Cloud Native Infrastructure @Zalando

Cloud Native Aarhus

November 6th 2018

Meetup

MIKKEL LARSEN

@mikkeloscar

2018-11-06

WE BRING FASHION TO PEOPLE IN 17 COUNTRIES

17 markets

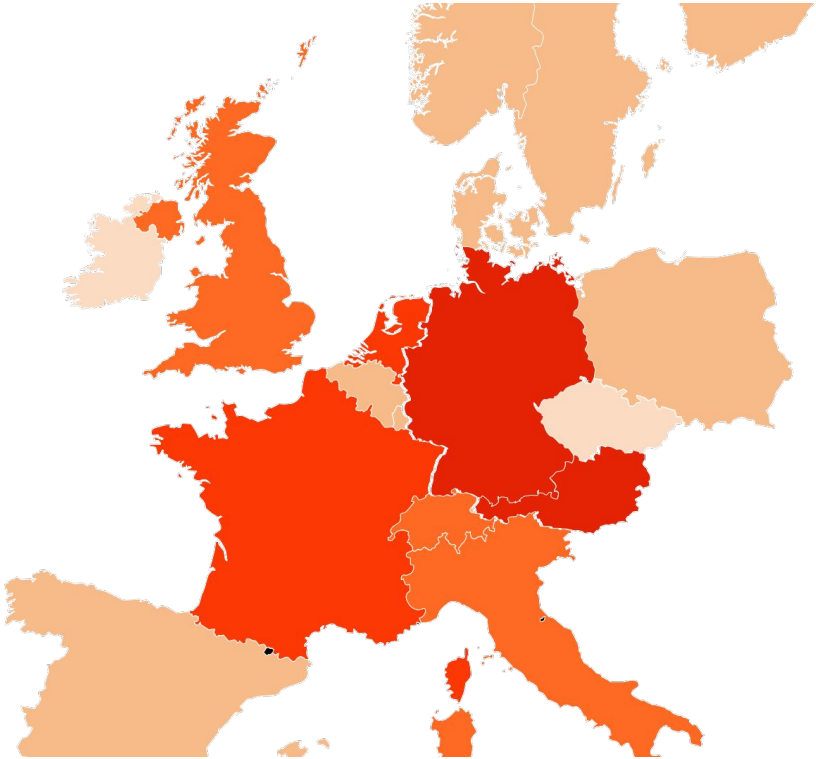
7 fulfillment centers

23 million active customers

4.5 billion € net sales 2017

200 million visits per month

15,000 employees in Europe



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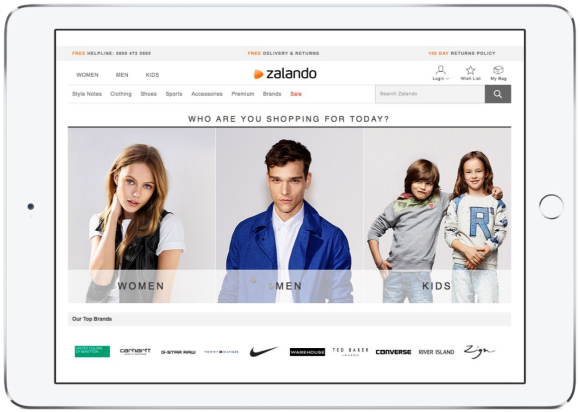
ZALANDO TECH



~ 2.000

Employees in Tech

~ 300

Delivery teams

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SCALE

373 Accounts

101 Clusters

INFRASTRUCTURE HISTORY @ ZALANDO

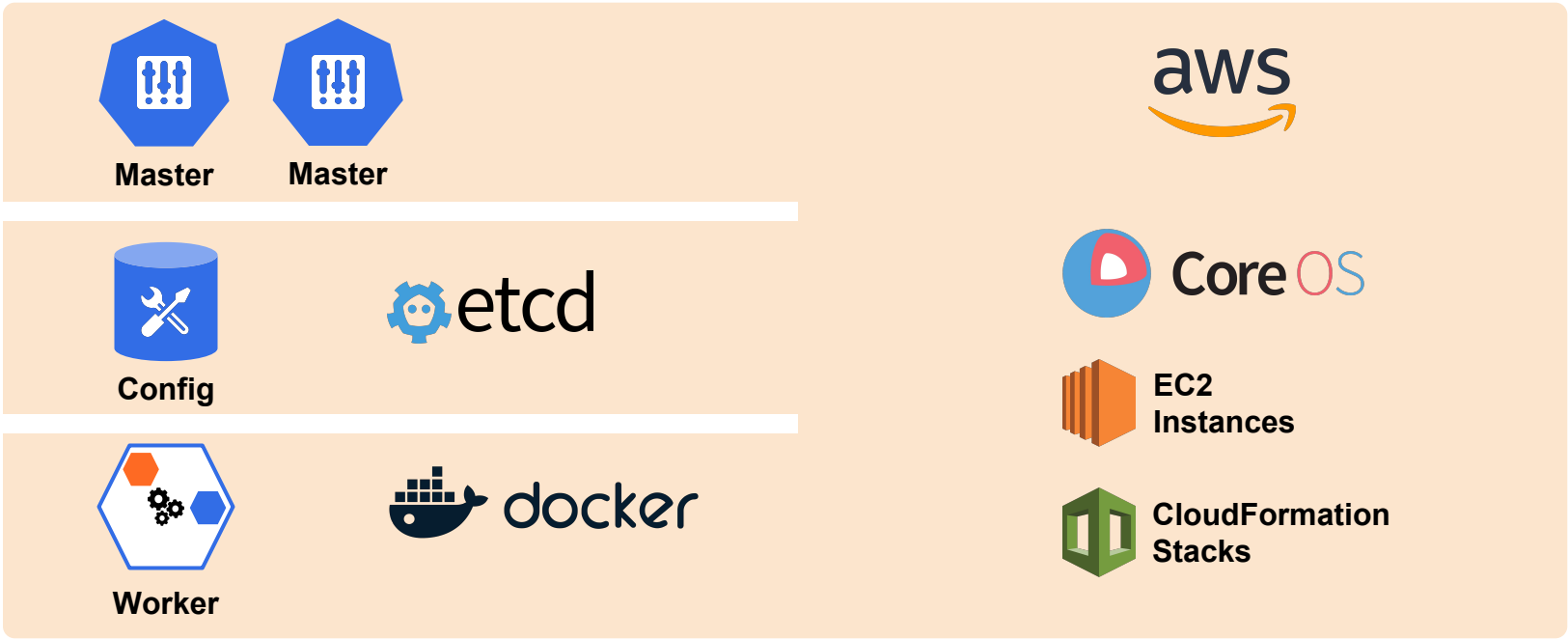
STUPS
(toolset around AWS)

- AWS accounts per team.
- All instances must run the same AMI.
- PowerUser access to Production.
- You build it, you run EVERYTHING.

Kubernetes

- Clusters per product (multiple teams).
- Instances are not managed by teams.
- Hands off approach.
- A lot of stuff out of the box.

KUBERNETES CLUSTER SETUP



github.com/zalando-incubator/kubernetes-on-aws

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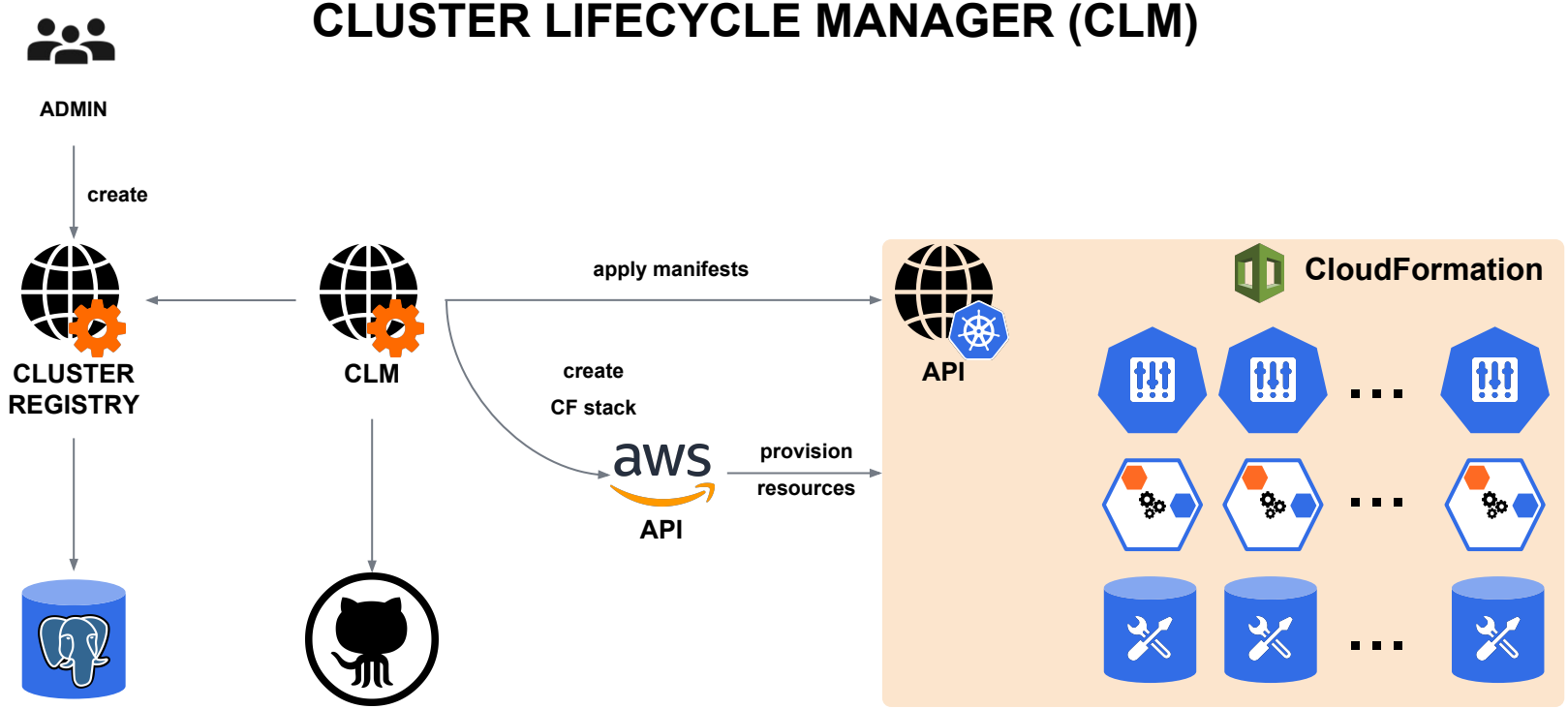
CLUSTER PROVISIONING
CLUSTER LIFECYCLE MANAGER (CLM)



github.com/zalando-incubator/cluster-lifecycle-manager

github.com/zalando-incubator/kubernetes-on-aws

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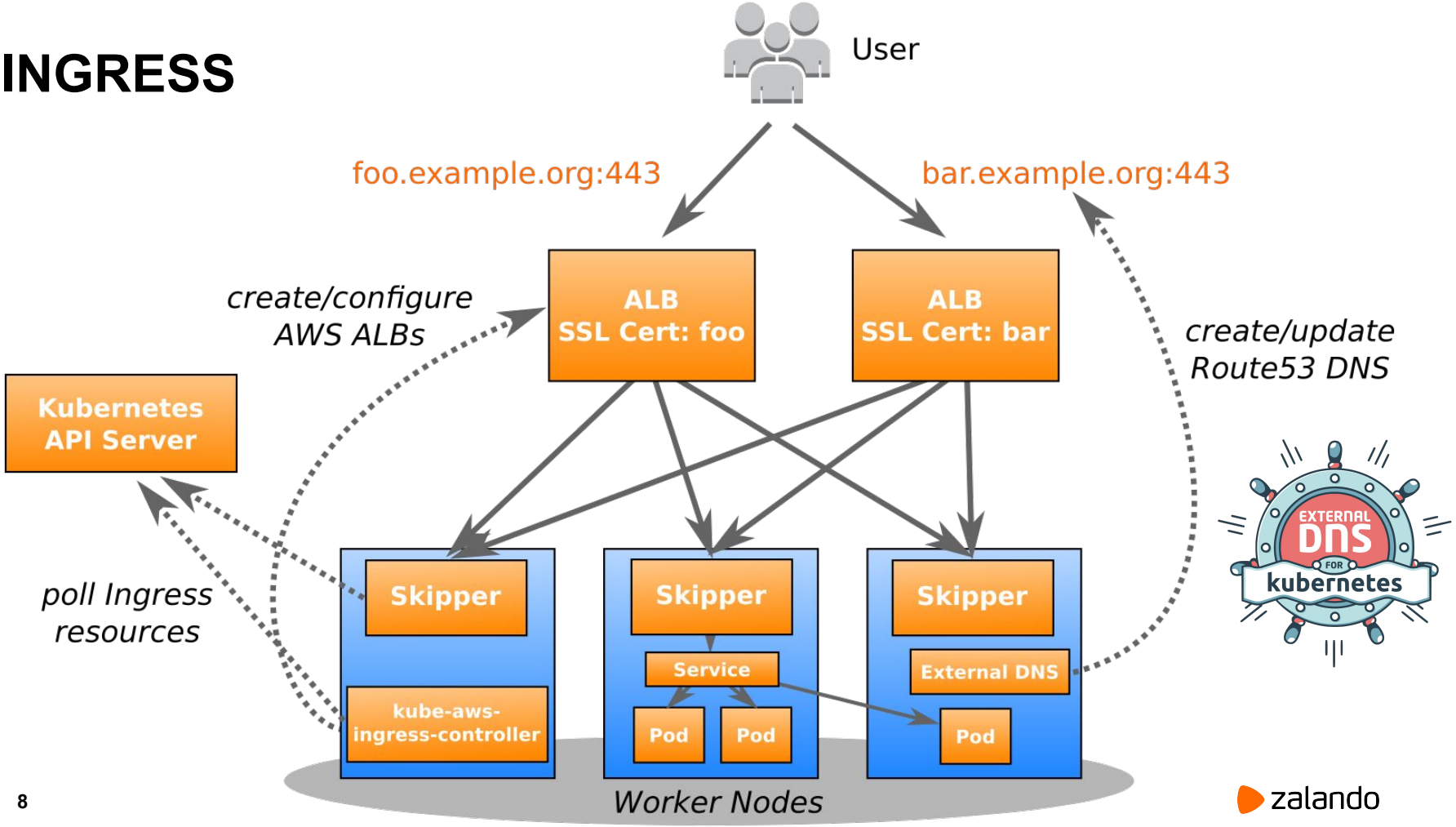
INGRESS



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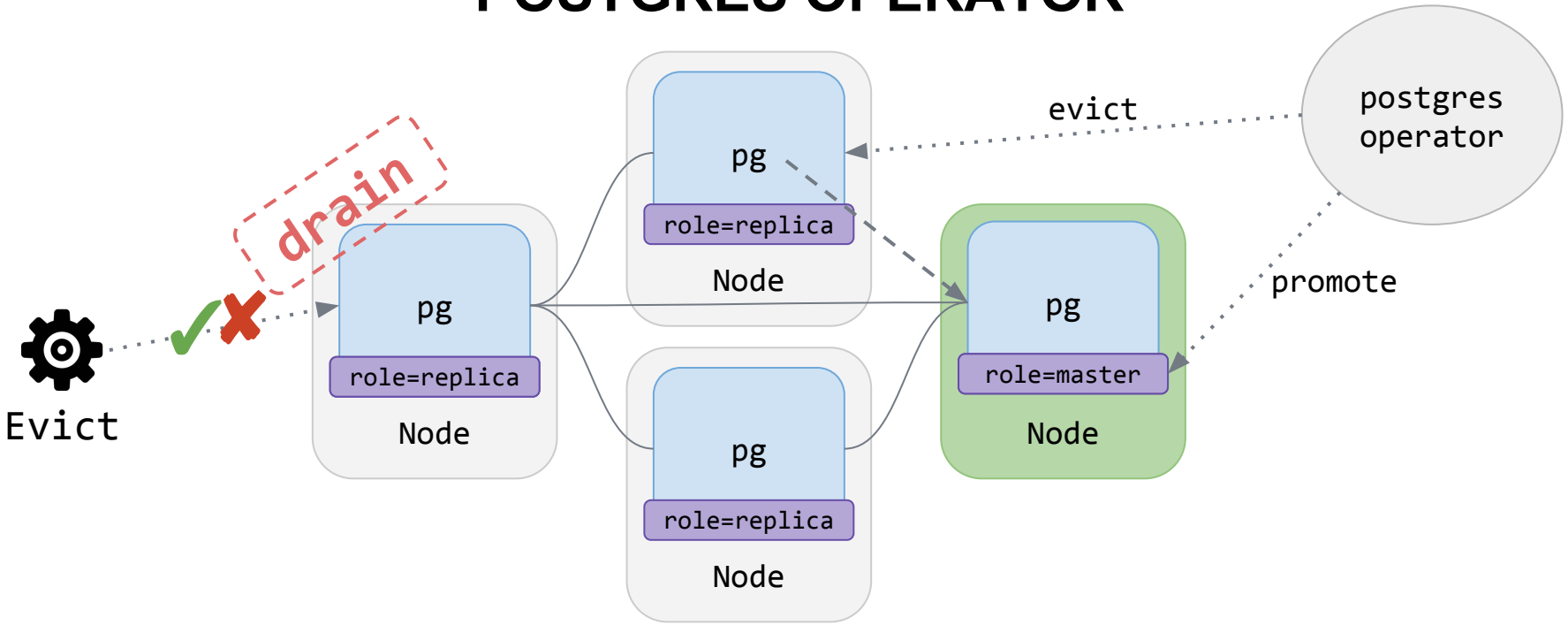
https://github.com/zalando-incubator/kube-ingress-aws-controller

STATEFUL WORKLOADS (POSTGRES)

POSTGRES AS A SERVICE

```yaml
apiVersion: "acid.zalan.do/v1"
kind: "postgresql"
metadata:
  name: "test-cluster"
  namespace: "default"
spec:
  teamId: "teapot"
  postgresql:
    version: "10"
  numberOfInstances: 3
  volume:
    size: "10Gi"
```

POSTGRES OPERATOR



github.com/zalando-incubator/postgres-operator

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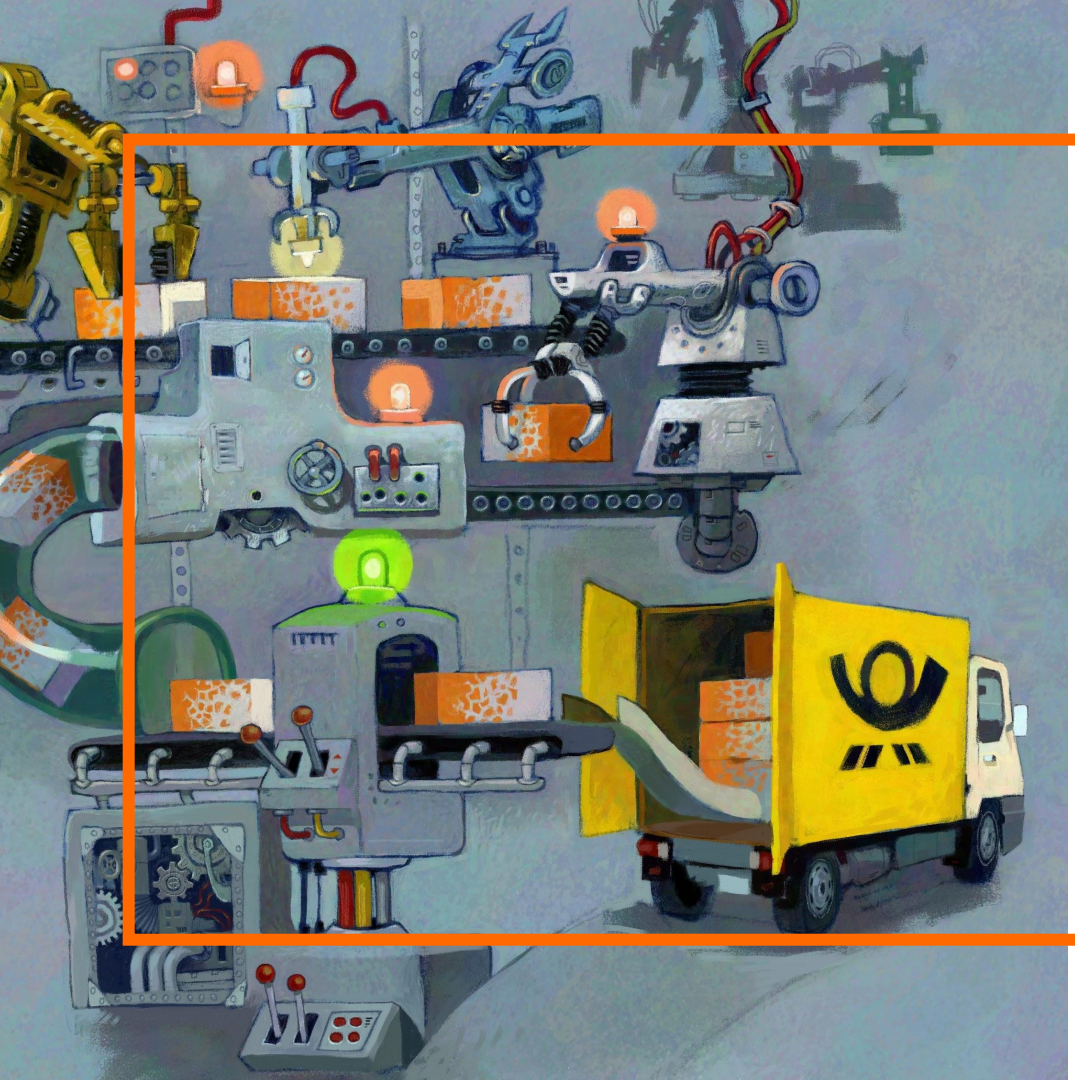
POSTGRES OPERATOR

```
apiVersion: policy/v1beta1
kind: PodDisruptionBudget
metadata:
  name: "postgres-cluster"
spec:
  minAvailable: 1
  selector:
    matchLabels:
      application: “postgres-cluster”
      role: “master”
```

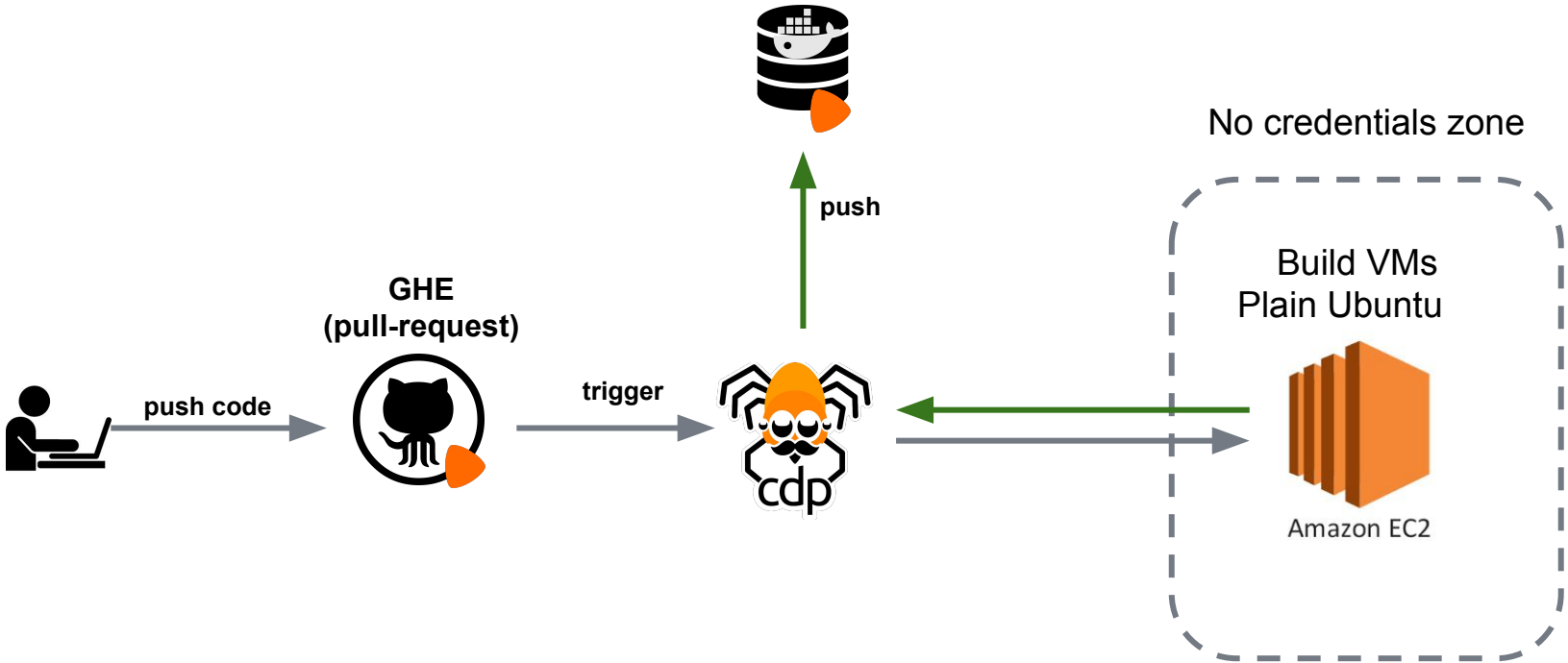
github.com/zalando-incubator/postgres-operator



CI/CD

CONTINUOUS DELIVERY PLATFORM (CDP)

BUILD PIPELINE



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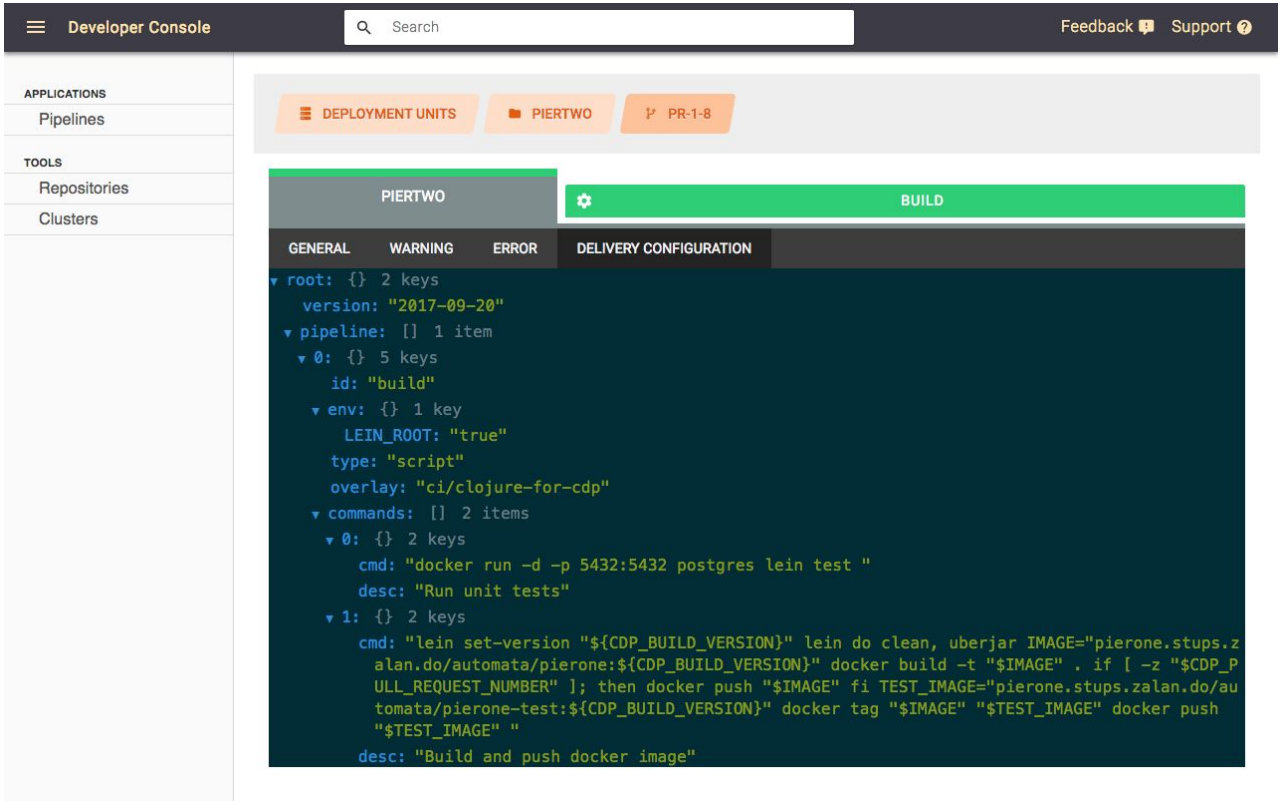
CONTINUOUS DELIVERY PLATFORM (CDP)

BUILD DEFINITION



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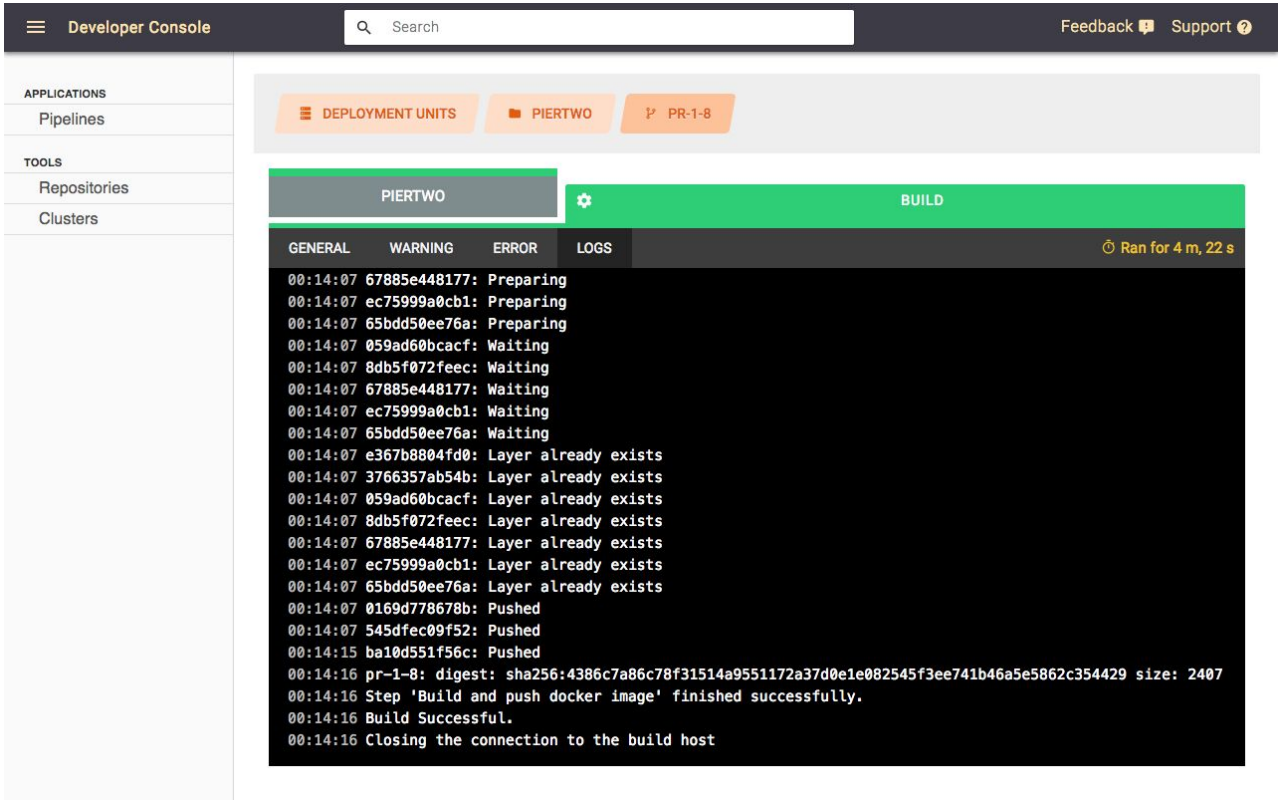
CONTINUOUS DELIVERY PLATFORM (CDP)

BUILD OUTPUT



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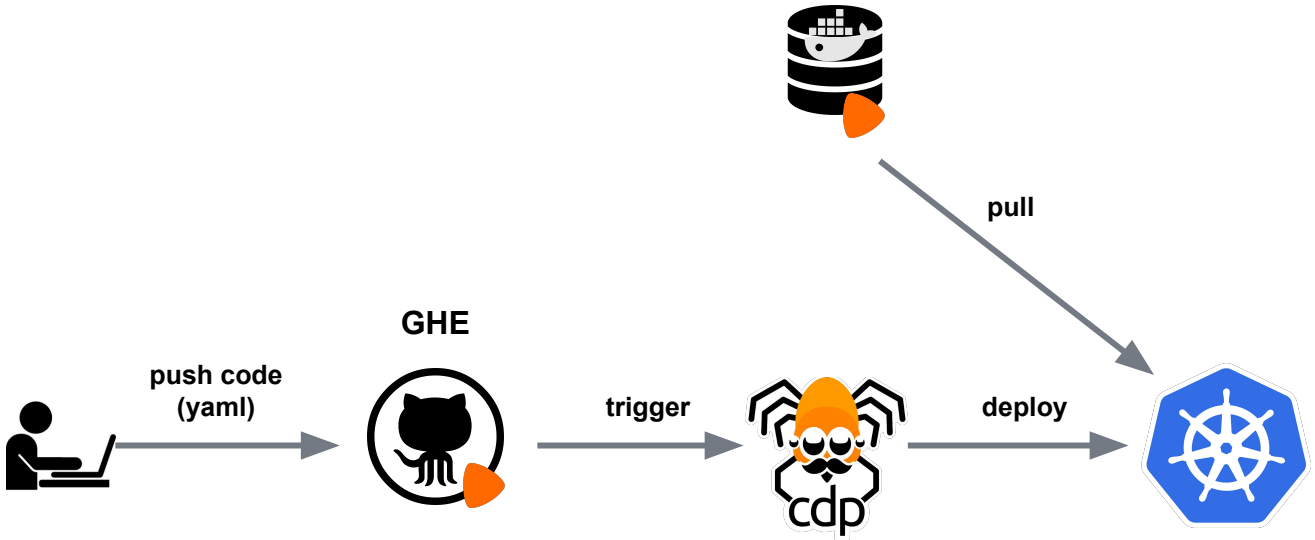
CONTINUOUS DELIVERY PLATFORM (CDP)

DEPLOYMENT PIPELINE



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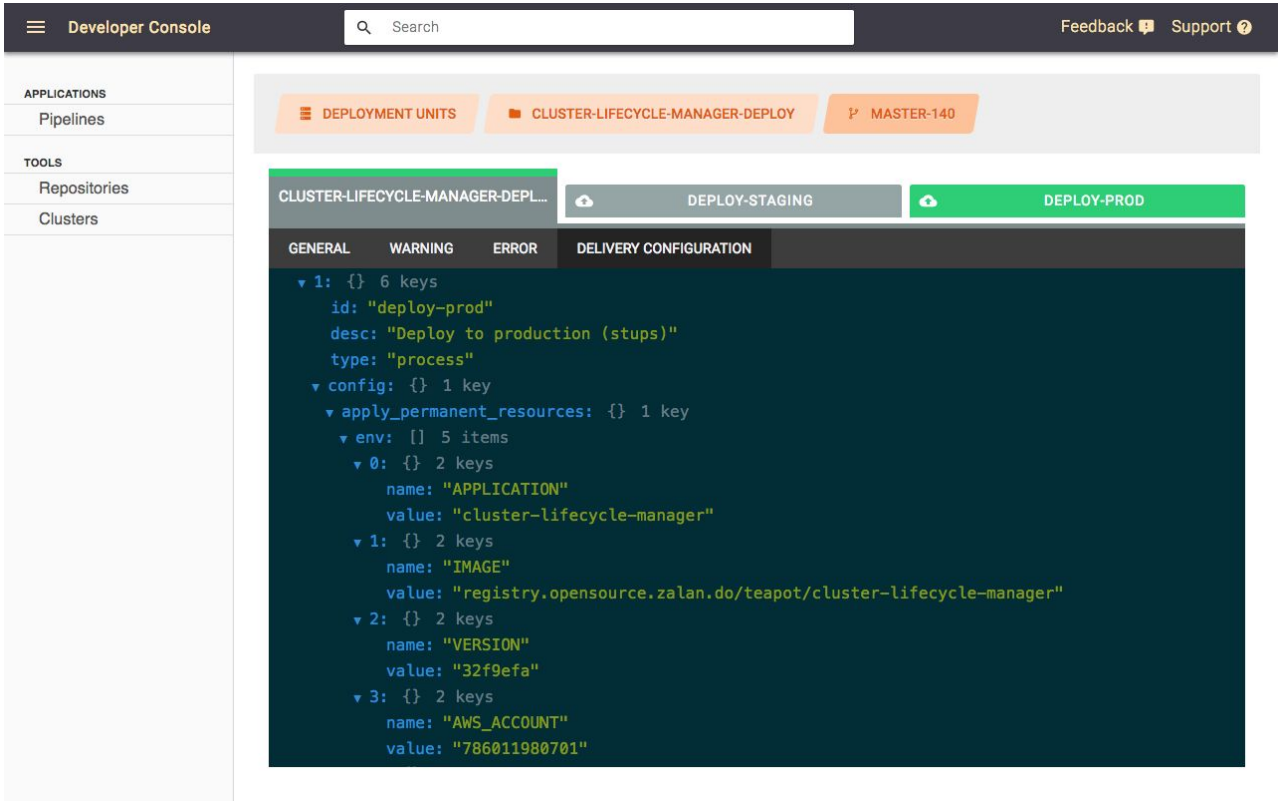
CONTINUOUS DELIVERY PLATFORM (CDP)

DEPLOYMENT DEFINITION



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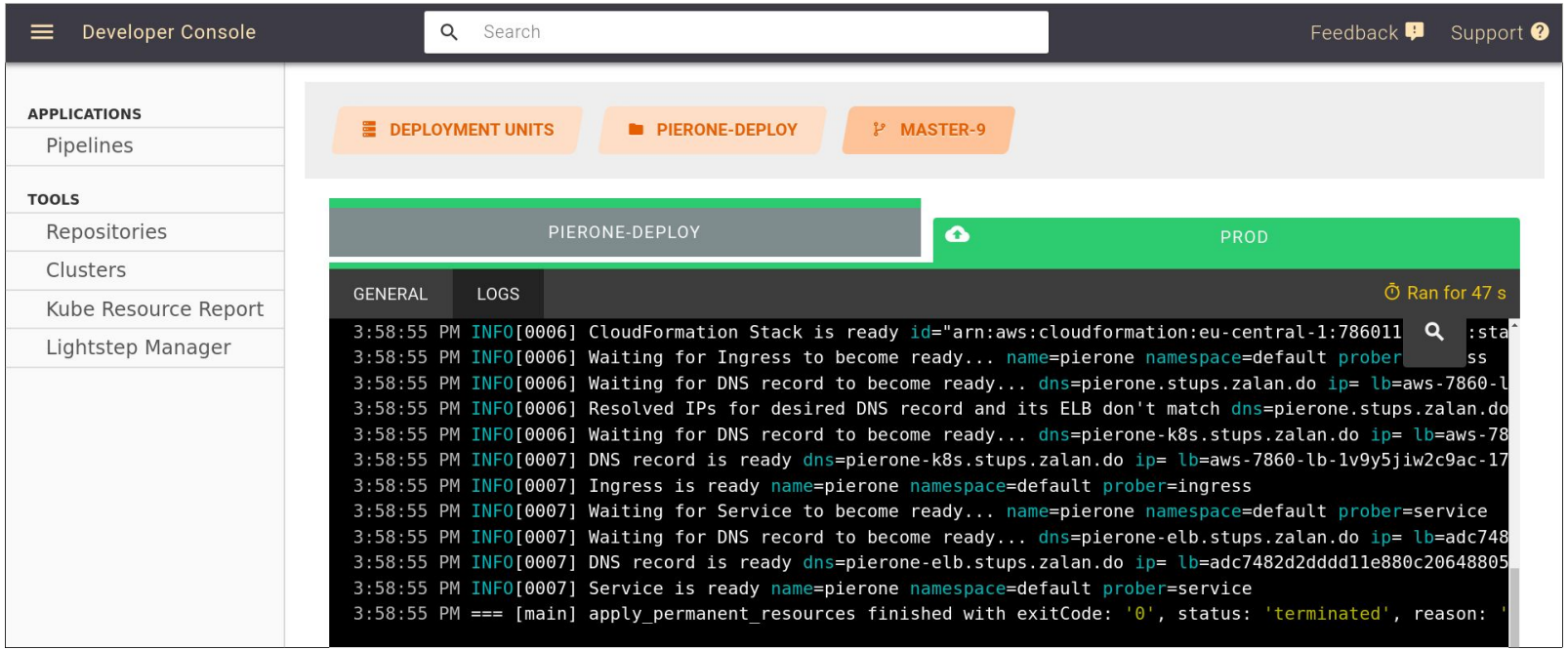
CONTINUOUS DELIVERY PLATFORM (CDP)

DEPLOYMENT OUTPUT



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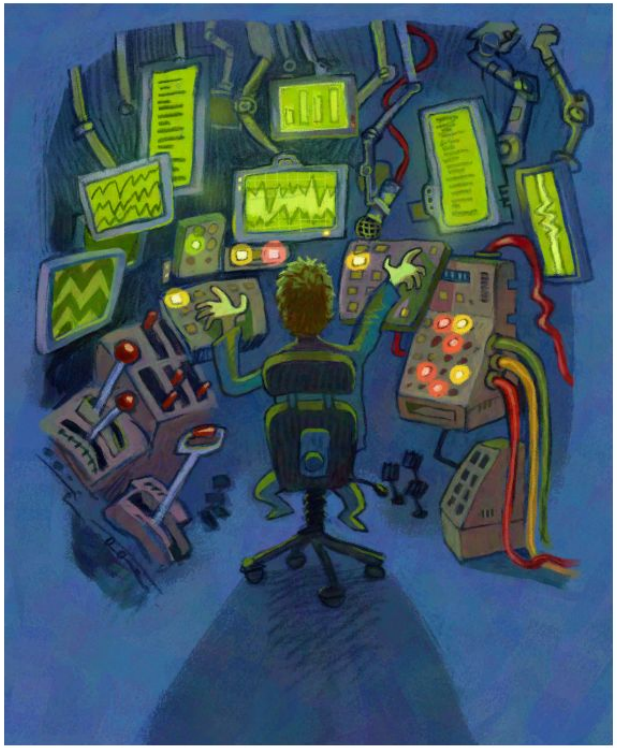
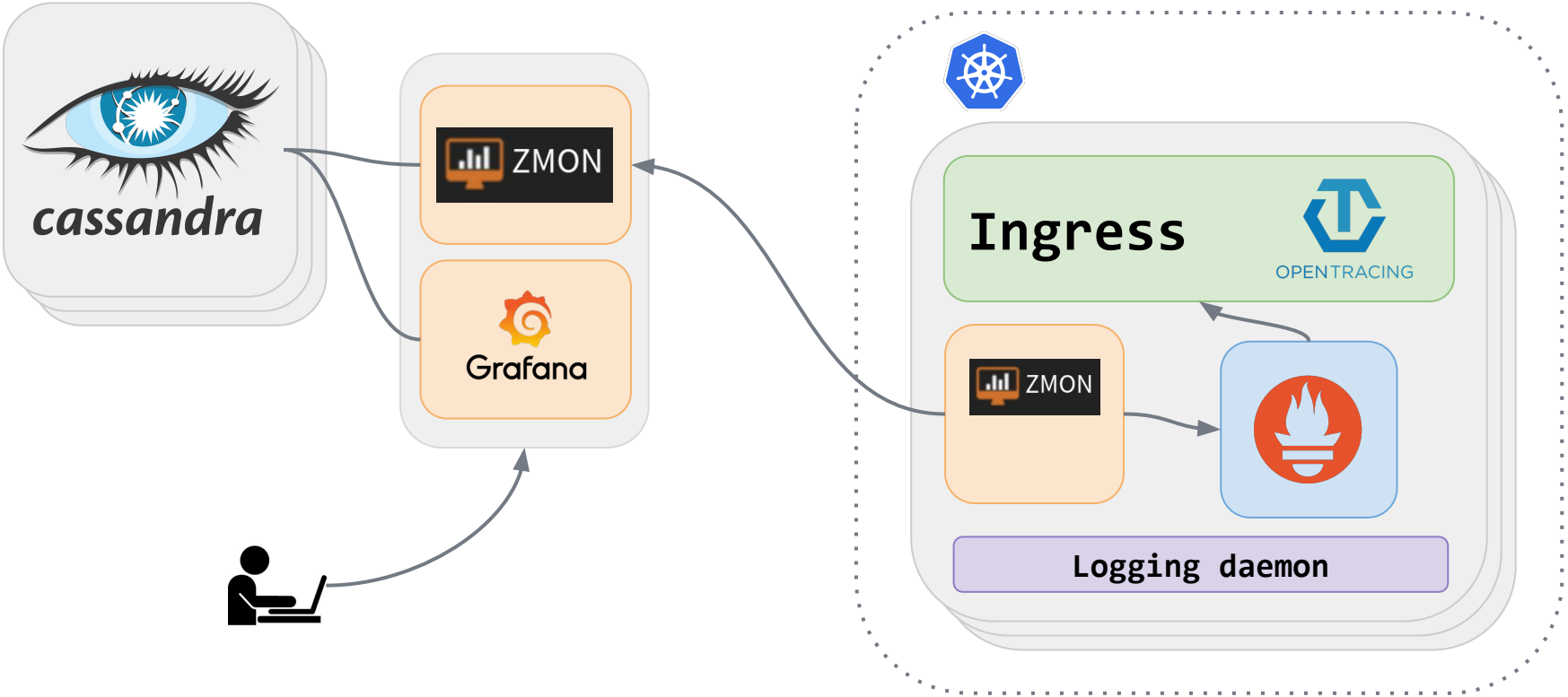


OBSERVABILITY

OBSERVABILITY



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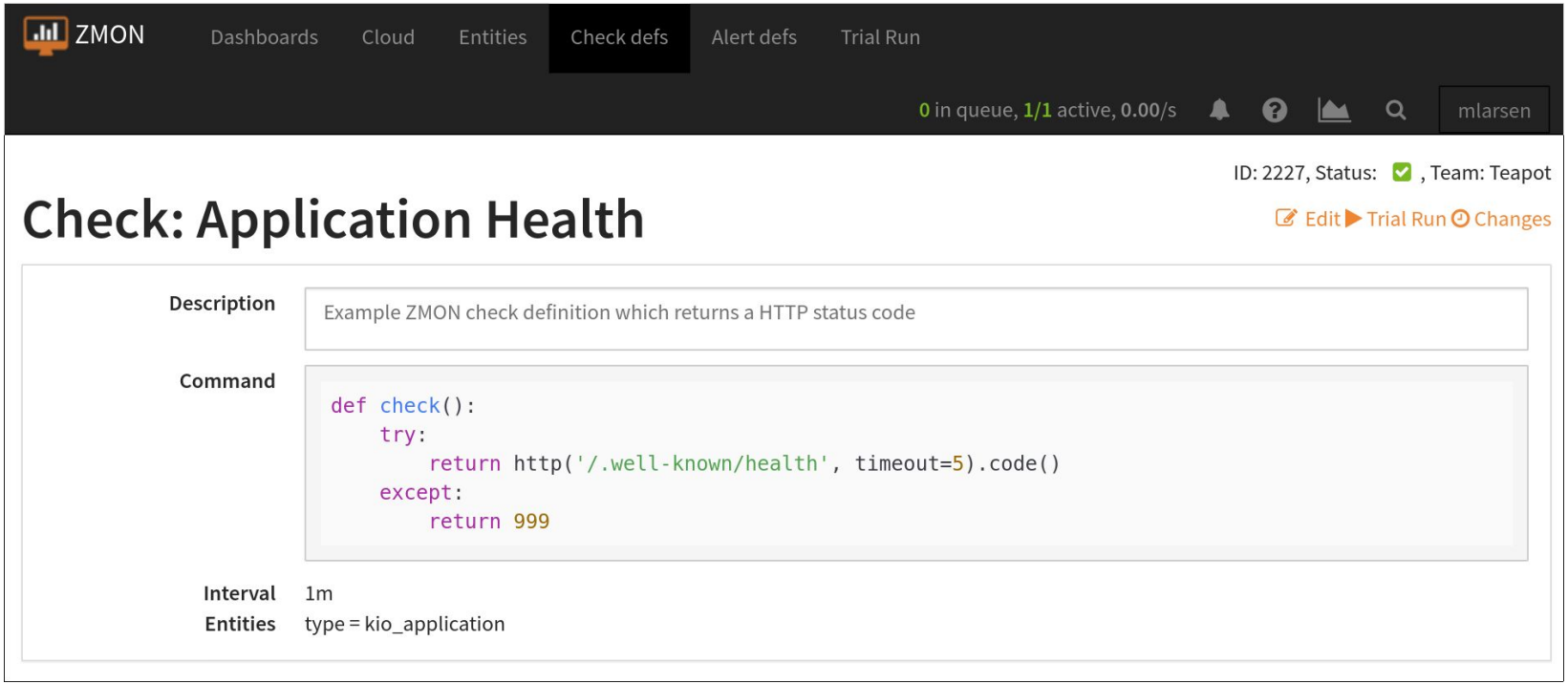
ZMON CHECKS



github.com/zalando/zmon

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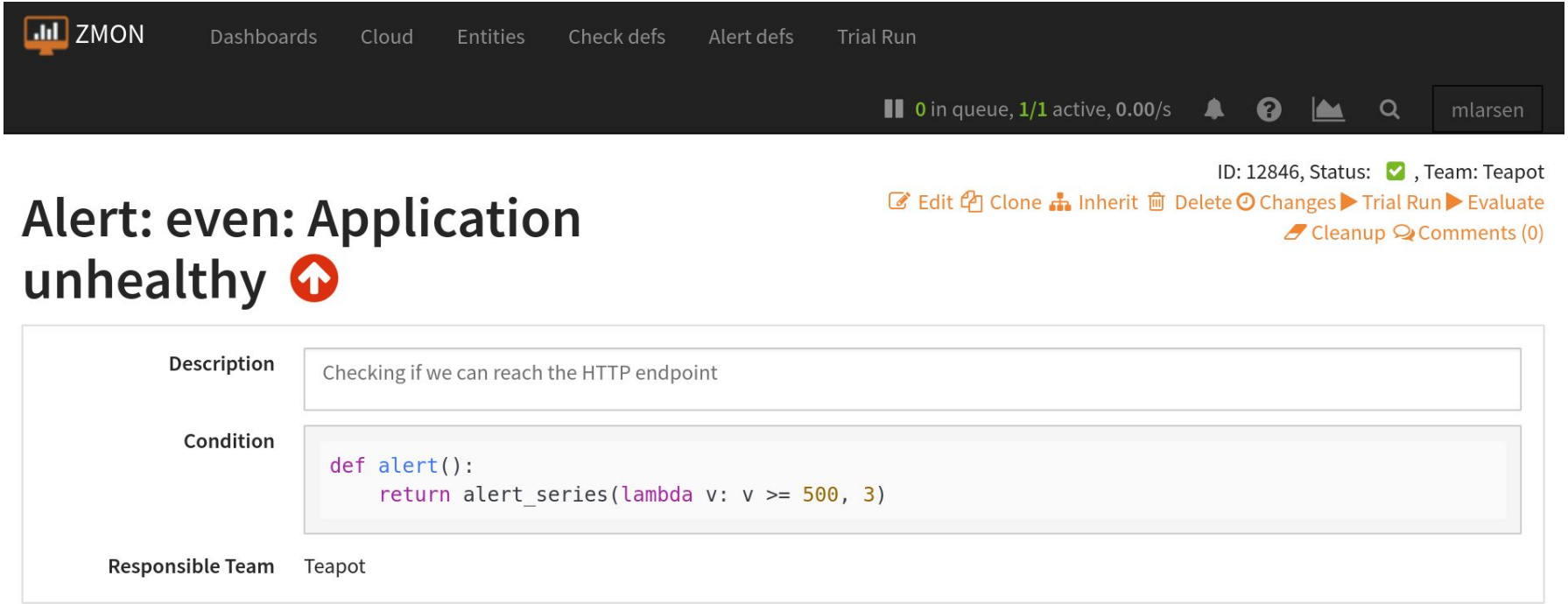
ZMON ALERTS



github.com/zalando/zmon

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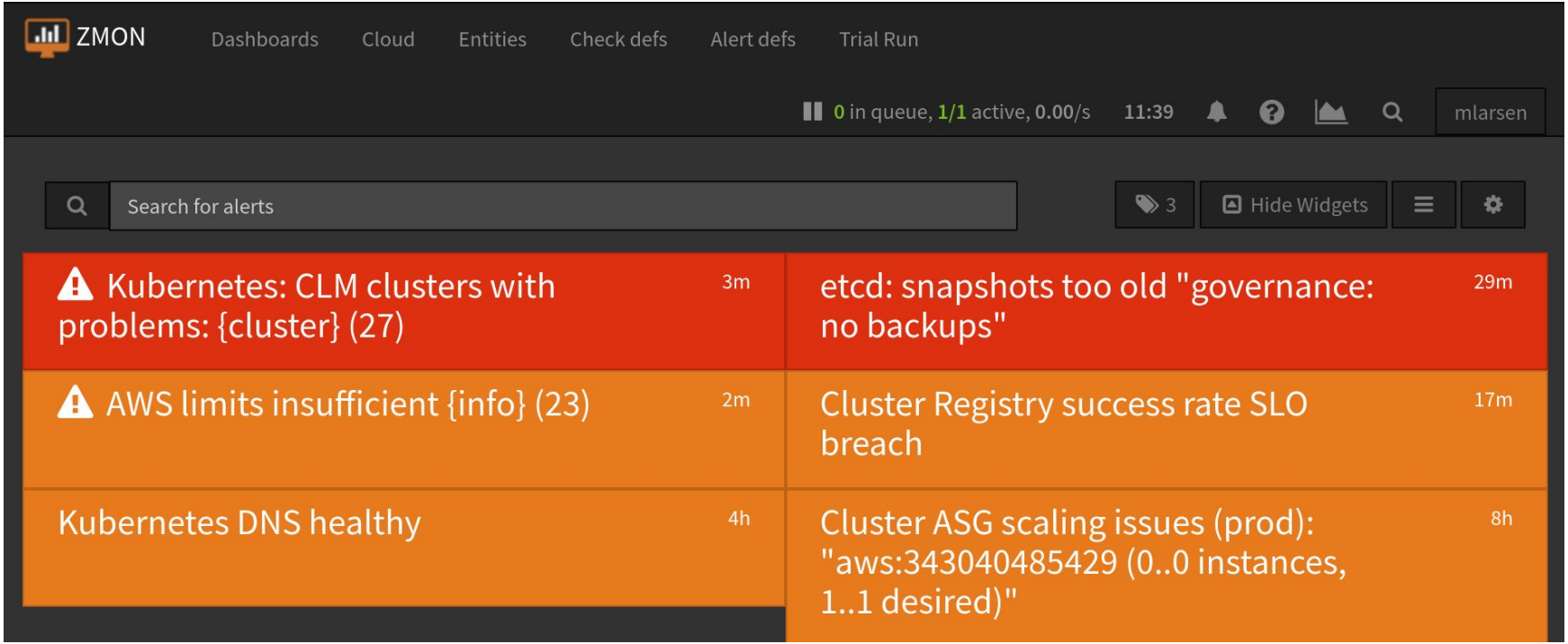
ZMON DASHBOARD



github.com/zalando/zmon

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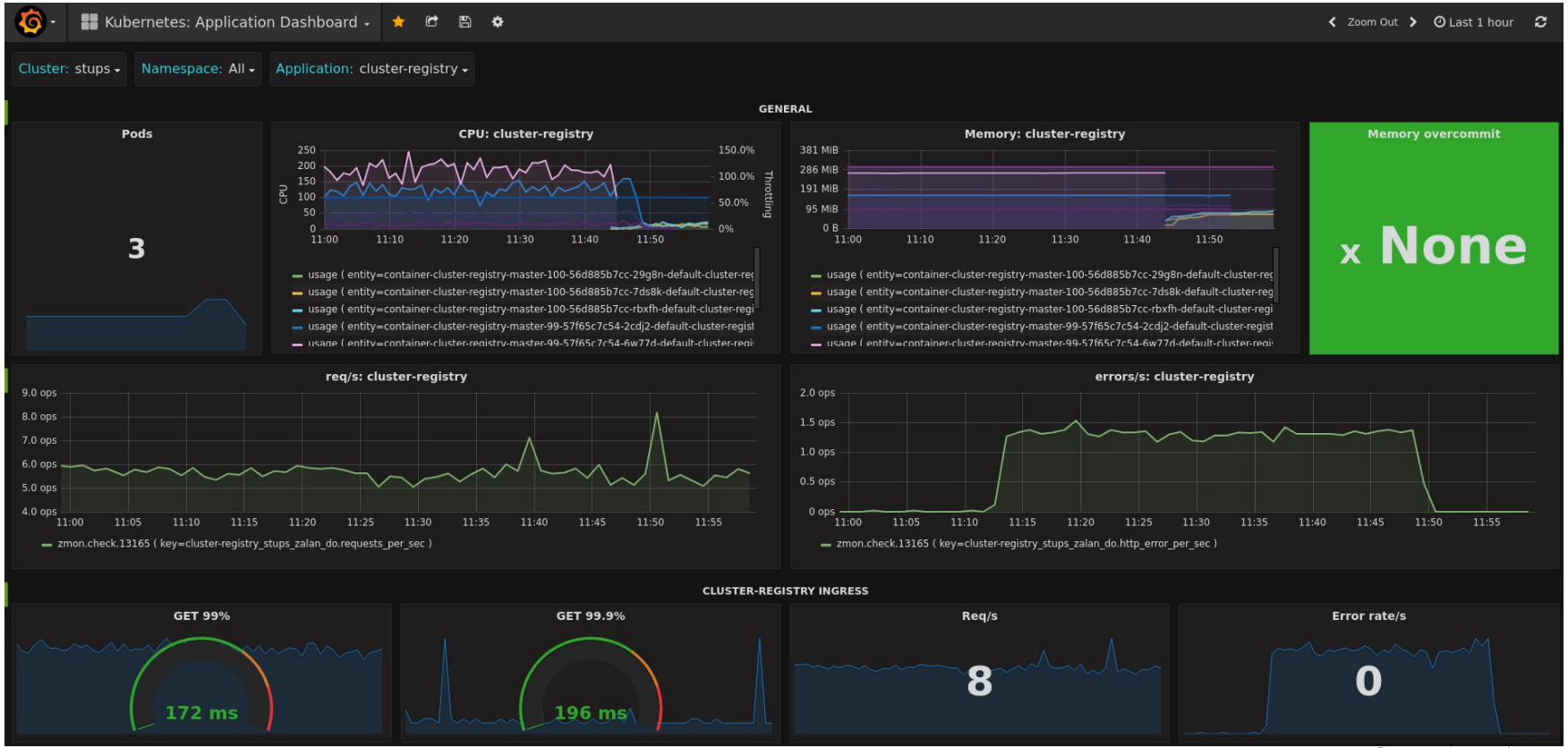
GRAFANA APPLICATION DASHBOARD



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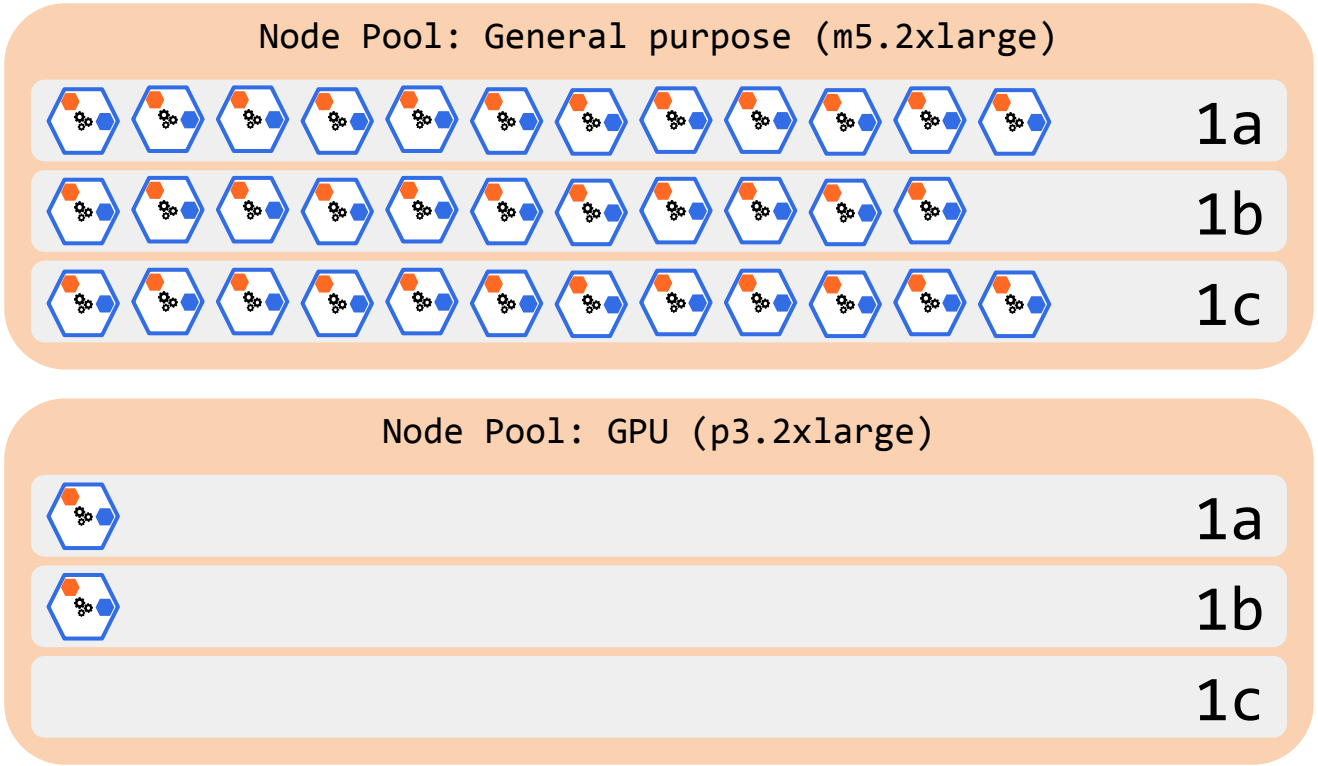
AUTOSCALING

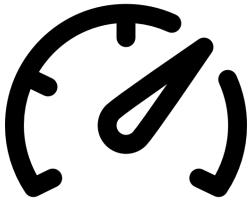
CLUSTER AUTOSCALER



github.com/kubernetes/autoscaler + patches

HORIZONTAL POD AUTOSCALING (CUSTOM METRICS)

Queue Length



Ingress Req/s

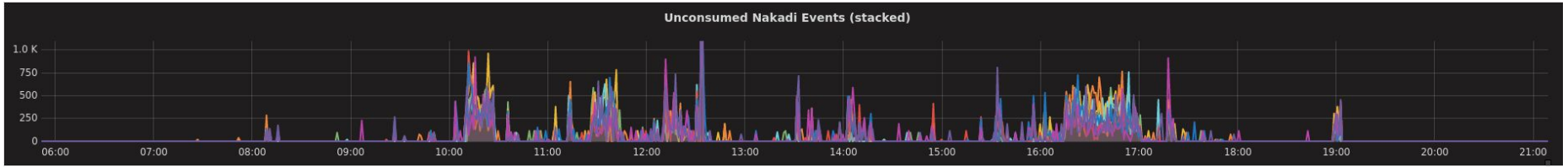
Prometheus Query

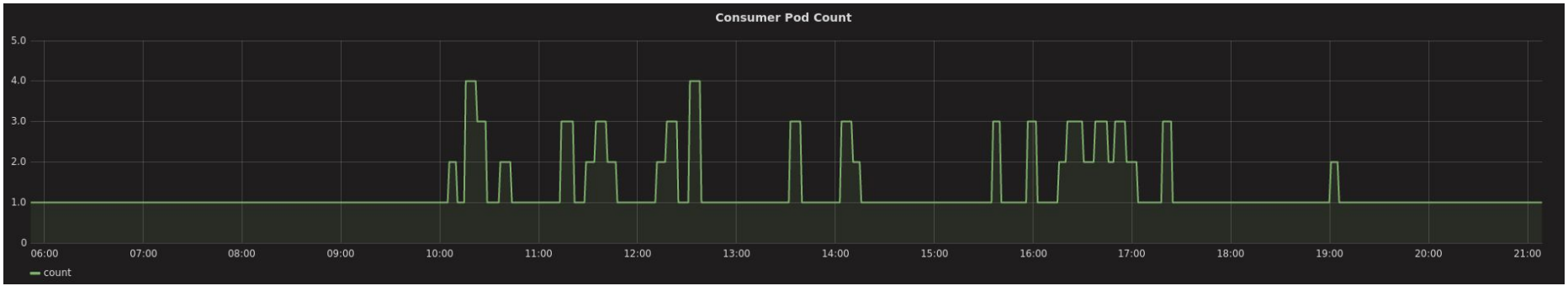
ZMON Check

github.com/zalando-incubator/kube-metrics-adapter

HORIZONTAL POD AUTOSCALING (CUSTOM METRICS)

JOB SCALING TO CONSUME EVENTS (ZMON CHECK)





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OPEN SOURCE

Cluster Lifecycle Manager
github.com/zalando-incubator/cluster-lifecycle-manager

Kubernetes on AWS
github.com/zalando-incubator/kubernetes-on-aws

AWS ALB Ingress controller
github.com/zalando-incubator/kube-ingress-aws-controller

Skipper HTTP Router & Ingress controller
github.com/zalando/skipper

External DNS
github.com/kubernetes-incubator/external-dns

Postgres Operator
github.com/zalando-incubator/postgres-operator

Kube Metrics Adapter
github.com/zalando-incubator/kube-metrics-adapter

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MIKKEL LARSEN

SENIOR SOFTWARE ENGINEER

PLATFORM INFRASTRUCTURE

mikkel.larsen@zalando.de

@mikkeloscar

Illustrations by @01k, @kcgreenn, @ntakayama

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