Day 8

Info - Tekton Jargons

- Red Hat Pipeline operator installs Tekton Knative Serverless Pipeline Framework into openshift
- the operators also adds many Custom Resources like
 - Task
 - TaskRun
 - Pipeline
 - PipelineRun
 - PipelineResources
 - Catalog
 - Tekton Trigger

Info - What is a Step in Tekton Task?

- Step is a Custom Resource added by Tekton in our openshift cluster using Custom Resource Definition(CRD)
- Each Step runs in a separate Container
- Steps can't be executed independed
- Steps always runs within a Tekton Task

Info - What is a Tekton Task?

- Custom Resource added by Red Hat Openshift Pipeline operator using CRD
- Task can be executed independently outside a Tekton Pipeline
- Task supports two scopes
 - Project scope
 - Cluster wide
- Each task contains one or more Steps
- Task is the smallest independent unit that can be deployed in Tekton under openshift
- Examples
 - A Task can be used to clone source code from GitHub
 - A Task can be used to build a container image, etc.,
 - A Task can be used to build application binary from source code

Info - What is Pipeline?

- a Custom Resource added by Tekton in openshift cluster
- it is a collection of many Task executed in sequence or parallel
- results in an output based on your inputs given to CI/CD pipeline

- Examples
 - a First Task could clone your source code from your GitHub Repo
- a Second Task could compile your application after the First Task clones the source code
- a Third Task could run Unit tests on your compiled application binary if the Second Task succeeds
 - a Fourth Task could package the binaries if Third Task succeeds
- a Fifth Task could deploy the binaries to JFrog Artifactory Server or Sonatype Nexus Server if the Fourth Task succeeds
- a Sixth Task could run in parallel to Fifth Task to deploy the microservice to staging environment if Fourth Task succeeds

Info - TaskRun

- is a Custom Resource added by Tekton
- Task can be thought of like a Class, while TaskRun is running instance of a Task
- TaskRun helps us supply Task arguments that are required for a Task to run

Info - PipelineRun

- is a Custom resource added by Tekton
- Pipeline is the blueprint/specification of PipelineRun
- PipelineRun is the running instance of the Pipeline
- PipelineRun helps us provide the Pipeline arguments

Info - Tekton Trigger

- is a component that allows Tekton Pipeline to detect events from variety of sources
- it also helps detect code changes from GitHub, or any version control
- TekTon Triggers can invoke TaskRun and/or PipelineRun with the parameters retrieved from events
- Tekton Triggers is an extension to run TekTon Pipeline
- Example
- helps in triggering a Tekton CI/CD pipeline based on code commit in GitHub repo or similar version controls

Info - Tekton Catalog?

- Reusable Task and Pipeline Resources

Info - Tekton Dashboard

- web based Dashbord or console for Tekton
- Openshift integrated the Tekton Dashboard within openshift webconsole
- but it is also possible to access outside cluster, in case of kubernest normally that is the approach

Lab - Kindly check if you have tkn client installed

```
tkn version
oc get crds | grep tekton
```

Expected output

```
jegan@tektutor.org
                                                                                                                                                                                                                                  Q = ×
 jegan@tektutor.org >-> tkn version
Client version: 0.35.2
Chains version: v0.20.1
Pipeline version: v0.56.4

Triggers version: v0.26.2

Operator version: v0.70.3

jegan@tektutor.org oc get crds | grep tekton

clusterinterceptors.triggers.tekton.dev
                                                                                                                    2024-06-19T04:47:03Z
2024-06-19T04:46:40Z
clustertasks.tekton.dev
clustertriggerbindings.triggers.tekton.dev
                                                                                                                    2024-06-19T04:47:03Z
customruns.tekton.dev
eventlisteners.triggers.tekton.dev
                                                                                                                    2024-06-19T04:46:40Z
                                                                                                                    2024-06-19T04:47:04Z
interceptors.triggers.tekton.dev openshiftpipelinesascodes.operator.tekton.dev
                                                                                                                    2024-06-19T04:47:047
                                                                                                                    2024-06-18T05:50:33Z
pipelineruns.tekton.dev
pipelines.tekton.dev
                                                                                                                    2024-06-19T04:46:40Z
2024-06-19T04:46:40Z
 repositories.pipelinesascode.tekton.dev
                                                                                                                    2024-06-19T04:47:31Z
resolutionrequests.resolution.tekton.dev stepactions.tekton.dev
                                                                                                                    2024-06-19T04:46:40Z
                                                                                                                    2024-06-19T04:46:40Z
taskruns.tekton.dev
tasks.tekton.dev
                                                                                                                    2024-06-19T04:46:41Z
                                                                                                                    2024-06-19T04:46:41Z
tektonaddons.operator.tekton.dev
tektonchains.operator.tekton.dev
                                                                                                                    2024-06-18T05:50:33Z
2024-06-18T05:50:33Z
tektonconfigs.operator.tekton.dev
tektonhubs.operator.tekton.dev
tektoninstallersets.operator.tekton.dev
                                                                                                                    2024-06-18T05:50:33Z
2024-06-18T05:50:32Z
                                                                                                                    2024-06-18T05:50:32Z
tektoninstaltersets.operator.tekton.dev
tektonpipelines.operator.tekton.dev
tektonresults.operator.tekton.dev
tektontriggers.operator.tekton.dev
triggerbindings.triggers.tekton.dev
triggers.triggers.tekton.dev
triggertemplates.triggers.tekton.dev
verificationpolicies.tekton.dev
                                                                                                                    2024-06-18T05:50:33Z
                                                                                                                    2024-06-18T05:50:33Z
                                                                                                                    2024-06-18T05:50:327
                                                                                                                    2024-06-19T04:47:04Z
                                                                                                                    2024-06-19T04:47:04Z
2024-06-19T04:47:04Z
verificationpolicies.tekton
jegan@tektutor.org ~
                                                                                                                    2024-06-19T04:46:41Z
```

Lab - Creating your first Tekton Task

```
cd ~/openshift-tekton-june2024
git pull
cd Day8/tekton/
pwd
cat hello-task.yml
oc apply -f hello-task.yml
tkn task list
oc get tasks
tkn taskrun list
```

```
oc get po
tkn task start helloworld-task
tkn taskrun logs helloworld-task-run-j95pp -f -n jegan
```

Expected output

```
Q =
jegan@tektutor.org ~/openshift-tekton-june2024/home/jegan/openshift-tekton-june2024/Day8/tektonjegan@tektutor.org ~/openshift-tekton-june2024
                                                                                 / main pwd
                                                                                main cat hello-task.yml
apiVersion: tekton.dev/v1
kind: Task
metadata:
  name: helloworld-task
spec:
  steps:
   - name: echo
     image: ubuntu
command:
      - echo
     args:
- "Hello Tekton Task!"
main oc apply -f hello-task.yml
                                                                                🄰 main 📄 tkn task list
                       DESCRIPTION
                                        AGE
5 seconds ago
helloworld-task
jegan@tektutor.org > ~/openshift-tekton-june2024/Day8/tekton > / main > oc get tasks
NAME AGE
helloworld-task
jegan@tektutor.org
No TaskRuns found
jegan@tektutor.org
                                    shift-tekton-june2024/Dav8/tekton 🔰 🗸 main 🕨 tkn taskrun list
                                                                                main oc get po
                                      READY
                                                 STATUS
                                                              RESTARTS
nginx-nginx-7577cb5f8-kqhvw
                                      1/1
                                                Running
                                                             0
                                                                            68m
nginx-nginx-7577cb5f8-l2n4g
                                                                            68m
                                                 Running
nginx-7577cb5f8-x88n6 1/1 Running 0 68m
jegan@tektutor.org ~/openshift-tekton-june2024/Day8/tekton task run doesn't exist. Run tkn help for available commands
                                                                                 main tkn task run helloword-task
   iegan@tektutor.org
CLI for tekton pipelines
Usage:
                                                                                 jegan@tektutor.org
€
Aliases:
  task, t, tasks
Available Commands:
                 Create a Task from ClusterTask
Delete Tasks in a namespace
  create
  delete
                 Describe a Task in a namespace
Lists Tasks in a namespace
  describe
  list
                 Show Task logs
Sign Tekton Task (experimental)
  sian*
                 Start Tasks
Verify Tekton Task (experimental)
  verify*
Flags:
  -c, --context string
-h, --help
                                    name of the kubeconfig context to use (default: kubectl config current-context)
                                   help for task kubectl config file (default: $HOME/.kube/config)
  -k, --kubeconfig string
-n, --namespace string
                                   namespace to use (default: from $KUBECONFIG) disable coloring (default: false)
  -C, --no-color
Use "tkn task [command] --help" for more information about a command.

jegan@tektutor.org ~/openshift-tekton-june2024/Day8/tekton / main tkn task list
jegan@tektutor.org
                       DESCRIPTION
                                        AGE
                                         1 minute ago
jegan@tektutor.org ~/openshift-tekton-j
TaskRun started: helloworld-task-run-j95pp
                                                     june2024/Day8/tekton // main tkn task start helloworld-task
In order to track the TaskRun progress run:
tkn taskrun logs helloworld-task-run-j95pp
jegan@tektutor.org >-/openshift-tekton-ju
[echo] Hello Tekton Task!
                                                           024/Day8/tekton | main | tkn taskrun logs helloworld-task-run-j95pp -f -n jegan
jegan@tektutor.org
                                                             24/Day8/tekton // main tkn taskrun logs helloworld-task-run-j95pp -f -n jegan
jegan@tektutor.org > ~/openshift-tekton-june2024/Day8/tekton > // main
```

Lab - Passing parameters to Tekton Task

```
cd ~/openshift-tekton-june2024
git pull
cd Day8/tekton
cat task-with-params.yml
```

```
oc apply -f task-with-params.yml
tkn task list
tkn task start hello-task-with-params
tkn taskrun logs hello-task-with-params-run-jpsmg -f -n jegan
tkn task start hello-task-with-params
tkn task start hello-task-with-params
tkn taskrun logs hello-task-with-params-run-mmmxl -f -n jegan
```

Expected output

```
jegan@tektutor.org // openshift-tekton-june2024
Day1 Day10 Day2 Day3 Day4 Day5 Day6 Day7 D
                                                                      ls
Day1 Day10 Day2 I
jegan@tektutor.org
                                                        Day8 Day9
                                                                      README.md
                                                                      cd Dav8
     an@tektutor.org
README.md tekton to
jegan@tektutor.org
jegan@tektutor.org
                                                                            cd tekton
hello-task.yml
jegan@tektutor.org ~/openshift-tekton-june20
jegan@tektutor.org ~/openshift-tekton-june20
task.tekton.dev/hello-task-with-params created
                                                                                    vim task-with-params.yml
                                                                           main oc apply -f task-with-params.yml
                                                                       main tkn task list
DESCRIPTION
hello-task-with-params
helloworld-task
                                             5 seconds ago
                                             15 minutes ago
TaskRun started: hello-task-with-params-run-jpsmg
In order to track the TaskRun progress run:
tkn taskrun logs hello-task-with-params-run-jpsmg -f -n jegan
jegan@tektutor.org / ~/openshift-tekton-june2024/Day8/tekton / / main / tkn taskrun logs hello-task-with-params-run-jpsmg -f -n jegan
[echo] Hello Tekton Task !!!
jegan@tektutor.org -/openshift-tekton-june2024/Day8/tekton / main tkn task start hello-task-with-params 
? Value for param `message` of type `string`? (Default is `Hello Tekton Task !`) Hello Tekton Task !
? Value for param `message` of type `string`? (De
TaskRun started: hello-task-with-params-run-mmmxl
[echo] Hello Tekton Task !
jegan@tektutor.org ~/openshift-tekton-june2024/Day8/tekton mai
```

Lab - Task with multiple steps

```
cd ~/openshift-tekton-june2024
git pull
cd Day8/tekton
cat task-with-multiple-steps.yml
oc apply -f task-with-multiple-steps.yml
tkn task list
tkn task start hello-task-with-multiple-steps
tkn taskrun list
tkn taskrun logs hello-task-with-multiple-steps-run-fpkf4 -f -n jegan
```

Expected output

```
jegan@tektutor.org ~/openshift-te
hello-task.yml task-with-params.yml
                                                                                      ls
jegan@tektutor.org
jegan@tektutor.org
                                                                                      vim task-with-multiple-steps.yml
                                                                                    oc apply -f task-with-multiple-steps.yml
task.tekton.dev/hello-task-with-multiple-steps created
jegan@tektutor.org > ~/openshift-tek
                                                                  ekton by main tkn task list
hello-task-with-multiple-steps
hello-task-with-params
                                                       6 seconds ago
8 minutes ago
                                                      23 minutes ago
024/Day8/tekton
helloworld-task
jegandtektutor.org -/openshift-tekton-june2024/Day8/te
TaskRun started: hello-task-with-multiple-steps-run-fpkf4
                                                                         main tkn task start hello-task-with-multiple-steps
In order to track the TaskRun progress run:
tkn taskrun logs hello-task-with-multiple-steps-run-fpkf4 -f -n jegan
jegan@tektutor.org > ~/openshift-tekton-june2024/Day8/tekton > / mair
                                                                                   🕨 tkn taskrun list
                                                                      DURATION
                                                  STARTED
                                                                                   STATUS
hello-task-with-multiple-steps-run-fpkf4
                                                   12 seconds ago
                                                                                   Running
hello-task-with-params-run-mmmxl
hello-task-with-params-run-jpsmg
                                                  8 minutes ago
                                                                      75
                                                  8 minutes ago
                                                                      36s
iegan@tektutor.org
                                                                           main tkn taskrun logs hello-task-with-multiple-steps-run-fpkf4 -f -n
jegan
[step-1] Step 1 => Hello Wordl !
[step-2] Step 2 => Hello Wordl !
[step-3] Step 3 => Hello Wordl !
  egan@tektutor.org
                                                                                     vim task-with-multiple-steps.vml
                                                                                     oc apply -f task-with-multiple-steps.yml
task.tekton.dev/hello-task-with-multiple-steps configured jegan@tektutor.org ~/openshift-tekton-june2024/Day8/te
                                                                                in tkn taskrun list
                                                  STARTED
                                                                      DURATION
                                                                                   STATUS
hello-task-with-multiple-steps-run-fpkf4
                                                  1 minute ago
                                                                       12s
hello-task-with-params-run-mmmxl
                                                  9 minutes ago
                                                                                                                                                       Q = x
hello-task-with-params-run-jpsmg
                                                                      7s
                                                  8 minutes ago
helloworld-task-run-j95pp
jegan@tektutor.org ~/o
                                                   23 minutes ágo
                                                                             main tkn taskrun logs hello-task-with-multiple-steps-run-fpkf4 -f -n
[step-1] Step 1 => Hello Wordl !
[step-2] Step 2 => Hello Wordl !
[step-3] Step 3 => Hello Wordl !
                                                                                     vim task-with-multiple-steps.vml
                                                                                     oc apply -f task-with-multiple-steps.yml
task.tekton.dev/hello-task-with-multiple-steps configured jegan@tektutor.org -/openshift-tekton-june2024/Day8/te
                                                                                   tkn taskrun list
                                                  STARTED
                                                                      DURATION
                                                                                   STATUS
hello-task-with-multiple-steps-run-fpkf4
                                                  1 minute ago
                                                                       12s
hello-task-with-params-run-mmmxl
                                                  9 minutes ago
hello-task-with-params-run-jpsmg
helloworld-task-run-j95pp
jegan@tektutor.org ~/openshif
                                                  9 minutes ago
                                                                      7s
                                                  24 minutes ago
                                                                       36<sub>,</sub>s
                                                                           main tkn task start hello-task-with-multiple-steps
TaskRun started: hello-task-with-multiple-steps-run-pgpdk
In order to track the TaskRun progress run:
[step-1] Step 1 => Hello World !
 step-2] Step 2 => Hello World !
[step-3] Step 3 => Hello World
```

Lab - Using reusable tasks from Tekton Hub(Catalog)

Navigate to below url

```
https://hub.tekton.dev/tekton/task/tekton-catalog-publish
```

Search for 'git-clone'

We can install the git-Iclone task from Tekton Hub into our openshift cluster as shown below

tkn hub install task git-clone

Let's us create a taskrun using the git-clone task we downloaded from TekTon Hub

```
cd ~/openshift-tekton-june2024
git pull
cd Day8/tekton
cat github-clone-taskrun.yml

oc create -f github-clone-taskrun.yml
tkn taskruns list
tkn taskrun list
tkn tr list
tkn tr logs -f github-clone-tr-b4bn7
```

Expected output











