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
Why?
Monitoring tools

Metrics

Logs

Images: Prometheus, Influx, Loki, Elastic
**Metrics - Aggregatable**

**RED Method**
- Requests
- Error
- Duration

**USE Method**
- Utilization
- Saturation
- Errors

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[Link to the Red Method blog post](https://grafana.com/blog/2018/08/02/the-red-method-how-to-instrument-your-services/)
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/order", "func_name="my-func", "cust_name="annanay"} 1s
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"
<table>
<thead>
<tr>
<th>Telemetry</th>
<th>Primary use case</th>
<th>What we want in addition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metrics</td>
<td>Aggregations</td>
<td>Fine grained information</td>
</tr>
<tr>
<td>Logs</td>
<td>Events</td>
<td>Cross process tracing</td>
</tr>
</tbody>
</table>

TLDR;
Distributed Tracing
Diagnosing the Long Tail
Distributed Tracing!

JAEGER
How? Context propagation

https://www.jaegertracing.io/docs/1.17/architecture/
Demo! (Jaeger + OpenTracing)

- Context Propagation ([OpenTracing Nethttp](https://github.com/joe-elliott/tracing-example))
  - 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](https://github.com/joe-elliott/tracing-example)
Getting involved
Open Source
Thank you for watching!

Have more questions?

Join us at community.grafana.com.