dailymotion

Collecting and visualizing Continuous Delivery Indicators

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About me

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Topic

Collecting and visualizing Continuous Delivery Indicators

In a Kubernetes-based CI/CD platform, using Jenkins X, Lighthouse, Tekton, PostgreSQL and Grafana.

- Why
- What
- How

Why?

- It’s not « just » CI anymore…
- CD defines how fast you bring value to the business

Jaana Dogan ヤナ ドガン
@rakyll

Your CI/CD pipelines are a part of your production story. Observability for CI/CD is observability for a critical prod component.

1:24 AM · Dec 22, 2020 · Twitter Web App

Why?

- What’s the performance of your CD platform?
- How do you know if it’s slow or broken?
- ”If you can’t measure it, you can’t improve it”

Rick Branson
@rbranson

Observability is putting temperature probes in the turkey *before* you put it in the oven, monitoring is checking it every 20 minutes with your fingers.

10:40 PM · Dec 25, 2020 from Yucca Valley, CA · Twitter for iPhone

What?

- What should we measure?
- Devs
  - Build duration
  - Build failure rate
- Ops
  - Deployment failure rate
  - Time to recover
- Product
  - How long before it’s in prod?

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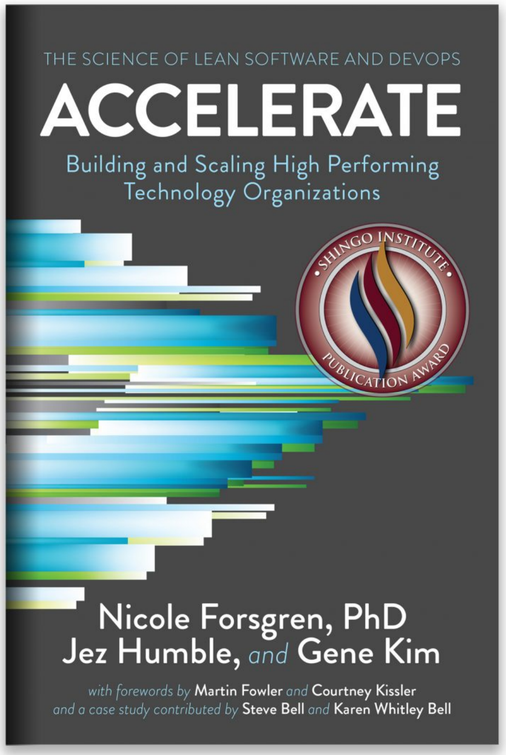
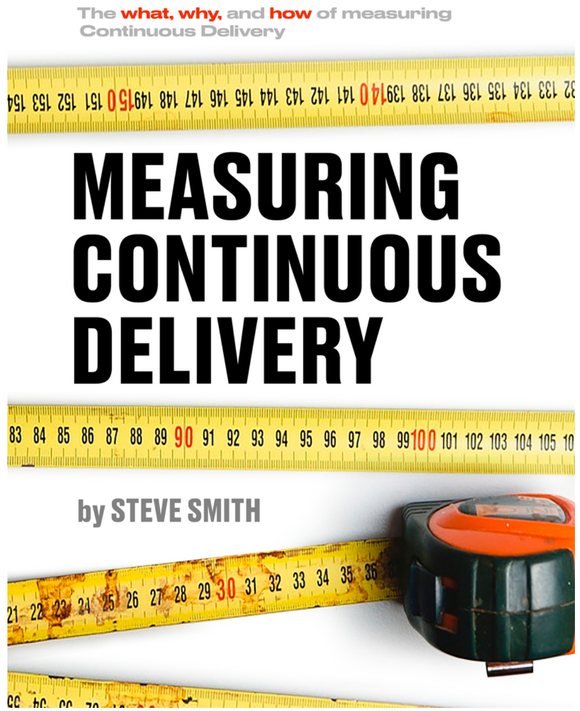
Standards





Throughput

- Mean Lead Time
  - How long for a commit to go to production
  - 1 day, 1 week, 1 month, 6 month
- Deployment Frequency
  - How often you deploy code to production
  - On demand, 1 per week, per month, 6 months

Stability

- Mean Time To Recover
  - How long to restore the service
  - 1 hour, 1 day, 1 week/month
- Change Failure Rate
  - % of change resulting in service failure

Standards

- Why use them?
  - DORA « DevOps reports »
  - Elite, high, medium, low performance teams
- How should we use them?
  - Automatic collection of metrics
  - Requires a very precise definition
  - Use them to improve your
    - Process / workflow
    - Tools

How?

- Define your CD Indicators
- Collect them
- Build visualizations
- Setup alerting

Define your CD indicators

- Focus on actionnable indicators
- Based on your:
  - Process / workflow
    - Code review?
    - QA / manual validation?
    - Continuous Deployment?
    - Feature flags?
  - Tools

Our own indicators

- Wiki
- Based on our GitOps workflow
- For each indicator:
  - Clear definition
    - Start / end
  - Dimensions
    - Application, Environment, ...
  - Actions
    - If exceed a threshold
  - How to collect
    - System/event to watch

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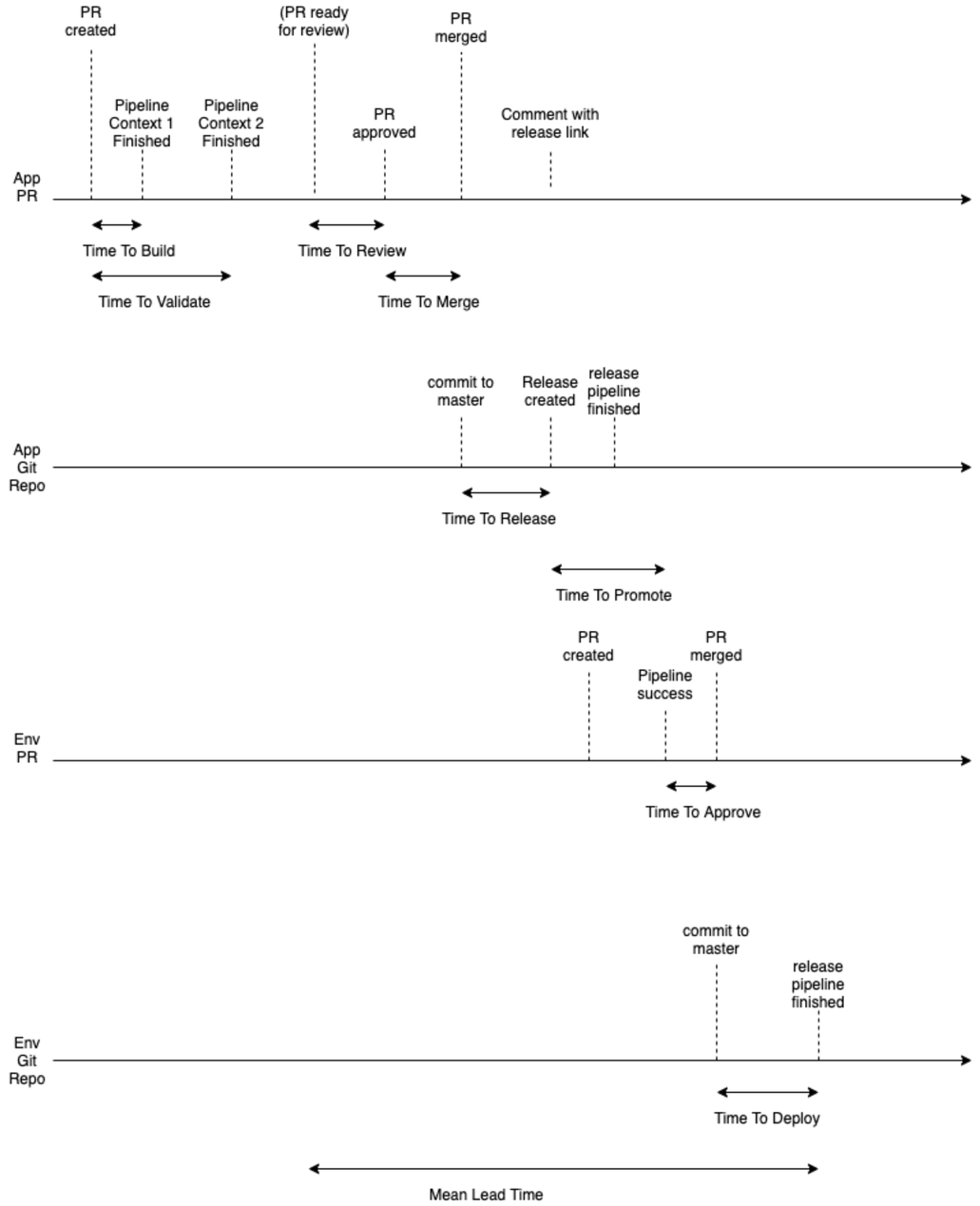
Our own indicators



Our own indicators

- Mean Lead Time:
  - PR ready for review => deployed in prod
  - Use GitHub events
  - Actions: ?
- Time to review
  - PR ready for review => PR approved
- Time to release
  - Commit to master => Release created
- Time to promote
  - Release created => GitOps PR ready

Our own indicators

- Build Failure Rate
- Release Failure Rate
  - Release Failure Recovery Time
- Deployment Failure Rate
  - Deployment Failure Recovery Time
- …

Our stack

JENKINS X

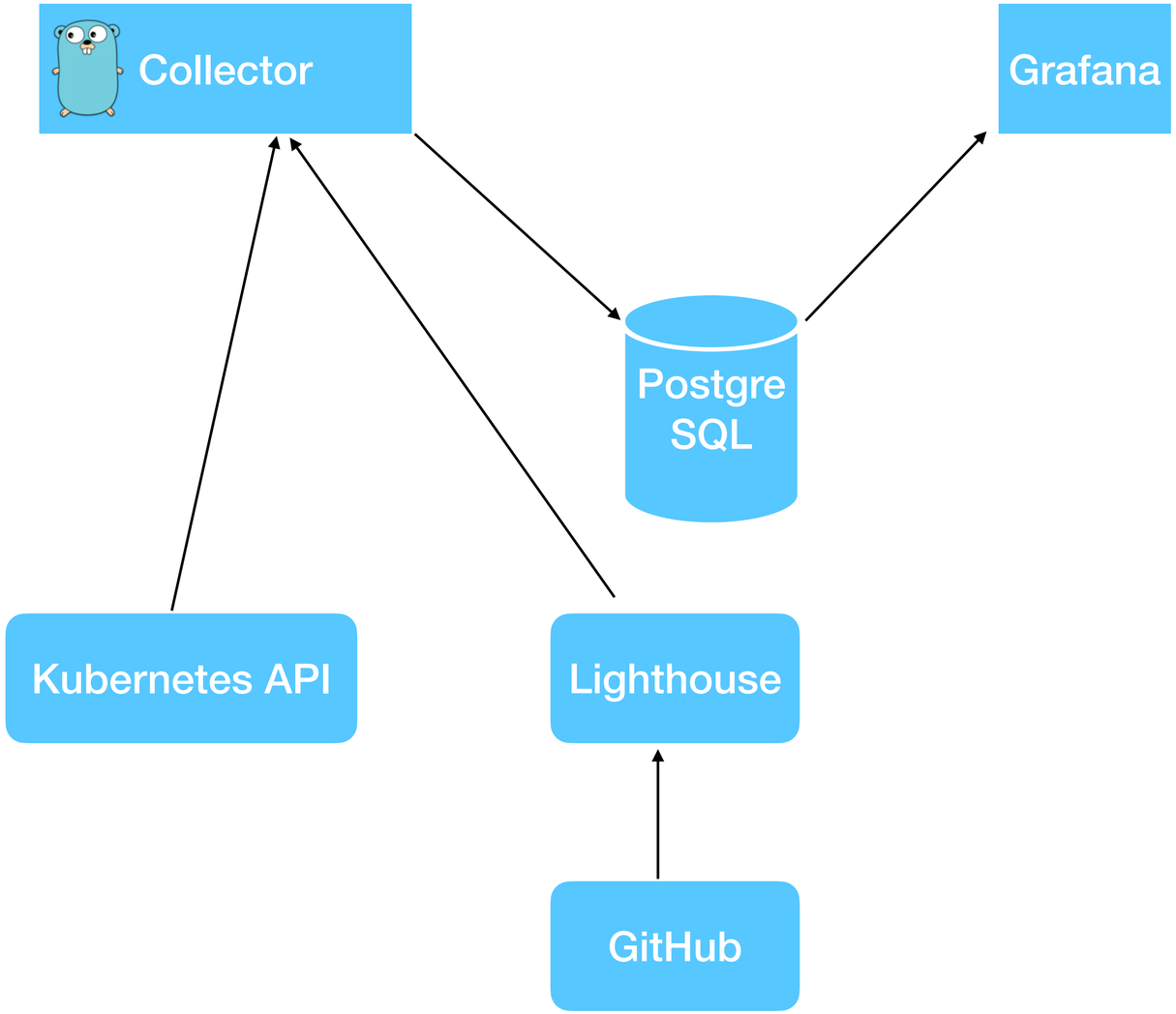
gitops

TEKTON

HELM

GitHub

Architecture



Collecting from Kubernetes

- Custom Resource Definition - CRD
  - Tekton
    - PipelineRun
  - Jenkins X
    - PipelineActivity
    - Release
- Kubernetes client-go

Collecting from GitHub

- GitOps
- GitHub WebHooks
  - Lighthouse Plugin
  - github.com/jenkins-x/lighthouse
  - Fork of Kubernetes' Prow
- Pull Request events
- Deployment events
  - DeploymentStatus
  - Pending, in progress, success, failure, inactive

Storing Data

- PostgreSQL
- Easy, powerful
- Integration with Grafana
- Raw data
  - Pipelines
    - Start, end, status, app, type, ...
  - Pull Requests
    - Repo, created, ready for review, merged...
  - Releases
    - Repo, commit time, release time, ...
  - Deployments
    - App, env, start, end, status, ...

Visualization

- Grafana
  - Time series
  - Time range, global variables, ...
- Dashboards packaged in Helm charts
- 1 dashboard per team / app / repo

Alerting

- Make it useful!
  - Define indicators thresholds
  - Take action
- Grafana
  - Per-panel (graph) rules
  - Slack
  - Webhook

Conclusion

- Invest in your CD platform
  - It should be an enabler
  - Do it early
- Continuous improvement
  - Take action
- Modern workflows / tools
- Open-source

Thank you!