Docker: From Zero to Hero

Topics of Presentation

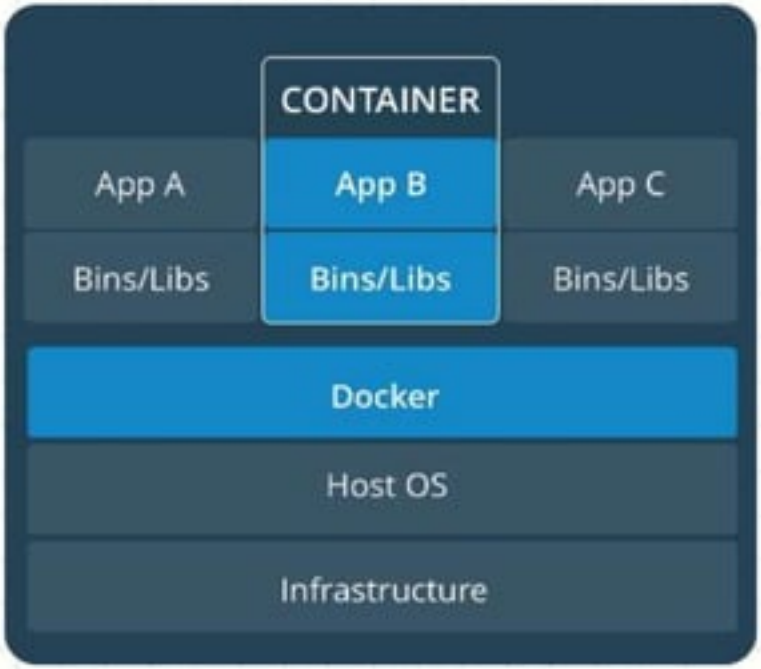
- Why Docker?
- Difference between Virtual machine and Docker
- What is Docker
- Docker Architecture
- Docker Installation
- Docker Commands
- Docker Compose
- DockerFile
- Communication between containers
- Swarm

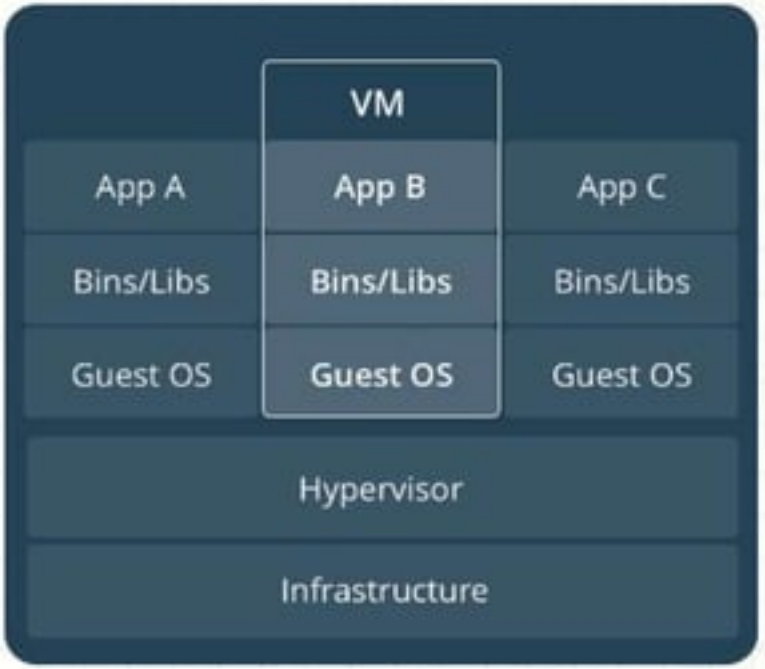
Why Docker?

- Development team on same page in term of environment
- Development, QA and Production sync up
- Local to Production easy deployment and scaling
- Build & Deploy, fast & better

Difference between Virtual machine and Docker

- Containers are an abstraction at the app layer that packages code and dependencies together.
- Virtual machines (VMs) are an abstraction of physical hardware turning one server into many servers.





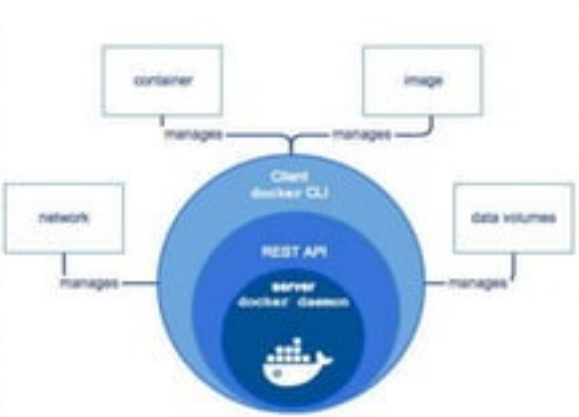
What is Docker

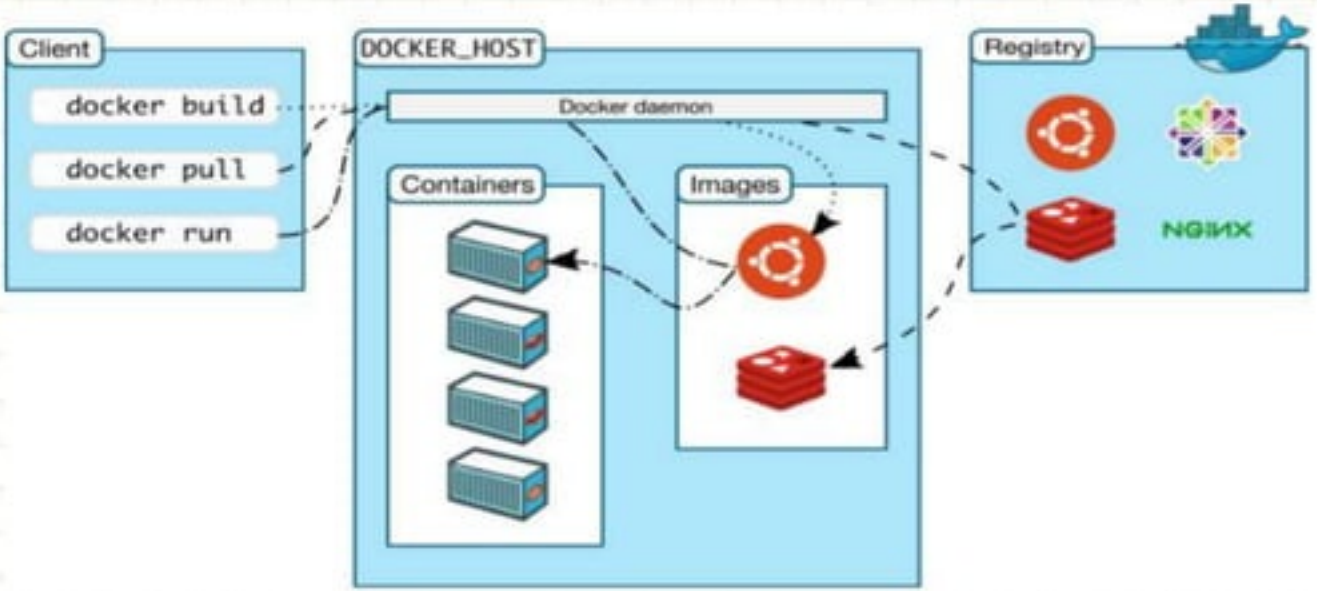
"**Docker** is a tool designed to make it easier to create, deploy, and run applications by using containers. Containers allow a developer to package up an application with all of the parts it needs, such as libraries and other dependencies, and ship it all out as one package."

" **Docker** Provides the version control of development/production environment."

Docker Architecture

- Docker daemon
- Docker client
- Docker registries
- Docker objects
  - Images
  - Containers





Docker Installation

- Docker for Windows/Mac
- Toolbox for Windows/Mac
  - Docker CLI client for running Docker Engine to create images and containers
  - Docker Machine so you can run Docker Engine commands from Windows terminals
  - Docker Compose for running the docker-compose command
  - Kitematic, the Docker GUI
  - the Docker QuickStart shell preconfigured for a Docker command-line environment
  - Oracle VM VirtualBox

Cont...

Windows Toolbox URL:
https://docs.docker.com/toolbox/toolbox_install_windows/
Mac Toolbox URL:
https://docs.docker.com/toolbox/toolbox_install_mac/
Docker for Windows:
https://www.docker.com/docker-windows
Docker for Mac:
https://www.docker.com/docker-mac

Practical Work

Docker Commands

- Docker Machine:
  - docker-machine ls
  - docker-machine start [MACHINE_NAME]
  - docker-machine stop [MACHINE_NAME]
  - docker-machine env [MACHINE_NAME]
  - docker-machine ip [MACHINE_NAME]
  - docker-machine status[MACHINE_NAME]

Cont…

- Docker Images VS Docker Container :
- Docker Images
  - docker pull [IMAGE_NAME] //pulls the image from hub.docker.com
  - docker images // list all images
  - docker rmi [IMAGE_NAME] // remove image
  - Example
    - docker pull nginx:latest
    - docker pull mysql:latest
    - docker pull php:7.1

Cont…

- Docker Container:
  - docker container ps // list running containers
  - docker container ps –a // list all containers
  - docker rm –f [CONTIANER_NAME] // remove container
  - Example
    - docker container run –name nginxServer -p 80:80 nginx
    - docker container run –name nginxServer -p 80:80 –v $(pwd):/usr/share/nginx/html nginx

Cont…

- Set up nginx, PHP 7 and Mysql.
- Run some commands on created Containers:
  - docker container top
  - docker container inspect
  - docker container stats

Any Questions?

Docker commands

- Docker Compose:
  - docker-compose build
  - docker-compose up
  - docker-compose down
  - docker-compose logs
  - docker-compose ps
  - docker-compose stop
  - docker-compose start
  - docker-compose rm

Cont...

- Set up nginx, PHP 7 and Mysql.

Docker File

- Docker File is used to customize the image

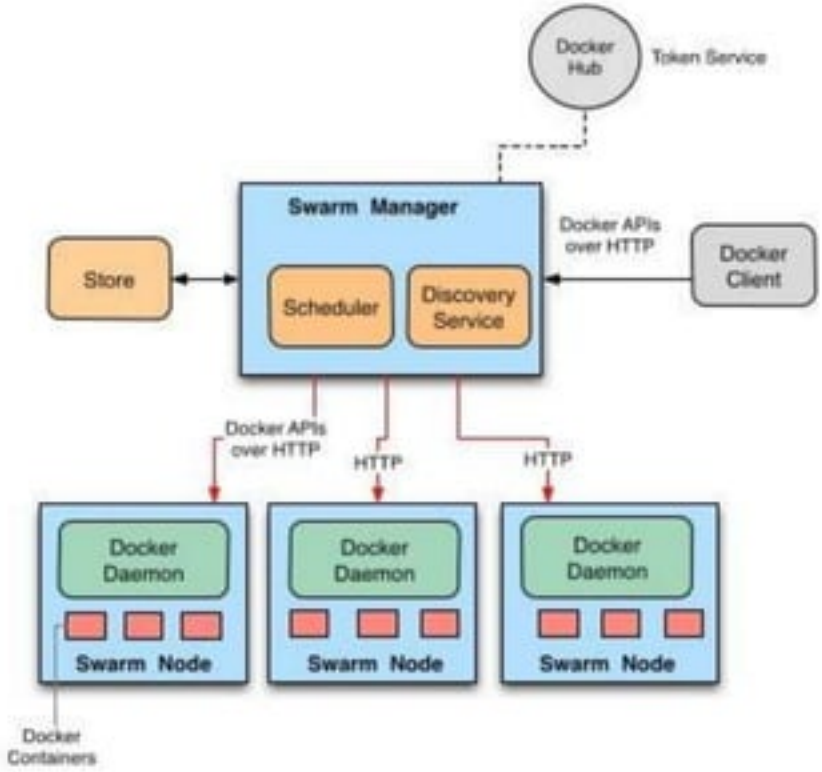
Any Questions?

Communication between containers

- docker network ls
- docker network inspect [NETWORK_NAME]
- docker network create [NETWORK_NAME]
- docker network rm [NETWORK_NAME]

Scalability and Clustering

Docker Swarm Architecture - Exploded



THANK YOU ☺