

Cloud Native Applications Workshop

Tekton Overview

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WW Developer Advocacy Team

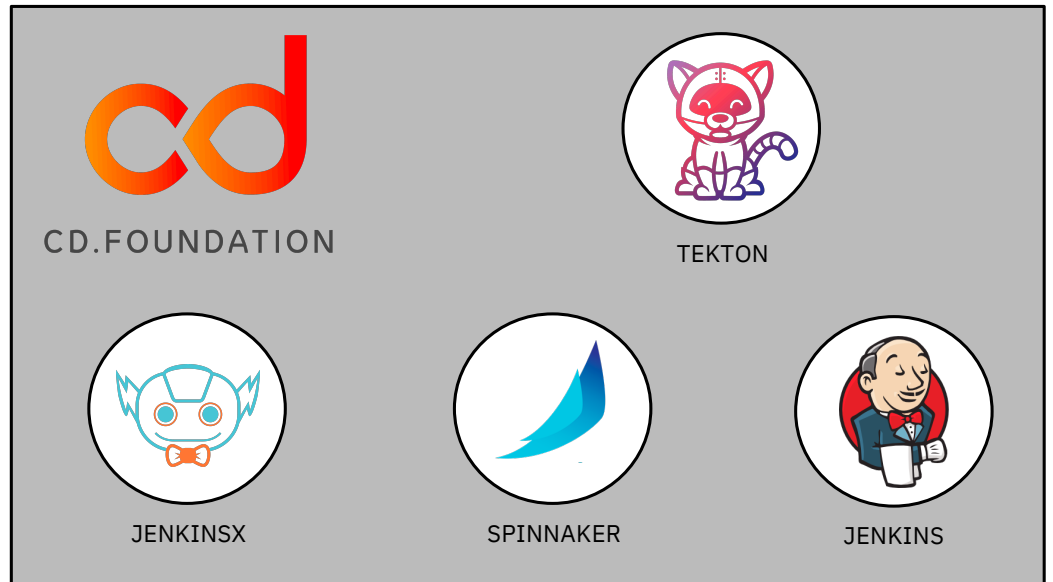
IBM Developer



Tekton provides
Kubernetes-style resources
for declaring CI/CD
concepts

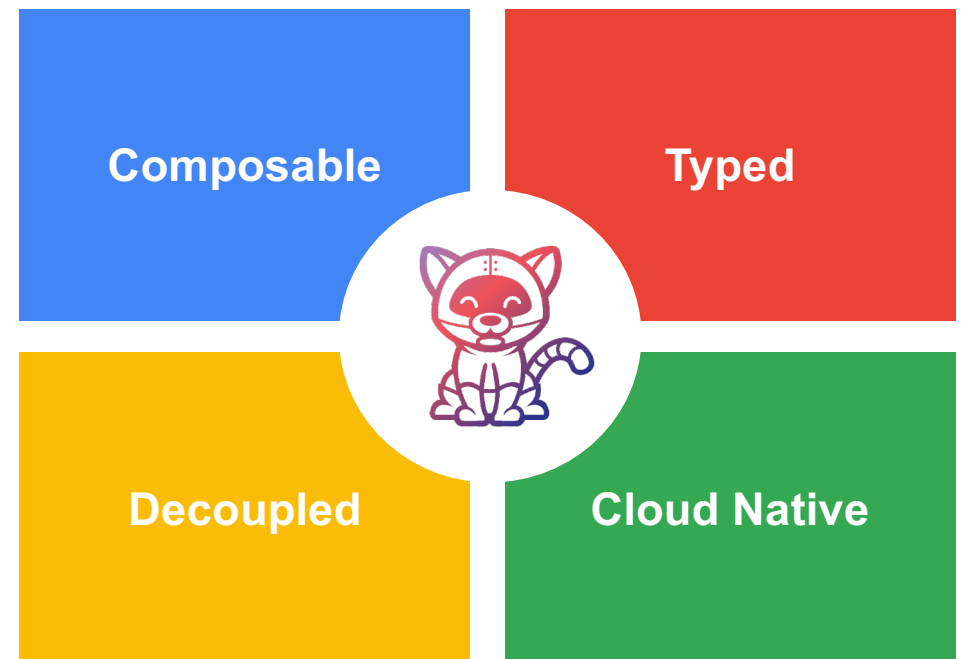
Tekton Emerges

- Spun out of the Knative build project
- Git Repo: <https://github.com/tektoncd>
- **Current release:** 0.11.0 (March 2020)
- **First release:** 0.2.0 (March 2019)
- **Contributors:** Google, Red Hat, Pivotal, IBM, etc.
- Part of the **CD Foundation** (under the Linux Foundation)
 - Includes other open source projects such as: JenkinsX, Jenkins, Spinnaker, Tekton
- CD Foundation announced in March 2019
 - **Goal:** To serve as the vendor-neutral home for the most important open source projects for continuous delivery



So, what is Tekton?

- **Cloud Native:** Run on Kubernetes, Have Kubernetes clusters as a first class type, use containers as their building blocks
- **Typed:** The concept of typed resources means that for a resources can swap out implementations
- **Composable:** Tekton concepts build upon each other
- **Decoupled:** The Tasks which make up a Pipeline can easily be run in isolation. One Pipeline can be used to deploy to any k8s cluster



Tekton Concept: Step

- The smallest building block
- Specify images, commands, arguments
- Is a container

```
steps:  
  - name: echo  
    image: ubuntu  
    command:  
      - echo  
    args:  
      - "hello world"
```

Tekton CRD: Task

- New CRD
- Sequence of **Steps**
- Run in sequential order
- Reusable
- Perform a specific task
- Runs on the same k8s node

```
apiVersion: tekton.dev/v1alpha1
kind: Task
metadata:
  name: echo-hello-world
spec:
  steps:
    - name: echo
      image: ubuntu
      command:
        - echo
      args:
        - "hello world"
```

Tekton CRD: Pipeline

- Expresses **Tasks**
 - Sequentially
 - Concurrently
- Links input and output
- Execute **Tasks** on different nodes

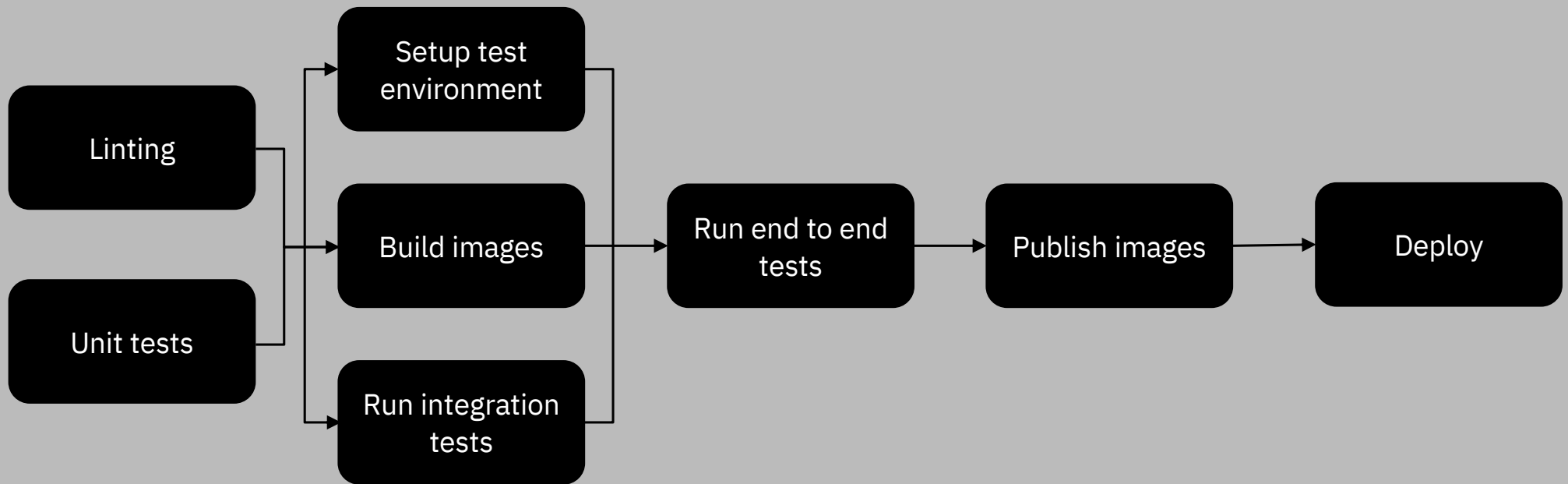
```
apiVersion: tekton.dev/v1alpha1
kind: Pipeline
metadata:
  name: tutorial-pipeline
spec:
  - name: build-app
    taskRef:
      name: build-push
    resources:
      outputs:
        - name: image
          resource: my-image
  - name: deploy-app
    taskRef:
      name: deploy-kubectl
    resources:
      inputs:
        - name: image
          resource: my-image
      from:
        - build-app
```

Tekton Runtime CRDs

- Instances of Pipelines and Tasks:
 - PipelineRun
 - TaskRun
- Runtime info such as registry information and git repo

```
apiVersion: tekton.dev/v1alpha1
kind: PipelineRun
metadata:
  name: tutorial-pipeline-run-1
spec:
  serviceName: tutorial-service
  pipelineRef:
    name: tutorial-pipeline
  resources:
    - name: source-repo
      resourceRef:
        name: skaffold-git
    - name: web-image
      resourceRef:
        name: skaffold-image-leeroy-web
```


Putting it all together



Putting it all together

Pipeline

