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# Installing Hyperledger Fabric on Ubuntu

To create a blockchain network with Hyperledger Fabric, you require to install all the prerequisites. In this section, you will learn the installation procedure for the Hyperledger Fabric on **Ubuntu Operating System**. Follow the steps below to set up your machine for running a blockchain network/application using Hyperledger Fabric.

## Installation of cURL

You will need to install the latest version of cURL if you don't already have it. Follow the steps below:

Open Ubuntu terminal and type the command "curl -V".

In case cURL is not installed, go to the [cURL website](#) and download the latest version.

## Installation of Docker

The next important tool that you need to install is docker. To install Docker CE, you need the 64-bit version of one of these Ubuntu versions:

Cosmic 18.10

Bionic 18.04 (LTS)

Xenial 16.04 (LTS)

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## Step 1: Uninstall old versions of docker

The first step would be to uninstall previous versions of docker, if any. You can do this by running the command below on your Ubuntu terminal:

```
$ sudo apt-get remove docker docker-engine docker.io containerd runc
```

## Step 2: Install the docker community edition

There are multiple ways of installing the docker community edition; it depends on the need of the project. For our application, we will install docker by setting up a docker repository, as it is the most recommended approach. Follow the steps below to install the docker via a repository:

**Step 1:** Set the repository using the following steps:

1.1. Update the apt package index:

```
$ sudo apt-get update
```

1.2. Install packages to allow apt to use a repository over HTTPS:

```
$ sudo apt-get install \
    apt-transport-https \
    ca-certificates \
    curl \
    gnupg-agent \
    software-properties-common
```

1.3. Add the docker's official GPG key:

```
$ curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key
```

Verify that you now have the key with the fingerprint 9DC8 5822 9FC7 DD38 854A

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\$ sudo apt-key fingerprint 0EBFCD88  
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1.4. Use the following command to set up the **stable** repository.

```
sudo add-apt-repository "deb [arch=amd64] https://download.docker.com/linux/ubuntu $(lsb
```

**Step 2:** Install the Docker CE:

2.1. Update the apt package index:

```
$ sudo apt-get update
```

2.2. Install the latest *version* of Docker CE and containers:

```
$ sudo apt-get install docker-ce docker-ce-cli containerd.io
```

2.3. Give permissions to your current user(non-root user) to use docker using the following command.

```
sudo usermod -a -G docker $USER
```

2.4 Restart your system using the following command in the terminal.

```
reboot
```

Once you have followed the steps above, your docker should be installed. Run the following command in Ubuntu terminal to check whether the docker is installed correctly:

```
docker version
```

You should get something like this as the output:

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```
abhinav@abhinav-ThinkPad-L470:~/zoomtail$ docker version
Client:
Version:           18.09.4
API version:       1.39
Go version:        go1.10.8
Git commit:        d14af54266
Built:             Wed Mar 27 18:35:44 2019
OS/Arch:           linux/amd64
Experimental:      false

Server: Docker Engine - Community
Engine:
Version:           18.09.4
API version:       1.39 (minimum version 1.12)
Go version:        go1.10.8
Git commit:        d14af54
Built:             Wed Mar 27 18:01:48 2019
OS/Arch:           linux/amd64
Experimental:      false
abhinav@abhinav-ThinkPad-L470:~/zoomtail$
```

## Installation of Docker Compose

After the successful installation of the docker, you will need to install docker-compose. Follow the steps below to install docker-compose:

1. Run this command to download the current stable release of Docker Compose:

```
sudo curl -L "https://github.com/docker/compose/releases/download/1.24.0,
```

2. Apply executable permissions to the binary:

```
sudo chmod +x /usr/local/bin/docker-compose
```

3. Test the installation using the following command:

```
$ docker-compose --version
```

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# Installation of the Go Programming Language

Hyperledger uses the Go programming language. Follow the steps below to install the Go language on your system.

**Step 1:** Update the system using the following commands:

```
sudo apt-get update
sudo apt-get -y upgrade
```

**Step 2:** Install Go using the following command:

```
cd /tmp
wget https://dl.google.com/go/go1.11.linux-amd64.tar.gz
```

**Step 3:** Extract the downloaded archive and install it to the desired location on the system using the following command:

```
sudo tar -xvf go1.11.linux-amd64.tar.gz
sudo mv go /usr/local
```

**Note:** You can store it anywhere else as well except the `/usr/local`. However, this is the standard suggested way.

**Step 4:** Set the environment variables in the `file` by appending the following variables to the end of the file:

```
export GOROOT=/usr/local/go
export GOPATH=$HOME/go
export PATH=$GOPATH/bin:$GOROOT/bin:$PATH
```

**Note:** In case you are unable to find the `.profile` file, use the following command to find and open the file:

```
gedit ~/.profile
```

**Step 5:** Update current shell session:

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**Step 6:** Verify the installation using the following command:

```
go version
```

You should get the following output:

```
abhinav@abhinav-ThinkPad-L470:~$ go version
go version go1.11 linux/amd64
abhinav@abhinav-ThinkPad-L470:~$
```

## Installation of NodeJS

Step 1: Go to <https://nodejs.org/en/download/>:

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Windows Installer

node-v10.15.2-x64.msi



macOS Installer

node-v10.15.2.pkg



Source Code

node-v10.15.2.tar.gz

Windows Installer (.msi)

Windows Binary (.zip)

macOS Installer (.pkg)

macOS Binary (.tar.gz)

Linux Binaries (x64)

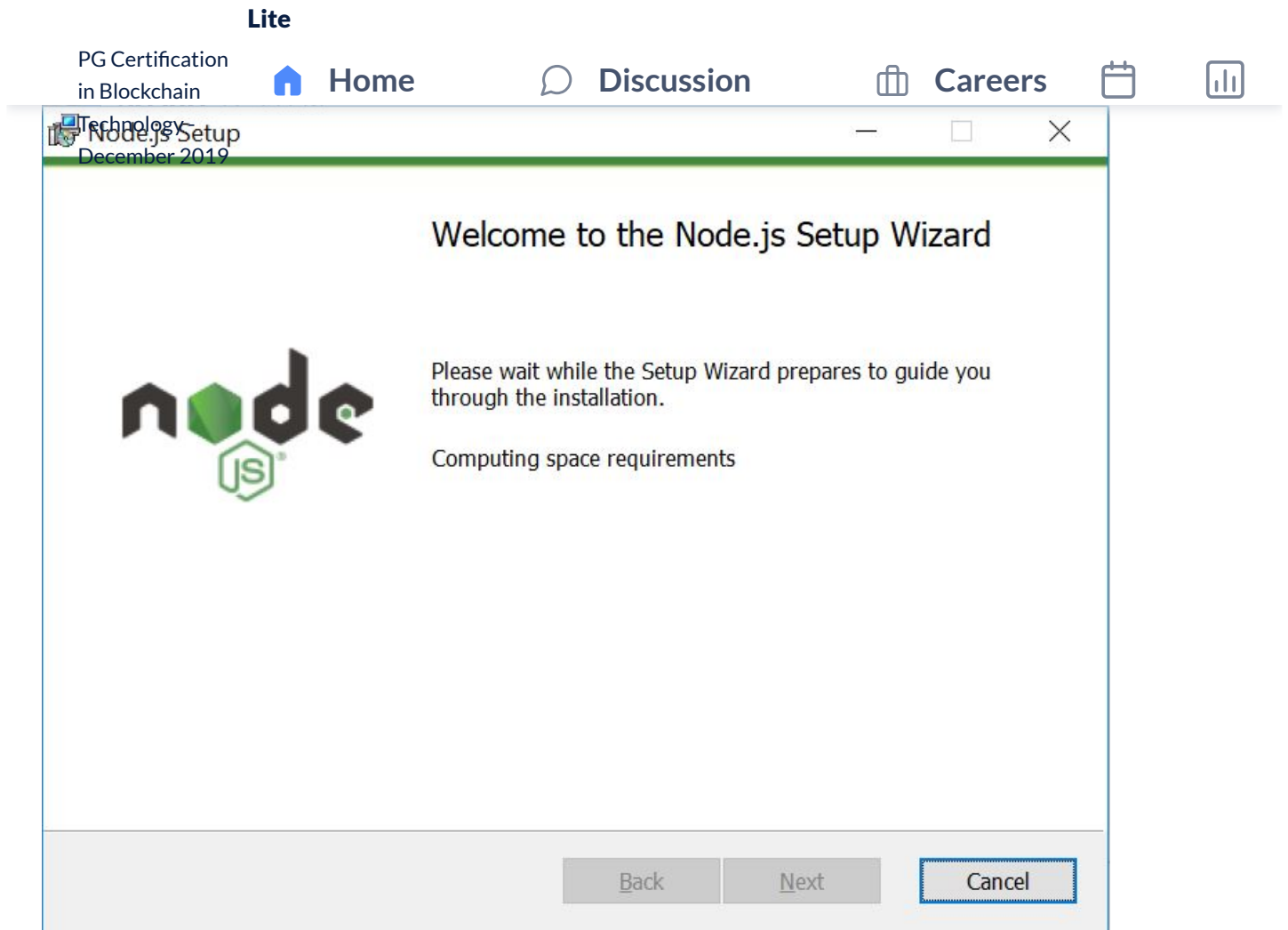
Linux Binaries (ARM)

Source Code

32-bit	64-bit
32-bit	64-bit
64-bit	
64-bit	
64-bit	
ARMv6	ARMv7
ARMv8	
node-v10.15.2.tar.gz	

Step 2: Download the node setup corresponding to your machine (x64 of Linux Binaries).

Step 3: Once the installer is downloaded, click on it to install.



Step 4: Once the installation is successful, go to the command prompt and type the following command to check the version of the node installed:

```
node -v
```

**Note:** In case you get a message that node does not exist, you need to reinstall the node in your system.

You can also install the node in Ubuntu using the following command:

```
sudo apt install nodejs
```

## Installation of Python

You will also require Python to be installed. Follow the steps below to install Python:

**Step 1:** Check whether you have Python already installed, using the following

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**Step 2:** In case it is not installed, install python using the following command:

```
sudo apt-get install python
```

**Step 5:** Check the version of Python installed using the following command:

```
python --version
```

## Installation of Hyperledger Fabric Samples, Binaries and Docker Images

The next step is to get the Fabric samples, binaries and the required docker images that you would use for the development of the blockchain network. Follow the steps below to do so:

**Step 1:** Choose a location for the Fabric repository and create a new folder workspace inside that using the following commands:

```
mkdir workspace  
cd workspace
```

**Step 2:** Run the following command to install hyperledger binaries along with all the required docker images.

```
curl -sSL https://bit.ly/2ysb0FE | bash -s -- 1.4.3 1.4.3 0.4.18
```

This command will download the latest version of fabric-binaries.

**Step 3:** To test the installation, run the sample network using the following commands:

```
cd first-network  
./byfn.sh generate
```



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byfn.sh up  
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OR

```
sudo ./byfn.sh up
```

You should get the following output:

**Starting network**

To stop running the network, use the following command:

```
./byfn.sh down
```

OR

```
sudo ./byfn.sh down
```

You should get the following output:

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## Stopping Network

If you are correctly able to start and stop the network, your setup is complete.

**Report an error**

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