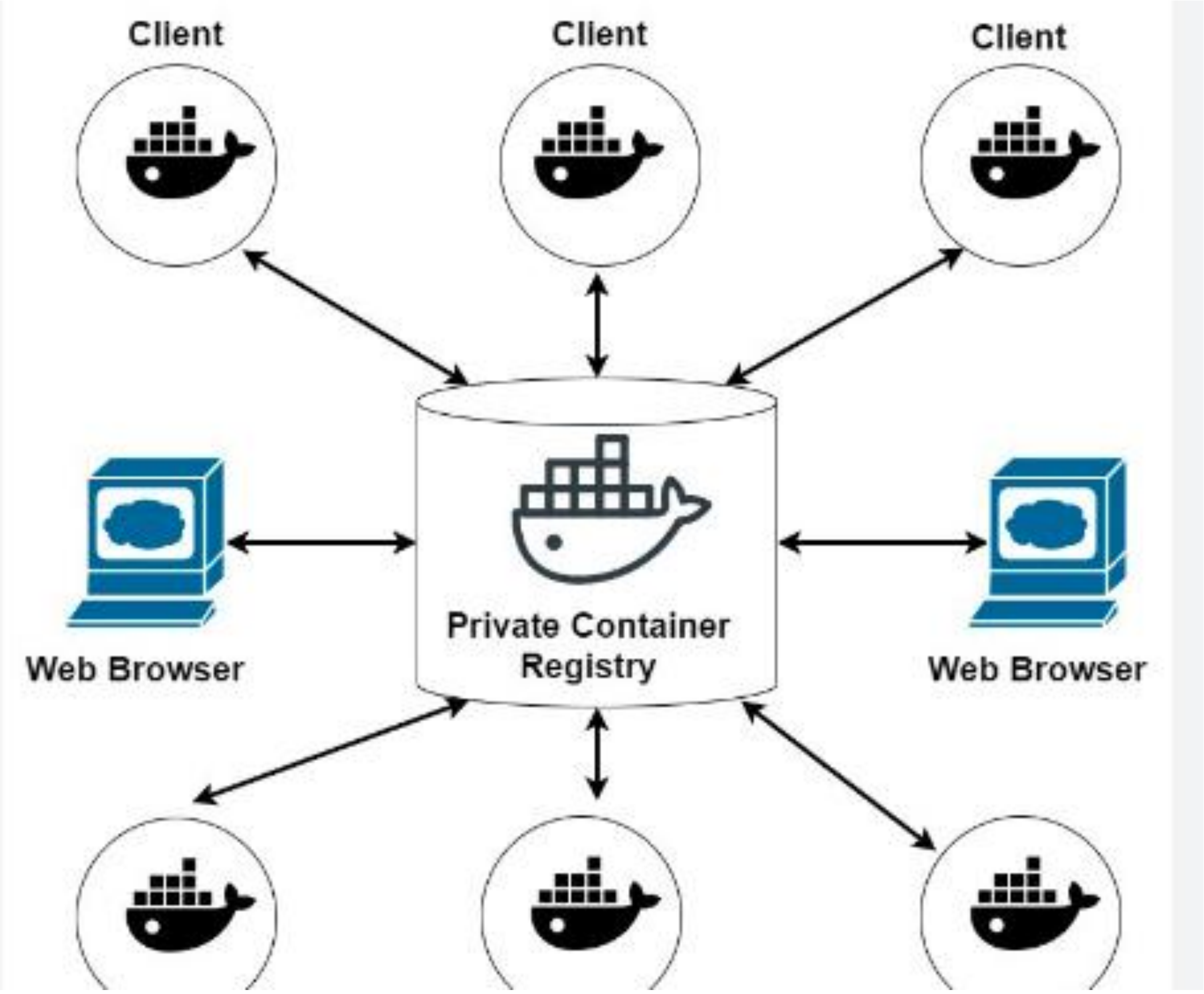
What is a Container?

- A way to package application with all the necessary dependencies and configuration

- Portable artifact, easily shared and moved around
- Makes development and deployment more efficient

Where do containers live?

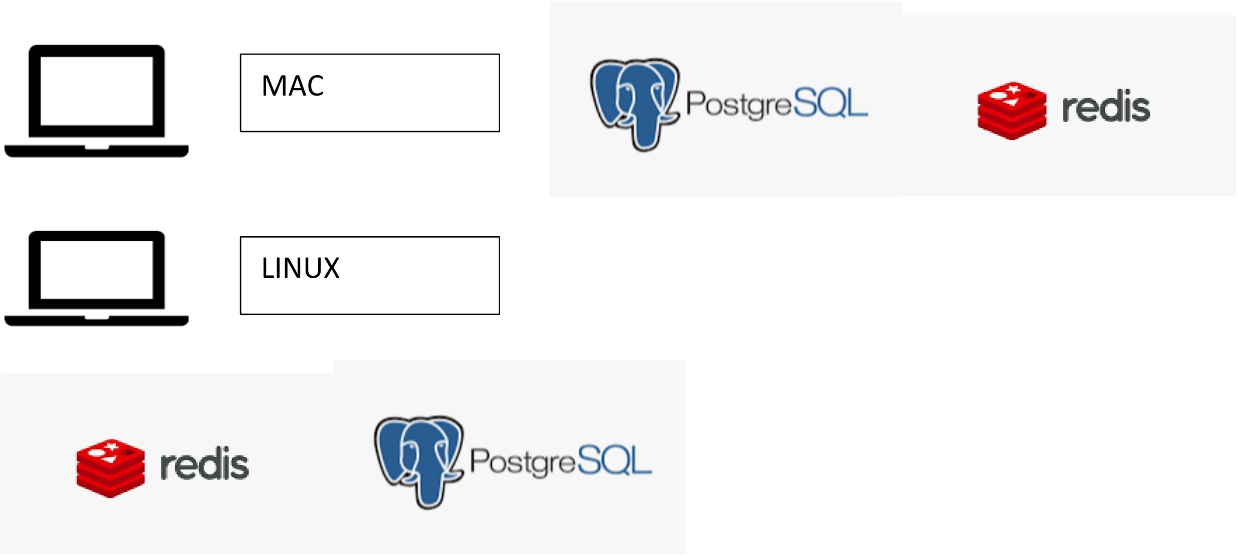
- Container Repository



- Private repositories
- Public repository for Docker known as DockerHub

How containers improved application development?

Before containers



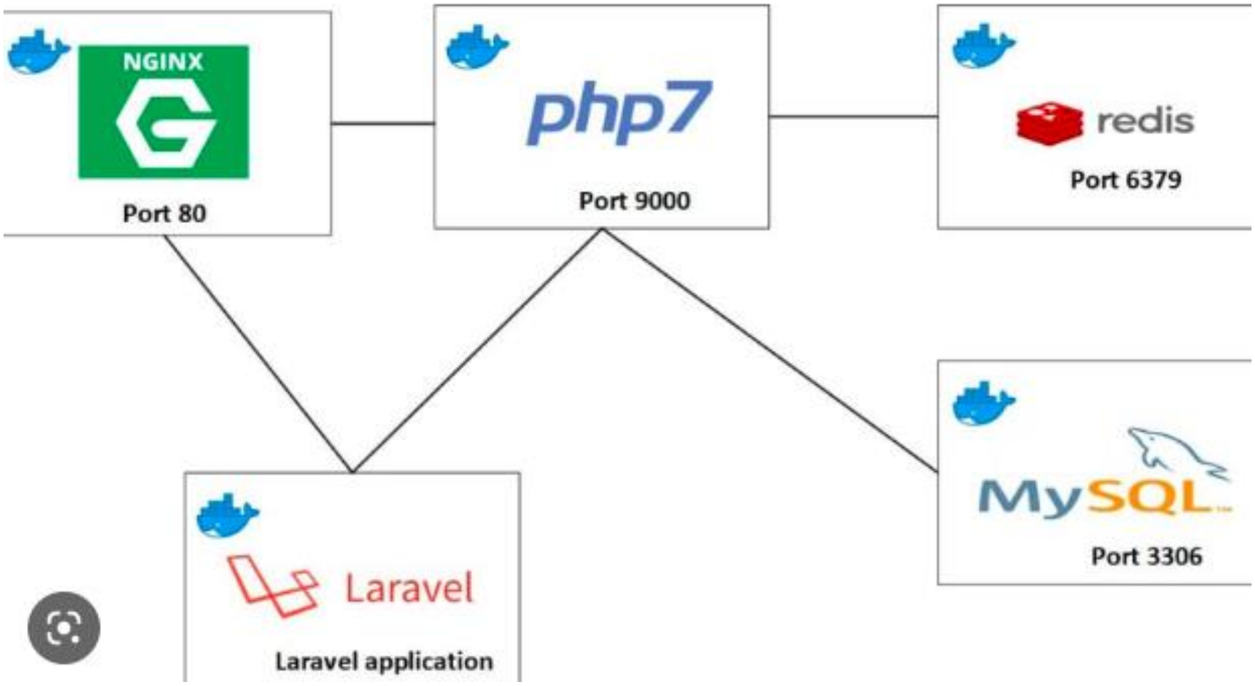
MAC

LINUX

- Installation process different on each os environment
- Many steps where something could go wrong

After containers

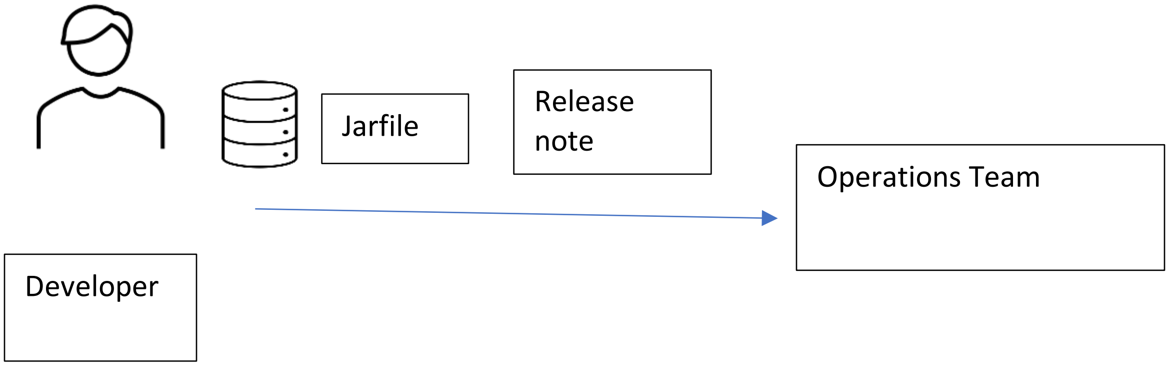
- Don’t have to install app/dependencies on the operating system



- Own isolated environment
- Packaged with all needed configuration
- One command to install the app
- Run same app with 2 different versions

Application Deployment

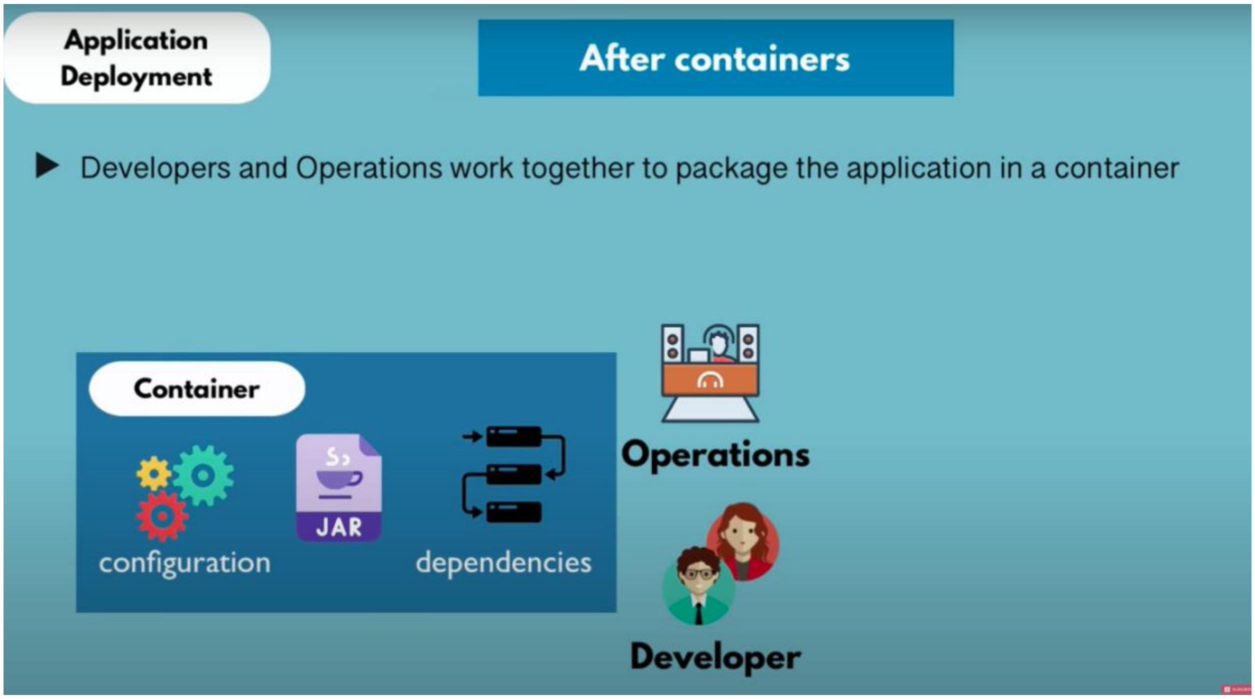
Before Containers



- Configuration on the server needed
- Textual guide of deployment
- Dependency version conflicts
- Misunderstandings

After Containers

- Developers and operations work together to package the application in a container
- No environment configuration needed on server



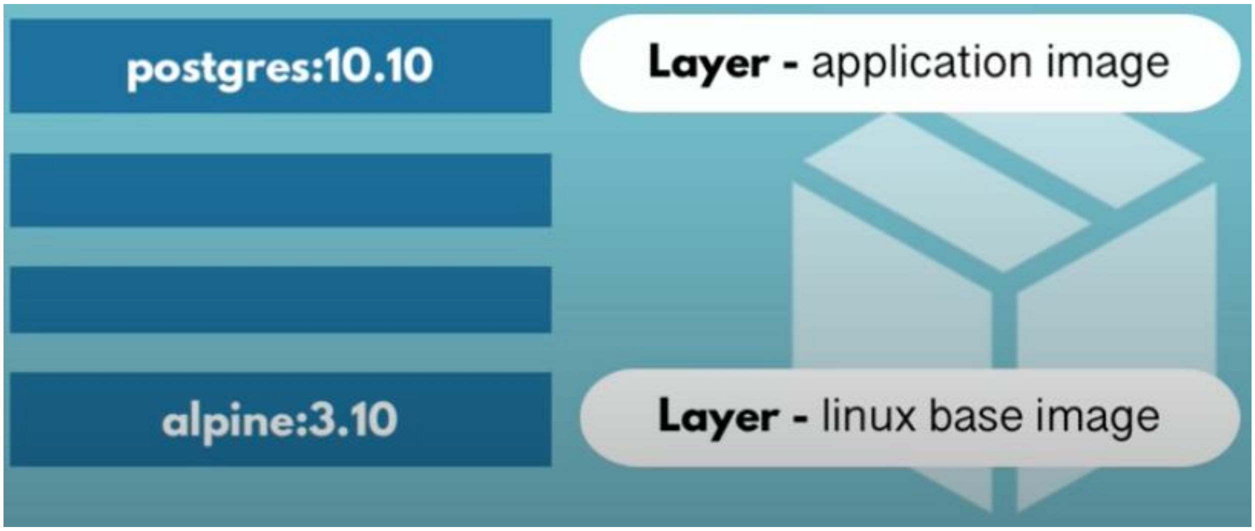
Application Deployment

After containers

▶ Developers and Operations work together to package the application in a container

What is a Container?

- Layers of images
- Mostly Linux Base Image, because small in size
- Application image on top

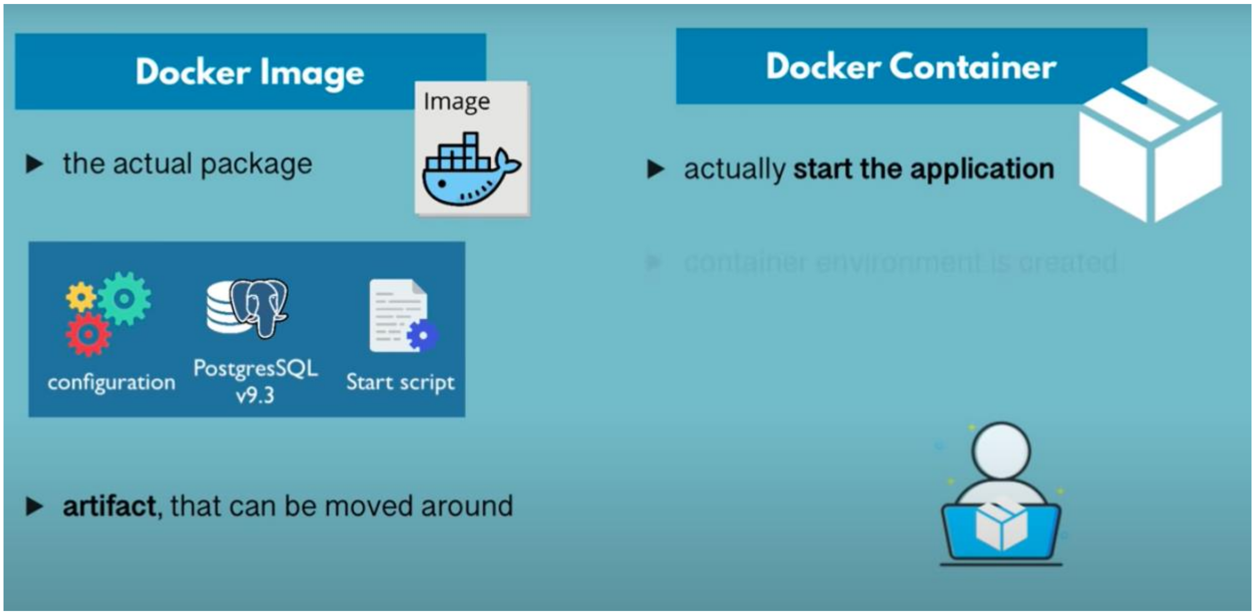


postgres:10.10

Layer - application image

alpine:3.10

Layer - linux base image



Docker Image

- the actual package

configuration

PostgresSQL v9.3

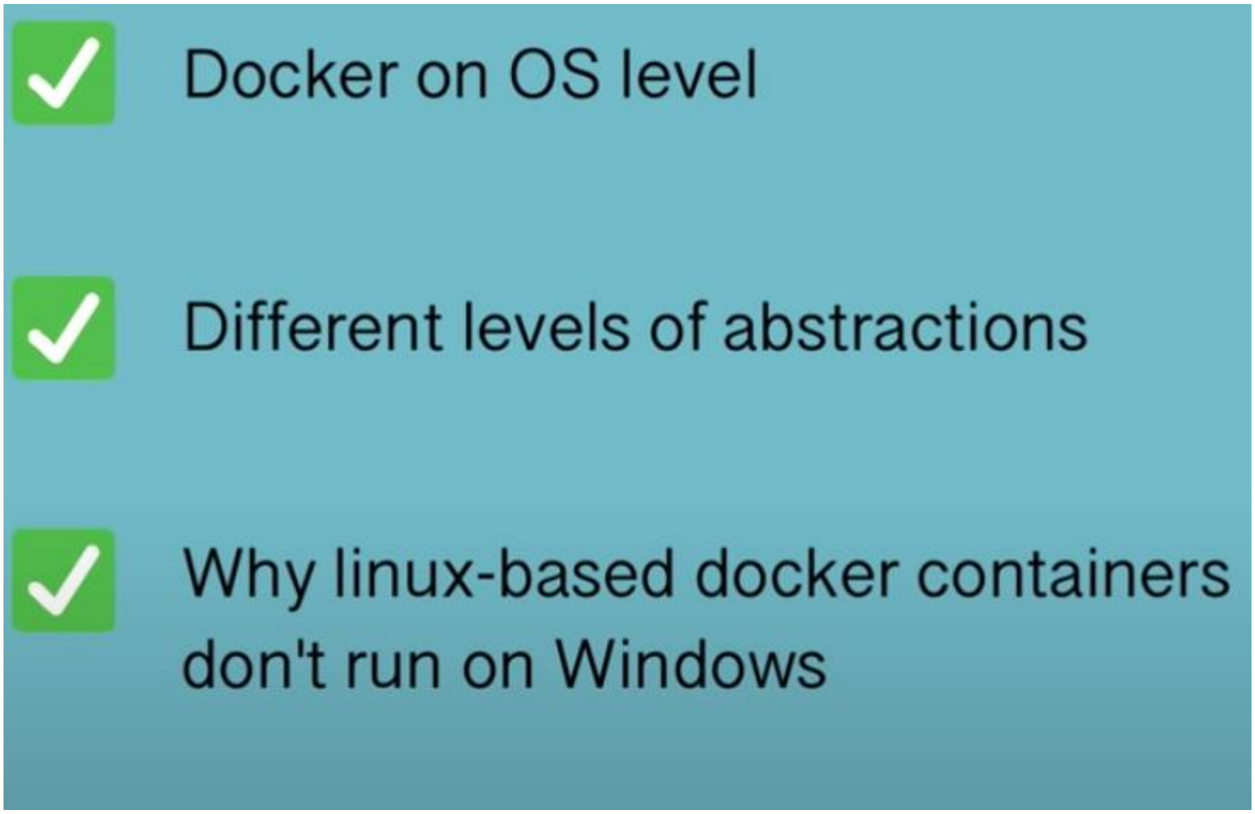
Start script

- **artifact**, that can be moved around

Docker Container

- actually **start the application**
- container environment is created

Docker vs Virtual Machine

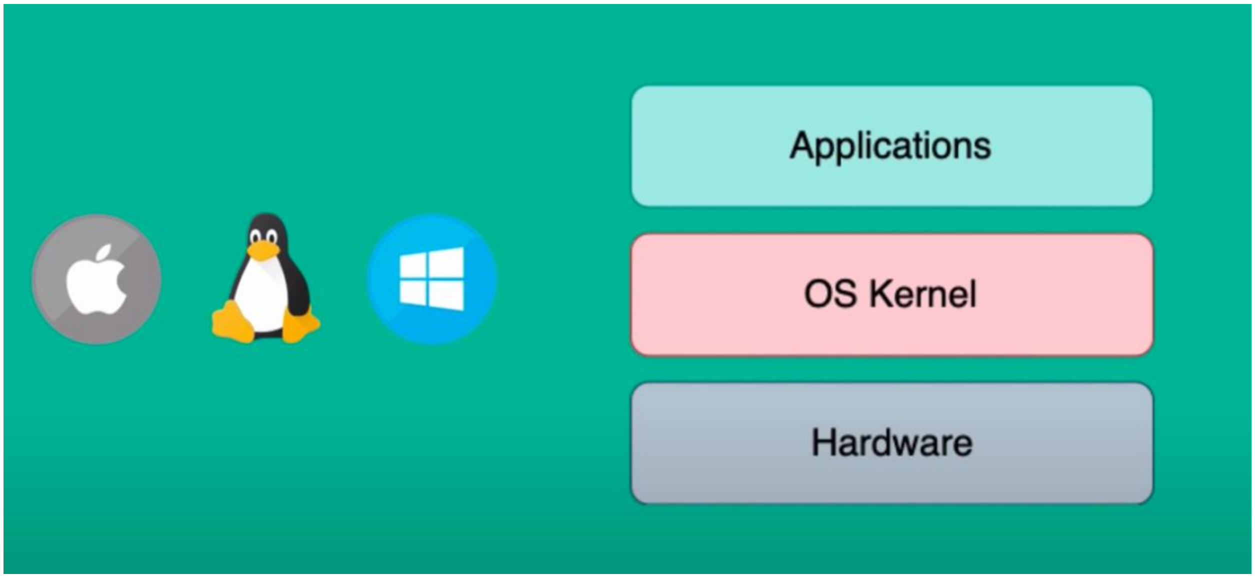


✓ Docker on OS level

✓ Different levels of abstractions

✓ Why linux-based docker containers don't run on Windows

How operating system is made up?



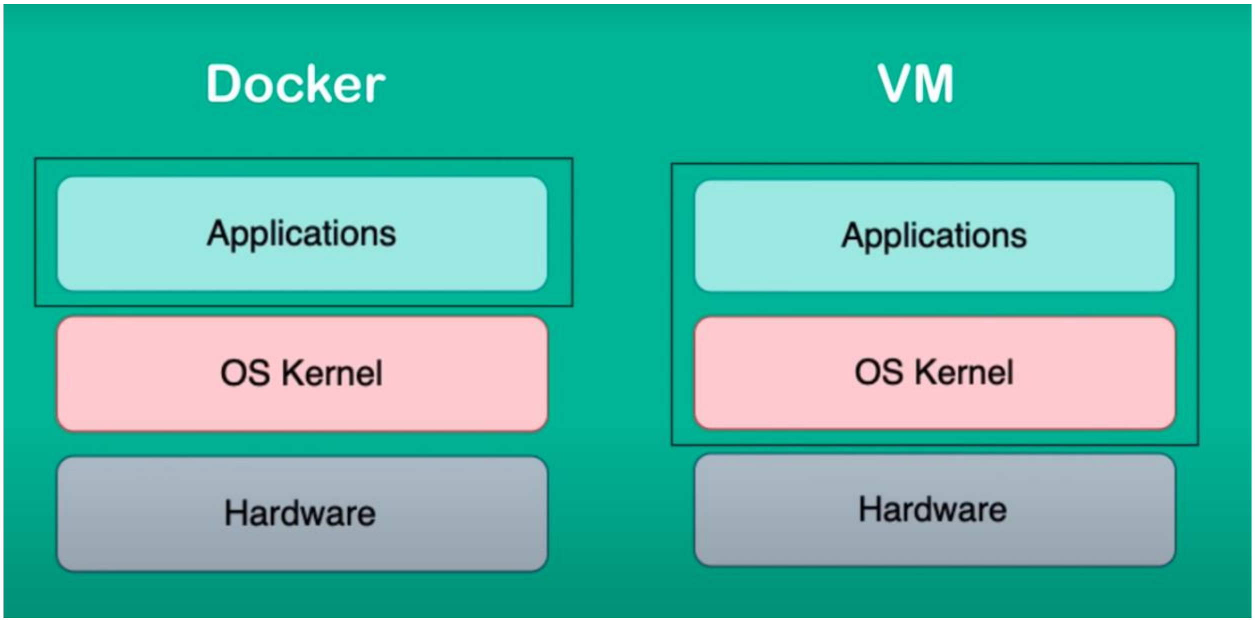
Applications

OS Kernel

Hardware

- Operating system have two layers – operating system kernel and applications layer
- Kernel communicates with hardware – cpu, ram etc

- Applications run on kernel layer
- Docker and virtual machines both are virtualization tools



- Size of docker images are much smaller
- Docker containers start and run very fast