

The road to full containerization

GLOBAL
APP
TESTING

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

- ▶ About this presentation

- Quick introduction
- Technology stack
- The migration talk

- ▶ Things are moving fast!

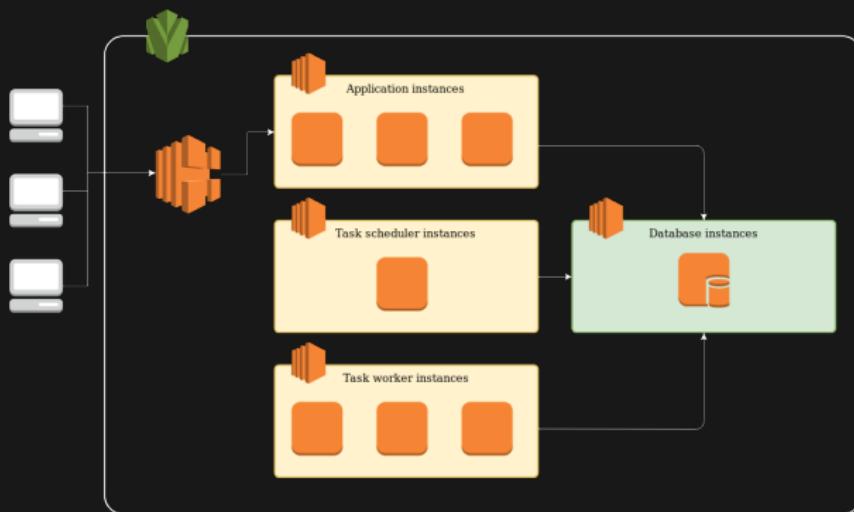


Ancient history



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



Gat infrastructure

What next?

- ▶ Improve existing infrastructure
 - Vendor lock-in
- ▶ Move to containers
 - Save money
 - Lessen configuration complexity
 - Play with shiny new tools



The container landscape



Docker



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



Kubernetes



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



Helm



- ▶ Package manager
- ▶ Configuration management
 - Provides templates
- ▶ Deployment management



Migrating to Kubernetes



Moving to Kubernetes on GKE

Why there?

- ▶ Automated cluster deployment
- ▶ Management by Google
- ▶ Built in goodies:
 - Integrated authentication
 - Centralized logging
 - Cluster monitoring
 - Container registry



Moving to Kubernetes on GKE

The journey

- ▶ Docker images for applications
- ▶ CI pipeline modification
- ▶ Helm instead of Chef
 - Change configuration generation



Moving to Kubernetes on GKE

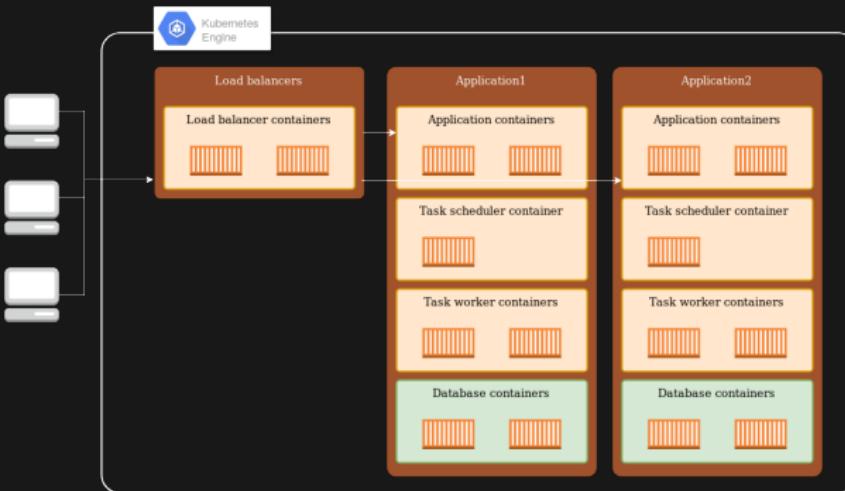
The actual move

- ▶ Moving apps one by one
- ▶ Only API communication
 - VPNs were helpful



Moving to Kubernetes on GKE

The end result



Moving to Kubernetes on GKE

Pain points revisited

- ▶ **Long deployment times**
 - Down from 15 minutes to 1-2 minutes
- ▶ **Uncertainty of success before starting**
 - Using Docker as packaging worked
- ▶ **Deployments caused downtime**
 - No downtime deployments
- ▶ **High cost**
 - Lowered
- ▶ **Not automated**
 - Automated (after some time)



Moving to Kubernetes on GKE

No happy end

- ▶ **Bugs!**
 - Nodes crashing due to misconfigured journalctl
 - Frequent networking problems
- ▶ **Bad support**
- ▶ **Management by Google**
 - No way of accessing the API master machine
- ▶ **Inflexible configuration**
 - Not possible to turn on alpha features
 - Not possible to change node configuration
- ▶ **Waiting for Kubernetes security updates**



Migrating back to AWS



Moving to Kubernetes on AWS

Enter kops



- ▶ Cluster bootstrapping utility
- ▶ Lifecycle management
- ▶ Very flexible



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



Moving to Kubernetes on AWS

End result

- ▶ It's stable!
- ▶ Minor issues
 - EBS volumes get stuck on mount



Questions?

