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Developers Thought

Docker For Beginners

Expectations after session

★ You should be aware of basic docker concepts, terminologies, architecture

★ You should be able to do a POC which involves docker directly or indirectly

★ You should be aware of the essential docker commands

★ You should be able to deliver knowledge about docker to your peers

★ You should be able to start thinking about containerization

★ You should feel confident about using the docker CLI

Source

Docker Logo: https://www.theverge.com/circuitbreaker/2018/5/25/17386716/docker-kubernetes-containers-explained

VM Vs Containers: https://blog.docker.com/2018/08/containers-replacing-virtual-machines/

Docker Architecture: https://docs.docker.com/engine/docker-overview/

Docker Containers: https://medium.freecodecamp.org/a-beginner-friendly-introduction-to-containers-vms-and-docker-79a9e3e119b

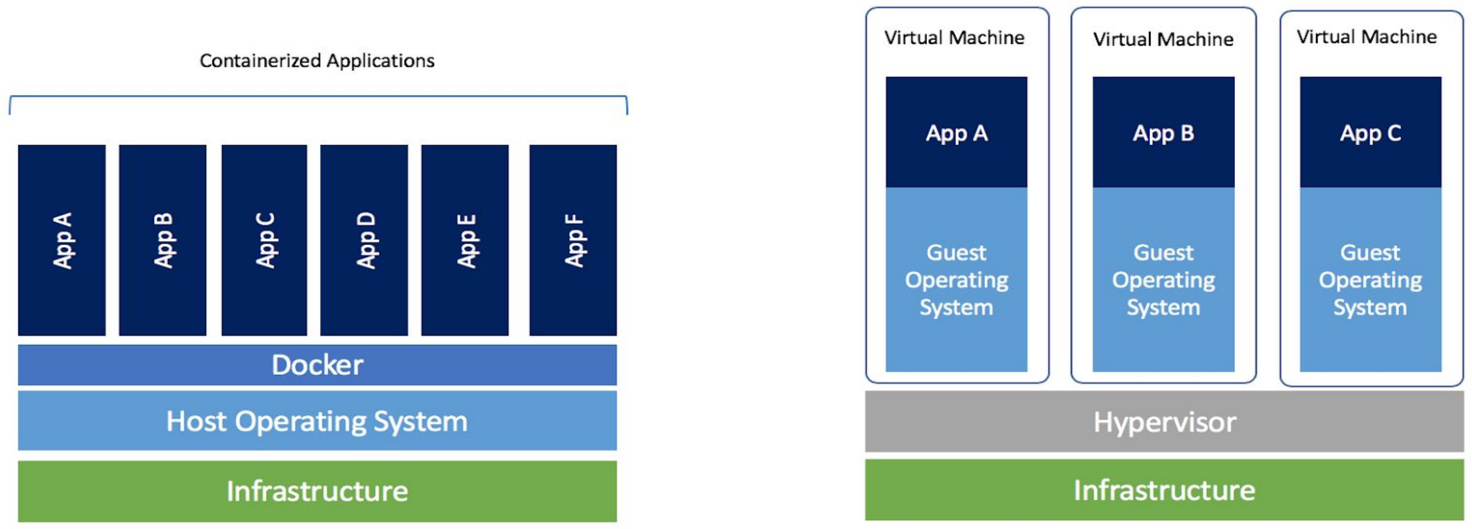
VMs Vs Containers

- Both VM’s & Containers can help get most of the available computer hardware & software resources
- VM is an emulation to computer system. It makes it possible to run what appear to be many separate computers on hardware that is actually one computer.
- VM requires its own OS while all the hardware resource are virtualized.
- Hypervisor or VMM (Virtual Machine Monitor) is used to create and run VM’s. It seats between VM & Hardware

VMs Vs Containers (Contd.)

- In containers instead of virtualizing the entire computer only the OS is virtualized
- Container seats on top of the Host OS. It shares the OS host kernel along with binaries & libraries. Those shared resource are read only.
- As containers shared the resources, there size becomes exceptionally light.

VMs Vs Containers (Contd.)



VMs Vs Containers (Contd.)

VM	Container
Heavyweight	Lightweight
Each VM run on its own OS	Container shares the host OS
Hardware Virtualization	OS Virtualization
Start up time is more	Start up time is less
More secure due to full isolation	Less secure due to process level isolation

VMs Vs Containers (Contd.)

Usage:

- ★ *VMs are used in case when you want to fully utilized system resources and want to run multiple apps on single OS*
- ★ *Containers are preferred when you want to run less or single application on multiple servers*

Introduction to Docker

- Docker is the leader in the containerization market
- Docker is an open platform for developing, shipping, and running applications.
- Docker is licensed under the open source Apache 2.0 license.
- Numbers:
    - Container Downloads: 80B
    - GitHub Stars: 32000+
    - Commercial Customers: 650+
- Products:
    - Docker Enterprise
    - Docker Desktop
    - Docker Engine
    - Docker Hub

Use Case for Developers

- Bob develops code and shared across using containers
- Bob uses docker to push the application as Docker Image to Test Environment and run some manual & automated tests
- Bob fixed the bugs found in above testing and again pushed application as Docker Image to Test Environment for testing/validation
- When testing is completed Bob pushed the application into the Production Environment

Docker Architecture

- Docker uses Client-Server Architecture
- Components:
  - Docker Client
  - Docker Daemon
  - Docker Registry
- Docker Client communicate with Docker Daemon via REST API which does main task of building, creating & running containers

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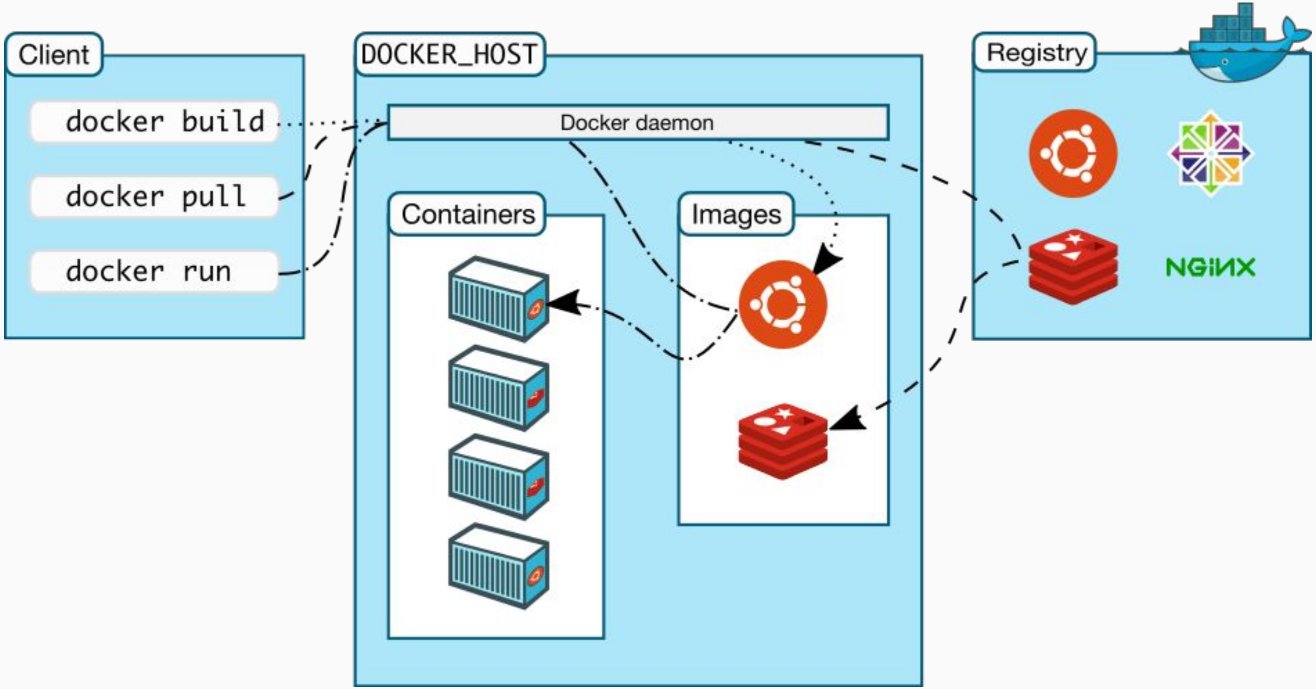
Docker Architecture (Contd.)



Hands-On Session

#1 Run your first container

1. Run a container
2. Run multiple container
3. Remove the containers

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Hands-On Session (Contd.)

# Adding the CI/CD value with Docker Images

1. Create a JAVA App
2. Create & Build the Docker Image
3. Run Docker Image
4. Push to a Central Registry (Docker Hub)
5. Deploy a Change
6. Understand Image Layers
7. Remove Containers & Images

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Essential Docker Commands for Beginners

docker images

docker pull

docker push

docker run

docker rm

docker stop

docker rmi

docker ps

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Be in touch...

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Upcoming Meetups...

Docker Deep Dive Saturday, January 12, 2019

http://meetu.ps/e/G9CRz/m5TBq/f

Helm for beginners Saturday, February 9, 2019

http://meetu.ps/e/G9CSW/m5TBq/f