



WALCHAND COLLEGE OF ENGINEERING, SANGLI

WALCHAND LINUX USERS' GROUP



METAMORPHOSIS

LIMITED SEATS

Navigating the DevOps Wave

EXCITING PRIZES



Let's Dock It!

SESSION 1

DockerVerse

SESSION 2

15 & 16 FEB



REGISTER AT

Sailing to K8s

SESSION 3

Pod Power

SESSION 4

WARGAMES

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IT'S FOSS

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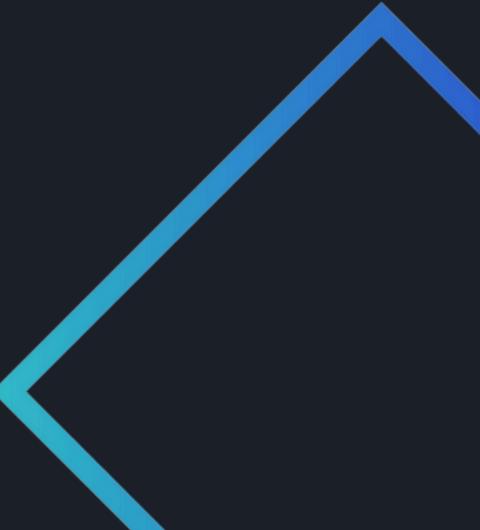
CONTENTS

- ❖ Kubernetes Orchestration
- ❖ Kubernetes Objects
- ❖ Managing Workload
- ❖ Project





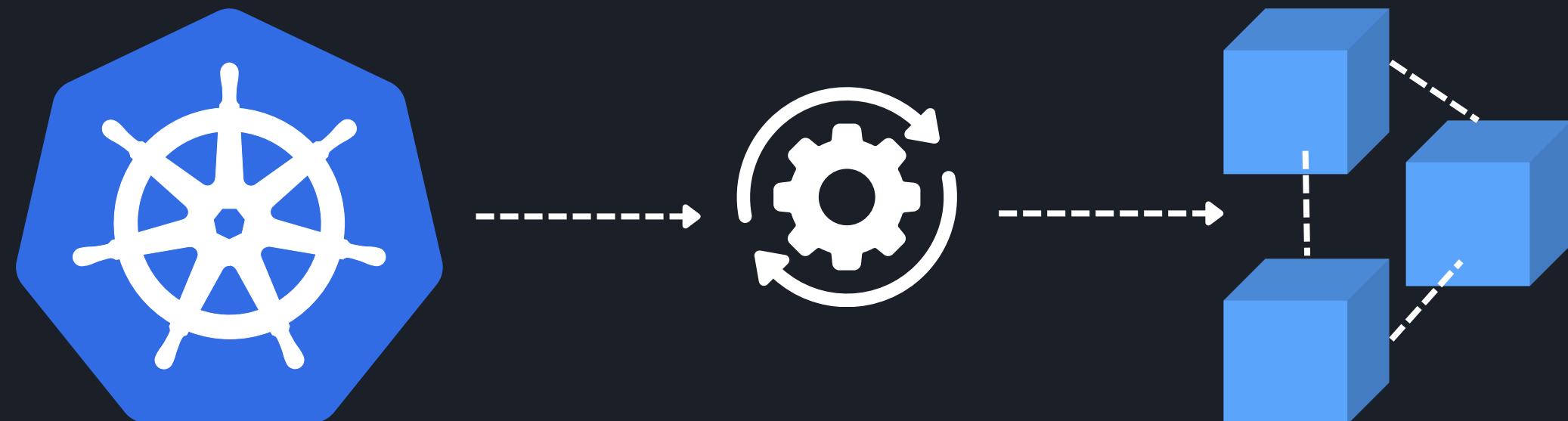
KUBERNETES ORCHESTRATION





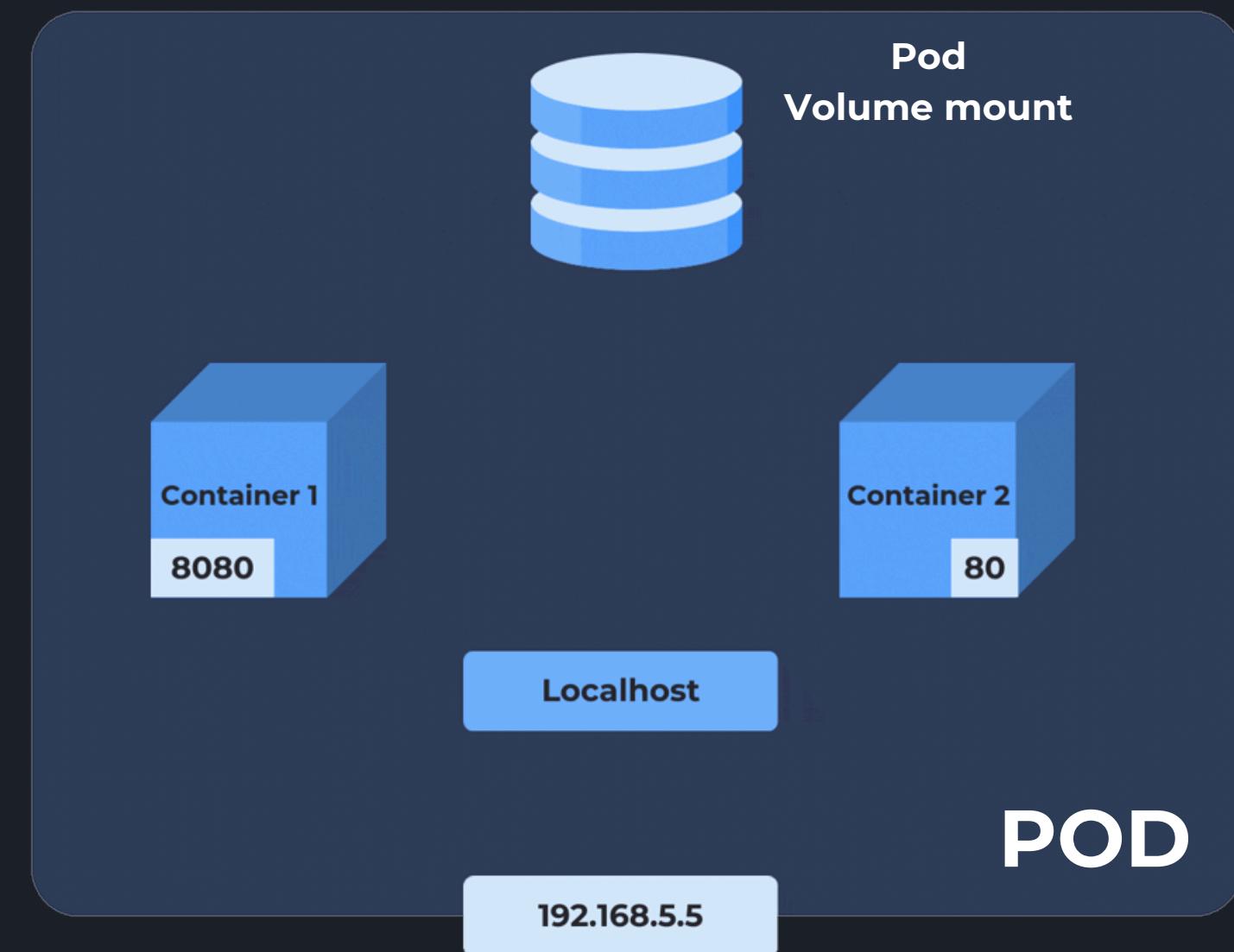
CONTAINER ORCHESTRATION

Allows developers to automatically deploy, scale and manage containerized applications

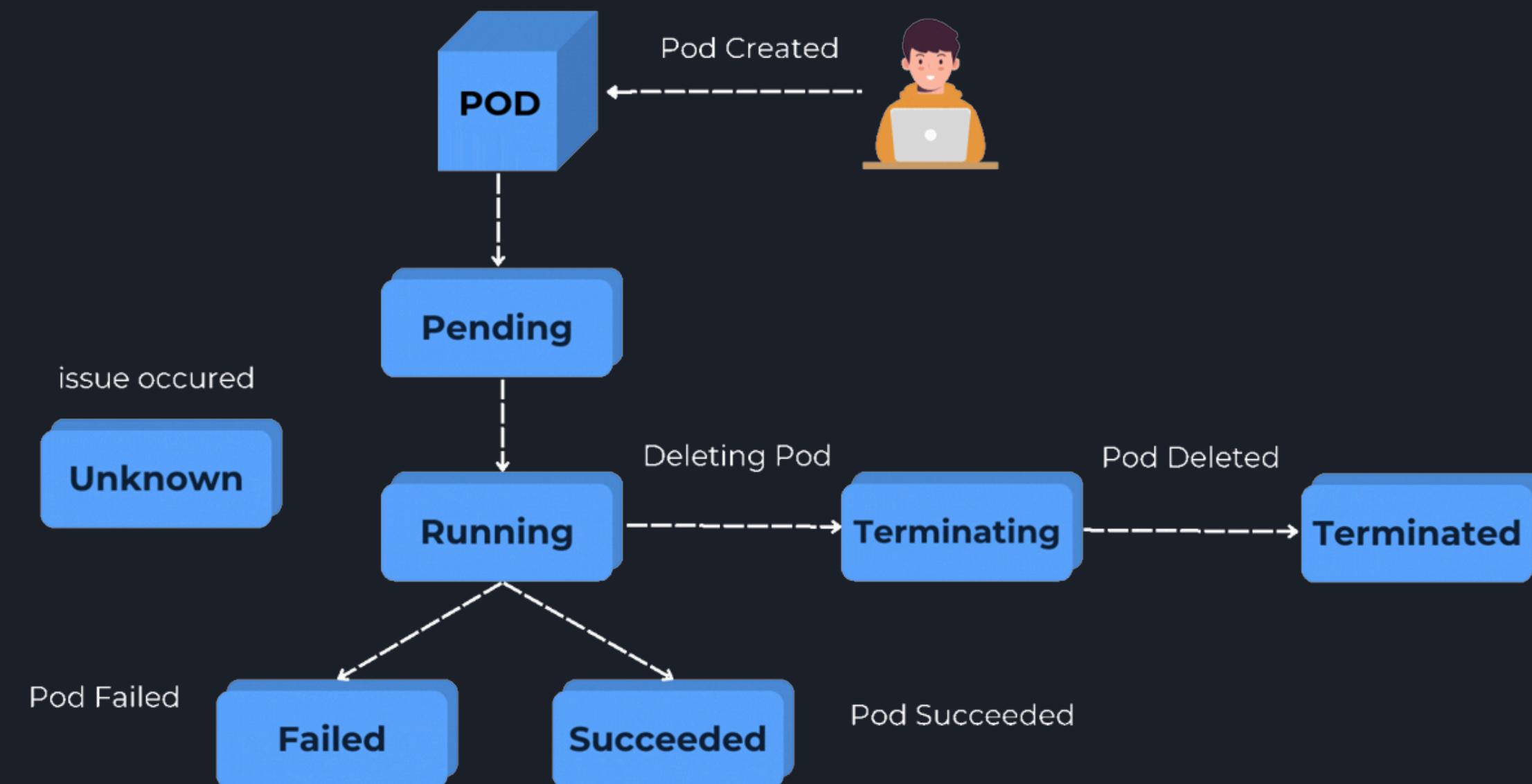


POD

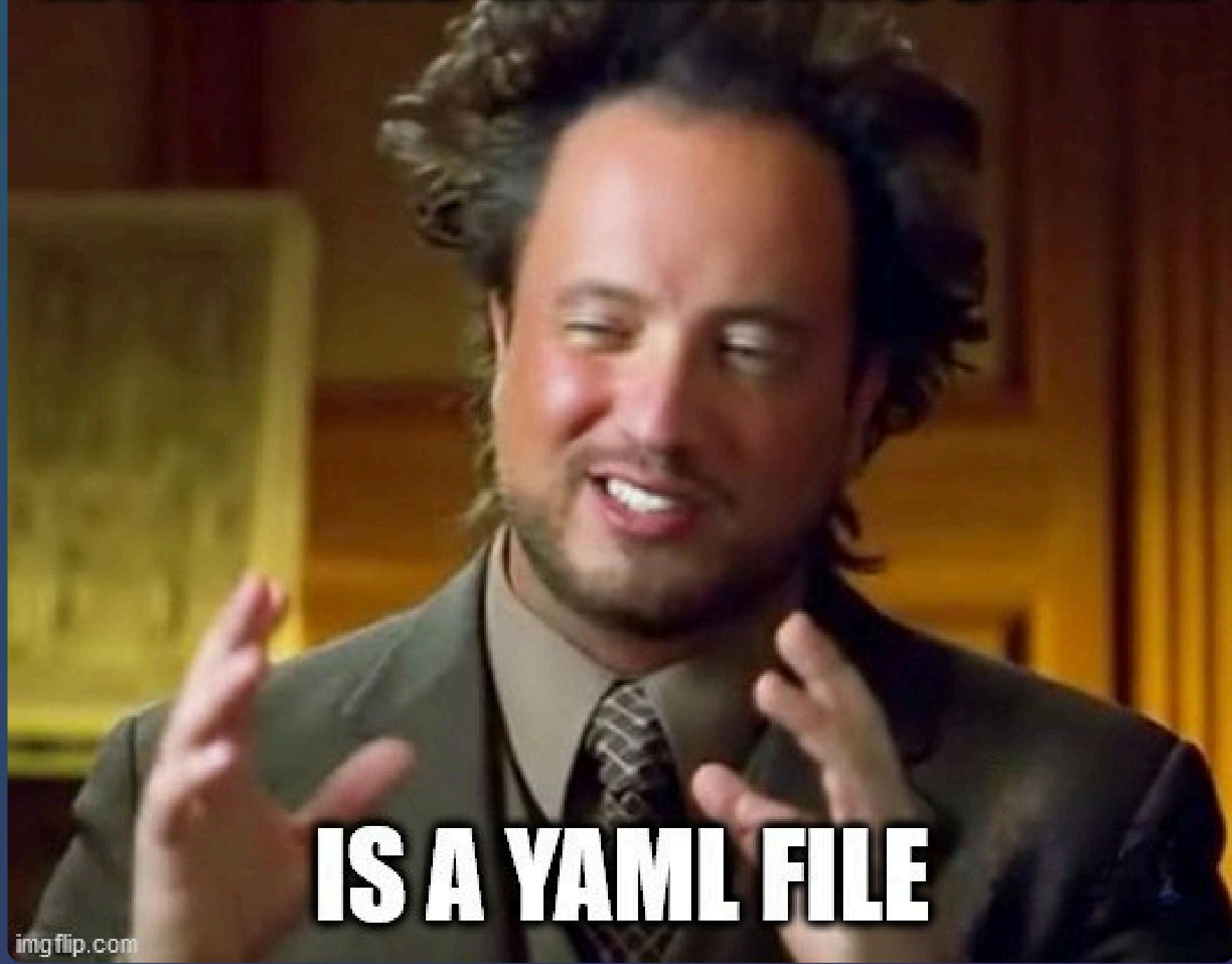
Smallest deployable unit in kubernetes

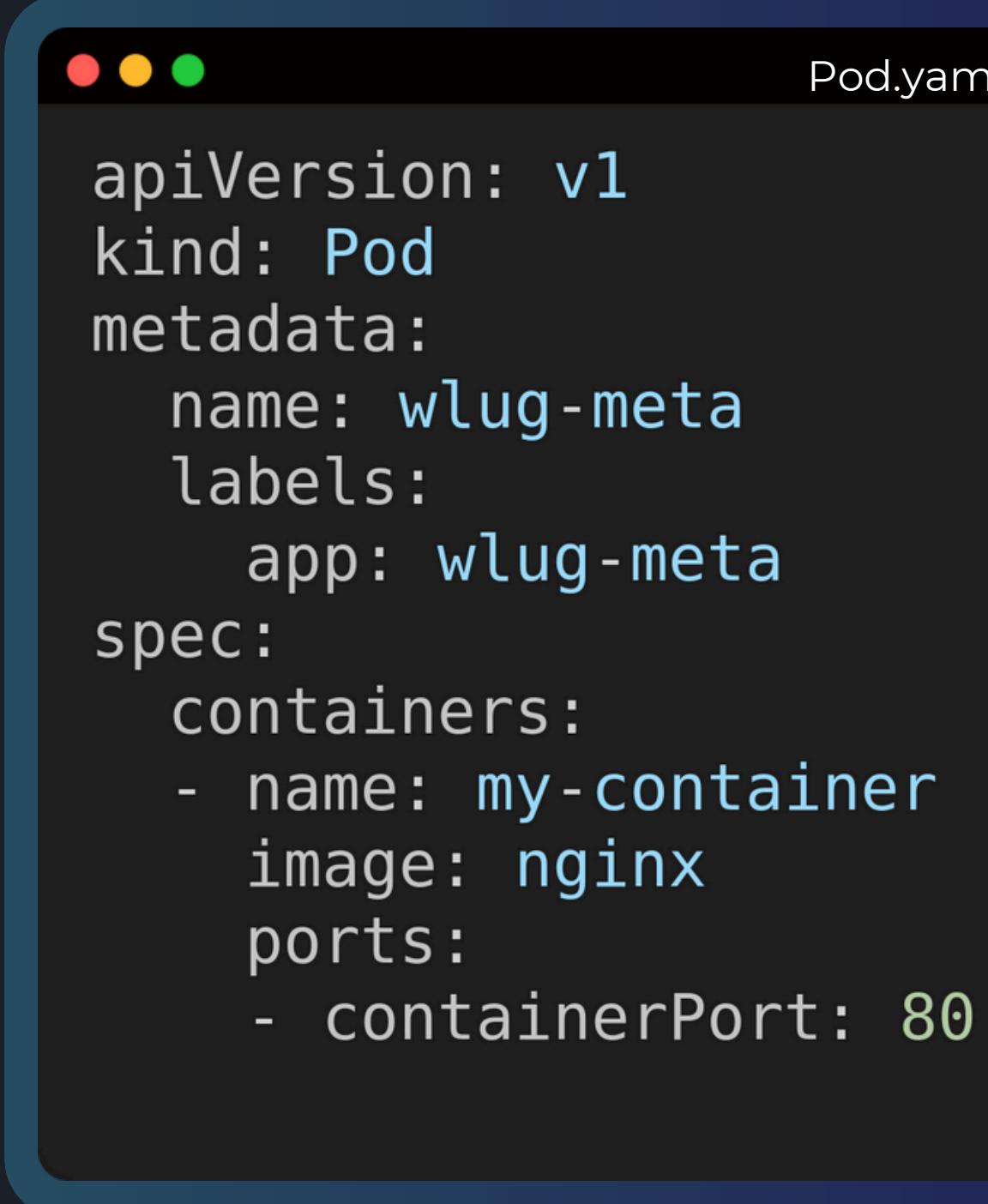


LIFECYCLE OF PODS



MY ENTIRE INFRASTRUCTURE





```
Pod.yaml

apiVersion: v1
kind: Pod
metadata:
  name: wlug-meta
  labels:
    app: wlug-meta
spec:
  containers:
  - name: my-container
    image: nginx
    ports:
    - containerPort: 80
```

YAML File for pod deployment

Equivalent docker command:

```
docker run -d --name wlug-
  meta -p 80:80 --label
  app=wlug-meta nginx
```

Create a pod

```
kubectl apply -f pod.yaml
```

OR

```
kubectl create -f pod.yaml
```



Get Pod Information

```
kubectl get pods
```

AND

```
kubectl describe pod <pod-name>
```



Manage Pods

```
kubectl get pods -o wide
```

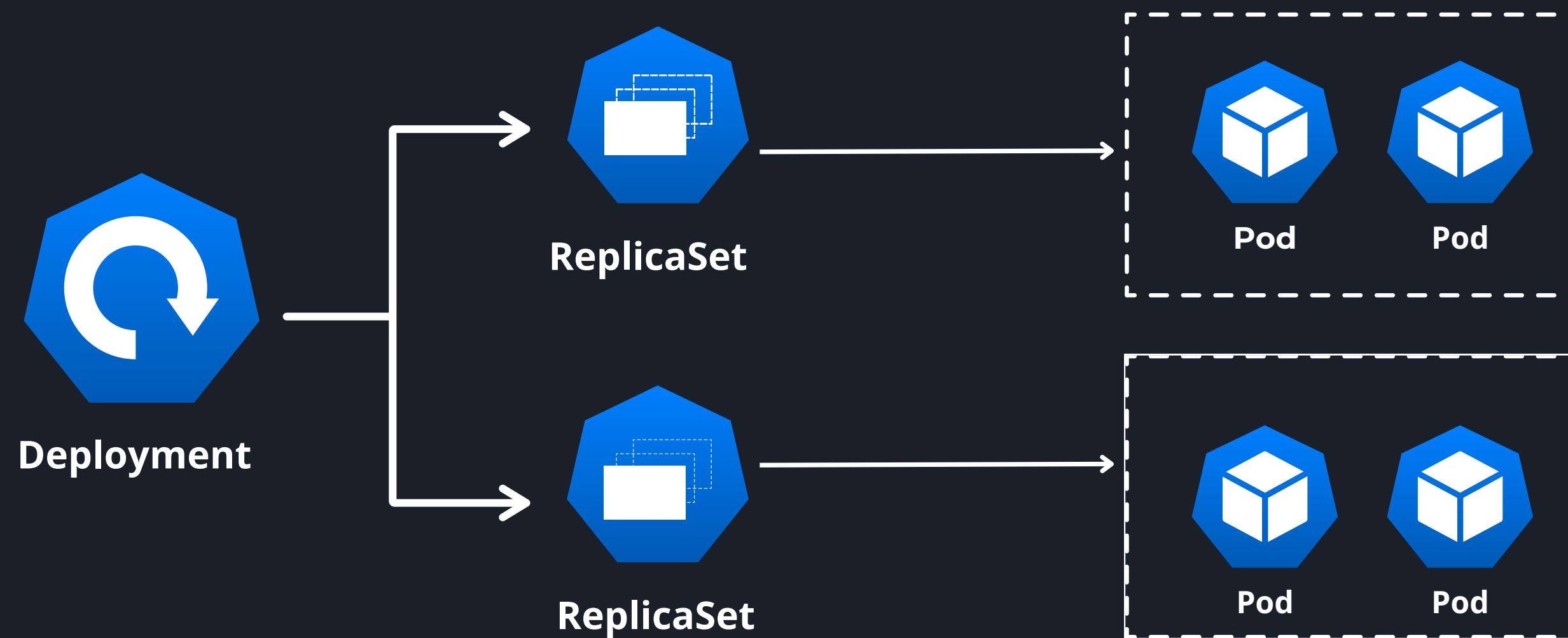
Delete Pods

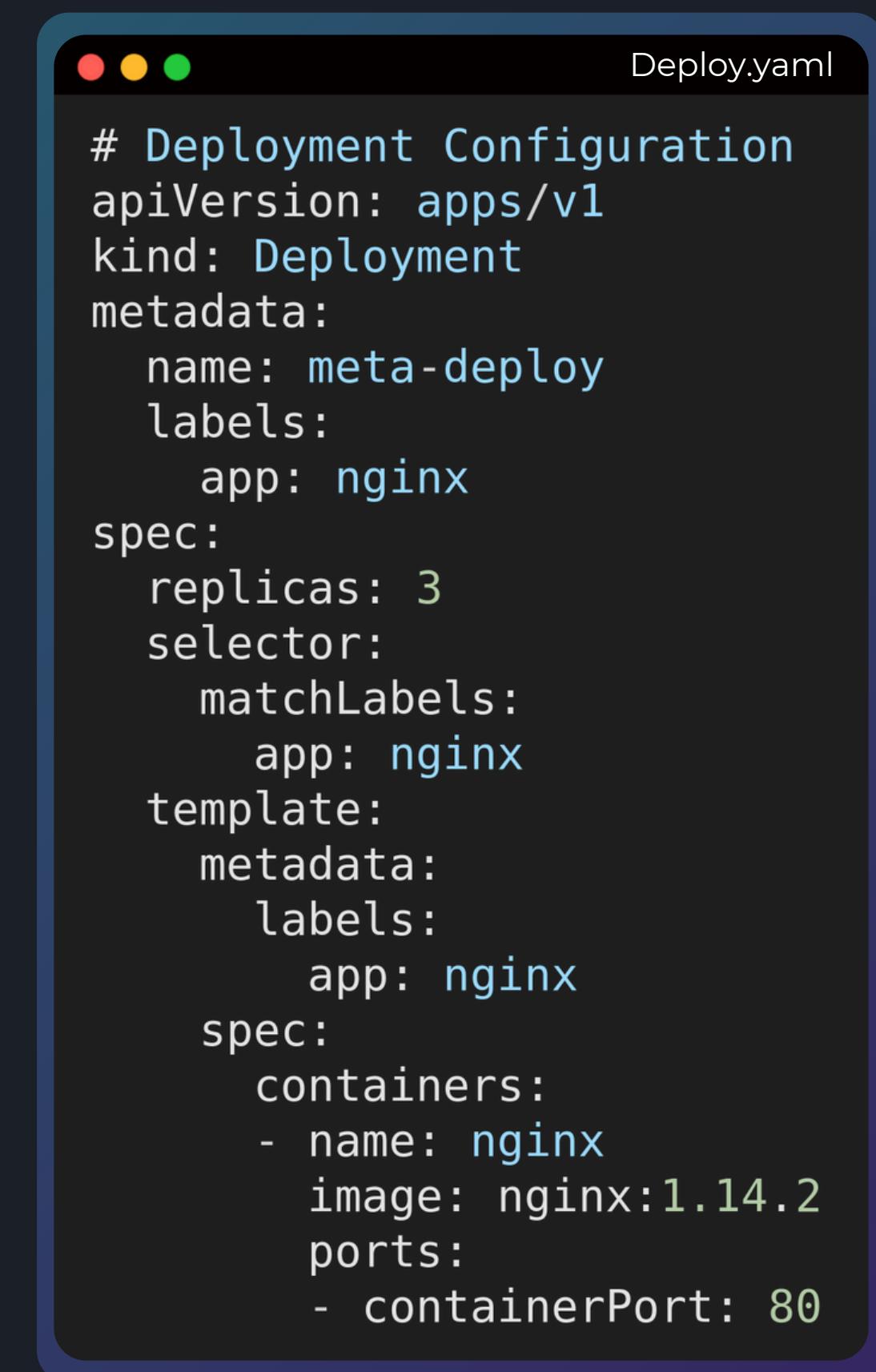
```
kubectl delete pod <pod-name>
```



DEPLOYMENT

A Deployment manages a set of Pods to run an application





```
Deploy.yaml
# Deployment Configuration
apiVersion: apps/v1
kind: Deployment
metadata:
  name: meta-deploy
  labels:
    app: nginx
spec:
  replicas: 3
  selector:
    matchLabels:
      app: nginx
  template:
    metadata:
      labels:
        app: nginx
    spec:
      containers:
        - name: nginx
          image: nginx:1.14.2
          ports:
            - containerPort: 80
```

YAML File for deployment

Creating deployment using YAML file

```
kubectl apply -f deployment.yaml
```

For getting all the deployments

```
kubectl get deployments
```



To get the information about deployment

```
kubectl describe deployment <deployment-name>
```

Scaling the deployment

```
kubectl scale deployment <deployment-name> --replicas=<number>
```

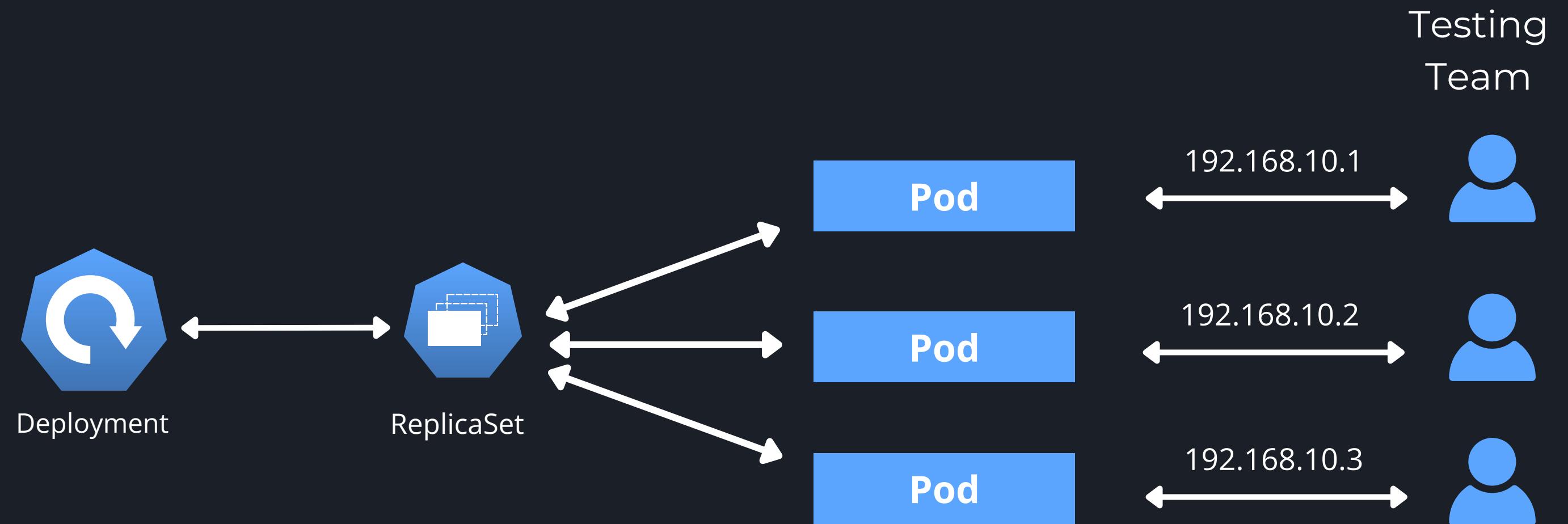
Monitor deployment changes

```
kubectl get pods --watch
```

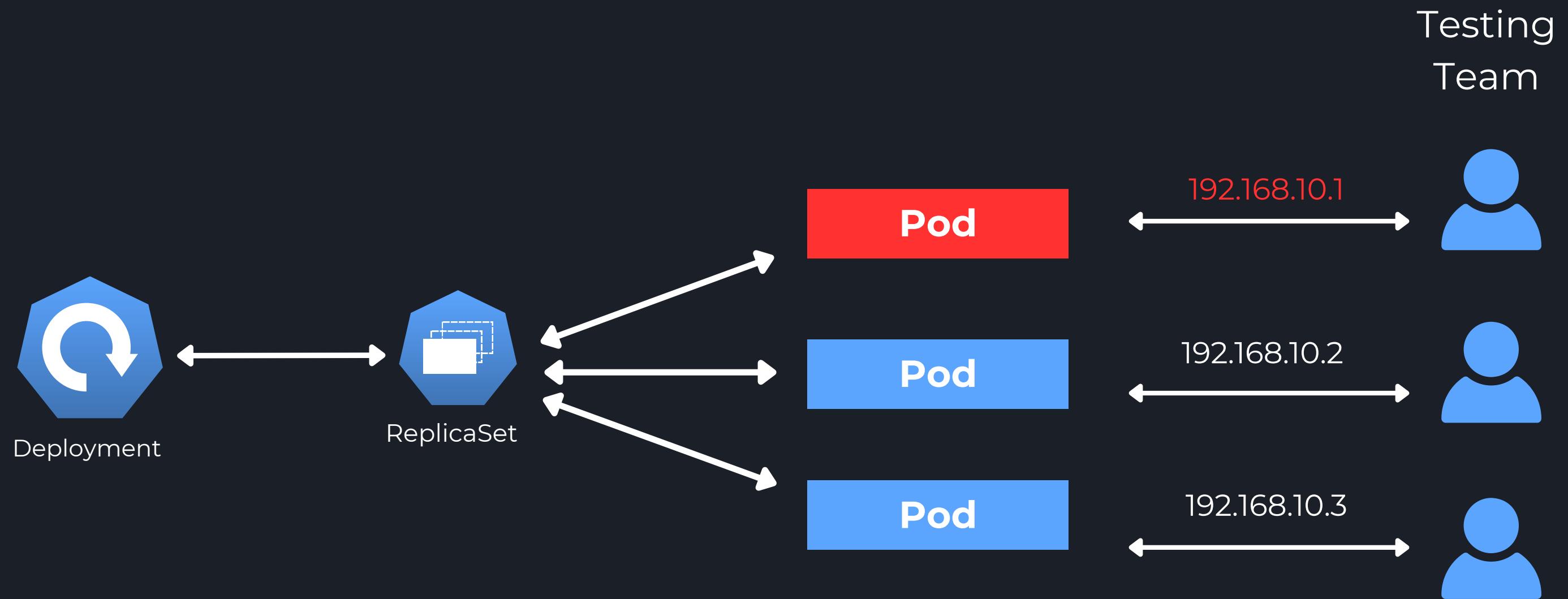
Deleting the deployment

```
kubectl delete deployment <deployment-name>
```

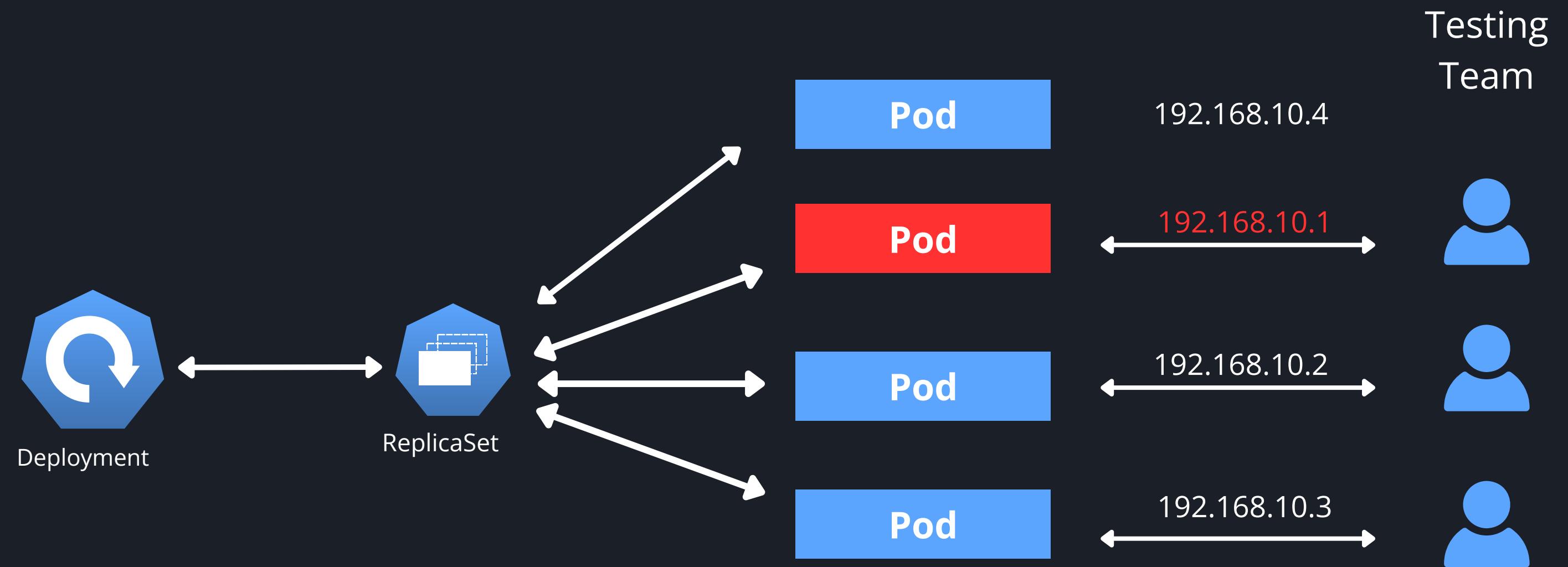
PROBLEMS WITH DEPLOYMENT



PROBLEMS WITH DEPLOYMENT



PROBLEMS WITH DEPLOYMENT



SERVICES

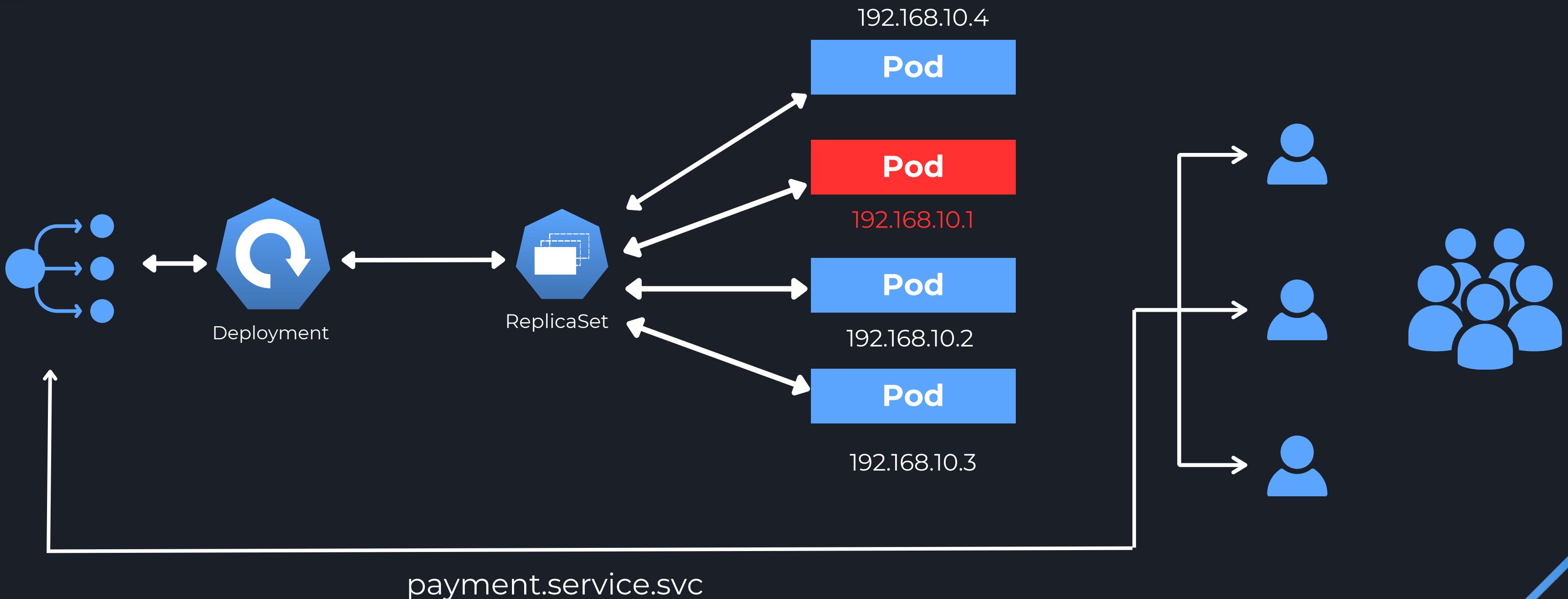
Services are an abstract way to expose an application running on a set of Pods

Features:

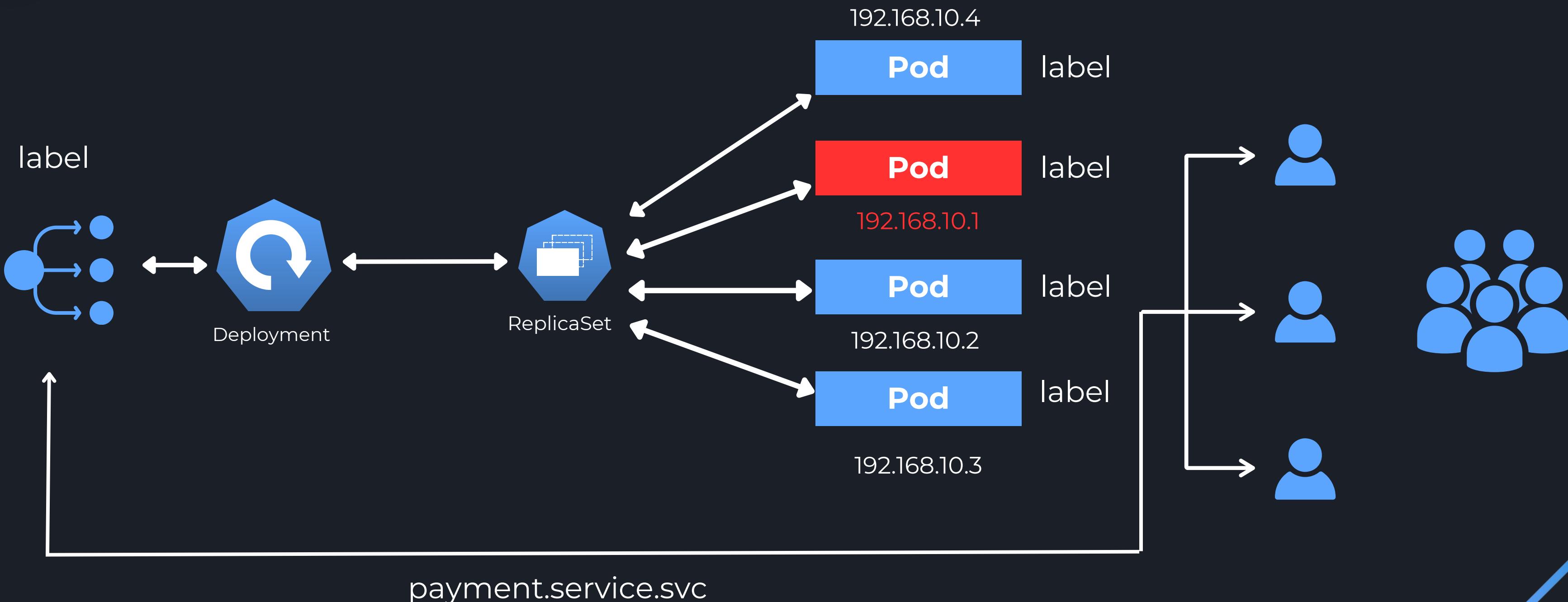
- ❖ Load-balancing
- ❖ Service discovery
- ❖ Exposing application to external world



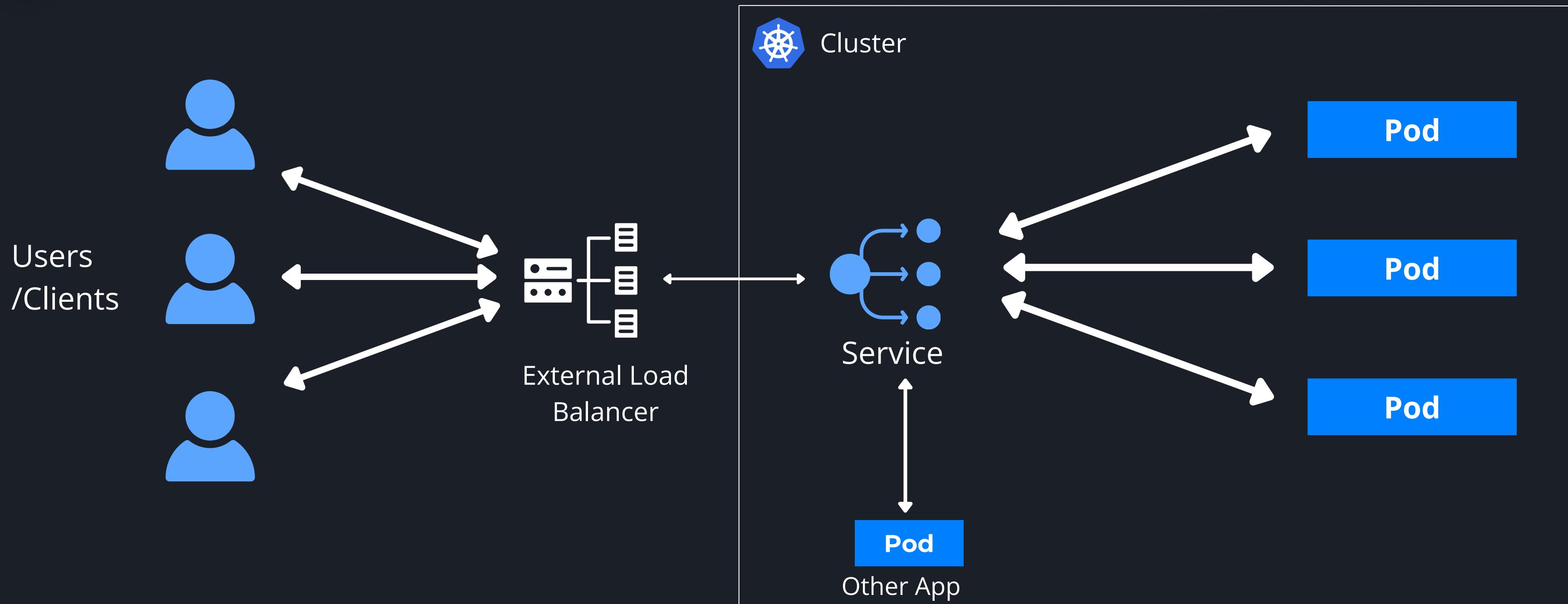
LOAD BALANCING



SERVICE DISCOVERY



EXPOSING TO EXTERNAL WORLD



TYPES OF SERVICE

LoadBalancer

Public access
with automatic
load balancing



ClusterIP

Internal
communication
within the cluster

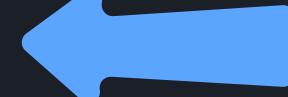
NodePort

External service
exposure on static
ports

CLUSTER IP



Hostel Mess



Hostel Students

- ❖ Default Service
- ❖ Communication within cluster
- ❖ No external access
- ❖ eg. Database access

NODEPORT

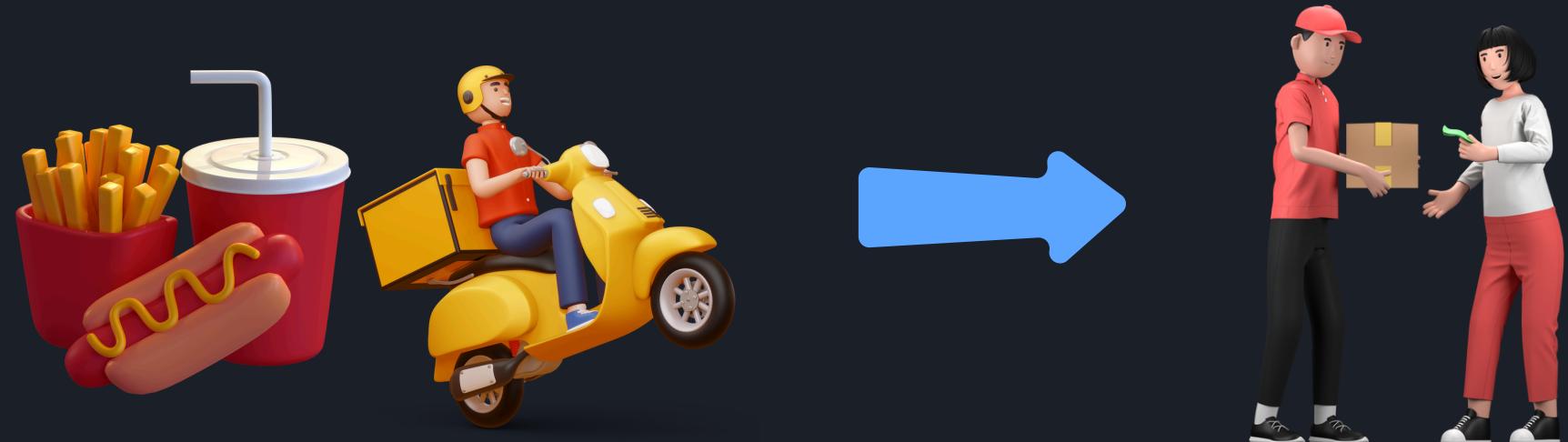


Cafe



- ❖ Allows external access
- ❖ Fixed port
- ❖ Access the service using the Node's IP + Port

LOADBALANCER



Home Delivery

- ❖ Provides an external IP
- ❖ Distributes traffic automatically
- ❖ Ensures load balancing

SERVICE

```
#Service Configuration
apiVersion: v1
kind: Service
metadata:
  name: backend-service
spec:
  selector:
    app: backend
  ports:
    - protocol: TCP
      port: 80
      targetPort: 8080
    type: ClusterIP
```

YAML File for Service

SERVICE

Create service

```
kubectl apply -f Service.yaml
```

Get all services

```
kubectl get svc
```





PROJECT TIME!



THANK YOU!

