```
vagrant@ubuntu-xenial:~$ cd python-virtual-environments/
vagrant@ubuntu-xenial:~/python-virtual-environments$ ls
env
vagrant@ubuntu-xenial:~/python-virtual-environments$ source env/bin/activate
(env) vagrant@ubuntu-xenial:~/python-virtual-environments$
```

```
vagrant@ubuntu-xenial: ~/python-virtual-environments                                — □ ×

(env) vagrant@ubuntu-xenial:~/python-virtual-environments$ python --version
Python 3.5.2
(env) vagrant@ubuntu-xenial:~/python-virtual-environments$ git --version
git version 2.19.1
(env) vagrant@ubuntu-xenial:~/python-virtual-environments$ docker --version
Docker version 18.06.1-ce, build e68fc7a
(env) vagrant@ubuntu-xenial:~/python-virtual-environments$ docker-compose --version
docker-compose version 1.23.0-rc3, build ea3d406e
(env) vagrant@ubuntu-xenial:~/python-virtual-environments$ nodejs --version
v6.14.4
(env) vagrant@ubuntu-xenial:~/python-virtual-environments$
```

```
vagrant@ubuntu-xenial: ~/HyperledgerComposer/fabric-dev-servers                                    —  □  ✕

v6.14.4
(env) vagrant@ubuntu-xenial:~/python-virtual-environments$ clear
(env) vagrant@ubuntu-xenial:~/python-virtual-environments$ cd
(env) vagrant@ubuntu-xenial:~$ cd HyperledgerComposer/
(env) vagrant@ubuntu-xenial:~/HyperledgerComposer$ ls
dist  fabric-dev-servers
(env) vagrant@ubuntu-xenial:~/HyperledgerComposer$ cd fabric-dev-servers/
(env) vagrant@ubuntu-xenial:~/HyperledgerComposer/fabric-dev-servers$ ls
composer-logs              downloadFabric.sh      _loader.sh      stopFabric.sh
createComposerProfile.sh   fabric-dev-servers.zip  package.json    teardownAllDocker.sh
createPeerAdminCard.sh     fabric-scripts        startFabric.sh  teardownFabric.sh
(env) vagrant@ubuntu-xenial:~/HyperledgerComposer/fabric-dev-servers$ export FABRIC_VERSION=hlfv1
(env) vagrant@ubuntu-xenial:~/HyperledgerComposer/fabric-dev-servers$ export FABRIC_START_TIMEOUT=15
```

```
(env) vagrant@ubuntu-xenial:~$ cd HyperledgerComposer/
(env) vagrant@ubuntu-xenial:~/HyperledgerComposer$ cd fabric-dev-servers/
(env) vagrant@ubuntu-xenial:~/HyperledgerComposer/fabric-dev-servers$ ls
composer-logs            downloadFabric.sh        _loader.sh           stopFabric.sh
createComposerProfile.sh  fabric-dev-servers.zip  package.json         teardownAllDocker.sh
createPeerAdminCard.sh    fabric-scripts          startFabric.sh       teardownFabric.sh
(env) vagrant@ubuntu-xenial:~/HyperledgerComposer/fabric-dev-servers$ ./startFabric.sh
Development only script for Hyperledger Fabric control
Running 'startFabric.sh'
FABRIC_VERSION is set to 'hlfv1'
FABRIC_START_TIMEOUT is set to '15'

#Detect architecture
ARCH=`uname -m`
uname -m

# Grab the current directory
DIR="$( cd "$( dirname "${BASH_SOURCE[0]}" )" && pwd )"
 cd "$( dirname "${BASH_SOURCE[0]}" )" && pwd
 dirname "${BASH_SOURCE[0]}"

#
ARCH=$ARCH docker-compose -f "${DIR}"/composer/docker-compose.yml down
Stopping peer0.org1.example.com ... done
Stopping ca.org1.example.com    ... done
Stopping orderer.example.com    ... done
Stopping couchdb                ... done
Removing peer0.org1.example.com ... done
Removing ca.org1.example.com    ... done
Removing orderer.example.com    ... done
Removing couchdb                ... done
Removing network composer_default
ARCH=$ARCH docker-compose -f "${DIR}"/composer/docker-compose.yml up -d
Creating network "composer_default" with the default driver
Creating couchdb                ... done
Creating ca.org1.example.com    ... done
Creating orderer.example.com ... done
Creating peer0.org1.example.com ... done

# wait for Hyperledger Fabric to start
# incase of errors when running later commands, issue export FABRIC_START_TIMEOUT=<larger numb
er>
echo ${FABRIC_START_TIMEOUT}
15
sleep ${FABRIC_START_TIMEOUT}
```
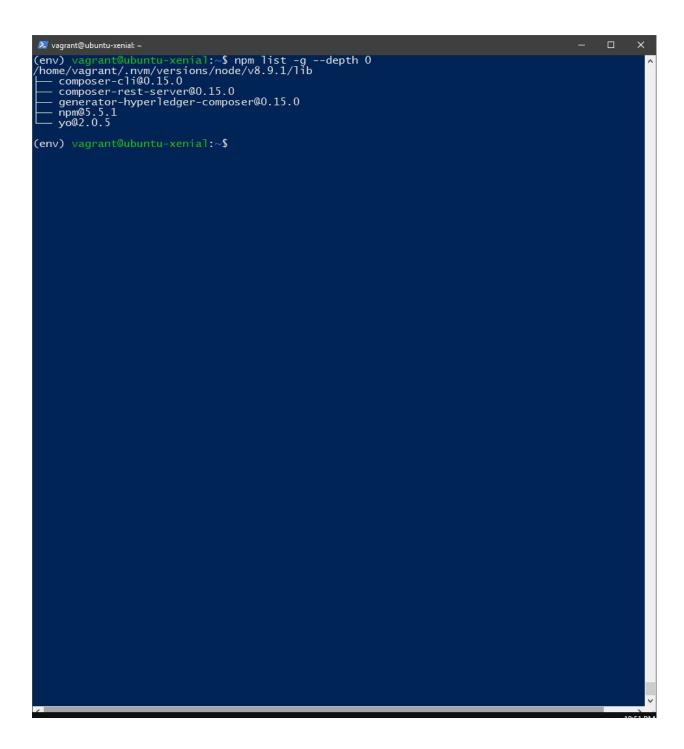
```
vagrant@ubuntu-xenial: ~/HyperledgerComposer/fabric-dev-servers

2018-11-19 03:41:30.859 UTC [msp] GetDefaultSigningIdentity -> DEBU 005 Obtaining default sign
ing identity
2018-11-19 03:41:30.859 UTC [msp] GetLocalMSP -> DEBU 006 Returning existing local MSP
2018-11-19 03:41:30.859 UTC [msp] GetDefaultSigningIdentity -> DEBU 007 Obtaining default sign
ing identity
2018-11-19 03:41:30.860 UTC [msp/identity] Sign -> DEBU 008 Sign: plaintext: 0A8C060A074F72673
14D53501280062D...6D706F736572436F6E736F727469756D
2018-11-19 03:41:30.860 UTC [msp/identity] Sign -> DEBU 009 Sign: digest: DE32B673CB77ECE51C17
5FC8729099E0DB5A1F5495B7251865A815068D03081B
2018-11-19 03:41:30.860 UTC [msp] GetLocalMSP -> DEBU 00a Returning existing local MSP
2018-11-19 03:41:30.860 UTC [msp] GetDefaultSigningIdentity -> DEBU 00b Obtaining default sign
ing identity
2018-11-19 03:41:30.861 UTC [msp] GetLocalMSP -> DEBU 00c Returning existing local MSP
2018-11-19 03:41:30.861 UTC [msp] GetDefaultSigningIdentity -> DEBU 00d Obtaining default sign
ing identity
2018-11-19 03:41:30.861 UTC [msp/identity] Sign -> DEBU 00e Sign: plaintext: 0AC9060A1B08021A0
608EAE1C8DF0522...D6EBA79B9FD4A95FDBC4B65098D5DFB0
2018-11-19 03:41:30.861 UTC [msp/identity] Sign -> DEBU 00f Sign: digest: 1A8AD921C4568CFB3079
72A3C52AB7F97E86F3BF01DCCD0F528CC556005FC8DA
2018-11-19 03:41:30.924 UTC [msp] GetLocalMSP -> DEBU 010 Returning existing local MSP
2018-11-19 03:41:30.924 UTC [msp] GetDefaultSigningIdentity -> DEBU 011 Obtaining default sign
ing identity
2018-11-19 03:41:30.924 UTC [msp] GetLocalMSP -> DEBU 012 Returning existing local MSP
2018-11-19 03:41:30.924 UTC [msp] GetDefaultSigningIdentity -> DEBU 013 Obtaining default sign
ing identity
2018-11-19 03:41:30.924 UTC [msp/identity] Sign -> DEBU 014 Sign: plaintext: 0AC9060A1B08021A0
608EAE1C8DF0522...F4BD95C858CD12080A021A0012021A00
2018-11-19 03:41:30.924 UTC [msp/identity] Sign -> DEBU 015 Sign: digest: 9B01F6F8E60245A304C7
C761A9D64637197647CFDA96A1A0DCA7B0E027B9A111
2018-11-19 03:41:30.925 UTC [channelCmd] readBlock -> DEBU 016 Got status: &{NOT_FOUND}
2018-11-19 03:41:30.925 UTC [msp] GetLocalMSP -> DEBU 017 Returning existing local MSP
2018-11-19 03:41:30.925 UTC [msp] GetDefaultSigningIdentity -> DEBU 018 Obtaining default sign
ing identity
2018-11-19 03:41:30.926 UTC [channelCmd] InitCmdFactory -> INFO 019 Endorser and orderer conne
ctions initialized
2018-11-19 03:41:31.130 UTC [msp] GetLocalMSP -> DEBU 01a Returning existing local MSP
2018-11-19 03:41:31.130 UTC [msp] GetDefaultSigningIdentity -> DEBU 01b Obtaining default sign
ing identity
2018-11-19 03:41:31.130 UTC [msp] GetLocalMSP -> DEBU 01c Returning existing local MSP
2018-11-19 03:41:31.130 UTC [msp] GetDefaultSigningIdentity -> DEBU 01d Obtaining default sign
ing identity
2018-11-19 03:41:31.130 UTC [msp/identity] Sign -> DEBU 01e Sign: plaintext: 0AC9060A1B08021A0
608EBE1C8DF0522...6335F3238A0012080A021A0012021A00
2018-11-19 03:41:31.130 UTC [msp/identity] Sign -> DEBU 01f Sign: digest: 85C77238390A6A4FDC05
249B34F75D08A237CA723531213E01D8F21878D0512B
2018-11-19 03:41:31.133 UTC [channelCmd] readBlock -> DEBU 020 Received block: 0
2018-11-19 03:41:31.134 UTC [main] main -> INFO 021 Exiting.....

# Join peer0.org1.example.com to the channel.
docker exec -e "CORE_PEER_MSPCONFIGPATH=/etc/hyperledger/msp/users/Admin@org1.example.com/msp"
 peer0.org1.example.com peer channel join -b composerchannel.block
2018-11-19 03:41:31.602 UTC [msp] GetLocalMSP -> DEBU 001 Returning existing local MSP
2018-11-19 03:41:31.602 UTC [msp] GetDefaultSigningIdentity -> DEBU 002 Obtaining default sign
ing identity
2018-11-19 03:41:31.604 UTC [channelCmd] InitCmdFactory -> INFO 003 Endorser and orderer conne
ctions initialized
2018-11-19 03:41:31.605 UTC [msp/identity] Sign -> DEBU 004 Sign: plaintext: 0A8A070A5C08011A0
C08EBE1C8DF0510...23465014E12A1A080A000A000A000A00
2018-11-19 03:41:31.605 UTC [msp/identity] Sign -> DEBU 005 Sign: digest: 91A207370500C2803074
F906029D321C6D56B58BC242D057D3DE19FB062C4AFD
2018-11-19 03:41:31.773 UTC [channelCmd] executeJoin -> INFO 006 Peer joined the channel!
2018-11-19 03:41:31.773 UTC [main] main -> INFO 007 Exiting.....
(env) vagrant@ubuntu-xenial:~/HyperledgerComposer/fabric-dev-servers$
```
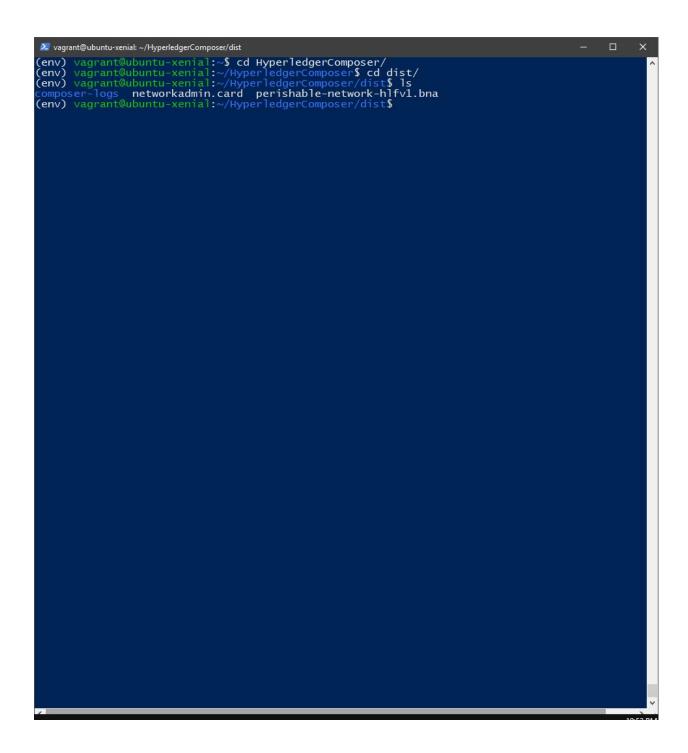
```
vagrant@ubuntu-xenial: ~/HyperledgerComposer/fabric-dev-servers

Creating peer0.org1.example.com ... done
# wait for Hyperledger Fabric to start
# incase of errors when running later commands, issue export FABRIC_START_TIMEOUT=<larger number>
echo ${FABRIC_START_TIMEOUT}
15
sleep ${FABRIC_START_TIMEOUT}

# Create the channel
docker exec peer0.org1.example.com peer channel create -o orderer.example.com:7050 -c composerchannel -f /etc/hyperledger/configtx/composer-channel.tx
2018-11-19 03:41:30.847 UTC [msp] GetLocalMSP -> DEBU 001 Returning existing local MSP
2018-11-19 03:41:30.847 UTC [msp] GetDefaultSigningIdentity -> DEBU 002 Obtaining default signing identity
2018-11-19 03:41:30.849 UTC [channelCmd] InitCmdFactory -> INFO 003 Endorser and orderer connections initialized
2018-11-19 03:41:30.859 UTC [msp] GetLocalMSP -> DEBU 004 Returning existing local MSP
2018-11-19 03:41:30.859 UTC [msp] GetDefaultSigningIdentity -> DEBU 005 Obtaining default signing identity
2018-11-19 03:41:30.859 UTC [msp] GetLocalMSP -> DEBU 006 Returning existing local MSP
2018-11-19 03:41:30.859 UTC [msp] GetDefaultSigningIdentity -> DEBU 007 Obtaining default signing identity
2018-11-19 03:41:30.860 UTC [msp/identity] Sign -> DEBU 008 Sign: plaintext: 0A8C060A074F7267314D53501280062D...6D706F736572436F6E736F727469756D
2018-11-19 03:41:30.860 UTC [msp/identity] Sign -> DEBU 009 Sign: digest: DE32B673CB77ECE51C175FC8729099E0DB5A1F5495B7251865A815068D03081B
2018-11-19 03:41:30.860 UTC [msp] GetLocalMSP -> DEBU 00a Returning existing local MSP
2018-11-19 03:41:30.860 UTC [msp] GetDefaultSigningIdentity -> DEBU 00b Obtaining default signing identity
2018-11-19 03:41:30.861 UTC [msp] GetLocalMSP -> DEBU 00c Returning existing local MSP
2018-11-19 03:41:30.861 UTC [msp] GetDefaultSigningIdentity -> DEBU 00d Obtaining default signing identity
2018-11-19 03:41:30.861 UTC [msp/identity] Sign -> DEBU 00e Sign: plaintext: 0AC9060A1B08021A0608EAE1C8DF0522...D6EBA79B9FD4A95FDBC4B65098D5DFB0
2018-11-19 03:41:30.861 UTC [msp/identity] Sign -> DEBU 00f Sign: digest: 1A8AD921C4568CFB307972A3C52AB7F97E86F3BF01DCCD0F528CC556005FC8DA
2018-11-19 03:41:30.924 UTC [msp] GetLocalMSP -> DEBU 010 Returning existing local MSP
2018-11-19 03:41:30.924 UTC [msp] GetDefaultSigningIdentity -> DEBU 011 Obtaining default signing identity
2018-11-19 03:41:30.924 UTC [msp] GetLocalMSP -> DEBU 012 Returning existing local MSP
2018-11-19 03:41:30.924 UTC [msp] GetDefaultSigningIdentity -> DEBU 013 Obtaining default signing identity
2018-11-19 03:41:30.924 UTC [msp/identity] Sign -> DEBU 014 Sign: plaintext: 0AC9060A1B08021A0608EAE1C8DF0522...F4BD95C858CD12080A021A0012021A00
2018-11-19 03:41:30.925 UTC [msp/identity] Sign -> DEBU 015 Sign: digest: 9B01F6F8E60245A304C7C761A9D64637197647CFDA96A1A0DCA7B0E027B9A111
2018-11-19 03:41:30.925 UTC [channelCmd] readBlock -> DEBU 016 Got status: &{NOT_FOUND}
2018-11-19 03:41:30.925 UTC [msp] GetLocalMSP -> DEBU 017 Returning existing local MSP
2018-11-19 03:41:30.925 UTC [msp] GetDefaultSigningIdentity -> DEBU 018 Obtaining default signing identity
2018-11-19 03:41:30.926 UTC [channelCmd] InitCmdFactory -> INFO 019 Endorser and orderer connections initialized
2018-11-19 03:41:31.130 UTC [msp] GetLocalMSP -> DEBU 01a Returning existing local MSP
2018-11-19 03:41:31.130 UTC [msp] GetDefaultSigningIdentity -> DEBU 01b Obtaining default signing identity
2018-11-19 03:41:31.130 UTC [msp] GetLocalMSP -> DEBU 01c Returning existing local MSP
2018-11-19 03:41:31.130 UTC [msp] GetDefaultSigningIdentity -> DEBU 01d Obtaining default signing identity
2018-11-19 03:41:31.130 UTC [msp/identity] Sign -> DEBU 01e Sign: plaintext: 0AC9060A1B08021A0608EBE1C8DF0522...6335F3238A0012080A021A0012021A00
2018-11-19 03:41:31.130 UTC [msp/identity] Sign -> DEBU 01f Sign: digest: 85C77238390A6A4FDC05249B34F75D08A237CA723531213E01D8F21878D0512B
2018-11-19 03:41:31.133 UTC [channelCmd] readBlock -> DEBU 020 Received block: 0
2018-11-19 03:41:31.134 UTC [main] main -> INFO 021 Exiting.....

# Join peer0.org1.example.com to the channel.
docker exec -e "CORE_PEER_MSPCONFIGPATH=/etc/hyperledger/msp/users/Admin@org1.example.com/msp" peer0.org1.example.com peer channel join -b composerchannel.block
2018-11-19 03:41:31.602 UTC [msp] GetLocalMSP -> DEBU 001 Returning existing local MSP
2018-11-19 03:41:31.602 UTC [msp] GetDefaultSigningIdentity -> DEBU 002 Obtaining default signing identity
2018-11-19 03:41:31.604 UTC [channelCmd] InitCmdFactory -> INFO 003 Endorser and orderer connections initialized
2018-11-19 03:41:31.605 UTC [msp/identity] Sign -> DEBU 004 Sign: plaintext: 0A8A070A5C08011A0C08EBE1C8DF0510...23465014E12A1A080A000A000A000A00
2018-11-19 03:41:31.605 UTC [msp/identity] Sign -> DEBU 005 Sign: digest: 91A207370500C2803074F906029D321C6D56B58BC242D057D3DE19FB062C4AFD
2018-11-19 03:41:31.773 UTC [channelCmd] executeJoin -> INFO 006 Peer joined the channel!
2018-11-19 03:41:31.773 UTC [main] main -> INFO 007 Exiting.....
(env) vagrant@ubuntu-xenial:~/HyperledgerComposer/fabric-dev-servers$ ddocker ps
CONTAINER ID        IMAGE                                    COMMAND                  CREATED             STATUS              PORTS                                              NAMES
b39dd82c9147        hyperledger/fabric-peer:x86_64-1.0.4     "peer node start --p…"   About a minute ago  Up About a minute   0.0.0.0:7051->7051/tcp, 0.0.0.0:7053->7053/tcp     peer0.org1.ex
ample.com
4e780a4b91b3        hyperledger/fabric-ca:x86_64-1.0.4       "sh -c 'fabric-ca-se…"   About a minute ago  Up About a minute   0.0.0.0:7054->7054/tcp                             ca.org1.examp
le.com
c7badb664ef5        hyperledger/fabric-orderer:x86_64-1.0.4  "orderer"                About a minute ago  Up About a minute   0.0.0.0:7050->7050/tcp                             orderer.examp
le.com
84a709e6e16e        hyperledger/fabric-couchdb:x86_64-1.0.4  "tini -- /docker-ent…"   About a minute ago  Up About a minute   4369/tcp, 9100/tcp, 0.0.0.0:5984->5984/tcp         couchdb
(env) vagrant@ubuntu-xenial:~/HyperledgerComposer/fabric-dev-servers$
```

```
vagrant@ubuntu-xenial: ~                                          —    □    ✕

(env) vagrant@ubuntu-xenial:~$ npm list -g --depth 0
/home/vagrant/.nvm/versions/node/v8.9.1/lib
├── composer-cli@0.15.0
├── composer-rest-server@0.15.0
├── generator-hyperledger-composer@0.15.0
├── npm@5.5.1
└── yo@2.0.5

(env) vagrant@ubuntu-xenial:~$
```

```
(env) vagrant@ubuntu-xenial:~$ cd HyperledgerComposer/
(env) vagrant@ubuntu-xenial:~/HyperledgerComposer$ cd dist/
(env) vagrant@ubuntu-xenial:~/HyperledgerComposer/dist$ ls
composer-logs   networkadmin.card   perishable-network-hlfv1.bna
(env) vagrant@ubuntu-xenial:~/HyperledgerComposer/dist$
```

```
vagrant@ubuntu-xenial: ~/HyperledgerComposer/dist                          —   □   ✕

(env) vagrant@ubuntu-xenial:~$ cd HyperledgerComposer/
(env) vagrant@ubuntu-xenial:~/HyperledgerComposer$ cd dist/
(env) vagrant@ubuntu-xenial:~/HyperledgerComposer/dist$ composer network deploy -a perishable-
rk-hlfv1.bna -A admin -S adminpw -c PeerAdmin@hlfv1 -f networkadmin.card
Deploying business network from archive: perishable-network-hlfv1.bna
Business network definition:
        Identifier: perishable-network@0.2.6-deploy.2
        Description: Shipping Perishable Goods Business Network

⠋ Deploying business network definition. This may take a minute...
Successfully created business network card to networkadmin.card

Command succeeded

(env) vagrant@ubuntu-xenial:~/HyperledgerComposer/dist$
```

```
vagrant@ubuntu-xenial: ~/HyperledgerComposer/dist                    —   ☐   ✕

(env) vagrant@ubuntu-xenial:~/HyperledgerComposer/dist$ composer card import --file networkadm
rd
Error: Card already exists: admin@perishable-network
Command failed

(env) vagrant@ubuntu-xenial:~/HyperledgerComposer/dist$
```

```
vagrant@ubuntu-xenial: ~/HyperledgerComposer/dist                          —    □    ✕

(env) vagrant@ubuntu-xenial:~/HyperledgerComposer/dist$ composer-rest-server -v
v0.15.0
(env) vagrant@ubuntu-xenial:~/HyperledgerComposer/dist$ composer-rest-server

? Enter the name of the business network card to use: admin@perishable-network
? Specify if you want namespaces in the generated REST API: always use namespaces
? Specify if you want to enable authentication for the REST API using Passport: No
? Specify if you want to enable event publication over WebSockets: No
? Specify if you want to enable TLS security for the REST API: No

To restart the REST server using the same options, issue the following command:
    composer-rest-server -c admin@perishable-network -n always

Discovering types from business network definition ...
Discovered types from business network definition
Generating schemas for all types in business network definition ...
Generated schemas for all types in business network definition
Adding schemas for all types to Loopback ...
Added schemas for all types to Loopback
Web server listening at: http://localhost:3000
Browse your REST API at http://localhost:3000/explorer
```

Left window (Chrome browser):

localhost:3000/explorer

This site can't be reached

localhost refused to connect.

Search Google for localhost 3000 explorer

ERR_CONNECTION_REFUSED

Right window (terminal):

```
(env) vagrant@ubuntu-xenial:~/HyperledgerComposer/dist$ composer-rest-server
? Enter the name of the business network card to use: admin@perishable-network
? Specify if you want namespaces in the generated REST API: always use namespaces
? Specify if you want to enable authentication for the REST API using Passport: No
? Specify if you want to enable event publication over WebSockets: No
? Specify if you want to enable TLS security for the REST API: No

To restart the REST server using the same options, issue the following command:
    composer-rest-server -c admin@perishable-network -n always

Discovering types from business network definition ...
Discovered types from business network definition
Generating schemas for all types in business network definition ...
Generated schemas for all types in business network definition
Adding schemas for all types to Loopback ...
Added schemas for all types to Loopback
Web server listening at: http://localhost:3000
Browse your REST API at http://localhost:3000/explorer
```