



# kubernetes+ cloud native

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eastern canada meetup

# Bienvenue! Welcome!



# MEETUPS ACROSS EASTERN CANADA

## Ottawa

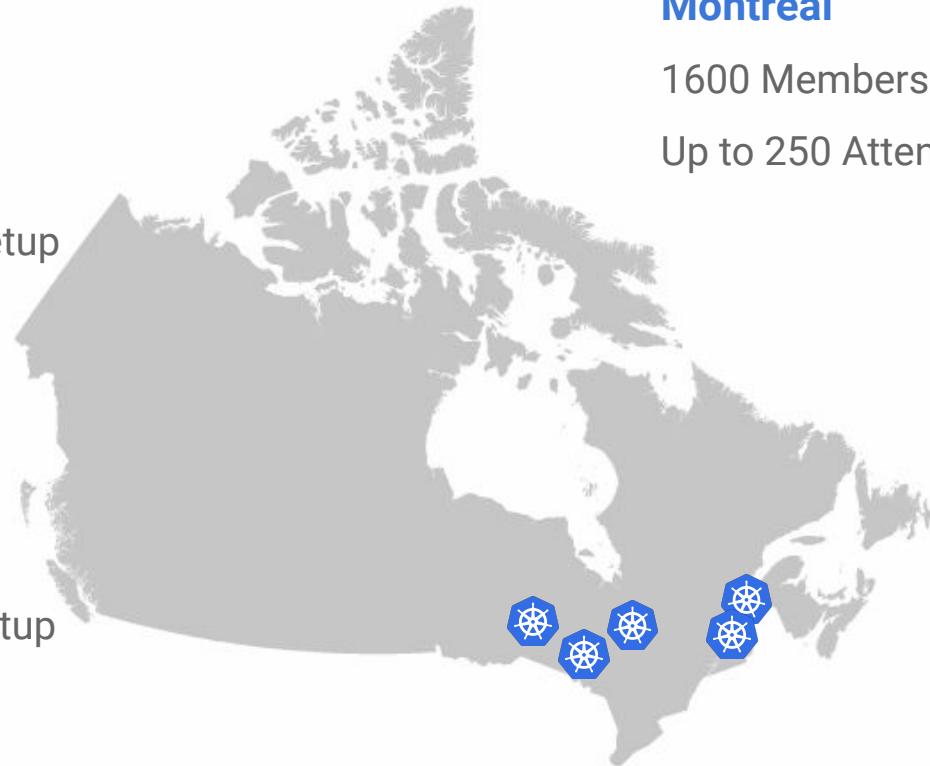
650 Members

Up to 85 Attendees each Meetup

## Kitchener-Waterloo

300 Members

Up to 35 Attendees each Meetup



## Montreal

1600 Members

Up to 250 Attendees each Meetup

## Quebec City

450 Members

Up to 50 Attendees each Meetup

## Toronto

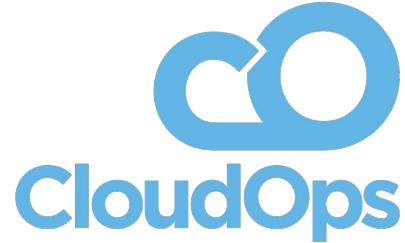
1200 Members

Up to 150 Attendees each Meetup





# Thank you to our sponsors!



redhat  Microsoft



elastic



Square *ticketmaster*®  ecobee





# New sponsors joined us!



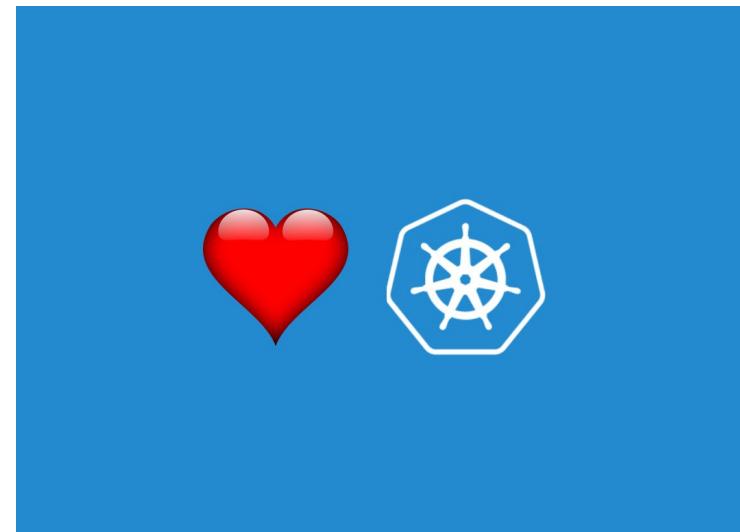
StackRox





# Thank you for hosting us!

*ticketmaster*®



# Congrats to Shopify!!!

\$2.9+ billion in worldwide sales over!!!

**That's a wrap for Black Friday  
Cyber Monday 2019**

Congratulations to Shopify business owners worldwide on your breakthrough BFCM



**Powered by** 



# Joignez-vous au Slack K8s Canada!



<http://K8scanadaslack.herokuapp.com>



# CFP Open for Q1 CNCF Meetups!

- **CNCF Meetup Q1**
- **Montreal** - <https://www.papercall.io/cncf-montreal>
- **Ottawa** - <https://www.papercall.io/cncf-ottawa>
- **Quebec** - <https://www.papercall.io/cncf-quebec>
- **Toronto** - <https://www.papercall.io/cncf-toronto>
- **Waterloo** - <https://www.papercall.io/cncf-waterloo>



# Join us !

- We are always looking for:
  - Sponsors
  - Venues
- Looking for Volunteers
- Looking for Co-organizers
- Looking for Speakers!



# Meet Ottawa Meetup Organizers



Ayrat "Archy"

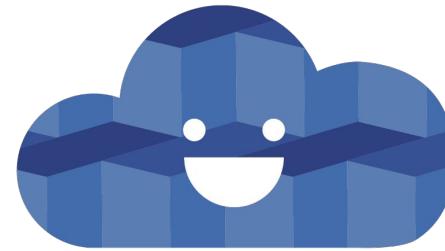


Jonathan Pulsifer



Chris Carty

# Meet Toronto Meetup Organizers



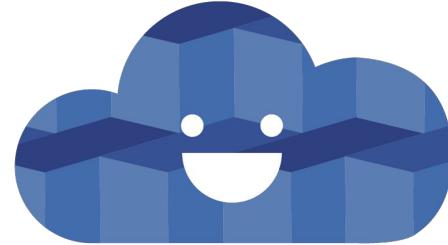
Ayrat “Archy”



# Meet Waterloo Meetup Organizers



CLOUD NATIVE  
COMPUTING FOUNDATION



CLOUD NATIVE  
COMPUTING FOUNDATION

AMBASSADOR



Ayrat "Archy"



Christopher Vollick



# Thank you to remote team of co-organizers to prepare content!!!

Tetrate



Enterprise ready service mesh  
for any workload on any environment

Powered by Envoy and Istio



Sebastien Thomas



CLOUD NATIVE  
COMPUTING FOUNDATION  
AMBASSADOR



Ayrat "Archy"

Adaptive



Anthony Dahanne



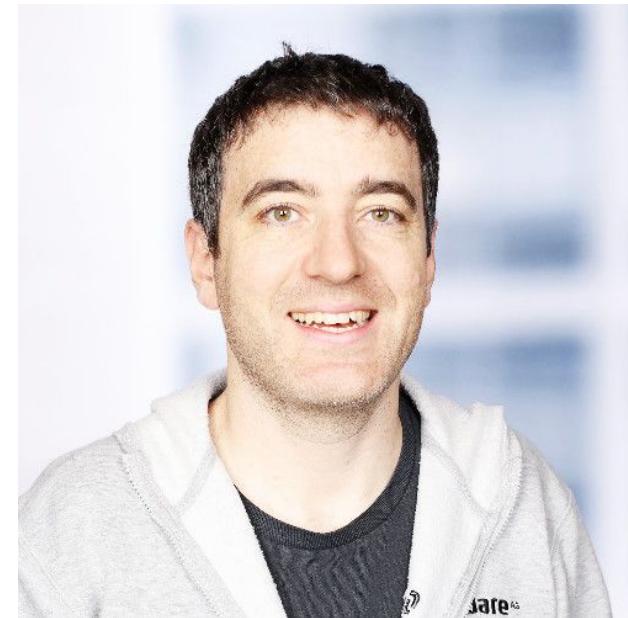
# Meet Montreal Meetup Organizers



CLOUD NATIVE  
COMPUTING FOUNDATION



Alex Gervais



Anthony Dahanne



# Meet Quebec Meetup Organizers



CLOUD NATIVE  
COMPUTING FOUNDATION



Alex Gervais

## Tetrate



Enterprise ready service mesh  
for any workload on any environment

Powered by Envoy and Istio



"Prune" (Sebastien THOMAS)



# Meet Toronto Meetup Organizers



CLOUD NATIVE  
COMPUTING FOUNDATION



Ayrat “Archy”

Dimka



# Agenda

- **Kubecon recap** - Anthony
- **CNCF Update**
  - Helm 3 - Ayrat CNCF Ambassador
  - FluxCD + ArgoCD = Argo Flux (GitOps Engine)
- **Istio Year in Recap** - Ayrat CNCF Ambassador and Sebastian
- **Kubernetes Year in Recap** - from Kubernetes 1.17 Release Notes Lead - Chris Carty



# Agenda for CNCF Kitchener-Waterloo



- **Kubecon recap** by Archy CNCF Ambassador
- **CNCF Update** by Archy CNCF Ambassador
- **Istio Year in Recap** - Archy CNCF Ambassador
- **Kubernetes Year in Recap** - Archy CNCF Ambassador
- **Modern DevOps with Spinnaker and State of the Kubernetes Provider** by Olga Kundzich @Pivotal
- **Autoscaling in reality: Lessons learned from adaptively scaling Kubernetes**, by Andy Kwiatkowski @Shopify



# Agenda for CNCF Montreal

- **Kubecon recap** by Anthony & Alex
- **CNCF Update** by Anthony
- **Kubernetes Year in Recap** by Alex
- **Building Operators with Kudo** by James Dyckowski @D2IQ
- **Build Your Own Serverless With Knative** by Alex @Datawire



# Agenda for CNCF Quebec

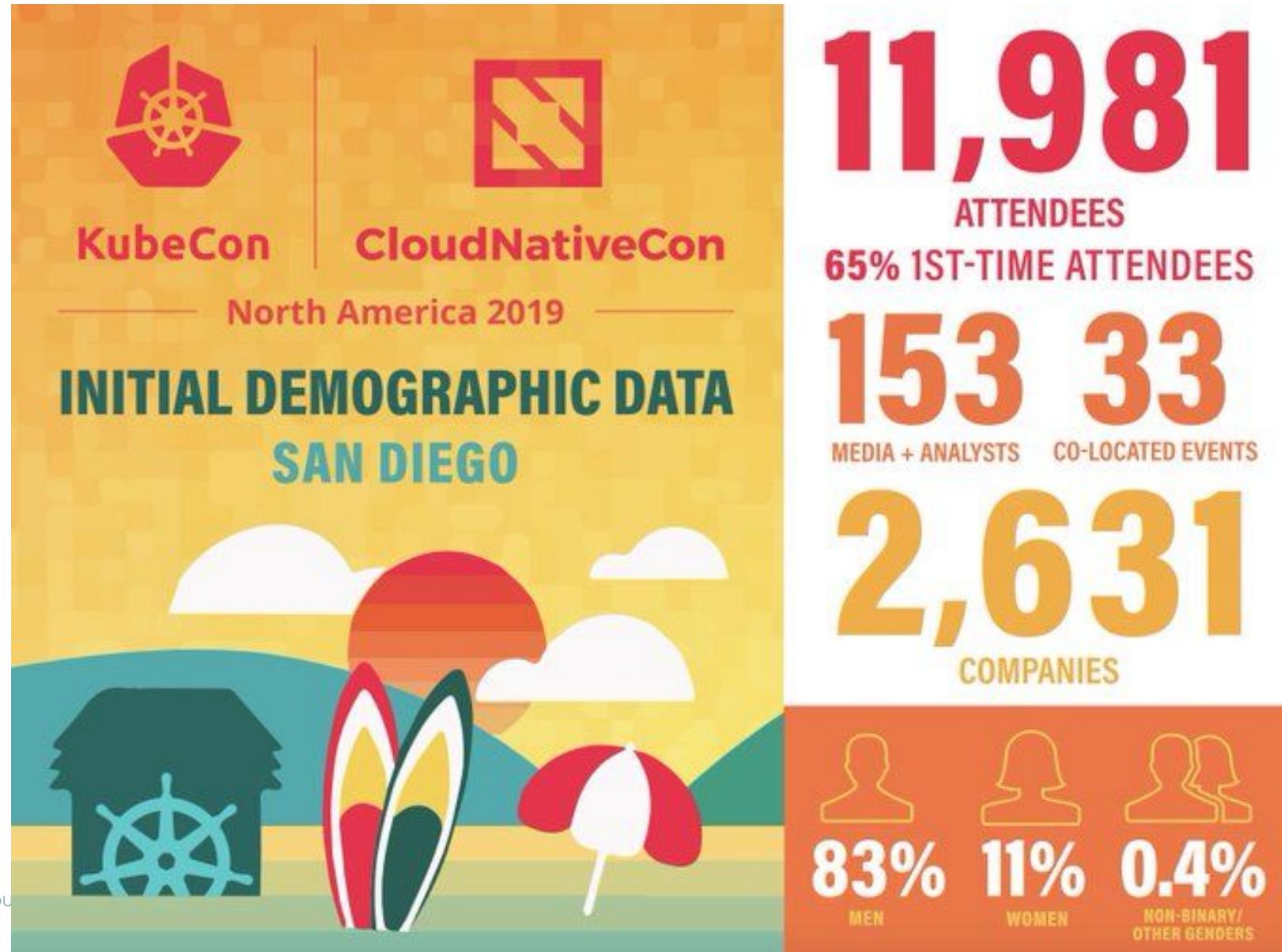
- **Kubecon recap** by Alex & Sebastien
- **CNCF Update** by Alex
- **Kubernetes Year in Recap** by Alex
- **Istio Year in Recap** by Sebastien
- **Banzai Cloud Kafka Operator** by Sebastien @Tetrate
- **Construit ton propre Serverless avec Knative** by Alex @Datawire



# Kubecon Recap



# Kubecon San Diego 2019 in Numbers



# Kubecon San Diego 2019 Top 10 Announcements

1. Mirantis acquires Docker enterprise business
2. Helm 3 released, for real!
3. Jfrog announces container and helm registry FREE
4. Rancher announces k3s GA and Rio is in Beta
5. Cloud Native Security Hub based on Falco from Sysdig
6. PlanetScale launches CNDb fully managed Vitess
7. Istio 1.4 released
8. Managed Istio GA on IBM Kubernetes Service
9. Solo.io introduces Autopilot
10. Google Cloud Run based on Knative API is GA



# Kubecon NA 2019 Trends

- Architecture: what's up with Ingress Controller and Services?
- Architecture: Pluggability - Container RuntimeClass, NSM
- Operators - several frameworks
- Kubernetes everywhere - yes, but...
- Policy, Policy, Policy - Everywhere
- OpenTelemetry - ready for primetime?
- GitOps : ArgoFlux



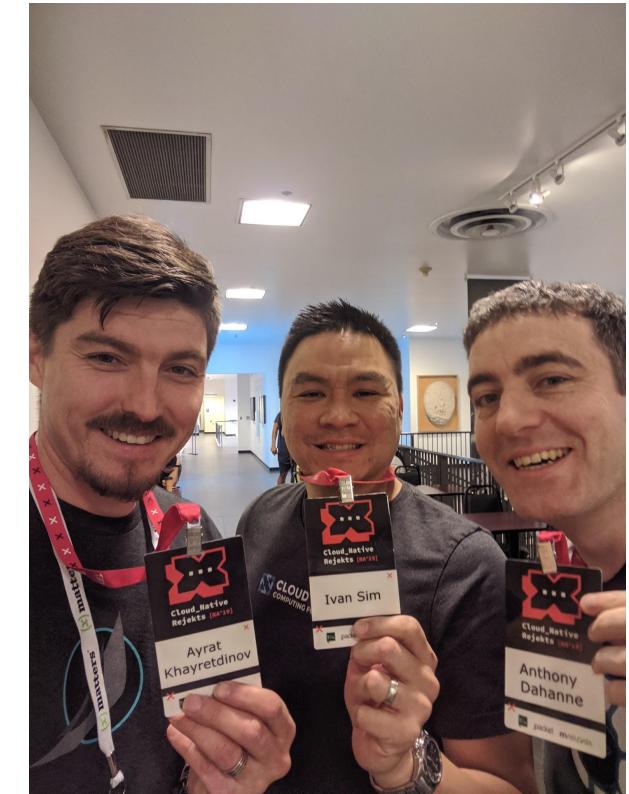
# Kubecon NA 2019 Tools

- Developer tools frenzy
  - Skaffold - GA
  - Tilt
  - Telepresence
  - Squash
  - the “older” ones: Draft (not much going)
  - the unsuspected gift: ephemeral containers
- Kubectl goodness
  - krew (plugin manager)
  - kubectx, kubens
  - kustomize
  - kail (log aggregator)
- Kubernetes distributions
  - Kind
  - k3s
  - the “older” ones: Minikube, DockerForMac/Windows



# Kubecon NA 2019 - Pre-Conference

- Rejekts: a pre conference with smaller audience (~200)
- Day 0 : pick your favorite (Spinnaker summit, Contributor summit, NSM day, AWS day, Anthos day, etc.)
- Kubecon itself (3 days)
  - Keynotes
  - Lightning talks
  - Tech Talks
  - SIG Intro
  - SIG Deep Dive
  - Vendor Booth
  - Parties

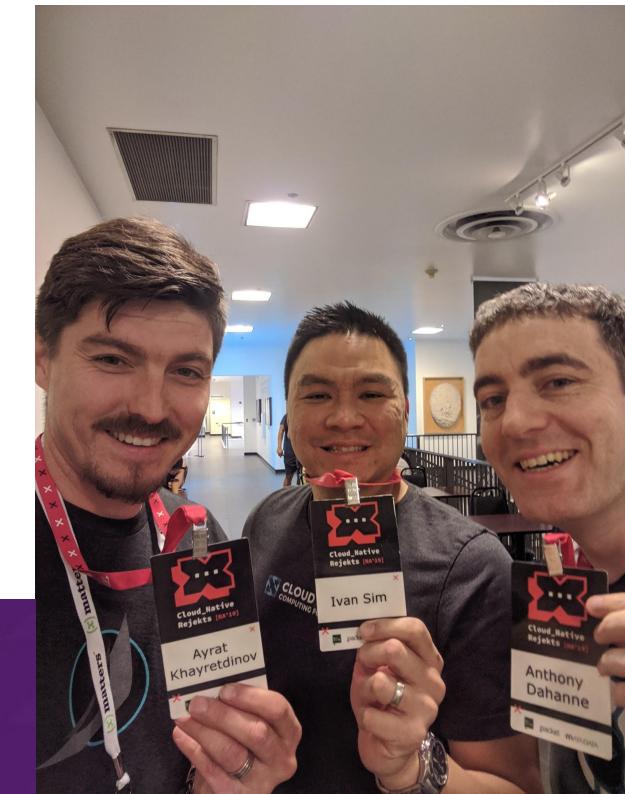


# Kubecon NA 2019 - Pre-Conference

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- Day 0 : pick your favorite (Contributor summit, NSM day, AWS day, etc.)



**Cloud\_Native  
Rejekts [NA'19]**



# Kubernetes 2019 Contributors Summit





# Overview

- 1 Day
- 551 Attendees
- New Contributors/Intermediate Contributor workshops
- Unconference Sessions
- Highlights
  - Securing Kubernetes By Default Session
  - Multi-Tenancy In Kubernetes Work Shop
  - Live API Review by Jorgan Liggitt
- Meeting core contributors!





MONDAY NOVEMBER 18

10:00 AM - 1

10:00am - 10:25am	Pacific Ballroom 18	How to Hold Upstream Training in Your Country and Get New Contributors! Oomichi; Akihito Inoh
10:00am - 10:30am	Pacific Ballroom 14/15	New/Intermediate Contributor Workshop - Contributing: Who/Where/How
10:00am - 10:45am	Pacific Ballroom Foyer	Break
10:05am - 10:25am	Pacific Ballroom 20/21/22	Precisely Defining Kubernetes: The Path of Conformance - Hippie Hack
10:30am - 10:55am		Raising the Bar: Production Readiness in K8s - John Belamaric
10:30am - 11:00am	Pacific Ballroom 14/15	New/Intermediate Contributor Workshop - How We Communicate - Guinevere
	Pacific Ballroom 18	Breaking Down Barriers to Kubernetes Contribution for Neurodiverse Communities - Kiran "Rin" Oliver
10:30am - 11:25am	Pacific Ballroom 24	Multi-tenancy in Kubernetes: Let's Talk - Tasha Drew
	Pacific Ballroom 25	Unconference



# Kubecon NA 2019 - Meetups

- Istio Meetup

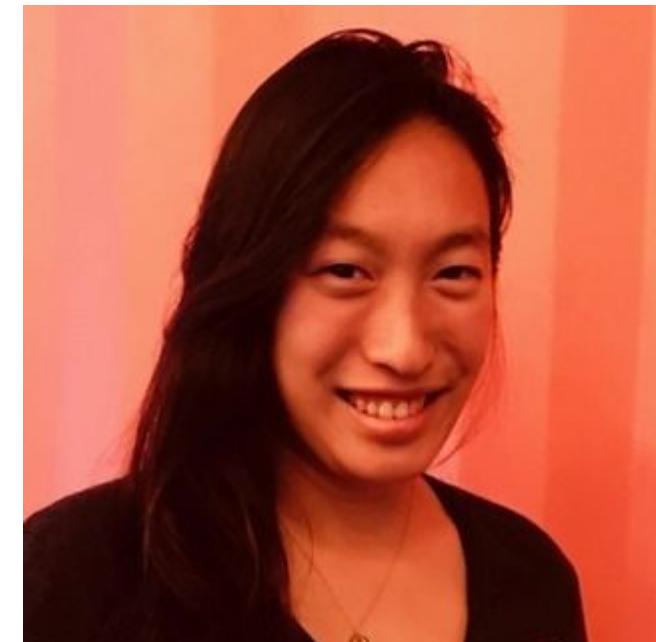


# Kubeccon NA 2019 Keynotes Hosts



[Bryan Liles](#)

33 | ©Senior Staff Engineer, VMware



[Vicki Cheung](#)

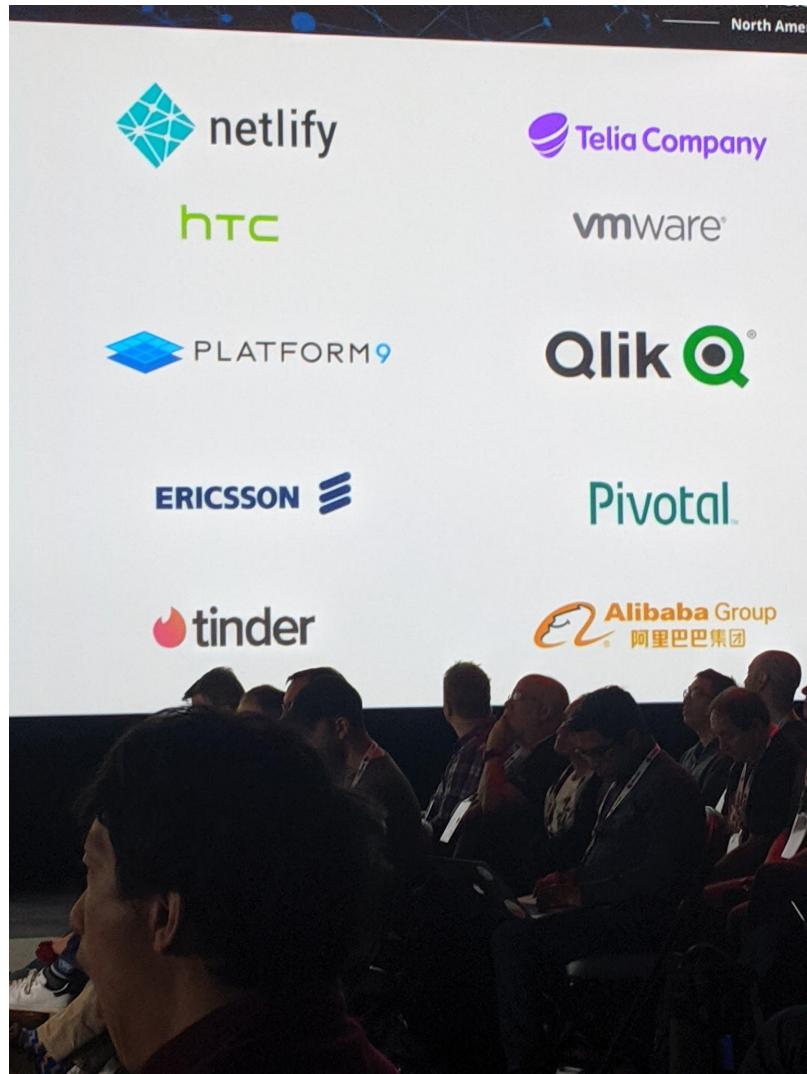
Engineering Manager, Lyft



# Kubecon NA 2019 Keynotes



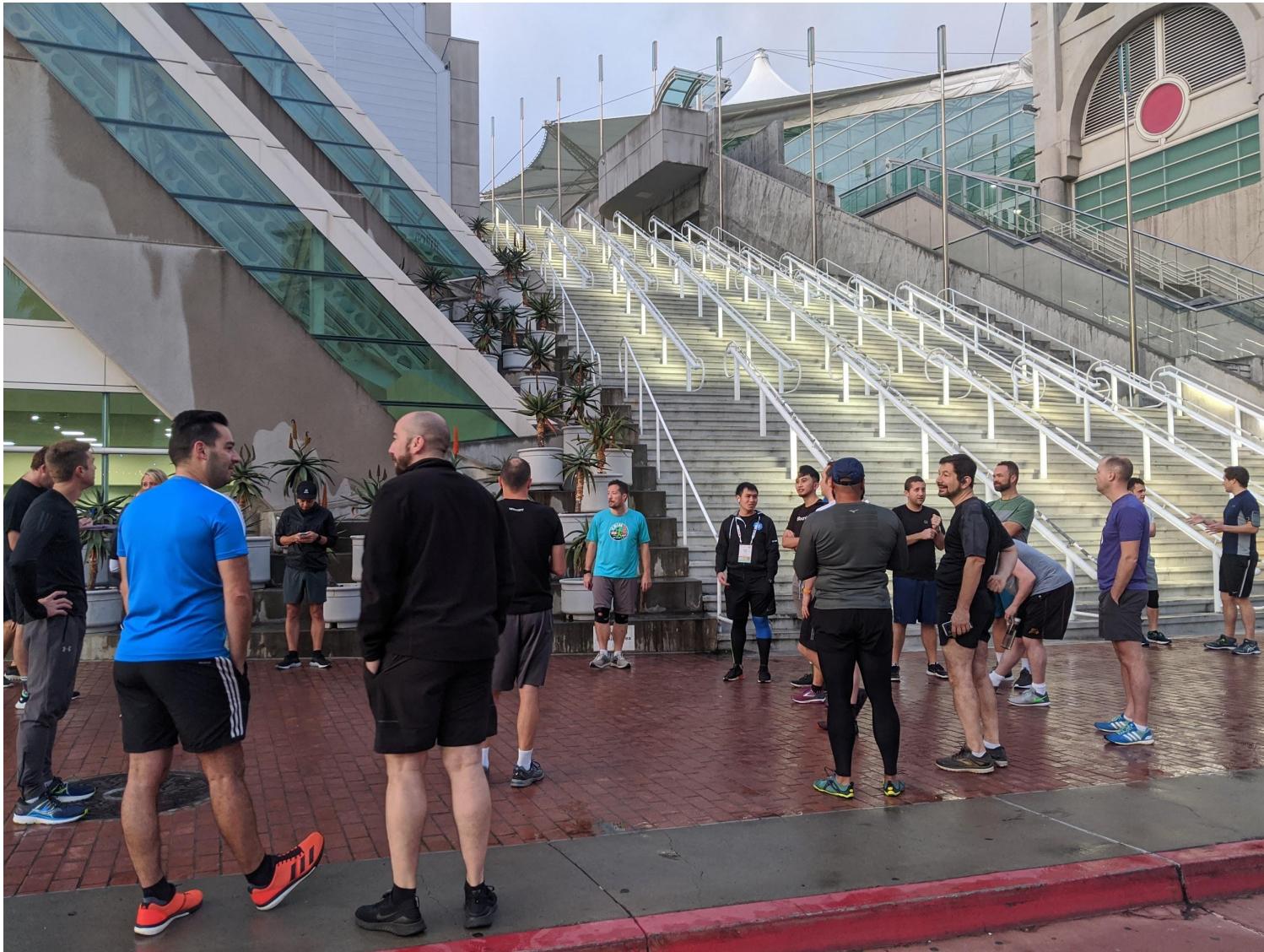
# Kubecon NA 2019 Keynotes



# Parties Day 0 and Day 1



# SIG Running



# All attendee party



# Boring part

- Lightning talks
- Tech Talks
- SIG Intro
- SIG Deep Dive



# Booth Crawl and Hallway Track

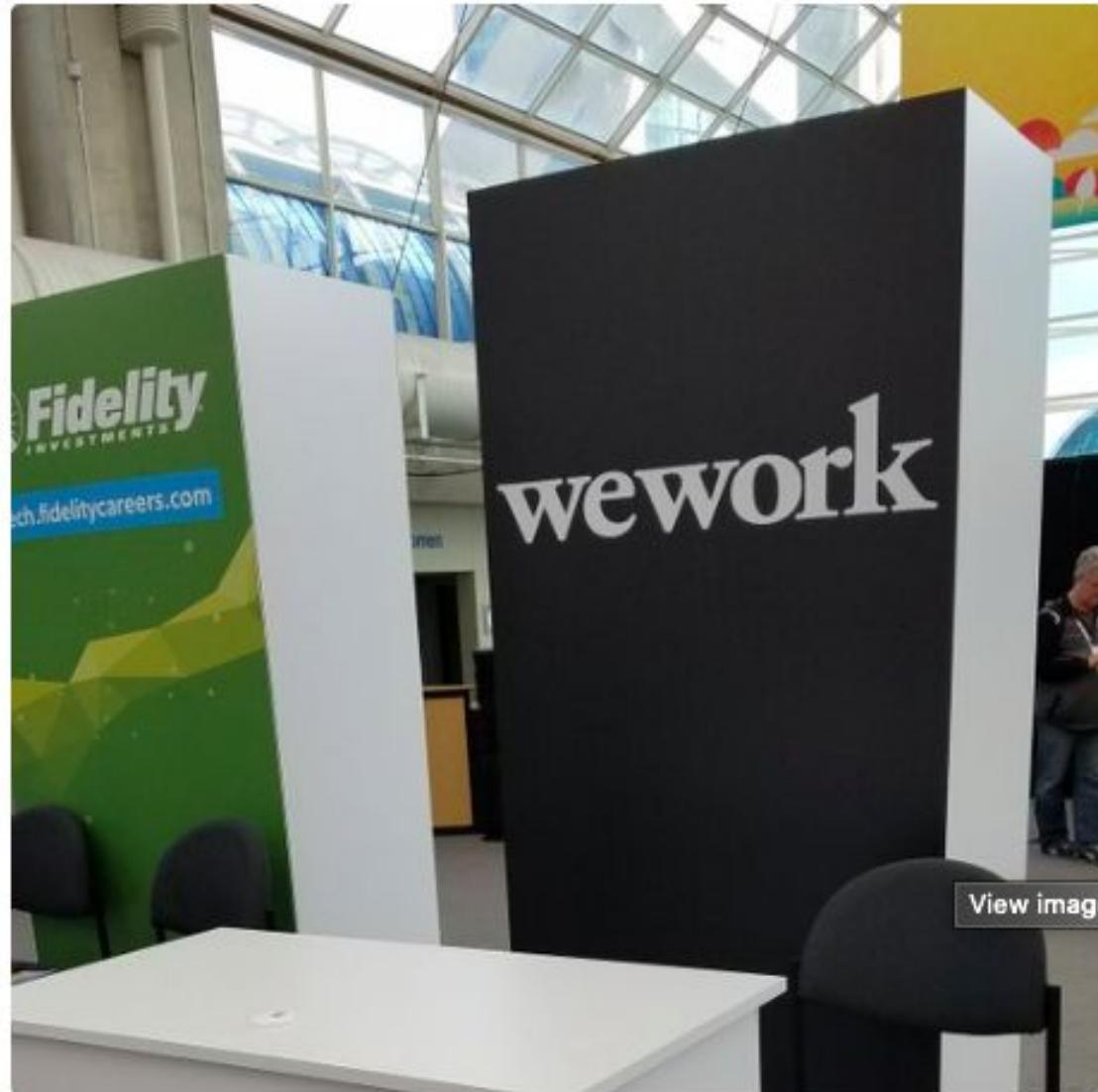


# Puppy Pawlooza

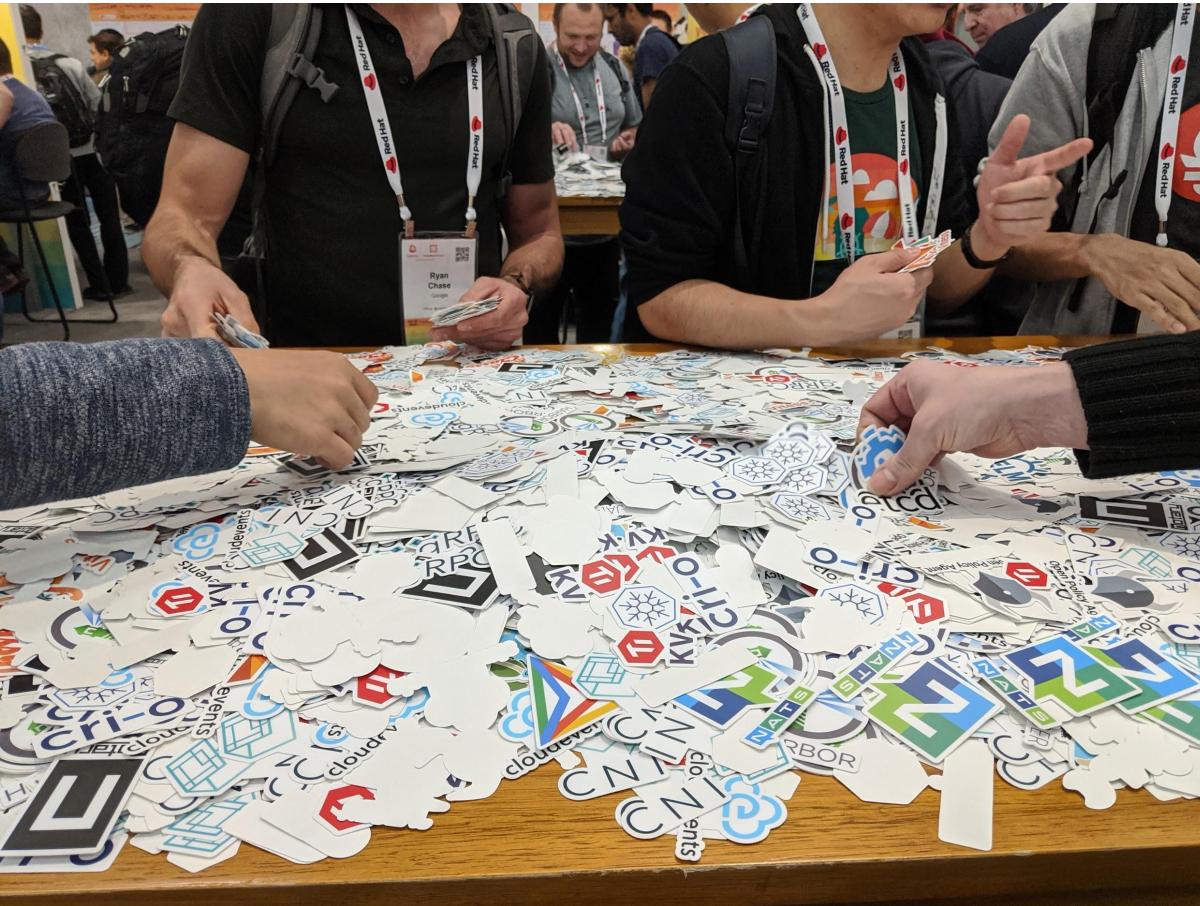


# WeWork booth didn't work at Kubecon :)

Sad #WeWork booth at #KubeCon is sad



# Swag



# Kubecon NA 2019 - Official hashtag #kubetaco



# Canadian Speakers @Kubecon





**Chris Carty**

**City Of Ottawa**

Senior Systems Developer/Integrator

Ottawa, On

 Tweet

Chris Carty is a Senior Systems Integrator/Developer with the City of Ottawa's DevOps team and a member of The City's Architecture Review Committee. He is a Certified Kubernetes Administrator, panelist for the Kubernetes Office Hours and a member of the Kubernetes 1.16 Release Notes team. Recently, he presented at the DPI Association of Public

Sector Information Professionals, Professional Development Week Conference on adopting Cloud Native Technologies.

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## My Speakers Sessions

**Wednesday, November 20**

2:25pm



**Moving from Legacy Infrastructure to the Cloud in a Government Organization - Chris Carty,**

**City Of Ottawa**

3

ROOM 17AB - SAN DIEGO CONVENTION CENTER



# »Hosting a Helm repository on github pages«

2019-11-16, 17:50–17:55, The Gallery

.ical

Feedback

**What if you could have your Helm charts directly updated and hosted on Github pages after each new commit?**

Hosting a helm repository does not have to be complicated nor involve running a dedicated web server for that!

Actually, hosting static files is the only requirements to host a Helm repository, and what is the most commonly used static file hosting service among developers? Github it is !

In this quick presentation, we'll see *what a helm chart repository is at its core (spoiler alert: it's pretty straightforward!)* what key helm CLI commands are necessary to build / update a helm repo \* how to integrate those commands in a nice CI environment for auto update of the Helm repository on commit!

## Speaker

**Anthony Dahanne**



# Videos and slides on Kubecon'19 San Diego on our community github



# KubeCon + CloudNativeCon

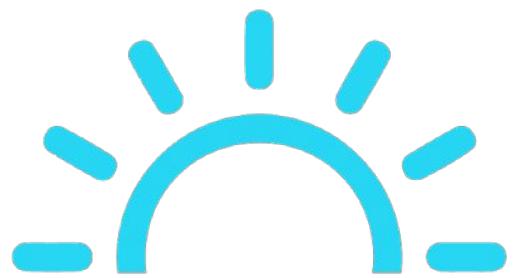
- Europe 2020
  - Amsterdam: March 30 - April 2, 2020
- China 2020
  - Shanghai: July 28-30, 2020
- North America 2020
  - Boston: November 17-20, 2020



# Kubernetes Community Days

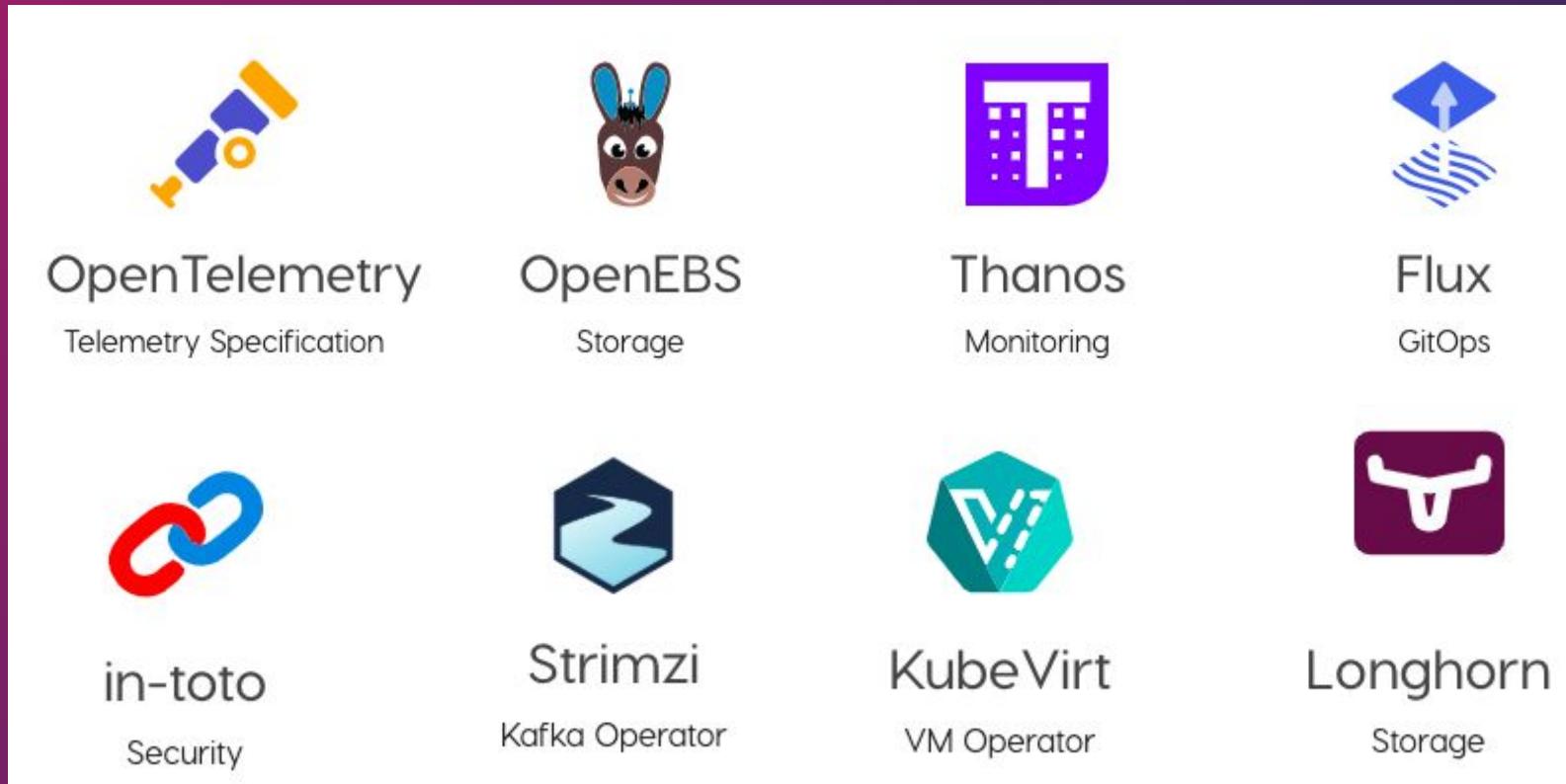


Kubernetes Community Days



# CNCF Updates

# Sandbox



# Incubation



TiKV

Key/Value Store



CloudEvents

Serverless



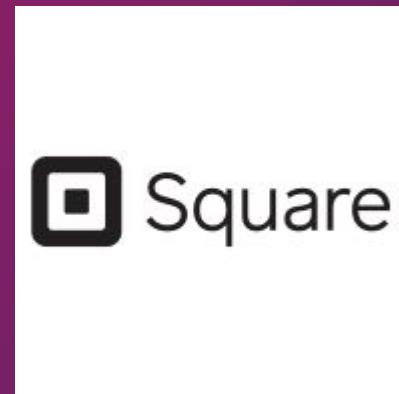
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# Graduated



CLOUD NATIVE  
COMPUTING FOUNDATION

# Graduated



# Helm 3

# Helm 3 - It's more than just Tiller!

- **No tiller!**
  - Helm init has been removed
- **Chart Repository**
  - Helm Hub – central catalog for chart repos
- **Release upgrade strategy**
  - 3 merge/upgrade compares: + cluster live state
- **Helm 3 Security audit passed!**
- **Migration**
  - 2 migration use cases: Strangler and in situ



# Helm 2 VS Helm 3



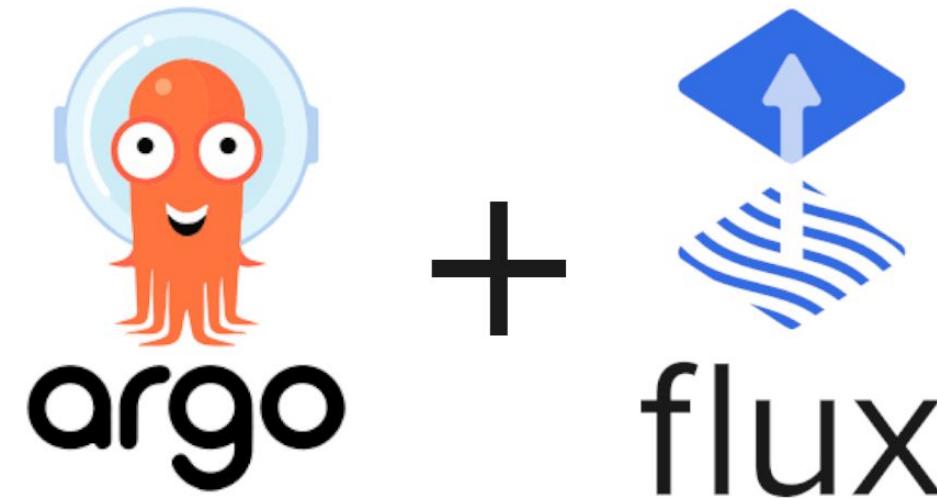
- Helm 2 charts still work in Helm 3\*
- The difference between Helm 2 and Helm 3 is mostly architectural and infrastructure changes (e.g. no Tiller)
- How do I migrate my cluster from Helm 2 to Helm 3?

\* CRDs and namespace creation are exceptions

# FluxCD + ArgoCD

# Argo Flux

- ArgoCd and FluxCD announced they are combining resources to create a GitOps Engine
- Development can be tracked at #gitops in the Kubernetes Slack
- First community meeting was this morning



# Kubernetes 2019 recap



# 4 Releases

- **1.14 Caternetes**  
Monday, March 25
- **1.15 The Persevering Release**  
Monday, June 17th
- **1.16 Unlimited Breadsticks For All**  
Wednesday, September 18
- **1.17 Stability**  
Monday, December 9





- 31 total enhancements tracked in 1.16
  - 8 Stable Enhancements
  - 8 Graduating to Beta
  - 15 Introduced Alpha features
- CRDs and Admission Webhooks (**GA**)
- Volume Cloning and Resizing (**Beta**)
- RuntimeClass scheduling (**Beta**)
- **Kubeadm** for Windows and Advanced config via Kustomize (**Alpha**)
- IPv4/IPv6 Dual Stack Support (**Alpha**)
- Ephemeral Containers (**Alpha**)
- New EndpointSlice API (**Alpha**)



# 1.17 Release (December 9th)

- 22 total enhancements tracked in 1.17
  - 14 Stable Enhancements
  - 4 Graduating to Beta
  - 4 Introduced Alpha features
- Cloud Provider Labels reach General Availability
- Volume Snapshot Moves to Beta
- CSI Migration Beta
- Add IPv4/IPv6 Dual Stack Support
- RunAsUserName for Windows



# Istio 2019 Recap



# Microservices - Benefits

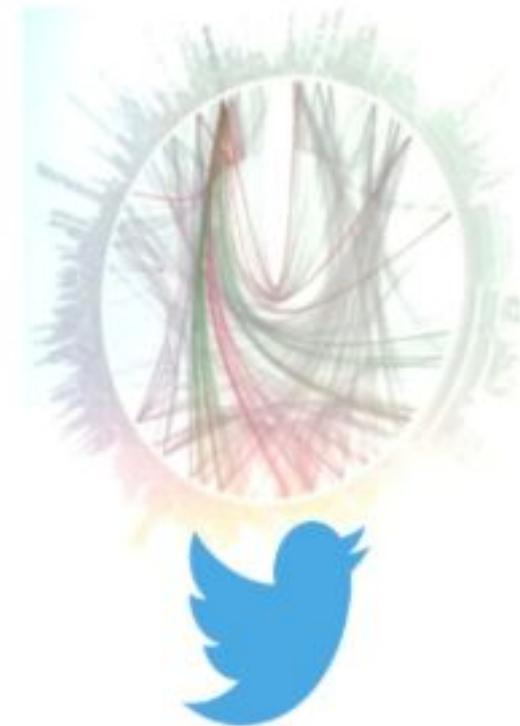
To scale independently

500+ microservices



Separation of concerns

500+ microservices



Faster commit-to-deploy time

Different programming languages

Smaller, more discrete codebases



# Microservices - Challenges

**More complexity**

**More service owners**

**More programming languages**

**More network interactions ++ hops**



# Kubernetes



# kubernetes

**Lifecycles containers, keeps applications alive**

**Declarative model (YAML)**

**Abstracts away individual servers**

**Add more nodes as you scale**

**Easily move between on-premises and the cloud**



But...



kubernetes

**What about the connections between my services? How to investigate latency?**

**How do I manage security policies?  
Service identity?**

**Network policies?**

**Resiliency? Avoid cascading failures?**

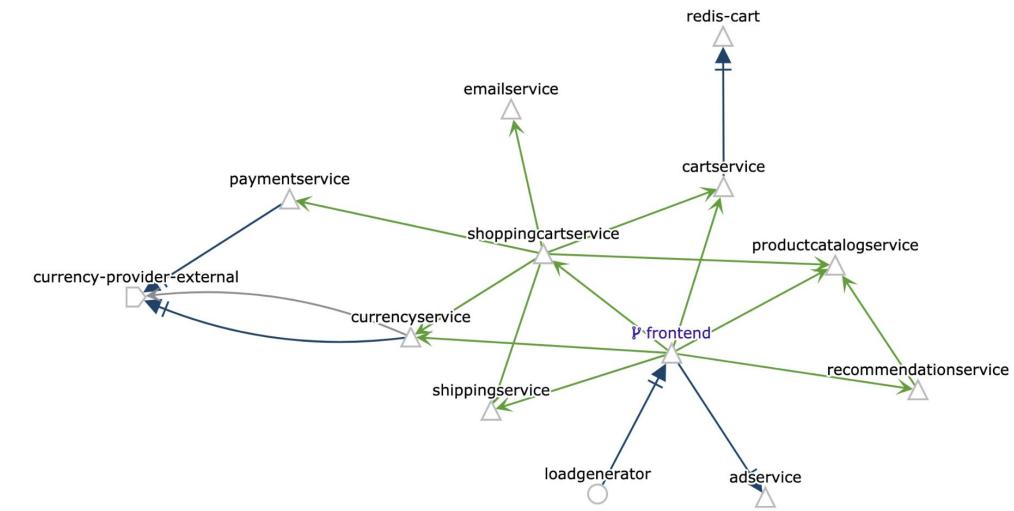
**How do I upgrade a service?**



# Introducing Service Mesh

A service mesh is...

- a transparent infrastructure layer that manages communication between microservices
- so that developers can focus on business logic
- while operators work independent of dev cycles to provide a more resilient environment



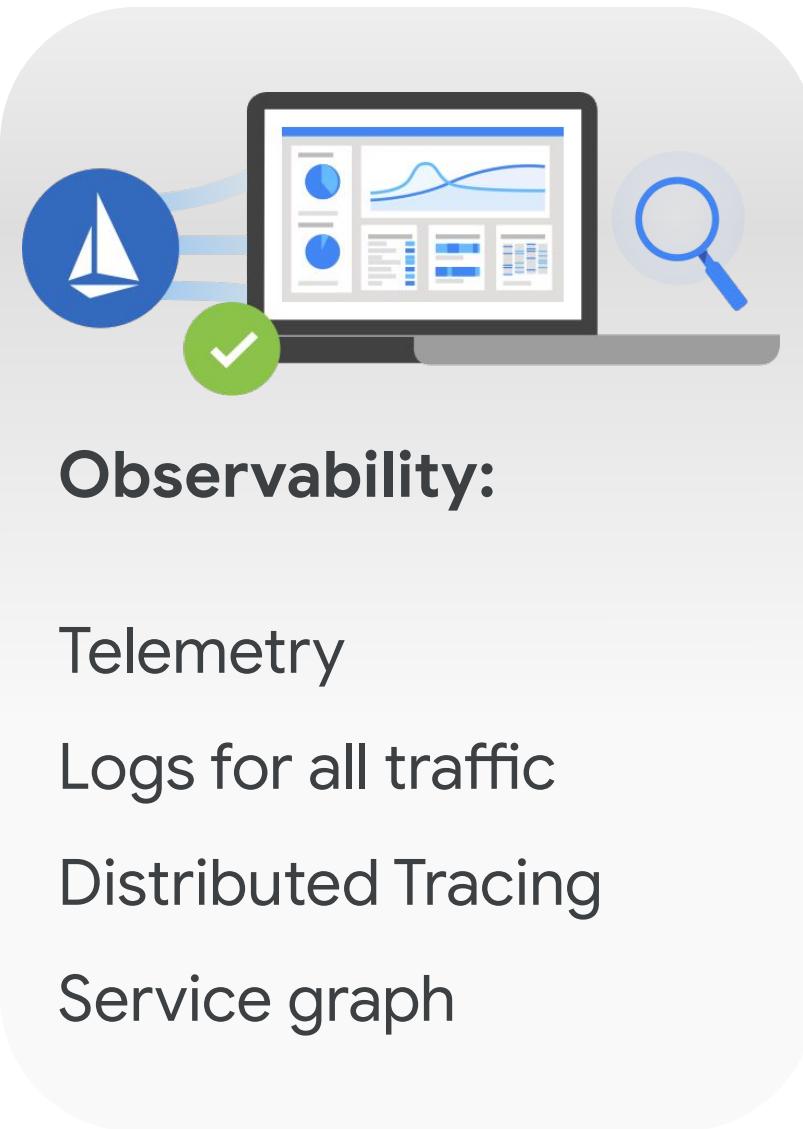
# What is Istio?

An open-source service mesh tool to manage service interactions across container and VM-based workloads.

- Runs on top of Kubernetes, VMs
- Based on Envoy proxy
- Originated by Google + IBM in 2017
- Today: 300+ organizations contributing,  
(Redhat, Pivotal, Aspen Mesh, Tetrate and



# What does it do?



**Observability:**

Telemetry

Logs for all traffic

Distributed Tracing

Service graph

# What does it do?



## Observability:

Telemetry

Logs for all traffic

Distributed Tracing

Service graph



## Traffic Management:

Advanced Ingress

A/B, mirroring, Canary

Client-side load balancing

Timeouts, retry, circuit-breakers

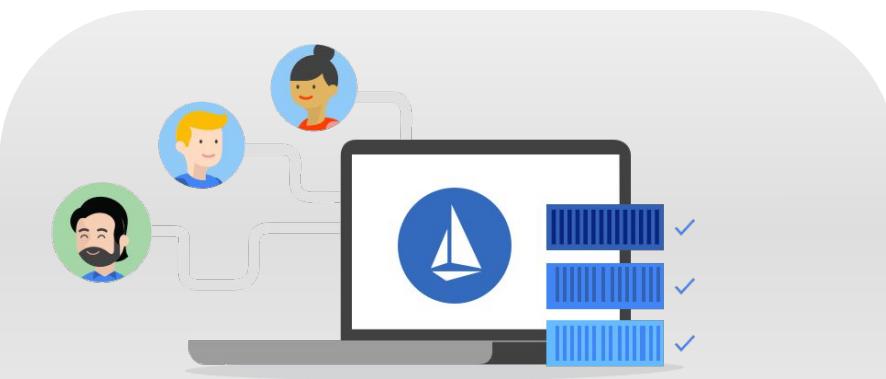


# What does it do?



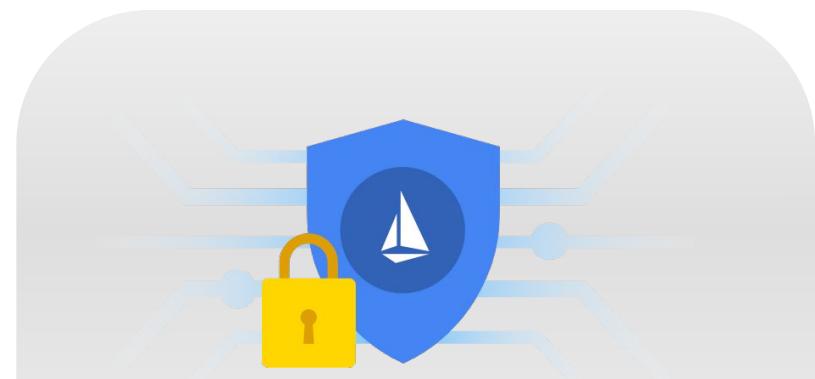
## Observability:

Telemetry  
Logs for all traffic  
Distributed Tracing  
Service graph



## Traffic Management:

Advanced Ingress  
A/B, mirroring, Canary  
Client-side load balancing  
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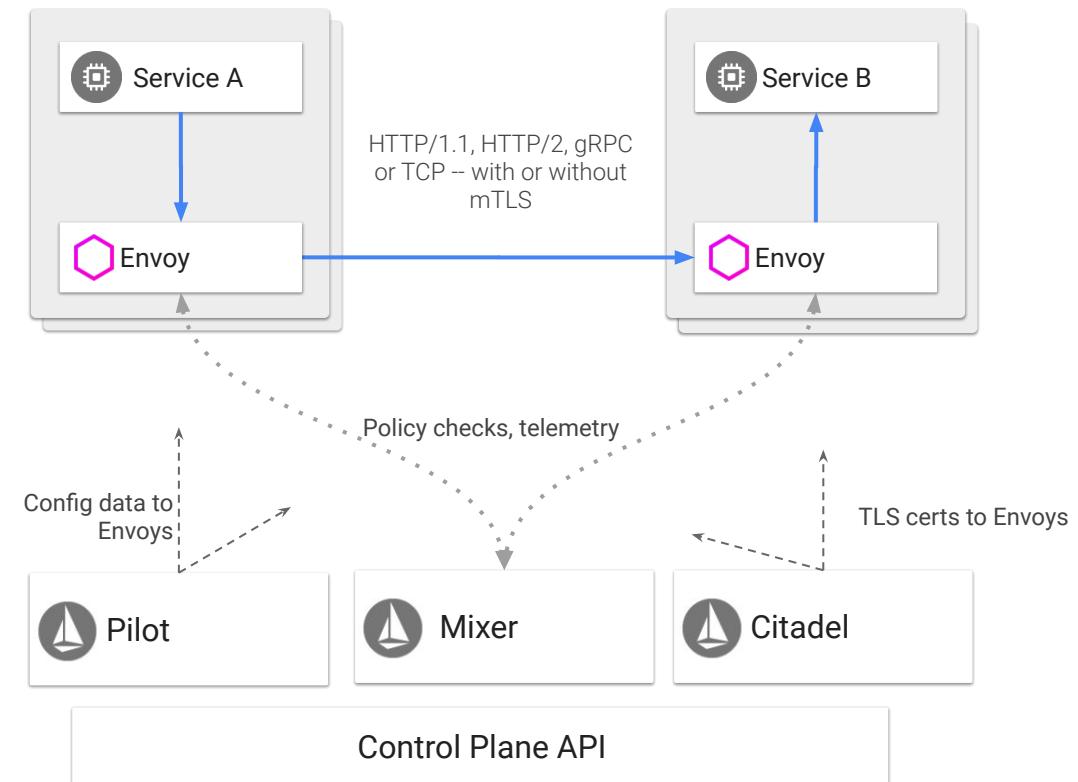


## Security:

Encryption in transit  
Authentication/Identity  
Authorization  
Egress control



# Istio Architecture



# Service Mesh Landscape



# Istio 0.x to 1.3

0.5 : 01/2018 : [RBAC control](#) to access services in the mesh

0.8 : 05/2018:

- [Citadel](#) to manage security (key/certificates) - replacing istio-auth
- [v1alpha3](#) route rules (ServiceEntry, DestinationRule)

1.0 : 07/2018 : [multi-cluster mesh](#)

1.1 : 03/2019 :

- Performance focused,
- added [Galley](#) to validate yaml
- VirtualServices (removed ingress annotations)
- [SDS support](#) with Citadel to send SSL certificates to proxies
- [Kiali](#) to visualize the Mesh

1.2 06/2019 :

- IPv6 experimental
- [locality based routing](#) for multi-cluster mesh
- [Istio CNI](#) to bootstrap Sidecars in place of istio-init container

1.3 09/2019 :

- [install Configuration Profiles](#)
- [multi-mesh](#) (mesh federation) effort started
- lots of improvements



# Istio 1.1 to 1.3

## 1.1 : 03/2019:

- Performance focused,
- added [Galley](#) to validate yaml
- VirtualServices (removed ingress annotations)
- [SDS support](#) with Citadel to send SSL certificates to proxies
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## 1.3 09/2019 :

- [install Configuration Profiles](#)
- [multi-mesh](#) (mesh federation) effort started
- [lots of improvements](#)



# Istio 1.4

## Install / Observability

- [Istio Operator](#)

## Telemetry

- [Mixer-less telemetry](#). Support for in-proxy Prometheus and Stackdriver

## Security

- [Automatic mTLS](#)
- [Authz policy](#) (Beta)
- Citadel Improvements (check and rotate the expired root CA)

## Traffic Management

- [Mirror percentage](#)

## Tools

- [Istio go-client](#) and [istioctl analyze](#)



After all talks use this slides

# Feedback



# Slides



# Istio 2019 Recap

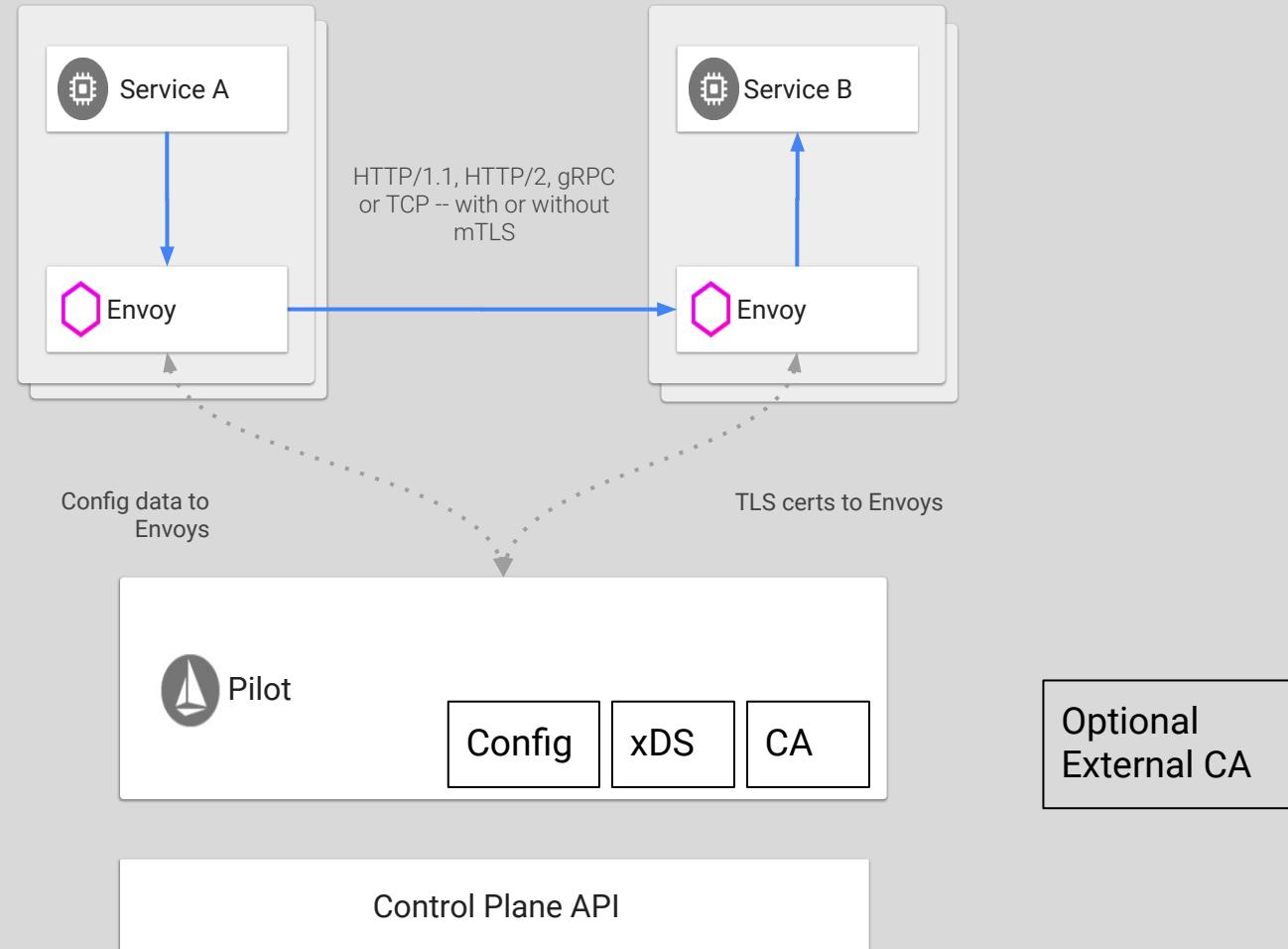


# No more Mixer → Extensions in Envoy

- Telemetry as Envoy C++ extensions ✓
  - Prometheus, StackDriver ✓



# New Architecture



# UX

- Better default behaviors
  - Zero-config
  - Auto-mTLS ✓
  - Protocol sniffing ✓
  - Transparent proxying ✓
- istioctl awesome-ness ✓
  - Audit, diagnose & recommend



# API & Config simplification

- ~~ClusterRbacConfig, ServiceRole, ServiceRoleBinding~~
  - AuthorizationPolicy ✓
- ~~Mixer (Instance, Handler, Rules)~~
  - CRD per telemetry vendor
- Values.yaml & mesh-config
- Root namespace for policy ✓



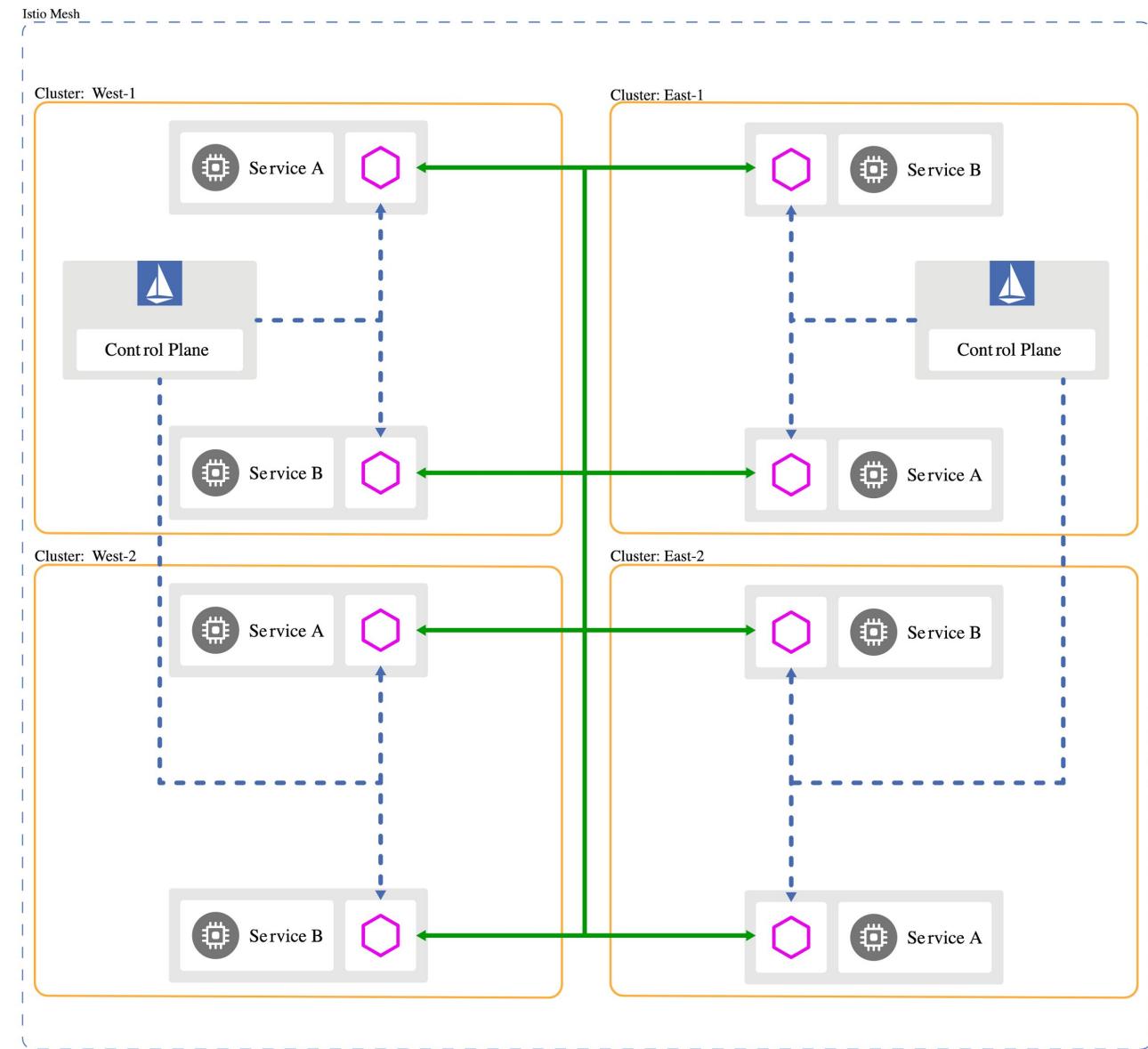
# Install & Upgrade

- **Operator** for common topologies ✓
  - More coming for multi-cluster
- New install layout ✓
  - A-B test control planes
- VM modelling & onboarding



# Istio 1.4

- Multi-Cluster Service Mesh
- Multi Control Plane
- Better security management
- Locality control
- Ready for production



# Istio 2020 foresight



# Announcing Speakers



**Gregory Palmer**



**Alex Gervais**



Wait for feedback ...

# Slides



# Themes

- Stay on course
- Improve extensibility model vs EnvoyFilter
  - Protocols, Envoy filters, WASM, CRDs
- Environments and Operations
- Performance

# Knative 2019 Recap



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# Announcing Speakers Toronto



# Announcing Speakers Toronto



# Announcing Speakers



**Andy Kwiatkowski**



**Olga Kundzich**  
Toronto, Ontario, Canada



**CLOUD NATIVE  
COMPUTING FOUNDATION**

# Announcing Speakers Toronto



Pivotal

Olga Kundzich  
Toronto, Ontario, Canada

FIGHT

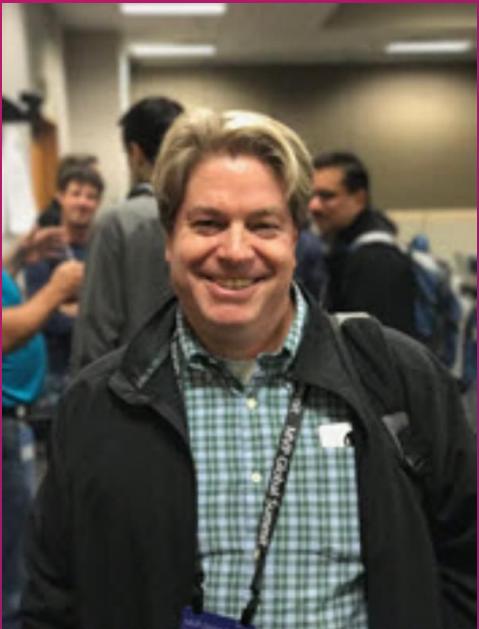
The word "FIGHT" is written in a red, jagged, 3D-style font.

Julian Mazzitelli  
Toronto, Ontario, Canada



CLOUD NATIVE  
COMPUTING FOUNDATION

# Announcing Speakers



**Wes MacDonald**



**Eric Leonard**



**Chris Carty**  
 CLOUD NATIVE COMPUTING FOUNDATION

# Cloud and AI DevFest Montreal



Track - Cloud/CloudNative/CI/CD



Istio



Montreal. September 27, 2019

An inclusive, positive conference for all technologists

Track #2 - AI/ML



TEKTON

200

Attendees



20

Sessions

Track #3 - Security

3

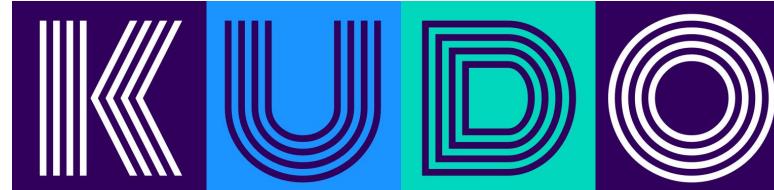
Tracks

2

Workshops



flux



# Ottawa Speakers and Cloud and AI DevFest



**Stephane Frechette**  
Ottawa, Ontario, Canada



**Hari Koduvely**  
Ottawa, Ontario, Canada



**Pierre Ernst**  
Ottawa, Ontario, Canada



**Taswar Bhatti**  
Ottawa, Ontario, Canada



**Bjoern Rost**  
Ottawa, Ontario, Canada



**Girish Ranganathan**  
Ottawa, Ontario, Canada



**Jonathan Pulsifer**  
Ottawa, Ontario, Canada



**Stephane Frechette**  
Ottawa, Ontario, Canada



# DevFest - What's Next ?

- Update website with video and slides from event

<https://devfest.cloud-montreal.ca/>

- Video will be available @Kubernetes Canada Youtube Channel
- Pictures from DevFest can be found [here](#)
- Next Cloud and AI DevFest in Ottawa ?



# KubeCon + CloudNativeCon

- We are expecting 11,000+ attendees
- Reminder to register for any additional colo events like EnvoyCon, Contributor Summit, Spinnaker, Rejecto and etc
- PLEASE express interest on sched for talks you want to attend
- Join #kubeccon-sandiego2019 in K8s Canada Slack

