

Tekton 101

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KubeCon and CloudNativeCon North
America 2019

A Bit of History

Knative

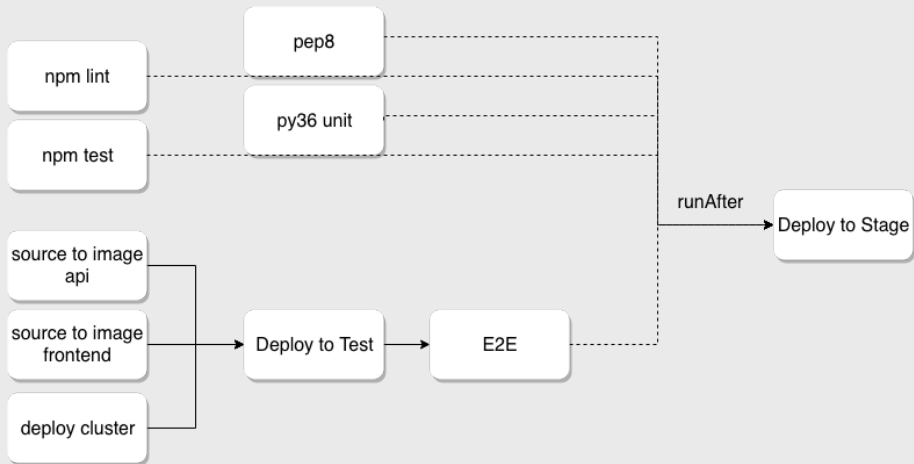
- Beginning of 2018...
- Knative:
 - Build
 - Eventing
 - Serving
- OpenSource
- Contributors:
 - Google
 - Pivotal
 - IBM
 - RedHat
 - Cloudbees
 - ...and others



Community

- Steering Committee (SC)
- Technical Oversight Committee (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

Going further



~Sept 2018: Knative Pipelines



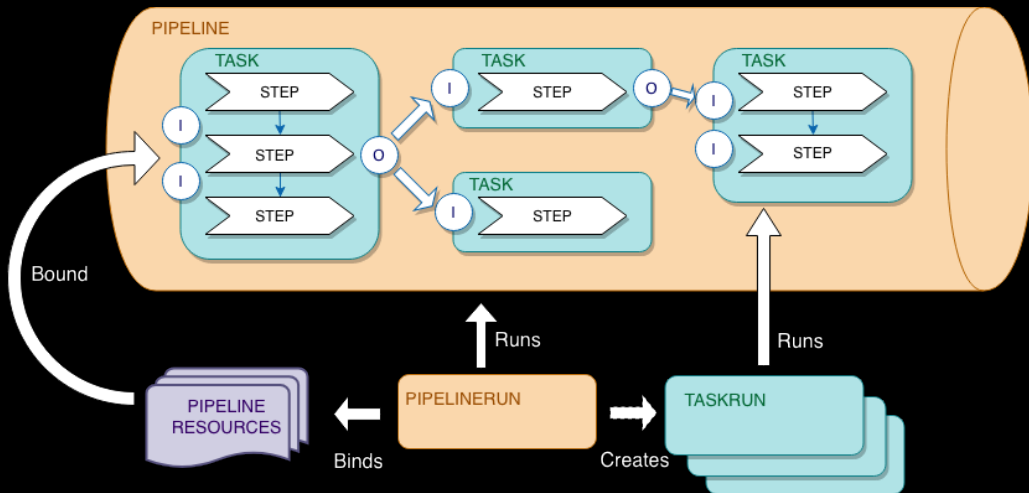
Latest news!

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



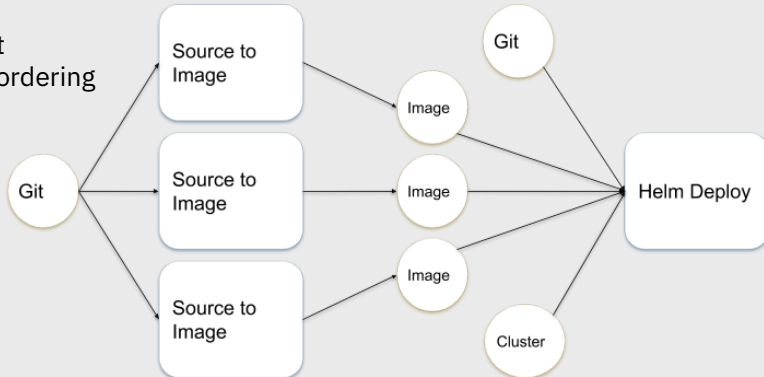
Tekton Pipelines

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

```
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
```

November 11th 2019

```
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
```

```
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