

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

Verify the deployment:

```
kubectl get deployments
```

NAME	READY	UP-TO-DATE	AVAILABLE	AGE
nginx-deployment-rolling	2/10	10	2	104s

```
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: 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. 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
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 no  
t 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
```

```
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
```

```
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-kvl5n  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
```