



- What's Knative?
- The Productivity WG
- Architecture and details
- Life of a PR ("demo")
- Q&A

Wait, what is this about?



- This is **NOT** about Knative
 - Tutorial
 - Knative Build
 - Deep Learning Inference
 - T-Mobile uses Knative
 - Knative Autoscaling
- This is **NOT** about Prow
 - Behind Your PR: How K8S use K8S to run K8S CI
- Tuesday's Intro session: <u>Knative Productivity BoF</u>



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Knative



- Knative is a Kubernetes-based platform
- Build, deploy, manage serverless workloads
- Provides middleware components
- For container-based applications

	Serverless Containers on GCF	GKE Serverless Add-on	SAP Kyma
Products	Pivotal Function Service	IBM Cloud Functions	Red Hat Cloud Functions
	riff	OpenFaaS	Jazz
	Knative		
Primitives	Build	Serving	Events
Platform		Kubernetes	



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Productivity WG 1/2



The **Productivity Working Group** mission is:

- Develop engineering guidelines
- Tools and infrastructure for Knative
- Enable high quality/velocity deliverables
- Drive measurable/predictable releases
- Achieve high community collaboration
- Achieve and overall productivity

Productivity WG 2/2



Why? Because Knative has...

- 12 repos
- 400+ users
- 160+ PRs per week
- ~60+ new issues per week

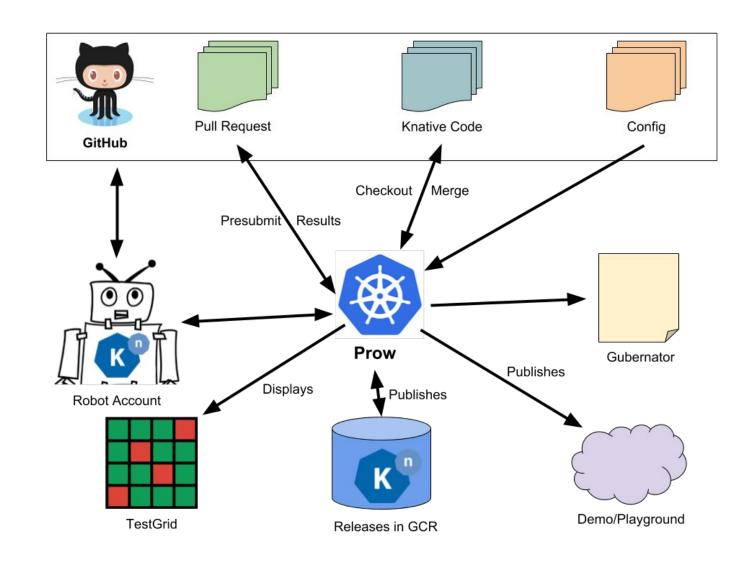


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Architecture







The basics



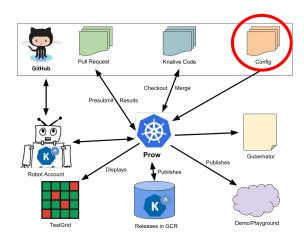
CI/CD system: the Kubernetes-based Prow

- Presubmit tests (required for merging)
- Automagic merging
- Continuous Integration (CI) flow (every 1 or 2h)
- Nightly releases
- Code coverage reports
- Weekly playground (optional)
- Performance tests (optional)

Prow config



- One job for each presubmit test
- Presubmit tests are required checks in GitHub
- Periodic jobs for dailies, nightlies, weeklies, etc.
- OWNERS files define approvers and reviewers
- Tide: /lgtm + /approve + passing tests = merge
- Boskos: pool of GCP projects for E2E



Prow config bonus: PR Dashboard





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PR Dashboard

View All | Me | adrcunha Switch User

Filter Milestone: Any Scaling: Robust E2E Autoscaling Tests Serving 0.3

Needs Attention (7) Clear Acks (6)

Repo	Number	Author	Status	▼ Updated	Assignees	Size	Title	
knative/docs	641	adrcunha	✓ LGTM	8:43 AM	RichieEscarez, labadav, vdemeester	XS	Fix my username :)	ACK
knative/serving	2665	mattmoor	✓ Needs Review	Dec 6	adrcunha, mattmoor, mdemirhan, srinivashegde86, tcnghia, vagababov, vaikas-google	L	Use regional clusters	ACK
knative/eventing-sources	121	grantr	× Needs Review	Dec 6	Harwayne, adrcunha, grantr, jessiezcc, vaikas-google	XXL	Add E2E test	ACK
knative/serving	2602	dushyanthsc	✓ Needs Review		adrcunha, dushyanthsc, evankanderson, jessiezcc, knative-prow-robot, srinivashegde 86 , steuhs	L	Moving envvars_test from e2e to conformance	ACK
knative/test-infra	296	adrcunha	✓ LGTM	Dec 5	srinivashegde86	M	Rename release jobs to "nightly-release" for clarity	ACK
knative/pkg	143	greghaynes	✓ Needs Review	Dec 5	adrcunha, jessiezcc	M	Add static endpoint override to test/spoof	ACK
knative/build-pipeline	311	adrcunha	✓ LGTM	Dec 5	ImJasonH, vdemeester	L	Update test-infra to include latest features of release.sh	ACK

Incoming (10)

Repo	Number	Author	Status	▼ Updated	Assignees	Size	Title
knative/serving	2665	mattmoor	✓ Needs Review	Dec 6	adrcunha, mattmoor, mdemirhan, srinivashegde 86 , tcnghia, vagababov, vaikas-google	L	Use regional clusters
knative/eventing-sources	121	grantr	× Needs Review	Dec 6	Harwayne, adrcunha, grantr, jessiezcc, vaikas-google	XXL	Add E2E test
knative/serving	2602	dushyanthsc	✓ Needs Review	Dec 6	adrcunha, dushyanthsc, evankanderson, jessiezcc, knative-prow-robot, srinivashegde 86 , steuhs	L	Moving envvars_test from e2e to conformance
knative/pkg	143	greghaynes	✓ Needs Review	Dec 5	adrcunha, jessiezcc	M	Add static endpoint override to test/spoof
knative/serving	2190	Leon-Liangming	✓ Needs Review	Nov 29	Leon-Liangming, ZhiminXiang, adrcunha, dgerd, evankanderson, jonjohnsonjr, josephburnett, knative-prow-robot, mattmoor, tcnghia	XL	Support set user-defined port to queue-proxy
knative/eventing-sources	127	n3wscott	✓ LGTM	Nov 26	Harwayne, adrcunha, grantr, matzew, vaikas-google	M	Adding heartbeats source and receiver as a release-able component.
knative/serving	2170	josephburnett	✓ LGTM		adrcunha, bbrowning, josephburnett, knative-prow-robot, markusthoemmes, mattmoor, mdemirhan, srinivashegde86	M	E2E test restarting Autoscaler and Activator
knative/test-infra	217	tcnghia	✓ Pending	Oct 29	adrcunha, jessiezcc	XS	Experiment with increasing the max nodes to 4
knative/test-infra	213	mattmoor	✓ LGTM	Oct 25	adrcunha, srinivashegde86, steuhs	S	This moves the build of dep-collector into the Prow Dockerfile.
knative/eventing	453	greghaynes	✓ Pending	Sep 27	adrcunha, greghaynes, n3wscott, scothis, srinivashegde86	L	Enforce all code dirs have tests

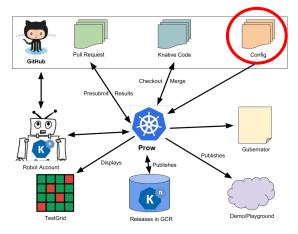
Outgoing (5)

Repo	Number	Author	Status	▼ Updated	Assignees	Size	Title
knative/docs	641	adrcunha	✓ LGTM	8:43 AM	RichieEscarez, labadav, vdemeester	XS	Fix my username :)
knative/serving	2526	adrcunha	✓ Pending	Dec 6	srinivashegde86, yanweiguo	XS	Temporarily set KO_DATA_PATH for E2E tests
knative/test-infra	296	adrcunha	✓ LGTM	Dec 5	srinivashegde86	M	Rename release jobs to "nightly-release" for clarity
knative/build-pipeline	311	adrcunha	✓ LGTM	Dec 5	ImJasonH, vdemeester	L	Update test-infra to include latest features of release.sh
knative/test-infra	254	adrcunha	✓ LGTM	Nov 13	ericKlawitter, jessjezcc, srinjvashegde86	XS	Fix getting commit hash for tagging

Needs Attention is a heuristic grouping based on a simple state machine. Use the "ACK" button to remove a PR from "Needs Attention" until something new occurs.

Have a problem? File a bug!

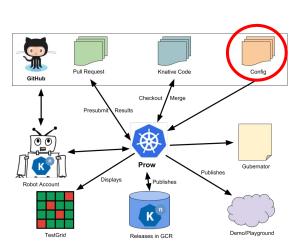
Gubernator's PR Dashboard



test-infra repo



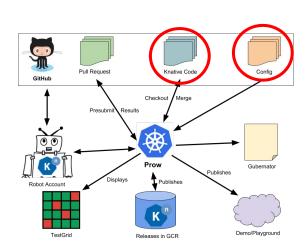
- Test infrastructure configurations
- Test infrastructure tools
- Shared code for tests
 - Frameworks are in the pkg repo
- Test-related tools
- Vendored in each repo
 - Pro: Avoid breakages
 - Con: Requires individual updates



Tests



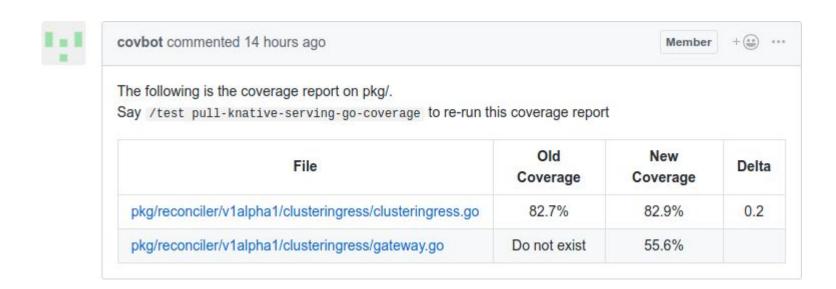
- At least build, unit, integration
- Starter in test-infra helpers (vendored)
- Repo-specific code in each repo (/test)
- Run locally or on Prow (presubmit, CI flow)
- Integration tests:
 - Use <u>kubetest</u> to provide k8s cluster
 - Conformance tests (separate display)
 - Too many? Too slow? Split (on Prow)

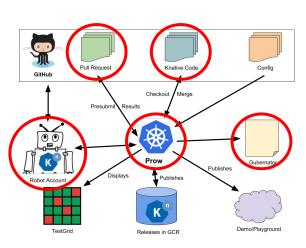


Coverage 1/2



- Code coverage
 - No support on Prow (yet)
 - Custom tool, reporting per PR and daily

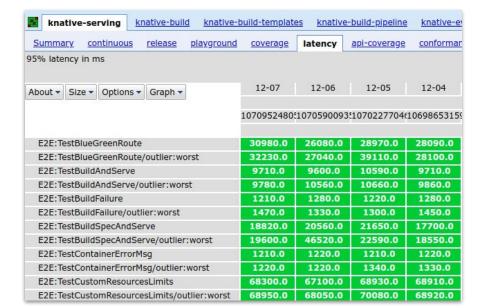


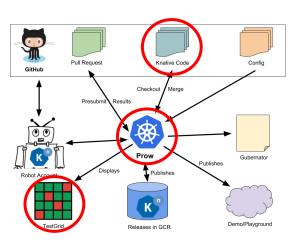


Coverage 2/2



- Runtime coverage support
 - Log metrics in the CI flow
 - API latency: embedded in E2E
 - API coverage: embedded in E2E

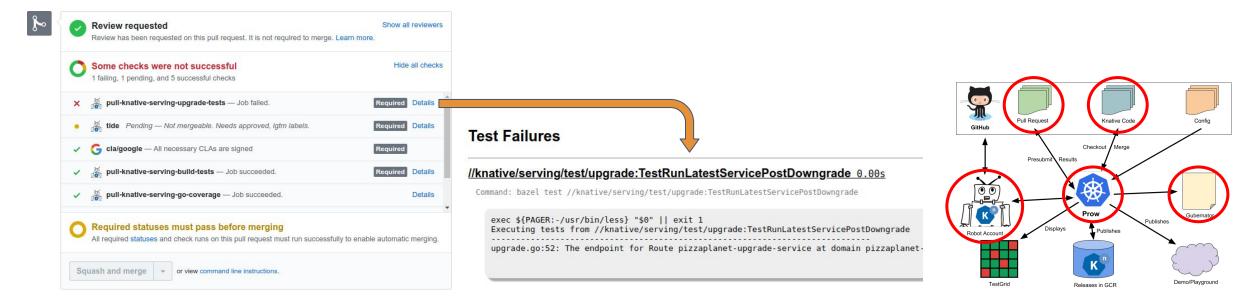




Presubmits



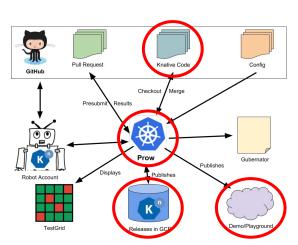
- Separate Prow jobs (at least 3)
- Required status check on GitHub
- Results displayed on Gubernator
 - No support for go, custom test result parser



Releases



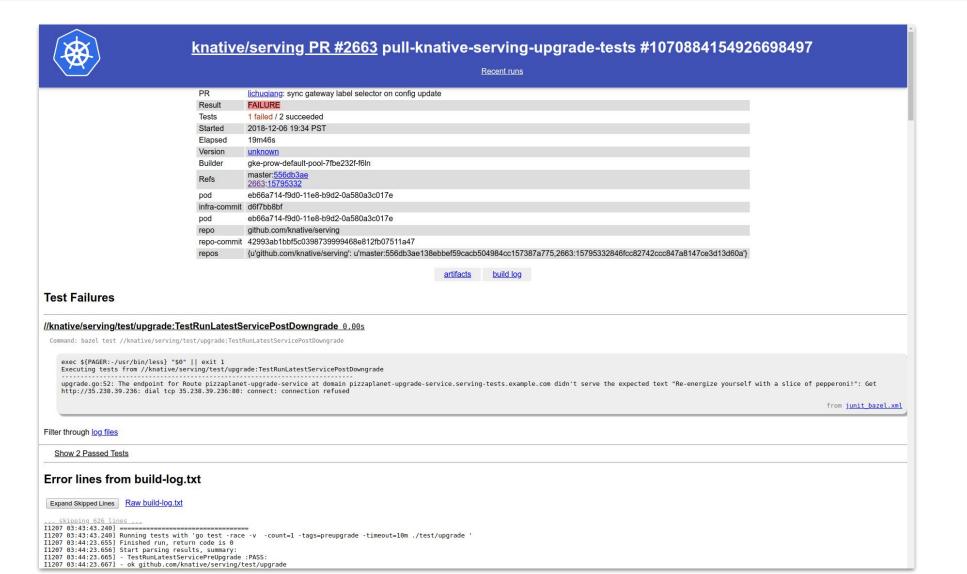
- Periodic Prow job
- Nightlies:
 - HEAD, all tests, build, publish (versioned)
 - tag images *v20181231-deadbeef*, *latest*
 - use separate dir in GCS (previous, latest)
- Playground: deploy latest nightly
- Display results in Testgrid

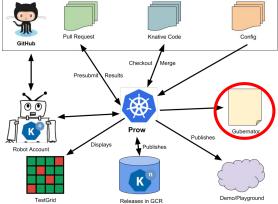


Results display 1/2: Gubernator









Results display 2/2: Testgrid

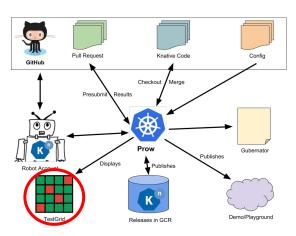




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- Pass/fail tests: go test parser
- Coverage: XML artifact contains results





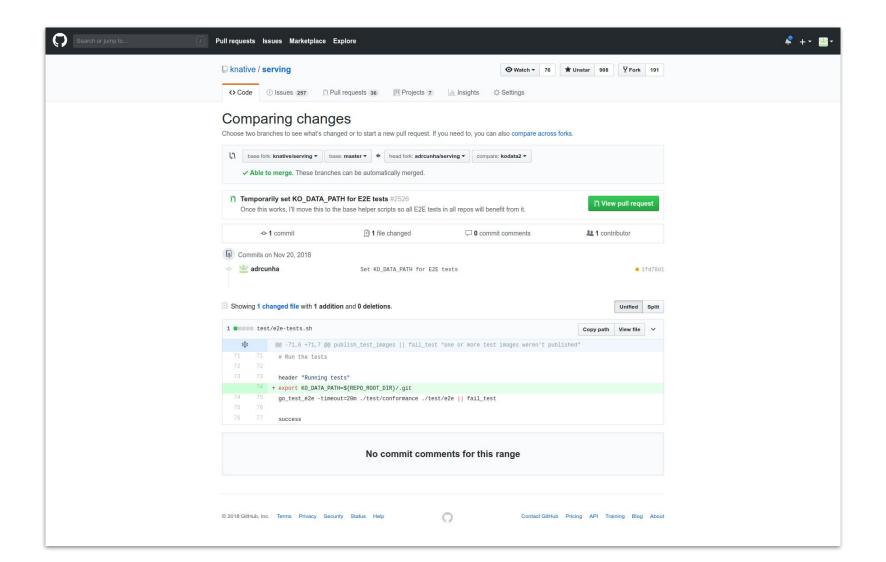


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Life of a PR 1/8: Create

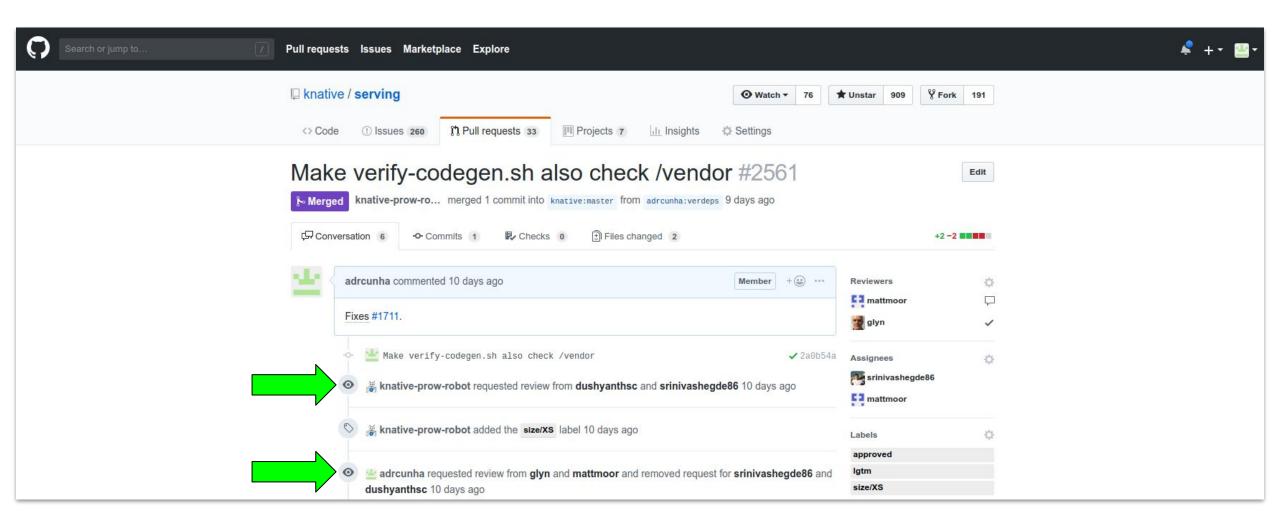






Life of a PR 2/8: Assignment



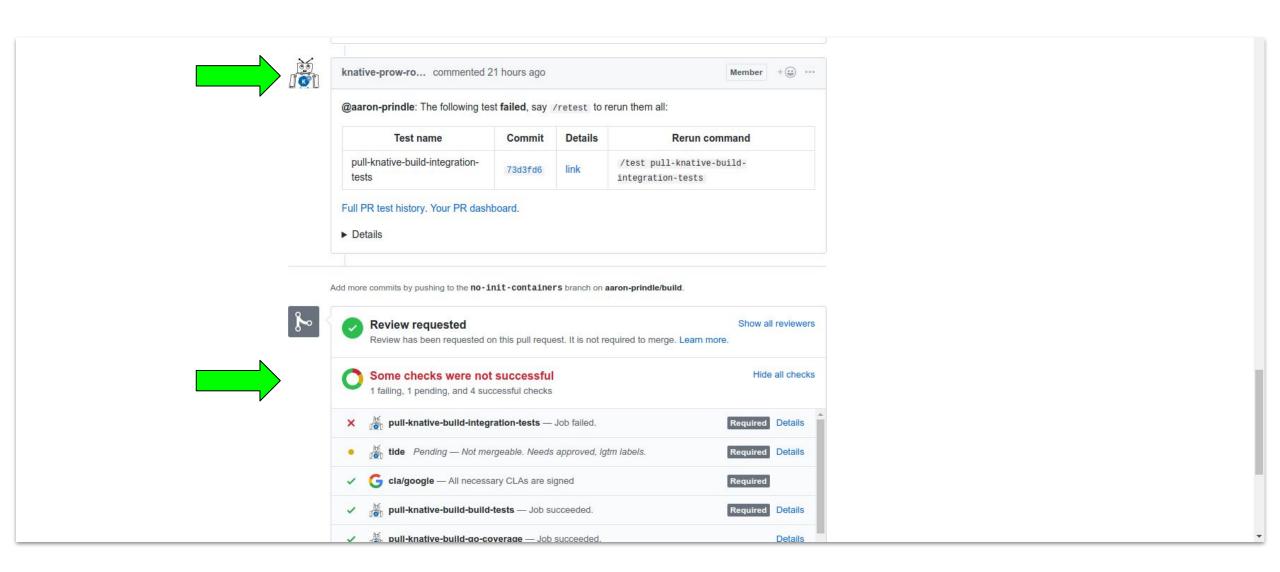


Life of a PR 3/8: Presubmit





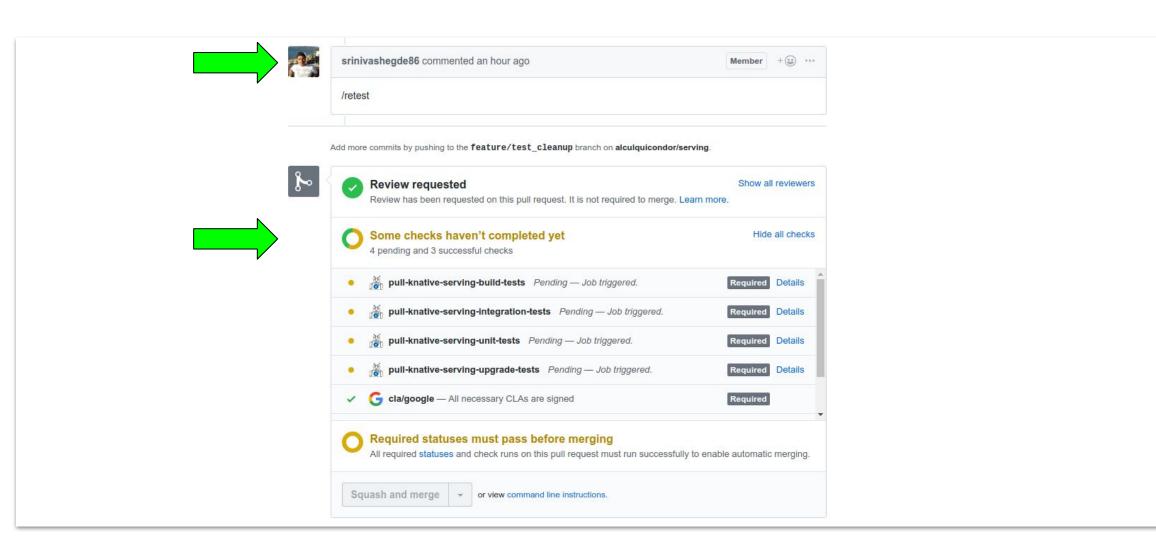
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Life of a PR 4/8: Retest







Life of a PR 5/8: Review





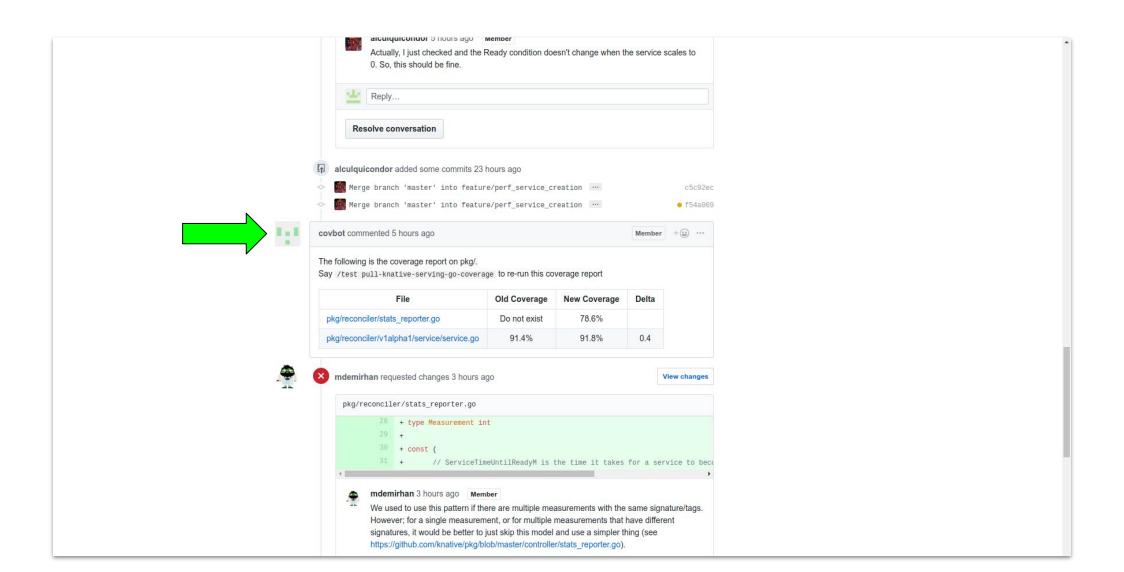
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63	mattmoor commented 20 hours ago	Member + ⊕ ···
	/test pull-knative-serving-upgrade-tests	Melliber 1 9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	mdemirhan commented 3 hours ago	Member + 😀 ···
-	@yanweiguo @akyyy The tests are finally passing. Please take a look and let redback.	ne know if you have more
1	akyyy reviewed 2 hours ago	View changes
	cmd/controller/main.go	
	QQ -192,6 +193,8 QQ func main() { 192 193 193 194	logging.UpdateLevelFromCo
	akyyy 2 hours ago Member In this file, you need to load volume "etc/config-observability" and controller yaml file?	add that mount path in
	eply	
	Resolve conversation	

Life of a PR 6/8: Coverage







Life of a PR 7/8: LGTM





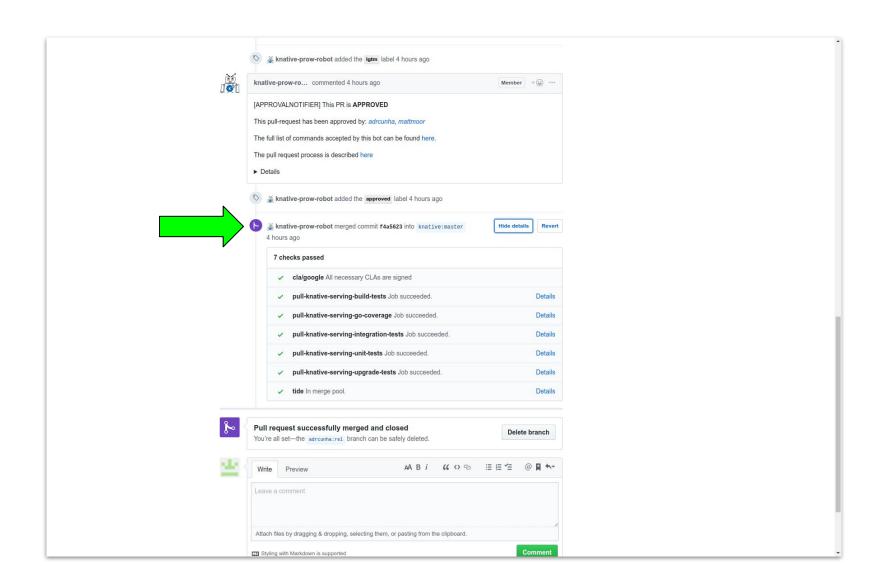
mattmoor reviewed 10 days ago	View changes	Projects 🖒	
/lgtm /approve		None yet Milestone No milestone	
knative-prow-robot assigned mattmoor 10 days ago		Notifications	
knative-prow-robot added lgtm approved labels 10 days ago glyn approved these changes 10 days ago	View changes	because you were mentioned. 5 participants	
LGTM, thanks!		Lock conversation	
knative-prow-ro commented 10 days ago [APPROVALNOTIFIER] This PR is APPROVED	Member + 😟	Allow edits from maintainers. Learn more	
This pull-request has been approved by: adrcunha, glyn, mattmoor The full list of commands accepted by this bot can be found here. The pull request process is described here			
► Details			

Life of a PR 8/8: PR merged





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