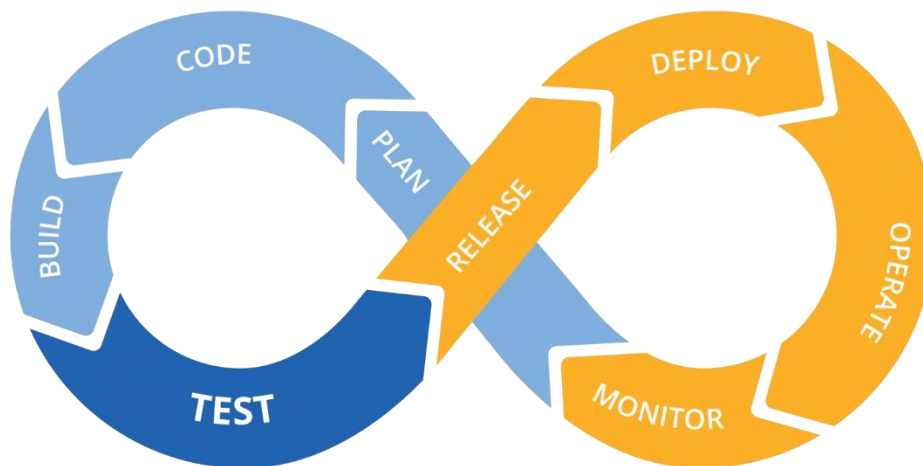


OPENSIFT



SERVERLESS CI/CD WITH OPENSIFT PIPELINES

WARUM SERVERLESS CI/CD?

CURRENT CHALLENGES OF CI/CD TOOLING



Jenkins

- ... not cloud native
- ... big management overhead
- ... brittle configuration
- ... lead to instability
- ... too many choices
- ... too few guidelines

<https://jenkins.io/blog/2018/08/31/shifting-gears/>



OPENSIFT PIPELINES



OPENSIFT PIPELINES

TEKTON



Started as part of the knative build component

Split in 2018

Builds on Kubernetes CRDs

Governed by the Continuous Delivery Foundation

Contributions from Google, Red Hat, Cloudbees, IBM, Pivotal and many more

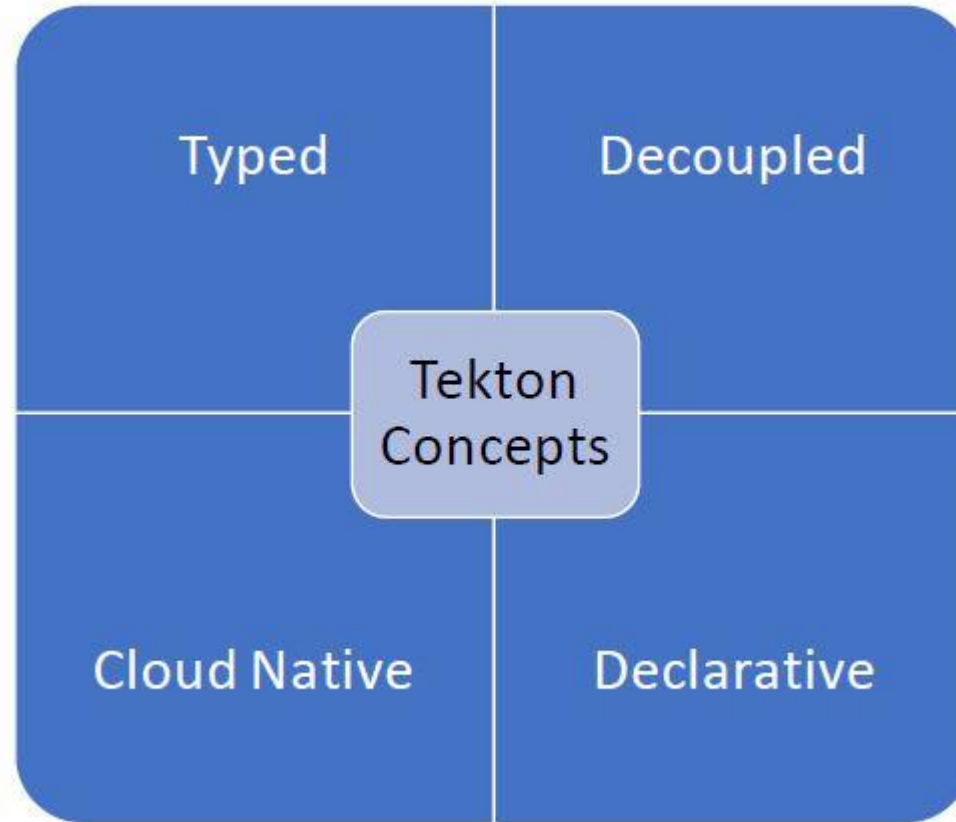


OPENSIFT PIPELINES

CONCEPTS

For resources such as repositories or images implementations can easily be swapped (e.g. buildah vs kaniko)

Every command is run in a container



**Tasks vs TaskRuns
Pipelines vs PipelineRuns
Portable across platforms**

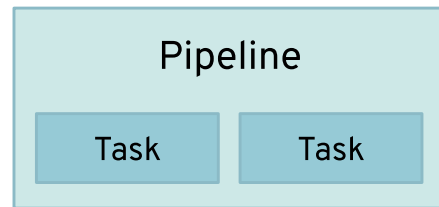
Kubernetes CRD / YAML



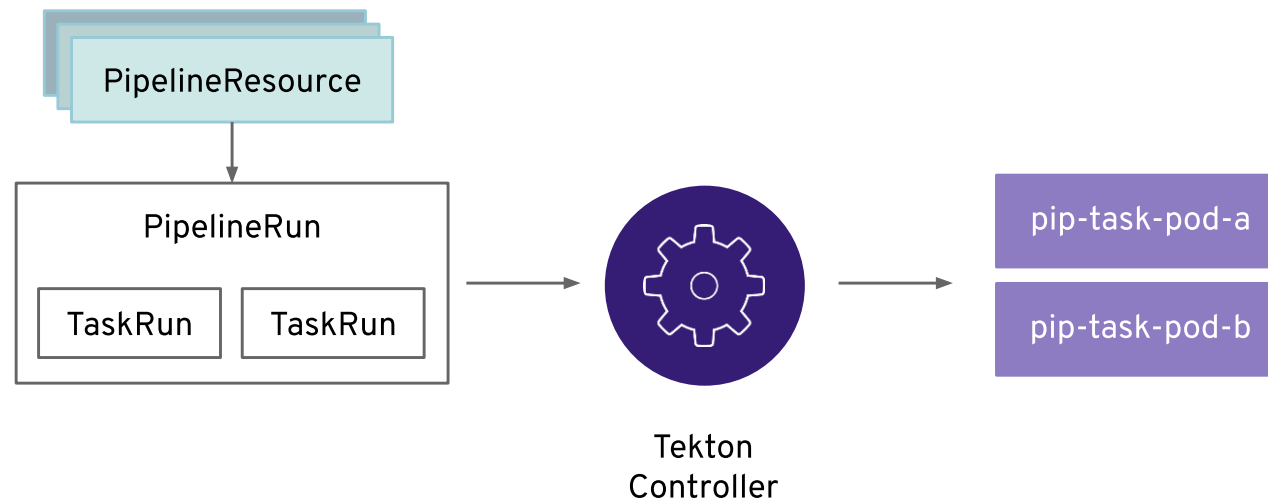
OPENSIFT PIPELINES

CONCEPTS

Define pipeline



Invoke pipelines



OPENSIFT PIPELINES

CONCEPTS

Steps

- Run commands in a container
- Kubernetes container spec
 - Env vars
 - Config maps
 - Secrets
- Part of Task CRD

```
- name: build
  image: maven:3.6.0-jdk-8-slim
  command:
  - /usr/bin/mvn
  args:
  - package
```



OPENSIFT PIPELINES

CONCEPTS

Tasks

- A list of steps run sequentially
- Inputs
- Outputs
- Parameterized
- Can run independent of pipelines

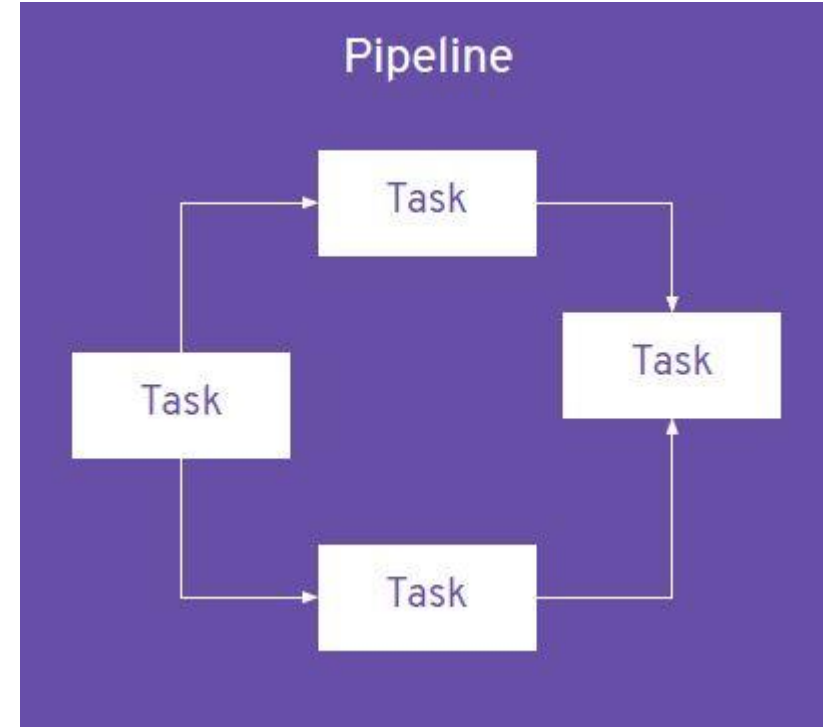


OPENSIFT PIPELINES

CONCEPTS

Pipeline

- Combine multiple tasks
- Define a running order
- Inputs
- Outputs
- Parameterized
- Links tasks inputs and outputs



OPENSIFT PIPELINES

CONCEPTS

PipelineResource

- Inputs and Outputs
 - git repository
 - container image
 - Pull requests (GitHub)
 - Cluster
 - Storage
 - CloudEvent
- Decoupled from pipeline definition
- Reusable across pipelines

Pipeline

PipelineResource
Git

PipelineResource
Image

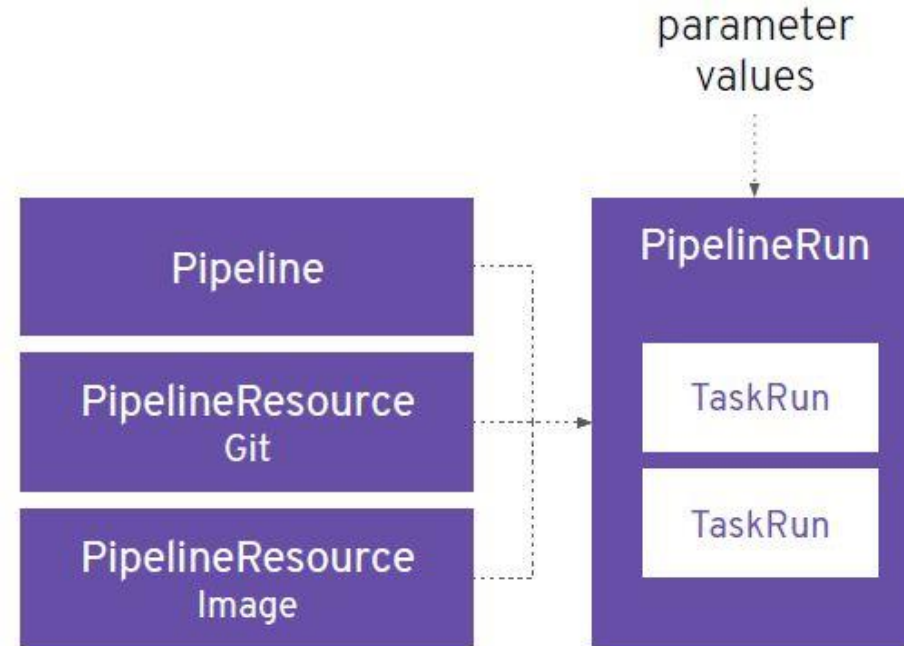


OPENSIFT PIPELINES

CONCEPTS

TaskRun and PipelineRun

- Runtime CRDs
- Reference tasks and pipelines
- Define inputs, outputs and parameters



OPENSIFT PIPELINE

TASK CATALOG

Catalog of reusable Tasks like

- Image build: buildah, kaniko, jib, buildpacks...
- Source-To-Image: Java, Python, Go, Ruby...

Soon: Shared pipelines

<https://github.com/openshift/pipelines-catalog>

<https://github.com/tektoncd/catalog>



OPENSIFT PIPELINES

DEMO

Red Hat OpenShift Container Platform

Project: Project01

Pipelines Tech Preview

Filter Pipelines by name

4 Succeeded 0 Failed 0 Cancelled 1 Running 0 Pending [Select All Filters](#) 5 of 5 items

Name ↕	Last Pipeline Run	Last Run Status	Last Task Status	Last Run Started
pipeline01	PRun01A	✓ Succeeded		3 seconds ago
pipeline02	PRun02C	✓ Succeeded		2 minutes ago
pipeline03	PRun03B	✓ Succeeded		4 minutes ago
pipeline04	PRun04A	✓ Succeeded		6 minutes ago
pipeline05	PRun05D	⌛ Running		8 minutes ago



OPENSIFT PIPELINES

STATE OF PLAY / ROADMAP

- + container-native, no plugin management
- + Very efficient build – test – deploy pipelines
- + support for sidecar containers (e.g. mockup apis for testing)
- + portable across clusters
- + shared tasks / pipelines
- Limited eco system (e.g. currently only support for git as SCM)
- No easy integration with bugtrackers like Jira / Bugzilla
- No notification system
- No Pause / Resume functionality
- No control loops / limited implementation of conditions

On the road...

Metrics (implemented in Tekton 0.8)

DAG pipelines

Workflow features (Pause/Resume, timeouts, notifications...)

Trigger

Further SCM integration (Linting, issue tracking, integration testing...)

