

The road to containerization



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October 4, 2018

What is this about?

► About me

- Started at GAT two years ago
- IT professional since 2011
- Only DevOps engineer
- First time event speaker



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- ▶ What will I talk about?

- Why throw the Chef stack away?
- How containers helped?
- What did we learn?

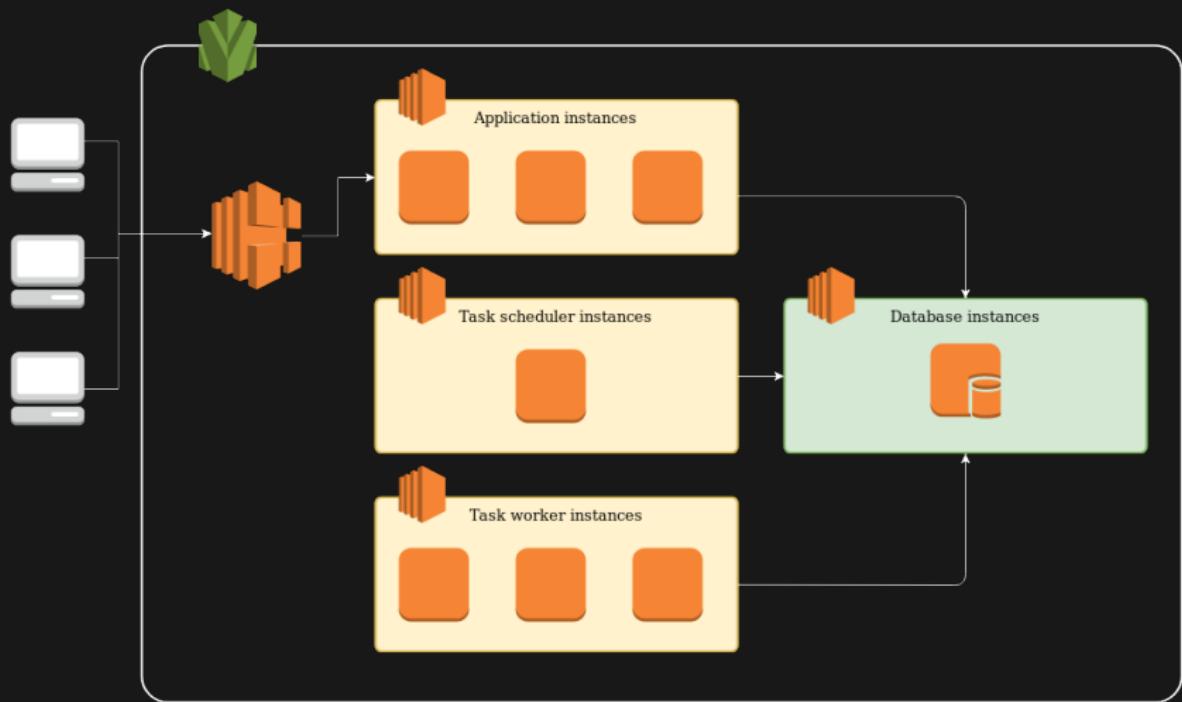




Ancient history



The year is 2016



Pain points explained

- ▶ Long deployment times



Pain points explained

- ▶ Long deployment times
- ▶ Uncertainty of success



Pain points explained

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- ▶ Uncertainty of success
- ▶ Deployments caused downtime



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- ▶ Deployments caused downtime
- ▶ Wasting resources = high cost
- ▶ Not automated



What next?

- ▶ Improve existing infrastructure
 - Vendor lock-in
 - Hard to lower costs



What next?

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



The container landscape



Docker



- ▶ Container platform
- ▶ Lightweight VMs
- ▶ Packaging format
 - Reproducible deployments



Kubernetes



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



Helm



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



Migrating to Kubernetes



Why move to GKE?

- ▶ Kubernetes as a Service



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- ▶ Automates the management plane



Why move to GKE?

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- ▶ Automates the management plane
- ▶ Automated the scary cluster deployment



Why move to GKE?

- ▶ Kubernetes as a Service
- ▶ Automates the management plane
- ▶ Automated the scary cluster deployment
- ▶ Built in goodies:
 - Integrated authentication
 - Centralized logging
 - Cluster monitoring
 - Container registry



The journey

- ▶ Docker images for applications



The journey

- ▶ Docker images for applications
- ▶ CI pipeline modification



The journey

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

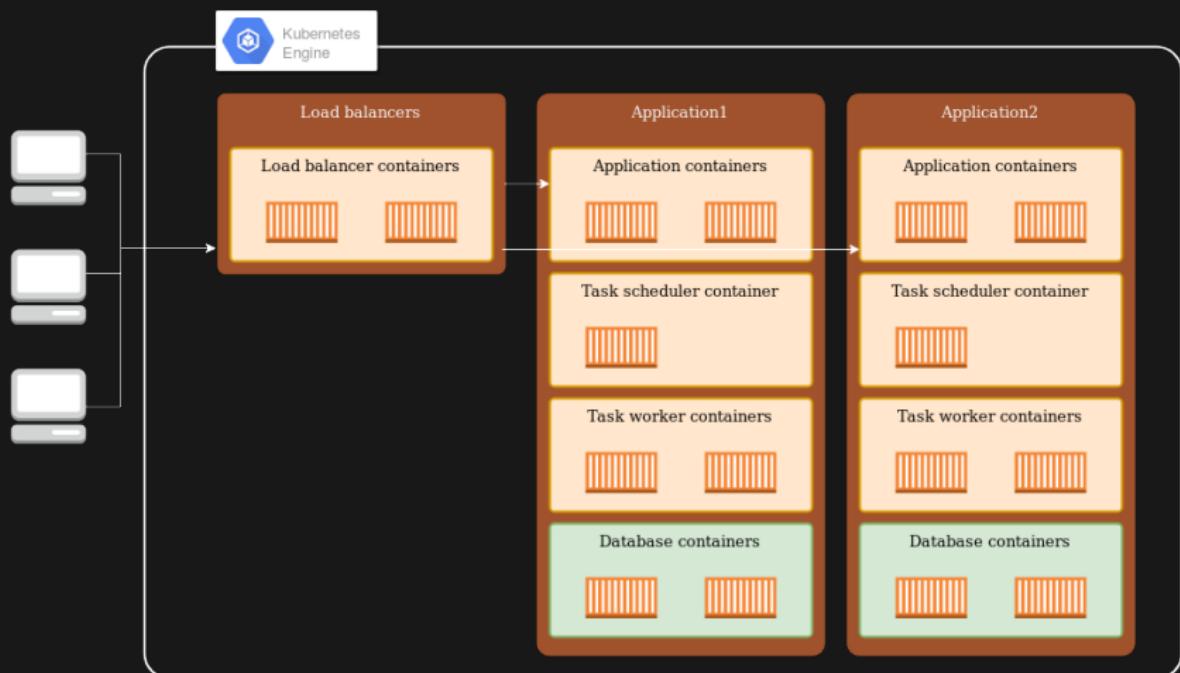


The journey

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



The end result



Pain points revisited

- ▶ Long deployment times
 - Down from 15 minutes to 1-2 minutes



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 - Rolling deployments = no downtime
- ▶ High cost
 - Lowered
- ▶ Not automated
 - Automated (after some time)



Whoops!



No happy end

- ▶ Bugs!
 - Nodes crashing
 - Networking problems



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No happy end

- ▶ **Bugs!**
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- ▶ **Bad support**
- ▶ **Kubernetes as a Service**
 - Frustrating when it doesn't work



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- ▶ **Inflexible configuration**
 - Caching images possible with own CM



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 - Nodes crashing
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- ▶ **Bad support**
- ▶ **Kubernetes as a Service**
 - Frustrating when it doesn't work
- ▶ **Inflexible configuration**
 - Caching images possible with own CM
- ▶ **Waiting for security updates**



Migrating back to AWS



Enter kops



- ▶ Cluster bootstrapping utility
- ▶ Lifecycle management
- ▶ Very flexible
 - Custom IAM roles
 - Caching images
 - Changing daemon configuration



New challenges

- ▶ Missing parts
 - Integrated authentication - **PKI**
 - Centralized logging - **Graylog**
 - Cluster monitoring - **Prometheus**



New challenges

- ▶ Missing parts
 - Integrated authentication - **PKI**
 - Centralized logging - **Graylog**
 - Cluster monitoring - **Prometheus**
- ▶ Moving stuff
 - Rewriting helper scripts
 - Load balancers behave differently
 - Use EBS instead of Google disks
 - Container registry - **Amazon ECR**



The end result



Lessons learned

- ▶ Outsourcing service management gives a big head start



Lessons learned

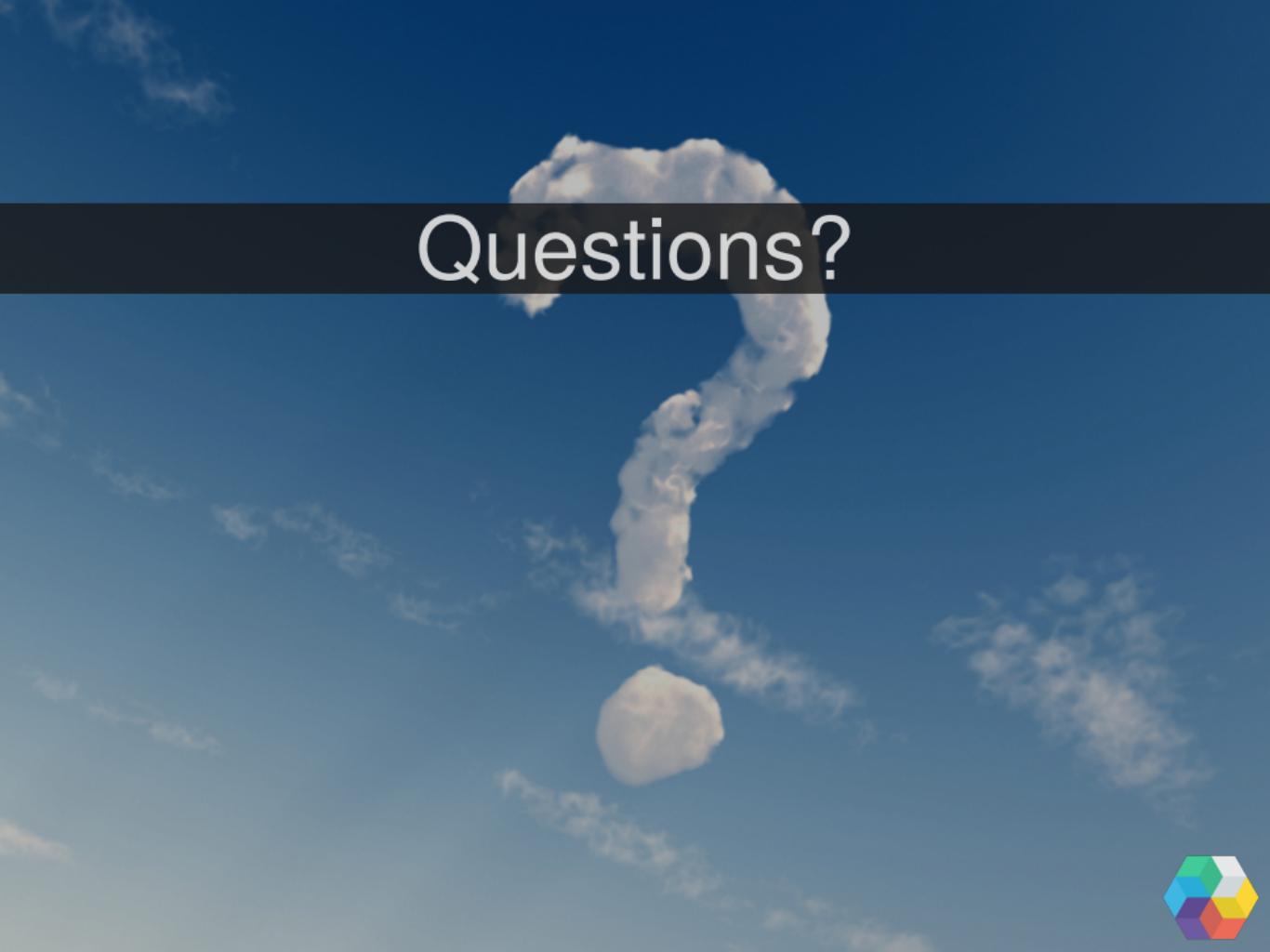
- ▶ Outsourcing service management gives a big head start
- ▶ Support is extremely important



Lessons learned

- ▶ Outsourcing service management gives a big head start
- ▶ Support is extremely important
- ▶ Cloud agnostic design can return very quickly





Questions?

