

minikube start



a gentle introduction

kubecon : seattle 2018



Who are we?

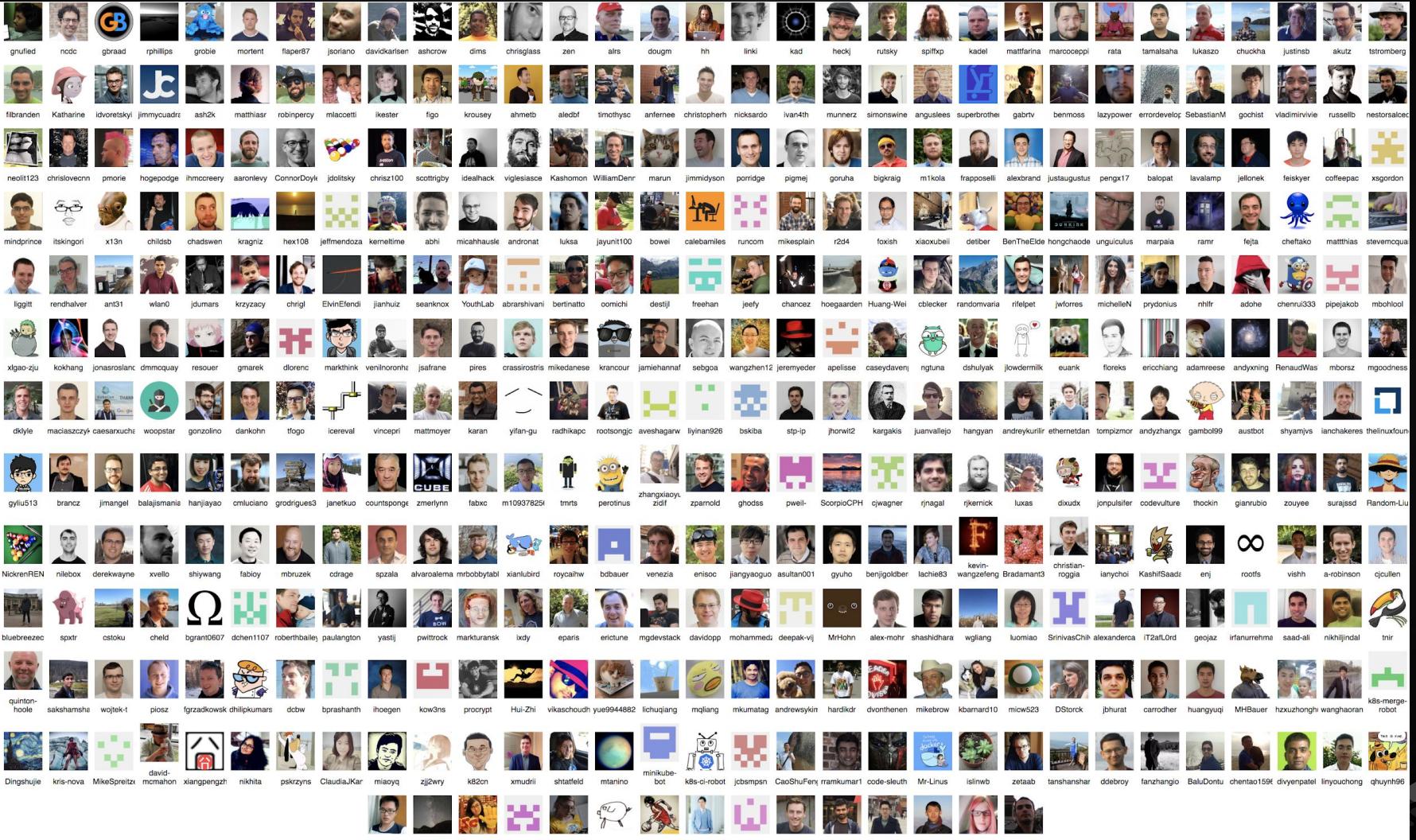


Balint Pato
@balopat
[GoogleContainerTools](#)
minikube, skaffold, kaniko



Thomas Strömberg
@helixblue
[GoogleContainerTools](#)
minikube, kritis





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

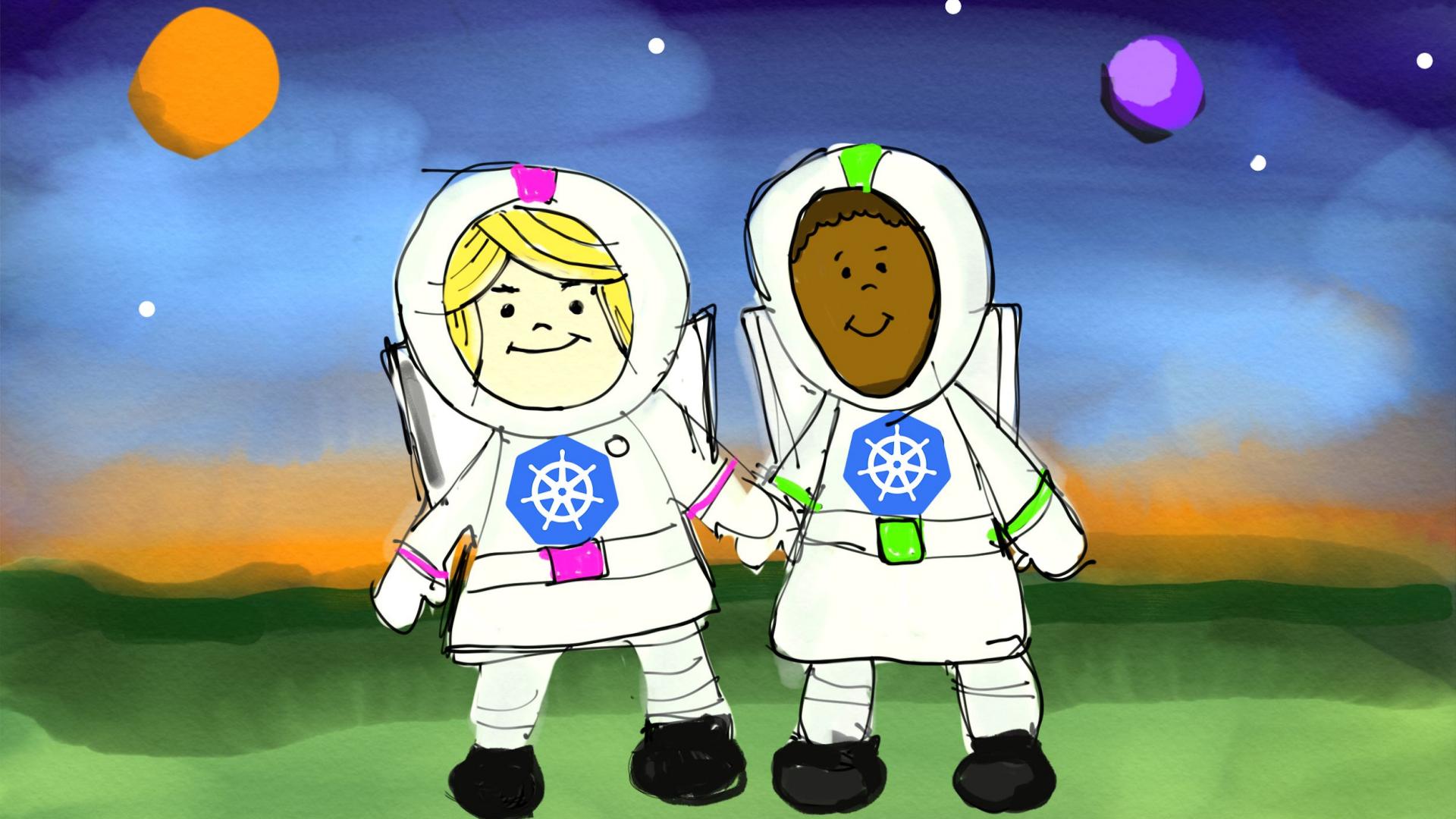
Introduction

Minikube internals

Landscape

Superpowers + Kryptonite





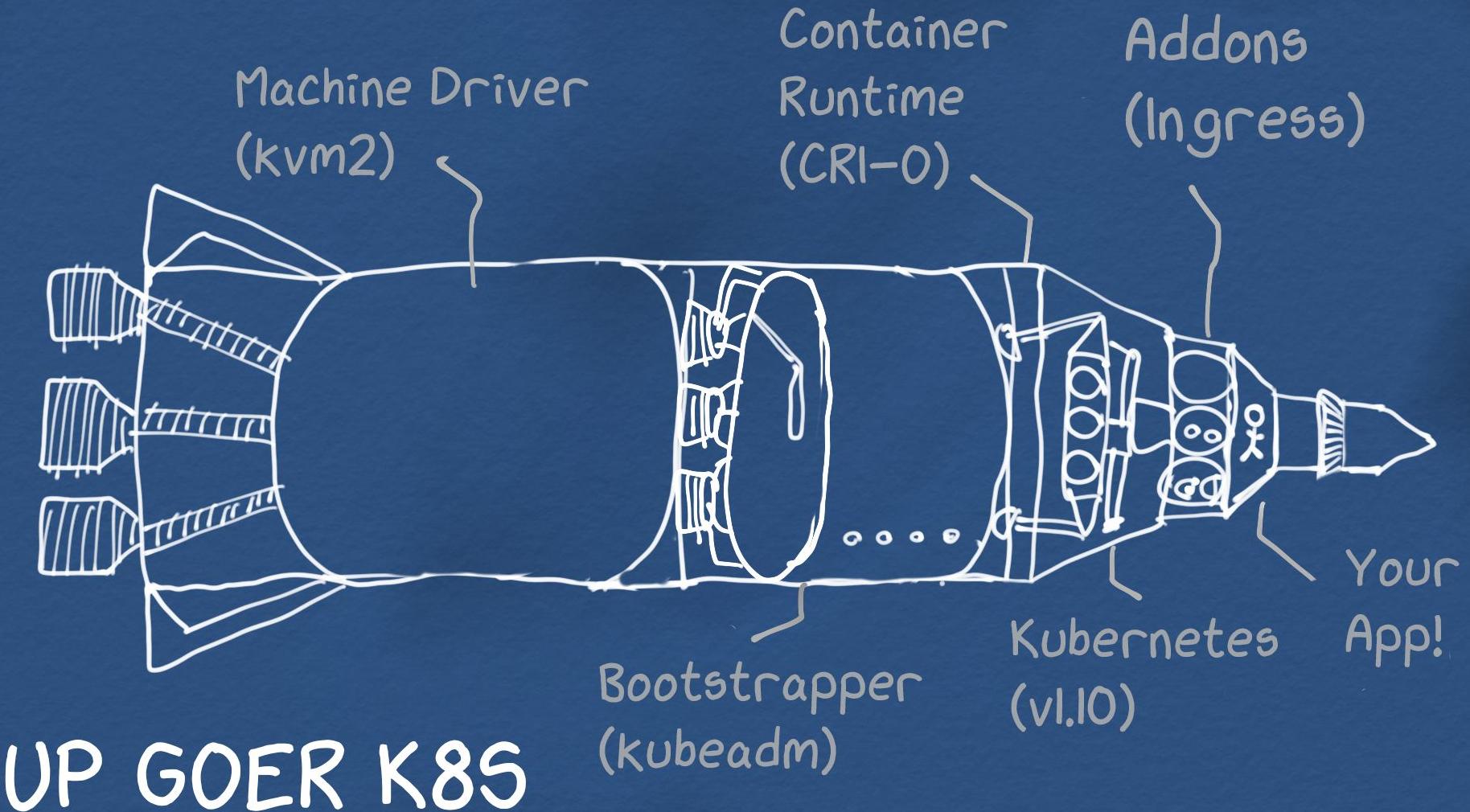
MINIKUBE

K8S DEV PROGRAM

START

OPTIONS





Demo

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

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





Proposal for improving local cluster experience. #24106

Merged k8s-merge-bot 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 @dlorenz @ethernetdan @runseb @mfburnett @bgrant0607 @pwittrock

Pipeline

Closed

Reviewers

No reviews

Assignees



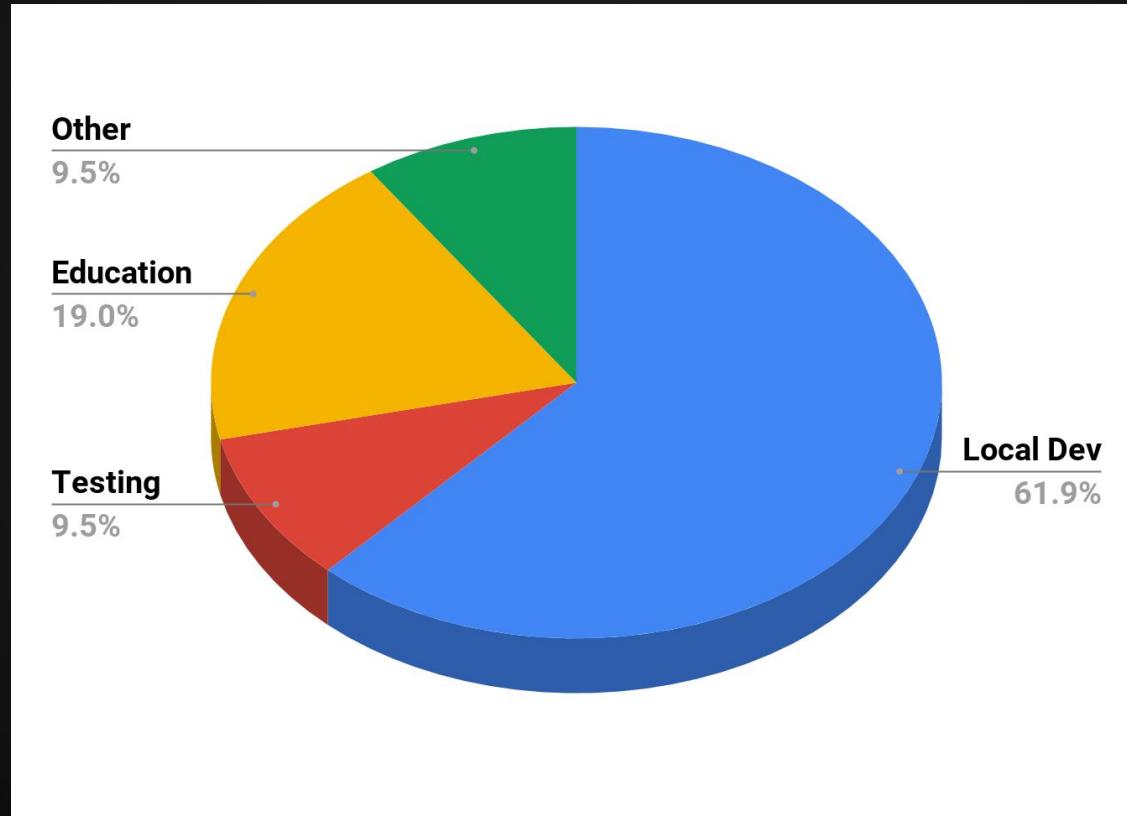
Design goals

- **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



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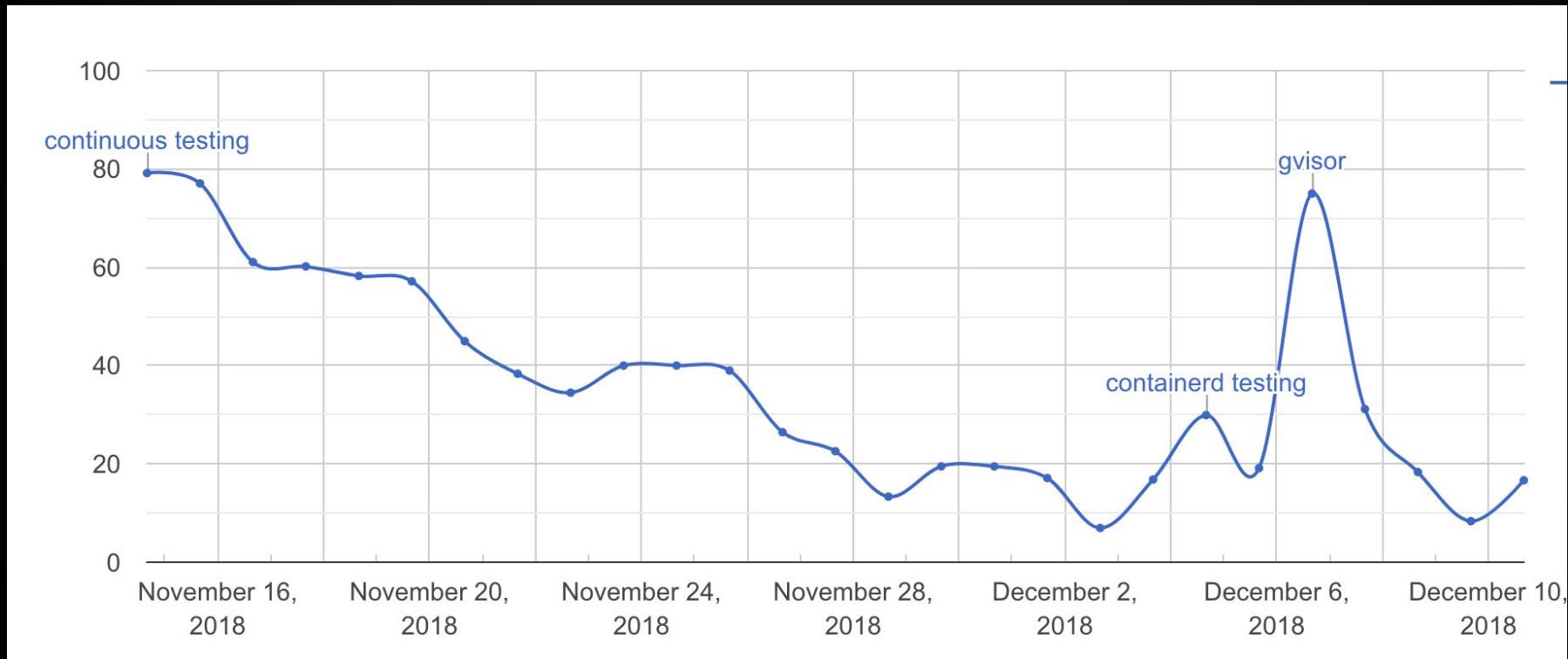
Superpowers + Kryptonite



	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	localkube	
hypervisor	none	VirtualBox	KVM
	HyperKit	HyperV	Fusion
OS	Linux	MacOS	Windows
			FreeBSD
Arch	amd64	arm64	s390x



Investing in CI



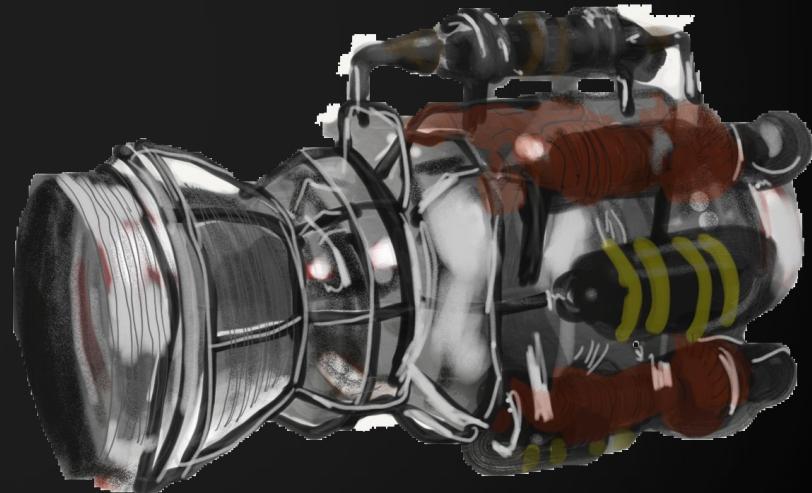
2018

- 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`



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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



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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





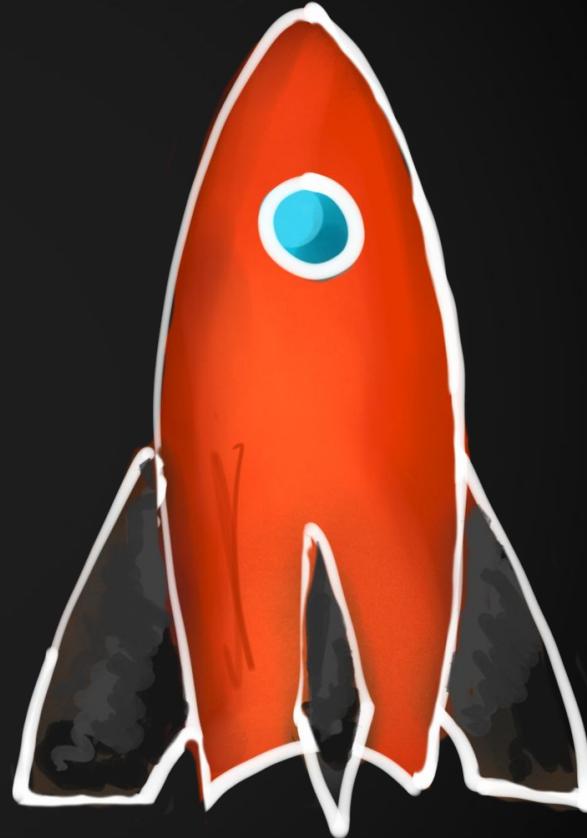
Minikube Kryptonite

- 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!

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



