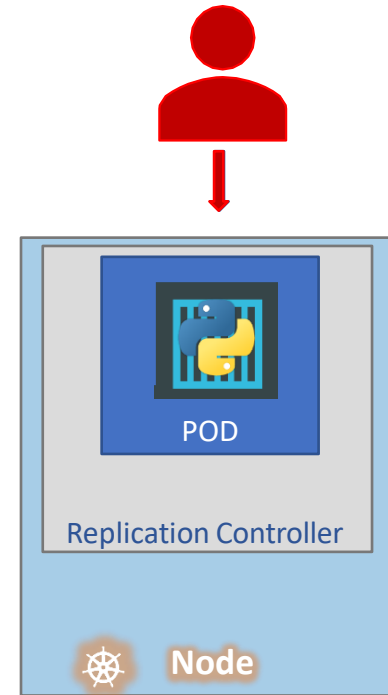
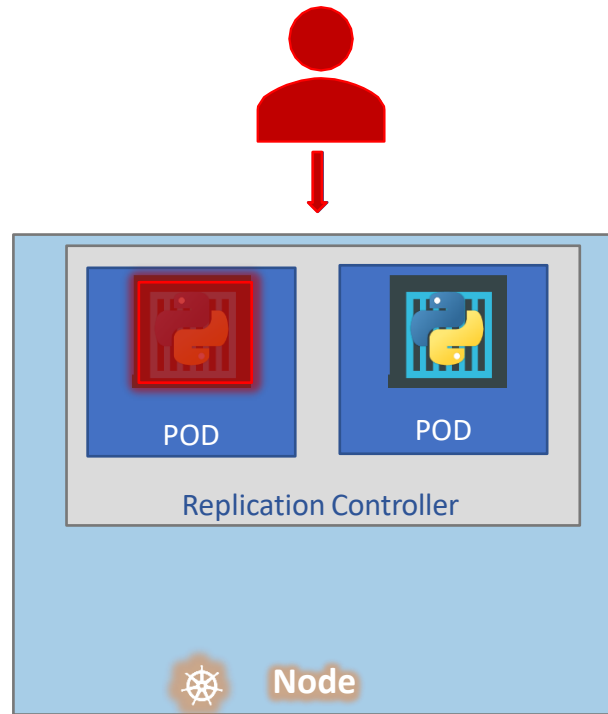


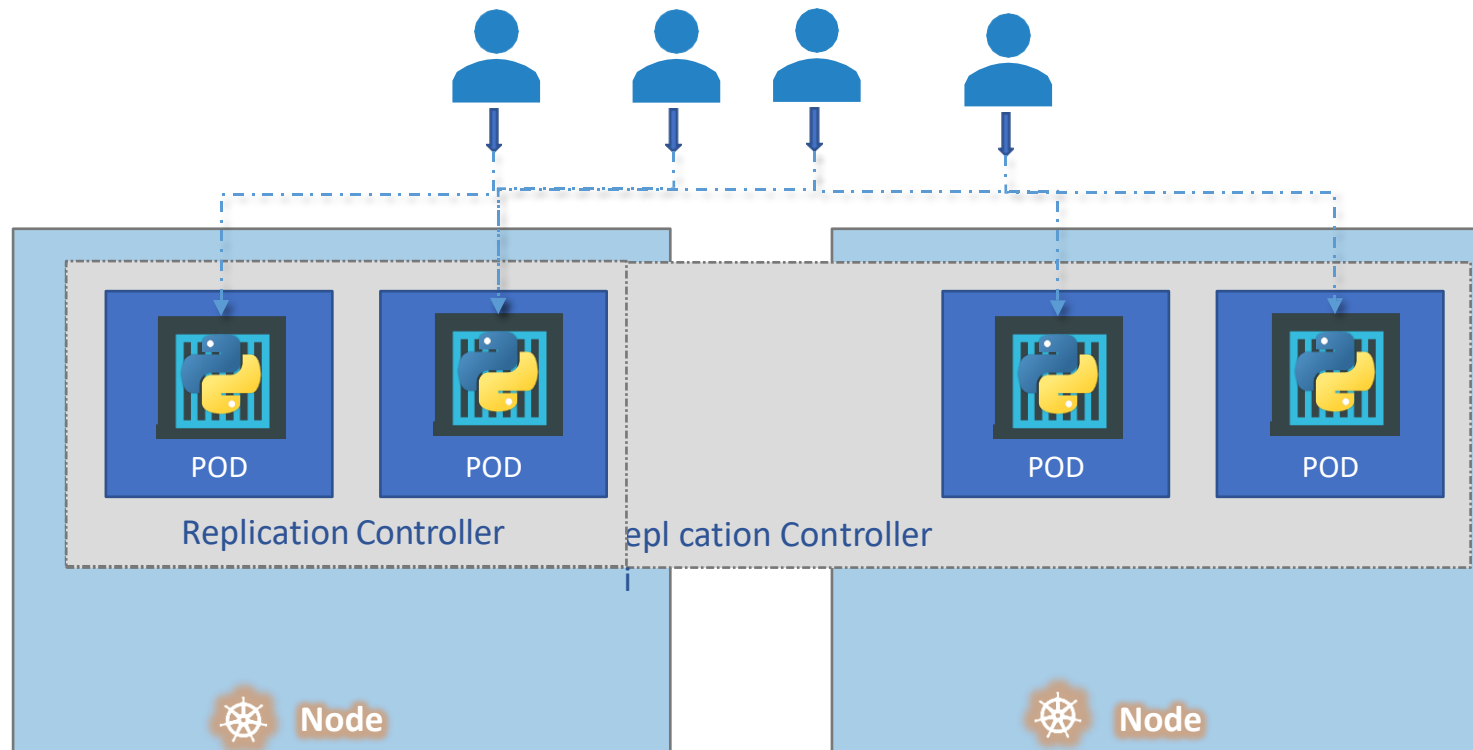


Replication Controller

High Availability



Load Balancing & Scaling



- Replication Controller

Replica Set

rc-definition.yml

```
apiVersion: v1
kind: ReplicationController
metadata:
  name: myapp-rc
  labels:
    app: myapp
    type: front-end
spec:
  template:
    # Diagram illustrating the Replication Controller's role:
    # A vertical stack of 6 blue arrows on the left points to a large brown rectangle.
    # Inside the rectangle, the word "POD" is centered.
    # Two smaller brown rectangles are positioned at the top-left and bottom-left of the large rectangle.
    # A line connects the top-left small rectangle to the label "POD" on the right.
    # Another line connects the bottom-left small rectangle to the label "POD" on the right.
    # This diagram represents the Replication Controller managing multiple Pods.
  replicas: 3
```

pod-definition.yml

```
apiVersion: v1
kind: Pod
metadata:
  name: myapp-pod
  labels:
    app: myapp
    type: front-end
spec:
  containers:
    - name: nginx-container
      image: nginx
```

```
> kubectl create -f rc-definition.yml
```

```
replicationcontroller "myapp-rc" created
```


```
> kubectl get replicationcontroller
```

NAME	DESIRED	CURRENT	READY	AGE
myapp-rc	3	3	3	19s

```
> kubectl get pods
```

NAME	READY	STATUS	RESTARTS	AGE
myapp-rc-4lvk9	1/1	Running	0	20s
myapp-rc-mc2mf	1/1	Running	0	20s
myapp-rc-px9pz	1/1	Running	0	20s

replicaset-definition.yml

```
apiVersion: apps/v1
kind: ReplicaSet
metadata:
  name: myapp-repl
  labels:
    app: myapp
    type: front-end
spec:
  template:
    
    POD
  replicas: 3
  selector:
    matchLabels:
      type: front-end
```

error: unable to recognize "replicaset-definition.yml": no matches for /, Kind=ReplicaSet

pod-definition.yml

```
apiVersion: v1
kind: Pod
labels:
  app: myapp
  type: front-end
spec:
  containers:
  - name: nginx-container
    image: nginx
```

```
> kubectl create -f replicaset-definition.yml
```

```
replicaset "myapp-replicaset" created
```

```
> kubectl get replicaset
```

NAME	DESIRED	CURRENT	READY	AGE
myapp-replicaset	3	3	3	19s

```
> kubectl get pods
```

NAME	READY	STATUS	RESTARTS	AGE
myapp-replicaset-9ddl9	1/1	Running	0	45s
myapp-replicaset-9jtpx	1/1	Running	0	45s
myapp-replicaset-hq84m	1/1	Running	0	45s

Labels and Selectors

```
replicaset-definition.yml
```

```
selector:
```

```
  matchLabels:
```

```
    tier:
```

```
  front-end
```

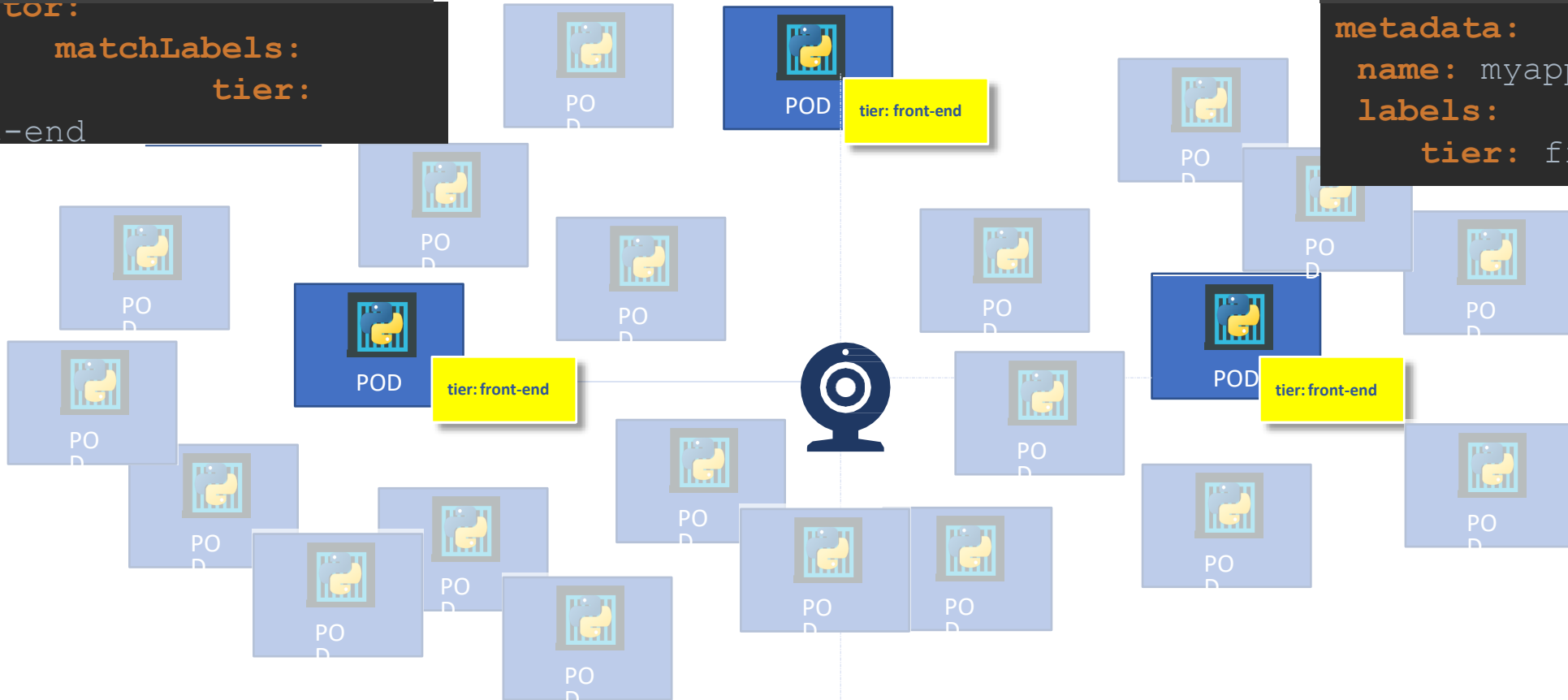
```
pod-definition.yml
```

```
metadata:
```

```
  name: myapp-pod
```

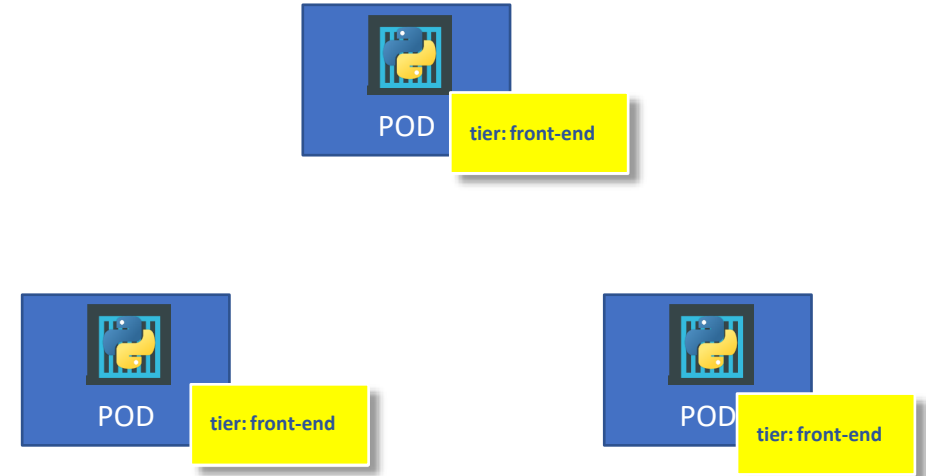
```
  labels:
```

```
    tier: front-end
```



replicaset-definition.yml

```
apiVersion: apps/v1
kind: ReplicaSet
metadata:
  name: myapp-replicaset
  labels:
    app: myapp
    type: front-end
spec:
  template:
    metadata:
      name: myapp-pod
      labels:
        app: myapp
        type: front-end
    spec:
      containers:
        - name: nginx-container
          image: nginx
  replicas: 3
  selector:
    matchLabels:
      type: front-end
```



Scale

```
> kubectl replace -f replicaset-definition.yml
```

```
> kubectl scale --replicas=6 -f replicaset-definition.yml
```

```
> kubectl scale --replicas=6 replicaset myapp-replicaset
```

↓ ↓
TYPE NAME

replicaset-definition.yml

```
apiVersion: apps/v1
kind: ReplicaSet
metadata:
  name: myapp-replicaset
  labels:
    app: myapp
    type: front-end
spec:
  template:
    metadata:
      name: myapp-pod
      labels:
        app: myapp
        type: front-end
    spec:
      containers:
        - name: nginx-container
          image: nginx
replicas: 6
selector:
  matchLabels:
    type: front-end
```

commands

```
> kubectl create -f replicaset-definition.yml
```

```
> kubectl get replicaset
```

```
> kubectl delete replicaset myapp-replicaset
```

*Also deletes all underlying PODs

```
> kubectl replace -f replicaset-definition.yml
```

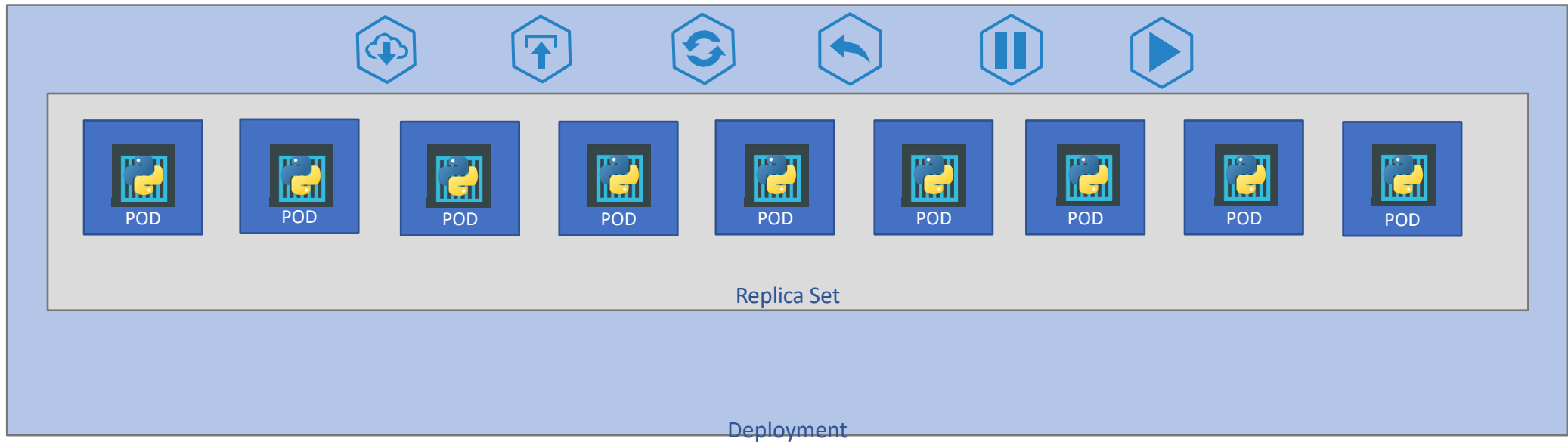
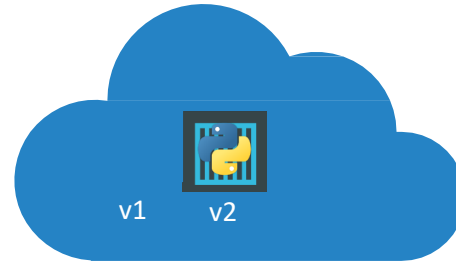
```
> kubectl scale --replicas=6 -f replicaset-definition.yml
```



{K}ODE{K}LOUD

Deployment

Deployment



Definition

```
> kubectl create -f deployment-definition.yml
```

```
deployment "myapp-deployment" created
```

```
> kubectl get deployments
```

NAME	DESIRED	CURRENT	UP-TO-DATE	AVAILABLE	AGE
myapp-deployment	3	3	3	3	21s

```
> kubectl get replicaset
```

NAME	DESIRED	CURRENT	READY	AGE
myapp-deployment-6795844b58	3	3	3	2m

```
> kubectl get pods
```

NAME	READY	STATUS	RESTARTS	AGE
myapp-deployment-6795844b58-5rbj1	1/1	Running	0	2m
myapp-deployment-6795844b58-h4w55	1/1	Running	0	2m
myapp-deployment-6795844b58-1fjvh	1/1	Running	0	2m

```
deployment-definition.yml
```

```
apiVersion: apps/v1
```

```
kind:
```

```
Deployment
```

```
name: myapp-deployment
```

```
labels:
```

```
app: myapp
```

```
type: front-end
```

```
spec:
```

```
template:
```

```
metadata:
```

```
name: myapp-pod
```

```
labels:
```

```
app: myapp
```

```
type: front-end
```

```
spec:
```

```
containers:
```

```
- name: nginx-container
```

```
image: nginx
```

```
replicas: 3
```

```
selector:
```

```
matchLabels:
```

```
type: front-end
```

commands

```
> kubectl get all
```

NAME	DESIRED	CURRENT	UP-TO-DATE	AVAILABLE	AGE
deploy/myapp-deployment	3	3	3	3	9h

NAME	DESIRED	CURRENT	READY	AGE
rs/myapp-deployment-6795844b58	3	3	3	9h

NAME	READY	STATUS	RESTARTS	AGE
po/myapp-deployment-6795844b58-5rbj1	1/1	Running	0	9h
po/myapp-deployment-6795844b58-h4w55	1/1	Running	0	9h
po/myapp-deployment-6795844b58-1fj hv	1/1	Running	0	9h