

Day 2

Lab - Deploying nginx in declarative style

```
cd ~  
oc create deployment nginx --image=bitnami/nginx:1.18 -o yaml --dry-run=client  
oc create deployment nginx --image=bitnami/nginx:1.18 -o yaml --dry-run=client > nginx-deploy.yml  
oc apply -f nginx-deploy.yml  
oc get deploy,rs,po
```

Expected output

The screenshot shows a terminal window with three tabs. The current tab is titled 'main' and contains the command: `jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts > oc create deployment nginx --image=bitnami/nginx:1.18 --replicas=3 -o yaml --dry-run=client`. Below this, the terminal displays the YAML configuration for the deployment:

```
apiVersion: apps/v1  
kind: Deployment  
metadata:  
  creationTimestamp: null  
  labels:  
    app: nginx  
  name: nginx  
spec:  
  replicas: 3  
  selector:  
    matchLabels:  
      app: nginx  
  strategy: {}  
  template:  
    metadata:  
      creationTimestamp: null  
    labels:  
      app: nginx  
  spec:  
    containers:  
    - image: bitnami/nginx:1.18  
      name: nginx  
      resources: {}  
status: {}
```

After running the command, the terminal shows the deployment being created:

```
jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts > oc create deployment nginx --image=bitnami/nginx:1.18 --replicas=3 -o yaml --dry-run=client > nginx-deploy.yml  
jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts > vim nginx-deploy.yml  
jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts > oc apply -f nginx-deploy.yml  
deployment.apps/nginx created  
jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts > oc get deploy,rs,po
```

Finally, the terminal lists the deployment status:

NAME	READY	UP-TO-DATE	AVAILABLE	AGE
deployment.apps/nginx	3/3	3	3	6s

```
jegan@tektutor.org
jegan@tektutor.org

name: nginx
spec:
  replicas: 3
  selector:
    matchLabels:
      app: nginx
  strategy: {}
  template:
    metadata:
      creationTimestamp: null
      labels:
        app: nginx
    spec:
      containers:
        - image: bitnami/nginx:1.18
          name: nginx
          resources: {}
status: {}

[jegan@tektutor.org ~] -> /openshift-3june-2024/Day2/declarative-manifest-scripts [✓] main ➔ oc create deployment nginx --image=bitnami/nginx:1.18 --replicas=3 -o yaml --dry-run=client > nginx-deploy.yaml
[jegan@tektutor.org ~] -> /openshift-3june-2024/Day2/declarative-manifest-scripts [✓] main ➔ vim nginx-deploy.yaml
[jegan@tektutor.org ~] -> /openshift-3june-2024/Day2/declarative-manifest-scripts [✓] main ➔ oc apply -f nginx-deploy.yaml
deployment.apps/nginx created
[jegan@tektutor.org ~] -> /openshift-3june-2024/Day2/declarative-manifest-scripts [✓] main ➔ oc get deploy,rs,po
NAME           READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/nginx   3/3       3            3           6s

NAME          DESIRED   CURRENT   READY   AGE
replicaset.apps/nginx-566b5879cb   3         3         3         6s

NAME          READY   STATUS    RESTARTS   AGE
pod/nginx-566b5879cb-4dq9t   1/1     Running   0          6s
pod/nginx-566b5879cb-95rwx   1/1     Running   0          6s
pod/nginx-566b5879cb-np8hb   1/1     Running   0          6s
[jegan@tektutor.org ~] -> /openshift-3june-2024/Day2/declarative-manifest-scripts [✓] main ➔
```

The screenshot shows the Red Hat OpenShift console's Topology view. The left sidebar has a 'Topology' section selected. The main area displays a network diagram with a central node labeled 'nginx' and three surrounding nodes, each labeled 'D nginx'. The top navigation bar shows the URL as https://console-openshift-console.apps.ocp4.tektutor.org.labs/topology/ns/jegan?view=graph.

Lab - Generating declarative manifest scripts for clusterip, nodeport and loadbalancer services

```
oc get deploy
oc expose deploy/nginx --type=ClusterIP --port=8080 -o yaml --dry-
run=client
oc expose deploy/nginx --type=ClusterIP --port=8080 -o yaml --dry-
run=client > nginx-clusterip-svc.yml
oc expose deploy/nginx --type=NodePort --port=8080 -o yaml --dry-run=client
> nginx-nodeport-svc.yml
oc expose deploy/nginx --type=LoadBalancer --port=8080 -o yaml --dry-
```

```
run=client > nginx-lb-svc.yml
ls
```

Expected output

```
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts ]$ main ]$ oc expose deploy/nginx
--type=ClusterIP --port=8080 -o yaml --dry-run=client
apiVersion: v1
kind: Service
metadata:
  creationTimestamp: null
  labels:
    app: nginx
    name: nginx
spec:
  ports:
  - port: 8080
    protocol: TCP
    targetPort: 8080
  selector:
    app: nginx
    type: ClusterIP
status:
  loadBalancer: {}

jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts ]$ main ]$ oc expose deploy/nginx
--type=ClusterIP --port=8080 -o yaml --dry-run=client > nginx-clusterip-svc.yml
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts ]$ main ]$ oc expose deploy/nginx
--type=NodePort --port=8080 -o yaml --dry-run=client > nginx-nodeport-svc.yml
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts ]$ main ]$ oc expose deploy/nginx
--type=LoadBalancer --port=8080 -o yaml --dry-run=client > nginx-lb-svc.yml
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts ]$ main ]$ ls
nginx-clusterip-svc.yml  nginx-deploy.yml  nginx-lb-svc.yml  nginx-nodeport-svc.yml
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts ]$ main ]$
```

Lab - Creating clusterip internal service in declarative style

```
oc expose deploy/nginx --type=ClusterIP --port=8080 -o yaml --dry-
run=client > nginx-clusterip-svc.yml
ls -l
oc apply -f nginx-clusterip-svc.yml
oc get svc
```

You can also delete the service in declarative style

```
oc delete -f nginx-clusterip-svc.yml
oc get svc
```

Expected output

```
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main> ls -l
total 16
-rw-r--r-- 1 jegan jegan 245 Jun  4 14:47 nginx-clusterip-svc.yml
-rw-r--r-- 1 jegan jegan 397 Jun  4 14:38 nginx-deploy.yml
-rw-r--r-- 1 jegan jegan 248 Jun  4 14:47 nginx-lb-svc.yml
-rw-r--r-- 1 jegan jegan 244 Jun  4 14:47 nginx-nodeport-svc.yml
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main> oc get deploy
NAME      READY   UP-TO-DATE   AVAILABLE   AGE
nginx    3/3     3           3           13m
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main> oc apply -f nginx-clusterip-svc.yml
service/nginx created
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main> oc get svc
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
nginx    ClusterIP  172.30.243.47  <none>          8080/TCP    2s
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main> oc delete -f nginx-clusterip-svc.yml
service "nginx" deleted
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main> oc apply -f nginx-nodeport-svc.yml
service/nginx created
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main> oc get svc
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
nginx    NodePort   172.30.87.68  <none>          8080:30249/TCP  2s
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main> oc delete -f nginx-nodeport-svc.yml
service "nginx" deleted
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main> oc apply -f nginx-lb-svc.yml
service/nginx created
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main> oc get svc
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
nginx    LoadBalancer 172.30.102.248  192.168.122.90  8080:30502/TCP  2s
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main> oc delete -f nginx-lb-svc.yml
service "nginx" deleted
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main>
```

Lab - Creating nodeport external service in declarative style

```
oc expose deploy/nginx --type=NodePort --port=8080 -o yaml --dry-run=client
> nginx-nodeport-svc.yml
ls -l
oc apply -f nginx-nodeport-svc.yml
oc get svc
```

You can also delete the service in declarative style

```
oc delete -f nginx-nodeport-svc.yml
oc get svc
```

Expected output

```
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts $ main> ls -l
total 16
-rw-r--r-- 1 jegan jegan 245 Jun  4 14:47 nginx-clusterip-svc.yml
-rw-r--r-- 1 jegan jegan 397 Jun  4 14:38 nginx-deploy.yml
-rw-r--r-- 1 jegan jegan 248 Jun  4 14:47 nginx-lb-svc.yml
-rw-r--r-- 1 jegan jegan 244 Jun  4 14:47 nginx-nodeport-svc.yml
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts $ main> oc get deploy
NAME      READY   UP-TO-DATE   AVAILABLE   AGE
nginx    3/3     3           3           13m
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts $ main> oc apply -f nginx-clusterip-svc.yml
service/nginx created
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts $ main> oc get svc
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
nginx    ClusterIP  172.30.243.47  <none>          8080/TCP    2s
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts $ main> oc delete -f nginx-clusterip-svc.yml
service "nginx" deleted
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts $ main> oc apply -f nginx-nodeport-svc.yml
service/nginx created
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts $ main> oc get svc
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
nginx    NodePort   172.30.87.68  <none>          8080:30249/TCP  2s
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts $ main> oc delete -f nginx-nodeport-svc.yml
service "nginx" deleted
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts $ main> oc apply -f nginx-lb-svc.yml
service/nginx created
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts $ main> oc get svc
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
nginx    LoadBalancer 172.30.102.248  192.168.122.90  8080:30502/TCP  2s
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts $ main> oc delete -f nginx-lb-svc.yml
service "nginx" deleted
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts $ main>
```

Lab - Creating loadbalancer external service in declarative style

```
oc expose deploy/nginx --type=LoadBalancer --port=8080 -o yaml --dry-run=client > nginx-lb-svc.yml
ls -l
oc apply -f nginx-lb-svc.yml
oc get svc
```

You can also delete the service in declarative style

```
oc delete -f nginx-lb-svc.yml
oc get svc
```

Expected output

```
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main > ls -l
total 16
-rw-r--r-- 1 jegan jegan 245 Jun  4 14:47 nginx-clusterip-svc.yml
-rw-r--r-- 1 jegan jegan 397 Jun  4 14:38 nginx-deploy.yml
-rw-r--r-- 1 jegan jegan 248 Jun  4 14:47 nginx-lb-svc.yml
-rw-r--r-- 1 jegan jegan 244 Jun  4 14:47 nginx-nodeport-svc.yml
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main > oc get deploy
NAME      READY   UP-TO-DATE   AVAILABLE   AGE
nginx    3/3     3           3           13m
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main > oc apply -f nginx-clusterip-svc.yml
service/nginx created
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main > oc get svc
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
nginx    ClusterIP  172.30.243.47  <none>          8080/TCP    2s
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main > oc delete -f nginx-clusterip-svc.yml
service "nginx" deleted
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main > oc apply -f nginx-nodeport-svc.yml
service/nginx created
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main > oc get svc
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
nginx    NodePort   172.30.87.68  <none>          8080:30249/TCP  2s
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main > oc delete -f nginx-nodeport-svc.yml
service "nginx" deleted
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main > oc apply -f nginx-lb-svc.yml
service/nginx created
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main > oc get svc
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
nginx    LoadBalancer 172.30.102.248  192.168.122.90  8080:30502/TCP  2s
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main > oc delete -f nginx-lb-svc.yml
service "nginx" deleted
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main >
```

Lab - Scaling up/down deployment in declarative style

Scale up the nginx deployment from 3 pods to 5 pods. You need to edit the nginx-deploy.yml file, replace the replicas from 3 to 5, save and apply as shown below.

```
cd ~/openshift-3june-2024
git pull
cd Day2/declarative-manifest-scripts
cat nginx-deploy.yml
oc get po
oc apply -f nginx-deploy.yml
oc get po
```

Expected output

```

apiVersion: apps/v1
kind: Deployment
metadata:
  creationTimestamp: null
  labels:
    app: nginx
    name: nginx
spec:
  replicas: 5
  selector:
    matchLabels:
      app: nginx
  strategy: {}
  template:
    metadata:
      creationTimestamp: null
      labels:
        app: nginx
    spec:
      containers:
        - image: bitnami/nginx:1.18
          name: nginx
          resources: {}
status: {}

```

"nginx-deploy.yml" 24L, 397B written

9,13 All

```

create mode 100644 Day2/declarative-deploy1.png
create mode 100644 Day2/declarative-deploy2.png
create mode 100644 Day2/declarative-deploy3.png
create mode 100644 Day2/service.png
create mode 100644 Day2/service1.png
jegan@tektutor.org > ~/openshift-3june-2024 ➤ main ➤ git push
Enumerating objects: 15, done.
Counting objects: 100% (15/15), done.
Delta compression using up to 48 threads.
Compressing objects: 100% (11/11), done.
Writing objects: 100% (11/11), 1.35 KiB | 1.35 MiB/s, done.
Total 11 (delta 5), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (5/5), completed with 2 local objects.
To https://github.com/tektutor/openshift-3june-2024.git
  173ace9..0f302d0 main -> main
jegan@tektutor.org > ~/openshift-3june-2024 ➤ main ➤ cd Day2/declarative-manifest-scripts
jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts ➤ main ➤ ls
nginx-clusterip-svc.yaml nginx-deploy.yaml nginx-lb-svc.yaml nginx-nodeport-svc.yaml
jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts ➤ main ➤ vim nginx-deploy.yaml
jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts ➤ main ➤ oc get po
NAME           READY   STATUS    RESTARTS   AGE
nginx-566b5879cb-4dq9t  1/1     Running   0          26m
nginx-566b5879cb-95rwx  1/1     Running   0          26m
nginx-566b5879cb-np8hb  1/1     Running   0          26m
jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts ➤ main ➤ oc apply -f nginx-deploy.yaml
deployment.apps/nginx configured
jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts ➤ main ➤ oc get po -w
NAME           READY   STATUS    RESTARTS   AGE
nginx-566b5879cb-2p79m  1/1     Running   0          3s
nginx-566b5879cb-4dq9t  1/1     Running   0          26m
nginx-566b5879cb-95rwx  1/1     Running   0          26m
nginx-566b5879cb-np8hb  1/1     Running   0          26m
nginx-566b5879cb-q4nc9  1/1     Running   0          3s
^C
x jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts ➤ main ➤

```

Scale down the nginx deployment from 5 pods to 3 pods. You need to edit the nginx-deploy.yaml file, replace the replicas from 5 to 3, save and apply as shown below.

```

cd ~/openshift-3june-2024
git pull
cd Day2/declarative-manifest-scripts
cat nginx-deploy.yaml
oc get po
oc apply -f nginx-deploy.yaml
oc get po

```

Expected output

The screenshot shows two terminal windows side-by-side. Both windows have a title bar 'jegan@tektutor.org'.

Terminal 1 (Left):

```
apiVersion: apps/v1
kind: Deployment
metadata:
  creationTimestamp: null
  labels:
    app: nginx
    name: nginx
spec:
  replicas: 3
  selector:
    matchLabels:
      app: nginx
  strategy: {}
  template:
    metadata:
      creationTimestamp: null
      labels:
        app: nginx
    spec:
      containers:
        - image: bitnami/nginx:1.18
          name: nginx
          resources: {}
status: {}
```

"nginx-deploy.yml" 24L, 397B

9,13 All

Terminal 2 (Right):

```
Delta compression using up to 48 threads
Compressing objects: 100% (11/11), done.
Writing objects: 100% (11/11), 1.35 KiB | 1.35 MiB/s, done.
Total 11 (delta 5), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (5/5), completed with 2 local objects.
To https://github.com/tektutor/openshift-3june-2024.git
  173ace9..0f302d0 main -> main
jegan@tektutor.org > ~/openshift-3june-2024 > main > cd Day2/declarative-manifest-scripts
jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts > main > ls
nginx-clusterip-svc.yaml nginx-deploy.yaml nginx-lb-svc.yaml nginx-nodeport-svc.yaml
jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts > main > vim nginx-deploy.yaml
jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts > main > oc get po
NAME           READY   STATUS    RESTARTS   AGE
nginx-566b5879cb-4dq9t  1/1    Running   0          26m
nginx-566b5879cb-95rwx  1/1    Running   0          26m
nginx-566b5879cb-np8hb  1/1    Running   0          26m
jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts > main > oc apply -f nginx-deploy.yaml
deployment.apps/nginx configured
jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts > main > oc get po -w
NAME           READY   STATUS    RESTARTS   AGE
nginx-566b5879cb-2p79m  1/1    Running   0          3s
nginx-566b5879cb-4dq9t  1/1    Running   0          26m
nginx-566b5879cb-95rwx  1/1    Running   0          26m
nginx-566b5879cb-np8hb  1/1    Running   0          26m
nginx-566b5879cb-q4nc9  1/1    Running   0          3s
^C
x jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts > main > vim nginx-deploy.yaml
jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts > main > oc apply -f nginx-deploy.yaml
deployment.apps/nginx configured
jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts > main > oc get po
NAME           READY   STATUS    RESTARTS   AGE
nginx-566b5879cb-4dq9t  1/1    Running   0          26m
nginx-566b5879cb-95rwx  1/1    Running   0          26m
nginx-566b5879cb-np8hb  1/1    Running   0          26m
jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts > main
```

Lab - Rolling update to upgrade your live application from one version to other without any downtime

You need to edit nginx-deploy.yaml and update the image version from 1.18 to 1.19, save it and apply

```
cd ~/openshift-3june-2024
git pull
cd Day2/declarative-manifest-scripts
cat nginx-deploy.yaml
oc apply -f nginx-deploy.yaml
```

To check the status of rolling update

```
oc rollout status deploy/nginx
oc rollout history deploy/nginx
```

To rollback to previous version

```
oc rollout undo deploy/nginx
```

Expected output

The screenshot shows a terminal window with two tabs. The left tab displays the deployment configuration file (`nginx-deploy.yml`) with 24L lines and 397B written. The right tab shows the output of the command `oc get rs -w`, listing a single replicset named `nginx-566b5879cb` with 3 desired and 3 current pods, all in READY state, created 42m ago. The bottom tab shows the output of the command `oc get po -w`, listing three pods: `nginx-566b5879cb-4dq9t`, `nginx-566b5879cb-95rwx`, and `nginx-566b5879cb-np8hb`, all in Running state with 0 restarts, created 41m ago.

```
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts > } main > oc get rs -w
NAME      DESIRED   CURRENT   READY   AGE
nginx-566b5879cb   3         3         3        42m

jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts > } main > oc get po -w
NAME          READY   STATUS    RESTARTS   AGE
nginx-566b5879cb-4dq9t   1/1     Running   0          41m
nginx-566b5879cb-95rwx   1/1     Running   0          41m
nginx-566b5879cb-np8hb   1/1     Running   0          41m
```

```
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts [!] main ➤ vim nginx-deploy.yml
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts [!] main ➤ oc apply -f nginx-deploy.yml
deployment.apps/nginx configured
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts [!] main ➤ oc get po
NAME          READY   STATUS    RESTARTS   AGE
nginx-6b49c75d9-2vtmb  1/1     Running   0          56s
nginx-6b49c75d9-6k8jg  1/1     Running   0          56s
nginx-6b49c75d9-d9c5z  1/1     Running   0          42s
nginx-6b49c75d9-hhzbn  1/1     Running   0          56s
nginx-6b49c75d9-mxzdf  1/1     Running   0          42s
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts [!] main ➤
```

	READY	STATUS	RESTARTS	AGE		READY	STATUS	RESTARTS	AGE	
nginx-566b5879cb	2	3	3	43m		nginx-566b5879cb-np8hb	0/1	Terminating	0	43m
nginx-6b49c75d9	5	4	2	14s		nginx-566b5879cb-np8hb	0/1	Terminating	0	43m
nginx-566b5879cb	2	3	3	43m		nginx-6b49c75d9-hhzbn	1/1	Running	0	15s
nginx-566b5879cb	2	2	2	43m		nginx-566b5879cb-v2w8b	1/1	Terminating	0	15s
nginx-6b49c75d9	5	4	2	14s		nginx-566b5879cb-v2w8b	0/1	Terminating	0	16s
nginx-6b49c75d9	5	5	2	14s		nginx-566b5879cb-v2w8b	0/1	Terminating	0	16s
nginx-6b49c75d9	5	5	3	15s		nginx-566b5879cb-v2w8b	0/1	Terminating	0	16s
nginx-566b5879cb	1	2	2	43m		nginx-566b5879cb-v2w8b	0/1	Terminating	0	16s
nginx-566b5879cb	1	2	2	43m		nginx-6b49c75d9-mxzdf	1/1	Running	0	11s
nginx-566b5879cb	1	1	1	43m		nginx-566b5879cb-95rwx	1/1	Terminating	0	44m
nginx-6b49c75d9	5	5	4	25s		nginx-566b5879cb-95rwx	0/1	Terminating	0	44m
nginx-566b5879cb	0	1	1	44m		nginx-6b49c75d9-d9c5z	1/1	Running	0	11s
nginx-566b5879cb	0	1	1	44m		nginx-566b5879cb-95rwx	0/1	Terminating	0	44m
nginx-566b5879cb	0	0	0	44m		nginx-566b5879cb-95rwx	0/1	Terminating	0	44m
nginx-6b49c75d9	5	5	5	25s		nginx-566b5879cb-95rwx	0/1	Terminating	0	44m

[!ol 0:zsh* "tektutor.org" 15:23 04-Jun-24]

```
jegan@tektutor.org
jegan@tektutor.org
```

```
strategy:
  rollingUpdate:
    maxSurge: 25%
    maxUnavailable: 25%
  type: RollingUpdate
template:
  metadata:
    creationTimestamp: null
    labels:
      app: nginx
spec:
  containers:
    - image: bitnami/nginx:1.19
      imagePullPolicy: IfNotPresent
      name: nginx
      resources: {}
```

nginx-566b5879cb	2	3	3	43m	nginx-566b5879cb-np8hb	0/1	Terminating	0	43m		
nginx-6b49c75d9	5	4	2	14s	nginx-566b5879cb-np8hb	0/1	Terminating	0	43m		
nginx-566b5879cb	2	3	3	43m	nginx-6b49c75d9-hhzbn	1/1	Running	0	15s		
nginx-566b5879cb	2	2	2	43m	nginx-566b5879cb-v2w8b	1/1	Terminating	0	15s		
nginx-6b49c75d9	5	4	2	14s	nginx-566b5879cb-v2w8b	0/1	Terminating	0	16s		
nginx-6b49c75d9	5	5	2	14s	nginx-566b5879cb-v2w8b	0/1	Terminating	0	16s		
nginx-6b49c75d9	5	5	3	15s	nginx-566b5879cb-v2w8b	0/1	Terminating	0	16s		
nginx-566b5879cb	1	2	2	43m	nginx-566b5879cb-v2w8b	0/1	Terminating	0	16s		
nginx-566b5879cb	1	2	2	43m	nginx-6b49c75d9-mxzdf	1/1	Running	0	11s		
nginx-566b5879cb	1	1	1	43m	nginx-566b5879cb-95rwx	1/1	Terminating	0	44m		
nginx-6b49c75d9	5	5	4	25s	nginx-566b5879cb-95rwx	0/1	Terminating	0	44m		
nginx-566b5879cb	0	1	1	44m	nginx-6b49c75d9-d9c5z	1/1	Running	0	11s		
nginx-566b5879cb	0	1	1	44m	nginx-566b5879cb-95rwx	0/1	Terminating	0	44m		
nginx-566b5879cb	0	0	0	44m	nginx-566b5879cb-95rwx	0/1	Terminating	0	44m		
nginx-6b49c75d9	5	5	5	25s	nginx-566b5879cb-95rwx	0/1	Terminating	0	44m		

[0] 0:oc*

"tektutor.org" 15:24 04-Jun-24

```
jegan@tektutor.org
jegan@tektutor.org
```

NAME	READY	STATUS	RESTARTS	AGE	LABELS
nginx-6b49c75d9-2vtmb	1/1	Running	0	9m	app=nginx,pod-template-hash=6b49c75d9
nginx-6b49c75d9-6k8jg	1/1	Running	0	9m	app=nginx,pod-template-hash=6b49c75d9
nginx-6b49c75d9-d9c5z	1/1	Running	0	8m46s	app=nginx,pod-template-hash=6b49c75d9
nginx-6b49c75d9-hhzbn	1/1	Running	0	9m	app=nginx,pod-template-hash=6b49c75d9
nginx-6b49c75d9-mxzdf	1/1	Running	0	8m46s	app=nginx,pod-template-hash=6b49c75d9

jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts ⌘ main ➜ oc rollout history deploy/nginx

deployment.apps/nginxx

REVISION CHANGE-CAUSE

1 <none>

2 <none>

jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts ⌘ main ➜ oc get p

error: the server doesn't have a resource type "p"

x jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts ⌘ main ➜ oc get po

NAME	READY	STATUS	RESTARTS	AGE
nginx-6b49c75d9-2vtmb	1/1	Running	0	9m36s
nginx-6b49c75d9-6k8jg	1/1	Running	0	9m36s
nginx-6b49c75d9-d9c5z	1/1	Running	0	9m22s
nginx-6b49c75d9-hhzbn	1/1	Running	0	9m36s
nginx-6b49c75d9-mxzdf	1/1	Running	0	9m22s

jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts ⌘ main ➜ oc edit pod/nginx-6b49c75d9-d9c5z

Edit cancelled, no changes made.

jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts ⌘ main ➜ oc rollout undo deploy/nginx

deployment.apps/nginxx rolled back

jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts ⌘ main ➜ oc get po

NAME	READY	STATUS	RESTARTS	AGE
nginx-566b5879cb-6zzbf	1/1	Running	0	15s
nginx-566b5879cb-8nr8q	1/1	Running	0	17s
nginx-566b5879cb-8wnds	1/1	Running	0	17s
nginx-566b5879cb-bjq82	1/1	Running	0	16s
nginx-566b5879cb-pdwtn	1/1	Running	0	15s

jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts ⌘ main ➜ oc edit pod/nginx-566b5879cb-6zzbf

Edit cancelled, no changes made.

jegan@tektutor.org > ~/openshift-3june-2024/Day2/declarative-manifest-scripts ⌘ main ➜

Lab - Creating a replicaset in declarative style without deployment

First let's delete any deployment running

```
cd ~/openshift-3june-2024
git pull
cd Day2/declarative-manifest-scripts
oc delete -f nginx-deploy.yml
```

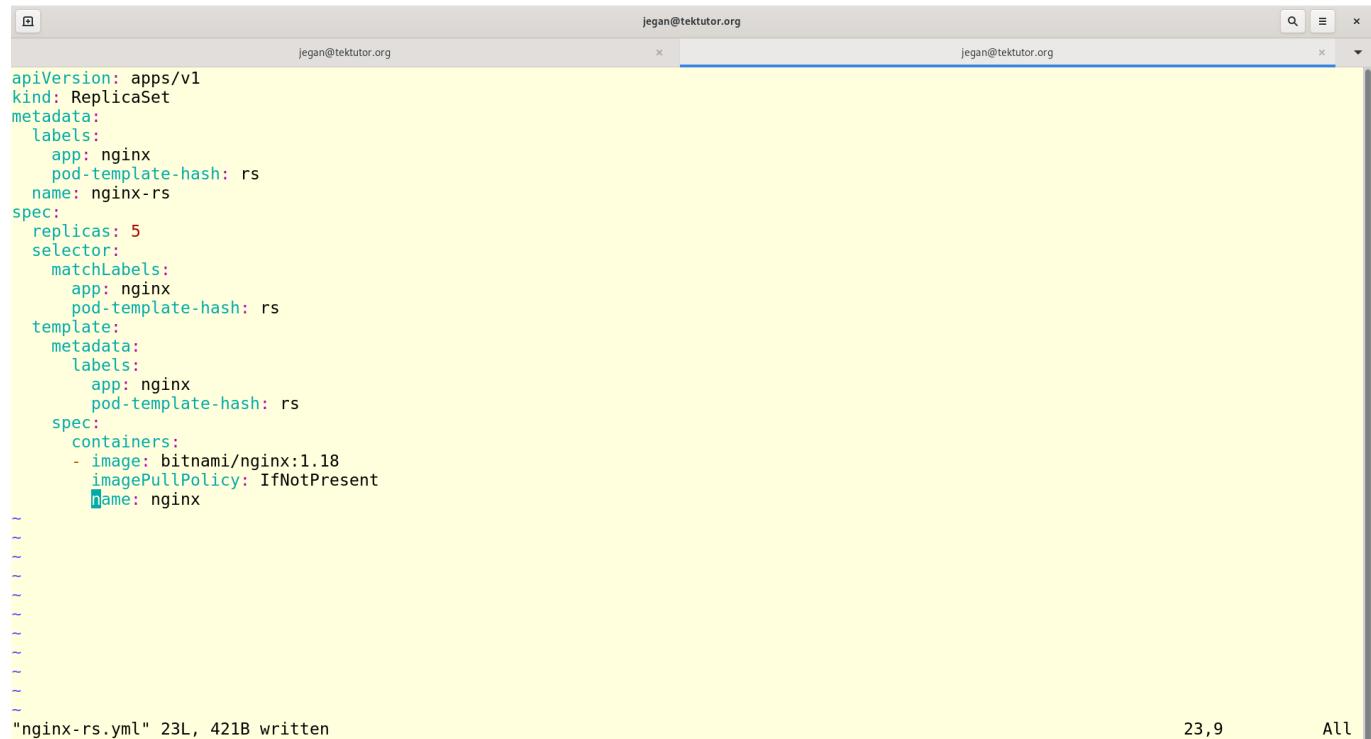
Let's create the replicaset

```
cd ~/openshift-3june-2024
cd Day2/declarative-manifest-scripts
cat nginx-rs.yml
oc apply -f nginx-rs
oc get deploy,rs,po
```

Once you are done, you may delete the replicaset declaratively

```
cd ~/openshift-3june-2024
cd Day2/declarative-manifest-scripts
oc delete -f nginx-rs
oc get rs,po
```

Expected output



The screenshot shows a terminal window with two tabs, both titled "jegan@tektutor.org". The left tab contains the command and its output:

```
jegan@tektutor.org ~ % cd ~/openshift-3june-2024
jegan@tektutor.org ~ % cd Day2/declarative-manifest-scripts
jegan@tektutor.org ~ % cat nginx-rs.yml
jegan@tektutor.org ~ % oc apply -f nginx-rs
jegan@tektutor.org ~ % oc get deploy,rs,po
jegan@tektutor.org ~ %
```

The right tab shows the file content of "nginx-rs.yml":

```
apiVersion: apps/v1
kind: ReplicaSet
metadata:
  labels:
    app: nginx
    pod-template-hash: rs
  name: nginx-rs
spec:
  replicas: 5
  selector:
    matchLabels:
      app: nginx
      pod-template-hash: rs
  template:
    metadata:
      labels:
        app: nginx
        pod-template-hash: rs
    spec:
      containers:
        - image: bitnami/nginx:1.18
          imagePullPolicy: IfNotPresent
          name: nginx
~
```

At the bottom of the terminal window, the status bar indicates: "nginx-rs.yml" 23L, 421B written, 23,9, All.

```
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts ⌘ main cat nginx-rs.yml
apiVersion: apps/v1
kind: ReplicaSet
metadata:
  labels:
    app: nginx
    pod-template-hash: rs
  name: nginx-rs
spec:
  replicas: 5
  selector:
    matchLabels:
      app: nginx
      pod-template-hash: rs
  template:
    metadata:
      labels:
        app: nginx
        pod-template-hash: rs
    spec:
      containers:
        - image: bitnami/nginx:1.18
          imagePullPolicy: IfNotPresent
          name: nginx
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts ⌘ main ls
nginx-clusterip-svc.yml nginx-deploy.yml nginx-lb-svc.yml nginx-nodeport-svc.yml nginx-rs.yml
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts ⌘ main oc delete -f nginx-deploy.yml
deployment.apps "nginx" deleted
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts ⌘ main oc apply -f nginx-rs.yml
replicaset.apps/nginx-rs created
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts ⌘ main oc get deploy,rs,po
NAME           DESIRED   CURRENT  READY   AGE
replicaset.apps/nginx-rs  5         5       5      4s
NAME             READY   STATUS    RESTARTS   AGE
pod/nginx-rs-6gfnb  1/1     Running   0          4s
pod/nginx-rs-9nvmb  1/1     Running   0          4s
pod/nginx-rs-lq2zq  1/1     Running   0          4s
pod/nginx-rs-nmcsm  1/1     Running   0          4s
pod/nginx-rs-smk6v  1/1     Running   0          4s
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts ⌘ main oc delete pod/nginx-rs-6gfnb
pod "nginx-rs-6gfnb" deleted
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts ⌘ main ls
nginx-clusterip-svc.yml nginx-deploy.yml nginx-lb-svc.yml nginx-nodeport-svc.yml nginx-rs.yml
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts ⌘ main oc delete -f nginx-deploy.yml
deployment.apps "nginx" deleted
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts ⌘ main oc apply -f nginx-rs.yml
replicaset.apps/nginx-rs created
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts ⌘ main oc get deploy,rs,po
NAME           DESIRED   CURRENT  READY   AGE
replicaset.apps/nginx-rs  5         5       5      4s
NAME             READY   STATUS    RESTARTS   AGE
pod/nginx-rs-6gfnb  1/1     Running   0          4s
pod/nginx-rs-9nvmb  1/1     Running   0          4s
pod/nginx-rs-lq2zq  1/1     Running   0          4s
pod/nginx-rs-nmcsm  1/1     Running   0          4s
pod/nginx-rs-smk6v  1/1     Running   0          4s
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts ⌘ main oc delete pod/nginx-rs-6gfnb
pod "nginx-rs-6gfnb" deleted
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts ⌘ main oc get po -w
NAME             READY   STATUS    RESTARTS   AGE
nginx-rs-9nvmb  1/1     Running   0          44s
nginx-rs-9w9bm  1/1     Running   0          4s
nginx-rs-lq2zq  1/1     Running   0          44s
nginx-rs-nmcsm  1/1     Running   0          44s
nginx-rs-smk6v  1/1     Running   0          44s
^C
x jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts ⌘ main oc delete -f nginx-rs.yml
replicaset.apps "nginx-rs" deleted
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts ⌘ main oc get rs,po
No resources found in jegan namespace.
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts ⌘ main
```

Lab - Creating a pod in declaratively style without replicaset and deployment

```
cd ~/openshift-3june-2024
git pull
cd Day2/declarative-manifest-scripts
cat pod.yml
oc apply -f pod.yml
oc get pod
```

Expected output

```
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main ls
nginx-clusterip-svc.yml nginx-deploy.yml nginx-lb-svc.yml nginx-nodeport-svc.yml nginx-rs.yml
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main vim pod.yml
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main oc apply -f pod.yml
Warning: would violate PodSecurity "restricted:v1.24": allowPrivilegeEscalation != false (container "my-container" must set securityContext.allowPrivilegeEscalation=false), unrestricted capabilities (container "my-container" must set securityContext.capabilities.drop=["ALL"]), runAsNonRoot != true (pod or container "my-container" must set securityContext.runAsNonRoot=true), seccompProfile (pod or container "my-container" must set securityContext.seccompProfile.type to "RuntimeDefault" or "Localhost")
pod/my-pod created
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main oc get po
NAME READY STATUS RESTARTS AGE
my-pod 1/1 Running 0 10s
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main cat pod.yml
apiVersion: v1
kind: Pod
metadata:
  name: my-pod
  labels:
    app: my-pod
spec:
  containers:
  - name: my-container
    image: bitnami/nginx:latest
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main
```

Once you are done with this exercise, you may delete the pod declaratively as shown below

```
cd ~/openshift-3june-2024
cd Day2/declarative-manifest-scripts
oc delete -f pod.yml
oc get pod
```

Expected output

```
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main ls
nginx-clusterip-svc.yml nginx-deploy.yml nginx-lb-svc.yml nginx-nodeport-svc.yml nginx-rs.yml
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main vim pod.yml
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main oc apply -f pod.yml
Warning: would violate PodSecurity "restricted:v1.24": allowPrivilegeEscalation != false (container "my-container" must set securityContext.allowPrivilegeEscalation=false), unrestricted capabilities (container "my-container" must set securityContext.capabilities.drop=["ALL"]), runAsNonRoot != true (pod or container "my-container" must set securityContext.runAsNonRoot=true), seccompProfile (pod or container "my-container" must set securityContext.seccompProfile.type to "RuntimeDefault" or "Localhost")
pod/my-pod created
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main oc get po
NAME READY STATUS RESTARTS AGE
my-pod 1/1 Running 0 10s
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main cat pod.yml
apiVersion: v1
kind: Pod
metadata:
  name: my-pod
  labels:
    app: my-pod
spec:
  containers:
  - name: my-container
    image: bitnami/nginx:latest
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main oc delete pod/my-pod
pod "my-pod" deleted
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main oc get po
No resources found in jegan namespace.
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main
```

Lab - Creating a route to expose the clusterip service with a convenient public url

As we discussed, the nodeport service is neither end-user friendly nor developer friendly. Also it forces us to open ports in the firewall it leads to security issues.

Route is the solution to the nodeport service issues.

Let's create a route

```
cd ~/openshift-3june-2024
git pull
cd Day2/declarative-manifest-scripts
ls -l
oc apply -f nginx-deploy.yml
oc apply -f nginx-clusterip-svc.yml
oc expose svc/nginx -o yaml --dry-run=client
oc expose svc/nginx -o yaml --dry-run=client > nginx-route.yml
oc apply -f nginx-route.yml

oc get route
```

You may access the route as shown below

```
curl http://nginx-jegan.apps.ocp4.tektutor.org.labs
```

Expected output

The screenshot shows a terminal window with two tabs. The left tab shows the command history and output of creating an Nginx deployment and service, then applying a route. The right tab shows the curl command being run. The output of the curl command is displayed in the terminal, showing the Nginx welcome page.

```
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts ✘ main • ls -l
total 28
-rw-r--r-- 1 jegan jegan 245 Jun 4 14:47 nginx-clusterip-svc.yml
-rw-r--r-- 1 jegan jegan 293 Jun 4 16:34 nginx-deploy.yml
-rw-r--r-- 1 jegan jegan 248 Jun 4 14:47 nginx-lb-svc.yml
-rw-r--r-- 1 jegan jegan 244 Jun 4 14:47 nginx-nodeport-svc.yml
-rw-r--r-- 1 jegan jegan 219 Jun 4 16:35 nginx-route.yml
-rw-r--r-- 1 jegan jegan 421 Jun 4 15:47 nginx-rs.yml
-rw-r--r-- 1 jegan jegan 151 Jun 4 16:02 pod.yml
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts ✘ main • oc apply -f nginx-deploy.yml
deployment.apps/nginx created
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts ✘ main • oc apply -f nginx-clusterip-svc.yml
service/nginx created
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts ✘ main • oc apply -f nginx-route.yml
route.route.openshift.io/nginx created
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts ✘ main • oc get route
NAME      HOST/PORT          PATH      SERVICES    PORT   TERMINATION   WILDCARD
nginx     nginx-jegan.apps.ocp4.tektutor.org.labs   nginx     8080          None
jegan@tektutor.org ~ -/openshift-3june-2024/Day2/declarative-manifest-scripts ✘ main • curl http://nginx-jegan.apps.ocp4.tektutor.org.labs
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
  body {
    width: 35em;
    margin: 0 auto;
    font-family: Tahoma, Verdana, Arial, sans-serif;
  }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and working. Further configuration is required.</p>
<p>For online documentation and support please refer to
<a href="http://nginx.org">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com">nginx.com</a>.</p>
<br><br>Thank you for using nginx </p></body>
```

Once you are done with this exercise, you may delete the resources as shown below

```
cd ~/openshift-3june-2024
cd Day2/declarative-manifest-scripts
ls -l

oc get deploy,svc,route
oc delete -f nginx-route.yml
oc delete -f nginx-clusterip-svc.yml
oc delete -f nginx-deploy.yml
oc get deploy,svc,route
```

Expected output

```
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main git push
Enumerating objects: 17, done.
Counting objects: 100% (15/15), done.
Delta compression using up to 48 threads
Compressing objects: 100% (9/9), done.
Writing objects: 100% (9/9), 969 bytes | 969.00 KiB/s, done.
Total 9 (delta 6), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (6/6), completed with 5 local objects.
To https://github.com/tektutor/openshift-3june-2024.git
  83cd286..2a1ff7b main -> main
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main ls -l
total 28
-rw-r--r-- 1 jegan jegan 245 Jun  4 14:47 nginx-clusterip-svc.yml
-rw-r--r-- 1 jegan jegan 293 Jun  4 16:34 nginx-deploy.yml
-rw-r--r-- 1 jegan jegan 248 Jun  4 14:47 nginx-lb-svc.yml
-rw-r--r-- 1 jegan jegan 244 Jun  4 14:47 nginx-nodeport-svc.yml
-rw-r--r-- 1 jegan jegan 219 Jun  4 16:35 nginx-route.yml
-rw-r--r-- 1 jegan jegan 421 Jun  4 15:47 nginx-rs.yml
-rw-r--r-- 1 jegan jegan 151 Jun  4 16:02 pod.yml
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main oc get deploy,svc,route
NAME          READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/nginx   5/5      5           5           10m
NAME        TYPE    CLUSTER-IP   EXTERNAL-IP   PORT(S)   AGE
service/nginx  ClusterIP  172.30.60.78 <none>     8080/TCP  10m
NAME                           HOST/PORT   PATH   SERVICES   PORT   TERMINATION   WILDCARD
route.route.openshift.io/nginx  nginx-jegan.apps.ocp4.tektutor.org.labs  8080   None
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main oc delete -f nginx-route.yml
route.route.openshift.io "nginx" deleted
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main oc delete -f nginx-clusterip-svc.yml
service "nginx" deleted
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main oc delete -f nginx-deploy.yml
deployment.apps "nginx" deleted
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main oc get deploy,svc,route
No resources found in jegan namespace.
jegan@tektutor.org ~ /openshift-3june-2024/Day2/declarative-manifest-scripts $ main
```

Lab - Deploying an application in declarative style from Webconsole in developer context

Topology - Red Hat OpenShift - Google Chrome

Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/topology/ns/jegan?view=graph

The screenshot shows the Red Hat OpenShift Topology interface. The left sidebar has a dark theme with white text. It includes a 'Developer' dropdown, '+Add' button, and a list of resources: Topology, Observe, Search, Builds, Helm, Project, ConfigMaps, and Secrets. The main content area has a blue header bar with the text 'You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.' Below this, it shows 'Project: jegan' and 'Application: All applications'. There are buttons for 'Display options' and 'Filter by resource'. A search bar with 'Name' and 'Find by name...' dropdowns is present. The center of the screen displays a small network graph icon with the text 'No resources found' and a message 'Start building your application or visit the [Add page](#) for more details.'

Search - Red Hat OpenShift - Google Chrome

Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/search-page/ns/jegan

The screenshot shows the Red Hat OpenShift Search interface. The left sidebar has a dark theme with white text. It includes a 'Developer' dropdown, '+Add' button, and a list of resources: Topology, Observe, Search, Builds, Helm, Project, ConfigMaps, and Secrets. The main content area has a blue header bar with the text 'You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.' Below this, it shows 'Project: jegan'. There are dropdown menus for 'Resources' and 'Label', and a search bar with a placeholder 'app=frontend'. The center of the screen displays the text 'No resources selected' and a message 'Select one or more resources from the dropdown.'

Search - Red Hat OpenShift - Google Chrome

Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/search-page/ns/jegan?kind=apps&v1=Deployment

Red Hat OpenShift

You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Project: jegan

Search

Resources 1 Label app=frontend /

Resource Deployment Clear all filters

Deployments apps/v1

Add to navigation

Create Deployment

No Deployments found

console-openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/deployments/~new/fo...

This screenshot shows the Red Hat OpenShift console interface. The left sidebar is dark-themed and includes options like Developer, +Add, Topology, Observe, Search (which is selected), Builds, Helm, Project, ConfigMaps, and Secrets. The main content area has a light blue header bar with the text 'You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.' Below this, it says 'Project: jegan'. A search bar at the top right contains 'app=frontend'. Under the 'Deployments' section, there's a 'Create Deployment' button and a message stating 'No Deployments found'.

Create Deployment - Red Hat OpenShift - Google Chrome

Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/deployments/~new/form

Red Hat OpenShift

You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Project: jegan

Create Deployment

Configure via: Form view YAML view

DeploymentConfig is being deprecated with OpenShift 4.14
Feature development of DeploymentConfigs will be deprecated in OpenShift Container Platform 4.14. DeploymentConfigs will continue to be supported for security and critical fixes, but you should migrate to Deployments wherever it is possible.
[Learn more about Deployments](#)

Note: Some fields may not be represented in this form view. Please select "YAML view" for full control.

Name *

Deployment strategy

Create Cancel

This screenshot shows the 'Create Deployment' form in the Red Hat OpenShift console. The left sidebar is identical to the previous screenshot. The main form has a 'Create Deployment' title. It includes a note about the deprecation of DeploymentConfig. It has a 'Name' field with a red asterisk indicating it's required. At the bottom are 'Create' and 'Cancel' buttons.

Create Deployment - Red Hat OpenShift - Google Chrome

Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/deployments/~new/form

Red Hat OpenShift

Developer

+Add

Topology

Observe

Search

Builds

Helm

Project

ConfigMaps

Secrets

You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Project: jegan

Create Deployment

Configure via: Form view YAML view

DeploymentConfig is being deprecated with OpenShift 4.14

Feature development of DeploymentConfigs will be deprecated in OpenShift Container Platform 4.14. DeploymentConfigs will continue to be supported for security and critical fixes, but you should migrate to Deployments wherever it is possible.

[Learn more about Deployments](#)

```
1 apiVersion: apps/v1
2 kind: Deployment
3 metadata:
4   namespace: jegan
5   name: nginx
6 spec:
7   selector:
8     matchLabels:
9       app: nginx
10    replicas: 3
```

Deployment

Schema

Deployment enables declarative updates for Pods and ReplicaSets.

- apiVersion string

Create Cancel Download

Create Deployment - Red Hat OpenShift - Google Chrome

Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/deployments/~new/form

Red Hat OpenShift

Developer

+Add

Topology

Observe

Search

Builds

Helm

Project

ConfigMaps

Secrets

You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Project: jegan

Create Deployment

Configure via: Form view YAML view

DeploymentConfig is being deprecated with OpenShift 4.14

Feature development of DeploymentConfigs will be deprecated in OpenShift Container Platform 4.14. DeploymentConfigs will continue to be supported for security and critical fixes, but you should migrate to Deployments wherever it is possible.

[Learn more about Deployments](#)

```
9   app: nginx
10  replicas: 3
11  template:
12    metadata:
13      labels:
14        app: nginx
15    spec:
16      containers:
17        - name: nginx
18          image: bitnami/nginx:latest
19          ports:
```

Deployment

Schema

Deployment enables declarative updates for Pods and ReplicaSets.

- apiVersion string

Create Cancel Download

Create Deployment - Red Hat OpenShift - Google Chrome

Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/deployments/~new/form kube:admin

Create Deployment

Project: jegan

Configure via: Form view (radio) YAML view (radio)

DeploymentConfig is being deprecated with OpenShift 4.14

Feature development of DeploymentConfigs will be deprecated in OpenShift Container Platform 4.14. DeploymentConfigs will continue to be supported for security and critical fixes, but you should migrate to Deployments wherever it is possible.

[Learn more about Deployments](#)

```
12     metadata:
13       labels:
14         |   app: nginx
15       spec:
16         containers:
17           - name: nginx
18             image: bitnami/nginx:latest
19             ports:
20               - containerPort: 8080
21                 protocol: TCP
```

Deployment

Schema

Deployment enables declarative updates for Pods and ReplicaSets.

- apiVersion string

Create **Cancel** **Download**

nginx - Deployment - Details - Red Hat OpenShift - Google Chrome

Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/deployments/nginx kube:admin

nginx

Project: jegan

Deployments > Deployment details

Deployment details

Scaling to 3

Name: nginx	Update strategy: RollingUpdate
Namespace: jegan	Max unavailable: 25% of 3 pods
Labels: No labels	Max surge: 25% greater than 3 pods
Progress deadline seconds:	

nginx - Deployment - Details - Red Hat OpenShift - Google Chrome

You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Project: jegan

Deployments > Deployment details

D nginx

Actions

Details Metrics YAML ReplicaSets Pods Environment Events

Deployment details

3 Pods

Name: nginx Update strategy: RollingUpdate

Namespace: jegan Max unavailable: 25% of 3 pods

Labels: No labels Edit Max surge: 25% greater than 3 pods

Progress deadline seconds

nginx - Deployment - Pods - Red Hat OpenShift - Google Chrome

You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Project: jegan

Deployments > Deployment details

D nginx

Actions

Details Metrics ReplicaSets Pods Environment Events

Name	Status	Ready	Restarts	Owner	Memory	CPU	Created
nginx-7577cb5f8-gtwit	Running	1/1	0	RS nginx-7577cb5f8	7.2 MiB	-	4 Jun 2024, 16:52
nginx-7577cb5f8-ht7xz	Running	1/1	0	RS nginx-7577cb5f8	7.3 MiB	-	4 Jun 2024, 16:52
nginx-7577cb5f8-vq7cc	Running	1/1	0	RS nginx-7577cb5f8	12.9 MiB	-	4 Jun 2024, 16:52

https://console.openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/deployments/nginx/pods

Lab - Create a clusterip service in declarative style from webconsole in developer context

Topology - Red Hat OpenShift - Google Chrome

Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/topology/ns/jegan?view=graph

The screenshot shows the Red Hat OpenShift Topology interface. The left sidebar has a 'Topology' section selected. The main area displays a single pod named 'nginx' represented by a blue circle with a white icon. Below the icon is a button labeled 'D nginx'. The top navigation bar shows 'Project: jegan' and 'Application: All applications'. There are also 'Display options' and 'Filter by resource' buttons.

Search - Red Hat OpenShift - Google Chrome

Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/search-page/ns/jegan?kind=core-v1-Service

The screenshot shows the Red Hat OpenShift Search interface. The left sidebar has a 'Search' section selected. The main area is titled 'Search' and shows a search results table. The table has columns for 'Resources' (with a dropdown showing '1'), 'Label' (with a dropdown showing 'app=frontend'), and a search bar. The results table shows several service entries: 'APIS APIService', 'CSV ClusterServiceVersion', 'EgressService', 'Service' (which is checked), 'ServiceAccount', 'ServiceCA', and 'ServiceMonitor'. A link 'Add to navigation' is visible on the right. The status message 'No Services found' is displayed at the bottom of the results table.

Search - Red Hat OpenShift - Google Chrome
Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/search-page/ns/jegan?kind=core~v1=Service

Red Hat OpenShift

You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Project: jegan

Search

Resources 1 Label app=frontend /

Resource Service Clear all filters

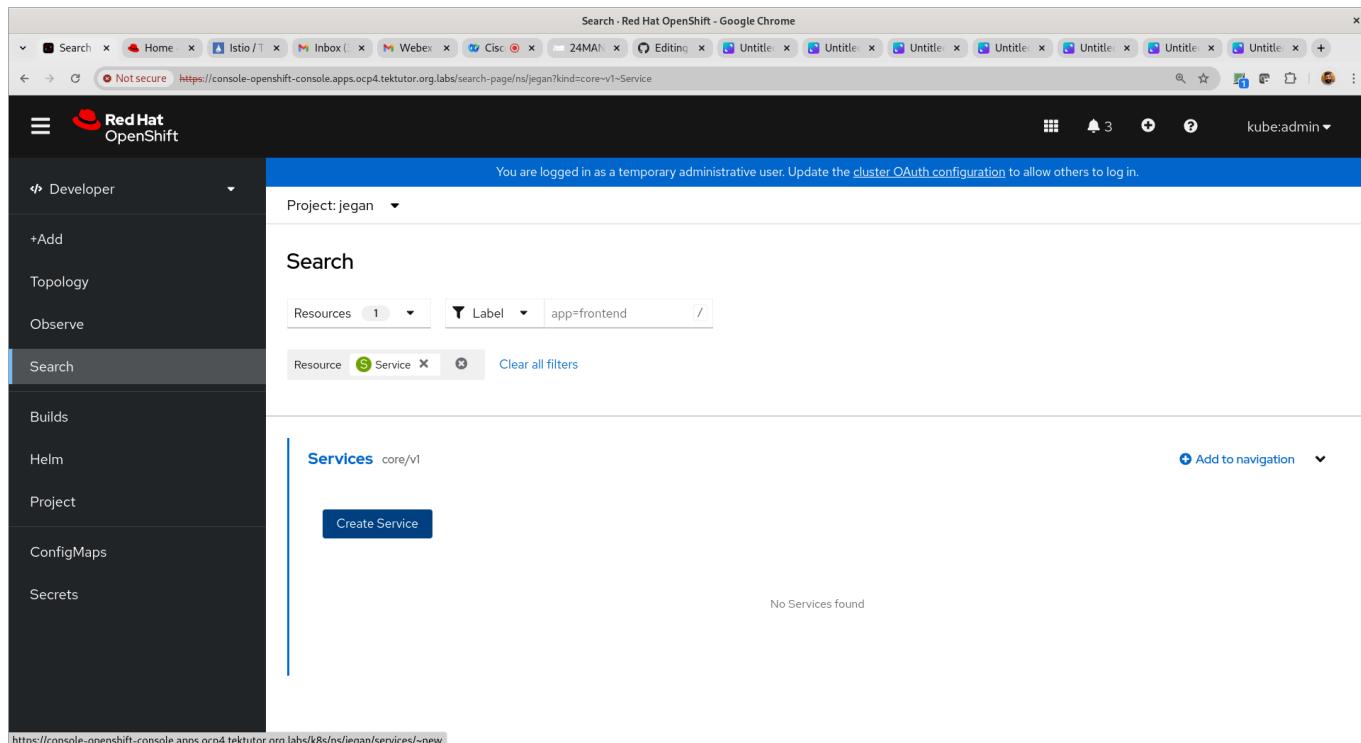
Services core/v1

Add to navigation

Create Service

No Services found

<https://console-openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/services/~new>



Red Hat OpenShift - Google Chrome
Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/services/~new

Red Hat OpenShift

You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Project: jegan

Create Service

Create by manually entering YAML or JSON definitions, or by dragging and dropping a file into the editor.

```
apiVersion: v1
kind: Service
metadata:
  name: example
  namespace: jegan
spec:
  selector:
    app: MyApp
  ports:
    - protocol: TCP
      port: 80
      targetPort: 9376
```

Alt + F1 Accessibility help | View shortcuts | Show tooltips

Create Cancel Download

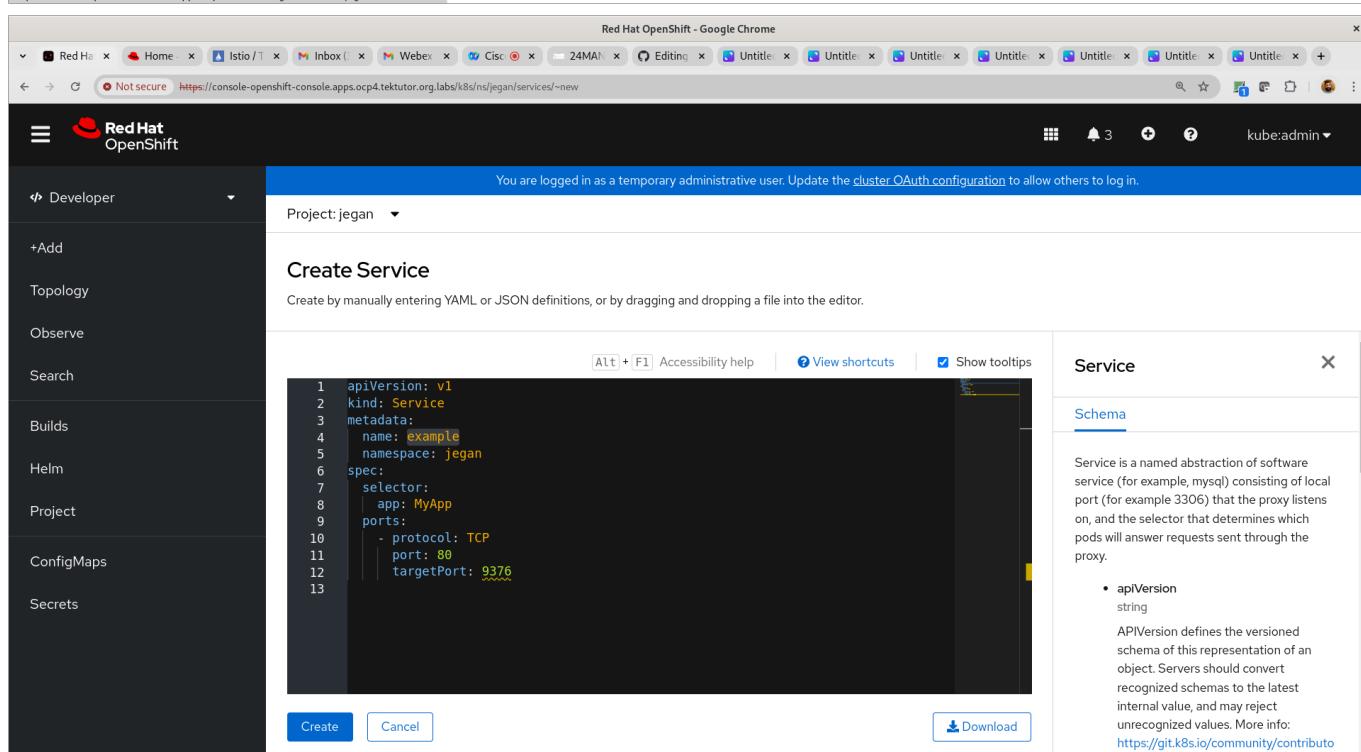
Service

Schema

Service is a named abstraction of software service (for example, mysql) consisting of local port (for example 3306) that the proxy listens on, and the selector that determines which pods will answer requests sent through the proxy.

- apiVersion string

APIVersion defines the versioned schema of this representation of an object. Servers should convert recognized schemas to the latest internal value, and may reject unrecognized values. More info: <https://git.k8s.io/community/contributo>



Red Hat OpenShift - Google Chrome

Not secure https://console.openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/services/~new

Red Hat OpenShift

Developer

+Add

Topology

Observe

Search

Builds

Helm

Project

ConfigMaps

Secrets

You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Project: jegan

Create Service

Create by manually entering YAML or JSON definitions, or by dragging and dropping a file into the editor.

```

1  apiVersion: v1
2  kind: Service
3  metadata:
4    name: nginx
5  spec:
6    selector:
7      app: nginx
8    ports:
9      - protocol: TCP
10     port: 8080
11     targetPort: 8080
12

```

Alt + F1 Accessibility help | ? View shortcuts | Show tooltips

Create Cancel Download

Service

Schema

Service is a named abstraction of software service (for example, mysql) consisting of local port (for example 3306) that the proxy listens on, and the selector that determines which pods will answer requests sent through the proxy.

- **apiVersion** string

APIVersion defines the versioned schema of this representation of an object. Servers should convert recognized schemas to the latest internal value, and may reject unrecognized values. More info: <https://git.k8s.io/community/contributing/api-versioning>

nginx - Service - Details - Red Hat OpenShift - Google Chrome

Not secure https://console.openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/services/nginx

Red Hat OpenShift

Developer

+Add

Topology

Observe

Search

Builds

Helm

Project

ConfigMaps

Secrets

You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Project: jegan

Details YAML Pods

Service details

Name: nginx

Namespace: NS jegan

Labels: No labels

Pod selector: [Q app=nginx](#)

Annotations: [O annotations](#)

Session affinity: None

Created at:

Service routing

Hostname: nginx.jegan.svc.cluster.local
Accessible within the cluster only

Service address

Type	Location
Cluster IP	172.30.23.181 Accessible within the cluster only

Service port mapping

Name	Port	Protocol	Pod port or name
-	8080	TCP	P 8080

You are logged in as a temporary administrative user. Update the [cluster OAuth configuration](#) to allow others to log in.

Project: jegan

Services > Service details

nginx

Actions

Details YAML Pods

Name	Status	Ready	Restarts	Owner	Memory	CPU	Created
nginx-7577cb5f8-gtwit	Running	1/1	0	RS nginx-7577cb5f8	7.2 MiB	-	4 Jun 2024, 16:52
nginx-7577cb5f8-ht7xz	Running	1/1	0	RS nginx-7577cb5f8	7.3 MiB	-	4 Jun 2024, 16:52
nginx-7577cb5f8-vq7cc	Running	1/1	0	RS nginx-7577cb5f8	12.9 MiB	-	4 Jun 2024, 16:52

Lab - Create a route in declarative style from webconsole in developer context

Search - Red Hat OpenShift - Google Chrome
Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/search-page/ns/jegan?kind=route.openshift.io~v1~Route

Red Hat OpenShift

Developer

+Add

Topology

Observe

Search

Builds

Helm

Project

ConfigMaps

Secrets

You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Project: jegan

Search

Resources 1 Label app=frontend /

Route

APBE AdminPolicyBasedExternalRoute

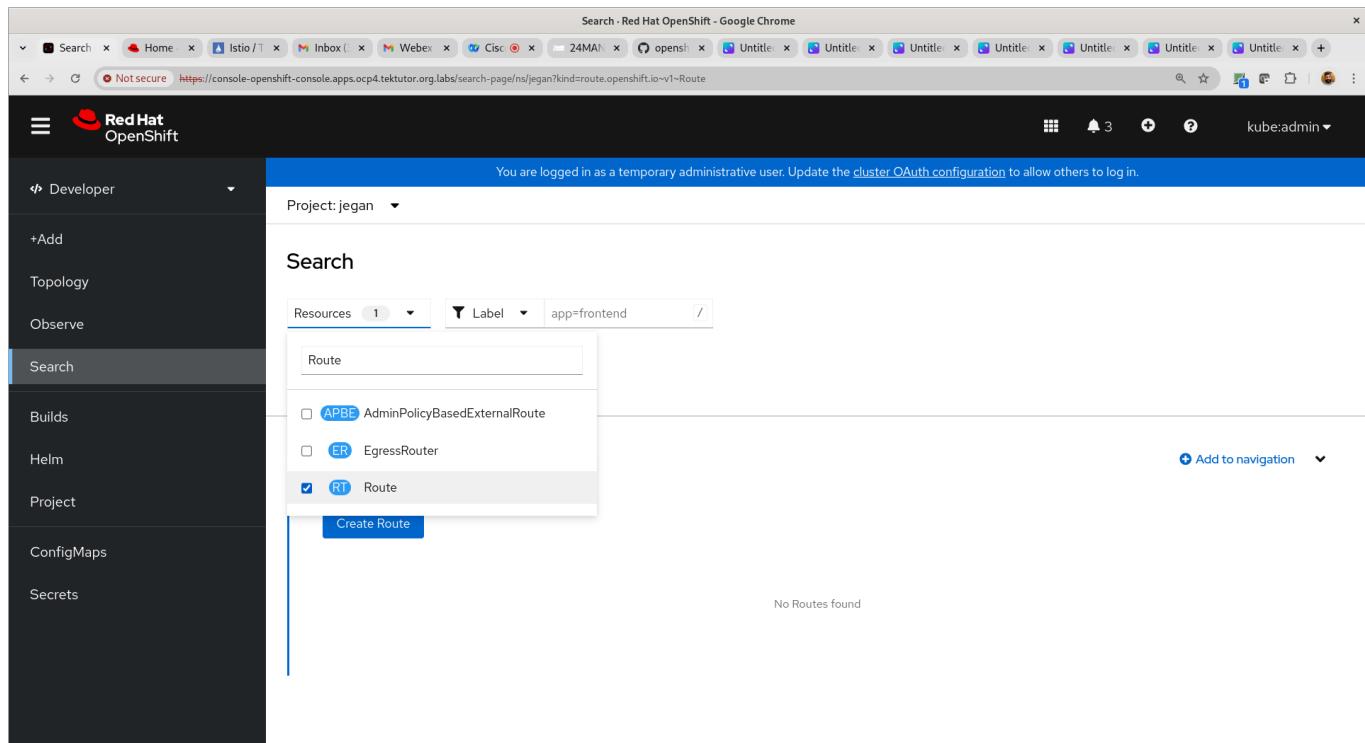
ER EgressRouter

RT Route

Create Route

Add to navigation

No Routes found



Search - Red Hat OpenShift - Google Chrome
Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/search-page/ns/jegan?kind=route.openshift.io~v1~Route

Red Hat OpenShift

Developer

+Add

Topology

Observe

Search

Builds

Helm

Project

ConfigMaps

Secrets

You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Project: jegan

Search

Resources 1 Label app=frontend /

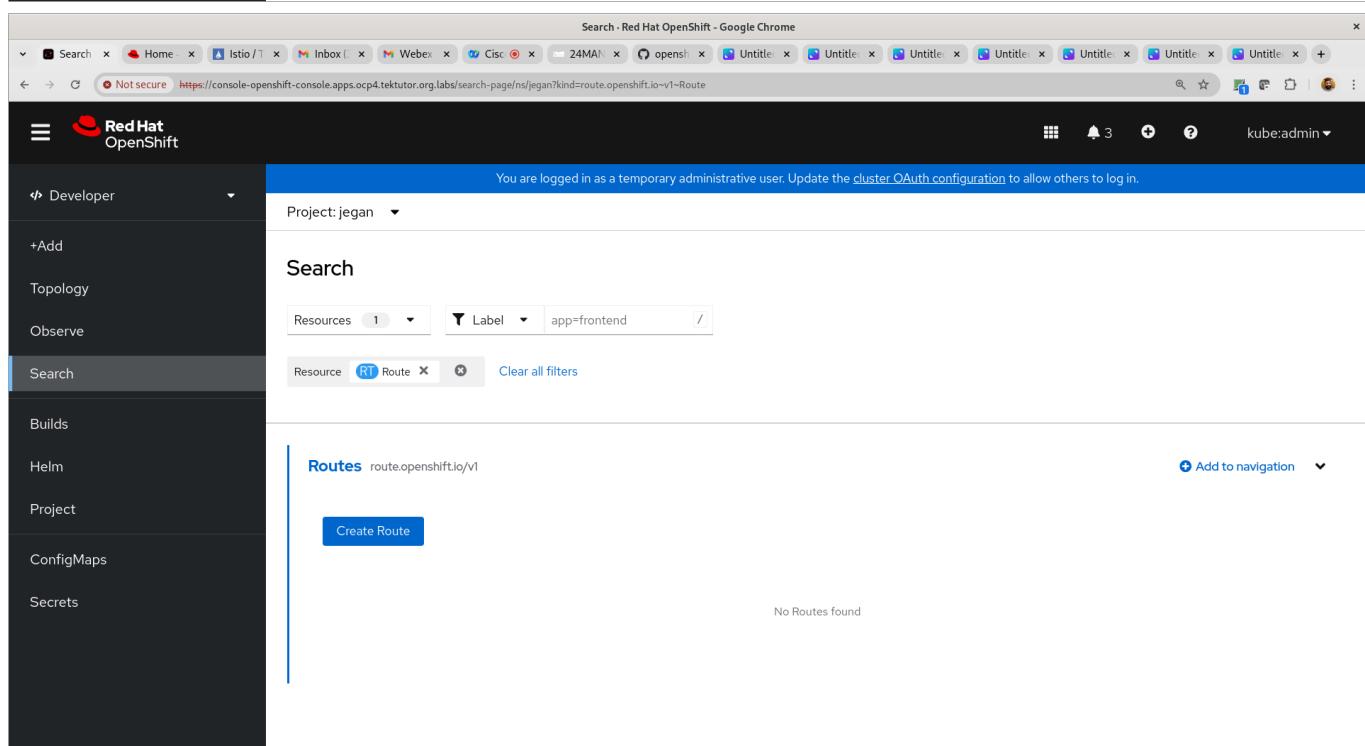
Resource RT Route Clear all filters

Routes route.openshift.io/v1

Create Route

Add to navigation

No Routes found



Create Route - Red Hat OpenShift - Google Chrome

Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/routes/~new/form

Red Hat OpenShift

Developer

+Add

Topology

Observe

Search

Builds

Helm

Project

ConfigMaps

Secrets

You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Project: jegan

Create Route

Routing is a way to make your application publicly visible.

Configure via: Form view YAML view

Name *

my-route

A unique name for the Route within the project.

Hostname

www.example.com

Public hostname for the Route. If not specified, a hostname is generated.

Path

/

Path that the router watches to route traffic to the service.

Service *

Select a service

Create Cancel

Create Route - Red Hat OpenShift - Google Chrome

Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/routes/~new/form

Red Hat OpenShift

Developer

+Add

Topology

Observe

Search

Builds

Helm

Project

ConfigMaps

Secrets

You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Project: jegan

Create Route

Routing is a way to make your application publicly visible.

Configure via: Form view YAML view

```
1 apiVersion: route.openshift.io/v1
2 kind: Route
3 metadata:
4   name: example
5 spec:
6   path: /
7   to:
8     kind: Service
9     name: example
10    port:
11      targetPort: 80
12
13
```

Route

Schema

A route allows developers to expose services through an HTTP(S) aware load balancing and proxy layer via a public DNS entry. The route may further specify TLS options and a certificate, or specify a public CNAME that the router should also accept for HTTP and HTTPS traffic. An administrator typically configures their router to be visible outside the cluster firewall, and may also add additional security, caching, or traffic controls on the service content. Routers usually talk directly to the service endpoints.

Once a route is created, the 'host' field may not be changed. Generally, routers use the oldest route with a given host when resolving conflicts.

Create Cancel

Create Route - Red Hat OpenShift - Google Chrome

Not secure https://console.openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/routes/~new/form

Red Hat OpenShift

Developer

+Add

Topology

Observe

Search

Builds

Helm

Project

ConfigMaps

Secrets

You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Project: jegan

Create Route

Routing is a way to make your application publicly visible.

Configure via: Form view YAML view

```

1  apiVersion: route.openshift.io/v1
2  kind: Route
3  metadata:
4    name: nginx
5  spec:
6    path: /
7    to:
8      kind: Service
9      name: nginx
10     port:
11       targetPort: 8080
12
13

```

Route

Schema

A route allows developers to expose services through an HTTP(S) aware load balancing and proxy layer via a public DNS entry. The route may further specify TLS options and a certificate, or specify a public CNAME that the router should also accept for HTTP and HTTPS traffic. An administrator typically configures their router to be visible outside the cluster firewall, and may also add additional security, caching, or traffic controls on the service content. Routers usually talk directly to the service endpoints.

Once a route is created, the 'host' field may not be changed. Generally, routers use the oldest route with a given host when resolving conflicts.

Create **Cancel**

nginx - Route - Details - Red Hat OpenShift - Google Chrome

Not secure https://console.openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/routes/nginx

Red Hat OpenShift

Developer

+Add

Topology

Observe

Search

Builds

Helm

Project

ConfigMaps

Secrets

You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Project: jegan

Routes > Route details

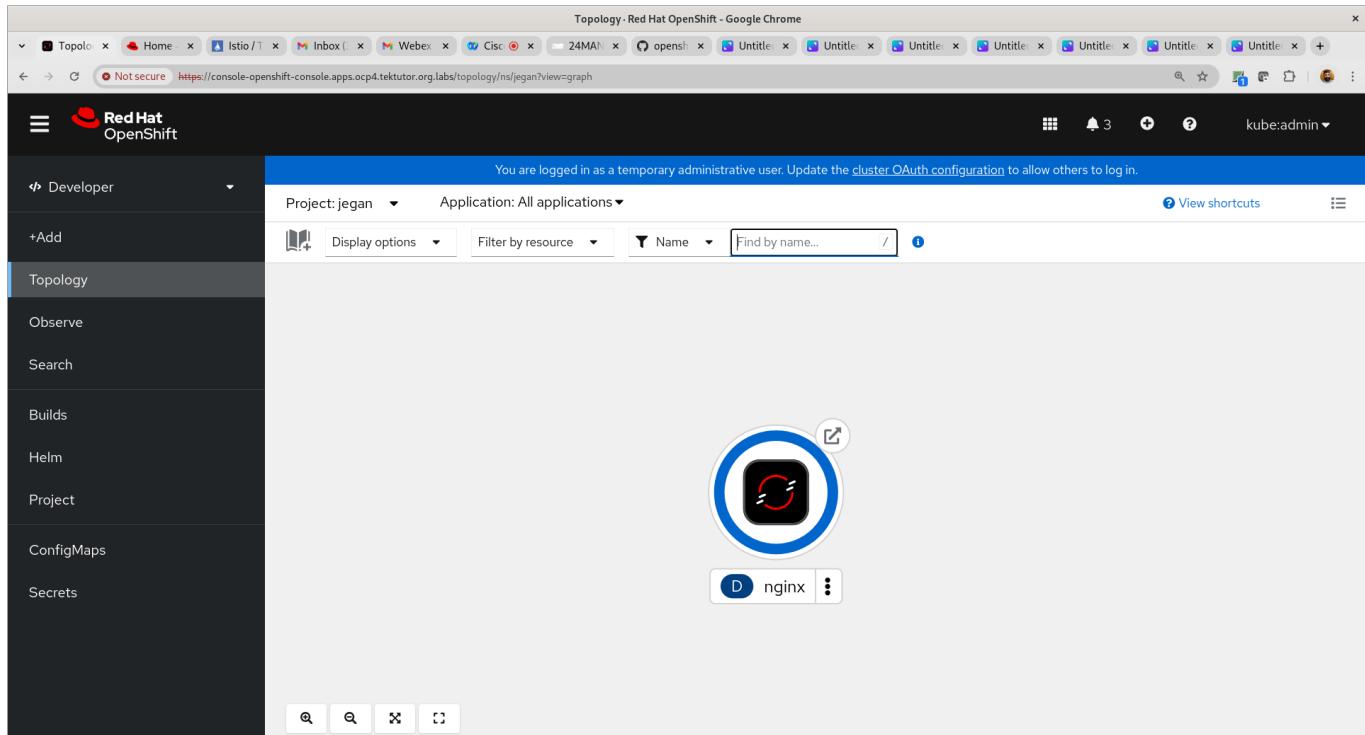
RT nginx Accepted

Actions

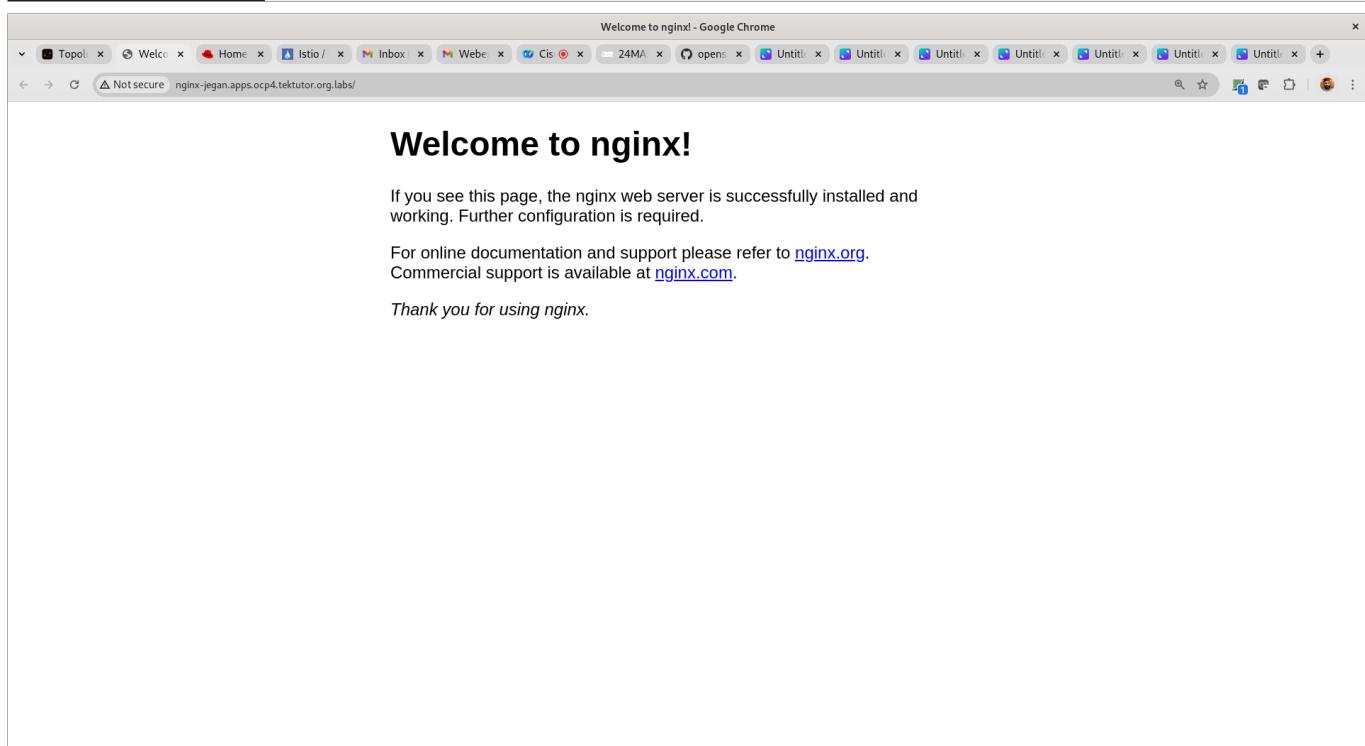
Details Metrics YAML

Route details

Name	Location
nginx	http://nginx-jegan.apps.ocp4.tektutor.org.labs/
Namespace	Status
jegan	Accepted
Labels	Host
No labels	nginx-jegan.apps.ocp4.tektutor.org.labs
Annotations	Path
1 annotation	/
Service	Router canonical hostname
nginx	router-default.apps.ocp4.tektutor.org.labs



The screenshot shows the Red Hat OpenShift Topology interface. On the left, a sidebar menu includes 'Topology' (which is selected), 'Developer', '+Add', 'Observe', 'Search', 'Builds', 'Helm', 'Project', 'ConfigMaps', and 'Secrets'. The main area displays a single pod named 'nginx' within a blue circular icon. Below the icon is a blue button labeled 'D nginx' with three vertical dots to its right. At the bottom of the main area are four small icons: a magnifying glass, a search bar, a refresh symbol, and a refresh symbol with a circular arrow.



The screenshot shows a web browser window titled 'Welcome to nginx! - Google Chrome'. The URL in the address bar is 'https://nginx-jegan.apps.ocp4.tektutor.org.labs/'. The page content includes the heading 'Welcome to nginx!', a message stating 'If you see this page, the nginx web server is successfully installed and working. Further configuration is required.', and links to 'nginx.org' and 'nginx.com'. Below the text is the footer 'Thank you for using nginx.'.

Info - What is Persistent Volume (PV) ?

- is an external storage used by application deployed in Kubernetes/OpenShift
- Persistent volumes are created in the cluster scope, to allow application running from any project namespace to claim them
- Administrators can provision the Persistent Volume from various storage solutions manually or dynamically
 - NFS
 - AWS EBS
 - AWS S3
 - Azure Storage

- When Persistent Volumes are created by Administrators, they will have define
 - Mandatory field - size/capacity of the storage
 - Mandatory field - access mode (`ReadWriteOnce`, `ReadWriteMany`, etc..,)
 - Storage Class - optional
 - labels - optional but recommended

Info - What is Persistent Volume Claim (PVC) ?

- Any application that requires external storage has to request for external storage by creating a Persistent volume claim
- Unless the Pod that expects the external get a PV matching the PVC criteria is found, the Pod will remain in the Pending state only
- The PVC has mention certain fields
 - size of the storage (mandatory)
 - access mode (mandatory)
 - storage class (optional)
 - label selector (optional)

Info - What is Storage Class ?

- Administrators can also provision the Persistent Volume(PV) on demand in a dynamic fashion by creating storage class
- For every type of storage, we need to create a separate storage class

Lab - Deploying mariadb database server using its internal storage to store database, tables, etc

```
cd ~/openshift-3june-2024
git pull
cd Day2/persistent-volume
oc create deployment mariadb --image=bitnami/nginx:latest -o yaml --dry-run=client
oc create deployment mariadb --image=bitnami/nginx:latest -o yaml --dry-run=client > mariadb-deploy.yml
cat mariadb-deploy.yml

oc apply -f mariadb-deploy.yml
oc get deploy,po
```

Getting inside the mariadb pod container shell. When prompts for password type 'root@123' as password without quotes.

```
oc rsh deploy/mariadb
hostname
hostname -i
mysql -u root -p
SHOW DATABASES;

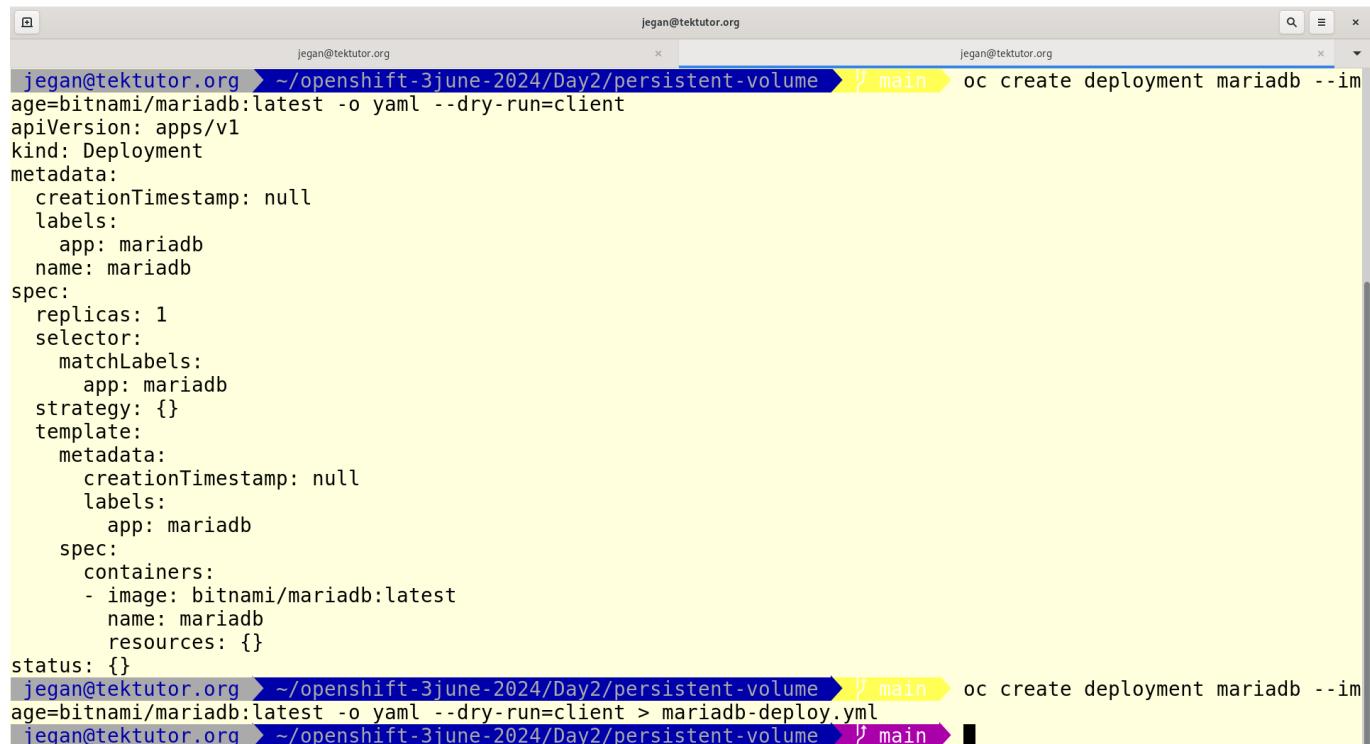
CREATE DATABASE tektutor;

USE tektutor;

CREATE TABLE training ( id INT NOT NULL, name VARCHAR(250) NOT NULL,
duration VARCHAR(250) NOT NULL, PRIMARY KEY(id));

INSERT INTO training VALUES ( 1, "DevOps", "5 Days" );
SELECT * FROM training;
```

Expected output



The screenshot shows a terminal window with two tabs. The left tab is titled 'jegan@tektutor.org' and contains the command to create a deployment named 'mariadb'. The right tab is also titled 'jegan@tektutor.org' and shows the resulting deployment configuration in YAML format.

```
jegan@tektutor.org ~ /openshift-3june-2024/Day2/persistent-volume main oc create deployment mariadb --image=bitnami/mariadb:latest -o yaml --dry-run=client
apiVersion: apps/v1
kind: Deployment
metadata:
  creationTimestamp: null
  labels:
    app: mariadb
    name: mariadb
spec:
  replicas: 1
  selector:
    matchLabels:
      app: mariadb
  strategy: {}
  template:
    metadata:
      creationTimestamp: null
      labels:
        app: mariadb
    spec:
      containers:
        - image: bitnami/mariadb:latest
          name: mariadb
          resources: {}
status: {}

jegan@tektutor.org ~ /openshift-3june-2024/Day2/persistent-volume main oc create deployment mariadb --image=bitnami/mariadb:latest -o yaml --dry-run=client > mariadb-deploy.yml
jegan@tektutor.org ~ /openshift-3june-2024/Day2/persistent-volume main
```

```
jegan@tektutor.org ~ /openshift-3june-2024/Day2/persistent-volume ⌘ main ls
mariadb-deploy.yml
jegan@tektutor.org ~ /openshift-3june-2024/Day2/persistent-volume ⌘ main oc apply -f mariadb-deploy.yml
deployment.apps/mariadb created
jegan@tektutor.org ~ /openshift-3june-2024/Day2/persistent-volume ⌘ main oc get po -w
NAME           READY   STATUS      RESTARTS   AGE
mariadb-74c68bd5b5-hhvdk   0/1     ContainerCreating   0          4s
mariadb-74c68bd5b5-hhvdk   0/1     Error        0          17s
mariadb-74c68bd5b5-hhvdk   0/1     Error        1 (4s ago)  21s
^C%
x jegan@tektutor.org ~ /openshift-3june-2024/Day2/persistent-volume ⌘ main oc logs mariadb-74c68bd5b5-hhvdk
k
mariadb 12:09:21.01 INFO  ===>
mariadb 12:09:21.01 INFO  ===> Welcome to the Bitnami mariadb container
mariadb 12:09:21.01 INFO  ===> Subscribe to project updates by watching https://github.com/bitnami/containers
mariadb 12:09:21.01 INFO  ===> Submit issues and feature requests at https://github.com/bitnami/containers/issues
mariadb 12:09:21.01 INFO  ===> Upgrade to Tanzu Application Catalog for production environments to access custom-configured and pre-packaged software components. Gain enhanced features, including Software Bill of Materials (SBOM), CVE scan result reports, and VEX documents. To learn more, visit https://bitnami.com/enterprise
mariadb 12:09:21.01 INFO  ===>
mariadb 12:09:21.02 INFO  ===> ** Starting MariaDB setup **
mariadb 12:09:21.03 INFO  ===> Validating settings in MYSQL */MARIADB * env vars
mariadb 12:09:21.03 ERROR ==> The MARIADB_ROOT_PASSWORD environment variable is empty or not set. Set the environment variable ALLOW_EMPTY_PASSWORD=yes to allow the container to be started with blank passwords. This is recommended only for development.
jegan@tektutor.org ~ /openshift-3june-2024/Day2/persistent-volume ⌘ main
```

```
jegan@tektutor.org                               jegan@tektutor.org
BOM), CVE scan result reports, and VEX documents. To learn more, visit https://bitnami.com/enterprise
mariadb 12:09:21.01 INFO  ==>
mariadb 12:09:21.02 INFO  ==> ** Starting MariaDB setup **
mariadb 12:09:21.03 INFO  ==> Validating settings in MYSQL_*/MARIADB_* env vars
mariadb 12:09:21.03 ERROR ==> The MARIADB_ROOT_PASSWORD environment variable is empty or not set. Set the environment variable ALLOW_EMPTY_PASSWORD=yes to allow the container to be started with blank passwords. This is recommended only for development.
jegan@tektutor.org > ~/openshift-3june-2024/Day2/persistent-volume  ↵ main vim mariadb-deploy.yml
jegan@tektutor.org > ~/openshift-3june-2024/Day2/persistent-volume  ↵ main vim mariadb-deploy.yml
jegan@tektutor.org > ~/openshift-3june-2024/Day2/persistent-volume  ↵ main oc apply -f mariadb-deploy.yml
deployment.apps/mariadb configured
jegan@tektutor.org > ~/openshift-3june-2024/Day2/persistent-volume  ↵ main oc get po -w
NAME          READY   STATUS    RESTARTS   AGE
mariadb-f5b894b56-dz5ft   1/1     Running   0          24s
^C%
x jegan@tektutor.org > ~/openshift-3june-2024/Day2/persistent-volume  ↵ main oc get rs
NAME          DESIRED   CURRENT   READY   AGE
mariadb-74c68bd5b5      0          0          0      2m21s
mariadb-f5b894b56       1          1          1      43s
jegan@tektutor.org > ~/openshift-3june-2024/Day2/persistent-volume  ↵ main oc logs mariadb-f5b894b56-dz5ft
mariadb 12:10:41.98 INFO  ==>
mariadb 12:10:41.98 INFO  ==> Welcome to the Bitnami mariadb container
mariadb 12:10:41.98 INFO  ==> Subscribe to project updates by watching https://github.com/bitnami/containers
mariadb 12:10:41.99 INFO  ==> Submit issues and feature requests at https://github.com/bitnami/containers/issues
mariadb 12:10:41.99 INFO  ==> Upgrade to Tanzu Application Catalog for production environments to access custom-configured and pre-packaged software components. Gain enhanced features, including Software Bill of Materials (SBOM), CVE scan result reports, and VEX documents. To learn more, visit https://bitnami.com/enterprise
mariadb 12:10:41.99 INFO  ==>
mariadb 12:10:41.99 INFO  ==> ** Starting MariaDB setup **
```

```
jegan@tektutor.org
2024-06-04 12:10:45 0 [Note] Starting MariaDB 11.3.2-MariaDB source revision 068a6819eb63bc01fd0a037c9bf3bf63c3
3ee42 as process 1
2024-06-04 12:10:45 0 [Note] InnoDB: Compressed tables use zlib 1.2.13
2024-06-04 12:10:45 0 [Note] InnoDB: Number of transaction pools: 1
2024-06-04 12:10:45 0 [Note] InnoDB: Using crc32 + pclmulqdq instructions
2024-06-04 12:10:45 0 [Note] mysqld: O_TMPFILE is not supported on /opt/bitnami/mariadb/tmp (disabling future attempts)
2024-06-04 12:10:45 0 [Note] InnoDB: Using Linux native AIO
2024-06-04 12:10:45 0 [Note] InnoDB: Initializing buffer pool, total size = 128.000MiB, chunk size = 2.000MiB
2024-06-04 12:10:45 0 [Note] InnoDB: Completed initialization of buffer pool
2024-06-04 12:10:45 0 [Note] InnoDB: Buffered log writes (block size=512 bytes)
2024-06-04 12:10:45 0 [Note] InnoDB: End of log at LSN=47773
2024-06-04 12:10:45 0 [Note] InnoDB: Opened 3 undo tablespaces
2024-06-04 12:10:45 0 [Note] InnoDB: 128 rollback segments in 3 undo tablespaces are active.
2024-06-04 12:10:45 0 [Note] InnoDB: Setting file './ibtmp1' size to 12.000MiB. Physically writing the file full
; Please wait ...
2024-06-04 12:10:45 0 [Note] InnoDB: File './ibtmp1' size is now 12.000MiB.
2024-06-04 12:10:45 0 [Note] InnoDB: log sequence number 47773; transaction id 14
2024-06-04 12:10:45 0 [Note] Plugin 'FEEDBACK' is disabled.
2024-06-04 12:10:45 0 [Note] Plugin 'wsrep-provider' is disabled.
2024-06-04 12:10:45 0 [Note] InnoDB: Loading buffer pool(s) from /bitnami/mariadb/data/ib_buffer_pool
2024-06-04 12:10:45 0 [Note] InnoDB: Buffer pool(s) load completed at 240604 12:10:45
2024-06-04 12:10:45 0 [Note] Server socket created on IP: '0.0.0.0'.
2024-06-04 12:10:45 0 [Warning] 'proxies_priv' entry '@% root@mariadb-f5b894b56-dz5ft' ignored in --skip-name-resolve mode.
2024-06-04 12:10:45 0 [Note] mysqld: Event Scheduler: Loaded 0 events
2024-06-04 12:10:45 0 [Note] /opt/bitnami/mariadb/sbin/mysqld: ready for connections.
Version: '11.3.2-MariaDB' socket: '/opt/bitnami/mariadb/tmp/mysql.sock' port: 3306 Source distribution
jegan@tektutor.org > ~/openshift-3june-2024/Day2/persistent-volume ↵ main ↵
```

```
jegan@tektutor.org
jegan@tektutor.org > ~/openshift-3june-2024/Day2/persistent-volume ↵ main ↵ oc rsh deploy/mariadb
$ hostname
mariadb-f5b894b56-dz5ft
$ hostname -i
10.128.2.30
$ mysql -u root -p
mysql: Deprecated program name. It will be removed in a future release, use '/opt/bitnami/mariadb/bin/mariadb' instead
Enter password:
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 3
Server version: 11.3.2-MariaDB Source distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> SHOW DATABASES;
+-----+
| Database      |
+-----+
| information_schema |
| mysql          |
| performance_schema |
| sys            |
| test           |
+-----+
5 rows in set (0.001 sec)

MariaDB [(none)]>
```

```
jegan@tektutor.org
jegan@tektutor.org

MariaDB [(none)]> CREATE DATABASE tektutor;
Query OK, 1 row affected (0.000 sec)

MariaDB [(none)]> USE tektutor;
Database changed
MariaDB [tektutor]> CREATE TABLE training ( id INT NOT NULL, name VARCHAR(250) NOT NULL, duration VARCHAR(250) NOT NULL, PRIMARY KEY(id));
Query OK, 0 rows affected (0.003 sec)

MariaDB [tektutor]> INSERT INTO training VALUES ( 1, "DevOps", "5 Days" );
Query OK, 1 row affected (0.001 sec)

MariaDB [tektutor]> INSERT INTO training VALUES ( 2, "Microservices with Quarkus", "5 Days" );
Query OK, 1 row affected (0.000 sec)

MariaDB [tektutor]> INSERT INTO training VALUES ( 2, "Microservices with Golang", "5 Days" );
ERROR 1062 (23000): Duplicate entry '2' for key 'PRIMARY'
MariaDB [tektutor]> INSERT INTO training VALUES ( 3, "Microservices with Golang", "5 Days" );
Query OK, 1 row affected (0.000 sec)

MariaDB [tektutor]> SELECT * FROM training;
+----+-----+-----+
| id | name      | duration |
+----+-----+-----+
| 1  | DevOps    | 5 Days   |
| 2  | Microservices with Quarkus | 5 Days   |
| 3  | Microservices with Golang | 5 Days   |
+----+-----+-----+
3 rows in set (0.001 sec)

MariaDB [tektutor]> exit
Bye
$ exit
jegan@tektutor.org ~ /openshift-3june-2024/Day2/persistent-volume ➜ main ➜
```

The screenshot shows a Red Hat OpenShift web interface. On the left, a sidebar menu includes options like Developer, Topology, Observe, Search, Builds, Helm, Project, ConfigMaps, and Secrets. The main content area displays a terminal session for a pod named 'mariadb-f5b894b56-t96px'. The terminal output shows the MySQL prompt, indicating a successful connection to the database. The top bar shows the user is logged in as a temporary administrative user.

```
mariadb-f5b894b56-t96px - Pod - Terminal - Red Hat OpenShift - Google Chrome
Not secure https://console.openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/pods/mariadb-f5b894b56-t96px/terminal
You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Project:jegan ▾
Pods > Pod details
P mariadb-f5b894b56-t96px ⚡ Running
Actions ▾
Developer
+Add
Topology
Observe
Search
Builds
Helm
Project
ConfigMaps
Secrets
Connecting to mariadb
$ mysql -u root -p
mysql: Deprecated program name. It will be removed in a future release, use '/opt/bitnami/mariadb/bin/mariadb' instead
Enter password:
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 3
Server version: 11.3.2-MariaDB Source distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> SHOW DATABASES;
+-----+
| Database      |
+-----+
| information_schema |
```

The screenshot shows the Red Hat OpenShift console interface. On the left, a sidebar lists various project resources like Developer, Topology, Observe, Search, Builds, Helm, Project, ConfigMaps, and Secrets. The main area displays a pod named 'mariadb-f5b894b56-t96px' which is 'Running'. The 'Terminal' tab is selected, showing a MySQL prompt. The user has run several commands:

```

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> SHOW DATABASES;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sys |
| test |
+-----+
5 rows in set (0.001 sec)

MariaDB [(none)]> 

;

Query OK, 0 rows affected (0.003 sec)

MariaDB [tektutor]> INSERT INTO training VALUES ( 1, "DevOps", "5 Days" );
Query OK, 1 row affected (0.001 sec)

MariaDB [tektutor]> INSERT INTO training VALUES ( 2, "Microservices with Quarkus", "5 Days" );
Query OK, 1 row affected (0.000 sec)

MariaDB [tektutor]> INSERT INTO training VALUES ( 2, "Microservices with Golang", "5 Days" );
ERROR 1062 (23000): Duplicate entry '2' for key 'PRIMARY'
MariaDB [tektutor]> INSERT INTO training VALUES ( 3, "Microservices with Golang", "5 Days" );
Query OK, 1 row affected (0.000 sec)

MariaDB [tektutor]> SELECT * FROM training;
+----+-----+-----+
| id | name           | duration |
+----+-----+-----+
| 1 | DevOps          | 5 Days   |
| 2 | Microservices with Quarkus | 5 Days   |
| 3 | Microservices with Golang | 5 Days   |
+----+-----+-----+
3 rows in set (0.001 sec)

MariaDB [tektutor]> exit
Bye
$ exit
jegan@tektutor.org > ~/openshift-3june-2024/Day2/persistent-volume > main > oc get po
NAME          READY   STATUS    RESTARTS   AGE
mariadb-f5b894b56-dz5ft  1/1     Running   0          5m17s
jegan@tektutor.org > ~/openshift-3june-2024/Day2/persistent-volume > main > oc delete po mariadb-f5b894b56-dz5ft
pod "mariadb-f5b894b56-dz5ft" deleted
jegan@tektutor.org > ~/openshift-3june-2024/Day2/persistent-volume > main > oc delete -f mariadb-deploy.yml
deployment.apps "mariadb" deleted
jegan@tektutor.org > ~/openshift-3june-2024/Day2/persistent-volume > main > 

```

You are logged in as a temporary administrative user. Update the [cluster OAuth configuration](#) to allow others to log in.

Project: jegan Application: All applications

No resources found

Start building your application or visit the [Add page](#) for more details.

https://console-openshift-console.apps.ocp4.tektutor.org.labs/helm-releases/ns/jegan

Lab - Mariadb with Persistent Volume

Let's delete the existing mariadb deployment

```
oc delete deploy/mariadb
```

Now, let's deploy mariadb with PV and PVC

```
cd ~/openshift-3june-2024
git pull
cd Day2/persistent-volume
ls -l
oc apply -f mariadb-pv.yml
oc apply -f mariadb-pvc.yml
oc apply -f mariadb-deploy.yml

oc get po,pv,pvc
```

Let's get inside the mariadb pod shell, when prompts for password type 'root@123' without quotes

```
oc rsh deploy/mariadb
mysql -u root -p
SHOW DATABASES;
CREATE DATABASE tektutor;
USE tektutor;
CREATE TABLE training ( id INT NOT NULL, name VARCHAR(250) NOT NULL,
duration VARCHAR(250) NOT NULL, PRIMARY KEY(id));
```

```
INSERT INTO training VALUES ( 1, "Openshift", "5 days" );
SELECT * FROM training;
exit
exit
```

Now, let's delete the mariadb pod, openshift will automatically redeploy a new mariadb pod. Let's get inside the new mariadb pod

```
oc rsh deploy/mariadb
mysql -u root -p
SHOW DATABASES;
USE tektutor;
SELECT * FROM training;
```

You are expected to see the tektutor database and training table intact with all the records we inserted via the old mariadb pod we deleted. This is made possible with the help of external Persistent Volume.

Expected output

The screenshot shows the Red Hat OpenShift web console interface. The left sidebar has a dark theme with the following navigation items: Developer (+Add), Topology (selected), Observe, Search, Builds, Helm, Project, ConfigMaps, and Secrets. The main content area is titled 'Topology - Red Hat OpenShift - Google Chrome'. It displays a message: 'You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.' Below this, it shows 'Project: jegan Application: All applications' and a search bar with 'Display options', 'Filter by resource', 'Name', and 'Find by name...'. A central message says 'No resources found' with a small network icon above it. At the bottom, there are buttons for 'Start building your application' and 'Add page for more details.'

```
jegan@tektutor.org ~/openshift-3june-2024/Day2/persistent-volume [main] ls -l
total 12
-rw-r--r-- 1 jegan jegan 631 Jun  5 10:28 mariadb-deploy.yml
-rw-r--r-- 1 jegan jegan 302 Jun  5 10:29 mariadb-pvc.yml
-rw-r--r-- 1 jegan jegan 544 Jun  5 10:21 mariadb-pv.yml
jegan@tektutor.org ~/openshift-3june-2024/Day2/persistent-volume [main] oc apply -f mariadb-pv.yml
persistentvolume/mariadb-pv-jegan created
jegan@tektutor.org ~/openshift-3june-2024/Day2/persistent-volume [main] oc apply -f mariadb-pvc.yml
persistentvolumeclaim/mariadb-pvc-jegan created
jegan@tektutor.org ~/openshift-3june-2024/Day2/persistent-volume [main] oc apply -f mariadb-deploy.yml
deployment.apps/mariadb created
jegan@tektutor.org ~/openshift-3june-2024/Day2/persistent-volume [main] oc get pv,pvc,po
NAME                                     CAPACITY   ACCESS MODES  RECLAIM POLICY  STATUS   CLAIM
STORAGECLASS     REASON    AGE
persistentvolume/mariadb-pv-jegan        100Mi      RWX          Retain         Bound    jegan/mariadb-pvc-jegan
                                         13s

NAME                           STATUS  VOLUME           CAPACITY  ACCESS MODES  STORAGECLASS  AGE
GE
persistentvolumeclaim/mariadb-pvc-jegan  Bound   mariadb-pv-jegan  100Mi     RWX          mariadb-pvc  9s

NAME          READY  STATUS    RESTARTS  AGE
pod/mariadb-69bdbcfcd4-56j9l  1/1   Running   0          5s
jegan@tektutor.org ~/openshift-3june-2024/Day2/persistent-volume [main]
```

Topology - Red Hat OpenShift - Google Chrome

Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/topology/ns/jegan?view=graph

The screenshot shows the Red Hat OpenShift Topology interface. The left sidebar has a dark theme with the following navigation items: Developer, +Add, Topology (selected), Observe, Search, Builds, Helm, Project, ConfigMaps, and Secrets. The main area has a light background. At the top, it says "You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in." Below this, there are dropdowns for "Project: jegan" and "Application: All applications". A toolbar includes icons for "Display options", "Filter by resource", "Name", "Find by name...", and a search bar. In the center, there is a circular icon containing a red and black logo, with the text "D mariadb" below it. At the bottom of the main area are four small icons: a magnifying glass, a search bar, a refresh symbol, and a refresh symbol with a circular arrow.

Log streaming... mariadb Current log Search Show full log Wrap lines Raw Download Collapse

81 lines

```

44 mariadb 06:21:09.82 INFO => Stopping mariadb
45 2024-06-05 6:21:09 0 [Note] /opt/bitnami/mariadb/sbin/mysql (initiated by: unknown): Normal shutdown
46 2024-06-05 6:21:09 0 [Note] InnoDB: FTS optimize thread exiting.
47 2024-06-05 6:21:09 0 [Note] InnoDB: Starting shutdown...
48 2024-06-05 6:21:09 0 [Note] InnoDB: Dumping buffer pool(s) to /bitnami/mariadb/data/ib_buffer_pool
49 2024-06-05 6:21:09 0 [Note] InnoDB: Buffer pool(s) dump completed at 240605 6:21:09
50 2024-06-05 6:21:10 0 [Note] InnoDB: Removed temporary tablespace data file: "./ibtmp1"
51 2024-06-05 6:21:10 0 [Note] InnoDB: Shutdown completed; log sequence number 50598; transaction id 23
52 2024-06-05 6:21:10 0 [Note] /opt/bitnami/mariadb/sbin/mysql: Shutdown complete
53
54 mariadb 06:21:10.84 INFO => ** MariaDB setup finished! **
55
56 mariadb 06:21:10.86 INFO => ** Starting MariaDB **

57 /opt/bitnami/mariadb/sbin/mysql: Deprecated program name. It will be removed in a future release, use '/opt/bitnami/mariadb/sbin/mariadb' instead
58 2024-06-05 6:21:10 0 [Note] Starting MariaDB 11.3.2-MariaDB source revision 068a6819eb63bcb01fdfa037c9bf3bf63c33ee42 as process 1
59 2024-06-05 6:21:10 0 [Note] InnoDB: Compressed tables use zlib 1.2.13
60 2024-06-05 6:21:10 0 [Note] InnoDB: Number of transaction pools: 1
61 2024-06-05 6:21:10 0 [Note] InnoDB: Using crc32 + pclmulqdq instructions
62 2024-06-05 6:21:10 0 [Note] mysqld: O_TMPFILE is not supported on /opt/bitnami/mariadb/tmp (disabling future attempts)
63 2024-06-05 6:21:10 0 [Note] InnoDB: Using Linux native AIO
64 2024-06-05 6:21:10 0 [Note] InnoDB: Initializing buffer pool, total size = 128.000MiB, chunk size = 2.000MiB
65 2024-06-05 6:21:10 0 [Note] InnoDB: Completed initialization of buffer pool
66 2024-06-05 6:21:10 0 [Note] InnoDB: Buffered log writes (block size=512 bytes)
67 2024-06-05 6:21:10 0 [Note] InnoDB: End of log at LSN=50598
68 2024-06-05 6:21:10 0 [Note] InnoDB: Opened 3 undo tablespaces
69 2024-06-05 6:21:10 0 [Note] InnoDB: 128 rollback segments in 3 undo tablespaces are active.
70 2024-06-05 6:21:10 0 [Note] InnoDB: Setting file './ibtmp1' size to 12.000MiB. Physically writing the file full; Please wait ...
71 2024-06-05 6:21:10 0 [Note] InnoDB: File './ibtmp1' size is now 12.000MiB.
72 2024-06-05 6:21:10 0 [Note] InnoDB: log sequence number 50598; transaction id 22
73 2024-06-05 6:21:10 0 [Note] Plugin 'FEEDBACK' is disabled.
74 2024-06-05 6:21:10 0 [Note] Plugin 'wsrep-provider' is disabled.
75 2024-06-05 6:21:10 0 [Note] InnoDB: Loading buffer pool(s) from /bitnami/mariadb/data/ib_buffer_pool
76 2024-06-05 6:21:11 0 [Note] Server socket created on IP: '0.0.0.0'.
77 2024-06-05 6:21:11 0 [Note] InnoDB: Buffer pool(s) load completed at 240605 6:21:11
78 2024-06-05 6:21:11 0 [Warning] 'proxies_priv' entry @% root@mariadb-69bdbcfcd4-mxpzx' ignored in --skip-name-resolve mode.
79 2024-06-05 6:21:11 0 [Note] mysqld: Event Scheduler: Loaded 0 events
80 2024-06-05 6:21:11 0 [Note] /opt/bitnami/mariadb/sbin/mysql: ready for connections.
81 Version: '11.3.2-MariaDB' socket: '/opt/bitnami/mariadb/tmp/mysql.sock' port: 3306 Source distribution

```

mariadb-69bdbcfcd4-56j9l-Pod-Events - Red Hat OpenShift - Google Chrome

https://console-openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/pods/mariadb-69bdbcfcd4-56j9l/events

You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Red Hat OpenShift

Developer Project:jegan

Topology

Observe

Search

Builds

Helm

Project

ConfigMaps

Secrets

P mariadb-69bdbcfcd4-56j9l Running

Actions

Details Metrics YAML Environment Logs Events Terminal

Streaming events...

Showing 6 events

	P mariadb-69bdbcfcd4-56j9l	Generated from kubelet on worker-1-ocp4.tektutor.org.labs	jegan
		Successfully pulled image "bitnami/mariadb:latest" in 2.927s (2.927s including waiting)	5 Jun 2024, 11:51
	P mariadb-69bdbcfcd4-56j9l	Generated from kubelet on worker-1-ocp4.tektutor.org.labs	jegan
		Created container mariadb	5 Jun 2024, 11:51
	P mariadb-69bdbcfcd4-56j9l	Generated from kubelet on worker-1-ocp4.tektutor.org.labs	jegan
		Started container mariadb	5 Jun 2024, 11:51
	P mariadb-69bdbcfcd4-56j9l		jegan
			5 Jun 2024, 11:51

https://console-openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/pods/mariadb-69bdbcfcd4-56j9l/events

The screenshot shows the Red Hat OpenShift web interface. On the left, a sidebar menu includes options like Developer, Topology, Observe, Search, Builds, Helm, Project, ConfigMaps, Secrets, and a plus sign for adding new resources. The main content area displays a terminal session for a pod named 'mariadb-69bdbcfcd4-56j9l'. The terminal window title is 'mariadb-69bdbcfcd4-56j9l - Pod - Terminal - Red Hat OpenShift - Google Chrome'. The session shows a MySQL prompt with the following output:

```
$ mysql -u root -p
mysql: Deprecated program name. It will be removed in a future release, use '/opt/bitnami/mariadb/bin/mariadb' instead
Enter password:
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 3
Server version: 11.3.2-MariaDB Source distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> SHOW DATABASES;
+-----+
| Database |
+-----+
| information_schema |
```

This screenshot shows a terminal window with four tabs, each displaying a MySQL command prompt. The tabs are labeled 'jegan@tektutor.org' and show the following outputs:

- [root@tektutor.org mariadb]# ls
aria_log_00000001 ib_buffer_pool ibtmp1
aria_log_control ibdata1 mariadb_upgrade_info
ddl_recovery.log ib_logfile0 multi-master.info
[root@tektutor.org mariadb]# pwd
/var/nfs/jegan/mariadb
[root@tektutor.org mariadb]#
- jegan@tektutor.org
- jegan@tektutor.org
- jegan@tektutor.org

The screenshot shows the Red Hat OpenShift web interface under the 'Storage' category. The left sidebar lists options such as PersistentVolumes, PersistentVolumeClaims, StorageClasses, VolumeSnapshots, VolumeSnapshotClasses, VolumeSnapshotContents, Builds, and Observe. The main content area is titled 'PersistentVolumes' and shows a table of existing volumes. A 'Create PersistentVolume' button is located in the top right corner. The table data is as follows:

Name	Status	Claim	Capacity	Labels	Created
PV mariadb-pv-jegan	Bound	PVC mariadb-pvc-jegan	100Mi	name=jegan	5 Jun 2024, 12:07

The screenshot shows two tabs open in a browser:

- PersistentVolumeClaims - Red Hat OpenShift - Google Chrome**: This tab displays the 'PersistentVolumeClaims' section for the 'jegan' project. It lists one item: a PVC named 'mariadb-pvc-jegan' which is bound to a PV named 'mariadb-pv-jegan'. The table columns include Name, Status, PersistentVolumes, Capacity, Used, and StorageClass.
- Pods - Red Hat OpenShift - Google Chrome**: This tab displays the 'Pods' section for the 'jegan' project. It lists one pod named 'mariadb-69bdbcfcd4-f9knt' which is running. The table columns include Name, Status, Ready, Restarts, Owner, Memory, CPU, and Created.

The left sidebar shows the navigation menu for the Red Hat OpenShift console, with 'PersistentVolumeClaims' selected under the 'Storage' category.

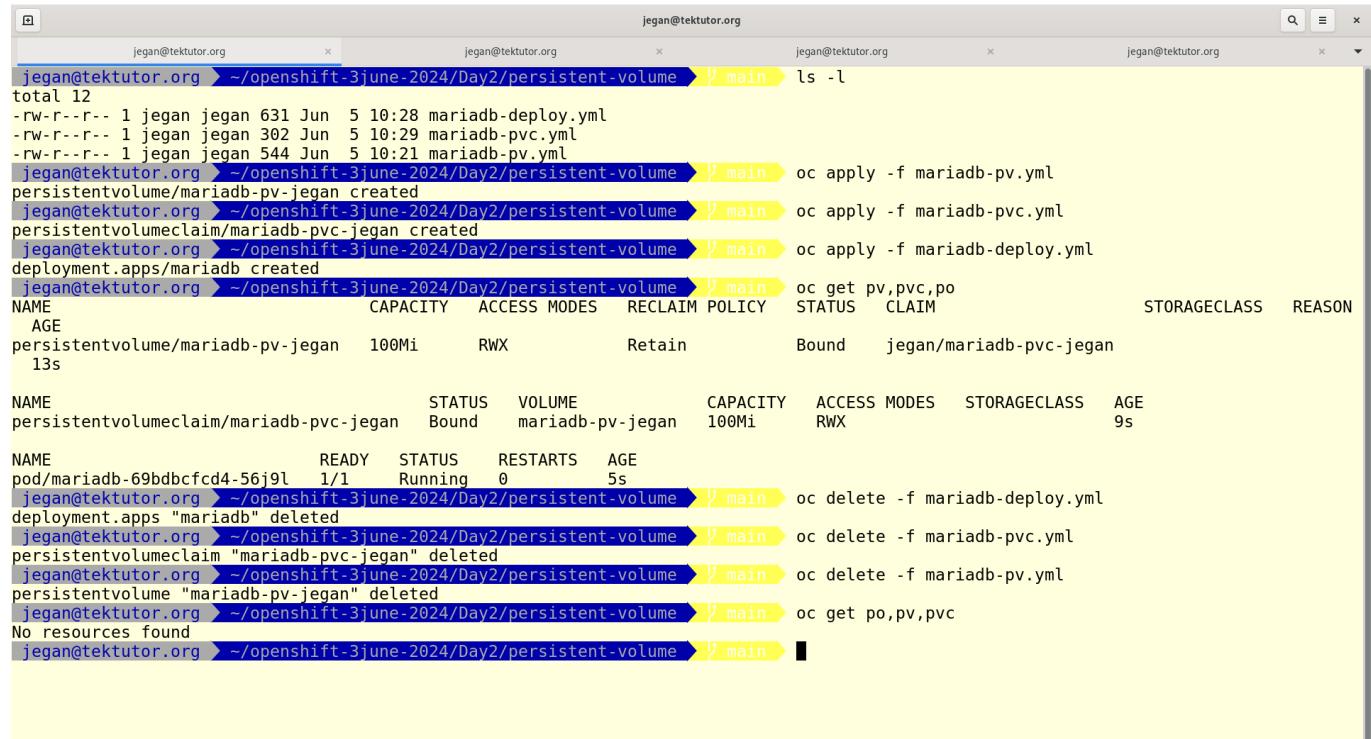
Once you are done with this exercise, you may delete the mariadb and related pv and pvc to freeup resources.

```
cd ~/openshift-3june-2024
cd Day2/persistent-volume

oc delete -f mariadb-deploy.yml
oc delete -f mariadb-pvc.yml
oc delete -f mariadb-pv.yml
```

If you noticed above, we have to delete the resources in the reverse order. While deploying mariadb, we would have created the pv first, followed by pvc and then the deployment at the last, while deleting we need to follow reverse order to save time.

Expected output



The screenshot shows a terminal window with four tabs, all labeled 'jegan@tektutor.org'. The current tab displays the command history for deleting a Mariadb deployment. The commands shown are:

```
jegan@tektutor.org ~-/openshift-3june-2024/Day2/persistent-volume [main] ls -l
total 12
-rw-r--r-- 1 jegan jegan 631 Jun  5 10:28 mariadb-deploy.yml
-rw-r--r-- 1 jegan jegan 302 Jun  5 10:29 mariadb-pvc.yml
-rw-r--r-- 1 jegan jegan 544 Jun  5 10:21 mariadb-pv.yml
jegan@tektutor.org ~-/openshift-3june-2024/Day2/persistent-volume [main] oc apply -f mariadb-pv.yml
persistentvolume/mariadb-pv-jegan created
jegan@tektutor.org ~-/openshift-3june-2024/Day2/persistent-volume [main] oc apply -f mariadb-pvc.yml
persistentvolumeclaim/mariadb-pvc-jegan created
jegan@tektutor.org ~-/openshift-3june-2024/Day2/persistent-volume [main] oc apply -f mariadb-deploy.yml
deployment.apps/mariadb created
jegan@tektutor.org ~-/openshift-3june-2024/Day2/persistent-volume [main] oc get pv,pvc,po
NAME          CAPACITY   ACCESS MODES  RECLAIM POLICY  STATUS   CLAIM
AGE
persistentvolume/mariadb-pv-jegan  100Mi      RWX        Retain       Bound    jegan/mariadb-pvc-jegan
13s

NAME          STATUS     VOLUME
persistentvolumeclaim/mariadb-pvc-jegan  Bound      mariadb-pv-jegan
                                         100Mi      RWX
                                         9s

NAME          READY  STATUS    RESTARTS  AGE
pod/mariadb-69bdbcfcd4-56j9l  1/1   Running   0          5s
jegan@tektutor.org ~-/openshift-3june-2024/Day2/persistent-volume [main] oc delete -f mariadb-deploy.yml
deployment.apps "mariadb" deleted
jegan@tektutor.org ~-/openshift-3june-2024/Day2/persistent-volume [main] oc delete -f mariadb-pvc.yml
persistentvolumeclaim "mariadb-pvc-jegan" deleted
jegan@tektutor.org ~-/openshift-3june-2024/Day2/persistent-volume [main] oc delete -f mariadb-pv.yml
persistentvolume "mariadb-pv-jegan" deleted
jegan@tektutor.org ~-/openshift-3june-2024/Day2/persistent-volume [main] oc get po,pv,pvc
No resources found
jegan@tektutor.org ~-/openshift-3june-2024/Day2/persistent-volume [main]
```