Modern CI/CD with Tekton and Prow automated with Jenkins X

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**Jenkins**

- **History**
  - Jenkins Server created in the form of Hudson in 2004
  - Almost 200,000 Jenkins Servers running *
  - 15,000,000 Jenkins users

- **Present day challenges**
  - Single Point of Failure
  - Large JVM requiring lots of memory and always running even if no builds required
  - Scaling jobs leads to issues as Pipelines are executed on the Jenkins Server

* Source https://stats.jenkins.io
Jenkins X

- Developer experience for Kubernetes
- Build traditional and modern cloud native workloads
- Create new or import existing applications onto Kubernetes
- Automated CI/CD
- Where possible use capabilities recommended from Accelerate
- ...

https://jenkins-x.io/about/accelerate
Jenkins X

- ... 
- Environments
- GitOps for environment promotion
- New extensibility model based on modern architectures
- Pluggable pipeline execution engines
Tekton

- Portability: a CI/CD shared API spec
- Custom Resource Definitions:
  - Extending Kubernetes with custom types
  - Controllers act on Resources
- Declarative API
- Decoupled:
  - Run a Pipeline with your own resources
  - Run pieces of a Pipeline (Tasks) on their own
- Containers run as Steps in a Task orchestrated by a Pipeline
- No JVM
Prow - The leading edge.

Kubernetes - Cluster management.

Hook - Catches webhooks from GitHub.

Deck - All of the jobs on display.

Testgrid - Detailed test result dashboards.

Horologium - Triggers periodic Continuous Integration tests.

Tide - Washes passing pull requests ashore for auto-merge.

Plank - Launches a container for each test job.

Sinker - Cleans up dead jobs.
High level Architecture

Git Providers

- Loadbalancer
- Kubernetes API Server
- Registries
- Tekton
- Prow
- Vault
- JX UI
- Builds
- Apps
- JX Controllers
- Artifacts
- Secrets
- Cache
- Build Logs, test reports

Infra logs and metrics

Agents

Cloud storage

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Continuous Delivery Foundation

Launched by CloudBees and the Linux Foundation on March 13, 2019
Goal of the CDF

To serve as the vendor-neutral home of many of the fastest-growing projects for continuous delivery, including Jenkins and Jenkins X.

The CDF fosters collaboration between the industry’s top developers, end users and vendors.
Initial Projects:

[Logos for Tekton, Jenkins, Spinnaker, and JenkinsX]

https://cd.foundation/projects
Try it out and get involved!

- Continuous Delivery Foundation:
  - [https://cd.foundation](https://cd.foundation)

- Jenkins X:
  - Quickstart: [jenkins-x.io/getting-started/next-gen-pipeline/](https://jenkins-x.io/getting-started/next-gen-pipeline/)
  - Contribute: [jenkins-x.io/contribute/](https://jenkins-x.io/contribute/)

- Tekton:
  - Get involved, propose projects: [github.com/tektoncd/community](https://github.com/tektoncd/community)

- Tekton Pipelines:
  - Contributing guide: [github.com/tektoncd/pipeline/blob/master/CONTRIBUTING.md](https://github.com/tektoncd/pipeline/blob/master/CONTRIBUTING.md)
Thank you