

Lab Exercise 11- Deployments with Rolling Update and Recreate Strategies

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Batch-2

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: hkshitesh/kubedemo:1.0
        ports:
          - containerPort: 80

```

Apply the deployment:

```
kubectl apply -f nginx-deployment-rolling.yaml ; watch "kubectl get rs -o wide"
```

```

NAME                                DESIRED   CURRENT   READY   AGE    CONTAINERS   IMAGES                               SELECTOR
nginx-deployment-rolling-8465d4f6c7  10        10        0       66s    nginx        hkshitesh/kubedemo:1.0             app=web,po
d-template-hash=8465d4f6c7

```

Verify the deployment:

```
kubectl get deployments
```

```

PS D:\kubs> kubectl get deployments
NAME                                READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deployment-rolling            2/10    10            2           104s
PS D:\kubs>

```

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

```

nginx-deployment-rolling 2/10 10 2 104s
PS D:\kubs> kubectl get pods -l app=web
NAME                                READY   STATUS             RESTARTS   AGE
nginx-deployment-rolling-8465d4f6c7-4d5tv 0/1     ContainerCreating   0           2m4s
nginx-deployment-rolling-8465d4f6c7-7wm85 0/1     ContainerCreating   0           2m4s
nginx-deployment-rolling-8465d4f6c7-csq8x 0/1     ContainerCreating   0           2m4s
nginx-deployment-rolling-8465d4f6c7-fxdw6 0/1     ContainerCreating   0           2m4s
nginx-deployment-rolling-8465d4f6c7-hh2t5 0/1     ContainerCreating   0           2m4s
nginx-deployment-rolling-8465d4f6c7-jr2dm 1/1     Running             0           2m4s
nginx-deployment-rolling-8465d4f6c7-lgdsb 1/1     Running             0           2m4s
nginx-deployment-rolling-8465d4f6c7-lvdjq 0/1     ContainerCreating   0           2m4s
nginx-deployment-rolling-8465d4f6c7-s856p 1/1     Running             0           2m4s
nginx-deployment-rolling-8465d4f6c7-z2zfj 1/1     Running             0           2m4s
PS D:\kubs> |

```

Update the deployment to a new image:

kubectl set image deployment/nginx-deployment-rolling nginx= hkshitesh/kubedemo:2.0

```

PS D:\kubs> kubectl set image deployment/nginx-deployment-rolling nginx=hkshitesh/kubedemo:2.0
deployment.apps/nginx-deployment-rolling image updated
PS D:\kubs> |

```

Monitor the rolling update:

kubectl rollout status deployment nginx-deployment-rolling

```

deployment.apps/nginx-deployment-rolling image updated
PS D:\kubs> kubectl rollout status deployment nginx-deployment-rolling
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 6 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 6 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 6 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 6 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 6 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 7 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 7 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 7 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 7 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 7 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 7 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 9 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 9 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 9 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 9 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 5 old replicas are pending termination...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 5 old replicas are pending termination...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 5 old replicas are pending termination...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 5 old replicas are pending termination...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 1 old replicas are pending termination...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 1 old replicas are pending termination...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 9 of 10 updated replicas are available...
deployment "nginx-deployment-rolling" successfully rolled out
PS D:\kubs> |

```

Verify the updated pods:

kubectl get pods -l app=web -o wide

```

deployment "nginx-deployment-rolling" successfully rolled out
PS D:\kubs> kubectl get pods -l app=web -o wide
NAME                                READY   STATUS    RESTARTS   AGE   IP            NODE                   NO
MINATED NODE   READINESS GATES
nginx-deployment-rolling-565c77f48b-47z7z  1/1     Running   0          51s   10.244.0.29   desktop-control-plane  <n
one>          <none>
nginx-deployment-rolling-565c77f48b-5p56b  1/1     Running   0          115s   10.244.0.21   desktop-control-plane  <n
one>          <none>
nginx-deployment-rolling-565c77f48b-76289  1/1     Running   0          115s   10.244.0.22   desktop-control-plane  <n
one>          <none>
nginx-deployment-rolling-565c77f48b-7ds9t  1/1     Running   0          63s   10.244.0.27   desktop-control-plane  <n
one>          <none>
nginx-deployment-rolling-565c77f48b-bs24x  1/1     Running   0          115s   10.244.0.24   desktop-control-plane  <n
one>          <none>
nginx-deployment-rolling-565c77f48b-f6lgm  1/1     Running   0          51s   10.244.0.28   desktop-control-plane  <n
one>          <none>
nginx-deployment-rolling-565c77f48b-fh4dx  1/1     Running   0          115s   10.244.0.23   desktop-control-plane  <n
one>          <none>
nginx-deployment-rolling-565c77f48b-kvl5n  1/1     Running   0          115s   10.244.0.26   desktop-control-plane  <n
one>          <none>
nginx-deployment-rolling-565c77f48b-qm4dj  1/1     Running   0          50s   10.244.0.30   desktop-control-plane  <n
one>          <none>
nginx-deployment-rolling-565c77f48b-zwhjt  1/1     Running   0          115s   10.244.0.25   desktop-control-plane  <n
one>          <none>
PS D:\kubs> |

```

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: web
  strategy:
    type: Recreate
  template:

```

```
metadata:
  labels:
    app: web
spec:
  containers:
  - name: nginx
    image: nginx: hkshitesh/kubedemo:1.0
  ports:
  - containerPort: 80
```

Apply the deployment:

```
kubectl apply -f nginx-deployment-recreate.yaml ; watch "kubectl get rs -o wide"
```

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

```
while ($true) {
  kubectl get rs -o wide
  Start-Sleep -Seconds 2
  Clear-Host
}
```

```
PS D:\kubs> kubectl apply -f nginx-deployment-recreate.yaml
error: error parsing nginx-deployment-recreate.yaml: error converting YAML to JSON: yaml: line 19: mapping values are not allowed in this context
PS D:\kubs>
PS D:\kubs> while ($true) {
>> kubectl get rs -o wide
>> Start-Sleep -Seconds 2
>> Clear-Host
>> }
NAME                                DESIRED  CURRENT  READY  AGE   CONTAINERS  IMAGES                SELECTOR
nginx-deployment-rolling-565c77f48b  10       10       10     3m50s  nginx       hkshitesh/kubedemo:2.0 app=web,
pod-template-hash=565c77f48b
nginx-deployment-rolling-8465d4f6c7  0        0        0      8m8s   nginx       hkshitesh/kubedemo:1.0 app=web,
pod-template-hash=8465d4f6c7
```

Verify the deployment:

kubectl get deployments

```
pod-template-hash=84b5d4f0c7
PS D:\kubs> kubectl get deployments
NAME                                READY    UP-TO-DATE    AVAILABLE    AGE
nginx-deployment-rolling            10/10    10             10           8m45s
PS D:\kubs> |
```

kubectl get pods -l app=nginx-recreate

```
nginx-deployment-rolling-565c77f48b-47z7z
PS D:\kubs> kubectl get pods -l app=web
NAME                                READY    STATUS    RESTARTS    AGE
nginx-deployment-rolling-565c77f48b-47z7z    1/1      Running    0           5m47s
nginx-deployment-rolling-565c77f48b-5p56b    1/1      Running    0           6m51s
nginx-deployment-rolling-565c77f48b-76289    1/1      Running    0           6m51s
nginx-deployment-rolling-565c77f48b-7ds9t    1/1      Running    0           5m59s
nginx-deployment-rolling-565c77f48b-bs24x    1/1      Running    0           6m51s
nginx-deployment-rolling-565c77f48b-f6lgm    1/1      Running    0           5m47s
nginx-deployment-rolling-565c77f48b-fh4dx    1/1      Running    0           6m51s
nginx-deployment-rolling-565c77f48b-kv15n    1/1      Running    0           6m51s
nginx-deployment-rolling-565c77f48b-qm4dj    1/1      Running    0           5m46s
nginx-deployment-rolling-565c77f48b-zwhjt    1/1      Running    0           6m51s
PS D:\kubs> |
```

Update the deployment to a new image:

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

Monitor the update:

kubectl rollout status deployment nginx-deployment-recreate

Verify the updated pods:

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

Step 3: Clean Up

Delete the deployments:

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

Verify that all resources are cleaned up:

```
kubectl get deployments
```

```
D:\kubs>kubectl get deployments  
No resources found in default namespace.
```

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

```
D:\kubs>kubectl get pods -l app=nginx  
No resources found in default namespace.
```

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