

DEVOPS

DAY – 4

```
bavya@DESKTOP-U167KSL: ~$ kubectl describe pod my-app
kube-api-access-kmjcl:
  Type:                      Projected (a volume that contains injected data from multiple sources)
  TokenExpirationSeconds:    3607
  ConfigMapName:             kube-root-ca.crt
  ConfigMapOptional:         <nil>
  DownwardAPI:               true
  QoS Class:                   BestEffort
  Node-Selectors:              <none>
  Tolerations:                node.kubernetes.io/not-ready:NoExecute op=Exists for 300s
                             node.kubernetes.io/unreachable:NoExecute op=Exists for 300s
Events:
  Type      Reason      Age   From      Message
  ----      -
  Normal    Scheduled   6m3s  default-scheduler  Successfully assigned default/my-app to minikube
  Normal    Pulling     2m58s (x5 over 6m2s)  kubelet            Pulling image "bavyadharshini/simplewebapp:tagname"
  Warning   Failed      2m54s (x5 over 5m59s)  kubelet            Failed to pull image "bavyadharshini/simplewebapp:tagname": Error response from daemon: manifest for bavyadharshini/simplewebapp:tagname not found: manifest unknown: manifest unknown
  Warning   Failed      2m54s (x5 over 5m59s)  kubelet            Error: ErrImagePull
  Warning   Failed      52s (x19 over 5m59s)  kubelet            Error: ImagePullBackOff
  Normal    BackOff     29s (x21 over 5m59s)  kubelet            Back-off pulling image "bavyadharshini/simplewebapp:tagname"
bavya@DESKTOP-U167KSL:~$ sudo nano pod.yml
bavya@DESKTOP-U167KSL:~$ kubectl apply -f pod.yml
pod/my-app configured
bavya@DESKTOP-U167KSL:~$ kubectl get pods
NAME      READY   STATUS    RESTARTS   AGE
my-app    0/1     ImagePullBackOff  0          8m46s
my-pod    1/1     Running   0          71m
my-pod1   1/1     Running   0          67m
bavya@DESKTOP-U167KSL:~$ sudo nano pod.yml
bavya@DESKTOP-U167KSL:~$ kubectl apply -f pod.yml
pod/my-app unchanged
bavya@DESKTOP-U167KSL:~$ kubectl get pods
NAME      READY   STATUS    RESTARTS   AGE
my-app    1/1     Running   0          11m
my-pod    1/1     Running   0          73m
my-pod1   1/1     Running   0          69m
bavya@DESKTOP-U167KSL:~$ kubectl exec -it my-app -- bin/bash
OCI runtime exec failed: exec failed: unable to start container process: exec: "bin/bash": stat bin/bash: no such file or directory: unknown
command terminated with exit code 126
bavya@DESKTOP-U167KSL:~$ kubectl exec -it my-app -- /bin/sh
# exit
```

Pod Creation Output

```
bavya@DESKTOP-U167KSL: ~$ sudo nano rs-test.yml
[sudo] password for bavya:
bavya@DESKTOP-U167KSL:~$ kubectl apply -f rs-test.yml
error: error validating "rs-test.yml": error validating data: failed to download openapi: Get "https://127.0.0.1:32769/openapi/v2?timeout=32s": dial tcp 127.0.0.1:32769: connect: connection refused; if you choose to ignore these errors, turn validation off with --validate=false
bavya@DESKTOP-U167KSL:~$ kubectl apply -f rs-test.yml
error: error validating "rs-test.yml": error validating data: failed to download openapi: Get "https://127.0.0.1:32769/openapi/v2?timeout=32s": dial tcp 127.0.0.1:32769: connect: connection refused; if you choose to ignore these errors, turn validation off with --validate=false
bavya@DESKTOP-U167KSL:~$ minikube start
🌟 minikube v1.35.0 on Ubuntu 24.04 (amd64)
👉 Using the docker driver based on existing profile
🔥 Starting "minikube" primary control-plane node in "minikube" cluster
📦 Pulling base image v0.0.46 ...
🔄 Restarting existing docker container for "minikube" ...
🔧 Preparing Kubernetes v1.32.0 on Docker 27.4.1 ...
🔍 Verifying Kubernetes components...
  * Using image gcr.io/k8s-minikube/storage-provisioner:v5
  * Enabled addons: default-storageclass, storage-provisioner
🎉 Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default
bavya@DESKTOP-U167KSL:~$ sudo nano rs-test.yml
bavya@DESKTOP-U167KSL:~$ kubectl apply -f rs-test.yml
replicaset.apps/my-rs unchanged
bavya@DESKTOP-U167KSL:~$ kubectl get pods
NAME      READY   STATUS    RESTARTS   AGE
my-rs-nj6nr 1/1     Running   1 (3m19s ago)  101m
my-rs-w4zxn 1/1     Running   1 (3m19s ago)  101m
my-rs-z9jkg 1/1     Running   1 (3m19s ago)  101m
bavya@DESKTOP-U167KSL:~$
```

Replicas Output

```
bavya@DESKTOP-U167KSL: ~$ kubectl scale deployment my-deploy --replicas=2
deployment.apps/my-deploy scaled
bavya@DESKTOP-U167KSL: ~$ kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
my-deploy-cfbf5f7f7-nz74j          1/1     Running   0           76s
my-deploy-cfbf5f7f7-s2mvp          1/1     Running   0           76s
my-rs-nj6nr                        1/1     Running   1 (50m ago) 148m
my-rs-w4zxn                        1/1     Running   1 (50m ago) 148m
my-rs-z9jkg                        1/1     Running   1 (50m ago) 148m
bavya@DESKTOP-U167KSL: ~$ kubectl delete deployment my-deploy
deployment.apps "my-deploy" deleted
bavya@DESKTOP-U167KSL: ~$ kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
my-rs-nj6nr                        1/1     Running   1 (53m ago) 151m
my-rs-w4zxn                        1/1     Running   1 (53m ago) 151m
my-rs-z9jkg                        1/1     Running   1 (53m ago) 151m
bavya@DESKTOP-U167KSL: ~$ kubectl create -f deployment.yml
deployment.apps/my-deploy created
bavya@DESKTOP-U167KSL: ~$ kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
my-deploy-cfbf5f7f7-29h7v          1/1     Running   0           93s
my-deploy-cfbf5f7f7-hsn6m          1/1     Running   0           93s
my-deploy-cfbf5f7f7-w158t          1/1     Running   0           93s
my-deploy-cfbf5f7f7-zr8mc          1/1     Running   0           93s
my-rs-nj6nr                        1/1     Running   1 (56m ago) 153m
my-rs-w4zxn                        1/1     Running   1 (56m ago) 153m
my-rs-z9jkg                        1/1     Running   1 (56m ago) 153m
bavya@DESKTOP-U167KSL: ~$ kubectl scale deployment my-deploy --replicas=1
deployment.apps/my-deploy scaled
bavya@DESKTOP-U167KSL: ~$ kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
my-deploy-cfbf5f7f7-hsn6m          1/1     Running   0           110s
my-rs-nj6nr                        1/1     Running   1 (56m ago) 154m
my-rs-w4zxn                        1/1     Running   1 (56m ago) 154m
my-rs-z9jkg                        1/1     Running   1 (56m ago) 154m
bavya@DESKTOP-U167KSL: ~$ sudo nano deployment.yml
```

Deployment Creation Output

```
bavya@DESKTOP-U167KSL: ~$ minikube start
minikube v1.35.0 on Ubuntu 24.04 (amd64)
Using the docker driver based on existing profile
Starting "minikube" primary control-plane node in "minikube" cluster
Pulling base image v0.0.46 ...
Restarting existing docker container for "minikube" ...
Preparing Kubernetes v1.32.0 on Docker 27.4.1 ...
Verifying Kubernetes components...
  * Using image gcr.io/k8s-minikube/storage-provisioner:v5
Enabled addons: storage-provisioner, default-storageclass
Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default
[sudo] password for bavya:
bavya@DESKTOP-U167KSL: ~$ sudo service jenkins start
bavya@DESKTOP-U167KSL: ~$ kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
my-deploy-cfbf5f7f7-hsn6m          1/1     Running   1 (65s ago) 57m
my-rs-nj6nr                        1/1     Running   2 (65s ago) 3h29m
my-rs-w4zxn                        1/1     Running   2 (65s ago) 3h29m
my-rs-z9jkg                        1/1     Running   2 (65s ago) 3h29m
bavya@DESKTOP-U167KSL: ~$ sudo nano deployment.yml
bavya@DESKTOP-U167KSL: ~$ kubectl replace -f deployment.yml
deployment.apps/my-deploy replaced
service/my-service replaced
bavya@DESKTOP-U167KSL: ~$ minikube service my-service
+-----+-----+-----+-----+
| NAMESPACE | NAME   | TARGET PORT | URL                               |
+-----+-----+-----+-----+
| default   | my-service | 7070        | http://192.168.49.2:30002       |
+-----+-----+-----+-----+
Starting tunnel for service my-service.
+-----+-----+-----+-----+
| NAMESPACE | NAME   | TARGET PORT | URL                               |
+-----+-----+-----+-----+
| default   | my-service |             | http://127.0.0.1:33541         |
+-----+-----+-----+-----+
Opening service default/my-service in default browser...
http://127.0.0.1:33541
! Because you are using a Docker driver on linux, the terminal needs to be open to run it.
```

My-Service

```
-----|-----|-----|-----|
Starting tunnel for service my-service.
-----|-----|-----|-----|
NAMESPACE   NAME       TARGET PORT   URL
-----|-----|-----|-----|
default     my-service                http://127.0.0.1:38399
-----|-----|-----|-----|
Opening service default/my-service in default browser...
http://127.0.0.1:38399
Because you are using a Docker driver on linux, the terminal needs to be open to run it.
Stopped tunnel for service my-service.
bavya@DESKTOP-U167KSL:~$ curl http://192.168.49.2:30002/my-app/
<doctype html><html lang="en"><head><title>HTTP Status 404 - Not Found</title><style type="text/css">body {font-family:Tahoma,Arial,sans-serif;} h1, h2, h3
, b {color:white;background-color:#525D76;} h1 {font-size:22px;} h2 {font-size:16px;} h3 {font-size:14px;} p {font-size:12px;} a {color:black;} .line {heigh
t:1px;background-color:#525D76;border:none;}</style></head><body><h1>HTTP Status 404 - Not Found</h1><hr class="line" /><p><b>Type</b> Status Report</p><p><
b>Description</b> The origin server did not find a current representation for the target resource or is not willing to disclose that one exists.</p><hr clas
s="line" /><h3>Apache Tomcat/9.0.102</h3></body></html>bavya@DESKTOP-U167KSL:~$ kubectl get pod
NAME                                READY   STATUS    RESTARTS   AGE
my-deploy-9ff857f79-m62m8          1/1     Running   1 (17m ago) 49m
my-deploy-9ff857f79-mttkc          1/1     Running   1 (17m ago) 50m
my-deploy-9ff857f79-p4r65          1/1     Running   1 (17m ago) 49m
my-deploy-9ff857f79-qdgkv          1/1     Running   1 (17m ago) 50m
my-rs-nj6nr                        1/1     Running   3 (17m ago) 4h22m
my-rs-w4zxn                        1/1     Running   3 (17m ago) 4h22m
my-rs-z9jkg                        1/1     Running   3 (17m ago) 4h22m
bavya@DESKTOP-U167KSL:~$ kubectl exec -it my-deploy-9ff857f79-m62m8 -- bin/bash/
OCI runtime exec failed: exec failed: unable to start container process: exec: "bin/bash/": stat bin/bash/: no such file or directory: unknown
command terminated with exit code 126
bavya@DESKTOP-U167KSL:~$ kubectl exec -it my-deploy-9ff857f79-m62m8 -- /bin/bash
root@my-deploy-9ff857f79-m62m8:/usr/local/tomcat# ls
bin                                conf                               filtered-KEYS                       LICENSE                             README.md                         RUNNING.txt                       upstream-KEYS                       webapps.dist
BUILDING.txt                      CONTRIBUTING.md                   lib                                 logs                                NOTICE                           RELEASE-NOTES                     300m                               webapps                            100m
root@my-deploy-9ff857f79-m62m8:/usr/local/tomcat# exit
exit
bavya@DESKTOP-U167KSL:~$ curl http://192.168.49.2:30002/maven-web-app/
<html>
<body>
<h2>Hello World!</h2>
</body>
</html>
bavya@DESKTOP-U167KSL:~$ |
```

My-Service Output

```
bavya@DESKTOP-U167KSL:~$ kubectl get pod
NAME                                READY   STATUS    RESTARTS   AGE
my-deploy-9ff857f79-t4d5c          1/1     Running   0           16m
my-deploy-9ff857f79-zd5wl          1/1     Running   0           16m
bavya@DESKTOP-U167KSL:~$ kubectl get pod
NAME                                READY   STATUS    RESTARTS   AGE
my-deploy-9ff857f79-m62m8          1/1     Running   1 (62m ago) 94m
my-deploy-9ff857f79-mttkc          1/1     Running   1 (62m ago) 94m
my-deploy-9ff857f79-p4r65          1/1     Running   1 (62m ago) 94m
my-deploy-9ff857f79-qdgkv          1/1     Running   1 (62m ago) 94m
my-rs-nj6nr                        1/1     Running   3 (62m ago) 5h7m
my-rs-w4zxn                        1/1     Running   3 (62m ago) 5h7m
my-rs-z9jkg                        1/1     Running   3 (62m ago) 5h7m
bavya@DESKTOP-U167KSL:~$ kubectl get pod -n my-deploy
No resources found in my-deploy namespace.
bavya@DESKTOP-U167KSL:~$ kubectl get pod -n my-deploy
NAME                                READY   STATUS    RESTARTS   AGE
my-deploy-9ff857f79-8lp7h          1/1     Running   0           17m
my-deploy-9ff857f79-kt8v           1/1     Running   0           17m
my-deploy-9ff857f79-t4d5c          1/1     Running   0           17m
my-deploy-9ff857f79-zd5wl          1/1     Running   0           17m
bavya@DESKTOP-U167KSL:~$ kubectl get all --namespaces
error: unknown flag: --namespaces
See 'kubectl get --help' for usage.
bavya@DESKTOP-U167KSL:~$ kubectl get all --namespaces my-deploy
error: unknown flag: --namespaces
See 'kubectl get --help' for usage.
bavya@DESKTOP-U167KSL:~$ kubectl get all --namespace my-deploy
NAME                                READY   STATUS    RESTARTS   AGE
pod/my-deploy-9ff857f79-8lp7h       1/1     Running   0           17m
pod/my-deploy-9ff857f79-kt8v        1/1     Running   0           17m
pod/my-deploy-9ff857f79-t4d5c       1/1     Running   0           17m
pod/my-deploy-9ff857f79-zd5wl       1/1     Running   0           17m
bavya@DESKTOP-U167KSL:~$ kubectl get service/my-service
NAME                                TYPE           CLUSTER-IP    EXTERNAL-IP    PORT(S)          AGE
service/my-service                 NodePort       10.107.54.218 <none>         7070:30001/TCP 17m
bavya@DESKTOP-U167KSL:~$ kubectl get deployment.apps/my-deploy
NAME                                READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/my-deploy           4/4     4             4           17m
bavya@DESKTOP-U167KSL:~$ kubectl get replicaset.apps/my-deploy-9ff857f79
NAME                                DESIRED   CURRENT   READY   AGE
replicaset.apps/my-deploy-9ff857f79 4          4         4       17m
bavya@DESKTOP-U167KSL:~$ |
```

Namespace

```
bavya@DESKTOP-U167KSL: ~  
my-deploy-9ff857f79-ktr8v 1/1 Running 0 17m  
my-deploy-9ff857f79-t4d5c 1/1 Running 0 17m  
my-deploy-9ff857f79-zd5wl 1/1 Running 0 17m  
bavya@DESKTOP-U167KSL:~$ kubectl get all --namespaces  
error: unknown flag: --namespaces  
See 'kubectl get --help' for usage.  
bavya@DESKTOP-U167KSL:~$ kubectl get all --namespaces my-deploy  
error: unknown flag: --namespaces  
See 'kubectl get --help' for usage.  
bavya@DESKTOP-U167KSL:~$ kubectl get all --namespace my-deploy  
NAME READY STATUS RESTARTS AGE  
pod/my-deploy-9ff857f79-8lp7h 1/1 Running 0 17m  
pod/my-deploy-9ff857f79-ktr8v 1/1 Running 0 17m  
pod/my-deploy-9ff857f79-t4d5c 1/1 Running 0 17m  
pod/my-deploy-9ff857f79-zd5wl 1/1 Running 0 17m  
  
NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE  
service/my-service NodePort 10.107.54.218 <none> 7070:30001/TCP 17m  
  
NAME READY UP-TO-DATE AVAILABLE AGE  
deployment.apps/my-deploy 4/4 4 4 17m  
  
NAME DESIRED CURRENT READY AGE  
replicaset.apps/my-deploy-9ff857f79 4 4 4 17m  
bavya@DESKTOP-U167KSL:~$ sudo nano deploy.yml  
[sudo] password for bavya:  
bavya@DESKTOP-U167KSL:~$ kubectl apply -f deploy.yml  
Command 'kubectl' not found, did you mean:  
  command 'kubectl' from snap kubectl (1.32.3)  
See 'snap info <snapname>' for additional versions.  
bavya@DESKTOP-U167KSL:~$ kubectl apply -f deploy.yml  
namespace/my-demo-ns created  
bavya@DESKTOP-U167KSL:~$ sudo nano nspod.yml  
bavya@DESKTOP-U167KSL:~$ kubectl get pod -n my-demo-ns  
No resources found in my-demo-ns namespace.  
bavya@DESKTOP-U167KSL:~$ kubectl apply -f nspod.yml  
pod/my-pod created  
bavya@DESKTOP-U167KSL:~$ kubectl get pod -n my-demo-ns  
NAME READY STATUS RESTARTS AGE  
my-pod 1/1 Running 0 6s  
bavya@DESKTOP-U167KSL:~$ |
```

Nspod

Pod Creation:

- a.
1. minikube start
2. kubectl get pod
3. kubectl delete all --all
4. kubectl run my-pod --image=nginx --port=80
5. kubectl get pod
6. kubectl get pod -o wide
7. kubectl describe my-pod1
8. kubectl exec -it my-pod1 -- bin/bash

pod.yml:

{

```
apiVersion: v1
kind: Pod
metadata:
  name: my-app
spec:
  containers:
    - name: my-app-container
      image: bavyadharshini/simplewebapp:tagname
      ports:
        - containerPort: 9090
  }
```

9. `kubectl apply -f pod.yml`

10. `kubectl get pods`

11. `kubectl exec -it my-app -- /bin/sh`

b.

1. `minikube ip`

2. `kubectl get rs`

3. `kubectl create deployment web-nginx --image=nginx --replicas=1`

4. `kubectl get deploy`

5. `kubectl create pod my-pod --image=nginx`

6. `kubectl delete deployment web-nginx`

7. `kubectl delete pod my-pod`

Replicas Creation:

1. sudo nano rs-test.yml

Yml File:

```
{
apiVersion: apps/v1
kind: ReplicaSet
metadata:
  name: my-rs
  labels:
    name: my-rs
spec:
  replicas: 3
  selector:
    matchLabels:
      apptype: web-backend
  template:
    metadata:
      labels:
        apptype: web-backend
    spec:
      containers:
        - name: my-app
          image: bavyadharshini/simplewebapp:latest
          ports:
            - containerPort: 9099
}
```

2. `kubectl apply -f rs-test.yml`
3. `kubectl get pods`
4. `kubectl get rs`
5. `kubectl exec -it my-rs-nj6nr -- /bin/bash`
6. `kubectl describe pod my-rs-nj6nr`

Deployment Creation:

a.

1. `sudo nano deployment`

Yml File:

```
{
  apiVersion: apps/v1
  kind: Deployment
  metadata:
    name: my-deploy
    labels:
      name: my-deploy
  spec:
    replicas: 4
    selector:
      matchLabels:
        apptype: web-backend
    strategy:
      type: RollingUpdate
    template:
```

```
metadata:
  labels:
    apptype: web-backend
spec:
  containers:
  - name: my-app
    image: bavyadharshini/simplewebapp:latest
    ports:
      - containerPort: 7076
}
```

2. `kubectl apply -f deployment.yml`
3. `kubectl get pods`
4. `kubectl scale deploy my-deploy --replicas=2`

b.

1. `kubectl create -f deployment.yml`
2. `kubectl get pods`
3. `kubectl scale deploy my-deploy --replicas=1`
4. `kubectl replace -f deployment.yml`

My-Service:

1. `sudo nano deployment.yml`

Yml File:

```
{
```



```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: my-deploy
  labels:
    name: my-deploy
spec:
  replicas: 1
  selector:
    matchLabels:
      apptype: web-backend
  strategy:
    type: RollingUpdate
  template:
    metadata:
      labels:
        apptype: web-backend
    spec:
      containers:
        - name: my-app
          image:
          ports:
            - containerPort: 7070
---
```

```
apiVersion: v1
```

```
kind: Service
metadata:
  name: my-service
  labels:
    app: my-service
    type: backend-app
spec:
  type: NodePort
  ports:
    - targetPort: 7070
      port: 7070
      nodePort: 30002
  selector:
    apptype: web-backend
}
```

2. `kubectl replace -f deployment.yml`

3. `minikube service my-service`

Namespace:

1. `kubectl get pod -n my-deploy`

2. `kubectl get all --namespace my-deploy`

Nspod:

1. sudo nano deploy.yml

deploy.yml

```
{
  apiVersion: v1
  kind: Namespace
  metadata:
    name: my-demo-ns
}
```

2. kubectl apply -f deploy.yml

3. sudo nano nspod.yml

nspod.yml

```
{
  apiVersion: v1
  kind: Pod
  metadata:
    name: my-pod
    namespace: my-demo-ns
  spec:
    containers:
      - name: my-container
        image: nginx:latest
}
```

4. kubectl apply -f nspod.yml

5. `kubectl get pod -n my-demo-ns`