Tekton Pipeline Configuration Guide

Pre-requisite:

- Kubernetes cluster.
- Kubectl

How to Install Kind Cluster:

1. Execute the below commands on your machine to install kind cluster:
    a. [$(uname -m) = aarch64] && curl -Lo ./kind https://kind.sigs.k8s.io/dl/v0.20.0/kind-linux-arm64
    b. chmod +x ./kind
    c. sudo mv ./kind /usr/local/bin/kind
2. Verify installation using the below command:
    a. kind –version
3. Create a cluster using the below command:
    a. kind create cluster

How to Install kubectl:

1. Execute the below commands on your machine to install kind cluster:
    a. curl -LO https://dl.k8s.io/release/$(curl -L -s https://dl.k8s.io/release/stable.txt)/bin/linux/amd64/kubectl
    b. curl -LO https://dl.k8s.io/$(curl -L -s https://dl.k8s.io/release/stable.txt)/bin/linux/amd64/kubectl.sha256
2. Validate the kubectl binary against the checksum file:
    a. echo "$(cat kubectl.sha256) kubectl" | sha256sum --check
3. Verify installation using the below command:
    a. kubectl version --client

Install Tekton Pipeline:

1. Execute the below commands on your machine to install Tekton Pipeline:
    a. kubectl apply --filename https://storage.googleapis.com/tekton-releases/pipeline/latest/release.yaml
2. Verify installation using the below command:
    a. kubectl get pods --namespace tekton-pipelines

```
root@[redacted]rver1:/home/server1/tekton# kubectl get pods --namespace tekton-pipelines
NAME                                           READY   STATUS    RESTARTS   AGE
tekton-events-controller-5fdf9cdd89-7d7cm      1/1     Running   0          11h
tekton-pipelines-controller-6465c4b5d-bww2l    1/1     Running   0          11h
tekton-pipelines-webhook-764d64c8bd-z7pks      1/1     Running   0          11h
root@[redacted]rver1:/home/server1/tekton#
```

Install Tekton CLI:

1. Execute the below commands on your machine to install Tekton CLI:
    a. curl -LO https://github.com/tektoncd/cli/releases/download/v0.31.1/tkn_0.31.1_Linux_x86_64.tar.gz
    b. sudo tar xvzf tkn_0.31.1_Linux_x86_64.tar.gz -C /usr/local/bin/ tkn
2. Verify the installation using the below command:
    a. tkn version

```
root@[redacted]-server1:/home/server1/tekton# tkn version
Client version: 0.31.1
Pipeline version: v0.50.0
root@suraj-server1:/home/server1/tekton#
```

Create Tekton Project

1. **Download the task script** on your local machine.

2. **Apply and execute the task.**

    To apply this task on Kubernetes cluster, use the below command:

    - kubectl apply -f **<Task file path>**

```
root@[redacted]erver1:/home/server1/tekton# kubectl apply -f task.yaml
task.tekton.dev/configure-acos-using-terraform configured
root@[redacted]erver1:/home/server1/tekton#
```

    Enter the below command to execute the task using Tekton:

    - tkn task start **<Task name>** --showlog

    Once you initiate task execution, the console will prompt you to specify the parameters in the command line in order to obtain the desired output.

```
root[redacted]:/home/server1/tekton# tkn task start configure-acos-using-terraform --showlog
? Value for param `REPO_URL` of type `string`? (Default is `https://github.com/a10networks/terraform-provider-thunder.git`) https://github.com/a10networks/terraform-provider-thunder.git
? Value for param `DIR_PATH` of type `string`? (Default is `examples/resources/thunder_gslb_group`) examples/resources/thunder_gslb_group
? Value for param `IP_ADDRESS` of type `string`? (Default is `10.10.10.10`) 10.64.3.183
? Value for param `USER_NAME` of type `string`? (Default is `admin`) admin
? Value for param `PASSWORD` of type `string`? (Default is `a10`) a10
? Value for param `PROVIDER_VERSION` of type `string`? (Default is `1.2.2`) 1.2.2
TaskRun started: configure-acos-using-terraform-run-qndxm
Waiting for logs to be available...
```

3. **Create a Pipeline**
    Download the pipeline script on your local machine.

4. **Apply and execute the pipeline**

To apply this pipeline on Kubernetes cluster, use the below command:

- kubectl apply -f **<Pipeline file path>**

```
root[redacted]erver1:/home/server1/tekton#
root[redacted]erver1:/home/server1/tekton# kubectl apply -f pipeline.yaml
pipeline.tekton.dev/terraform-pipeline created
```

Enter the below command to execute pipeline using Tekton:

- tkn task start **< Pipeline name>** --showlog

Once you initiate pipeline execution, the console will prompt you to specify the parameters in the command line in order to obtain the desired output.

```
root@sura[redacted]e/server1/tekton# tkn pipeline start terraform-pipeline --showlog
? Value for param `REPO_URL` of type `string`? (Default is `https://github.com/a10networks/terraform-provider-thunder.git`) https://github.com/a10networks/terraform-provider-thunder.git
? Value for param `DIR_PATH` of type `string`? (Default is `examples/resources/thunder_gslb_group`) examples/resources/thunder_gslb_group
? Value for param `IP_ADDRESS` of type `string`? (Default is `10.64.3.183`) 10.64.3.183
? Value for param `USER_NAME` of type `string`? (Default is `admin`) admin
? Value for param `PASSWORD` of type `string`? (Default is `a10`) a10
? Value for param `PROVIDER_VERSION` of type `string`? (Default is `1.2.2`) 1.2.2
PipelineRun started: terraform-pipeline-run-b2mkc
Waiting for logs to be available...
```

Stages:

- The **clone-repository** stage clones the terraform repository from GitHub.
- The **create-files** stage creates necessary Terraform configuration files.
- The **install-and-configure** stage prepares terraform environment then performs below task.
    - Initializes the Terraform environment.
    - Performs the Terraform plan operation.
    - Applies the Terraform changes with auto-approval.