

BLOCKCHAIN ON CLOUD

WORKSHOP GUIDE

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SECTION 1 - BUILDING A DEVELOPMENT ENVIRONMENT

1.1 INSTALL PREREQUISITES FOR HYPERLEDGER FABRIC AND COMPOSER

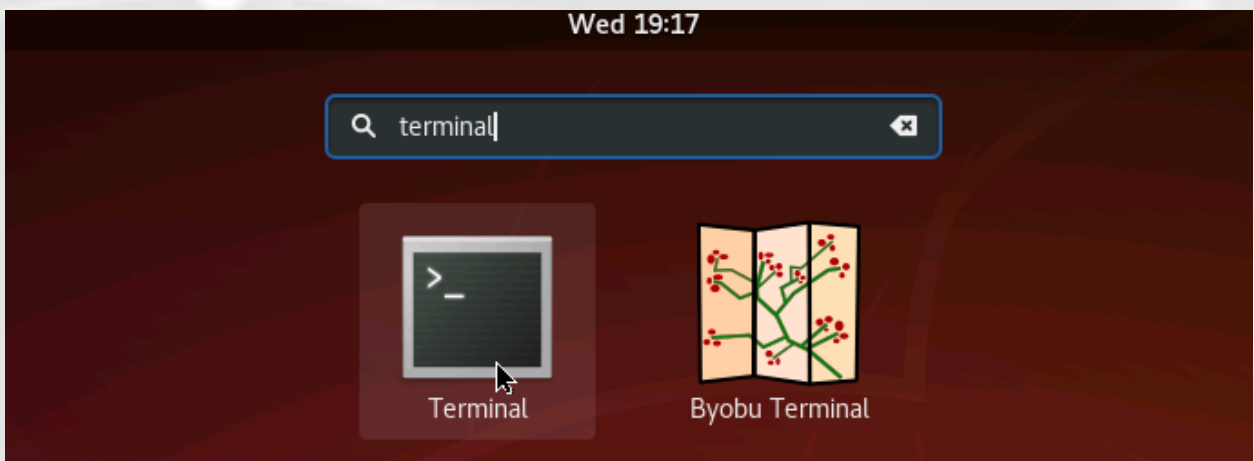
In this section, you will be installing required prerequisite for Hyperledger Fabric v1.2 and Hyperledger composer/playground.

1.1.1 Click on the “Activities” located at the top left hand corner.



Pic 1.1.1 – Activities menu

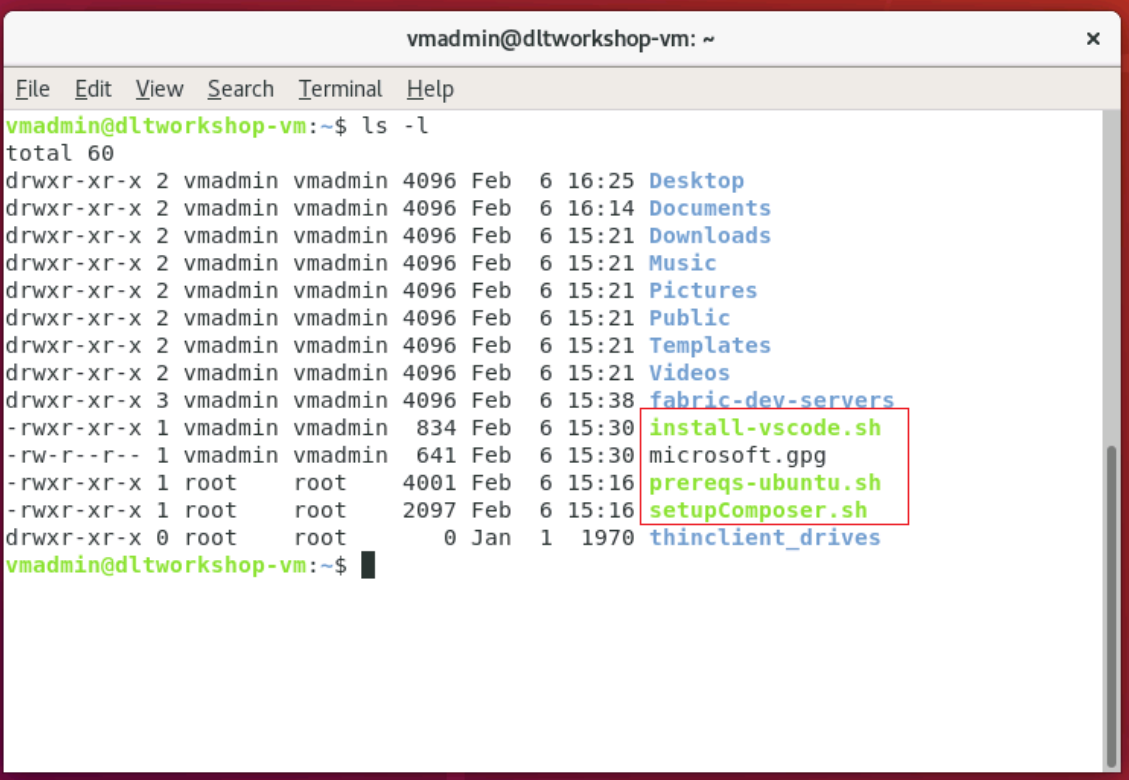
1.1.2 Type-in “terminal” and you will see two applications as shown below. Please click on “Terminal”



Pic 1.1.2 – Opening Terminal

- 1.1.3 When you open the terminal app, please type the following command and that should display list of folders and files located at the home folder.

```
ls -l
```



```
vmadmin@dltworkshop-vm: ~  
File Edit View Search Terminal Help  
vmadmin@dltworkshop-vm:~$ ls -l  
total 60  
drwxr-xr-x 2 vmadmin vmadmin 4096 Feb  6 16:25 Desktop  
drwxr-xr-x 2 vmadmin vmadmin 4096 Feb  6 16:14 Documents  
drwxr-xr-x 2 vmadmin vmadmin 4096 Feb  6 15:21 Downloads  
drwxr-xr-x 2 vmadmin vmadmin 4096 Feb  6 15:21 Music  
drwxr-xr-x 2 vmadmin vmadmin 4096 Feb  6 15:21 Pictures  
drwxr-xr-x 2 vmadmin vmadmin 4096 Feb  6 15:21 Public  
drwxr-xr-x 2 vmadmin vmadmin 4096 Feb  6 15:21 Templates  
drwxr-xr-x 2 vmadmin vmadmin 4096 Feb  6 15:21 Videos  
drwxr-xr-x 3 vmadmin vmadmin 4096 Feb  6 15:38 fabric-dev-servers  
-rwxr-xr-x 1 vmadmin vmadmin  834 Feb  6 15:30 install-vscode.sh  
-rw-r--r-- 1 vmadmin vmadmin  641 Feb  6 15:30 microsoft.gpg  
-rwxr-xr-x 1 root    root    4001 Feb  6 15:16 prereqs-ubuntu.sh  
-rwxr-xr-x 1 root    root    2097 Feb  6 15:16 setupComposer.sh  
drwxr-xr-x 0 root    root      0 Jan  1 1970 thinclient_drives  
vmadmin@dltworkshop-vm:~$
```

Pic 1.1.3 – Terminal window that list all the prerequisite install scripts

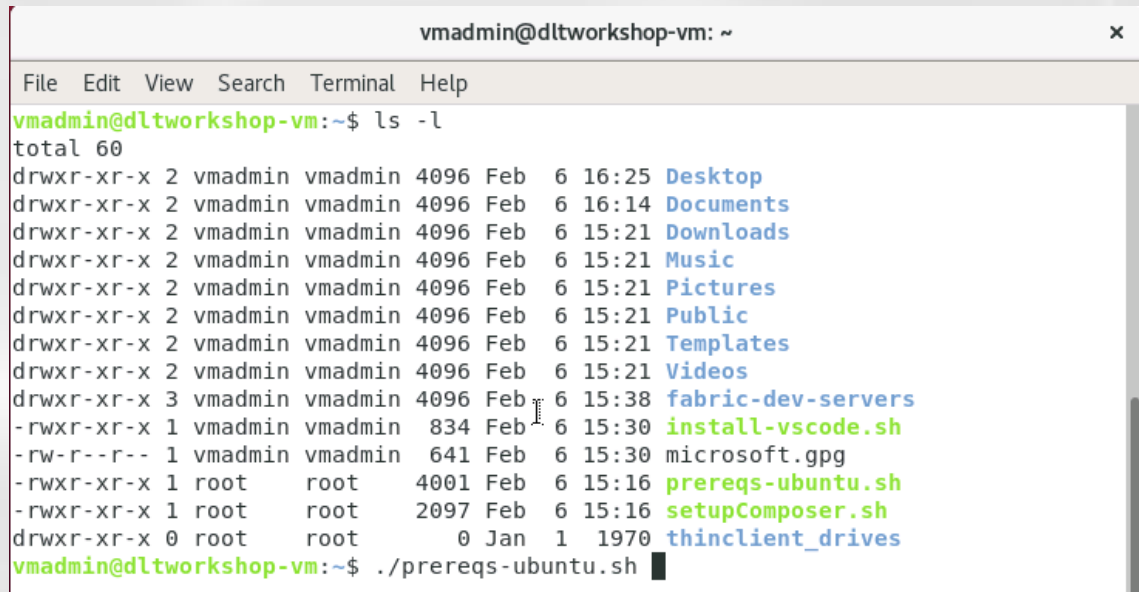
- 1.1.4 We will be using “prereqs-ubuntu.sh” script to install the following dependencies need for Hyperledger Fabric and Composer tool set.

- Git
- npm
- NodeJS
- Docker-ce
- Docker-Compose
- Python

- Unzip

Please run the following command and execute “prereqs-ubuntu.sh” script.

```
./prereqs-ubuntu.sh
```



A terminal window titled 'vmadmin@dltworkshop-vm: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The terminal shows the output of the command 'ls -l', listing files and directories in the home directory. The files include Desktop, Documents, Downloads, Music, Pictures, Public, Templates, Videos, fabric-dev-servers, install-vscode.sh, microsoft.gpg, prereqs-ubuntu.sh, setupComposer.sh, and thinclient_drives. The permissions, owner, group, size, date, and time are listed for each file. The command './prereqs-ubuntu.sh' is entered at the prompt.

```
vmadmin@dltworkshop-vm: ~  
File Edit View Search Terminal Help  
vmadmin@dltworkshop-vm:~$ ls -l  
total 60  
drwxr-xr-x 2 vmadmin vmadmin 4096 Feb  6 16:25 Desktop  
drwxr-xr-x 2 vmadmin vmadmin 4096 Feb  6 16:14 Documents  
drwxr-xr-x 2 vmadmin vmadmin 4096 Feb  6 15:21 Downloads  
drwxr-xr-x 2 vmadmin vmadmin 4096 Feb  6 15:21 Music  
drwxr-xr-x 2 vmadmin vmadmin 4096 Feb  6 15:21 Pictures  
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-rwxr-xr-x 1 root    root    4001 Feb  6 15:16 prereqs-ubuntu.sh  
-rwxr-xr-x 1 root    root    2097 Feb  6 15:16 setupComposer.sh  
drwxr-xr-x 0 root    root      0 Jan  1 1970 thinclient_drives  
vmadmin@dltworkshop-vm:~$ ./prereqs-ubuntu.sh
```

Pic 1.1.4 – Terminal window with command to run ./prereqs-ubuntu.sh script

Please let the script: prereqs-ubuntu.sh run and wait for the following message:
“Please logout then login before continuing”

When you see this message you can execute the following command or manually reboot your VM.

```
sudo reboot now
```

1.2 INSTALL VISUAL STUDIO CODE

Here we will use a script to install Visual Studio Code editor. You can find more information about this edit at <https://code.visualstudio.com/>

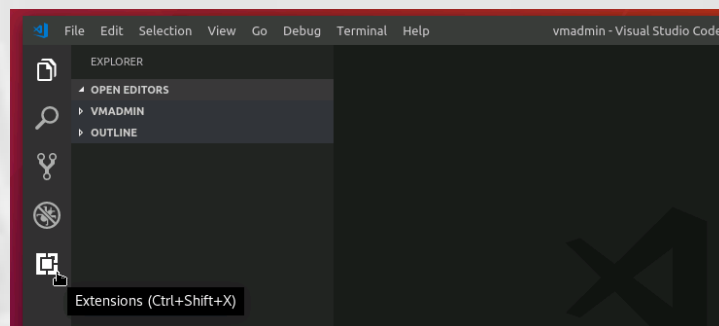
Please run the following command and execute "install-vscode.sh" script.

```
./install-vscode.sh
```

Once the installation is complete, please launch the code editor. You can just type "code" from the terminal window to open the app.

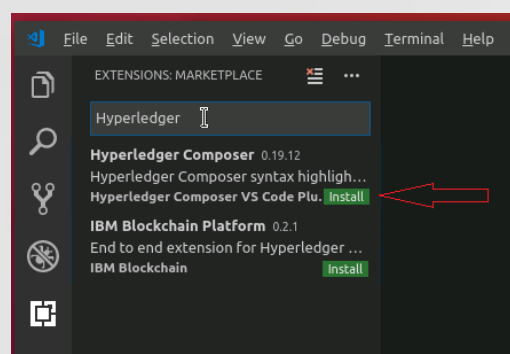
```
code
```

Once the app is running, please click on Extensions button at the top left hand corner.



Picture 1.2.1 – Code editor

Please type "Hyperledger" on market place search box. You should see Hyperledger composer as one of the results. click on "install" to install the composer extension.



1.3 INSTALL HYPERLEDGER COMPOSER TOOL SET

Now that we have all the prerequisite installed, let's install Composer tool sets and Fabric.

Please run setupComposer.sh script found under the home directory.

```
./setupComposer.sh
```

This script install the following components:

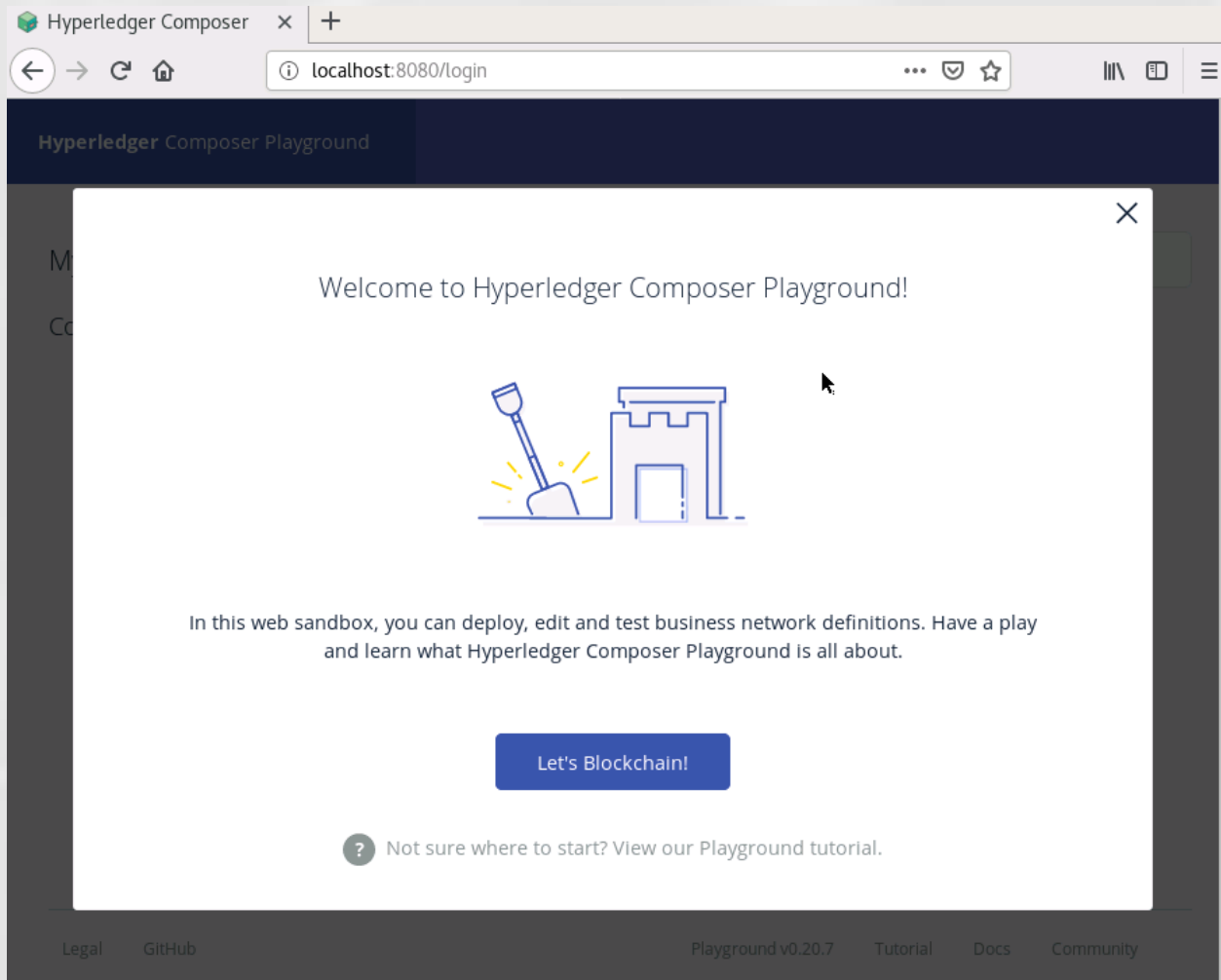
- Composer-cli – command line interface to Composer
- Composer-rest-server - Utility for running a REST Server on your machine to expose your business networks as RESTful APIs.
- Generator-hyperledger-composer - Useful utility for generating application assets.
- Yo - Yeoman is a tool for generating applications, which utilises generator-hyperledger-composer
- Composer-playground – web application that enables testing of Blockchain models.
- Deploy Fabric framework and starts a sample single organization based network.
- Creates a Peer admin card
- Finally, runs composer-playground web application.

SECTION 2 – HANDS ON WITH HYPERLEDGER

In this section we will be exploring components of Hyperledger Composer using a simple Blockchain business model.

2.1 HYPERLEDGER COMPOSER PLAYGROUND




After the step 1.3, a web based Playground IDE will be launched as shown below. Please click on “Let’s Blockchain!” button to view the main page.




Playground IDE

My Business Networks

Connection: hlfv1

 PeerAdmin@hlfv1  
USER ID PeerAdmin
BUSINESS NETWORK none
Connect now →






Deploy a new business network

Blockchain test environment that run on the actual Fabric network (hlfv1)



Connection: Web Browser

 admin@basic-sample-network  
USER ID admin
BUSINESS NETWORK basic-sample-network
Connect now →



Deploy a new business network

Simulated Blockchain test environment that run on the Browser cache



Please Wait: Refreshing Connection
refreshing the connection to web

C

Import B

← → ↺ 🏠

localhost:8080/editor

⋮ 🛡️ ☆

📁 📄 ☰

Web basic-sample-network

Define Test admin ▾

FILES

About
README.md, package.json

Model File
models/sample.cto

Script File
lib/sample.js

Access Control
permissions.acl

📄 Add a file... ⬇️ Export

UPDATE NETWORK

From: 0.2.6-20180818002031

To: 0.2.6-deploy.0 ✎

Deploy changes

ACL File permissions.acl

```
40     action: ALLOW
41   }
42
43   rule SystemACL {
44     description: "System ACL to permit all access"
45     participant:
46       "org.hyperledger.composer.system.Participant"
47     operation: ALL
48     resource: "org.hyperledger.composer.system.*)"
49   }
50
51   rule NetworkAdminUser {
52     description: "Grant business network administrators
53     full access to user resources"
54     participant:
55       "org.hyperledger.composer.system.NetworkAdmin"
56   }
```

✔️ Everything looks good!

Any problems detected in your code would be reported here

Legal

GitHub

Playground

Tutorial

Docs

Community