µONOS - Deployment

Getting started procedure

Deploying µONOS microservices with HELM

Install dependencies

1) Install Docker by following the instructions on this page.
   Then follow the steps in this section.

2) Install golang:
   `sudo apt install golang`

3) Install Homebrew:[1]
   Run the command on this page.

   *When the installation is complete, it will **warn** you about the brew executable not being in your PATH. To resolve, follow the instructions in the '**Next steps**' section in the output.*

4) Install Helm:
   `brew install helm`

5) Install kind:
   `brew install kind`

6) Install kubectl:
   `brew install kubectl`

[1] *Uninstallation: run the command in this page.*

Start environments and deploy everything

Run these commands in order:

1) kind create cluster
2) cd ~
3) mkdir .kube
4) kind get kubeconfig > ~/.kube/kind
   If it lacks permission, run the following
   i) touch kind
   ii) chmod 777 .kube/kind
5) export KUBECONFIG=~/.kube/kind
   If running it for the first time:
   i) helm repo add cord https://charts.opencord.org
   ii) helm repo add atomix https://charts.atomix.io
   iii) helm repo add onosproject https://charts.onosproject.org
   iv) helm repo update
6) kubectl create namespace micro-onos
7) helm install -n kube-system atomix-controller atomix/atomix-controller
8) helm install -n kube-system atomix-raft-storage atomix/atomix-raft-storage
9) helm install -n kube-system onos-operator onosproject/onos-operator
10) helm -n micro-onos install onos-umbrella onosproject/onos-umbrella

Deploy/Redeploy a module (gnmi-netconf-adapter)

- If the module is already deployed in the cluster (do the following first):
  - Run: helm -n micro-onos delete gnmi-netconf-adapter
- Continue with:
  - Make sure the latest code is in the local repo
  - In the local repo run:
    - make deploy
    - make kind
  - Install adapter with:
    - helm -n micro-onos install gnmi-netconf-adapter **CHART**
    - **REPLACE CHART** with the correct directory path to onos-helm-charts/gnmi-netconf-adapter.

Check Logs

- First find the name of the pod you want to see the logs of:
    - kubectl -n micro-onos get pods
- Open the logs of the pod:
    - kubectl logs -f -n micro-onos pod/**NAME-OF-POD**
    - **Example of name:** gnmi-netconf-adapter-dd6b6cc44-t5p2h

Run CLI commands in the cluster

- Open bash in CLI pod without exact name of pod:
    - kubectl -n micro-onos exec -it $(kubectl -n micro-onos get pods -l type=cli -o name) -- /bin/sh
- Open bash in CLI pod with the exact name of a pod:
    - kubectl -n micro-onos exec -it **NAME-OF-POD** -- /bin/sh
    - **Example of name:** onos-cli-dd6b6cc44-t5p2h

Set up adapter as a device in onos-topo

1) Make sure that the **GNMI-NETCONF-ADAPTER** is **RUNNING** and that the model **DEVICESIM-1.0.0** is loaded into onos (can be checked by running “onos modelregistry list” in cli-module).
2) onos topo create entity my-adapter -a onos.topo.Configurable='{"address":"gnmi-netconf-adapter:11161", "version":"1.0.0", "type":"Devicesim"}' -a onos.topo.TLSOptions='{"insecure":true, "plain":true}' -a onos.topo.Asset='{"name":"my-adapter"}' -a onos.topo.MastershipState='{}' -k my-adapter
3) onos topo get objects
4) gnmi_cli -address onos-config:5150 -set -proto "update: <path: <target: 'my-adapter', elem: <name: 'system'> elem: <name: 'clock'> elem: <name: 'config'> elem: <name: 'timezone-name'>> val: <string_val: 'Europe/Dublin'>>" -en JSON -insecure
5) onos config get network-changes

Find more information about the system

Find IP of pods

- kubectl -n micro-onos get pods -o wide

Find more details about a pod

- kubectl -n micro-onos describe pod **NAME-OF-POD**
- **Example of name:** gnmi-netconf-adapter-7b6fd57bb-58fm6

Find installed charts in a namespace

- helm -n micro-onos ls

Access GUI

- Enable access with port-forward:
    - kubectl -n micro-onos port-forward $(kubectl -n micro-onos get pods -l type=gui -o name) 8182:80
- Access the GUI:
    - Open a browser and go to the address localhost:8182

Location of local repositories on the testbed

- Inside the directory gnmi_adapter_fredrik lies the directories:
    - gnmi-netconf-adapter
    - onos-helm-charts

Useful links

- Default charts:
  - https://github.com/onosproject/onos-helm-charts.git
- Our repository with added charts:
  - https://github.com/Jojjer123/onos-helm-charts.git
- Our implementation of the adapter:
  - https://github.com/Jojjer123/gnmi-netconf-adapter.git
- Resource for understanding NETCONF:
  - https://trac.ietf.org/trac/edu/raw-attachment/wiki/IETF94/94-module-3-netconf.pdf