



TEKTON

Project Update

Who Am I?

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- ❖ Tekton Intro
- ❖ Community
- ❖ Recent Additions
- ❖ Future Features
- ❖ Wrap

Intro - What is Tekton?



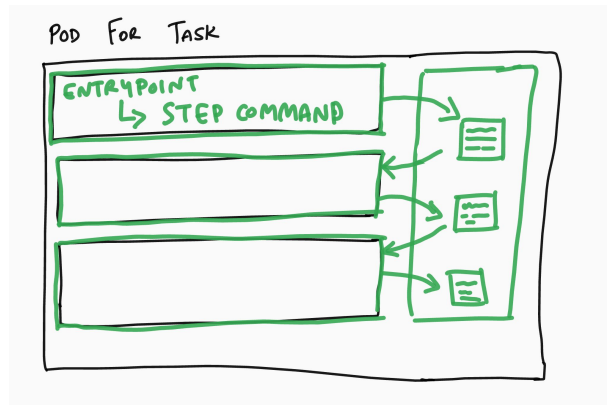
1. Specification of objects in a CI/CD pipeline:
 - a. Task runs series of steps to achieve a goal
 - b. Pipeline describes a graph of Tasks: “Build this, test that, deploy here”
 - c. TaskRun / PipelineRun: runtime info for CI/CD processes. Params & resources.
 - d. PipelineResources: files, directories, repositories, registries, cloud buckets, clusters - any meaningful external resource.

Why? Common language & interoperability between CI/CD systems. Tekton sometimes described as “Building Blocks” for CI/CD systems.

2. Tekton is a “kubernetes-native” implementation of the specification described above.
 - a. Tekton runs as a k8s controller in your cluster
 - b. Uses k8s primitives - Pods for Tasks and Containers for Task Steps.

Intro - What is Tekton?

Illustrating Task Execution



Task = Pod

Task's Step = Container in Pod

Containers in a Pod normally all start at same time.

Tekton wants to "sequence" those steps so they run one after another.

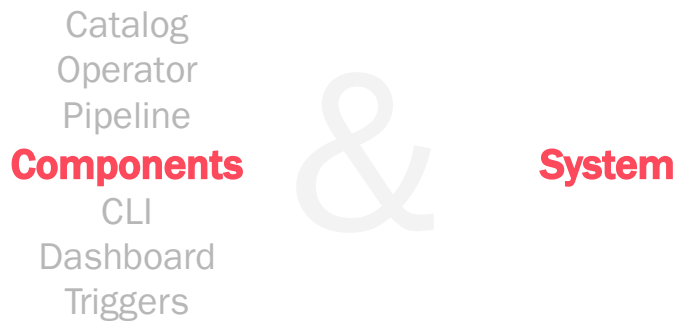
Tekton adds two ingredients: 1) a shared volume on the node. 2) an "entrypoint" binary.

Entrypoint binary runs your step's command. E.g. "go build"

Then the entrypoint bin writes a file with name like "1.complete" to shared volume.

Entrypoint for next step is waiting for that file. Sees it. Starts running. And then same pattern repeats for each step.

Intro - What is Tekton?



3. Tekton is not just pipelines, it's also an ecosystem of components and tools.

Dashboard, CLI, Pipeline, Catalog - all enabled by common specified resources.

Put together you have something approaching a CI/CD system.

That's the dream - Tekton is still in Alpha. Design and development still well underway.

The Tekton Community

Cloudbees

Alibaba Google

Tekton Friends

IBM TriggerMesh

RedHat

Source: <https://github.com/tektoncd/friends>

Tekton's community is its greatest strength.

Working group meetings every week. Very busy, lots of updates from multiple projects and companies.

WGs are great place to hear how Tekton is being used to build new products.

Check out the "Friends" repo to see what other companies are doing. Make a PR if you're using Tekton!

The Tekton Community

The Catalog & Experimental Repos

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

Catalog - You shouldn't have to write your own "go build" for every new project. Tekton should have a source of best practice Tasks.

Experimental - Allows Tekton devs to try out new ideas without risking changes in the core Tekton codebases.

Triggers project graduated from experimental repo recently. Started life as several different projects contributed by different companies.

Recent Additions

Recent Additions

Conditional Execution

- Skip on unmet condition.
- Any language, any resource.

Example: Run for specific branch.

Pull Request Resource

- Initial support for Github PRs
 - Comment and add labels directly from pipeline
 - Generic - intention to add more source control providers like GitLab, BitBucket, etc, all providing the same functionality.
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Conditional Execution :- allows you to skip parts of the pipeline based on any condition you want.

E.g. Compare branch name to list of protected branches. Check a file exists in a repo before running docker build + push.

Unlocks lots of flexibility.

Pull Request Resource :- interface for version control providers like Github, Gitlab, Bitbucket.

Added initial support for Github.

Recent Additions

The tkn CLI tool

- Start and stop pipelines.
- Easily tail logs!!
- SHELL COMPLETION!!!!

github.com/tektoncd/cli

Dashboard Public Release

- Start pipelines in browser
- See log output
- ~~Webhook Support~~
- Highly extensible

github.com/tektoncd/dashboard

tkn CLI tool :- Huge benefit to daily development

Start & stop pipelines + reuse paramaters from previous pipeline runs.

Tail logs from all tasks in a pipeline.

Shell completion for pipeline resources.

Dashboard project :- extensible user interface for Tekton.

Recently had first public release.

Includes extension to create webhooks so external systens like Github can talk to Pipelines.

Future Features

Future Features

Triggers

- Expose endpoints
- Receive requests
- Filter and transform request payloads
- START PIPELINES

github.com/tektoncd/triggers

Sidecars

- Support for injected sidecars already in
- User-defined sidecars is next.

Example: easily start a mock API server to run integration tests against.

Triggers :- Provide mechanism to expose endpoints that external systems can hit for CI/CD.

Canonical example is github webhook so PRs can start pipelines.

Knative Eventing has done a lot of work in this area. Want to be interoperable.

Sidecar support :- Tekton now plays well with injected sidecars.

Next want to allow users to define their own sidecars in Pipelines.

E.g. Start a mock API server to run tests against.

Future Features

Observability

- Expose metrics
- Performance test
- ???
- Profit

Get Pipelines to Beta

- Stronger validation
 - Longer term support of APIs
 - Clear deprecation policy
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Observability :- Expose metrics for performance or analytics collection.

How many pipelines are we running? How long are they taking? Where are bottlenecks?

Move Pipelines into Beta :- Important for large orgs and integrating systems.

Need stronger validation of releases.

Provide clearer support of APIs we expose.

That's a wrap...

1. Tekton is building blocks
2. Tekton can operate as a system
3. Currently Alpha
4. Rapidly approaching Beta
5. Get involved!

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

<https://tektoncd.slack.com/>
