Kubernetes 101

Oleg Fiksel | Sean Mitchell | Michael Siebertz

Email: oleg@fiksel.info | sean@srm.im | mail@michaelsiebertz.de

Matrix: @oleg:fiksel.info | @sean:fiksel.info | @captain.vsan:matrix.org

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MOTIVATION

Our motivation to do this talk

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Provide an overview of container architechture on the example of Docker and Kubernetes.

AGENDA

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- Docker Fundamentals

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- Kubernetes from 10.000 feet

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- Docker Fundamentals
- Kubernetes from 10.000 feet
- Live Demo

OLEG FIKSEL (DOCKER FUNDAMENTALS)

[1] Accenture Interactive
[2] DevSecOps Workshop

OLEG FIKSEL (DOCKER FUNDAMENTALS)

About me:

- DevOps Engineer @ Accenture Interactive [1] (DevOps Chapter)
- **Main topics**
  - Big fan of CI (especially GitLab) and a Gentoo user
  - Learning Golang and like to automate eveything
  - Continuous Security (DevSecOps) [2]

[1] Accenture Interactive
[2] DevSecOps Workshop

SEAN MITCHELL (KUBERNETES FROM 10.000 FEET)

[1] Grandcentrix

SEAN MITCHELL (KUBERNETES FROM 10.000 FEET)

About me:

- Site Reliability Engineer (SRE) @ Grandcentrix [1]
- **Main topics**
  - Support developers building and deploying projects
  - Ensure customers' cloud infrastructure runs
  - Home Automation geek

[1] Grandcentrix

MICHAEL SIEBERTZ (LIVE DEMO)

[1] HRS

MICHAEL SIEBERTZ (LIVE DEMO)

About me:

- DevOps Engineer @ HRS [1]
- **Main topics**
  - Linux-User for long time
  - Trying to automate as much as possible
  - Part of Central DevOps Team

[1] HRS

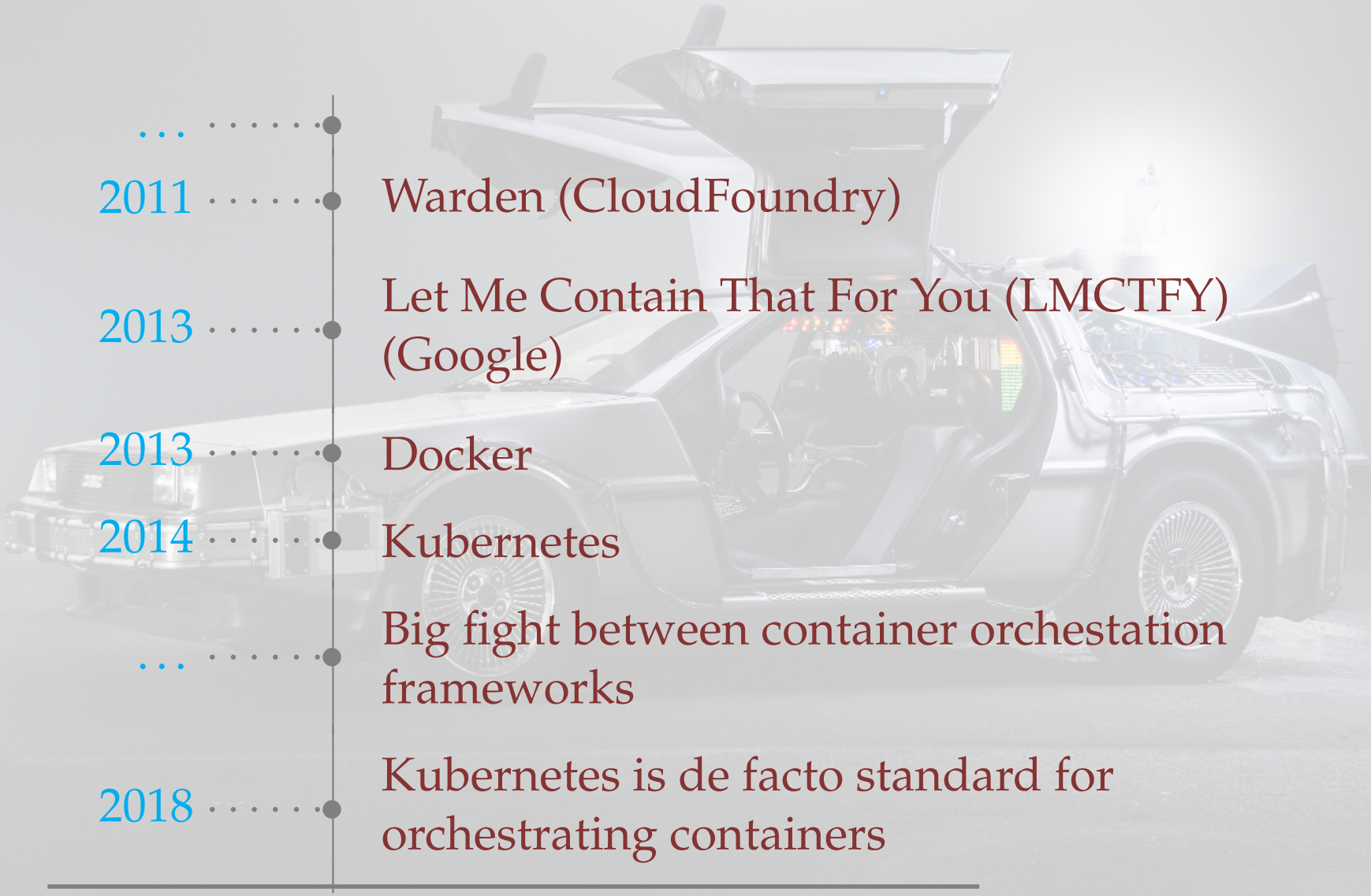
Container fundamentals

A BIT OF HISTORY

A BIT OF HISTORY 1/2

- 1979 — chroot
- 2000 — FreeBSD Jails
- 2001 — Linux VServer
- 2004 — Solaris Containers
- 2005 — OpenVZ
- 2006 — Process Containers (Google)
- 2008 — LXC
- ... —

A BIT OF HISTORY 2/2



- ...
- 2011 — Warden (CloudFoundry)
- 2013 — Let Me Contain That For You (LMCTFY) (Google)
- 2013 — Docker
- 2014 — Kubernetes
- ... — Big fight between container orchestation frameworks
- 2018 — Kubernetes is de facto standard for orchestrating containers

VMs and Containers

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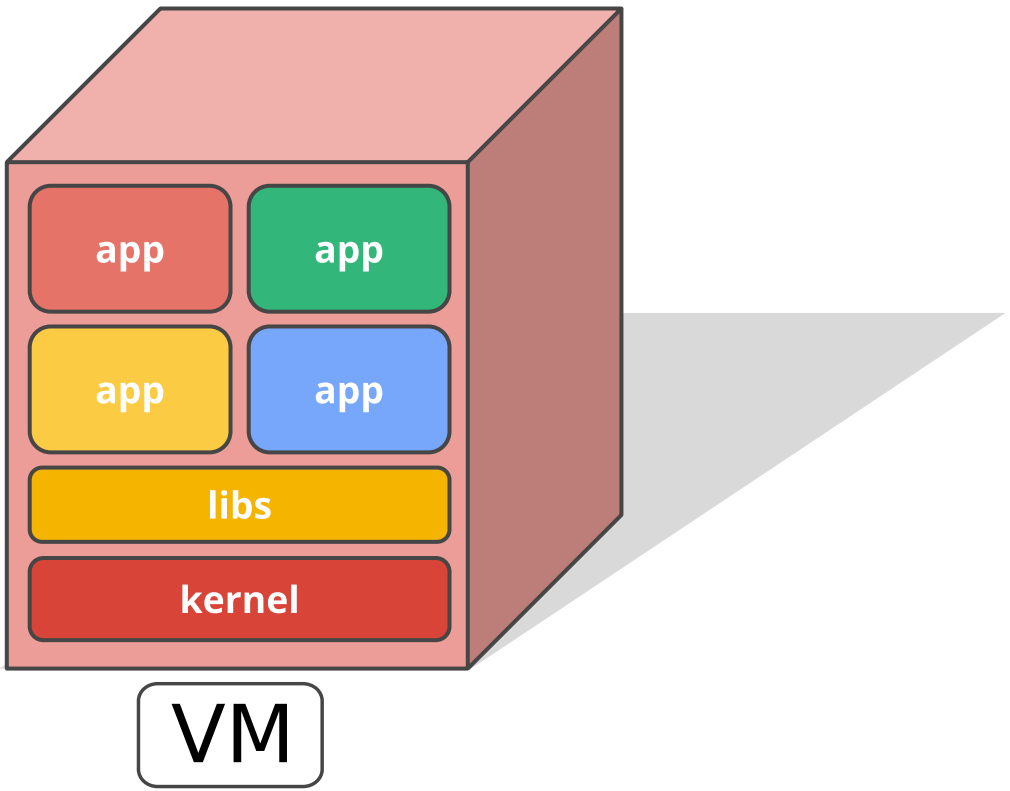

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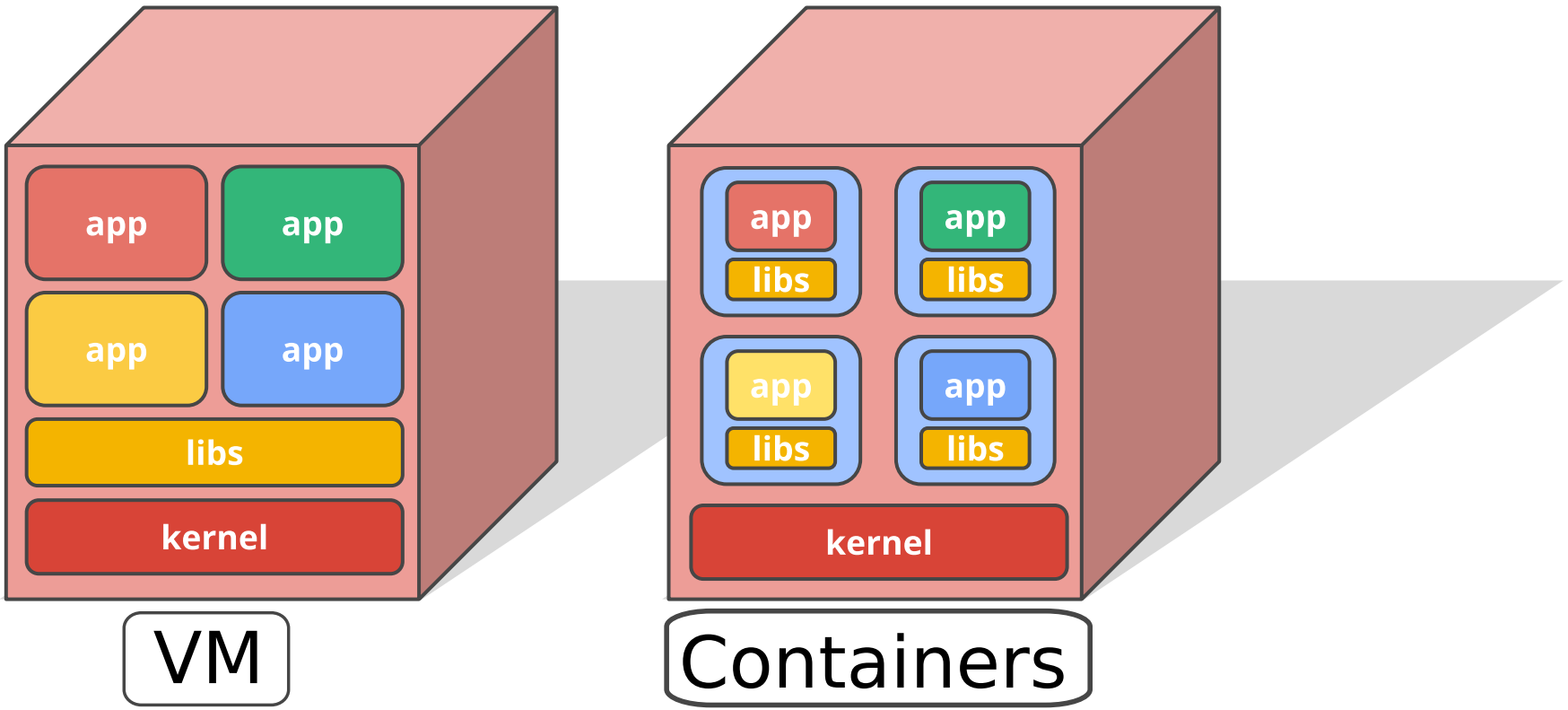

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  - Container: stateless

CONTAINER LIFECYCLE - OVERVIEW

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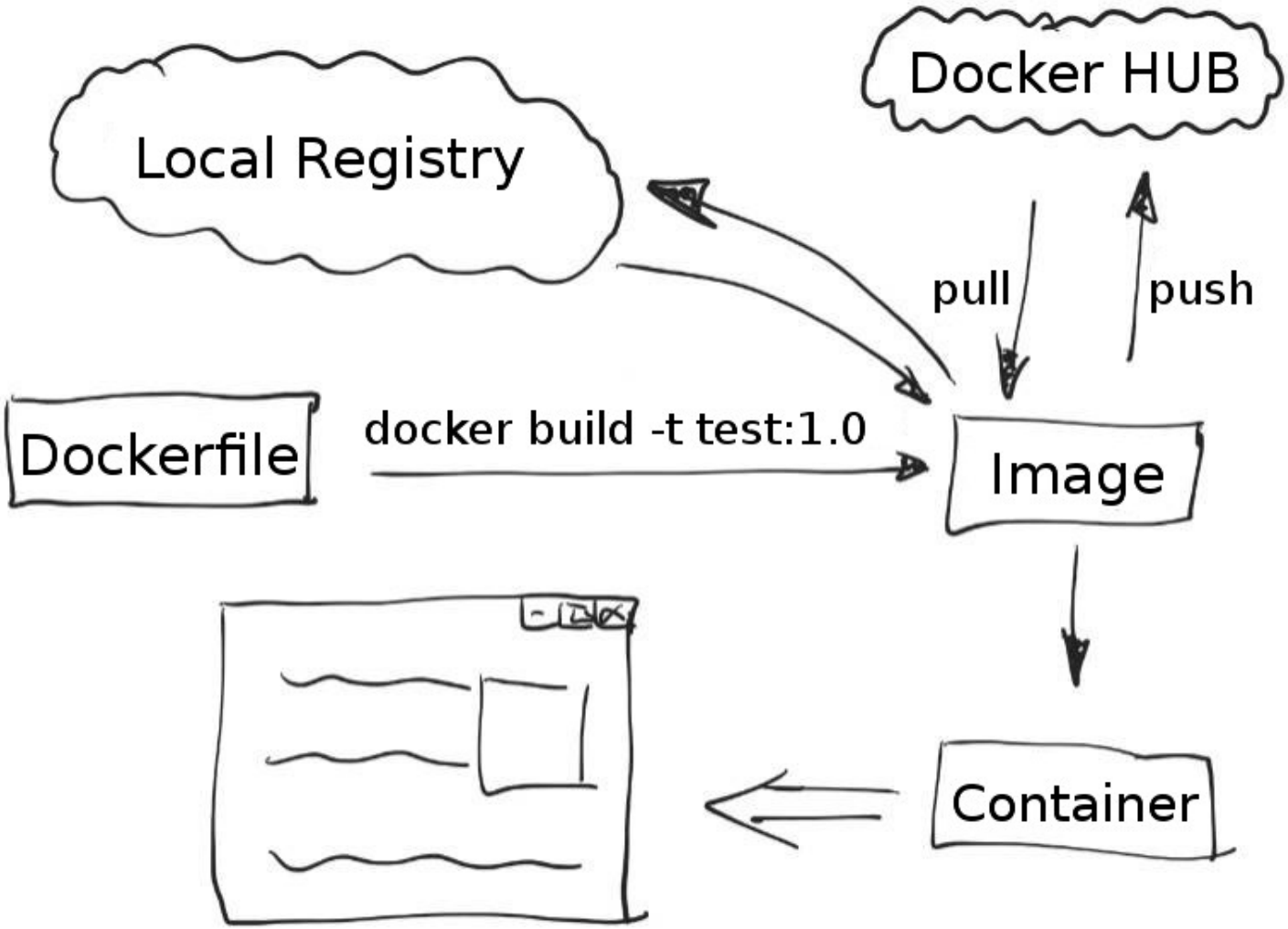

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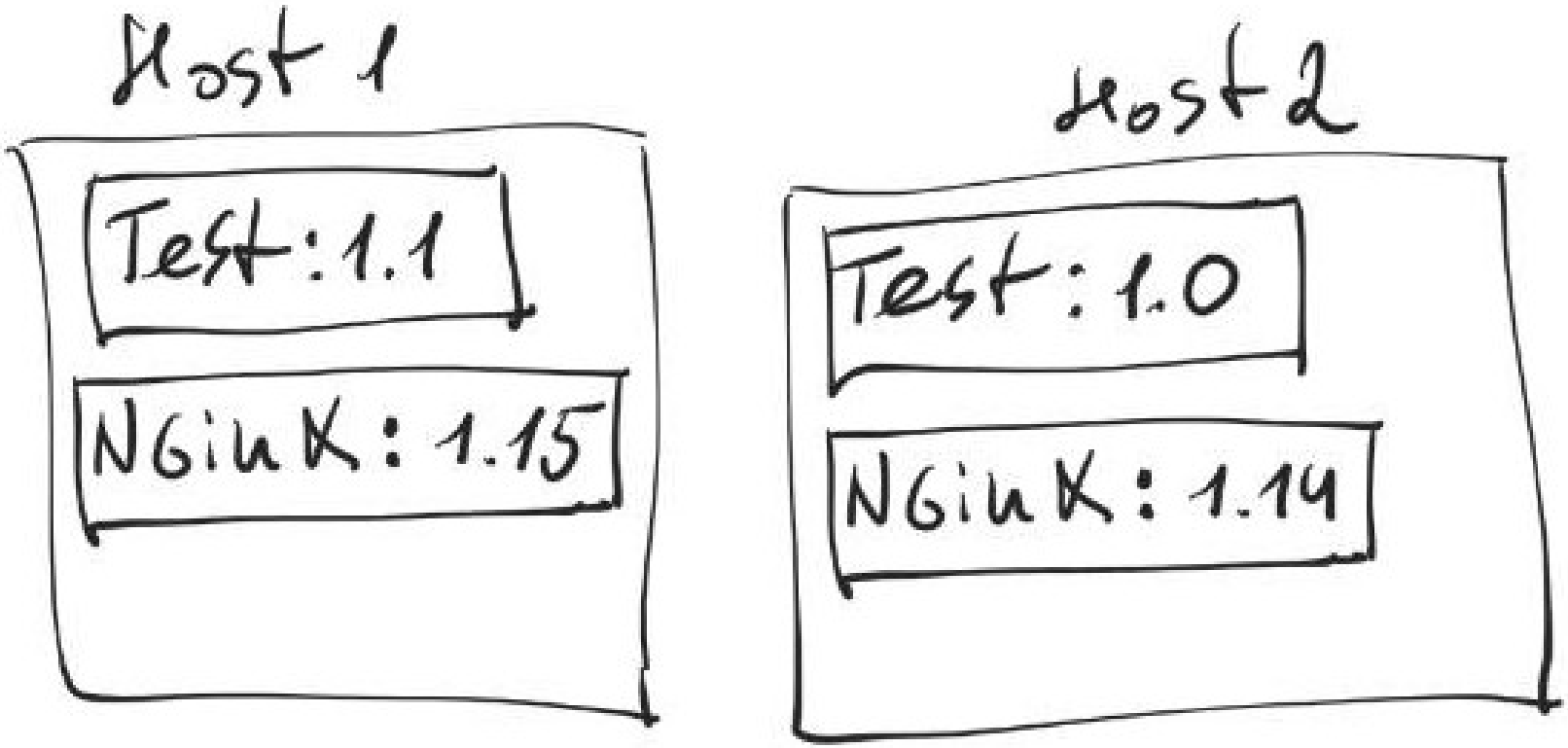

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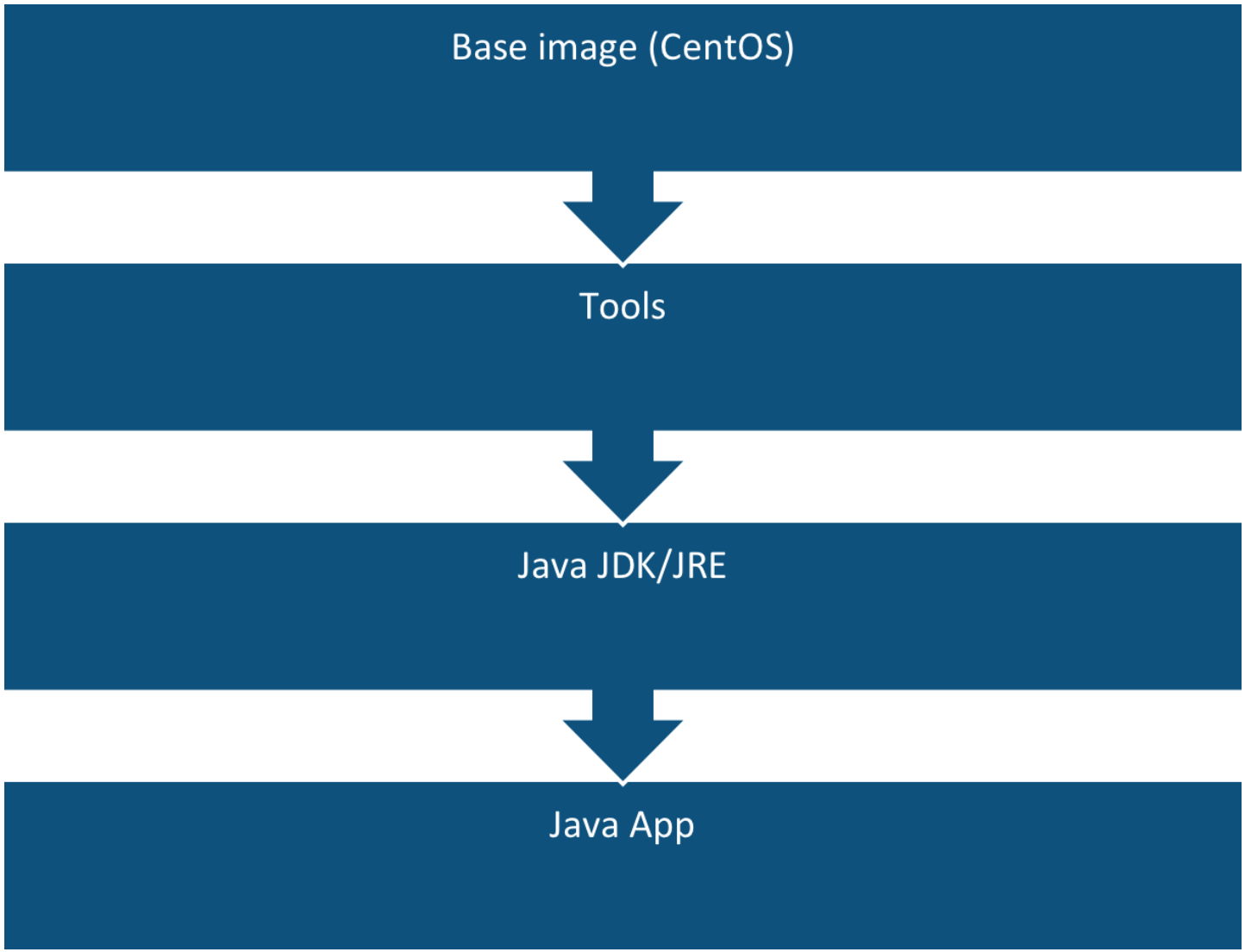

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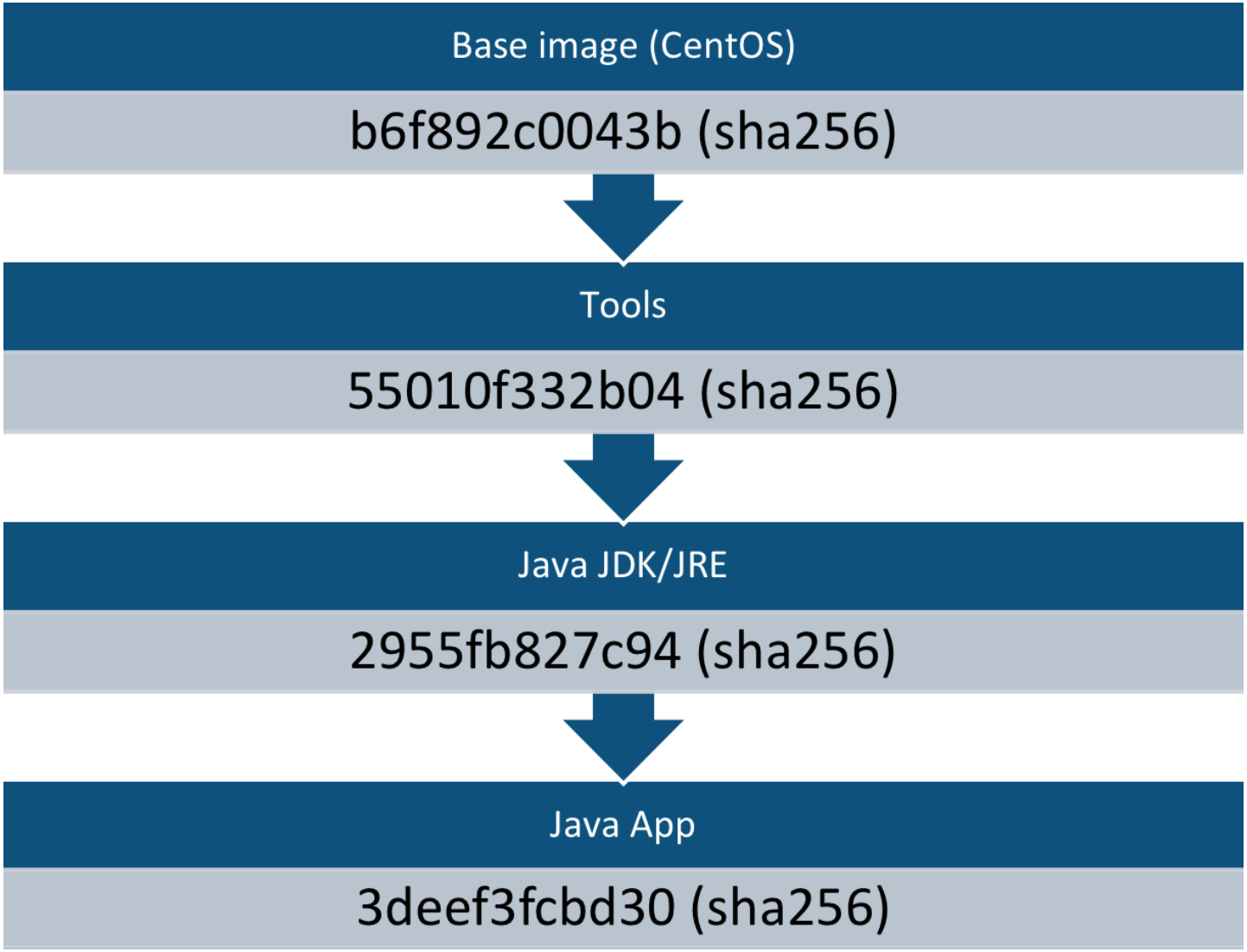

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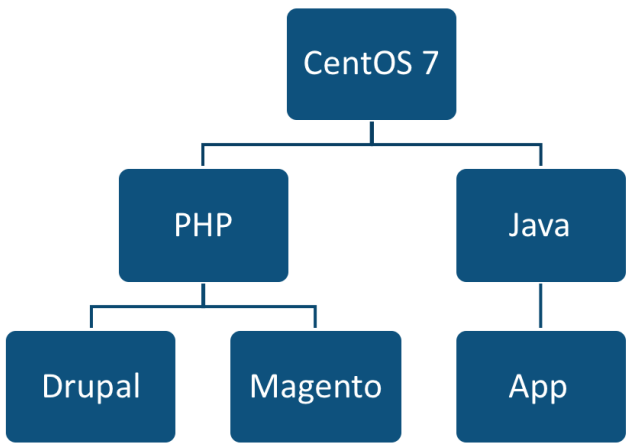

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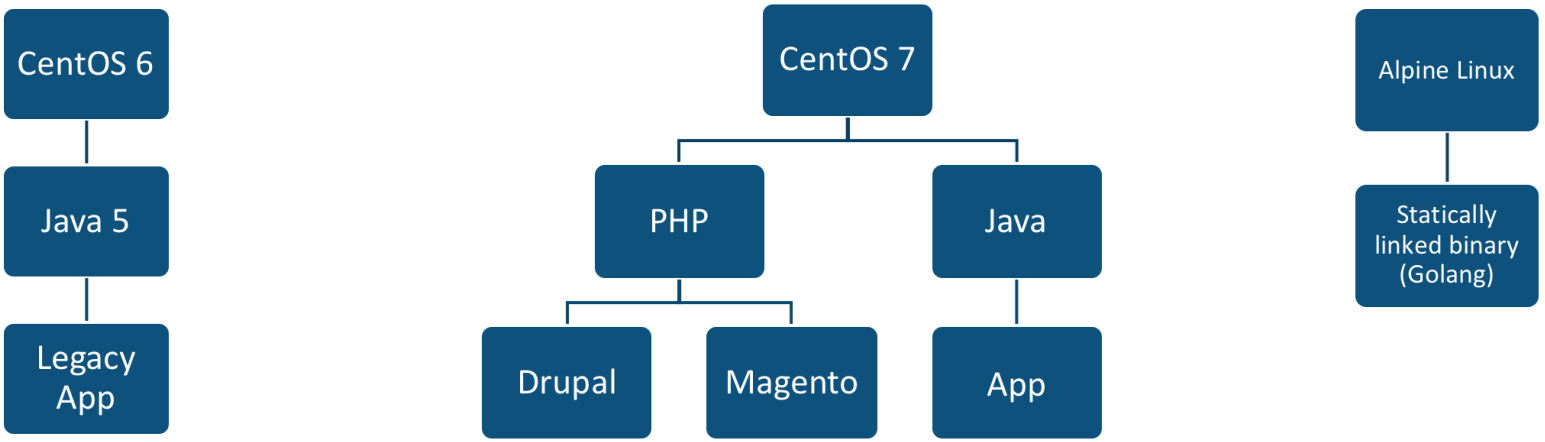

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- aufs (legacy)
- overlayfs (legacy)
- devicemapper
- overlayfs2
- btrfs

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  - Linux kernel feature
  - process isolation
    Each container "thinks" it's the only one in the system
    (*ps uax*)

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  The question is "Where to start?"
- Docker is the standard de facto (for now) for running containers
- Docker alone is not enough to run containers big time
- Next up: Container Orchestration (Kubernetes)

Q & A

Thanks!

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