

## Commands to Bring up and run the Pharma-Network

Starting the network:

### 1. Generate crypto material and channel artifacts Command:

```
# sudo ./fabricNetwork.sh generate
```

```
upgrad@upgrad-VirtualBox: ~/workspace/pharma-net-org/network
File Edit View Search Terminal Help
upgrad@upgrad-VirtualBox:~/workspace/pharma-net-org$ cd network/
upgrad@upgrad-VirtualBox:~/workspace/pharma-net-org/network$ sudo ./fabricNetwork.sh generate
Generating certs and genesis block for channel 'pharnachannel' with CLI timeout of '15' seconds and CLI delay of '5' seconds and chaincode version '1.1'
Continue? [Y/n]
proceeding ...
/home/upgrad/workspace/pharma-net-org/network/bin/cryptogen

##### Generate certificates using cryptogen tool #####
+ cryptogen generate --config ./crypto-config.yaml
manufacturer.pharma-supply-network.com
distributor.pharma-supply-network.com
retailer.pharma-supply-network.com
consumer.pharma-supply-network.com
transporter.pharma-supply-network.com
+ res=0
+ set +x

/home/upgrad/workspace/pharma-net-org/network/bin/configtxgen
##### Generating Orderer Genesis block #####
+ configtxgen -profile OrdererGenesis -channelID upgrad-sys-channel -outputBlock ./channel-artifacts/genesis.block
2021-09-22 12:51:02.201 IST [common.tools.configtxgen.main] -> INFO 001 Loading configuration
2021-09-22 12:51:02.223 IST [common.tools.configtxgen.localconfig] completeInitialization -> INFO 002 orderer type: solo
2021-09-22 12:51:02.223 IST [common.tools.configtxgen.localconfig] load -> INFO 003 Loaded configuration: /home/upgrad/workspace/pharma-net-org/network/configtx.yaml
2021-09-22 12:51:02.234 IST [common.tools.configtxgen.localconfig] completeInitialization -> INFO 004 orderer type: solo
2021-09-22 12:51:02.244 IST [common.tools.configtxgen.localconfig] loadTopLevel -> INFO 005 Loaded configuration: /home/upgrad/workspace/pharma-net-org/network/configtx.yaml
2021-09-22 12:51:02.251 IST [common.tools.configtxgen] doOutputBlock -> INFO 006 Generating genesis block
2021-09-22 12:51:02.252 IST [common.tools.configtxgen] doOutputBlock -> INFO 007 Writing genesis block
+ res=0
+ set +x

##### Generating channel configuration transaction 'channel.tx' #####
+ configtxgen -profile Pharnachannel -outputCreateChannelTx ./channel-artifacts/channel.tx -channelID pharnachannel
2021-09-22 12:51:02.276 IST [common.tools.configtxgen.main] -> INFO 001 Loading configuration
2021-09-22 12:51:02.302 IST [common.tools.configtxgen.localconfig] load -> INFO 002 Loaded configuration: /home/upgrad/workspace/pharma-net-org/network/configtx.yaml
2021-09-22 12:51:02.311 IST [common.tools.configtxgen.localconfig] loadTopLevel -> INFO 003 Loaded configuration: /home/upgrad/workspace/pharma-net-org/network/configtx.yaml
2021-09-22 12:51:02.331 IST [common.tools.configtxgen] doOutputChannelCreateTx -> INFO 004 Loaded configuration: /home/upgrad/workspace/pharma-net-org/network/configtx.yaml
2021-09-22 12:51:02.331 IST [common.tools.configtxgen] doOutputChannelCreateTx -> INFO 005 Generating new channel configtx
2021-09-22 12:51:02.331 IST [common.tools.configtxgen.encoder] NewChannelGroup -> WARN 006 Default policy emssion is deprecated, please include policy specifications for the channel group in configtx.yaml
2021-09-22 12:51:02.335 IST [common.tools.configtxgen.encoder] NewChannelGroup -> WARN 007 Default policy emssion is deprecated, please include policy specifications for the channel group in configtx.yaml
2021-09-22 12:51:02.341 IST [common.tools.configtxgen] doOutputChannelCreateTx -> INFO 008 Writing new channel tx
+ res=0
```

```
upgrad@upgrad-VirtualBox: ~/workspace/pharma-net-org/network
File Edit View Search Terminal Help
2021-09-22 12:51:02.566 IST [common.tools.configtxgen.localconfig] loadTopLevel -> INFO 004 Loaded configuration: /home/upgrad/workspace/pharma-net-org/network/configtx.yaml
2021-09-22 12:51:02.566 IST [common.tools.configtxgen] doOutputAnchorPeersUpdate -> INFO 005 Generating anchor peer update
2021-09-22 12:51:02.566 IST [common.tools.configtxgen] doOutputAnchorPeersUpdate -> INFO 006 Writing anchor peer update
+ res=0
+ set +x

##### Generating anchor peer update for retailerMSP #####
+ configtxgen -profile Pharnachannel -outputAnchorPeersUpdate ./channel-artifacts/retailerMSPanchors.tx -channelID pharnachannel -asOrg retailerMSP
2021-09-22 12:51:02.609 IST [common.tools.configtxgen.main] -> INFO 001 Loading configuration
2021-09-22 12:51:02.632 IST [common.tools.configtxgen.localconfig] load -> INFO 002 Loaded configuration: /home/upgrad/workspace/pharma-net-org/network/configtx.yaml
2021-09-22 12:51:02.662 IST [common.tools.configtxgen.localconfig] completeInitialization -> INFO 003 orderer type: solo
2021-09-22 12:51:02.688 IST [common.tools.configtxgen.localconfig] loadTopLevel -> INFO 004 Loaded configuration: /home/upgrad/workspace/pharma-net-org/network/configtx.yaml
2021-09-22 12:51:02.688 IST [common.tools.configtxgen] doOutputAnchorPeersUpdate -> INFO 005 Generating anchor peer update
2021-09-22 12:51:02.688 IST [common.tools.configtxgen] doOutputAnchorPeersUpdate -> INFO 006 Writing anchor peer update
+ res=0
+ set +x

##### Generating anchor peer update for transporterMSP #####
+ configtxgen -profile Pharnachannel -outputAnchorPeersUpdate ./channel-artifacts/transporterMSPanchors.tx -channelID pharnachannel -asOrg transporterMSP
2021-09-22 12:51:02.732 IST [common.tools.configtxgen.main] -> INFO 001 Loading configuration
2021-09-22 12:51:02.755 IST [common.tools.configtxgen.localconfig] load -> INFO 002 Loaded configuration: /home/upgrad/workspace/pharma-net-org/network/configtx.yaml
2021-09-22 12:51:02.767 IST [common.tools.configtxgen.localconfig] completeInitialization -> INFO 003 orderer type: solo
2021-09-22 12:51:02.772 IST [common.tools.configtxgen.localconfig] loadTopLevel -> INFO 004 Loaded configuration: /home/upgrad/workspace/pharma-net-org/network/configtx.yaml
2021-09-22 12:51:02.772 IST [common.tools.configtxgen] doOutputAnchorPeersUpdate -> INFO 005 Generating anchor peer update
2021-09-22 12:51:02.772 IST [common.tools.configtxgen] doOutputAnchorPeersUpdate -> INFO 006 Writing anchor peer update
+ res=0
+ set +x

##### Generating anchor peer update for consumerMSP #####
+ configtxgen -profile Pharnachannel -outputAnchorPeersUpdate ./channel-artifacts/consumerMSPanchors.tx -channelID pharnachannel -asOrg consumerMSP
2021-09-22 12:51:02.838 IST [common.tools.configtxgen.main] -> INFO 001 Loading configuration
2021-09-22 12:51:02.862 IST [common.tools.configtxgen.localconfig] load -> INFO 002 Loaded configuration: /home/upgrad/workspace/pharma-net-org/network/configtx.yaml
2021-09-22 12:51:02.883 IST [common.tools.configtxgen.localconfig] completeInitialization -> INFO 003 orderer type: solo
2021-09-22 12:51:02.883 IST [common.tools.configtxgen.localconfig] loadTopLevel -> INFO 004 Loaded configuration: /home/upgrad/workspace/pharma-net-org/network/configtx.yaml
2021-09-22 12:51:02.883 IST [common.tools.configtxgen] doOutputAnchorPeersUpdate -> INFO 005 Generating anchor peer update
2021-09-22 12:51:02.883 IST [common.tools.configtxgen] doOutputAnchorPeersUpdate -> INFO 006 Writing anchor peer update
+ res=0
+ set +x

upgrad@upgrad-VirtualBox:~/workspace/pharma-net-org/network$
```

## Create Docker container, create and join channel, update anchor peer

### Command:

```
# sudo ./fabricNetwork.sh up
```

```
upgrad@upgrad-VirtualBox: /workspace/pharma-net-org/network$ sudo ./fabricNetwork.sh up
Starting for channel 'pharmachannel' with CLI timeout of '15' seconds and CLI delay of '5' seconds and chaincode version '1.1'
Continue? [y/n] y
proceeding ...
LOCAL_VERSION=1.4.2
DOCKER_IMAGE_VERSION=1.4.3
***** WARNING *****
Local fabric binaries and docker images are
out of sync. This may cause problems.
*****
Creating network 'network_pharma-network' with the default driver
Creating volume 'network_orderer.pharma-supply-network.com' with default driver
Creating volume 'network_peer0.consumer.pharma-supply-network.com' with default driver
Creating volume 'network_peer1.consumer.pharma-supply-network.com' with default driver
Creating volume 'network_peer0.distributor.pharma-supply-network.com' with default driver
Creating volume 'network_peer1.distributor.pharma-supply-network.com' with default driver
Creating volume 'network_peer0.manufacturer.pharma-supply-network.com' with default driver
Creating volume 'network_peer1.manufacturer.pharma-supply-network.com' with default driver
Creating volume 'network_peer0.retailer.pharma-supply-network.com' with default driver
Creating volume 'network_peer1.retailer.pharma-supply-network.com' with default driver
Creating volume 'network_peer0.transporter.pharma-supply-network.com' with default driver
Creating volume 'network_peer1.transporter.pharma-supply-network.com' with default driver
Creating peer0.distributor.pharma-supply-network.com ... done
Creating peer1.manufacturer.pharma-supply-network.com ... done
Creating peer0.consumer.pharma-supply-network.com ... done
Creating ca.transporter.pharma-supply-network.com ... done
Creating peer0.retailer.pharma-supply-network.com ... done
Creating chaincode ... done
Creating ca.manufacturer.pharma-supply-network.com ... done
Creating peer1.transporter.pharma-supply-network.com ... done
Creating ca.distributor.pharma-supply-network.com ... done
Creating peer1.consumer.pharma-supply-network.com ... done
Creating peer0.manufacturer.pharma-supply-network.com ... done
Creating ca.retailer.pharma-supply-network.com ... done
Creating orderer.pharma-supply-network.com ... done
Creating peer1.retailer.pharma-supply-network.com ... done
Creating peer0.transporter.pharma-supply-network.com ... done
Creating peer1.distributor.pharma-supply-network.com ... done
Creating ca.consumer.pharma-supply-network.com ... done
Creating cli ... done
CONTAINER ID        IMAGE               COMMAND             CREATED             STATUS              PORTS
b6fcd9f3c1c1        hyperledger/fabric-tools:1.4.9   "/bin/bash"        1 second ago        Up Less than a second
cli
5526fc4c2a0f        hyperledger/fabric-peer:1.4.9     "peer node start -p." 15 seconds ago      Up 1 second         0.0.0.0:17051->17051/tcp, :::17051->17051/tcp, 0.0.0.0:17053->17053/tcp, :::17053->17053/tcp
/tcp peer0.transporter.pharma-supply-network.com
39ebde29808e        hyperledger/fabric-ca:1.4.9       "sh -c 'fabric-ca-se." 15 seconds ago      Up 6 seconds        0.0.0.0:7054->7054/tcp, :::7054->7054/tcp
ca.consumer.pharma-supply-network.com
b6fcd9f3c1c1        hyperledger/fabric-peer:1.4.9     "peer node start -p." 15 seconds ago      Up 2 seconds        0.0.0.0:14051->14051/tcp, :::14051->14051/tcp, 0.0.0.0:14053->14053/tcp, :::14053->14053/tcp
/tcp peer1.distributor.pharma-supply-network.com
ce0b1d71339        hyperledger/fabric-orderer:1.4.3   "orderer"            15 seconds ago      Up 8 seconds        0.0.0.0:7050->7050/tcp, :::7050->7050/tcp
orderer.pharma-supply-network.com
82f2ccdb1225        hyperledger/fabric-peer:1.4.9     "peer node start -p." 15 seconds ago      Up 2 seconds        0.0.0.0:8051->8051/tcp, :::8051->8051/tcp, 0.0.0.0:8053->8053/tcp, :::8053->8053/tcp
peer1.consumer.pharma-supply-network.com
f011eaf3b0b5        hyperledger/fabric-peer:1.4.9     "peer node start -p." 15 seconds ago      Up 3 seconds        0.0.0.0:16051->16051/tcp, :::16051->16051/tcp, 0.0.0.0:16053->16053/tcp, :::16053->16053/tcp
/tcp peer1.retailer.pharma-supply-network.com
c5b8934a02e        hyperledger/fabric-ca:1.4.9       "sh -c 'fabric-ca-se." 15 seconds ago      Up 5 seconds        7054/tcp, 0.0.0.0:10054->10054/tcp, :::10054->10054/tcp
ca.retailer.pharma-supply-network.com
24b57fe0397b        hyperledger/fabric-peer:1.4.9     "peer node start -p." 15 seconds ago      Up 2 seconds        0.0.0.0:11051->11051/tcp, :::11051->11051/tcp, 0.0.0.0:11053->11053/tcp, :::11053->11053/tcp
/tcp peer.manufacturer.pharma-supply-network.com
1f84222b994a        hyperledger/fabric-peer:1.4.9     "peer node start -p." 15 seconds ago      Up 3 seconds        0.0.0.0:18051->18051/tcp, :::18051->18051/tcp, 0.0.0.0:18053->18053/tcp, :::18053->18053/tcp
/tcp peer1.transporter.pharma-supply-network.com
91785465d171        hyperledger/fabric-cenv:1.4.9     "/bin/bash -c 'sleep." 15 seconds ago      Up 6 seconds
chaincode
38b750af603        hyperledger/fabric-ca:1.4.9       "sh -c 'fabric-ca-se." 15 seconds ago      Up 5 seconds        7054/tcp, 0.0.0.0:8054->8054/tcp, :::8054->8054/tcp
ca.distributor.pharma-supply-network.com
7d966c9874d2        hyperledger/fabric-ca:1.4.9       "sh -c 'fabric-ca-se." 15 seconds ago      Up 7 seconds        7054/tcp, 0.0.0.0:9054->9054/tcp, :::9054->9054/tcp
ca.manufacturer.pharma-supply-network.com
c09097d4b6c7        hyperledger/fabric-peer:1.4.9     "peer node start -p." 16 seconds ago      Up 7 seconds        0.0.0.0:7051->7051/tcp, :::7051->7051/tcp, 0.0.0.0:7053->7053/tcp, :::7053->7053/tcp
peer0.consumer.pharma-supply-network.com
a97b92d11464        hyperledger/fabric-ca:1.4.9       "sh -c 'fabric-ca-se." 16 seconds ago      Up 8 seconds        7054/tcp, 0.0.0.0:11054->11054/tcp, :::11054->11054/tcp
ca.transporter.pharma-supply-network.com
02a39ce9f4e        hyperledger/fabric-peer:1.4.9     "peer node start -p." 16 seconds ago      Up 7 seconds        0.0.0.0:15051->15051/tcp, :::15051->15051/tcp, 0.0.0.0:15053->15053/tcp, :::15053->15053/tcp
/tcp peer1.retailer.pharma-supply-network.com
06735d09c84c        hyperledger/fabric-peer:1.4.9     "peer node start -p." 16 seconds ago      Up 9 seconds        0.0.0.0:12051->12051/tcp, :::12051->12051/tcp, 0.0.0.0:12053->12053/tcp, :::12053->12053/tcp
peer0.manufacturer.pharma-supply-network.com
4d81806e28a2        hyperledger/fabric-peer:1.4.9     "peer node start -p." 16 seconds ago      Up 6 seconds        0.0.0.0:13051->13051/tcp, :::13051->13051/tcp, 0.0.0.0:13053->13053/tcp, :::13053->13053/tcp
/tcp peer0.distributor.pharma-supply-network.com
Sleeping 10s to allow cluster to complete booting

START

Setting Up Hyperledger Fabric Network

Channel name : pharmachannel
Creating channel...
-peer channel create -o orderer.pharma-supply-network.com:7050 -c pharmachannel -f ./channel-artifacts/channel.tx
```

```

upgrad@upgrad-VirtualBox: ~/workspace/pharma-net-org/network

Creating channel...
+ peer channel create -o orderer.pharma-supply-network.com:7050 -c pharnachannel -f ./channel-artifacts/channel.tx
+ res=0
+ set +x
2021-09-22 07:24:54.762 UTC [channelCmd] InitCmdFactory -- INFO 001 Endorser and orderer connections initialized
2021-09-22 07:24:54.858 UTC [cli-common] rawBlock -- INFO 002 Received block: 0
===== Channel 'pharnachannel' created =====

Having all peers join the channel...
+ peer channel join -b pharnachannel.block
+ set +x
2021-09-22 07:24:54.951 UTC [channelCmd] InitCmdFactory -- INFO 001 Endorser and orderer connections initialized
2021-09-22 07:24:55.049 UTC [channelCmd] executeJoin -- INFO 002 Successfully submitted proposal to join channel
+ res=0
+ set +x
===== peer0.consumer.pharma-supply-network.com joined channel 'pharnachannel' =====

+ peer channel join -b pharnachannel.block
+ set +x
2021-09-22 07:25:00.183 UTC [channelCmd] InitCmdFactory -- INFO 001 Endorser and orderer connections initialized
2021-09-22 07:25:00.287 UTC [channelCmd] executeJoin -- INFO 002 Successfully submitted proposal to join channel
===== peer1.consumer.pharma-supply-network.com joined channel 'pharnachannel' =====

+ peer channel join -b pharnachannel.block
+ set +x
2021-09-22 07:25:05.344 UTC [channelCmd] InitCmdFactory -- INFO 001 Endorser and orderer connections initialized
2021-09-22 07:25:05.395 UTC [channelCmd] executeJoin -- INFO 002 Successfully submitted proposal to join channel
===== peer0.distributor.pharma-supply-network.com joined channel 'pharnachannel' =====

+ peer channel join -b pharnachannel.block
+ set +x
2021-09-22 07:25:10.474 UTC [channelCmd] InitCmdFactory -- INFO 001 Endorser and orderer connections initialized
2021-09-22 07:25:10.524 UTC [channelCmd] executeJoin -- INFO 002 Successfully submitted proposal to join channel
===== peer1.distributor.pharma-supply-network.com joined channel 'pharnachannel' =====

+ peer channel join -b pharnachannel.block
+ set +x
2021-09-22 07:25:15.594 UTC [channelCmd] InitCmdFactory -- INFO 001 Endorser and orderer connections initialized
2021-09-22 07:25:15.646 UTC [channelCmd] executeJoin -- INFO 002 Successfully submitted proposal to join channel
===== peer0.manufacturer.pharma-supply-network.com joined channel 'pharnachannel' =====

+ peer channel join -b pharnachannel.block
+ set +x
2021-09-22 07:25:20.724 UTC [channelCmd] InitCmdFactory -- INFO 001 Endorser and orderer connections initialized
2021-09-22 07:25:20.779 UTC [channelCmd] executeJoin -- INFO 002 Successfully submitted proposal to join channel
===== peer1.manufacturer.pharma-supply-network.com joined channel 'pharnachannel' =====

+ res=0
+ set +x
2021-09-22 07:25:46.475 UTC [channelCmd] InitCmdFactory -- INFO 001 Endorser and orderer connections initialized
2021-09-22 07:25:46.583 UTC [channelCmd] update -- INFO 002 Successfully submitted channel update
===== Anchor peers updated for org 'consumerMSP' on channel 'pharnachannel' =====

Updating anchor peers for MANUFACTURER...
+ peer channel update -o orderer.pharma-supply-network.com:7050 -c pharnachannel -f ./channel-artifacts/manufacturerMSPanchors.tx
+ res=0
+ set +x
2021-09-22 07:25:51.578 UTC [channelCmd] InitCmdFactory -- INFO 001 Endorser and orderer connections initialized
2021-09-22 07:25:51.682 UTC [channelCmd] update -- INFO 002 Successfully submitted channel update
===== Anchor peers updated for org 'manufacturerMSP' on channel 'pharnachannel' =====

Updating anchor peers for DISTRIBUTOR...
+ peer channel update -o orderer.pharma-supply-network.com:7050 -c pharnachannel -f ./channel-artifacts/distributorMSPanchors.tx
+ res=0
+ set +x
2021-09-22 07:25:56.688 UTC [channelCmd] InitCmdFactory -- INFO 001 Endorser and orderer connections initialized
2021-09-22 07:25:56.711 UTC [channelCmd] update -- INFO 002 Successfully submitted channel update
===== Anchor peers updated for org 'distributorMSP' on channel 'pharnachannel' =====

Updating anchor peers for RETAILER...
+ peer channel update -o orderer.pharma-supply-network.com:7050 -c pharnachannel -f ./channel-artifacts/retailerMSPanchors.tx
+ res=0
+ set +x
2021-09-22 07:26:01.801 UTC [channelCmd] InitCmdFactory -- INFO 001 Endorser and orderer connections initialized
2021-09-22 07:26:01.822 UTC [channelCmd] update -- INFO 002 Successfully submitted channel update
===== Anchor peers updated for org 'retailerMSP' on channel 'pharnachannel' =====

Updating anchor peers for TRANSPORTER...
+ peer channel update -o orderer.pharma-supply-network.com:7050 -c pharnachannel -f ./channel-artifacts/transporterMSPanchors.tx
+ res=0
+ set +x
2021-09-22 07:26:06.895 UTC [channelCmd] InitCmdFactory -- INFO 001 Endorser and orderer connections initialized
2021-09-22 07:26:06.916 UTC [channelCmd] update -- INFO 002 Successfully submitted channel update
===== Anchor peers updated for org 'transporterMSP' on channel 'pharnachannel' =====

===== All GOOD, Hyperledger Fabric Pharma Network Is Now Up and Running! =====

END
upgrad@upgrad-VirtualBox: ~/workspace/pharma-net-org/network$

```

Connect to the chaincode container and run the chaincode:

Command:

```

# docker exec -it chaincode /bin/bash

# npm install (to download all the dependencies)

# npm run start-dev (run the script)

```

Install and instantiate chaincode:

Command:

```

sudo ./fabricNetwork.sh install

```

```
upgrad@upgrad-VirtualBox: ~/workspace/pharma-net-org/network
File Edit View Search Terminal Tabs Help
upgrad@upgrad-VirtualBox: ~/workspace/pharma-net-org/network root@91785405d171: /opt/gopath/src/chaincode upgrad@upgrad-VirtualBox: ~/workspace/pharma-net-org/application
upgrad@upgrad-VirtualBox: ~/workspace/pharma-net-org/network$ sudo ./fabricNetwork.sh install
[sudo] password for upgrad:
upgrad@upgrad-VirtualBox: ~/workspace/pharma-net-org/network$ sudo ./fabricNetwork.sh install
[sudo] password for upgrad:
Installing chaincode for channel 'pharmachannel' with CLI timeout of '15' seconds and CLI delay of '5' seconds and chaincode version '1.1'
Continue? [Y/n]
proceeding ...
LOCAL_VERSION=1.4.2
DOCKER_IMAGE_VERSION=1.4.3
===== WARNING =====
Local fabric binaries and docker images are
out of sync. This may cause problems.
=====
START
Deploying chaincode pharnanet On Pharna Network
channel name = pharmachannel
+ peer chaincode install -n pharnanet -v 1.1 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chaincode/
Installing chaincode on peer0.manufacturer.pharma-supply-network.com ...
+ res=0
+ set +x
0921-09-22 09:22:53.776 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 001 Using default escc
0921-09-22 09:22:53.776 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 001 Using default vsc
0921-09-22 09:22:54.188 UTC [chaincodeCmd] install -> INFO 001 Installed remotely response: {status:200 payload:"OK"} >
===== Chaincode is installed on peer0.manufacturer =====
Installing chaincode on peer0.distributor.pharma-supply-network.com ...
+ peer chaincode install -n pharnanet -v 1.1 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chaincode/
+ res=0
+ set +x
0921-09-22 09:22:54.574 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 001 Using default escc
0921-09-22 09:22:54.574 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 002 Using default vsc
0921-09-22 09:22:54.736 UTC [chaincodeCmd] install -> INFO 003 Installed remotely response: {status:200 payload:"OK"} >
+ peer chaincode install -n pharnanet -v 1.1 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chaincode/
===== Chaincode is installed on peer0.distributor =====
Installing chaincode on peer0.retailer.pharma-supply-network.com ...
+ res=0
+ set +x
0921-09-22 09:22:54.888 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 001 Using default escc
```

## Starting node application

1. Navigate to the application folder:

Command:

```
# cd /home/upgrad/workspace/pharma-network/application
```

Note: make sure to update the key stores to make sure identity can be successfully stored in the wallet.

2. Start node using

```
# node . or node index.js
```

```
upgrad@upgrad-VirtualBox: ~/workspace/pharma-net-org/application
File Edit View Search Terminal Tabs Help
upgrad@upgrad-VirtualBox: ~/workspace/pharma-net-org/network upgrad@upgrad-VirtualBox: ~/workspace/pharma-net-org/application
upgrad@upgrad-VirtualBox: ~/workspace/pharma-net-org/network$ cd ../application/
upgrad@upgrad-VirtualBox: ~/workspace/pharma-net-org/application$ node .
Distributed Pharma App listening on port 3000!
```

Identity for all the organisations is stored at `/home/upgrad/workspace/pharma-network/application/addToWalletForAllOrg`

## Using postman to run test collections:

1. Launch Postman
2. Select Collections and export collections from the test folder.
3. Select a collection and run them



collections are exported/saved from /home/upgrad/workspace/pharma-network/test/postman collection

Select the collection and run them

### Test Case 1: Initiation

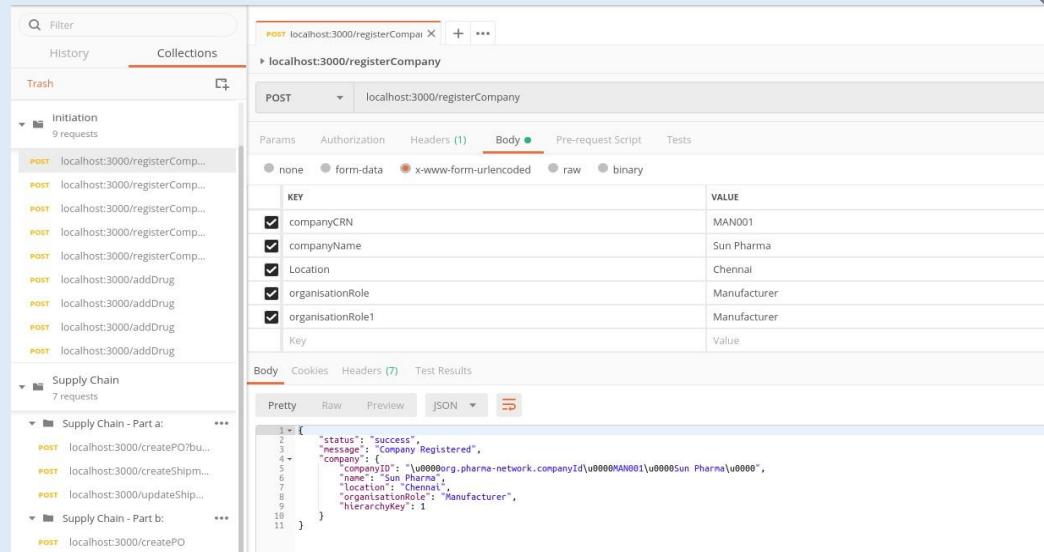
Create a collection file named 'initiation' which contains the HTTP requests to perform the following Function.

*Create a manufacturer with the following details:*

Name: 'Sun Pharma'

CRN number: 'MAN001'

Location: 'Chennai'

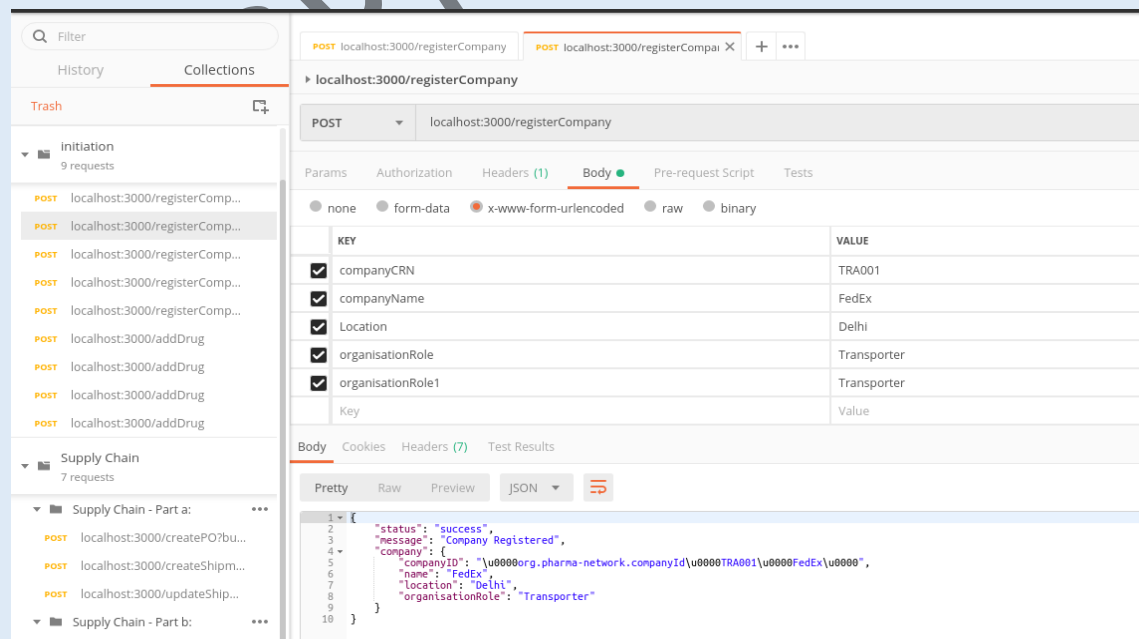


*Create a transporter with the following details:*

Name: 'FedEx'

CRN number: 'TRA001'

Location: 'Delhi'



Create another transporter with the following details:

Name: 'Blue Dart'  
CRN number: 'TRA002'  
Location: 'Bangalore'

The screenshot shows the Postman interface with a collection named 'localhost:3000/registerCompany'. The selected request is a POST method. The body is set to 'x-www-form-urlencoded' and contains the following data:

KEY	VALUE
companyCRN	TRA002
companyName	Blue Dart
Location	Bangalore
organisationRole	Transporter
organisationRole1	Transporter
Key	Value

The response body is a JSON object:

```
1 {
2   "status": "success",
3   "message": "Company Registered",
4   "company": {
5     "companyID": "\u0000org.pharma-network.companyId\u0000TRA002\u0000Blue Dart\u0000",
6     "name": "Blue Dart",
7     "location": "Bangalore",
8     "organisationRole": "Transporter"
9   }
10 }
```

Create a distributor with the following details:

Name: 'VG Pharma'  
CRN number: 'DIST001'  
Location: 'Vizag'

The screenshot shows the Postman interface with a collection named 'localhost:3000/registerCompany'. The selected request is a POST method. The body is set to 'x-www-form-urlencoded' and contains the following data:

KEY	VALUE
companyCRN	DIST001
companyName	VG Pharma
Location	Vizag
organisationRole	Distributor
organisationRole1	Distributor
Key	Value

The response body is a JSON object:

```
1 {
2   "status": "success",
3   "message": "Company Registered",
4   "company": {
5     "companyID": "\u0000org.pharma-network.companyId\u0000DIST001\u0000VG Pharma\u0000",
6     "name": "VG Pharma",
7     "location": "Vizag",
8     "organisationRole": "Distributor",
9     "hierarchyKey": 2
10   }
11 }
```

Create a retailer with the following details:

Name: 'upgrad'

CRN number: 'RET002'

Location: 'Mumbai'

History Collections

Trash

Initiation 9 requests

POST localhost:3000/registerComp...

POST localhost:3000/registerComp...

POST localhost:3000/registerComp...

POST localhost:3000/registerComp...

POST localhost:3000/registerComp...

POST localhost:3000/addDrug

POST localhost:3000/addDrug

POST localhost:3000/addDrug

POST localhost:3000/addDrug

POST localhost:3000/addDrug

Supply Chain 7 requests

Supply Chain - Part a: ...

POST localhost:3000/createPO?bu...

POST localhost:3000/createShipm...

POST localhost:3000/updateShip...

Supply Chain - Part b: ...

POST localhost:3000/createPO

localhost:3000/registerCompany

POST localhost:3000/registerCompany

Params Authorization Headers (1) Body Pre-request Script Tests

none form-data x-www-form-urlencoded raw binary

KEY	VALUE
companyCRN	RET002
companyName	upgrad
Location	Mumbai
organisationRole	Retailer
organisationRole1	Retailer
Key	Value

Body Cookies Headers (7) Test Results

Pretty Raw Preview JSON

```
1 {
2   "status": "success",
3   "message": "Company Registered",
4   "company": {
5     "companyID": "\u0000org.pharma-network.companyId\u0000RET002\u0000upgrad\u0000",
6     "name": "upgrad",
7     "location": "Mumbai",
8     "organisationRole": "Retailer",
9     "hierarchyKey": 3
10  }
11 }
```

Create 4 strips of a drug named 'Paracetamol' with serial number starting from '001' to '004'

History Collections

Trash

Initiation 9 requests

POST localhost:3000/registerComp...

POST localhost:3000/registerComp...

POST localhost:3000/registerComp...

POST localhost:3000/registerComp...

POST localhost:3000/registerComp...

POST localhost:3000/addDrug

POST localhost:3000/addDrug

POST localhost:3000/addDrug

POST localhost:3000/addDrug

POST localhost:3000/addDrug

Supply Chain 7 requests

Supply Chain - Part a: ...

POST localhost:3000/createPO?bu...

POST localhost:3000/createShipm...

POST localhost:3000/updateShip...

Supply Chain - Part b: ...

POST localhost:3000/createPO

POST localhost:3000/createShipm...

localhost:3000/addDrug

POST localhost:3000/addDrug

Params Authorization Headers (1) Body Pre-request Script Tests

none form-data x-www-form-urlencoded raw binary

KEY	VALUE
drugName	Paracetamol
serialNo	001
mfgDate	JAN2020
expDate	DEC2022
companyCRN	MAN001
organisationRole	Manufacturer
Key	Value

Body Cookies Headers (7) Test Results

Pretty Raw Preview JSON

```
1 {
2   "status": "success",
3   "message": "Drug Added successfully",
4   "drug": {
5     "productID": "\u0000org.pharma-network.productId\u00000001\u0000Paracetamol\u0000",
6     "name": "Paracetamol",
7     "manufacturer": "\u0000org.pharma-network.companyId\u0000MAN001\u0000Sun Pharma\u0000",
8     "manufacturingDate": "JAN2020",
9     "expiryDate": "DEC2022",
10    "owner": "\u0000org.pharma-network.companyId\u0000MAN001\u0000Sun Pharma\u0000",
11    "shipment": ""
12  }
13 }
```

History Collections

Trash

Initiation  
9 requests

POST localhost:3000/registerComp...

POST localhost:3000/registerComp...

POST localhost:3000/registerComp...

POST localhost:3000/registerComp...

POST localhost:3000/registerComp...

POST localhost:3000/addDrug

POST localhost:3000/addDrug

POST localhost:3000/addDrug

POST localhost:3000/addDrug

Supply Chain  
7 requests

Supply Chain - Part a: \*\*\*

POST localhost:3000/createPO?bu...

POST localhost:3000/createShipm...

POST localhost:3000/updateShip...

Supply Chain - Part b: \*\*\*

POST localhost:3000/createPO

POST localhost:3000/createShipm...

POST localhost:3000/createShipm...

localhost:3000/createShipm...

localhost:3000/addDrug

POST localhost:3000/addDrug

Params Authorization Headers (1) Body Pre-request Script Tests

none form-data x-www-form-urlencoded raw binary

KEY	VALUE
<input checked="" type="checkbox"/> drugName	Paracetamol
<input checked="" type="checkbox"/> serialNo	002
<input checked="" type="checkbox"/> mfgDate	JAN2020
<input checked="" type="checkbox"/> expDate	DEC2022
<input checked="" type="checkbox"/> companyCRN	MAN001
<input checked="" type="checkbox"/> organisationRole	Manufacturer
Key	Value

Body Cookies Headers (7) Test Results

Pretty Raw Preview JSON

```
1 {
2   "status": "success",
3   "message": "Drug Added successfully",
4   "drug": {
5     "productID": "\u0000org.pharma-network.productIDKey\u0000002\u0000Paracetamol\u0000",
6     "name": "Paracetamol",
7     "manufacturer": "\u0000org.pharma-network.companyId\u0000001\u0000Sun Pharma\u0000",
8     "manufacturingDate": "JAN2020",
9     "expiryDate": "DEC2022",
10    "owner": "\u0000org.pharma-network.companyId\u0000001\u0000Sun Pharma\u0000",
11    "shipment": ""
12  }
13 }
```

History Collections

Trash

Initiation  
9 requests

POST localhost:3000/registerComp...

POST localhost:3000/registerComp...

POST localhost:3000/registerComp...

POST localhost:3000/registerComp...

POST localhost:3000/registerComp...

POST localhost:3000/addDrug

POST localhost:3000/addDrug

POST localhost:3000/addDrug

POST localhost:3000/addDrug

Supply Chain  
7 requests

Supply Chain - Part a: \*\*\*

POST localhost:3000/createPO?bu...

POST localhost:3000/createShipm...

POST localhost:3000/updateShip...

Supply Chain - Part b: \*\*\*

POST localhost:3000/createPO

POST localhost:3000/createShipm...

POST localhost:3000/createShipm...

POST localhost:3000/updateShip...

localhost:3000/addDrug

POST localhost:3000/addDrug

Params Authorization Headers (1) Body Pre-request Script Tests

none form-data x-www-form-urlencoded raw binary

KEY	VALUE
<input checked="" type="checkbox"/> drugName	Paracetamol
<input checked="" type="checkbox"/> serialNo	003
<input checked="" type="checkbox"/> mfgDate	JAN2020
<input checked="" type="checkbox"/> expDate	DEC2022
<input checked="" type="checkbox"/> companyCRN	MAN001
<input checked="" type="checkbox"/> organisationRole	Manufacturer
Key	Value

Body Cookies Headers (7) Test Results

Pretty Raw Preview JSON

```
1 {
2   "status": "success",
3   "message": "Drug Added successfully",
4   "drug": {
5     "productID": "\u0000org.pharma-network.productIDKey\u0000003\u0000Paracetamol\u0000",
6     "name": "Paracetamol",
7     "manufacturer": "\u0000org.pharma-network.companyId\u0000001\u0000Sun Pharma\u0000",
8     "manufacturingDate": "JAN2020",
9     "expiryDate": "DEC2022",
10    "owner": "\u0000org.pharma-network.companyId\u0000001\u0000Sun Pharma\u0000",
11    "shipment": ""
12  }
13 }
```



POST localhost:3000/addDrug

KEY	VALUE
drugName	Paracetamol
serialNo	004
mfgDate	JAN2020
expDate	DEC2022
companyCRN	MAN001
organisationRole	Manufacturer
Key	Value

```

1 {
2   "status": "success",
3   "message": "Drug Added successfully",
4   "drug": {
5     "productId": "\u0000org.pharma-network.productIdKey\u0000004\u0000Paracetamol\u0000",
6     "name": "Paracetamol",
7     "manufacturer": "\u0000org.pharma-network.companyId\u0000MAN001\u0000Sun Pharma\u0000",
8     "manufacturingDate": "JAN2020",
9     "expiryDate": "DEC2022",
10    "owner": "\u0000org.pharma-network.companyId\u0000MAN001\u0000Sun Pharma\u0000",
11    "shipment": ""
12  }
13 }

```

## Test Case 2: Supply Chain

Create a collection file named 'Supply Chain' which contains the HTTP requests to perform the following functions.

Supply Chain  
7 requests

- Supply Chain - Part a:
  - POST localhost:3000/createPO?bu...
  - POST localhost:3000/createShipm...
  - POST localhost:3000/updateShip...
- Supply Chain - Part b:
  - POST localhost:3000/createPO
  - POST localhost:3000/createShipm...
  - POST localhost:3000/updateShip...
- Supply Chain - Part c:
  - POST localhost:3000/retailDrug

Part a:

Purchase Order raised by 'VG Pharma' to purchase 3 strips of paracetamol from 'Sun Pharma'.

Expected Output: Display the PO object created in the response body.

History Collections

POST localhost:3000/createPO?buyerCRN=DIST001&sellerCRN=MAN001&drugName=Paracetamol&quantity=3&organisationRole=Manufacturer

Params Authorization Headers (1) Body Pre-request Script Tests

none form-data x-www-form-urlencoded raw binary

KEY	VALUE
buyerCRN	DIST001
sellerCRN	MAN001
drugName	Paracetamol
quantity	3
organisationRole	Manufacturer
Key	Value

Body Cookies Headers (7) Test Results

Pretty Raw Preview JSON

```
1 {
2   "status": "success",
3   "message": "Purchase order created successfully",
4   "purchaseOrder": {
5     "poID": "\u0000org.pharma-network.poIDKey\u0000IST001\u0000Paracetamol\u0000",
6     "drugName": "Paracetamol",
7     "quantity": "3",
8     "buyer": "\u0000org.pharma-network.companyId\u0000IST001\u0000VG Pharma\u0000",
9     "seller": "\u0000org.pharma-network.companyId\u0000MAN001\u0000Sun Pharma\u0000"
10  }
11 }
```

*Shipment created by 'Sun Pharma' in response to the raised purchase order. 'FedEx' acts as the Transporter.*

Expected Output: Display the Shipment object created in the response body.

History Collections

POST localhost:3000/createShipment

Params Authorization Headers (1) Body Pre-request Script Tests

none form-data x-www-form-urlencoded raw binary

KEY	VALUE
buyerCRN	DIST001
drugName	Paracetamol
listOfAssets	001,002,003
transporterCRN	TRA001
organisationRole	Manufacturer
Key	Value

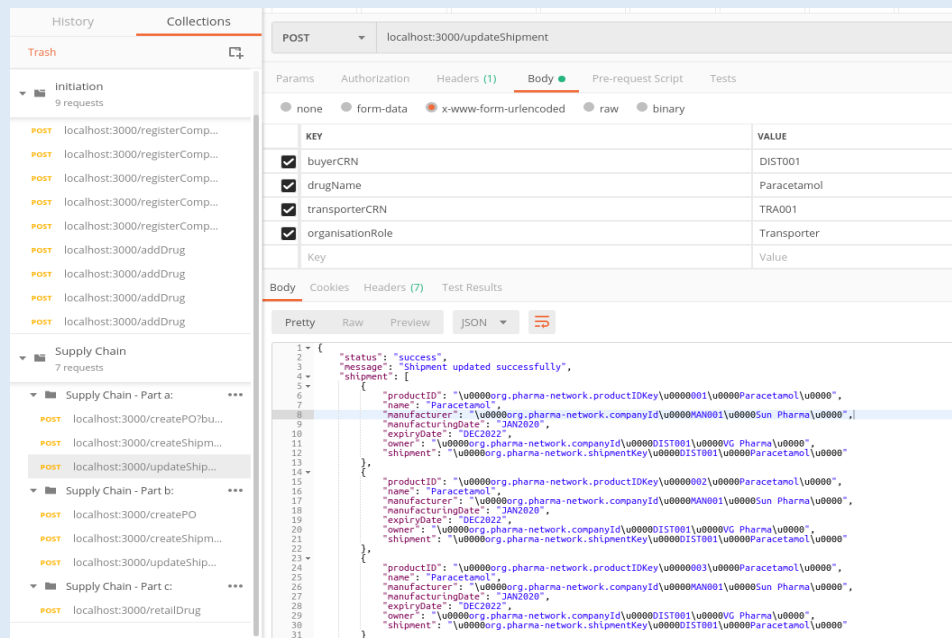
Body Cookies Headers (7) Test Results

Pretty Raw Preview JSON

```
1 {
2   "status": "success",
3   "message": "Shipment created successfully",
4   "shipment": {
5     "shipmentID": "\u0000org.pharma-network.shipmentKey\u0000IST001\u0000Paracetamol\u0000",
6     "creator": "\u0000org.pharma-network.companyId\u0000MAN001\u0000Sun Pharma\u0000",
7     "assets": [
8       "\u0000org.pharma-network.productIdKey\u000000001\u0000Paracetamol\u0000",
9       "\u0000org.pharma-network.productIdKey\u000000002\u0000Paracetamol\u0000",
10      "\u0000org.pharma-network.productIdKey\u000000003\u0000Paracetamol\u0000"
11     ],
12     "transporter": "\u0000org.pharma-network.companyId\u0000TRA001\u0000FedEx\u0000",
13     "status": "in-transit"
14   }
15 }
```

*'FedEx' delivers the shipment to 'VG pharma'.*

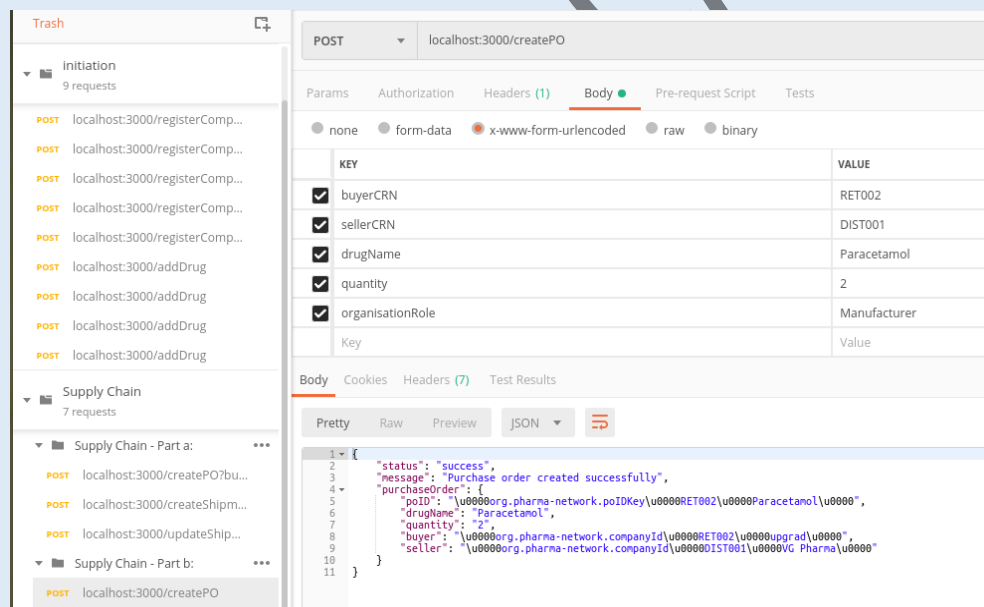
Expected Output: Display the data of each asset of the shipment.



Part b:

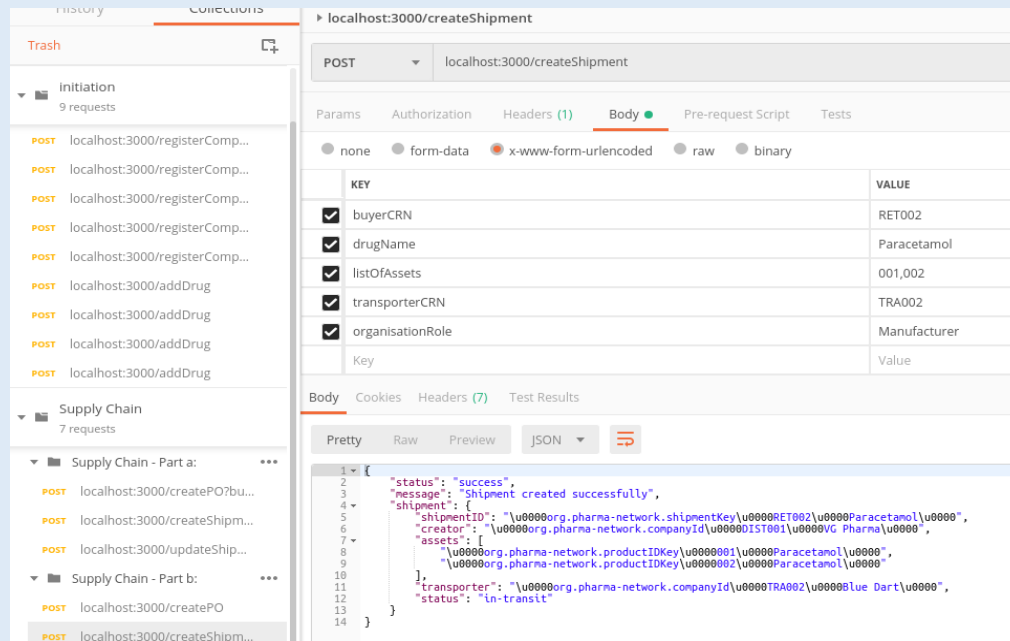
Purchase Order raised by 'upgrad' to purchase 2 strips of paracetamol from 'VG Pharma'.

Expected Output: Display the PO object created in the response body.



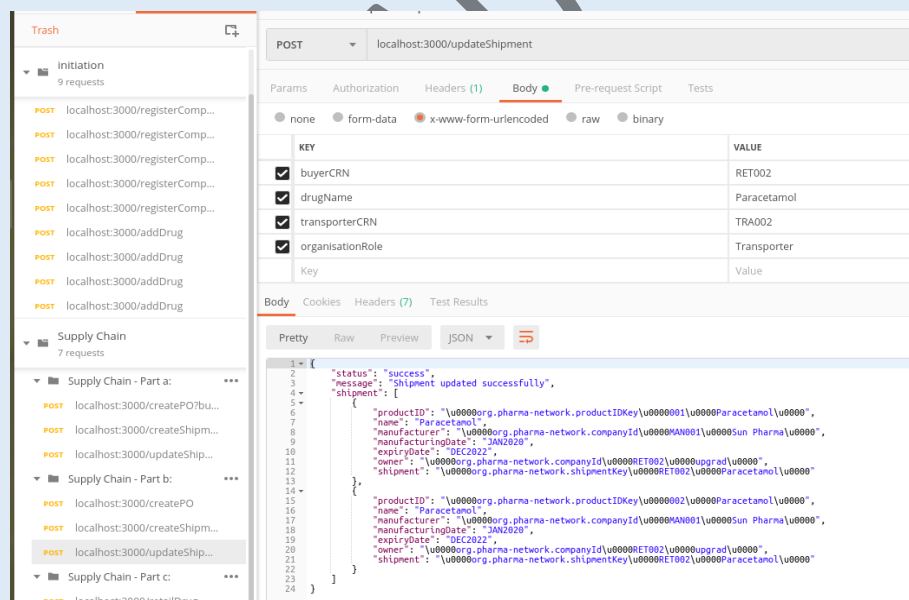
Shipment created by 'VG Pharma' in response to the raised purchase order. 'Blue Dart' acts as the transporter.

Expected Output: Display the Shipment object created in the response body.



*‘Blue Dart’ delivers the shipment to ‘upgrad’.*

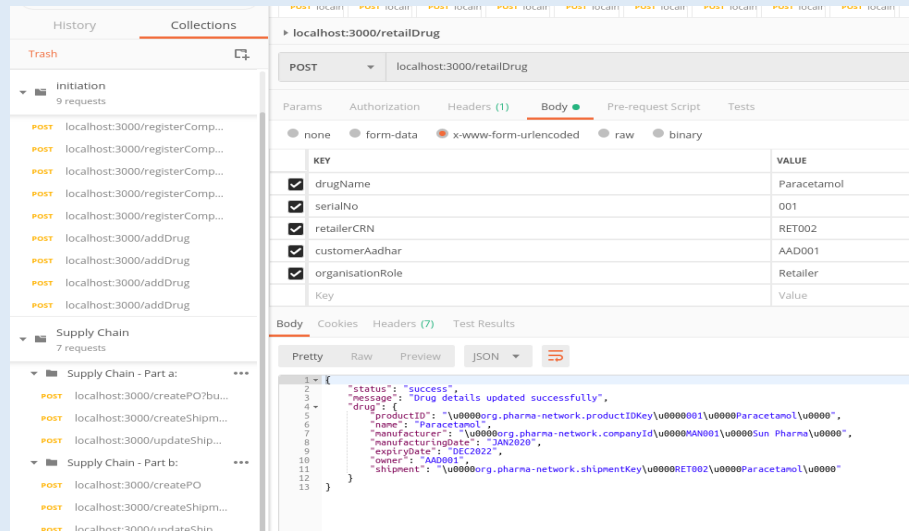
Expected Output: Display the data of each asset of the shipment in the response body.



*Part c:*

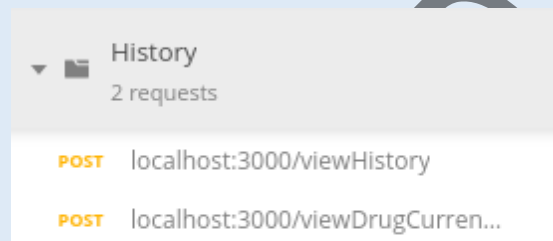
A customer named 'Akash' with Aadhar Number 'AAD001' buys 1 paracetamol strip from the retailer 'upgrad'.

Expected Output: Display the data of the asset bought by Akash in the response body.



### Test Case 3: History Tracking

Create a collection file named 'History' which contains the HTTP requests to perform the following functions.



The customer 'Akash' wishes to check the history of the paracetamol that he bought from 'upgrad'.

Expected Output: The response body should display the entire lifecycle of the asset.



History

Collections

Trash

History

2 requests

POST localhost:3000/viewHistory

POST localhost:3000/viewDrugCurrent...

Initiation

9 requests

Supply Chain

7 requests

localhost:3000/viewHistory

POST

localhost:3000/viewHistory

Params

Authorization

Headers (1)

Body

Pre-request Script

Tests

none

form-data

x-www-form-urlencoded

raw

binary

KEY	VALUE
drugName	Paracetamol
serialNo	001
organisationRole	Manufacturer
Key	Value

Body

Cookies

Headers (7)

Test Results

Pretty

Raw

Preview

JSON

```

1 {
2   "status": "success",
3   "message": "Drug transaction history fetched successfully",
4   "drug": {
5     "TxId": "4a7b55718391d7662c86c728f00c0cc1e138af961a9bcc5c419861c4d9448cf1",
6     "Timestamp": {
7       "seconds": {
8         "low": 1601812488,
9         "high": 0,
10        "unsigned": false
11      },
12      "nanos": 369000000
13    },
14    "isDelete": "false",
15    "Value": {
16      "productID": "\u0000org.pharma-network.productIDKey\u0000001\u00000Paracetamol\u0000",
17      "name": "Paracetamol",
18      "manufacturer": "\u0000org.pharma-network.companyId\u00000MAN001\u00000Sun Pharma\u0000",
19      "manufacturingDate": "JAN2020",
20      "expiryDate": "DEC2022",
21      "owner": "\u0000org.pharma-network.companyId\u00000MAN001\u00000Sun Pharma\u0000",
22      "shipment": "\u0000org.pharma-network.shipmentKey\u00000IST001\u00000Paracetamol\u0000"
23    }
24  },
25  }

```

Supply Chain

7 requests

```

26 {
27   "TxId": "ae2601028736c935f8e471c6d6980b508728d273d4dae9d0113b1e69c1fb6e4",
28   "Timestamp": {
29     "seconds": {
30       "low": 1601812733,
31       "high": 0,
32       "unsigned": false
33     },
34     "nanos": 14000000
35   },
36   "isDelete": "false",
37   "Value": {
38     "productID": "\u0000org.pharma-network.productIDKey\u0000001\u00000Paracetamol\u0000",
39     "name": "Paracetamol",
40     "manufacturer": "\u0000org.pharma-network.companyId\u00000MAN001\u00000Sun Pharma\u0000",
41     "manufacturingDate": "JAN2020",
42     "expiryDate": "DEC2022",
43     "owner": "\u0000org.pharma-network.companyId\u00000IST001\u00000VC Pharma\u0000",
44     "shipment": "\u0000org.pharma-network.shipmentKey\u00000IST001\u00000Paracetamol\u0000"
45   }
46 },
47 {
48   "TxId": "18c0aabdc8c8ee4cebdf4f24a98193835dde9f7721f290893d2aece89b92ace",
49   "Timestamp": {
50     "seconds": {
51       "low": 1601812840,
52       "high": 0,
53       "unsigned": false
54     },
55     "nanos": 17000000
56   },
57   "isDelete": "false",
58   "Value": {
59     "productID": "\u0000org.pharma-network.productIDKey\u0000001\u00000Paracetamol\u0000",
60     "name": "Paracetamol",
61     "manufacturer": "\u0000org.pharma-network.companyId\u00000MAN001\u00000Sun Pharma\u0000",
62     "manufacturingDate": "JAN2020",
63     "expiryDate": "DEC2022",
64     "owner": "\u0000org.pharma-network.companyId\u00000RET002\u00000upgrad\u0000",
65     "shipment": "\u0000org.pharma-network.shipmentKey\u00000RET002\u00000Paracetamol\u0000"
66   }
67 },
68 }
69 ]

```

The customer 'Aakash' wishes to check the current state of the paracetamol that he bought from 'upgrad'.

Expected Output: The response body should display the current state of the asset

History

Collections

Trash

History  
2 requests

POST localhost:3000/viewHistory

POST localhost:3000/viewDrugCurrent...

Initiation  
9 requests

Supply Chain  
7 requests

localhost:3000/viewDrugCurrentState

POST localhost:3000/viewDrugCurrentState

ParamsAuthorizationHeaders (1)BodyPre-request ScriptTests

noneform-datax-www-form-urlencodedrawbinary

KEY	VALUE
<input checked="" type="checkbox"/> drugName	Paracetamol
<input checked="" type="checkbox"/> serialNo	001
<input checked="" type="checkbox"/> organisationRole	Manufacturer
Key	Value

BodyCookiesHeaders (7)Test Results

PrettyRawPreviewJSON

```
1 {
2   "status": "success",
3   "message": "Drug details fetched successfully",
4   "drug": {
5     "productID": "\u0000org.pharma-network.productIDKey\u0000001\u0000Paracetamol\u0000",
6     "name": "Paracetamol",
7     "manufacturer": "\u0000org.pharma-network.companyId\u0000MAN001\u0000Sun Pharma\u0000",
8     "manufacturingDate": "JAN2020",
9     "expiryDate": "DEC2022",
10    "owner": "\u0000org.pharma-network.companyId\u0000RET002\u0000upgrad\u0000",
11    "shipment": "\u0000org.pharma-network.shipmentKey\u0000RET002\u0000Paracetamol\u0000"
12  }
13 }
```

UPGRAD CAPS

UPGRAD CAPSTONE