From Zero to CD with Tekton

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Agenda

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Tekton is an open-source framework for creating CI/CD systems

Cloud Native

Serveless, Scalable Pipelines

Standardization

Built In Best Practices

Maximum Flexibility

Projects

- Pipeline
- Triggers
- Dashboard
- CLI
- Catalog, Hub
- Results
- Chains
- Operator

Community

More than 150 Companies

Google, IBM, RedHat, VMWare

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for creating CI/CD systems

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Tekton is an open-source framework for creating continuous delivery systems (aka CI/CD). Tekton is built on top of Kubernetes, and it brings all the cloud-native advantages into the CD space: serverless execution, scalability and integration with the impressive ecosystem of cloud native tools for logging, monitoring, policy enforcement and more.

Tekton has a very small footprint, which makes it easy to get started with it in your minikube or kind cluster. That also means having a small control plan overhead when running hundres of pipelines. Tekton particuarly shines in large scale CD environments, as it gives DevOps architects the full flexibility they need to setup up a CD system which meets the enterprise needs for security and compliance, while letting software engineers quickly and easily develop their pipelines through a catalog of curated bulding blocks.

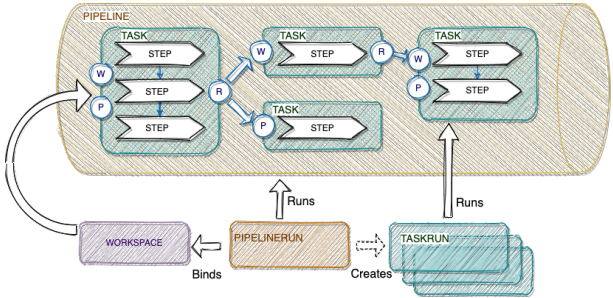
Tekton benefits from a lively community, with contributions from more than 150 companies and a collection of different projects that provide from workflow definition, event handling, user interfaces, catalog and security.

At a Glance

CD.FOUNDATION

- Extend the k8s API with CRDs
- Definitions: Task, Pipeline
- Execution: TaskRun, PipelineRun
- Bindings:
  Workspaces, Parameters, Results

- Tekton v1 – Q1 2022
- Standalone or building block



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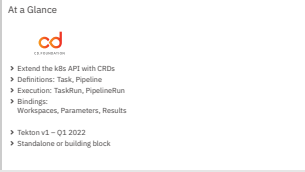
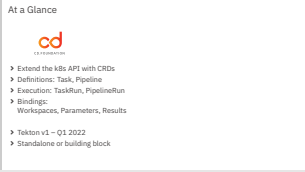


Tekton was one of the founding members of the continuous delivery foundation (CDF) back at the beginning of 2019. It extends the k8s API with CD specific resources. Tasks, Pipelines... We aim for the Q1 or 2022 for Tekton v1 Tekton is often used as building block for other platforms, like OpenShift Pipelines, Jenkins X, Kubeflow Pipelines and more. The Tekton community cares deeply about the stability of its API and happiness of its users.



Let’s see Tekton in action. For the demo sections today, we’ll use OpenShift Pipelines, which is a distribution of Tekton nicely integrated in OpenShift.

Photo by Nadi Whatisdelirium, CC0

Install

- One-liner (almost)
- Tekton Operator (OperatorHub)
- Nightly Builds (Operator too)
- Helm (by CDF)

- Multi-architecture (amd64, s390x, ppc64le, arm64)
- Multi-OS (Workloads can run on Windows/amd64)

- OpenShift Pipelines
- Let’s install it!

Install

Install

First thing, we need to install Tekton. There are several options, from a simple one-liner command with kubectl to an operator. Tekton can run on several different architectures. It is also possible to run Tekton Tasks on Windows cluster nodes.

OpenShift supports an operator. -> Show installing openshift

Authoring

- Catalog & Hub
- Tasks & Pipelines
- Parameters, Results & Workspaces
- OCI Bundles
- Signed Tasks and Pipelines (WIP)

- Let’s install some tasks and pipelines

Photo by Thom Milkovic, CC0

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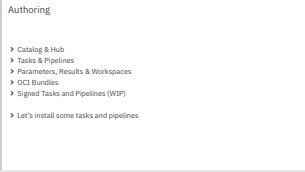

Tekton Tasks and Pipelines are k8s resources, written in YAML. The community maintains a catalog of common tasks that can be used to compose a pipeline. Organisations may maintain their own catalog too. Parameters, workspaces and results represent the interface of both tasks and pipelines.
Pipelines and Tasks can also be stored in container registries. The Tekton community is working towards making it easy to sign and verify the workflow definitions.
Show the hub UI, search for a git task Search and install git-clone task via tkn tkn hub search git-clone tkn hub info task git-clone tkn hub install task git-clone tkn task describe git-clone tkn hub install task pylint tkn hub install task pytest
Install other resources via kubectl kubectl create -k tekton/
Start the pipeline via the UI

Photo by John Yunker, CC0

Watching

- Running Tasks & Pipelines
- Tekton Dashboard
- `tkn`, `kubectl`
- Pods, Volumes & Events
- OpenShift Console

Watching