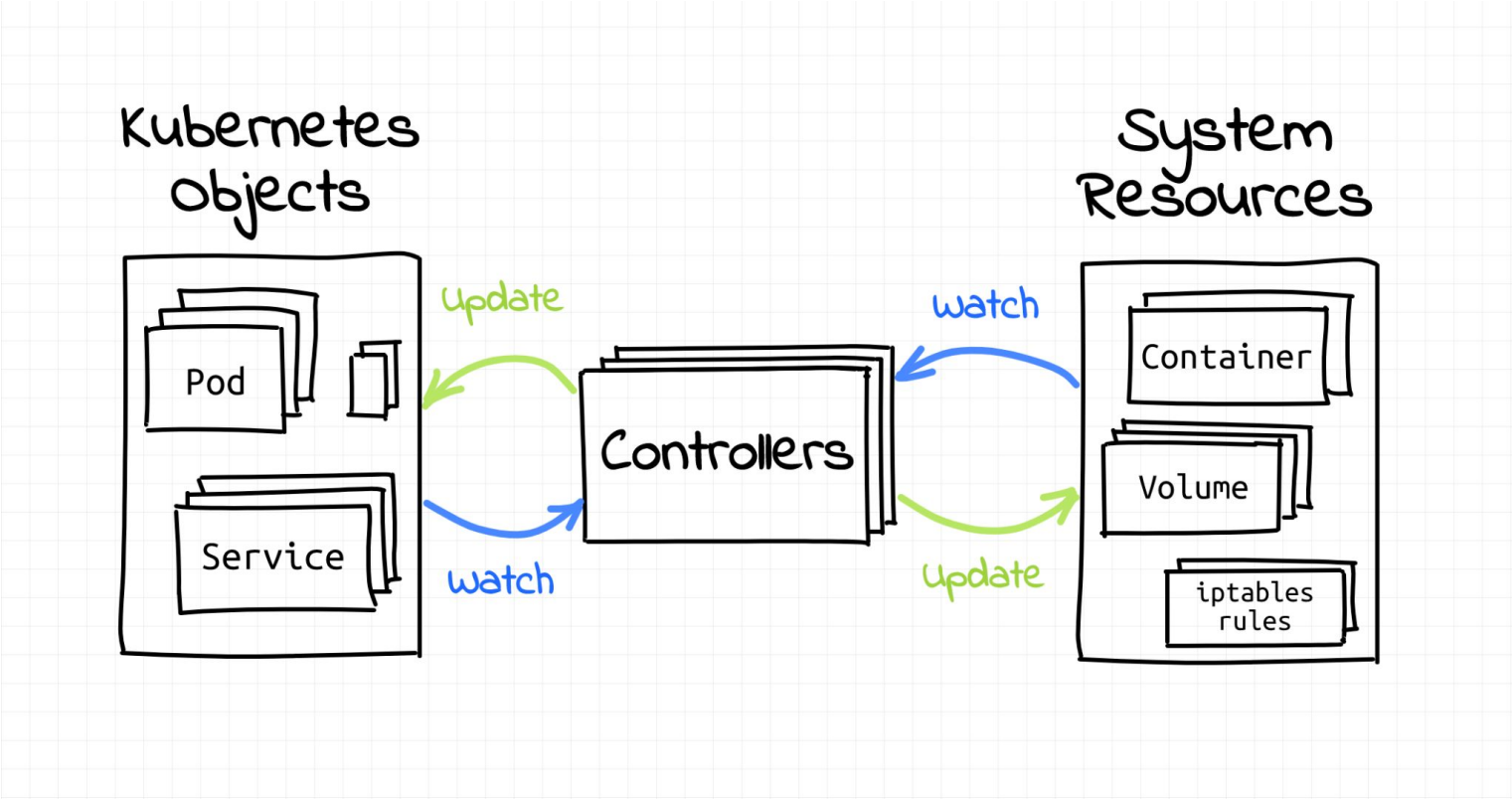
POD problems

1) Recrete [auto]

2) Scale(pod)

3) perhaps several Pods, to carry out a task and then stop.

Controller


Kubernetes objects
Pod
Service
Update
watch
Controllers
watch
Update
System Resources
Container
Volume
iptables rules

K8s native Controller

Replication controller[RC]:-A ReplicationController ensures that a specified number of pod replicas are running at any one time. In other words, a ReplicationController makes sure that a pod or a homogeneous set of pods is always up and available.

ReplicaSet[RS]:- A ReplicaSet's purpose is to maintain a stable set of replica Pods running at any given time.

ReplicationController

```yaml
apiVersion: v1
kind: ReplicationController
metadata:
 name: ashu-rc1
spec:
 replicas: 1 # number of pods
 template: # pod yaml info
   metadata:
     labels:
       x1: akash
   spec: # to create env
     containers:
     - name: ashuc1
       image: nginx
       ports:
       - containerPort: 80
```

Kubernetes workload according to apps

For Stateless app:- (eg :- Webapp)

- Deployments
  - ReplicaSets
    - Pods
      - Container

For stateful app:- (eg : Databases)

- StatefulSets

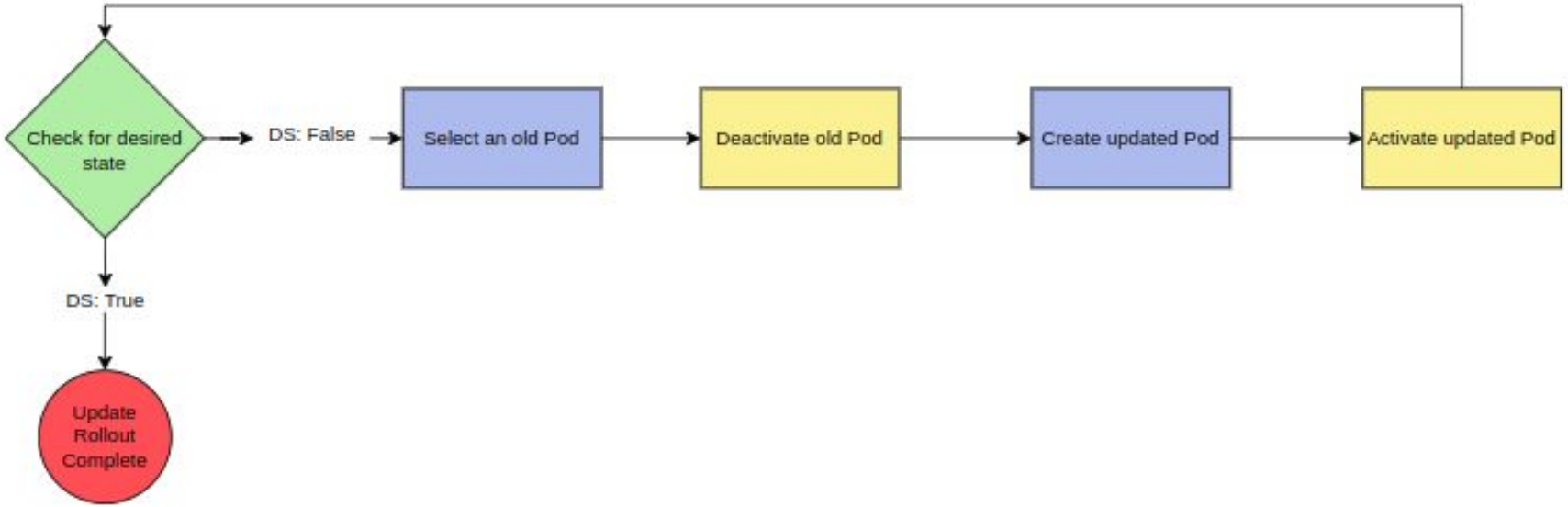
Deployments

A Deployment provides declarative updates for Pods and ReplicaSets.

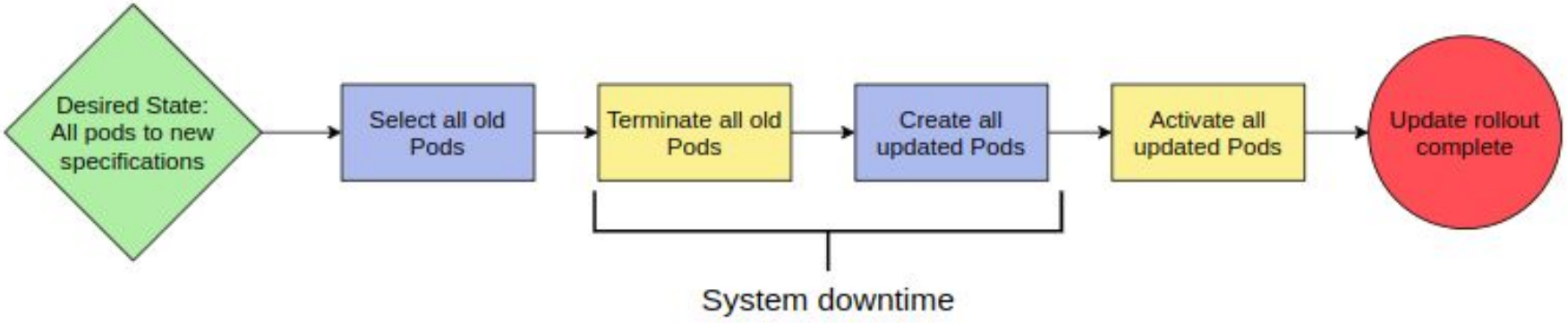
Update Deployment Strategies

- **Rolling update strategy**: Minimizes downtime at the cost of update speed.
- **Recreation Strategy**: Causes downtime but updates quickly.
- **Canary Strategy**: Quickly updates for a select few users with a full rollout later.

Rolling update strategy

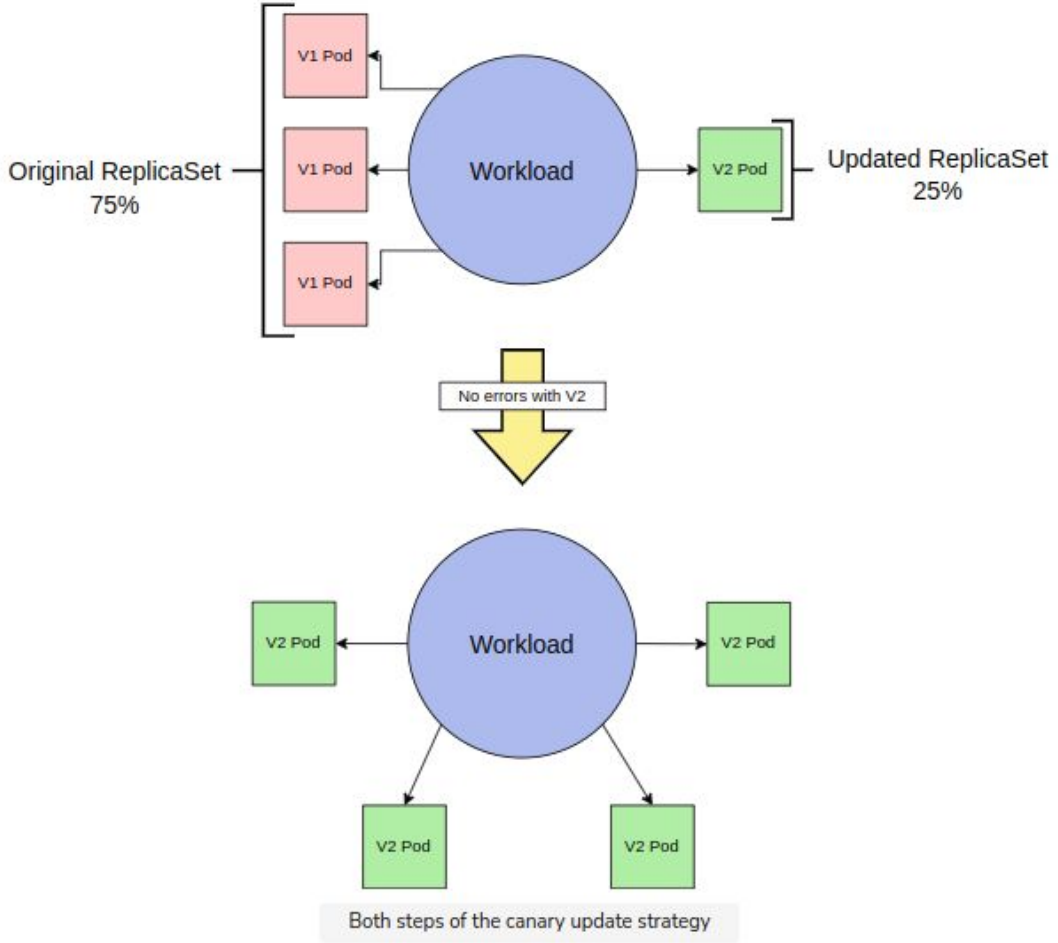


Recreation Strategy



Recreate update strategy flowchart

Canary Strategy



Deployments

kubectl create deployment akdep1 --image=nginx --port 80 --dry-run=client -o yaml >deployment.yaml

```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
 creationTimestamp: null
 labels: # label of deployment
   app: akdep1
 name: akdep1 # name
spec:
 replicas: 1 # number of pod
 selector: #
   matchLabels:
     app: akdep1
 strategy: {} # app upgrade strategy -- rolling updates
 template: # to create pods
   metadata:
     creationTimestamp: null
     labels: # label of pods
       app: akdep1
   spec:
     containers:
     - image: nginx
       name: nginx
       ports:
       - containerPort: 80
       resources: {}
status: {}
```