

A photograph of a shipping yard with several tall stacks of intermodal containers in red, blue, and orange. A red forklift is visible in the foreground on the left, positioned near one of the stacks. The sky is blue with some light clouds.

# Docker Containers

John R Williams and Abel Sanchez  
MIT

# The Problem

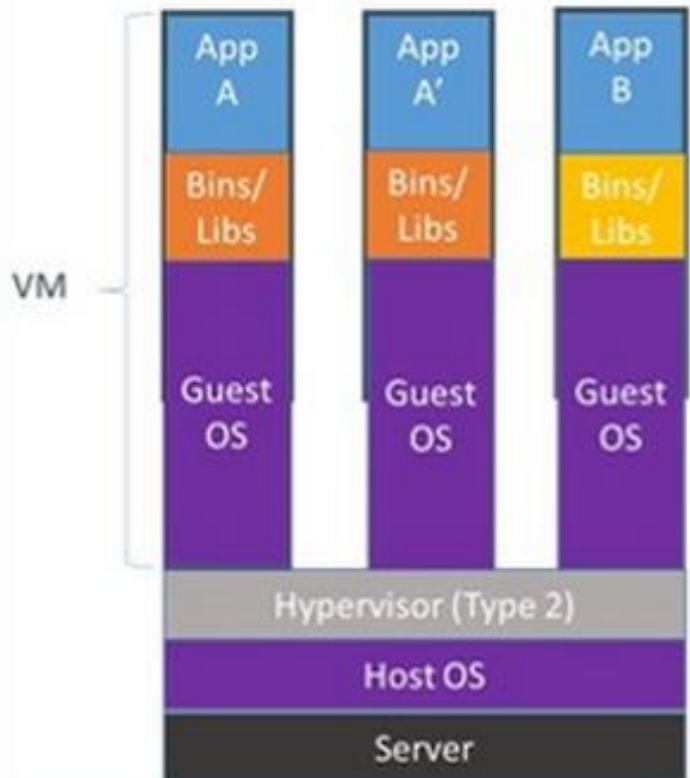


Docker Concepts

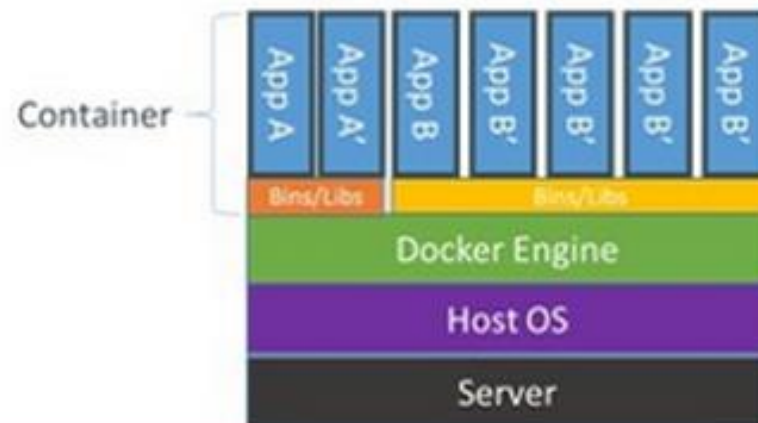
Static website	?	?	?	?	?	?	?
Web frontend	?	?	?	?	?	?	?
Background workers	?	?	?	?	?	?	?
User DB	?	?	?	?	?	?	?
Analytics DB	?	?	?	?	?	?	?
Queue	?	?	?	?	?	?	?
							

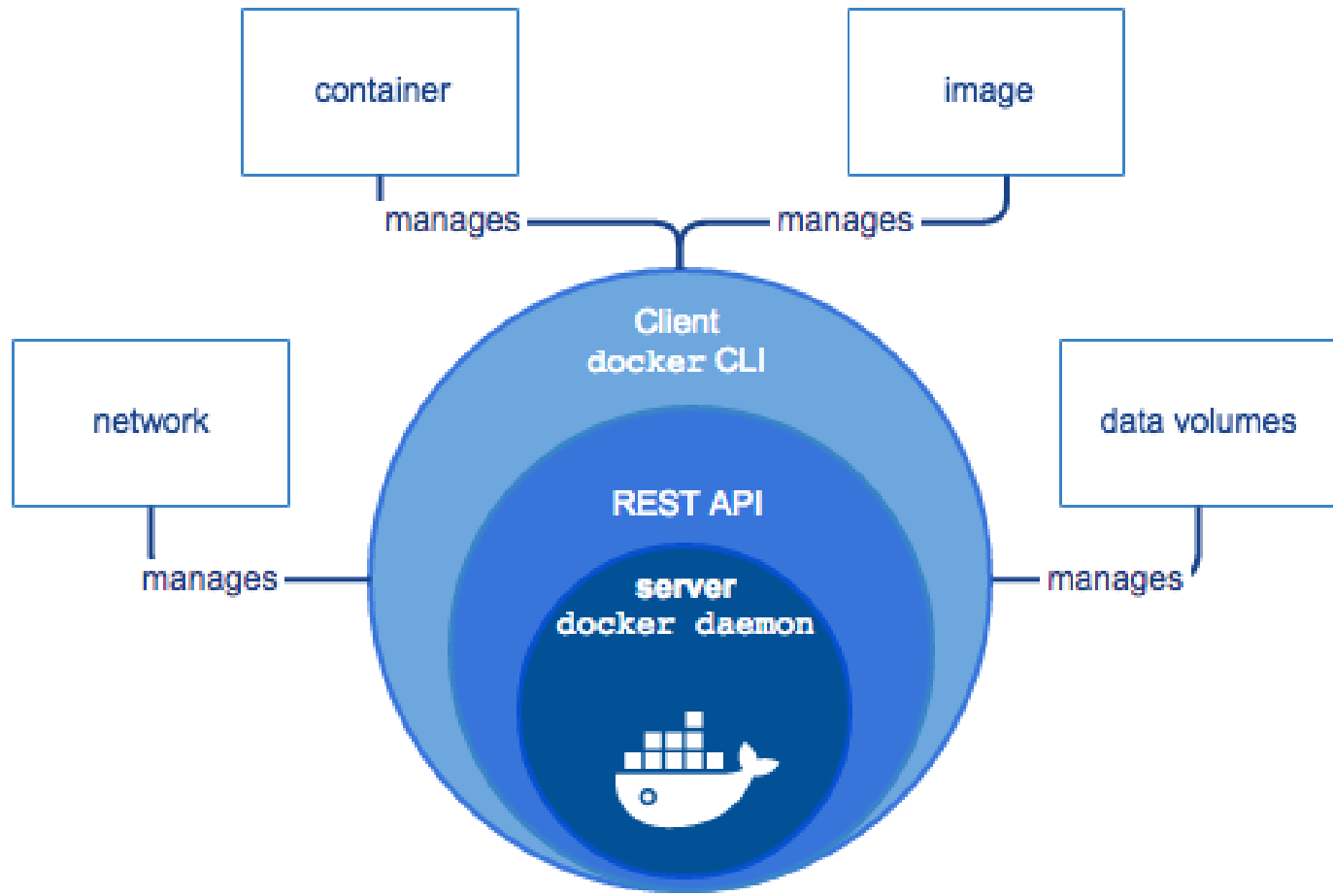
# Containers vs VMs

## Containers vs. VMs

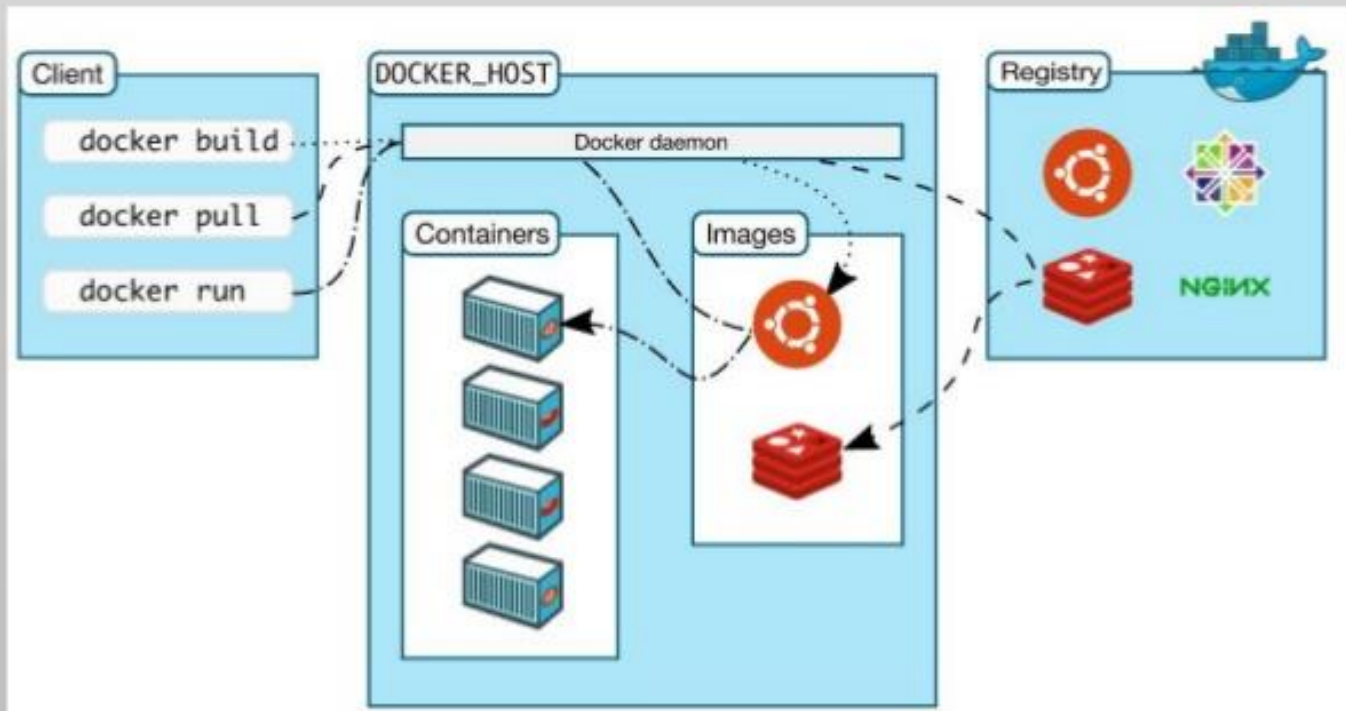


Containers are isolated, but share OS and, where appropriate, bins/libraries

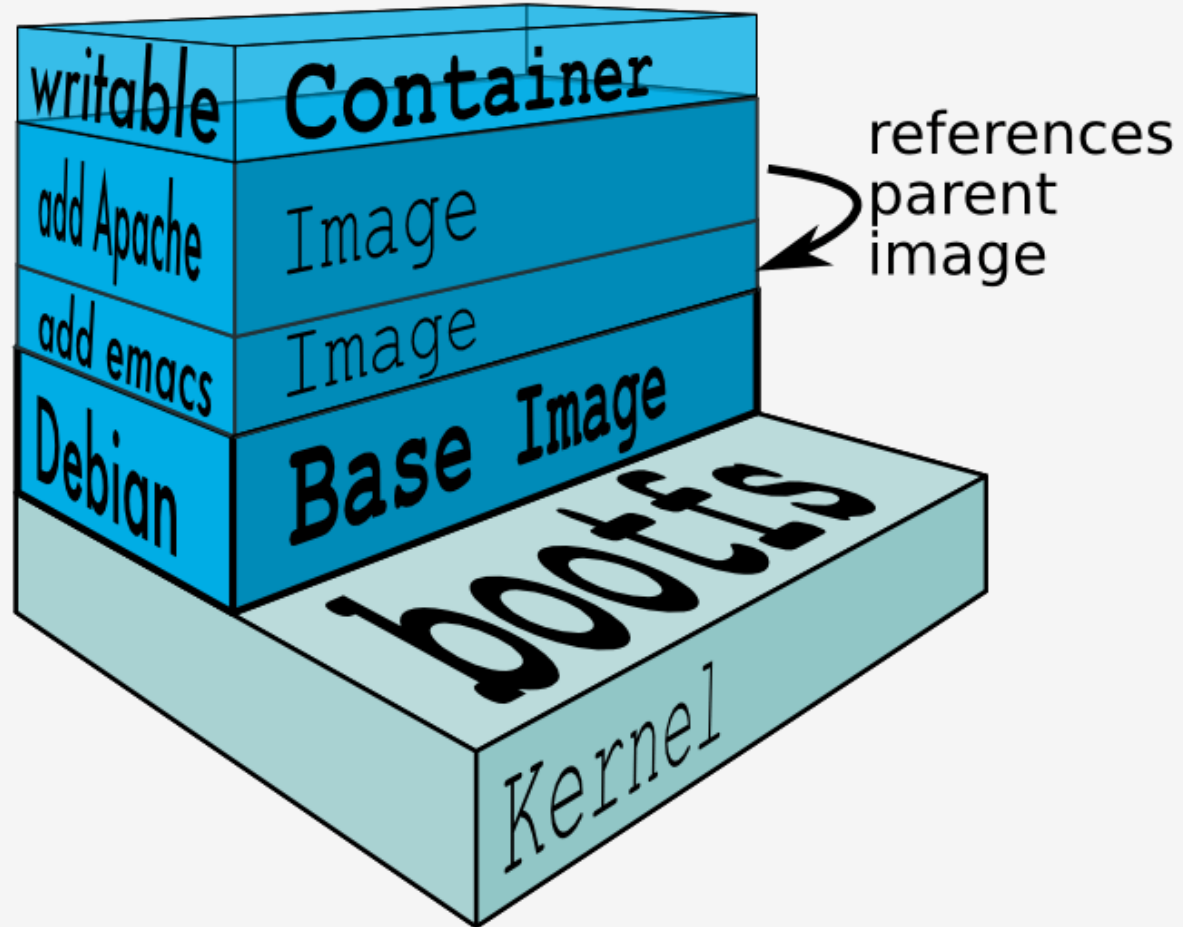




# Docker's architecture



<https://docs.docker.com/introduction/understanding-docker/>



# docker commands



```
docker run hello-world
docker run -it ubuntu bash
docker run -it node
docker ps -a
docker images
docker run -i -t --name test 7867d1cc16ef
docker stop test
docker rm test
docker ps -a |
```

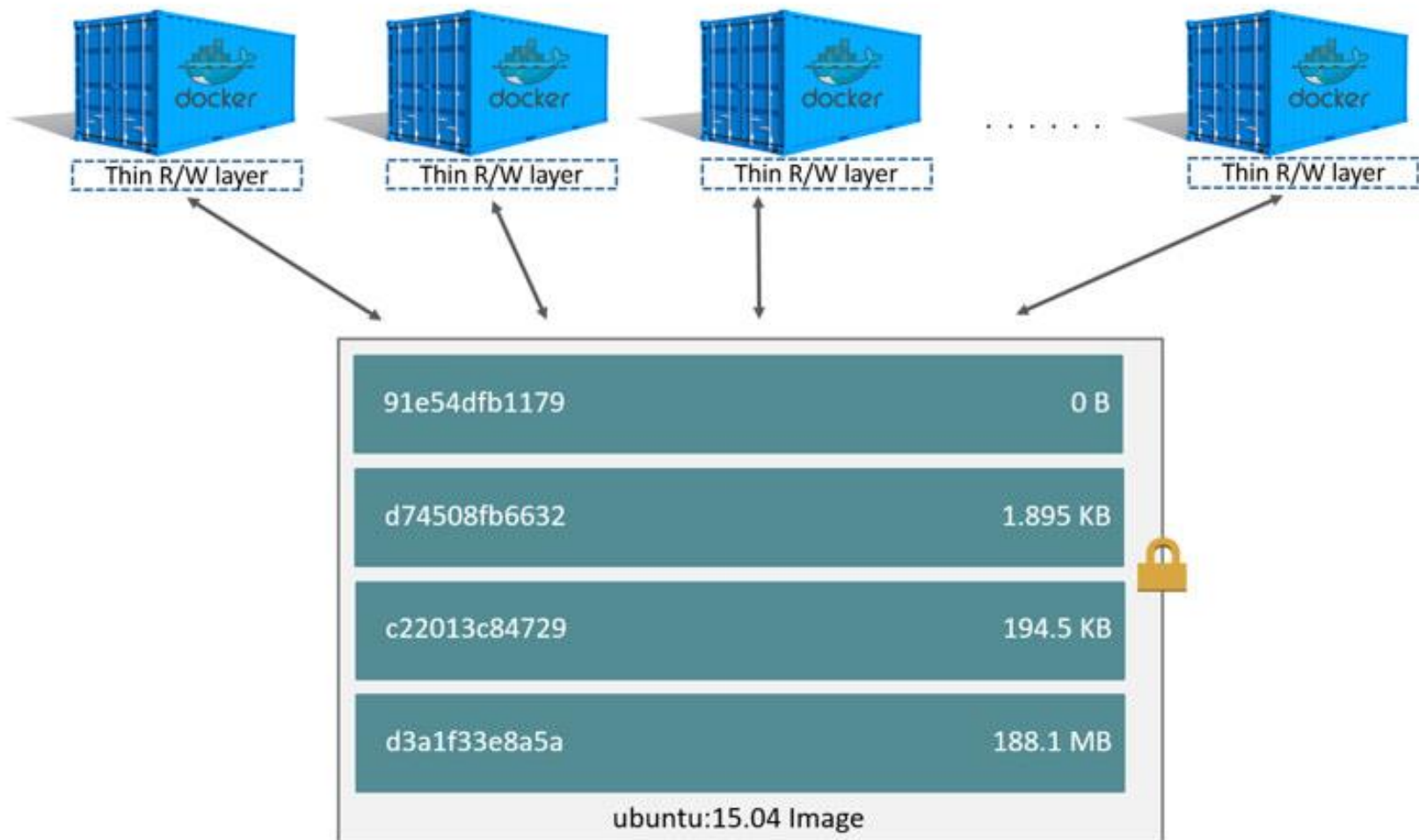
# Dockerfile – installs image



```

1 FROM node:4.6
2
3 RUN mkdir /kogs
4 ADD package.json /kogs/
5 ADD main.js /kogs/
6
7 RUN cd /kogs && npm install
8
9 EXPOSE 3001
10 EXPOSE 6001
11
12 ENTRYPOINT cd /kogs && npm install && PEERS=$PEERS npm
start
```





# Docker-compose.yml – builds multiple containers



```
docker-compose.yml x README.md x
1 version: '3'
2 services:
3   node1:
4     build:
5       context: ./
6       dockerfile: Dockerfile
7     ports:
8       - "3001:3001"
9   node2:
10    environment:
11      - PEERS=ws://node1:6001
12    build:
13      context: ./
14      dockerfile: Dockerfile
15    ports:
16      - "3002:3001"
```