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Create a Reproducible Research Environment

Share your System

Lars Vögtlin, Fouad Slimane, Marcel (Würsch)Gygli and Rolf Ingold
DIVA Group, University of Fribourg, Switzerland

Overview

Why do we need containers?

What is a container?

Different container engines

How does it work?

What do I use

Why do we need containers?

Moving environments to different systems

- OS
- Network
- Storage
- etc.

Reliable results

Cross-platform

Why do we need virtual environments? II

Example 1:

Development System:

Ubuntu 16.0.1

Production System:

Red Hat 7.x

=> Code will not behave the same!

What is a container?

A runtime environment

- an application
- dependencies
- libraries
- binaries
- etc.

Lightweight virtual machine

What is a virtual environment? II

Example 2 with containers:

Development System:

Ubuntu 16.0.1

Production System:

Red Hat 7.x

=> Code runs in the same runtime environment! Host OS does not matter.

Different container engines

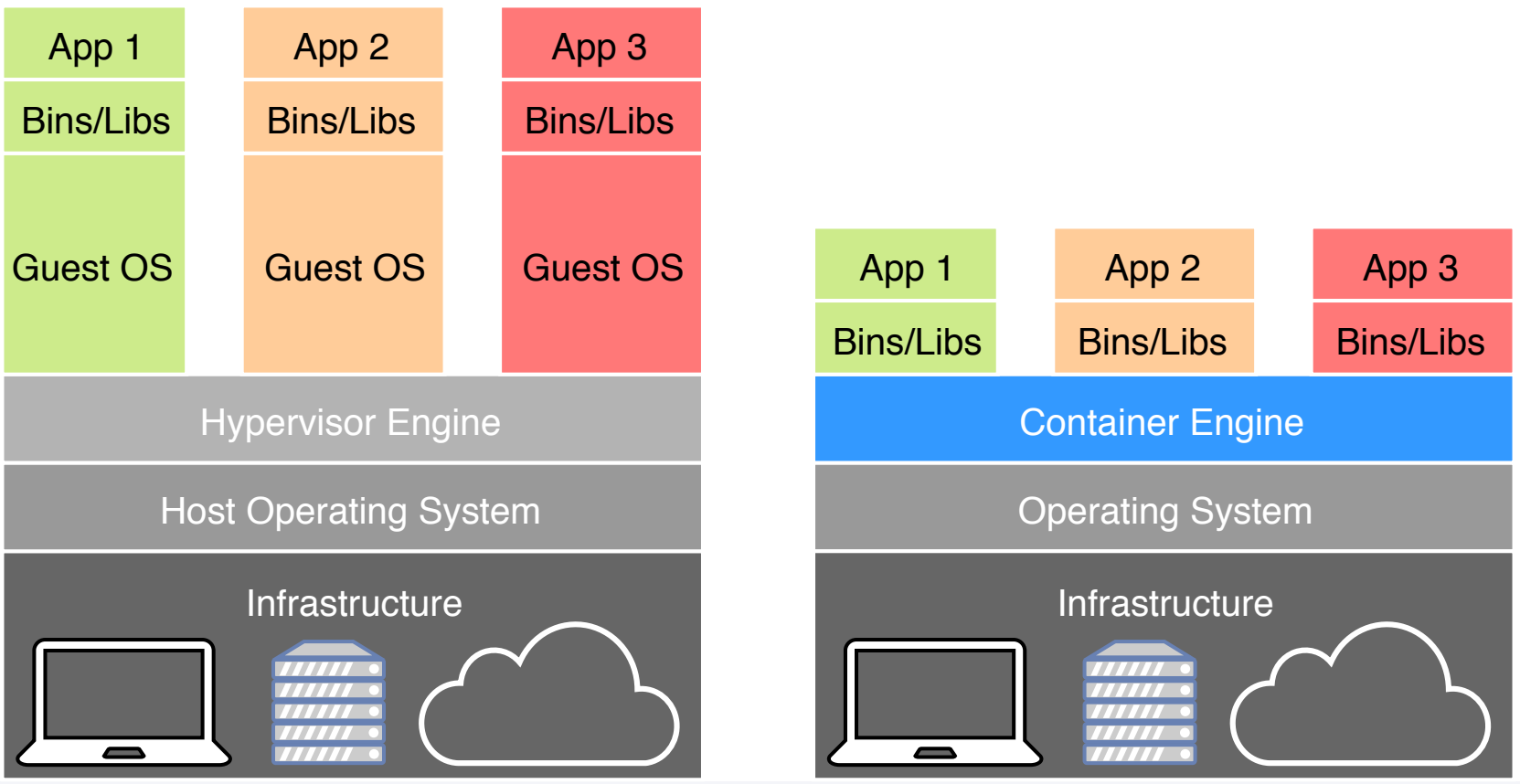
LXC (linux containers)

Podman (red hat container engine)

Kubernetes (google container engine)

Docker <- we will use this one

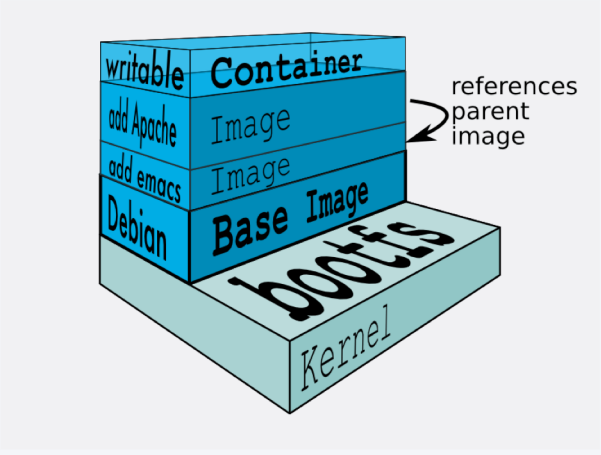
How does it work? I



How does it work? II

Creating an image (layer)

- OS
- Application
- Libraries
- etc.



Source: Docker

Instance of a image is a container (class-> object)

What do I use?

Engine:

Docker

Registry:

DockerHub