

Day 4

Info - Helm Overview

- Just we have package manage in Linux distributions
 - apt-get in ubuntu
 - yum in Red Hat based Linux distributions
- helm is a package manager for Kubernetes and Openshift
- using helm we can install, uninstall, upgrade applications into Kubernetes and Openshift
- helm works just like oc or kubectl outside the cluster as a client tool
- using helm we can package our yaml manifest scripts in a specific format called Helm Chart
- Helm chart is a compressed file which can distribute to your customers
- Using the Helm chart, your customer can install your application into Kubernetes and Openshift
- There is a community maintained Helm chart portal is there, you can download charts other people developed and published

Lab - Creating a custom helm chart to package the wordpress & mariadb multipod application

```
cd ~/openshift-june-2024
git pull
cd Day4/helm
helm create wordpress
tree wordpress
cd wordpress/templates
rm -rf *
cd ..
echo "" > values.yaml
cp ../scripts/*.yaml templates
cp ../values.yaml .
cd ..
helm package wordpress
ls -l
helm install wordpress wordpress-0.1.0.tgz
helm list
```

Expected output

```

Activities Terminal Jun 27 12:43
jegan@tektutor.org ~ /openshift-june-2024/Day4/helm ↵ main > pwd
/home/jegan/openshift-june-2024/Day4/helm
jegan@tektutor.org ~ /openshift-june-2024/Day4/helm ↵ main > tree
.
└── scripts
    ├── mariadb-deploy.yml
    ├── mariadb-pvc.yml
    ├── mariadb-pv.yml
    ├── mariadb-svc.yml
    ├── wordpress-cm.yml
    ├── wordpress-deploy.yml
    ├── wordpress-pvc.yml
    ├── wordpress-pv.yml
    ├── wordpress-route.yml
    └── wordpress-secret.yml
        └── wordpress-svc.yml

1 directory, 11 files
jegan@tektutor.org ~ /openshift-june-2024/Day4/helm ↵ main > helm create wordpress
WARNING: Kubernetes configuration file is group-readable. This is insecure. Location: /home/jegan/.kube/config
Creating wordpress
jegan@tektutor.org ~ /openshift-june-2024/Day4/helm ↵ main > tree wordpress
wordpress
├── charts
│   └── Chart.yaml
├── templates
│   ├── deployment.yaml
│   ├── _helpers.tpl
│   ├── hpa.yaml
│   ├── ingress.yaml
│   ├── NOTES.txt
│   ├── serviceaccount.yaml
│   ├── service.yaml
│   └── tests
        └── test-connection.yaml
values.yaml

3 directories, 10 files
jegan@tektutor.org ~ /openshift-june-2024/Day4/helm ↵ main >

```

```

Activities Terminal Jun 27 12:48
jegan@tektutor.org ~ /openshift-june-2024/Day4/helm/wordpress ↵ main > ls
charts Chart.yaml templates values.yaml
jegan@tektutor.org ~ /openshift-june-2024/Day4/helm/wordpress ↵ main > cat Chart.yaml
apiVersion: v2
name: wordpress
description: A Helm chart for Kubernetes
# A chart can be either an 'application' or a 'library' chart.
# Application charts are a collection of templates that can be packaged into versioned archives
# to be deployed.
#
# Library charts provide useful utilities or functions for the chart developer. They're included as
# a dependency of application charts to inject those utilities and functions into the rendering
# pipeline. Library charts do not define any templates and therefore cannot be deployed.
type: application
# This is the chart version. This version number should be incremented each time you make changes
# to the chart and its templates, including the app version.
# Versions are expected to follow Semantic Versioning (https://semver.org/)
version: 0.1.0
# This is the version number of the application being deployed. This version number should be
# incremented each time you make changes to the application. Versions are not expected to
# follow Semantic Versioning. They should reflect the version the application is using.
# It is recommended to use it with quotes.
appVersion: "1.16.0"
jegan@tektutor.org ~ /openshift-june-2024/Day4/helm/wordpress ↵ main > ls
charts Chart.yaml templates values.yaml
jegan@tektutor.org ~ /openshift-june-2024/Day4/helm/wordpress ↵ main > vim values.yaml
jegan@tektutor.org ~ /openshift-june-2024/Day4/helm/wordpress ↵ main > ls
charts Chart.yaml templates values.yaml
jegan@tektutor.org ~ /openshift-june-2024/Day4/helm/wordpress ↵ main > cd templates
jegan@tektutor.org ~ /openshift-june-2024/Day4/helm/wordpress/templates ↵ main > ls
deployment.yaml _helpers.tpl hpa.yaml ingress.yaml NOTES.txt serviceaccount.yaml service.yaml tests
jegan@tektutor.org ~ /openshift-june-2024/Day4/helm/wordpress/templates ↵ main > rm -rf *
zsh: sure you want to delete all 8 files in /home/jegan/openshift-june-2024/Day4/helm/wordpress/templates [yn]? y
jegan@tektutor.org ~ /openshift-june-2024/Day4/helm/wordpress/templates ↵ main > cd ..
jegan@tektutor.org ~ /openshift-june-2024/Day4/helm/wordpress/templates ↵ main > tree
.
└── charts
    └── Chart.yaml
    └── templates
        └── values.yaml

2 directories, 2 files
jegan@tektutor.org ~ /openshift-june-2024/Day4/helm/wordpress ↵ main > cat values.yaml
jegan@tektutor.org ~ /openshift-june-2024/Day4/helm/wordpress ↵ main >

```

```
Activities Terminal Jun 27 13:00 jegan@tektutor.org
jegan@tektutor.org ~/openshift-june-2024/Day4/helm/scripts ↵ { main } ls
mariadb-deploy.yml mariadb-svc.yml wordpress-pvc.yml wordpress-secret.yml
mariadb-pvc.yml wordpress-cm.yml wordpress-pv.yml wordpress-svc.yml
mariadb-pv.yml wordpress-deploy.yml wordpress-route.yml
jegan@tektutor.org ~/openshift-june-2024/Day4/helm ↵ { main } cd ..
jegan@tektutor.org ~/openshift-june-2024/Day4/helm ↵ { main } ls
scripts values.yaml wordpress
jegan@tektutor.org ~/openshift-june-2024/Day4/helm ↵ { main } cat values.yaml
nfs:
  server_ip: 192.168.1.108
  wordpress_path: /var/nfs/jegan/wordpress
  mariadb_path: /var/nfs/jegan/mariadb

pv:
  mariadb_disk_size: 100Mi
  wordpress_disk_size: 100Mi
  label: jegan
jegan@tektutor.org ~/openshift-june-2024/Day4/helm ↵ { main } ls wordpress/templates
mariadb-deploy.yml mariadb-svc.yml wordpress-pvc.yml wordpress-secret.yml
mariadb-pvc.yml wordpress-cm.yml wordpress-pv.yml wordpress-svc.yml
mariadb-pv.yml wordpress-deploy.yml wordpress-route.yml
jegan@tektutor.org ~/openshift-june-2024/Day4/helm ↵ { main }
```

```
Activities Terminal Jun 27 13:03 jegan@tektutor.org
jegan@tektutor.org ~/openshift-june-2024/Day4/helm ↵ { main } tree wordpress
wordpress
├── charts
├── Chart.yaml
└── templates
    ├── mariadb-deploy.yml
    ├── mariadb-pvc.yml
    ├── mariadb-pv.yml
    ├── mariadb-svc.yml
    ├── wordpress-cm.yml
    ├── wordpress-deploy.yml
    ├── wordpress-pvc.yml
    ├── wordpress-pv.yml
    ├── wordpress-route.yml
    └── wordpress-secret.yml
        └── wordpress-svc.yml
values.yaml

2 directories, 13 files
jegan@tektutor.org ~/openshift-june-2024/Day4/helm ↵ { main } helm package wordpress
WARNING: Kubernetes configuration file is group-readable. This is insecure. Location: /home/jegan/.kube/config
Successfully packaged chart and saved it to: /home/jegan/openshift-june-2024/Day4/helm/wordpress-0.1.0.tgz
jegan@tektutor.org ~/openshift-june-2024/Day4/helm ↵ { main } ls -l
total 12
drwxr-xr-x 2 jegan jegan 4096 Jun 27 12:42 scripts
-rw-r--r-- 1 jegan jegan 190 Jun 27 12:59 values.yaml
drwxr-xr-x 4 jegan jegan 93 Jun 27 12:59 wordpress
-rw-r--r-- 1 jegan jegan 1772 Jun 27 13:02 wordpress-0.1.0.tgz
jegan@tektutor.org ~/openshift-june-2024/Day4/helm ↵ { main }
```

```

Activities Terminal Jun 27 13:06 jegan@tektutor.org
jegan@tektutor.org
jegan@tektutor.org

mariadb-deploy.yml
mariadb-pvc.yml
mariadb-pv.yml
mariadb-svc.yml
wordpress-cm.yml
wordpress-deploy.yml
wordpress-pvc.yml
wordpress-pv.yml
wordpress-route.yml
wordpress-secret.yml
wordpress-svc.yml
values.yaml

2 directories, 13 files
jegan@tektutor.org ~~/openshift-june-2024/Day4/helm ⌘ main ➔ helm package wordpress
WARNING: Kubernetes configuration file is group-readable. This is insecure. Location: /home/jegan/.kube/config
Successfully packaged chart and saved it to: /home/jegan/openshift-june-2024/Day4/helm/wordpress-0.1.0.tgz
jegan@tektutor.org ~~/openshift-june-2024/Day4/helm ⌘ main ➔ ls
scripts values.yaml wordpress wordpress-0.1.0.tgz
jegan@tektutor.org ~~/openshift-june-2024/Day4/helm ⌘ main ➔ helm install wordpress wordpress-0.1.0.tgz
WARNING: Kubernetes configuration file is group-readable. This is insecure. Location: /home/jegan/.kube/config
W0627 13:05:49.955219 1941371 warnings.go:70] unknown field "spec.persistentVolumeReclaimPolicy"
W0627 13:05:49.955232 1941371 warnings.go:70] unknown field "spec.persistentVolumeReclaimPolicy"
NAME: wordpress
LAST DEPLOYED: Thu Jun 27 13:05:49 2024
NAMESPACE: jegan
STATUS: deployed
REVISION: 1
TEST SUITE: None
jegan@tektutor.org ~~/openshift-june-2024/Day4/helm ⌘ main ➔ helm list
WARNING: Kubernetes configuration file is group-readable. This is insecure. Location: /home/jegan/.kube/config
NAME NAMESPACE REVISION UPDATED STATUS CHART APP VERSION
my-mysql jegan 1 2024-06-27 12:16:35.031855827 +0530 IST deployed mysql-11.1.4 8.4.0
wordpress jegan 1 2024-06-27 13:05:49.441528292 +0530 IST deployed wordpress-0.1.0 1.16.0
jegan@tektutor.org ~~/openshift-june-2024/Day4/helm ⌘ main ➔

```

```

Activities Terminal Jun 27 13:07 jegan@tektutor.org
jegan@tektutor.org
jegan@tektutor.org

TEST SUITE: None
jegan@tektutor.org ~~/openshift-june-2024/Day4/helm ⌘ main ➔ helm list
WARNING: Kubernetes configuration file is group-readable. This is insecure. Location: /home/jegan/.kube/config
NAME NAMESPACE REVISION UPDATED STATUS CHART APP VERSION
my-mysql jegan 1 2024-06-27 12:16:35.031855827 +0530 IST deployed mysql-11.1.4 8.4.0
wordpress jegan 1 2024-06-27 13:05:49.441528292 +0530 IST deployed wordpress-0.1.0 1.16.0
jegan@tektutor.org ~~/openshift-june-2024/Day4/helm ⌘ main ➔ oc get deploy
NAME READY UP-TO-DATE AVAILABLE AGE
mariadb 1/1 1 1 58s
wordpress 0/1 1 0 58s
jegan@tektutor.org ~~/openshift-june-2024/Day4/helm ⌘ main ➔ oc get po
NAME READY STATUS RESTARTS AGE
mariadb-54bbf75ddd-jmzxn 1/1 Running 0 61s
my-mysql-0 1/1 Running 0 29m
my-mysql-1 1/1 Running 0 38m
wordpress-5988f6f6d6-f2cnl 0/1 Error 2 (17s ago) 61s
jegan@tektutor.org ~~/openshift-june-2024/Day4/helm ⌘ main ➔ oc get pvc,pv
NAME CAPACITY ACCESS MODES RECLAIM POLICY STATUS CLAIM STORAGECLASS REASON AGE
mariadb-pv-jegan 100Mi RWX Retain Bound jegan/mariadb-pvc-jegan
mongodb-pv-jegan 100Mi RWX Retain Released jegan/mongodb-pvc-jegan
mysql-pv 8Gi RWO Retain Bound jegan/data-my-mysql-0
mysql1-pv 8Gi RWO Retain Bound jegan/data-my-mysql-1
redis-pv-jegan 100Mi RWX Retain Released jegan/redis-pvc-jegan
wordpress-pv 100Mi RWO Retain Available slow
wordpress-pv-jegan 100Mi RWX Retain Bound jegan/wordpress-pvc-jegan
jegan@tektutor.org ~~/openshift-june-2024/Day4/helm ⌘ main ➔ oc get svc
NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE
mariadb ClusterIP 172.30.226.39 <none> 3306/TCP 74s
my-mysql ClusterIP 172.30.52.145 <none> 3306/TCP 50m
my-mysql-headless ClusterIP None <none> 3306/TCP 50m
wordpress ClusterIP 172.30.255.4 <none> 8080/TCP 74s
jegan@tektutor.org ~~/openshift-june-2024/Day4/helm ⌘ main ➔ oc get route
NAME HOST/PORT PATH SERVICES PORT TERMINATION WILDCARD
wordpress wordpress.jegan.apps.ocp4.tektutor.org.labs wordpress 8080 None
jegan@tektutor.org ~~/openshift-june-2024/Day4/helm ⌘ main ➔

```

Activities Google Chrome Jun 27 13:07 Topology - Red Hat OpenShift - Google Chrome Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/topology/ns/jegan?view=graph&selectId=3343eba8-93aa-402a-98d6-1fb19ae9ec52 kube:admin

Developer Project: jegan Application: All applications +Add Display options Filter by resource Name Find by name... View shortcuts

Topology Observing Search Builds Helm Project ConfigMaps Secrets

HR wordpress Actions Details Resources Release notes Deployments mariadb wordpress ConfigMaps CM wordpress-cm PersistentVolumes PV mariadb-pv-jegan PV wordpress-pv-jegan PersistentVolumeClaims PVC mariadb-pvc-jegan PVC wordpress-pvc-jegan

Activities Google Chrome Jun 27 13:07 Topology - Red Hat OpenShift - Google Chrome Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/topology/ns/jegan?view=graph&selectId=3343eba8-93aa-402a-98d6-1fb19ae9ec52 kube:admin

Developer Project: jegan Application: All applications +Add Display options Filter by resource Name Find by name... View shortcuts

Topology Observing Search Builds Helm Project ConfigMaps Secrets

HR wordpress Actions Details Resources Release notes Deployments mariadb wordpress ConfigMaps CM wordpress-cm PersistentVolumes PV mariadb-pv-jegan PV wordpress-pv-jegan PersistentVolumeClaims PVC mariadb-pvc-jegan PVC wordpress-pvc-jegan

Jun 27 13:08 mariadb-54bbf75ddd-jmzxn - Pod - Logs - Red Hat OpenShift - Google Chrome

mariadb-54bbf75ddd-jmzxn - Pod - Logs - Red Hat OpenShift - Google Chrome

Jun 27 13:08 mariadb-54bbf75ddd-jmzxn - Pod - Logs - Red Hat OpenShift - Google Chrome

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

Project: jegan ▾

+Add

Topology

Observe

Search

Builds

Helm

Project

ConfigMaps

Secrets

mariadb-54bbf75ddd-jmzxn Running

Details Metrics YAML Environment Logs Events Terminal

Log streaming... mariadb Current log Search

Show full log Wrap lines Raw Download Expand

87 lines

```

66 2024-06-27 7:36:37 0 [Note] InnoDB: Number of transaction pools: 1
67 2024-06-27 7:36:37 0 [Note] InnoDB: Using crc32 + pclmulqdq instructions
68 2024-06-27 7:36:37 0 [Note] mysqld: O_TMPFILE is not supported on /opt/bitnami/mariadb/tmp (disabling future attempts)
69 2024-06-27 7:36:37 0 [Note] InnoDB: Using Linux native AIO
70 2024-06-27 7:36:37 0 [Note] InnoDB: Initializing buffer pool, total size = 128.000MiB, chunk size = 2.000MiB
71 2024-06-27 7:36:37 0 [Note] InnoDB: Completed initialization of buffer pool
72 2024-06-27 7:36:37 0 [Note] InnoDB: Buffered log writes (block size=512 bytes)
73 2024-06-27 7:36:37 0 [Note] InnoDB: End of log at LSN=47795
74 2024-06-27 7:36:37 0 [Note] InnoDB: Opened 3 undo tablespaces
75 2024-06-27 7:36:37 0 [Note] InnoDB: 128 rollback segments in 3 undo tablespaces are active.
76 2024-06-27 7:36:37 0 [Note] mysqld: Setting file './ibtmp1' size to 12.000MiB. Physically writing the file full; Please wait ...
77 2024-06-27 7:36:37 0 [Note] InnoDB: File './ibtmp1' size is now 12.000MiB.
78 2024-06-27 7:36:37 0 [Note] InnoDB: log sequence number 47795; transaction id 14
79 2024-06-27 7:36:37 0 [Note] Plugin 'FEEDBACK' is disabled.
80 2024-06-27 7:36:37 0 [Note] Plugin 'wsrep-provider' is disabled.
81 2024-06-27 7:36:37 0 [Note] InnoDB: Loading buffer pool(s) from /bitnami/mariadb/data/ib_buffer_pool
82 2024-06-27 7:36:37 0 [Note] InnoDB: Buffer pool(s) load completed at 240627 7:36:37
83 2024-06-27 7:36:37 0 [Note] Server socket created on IP: '0.0.0.0'.
84 2024-06-27 7:36:37 0 [Warning] proxies_priv' entry '@% root@mariadb-54bbf75ddd-jmzxn' ignored in --skip-name-resolve mode.
85 2024-06-27 7:36:37 0 [Note] mysqld: Event Scheduler: Loaded 0 events
86 2024-06-27 7:36:37 0 [Note] /opt/bitnami/mariadb/sbin/mysqld: ready for connections.
87 Version: '11.3.2-MariaDB' socket: '/opt/bitnami/mariadb/tmp/mysql.sock' port: 3306 Source distribution

```

Jun 27 13:16 Topology - Red Hat OpenShift - Google Chrome

Topology - Red Hat OpenShift - Google Chrome

Jun 27 13:16 Topology - Red Hat OpenShift - Google Chrome

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

Project: jegan ▾ Application: All applications ▾

+Add

Topology

Observe

Search

Builds

Helm

Project

ConfigMaps

Secrets

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

wordpress

Actions

Details Resources Release notes

Deployments

- mariadb
- wordpress

ConfigMaps

- CM wordpress-cm

PersistentVolumes

- PV mariadb-pv-jegan
- PV wordpress-pv-jegan

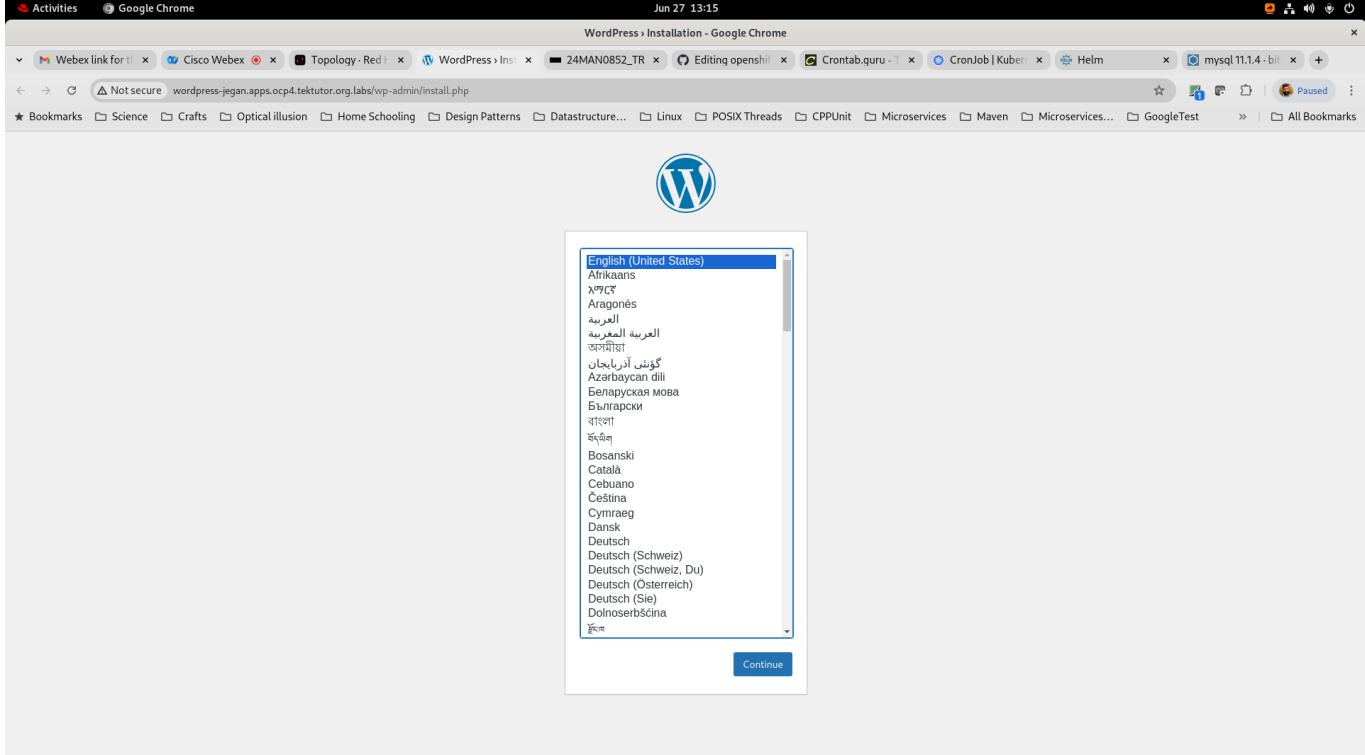
PersistentVolumeClaims

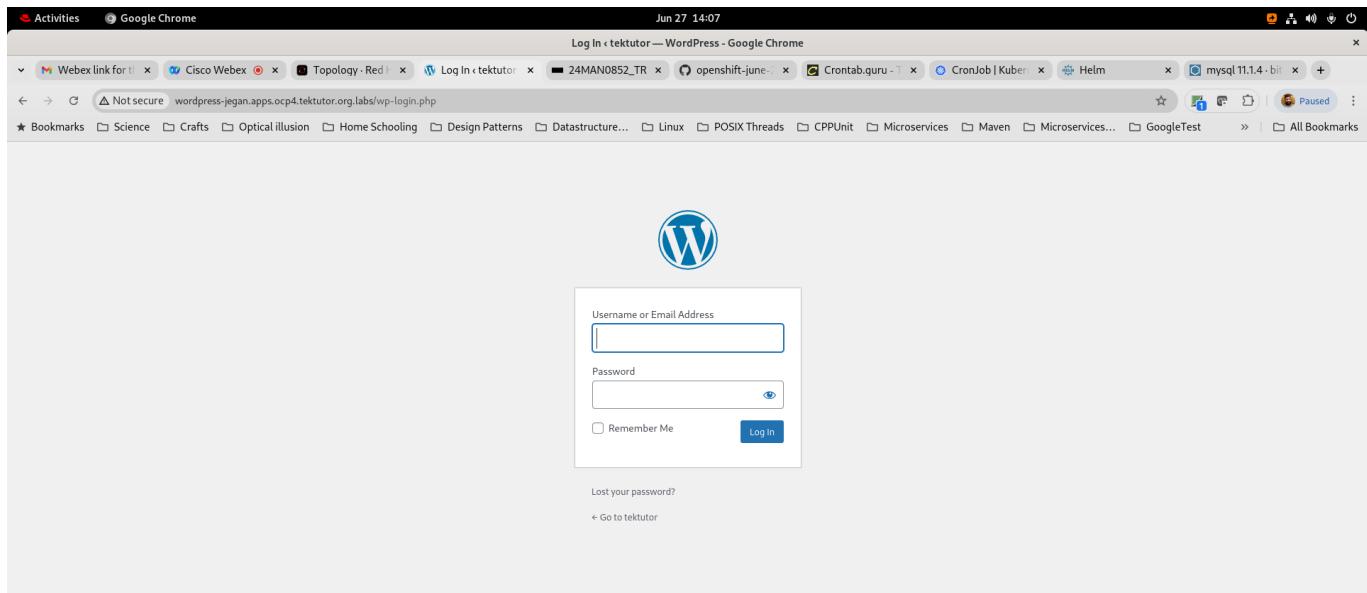
- PVC mariadb-pvc-jegan
- PVC wordpress-pvc-jegan

```

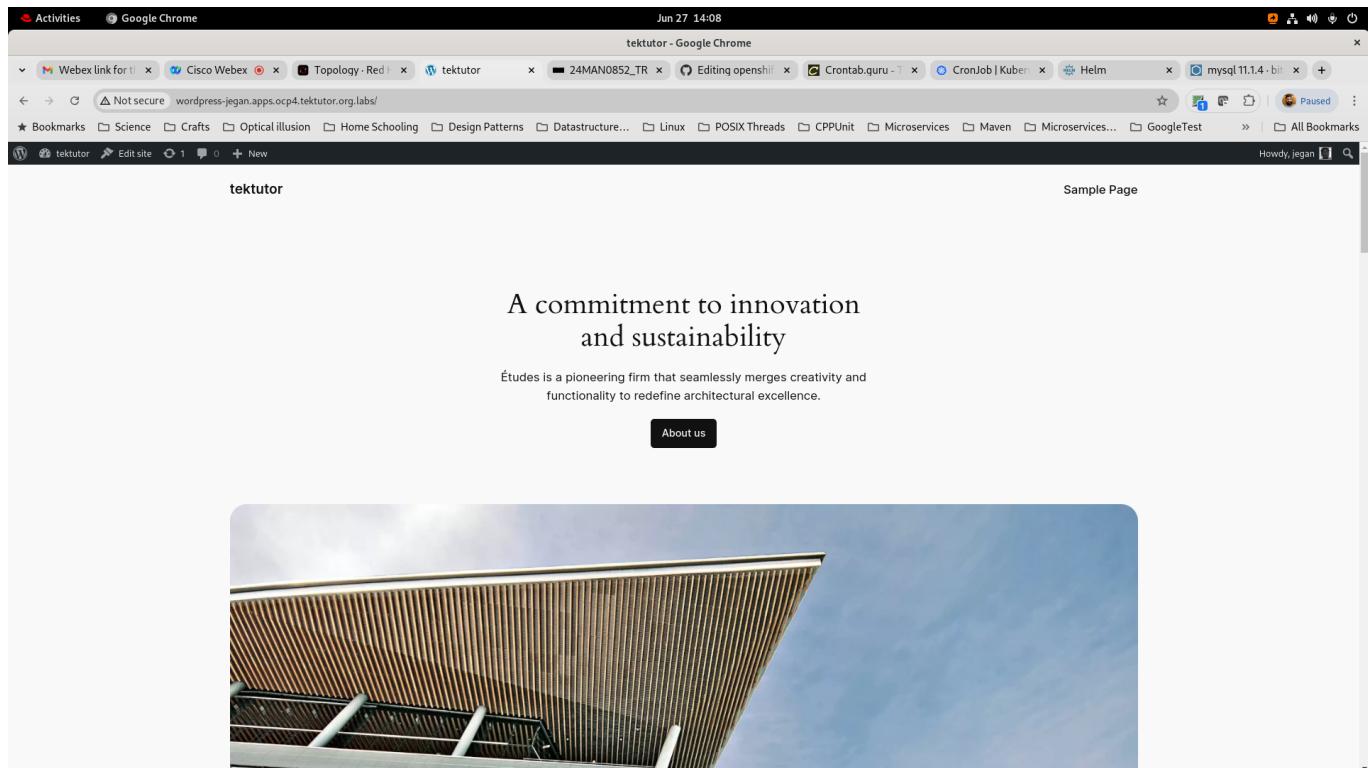
Activities Terminal Jun 27 13:16
jegan@tektutor.org jegan@tektutor.org
jegan@tektutor.org
[root@tektutor.org wordpress]# ls
[root@tektutor.org wordpress]# ls -l
total 154064
-rw-rw--- 1 1000720000 root 417792 Jun 27 13:14 aria_log.00000001
-rw-rw--- 1 1000720000 root 52 Jun 27 13:14 aria_log_control
-rw-rw--- 1 1000720000 root 9 Jun 27 13:14 ddl_recovery.log
-rw-rw--- 1 1000720000 root 790 Jun 27 13:14 ib_buffer_pool
-rw-rw--- 1 1000720000 root 12582912 Jun 27 13:14 ibdata1
-rw-rw--- 1 1000720000 root 100663296 Jun 27 13:14 ib_logfile0
-rw-rw--- 1 1000720000 root 12582912 Jun 27 13:14 ibtmp1
-rw-r--- 1 1000720000 root 14 Jun 27 13:14 mariadb_upgrade_info
-rw-rw--- 1 1000720000 root 0 Jun 27 13:14 multi-master.info
drwx----- 2 1000720000 root 4096 Jun 27 13:14 mysql
drwx----- 2 1000720000 root 20 Jun 27 13:14 performance_schema
drwx----- 2 1000720000 root 8192 Jun 27 13:14 sys
-rw-rw--- 1 1000720000 root 24576 Jun 27 13:14 tc.log
drwx----- 2 1000720000 root 20 Jun 27 13:14 test
-rw-rw--- 1 1000720000 root 10485760 Jun 27 13:14 undo001
-rw-rw--- 1 1000720000 root 10485760 Jun 27 13:14 undo002
-rw-rw--- 1 1000720000 root 10485760 Jun 27 13:14 undo003
drwx----- 2 1000720000 root 20 Jun 27 13:14 wordpress
[root@tektutor.org wordpress]# cd ..
[root@tektutor.org wordpress]# cd ..
[root@tektutor.org jegan]# ls
data-exchange mongodbs mysql postgresql tektutor wordpress
couchdb mariadb mongodbs1 mysql redis test
[root@tektutor.org mariadb]# cd mariadb/
[root@tektutor.org mariadb]# ls -l
total 8
-r--r---- 1 1000720000 root 4263 Jun 27 13:12 wp-config.php
drwxrwxr-x 7 1000720000 root 99 Jun 27 13:13 wp-content
[root@tektutor.org mariadb]# █

```





A screenshot of the WordPress dashboard. The top navigation bar shows the current location as 'Dashboard < tekutor — WordPress'. The dashboard features a 'Welcome to WordPress!' banner with a link to 'Learn more about the 6.5.5 version.' On the left, there's a sidebar with links for Home, Posts, Media, Pages, Comments, Appearance, Plugins, Users, Tools, and Settings. The main area has three sections: 'Author rich content with blocks and patterns', 'Customize your entire site with block themes', and 'Switch up your site's look & feel with Styles'. It also includes a 'Site Health Status' section showing 'No information yet...', an 'At a Glance' summary with 1 Post and 1 Comment, and a 'Quick Draft' editor.



Info - Installing openssl (is already installed in our lab - just for your future reference)

Installing openssl from source code (Already installed on Lab machines, so kindly skip this installation)

```
sudo yum -y remove openssl openssl-devel
sudo yum groupinstall 'Development Tools'
sudo yum install perl-IPC-Cmd perl-Test-Simple -y
cd /usr/src
wget https://www.openssl.org/source/openssl-3.3.1.tar.gz
tar -zxf openssl-3.3.1.tar.gz
rm openssl-3.3.1.tar.gz
cd /usr/src/openssl-3.3.1
./config
make
make test
make install

sudo ln -s /usr/local/lib64/libssl.so.3 /usr/lib64/libssl.so.3
sudo ln -s /usr/local/lib64/libcrypto.so.3 /usr/lib64/libcrypto.so.3

sudo ldconfig
sudo tee /etc/profile.d/openssl.sh<<EOF
export PATH=/usr/local/bin:$PATH
export
LD_LIBRARY_PATH=/usr/local/openssl/lib:/usr/local/openssl/lib64:$LD_LIBRARY_PATH
EOF

which openssl
openssl version
```

Demo - Install Operator SDK

```
su -
wget https://go.dev/dl/go1.18.2.linux-amd64.tar.gz
tar xvfz go1.18.2.linux-amd64.tar.gz
pwd
export PATH=/root/go/bin:$PATH
```

To apply the .bashrc changes

```
source ~/.bashrc
```

Check the golang version

```
go version
```

Install Openshift operator SDK

```
wget https://mirror.openshift.com/pub/openshift-v4/x86_64/clients/operator-sdk/4.10.12/operator-sdk-linux-x86_64.tar.gz
tar xvf operator-sdk-linux-x86_64.tar.gz
mv ./operator-sdk /usr/local/bin
operator-sdk version
```

Lab - Creating an edge route for nginx deployment

Let's deploy nginx inside a project

```
oc new-project jegan
oc create deployment nginx --image=bitnami/nginx:latest --replicas=3
oc expose deploy/nginx --port=8080
```

Find your base domain of your openshift cluster

```
oc get ingresses.config/cluster -o jsonpath={.spec.domain}
```

Expected output

```
[root@tektutor.org auth]# oc get ingresses.config/cluster -o jsonpath={.spec.domain}  
apps.ocp4.tektutor.org.labs
```

Let's deploy a microservice and create an edge route as shown below.

First, let's generate a private key

```
openssl genrsa -out key.key
```

We need to create a public key using the private key with specific with your organization domain

```
openssl req -new -key key.key -out csr.csr -subj="/CN=nginx-jegan.apps.ocp4.tektutor.org.labs"
```

Sign the public key using the private key and generate certificate(.crt)

```
openssl x509 -req -in csr.csr -signkey key.key -out crt.crt  
oc create route edge --service nginx --hostname nginx-jegan.apps.ocp4.tektutor.org.labs --key key.key --cert crt.crt
```

Expected output

```
[jegan@tektutor.org edge-route]$ oc get svc  
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE  
nginx     ClusterIP   172.30.208.33   8080/TCP       87m  
[jegan@tektutor.org edge-route]$ oc expose deploy/nginx --port=8080  
service/nginx exposed
```

```
[jegan@tektutor.org edge-route]$ oc get svc  
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE  
nginx     ClusterIP   172.30.16.165    8080/TCP       4s
```

```
[jegan@tektutor.org edge-route]$ oc get ingresses.config/cluster -o jsonpath={.spec.domain}  
apps.ocp4.tektutor.org.labs
```

```
[jegan@tektutor.org edge-route]$ oc project  
Using project "jegan-devops" on server  
"https://api.ocp4.tektutor.org.labs:6443".
```

```
[jegan@tektutor.org edge-route]$ openssl req -new -key key.key -out csr.csr  
-subj="/CN=nginx-jegan-devops.apps.ocp4.tektutor.org.labs"
```

```
[jegan@tektutor.org edge-route]$ openssl x509 -req -in csr.csr -signkey  
key.key -out crt.crt
```

```
[jegan@tektutor.org edge-route]$ oc create route edge --service nginx --  
hostname nginx-jegan-devops.apps.ocp4.tektutor.org.labs --key key.key --  
cert crt.crt  
route.route.openshift.io/nginx created
```

```
[jegan@tektutor.org edge-route]$ oc get route  
NAME      HOST/PORT          PATH  SERVICES  
PORT      TERMINATION  WILDCARD  
nginx    nginx-jegan-devops.apps.ocp4.tektutor.org.labs  nginx  edge  
None
```

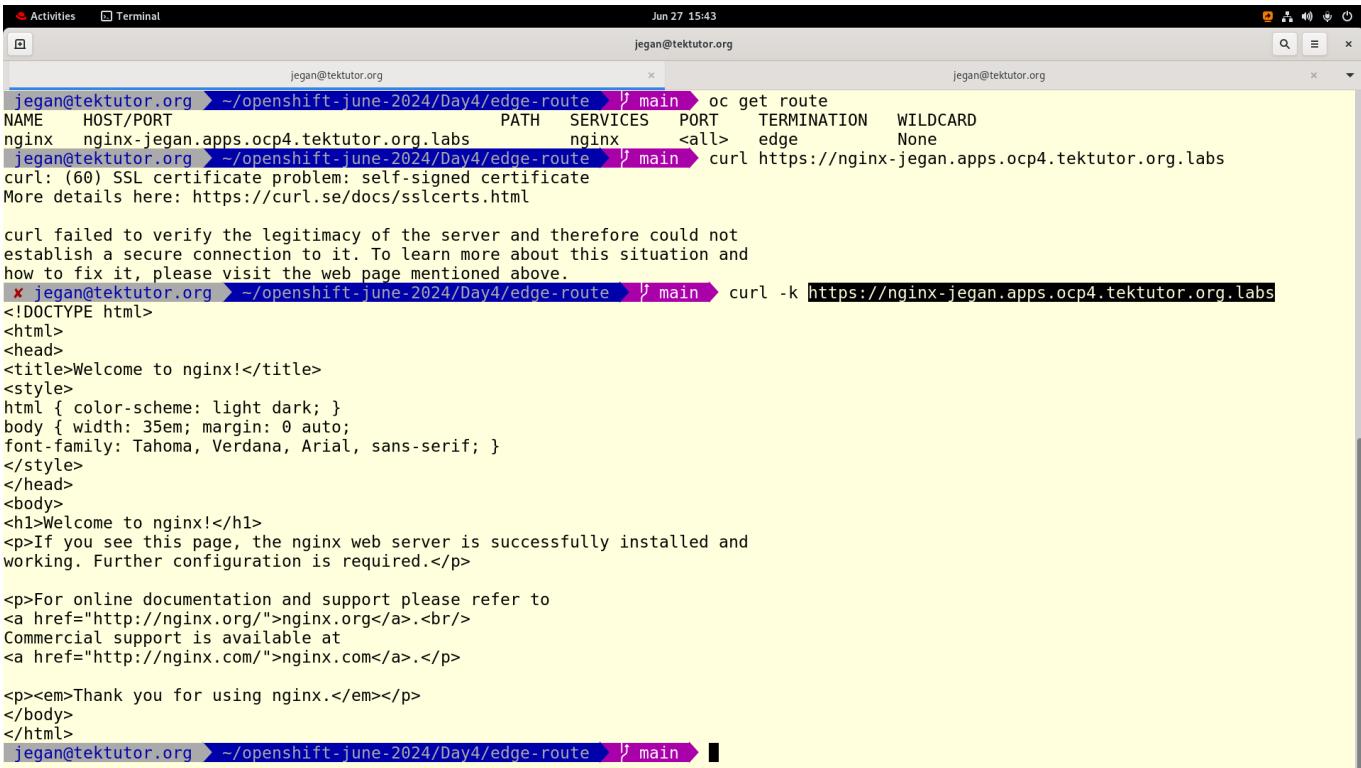
```

Activities Terminal Jun 27 15:42 jegan@tektutor.org
jegan@tektutor.org ~ -/openshift-june-2024/Day4/helm > main > oc project
Using project "jegan" on server "https://api.ocp4.tektutor.org.labs:6443".
jegan@tektutor.org ~ -/openshift-june-2024/Day4/helm > main > oc create deploy nginx --image=bitnami/nginx:latest --replicas=3
deployment.apps/nginx created
jegan@tektutor.org ~ -/openshift-june-2024/Day4/helm > main > oc get deploy
NAME READY UP-TO-DATE AVAILABLE AGE
nginx 0/3 3 0 3s
jegan@tektutor.org ~ -/openshift-june-2024/Day4/helm > main > oc expose svc/nginx --port=8080
Error from server (NotFound): services "nginx" not found
x jegan@tektutor.org ~ -/openshift-june-2024/Day4/helm > main > oc expose deploy/nginx --port=8080
service/nginx exposed
jegan@tektutor.org ~ -/openshift-june-2024/Day4/helm > main > oc get svc
NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE
nginx ClusterIP 172.30.43.102 <none> 8080/TCP 2s
jegan@tektutor.org ~ -/openshift-june-2024/Day4/helm > main > cd ..
jegan@tektutor.org ~ -/openshift-june-2024/Day4 > main > ls
helm README.md
jegan@tektutor.org ~ -/openshift-june-2024/Day4 > main > mkdir edge-route
jegan@tektutor.org ~ -/openshift-june-2024/Day4 > main > cd edge-route
jegan@tektutor.org ~ -/openshift-june-2024/Day4/edge-route > main > openssl genrsa -out key.key
jegan@tektutor.org ~ -/openshift-june-2024/Day4/edge-route > main > ls
key.key
jegan@tektutor.org ~ -/openshift-june-2024/Day4/edge-route > main > openssl req -new -key key.key -out csr.csr -subj="/CN=nginx-jegan.apps.ocp4.tektutor.org.labs"
jegan@tektutor.org ~ -/openshift-june-2024/Day4/edge-route > main > ls
csr.csr key.key
jegan@tektutor.org ~ -/openshift-june-2024/Day4/edge-route > main > openssl x509 -req -in csr.csr -signkey key.key -out crt.crt
jegan@tektutor.org ~ -/openshift-june-2024/Day4/edge-route > main > ls
crt.crt csr.csr key.key
jegan@tektutor.org ~ -/openshift-june-2024/Day4/edge-route > main > oc create route edge --service nginx --hostname nginx-jegan.apps.ocp4.tektutor.org.labs --key key.key --cert crt.crt
route/nginx created

Activities Terminal Jun 27 15:43 jegan@tektutor.org
jegan@tektutor.org ~ -/openshift-june-2024/Day4/edge-route > main > ls
csr.csr key.key
jegan@tektutor.org ~ -/openshift-june-2024/Day4/edge-route > main > openssl x509 -req -in csr.csr -signkey key.key -out crt.crt
jegan@tektutor.org ~ -/openshift-june-2024/Day4/edge-route > main > ls
crt.crt csr.csr key.key
jegan@tektutor.org ~ -/openshift-june-2024/Day4/edge-route > main > oc create route edge --service nginx --hostname nginx-jegan.apps.ocp4.tektutor.org.labs --key key.key --cert crt.crt
route/nginx created
jegan@tektutor.org ~ -/openshift-june-2024/Day4/edge-route > main > oc get route
NAME HOST/PORT PATH SERVICES PORT TERMINATION WILDCARD
nginx nginx-jegan.apps.ocp4.tektutor.org.labs nginx <all> edge None
jegan@tektutor.org ~ -/openshift-june-2024/Day4/edge-route > main > curl https://nginx-jegan.apps.ocp4.tektutor.org.labs
curl: (60) SSL certificate problem: self-signed certificate
More details here: https://curl.se/docs/sslcerts.html

curl failed to verify the legitimacy of the server and therefore could not
establish a secure connection to it. To learn more about this situation and
how to fix it, please visit the web page mentioned above.
x jegan@tektutor.org ~ -/openshift-june-2024/Day4/edge-route > main > curl -k https://nginx-jegan.apps.ocp4.tektutor.org.labs
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
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

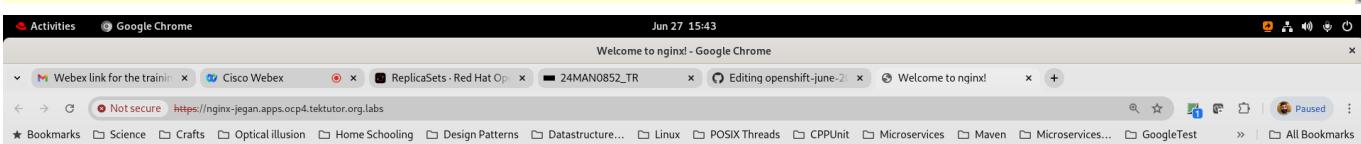
```



```
jegan@tektutor.org ~ -/openshift-june-2024/Day4/edge-route [main] oc get route
NAME      HOST/PORT          PATH  SERVICES   PORT  TERMINATION  WILDCARD
nginx    nginx-jean.apps.ocp4.tektutor.org.labs  nginx <all>        edge      None
jegan@tektutor.org ~ -/openshift-june-2024/Day4/edge-route [main] curl https://nginx-jean.apps.ocp4.tektutor.org.labs
curl: (60) SSL certificate problem: self-signed certificate
More details here: https://curl.se/docs/sslcerts.html

curl failed to verify the legitimacy of the server and therefore could not
establish a secure connection to it. To learn more about this situation and
how to fix it, please visit the web page mentioned above.
x jegan@tektutor.org ~ -/openshift-june-2024/Day4/edge-route [main] curl -k https://nginx-jean.apps.ocp4.tektutor.org.labs
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
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-june-2024/Day4/edge-route [main]



Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
 Commercial support is available at nginx.com.

Thank you for using nginx.

Points to note

- Creating an edge for each deployment is a bad idea both in terms of cost implication and performance implications
- If your monolithic application supports 100 features, when you break them into 100 microservice, you will end-up creates 100 https based edge routes
 - each edge routes will have an unique url, which means for each route you need to get a cert file from third party which will cost more
 - when the microservice to microservice communication uses https protocol, each packet that transmitted will be encrypted from the sender microservice

and decrypted on the receiver microservice, this will bring down the overall application performance

- Hence, the recommended industry standard procedure is to put a reverse proxy server with https url as the frontend for all connections that comes from internet, the reverse proxy server will use plain http protocol as they are secured inside your office network, hence no security issues and no performance penalty is expected

- you may refer this for details <https://www.redhat.com/en/blog/openshift-ecosystem-implementing-the-nginx-proxy-model-on-red-hat-openshift>

Lab - Deploying nginx as a daemonset

```
cd ~/openshift-june-2024
git pull
cd Day4/daemonset
cat nginx-ds.yml
oc apply -f nginx-ds.yml
oc get po -o wide
```

Expected output

```
jegan@tektutor.org ~ /~/openshift-june-2024/Day4/daemonset $ ls
nginx-ds.yml
jegan@tektutor.org ~ /~/openshift-june-2024/Day4/daemonset $ cat nginx-ds.yml
apiVersion: apps/v1
kind: DaemonSet
metadata:
  labels:
    app: nginx
    name: nginx
spec:
  selector:
    matchLabels:
      app: nginx
  template:
    metadata:
      labels:
        app: nginx
    spec:
      containers:
        - image: bitnami/nginx:latest
          name: nginx
jegan@tektutor.org ~ /~/openshift-june-2024/Day4/daemonset $ oc apply -f nginx-ds.yml
daemonset.apps/nginx created
jegan@tektutor.org ~ /~/openshift-june-2024/Day4/daemonset $ oc get po -o wide
NAME      READY   STATUS    RESTARTS   AGE     IP           NODE
nginx-ds54  0/1    ContainerCreating   0          4s      <none>       worker-2.ocp4.tektutor.org.labs  <none>   <none>
nginx-htdgg 1/1    Running   0          4s      10.128.2.38  worker-1.ocp4.tektutor.org.labs  <none>   <none>
nginx-kwkhw  1/1    Running   0          4s      10.128.0.103 master-1.ocp4.tektutor.org.labs <none>   <none>
nginx-ss2qt  0/1    ContainerCreating   0          4s      <none>       master-2.ocp4.tektutor.org.labs  <none>   <none>
nginx-vrsrf  0/1    ContainerCreating   0          4s      <none>       master-3.ocp4.tektutor.org.labs  <none>   <none>
```

Lab - Creating a JFrog Artifactory 14 days cloud trial

You need to create a trial JFrog Artifactory (14-days Cloud Trial) @ <https://jfrog.com/start-free/#trialOptions> with your personal gmail account (No credit cards required)

Start a Trial With Artifactory and Xray | JFrog - Google Chrome

The screenshot shows a web browser window with the title "Start a Trial With Artifactory and Xray | JFrog - Google Chrome". The main content is titled "Choose Your Experience". It features two main sections: "JFrog Platform Tour" and "Free Trial".

- JFrog Platform Tour:**
 - No setup required
 - Populated with sample data (read-only)
 - Optional self-guided tours

For viewing JFrog functionality in action with minimal upfront investment.

[PLATFORM TOUR >](#)
- Free Trial:**
 - Configure your own trial instance
 - Populate with your data
 - The full JFrog Platform Experience

For performing a full review or POC of JFrog's capabilities.

[CLOUD TRIAL >](#) [SELF-HOSTED TRIAL >](#)

[← Back](#)

By clicking "Accept All Cookies", you agree to the storing of cookies on your device to enhance site navigation, analyze site usage, and assist in our marketing efforts.

[Cookies Settings](#) [Accept All Cookies](#)

You could choose AWS (they use their cloud account hence no charges are applicable to us - I didn't give my mobile number)

Start a Trial With Artifactory and Xray | JFrog - Google Chrome

The screenshot shows a web browser window with the title "Start a Trial With Artifactory and Xray | JFrog - Google Chrome". The main content is titled "Set up your JFrog Platform Environment".

Create a Hostname*: https://openshiftjegan.jfrog.io
 This will be your team's subdomain.

Last Name*: Swamianthan

Company*: Personal

Phone: Enter your phone number

Hosting Preferences: Select a Cloud Provider for your JFrog Environment
 AWS Google Cloud Microsoft Azure
Cloud Region*: US West 2 (Oregon)

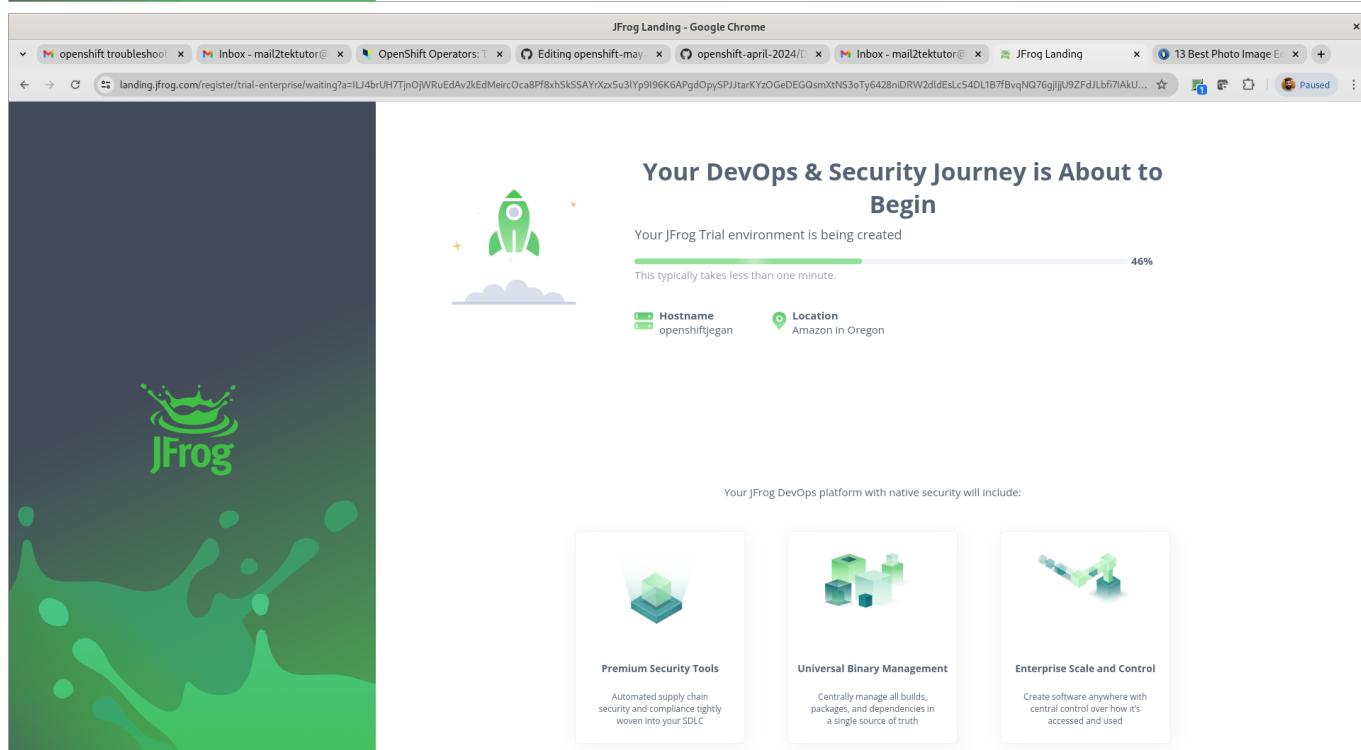
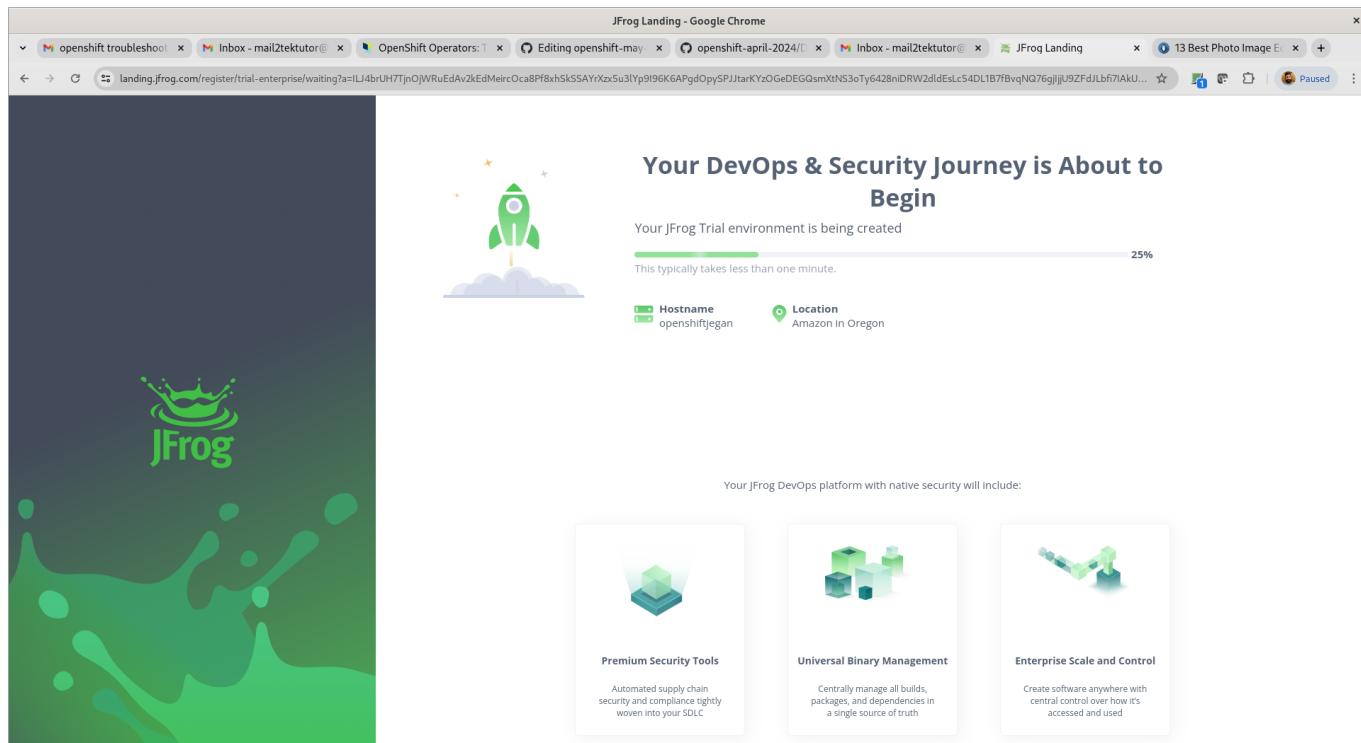
What are you interested in?

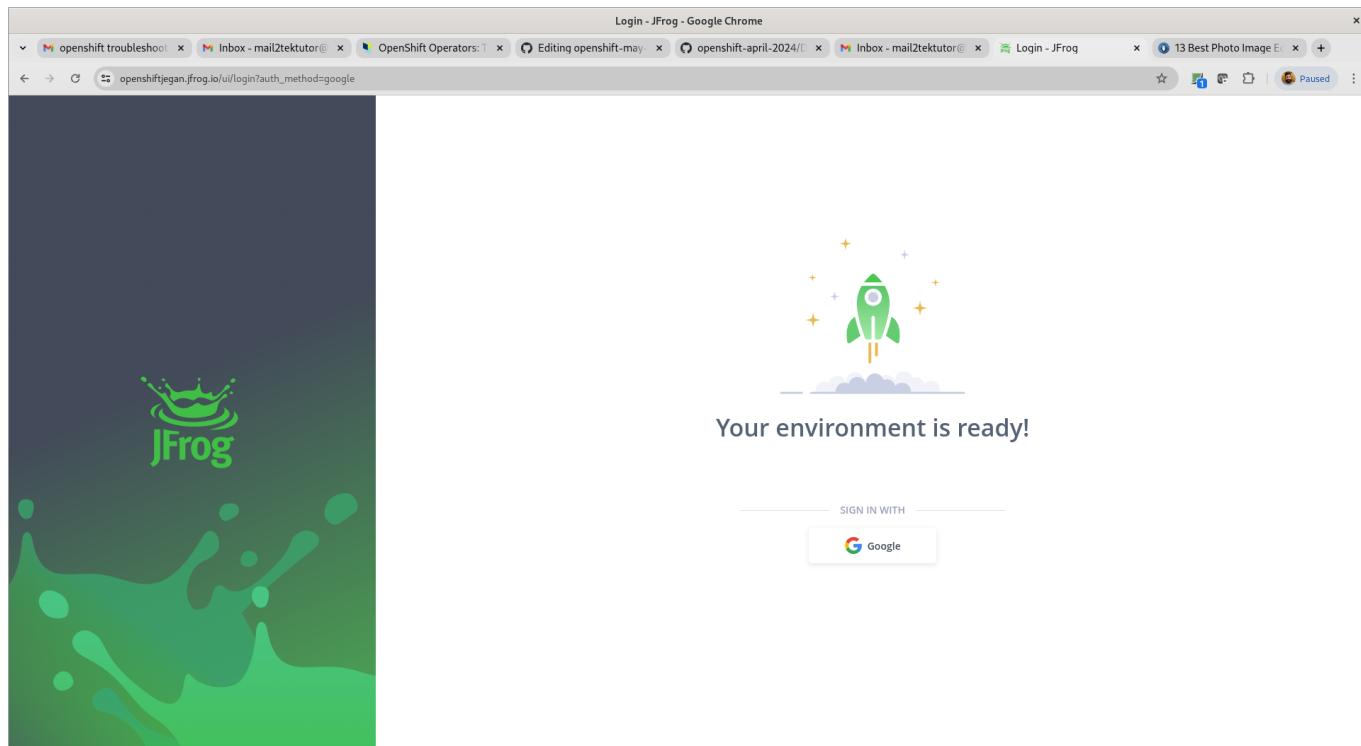
<input type="checkbox"/> DevOps Package and Dependency Management, CI/CD, Container Registry	<input type="checkbox"/> IoT Software Updates, Remote Access, Fleet Management
<input type="checkbox"/> End-to-End Security Vulnerability detection, prioritization and remediation.	<input type="checkbox"/> Other

Which of the following best matches your role?

[TRY IT NOW >](#)

[← Back](#)



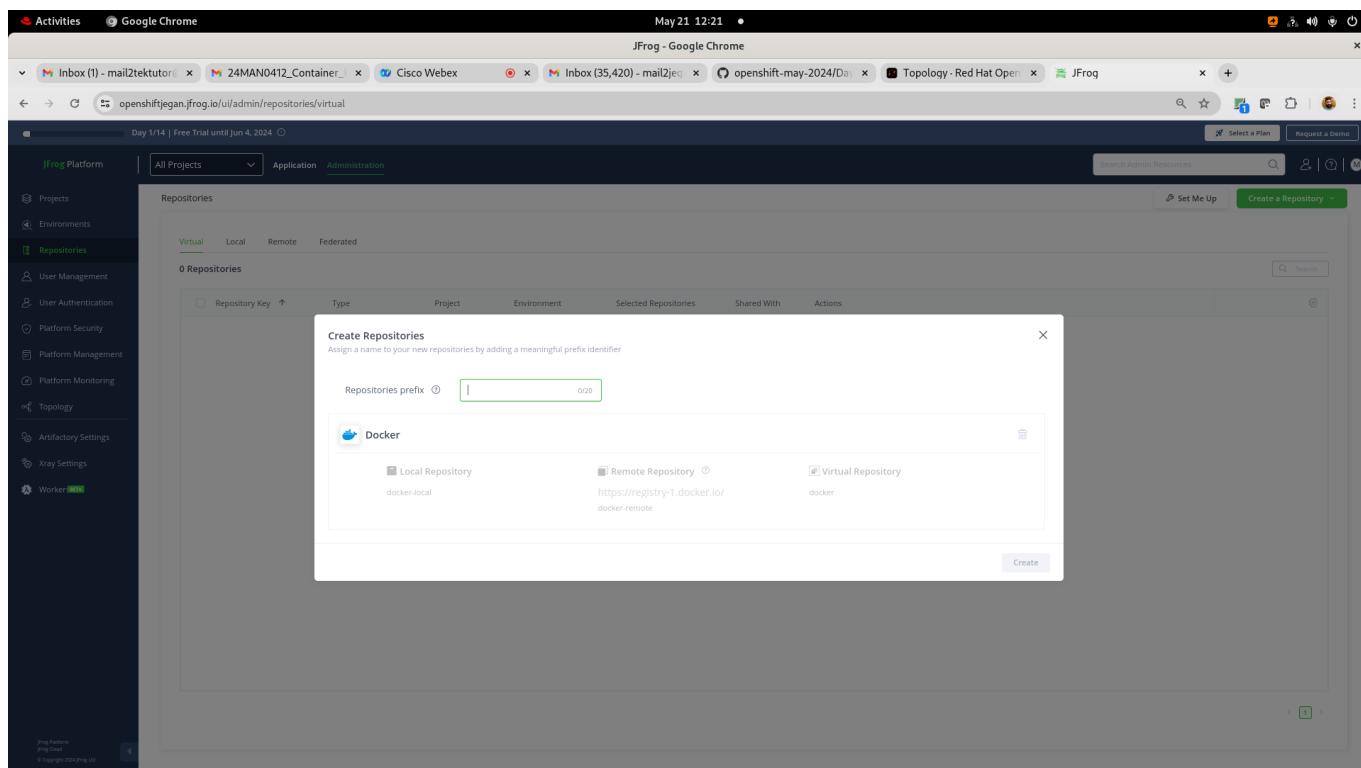
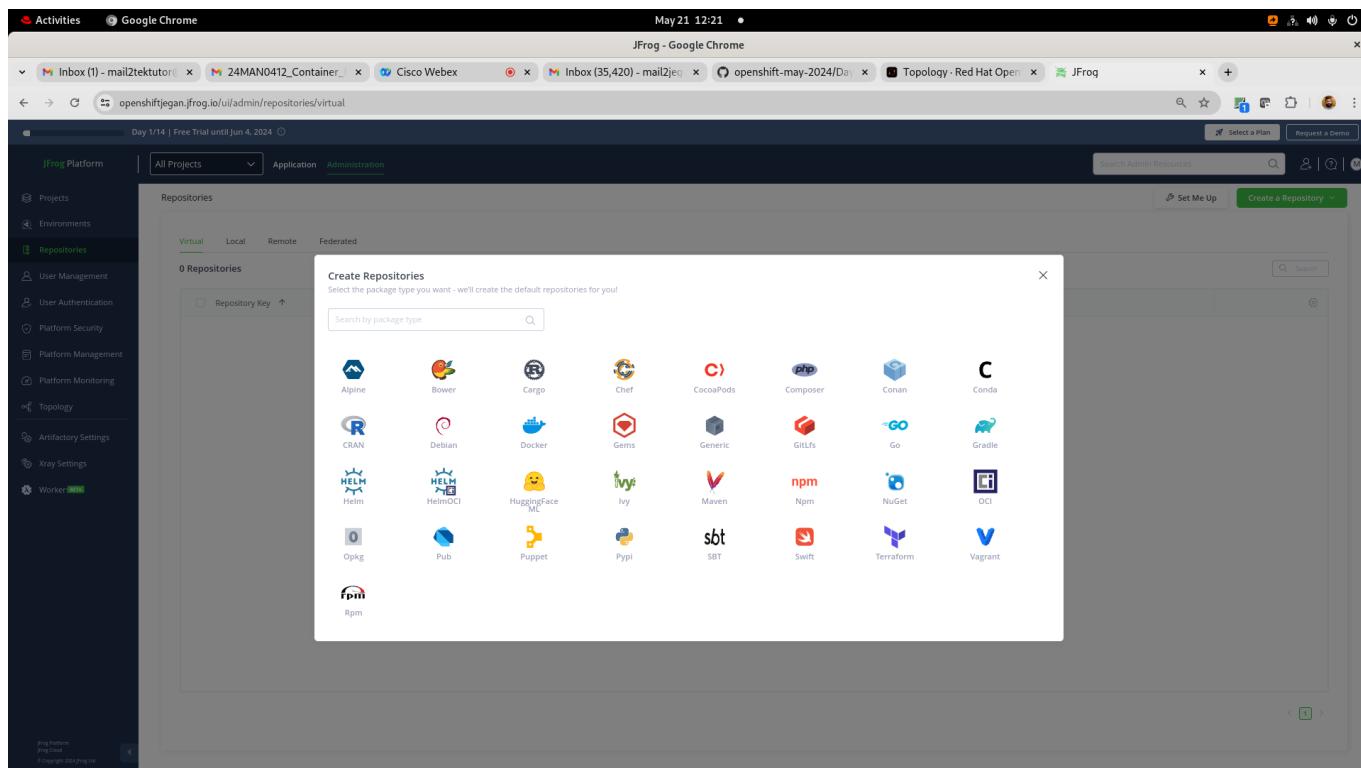


Now you should be able to login to your jfrog cloud with your gmail account that your registered with JFrog trial

A screenshot of the JFrog Platform "Get Started" page. The page has a dark header with the text "JFrog - Google Chrome" and "Day 1/14 | Free Trial until Jun 4, 2024". On the left, there is a sidebar with links like "Get Started", "Artifactory", "Xray", "Distribution", "Pipelines", "Integrations", "Connect", and "MyJFrog Portal". The main content area is titled "Get Started with JFrog" and shows a progress bar at 0%. It lists two sections: "Set up your workflow" (3 steps) and "Secure your packages" (5 steps). Each step has a number, a description, and a "Go" button. A "Search Packages" bar is at the top right, and a "Go To Trial Documentation" link is also present.

The screenshot shows the JFrog Platform interface. The left sidebar is titled "JFrog Platform" and includes sections for Projects, Environments, Repositories, User Management, User Authentication, Platform Security, Platform Management, Platform Monitoring, Topology, Artifactory Settings, Xray Settings, and Workers. The main content area is titled "Projects" and shows tabs for "All Projects" and "Unassigned". A green box contains the text "Get Started with your first Project!" and a "Create New" button. The top navigation bar shows a free trial until June 4, 2024, and search and demo buttons.

The screenshot shows the JFrog Platform interface. The left sidebar is identical to the previous screenshot. The main content area is titled "Repositories" and shows tabs for "Virtual", "Local", "Remote", and "Federated". It displays a table with columns: Repository Key, Type, Project, Environment, Selected Repositories, Shared With, and Actions. A message at the bottom says "No results were found Try to change your search". On the right side, there is a sidebar titled "Pre-Built Setup" with "JFrog Best Practice" which includes options for "Virtual", "Local", "Remote", and "Federated". The bottom of the sidebar has copyright information: "© Copyright 2024 JFrog Ltd".



JFrog - Google Chrome

Inbox (1) - mail2tekutor... 24MANO412_Container... Cisco Webex Inbox (35,420) - mail2jeg... openshift-may-2024/D... Topology - Red Hat Open... JFrog Day 1/14 | Free Trial until Jun 4, 2024

openshiftjegan.jfrog.io/u/admin/repositories/virtual

All Projects Application Administration

Search Admin Resources Set Me Up Request a Demo

Projects Environments Repositories User Management User Authentication Platform Security Platform Management Platform Monitoring Topology Artifactory Settings Xray Settings Worker 0/0

Repositories

Virtual Local Remote Federated

0 Repositories

Repository Key Type Project Environment Selected Repositories Shared With Actions

Create Repositories Assign a name to your new repositories by adding a meaningful prefix identifier

Repositories prefix: jegan 5/20

Docker

Local Repository: jegan-docker-local
Remote Repository: https://registry-1.docker.io/
Virtual Repository: jegan-docker

Create

Activities Google Chrome May 21 12:22

Inbox (1) - mail2tekutor... 24MANO412_Container... Cisco Webex Inbox (35,420) - mail2jeg... openshift-may-2024/D... Topology - Red Hat Open... JFrog Day 1/14 | Free Trial until Jun 4, 2024

openshiftjegan.jfrog.io/u/admin/repositories/virtual

All Projects Application Administration

Search Admin Resources Set Me Up Request a Demo

Projects Environments Repositories User Management User Authentication Platform Security Platform Management Platform Monitoring Topology Artifactory Settings Xray Settings Worker 0/0

Repositories

Virtual Local Remote Federated

1 Repositories

Repository Key: jegan-docker

Your docker Repository was Created Successfully!

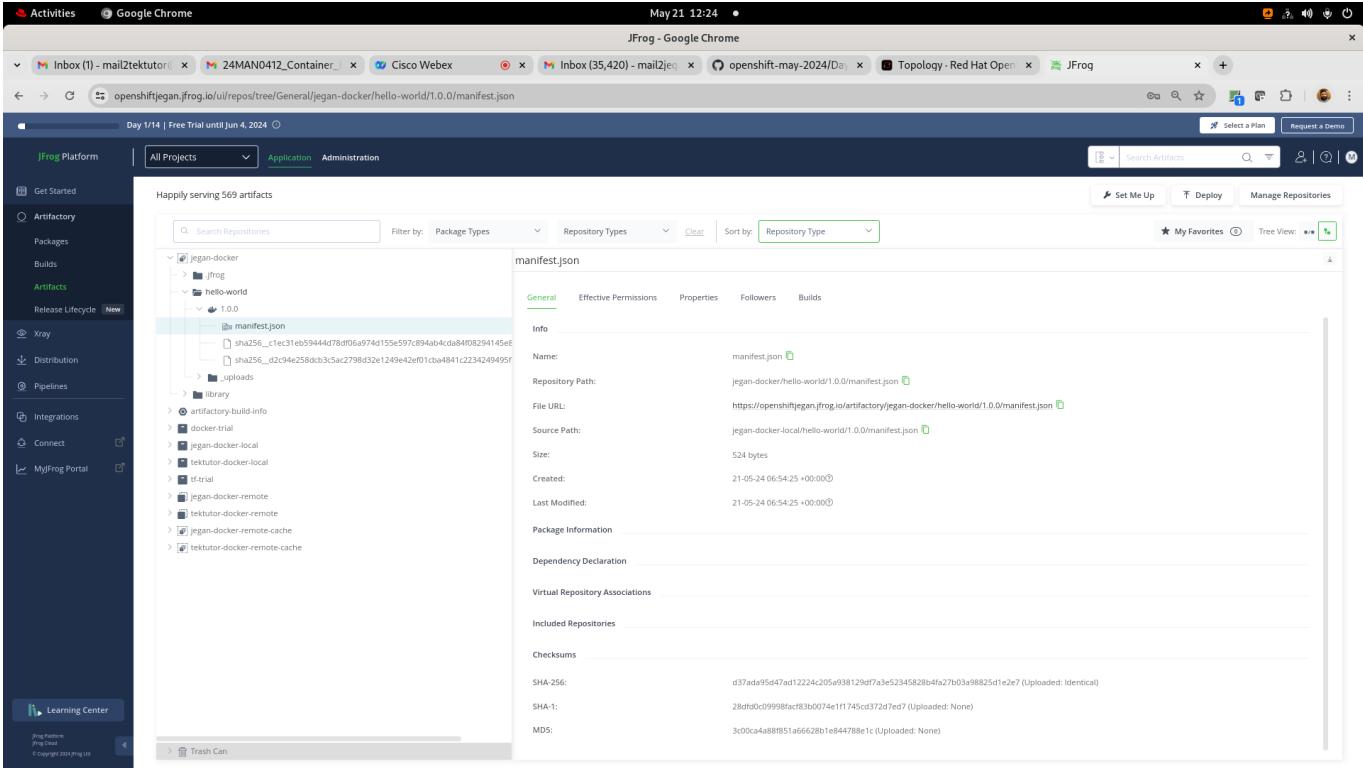
Docker Repository: jegan-docker

URL: https://openshiftjegan.jfrog.io/artifactory/api/docker/jegan-docker

Next, connect your repository to a project build or a docker client.

I'll Do It Later Continue

Showing 1 - 1 from 1 items



```
jegan@tektutor.org $ docker login -u mail2tektutor@gmail.com
openshiftjegan.jfrog.io
Password:
WARNING! Your password will be stored unencrypted in
/home/jegan/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store
```

```
Login Succeeded
jegan@tektutor.org % docker pull openshiftjegan.jfrog.io/jegan-
docker/hello-world:latest
latest: Pulling from jegan-docker/hello-world
Digest:
sha256:266b191e926f65542fa8daaec01a192c4d292bff79426f47300a046e1bc576fd
Status: Downloaded newer image for openshiftjegan.jfrog.io/jegan-
docker/hello-world:latest
openshiftjegan.jfrog.io/jegan-docker/hello-world:latest
```

```
jegan@tektutor.org $ docker tag openshiftjegan.jfrog.io/jegan-docker/hello-
world openshiftjegan.jfrog.io/jegan-docker/hello-world:1.0.0
```

```
jegan@tektutor.org $ docker push openshiftjegan.jfrog.io/jegan-
docker/hello-world:1.0.0
The push refers to repository [openshiftjegan.jfrog.io/jegan-docker/hello-
world]
ac28800ec8bb: Layer already exists
1.0.0: digest:
sha256:d37ada95d47ad12224c205a938129df7a3e52345828b4fa27b03a98825d1e2e7
size: 524
```

Lab - Building application, creating custom docker image and push to openshift's internal container registry

```
cd ~/openshift-june-2024
git pull
cd Day4/BuildConfig
cat imagestream.yml
cat buildconfig.yml

oc apply -f imagestream.yml
oc apply -f buildconfig.yml
```

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 window has a dark background with light-colored text. The user runs several commands to build a Docker image and push it to an ImageStream:

```
jegan@tektutor.org ~ /openshift-june-2024/Day4 > cd buildconfig
jegan@tektutor.org ~ /openshift-june-2024/Day4/buildconfig > ls
buildconfig.yml Dockerfile imagestream.yml pom.xml src
jegan@tektutor.org ~ /openshift-june-2024/Day4/buildconfig > cat buildconfig.yml
apiVersion: build.openshift.io/v1
kind: BuildConfig
metadata:
  name: hello
  labels:
    name: hello
spec:
  triggers:
  - type: ConfigChange
  source:
    type: Git
    git
      uri: "https://github.com/tektutor/openshift-june-2024.git"
      ref: main
    contextDir: "Day4/buildconfig"
  strategy:
    type: Docker
  output:
    to:
      kind: ImageStreamTag
      name: 'tektutor-hello:latest'

jegan@tektutor.org ~ /openshift-june-2024/Day4/buildconfig > cat imagestream.yml
apiVersion: image.openshift.io/v1
kind: ImageStream
metadata:
  name: tektutor-hello
jegan@tektutor.org ~ /openshift-june-2024/Day4/buildconfig >
```

```

Activities Terminal Jun 27 18:04 jegan@tektutor.org
jegan@tektutor.org > ~/openshift-june-2024/Day4/buildconfig > main > oc apply -f imagestream.yml
imagestream.image.openshift.io/tektutor-hello unchanged
jegan@tektutor.org > ~/openshift-june-2024/Day4/buildconfig > main > oc apply -f buildconfig.yml
buildconfig.build.openshift.io/hello created
jegan@tektutor.org > ~/openshift-june-2024/Day4/buildconfig > main > oc get imagestreams
NAME IMAGE REPOSITORY TAGS UPDATED
tektutor-hello image-registry.openshift-image-registry.svc:5000/jegan/tektutor-hello
jegan@tektutor.org > ~/openshift-june-2024/Day4/buildconfig > main > oc get imagestream
NAME IMAGE REPOSITORY TAGS UPDATED
tektutor-hello image-registry.openshift-image-registry.svc:5000/jegan/tektutor-hello
jegan@tektutor.org > ~/openshift-june-2024/Day4/buildconfig > main > oc get is
NAME IMAGE REPOSITORY TAGS UPDATED
tektutor-hello image-registry.openshift-image-registry.svc:5000/jegan/tektutor-hello
jegan@tektutor.org > ~/openshift-june-2024/Day4/buildconfig > main > oc get buildconfigs
NAME TYPE FROM LATEST
hello Docker Git@main 1
jegan@tektutor.org > ~/openshift-june-2024/Day4/buildconfig > main > oc get buildconfig
NAME TYPE FROM LATEST
hello Docker Git@main 1
jegan@tektutor.org > ~/openshift-june-2024/Day4/buildconfig > main > oc get bc
NAME TYPE FROM LATEST
hello Docker Git@b6395a5 Running 33 seconds ago
jegan@tektutor.org > ~/openshift-june-2024/Day4/buildconfig > main > oc logs -f bc/hello
Cloning "https://github.com/tektutor/openshift-june-2024.git" ...
Commit: b6395a5da364df19c5bb61cc5e102cec3eea96a (Added Day4 lab exercises)
Author: Jeganathan Swaminathan <mail2jegan@gmail.com>
Date: Thu Jun 27 18:01:14 2024 +0530
time="2024-06-27T12:32:14Z" level=info msg="Not using native diff for overlay, this may cause degraded performance for building images:
kernel has CONFIG_OVERLAY_FS_REDIRECT_DIR enabled"
I0627 12:32:14.903906      1 defaults.go:112] Defaulting to storage driver "overlay" with options [mountopt=metacopy=on].
Caching blobs under "/var/cache/blobs".
Pulling image docker.io/maven:3.6.3-jdk-11
Activities Terminal Jun 27 18:04 jegan@tektutor.org
jegan@tektutor.org > Author: Jeganathan Swaminathan <mail2jegan@gmail.com>
jegan@tektutor.org > Date: Thu Jun 27 18:01:14 2024 +0530
jegan@tektutor.org > time="2024-06-27T12:32:14Z" level=info msg="Not using native diff for overlay, this may cause degraded performance for building images:
jegan@tektutor.org > kernel has CONFIG_OVERLAY_FS_REDIRECT_DIR enabled"
jegan@tektutor.org > I0627 12:32:14.903906      1 defaults.go:112] Defaulting to storage driver "overlay" with options [mountopt=metacopy=on].
jegan@tektutor.org > Caching blobs under "/var/cache/blobs".
jegan@tektutor.org > Pulling image docker.io/maven:3.6.3-jdk-11 ...
jegan@tektutor.org > Trying to pull docker.io/library/maven:3.6.3-jdk-11...
jegan@tektutor.org > Getting image source signatures
jegan@tektutor.org > Copying blob sha256:5d6f1e8117dbb1c6a57603cb4f321a861a08105a81bcc6b01b0ec2b78c8523a5
jegan@tektutor.org > Copying blob sha256:d7eb6c022a4e6128219b32a8e07c8c22c89624ff440ebac1506121794bc15ccc
jegan@tektutor.org > Copying blob sha256:48c2faf66abec3dce9f54d6722ff592fce6dd4fb58a0d0b72282936c6598a3b3
jegan@tektutor.org > Copying blob sha256:6c215442f70bd949af2e092549943905e2d4f9c87a4f532d7740ae8647d33a
jegan@tektutor.org > Copying blob sha256:004f1eed87df3f75f5e2a1a649fa7edd7f713d1300532fd0909bb39cd48437d7
jegan@tektutor.org > Copying blob sha256:234b70d0479d7f16d7ee8d04e4ffdacc57d7d14313faf59d332f18b2e9418743
jegan@tektutor.org > Copying blob sha256:355e8215390faee903502a9fddfc65cd823f1606f053376ba2575adce66974a1
jegan@tektutor.org > Copying blob sha256:c5eb43522f68d7e2347e19ad70dadcf1594d25b792ede0464c2936ff902c4c6
jegan@tektutor.org > Copying blob sha256:4fee0489a65b64056f81358639bfe85fd87776630830fd02ce8c15e34928bf9c
jegan@tektutor.org > Copying blob sha256:413646e6fa5d7bcd9722d3e400fc080a77deb505baed79afa5fedae23583af25
jegan@tektutor.org > Copying config sha256:e23b595c92ada5c9f20a27d547ed980a445f644eb1cbcde7cfb27478fa38c4691
jegan@tektutor.org > Writing manifest to image destination
jegan@tektutor.org > Adding transient rw bind mount for /run/secrets/rhsm
jegan@tektutor.org > [1/2] STEP 1/3: FROM docker.io/maven:3.6.3-jdk-11 AS builder
jegan@tektutor.org > [1/2] STEP 2/3: COPY .
--> bb7bf0dba337
jegan@tektutor.org > [1/2] STEP 3/3: RUN mvn clean package
jegan@tektutor.org > TNE01 Scanning for projects

```

```

Activities Terminal Jun 27 18:04
jegan@tektutor.org jegan@tektutor.org jegan@tektutor.org
[INFO] Total time: 16.206 s
[INFO] Finished at: 2024-06-27T12:33:05Z
[INFO] -----
--> a98e8539bf58
[2/2] STEP 1/6: FROM registry.access.redhat.com/ubi8/openjdk-11
[2/2] STEP 2/6: COPY --from=builder target/*.jar app.jar
--> ab757c3689e2
[2/2] STEP 3/6: EXPOSE 8080
--> c91193490488
[2/2] STEP 4/6: ENTRYPOINT ["java","-jar","app.jar"]
--> 58057e90b536
[2/2] STEP 5/6: ENV "OPENSHIFT_BUILD_NAME"="hello-1" "OPENSHIFT_BUILD_NAMESPACE"="jegan" "OPENSHIFT_BUILD_SOURCE"="https://github.com/tektutor/openshift-june-2024.git" "OPENSHIFT_BUILD_REFERENCE"="main" "OPENSHIFT_BUILD_COMMIT"="b6395a5da364df19c5bb61cc5e102cec3eea96a"
--> 5bd0327353b6
[2/2] STEP 6/6: LABEL "io.openshift.build.commit.author"="Jeganathan Swaminathan <mail2jegan@gmail.com>" "io.openshift.build.commit.date"="Thu Jun 27 18:01:14 2024 +0530" "io.openshift.build.commit.id"="b6395a5da364df19c5bb61cc5e102cec3eea96a" "io.openshift.build.commit.message"="Added Day4 lab exercises" "io.openshift.build.commit.ref"="main" "io.openshift.build.name"="hello-1" "io.openshift.build.namespace"="jegan" "io.openshift.build.source-context-dir"="Day4/buildconfig" "io.openshift.build.source-location"="https://github.com/tektutor/openshift-june-2024.git"
[2/2] COMMIT temp.builder.openshift.io/jegan/hello-1:3dbdd8d9
--> a4c0bacca27
Successfully tagged temp.builder.openshift.io/jegan/hello-1:3dbdd8d9
a4c0bacca27882654cd8ec1b349a941cd0c960b3a47e5c23924ee3bab9086ab

Pushing image image-registry.openshift-image-registry.svc:5000/jegan/tektutor-hello:latest ...
Getting image source signatures
Copying blob sha256:b85d53bb3bdd79c80b5a9e65a868d49790e9bd3fe604e04f3b6fd032fe3509c5
Copying blob sha256:1846180440d3041e0848b0bcb735f024f3bc5e2d39f1ab4ad490f630863d903
Copying blob sha256:8393debac2ec316f87eb40af5451d57df2863f844f545d40447e46e025c9663
Copying config sha256:a4c0bacca27882654cd8ec1b349a941cd0c960b3a47e5c23924ee3bab9086ab
Writing manifest to image destination
Successfully pushed image-registry.openshift-image-registry.svc:5000/jegan/tektutor-hello@sha256:d59568febe517418f4be5bfd1169850d623af25
a7f0034899092fe86fc695137
Push successful
jegan@tektutor.org > ~/openshift-june-2024/Day4/buildconfig > main >

```

```

Activities Terminal Jun 27 18:05
jegan@tektutor.org jegan@tektutor.org jegan@tektutor.org
[2/2] STEP 6/6: LABEL "io.openshift.build.commit.author"="Jeganathan Swaminathan <mail2jegan@gmail.com>" "io.openshift.build.commit.date"="Thu Jun 27 18:01:14 2024 +0530" "io.openshift.build.commit.id"="b6395a5da364df19c5bb61cc5e102cec3eea96a" "io.openshift.build.commit.message"="Added Day4 lab exercises" "io.openshift.build.commit.ref"="main" "io.openshift.build.name"="hello-1" "io.openshift.build.namespace"="jegan" "io.openshift.build.source-context-dir"="Day4/buildconfig" "io.openshift.build.source-location"="https://github.com/tektutor/openshift-june-2024.git"
[2/2] COMMIT temp.builder.openshift.io/jegan/hello-1:3dbdd8d9
--> a4c0bacca27
Successfully tagged temp.builder.openshift.io/jegan/hello-1:3dbdd8d9
a4c0bacca27882654cd8ec1b349a941cd0c960b3a47e5c23924ee3bab9086ab

Pushing image image-registry.openshift-image-registry.svc:5000/jegan/tektutor-hello:latest ...
Getting image source signatures
Copying blob sha256:b85d53bb3bdd79c80b5a9e65a868d49790e9bd3fe604e04f3b6fd032fe3509c5
Copying blob sha256:1846180440d3041e0848b0bcb735f024f3bc5e2d39f1ab4ad490f630863d903
Copying blob sha256:8393debac2ec316f87eb40af5451d57df2863f844f545d40447e46e025c9663
Copying config sha256:a4c0bacca27882654cd8ec1b349a941cd0c960b3a47e5c23924ee3bab9086ab
Writing manifest to image destination
Successfully pushed image-registry.openshift-image-registry.svc:5000/jegan/tektutor-hello@sha256:d59568febe517418f4be5bfd1169850d623af25a7f0034899092fe86fc695137
Push successful
jegan@tektutor.org > ~/openshift-june-2024/Day4/buildconfig > main > oc get is
NAME          IMAGE REPOSITORY                                     TAGS      UPDATED
tektutor-hello image-registry.openshift-image-registry.svc:5000/jegan/tektutor-hello   latest   About a minute ago
jegan@tektutor.org > ~/openshift-june-2024/Day4/buildconfig > main > oc describe is/tektutor-hello
Name:              tektutor-hello
Namespace:         jegan
Created:           4 minutes ago
Labels:            <none>
Annotations:      kubectl.kubernetes.io/last-applied-configuration={"apiVersion":"image.openshift.io/v1","kind":"ImageStream","metadata":{"annotations":{},"name":"tektutor-hello","namespace":"jegan"}}
Image Repository: image-registry.openshift-image-registry.svc:5000/jegan/tektutor-hello
Image Lookup:     local=false
Unique Images:    1
Tags:             1

latest
no spec tag

* image-registry.openshift-image-registry.svc:5000/jegan/tektutor-hello@sha256:d59568febe517418f4be5bfd1169850d623af25a7f0034899092fe86fc695137
jegan@tektutor.org > ~/openshift-june-2024/Day4/buildconfig > main >

```

The screenshot shows the Red Hat OpenShift console interface. The left sidebar is dark-themed and includes sections for Developer, Topology, Observe, Search, Builds, Helm, Project, ConfigMaps, and Secrets. The 'Builds' section is currently selected. The main content area has a blue header bar with the text "You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in." Below this, a table titled "BuildConfigs" displays one entry:

Name	Last run	Last run status	Last run time	Last run duration
BC hello	hello-1	Complete	27 Jun 2024, 18:01	1 minute 22 seconds

A "Create BuildConfig" button is located in the top right corner of the main content area.

The screenshot shows the Red Hat OpenShift console interface, similar to the previous one but with a different URL in the address bar: "https://console-openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/builds/hello-1". The left sidebar is identical. The main content area shows the "Build details" for the build "hello-1". The build is marked as "Complete". The "Details" tab is selected, showing the following information:

- Name:** hello-1
- Namespace:** jegan
- Labels:** buildconfig=hello, name=hello, openshift.io/build-config.name=hello, openshift.io/build.start-policy=Serial
- Annotations:** 3 annotations
- Triggered by:** Build configuration change
- Created at:** 27 Jun 2024, 18:01
- Owner:** BC hello
- Status:** Complete
- BuildConfig:** BC hello
- Start time:** 27 Jun 2024, 18:01
- Completion time:** 27 Jun 2024, 18:03
- Duration:** 1 minute 22 seconds
- Type:** Docker
- Git repository:** https://github.com/tektutor/openshift-june-2024.git
- Git ref:** (empty)

Activities Google Chrome Jun 27 18:06 hello-1 - Build - Logs - Red Hat OpenShift - Google Chrome Editing openshift-june-2... Inbox (1) - tektutorjegan Cisco Webex hello-1 - Build - Logs - Red Hat OpenShift - Logs Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/builds/hello-1/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 +Add Topology Observe Search Builds Helm Project ConfigMaps Secrets

Project: jegan

Builds > Build details hello-1 Complete Details Metrics YAML Environment Logs Events

Logs 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.

Log stream ended. Search Show full log Wrap lines Raw Download Expand

1000 lines

```

980 [2/2] STEP 3/6: EXPOSE 8080
981 --> c91193409488
982 [2/2] STEP 4/6: ENTRYPOINT ['java','"-jar","app.jar"]
983 --> 58057e906536
984 [2/2] STEP 5/6: ENV "OPENSHIFT_BUILD_NAME="hello-1" "OPENSHIFT_BUILD_NAMESPACE="jegan" "OPENSHIFT_BUILD_SOURCE="https://github.com/tektutor/openshift-june-2024.git" "OPENSHIFT_BUILD_TARGET_NAMESPACE="jegan" "OPENSHIFT_BUILD_TRIGGERedBy="Jeganathan Swaminathan <mailto:jegan@gmail.com>" "io.openshift.build.commit.date="Thu Jun 27 18:01:14 2024 +0530" "io.openshift.build.commit.id="5b40d27353b6
985 --> 5b40d27353b6
986 [2/2] STEP 6/6: LABEL "io.openshift.build.commit.author="Jeganathan Swaminathan <jegan@hello-1.3dbdd8d9
987 [2/2] COMMITT temp_builder.openshift.io/jegan/hello-1:3dbdd8d9
988 --> a4c0bac2a279882654cd8ec1b349a941cd0c960b3a47e5c23924ee3bab9086ab
989 Successfully tagged temp_builder.openshift.io/jegan/hello-1:3dbdd8d9
990 a4c0bac2a279882654cd8ec1b349a941cd0c960b3a47e5c23924ee3bab9086ab
991
992 Pushing image image-registry.openshift-image-registry.svc:5000/jegan/tektutor-hello:latest ...
993 Getting image source signatures
994 Copying blob sha256:b85d3bb3bd79c80b5a9e65a868449790e99d3f6e604ae04f3b6fd0327e3509c5
995 Copying blob sha256:1846189440d3041e0848b0cb735f024f3bc5e2d39f1a14a4d90f630863d983
996 Copying blob sha256:8393debac2e316f87aab40af5451d57df2863f844f54540447e46e025c9663
997 Copying config sha256:a4c0bac2a279882654cd8ec1b349a941cd0c960b3a47e5c23924ee3bab9086ab
998 Writing manifest to image destination
999 Successfully pushed image-registry.openshift-image-registry.svc:5000/jegan/tektutor-hello@sha256:d59568febe517418f4be5bf1d1169850d623af25a7f00348999092fe86fc695137

```

Activities Google Chrome Jun 27 18:06 Pods - Red Hat OpenShift - Google Chrome Editing openshift-june-2... Inbox (1) - tektutorjegan Cisco Webex hello-1 - Build - Logs - Red Hat OpenShift - Core v1 - Pods Login - JFrog nginx Reverse Proxy Server 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

Administrator Home Operators Workloads Pods Deployments DeploymentConfigs StatefulSets Secrets ConfigMaps CronJobs Jobs DaemonSets ReplicaSets ReplicationControllers HorizontalPodAutoscalers PodDisruptionBudgets Networking

Project: jegan

Pods Create Pod

Filter Name Search by name...

Name	Status	Ready	Restarts	Owner	Memory	CPU	Created
hello-1-build	Completed	0/1	0	hello-1	-	0.375 cores	27 Jun 2024, 18:01

Screenshot 1: Red Hat OpenShift Pod Details

Screenshot 2: Red Hat OpenShift Pod Logs

```

[2/2] STEP 3/6: EXPOSE 8080
[2/2] STEP 4/6: ENTRYPOINT ['java', '-jar', 'app.jar']
[2/2] STEP 5/6: ENV OPENSHIFT_BUILD_NAME="hello-1" OPENSHIFT_BUILD_NAMESPACE="jegan" OPENSHIFT_BUILD_SOURCE="https://github.com/tektutor/openshift-june-2024.git" OPENSHIFT_BUILD_TARGET="builder-dockercfg-dtb99"
[2/2] STEP 6/6: LABEL "io.openshift.build.commit.author"="Jeganathan Swaminathan <mail2jegan@gmail.com>" "io.openshift.build.commit.date"="Thu Jun 27 18:01:14 2024 +0530" "io.openshift.build.id"="sha256:b85d53bb3bd79c80b5a9e65a868449790e9bd3ff604ae4f3bf6d032fe3509c5"
[2/2] COMMIT temp.builder.openshift.lo/jegan/hello-1:3dbdd8d9
[2/2] Pushing image image-registry.openshift-image-registry.svc:5000/jegan/tektutor-hello:latest ...
[2/2] Getting image source signatures
[2/2] Copying blob sha256:b85d53bb3bd79c80b5a9e65a868449790e9bd3ff604ae4f3bf6d032fe3509c5
[2/2] Copying blob sha256:1846184440d3041a0848b0cbb73f024f3bc5e2d39f1a1a4d490f6360863d9083
[2/2] Copying blob sha256:8393debac2ec316f87eab40af545df7d7f2863f844f545d40447e46e025c9663
[2/2] Copying config sha256:a4b8acc2a77882654cd8ec1b3a941cd0c960b3a47e5c23924ee3bab9086ab
[2/2] Writing manifest to image destination
[2/2] Successfully pushed image image-registry.openshift-image-registry.svc:5000/jegan/tektutor-hello@sha256:d59568febe517418f4be5bfd1169850d623af25a7f0034899092fe86fc695137
[2/2] Push successful

```

The screenshot shows two views of the Red Hat OpenShift web interface, both titled "ImageStreams - Red Hat OpenShift - Google Chrome".

Top View (Jun 27 18:07): This view displays a list of ImageStreams for the project "jegan". A single entry, "tektutor-hello", is listed. The table columns are "Name", "Labels", and "Created". The "Name" column shows a small icon followed by "tektutor-hello". The "Labels" column shows "No labels". The "Created" column shows "27 Jun 2024, 18:00". A "Create ImageStream" button is located in the top right corner.

Name	Labels	Created
tektutor-hello	No labels	27 Jun 2024, 18:00

Bottom View (Jun 27 18:08): This view shows a detailed view of the "tektutor-hello" ImageStream. The left sidebar is identical to the top view. The main content area includes:

- Project:** jegan
- Namespace:** jegan
- Annotations:** 1 annotation
- Image repository:** image-registry.openshift-image-registry.svc:5000/jegan/tektutor-hello
- Image count:** 1
- Created at:** 27 Jun 2024, 18:00
- Owner:** No owner
- Tags:** A table showing one tag: "tektutor-hello:latest" (From: pushed-image, Identifier: sha256:d59568febe517418f4be5bfd1169850d623af25a7f0034899092fe86fc6 95137, Last updated: 27 Jun 2024, 18:03)