Containers: FTW!

About Me!

- Advocate for Developer Tools, Serverless, and Service Mesh
- Using containers since ~2013
- Using cloud since ~2006

Some References

Home \ Blog \ Containers \ The History of Container Technology

The History of Container Technology

Posted on **August 17, 2018** by EllMarquez

Containers | Docker | It's Ok to Be New | Linux Academy

As a part of the **It's Okay to Be New series**, I've been doing a lot of research about containers this week. My goal is to lay the foundation for anyone, regardless of technical background, to be able to start playing with and learning about containers — be it LXC, Docker, or the next big container

- Brief: https://linuxacademy.com/blog/containers/history-of-container-technology/

Rani Osnat ● March 21, 2018

A Brief History of Containers: From the 1970s to 2017

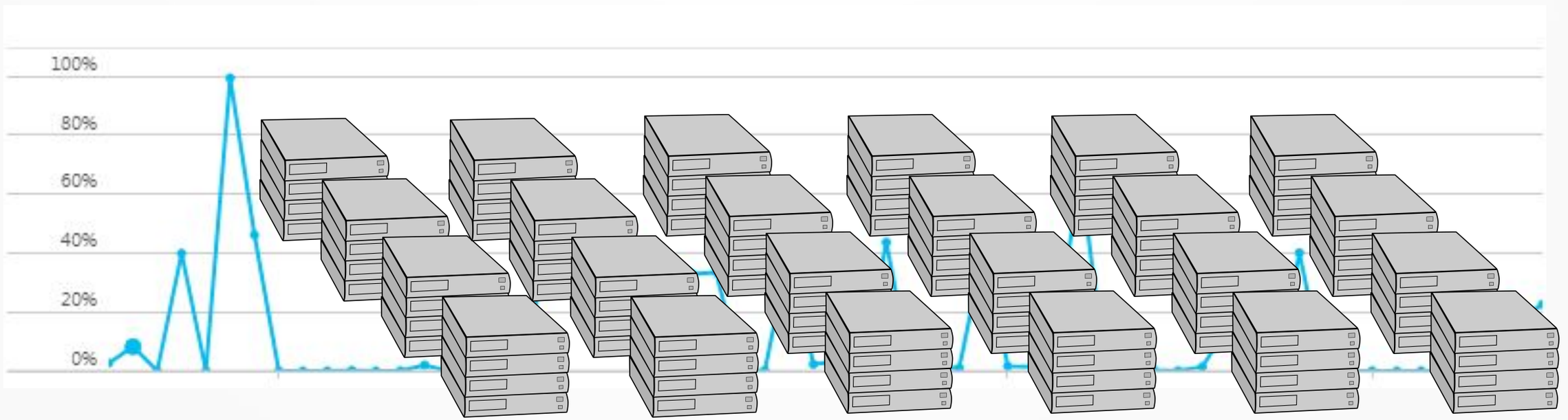
Updated as of March 2018.

If you can believe it, this March, Docker will be celebrating five years of existence.

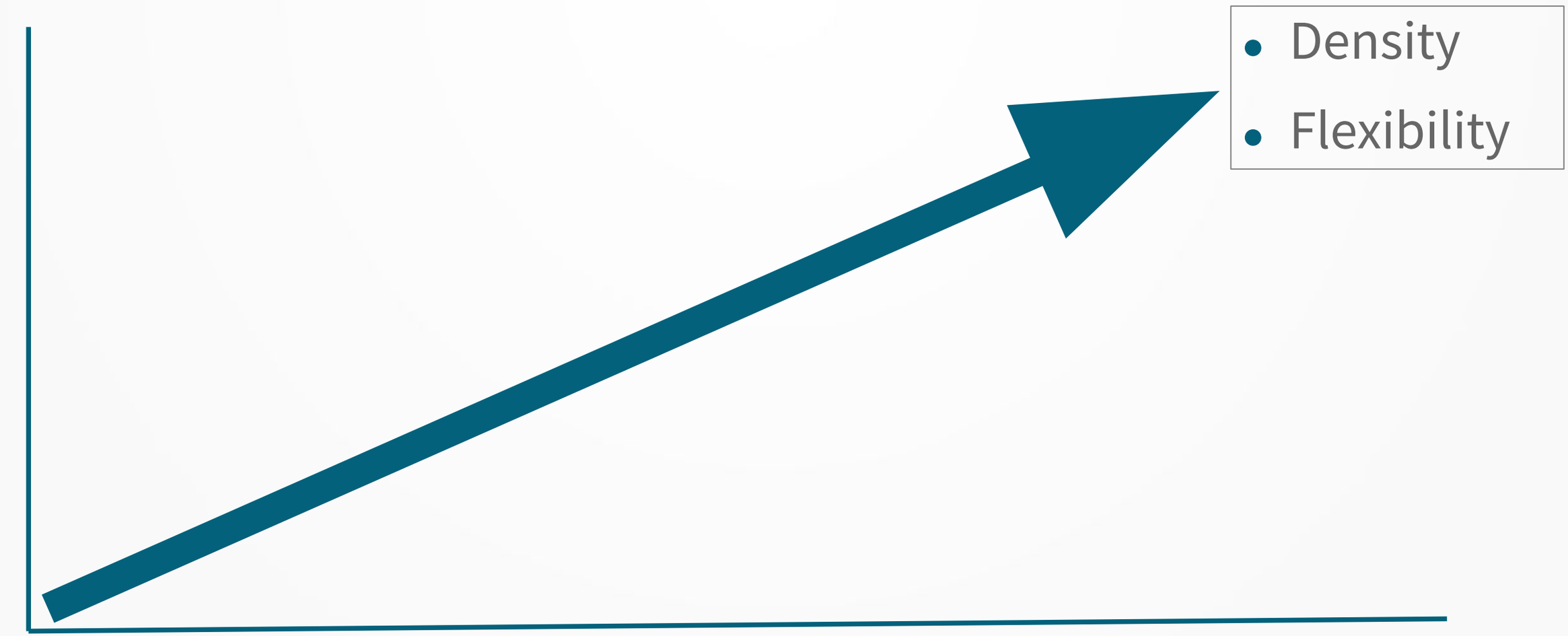
But that wasn't the first time we've heard about containers. In honor of Docker's birthday, let's take a trip down memory lane and take a look at the major milestones in the lifetime of virtualized containers.

- Detailed: https://blog.aquasec.com/a-brief-history-of-containers-from-1970s-chroot-to-docker-2016

Usage



What can we do?



History of Density

- 1979: Unix V7: chroot
- 2000: FreeBSD Jails
- 2001: Linux VServer
- 2003: Xen (first release 2004)
- 2004: Solaris Containers (sometimes Zones)
- 2006: Process Containers (cgroups); KVM
- 2008: LXC
- 2009: Heroku
- 2012: OpenShift
- 2013: Docker
- 2014: rkt
- 2017: CNCF owns all the things (cri-o, oci, etc)
- 2018: podman

- Notes!
  - Remind me to cover everything on here!
  - Linux VServer a jail mechanism that can partition resources
  - CNCF: Cloud Native Computing Foundation
  - OCI: Open Container Initiative
  - Not exhaustive!

History of Flexibility

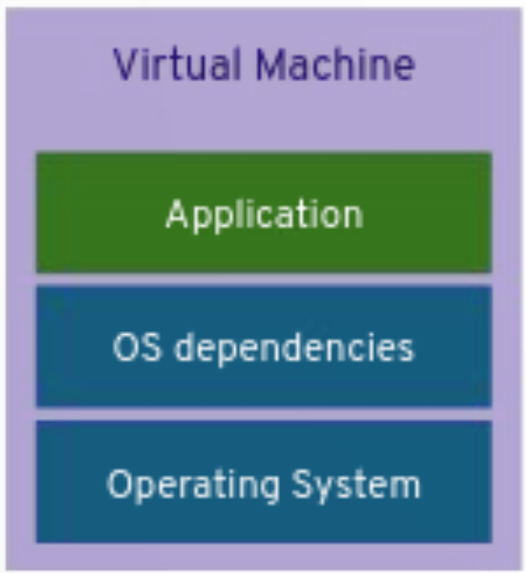
- 1987: Component Object Model
- 1991: CORBA (Java in 1998)
- 2006: Distributed COM
- Late 90s, Early 2000s: SOA
- 2011: Microservices

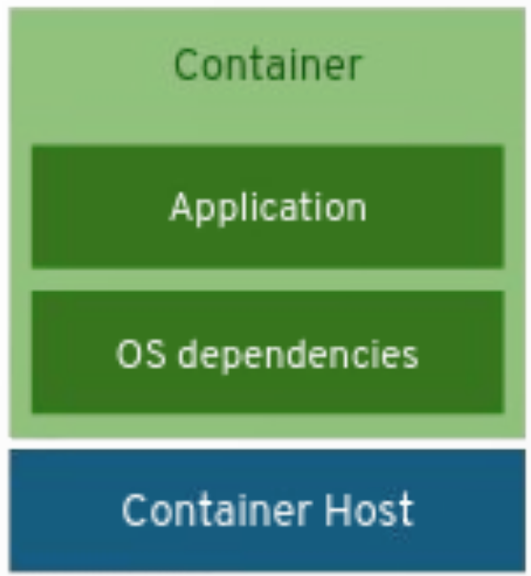
- Notes!
  - Remind me to cover everything on here!
  - CORBA: Common Object Request Broker Architecture
  - mention tightly-coupled!

Modern Semi-Cloudy Terminology

- IAAS — Infrastructure as a service (AWS, G Cloud, Azure)
- PAAS — Platform "" (OpenShift, Heroku)
- SAAS — Software "" (Salesforce, Mint)
- Serverless — Single functions run in a cloud
- Container Image — pre-defined set of software runnable by a container runtime (immutable)
- Container — an instance of a Container Image

Virtual Machines vs Containers





- \+ VM Isolation
- − Complete OS
- − Static Compute
- − Static Memory
- − High Resource Usage

- \+ Container Isolation
- \+ Shared Kernel
- \+ Burstable Compute
- \+ Burstable Memory
- \+ Low Resource Usage

Containers in Detail

Terms

- Base Image / Layer
- Image Layer
- Registry
- Repository
- Tag

Concepts

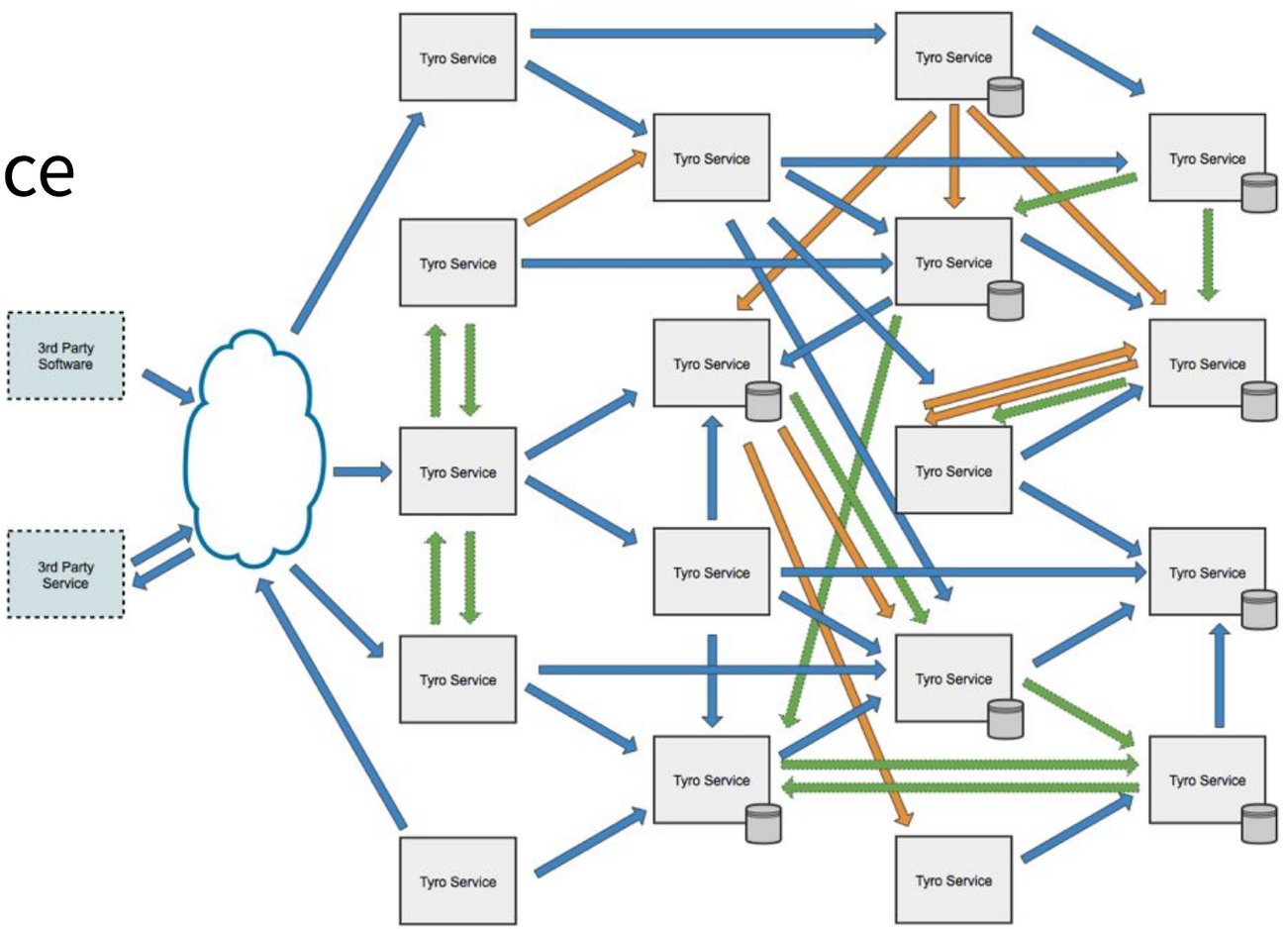
- cgroups/isolation
- clone on write
- Just a process

Thanks to Scott McCarty and https://developers.redhat.com/blog/2018/02/22/container-terminology-practical-introduction/

Demo

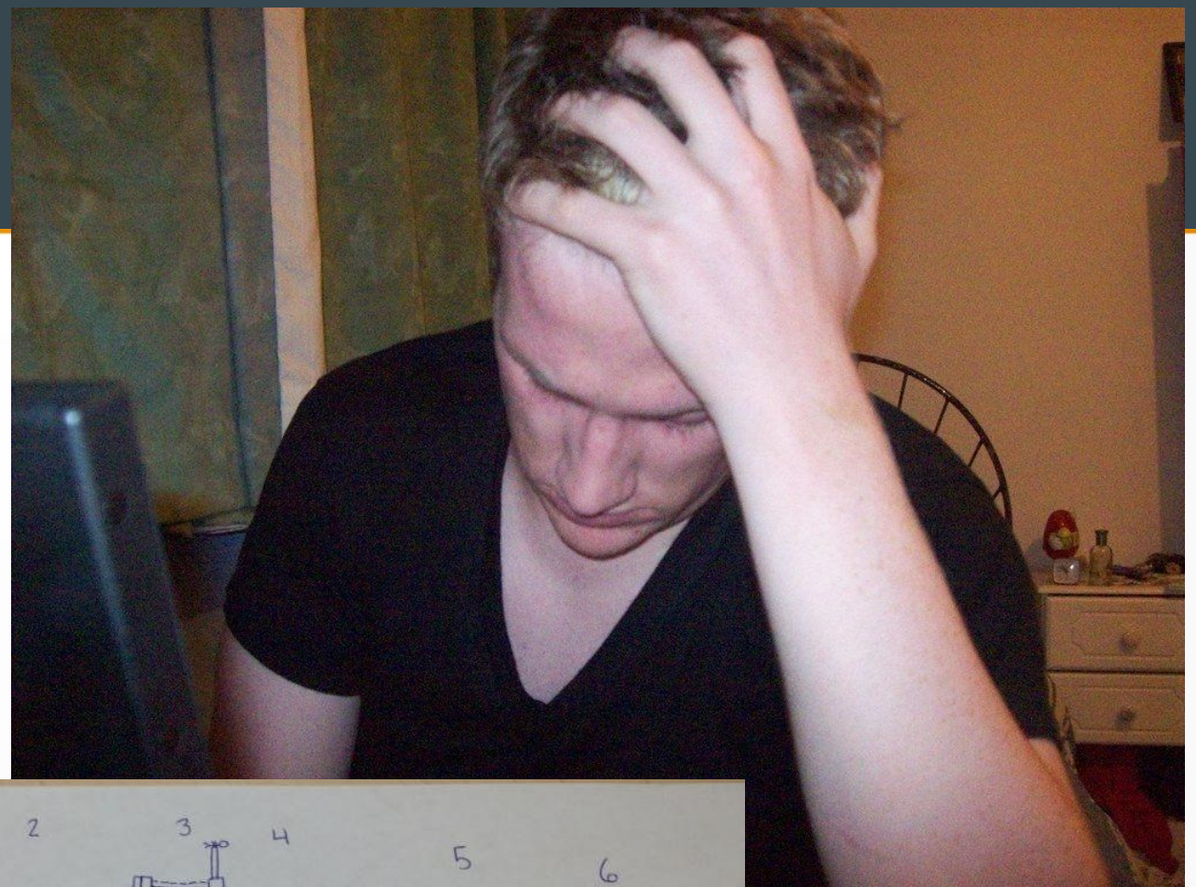
Microservices

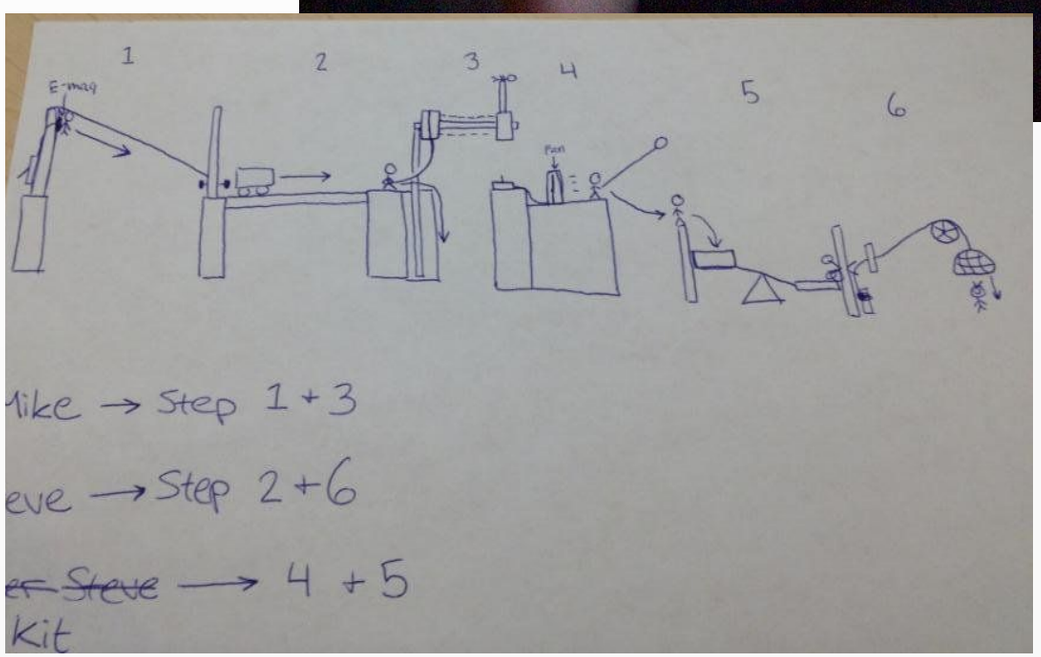
- A chunk of code that does one thing
- Ideally, idempotent
- Provides a complete service



All these services!

- Now what?

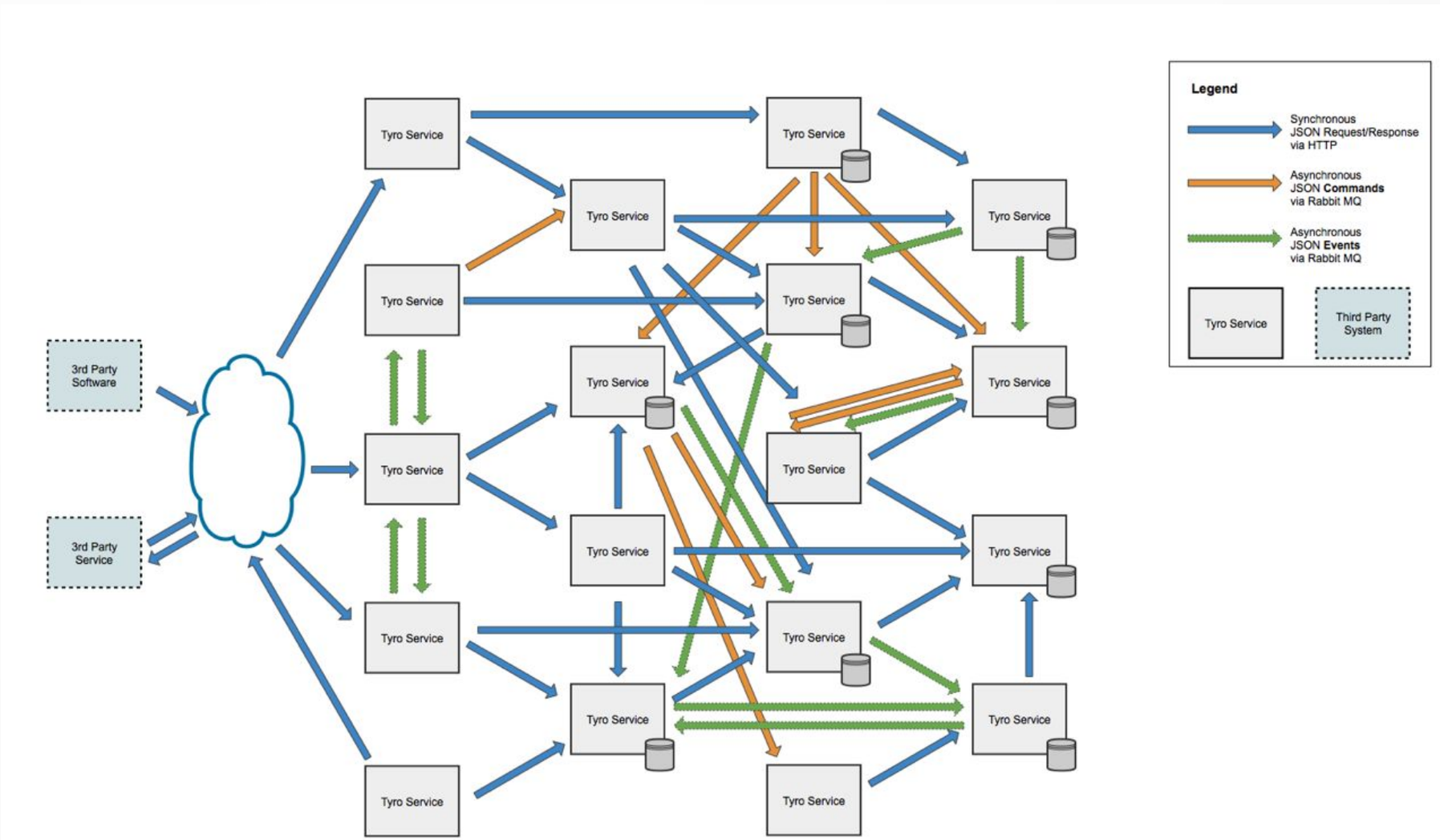




All these services!

Orchestration

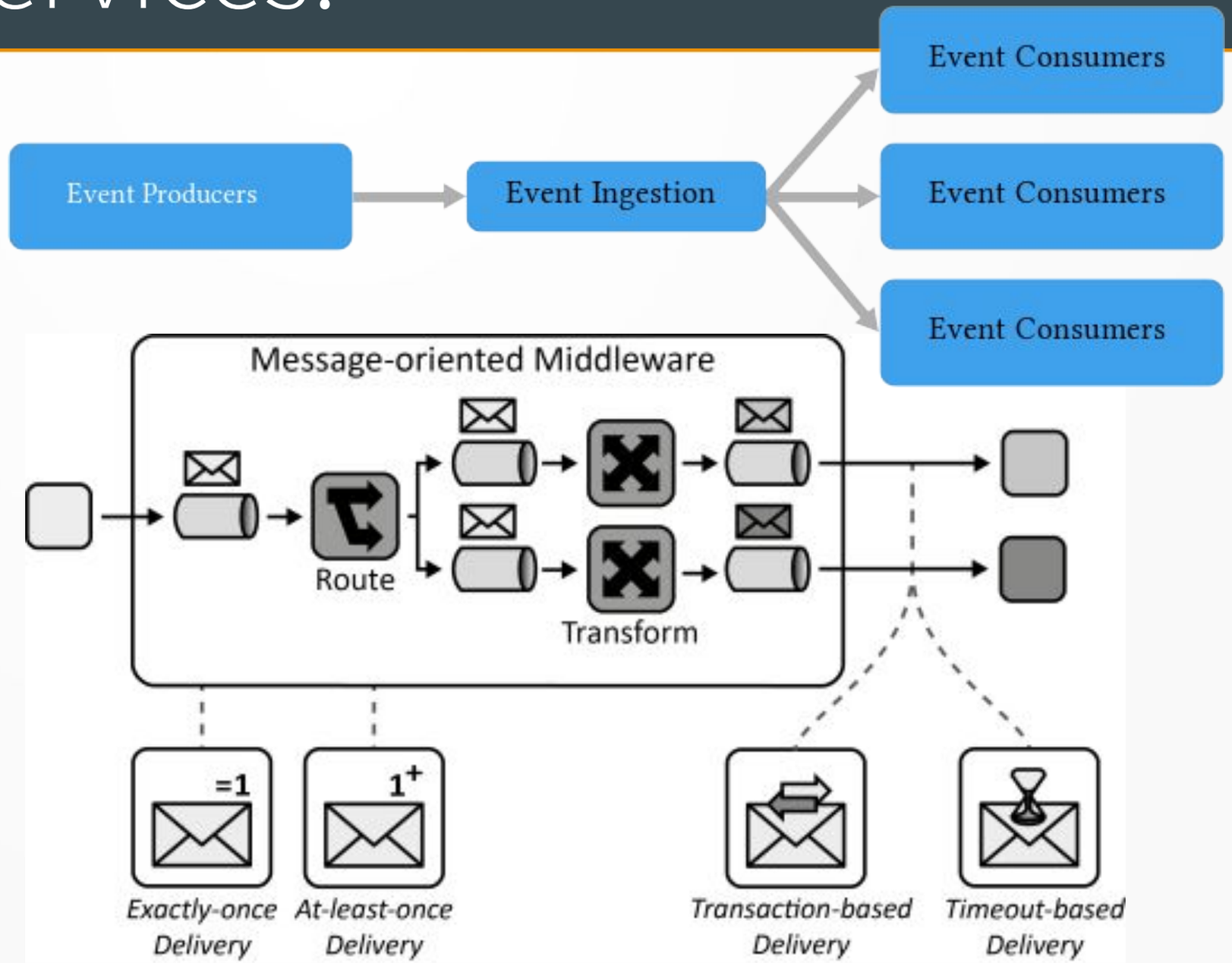
- kubernetes
- swarm
- OpenShift



All these services!

Architectures

- eventing
- service bus
- service mesh



Usable References

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Attributions

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