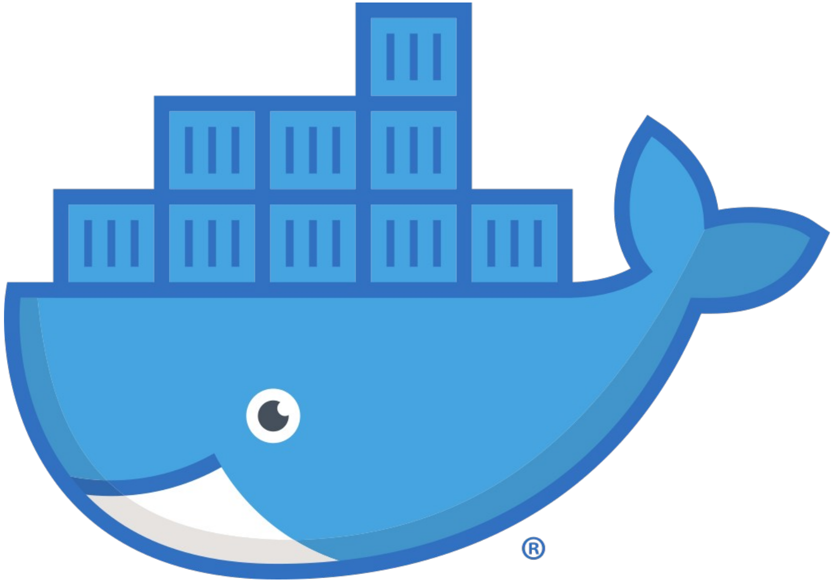
Introduction to Docker



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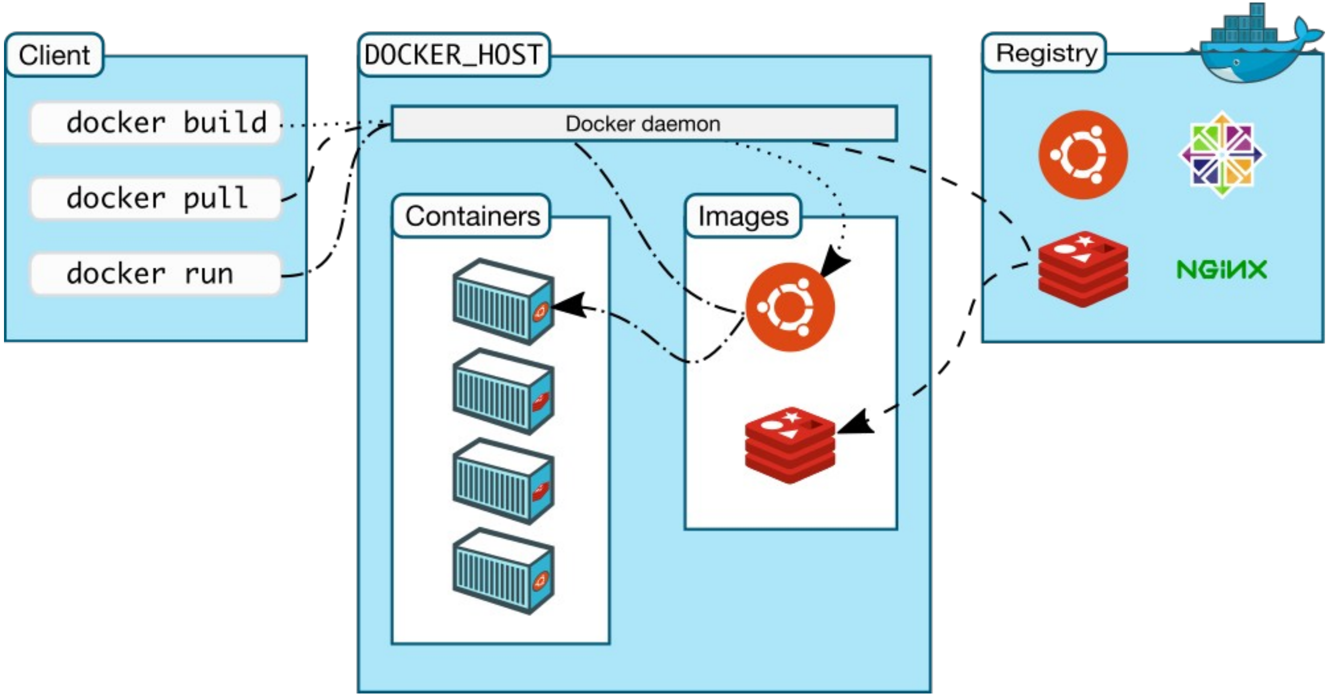
What is Docker

Docker is a platform for developers and sysadmins to **develop**, **deploy**, and **run** applications with containers.

Docker Architecture



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Features

- Flexible: Even the most complex applications can be containerized.
- Lightweight: Containers leverage and share the host kernel.
- Interchangeable: You can deploy updates and upgrades on-the-fly.

Features

- Portable: You can build locally, deploy to the cloud, and run anywhere.
- Scalable: You can increase and automatically distribute container replicas.
- Stackable: You can stack services vertically and on-the-fly

Images and Containers

A **container** is launched by running an **image**

Images and Containers

An **image** is an executable package that includes everything needed to run an application – the code, a runtime, libraries, environment variables and configuration files.

Images and Containers

A **container** is a runtime instance of an image – what the image becomes in memory when executed (that is, an image with state, or a user process).

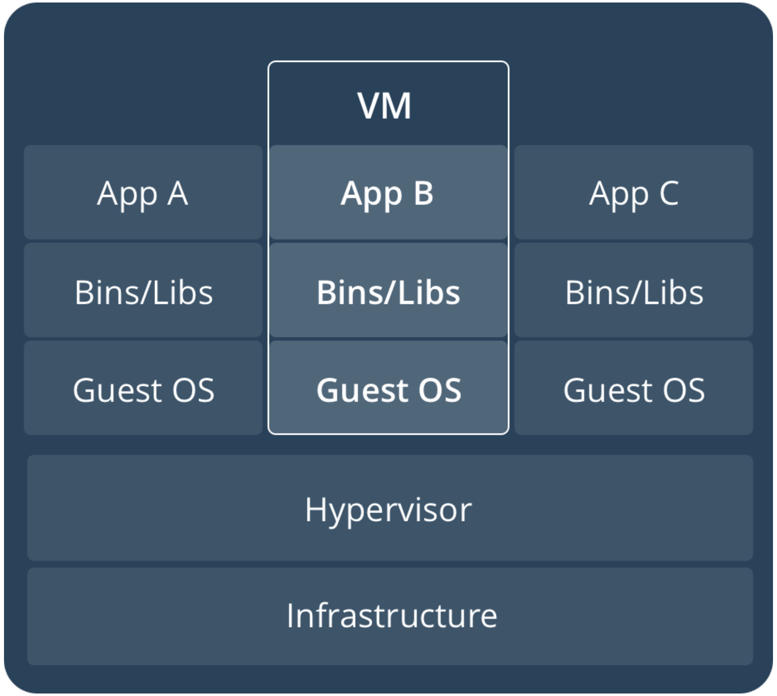
Containers and Virtual Machines

A **container** runs natively on Linux and shares the kernel of the host machine with other containers. It runs a discrete process, taking no more memory than any other executable, making it lightweight.

Containers and Virtual Machines

By contrast, a **virtual machine** (VM) runs a full-blown “guest” operating system with virtual access to host resources through a hypervisor. In general, VMs provide an environment with more resources than most applications need.

Virtual Machines



- Abstraction of a virtual hardware
- Each virtual machine includes a full copy of an operative system

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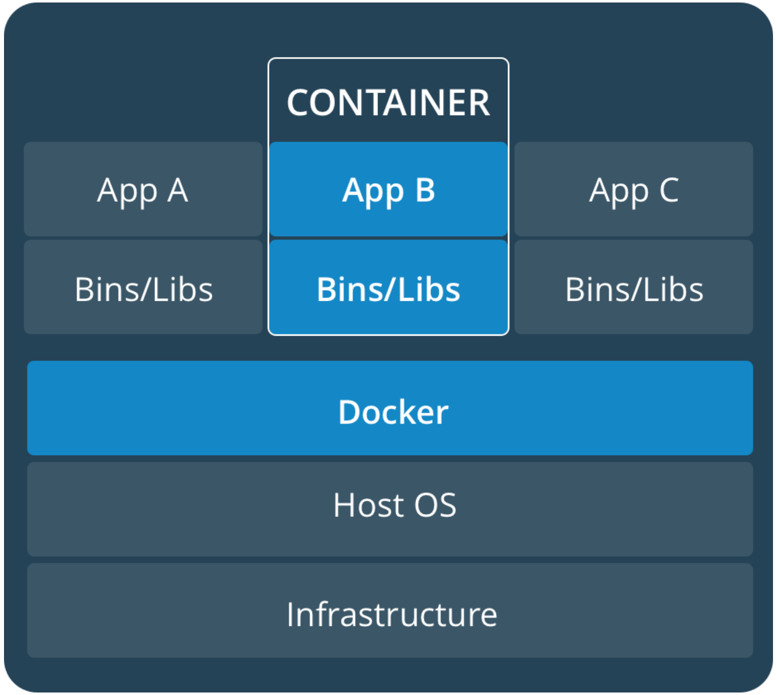
Containers

- Docker shares the kernel of the host machine
- It runs a discrete process



Running a Container

```
$ sudo usermod -aG docker <username>
```

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```
$ docker --version
$ docker search hello-world
$ docker run hello-world
$ docker ps -a
```

Dockerfile

A **Dockerfile** is a text document that contains all the commands a user could call on the command line to assemble an image

Dockerfile

```
FROM busybox:latest
RUN mkdir /app
ADD script /app
ENTRYPOINT /app/script
```

```
docker build -t testing/loop .
```

docker history testing/loop

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```
docker run --name loop1 -d testing/loop
docker run --name loop2 -d testing/loop
docker stats <container-id>
```

Controlling Containers

- $ docker pause <container-id>
- $ docker unpause <container-id>
- $ docker stop <container-id>
- $ docker start <container-id>

Orchestration

docker-compose

Docker Compose

Compose is a tool for defining and running multi-container Docker applications

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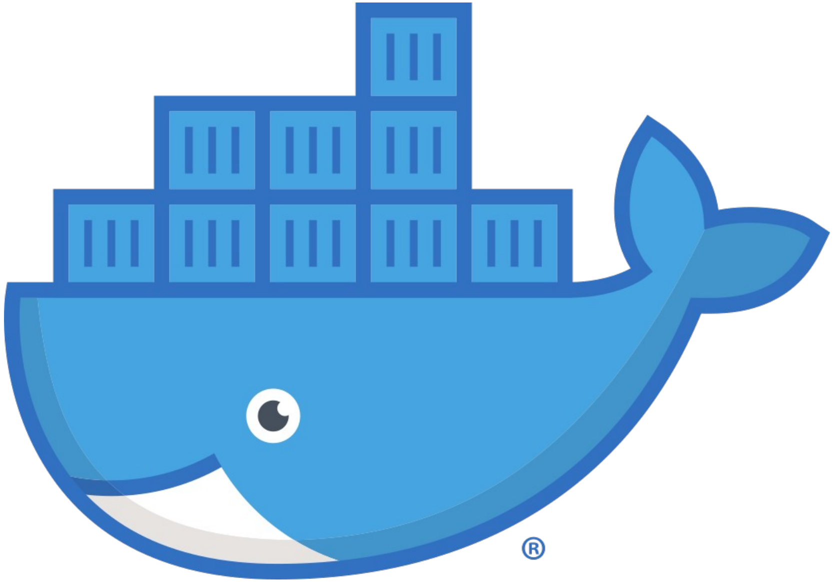
Thank you for coming!



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More information about Docker

- https://www.youtube.com/watch?time_continue=529&v=V9IJj4MzZBc