

The road to full containerization

GLOBAL
APP
TESTING

globalapptesting.com

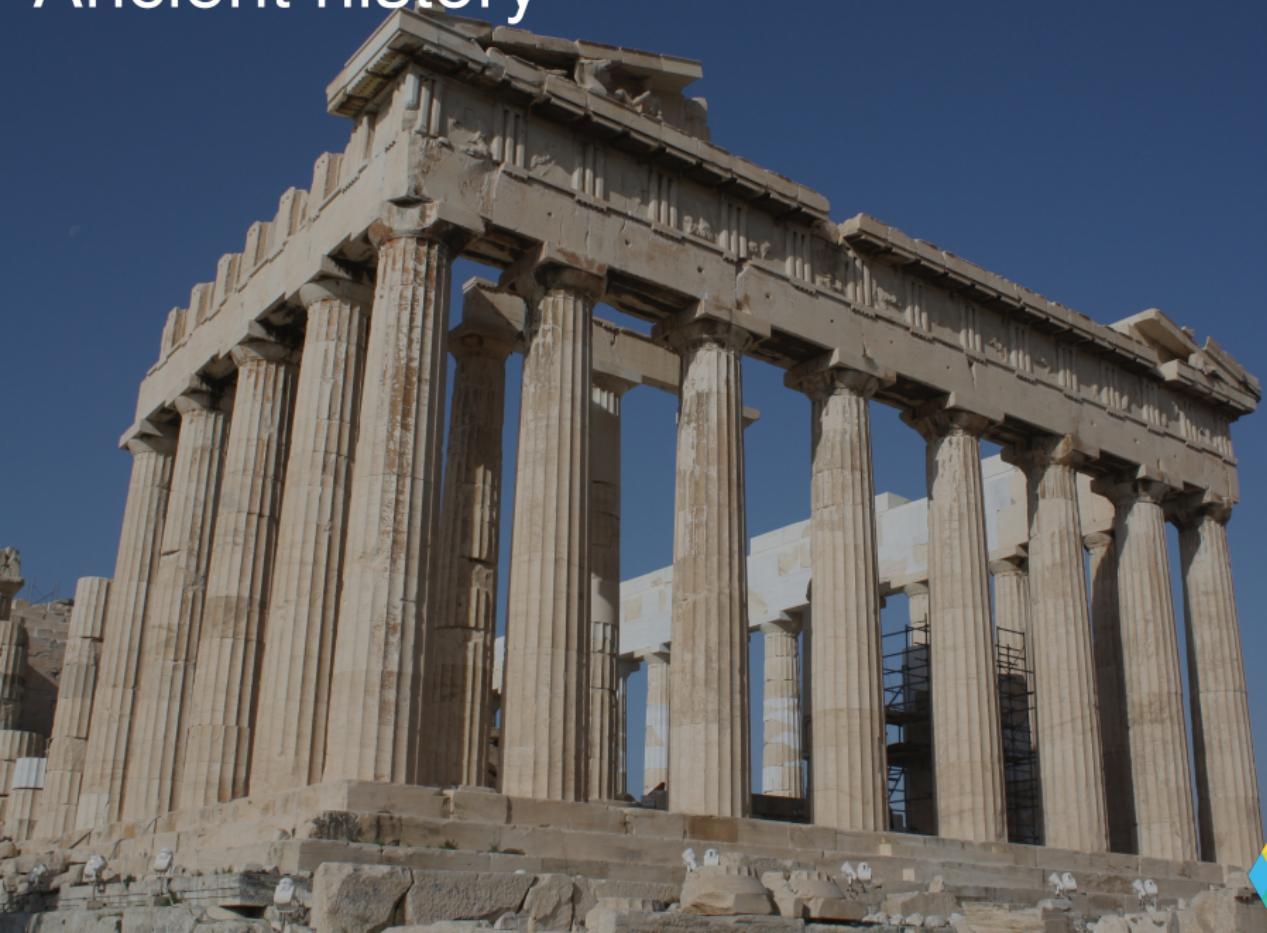
Wiesław Kielas
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Who am I and what is this about?

- ▶ 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, circa 2016

- ▶ TODO: Diagram goes here



GAT infrastructure, pain points

- ▶ 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

- ▶ TODO: Diagram goes here
- ▶ Deployment flow unchanged
- ▶ Basic architecture stays the same



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)



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?

