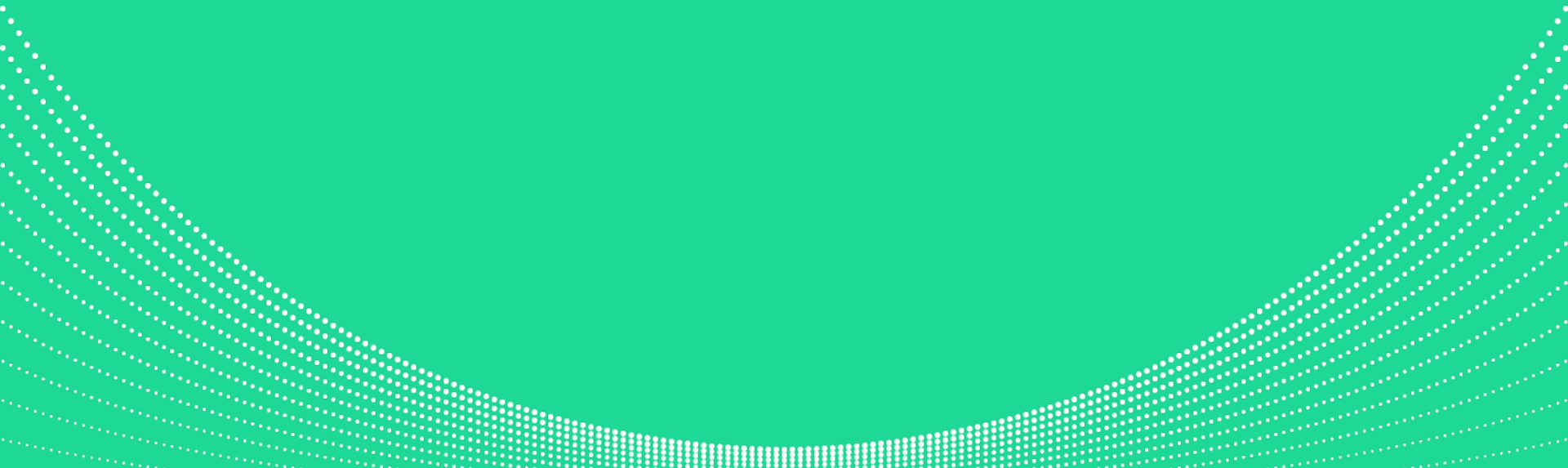# Exemplars in practice

Joel Groen, Chronosphere
July 30, 2022
SCALE 19x

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Agenda

- Before exemplars

- What are exemplars?

- Exemplars in practice

- Beyond exemplars
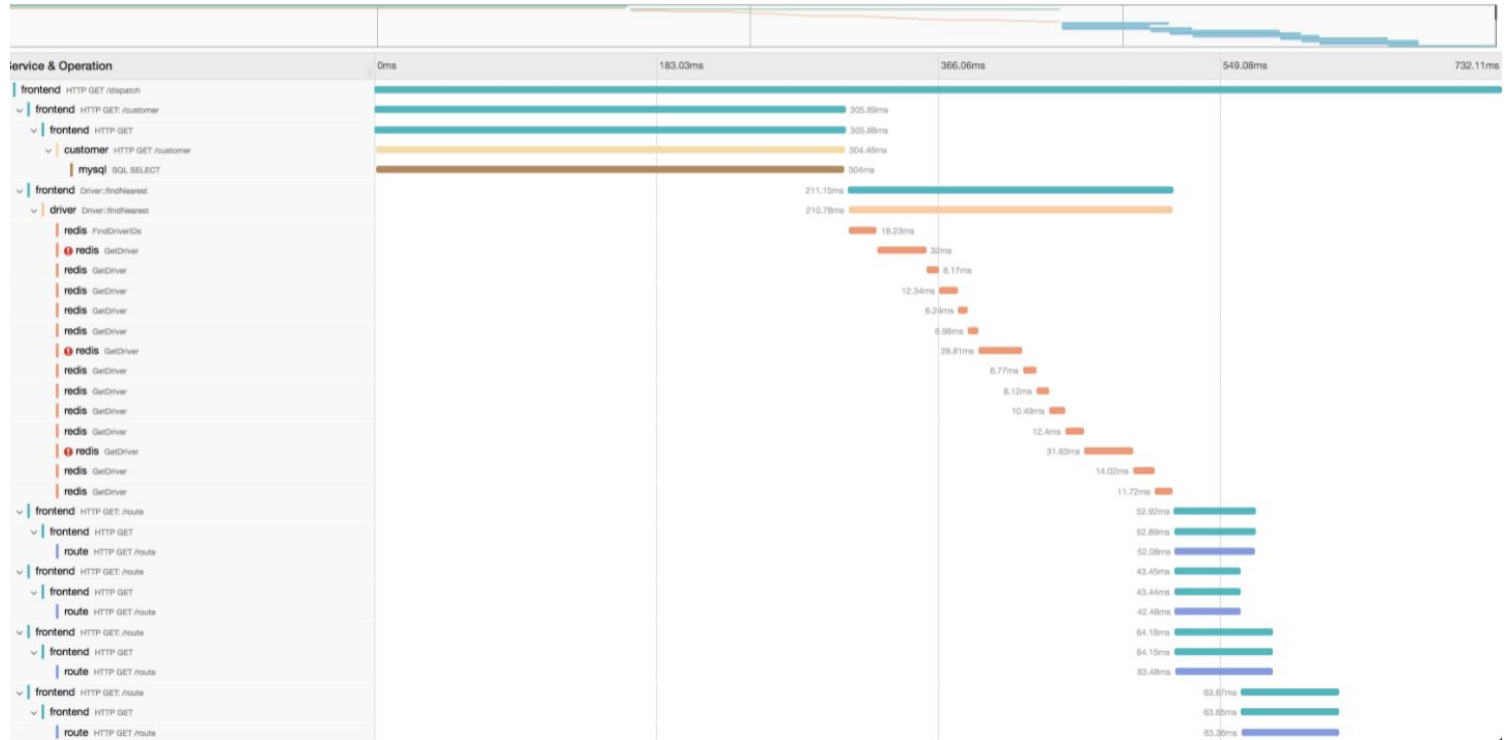
Before Exemplars

Life before exemplars

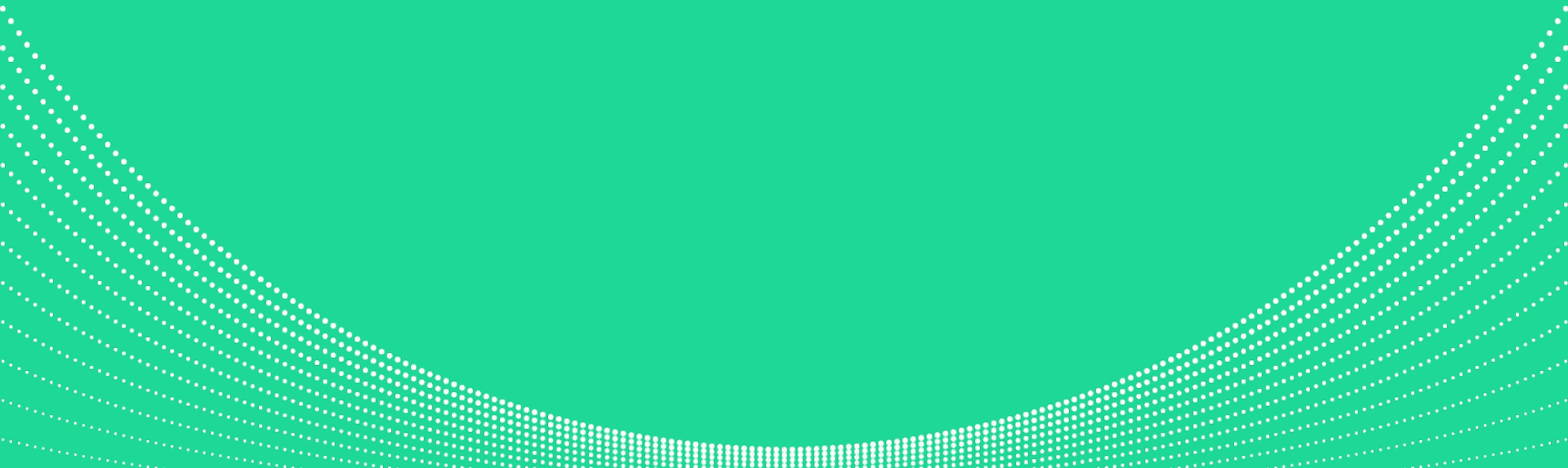You receive an alert that the errors are spiking for a given service. Now what?
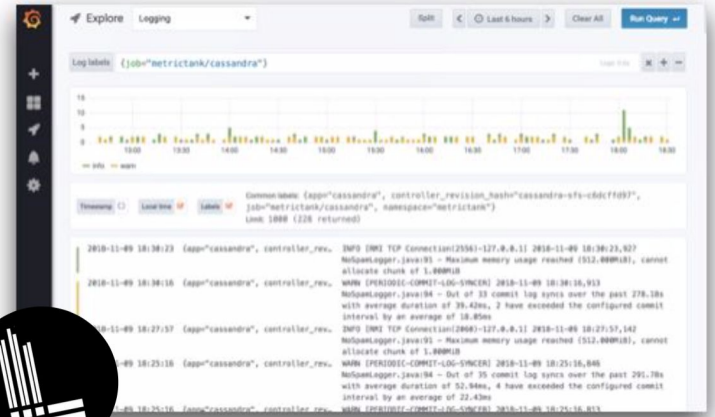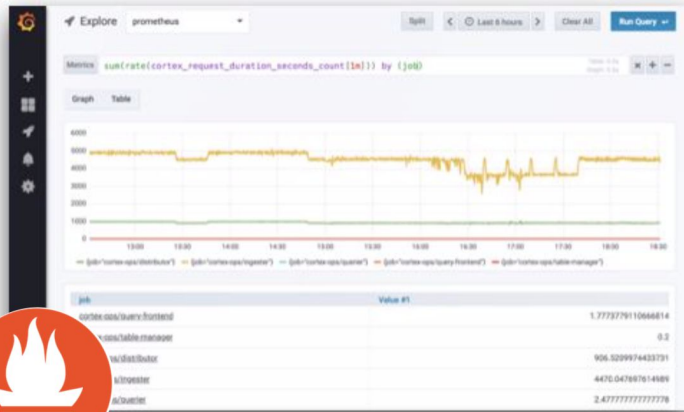
Scroll through trace data
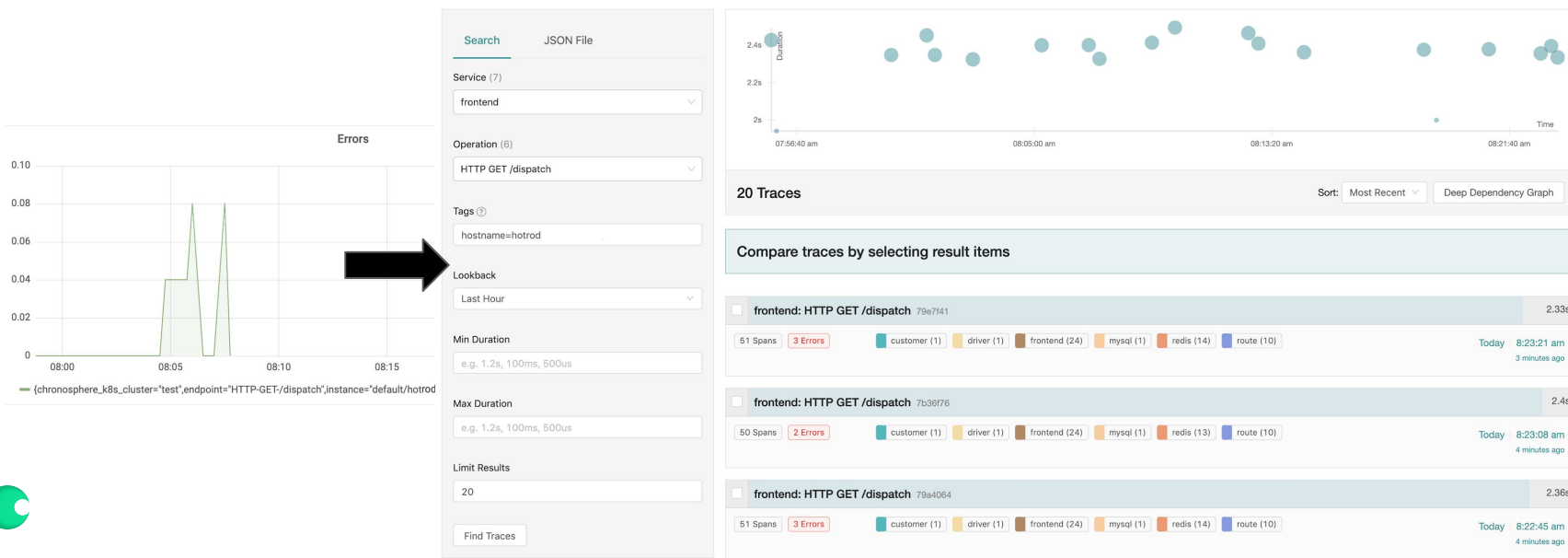

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Integrations

Current Integrations

Increasingly, more Observability platforms providing two or more signals (logs, metrics, traces)

A closer look at integrations

If you take a closer look at how jumping between metrics and traces is today, they are generally linked by common set of labels and time window.

A closer look at integrations

This narrows down search space in terms of time window and labels, but:

- Querying metrics with sum(...) or any other aggregation will drop tags

  - Context lost for jumping from metrics to traces

- Only "magical" when you store every trace

  - For a lot of users is prohibitively expensive.

- When sampling, the chances of having the right trace is low

  - Especially debugging edge cases – P99
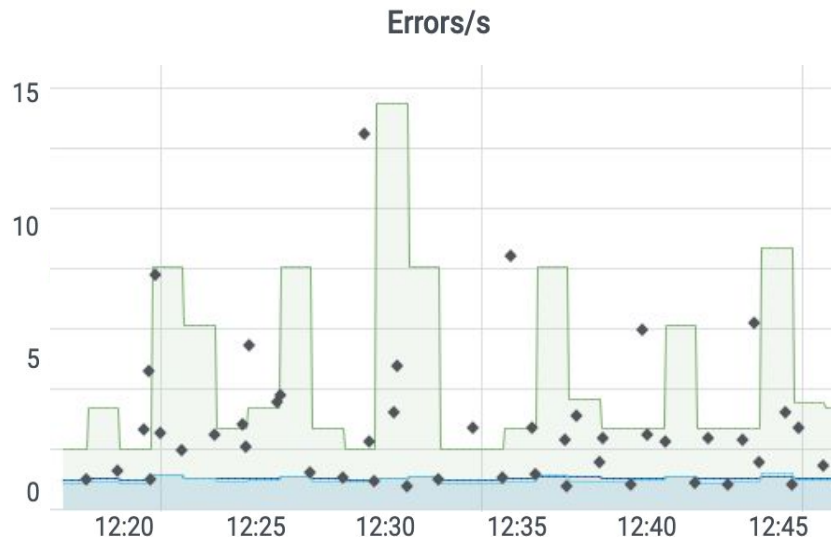
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What are exemplars?
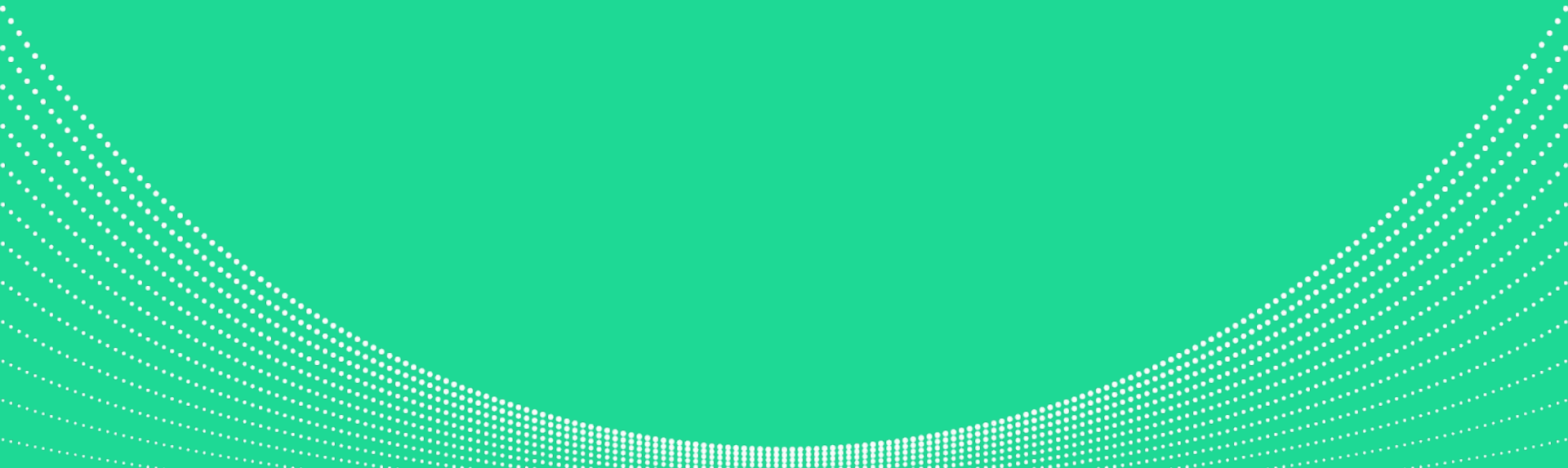
Exemplars

Metric data

+

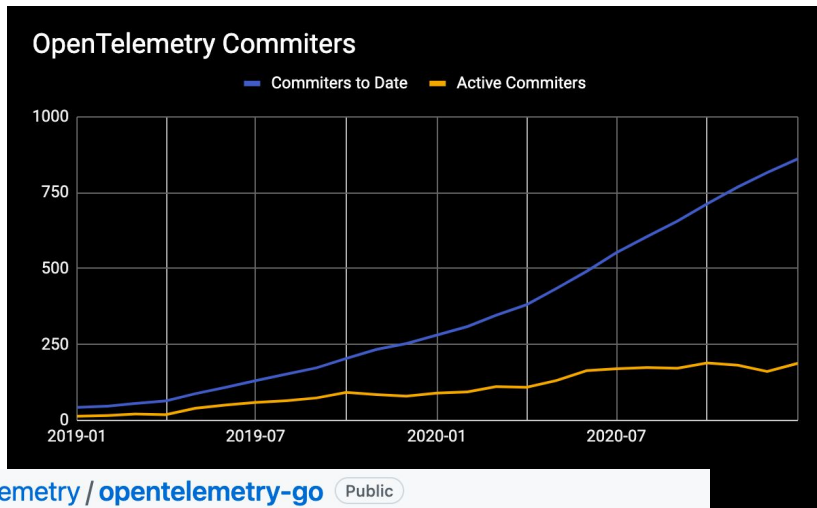Some other data (i.e. a traceID) that relates to the metric data

=

An easy way to jump from a metrics dashboard with many requests to a single example of a request

Errors/s

Exemplars are…

✅ Great for looking at binary problems

✅ A way for engineers to quickly jump between data types

✅ On the rise with open standards, like OpenTelemetry and OpenMetrics, as a way of linking open source metrics and tracing solutions

OpenTelemetry Commiters

— Commiters to Date — Active Commiters

1000

750

500

250

0
2019-01   2019-07   2020-01   2020-07

open-telemetry / opentelemetry-go Public

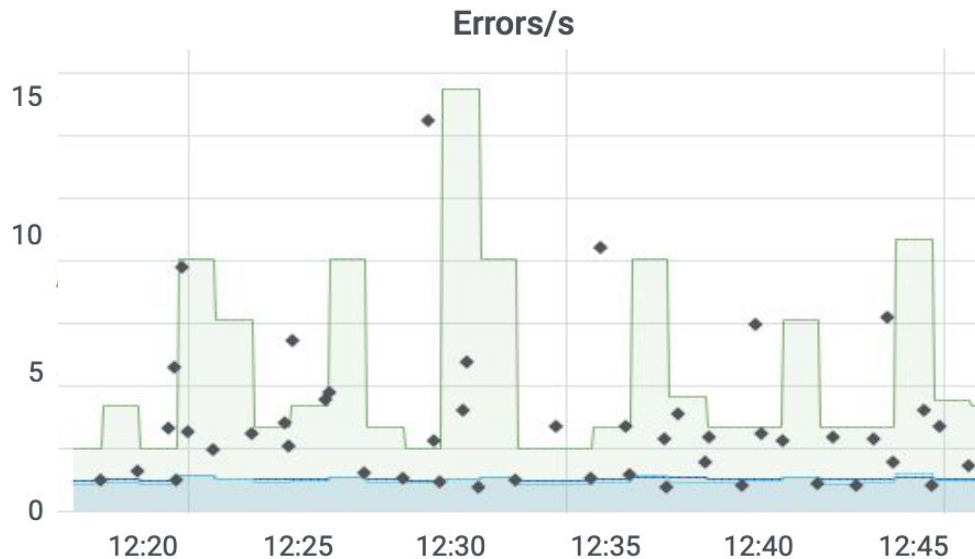<> Code   ⊙ Issues 123   ⇅ Pull requests 14   💬 Discussions   ▷ Actions

Add support for exemplars #559

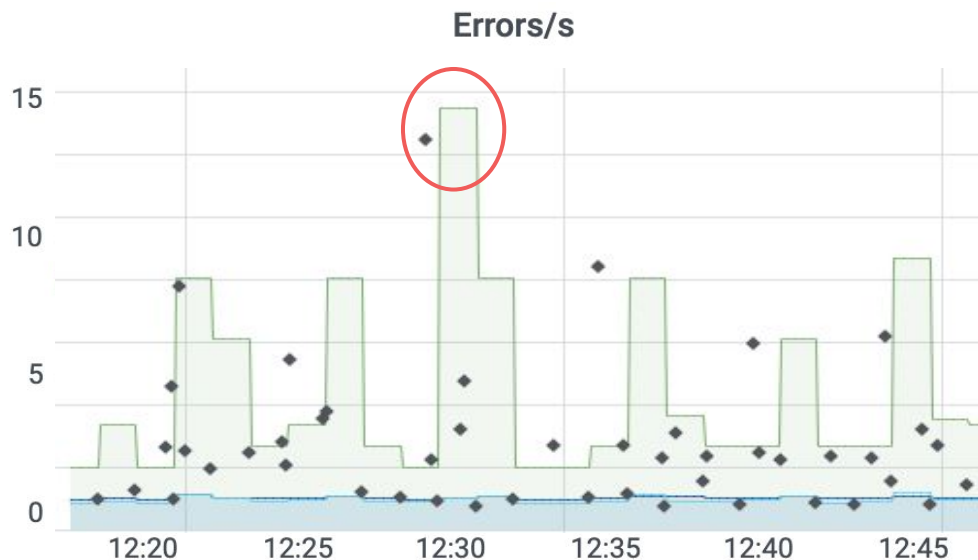⊙ Open   rghetia opened this issue on Mar 16, 2020 · 3 comments

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You triage the alert

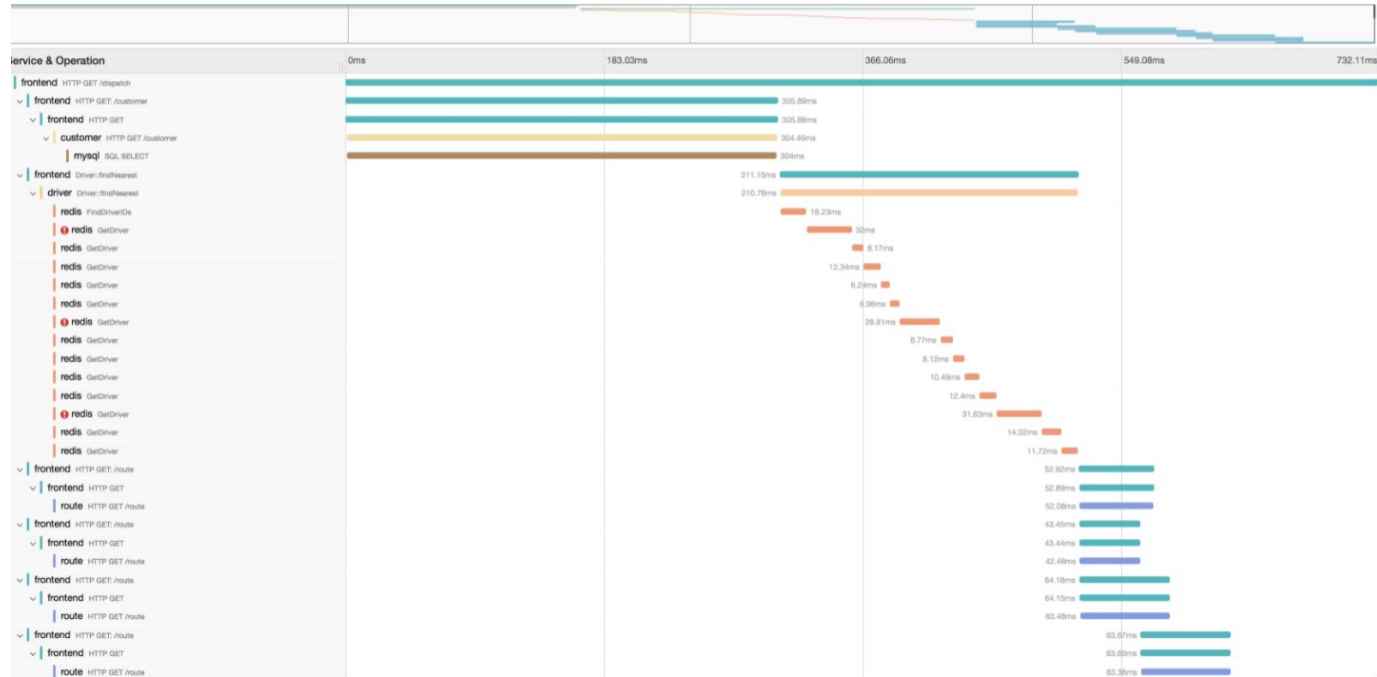You go to the relevant dashboard to begin your investigation

You triage the alert

You click on an exemplar around the time of the spike, which sends you to a tracing solution to view the distributed trace

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You triage the alert

The distributed trace shows you the authentication request from an Android user has timed out
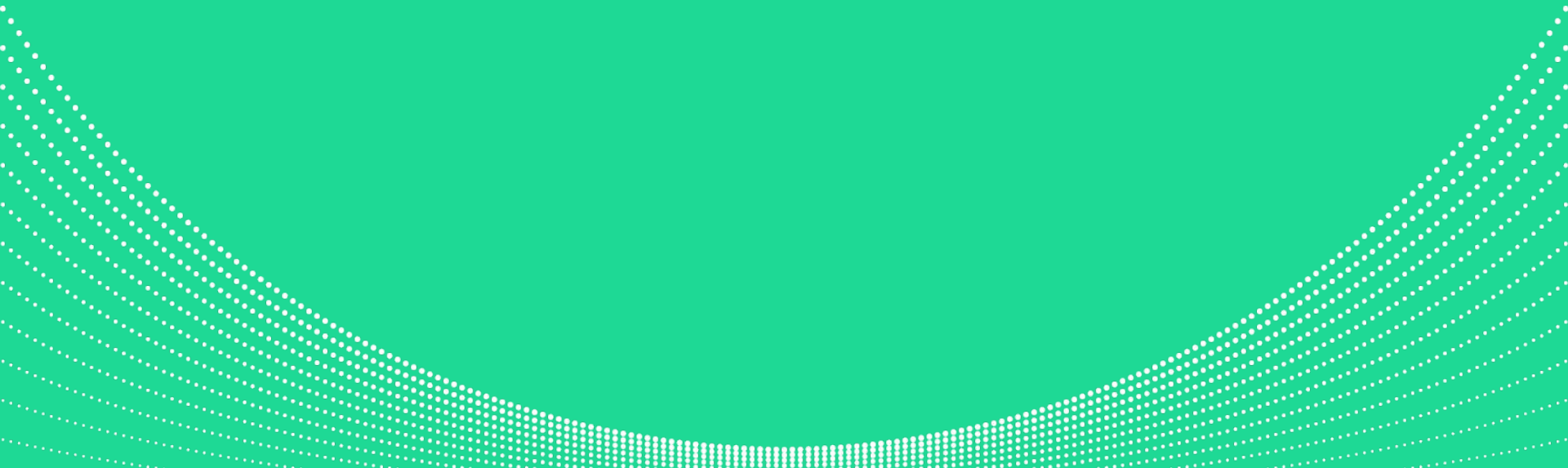

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You still have a lot of questions

- Is the spike in errors related only to Android users, or are iOS users affected as well?

- Does this affect all versions of Android?

- Is there any correlation between client geography and errors?

- Is the timeout THE error to focus on?

ZIPKIN

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When exemplars are not enough

Good for homogeneous, but not heterogeneous traces

❌ Exemplars are tied to a single trace, not a population of traces

❌ A single trace rarely has enough context to resolve an issue

Issues A, B, C all active at time of alert, so how do you know for sure which one to focus on...

Issue B has larger impact, but not the problem causing the alert

Issue C has the largest impact and is causing the alert

Exemplar linked to issue A

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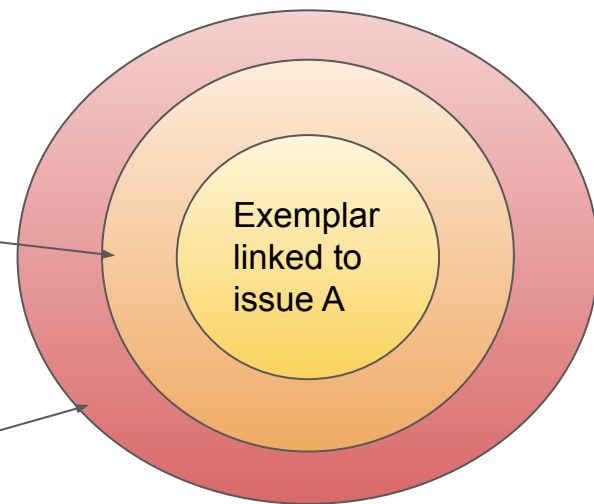
Difficult to identify "relevant" traces

❌ Application developers don't have enough context to be able to publish the "right" exemplar

❌ It's like looking for a needle in your observability haystack!

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Beyond Exemplars

Beyond Exemplars

✅ Link 100% of your metrics and traces – no aggressive or forced sampling

✅ Flexibly query across the entire population of traces (not just one) to identify outliers and/or trends

✅ Get context and identify patterns for your traces by setting which variables to query for

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Demo

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