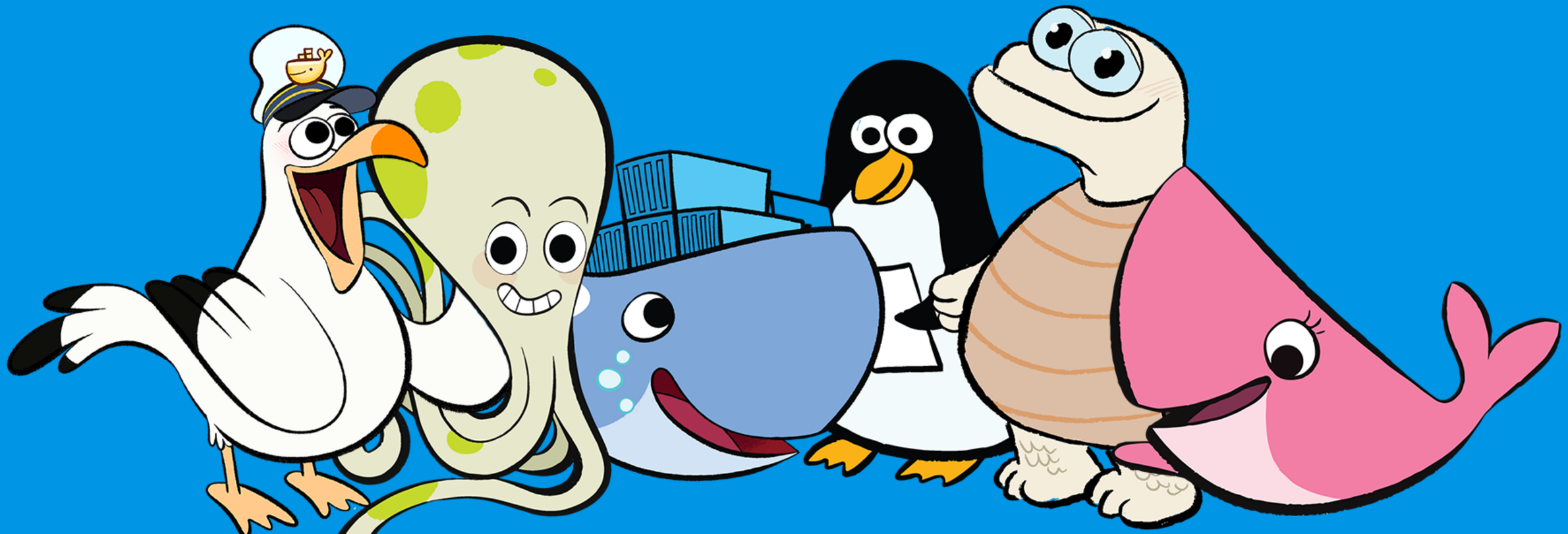
# How Docker is Changing IT

5 YEARS CREATING AN INDUSTRY OF INNOVATION



# This is it. Containers are the next once-in-a-decade shift in infrastructure and process that make or break you.

SAID BY ME. JUST NOW.

# Let's Recap

MAJOR INFRASTRUCTURE SHIFTS

## Mainframe to PC

90'S

## Baremetal to Virtual

00'S

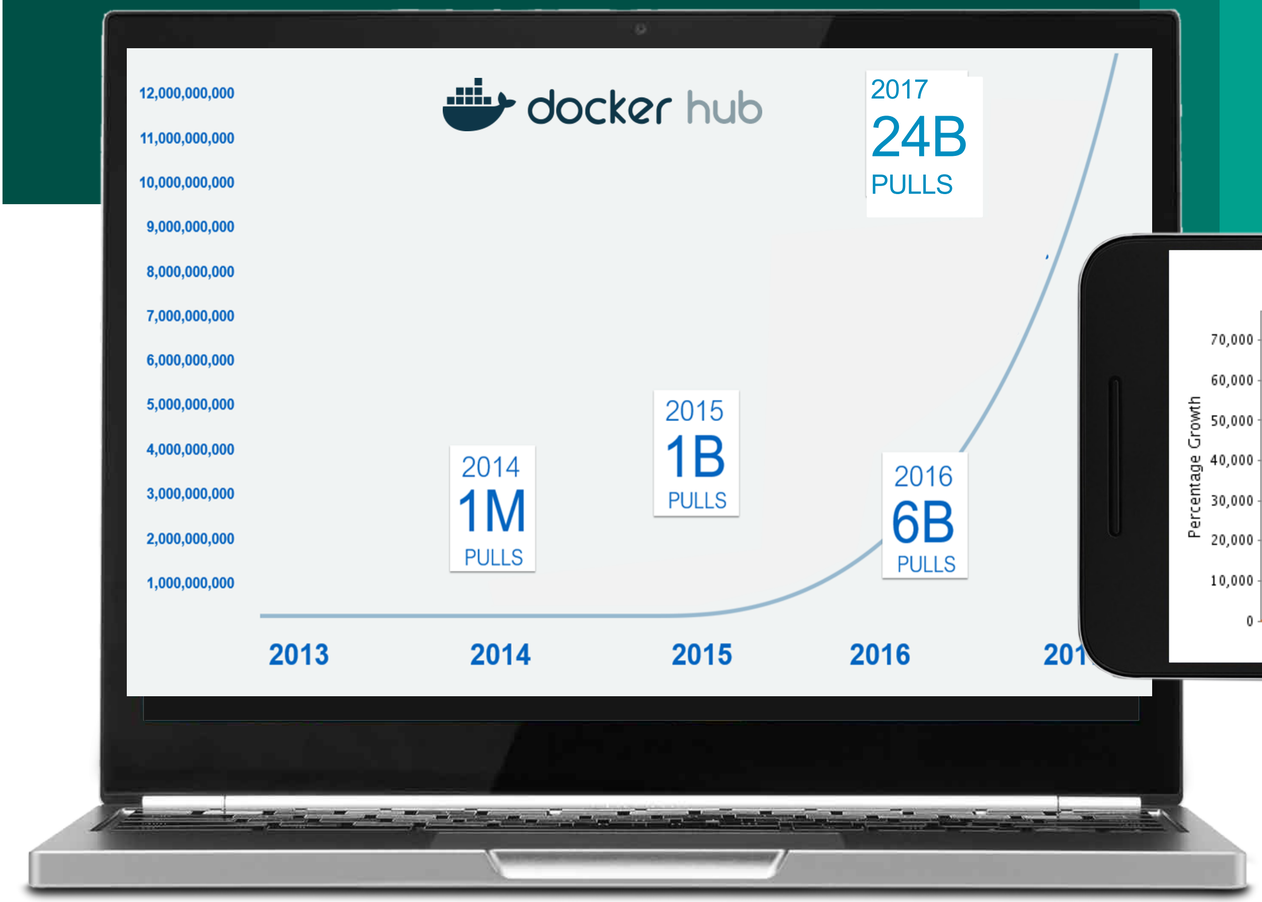
## Datacenter to Cloud

10'S

## Host to Container (Serverless)

Like all these shifts, migrating Docker is
not part on the migration experience.

# Containers are the “Fastest Growing Cloud Enabling Technology”

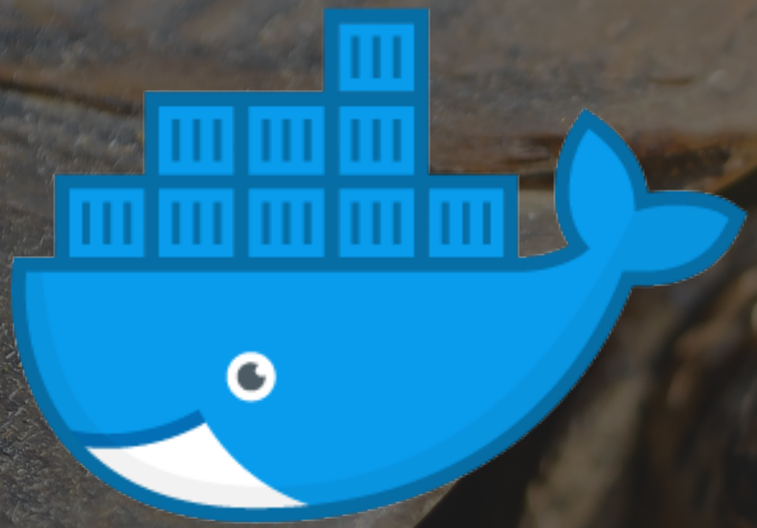


“By 2020, more than 50% of global organizations will be running containers in production.”

-Gartner

Title source: 451 Research

@docker



@gordonTheTurtle

# What will Docker do for me?

**Docker is all about speed.**

Develop Faster.

Build Faster.

Test Faster.

Deploy Faster.

Update Faster.

Recover Faster.

# The “Matrix from Hell” Breeds Complexity

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Static Website | ? | ? | ? | ? | ? | ? | ? | ? |
| Web Frontend | ? | ? | ? | ? | ? | ? | ? | ? |
| Background Workers | ? | ? | ? | ? | ? | ? | ? | ? |
| User DB | ? | ? | ? | ? | ? | ? | ? | ? |
| Analytics DB | ? | ? | ? | ? | ? | ? | ? | ? |
| Queue | ? | ? | ? | ? | ? | ? | ? | ? |
| | Desktop | Test/QA Cluster | Production Cluster | Public Cloud | Data Center | Mainframe | Windows Server | Edge Device |

# Containers Reduce Complexity

Static Website

Web Frontend

Background Workers

User DB

Analytics DB

Queue

| Desktop | Test/QA Cluster | Production Cluster | Public Cloud | Data Center | Mainframe | Windows Server | Edge Device |
|---|---|---|---|---|---|---|---|

# Maintenance and Complexity Drains Budgets, So Innovation Suffers

80%
MAINTENANCE

20%
INNOVATION

IT demands *increasing!*

<20% server utilization***

8+ IT Silos*

1000's of apps

## Stalled Initiatives

- Modernizing legacy apps
- Cloud migration
- Server consolidation
- Faster s/w time to market

60% of CIOs say
***"We're behind in digital transformation"***

* Average number infrastructures in the enterprise (on-prem and cloud)
** Forrester, CIO and the emerging Digital Crisis, 2018
*** CloudPhysics, Global IT Data Lake Report, Q4, '16
Sources: IDC "The Cost of Retaining Aging IT Infrastructure", RightScale 2017 State of the Cloud Report

# 500+ Build Their Containerization Strategy with Docker Enterprise Edition

## Oil & Gas / Energy

- Shell
- Halliburton
- Schlumberger
- EOG Resources

## Healthcare & Science

- Amgen
- Merck
- GlaxoSmithKline
- HudsonAlpha Institute for Biotechnology

## Financial Services

- Goldman Sachs
- Societe Generale
- Visa
- ADP

## Tech

- GE
- RSA
- PayPal
- Splunk>

## Insurance

- Anthem
- Alm Brand
- Liberty Mutual Insurance
- MetLife

## Public Sector

- GSA
- kadaster
- Cornell University Founded A.D. 1865
- Indiana University

docker.com/customers

18 Month project
Migrated 700+ apps
Now 150,000 containers
50% dev productivity boost

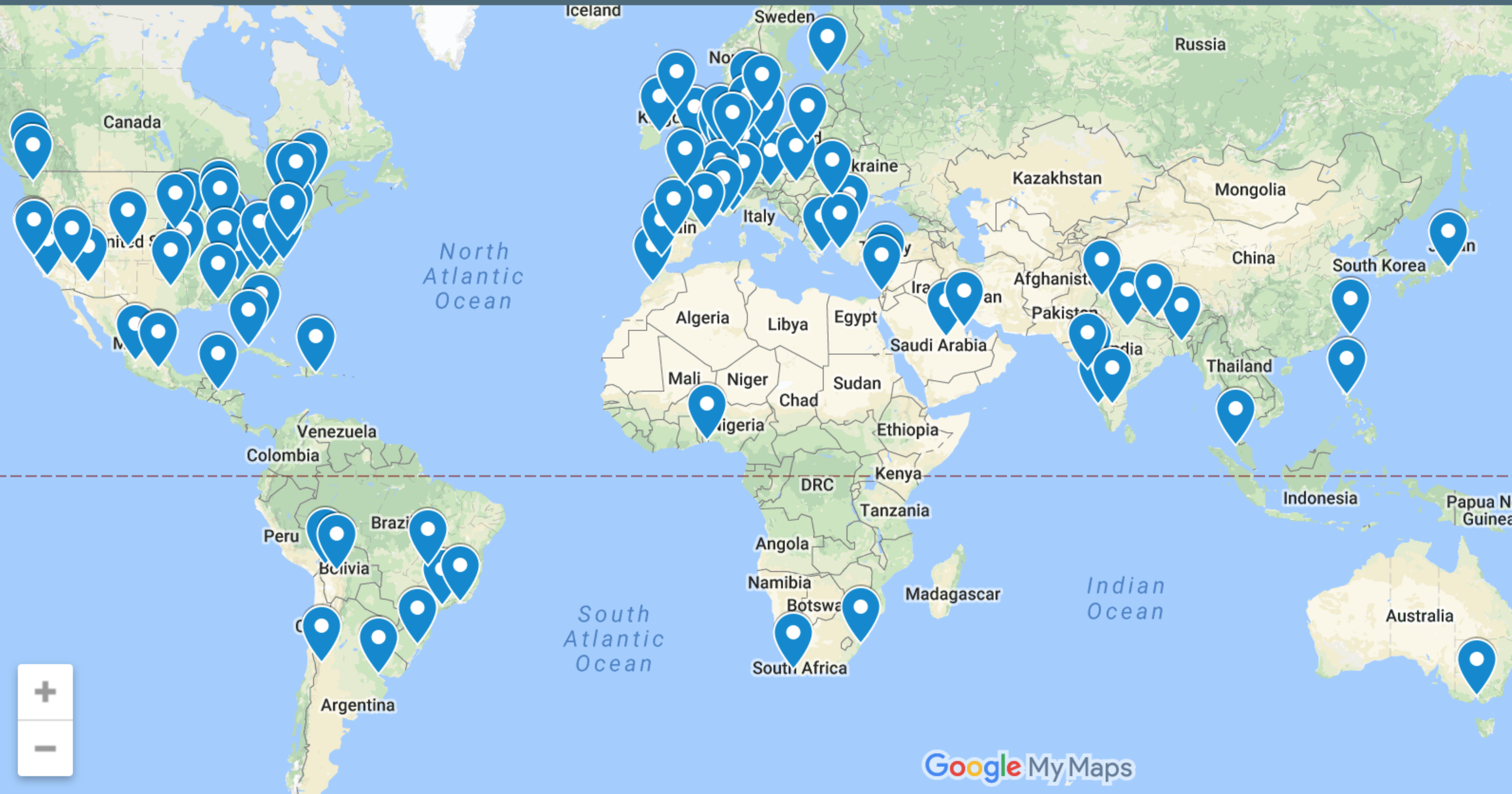
70% reduction in VM costs
67% fewer CPU's
10x average CPU utilization
66% cost reduction

https://blog.docker.com/2017/10/metlife-docker-enterprise-edition-self-funded-containerization/

https://blog.docker.com/2017/12/containers-at-paypal/

5
docker

# Docker Birthday #5



HAPPY BIRTHDAY
docker

HAPPY BIRTHDAY
DOCKER!
docker

DOCKER!

HAPPY
BIRTHDAY
5
docker

HAPPY BIRTHDAY
DOCKER!

Docker

# Cloud Native Landscape

v2.1

See the interactive landscape at **landscape.cncf.io**

Greyed logos are not open source

## App Definition & Development

### Database & Data Warehouse

Vitess (CNCF Incubating)

ArangoDB, BIGCHAINDB, CarbonData, Cassandra, CockroachDB, Couchbase, CrateDB, Druid, EdgeDB, IBM DB2, Iguazio, Infinispan, MariaDB, MemSQL, MongoDB, MySQL, NDB Cluster, Oracle Database, OrientDB, Pachyderm, pilosa, PostgreSQL, Presto, Qubole, Redis, RethinkDB, ScyllaDB, Snowflake, Software AG, Stanford Lagunita, STAN's FIRST DATA, SQL Server, Tarantool, Vertica, YugaByte

### Streaming

NATS (CNCF Incubating)

Amazon Kinesis, Apache APEX, NiFi, Apache Nemo, Spark, Apache Storm, cloudevents, Flink, Heron, Kafka, Pulsar, RabbitMQ, StreamSets

### Source Code Management

Bitbucket, GitHub, GitLab, Software Heritage

### Application Definition

Apache Brooklyn, Binnaker, Habitat, Kubevirt, OpenAPI, Packer, Singularity

### Continuous Integration / Continuous Delivery (CI/CD)

AppVeyor, Argo, Bamboo, Buddy, Buildkite, CircleCI, Skycap, CloudBees, Codeship, Concourse, ContainerOps, Distelli, Drone, Habitus, Jenkins, Keel, openstack Zuul, Rio, Screwdriver, shippable, Solano Labs, Spinnaker, Travis CI, Weave Flux, Wercker, DEIS

## Orchestration & Management

### Scheduling & Orchestration

kubernetes (CNCF Graduated)

Amazon ECS, Docker Swarm, Mesos, Microsoft Azure Service Fabric, Nomad

### Coordination & Service Discovery

CoreDNS (CNCF Incubating)

Apache Zookeeper, Consul, ContainerPilot, etcd, Netflix Eureka, SkyDNS, airbnb SmartStack, vmware Haret

### Service Management

gRPC (CNCF Incubating)

envoy (CNCF Incubating)

LINKERD (CNCF Sandbox)

3Scale, Ambassador, AWS ELB, Apache Thrift, AVI Networks, backplane, Conduit, F5, HAProxy, Heptio Contour, Hystrix, Istio, Kong, Netflix Zuul, NGINX, Open Policy Agent, Orbitera, Netflix Ribbon, traefik, Turbine Labs, vamp

## Runtime

### Cloud-Native Storage

ROOK (CNCF Sandbox)

ceph, CSI, Datera, DellEMC, Diamanti, Gluster, Hatchway, HedvIG, Infinit, kasten, LeoFS, Joyent Manta, MINIO, NetApp, OpenEBS, OpenIO, OpenSDS, Portworx, Pure Storage, Quobyte, Robin, Sheepdog, Springpath, Storagos, SWIFT

### Container Runtime

containerd (CNCF Incubating)

rkt (CNCF Incubating)

cri-o, Intel Clear Containers, kata, lxd, OPEN ENCLAVE, Pouch, runV, Singularity, SmartOS

### Cloud-Native Network

CNI (CNCF Incubating)

Aporeto, Avaistix, bigswitch, canal, cilium, Contiv, Cumulus, flannel, GuardiCore, midonet, VMware NSX, Nuage Networks, OvS, Open vSwitch, OpenContrail, Plumgrid, Calico, Romana, snaproute, Weave Net

## Provisioning

### Host Management / Tooling

Ansible, CFEngine, Chef, LinuxKit, puppet, Rundeck, SaltStack

### Infrastructure Automation

AWS CloudFormation, BOSH, Cloud Foundry Coreo, Cloudify, Helm, Infrakit, Juju, Kubicorn, ManageIQ, Terraform

### Container Registries

Amazon ECR, Azure Registry, codefresh Registry, Docker Registry, Google Container Registry, Harbor, JFrog Artifactory, Portus, Atomic Registry, Quay

### Secure Images

Notary (CNCF Incubating)

TUF (CNCF Incubating)

anchore, aqua, Black Duck, clair, NeuVector, OpenSCAP, Sonatype Nexus, Twistlock

### Key Management

KeyWhiz, Knox, Confidant, Oracle Policy Automation, Spiffe, SPIRE, Vault

## Cloud

### Public

Alibaba Cloud, aws, Azure, Baidu Cloud, DigitalOcean, Fujitsu, Google Cloud, Huawei, IBM Cloud, Joyent, Oracle, packet, Tencent Cloud

### Private

Digital Rebar, Foreman, MAAS, openstack, Scaleway, vmware

github.com/cncf/landscape

*This landscape is intended as a map through the previously uncharted terrain of cloud native technologies. There are many routes to deploying a cloud native application, with CNCF Projects representing a particularly well-traveled path.*

CLOUD NATIVE Landscape

CLOUD NATIVE COMPUTING FOUNDATION

Redpoint Amplify Partners

## Platforms

### Certified Kubernetes - Distribution

Apprenda, Apps Code, Caicloud, Canonical, Container Solutions, Core OS, DaoCloud, Diamanti, Docker, Ghostcloud, Giant Swarm, Google Cloud, Heptio, IBM Cloud, Infoblox, Joyent, kube-spawn, kublr, Kubernetic, Mesosphere, Mirantis, NetApp Cloud, OpenShift, Oracle, Pivotal, Platform9, QFusion, Rancher, Samsung SDS, Stack Point Cloud, SUSE, Tectonic, Typhoon, vmware, Weaveworks

### Certified Kubernetes - Platform

Alauda, Alibaba Cloud, Apprenda, Azure, Baidu Cloud, Beijing Shenzhou Aerospace, Cisco, EasyStack, ebay Technology, Inspur, Internet Initiative Japan, Mirantis, Huawei, IBM Cloud, nirmata, Oracle, SAP, Tencent Cloud, ZTE

### Non-Certified Kubernetes

Amazon EKS, Maestro, Containership, goPaddle, Gravitational, Huawei, navops, Supergiant

### PaaS/Container Service

Apcera, Atomic, cloudcraft, Convox, Datawire, Remind, Exoscale, Flynn, Galactic Fog, Heroku, Hyper.sh, Jiaozi, Kontena, Lightbend, Mantl, No Code, Pivotal, platform.sh, Portainer.io, Scalingo, Tsuru

## Observability & Analysis

### Monitoring

Prometheus (CNCF Incubating)

Amazon CloudWatch, AppDynamics, Applicfy, AXIBASE, cashpoint, centreon, Cobe, COSCALE, Datadog, dynatrace, Google Stackdriver, Grafana, Graphite, Hosted Graphite, Icinga, InfluxDB, Instana, Ironio, Librato, LightStep, Log Analytics, meros, New Relic, Nagios, Netsil, Node Source, opbeat, OpenTSDB, opsclarity, Outlyer, rocana, sensu, Sentry, Sysdig, Tingyun, Weave Cloud, Weave Scope, Zabbix

### Logging

fluentd (CNCF Incubating)

elastic, graylog, Loggly, Humio, logzio, loom, sematext, splunk, sumologic

### Tracing

OpenTracing (CNCF Incubating)

Jaeger (CNCF Incubating)

Appdash, Skywalking, Zipkin

### Serverless

See the separate serverless landscape

## Special

### Kubernetes Certified Service Provider

Accenture, Bitnami, Caicloud, Canonical, Claranet, CloudOps, Container Solutions, Contino, Core OS, Diamanti, Ghostcloud, Giant Swarm, Heptio, Huawei, IBM Cloud, Infoblox, Jetstack, Kublr, Livewyer, Loodse, Mirantis, nailways, nirmata, RX-M, Samsung SDS, Stack Point Cloud, Supergiant, Treasure Data, Weaveworks