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## **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: HKSHITESH/KUBEDEMO:1.0

PORTS:
- CONTAINERPORT: 80

```

#### APPLY THE DEPLOYMENT:

```

KUBECTL APPLY -F NGINX-DEPLOYMENT-ROLLING.YAML ; WATCH "KUBECTL GET RS -O
WIDE"

```

```

PS D:\Coding\ClassWork> kubectl get rs -o wide -w
NAME          DESIRED   CURRENT   READY   AGE   CONTAINERS   IMAGES
nginx-deployment-rolling-85cf8767cc   10        10        10   2m20s   nginx   hkshitesh/kubedemo:1.0   selector: app=web, pod-template-hash=85cf8767cc

```

#### VERIFY THE DEPLOYMENT:

```

KUBECTL GET DEPLOYMENTS

```

```

KUBECTL GET PODS -L APP=WEB

```

```

PS D:\Coding\ClassWork> kubectl get deployments
● NAME          READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deployment-rolling   10/10   10          10   2m57s
PS D:\Coding\ClassWork> kubectl get pods -l app=web
● NAME          READY   STATUS   RESTARTS   AGE
nginx-deployment-rolling-85cf8767cc-7q4v5   1/1    Running   0   2m57s
nginx-deployment-rolling-85cf8767cc-8phk7   1/1    Running   0   2m57s
nginx-deployment-rolling-85cf8767cc-bb9x2   1/1    Running   0   2m57s
nginx-deployment-rolling-85cf8767cc-cg4j4   1/1    Running   0   2m57s
nginx-deployment-rolling-85cf8767cc-dw64s   1/1    Running   0   2m57s
nginx-deployment-rolling-85cf8767cc-kqn19   1/1    Running   0   2m57s
nginx-deployment-rolling-85cf8767cc-l2tzj   1/1    Running   0   2m57s
nginx-deployment-rolling-85cf8767cc-tt5r5   1/1    Running   0   2m57s
nginx-deployment-rolling-85cf8767cc-vzq5x   1/1    Running   0   2m57s
nginx-deployment-rolling-85cf8767cc-xk5bj   1/1    Running   0   2m57s

```

#### UPDATE THE DEPLOYMENT TO A NEW IMAGE:

```

KUBECTL SET IMAGE DEPLOYMENT/NGINX-DEPLOYMENT-ROLLING NGINX= HKSHITESH/
KUBEDEMO:2.0

```

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

#### MONITOR THE ROLLING UPDATE:

#### KUBECTL ROLLOUT STATUS DEPLOYMENT NGINX-DEPLOYMENT-ROLLING

```
PS D:\Coding\ClassWork> 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: 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: 8 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 8 out of 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 8 out of 10 new replicas have been updated...
```

#### VERIFY THE UPDATED PODS:

#### KUBECTL GET PODS -l APP=WEB -o WIDE

NAME	READY	STATUS	RESTARTS	AGE	IP	NODE	NOMINATED NODE	NODE	READINESS	GATES
nginx-deployment-rolling-8587c95656-2xqss	1/1	Running	0	48s	10.244.0.29	kind-control-plane	<none>	<none>	<none>	
nginx-deployment-rolling-8587c95656-226g8	1/1	Running	0	68s	10.244.0.27	kind-control-plane	<none>	<none>	<none>	
nginx-deployment-rolling-8587c95656-8rp6q	1/1	Running	0	69s	10.244.0.26	kind-control-plane	<none>	<none>	<none>	
nginx-deployment-rolling-8587c95656-f5vcg	1/1	Running	0	69s	10.244.0.28	kind-control-plane	<none>	<none>	<none>	
nginx-deployment-rolling-8587c95656-hpntg	1/1	Running	0	42s	10.244.0.30	kind-control-plane	<none>	<none>	<none>	
nginx-deployment-rolling-8587c95656-nvrmg	1/1	Running	0	37s	10.244.0.32	kind-control-plane	<none>	<none>	<none>	
nginx-deployment-rolling-8587c95656-q9xmn	1/1	Running	0	69s	10.244.0.24	kind-control-plane	<none>	<none>	<none>	
nginx-deployment-rolling-8587c95656-rpt4t	1/1	Running	0	39s	10.244.0.31	kind-control-plane	<none>	<none>	<none>	
nginx-deployment-rolling-8587c95656-swhk4	1/1	Running	0	69s	10.244.0.23	kind-control-plane	<none>	<none>	<none>	
nginx-deployment-rolling-8587c95656-t7dqx	1/1	Running	0	69s	10.244.0.25	kind-control-plane	<none>	<none>	<none>	

#### 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"

PS D:\Coding\ClassWork> kubectl apply -f nginx-deployment-recreate.yaml ; kubectl get rs -o wide -w
deployment.apps/nginx-deployment-recreate created
NAME          DESIRED  CURRENT  READY   AGE    CONTAINERS   IMAGES
nginx-deployment-recreate-85cf8767cc  10       10       0       0s    nginx       hkshitesh/kubedemo:1.0  app=web,pod-template-hash=85cf8767cc
nginx-deployment-rolling-8587c95656  10       10       10      2m57s  nginx       hkshitesh/kubedemo:2.0  app=web,pod-template-hash=8587c95656
nginx-deployment-rolling-85cf8767cc  0        0        0       6m34s  nginx       hkshitesh/kubedemo:1.0  app=web,pod-template-hash=85cf8767cc
nginx-deployment-recreate-85cf8767cc  10       10       1       <invalid>  nginx       hkshitesh/kubedemo:1.0  app=web,pod-template-hash=85cf8767cc
nginx-deployment-recreate-85cf8767cc  10       10       2       <invalid>  nginx       hkshitesh/kubedemo:1.0  app=web,pod-template-hash=85cf8767cc
nginx-deployment-recreate-85cf8767cc  10       10       3       <invalid>  nginx       hkshitesh/kubedemo:1.0  app=web,pod-template-hash=85cf8767cc
nginx-deployment-recreate-85cf8767cc  10       10       4       <invalid>  nginx       hkshitesh/kubedemo:1.0  app=web,pod-template-hash=85cf8767cc
nginx-deployment-recreate-85cf8767cc  10       10       5       <invalid>  nginx       hkshitesh/kubedemo:1.0  app=web,pod-template-hash=85cf8767cc
nginx-deployment-recreate-85cf8767cc  10       10       6       <invalid>  nginx       hkshitesh/kubedemo:1.0  app=web,pod-template-hash=85cf8767cc
nginx-deployment-recreate-85cf8767cc  10       10       7       <invalid>  nginx       hkshitesh/kubedemo:1.0  app=web,pod-template-hash=85cf8767cc
nginx-deployment-recreate-85cf8767cc  10       10       8       <invalid>  nginx       hkshitesh/kubedemo:1.0  app=web,pod-template-hash=85cf8767cc
nginx-deployment-recreate-85cf8767cc  10       10       9       <invalid>  nginx       hkshitesh/kubedemo:1.0  app=web,pod-template-hash=85cf8767cc
nginx-deployment-recreate-85cf8767cc  10       10       10      <invalid>  nginx       hkshitesh/kubedemo:1.0  app=web,pod-template-hash=85cf8767cc

```

#### VERIFY THE DEPLOYMENT:

```

KUBECTL GET DEPLOYMENTS
KUBECTL GET PODS -L APP=NGINX-RECREATE

```

NAME	READY	STATUS	RESTARTS	AGE
nginx-deployment-recreate-85cf8767cc-92jbn	1/1	Running	0	48s
nginx-deployment-recreate-85cf8767cc-9sgp8	1/1	Running	0	48s
nginx-deployment-recreate-85cf8767cc-d4645	1/1	Running	0	48s
nginx-deployment-recreate-85cf8767cc-j48vf	1/1	Running	0	48s
nginx-deployment-recreate-85cf8767cc-j8x7t	1/1	Running	0	48s
nginx-deployment-recreate-85cf8767cc-kg5qp	1/1	Running	0	48s
nginx-deployment-recreate-85cf8767cc-nhlkm	1/1	Running	0	48s
nginx-deployment-recreate-85cf8767cc-pjqtt	1/1	Running	0	48s
nginx-deployment-recreate-85cf8767cc-t2mw7	1/1	Running	0	48s
nginx-deployment-recreate-85cf8767cc-xpbhz	1/1	Running	0	48s
nginx-deployment-rolling-8587c95656-2xqss	1/1	Running	0	3m24s
nginx-deployment-rolling-8587c95656-2z6g8	1/1	Running	0	3m44s
nginx-deployment-rolling-8587c95656-8rp6q	1/1	Running	0	3m45s
nginx-deployment-rolling-8587c95656-f5vcg	1/1	Running	0	3m45s
nginx-deployment-rolling-8587c95656-hpntg	1/1	Running	0	3m18s
nginx-deployment-rolling-8587c95656-nvmrg	1/1	Running	0	3m13s
nginx-deployment-rolling-8587c95656-q9xmn	1/1	Running	0	3m45s
nginx-deployment-rolling-8587c95656-rpt4t	1/1	Running	0	3m15s
nginx-deployment-rolling-8587c95656-swhk4	1/1	Running	0	3m45s
nginx-deployment-rolling-8587c95656-t7dqx	1/1	Running	0	3m45s

UPDATE THE DEPLOYMENT TO A NEW IMAGE:

```
PS D:\Coding\ClassWork> 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

```
PS D:\Coding\ClassWork> kubectl rollout status deployment nginx-deployment-recreate
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 1 of 10 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 2 of 10 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 3 of 10 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 4 of 10 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 5 of 10 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 6 of 10 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 7 of 10 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 8 of 10 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 9 of 10 updated replicas are available...
deployment "nginx-deployment-recreate" successfully rolled out
```

VERIFY THE UPDATED PODS:

#### KUBECTL GET PODS -L APP=NGINX-RECREATE -O WIDE

NAME	READY	STATUS	RESTARTS	AGE	IP	NODE	NOMINATED NODE	READINESS	GATES
nginx-deployment-recreate-8755c7cc9-2f2t5	1/1	Running	0	80s	10.244.0.45	kind-control-plane	<none>	<none>	
nginx-deployment-recreate-8755c7cc9-9dtwk	1/1	Running	0	80s	10.244.0.51	kind-control-plane	<none>	<none>	
nginx-deployment-recreate-8755c7cc9-bzcc9	1/1	Running	0	80s	10.244.0.49	kind-control-plane	<none>	<none>	
nginx-deployment-recreate-8755c7cc9-kpnp2	1/1	Running	0	80s	10.244.0.44	kind-control-plane	<none>	<none>	
nginx-deployment-recreate-8755c7cc9-mzml4	1/1	Running	0	80s	10.244.0.47	kind-control-plane	<none>	<none>	
nginx-deployment-recreate-8755c7cc9-n416c	1/1	Running	0	80s	10.244.0.46	kind-control-plane	<none>	<none>	
nginx-deployment-recreate-8755c7cc9-txd24	1/1	Running	0	80s	10.244.0.43	kind-control-plane	<none>	<none>	
nginx-deployment-recreate-8755c7cc9-x95vg	1/1	Running	0	80s	10.244.0.48	kind-control-plane	<none>	<none>	
nginx-deployment-recreate-8755c7cc9-z8574	1/1	Running	0	80s	10.244.0.50	kind-control-plane	<none>	<none>	
nginx-deployment-recreate-8755c7cc9-zcjhg	1/1	Running	0	80s	10.244.0.52	kind-control-plane	<none>	<none>	
nginx-deployment-rolling-8587c95656-2xqss	1/1	Running	0	4m57s	10.244.0.29	kind-control-plane	<none>	<none>	
nginx-deployment-rolling-8587c95656-2z6g8	1/1	Running	0	5m17s	10.244.0.27	kind-control-plane	<none>	<none>	
nginx-deployment-rolling-8587c95656-8rp6q	1/1	Running	0	5m18s	10.244.0.26	kind-control-plane	<none>	<none>	
nginx-deployment-rolling-8587c95656-f5vcg	1/1	Running	0	5m18s	10.244.0.28	kind-control-plane	<none>	<none>	
nginx-deployment-rolling-8587c95656-hptng	1/1	Running	0	4m51s	10.244.0.30	kind-control-plane	<none>	<none>	
nginx-deployment-rolling-8587c95656-nvrmg	1/1	Running	0	4m46s	10.244.0.32	kind-control-plane	<none>	<none>	
nginx-deployment-rolling-8587c95656-q9xmn	1/1	Running	0	5m18s	10.244.0.24	kind-control-plane	<none>	<none>	
nginx-deployment-rolling-8587c95656-rpt4t	1/1	Running	0	4m48s	10.244.0.31	kind-control-plane	<none>	<none>	
nginx-deployment-rolling-8587c95656-swhk4	1/1	Running	0	5m18s	10.244.0.23	kind-control-plane	<none>	<none>	
nginx-deployment-rolling-8587c95656-t7dqx	1/1	Running	0	5m18s	10.244.0.25	kind-control-plane	<none>	<none>	

### STEP 3: CLEAN UP

#### DELETE THE DEPLOYMENTS:

```
KUBECTL DELETE DEPLOYMENT NGINX-DEPLOYMENT-ROLLING
KUBECTL DELETE DEPLOYMENT NGINX-DEPLOYMENT-RECREATE

PS D:\Coding\ClassWork> kubectl delete deployment nginx-deployment-rolling
deployment.apps "nginx-deployment-rolling" deleted from default namespace
PS D:\Coding\ClassWork> kubectl delete deployment nginx-deployment-recreate
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

PS D:\Coding\ClassWork> kubectl get pods -l app=web
NAME                               READY   STATUS    RESTARTS   AGE
nginx-deployment-recreate-8755c7cc9-z8574   0/1    Completed   0          2m3s
PS D:\Coding\ClassWork> kubectl get pods -l app=web
NAME                               READY   STATUS    RESTARTS   AGE
nginx-deployment-recreate-8755c7cc9-z8574   0/1    Completed   0          2m7s
```