

# Knative- A New Way To Kube

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# Agenda

A bit of history...

then some **Knative**...

a demo!

***Warning: This talk may require salt***



# In the beginning there was Docker, and it was good...

```
$ docker run ubuntu echo Hello World  
Hello World
```

- Containers
- Build / Images
- DockerHub



# Then we started to mature, doing real work...

- Networks
- Volumes
- Services
- Swarm / SwarmKit



# Adulting

## Kubernetes!

Enterprise grade environment for deploying containerized applications. Enhancing developer productivity, resource efficiency, automated operations, and open source flexibility to accelerate your time to market.

C-Suite Definition



# The Claim: Kubernetes is for Developers

Deploy and manage your containerized applications



# Reality: What really is Kubernetes?

A RESTful DB with a set of watchers that react to changes in the DB

<b>Containers</b>	<b>Ingress / LBs</b>
<b>Pods</b>	<b>yaml</b>
<b>Replica Sets</b>	<b>Spec vs Status</b>
<b>Deployments</b>	<b>helm</b>
<b>Services</b>	<b>kubectl</b>
<b>Endpoints</b>	<b>Istio</b>
<b>Secrets</b>	<b>...</b>
<b>Networks</b>	
<b>Volumes/PV/PVC</b>	

**Blue/green deployments**





# Back to first principles

What was Kubernetes supposed to be?

- A platform to build platforms

Reality: It **is** the platform

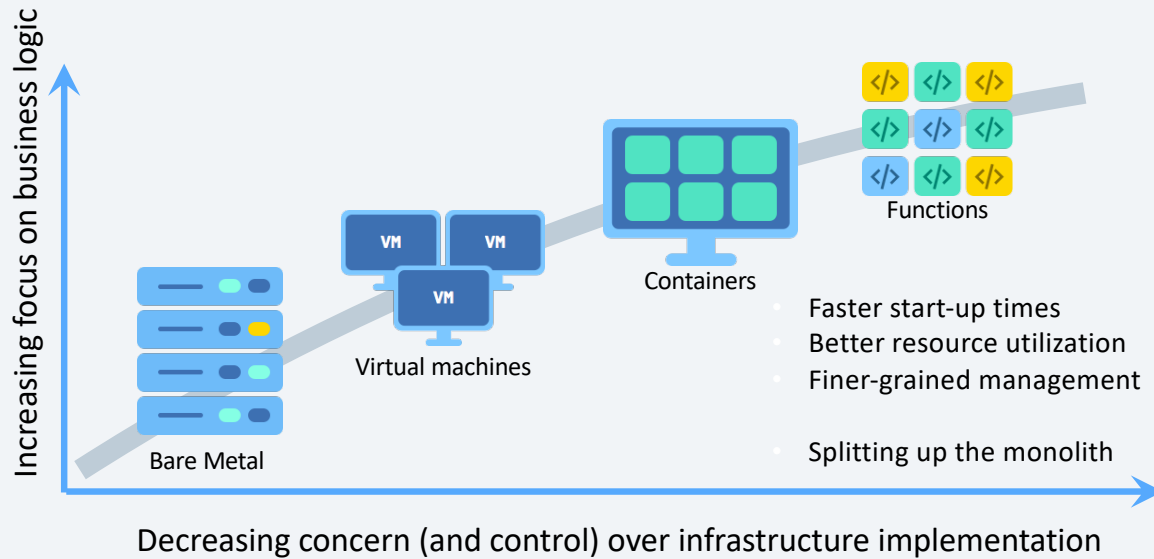
- Force developers to manage infrastructure
- With flexibility came complexity

**I just want to run my app!**





# Enter stage left... Serverless



# Properties of Serverless

- Stateless
- Event Driven
- Auto-scaled / Scale-to-zero
- Short Lived
- **Reduced Cost**
- **Faster Time to Market**



# Introducing Knative

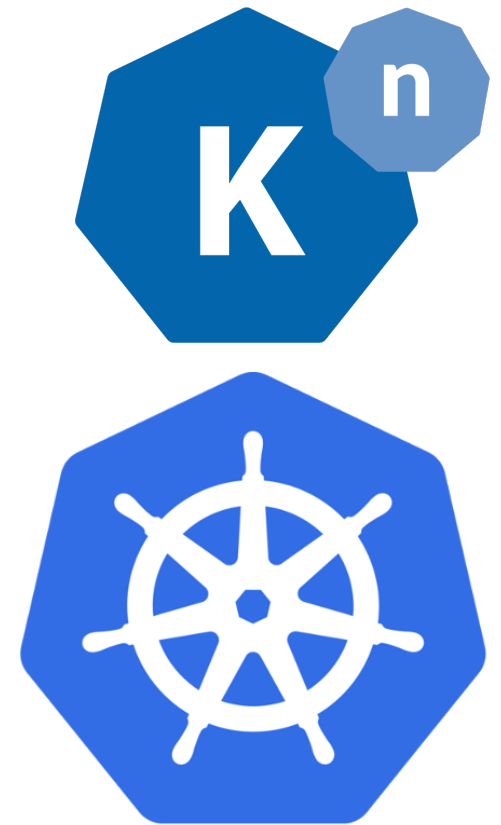
"Knative extends Kubernetes to provide a set of middleware components that are essential to build modern, source-centric, and container-based applications that can run anywhere: on premises, in the cloud, or even in a third-party data center." - Kn docs

Huh ?



# What it really means...

- An opinionated and simplified view of application management
- Heavily influenced by Serverless
- Allowing developers to focus on coding
- New Kubernetes extension resources (CRDs)



# Technical Specs

## 3 Main Components

- **Build** container images from source
- **Serving** is the runtime component
- **Eventing** for loosely coupled services



# Knative Build

Build container images from source

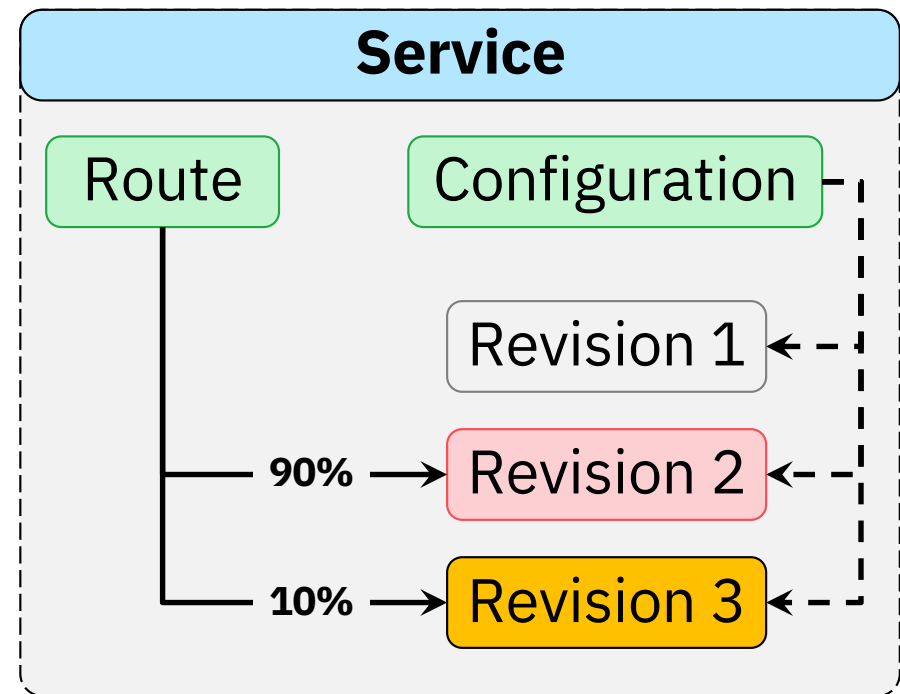
- Built from your source control system
- Customizable **BuildTemplates** define the build steps/process
- Results are stored in a container registry



# Knative Serving

Manages the hosting aspects of your app

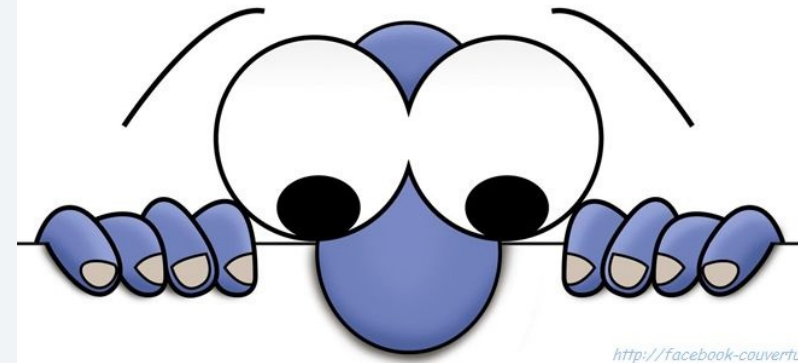
- **Service** - manages the lifecycle of app
- **Configuration** - manage history of app
- **Revision** - A snapshot of your app
  - Config and image
- **Route** - Endpoint and network traffic management





# Knative Serving - What it really means...

- Encapsulate "build" steps into Service definition
- Rolling-upgrades- eg. A/B traffic splitting
- Better resource utilization
  - Scale to zero capabilities
  - Auto-scaling on demand
- Manages the core K8s resources for you
- Runtime building blocks on which Cloud Providers can build a Serverless platform
- **Expect changes to simplify the model**



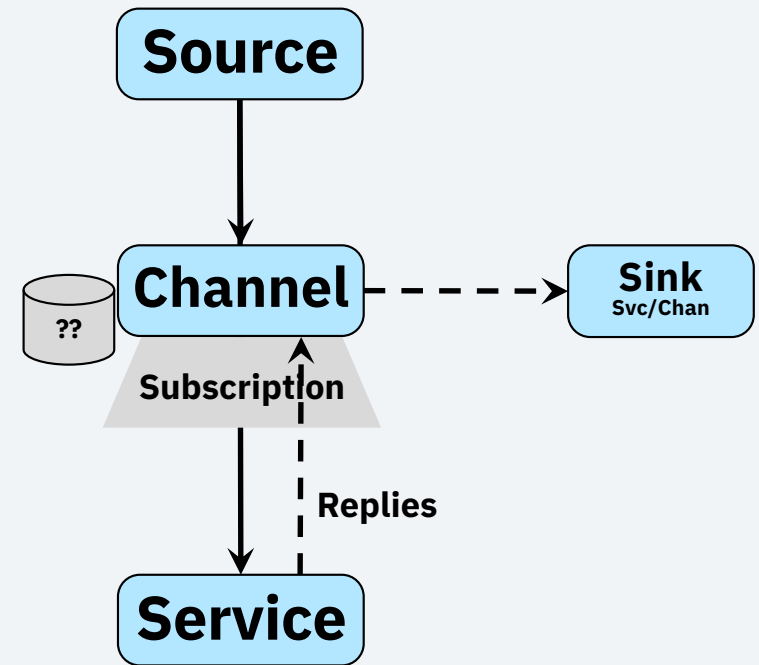
# Knative Eventing

## Eventing Primitives

- **Event Source** - connect to event producer
  - Can create the subscription for you
- **Channels** - a receiver of events
  - E.g. a queue
- **Subscription** - ask for events from a Channel

Manage to coordination/delivery of events to sinks

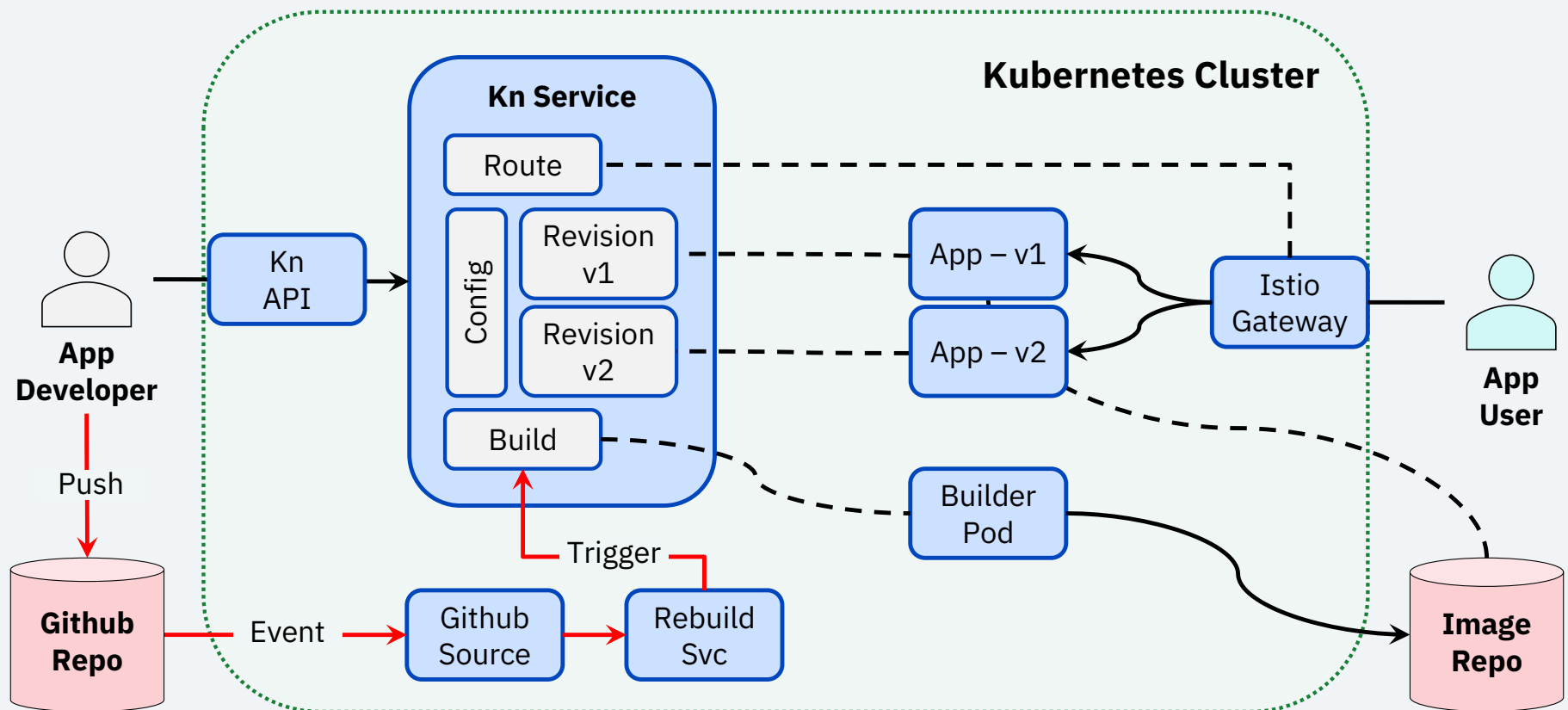
**Expect changes: Brokers and Triggers**



# Demo time



# Knative Demo



# Demo Summary

## What we did:

- Deployed app w/o build
- Deployed app w/ build
- Rolling upgrade

## All via the Knative Service resource

- Integrated Github webhook

<https://github.com/duglin/helloworld>

## What we didn't do:

- Create Deployment / ReplicaSet
- Create a K8s Service
- Create an Endpoint / Ingress
- Set up a dynamic Load-Balancer
- Set up an auto-scaler
- Talk to Github directly to create web hook
- ...

# Knative: A Rose By Any Other Name...

## What is Knative?

- Serverless Framework?
- PaaS?
- New "Deployment" w/ magic pixie dust?
- A new Kubernetes user experience?

## Does it matter? Does it meet your needs?

Letting developers be developers again

YOU DECIDE!



# Knative - Technical Notes

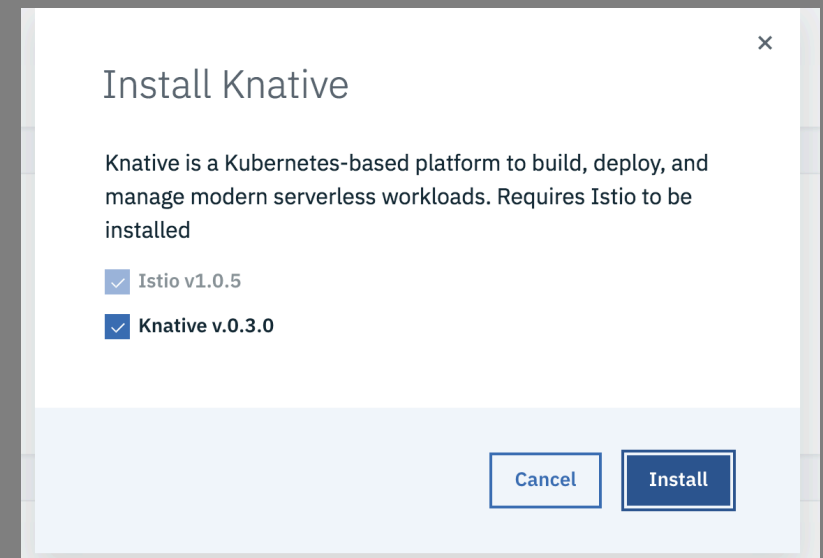
- Not full Pod support (yet)
- Leverages Istio for networking / traffic
  - But optional
- "kn" CLI is in the works
- Service vs Configs/Revisions/Routes
- KnBuild will probably vanish for Tekton





# Announcing Managed Knative on IKS - Experimental

- Managed Knative (0.4.0) add-on for IBM Cloud Kubernetes Service
- One click install of Knative into your cluster
  - Includes Istio 1.0.5
- Updates to Knative are managed



# Thank You!

Knative: <https://github.com/knative/docs/>

IKS: <https://ibm.com/iks>

Demo: <https://github.com/duglin/helloworld>

