DevOps tooling for the impatient engineer

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What is DevOps?

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It is a concept very often misused

DevOps is not a team or role, it is an organizational change in practices and communication to enable agility delivering business value

~~DevOps~~ Infrastructure tooling for the impatient engineer

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What do we want to automate?

- Development environments
- Network creation
- Storage
- Virtual machines
- Application deployment
- Application scalability
- Load balancers
- etc

Why do we want to automate?

Essentially because we want to deliver business value as fast as possible

Why do we want to automate?

Deployments per day at some well known companies:

- Etsy: 50
- Flickr: 10
- HubSpot: 300
- Amazon: 7800
- Netflix: 100
- Twitter: 7200

What's the current tooling landscape like?

VAGRANT

otto

Docker Machine

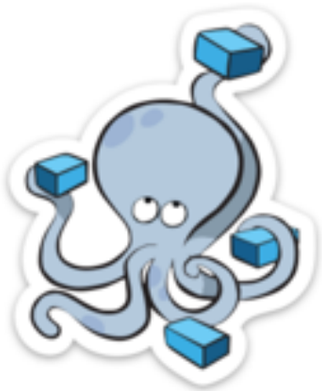
Nomad

MESOS

TERRAFORM

AWS CloudFormation

Docker Swarm



Docker Compose

Packer

CHEF

puppet labs

docker

ANSIBLE

SALTSTACK

rkt

CoreOS

RANCHEROS

runC By Open Container Project

PHOTON™

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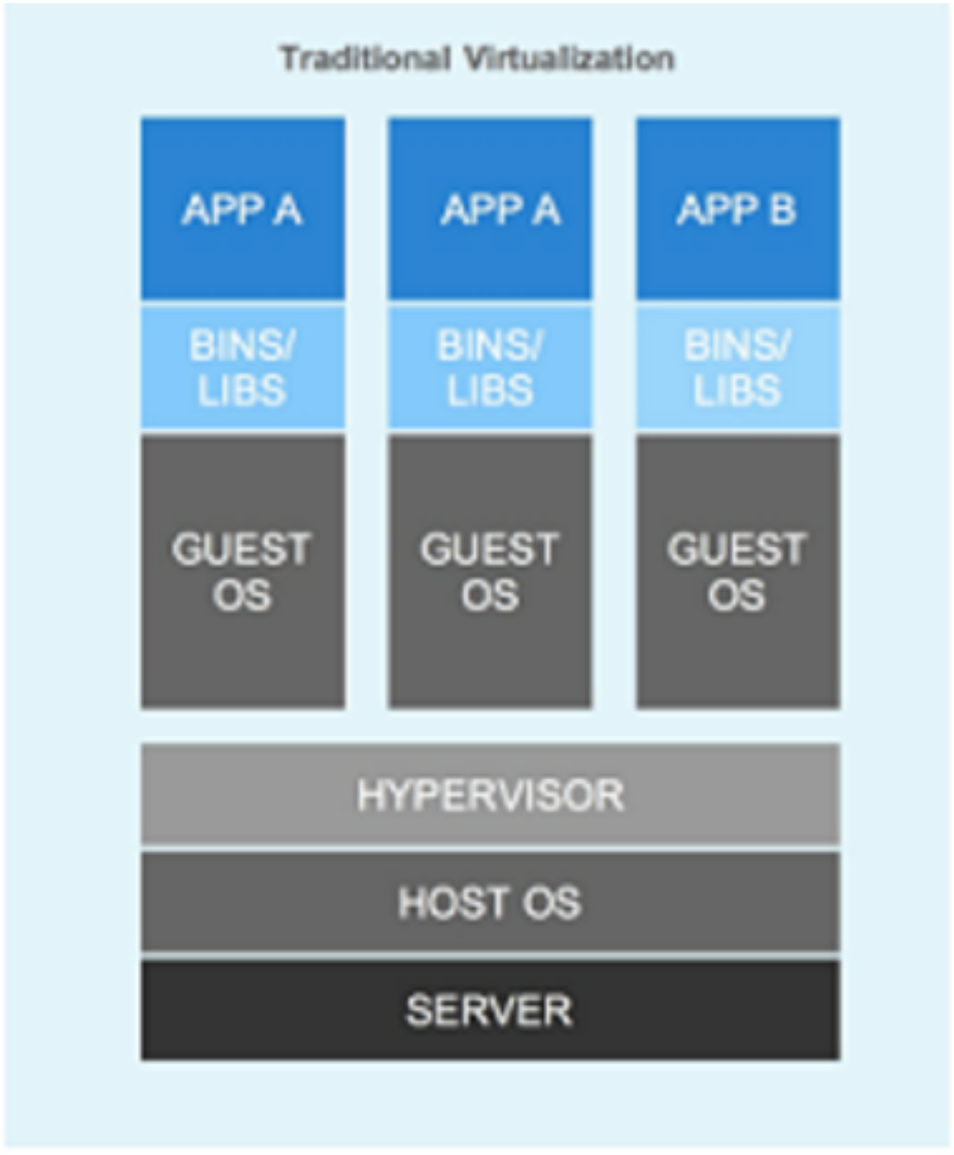
OVERWHELMED

SURE, I CAN HANDLE THE LOAD. NO PROBLEM.

Containers



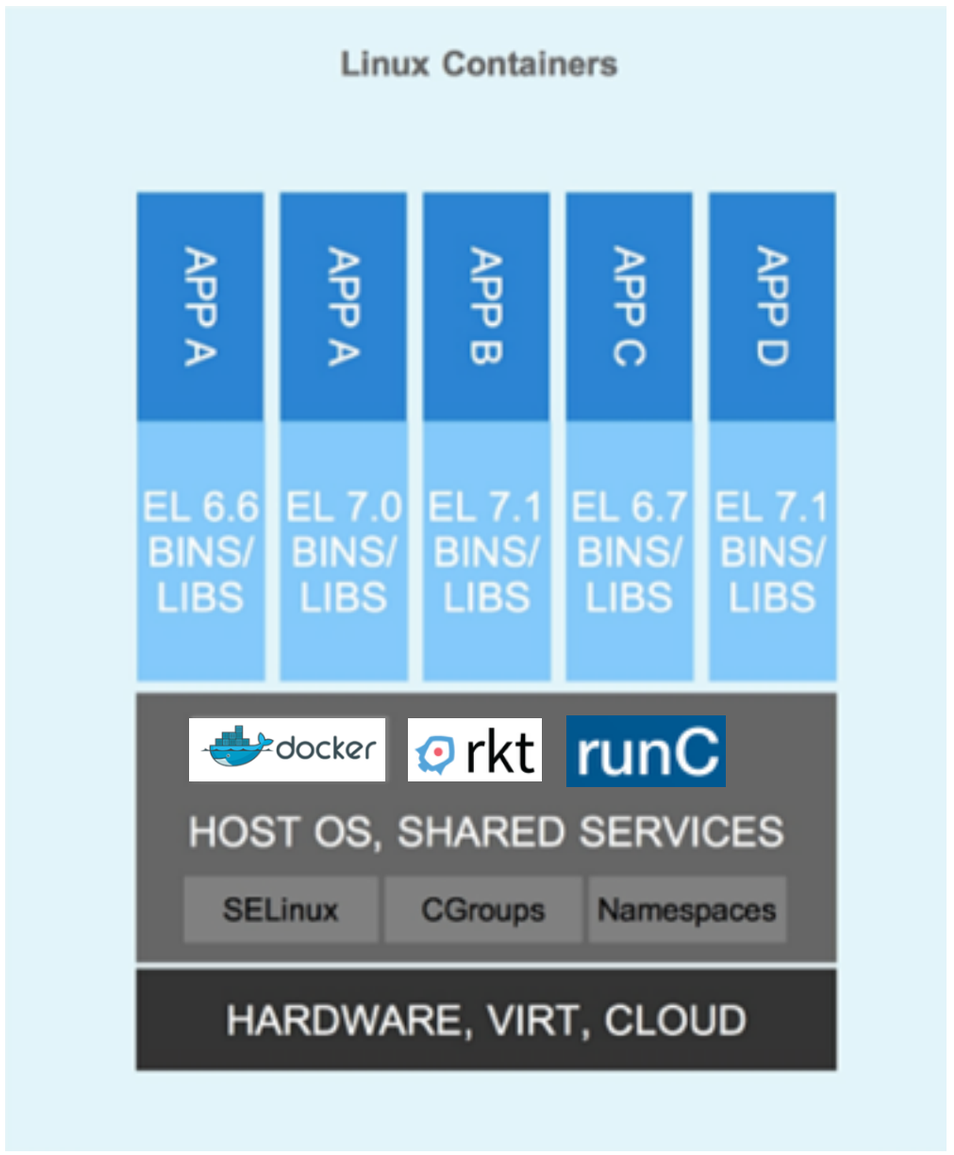
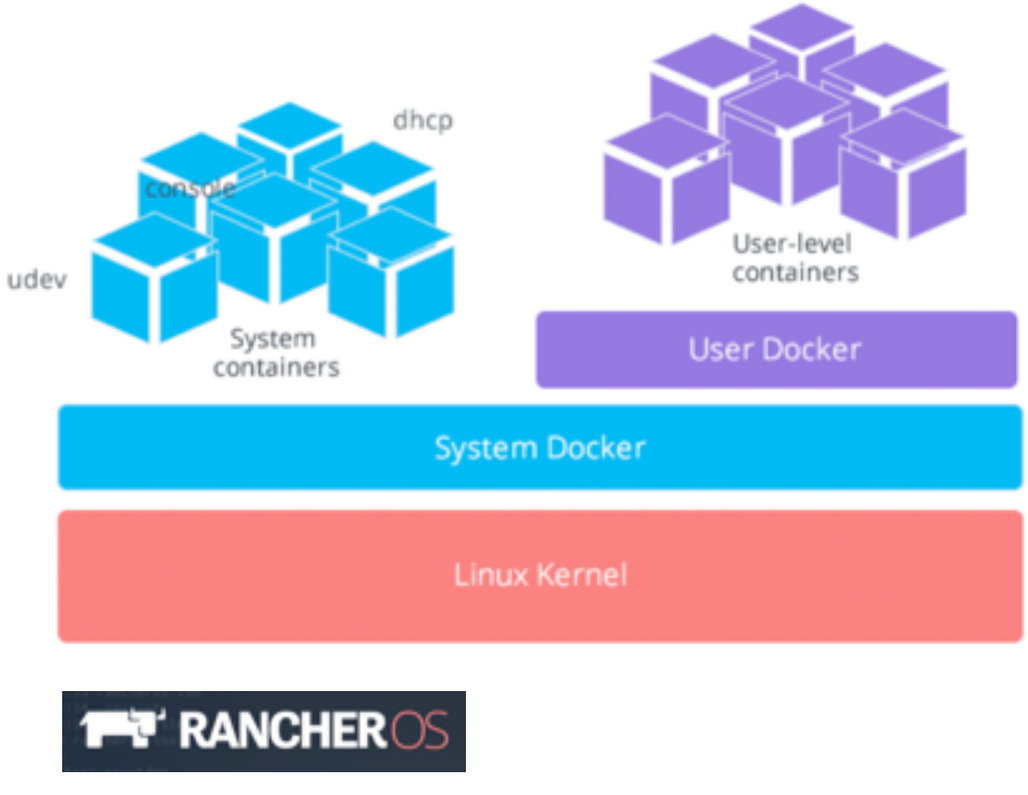


Image source: http://opensource.com/government/14/12/how-linux-containers-can-solve-problem-defense-virtualization

Operating systems for Containers

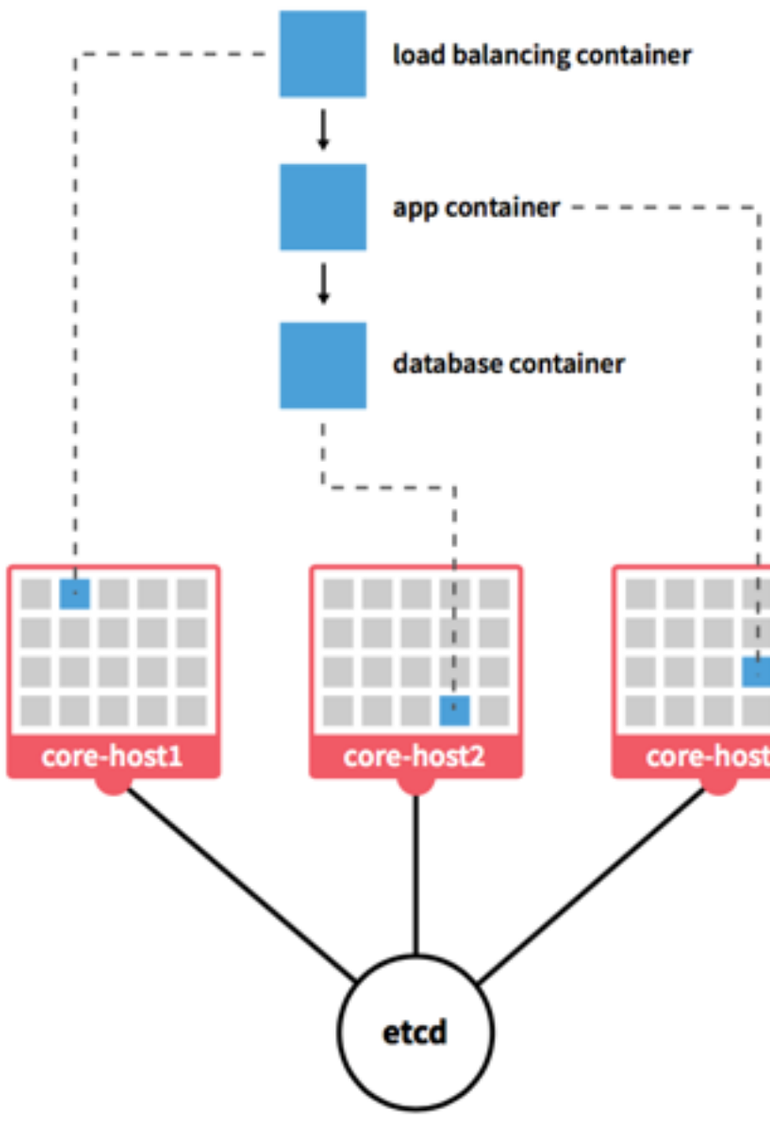
PHOTON™

- Usually very minimal: ~200mb
- Have auto-updates
- Only host containers
- Secure
- Reliable



RANCHEROS

CoreOS



3-tiered webapp running on a CoreOS cluster

Image source: https://coreos.com/using-coreos/

Development environments

Docker Machine

Allows you to easily create lightweight and reproducible dev environments

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Infrastructure orchestration

AWS CloudFormation

Creates and destroys infrastructure resources such as:

- Virtual machines
- Networks
- DNS records
- Load balancers
- Volumes
- Security groups
- etc.

Terraform does the above on multiple cloud providers and with a simpler configuration language

Configuration management

- Especially useful for managing configuration of thousands of servers with multiple operating systems. IT people loves these tools.

- For devs to provision individual applications, it becomes an unnecessary knowledge and maintenance burden

- Save you from writing shell scripts

- Slow running

- Helps to keep configuration consistent across all machines

Schedulers

Docker Swarm

- Allows you to place containers on hosts, using different constrains such as: region, memory and cpu available, kernel version, bandwidth, etc.
- Mostly used for cluster utilization optimization
- You don't need them in your local dev environments

Image builders

Packer

Allows you to build machine images for multiple platforms from a single source of configuration

A machine image is a single static unit that contains a pre-configured operating system and installed software which is used to quickly create new running machines.

Machine image formats change for each platform. Some examples include AMIs for EC2, VMDK/VMX files for VMware, OVF exports for VirtualBox, etc.

Some text was taken from: https://www.packer.io/intro

Demo

Q&A