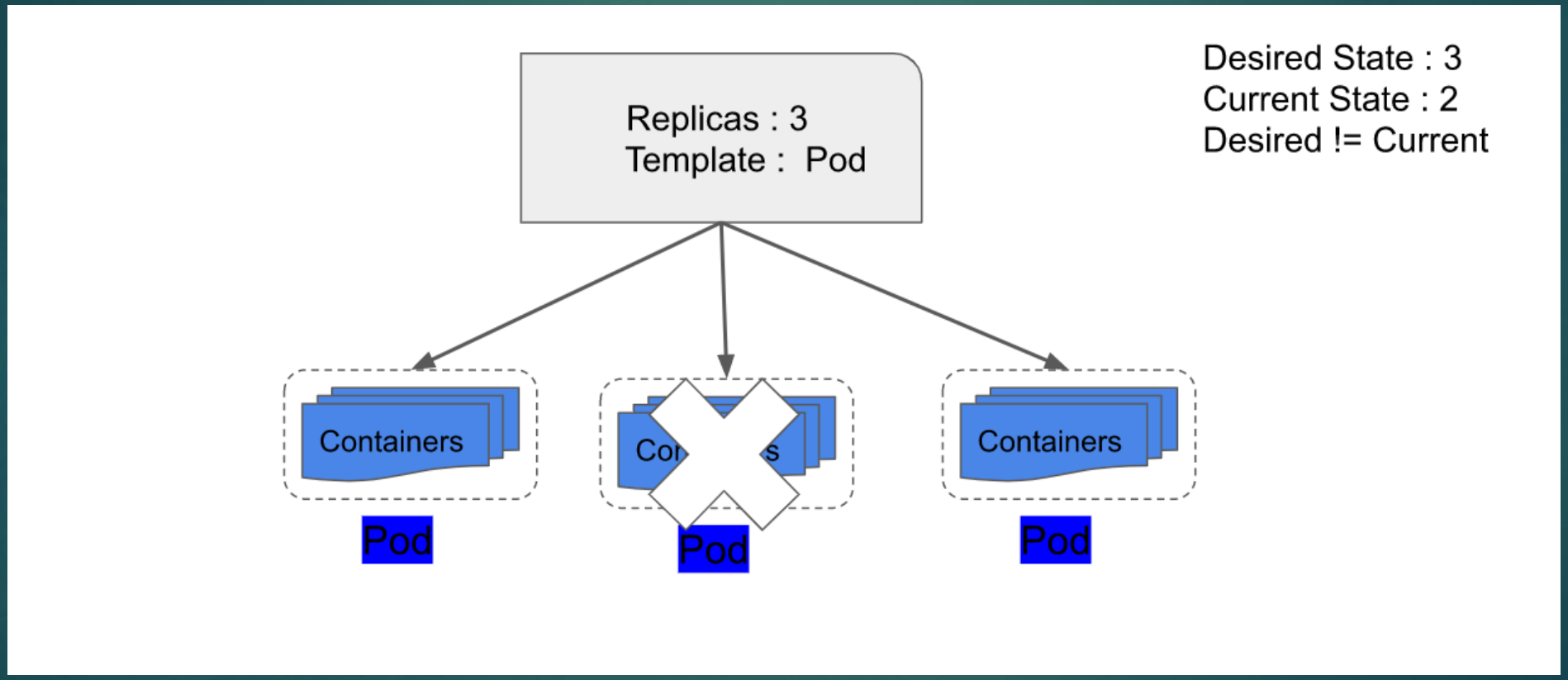
Application Lifecycle Management

ReplicaSets

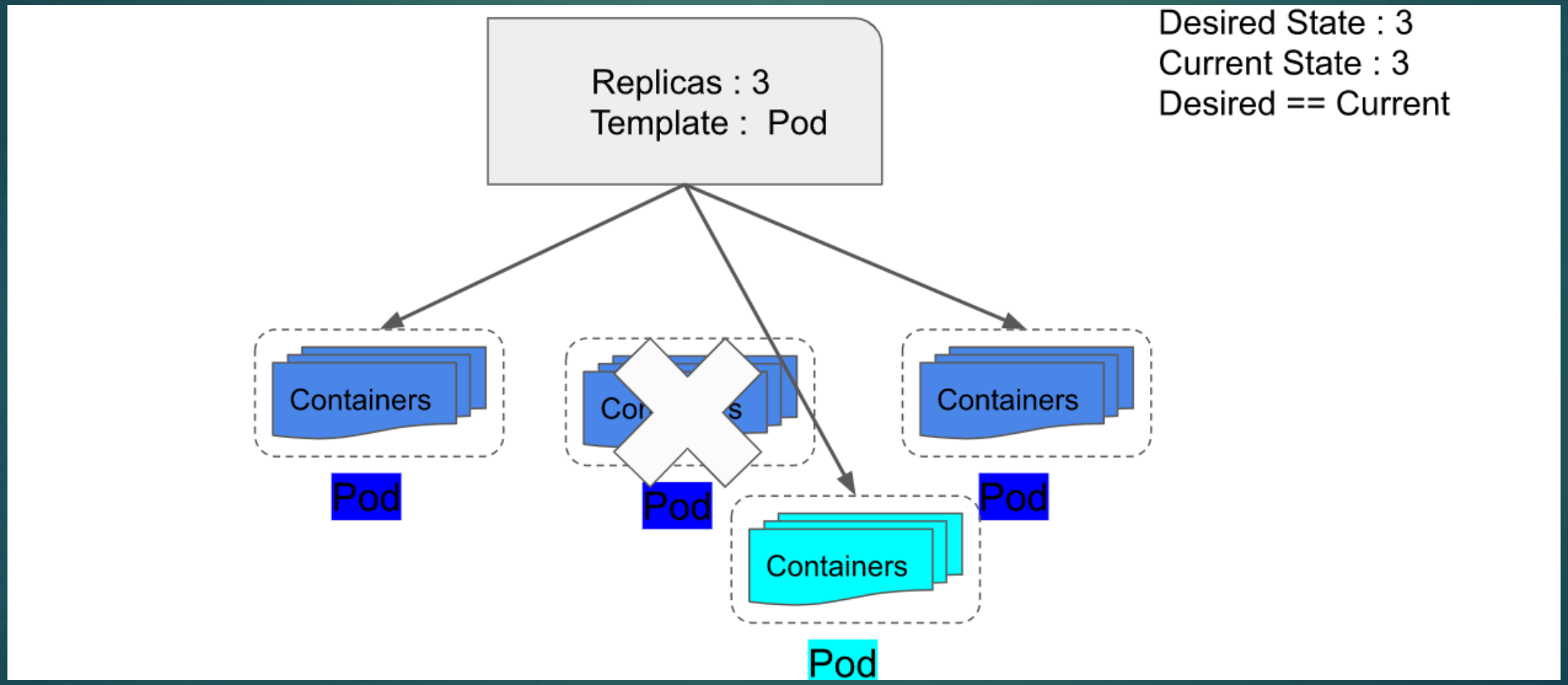


- ReplicaSet ensures that a specified number of pod replicas are running at any given time
- ReplicaSets are mainly used by deployments, which manages updates to the pod.
- The .spec.template.metadata.labels must match the .spec.selector, or it will be rejected by the API.

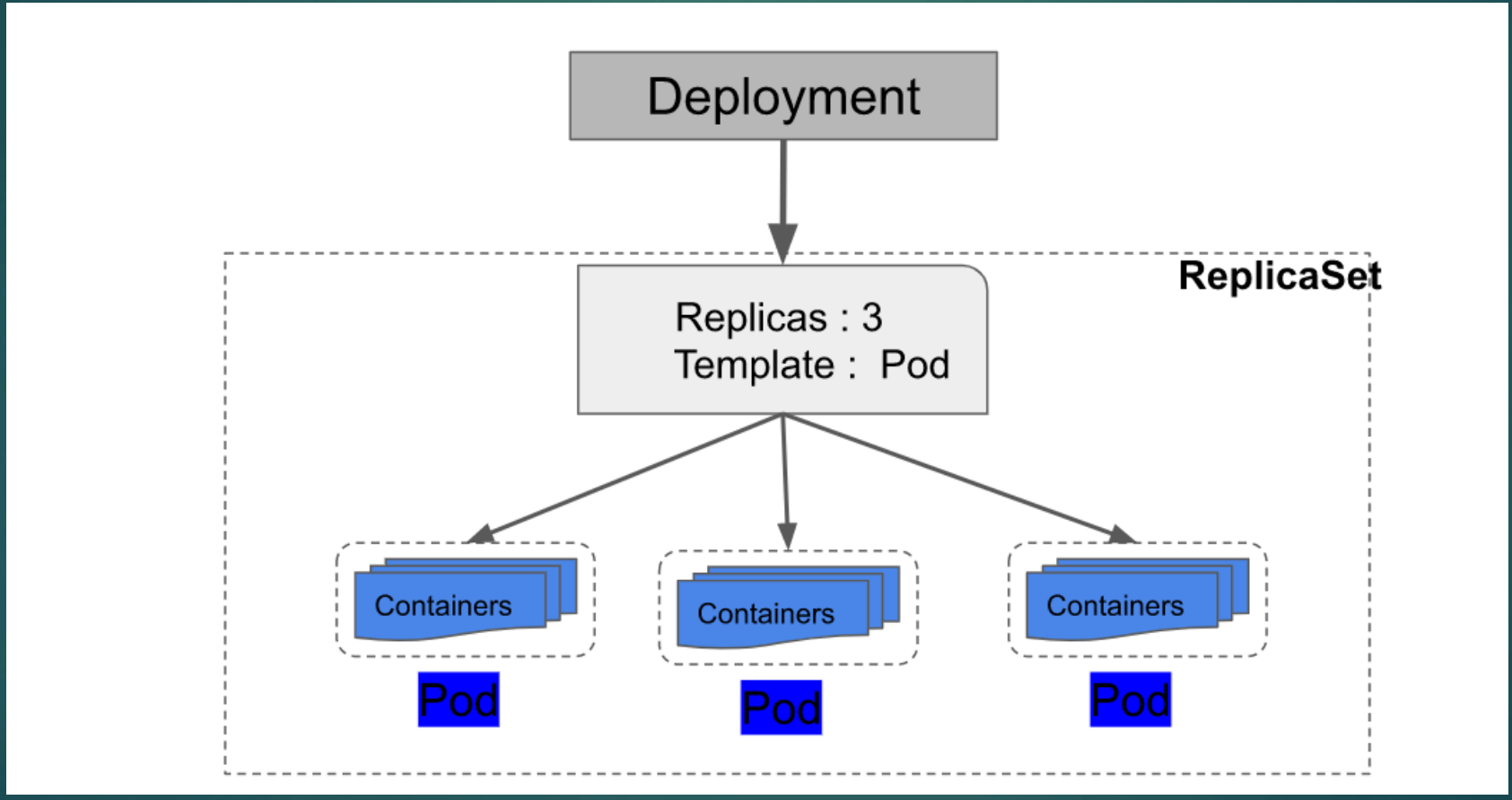
ReplicaSets



ReplicaSets



Deployments



What are Deployments?

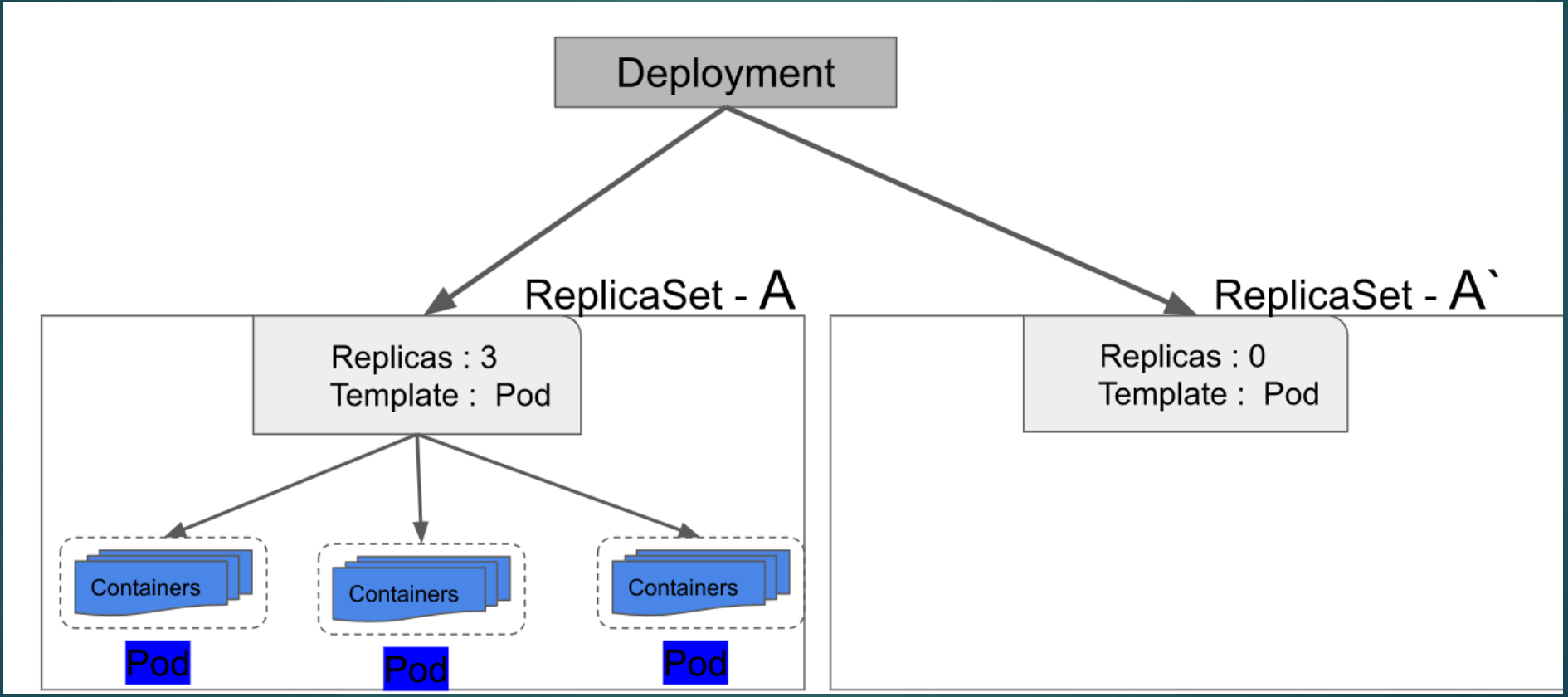
- Deployments are intended to replace Replication Controllers. They provide the same replication functions with the help of Replica Sets and Deployments also have the ability to rollout changes and roll them back if necessary.

- Deployment is usually used for new releases and updates in kubernetes cluster.

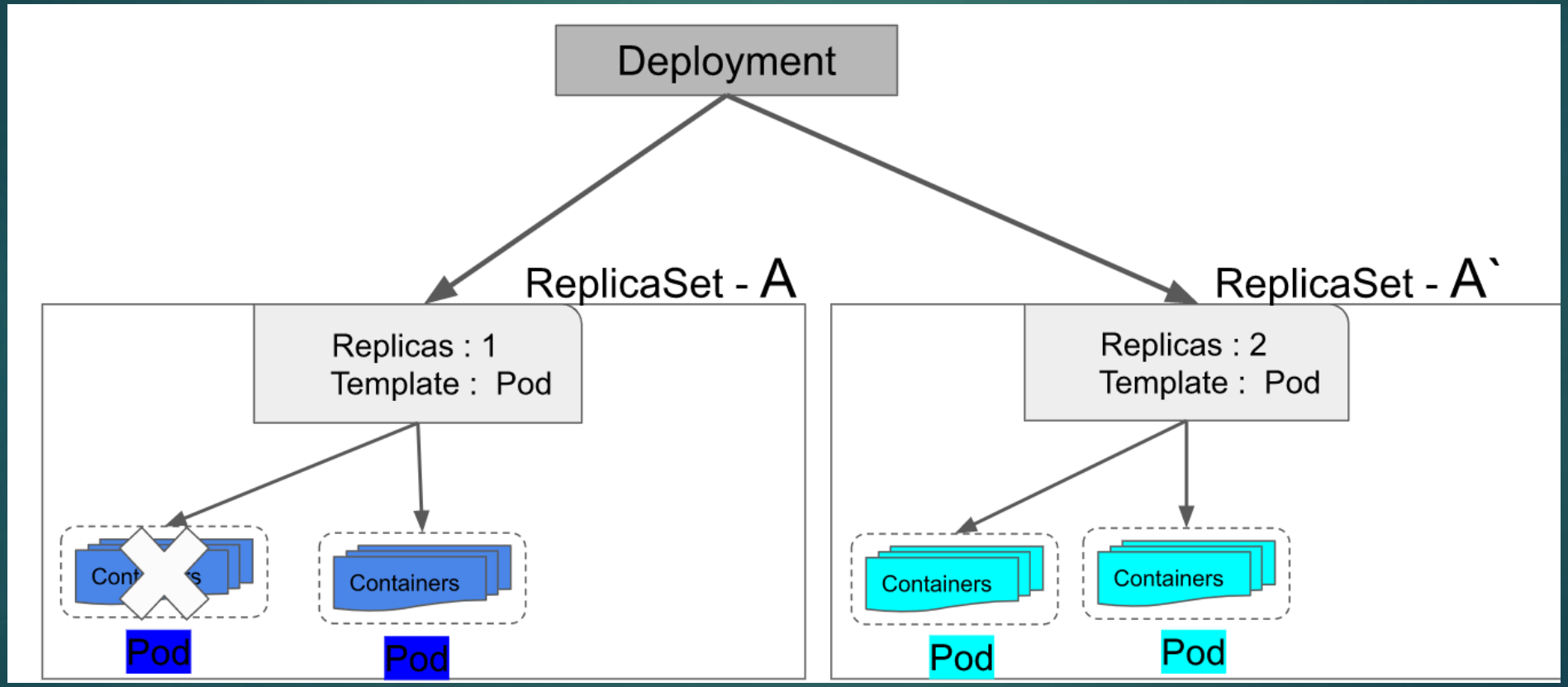
Rolling Updates with Deployments

- **Rolling updates** allow to update the Deployments with zero downtime by incrementally updating Pods instances with new ones.
- The new Pods will be scheduled on Nodes with available resources.
- We can also specify the number of pods updated at a time and number of pods Should be available when update is in action
- Advantages
  - CI/CD of application with Zero Downtime
  - Change the image of application
  - Rollback application to earlier version

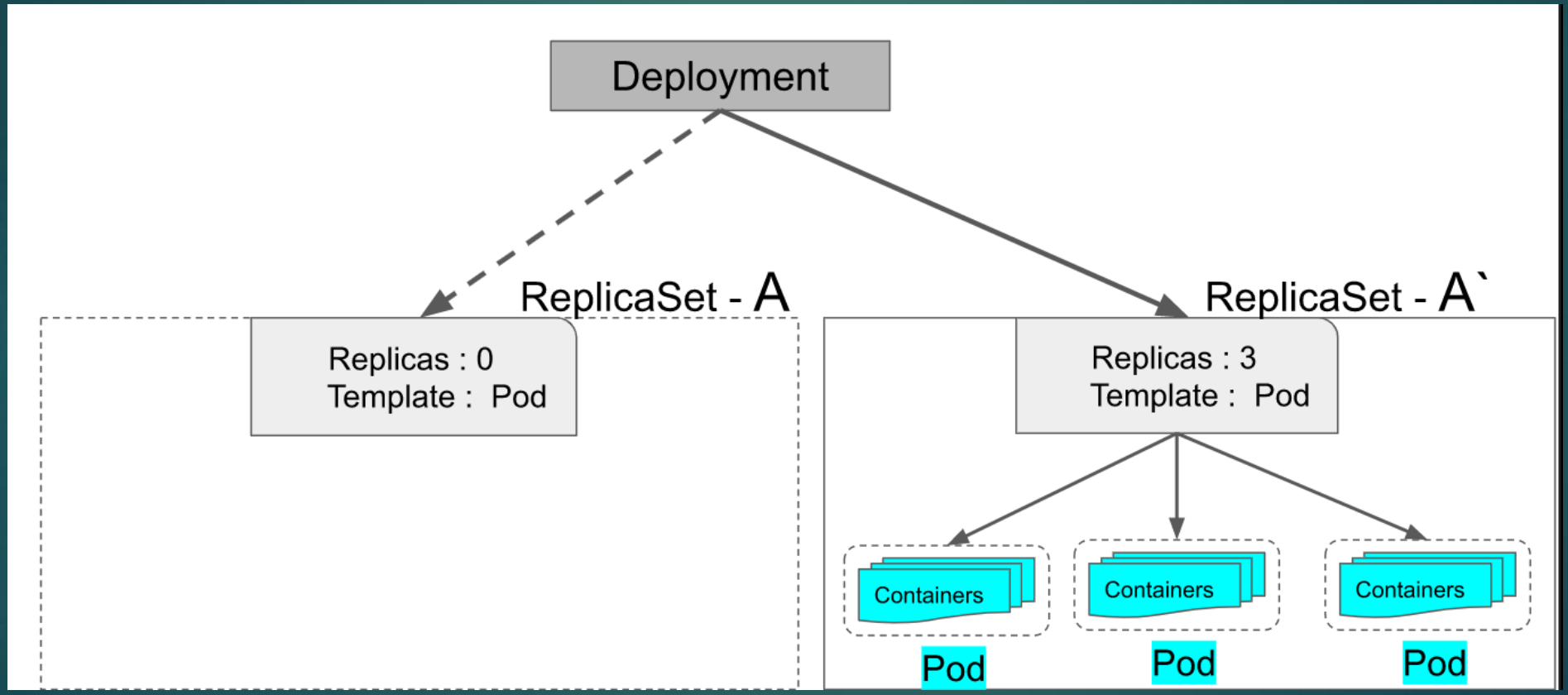
Deployment Rolling Updates



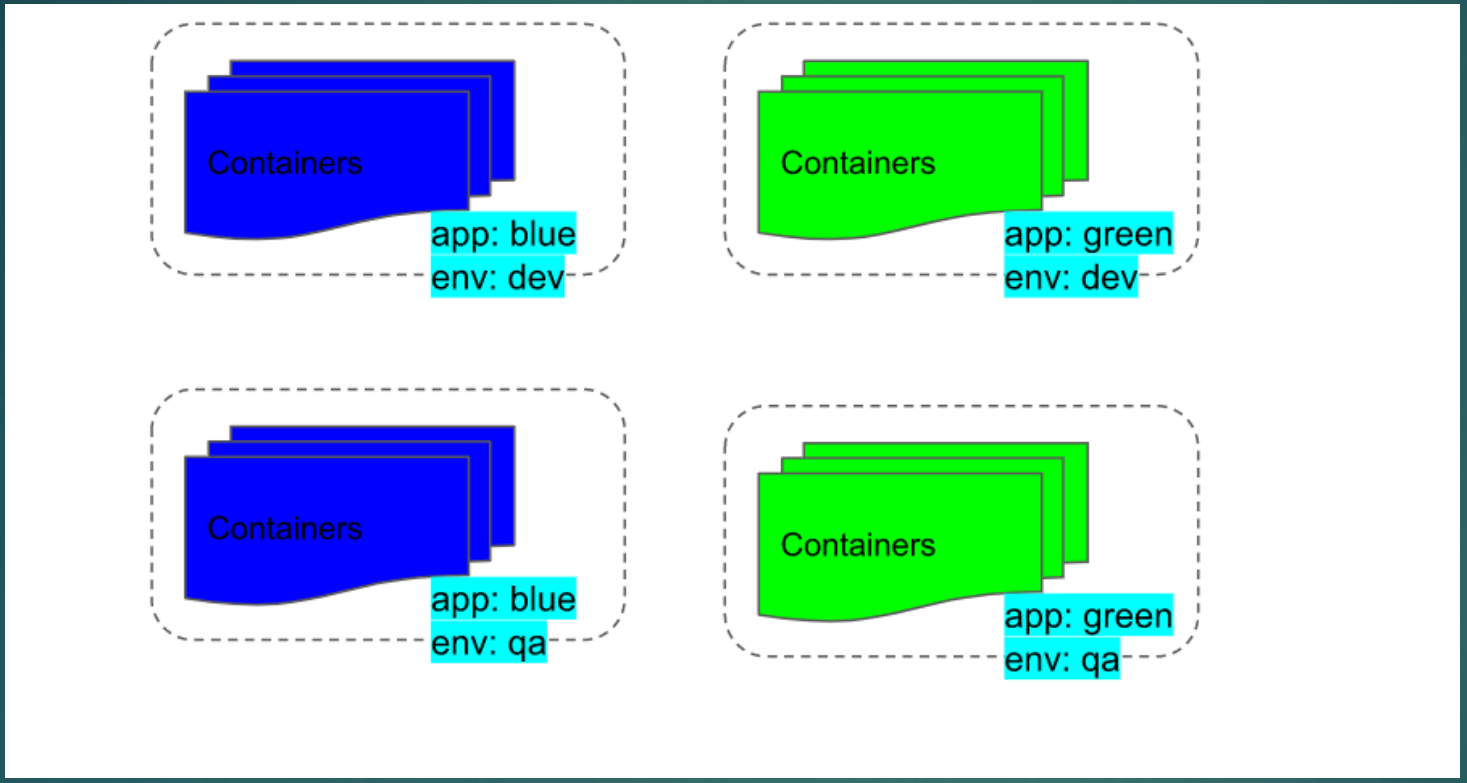
Deployment Rolling Updates



Deployment Rolling Updates

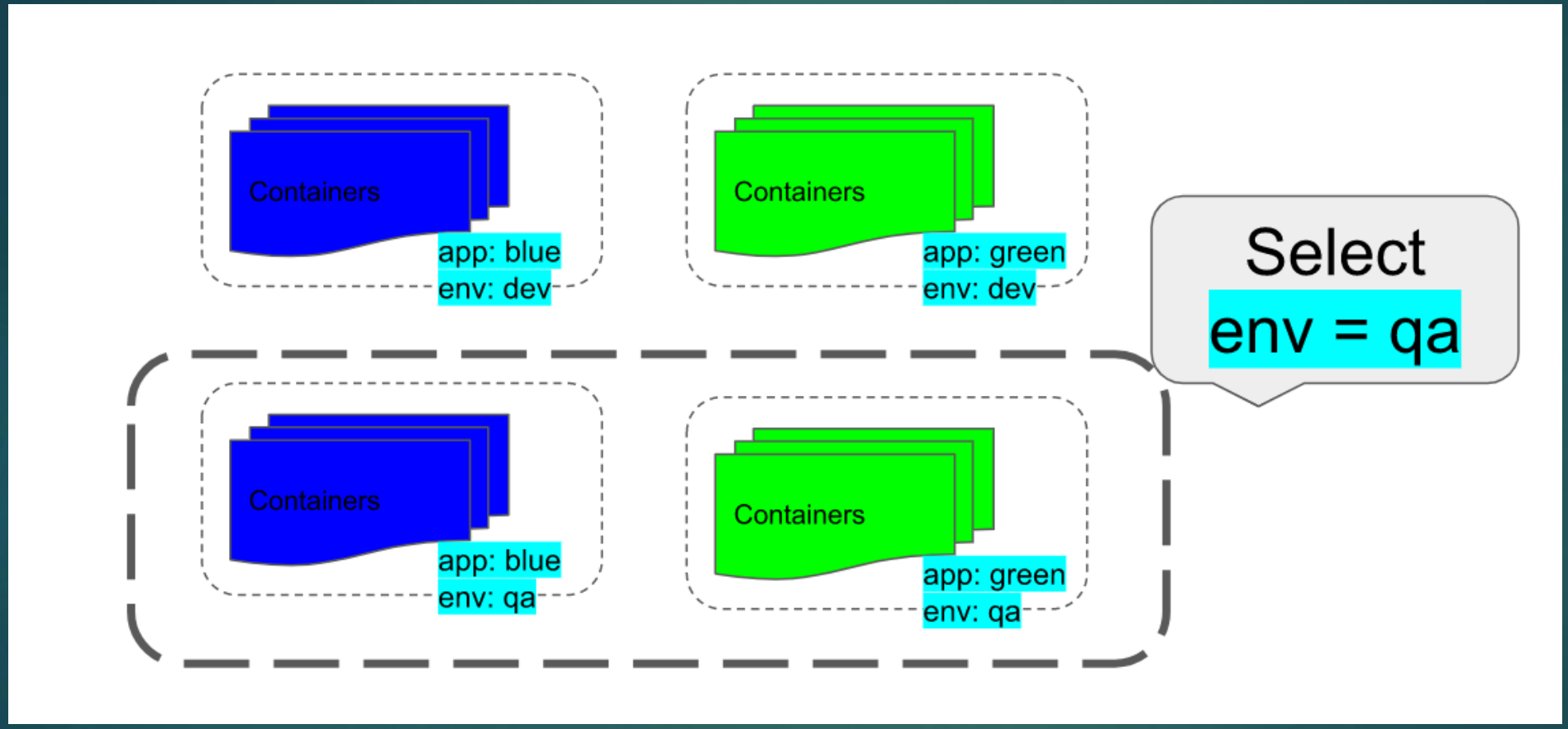


Labels



Labels are the key/value pairs that can be attached to kubernetes objects, such as pods, nodes. Labels can used for identifying attributes of objects that are meaningful and relevant to users. You can attach labels to kubernetes objects at creation time or you can attach them laters.

Selectors



Note :https://kubernetes.io/docs/concepts/overview/working-with-objects/labels/

Application Health Checks

Liveness-Probes

- Kubelet running on each node probes applications running inside the containers to check if they are healthy or not

- Types of Probes
  - HTTP endpoint
  - TCP
  - Custom Command

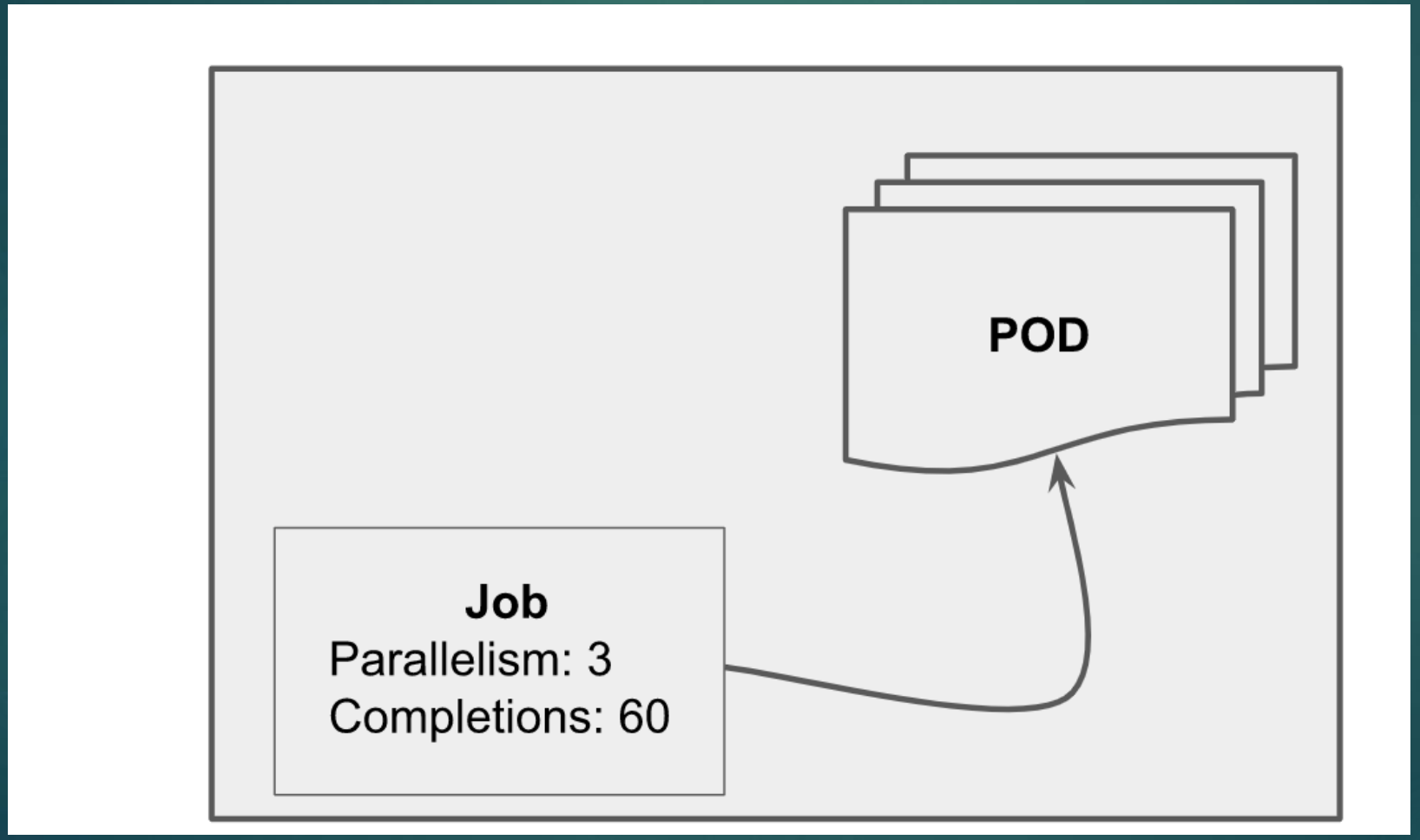
Readiness Probes

- Kubelet running on each node probes applications running inside the containers if they are ready or not.
- Used to check if application can take more traffic before it is ready
- Available Probes
  - HTTP endpoint
  - TCP
  - Custom command

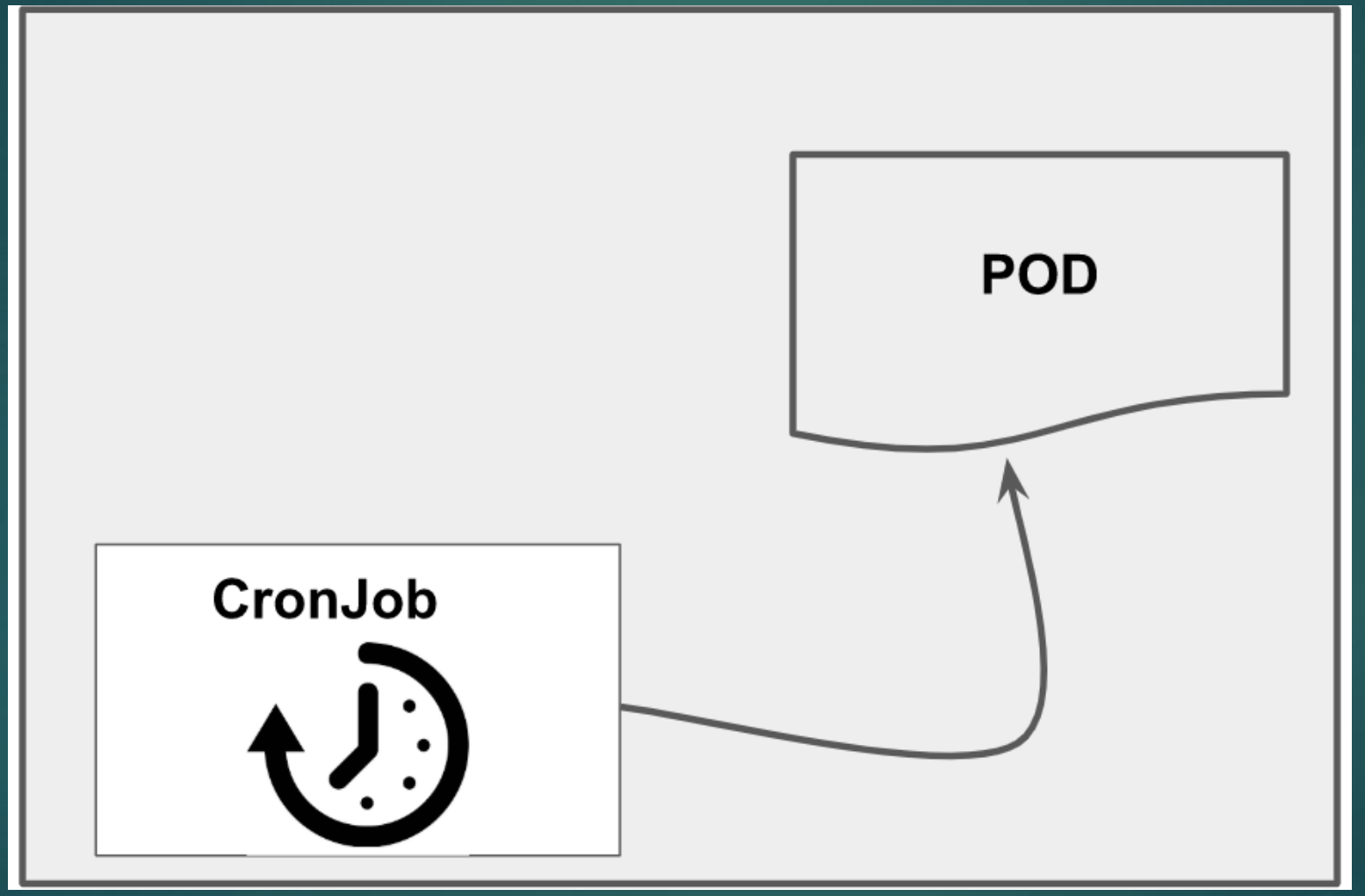
Jobs & CronJob

- A job creates one or more pods and ensures that a specified number of them successfully terminate.
- When the pods successfully complete, the jobchecks for the successful completions.
- When a desired number of successful completions are achieved, then the job will get completed.
- Deleting a Job will cleanup the pods created by it. The Job object will start a new Pod if the first pod fails or is deleted.
- A CronJob creates a job object when it gets scheduled

Jobs



CronJobs



THANK YOU