

k8s and CloudNative Meetup Dresden #4

17.05.18 @ T-Systems MMS

Agenda

- Recap of KubeCon + CloudNativeCon EU in Copenhagen
- Googles "GKE" vs Azure "AKS" / Andrew Holway
- Break
- Kubernetes Cert-Manager / Mathias Kaufmann

Peter

GitOps

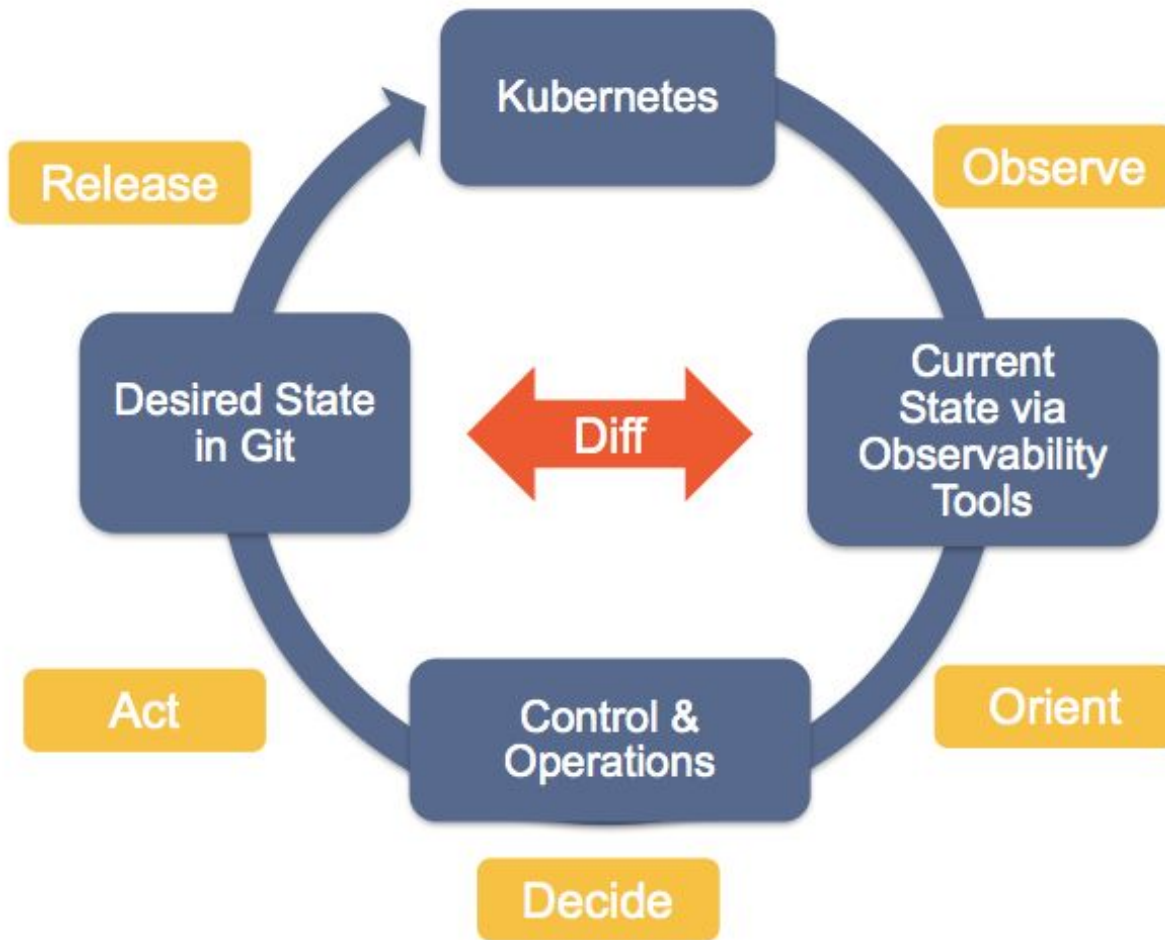


GitOps

Atomic updates for
declarative
platforms

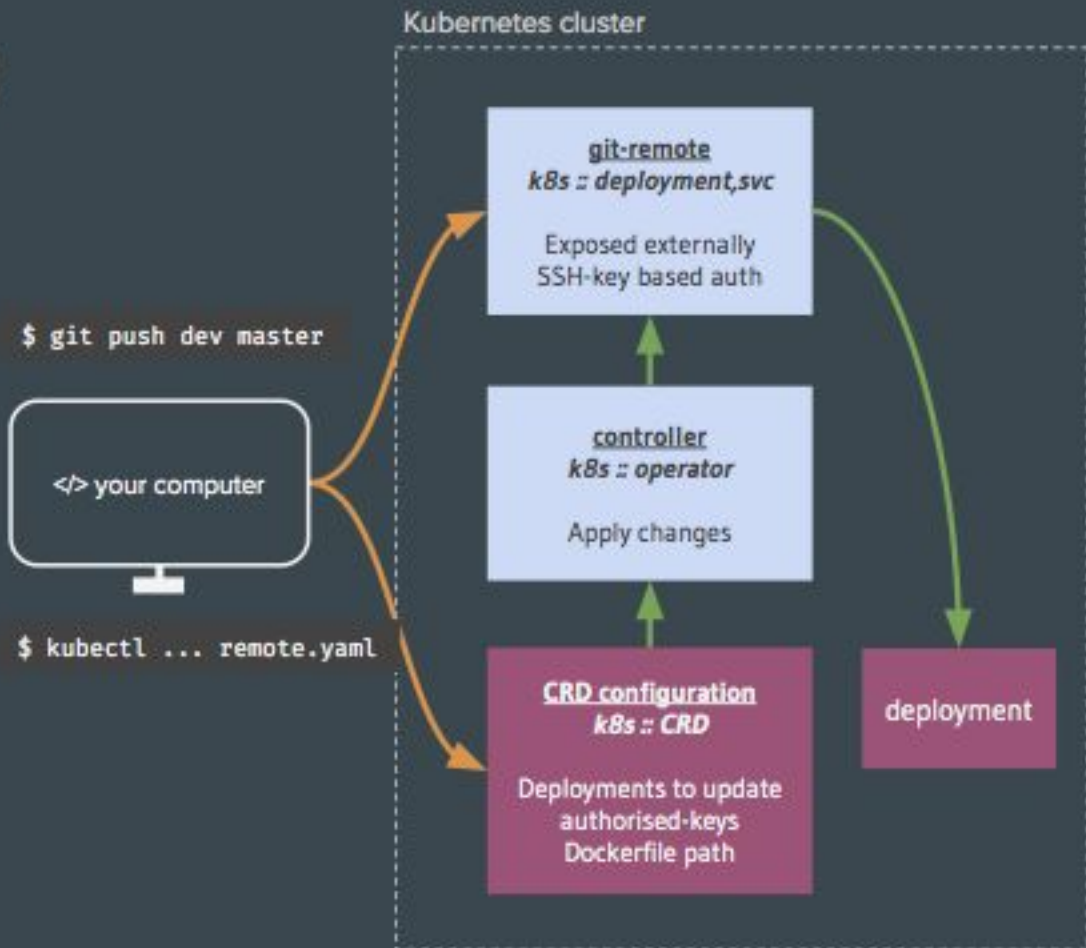
Developer
experience is just
Git push

Best practice for
Cont. Delivery



The obvious architecture

- Git remote agent on your cluster. Pre-receive hook:
 - Build docker image
 - Apply to k8s deployment
- Configuration:
 - SSH keys
 - Dockerfile path
- Sync configuration changes with the git-remote agent



GitOps Tools

<https://github.com/hasura/gitkube>

<https://github.com/weaveworks/flux>

<https://github.com/jenkins-x/jx>

and others

Bare Metal



Kubernetes makes data-center sexy again

- Kubeadm
- Kubespray
- Cluster API
- Wikipedia served via k8s on bare metal

kubeadm goals



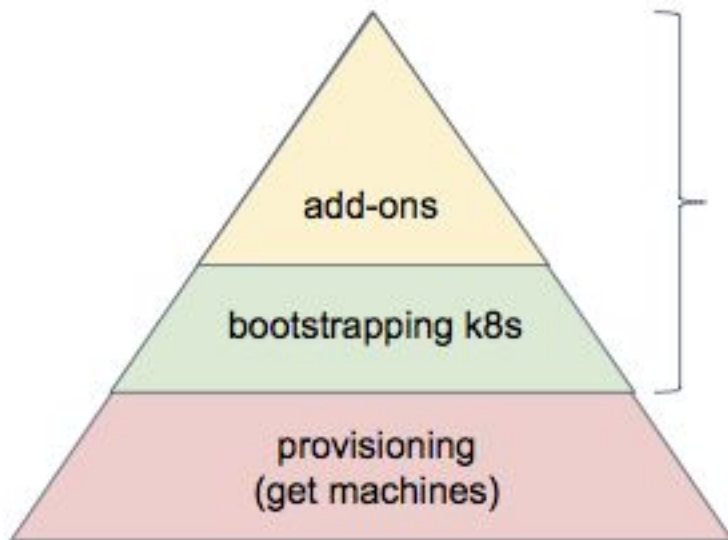
KubeCon



CloudNativeCon

Europe 2018

- Make Kubernetes insanely easy to install
- 3 phases to installation
- Variety in how people provision machines
- Decided to focus on bootstrapping, not provisioning!
- Two commands, plus add-ons



Kubespray's approach

Ansible based

Cross-platform

Containerized everything

One package-based component: Docker

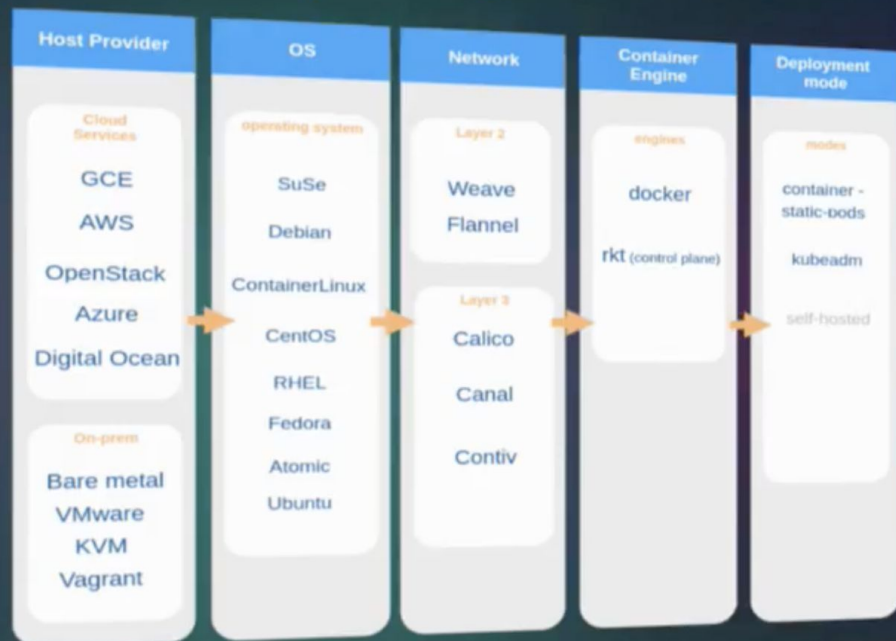
Simple component management

Just bring your own machine



Europe 2018

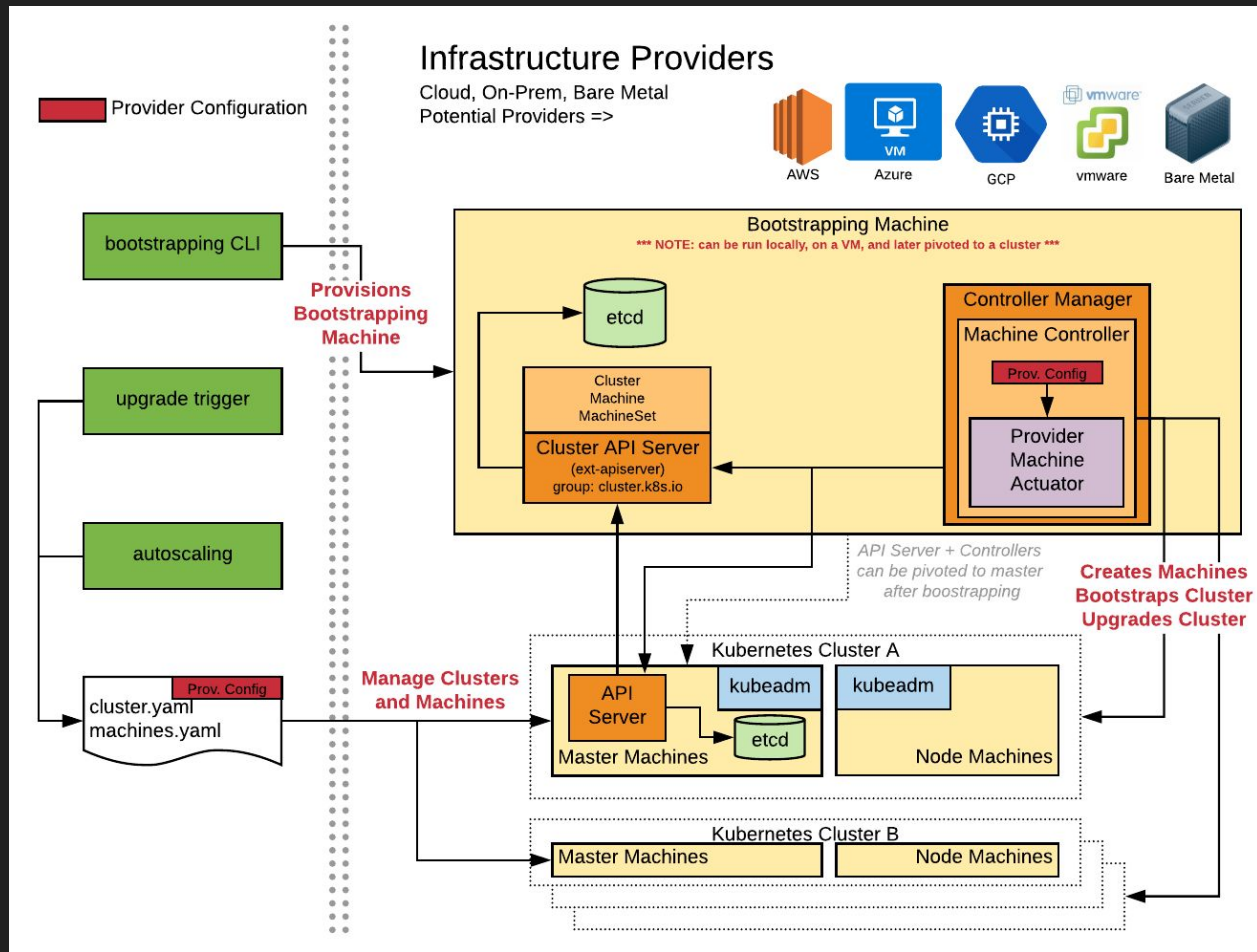
Compatibility matrix



CloudNativeCon

Europe 2018

Cluster API



Why on bare metal?

No public cloud

- User's privacy guarantee
- Already maintaining our own infrastructure and CDN
- Costs

No private cloud

- We actually run Kubernetes on OpenStack, for a different project
- Reducing moving parts
- No practical advantages for production services



Jan

Operators

Kubevisor

Pod Anomaly Detection

Queries Prometheus

Actions based on metrics

Kubevisor Internal Architecture

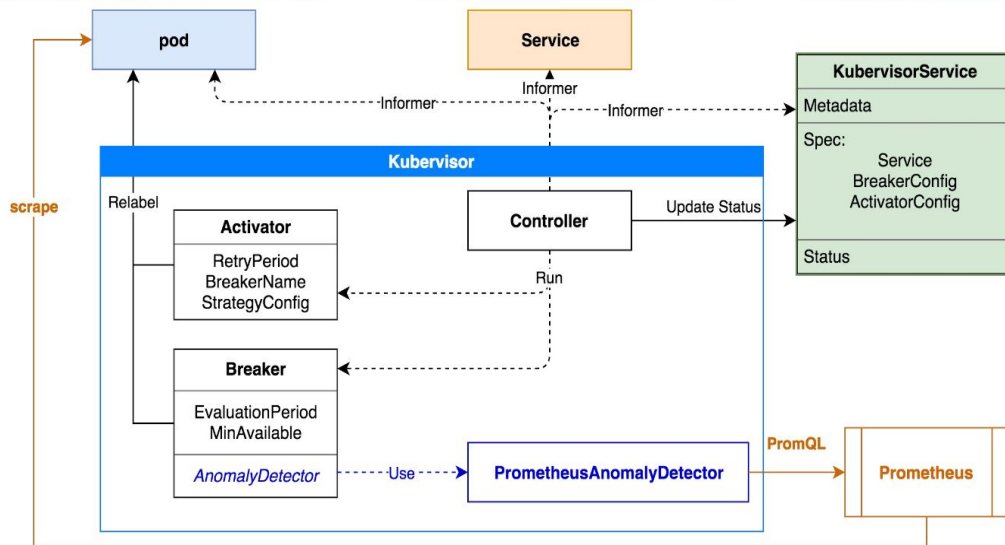


KubeCon



CloudNativeCon

Europe 2018

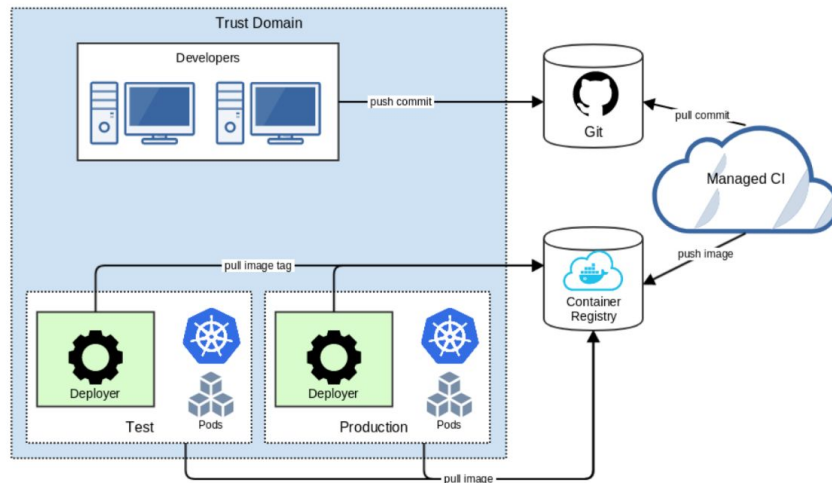


CD Operator

Watch Container Registry

Deploy on changes

Simpler Pipeline



https://scho.ws/hosted_files/kccnceu18/66/Teaser-Continuous%20Delivery%20Meets%20Custom%20Kubernetes%20Controller.pdf

Operator Framework

Tools to build, test and package your Operator

Easy setup

Lifecycle manager for upgrading kubernetes native operators

<https://github.com/operator-framework>

https://sched.ws/hosted_files/kccnceu18/49/BRANDON%20PHILIPS.pdf

<https://coreos.com/blog/introducing-operator-framework>

Error detection & investigation

Follow the Data from the Darkest Corners of K8s

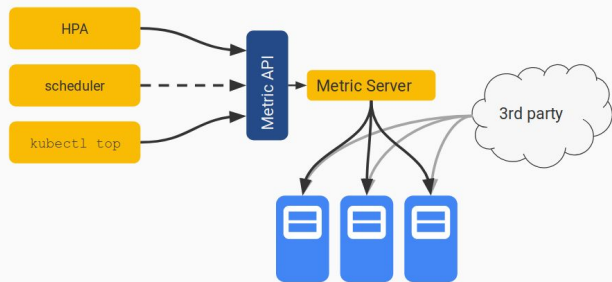
Points out Kubernetes is not build for monitoring

Describes push & pull based monitoring

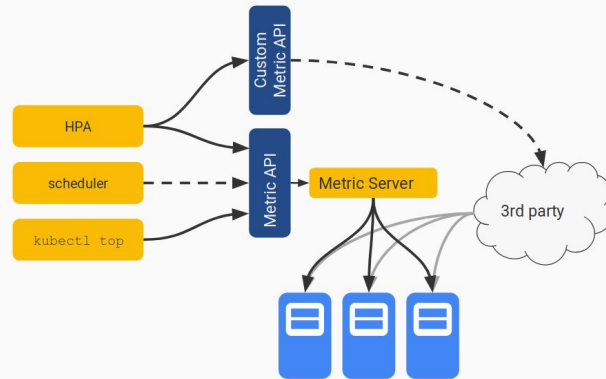
Overview of how Prometheus & Stackdriver works

[https://schd.ws/hosted_files/kccnceu18/37/Monitoring_%20Follow%20the%20Data%20from%20the%20Darkest%20Corners%20of%20Kubernetes.p
df](https://schd.ws/hosted_files/kccnceu18/37/Monitoring_%20Follow%20the%20Data%20from%20the%20Darkest%20Corners%20of%20Kubernetes.pdf)

Follow the Data from the Darkest Corners of K8s



Custom Metrics API



Getting Started with Logging in Kubernetes

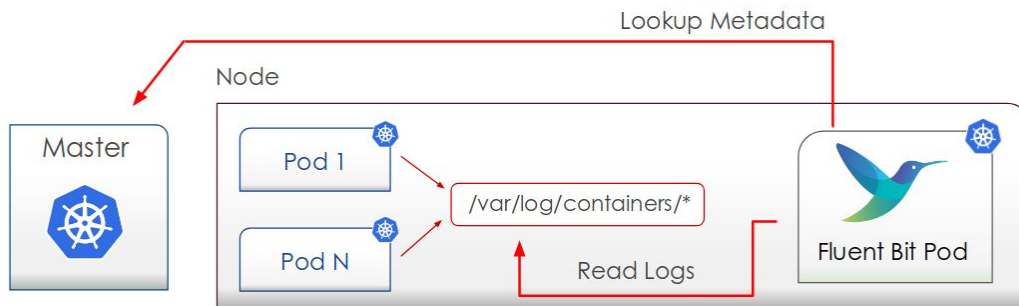
Describes how Fluent Bit

and FluentD works

It's more than just logging

Logging & Kubernetes

Lookup for Metadata Associated with each Pod



https://sched.ws/hosted_files/kccnceu18/2d/Getting%20Started%20with%20Logging%20in%20Kubernetes.pdf

Storage

Kubernetes Storage Lingo 101

Kubernetes is good for portability


Explains different storage types


Points out difference between in- & out- of tree volume plugins (e.g. CSI)

Agenda

- What do these words mean and how do they fit together?

Persistent Volume Claims	Driver	Persistent Volumes			
Remote	File	Flex	Block	CSI	Stateless
Storage Classes	Ephemeral	Local	Out-of-tree		
Dynamic Provisioning	In-tree	Volume	Object		
	Stateful	Plugin			


KubeCon


CloudNativeCon

Europe 2018

<https://www.youtube.com/watch?v=uSxlgK1bCuA>

Links

All Talks, Sildes and Videos on one page

<https://github.com/cloudyuga/kubecon18-eu/blob/master/README.md>

Photos

<https://www.flickr.com/photos/143247548@N03/albums/72157696369579365>