

# The road to full containerization

GLOBAL  
APP  
TESTING

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[globalapptesting.com](http://globalapptesting.com)

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# Who am I and what is this about?

- ▶ About me

- DevOps engineer for Global App Testing since 2016
- IT professional since 2011, industrial and banking clients
- TODO: blah blah blah

- ▶ About this presentation

- Quick introduction
- Technology stack
- The migration talk

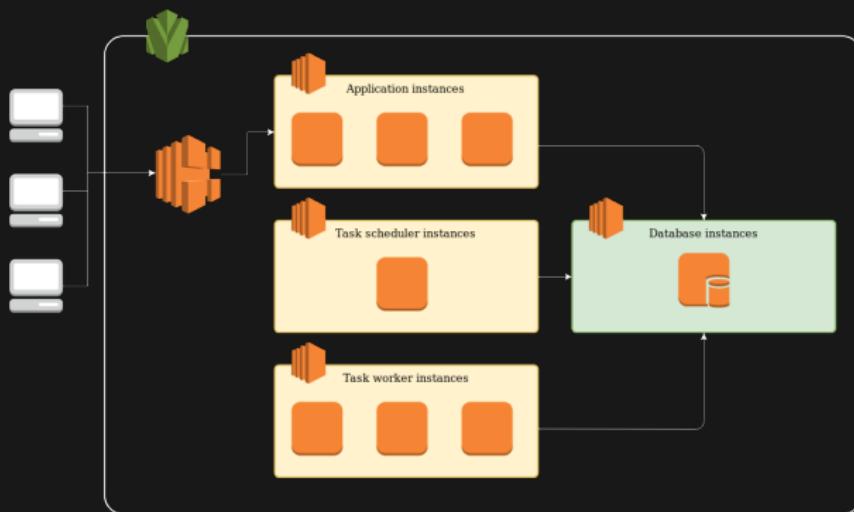


# Ancient history



# GAT infrastructure

The year is 2016



# GAT infrastructure

Pain points explained

- ▶ Long deployment times
- ▶ Uncertainty of success before starting
- ▶ Deployments caused downtime
- ▶ High cost
- ▶ Not automated



# The container landscape



# Docker



- ▶ Container platform
- ▶ Lightweight virtual machines
- ▶ Packaging format



# Kubernetes



- ▶ Container orchestration
- ▶ Service discovery
- ▶ Persistent storage
- ▶ High availability



# Helm



- ▶ Package manager for Kubernetes
- ▶ Configuration management
- ▶ Deployment management
- ▶ Template provider



# Migrating to Kubernetes



# Moving to Kubernetes on GKE

Why there?

- ▶ Cluster deployment is completely automated
- ▶ Management is done by Google
- ▶ Built in goodies
  - Authentication integrated with the rest of their cloud
  - Centralized logging
  - Cluster monitoring
  - Container registry



# Moving to Kubernetes on GKE

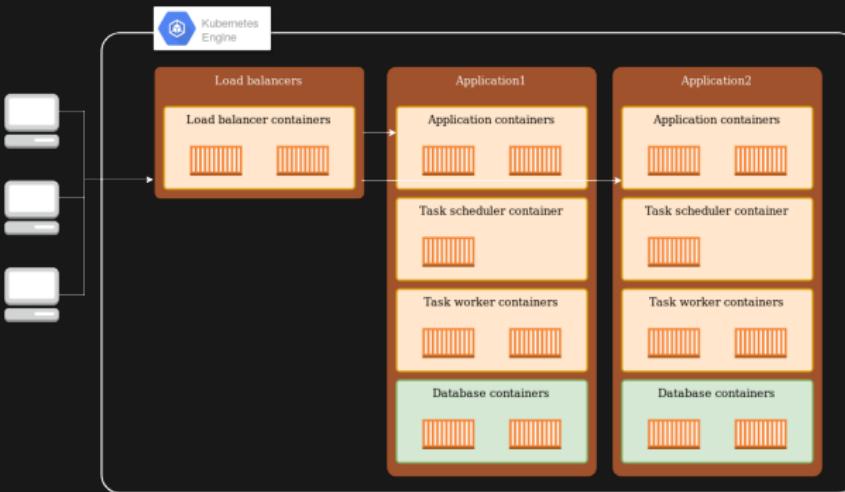
## The journey

- ▶ Docker images for applications
- ▶ CI pipeline modification
- ▶ Helm charts to replace the currently used automation
- ▶ Moving the apps one by one
  - First on sandbox environments
  - No weird dependencies, only API communication



# Moving to Kubernetes on GKE

The end result



# Moving to Kubernetes on GKE

No happy end

- ▶ Bugs!
  - Nodes crashing due to misconfigured journalctl
  - Frequent networking problems
- ▶ Management is done by Google
  - Forced, automatic security updates on master nodes
  - No way of accessing the machine
  - Doesn't work? Too bad
- ▶ Inflexible configuration
  - Not possible to turn on alpha features
  - Not possible to change node configuration
  - Even pulling an image before attaching a node to the cluster is hard
- ▶ Waiting for Kubernetes security updates  
(CVE-2017-1002101 and it's 4 days)



# Migrating back to AWS



# Moving to Kubernetes on AWS

Enter kops

- ▶ A Kubernetes cluster bootstrapping utility



# Moving to Kubernetes on AWS

New challenges

- ▶ Missing parts

- Authentication integrated with the rest of their cloud - **PKI**
- Centralized logging - **Graylog**
- Cluster monitoring - **Prometheus and Grafana**

- ▶ Moving stuff

- Container registry - **Amazon ECR**
- AWS and GKE load balancers behave differently
- Use EBS instead of Google disks



# Questions?

