Hyperledger Fabric Setup Guideline

Disclaimer

This guideline doesn't include installation of hyperledger fabric. For that visit original documentation site

After installation, hyperledger provides us with some examples in the folder 'fabric-samples'.We are utilizing one such example network setup called "Build Your First Network" with the script name -> byfn.sh .This script is available at the location 'fabric-samples/first-network'.

The version we discuss in this guideline is v2.1.0. Latest versions of hyperledger might have removed this folder.

Node distribution for multi-host setup

The first-network builds 2 organizations with 2 member peers each and 5 ordering nodes.

Host1 <IP Address1>	Host2 <IP Address2>
peer0.org1.example.com	peer0.org2.example.com
peer1.org1.example.com	peer1.org2.example.com
orderer.example.com	
orderer2.example.com	
orderer3.example.com	
orderer4.example.com	
orderer5.example.com	

Customization of default files in first-network (host1 & host2)

Filename: docker-compose-host-cli.yaml

Location: ‘fabric-sample/first-network’

‘cli’ is a special interface that runs on each host which is used to communicate with the nodes running on that host.

Comment the unwanted peers.Keep only the nodes that run on this host (1)

Orderers 2-5 have a different yaml file, so host1 has to consider that in the script byfn.sh

hyperledger > workspace > fabric-samples > first-network > ! docker-compose-host1-cli.yaml

```
1  # Copyright IBM Corp. All Rights Reserved.
2  #
3  # SPDX-License-Identifier: Apache-2.0
4  #
5
6  version: '2'
7
8  volumes:
9    orderer.example.com:
10   peer0.org1.example.com:
11   peer1.org1.example.com:
12   # peer0.org2.example.com:
13   # peer1.org2.example.com:
14
15 networks:
16   byfn:
```

Customization of cli yaml file

Filename: docker-compose-host-cli.yaml

Location: ‘fabric-sample/first-network’

Peers that reside in host2 must be specified in extra_hosts section along with IP address of host2

PS: keep note of the working directory, which contains some important files we need further down the setup

```
43
44    cli:
45      container_name: cli
46      image: hyperledger/fabric-tools:$IMAGE_TAG
47      tty: true
48      stdin_open: true
49      environment:
50        - GOPATH=/opt/gopath
51        - CORE_VM_ENDPOINT=unix:///host/var/run/docker.sock
52        - FABRIC_LOGGING_SPEC=DEBUG
53        # - FABRIC_LOGGING_SPEC=INFO
54        - CORE_PEER_ID=cli
55        - CORE_PEER_ADDRESS=peer0.org1.example.com:7051
56        - CORE_PEER_LOCALMSPID=Org1MSP
57        - CORE_PEER_TLS_ENABLED=true
58        - CORE_PEER_TLS_CERT_FILE=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrga
59        - CORE_PEER_TLS_KEY_FILE=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrgan
60        - CORE_PEER_TLS_ROOTCERT_FILE=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peer
61        - CORE_PEER_MSPCONFIGPATH=/opt/gopath/src/github.com/hyperledger/fabric/peer/crypto/peerOrga
62      extra_hosts:
63        - "peer0.org2.example.com:<IP Address2>"
64        - "peer1.org2.example.com:<IP Address2>"
65      working_dir: /opt/gopath/src/github.com/hyperledger/fabric/peer
66      command: /bin/bash
```

Customization of base yaml file

Filename: docker-compose-host-base.yaml

Location: ‘fabric-sample/first-network/base’

Similar to cli configuration, orderer and peer configuration also requires the extra_hosts section

Repeat the same for peer0.org1.example.com & peer1.org1.example.com under the same file

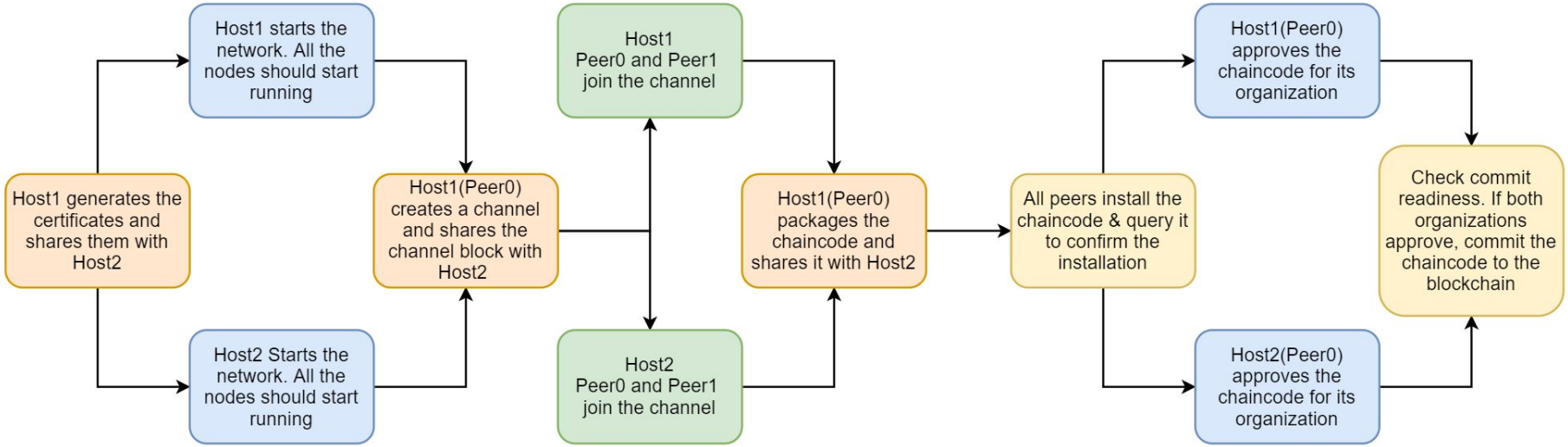
Also take note of the ports used by each node in the host. These ports need to be forwarded towards host1’s local IP in the LAN

```
services:

  orderer.example.com:
    container_name: orderer.example.com
    extends:
      file: peer-base.yaml
      service: orderer-base
    volumes:
        - ../channel-artifacts/genesis.block:/var/hyperledger/orderer/
        - ../crypto-config/ordererOrganizations/example.com/orderers/o
        - ../crypto-config/ordererOrganizations/example.com/orderers/o
        - orderer.example.com:/var/hyperledger/production/orderer
    extra_hosts:
      - "peer0.org2.example.com:<IP address2>"
      - "peer1.org2.example.com:<IP address2>"
    ports:
      - 7050:7050

```

Process flowchart



Some important commands

To copy channel block from cli docker to host1 directory: **“docker cp cli:<working_dir>/mychannel.block ”**

To copy channel block from host2 directory to cli docker: **“docker cp mychannel.block cli:<working_dir>”**

To copy packaged chaincode from cli docker to host1 directory: **“docker cp cli:<working_dir>/mycc.tar.gz ”**

To copy packaged chaincode from host2 directory to cli docker: **“docker cp mycc.tar.gz cli:<working_dir>”**