

Pharma Network - Instruction documents

Table of content:

Sr.No.	Subject
1	Generate crypto material and channel artifacts
2	Create docker container, join channel, update anchor peer
3	Connect to the chaincode container and run chaincode
4	Install and instantiate chaincode
5	Smart contract successfully instantiated
6	Start node and Identity added sucessfully
7	Test Case 1 - Initiation
	1.1.Manufacturer – registerCompany
	1.2 - distributor- registerCompany
	1.3 -retailer – registerCompany
	1.4. transporter- registerCompany
	1.5. transporter 2- registerCompany
	1.6.1 -addDrug -001
	1.6.2 -addDrug -002
	1.6.3 -addDrug -003

	1.6.4 -addDrug -004
8	Test case 2 -Supply Chain
	Test case 2 - part a
	2.1.1 -Distributor - createPO
	2.1.2 - Manufacturer- createShipment
	2.1.3 -Transporter- updateShipment
	Test case 2 - part b
	2.2.1 -Retailer - createPO
	2.2.2 - Distributor – createShipment
	2.2.3 -part b-Transporter – updateShipment
	Test case 2 - part c
	2.3.1 -Retailer -retailDrug
9	Test case 3
	3.1 -viewHistory
	3.2 -viewDrugCustomerState

1. Generate crypto material and channel artifacts

./fabricNetwork.sh generate

```
dell-nish@dell-ubuntu:~$ cd pharma-network/
dell-nish@dell-ubuntu:~/pharma-network$ cd network/
dell-nish@dell-ubuntu:~/pharma-network/network$ mkdir channel-artifacts
dell-nish@dell-ubuntu:~/pharma-network/network$ ls
bin                         docker-base           fabricNetwork.sh
channel-artifacts            docker-compose-e2e.yml   scripts
configtx.yaml                docker-compose-template.yaml
crypto-config.yaml            docker-compose.yml
dell-nish@dell-ubuntu:~/pharma-network/network$ ./fabricNetwork.sh generate
Generating certs and genesis block for channel 'pharmacchannel' with CLI timeout of '15' seconds and CLI delay of '5' seconds and chaincode version '1.1'
Continue? [Y/n] y
proceeding ...
/home/dell-nish/pharma-network/bin/cryptogen

#####
##### Generate certificates using cryptogen tool #####
#####
+ 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
+ res=0
+ set +x

/home/dell-nish/pharma-network/network/bin/configtxgen
#####
##### Generating Orderer Genesis block #####
#####
+ configtxgen -profile OrdererGenesis -channelID pharmasys-channel -outputBlock ./channel-artifacts/genesis.block
2022-01-28 13:43:53.308 AEDT [common.tools.configtxgen] main -> INFO 001 Loading configuration
2022-01-28 13:43:53.332 AEDT [common.tools.configtxgen.localconfig] completeInitialization -> INFO 002 orderer type: solo
2022-01-28 13:43:53.332 AEDT [common.tools.configtxgen.localconfig] Load -> INFO 003 Loaded configuration: /home/dell-nish/pharma-network/network/configtx.yaml
2022-01-28 13:43:53.351 AEDT [common.tools.configtxgen.localconfig] completeInitialization -> INFO 004 orderer type: solo
2022-01-28 13:43:53.351 AEDT [common.tools.configtxgen.localconfig] Load -> INFO 005 Generated genesis block
```

```
#####
##### Generating channel configuration transaction 'channel.tx' #####
#####
+ configtxgen -profile pharmacchannel -outputCreateChannelTx ./channel-artifacts/channel.tx -channelID pharmacchannel
2022-01-28 13:43:53.395 AEDT [common.tools.configtxgen] main -> INFO 001 Loading configuration
2022-01-28 13:43:53.411 AEDT [common.tools.configtxgen.localconfig] Load -> INFO 002 Loaded configuration: /home/dell-nish/pharma-network/network/configtx.yaml
2022-01-28 13:43:53.429 AEDT [common.tools.configtxgen.localconfig] completeInitialization -> INFO 003 orderer type: solo
2022-01-28 13:43:53.429 AEDT [common.tools.configtxgen.localconfig] LoadTopLevel -> INFO 004 Loaded configuration: /home/dell-nish/pharma-network/network/configtx.yaml
2022-01-28 13:43:53.429 AEDT [common.tools.configtxgen] doOutputChannelCreateTx -> INFO 005 Generating new channel configtx
2022-01-28 13:43:53.429 AEDT [common.tools.configtxgen.encoder] NewChannelGroup -> WARN 006 Default policy emission is deprecated, please include policy specifications for the channel group in configtx.yaml
2022-01-28 13:43:53.432 AEDT [common.tools.configtxgen.encoder] NewChannelGroup -> WARN 007 Default policy emission is deprecated, please include policy specifications for the channel group in configtx.yaml
2022-01-28 13:43:53.435 AEDT [common.tools.configtxgen] doOutputChannelCreateTx -> INFO 008 Writing new channel tx
+ res=0
+ set +x

#####
##### Generating anchor peer update for manufacturerMSP #####
#####
+ configtxgen -profile pharmacchannel -outputAnchorPeersUpdate ./channel-artifacts/manufacturerMSPanchors.tx -channelID pharmacchannel -asOrg manufacturerMSP
2022-01-28 13:43:53.470 AEDT [common.tools.configtxgen] main -> INFO 001 Loading configuration
2022-01-28 13:43:53.491 AEDT [common.tools.configtxgen.localconfig] Load -> INFO 002 Loaded configuration: /home/dell-nish/pharma-network/network/configtx.yaml
2022-01-28 13:43:53.509 AEDT [common.tools.configtxgen.localconfig] completeInitialization -> INFO 003 orderer type: solo
2022-01-28 13:43:53.509 AEDT [common.tools.configtxgen.localconfig] LoadTopLevel -> INFO 004 Loaded configuration: /home/dell-nish/pharma-network/network/configtx.yaml
2022-01-28 13:43:53.510 AEDT [common.tools.configtxgen] doOutputAnchorPeersUpdate -> INFO 005 Generating anchor peer update
2022-01-28 13:43:53.510 AEDT [common.tools.configtxgen] doOutputAnchorPeersUpdate -> INFO 006 Writing anchor peer update
+ res=0
+ set +x

#####
##### Generating anchor peer update for distributorMSP #####
#####
```

2.Create docker container, join channel, update anchor peer

./fabricNetwork.sh up

```
dell-nish@dell-ubuntu:~/pharma-network/network$ ./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" 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 peer1.consumer.pharma-network.com ... done
Creating ca.retailer.pharma-network.com ... done
Creating peer0.distributor.pharma-network.com ... done
Creating ca.distributor.pharma-network.com ... done
Creating ca.transporter.pharma-network.com ... done
Creating peer1.transporter.pharma-network.com ... done
Creating ca.consumer.pharma-network.com ... done
Creating ca.manufacturer.pharma-network.com ... done
Creating peer1.manufacturer.pharma-network.com ... done
Creating peer0.consumer.pharma-network.com ... done
Creating peer0.retailer.pharma-network.com ... done
Creating peer0.manufacturer.pharma-network.com ... done
Creating peer0.transporter.pharma-network.com ... done
Creating peer0.consumer.pharma-network.com ... done
Creating peer0.retailer.pharma-network.com ... done
Creating peer0.manufacturer.pharma-network.com ... done
Creating peer0.transporter.pharma-network.com ... done
Creating peer1.consumer.pharma-network.com ... done
Creating peer1.distributor.pharma-network.com ... done
Creating cli ... done
```

CONTAINER ID	IMAGE	NAMES	COMMAND	CREATED	STATUS	PORTS
5585cd90525	hyperledger/fabric-tools:latest	"bin/bash" cli	/bin/bash	Less than a second ago	Up Less than a second	
39f39806db72	hyperledger/fabric-peer:latest	"peer node start"	peer node start	5 seconds ago	Up Less than a second	0.0.0.0:1
0051->10051/tcp, 0.0.0.0:10053->10053/tcp	peer1.distributor.pharma-network.com	orderer	orderer.pharma-network.com	5 seconds ago	Up 1 second	0.0.0.0:7
6811168dfb2e	hyperledger/fabric-orderer:latest	"orderer"		5 seconds ago		
050->7050/tcp		orderer.pharma-network.com		5 seconds ago		
fc933a0b3f99	hyperledger/fabric-ccenv:latest	"bin/bash -c 'sleep..." chaincode	/bin/bash -c 'sleep... chaincode	5 seconds ago	Up 2 seconds	
6576111ac0c8	hyperledger/fabric-peer:latest	"peer node start"	peer node start	5 seconds ago	Up Less than a second	0.0.0.0:1
2051->12051/tcp, 0.0.0.0:12053->12053/tcp	peer1.retailer.pharma-network.com			5 seconds ago		
66ad334b7286	hyperledger/fabric-peer:latest	"peer node start"	peer node start	5 seconds ago	Up Less than a second	0.0.0.0:1
5051->15051/tcp, 0.0.0.0:15053->15053/tcp	peer0.transporter.pharma-network.com			5 seconds ago		
ee64245edc2d	hyperledger/fabric-peer:latest	"peer node start"	peer node start	5 seconds ago	Up 1 second	0.0.0.0:1
3051->13051/tcp, 0.0.0.0:13053->13053/tcp	peer0.consumer.pharma-network.com			5 seconds ago		
c3cead9fea1	hyperledger/fabric-peer:latest	"peer node start"	peer node start	5 seconds ago	Up 1 second	0.0.0.0:1
1051->11051/tcp, 0.0.0.0:11053->11053/tcp	peer0.retailer.pharma-network.com			5 seconds ago		
c39619ac692e	hyperledger/fabric-peer:latest	"peer node start"	peer node start	5 seconds ago	Up 1 second	0.0.0.0:7
051->7051/tcp, 0.0.0.0:7053->7053/tcp	peer0.manufacturer.pharma-network.com			5 seconds ago		
56606c3ed4f2b	hyperledger/fabric-peer:latest	"peer node start"	peer node start	5 seconds ago	Up 2 seconds	0.0.0.0:8
051->8051/tcp, 0.0.0.0:8053->8053/tcp	peer1.manufacturer.pharma-network.com			5 seconds ago		
73a978614507	hyperledger/fabric-ca:latest	"sh -c 'fabric-ca-se..." ca.consumer.pharma-network.com	sh -c 'fabric-ca-se... ca.consumer.pharma-network.com	6 seconds ago	Exited (1) 2 seconds ago	
3fbca4a0dc1a4	hyperledger/fabric-ca:latest	"sh -c 'fabric-ca-se..." ca.manufacturer.pharma-network.com	sh -c 'fabric-ca-se... ca.manufacturer.pharma-network.com	6 seconds ago	Exited (1) 2 seconds ago	
0746b55c841a	hyperledger/fabric-ca:latest	"sh -c 'fabric-ca-se..." ca.transporter.pharma-network.com	sh -c 'fabric-ca-se... ca.transporter.pharma-network.com	6 seconds ago	Exited (1) 2 seconds ago	
2a414e46b4d2	hyperledger/fabric-peer:latest	"peer node start"	peer node start	6 seconds ago	Up 2 seconds	0.0.0.0:1
6051->16051/tcp, 0.0.0.0:16053->16053/tcp	peer1.transporter.pharma-network.com			6 seconds ago		
659cf1b4c993	hyperledger/fabric-ca:latest	"sh -c 'fabric-ca-se..." ca.distributor.pharma-network.com	sh -c 'fabric-ca-se... ca.distributor.pharma-network.com	6 seconds ago	Exited (1) 3 seconds ago	
7d3ac917677a	hyperledger/fabric-peer:latest	"peer node start"	peer node start	6 seconds ago	Up 3 seconds	0.0.0.0:9
051->9051/tcp, 0.0.0.0:9053->9053/tcp	peer0.distributor.pharma-network.com			6 seconds ago		
09cd114581ee	hyperledger/fabric-ca:latest	"sh -c 'fabric-ca-se..."	sh -c 'fabric-ca-se...	6 seconds ago	Exited (1) 3 seconds ago	

```

Setting Up Hyperledger Fabric Network

Channel name : pharmachannel
Creating channel...
+ peer channel create -o orderer.pharma-network.com:7050 -c pharmachannel -f ./channel-artifacts/channel.tx
+ res=0
+ set +x
2022-01-28 02:44:52.102 UTC [channelCmd] InitCmdFactory -> INFO 001 Endorser and orderer connections initialized
2022-01-28 02:44:52.160 UTC [cli.common] readBlock -> INFO 002 Received block: 0
===== Channel 'pharmachannel' created =====

Having all peers join the channel...
+ peer channel join -b pharmachannel.block
+ res=0
+ set +x
2022-01-28 02:44:52.228 UTC [channelCmd] InitCmdFactory -> INFO 001 Endorser and orderer connections initialized
2022-01-28 02:44:52.304 UTC [channelCmd] executeJoin -> INFO 002 Successfully submitted proposal to join channel
===== peer0.manufacturer.pharma-network.com joined channel 'pharmachannel' =====

+ peer channel join -b pharmachannel.block
+ res=0
+ set +x
2022-01-28 02:44:57.380 UTC [channelCmd] InitCmdFactory -> INFO 001 Endorser and orderer connections initialized
2022-01-28 02:44:57.463 UTC [channelCmd] executeJoin -> INFO 002 Successfully submitted proposal to join channel
===== peer1.manufacturer.pharma-network.com joined channel 'pharmachannel' =====

+ peer channel join -b pharmachannel.block
+ res=0
+ set +x
2022-01-28 02:44:57.500 UTC [channelCmd] InitCmdFactory -> INFO 001 Endorser and orderer connections initialized
===== peer2.manufacturer.pharma-network.com joined channel 'pharmachannel' =====

```

```

2022-01-28 02:45:48.928 UTC [channelCmd] update -> INFO 002 Successfully submitted channel update
===== Anchor peers updated for org 'distributorMSP' on channel 'pharmachannel' =====

Updating anchor peers for RETAILER...
+ peer channel update -o orderer.pharma-network.com:7050 -c pharmachannel -f ./channel-artifacts/retailerMSPanchors.tx
+ res=0
+ set +x
2022-01-28 02:45:54.008 UTC [channelCmd] InitCmdFactory -> INFO 001 Endorser and orderer connections initialized
2022-01-28 02:45:54.026 UTC [channelCmd] update -> INFO 002 Successfully submitted channel update
===== Anchor peers updated for org 'retailerMSP' on channel 'pharmachannel' =====

Updating anchor peers for CONSUMER...
+ peer channel update -o orderer.pharma-network.com:7050 -c pharmachannel -f ./channel-artifacts/consumerMSPanchors.tx
+ res=0
+ set +x
2022-01-28 02:45:59.095 UTC [channelCmd] InitCmdFactory -> INFO 001 Endorser and orderer connections initialized
2022-01-28 02:45:59.111 UTC [channelCmd] update -> INFO 002 Successfully submitted channel update
===== Anchor peers updated for org 'consumerMSP' on channel 'pharmachannel' =====

Updating anchor peers for TRANSPORTER...
+ peer channel update -o orderer.pharma-network.com:7050 -c pharmachannel -f ./channel-artifacts/transporterMSPanchors.tx
+ res=0
+ set +x
2022-01-28 02:46:04.181 UTC [channelCmd] InitCmdFactory -> INFO 001 Endorser and orderer connections initialized
2022-01-28 02:46:04.197 UTC [channelCmd] update -> INFO 002 Successfully submitted channel update
===== Anchor peers updated for org 'transporterMSP' on channel 'pharmachannel' =====

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

```

```

dell-nish@dell-ubuntu:~/pharma-network/network$ 

```

3. Connect to the chaincode container and run chaincode

docker exec -it chaincode /bin/bash

npm install (only first time)

npm run start-dev

```
dell-nish@dell-ubuntu:~/pharma-network/network$ docker exec -it chaincode /bin/bash
root@735a69e3c8fa:/opt/gopath/src/chaincode# npm install
npm WARN webpack-dev-middleware@3.7.2 requires a peer of webpack@^4.0.0 but none is installed. You must install peer dependencies yourself.
npm WARN webpack-dev-server@3.11.0 requires a peer of webpack@^4.0.0 || ^5.0.0 but none is installed. You must install peer dependencies yourself.
npm WARN pharma-network@0.0.1 No repository field.
npm WARN pharma-network@0.0.1 No license field.
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: fsevents@2.1.3 (node_modules/mocha/node_modules/fsevents):
npm WARN notsup SKIPPING OPTIONAL DEPENDENCY: Unsupported platform for fsevents@2.1.3: wanted {"os":"darwin","arch":"any"} (current: {"os":"linux","arch":"x64"})
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: fsevents@1.2.13 (node_modules/fsevents):
npm WARN notsup SKIPPING OPTIONAL DEPENDENCY: Unsupported platform for fsevents@1.2.13: wanted {"os":"darwin","arch":"any"} (current: {"os":"linux","arch":"x64"})
audited 890 packages in 6.621s
found 95 vulnerabilities (3 low, 44 moderate, 45 high, 3 critical)
  run `npm audit fix` to fix them, or `npm audit` for details
root@735a69e3c8fa:/opt/gopath/src/chaincode# npm run start-dev

> pharma-network@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:1.2

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.
2022-01-28T23:08:29.702Z tinfo [shim:contracts-spi/bootstrap.js]           No metadata file supplied in contract, introspection will generate all the data
2022-01-28T23:08:29.702Z tinfo [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.
2022-01-28T23:08:29.763Z tinfo [shim:lib/chaincode.js]                      Registering with peer peer0.manufacturer.pharma-network.com:7053 as chaincode "pharmanet:1.2"

Command succeeded
2022-01-28T23:08:29.784Z tinfo [shim:lib/handler.js]                         Successfully registered with peer node. State transferred to
```

```
elf.
npm WARN pharma-network@0.0.1 No repository field.
npm WARN pharma-network@0.0.1 No license field.
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: fsevents@2.1.3 (node_modules/mocha/node_modules/fsevents):
npm WARN notsup SKIPPING OPTIONAL DEPENDENCY: Unsupported platform for fsevents@2.1.3: wanted {"os":"darwin","arch":"any"} (current: {"os":"linux","arch":"x64"})
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: fsevents@1.2.13 (node_modules/fsevents):
npm WARN notsup SKIPPING OPTIONAL DEPENDENCY: Unsupported platform for fsevents@1.2.13: wanted {"os":"darwin","arch":"any"} (current: {"os":"linux","arch":"x64"})
audited 890 packages in 6.621s
found 95 vulnerabilities (3 low, 44 moderate, 45 high, 3 critical)
  run `npm audit fix` to fix them, or `npm audit` for details
root@735a69e3c8fa:/opt/gopath/src/chaincode# npm run start-dev

> pharma-network@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:1.2

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.
2022-01-28T23:08:29.702Z tinfo [shim:contracts-spi/bootstrap.js]           No metadata file supplied in contract, introspection will generate all the data
2022-01-28T23:08:29.702Z tinfo [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.
2022-01-28T23:08:29.763Z tinfo [shim:lib/chaincode.js]                      Registering with peer peer0.manufacturer.pharma-network.com:7053 as chaincode "pharmanet:1.2"

Command succeeded
2022-01-28T23:08:29.784Z tinfo [shim:lib/handler.js]                         Successfully registered with peer node. State transferred to "established"
2022-01-28T23:08:29.785Z tinfo [shim:lib/handler.js]                         Successfully established communication with peer node. State transferred to "ready"
```

4. Install and instantiate chaincode

./fabricNetwork.sh install

```
dell-nish@dell-ubuntu:~/pharma-network/network$ ./fabricNetwork.sh install
Installing chaincode for channel 'pharmacchannel' with CLI timeout of '15' seconds and CLI delay of '5' seconds and chaincode version '1.2'
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.
=====

[====]
[====]
[====]
[====]
[====]

Deploying Chaincode PHARMANET On Pharma Network

Channel name : pharmacchannel
Installing chaincode on peer0.manufacturer.pharma-network.com ...
+ peer chaincode install -n pharmanet -v 1.2 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chaincode/
+ res=0
+ set +x
2022-01-28 06:15:18.637 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 001 Using default escc
2022-01-28 06:15:18.638 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 002 Using default vscc
2022-01-28 06:15:18.832 UTC [chaincodeCmd] install -> INFO 003 Installed remotely response:<status:200 payload:"OK" >
=====
Chaincode is installed on peer0.manufacturer =====

Installing chaincode on peer0.distributor.pharma-network.com ...
+ peer chaincode install -n pharmanet -v 1.2 -l node -p /opt/gopath/src/github.com/hyperledger/fabric/peer/chaincode/
+ res=0
+ set +x
2022-01-28 06:15:18.896 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 001 Using default escc
2022-01-28 06:15:18.897 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 002 Using default vscc
2022-01-28 06:15:19.080 UTC [chaincodeCmd] install -> INFO 003 Installed remotely response:<status:200 payload:"OK" >
```

```
2022-01-28 06:15:19.820 UTC [chaincodeCmd] install -> INFO 003 Installed remotely response:<status:200 payload:"OK" >
=====
Chaincode is installed on peer0.transporter =====

Instantiating chaincode on channel using peer0.manufacturer.pharma-network.com ...
+ peer chaincode instantiate -o orderer.pharma-network.com:7050 -C pharmacchannel -n pharmanet -l node -v 1.2 -c '{"Args":["org.pharma-network.pharmanet.manufacturer:instantiate"]}' -P 'OR ('\\'\\'manufacturerMSP.member'\\'', '\\'\\'distributorMSP.member'\\'', '\\'\\'retailerMSP.member'\\'', '\\\\'con\\sumerMSP.member'\\'', '\\\\'transporterMSP.member'\\''\\')'
+ res=0
+ peer chaincode instantiate -o orderer.pharma-network.com:7050 -C pharmacchannel -n pharmanet -l node -v 1.2 -c '{"Args":["org.pharma-network.pharmanet.distributor:instantiate"]}' -P 'OR ('\\'\\'manufacturerMSP.member'\\'', '\\'\\'distributorMSP.member'\\'', '\\'\\'retailerMSP.member'\\'', '\\\\'cons\\umerMSP.member'\\'', '\\\\'transporterMSP.member'\\''\\')'
+ res=0
+ peer chaincode instantiate -o orderer.pharma-network.com:7050 -C pharmacchannel -n pharmanet -l node -v 1.2 -c '{"Args":["org.pharma-network.pharmanet.retailer:instantiate"]}' -P 'OR ('\\'\\'manufacturerMSP.member'\\'', '\\'\\'distributorMSP.member'\\'', '\\'\\'retailerMSP.member'\\'', '\\\\'cons\\umerMSP.member'\\'', '\\\\'transporterMSP.member'\\''\\')'
+ res=0
+ peer chaincode instantiate -o orderer.pharma-network.com:7050 -C pharmacchannel -n pharmanet -l node -v 1.2 -c '{"Args":["org.pharma-network.pharmanet.transporter:instantiate"]}' -P 'OR ('\\'\\'manufacturerMSP.member'\\'', '\\'\\'distributorMSP.member'\\'', '\\'\\'retailerMSP.member'\\'', '\\\\'cons\\umerMSP.member'\\'', '\\\\'transporterMSP.member'\\''\\')'
+ res=0
+ set +x
2022-01-28 06:15:20.164 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 001 Using default escc
2022-01-28 06:15:20.165 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 002 Using default vscc
=====
Chaincode is instantiated on peer0.manufacturer on channel 'pharmacchannel' =====

=====
All GOOD, Chaincode PHARMANET Is Now Installed & Instantiated On Pharma Network =====

[====]
[====]
[====]
```

```
dell-nish@dell-ubuntu:~/pharma-network/network$
```

5. Smart contract successfully instantiated

```
run `npm audit fix` to fix them, or `npm audit` for details
root@735a69e3c8fa:/opt/gopath/src/chaincode# npm run start-dev

> pharma-network@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:1.2

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.
2022-01-28T23:08:29.702Z info [shim:contracts-spi/bootstrap.js]           No metadata file supplied in contract, introspection will generate all the data
2022-01-28T23:08:29.702Z 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.
2022-01-28T23:08:29.763Z info [shim:lib/chaincode.js]                      Registering with peer peer0.manufacturer.pharma-network.com:7053 as chaincode "pharmanet:1.2"

Command succeeded

2022-01-28T23:08:29.784Z info [shim:lib/handler.js]                         Successfully registered with peer node. State transferred to
"established"
2022-01-28T23:08:29.785Z info [shim:lib/handler.js]                         Successfully established communication with peer node. State
transferred to "ready"
PharmaNet - Manufacturer Smart Contract Instantiated
2022-01-28T23:09:45.733Z info [shim:lib/handler.js]                         Sending COMPLETED message back to peer
[pharmachannel-a4d93053] Calling chaincode Init() succeeded.
PharmaNet - Distributor Smart Contract Instantiated
2022-01-28T23:09:45.814Z info [shim:lib/handler.js]                         Sending COMPLETED message back to peer
[pharmachannel-36f1cc7e] Calling chaincode Init() succeeded.
PharmaNet - Retailer Smart Contract Instantiated
2022-01-28T23:09:45.907Z info [shim:lib/handler.js]                         Sending COMPLETED message back to peer
[pharmachannel-34b08387] Calling chaincode Init() succeeded.
PharmaNet - Transporter Smart Contract Instantiated
2022-01-28T23:09:45.996Z info [shim:lib/handler.js]                         Sending COMPLETED message back to peer
[pharmachannel-199bb10b] Calling chaincode Init() succeeded.
```

6. Start node and Identity added successfully

~/home/dell-nish/pharma-network/application

node index.js

http://localhost:3000/initializeAllIdentitiesDoneAtOnce

```
dell-nish@dell-ubuntu:~/pharma-network/application$ node index.js
Distributed PharmeNet App listening on port 3000!
MANUFACTURER_ADMIN identity added successfully
DISTRIBUTOR_ADMIN identity added successfully
RETAILER_ADMIN identity added successfully
CONSUMER_ADMIN identity added successfully
TRANSPORTER_ADMIN identity added successfully
```

The screenshot shows a Postman interface with the following details:

- Request URL:** http://localhost:3000/initializeAllIdentitiesDoneAtOnce
- Method:** GET
- Headers:** Headers (7) - includes Content-Type: application/json
- Body:** Empty
- Response Status:** 200 OK, 400 ms, 326 B
- Response Body (Pretty JSON):**

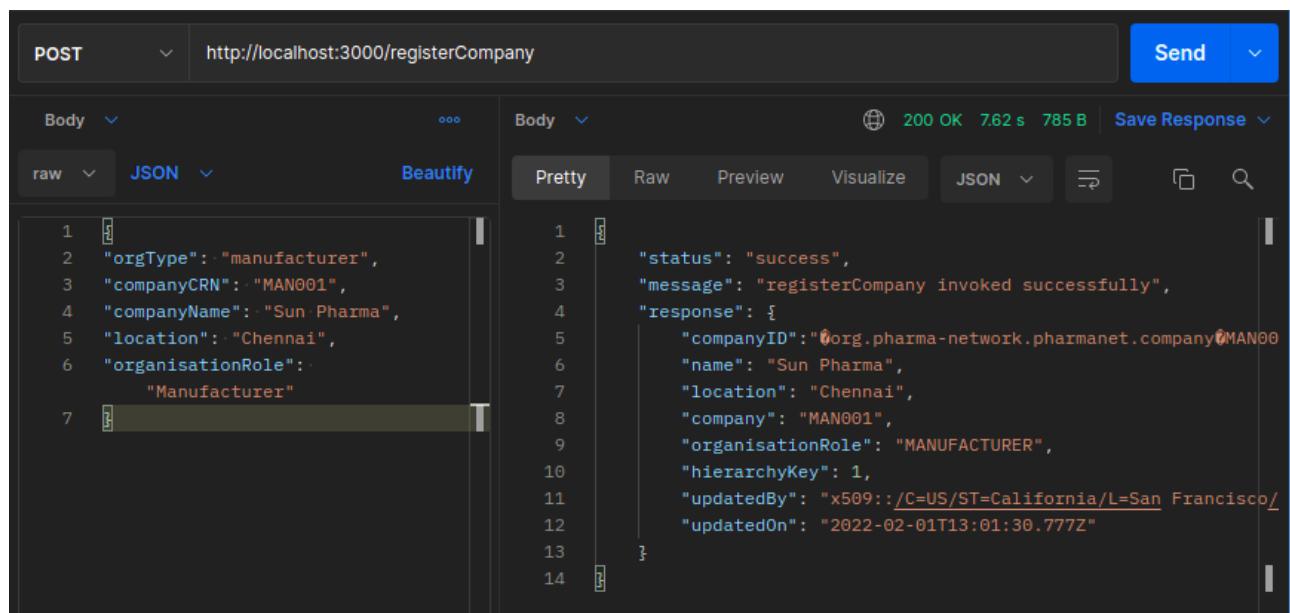
```
1  "status": "success",
2  "message": "All organisation user credentials added to wallet"
```

Run test on Postman and note results:

Test Case 1 - Initiation

1.1.Manufacturer – registerCompany

http://localhost:3000/registerCompany



POST http://localhost:3000/registerCompany

Body

raw

JSON

Beautify

Pretty

Raw

Preview

Visualize

JSON

200 OK 7.62 s 785 B

Save Response

Send

```
1
2 "orgType": "manufacturer",
3 "companyCRN": "MAN001",
4 "companyName": "Sun Pharma",
5 "location": "Chennai",
6 "organisationRole": "Manufacturer"
7
```

```
1
2 "status": "success",
3 "message": "registerCompany invoked successfully",
4 "response": {
5     "companyID": "\u0000org.pharma-network.pharmanet.company\u0000MAN001",
6     "name": "Sun Pharma",
7     "location": "Chennai",
8     "company": "MAN001",
9     "organisationRole": "MANUFACTURER",
10    "hierarchyKey": 1,
11    "updatedBy": "x509::/C=US/ST=California/L=San Francisco/O=manufacturer.pharma-network.com/CN=ca.manufacturer.pharma-network.com",
12    "updatedOn": "2022-02-01T13:01:30.777Z"
13 }
14
```

```
.....registerCompany Transaction Complete! { companyID:
  '\u0000org.pharma-network.pharmanet.company\u0000MAN001\u0000Sun Pharma\u0000',
  name: 'Sun Pharma',
  location: 'Chennai',
  company: 'MAN001',
  organisationRole: 'MANUFACTURER',
  hierarchyKey: 1,
  updatedBy:
    'x509::/C=US/ST=California/L=San Francisco/OU=client/CN=Admin@manufacturer.pharma-network.com::/C=US/ST=California/L=San Francisco/O=manufacturer.pharma-network.com/CN=ca.manufacturer.pharma-network.com',
  updatedOn: '2022-02-01T13:01:30.777Z' }
.....Disconnecting from Fabric Gateway
```

1.2 - distributor- registerCompany

<http://localhost:3000/registerCompany>

The screenshot shows a Postman interface with a POST request to `http://localhost:3000/registerCompany`. The request body is a JSON object with fields: `orgType: "distributor"`, `companyCRN: "DIST001"`, `companyName: "VG Pharma"`, `location: "vizag"`, and `organisationRole: "Distributor"`. The response is also JSON, indicating success with message `"registerCompany invoked successfully"` and a detailed company object:

```
1 "status": "success",
2 "message": "registerCompany invoked successfully",
3 "response": {
4     "companyID": "\u0000org.pharma-network.pharmanet.company\u0000DIST001\u0000VG Pharma\u0000",
5     "name": "VG Pharma",
6     "location": "vizag",
7     "company": "DIST001",
8     "organisationRole": "DISTRIBUTOR",
9     "hierarchyKey": 2,
10    "updatedBy": "x509::/C=US/ST=California/L=San Francisco/O=distributor.pharma-network.com/CN=ca.distributor.pharma-network.com",
11    "updatedOn": "2022-02-01T13:06:52.398Z"
12 }
13 }
```

```
.....registerCompany Transaction Complete! { companyID:
  '\u0000org.pharma-network.pharmanet.company\u0000DIST001\u0000VG Pharma\u0000',
  name: 'VG Pharma',
  location: 'vizag',
  company: 'DIST001',
  organisationRole: 'DISTRIBUTOR',
  hierarchyKey: 2,
  updatedBy:
    'x509::/C=US/ST=California/L=San Francisco/O=client/CN=Admin@distributor.pharma-network.com::/C=US/ST=California/L=San Francisco/O=distributor.pharma-network.com/CN=ca.distributor.pharma-network.com',
  updatedOn: '2022-02-01T13:06:52.398Z' }
.....Disconnecting from Fabric Gateway
```

1.3 -retailer – registerCompany

<http://localhost:3000/registerCompany>

POST http://localhost:3000/registerCompany

Body

raw JSON Beautify

```
1 [ ]  
2 "orgType": "retailer",  
3 "companyCRN": "RET002",  
4 "companyName": "upgrad",  
5 "location": "mumbai",  
6 "organisationRole": "Retailer"  
7 [ ]
```

Body

Pretty Raw Preview Visualize JSON

200 OK 2.38 s 760 B Save Response

```
1 [ ]  
2 "status": "success",  
3 "message": "registerCompany invoked successfully",  
4 "response": {  
5     "companyID": "\u0000org.pharma-network.pharmanet.company\u0000RET002",  
6     "name": "upgrad",  
7     "location": "mumbai",  
8     "company": "RET002",  
9     "organisationRole": "RETAILER",  
10    "hierarchyKey": 3,  
11    "updatedBy": "x509::/C=US/ST=California/L=San Francisco/O=retailer.pharma-network.com/CN=ca.retailer.pharma-network.com",  
12    "updatedOn": "2022-02-01T13:11:40.051Z"  
13 }  
14 [ ]
```

```
.....registerCompany Transaction Complete! { companyID:  
  '\u0000org.pharma-network.pharmanet.company\u0000RET002\u0000upgrad\u0000',  
  name: 'upgrad',  
  location: 'mumbai',  
  company: 'RET002',  
  organisationRole: 'RETAILER',  
  hierarchyKey: 3,  
  updatedBy:  
    'x509::/C=US/ST=California/L=San Francisco/OU=client/CN=Admin@retailer.pharma-network.com:/C=US/ST=California/L=San Francisco/O=retailer.pharma-network.com/CN=ca.retailer.pharma-network.com',  
  updatedOn: '2022-02-01T13:11:40.051Z' }  
.....Disconnecting from Fabric Gateway
```

1.4. transporter- registerCompany

<http://localhost:3000/registerCompany>

POST http://localhost:3000/registerCompany

Body

raw JSON Beautify

```
1 {  
2   "orgType": "transporter",  
3   "companyCRN": "TRA001",  
4   "companyName": "FedEx",  
5   "location": "Delhi",  
6   "organisationRole": "Transporter"  
7 }
```

Body

Pretty Raw Preview Visualize JSON

200 OK 2.38 s 752 B Save Response

```
1 {  
2   "status": "success",  
3   "message": "registerCompany invoked successfully",  
4   "response": {  
5     "companyID": "org.pharma-network.pharmanet.company@TRA001",  
6     "name": "FedEx",  
7     "location": "Delhi",  
8     "company": "TRA001",  
9     "organisationRole": "TRANSPORTER",  
10    "updatedBy": "x509::/C=US/ST=California/L=San Francisco/O=transporter.pharma-network.com/CN=ca.transporter.pharma-network.com",  
11    "updatedOn": "2022-02-01T13:14:55.760Z"  
12  }  
13 }
```

```
....registerCompany Transaction Complete! { companyID:  
  '\u0000org.pharma-network.pharmanet.company\u0000TRA001\u0000FedEx\u0000',  
  name: 'FedEx',  
  location: 'Delhi',  
  company: 'TRA001',  
  organisationRole: 'TRANSPORTER',  
  updatedBy:  
  'x509::/C=US/ST=California/L=San Francisco/OU=client/CN=Admin@transporter.pharma-network.com::/C=US/ST=California/L=San Francisco/O=transporter.pharma-network.com/CN=ca.transporter.pharma-network.com',  
  updatedOn: '2022-02-01T13:14:55.760Z' }  
....Disconnecting from Fabric Gateway
```

1.5. transporter 2- registerCompany

<http://localhost:3000/registerCompany>

The screenshot shows a Postman interface with a POST request to `http://localhost:3000/registerCompany`. The request body is a JSON object with fields: `orgType: "transporter"`, `companyCRN: "TRA002"`, `companyName: "Blue Dart"`, `location: "Banglore"`, and `organisationRole: "Transporter"`. The response status is 200 OK, with a response message indicating success and providing details about the registered company, including its ID, name, location, company CRN, role, updated by, and update timestamp.

Body	Body
<code>raw</code>	<code>Pretty</code>
<code>JSON</code>	<code>Raw</code>
<code>Beautify</code>	<code>Preview</code>
	<code>Visualize</code>
	<code>JSON</code>

Response Headers: 200 OK 2.37 s 763 B | Save Response

```
1  {
2    "status": "success",
3    "message": "registerCompany invoked successfully",
4    "response": {
5      "companyID": "org.pharma-network.pharmanet.company@TRA002",
6      "name": "Blue Dart",
7      "location": "Banglore",
8      "company": "TRA002",
9      "organisationRole": "TRANSPORTER",
10     "updatedBy": "x509::/C=US/ST=California/L=San Francisco/O=transporter.pharma-network.com/CN=Admin@transporter.pharma-network.com",
11     "updatedOn": "2022-02-01T13:17:55.104Z"
12   }
13 }
```

```
.....registerCompany Transaction Complete! { companyID:
  '\u0000org.pharma-network.pharmanet.company\u0000TRA002\u0000Blue Dart\u0000',
  name: 'Blue Dart',
  location: 'Banglore',
  company: 'TRA002',
  organisationRole: 'TRANSPORTER',
  updatedBy:
    'x509::/C=US/ST=California/L=San Francisco/OU=client/CN=Admin@transporter.pharma-network.com::/C=US/ST=California/L=San Francisco/O=transporter.pharma-network.com/CN=ca.transporter.pharma-network.com',
  updatedOn: '2022-02-01T13:17:55.104Z' }
.....Disconnecting from Fabric Gateway
```

1.6 -addDrug

1.6.1 -addDrug -001

<http://localhost:3000/addDrug>

POST http://localhost:3000/addDrug

Body

raw JSON Beautify

```
1 [ ]  
2 "orgType": "manufacturer",  
3 "drugName": "Paracetamol",  
4 "serialNo": "001",  
5 "mfgDate": "06/01/2022",  
6 "expDate": "06/06/2025",  
7 "companyCRN": "MAN001"  
8 [ ]
```

Body

Pretty Raw Preview Visualize JSON

200 OK 2.27 s 698 B Save Response

```
1 [ ]  
2 "status": "success",  
3 "message": "addDrug invoked successfully",  
4 "response": {  
5     "productID": "\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u00000001\u0000",  
6     "name": "Paracetamol",  
7     "serialNo": "001",  
8     "manufacturer": "\u0000org.pharma-network.pharmanet.company\u0000MAN001",  
9     "manufacturingDate": "06/01/2022",  
10    "expiryDate": "06/06/2025",  
11    "owner": "\u0000org.pharma-network.pharmanet.company\u0000MAN001",  
12    "shipment": []  
13 }  
14 [ ]
```

```
.....addDrug Transaction Complete! { productID:  
  '\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u00000001\u0000',  
  name: 'Paracetamol',  
  serialNo: '001',  
  manufacturer:  
  '\u0000org.pharma-network.pharmanet.company\u0000MAN001\u0000Sun Pharma\u0000',  
  manufacturingDate: '06/01/2022',  
  expiryDate: '06/06/2025',  
  owner:  
  '\u0000org.pharma-network.pharmanet.company\u0000MAN001\u0000Sun Pharma\u0000',  
  shipment: [] }  
.....Disconnecting from Fabric Gateway
```

1.6.2 -addDrug -002

<http://localhost:3000/addDrug>

The screenshot shows a Postman interface with a POST request to `http://localhost:3000/addDrug`. The request body is a JSON object:

```
1 {
2   "orgType": "manufacturer",
3   "drugName": "Paracetamol",
4   "serialNo": "002",
5   "mfgDate": "06/01/2022",
6   "expDate": "06/06/2025",
7   "companyCRN": "MAN001"
8 }
```

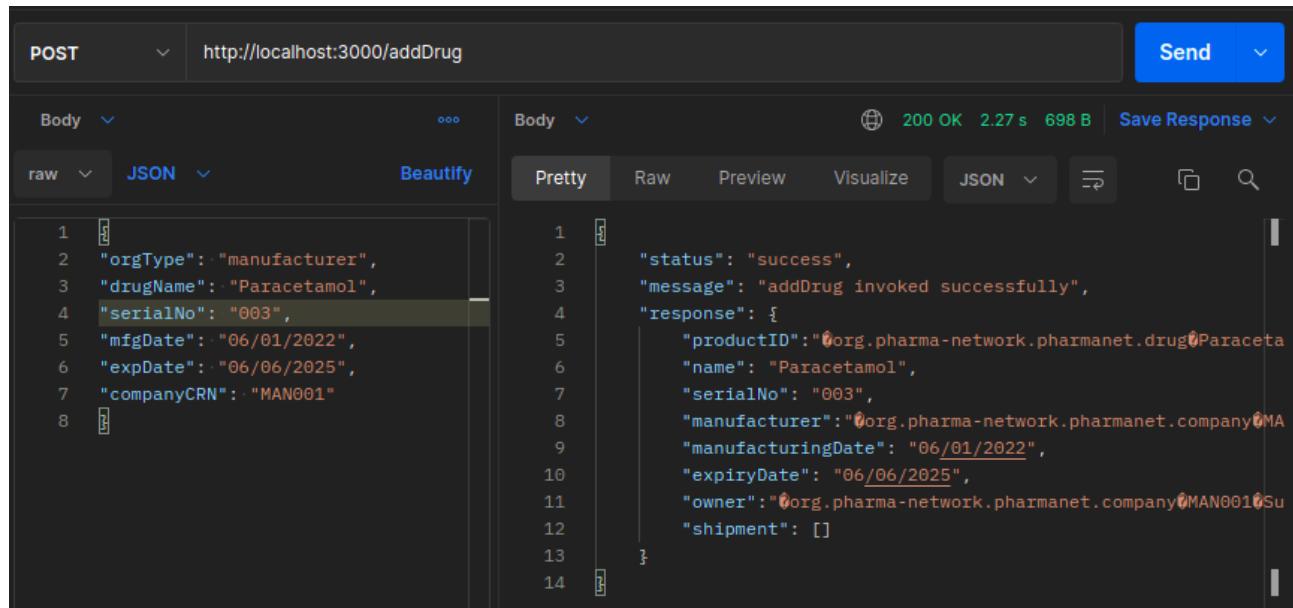
The response is a JSON object:

```
1 {
2   "status": "success",
3   "message": "addDrug invoked successfully",
4   "response": {
5     "productID": "\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u00000002\u0000",
6     "name": "Paracetamol",
7     "serialNo": "002",
8     "manufacturer": "\u0000org.pharma-network.pharmanet.company\u0000MAN001",
9     "manufacturingDate": "06/01/2022",
10    "expiryDate": "06/06/2025",
11    "owner": "\u0000org.pharma-network.pharmanet.company\u0000MAN001",
12    "shipment": []
13  }
14 }
```

```
.....addDrug Transaction Complete! { productID:
  '\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u00000002\u0000',
  name: 'Paracetamol',
  serialNo: '002',
  manufacturer:
    '\u0000org.pharma-network.pharmanet.company\u0000MAN001\u0000Sun Pharma\u0000',
  manufacturingDate: '06/01/2022',
  expiryDate: '06/06/2025',
  owner:
    '\u0000org.pharma-network.pharmanet.company\u0000MAN001\u0000Sun Pharma\u0000',
  shipment: [] }
.....Disconnecting from Fabric Gateway
```

1.6.3 -addDrug -003

<http://localhost:3000/addDrug>



POST http://localhost:3000/addDrug

Body

raw JSON Beautify

```
1 {
2   "orgType": "manufacturer",
3   "drugName": "Paracetamol",
4   "serialNo": "003",
5   "mfgDate": "06/01/2022",
6   "expDate": "06/06/2025",
7   "companyCRN": "MAN001"
8 }
```

Body

Pretty Raw Preview Visualize JSON

200 OK 2.27 s 698 B Save Response

```
1 {
2   "status": "success",
3   "message": "addDrug invoked successfully",
4   "response": {
5     "productID": "\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u0000003\u0000",
6     "name": "Paracetamol",
7     "serialNo": "003",
8     "manufacturer": "\u0000org.pharma-network.pharmanet.company\u0000MAN001\u0000Sun Pharma\u0000",
9     "manufacturingDate": "06/01/2022",
10    "expiryDate": "06/06/2025",
11    "owner": "\u0000org.pharma-network.pharmanet.company\u0000MAN001\u0000Sun Pharma\u0000",
12    "shipment": []
13  }
14 }
```

```
.....addDrug Transaction Complete! { productID:
  '\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u0000003\u0000',
  name: 'Paracetamol',
  serialNo: '003',
  manufacturer:
    '\u0000org.pharma-network.pharmanet.company\u0000MAN001\u0000Sun Pharma\u0000',
  manufacturingDate: '06/01/2022',
  expiryDate: '06/06/2025',
  owner:
    '\u0000org.pharma-network.pharmanet.company\u0000MAN001\u0000Sun Pharma\u0000',
  shipment: [] }
.....Disconnecting from Fabric Gateway
```

1.6.4 -addDrug -004

<http://localhost:3000/addDrug>

POST http://localhost:3000/addDrug

Body

raw JSON Beautify

```
1 "orgType": "manufacturer",
2 "drugName": "Paracetamol",
3 "serialNo": "004",
4 "mfgDate": "06/01/2022",
5 "expDate": "06/06/2025",
6 "companyCRN": "MAN001"
```

Body

Pretty Raw Preview Visualize JSON

200 OK 2.28 s 698 B Save Response

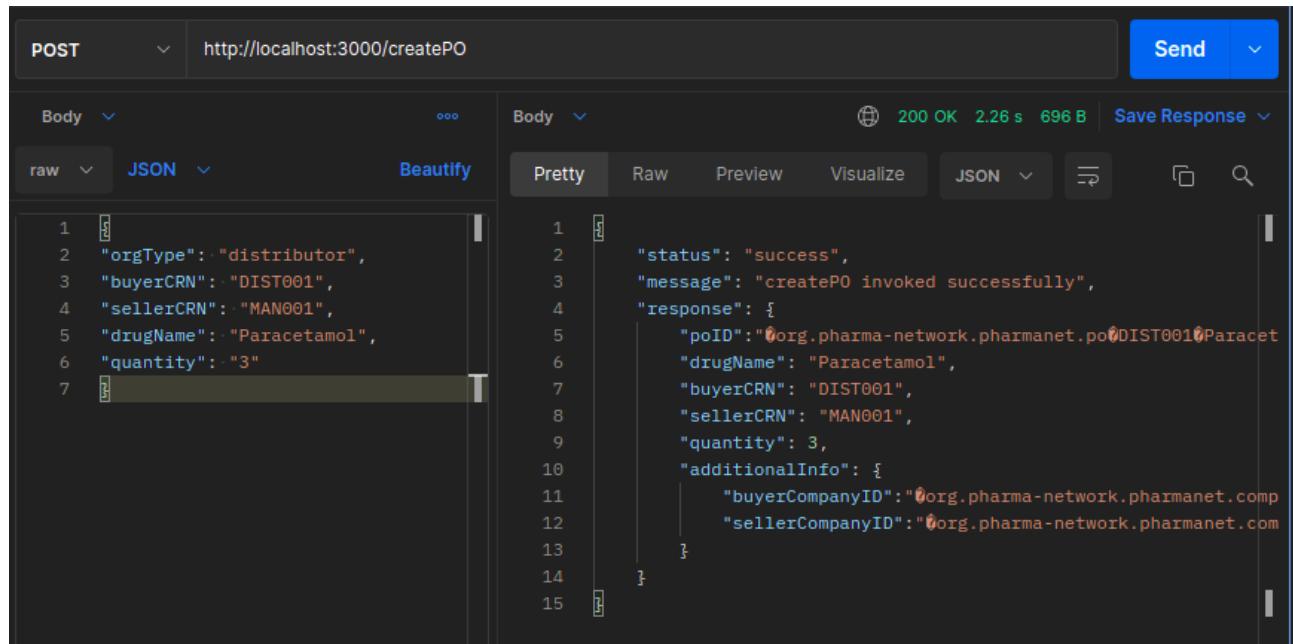
```
1 "status": "success",
2 "message": "addDrug invoked successfully",
3 "response": {
4     "productID": "\u0000org.pharma-network.pharmanet.drug\0Paraceta",
5     "name": "Paracetamol",
6     "serialNo": "004",
7     "manufacturer": "\u0000org.pharma-network.pharmanet.company\0MA",
8     "manufacturingDate": "06/01/2022",
9     "expiryDate": "06/06/2025",
10    "owner": "\u0000org.pharma-network.pharmanet.company\0MAN001\0Su",
11    "shipment": []
12 }
13 }
```

```
....addDrug Transaction Complete! { productID:
  '\u0000org.pharma-network.pharmanet.drug\0Paracetamol\00000004\0000',
  name: 'Paracetamol',
  serialNo: '004',
  manufacturer:
    '\u0000org.pharma-network.pharmanet.company\0000MAN001\0000Sun Pharma\0000',
  manufacturingDate: '06/01/2022',
  expiryDate: '06/06/2025',
  owner:
    '\u0000org.pharma-network.pharmanet.company\0000MAN001\0000Sun Pharma\0000',
  shipment: [] }
....Disconnecting from Fabric Gateway
```

Test case 2 -Supply Chain - part a

<http://localhost:3000/createPO>

2.1.1 -Distributor - createPO



POST http://localhost:3000/createPO

Body

raw JSON Beautify

```
1
2 "orgType": "distributor",
3 "buyerCRN": "DIST001",
4 "sellerCRN": "MAN001",
5 "drugName": "Paracetamol",
6 "quantity": "3"
7
```

Body

Pretty Raw Preview Visualize JSON

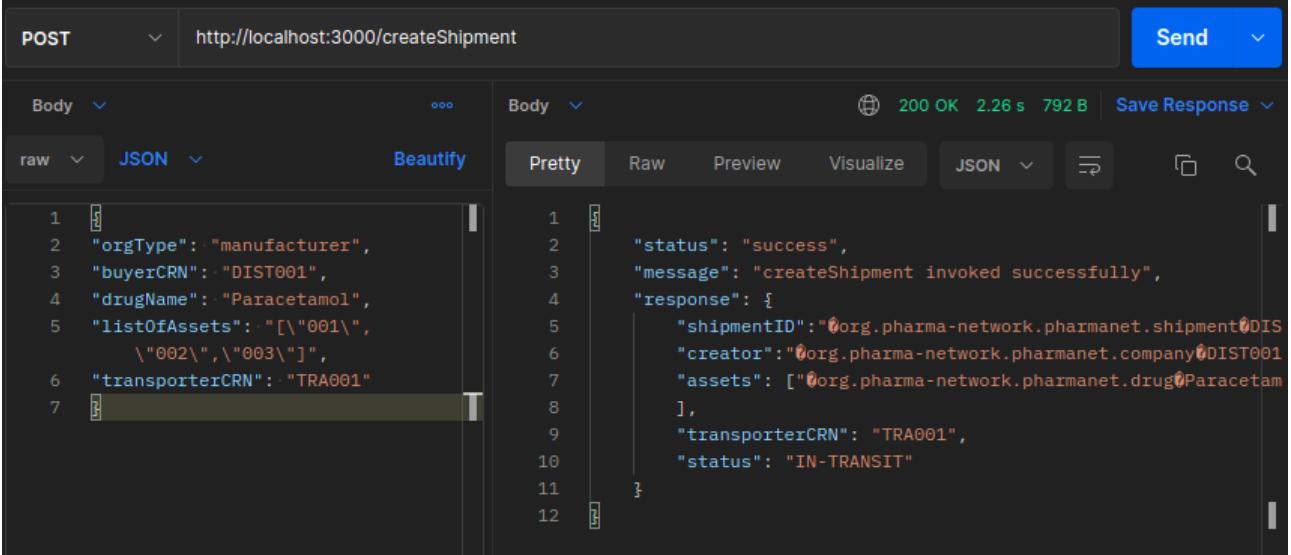
200 OK 2.26 s 696 B Save Response

```
1
2 "status": "success",
3 "message": "createPO invoked successfully",
4 "response": {
5     "poID": "\u0000org.pharma-network.pharmanet.po\u0000DIST001\Paracetamol\u0000",
6     "drugName": "Paracetamol",
7     "buyerCRN": "DIST001",
8     "sellerCRN": "MAN001",
9     "quantity": 3,
10    "additionalInfo": {
11        "buyerCompanyID": "\u0000org.pharma-network.pharmanet.company\u0000DIST001\VG Pharma\u0000",
12        "sellerCompanyID": "\u0000org.pharma-network.pharmanet.company\u0000MAN001\Sun Pharma\u0000"
13    }
14}
15
```

```
.....createPO Transaction Complete! { poID:
  '\u0000org.pharma-network.pharmanet.po\u0000DIST001\u0000Paracetamol\u0000',
  drugName: 'Paracetamol',
  buyerCRN: 'DIST001',
  sellerCRN: 'MAN001',
  quantity: 3,
  additionalInfo:
  { buyerCompanyID:
    '\u0000org.pharma-network.pharmanet.company\u0000DIST001\u0000VG Pharma\u0000',
    sellerCompanyID:
    '\u0000org.pharma-network.pharmanet.company\u0000MAN001\u0000Sun Pharma\u0000' } }
.....Disconnecting from Fabric Gateway
```

2.1.2 - Manufacturer- createShipment

<http://localhost:3000/createShipment>



POST http://localhost:3000/createShipment

Body

raw JSON Beautify

```
1 {"orgType": "manufacturer",  
2 "buyerCRN": "DIST001",  
3 "drugName": "Paracetamol",  
4 "listOfAssets": "[\"001\",  
5 "    \"002\", \"003\"]",  
6 "transporterCRN": "TRA001"}  
7
```

Body

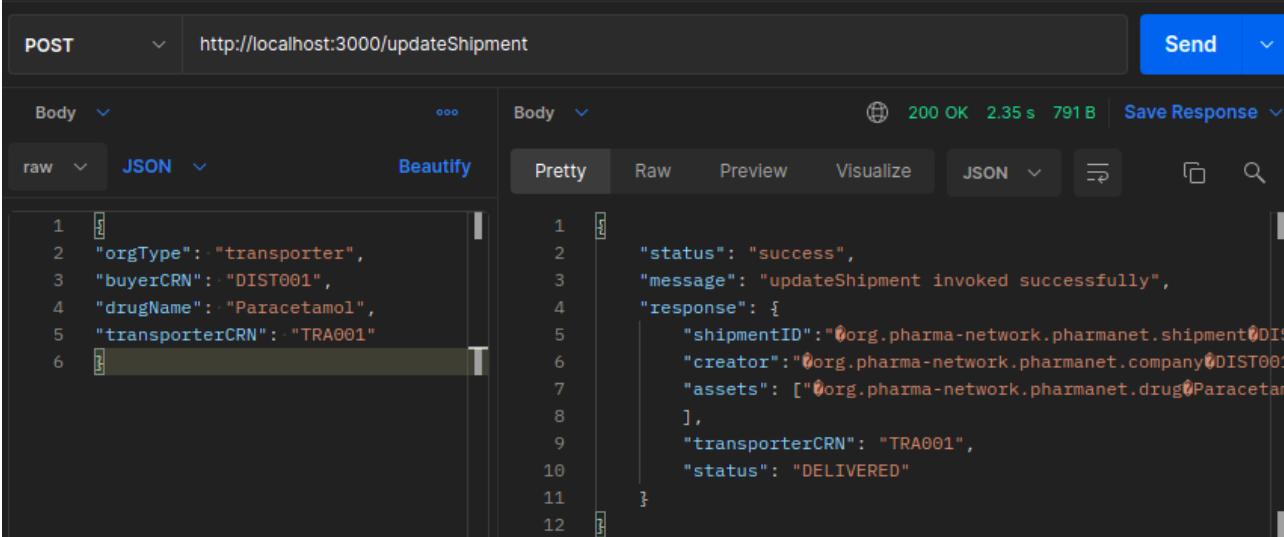
Pretty Raw Preview Visualize JSON

```
1 {"status": "success",  
2 "message": "createShipment invoked successfully",  
3 "response": {  
4     "shipmentID": "\u0000org.pharma-network.pharmanet.shipment\u0000DIST001\u0000Paracetamol\u0000",  
5     "creator": "\u0000org.pharma-network.pharmanet.company\u0000DIST001\u0000VG Pharma\u0000",  
6     "assets": ["\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u0000"],  
7     "transporterCRN": "TRA001",  
8     "status": "IN-TRANSIT"  
9 }  
10 }  
11  
12 }
```

```
.....createShipment Transaction Complete! { shipmentID:  
  '\u0000org.pharma-network.pharmanet.shipment\u0000DIST001\u0000Paracetamol\u0000',  
  creator:  
  '\u0000org.pharma-network.pharmanet.company\u0000DIST001\u0000VG Pharma\u0000',  
  assets:  
  [ '\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u0000001\u0000',  
    '\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u0000002\u0000',  
    '\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u0000003\u0000' ],  
  transporterCRN: 'TRA001',  
  status: 'IN-TRANSIT' }  
.....Disconnecting from Fabric Gateway
```

2.1.3 -Transporter- updateShipment

<http://localhost:3000/updateShipment>



The screenshot shows a Postman interface with a POST request to `http://localhost:3000/updateShipment`. The request body is JSON, and the response is JSON, indicating success. The response message says "updateShipment invoked successfully".

```
POST http://localhost:3000/updateShipment
{
  "orgType": "transporter",
  "buyerCRN": "DIST001",
  "drugName": "Paracetamol",
  "transporterCRN": "TRA001"
}
{
  "status": "success",
  "message": "updateShipment invoked successfully",
  "response": {
    "shipmentID": "org.pharma-network.pharmanet.shipment\u0000DIST001\u0000Paracetamol\u0000",
    "creator": "org.pharma-network.pharmanet.company\u0000DIST001\u0000VG Pharma\u0000",
    "assets": [
      "org.pharma-network.pharmanet.drug\u0000Paracetamol\u00000001\u0000",
      "org.pharma-network.pharmanet.drug\u0000Paracetamol\u00000002\u0000",
      "org.pharma-network.pharmanet.drug\u0000Paracetamol\u00000003\u0000"
    ],
    "transporterCRN": "TRA001",
    "status": "DELIVERED"
  }
}
```

```
.....updateShipment Transaction Complete! { shipmentID: '\u0000org.pharma-network.pharmanet.shipment\u0000DIST001\u0000Paracetamol\u0000', creator: '\u0000org.pharma-network.pharmanet.company\u0000DIST001\u0000VG Pharma\u0000', assets: [ '\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u00000001\u0000', '\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u00000002\u0000', '\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u00000003\u0000' ], transporterCRN: 'TRA001', status: 'DELIVERED' } .....Disconnecting from Fabric Gateway
```

Test case 2 - part b

<http://localhost:3000/createPO>

2.2.1 -Retailer - createPO

POST http://localhost:3000/createPO

Body

raw JSON Beautify

```
1 [ ]  
2 "orgType": "retailer",  
3 "buyerCRN": "RET002",  
4 "sellerCRN": "DIST001",  
5 "drugName": "Paracetamol",  
6 "quantity": "2"  
7 [ ]
```

Body

Pretty Raw Preview Visualize JSON

200 OK 2.23 s 691 B Save Response

```
1 [ ]  
2 "status": "success",  
3 "message": "createPO invoked successfully",  
4 "response": {  
5     "poID": "\u0000org.pharma-network.pharmanet.po\u0000RET002\Paracetamol\u0000",  
6     "drugName": "Paracetamol",  
7     "buyerCRN": "RET002",  
8     "sellerCRN": "DIST001",  
9     "quantity": 2,  
10    "additionalInfo": {  
11        "buyerCompanyID": "\u0000org.pharma-network.pharmanet.company\u0000RET002\upgrad\u0000",  
12        "sellerCompanyID": "\u0000org.pharma-network.pharmanet.company\u0000DIST001\VG Pharma\u0000" } }  
13    }  
14 }  
15 [ ]
```

```
.....createPO Transaction Complete! { poID:  
  '\u0000org.pharma-network.pharmanet.po\u0000RET002\Paracetamol\u0000',  
  drugName: 'Paracetamol',  
  buyerCRN: 'RET002',  
  sellerCRN: 'DIST001',  
  quantity: 2,  
  additionalInfo:  
  { buyerCompanyID:  
    '\u0000org.pharma-network.pharmanet.company\u0000RET002\upgrad\u0000',  
    sellerCompanyID:  
    '\u0000org.pharma-network.pharmanet.company\u0000DIST001\VG Pharma\u0000' } }  
.....Disconnecting from Fabric Gateway
```

2.2.2 - Distributor – createShipment

<http://localhost:3000/createShipment>

Distributor - createShipment

POST http://localhost:3000/createShipment

Body

raw JSON Beautify

```
1 {
2   "orgType": "distributor",
3   "buyerCRN": "RET002",
4   "drugName": "Paracetamol",
5   "listOfAssets": "[\"001\",
6                 \"002\"]",
7   "transporterCRN": "TRA002"
8 }
```

Body

Pretty Raw Preview Visualize JSON

200 OK 2.29 s 713 B Save Response

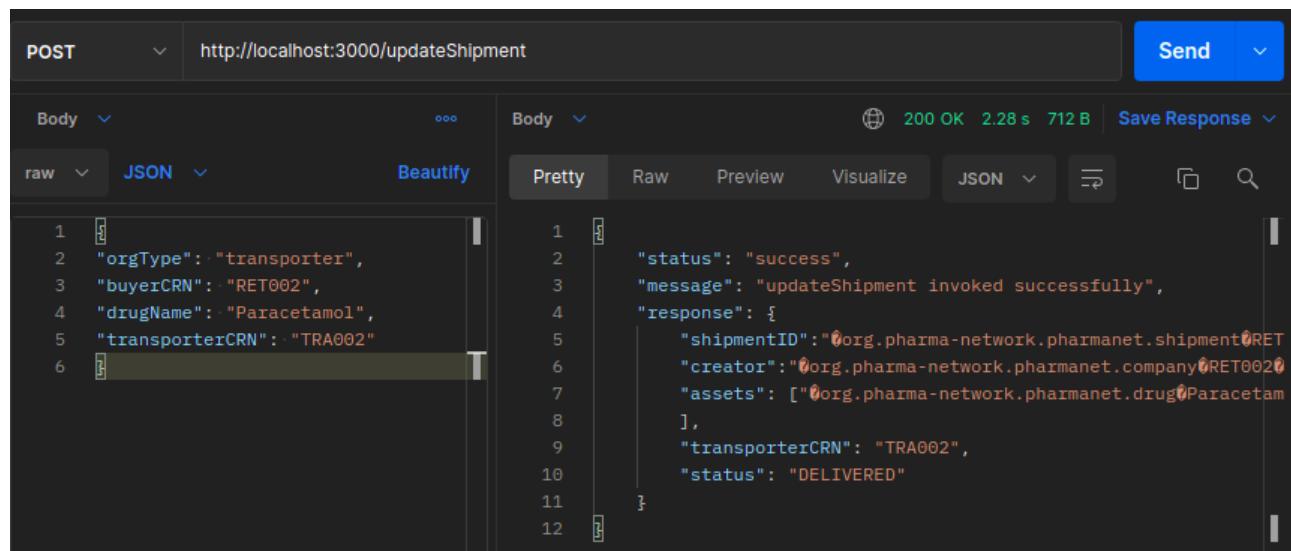
```
1 {
2   "status": "success",
3   "message": "createShipment invoked successfully",
4   "response": {
5     "shipmentID": "org.pharma-network.pharmanet.shipment\RET002",
6     "creator": "org.pharma-network.pharmanet.company\RET002",
7     "assets": ["org.pharma-network.pharmanet.drug\Paracetamol"],
8     "transporterCRN": "TRA002",
9     "status": "IN-TRANSIT"
10   }
11 }
```

```
....createShipment Transaction Complete! { shipmentID:
  '\u0000org.pharma-network.pharmanet.shipment\u0000RET002\u0000Paracetamol\u0000',
  creator:
  '\u0000org.pharma-network.pharmanet.company\u0000RET002\u0000upgrad\u0000',
  assets:
  [ '\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u0000001\u0000',
    '\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u0000002\u0000' ],
  transporterCRN: 'TRA002',
  status: 'IN-TRANSIT' }
....Disconnecting from Fabric Gateway
```

2.2.3 -part b-Transporter – updateShipment

<http://localhost:3000/updateShipment>

Transporter - updateShipment



POST http://localhost:3000/updateShipment

Body

raw JSON Beautify

```
1 "orgType": "transporter",
2 "buyerCRN": "RET002",
3 "drugName": "Paracetamol",
4 "transporterCRN": "TRA002"
```

Body

Pretty Raw Preview Visualize JSON

```
1 "status": "success",
2 "message": "updateShipment invoked successfully",
3 "response": {
4     "shipmentID": "\u0000org.pharma-network.pharmanet.shipment\u0000RET002\u0000Paracetamol\u0000",
5     "creator": "\u0000org.pharma-network.pharmanet.company\u0000RET002",
6     "assets": ["\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u0000"],
7     "transporterCRN": "TRA002",
8     "status": "DELIVERED"
9 }
```

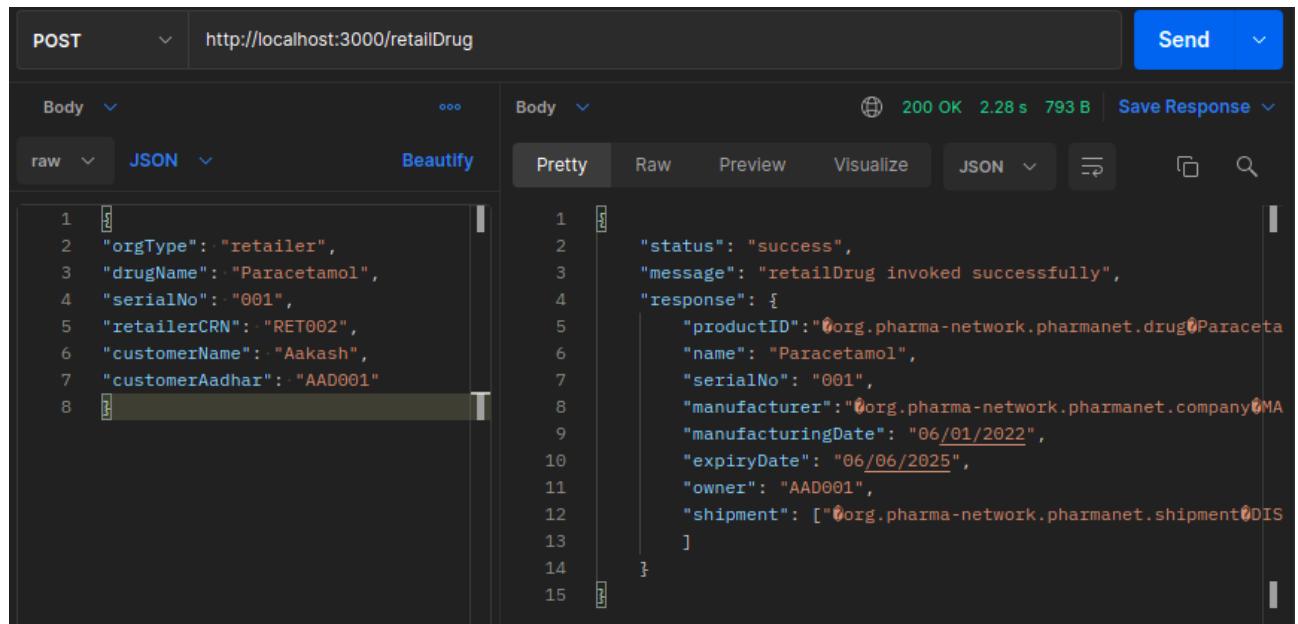
Send

```
.....updateShipment Transaction Complete! { shipmentID:
  '\u0000org.pharma-network.pharmanet.shipment\u0000RET002\u0000Paracetamol\u0000',
  creator:
  '\u0000org.pharma-network.pharmanet.company\u0000RET002\u0000upgrad\u0000',
  assets:
  [ '\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u00000001\u0000',
    '\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u00000002\u0000' ],
  transporterCRN: 'TRA002',
  status: 'DELIVERED' }
.....Disconnecting from Fabric Gateway
```

Test case 2 - part c

<http://localhost:3000/retailDrug>

2.3.1 -Retailer -retailDrug



```
POST http://localhost:3000/retailDrug
```

Body

raw JSON Beautify

```
1 [ ]  
2 "orgType": "retailer",  
3 "drugName": "Paracetamol",  
4 "serialNo": "001",  
5 "retailerCRN": "RET002",  
6 "customerName": "Aakash",  
7 "customerAadhar": "AAD001"  
8 [ ]
```

Body

Pretty Raw Preview Visualize JSON

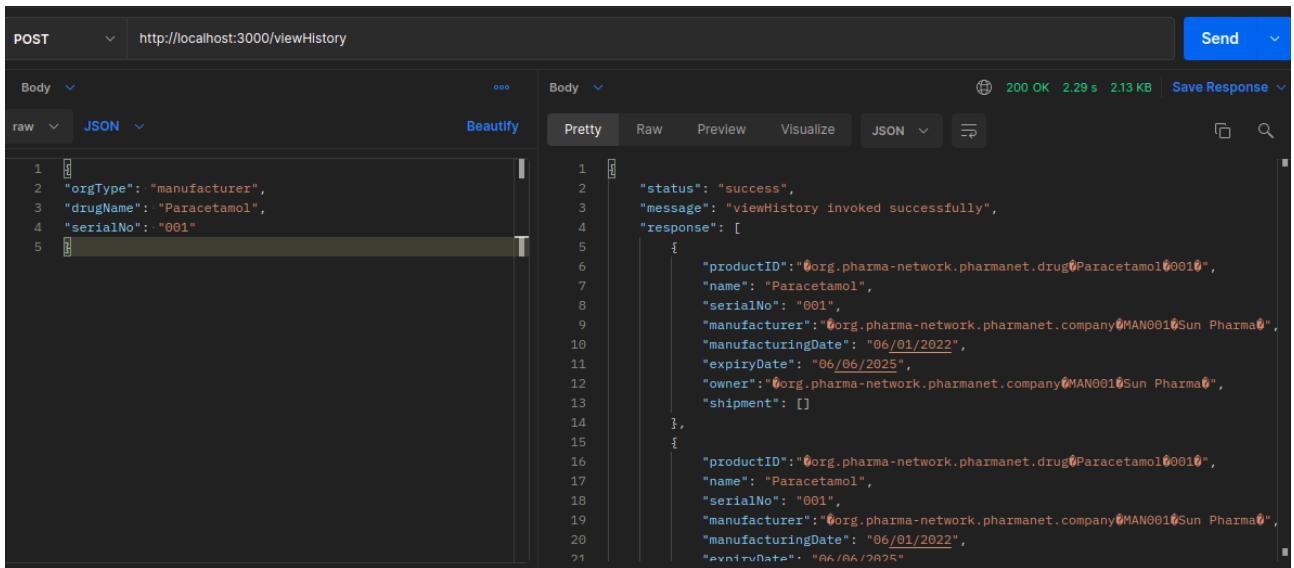
```
1 [ ]  
2 "status": "success",  
3 "message": "retailDrug invoked successfully",  
4 "response": {  
5     "productID": "\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u00000001\u0000",  
6     "name": "Paracetamol",  
7     "serialNo": "001",  
8     "manufacturer": "\u0000org.pharma-network.pharmanet.company\u0000MAN001",  
9     "manufacturingDate": "06/01/2022",  
10    "expiryDate": "06/06/2025",  
11    "owner": "AAD001",  
12    "shipment": ["\u0000org.pharma-network.pharmanet.shipment\u0000DIS001",  
13        "\u0000org.pharma-network.pharmanet.shipment\u0000RET002"],  
14 }  
15 [ ]
```

```
....retailDrug Transaction Complete! { productID:  
  '\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u00000001\u0000',  
  name: 'Paracetamol',  
  serialNo: '001',  
  manufacturer:  
  '\u0000org.pharma-network.pharmanet.company\u0000MAN001\u0000Sun Pharma\u0000',  
  manufacturingDate: '06/01/2022',  
  expiryDate: '06/06/2025',  
  owner: 'AAD001',  
  shipment:  
  [ '\u0000org.pharma-network.pharmanet.shipment\u0000DIST001\u0000Paracetamol\u0000',  
    '\u0000org.pharma-network.pharmanet.shipment\u0000RET002\u0000Paracetamol\u0000' ] }  
....Disconnecting from Fabric Gateway
```

Test case 3

<http://localhost:3000/viewHistory>

3.1 -viewHistory



POST http://localhost:3000/viewHistory

Body

raw JSON Beautify

```
1
2 "orgType": "manufacturer",
3 "drugName": "Paracetamol",
4 "serialNo": "001"
```

Body

Pretty Raw Preview Visualize JSON

200 OK 2.29 s 2.13 KB Save Response

```
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
{
  "status": "success",
  "message": "viewHistory invoked successfully",
  "response": [
    {
      "productID": "Org.pharma-network.pharmanet.drug@Paracetamol@001@",
      "name": "Paracetamol",
      "serialNo": "001",
      "manufacturer": "Org.pharma-network.pharmanet.company@MAN001@Sun Pharma@",
      "manufacturingDate": "06/01/2022",
      "expiryDate": "06/06/2025",
      "owner": "Org.pharma-network.pharmanet.company@MAN001@Sun Pharma@",
      "shipment": []
    },
    {
      "productID": "Org.pharma-network.pharmanet.drug@Paracetamol@001@",
      "name": "Paracetamol",
      "serialNo": "001",
      "manufacturer": "Org.pharma-network.pharmanet.company@MAN001@Sun Pharma@",
      "manufacturingDate": "06/01/2022",
      "expiryDate": "06/06/2025"
    }
  ]
}
```

```
....viewHistory Transaction Complete! [ { productID:  
  '\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u0000001\u0000',  
  name: 'Paracetamol',  
  serialNo: '001',  
  manufacturer:  
    '\u0000org.pharma-network.pharmanet.company\u0000MAN001\u0000Sun Pharma\u0000',  
  manufacturingDate: '06/01/2022',  
  expiryDate: '06/06/2025',  
  owner:  
    '\u0000org.pharma-network.pharmanet.company\u0000MAN001\u0000Sun Pharma\u0000',  
  shipment: [] },  
{ productID:  
  '\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u0000001\u0000',  
  name: 'Paracetamol',  
  serialNo: '001',  
  manufacturer:  
    '\u0000org.pharma-network.pharmanet.company\u0000MAN001\u0000Sun Pharma\u0000',  
  manufacturingDate: '06/01/2022',  
  expiryDate: '06/06/2025',  
  owner:  
    '\u0000org.pharma-network.pharmanet.company\u0000DIST001\u0000VG Pharma\u0000',  
  shipment:  
    [ '\u0000org.pharma-network.pharmanet.shipment\u0000DIST001\u0000Paracetamol\u0000' ] },  
{ productID:  
  '\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u0000001\u0000',  
  name: 'Paracetamol',  
  serialNo: '001',  
  manufacturer:  
    '\u0000org.pharma-network.pharmanet.company\u0000MAN001\u0000Sun Pharma\u0000',  
  manufacturingDate: '06/01/2022',  
  expiryDate: '06/06/2025',  
  owner:  
    '\u0000org.pharma-network.pharmanet.company\u0000RET002\u0000upgrad\u0000',  
  shipment:
```

```
manufacturer:  
  '\u0000org.pharma-network.pharmanet.company\u0000MAN001\u0000Sun Pharma\u0000',  
manufacturingDate: '06/01/2022',  
expiryDate: '06/06/2025',  
owner:  
  '\u0000org.pharma-network.pharmanet.company\u0000RET002\u0000upgrad\u0000',  
shipment:  
  [ '\u0000org.pharma-network.pharmanet.shipment\u0000DIST001\u0000Paracetamol\u0000',  
    '\u0000org.pharma-network.pharmanet.shipment\u0000RET002\u0000Paracetamol\u0000' ] },  
productID:  
  '\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u0000001\u0000',  
name: 'Paracetamol',  
serialNo: '001',  
manufacturer:  
  '\u0000org.pharma-network.pharmanet.company\u0000MAN001\u0000Sun Pharma\u0000',  
manufacturingDate: '06/01/2022',  
expiryDate: '06/06/2025',  
owner: 'AAD001',  
shipment:  
  [ '\u0000org.pharma-network.pharmanet.shipment\u0000DIST001\u0000Paracetamol\u0000',  
    '\u0000org.pharma-network.pharmanet.shipment\u0000RET002\u0000Paracetamol\u0000' ] } ]  
.Disconnecting from Fabric Gateway
```

3.2 -viewDrugCustomerState

<http://localhost:3000/viewDrugcurrentState>

POST http://localhost:3000/viewDrugcurrentState

Body

raw JSON Beautify

```
1 [ ]  
2 "orgType": "manufacturer",  
3 "drugName": "Paracetamol",  
4 "serialNo": "001"
```

Body

Pretty Raw Preview Visualize JSON

200 OK 2.25 s 803 B Save Response

```
1 [ ]  
2 "status": "success",  
3 "message": "viewDrugcurrentState invoked successfully",  
4 "response": {  
5     "productID": "\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u00000001\u0000",  
6     "name": "Paracetamol",  
7     "serialNo": "001",  
8     "manufacturer": "\u0000org.pharma-network.pharmanet.company\u0000MAN001",  
9     "manufacturingDate": "06/01/2022",  
10    "expiryDate": "06/06/2025",  
11    "owner": "AAD001",  
12    "shipment": ["\u0000org.pharma-network.pharmanet.shipment\u0000DIST001",  
13                                "\u0000org.pharma-network.pharmanet.shipment\u0000RET002"],  
14 }
```

```
.....viewDrugcurrentState Transaction Complete! { productID:  
  '\u0000org.pharma-network.pharmanet.drug\u0000Paracetamol\u00000001\u0000',  
  name: 'Paracetamol',  
  serialNo: '001',  
  manufacturer:  
    '\u0000org.pharma-network.pharmanet.company\u0000MAN001\u0000Sun Pharma\u0000',  
  manufacturingDate: '06/01/2022',  
  expiryDate: '06/06/2025',  
  owner: 'AAD001',  
  shipment:  
    [ '\u0000org.pharma-network.pharmanet.shipment\u0000DIST001\u0000Paracetamol\u0000',  
      '\u0000org.pharma-network.pharmanet.shipment\u0000RET002\u0000Paracetamol\u0000' ] }  
.....Disconnecting from Fabric Gateway
```