

minikube start

a gentle introduction

kubecon : seattle 2018



Who are we?



Balint Pato
@balopat

[GoogleContainerTools](#)

minikube, skaffold, kaniko

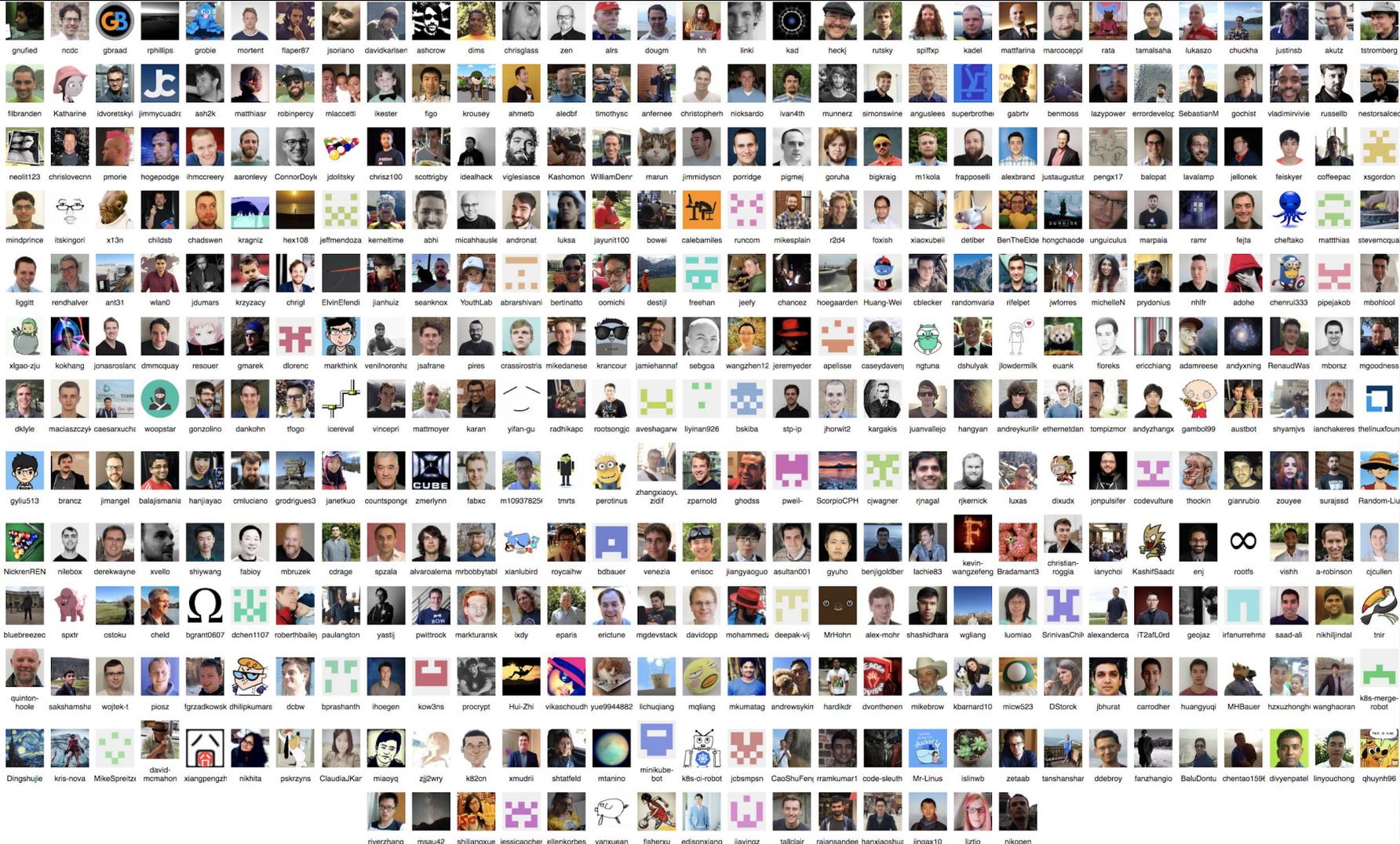


Thomas Strömberg
@helixblue

[GoogleContainerTools](#)

minikube, kritis





gruffled nodc gbraad rphilips grobie mortent flaper87 jsoriano davidkarsen ashcrow dims chrisglass zen alrs dougm hh linki kad heokj rutsky spifxp kadel maffarina marcoceppi rata tamatsaha lukaszo chuckha justnsb akutz tstromberg

flbranden Katharine idvoretskiy jimmycadre ash2k mathiasr robinpercy miaccetti ikester figo krousey ahmetb aledbf timothyrc anfernee christopher nicksardo ivan4th munnerz simonswine anguseels superbrother gabtrv benmoss lazypower errordevelo SebastianM gochist vladimirvive russelb nestorsalced

neolit123 chrisloveavn pmorie hopepodge ihmcreery aaronlevy ConnorDoyle jdolitsky chrisz100 scottigby idealhack viglesiasce Kashomon WilliamDenn marun jimmidyon porridge pigmej goruha bigkraig m1kola frapposelli alexbrand justaugustus pengx17 balopat lavalamp jellonek feiskyer coffeepac xsgordon

mindprince itskingori x13n childsb chadswen kragniz hex108 jeffmendoza kerneltme abhi micahauske andronat luka jayunit100 bowei calebamiles runcom mikesplain r2d4 foxish xiaoxubeli denber BenTheEldie hongchaode unguiculus marpaia ramr fejta chefako matthias stevemoquis

ligitt rendhalver ant31 wlan0 jdumars krzyzacy chrigr ElvinElendi jianhuiz seanknox YouthLab abrarshivani bertinato oomichi destij freehan jeely chancez hoegaarden Huang-Wei cblecker randomvaria riflepet jwforres michelleN prydonius nhfr adobe chenru333 pipejakob mbholool

xigao-zju kokhang jonasrosnar dnmquay resouer gmarek dlorcnc markthink venihoronhs jafrane pires crassirosiris mikedanese krancour jamiehannaf sebgao wangzhen12 jeremyeder apelisse caseydaerj ngntua dshulyak jlowdermilk euank flores ericchiang adamreese andyxning RenaudWas mborsz mgoodness

dkyle maciaszczyk caesarxuche woopstar gonzo1no dankohn tfogo icereval vincepri mattmoyer karan yifan-gu radhikapo rootsongic aveshaganw liyan926 bsbkba stp-lp jhorwit2 kargakis juanvallejo hangyan andrekyurilr ethemetdan tompznor andyzhangx gambol99 austbot shyamjvs ianchekeres thelinuxforum

gylius13 branzc jimangel balajismania hanjayao cmulciano godrigues3 janetkuo countsponge zmerlynn fabxc m109378251 tmnts perotinus zhangxiaoyu zidf zparnoid ghodss pweil ScorpioCPH cfwagner rjagal rkernick luxus dixudx jonpulsifer codeculture thockin glanrubio zouyee surajsad Random-Liu

NickrenREN nilebox derekwayne xvello shiywang fabioy mbruzek cdrage spzala alvarocalema mrbobbyjabl xianlbird roycathw bdbauer venezia enisc jiangyaoguo asutan001 gyhuo benjigoldber lachie83 kevin-wangzefeng Bradamant3 christian-roggia lanychoi KashiSaad enj roots vishh a-robinson cjcullen

bluebreeze spxr cstoku cheld bgran0607 dchen1107 roberthbaile paulington yastj pwtitrock markturansk idxy epanis erictune mgdevstack davidpp mohammed deepak-vij MrHohn alex-mohr shashidhara wgliang luomiao SrinivasChik alexandera it2aflOrd geojaz ifaranurehms saad-ali nikhijindal tnir

quintn-hoole sakshamsha wojek-t piosz frgzadkowsk thilipkumars dcwb bprashanth ihogen kow3ns procrypt Hui-Zhi vikascoudh yue9944882 lichuang mqliang mkumatag andrewskyin hardikr dvonthenen mikebrov kbarnard10 micw523 DStrock jbhurat carrother huangyuqi MHBauer hzxuzhonghi wanghaoran kbs-merge-robot

Dingshuje kris-nova MikeSpreitz david-mcmahon xiangpengzh nikhita pskrzyns Claudia,Kar miaoyq zijzwyr kb2cn xmudri shtatfeld mtanino minikube-bot kbs-ci-robot jobsmpsn CaoShuFen rrankumar1 code-sleuth Mr-Linus isilwb zetaab tanshanshar ddebyr fanzhangio BaluDontu chentao159f divyentpatel linyouchou qhuynh86

riverzhang msau42 shiliangxue jessicaocher ellenkorbes yanxuean fisherxu edisonxiang jiayingz tallclair rajansandee hanxiaoshu jingax10 litzio nikopen

Goals

After this session you should be able to

- get started with minikube
- decide if minikube fits your use case
 - what are the supported features and customizations
 - other options
 - where minikube came from
 - where minikube is heading
- If this all sounds great and you want to contribute, come to the Deep Dive session too! Thursday 4:30 pm:D



Agenda

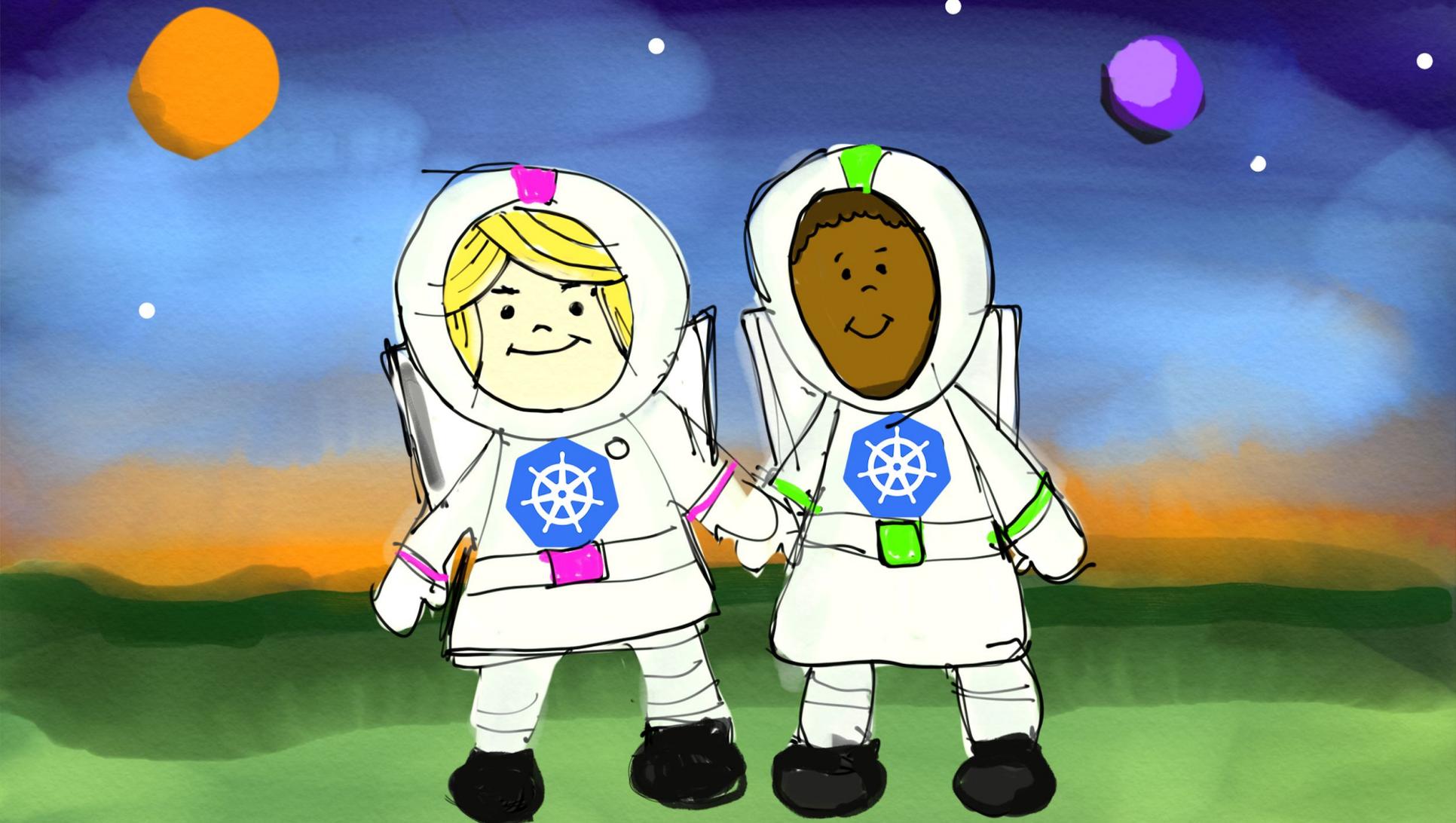
Introduction

Minikube internals

Landscape

Superpowers + Kryptonite





MINIKUBE

K8S DEV PROGRAM

START

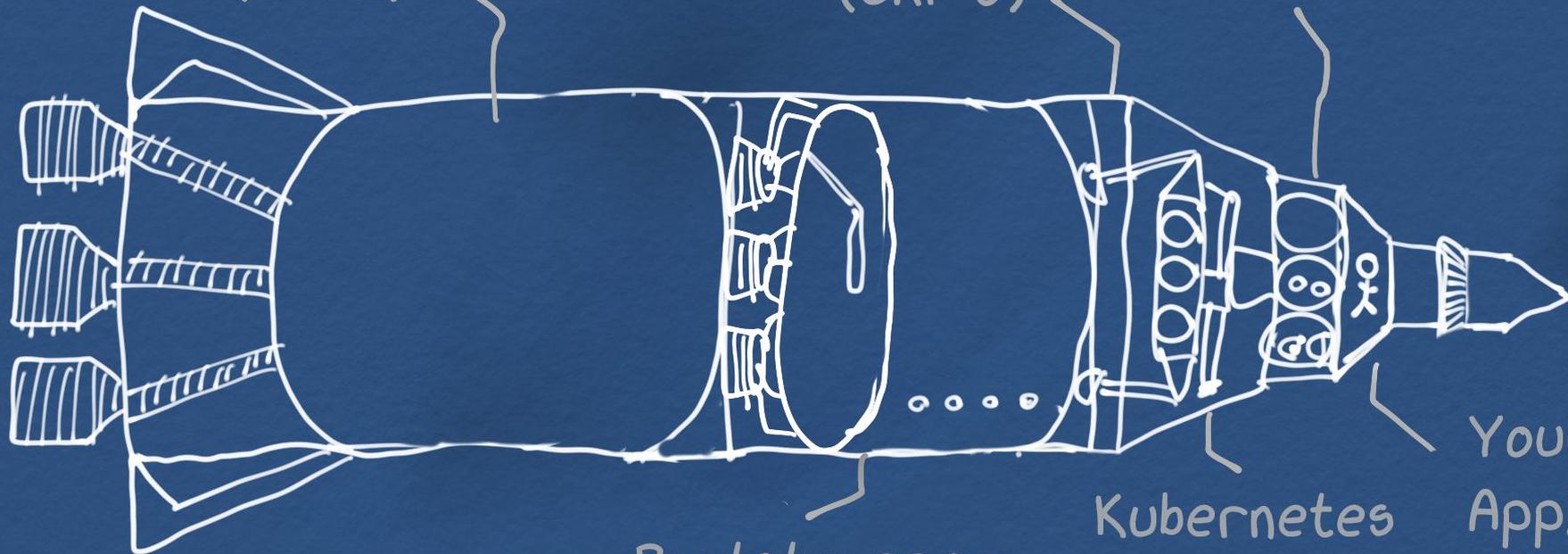
OPTIONS



Machine Driver
(kvm2)

Container
Runtime
(CRI-O)

Addons
(Ingress)



Bootstrapper
(kubeadm)

Kubernetes
(v1.10)

Your
App!

UP GOER K8S

Demo

- `kubectl run nginx`
- `kubectx`
- minikube dashboard
- quick skaffold demo

<https://github.com/balopat/contribwall>



Proposal for improving local cluster experience. #24106

Mergedk8s-merge-robot merged 1 commit into `kubernetes:master` from `vishh:local-cluster-setup` on Apr 20, 2016

💬 Conversation 101

🔑 Commits 1

📄 Checks 0

📄 Files changed 1



vishh commented on Apr 11, 2016

Member

+ 😊 ...

This proposal attempts to improve the existing single node, local cluster experience in Kubernetes.

It is **not** a proposal that helps with setting up a multi-node, production cluster.

cc @dlorenc @ethernetdan @runseb @mfburnett @bgrant0607 @pwittrock

Pipeline

Closed

Reviewers

No reviews

Assignees



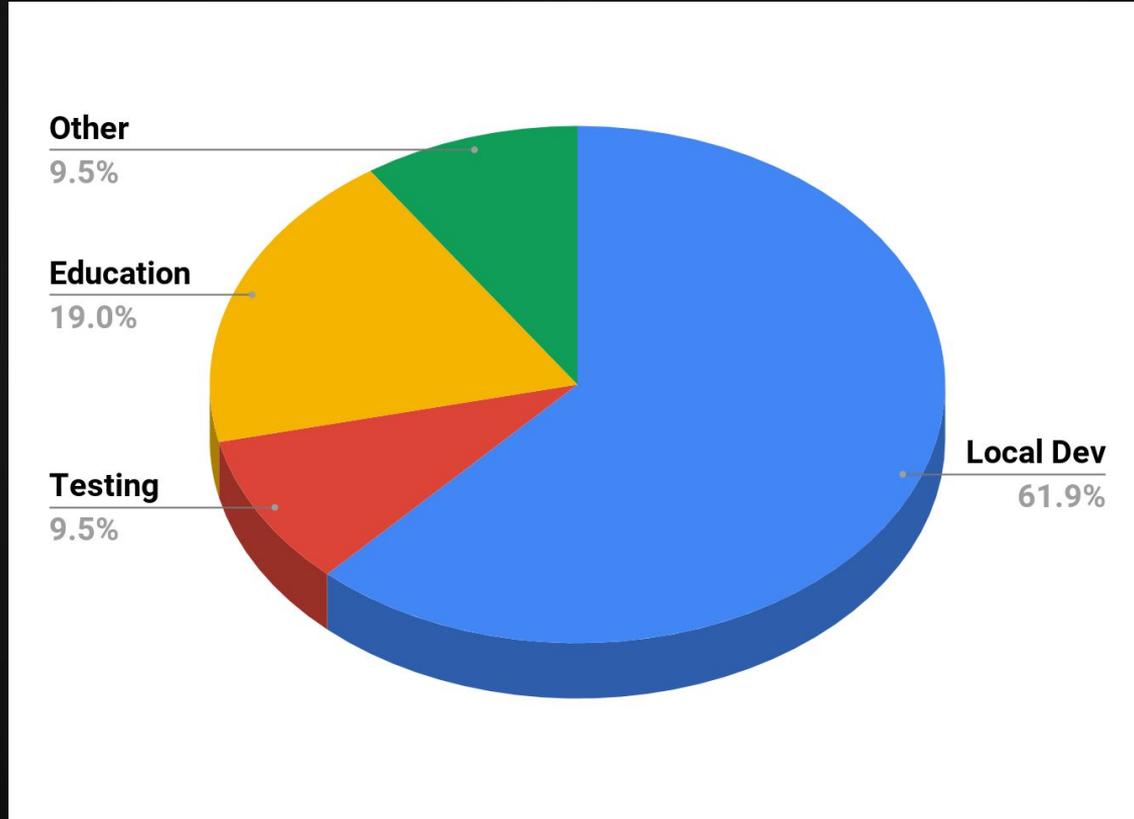
Design goals

- **Speed** for local development
- **Single command setup** and teardown
- Support **Kubernetes features that fit**
- **Unified UX** across OSes
- **Minimal** dependencies
- Becoming the de facto **local Kubernetes**

Reference: the original [design doc](#)



Why minikube? <http://tinyurl.com/minik-survey>



Kubernetes features that fit

NodePorts

Ingress

LoadBalancer*

DNS

Runtimes

Persistent
Volumes

ConfigMaps

Secrets

Dashboard

RBAC

* New!



Addons

"minikube addons enable <addon>"

- dashboard
- freshpod
- gvisor
- ingress
- metrics-server
- registry-creds
- storageclass
- coredns
- efk
- gpu
- heapster
- kube-dns
- registry
- storage-provisioner



Agenda

Introduction

Minikube internals

Landscape

Superpowers + Kryptonite



Continuously Tested

Supported

YMMV

k8s

1.13

1.12

1.11

1.10

1.9

1.8

runtime

CRI-O

Docker

containerd

containerd-gvisor

bootstrapper

kubeadm

locaalkube

hypervisor

none

VirtualBox

KVM

HyperKit

HyperV

Fusion

OS

Linux

MacOS

Windows

FreeBSD

Arch

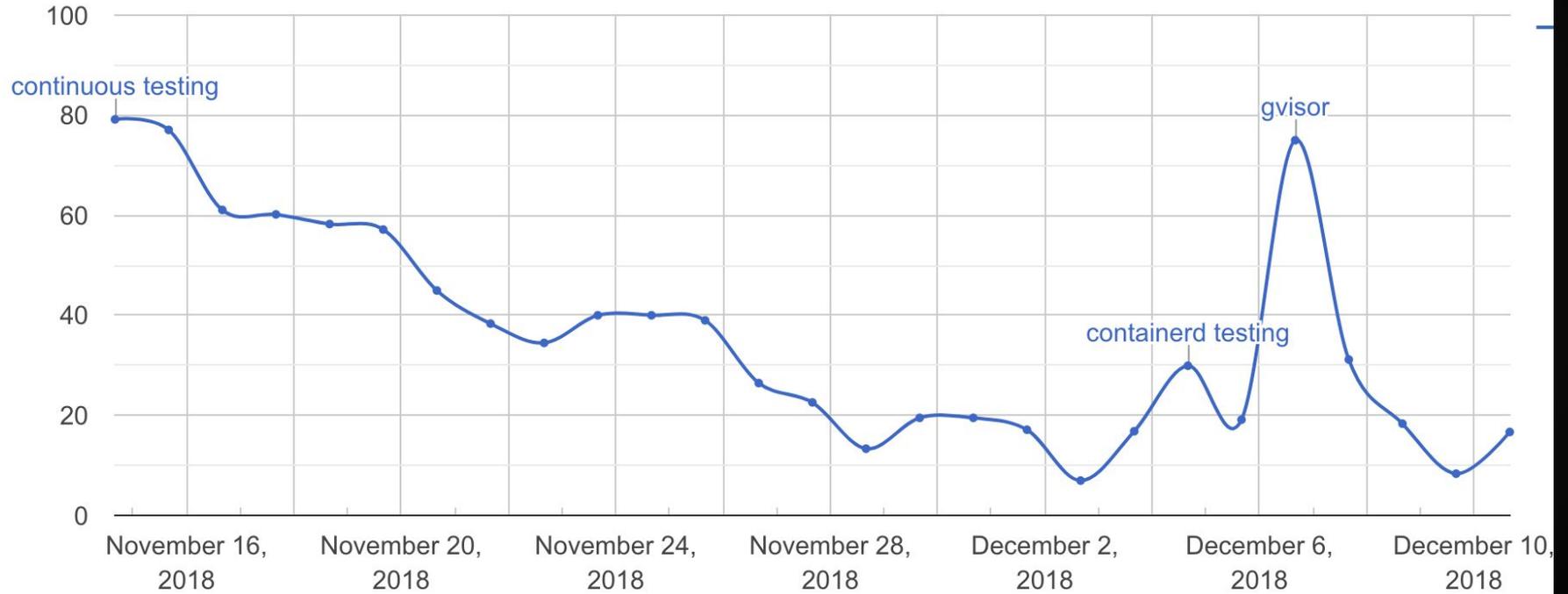
amd64

arm64

s390x



Investing in CI



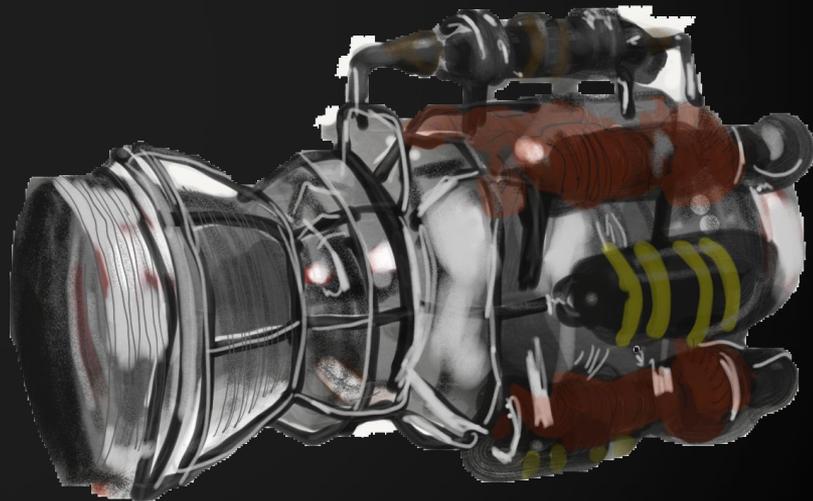
2018

- LoadBalancer emulation: `minikube tunnel`
- containerd, improved CRI-O
- Experimental GPU support
- Improved mount (9p, sshfs, and NFS)
- Improved reliability
- Switched upstream to machine-drivers (minishift collaboration)
- gVisor: Test untrusted workloads
- Retired localkube
- v1.12 (default by EOY)



Under the hood

- `minikube ssh`
- `ps -afe | grep kubelet # schedulable`
- `toolbox`
- `eval $(minikube docker-env)`
- `docker ps`



Agenda

Introduction

Minikube internals

Landscape

Superpowers + Kryptonite



Kubernetes distros with dev/test focus

- [microK8s](#)
 - Focus: local dev
 - Linux only, available as Snap
 - Isolation provided by LXC
- Kubernetes in [Docker Desktop](#)
 - Focus: local dev
 - docker only backend
 - no multi-service type loadbalancer
 - Mac/Windows only
- [KIND](#)
 - focus: e2e testing of Kubernetes
 - docker based
 - Allows testing from an arbitrary k8s commit
- [Minishift](#)
 - Focus: openshift

Other distros:

ramitsurana.github.io/awesome-kubernetes/#installers



Kubernetes bootstrappers

- **Kubeadm**
 - node-by-node, standard k8s bootstrapping
- **Kops**
 - full lifecycle cluster management, including infrastructure
- **Kubespray**
 - ansible + kubeadm



Agenda

Introduction

Minikube internals

Landscape

Superpowers + Kryptonite



Minikube Superpowers

- Fast Iterative Development
 - Especially across Kubernetes versions
- Democratizing Kubernetes Development
 - Free! Open source!
 - No rocket science or YAML required
- No-Compromises Kubernetes
 - Non-magical, released binaries of Kubernetes
- Cross Platform
- Easy to extend





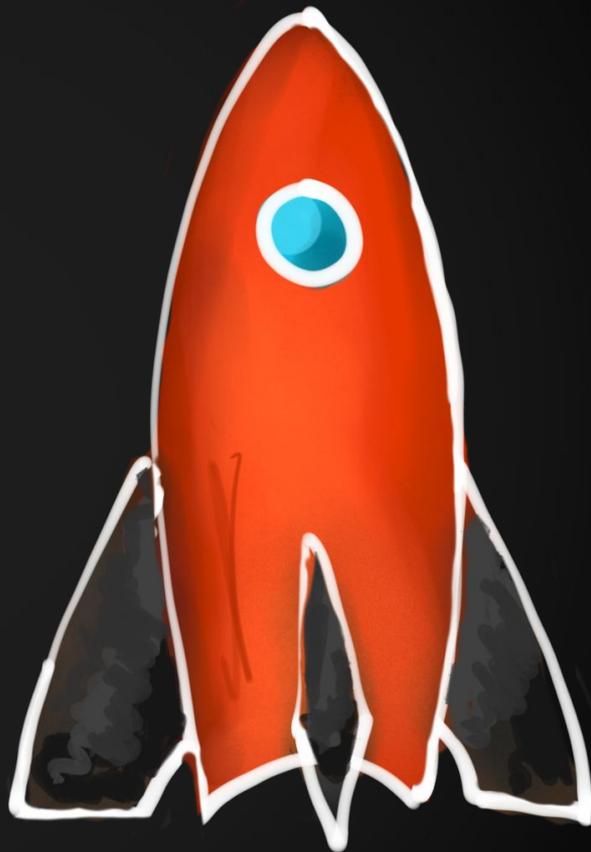
Minikube Kryptonite

- Proxies, VPN's, Firewalls
- Poor connectivity
- Production
- `vm-driver=none` outside of a VM
- Performance sensitive tasks
- Large resource footprints
 - `--memory=8192 --cpus`



2019

- Delightful out-of-the-box experience
 - Single step install
 - Clear end-user documentation (**help wanted!**)
 - Stop asking people to delete `~/minikube` ☐
- Easy to debug
 - Comprehensive pre-flight checks
 - Clear actionable error messages
- More inclusive
 - Increase our diversity
 - Offline friendly & better VM-free experience
- Efficient open source governance
 - Self sustaining project



Questions?

Start it!

- github.com/kubernetes/minikube

Discuss it!

- [#minikube](https://slack.k8s.io)
- groups.google.com/forum/#!forum/minikube-users
- tinyurl.com/minik-survey



