

# < Tuna 예제 실습 >

## 1. basic-network로 시작하기

- fabric-samples/basic-network 디렉토리에 들어가보면 다양한 .sh파일이 있음  
단순 스크립트 파일로 이를 사용해 간편하게 서버를 구동할 수 있음  
모든 프로젝트를 시작할 때 이 basic-network를 이용해서 구현!!

```
guru@guru:~/fabric-samples/basic-network$ ls
config  configtx.yaml  crypto-config  crypto-config.yaml  docker-compose.yml  generate.sh  init.sh  README.md  start.sh  stop.sh  teardown.sh
```

- 모든 business logic은 전부 chaincode 안에 들어있어야 함!
- chaincode는 GetState, PutState, DelState라는 함수를 지원
- **설계과정 : 기능일람표 작성(어느 기능이 필요한지) → API로 바꿈 → 구현**
- 네트워크가 안될 땐??? \$ **sudo service networking restart**로 네트워크 재시작!

```
guru@guru:~$ sudo service networking restart
```

## 2. tuna 실습

- home에 dir만들고 basic-network에 있는 것 전체를 복사(\$ cp -rf ./basic-network/ ~/tuna/)

```
guru@guru:~$ tree tuna -L 1
tuna
├── basic-network
├── chaincode
└── tuna-app
```

```
guru@guru:~/tuna/basic-network$ ll
total 64
drwxrwxr-x 4 guru guru 4096 Nov 21 17:15 ./
drwxrwxr-x 5 guru guru 4096 Nov 21 17:12 ../
drwxrwxr-x 2 guru guru 4096 Nov 21 17:15 config/
-rw-rw-r-- 1 guru guru 4341 Nov 21 16:36 configtx.yaml
drwxrwxr-x 4 guru guru 4096 Nov 21 17:15 crypto-config/
-rw-rw-r-- 1 guru guru 3555 Nov 21 16:36 crypto-config.yaml
-rw-rw-r-- 1 guru guru 4774 Nov 21 16:36 docker-compose.yml
-rw-rw-r-- 1 guru guru 25 Nov 21 16:36 .env
-rwxrwxr-x 1 guru guru 1238 Nov 21 17:15 generate.sh*
-rwxrwxr-x 1 guru guru 277 Nov 21 16:36 init.sh*
-rw-rw-r-- 1 guru guru 770 Nov 21 16:36 README.md
-rwxrwxr-x 1 guru guru 1116 Nov 21 16:36 start.sh*
-rwxrwxr-x 1 guru guru 258 Nov 21 16:36 stop.sh*
-rwxrwxr-x 1 guru guru 468 Nov 21 16:36 teardown.sh*
```

- : 앞으로 fabric 프로젝트 할 때는 basic-network 안에서 모두 실행!!
- : ./teardown.sh(중지하고 죽이는 스크립트)
- : ./start.sh(네트워크 기동하는 스크립트 : endorsor만들기 등등)
- : 실제 시작은 ./generate.sh로 시작!!

Branch: master	education / LFS171x / fabric-material / tuna-app /	Create new file	Upload files	Find file	History
alexandrag2254 and tkuhr Add attributes (#8) ...					Latest commit 6b43283 on 27 Oct 2017
..					
client	Add Hyperledger Fabric code to Hyperledger education repo (#7)				a year ago
src	Add attributes (#8)				a year ago
.gitignore	Add Hyperledger Fabric code to Hyperledger education repo (#7)				a year ago
README.md	Add attributes (#8)				a year ago
controller.js	Add attributes (#8)				a year ago
package-lock.json	Add Hyperledger Fabric code to Hyperledger education repo (#7)				a year ago
package.json	Add Hyperledger Fabric code to Hyperledger education repo (#7)				a year ago
registerAdmin.js	Add attributes (#8)				a year ago
registerUser.js	Add attributes (#8)				a year ago
routes.js	Add Hyperledger Fabric code to Hyperledger education repo (#7)				a year ago
server.js	Add Hyperledger Fabric code to Hyperledger education repo (#7)				a year ago
startFabric.sh	Add attributes (#8)				a year ago

오류 메시지의 출력 단계(←단계까지 다 보여줌 : ex)debug라고 바꾸면 verbose, info에러 보여줌)  
 verbose / info / debug / warn / error / fatal

```
cli:
  container_name: cli
  image: hyperledger/fabric-tools
  tty: true
  environment:
    - GOPATH=/opt/gopath
    - CORE_VM_ENDPOINT=unix:///host/var/run/docker.sock
    - CORE_LOGGING_LEVEL=info
    - CORE_PEER_ID=cli
    - CORE_PEER_ADDRESS=peer0.org1.example.com:7051
    - CORE_PEER_LOCALMSPID=Org1MSP
```

이런걸 info 지우고 debug로 수정!

```
2018-11-21 08:49:21.824 UTC [grpc] HandleSubConnStateChange -> DEBU 03c pickfirstBalancer: HandleSubConnStateChange: 0xc4205e89e0, READY
2018-11-21 08:49:21.828 UTC [grpc] DialContext -> DEBU 03d parsed scheme: ""
2018-11-21 08:49:21.829 UTC [grpc] DialContext -> DEBU 03e scheme "" not registered, fallback to default scheme
2018-11-21 08:49:21.830 UTC [grpc] watcher -> DEBU 03f ccResolverWrapper: sending new addresses to cc: [{peer0.org1.example.com:7051 0 <nil>}]
2018-11-21 08:49:21.830 UTC [grpc] switchBalancer -> DEBU 040 ClientConn switching balancer to "pick_first"
2018-11-21 08:49:21.831 UTC [grpc] HandleSubConnStateChange -> DEBU 041 pickfirstBalancer: HandleSubConnStateChange: 0xc420068c50, CONNECTING
2018-11-21 08:49:21.833 UTC [grpc] HandleSubConnStateChange -> DEBU 042 pickfirstBalancer: HandleSubConnStateChange: 0xc420068c50, READY
2018-11-21 08:49:21.834 UTC [msp] GetDefaultSigningIdentity -> DEBU 043 Obtaining default signing identity
2018-11-21 08:49:21.835 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 044 Using default escc
2018-11-21 08:49:21.835 UTC [chaincodeCmd] checkChaincodeCmdParams -> INFO 045 Using default vscc
Error: error getting chaincode code tuna-app: path to chaincode does not exist: /opt/gopath/src/github.com/tuna-app
```

에러가 더 많이 발생함!(하늘색 추가생성)



```

"name": "Fabric-tuna-app",
"version": "1.0.0",
"description": "Hyperledger Fabric MOOC Sample Application",
"main": "server.js",
"dependencies": {
  "fabric-ca-client": "^1.0.2",
  "fabric-client": "^1.0.2",
  "grpc": "^1.6.0",
  "express": "latest",
  "body-parser": "latest",
  "ejs": "latest",
  "angular": "^1.4.3"
},
"license": "Apache-2.0",
"keywords": [
  "Hyperledger",
  "Fabric",

```

package.json 파일

fabric-ca-client, fabric-client, grpc가 SDK역할! 애네에 필요한걸 다운받아주는 명령어가  
\$ npm install 알아서 자동설치가 되면?

```

guru@guru:~/tuna/tuna-app$ ll
total 292
drwxrwxr-x   3 guru guru   4096 Nov 21 17:54 ./
drwxrwxr-x   5 guru guru   4096 Nov 21 17:12 ../
-rw-rw-r--   1 guru guru  20935 Nov 21 17:37 controller.js
drwxrwxr-x 346 guru guru  12288 Nov 21 17:54 node_modules/
-rw-rw-r--   1 guru guru    579 Nov 21 17:37 package.json
-rw-rw-r--   1 guru guru 228240 Nov 21 17:54 package-lock.json
-rw-rw-r--   1 guru guru   2939 Nov 21 17:37 registerAdmin.js
-rw-rw-r--   1 guru guru   3261 Nov 21 17:37 registerUser.js
-rw-rw-r--   1 guru guru    462 Nov 21 17:37 routes.js
-rw-rw-r--   1 guru guru   1204 Nov 21 17:37 server.js
-rwxrwxr-x   1 guru guru   1820 Nov 21 17:37 startFabric.sh*

```

node\_modules 디렉토리가 자동 생성(들어가보면 굉장히 많은 파일들이 생성됨)

그리고 포트포워딩 8000번으로 실시!!