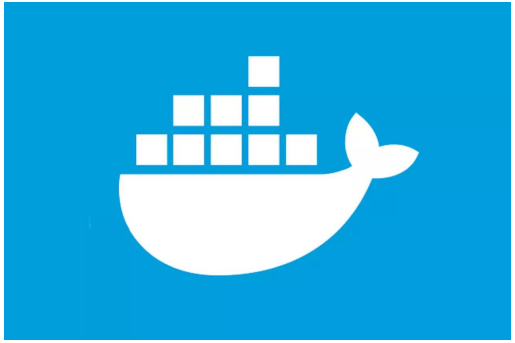


Overview

Docker

Basic Information

- What is Docker
- Why we need Docker
- Advantages
- Images and Container
- Docker File
- Docker Hub
- Docker Workflow
- Docker Eco System

Basic Commands

Disadvantages

What is Docker

- Open-source Centralised Platform designed to Create, deploy and run applications
- It Uses Container on the host OS to run applications It allows applications to use the same linux Kernel as a System on the host Computer rather than Creating a whole Virtual O S
- We Can install Docker on any OS but D.E. runs natively on Linux Distribution
- Docker written in ‘go language '
- OS Level Virtualization also Known as Containerization
- Docker is a Set of PAAS

First Release in March 2013 by Solomon hykes and Sebastain Pahl

Why We Need Docker

- Before Docker many user faces the problem that particular Code running the developer's system but not in the User's System
- For distributing your app’s OS with a team, and as a version control system.
- Conventional Deployment takes longer time
- Infrastructure development takes time
- Application portability is a challenge (it works on my machine)
- Manual deployment scripts are difficult to manage and version control.

Docker Advantages

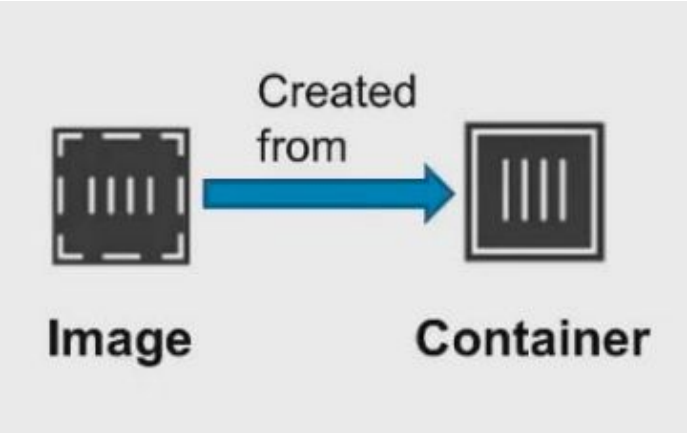
- Rapid Deployment
- No pre-allocation of RAM
- CI Efficiency , Build App only once
- Less Cost and light weight
- It can run on the Physical H/W ,VM
- You can reuse the image
- Less time to create container (VM)
- Version Controlling
- Portability
- Isolation

Docker Images

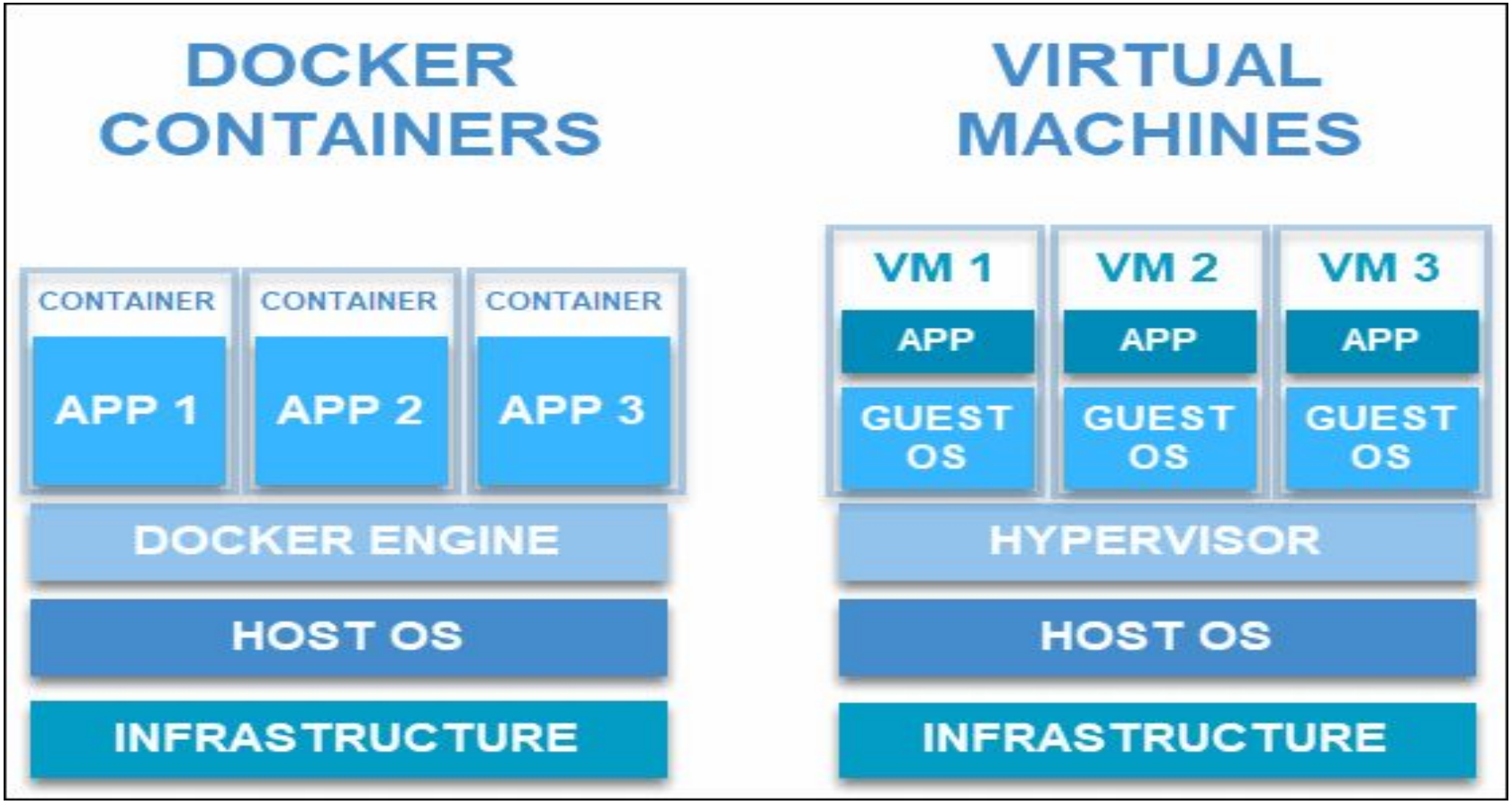
- Read only template used to create containers
- Stored in the Docker Hub or in your local registry
- Image is a Read Only Template and is use to create container
- You can’t Edit , But u can delete
- 2 Method to create Image (Interactive Method ,Dockerfile Method)

A Docker image is made up of a collection of files that bundle together all the essentials, such as installations, application code and dependencies, required to configure a fully operational container environment.

Docker Containers



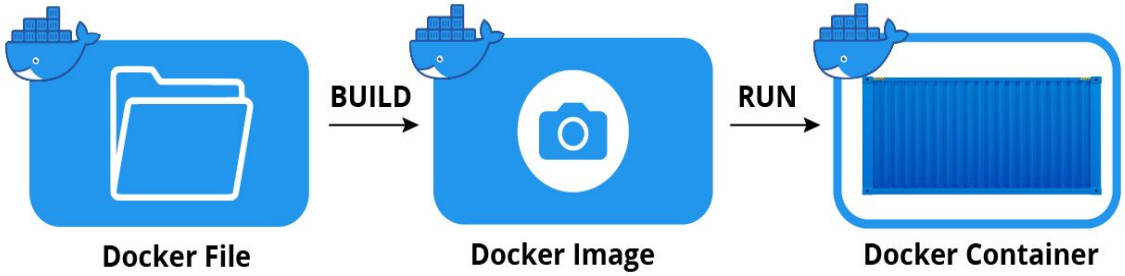
- Running State of Image
- It is Like a Virtual Machine
- It Works on Layered File System
- Runnable instance of a docker image
- Isolated application platform
- Contains everything needed to run your application
- Based on one or more images
- Each container has its own Root file system , Processes ,Memory , Devices , Network ports

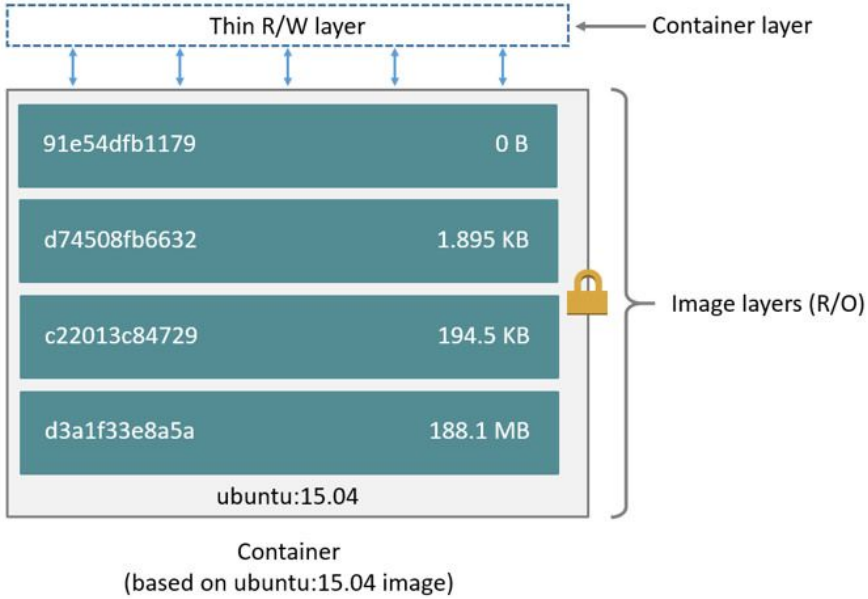

DOCKER CONTAINERS
CONTAINER
APP 1
CONTAINER
APP 2
CONTAINER
APP 3
DOCKER ENGINE
HOST OS
INFRASTRUCTURE
VIRTUAL MACHINES
VM 1
APP
GUEST OS
VM 2
APP
GUEST OS
VM 3
APP
GUEST OS
HYPERVISOR
HOST OS
INFRASTRUCTURE

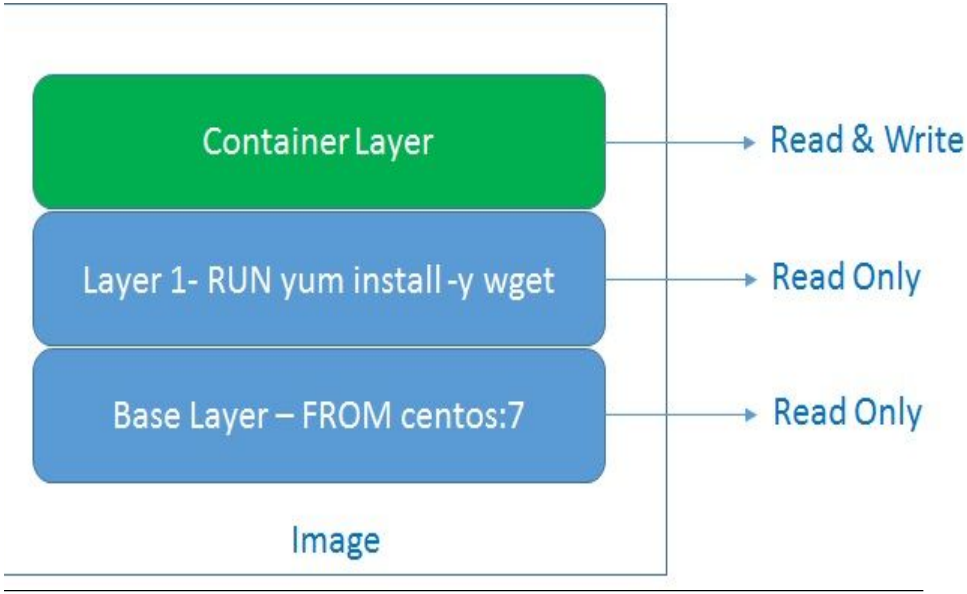
Docker File

- A **Dockerfile** is a text document that contains all the commands a user could call on the command line to assemble an image.

- Using **docker** build users can create an automated build that executes several command-line instructions in succession.


BUILD
RUN
Docker File
Docker Image
Docker Container


Thin R/W layer
Container layer
91e54dfb1179 0 B
d74508fb6632 1.895 KB
c22013c84729 194.5 KB
d3a1f33e8a5a 188.1 MB
ubuntu:15.04
Image layers (R/O)
Container
(based on ubuntu:15.04 image)

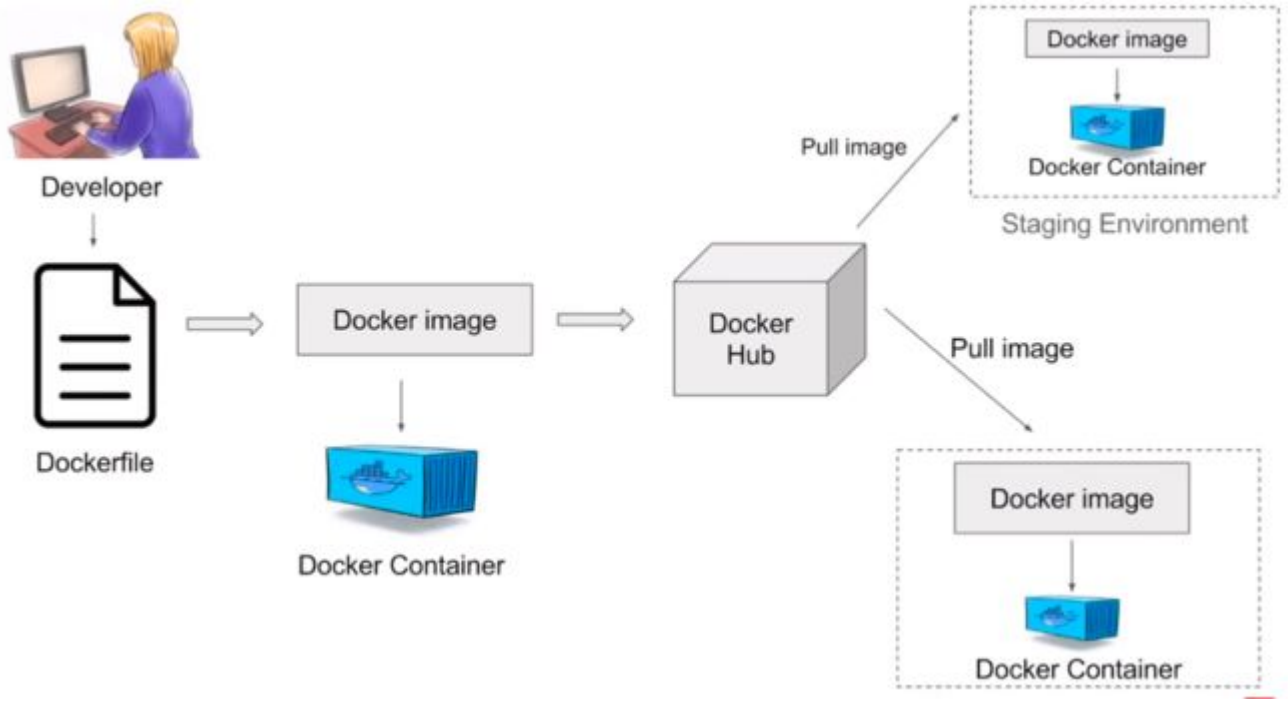

Container Layer
Layer 1- RUN yum install -y wget
Base Layer – FROM centos:7
Image
Read & Write
Read Only
Read Only

Docker Hub

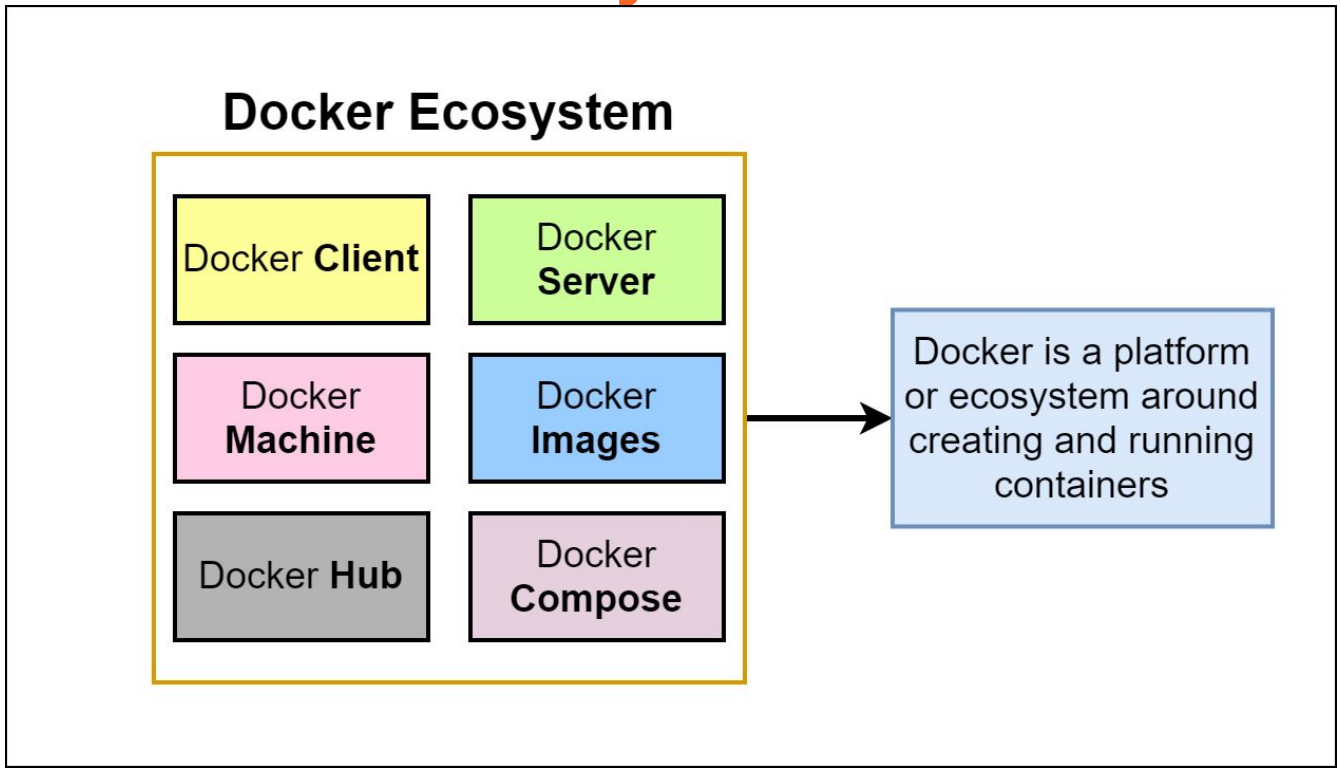
- Docker Hub is the world's largest repository of container images with an array of content sources including container community
- **Docker Hub** is a hosted repository service provided by **Docker** for finding and sharing container images with your team.
- Private Repositories: Push and pull container images.
- Automated Builds: Automatically build container images from GitHub and Bitbucket and push them to **Docker Hub**.
- Users get access to free public repositories for storing and sharing images or can choose subscription plan for private repos.

For more info click on link here

Docker Work Flow



Docker Eco System



Basic Command

- docker –version To check currently installed version of docker
- service docker start/stop To Start/stop service Docker (Engine)
- docker images To check images Locally
- docker pull To Pull Image from Docker hub
- docker run Combination of Create and Start

  (Usage: docker run -it --name container <image name>:1.1 /bin/bash)

- docker ps To List the Running Container (ps =Process status)
- docker ps -a To list the all container (Running and Exited Containers)
- docker search To Find out the image in Docker Hub
- docker start/stop To start/stop Container
- docker attach To go inside the container
- docker rm To Remove the Container

Docker Disadvantages

- Not a Good solution for Rich GUI
- Difficult to Manage Large Amount (Containers)
- Cross platform compatibility issue
- Only suitable when team OS is same
- No solution For data recovery & Backup

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