Dev Machine Setup

raj@acloudfan.com

@acloudfan

http://ACloudFan.com

Discount Coupon Links to UDEMY courses:

https://www.udemy.com/hyperledger/?couponCode=DKHLF1099

https://www.udemy.com/ethereum-dapp/?couponCode=DKETH1099

https://www.udemy.com/rest-api/?couponCode=DKRST1099

mentoring, seeking Blockchain part time work, project guidance, advice … …
http://www.bcmentors.com

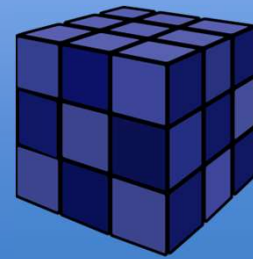This deck is part of a online course on "Hyperledger Fabric Development with Composer"

Development Machine

For this course

raj@acloudfan.com

@acloudfan

http://ACloudFan.com

Learning Objectives:
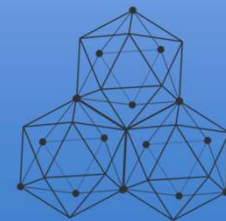
- Machine configuration

- Visual Studio Code

Windows
(No official word)

Ubuntu Linux
14.04 / 16.04 LTS

Mac OS 10.12

http://www.ACloudFan.com

Minimum 4GB RAM, 8GB RAM Ideal

Decent internet connection

---

https://code.visualstudio.com/download

Download Visual Studio Code

Free and open source. Integrated Git, debugging and extensions.
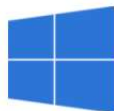
↓ Windows	↓ .deb	↓ .rpm	↓ Mac
Windows 7, 8, 10	Debian, Ubuntu	Red Hat, Fedora, SUSE	macOS 10.9+
.zip | 32 bit versions	.tar.gz | 32 bit versions		
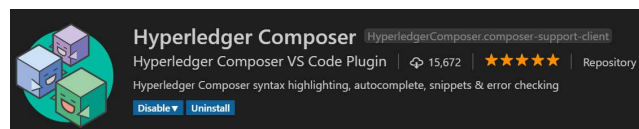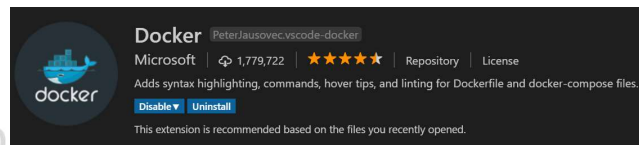
Native Vs Virtual Machine

For setting Hyperledger Dev Environment

raj@acloudfan.com

@acloudfan

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Learning Objectives:

http://www.ACloudFan.c
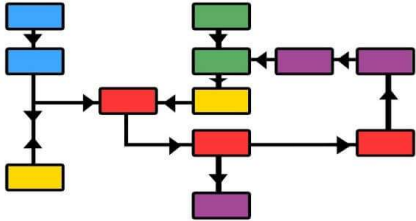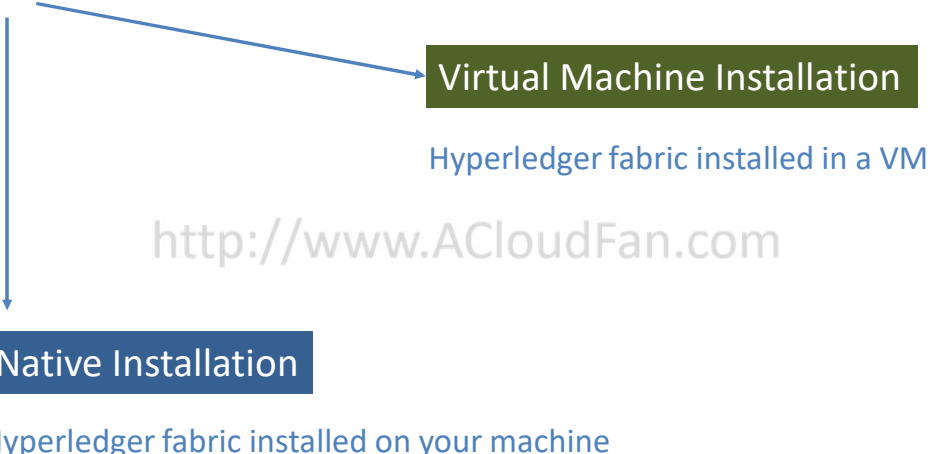
- Choice Development Environment
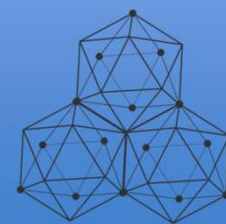
Dependency Hell

> Frustration of some software users who have installed software packages which have dependencies on specific versions of other software packages

---

CHOICES

Virtual Machine Installation

Hyperledger fabric installed in a VM

Native Installation

Hyperledger fabric installed on your machine

CHOICES

Native Installation	Virtual Machine Installation
Time taken to setup	Fast compared to native
Manual installation	Automated installation
Version clashes	Self contained | Managed internally
	Easy cleanup
Experience with setup	Hides the details
	Resource usage

http://www.ACloudFan.com

CHOICES

Native Installation

Supported Linux

http://www.ACloudFan.com

Virtual Machine Installation

Start with VM based setup & later do native

My suggestions!

Dev Setup Overview (VM)

raj@acloudfan.com

@acloudfan

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Learning Objectives:

- Virtualization software

- High level setup
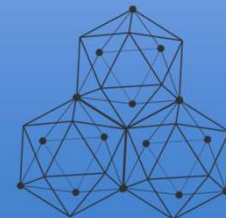
Virtualization | Software simulation of the physical hardware

Virtual Machine
Virtual Machine
Virtual Machine
…
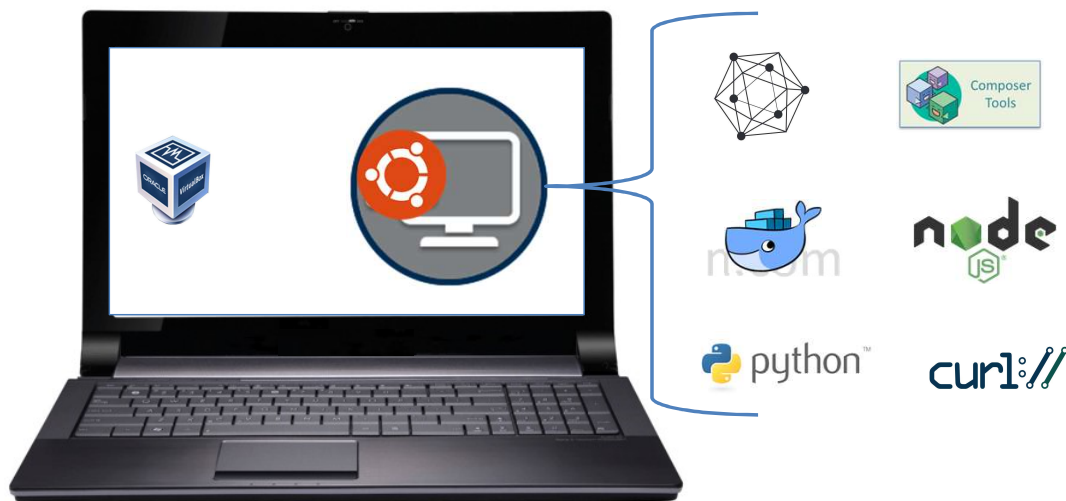Virtual Machine

Hypervisor
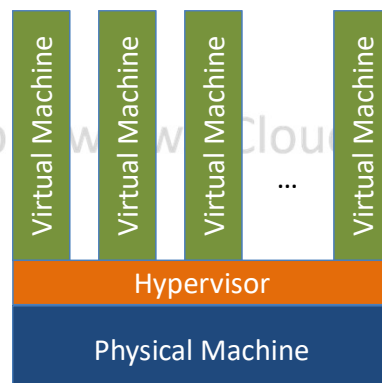
Physical Machine

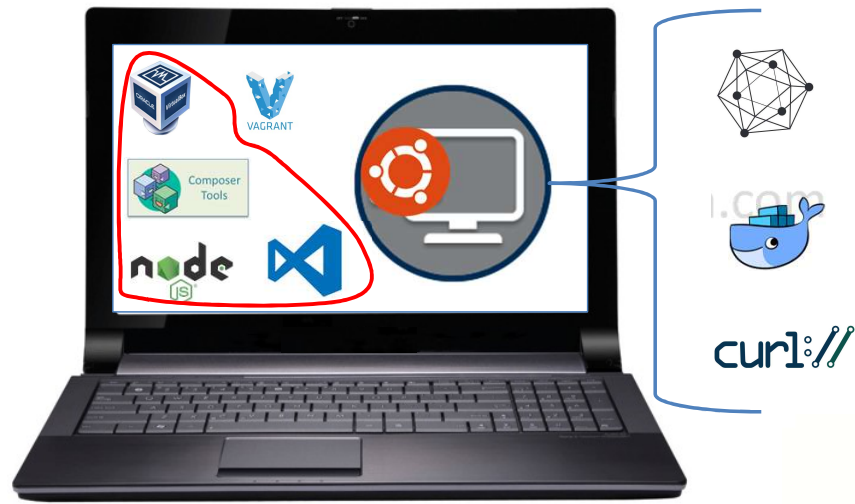## Virtualization — Software simulation of the physical hardware

Hypervisor:

The virtualization system that creates and runs virtual machines.

VM Setup

Log into VM for all tool execution

Mixed Mode Setup

My suggestions!

Mixed Mode Setup

Benefit:

Same experience as native install

No need to log into VM

My suggestions!

VAGRANT

> Vagrant is a tool for building and managing virtual machine environments in a single workflow

http://www.ACloudFan.com

- CLI tool for managing virtual machines

- Workflow automated by way of   Vagrant file

Virtualization Layer

http://www.ACloudFan

VAGRANT

Virtual Machine

Vagrant file

Virtual Machine Setup

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http://ACloudFan.com

- Installation

http://www.ACloudFan.c

- Installation

- Common commands
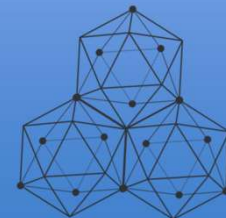
- Windows 10 PRO users with Hyper-V enabled do not need to install Virtual Box

http://www.ACloudFan.com

- If you already have Hypervisor on your machine. You don't need to install virtual box as long as

  1. your virtualization software is supported by Vagrant

  2. ubuntu/trusty64 box is available for it

PLEASE NOTE

Installation

STEP ① • Check if its already installed on your machine

STEP ② • Download & Install

https://www.virtualbox.org/wiki/Downloads

Installation

Debian
32-bit | 64-bit

Windows
32-bit | 64-bit

Centos
32-bit | 64-bit

macOS
64-bit

Arch Linux
64-bit

https://www.vagrantup.com/docs/installation/

Clone the Vagrant Repository

https://github.com/acloudfan/HLF-Vagrant-Dev-Setup.git

http://www.ACloudFan.com

`>_`   `git clone    …Repository Link…`

Crash Course

https://www.vagrantup.com/intro/getting-started/

`>_`   `vagrant  up`   Starts the VM

`>_`   `vagrant  halt`   Gracefully shuts down the VM

`>_`   `vagrant  ssh`   Log into the VM

`>_`   `vagrant  destroy` Deletes the VM

Dev Machine Setup

raj@acloudfan.com

🐦 @acloudfan

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https://www.udemy.com/ethereum-dapp/?couponCode=DKETH1099

https://www.udemy.com/rest-api/?couponCode=DKRST1099

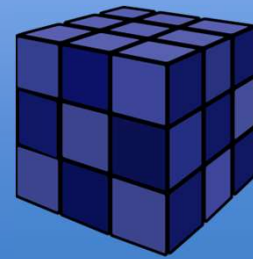mentoring, seeking Blockchain part time work, project guidance, advice ... ...
http://www.bcmentors.com

This deck is part of a online course on "Hyperledger Fabric Development with Composer"
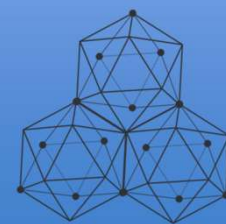
Hyperledger Fabric Installation

raj@acloudfan.com

🐦 @acloudfan

http://ACloudFan.com

- Installation

Pre-Req Installation

Fabric Tools Installation

Post Install Steps

Pre-Req Installation

Sets up all pre-requisites on VM

15 – 30 minutes

Fabric Tools Installation

Installs the fabric dev tools | environment

< 2 minutes

Pre-Req Installation

STEP ① `>_` `vagrant` **`up`**

STEP ② • Execute the pre-requisites install script

`>_` `vagrant` **`ssh`**

`$ ./scripts/install-prereqs.sh`

`$ logout`

Fabric Tools Installation
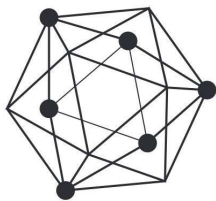
STEP ① `>_` `vagrant` **`ssh`**

STEP ② • Execute the fabric-tools install script

`$ ./scripts/install-fabric-tools.sh`

`$ ./scripts/install-composer.sh`

Hyperledger Fabric Post Install Steps

raj@acloudfan.com

@acloudfan

http://ACloudFan.com
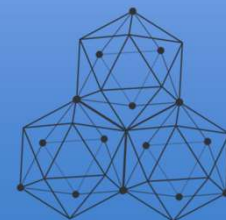
Post Install Steps

Post Install Steps   Download fabric docker images

STEP ①
```
>_    vagrant   ssh
```

http://www.ACloudFan.com

STEP ②

- Execute script for downloading fabric docker images

```
$ ./downloadFabric.sh
```

Post Install Steps — Install Peer Admin Card

STEP ①   Setup the utility
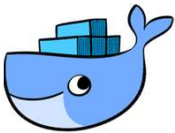
```
>_    cd  util
```

http://www.ACloudFan.com

```
>_    npm  install
```

STEP ②   Create the PeerAdmin Card

```
>_    node  devutil.js
```

- Docker commands used against Docker daemon in VM

http://www.ACloudFan.com

```
>_   docker  ps
```

```
>_   docker  images
```

Post Install Steps — Setup Environment Variable for

- Add these to your *.profile*

http://www.ACloudFan.com

export   DOCKER_HOST=tcp://localhost:2375

unset   DOCKER_TLS_VERIFY

Post Install Steps — Setup Environment Variable for
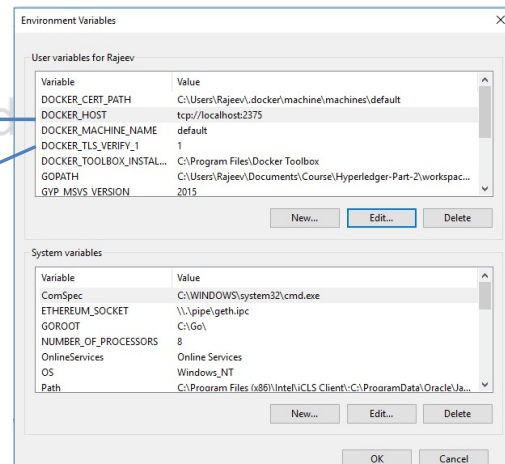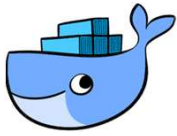
- Use the control-panel

DOCKER_HOST=tcp://localhost:2375

DOCKER_TLS_VERIFY

Rename or Remove

- Validation

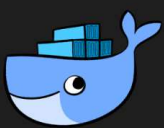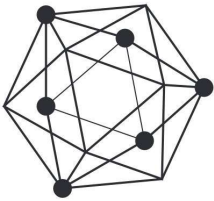http://www.ACloudFan.com

```
docker   images
```

- Some of the Docker Extensions on VSC DO NOT Work

- Use Docker commands on host machine

- Use this extension: There are some know issues with it ☹

Docker Explorer formulahendry.docker-explorer

Jun Han | 45,479 | ★★★★★ | Repository | License

Manage Docker Containers, Docker Images, Docker Hub and Azure Container Registry

Enable ▼ Uninstall

Validation Dev Environment setup

```
>_    vagrant   ssh
```
http://www.ACloudFan.com

```
              $./startFabric.sh
```

```
>_    docker   ps
```

```
              $./stopFabric.sh
```

- **Cross platform virtualization software**

  - Launch Virtual Machines – different OS

htt   m
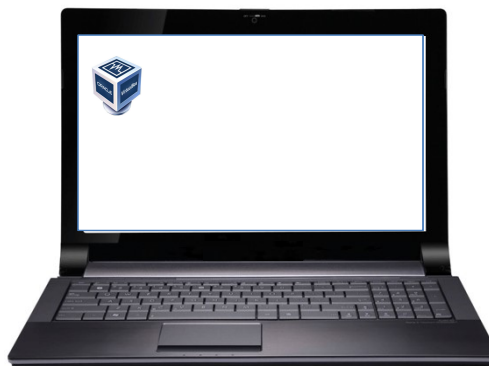
https://www.oracle.com/virtualization/virtualbox/index.html

Dev Machine Setup

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Discount Coupon Links to UDEMY courses:

http://www.ACloudFan.com

Learn **Hyperledger Fabric**
Hands-On **Blockchain** Development

https://www.udemy.com/hyperledger/?couponCode=DKHLF1099

Learn **Ethereum DAPP** on UDEMY
Hands-On Blockchain Development

https://www.udemy.com/ethereum-dapp/?couponCode=DKETH1099

Learn REST API on UDEMY
API Design, Development & Management

https://www.udemy.com/rest-api/?couponCode=DKRST1099

Blockchain
Training   bcmentors.com

mentoring, seeking Blockchain part time work, project guidance, advice … …
http://www.bcmentors.com
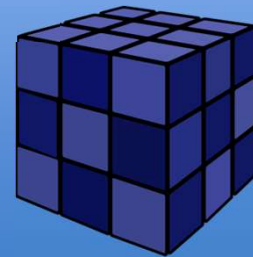
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Docker Installation

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http://ACloudFan.com
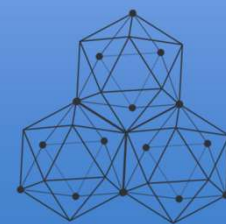
Learning Objectives:

* Docker installation

http://www.ACloudFan.c

PREREQUISITES

Basic understanding of Docker containers & commands
Basic knowledge of Virtual Machines

Course will cover the basic docker commands needed for running fabric software

http://www.ACloudFan.com

You will not learn Docker in this course!!!
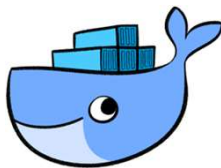
Windows 10 **PRO**

OS X El Capitan 10.11 or higher

Windows 10 **Home**

All other windows version

Older Mac Machines

https://docs.docker.com/docker-for-mac/install

Already have Docker on your machine?

> docker -v

Pre-Requisites

- Docker Engine: Version 17.03 or higher
- Docker-Compose: Version 1.8 or higher
- Node: 6.x (note versions 7 and higher are not supported)
- npm: v3.x or v5.x
- git: 2.9.x or higher
- Python: 2.7.x

Mac OS

Stable channel

This installer is fully baked and tested. This is the best channel to use if you want a reliable platform to work with. These releases follow the Docker Engine stable releases.

On this channel, you can select whether to send usage statistics and other data.
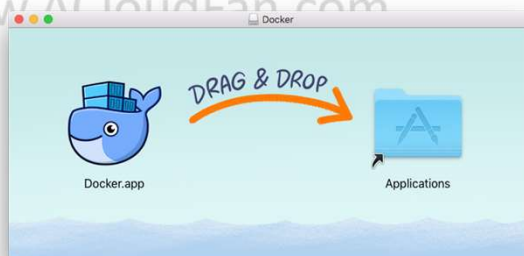
Stable builds are released once per quarter.

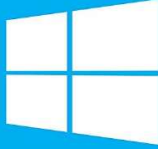Get Docker for Mac [Stable]

Edge channel

This installer provides the latest Edge release of Docker for Mac and Engine, and typically offers new features in development. Use this channel if you want to get experimental features faster, and can weather some instability and bugs. We collect all usage data on Edge releases across the board.

Edge builds are released once per month.

Get Docker for Mac [Edge]

DRAG & DROP

Docker.app → Applications

https://docs.docker.com/docker-for-mac/install/#download-docker-for-mac

Windows 10 Pro

Stable channel

Stable is the best channel to use if you want a reliable platform to work with. Stable releases track the Docker platform stable releases.

On this channel, you can select whether to send usage statistics and other data.

Stable releases happen once per quarter.

Get Docker for Windows [Stable]

Checksum: Stable installer SHA256

Edge channel

Use the Edge channel if you want to get experimental features faster, and can weather some instability and bugs. We collect usage data on Edge releases.

Edge builds are released once per month.

Get Docker for Windows [Edge]

Checksum: Edge installer SHA256

https://docs.docker.com/docker-for-windows/install/#download-docker-for-windows
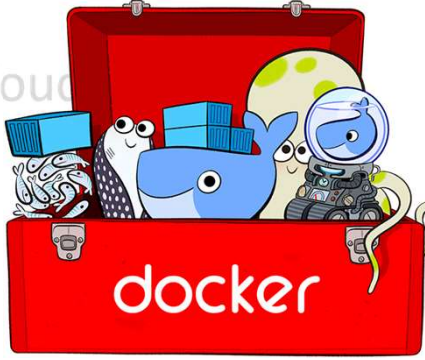
No Native support for virtualization

docker

- Need to change the BIOS settings

- Depends on the machine
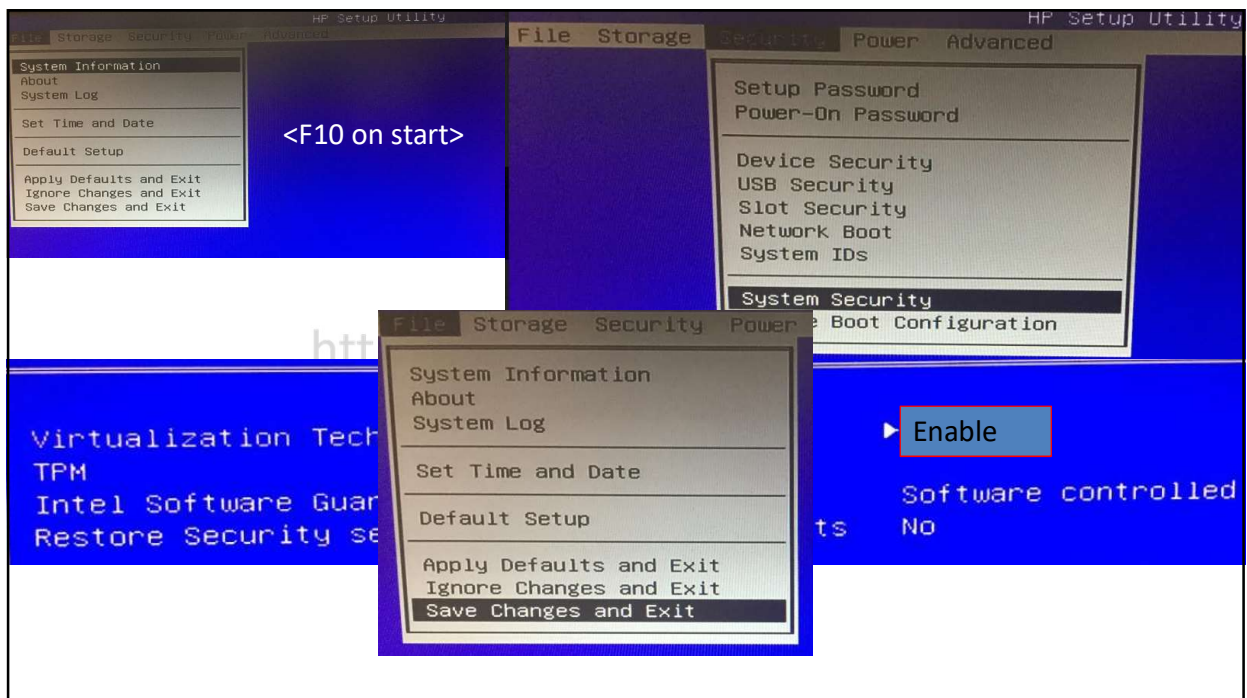
- Open Quickstart Terminal

> env | grep DOCKER_

```
$ env | grep DOCKER_
DOCKER_HOST=tcp://192.168.99.100:2376
DOCKER_MACHINE_NAME=default
DOCKER_TLS_VERIFY=1
DOCKER_TOOLBOX_INSTALL_PATH=C:\Program Files\Docker Toolbox
DOCKER_CERT_PATH=C:\Users\Rajeev\.docker\machine\machines\default
```
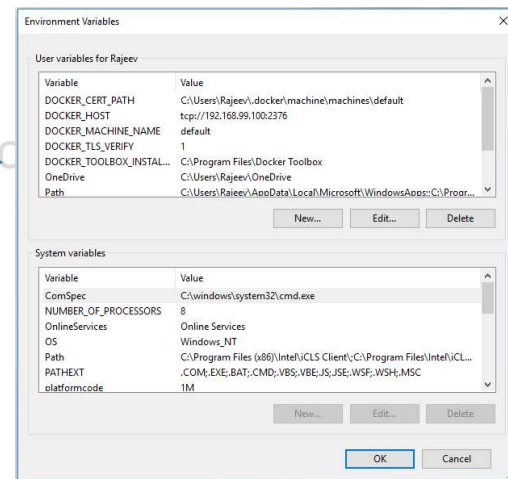
- Create environment variables

Environment Variables

User variables for Rajeev

Variable	Value
DOCKER_CERT_PATH	C:\Users\Rajeev\.docker\machine\machines\default
DOCKER_HOST	tcp://192.168.99.100:2376
DOCKER_MACHINE_NAME	default
DOCKER_TLS_VERIFY	1
DOCKER_TOOLBOX_INSTAL...	C:\Program Files\Docker Toolbox
OneDrive	C:\Users\Rajeev\OneDrive
Path	C:\Users\Rajeev\AppData\Local\Microsoft\WindowsApps;C:\Progr...

New...   Edit...   Delete

System variables

Variable	Value
ComSpec	C:\windows\system32\cmd.exe
NUMBER_OF_PROCESSORS	8
OnlineServices	Online Services
OS	Windows_NT
Path	C:\Program Files (x86)\Intel\iCLS Client\;C:\Program Files\Intel\iCL...
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC
platformcode	1M

New...   Edit...   Delete

OK   Cancel

Docker crash course

raj@acloudfan.com

@acloudfan

http://ACloudFan.com

Learning Objectives:

- Basic commands (Cheat sheet)

- Visual code Docker plugin

- Virtual box

https://docker-curriculum.com/
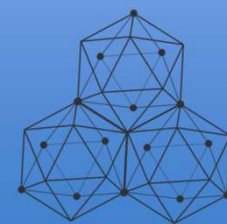
List Containers

```
> docker ps


> docker ps  -a
```

http://www.ACloudFan.com

List Containers

```
> docker exec -it container_id bash


> docker stop $(docker ps -a -q)
```

Remove containers

```
> docker rm    container_id


> docker rm  $(docker ps -a -q)
```

http://www.ACloudFan.com

List Images

```
> docker images

> docker pull image_info

> docker rmi image_info

> docker rmi $(docker images -a -q)
```

http://www.ACloudFan.com

Install Visual Code Docker extension
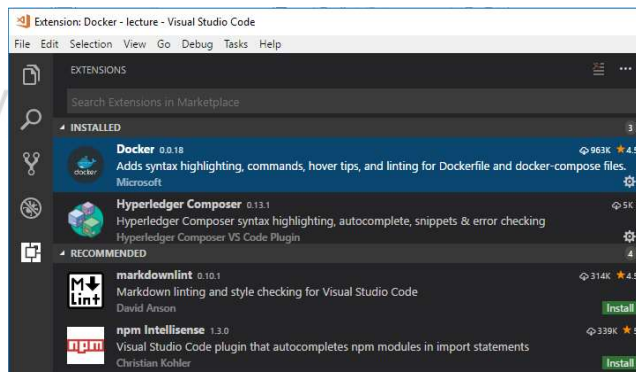
Dev Machine Setup

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https://www.udemy.com/hyperledger/?couponCode=DKHLF1099

https://www.udemy.com/ethereum-dapp/?couponCode=DKETH1099

https://www.udemy.com/rest-api/?couponCode=DKRST1099

mentoring, seeking Blockchain part time work, project guidance, advice … …
http://www.bcmentors.com
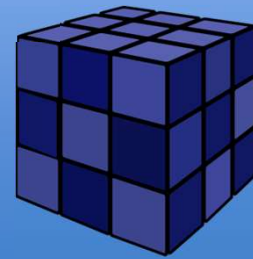
This deck is part of a online course on "Hyperledger Fabric Development with Composer"

Fabric Development Environment

raj@acloudfan.com

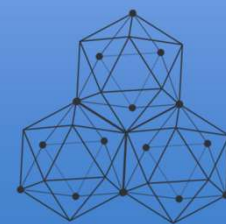@acloudfan

http://ACloudFan.com

curl://

Windows Only

curl://

https://curl.haxx.se/

" **A** tool to transfer data from or to a server, using one of the supported protocols HTTP, FTP, LDAP, POP3 ….

http://www.ACloudFan.com

curl://

https://curl.haxx.se/
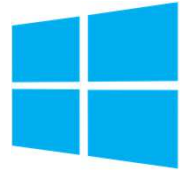
Verify Installation   >_   curl --version

http://www.ACloudFan.com

Windows Only

Cygwin is a Unix-like environment command-line interface for Microsoft Windows

Cygwin provides native integration of Windows-based applications, data, and other system resources with applications, software tools, and data of the Unix-like environment.

Hyperledger Fabric tools and utilities are available as Bash scripts

Bash scripts cannot be executed on Windows command prompt or Powershell !!!!

Install curl

https://curl.haxx.se/download.html

https://cygwin.com/install.html

/cygdrive/c/Users/Rajeev/Documents/Course/Hyperledger-Course/workspace/wip/fabric-samples/first-network

---

Environment Setup

Windows Only

Drive Mapping

/cygdrive/c/Users/Rajeev/Documents

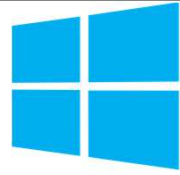**Env Needed for Fabric Scripts**

export   COMPOSE_CONVERT_WINDOWS_PATHS=1

export   MSYS_NO_PATHCONV=1

32

Environment Setup   Windows Only
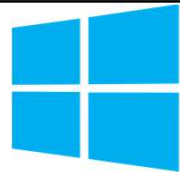
STEP ①   Open a Cygwin terminal

http://www.ACloudFan.com

`>_`   `cd`

`>_`   `vi  .bash_profile`

Cygwin Environment Setup   Windows Only

1. Press keys capital GA <Enter>

http://www.ACloudFan.com

STEP ②   2. Copy/Paste following lines using right click option
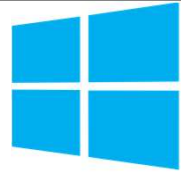
```
export   COMPOSE_CONVERT_WINDOWS_PATHS=1
export   MSYS_NO_PATHCONV=1
```

3. Press <Escape>:wq<Enter>

Cygwin Environment Setup   Windows Only

STEP ③

http://www.ACloudFan.com

- Copy the edited .bash_profile to ~/.

```
cp /cygdrive/c/SOME-LOCATION/.bash_profile ~/.
```