Introduction to Kubernetes and OpenShift Webinar

—

David Nugent
Developer Advocate, IBM

Sign up: ibm.biz/openshift-dec17

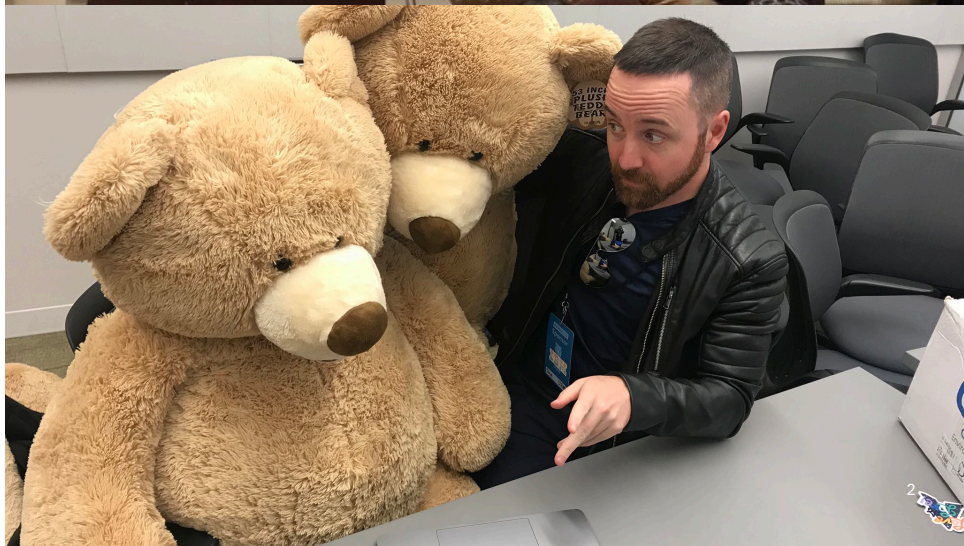
Hi, I’m Dave

I’m a developer advocate for IBM in San Francisco. I also help organize:

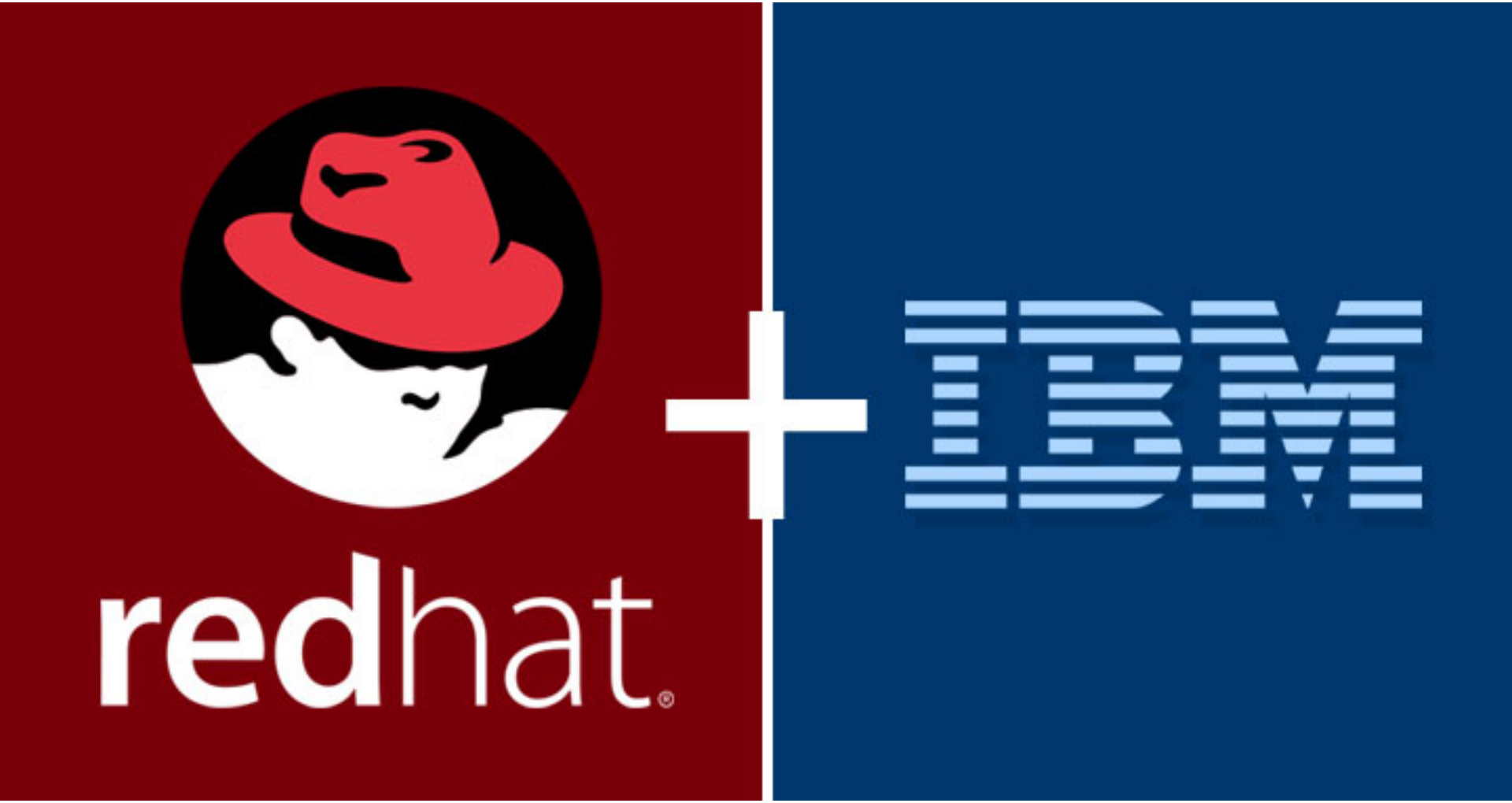
- The SF JavaScript Meetup
- IBM Developer SF Meetup
- ForwardJS San Francisco && Ottawa

I participate in meetups, hackathons, webinars and write articles about technology for IBM and other organizations.

Warning: I am a lowly developer



Agenda


redhat
+
IBM

Sign Up for IBM Cloud Account

ibm.biz/openshift-dec17

Projected market for application container technologies, 2022

Source: 2019 Container Adoption Survey

$4.3B

IT Admins who are running container technologies

Source: 2019 Container Adoption Survey

87%

IT Admins using Two or More Orchestration Tools

Source: 2019 Container Adoption Survey

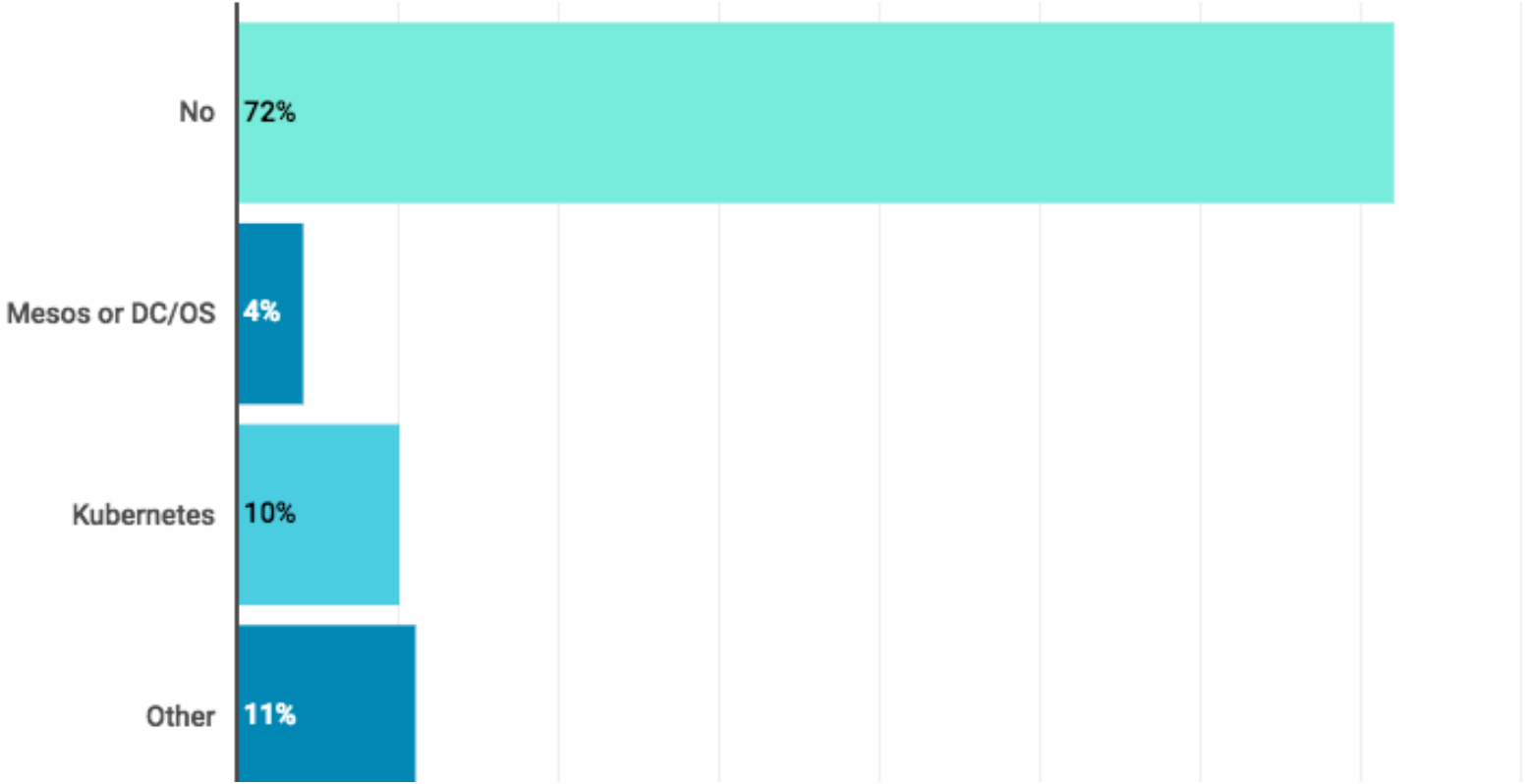
65%

Commits made to the Kubernetes repository on GitHub

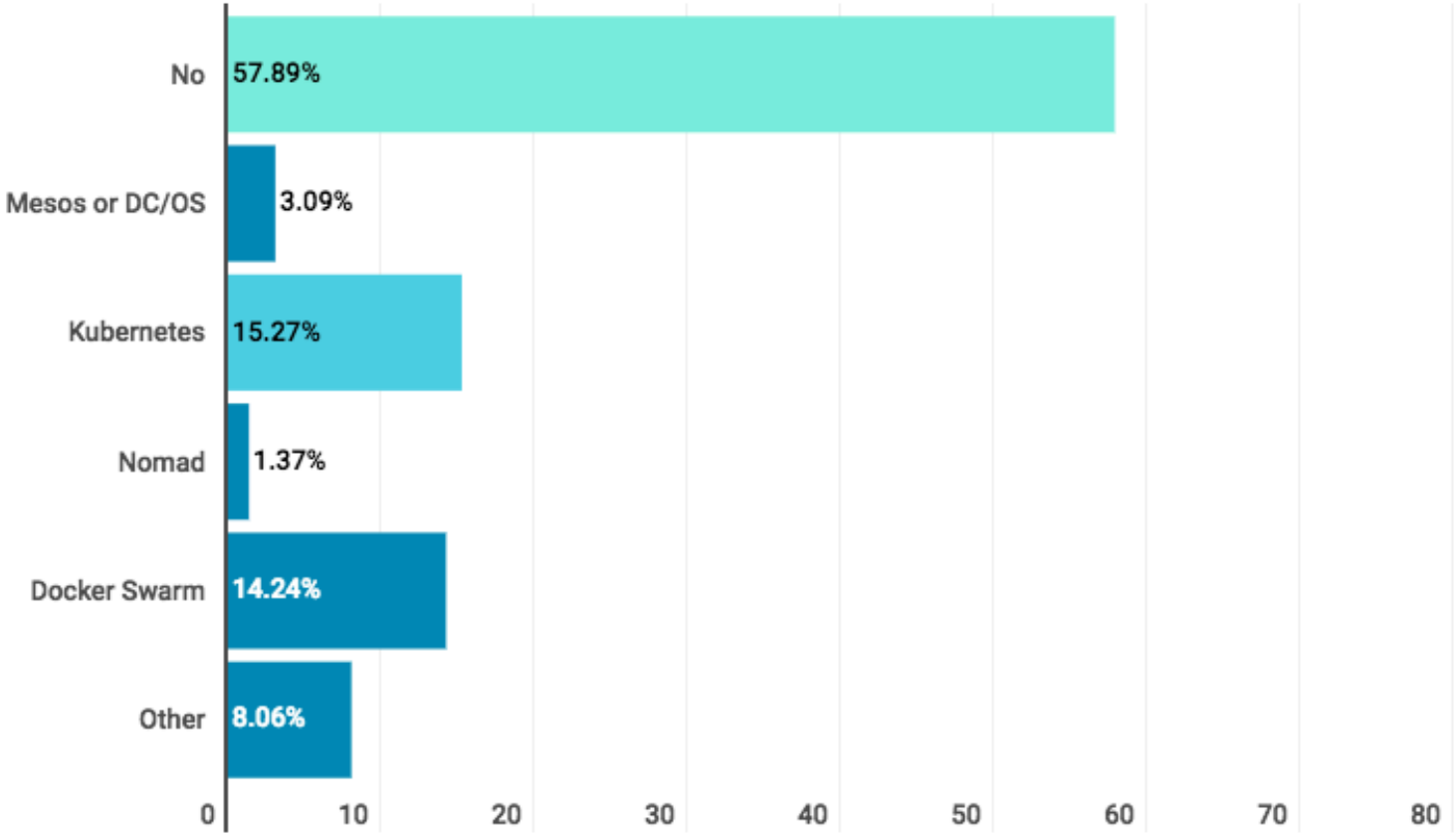
Source: 2019 Container Adoption Survey

84,413

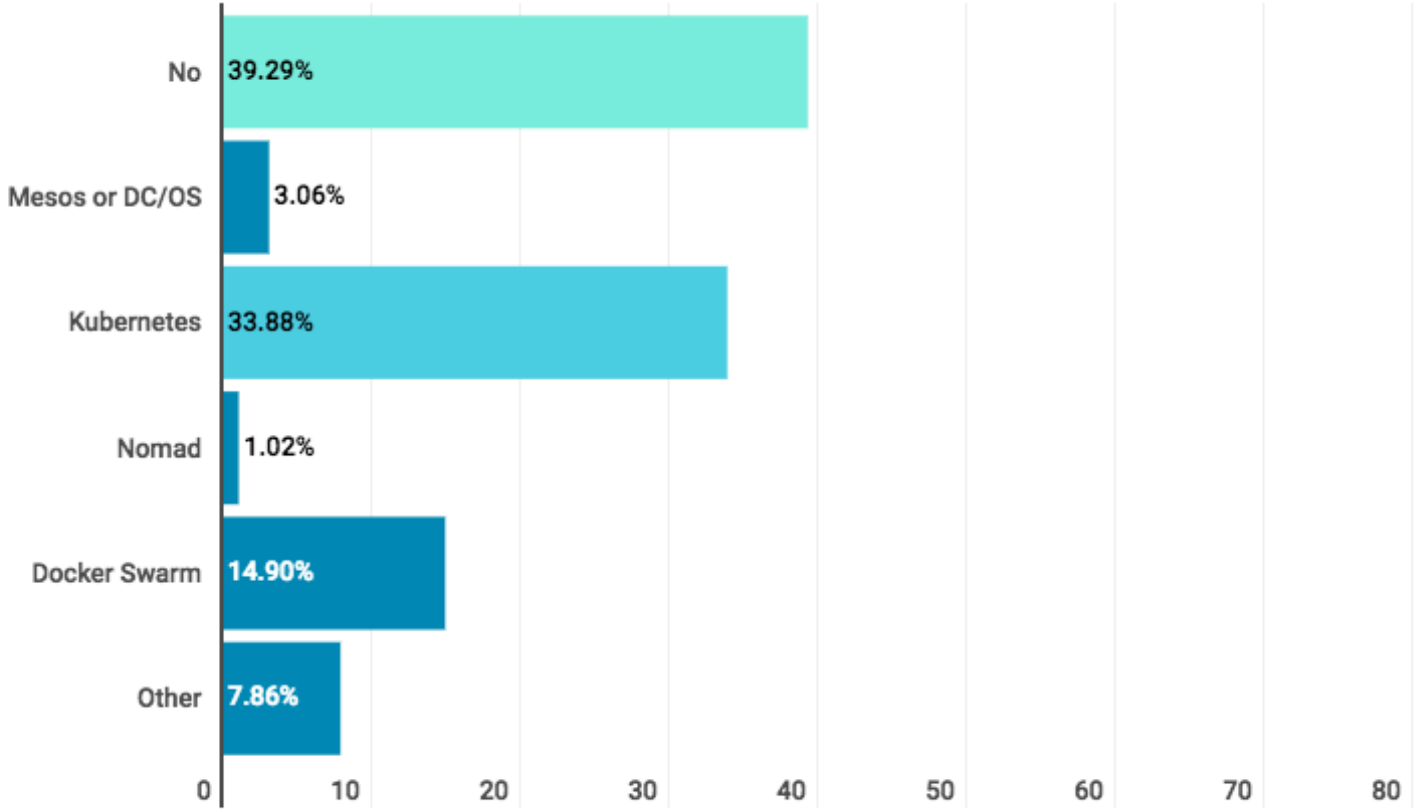
Do you use orchestration services, and if so which? (2016)



Do you use orchestration services, and if so which? (2017)

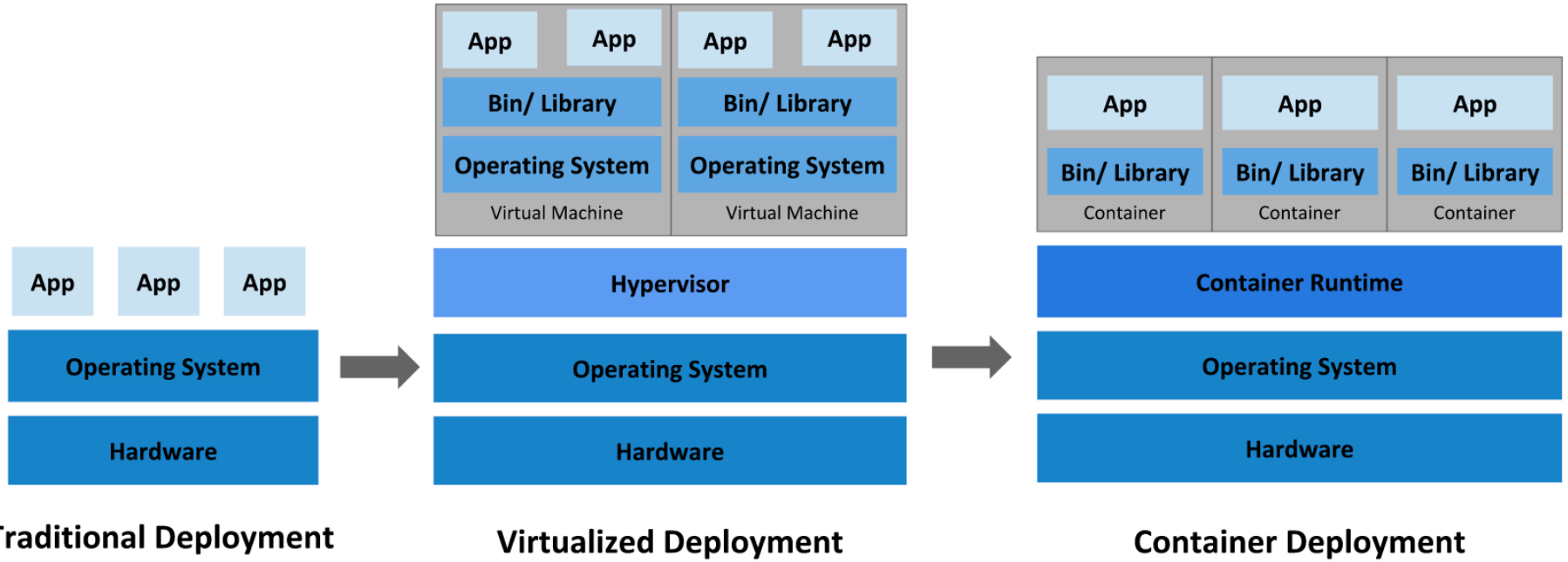


Do you use orchestration services, and if so which? (2018)



↳ Why Containers?

Why Containers?



Containers overview

- Environment isolation
- Demand growth
- New Cloud-Native Apps
- Modernize existing apps
- Dev vs Ops

A standard way to package an application and all its dependencies so that it can be moved between environments and run without changes.

Containers work by isolating the differences between applications inside the container so that everything outside the container can be standardized.

Containers: Dev vs Ops

Code

Libraries

Config

Runtime

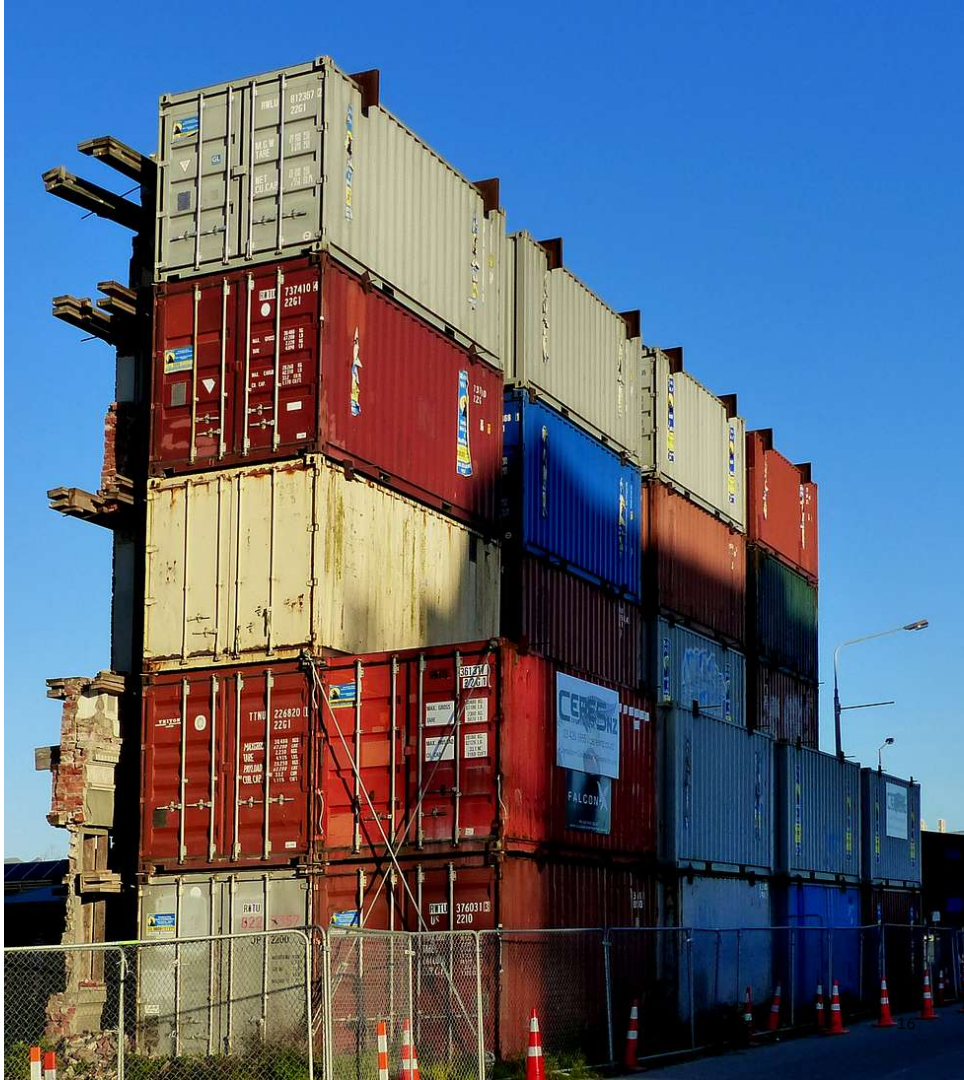
OS

Logging

Remote Access

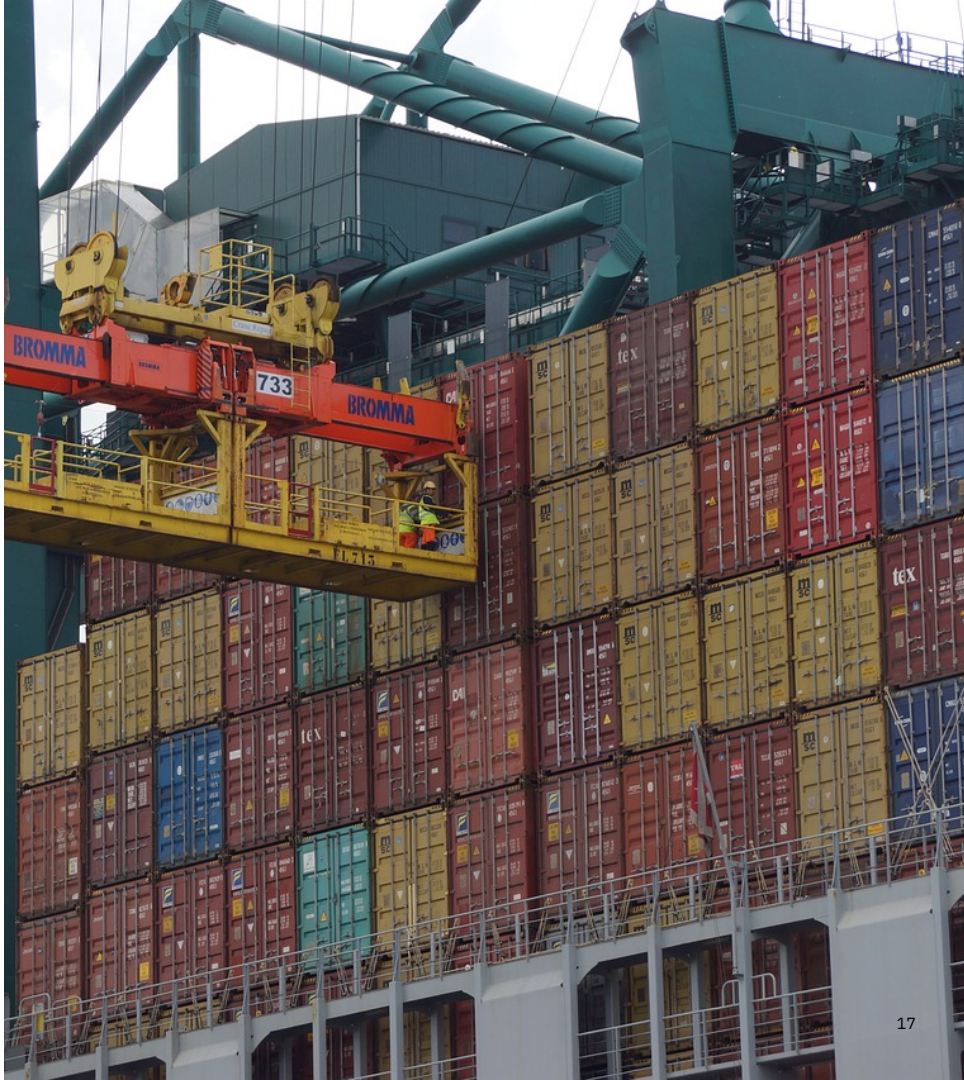
Network Config

Monitoring



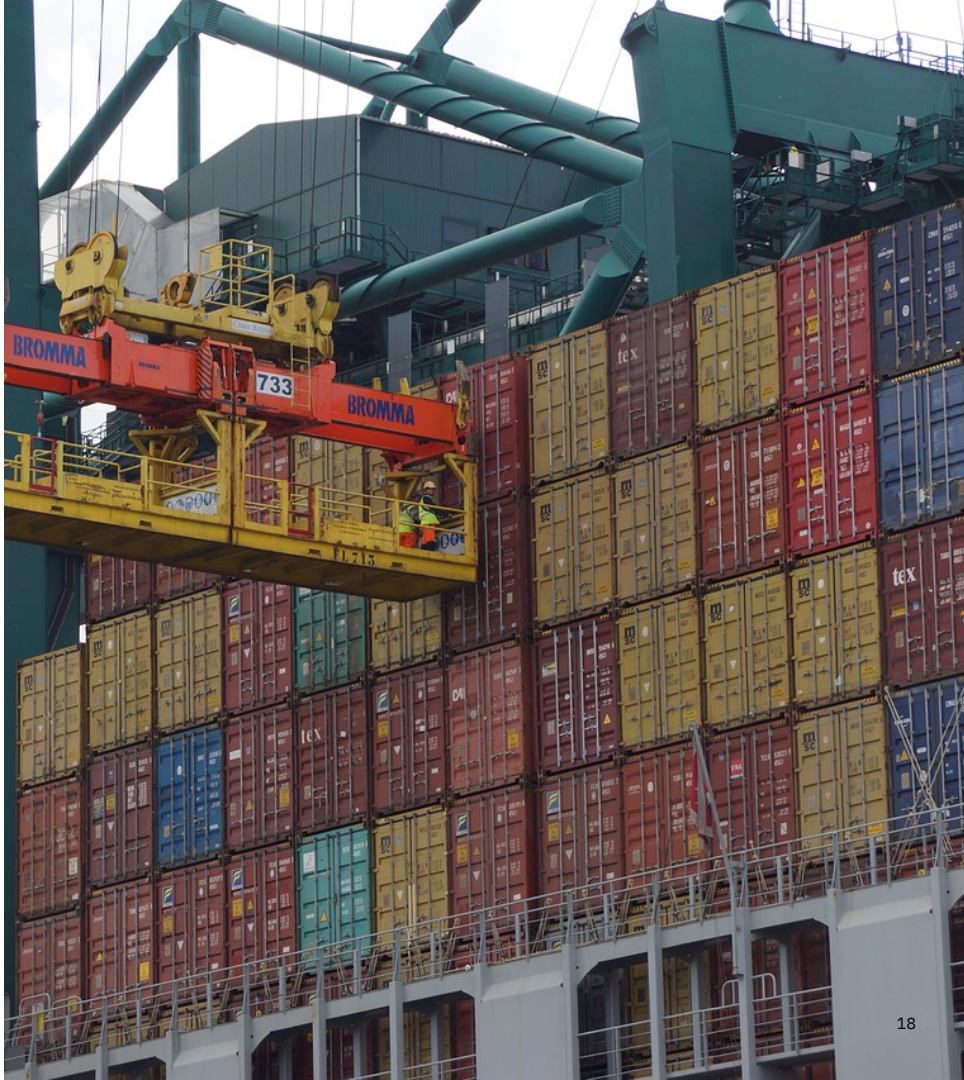
Why Containers?

- Agile
- Continuous Deployment
- Separation of Concerns
- Observability
- Consistency
- Management
- Microservices
- Resource Isolation
- Resource Utilization



Other High-Level Benefits

- Portable
- Easy to manage
- Containers provide “just enough” isolation
- Immutable

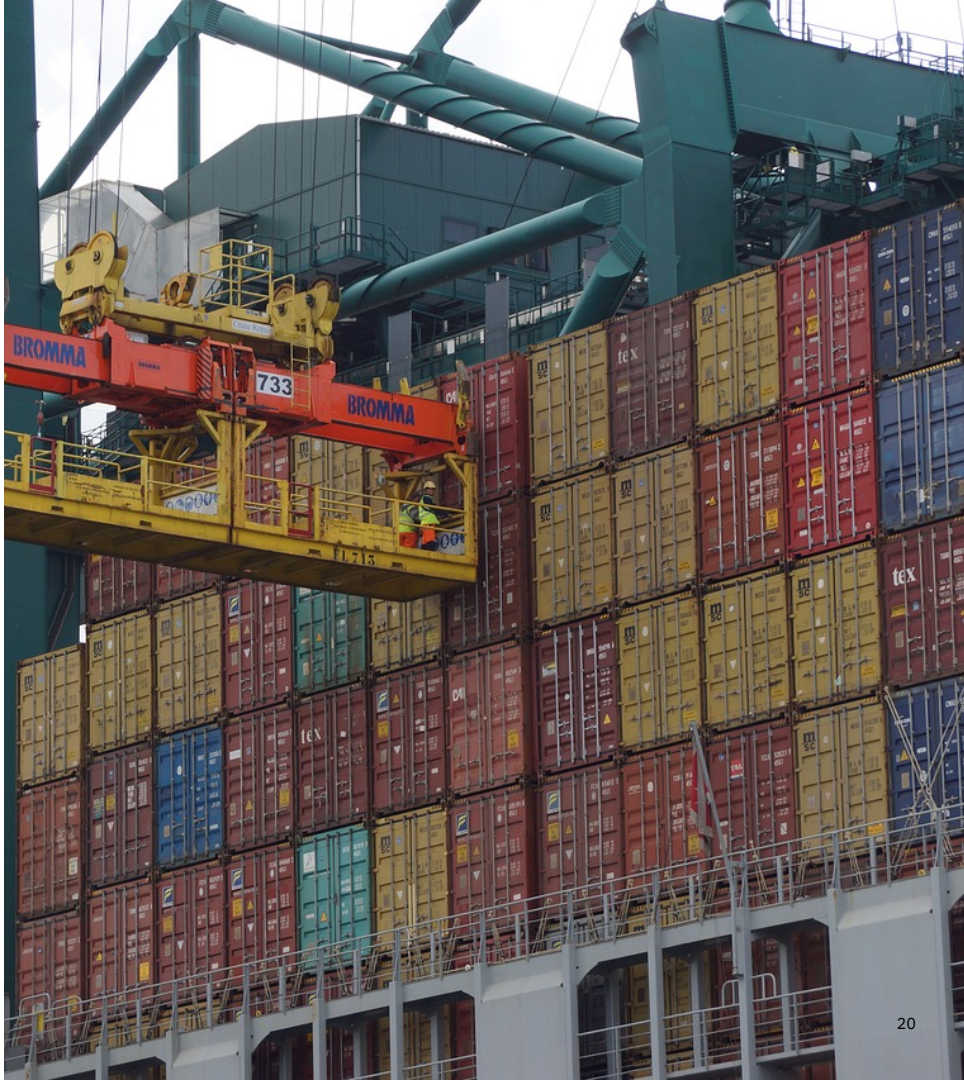


↳ Microservice Architectures

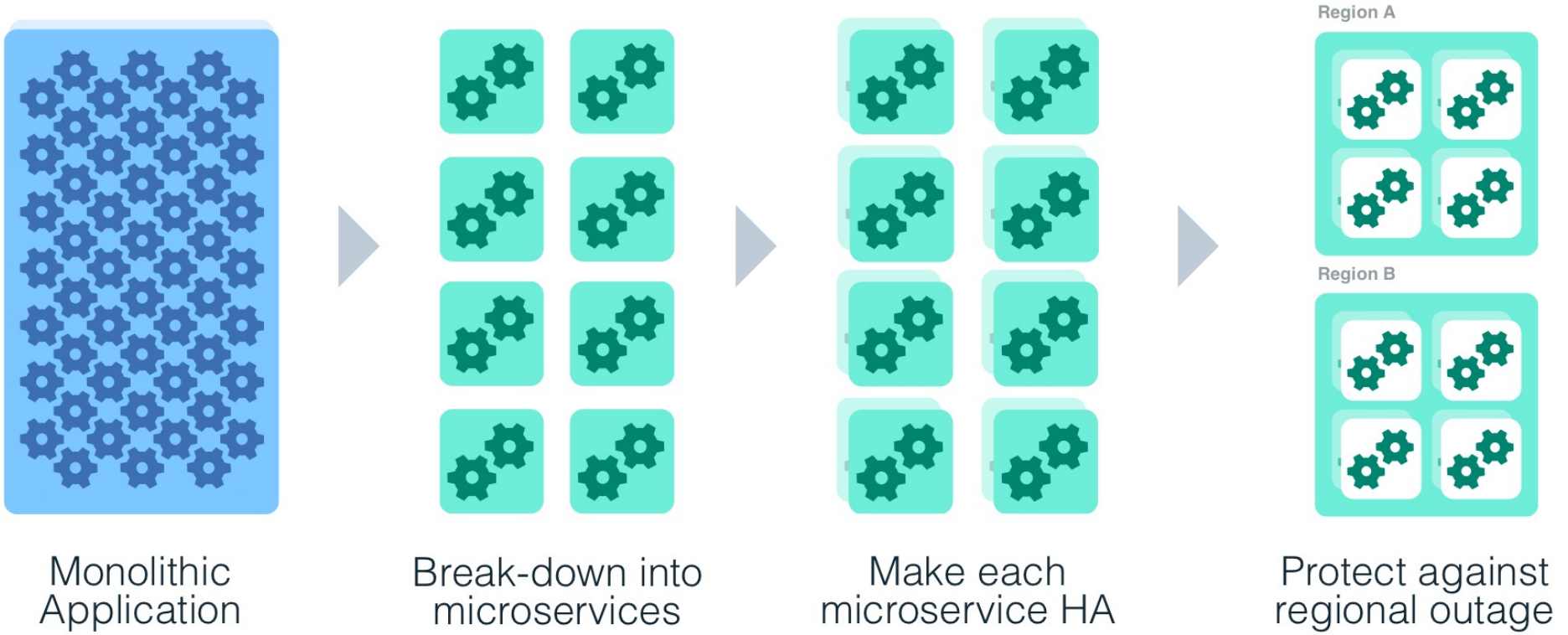
Microservices Defined

[Martin Fowler: Microservices]

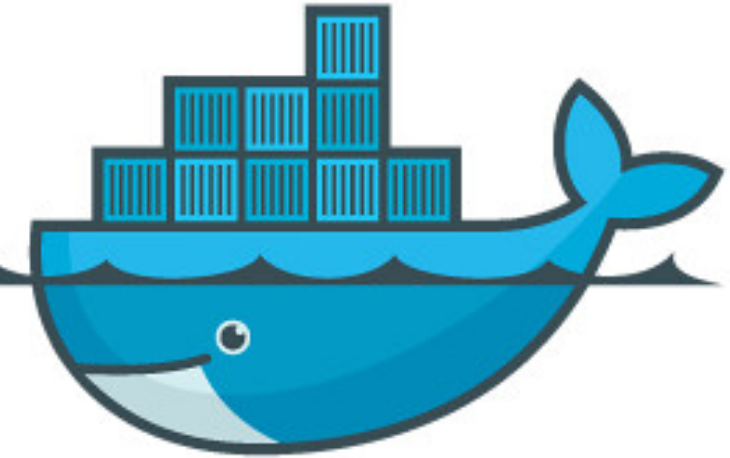
“In short, the microservice architectural style is an approach to developing a single application as a suite of small services, each running in its own process and communicating with lightweight mechanisms, often an HTTP resource API. These services are built around business capabilities and independently deployable by fully automated deployment machinery. There is a bare minimum of centralized management of these services, which may be written in different programming languages and use different data storage technologies. “



Microservices



↳ Docker Containers



dotCloud

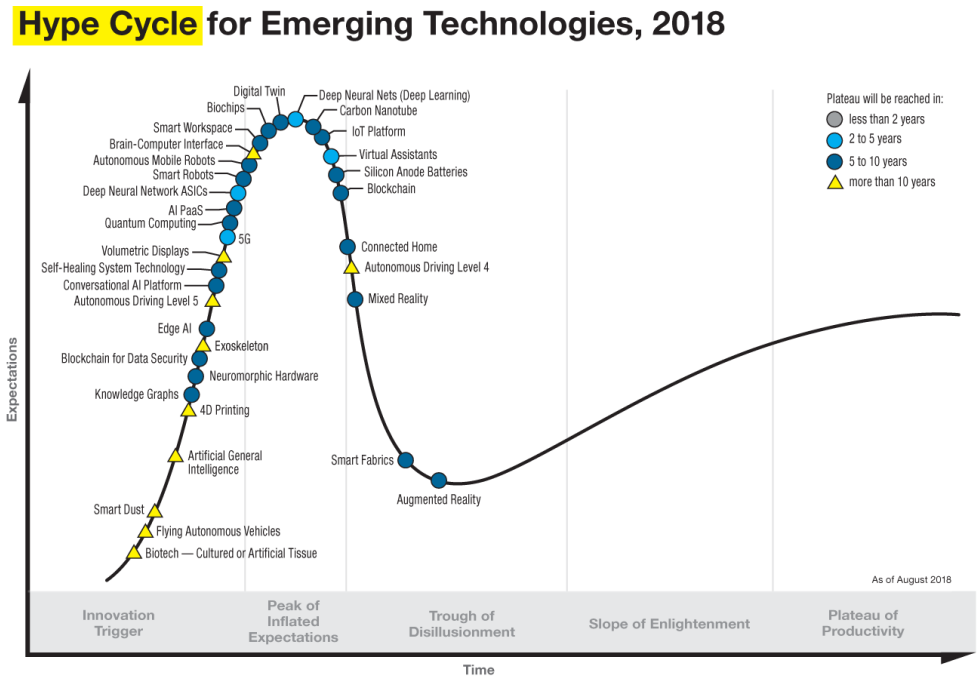
docker

The Gartner Hype Cycle

Docker generated a lot of buzz and $272M+ in venture capital funding.

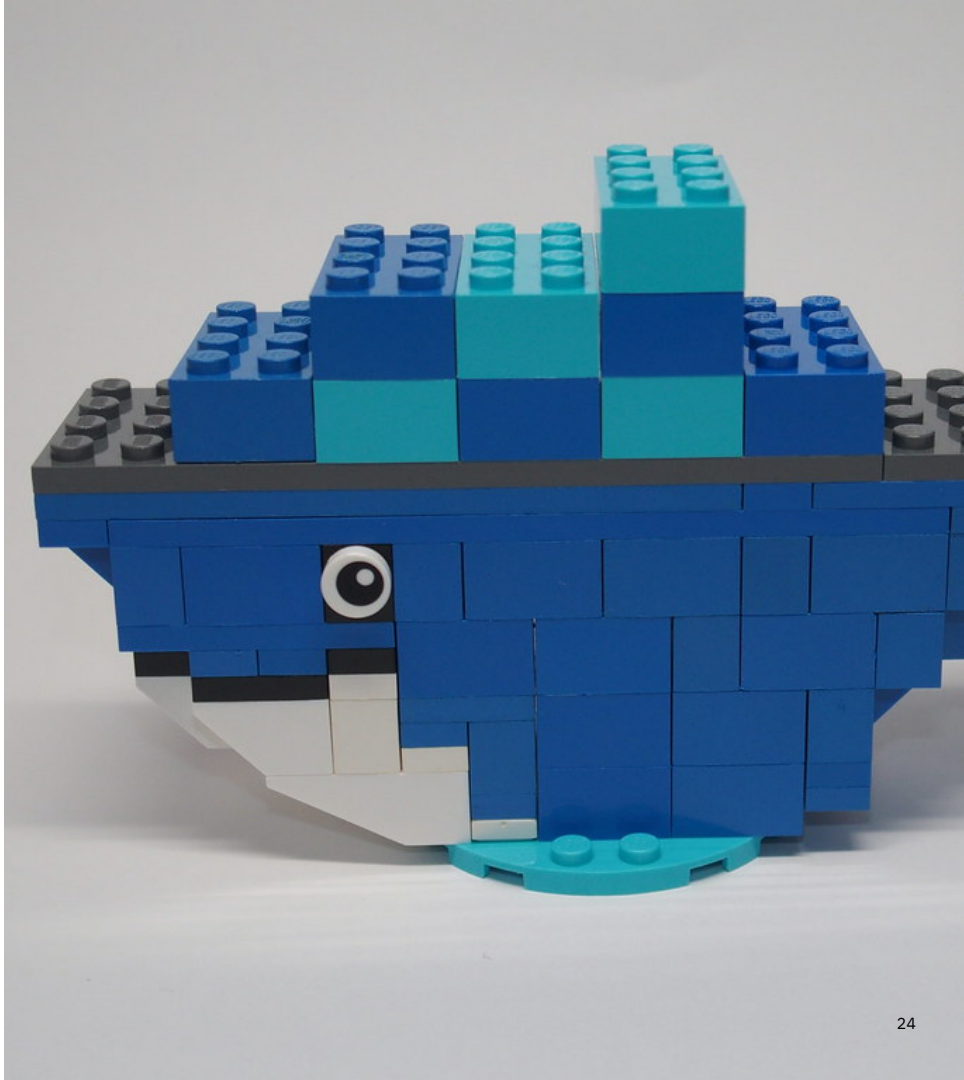
As a technology, containers are still gaining in popularity, especially with enterprises.

With a focus on Kubernetes, what is the future for Docker and Docker, Inc?



Docker Components

- Docker Engine
  - Manages containers on a host
  - Accepts requests from clients
  - Maps container ports to host ports
- Images
- Docker Client
  - Drives engine
  - Drives “builder” of images
- Docker Registry



↳ Orchestration

Orchestration

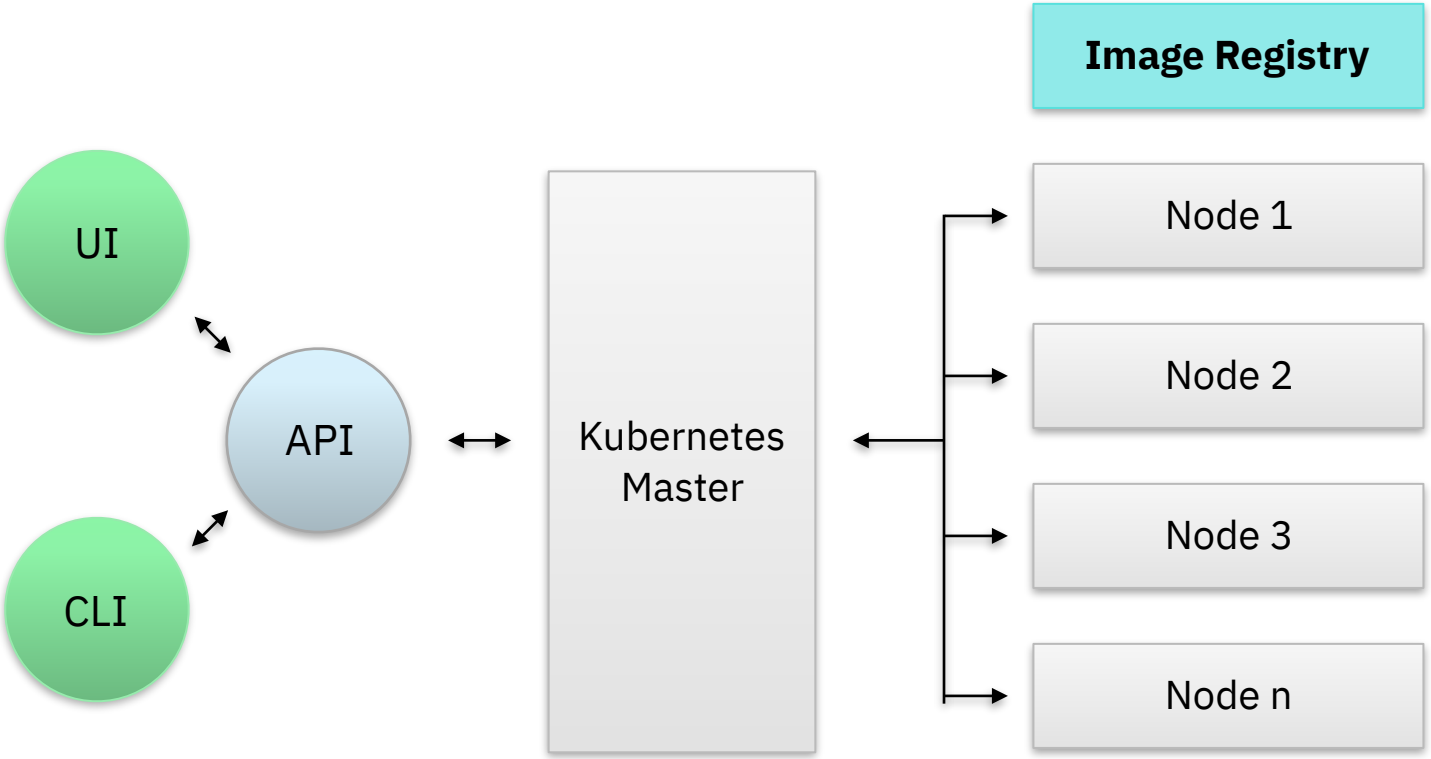
- Scheduling
- Cluster management
- Service discovery
- Provisioning
- Monitoring
- Configuration management

↳ Kubernetes


TTNU 991764 2
4561
TRIU 969001 8
4561
WHLU 594080 0
TW 4510
MGW
TARE
NET
CU CAP
AKLU 2903030
US 4500
2.9
9'
HIGH
TRIU 984191 6
4561
XTRA
MLCU 930980 0
4561
TTNU 950566 6
4561
WHLU 594551 0
4510
WHLU 594245 0
4510
TEXU 520338 0
GB 4510
TRIU 9689315

kubernetes

Kubernetes Architecture



Why Kubernetes?

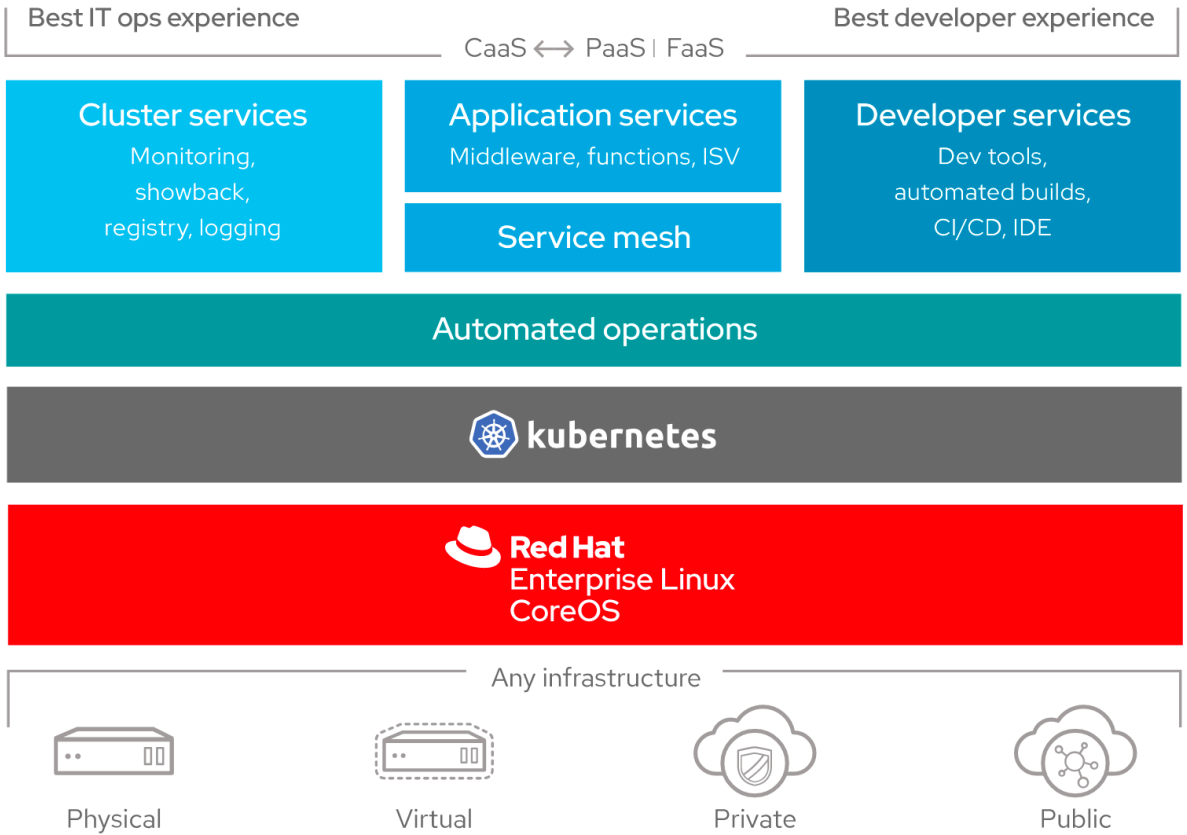
- Service Discovery
- Storage Orchestration
- Rollouts/Rollbacks
- Automatic Bin Packing
- Self-Healing
- Secret/Config Management

What Doesn’t Kubernetes Do?

- Define Application Types
- Deploy Code
- Application-Level Services
- Logging/Monitoring/Alerting
- Config
- Machine Management

↳ OpenShift

↳ OpenShift Architectural Overview



OpenShift Overview

- Container Host & Runtime
- Enterprise Kubernetes
- Validated Integrations
- Integrated Container Registry
- Developer Workflows
- Access to Services

OpenShift Developer Services

- OpenShift Service Mesh
- OpenShift Serverless
- OpenShift Pipelines

Red Hat OpenShift 4.2 released October 16, 2019

https://blog.openshift.com/introducing-red-hat-openshift-4-2-developers-get-an-expanded-and-improved-toolbox/

Today Red Hat announces Red Hat OpenShift 4.2 extending its commitment to simplifying and automating the cloud and empowering developers to innovate.

Red Hat OpenShift 4, introduced in May, is the next generation of Red Hat's trusted enterprise Kubernetes platform, reengineered to address the complexity of managing container-based applications in production systems. It is designed as a self-managing platform with automatic software updates and lifecycle management across hybrid cloud environments, built on the trusted foundation of Red Hat Enterprise Linux and Red Hat Enterprise Linux CoreOS.

OpenShift vs OKD

- OKD (Origin Community Distribution)
- github.com/openshift/origin
- 30,872 commits, 364 contributors

↳ Conclusion & Lab

Let’s Go to the Labs!

1. Sign up for IBM Cloud
ibm.biz/openshift-dec17

2. Get your OpenShift Cluster
openshiftwebinardec17.mybluemix.net (key: **oslab**)

3. Switch to your new IBM Cloud profile

4. Start a Web Shell
workshop.shell.cloud.ibm.com (password: **ikslab**)

5. Follow the Lab Setup Instructions
ibm.biz/openshift-dec17-lab

Part of **IBM Developer – 34 groups**

IBM Developer SF Bay Area

San Francisco, CA
7,619 members · Public group
Organized by **Angie K** and **6 others**

Wednesday, December 18
Online Meetup: Data wrangling and exploration with Pandas

Wednesday, January 8
Online Meetup: Real-Time Voice Applications with Glitch, Nexmo and IBM Watson

ibm.biz/bayareaevents

IBM Partners

Enabling Independent Software Vendors (ISVs) and tech companies for growth

Target audience

- ISVs and tech companies building and selling cloud solutions
- New to IBM Cloud
- Startups who aspire to build and sell their own solutions

Offers to help you get started

Build with up to $12,000 of free IBM Cloud™ credits ($1,000 per month for 12 months)

Integrate your solutions with leading-edge IBM Cloud technologies to deliver more innovation and value to your clients. Access more than **130 unparalleled services** including Watson™, Analytics and Security.

Build with 10TB of IBM Cloud Object Storage at no charge

Build data capability into your offering. IBM Cloud Object Storage is designed for high durability, resiliency and security.

Build with IBM Watson Assistant with a 1-year free trial

Receive access to 100K API calls per month plus 10 workspaces. Build and deploy chatbots quickly and efficiently with IBM Watson Assistant's advanced capabilities and seamless interface.

Build with IBM Cloud Kubernetes Service with a 1-year free trial

Containerize your solution with 1TB of block storage. Ship all your applications in one agile, well-defined structure with IBM Cloud Kubernetes Service.

Build with IBM Blockchain with a 6-month free trial

Build a network with up to 3 organizations to prototype. Build a secure business transaction network for your clients using blockchain and smart contracts.

Finished building and testing? Go-to-market with IBM

Access Provider Workbench, attend an orientation session and join the premier network of over 400 partners who are already listing their solutions on the IBM Marketplace.

Is your business a Startup? Build with up to $120,000 in IBM Cloud credits

If your business revenue in the last 12 months is less than $1M and you've been in business for fewer than five years, then you may qualify for Startup with IBM.

Get started

Experience IBM's countless partner benefits. Start building and selling with IBM today.

Learn more and access offers at ibm.com/partners/start

Questions?