

# Lab Exercise 11- Deployments with Rolling Update and Recreate Strategies

Understand how to use the rolling update and recreate strategies for deploying applications using Kubernetes Deployments.

## Step 1: Create a Deployment with Rolling Update Strategy

Create a YAML file for the deployment:

Create a file named **nginx-deployment-rolling.yaml** with the following content:

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: nginx-deployment-rolling
spec:
  replicas: 10
  minReadySeconds: 10
  selector:
    matchLabels:
      app: web
  strategy:
    type: RollingUpdate
    rollingUpdate:
      maxUnavailable: 1
      maxSurge: 5
  template:
    metadata:
      labels:
```

```
  app: web
spec:
  containers:
  - name: nginx
    image: 1.25
  ports:
  - containerPort: 80
```

```
! nginx-deployment-rolling.yaml
1  apiVersion: apps/v1
2  kind: Deployment
3  metadata:
4    name: nginx-deployment-rolling
5  spec:
6    replicas: 10
7    minReadySeconds: 10
8    selector:
9      matchLabels:
10       app: web
11    strategy:
12      type: RollingUpdate
13      rollingUpdate:
14        maxUnavailable: 1
15        maxSurge: 5
16    template:
17      metadata:
18        labels:
19          app: web
20      spec:
21        containers:
22        - name: nginx
23          image: nginx:1.21.1
24          ports:
25            - containerPort: 80
```

Apply the deployment:

```
kubectl          apply          -f          nginx-deployment-rolling.yaml          ;
kubectl get rs -w
```

```
devansilswal@devanks-MacBook-Air deployment-strategy % kubectl apply -f nginx-deployment-rolling.yaml
[kubectl get rs -w
deployment.apps/nginx-deployment-rolling configured
NAME                                DESIRED    CURRENT    READY    AGE
nginx-deployment-rolling-8587c95656 6           6           0        24m
nginx-deployment-rolling-85cf8767cc 3           3           0        28m
nginx-deployment-rolling-8755c7cc9   6           6           0         0s
nginx-deployment-rolling-85cf8767cc 3           3           0        28m
nginx-deployment-rolling-85cf8767cc 3           3           0        28m
nginx-deployment-rolling-85cf8767cc 3           3           0        28m
nginx-deployment-rolling-85cf8767cc 3           3           0        28m
nginx-deployment-rolling-85cf8767cc 3           3           0        28m
nginx-deployment-rolling-85cf8767cc 3           3           0        28m
nginx-deployment-rolling-85cf8767cc 3           3           0        28m
```

Verify the deployment:

```
kubectl get deployments
kubectl get pods -l app=web
```

```
devansilswal@devanks-MacBook-Air deployment-strategy % kubectl get deployments
[kubectl get pods -l app=web
NAME                                READY    UP-TO-DATE    AVAILABLE    AGE
nginx-deployment-rolling            10/10    10             7            28m
NAME                                READY    STATUS        RESTARTS      AGE
nginx-deployment-rolling-8587c95656-gdsxq 0/1      CrashLoopBackOff 9 (3m25s ago) 25m
nginx-deployment-rolling-8587c95656-194lq 0/1      CrashLoopBackOff 9 (2m58s ago) 25m
nginx-deployment-rolling-8755c7cc9-26cgt 1/1      Running         0              40s
nginx-deployment-rolling-8755c7cc9-5xls7 1/1      Running         0              16s
nginx-deployment-rolling-8755c7cc9-8fppd 1/1      Running         0              40s
nginx-deployment-rolling-8755c7cc9-99klw 1/1      Running         0              40s
nginx-deployment-rolling-8755c7cc9-9cswl 1/1      Running         0              14s
nginx-deployment-rolling-8755c7cc9-bmzz8 1/1      Running         0              40s
nginx-deployment-rolling-8755c7cc9-ck2d5 1/1      Running         0              40s
nginx-deployment-rolling-8755c7cc9-gn7mf 1/1      Running         0              11s
nginx-deployment-rolling-8755c7cc9-gxkfx 1/1      Running         0              40s
nginx-deployment-rolling-8755c7cc9-tfd84 1/1      Running         0              8s
```

Update the deployment to a new image:

```
kubectl set image deployment/nginx-deployment-rolling nginx=nginx:1.22.0
```

```
devansilswal@devanks-MacBook-Air deployment-strategy % kubectl set image deployment/nginx-deployment-rolling nginx=nginx:1.22.0
deployment.apps/nginx-deployment-rolling image updated
```

Monitor the rolling update:

```
kubectl rollout status deployment nginx-deployment-rolling
```



```
devanksilswal@devanks-MacBook-Air deployment-strategy % kubectl get pods -l app=web -o wide
NAME                                READY   STATUS    RESTARTS   AGE   IP              NODE             NOMINATED NODE   READINESS GATES
nginx-deployment-rolling-9ffb58fd5-44rzj  1/1     Running   0          114s   10.244.0.32     minikube         <none>           <none>
nginx-deployment-rolling-9ffb58fd5-4hg2g  1/1     Running   0          114s   10.244.0.31     minikube         <none>           <none>
nginx-deployment-rolling-9ffb58fd5-6k487  1/1     Running   0          84s    10.244.0.38     minikube         <none>           <none>
nginx-deployment-rolling-9ffb58fd5-9kdwj  1/1     Running   0          91s    10.244.0.35     minikube         <none>           <none>
nginx-deployment-rolling-9ffb58fd5-fmtmw  1/1     Running   0          114s   10.244.0.34     minikube         <none>           <none>
nginx-deployment-rolling-9ffb58fd5-fnd66  1/1     Running   0          114s   10.244.0.30     minikube         <none>           <none>
nginx-deployment-rolling-9ffb58fd5-mt5ns  1/1     Running   0          114s   10.244.0.33     minikube         <none>           <none>
nginx-deployment-rolling-9ffb58fd5-nmtnd  1/1     Running   0          114s   10.244.0.29     minikube         <none>           <none>
nginx-deployment-rolling-9ffb58fd5-td5md  1/1     Running   0          87s    10.244.0.37     minikube         <none>           <none>
nginx-deployment-rolling-9ffb58fd5-znrgg  1/1     Running   0          89s    10.244.0.36     minikube         <none>           <none>
devanksilswal@devanks-MacBook-Air deployment-strategy % touch nginx-deployment-recreate.yaml
```

## Step 2: Create a Deployment with Recreate Strategy

Create a YAML file for the deployment:

Create a file named **nginx-deployment-recreate.yaml** with the following content:

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: nginx-deployment-recreate
spec:
  replicas: 10
  selector:
    matchLabels:
      app: nginx-recreate
  strategy:
    type: Recreate
  template:
    metadata:
      labels:
        app: web
    spec:
      containers:
        - name: nginx
          image: nginx:1.25
          ports:
```



- containerPort: 80

```
! nginx-deployment-recreate.yaml ×
! r ~/ex_s/deployment-strategy/nginx-deployment-recreate.yaml (preview ⚙)
1  apiVersion: apps/v1
2  kind: Deployment
3  metadata:
4    name: nginx-deployment-recreate
5  spec:
6    replicas: 10
7    selector:
8      matchLabels:
9        app: nginx-recreate
10   strategy:
11     type: Recreate
12   template:
13     metadata:
14       labels:
15         app: nginx-recreate
16     spec:
17       containers:
18         - name: nginx
19           image: nginx:1.25
20           ports:
21             - containerPort: 80
```

Apply the deployment:

```
kubectl apply -f nginx-deployment-recreate.yaml ;
kubectl get rs -w
```

```
devanksilswal@devanks-MacBook-Air deployment-strategy % touch nginx-deployment-recreate.yaml
devanksilswal@devanks-MacBook-Air deployment-strategy % kubectl apply -f nginx-deployment-recreate.yaml
deployment.apps/nginx-deployment-recreate created
devanksilswal@devanks-MacBook-Air deployment-strategy % kubectl get rs -w
```

NAME	DESIRED	CURRENT	READY	AGE
nginx-deployment-recreate-c77955c54	10	10	0	4s
nginx-deployment-rolling-8587c95656	0	0	0	33m
nginx-deployment-rolling-85cf8767cc	0	0	0	37m
nginx-deployment-rolling-8755c7cc9	0	0	0	9m1s
nginx-deployment-rolling-9ffb58fd5	10	10	10	7m19s

Verify the deployment:

```
kubectl get deployments
kubectl get pods -l app=nginx-recreate
```

```
devanksilswal@devanks-MacBook-Air deployment-strategy % kubectl get deployments
[kubectl get pods -l app=nginx-recreate
```

NAME	READY	UP-TO-DATE	AVAILABLE	AGE
nginx-deployment-recreate	10/10	10	10	32s
nginx-deployment-rolling	10/10	10	10	46m

  

NAME	READY	STATUS	RESTARTS	AGE
nginx-deployment-recreate-84d6f68478-7chnw	1/1	Running	0	32s
nginx-deployment-recreate-84d6f68478-964mq	1/1	Running	0	32s
nginx-deployment-recreate-84d6f68478-cw5fb	1/1	Running	0	32s
nginx-deployment-recreate-84d6f68478-d9x4q	1/1	Running	0	32s
nginx-deployment-recreate-84d6f68478-dhjc2	1/1	Running	0	32s
nginx-deployment-recreate-84d6f68478-lf7hc	1/1	Running	0	32s
nginx-deployment-recreate-84d6f68478-lf8qf	1/1	Running	0	32s
nginx-deployment-recreate-84d6f68478-qqn timer	1/1	Running	0	32s
nginx-deployment-recreate-84d6f68478-rgbdt	1/1	Running	0	32s
nginx-deployment-recreate-84d6f68478-x5t8f	1/1	Running	0	32s

Update the deployment to a new image:

```
kubectl set image deployment/nginx-deployment-recreate nginx=nginx:1.21.1
```

```
devanksilswal@devanks-MacBook-Air deployment-strategy % kubectl set image deployment/nginx-deployment-recreate nginx=nginx:1.21.1
[deployment.apps/nginx-deployment-recreate image updated
```

Monitor the update:

```
kubectl rollout status deployment nginx-deployment-recreate
```

```
devanksilswal@devanks-MacBook-Air deployment-strategy % kubectl rollout status deployment nginx-deployment-recreate
deployment "nginx-deployment-recreate" successfully rolled out
```

Verify the updated pods:

```
kubectl get pods -l app=nginx-recreate -o wide
```

```
devanksilswal@devanks-MacBook-Air deployment-strategy % kubectl get pods -l app=nginx-recreate -o wide
NAME                                READY   STATUS    RESTARTS   AGE   IP            NODE       NOMINATED NODE   READINESS GATES
nginx-deployment-recreate-75c6c55dc-2v28z   1/1     Running   0          22s   10.244.0.75   minikube   <none>           <none>
nginx-deployment-recreate-75c6c55dc-2xbfj   1/1     Running   0          22s   10.244.0.74   minikube   <none>           <none>
nginx-deployment-recreate-75c6c55dc-79785   1/1     Running   0          22s   10.244.0.73   minikube   <none>           <none>
nginx-deployment-recreate-75c6c55dc-c2xgf   1/1     Running   0          22s   10.244.0.71   minikube   <none>           <none>
nginx-deployment-recreate-75c6c55dc-jk4xn   1/1     Running   0          22s   10.244.0.69   minikube   <none>           <none>
nginx-deployment-recreate-75c6c55dc-kjsfw   1/1     Running   0          22s   10.244.0.70   minikube   <none>           <none>
nginx-deployment-recreate-75c6c55dc-kvx2f   1/1     Running   0          22s   10.244.0.77   minikube   <none>           <none>
nginx-deployment-recreate-75c6c55dc-mrc9r   1/1     Running   0          22s   10.244.0.76   minikube   <none>           <none>
nginx-deployment-recreate-75c6c55dc-tfgtq   1/1     Running   0          22s   10.244.0.72   minikube   <none>           <none>
nginx-deployment-recreate-75c6c55dc-tx4hf   1/1     Running   0          22s   10.244.0.78   minikube   <none>           <none>
```

### Step 3: Clean Up

Delete the deployments:

```
kubectl delete deployment nginx-deployment-rolling
kubectl delete deployment nginx-deployment-recreate
```

```
devanksilswal@devanks-MacBook-Air deployment-strategy % kubectl delete deployment nginx-deployment-rolling
kubectl delete deployment nginx-deployment-recreate
deployment.apps "nginx-deployment-rolling" deleted from default namespace
deployment.apps "nginx-deployment-recreate" deleted from default namespace
```

Verify that all resources are cleaned up:

```
kubectl get deployments
kubectl get pods -l app=nginx
kubectl get pods -l app=nginx-recreate
```

```
devanksilswal@devanks-MacBook-Air deployment-strategy % kubectl get deployments
kubectl get pods -l app=nginx
kubectl get pods -l app=nginx-recreate
No resources found in default namespace.
No resources found in default namespace.
No resources found in default namespace.
```