

Introduction to Distributed Tracing

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What are we doing here?

- Intro!
 - [Jaeger Getting Started](#)
 - [OpenTracing: What is Tracing](#)
 - [OpenTracing Examples](#)
- Open Source
- Demo
 - Jaeger All In One + Instrumentation
 - Grafana + Jaeger Integrations

The background features a light blue gradient with several concentric circles and dotted lines. A solid blue circle is centered on the page, with a dotted line just outside it. Further out, there are more dotted lines and some larger, faint circles. Small clusters of dots in blue, orange, and red are scattered around the edges. A horizontal line is near the bottom.

Why?

Monitoring tools

Metrics



Logs



Metrics - Aggregatable

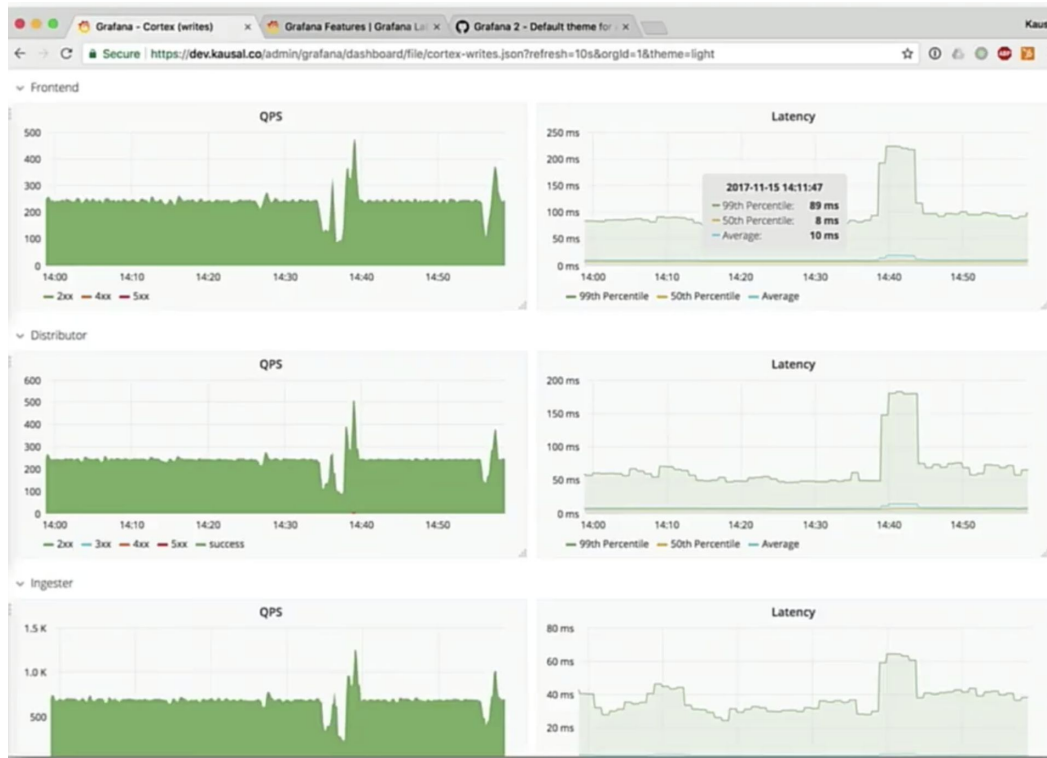
RED Method

Requests Error Duration

USE Method

Utilization Saturation Errors

...



Metrics - Cardinality

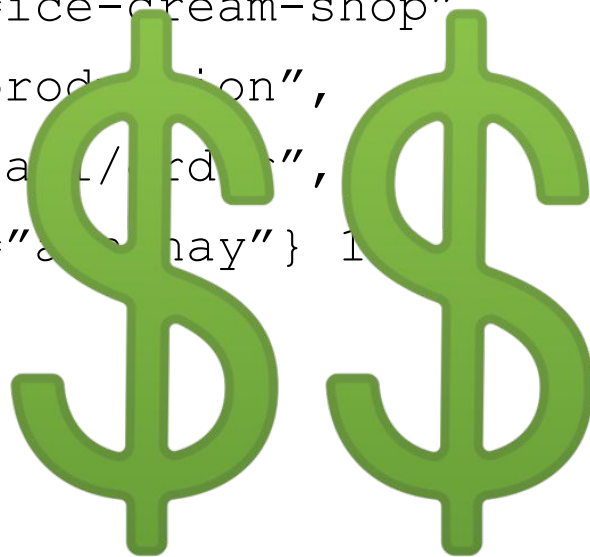
```
http_request_duration_sec{"app=ice-cream-shop"} 10s
```

Metrics - Cardinality

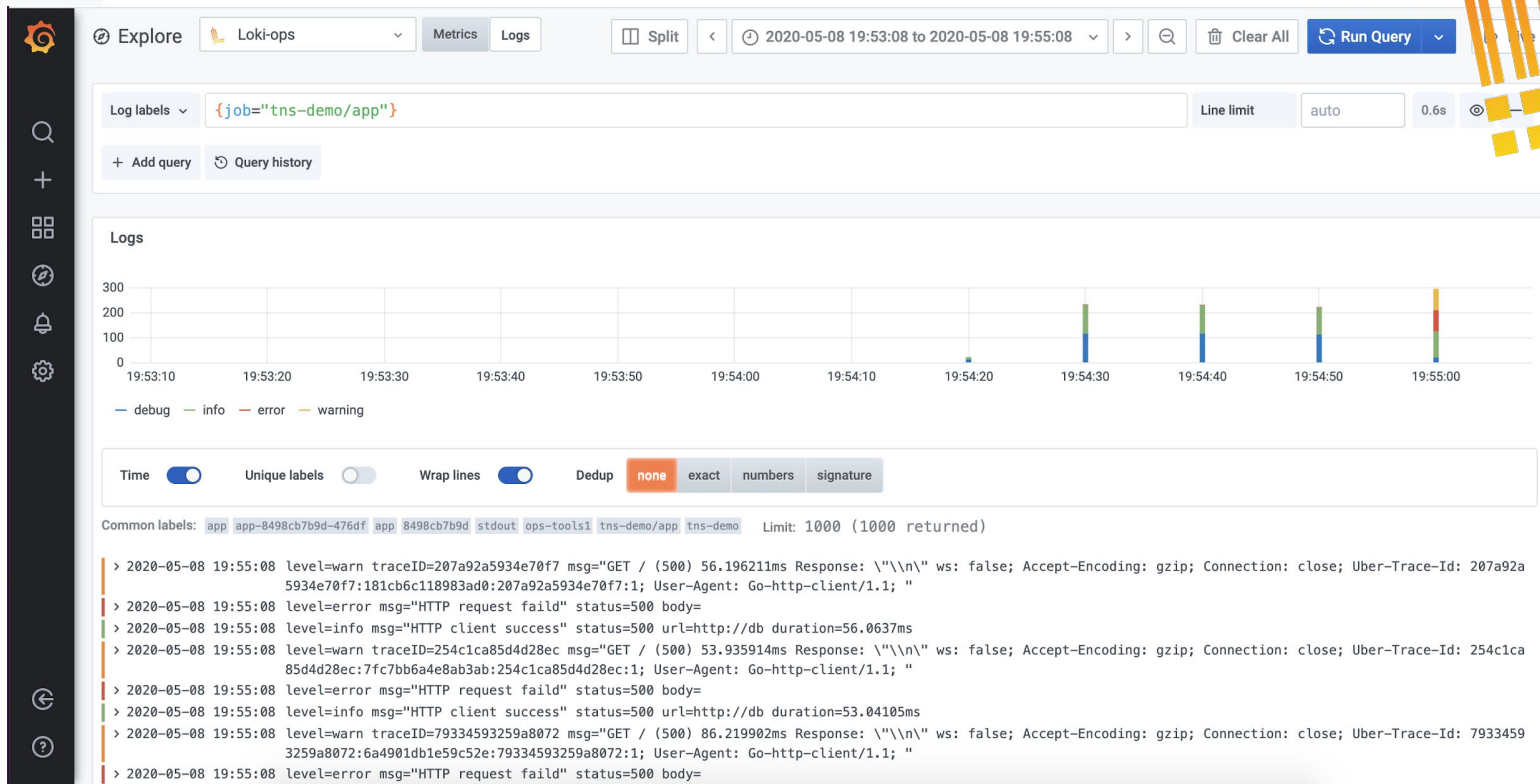
```
http_request_duration_sec{"app=ice-cream-shop"  
datacenter="us-central", env="production",  
service="cart-manager", path="/api/order",  
func_name="my-func", cust_name="annanay"} 10s
```

Metrics - Cardinality

```
http_request_duration_sec{"app=ice-cream-shop"  
datacenter="us-central", env="production",  
service="cart-manager", path="/api/orders",  
func_name="my-func", cust_name="John Doe"} 1
```



Logs



Logs

Useful to check health of a particular service.

“Events” in a service.

```
"rpc error: code = Code(400) desc = user = xyz:
series={__name__=\"process_virtual_memory_bytes\", cluster=\"us-central\",
instance=\"consul-5sqwxccxvq\", timestamp=2020-01-04T14:12:59.102Z: out of order
sample}"
.
.
level=error ts=2020-05-08T09:46:43.11193994Z caller=a_file_from_my_codebase:16
msg="error processing requests" err="rpc error: Code(400) desc = expected string
but got null"
```

TLDR;

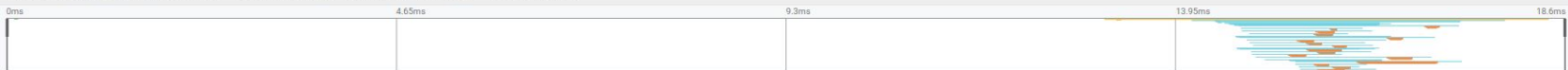
Telemetry	Primary use case	What we want in addition
Metrics	Aggregations	Fine grained information
Logs	Events	Cross process tracing

Distributed Tracing

cortex-gateway: HTTP GET - api_prom_api_v1_query 5bc5f61

Find...

Trace Start July 29 2020, 11:57:24.811 | Duration 18.6ms | Services 4 | Depth 10 | Total Spans 102



Service & Operation

0ms 4.65ms 9.3ms 13.95ms 18.6ms

✓ cortex-gateway HTTP GET - api_prom_api_v1_query

✓ cortex-gateway Auth/Authenticate

✓ cortex-query-frontend HTTP GET - api_prom_api_v1_query

✓ cortex-query-frontend queued

✓ cortex-querier HTTP GET - api_prom_api_v1_query

✓ cortex-querier promqlExec

✓ cortex-querier promqlExecQueue

✓ cortex-querier promqlEval

✓ cortex-querier promqlPrepare

✓ cortex-querier querier.Select

✓ cortex-querier querier.Select

✓ cortex-querier querier.Select

✓ cortex-querier distributorQuerier.Select

✓ cortex-querier Distributor.QueryStream

✓ cortex-querier /cortex.Ingestor/QuerySt...

✓ cortex-ingester /cortex.Ingestor/Q...

✓ cortex-ingester /cortex.Ingestor/Q...

✓ cortex-ingester QueryStream

✓ cortex-ingester forSeriesMatc...

✓ cortex-querier /cortex.Ingestor/QuerySt...

✓ cortex-ingester /cortex.Ingestor/Q...

✓ cortex-ingester /cortex.Ingestor/Q...

✓ cortex-ingester QueryStream

✓ cortex-ingester forSeriesMatc...

✓ cortex-querier /cortex.Ingestor/QuerySt...

0.01ms

5.3ms

0.06ms

3.74ms

2.94ms

0.01ms

2.89ms

0.02ms

1.85ms

1.94ms

1.79ms

1.74ms

1.7ms

2.63ms

0.19ms

0.18ms

0.16ms

0.12ms

1.45ms

0.09ms

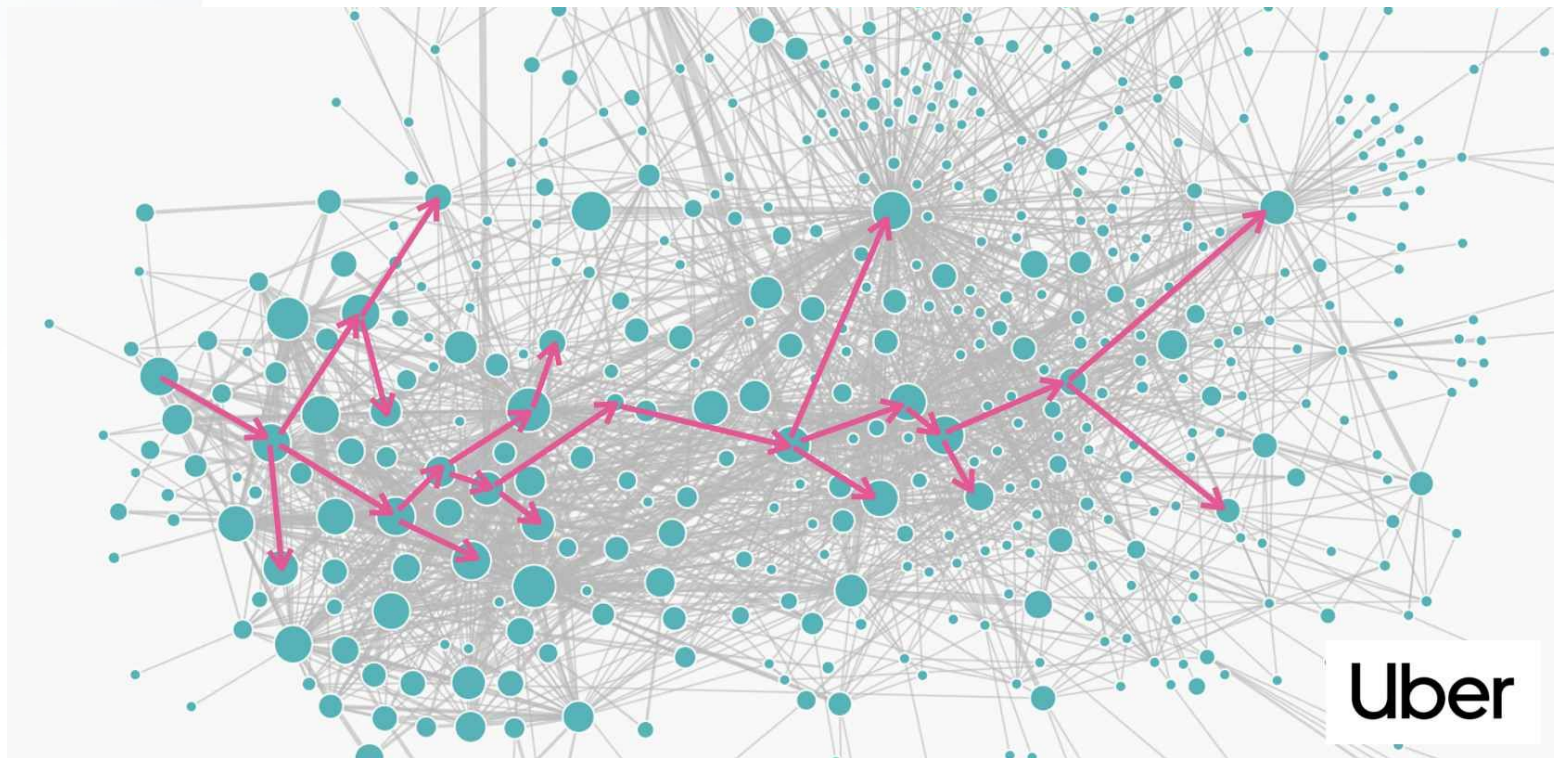
0.08ms

0.07ms

0.06ms

1.56ms

Diagnosing the Long Tail

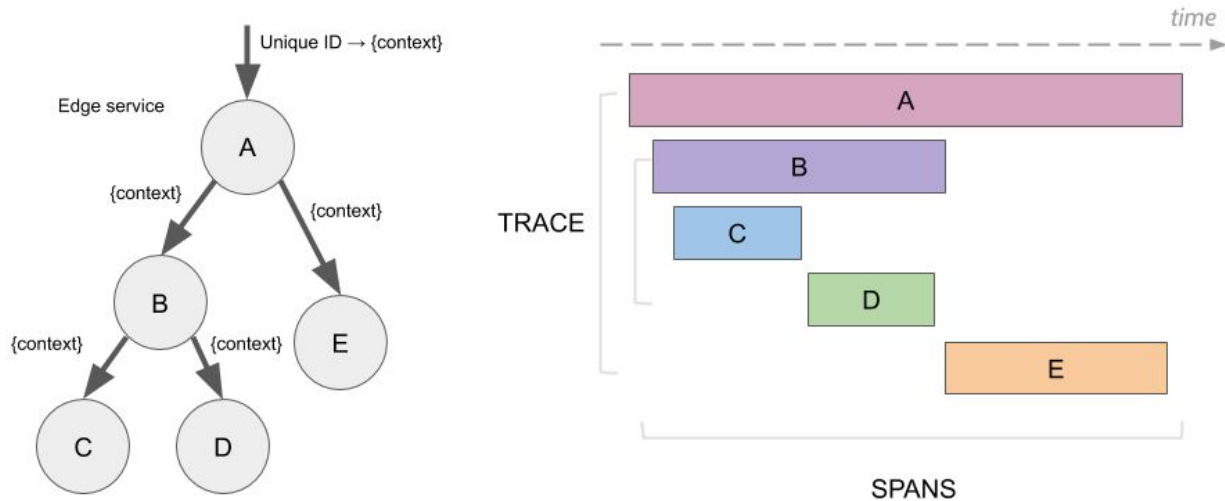


Distributed Tracing!



JAEGER

How? Context propagation



Demo! (Jaeger + OpenTracing)

- Context Propagation ([OpenTracing Nethttp](#))
 - In Process : Context
 - Cross Process : Headers
- Metadata
 - Logs, Span Tags, Process Tags
- Explore the Jaeger UI
- Grafana/Loki Trace Integration

<https://github.com/joe-elliott/tracing-example>

Getting involved

Open Source

The screenshot displays the GitHub interface for the `grafana/grafana` repository. At the top, navigation links include `<> Code`, `Issues 2.7k`, `Pull requests 92`, `Actions`, `Projects 9`, `Wiki`, `Security`, and `Insights`. The repository statistics show 415 branches and 208 tags. A recent commit by `torkelo` is highlighted: "Inspect: Fix link to error tab from panel header (#26682)" with 25,988 commits. Below this, a list of recent commits is shown with their descriptions and timestamps.

Commit	Description	Time
<code>torkelo</code>	Inspect: Fix link to error tab from panel header (#26682)	5 hours ago
<code>eb0b9de</code>	Chore: Enable goprintffuncname and nakedret linters (#26376)	7 days ago
	Issue Template: @grafana/ui component request (#25981)	20 days ago
	Chore: fix spelling of GitHub (#26182)	7 days ago
	Chore: Update developer guide to reflect changes to go get (#26646)	16 hours ago
	docs: customMetricsNamespaces for Cloudwatch provisioning (#26457)	9 days ago
	Dashboard: Implement Duplicate DashboardLink Feature (#26600)	2 days ago
	Chore: Enable PR testing in Drone (#26189)	19 days ago
	Update getting started link (#26374)	13 days ago
	Grafana-UI: Reverse TimeRangeInput range pickers (#26652)	yesterday
	Docker: Don't upgrade packages when installing (#24132) (#26055)	yesterday

The right sidebar contains the "About" section, describing Grafana as a tool for beautiful monitoring and metric analytics & dashboards for Graphite, InfluxDB & Prometheus & More. It also lists tags like `grafana`, `monitoring`, `analytics`, `metrics`, `influxdb`, `prometheus`, `elasticsearch`, `alerting`, `data-visualization`, `go`, `dashboard`, `business-intelligence`, `mysql`, and `postgres`. The "Releases" section shows the `2.0.0` version.



LIVE WEBINAR: Introduction To Distributed Tracing | with Joe Elliott

Thank you for watching!

Have more questions?

Join us at community.grafana.com.