



# Kubernetes Upstream Training



**CLOUDNATIVEDAYS**  
**TOKYO2019**

# Workshop Facilitators

## 101/201 Workshop

### **Kenichi Omichi, NEC**

- sig-testing
- approver of /test in k/k

### **Masaki Kimura, Hitachi**

- sig-storage
- member of kubernetes

## Tutors

### **Shu Muto, NEC**

- sig-ui

### **Kohei Toyoda, NEC**

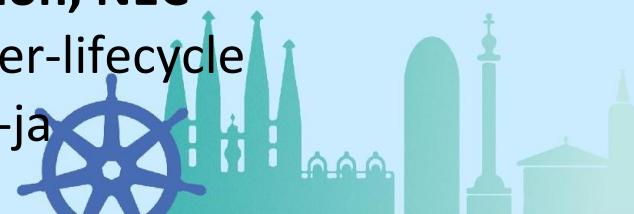
- sig-testing

### **Shingo Ito, NEC**

- sig-testing

### **Akihito Inoh, NEC**

- sig-cluster-lifecycle
- sig-docs-ja



# Schedule

## Introduction Session

- **13:20-14:00: Introduction**
- **14:20-15:00: 101**

## Hands-on Session

- **15:40-16:20: 201**
- **16:40-18:20: Hands-on**



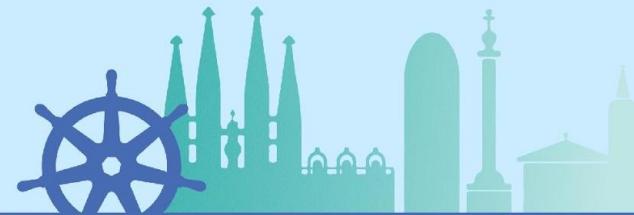
# TODO - 1

## Install packages for 101/201

- **golang v1.12**
- **docker**

## CLA

- <https://github.com/kubernetes/community/blob/master/CLA.md>



# TODO - 2

**Clone kubernetes-sigs/contributor-playground repo**

- Fork the repo into your github account
- Clone your account repo into your laptop PC

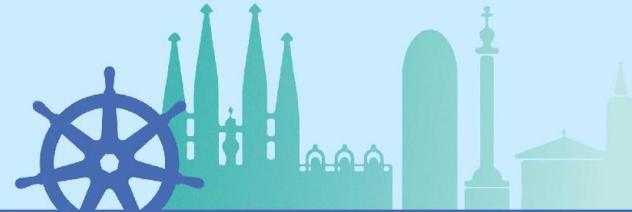
**(Option) Clone kubernetes/kubernetes repo**

- Fork the repo into your github account
- Clone your account repo into your laptop PC

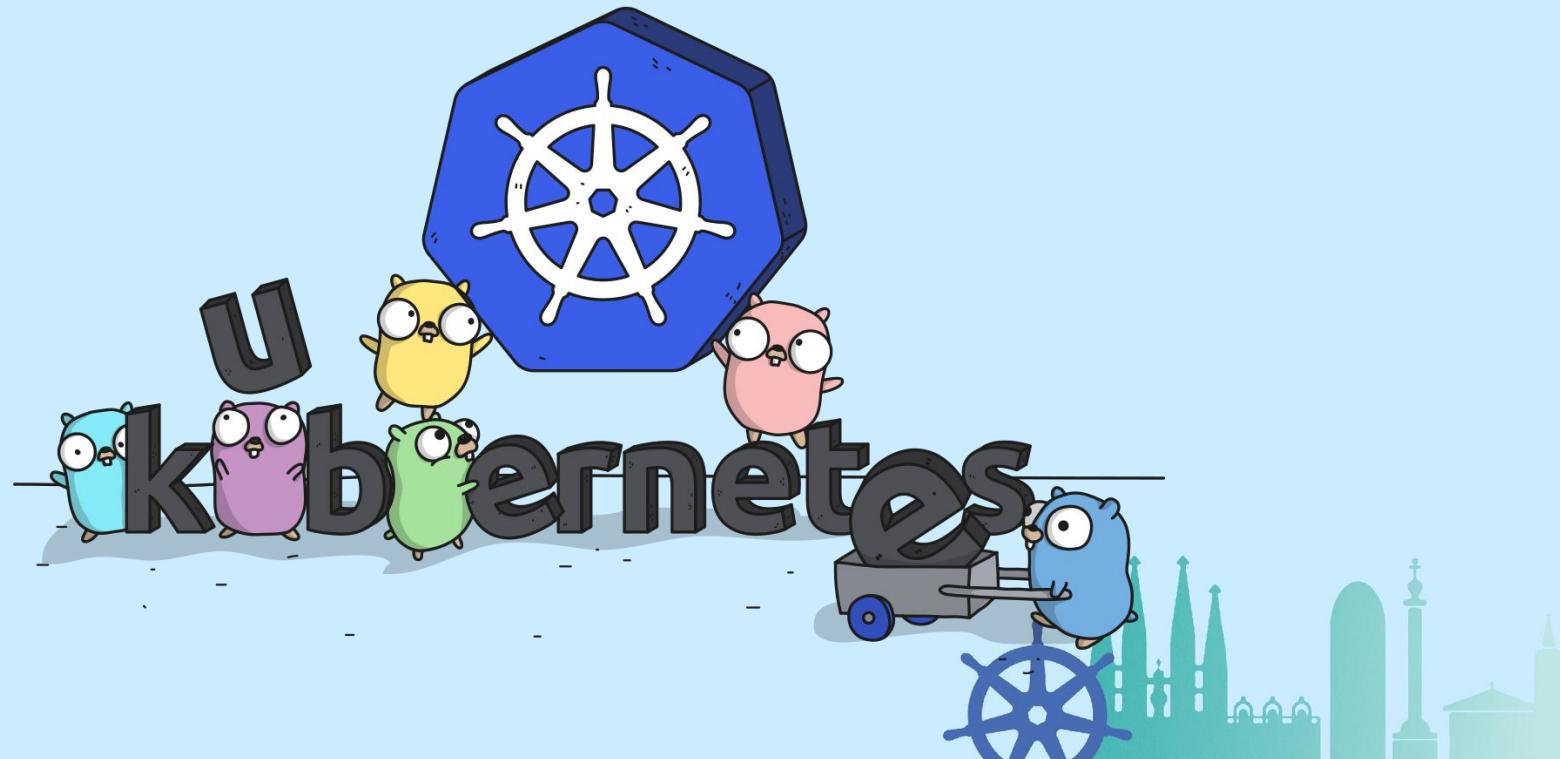


# Order of operations - Combined session

1. Introduction
2. Where to Contribute
3. Communication
4. The SIG system
5. Tour of Repos



# Who can contribute to Kubernetes?



Credit Ashley McNamara and [github.com/ashleymcnamara/gophers](https://github.com/ashleymcnamara/gophers) for this image. Credit Renee French for the original gopher concept and design.

# Why contribute to Kubernetes?



## The Kubernetes Contributor Patch

**\$1,000<sup>00</sup>**

Quantity

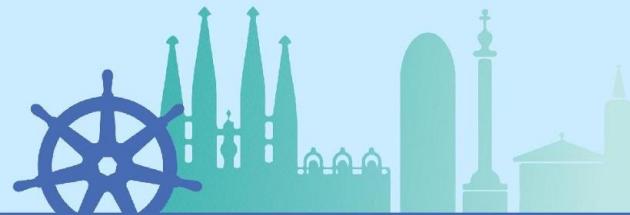
-	1	+
---	---	---

 Add to Cart

This is an exclusive item only recognized contributors can earn. You must be awarded a purchase code to get this badge of honor.

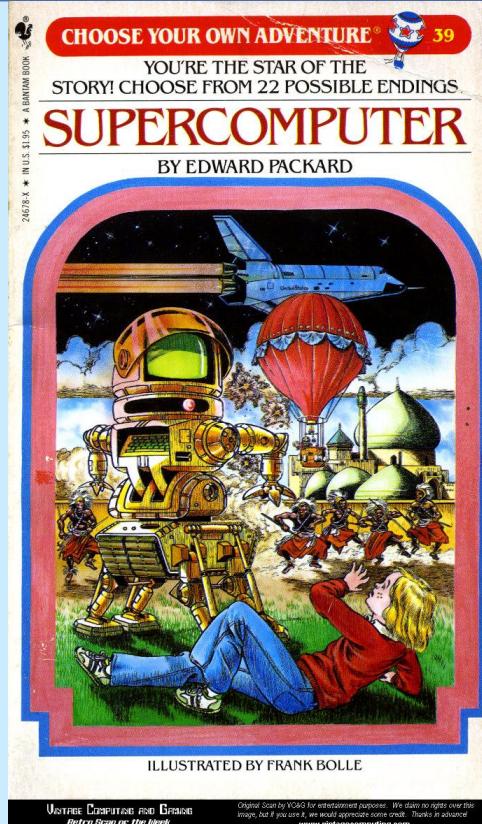


# Fitting Contributions Into Your Job



# Choose Your Own Adventure

Figuring out where  
to contribute



# Find Your Topic Exercise

1. With those around you, explain (or speculate) on what part of Kubernetes you might want to contribute to.
2. Also, explain what in your background, job, or interests motivates you.





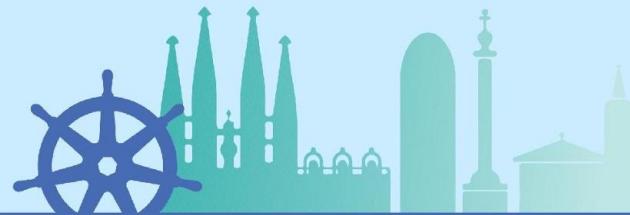
# Communication

# Standards of Communication

aka: Why is everyone so nice?

We believe that mutual respect is a prerequisite for healthy collaboration.

[git.k8s.io/community/code-of-conduct.md](https://git.k8s.io/community/code-of-conduct.md)



# Technical Questions



# Slack

Register here: [slack.k8s.io](https://slack.k8s.io)

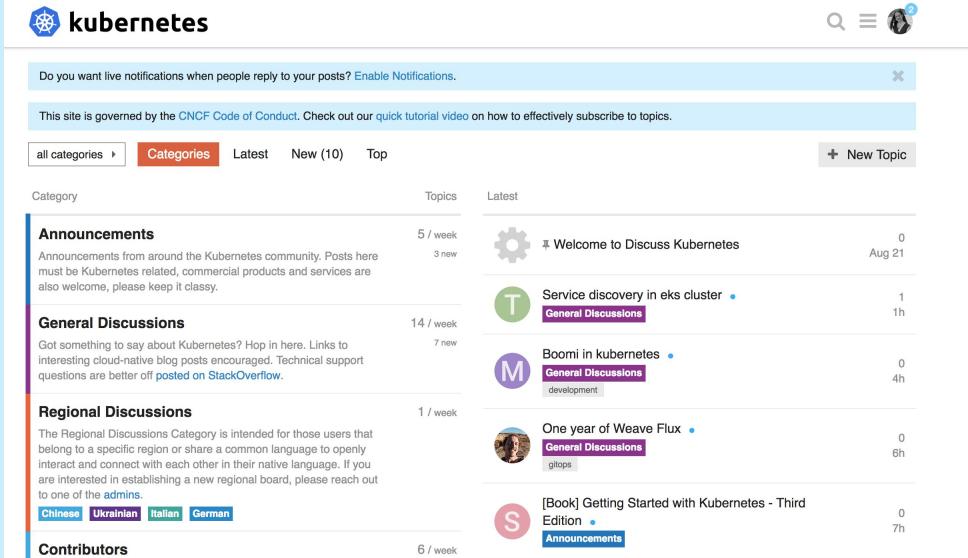
Good channels to start in are:

[#kubernetes-users](#),  
[#kubernetes-novice](#),  
[#sig-contribex](#)



# Discuss

Want more long-form discussions?  
Head over to [discuss.kubernetes.io](https://discuss.kubernetes.io)



The screenshot shows the homepage of the Kubernetes Discuss forum. At the top, there's a navigation bar with a search icon, a menu icon, and a user profile icon. Below the navigation, a message asks if you want live notifications when people reply to your posts, with a link to enable them. Another message states that the site is governed by the CNCF Code of Conduct and provides a link to a quick tutorial video.

The main content area has tabs for "all categories" (selected), "Categories", "Latest", "New (10)", and "Top". A "New Topic" button is located in the top right of this section. To the left, there's a sidebar with sections for "Announcements", "General Discussions", and "Regional Discussions", each with a brief description and a list of recent posts. The "Contributors" section shows 6 new contributors. On the right, the "Latest" section displays a list of recent posts:

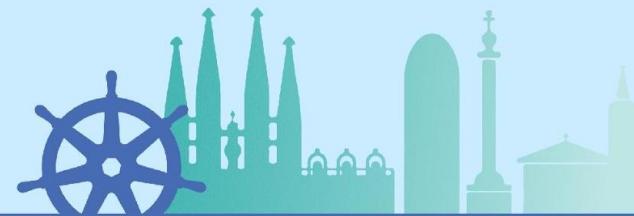
- 5 / week 3 new - Welcome to Discuss Kubernetes (by user T, General Discussions, posted Aug 21)
- 14 / week 7 new - Service discovery in eks cluster (by user M, General Discussions, posted 1h ago)
- 1 / week - Boomi in kubernetes (by user S, General Discussions, development, posted 4h ago)
- 0 - One year of Weave Flux (by user S, General Discussions, gitops, posted 6h ago)
- 0 - [Book] Getting Started with Kubernetes - Third Edition (by user S, Announcements, posted 7h ago)



# Planning and Discussion

# Mailing lists

- One per SIG/WG
- Run on Google Groups
- You need to join:
  - [kubernetes-dev](#)
  - Required for Org Membership!





# Issues Features Pull requests



**Break up and Refactor test/e2e/framework/utils.go #77095**

[Open](#) andrewsykim opened this issue 4 days ago · 21 comments

[New issue](#)

andrewsykim commented 4 days ago · edited

Member [+ ↗](#) ...

**What would you like to be added:**  
There are a lot of methods in `test/e2e/framework/util.go` that can be cleaned up or moved into its own package for easier consumption/discovery. In [#76206](#) there were some discussions for how to break up this file. The proposed package structure was:

`test/e2e/framework/`

- `kubectl/ (@alejandrox1)`
  - `builder.go`
  - `runner.go`
- `log/ (@WanLinghao)`
  - `logger.go`
- `pod/ (@alejandrox1)`
  - `wait.go`
  - `resource.go`
- `node/ (@alejandrox1)`
  - `wait.go`
  - `resource.go`
- `service/ (@draveness)`
  - `resource.go`
- `endpoints/ (@draveness)`
  - `resource.go`
- `resource/ (@draveness)`
  - `runtime.go`
- `lifecycle/ (@WanLinghao)`
  - `versions.go`
  - `state.go`
  - `restart`
- `wrappers.go (@MorrisLaw)`
- `providers.go (@MorrisLaw)`

I think each package & top level file can be it's own task. Pick a package above, go through each method in `test/e2e/framework/util.go` and move it to that package/file if it makes sense. The above is just a guideline, feel free to introduce new packages/files where it makes sense.

**Why is this needed:**  
This is a part of [#76206](#) & [#75601](#)

**Assignees**  
No one assigned

**Labels**  
[area/e2e-test-framework](#) kind/feature sig/testing

**Projects**  
None yet

**Milestone**  
No milestone

**Notifications**  
[Subscribe](#)  
You're not receiving notifications from this thread.

**8 participants**

# Zoom Meetings

Schedule is on the community calendar

- SIG Meetings
- [Kubernetes Weekly Community Meeting](#)
  - Overview of community activities, release info, and governance updates.
- Special meetings



# Other Communications

- [kubernetes.io/community](https://kubernetes.io/community)
  - Links to everything community related can be found here
- [Meet Our Contributors](#)
  - Monthly live video discussion with contributors
- [Office Hours](#)
  - Monthly live video panel to ask technical questions
- KubeCon + CloudNativeCon
- Face-to-Face SIG meetings
- [Meetups](#)



# Collected links

[kubernetes.io/community](https://kubernetes.io/community)

[discuss.kubernetes.io](https://discuss.kubernetes.io)

[slack.k8s.io](https://slack.k8s.io)

[groups.google.com/forum/#!forum/kubernetes-dev](https://groups.google.com/forum/#!forum/kubernetes-dev)

[git.k8s.io/community/events/community-meeting.md](https://git.k8s.io/community/events/community-meeting.md)

[git.k8s.io/community/events/office-hours.md](https://git.k8s.io/community/events/office-hours.md)

[git.k8s.io/community/mentoring/meet-our-contributors.md](https://git.k8s.io/community/mentoring/meet-our-contributors.md)





# The SIG System

# Special Interest Group

How work is organized



[git.k8s.io/community/sig-list.md](https://git.k8s.io/community/sig-list.md)



# Special Interest Group

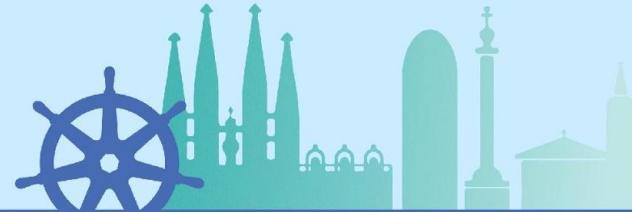
SIG sounds like of like a meetup group, and it both isn't and also is.

Each SIG is its own sub-community in Kubernetes, because it's a huge project and we can't all be in one giant pool of 3000 contributors.



# Types of SIGs

1. Feature Areas
2. Plumbing
3. Meta
4. Docs
5. Cloud Provider



# Feature Area SIGs

sig-auth

sig-apps

sig-autoscaling

sig-cli

sig-multicloud

sig-network

sig-node

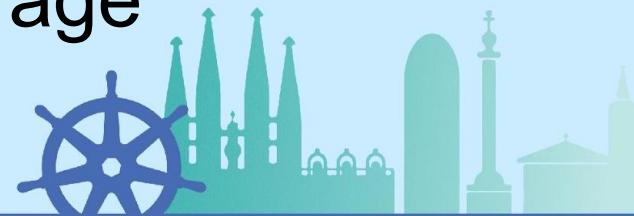
sig-scalability

sig-scheduling

sig-service-catalog

sig-storage

sig-ui



# “Plumbing” SIGs

sig-api-machinery

sig-cluster-lifecycle

sig-instrumentation



# Meta

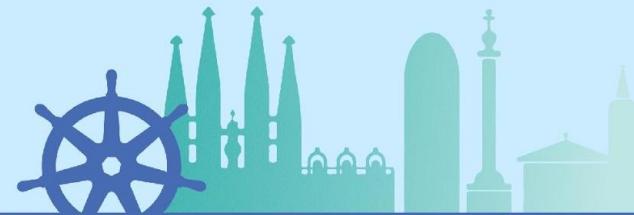
sig-architecture

sig-contributor-experience

sig-pm

sig-release

sig-testing



# Documentation & Website

sig-docs

sig-docs-\*\* (fr, ja, ko, zh, etc....)



# Cloud Provider

Individual cloud providers are  
Subprojects of this SIG.

[List of Cloudprovider Subprojects](#)



# Working Groups and Subprojects

Working Groups: inter-SIG efforts

Subprojects: focus areas for SIGs

For specific:

- Tools (ex. Kubectl)
- Goals (ex. Code Cleanup, Contributor Site)
- Areas (ex. Machine Learning)



# Working Groups

wg-apply

wg-component-standard

wg-iot-edge

wg-k8s-infra

wg-lts

wg-machine-learning

wg-multitenancy

wg-policy

wg-resource-management

wg-security-audit



# Subprojects

Usually found in  
kubernetes-sigs/  
namespace

Examples include...

cloud tools

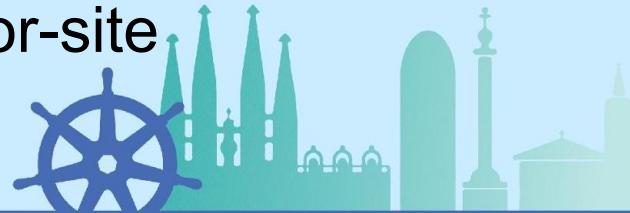
kustomize

kind

kubebuilder

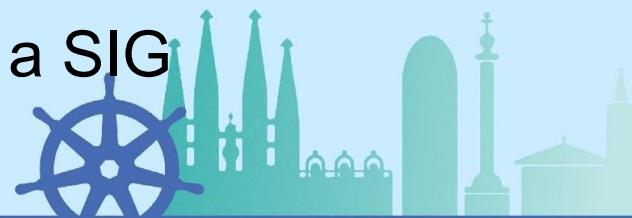
federation-v2

contributor-site



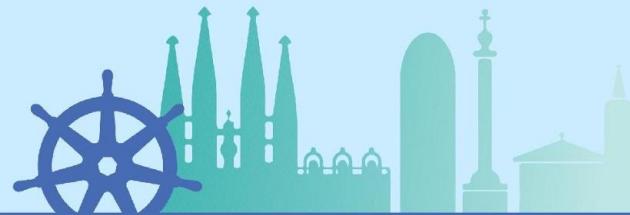
# Picking the right SIG

1. Figure out what specific projects/areas you want to work on.
2. Find out which SIG/WG/subproject covers that
  - a. Ask on #sig-contribex
  - b. Go to the SIG intros at this conference
3. Join that SIG/subproject
  - a. If joining a WG/subproject, also *join* a SIG



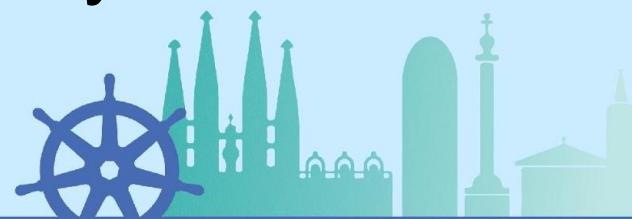
# How Do I Join A SIG?

1. Join the sig-specific mailing list.  
This is open to anyone.
2. That's it. You've joined a SIG.



# Really? That's it?

1. Yup! It's the official way to denote SIG membership.
2. You will now get calendar invites to SIG meetings on Zoom. Go ahead and join and you'll likely be asked to introduce yourself.



# User Groups

- No codebase ownership
- For any purpose that does not have clearly defined deliverables or ownership

Example: Big Data User Group



# Committees

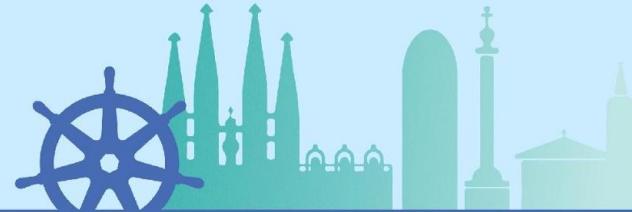
Project governance oriented

There are currently three committees.

Join By Invite Or Election Only

Examples:

- Steering
- Project Security
- Code of Conduct



# Quick reference

Governance reference (WIP)

Project Group List

sigs.yaml configuration file



# Tour of Repositories



CONTRIBUTOR SUMMIT  
BARCELONA 2019

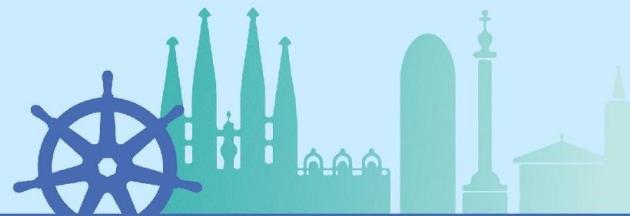
# Core Repository

[kubernetes/kubernetes](https://github.com/kubernetes/kubernetes)

Most SIGs are stakeholders in the monolith.

Areas of SIG ownership can be found in

<https://git.k8s.io/community/sigs.yaml>



# My repository, my rules

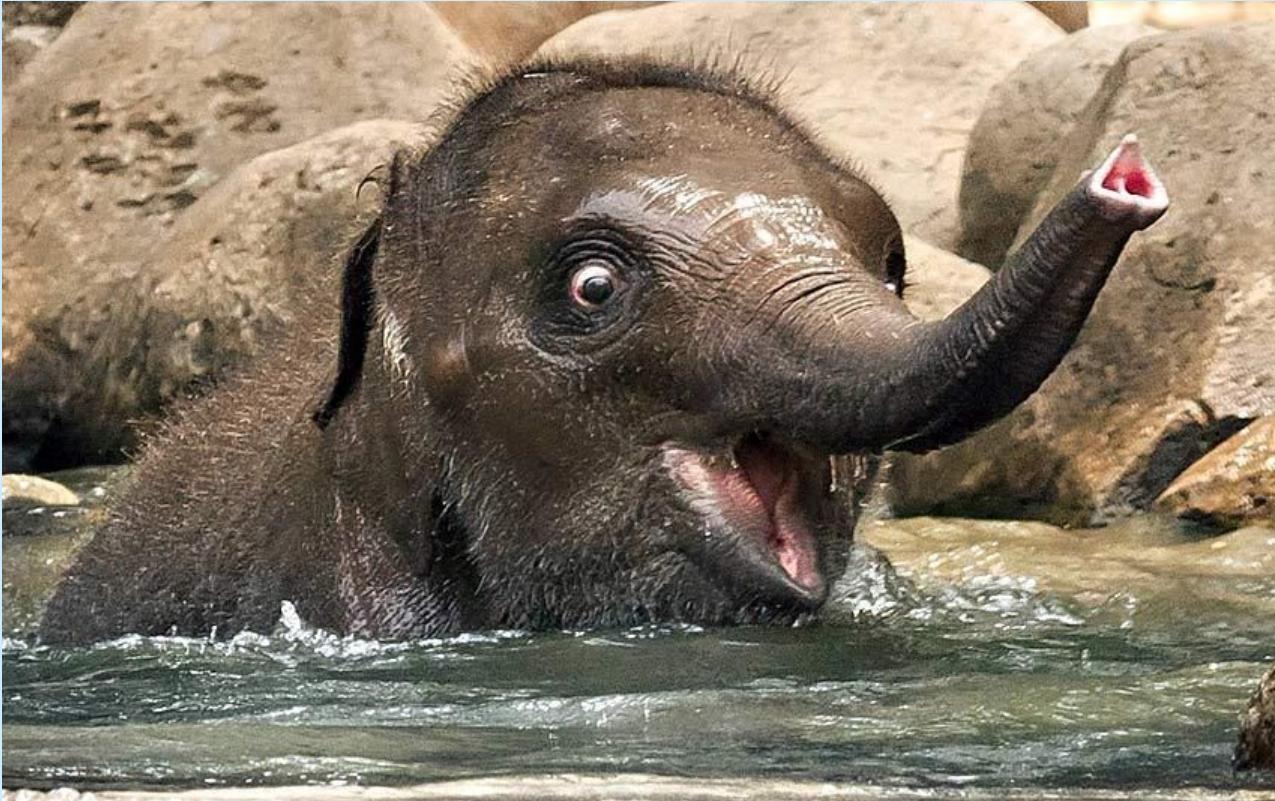
Repos can have different:

- Ownership
- Approval workflows
- Merge workflows
- Release cycles

However, most are pretty similar.



# Ready to jump right in?



# BEGIN 101

# 101 Agenda

## 101-1

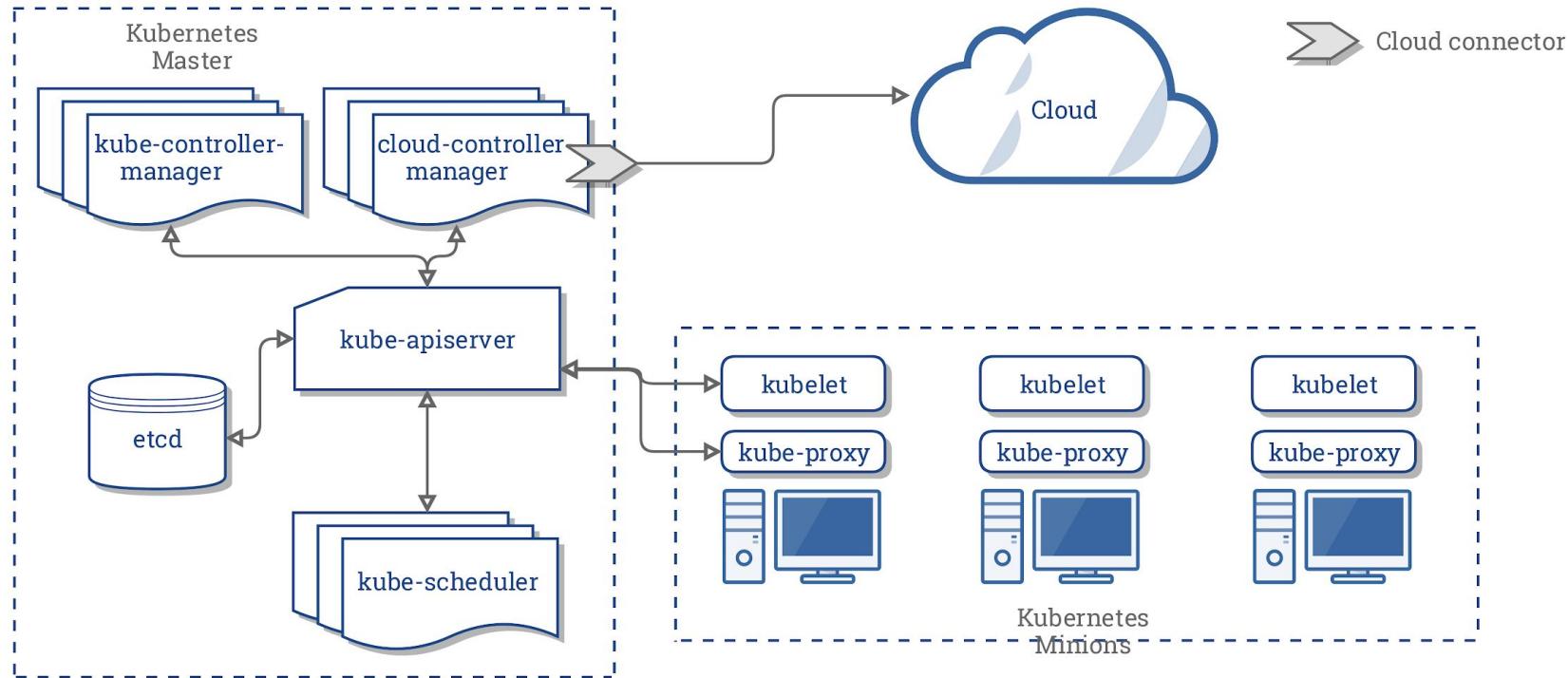
- Basic Repo/Code Tour
- Dev Env: Pre-Requisites
- SIGs, Labels, Issues: Overview
- Open Source Interactions
- PRs and Bots
- Dev Env: Status Check

## 101-2

- Dev Env: Final Check
- Build System(s)
- Make Targets
- Build kubectl
- Testing
- SIGs, Areas, Issues: Engaging



# Basic Repo/Code Tour



# Basic Repo/Code Tour

[kubernetes / kubernetes](#)

Watch 2,970 Star 52,421 Fork 18,080

Code Issues 2,129 Pull requests 994 Projects 9 Insights Settings

Production-Grade Container Scheduling and Management <https://kubernetes.io> Edit

kubernetes go cncf containers Manage topics

78,248 commits 43 branches 509 releases 1 environment 2,134 contributors Apache-2.0

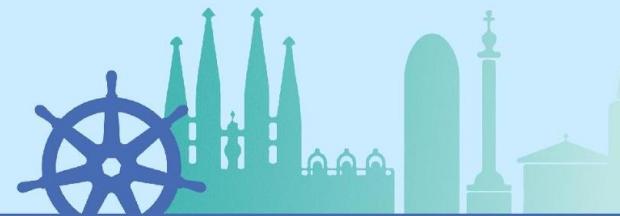
Branch: master New pull request Create new file Upload files Find File Clone or download

File	Description	Time Ago
.github	Update github issue template OWNERS	16 days ago
Godeps	Use latest etcd from release-3.3 branch for dropping ugorji	8 days ago
api	Merge pull request #77516 from gnuified/implement-resize-secrets	21 hours ago
build	Update to go 1.12.5	2 days ago
cluster	Merge pull request #77424 from MrHohn/gce-manifest-owners	18 hours ago
cmd	Merge pull request #76659 from S-Chan/stephen_chan--lazy_initialize_s...	6 hours ago
docs	Updated OWNERS files to include link to docs	3 months ago

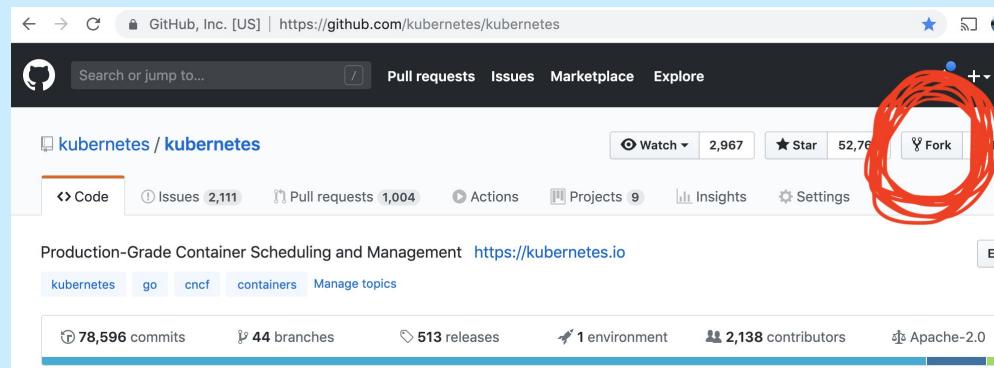
# Dev Environment: Pre-Requisites

- Lots of RAM/Disk/CPU
- Linux, Mac, Windows basic dev tools
- Docker (for Mac/Win dedicate 6GB RAM)
- Golang 1.12 latest and \$GOPATH set
- GitHub:
  - account and SSH key configured
  - fork [github.com/kubernetes/kubernetes](https://github.com/kubernetes/kubernetes)

<https://www.flickr.com/photos/vestman/3900877043/>  
By Vestman (vestman) [CC BY 2.0], via flickr

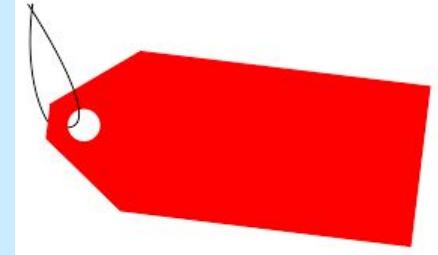


# Dev Environment: Initialization

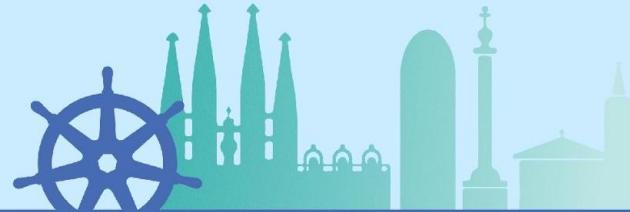
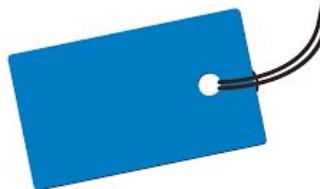


- mkdir -p \$GOPATH/src/k8s.io/ && cd \$GOPATH/src/k8s.io/
- git clone <git@github.com:YOUYOUYOU>/kubernetes.git && cd kubernetes
- git remote add upstream <https://github.com/kubernetes/kubernetes.git>
- git fetch upstream
- git checkout upstream/release-1.14

# SIGs, Labels, Issues: Overview



How to talk to the Kubernetes  
community and automation





k8s-ci-robot commented 14 days ago

Owner



Thanks for your pull request. Before we can look at your pull request, you'll need to sign a Contributor License Agreement (CLA).

Please follow instructions at <https://git.k8s.io/community/CLA.md#the-contributor-license-agreement> to sign the CLA.

It may take a couple minutes for the CLA signature to be fully registered; after that, please reply here with a new comment and we'll verify. Thanks.

- If you've already signed a CLA, it's possible we don't have your GitHub username or you're using a different email address. Check your existing CLA data and verify that your [email is set on your git commits](#).
- If you signed the CLA as a corporation, please sign in with your organization's credentials at <https://identity.linuxfoundation.org/projects/cncf> to be authorized.
- If you have done the above and are still having issues with the CLA being reported as unsigned, please email the CNCF helpdesk: [helpdesk@rt.linuxfoundation.org](mailto:helpdesk@rt.linuxfoundation.org)

#### ► Details

k8s-ci-robot added the **cncf-cla: no** label 14 days ago

k8s-ci-robot requested review from **idvoretskyi** and **tpepper** 14 days ago

k8s-ci-robot added the **needs-ok-to-test** label 14 days ago



guineveresaenger

#### Labels

approved
area/contributor-guide
cncf-cla: no
lgtm
needs-rebase
sig/contributor-experience
size/XS

#### Projects

None yet

#### Milestone

No milestone

#### Notifications

Unsubscribe

You're receiving notifications because you were mentioned.

#### 7 participants

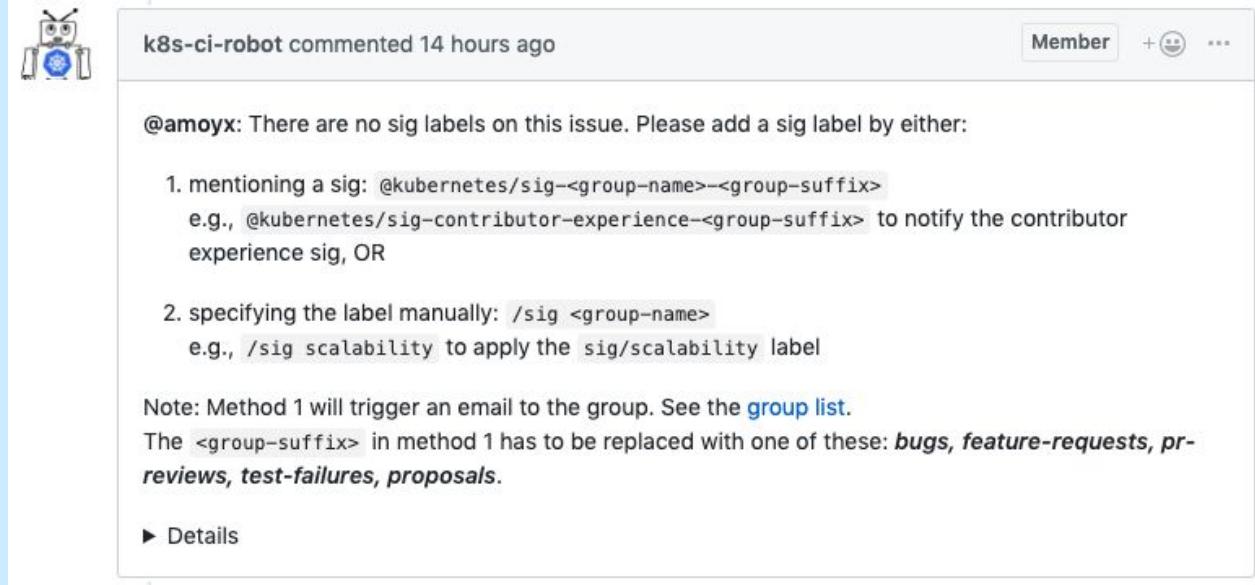


# Required Labels for Issues

On creation:

sig/

kind/



A screenshot of a GitHub issue comment. The comment is from a user named "k8s-ci-robot" and was posted 14 hours ago. The comment text reads:

@amoyx: There are no sig labels on this issue. Please add a sig label by either:

- mentioning a sig: @kubernetes/sig-<group-name>-<group-suffix>  
e.g., @kubernetes/sig-contributor-experience-<group-suffix> to notify the contributor experience sig, OR
- specifying the label manually: /sig <group-name>  
e.g., /sig scalability to apply the sig/scalability label

Note: Method 1 will trigger an email to the group. See the [group list](#).  
The <group-suffix> in method 1 has to be replaced with one of these: *bugs, feature-requests, pr-reviews, test-failures, proposals*.

▶ Details

<https://go.k8s.io/bot-commands>



# The SIG Label

*Label*

sig/auth

sig/testing

sig/api-machinery

sig/node

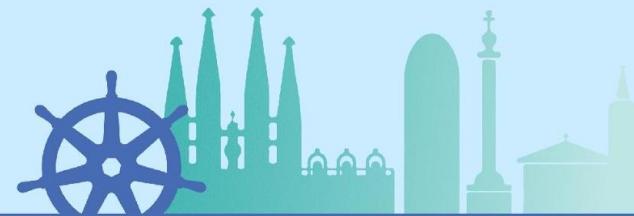
*Bot command*

/sig auth

/sig testing

/sig api-machinery

/sig node



# The Kind Label

kind/bug

kind/feature

kind/documentation

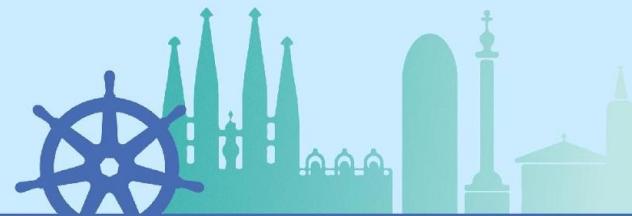
kind/design

kind/failing-test

kind/flake

kind/cleanup

*Example bot command: /kind feature*



# The Priority Label

priority/critical-urgent

priority/important-soon

priority/important-longterm

priority/backlog

priority/awaiting-evidence

*Example bot command:*  
/priority critical-urgent



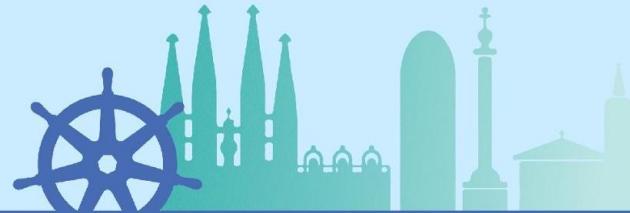
# The Area Label

area/kubectl

area/api

area/dns

area/platform/gce



# The Triage Label

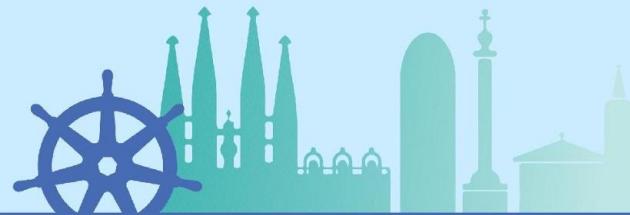
triage/duplicate

triage/needs-information

triage/support

triage/unreproduceable

triage/unresolved



# Open Source Interactions

me  
implementation  
centralized  
implicit  
assumptions



# Open Source Interactions

me  
~~implementation~~  
~~centralized~~  
~~implicit~~  
~~assumptions~~

we  
collaboration  
decentralized  
explicit  
shared theories



# Open Source Interactions

functionality  
code



# Open Source Interactions

functionality  
code

docs  
tests  
integrations  
releases  
security



# Open Source Interactions

## HUMAN / SOCIAL:



functionality  
code  
docs  
tests  
integrations  
releases  
security



# Open Source Interactions

Be good people!

Mutual respect is a prerequisite for healthy collaboration.

[git.k8s.io/community/code-of-conduct.md](https://git.k8s.io/community/code-of-conduct.md)



# Open Source Interactions

Goal: Get a change into project



# Open Source Interactions

**Goal:** Get a change into project

**Path:**

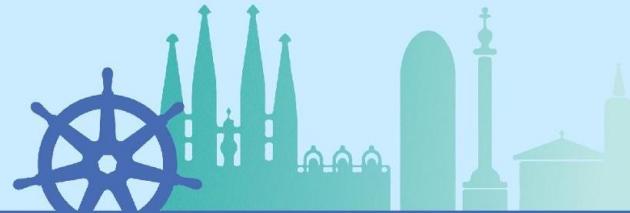
- Visibility, transparency, proactive communication
- Code, plus documentation, plus test cases
- Presence in meetings, Slack, mailing list
- Reviewable code



# Open Source Interactions

## Reviewable code:

- demonstrates sound *IDEA*...through words
- demonstrates reasonably architected solution...through words
- polished implementation
  - coding style
  - quality standards
  - <https://chris.beams.io/posts/git-commit/>



# Open Source Interactions

## Reviewable code:

- demonstrates sound *IDEA*...through words
- demonstrates reasonably architected solution...through words
- polished implementation
  - coding style
  - quality standards
  - <https://chris.beams.io/posts/git-commit/>

## Make the reviewer's job easy:

- commit subject line summarizes
- commit body details **what & why**



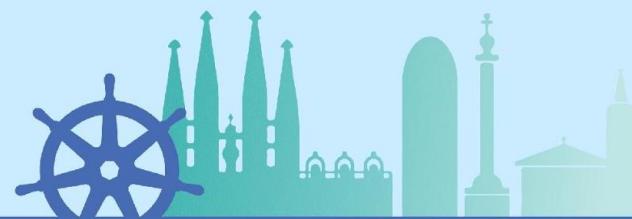
# Open Source Interactions

## Timing:

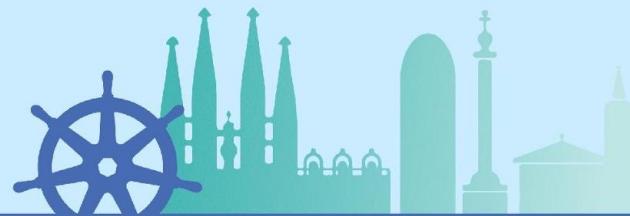
- expect things you **CARE** about to take time
- quality vs. speed
- decentralized consensus forming
- conversations wrap the globe
- is it code freeze right now or merge time?

## Open source is fast in aggregate, but:

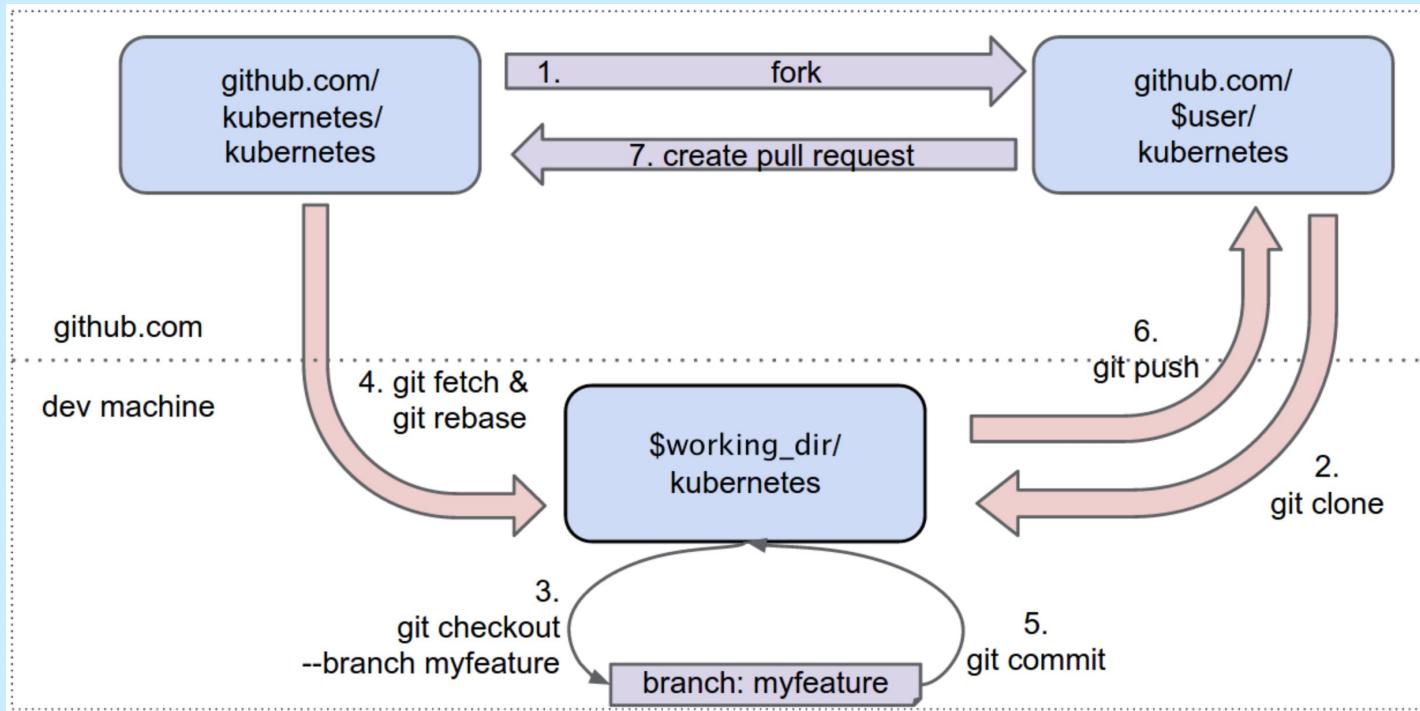
- **idea** → months → alpha → 1+ release → beta → 1+ release → **stable**
- ...**9-24 months**



# Open Source Interactions



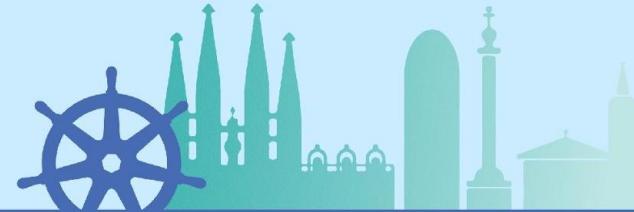
# PRs and Bots: GitHub PR Flow



# PRs and Bots: Kubernetes PR Flow

1. You submit Pull Request (PR)
2. You add labels & notes
3. Bots validate and comment on the PR  
`release-note` `cncf-cla: no` `needs-ok-to-test` `needs-kind` `needs-sig`
4. You add more labels & notes & resolve review comments
5. SIGs & OWNERS review and /approve → `approved`
6. Other contributors /lgtm → `lgtm`
7. Tests pass
8. *Tide* merges the PR

<https://prow.k8s.io/command-help>



# PRs and Bots: Useful Commands

## Command

/assign @username

## Result

Assigns a Reviewer

/retest

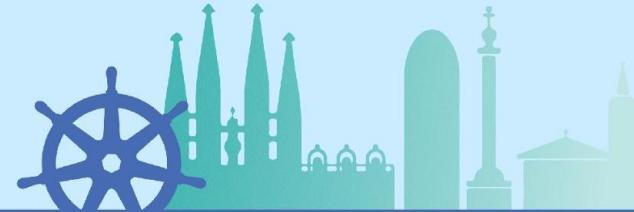
Reruns failed tests

/close

Closes PR

/cc @username

Tags a user



# PRs and Bots: Reviewers/Approvers



k8s-ci-robot commented 7 minutes ago

Member + ...

[APPROVALNOTIFIER] This PR is NOT APPROVED

This pull-request has been approved by: [ksubrmnn](#)

To fully approve this pull request, please assign additional approvers.

We suggest the following additional approver: [rosti](#)

If they are not already assigned, you can assign the PR to them by writing `/assign @rosti` in a comment when ready.

The full list of commands accepted by this bot can be found [here](#).

The pull request process is described [here](#)

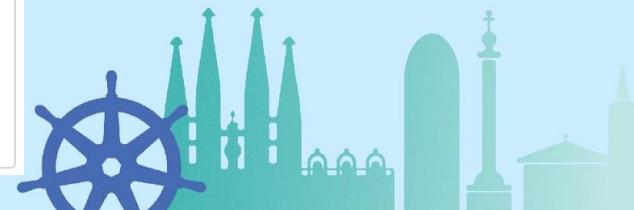
## ▼ Details

Needs approval from an approver in each of these files:

- [cmd/kubeadm/OWNERS](#)

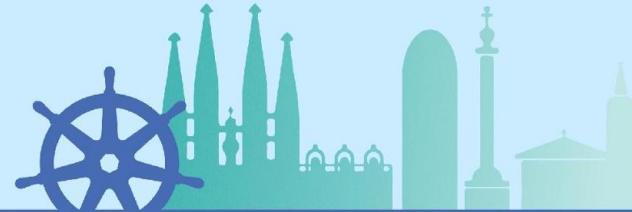
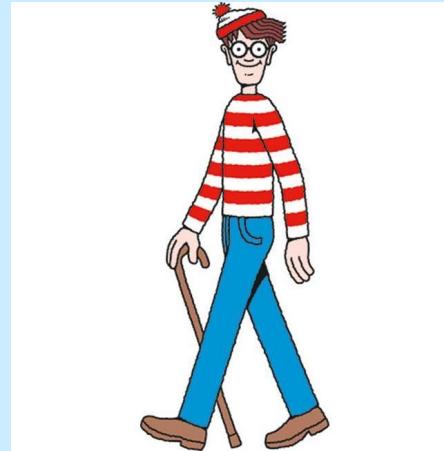
Approvers can indicate their approval by writing `/approve` in a comment

Approvers can cancel approval by writing `/approve cancel` in a comment



# PRs and Bots: Reviewers/Approvers

- Attach /sig label
- Contact your mentor(s)
- Contact the SIG
  - attend SIG meeting
  - ask Slack
  - send email to list
- Contact OWNERS



# PRs and Bots: Test Results



k8s-ci-robot commented 2 minutes ago

Member



...

@ksubrmnn: The following tests failed, say `/retest` to rerun them all:

Test name	Commit	Details	Rerun command
pull-kubernetes-e2e-gce	<a href="#">0a1251a</a>	<a href="#">link</a>	<code>/test pull-kubernetes-e2e-gce</code>
pull-kubernetes-e2e-gce-device-plugin-gpu	<a href="#">0a1251a</a>	<a href="#">link</a>	<code>/test pull-kubernetes-e2e-gce-device-plugin-gpu</code>

[Full PR test history.](#) [Your PR dashboard.](#) Please help us cut down on flakes by [linking to an open issue](#) when you hit one in your PR.

► Details



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# PRs and Bots: Following Up

**Answer questions**

**Resolve:**

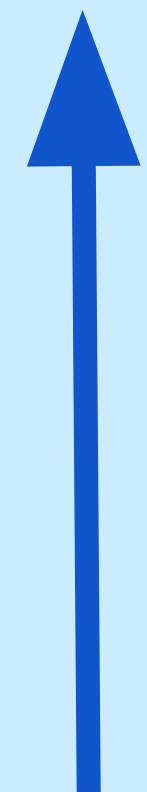
**Bot messages**

**Code comments**

**Test failures**



# Contributor Ladder



**Subproject Owner**

Set priorities and approve proposals for subproject  
Responsibility and leadership for entire repository/directory

**Approver**

Approve contributions for acceptance  
Highly experienced reviewer and contributor in subproject

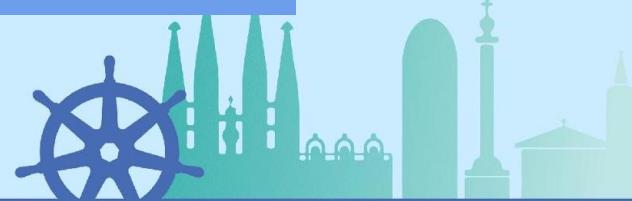
**Reviewer**

History of reviewing; reviews frequently  
Authorship in subproject

**Member**

Active contributor to the project  
Sponsored by two Reviewers

**Non-member Contributors**



# Contributor Ladder: Membership

k8s-ci-robot commented on Dec 14, 2017

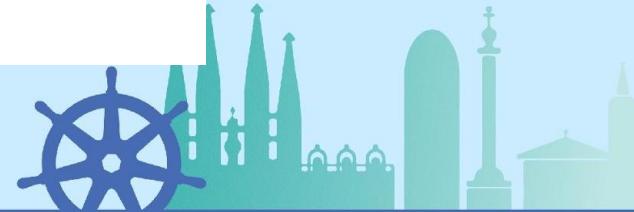
Hi @guineveresaenger. Thanks for your PR.

I'm waiting for a [kubernetes](#) member to verify that this patch is reasonable to test. If it is, they should reply with `/ok-to-test` on its own line. Until that is done, I will not automatically test new commits in this PR, but the usual testing commands by org members will still work. Regular contributors should [join the org](#) to skip this step.

I understand the commands that are listed [here](#).

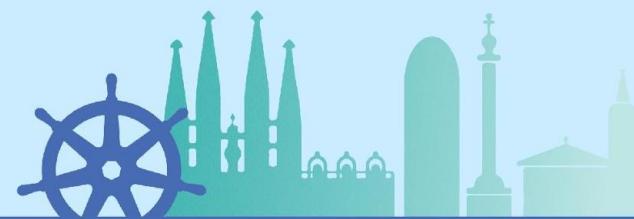
▶ Details

k8s-ci-robot added the **needs-ok-to-test** label on Dec 14, 2017



# Contributor Ladder: Membership

<http://git.k8s.io/community/community-membership.md>



# Contributor Ladder

Role	Responsibilities	Requirements	Defined by
member	active contributor in the community	sponsored by 2 reviewers. multiple contributions to the project.	Kubernetes GitHub org member.
reviewer	review contributions from other members	history of review and authorship in a subproject	<a href="#">OWNERS</a> file reviewer entry.
approver	approve accepting contributions	highly experienced and active reviewer + contributor to a subproject	<a href="#">OWNERS</a> file approver entry
subproject owner	set direction and priorities for a subproject	demonstrated responsibility and excellent technical judgement for the subproject	<a href="#">sigs.yaml</a> subproject <a href="#">OWNERS</a> file owners entry

# OWNERS

YAML files sprinkled all through the repos, eg:

<http://git.k8s.io/community/contributors/guide/owners.md>

Kubernetes Core OWNERS file





# BREAK!

Let us know if you need any additional hands on help with your laptop configuration...

# Dev Environment: Final Check

“make” should work now...

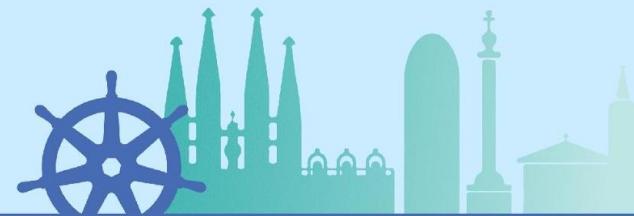


# Build System(s)

- local OS
  - or
- container based
- go build
- make
- bazel build



<https://git.k8s.io/kubernetes/build/README.md>



# Make Targets

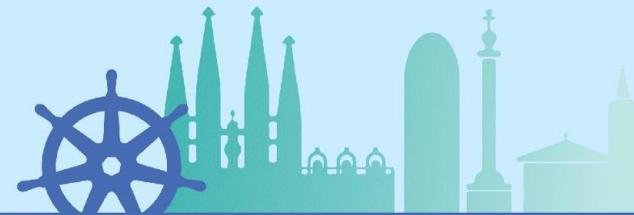
- ‘**make**’: go build of host OS/arch-specific core binaries
- ‘**make release**’: (don’t do this ;)
  - containerized build of client/server/node binaries
  - Window, MacOS, Linux
  - x86/386, x86\_64/amd64, arm, arm64, ppc64le, s390x
- ‘**make quick-release**’:
  - containerized build of core binaries
  - defaults to linux/amd64



# Testing

- **Unit:** test via native golang
- **Integration:** test package or component interactions
- **End-to-end** (“e2e”): tests overall system behavior and coherence on a fully integrated cluster
- **Conformance:** subset of e2e, tests SIG Architecture approved to define the core set of interoperable features

<https://bit.ly/k8s-ncw-testing>



# Testing: Unit Tests

- Simple native golang
- Example: run kubectl's unit tests
- cd pkg/kubectl; go test ./...

```
ok   k8s.io/kubernetes/pkg/kubectl      5.525s
?    k8s.io/kubernetes/pkg/kubectl/apply [no test files]
ok   k8s.io/kubernetes/pkg/kubectl/apply/parse 0.442s
ok   k8s.io/kubernetes/pkg/kubectl/apply/strategy 2.916s
ok   k8s.io/kubernetes/pkg/kubectl/apps     0.251s
.
.
```



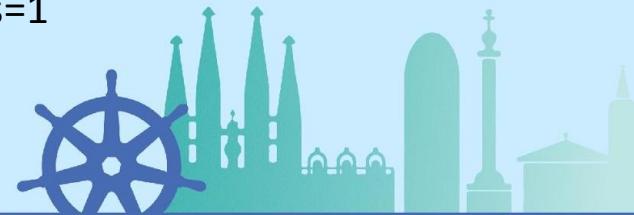
# Testing: Integration

- Package or component interactions
- Requires dependency management
- Example: run a test of k8s code + etcd
- hack/install-etcd.sh; make test-integration

# Testing: End-to-End (e2e)

- Cluster interactions
- Requires ... a cluster
- Example: run a focused e2e test (requires Linux)

```
sudo PATH=$PATH hack/local-up-cluster.sh  
export KUBECONFIG=/path/to/kubeconfig  
kubetest --provider=local --test --test_args="--minStartupPods=1  
--ginkgo.focus=Secrets"
```



# Testing: Conformance

- Subset of e2e
- SIG Architecture approved tests
- Represent core set of interoperable features
- Example: run the conformance tests

(see previous on local-cluster-up.sh)

```
make WHAT="test/e2e/e2e.test vendor/github.com/onsi/ginkgo/ginkgo cmd/kubectl"  
kubetest --provider=skeleton --test --test_args="--ginkgo.focus='\[Conformance\]'"
```



# Testing: Minikube

- <https://github.com/kubernetes/minikube/>
- Kubernetes **cluster-in-a-VM** on your local machine!
- Requirements:
  - Host machine with kubectl
  - Guest VM ability
  - Host<->Guest networking and internet connectivity

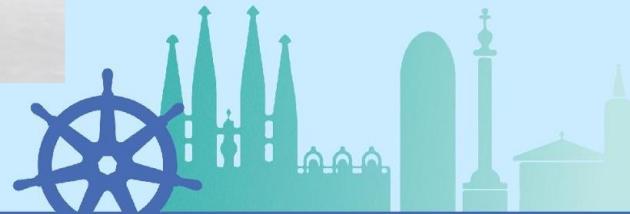
# Testing: KinD

- <https://github.com/kubernetes-sigs/kind/>
- Kubernetes **cluster-in-a-container** on your local machine!
- Requirements:
  - Docker runtime
  - Internet connectivity
- Get KinD, build k8s from source, start cluster:
  - GO111MODULE="on" go get -u sigs.k8s.io/kind@v0.3.0
  - kind build node-image
  - kind create cluster --image kindest/node:latest



# SIGs, Areas, Issues: Engaging

What's next for you?



# SIGs, Areas, Issues: Engaging

## Non-Code Contributions

- Filing Issues
- Answering Questions on StackOverflow
- Github Repo Management
- Blogging, Evangelism, and Promotion
- Event Management and Volunteering
- Visual Communication
- User Experience Feedback and Surveys
- Helping Manage Youtube Recordings
- ...and more!



# SIGs, Areas, Issues: Engaging

## Mentoring Opportunities

- Meet-Our-Contributors
- Group Mentoring
- Release Team Shadow
- 1-on-1 ad-hoc mentoring
- GSOC/Outreachy



# SIGs, Areas, Issues: Engaging

## Kubernetes Tutorials

- As an operator
- As an app developer
- As a kubernetes developer

<https://kubernetes.io/docs/tutorials/>



# SIGs, Areas, Issues: Engaging

## Mentoring Links

<https://git.k8s.io/community/mentoring/meet-our-contributors.md>  
<https://git.k8s.io/community/mentoring/google-summer-of-code.md>  
<https://git.k8s.io/community/mentoring/outreachy.md>  
<https://git.k8s.io/community/mentoring/>

## Technical Help and Tutorials

<https://git.k8s.io/community/events/office-hours.md>  
<https://kubernetes.io/docs/tutorials/>

## Contributor Guide

<https://git.k8s.io/community/contributors/guide/README.md>

## Developer Guide

<https://git.k8s.io/community/contributors-devel/README.md>



# SIGs, Areas, Issues: Engaging

## At Contributor Summit!

- F2F

## At KubeCon!

- Sessions
- SIG Intros
- SIG Deep Dives
- Hallway Track

## KubeCon Barcelona videos

<https://www.youtube.com/playlist?list=PLj6h78yzYM2PpmMAnvpvsnR4c27wJePh3>



**END 101**

**BEGIN 201**



# 201 Session



# The Kubernetes Monolith

# Core Repository

[kubernetes/kubernetes](https://github.com/kubernetes/kubernetes)

Most SIGs are stakeholders in the monolith.

Areas of SIG ownership can be found in

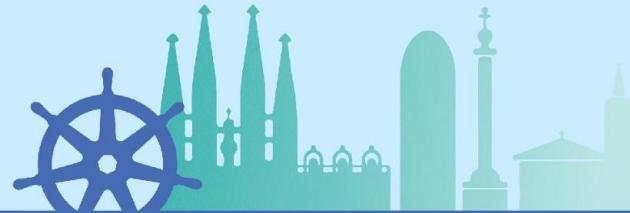
<https://git.k8s.io/community/sigs.yaml>



# Building Binaries

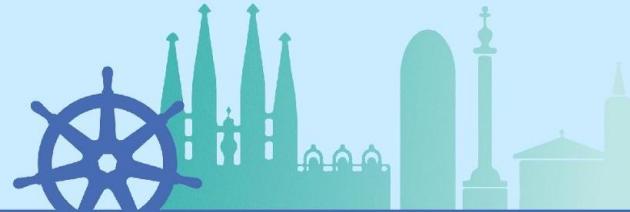
## Kubernetes Developer Guide Instructions

```
$make WHAT=cmd/kubectl
```



# Let's Break A Test!

```
$make test WHAT=./<your_package_here>
```



# Labels and Bot Commands

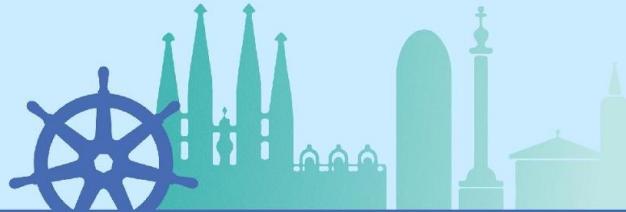


kubernetes

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# The Contributor Playground

<https://sigs.k8s.io/contributor-playground>



# Bot Commands

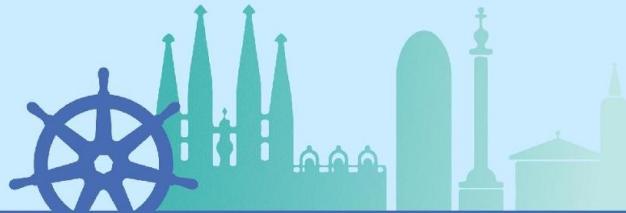
<https://prow.k8s.io/command-help>



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# Kubernetes GitHub Workflow

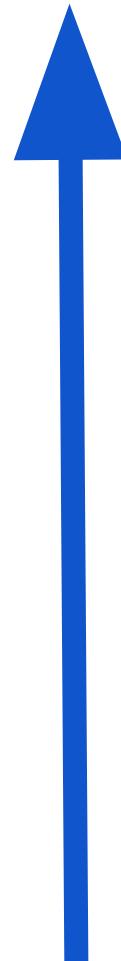
## GitHub Workflow Chart



# Membership

<http://git.k8s.io/community/community-membership.md>





# Owner

Set priorities and approve proposals for subproject  
Responsibility and leadership for entire repository

# Approver

Approve contributions for acceptance  
Highly experienced reviewer and contributor in subproject

# Reviewer

History of reviewing; reviews frequently  
Authorship in subproject

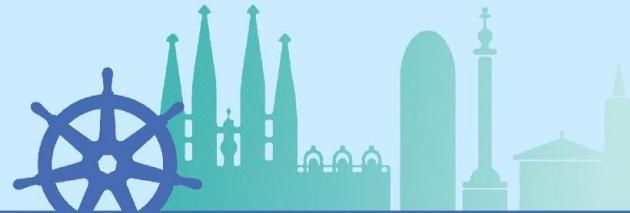
# Member

Active contributor to the project  
Sponsored by two Reviewers

# Non-member Contributors

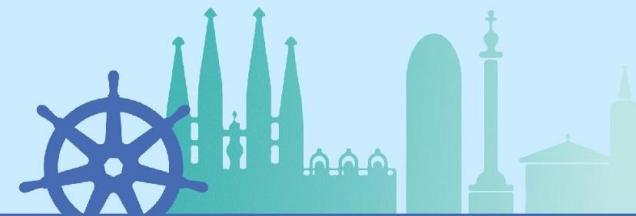
# Code Cleanup Demo

Use framework.ExpectEqual() for e2e tests



# Finding A Reviewer

- Follow Bot Prompts
- OWNERS file
- #pr-reviews on k8s Slack
- Ping Issue author
- [sigs.yaml](#) (Find leads and attend meetings)

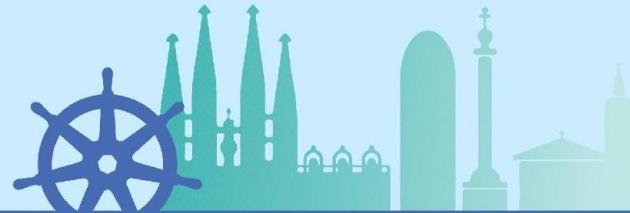
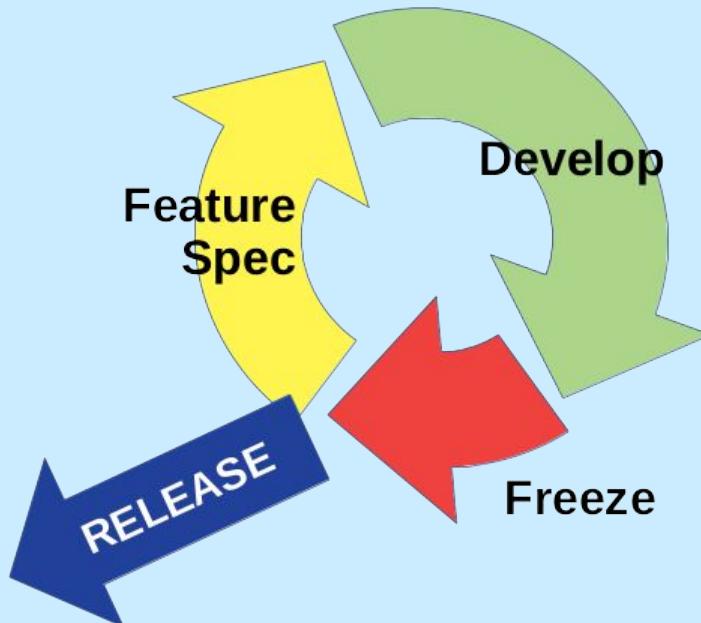




# Releases

Software has to leave home eventually

# The 3-month Release Cycle



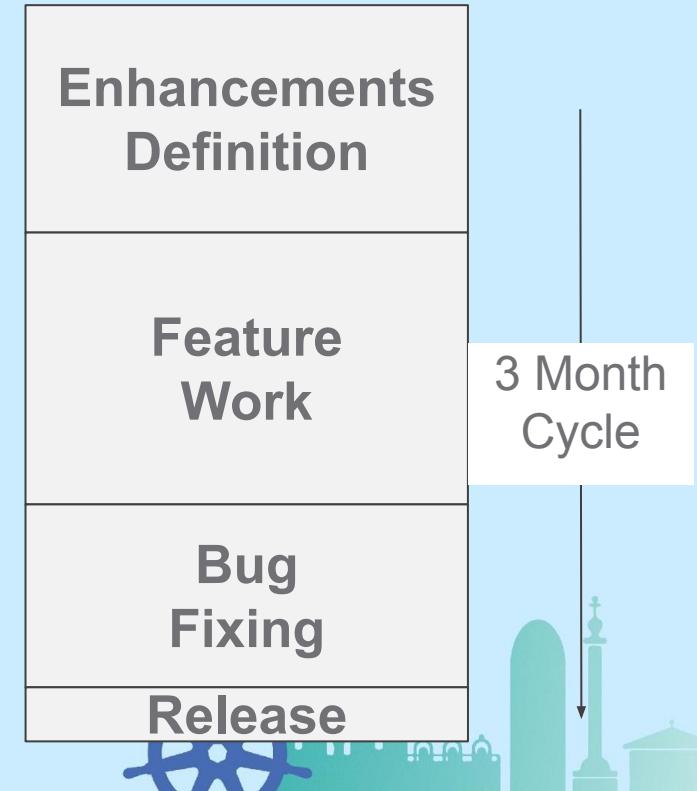
# Release Process

Enhancements Discussion (per SIG):      ongoing

Enhancements Freeze:                        week ~4

Release Branch Creation:                    week ~7

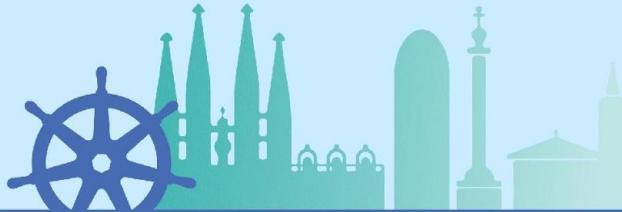
Code Slush / Freeze:                        week ~8



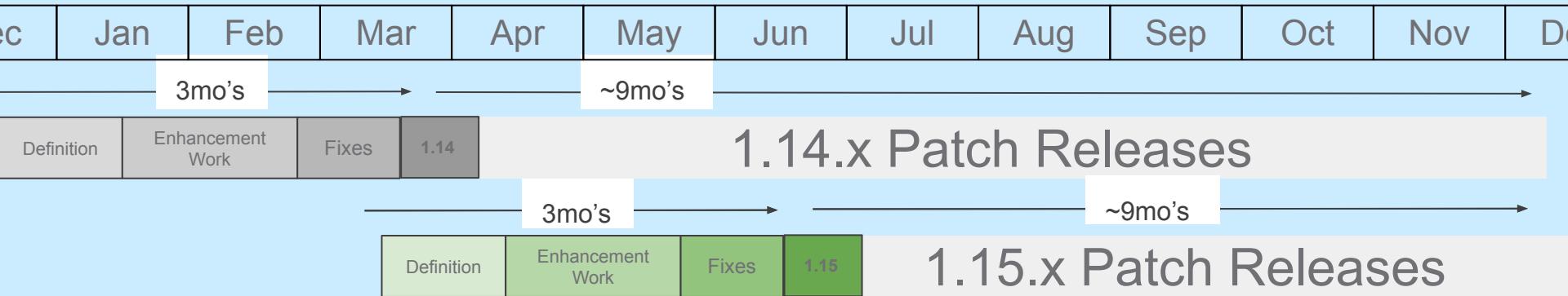
# Release Lifecycle



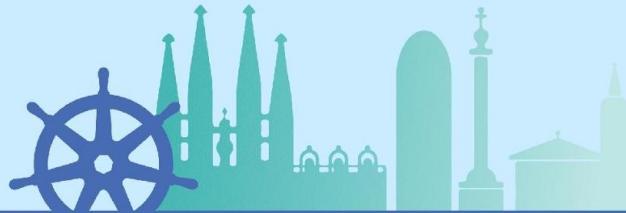
## K8s Releases



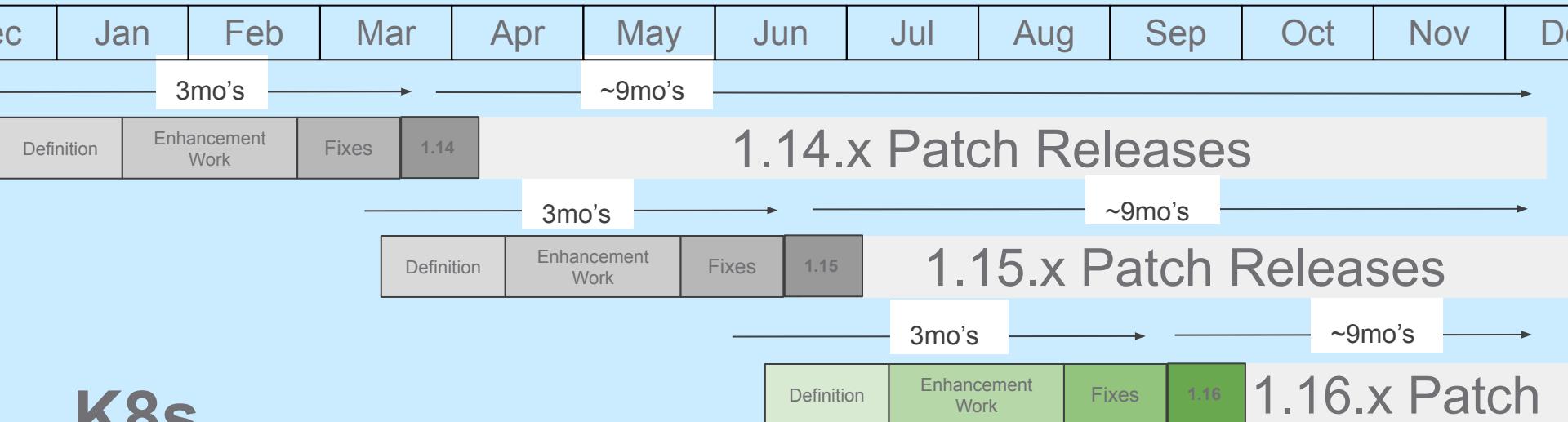
# Release Lifecycle



K8s  
Releases



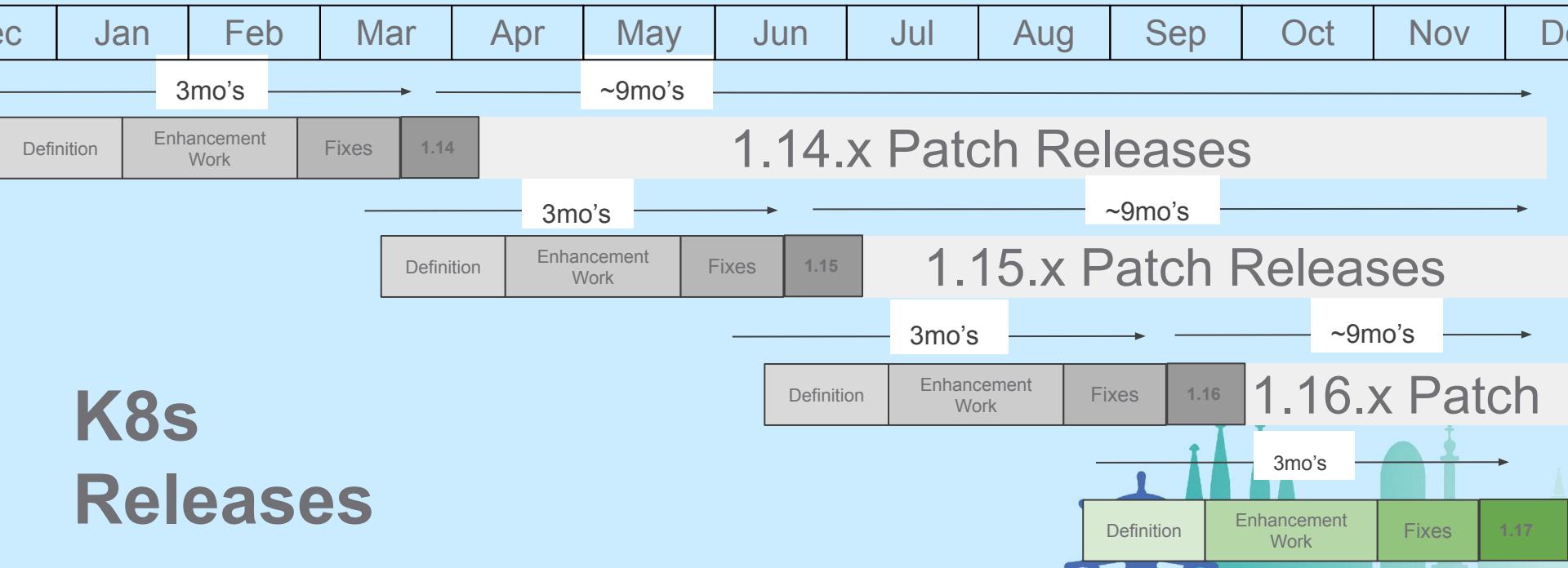
# Release Lifecycle



K8s  
Releases

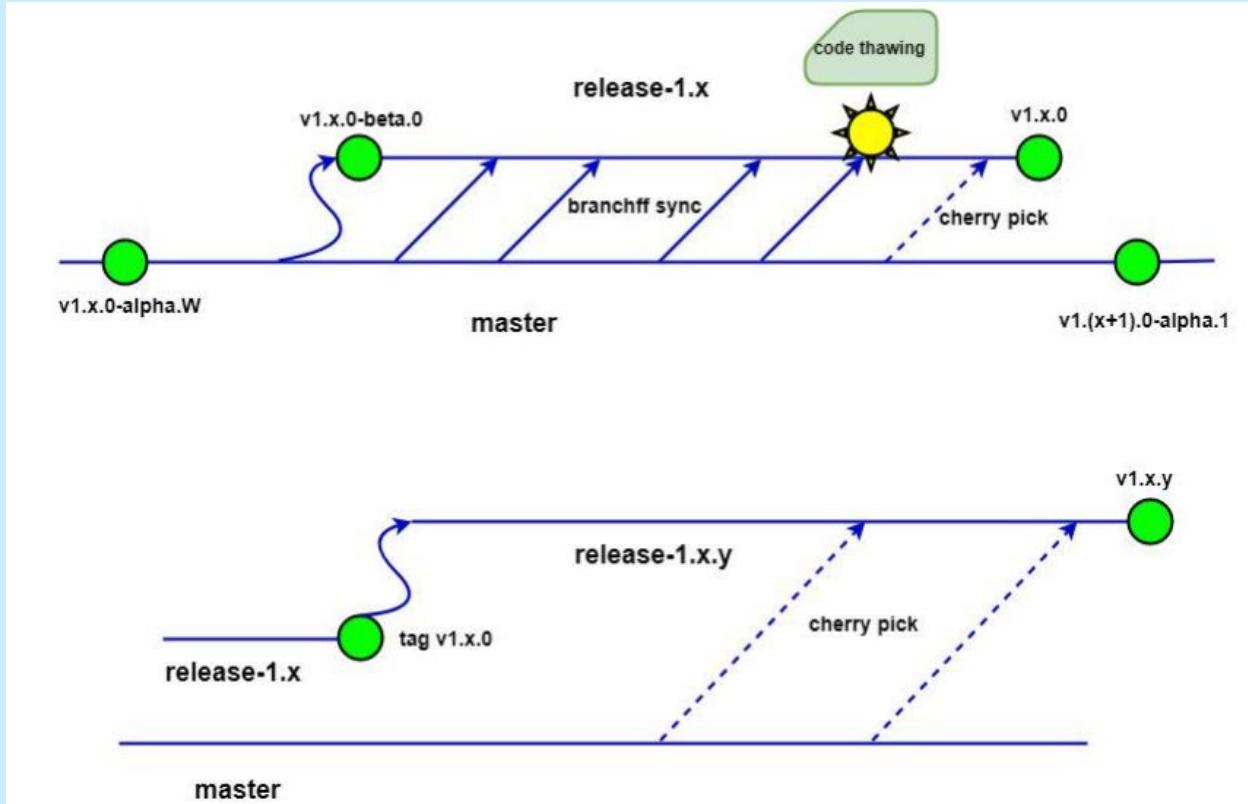


# Release Lifecycle



K8s  
Releases

# Branch Management





Thank you, and  
welcome aboard!



**END 201**



# SIG Meet-and-Greet

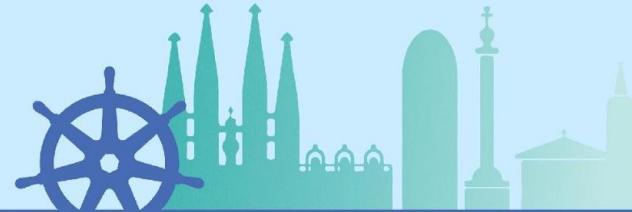


# Post-Workshop Resources

[Videos are available](#) (on Google Drive)

Also please reach out to Guin or Tim  
anytime:

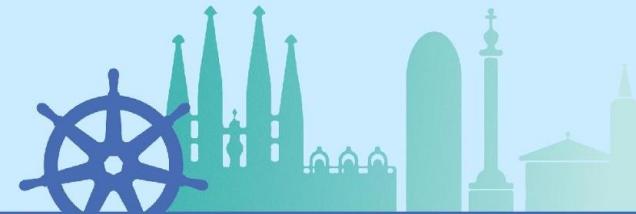
@gsaenger, @tpepper on k8s Slack  
@guincodes on twitter



# Hands-on

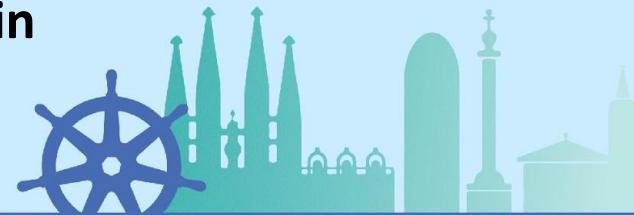
# Make Targets

- ‘make **WHAT=cmd/kubectl**’
  - build kubectl for your host OS/arch
- ‘**KUBE\_BUILD\_PLATFORMS=windows/amd64 \** make WHAT=cmd/kubectl’
  - build kubectl for windows/amd64
- ‘make help’: info on make targets



# Make Targets: Try it...build kubectl!

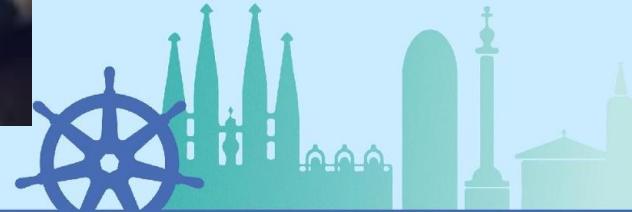
1. Edit cmd/kubectl/kubectl.go
2. Add a “hello world” print out in “func main()”, eg:  
`fmt.Println("Hello! Tokyo!")`
3. Build:                   **make WHAT=cmd/kubectl**
4. New binary?           **ls -al \_output/local/go/bin/kubectl**
5. Run your binary:      **cd .\_output/local/go/bin  
./kubectl version**



# Playground Exercise

Your turn!!!

<https://sigs.k8s.io/contributor-playground>



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# Playground Exercise

<https://sigs.k8s.io/contributor-playground>

1. Fork and clone
2. Make changes in “**cndt-2019**” directory
3. Pull request
4. Review/comment/rebase
5. Pay attention to labels and bot prompts

# Playground Exercise - Ask reviews

Ask reviews on #sig-contribex

@mkimura Please review

<https://github.com/kubernetes/kubernetes/pull/79695>

Reviewers list on k8s slack

@oomichi

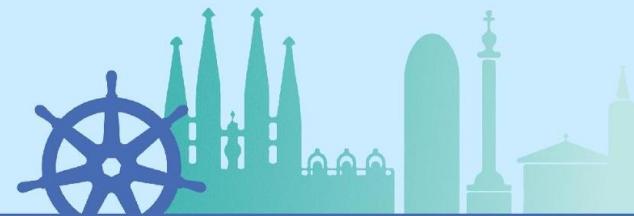
@akihito-inou(atoato88)

@Shu Muto

@mkimura

@s-ito

@toyoda



# Help Wanted: First PR Ideas

- Search for **good first issue** & **help wanted** issues
- Search by SIG & Area labels to match your interest
- Discuss at tables ideas for contributing

...carry this discussion into the SIG Meet & Greet