Tekton 101

—

Andrea Frittoli
Open Source Developer Advocate
andrea.frittoli@uk.ibm.com

@blackchip76

—

KubeCon and CloudNativeCon
North America 2019

November 19th 2019

# A Bit of History

Knative

- Beginning of 2018...
- Knative:
    - Build
    - Eventing
    - Serving

- OpenSource
- Contributors:
    - Google
    - Pivotal
    - IBM
    - RedHat
    - Cloudbees
    - ...and others

Community

- Steering Commitee (SC)
- Technical Oversight Commitee (TOC)
- Dedicated Working Groups (WG)
- Various Contribution profiles
- Design, issues: on GitHub
- Communication:
    - WG periodic meetings, recorded
    - Asynch: Knative Users / Developers ML
    - Sync: slack.knative.dev
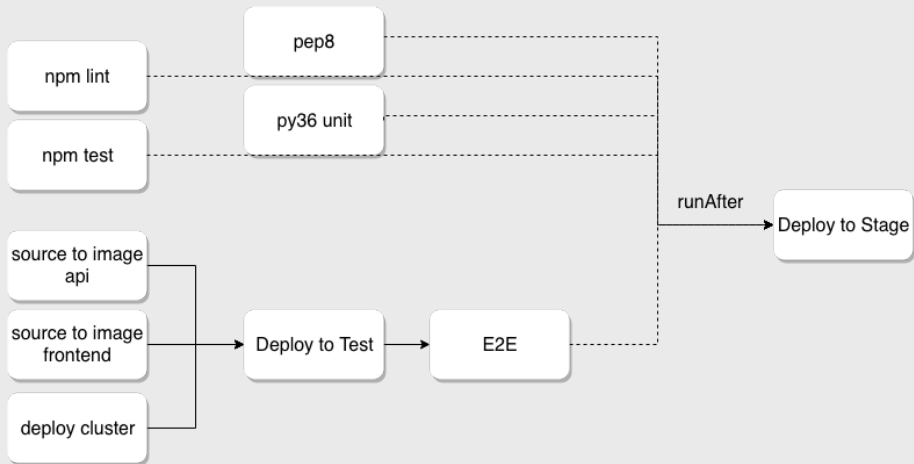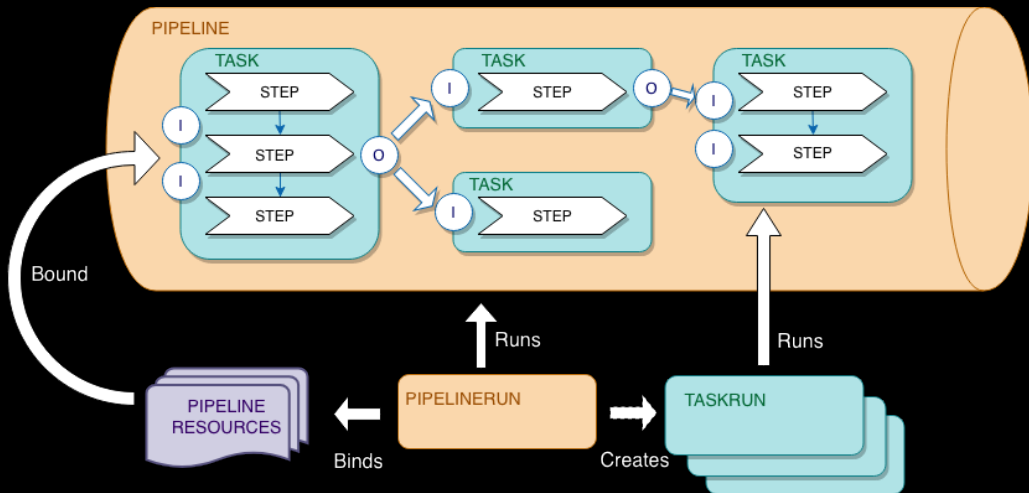
~Sept 2018: Knative Pipelines

Latest news!

- Tekton pipelines (March 2019)
- Focus on CI/CD
- @CD Foundation (March 2019)
- Deploy "anywhere"
- Replaces Knative Build (June 2019)
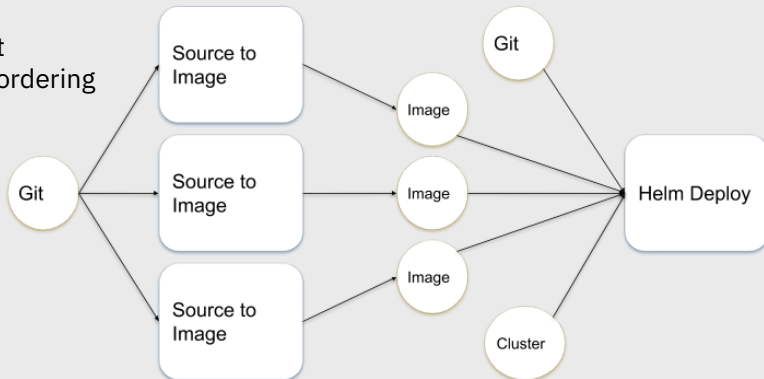- Bootstrap governance

Tekton Pipelines

Cloud Native Pipelines

Sample pipeline

- Steps are sequential
- Tasks are a Directed Acyclic Graph
- Order defined by:
    - *from*: input / output
    - *runAfter*: enforced ordering

Sample Task: Source to Image

Source to Image (spec only):

```
inputs:
  resources:
    - name: workspace
      type: git
  params:
    - name: pathToDockerFile
      default: Dockerfile
    - name: pathToContext
      default: .
    - name: useImageCache
      default: "true"
    - name: imageTag
      default: "default"
outputs:
  resources:
    - name: builtImage
      type: image
volumes:
  - name: kaniko-base-image-cache
    persistentVolumeClaim:
      claimName: kaniko-base-image-cache
steps:
  - name: build-and-push
    image: gcr.io/kaniko-project/executor
    command:
      - /kaniko/executor
```

```
args:
  - --cache=${inputs.params.useImageCache}
  - --cache-dir=/cache
  - --dockerfile=${inputs.params.pathToDockerFile}
  - --reproducible
  - --destination=${outputs.resources.builtImage.url}:${inputs.params.imageTag}
  - --context=/workspace/workspace/${inputs.params.pathToContext}
volumeMounts:
  - name: kaniko-base-image-cache
    mountPath: /cache
```

Pipeline as code

- Pipeline and Tasks:
  - Static definition, stored in git
- PipelineRuns and TaskRuns:
  - Specific to one execution
  - Generated programmatically
- Parameters and Resources:
  - Env / run specific

```yaml
apiVersion: tekton.dev/v1alpha1
kind: PipelineResource
metadata:
  name: health-helm-git-knative
  labels:
    tag: agreatrelease
spec:
  type: git
  params:
    - name: revision
      value: knative
    - name: url
      value: https://github.com/afrittoli/health-helm
```

```yaml
metadata:
  name: mycluster
spec:
  type: cluster
  params:
    - name: name
      value: mycluster
    - name: url
      value: https://mycluster.containers.cloud.ibm.com
    - name: username
      value: admin
  secrets:
    - fieldName: token
      secretKey: tokenKey
      secretName: cluster-secrets
    - fieldName: cadata
      secretKey: cadataKey
      secretName: cluster-secrets
```

```yaml
metadata:
  name: health-api-image
spec:
  type: image
  params:
    - name: url
      value: registry.ng.bluemix.net/andreaf/health-api
```

Tekton Projects

All Tekton projects

- Pipeline
- Dashboard
- CLI
- Catalog
- Trigger
- Plumbing

- Operator
- Community
- Friends
- Website (https://tekton.dev/)

References

- This Talk:
  https://github.com/afrittoli/tekton_pipelines_knative_intro/tree/oss-jp-2019
- Tekton Links:
    - https://tekton.dev/, https://cd.foundation/
    - https://github.com/tektoncd/pipeline
    - https://github.com/tektoncd/pipeline
    - https://github.com/tektoncd/pipeline/blob/master/api_compatibility_policy.md
    - https://github.com/tektoncd/pipeline/blob/master/roadmap-2019.md
- Knative Community: https://github.com/knative/docs/tree/master/community
- Kaniko: https://github.com/GoogleContainerTools/kaniko
- Source code and my blog:
    - https://github.com/afrittoli/health-helm/tree/knative
    - https://github.com/afrittoli/openstack-health/tree/knative-eventing
    - https://github.com/afrittoli/github_tekton_glue
    - https://andreafrittoli.me
- IBM Cloud: https://cloud.ibm.com

Q&A