



KubeCon



CloudNativeCon

Europe 2018

# Accelerating Kubernetes Native Applications

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Core OS

# Operators: Kube Native Apps



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### Introducing Operators: Putting Operational Knowledge into Software

November 03, 2016 • By Brandon Philips

Tags: [announcements](#) [Operators](#)

A Site Reliability Engineer (SRE) is a person that operates an application by writing software. They are an engineer, a developer, who knows how to develop software specifically for a particular application domain. The resulting piece of software has an application's operational domain knowledge programmed into it.

Our team has been busy in the Kubernetes community designing and implementing this concept to reliably create, configure, and manage complex application instances atop Kubernetes.

# Operators: Kube Native Apps



Operators: Kube Natives Apps which:

Run in Kube Pods  
Managed w/ Kube APIs

# Operators: Kube Native Apps



```
# install the service types  
$ kubectl create -f etcd-operator.yml
```

Operators: Kube Natives Apps which:

**Run in Kube Pods**  
**Managed w/ Kube APIs**

# Operators: Kube Native Apps



```
# install the service types  
$ kubectl create -f etcd-operator.yml  
  
$ cat etcd-operator.yml | head -n 3  
kind: Deployment  
metadata:  
  name: etcd-operator
```

Operators: Kube Native Apps which:

**Run in Kube Pods**

Managed w/ Kube APIs

# Operators: Kube Native Apps



```
# create a new etcd cluster  
$ kubectl create -f etcd-instance.yml
```

Operators: Kube Natives Apps which:

Run in Kube Pods  
**Managed w/ Kube APIs**

# Operators: Kube Native Apps

```
# create a new etcd cluster
$ kubectl create -f etcd-instance.yml
```

```
$ cat etcd-instance.yml | head -n 1
kind: "EtcdCluster"
```

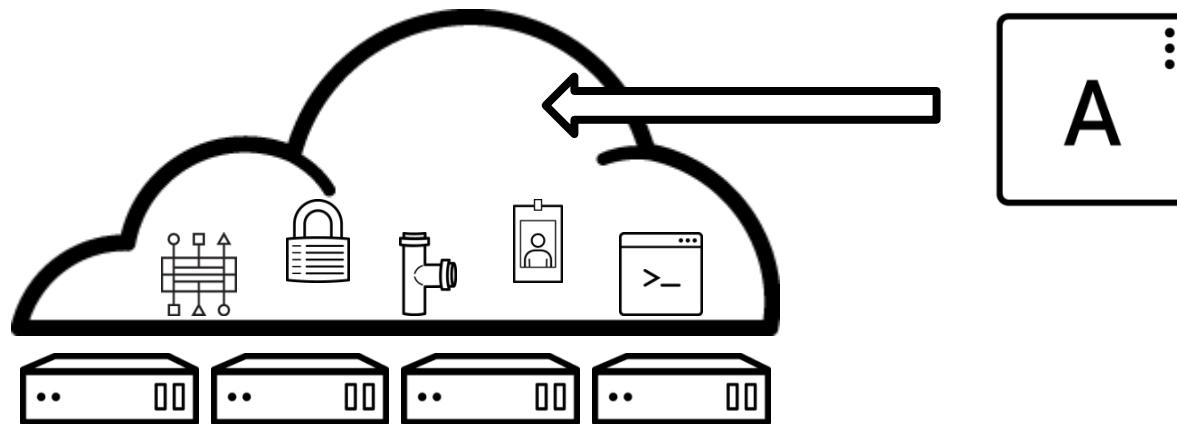
Operators: Kube Natives Apps which:

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# Operators: Kube Native Apps



# Operators: Kube Native Apps



# Operators: Kube Native Apps

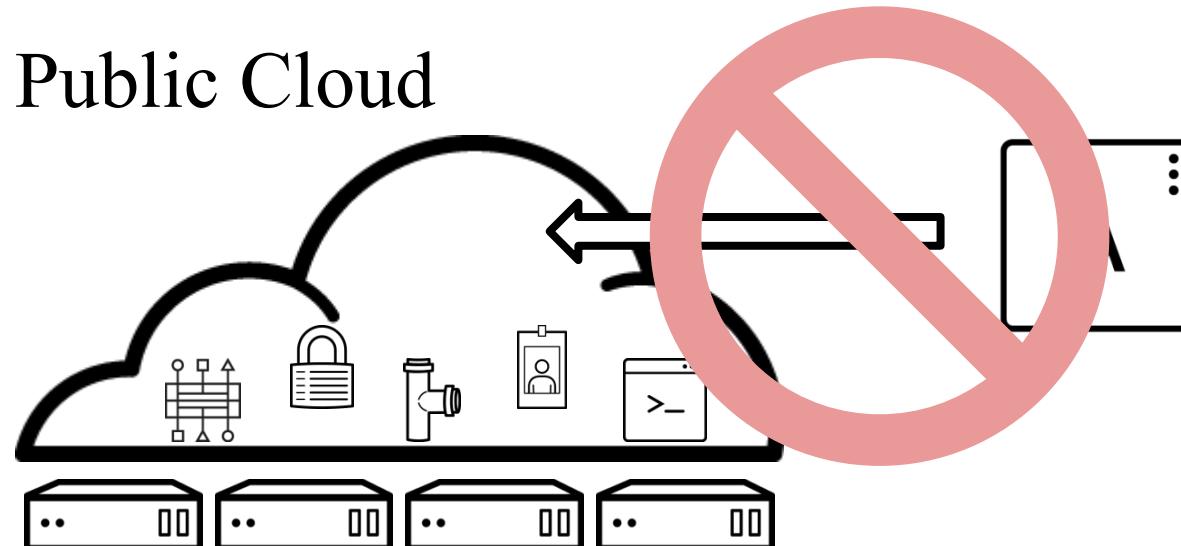


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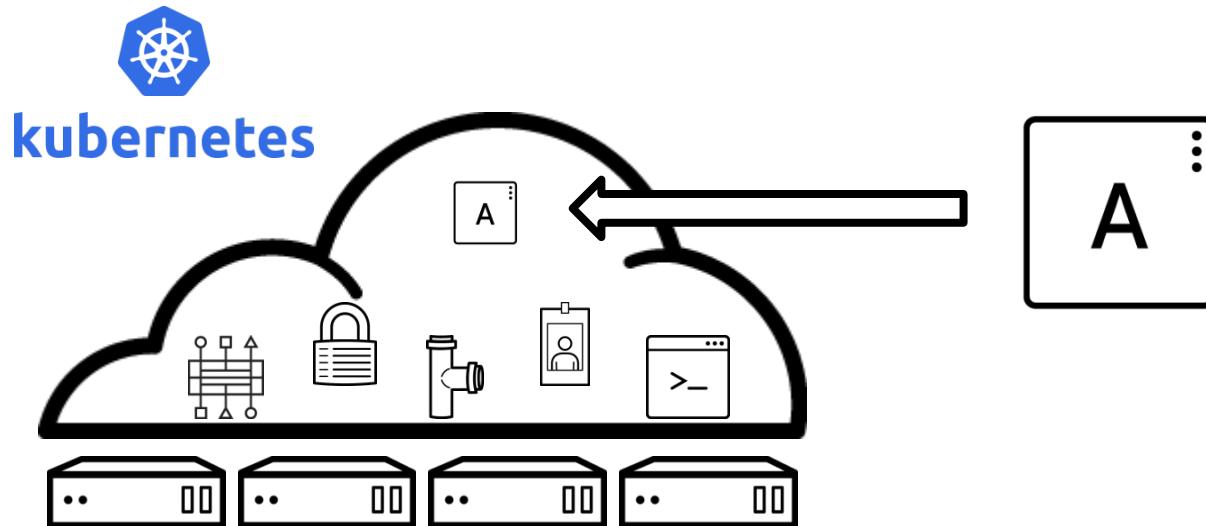


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# Operators: Kube Native Apps



# Operators: Kube Native Apps



*Using the Prometheus Operator, our dev teams are able to provision their own end-to-end monitoring. We could not hope to manage the 344 Prometheus instances without the domain knowledge the Operator encapsulates.*

*- Michael Goodness, Lead Systems Engineer at Ticketmaster*

# Operators: The Next Step



Building on this success, how do we?

- Create more Operators more easily
- Bring Operators to more users

# The Operator Framework



*An open source toolkit to help developers build new Kube Native Apps, called Operators, and make them available and manageable by Kubernetes users.*



## Operator Framework

The Operator Framework is an open source toolkit to manage Kubernetes native applications, called Operators, in an effective, automated, and scalable way.

<http://coreos.com/operators>

Repositories 8

People 13

Teams 3

Settings

Search repositories...

Type: All ▾

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Customize pinned repositories

New

### operator-lifecycle-manager

Private

Kubernetes Operator Lifecycle Manager

Go ★1 10 Apache-2.0 Updated 6 hours ago



### Top languages

Go Shell

### operator-sdk

Private

Kubernetes Operator SDK

### People

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# Operator SDK

*Tools to build, test and package your Operator.*

# Operator Development Challenges



Tracking related Kube resources

Test scaffolding and repo organization

Vendoring a working set of libraries

# Simplify Operator Development



```
operator-sdk new myapp-operator  
  --api-version=myapp.example.com/v1alpha1  
  --kind=MyApp
```

# Operators: Kube Native Apps

*“We are working together with Red Hat and the broader Kubernetes community to help enable this ecosystem with an easier way to create and operate their applications on Kubernetes”*

*- Phillip Wittrock, Software Engineer at Google and Kubernetes community member*

# Operator Lifecycle Management

*Enable cluster admins to manage Operators on any  
Kubernetes cluster.*

# Answering these questions?

Maintain a catalog of Operators and dependencies

Make an Operator available to specific namespaces

Track Operator app instances across namespaces

Apply updates to Operator app instances

# Install/upgrade your Operators

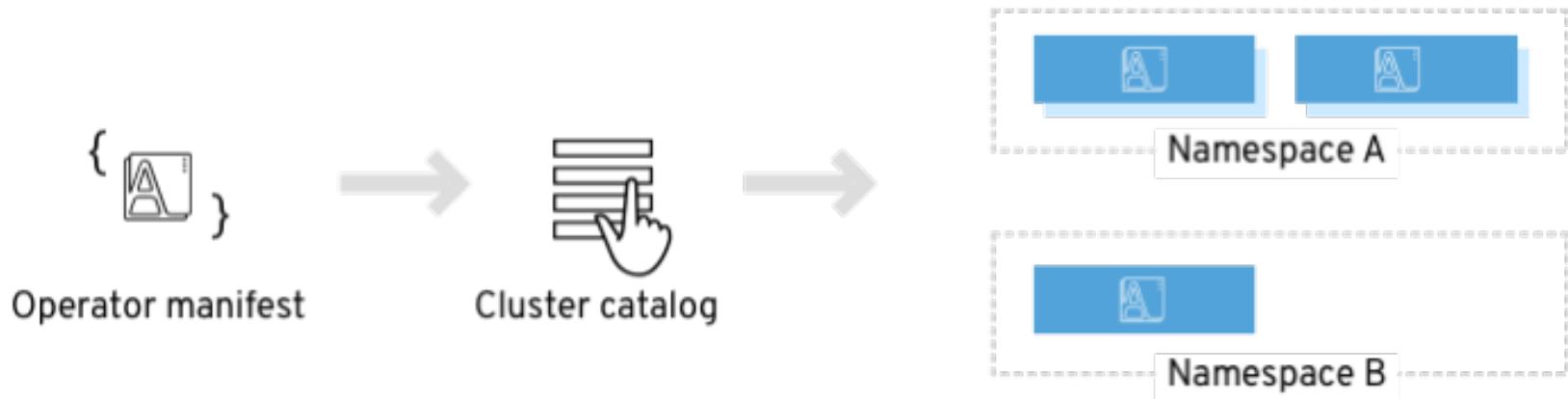


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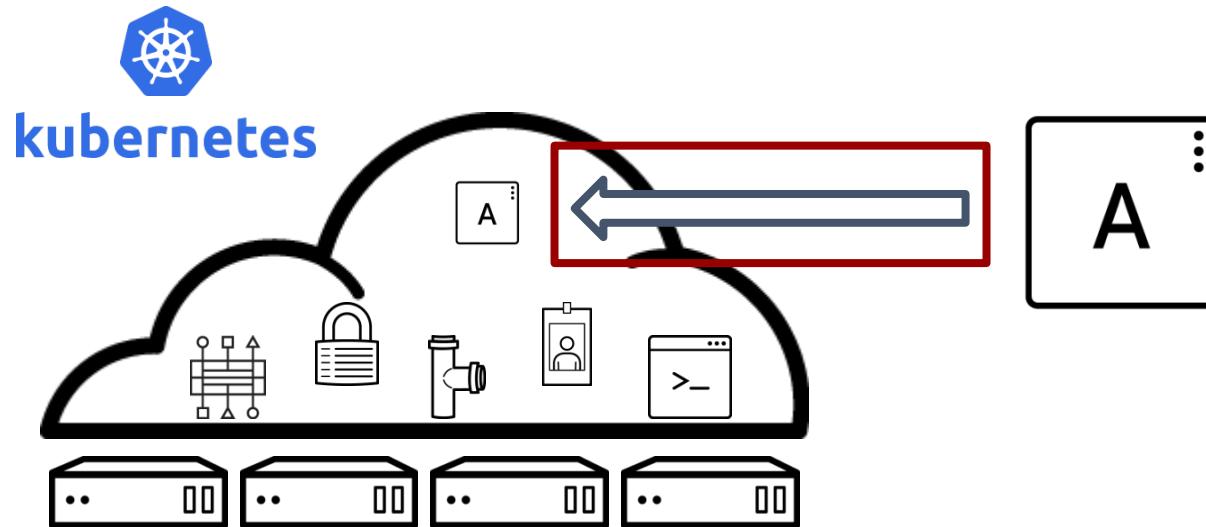


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# Lifecycle Managements Role



# Operator Lifecycle Manager

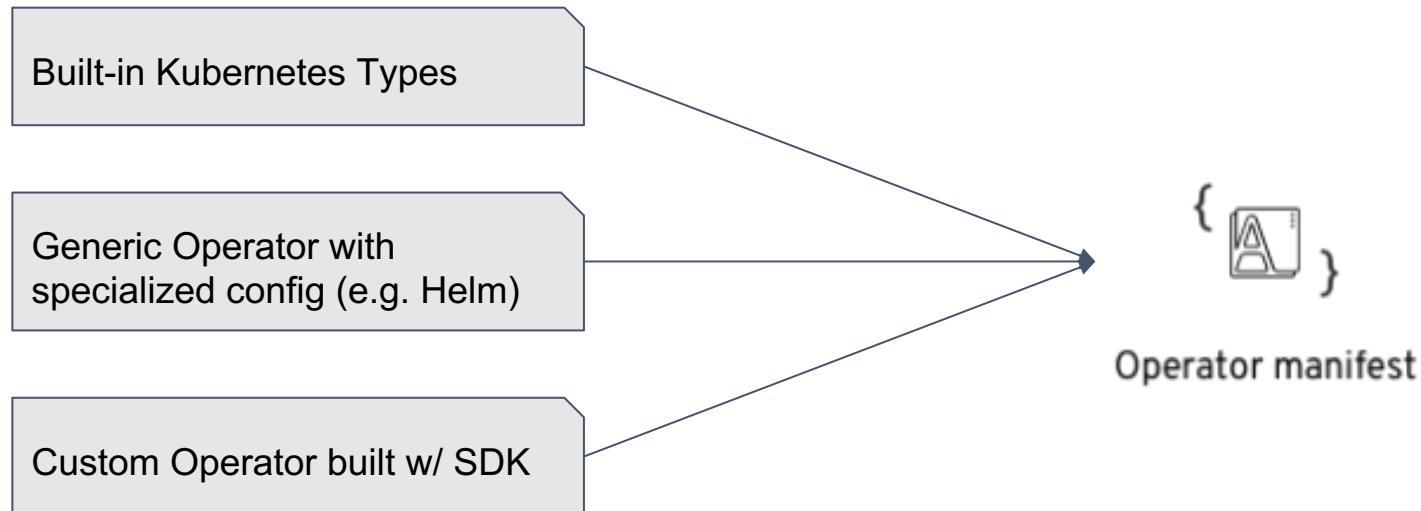


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# Operator Framework Recap



## Operator Framework

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# Operators: The Next Step



With the goal to:

- Create more Operators more easily
- Bring Operators to more users

# Why?

*Make Kubernetes the dominate API  
for Cloud Native apps.*

# Thank You!

Come find us at the Red Hat Booth or around the conference



Jimmy Zelinskie



Rob Szumski



Brandon Philips



Kelly Tenn