KubeCon
CloudNativeCon
North America 2018
Intro Knative
Productivity BOF

Agenda

- What is Knative?
- Knative Productivity
- Tools
- Q&A

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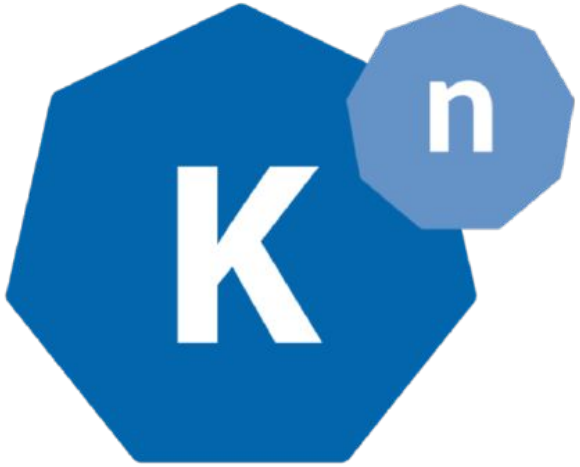
Knative



- Building blocks for serverless on kubernetes
- Set of primitives(build, serving, eventing,...)
- Designed with different personas in mind
- Collaboration with multiple partners.
- 12 repositories
- >400 users

https://github.com/knative/docs

Agenda

- What is Knative?
- **Knative Productivity**
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Knative Productivity Basics

Knative Productivity Leads

- Jessie Zhu(@jessiezcc)
- Adriano Cunha (@adrcunha)

Bi-weekly meetings:

- Thursday’s @2.30pm PST

Knative Productivity

Develop engineering guidelines, tools and infrastructure for Knative community to enable ***high quality*** *and* ***high velocity*** *deliverables, to drive* ***measurable and predictable releases****, and to achieve* ***high community collaboration*** *and overall productivity.*

Test Health

Fast presubmits, Attack Flakiness,
Reduce toil & Improve debuggability

Release Health

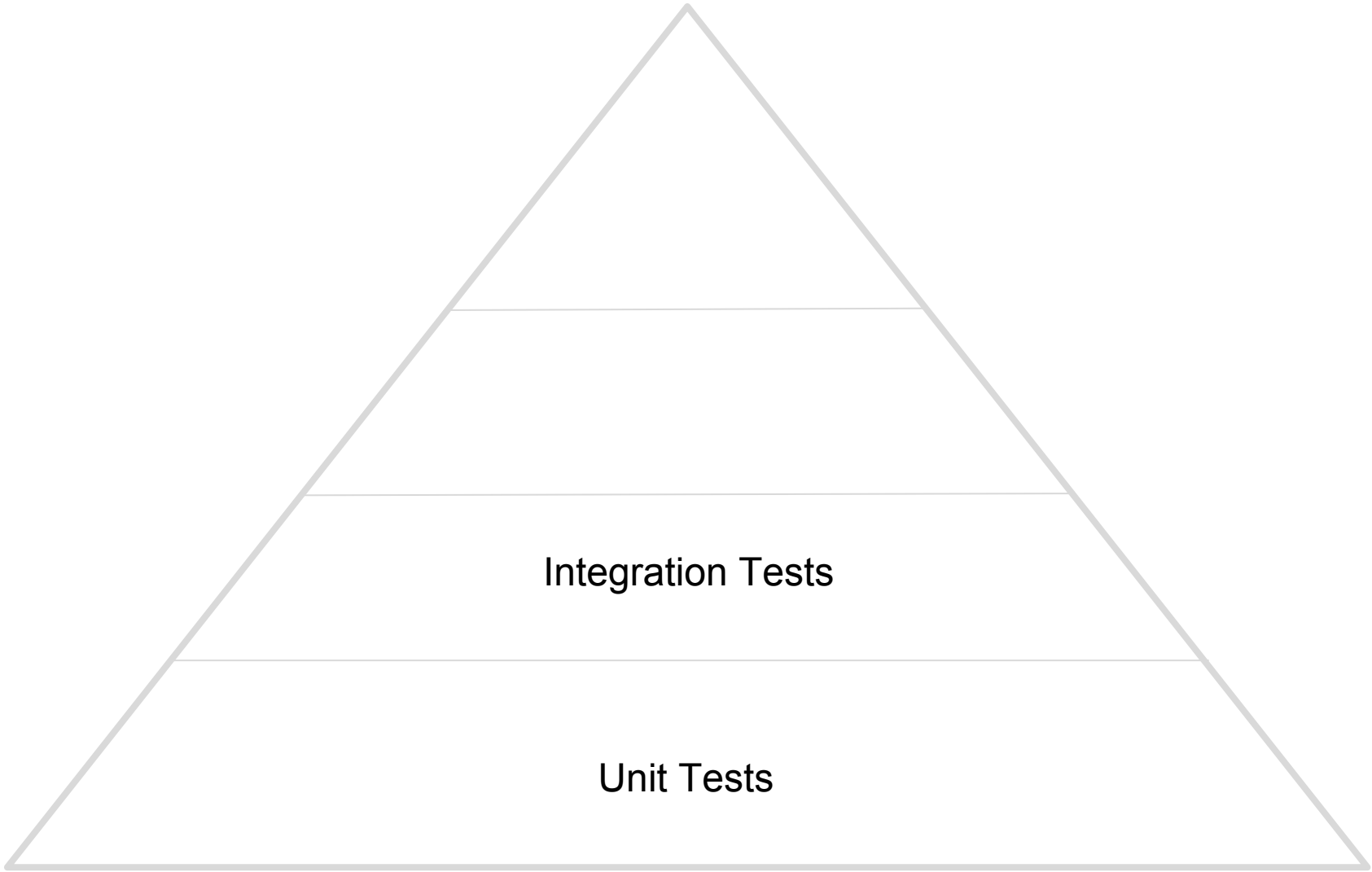
Improve release automation,
handle versioning

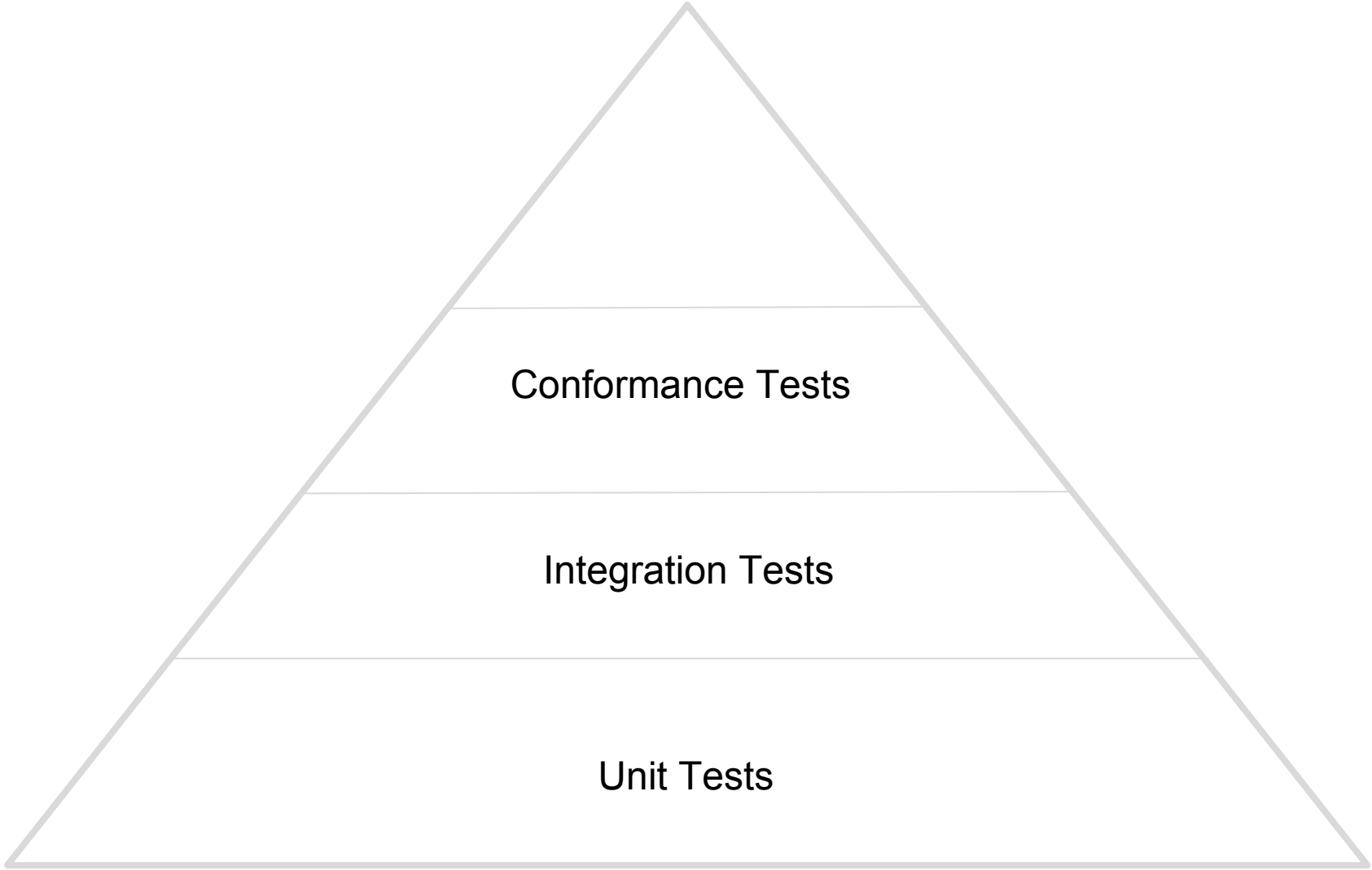
Metrics

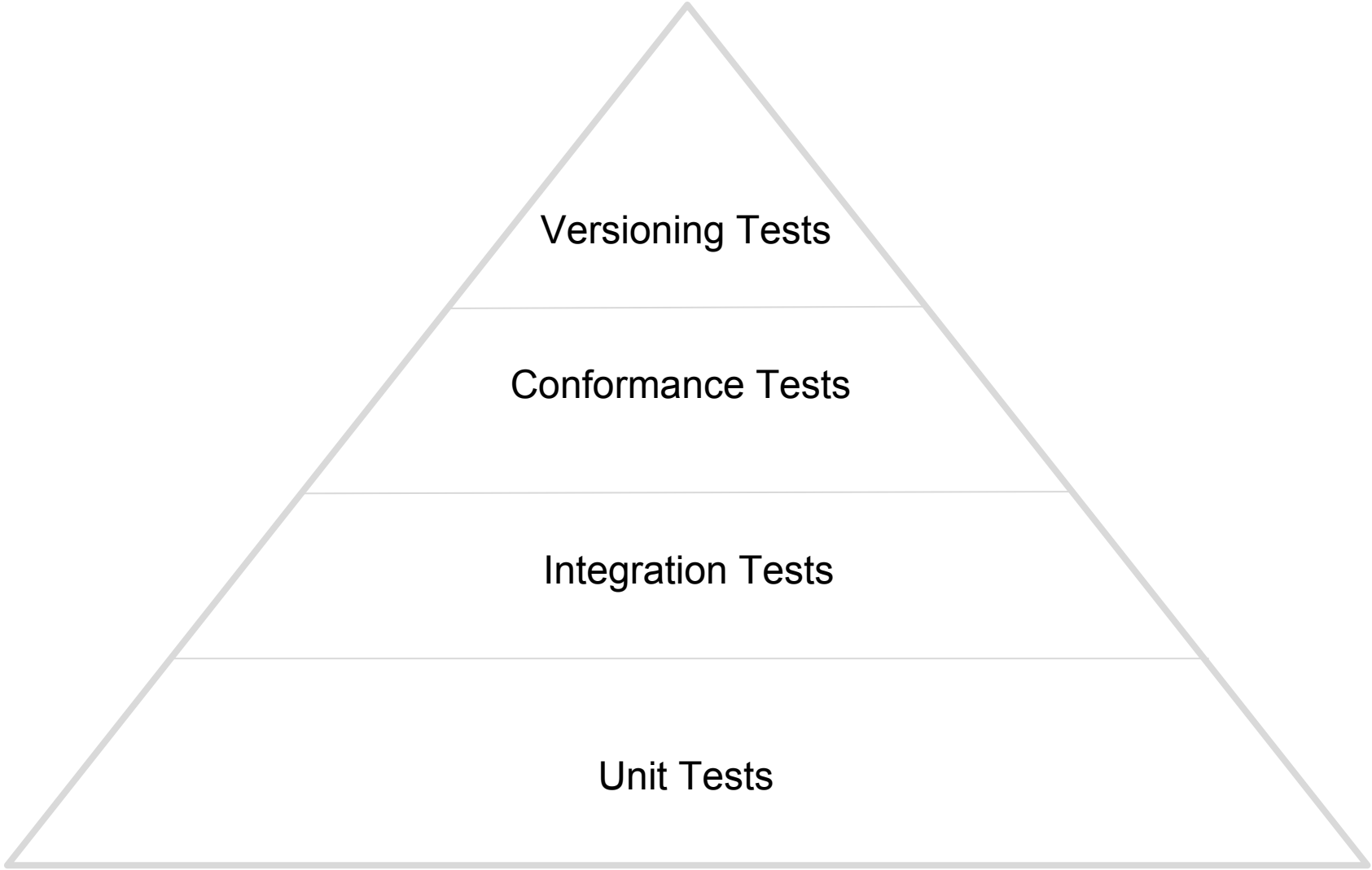
Provide insightful and
actionable metrics

Performance

Enable contributors to run performance tests
and see regressions


Integration Tests
Unit Tests


Conformance Tests
Integration Tests
Unit Tests


Versioning Tests
Conformance Tests
Integration Tests
Unit Tests

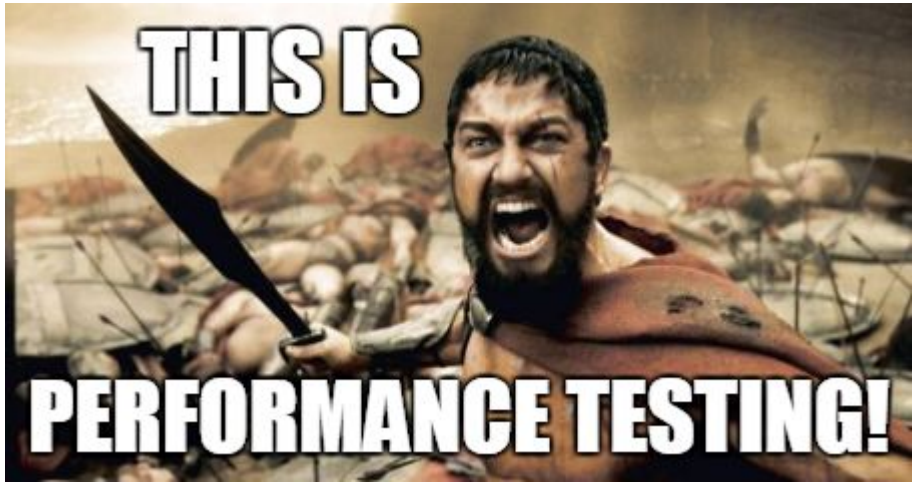
Release Health

- Hourly job to run all tests
- Nightly job to push latest code to a nightly environment
- Weekly job to push latest code to a weekly environment
- Well defined release cadence for all primitives

Source

Performance

- Test Type:
  - Black box
  - White box
- Test Cadence:
  - Presubmit
  - Nightly
- Test components:
  - Load generator
  - Benchmarking



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Metrics

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Metrics

- Test Health Metrics
  - Flakiness
  - Code Coverage
  - Time to run
  - Resources required
- Release Health metrics
  - Pass rate
  - Test flakiness

Metrics

- Performance metrics
  - Latency
  - 0 -> 1 scaling
  - 1 -> 0 scaling
  - 1 -> 1000 scaling
- Server metrics
  - Controller metrics
  - Pod metrics
  - Autoscaler metrics

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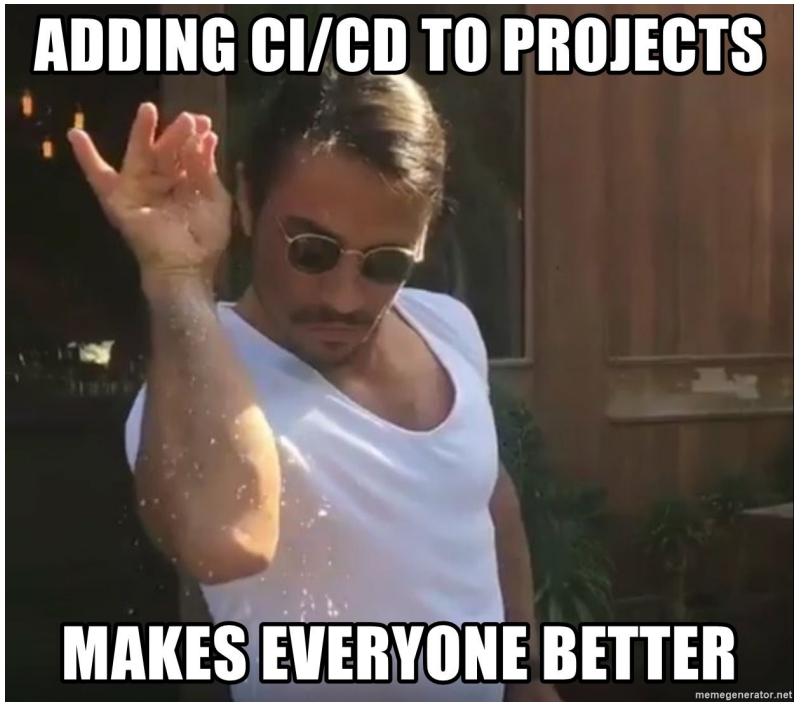
CI/CD

- Maintain presubmit and postsubmit workflows to gate the quality of code check-in.
- Maintain quality of release
- Define and implement release criteria and process
- Run unit, build, E2E and conformance tests
- Get output logs and metrics from tests



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CI/CD - Prow

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- k8s first CI/CD solution.
- Battle tested with k8s
- Easy to configure
- Easy to extend
- Handles all the plumbing

Load Generator

- Simple golang library to integrate with knative
- Provide all data points from the response
- Advanced features like latency calculation and charting helpful

Fortio

- Can run at fixed QPS, not just max
- Fortio is not only a load generation tool but also a server, that lets you test proxies and ingresses
- Can generate standard go tls and http2 in addition to optimized http1.1. (Also grpc)
- Fortio is also a go library, you can integrate it easily in your go code/tests.
- Provides charting capabilities with histogram data and all data points.

Dashboards

- Monitoring in place to monitor the health of workflow and infrastructure themselves
- Monitor all releases and for all repos
- Monitor test health and measure flakiness
- Alerting when thresholds are not met.

Testgrid

- Grid view of the metric and the status
- Can be expanded to show the exact value of the metric
- Has some charting capabilities to show trends in the metrics
- Battle-tested with k8s

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Deep Dive Session

Thursday 4:30-5:05pm: Deep Dive: Knative Productivity BoF

Knative Talks

- **Tuesday, Dec 11**
  - **3:40pm-5:05pm:** Tutorial: Getting Your Hands Dirty with Knative
- **Wednesday, Dec 12**
  - **10:50–11:25am:** Building Container Images on Your Kubernetes Cluster with Knative Build.
  - **3:40–5:05pm:** Tutorial: Getting Your Hands Dirty with Knative.
- **Thursday, Dec 13**
  - **10:50–11:25am:** How to Build Deep Learning Inference Through Knative Serverless Framework.
  - **1:45-2:20pm:** T-Mobile Store Locator Serverless Journey with Knative and Kubernetes.
  - **2:35-3:10pm:** Knative: Scaling From 0 to Infinity.
  - **4:30-5:05pm:** Birds of a Feather: Knative.

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