

YouTube Live Training

Mastering Docker Session 1

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The complete portal on open source **For U .com**

I truly believes in Open Source so I like to share my knowledge with community in as many ways possible and helping people.



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Session Agenda

- Why do we need Containers ?
- Difference between VMs & Containers
- Introduction to Docker
- Docker Architecture
- Docker Terminologies
- Hands-on lab 1 : Run Your First Container
- Hands-on lab 2 : Create Docker Container for Apache Web Server
- Hands-on lab 3 : Run Web Server with custom contents
- Hands-on lab 4 : Run Container for Java Application
- Challenge

Why do we need Containers ?



**SAY ONE MORE
TIME**



WORKS ON MY MACHINE
memegenerator.net

Why do we need Containers ?

- Resolve Dependencies issues
- Resolve Compatibility issues
- Build Once and Run Anywhere
- Reduce Deployment Timing
- Easy for Automation
- Runs in Isolated environment

Difference between VMs & Containers

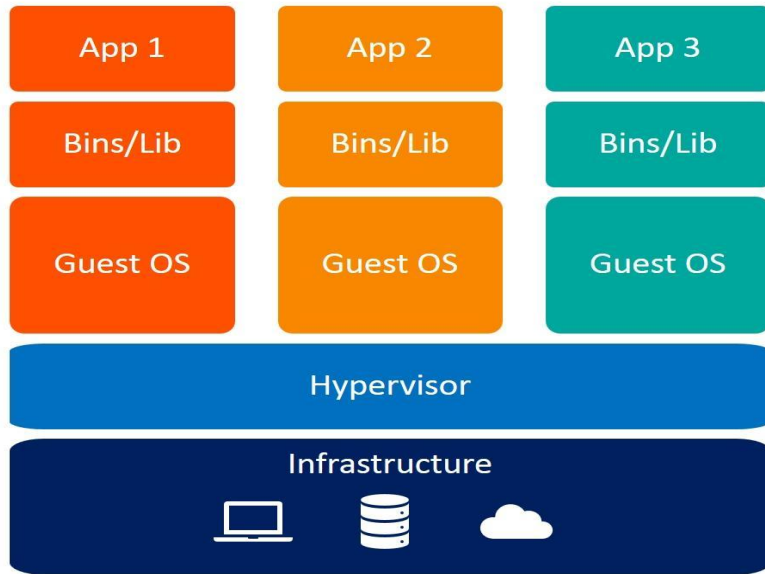
Virtual Machines



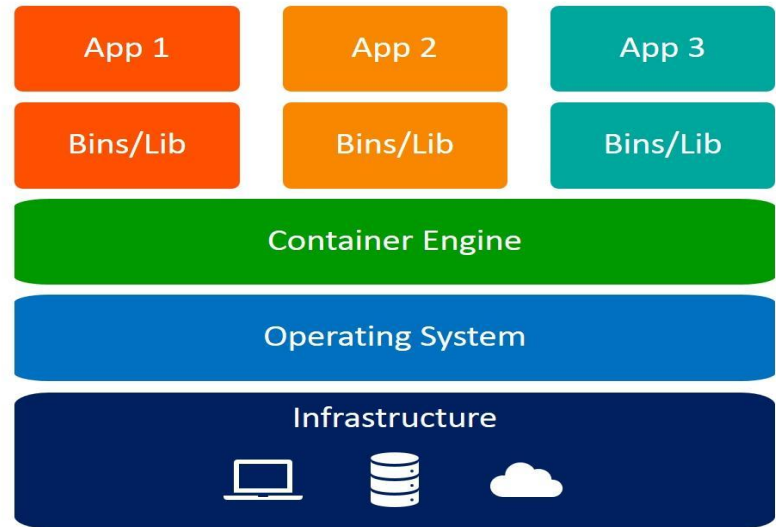
Containers



Difference between VMs & Containers



Virtual Machines



Containers

Difference between VMs & Containers

Virtual Machines

- Heavyweight
- Each VM run on its own OS
- Hardware Virtualization
- Start up time is more
- More secure due to full isolation

Containers

- Lightweight
- Container shares the host OS
- OS Virtualization
- Start up time is less
- Less secure due to process level isolation

Introduction to Docker

- Docker is the leader in the containerization market.
- Docker is an open platform for developing, shipping, and running applications.
- Docker uses Client-Server Architecture.
- Docker Client communicate with Docker Daemon via REST API which does main task of building, creating & running containers.
- Docker/Containers uses features of the Linux kernel such as pivot_root, cgroups, namespaces, capabilities, seccomp-bpf & overlay file systems.

Docker : Build, Ship, Run Workflow

Developers

IT Operations

BUILD

Development Environments



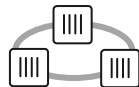
SHIP

Create & Store Images

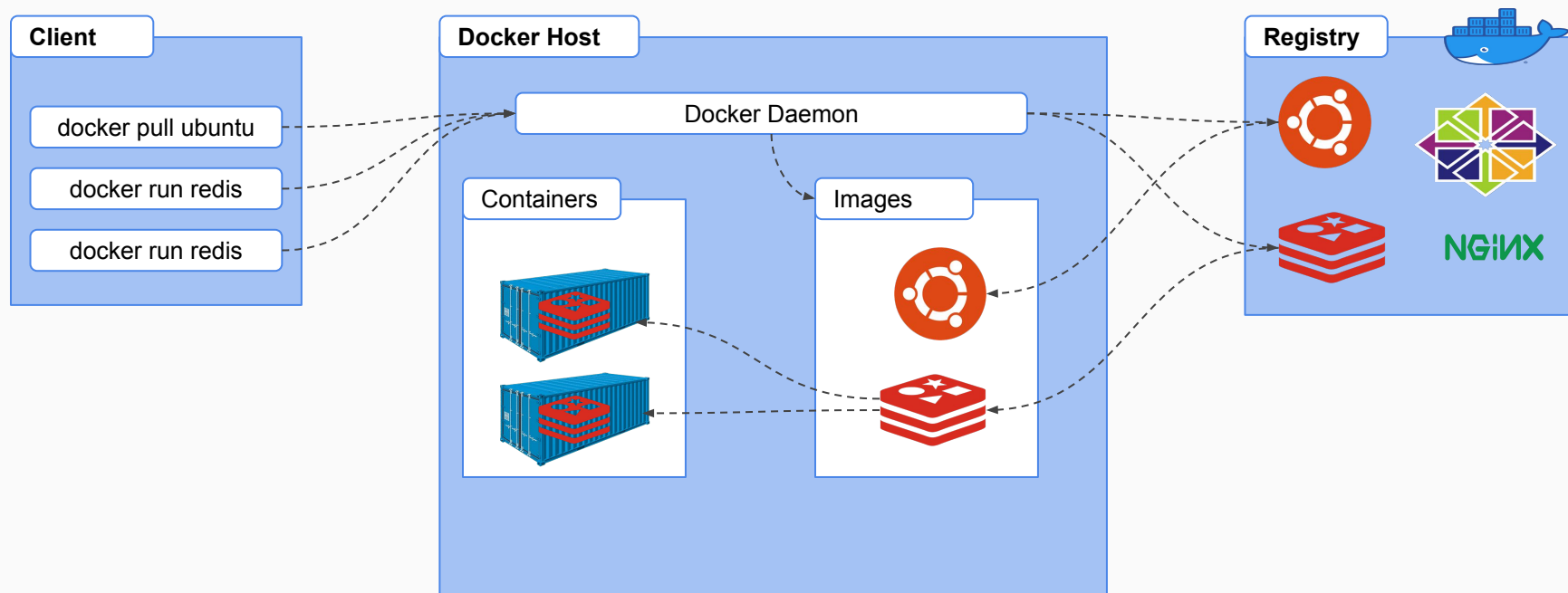


RUN

Deploy, Manage, Scale



Docker Architecture



Docker Terminologies

**Docker Daemon
(dockerd)**

**Docker Client
(docker cli)**

**Docker Desktop
(Application)**

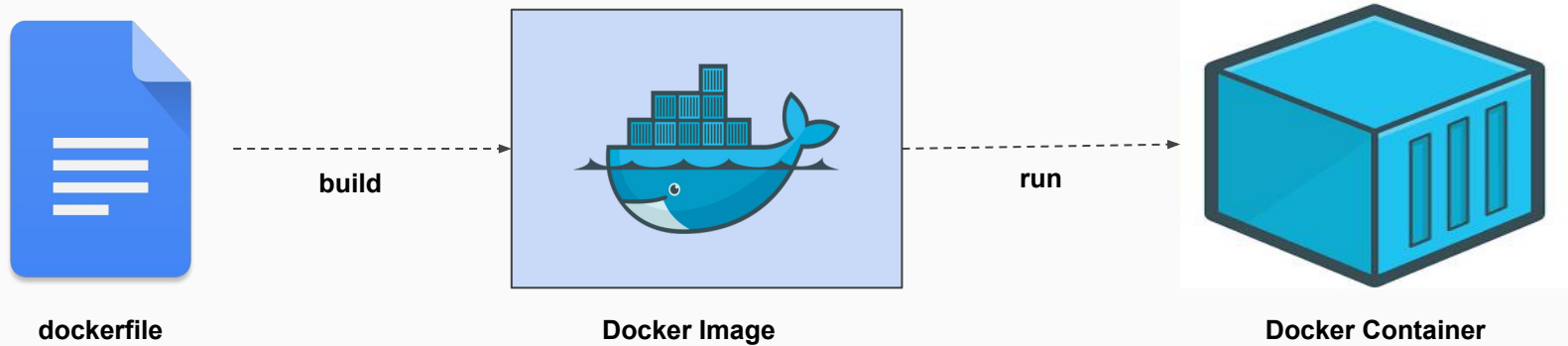
**Docker
Registries
(Images)**

Docker Image

**Docker
Containers**

Docker Objects

How To Build Docker Image ?



Hands-On Labs

Github Repository



<https://github.com/akshayithape-devops/Mastering-Docker>

Lab #1 : Run Your First Container

- Get docker information
- Run a first container
- Remove the containers

Lab #2 : Create Docker Container for Apache Web Server

- Run the container for web server with port mapping.
- Understand the port mapping concepts.

Lab #3 : Run Web Server with custom contents

- Run the container for web server with port & volume mapping.
- Understand the volume mapping concepts.

Lab #4 : Run Container For Java Application

- Build & Run Java application without using Docker
- Build & Run Java application using Docker
- Make changes Persistent
- Push changes to Docker Hub
- Rerun the container with new image(Persistent Changes)
- Remove everything

Challenge

Lab #5 (Challenge)

- Build docker image with following HTML contents.

← → ↻ ⓘ localhost:8000

Docker #101 - Challenge Completed By Your Full Name

- Publish that image on your Docker Hub Account.
- Share that image name with me.
- When I will run container with that image.
It should print same output as above.



Mastering Docker

WhatsApp group



Essential Docker Command

`docker
version`

`docker
search`

`docker
pull`

`docker
run`

`docker
stop`

`docker
rm`

`docker
images`

`docker
rmi`

`docker
ps`

`docker
exec`

`docker
info`

`docker
inspect`

`docker
commit`

`docker
tag`

`docker
push`

Reference Link

- <https://www.statista.com/statistics/1256245/containerization-technologies-software-market-share/>
- <https://docs.docker.com/get-started/overview>
- <https://www.techtarget.com/searchitoperations/feature/Dive-into-the-decades-long-history-of-container-technology>

Thank You EveryOne

Be In Touch

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