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| Explore Docker |
| Basics :: Installation: POC |
|  |
| **Vibranarayanan** |
| **5/16/2018** |

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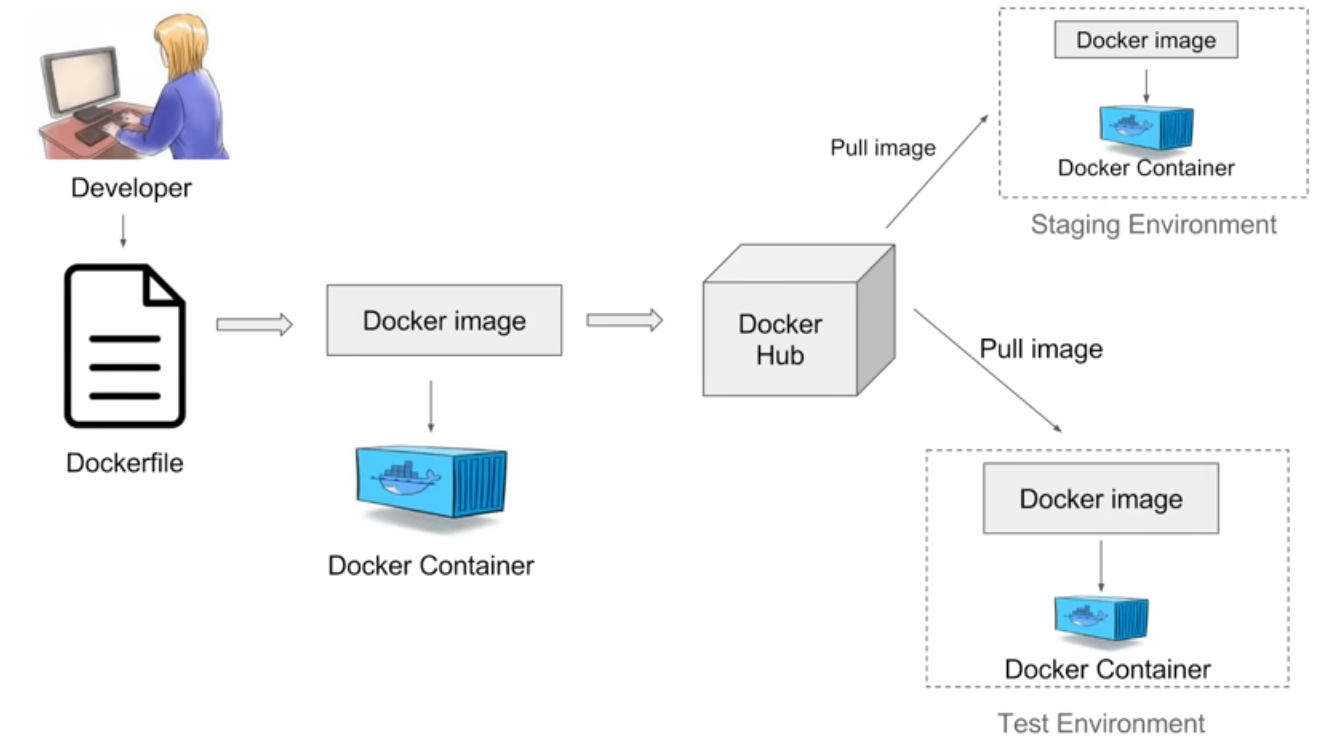
## Change Log

|  |  |
| --- | --- |
| Date | Details |
| 05/16/2018 | * Docker terms * Docker work flow * Virtualization vs Containerization * Client server architecture * Benefits |
| 05/17/2018 | * Docker Tool installation on windows * verify Docker commands after installation * Running hello world Docker image * Learn how to create Docker file * Running Docker file with existing repo image.   Pages (6 to 10) |

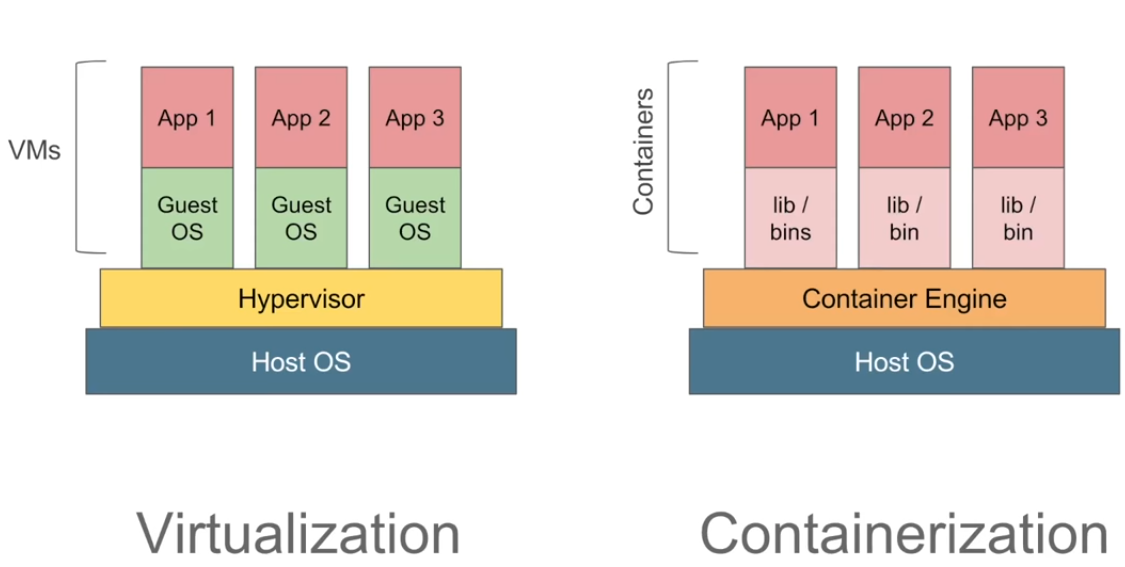
## Docker Terms

|  |  |
| --- | --- |
| Term | Explanation |
| Docker file | * Describes steps to create Docker image |
| Docker image | * Created using Docker file * An **image** is an executable package that includes everything needed to run an application--the code, a runtime, libraries, environment variables, and configuration files. dependencies |
| Docker container | * Created by running Docker image. * Run time instances of Docker image. * A **container** runs natively on Linux and shares the kernel of the host machine with other containers. It runs a discrete process, taking no more memory than any other executable, making it lightweight. |
| Docker Hub | * Online repository, images can be stored in this repository |
| Docker Client | * Command line inter face to interact with Docker server. |
| Docker Server/Daemon | * Will have all the containers |
| Docker Engine | * Combination of Docker Client and server component. |

## Docker work flow



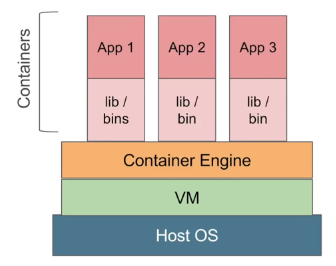
## Virtualization Vs Containerization



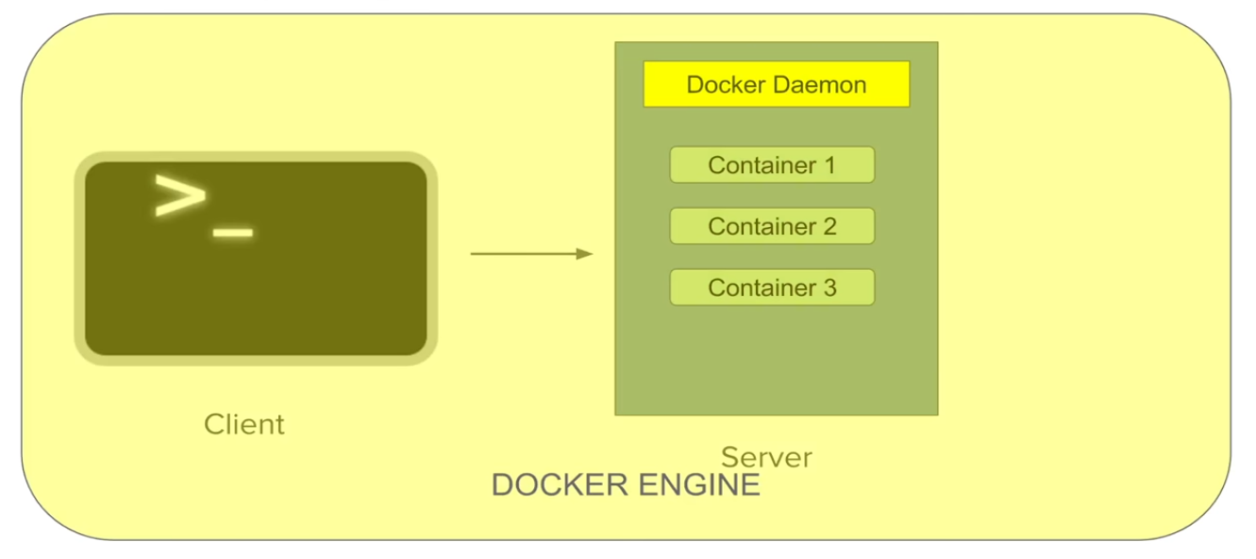
|  |  |
| --- | --- |
| **Virtualization** | **Containerization** |
| * Create Multiple VMs using Hypervisor in Host OS * VMs have their own OS and does not use host OS. * Overhead on Host platform * Each VM fixed memory need to be allocated. this leads to wastage of memory. | * Containers are light weight * Container engine will manage/use Host OS configurations/memory based on applications in containers. * No memory/space overhead. |

## Containers on VM

There may be a scenarios like container need to be run on VM. In that case Containers can be managed in below stacks.



## Docker Client-server architecture



* Docker server/Docker Daemon receives command from client in this form of CLI or rest API.
* All the Docker Client and server together form Docker engine.
* Docker client or Docker Daemon can be present in same host or in different host.

## Docker Benefits

* An Application inside a container runs on any system that Docker installed.
* Build application only once and no need to configure multiple times.
* Docker images can be maintained in any repository , later images can be pulled for usage.
* Test your application inside your container and ship it inside the container, This means Environment in which you test is identical with the app in production.
* *Isolation* is the Key, with Docker every application works in isolation in its own container. Does not interferes with other application running on the same system.
* Removal of an application is easy by deleting a container.
* Developer can package software with all its dependency and Docker will take care if running those application in different platform.
* *Productivity* is an another key. Docker allows faster and efficient deployment without worrying about, application running on different planform.

### Portability



* Docker containers can run on any platform. This can run on local system and Amazon ec2 or Google Cloud, etc..
* Container running on AWS can easily be ported to Virtual machine.

### Version Control

* Like Git Docker has in-build version control.
* Docker containers work just like a GIT repo, allow you to commit your changes into Docker images and version control them.
* Docker images can be tracked in other version control system like GIT.

## Installing Docker Toolbox in Windows

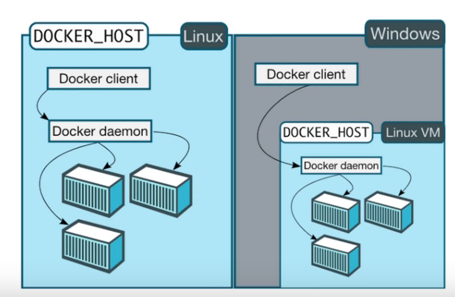
### Pre requisites

review system requirement and install in your windows system. your OS should be in 64 bit architecture. get installation information from this [Link](https://docs.docker.com/toolbox/toolbox_install_windows/#step-1-check-your-version)

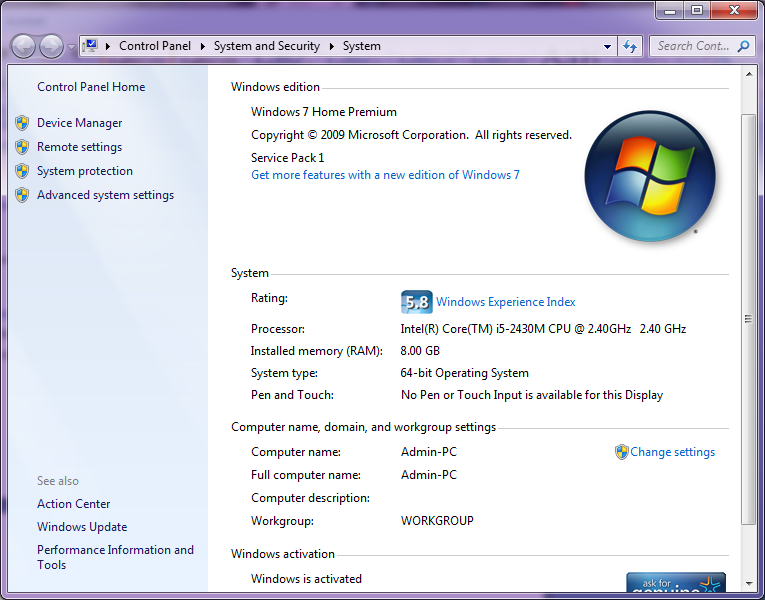
### VM virtual box with Linux 674 bit

from higher version of windows 7, by enabling Virtualization at BIOS level and disabling Hyper-vT in windows feature. you can start installing 64 bit version linux flavour. for more details refer this [link](http://www.fixedbyvonnie.com/2014/11/virtualbox-showing-32-bit-guest-versions-64-bit-host-os/#.Wv0vLsIQDIU)

### Running Docker Linux Vs Window

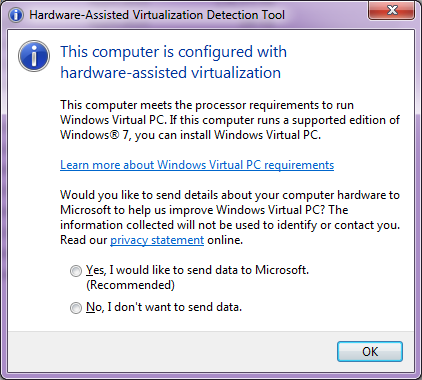


### Current system Configuration



### Hyperv detection Tool

As mention in this [link](https://docs.docker.com/toolbox/toolbox_install_windows/#step-2-install-docker-toolbox) under Window section downloaded havdetection tool and verified, i am good with run windows virtual PC. [Download URL](http://www.microsoft.com/en-us/download/details.aspx?id=592)



### Download & Install Docker Tool

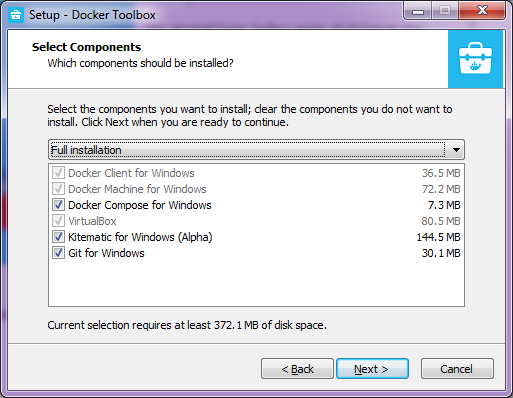
Down load Docker tool from this [URL](https://docs.docker.com/toolbox/toolbox_install_windows/)

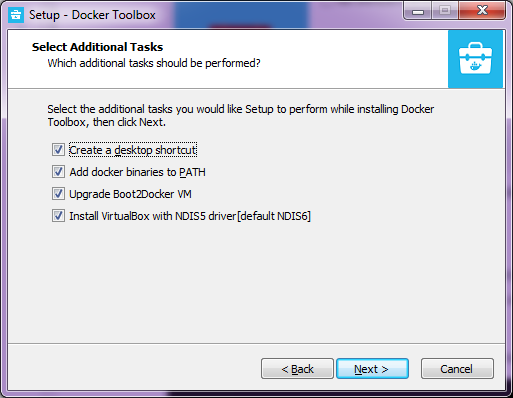
### Install Docker Tool

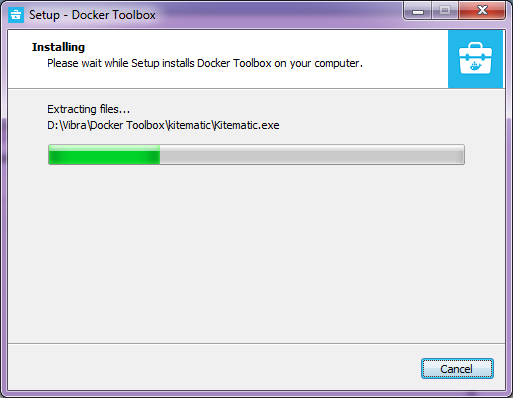
Install Down loaded docker tool.

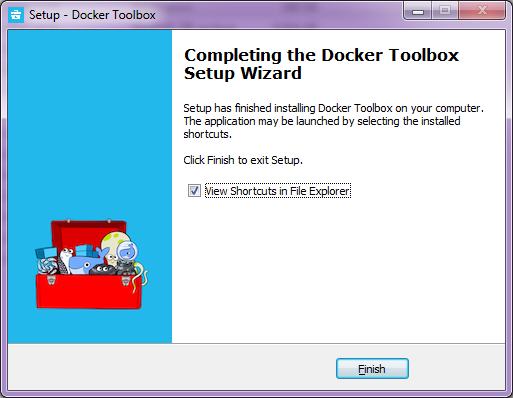
### Step by Step Installation screen

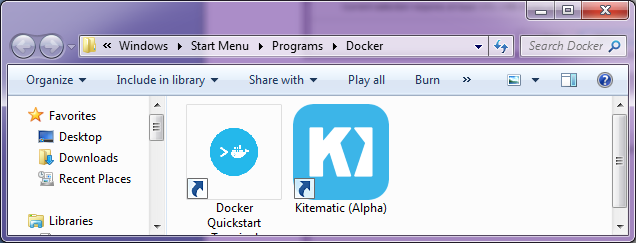




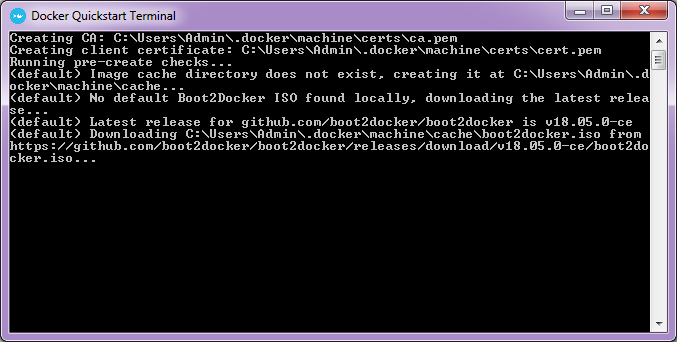




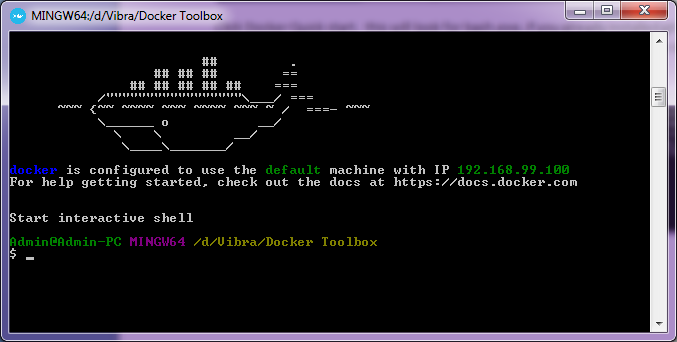




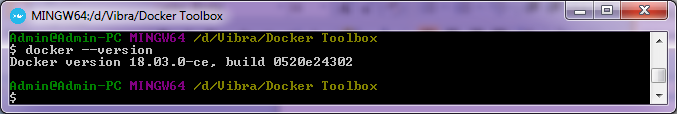
Click Docker Quick start. this will look for bash.exe, if you already installed git this will try to find that bash.exe location. if you sure about location you can point that location by browsing option provided.



#### Final screen after installation



### Verify Docker commands after installation



### Docker Hello-world

In command line type below to check the installation   
$docker run hellow-world  
This will look for local image, and if it doesn't find it will get it from common repro

