~~Mini-loop update~~ ?

ml_install.sh

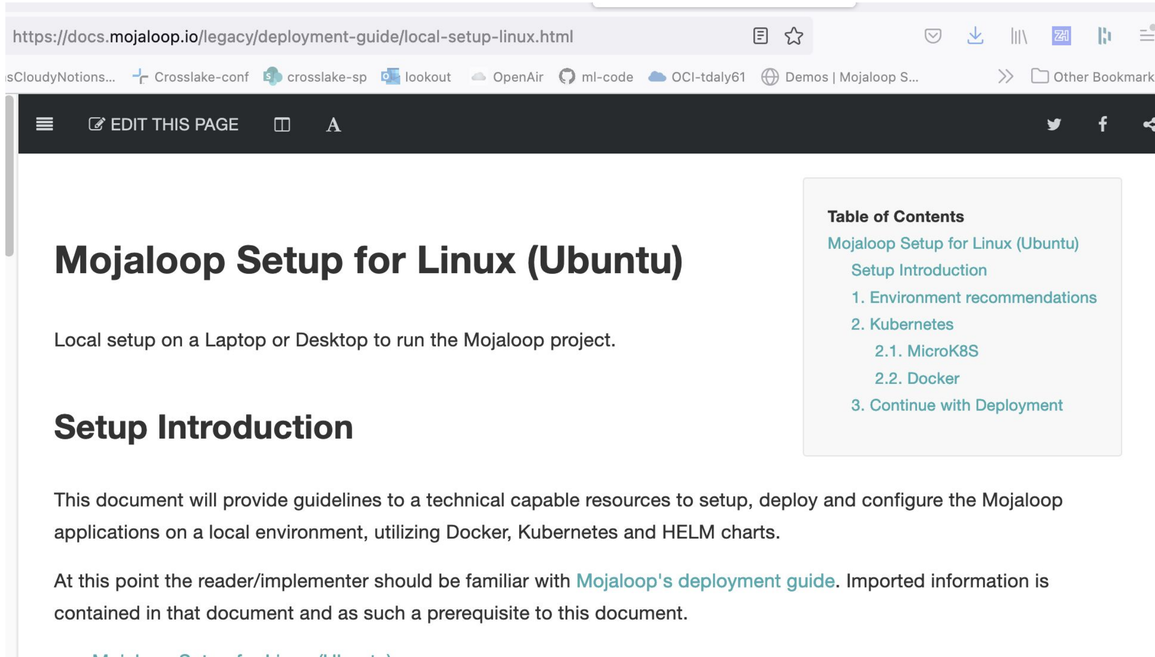
plus some other utils

Agenda

- What is it ?
- Research / Demonstrations
- Next steps

What is/was mini-loop

- Automation of the Mojaloop getting started document
- A tool to enable a “successful out of the box experience”
- A tool to enable easy fast, repeatable deploy and test :-
  - different k8s engines, versions, architectures, environments
  - Local (on laptop) and remote



mini-loop now(-ish)

```
git clone https://github.com/tdaly61/mini-loop.git
cd mini-loop/vbox-deploy
vagrant up
```

:

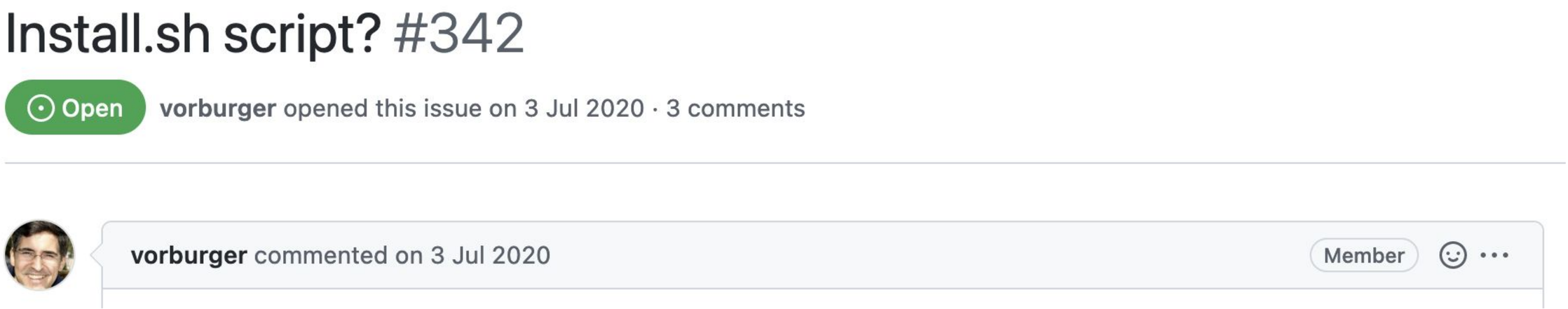
- Starts a VirtualBox VM / Provisions Cloud VM
- Configures the (linux) operating system
  - hosts file, for ingress endpoints
  - any needed packages
- Installs kubernetes engine (Microk8s)
- Configures or installs helm,
- Install and configure kubectl
- Install / configure ingress controller

:

- Helm install mojaloop
- Curl health endpoints
- Setup for testing toolkit tests
- Run testing toolkit tests (helm test)
  - Report success / failure
- Enable TTK demo-mode

- also mini-loop very much drawn on today for testing v14 charts across multiple k8s releases

What is mini-loop (nearly)



git clone mojaloop helm repo
cd ./helm/install
./ml_install.sh -k <engine> -u <user> -m <ml version> -d <directory> -f <values file>

Plus a few other utility scripts

Benefits

- Best possible OOTB experience
- Local or in-cloud or even cloud vendor k8s engine
- Lower the mojaloop-help slack channel burden/experience
- Quick repeatable install enables testing/dev
  - Enable users to create own sandbox ?
  - Testing across multiple engines/releases (e.g. v14)
  - Research tool
-

Research example
ML on K8s V1.22/23 “Today”

- Git clone mini-loop
- Git clone mojaloop helm repo 13.1.x
- K8s-install.sh -v 1.22/1.23 # install and configure microk8s
- mod_charts -d . -i # make charts conform to latest k8s standards
- ./package.sh; helm install

*k8s moves quickly => helps to keep ahead of this
e.g. docker to containerd issues.

```
NAME                                                     READY   STATUS    RESTARTS        AGE
ml-sim-testfsp1-cache-74557fc6c8-g6np6                   1/1     Running   0               5d3h
ml-sim-testfsp2-backend-56f6789446-nm2cg                 1/1     Running   0               5d3h
ml-sim-payerfsp-backend-546d9f5d99-569k7                 1/1     Running   0               5d3h
ml-sim-testfsp2-cache-874b74675-jvhtg                    1/1     Running   0               5d3h
ml-ml-testing-toolkit-backend-0                          1/1     Running   0               5d3h
ml-account-lookup-mysql-565b5cb96d-4zs88                 1/1     Running   0               5d3h
ml-sim-payeefsp-cache-7fcd6758ff-dpndr                   1/1     Running   0               5d3h
ml-sim-payerfsp-cache-5cbfd4b888-h9tn8                   1/1     Running   0               5d3h
ml-sim-testfsp4-cache-76f6b5bb6f-9kpmr                   1/1     Running   0               5d3h
ml-cep-mongodb-6596448448-btpp5                          1/1     Running   0               5d3h
ml-sim-testfsp3-cache-6d6c49b468-vfwcr                   1/1     Running   0               5d3h
ml-ml-testing-toolkit-frontend-bbfc8c746-sdpcz           1/1     Running   0               5d3h
ml-centralledger-mysql-567dc867f6-mbcj9                  1/1     Running   0               5d3h
ml-sim-payeefsp-backend-5878f55494-ftq8v                 1/1     Running   0               5d3h
ml-zookeeper-0                                           1/1     Running   0               5d3h
ml-sim-testfsp3-backend-679f56bd79-5rzhk                 1/1     Running   0               5d3h
ml-ttk-mysql-647f7ddd8-7js87                             1/1     Running   0               5d3h
ml-sim-testfsp4-backend-664d8d84dd-xr7lv                 1/1     Running   0               5d3h
ml-simulator-78bf864cc5-lxvzb                            1/1     Running   0               5d3h
ml-sim-testfsp1-backend-67f9b457-7s68k                   1/1     Running   0               5d3h
ml-mysql-d9db648c-rgqxj                                  1/1     Running   0               5d3h
ml-kafka-exporter-f85686bb-zvmrx                         1/1     Running   4 (5d3h ago)    5d3h
ml-transaction-requests-service-659d5fcf54-gts94         2/2     Running   0               5d3h
ml-sim-testfsp2-scheme-adapter-775bf57fb-qlbhq           1/1     Running   3 (5d3h ago)    5d3h
ml-sim-payeefsp-scheme-adapter-5c6dc5f55b-cnghw          1/1     Running   3 (5d3h ago)    5d3h
ml-centralledger-service-5d44645b46-lgx4s                1/1     Running   0               5d3h
ml-sim-testfsp1-scheme-adapter-5cffcdbd69-pqkxx          1/1     Running   3 (5d3h ago)    5d3h
ml-sim-testfsp4-scheme-adapter-f6d68f966-mjqjc           1/1     Running   3 (5d3h ago)    5d3h
ml-sim-testfsp3-scheme-adapter-589d87c95-m4zhc           1/1     Running   3 (5d3h ago)    5d3h
ml-sim-payerfsp-scheme-adapter-69d7fb4fc9-5fgd5          1/1     Running   3 (5d3h ago)    5d3h
ml-quoting-service-d88d5d65d-x6szt                       2/2     Running   0               5d3h
ml-account-lookup-service-admin-575674dff6-q77l6         2/2     Running   2 (5d3h ago)    5d3h
ml-account-lookup-service-867c4d9fc7-87zln               2/2     Running   2 (5d3h ago)    5d3h
ml-kafka-0                                               2/2     Running   1 (5d3h ago)    5d3h
ml-centralsettlement-service-d88d5b747-d2dn7             2/2     Running   0               5d3h
ml-ml-api-adapter-service-f64d975f5-6tgjn                2/2     Running   0               5d3h
ml-centraleventprocessor-767c4f5688-kjw8w                1/1     Running   1 (5d3h ago)    5d3h
ml-centralledger-handler-admin-transfer-7659fc47-h7hcg   1/1     Running   0               5d3h
ml-centralledger-handler-transfer-position-ff66878db-vgdkp   2/2     Running   1 (5d3h ago)    5d3h
ml-centralledger-handler-transfer-get-5d68495d4f-xmdcq   1/1     Running   1 (5d3h ago)    5d3h
ml-centralsettlement-handler-rules-5bd7479f88-j8z7d      2/2     Running   1 (5d3h ago)    5d3h
ml-centralledger-handler-transfer-fulfil-75ff8cc466-jx77l   2/2     Running   1 (5d3h ago)    5d3h
ml-centralsettlement-handler-grosssettlement-559585f897-dxzbq   2/2     Running   1 (5d3h ago)    5d3h
ml-centralledger-handler-timeout-6f569b7dc7-4sbbf        2/2     Running   0               5d3h
ml-ml-api-adapter-handler-notification-754dd6b688-7zjwn  2/2     Running   0               5d3h
ml-centralsettlement-handler-deferredsettlement-57c9d885d85c9p7   2/2     Running   0               5d3h
ml-centralledger-handler-transfer-prepare-75cbfbcc5c-5hgcv   2/2     Running   0               5d3h
ubuntu@ip-172-31-0-181:~$ curl -s http://ml-api-adapter.local/health
{"status":"OK","uptime":445578.145671337,"startTime":"2022-04-26T09:27:35.866Z","versionNumber":"13.0.0","services":[{"
```

k8s version 1.22
containerd (not docker)
X86 (AWS)

Research
ML on Arm today outline

- Git clone mini-loop
- Git clone mojaloop helm repo 13.1.x
- do-arm64.sh -m build_images -c convert_to_containerd -u ubuntu

- ./package.sh; helm install ml ./mojaloop # install from local

Research
ML on Arm64

Rationale :

- Save (significantly ?) on “cloud costs”
  - Eg. graviton worker nodes/VMs on AWS
  - Other cloud providers embracing arm $$ economics
- ARM power util is current advantage
- OCI free tier gives 8GB arm instances => very handy for testing ML
- Mac M1 support (to aid dev of Mojaloop)
- Raspberry PI 4 (5?) clusters as test/dev or edge applications ?

Research
ML on Arm64


```
ubuntu@ubuntu1:~/work$ k get pods
NAME                                                READY   STATUS    RESTARTS   AGE
cl-centralledger-mysql-55b9859c44-tqp8t             1/1     Running   0          3m33s
cl-zookeeper-0                                      1/1     Running   0          3m33s
cl-centralledger-service-55f7954449-4t5pj           0/1     Running   0          3m33s
cl-kafka-0                                          1/1     Running   3          3m33s
cl-centralledger-handler-transfer-fulfil-6c9bc4787f-kpbx6   0/1     Running   0          3m33s
cl-centralledger-handler-transfer-prepare-6fb7c6b66d-z5lj6  0/1     Running   0          3m33s
cl-centralledger-handler-admin-transfer-5487648875-ctmrk    0/1     Running   0          3m33s
cl-centralledger-handler-transfer-get-564b8d9cf9-5xfqb      0/1     Running   0          3m33s
cl-centralledger-handler-transfer-position-6d8dc6898b-jdpjg 0/1     Running   0          3m33s
cl-centralledger-handler-timeout-568468d75f-hmdtg           0/1     Running   0          3m33s
ubuntu@ubuntu1:~/work$ curl http://general_ledger.local/health
curl: (6) Could not resolve host: general_ledger.local
ubuntu@ubuntu1:~/work$ curl http://central_ledger.local/health
curl: (6) Could not resolve host: central_ledger.local
ubuntu@ubuntu1:~/work$ curl http://central-ledger.local/health
{"status":"OK","uptime":389.963164067,"startTime":"2022-04-17T13:11:08.688Z","versionNumber":"13.16.3","services":[{"name":"dat
astore","status":"OK"},{"name":"broker","status":"OK"}]}ubuntu@ubuntu1:~/work$ cd ../mini-loop/
ubuntu@ubuntu1:~/mini-loop$ git status
On branch installscript
```

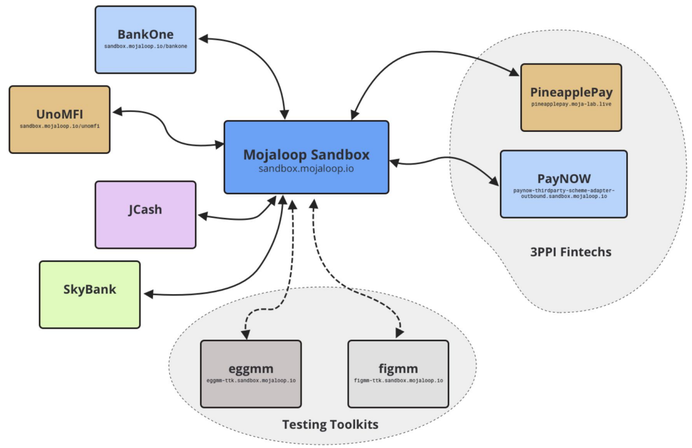
Research
ML on Arm64


```
ubuntu@ubuntu1:~/work$ uname -a
Linux ubuntu1 5.13.0-1027-oracle #32~20.04.1-Ubuntu SMP Fri Apr 15 06:01:57 UTC 2022 aarch64 aarch64 aarch64 GNU/Linux
ubuntu@ubuntu1:~/work$ free -h
               total        used        free      shared  buff/cache   available
Mem:           7.7Gi       1.9Gi       3.4Gi       3.0Mi       2.5Gi       5.8Gi
Swap:             0B          0B          0B
```

Research : Next steps ?

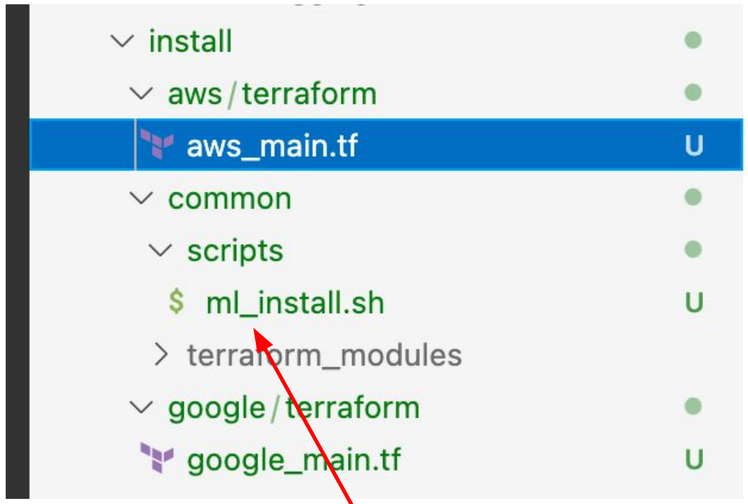
Further Converge with the Sandbox Environment:

- Developer Portal (sandbox.mojaloop.io page)
- Seed Environment (Oracles, Participants, Parties, simulators)
- Auto setup ttks
- Regression test + automated golden path tests



Research : Next steps ?

Initial thoughts on approach on new workstream for install on public cloud



Step #1 Terraform apply to create “cloud infrastructure”

Step #2
Terraform “provisioner” runs the ml_install.sh

This could be complementary to cloud vendor “market place” deployments e.g. Azure

** Important coordination & positioning with IaC is needed