



## Task 4: Implement Rolling Updates



### Objective

Configure the Deployment to use **RollingUpdate** strategy with controlled surge and availability, then trigger an image version change and observe the rollout.

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### ✂ Steps Taken

1. Edited the Deployment manifest to include the following rolling update strategy:

```
strategy:
  type: RollingUpdate
  rollingUpdate:
    maxSurge: 1
    maxUnavailable: 0
```

2. Applied the updated Deployment using:

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

3. Check on the pods until updated:

```
kubectl get pods -l app=nodejs -w
```

4. Applying the updated-deployment manifest:

```
Kubectl apply -f updated-deployment.yaml
```

5. Monitored the rollout progress:

```
kubectl rollout status deployment/my-app
```

6. Described the pods to inspect rollout details:

```
kubectl describe pods -l app=nodejs
```

7. Performed a rollback to the previous version:

```
kubectl rollout undo deployment/nodejs-app
```

8. Verified the rollback via pod description:

```
kubectl describe pods -l app=nodejs
```

## Screenshots

- Screenshot 1:

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

```
kubectl get pods -l app=nodejs -w
```

```
PS C:\Users\user\Desktop\Banque Misr -Sprints\NodeJS-as-K8s> kubectl apply -f deployment.yaml
deployment.apps/nodejs-app created
PS C:\Users\user\Desktop\Banque Misr -Sprints\NodeJS-as-K8s> kubectl get pods -l app=nodejs -w
NAME                                READY   STATUS    RESTARTS   AGE
nodejs-app-67fb9cd6f6-2ms2f         1/1     Running   0           37s
nodejs-app-67fb9cd6f6-n42ht         1/1     Running   0           37s
```

- Screenshot 2:

```
kubectl apply -f updated-deployment.yaml
```

```
kubectl rollout status deployment/my-app
```

```
PS C:\Users\user\Desktop\Banque Misr -Sprints\NodeJS-as-K8s> kubectl apply -f updated-deployment.yaml
deployment.apps/nodejs-app configured
PS C:\Users\user\Desktop\Banque Misr -Sprints\NodeJS-as-K8s> kubectl rollout status deployment/nodejs-app
Waiting for deployment "nodejs-app" rollout to finish: 1 out of 2 new replicas have been updated...
Waiting for deployment "nodejs-app" rollout to finish: 1 out of 2 new replicas have been updated...
Waiting for deployment "nodejs-app" rollout to finish: 1 out of 2 new replicas have been updated...
Waiting for deployment "nodejs-app" rollout to finish: 1 old replicas are pending termination...
Waiting for deployment "nodejs-app" rollout to finish: 1 old replicas are pending termination...
deployment "nodejs-app" successfully rolled out
```

- Screenshot 3:

```
kubectl describe pods -l app=nodejs
```

```
PS C:\Users\user\Desktop\Banque Misr -Sprints\NodeJS-as-K8s> kubectl describe pods -l app=nodejs
Name:                                nodejs-app-57954fc997-6l276
Namespace:                           default
Priority:                             0
Service Account:                     default
Node:                                minikube/192.168.49.2
Start Time:                          Sat, 02 Aug 2025 20:50:06 +0300
Labels:                              app=nodejs
                                      pod-template-hash=57954fc997
Annotations:                          <none>
Status:                              Running
IP:                                  10.244.1.5
IPs:
  IP:                                10.244.1.5
Controlled By:                       ReplicaSet/nodejs-app-57954fc997
Containers:
  nodejs:
    Container ID:  docker://2014b77b74e63a0adbb80002977a971ee44b3760e0cda70957c22b035d0dc9f0
    Image:         karimzakouk/nodejs-hello:v2
    Image ID:      docker-pullable://karimzakouk/nodejs-hello@sha256:91ea36d30b13b1b6cbb7e1d44405c8ba15d9cd660f1d243dcd47b3ed024046c4
    Port:         3000/TCP
    Host Port:    0/TCP
    State:        Running
      Started:    Sat, 02 Aug 2025 20:50:10 +0300
    Ready:        True
    Restart Count: 0
    Environment:  <none>
    Mounts:       <none>
```

- Screenshot 4:

kubectl rollout undo deployment/nodejs-app

```
PS C:\Users\user\Desktop\Banque Mistr -Sprints\NodeJS-as-K8s> kubectl rollout undo deployment/nodejs-app
deployment.apps/nodejs-app rolled back
```

- Screenshot 5:

kubectl describe deploy nodejs-app

```
PS C:\Users\user\Desktop\Banque Mistr -Sprints\NodeJS-as-K8s> kubectl describe deploy nodejs-app
Name: nodejs-app
Namespace: default
CreationTimestamp: Sat, 02 Aug 2025 20:47:02 +0300
Labels: <none>
Annotations: deployment.kubernetes.io/revision: 3
Selector: app=nodejs
Replicas: 2 desired | 2 updated | 2 total | 2 available | 0 unavailable
StrategyType: RollingUpdate
MinReadySeconds: 0
RollingUpdateStrategy: 0 max unavailable, 1 max surge
Pod Template:
  Labels: app=nodejs
  Containers:
    nodejs:
      Image: karimzakzouk/nodejs-hello:latest
      Port: 3000/TCP
      Host Port: 0/TCP
      Environment: <none>
      Mounts: <none>
  Volumes: <none>
  Node-Selectors: <none>
  Tolerations: <none>
Conditions:
  Type           Status  Reason
  ----           -
  Available      True    MinimumReplicasAvailable
  Progressing    True    NewReplicaSetAvailable
OldReplicaSets: nodejs-app-57954fc997 (0/0 replicas created)
NewReplicaSet:  nodejs-app-67fb9cd6f6 (2/2 replicas created)
Events:
  Type    Reason             Age   From                  Message
  ----    -
  Normal  ScalingReplicaSet  48m   deployment-controller  Scaled up replica set nodejs-app-67fb9cd6f6 from 0 to 2
  Normal  ScalingReplicaSet  45m   deployment-controller  Scaled up replica set nodejs-app-57954fc997 from 0 to 1
  Normal  ScalingReplicaSet  44m   deployment-controller  Scaled down replica set nodejs-app-67fb9cd6f6 from 2 to 1
  Normal  ScalingReplicaSet  44m   deployment-controller  Scaled up replica set nodejs-app-57954fc997 from 1 to 2
  Normal  ScalingReplicaSet  44m   deployment-controller  Scaled down replica set nodejs-app-67fb9cd6f6 from 1 to 0
  Normal  ScalingReplicaSet  41m   deployment-controller  Scaled up replica set nodejs-app-67fb9cd6f6 from 0 to 1
  Normal  ScalingReplicaSet  41m   deployment-controller  Scaled down replica set nodejs-app-57954fc997 from 2 to 1
  Normal  ScalingReplicaSet  41m   deployment-controller  Scaled up replica set nodejs-app-67fb9cd6f6 from 1 to 2
```

## ✅ Outcome

The Deployment used a **RollingUpdate** strategy successfully. The application was updated incrementally with zero downtime, and all pods transitioned to the new version while maintaining availability.