

Day 5

Lab - Creating an Image Stream, build an image using BuildConfig and pushing the image to Image Stream

```
cd ~/openshift-may-2024
git pull
cd Day5/ImageStreamAndBuildConfig
oc project jegan
oc apply -f imagestream.yml
oc get imagestreams
oc get imagestream
oc get is

oc apply -f buildconfig.yml
oc get buildconfigs
oc get buildconfig
oc get bc

oc get builds
oc get builds

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

Expected output

```
jegan@tektutor.org ~ ~/openshift-may-2024/Day5/ImageStreamAndBuildConfig
└ main └ oc logs -f bc/spring-hello
Cloning "https://github.com/tektutor/openshift-may-2024.git" ...
Commit: 40c7a55875d80bfe199a89551375889c02557828 (Updated
buildconfig in Day5)
    Author: Jeganathan Swaminathan
    Date: Tue May 21 11:06:46 2024 +0530
time="2024-05-21T05:37:10Z" 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"
I0521 05:37:10.447629      1 defaults.go:112] Defaulting to storage driver
"overlay" with options [mountopt=metacopy=on].
Caching blobs under "/var/cache/blobs".

Pulling image registry.redhat.io/ubi8/openjdk-11:latest ...
Trying to pull registry.redhat.io/ubi8/openjdk-11:latest...
Getting image source signatures
Copying blob
sha256:ca19c1d8b6a56d82b4d9cc9ee30899ce07641f8ba17831ffd074240384f32cb0
Copying blob
sha256:50973ec5afdbaf48c719a37a132e9a827da1ad121015a22a9420e05800137a28
Copying config
```

```
sha256:41ecfe9aa068500e58d86438b8a33611d16688a4dd388f5de8c43f4f728ee77c
Writing manifest to image destination
Adding transient rw bind mount for /run/secrets/rhsm
[1/2] STEP 1/6: FROM registry.redhat.io/ubi8/openjdk-11:latest AS builder
[1/2] STEP 2/6: MAINTAINER Jeganathan Swaminathan
--> da1a6a8c047b
[1/2] STEP 3/6: RUN mkdir -p -m 0700 ./hello/target
--> d0a2318330b0
[1/2] STEP 4/6: WORKDIR ./hello
--> 130104147115
[1/2] STEP 5/6: COPY . .
--> 4bd2f8044bea
[1/2] STEP 6/6: RUN mvn package && cp ./target/spring-hello-1.0.jar
/tmp/app.jar

[INFO] Replacing main artifact with repackaged archive
[INFO] -----
-----
[INFO] BUILD SUCCESS
[INFO] -----
-----
[INFO] Total time: 07:07 min
[INFO] Finished at: 2024-05-21T05:44:32Z
[INFO] -----
-----
--> 1aa7d4ba284e
[2/2] STEP 1/5: FROM registry.redhat.io/ubi8/openjdk-11:latest AS runner
[2/2] STEP 2/5: COPY --from=builder /tmp/app.jar .
--> d2c7c775b060
[2/2] STEP 3/5: CMD ["java", "-jar", "./app.jar"]
--> a49ccf6e5faf
[2/2] STEP 4/5: ENV "OPENSHIFT_BUILD_NAME"="spring-hello-1"
"OPENSHIFT_BUILD_NAMESPACE"="jegan"
"OPENSHIFT_BUILD_SOURCE"="https://github.com/tektutor/openshift-may-
2024.git"
"OPENSHIFT_BUILD_COMMIT"="40c7a55875d80bfe199a89551375889c02557828"
--> 837f9a2af512
[2/2] STEP 5/5: LABEL "io.openshift.build.commit.author"="Jeganathan
Swaminathan" "io.openshift.build.commit.date"="Tue May 21 11:06:46 2024
+0530"
"io.openshift.build.commit.id"="40c7a55875d80bfe199a89551375889c02557828"
"io.openshift.build.commit.message"="Updated buildconfig in Day5"
"io.openshift.build.commit.ref"="main" "io.openshift.build.name"="spring-
hello-1" "io.openshift.build.namespace"="jegan" "io.openshift.build.source-
context-dir"="Day5/ImageStreamAndBuildConfig" "io.openshift.build.source-
location"="https://github.com/tektutor/openshift-may-2024.git"
[2/2] COMMIT temp.builder.openshift.io/jegan/spring-hello-1:c5e02ad5
--> c276403a7bf3
Successfully tagged temp.builder.openshift.io/jegan/spring-hello-1:c5e02ad5
c276403a7bf315f9ec2d53ad62832fd02f23ce1d6e94c60192d0846db9c7896a

Pushing image image-registry.openshift-image-
registry.svc:5000/jegan/tektutor-spring-hello:latest ...
Getting image source signatures
```

```
Copying blob
sha256:38c8b7d0b2e0247230e14bb40c3206b5538425b2762e896203ca09ff340f3d68
Copying blob
sha256:50973ec5afdbaf48c719a37a132e9a827da1ad121015a22a9420e05800137a28
Copying blob
sha256:ca19c1d8b6a56d82b4d9cc9ee30899ce07641f8ba17831ffd074240384f32cb0
Copying config
sha256:c276403a7bf315f9ec2d53ad62832fd02f23ce1d6e94c60192d0846db9c7896a
Writing manifest to image destination
Successfully pushed image-registry.openshift-image-
registry.svc:5000/jegan/tektutor-spring-
hello@sha256:e3e8c5c3e7abf8c0e740a730121ca6c021f93fce0d3559967b16b0e429103e
7f
Push successful
```

Let's deploy the application into openshift

```
cd ~/openshift-may-2024
git pull
cd Day5/ImageStreamAndBuildConfig
oc project jegan

oc apply -f hello-deploy.yml
oc apply -f hello-svc.yml
oc apply -f hello-route.yml

oc get deploy,svc,route

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

Lab - Build Custom Image from java springboot source from GitHub and push the custom image into JFrog Private Registry cloud

We need to create secret to store the JFrog Artifactory Private Image Registry login credentials in OpenShift

```
oc create secret docker-registry private-jfrog-image-registry --docker-
server=openshiftjegan.jfrog.io --docker-username=your-registered-gmail --
docker-password=your-frog-password
```

```
cd ~/openshift-may-2024
git pull
cd Day5/BuildConfig
```

CI/CD

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

The screenshot shows a web browser window with the title "Start a Trial With Artifactory and Xray | JFrog - Google Chrome". The URL in the address bar is jfrog.com/start-free/#trialOptions. The page displays two main trial options:

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

For viewing JFrog functionality in action with minimal upfront investment.

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

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

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

At the bottom of the page, there is a "Back" button and a cookie consent banner:

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

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

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

The screenshot shows a web browser window with the title "Start a Trial With Artifactory and Xray | JFrog - Google Chrome". The URL in the address bar is jfrog.com/start-free/#saas. The page is titled "Set up your JFrog Platform Environment" and offers a "Free 14-Day Trial".

The setup form includes the following fields:

- Create a Hostname*: (This will be your team's subdomain.)
- Last Name*:
- Company*:
- Phone:
- Hosting Preferences:
 - Select a Cloud Provider for your JFrog Environment: AWS, Google Cloud, Microsoft Azure
 - Cloud Region*:
- What are you interested in? (checkboxes):
 - DevOps: Package and Dependency Management, CI/CD, Container Registry
 - End-to-End Security: Vulnerability detection, prioritization and remediation.
 - IoT: Software Updates, Remote Access, Fleet Management
 - Other
- Which of the following best matches your role?

At the bottom of the page, there is a "Back" button and a "TRY IT NOW >" button.

JFrog Landing - Google Chrome

landing.jfrog.com/register/trial-enterprise/waiting?a=LJ4brUH7TjnOjWRuEdAv2kEdMeircOca8Pf8xhSkSSAYrXzx5u3lYp9I96K6APgdOpySPJtarKYzOGeDEGQsmXtNS3oTy6428nIDRW2dldEsLc54DL1B7BvqNQ76gjjU9ZFdJLbf7AkU... Paused

Your DevOps & Security Journey is About to Begin

Your JFrog Trial environment is being created

This typically takes less than one minute.

25%

Hostname: openshiftjegan Location: Amazon In Oregon

Your JFrog DevOps platform with native security will include:

- Premium Security Tools
- Universal Binary Management
- Enterprise Scale and Control

Automated supply chain security and compliance tightly woven into your SDLC

Centrally manage all builds, packages, and dependencies in a single source of truth

Create software anywhere with central control over how it's accessed and used

JFrog Landing - Google Chrome

landing.jfrog.com/register/trial-enterprise/waiting?a=LJ4brUH7TjnOjWRuEdAv2kEdMeircOca8Pf8xhSkSSAYrXzx5u3lYp9I96K6APgdOpySPJtarKYzOGeDEGQsmXtNS3oTy6428nIDRW2dldEsLc54DL1B7BvqNQ76gjjU9ZFdJLbf7AkU... Paused

Your DevOps & Security Journey is About to Begin

Your JFrog Trial environment is being created

This typically takes less than one minute.

46%

Hostname: openshiftjegan Location: Amazon In Oregon

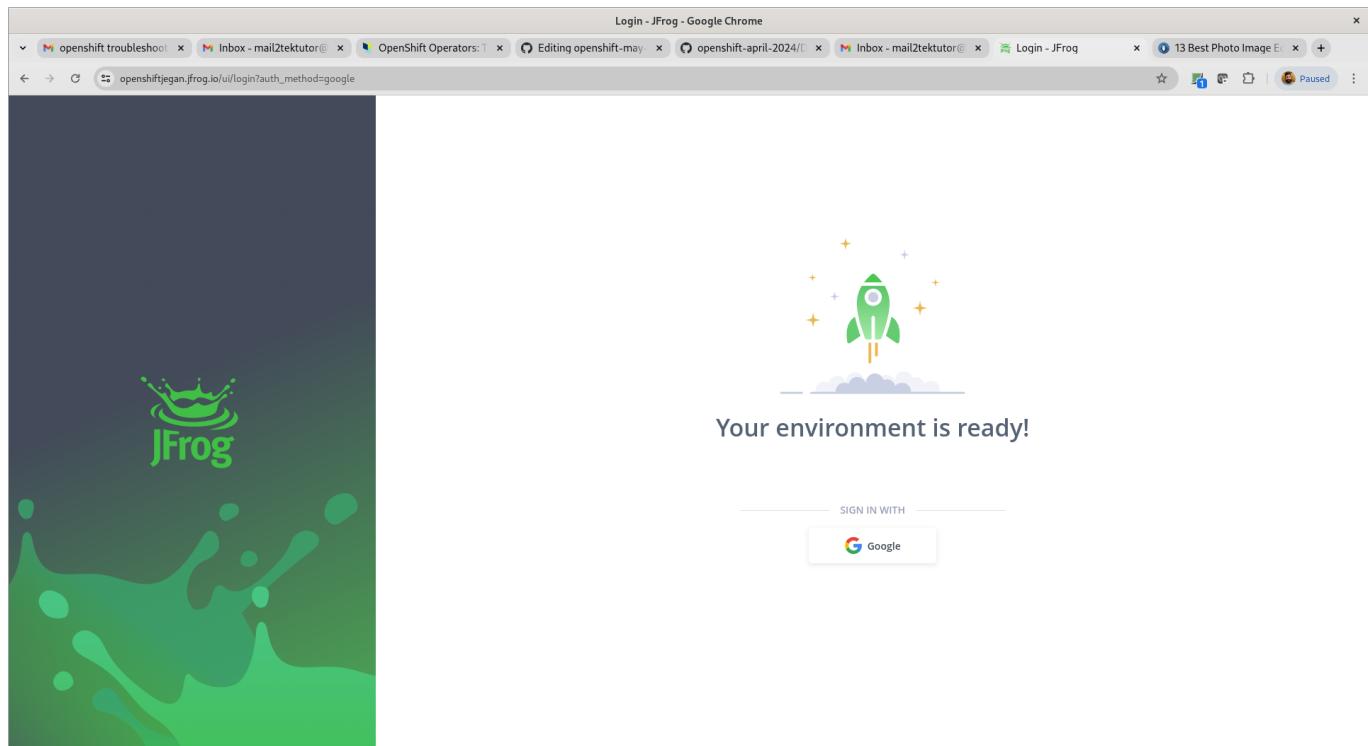
Your JFrog DevOps platform with native security will include:

- Premium Security Tools
- Universal Binary Management
- Enterprise Scale and Control

Automated supply chain security and compliance tightly woven into your SDLC

Centrally manage all builds, packages, and dependencies in a single source of truth

Create software anywhere with central control over how it's accessed and used



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

A screenshot of the JFrog Platform "Get Started" page. The header includes a "Day 1/14 | Free Trial until Jun 4, 2024" message and navigation tabs for "All Projects", "Application", and "Administration". On the left, a sidebar lists "JFrog Platform" sections: Get Started, Artifactory, Xray, Distribution, Pipelines, Integrations, Connect, and MyJFrog Portal. The main content area is titled "Get Started with JFrog" and contains a "We recommend these steps to get you started" section. It lists two main categories: "Set up your workflow" (3 steps) and "Secure your packages" (5 steps). Each step is numbered, has a brief description, and a "Go" button. A progress bar at the top indicates 0% completion. A "Go To Trial Documentation" link is also present.

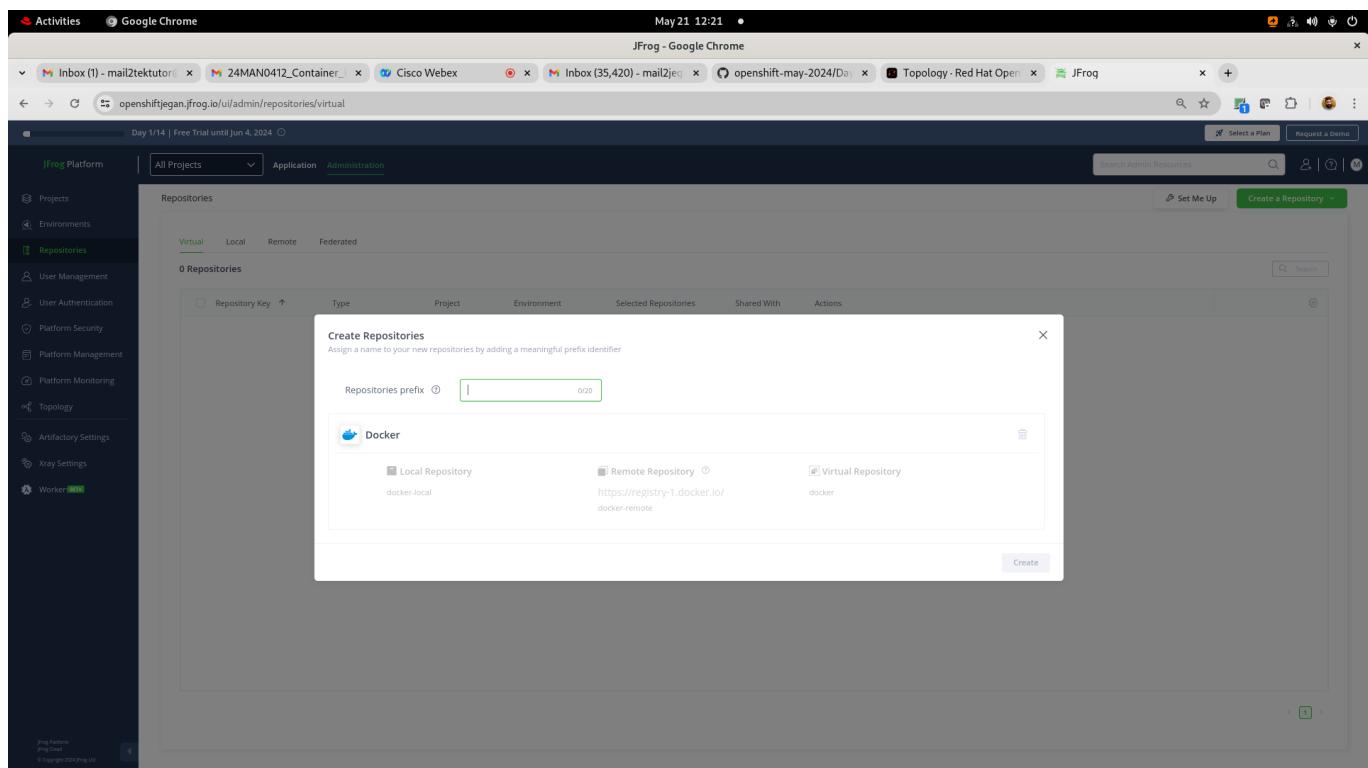
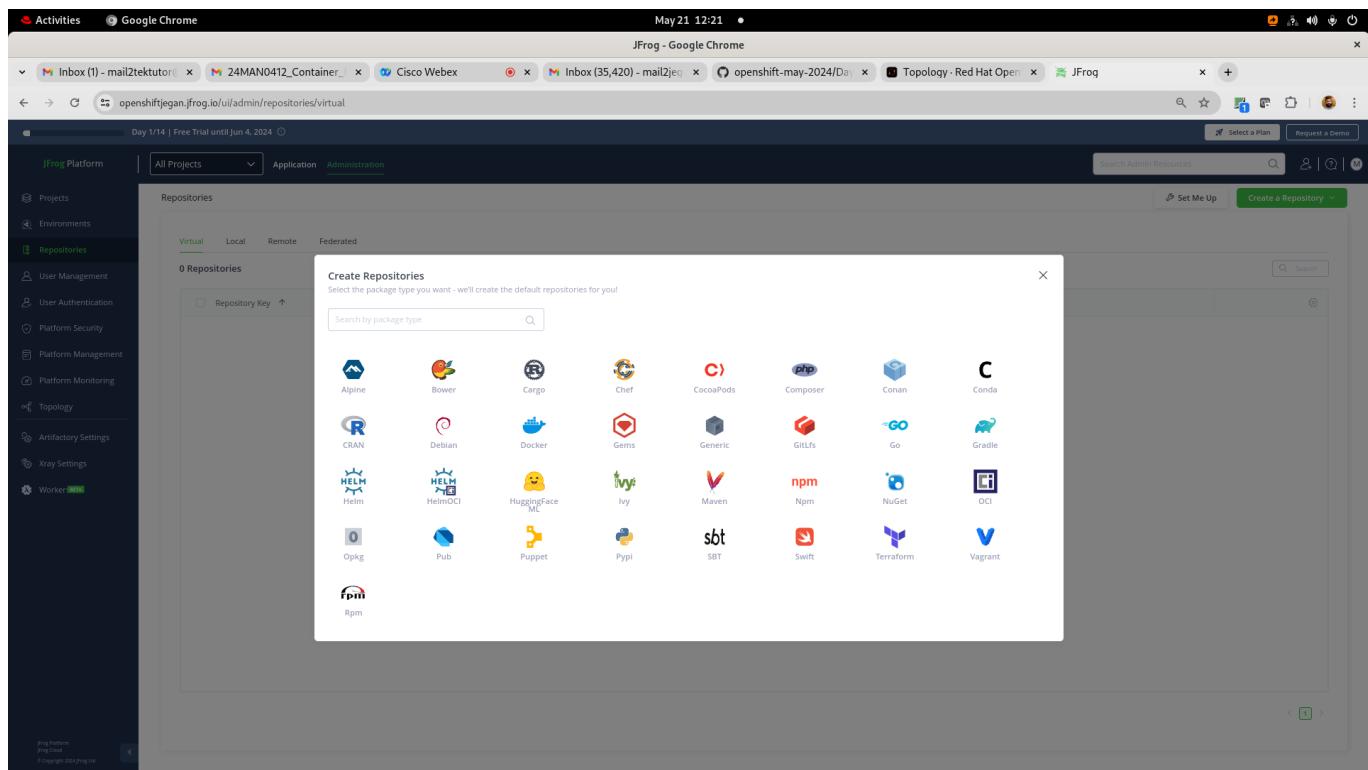
The screenshot displays two consecutive views of the JFrog Platform web interface, likely from a browser session.

Top View (Projects Section):

- The title bar says "JFrog - Google Chrome".
- The address bar shows the URL: "openshiftjegan.jfrog.io/ui/admin/projects/list".
- The header includes a "Day 1/14 | Free Trial until Jun 4, 2024" message and navigation tabs: "All Projects" (selected), "Application", and "Administration".
- A search bar at the top right contains "Search Admin Resources" and a magnifying glass icon.
- The left sidebar, titled "JFrog Platform", lists various modules: Projects, Environments, Repositories, User Management, User Authentication, Platform Security, Platform Management, Platform Monitoring, Topology, Artifactory Settings, Xray Settings, and Worker (with 30K workers).
- The main content area is titled "Projects" with tabs "All Projects" and "Unassigned". It features a green "Get Started with your first Project!" box and a "Create New" button.

Bottom View (Repositories Section):

- The title bar says "Activities" and "JFrog - Google Chrome".
- The address bar shows the URL: "openshiftjegan.jfrog.io/ui/admin/repositories/virtual".
- The header includes a "Day 1/14 | Free Trial until Jun 4, 2024" message and navigation tabs: "All Projects" (selected), "Application", and "Administration".
- A search bar at the top right contains "Search Admin Resources" and a magnifying glass icon.
- The left sidebar is identical to the top view.
- The main content area is titled "Repositories" with tabs "Virtual" (selected), "Local", "Remote", and "Federated". It shows a table with 0 repositories and a note: "No results were found Try to change your search".
- A sidebar on the right titled "Pre-Built Setup" provides "JFrog Best Practice" recommendations:
 - Virtual:** Access multiple repositories within a single URL.
 - Local:** Upload and resolve your own packages.
 - Remote:** Proxy and cache packages hosted remotely.
 - Federated:** Mirror packages from different JFrog instances.



JFrog - Google Chrome

Inbox (1) - mail2tekutor... 24MANO412_Container... Cisco Webex Inbox (35,420) - mail2jeg... openshift-may-2024/D... Topology - Red Hat Open... JFrog Day 1/14 | Free Trial until Jun 4, 2024 Select a Plan Request a Demo Set Me Up Create a Repository Search Admin Resources Search Projects Environments Repositories User Management User Authentication Platform Security Platform Management Platform Monitoring Topology Artifactory Settings Xray Settings Worker 0/0 JFrog Platform All Projects Application Administration Day 1/14 | Free Trial until Jun 4, 2024 Set Me Up Create a Repository Search Repositories Virtual Local Remote Federated 0 Repositories Create Repositories Assign a name to your new repositories by adding a meaningful prefix identifier Repositories prefix: jegan 5/20 Docker Local Repository jegan-docker-local Remote Repository https://registry-1.docker.io/ https://registry-1.docker.io/jegan-docker-remote Virtual Repository jegan-docker Create Activities Google Chrome May 21 12:22 JFrog - Google Chrome Inbox (1) - mail2tekutor... 24MANO412_Container... Cisco Webex Inbox (35,420) - mail2jeg... openshift-may-2024/D... Topology - Red Hat Open... JFrog Day 1/14 | Free Trial until Jun 4, 2024 Select a Plan Request a Demo Set Me Up Create a Repository Search Admin Resources Search Projects Environments Repositories User Management User Authentication Platform Security Platform Management Platform Monitoring Topology Artifactory Settings Xray Settings Worker 0/0 JFrog Platform All Projects Application Administration Day 1/14 | Free Trial until Jun 4, 2024 Set Me Up Create a Repository Search Repositories Virtual Local Remote Federated 1 Repositories Docker Repository: jegan-docker URL: https://openshiftjegan.jfrog.io/artifactory/api/docker/jegan-docker Continue I'll Do It Later Your docker Repository was Created Successfully! Next, connect your repository to a project build or a docker client. Set Up Client/CI Tool ... Showing 1 - 1 from 1 items /

The screenshot shows the JFrog Platform interface. On the left, there's a sidebar with various project and integration options. The main area displays a repository tree under 'jegan-docker/hello-world/1.0'. A specific file, 'manifest.json', is selected. The right panel provides detailed information about this file, including its general properties, effective permissions, and package information. It also lists dependency declarations, virtual repository associations, included repositories, and checksums.

```
jegan@tektutor.org ~ ~/openshift-may-2024/Day5 ~ main docker login -u mail2tektutor@gmail.com openshiftjegan.jfrog.io
```

Password:

WARNING! Your password will be stored unencrypted in /home/jegan/.docker/config.json.

Configure a credential helper to remove this warning. See <https://docs.docker.com/engine/reference/commandline/login/#credentials-store>

Login Succeeded

```
jegan@tektutor.org ~ ~/openshift-may-2024/Day5 ~ main docker pull openshiftjegan.jfrog.io/jegan-docker/hello-world:latest
latest: Pulling from jegan-docker/hello-world
```

Digest:

```
sha256:266b191e926f65542fa8daaec01a192c4d292bff79426f47300a046e1bc576fd
```

Status: Downloaded newer image for openshiftjegan.jfrog.io/jegan-docker/hello-world:latest

```
openshiftjegan.jfrog.io/jegan-docker/hello-world:latest
```

```
jegan@tektutor.org ~ ~/openshift-may-2024/Day5 ~ main docker tag openshiftjegan.jfrog.io/jegan-docker/hello-world
openshiftjegan.jfrog.io/jegan-docker/hello-world:1.0.0
```

```
jegan@tektutor.org ~ ~/openshift-may-2024/Day5 ~ main docker push openshiftjegan.jfrog.io/jegan-docker/hello-world:1.0.0
```

The push refers to repository [openshiftjegan.jfrog.io/jegan-docker/hello-world]

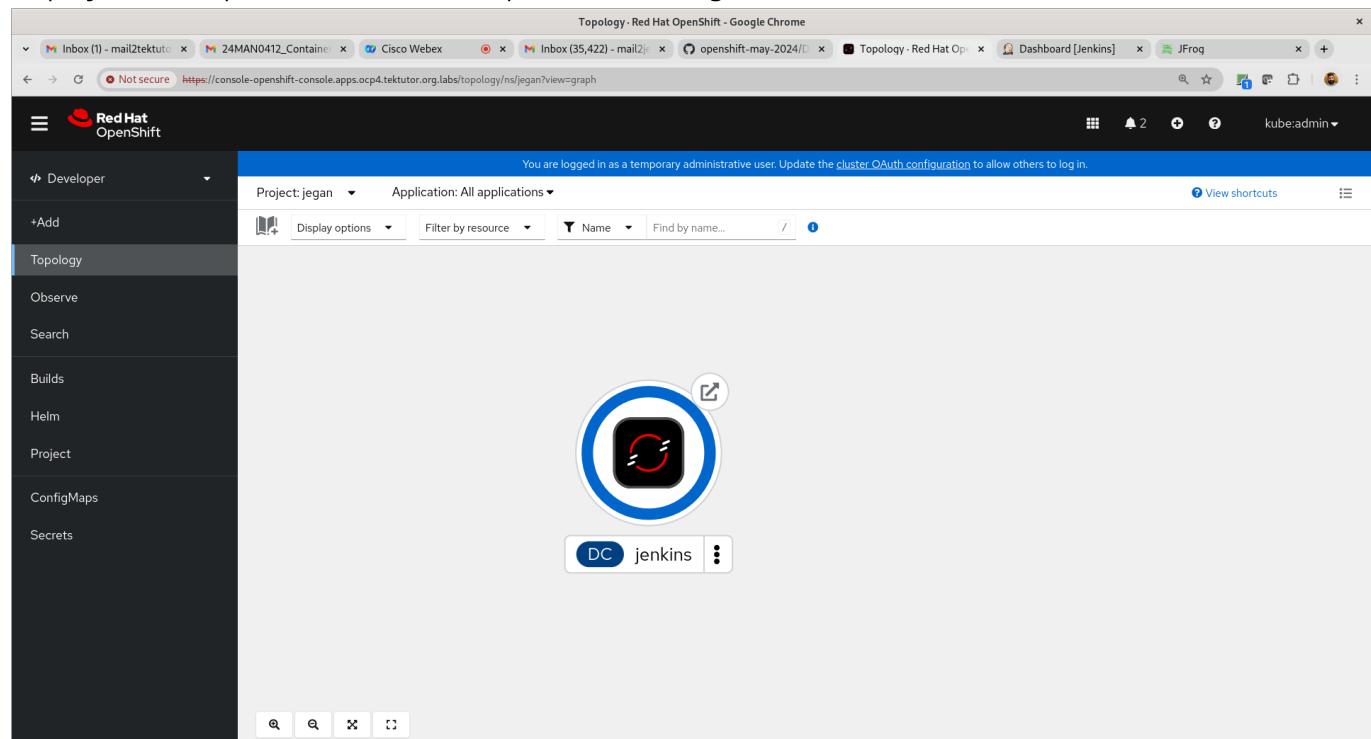
```
ac28800ec8bb: Layer already exists
```

1.0.0: digest:

```
sha256:d37ada95d47ad12224c205a938129df7a3e52345828b4fa27b03a98825d1e2e7
```

size: 524

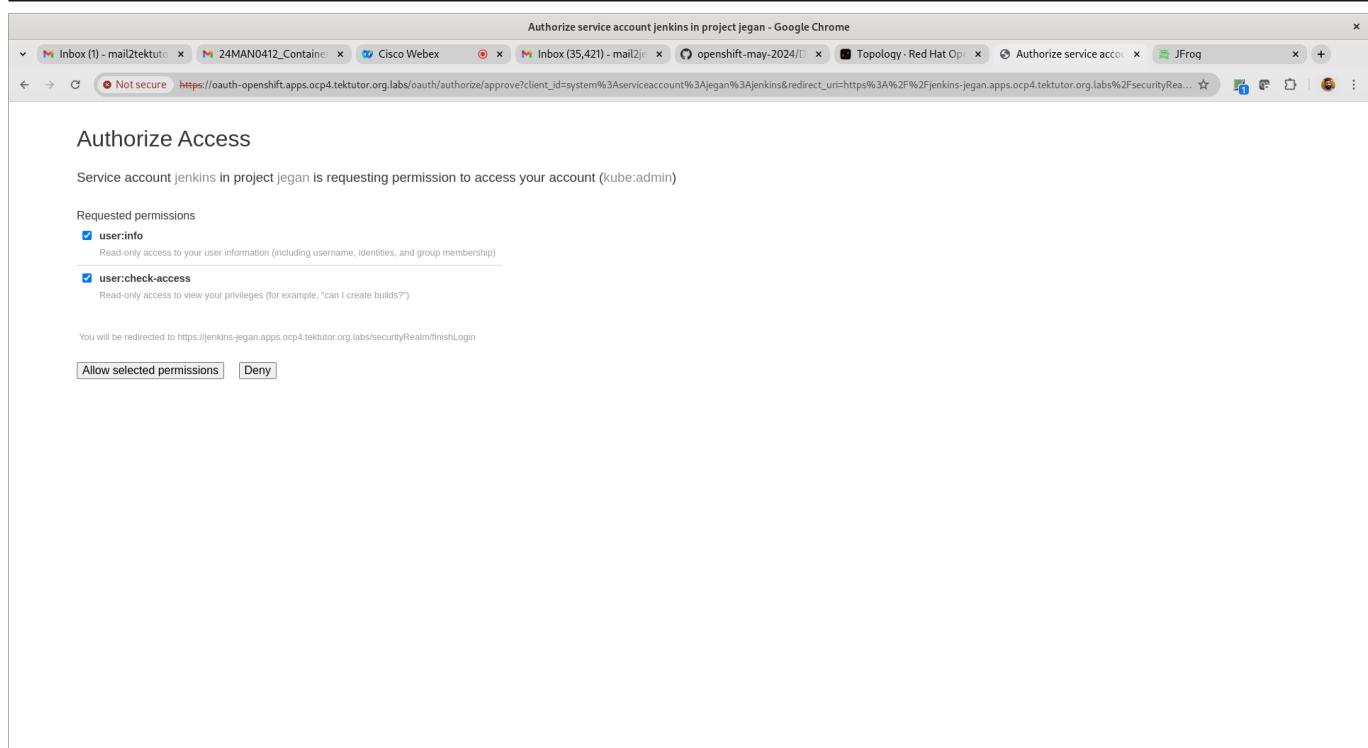
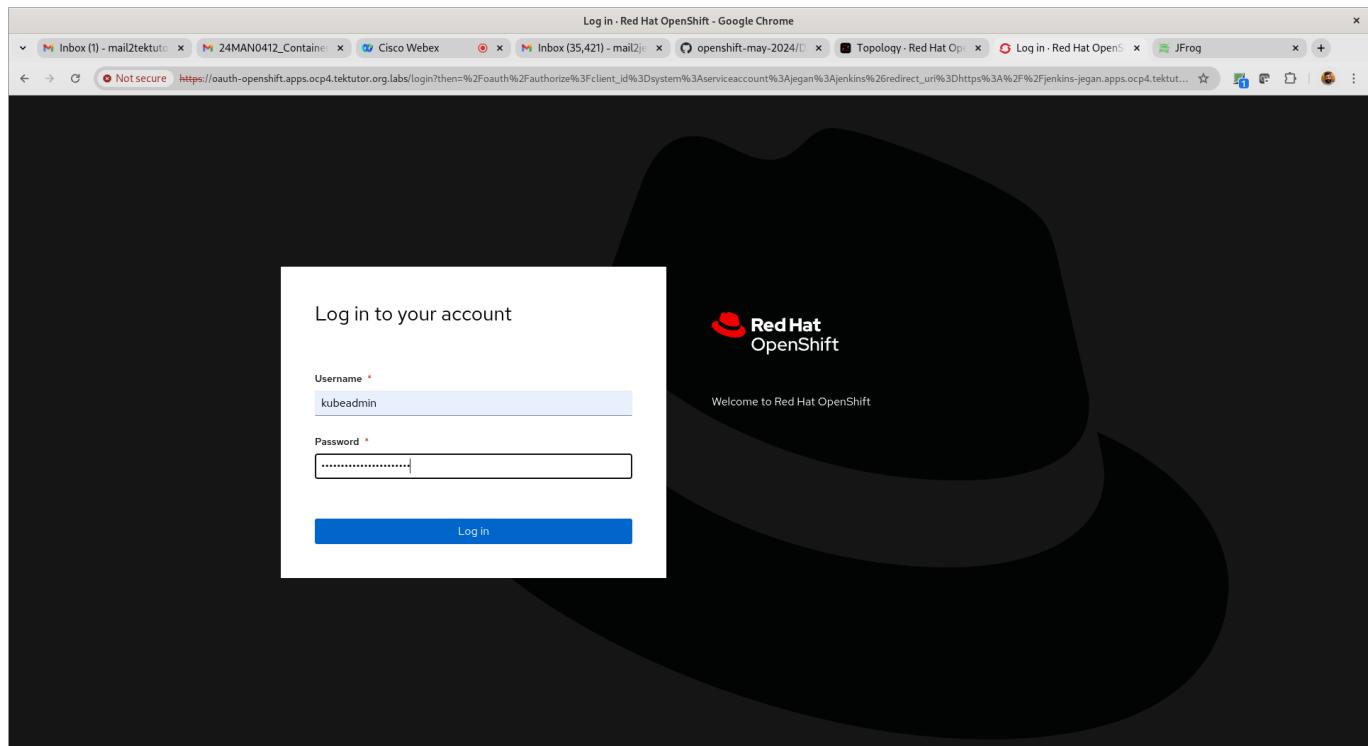
Deploy Jenkins Ephemeral from Develop context and login to Jenkins



The screenshot shows the Red Hat OpenShift web console interface. The left sidebar is titled "Developer" and includes options like "Topology", "Observe", "Search", "Builds", "Helm", "Project", "ConfigMaps", and "Secrets". The main content area is titled "Topology - Red Hat OpenShift - Google Chrome" and displays a "jenkins" application icon. The application icon is a blue circle with a white Jenkins logo inside, and it has a "DC" label below it. The URL in the browser is <https://console-openshift-console.apps.ocp4.tektutor.org.labs/topology/ns/jegan?view=graph>.



The screenshot shows a Jenkins login dialog box titled "Log in to Jenkins using your OpenShift credentials - Google Chrome". It features the Jenkins logo and the Red Hat OpenShift logo. Below the logos, the text "Log in to Jenkins using your OpenShift credentials" is displayed, followed by a blue "Log in with OpenShift" button.



The screenshot shows the Jenkins dashboard. On the left, there's a sidebar with links like '+ New Item', 'People', 'Build History', 'Manage Jenkins', 'My Views', 'Open Blue Ocean', and 'Lockable Resources'. Below these are sections for 'Build Queue' (empty) and 'Build Executor Status' (showing 1 idle executor). In the center, a large banner says 'Welcome to Jenkins!' with the subtext: 'This page is where your Jenkins jobs will be displayed. To get started, you can set up distributed builds or start building a software project.' At the bottom right of the banner is a 'Create a job' button with a right-pointing arrow. The footer of the page includes links for 'REST API' and 'Jenkins 2.401.1'.

Select "pipeline" project

The screenshot shows the 'New Item' creation dialog. At the top, there's a field labeled 'Enter an item name' containing the text 'hello-pipeline'. Below this is a list of project types: 'Freestyle project', 'Maven project', 'Pipeline', 'Multi-configuration project', 'Folder', 'Multibranch Pipeline', and 'Organization Folder'. The 'Pipeline' option is highlighted with a blue border. At the bottom of the dialog is an 'OK' button.

hello-pipeline Config [Jenkins] - Google Chrome

The screenshot shows the Jenkins pipeline configuration page for the 'hello-pipeline' project. The 'General' tab is selected. In the 'Description' field, the text 'Jira site' is entered. Below the description, there is a list of build options with checkboxes: 'Discard old builds', 'Do not allow concurrent builds', 'Do not allow the pipeline to resume if the controller restarts', 'GitHub project', 'Pipeline speed/durability override', 'Preserve stashes from completed builds', 'This project is parameterised', and 'Throttle builds'. At the bottom of the page are 'Save' and 'Apply' buttons.

hello-pipeline Config [Jenkins] - Google Chrome

The screenshot shows the Jenkins pipeline configuration page for the 'hello-pipeline' project. The 'General' tab is selected. In the 'Description' field, the text 'CI/CD for sample spring-boot application' is entered. Below the description, there is a list of build options with checkboxes: 'Discard old builds', 'Do not allow concurrent builds', 'Do not allow the pipeline to resume if the controller restarts', 'GitHub project', 'Pipeline speed/durability override', 'Preserve stashes from completed builds', 'This project is parameterised', and 'Throttle builds'. At the bottom of the page are 'Save' and 'Apply' buttons.

hello-pipeline Config [Jenkins] - Google Chrome

Not secure https://jenkins-jegan.apps.ocp4.tektutor.org/labs/job/hello-pipeline/configure

Dashboard > hello-pipeline > Configuration

Configure

Build Triggers

General

Build after other projects are built ?
 Build periodically ?
 GitHub hook trigger for GITScm polling ?
 Poll SCM ?
Schedule ?
H/02 * * * *

Would last have run at Tuesday, May 21, 2024 at 7:25:55 AM Coordinated Universal Time; would next run at Tuesday, May 21, 2024 at 7:25:55 AM Coordinated Universal Time.

Ignore post-commit hooks ?
 Quiet period ?
 Trigger builds remotely (e.g., from scripts) ?

Advanced Project Options

Advanced

Pipeline

Save Apply

hello-pipeline Config [Jenkins] - Google Chrome

Not secure https://jenkins-jegan.apps.ocp4.tektutor.org/labs/job/hello-pipeline/configure

Dashboard > hello-pipeline > Configuration

Configure

Pipeline

General

Advanced Project Options

Pipeline

Definition

Pipeline script from SCM

SCM ?

Git

Repositories ?

Repository URL ?
https://qithub.com/tektutor/openshift-may-2024.git

Credentials ?
- none -
Add ▾

Advanced ^

Name ?

Refspec ?

Save Apply

hello-pipeline Config [Jenkins] - Google Chrome

Inbox (1) - mail2tekuto ... 24MAN0412_Container ... Cisco Webex ... Inbox (35,422) - mail2 ... tektutor/openshift-ma ... Topology - Red Hat Op ... hello-pipeline Config ... JFrog ... Not secure https://jenkins-jegan.apps.ocp4.tektutor.org.labs/job/hello-pipeline/configure

Dashboard > hello-pipeline > Configuration

Configure

General

Advanced Project Options

Pipeline

Add Repository

Branches to build ?

Branch Specifier (blank for 'any') ?

*main

Add Branch

Repository browser ?

(Auto)

Additional Behaviours

Add

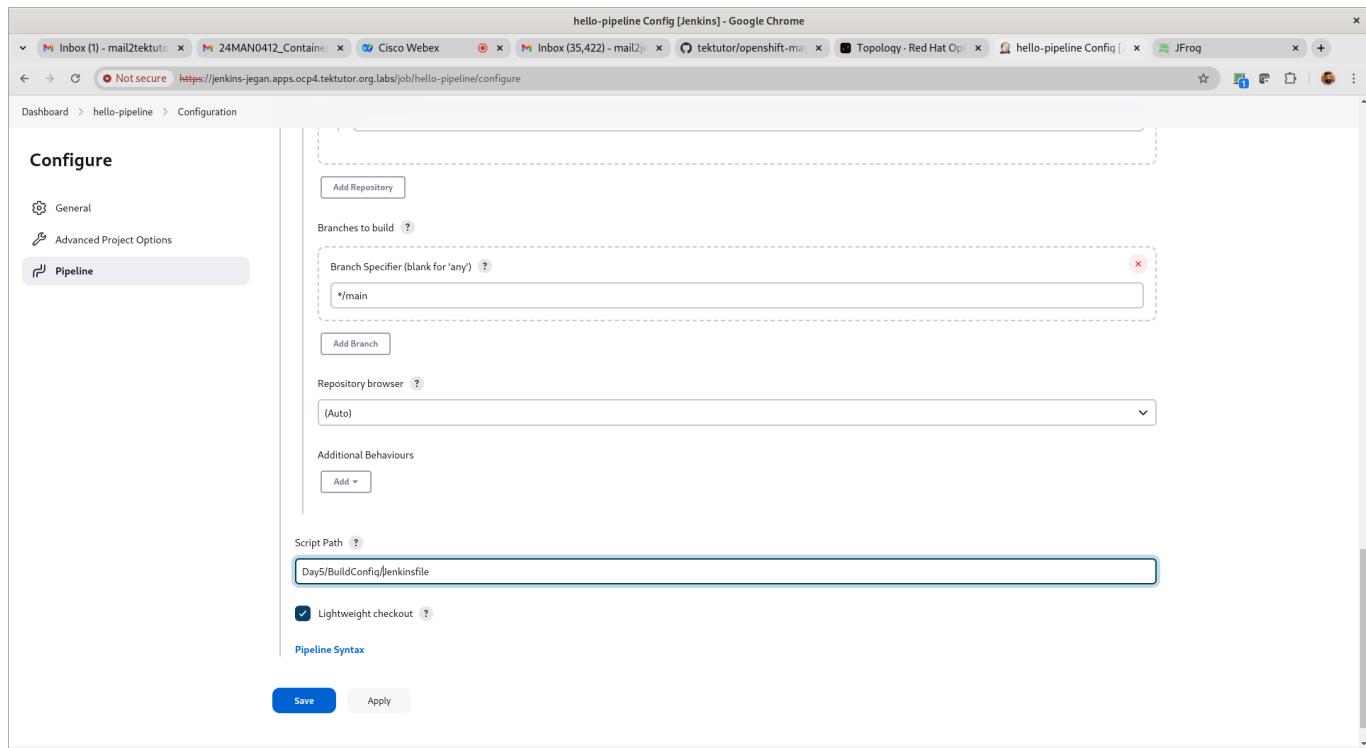
Script Path ?

Day5/BuildConfig/jenkinsfile

Lightweight checkout ?

Pipeline Syntax

Save Apply



hello-pipeline [Jenkins] - Google Chrome

Inbox (1) - mail2tekuto ... 24MAN0412_Container ... Cisco Webex ... Inbox (35,422) - mail2 ... tektutor/openshift-ma ... Topology - Red Hat Op ... hello-pipeline Jenkins ... JFrog ... Not secure https://jenkins-jegan.apps.ocp4.tektutor.org.labs/job/hello-pipeline/

Jenkins

Dashboard > hello-pipeline >

Pipeline hello-pipeline

Status

Changes

Build Now

Configure

Delete Pipeline

Full Stage View

Open Blue Ocean

Rename

Pipeline Syntax

Polling Log

Build History trend

Filter builds... /

No builds

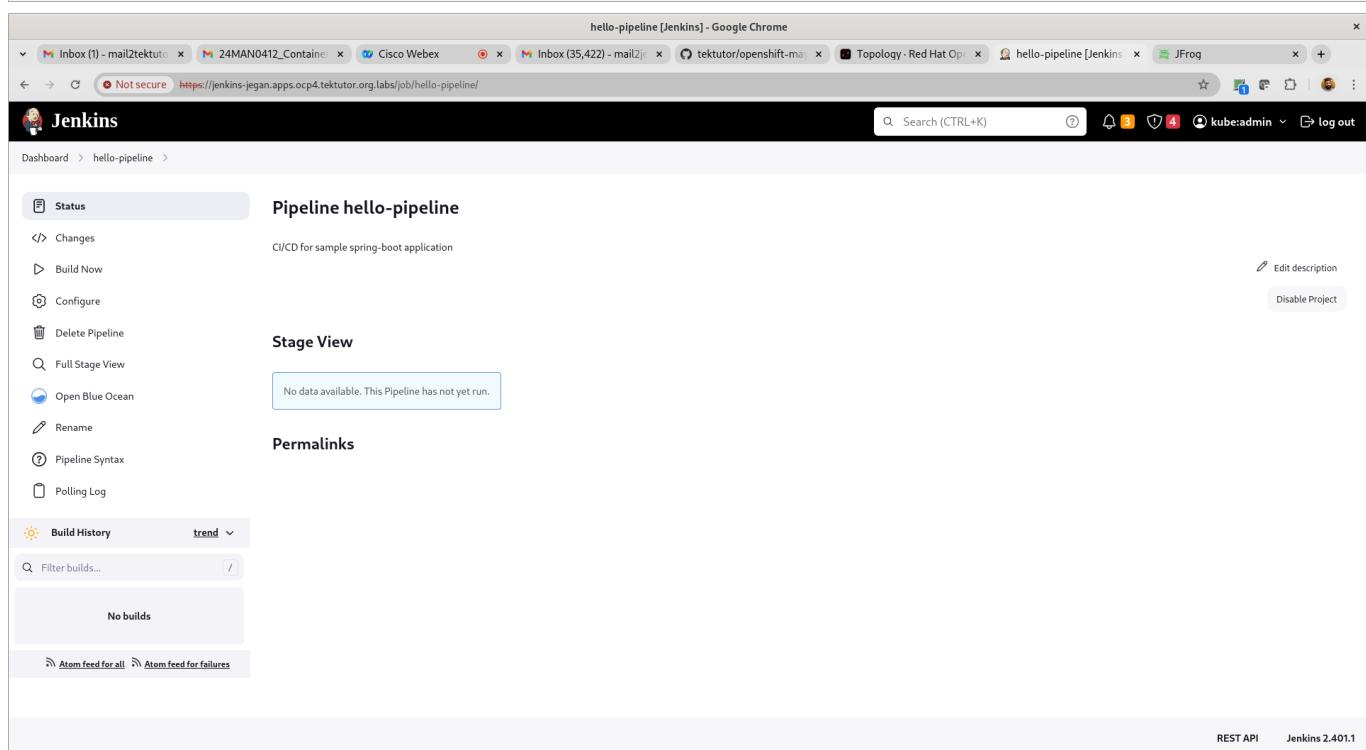
Atom feed for all Atom feed for failures

Stage View

No data available. This Pipeline has not yet run.

Permalinks

REST API Jenkins 2.401.1



hello-pipeline [Jenkins] - Google Chrome

Inbox (1) - mail2tektuto x 24MAN0412_Content x Cisco Webex x Inbox (35,422) - mail2... x openshift-may-2024/ x Topology - Red Hat Op... x hello-pipeline [Jenkins] x JFrog x

Not secure https://jenkins-jegan.apps.ocp4.tektutor.org.labs/job/hello-pipeline/

Jenkins

Dashboard > hello-pipeline >

Pipeline hello-pipeline

Status CI/CD for sample spring-boot application

Changes Build Now Configure Delete Pipeline Full Stage View Open Blue Ocean Rename Pipeline Syntax Git Polling Log Build History trend Filter builds... #2 21 May 2024, 07:33 #1 21 May 2024, 07:31 Atom feed for all Atom feed for failures

Stage View

Average stage times: (Average full run time: ~13s)

Stage 1 - Build Custom Docker Image with our application	Stage 2 - Deploy hello microservice into OpenShift
3s	3s
2s	2s
5s	4s

Permalinks

- Last build (#2), 57 sec ago
- Last stable build (#2), 57 sec ago
- Last successful build (#2), 57 sec ago
- Last completed build (#2), 57 sec ago

Topology - Red Hat OpenShift - Google Chrome

Inbox (1) - mail2tektuto x 24MAN0412_Content x Cisco Webex x Inbox (35,422) - mail2... x openshift-may-2024/ x Topology - Red Hat Op... x hello-pipeline [Jenkins] x JFrog x

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

Red Hat OpenShift

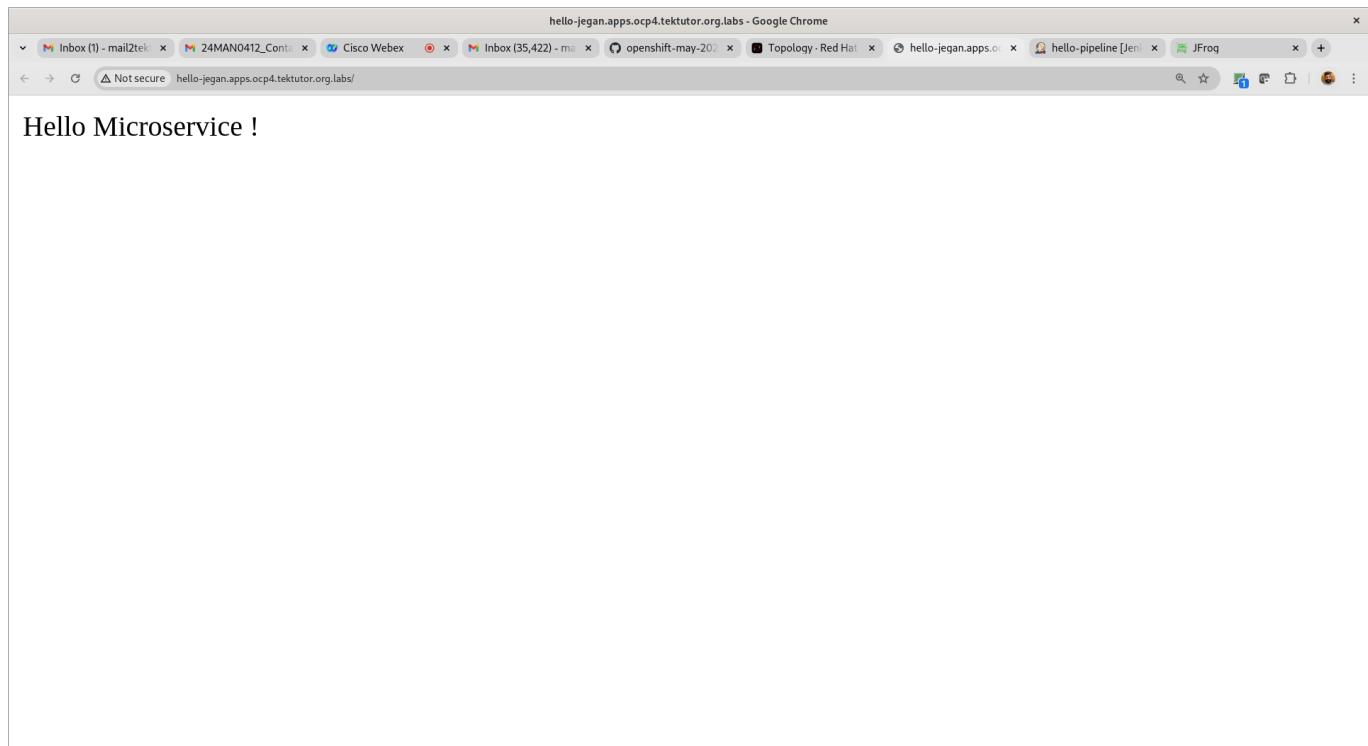
Developer Project: jegan Application: All applications View shortcuts

Topology

Observe Search Builds Helm Project ConfigMaps Secrets

DC jenkins

DC hello



Lab - Ingress

```
cd ~/openshift-may-2024
git pull
cd Day5/ingress

oc new-app --name=nginx bitnami/nginx
oc expose service/nginx

oc new-app --name=hello tektutor/spring-ms:1.0
oc expose service/hello
```

Find your OpenShift cluster base domain and update the ingress.yml accordingly

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

Expected output

```
apps.ocp4.tektutor.org.labs
```

Once you have updated the base url in the ingress.yml file, you may below

```
cd ~/openshift-may-2024
git pull
cd Day5/ingress

oc apply -f ingress.yml

oc get ingress
oc describe ingress/tektutor

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

Expected output

```
jegan@tektutor.org ~ ~/openshift-may-2024/Day5/ingress ~ main • oc get
ingresses.config/cluster -o jsonpath={.spec.domain}
apps.ocp4.tektutor.org.labs%
jegan@tektutor.org ~ ~/openshift-may-2024/Day5/ingress ~ main • vim
ingress.yml
jegan@tektutor.org ~ ~/openshift-may-2024/Day5/ingress ~ main • oc
apply -f ingress.yml
ingress.networking.k8s.io/tektutor created
jegan@tektutor.org $ ~/openshift-may-2024/Day5/ingress ~ main • oc get
ingress
NAME      CLASS      HOSTS                      ADDRESS
PORTS    AGE
tektutor  <none>    tektutor.apps.ocp4.tektutor.org.labs  router-
default.apps.ocp4.tektutor.org.labs  80      7s
jegan@tektutor.org $ ~/openshift-may-2024/Day5/ingress ~ main • oc
describe ingress/tektutor
Name:          tektutor
Labels:        <none>
Namespace:     jegan
Address:       router-default.apps.ocp4.tektutor.org.labs
Ingress Class: <none>
```

```
Default backend: <default>
Rules:
  Host           Path  Backends
  ----          ----  -----
  tektutor.apps.ocp4.tektutor.org.labs
                        /nginx  nginx:8080
(10.128.2.52:8080,10.130.0.31:8080,10.131.0.23:8080)
                        /hello   hello:8080
(10.128.0.163:8080,10.128.2.51:8080,10.131.0.24:8080)
Annotations:
haproxy.router.openshift.io/rewrite-target: /
Events:                <none>
jegan@tektutor.org $ ~/openshift-may-2024/Day5/ingress □ □ main • □ curl
http://tektutor.apps.ocp4.tektutor.org.labs/nginx
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>

<p><em>Thank you for using nginx.</em></p>
</body>
</html>
jegan@tektutor.org $ ~/openshift-may-2024/Day5/ingress □ □ main • □ curl
http://tektutor.apps.ocp4.tektutor.org.labs/hello
Greetings from Spring Boot!
```

What does Serverless mean?

- serverless does not mean the absence of servers
- is an architecture model for running applications in an environment that is abstracted away from the developers
- developers can focus more on developing their applications than where their code runs
- in other deployment models, resources wait idle to serve requests and run regardless of whether there is work to do

- an ideal serverless workload executes a single task
- a function that retrieves data from a database can be an excellent serverless workload
- the database server is not a good serverless workload because it needs to run continuously
- serverless model is the idea of the cold start
- when using serverless, there is a period between the request and creating the pod environment. This period is the cold start.
- Examples
 - OpenShift Serverless workloads follow this workflow:
 - A request comes in
 - A pod is spun up to service the request
 - The pod services the request
 - The pod is destroyed
 - Another example of a serverless workload can be an image processing function
 - An event could be a photo 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 a thumbnail.
 - Once the image is stored permanently, the application has served its purpose and is no longer needed.

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
 - 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.

Benefits of Serverless

- cost savings and more efficient utilization of CPU, RAM, and storage resources (better hardware utilization in general)
- Code is executed as needed, there is no idle time. We only pay for the execution time.
- As there is no servers to manage, no need to worry about Infrastructure management activities like
 - security updates

- monitoring
- hardware maintenance
- hardware upgradation, etc.,
- Scaling is easier on demand
- high availability (HA)

Knative and Red Hat Serverless

- Red Hat Serverless is based on Knative project
- Knative provides a serverless application layer on top of OpenShift/Kubernetes
- Knative consists of 3 building blocks
 1. Build
 2. Eventing
 3. Serving

Lab - Deploying a knative service

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

Expected output

The screenshot shows a terminal window with four tabs, all labeled 'jegan@tektutor.org'. The current tab is active and displays the command and its output:

```
jegan@tektutor.org ~ ~/openshift-may-2024 ↵ } main ↴ set -o vi
jegan@tektutor.org ~ ~/openshift-may-2024 ↵ } 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'.

0.053s The Route is still working to reflect the latest desired specification.
0.063s Configuration "hello" is waiting for a Revision to become ready.
0.075s ...
3.322s ...
3.361s Ingress has not yet been reconciled.
3.413s Waiting for load balancer to be ready
3.614s Ready to serve.

Service 'hello' created to latest revision 'hello-00001' is available at URL:
https://hello-jegan.apps.ocp4.tektutor.org.labs
jegan@tektutor.org ~ ~/openshift-may-2024 ↵ } main ↴
jegan@tektutor.org ~ ~/openshift-may-2024 ↵ } main ↴ kn revisions list
NAME      SERVICE  TRAFFIC  TAGS  GENERATION  AGE    CONDITIONS  READY  REASON
hello-00001  hello   100%     1      9s     4 OK / 4    True
jegan@tektutor.org ~ ~/openshift-may-2024 ↵ }
```

The terminal prompt at the bottom indicates it's a zsh shell on 'tektutor.org' at 15:11 on May 21, 2024.

Accessing the knative application

```
curl -k https://hello-jegan.apps.ocp4.tektutor.org.labs
```

Expected output

```
jegan@tektutor.org ~ -> jegan@tektutor.org ~ -> jegan@tektutor.org ~ -> jegan@tektutor.org ~ ->
jegan@tektutor.org > ~/openshift-may-2024 > \ main > set -o vi
jegan@tektutor.org > ~/openshift-may-2024 > \ 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':
0.053s The Route is still working to reflect the latest desired specification.
0.063s Configuration "hello" is waiting for a Revision to become ready.
0.075s ...
3.322s ...
3.361s Ingress has not yet been reconciled.
3.413s Waiting for load balancer to be ready
3.614s Ready to serve.

Service 'hello' created to latest revision 'hello-00001' is available at URL:
https://hello-jegan.apps.ocp4.tektutor.org.labs
jegan@tektutor.org > ~/openshift-may-2024 > \ main >
jegan@tektutor.org > ~/openshift-may-2024 > \ main > kn revisions list
NAME SERVICE TRAFFIC TAGS GENERATION AGE CONDITIONS READY REASON
hello-00001 hello 100% 1 9s 4 OK / 4 True
jegan@tektutor.org > ~/openshift-may-2024 > \ main > kn revisions list
NAME SERVICE TRAFFIC TAGS GENERATION AGE CONDITIONS READY REASON
hello-00001 hello 100% 1 81s 3 OK / 4 True
jegan@tektutor.org > ~/openshift-may-2024 > \ main > curl -k https://hello-jegan.apps.ocp4.tektutor.org.labs
Hello World!
jegan@tektutor.org > ~/openshift-may-2024 > \ main >

[0] 0:curl*                                     "tektutor.org" 15:12 21-May-24
```

Update the service

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

Expected output

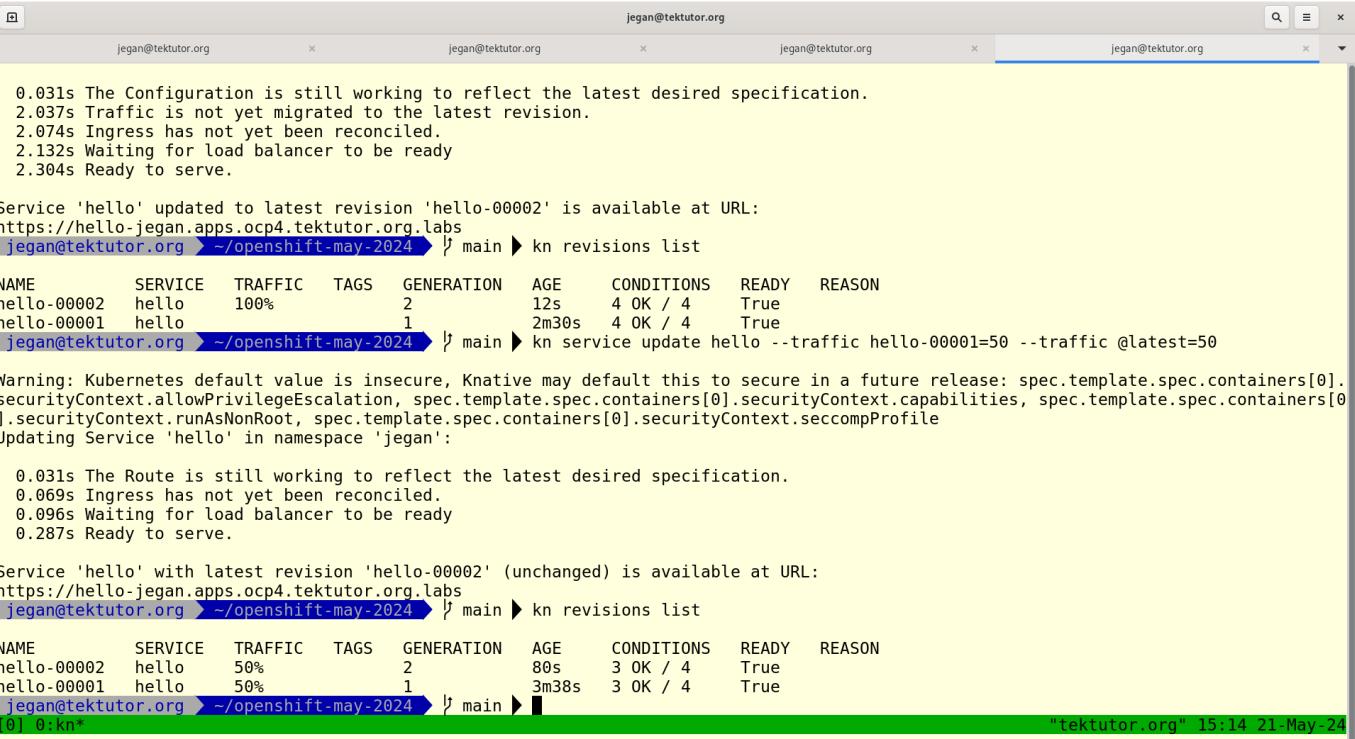
```
jegan@tektutor.org ~ -> jegan@tektutor.org ~ -> jegan@tektutor.org ~ -> jegan@tektutor.org ~ ->
Service 'hello' created to latest revision 'hello-00001' is available at URL:
https://hello-jegan.apps.ocp4.tektutor.org.labs
jegan@tektutor.org > ~/openshift-may-2024 > \ main >
jegan@tektutor.org > ~/openshift-may-2024 > \ main > kn revisions list
NAME SERVICE TRAFFIC TAGS GENERATION AGE CONDITIONS READY REASON
hello-00001 hello 100% 1 9s 4 OK / 4 True
jegan@tektutor.org > ~/openshift-may-2024 > \ main > kn revisions list
NAME SERVICE TRAFFIC TAGS GENERATION AGE CONDITIONS READY REASON
hello-00001 hello 100% 1 81s 3 OK / 4 True
jegan@tektutor.org > ~/openshift-may-2024 > \ main > curl -k https://hello-jegan.apps.ocp4.tektutor.org.labs
Hello World!
jegan@tektutor.org > ~/openshift-may-2024 > \ main > kn service update hello --env TARGET=Knative
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':
0.031s The Configuration is still working to reflect the latest desired specification.
2.037s Traffic is not yet migrated to the latest revision.
2.074s Ingress has not yet been reconciled.
2.132s Waiting for load balancer to be ready
2.304s Ready to serve.

Service 'hello' updated to latest revision 'hello-00002' is available at URL:
https://hello-jegan.apps.ocp4.tektutor.org.labs
jegan@tektutor.org > ~/openshift-may-2024 > \ main > kn revisions list
NAME SERVICE TRAFFIC TAGS GENERATION AGE CONDITIONS READY REASON
hello-00002 hello 100% 2 12s 4 OK / 4 True
hello-00001 hello 100% 1 2m30s 4 OK / 4 True
jegan@tektutor.org > ~/openshift-may-2024 > \ main >
[0] 0:zsh*                                     "tektutor.org" 15:13 21-May-24
```

Splitting the traffic between two revisions

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

Expected output



0.031s The Configuration is still working to reflect the latest desired specification.
 2.037s Traffic is not yet migrated to the latest revision.
 2.074s Ingress has not yet been reconciled.
 2.132s Waiting for load balancer to be ready
 2.304s Ready to serve.

Service 'hello' updated to latest revision 'hello-00002' is available at URL:
<https://hello-jegan.apps.ocp4.tektutor.org.labs>

NAME	SERVICE	TRAFFIC	TAGS	GENERATION	AGE	CONDITIONS	READY	REASON
hello-00002	hello	100%		2	12s	4 OK / 4	True	
hello-00001	hello			1	2m30s	4 OK / 4	True	

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

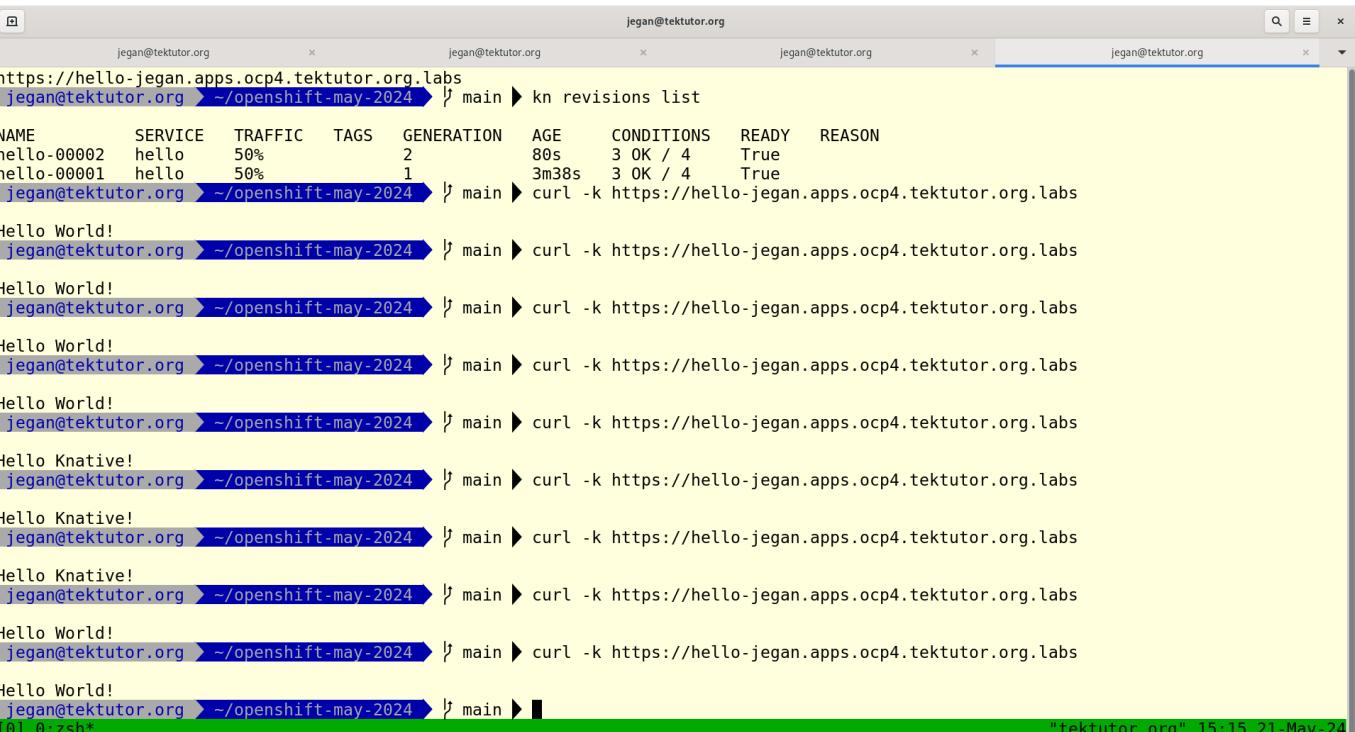
Updating Service 'hello' in namespace 'jegan':

0.031s The Route is still working to reflect the latest desired specification.
 0.069s Ingress has not yet been reconciled.
 0.096s Waiting for load balancer to be ready
 0.287s Ready to serve.

Service 'hello' with latest revision 'hello-00002' (unchanged) is available at URL:
<https://hello-jegan.apps.ocp4.tektutor.org.labs>

NAME	SERVICE	TRAFFIC	TAGS	GENERATION	AGE	CONDITIONS	READY	REASON
hello-00002	hello	50%		2	80s	3 OK / 4	True	
hello-00001	hello	50%		1	3m38s	3 OK / 4	True	

"tektutor.org" 15:14 21-May-24



Hello World!

Hello World!

Hello World!

Hello World!

Hello Knative!

Hello Knative!

Hello Knative!

Hello World!

Hello World!

Hello World!

"tektutor.org" 15:15 21-May-24

Deleting the knative service

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

Expected output

```
jegan@tektutor.org > ~/openshift-may-2024 > ! main ▶ curl -k https://hello-jegan.apps.ocp4.tektutor.org.labs
Hello World!
jegan@tektutor.org > ~/openshift-may-2024 > ! main ▶ curl -k https://hello-jegan.apps.ocp4.tektutor.org.labs
Hello World!
jegan@tektutor.org > ~/openshift-may-2024 > ! main ▶ curl -k https://hello-jegan.apps.ocp4.tektutor.org.labs
Hello World!
jegan@tektutor.org > ~/openshift-may-2024 > ! main ▶ curl -k https://hello-jegan.apps.ocp4.tektutor.org.labs
Hello World!
jegan@tektutor.org > ~/openshift-may-2024 > ! main ▶ curl -k https://hello-jegan.apps.ocp4.tektutor.org.labs
Hello Knative!
jegan@tektutor.org > ~/openshift-may-2024 > ! main ▶ curl -k https://hello-jegan.apps.ocp4.tektutor.org.labs
Hello Knative!
jegan@tektutor.org > ~/openshift-may-2024 > ! main ▶ curl -k https://hello-jegan.apps.ocp4.tektutor.org.labs
Hello World!
jegan@tektutor.org > ~/openshift-may-2024 > ! main ▶ curl -k https://hello-jegan.apps.ocp4.tektutor.org.labs
Hello World!
jegan@tektutor.org > ~/openshift-may-2024 > ! main ▶ kn service delete hello
Service 'hello' successfully deleted in namespace 'jegan'.
jegan@tektutor.org > ~/openshift-may-2024 > ! main ▶ kn revisions list
No revisions found.
jegan@tektutor.org > ~/openshift-may-2024 > ! main ▶
[0] 0:zsh* "tektutor.org" 15:16 21-May-24
```

Lab - Knative eventing

Let's deploy a sink service

```
oc project jegan
kn service create eventinghello --concurrency-target=1 --
image=quay.io/rhdevelopers/eventinghello:0.0.2
```

Expected output

```
jegan@tektutor.org > ~/openshift-may-2024 > ! main ▶ oc get all
Warning: apps.openshift.io/v1 DeploymentConfig is deprecated in v4.14+, unavailable in v4.10000+
No resources found in jegan namespace.
jegan@tektutor.org > ~/openshift-may-2024 > ! main ▶ kn service create eventinghello --concurrency-target=1 --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':
0.054s The Route is still working to reflect the latest desired specification.
0.080s ...
0.106s Configuration "eventinghello" is waiting for a Revision to become ready.
25.381s ...
25.427s Ingress has not yet been reconciled.
25.476s Waiting for load balancer to be ready
25.675s Ready to serve.

Service 'eventinghello' created to latest revision 'eventinghello-00001' is available at URL:
https://eventinghello-jegan.apps.ocp4.tektutor.org.labs
jegan@tektutor.org > ~/openshift-may-2024 > ! main ▶
[0] 0:zsh* "tektutor.org" 15:53 21-May-24
```

Let's create an event source application

```
kn source ping create eventinhello-ping-source --schedule="*/2 * * * *" --
data '{"message": "Thanks for your message"}' --sink ksvc:eventinghello
```

Expected output

```
jegan@tektutor.org ~ -/openshift-may-2024 > \ main > oc project jegan
jegan@tektutor.org ~ -/openshift-may-2024 > \ main >
jegan@tektutor.org ~ -/openshift-may-2024 > \ main > # Deploying the event receiving application
jegan@tektutor.org ~ -/openshift-may-2024 > \ main > kn service create eventinghello --concurrency-target=1 --image=quay.io/rhdevops/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':

0.052s The Route is still working to reflect the latest desired specification.
0.080s Configuration "eventinghello" is waiting for a Revision to become ready.
0.092s ...
3.977s ...
4.020s Ingress has not yet been reconciled.
4.097s Waiting for load balancer to be ready
4.289s Ready to serve.

Service 'eventinghello' created to latest revision 'eventinghello-00001' is available at URL:
https://eventinghello-jegan.apps.ocp4.tektutor.org.labs
jegan@tektutor.org ~ -/openshift-may-2024 > \ main > kn service list
NAME          URL           LATEST      AGE        CONDITIONS   READY   REASON
eventinghello https://eventinghello-jegan.apps.ocp4.tektutor.org.labs  eventinghello-00001  13s       3 OK / 3    True

jegan@tektutor.org ~ -/openshift-may-2024 > \ main >
```

[0] 0:kn*

"tektutor.org" 16:03 21-May-24

Name	URL	Conditions	Ready	Reason	Revision	Created
eventinghello	https://eventinghello-jegan.apps.ocp4.tektutor.org.labs	3 0	True	-	1	21 May 2024, 16:03

Event Sources - Red Hat OpenShift - Google Chrome

Inbox (1) - mail2tekutor... 24MANO412_Container... Cisco Webex Inbox (35,423) - mail2jeg... openshift-may-2024/D... Event Sources - Red Hat ... Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/eventing/ns/jegan kube:admin

Eventing

Event Sources Brokers Triggers Channels Subscriptions

Name Ready Conditions Type Created

Name	Ready	Conditions	Type	Created
eventinhello-ping-source	True	3 OK / 3	PingSource	21 May 2024, 16:03

Filter Name Search by name... /

Overview Projects Search API Explorer Events Operators Workloads Serverless Networking Storage Builds Observe

OperatorHub Installed Operators Workloads > Eventing > Eventing

Serving Eventing

Create

Pods - Red Hat OpenShift - Google Chrome

Inbox (1) - mail2tekutor... 24MANO412_Container... Cisco Webex Inbox (35,423) - mail2jeg... openshift-may-2024/D... Pods - Red Hat OpenShift ... Not secure https://console-openshift-console.apps.ocp4.tektutor.org.labs/k8s/ns/jegan/core-v1~Pod kube:admin

Pods

Filter Name Status Ready Restarts Owner Memory CPU Created

Name	Status	Ready	Restarts	Owner	Memory	CPU	Created
eventinhello-00001-deployment-6f455db578-zg5lz	Running	2/2	0	eventinhello-00001-deployment-6f455db578	1479 MiB	0.002 cores	21 May 2024, 16:03

Overview Projects Search API Explorer Events Operators Workloads > Pods Deployments DeploymentConfigs StatefulSets Secrets ConfigMaps CronJobs Jobs DaemonSets ReplicaSets

Create Pod

The screenshot shows the Red Hat OpenShift web interface. The left sidebar has sections for Overview, Projects, Search, API Explorer, Events, Operators (OperatorHub, Installed Operators), and Workloads (Pods, Deployments, DeploymentConfigs, StatefulSets, Secrets, ConfigMaps, CronJobs, Jobs, DaemonSets, ReplicaSets). The 'Pods' section is selected. The main content area shows a table of pods. The table has columns for Name, Status, Ready, Restarts, Owner, Memory, CPU, and Created. One pod is listed:

Name	Status	Ready	Restarts	Owner	Memory	CPU	Created
eventinghello-00001-deployment-6f455db578-zg5lz	Terminating	2/2	0	RS eventinghello-00001-deployment-6f455db578	1479 MiB	0.002 cores	21 May 2024, 16:03

Post-test - Kindly complete the test from RPS Lab machine

<https://app.mymapit.in/code4/tiny/wiSvSn>

Feedback - kindly fill up your feedback here

<https://survey.zohopublic.com/zs/cHD3Vm>