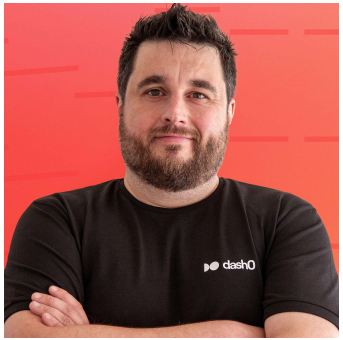
Instrumentation Score

The Difference Between Telemetry and Good Telemetry

#KubeCon #CloudNativeCon

Hi!



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- OTel Governance Committee
- Organizer OTel Night Berlin
- Telemetry Drops
  - LinkedIn
  - YouTube

Agenda

- Telemetry
- Bad Telemetry
  - Examples
- Instrumentation Score
  - Spec overview
  - Rule structure
  - Examples
- Q&A

Day 1

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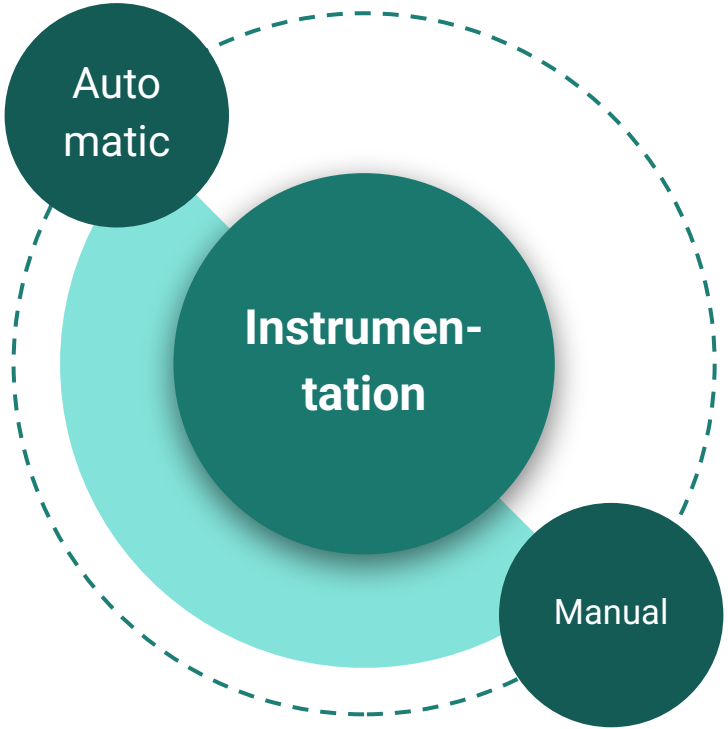
Day 1: OBSERVA…WHAT?

Day 1: How do we collect data?



Day 1

We have observability 🎉

Day 2

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Day 2

- Too much (bad) telemetry! 💸
  - Up to 90% of that is never used
  - Often contains things that should NOT be there (passwords! tokens! PII!)

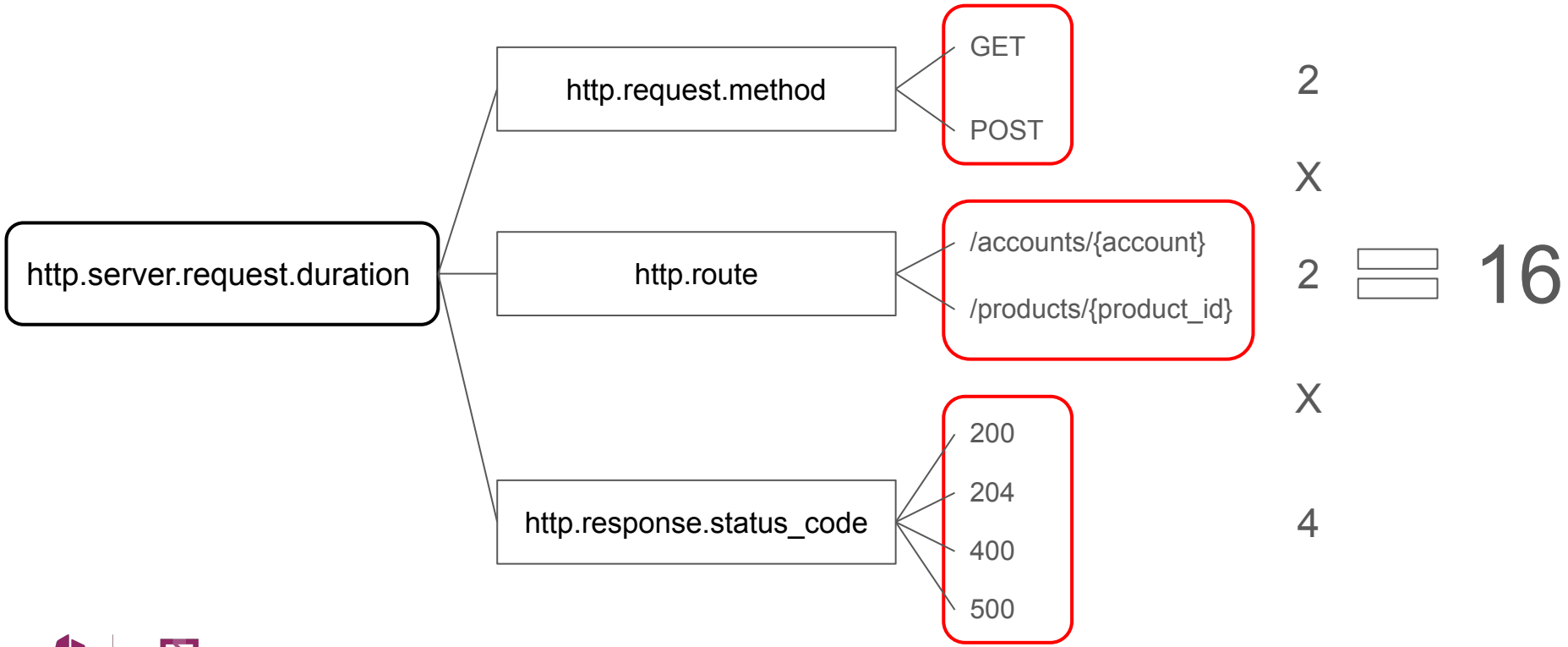
Day 2

Day 2

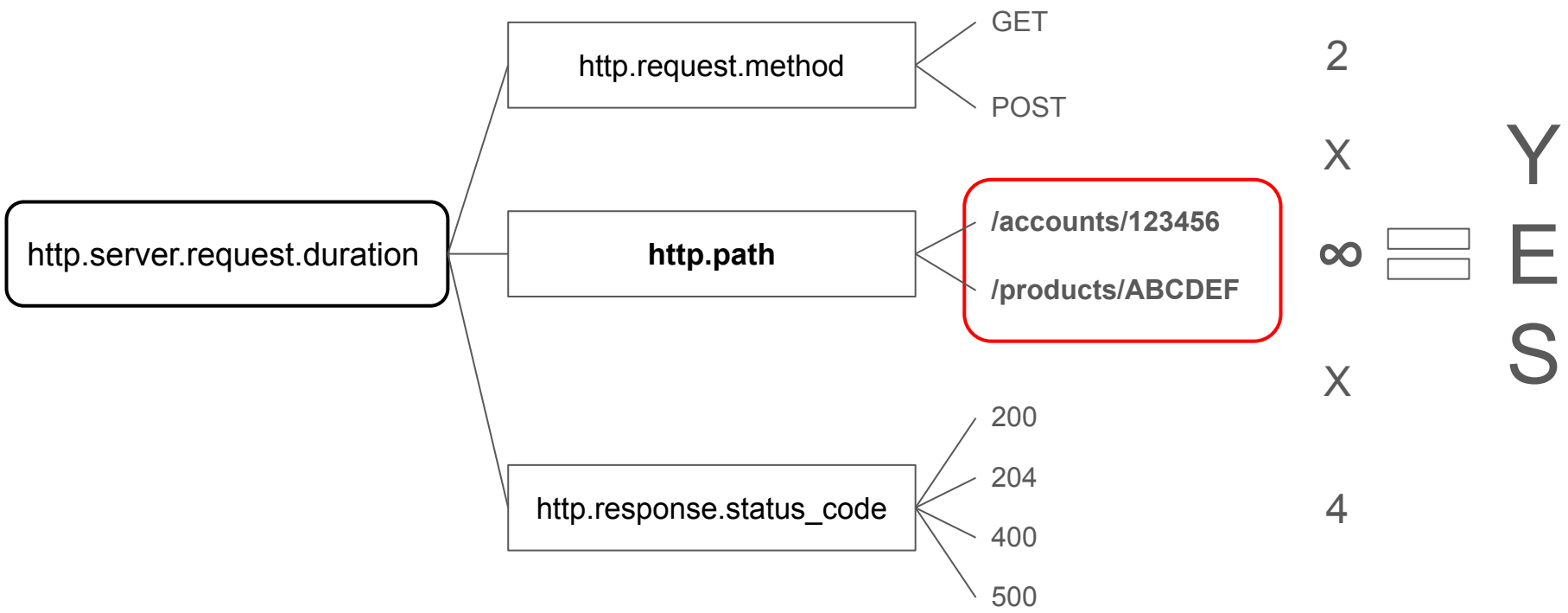
Are we doing this right? 🤔

Some classic issues with telemetry

Metrics cardinality



Metrics cardinality

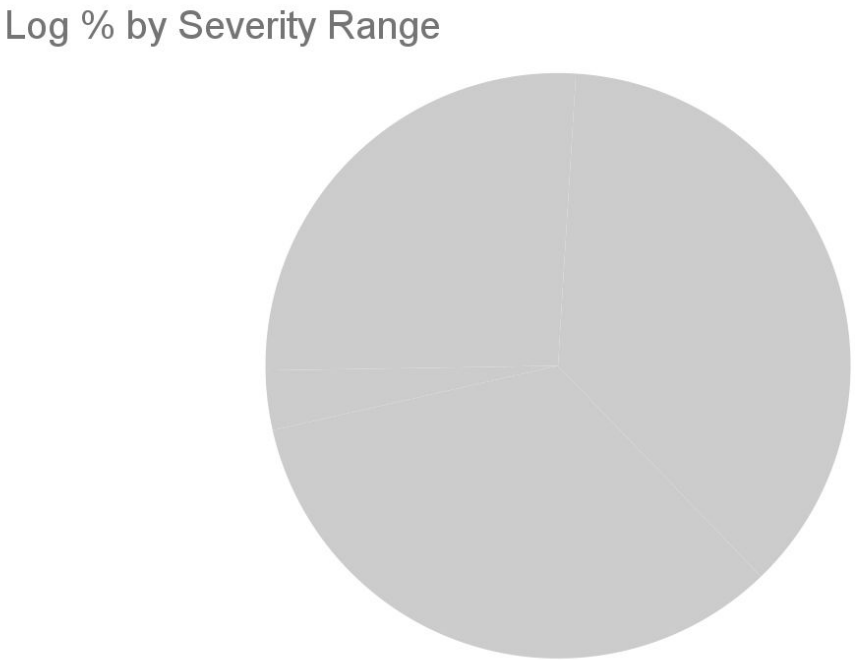


Meanwhile, your O11y bill…

Stale Debug Logs in Production

DEBUG | <SERVICE_NAME> | [Consumer clientId=REDACTED, groupId=REDACTED]
DEBUG | <SERVICE_NAME> | [Consumer clientId=REDACTED, groupId=REDACTED]
DEBUG | <SERVICE_NAME> | Completed 200 OK
DEBUG | <SERVICE_NAME> | Read "application/octet-stream" to []
DEBUG | <SERVICE_NAME> | Using 'application/vnd.spring-boot.actuator.v3+json', given [*/*] and supported [application/vnd.spr
DEBUG | <SERVICE_NAME> | Mapped to Actuator web endpoint 'health-path'

Stale Debug Logs in Production



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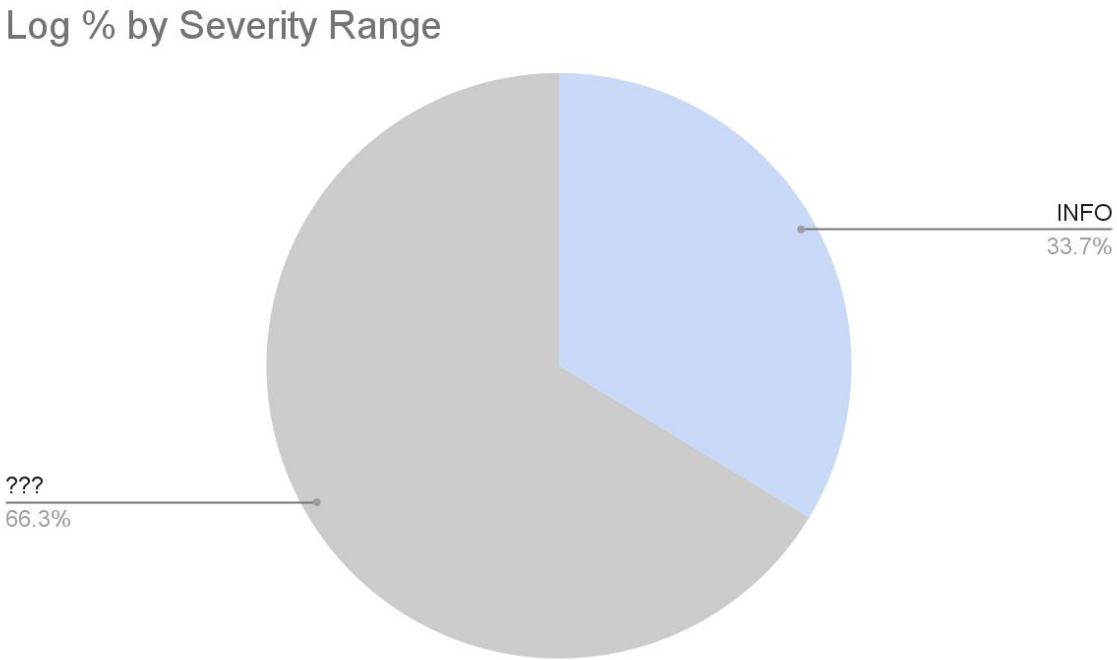

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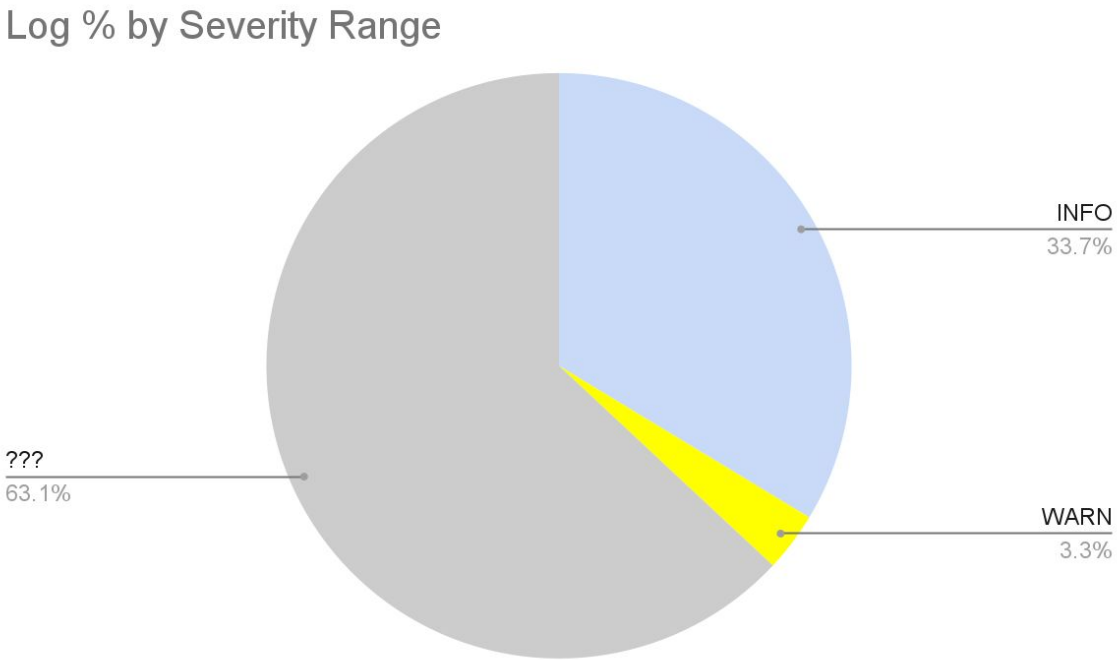

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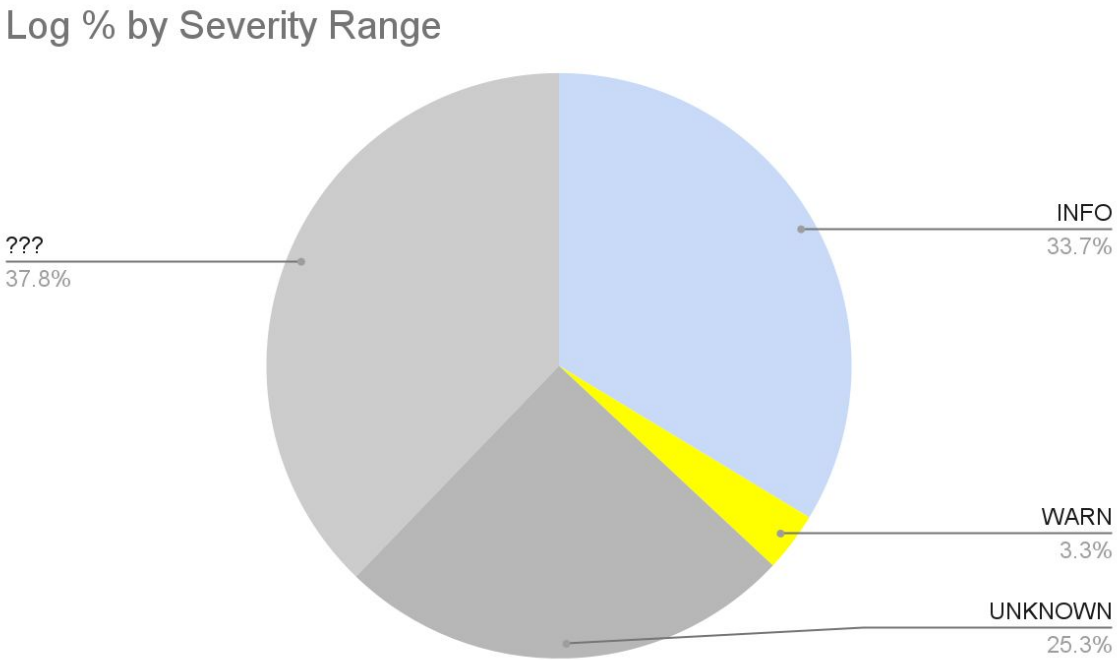

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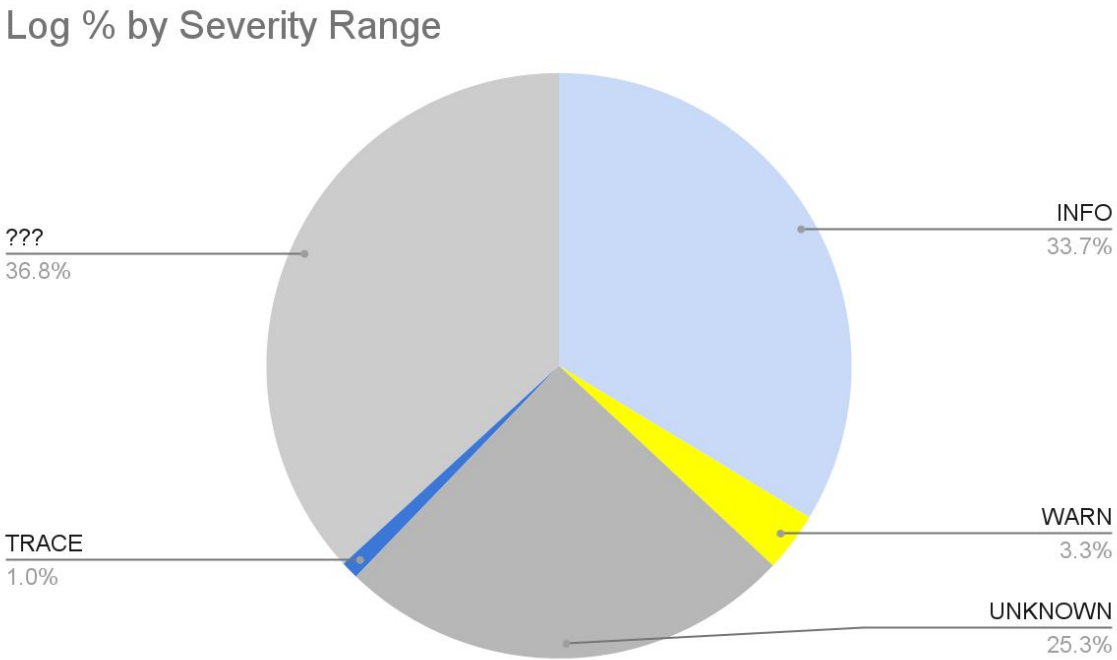
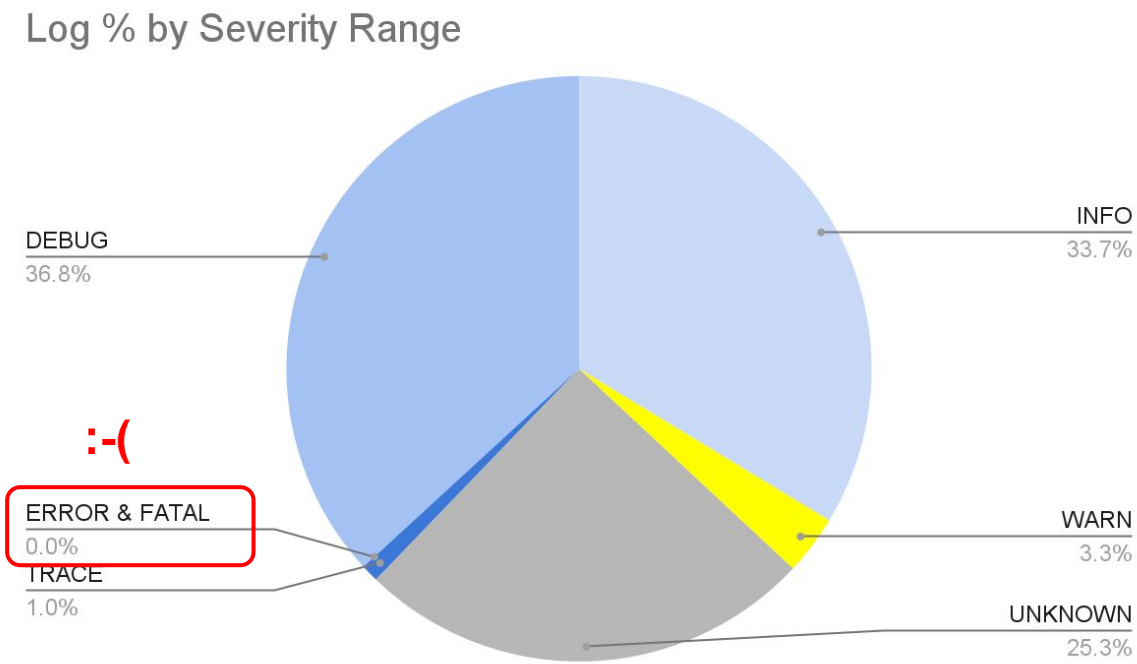


Stale Debug Logs in Production



Hello darkness, my old friend

Why do we need those logs again?

Noisy Internal Spans

Bad Telemetry concept is fluid

Bad telemetry today might have been great telemetry yesterday!

Instrumentation Score

Instrumentation Score

- **Opinions** about what is good or bad telemetry
- **Guideline** for practitioners to understand what's bad and why
- **Score** to compare services and prioritize improvement efforts

Instrumentation Score: Usage

- As part of onboarding for new engineers
- Context for your coding agents
- Base for your own instrumentation guidelines
- Vendors may implement the spec as part of their products

Instrumentation Score: Spec Overview

- Building on the shoulders of giants
  - CVSS, Google Lighthouse, SSL Labs Server Test
- Opinionated towards OTel
- Numerical value between 0 (Poor) and 100 (Excellent)
- “Portable” number
- Each rule has an impact levels
  - Critical (weight 40), Important (30), Normal (20), Low (10)
- Scoped by `service.name`

Instrumentation Score: Example

- Critical: 4/8 rules passed
- Important: 8/10 rules passed
- Normal: 6/8 rules passed
- Low: 1/5 rules passed

$$\text{Score} = \frac{\sum_{i=1}^{N} (P_i \times W_i)}{\sum_{i=1}^{N} (T_i \times W_i)} \times 100$$

Points: (4×40)+(8×30)+(6×20)+(1×10) = 530
Total possible: (8×40)+(10×30)+(8×20)+(5×10) = 830
Instrumentation Score: (530/830)*100 = ~63.86

Instrumentation Score: Example MET-001

Rule ID: MET-001

Description: Metric attributes have bound cardinality.

Rationale: High cardinality metric attributes can significantly degrade performance and increase storage costs of observability systems. They lead to a large number of unique time series, making it difficult to aggregate, query, and analyze metrics effectively. This rule helps identify and address such attributes.

Target: Metric

Criteria: Attribute keys on metrics, aggregated by metric name, MUST have less than 10.000 unique values within a 1-hour window.

Impact: Important

How to use Instrumentation Score at its best

- Treat it as a *signal*
- Go for ranges, not raw score!
  - Perfect is the enemy of good
- Be opportunistic in your improvements

Get Your Score

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Let’s play a game!

https://olly.garden/score-calculator

Key Takeaways

Key Takeaways

- Having no telemetry is bad! We need telemetry
- The “easy button” often comes with too much telemetry
  - Start with auto-instrumentations
  - But cut what you do need and shape what does not work for you
- Having too much telemetry is bad too
- What is good telemetry today might become bad telemetry tomorrow
- The Instrumentation Score project provides opinionated guidelines

Tell Us Your Story With Bad Telemetry

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Tell Us Your Story!

- Contribute to the Instrumentation Score
  https://github.com/instrumentation-score/spec
- CNCF Slack channel: **#instrumentation-score**
- Start Measuring
- Join the Community

Questions and Answers

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