

Day 5

Info - S2I (Source to Image)

- Normally Container Orchestration Platform like Docker SWARM, Kubernetes requires a readily available container image to deploy the application into Container Orchestration Platform
- In case of Openshift, the S2I feature takes the Version Control url to clone your application source code,
 - For Docker strategy
 - GitHub repository url and branch to clone your source code
 - it will look for Dockerfile/Containerfile
 - For Source strategy
 - GitHub repository url and branch to clone your source code
 - it will look for Container Image that can be used to build your application
- Then it starts the application build to get the application binary
- With the application binary, it then creates a Custom Container Image
- Which can be pushed either to Openshift Internal Container Registry or you can push it to Private Container Registry like JFrog Artifactory, Docker Hub or Sonatype Nexus.

Info - Openshift Build Strategies

- Openshift supports many different types of build strategies like
 1. docker
 2. source
 3. custom
 4. pipeline

Lab - BuildConfig

- The BuildConfig has build instructions
- For each Build, openshift creates an instance of BuildConfig called Build
- For each Build, one Pod will be created
- Within the Pod container, the build activity will happen
- the Pod container image must have all the tools required to perform your application build
- In case your application happens to be a Java application, to build it you will need a container image that has Maven build and appropriate version of JDK
- In case your application happens to be a Python application, to build it you will need a container image that has Python version as per your application code

```
cd ~/openshift-july-2024
git pull
cd Day5/buildconfig

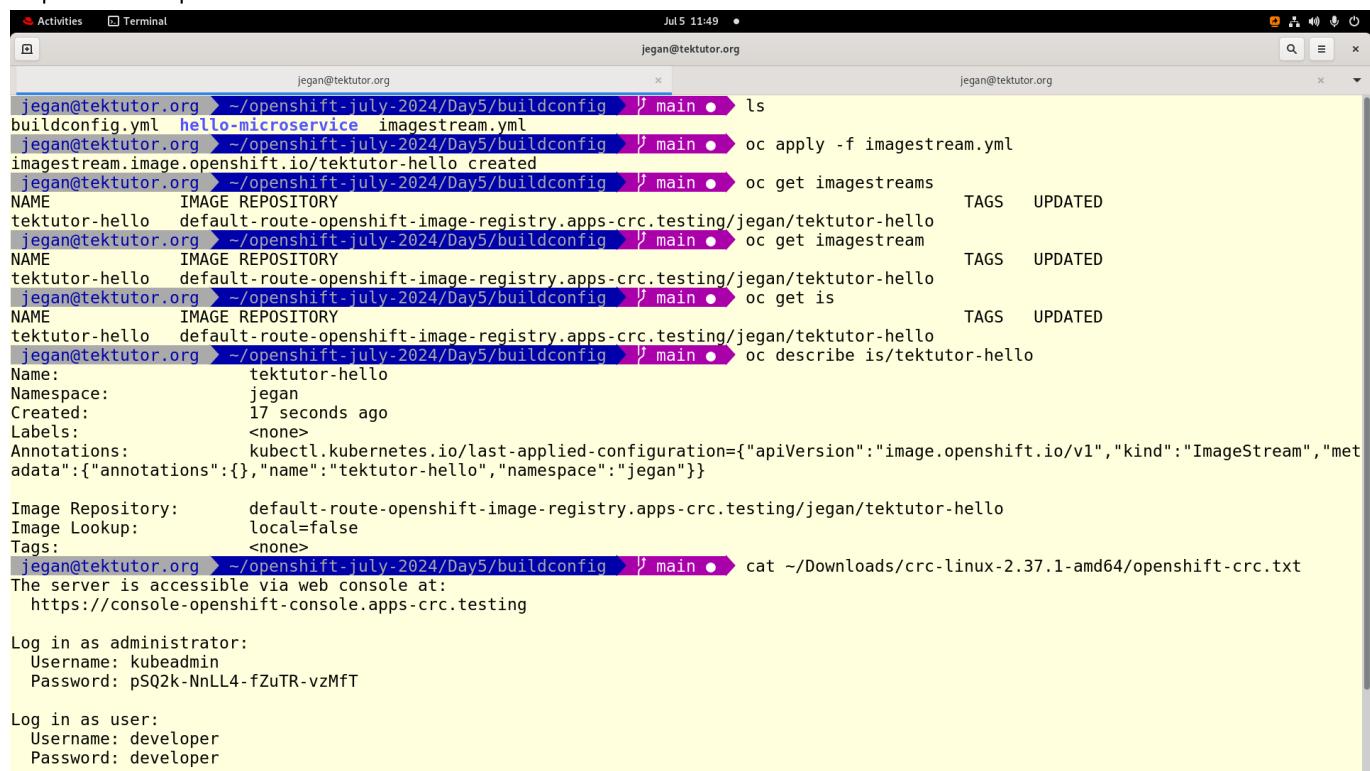
oc create -f imagestream.yml --save-config
oc get imagestreams
oc get imagestream
oc get is
oc describe is/tektutor-hello

oc create -f buildconfig.yml --save-config
oc get buildconfigs
oc get buildconfig
oc get bc

oc get builds
oc get build

oc logs -f bc/hello-bc
```

Expected output



```
jegan@tektutor.org ~/openshift-july-2024/Day5/buildconfig ⚡ main • ls
jegan@tektutor.org ~/openshift-july-2024/Day5/buildconfig ⚡ main • oc apply -f imagestream.yml
imagestream.image.openshift.io/tektutor-hello created
jegan@tektutor.org ~/openshift-july-2024/Day5/buildconfig ⚡ main • oc get imagestreams
NAME           IMAGE REPOSITORY                                     TAGS   UPDATED
tektutor-hello  default-route-openshift-image-registry.apps-crc.testing/jegan/tektutor-hello
jegan@tektutor.org ~/openshift-july-2024/Day5/buildconfig ⚡ main • oc get imagestream
NAME           IMAGE REPOSITORY                                     TAGS   UPDATED
tektutor-hello  default-route-openshift-image-registry.apps-crc.testing/jegan/tektutor-hello
jegan@tektutor.org ~/openshift-july-2024/Day5/buildconfig ⚡ main • oc get is
NAME           IMAGE REPOSITORY                                     TAGS   UPDATED
tektutor-hello  default-route-openshift-image-registry.apps-crc.testing/jegan/tektutor-hello
jegan@tektutor.org ~/openshift-july-2024/Day5/buildconfig ⚡ main • oc describe is/tektutor-hello
Name:          tektutor-hello
Namespace:     jegan
Created:       17 seconds ago
Labels:        <none>
Annotations:  kubectl.kubernetes.io/last-applied-configuration={"apiVersion":"image.openshift.io/v1","kind":"ImageStream","metadata":{"annotations":{},"name":"tektutor-hello","namespace":"jegan"}}

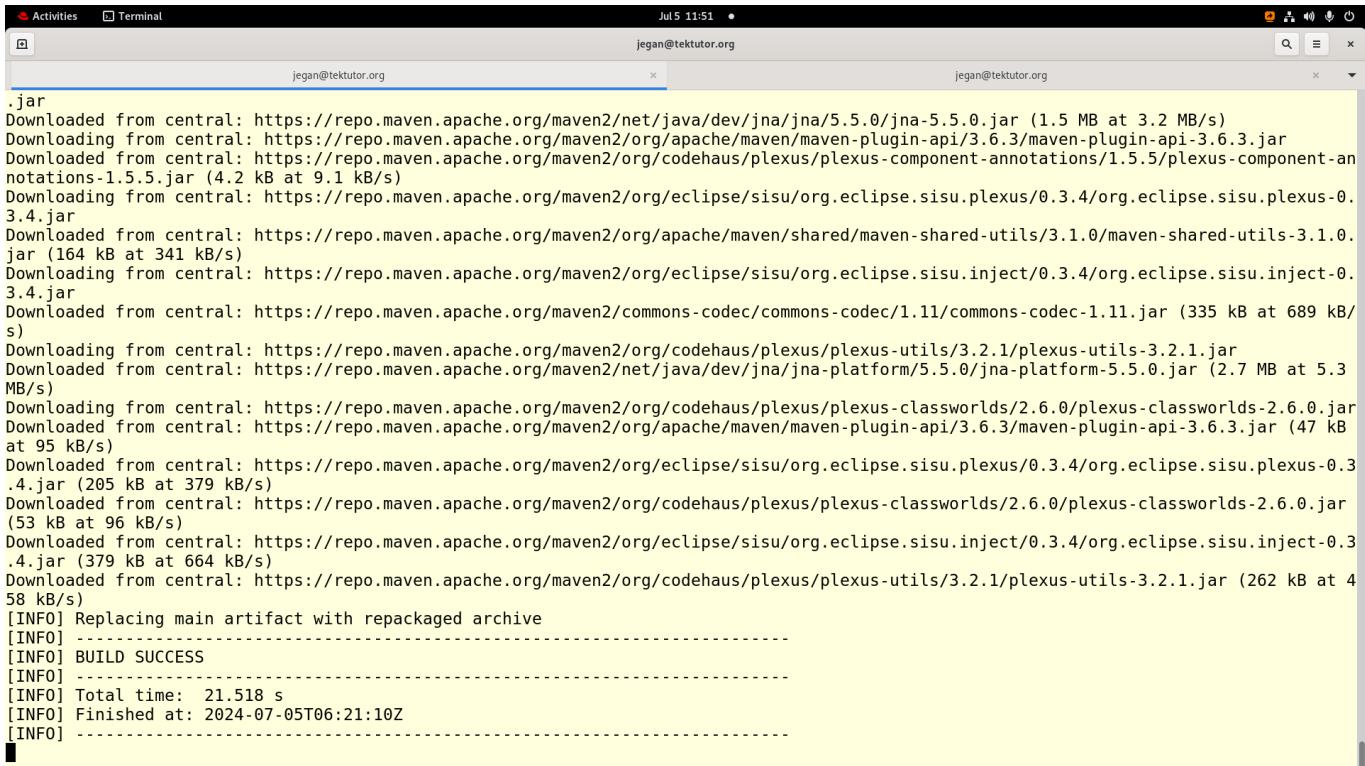
Image Repository:  default-route-openshift-image-registry.apps-crc.testing/jegan/tektutor-hello
Image Lookup:    local=false
Tags:           <none>
jegan@tektutor.org ~/openshift-july-2024/Day5/buildconfig ⚡ main • cat ~/Downloads/crc-linux-2.37.1-amd64/openshift-crc.txt
The server is accessible via web console at:
https://console.openshift-console.apps-crc.testing

Log in as administrator:
  Username: kubeadmin
  Password: pSQ2k-NnLL4-fZuTR-vzMfT

Log in as user:
  Username: developer
  Password: developer
```

```
jegan@tektutor.org ~ -/openshift-july-2024/Day5/buildconfig > main • oc get bc
No resources found in jegan namespace.
jegan@tektutor.org ~ -/openshift-july-2024/Day5/buildconfig > main • oc create -f buildconfig.yml
buildconfig.build.openshift.io/hello-bc created
jegan@tektutor.org ~ -/openshift-july-2024/Day5/buildconfig > main • oc get bc
NAME      TYPE   FROM          LATEST
hello-bc   Docker  Git@main  1
jegan@tektutor.org ~ -/openshift-july-2024/Day5/buildconfig > main • oc get builds
NAME      TYPE   FROM          STATUS    STARTED          DURATION
hello-bc-1 Docker  Git@1168fc9  Running   10 seconds ago
jegan@tektutor.org ~ -/openshift-july-2024/Day5/buildconfig > main • oc logs -f bc/hello-bc
Cloning "https://github.com/tektutor/openshift-july-2024.git" ...
Commit: 1168fc9b5539c96dbae8df8b47ae18356a2ec4e3 (Update README.md)
Author: Jeganathan Swaminathan <mail2jegan@gmail.com>
Date: Fri Jul 5 11:15:43 2024 +0530
time="2024-07-05T06:20:13Z" 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"
I0705 06:20:13.831110       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 ...
Trying to pull docker.io/library/maven:3.6.3-jdk-11...
Getting image source signatures
Copying blob sha256:6c215442f70bd949a6f2e8092549943905e2d4f9c87a4f532d7740ae8647d33a
Copying blob sha256:004f1eed87df7f75f5e2a1a649fa7edd7f713d1300532fd0909bb39cd48437d7
Copying blob sha256:5d6f1e8117dbb1c6a57603cb4f321a861a08105a81bcc6b01b0ec2b78c8523a5
Copying blob sha256:48c2faf66abec3dc9f54d6722ff592fce6dd4fb58a0d0b72282936c6598a3b3
Copying blob sha256:234b70d0479d7f16d7ee8d04e4ffdacc57d7d14313faf59d332f18b2e9418743
Copying blob sha256:d7eb6c022a4e6128219b32a8e07c8c22c89624ff440ebac1506121794bc15ccc
Copying blob sha256:355e8215390faee903502a9fddfc65cd823f1606f053376ba2575adce66974a1
Copying blob sha256:c5eb43522f68d7e2347e19ad70dadcf1594d25b792ede0464c2936ff902c4c6
Copying blob sha256:4fee0489a65b64056f81358639bfe85fd87776630830fd02ce8c15e34928bf9c
Copying blob sha256:413646e6fa5d7bcd9722d3e400fc080a77deb505baed79afa5fedae23583af25
```

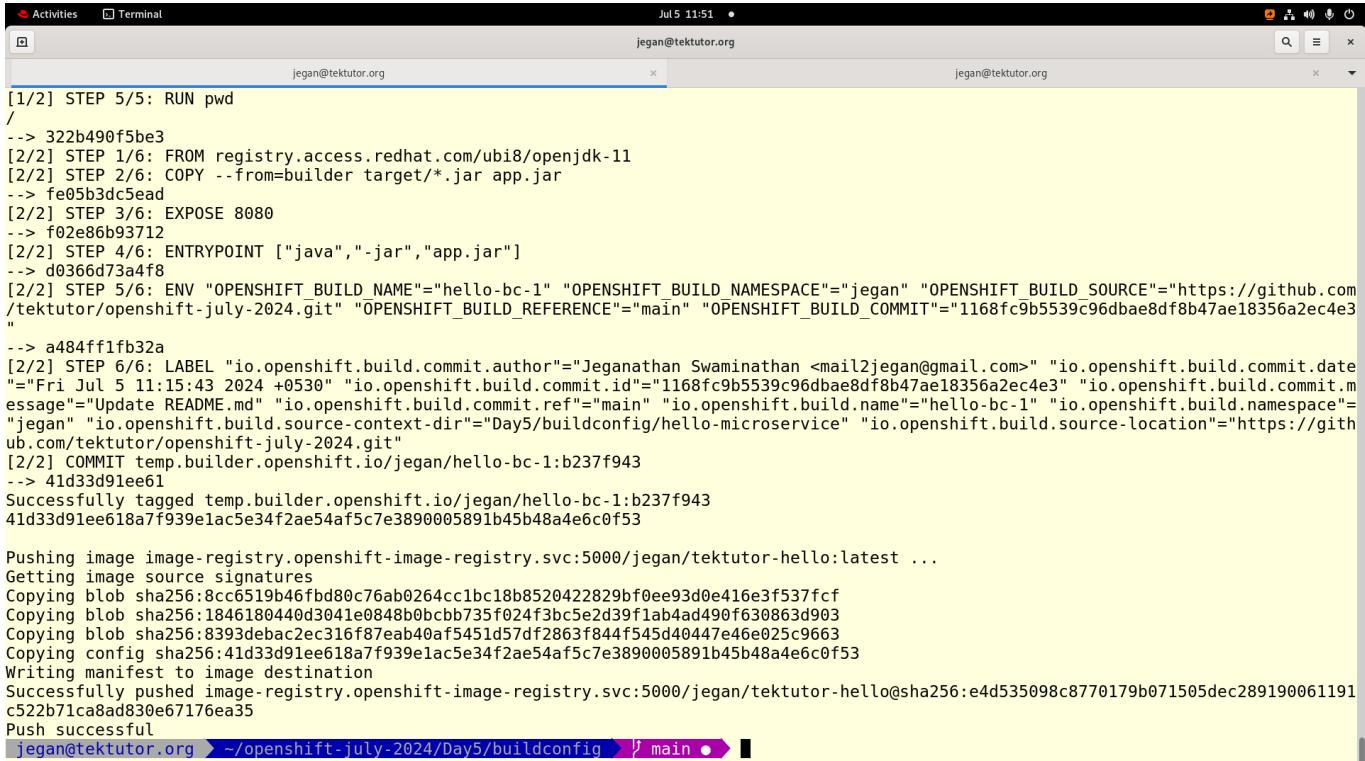
```
gin-3.2.0.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-resources-plugin/3.2.0/maven-resources-plugin-3.2.0.pom (8.1 kB at 261 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-plugins/34/maven-plugins-34.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/34/maven-plugins-34.pom (11 kB at 345 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven-parent/34/maven-parent-34.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven-parent/34/maven-parent-34.pom (43 kB at 1.1 MB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/apache/23/apache-23.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/apache/23/apache-23.pom (18 kB at 576 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-resources-plugin/3.2.0/maven-resources-plugin-3.2.0.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-resources-plugin/3.2.0/maven-resources-plugin-3.2.0.jar (33 kB at 942 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-compiler-plugin/3.8.1/maven-compiler-plugin-3.8.1.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-compiler-plugin/3.8.1/maven-compiler-plugin-3.8.1.pom (12 kB at 312 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-plugins/33/maven-plugins-33.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-plugins/33/maven-plugins-33.pom (11 kB at 23 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/33/maven-parent-33.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/33/maven-parent-33.pom (44 kB at 1.1 MB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/apache/21/apache-21.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/apache/21/apache-21.pom (17 kB at 535 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-compiler-plugin/3.8.1/maven-compiler-plugin-3.8.1.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-compiler-plugin/3.8.1/maven-compiler-plugin-3.8.1.jar (62 kB at 1.7 MB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-surefire-plugin/2.22.2/maven-surefire-plugin-2.22.2.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-surefire-plugin/2.22.2/maven-surefire-plugin-2.22.2.pom (5.0 kB at 143 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/surefire/surefire/2.22.2/surefire-2.22.2.pom
```



```

Activities Terminal Jul 5 11:51 • jegan@tektutor.org
.jar
Downloaded from central: https://repo.maven.apache.org/maven2/net/java/dev/jna/jna/5.5.0/jna-5.5.0.jar (1.5 MB at 3.2 MB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-plugin-api/3.6.3/maven-plugin-api-3.6.3.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-component-annotations/1.5.5/plexus-component-annotations-1.5.5.jar (4.2 kB at 9.1 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/eclipse/sisu/org.eclipse.sisu.plexus/0.3.4/org.eclipse.sisu.plexus-0.3.4.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-shared-utils/3.1.0/maven-shared-utils-3.1.0.jar (164 kB at 341 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/eclipse/sisu/org.eclipse.sisu.inject/0.3.4/org.eclipse.sisu.inject-0.3.4.jar
Downloaded from central: https://repo.maven.apache.org/maven2/commons-codec/commons-codec/1.11/commons-codec-1.11.jar (335 kB at 689 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-utils/3.2.1/plexus-utils-3.2.1.jar
Downloaded from central: https://repo.maven.apache.org/maven2/net/java/dev/jna/jna-platform/5.5.0/jna-platform-5.5.0.jar (2.7 MB at 5.3 MB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-classworlds/2.6.0/plexus-classworlds-2.6.0.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-plugin-api/3.6.3/maven-plugin-api-3.6.3.jar (47 kB at 95 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/eclipse/sisu/org.eclipse.sisu.plexus/0.3.4/org.eclipse.sisu.plexus-0.3.4.jar (205 kB at 379 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-classworlds/2.6.0/plexus-classworlds-2.6.0.jar (53 kB at 96 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/eclipse/sisu/org.eclipse.sisu.inject/0.3.4/org.eclipse.sisu.inject-0.3.4.jar (379 kB at 664 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-utils/3.2.1/plexus-utils-3.2.1.jar (262 kB at 458 kB/s)
[INFO] Replacing main artifact with repackaged archive
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 21.518 s
[INFO] Finished at: 2024-07-05T06:21:10Z
[INFO] -----

```



```

Activities Terminal Jul 5 11:51 • jegan@tektutor.org
[1/2] STEP 5/5: RUN pwd
/
--> 322b490f5be3
[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
--> fe05b3dc5ead
[2/2] STEP 3/6: EXPOSE 8080
--> f02e86b93712
[2/2] STEP 4/6: ENTRYPOINT ["java","-jar","app.jar"]
--> d0366d73a4f8
[2/2] STEP 5/6: ENV "OPENSHIFT_BUILD_NAME"="hello-bc-1" "OPENSHIFT_BUILD_NAMESPACE"="jegan" "OPENSHIFT_BUILD_SOURCE"="https://github.com/tektutor/openshift-july-2024.git" "OPENSHIFT_BUILD_REFERENCE"="main" "OPENSHIFT_BUILD_COMMIT"="1168fc9b5539c96dbae8df8b47ae18356a2ec4e3"
--> a484ff1fb32a
[2/2] STEP 6/6: LABEL "io.openshift.build.commit.author"="Jeganathan Swaminathan <mail2jegan@gmail.com>" "io.openshift.build.commit.date"="Fri Jul 5 11:15:43 2024 +0530" "io.openshift.build.commit.id"="1168fc9b5539c96dbae8df8b47ae18356a2ec4e3" "io.openshift.build.commit.message"="Update README.md" "io.openshift.build.commit.ref"="main" "io.openshift.build.name"="hello-bc-1" "io.openshift.build.namespace"="jegan" "io.openshift.build.source-context-dir"="Day5/buildconfig/hello-microservice" "io.openshift.build.source-location"="https://github.com/tektutor/openshift-july-2024.git"
[2/2] COMMIT temp.builder.openshift.io/jegan/hello-bc-1:b237f943
--> 41d33d91ee61
Successfully tagged temp.builder.openshift.io/jegan/hello-bc-1:b237f943
41d33d91ee618a7f939e1ac5e34f2ae54af5c7e3890005891b45b48a4e6c0f53

Pushing image image-registry.openshift-image-registry.svc:5000/jegan/tektutor-hello:latest ...
Getting image source signatures
Copying blob sha256:8cc6519b46fdb80c76ab0264cc1bc18b8520422829bf0ee93d0e416e3f537fcf
Copying blob sha256:1846180440d3041e0848b0bcb735f024f3bc5e2d39f1ab4ad490f630863d903
Copying blob sha256:8393debac2ec316f87eab40af5451d57df2863f844f545d40447e46e025c9663
Copying config sha256:41d33d91ee618a7f939e1ac5e34f2ae54af5c7e3890005891b45b48a4e6c0f53
Writing manifest to image destination
Successfully pushed image-registry.openshift-image-registry.svc:5000/jegan/tektutor-hello@sha256:e4d535098c8770179b071505dec289190061191
c522b71ca8ad830e67176ea35
Push successful
jegan@tektutor.org ~ /openshift-july-2024/Day5/buildconfig ⚡ main

```

Activities Google Chrome BuildConfigs - Red Hat OpenShift - Google Chrome

Not secure https://console-openshift-console.apps-crc.testing/k8s/ns/jegan/build.openshift.io~v1~BuildConfig

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

OpenShift Local cluster is for development and testing purposes. DON'T use it for production.

Red Hat OpenShift

Administrator

- Home
- Operators
- Workloads
- Networking
- Storage
- Builds
- BuildConfigs**
- Builds
- ImageStreams
- Compute
- User Management
- Administration

Project: jegan

BuildConfigs

Filter Name Search by name...

Name	Last run	Last run status	Last run time	Last run duration
hello-bc	hello-bc-1	Complete	5 Jul 2024, 11:50	1 minute 12 seconds

Create BuildConfig

Activities Google Chrome hello-bc - BuildConfig - Details - Red Hat OpenShift - Google Chrome

Not secure https://console-openshift-console.apps-crc.testing/k8s/ns/jegan/buildconfigs/hello-bc

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

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Project: jegan

BuildConfigs > BuildConfig details

BC hello-bc

Actions

Details	YAML	Builds	Environment	Events
BuildConfig details				
Name hello-bc	Type Docker			
Namespace jegan	Git repository https://github.com/tektutor/openshift-july-2024.git			
Labels name=hello	Edit	Git ref main		
Annotations 0 annotations		Context dir Day5/buildconfig/hello-microservice		
Created at 5 Jul 2024, 11:50		Output to tekstutor-hello:latest		
Owner No owner		Run policy Serial		
		Triggers ConfigChange		

Activities Google Chrome July 5 11:51 • hello-bc - BuildConfig - Builds - Red Hat OpenShift - Google Chrome Not secure https://console-openshift-console.apps-crc.testing/k8s/ns/jegan/buildconfigs/hello-bc/builds Bookmarks Science Crafts Optical illusion Home Schooling Design Patterns Datastructure... Linux POSIX Threads CPPUnit Microservices Maven Microservices... GoogleTest All Bookmarks OpenShift Local cluster is for development and testing purposes. DONT use it for production.

Red Hat OpenShift

Administrator Home Operators Workloads Networking Storage Builds BuildConfigs Builds ImageStreams Compute User Management Administration

Project: jegan BuildConfigs > BuildConfig details BC hello-bc Details YAML Builds Environment Events Actions ▾

Filter Name Search by name... /

Name	Status	Start time	Duration
hello-bc-1	Complete	5 Jul 2024, 11:50	1 minute 12 seconds

Activities Google Chrome July 5 11:52 • hello-bc-1 - Build - Details - Red Hat OpenShift - Google Chrome Not secure https://console-openshift-console.apps-crc.testing/k8s/ns/jegan/builds/hello-bc-1 Bookmarks Science Crafts Optical illusion Home Schooling Design Patterns Datastructure... Linux POSIX Threads CPPUnit Microservices Maven Microservices... GoogleTest All Bookmarks OpenShift Local cluster is for development and testing purposes. DONT use it for production.

Red Hat OpenShift

Administrator Home Operators Workloads Networking Storage Builds BuildConfigs Builds ImageStreams Compute User Management Administration

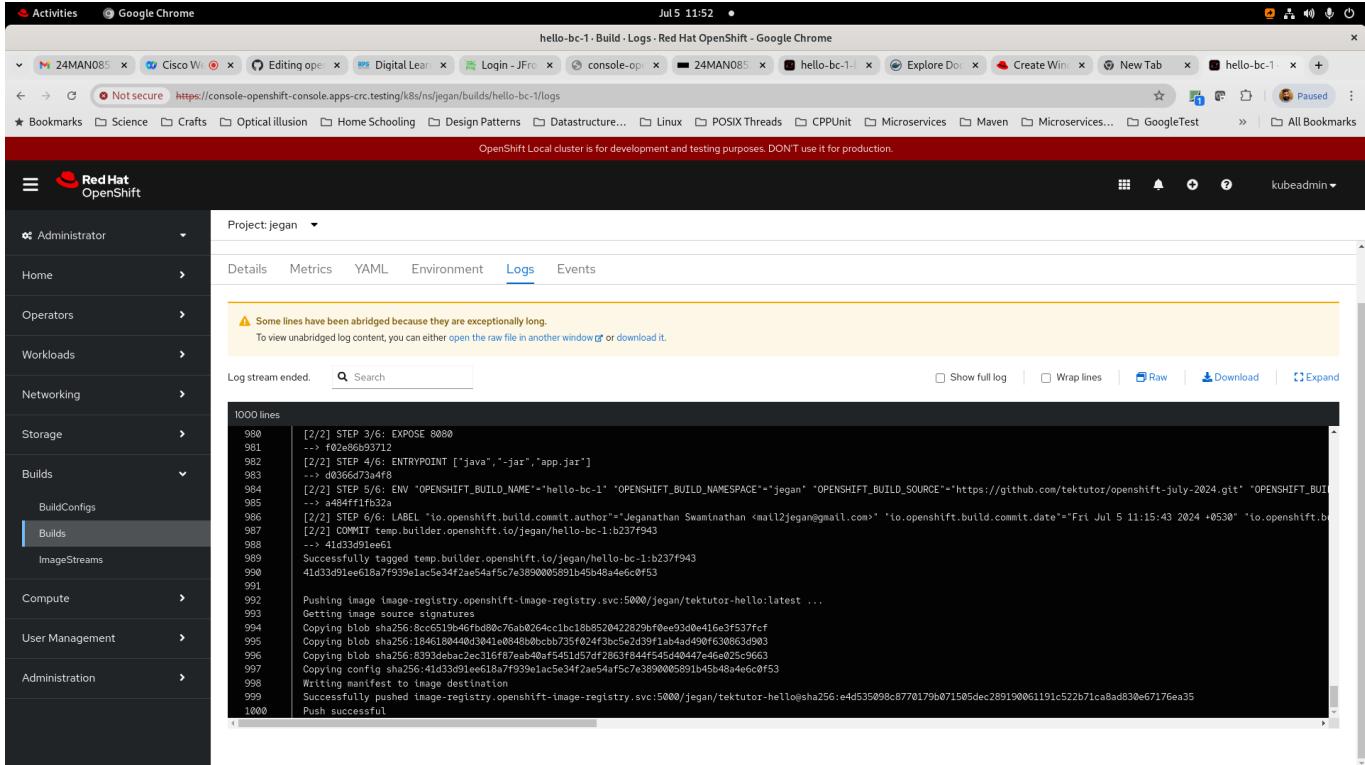
Project: jegan Builds > Build details BC hello-bc-1 Complete Actions ▾

Details Metrics YAML Environment Logs Events

Build details

Name	hello-bc-1	Status	Complete	
Namespace	NS jegan	BuildConfig	BC hello-bc	
Labels	buildconfig=hello-bc, name=hello, openshift.io/build-config.name=hello-bc, openshift.io/build.start-policy=Serial	Edit	Start time	5 Jul 2024, 11:50
Annotations	3 annotations		Completion time	5 Jul 2024, 11:51
Triggered by	Build configuration change		Duration	1 minute 12 seconds
Created at	5 Jul 2024, 11:50		Type	Docker
Owner	BC hello-bc		Git repository	https://github.com/tektutor/openshift-july-2024.git
			Git ref	

https://console-openshift-console.apps-crc.testing/k8s/ns/jegan/builds/hello-bc-1/logs



Lab - Deploying our application using the custom docker image we pushed into Openshift's Internal Container Registry

```

cd ~/openshift-july-2024
git pull
cd Day5/buildconfig

oc create deployment hello --image=default-route-openshift-image-
registry.apps-crc.testing/jegan/tektutor-hello:latest --replicas=3 -o yaml
--dry-run=client

oc create deployment hello --image=default-route-openshift-image-
registry.apps-crc.testing/jegan/tektutor-hello:latest --replicas=3 -o yaml
--dry-run=client > hello-deploy.yml

ls -l
oc create -f hello-deploy.yml --save-config
oc get po

oc expose deploy/hello -o yaml --port=8080 --dry-run=client
oc expose deploy/hello -o yaml --port=8080 --dry-run=client > hello-svc.yml
oc create -f hello-svc.yml --save-config
oc get svc
oc describe svc/hello

oc expose svc/hello -o yaml --dry-run=client
oc expose svc/hello -o yaml --dry-run=client > hello-route.yml
oc explain route

curl http://hello-jegan.apps-crc.testing
oc logs -f deploy/hello

```

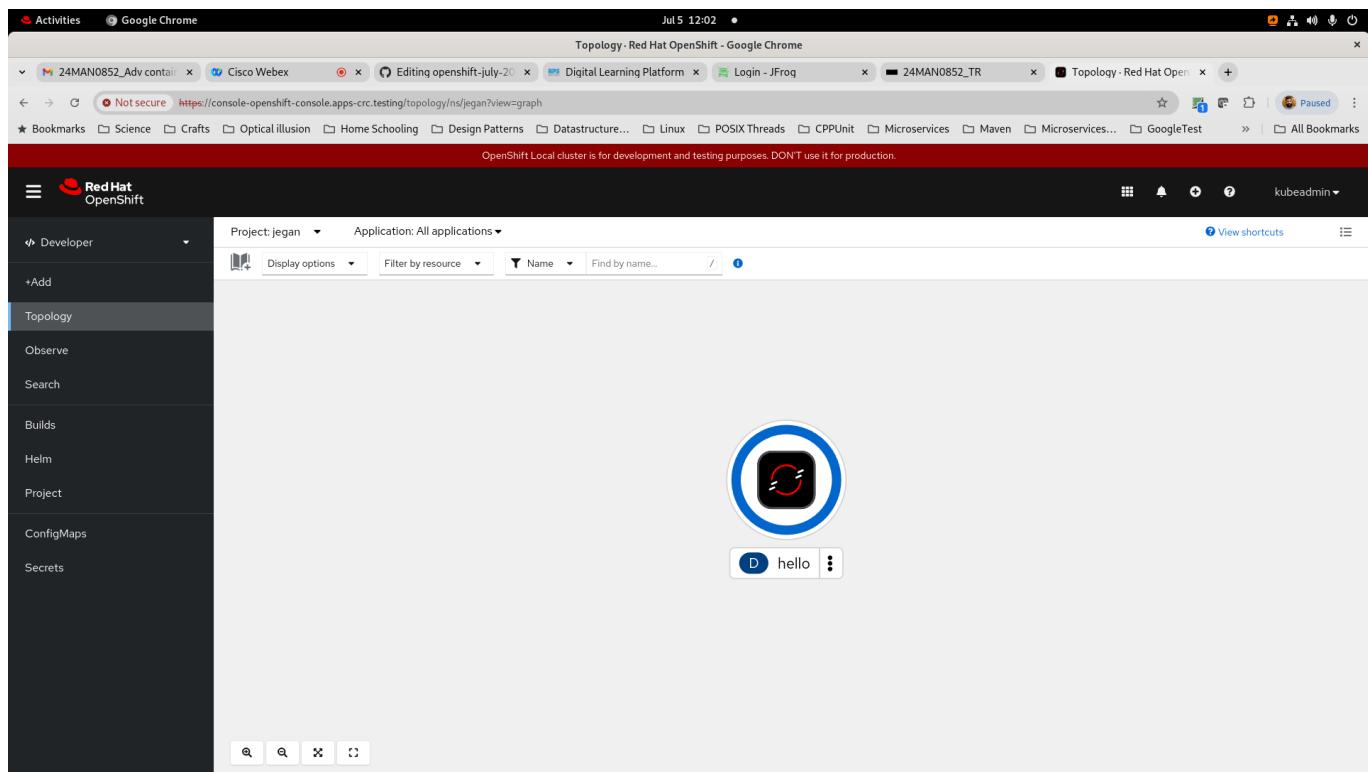
Expected output

```

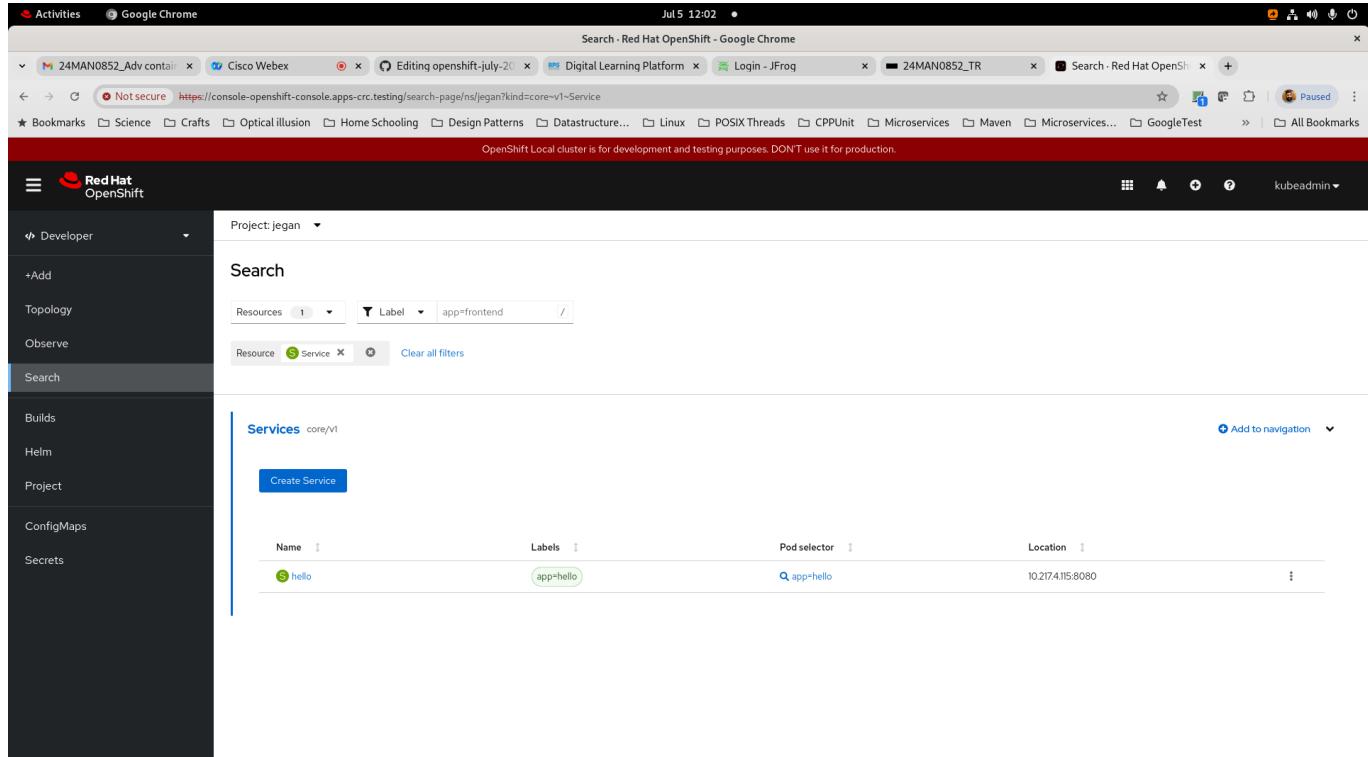
Activities Terminal Jul 5 11:57 • jegan@tektutor.org
jegan@tektutor.org ~ ~/openshift-july-2024/Day5/buildconfig > main ➔ ls
buildconfig.yml hello-microservice imagestream.yml
jegan@tektutor.org ~ ~/openshift-july-2024/Day5/buildconfig > main ➔ oc create deployment hello --image=tektutor-hello:latest
x jegan@tektutor.org ~ ~/openshift-july-2024/Day5/buildconfig > main ➔ oc get is
NAME IMAGE REPOSITORY TAGS UPDATED
tektutor-hello default-route-openshift-image-registry.apps-crc.testing/jegan/tektutor-hello latest 5 minutes ago
jegan@tektutor.org ~ ~/openshift-july-2024/Day5/buildconfig > main ➔ oc get deploy
No resources found in jegan namespace.
jegan@tektutor.org ~ ~/openshift-july-2024/Day5/buildconfig > main ➔ oc create deployment hello --image=default-route-openshift-image-registry.apps-crc.testing/jegan/tektutor-hello:latest --replicas=3 -o yaml --dry-run=client
apiVersion: apps/v1
kind: Deployment
metadata:
  creationTimestamp: null
  labels:
    app: hello
    name: hello
spec:
  replicas: 3
  selector:
    matchLabels:
      app: hello
  strategy: {}
  template:
    metadata:
      creationTimestamp: null
      labels:
        app: hello
    spec:
      containers:
        - image: default-route-openshift-image-registry.apps-crc.testing/jegan/tektutor-hello:latest
          name: tektutor-hello
          resources: {}
status: {}
jegan@tektutor.org ~ ~/openshift-july-2024/Day5/buildconfig > main ➔ oc create deployment hello --image=default-route-openshift-image-registry.apps-crc.testing/jegan/tektutor-hello:latest --replicas=3 -o yaml --dry-run=client > hello-deploy.yaml
Activities Terminal Jul 5 11:58 • jegan@tektutor.org
jegan@tektutor.org ~ ~/openshift-july-2024/Day5/buildconfig > main ➔ vim hello-deploy.yaml
jegan@tektutor.org ~ ~/openshift-july-2024/Day5/buildconfig > main ➔ oc create -f hello-deploy.yaml --save-config
deployment.apps/hello created
jegan@tektutor.org ~ ~/openshift-july-2024/Day5/buildconfig > main ➔ oc get po -w
NAME READY STATUS RESTARTS AGE
hello-8b48bd7b4-pqtw6 0/1 ContainerCreating 0 4s
hello-8b48bd7b4-wkb8j 0/1 ContainerCreating 0 4s
hello-8b48bd7b4-wqlb4 0/1 ContainerCreating 0 4s
hello-bc-1-build 0/1 Completed 0 7m27s
hello-8b48bd7b4-wqlb4 1/1 Running 0 9s
hello-8b48bd7b4-wkb8j 1/1 Running 0 9s
hello-8b48bd7b4-pqtw6 1/1 Running 0 9s
^C
x jegan@tektutor.org ~ ~/openshift-july-2024/Day5/buildconfig > main ➔

```

```
jegan@tektutor.org ~ -/openshift-july-2024/Day5/buildconfig Jul 5 12:01 • jegan@tektutor.org jegan@tektutor.org
hello-bc-1-build 0/1 Completed 0 7m27s
hello-8b48bd7b4-wqlb4 1/1 Running 0 9s
hello-8b48bd7b4-wkb8j 1/1 Running 0 9s
hello-8b48bd7b4-pqtw6 1/1 Running 0 9s
^C
x jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > ⌘ main ● oc expose deploy/hello -o yaml --port=8080 --dry-run=client
apiVersion: v1
kind: Service
metadata:
  creationTimestamp: null
  labels:
    app: hello
    name: hello
spec:
  ports:
    - port: 8080
      protocol: TCP
      targetPort: 8080
  selector:
    app: hello
status:
  loadBalancer: {}
jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > ⌘ main ● oc expose deploy/hello -o yaml --port=8080 --dry-run=client >
hello-svc.yml
jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > ⌘ main ● oc create -f hello-svc.yml --save-config
service/hello created
jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > ⌘ main ● oc get svc
NAME   TYPE    CLUSTER-IP   EXTERNAL-IP   PORT(S)   AGE
hello   ClusterIP  10.217.4.115 <none>        8080/TCP  3s
jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > ⌘ main ● oc describe svc/hello
Name:           hello
Namespace:      jegan
Labels:         app=hello
Annotations:    <none>
Selector:       app=hello
Activities   Activities Terminal Jul 5 12:02 • jegan@tektutor.org jegan@tektutor.org
jegan@tektutor.org ~ -/openshift-july-2024/Day5/buildconfig Jul 5 12:02 • jegan@tektutor.org jegan@tektutor.org
app: hello
name: hello
spec:
  ports:
    - port: 8080
      protocol: TCP
      targetPort: 8080
  selector:
    app: hello
status:
  loadBalancer: {}
jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > ⌘ main ● oc expose deploy/hello -o yaml --port=8080 --dry-run=client >
hello-svc.yml
jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > ⌘ main ● oc create -f hello-svc.yml --save-config
service/hello created
jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > ⌘ main ● oc get svc
NAME   TYPE    CLUSTER-IP   EXTERNAL-IP   PORT(S)   AGE
hello   ClusterIP  10.217.4.115 <none>        8080/TCP  3s
jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > ⌘ main ● oc describe svc/hello
Name:           hello
Namespace:      jegan
Labels:         app=hello
Annotations:    <none>
Selector:       app=hello
Type:          ClusterIP
IP Family Policy: SingleStack
IP Families:   IPv4
IP:             10.217.4.115
IPs:            10.217.4.115
Port:           <unset>  8080/TCP
TargetPort:     8080/TCP
Endpoints:      10.217.0.90:8080,10.217.0.91:8080,10.217.0.92:8080
Session Affinity: None
Events:         <none>
jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > ⌘ main ●
```



The screenshot shows the Red Hat OpenShift Topology interface. The left sidebar is collapsed, showing options like Developer, +Add, Topology (which is selected), Observe, Search, Builds, Helm, Project, ConfigMaps, and Secrets. The main area displays a single pod named "hello" represented by a blue circle with a white icon. Below the icon is a button labeled "D hello". The top navigation bar shows the URL <https://console-openshift-console.apps-crc.testing/topology/ns/jegan?view=graph>. The status bar at the bottom indicates "Jul 5 12:02".



The screenshot shows the Red Hat OpenShift Search interface. The left sidebar is collapsed, showing options like Developer, +Add, Topology (which is selected), Observe, Search (selected), Builds, Helm, Project, ConfigMaps, and Secrets. The main area displays a service named "core/v1/hello". The search bar at the top has the query "app:frontend". The table below lists the service details:

Name	Labels	Pod selector	Location
core/v1/hello	app=hello	app=hello	10.217.4.115:8080

The top navigation bar shows the URL <https://console-openshift-console.apps-crc.testing/search-page/ns/jegan?kind=core&v1~Service>. The status bar at the bottom indicates "Jul 5 12:02".

The screenshot shows the Red Hat OpenShift web interface. The URL is <https://console.openshift-console.apps-crc.testing/k8s/ns/jegan/services/hello>. The page title is "hello - Service - Details - Red Hat OpenShift - Google Chrome". The top navigation bar includes links for Activities, Google Chrome, Cisco Webex, and several other tabs. The main content area is titled "Project: jegan" and shows the "Service details" for the "hello" service. The "Details" tab is selected. The service name is "hello", namespace is "jegan", and it has a single label "app:hello". The "Service routing" section shows the hostname as "hello.jegan.svc.cluster.local" and the "Service address" section shows the Cluster IP as "10.217.4.115". The "Service port mapping" section shows a single port mapping from port 8080 to 8080. The "Created at" field shows the service was created on "5 Jul 2024, 12:01".

The screenshot shows the Red Hat OpenShift web interface. The URL is <https://console.openshift-console.apps-crc.testing/k8s/ns/jegan/services/hello/pods>. The page title is "hello - Service - Pods - Red Hat OpenShift - Google Chrome". The main content area is titled "Project: jegan" and shows the "Pods" tab selected. The table lists three pods: "hello-8b48bd7b4-pqtw6", "hello-8b48bd7b4-wkb8j", and "hello-8b48bd7b4-wqlb4", all in a "Running" status. The columns include Name, Status, Ready, Restarts, Owner, Memory, CPU, and Created.

Name	Status	Ready	Restarts	Owner	Memory	CPU	Created
hello-8b48bd7b4-pqtw6	Running	1/1	0	RS hello-8b48bd7b4	-	-	5 Jul 2024, 11:57
hello-8b48bd7b4-wkb8j	Running	1/1	0	RS hello-8b48bd7b4	-	-	5 Jul 2024, 11:57
hello-8b48bd7b4-wqlb4	Running	1/1	0	RS hello-8b48bd7b4	-	-	5 Jul 2024, 11:57

```

Activities Terminal Jul 5 12:04 • jegan@tektutor.org
jegan@tektutor.org ~ -/openshift-july-2024/Day5/buildconfig > main • oc expose deploy/hello -o yaml --port=8080 --dry-run=client >
hello-svc.yml
jegan@tektutor.org ~ -/openshift-july-2024/Day5/buildconfig > main • oc create -f hello-svc.yml --save-config
service/hello created
jegan@tektutor.org ~ -/openshift-july-2024/Day5/buildconfig > main • oc get svc
NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE
hello ClusterIP 10.217.4.115 <none> 8080/TCP 3s
jegan@tektutor.org ~ -/openshift-july-2024/Day5/buildconfig > main • oc describe svc/hello
Name: hello
Namespace: jegan
Labels: app=hello
Annotations: <none>
Selector: app=hello
Type: ClusterIP
IP Family Policy: SingleStack
IP Families: IPv4
IP: 10.217.4.115
IPs: 10.217.4.115
Port: <unset> 8080/TCP
TargetPort: 8080/TCP
Endpoints: 10.217.0.90:8080,10.217.0.91:8080,10.217.0.92:8080
Session Affinity: None
Events: <none>
jegan@tektutor.org ~ -/openshift-july-2024/Day5/buildconfig > main • oc expose svc/hello -o yaml --dry-run=client
apiVersion: v1
kind: Route
metadata:
  creationTimestamp: null
  labels:
    app: hello
  name: hello
spec:
  port:
    targetPort: 8080
  to:
    kind: "Service"
Activities Terminal Jul 5 12:05 • jegan@tektutor.org
jegan@tektutor.org ~ -/openshift-july-2024/Day5/buildconfig > main • oc expose svc/hello -o yaml --dry-run=client > hello-route.yml
jegan@tektutor.org ~ -/openshift-july-2024/Day5/buildconfig > main • oc explain route
GROUP: route.openshift.io
KIND: Route
VERSION: v1
DESCRIPTION:
A route allows developers to expose services through an HTTP(S) aware load balancing and proxy layer via a public DNS entry. The route may further specify TLS options and a certificate, or specify a public CNAME that the router should also accept for HTTP and HTTPS traffic. An administrator typically configures their router to be visible outside the cluster firewall, and may also add additional security, caching, or traffic controls on the service content. Routers usually talk directly to the service endpoints.

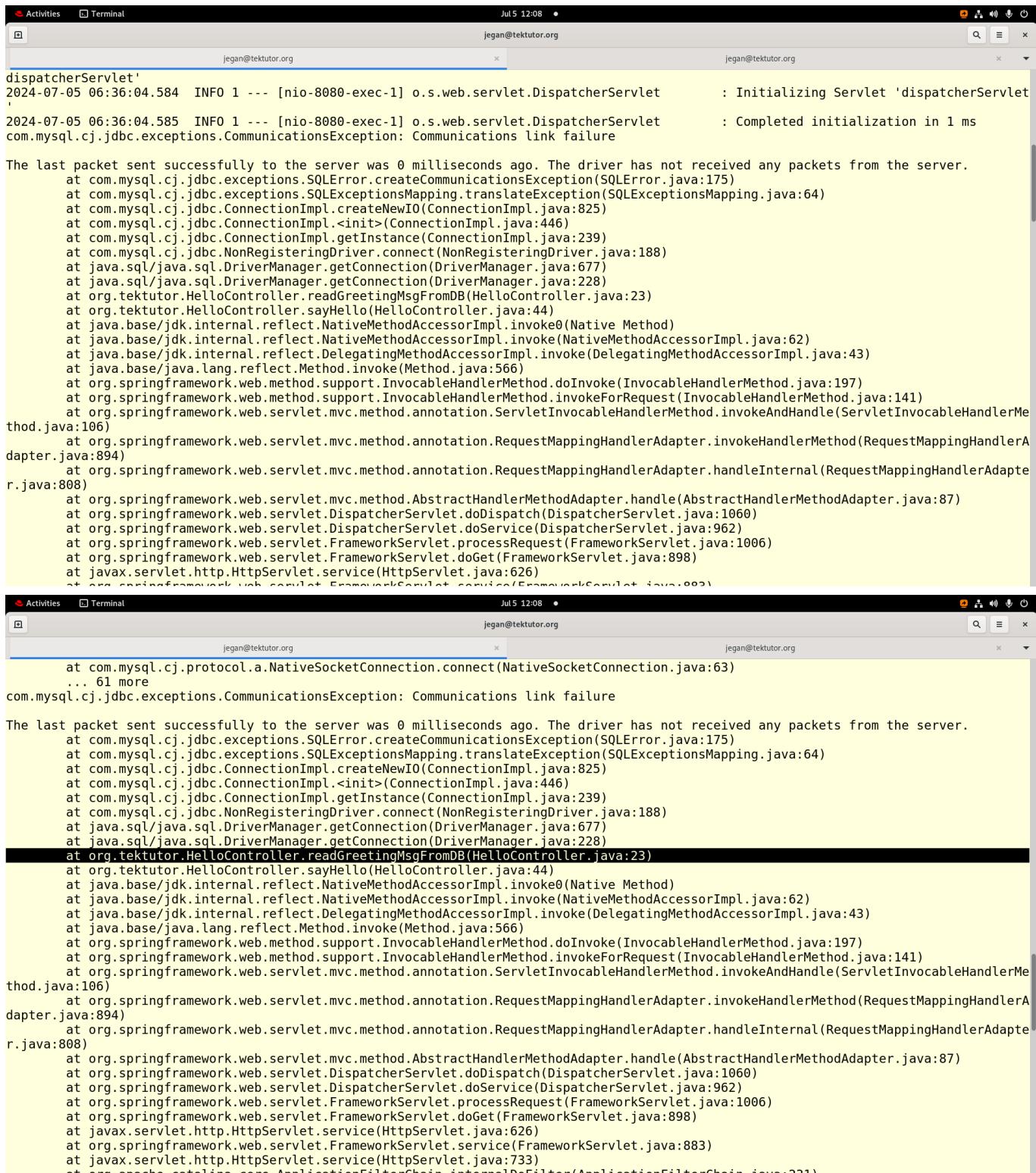
Once a route is created, the `host` field may not be changed. Generally, routers use the oldest route with a given host when resolving conflicts.

Routers are subject to additional customization and may support additional controls via the annotations field.

Because administrators may configure multiple routers, the route status field is used to return information to clients about the names and states of the route under each router. If a client chooses a duplicate name, for instance, the route status conditions are used to indicate the route cannot be chosen.

To enable HTTP/2 ALPN on a route it requires a custom (non-wildcard) certificate. This prevents connection coalescing by clients, notably web browsers. We do not support HTTP/2 ALPN on routes that use the default certificate because of the risk of connection re-use/coalescing. Routes that

```

```

Activities Terminal jegan@tektutor.org Jul 5 12:08 • jegan@tektutor.org
dispatcherServlet'
2024-07-05 06:36:04.584 INFO 1 --- [nio-8080-exec-1] o.s.web.servlet.DispatcherServlet : Initializing Servlet 'dispatcherServlet'
'2024-07-05 06:36:04.585 INFO 1 --- [nio-8080-exec-1] o.s.web.servlet.DispatcherServlet : Completed initialization in 1 ms
com.mysql.cj.jdbc.exceptions.CommunicationsException: Communications link failure
The last packet sent successfully to the server was 0 milliseconds ago. The driver has not received any packets from the server.
at com.mysql.cj.jdbc.exceptions.SQLException.createCommunicationsException(SQLException.java:175)
at com.mysql.cj.jdbc.exceptions.SQLExceptionsMapping.translateException(SQLExceptionsMapping.java:64)
at com.mysql.cj.jdbc.ConnectionImpl.createNewIO(ConnectionImpl.java:825)
at com.mysql.cj.jdbc.ConnectionImpl.<init>(ConnectionImpl.java:446)
at com.mysql.cj.jdbc.ConnectionImpl.getInstance(ConnectionImpl.java:239)
at com.mysql.cj.jdbc.NonRegisteringDriver.connect(NonRegisteringDriver.java:188)
at java.sql.DriverManager.getConnection(DriverManager.java:677)
at java.sql.DriverManager.getConnection(DriverManager.java:228)
at org.tektutor.HelloController.readGreetingMsgFromDB(HelloController.java:23)
at org.tektutor.HelloController.sayHello(HelloController.java:44)
at java.base/jdk.internal.reflect.NativeMethodAccessorImpl.invoke0(Native Method)
at java.base/jdk.internal.reflect.NativeMethodAccessorImpl.invoke(NativeMethodAccessorImpl.java:62)
at java.base/jdk.internal.reflect.DelegatingMethodAccessorImpl.invoke(DelegatingMethodAccessorImpl.java:43)
at java.base/java.lang.reflect.Method.invoke(Method.java:566)
at org.springframework.web.method.support.InvocableHandlerMethod.doInvoke(InvocableHandlerMethod.java:197)
at org.springframework.web.method.support.InvocableHandlerMethod.invokeForRequest(InvocableHandlerMethod.java:141)
at org.springframework.web.servlet.mvc.method.annotation.ServletInvocableHandlerMethod.invokeAndHandle(ServletInvocableHandlerMethod.java:106)
at org.springframework.web.servlet.mvc.method.annotation.RequestMappingHandlerAdapter.invokeHandlerMethod(RequestMappingHandlerAdapter.java:894)
at org.springframework.web.servlet.mvc.method.annotation.RequestMappingHandlerAdapter.handleInternal(RequestMappingHandlerAdapter.java:808)
at org.springframework.web.servlet.mvc.method.AbstractHandlerMethodAdapter.handle(AbstractHandlerMethodAdapter.java:87)
at org.springframework.web.servlet.DispatcherServlet.doDispatch(DispatcherServlet.java:1060)
at org.springframework.web.servlet.DispatcherServlet.doService(DispatcherServlet.java:962)
at org.springframework.web.servlet.FrameworkServlet.processRequest(FrameworkServlet.java:1006)
at org.springframework.web.servlet.FrameworkServlet.doGet(FrameworkServlet.java:898)
at javax.servlet.http.HttpServlet.service(HttpServlet.java:626)
at org.springframework.web.servlet.FrameworkServlet.service(FrameworkServlet.java:883)
at javax.servlet.http.HttpServlet.service(HttpServlet.java:733)
at org.apache.catalina.core.ApplicationFilterChain.internalDoFilter(ApplicationFilterChain.java:221)

Activities Terminal jegan@tektutor.org Jul 5 12:08 • jegan@tektutor.org
at com.mysql.cj.protocol.a.NativeSocketConnection.connect(NativeSocketConnection.java:63)
... 61 more
com.mysql.cj.jdbc.exceptions.CommunicationsException: Communications link failure
The last packet sent successfully to the server was 0 milliseconds ago. The driver has not received any packets from the server.
at com.mysql.cj.jdbc.exceptions.SQLException.createCommunicationsException(SQLException.java:175)
at com.mysql.cj.jdbc.exceptions.SQLExceptionsMapping.translateException(SQLExceptionsMapping.java:64)
at com.mysql.cj.jdbc.ConnectionImpl.createNewIO(ConnectionImpl.java:825)
at com.mysql.cj.jdbc.ConnectionImpl.<init>(ConnectionImpl.java:446)
at com.mysql.cj.jdbc.ConnectionImpl.getInstance(ConnectionImpl.java:239)
at com.mysql.cj.jdbc.NonRegisteringDriver.connect(NonRegisteringDriver.java:188)
at java.sql.DriverManager.getConnection(DriverManager.java:677)
at java.sql.DriverManager.getConnection(DriverManager.java:228)
at org.tektutor.HelloController.readGreetingMsgFromDB(HelloController.java:23)
at org.tektutor.HelloController.sayHello(HelloController.java:44)
at java.base/jdk.internal.reflect.NativeMethodAccessorImpl.invoke0(Native Method)
at java.base/jdk.internal.reflect.NativeMethodAccessorImpl.invoke(NativeMethodAccessorImpl.java:62)
at java.base/jdk.internal.reflect.DelegatingMethodAccessorImpl.invoke(DelegatingMethodAccessorImpl.java:43)
at java.base/java.lang.reflect.Method.invoke(Method.java:566)
at org.springframework.web.method.support.InvocableHandlerMethod.doInvoke(InvocableHandlerMethod.java:197)
at org.springframework.web.method.support.InvocableHandlerMethod.invokeForRequest(InvocableHandlerMethod.java:141)
at org.springframework.web.servlet.mvc.method.annotation.ServletInvocableHandlerMethod.invokeAndHandle(ServletInvocableHandlerMethod.java:106)
at org.springframework.web.servlet.mvc.method.annotation.RequestMappingHandlerAdapter.invokeHandlerMethod(RequestMappingHandlerAdapter.java:894)
at org.springframework.web.servlet.mvc.method.annotation.RequestMappingHandlerAdapter.handleInternal(RequestMappingHandlerAdapter.java:808)
at org.springframework.web.servlet.mvc.method.AbstractHandlerMethodAdapter.handle(AbstractHandlerMethodAdapter.java:87)
at org.springframework.web.servlet.DispatcherServlet.doDispatch(DispatcherServlet.java:1060)
at org.springframework.web.servlet.DispatcherServlet.doService(DispatcherServlet.java:962)
at org.springframework.web.servlet.FrameworkServlet.processRequest(FrameworkServlet.java:1006)
at org.springframework.web.servlet.FrameworkServlet doGet(FrameworkServlet.java:898)
at javax.servlet.http.HttpServlet.service(HttpServlet.java:626)
at org.springframework.web.servlet.FrameworkServlet.service(FrameworkServlet.java:883)
at javax.servlet.http.HttpServlet.service(HttpServlet.java:733)
at org.apache.catalina.core.ApplicationFilterChain.internalDoFilter(ApplicationFilterChain.java:221)

```

We need to deploy mysql with tektutor database and greeting table with a single record, that is the root-cause of why the hello pods throwing exception when we access the hello microservice route.

```

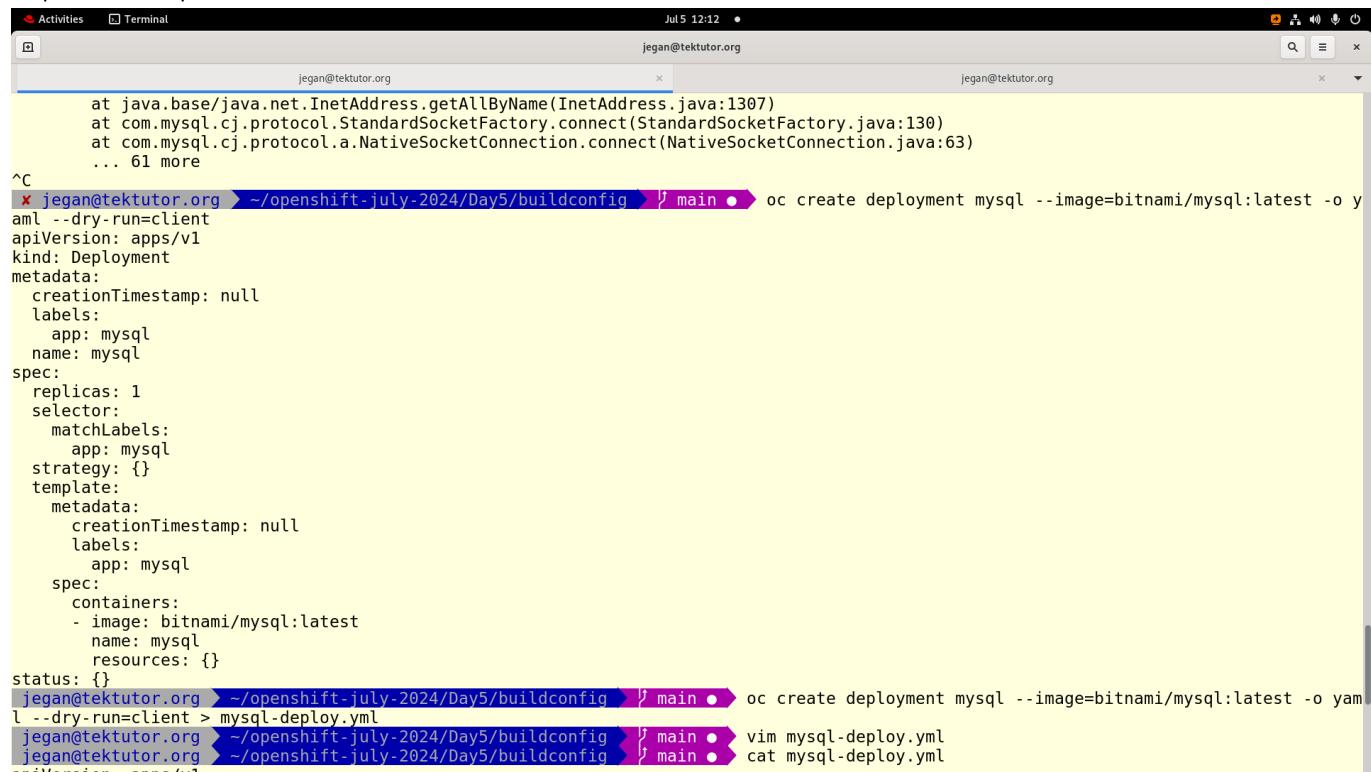
oc create deployment mysql --image=bitnami/mysql:latest -o yaml --dry-run=client
oc create deployment mysql --image=bitnami/mysql:latest -o yaml --dry-run=client > mysql-deploy.yml
cat mysql-deploy.yml

```

Let's get inside the mysql container shell, when prompts for password type 'root@123' as the password without quotes

```
oc rsh deploy/mysql
mysql -u root -p
SHOW DATABASES;
USE tektutor;
CREATE TABLE greeting ( message VARCHAR(200) NOT NULL );
DESCRIBE TABLE greeting;
INSERT INTO greeting VALUES ( "Hello Microservice v1.0 !" );
SELECT * FROM greeting;
exit
exit
```

Expected output



The screenshot shows a terminal window with two tabs open. The left tab is titled 'jegan@tektutor.org' and the right tab is also titled 'jegan@tektutor.org'. The terminal history shows the following commands:

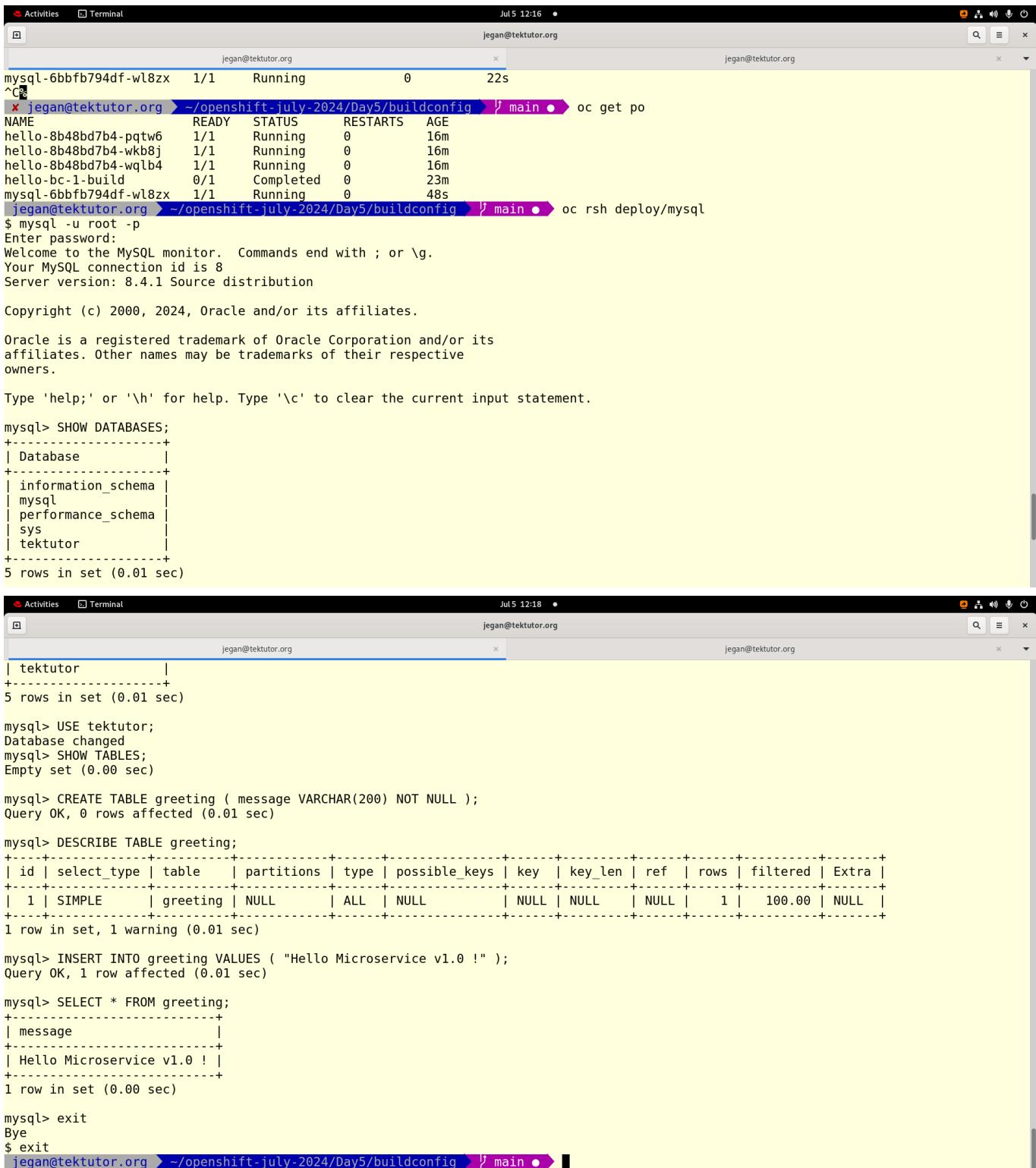
```
jegan@tektutor.org ~ /openshift-july-2024/Day5/buildconfig ↵ main • oc create deployment mysql --image=bitnami/mysql:latest -o yaml --dry-run=client
apiVersion: apps/v1
kind: Deployment
metadata:
  creationTimestamp: null
  labels:
    app: mysql
    name: mysql
spec:
  replicas: 1
  selector:
    matchLabels:
      app: mysql
  strategy: {}
  template:
    metadata:
      creationTimestamp: null
      labels:
        app: mysql
    spec:
      containers:
        - image: bitnami/mysql:latest
          name: mysql
          resources: {}
status: {}
```

After the deployment command, the user navigates to the 'mysql-deploy.yaml' file:

```
jegan@tektutor.org ~ /openshift-july-2024/Day5/buildconfig ↵ main • vim mysql-deploy.yaml
jegan@tektutor.org ~ /openshift-july-2024/Day5/buildconfig ↵ main • cat mysql-deploy.yaml
```

```
Activities Terminal Jul 5 12:12 • jegan@tektutor.org
jegan@tektutor.org ~-/openshift-july-2024/Day5/buildconfig > main ● oc create deployment mysql --image=bitnami/mysql:latest -o yaml --dry-run=client > mysql-deploy.yml
jegan@tektutor.org ~-/openshift-july-2024/Day5/buildconfig > main ● vim mysql-deploy.yml
jegan@tektutor.org ~-/openshift-july-2024/Day5/buildconfig > main ● cat mysql-deploy.yml
apiVersion: apps/v1
kind: Deployment
metadata:
  creationTimestamp: null
  labels:
    app: mysql
  name: mysql
spec:
  replicas: 1
  selector:
    matchLabels:
      app: mysql
  strategy: {}
  template:
    metadata:
      labels:
        app: mysql
    spec:
      containers:
        - image: bitnami/mysql:latest
          name: mysql
          env:
            - name: MYSQL_ROOT_PASSWORD
              value: root@123
            - name: MYSQL_DATABASE
              value: tekton
jegan@tektutor.org ~-/openshift-july-2024/Day5/buildconfig > main ●

Activities Terminal Jul 5 12:13 • jegan@tektutor.org
jegan@tektutor.org ~-/openshift-july-2024/Day5/buildconfig > main ● oc create -f mysql-deploy.yml --save-config
deployment.apps/mysql created
jegan@tektutor.org ~-/openshift-july-2024/Day5/buildconfig > main ● oc get po
NAME READY STATUS RESTARTS AGE
hello-8b48bd7b4-pqtw6 1/1 Running 0 15m
hello-8b48bd7b4-wkb8j 1/1 Running 0 15m
hello-8b48bd7b4-wqlb4 1/1 Running 0 15m
hello-bc-1-build 0/1 Completed 0 23m
mysql-6bbfb794df-wl8zx 0/1 ContainerCreating 0 2s
jegan@tektutor.org ~-/openshift-july-2024/Day5/buildconfig > main ● oc get po -w
NAME READY STATUS RESTARTS AGE
hello-8b48bd7b4-pqtw6 1/1 Running 0 15m
hello-8b48bd7b4-wkb8j 1/1 Running 0 15m
hello-8b48bd7b4-wqlb4 1/1 Running 0 15m
hello-bc-1-build 0/1 Completed 0 23m
mysql-6bbfb794df-wl8zx 0/1 ContainerCreating 0 6s
mysql-6bbfb794df-wl8zx 1/1 Running 0 22s
```



```

Activities Terminal Jul 5 12:16 • jegan@tektutor.org
mysql> SHOW DATABASES;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sys |
| tektutor |
+-----+
5 rows in set (0.01 sec)

mysql> USE tektutor;
Database changed
mysql> SHOW TABLES;
Empty set (0.00 sec)

mysql> CREATE TABLE greeting ( message VARCHAR(200) NOT NULL );
Query OK, 0 rows affected (0.01 sec)

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

mysql> INSERT INTO greeting VALUES ( "Hello Microservice v1.0 !" );
Query OK, 1 row affected (0.01 sec)

mysql> SELECT * FROM greeting;
+-----+
| message |
+-----+
| Hello Microservice v1.0 ! |
+-----+
1 row in set (0.00 sec)

mysql> exit
Bye
$ exit
jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > main ●

```

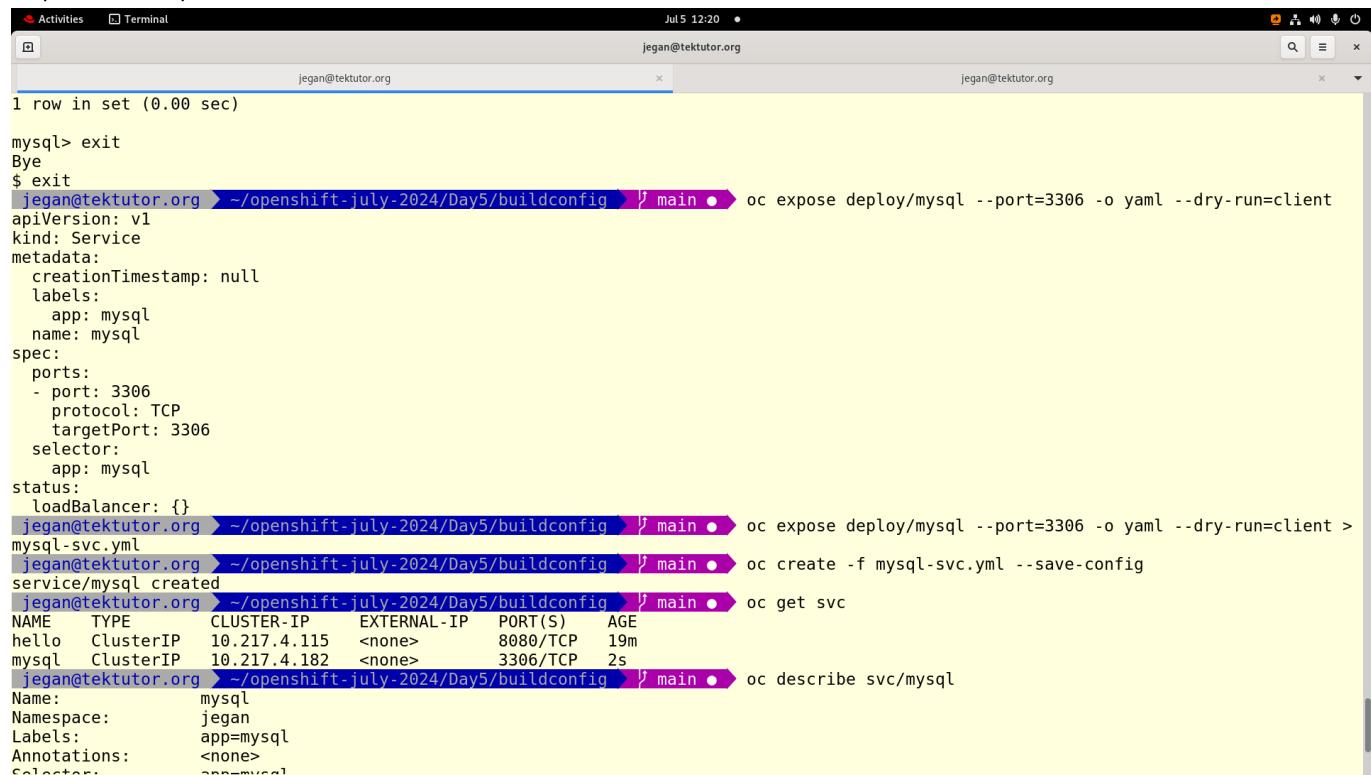
We need to create a mysql service as the hello microservice deployment pods will connect to the mysql pod via a service name (ie. service discovery).

```

oc expose deploy/mysql --port=3306 -o yaml --dry-run=client
oc expose deploy/mysql --port=3306 -o yaml --dry-run=client > mysql-svc.yml
oc create -f mysql-svc.yml --save-config
oc get svc
oc describe svc/mysql

```

Expected output



```
mysql> exit
Bye
$ exit
jegan@tektutor.org ~ -/openshift-july-2024/Day5/buildconfig > main ● oc expose deploy/mysql --port=3306 -o yaml --dry-run=client
apiVersion: v1
kind: Service
metadata:
  creationTimestamp: null
  labels:
    app: mysql
    name: mysql
spec:
  ports:
  - port: 3306
    protocol: TCP
    targetPort: 3306
  selector:
    app: mysql
status:
  loadBalancer: {}
jegan@tektutor.org ~ -/openshift-july-2024/Day5/buildconfig > main ● oc expose deploy/mysql --port=3306 -o yaml --dry-run=client >
mysql-svc.yaml
jegan@tektutor.org ~ -/openshift-july-2024/Day5/buildconfig > main ● oc create -f mysql-svc.yaml --save-config
service/mysql created
jegan@tektutor.org ~ -/openshift-july-2024/Day5/buildconfig > main ● oc get svc
NAME      TYPE      CLUSTER-IP   EXTERNAL-IP   PORT(S)   AGE
hello    ClusterIP  10.217.4.115  <none>        8080/TCP  19m
mysql    ClusterIP  10.217.4.182  <none>        3306/TCP  2s
jegan@tektutor.org ~ -/openshift-july-2024/Day5/buildconfig > main ● oc describe svc/mysql
Name:            mysql
Namespace:       jegan
Labels:          app=mysql
Annotations:    <none>
Selector:        app=mysql
```

```

name: mysql
spec:
  ports:
    - port: 3306
      protocol: TCP
      targetPort: 3306
  selector:
    app: mysql
status:
  loadBalancer: {}
jegan@tektutor.org ~-/openshift-july-2024/Day5/buildconfig > main ● oc expose deploy/mysql --port=3306 -o yaml --dry-run=client >
mysql-svc.yml
jegan@tektutor.org ~-/openshift-july-2024/Day5/buildconfig > main ● oc create -f mysql-svc.yml --save-config
service/mysql created
jegan@tektutor.org ~-/openshift-july-2024/Day5/buildconfig > main ● oc get svc
NAME   TYPE    CLUSTER-IP   EXTERNAL-IP   PORT(S)   AGE
hello  ClusterIP  10.217.4.115 <none>       8080/TCP  19m
mysql  ClusterIP  10.217.4.182 <none>       3306/TCP  2s
jegan@tektutor.org ~-/openshift-july-2024/Day5/buildconfig > main ● oc describe svc/mysql
Name:           mysql
Namespace:      jegan
Labels:         app=mysql
Annotations:    <none>
Selector:       app=mysql
Type:          ClusterIP
IP Family Policy: SingleStack
IP Families:   IPv4
IP:             10.217.4.182
IPs:            10.217.4.182
Port:           <unset>  3306/TCP
TargetPort:     3306/TCP
Endpoints:      10.217.0.100:3306
Session Affinity: None
Events:         <none>
jegan@tektutor.org ~-/openshift-july-2024/Day5/buildconfig > main ●

```

```

targetPort: 3306
selector:
  app: mysql
status:
  loadBalancer: {}
jegan@tektutor.org ~-/openshift-july-2024/Day5/buildconfig > main ● oc expose deploy/mysql --port=3306 -o yaml --dry-run=client >
mysql-svc.yml
jegan@tektutor.org ~-/openshift-july-2024/Day5/buildconfig > main ● oc create -f mysql-svc.yml --save-config
service/mysql created
jegan@tektutor.org ~-/openshift-july-2024/Day5/buildconfig > main ● oc get svc
NAME   TYPE    CLUSTER-IP   EXTERNAL-IP   PORT(S)   AGE
hello  ClusterIP  10.217.4.115 <none>       8080/TCP  19m
mysql  ClusterIP  10.217.4.182 <none>       3306/TCP  2s
jegan@tektutor.org ~-/openshift-july-2024/Day5/buildconfig > main ● oc describe svc/mysql
Name:           mysql
Namespace:      jegan
Labels:         app=mysql
Annotations:    <none>
Selector:       app=mysql
Type:          ClusterIP
IP Family Policy: SingleStack
IP Families:   IPv4
IP:             10.217.4.182
IPs:            10.217.4.182
Port:           <unset>  3306/TCP
TargetPort:     3306/TCP
Endpoints:      10.217.0.100:3306
Session Affinity: None
Events:         <none>
jegan@tektutor.org ~-/openshift-july-2024/Day5/buildconfig > main ● oc get route
NAME   HOST/PORT   PATH  SERVICES  PORT  TERMINATION  WILDCARD
hello  hello-jegan.apps-crc.testing  hello  8080          None
jegan@tektutor.org ~-/openshift-july-2024/Day5/buildconfig > main ● curl http://hello-jegan.apps-crc.testing
Hello Microservice v1.0 !%
jegan@tektutor.org ~-/openshift-july-2024/Day5/buildconfig > main ●

```

Now, since the mysql database deployment/service with necessary table and records are in place, let's try accessing the hello route url

```

oc get route
curl http://http://hello-jegan.apps-crc.testing

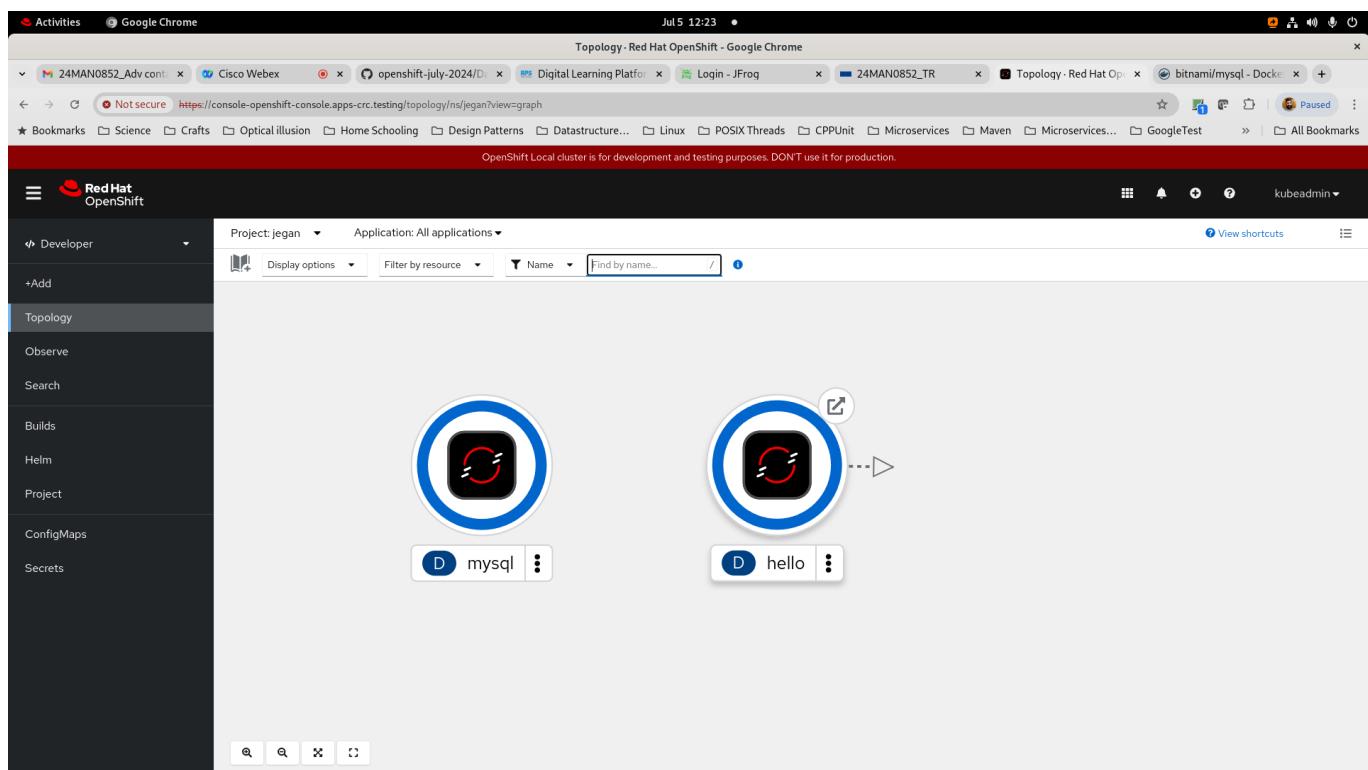
```

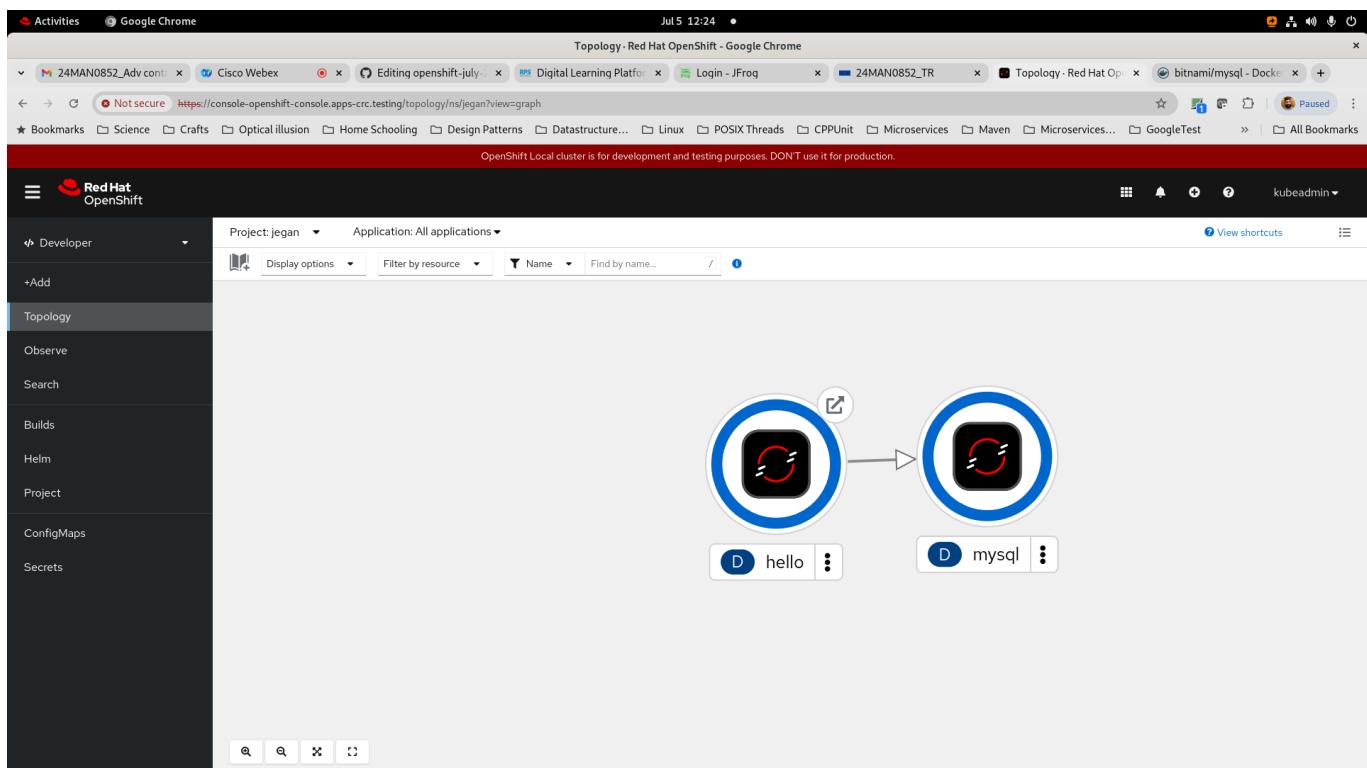
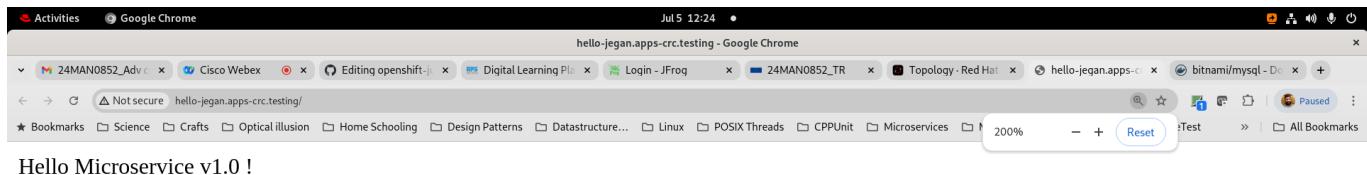
Expected output

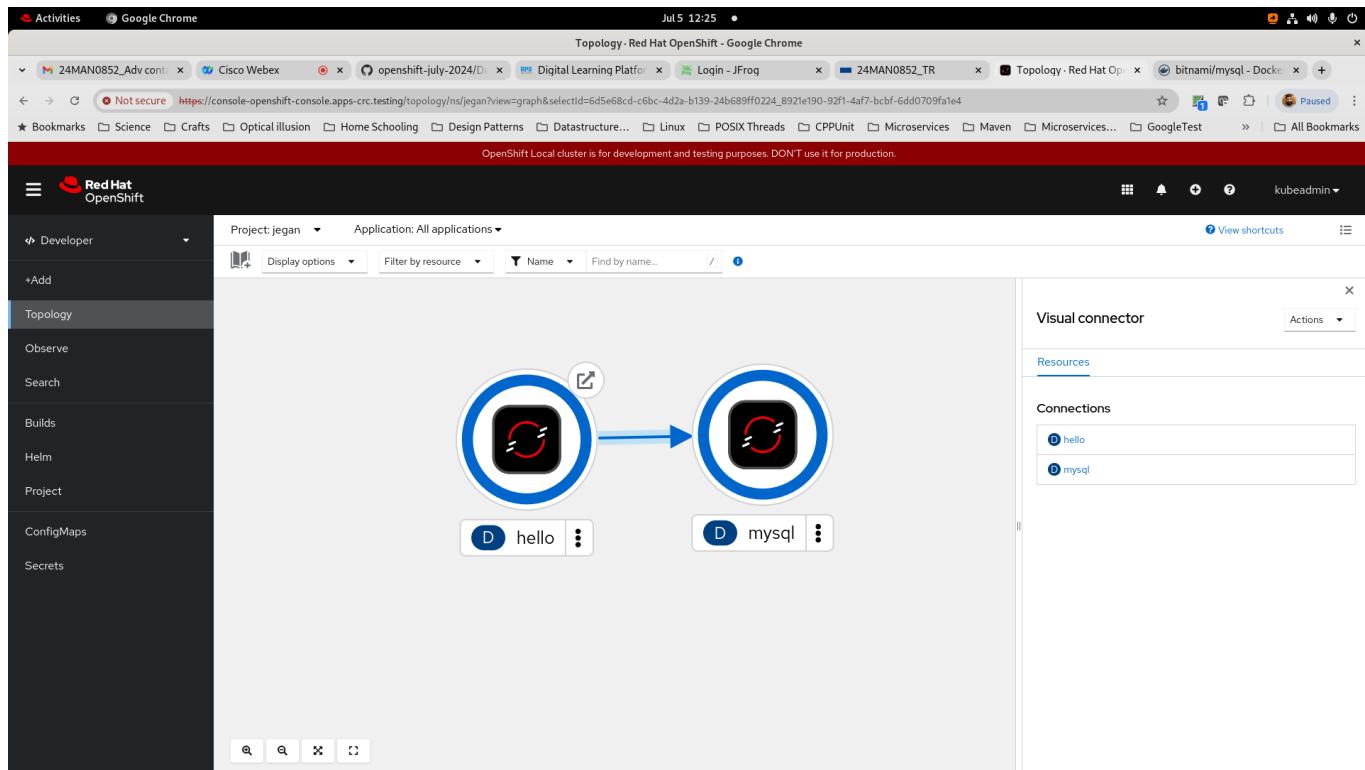
```

Activities Terminal Jul 5 12:22 • jegan@tektutor.org
jegan@tektutor.org targetPort: 3306
selector:
  app: mysql
status:
  loadBalancer: {}
jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > main ● oc expose deploy/mysql --port=3306 -o yaml --dry-run=client >
mysql-svc.yml
jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > main ● oc create -f mysql-svc.yml --save-config
service/mysql created
jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > main ● oc get svc
NAME    TYPE        CLUSTER-IP   EXTERNAL-IP   PORT(S)    AGE
hello   ClusterIP  10.217.4.115 <none>       8080/TCP   19m
mysql   ClusterIP  10.217.4.182 <none>       3306/TCP   2s
jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > main ● oc describe svc/mysql
Name:          mysql
Namespace:     jegan
Labels:         app=mysql
Annotations:   <none>
Selector:      app=mysql
Type:          ClusterIP
IP Family Policy: SingleStack
IP Families:   IPv4
IP:            10.217.4.182
IPs:           10.217.4.182
Port:          <unset>  3306/TCP
TargetPort:    3306/TCP
Endpoints:    10.217.0.100:3306
Session Affinity: None
Events:        <none>
jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > main ● oc get route
NAME    HOST/PORT    PATH    SERVICES    PORT    TERMINATION    WILDCARD
hello   hello.jegan.apps-crc.testing   hello   8080          None
jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > main ● curl http://hello.jegan.apps-crc.testing
Hello Microservice v1.0 !%
jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > main ●

```







Lab - Build custom docker image using application source code from GitHub and pushing the image to JFrog Private Container Registry

We need to create a JFrog secret to push the image to our private JFrog Container Registry

```
oc create secret docker-registry private-jfrog-image-registry --docker-server=tektutorjuly2024.jfrog.io --docker-username=<your-jfrog-registered-email> --docker-password=<your-jfrog-token>
```

Expected output

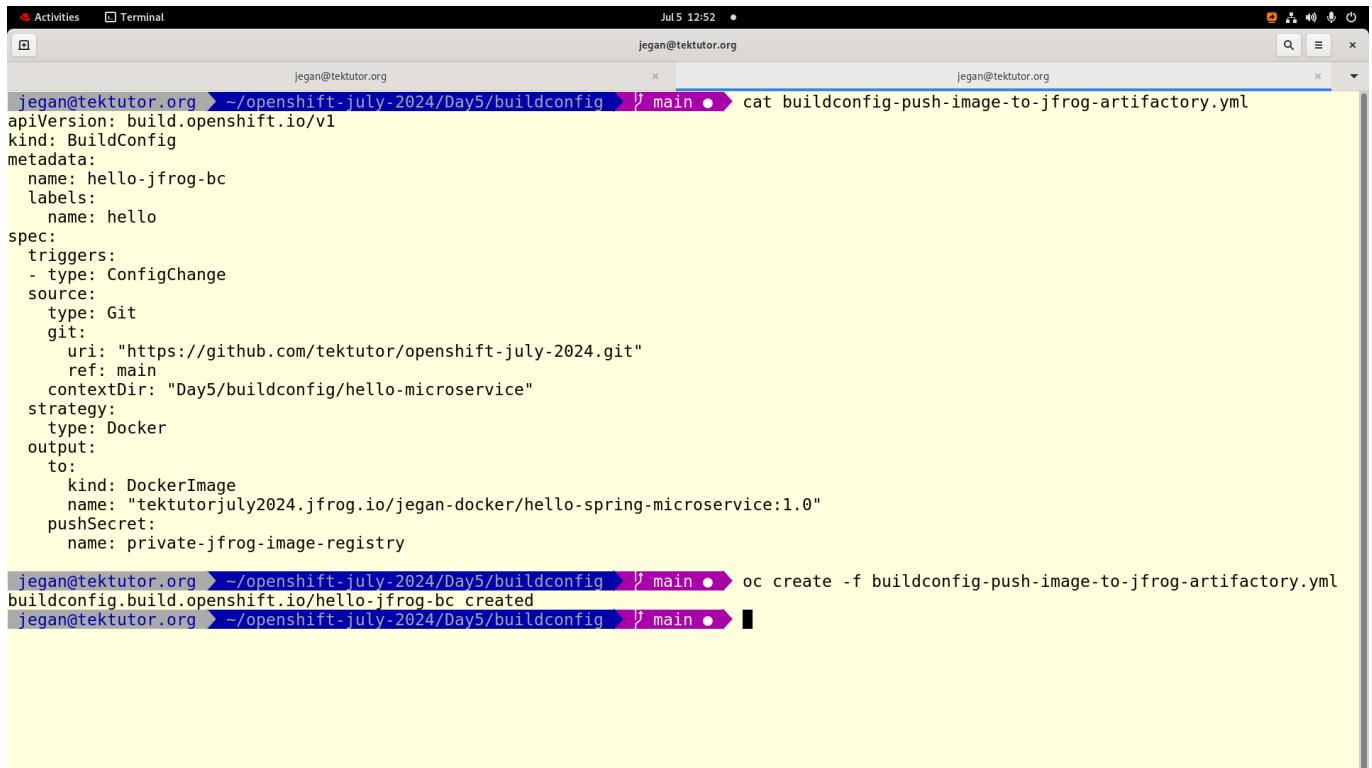
```
jegan@tektutor.org ~/Downloads/crc-linux-2.37.1-amd64 oc delete project jegan
project.project.openshift.io "jegan" deleted
jegan@tektutor.org ~/Downloads/crc-linux-2.37.1-amd64 cat ~/jfrog-4thJuly2024
docker login -u tektutorjuly@gmail.com tektutorjuly2024.jfrog.io
cmVmdGtu0jAx0jE3NTE2MzA2MzY6SDlDcWs1bkpw0DJ0bllxc0NMYjR5VUdUQU1C
docker pull tektutorjuly2024.jfrog.io/jegan-docker/hello-world:latest
docker tag tektutorjuly2024.jfrog.io/jegan-docker/hello-world tektutorjuly2024.jfrog.io/jegan-docker/hello-world:1.0.0
docker push tektutorjuly2024.jfrog.io/jegan-docker/hello-world:1.0.0
jegan@tektutor.org ~/Downloads/crc-linux-2.37.1-amd64 oc create secret docker-registry private-jfrog-image-registry --docker-server=tektutorjuly2024.jfrog.io --docker-username=tektutorjuly@gmail.com --docker-password=cmVmdGtu0jAx0jE3NTE2MzA2MzY6SDlDcWs1bkpw0DJ0bllxc0NMYjR5VUdUQU1C
secret/private-jfrog-image-registry created
jegan@tektutor.org ~/Downloads/crc-linux-2.37.1-amd64
```

Now let's create a buildconfig that will

- build the application binary using cloning latest code from our training github repository
- build a custom image that will have have application binary
- push to image to our Private JFrog Artifactory using the login credentials stored in the secret

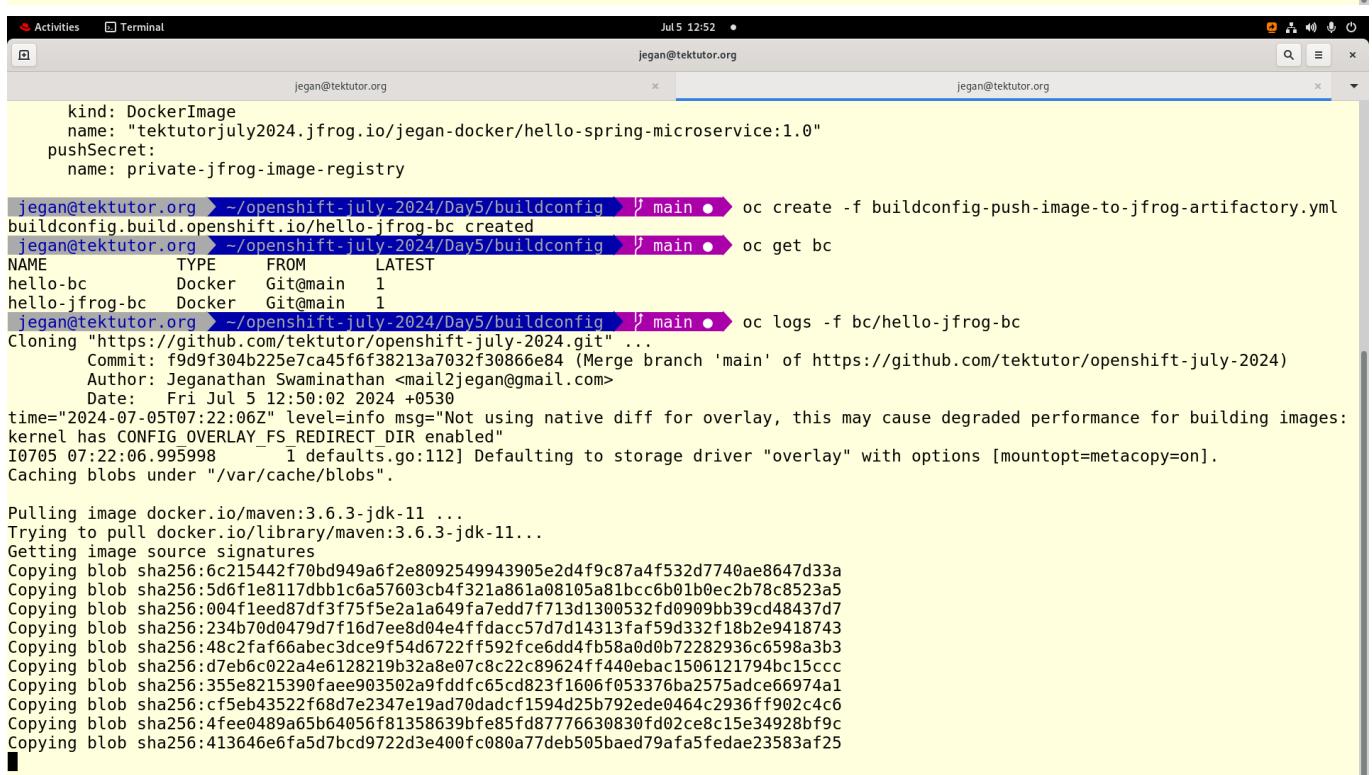
```
cat buildconfig-push-image-to-jfrog-artifactory.yml
oc create -f buildconfig-push-image-to-jfrog-artifactory.yml --save-config
oc get bc
oc get builds
oc logs -f bc/hello-jfrog-bc
```

Expected output



```
jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > main ● cat buildconfig-push-image-to-jfrog-artifactory.yml
apiVersion: build.openshift.io/v1
kind: BuildConfig
metadata:
  name: hello-jfrog-bc
  labels:
    name: hello
spec:
  triggers:
  - type: ConfigChange
  source:
    type: Git
    git:
      uri: "https://github.com/tektutor/openshift-july-2024.git"
      ref: main
      contextDir: "Day5/buildconfig/hello-microservice"
  strategy:
    type: Docker
  output:
    to:
      kind: DockerImage
      name: "tektutorjuly2024.jfrog.io/jegan-docker/hello-spring-microservice:1.0"
    pushSecret:
      name: private-jfrog-image-registry

jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > main ● oc create -f buildconfig-push-image-to-jfrog-artifactory.yml
buildconfig.build.openshift.io/hello-jfrog-bc created
jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > main ●
```



```
jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > main ●
kind: DockerImage
name: "tektutorjuly2024.jfrog.io/jegan-docker/hello-spring-microservice:1.0"
pushSecret:
  name: private-jfrog-image-registry

jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > main ● oc create -f buildconfig-push-image-to-jfrog-artifactory.yml
buildconfig.build.openshift.io/hello-jfrog-bc created
jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > main ● oc get bc
NAME          TYPE   FROM      LATEST
hello-bc      Docker  Git@main  1
hello-jfrog-bc Docker  Git@main  1
jegan@tektutor.org > ~/openshift-july-2024/Day5/buildconfig > main ● oc logs -f bc/hello-jfrog-bc
Cloning "https://github.com/tektutor/openshift-july-2024.git" ...
  Commit: f9d9f304b225e7ca45f6f38213a7032f30866e84 (Merge branch 'main' of https://github.com/tektutor/openshift-july-2024)
  Author: Jeganathan Swaminathan <mail2jegan@gmail.com>
  Date:  Fri Jul 5 12:50:02 2024 +0530
time="2024-07-05T07:22:06Z" 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"
I0705 07:22:06.995998 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...
Trying to pull docker.io/library/maven:3.6.3-jdk-11...
Getting image source signatures
Copying blob sha256:6c215442f70bd949a6f2e8092549943905e2d4f9c87a4f532d7740ae8647d33a
Copying blob sha256:5d6f1e8117dbb1c6a57603cb4f321a861a08105a81bcc6b01b0ec2b78c8523a5
Copying blob sha256:004f1eed87df3f75f5e2a1a649fa7edd7f713d1300532fd0909bb39cd48437d7
Copying blob sha256:234b70d0479d7f16d7ee8d04e4ffdacc57d7d14313faf59d332f18b2e9418743
Copying blob sha256:48c2faf6abec3dce9f54d6722ff592fce6dd4fb58a0d0b72282936c6598a3b3
Copying blob sha256:d7eb6c022a4e6128219b32a8e07c8c22c89624ff440ebac1506121794bc15ccc
Copying blob sha256:35e8215390faee903502a9fddfc65cd823f1606f053376ba2575adce66974a1
Copying blob sha256:c5eb4352f68d7e2347e19ad70dadcf1594d25b792ede0464c2936ff902c4c6
Copying blob sha256:4fee0489a65b64056f81358639bfe85fd87776630830fd02ce8c15e34928bf9c
Copying blob sha256:413646e6fa5d7bcd9722d3e400fc080a77deb505baed79afa5fedae23583af25
```

Google Chrome - JFrog - Google Chrome

Day 1/14 | Free Trial until Jul 18, 2024

JFrog Platform Application Administration

Get Started Artifactory Packages Builds Artifacts Release Lifecycle Xray Distribution Pipelines Integrations MyFrog Portal

Search Repositories Filter by: Package Types Repository Types Sort by: Repository Type

My Favorites Deploy Manage Repositories Set Me Up

Repository Type: jegan-docker

General

Info

Name: jegan-docker
Package Type: Docker
Repository Path: jegan-docker/
File URL: https://tektutorjuly2024.jfrog.io/artifactory/jegan-docker/
Repository Layout: simple-default

Virtual Repository Associations

Included Repositories

Show All Included

Trash Can

Activities Terminal

jegan@tektutor.org

Getting image source signatures

```
Copying blob sha256:6c215442f70bd949a6f2e8092549943905e2d4f9c87a4f532d7740ae8647d33a
Copying blob sha256:5d6f1e8117dbb1c6a57603cb4f321a861a08105a81bcc6b01b0ec2b78c8523a5
Copying blob sha256:004f1eed87df3f75f5e2a1a649fa7edd7f713d1300532fd0909bb39cd48437d7
Copying blob sha256:234b70d0479d7f16d7ee8d04e4ffadcc57d7d14313faf59d32f18b2e9418743
Copying blob sha256:48c2faf66abec3dce9f54d6722ff592fce6dd4fb58a0d0b72282936c6598a3b3
Copying blob sha256:d7eb6c022a4e6128219b32a8e07c8c22c89624ff440ebac1506121794bc15ccc
Copying blob sha256:355e8215390faee903502a9fdfffc65cd823f1606f053376ba2575adce66974a1
Copying blob sha256:c5feba43522f68d7e2347e19ad70dadcf1594d25b792ede0464c2936ff902c4c6
Copying blob sha256:4fee0489a65b64056f81358639bfe85f8776630830f0d2ce8c15e34928bf9c
Copying blob sha256:413646e6fa5d7bcd9722d3e400fc080a77deb505baed79afa5fedae23583af25
Copying config sha256:e23b595c92ada5c9f20a27d547ed980a445f644eb1cbde7cfb27478fa38c4691
Writing manifest to image destination
```

Pulling image registry.access.redhat.com/ubi8/openjdk-11 ...

Trying to pull registry.access.redhat.com/ubi8/openjdk-11:latest...

Getting image source signatures

```
Copying blob sha256:1846180440d3041e0848b0bcbb735f024f3bc5e2d39f1ab4ad490f630863d903
Copying blob sha256:8393debac2ec316f87eab40af5451d57df2863f844f545d40447e46e025c9663
Copying config sha256:d08fe122e5d7434ce8487ccdaa169da9e58db9f94ebf634dce9aa48cf0b5469a
Writing manifest to image destination
```

Adding transient rw bind mount for /run/secrets/rhsm

```
[1/2] STEP 1/5: FROM docker.io/maven:3.6.3-jdk-11 AS builder
[1/2] STEP 2/5: COPY . .
--> c01f2eb5e102
[1/2] STEP 3/5: RUN mvn clean package
[INFO] Scanning for projects...
Downloading from central: https://repo.maven.apache.org/maven2/org/springframework/boot/spring-boot-starter-parent/2.4.2/spring-boot-starter-parent-2.4.2.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/springframework/boot/spring-boot-starter-parent/2.4.2/spring-boot-starter-parent-2.4.2.pom (8.6 kB at 23 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/springframework/boot/spring-boot-dependencies/2.4.2/spring-boot-dependencies-2.4.2.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/springframework/boot/spring-boot-dependencies/2.4.2/spring-boot-dependencies-2.4.2.pom (108 kB at 1.5 MB/s)
Downloading from central: https://repo.maven.apache.org/maven2/com/datstax/oss/java-driver-ham/1.0.0/java-driver-ham-1.0.0.pom
```

```
jegan@tektutor.org terminal Jul 5 13:12 • jegan@tektutor.org terminal Jul 5 13:12 • jegan@tektutor.org terminal Jul 5 13:12 •
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-archiver/4.2.1/plexus-archiver-4.2.1.pom (4.8 kB at 173 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/file-management/3.0.0/file-management-3.0.0.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-compat/3.0/maven-compat-3.0.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/wagon/wagon-provider-api/2.10/wagon-provider-api-2.10.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/archiver/3.5.0/maven-archiver-3.5.0.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-shared-io/3.0.0/maven-shared-io-3.0.0.jar (35 kB at 1.2 MB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-archiver/4.2.1/plexus-archiver-4.2.1.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/archiver/3.5.0/maven-archiver-3.5.0.jar (26 kB at 823 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-io/3.2.0/plexus-io-3.2.0.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/wagon/wagon-provider-api/2.10/wagon-provider-api-2.10.jar (54 kB at 1.4 MB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/commons/commons-compress/1.19/commons-compress-1.19.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-shared-io/3.0.0/maven-shared-io-3.0.0.jar (41 kB at 1.0 MB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/iq80/snappy/snappy/0.4/snappy-0.4.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven-compat/3.0/maven-compat-3.0.jar (285 kB at 5.4 MB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/tukaani/xz/1.8/xz-1.8.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-io/3.2.0/plexus-io-3.2.0.jar (76 kB at 1.3 MB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-utils/3.3.0/plexus-utils-3.3.0.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-archiver/4.2.1/plexus-archiver-4.2.1.jar (196 kB at 2.9 MB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/iq80/snappy/snappy/0.4/snappy-0.4.jar (58 kB at 743 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/tukaani/xz/1.8/xz-1.8.jar (109 kB at 1.2 MB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/commons/commons-compress/1.19/commons-compress-1.19.jar (615 kB at 6.1 MB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-utils/3.3.0/plexus-utils-3.3.0.jar (263 kB at 2.5 MB/s)
```

```
jegan@tektutor.org terminal Jul 5 13:13 • jegan@tektutor.org terminal Jul 5 13:13 • jegan@tektutor.org terminal Jul 5 13:13 •
[1/2] STEP 5/5: RUN pwd
/
--> c35ad4e6dbed
[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
--> 39e58c8bc206
[2/2] STEP 3/6: EXPOSE 8080
--> 5fa8f214a653
[2/2] STEP 4/6: ENTRYPOINT ["java","-jar","app.jar"]
--> 637351eac81b
[2/2] STEP 5/6: ENV "OPENSHIFT_BUILD_NAME"="hello-jfrog-bc-3" "OPENSHIFT_BUILD_NAMESPACE"="jegan" "OPENSHIFT_BUILD_SOURCE"="https://github.com/tektutor/openshift-july-2024.git" "OPENSHIFT_BUILD_REFERENCE"="main" "OPENSHIFT_BUILD_COMMIT"="6d006393910beaa06988beb0a23c7d7b081ecef"
--> 76456222aff7
[2/2] STEP 6/6: LABEL "io.openshift.build.commit.author"="Jeganathan Swaminathan <mail2jegan@gmail.com>" "io.openshift.build.commit.date"="Fri Jul 5 12:54:32 2024 +0530" "io.openshift.build.commit.id"="6d006393910beaa06988beb0a23c7d7b081ecef" "io.openshift.build.commit.message"="Update README.md" "io.openshift.build.commit.ref"="main" "io.openshift.build.name"="hello-jfrog-bc-3" "io.openshift.build.namespace"="jegan" "io.openshift.build.source-context-dir"="Day5/buildconfig/hello-microservice" "io.openshift.build.source-location"="https://github.com/tektutor/openshift-july-2024.git"
[2/2] COMMIT temp.builder.openshift.io/jegan/hello-jfrog-bc-3:c1186068
--> 87facdd41e03
Successfully tagged temp.builder.openshift.io/jegan/hello-jfrog-bc-3:c1186068
87facdd41e03cb3e91c00dee9e6e54664a39959ab0c42fd0594a7dee908b046e

Pushing image tektutorjuly2024.jfrog.io/jegan-docker/hello-spring-microservice:1.0 ...
Getting image source signatures
Copying blob sha256:36c5f171c42c51ebc6a600e8e4f9d2b0dfc110618a1bfdf0165c443afb081fd7
Copying blob sha256:1846180440d3041e0848b0ccb735f024f3bc5e2d39f1ab4ad490f630863d903
Copying blob sha256:8393debac2ec316f87eab40af5451d57df2863f844f545d40447e46e025c9663
Copying config sha256:87facdd41e03cb3e91c00dee9e6e54664a39959ab0c42fd0594a7dee908b046e
Writing manifest to image destination
Successfully pushed tektutorjuly2024.jfrog.io/jegan-docker/hello-spring-microservice@sha256:225334f09375a29df9e4a3ca3bb1d4fdee0a164e825fac055480e53c06ce80b6
Push successful
jegan@tektutor.org ~ /openshift-july-2024/Day5/buildconfig ↵ main ➔
```

Lab - Using source strategy to deploy an application from GitHub source code

```
oc new-app --name=hello registry.access.redhat.com/ubi8/openjdk-11~https://github.com/tektutor/openshift-july-2024.git --context-dir=Day5/spring-ms --strategy=source
```

Expected output

```
jegan@tektutor.org ~ /openshift-july-2024 $ main $ oc new-app --name=hello registry.access.redhat.com/ubi8/openjdk-11~https://github.com/tektutor/openshift-july-2024.git --context-dir=Day5/spring-ms --strategy=source
--> Found container image d08fe12 (4 weeks old) from registry.access.redhat.com for "registry.access.redhat.com/ubi8/openjdk-11"
Java Applications
-----
Platform for building and running plain Java applications (fat-jar and flat classpath)
Tags: builder, java
* An image stream tag will be created as "openjdk-11:latest" that will track the source image
* A source build using source code from https://github.com/tektutor/openshift-july-2024.git will be created
  * The resulting image will be pushed to image stream tag "hello:latest"
  * Every time "openjdk-11:latest" changes a new build will be triggered
--> Creating resources ...
imagestream.image.openshift.io "openjdk-11" created
imagestream.image.openshift.io "hello" created
buildconfig.build.openshift.io "hello" created
deployment.apps "hello" created
service "hello" created
--> Success
Build scheduled, use 'oc logs -f buildconfig/hello' to track its progress.
Application is not exposed. You can expose services to the outside world by executing one or more of the commands below:
  'oc expose service/hello'
  Run 'oc status' to view your app.
jegan@tektutor.org ~ /openshift-july-2024 $ main $
```

```
jegan@tektutor.org > ./main > oc logs -f buildconfig/hello
Run 'oc status' to view your app.
jegan@tektutor.org > ./main > oc logs -f buildconfig/hello
Cloning "https://github.com/tektutor/openshift-july-2024.git" ...
  Commit: acb1b8f8aaacb710a204c3d2e6110bc3e3e45daa (Added Day5 lab exercises)
  Author: Jeganathan Swaminathan <mail2jegan@gmail.com>
  Date:   Fri Jul 5 14:08:21 2024 +0530
time="2024-07-05T08:41:44Z" 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"
I0705 08:41:44.969788       1 defaults.go:112] Defaulting to storage driver "overlay" with options [mountopt=metacopy=on].
Caching blobs under "/var/cache/blobs".
Trying to pull registry.access.redhat.com/ubi8/openjdk-11@sha256:e48aa876e62441f8a7bec91748ba4f336262d379c8d423a2e70efc219a374f27...
Getting image source signatures
Copying blob sha256:1846180440d3041e0848b0bcbb735f024f3bc5e2d39f1ab4ad490f630863d903
Copying blob sha256:8393debac2ec316f87eab40af5451d57df2863f844f545d40447e46e025c9663
Copying config sha256:d08fe122e5d7434ce8487ccdaa169da9e58db9f94ebf634dce9aa48cf0b5469a
Writing manifest to image destination
Generating dockerfile with builder image registry.access.redhat.com/ubi8/openjdk-11@sha256:e48aa876e62441f8a7bec91748ba4f336262d379c8d423a2e70efc219a374f27
Adding transient rw bind mount for /run/secrets/rhsm
STEP 1/9: FROM registry.access.redhat.com/ubi8/openjdk-11@sha256:e48aa876e62441f8a7bec91748ba4f336262d379c8d423a2e70efc219a374f27
STEP 2/9: LABEL "io.openshift.build.commit.ref"="main" "io.openshift.build.image"="registry.access.redhat.com/ubi8/openjdk-11@sha256:e48aa876e62441f8a7bec91748ba4f336262d379c8d423a2e70efc219a374f27" "io.openshift.build.commit.date"="Fri Jul 5 14:08:21 2024 +0530" "io.openshift.build.commit.message"="Added Day5 lab exercises" "io.openshift.build.source-location"="https://github.com/tektutor/openshift-july-2024.git" "io.openshift.build.source-context-dir"="Day5/spring-ms" "io.openshift.s2i.destination"="/tmp" "io.openshift.build.commit.author"="Jeganathan Swaminathan <mail2jegan@gmail.com>" "io.openshift.build.commit.id"="acb1b8f8aaacb710a204c3d2e6110bc3e3e45daa"
STEP 3/9: ENV OPENSHIFT_BUILD_NAME="hello-1" OPENSHIFT_BUILD_NAMESPACE="jegan" OPENSHIFT_BUILD_SOURCE="https://github.com/tektutor/openshift-july-2024.git" OPENSHIFT_BUILD_COMMIT="acb1b8f8aaacb710a204c3d2e6110bc3e3e45daa"
STEP 4/9: USER root
STEP 5/9: COPY upload/src /tmp/src
STEP 6/9: RUN chown -R 185:0 /tmp/src
STEP 7/9: USER 185
STEP 8/9: RUN /usr/local/s2i/assemble
INFO Performing Maven build in /tmp/src
INFO Using MAVEN_OPTS -XX:MaxRAMPercentage=80.0 -XX:+UseParallelGC -XX:MinHeapFreeRatio=10 -XX:MaxHeapFreeRatio=20 -XX:GCTimeRatio=4 -XX:
```

```
[INFO] Downloaded from central: https://repo1.maven.org/maven2/org/apache/maven/maven-repository-metadata/3.0/maven-repository-metadata-3.0.pom (1.9 kB at 5.2 kB/s)
[INFO] Downloading from central: https://repo1.maven.org/maven2/org/apache/maven/maven-model-builder/3.0/maven-model-builder-3.0.pom
[INFO] Downloaded from central: https://repo1.maven.org/maven2/org/apache/maven/maven-model-builder/3.0/maven-model-builder-3.0.pom (2.2 kB at 6.1 kB/s)
[INFO] Downloading from central: https://repo1.maven.org/maven2/org/apache/maven/maven-aether-provider/3.0/maven-aether-provider-3.0.pom
[INFO] Downloaded from central: https://repo1.maven.org/maven2/org/apache/maven/maven-aether-provider/3.0/maven-aether-provider-3.0.pom (2.5 kB at 6.6 kB/s)
[INFO] Downloading from central: https://repo1.maven.org/maven2/org/sonatype/aether/aether-api/1.7/aether-api-1.7.pom
[INFO] Downloaded from central: https://repo1.maven.org/maven2/org/sonatype/aether/aether-api/1.7/aether-api-1.7.pom (1.7 kB at 4.5 kB/s)
[INFO] Downloading from central: https://repo1.maven.org/maven2/org/sonatype/aether/aether-parent/1.7/aether-parent-1.7.pom
[INFO] Downloaded from central: https://repo1.maven.org/maven2/org/sonatype/aether/aether-parent/1.7/aether-parent-1.7.pom (7.7 kB at 21 kB/s)
[INFO] Downloading from central: https://repo1.maven.org/maven2/org/sonatype/aether/aether-util/1.7/aether-util-1.7.pom
[INFO] Downloaded from central: https://repo1.maven.org/maven2/org/sonatype/aether/aether-util/1.7/aether-util-1.7.pom (2.1 kB at 5.5 kB/s)
[INFO] Downloading from central: https://repo1.maven.org/maven2/org/sonatype/aether/aether-impl/1.7/aether-impl-1.7.pom
[INFO] Downloaded from central: https://repo1.maven.org/maven2/org/sonatype/aether/aether-impl/1.7/aether-impl-1.7.pom (3.7 kB at 10.0 kB/s)
[INFO] Downloading from central: https://repo1.maven.org/maven2/org/sonatype/aether/aether-spi/1.7/aether-spi-1.7.pom
[INFO] Downloaded from central: https://repo1.maven.org/maven2/org/sonatype/aether/aether-spi/1.7/aether-spi-1.7.pom (1.7 kB at 4.5 kB/s)
[INFO] Downloading from central: https://repo1.maven.org/maven2/org/apache/maven/shared/maven-shared-utils/3.2.1/maven-shared-utils-3.2.1.pom
[INFO] Downloaded from central: https://repo1.maven.org/maven2/org/apache/maven/shared/maven-shared-utils/3.2.1/maven-shared-utils-3.2.1.pom (5.6 kB at 15 kB/s)
[INFO] Downloading from central: https://repo1.maven.org/maven2/org/apache/maven/shared/maven-shared-components/30/maven-shared-components-30.pom
[INFO] Downloaded from central: https://repo1.maven.org/maven2/org/apache/maven/shared/maven-shared-components/30/maven-shared-components-30.pom (4.6 kB at 12 kB/s)
[INFO] Downloading from central: https://repo1.maven.org/maven2/org/apache/maven-parent/30/maven-parent-30.pom
[INFO] Downloaded from central: https://repo1.maven.org/maven2/org/apache/maven-parent/30/maven-parent-30.pom (41 kB at 110 kB/s)
[INFO] Downloading from central: https://repo1.maven.org/maven2/commons-io/2.5/commons-io-2.5.pom
```

```

Activities Terminal jegan@tektutor.org
jegan@tektutor.org jegan@tektutor.org jegan@tektutor.org
jegan@tektutor.org
(53 kB at 35 kB/s)
[INFO] Replacing main artifact with repackaged archive
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 02:36 min
[INFO] Finished at: 2024-07-05T08:44:34Z
[INFO] -----
[WARNING] The requested profile "openshift" could not be activated because it does not exist.
INFO Copying deployments from target to /deployments...
'/tmp/src/target/spring-hello-1.0.jar' -> '/deployments/spring-hello-1.0.jar'
INFO Cleaning up source directory (/tmp/src)
STEP 9/9: CMD /usr/local/s2i/run
COMMIT temp.builder.openshift.io/jegan/hello-1:1fbdb8ea2
Getting image source signatures
Copying blob sha256:7fa000cf03ea90b564a8d4a1f6d943e4fa07196a151d4bbc35bfc0c13c08620d
Copying blob sha256:c5adec096748615f2358c9b52430bcba108d0958599c065d73c7cef0318d815
Copying blob sha256:ad5ce426badd06e4bf4ed0ba73b084bf22e547ba14456a4363927b1fdcb7ce37
Copying config sha256:7lee351b432719f7496fd270b752b32b4cf73565ee0b716846d431aa2b8c5a41
Writing manifest to image destination
--> 7lee351b4327
Successfully tagged temp.builder.openshift.io/jegan/hello-1:1fbdb8ea2
7lee351b432719f7496fd270b752b32b4cf73565ee0b716846d431aa2b8c5a41

Pushing image image-registry.openshift-image-registry.svc:5000/jegan/hello:latest ...
Getting image source signatures
Copying blob sha256:a55ce426badd06e4bf4ed0ba73b084bf22e547ba14456a4363927b1fdcb7ce37
Copying blob sha256:8393debac2ec316f87eab40af5451d57df2863f844f545d40447e46e025c9663
Copying blob sha256:1846180440d3041e0848b0bcb735f024f3bc5e2d39f1ab4ad490f630863d903
Copying config sha256:7lee351b432719f7496fd270b752b32b4cf73565ee0b716846d431aa2b8c5a41
Writing manifest to image destination
Successfully pushed image-registry.openshift-image-registry.svc:5000/jegan/hello@sha256:81b070abc7b47735f205b36b379b191ae156272dc4ae031e
9041250ca0c33aa2
Push successful
jegan@tektutor.org > ~/openshift-july-2024 > ⌂ main >

```

Info - Knative and Red Hat Serverless Operator

- Red Hat Serverless operator is based on Knative opensource project
- Knative provides a serverless application layer on top of OpenShift/Kubernetes
- the term Knative means Kubernative native
- Knative is Kubernetes Serverless Framework
- Knative Framework consists of 3 build blocks
 - Function
 - Eventing
 - Serving

Info - What does Serverless mean?

- serverless doesn't mean the absence of servers
- is an architecture model for running applications in an environment that is abstracted away from developers
- developers can focus more on developing their application, leaving openshift to deal with where their code/application runs
- an ideal serverless workload executes a single task
- a function that retrieves data from a database can be an excellent serverless workload
- when using serverless, there is a period between the request and creating the Pod environment.
- This period is called cold start
- Examples
 - Openshift serverless workloads follows this workflow
 - a request comes in

- a pod is spun up to service the request
- the Pod serves the request
- the Pod is destroyed when there is no user traffic to handle (i.e scaled down to zero)
 - your service will be scaled down all the way upto 0 Pod where is zero requests
 - your service will be automatically scaled up when there is a request
 - Other examples of a serverless workload can be an image processing function
 - an event could be a phot upload, the uploaded photo triggers an event to run an application to process the image
 - For example, the application may overlay text, create a banner, or make thumbnails
 - Once the image is stored permanently, the application has served its purpose and is no longer needed

Info - Serverless Features

- Stateless Function
 - a function to query a database and return the data
 - a function to query weather report and return the data
- Event Driven
 - a serverless model relies on a trigger to execute the code
 - could be a request to an API or an event on a queue
- Auto scales to zero
 - Being able to scale to zero means your code only runs when it needs to respond to an event
 - once the request is served, resources are released

Lab - Deploying your first knative service

```
kn service create hello \  
--image ghcr.io/knative/helloworld-go:latest \  
--port 8080 \  
--env TARGET=World
```

Accessing the knative application from command line

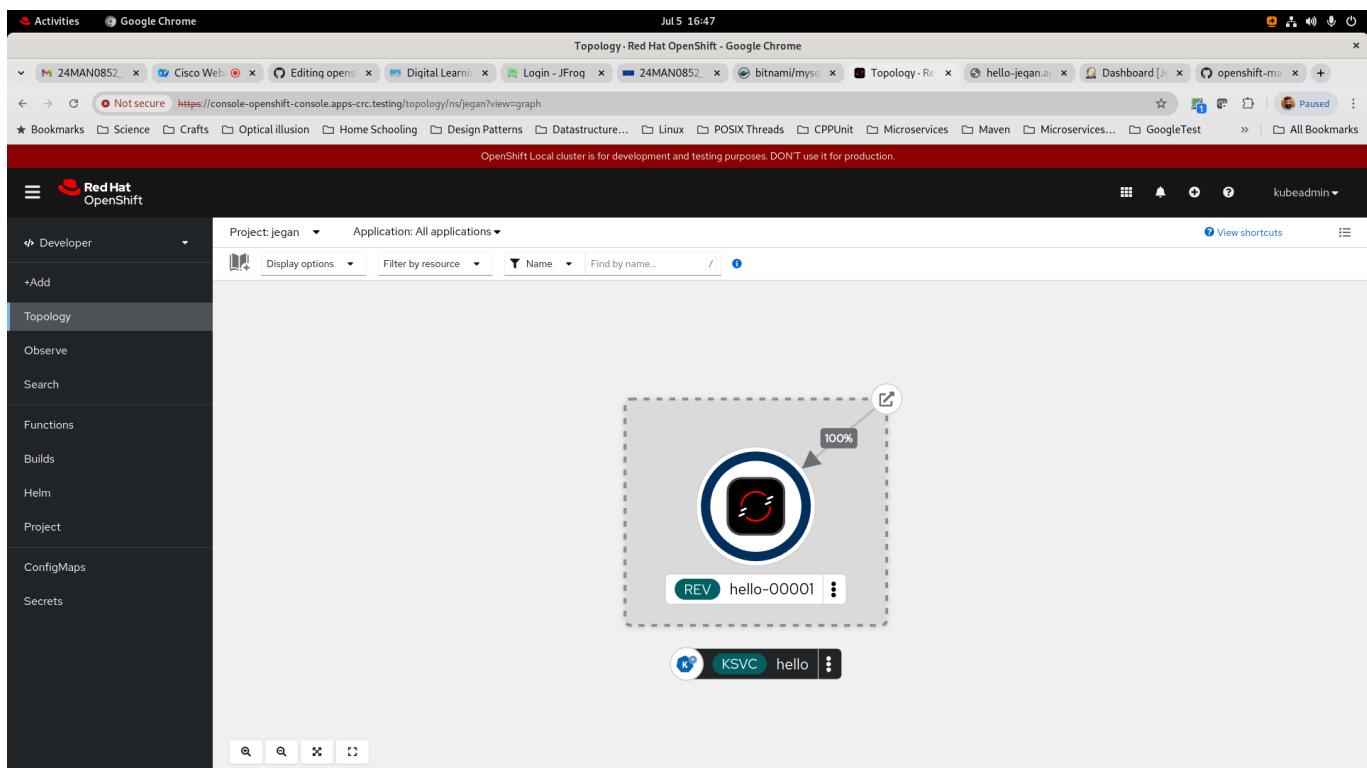
```
curl -k https://hello-jegan-serverless.apps.crc-testing
```

Expected output

```
jegan@tektutor.org ~ ~/openshift-july-2024/Day5/spring-ms ✘ main ✘ kn version
Version: v1.12.0
Build Date: 2024-06-10 11:52:29
Git Revision: 415d3186b
Supported APIs:
* Serving
  - serving.knative.dev/v1 (knative-serving v1.12.0)
* Eventing
  - sources.knative.dev/v1 (knative-eventing v1.12.0)
  - eventing.knative.dev/v1 (knative-eventing v1.12.0)
jegan@tektutor.org ~ ~/openshift-july-2024/Day5/spring-ms ✘ main ✘ kn service create hello \
--image ghcr.io/knative/helloworld-go:latest \
--port 8080 \
--env TARGET=World
Warning: Kubernetes default value is insecure, Knative may default this to secure in a future release: spec.template.spec.containers[0].securityContext.allowPrivilegeEscalation, spec.template.spec.containers[0].securityContext.capabilities, spec.template.spec.containers[0].securityContext.runAsNonRoot, spec.template.spec.containers[0].securityContext.seccompProfile
Creating service 'hello' in namespace 'jegan':
0.044s The Route is still working to reflect the latest desired specification.
0.051s ...
0.060s Configuration "hello" is waiting for a Revision to become ready.
4.093s ...
4.126s Ingress has not yet been reconciled.
4.173s Waiting for load balancer to be ready
4.369s Ready to serve.

Service 'hello' created to latest revision 'hello-00001' is available at URL:
https://hello-jegan.apps-crc.testing
jegan@tektutor.org ~ ~/openshift-july-2024/Day5/spring-ms ✘ main ✘
```

The screenshot shows the Red Hat OpenShift web console interface. The left sidebar menu is visible with options like Developer, Topology, Observe, Search, Functions, Builds, Helm, Project, ConfigMaps, and Secrets. The 'Topology' option is currently selected. The main content area displays a topology diagram for the 'hello' service. The diagram consists of a central node labeled 'hello-00001' with a blue border and a circular arrow icon inside. A tooltip indicates '100%' utilization. Below the node are buttons for 'REV' (Revision) and 'KSVC' (Knative Service). The top navigation bar shows the URL as https://console.openshift-console.apps-crc.testing/topology/ns/jegan/view=graph.



The screenshot shows the Red Hat OpenShift Topology 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 area displays a pod named 'hello' with a status of '1 Running' and '1 Terminating'. A tooltip indicates '100%' health. Below the pod, it says 'REV hello-00001'. At the bottom, there are buttons for 'KSVC' and 'hello'.

```
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms [main] kn version
Version: v1.12.0
Build Date: 2024-06-10 11:52:29
Git Revision: 415d3186b
Supported APIs:
* Serving
  - serving.knative.dev/v1 (knative-serving v1.12.0)
* Eventing
  - sources.knative.dev/v1 (knative-eventing v1.12.0)
  - eventing.knative.dev/v1 (knative-eventing v1.12.0)
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms [main] kn service create hello \
--image ghcr.io/knative/helloworld-go:latest \
--port 8080 \
--env TARGET=World
Warning: Kubernetes default value is insecure, Knative may default this to secure in a future release: spec.template.spec.containers[0].securityContext.allowPrivilegeEscalation, spec.template.spec.containers[0].securityContext.capabilities, spec.template.spec.containers[0].securityContext.runAsNonRoot, spec.template.spec.containers[0].securityContext.seccompProfile
Creating service 'hello' in namespace 'jegan':
0.044s The Route is still working to reflect the latest desired specification.
0.051s ...
0.060s Configuration "hello" is waiting for a Revision to become ready.
4.093s ...
4.126s Ingress has not yet been reconciled.
4.173s Waiting for load balancer to be ready
4.369s Ready to serve.

Service 'hello' created to latest revision 'hello-00001' is available at URL:
https://hello-jegan.apps-crc.testing
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms [main] oc get route
No resources found in jegan namespace.
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms [main] curl -k https://hello-jegan.apps-crc.testing
Hello World!
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms [main]
```

Update the service (Rolling update)

```
kn service update hello --env TARGET=Knative!
kn revisions list
```

Accesing the knative application from command line

```
curl -k https://hello-jegan.apps-crc.testing
```

Expected output

The screenshot shows a terminal window with three tabs, all titled 'jegan@tektutor.org'. The current tab is active and displays the deployment process of a Knative service.

```

3.179s Ready to serve.

Service 'hello' created to latest revision 'hello-00001' is available at URL:
https://hello-jegan.apps-crc.testing
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms ⌘ main kn service list
NAME      URL          LATEST   AGE    CONDITIONS   READY   REASON
hello    https://hello-jegan.apps-crc.testing  hello-00001  10s   3 OK / 3  True
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms ⌘ main kn revisions list
NAME      SERVICE     TRAFFIC  TAGS  GENERATION  AGE    CONDITIONS   READY   REASON
hello-00001  hello    100%     1     36s        4 OK / 4  True
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms ⌘ main curl -k https://hello-jegan.apps-crc.testing
Hello World!
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms ⌘ main kn service update hello --env TARGET=Knative!
Warning: Kubernetes default value is insecure, Knative may default to this to secure in a future release: spec.template.spec.containers[0].securityContext.allowPrivilegeEscalation, spec.template.spec.containers[0].securityContext.capabilities, spec.template.spec.containers[0].securityContext.runAsNonRoot, spec.template.spec.containers[0].securityContext.seccompProfile
Updating Service 'hello' in namespace 'jegan':
0.028s The Configuration is still working to reflect the latest desired specification.
1.135s Traffic is not yet migrated to the latest revision.
1.161s Ingress has not yet been reconciled.
1.180s Waiting for load balancer to be ready
1.385s Ready to serve.

Service 'hello' updated to latest revision 'hello-00002' is available at URL:
https://hello-jegan.apps-crc.testing
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms ⌘ main kn revisions list
NAME      SERVICE     TRAFFIC  TAGS  GENERATION  AGE    CONDITIONS   READY   REASON
hello-00002  hello    100%     2     4m47s    3 OK / 4  True
hello-00001  hello    100%     1     6m21s    3 OK / 4  True
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms ⌘ main curl -k https://hello-jegan.apps-crc.testing
Hello Knative!!
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms ⌘ main curl -k https://hello-jegan.apps-crc.testing
Hello Knative!!
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms ⌘ main

```

Splitting the traffic between two revisions (something similar to canary deployment)

```

kn service update hello --traffic hello-00001=50 --traffic @latest=50
kn revisions list

```

Accessing the Knative application from command line

```

curl -k https://hello-jegan.apps-crc.testing
curl -k https://hello-jegan.apps-crc.testing
curl -k https://hello-jegan.apps-crc.testing
curl -k https://hello-jegan.apps-crc.testing

```

Expected output

```

Activities Terminal Jul 5 17:00
jegan@tektutor.org jegan@tektutor.org jegan@tektutor.org
Hello Knative!!
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms ✘ main curl -k https://hello-jegan.apps-crc.testing
Hello Knative!!
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms ✘ main kn service update hello --traffic hello-00001=50 --traffic @latest
=50
Warning: Kubernetes default value is insecure, Knative may default this to secure in a future release: spec.template.spec.containers[0].securityContext.allowPrivilegeEscalation, spec.template.spec.containers[0].securityContext.capabilities, spec.template.spec.containers[0].securityContext.runAsNonRoot, spec.template.spec.containers[0].securityContext.seccompProfile
Updating Service 'hello' in namespace 'jegan':
0.022s The Route is still working to reflect the latest desired specification.
0.061s Ingress has not yet been reconciled.
0.098s Waiting for load balancer to be ready
0.274s Ready to serve.

Service 'hello' with latest revision 'hello-00002' (unchanged) is available at URL:
https://hello-jegan.apps-crc.testing
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms ✘ main kn revisions list
NAME SERVICE TRAFFIC TAGS GENERATION AGE CONDITIONS READY REASON
hello-00002 hello 50% 2 8m14s 3 OK / 4 True
hello-00001 hello 50% 1 9m48s 3 OK / 4 True
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms ✘ main curl -k https://hello-jegan.apps-crc.testing
Hello World!
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms ✘ main curl -k https://hello-jegan.apps-crc.testing
Hello World!
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms ✘ main curl -k https://hello-jegan.apps-crc.testing
Hello Knative!!
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms ✘ main curl -k https://hello-jegan.apps-crc.testing
Hello World!
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms ✘ main curl -k https://hello-jegan.apps-crc.testing
Hello Knative!!
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms ✘ main curl -k https://hello-jegan.apps-crc.testing
Hello Knative!!
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms ✘ main curl -k https://hello-jegan.apps-crc.testing
Hello Knative!!
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms ✘ main

```

Activities Google Chrome Jul 5 17:00

Topology - Red Hat OpenShift - Google Chrome

Not secure https://console.openshift-console.apps-crc.testing/topology/ns/jegan/view=graph

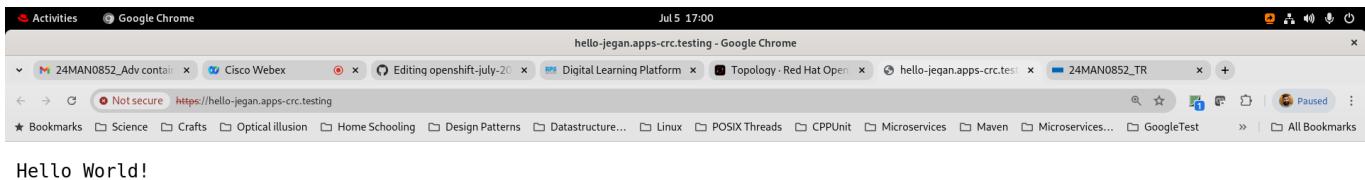
Project: jegan Application: All applications

Topology

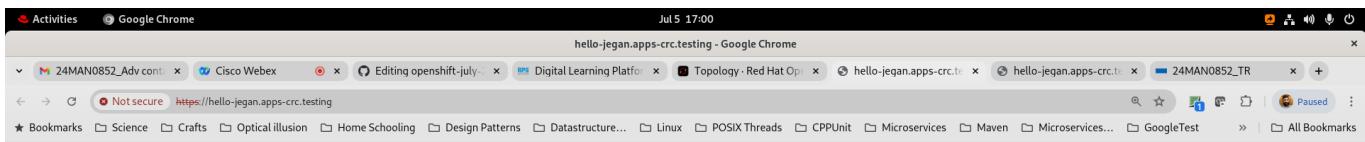
OpenShift Local cluster is for development and testing purposes. DONT use it for production.

REV hello-00002 REV hello-00001

The screenshot shows the Red Hat OpenShift Topology interface. On the left, a sidebar menu includes Developer, Topology (which is selected), Observe, Search, Functions, Builds, Helm, Project, ConfigMaps, and Secrets. The main area displays a topology graph with two nodes, each represented by a blue circle containing a white icon. Arrows from both nodes point to a central dashed box. Inside the box, there are two labels: '50%' above each node. Below the nodes are two status bars: 'REV hello-00002' and 'REV hello-00001'. At the bottom of the main area are several small icons: a magnifying glass, a search bar, a close button, and a refresh button.



Hello World!



Hello Knative!!

Delete the knative service

```
kn service list
kn service delete hello
kn service list
```

Expected output

The screenshot shows three terminal windows on a Linux desktop. The first window shows the deployment of a service named 'hello' in the 'jegan' namespace. It includes logs for route reconciliation and a curl command to test the service at <https://hello-jegan.apps-crc.testing>. The second window lists the revisions of the service, showing two versions: 'hello-00002' and 'hello-00001'. The third window shows multiple curl requests to the service, all returning 'Hello Knative!' or 'Hello World!' responses.

```

Updating Service 'hello' in namespace 'jegan':
0.022s The Route is still working to reflect the latest desired specification.
0.061s Ingress has not yet been reconciled.
0.098s Waiting for load balancer to be ready
0.274s Ready to serve.

Service 'hello' with latest revision 'hello-00002' (unchanged) is available at URL:
https://hello-jegan.apps-crc.testing
jegan@tektutor.org ~ -/openshift-july-2024/Day5/spring-ms [✓ main] $ kn revisions list
NAME          SERVICE  TRAFFIC   TAGS  GENERATION AGE    CONDITIONS  READY  REASON
hello-00002   hello     50%        2      8m14s   3 OK / 4   True
hello-00001   hello     50%        1      9m48s   3 OK / 4   True
jegan@tektutor.org ~ -/openshift-july-2024/Day5/spring-ms [✓ main] $ curl -k https://hello-jegan.apps-crc.testing
Hello World!
jegan@tektutor.org ~ -/openshift-july-2024/Day5/spring-ms [✓ main] $ curl -k https://hello-jegan.apps-crc.testing
Hello World!
jegan@tektutor.org ~ -/openshift-july-2024/Day5/spring-ms [✓ main] $ curl -k https://hello-jegan.apps-crc.testing
Hello Knative!!
jegan@tektutor.org ~ -/openshift-july-2024/Day5/spring-ms [✓ main] $ curl -k https://hello-jegan.apps-crc.testing
Hello World!
jegan@tektutor.org ~ -/openshift-july-2024/Day5/spring-ms [✓ main] $ curl -k https://hello-jegan.apps-crc.testing
Hello Knative!!
jegan@tektutor.org ~ -/openshift-july-2024/Day5/spring-ms [✓ main] $ kn service list
NAME          URL           LATEST   AGE    CONDITIONS  READY  REASON
hello         https://hello-jegan.apps-crc.testing  hello-00002  11m  3 OK / 3   True
jegan@tektutor.org ~ -/openshift-july-2024/Day5/spring-ms [✓ main] $ kn service delete hello
Service 'hello' successfully deleted in namespace 'jegan'.
jegan@tektutor.org ~ -/openshift-july-2024/Day5/spring-ms [✓ main] $ kn service list
No services found.
jegan@tektutor.org ~ -/openshift-july-2024/Day5/spring-ms [✓ main] $ kn revisions list
No revisions found.
jegan@tektutor.org ~ -/openshift-july-2024/Day5/spring-ms [✓ main]

```

The screenshot shows the Red Hat OpenShift web console interface. The left sidebar navigation bar is visible, with 'Topology' selected. The main content area displays a graph titled 'Topology - Red Hat OpenShift - Google Chrome'. The graph shows a single node labeled 'No resources found'. Below the graph, there is a message: 'Start building your application or visit the Add page for more details.' The browser's address bar shows the URL <https://console-openshift-console.apps-crc.testing/topology/ns/jegan/view=graph>.

Lab - Knative eventing

Let's deploy a sink service

```

oc project jegan-eventing
kn service create eventinghello --
image=quay.io/rhdevelopers/eventinghello:0.0.2

```

Expected output

```

Activities Terminal Jul 5 17:05
jegan@tektutor.org jegan@tektutor.org jegan@tektutor.org
* openshift-serverless
* openshift-service-ca
* openshift-service-ca-operator
* openshift-user-workload-monitoring
* openshift-vsphere-infra
x jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms > main > oc new-project jegan-eventing
Now using project "jegan-eventing" on server "https://api.crc.testing: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/Day5/spring-ms > main > kn service create eventinghello --image=quay.io/rhdevelopers/eventinghello:0.0.2
Warning: Kubernetes default value is insecure, Knative may default this to secure in a future release: spec.template.spec.containers[0].securityContext.allowPrivilegeEscalation, spec.template.spec.containers[0].securityContext.capabilities, spec.template.spec.containers[0].securityContext.runAsNonRoot, spec.template.spec.containers[0].securityContext.seccompProfile
Creating service 'eventinghello' in namespace 'jegan-eventing':
  0.037s The Route is still working to reflect the latest desired specification.
  0.051s Configuration "eventinghello" is waiting for a Revision to become ready.
  0.083s ...
  25.088s ...
  25.122s Ingress has not yet been reconciled.
  25.168s Waiting for load balancer to be ready
  25.364s Ready to serve.

Service 'eventinghello' created to latest revision 'eventinghello-00001' is available at URL:
https://eventinghello.jegan-eventing.apps-crc.testing
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms > main >

```

The screenshot shows the Red Hat OpenShift web console with the 'Topology' view selected. The left sidebar includes options like Developer, Topology (which is currently active), Observe, Search, Functions, Builds, Helm, Project, ConfigMaps, and Secrets. The main area displays a graph of resources, with one node highlighted in blue and showing a 100% utilization status. The URL in the browser is https://console.openshift-console.apps-crc.testing/topology/ns/jegan-eventing?view=graph.

Let's create an event source application

```

kn source ping create eventinghello-ping-source --schedule="*/2 * * * *" --
data '{"message": "Scale up"}' --sink ksvc:eventinghello

```

Expected output

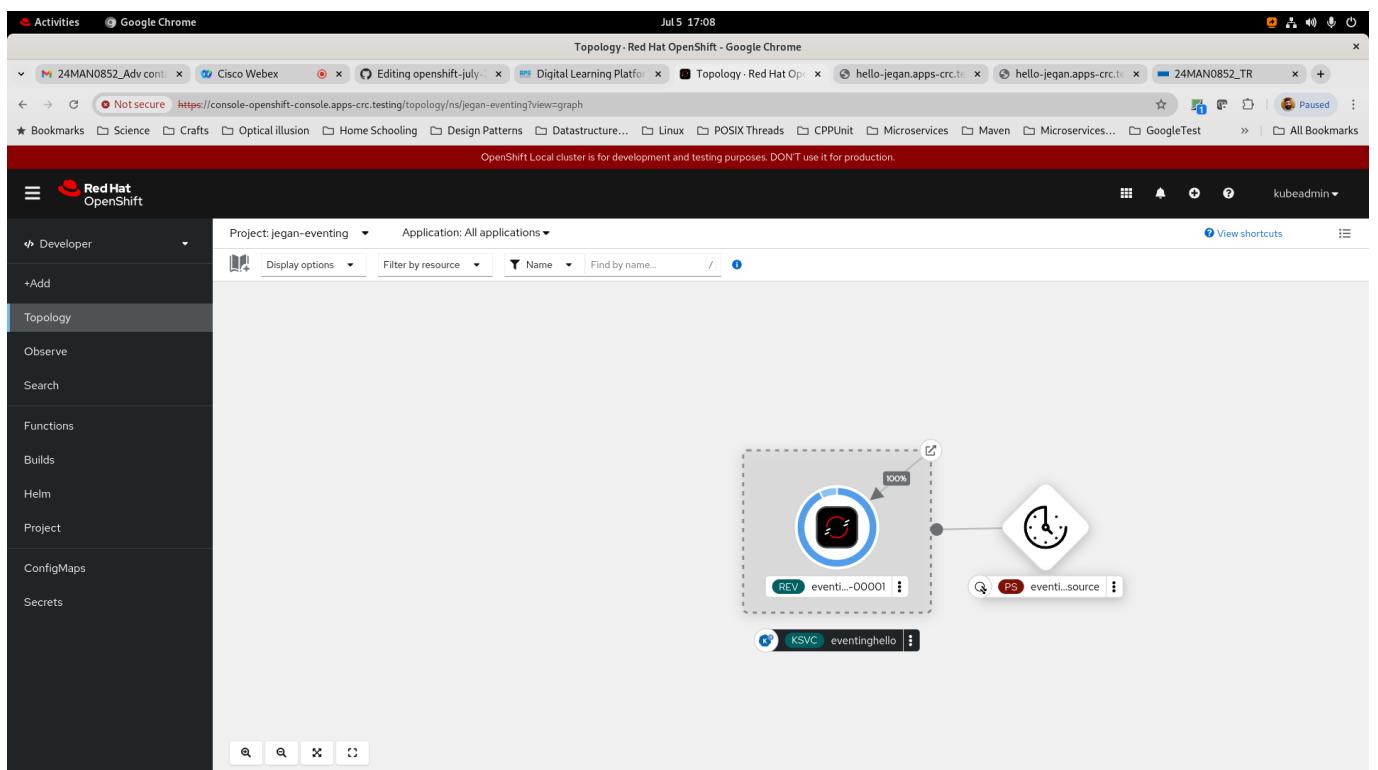
```

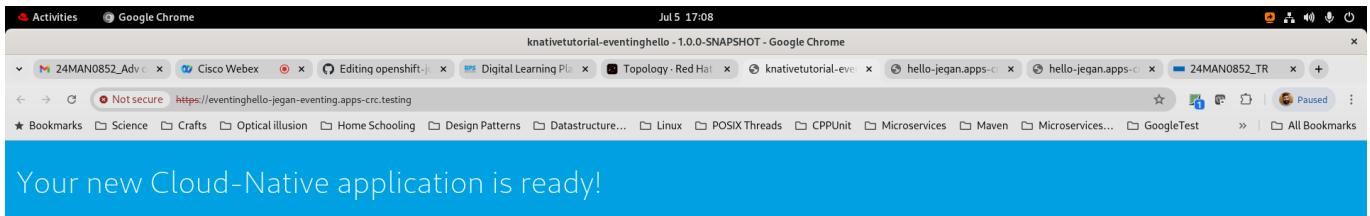
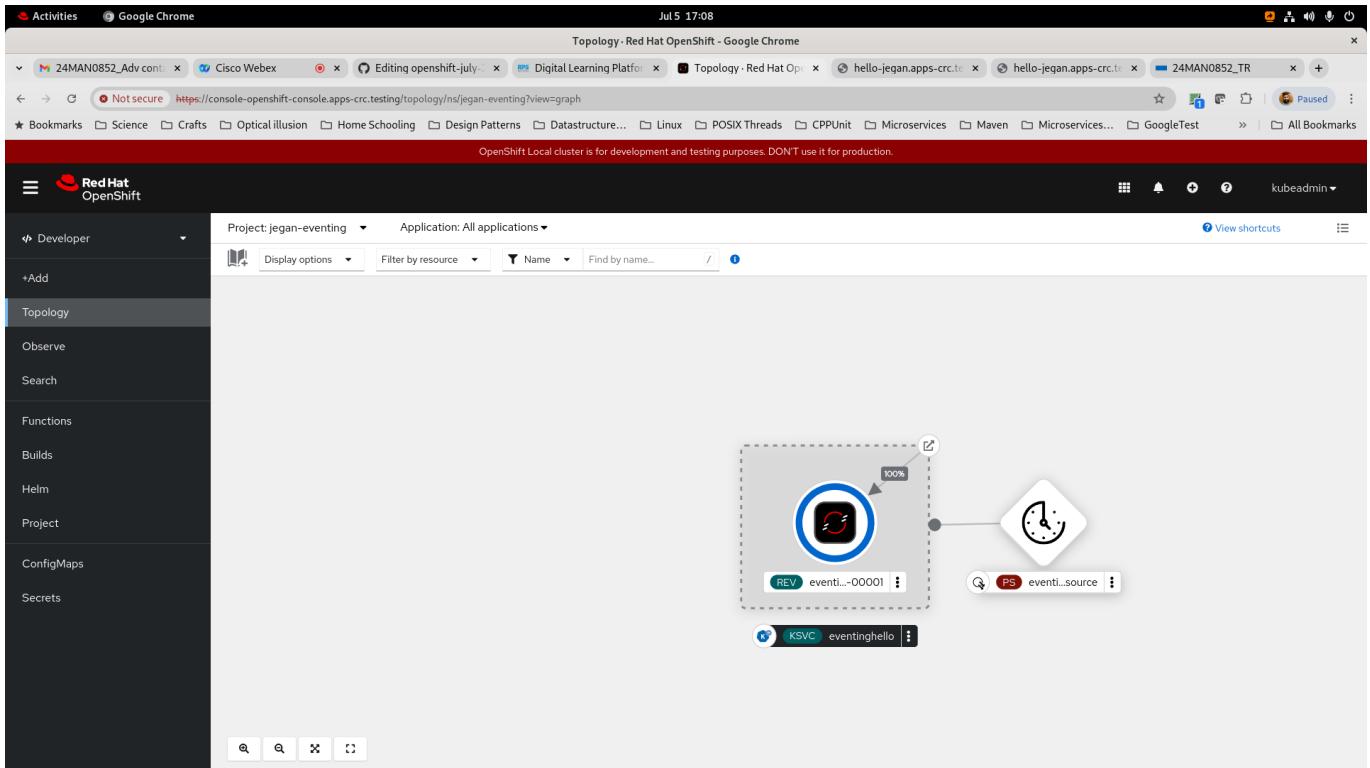
Activities Terminal Jul 5 17:06
jegan@tektutor.org jegan@tektutor.org jegan@tektutor.org
Now using project "jegan-eventing" on server "https://api.crc.testing:6443".
You can add applications to this project with the 'new-app' command. For example, try:
  oc new-app rails-postgresql-example
to build a 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/Day5/spring-ms > main kn service create eventinghello --image=quay.io/rhdevelopers/eventinghello:0.0.2
Warning: Kubernetes default value is insecure, Knative may default this to secure in a future release: spec.template.spec.containers[0].securityContext.allowPrivilegeEscalation, spec.template.spec.containers[0].securityContext.capabilities, spec.template.spec.containers[0].securityContext.runAsNonRoot, spec.template.spec.containers[0].securityContext.seccompProfile
Creating service 'eventinghello' in namespace 'jegan-eventing'

0.037s The Route is still working to reflect the latest desired specification.
0.051s Configuration "eventinghello" is waiting for a Revision to become ready.
0.083s ...
25.088s ...
25.122s Ingress has not yet been reconciled.
25.168s Waiting for load balancer to be ready
25.364s Ready to serve.

Service 'eventinghello' created to latest revision 'eventinghello-00001' is available at URL:
https://eventinghello-jegan-eventing.apps-crc.testing
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms > main kn source ping create eventinghello-ping-source --schedule="*/2 * * * *" --data '{"message": "Scale up"}' --sink ksvc:eventinghello
Warning: sources.knative.dev/v1beta2 PingSource is deprecated; see https://knative.dev/docs/eventing/sources/ping-source/ for instructions to migrate to sources.knative.dev/v1 PingSource
Ping source 'eventinghello-ping-source' created in namespace 'jegan-eventing'.
jegan@tektutor.org > ~/openshift-july-2024/Day5/spring-ms > main

```





Congratulations, you have created a new Quarkus application.

Why do you see this?

This page is served by Quarkus. The source is in [src/main/resources/META-INF/resources/index.html](#).

What can I do from here?

- If not already done, run the application in *dev mode* using: `mvn compile quarkus:dev`.
- Add REST resources, Servlets, functions and other services in `src/main/java`.
 - Your static assets are located in `src/main/resources/META-INF/resources`.
 - Configure your application in `src/main/resources/application.properties`.

How do I get rid of this page?

Just delete the `src/main/resources/META-INF/resources/index.html` file.

Application

GroupId: com.redhat.developers
ArtifactId: knativetutorial-eventinghello
Version: 1.0.0-SNAPSHOT
Quarkus Version: 1.4.2.Final

Next steps

[Setup your IDE](#)
[Getting started](#)
[Quarkus Web Site](#)

Activities Google Chrome Topology - Red Hat OpenShift - Google Chrome

Topology · Red Hat OpenShift - Google Chrome

Not secure https://console-openshift-console.apps-crc.testing/topology/ns/jegan-eventing?view=graph

Project: jegan-eventing Application: All applications

Developer Topology

+Add

Topology

Observe

Search

Functions

Builds

Helm

Project

ConfigMaps

Secrets

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

OpenShift Local cluster is for development and testing purposes. DON'T use it for production.

The screenshot shows the Red Hat OpenShift Topology interface. On the left, a sidebar menu includes 'Topology' under the 'Developer' section. The main area displays a topology graph with a central deployment pod icon containing a circular arrow and a 'REV' label. A 'cronjob' icon with a clock symbol is connected to the deployment pod. A tooltip indicates '100%' completion. Below the graph, a 'KSVC' icon and the text 'eventinghello' are visible. The browser address bar shows a non-secure connection to the topology view of the 'jegan-eventing' namespace.

Activities Google Chrome Topology - Red Hat OpenShift - Google Chrome

Topology · Red Hat OpenShift - Google Chrome

Not secure https://console-openshift-console.apps-crc.testing/topology/ns/jegan-eventing?view=graph

Project: jegan-eventing Application: All applications

Developer Topology

+Add

Topology

Observe

Search

Functions

Builds

Helm

Project

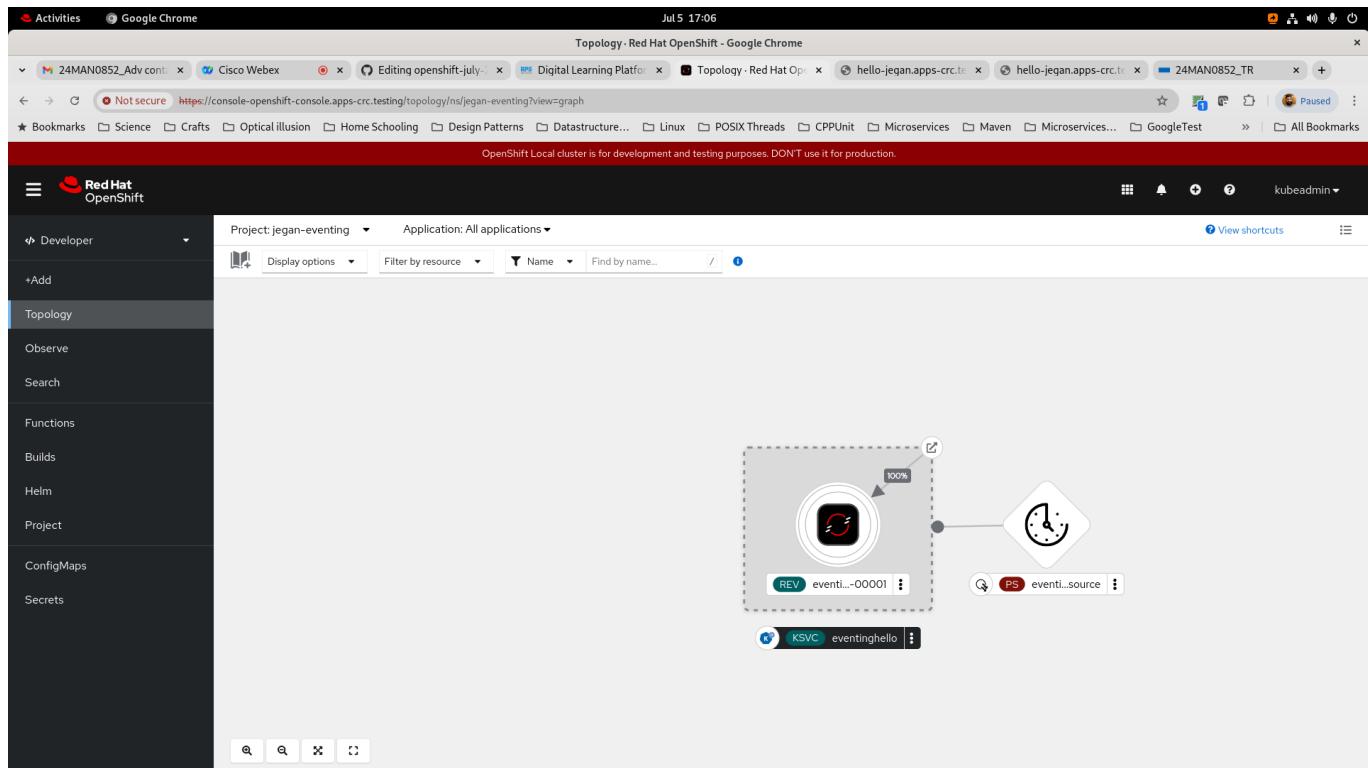
ConfigMaps

Secrets

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

OpenShift Local cluster is for development and testing purposes. DON'T use it for production.

This screenshot is identical to the one above, showing the Red Hat OpenShift Topology interface. The main difference is a callout bubble with the text 'Open URL' pointing to the connection line between the deployment pod and the cronjob icon. This indicates that clicking on the connection will open a URL related to the eventinghello service.



Lab - Developing a simple knative function in nodejs and deploying into Openshift

This will generate a basic nodejs application in your current directory

```
oc new-project jegan-faas  
kn func create -l node
```

If you wish to build your application

```
kn func build
```

If you wish to run the application locally and test it

```
kn func run
```

Deploy the nodejs application into openshift after building it

```
kn func deploy -n jegan-faas
```

Test the knative function

```
curl -k https://
```

Expected output

```
Activities Terminal Jul 5 17:16
jegan@tektutor.org
jegan@tektutor.org ~ /openshift-july-2024/Day5/faas
jegan@tektutor.org ~ /~/main ls
jegan@tektutor.org ~ /~/main oc project
Using project "jegan-faas" on server "https://api.crc.testing:6443".
jegan@tektutor.org ~ /~/main kn func create -l node

Created node function in /home/jegan/openshift-july-2024/Day5/faas
jegan@tektutor.org ~ /~/main ls
func.yaml index.js package.json package-lock.json README.md test
jegan@tektutor.org ~ /~/main kn func build
Building function image
Still building
⌚ Function built: image-registry.openshift-image-registry.svc:5000/jegan-faas/faas:latest
jegan@tektutor.org ~ /~/main kn func run
function up-to-date. Force rebuild with --build
Running on host port 8080
Environment:
  DEV_MODE=false
  NODE_ENV=production
  DEBUG_PORT=5858
Launching via npm...
npm info using npm@10.5.0
npm info using node@v20.12.2

> http-handler@0.1.0 start
> FUNC_LOG_LEVEL=info faas-js-runtime ./index.js

npm http fetch GET 200 https://registry.npmjs.org/npm 155ms
{"level":30,"time":1720179929161,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","msg":"Server listening at http://[::]:8080"}
{"level":30,"time":1720179954661,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-1","req":{"method":"GET","url":"/","hostname":"localhost:8080","remoteAddress":":fffff:172.17.0.1","remotePort":53184},"msg":"incoming request"}
{"level":30,"time":1720179954663,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-1","msg":"query"}
{"level":30,"time":1720179954663,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-1","msg":"body"}
{"level":30,"time":1720179954667,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-1","res":{"statusCode":200},"responseTime":5.456429999321699,"msg":"request completed"}
{"level":30,"time":1720179954667,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-2","req":{"method":"GET","url":"/","hostname":"localhost:8080","remoteAddress":":fffff:172.17.0.1","remotePort":53184}}}
```

```
func.yaml index.js package.json package-lock.json README.md test
jegan@tektutor.org ~/-openshift-july-2024/Day5/faas main kn func build
Building function image
Still building
👉 Function built: image-registry.openshift-image-registry.svc:5000/jegan-faas/faas:latest
jegan@tektutor.org ~/-openshift-july-2024/Day5/faas main kn func run
function up-to-date. Force rebuild with --build
Running on host port 8080
Environment:
  DEV_MODE=false
  NODE_ENV=production
  DEBUG_PORT=5858
Launching via npm...
npm info using npm@10.5.0
npm info using node@v20.12.2

> http-handler@0.1.0 start
> FUNC_LOG_LEVEL=info faas-js-runtime ./index.js

npm http fetch GET 200 https://registry.npmjs.org/npm 155ms
{"level":30,"time":1720179929161,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","msg":"Server listening at http://[::]:8080"}
{"level":30,"time":1720179954661,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-1","req":{"method":"GET","url":"/","hostname":"localhost:8080","remoteAddress":"::ffff:172.17.0.1","remotePort":53184},"msg":"incoming request"}
{"level":30,"time":1720179954663,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-1","msg":"query"}
{"level":30,"time":1720179954663,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-1","msg":"body"}
 {"level":30,"time":1720179954667,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-1","res":{"statusCode":200}, "responseTime":5.456429999321699,"msg":"request completed"}
 {"level":30,"time":1720179962082,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-2","req":{"method":"GET","url":"/","hostname":"localhost:8080","remoteAddress":"::ffff:172.17.0.1","remotePort":53190},"msg":"incoming request"}
 {"level":30,"time":1720179962083,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-2","msg":"query"}
 {"level":30,"time":1720179962083,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-2","msg":"body"}
 {"level":30,"time":1720179962083,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-2","res":{"statusCode":200}, "responseTime":0.5766369998455048,"msg":"request completed"}
```

```
Activities Terminal Jul 5 17:17
jegan@tektutor.org jegan@tektutor.org jegan@tektutor.org
func.yaml index.js package.json package-lock.json README.md test
jegan@tektutor.org ~/openshift-july-2024/Day5/faas ↵ main ➔ kn func build
Building function image
Still building
Function built: image-registry.openshift-image-registry.svc:5000/jegan-faas/faas:latest
jegan@tektutor.org ~/openshift-july-2024/Day5/faas ↵ main ➔ kn func run
function up-to-date. Force rebuild with --build
Running on host port 8080
Environment:
  DEV_MODE=false
  NODE_ENV=production
  DEBUG_PORT=5858
Launching via npm...
npm info using npm@10.5.0
npm info using node@v20.12.2

> http-handler@0.1.0 start
> FUNC_LOG_LEVEL=info faas-js-runtime ./index.js

npm http fetch GET 200 https://registry.npmjs.org/npm 155ms
{"level":30,"time":1720179929161,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","msg":"Server listening at http://[::]:8080"}
{"level":30,"time":1720179954661,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-1","req":{"method":"GET","url":"/","hostname":"localhost:8080","remoteAddress "::ffff:172.17.0.1","remotePort":53184},"msg":"incoming request"}
{"level":30,"time":1720179954663,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-1","msg":"query"}
{"level":30,"time":1720179954663,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-1","msg":"body"}
{"level":30,"time":1720179954667,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-1","res":{"statusCode":200},"responseTime":5.456429999321699,"msg":"request completed"}
 {"level":30,"time":1720179962082,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-2","req":{"method":"GET","url":"/","hostname":"localhost:8080","remoteAddress "::ffff:172.17.0.1","remotePort":531900},"msg":"incoming request"}
 {"level":30,"time":1720179962083,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-2","msg":"query"}
 {"level":30,"time":1720179962083,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-2","msg":"body"}
 {"level":30,"time":1720179962083,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-2","res":{"statusCode":200},"responseTime":0.5766369998455048,"msg":"request completed"}
```

```
Activities Terminal Jul 5 17:17
jegan@tektutor.org jegan@tektutor.org jegan@tektutor.org
jegan@tektutor.org ~/openshift-july-2024/Day5/faas ↵ main ➔ curl http://localhost:8080
{"query":{}}
jegan@tektutor.org ~/openshift-july-2024/Day5/faas ↵ main ➔
```

```

Activities Terminal July 5 17:19
jegan@tektutor.org jegan@tektutor.org jegan@tektutor.org
jegan@tektutor.org x jegan@tektutor.org x jegan@tektutor.org x

> http-handler@0.1.0 start
> FUNC_LOG_LEVEL=info faas-js-runtime ./index.js

npm http fetch GET 200 https://registry.npmjs.org/npm 155ms
{"level":30,"time":1720179929161,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","msg":"Server listening at http://[::]:8000"}
{"level":30,"time":1720179954661,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-1","req":{"method":"GET","url":"/","hostname":"localhost:8080","remoteAddress":"::ffff:172.17.0.1","remotePort":53184},"msg":"incoming request"}
{"level":30,"time":1720179954663,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-1","msg":"query"}
{"level":30,"time":1720179954663,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-1","msg":"body"}
{"level":30,"time":1720179954667,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-1","res":{"statusCode":200},"responseTime":5.456429999321699,"msg":"request completed"}
{"level":30,"time":1720179962082,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-2","req":{"method":"GET","url":"/","hostname":"localhost:8080","remoteAddress":"::ffff:172.17.0.1","remotePort":53190},"msg":"incoming request"}
{"level":30,"time":1720179962083,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-2","msg":"query"}
{"level":30,"time":1720179962083,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-2","msg":"body"}
{"level":30,"time":1720179962083,"pid":17,"hostname":"986691bd3e07","node_version":"v20.12.2","reqId":"req-2","res":{"statusCode":200},"responseTime":0.5766369998455048,"msg":"request completed"}
^Cnpn notice
npm notice New minor version of npm available! 10.5.0 -> 10.8.1
npm notice Changelog: <https://github.com/npm/cli/releases/tag/v10.8.1>
npm notice Run `npm install -g npm@10.8.1` to update!
npm notice
npm info ok
jegan@tektutor.org ~ /openshift-july-2024/Day5/faas ↵ main ➔ kn func deploy -n jegan-faas
function up-to-date. Force rebuild with --build
Pushing function image to the registry "image-registry.openshift-image-registry.svc:5000" using the "openshift" user credentials
Deploying function to the cluster
Creating Triggers on the cluster
Function deployed in namespace "jegan-faas" and exposed at URL:
https://faas-jegan-faas.apps-crc.testing
jegan@tektutor.org ~ /openshift-july-2024/Day5/faas ↵ main ➔ curl -k https://faas-jegan-faas.apps-crc.testing
{"query":{}}
jegan@tektutor.org ~ /openshift-july-2024/Day5/faas ↵ main ➔

```

Activities Google Chrome July 5 17:20

Topology - Red Hat OpenShift - Google Chrome
<https://console-openshift-console.apps-crc.testing/topology/ns/jegan-faas?view=graph>

Not secure https://console-openshift-console.apps-crc.testing/topology/ns/jegan-faas?view=graph

Project: jegan-faas Application: All applications View shortcuts

Topology

Developer +Add

Topology

Observe

Search

Functions

Builds

Helm

Project

ConfigMaps

Secrets

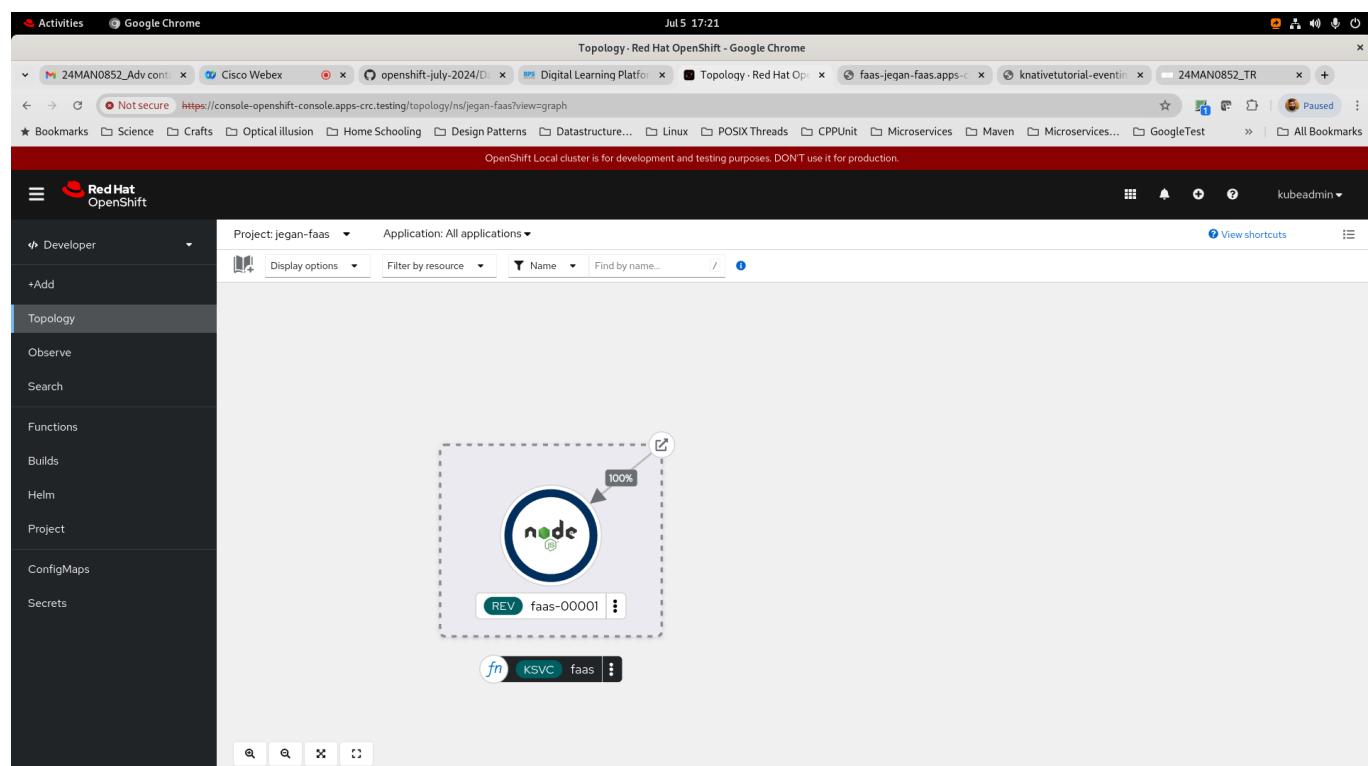
Display options Filter by resource Name Find by name... fn REV faas-00001 ...

REV faas-00001 ...

fn KSVCS faas ...

The screenshot shows a Google Chrome browser window with multiple tabs open. The active tab's URL is `https://faas-jegan-faas.apps-crc.testing`. The page content displays a JSON object:

```
{
  "query": {
  }
}
```



Request for your feedback (Using RPS Lab machine)

<https://survey.zohopublic.com/zs/KI0DHJ>

Post test link (Using RPS Lab machine)

<https://rpsconsulting116.examly.io/contest/publicU2FsdGVkX1/JCYJ6pgzhyRDN6KxFZZVDm8PA05DQ1bAAZsl8h8W19j5WVwJ9CvyMbq6DI0fxTZ41/oNdnEYhg==>

