# Helm chart for installing Tekton pipelines

[Cogito Group’s](https://cogitogroup.co.uk) cloud agnostic and generic Tekton Helm chart to install DevOps pipelines ontop of Kubernetes with **one** command.

Source repository https://github.com/cogitogroupltd/tekton-helm-chart

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## 1. Summary

### 1.1. Features

* Values.yaml driven pipeline development
* Dynamic task generation
* Least-privilege with isolated permissions for each task run
* Create/Delete Github webhook tasks

### 1.2. Successfully tested on

* AWS EKS > v1.22
* OpenShift ROSA (OKD4)
* Openshift OKD3
* Kind [download](https://kind.sigs.k8s.io/) > v1.22
* Microk8s
* Rancher K3s
* Google Kubernetes Engine (GKE)

### 1.3. PreRequisties

In order to install the Tekton Helm chart you will need a Kubernetes cluster > v1.22 and the below tools

* Kubernetes cluster (optional, see [kind.md](./docs/kind.md) for deploying a local Kind cluster)
* Kubectl > v1.22
* Helm > v3.0
* AWS (optional, required for some examples)
* Docker (optional, required for running local Kubernetes Kind cluster and building/pushing images)
* SSH RSA Keypair with no passphrase placed at .auth/id\_rsa (optional: only if git clone uses git@ or the repository is private)
* ```bash  
   cd tekton-helm-chart  
   ssh-keygen -t rsa -f .auth/id\_rsa -b 4096 -m PEM -q -N ""  
   ```

See [prereqs.md](./docs/prereqs.md)

### 1.4. Install Tekton

# Install pipeline CRD  
# See here for version list https://github.com/tektoncd/pipeline/tags  
kubectl apply -f https://storage.googleapis.com/tekton-releases/pipeline/previous/v0.40.2/release.yaml  
# Install trigger and interceptor CRDs  
# See here for version list https://github.com/tektoncd/triggers/tags  
kubectl apply --filename https://storage.googleapis.com/tekton-releases/triggers/previous/v0.20.1/release.yaml  
kubectl apply --filename https://storage.googleapis.com/tekton-releases/triggers/previous/v0.20.1/interceptors.yaml  
  
# Install Tekton dashboard  
# See here for version list https://github.com/tektoncd/dashboard/tags  
kubectl apply --filename https://storage.googleapis.com/tekton-releases/dashboard/previous/v0.29.2/tekton-dashboard-release.yaml  
sleep 2  
kubectl get pods --namespace tekton-pipelines --watch  
  
# when complete  
sleep 3  
kubectl wait --for=condition=ready pod -n tekton-pipelines -l app=tekton-dashboard

* Expose the Tekton dashboard via Kind NodePort, must have installed using [cluster.yaml](./cluster.yaml) in [kind.md](./docs/kind.md)

kubectl delete service tekton-dashboard -n tekton-pipelines  
kubectl expose deployment tekton-dashboard --namespace tekton-pipelines --type=NodePort  
kubectl patch service tekton-dashboard --namespace=tekton-pipelines --type='json' --patch='[{"op": "replace", "path": "/spec/ports/0/nodePort", "value":30080}]'

OR

Navigate to Tekton Dashboard at http://localhost:30080

* Expose the Tekton dashboard via kubectl port-forward (using this method intermittent connection timeouts at the time of writing this)

kubectl port-forward svc/tekton-dashboard -n tekton-pipelines 8887:9097

Navigate to Tekton Dashboard at http://localhost:8887

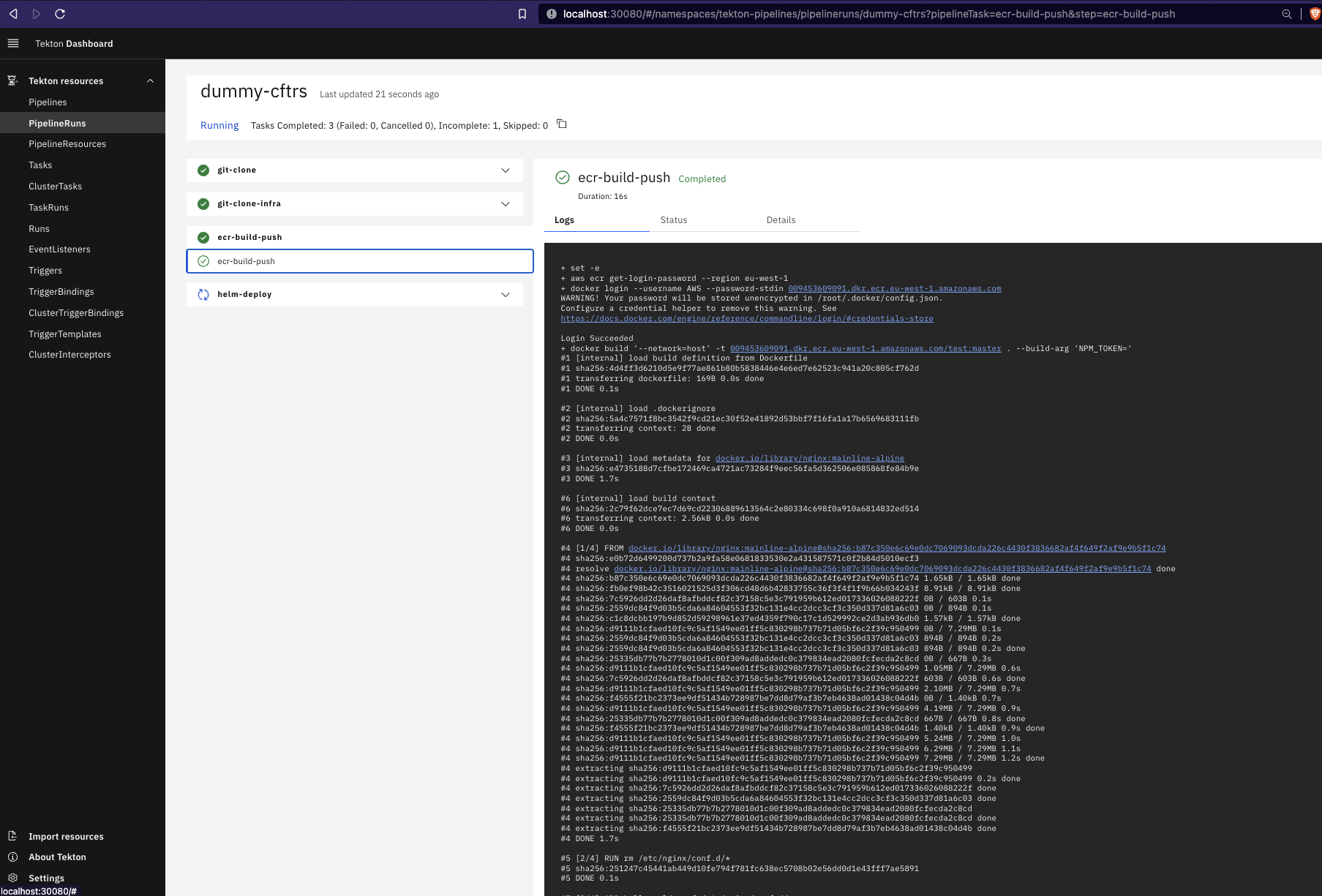
NOTE: The Tekton dashboard has a tendency to drop whilst using port-forwarding, to work around this hit CTRL+C and rerun the port forward command above.

## 2. Install pipelines examples

See raw-output.yaml files for example outputted Kubernetes YAML and example command used to generate.

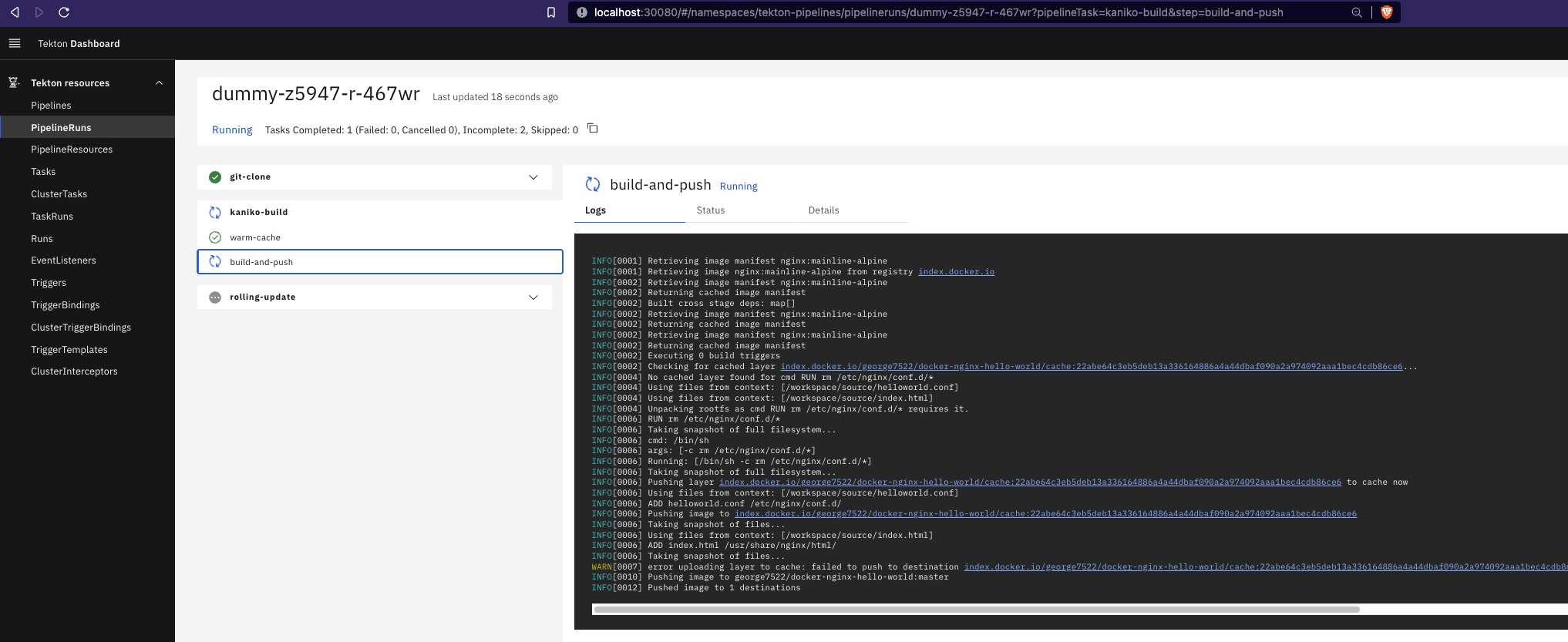
### 2.1. Example 1 - Clone, build and push docker image to ECR using Docker-in-docker

See example [README.md](./examples/tekton-ecr-build-deploy/README.md)



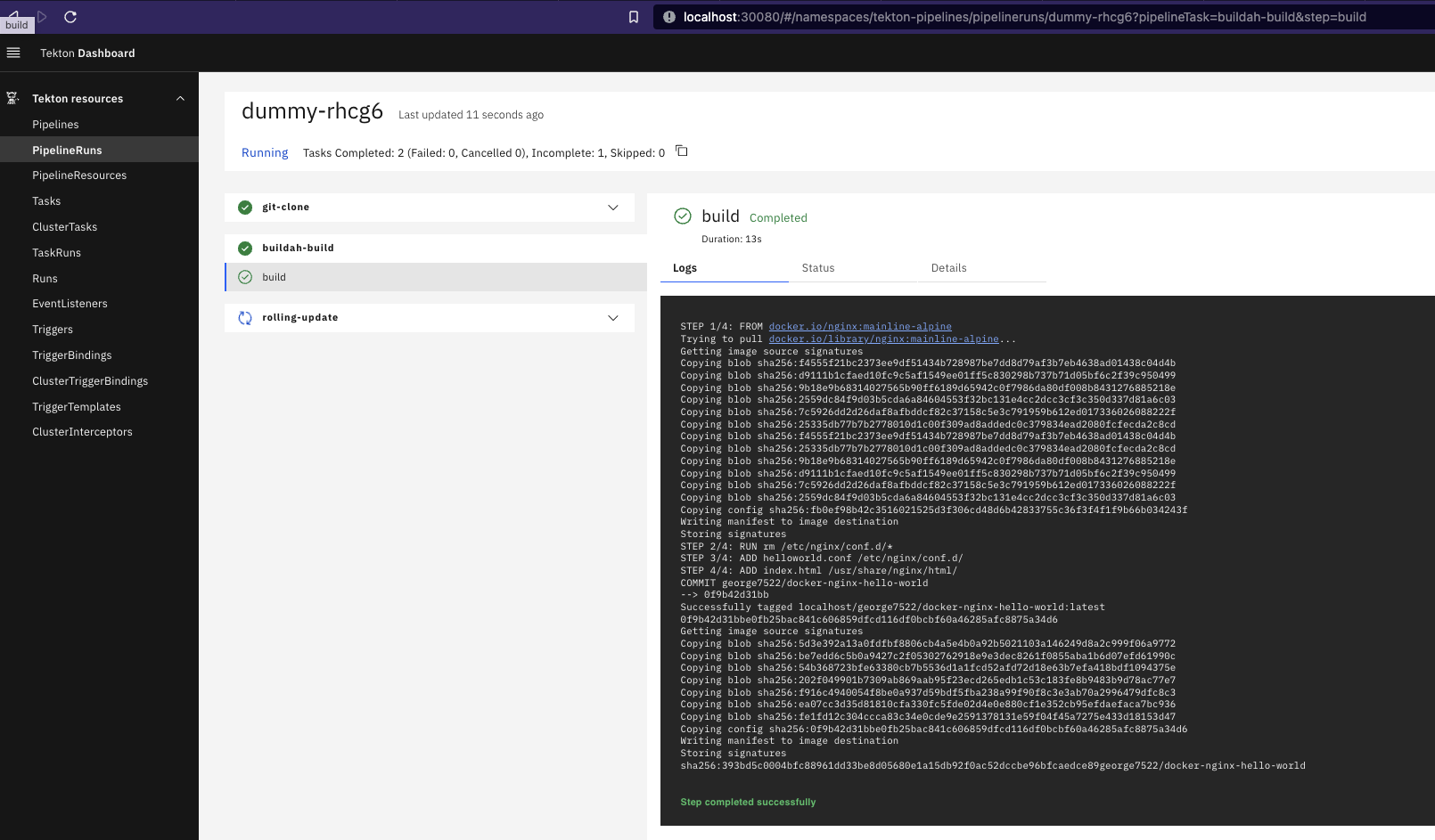
### 2.2. Example 2 - Clone, build and push docker image to Dockerhub using Kaniko

See example [README.md](./examples/tekton-kaniko-build-deploy/README.md)



### 2.3. Example 3 - Clone, build and push docker image to Dockerhub using Buildah

See example [README.md](./examples/tekton-buildah-build-deploy/README.md)



## 3. Todo

* Create Incubator project https://github.com/helm/community/blob/main/incubator.md
* Remove hard coding in triggerTemplate by moving all built-in tasks to use an array same as calling a global custom task
* Add docs on taskPodTemplate vs podTemplate whereby a taskPodTemplate overrides the podTemplate
* Examples - Incorpoate usage of eks.role.arn annotations to demonstrate easy utilisation of lease privilege
* Allow multiple installations of helm chart into same namespace; currently conflicts when task names are not unique
* Move resource defs from eventListener
* Remove dependency on cluster-admin ClusterRole by creating a new tekton-cluster-admin ClusterRole
* Documentation for Windows
* Test Documentation on WSL
* Create output-raw.yaml for each pipeline run
* Auto generate \_taskRun.yaml for custom-task in helm output via Notes.txt
* Auto generate a \_pipelineRun.yaml for each pipeline in helm output via Notes.txt
* Add taskcall[0].steps to override taskdefinition[0].steps so that a developer can use the same task but have the steps overridden. This fix requires dynamic task creation in the background. ## 4. Troubleshooting

See [FAQ.md](./docs/FAQ.md) or our [blog](https://cogitogroup.co.uk/blog)