

HỆ THỐNG B2B TRÊN HYPERLEDGER FABRIC.

I. Tổng Quan:

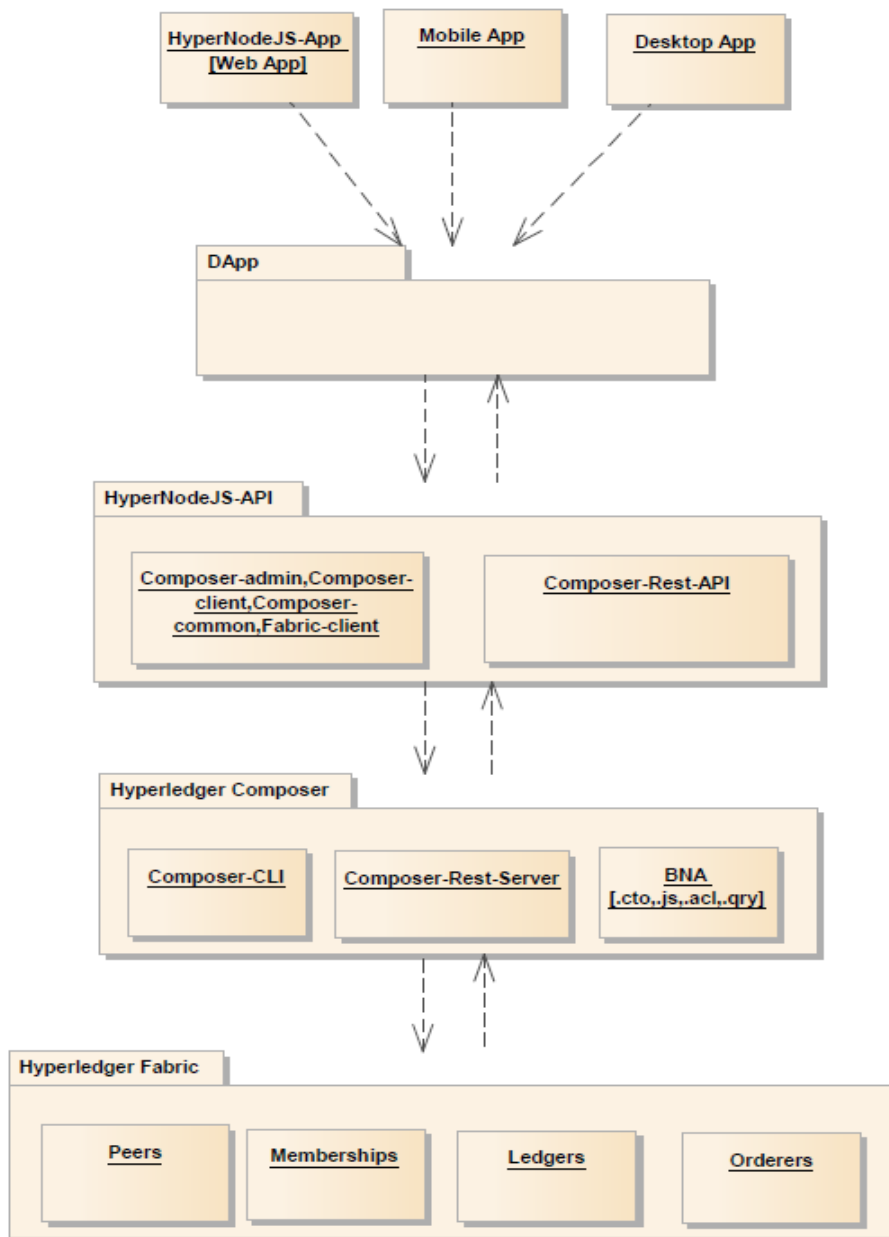
1) Mô Tả Chung:

- Hệ thống B2B được xây dựng dựa trên công nghệ Hyperledger Fabric nhằm đáp ứng nhu cầu giao dịch mua bán giữa các công ty.

2) Chuẩn Bị:

- 1 máy ubuntu16.04 x64 để xây dựng hyperledger private network .
- 1 máy ubuntu16.04 x64 để triển khai DApp.

3) Mô Hình Phác Thảo:



4) Các Thành Phần Chính:

Các Thành Phần Chính		Công Nghệ Áp Dụng	Các Thành Phần Phụ Thuộc
1) Hyperledger Private Network	Hyperledger Fabric(HF)	▪ Hyperledger Fabric V1.0	▪ Peers, ▪ Membership, ▪ Ledgers, ▪ Orderers
	Hyperleger Composer(HC)	▪ Hyperledger Composer V0.16.0	▪ Composer-cli, ▪ composer-rest-server, ▪ BNA
2) HyperNodeJS-API		▪ Nodejs V8.12.0 ▪ MySQL V5.5	▪ Rest-composer-API, ▪ composer-admin V0.16.0, ▪ composer-client V0.16.0, ▪ composer-common V0.16.0, ▪ composer-runtime V0.16.0, ▪ composer-runtime-hlfv1 V0.16.0, ▪ fabric-client V1.0.2,
3) HyperNodeJS-APP		▪ Nodejs V8.12.0	▪ HyperNodeJS-API

II. Tóm Tắt Các Bước Triển Khai:

- 1) Triển khai Hyperledger Private Network
- 2) Triển khai HyperNodeJs-API
- 3) Triển khai HyperNodeJs-APP

III. Chi Tiết Các Bước Triển Khai:

1) Triển khai Hyperledger Private Network

INPUT	OUTPUT	GHI CHÚ
1) Cài Đặt Công Cụ Cho Ubuntu		
<pre>\$ sudo apt-get update \$ sudo apt-get install build-essential \$ sudo apt-get upgrade \$ sudo apt-get install -y curl \$ curl -version</pre>		
2) Setup Hyperledger Fabric		
<pre>\$ curl -O https://github.com/bongthoi/HyperlegerFabricPrivateNetwork/blob/master/setup_Ubuntu_Part_1.sh \$ chmod u+x setup_Ubuntu_Part_1.sh \$bash setup_Ubuntu_Part_1.sh</pre>		
<pre>\$ curl -O https://github.com/bongthoi/HyperlegerFabricPrivateNetwork/blob/master/setup_Ubuntu_Part_1.sh</pre>		

<p>Part 2.sh</p> <pre>\$ chmod u+x setup_Ubuntu_Part_2.sh</pre> <p>\$bash setup_Ubuntu_Part_2.sh</p> <p>\$sudo reboot</p>		
<h3>3) Download Sample Repository</h3>		
<pre>\$git clone https://github.com/bongthoi/HyperlegerFabricPrivateNetwork.k.git</pre>	<pre>user@user-virtual-machine:~\$ git clone https://github.com/cdill118N/ZeroToBlockchain.git Cloning into 'ZeroToBlockchain'... remote: Counting objects 1276, done. remote: Compressing objects 100% (4/4), done. remote: Total 1276 (delta 0), reused 1 (delta 0), pack-reused 1276 Receiving objects 100% (1276/1276), 76.76 KiB 114.00 KiB/s, done. Resolving deltas 100% (1042/1042), done. Checking out files 100% (1502/1502), done.</pre>	
<pre>\$cd HyperlegerFabricPrivateNetwork /Chapter10/</pre> <p>\$ll</p>	<pre>user@user-virtual-machine:~\$ cd ZeroToBlockchain/Chapter10/ user@user-virtual-machine:~/ZeroToBlockchain/Chapter10\$ ll total 140 drwxr-xr-x 7 user user 4096 Th04 15 14:32 ./ drwxr-xr-x 21 user user 4096 Th04 15 14:32 ../ drwxr-xr-x 2 user user 1536 Th04 15 14:32 buildAndDeploy* drwxr-xr-x 1 user user 940 Th04 15 14:32 cd-diagn* drwxr-xr-x 1 user user 14 Th04 15 14:32 .cfigstore drwxr-xr-x 1 user user 4096 Th04 15 14:32 connectutil/ drwxr-xr-x 1 user user 2416 Th04 15 14:32 createArchive.sh* drwxr-xr-x 1 user user 1037 Th04 15 14:32 create_compose_docs* drwxr-xr-x 1 user user 1037 Th04 15 14:32 create_compose_docs.sh* drwxr-xr-x 2 user user 4100 Th04 15 14:32 deployNetwork.sh* drwxr-xr-x 4 user user 4096 Th04 15 14:32 Formnetutil.sh drwxr-xr-x 1 user user 51 Th04 15 14:32 .gitignore drwxr-xr-x 1 user user 914 Th04 15 14:32 .gitignore.yml drwxr-xr-x 1 user user 2741 Th04 15 14:32 Hyperledger.lnx* drwxr-xr-x 1 user user 157 Th04 15 14:32 README.txt drwxr-xr-x 7 user user 4096 Th04 15 14:32 RTML/ drwxr-xr-x 4 user user 2446 Th04 15 14:32 Server_IP drwxr-xr-x 1 user user 978 Th04 15 14:32 .xdebug.json drwxr-xr-x 1 user user 141 Th04 15 14:32 .xunitignore.yml drwxr-xr-x 8 user user 4096 Th04 15 14:32 network/ drwxr-xr-x 1 user user 1045 Th04 15 14:32 package_json drwxr-xr-x 1 user user 1480 Th04 15 14:32 README.md drwxr-xr-x 1 user user 20856 Th04 15 14:32 README.pdf drwxr-xr-x 2 user user 215 Th04 15 14:32 startAndStop.sh* drwxr-xr-x 1 user user 1658 Th04 15 14:32 start_rest_server.sh* drwxr-xr-x 2 user user 4096 Th04 15 14:32 starting/ drwxr-xr-x 1 user user 1171 Th04 15 14:32 startup.sh* drwxr-xr-x 1 user user 941 Th04 15 14:32 test_block1*</pre>	
<h3>4) Build And Deploy Network</h3>		
<pre>\$chmod u +x buildAndDeploy</pre> <p>\$bash buildAndDeploy</p>	<pre>user@user-virtual-machine:~/Chapter10\$ bash buildAndDeploy buildAndDeploy: line 3: ./common_CD.sh: No such file or directory buildAndDeploy: line 21: indent: command not found buildAndDeploy: line 22: indent: command not found buildAndDeploy: line 23: indent: command not found Parameters: buildAndDeploy: line 47: indent: command not found buildAndDeploy: line 49: showDefp: command not found ===== ----- option passed for network name is: 'zerotoblockchain-network' ===== archive creation script for the Zero To Blockchain Series This has been tested on Mac OS, Mac High Sierra and Ubuntu 16.04 LTS This script will create your Composer archive Parameters: Network Name is: zerotoblockchain-network ===== ----- creating archive ===== Creating Business Network Archive Looking for package_json of Business Network Definition Input directory: /home/user/Chapter10/network Found: zerotoblockchain - Zero To Blockchain tutorial network Name: zerotoblockchain-network Identifier: zerotoblockchain-network@0.1.5 Written Business Network Definition Archive file to Output file: ./dist/zerotoblockchain-network.bna Command succeeded Creating business network from archive: zerotoblockchain-network.bna Business network definition: Identifier: zerotoblockchain-network@0.1.5 Association: Zero To Blockchain tutorial network Processing these Network Admins: user@user: admin A Starting business network definition. This may take a minute... Successfully created Business network card: Card Name: networkadmin.card Command succeeded ----- importing zerotoblockchain card ===== Related Business Network Card: admin@zerotoblockchain-network Command succeeded Successfully imported business network card Card Name: networkadmin.card Card Name: admin@zerotoblockchain-network Command succeeded ----- plugging admin@zerotoblockchain-network card ===== The connection to the network was successfully tested: zerotoblockchain-net work version: 0.16.0 path: /usr/bin - org.hyperledger.composer.system.NetworkAdminAdmin Command succeeded user@user-virtual-machine:~/Chapter10\$</pre>	
<h3>5) Start Rest Server</h3>		
<pre>\$chmod u+x start_rest_server.sh</pre> <p>./start_rest_server.sh</p>	<pre>user@user-virtual-machine:~/Chapter10\$./start_rest_server.sh network archive, start and deploy script for the Zero To Blockchain Series This has been tested on Mac OS, Mac High Sierra and Ubuntu 16.04 LTS This script will create your Composer archive Parameters: Network Name is: zerotoblockchain-network ===== ----- testing rest server When this completes, go to your favorite browser and enter localhost:3000/explorer ===== ----- starting rest server v0.16 for admin@zerotoblockchain-network ===== Recovering types from business network definition ...</pre>	

	<pre>Dapper: skipping unknown type "org.hyperledger.composer.system.HistorianRecord". Dapper: skipping unknown type "org.xmml.I2STestNetwork.Ocids". Dapper: skipping unknown type "org.hyperledger.composer.system.HistorianRecord". Dapper: skipping unknown type "org.xmml.I2STestNetwork.Ocids". Dapper: skipping unknown type "org.hyperledger.composer.system.HistorianRecord". Dapper: skipping unknown type "org.xmml.I2STestNetwork.Ocids". Dapper: skipping unknown type "org.hyperledger.composer.system.HistorianRecord". Dapper: skipping unknown type "org.xmml.I2STestNetwork.Ocids". Dapper: skipping unknown type "org.hyperledger.composer.system.HistorianRecord". Dapper: skipping unknown type "org.xmml.I2STestNetwork.Ocids". Added schemas for all types to Lookup Web services listening at http://localhost:1020 Browse your REST API at http://localhost:1020/explorer</pre>	
6) Link Sources		
https://github.com/bongthoi/HyperlegerFabricPrivateNetwork.git		

Input	Output
1) Cài Đặt Công Cụ Cho Ubuntu \$ sudo apt-get update \$ sudo apt-get install build-essential \$ sudo apt-get upgrade \$ sudo apt-get install curl \$ curl --version	<pre> user@ubuntu:~\$ curl --version curl 7.47.0 (x86_64-pc-linux-gnu) libcurl/7.47.0 GnuTLS/3.4.10 zlib/1.2.8 libidn /1.32 librtmp/2.3 Protocols: dict file ftp ftps gopher http https imap imaps ldap ldaps pop3 pop3s rtmp rtsp smb smbs smtp smtps telnet tftp Features: AsynchDNS IDN IPv6 Largefile GSS-API Kerberos SPNEGO NTLM NTLM_WB SSL libz TLS-SRP UnixSockets </pre>
2) Cài Đặt Các Packages Cần Thiết Cho Dapp \$ curl -O https://github.com/bongthoi/hypernodejs-api/blob/master/documents/shell_scripts/prereqs-ubuntu.sh \$ chmod u+x prereqs-ubuntu.sh \$.prereqs-ubuntu.sh	<pre> hoanglong@HoangLong-VinhSang:~\$ curl -O https://hyperledger.github.io/composer/prereqs-ubuntu.sh % Total % Received % Xferd Average Speed Time Time Time Current Dload Upload Total Spent Left Speed 100 3519 100 3519 0 0 4526 0 --:--:-- --:--:-- --:--:-- 4523 hoanglong@HoangLong-VinhSang:~\$ hoanglong@HoangLong-VinhSang:~\$ chmod u+x prereqs-ubuntu.sh hoanglong@HoangLong-VinhSang:~\$ hoanglong@HoangLong-VinhSang:~\$ sudo ./prereqs-ubuntu.sh Installing Hyperledger Composer prereqs for Ubuntu xenial # Updating package lists gpg: keyring '/tmp/tmpS13vmpbs/secring.gpg' created gpg: keyring '/tmp/tmpS13vmpbs/pubring.gpg' created gpg: requesting key E1DF1F24 from hkp server keyserver.ubuntu.com gpg: /tmp/tmpS13vmpbs/trustdb.gpg: trustdb created gpg: key E1DF1F24: public key "Launchpad PPA for Ubuntu Git Maintainers" imported gpg: Total number processed: 1 gpg: imported: 1 (RSA: 1) OK Hit:1 https://download.docker.com/linux/ubuntu xenial InRelease Get:2 http://security.ubuntu.com/ubuntu xenial-security InRelease [102 kB] Hit:3 http://ppa.launchpad.net/git-core/ppa/ubuntu xenial InRelease Hit:4 http://vn.archive.ubuntu.com/ubuntu xenial InRelease Hit:5 http://vn.archive.ubuntu.com/ubuntu xenial-updates InRelease Get:6 http://vn.archive.ubuntu.com/ubuntu xenial-backports InRelease [102 kB] Get:7 http://vn.archive.ubuntu.com/ubuntu xenial-proposed InRelease [253 kB] Fetched 458 kB in 3s (142 kB/s) # Installing Docker-Compose % Total % Received % Xferd Average Speed Time Time Time Current Dload Upload Total Spent Left Speed 100 617 0 617 0 0 446 0 --:--:-- 0:00:01 --:--:-- 446 100 8079k 100 8079k 0 0 283k 0 0:00:28 0:00:28 --:--:-- 571k Installation completed, versions installed are: Node: v8.9.4 npm: 5.6.0 Docker: Docker version 17.12.0-ce, build c97c6d6 Docker Compose: docker-compose version 1.13.0, build 1718ceb Python: Python 2.7.12 Please logout then login before continuing. </pre>
3) Cài Đặt Và Chạy Dapp \$git clone https://github.com/bongthoi/hypernodejs-api.git \$cd hypernodejs-api \$npm install \$npm start	
4) Link Sources Github Link	https://github.com/bongthoi/hypernodejs-api.git

Input	Output
1) Cài Đặt Cộng Cụ Cho Ubuntu	

<pre>\$ sudo apt-get update \$ sudo apt-get install build-essential \$ sudo apt-get upgrade \$ sudo apt-get install curl \$ curl --version</pre>	<pre>user@ubuntu:~\$ curl --version curl 7.47.0 (x86_64-pc-linux-gnu) libcurl/7.47.0 GnuTLS/3.4.10 zlib/1.2.8 libidn2/1.32 librtmp/2.3 Protocols: dict file ftp ftps gopher http https imap imaps ldap ldaps pop3 pop3s rtmp rtsp smb smbs smtp smtps telnet tftp Features: AsynchDNS IDN IPv6 Largefile GSS-API Kerberos SPNEGO NTLM NTLM_WB SSL libz TLS-SRP UnixSockets</pre>	
2) Cài Đặt Các Packages Cần Thiết Cho Dapp		
<pre>\$ curl -O https://github.com/bongthoi/hypernodejs-app/blob/master/documents/shell_scripts/prereqs-ubuntu.sh</pre>	<pre>hoanglong@HoangLong-VinhSang:~\$ curl -O https://hyperledger.github.io/composer/prereqs-ubuntu.sh % Total % Received % Xferd Average Speed Time Time Time Current Dload Upload Total Spent Left Speed 100 3519 100 3519 0 0 4526 0 --:--:-- --:--:-- --:--:-- 4523 hoanglong@HoangLong-VinhSang:~\$</pre>	
<pre>\$ chmod u+x prereqs-ubuntu.sh</pre>	<pre>hoanglong@HoangLong-VinhSang:~\$ chmod u+x prereqs-ubuntu.sh hoanglong@HoangLong-VinhSang:~\$</pre>	
<pre>\$.prereqs-ubuntu.sh</pre>	<pre>hoanglong@HoangLong-VinhSang:~\$ sudo \$.prereqs-ubuntu.sh Installing Hyperledger Composer prereqs for Ubuntu xenial # Updating package lists gpg: keyring '/tmp/tmp513vmpbs/secring.gpg' created gpg: keyring '/tmp/tmp513vmpbs/pubring.gpg' created gpg: requesting key E1DF1F24 from hkp server keyserver.ubuntu.com gpg: /tmp/tmp513vmpbs/trustdb.gpg: trustdb created gpg: key E1DF1F24: public key "Launchpad FPA for Ubuntu Git Maintainers" imported gpg: Total number processed: 1 gpg: imported: 1 (RSA: 1) OK Hit:1 https://download.docker.com/linux/ubuntu xenial InRelease Get:2 http://security.ubuntu.com/ubuntu xenial-security InRelease [102 kB] Hit:3 http://ppa.launchpad.net/git-core/ppa/ubuntu xenial InRelease Hit:4 http://vn.archive.ubuntu.com/ubuntu xenial InRelease Hit:5 http://vn.archive.ubuntu.com/ubuntu xenial-updates InRelease Get:6 http://vn.archive.ubuntu.com/ubuntu xenial-backports InRelease [102 kB] Get:7 http://vn.archive.ubuntu.com/ubuntu xenial-proposed InRelease [253 kB] Fetched 458 kB in 3s (142 kB/s) # Installing Docker-Compose % Total % Received % Xferd Average Speed Time Time Time Current Dload Upload Total Spent Left Speed 100 617 0 617 0 0 446 0 --:--:-- 0:00:01 --:--:-- 446 100 8079k 100 8079k 0 0 283k 0 0:00:28 0:00:28 --:--:-- 571k Installation completed, versions installed are: Node: v8.9.4 npm: 5.6.0 Docker: Docker version 17.12.0-ce, build c97c6d6 Docker Compose: docker-compose version 1.13.0, build 1719ceb Python: Python 2.7.12 Please logout then login before continuing.</pre>	
3) Cài Đặt Và Chạy Dapp		
<pre>\$git clone https://github.com/bongthoi/hypernodejs-app.git</pre>		
<pre>\$cd hypernodejs-app</pre>		
<pre>\$npm install</pre>		
<pre>\$npm start</pre>		
4) Link Sources		
Github Link	https://github.com/bongthoi/hypernodejs-app.git	