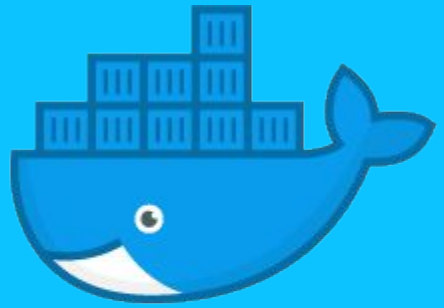


docker day
2017 Dec
Isfahan University of Technology

Alireza Omidi

Software Engineering BSc

Senior Student

Isfahan University of Technology

aomidi@acm.org

@a1ir3za

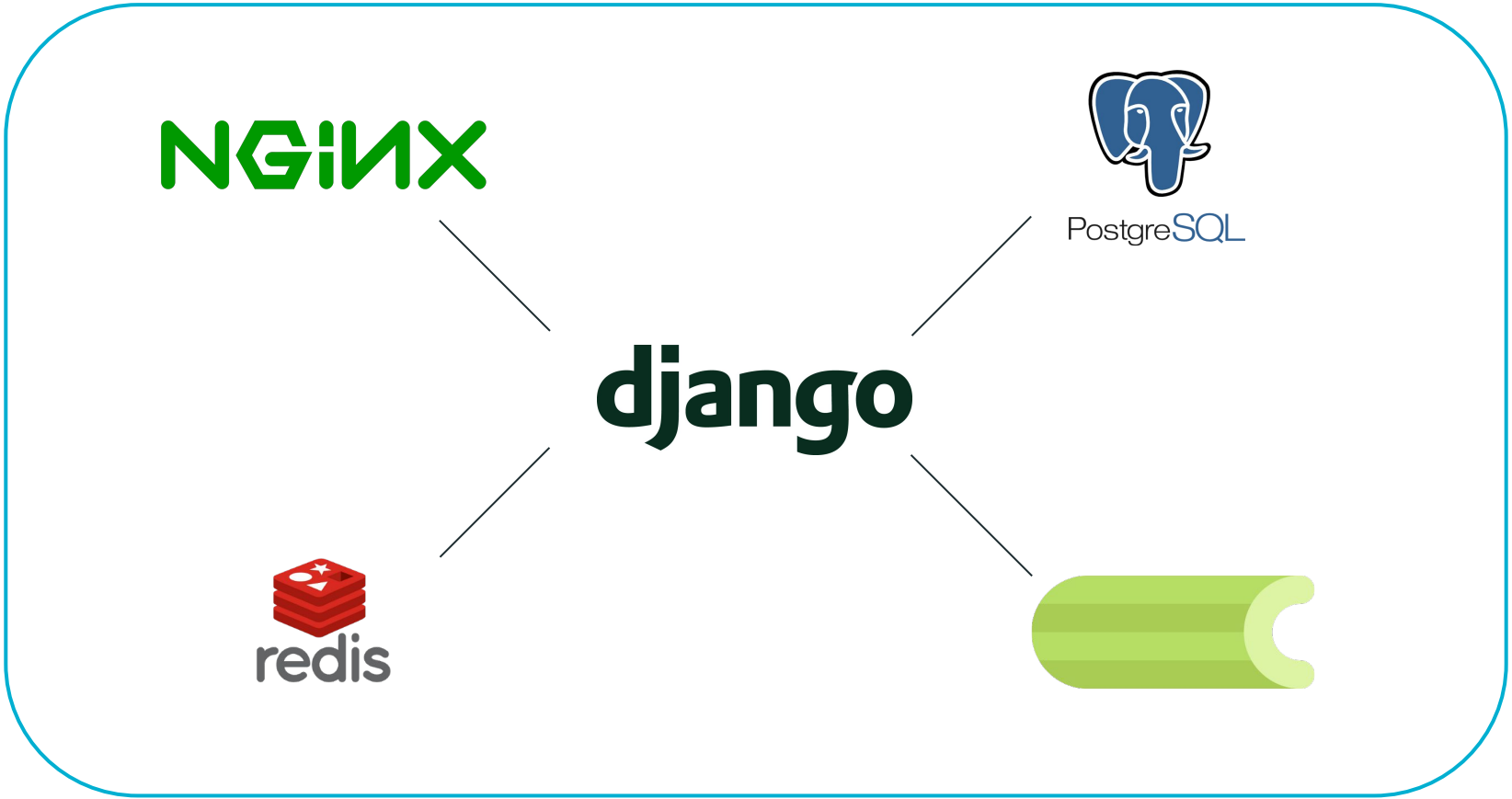
@alirezaomidi

Shipping Problem

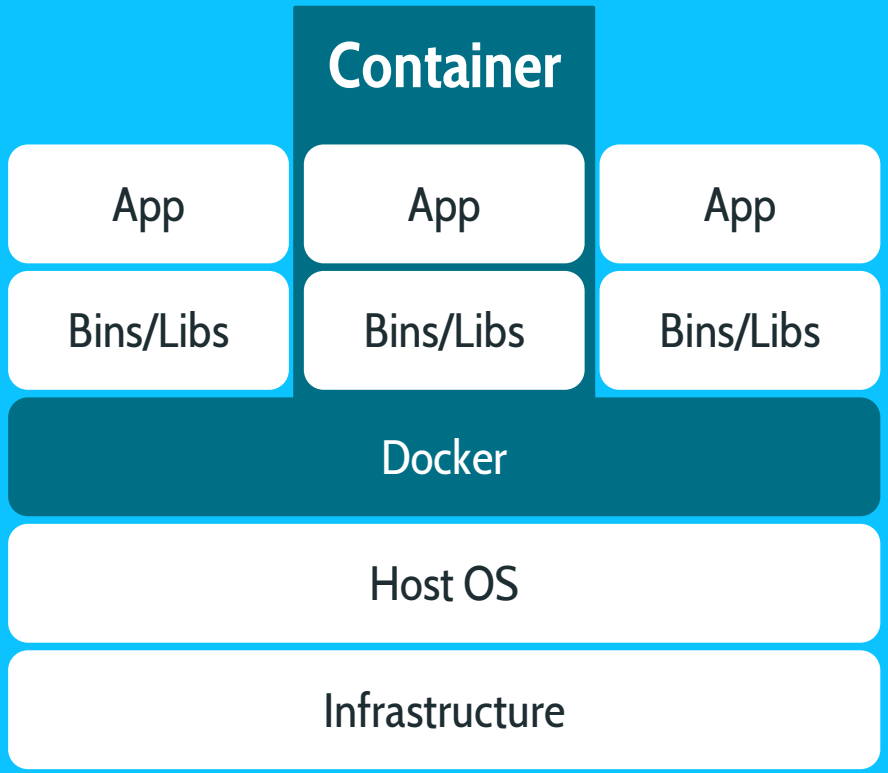
Softwares are Complex

WORKS ON MY MACHINE
SHIPPIT

Container



Docker Begins!



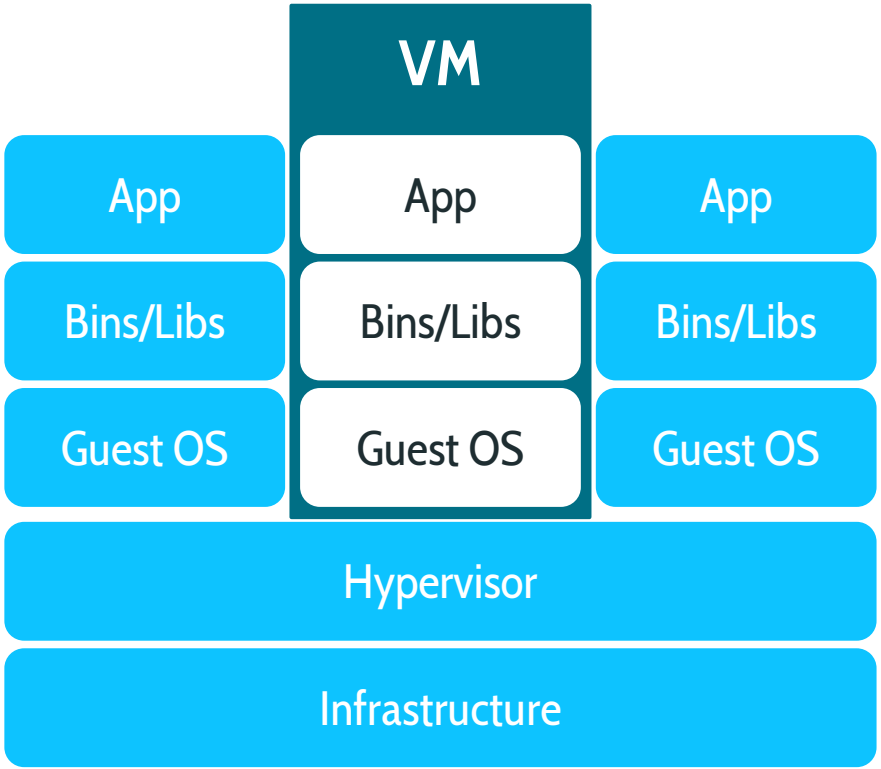


Image vs. Container

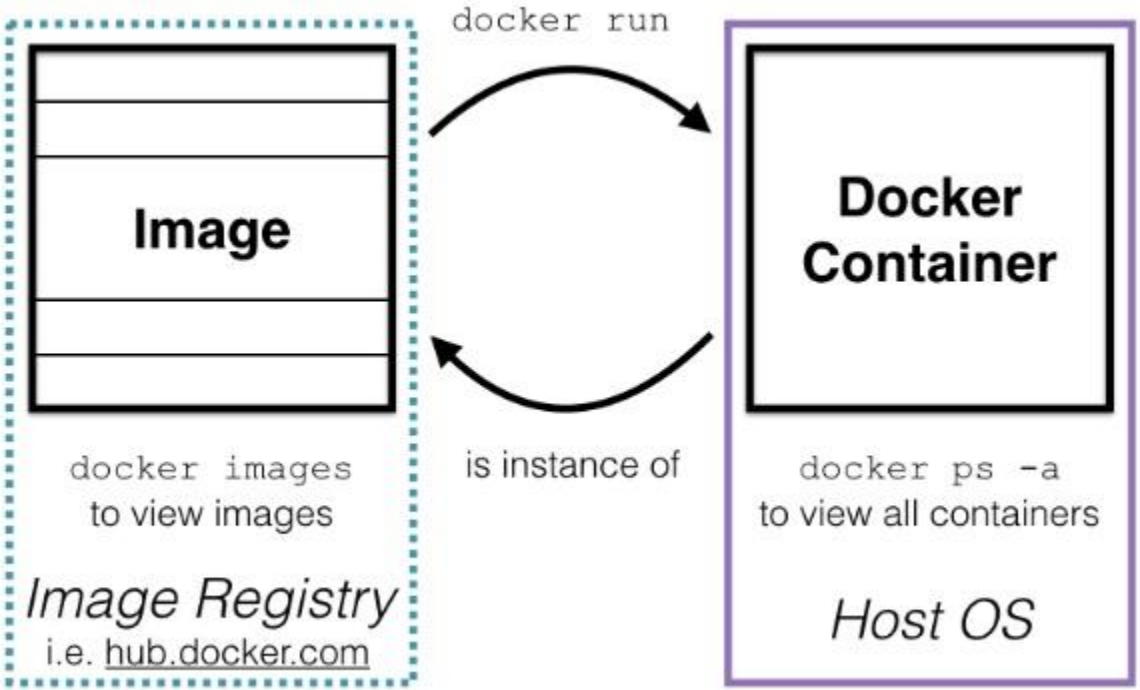
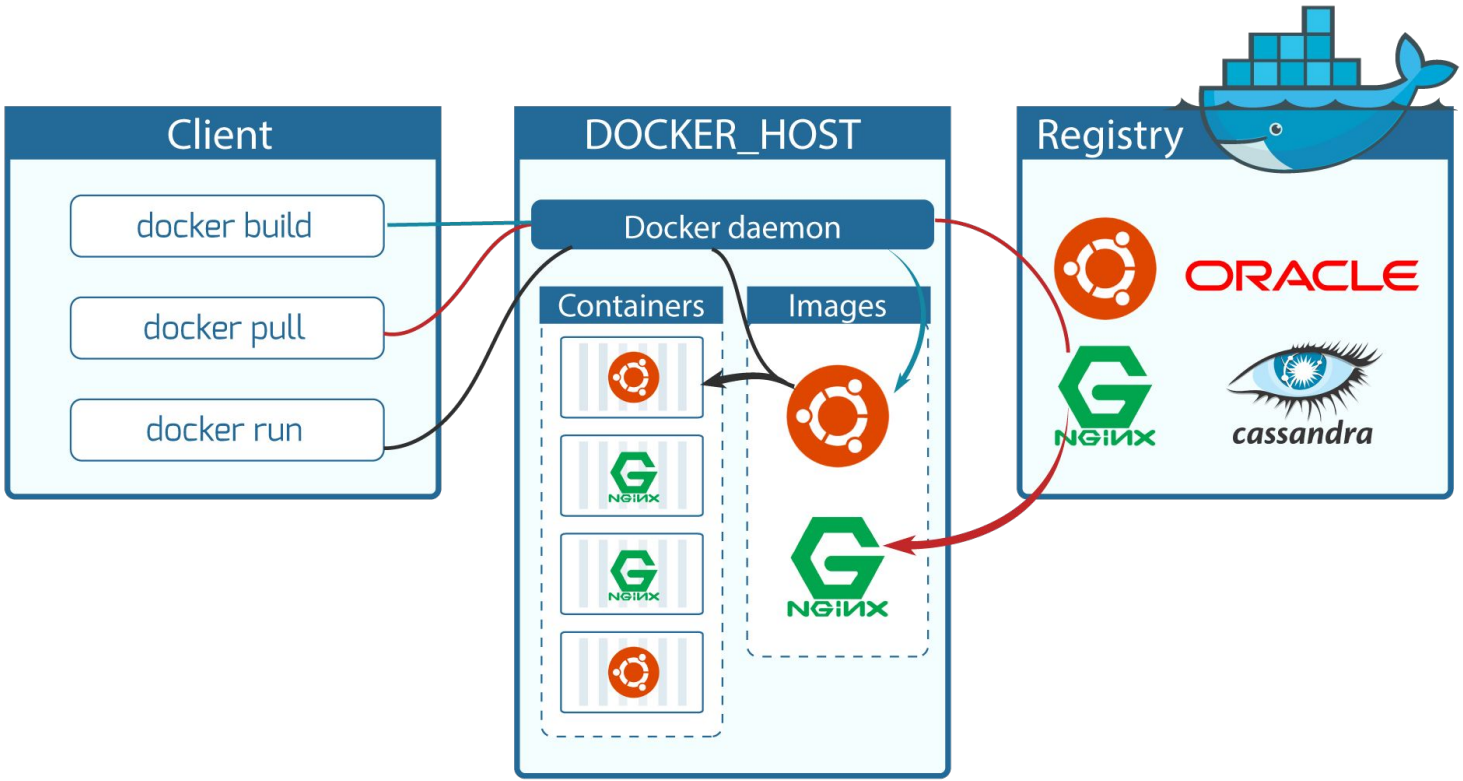


Image vs. Container

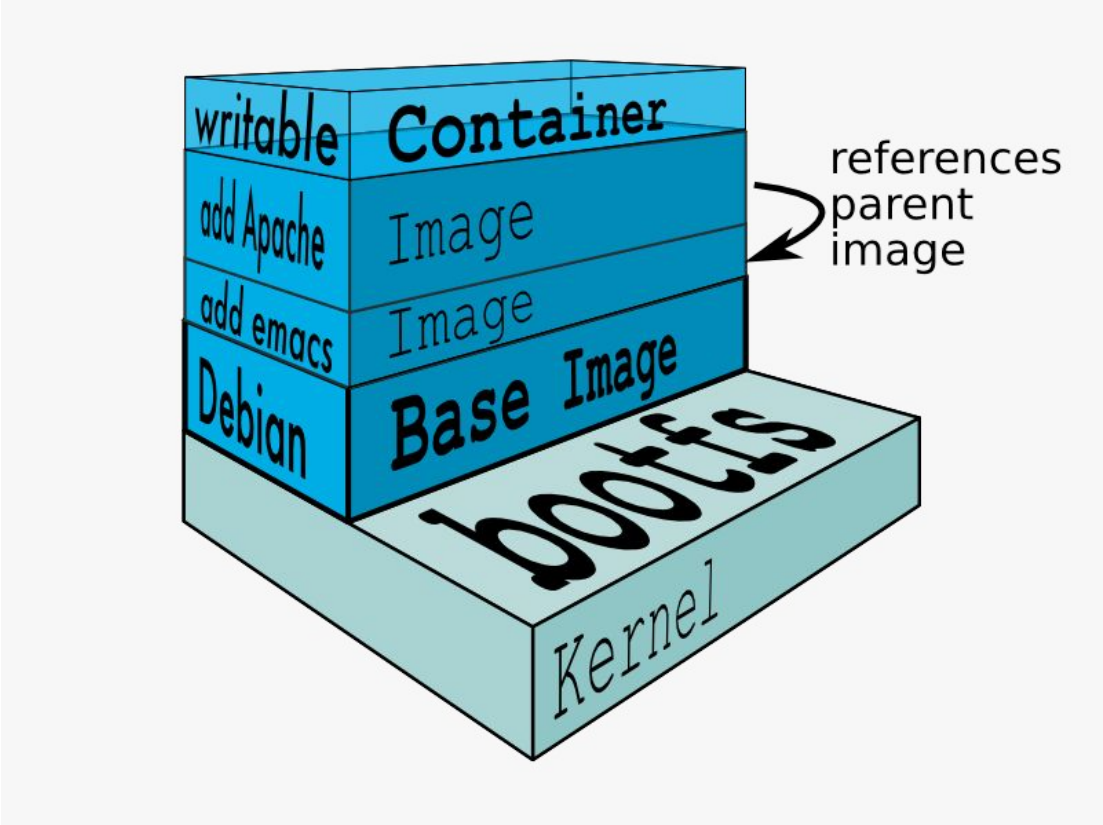


Demo

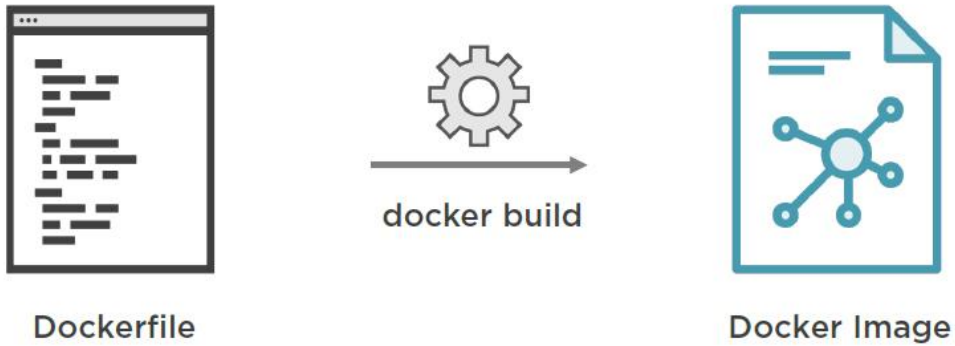
Docker Basic Commands

- hub.docker.com
- docker pull
- docker run
- docker images
- docker ps
- docker exec

Docker Layers



How to Create a Docker Image?



Dockerfile: An Example

```
FROM ubuntu
MAINTAINER Alireza Omidi
RUN apt-get update && apt install -y nginx
COPY index.html /usr/share/nginx/html/
CMD /usr/sbin/nginx -g “daemon off;”
EXPOSE 80
```

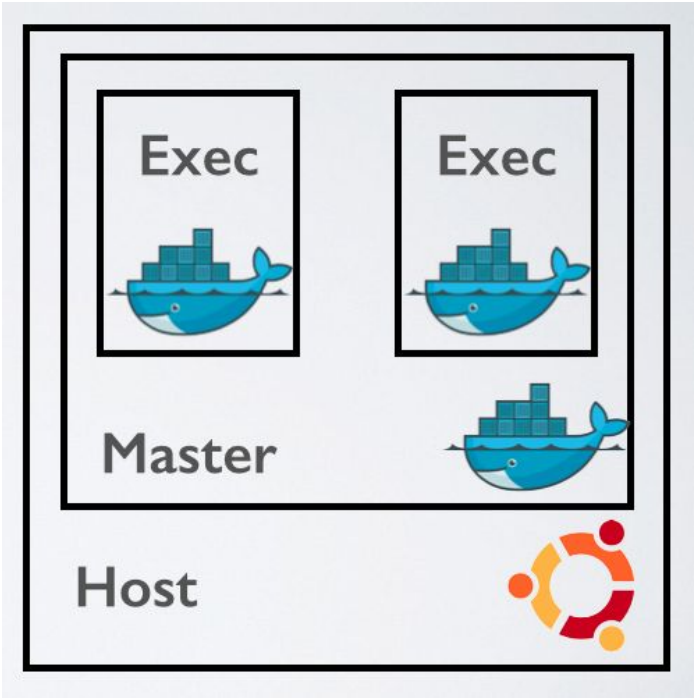
Demo

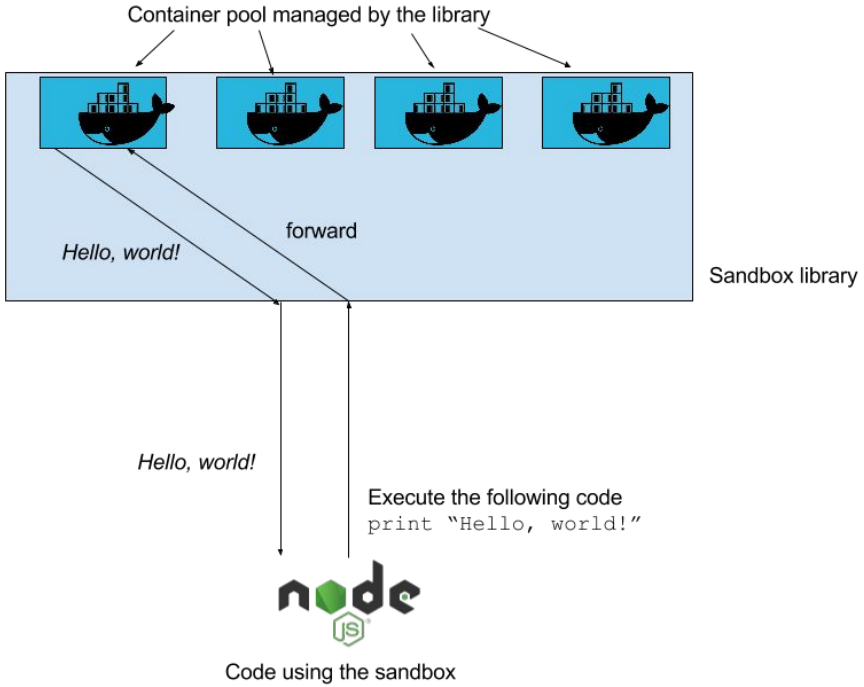
Dockerfile

- FROM
- CMD, ENTRYPOINT
- RUN
- ADD, COPY
- WORKDIR
- MAINTAINER
- LABEL

Docker Use cases

Sandboxing

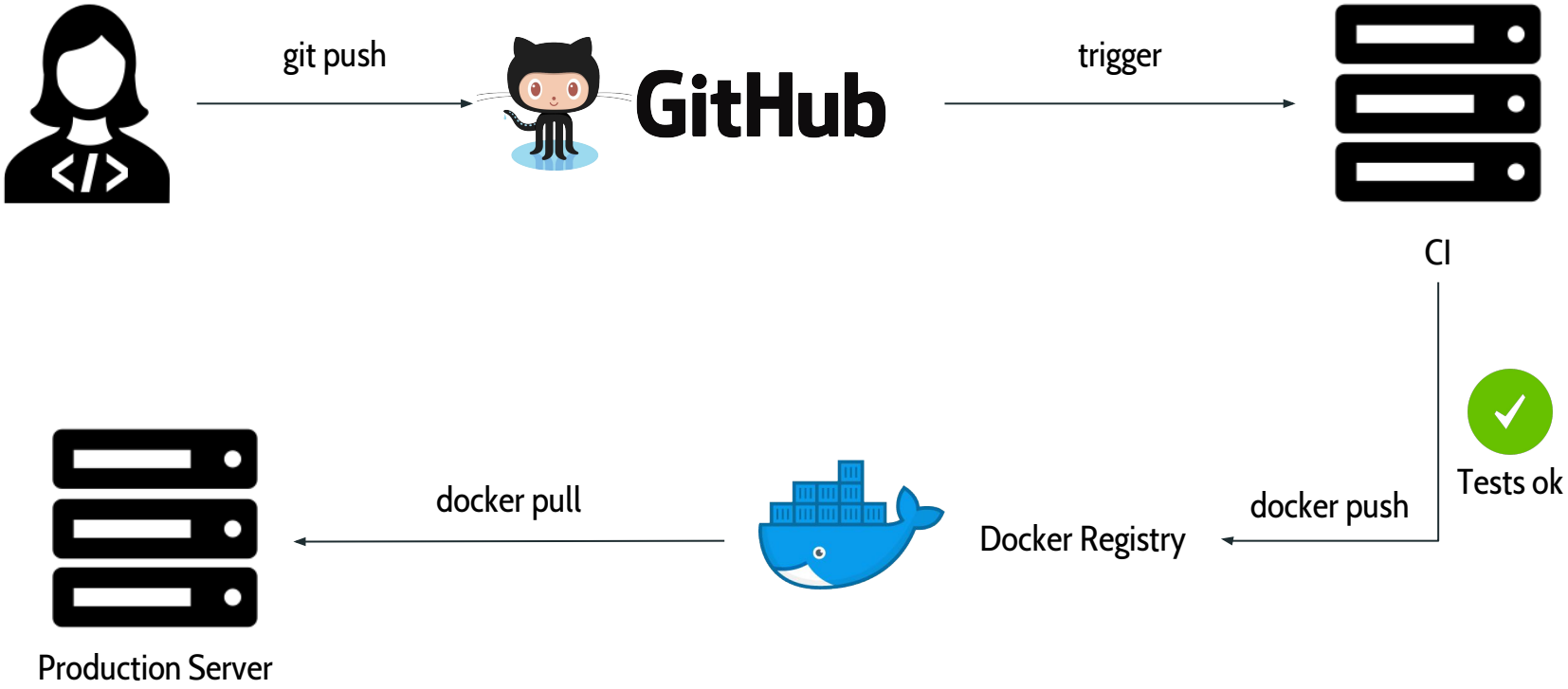

Exec
Exec
Master
Host


Container pool managed by the library
forward
Hello, world!
Sandbox library
Hello, world!
Execute the following code
print "Hello, world!"
Code using the sandbox

Continuous(?) Integration

ONE DOES NOT SIMPLY
TEST IN PRODUCTION!
makeameme.org

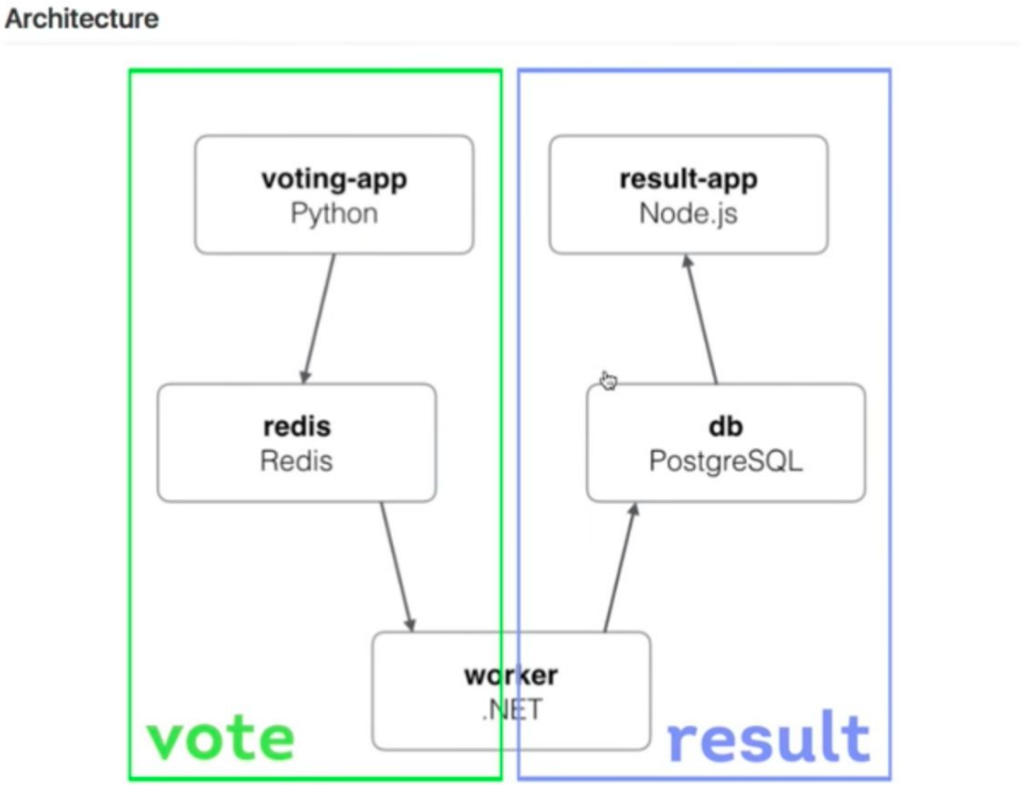
Continuous Integration



Docker Compose: An Example

```
votinglb:
  image: dockercloud/haproxy
  links:
    - voting
  ports:
    - '80:80'
voting:
  build: voting/
  links:
    - redis
results:
  build: results/
  links:
    - redis
  ports:
    - "8000:80"
redis:
  image: redis
```

High Availability



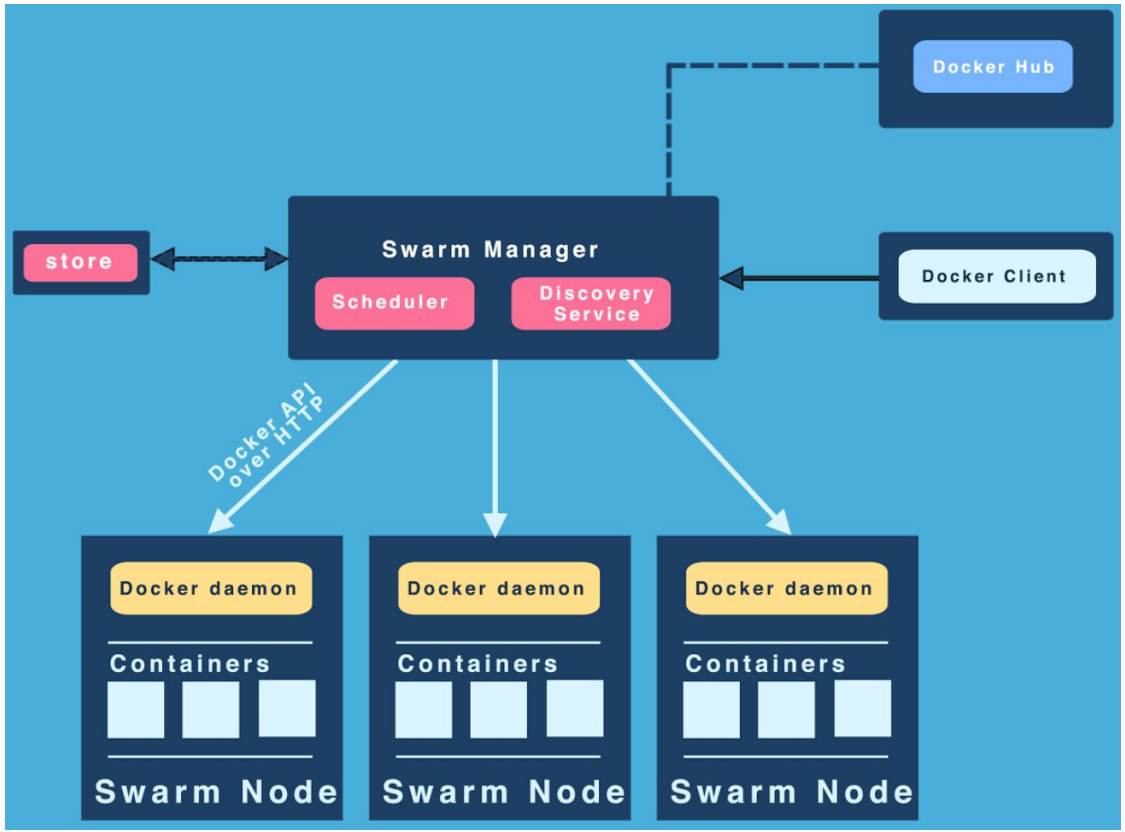
Demo

CI & High Availability

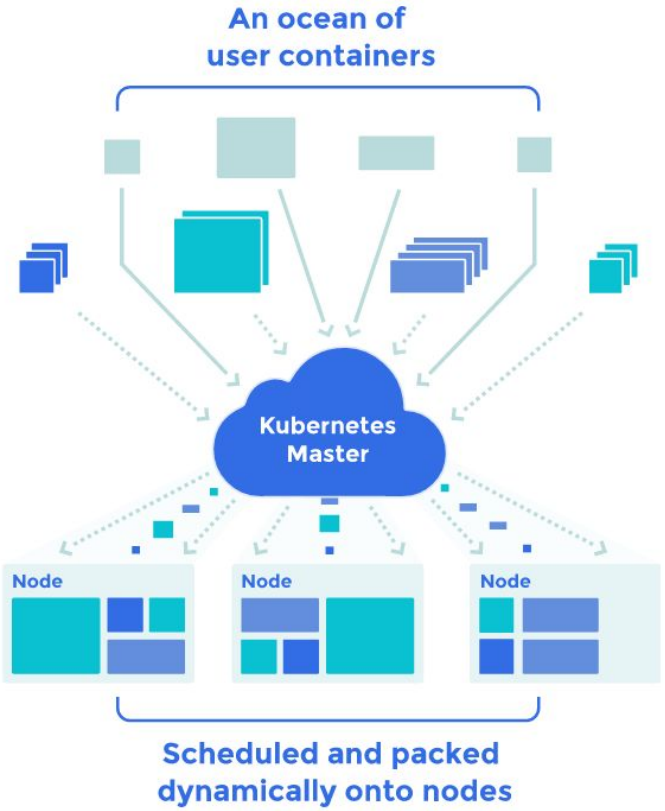
- docker-compose
- Github
- Docker Cloud

Distributed Docker

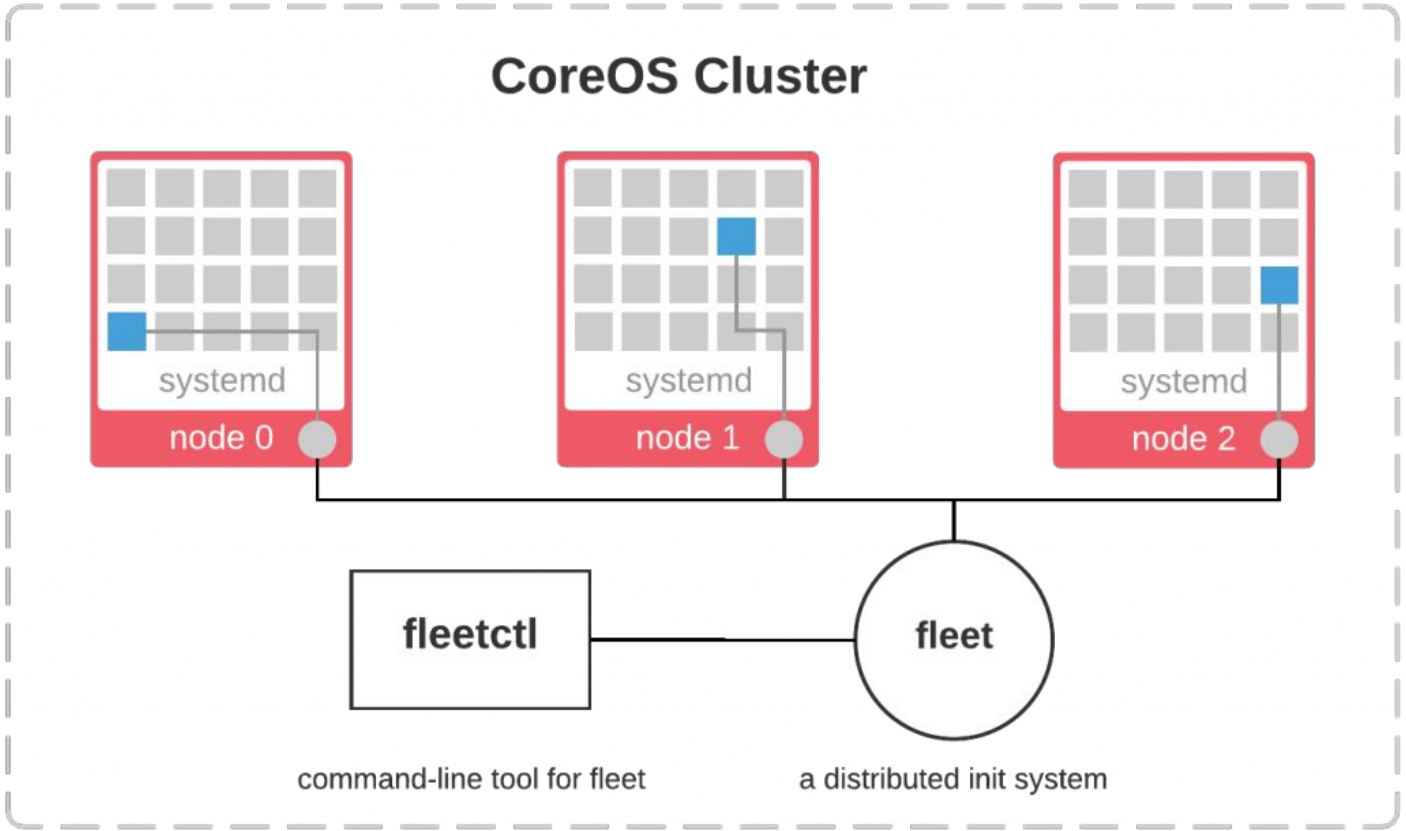
Swarm Mode


Docker Hub
store
Swarm Manager
Scheduler
Discovery Service
Docker Client
Docker API over HTTP
Docker daemon
Containers
Swarm Node
Docker daemon
Containers
Swarm Node
Docker daemon
Containers
Swarm Node

Kubernetes


An ocean of
user containers
Kubernetes
Master
Node
Node
Node
Scheduled and packed
dynamically onto nodes

CoreOS

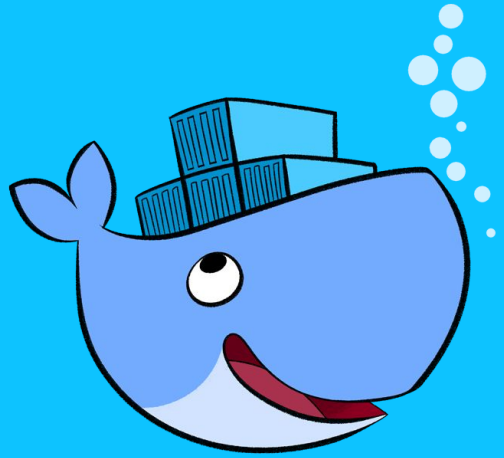

CoreOS Cluster
systemd
node 0
systemd
node 1
systemd
node 2
fleetctl
fleet
command-line tool for fleet
a distributed init system

References

http://training.play-with-docker.com/

https://docs.docker.com/get-started/

https://kubernetes.io/docs/tutorials/kubernetes-basics/



Thank you!