



Tekton - Kubernetes Native CI/CD





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Before We Begin

- What is today's talk about?
- Why I have put together this talk?
- Takeaways from this talk - All in demo
 - Light-weight Kubernetes deployment
 - Basic Traefik Ingress Route
 - Tekton Concepts
 - Get started with Tekton with pipelines



Project Overview

TEKTON



Key URLs

- <https://tekton.dev/>
- <https://cloud.google.com/tekton>
- <https://github.com/tektoncd>
- <https://landscape.cncf.io/selected=tekton-pipelines>



What is Tekton?

- Formerly a part of Knative and was called [Knative Build Pipelines](#)
- Built by Google but contributed by CloudBees, Red Hat, IBM, etc
- Kubernetes-native
- Flexible, and supports many advanced CI/CD patterns, including rolling, blue/green, and canary deployments
- Written in GoLang
- CLI and a dashboard

Tekton Vision



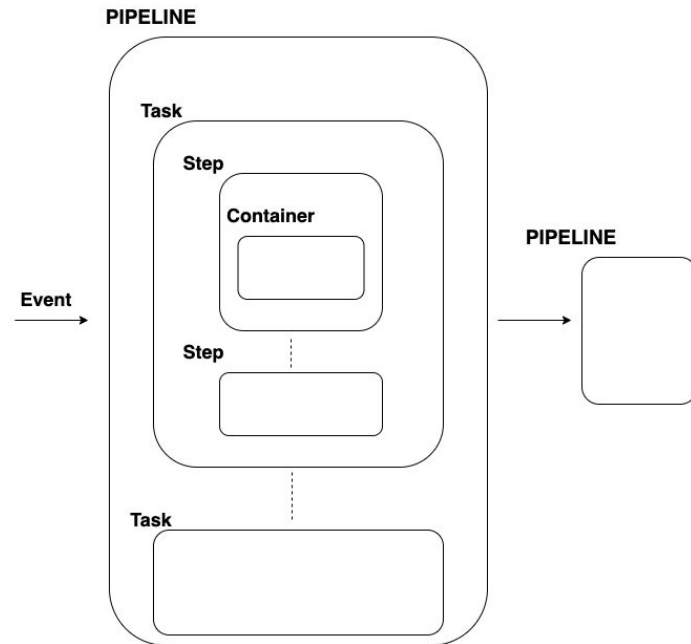


Key Components

- **Pipelines:** Basic building blocks (tasks and pipelines) of a CI/CD workflow
- **Triggers:** Event triggers for a CI/CD workflow, like a GitHub trigger
- **CLI:** Command-line interface for CI/CD workflow management, view logs, etc
- **Dashboard:** General-purpose, web-based UI for Pipelines



What is a pipeline?





Additional Concepts

- **PipelineResource:**
 - Inputs or Outputs of a pipeline
 - Examples: Git Repository, Docker Images
- **PipelineRun:**
 - Invocation of a pipeline
 - Pass pipeline resources to a pipeline
- **TaskRun:**
 - Invocation of a task
 - Runs one or more steps



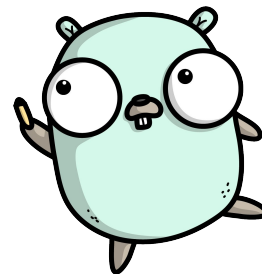
Tekton Installation

TEKTON

Installation : Pre-requisites

Requirements:

- **kubectl**
 - <https://kubernetes.io/docs/tasks/tools/install-kubectl/>
- **k3d (fastest way to deploy Kubernetes?)**
 - <https://github.com/rancher/k3d>
- **Tekton CLI**
 - <https://github.com/tektoncd/cli>





Installation - Tekton with a dashboard

```
→ ~ k apply -f https://github.com/tektoncd/pipeline/releases/download/v0.12.0/release.yaml

→ ~ kubectl api-resources | grep -i tekton
clustertasks          tekton.dev          false      ClusterTask
conditions            tekton.dev          true       Condition
pipelineresources     tekton.dev          true       PipelineResource
pipelineruns          pr,prs             tekton.dev true       PipelineRun
pipelines             tekton.dev          true       Pipeline
taskruns              tr,trs             tekton.dev true       TaskRun
tasks                 tekton.dev          true       Task

→ ~
→ ~ k -n tekton-pipelines apply -f https://github.com/tektoncd/dashboard/releases/download/v0.6.1/tekton-dashboard-release.yaml
```





Agenda

- Create a Kubernetes Cluster
- Deploy Tekton with a dashboard
- Expose dashboard by creating an Ingress object
- Create Pipelines (Code is here <https://github.com/vikas027/tekton-k8s-demo.git>)
 - Pull a private git repository from Git, build a docker image with Terraform, and push to DockerHub
 - Pull the docker image (built above) from DockerHub and run terraform apply
- Debugging

