

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
```

```
devanksilswal@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
```

Verify the deployment:

```
kubectl get deployments
```

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

```
devanksilswal@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
```

```
devanksilswal@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
```

Verify the updated pods:

```
kubectl get pods -l app=web -o wide
```

```

devanksilwal@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-zngrg  1/1    Running   0          89s    10.244.0.36  minikube  <none>        <none>
devanksilwal@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
^C%

```

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-qqnh7  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-2btfj  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.
```