Tekton Pipelines As Code 😍

An opinionated CI based on Tekton Pipelines

Shivam Mukhade

Software Engineer, Red Hat

Red Hat

🥷 Agenda 🥷

- CI/CD Pipeline?
- Tekton Overview
- Tekton Pipelines Demo
- Introduction to Pipelines As Code?
- Why Pipelines As Code?
- Demo :)

What is a CI/CD pipeline?

- A continuous integration and continuous deployment (CI/CD) pipeline is a series of steps that must be performed in order to deliver a new version of software. Ref.
- By automating CI/CD throughout development, testing, production, and monitoring phases of the software development lifecycle, organizations are able to develop higher quality code, faster.
- Examples:
  - When someone create a pull request, run unit test, e2e, build test and deploy
  - When a commit is merged, deploy the code

TEKTON

An open-source project for providing a set of shared and standard components for building Kubernetes-style CI/CD systems

CD.FOUNDATION

Governed by the Continuous Delivery Foundation

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

Red Hat

Tekton Projects

Pipelines

Triggers

CLI

Dashboard

Operator

Catalog

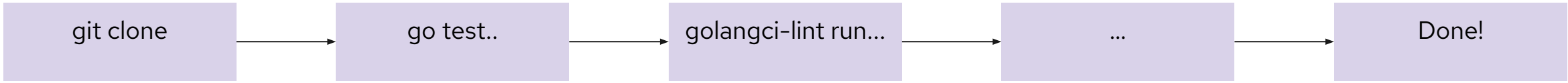
Hub

Chains

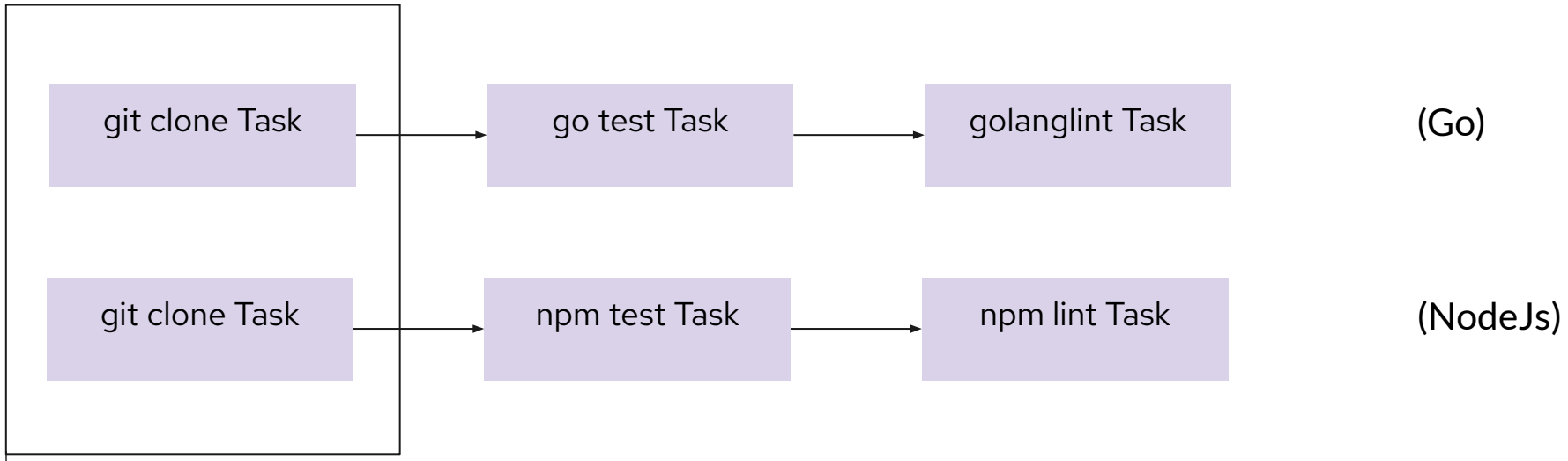
Results

Example

If we do it manually for a go project..

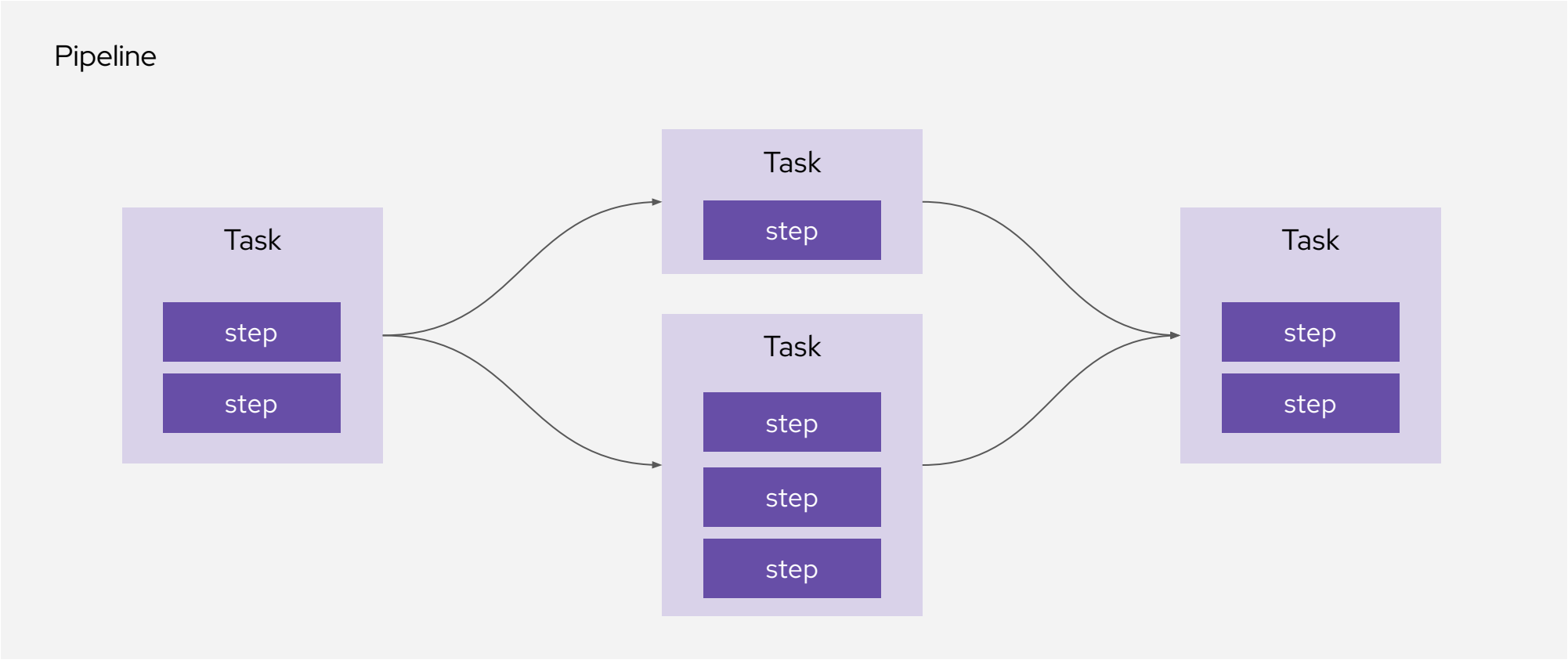


Now, let's see how to define using Tekton resources...



Red Hat

Tekton Concepts

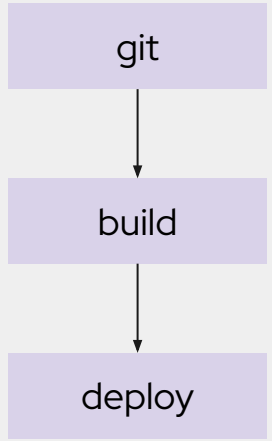


Red Hat

Tekton Concepts: `Pipeline`

- A graph of Tasks: concurrent & sequential
- Tasks run on different nodes
- Task execution logic
  - Conditional
  - Retries
- Share data between tasks

```yaml
kind: Pipeline
metadata:
 name: deploy-dev
spec:
 params:
   - name: IMAGE_TAG
 tasks:
   - name: git
     taskRef:
       name: git-clone
     params: [...]
   - name: build
     taskRef:
       name: buildah
     params: [...]
     runAfter: ["git"]
   - name: deploy
     taskRef:
       name: oc-deploy
     params: [...]
     runAfter: ["build"]
```



Red Hat

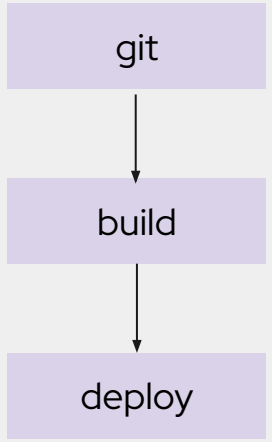
Task, Pipeline & PipelineRun

```yaml
kind: Task
metadata:
 name: git-clone
spec:
 ....
```

```yaml
kind: Task
metadata:
 name: buildah
spec:
 ....
```

```yaml
kind: Task
metadata:
 name: oc-deploy
spec:
 ....
```

```yaml
kind: Pipeline
metadata:
 name: deploy-dev
spec:
 params:
   - name: IMAGE_TAG
 tasks:
   - name: git
     taskRef:
       name: git-clone
     params: [...]
   - name: build
     taskRef:
       name: buildah
     params: [...]
     runAfter: ["git"]
   - name: deploy
     taskRef:
       name: oc-deploy
     params: [...]
     runAfter: ["build"]
```

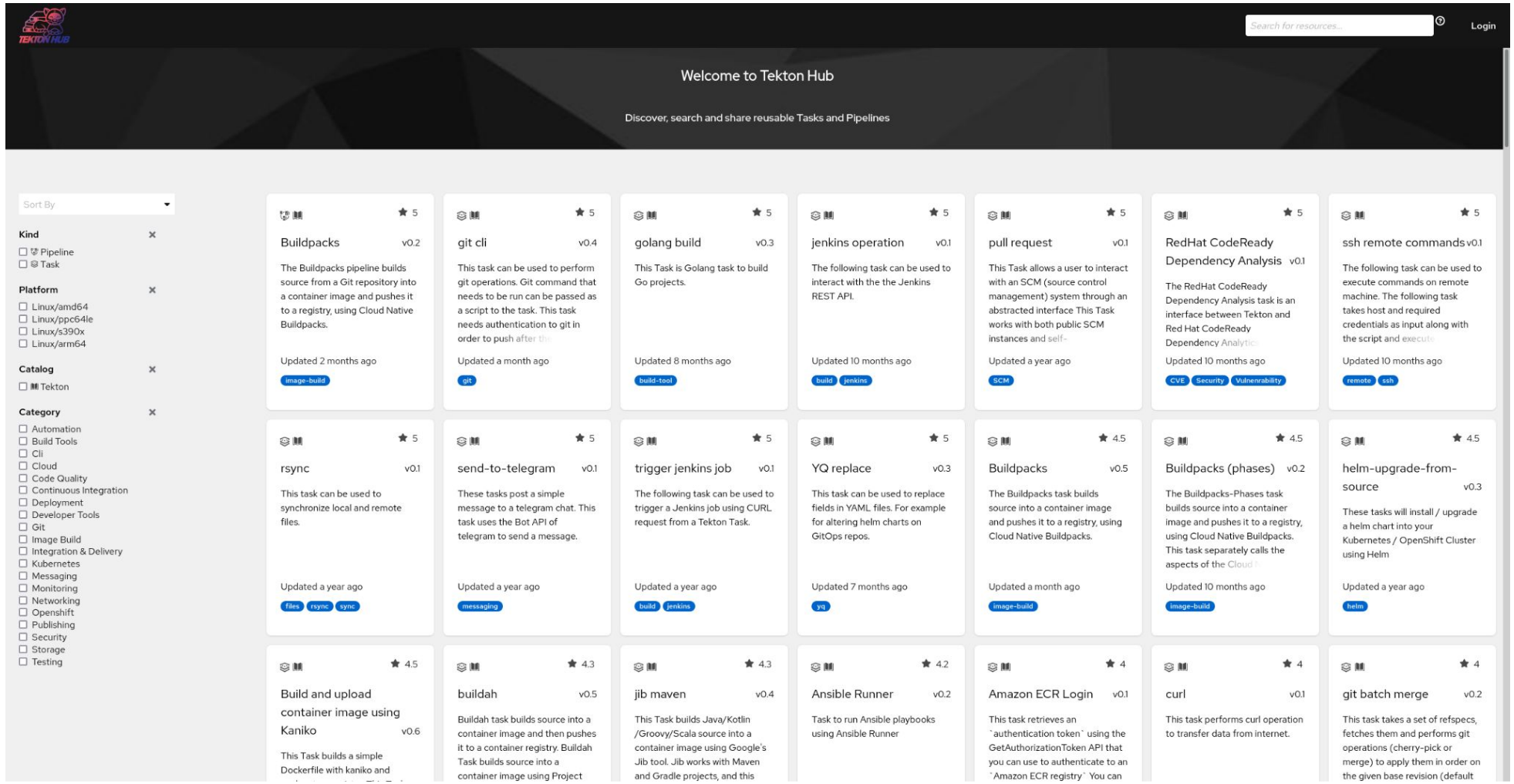



```yaml
kind: PipelineRun
metadata:
 name: deploy-dev-run-1
spec:
 pipelineRef:
  name: deploy-dev
```

```yaml
kind: PipelineRun
metadata:
 name: deploy-dev-run-2
spec:
 pipelineRef:
  name: deploy-dev
```

```yaml
kind: PipelineRun
metadata:
 name: deploy-dev-run-3
spec:
 pipelineRef:
  name: deploy-dev
```

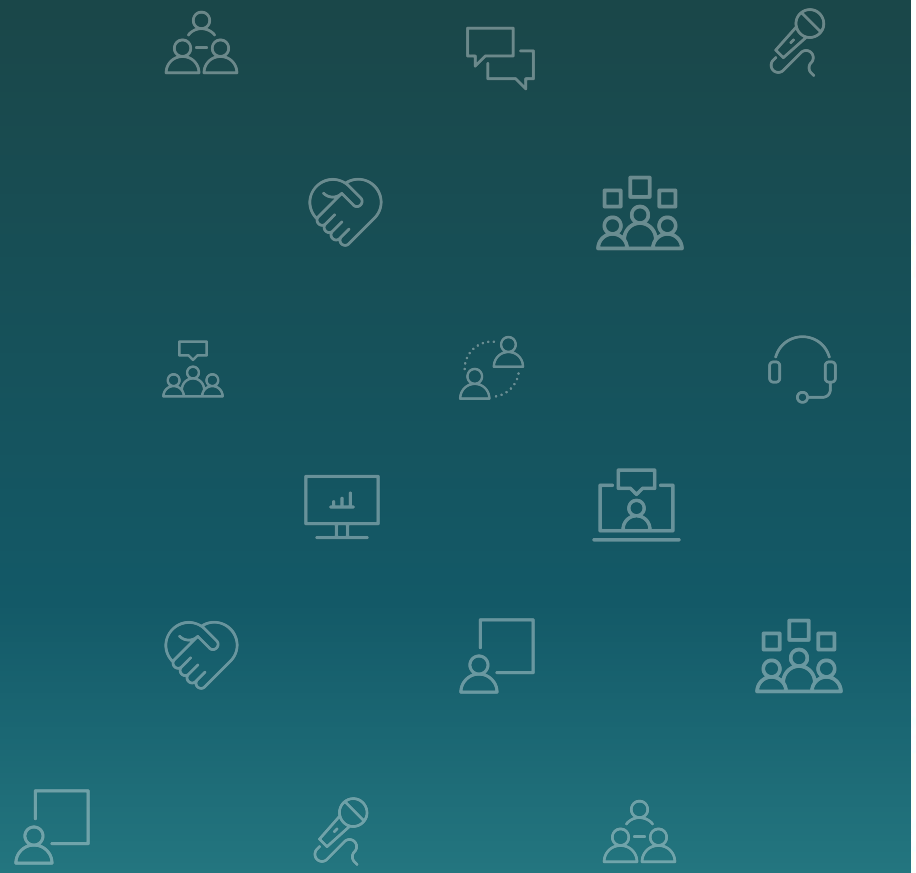
Tekton Hub (hub.tekton.dev)



Red Hat

Tekton Triggers

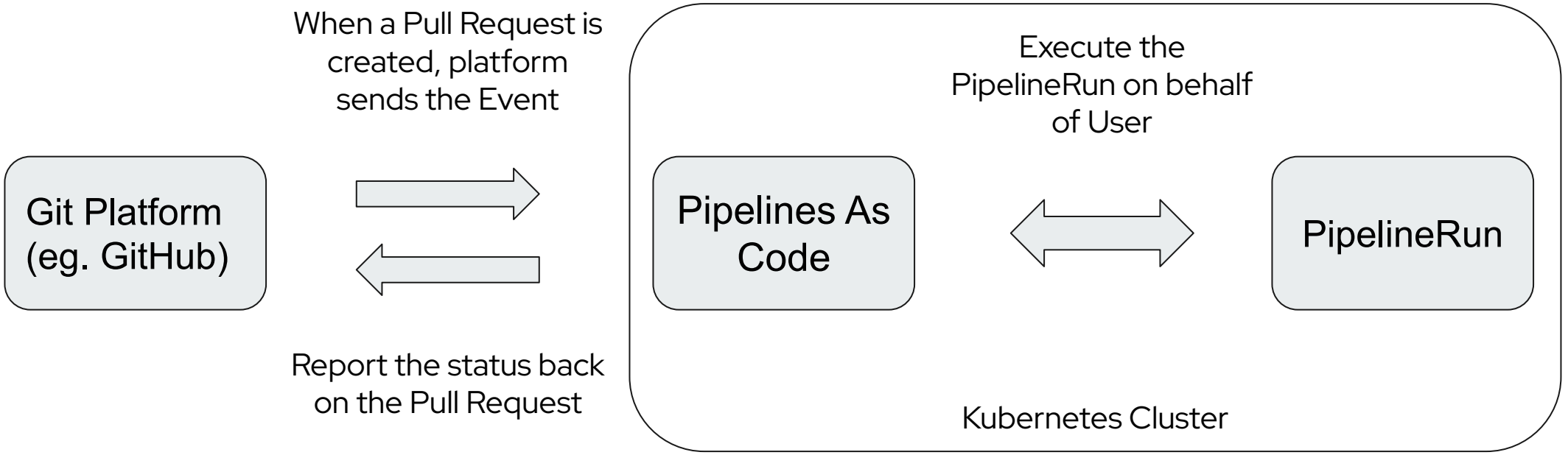
- Event triggering with Tekton!
- Triggers will execute pipeline but won't report



Pipelines As Code

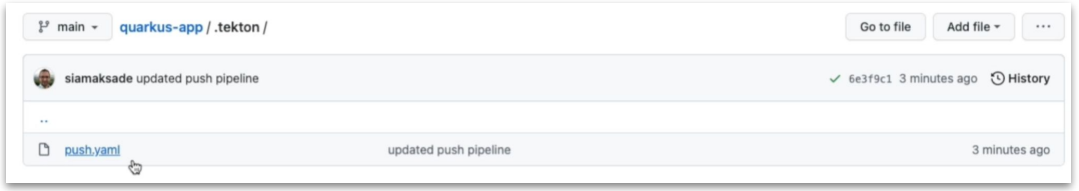
Red Hat

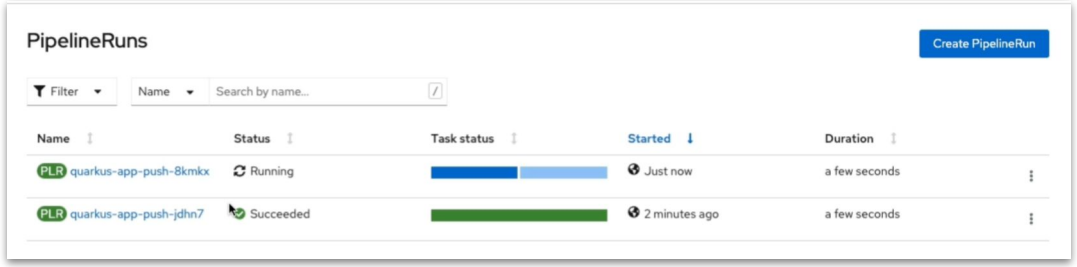
Overview

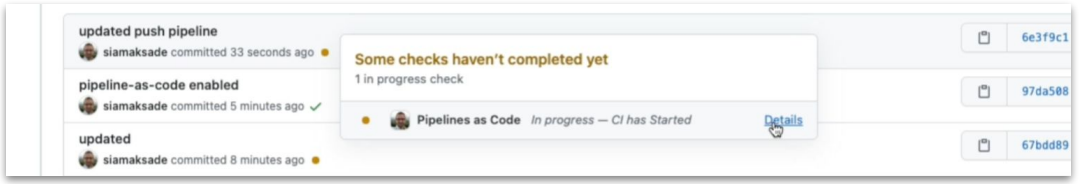


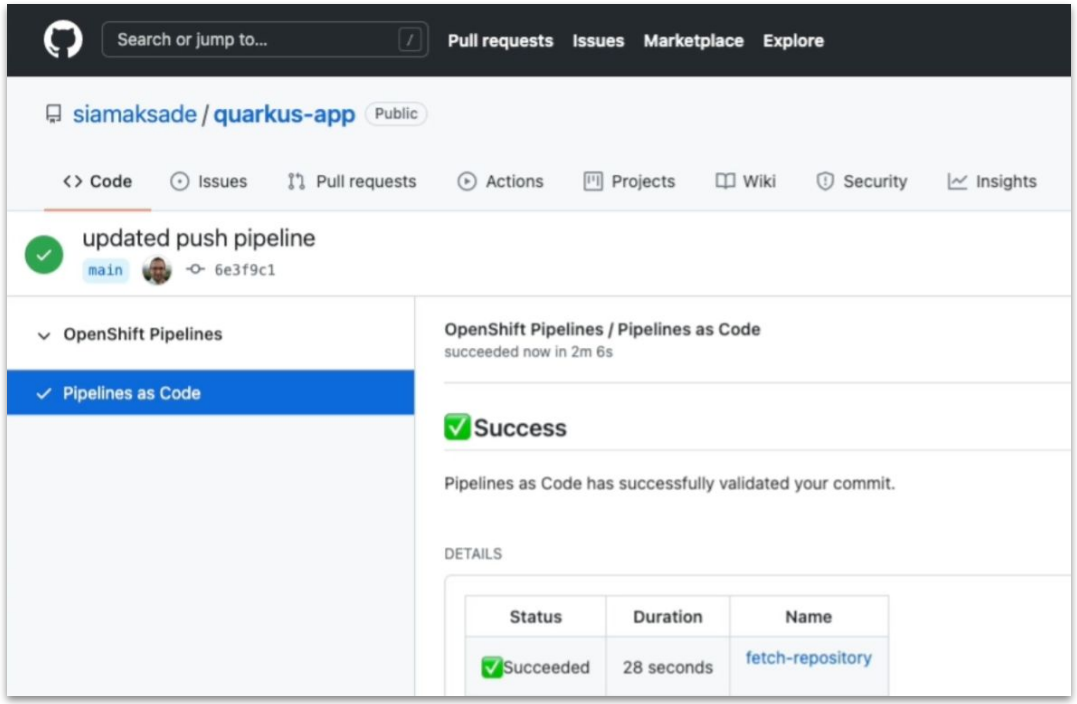
Pipelines as Code

- Git as the source of pipeline definition
- Pipelines retrieved and run from Git
- Pipeline per Git event (push, pull-request)
- Pipeline status on GitHub commit and pr
- Integrated with GitHub Checks
- Restart pipelines via pull-request comments



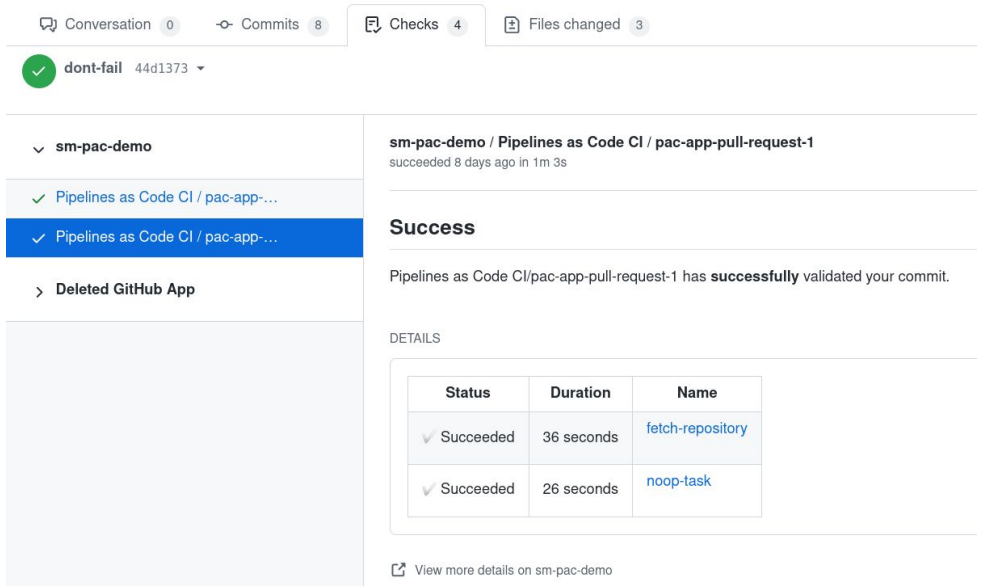


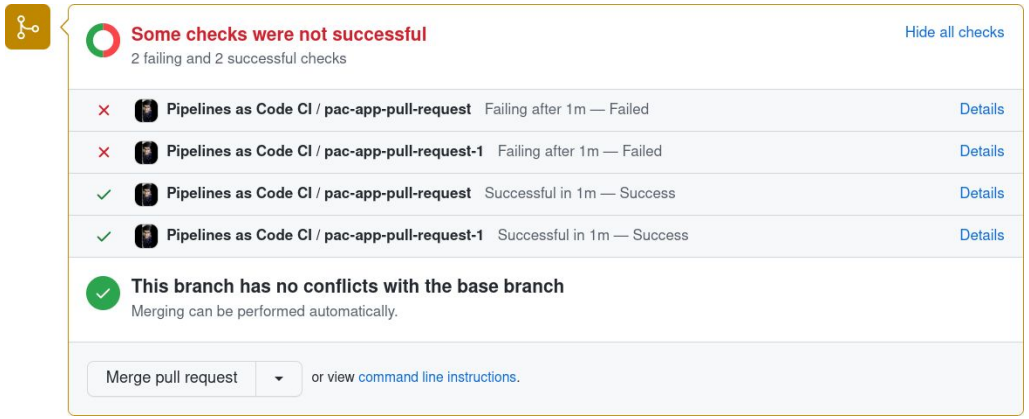


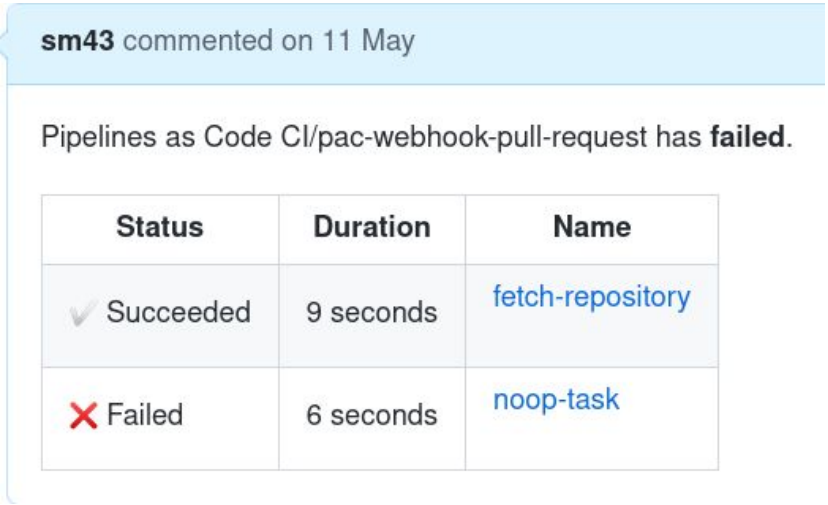


Pipelines as Code

- Support using
  - GitHub App
  - Webhook
    - GitHub
    - GitLab
    - Bitbucket Cloud/Server



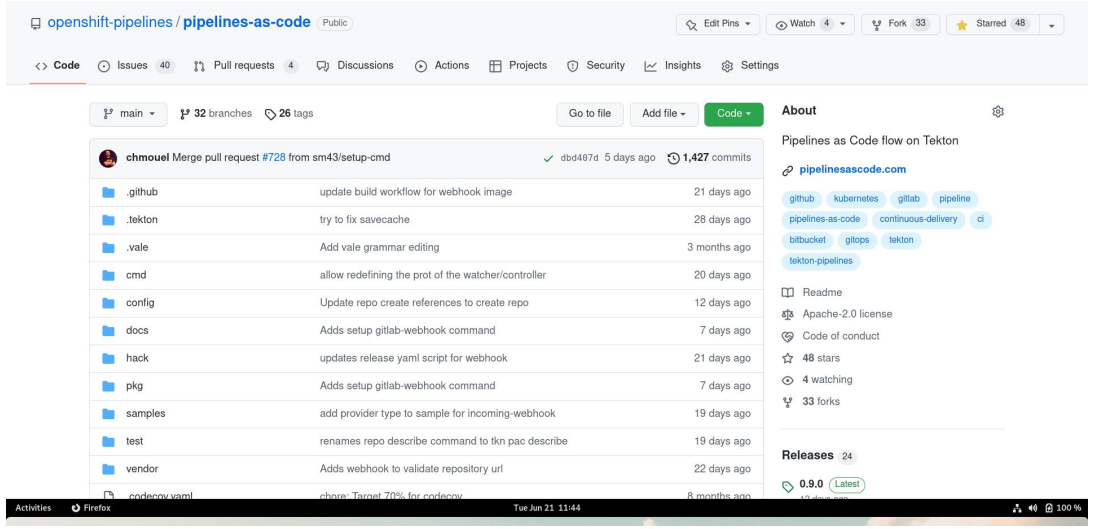


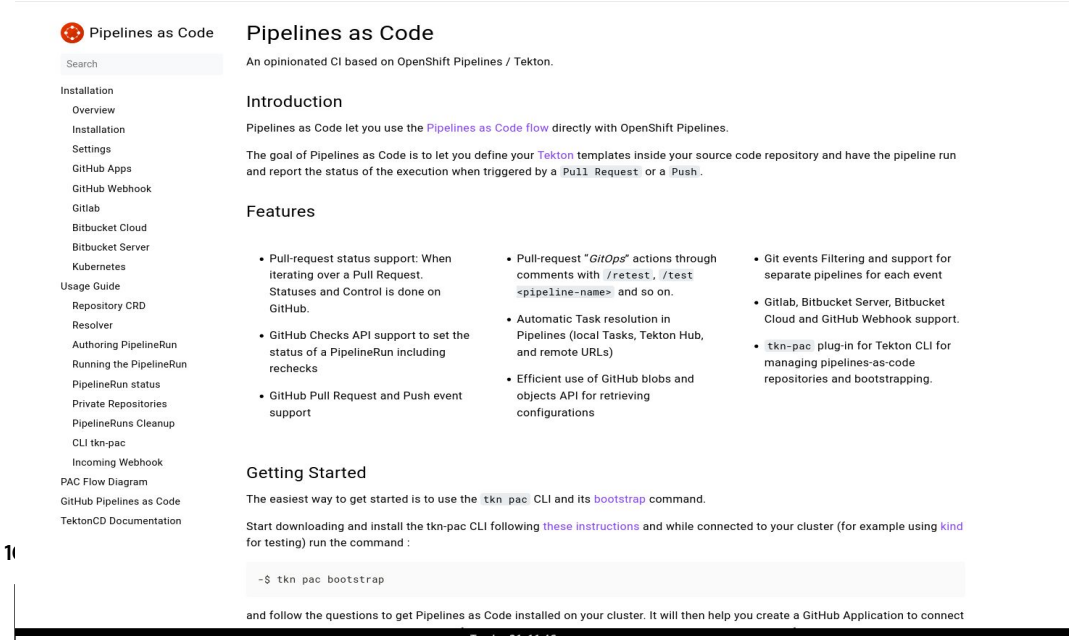


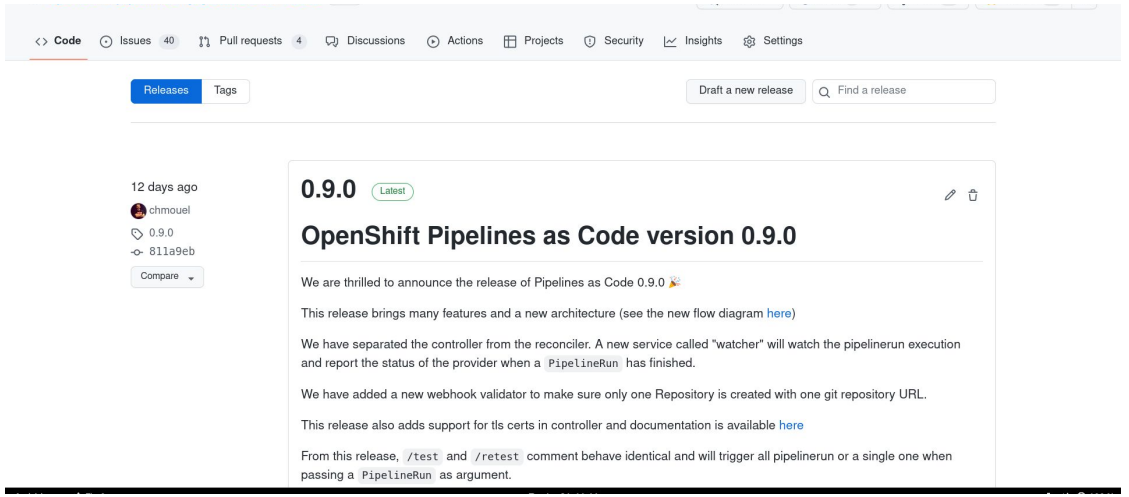
Red Hat

What's Next?

- [openshift-pipelines/pipelines-as-code](https://github.com/openshift-pipelines/pipelines-as-code)
- https://pipelinesascode.com/







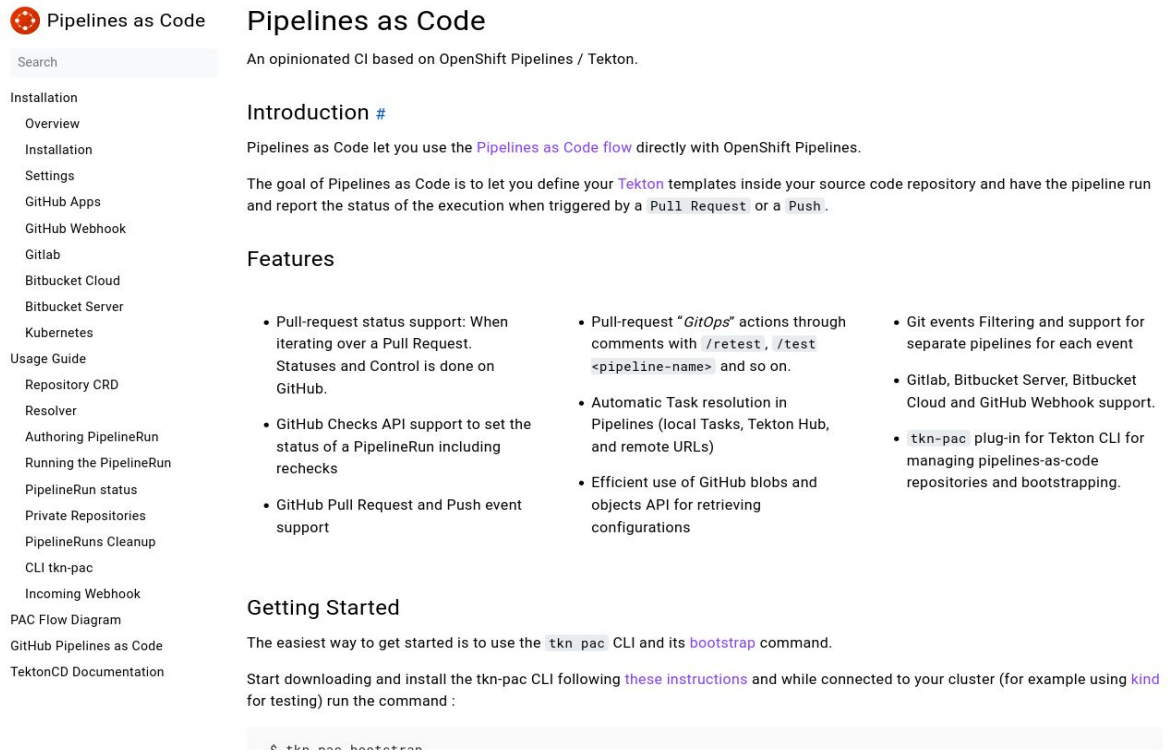
Red Hat

References

- Pipelines As Code
- https://pipelinesascode.com/

Blogs: (sm43.medium.com)

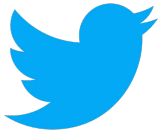
- World of Tekton
- OpenShift/Tekton Pipelines As Code



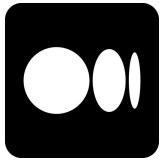
Red Hat

Thank you

sm43



@smeee43



sm43

sm43 (k8s / tektoncd)

Red Hat