Exemplars in practice

Finding the needle in your observability haystack

Gibbs Cullen, Chronosphere
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Who am I?

Gibbs Cullen

Product Marketing Manager @ Chronosphere

→   CNCF O11y TAG member
   →   Former AWS PM
  →   Twitter: @gibbscullen

Agenda

- What are exemplars?

- Exemplars in practice

- Limitations to exemplars

- Exemplars and beyond

Life before exemplars

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

Errors/s

Context switch to look at trace data

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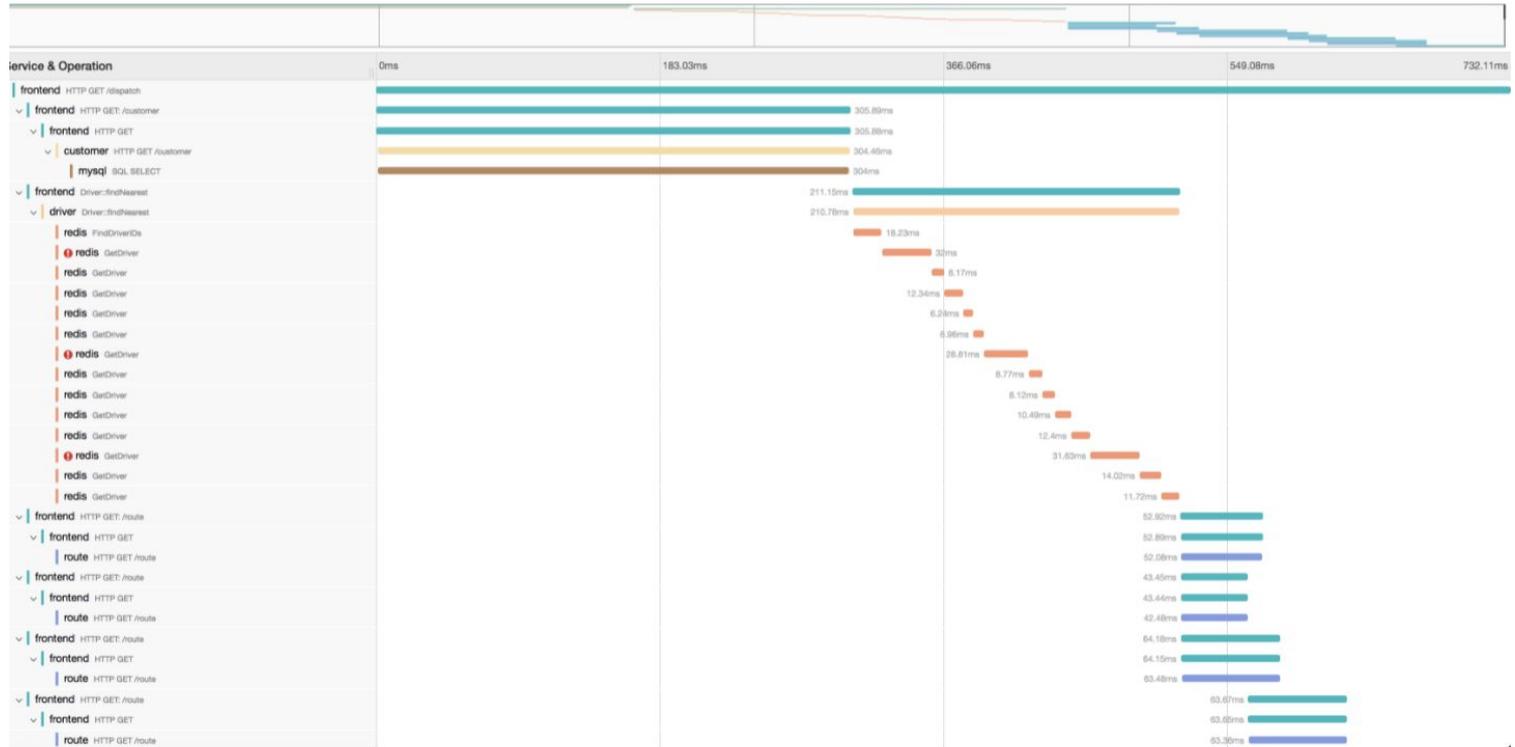
What are exemplars?
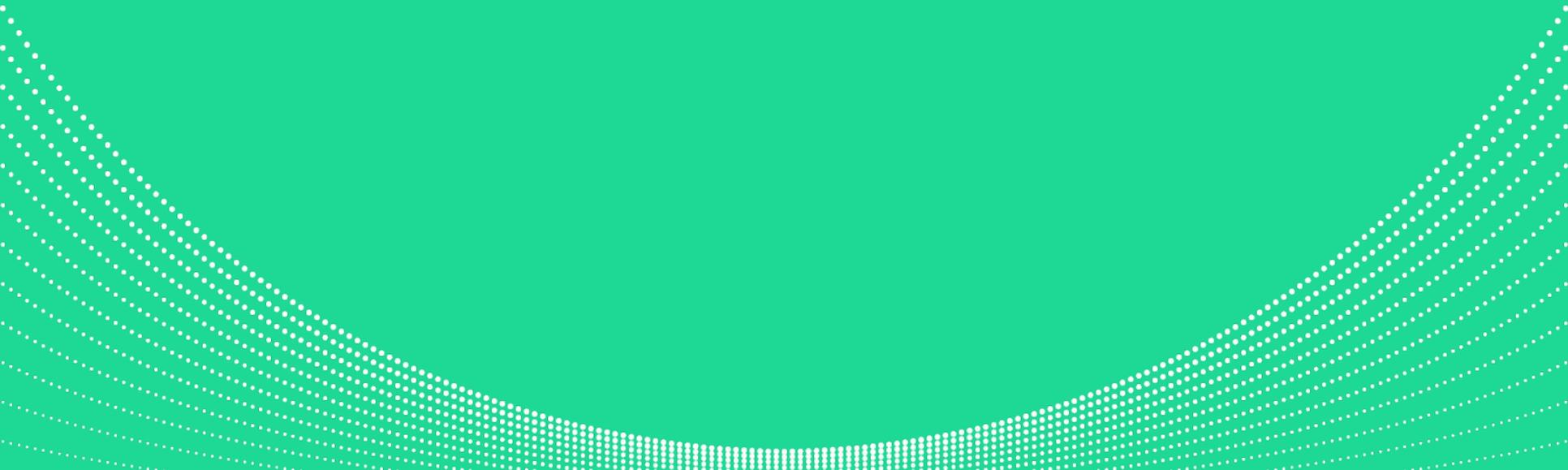
Exemplars are…

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

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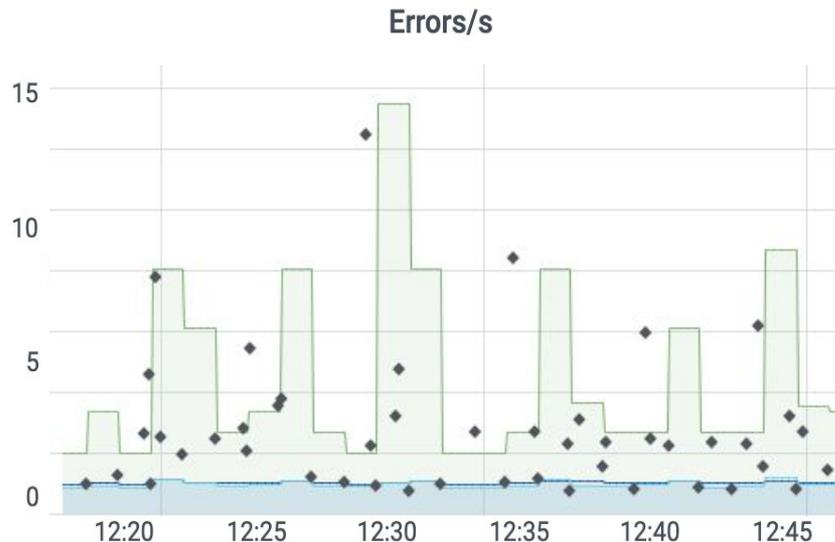
Exemplars are…

✅ 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

open-telemetry / opentelemetry-go Public

<> Code   ⊙ Issues 123   ⫶ Pull requests 14   💬 Discussions   ▶ Actions
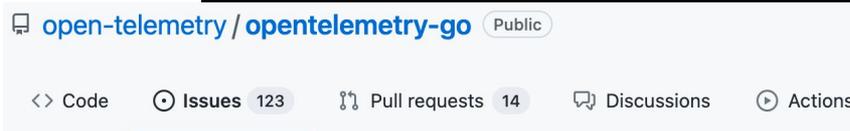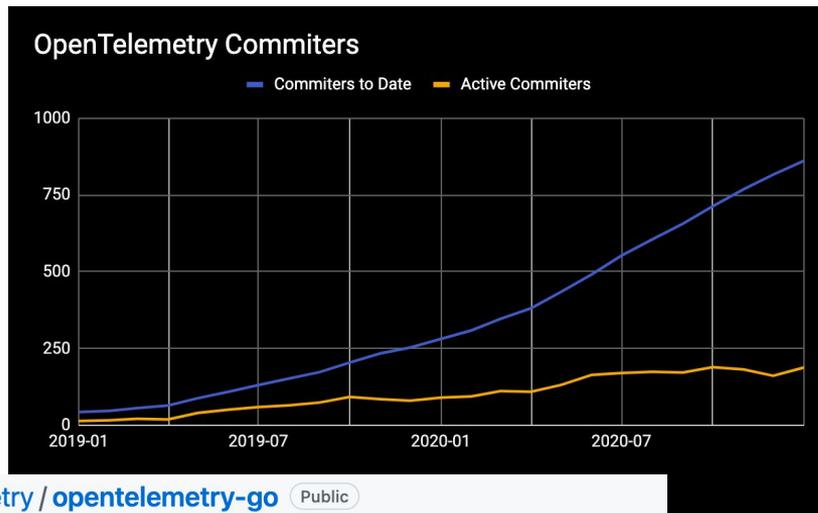
Add support for exemplars #559

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

Exemplars in practice
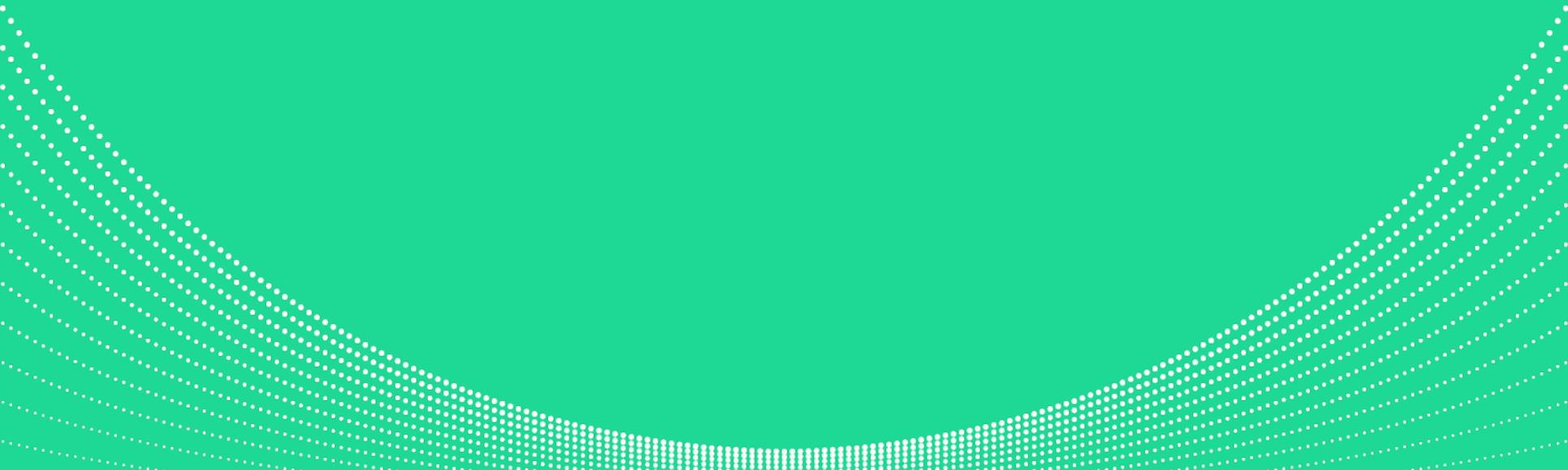
You receive an alert

You are alerted that your authentication service for a mobile application is seeing a spike in errors
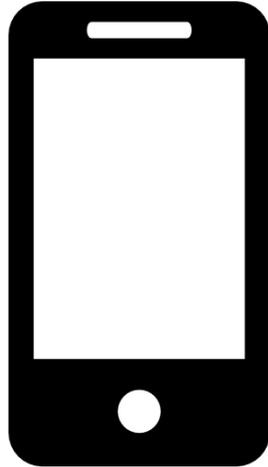
# You triage the alert

You go to the relevant dashboard to begin your investigation

Errors/s
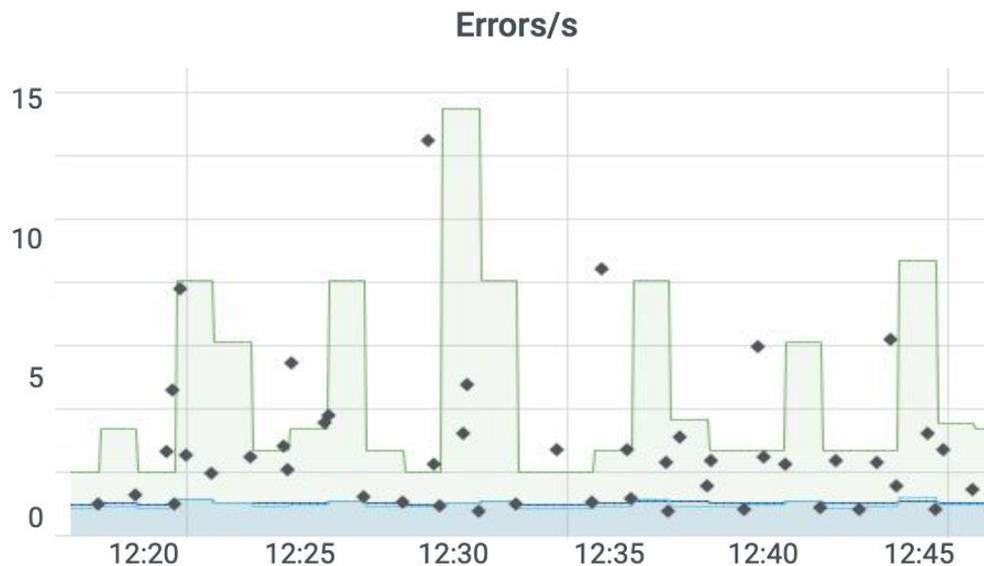
You triage the alert

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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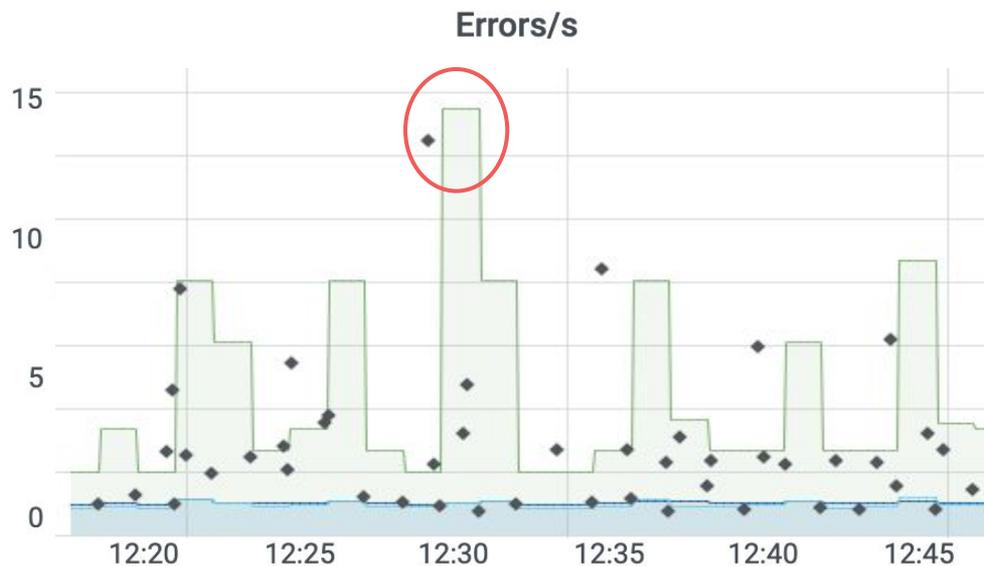
You triage the alert

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

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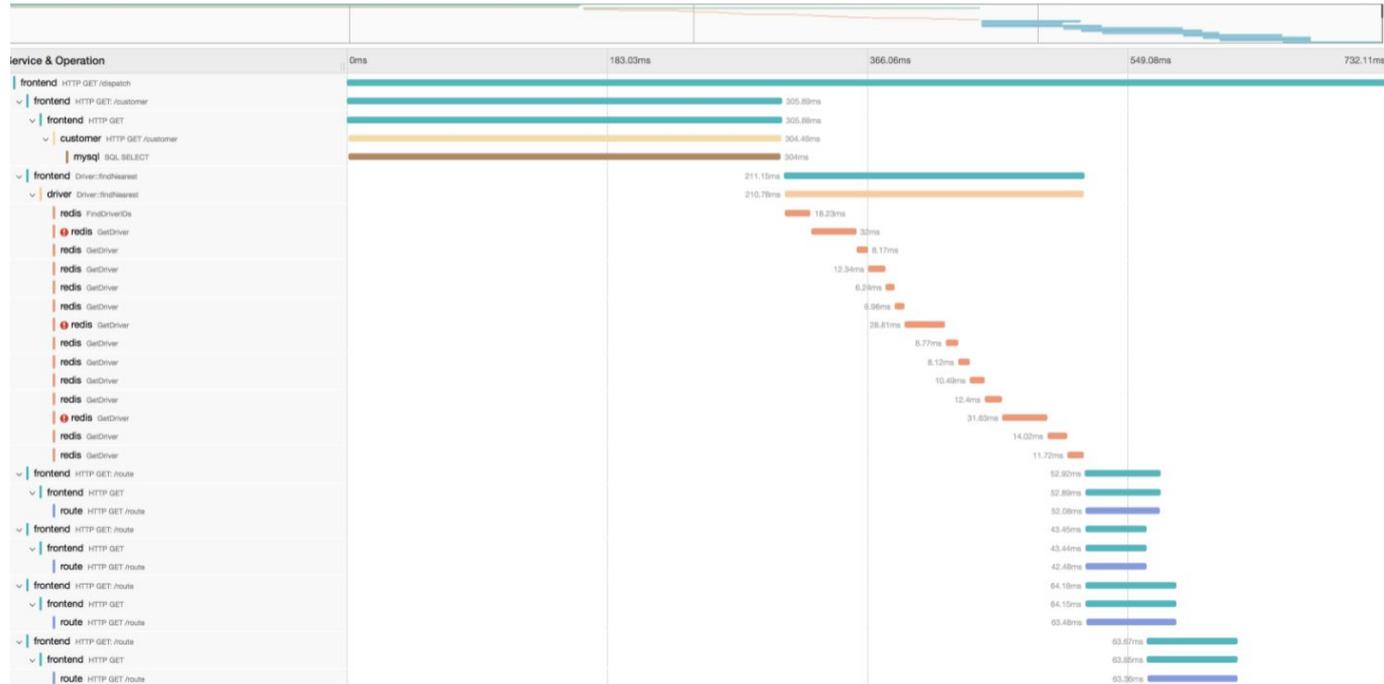
You try to understand the alert... but have lots of questions!

- 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?

You need more information!

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When exemplars are not enough
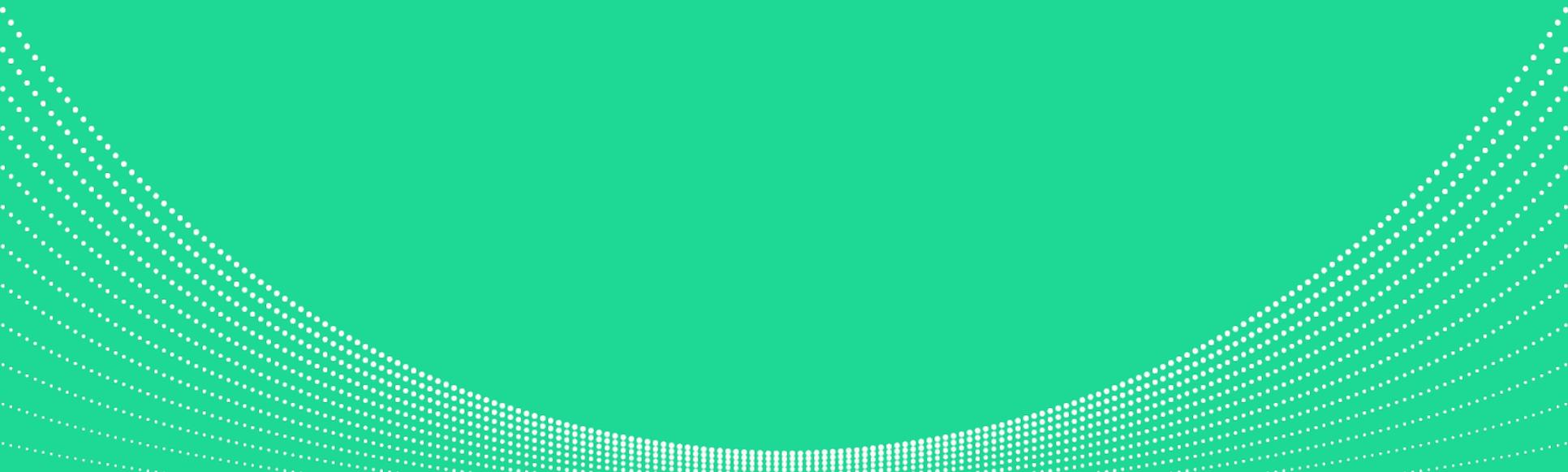
Good for homogeneous, but not heterogeneous traces

❌ 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

Exemplar linked to issue A

Issue C has the largest impact and is causing the alert

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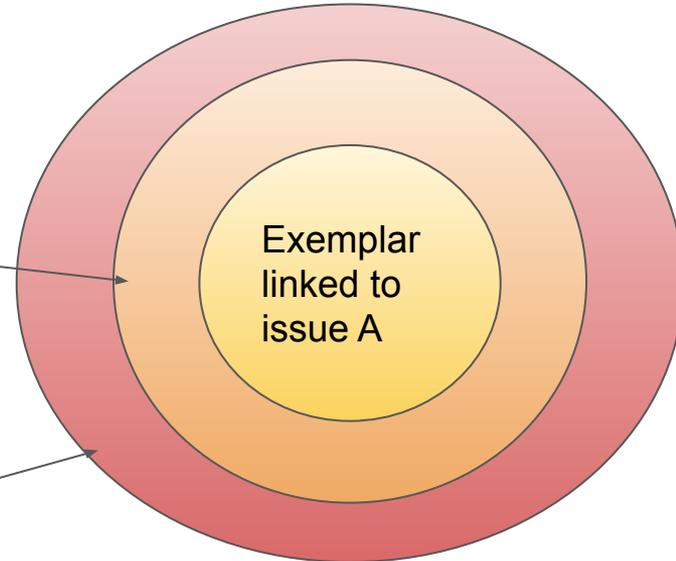
Too hard to identify "relevant" traces

❌ Applications 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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Exemplars and beyond
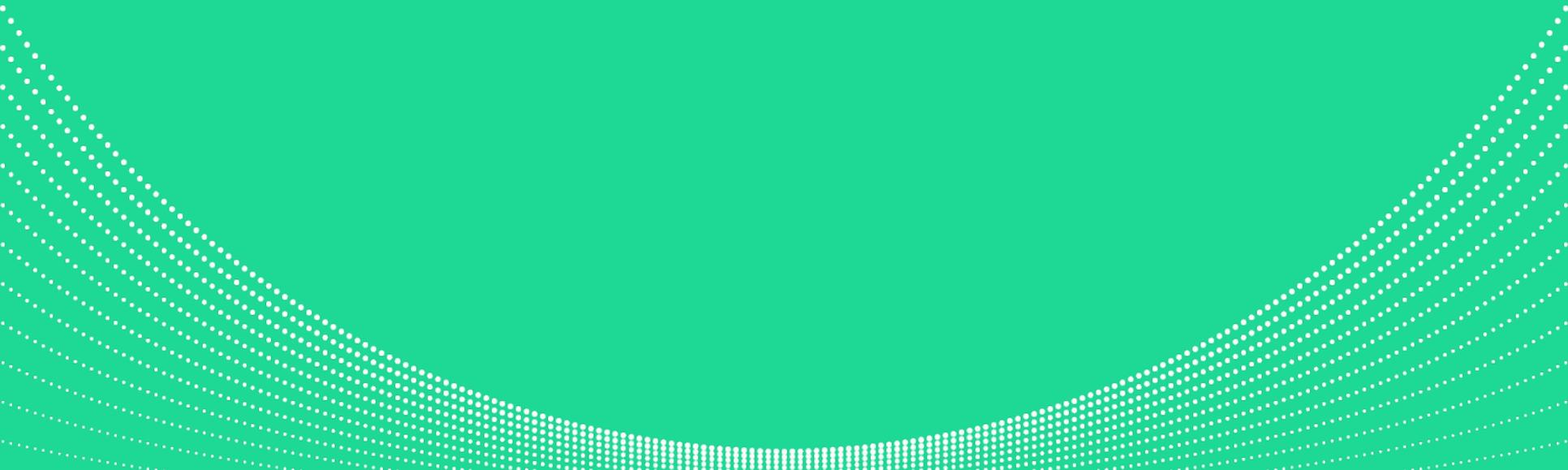
Query traces to go beyond exemplars

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

✅ Flexibly query across a population of exemplars (not just one) to eliminate false positives or noisy data

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

Trace Explorer

Search Summary

Time within the last 10m
Error Include any

Include

demo_musicfe
POST /play-track

03:44:00 PM   03:44:40 PM   03:45:20 PM   03:46:00 PM   03:46:40 PM   03:47:20 PM   03:48:00 PM   03:48:40 PM   03:49:20 PM   03:50:00 PM   03:50:40 PM   03:51:20 PM   03:52:00 PM   03:52:40 PM   03:53:20 PM   03:54:00 P

Stats by Services   Top Tags

Request Count

demo_s3gateway > GetObject	0.12/s
demo_musicfe > POST /play-track	0.04/s
demo_albumart > /albumart.AlbumArt/FetchImages	0.04/s
demo_track > /track.Track/GetTrack	0.04/s
demo_authchecker > /authchecker.AuthChecker/Auth...	0.03/s
demo_subscription > /subscription.Subscription/Check...	0.03/s
demo_trackrights > /trackrights.TrackRights/CheckCa...	0.03/s
demo_memcached-subscription-1-dfw1 > set	0.03/s
demo_memcached-track-2-dfw1 > set	0.03/s
demo_memcached-trackrights-2-dfw1 > set	0.03/s

Error Percentage

demo_musicfe > POST /play-track	11.54%
demo_trackrights > /trackrights.TrackRights/CheckCa...	5.56%
demo_albumart > /albumart.AlbumArt/FetchImages	4.17%
demo_memcached-subscription-1-dfw1 > get	0.00%
demo_memcached-track-2-dfw1 > get	0.00%
demo_mysql-trackrights-2-dfw1-ro > exec	0.00%
demo_mysql-track-2-dfw1-ro > exec	0.00%
demo_mysql-subscription-1-dfw1-ro > exec	0.00%
demo_geoip > /geoip.GeoIP/GetGeoAreaForIP	0.00%

Median Duration (P50)

demo_musicfe > POST /play-track	2.3s
demo_track > /track.Track/GetTrack	1.3s
demo_albumart > /albumart.AlbumArt/FetchImages	798ms
demo_subscription > /subscription.Subscription/Chec...	395ms
demo_trackrights > /trackrights.TrackRights/CheckCa...	391ms
demo_s3gateway > GetObject	295ms
demo_memcached-track-2-dfw1 > get	198ms
demo_mysql-subscription-1-dfw1-ro > exec	193ms
demo_mysql-track-2-dfw1-ro > exec	190ms
demo_memcached-subscription-1-dfw1 > set	189ms

Tail Duration (P99)

demo_musicfe > POST /play-track	2.6s
demo_track > /track.Track/GetTrack	1.6s
demo_albumart > /albumart.AlbumArt/FetchImages	1.1s
demo_trackrights > /trackrights.TrackRights/CheckCa...	803ms
demo_subscription > /subscription.Subscription/Chec...	599ms
demo_s3gateway > GetObject	496ms
demo_mysql-track-2-dfw1-ro > exec	400ms
demo_memcached-track-2-dfw1 > get	400ms
demo_memcached-trackrights-2-dfw1 > get	394ms
demo_memcached-subscription-1-dfw1 > set	393ms

Trace Details   Dependency Tree

Start time	Trace	Duration	Spans	Errors
03:51:52.785 PM	demo_musicfe > POST /play-track	2.4s	N/A	Contains errors
03:51:52.097 PM	demo_musicfe > POST /play-track	2.4s	N/A	No errors
03:51:45.888 PM	demo_musicfe > POST /play-track	2.4s	N/A	No errors
03:51:44.196 PM	demo_musicfe > POST /play-track	2.3s	N/A	No errors

Thank you!

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