

# Day 3

## Lab - Deleting a project

```
oc delete project jegan
```

### Expected output

The screenshot shows a terminal window titled 'Terminal' with the command 'oc delete project jegan' being run. The output shows the project 'jegan' being deleted successfully, and then lists all other active projects in the cluster.

```
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts $ main ls
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts $ main oc project
Using project "jegan" on server "https://api.ocp4.tektutor.org.labs:6443".
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts $ main oc delete project jegan
project.project.openshift.io "jegan" deleted
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts $ main oc get project | grep jegan
x jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts $ main oc get projects
NAME DISPLAY NAME STATUS
default Active
knative-eventing Active
knative-serving Active
knative-serving-ingress Active
kube-node-lease Active
kube-public Active
kube-system Active
metallb-system Active
nitesh Active
openshift Active
openshift-apiserver Active
openshift-apiserver-operator Active
openshift-authentication Active
openshift-authentication-operator Active
openshift-cloud-controller-manager Active
openshift-cloud-controller-manager-operator Active
openshift-cloud-credential-operator Active
openshift-cloud-network-config-controller Active
openshift-cloud-platform-infra Active
openshift-cluster-csi-drivers Active
```

## Lab - Deploying nginx in declarative style

```
oc new-project jegan
oc create deployment nginx --image=bitnami/nginx:1.18 --replicas=3 -o yaml
--dry-run=client
oc create deployment nginx --image=bitnami/nginx:1.18 --replicas=3 -o yaml
--dry-run=client > nginx-deploy.yml

oc create -f nginx-deploy.yml
oc get deploy,rs,po
```

## Expected output

```
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ➤ oc new-project jegan
Already on project "jegan" on server "https://api.ocp4.tektutor.org.labs:6443".
You can add applications to this project with the 'new-app' command. For example, try:
  oc new-app rails-postgresql-example
to build a new example application in Ruby. Or use kubectl to deploy a simple Kubernetes application:
  kubectl create deployment hello-node --image=registry.k8s.io/e2e-test-images/agnhost:2.43 -- /agnhost serve-hostname
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ➤ oc create deployment nginx --image=bitnami/nginx:1.18 --replicas=3 -o yaml --dry-run=client
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: {}
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ➤ oc create deployment nginx --image=bitnami/nginx:1.18 --replicas=3 -o yaml --dry-run=client > nginx-deploy.yml
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ➤
```

```
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ➤ oc create deployment nginx --image=bitnami/nginx:1.18 --replicas=3 -o yaml --dry-run=client > nginx-deploy.yml
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ➤ oc deploy,rs,po
error: unknown command "deploy,rs,po" for "oc"
x jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ➤ oc get deploy,rs,po
No resources found in jegan namespace.
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ➤ ls -l
total 4
-rw-r--r-- 1 jegan jegan 397 Jul  3 10:25 nginx-deploy.yml
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ➤ oc create -f nginx-deploy.yml
deployment.apps/nginx created
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ➤ oc get deploy,rs,po
NAME           READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/nginx  0/3     3           0           5s

NAME          DESIRED   CURRENT   READY   AGE
replicaset.apps/nginx-566b5879cb  3         3         0         5s

NAME          READY   STATUS             RESTARTS   AGE
pod/nginx-566b5879cb-nbcwl  0/1   ContainerCreating   0          5s
pod/nginx-566b5879cb-wfgtg  0/1   ContainerCreating   0          5s
pod/nginx-566b5879cb-wvxkm  0/1   ContainerCreating   0          5s
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ➤ oc get po -w
NAME          READY   STATUS             RESTARTS   AGE
nginx-566b5879cb-nbcwl  0/1   ContainerCreating   0          11s
nginx-566b5879cb-wfgtg  0/1   ContainerCreating   0          11s
nginx-566b5879cb-wvxkm  0/1   ContainerCreating   0          11s
nginx-566b5879cb-wfgtg  1/1   Running          0          11s
nginx-566b5879cb-nbcwl  1/1   Running          0          12s
nginx-566b5879cb-wvxkm  1/1   Running          0          13s
^C
x jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ➤ oc get po
NAME          READY   STATUS   RESTARTS   AGE
nginx-566b5879cb-nbcwl  1/1   Running   0          19s
nginx-566b5879cb-wfgtg  1/1   Running   0          19s
nginx-566b5879cb-wvxkm  1/1   Running   0          19s
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ➤
```

Activities Google Chrome Topology - Red Hat OpenShift - Google Chrome

Topology · Red Hat OpenShift - Google Chrome

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

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

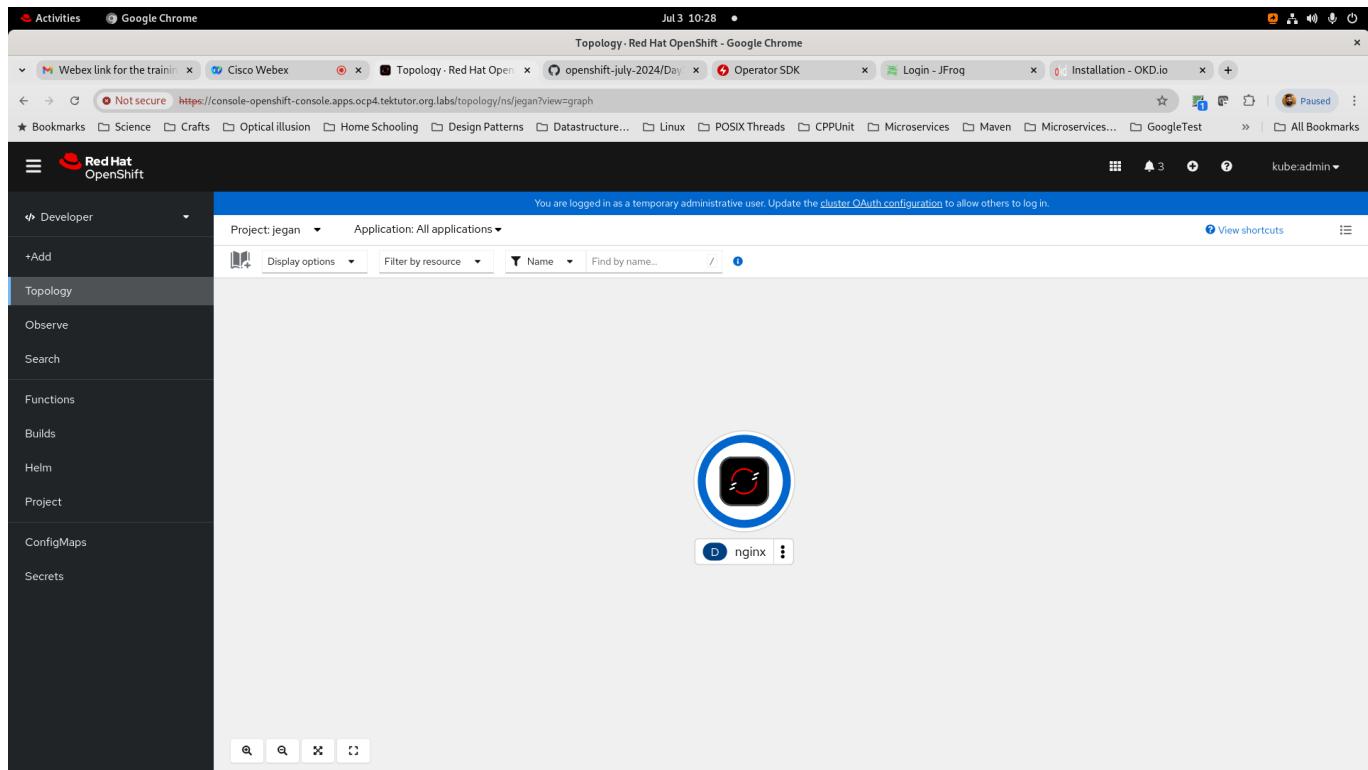
Project: jegan Application: All applications

+Add Display options Filter by resource Name Find by name... View shortcuts

Topology

Developer Observers Search Functions Builds Helm Project ConfigMaps Secrets

nginx



Activities Google Chrome Topology - Red Hat OpenShift - Google Chrome

Topology · Red Hat OpenShift - Google Chrome

Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/topology/ns/jegan?view=graph&selectId=4476041a-2f49-4e98-ba7b-179dfb29c417

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

+Add Display options Filter by resource Name Find by name... View shortcuts

Topology

Developer Observers Search Functions Builds Helm Project ConfigMaps Secrets

nginx

Health checks Container nginx does not have health checks to ensure your application is running correctly. Add health checks

Scaling 3 → 4

Details Resources Observe

Name nginx Update strategy RollingUpdate

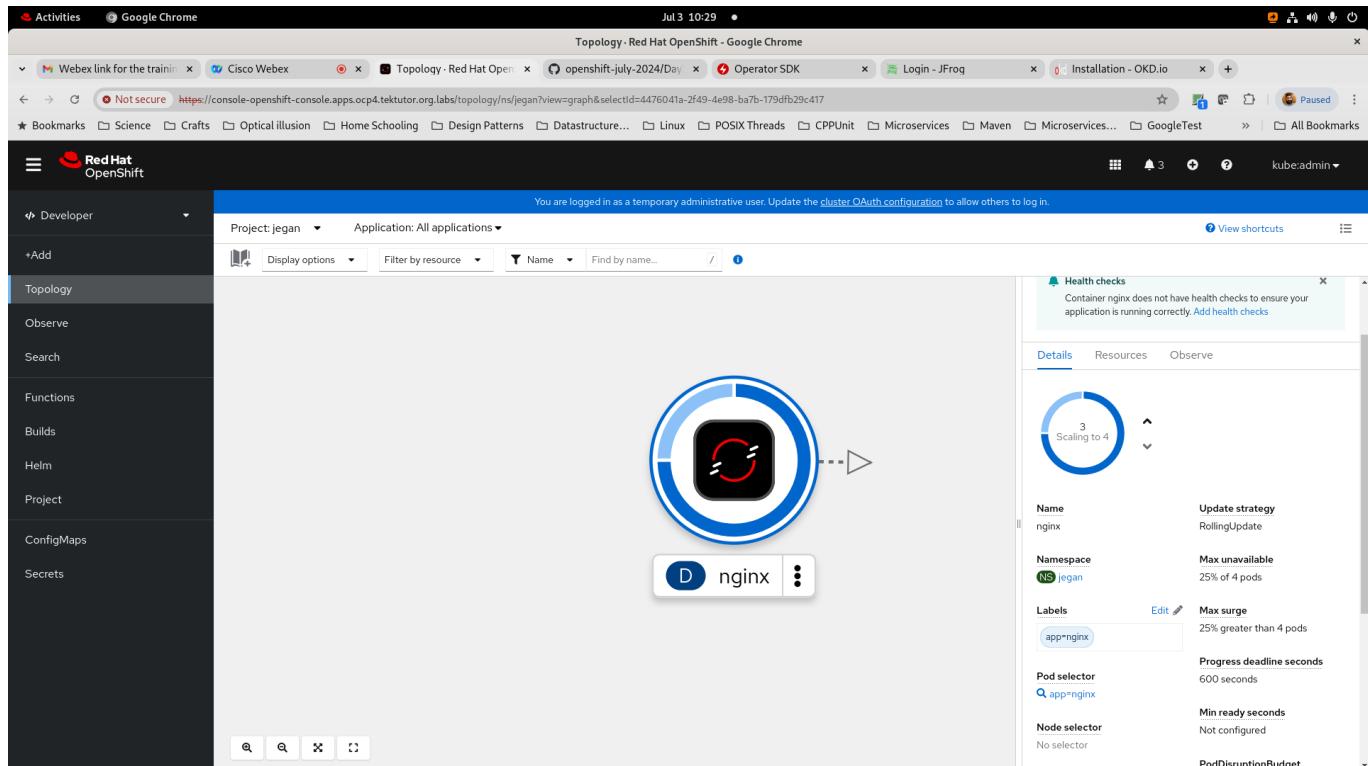
Namespace jegan Max unavailable 25% of 4 pods

Labels app=nginx Edit Max surge 25% greater than 4 pods

Pod selector app=nginx Progress deadline seconds 600 seconds

Node selector No selector Min ready seconds Not configured

PodDisruptionBudget



The screenshot shows the Red Hat OpenShift Topology interface. The left sidebar menu includes Developer, Topology, Observe, Search, Functions, Builds, Helm, Project, ConfigMaps, and Secrets. The main content area displays a large circular icon with a red 'D' and a blue 'nginx' logo. To the right, there is a detailed view of the 'nginx' pod:

- Health checks:** Container nginx does not have health checks to ensure your application is running correctly. [Add health checks](#)
- Details:** Shows the pod's status as Running.
- Resources:** Lists three pods: nginx-566b5879cb-rggsw, nginx-566b5879cb-nbcwl, and nginx-566b5879cb-wvkm, all in Running status.
- Pods:** A list of all four pods under the nginx project.
- Services:** No Services found for this resource.
- Routes:** No Routes found for this resource.

The screenshot shows the Red Hat OpenShift Logs interface for the 'nginx' pod. The left sidebar is identical to the first screenshot. The main content area shows the log stream for the 'nginx' pod:

- Logs:** The tab is selected, showing the log details.
- Log streaming...**: A button to start streaming logs.
- nginx**: A dropdown menu to select the log source.
- Current log**: A dropdown menu to select the current log file.
- Search**: A search bar to find specific log entries.
- 11 lines**: The log output:

```
1  nginx 04:59:26.29 Welcome to the Bitnami nginx container
2  nginx 04:59:26.29 Subscribe to project updates by watching https://github.com/bitnami/bitnami-docker-nginx
3  nginx 04:59:26.29 Submit issues and feature requests at https://github.com/bitnami/bitnami-docker-nginx/issues
4  nginx 04:59:26.29
5  nginx 04:59:26.29
6  nginx 04:59:26.30 INFO => ** Starting NGINX setup **
7  nginx 04:59:26.31 INFO => Validating settings in NGINX_* env vars
8  nginx 04:59:26.32 INFO => Initializing NGINX
9  nginx 04:59:26.33 INFO => ** NGINX setup finished! **
10
11  nginx 04:59:26.34 INFO => ** Starting NGINX **
```

Activities Google Chrome Topology - Red Hat OpenShift - Google Chrome

Topology · Red Hat OpenShift - Google Chrome

Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/topology/ns/jegan?view=graph&selectId=4476041a-2f49-4e98-ba7b-179dfb29c417

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kube:admin

**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 Application: All applications

+Add Display options Filter by resource Name Find by name... Actions

Topology

Developer Observers Search Functions Builds Helm Project ConfigMaps Secrets

nginx

4 Pods

Name nginx Namespace NS jegan Labels app:nginx Pod selector

**Edit Deployment - Red Hat OpenShift - Google Chrome**

Edit Deployment - Red Hat OpenShift - Google Chrome

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

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kube:admin

**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

Configure via: Form view (radio) YAML view

**Edit Deployment**

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 kind: Deployment
2 apiVersion: apps/v1
3 metadata:
4   annotations:
5     deployment.kubernetes.io/revision: '1'
6   resourceVersion: '1996049'
7   name: nginx
8   uid: 4476041a-2f49-4e98-ba7b-179dfb29c417
9   creationTimestamp: '2024-07-03T04:56:26Z'
10  generation: 2
11  managedFields:-
12    name: updateDeployment
13    namespace: jegan
14    labels:
15      app: nginx
16    spec:
17      replicas: 4
18      selector:

```

Save Reload Cancel

**Deployment**

Schema

Deployment enables declarative updates for Pods and ReplicaSets.

- 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/contributors/devel/sig-architecture/api-conventions.md#resources>

- kind

Download

Activities Google Chrome Search - Red Hat OpenShift - Google Chrome

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

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Red Hat OpenShift kube:admin

Developer Project: jegan

### Search

Resources Label app=frontend /

Repl RS ReplicaSet RC ReplicationController

Create ReplicaSet

Name	Status	Labels	Owner	Created
nginx-566b5879cb	4 of 4 pods	app:nginx pod-template-hash=566b5879cb	nginx	3 Jul 2024, 10:26

Activities Google Chrome Jul 3 10:31

Not secure https://console.openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/replicasets/nginx-566b5879cb/yaml

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Red Hat OpenShift kube:admin

Developer Project: jegan

ReplicaSets > ReplicaSet details RS nginx-566b5879cb

Actions

Details YAML Pods Environment Events

```

1 kind: ReplicaSet
2 apiVersion: apps/v1
3 metadata:
4   annotations:
5     deployment.kubernetes.io/desired-replicas: '4'
6     deployment.kubernetes.io/max-replicas: '5'
7     deployment.kubernetes.io/revision: '1'
8   resourceVersion: '1996048'
9   name: nginx-566b5879cb
10  uid: 757fdbfe-4162-4035-82bc-34b96e58da46
11  creationTimestamp: '2024-07-03T04:56:26Z'
12  generation: 2
13  managedFields:
14    - manager: kube-controller-manager
15      operation: Update
16      apiVersion: apps/v1
17      time: '2024-07-03T04:59:16Z'
18      fieldsType: FieldsV1
19      fieldsV1:
20        'f:metadata':
21          'f:annotations':
22            . {}
23        'f:deployment.kubernetes.io/desired-replicas': {}
24        'f:deployment.kubernetes.io/max-replicas': {}
25        'f:deployment.kubernetes.io/revision': {}

```

Save Reload Cancel Download

```

1 kind: Pod
2 apiVersion: v1
3 metadata:
4   generateName: nginx-566b5879cb-
5   annotations:
6     kbs.ovn.org/pod-networks: '{"default":{"ip_addresses":["10.130.0.92/23"],"mac_address":"0a:58:0a:82:00:5c","gateway_ips":["10.130.0.1"],"routes":[{"dest":"10.12
7     [{"(
8       "name": "ovn-kubernetes",
9       "interface": "eth0",
10      "ips": [
11        "10.130.0.92"
12      ],
13      "mac": "0a:58:0a:82:00:5c",
14      "default": true,
15      "dns": {}
16    ]
17  }]
18  openshift.io/scsc: restricted-v2
19  seccomp.security.alpha.kubernetes.io/pod: runtime/default
20  resourceVersion: '1996047'
21  name: nginx-566b5879cb-rggsw
22  uid: df1adef1-9dh3-4686-9a1c-e12fcf89h3a4
23  creationTimestamp: '2024-07-03T04:59:16Z'
24  managedFields:
25    - manager: kube_controller_manager

```

## Lab - Scale up nginx deployment in declarative style

We need to update the replicas in the nginx-deploy.yml file from 3 to 5, save it and apply

```

cd ~/openshift-july-2024
git pull
cd Day3/declarative-manifest-scripts
cat nginx-deploy.yml
oc apply -f nginx-deploy.yml
oc get po -w
oc get po

```

## Expected output

The screenshot shows a terminal window titled "Terminal" with the command line "jegan@tektutor.org ~". The user has run several commands to create a deployment manifest:

```
jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts $ main ls
nginx-deploy.yml
jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts $ main vim nginx-deploy.yml
jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts $ main cat nginx-deploy.yml
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: {}
```

The terminal shows the YAML configuration for a Deployment named "nginx" with 3 replicas, using the "nginx" image from the "bitnami" namespace. The configuration includes labels and a template section.

```

Activities Terminal Jul 3 10:35 • jegan@tektutor.org
metadata:
  creationTimestamp: null
  labels:
    app: nginx
spec:
  containers:
    - image: bitnami/nginx:1.18
      name: nginx
      resources: {}
status: {}
jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts ▶ main vim nginx-deploy.yml
jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts ▶ main cat nginx-deploy.yml
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: {}
jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts ▶ main ●

Activities Terminal Jul 3 10:36 • jegan@tektutor.org
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-july-2024/Day3/declarative-manifest-scripts ▶ main ● oc apply -f nginx-deploy.yml
Warning: resource deployments/nginx is missing the kubectl.kubernetes.io/last-applied-configuration annotation which is required by oc apply. oc apply should only be used on resources created declaratively by either oc create --save-config or oc apply. The missing annotation will be patched automatically.
deployment.apps/nginx configured
jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts ▶ main ● oc get po -w
NAME READY STATUS RESTARTS AGE
nginx-566b5879cb-48xg5 0/1 ContainerCreating 0 2s
nginx-566b5879cb-nbcwl 1/1 Running 0 9m27s
nginx-566b5879cb-rggsw 1/1 Running 0 6m37s
nginx-566b5879cb-wfgtg 1/1 Running 0 9m27s
nginx-566b5879cb-wvxkm 1/1 Running 0 9m27s
nginx-566b5879cb-48xg5 1/1 Running 0 9s
^C
x jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts ▶ main ● oc get po
NAME READY STATUS RESTARTS AGE
nginx-566b5879cb-48xg5 1/1 Running 0 16s
nginx-566b5879cb-nbcwl 1/1 Running 0 9m41s
nginx-566b5879cb-rggsw 1/1 Running 0 6m51s
nginx-566b5879cb-wfgtg 1/1 Running 0 9m41s
nginx-566b5879cb-wvxkm 1/1 Running 0 9m41s
jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts ▶ main ●

```

## Lab - Deleting a deployment in declarative style

```

cd ~/openshift-july-2024
git pull
cd Day3/declarative-manifest-scripts
oc get deploy,rs,po
oc delete -f nginx-deploy.yml
oc get deploy,rs,po

```

## Expected output

```

template:
  metadata:
    creationTimestamp: null
    labels:
      app: nginx
  spec:
    containers:
      - image: bitnami/nginx:1.18
        name: nginx
        resources: {}
status: {}
jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts [main] ➜ oc apply -f nginx-deploy.yml
Warning: resource deployments/nginx is missing the kubectl.kubernetes.io/last-applied-configuration annotation which is required by oc apply. oc apply should only be used on resources created declaratively by either oc create --save-config or oc apply. The missing annotation will be patched automatically.
deployment.apps/nginx configured
jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts [main] ➜ oc get po -w
NAME     READY   STATUS    RESTARTS   AGE
nginx-566b5879cb-48xg5  0/1     ContainerCreating   0          2s
nginx-566b5879cb-nbcwl  1/1     Running   0          9m27s
nginx-566b5879cb-rggsw  1/1     Running   0          6m37s
nginx-566b5879cb-wfgtg  1/1     Running   0          9m27s
nginx-566b5879cb-wvxkm  1/1     Running   0          9m27s
nginx-566b5879cb-48xg5  1/1     Running   0          9s
^C
x jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts [main] ➜ oc get po
NAME     READY   STATUS    RESTARTS   AGE
nginx-566b5879cb-48xg5  1/1     Running   0          16s
nginx-566b5879cb-nbcwl  1/1     Running   0          9m41s
nginx-566b5879cb-rggsw  1/1     Running   0          6m51s
nginx-566b5879cb-wfgtg  1/1     Running   0          9m41s
nginx-566b5879cb-wvxkm  1/1     Running   0          9m41s
jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts [main] ➜ oc delete -f nginx-deploy.yml
deployment.apps "nginx" deleted
jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts [main] ➜ oc get deploy,rs,po
No resources found in jegan namespace.
jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts [main] ➜

```

## Lab - Deploy nginx in declarative style with --save-config flag

### Points to remember

- oc create should be used only the first time we are creating the resource
- oc create will assume the resource definitions captured in the yaml file is not deployed already in openshift
- oc apply must be used after updating any changes done in yaml file following the oc create command
- oc apply command will work first time and after updating the yaml file as well
- when we use the save-config flag while using oc create command, it save the meta-data i.e using which yaml file the resources were created in the etcd database
- so next time apply changes after any modification done in the yaml file, it will validate that we used the same file while creating the resource, this way we avoid the warning we get while using apply in declarative style

```

cd ~/openshift-july-2024
git pull
cd Day3/declarative-manifest-scripts
oc get deploy,rs,po

cat nginx-deploy.yml
oc create -f nginx-deploy.yml --save-config
oc get deploy,rs,po

```

## Expected output

```
jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts ] main cat nginx-deploy.yml
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: {}
```

Update the nginx-deploy.yml, replace replicas from 5 to 3, save it and apply

```
cat nginx-deploy.yml
oc apply -f nginx-deploy.yml
oc get deploy,rs,po
```

## Expected output

```
jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts ] main vim nginx-deploy.yml
jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts ] main cat nginx-deploy.yml
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: {}
```

```
jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts ] main oc apply -f nginx-deploy.yml
deployment.apps/nginx configured
jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts ] main oc get po
NAME           READY   STATUS    RESTARTS   AGE
nginx-566b5879cb-bxsxx  1/1     Running   0          29s
nginx-566b5879cb-cqjfd  1/1     Running   0          29s
nginx-566b5879cb-mmbqh  1/1     Running   0          29s
```

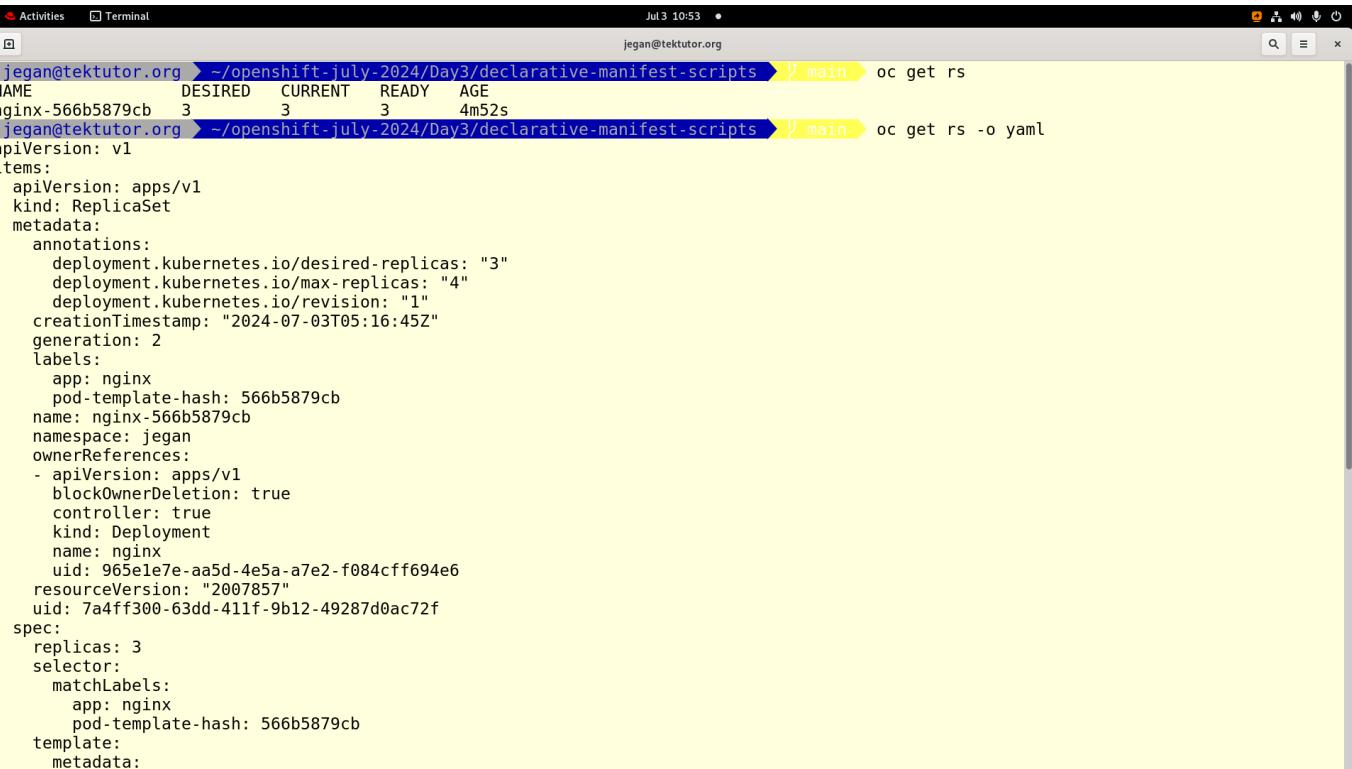
# Lab - Deploying replicaset without deployment in declarative style

## Points to remember

- Deploying an application directly using replicaset isn't considered a best practice
- When the top level resource is replicaset, deployment controller will not monitor the replicaset, hence repairing replicaset is not possible
- Deployment controller is the one which supports rolling update, because now we deployed replicaset without deployment, rolling update isn't possible
- Hence, for these reasons we should always deploy stateless applications as a Deployment not using replicaset directly

```
oc get rs
oc get rs -o yaml
oc get rs -o json
oc get rs/nginx-566b5879cb -o yaml
oc get rs -o yaml > nginx-rs.yml
cat nginx-rs.yml
```

## Expected output



```
jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts $ oc get rs
NAME           DESIRED   CURRENT   READY   AGE
nginx-566b5879cb   3         3         3     4m52s
jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts $ oc get rs -o yaml
apiVersion: v1
items:
- apiVersion: apps/v1
  kind: ReplicaSet
  metadata:
    annotations:
      deployment.kubernetes.io/desired-replicas: "3"
      deployment.kubernetes.io/max-replicas: "4"
      deployment.kubernetes.io/revision: "1"
      creationTimestamp: "2024-07-03T05:16:45Z"
    generation: 2
    labels:
      app: nginx
      pod-template-hash: 566b5879cb
    name: nginx-566b5879cb
    namespace: jegan
    ownerReferences:
    - apiVersion: apps/v1
      blockOwnerDeletion: true
      controller: true
      kind: Deployment
      name: nginx
      uid: 965e1e7e-aa5d-4e5a-a7e2-f084cff694e6
      resourceVersion: "2007857"
      uid: 7a4ff300-63dd-411f-9b12-49287d0ac72f
  spec:
    replicas: 3
    selector:
      matchLabels:
        app: nginx
        pod-template-hash: 566b5879cb
    template:
      metadata:
```

```
Activities Terminal Jul 3 10:54 • jegan@tektutor.org
resourceVersion: ""
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts > } main > oc get rs -o json
{
  "apiVersion": "v1",
  "items": [
    {
      "apiVersion": "apps/v1",
      "kind": "ReplicaSet",
      "metadata": {
        "annotations": {
          "deployment.kubernetes.io/desired-replicas": "3",
          "deployment.kubernetes.io/max-replicas": "4",
          "deployment.kubernetes.io/revision": "1"
        },
        "creationTimestamp": "2024-07-03T05:16:45Z",
        "generation": 2,
        "labels": {
          "app": "nginx",
          "pod-template-hash": "566b5879cb"
        },
        "name": "nginx-566b5879cb",
        "namespace": "jegan",
        "ownerReferences": [
          {
            "apiVersion": "apps/v1",
            "blockOwnerDeletion": true,
            "controller": true,
            "kind": "Deployment",
            "name": "nginx",
            "uid": "965ele7e-aa5d-4e5a-a7e2-f084cff694e6"
          }
        ],
        "resourceVersion": "2007857",
        "uid": "7a4ff300-63dd-411f-9b12-49287d0ac72f"
      },
      "spec": {
        "replicas": 3
      }
    }
  ]
}

Activities Terminal Jul 3 10:53 • jegan@tektutor.org
resourceVersion: "2007857"
uid: 7a4ff300-63dd-411f-9b12-49287d0ac72f
spec:
replicas: 3
selector:
  matchLabels:
    app: nginx
    pod-template-hash: 566b5879cb
template:
  metadata:
    creationTimestamp: null
    labels:
      app: nginx
      pod-template-hash: 566b5879cb
  spec:
    containers:
      - image: bitnami/nginx:1.18
        imagePullPolicy: IfNotPresent
        name: nginx
        resources: {}
        terminationMessagePath: /dev/termination-log
        terminationMessagePolicy: File
    dnsPolicy: ClusterFirst
    restartPolicy: Always
    schedulerName: default-scheduler
    securityContext: {}
    terminationGracePeriodSeconds: 30
status:
  availableReplicas: 3
  fullyLabeledReplicas: 3
  observedGeneration: 2
  readyReplicas: 3
  replicas: 3
kind: List
metadata:
  resourceVersion: ""
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts > } main >
```

```
Activities Terminal Jul 3 10:55 • jegan@tektutor.org
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts ⌘ main oc get rs -o yaml > nginx-rs.yaml
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts ⌘ main vim nginx-rs.yaml
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts ⌘ main oc get rs
NAME DESIRED CURRENT READY AGE
nginx-566b5879cb 3 3 3 8m16s
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts ⌘ main oc get rs/nginx-566b5879cb -o yaml
apiVersion: apps/v1
kind: ReplicaSet
metadata:
  annotations:
    deployment.kubernetes.io/desired-replicas: "3"
    deployment.kubernetes.io/max-replicas: "4"
    deployment.kubernetes.io/revision: "1"
  creationTimestamp: "2024-07-03T05:16:45Z"
  generation: 2
  labels:
    app: nginx
    pod-template-hash: 566b5879cb
  name: nginx-566b5879cb
  namespace: jegan
  ownerReferences:
  - apiVersion: apps/v1
    blockOwnerDeletion: true
    controller: true
    kind: Deployment
    name: nginx
    uid: 965e1e7e-aa5d-4e5a-a7e2-f084cff694e6
  resourceVersion: "2007857"
  uid: 7a4ff300-63dd-411f-9b12-49287d0ac72f
spec:
  replicas: 3
  selector:
    matchLabels:
      app: nginx
      pod-template-hash: 566b5879cb
  template:
    metadata:
      kind: Deployment
      name: nginx
      uid: 965e1e7e-aa5d-4e5a-a7e2-f084cff694e6
      resourceVersion: "2007857"
      uid: 7a4ff300-63dd-411f-9b12-49287d0ac72f
    spec:
      replicas: 3
      selector:
        matchLabels:
          app: nginx
          pod-template-hash: 566b5879cb
      template:
        metadata:
          creationTimestamp: null
          labels:
            app: nginx
            pod-template-hash: 566b5879cb
        spec:
          containers:
          - image: bitnami/nginx:1.18
            imagePullPolicy: IfNotPresent
            name: nginx
            resources: {}
            terminationMessagePath: /dev/termination-log
            terminationMessagePolicy: File
          dnsPolicy: ClusterFirst
          restartPolicy: Always
          schedulerName: default-scheduler
          securityContext: {}
          terminationGracePeriodSeconds: 30
      status:
        availableReplicas: 3
        fullyLabeledReplicas: 3
        observedGeneration: 2
        readyReplicas: 3
        replicas: 3
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts ⌘ main
```

```

apiVersion: apps/v1
kind: ReplicaSet
metadata:
  labels:
    app: nginx
    pod-template-hash: rs
  name: nginx-rs
spec:
  replicas: 3
  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

```

"nginx-rs.yaml" 23L, 421B written

Let's delete the existing deployment

```

oc delete -f nginx-deploy.yml
oc get deploy,rs,po
cat nginx-rs.yaml

```

Expected output

```

availableReplicas: 3
fullyLabeledReplicas: 3
observedGeneration: 2
readyReplicas: 3
replicas: 3
jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ➤ oc get rs/nginx-566b5879cb -o yaml > nginx-rs.yaml
ml
jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ➤ vim nginx-rs.yaml
jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ➤ oc delete -f nginx-deploy.yml
deployment.apps "nginx" deleted
jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ➤ oc get deploy,rs,po
No resources found in jegan namespace.
jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ➤ cat nginx-rs.yaml
apiVersion: apps/v1
kind: ReplicaSet
metadata:
  labels:
    app: nginx
    pod-template-hash: rs
  name: nginx-rs
spec:
  replicas: 3
  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-july-2024/Day3/declarative-manifest-scripts ➤ main ➤

```

Let's now create the replicaset without deployment in declarative style

```
oc create -f nginx-rs.yml --save-config
oc get deploy,rs,po
```

## Expected output

```
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts > main > oc get deploy,rs,po
No resources found in jegan namespace.

jegan@tektutor.org > ~/openshift-july-2024/Day3/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: 3
  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
replicaset.apps/nginx-rs > main > oc create -f nginx-rs.yml --save-config
replicaset.apps/nginx-rs created
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts > main > oc get deploy,rs,po
NAME           DESIRED   CURRENT   READY   AGE
replicaset.apps/nginx-rs   3         3         3       6s

NAME          READY   STATUS    RESTARTS   AGE
pod/nginx-rs-2hrwd  1/1     Running   0          6s
pod/nginx-rs-hh2lj   1/1     Running   0          6s
pod/nginx-rs-qtv4   1/1     Running   0          6s
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts > main >
```

## Lab - Deploying a pod directly without replicaset/deployment in declarative style

### Points to note

- Creating a Pod directly without replicaset & deployment is a bad practice
- As there is no ReplicaSet, ReplicaSet controller will not support scale up/down and healing of pod is also not possible
- As there is no Deployment, Deployment Controller will not support rolling update
- One genuine usecase for creating a Pod is for testing purpose
- With a test pod we can check if the service discovery is working

```
cd ~/openshift-july-2024
git pull
cd Day3/declarative-manifest-scripts
cat pod.yml
oc create -f pod.yml --save-config
oc get po -w
oc get po
```

## Expected output

```
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts $ main ls
nginx-deploy.yml nginx-rs.yml
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts $ main vim pod.yml
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts $ main oc explain pod
KIND: Pod
VERSION: v1

DESCRIPTION:
Pod is a collection of containers that can run on a host. This resource is
created by clients and scheduled onto hosts.

FIELDS:
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/contributors/devel/sig-architecture/api-conventions.md#resources

kind <string>
Kind is a string value representing the REST resource this object
represents. Servers may infer this from the endpoint the client submits
requests to. Cannot be updated. In CamelCase. More info:
https://git.k8s.io/community/contributors/devel/sig-architecture/api-conventions.md#types-kinds

metadata <ObjectMeta>
Standard object's metadata. More info:
https://git.k8s.io/community/contributors/devel/sig-architecture/api-conventions.md#metadata

spec <PodSpec>
Specification of the desired behavior of the pod. More info:
https://git.k8s.io/community/contributors/devel/sig-architecture/api-conventions.md#spec-and-status

status <PodStatus>
Most recently observed status of the pod. This data may not be up to date.
Populated by the system. Read-only. More info:
https://git.k8s.io/community/contributors/devel/sig-architecture/api-conventions.md#spec-and-status
```

```
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts $ main vim pod.yml
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts $ main cat pod.yml
apiVersion: v1
kind: Pod
metadata:
  name: my-pod
  labels:
    app: hello
spec:
  containers:
  - name: hello-container
    image: tektutor/spring-ms:1.0
    imagePullPolicy: IfNotPresent
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts $ main oc create -f pod.yml --save-config
Warning: would violate PodSecurity "restricted:v1.24": allowPrivilegeEscalation != false (container "hello-container" must set securityContext.allowPrivilegeEscalation=false), unrestricted capabilities (container "hello-container" must set securityContext.capabilities.drop=["ALL"]), runAsNonRoot != true (pod or container "hello-container" must set securityContext.runAsNonRoot=true), seccompProfile (pod or container "hello-container" must set securityContext.seccompProfile.type to "RuntimeDefault" or "Localhost")
pod/my-pod created
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts $ main oc get po -w
NAME      READY   STATUS    RESTARTS   AGE
my-pod   1/1     Running   0          3s
^C
x jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts $ main oc get po
NAME      READY   STATUS    RESTARTS   AGE
my-pod   1/1     Running   0          7s
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts $
```

## Lab - Creating a clusterip internal service in declarative style

```
cd ~/openshift-july-2024
git pull
cd Day3/declarative-manifest-scripts
oc get deploy,rs,po
oc create -f nginx-deploy.yml --save-config
oc get deploy,rs,po
```

## Expected output

```
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts $ main ls -l
total 12
-rw-r--r-- 1 jegan jegan 397 Jul 3 10:47 nginx-deploy.yml
-rw-r--r-- 1 jegan jegan 421 Jul 3 10:57 nginx-rs.yml
-rw-r--r-- 1 jegan jegan 189 Jul 3 11:12 pod.yml
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts $ main oc get deploy
No resources found in jegan namespace.
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts $ main oc create -f nginx-deploy.yml --save-config
deployment.apps/nginx created
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts $ main oc get deploy,rs,po
NAME          READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/nginx   3/3      3           3           3s
NAME          DESIRED   CURRENT   READY   AGE
replicaset.apps/nginx-566b5879cb   3         3         3         3s
NAME          READY   STATUS    RESTARTS   AGE
pod/nginx-566b5879cb-cms2t   1/1     Running   0          3s
pod/nginx-566b5879cb-pw6x   1/1     Running   0          3s
pod/nginx-566b5879cb-x4187  1/1     Running   0          3s
jegan@tektutor.org ~ -/openshift-july-2024/Day3/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
```

Let's create a clusterip internal service

```
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 create -f nginx-clusterip-svc.yml --save-config
oc get svc
oc describe svc/nginx
```

## Expected output

```
jegan@tektutor.org ~ /openshift-july-2024/Day3/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-july-2024/Day3/declarative-manifest-scripts > | main | oc expose deploy/nginx --type=ClusterIP --port=8080 -o yaml --dry-run=client > nginx-clusterip-svc.yaml
jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts > | main | oc create -f nginx-clusterip-svc.yaml
service/nginx created
jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts > | main | oc get svc
NAME      TYPE        CLUSTER-IP      EXTERNAL-IP     PORT(S)      AGE
nginx   ClusterIP   172.30.183.139  <none>        8080/TCP   3s
jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts > | main | oc describe svc/nginx
Name:           nginx
Namespace:      jegan
Labels:         app=nginx
Annotations:    <none>
Selector:       app=nginx
Type:          ClusterIP
IP Family Policy: SingleStack
IP Families:   IPv4
IP:             172.30.183.139
IPs:            172.30.183.139

Activities Terminal Jul 3 11:40 • jegan@tektutor.org

labels:
  app: nginx
  name: nginx
spec:
  ports:
  - port: 8080
    protocol: TCP
    targetPort: 8080
  selector:
    app: nginx
  type: ClusterIP
status:
  loadBalancer: {}
jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts > | main | oc expose deploy/nginx --type=ClusterIP --port=8080 -o yaml --dry-run=client > nginx-clusterip-svc.yaml
jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts > | main | oc create -f nginx-clusterip-svc.yaml
service/nginx created
jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts > | main | oc get svc
NAME      TYPE        CLUSTER-IP      EXTERNAL-IP     PORT(S)      AGE
nginx   ClusterIP   172.30.183.139  <none>        8080/TCP   3s
jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts > | main | oc describe svc/nginx
Name:           nginx
Namespace:      jegan
Labels:         app=nginx
Annotations:    <none>
Selector:       app=nginx
Type:          ClusterIP
IP Family Policy: SingleStack
IP Families:   IPv4
IP:             172.30.183.139
IPs:            172.30.183.139
Port:           <unset>     8080/TCP
TargetPort:     8080/TCP
Endpoints:     10.128.2.14:8080,10.129.0.42:8080,10.131.0.52:8080
Session Affinity: None
Events:         <none>
```

The screenshot shows the Red Hat OpenShift Services interface. The left sidebar is for an 'Administrator' user, with 'Services' selected. The main area shows a single service named 'nginx'. The service has the following details:

Name	Labels	Pod selector	Location
nginx	app=nginx	app=nginx	172.30.183.139:8080

Below this, there is a search interface for finding services. The search bar contains 'app=frontend'. The results show the same 'nginx' service under the 'core/v1' namespace.

The search results show the 'nginx' service under the 'core/v1' namespace. The service has the following details:

Name	Labels	Pod selector	Location
nginx	app=nginx	app=nginx	172.30.183.139:8080

The screenshot shows the Red Hat OpenShift web interface. The URL is <https://console.openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/services/nginx>. The page title is "nginx - Service - Details - Red Hat OpenShift - Google Chrome". The sidebar on the left has sections like Developer, Topology, Observe, Search, Functions, Builds, Helm, Project, ConfigMaps, Secrets, and +Add. The main content area shows a service named "nginx" in the "jegan" project. Under "Service details", it shows the name "nginx", namespace "jegan", and labels {"app": "nginx"}. It also lists annotations and session affinity. Under "Service routing", it shows the hostname "nginx.jegan.svc.cluster.local" and a service address of type "ClusterIP" at port 172.30.183.139. Under "Service port mapping", there is a single entry for port 8080. A note says "Accessible within the cluster only".

The screenshot shows the Red Hat OpenShift web interface. The URL is <https://console.openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/pods>. The page title is "nginx - Service - Pods - Red Hat OpenShift - Google Chrome". The sidebar on the left has sections like Developer, Topology, Observe, Search, Functions, Builds, Helm, Project, ConfigMaps, Secrets, and +Add. The main content area shows a pod named "nginx" in the "jegan" project. Under "Pods", it lists three pods: "nginx-566b5879cb-cms2t", "nginx-566b5879cb-pw66x", and "nginx-566b5879cb-x4l87", all in a "Running" status. Each pod has a "Name", "Status", "Ready", "Restarts", "Owner", "Memory", "CPU", and "Created" timestamp.

Accessing the clusterip internal service using a test pod

```
cd ~/openshift-july-2024
git pull
cd Day3/declarative-manifest-scripts
oc get svc
oc describe svc/nginx
ls -l
cat pod.yml
oc apply -f pod.yml
oc exec -it mypod sh
```

```
curl http://nginx:8080
exit
```

## Expected output

```
Day2 Day4 img1.png img3.png img5.png img6.png img7.png README.md
jegan@tektutor.org ~/openshift-july-2024/main$ cd Day3
jegan@tektutor.org ~/openshift-july-2024/Day3$ oc get svc
NAME      TYPE        CLUSTER-IP   EXTERNAL-IP   PORT(S)    AGE
nginx     ClusterIP  172.30.183.139 <none>        8080/TCP   4m4s
jegan@tektutor.org ~/openshift-july-2024/Day3$ oc describe svc/nginx
Name:            nginx
Namespace:       jegan
Labels:          app=nginx
Annotations:    <none>
Selector:        app=nginx
Type:            ClusterIP
IP Family Policy: SingleStack
IP Families:    IPv4
IP:              172.30.183.139
IPs:             172.30.183.139
Port:            <unset>  8080/TCP
TargetPort:      8080/TCP
Endpoints:       10.128.2.14:8080,10.129.0.42:8080,10.131.0.52:8080
Session Affinity: None
Events:          <none>
jegan@tektutor.org ~/openshift-july-2024/Day3$ cd declarative-manifest-scripts
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts$ ls
nginx-clusterip-svc.yml nginx-deploy.yml nginx-lb-svc.yml nginx-nodeport-svc.yml nginx-rs.yml pod.yml
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts$ cat pod.yml
apiVersion: v1
kind: Pod
metadata:
spec:
  containers:
  - name: hello-container
    image: tektutor/spring-ms:1.0
    imagePullPolicy: IfNotPresent
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts$ oc apply -f pod.yml
```

```
Events:          <none>
jegan@tektutor.org ~/openshift-july-2024/Day3$ cd declarative-manifest-scripts
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts$ ls
nginx-clusterip-svc.yml nginx-deploy.yml nginx-lb-svc.yml nginx-nodeport-svc.yml nginx-rs.yml pod.yml
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts$ cat pod.yml
apiVersion: v1
kind: Pod
metadata:
spec:
  containers:
  - name: my-pod
    image: tektutor/spring-ms:1.0
    imagePullPolicy: IfNotPresent
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts$ oc apply -f pod.yml
Warning: would violate PodSecurity "restricted:v1.24": allowPrivilegeEscalation != false (container "hello-container" must set securityContext.allowPrivilegeEscalation=false), unrestricted capabilities (container "hello-container" must set securityContext.capabilities.drop=["ALL"]), runAsNonRoot != true (pod or container "hello-container" must set securityContext.runAsNonRoot=true), seccompProfile (pod or container "hello-container" must set securityContext.seccompProfile.type to "RuntimeDefault" or "localhost")
pod/my-pod created
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts$ oc get po
NAME        READY   STATUS    RESTARTS   AGE
my-pod      1/1     Running   0          3s
nginx-566b5879cb-cms2t  1/1     Running   0          9m45s
nginx-566b5879cb-pw66x  1/1     Running   0          9m45s
nginx-566b5879cb-x4187  1/1     Running   0          9m45s
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts$ oc exec -it my-pod sh
kubectl exec [POD] [COMMAND] is DEPRECATED and will be removed in a future version. Use kubectl exec [POD] -- [COMMAND] instead.
sh-4.4# curl http://nginx:8080
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
  body {
```

The screenshot shows two terminal sessions on a Linux desktop. Both terminals are running under the user 'jegan@tektutor.org'.

**Terminal 1 (Top):**

```
jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts $ main $ oc get po
NAME      READY   STATUS    RESTARTS   AGE
my-pod    1/1     Running   0          3s
nginx-566b5879cb-cms2t  1/1     Running   0          9m45s
nginx-566b5879cb-pw66x  1/1     Running   0          9m45s
nginx-566b5879cb-x4l87  1/1     Running   0          9m45s
jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts $ main $ oc exec -it my-pod sh
kubectl exec [POD] [COMMAND] is DEPRECATED and will be removed in a future version. Use kubectl exec [POD] -- [COMMAND] instead.
sh-4.4# curl http://nginx:8080
<!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>
<p><em>Thank you for using nginx.</em></p>
</body>
</html>
sh-4.4# exit
exit
jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts $ main $
```

**Terminal 2 (Bottom):**

```
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>
<p><em>Thank you for using nginx.</em></p>
</body>
</html>
sh-4.4# exit
exit
jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts $ main $ oc exec -it my-pod sh
kubectl exec [POD] [COMMAND] is DEPRECATED and will be removed in a future version. Use kubectl exec [POD] -- [COMMAND] instead.
sh-4.4# curl http://172.30.183.139:8080
<!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>
<p><em>Thank you for using nginx.</em></p>
</body>
</html>
sh-4.4#
```

## Lab - Creating a nodeport external service in declarative style

```
cd ~/openshift-july-2024
git pull
cd Day3/declarative-manifest-scripts
oc get deploy,rs,po
oc create -f nginx-deploy.yml --save-config
oc get deploy,rs,po
```

## Expected output

```
jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts $ main $ oc get deploy,po
NAME          READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/nginx   3/3      3           3           17m

NAME                           READY   STATUS    RESTARTS   AGE
pod/nginx-566b5879cb-cms2t   1/1     Running   0          17m
pod/nginx-566b5879cb-pw66x   1/1     Running   0          17m
pod/nginx-566b5879cb-x4l87   1/1     Running   0          17m

jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts $ main $ oc expose deploy/nginx --type=NodePort --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: NodePort
status:
  loadBalancer: {}

jegan@tektutor.org ~ /openshift-july-2024/Day3/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-july-2024/Day3/declarative-manifest-scripts $ main $ oc create -f nginx-nodeport-svc.yml
Error from server (AlreadyExists): error when creating "nginx-nodeport-svc.yaml": services "nginx" already exists
x jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts $ main $ oc delte -f nginx-clusterip-svc.yml
error: unknown command "delte" for "oc"

Did you mean this?
  delete
x jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts $ main $ oc delete -f nginx-clusterip-svc.yml
```

Let's create a nodeport external service

```
oc expose deploy/nginx --type=NodePort --port=8080 -o yaml --dry-run=client
oc expose deploy/nginx --type=NodePort --port=8080 -o yaml --dry-run=client > nginx-nodeport-svc.yml
oc delete -f nginx-clusterip-svc.yml
oc create -f nginx-nodeport-svc.yml --save-config
oc get svc
oc describe svc/nginx
```

## Expected output

```
jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts $ main oc expose deploy/nginx --type=NodePort --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: NodePort
status:
  loadBalancer: {}

jegan@tektutor.org ~-/openshift-july-2024/Day3/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-july-2024/Day3/declarative-manifest-scripts $ main oc create -f nginx-nodeport-svc.yml
Error from server (AlreadyExists): error when creating "nginx-nodeport-svc.yaml": services "nginx" already exists
x jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts $ main oc delte -f nginx-clusterip-svc.yml
error: unknown command "delte" for "oc"

Did you mean this?
  delete
x jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts $ main oc delete -f nginx-clusterip-svc.yml
service "nginx" deleted
jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts $ main oc create -f nginx-nodeport-svc.yml
service/nginx created
jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts $ main oc get svc
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
nginx   NodePort  172.30.130.179  <none>        8080:32449/TCP  2s
jegan@tektutor.org ~-/openshift-july-2024/Day3/declarative-manifest-scripts $ main oc get nodes
NAME      STATUS      ROLES      AGE      VERSION

```

Accessing the nodeport external service using a test pod

```
cd ~/openshift-july-2024
git pull
cd Day3/declarative-manifest-scripts
oc get svc
oc describe svc/nginx
ls -l
cat pod.yml
oc apply -f pod.yml
oc exec -it mypod sh
curl http://nginx:8080
exit
```

## Expected output

```
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts [main] oc delete -f nginx-clusterip-svc.yml
service "nginx" deleted
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts [main] oc create -f nginx-nodeport-svc.yml
service/nginx created
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts [main] oc get svc
NAME      TYPE      CLUSTER-IP   EXTERNAL-IP   PORT(S)      AGE
nginx    NodePort   172.30.130.179 <none>        8080:32449/TCP   2s
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts [main] oc get nodes
NAME           STATUS  ROLES      AGE   VERSION
master-1.ocp4.tektutor.org.labs  Ready   control-plane,master,worker  9d   v1.28.10+a2c84a5
master-2.ocp4.tektutor.org.labs  Ready   control-plane,master,worker  9d   v1.28.10+a2c84a5
master-3.ocp4.tektutor.org.labs  Ready   control-plane,master,worker  9d   v1.28.10+a2c84a5
worker-1.ocp4.tektutor.org.labs Ready   worker      9d   v1.28.10+a2c84a5
worker-2.ocp4.tektutor.org.labs Ready   worker      9d   v1.28.10+a2c84a5
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts [main] curl http://worker-2.ocp4.tektutor.org.labs:32449
49
<!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>
```

## Lab - Creating a loadbalancer service for nginx deployment in declarative style

Let's delete the existing nodeport service

```
cd ~/openshift-july-2024
git pull
cd Day3/declarative-manifest-scripts
oc delete -f nginx-nodeport-svc.yml
```

Let's create the lb service in declarative style

```
oc get deploy,po
oc expose deploy/nginx --type=LoadBalancer --port=8080 -o yaml --dry-run=client
oc expose deploy/nginx --type=LoadBalancer --port=8080 -o yaml --dry-run=client > nginx-lb-svc.yml
oc create -f nginx-lb-svc.yml
oc get svc
oc describe svc/nginx
```

## Expected output

```
jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts $ main oc delete -f nginx-nodeport-svc.yml  
service "nginx" deleted  
jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts $ main oc get deploy,po  
NAME READY UP-TO-DATE AVAILABLE AGE  
deployment.apps/nginx 3/3 3 3 25m  
  
NAME READY STATUS RESTARTS AGE  
pod/nginx-566b5879cb-cms2t 1/1 Running 0 25m  
pod/nginx-566b5879cb-pw66x 1/1 Running 0 25m  
pod/nginx-566b5879cb-x4l87 1/1 Running 0 25m  
  
jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts $ main oc expose deploy/nginx --type=LoadBalancer --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: LoadBalancer  
status:  
  loadBalancer: {}  
  
jegan@tektutor.org ~ /openshift-july-2024/Day3/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-july-2024/Day3/declarative-manifest-scripts $ main oc create -f nginx-lb-svc.yml  
service/nginx created  
jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts $ main oc get svc  
NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE  
nginx LoadBalancer 172.30.82.94 192.168.122.90 8080:31560/TCP 2s  
jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts $ main
```

```

Activities Terminal Jul 3 12:04 • jegan@tektutor.org
jegan@tektutor.org > ~/openshift-july-2024/Day3/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-july-2024/Day3/declarative-manifest-scripts > \| main > oc create -f nginx-lb-svc.yml
service/nginx created
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts > \| main > oc get svc
NAME    TYPE        CLUSTER-IP      EXTERNAL-IP      PORT(S)         AGE
nginx   LoadBalancer 172.30.82.94  192.168.122.90  8080:31560/TCP  2s
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts > \| main > oc describe svc/nginx
Name:            nginx
Namespace:       jegan
Labels:          app=nginx
Annotations:    metallb.universe.tf/ip-allocated-from-pool: tektutor-metallb-addresspool
Selector:        app=nginx
Type:           LoadBalancer
IP Family Policy: SingleStack
IP Families:    IPv4
IP:              172.30.82.94
IPs:             172.30.82.94
LoadBalancer Ingress: 192.168.122.90
Port:            <unset>  8080/TCP
TargetPort:      8080/TCP
NodePort:        <unset>  31560/TCP
Endpoints:      10.128.2.14:8080,10.129.0.42:8080,10.131.0.52:8080
Session Affinity: None
External Traffic Policy: Cluster
Events:
  Type  Reason     Age   From           Message
  ----  -----     --  --  -----
  Normal  IPAllocated  2m35s metallb-controller  Assigned IP ["192.168.122.90"]
  Normal  nodeAssigned  2m35s metallb-speaker   announcing from node "worker-2.ocp4.tektutor.org.labs" with protocol "layer2"
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts > \| main > curl http://192.168.122.90:8080
<!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>
<p><em>Thank you for using nginx.</em></p>
</body>
</html>
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts > \| main

```

## Info - Rolling update

- is a way one can upgrade the application which is already deployed in OpenShift to latest version without any downtime
- rolling update happens when we update the container image in a deployment
- for each container image version, the deployment controller creates one instance of ReplicaSet
- it is also possible to rollback to previous or any specific version in case you found any issue with the latest version of your application

## Lab - Rolling update - upgrading nginx image from 1.18 to 1.19

```
oc get deploy
oc get deploy/nginx -o yaml | grep image
oc get po
oc get po/nginx-566b5879cb-9zgck -o yaml | grep image
oc get rs
oc get rs/nginx-566b5879cb -o yaml | grep image
```

### Expected output

The screenshot shows a tmux session with a single window titled 'Terminal'. The command history is as follows:

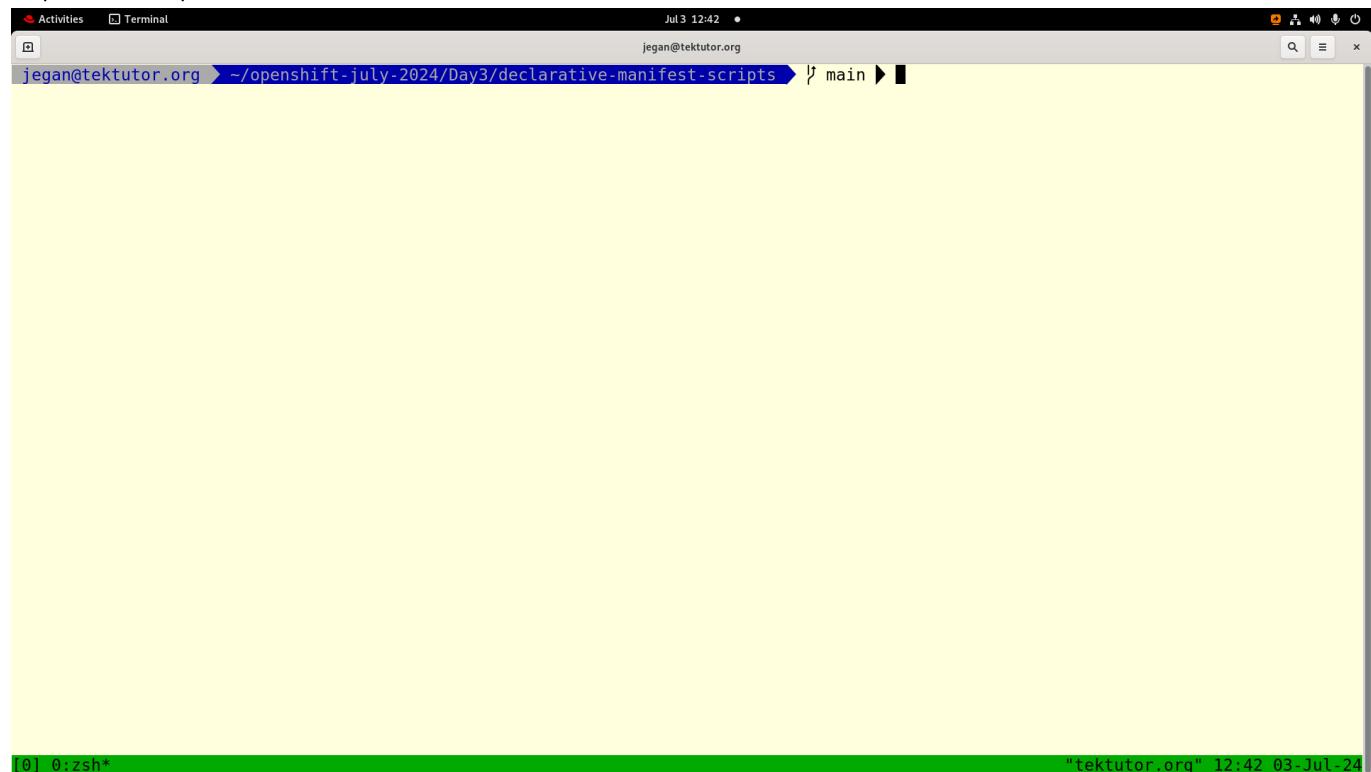
```
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts $ main > oc get all
Warning: apps.openshift.io/v1 DeploymentConfig is deprecated in v4.14+, unavailable in v4.10000+
No resources found in jegan namespace.
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts $ main > oc create -f nginx-deploy.yml
deployment.apps/nginx created
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts $ main > oc get deploy/nginx -o yaml | grep image
- image: bitnami/nginx:1.18
  imagePullPolicy: IfNotPresent
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts $ main > oc get po
NAME           READY   STATUS    RESTARTS   AGE
nginx-566b5879cb-9zgck  1/1     Running   0          47s
nginx-566b5879cb-dj2t8  1/1     Running   0          47s
nginx-566b5879cb-lcjig  1/1     Running   0          47s
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts $ main > oc get po/nginx-566b5879cb-9zgck -o yaml | grep image
- image: bitnami/nginx:1.18
  imagePullPolicy: IfNotPresent
imagePullSecrets:
  image: docker.io/bitnami/nginx:1.18
  imageID: docker.io/bitnami/nginx@sha256:6b998c3c1a9e411346cff07fe48bcade4ab4775130da80efc00d223dfe03ce0b
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts $ main > oc get rs
NAME           DESIRED   CURRENT   READY   AGE
nginx-566b5879cb  3         3         3       68s
jegan@tektutor.org ~/openshift-july-2024/Day3/declarative-manifest-scripts $ main > oc get rs/nginx-566b5879cb -o yaml | grep image
- image: bitnami/nginx:1.18
  imagePullPolicy: IfNotPresent
```

- To split the screen horizontal, you need to press **Ctrl+B "**
- To navigate from one splitted window to other, Esc **Ctrl+B** cursor movement keys (up,down,left,right)
- To split the screen vertically, you need to press **Ctrl+B %**

Let's use tmux to split the terminal

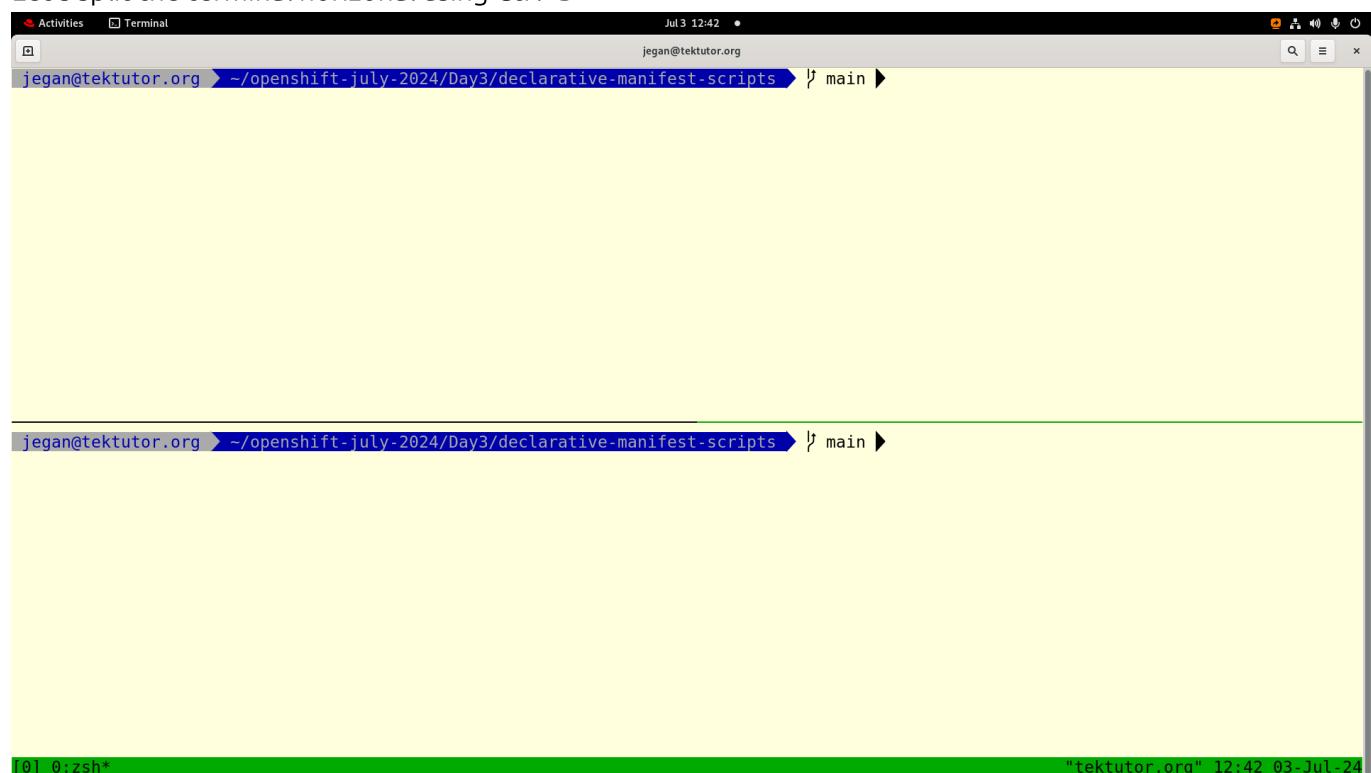
```
tmux
```

## Expected output



A screenshot of a terminal window titled "Terminal". The title bar shows the date and time as "Jul 3 12:42". The user name "jegan@tektutor.org" is also visible. The main area of the terminal is a single horizontal split window. The top half of the split window contains the command "jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts > ↵ main >". The bottom half of the split window is a green status bar with the text "[0] 0:zsh\*". The status bar also includes the date and time "03-Jul-24" and the host name "tektutor.org".

Let's split the terminal horizontal using Ctrl+B "



A screenshot of a terminal window titled "Terminal". The title bar shows the date and time as "Jul 3 12:42". The user name "jegan@tektutor.org" is also visible. The main area of the terminal is a horizontal split window with two panes. The top pane contains the command "jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts > ↵ main >". The bottom pane is a green status bar with the text "[0] 0:zsh\*". The status bar also includes the date and time "03-Jul-24" and the host name "tektutor.org".

Move to the bottom splitted window by pressing Ctrl+B down arrow

```
cd ~  
clear
```

```
jegan@tektutor.org ➜
```

```
[0] 0;zsh*
```

Let's split the bottom window vertically

```
Ctrl+B %
cd ~
clear
```

```
jegan@tektutor.org ➜
```

```
jegan@tektutor.org ➜ -
```

```
[0] 0;zsh*
```

In the bottom left window, run the below command

```
oc get rs -w
```

In the bottom right window, run the below command

```
oc get po -w
```

```
jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts > \ main > oc set image deploy/nginx nginx=bitnami/nginx:1.19
jegan@tektutor.org ~ /openshift-july-2024/Day3/declarative-manifest-scripts > \ main > cd ~
jegan@tektutor.org ~ > clear
jegan@tektutor.org ~ > oc get rs -w
NAME      DESIRED   CURRENT   READY   AGE
nginx-566b5879cb   3         3         3     8m8s
jegan@tektutor.org ~ > oc get po -w
NAME      READY   STATUS    RESTARTS   AGE
nginx-566b5879cb-88lp2   1/1     Running   0          8m17s
nginx-566b5879cb-ktntn   1/1     Running   0          8m17s
nginx-566b5879cb-qb5t2   1/1     Running   0          8m17s
```

Let's upgrade then nginx image version from 1.18 to 1.19 from the top window

```
oc set image deploy/nginx nginx=bitnami/nginx:1.19
oc get deploy/nginx -o yaml | grep image
oc get rs
oc get rs/nginx-566b5879cb -o yaml | grep image
oc get rs/nginx-6b49c75d9 -o yaml | grep image
```

Checking the rollout status and history

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

```
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ▶ oc set image deploy/nginx nginx=bitnami/nginx:1.19
deployment.apps/nginx image updated
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ▶ █
```

NAME	DESIRED	CURRENT	READY	AGE
nginx-566b5879cb	3	3	3	4m6s
nginx-6b49c75d9	1	0	0	0s
nginx-6b49c75d9	1	0	0	0s
nginx-6b49c75d9	1	1	0	0s

NAME	READY	STATUS	RESTARTS	AGE
nginx-566b5879cb-9zgck	1/1	Running	0	4m11s
nginx-566b5879cb-dj2t8	1/1	Running	0	4m11s
nginx-566b5879cb-lcjg	1/1	Running	0	4m11s
nginx-6b49c75d9-dgkmh	0/1	Pending	0	0s
nginx-6b49c75d9-dgkmh	0/1	Pending	0	0s
nginx-6b49c75d9-dgkmh	0/1	Pending	0	0s
nginx-6b49c75d9-dgkmh	0/1	ContainerCreating	0	0s

```
[0] 0:zsh* "tektutor.org" 12:44 03-Jul-24
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ▶ oc get rs -w
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ▶ oc set image deploy/nginx nginx=bitnami/nginx:1.19
deployment.apps/nginx image updated
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ▶ oc rollout status deploy/nginx
Error from server (NotFound): deployments.apps "nginx" not found
✗ jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ▶ oc rollout status deploy/nginx
deployment "nginx" successfully rolled out
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ▶ oc rollout history deploy/nginx
deployment.apps/nginx
REVISION CHANGE-CAUSE
1 <none>
2 <none>
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ▶ oc get deploy/nginx -o yaml | grep image
  - image: bitnami/nginx:1.19
    imagePullPolicy: IfNotPresent
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ▶ █
```

nginx-6b49c75d9	2	1	1	1s	0s					
nginx-566b5879cb	2	3	3	4m37s	nginx-566b5879cb-lcjg	0/1	Terminating	0	4m4	
nginx-6b49c75d9	2	1	1	1s	0s	nginx-566b5879cb-lcjg	0/1	Terminating	0	4m4
nginx-566b5879cb	2	2	2	4m37s	0s	nginx-6b49c75d9-n6jqd	1/1	Running	0	2s
nginx-6b49c75d9	2	2	1	1s	nginx-566b5879cb-dj2t8	1/1	Terminating	0	4m4	
nginx-566b5879cb	1	2	2	4m39s	1s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4
nginx-566b5879cb	1	2	2	4m39s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4	
nginx-6b49c75d9	3	2	2	3s	1s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4
nginx-566b5879cb	1	1	1	4m39s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4	
nginx-6b49c75d9	3	2	2	3s	2s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4
nginx-6b49c75d9	3	3	2	3s	2s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4
nginx-566b5879cb	0	1	1	4m41s	2s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4
nginx-566b5879cb	0	0	0	4m41s	2s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4

```
Activities Terminal Jul 3 12:46 • jegan@tektutor.org
1      <none>
2      <none>

jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ➤ oc get deploy/nginx -o yaml | grep image
- image: bitnami/nginx:1.19
  imagePullPolicy: IfNotPresent
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ➤ oc get rs
NAME        DESIRED   CURRENT   READY   AGE
nginx-566b5879cb   0         0         0      5m48s
nginx-6b49c75d9   3         3         3      72s
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ➤ oc get rs/nginx-566b5879cb -o yaml | grep image
- image: bitnami/nginx:1.18
  imagePullPolicy: IfNotPresent
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ➤ oc get rs/nginx-6b49c75d9 -o yaml | grep image
- image: bitnami/nginx:1.19
  imagePullPolicy: IfNotPresent
jegan@tektutor.org ~ -/openshift-july-2024/Day3/declarative-manifest-scripts ➤ main ➤ █

nginx-6b49c75d9   2         1         1      1s          0s
nginx-566b5879cb   2         3         3      4m37s      nginx-566b5879cb-lcjgjg   0/1   Terminating    0     4m4
nginx-6b49c75d9   2         1         1      1s          0s
nginx-566b5879cb   2         2         2      4m37s      nginx-566b5879cb-lcjgjg   0/1   Terminating    0     4m4
nginx-6b49c75d9   2         2         1      1s          0s
nginx-6b49c75d9   2         2         2      3s          nginx-6b49c75d9-n6jqd   1/1   Running       0     2s
nginx-566b5879cb   1         2         2      4m39s      nginx-566b5879cb-dj2t8   1/1   Terminating    0     4m4
nginx-566b5879cb   1         2         2      4m39s      1s
nginx-6b49c75d9   3         2         2      3s          nginx-566b5879cb-dj2t8   0/1   Terminating    0     4m4
nginx-566b5879cb   1         1         1      4m39s      1s
nginx-6b49c75d9   3         2         2      3s          nginx-566b5879cb-dj2t8   0/1   Terminating    0     4m4
nginx-6b49c75d9   3         3         2      3s          2s
nginx-6b49c75d9   3         3         3      5s          nginx-566b5879cb-dj2t8   0/1   Terminating    0     4m4
nginx-566b5879cb   0         1         1      4m41s      2s
nginx-566b5879cb   0         1         1      4m41s      nginx-566b5879cb-dj2t8   0/1   Terminating    0     4m4
nginx-566b5879cb   0         0         0      4m41s      2s
```

"tektutor.org" 12:46 03-Jul-24

```
Activities Terminal Jul 3 12:47 • jegan@tektutor.org
- image: bitnami/nginx:1.18
  imagePullPolicy: IfNotPresent
jegan@tektutor.org ➤ ~/openshift-july-2024/Day3/declarative-manifest-scripts ➤ !� main ➤ oc get rs/nginx-6b49c75d9 -o yaml | grep image
- image: bitnami/nginx:1.19
  imagePullPolicy: IfNotPresent
jegan@tektutor.org ➤ ~/openshift-july-2024/Day3/declarative-manifest-scripts ➤ !� main ➤ oc get pods
NAME READY STATUS RESTARTS AGE
nginx-6b49c75d9-dgkmh 1/1 Running 0 2m34s
nginx-6b49c75d9-n6jqd 1/1 Running 0 2m31s
nginx-6b49c75d9-ttvct 1/1 Running 0 2m33s
jegan@tektutor.org ➤ ~/openshift-july-2024/Day3/declarative-manifest-scripts ➤ !� main ➤ oc get pod/nginx-6b49c75d9-dgkmh -o yaml | grep image
- image: bitnami/nginx:1.19
  imagePullPolicy: IfNotPresent
imagePullSecrets:
  image: docker.io/bitnami/nginx:1.19
  imageID: docker.io/bitnami/nginx@sha256:3fd42d3e9833b089a364f603edf5812cc083ceac2c4bcd8293e48ab6efce7bd1
jegan@tektutor.org ➤ ~/openshift-july-2024/Day3/declarative-manifest-scripts ➤ !� main ➤ █
```

nginx-6b49c75d9	2	1	1	1s	0s	nginx-566b5879cb-lcjgjg	0/1	Terminating	0	4m4
nginx-566b5879cb	2	3	3	4m37s	0s	nginx-566b5879cb-lcjgjg	0/1	Terminating	0	4m4
nginx-6b49c75d9	2	1	1	1s	0s	nginx-566b5879cb-lcjgjg	0/1	Terminating	0	4m4
nginx-566b5879cb	2	2	2	4m37s	0s	nginx-6b49c75d9-n6jqd	1/1	Running	0	2s
nginx-6b49c75d9	2	2	1	1s	0s	nginx-566b5879cb-dj2t8	1/1	Terminating	0	4m4
nginx-6b49c75d9	2	2	2	3s	nginx-6b49c75d9-n6jqd	1/1	Running	0	2s	
nginx-566b5879cb	1	2	2	4m39s	nginx-566b5879cb-dj2t8	1/1	Terminating	0	4m4	
nginx-566b5879cb	1	2	2	4m39s	1s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4
nginx-6b49c75d9	3	2	2	3s	1s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4
nginx-566b5879cb	1	1	1	4m39s	nginx-6b49c75d9-n6jqd	1/1	Running	0	2s	
nginx-6b49c75d9	3	2	2	3s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4	
nginx-6b49c75d9	3	3	2	3s	2s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4
nginx-6b49c75d9	3	3	3	5s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4	
nginx-566b5879cb	0	1	1	4m41s	2s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4
nginx-566b5879cb	0	1	1	4m41s	2s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4
nginx-566b5879cb	0	0	0	4m41s	2s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4

"tektutor.org" 12:47 03-Jul-24

```
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts > | main | oc rollout status deploy/nginx
deployment "nginx" successfully rolled out
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts > | main | oc rollout history deploy/nginx
deployment.apps/nginx
REVISION  CHANGE-CAUSE
1          <none>
2          <none>

jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts > | main |
```

nginx-6b49c75d9	2	1	1	1s	0s	nginx-566b5879cb-lcjgjg	0/1	Terminating	0	4m4
nginx-566b5879cb	2	3	3	4m37s	0s	nginx-566b5879cb-lcjgjg	0/1	Terminating	0	4m4
nginx-6b49c75d9	2	1	1	1s	0s	nginx-566b5879cb-lcjgjg	0/1	Terminating	0	4m4
nginx-566b5879cb	2	2	2	4m37s	0s	nginx-6b49c75d9-n6jqd	1/1	Running	0	2s
nginx-6b49c75d9	2	2	1	1s	0s	nginx-566b5879cb-dj2t8	1/1	Terminating	0	4m4
nginx-566b5879cb	2	2	2	3s	nginx-6b49c75d9-n6jqd	1/1	Running	0	2s	
nginx-566b5879cb	1	2	2	4m39s	nginx-566b5879cb-dj2t8	1/1	Terminating	0	4m4	
nginx-566b5879cb	1	2	2	4m39s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4	
nginx-6b49c75d9	3	2	2	3s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4	
nginx-566b5879cb	1	1	1	4m39s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4	
nginx-6b49c75d9	3	2	2	3s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4	
nginx-6b49c75d9	3	3	2	3s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4	
nginx-6b49c75d9	3	3	3	5s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4	
nginx-566b5879cb	0	1	1	4m41s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4	
nginx-566b5879cb	0	1	1	4m41s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4	
nginx-566b5879cb	0	0	0	4m41s	nginx-566b5879cb-dj2t8	0/1	Terminating	0	4m4	

[0] 0:zsh\* "tektutor.org" 12:48 03-Jul-24

If you wish to go back to older version, you may rollback ( practical usecase if newly deployed version unstable)

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

### Expected output

```
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts > | main | oc rollout status deploy/nginx
deployment "nginx" successfully rolled out
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts > | main | oc rollout history deploy/nginx
deployment.apps/nginx
REVISION  CHANGE-CAUSE
1          <none>
2          <none>

jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts > | main | oc rollout undo deploy/nginx
deployment.apps/nginx rolled back
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts > | main |
```

NAME	DESIRED	CURRENT	READY	AGE	NAME	READY	STATUS	RESTARTS	AGE
nginx-566b5879cb	0	0	0	10m	nginx-6b49c75d9-dgkmh	1/1	Running	0	5m59s
nginx-6b49c75d9	3	3	3	6m6s	nginx-6b49c75d9-n6jqd	1/1	Running	0	5m56s
nginx-566b5879cb	0	0	0	10m	nginx-6b49c75d9-ttvct	1/1	Running	0	5m58s
nginx-566b5879cb	1	0	0	10m	nginx-566b5879cb-b9kxp	0/1	Pending	0	0s
nginx-566b5879cb	1	0	0	10m	nginx-566b5879cb-b9kxp	0/1	Pending	0	0s
nginx-566b5879cb	1	1	0	10m	nginx-566b5879cb-b9kxp	0/1	Pending	0	0s

[0] 0:zsh\* "tektutor.org" 12:50 03-Jul-24

```

Activities Terminal Jul 3 12:51 • jegan@tektutor.org
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts ➤ ↵ main ➤ oc rollout status deploy/nginx
deployment "nginx" successfully rolled out
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts ➤ ↵ main ➤ oc rollout history deploy/nginx
deployment.apps/nginx
REVISION CHANGE-CAUSE
1 <none>
2 <none>

jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts ➤ ↵ main ➤ oc rollout undo deploy/nginx
deployment.apps/nginx rolled back
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts ➤ ↵ main ➤

```

nginx-566b5879cb	1	0	0	10m	nginx-6b49c75d9-dgkmh	0/1	Terminating	0	6m2
nginx-566b5879cb	1	1	0	10m	nginx-566b5879cb-0s	1/1	Running	0	2s
nginx-566b5879cb	1	1	1	10m	nginx-566b5879cb-4x7nd	1/1	Terminating	0	6m2
nginx-6b49c75d9	2	3	3	6m19s	nginx-6b49c75d9-ttvct	1/1	Pending	0	0s
nginx-566b5879cb	2	1	1	10m	nginx-566b5879cb-q5664	0/1	Pending	0	0s
nginx-6b49c75d9	2	3	3	6m19s	nginx-566b5879cb-q5664	0/1	Pending	0	0s
nginx-566b5879cb	2	2	2	6m19s	nginx-566b5879cb-q5664	0/1	Pending	0	0s
nginx-566b5879cb	2	1	1	10m	nginx-566b5879cb-q5664	0/1	ContainerCreating	0	0s
nginx-6b49c75d9	2	2	1	10m	nginx-6b49c75d9-ttvct	0/1	Terminating	0	6m2
nginx-566b5879cb	2	2	2	10m	nginx-6b49c75d9-ttvct	0/1	Terminating	0	6m2
nginx-6b49c75d9	1	2	2	6m21s	nginx-6b49c75d9-0s	0/1	Terminating	0	6m2
nginx-6b49c75d9	1	2	2	6m21s	nginx-6b49c75d9-ttvct	0/1	Terminating	0	6m2
nginx-566b5879cb	3	2	2	10m	nginx-6b49c75d9-ttvct	0/1	Terminating	0	6m2
nginx-6b49c75d9	1	1	1	6m21s	nginx-6b49c75d9-ttvct	0/1	Terminating	0	6m2
nginx-566b5879cb	3	2	2	10m	nginx-6b49c75d9-0s	0/1	ContainerCreating	0	1s
nginx-566b5879cb	3	3	2	10m	nginx-566b5879cb-q5664	0/1	ContainerCreating	0	1s

```
[0] 0;zsh* "tektutor.org" 12:50 03-Jul-24
```

```

Activities Terminal Jul 3 12:51 • jegan@tektutor.org
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts ➤ ↵ main ➤ oc rollout undo deploy/nginx
deployment.apps/nginx rolled back
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts ➤ ↵ main ➤ oc rollout status deploy/nginx
deployment "nginx" successfully rolled out
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts ➤ ↵ main ➤ oc rollout history deploy/nginx
deployment.apps/nginx
REVISION CHANGE-CAUSE
1 <none>
2 <none>
3 <none>

jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts ➤ ↵ main ➤ oc get deploy/nginx -o yaml | grep image
- image: bitnami/nginx:1.18
  imagePullPolicy: IfNotPresent
jegan@tektutor.org > ~/openshift-july-2024/Day3/declarative-manifest-scripts ➤ ↵ main ➤

```

nginx-566b5879cb	2	1	1	10m	nginx-6b49c75d9-ttvct	0/1	Terminating	0	6m2
nginx-6b49c75d9	2	3	3	6m19s	nginx-6b49c75d9-ttvct	0/1	Terminating	0	6m2
nginx-6b49c75d9	2	2	2	6m19s	nginx-566b5879cb-0s	0/1	ContainerCreating	0	1s
nginx-566b5879cb	2	1	1	10m	nginx-566b5879cb-q5664	0/1	Running	0	2s
nginx-566b5879cb	2	2	2	10m	nginx-566b5879cb-q5664	1/1	Terminating	0	6m2
nginx-6b49c75d9	1	2	2	6m21s	nginx-6b49c75d9-n6jqd	1/1	Terminating	0	6m2
nginx-6b49c75d9	1	2	2	6m21s	nginx-6b49c75d9-n6jqd	0/1	Terminating	0	6m2
nginx-566b5879cb	3	2	2	10m	nginx-6b49c75d9-n6jqd	0/1	Terminating	0	6m2
nginx-6b49c75d9	1	1	1	6m21s	nginx-6b49c75d9-0s	0/1	Terminating	0	6m2
nginx-566b5879cb	3	2	2	10m	nginx-6b49c75d9-n6jqd	0/1	Terminating	0	6m2
nginx-566b5879cb	3	3	2	10m	nginx-6b49c75d9-n6jqd	1/1	Terminating	0	6m2
nginx-566b5879cb	3	3	3	10m	nginx-6b49c75d9-n6jqd	0/1	Terminating	0	6m2
nginx-6b49c75d9	0	1	1	6m23s	nginx-6b49c75d9-n6jqd	0/1	Terminating	0	6m2
nginx-6b49c75d9	0	0	0	6m23s	nginx-6b49c75d9-n6jqd	0/1	Terminating	0	6m2
nginx-6b49c75d9	0	0	0	6m23s	nginx-6b49c75d9-n6jqd	1/1	Terminating	0	6m2

```
[0] 0;zsh* "tektutor.org" 12:51 03-Jul-24
```

## Lab - Deploying application in declarative style from Openshift webconsole

Go to Developer context in Openshift webconsole on your web browser

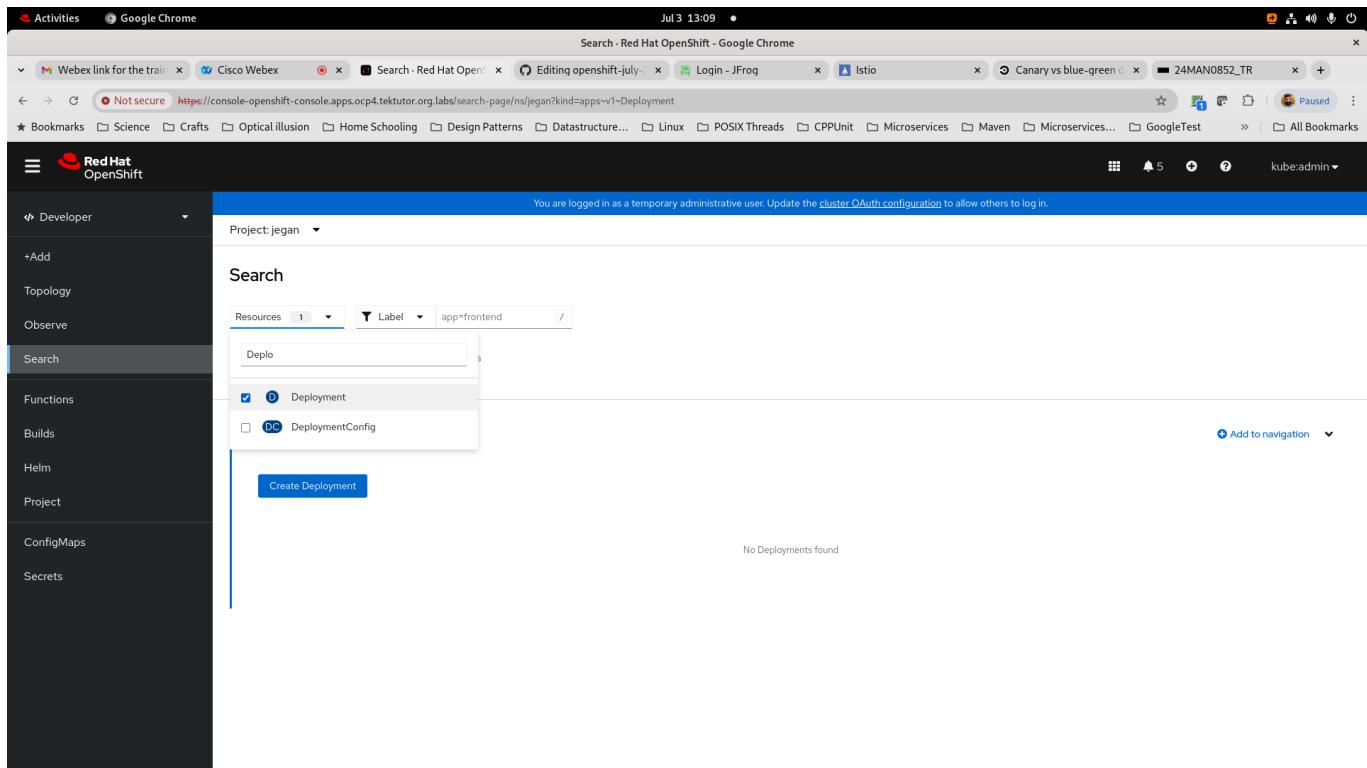
The screenshot shows the Red Hat OpenShift web console interface. The title bar indicates it's running on Google Chrome at 13:08 on July 3rd. The URL is https://console-openshift-console.apps.ocp4.tektutor.org.labs/topology/ns/jegan?view=graph. The left sidebar has a 'Developer' section with options like Topology, Observe, Search, Functions, Builds, Helm, Project, ConfigMaps, and Secrets. The 'Topology' option is selected. The main content area shows 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 says 'Project: jegan Application: All applications'. A search bar and filter dropdown are present. The central area displays a small network graph icon with the message 'No resources found' and a link to 'Start building your application'.

Click Search

The screenshot shows the Red Hat OpenShift web console interface. The title bar indicates it's running on Google Chrome at 13:09 on July 3rd. The URL is https://console-openshift-console.apps.ocp4.tektutor.org.labs/search-page/ns/jegan. The left sidebar has a 'Developer' section with options like Topology, Observe, Search, Functions, Builds, Helm, Project, ConfigMaps, and Secrets. The 'Search' option is selected. The main content area shows a search interface with dropdowns for 'Resources' and 'Label', and a search term 'app=frontend'. The central area displays a message: 'No resources selected' and 'Select one or more resources from the dropdown.'

<https://console-openshift-console.apps.ocp4.tektutor.org.labs/functions/ns/jegan>

Search for "Deployment"



Click Create Deployment button

The screenshot shows the 'Create Deployment' form. It includes a warning about DeploymentConfig being deprecated, a YAML editor with the following code:

```

1 apiVersion: apps/v1
2 kind: Deployment
3 metadata:
4   namespace: jegan
5   name: ''
6 spec:
7   selector:
8     matchLabels:
9       app: name
10    replicas: 3
11   template:
12     metadata:
13       labels:
14         app: name
15     spec:
16       containers:
17         - name: container
  
```

The right side shows the 'Deployment' schema panel with details about APIVersion and kind.

You need to edit name to nginx, app under label to nginx, container name to nginx, image to bitnami/nginx:latest

Activities Google Chrome Create Deployment - Red Hat OpenShift - Google Chrome

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

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**Red Hat OpenShift**

Developer Project: jegan

## Create Deployment

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

**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: name
10    replicas: 3
11   template:
12     metadata:
13       labels:
14         app: name
15     spec:
16       containers:
17         - name: container

```

**Deployment**

**Schema**

Deployment enables declarative updates for Pods and ReplicaSets.

- **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/contributors/devel/sig-architecture/api-conventions.md#resources>
- **kind**

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**Create** **Cancel**

Activities Google Chrome Create Deployment - Red Hat OpenShift - Google Chrome

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

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```

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
11   template:
12     metadata:
13       labels:
14         app: name
15     spec:
16       containers:
17         - name: container

```

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**Create** **Cancel**

Activities Google Chrome Create Deployment - Red Hat OpenShift - Google Chrome Jul 3 13:12 •

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[Learn more about Deployments](#)

```

6   spec:
7     selector:
8       matchLabels:
9         app: nginx
10    replicas: 3
11    template:
12      metadata:
13        labels:
14          app: nginx
15      spec:
16        containers:
17          - name: container
18            image: >
19              image-registry.openshift-image-registry.svc:5000/openshift/http
20            ports:
21              - containerPort: 8080
22                protocol: TCP
23        strategy:
24          type: RollingUpdate
25          rollingUpdate:

```

**Deployment**

Schema

Deployment enables declarative updates for Pods and ReplicaSets.

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**Create** **Cancel**

Activities Google Chrome Create Deployment - Red Hat OpenShift - Google Chrome Jul 3 13:12 •

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[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: >
19            image-registry.openshift-image-registry.svc:5000/openshift/http
20          ports:
21            - containerPort: 8080
22              protocol: TCP
23      strategy:
24        type: RollingUpdate
25        rollingUpdate:

```

**Deployment**

Schema

Deployment enables declarative updates for Pods and ReplicaSets.

- **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/contributors/devel/sig-architecture/api-conventions.md#resources>
- **kind**

[Download](#)

**Create** **Cancel**

The screenshot shows the Red Hat OpenShift web console with a 'Create Deployment' dialog open. The left sidebar shows the navigation menu with 'Developer' selected. The main area is titled 'Create Deployment' and shows a YAML configuration for an 'nginx' deployment. The configuration includes:

```

11  kind: Deployment
12  apiVersion: apps/v1
13  metadata:
14    name: nginx
15  spec:
16    replicas: 3
17    selector:
18      app: nginx
19    template:
20      metadata:
21        labels:
22          app: nginx
23      spec:
24        containers:
25          - name: nginx
26            image: bitnami/nginx
27            ports:
28              - containerPort: 8080
29            protocol: TCP
30        strategy:
31          type: RollingUpdate
32          rollingUpdate:
33            maxSurge: 25%
34            maxUnavailable: 25%
35

```

The right panel displays the 'Deployment' schema with fields like 'apiVersion' and 'kind'. At the bottom, there are 'Create' and 'Cancel' buttons.

Once you updated the mandatory fields, you may click on "Create" button

The screenshot shows the Red Hat OpenShift web console with the 'Deployment details' page for the 'nginx' deployment. The left sidebar shows the navigation menu with 'Developer' selected. The main area shows the deployment details for 'nginx' in the 'jegan' project. The 'Deployment details' section includes:

- Deployment details**: Shows the current scaling status (0 pods).
- Name**: nginx
- Namespace**: jegan
- Labels**: No labels
- Pod selector**: app=nginx
- Node selector**: No selector
- Update strategy**: RollingUpdate
- Max unavailable**: 25% of 3 pods
- Max surge**: 25% greater than 3 pods
- Progress deadline seconds**: 600 seconds
- Min ready seconds**: Not configured
- PodDisruptionBudget**

The screenshot shows the Red Hat OpenShift web interface. The left sidebar is titled 'Developer' and lists various project and cluster management options. The main content area is titled 'Deployment details' for a deployment named 'nginx' within the 'jegan' project. Key information shown includes:

- Deployment details:** Shows 3 Pods.
- Name:** nginx
- Namespace:** jegan
- Labels:** No labels
- Pod selector:** app=nginx
- Node selector:** No selector
- Update strategy:** RollingUpdate
- Max unavailable:** 25% of 3 pods
- Max surge:** 25% greater than 3 pods
- Progress deadline seconds:** 600 seconds
- Min ready seconds:** Not configured
- PodDisruptionBudget:**

## Info - Persistent Volume Overview

- is an external storage which is used to persistently store data
- though Pod container's can use its internal storage, we will lose data once the Pod is deleted
- if we need data to persist beyond life-time of the Pod, we need to use Persistent volumes
- Persistent volumes are created by OpenShift Administrator
- Persistent volumes can be provisioned either manually or dynamically using Storage Class
- Persistent Storage can be provisioned using NFS, AWS, Azure, GCP, etc.,
- it is always created in Cluster scope, hence any application deployed under any project namespace can claim PV and use it
- Persistent Volume mandatory attributes
  - Size in MiB/GiB/TiB
  - AccessModes
    - ReadWriteOnce ( All Pods from same node can access the PV )
    - ReadWriteMany ( All Pods from all nodes can access the PV )
  - Server, Path, etc.,
  - StorageClass - Optional
  - Labels - Optional

## Info - Persistent Volume Claim Overview

- any application that needs Persistent Volume external storage has to request for it by defining the requirement in the form of Persistent Volume Claim(PVC)
- Persistent volume claim attributes

- Size in MiB/GiB/TiB
- AccessMode
- StorageClass ( optional )
- Labels (optional)
- the storage controller will search for a matching Persistent Volume as per the PVC attributes
- if storage controller is not able to find a matching PV, then the PVC will be in Pending state, the Pod that depends on this PVC will also be in Pending state

## Info - NFS Shared Folder

- For Persistent volume, we will be using NFS Server
- NFS Server is already installed in
  - 10.10.15.9 (OS1)
    - user01 thru user08
  - 10.10.15.34 (OS2) and
    - user09 to user16
  - 10.10.15.5 (OS3) Linux Servers
    - user17 to user22
- For each participants, there will be about five folders
  - For user01
    - /var/nfs/user01/mariadb
    - /var/nfs/user01/mysql
    - /var/nfs/user01/wordpress
    - /var/nfs/user01/redis
    - /var/nfs/user01/mongodb

## Lab - Deploying mysql with Persistent volume and claim

Before proceeding with the deployment, you need to customize mysql-pv.yml, mysql-pvc.yml and mysql-deploy.yml.

```
cd ~/openshift-july-2024
git pull
cd Day3/persistent-volume/mysql
ls -l
cat mysql-pv.yml
oc create -f mysql-pv.yml --save-config
oc get persistentvolumes
oc get persistentvolume
oc get pv

cat mysql-pvc.yml
oc create -f mysql-pvc.yml --save-config
oc get persistentvolumeclaims
oc get persistentvolumeclaim
oc get pvc
```

```
cat mysql-deploy.yml
oc create -f mysql-deploy.yml --save-config
oc get deploy,rs,po
```

## Expected output

```
jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume > main > ls -l
total 12
-rw-r--r-- 1 jegan jegan 647 Jul 3 14:47 mysql-deploy.yaml
-rw-r--r-- 1 jegan jegan 286 Jul 3 14:33 mysql-pvc.yaml
-rw-r--r-- 1 jegan jegan 538 Jul 3 14:33 mysql-pv.yaml
jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume > main > oc create -f mysql-pv.yaml
persistentvolume/mysql-pv-jegan created
jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume > main > oc get pv
NAME      CAPACITY   ACCESS MODES  RECLAIM POLICY  STATUS   CLAIM           STORAGECLASS  REASON   AGE
mysql-pv-jegan  100Mi     RWO        Retain        Available          jegan           mysql-pvc-jegan   3s
jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume > main > oc create -f mysql-pvc.yaml
persistentvolumeclaim/mysql-pvc-jegan created
jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume > main > oc get pvc
NAME      STATUS      VOLUME    CAPACITY   ACCESS MODES  STORAGECLASS  AGE
mysql-pvc-jegan  Bound     mysql-pv-jegan  100Mi     RWO           jegan/mysql-pvc-jegan   2s
jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume > main > oc get pv
NAME      CAPACITY   ACCESS MODES  RECLAIM POLICY  STATUS   CLAIM           STORAGECLASS  REASON   AGE
mysql-pv-jegan  100Mi     RWO        Retain        Bound          jegan/mysql-pvc-jegan   26s
jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume > main > oc create -f mysql-deploy.yaml
deployment.apps/mysql created
jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume > main > oc get po -w
NAME        READY   STATUS      RESTARTS   AGE
mysql-66ff7b7486-zpxzx  0/1     ContainerCreating  0          3s
nginx-6fd44844bc-gpzdq  1/1     Running     0          95m
nginx-6fd44844bc-pp7xj  1/1     Running     0          95m
nginx-6fd44844bc-wb5b9  1/1     Running     0          95m
^C
x jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume > main > oc get po
NAME        READY   STATUS      RESTARTS   AGE
mysql-66ff7b7486-zpxzx  1/1     Running     0          112s
nginx-6fd44844bc-gpzdq  1/1     Running     0          96m
nginx-6fd44844bc-pp7xj  1/1     Running     0          96m
nginx-6fd44844bc-wb5b9  1/1     Running     0          96m
jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume > main >
```

The screenshot shows the Red Hat OpenShift web interface. On the left, a sidebar menu includes options like Developer, Topology, Observe, Search, Functions, Builds, Helm, Project, ConfigMaps, and Secrets. The 'Topology' option is selected. The main content area displays the MySQL application's topology. A central icon represents the MySQL pod, which is currently running. To the right, there are tabs for 'Details', 'Resources', and 'Observe'. Under 'Resources', it shows a single pod named 'mysql-66ff7b7486-zpxzx' with status 'Running'. Below the pod, sections for 'Services' and 'Routes' are shown, both indicating no resources found.

The screenshot shows two related pages from the Red Hat OpenShift web interface, both for the pod `mysql-66ff7b7486-zpxzx`.

**Pod Details Page:**

- Project:** jegan
- Name:** mysql-66ff7b7486-zpxzx
- Status:** Running
- Namespace:** jegan
- Labels:** app=mysql, pod-template-hash=66ff7b7486
- Node selector:** No selector
- Tolerations:** 2 tolerations
- Annotations:** 4 annotations
- Created at:** 3 Jul 2024, 14:48
- Restart policy:** Always restart
- Active deadline seconds:** Not configured
- Pod IP:** 10.131.0.76
- Host IP:** 192.168.122.192
- Node:** worker-2.ocp4.tektutor.org.labs
- Image pull secret:** default-dockercfg-49x76
- PodDisruptionBudget:** Not defined

**Events Page:**

- Streaming events...**
- Showing 6 events**
- Event 1:** mysql-66ff7b7486-zpxzx Generated from kubelet on worker-2.ocp4.tektutor.org.labs Started container mysql (3 Jul 2024, 14:49)
- Event 2:** mysql-66ff7b7486-zpxzx Generated from kubelet on worker-2.ocp4.tektutor.org.labs Successfully pulled image "bitnami/mysql:latest" in 20.08ls (20.08ls including waiting) (3 Jul 2024, 14:49)
- Event 3:** mysql-66ff7b7486-zpxzx Generated from kubelet on worker-2.ocp4.tektutor.org.labs Created container mysql (3 Jul 2024, 14:49)
- Event 4:** mysql-66ff7b7486-zpxzx Generated from muttus Add eth0 [10.131.0.76/23] from ovn-kubernetes (3 Jul 2024, 14:49)
- Event 5:** mysql-66ff7b7486-zpxzx Generated from kubelet on worker-2.ocp4.tektutor.org.labs Pulling image "bitnami/mysql:latest" (3 Jul 2024, 14:49)

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

**Logs**

```

60 lines
1  mysql 09:19:51.00 INFO => 
2  mysql 09:19:51.00 INFO => Welcome to the Bitnami mysql container
3  mysql 09:19:51.01 INFO => Subscribe to project updates by watching https://github.com/bitnami/containers
4  mysql 09:19:51.01 INFO => Submit issues and feature requests at https://github.com/bitnami/containers/issues
5  mysql 09:19:51.01 INFO => Upgrade to Tanu Application Catalog for production environments to access custom-configured and pre-packaged software components. Gain enhanced features, inclu
6  mysql 09:19:51.01 INFO =>
7  mysql 09:19:51.01 INFO => ** Starting MySQL setup **
8  mysql 09:19:51.03 INFO => Initializing settings in MYSQL_*/MARIADB_* env vars
9  mysql 09:19:51.04 INFO => Initializing mysql database
10 mysql 09:19:51.05 INFO => Updating 'my.cnf' with custom configuration
11 mysql 09:19:51.06 INFO => Setting slow_query_log option
12 mysql 09:19:51.06 INFO => Setting long_query_time option
13 mysql 09:19:51.07 INFO => Installing database
14 2024-07-03T09:19:51.09Z [System] [MY-015017] [Server] MySQL Server Initialization - start.
15 2024-07-03T09:19:51.09Z [System] [MY-013169] [Server] /opt/bitnami/mysql/bin/mysqld (mysqld 8.4.1) initializing of server in progress as process 45
16 2024-07-03T09:19:51.11180Z [System] [MY-013576] [InnoDB] InnoDB initialization has started.
17 2024-07-03T09:19:51.79698Z [System] [MY-013577] [InnoDB] InnoDB initialization has ended.
18 2024-07-03T09:19:53.96989Z [Warning] [MY-010453] [Server] root@localhost is created with an empty password ! Please consider switching off the --initialize-insecure option.
19 2024-07-03T09:19:56.86849Z [System] [MY-015018] [Server] MySQL Server Initialization - end.
20 mysql 09:19:56.90 INFO => Starting mysql in background
21 2024-07-03T09:19:56.91589Z [System] [MY-015015] [Server] MySQL Server - start.

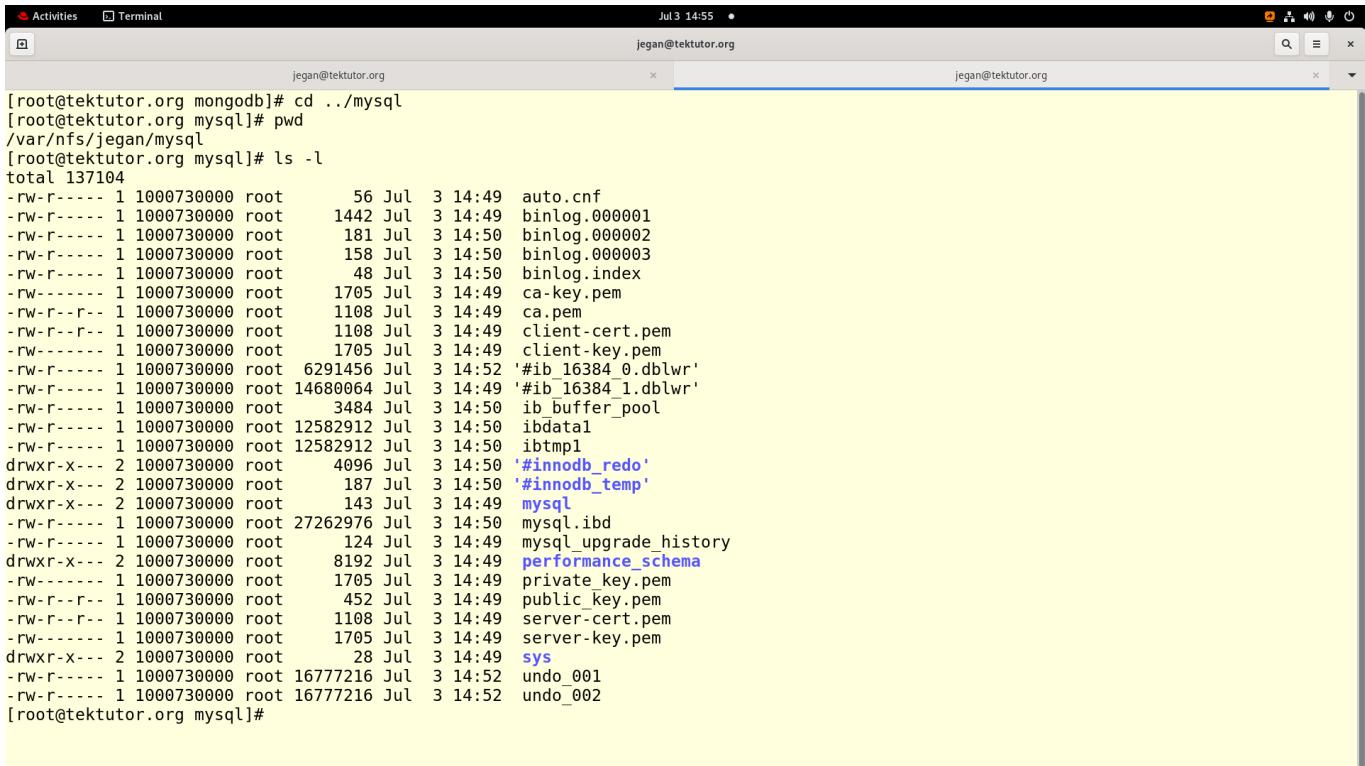
```

**Logs**

```

60 lines
40 2024-07-03T09:20:01.67795Z [System] [MY-013577] [InnoDB] InnoDB initialization has ended.
41 2024-07-03T09:20:01.98346Z [Warning] [MY-012068] [Server] CA certificate ca.pem is self signed.
42 2024-07-03T09:20:01.98346Z [System] [MY-013403] [Server] Channel mysql_main configured to support TLS. Encrypted connections are now supported for this channel.
43 2024-07-03T09:20:02.033886Z [System] [MY-011323] [Server] X Plugin ready for connections. Bind-address: :: port: 33060, socket: /tmp/mysql.sock
44 2024-07-03T09:20:02.033173Z [System] [MY-010931] [Server] /opt/bitnami/mysql/bin/mysqld: ready for connections. Version: '8.4.1' socket: '/opt/bitnami/mysql/tmp/mysql.sock' port: 3306 S
45 finds: '/docker-entrypoint-initdb.d': No such file or directory
46 mysql 09:20:05.00 INFO => Stopping mysql
47 2024-07-03T09:20:03.038827Z [System] [MY-013172] [Server] Received SHUTDOWN from user <via user signal>. Shutting down mysqld (Version: 8.4.1).
48 2024-07-03T09:20:04.389760Z [System] [MY-010910] [Server] /opt/bitnami/mysql/bin/mysqld: Shutdown complete (mysqld 8.4.1) Source distribution.
49 2024-07-03T09:20:04.389779Z [System] [MY-015016] [Server] MySQL Server - end.
50 mysql 09:20:05.00 INFO => ** MySQL setup finished! **
51
52 mysql 09:20:05.08 INFO => ** Starting MySQL **
53 2024-07-03T09:20:05.099981Z [System] [MY-015015] [Server] MySQL Server - start.
54 2024-07-03T09:20:05.335361Z [System] [MY-010116] [Server] /opt/bitnami/mysql/bin/mysqld (mysqld 8.4.1) starting as process 1
55 2024-07-03T09:20:05.350537Z [System] [MY-013576] [InnoDB] InnoDB initialization has started.
56 2024-07-03T09:20:05.719667Z [System] [MY-013577] [InnoDB] InnoDB initialization has ended.
57 2024-07-03T09:20:06.057416Z [Warning] [MY-010068] [Server] CA certificate ca.pem is self signed.
58 2024-07-03T09:20:06.057463Z [System] [MY-013402] [Server] Channel mysql_main configured to support TLS. Encrypted connections are now supported for this channel.
59 2024-07-03T09:20:06.115086Z [System] [MY-011323] [Server] X Plugin ready for connections. Bind-address: :: port: 33060, socket: /tmp/mysql.sock
60 2024-07-03T09:20:06.115198Z [System] [MY-010931] [Server] /opt/bitnami/mysql/bin/mysqld: ready for connections. Version: '8.4.1' socket: '/opt/bitnami/mysql/tmp/mysql.sock' port: 3306 S

```



```
[root@tektutor.org mongodb]# cd ../mysql
[root@tektutor.org mysql]# pwd
/var/nfs/jegan/mysql
[root@tektutor.org mysql]# ls -l
total 137104
-rw-r---- 1 1000730000 root      56 Jul  3 14:49 auto.cnf
-rw-r---- 1 1000730000 root    1442 Jul  3 14:49 binlog.000001
-rw-r---- 1 1000730000 root    181 Jul  3 14:50 binlog.000002
-rw-r---- 1 1000730000 root   158 Jul  3 14:50 binlog.000003
-rw-r---- 1 1000730000 root    48 Jul  3 14:50 binlog.index
-rw-r---- 1 1000730000 root   1705 Jul  3 14:49 ca-key.pem
-rw-r---- 1 1000730000 root   1108 Jul  3 14:49 ca.pem
-rw-r---- 1 1000730000 root   1108 Jul  3 14:49 client-cert.pem
-rw-r---- 1 1000730000 root   1705 Jul  3 14:49 client-key.pem
-rw-r---- 1 1000730000 root  6291456 Jul  3 14:52 '#ib_16384_0 dblwr'
-rw-r---- 1 1000730000 root 14680064 Jul  3 14:49 '#ib_16384_1 dblwr'
-rw-r---- 1 1000730000 root   3484 Jul  3 14:50 ib_buffer_pool
-rw-r---- 1 1000730000 root 12582912 Jul  3 14:50 ibdata1
-rw-r---- 1 1000730000 root 12582912 Jul  3 14:50 ibtmp1
drwxr-x--- 2 1000730000 root   4096 Jul  3 14:50 '#innodb_redo'
drwxr-x--- 2 1000730000 root   187 Jul  3 14:50 '#innodb_temp'
drwxr-x--- 2 1000730000 root   143 Jul  3 14:49 mysql
-rw-r---- 1 1000730000 root 27262976 Jul  3 14:50 mysql.ibd
-rw-r---- 1 1000730000 root   124 Jul  3 14:49 mysql_upgrade_history
drwxr-x--- 2 1000730000 root   8192 Jul  3 14:49 performance_schema
-rw-r---- 1 1000730000 root   1705 Jul  3 14:49 private_key.pem
-rw-r---- 1 1000730000 root   452 Jul  3 14:49 public_key.pem
-rw-r---- 1 1000730000 root   1108 Jul  3 14:49 server-cert.pem
-rw-r---- 1 1000730000 root   1705 Jul  3 14:49 server-key.pem
drwxr-x--- 2 1000730000 root    28 Jul  3 14:49 sys
-rw-r---- 1 1000730000 root 16777216 Jul  3 14:52 undo_001
-rw-r---- 1 1000730000 root 16777216 Jul  3 14:52 undo_002
[root@tektutor.org mysql]#
```

Getting inside the mysql pod shell

```
oc get deploy
oc rsh deploy/mysql
mysql -u root -p
```

```

Activities Terminal Jul 3 15:18 • jegan@tektutor.org
jegan@tektutor.org ~ /openshift-july-2024 ➜ main ➜ oc get po
NAME READY STATUS RESTARTS AGE
mysql-66ff7b7486-cmb4p 1/1 Running 0 11m
nginx-6fd44844bc-gpzdq 1/1 Running 0 123m
nginx-6fd44844bc-pp7xj 1/1 Running 0 123m
nginx-6fd44844bc-wb59 1/1 Running 0 123m
jegan@tektutor.org ~ /openshift-july-2024 ➜ main ➜ oc rsh deploy/mysql
$ mysql -u root -p
Enter password:
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 9
Server version: 8.4.1 Source distribution

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affiliates. Other names may be trademarks of their respective
owners.

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

mysql> SHOW DATABASES;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sys |
| tektutor |
+-----+
5 rows in set (0.00 sec)

mysql> USE tektutor;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with ^A
Activities Terminal Jul 3 15:21 • jegan@tektutor.org
jegan@tektutor.org ~ /openshift-july-2024 ➜ main ➜ oc get po
NAME READY STATUS RESTARTS AGE
mysql-66ff7b7486-cmb4p 1/1 Running 0 15m
nginx-6fd44844bc-gpzdq 1/1 Running 0 127m
nginx-6fd44844bc-pp7xj 1/1 Running 0 127m
nginx-6fd44844bc-wb59 1/1 Running 0 127m
jegan@tektutor.org ~ /openshift-july-2024 ➜ main ➜ oc exec -it pod/mysql-66ff7b7486-cmb4p sh
Kubectl exec [POD] [COMMAND] is DEPRECATED and will be removed in a future version. Use kubectl exec [POD] -- [COMMAND] instead.
$ mysql -u root -p
Enter password:
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 11
Server version: 8.4.1 Source distribution

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owners.

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

mysql> exit
Bye
$ exit
jegan@tektutor.org ~ /openshift-july-2024 ➜ main ➜

```

Connecting to mysql server using mysql client from mysql pod terminal, when prompted for password type 'root@123' without quotes

```

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) );
DESCRIBE TABLE training;

```

```

INSERT INTO TRAINING VALUES (1, "DevOps", "5 Days");
INSERT INTO TRAINING VALUES (3, "Advanced Ansible tower", "5 Days");

SELECT * FROM TRAINING;
exit
exit

```

## Expected output

```

$ mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.4.1 Source distribution

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affiliates. Other names may be trademarks of their respective
owners.

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

mysql> SHOW DATABASES;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
4 rows in set (0.00 sec)

mysql> CREATE DATABASE tekutor;
Query OK, 1 row affected (0.01 sec)

mysql> USE tekutor;
Database changed
mysql> CREATE TABLE training ( id INT NOT NULL, name VARCHAR(256) NOT NULL, duration VARCHAR(256) NOT NULL, PRIMARY KEY(id) );
Query OK, 0 rows affected (0.03 sec)

mysql> DESCRIBE TABLE training;
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| id | select_type | table | partitions | type | possible_keys | key | key_len | ref | rows | filtered | Extra |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 1 | SIMPLE     | training | NULL    | ALL   | NULL        | NULL | NULL    | NULL | 1    | 100.00 | NULL |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
1 row in set, 1 warning (0.01 sec)

mysql> INSERT INTO training VALUES ( 1, "DevOps", "5 days" );
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO training VALUES ( 2, "Advanced Ansible tower", "5 Days" );
Query OK, 1 row affected (0.00 sec)

mysql> SELECT * FROM training;
+-----+-----+-----+
| id | name      | duration |
+-----+-----+-----+
| 1  | DevOps    | 5 days  |
| 2  | Advanced Ansible tower | 5 Days |
+-----+-----+-----+
2 rows in set (0.00 sec)

```

```

$ mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.4.1 Source distribution

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affiliates. Other names may be trademarks of their respective
owners.

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

mysql> SHOW DATABASES;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
4 rows in set (0.00 sec)

mysql> CREATE DATABASE tekutor;
Query OK, 1 row affected (0.01 sec)

mysql> USE tekutor;
Database changed
mysql> CREATE TABLE training ( id INT NOT NULL, name VARCHAR(256) NOT NULL, duration VARCHAR(256) NOT NULL, PRIMARY KEY(id) );
Query OK, 0 rows affected (0.03 sec)

mysql> DESCRIBE TABLE training;
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| id | select_type | table | partitions | type | possible_keys | key | key_len | ref | rows | filtered | Extra |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 1 | SIMPLE     | training | NULL    | ALL   | NULL        | NULL | NULL    | NULL | 1    | 100.00 | NULL |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
1 row in set, 1 warning (0.01 sec)

mysql> INSERT INTO training VALUES ( 1, "DevOps", "5 days" );
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO training VALUES ( 2, "Advanced Ansible tower", "5 Days" );
Query OK, 1 row affected (0.00 sec)

mysql> SELECT * FROM training;
+-----+-----+-----+
| id | name      | duration |
+-----+-----+-----+
| 1  | DevOps    | 5 days  |
| 2  | Advanced Ansible tower | 5 Days |
+-----+-----+-----+
2 rows in set (0.00 sec)

```

```

mysql> DESCRIBE TABLE training;
+-----+-----+-----+-----+-----+-----+-----+-----+
| id | select_type | table | partitions | type | possible_keys | key | key_len | ref |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 1 | SIMPLE | training | NULL | ALL | NULL | NULL | NULL | NULL |
+-----+-----+-----+-----+-----+-----+-----+-----+
1 row in set, 1 warning (0.01 sec)

mysql> INSERT INTO training VALUES ( 1, "DevOps", "5 days" );
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO training VALUES ( 2, "Advanced Ansible tower", "5 Days" );
Query OK, 1 row affected (0.00 sec)

mysql> SELECT * FROM training;
+-----+-----+-----+
| id | name | duration |
+-----+-----+-----+
| 1 | DevOps | 5 days |
| 2 | Advanced Ansible tower | 5 Days |
+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> 

```

```

The terminal connection has closed.
Reconnect

mysql> DESCRIBE TABLE training;
+-----+-----+-----+-----+-----+-----+-----+-----+
| id | select_type | table | partitions | type | possible_keys | key | key_len | ref |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 1 | SIMPLE | training | NULL | ALL | NULL | NULL | NULL | NULL |
+-----+-----+-----+-----+-----+-----+-----+-----+
1 row in set, 1 warning (0.01 sec)

mysql> INSERT INTO training VALUES ( 1, "DevOps", "5 days" );
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO training VALUES ( 2, "Advanced Ansible tower", "5 Days" );
Query OK, 1 row affected (0.00 sec)

mysql> SELECT * FROM training;
+-----+-----+-----+
| id | name | duration |
+-----+-----+-----+
| 1 | DevOps | 5 days |
| 2 | Advanced Ansible tower | 5 Days |
+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> exit
Bye
$ exit
The terminal connection has closed.

```

Delete the mysql pod from openshift webconsole and observe a new mysql pod will be created automatically.

Now, get inside the mysql pod terminal and try the below to see if the database and records are safe

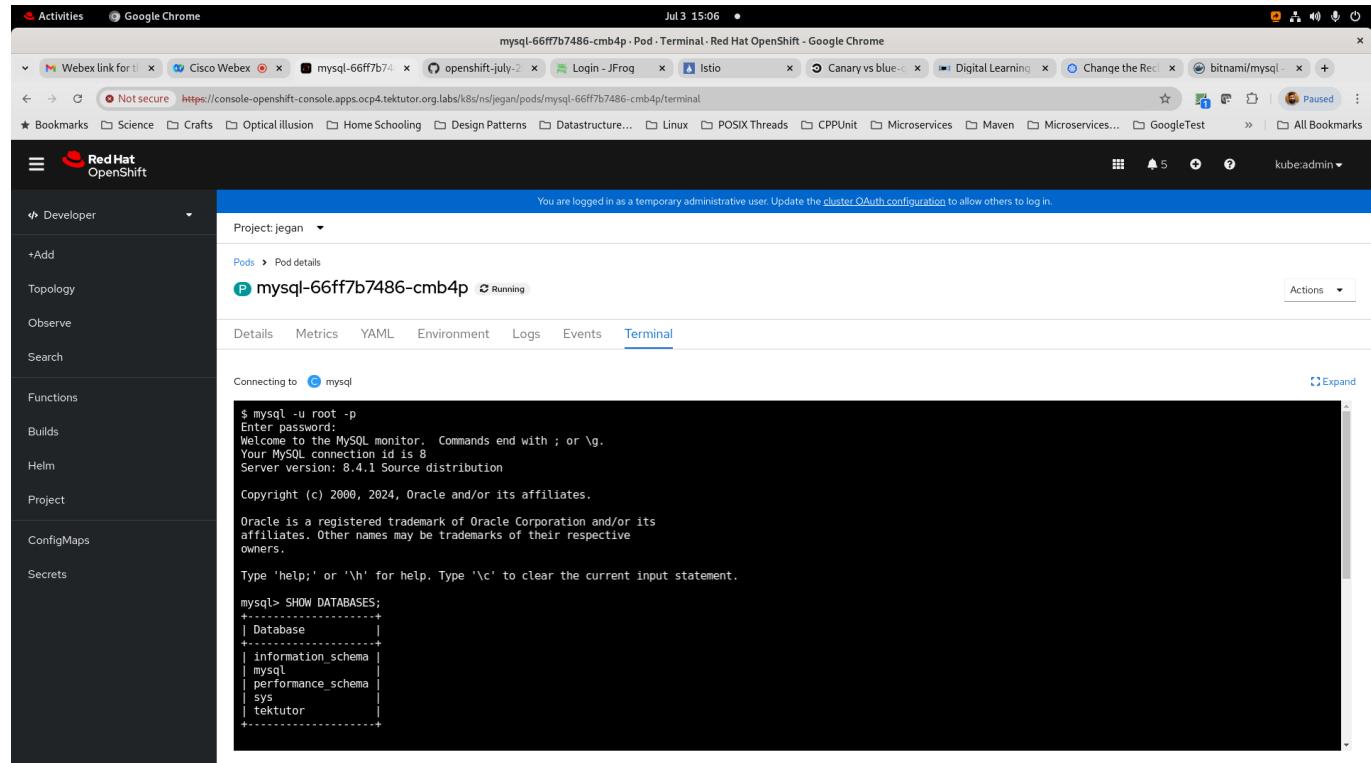
```

mysql -u root -p
SHOW DATABASES;
USE tektutor;
SHOW TABLES;
SELECT * FROM training;

```

```
exit
exit
```

## Expected output



This screenshot shows the Red Hat OpenShift web interface. The user is logged in as a temporary administrative user. They are viewing the details of a MySQL pod named 'mysql-66ff7b7486-cmb4p'. The 'Terminal' tab is selected, showing a MySQL shell session. The user has run the command '\$ mysql -u root -p' and is prompted for the password. The MySQL server version is 8.4.1. The user then runs 'SHOW DATABASES;' which lists the databases: information\_schema, mysql, performance\_schema, sys, and tektutor.

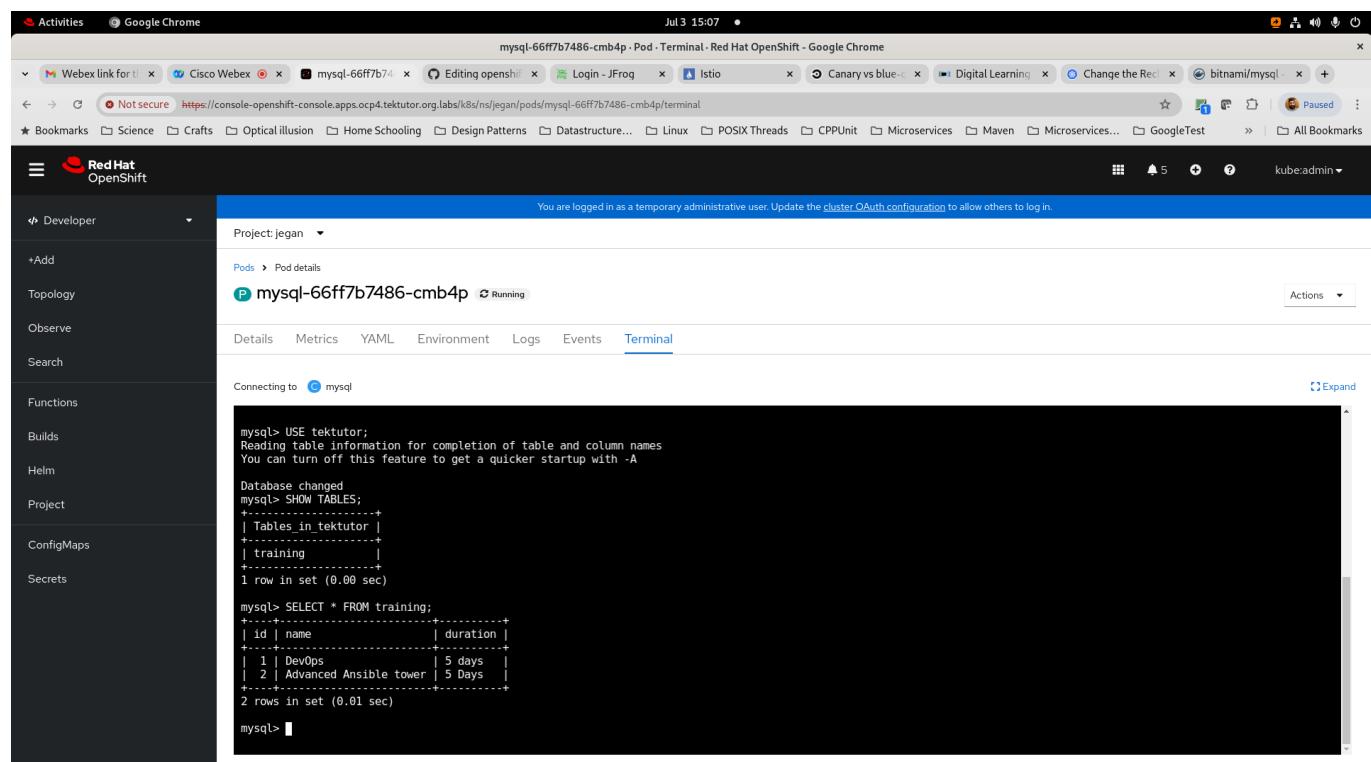
```
$ mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.4.1 Source distribution

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affiliates. Other names may be trademarks of their respective
owners.

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

mysql> SHOW DATABASES;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sys |
| tektutor |
+-----+
```



This screenshot continues the MySQL session from the previous terminal. The user has run 'USE tektutor;' and is reading table information for completion. They then run 'SHOW TABLES;' which lists the tables: Tables\_in\_tekstutor, training, and \_\_TABLES\_\_. The user then runs 'SELECT \* FROM training;' and receives the following results:

id	name	duration
1	DevOps	5 days
2	Advanced Ansible tower	5 Days

2 rows in set (0.01 sec)

The screenshot shows the Red Hat OpenShift web interface. On the left, a sidebar lists various project components like Developer, Topology, Observe, Search, Functions, Builds, Helm, Project, ConfigMaps, Secrets, and MySQL pods. The main area is titled 'Pods > Pod details' for the MySQL pod 'mysql-66ff7b7486-cmb4p'. The 'Terminal' tab is selected, displaying a MySQL prompt. The user runs a command to show tables in the 'training' database, which returns one row. Then, they run a SELECT query on the 'training' table, returning two rows. Finally, they exit the MySQL shell.

```

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
mysql-66ff7b7486-cmb4p • Running
Actions ▾

Details Metrics YAML Environment Logs Events Terminal

Connecting to mysql
The terminal connection has closed.
Reconnect

+-----+
| Tables_in_tektutor |
+-----+
| training           |
+-----+
1 row in set (0.00 sec)

mysql> SELECT * FROM training;
+----+-----+-----+
| id | name | duration |
+----+-----+-----+
| 1  | DevOps | 5 days   |
| 2  | Advanced Ansible tower | 5 Days   |
+----+-----+-----+
2 rows in set (0.01 sec)

mysql> exit
Bye
$ exit
The terminal connection has closed.

```

This screenshot shows a terminal window with two tabs. The left tab shows a file listing in a MySQL directory, including files like binlog.index, ca-key.pem, ca.pem, client-cert.pem, client-key.pem, ib\_buffer\_pool, ibdata1, ibtmp1, and various MySQL configuration and key files. The right tab shows the MySQL prompt at the root level of the 'tektutor' directory.

```

jegan@tektutor.org
jegan@tektutor.org

-rw-r----- 1 1000730000 root      48 Jul  3 14:50 binlog.index
-rw-r----- 1 1000730000 root    1705 Jul  3 14:49 ca-key.pem
-rw-r----- 1 1000730000 root   1108 Jul  3 14:49 ca.pem
-rw-r----- 1 1000730000 root   1108 Jul  3 14:49 client-cert.pem
-rw-r----- 1 1000730000 root   1705 Jul  3 14:49 client-key.pem
-rw-r----- 1 1000730000 root  6291456 Jul  3 14:56 '#ib_16384_0 dblwr'
-rw-r----- 1 1000730000 root 14689064 Jul  3 14:49 '#ib_16384_1 dblwr'
-rw-r----- 1 1000730000 root   3484 Jul  3 14:50 ib_buffer_pool
-rw-r----- 1 1000730000 root 12582912 Jul  3 14:56 ibdata1
-rw-r----- 1 1000730000 root 12582912 Jul  3 14:50 ibtmp1
drwxr-x--- 2 1000730000 root  4096 Jul  3 14:50 '#innodb redo'
drwxr-x--- 2 1000730000 root   187 Jul  3 14:50 '#innodb temp'
drwxr-x--- 2 1000730000 root   143 Jul  3 14:49 mysql
-rw-r----- 1 1000730000 root 27262976 Jul  3 14:56 mysql.ibd
-rw-r----- 1 1000730000 root   124 Jul  3 14:49 mysql_upgrade_history
drwxr-x--- 2 1000730000 root  8192 Jul  3 14:49 performance_schema
-rw-r----- 1 1000730000 root   1705 Jul  3 14:49 private_key.pem
-rw-r----- 1 1000730000 root   452 Jul  3 14:49 public_key.pem
-rw-r----- 1 1000730000 root   1108 Jul  3 14:49 server-cert.pem
-rw-r----- 1 1000730000 root   1705 Jul  3 14:49 server-key.pem
drwxr-x--- 2 1000730000 root   28 Jul  3 14:49 sys
drwxr-x--- 2 1000730000 root     6 Jul  3 14:56 tektutor
-rw-r----- 1 1000730000 root 16777216 Jul  3 14:56 undo_001
-rw-r----- 1 1000730000 root 16777216 Jul  3 14:52 undo_002
[root@tektutor.org mysql]# cd tektutor/
[root@tektutor.org tektutor]# ls
[root@tektutor.org tektutor]# ls -lha
total 4.0K
drwxr-x--- 2 1000730000 root      6 Jul  3 14:56 .
drwxrwxrwx. 8 nobody    nobody 4.0K Jul  3 14:56 .
[root@tektutor.org tektutor]# ls
training.ibd
[root@tektutor.org tektutor]# pwd
/var/nfs/jegan/mysql/tektutor
[root@tektutor.org tektutor]# 

```

## Lab - Deploying redis database and persist data in a NFS path using Persistent Volume and Claim

```

cd ~/openshift-july-2024
git pull
cd Day3/persistent-volume/redis
cat redis-pv.yml
oc create -f redis-pv.yml
oc get pv

```

```
cat redis-pvc.yml
oc create -f redis-pvc.yml
oc get pvc

cat redis-deploy.yml
oc create -f redis-deploy.yml
oc get deploy,po
```

## Expected output

The screenshot shows two terminal sessions on a Mac OS X desktop. Both terminals are running under the user 'jegan@tektutor.org'.

**Terminal 1 (Top):**

```
jegan@tektutor.org ~ -> /openshift-july-2024/Day3/persistent-volume/redis > main • ls
redis-deploy.yml  redis-pvc.yml  redis-pv.yml
jegan@tektutor.org ~ -> /openshift-july-2024/Day3/persistent-volume/redis > main • cat redis-pv.yml
apiVersion: v1
kind: PersistentVolume
metadata:
  name: redis-pv-jegan # Replace 'jegan' with your name
  labels:
    name: jegan # Replace 'jegan' with your name
    app: redis
spec:
  capacity:
    storage: 200Mi
  volumeMode: Filesystem
  accessModes:
    - ReadWriteOnce
  persistentVolumeReclaimPolicy: Retain
  nfs:
    server: 192.168.1.108 # Replace this IP with 10.10.15.5, 10.10.15.9 or 10.10.15.34 depending which server is allotted to you
    path: /var/nfs/jegan/redis # Replace this path with your path /var/nfs/user[xy]/redis
jegan@tektutor.org ~ -> /openshift-july-2024/Day3/persistent-volume/redis > main • oc create -f redis-pv.yml --save-config
persistentvolume/redis-pv-jegan created
jegan@tektutor.org ~ -> /openshift-july-2024/Day3/persistent-volume/redis > main • oc get pv
NAME      CAPACITY   ACCESS MODES   RECLAIM POLICY   STATUS   CLAIM   STORAGECLASS   REASON   AGE
redis-pv-jegan  200Mi      RWO          Retain        Available           2s
jegan@tektutor.org ~ -> /openshift-july-2024/Day3/persistent-volume/redis > main • cat redis-pvc.yml
apiVersion: v1
kind: PersistentVolumeClaim
metadata:
  name: redis-pvc-jegan # Replace 'jegan' with your name
spec:
  selector:
    matchLabels:
      name: jegan
      app: redis
  accessModes:
```

**Terminal 2 (Bottom):**

```
peristentVolumeReclaimPolicy: Retain
nfs:
  server: 192.168.1.108 # Replace this IP with 10.10.15.5, 10.10.15.9 or 10.10.15.34 depending which server is allotted to you
  path: /var/nfs/jegan/redis # Replace this path with your path /var/nfs/user[xy]/redis
jegan@tektutor.org ~ -> /openshift-july-2024/Day3/persistent-volume/redis > main • oc create -f redis-pv.yml --save-config
persistentvolume/redis-pv-jegan created
jegan@tektutor.org ~ -> /openshift-july-2024/Day3/persistent-volume/redis > main • oc get pv
NAME      CAPACITY   ACCESS MODES   RECLAIM POLICY   STATUS   CLAIM   STORAGECLASS   REASON   AGE
redis-pv-jegan  200Mi      RWO          Retain        Available           2s
jegan@tektutor.org ~ -> /openshift-july-2024/Day3/persistent-volume/redis > main • cat redis-pvc.yml
apiVersion: v1
kind: PersistentVolumeClaim
metadata:
  name: redis-pvc-jegan # Replace 'jegan' with your name
spec:
  selector:
    matchLabels:
      name: jegan
      app: redis
  accessModes:
    - ReadWriteOnce
  volumeMode: Filesystem
  resources:
    requests:
      storage: 200Mi
jegan@tektutor.org ~ -> /openshift-july-2024/Day3/persistent-volume/redis > main • oc create -f redis-pvc.yml --save-config
error: You must be logged in to the server (error when creating "redis-pvc.yml": Unauthorized)
x jegan@tektutor.org ~ -> /openshift-july-2024/Day3/persistent-volume/redis > main • cat ~/openshift.txt
Red Hat API Server Endpoint URL
+++++
https://api.ocp4.training.tektutor:6443

Red Hat OpenShift web-console
+++++
https://console.openshift-console.apps.ocp4.tektutor.org.labs
```

```

Activities Terminal Jul 3 15:49 • jegan@tektutor.org
jegan@tektutor.org ~ -/openshift-july-2024/Day3/persistent-volume/redis ↵ main ● oc create -f redis-pvc.yml --save-config
error: You must be logged in to the server (error when creating "redis-pvc.yml": Unauthorized)
✖ jegan@tektutor.org ~ -/openshift-july-2024/Day3/persistent-volume/redis ↵ main ● cat ~/openshift.txt
Red Hat API Server Endpoint
+++++
https://api.ocp4.training.tektutor:6443

Red Hat OpenShift web-console
+++++
https://console-openshift-console.apps.ocp4.tektutor.org.labs

Login Credentials
+++++
username : kubeadmin
password : 9fSDY-XckZz-DQDHJ-FaLT6
jegan@tektutor.org ~ -/openshift-july-2024/Day3/persistent-volume/redis ↵ main ● oc login -u kubeadmin
Console URL: https://api.ocp4.tektutor.org.labs:6443/console
Authentication required for https://api.ocp4.tektutor.org.labs:6443 (openshift)
Username: kubeadmin
Password:
Login successful.

You have access to 77 projects, the list has been suppressed. You can list all projects with 'oc projects'

Using project "jegan".
jegan@tektutor.org ~ -/openshift-july-2024/Day3/persistent-volume/redis ↵ main ● oc create -f redis-pvc.yml --save-config
persistentvolumeclaim/redis-pvc-jegan created
jegan@tektutor.org ~ -/openshift-july-2024/Day3/persistent-volume/redis ↵ main ● oc get pvc
NAME STATUS VOLUME CAPACITY ACCESS MODES STORAGECLASS AGE
redis-pvc-jegan Bound redis-pv-jegan 200Mi RWO
jegan@tektutor.org ~ -/openshift-july-2024/Day3/persistent-volume/redis ↵ main ● cat redis-deploy.yml
apiVersion: apps/v1
kind: Deployment
metadata:
  labels:
    app: redis
    name: redis
spec:
  replicas: 1
  selector:
    matchLabels:
      app: redis
  template:
    metadata:
      labels:
        app: redis
  spec:
    volumes:
      - name: redis-storage
        persistentVolumeClaim:
          claimName: redis-pvc-jegan # Replace 'jegan' with your name
    containers:
      - image: bitnami/redis:latest
        name: redis
        imagePullPolicy: IfNotPresent
    volumeMounts:
      - name: redis-storage
        mountPath: /bitnami/redis/data
  env:
    - name: REDIS_PASSWORD
      value: root@123
jegan@tektutor.org ~ -/openshift-july-2024/Day3/persistent-volume/redis ↵ main ● oc create -f redis-deploy.yml --save-config

```

```

Activities Terminal Jul 3 15:50 •
jegan@tektutor.org jegan@tektutor.org
jegan@tektutor.org
spec:
  volumes:
    - name: redis-storage
      persistentVolumeClaim:
        claimName: redis-pvc-jegan # Replace 'jegan' with your name
  containers:
    - image: bitnami/redis:latest
      name: redis
      imagePullPolicy: IfNotPresent

  volumeMounts:
    - name: redis-storage
      mountPath: /bitnami/redis/data
  env:
    - name: REDIS_PASSWORD
      value: root@123
jegan@tektutor.org > ~/openshift-july-2024/Day3/persistent-volume/redis ➤ main ● oc create -f redis-deploy.yml --save-config
deployment.apps/redis created
jegan@tektutor.org > ~/openshift-july-2024/Day3/persistent-volume/redis ➤ main ● oc get deploy,po
NAME READY UP-TO-DATE AVAILABLE AGE
deployment.apps/nginx 3/3 3 3 156m
deployment.apps/redis 0/1 1 0 4s
NAME READY STATUS RESTARTS AGE
pod/nginx-6fd44844bc-gpzdq 1/1 Running 0 156m
pod/nginx-6fd44844bc-pp7xj 1/1 Running 0 156m
pod/nginx-6fd44844bc-wb5b9 1/1 Running 0 156m
pod/redis-c7bf8bd5-q6dx8 0/1 ContainerCreating 0 4s
jegan@tektutor.org > ~/openshift-july-2024/Day3/persistent-volume/redis ➤ main ● oc get po
NAME READY STATUS RESTARTS AGE
nginx-6fd44844bc-gpzdq 1/1 Running 0 156m
nginx-6fd44844bc-pp7xj 1/1 Running 0 156m
nginx-6fd44844bc-wb5b9 1/1 Running 0 156m
redis-c7bf8bd5-q6dx8 1/1 Running 0 38s
jegan@tektutor.org > ~/openshift-july-2024/Day3/persistent-volume/redis ➤ main ●

```

The screenshot shows the Red Hat OpenShift web console interface. On the left, a sidebar menu includes options like Developer, Topology (which is selected), Observe, Search, Functions, Builds, Helm, Project, ConfigMaps, and Secrets. The main content area displays the 'Topology' view for the 'redis' application. A large circular icon contains a red 'D' and a blue 'redis' logo. Below it, there's a 'Details' button and an information icon. To the right, a detailed view of the 'redis' resource is shown, including a 'Health checks' section (warning: Container redis does not have health checks to ensure your application is running correctly), a 'Resources' tab (listing a single pod named 'redis-c7bf8bd5-q6dx8' which is running), a 'Pods' section, a 'Services' section (empty), and a 'Routes' section (empty). The top navigation bar shows the URL as https://console-openshift-console.apps.ocp4.tektutor.org.labs/topology/ns/jegan?view=graph&selectId=0aa34d66-676d-4725-b305-f7ae61ffda6e.

The screenshot shows two instances of the Red Hat OpenShift web console. The top instance displays the 'Logs' tab for a Redis pod named 'redis-c7bf8bd5-q6dx8'. The log output shows the Redis startup process, including configuration loading and connection setup. The bottom instance shows a 'Terminal' session connected to the same Redis pod, where a redis-cli command is run to connect to the Redis server at port 6379.

Once you are done with this exercise, you may clean up all the resources used by this project

```
cd ~/openshift-july-2024
git pull
cd Day3/persistent-volume/redis

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

## Expected output

```
jegan@tektutor.org ~ /openshift-july-2024 $ ls
Day1 Day3 Day5 img2.png img4.png img5png img6png img8.png
Day2 Day4 img1.png img3.png img5.png img6.png img7.png README.md

jegan@tektutor.org ~ /openshift-july-2024 $ cd Day3/persistent-volume/redis
jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume/redis $ ls
redis-deploy.yml redis-pvc.yml redis-pv.yml

jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume/redis $ oc delete -f redis-deploy.yml
deployment.apps "redis" deleted
jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume/redis $ oc delete -f redis-pvc.yml
persistentvolumeclaim "redis-pvc-jegan" deleted
jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume/redis $ oc delete -f redis-pv.yml
persistentvolume "redis-pv-jegan" deleted
jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume/redis $ oc get deploy,rs,po,pv,pvc
No resources found
jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume/redis $
```

## Lab - Deploying mongodb using Persistent volume and claim

```
cd ~/openshift-july-2024
git pull
cd Day3/persistent-volume/mongodb
./deploy.sh
```

## Expected output

```
jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume/mongodb $ ls -l
total 20
-rwxr-xr-x 1 jegan jegan 152 Jul 3 16:14 delete-all.sh
-rwxr-xr-x 1 jegan jegan 211 Jul 3 16:15 deploy.sh
-rw-r--r-- 1 jegan jegan 664 Jul 3 16:11 mongodb-deploy.yml
-rw-r--r-- 1 jegan jegan 290 Jul 3 16:09 mongodb-pvc.yml
-rw-r--r-- 1 jegan jegan 544 Jul 3 16:09 mongodb-pv.yml
jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume/mongodb $ ./deploy.sh
Deploying mongodb ...

apiVersion: v1
kind: PersistentVolume
metadata:
  name: mongodb-pv-jegan # Replace 'jegan' with your name
  labels:
    name: jegan # Replace 'jegan' with your name
    app: mongodb
spec:
  capacity:
    storage: 200Mi
  volumeMode: Filesystem
  accessModes:
    - ReadWriteOnce
  persistentVolumeReclaimPolicy: Retain
  nfs:
    server: 192.168.1.108 # Replace this IP with 10.10.15.5, 10.10.15.9 or 10.10.15.34 depending which server is allotted to you
    path: /var/nfs/jegan/mongodb # Replace this path with your path /var/nfs/user[xy]/mysql
persistentvolume/mongodb-pv-jegan created
apiVersion: v1
kind: PersistentVolumeClaim
metadata:
  name: mongodb-pvc-jegan # Replace 'jegan' with your name
spec:
  selector:
    matchLabels:
      name: jegan
```

```
jegan@tektutor.org
```

```
nfs:
  server: 192.168.1.108 # Replace this IP with 10.10.15.5, 10.10.15.9 or 10.10.15.34 depending which server is allotted to you
  path: /var/nfs/jegan/mongodb # Replace this path with your path /var/nfs/user[xy]/mysql
persistentvolume/mongodb-pv-jegan created
apiVersion: v1
kind: PersistentVolumeClaim
metadata:
  name: mongodb-pvc-jegan # Replace 'jegan' with your name
spec:
  selector:
    matchLabels:
      name: jegan
      app: mongodb
  accessModes:
    - ReadWriteOnce
  volumeMode: Filesystem
  resources:
    requests:
      storage: 200Mi
persistentvolumeclaim/mongodb-pvc-jegan created
apiVersion: apps/v1
kind: Deployment
metadata:
  labels:
    app: mongodb
  name: mongodb
spec:
  replicas: 1
  selector:
    matchLabels:
      app: mongodb
  template:
    metadata:
      labels:
        app: mongodb
  spec:
```

```
jegan@tektutor.org
```

```
apiVersion: apps/v1
kind: Deployment
metadata:
  labels:
    app: mongodb
  name: mongodb
spec:
  replicas: 1
  selector:
    matchLabels:
      app: mongodb
  template:
    metadata:
      labels:
        app: mongodb
  spec:
    volumes:
      - name: mongodb-storage
        persistentVolumeClaim:
          claimName: mongodb-pvc-jegan # Replace 'jegan' with your name
    containers:
      - image: bitnami/mongodb:latest
        name: mongodb
        imagePullPolicy: IfNotPresent
        volumeMounts:
          - name: mongodb-storage
            mountPath: /bitnami/mongodb
    env:
      - name: MONGODB_ROOT_PASSWORD
        value: root@123
deployment.apps/mongodb created
NAME           READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/mongodb   0/1     1           0          0s
```

```

Activities Terminal Jul 3 16:17 • jegan@tektutor.org
jegan@tektutor.org
app: mongodb
spec:
  volumes:
    - name: mongodb-storage
      persistentVolumeClaim:
        claimName: mongodb-pvc-jegan # Replace 'jegan' with your name
  containers:
    - image: bitnami/mongodb:latest
      name: mongodb
      imagePullPolicy: IfNotPresent

  volumeMounts:
    - name: mongodb-storage
      mountPath: /bitnami/mongodb
  env:
    - name: MONGODB_ROOT_PASSWORD
      value: root@123
deployment.apps/mongodb created
NAME READY UP-TO-DATE AVAILABLE AGE
deployment.apps/mongodb 0/1 1 0 0s

NAME DESIRED CURRENT READY AGE
replicaset.apps/mongodb-5bfd6f8989 1 1 0 0s

NAME READY STATUS RESTARTS AGE
pod/mongodb-5bfd6f8989-kjxzt 0/1 ContainerCreating 0 0s

NAME CAPACITY ACCESS MODES RECLAIM POLICY STATUS CLAIM STORAGECLASS REASON
AGE
persistentvolume/mongodb-pv-jegan 200Mi RWO Retain Bound jegan/mongodb-pvc-jegan
ls

NAME STATUS VOLUME CAPACITY ACCESS MODES STORAGECLASS AGE
persistentvolumeclaim/mongodb-pvc-jegan Bound mongodb-pv-jegan 200Mi RWO 0s
jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume/mongodb [main]

```

The screenshot shows the Red Hat OpenShift web interface. On the left, a sidebar menu includes options like Developer, Topology (which is selected), Observe, Search, Functions, Builds, Helm, Project, ConfigMaps, and Secrets. The main content area displays a topology graph where a central node labeled "mongodb" is connected to a pod icon. Below the graph, a table provides details for the "mongodb" resource:

D mongodb					
<b>Health checks</b>	Container mongodb does not have health checks to ensure your application is running correctly. <a href="#">Add health checks</a>				
<b>Details</b>	<b>Resources</b> (selected)				
<b>Pods</b>					
<table border="1"> <tr> <td></td> <td>mongodb-5bfd6f8989-kjxzt</td> <td>Running</td> <td><a href="#">View logs</a></td> </tr> </table>			mongodb-5bfd6f8989-kjxzt	Running	<a href="#">View logs</a>
	mongodb-5bfd6f8989-kjxzt	Running	<a href="#">View logs</a>		
<b>Services</b>					
No Services found for this resource.					
<b>Routes</b>					
No Routes found for this resource.					

The screenshot shows the Red Hat OpenShift web console interface. On the left, a sidebar navigation includes 'Developer', '+Add', 'Topology', 'Observe', 'Search', 'Functions', 'Builds', 'Helm', 'Project', 'ConfigMaps', and 'Secrets'. The main area is titled 'Project: jegan' and shows a 'Pods > Pod details' view for a pod named 'mongodb-5bfd6f8989-kjxzt' which is 'Running'. The 'Logs' tab is selected. A warning message at the top states: 'Some lines have been abridged because they are exceptionally long. To view unabridged log content, you can either open the raw file in another window or download it.' Below this, the log output is displayed in a scrollable text area. The log shows the MongoDB setup process, including connecting to the Bitnami container, validating environment variables, and enabling authentication. The log ends with 'MongoDB setup finished!'. The log stream is currently paused.

This screenshot shows the same Red Hat OpenShift interface, but the log stream for the 'mongodb-5bfd6f8989-kjxzt' pod is now streaming in real-time. The log output continues from where it left off, showing more detailed startup messages, including configuration of the 'NETWORK' interface and handling of incoming connections. The log stream is indicated by a play button icon and a timestamp of 'Jul 13 16:18'.

Once you are done with this exercise, you may clean up all the resources that were created in this exercises

```
cd ~/openshift-july-2024
git pull
cd Day3/persistent-volume/mongodb
./delete-all.sh
```

## Expected output

The screenshot shows a terminal window with two tabs. The left tab is titled 'jegan@tektutor.org' and the right tab is also 'jegan@tektutor.org'. The terminal displays the following command-line session:

```
name: mongodb
imagePullPolicy: IfNotPresent

volumeMounts:
- name: mongodb-storage
  mountPath: /bitnami/mongodb
env:
- name: MONGODB_ROOT_PASSWORD
  value: root@123
deployment.apps/mongodb created
NAME READY UP-TO-DATE AVAILABLE AGE
deployment.apps/mongodb 0/1 1 0 0s

NAME DESIRED CURRENT READY AGE
replicaset.apps/mongodb-5bfd6f8989 1 1 0 0s

NAME READY STATUS RESTARTS AGE
pod/mongodb-5bfd6f8989-kjxzt 0/1 ContainerCreating 0 0s

NAME AGE CAPACITY ACCESS MODES RECLAIM POLICY STATUS CLAIM STORAGECLASS REASON
persistentvolume/mongodb-pv-jegan 200Mi RWO Retain Bound jegan/mongodb-pvc-jegan
ls

NAME STATUS VOLUME CAPACITY ACCESS MODES STORAGECLASS AGE
persistentvolumeclaim/mongodb-pvc-jegan Bound mongodb-pv-jegan 200Mi RWO 0s
jegan@tektutor.org > ~/openshift-july-2024/Day3/persistent-volume/mongodb > ./main > ./delete-all.sh
$ Undeploying mongoDB ...
deployment.apps "mongodb" deleted
persistentvolumeclaim "mongodb-pvc-jegan" deleted
persistentvolume "mongodb-pv-jegan" deleted
No resources found
jegan@tektutor.org > ~/openshift-july-2024/Day3/persistent-volume/mongodb > ./main > oc get deploy,rs,po,pv,pvc
No resources found
jegan@tektutor.org > ~/openshift-july-2024/Day3/persistent-volume/mongodb > ./main > 
```

## Lab - Deploying a multipod application with Persistent volume and claim ( Wordpress and Mariadb )

```
cd ~/openshift-july-2024
git pull
cd Day3/persistent-volume/wordpress
./deploy.sh
```

## Expected output

```
jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume/wordpress > main > ls -l
total 44
-rwxr-xr-x 1 jegan jegan 376 Jul 3 17:02 delete-all.yml
-rwxr-xr-x 1 jegan jegan 370 Jul 3 17:02 deploy.yml
-rw-r--r-- 1 jegan jegan 730 Jul 3 16:45 mariadb-deploy.yml
-rw-r--r-- 1 jegan jegan 323 Jul 3 16:41 mariadb-pvc.yml
-rw-r--r-- 1 jegan jegan 525 Jul 3 16:40 mariadb-pv.yml
-rw-r--r-- 1 jegan jegan 251 Jul 3 16:53 mariadb-svc.yml
-rw-r--r-- 1 jegan jegan 952 Jul 3 16:51 wordpress-deploy.yml
-rw-r--r-- 1 jegan jegan 327 Jul 3 16:46 wordpress-pvc.yml
-rw-r--r-- 1 jegan jegan 533 Jul 3 16:45 wordpress-pv.yml
-rw-r--r-- 1 jegan jegan 231 Jul 3 17:03 wordpress-route.yml
-rw-r--r-- 1 jegan jegan 231 Jul 3 16:54 wordpress-svc.yml
jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume/wordpress > main > ./deploy.yml

Deploying mariadb ...
persistentvolume/mariadb-pv-jegan created
persistentvolumeclaim/mariadb-pvc-jegan created
deployment.apps/mariadb created
service/mariadb created

Deploying wordpress ...
persistentvolume/wordpress-pv-jegan created
persistentvolumeclaim/wordpress-pvc-jegan created
deployment.apps/wordpress created
service/wordpress created
route.route.openshift.io/wordpress created
NAME          CAPACITY   ACCESS MODES  RECLAIM POLICY  STATUS   CLAIM
SON AGE
persistentvolume/mariadb-pv-jegan    100Mi      RWO           Delete        Bound   jegan/mariadb-pvc-jegan
4s
persistentvolume/wordpress-pv-jegan  100Mi      RWO           Delete        Bound   jegan/wordpress-pvc-jegan
2s

jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume/wordpress > main >
persistentvolume/mariadb-pv-jegan created
persistentvolumeclaim/mariadb-pvc-jegan created
deployment.apps/mariadb created
service/mariadb created

Deploying wordpress ...
persistentvolume/wordpress-pv-jegan created
persistentvolumeclaim/wordpress-pvc-jegan created
deployment.apps/wordpress created
service/wordpress created
route.route.openshift.io/wordpress created
NAME          CAPACITY   ACCESS MODES  RECLAIM POLICY  STATUS   CLAIM
SON AGE
persistentvolume/mariadb-pv-jegan    100Mi      RWO           Delete        Bound   jegan/mariadb-pvc-jegan
4s
persistentvolume/wordpress-pv-jegan  100Mi      RWO           Delete        Bound   jegan/wordpress-pvc-jegan
2s

NAME          STATUS    VOLUME
persistentvolumeclaim/mariadb-pvc-jegan Bound     mariadb-pv-jegan
persistentvolumeclaim/wordpress-pvc-jegan Bound     wordpress-pv-jegan
CAPACITY   ACCESS MODES  STORAGECLASS  AGE
100Mi      RWO           3s
100Mi      RWO           2s

NAME          READY  STATUS      RESTARTS  AGE
pod/mariadb-5b9895469b-hr655  1/1   Running    0          3s
pod/wordpress-7f88ffff478-nplvl 0/1   ContainerCreating 0          1s

NAME          TYPE      CLUSTER-IP  EXTERNAL-IP  PORT(S)  AGE
service/mariadb ClusterIP  172.30.230.161  <none>      3306/TCP  2s
service/wordpress ClusterIP  172.30.197.68   <none>      8080/TCP  1s

NAME          HOST/PORT  PATH  SERVICES  PORT  TERMINATION  WILDCARD
route.route.openshift.io/wordpress  wordpress-jegan.apps.ocp4.tektutor.org.labs  /  wordpress  8080  None
jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume/wordpress > main >
```

Activities Google Chrome Topology - Red Hat OpenShift - Google Chrome

Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/topology/ns/jegan?view=graph&selectId=635122ae-3311-457e-b675-1ae7052f2ed7

Bookmarks Science Crafts Optical illusion Home Schooling Design Patterns Datastructure... Linux POSIX Threads CPPUnit Microservices Maven Microservices... GoogleTest All Bookmarks

kube:admin

**Red Hat OpenShift**

Developer Project: jegan Application: All applications

+Add Display options Filter by resource Name Find by name... View shortcuts

**Topology**

Observe Search Functions 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.

**wordpress**

**Health checks** Container wordpress does not have health checks to ensure your application is running correctly. Add health checks

**Details Resources Observe**

**Pods**

wordpress-7f88fff478-nplvl Running View logs

**Services**

wordpress Service port: TCP/8080 → Pod port: 8080

**Routes**

wordpress Location: http://wordpress-jegan.apps.ocp4.tektutor.org.labs

Activities Google Chrome wordpress-7f88fff478-nplvl - Logs - Red Hat OpenShift - Google Chrome

Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/pods/wordpress-7f88fff478-nplvl/logs

Bookmarks Science Crafts Optical illusion Home Schooling Design Patterns Datastructure... Linux POSIX Threads CPPUnit Microservices Maven Microservices... GoogleTest All Bookmarks

kube:admin

**Red Hat OpenShift**

Developer Project: jegan

+Add Pods > Pod details

**wordpress-7f88fff478-nplvl** Running

**Logs**

Details Metrics YAML Environment Logs Events Terminal

Log stream paused. wordpress Current log Search Show full log Wrap lines Raw Download Expand

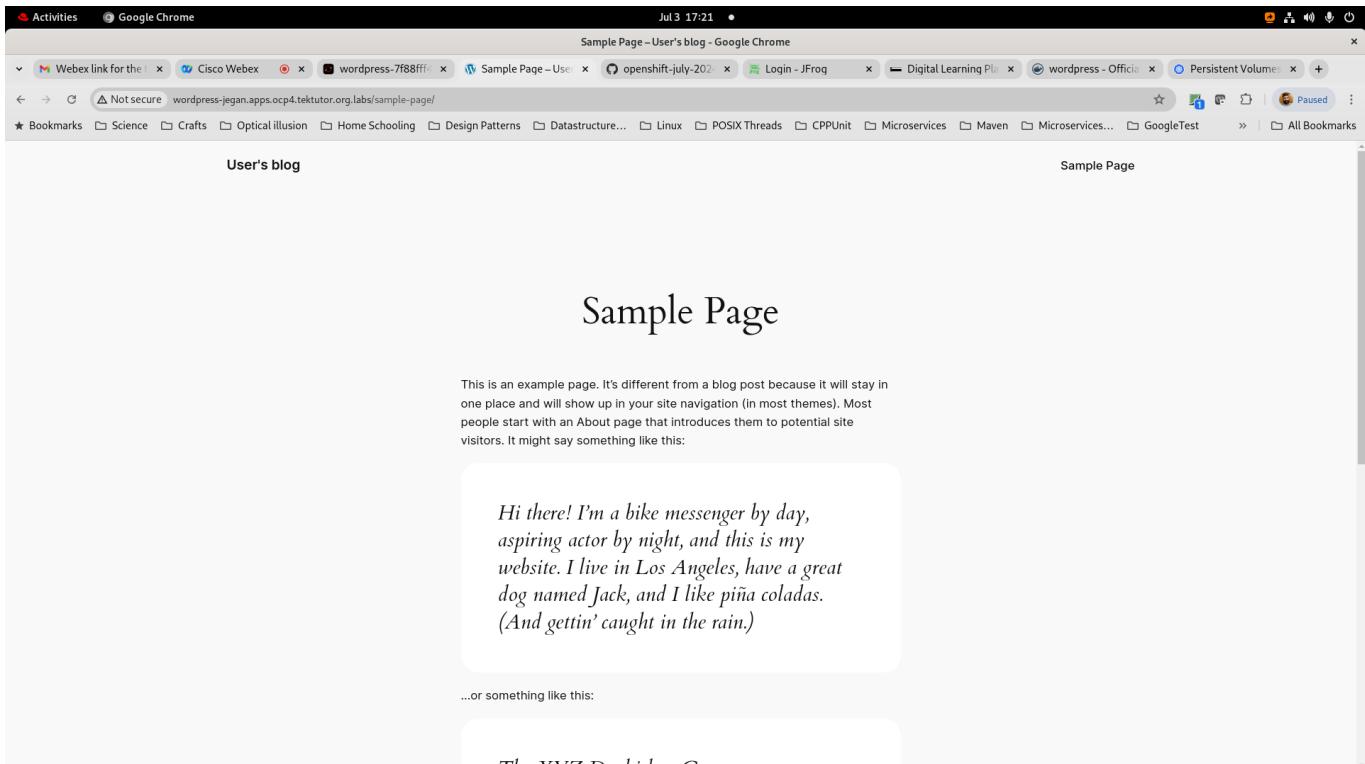
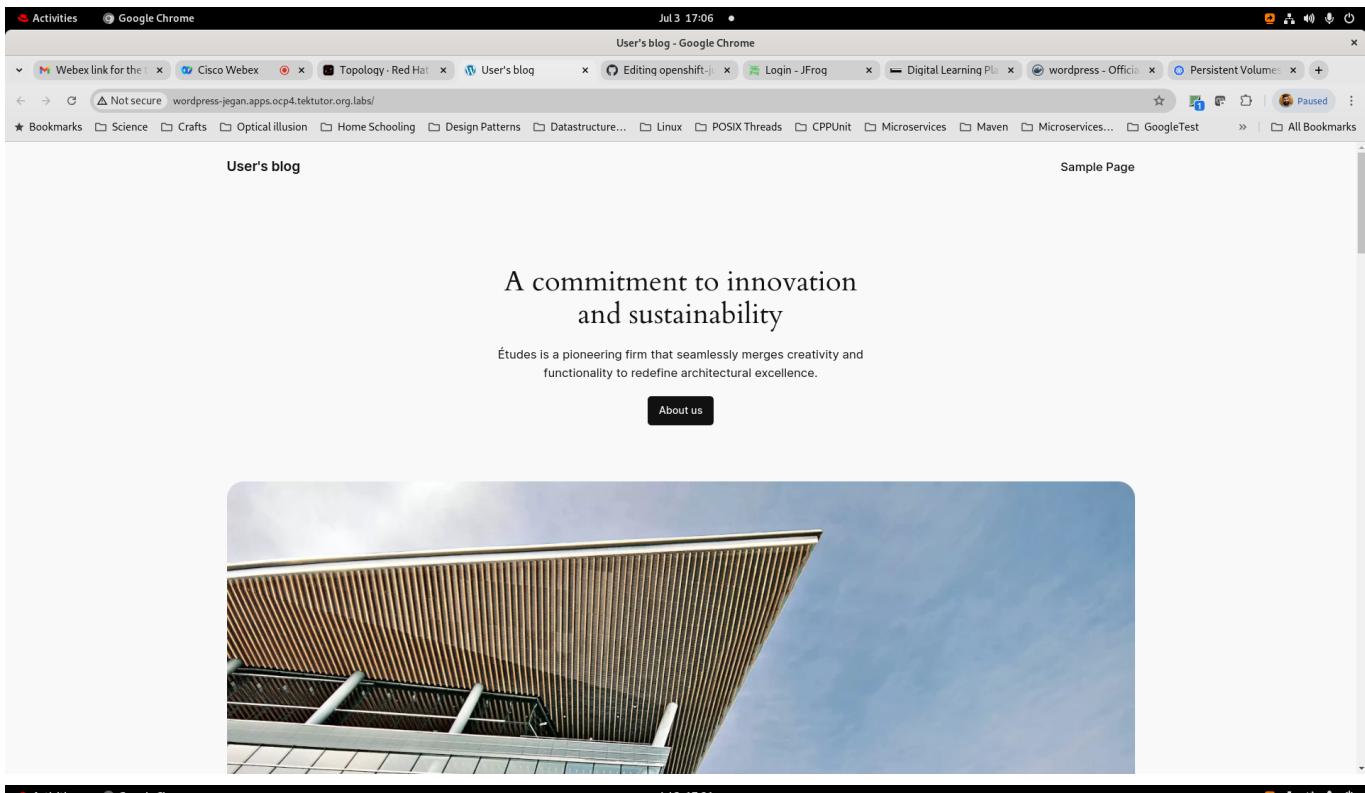
38 lines

```

1  wordpress 11:34:02.17 INFO >>> Welcome to the Bitnami wordpress container
2  wordpress 11:34:02.17 INFO >>> Subscribe to project updates by watching https://github.com/bitnami/containers
3  wordpress 11:34:02.17 INFO >>> Submit issues and feature requests at https://github.com/bitnami/containers/issues
4  wordpress 11:34:02.17 INFO >>> Upgrade to Tanzu Application Catalog for production environments to access custom-configured and pre-packaged software components. Gain enhanced features, improved security, and simplified management.
5  wordpress 11:34:02.18 INFO >>>
6  wordpress 11:34:02.18 INFO >>> Starting WordPress setup
7  wordpress 11:34:02.18 INFO >>> Generating sample certificates
8  wordpress 11:34:02.21 INFO >>> Certificate request self-signature ok
9   subjectCN = example.com
10 
11  realpath: /bitnami/apache/conf: No such file or directory
12  wordpress 11:34:04.21 INFO >>> Configuring Apache ServerTokens directive
13  wordpress 11:34:04.23 INFO >>> Configuring PHP options
14  wordpress 11:34:04.23 INFO >>> Setting PHP expose_php option
15  wordpress 11:34:04.24 INFO >>> Setting PHP output_buffering option
16  wordpress 11:34:04.26 INFO >>> Validating settings in MYSQL_CLIENT_* env vars
17  wordpress 11:34:04.58 INFO >>> Restoring persisted WordPress installation
18  wordpress 11:34:05.10 INFO >>> Trying to connect to the database server
19  wordpress 11:34:05.99 INFO >>> WordPress setup finished!
20 
21  wordpress 11:34:06.00 INFO >>> Starting Apache

```

Resume stream



Once you are done with this exercise, you may cleanup the resources

```
oc get all
oc get pv,pvc
cd ~/openshift-july-2024
git pull
cd Day3/persistent-volume/wordpress
ls -l
./delete-all.yml
```

## Expected output

```
Activities Terminal Jul 3 17:22 • jegan@tektutor.org jegan@tektutor.org
jegan@tektutor.org ~ -/openshift-july-2024/Day3/persistent-volume/wordpress [?] main > oc get all
total 44
-rw-r--r-x 1 jegan jegan 376 Jul 3 17:02 delete-all.yml
-rw-r--r-x 1 jegan jegan 370 Jul 3 17:02 deploy.yml
-rw-r--r-- 1 jegan jegan 730 Jul 3 16:45 mariadb-deploy.yml
-rw-r--r-- 1 jegan jegan 323 Jul 3 16:41 mariadb-pvc.yml
-rw-r--r-- 1 jegan jegan 525 Jul 3 16:40 mariadb-pv.yml
-rw-r--r-- 1 jegan jegan 251 Jul 3 16:53 mariadb-svc.yml
-rw-r--r-- 1 jegan jegan 952 Jul 3 16:51 wordpress-deploy.yml
-rw-r--r-- 1 jegan jegan 327 Jul 3 16:46 wordpress-pvc.yml
-rw-r--r-- 1 jegan jegan 533 Jul 3 16:45 wordpress-pv.yml
-rw-r--r-- 1 jegan jegan 231 Jul 3 17:03 wordpress-route.yml
-rw-r--r-- 1 jegan jegan 231 Jul 3 16:54 wordpress-svc.yml
jegan@tektutor.org ~ -/openshift-july-2024/Day3/persistent-volume/wordpress [?] main > oc get all
Warning: apps.openshift.io/v1 DeploymentConfig is deprecated in v4.14+, unavailable in v4.1000+
NAME READY STATUS RESTARTS AGE
pod/mariadb-5b9895469b-hr655 1/1 Running 0 18m
pod/wordpress-7f88ffff478-nplvl 1/1 Running 0 18m

NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE
service/mariadb ClusterIP 172.30.230.161 <none> 3306/TCP 18m
service/wordpress ClusterIP 172.30.197.68 <none> 8080/TCP 18m

NAME READY UP-TO-DATE AVAILABLE AGE
deployment.apps/mariadb 1/1 1 1 18m
deployment.apps/wordpress 1/1 1 1 18m

NAME DESIRED CURRENT READY AGE
replicaset.apps/mariadb-5b9895469b 1 1 1 18m
replicaset.apps/wordpress-7f88ffff478 1 1 1 18m

NAME HOST/PORT PATH SERVICES PORT TERMINATION WILDCARD
route.route.openshift.io/wordpress wordpress-jegan.apps.ocp4.tektutor.org.labs wordpress 8080 None
jegan@tektutor.org ~ -/openshift-july-2024/Day3/persistent-volume/wordpress [?] main > oc get pv,pvc
NAME CAPACITY ACCESS MODES RECLAIM POLICY STATUS CLAIM STORAGECLASS REASON AGE
persistentvolume/mariadb-pv-jegan 100Mi RWO Delete Bound jegan/mariadb-pvc-jegan 18m
persistentvolume/wordpress-pv-jegan 100Mi RWO Delete Bound jegan/wordpress-pvc-jegan 18m

NAME STATUS VOLUME CAPACITY ACCESS MODES STORAGECLASS AGE
persistentvolumeclaim/mariadb-pvc-jegan Bound mariadb-pv-jegan 100Mi RWO 18m
persistentvolumeclaim/wordpress-pvc-jegan Bound wordpress-pv-jegan 100Mi RWO 18m
jegan@tektutor.org ~ -/openshift-july-2024/Day3/persistent-volume/wordpress [?] main >
```

```

Activities Terminal Jul 3 17:23 • jegan@tektutor.org jegan@tektutor.org
jegan@tektutor.org
NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE
service/mariadb ClusterIP 172.30.230.161 <none> 3306/TCP 18m
service/wordpress ClusterIP 172.30.197.68 <none> 8080/TCP 18m

NAME READY UP-TO-DATE AVAILABLE AGE
deployment.apps/mariadb 1/1 1 1 18m
deployment.apps/wordpress 1/1 1 1 18m

NAME DESIRED CURRENT READY AGE
replicaset.apps/mariadb-5b9895469b 1 1 1 18m
replicaset.apps/wordpress-7f88fff478 1 1 1 18m

NAME HOST/PORT PATH SERVICES PORT TERMINATION WILDCARD
route.route.openshift.io/wordpress wordpress-jegan.apps.ocp4.tektutor.org.labs / main oc get pv,pvc
NAME CAPACITY ACCESS MODES RECLAIM POLICY STATUS CLAIM STORAGECLASS REASON AGE
persistentvolume/mariadb-pv-jegan 100Mi RWO Delete Bound jegan/mariadb-pvc-jegan 18m
persistentvolume/wordpress-pv-jegan 100Mi RWO Delete Bound jegan/wordpress-pvc-jegan 18m

NAME STATUS VOLUME CAPACITY ACCESS MODES STORAGECLASS AGE
persistentvolumeclaim/mariadb-pvc-jegan Bound mariadb-pv-jegan 100Mi RWO 18m
persistentvolumeclaim/wordpress-pvc-jegan Bound wordpress-pv-jegan 100Mi RWO 18m
jegan@tektutor.org -/openshift-july-2024/Day3/persistent-volume/wordpress ./main ./delete-all.yml

Undeploying wordpress ...
route.route.openshift.io "wordpress" deleted
service "wordpress" deleted
deployment.apps "wordpress" deleted
persistentvolumeclaim "wordpress-pvc-jegan" deleted
persistentvolume "wordpress-pv-jegan" deleted

Undeploying mariadb ...
service "mariadb" deleted
deployment.apps "mariadb" deleted
persistentvolumeclaim "mariadb-pvc-jegan" deleted
persistentvolume "mariadb-pv-jegan" deleted
No resources found
jegan@tektutor.org -/openshift-july-2024/Day3/persistent-volume/wordpress ./main

```

## Info - ConfigMap

- ConfigMap is used to store multiple key-value configuration data
- any number of key/value pairs can be stored in configmap
- this is alternate to properties.xml or properties.yml file used in java or other programming languages
- this is used only for storing non-sensitive information
- for storing sensitive information like login credentials, consider using secret
- practical usecase examples

- software tools path
- application log path

## Info - Secret

- secret is also a Map internally just like ConfigMap
- only difference is the data stored in secret is not revealed, hence your application can securely retrieve and use it
- passwords, certificates can be stored in secret as key/value
- the key will be visible but not the password
- Openshift administrators can view both key/value stored in the secret

## Lab - Let's refactor the wordpress/mariadb multi-pod application using ConfigMap and Secret

```
cd ~/openshift-july-2024
git pull
cd Day3/persistent-volume
./deploy.sh
```

### Expected output

```
jegan@tektutor.org ~/openshift-july-2024/Day3/persistent-volume/wordpress-with-configmap-and-secrets $ main
jegan@tektutor.org ~/openshift-july-2024/Day3/persistent-volume/wordpress-with-configmap-and-secrets $ ls -l
total 52
-rwxr-xr-x 1 jegan jegan 448 Jul  3 17:43 delete-all.yml
-rwxr-xr-x 1 jegan jegan 488 Jul  3 17:43 deploy.yml
-rw-r--r-- 1 jegan jegan 904 Jul  3 17:42 mariadb-deploy.yml
-rw-r--r-- 1 jegan jegan 323 Jul  3 17:40 mariadb-pvc.yml
-rw-r--r-- 1 jegan jegan 525 Jul  3 17:40 mariadb-pv.yml
-rw-r--r-- 1 jegan jegan 251 Jul  3 17:40 mariadb-svc.yml
-rw-r--r-- 1 jegan jegan 132 Jul  3 17:40 wordpress-configmap.yml
-rw-r--r-- 1 jegan jegan 1395 Jul  3 17:40 wordpress-deploy.yml
-rw-r--r-- 1 jegan jegan 327 Jul  3 17:40 wordpress-pvc.yml
-rw-r--r-- 1 jegan jegan 533 Jul  3 17:40 wordpress-pv.yml
-rw-r--r-- 1 jegan jegan 231 Jul  3 17:40 wordpress-route.yml
-rw-r--r-- 1 jegan jegan 118 Jul  3 17:40 wordpress-secret.yml
-rw-r--r-- 1 jegan jegan 231 Jul  3 17:40 wordpress-svc.yml
jegan@tektutor.org ~/openshift-july-2024/Day3/persistent-volume/wordpress-with-configmap-and-secrets $ ./deploy.yml
Creating configmap and secrets ...
configmap/wordpress-cm created
secret/mariadb-credentials created
Deploying mariadb ...
persistentvolume/mariadb-pv-jegan created
persistentvolumeclaim/mariadb-pvc-jegan created
deployment.apps/mariadb created
```

```
jegan@tektutor.org ~/openshift-july-2024/Day3/persistent-volume/wordpress-with-configmap-and-secrets ▶ main
./deploy.yml

Creating configmap and secrets ...
configmap/wordpress-cm created
secret/mariadb-credentials created

Deploying mariadb ...
persistentvolume/mariadb-pv-jegan created
persistentvolumeclaim/mariadb-pvc-jegan created
deployment.apps/mariadb created
service/mariadb created

Deploying wordpress ...
persistentvolume/wordpress-pv-jegan created
persistentvolumeclaim/wordpress-pvc-jegan created
deployment.apps/wordpress created
service/wordpress created
route.route.openshift.io/wordpress created
NAME                                     CAPACITY   ACCESS MODES  RECLAIM POLICY  STATUS   CLAIM
  STORAGECLASS    REASON    AGE
persistentvolume/mariadb-pv-jegan        100Mi     RWO          Delete        Bound    jegan/mariadb-pvc-jega
n                                         3s
persistentvolume/wordpress-pv-jegan      100Mi     RWO          Delete        Bound    jegan/wordpress-pvc-je
gan                                         2s

service/wordpress created
route.route.openshift.io/wordpress created
NAME                                     CAPACITY   ACCESS MODES  RECLAIM POLICY  STATUS   CLAIM
  STORAGECLASS    REASON    AGE
persistentvolume/mariadb-pv-jegan        100Mi     RWO          Delete        Bound    jegan/mariadb-pvc-jega
n                                         3s
persistentvolume/wordpress-pv-jegan      100Mi     RWO          Delete        Bound    jegan/wordpress-pvc-je
gan                                         2s

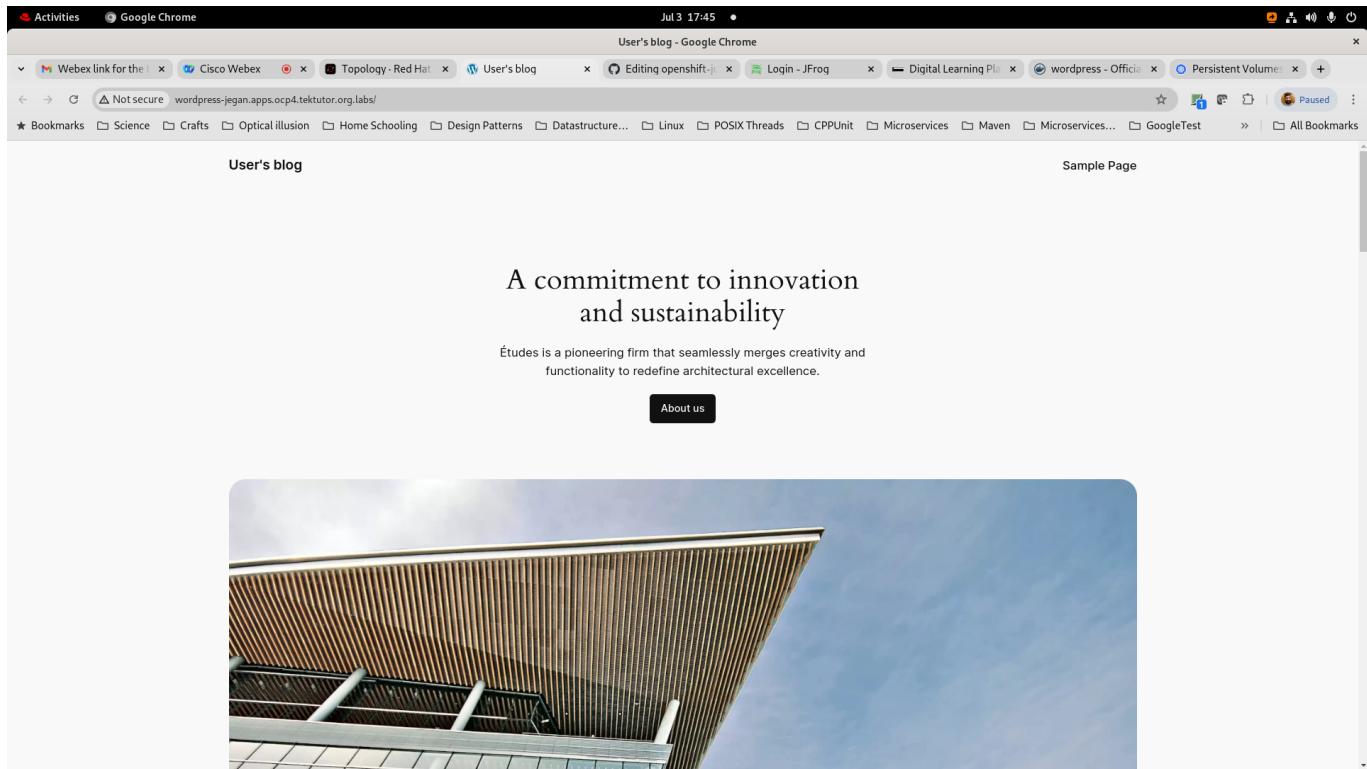
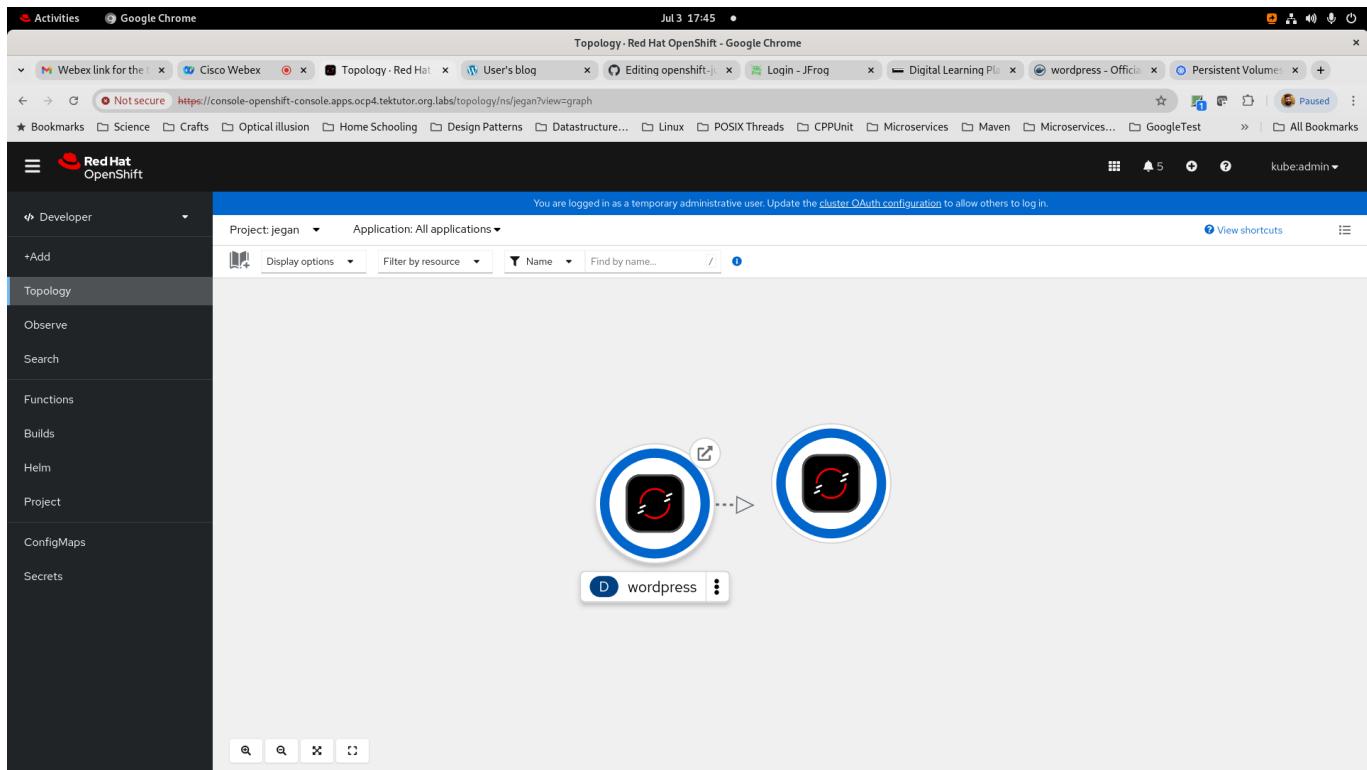
NAME           STATUS  VOLUME                                     CAPACITY   ACCESS MODES  STORAGECLASS
  AGE
persistentvolumeclaim/mariadb-pvc-jegan  Bound   mariadb-pv-jegan                         100Mi     RWO
                                         3s
persistentvolumeclaim/wordpress-pvc-jegan  Bound   wordpress-pv-jegan                        100Mi     RWO
                                         1s

NAME          READY  STATUS           RESTARTS  AGE
pod/mariadb-5b7b8d6bfb-vpfhr   1/1   Running          0         2s
pod/wordpress-5756698855-ljpc6  0/1   ContainerCreating  0         1s

NAME          TYPE    CLUSTER-IP      EXTERNAL-IP  PORT(S)  AGE
service/mariadb ClusterIP  172.30.90.155  <none>       3306/TCP  2s
service/wordpress ClusterIP  172.30.242.244 <none>       8080/TCP  0s

NAME          MININATION  WILDCARD
route.route.openshift.io/wordpress  None        wordpress-jegan.apps.ocp4.tektutor.org.labs
                                         8080

jegan@tektutor.org ~/openshift-july-2024/Day3/persistent-volume/wordpress-with-configmap-and-secrets ▶ main
```



Once you are done with this exercise, consider deleting all the resources created part of this exercise to free up resources

```
cd ~/openshift-july-2024
git pull
cd Day3/persistent-volume
./delete-all.sh
```

## Expeced output

```
jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume/wordpress-with-configmap-and-secrets $ main $ ls -l
total 52
-rwxr-xr-x 1 jegan jegan 448 Jul 3 17:43 delete-all.yml
-rwxr-xr-x 1 jegan jegan 488 Jul 3 17:43 deploy.yml
-rw-r--r-- 1 jegan jegan 904 Jul 3 17:42 mariadb-deploy.yml
-rw-r--r-- 1 jegan jegan 323 Jul 3 17:40 mariadb-pvc.yml
-rw-r--r-- 1 jegan jegan 525 Jul 3 17:40 mariadb-pv.yml
-rw-r--r-- 1 jegan jegan 251 Jul 3 17:40 mariadb-svc.yml
-rw-r--r-- 1 jegan jegan 132 Jul 3 17:40 wordpress-configmap.yml
-rw-r--r-- 1 jegan jegan 1395 Jul 3 17:40 wordpress-deploy.yml
-rw-r--r-- 1 jegan jegan 327 Jul 3 17:40 wordpress-pvc.yml
-rw-r--r-- 1 jegan jegan 533 Jul 3 17:40 wordpress-pv.yml
-rw-r--r-- 1 jegan jegan 231 Jul 3 17:40 wordpress-route.yml
-rw-r--r-- 1 jegan jegan 118 Jul 3 17:40 wordpress-secret.yml
-rw-r--r-- 1 jegan jegan 231 Jul 3 17:40 wordpress-svc.yml
jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume/wordpress-with-configmap-and-secrets $ main $ ./delete-all.yml

Undeploying wordpress ...
route.route.openshift.io "wordpress" deleted
service "wordpress" deleted
deployment.apps "wordpress" deleted
persistentvolumeclaim "wordpress-pvc-jegan" deleted
persistentvolume "wordpress-pv-jegan" deleted

Undeploying mariadb ...
service "mariadb" deleted
deployment.apps "mariadb" deleted
persistentvolumeclaim "mariadb-pvc-jegan" deleted
persistentvolume "mariadb-pv-jegan" deleted
configmap "wordpress-cm" deleted
secret "mariadb-credentials" deleted
No resources found
jegan@tektutor.org ~ /openshift-july-2024/Day3/persistent-volume/wordpress-with-configmap-and-secrets $ main $
```

The screenshot shows the Red Hat OpenShift web interface. The top navigation bar includes links for 'Activities', 'Terminal', and the current session 'jegan@tektutor.org'. The main content area is titled 'Topology - Red Hat OpenShift - Google Chrome' and displays the URL <https://console-openshift-console.apps.ocp4.tektutor.org.labs/topology/ns/jegan?view=graph>. The interface has a dark theme. On the left, a sidebar under the 'Developer' heading lists 'Topology' (which is selected), 'Observe', 'Search', 'Functions', 'Builds', 'Helm', 'Project', 'ConfigMaps', and 'Secrets'. The main panel shows a message 'No resources found' with a small molecular-like icon above it. Below this message, there is a note: 'Start building your application or visit the [Add page](#) for more details.' At the bottom of the main panel, there are several small buttons for search, filter, and other actions.