Building Apps on Kubernetes

Introducing the Operator Framework

whoami

Georgi Alexandrov

Software Engineer @ Progress (Kinvey Team)

github.com/galexandrov

twitter.com/tenuar

How do you run apps in Kubernetes?

How do you run apps in Kubernetes?

- Write some Deployment, Services, Configmaps etc

- Deploy them to K8s

- Maybe create Helm Chart

What is Kubernetes application?

- Deployed on Kubernetes

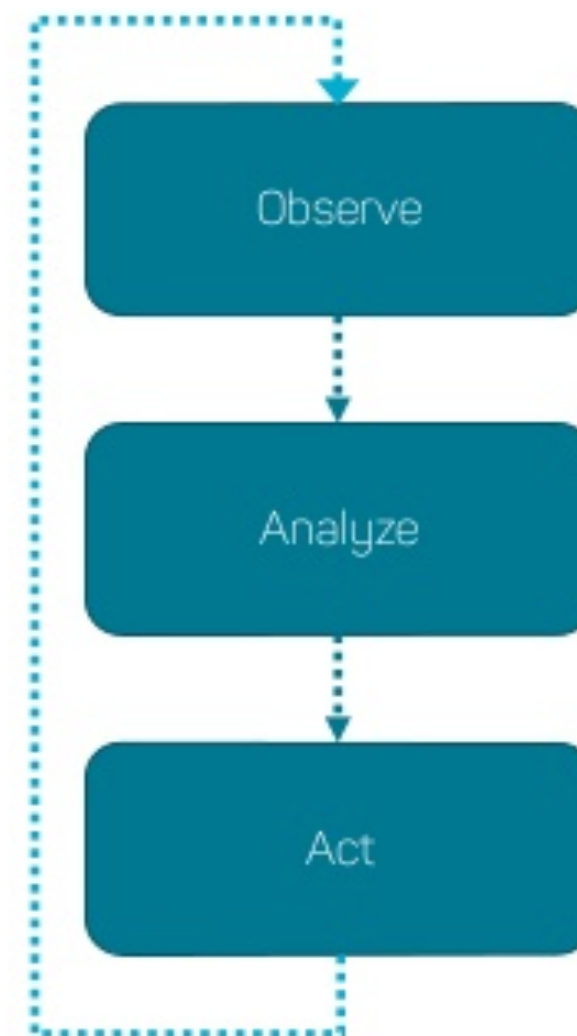- Managed using the Kubernetes APIs and kubectl tooling

Kubernetes application overview

- CustomResourceDefinitions (defines a new API & kubectl support)

- Application Business Logic

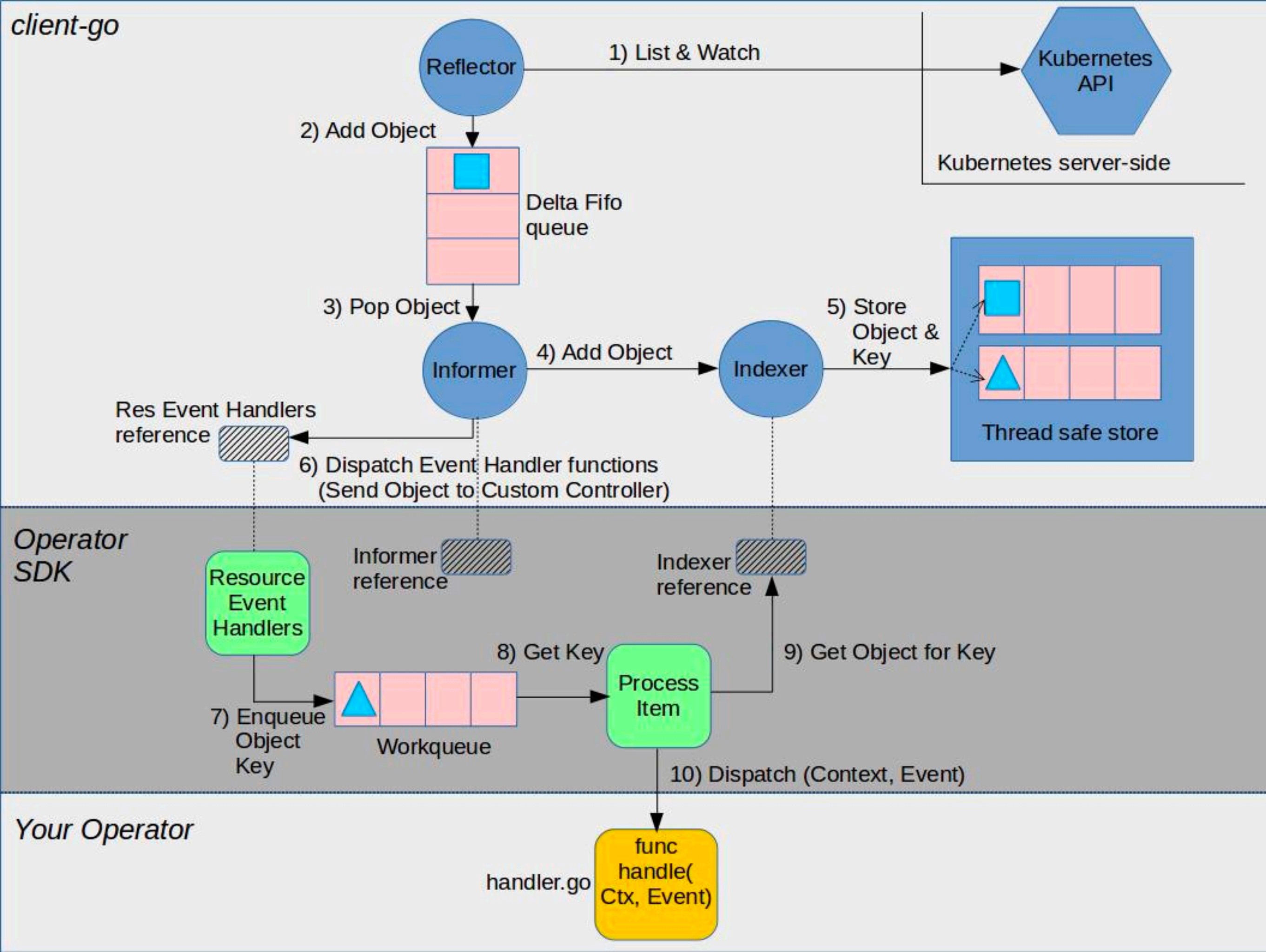# Operators == Kubernetes applications

Control Loop

- Operator create WATCH on CR Objects
- Analyze difference Actual vs Desired State
- Act on changes

The Operator Framework (CoreOS)

- Operator SDK (for devs)

- Operator Livecycle Management (OLM) (for admins)

- Operator Metering

client-go

Reflector

1) List & Watch

Kubernetes API

Kubernetes server-side

2) Add Object

Delta Fifo queue

3) Pop Object

Informer

4) Add Object

Indexer

5) Store Object & Key

Thread safe store

Res Event Handlers reference

6) Dispatch Event Handler functions
(Send Object to Custom Controller)

Operator SDK

Resource Event Handlers

Informer reference

Indexer reference

8) Get Key

9) Get Object for Key

7) Enqueue Object Key

Workqueue

Process Item

10) Dispatch (Context, Event)

Your Operator

handler.go

func handle(Ctx, Event)

DEMO