Pharma-net Network Setup and Testing Guide

NOTE: - I have checked in the solution with crypto material, transaction artifacts and identities for node application already created so you don't need to create them again. In case you generate crypto material again don't forget to use ***AddToWallet*** API to create identities again for all organizations.

STEPS TO SET UP THE NETWORK: -

1. Open terminal pointing to network folder of pharma-net. Create crypto material using cryptogen tool. Using following command: -

   export PATH=~/workspace/pharmachain/network/bin:$PATH

   cryptogen generate --config=./crypto-config.yaml

```
aishwary@aish-Virtual-Machine:~/workspace/pharmachain/network$ export PATH=~/workspace/pharmachain/network/bin:$PATH
aishwary@aish-Virtual-Machine:~/workspace/pharmachain/network$ cryptogen generate --config=./crypto-config.yaml
manufacturer.pharma-network.com
distributor.pharma-network.com
retailer.pharma-network.com
consumer.pharma-network.com
transporter.pharma-network.com
aishwary@aish-Virtual-Machine:~/workspace/pharmachain/network$
```

2. Create genesis block and channel using configtxgen tool. Using following command: -

   configtxgen -profile OrdererGenesis -channelID pharma-sys-channel -outputBlock ./channel-artifacts/genesis.block

   configtxgen -profile PharmaChannel -outputCreateChannelTx ./channel-artifacts/channel.tx -channelID pharmachannel

```
aishwary@aish-Virtual-Machine:~/workspace/pharmachain/network$ configtxgen -profile OrdererGenesis -channelID pharma-sys-channel -outputBlock ./channel-artifacts/genesis.block
2020-11-22 15:18:06.459 IST [common.tools.configtxgen] main -> INFO 001 Loading configuration
2020-11-22 15:18:06.495 IST [common.tools.configtxgen.localconfig] completeInitialization -> INFO 002 orderer type: solo
2020-11-22 15:18:06.495 IST [common.tools.configtxgen.localconfig] Load -> INFO 003 Loaded configuration: /home/aishwary/workspace/pharmachain/network/configtx.yaml
2020-11-22 15:18:06.524 IST [common.tools.configtxgen.localconfig] completeInitialization -> INFO 004 orderer type: solo
2020-11-22 15:18:06.524 IST [common.tools.configtxgen.localconfig] LoadTopLevel -> INFO 005 Loaded configuration: /home/aishwary/workspace/pharmachain/network/configtx.yaml
2020-11-22 15:18:06.527 IST [common.tools.configtxgen] doOutputBlock -> INFO 006 Generating genesis block
2020-11-22 15:18:06.528 IST [common.tools.configtxgen] doOutputBlock -> INFO 007 Writing genesis block
aishwary@aish-Virtual-Machine:~/workspace/pharmachain/network$ configtxgen -profile PharmaChannel -outputCreateChannelTx ./channel-artifacts/channel.tx -channelID pharmachannel
2020-11-22 15:18:37.555 IST [common.tools.configtxgen] main -> INFO 001 Loading configuration
2020-11-22 15:18:37.575 IST [common.tools.configtxgen.localconfig] Load -> INFO 002 Loaded configuration: /home/aishwary/workspace/pharmachain/network/configtx.yaml
2020-11-22 15:18:37.596 IST [common.tools.configtxgen.localconfig] completeInitialization -> INFO 003 orderer type: solo
2020-11-22 15:18:37.596 IST [common.tools.configtxgen.localconfig] LoadTopLevel -> INFO 004 Loaded configuration: /home/aishwary/workspace/pharmachain/network/configtx.yaml
2020-11-22 15:18:37.596 IST [common.tools.configtxgen] doOutputChannelCreateTx -> INFO 005 Generating new channel configtx
2020-11-22 15:18:37.597 IST [common.tools.configtxgen.encoder] NewChannelGroup -> WARN 006 Default policy emission is deprecated, please include policy specifications for the channe
l group in configtx.yaml
2020-11-22 15:18:37.609 IST [common.tools.configtxgen.encoder] NewChannelGroup -> WARN 007 Default policy emission is deprecated, please include policy specifications for the channe
l group in configtx.yaml
2020-11-22 15:18:37.618 IST [common.tools.configtxgen] doOutputChannelCreateTx -> INFO 008 Writing new channel tx
aishwary@aish-Virtual-Machine:~/workspace/pharmachain/network$
```

3. Create anchor peer update transactions using configtxgen tool. Using following command: -

   configtxgen -profile PharmaChannel -outputAnchorPeersUpdate ./channel-artifacts/manufacturerMSPanchors.tx -channelID pharmachannel -asOrg manufacturerMSP

   configtxgen -profile PharmaChannel -outputAnchorPeersUpdate ./channel-artifacts/distributorMSPanchors.tx -channelID pharmachannel -asOrg distributorMSP

   configtxgen -profile PharmaChannel -outputAnchorPeersUpdate ./channel-artifacts/retailerMSPanchors.tx -channelID pharmachannel -asOrg retailerMSP

   configtxgen -profile PharmaChannel -outputAnchorPeersUpdate ./channel-artifacts/consumerMSPanchors.tx -channelID pharmachannel -asOrg consumerMSP

configtxgen -profile PharmaChannel -outputAnchorPeersUpdate ./channel-artifacts/transporterMSPanchors.tx -channelID pharmachannel -asOrg transporterMSP

```
aishwary@aish-Virtual-Machine:~/workspace/pharmachain/network$ configtxgen -profile PharmaChannel -outputAnchorPeersUpdate ./channel-artifacts/manufacturerMSPanchors.tx -channelID p
harmachannel -asOrg manufacturerMSP
2020-11-22 15:20:19.008 IST [common.tools.configtxgen] main -> INFO 001 Loading configuration
2020-11-22 15:20:19.036 IST [common.tools.configtxgen.localconfig] Load -> INFO 002 Loaded configuration: /home/aishwary/workspace/pharmachain/network/configtx.yaml
2020-11-22 15:20:19.059 IST [common.tools.configtxgen.localconfig] completeInitialization -> INFO 003 orderer type: solo
2020-11-22 15:20:19.059 IST [common.tools.configtxgen.localconfig] LoadTopLevel -> INFO 004 Loaded configuration: /home/aishwary/workspace/pharmachain/network/configtx.yaml
2020-11-22 15:20:19.059 IST [common.tools.configtxgen] doOutputAnchorPeersUpdate -> INFO 005 Generating anchor peer update
2020-11-22 15:20:19.060 IST [common.tools.configtxgen] doOutputAnchorPeersUpdate -> INFO 006 Writing anchor peer update
aishwary@aish-Virtual-Machine:~/workspace/pharmachain/network$ configtxgen -profile PharmaChannel -outputAnchorPeersUpdate ./channel-artifacts/distributorMSPanchors.tx -channelID ph
armachannel -asOrg distributorMSP
2020-11-22 15:20:29.135 IST [common.tools.configtxgen] main -> INFO 001 Loading configuration
2020-11-22 15:20:29.167 IST [common.tools.configtxgen.localconfig] Load -> INFO 002 Loaded configuration: /home/aishwary/workspace/pharmachain/network/configtx.yaml
2020-11-22 15:20:29.195 IST [common.tools.configtxgen.localconfig] completeInitialization -> INFO 003 orderer type: solo
2020-11-22 15:20:29.195 IST [common.tools.configtxgen.localconfig] LoadTopLevel -> INFO 004 Loaded configuration: /home/aishwary/workspace/pharmachain/network/configtx.yaml
2020-11-22 15:20:29.195 IST [common.tools.configtxgen] doOutputAnchorPeersUpdate -> INFO 005 Generating anchor peer update
2020-11-22 15:20:29.195 IST [common.tools.configtxgen] doOutputAnchorPeersUpdate -> INFO 006 Writing anchor peer update
aishwary@aish-Virtual-Machine:~/workspace/pharmachain/network$ configtxgen -profile PharmaChannel -outputAnchorPeersUpdate ./channel-artifacts/retailerMSPanchors.tx -channelID pharm
achannel -asOrg retailerMSP
2020-11-22 15:20:38.264 IST [common.tools.configtxgen] main -> INFO 001 Loading configuration
2020-11-22 15:20:38.278 IST [common.tools.configtxgen.localconfig] Load -> INFO 002 Loaded configuration: /home/aishwary/workspace/pharmachain/network/configtx.yaml
2020-11-22 15:20:38.306 IST [common.tools.configtxgen.localconfig] completeInitialization -> INFO 003 orderer type: solo
2020-11-22 15:20:38.306 IST [common.tools.configtxgen.localconfig] LoadTopLevel -> INFO 004 Loaded configuration: /home/aishwary/workspace/pharmachain/network/configtx.yaml
2020-11-22 15:20:38.307 IST [common.tools.configtxgen] doOutputAnchorPeersUpdate -> INFO 005 Generating anchor peer update
2020-11-22 15:20:38.307 IST [common.tools.configtxgen] doOutputAnchorPeersUpdate -> INFO 006 Writing anchor peer update
aishwary@aish-Virtual-Machine:~/workspace/pharmachain/network$ configtxgen -profile PharmaChannel -outputAnchorPeersUpdate ./channel-artifacts/consumerMSPanchors.tx -channelID pharm
achannel -asOrg consumerMSP
2020-11-22 15:20:48.590 IST [common.tools.configtxgen] main -> INFO 001 Loading configuration
2020-11-22 15:20:48.612 IST [common.tools.configtxgen.localconfig] Load -> INFO 002 Loaded configuration: /home/aishwary/workspace/pharmachain/network/configtx.yaml
2020-11-22 15:20:48.653 IST [common.tools.configtxgen.localconfig] completeInitialization -> INFO 003 orderer type: solo
2020-11-22 15:20:48.654 IST [common.tools.configtxgen.localconfig] LoadTopLevel -> INFO 004 Loaded configuration: /home/aishwary/workspace/pharmachain/network/configtx.yaml
2020-11-22 15:20:48.654 IST [common.tools.configtxgen] doOutputAnchorPeersUpdate -> INFO 005 Generating anchor peer update
2020-11-22 15:20:48.654 IST [common.tools.configtxgen] doOutputAnchorPeersUpdate -> INFO 006 Writing anchor peer update
aishwary@aish-Virtual-Machine:~/workspace/pharmachain/network$ configtxgen -profile PharmaChannel -outputAnchorPeersUpdate ./channel-artifacts/transporterMSPanchors.tx -channelID ph
armachannel -asOrg transporterMSP
2020-11-22 15:21:06.410 IST [common.tools.configtxgen] main -> INFO 001 Loading configuration
2020-11-22 15:21:06.435 IST [common.tools.configtxgen.localconfig] Load -> INFO 002 Loaded configuration: /home/aishwary/workspace/pharmachain/network/configtx.yaml
2020-11-22 15:21:06.470 IST [common.tools.configtxgen.localconfig] completeInitialization -> INFO 003 orderer type: solo
2020-11-22 15:21:06.471 IST [common.tools.configtxgen.localconfig] LoadTopLevel -> INFO 004 Loaded configuration: /home/aishwary/workspace/pharmachain/network/configtx.yaml
2020-11-22 15:21:06.471 IST [common.tools.configtxgen] doOutputAnchorPeersUpdate -> INFO 005 Generating anchor peer update
2020-11-22 15:21:06.471 IST [common.tools.configtxgen] doOutputAnchorPeersUpdate -> INFO 006 Writing anchor peer update
aishwary@aish-Virtual-Machine:~/workspace/pharmachain/network$
```

4. Create docker container using command: -

   docker-compose -f ./docker-compose.yml up –d

```
aishwary@aish-Virtual-Machine:~/workspace/pharmachain/network$ docker-compose -f ./docker-compose.yml up -d
Creating network "network_pharma" with the default driver
Creating volume "network_orderer.pharma-network.com" with default driver
Creating volume "network_peer0.manufacturer.pharma-network.com" with default driver
Creating volume "network_peer1.manufacturer.pharma-network.com" with default driver
Creating volume "network_peer0.distributor.pharma-network.com" with default driver
Creating volume "network_peer1.distributor.pharma-network.com" with default driver
Creating volume "network_peer0.retailer.pharma-network.com" with default driver
Creating volume "network_peer1.retailer.pharma-network.com" with default driver
Creating volume "network_peer0.consumer.pharma-network.com" with default driver
Creating volume "network_peer1.consumer.pharma-network.com" with default driver
Creating volume "network_peer0.transporter.pharma-network.com" with default driver
Creating volume "network_peer1.transporter.pharma-network.com" with default driver
Creating peer0.consumer.pharma-network.com ...
Creating ca.manufacturer.pharma-network.com ...
Creating peer1.consumer.pharma-network.com  ...
Creating ca.consumer.pharma-network.com     ...
Creating peer0.manufacturer.pharma-network.com ...
Creating ca.retailer.pharma-network.com        ...
Creating peer1.transporter.pharma-network.com  ...
Creating peer1.manufacturer.pharma-network.com ...
Creating peer0.distributor.pharma-network.com  ...
Creating ca.distributor.pharma-network.com     ...
Creating peer0.consumer.pharma-network.com     ... done
Creating ca.manufacturer.pharma-network.com    ... done
Creating peer1.consumer.pharma-network.com     ... done
Creating ca.consumer.pharma-network.com        ... done
Creating peer0.manufacturer.pharma-network.com ... done
Creating ca.retailer.pharma-network.com        ... done
Creating peer1.transporter.pharma-network.com  ... done
Creating peer1.manufacturer.pharma-network.com ... done
Creating peer0.distributor.pharma-network.com  ... done
Creating ca.distributor.pharma-network.com     ... done
Creating orderer.pharma-network.com            ... done
Creating peer0.retailer.pharma-network.com     ... done
Creating peer1.retailer.pharma-network.com     ... done
Creating peer0.transporter.pharma-network.com  ... done
Creating peer1.distributor.pharma-network.com  ... done
Creating ca.transporter.pharma-network.com     ... done
Creating chaincode                             ... done
Creating cli                                   ... done
aishwary@aish-Virtual-Machine:~/workspace/pharmachain/network$
```

5. Create channel and make peers join channel using following commands: -

   docker exec -it cli /bin/bash

   peer channel create -o orderer.pharma-network.com:7050 -c pharmachannel -f ./channel-artifacts/channel.tx

   peer channel join -b pharmachannel.block

   CORE_PEER_ADDRESS=peer1.manufacturer.pharma-network.com:8051

```
peer channel join -b pharmachannel.block

# Point to other peers and make them join channel. CLI by default connected to manufacturer peer0

CORE_PEER_LOCALMSPID="distributorMSP"

CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations
/distributor.pharma-network.com/users/Admin@distributor.pharma-network.com/msp

CORE_PEER_ADDRESS=peer0.distributor.pharma-network.com:9051

peer channel join -b pharmachannel.block

CORE_PEER_ADDRESS=peer1.distributor.pharma-network.com:10051

peer channel join -b pharmachannel.block

CORE_PEER_LOCALMSPID="retailerMSP"

CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations
/retailer.pharma-network.com/users/Admin@retailer.pharma-network.com/msp

CORE_PEER_ADDRESS=peer0.retailer.pharma-network.com:11051

peer channel join -b pharmachannel.block

CORE_PEER_ADDRESS=peer1.retailer.pharma-network.com:12051

peer channel join -b pharmachannel.block

CORE_PEER_LOCALMSPID="consumerMSP"

CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations
/consumer.pharma-network.com/users/Admin@consumer.pharma-network.com/msp

CORE_PEER_ADDRESS=peer0.consumer.pharma-network.com:13051

peer channel join -b pharmachannel.block

CORE_PEER_ADDRESS=peer1.consumer.pharma-network.com:14051

peer channel join -b pharmachannel.block

CORE_PEER_LOCALMSPID="transporterMSP"

CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations
/transporter.pharma-network.com/users/Admin@transporter.pharma-network.com/msp

CORE_PEER_ADDRESS=peer0.transporter.pharma-network.com:15051

peer channel join -b pharmachannel.block

CORE_PEER_ADDRESS=peer1.transporter.pharma-network.com:16051

peer channel join -b pharmachannel.block
```

```
aishwary@aish-Virtual-Machine:~/workspace/pharmachain/network$ docker exec -it cli /bin/bash
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer channel create -o orderer.pharma-network.com:7050 -c pharmachannel -f ./channel-artifacts/channel.tx
2020-11-22 09:55:05.351 UTC [channelCmd] InitCmdFactory -> INFO 001 Endorser and orderer connections initialized
2020-11-22 09:55:05.588 UTC [cli.common] readBlock -> INFO 002 Received block: 0
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer channel join -b pharmachannel.block
2020-11-22 09:55:17.167 UTC [channelCmd] InitCmdFactory -> INFO 001 Endorser and orderer connections initialized
2020-11-22 09:55:18.048 UTC [channelCmd] executeJoin -> INFO 002 Successfully submitted proposal to join channel
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_ADDRESS=peer1.manufacturer.pharma-network.com:8051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer channel join -b pharmachannel.block
2020-11-22 09:55:48.173 UTC [channelCmd] InitCmdFactory -> INFO 001 Endorser and orderer connections initialized
2020-11-22 09:55:49.980 UTC [channelCmd] executeJoin -> INFO 002 Successfully submitted proposal to join channel
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_LOCALMSPID="distributorMSP"
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/distributor
.pharma-network.com/users/Admin@distributor.pharma-network.com/msp
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_ADDRESS=peer0.distributor.pharma-network.com:9051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer channel join -b pharmachannel.block
2020-11-22 09:56:49.162 UTC [channelCmd] InitCmdFactory -> INFO 001 Endorser and orderer connections initialized
2020-11-22 09:56:50.453 UTC [channelCmd] executeJoin -> INFO 002 Successfully submitted proposal to join channel
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_ADDRESS=peer1.distributor.pharma-network.com:10051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer channel join -b pharmachannel.block
2020-11-22 09:57:10.899 UTC [channelCmd] InitCmdFactory -> INFO 001 Endorser and orderer connections initialized
2020-11-22 09:57:11.819 UTC [channelCmd] executeJoin -> INFO 002 Successfully submitted proposal to join channel
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_LOCALMSPID="retailerMSP"
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/retailer.ph
arma-network.com/users/Admin@retailer.pharma-network.com/msp
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_ADDRESS=peer0.retailer.pharma-network.com:11051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer channel join -b pharmachannel.block
2020-11-22 09:57:55.076 UTC [channelCmd] InitCmdFactory -> INFO 001 Endorser and orderer connections initialized
2020-11-22 09:57:56.209 UTC [channelCmd] executeJoin -> INFO 002 Successfully submitted proposal to join channel
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_ADDRESS=peer1.retailer.pharma-network.com:12051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer channel join -b pharmachannel.block
2020-11-22 09:58:19.157 UTC [channelCmd] InitCmdFactory -> INFO 001 Endorser and orderer connections initialized
2020-11-22 09:58:20.798 UTC [channelCmd] executeJoin -> INFO 002 Successfully submitted proposal to join channel
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_LOCALMSPID="consumerMSP"
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/consumer.ph
arma-network.com/users/Admin@consumer.pharma-network.com/msp
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_ADDRESS=peer0.consumer.pharma-network.com:13051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer channel join -b pharmachannel.block
2020-11-22 09:59:02.994 UTC [channelCmd] InitCmdFactory -> INFO 001 Endorser and orderer connections initialized
2020-11-22 09:59:03.798 UTC [channelCmd] executeJoin -> INFO 002 Successfully submitted proposal to join channel
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_ADDRESS=peer1.consumer.pharma-network.com:14051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer channel join -b pharmachannel.block
2020-11-22 09:59:18.831 UTC [channelCmd] InitCmdFactory -> INFO 001 Endorser and orderer connections initialized
2020-11-22 09:59:19.725 UTC [channelCmd] executeJoin -> INFO 002 Successfully submitted proposal to join channel
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_LOCALMSPID="transporterMSP"
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/transporter
.pharma-network.com/users/Admin@transporter.pharma-network.com/msp
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_ADDRESS=peer0.transporter.pharma-network.com:15051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer channel join -b pharmachannel.block
2020-11-22 09:59:57.362 UTC [channelCmd] InitCmdFactory -> INFO 001 Endorser and orderer connections initialized
2020-11-22 09:59:58.951 UTC [channelCmd] executeJoin -> INFO 002 Successfully submitted proposal to join channel
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_ADDRESS=peer1.transporter.pharma-network.com:16051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer channel join -b pharmachannel.block
2020-11-22 10:00:22.489 UTC [channelCmd] InitCmdFactory -> INFO 001 Endorser and orderer connections initialized
2020-11-22 10:00:24.331 UTC [channelCmd] executeJoin -> INFO 002 Successfully submitted proposal to join channel
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer#
```

6. Update anchor peers on network using following commands: -

CORE_PEER_LOCALMSPID="manufacturerMSP"

CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/manufacturer.pharma-network.com/users/Admin@manufacturer.pharma-network.com/msp

CORE_PEER_ADDRESS=peer0.manufacturer.pharma-network.com:7051

peer channel update -o orderer.pharma-network.com:7050 -c pharmachannel -f ./channel-artifacts/manufacturerMSPanchors.tx

CORE_PEER_LOCALMSPID="distributorMSP"

CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/distributor.pharma-network.com/users/Admin@distributor.pharma-network.com/msp

CORE_PEER_ADDRESS=peer0.distributor.pharma-network.com:9051

peer channel update -o orderer.pharma-network.com:7050 -c pharmachannel -f ./channel-artifacts/distributorMSPanchors.tx

CORE_PEER_LOCALMSPID="retailerMSP"

CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/retailer.pharma-network.com/users/Admin@retailer.pharma-network.com/msp

CORE_PEER_ADDRESS=peer0.retailer.pharma-network.com:11051

peer channel update -o orderer.pharma-network.com:7050 -c pharmachannel -f ./channel-artifacts/retailerMSPanchors.tx

CORE_PEER_LOCALMSPID="consumerMSP"

CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/consumer.pharma-network.com/users/Admin@consumer.pharma-network.com/msp

CORE_PEER_ADDRESS=peer0.consumer.pharma-network.com:13051

peer channel update -o orderer.pharma-network.com:7050 -c pharmachannel -f ./channel-artifacts/consumerMSPanchors.tx

CORE_PEER_LOCALMSPID="transporterMSP"

CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/transporter.pharma-network.com/users/Admin@transporter.pharma-network.com/msp

CORE_PEER_ADDRESS=peer0.transporter.pharma-network.com:15051

peer channel update -o orderer.pharma-network.com:7050 -c pharmachannel -f ./channel-artifacts/transporterMSPanchors.tx

```
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_LOCALMSPID="manufacturerMSP"
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/manufacture
r.pharma-network.com/users/Admin@manufacturer.pharma-network.com/msp
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_ADDRESS=peer0.manufacturer.pharma-network.com:7051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer channel update -o orderer.pharma-network.com:7050 -c pharmachannel -f ./channel-artifacts/manufacturerMSPa
nchors.tx
2020-11-22 10:02:08.731 UTC [channelCmd] InitCmdFactory -> INFO 001 Endorser and orderer connections initialized
2020-11-22 10:02:08.786 UTC [channelCmd] update -> INFO 002 Successfully submitted channel update
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_LOCALMSPID="distributorMSP"
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/distributor
.pharma-network.com/users/Admin@distributor.pharma-network.com/msp
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_ADDRESS=peer0.distributor.pharma-network.com:9051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer channel update -o orderer.pharma-network.com:7050 -c pharmachannel -f ./channel-artifacts/distributorMSPan
chors.tx
2020-11-22 10:02:57.252 UTC [channelCmd] InitCmdFactory -> INFO 001 Endorser and orderer connections initialized
2020-11-22 10:02:57.281 UTC [channelCmd] update -> INFO 002 Successfully submitted channel update
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_LOCALMSPID="retailerMSP"
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/retailer.ph
arma-network.com/users/Admin@retailer.pharma-network.com/msp
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_ADDRESS=peer0.retailer.pharma-network.com:11051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer channel update -o orderer.pharma-network.com:7050 -c pharmachannel -f ./channel-artifacts/retailerMSPancho
rs.tx
2020-11-22 10:03:38.521 UTC [channelCmd] InitCmdFactory -> INFO 001 Endorser and orderer connections initialized
2020-11-22 10:03:38.573 UTC [channelCmd] update -> INFO 002 Successfully submitted channel update
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_LOCALMSPID="consumerMSP"
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/consumer.ph
arma-network.com/users/Admin@consumer.pharma-network.com/msp
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_ADDRESS=peer0.consumer.pharma-network.com:13051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer channel update -o orderer.pharma-network.com:7050 -c pharmachannel -f ./channel-artifacts/consumerMSPancho
rs.tx
2020-11-22 10:04:19.158 UTC [channelCmd] InitCmdFactory -> INFO 001 Endorser and orderer connections initialized
2020-11-22 10:04:19.184 UTC [channelCmd] update -> INFO 002 Successfully submitted channel update
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_LOCALMSPID="transporterMSP"
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/transporter
.pharma-network.com/users/Admin@transporter.pharma-network.com/msp
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_ADDRESS=peer0.transporter.pharma-network.com:15051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer channel update -o orderer.pharma-network.com:7050 -c pharmachannel -f ./channel-artifacts/transporterMSPan
chors.tx
2020-11-22 10:05:30.991 UTC [channelCmd] InitCmdFactory -> INFO 001 Endorser and orderer connections initialized
2020-11-22 10:05:31.020 UTC [channelCmd] update -> INFO 002 Successfully submitted channel update
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer#
```

7. Install chaincode on the chaincode container in a new terminal window using following commands: -

   docker exec -it chaincode /bin/bash

   npm install

   npm run start-dev

```
aishwary@aish-Virtual-Machine:~/workspace/pharmachain/network$ docker exec -it chaincode /bin/bash
root@e80492209f6a:/opt/gopath/src/chaincode# npm install
npm WARN pharmanet@0.0.1 No repository field.
npm WARN pharmanet@0.0.1 No license field.

audited 631 packages in 9.214s
found 145 vulnerabilities (109 low, 1 moderate, 34 high, 1 critical)
  run `npm audit fix` to fix them, or `npm audit` for details
root@e80492209f6a:/opt/gopath/src/chaincode# npm run start-dev

> pharmanet@0.0.1 start-dev /opt/gopath/src/chaincode
> fabric-chaincode-node start --peer.address peer0.manufacturer.pharma-network.com:7053 --chaincode-id-name pharmanet:1.1

Configuring yargs through package.json is deprecated and will be removed in the next major release, please use the JS API instead.
Configuring yargs through package.json is deprecated and will be removed in the next major release, please use the JS API instead.
Configuring yargs through package.json is deprecated and will be removed in the next major release, please use the JS API instead.
2020-11-22T10:08:42.254Z info [shim:contracts-spi/bootstrap.js]                  No metadata file supplied in contract, introspection will generate all the data
2020-11-22T10:08:42.255Z info [shim:contracts-spi/chaincodefromcontract.js]       Using serializers {"transaction":"jsonSerializer","serializers":{}}
Configuring yargs through package.json is deprecated and will be removed in the next major release, please use the JS API instead.
2020-11-22T10:08:42.291Z info [shim:lib/chaincode.js]                            Registering with peer peer0.manufacturer.pharma-network.com:7053 as chaincode "pharmanet:1.1"

Command succeeded

2020-11-22T10:08:42.325Z info [shim:lib/handler.js]                              Successfully registered with peer node. State transferred to "established"
2020-11-22T10:08:42.327Z info [shim:lib/handler.js]                              Successfully established communication with peer node. State transferred to "ready"
```

8. Open a new terminal window and install chaincode on all peers using following commands: -

docker exec -it cli /bin/bash

peer chaincode install -n pharmanet -v 1.1 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chaincode/

CORE_PEER_ADDRESS=peer1.manufacturer.pharma-network.com:8051

peer chaincode install -n pharmanet -v 1.1 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chaincode/

Point to other peers and make them join channel. CLI by default connected to manufacturer peer0

CORE_PEER_LOCALMSPID="distributorMSP"

CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/distributor.pharma-network.com/users/Admin@distributor.pharma-network.com/msp

CORE_PEER_ADDRESS=peer0.distributor.pharma-network.com:9051

peer chaincode install -n pharmanet -v 1.1 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chaincode/

CORE_PEER_ADDRESS=peer1.distributor.pharma-network.com:10051

peer chaincode install -n pharmanet -v 1.1 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chaincode/

CORE_PEER_LOCALMSPID="retailerMSP"

CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/retailer.pharma-network.com/users/Admin@retailer.pharma-network.com/msp

CORE_PEER_ADDRESS=peer0.retailer.pharma-network.com:11051

peer chaincode install -n pharmanet -v 1.1 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chaincode/

CORE_PEER_ADDRESS=peer1.retailer.pharma-network.com:12051

peer chaincode install -n pharmanet -v 1.1 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chaincode/

CORE_PEER_LOCALMSPID="consumerMSP"

CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/consumer.pharma-network.com/users/Admin@consumer.pharma-network.com/msp

CORE_PEER_ADDRESS=peer0.consumer.pharma-network.com:13051

peer chaincode install -n pharmanet -v 1.1 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chaincode/

CORE_PEER_ADDRESS=peer1.consumer.pharma-network.com:14051

peer chaincode install -n pharmanet -v 1.1 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chaincode/

CORE_PEER_LOCALMSPID="transporterMSP"

CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/transporter.pharma-network.com/users/Admin@transporter.pharma-network.com/msp

CORE_PEER_ADDRESS=peer0.transporter.pharma-network.com:15051

peer chaincode install -n pharmanet -v 1.1 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chaincode/

CORE_PEER_ADDRESS=peer1.transporter.pharma-network.com:16051

peer chaincode install -n pharmanet -v 1.1 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chaincode/

```
aishwary@aish-Virtual-Machine:~/workspace/pharmachain/network$ docker exec -it cli /bin/bash
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# echo $CORE_PEER_ADDRESS
peer0.manufacturer.pharma-network.com:7051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer chaincode install -n pharmanet -v 1.1 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chainc
ode/
2020-11-22 10:11:54.549 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 001 Using default escc
2020-11-22 10:11:54.549 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 002 Using default vscc
2020-11-22 10:11:55.181 UTC [chaincodeCmd] install -> INFO 003 Installed remotely response:<status:200 payload:"OK" >
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_ADDRESS=peer1.manufacturer.pharma-network.com:8051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer chaincode install -n pharmanet -v 1.1 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chainc
ode/
2020-11-22 10:12:13.880 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 001 Using default escc
2020-11-22 10:12:13.880 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 002 Using default vscc
2020-11-22 10:12:13.981 UTC [chaincodeCmd] install -> INFO 003 Installed remotely response:<status:200 payload:"OK" >
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_LOCALMSPID="distributorMSP"
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/distributor
.pharma-network.com/users/Admin@distributor.pharma-network.com/msp
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_ADDRESS=peer0.distributor.pharma-network.com:9051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer chaincode install -n pharmanet -v 1.1 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chainc
ode/
2020-11-22 10:13:00.092 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 001 Using default escc
2020-11-22 10:13:00.093 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 002 Using default vscc
2020-11-22 10:13:00.283 UTC [chaincodeCmd] install -> INFO 003 Installed remotely response:<status:200 payload:"OK" >
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_ADDRESS=peer1.distributor.pharma-network.com:10051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer chaincode install -n pharmanet -v 1.1 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chainc
ode/
2020-11-22 10:13:19.464 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 001 Using default escc
2020-11-22 10:13:19.464 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 002 Using default vscc
2020-11-22 10:13:19.572 UTC [chaincodeCmd] install -> INFO 003 Installed remotely response:<status:200 payload:"OK" >
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_LOCALMSPID="retailerMSP"
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/retailer.ph
arma-network.com/users/Admin@retailer.pharma-network.com/msp
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_ADDRESS=peer0.retailer.pharma-network.com:11051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer chaincode install -n pharmanet -v 1.1 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chainc
ode/
2020-11-22 10:14:35.821 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 001 Using default escc
2020-11-22 10:14:35.822 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 002 Using default vscc
2020-11-22 10:14:35.912 UTC [chaincodeCmd] install -> INFO 003 Installed remotely response:<status:200 payload:"OK" >
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_ADDRESS=peer1.retailer.pharma-network.com:12051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer chaincode install -n pharmanet -v 1.1 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chainc
ode/
2020-11-22 10:14:55.516 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 001 Using default escc
2020-11-22 10:14:55.516 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 002 Using default vscc
2020-11-22 10:14:55.621 UTC [chaincodeCmd] install -> INFO 003 Installed remotely response:<status:200 payload:"OK" >
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_LOCALMSPID="consumerMSP"
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/consumer.ph
arma-network.com/users/Admin@consumer.pharma-network.com/msp
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_ADDRESS=peer0.consumer.pharma-network.com:13051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer chaincode install -n pharmanet -v 1.1 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chainc
ode/
2020-11-22 10:15:36.021 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 001 Using default escc
2020-11-22 10:15:36.022 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 002 Using default vscc
2020-11-22 10:15:36.124 UTC [chaincodeCmd] install -> INFO 003 Installed remotely response:<status:200 payload:"OK" >
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer#
```

```
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# echo $CORE_PEER_ADDRESS
peer0.consumer.pharma-network.com:13051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_ADDRESS=peer1.consumer.pharma-network.com:14051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer chaincode install -n pharmanet -v 1.1 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chainc
ode/
2020-11-22 10:17:32.085 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 001 Using default escc
2020-11-22 10:17:32.086 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 002 Using default vscc
2020-11-22 10:17:32.183 UTC [chaincodeCmd] install -> INFO 003 Installed remotely response:<status:200 payload:"OK" >
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_LOCALMSPID="transporterMSP"
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/transporter
.pharma-network.com/users/Admin@transporter.pharma-network.com/msp
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_ADDRESS=peer0.transporter.pharma-network.com:15051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer chaincode install -n pharmanet -v 1.1 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chainc
ode/
2020-11-22 10:18:12.127 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 001 Using default escc
2020-11-22 10:18:12.127 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 002 Using default vscc
2020-11-22 10:18:12.225 UTC [chaincodeCmd] install -> INFO 003 Installed remotely response:<status:200 payload:"OK" >
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_ADDRESS=peer1.transporter.pharma-network.com:16051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer chaincode install -n pharmanet -v 1.1 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chainc
ode/
2020-11-22 10:18:29.287 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 001 Using default escc
2020-11-22 10:18:29.287 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 002 Using default vscc
2020-11-22 10:18:29.382 UTC [chaincodeCmd] install -> INFO 003 Installed remotely response:<status:200 payload:"OK" >
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer#
```

9. Instantiate the chaincode from any one peer. Here we are pointing to peer0 of manufacturer to instantiate the chaincode as dev chaincode container is currently pointing to the same.

   CORE_PEER_LOCALMSPID="manufacturerMSP"

   CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/manufacturer.pharma-network.com/users/Admin@manufacturer.pharma-network.com/msp

   CORE_PEER_ADDRESS=peer0.manufacturer.pharma-network.com:7051

   peer chaincode instantiate -o orderer.pharma-network.com:7050 -C pharmachannel -n pharmanet -l node -v 1.1 -c '{"Args":["org.pharma-network.pharmanet:instantiate"]}' -P "OR ('manufacturerMSP.member','distributorMSP.member','retailerMSP.member','consumerMSP.member','transporterMSP.member')"

```
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_LOCALMSPID="manufacturerMSP"
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrganizations/manufacture
r.pharma-network.com/users/Admin@manufacturer.pharma-network.com/msp
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# CORE_PEER_ADDRESS=peer0.manufacturer.pharma-network.com:7051
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer# peer chaincode instantiate -o orderer.pharma-network.com:7050 -C pharmachannel -n pharmanet -l node -v 1.1 -c '
{"Args":["org.pharma-network.pharmanet:instantiate"]}' -P "OR ('manufacturerMSP.member','distributorMSP.member','retailerMSP.member','consumerMSP.member','transporterMSP.member')"
2020-11-22 10:20:29.707 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 001 Using default escc
2020-11-22 10:20:29.707 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 002 Using default vscc
root@89061487aa9e:/opt/gopath/src/github.com/hyperledger/fabric/peer#
```

   You can see the success on dev chaincode container as: -

```
Command succeeded

2020-11-22T10:08:42.325Z info [shim:lib/handler.js]                    Successfully registered with peer node. State transferred to "established"
2020-11-22T10:08:42.327Z info [shim:lib/handler.js]                    Successfully established communication with peer node. State transferred to "ready"
Pharmanet Smart Contract Instantiated
2020-11-22T10:20:29.731Z info [shim:lib/handler.js]                    [pharmachannel-74498400] Calling chaincode Init() succeeded. Sending COMPLETED message back to peer
```

   Now our network setup is complete. Now we will head to node application.

10. Go to application folder and open it in a new terminal and run following commands: -

    npm install

    node .

Now as our application is up and running, we can run test through postman to run API's and test the contract.

Testing the pharma-net

1. If you generated the crypto material again kindly use AddToWallet API to create identity again. I have checked in the code with identities created corresponding to crypto material already generated and checked in. In case you

want to generate them again call the API passing signcerts .pem file location as **certificatePath** and path of file generated inside keystore folder as **privateKeyPath** for Admin user for each organization and pass corresponding organization name as **organization** as parameters for API.

e.g.

CertificatePath: -'/home/aishwary/workspace/pharmachain/network/crypto-config/peerOrganizations/manufacturer.pharma-network.com/users/Admin@manufacturer.pharma-network.com/msp/signcerts/Admin@manufacturer.pharma-network.com-cert.pem',

PrivateKeyPath: - '/home/aishwary/workspace/pharmachain/network/crypto-config/peerOrganizations/manufacturer.pharma-network.com/users/Admin@manufacturer.pharma-network.com/msp/keystore/5b5a4322c2f066ca9f5dbdc61cca31fb77ed64d3e037228cc6ca22bd30a9ad9a_sk',

Organization: - 'Manufacturer'

2. The following API calls are part of collection file created. Import the collection and call the API inside Initiation folder. Register the manufacturer Sun Pharma

3. Add drugs Paracetamol with four serials 001 to 004

add drug 1

You need to be signed-in to view comments.

POST localhost:4000/addDrug Send Save

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies Code

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

KEY	VALUE	DESCRIPTION
drugName	Paracetamol	
serialNo	001	
mfgDate	2020-01-01	
expDate	2025-01-01	
companyCRN	MAN001	
organizationRole	Manufacturer	
Key	Value	Description

Body Cookies Headers (7) Test Results Status: 200 OK Time: 2.95 s Size: 744 B Save Response

Pretty Raw Preview Visualize JSON


```
{
    "data": {
        "productId":"\org.pharma-network.com.pharmanet.product\Paracetamol\001\",
        "name": "Paracetamol",
        "manufacturer":"\org.pharma-network.com.pharmanet.company\MAN001\Sun Pharma\",
        "manufacturingDate": "2020-01-01",
        "expiryDate": "2025-01-01",
        "owner":"\org.pharma-network.com.pharmanet.company\MAN001\Sun Pharma\",
        "shipment": [],
        "createdAt": "2020-11-28T11:04:53.318Z"
    },
    "status": "success",
    "message": "Add drug request submitted on the Network"
}
```


add drug 2

Examples 0 BUILD

POST localhost:4000/addDrug Send Save

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies Code

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

KEY	VALUE	DESCRIPTION
drugName	Paracetamol	
serialNo	002	
mfgDate	2020-01-01	
expDate	2025-01-01	
companyCRN	MAN001	
organizationRole	Manufacturer	
Key	Value	Description

Body Cookies Headers (7) Test Results Status: 200 OK Time: 4.03 s Size: 744 B Save Response

Pretty Raw Preview Visualize JSON


```
{
    "data": {
        "productId":"\org.pharma-network.com.pharmanet.product\Paracetamol\002\",
        "name": "Paracetamol",
        "manufacturer":"\org.pharma-network.com.pharmanet.company\MAN001\Sun Pharma\",
        "manufacturingDate": "2020-01-01",
        "expiryDate": "2025-01-01",
        "owner":"\org.pharma-network.com.pharmanet.company\MAN001\Sun Pharma\",
        "shipment": [],
        "createdAt": "2020-11-28T11:08:11.588Z"
    },
    "status": "success",
    "message": "Add drug request submitted on the Network"
}
```

add drug 3

Examples 0 BUILD

POST localhost:4000/addDrug Send Save

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies Code

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

KEY	VALUE	DESCRIPTION
drugName	Paracetamol	
serialNo	003	
mfgDate	2020-01-01	
expDate	2025-01-01	
companyCRN	MAN001	
organizationRole	Manufacturer	
Key	Value	Description

Body Cookies Headers (7) Test Results Status: 200 OK Time: 3.37 s Size: 744 B Save Response

Pretty Raw Preview Visualize JSON


```
{
    "data": {
        "productId":"\org.pharma-network.com.pharmanet.product\Paracetamol\003\",
        "name": "Paracetamol",
        "manufacturer":"\org.pharma-network.com.pharmanet.company\MAN001\Sun Pharma\",
        "manufacturingDate": "2020-01-01",
        "expiryDate": "2025-01-01",
        "owner":"\org.pharma-network.com.pharmanet.company\MAN001\Sun Pharma\",
        "shipment": [],
        "createdAt": "2020-11-28T11:12:16.287Z"
    },
    "status": "success",
    "message": "Add drug request submitted on the Network"
}
```


add drug 4

Examples 0 BUILD

POST localhost:4000/addDrug Send Save

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies Code

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

KEY	VALUE	DESCRIPTION
drugName	Paracetamol	
serialNo	004	
mfgDate	2020-01-01	
expDate	2025-01-01	
companyCRN	MAN001	
organizationRole	Manufacturer	
Key	Value	Description

Body Cookies Headers (7) Test Results Status: 200 OK Time: 3.29 s Size: 744 B Save Response

Pretty Raw Preview Visualize JSON


```
{
    "data": {
        "productId":"\org.pharma-network.com.pharmanet.product\Paracetamol\004\",
        "name": "Paracetamol",
        "manufacturer":"\org.pharma-network.com.pharmanet.company\MAN001\Sun Pharma\",
        "manufacturingDate": "2020-01-01",
        "expiryDate": "2025-01-01",
        "owner":"\org.pharma-network.com.pharmanet.company\MAN001\Sun Pharma\",
        "shipment": [],
        "createdAt": "2020-11-28T11:15:14.158Z"
    },
    "status": "success",
    "message": "Add drug request submitted on the Network"
}
```


4. Go to package.json file inside chaincode folder and change script for start-dev and change peer.address to peer0.transporter.pharma-network.com:15053.

Go to terminal where dev chaincode is running press ctrl + c, and run the command “npm run start-dev” and start chaincode container pointing to transporter peer.

Add trasnporter FedEx

add transporter 1

Examples 0 BUILD

POST localhost:4000/registerCompany Send Save

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies Code

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

KEY	VALUE	DESCRIPTION
companyCRN	TRA001	
companyName	FedEx	
location	Delhi	
organizationRole	Transporter	
Key	Value	Description

Bulk Edit

Body Cookies Headers (7) Test Results Status: 200 OK Time: 3.22 s Size: 551 B Save Response

Pretty Raw Preview Visualize JSON


```
{
    "data": {
        "companyId":"org.pharma-network.com.pharmanet.company#TRA001#FedEx",
        "name": "FedEx",
        "location": "Delhi",
        "organisationRole": "Transporter",
        "hierarchyKey": -1,
        "createdAt": "2020-11-28T11:19:36.588Z"
    },
    "status": "success",
    "message": "Register company request submitted on the Network"
}
```


5. Add transporter Blue Dart

add transporter 2

Examples 0 BUILD

POST localhost:4000/registerCompany Send Save

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies Code

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

KEY	VALUE	DESCRIPTION
companyCRN	TRA002	
companyName	Blue Dart	
location	Bangalore	
organizationRole	Transporter	
Key	Value	Description

Bulk Edit

Body Cookies Headers (7) Test Results Status: 200 OK Time: 3.73 s Size: 563 B Save Response

Pretty Raw Preview Visualize JSON


```
{
    "data": {
        "companyId":"org.pharma-network.com.pharmanet.company#TRA002#Blue Dart",
        "name": "Blue Dart",
        "location": "Bangalore",
        "organisationRole": "Transporter",
        "hierarchyKey": -1,
        "createdAt": "2020-11-28T11:22:41.431Z"
    },
    "status": "success",
    "message": "Register company request submitted on the Network"
}
```


6. Go to package.json file inside chaincode folder and change script for start-dev and change peer.address to peer0.retailer.pharma-network.com:11053.

Go to terminal where dev chaincode is running press ctrl + c, and run the command “npm run start-dev” and start chaincode container pointing to retailer peer.

Add retailer upgrad.

add retailer

Examples 0 BUILD

POST localhost:4000/registerCompany Send Save

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies Co

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

KEY	VALUE	DESCRIPTION
companyCRN	RET002	
companyName	upgrad	
location	Mumbai	
organizationRole	Retailer	
Key	Value	Description

Body Cookies Headers (7) Test Results Status: 200 OK Time: 3.12 s Size: 550 B Save Response

Pretty Raw Preview Visualize JSON


```
{
    "data": {
        "companyId":"org.pharma-network.com.pharmanet.company#RET002#upgrad",
        "name": "upgrad",
        "location": "Mumbai",
        "organisationRole": "Retailer",
        "hierarchyKey": 3,
        "createdAt": "2020-11-28T11:26:05.873Z"
    },
    "status": "success",
    "message": "Register company request submitted on the Network"
}
```


7. Go to package.json file inside chaincode folder and change script for start-dev and change peer.address to peer0.distributor.pharma-network.com:9053.

   Go to terminal where dev chaincode is running press ctrl + c, and run the command “npm run start-dev” and start chaincode container pointing to distributor peer.

   Add distributor VGPharma.

add distributor

Examples 0 BUILD

POST localhost:4000/registerCompany Send Save

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies Code

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

KEY	VALUE	DESCRIPTION
companyCRN	DIST001	
companyName	VG Pharma	
location	Vizag	
organizationRole	Distributor	
Key	Value	Description

Bulk Edit

Body Cookies Headers (7) Test Results Status: 200 OK Time: 3.12 s Size: 559 B Save Response

Pretty Raw Preview Visualize JSON


```
{
    "data": {
        "companyId":"org.pharma-network.com.pharmanet.company:DIST001:VG Pharma",
        "name": "VG Pharma",
        "location": "Vizag",
        "organisationRole": "Distributor",
        "hierarchyKey": 2,
        "createdAt": "2020-11-28T11:29:34.223Z"
    },
    "status": "success",
    "message": "Register company request submitted on the Network"
}
```


8. Create purchase order by distributor.

Create purchase order by distributor

Examples 0 BUILD

POST localhost:4000/createPurchaseOrder Send Save

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies Code

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

KEY	VALUE	DESCRIPTION
buyerCRN	DIST001	
sellerCRN	MAN001	
drugName	Paracetamol	
quantity	3	
organizationRole	Distributor	
Key	Value	Description

Bulk Edit

Body Cookies Headers (7) Test Results Status: 200 OK Time: 4.25 s Size: 702 B Save Response

Pretty Raw Preview Visualize JSON


```
{
    "data": {
        "poId":"org.pharma-network.com.pharmanet.purchaseOrder:DIST001:Paracetamol",
        "drugName": "Paracetamol",
        "quantity": "3",
        "buyer":"org.pharma-network.com.pharmanet.company:DIST001:VG Pharma",
        "seller":"org.pharma-network.com.pharmanet.company:MAN001:Sun Pharma",
        "createdAt": "2020-11-28T11:34:17.166Z"
    },
    "status": "success",
    "message": "Create purchase order request submitted on the Network"
}
```


9. Go to package.json file inside chaincode folder and change script for start-dev and change peer.address to peer0.manufacturer.pharma-network.com:7053.

   Go to terminal where dev chaincode is running press ctrl + c, and run the command “npm run start-dev” and start chaincode container pointing to manufacturer peer.

Create shipment in response to purchase order created.

Create Shipment By Manufacturer

Examples 0 BUILD

POST localhost:4000/createShipment Send Save

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies Code

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

KEY	VALUE	DESCRIPTION
buyerCRN	DIST001	
drugName	Paracetamol	
listOfAssets	Paracetamol|001,Paracetamol|002,Paracetamol|003	
transporterCRN	TRA001	
organizationRole	Manufacturer	
Key	Value	Description

Bulk Edit

Body Cookies Headers (7) Test Results Status: 200 OK Time: 3.09 s Size: 746 B Save Response

Pretty Raw Preview Visualize JSON


```
{
    "data": {
        "shipmentId":"6org.pharma-network.com.pharmanet.shipment6DIST0016Paracetamol6",
        "creator":"6org.pharma-network.com.pharmanet.company6MAN0016Sun Pharma6",
        "assets": [
            "Paracetamol|001",
            "Paracetamol|002",
            "Paracetamol|003"
        ],
        "transporter":"6org.pharma-network.com.pharmanet.company6TRA0016FedEx6",
        "status": "in-transit",
        "createdAt": "2020-11-28T11:40:08.002Z"
    },
    "status": "success",
    "message": "Create shipment request submitted on the Network"
}
```


10. Go to package.json file inside chaincode folder and change script for start-dev and change peer.address to peer0.transporter.pharma-network.com:15053.

    Go to terminal where dev chaincode is running press ctrl + c, and run the command “npm run start-dev” and start chaincode container pointing to transporter peer.

    Update shipment in response to shipment created by Manufacturer. This will be called when assets are delivered. Check in response that status is changed to delivered.

Update shipment by transpoter 1

Examples 0 BUILD

POST localhost:4000/updateShipment Send Save

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies Code

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

KEY	VALUE	DESCRIPTION
buyerCRN	DIST001	
drugName	Paracetamol	
transporterCRN	TRA001	
organizationRole	Transporter	
Key	Value	Description

Body Cookies Headers (7) Test Results Status: 200 OK Time: 2.99 s Size: 745 B Save Response

Pretty Raw Preview Visualize JSON


```
{
    "data": {
        "shipmentId":"\0org.pharma-network.com.pharmanet.shipment\0DIST001\0Paracetamol\0",
        "creator":"\0org.pharma-network.com.pharmanet.company\0MAN001\0Sun Pharma\0",
        "assets": [
            "Paracetamol|001",
            "Paracetamol|002",
            "Paracetamol|003"
        ],
        "transporter":"\0org.pharma-network.com.pharmanet.company\0TRA001\0FedEx\0",
        "status": "delivered",
        "createdAt": "2020-11-28T11:51:11.891Z"
    },
    "status": "success",
    "message": "Update shipment request submitted on the Network"
}
```


11. Go to package.json file inside chaincode folder and change script for start-dev and change peer.address to peer0.retailer.pharma-network.com:11053.

    Go to terminal where dev chaincode is running press ctrl + c, and run the command “npm run start-dev” and start chaincode container pointing to retailer peer.

    Create purchase order to buy 2 units from distributor.

create purchase order by retailer

Examples 0 BUILD

POST localhost:4000/createPurchaseOrder Send Save

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies Code

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

KEY	VALUE	DESCRIPTION
buyerCRN	RET002	
sellerCRN	DIST001	
drugName	Paracetamol	
quantity	2	
organizationRole	Retailer	
Key	Value	Description

Body Cookies Headers (7) Test Results Status: 200 OK Time: 3.05 s Size: 697 B Save Response

Pretty Raw Preview Visualize JSON


```
{
    "data": {
        "poId":"\0org.pharma-network.com.pharmanet.purchaseOrder\0RET002\0Paracetamol\0",
        "drugName": "Paracetamol",
        "quantity": "2",
        "buyer":"\0org.pharma-network.com.pharmanet.company\0RET002\0upgrad\0",
        "seller":"\0org.pharma-network.com.pharmanet.company\0DIST001\0VG Pharma\0",
        "createdAt": "2020-11-28T11:57:40.224Z"
    },
    "status": "success",
    "message": "Create purchase order request submitted on the Network"
}
```

12. Go to package.json file inside chaincode folder and change script for start-dev and change peer.address to peer0.distributor.pharma-network.com:9053.

    Go to terminal where dev chaincode is running press ctrl + c, and run the command “npm run start-dev” and start chaincode container pointing to distributor peer.

    Create shipment in response to purchase order created by retailer.

13. Go to package.json file inside chaincode folder and change script for start-dev and change peer.address to peer0.transporter.pharma-network.com:15053.

    Go to terminal where dev chaincode is running press ctrl + c, and run the command “npm run start-dev” and start chaincode container pointing to transporter peer.

    Update shipment in response to shipment created by Distributor. This will be called when assets are delivered. Check in response that status is changed to delivered.

update shipment by transporter 2

Examples 0 BUILD

POST localhost:4000/updateShipment Send Save

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies Code

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

KEY	VALUE	DESCRIPTION
buyerCRN	RET002	
drugName	Paracetamol	
transporterCRN	TRA002	
organizationRole	Transporter	
Key	Value	Description

Body Cookies Headers (7) Test Results Status: 200 OK Time: 3.33 s Size: 730 B Save Response

Pretty Raw Preview Visualize JSON


```
{
    "data": {
        "shipmentId":"\0org.pharma-network.com.pharmanet.shipment\0RET002\0Paracetamol\0",
        "creator":"\0org.pharma-network.com.pharmanet.company\0DIST001\0VG Pharma\0",
        "assets": [
            "Paracetamol|001",
            "Paracetamol|002"
        ],
        "transporter":"\0org.pharma-network.com.pharmanet.company\0TRA002\0Blue Dart\0",
        "status": "delivered",
        "createdAt": "2020-11-28T12:08:24.091Z"
    },
    "status": "success",
    "message": "Update shipment request submitted on the Network"
}
```


14. Go to package.json file inside chaincode folder and change script for start-dev and change peer.address to peer0.retailer.pharma-network.com:11053.

    Go to terminal where dev chaincode is running press ctrl + c, and run the command “npm run start-dev” and start chaincode container pointing to retailer peer.

    Buy drugs from retailer. This will be called by retailer and pass aadhar Id of the consumer buying the drug.

buy drug from retailer

Examples 0 BUILD

POST localhost:4000/retailDrug Send Save

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies Code

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

KEY	VALUE	DESCRIPTION
drugName	Paracetamol	
serialNo	001	
retailerCRN	RET002	
customerAadhar	AAD001	
organizationRole	Retailer	
Key	Value	Description

Body Cookies Headers (7) Test Results Status: 200 OK Time: 3.03 s Size: 1014 B Save Response

Pretty Raw Preview Visualize JSON


```
{
    "data": {
        "productId":"\0org.pharma-network.com.pharmanet.product\0Paracetamol\0001\0",
        "name": "Paracetamol",
        "manufacturer":"\0org.pharma-network.com.pharmanet.company\0MAN001\0Sun Pharma\0",
        "manufacturingDate": "2020-01-01",
        "expiryDate": "2025-01-01",
        "owner": "AAD001",
        "shipment": ["\0org.pharma-network.com.pharmanet.shipment\0DIST001\0Paracetamol\0","\0org.pharma-network.com.pharmanet.shipment\0DIST001\0Paracetamol\0","\0org.pharma-network.com.pharmanet.
            shipment\0RET002\0Paracetamol\0","\0org.pharma-network.com.pharmanet.shipment\0RET002\0Paracetamol\0"
        ],
        "createdAt": "2020-11-28T11:04:53.318Z"
    },
    "status": "success",
    "message": "Retail Drug request submitted on the Network"
}
```

15. Go to package.json file inside chaincode folder and change script for start-dev and change peer.address to peer0.consumer.pharma-network.com:13053.

    Go to terminal where dev chaincode is running press ctrl + c, and run the command “npm run start-dev” and start chaincode container pointing to transporter peer.

    We will use view history API to see history on any drug asset.

Response: -

{

"data": [

{

"productId": "\u0000org.pharma-network.com.pharmanet.product\u0000Paracetamol\u0000001\u0000",

"name": "Paracetamol",

"manufacturer": "\u0000org.pharma-network.com.pharmanet.company\u0000MAN001\u0000Sun Pharma\u0000",

"manufacturingDate": "2020-01-01",

"expiryDate": "2025-01-01",

"owner": "\u0000org.pharma-network.com.pharmanet.company\u0000MAN001\u0000Sun Pharma\u0000",

"shipment": [],

"createdAt": "2020-11-28T11:04:53.318Z"

},

{

"productId": "\u0000org.pharma-network.com.pharmanet.product\u0000Paracetamol\u0000001\u0000",

"name": "Paracetamol",

"manufacturer": "\u0000org.pharma-network.com.pharmanet.company\u0000MAN001\u0000Sun Pharma\u0000",

"manufacturingDate": "2020-01-01",
"expiryDate": "2025-01-01",
"owner": "\u0000org.pharma-network.com.pharmanet.company\u0000TRA001\u0000FedEx\u0000",
"shipment": [
"\u0000org.pharma-network.com.pharmanet.shipment\u0000DIST001\u0000Paracetamol\u0000"
],
"createdAt": "2020-11-28T11:04:53.318Z"
},
{
"productId": "\u0000org.pharma-network.com.pharmanet.product\u0000Paracetamol\u0000001\u0000",
"name": "Paracetamol",
"manufacturer": "\u0000org.pharma-network.com.pharmanet.company\u0000MAN001\u0000Sun Pharma\u0000",
"manufacturingDate": "2020-01-01",
"expiryDate": "2025-01-01",
"owner": "\u0000org.pharma-network.com.pharmanet.company\u0000DIST001\u0000VG Pharma\u0000",
"shipment": [
"\u0000org.pharma-network.com.pharmanet.shipment\u0000DIST001\u0000Paracetamol\u0000",
"\u0000org.pharma-network.com.pharmanet.shipment\u0000DIST001\u0000Paracetamol\u0000"
],
"createdAt": "2020-11-28T11:04:53.318Z"
},
{
"productId": "\u0000org.pharma-network.com.pharmanet.product\u0000Paracetamol\u0000001\u0000",
"name": "Paracetamol",
"manufacturer": "\u0000org.pharma-network.com.pharmanet.company\u0000MAN001\u0000Sun Pharma\u0000",
"manufacturingDate": "2020-01-01",
"expiryDate": "2025-01-01",
"owner": "\u0000org.pharma-network.com.pharmanet.company\u0000TRA002\u0000Blue Dart\u0000",
"shipment": [
"\u0000org.pharma-network.com.pharmanet.shipment\u0000DIST001\u0000Paracetamol\u0000",
"\u0000org.pharma-network.com.pharmanet.shipment\u0000DIST001\u0000Paracetamol\u0000",

"\u0000org.pharma-network.com.pharmanet.shipment\u0000RET002\u0000Paracetamol\u0000"
],
"createdAt": "2020-11-28T11:04:53.318Z"
},
{
"productId": "\u0000org.pharma-network.com.pharmanet.product\u0000Paracetamol\u0000001\u0000",
"name": "Paracetamol",
"manufacturer": "\u0000org.pharma-network.com.pharmanet.company\u0000MAN001\u0000Sun Pharma\u0000",
"manufacturingDate": "2020-01-01",
"expiryDate": "2025-01-01",
"owner": "\u0000org.pharma-network.com.pharmanet.company\u0000RET002\u0000upgrad\u0000",
"shipment": [
"\u0000org.pharma-network.com.pharmanet.shipment\u0000DIST001\u0000Paracetamol\u0000",
"\u0000org.pharma-network.com.pharmanet.shipment\u0000DIST001\u0000Paracetamol\u0000",
"\u0000org.pharma-network.com.pharmanet.shipment\u0000RET002\u0000Paracetamol\u0000",
"\u0000org.pharma-network.com.pharmanet.shipment\u0000RET002\u0000Paracetamol\u0000"
],
"createdAt": "2020-11-28T11:04:53.318Z"
}
],
"status": "success",
"message": "View drug history request submitted on the Network"
}

As you can see 5 asset objects are returned with different owners updated at each stage of supply chain with timestamp. First owner is manufacturer then FedEx once assets are delivered owner changes to distributor VG Pharma.

Retailer created purchase order in response to which distributor created shipment and owner changes to BlueDart. Once status is delivered owner changes to retailer upgrad.

16. View current state of asset

As current state displays the ownership is changed to Aadhar Id of the user who purchased the drug from retailer.