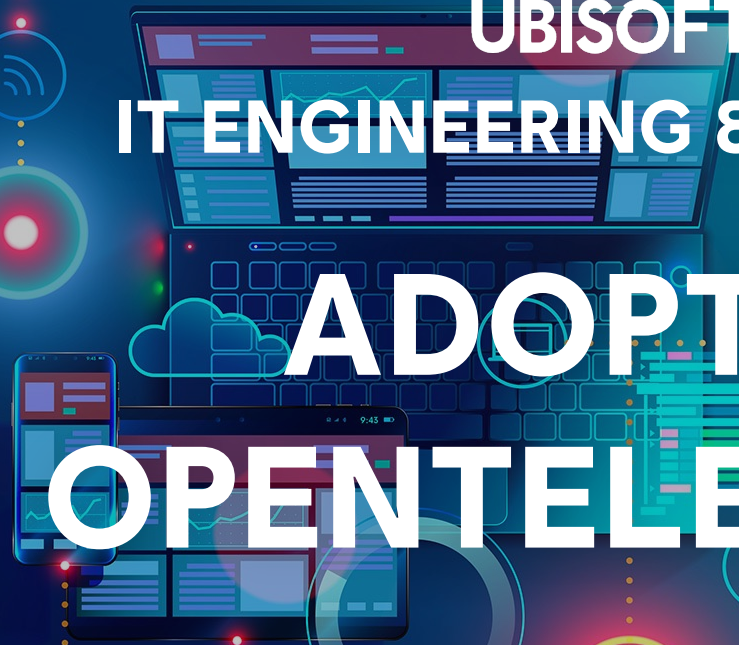
UBISOFT IT

IT ENGINEERING & PLATFORM

ADOPTING OPENTELEMETRY



06/02/2022

ABOUT ME

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Ubisoft

French video game company

Twitter

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GitHub

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AGENDA

1. OpenTelemetry
2. Our context and goals
3. Implementation
4. Adoption
5. Benefits

OPENTELEMETRY

High-quality, ubiquitous, and portable telemetry to enable effective observability

Open source

- 2019
- OpenTracing
- OpenCensus
- CNCF - #2 project

Contributors

- Amazon, Google, Microsoft, RedHat, ...
- Splunk, Datadog, Grafana, Dynatrace, New Relic, Elastic, ...

OPENTELEMETRY

What's in it?

Specifications

- Traces: stable
- Metrics: stable
- Logs: experimental
- Semantic Conventions
- Propagation
- **Protocol** (OTLP)
- …

Implementations

- **APIs**
- **SDKs**
- Libraries instrumentation
- 11 languages

Collector

- **Interoperability**
- Written in Go
- OpenCensus Service
- OTel's killer feature

OPENTELEMETRY COLLECTOR

Vendor-agnostic way to receive, process and export telemetry data

Components

- 50+ receivers
- 40+ exporters
- 20+ processors
- 10+ extensions
- Custom components
- Distributions

OUR CONTEXT

Why we reconsidered our monitoring strategy?

Silos

- **Total isolation** between logs and metrics
- **Heterogenous** agents setup between services

Internal requirements

- Push **logs** to an Elasticsearch-based platform
- Push **metrics** to a VictoriaMetrics-based platform

Timing

- GA approching…
- Integrating more services

OUR GOALS

Unified Platform

Unified Visualization Platform

- **Quickly surface relevant data**
- With **correlation** between logs, metrics and traces
- Jump from graphs (metrics) to traces – with exemplars – to logs, …

Unified collection and processing platform

- Common set of **metadata** and **naming convention**
- Simplify operations

OUR GOALS

Platform Features

Standards and conventions

- **Interoperability** between our applications
- Interoperability with 3rd party components
- Improve **troubleshooting and understanding** of our system

Extensible

- **Custom use-cases**
- Logs, metrics and traces today, **continuous profiling tomorrow**?

OUR GOALS

Integration in Ubisoft Ecosystem

Compliance with internal requirements

- Push our logs to an internal Elasticsearch-based service
- Set pre-defined labels on specific logs for security audit
- Push our metrics to an internal VictoriaMetrics-based service

Alignment with other teams

- Lots of teams / services at Ubisoft
- **Align** on the technology stack
- **Share** knowledge, experience

WHY OPENTELEMETRY

And what are we using?

Semantic conventions

- Spans attributes
- Application's logs
- Collector pipelines

API/SDK for tracing

- Stable API/SDK available in multiple languages
- Auto-instrumentation
- Adoption by libraries
- OTLP

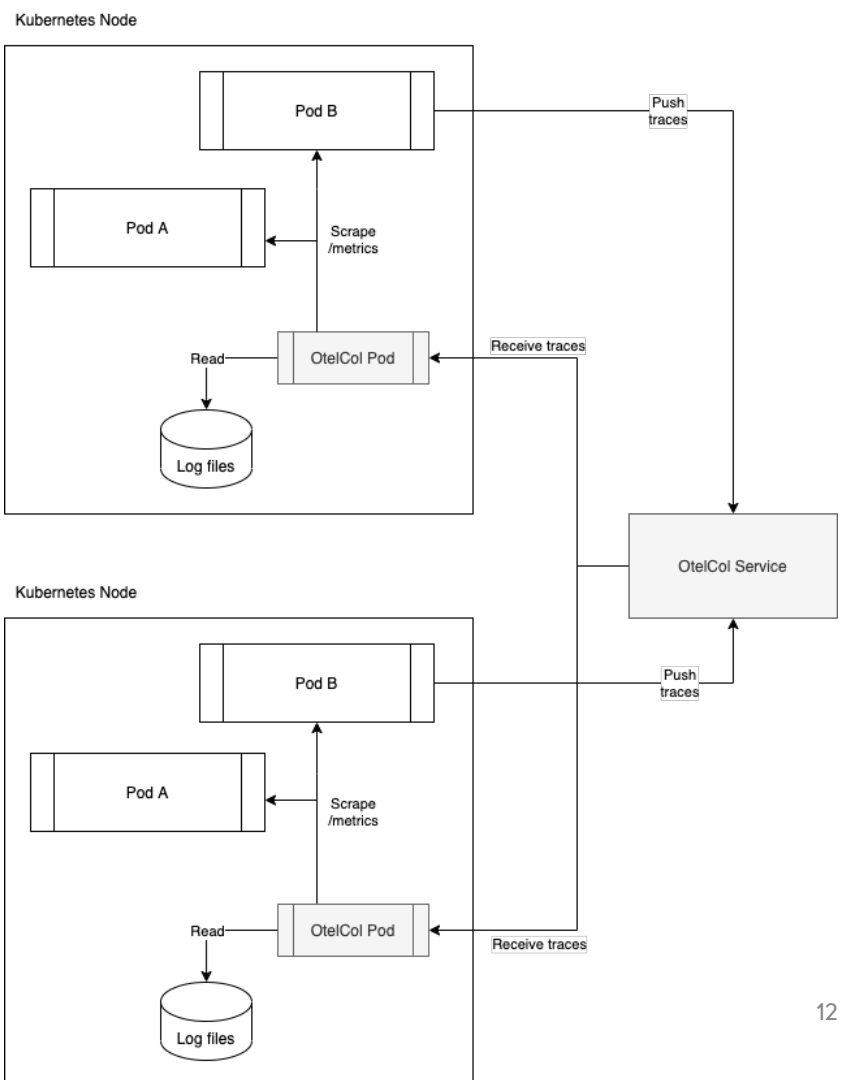
Collector

- Single agent
- Interoperability
- Routing
- Custom processors
- Custom distribution
- **Not just an agent, but an extensible platform**

IMPLEMENTATION

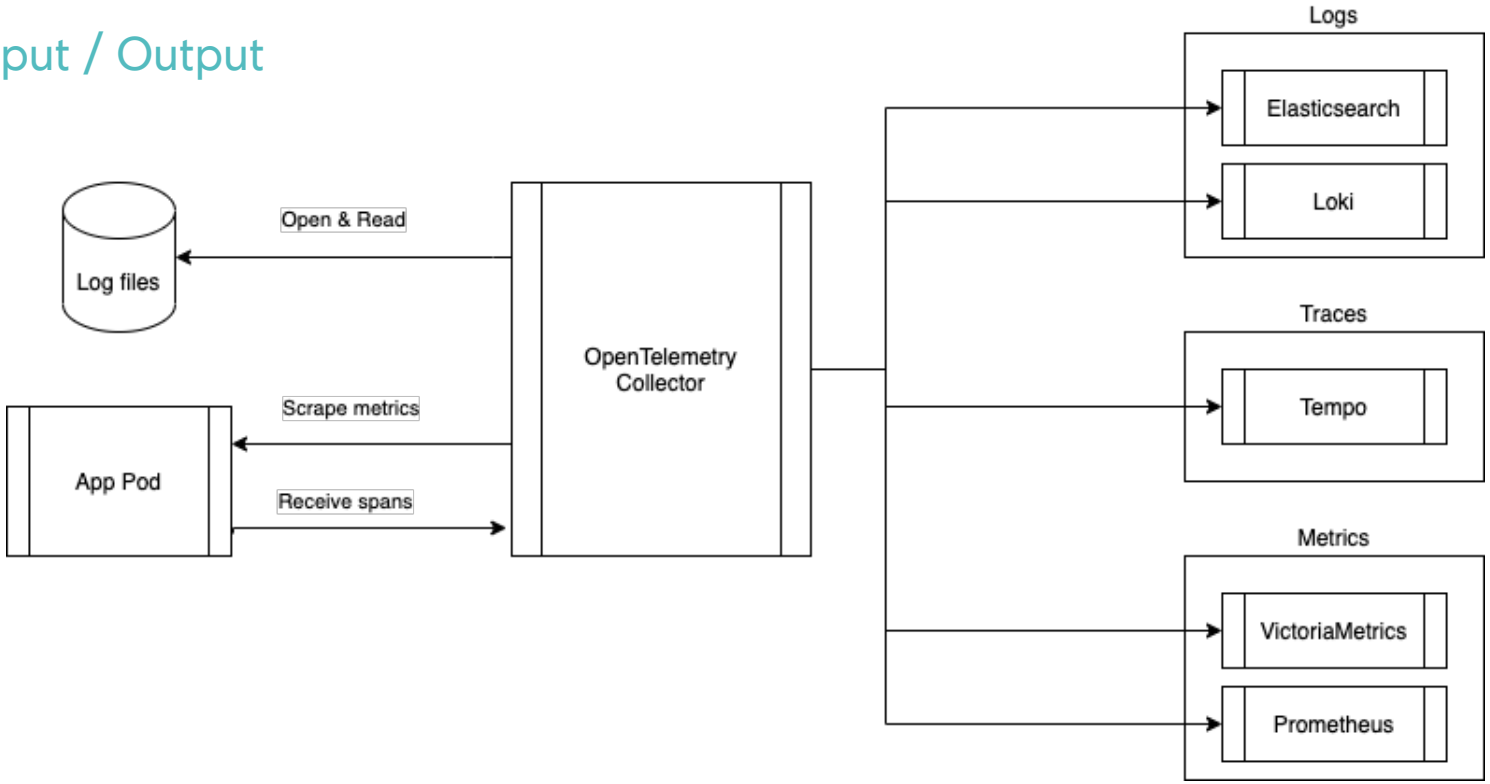
Deployment Strategy

- Kubernetes
- **DaemonSet**
- Per-node collection of logs and metrics
- Spans ingestion through a Service



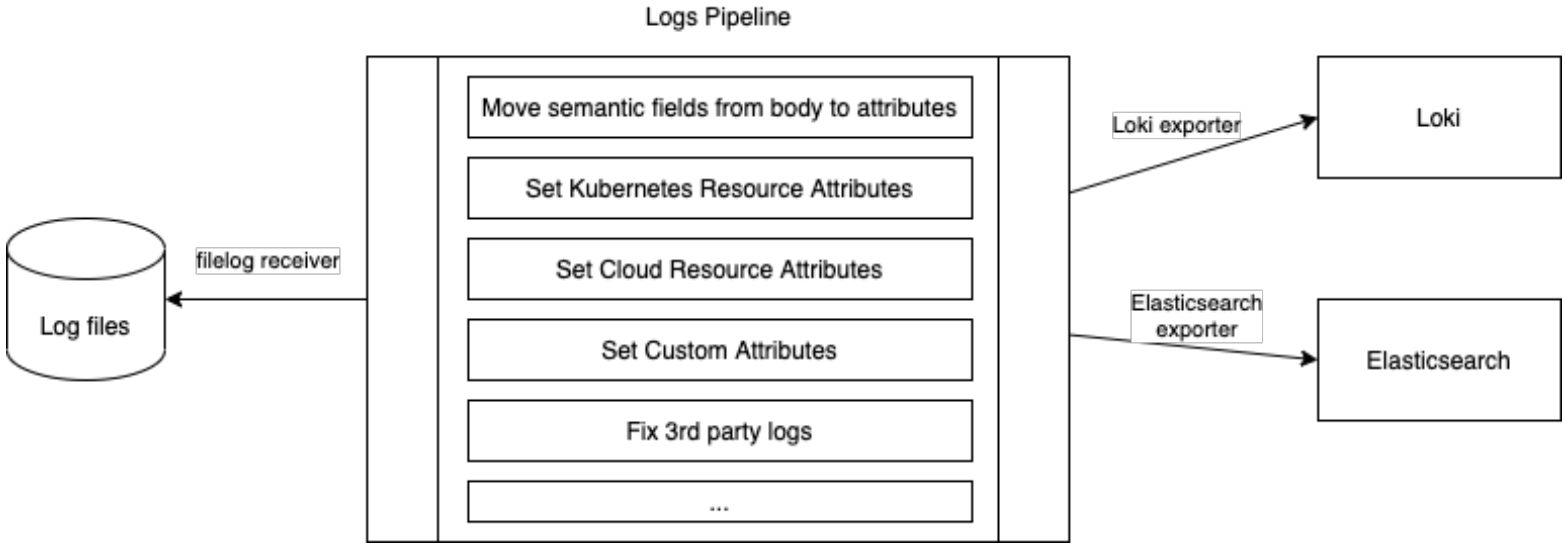
IMPLEMENTATION

Input / Output



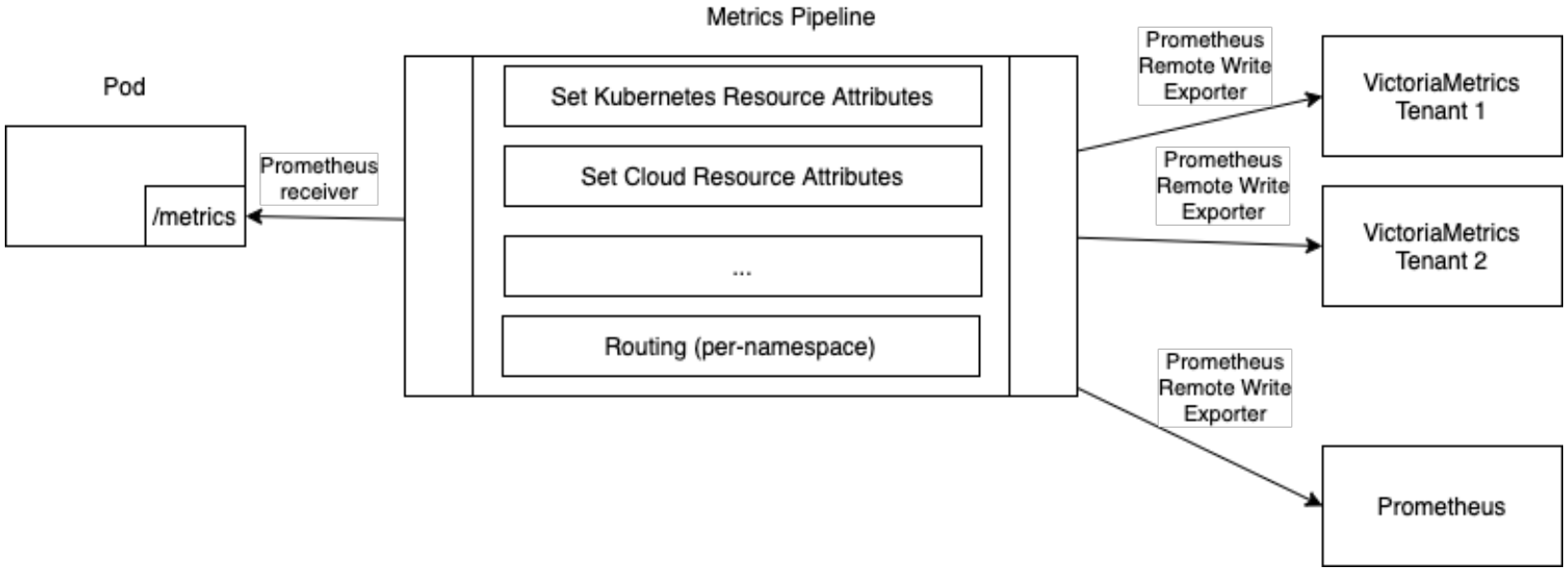
IMPLEMENTATION

Logs Pipeline



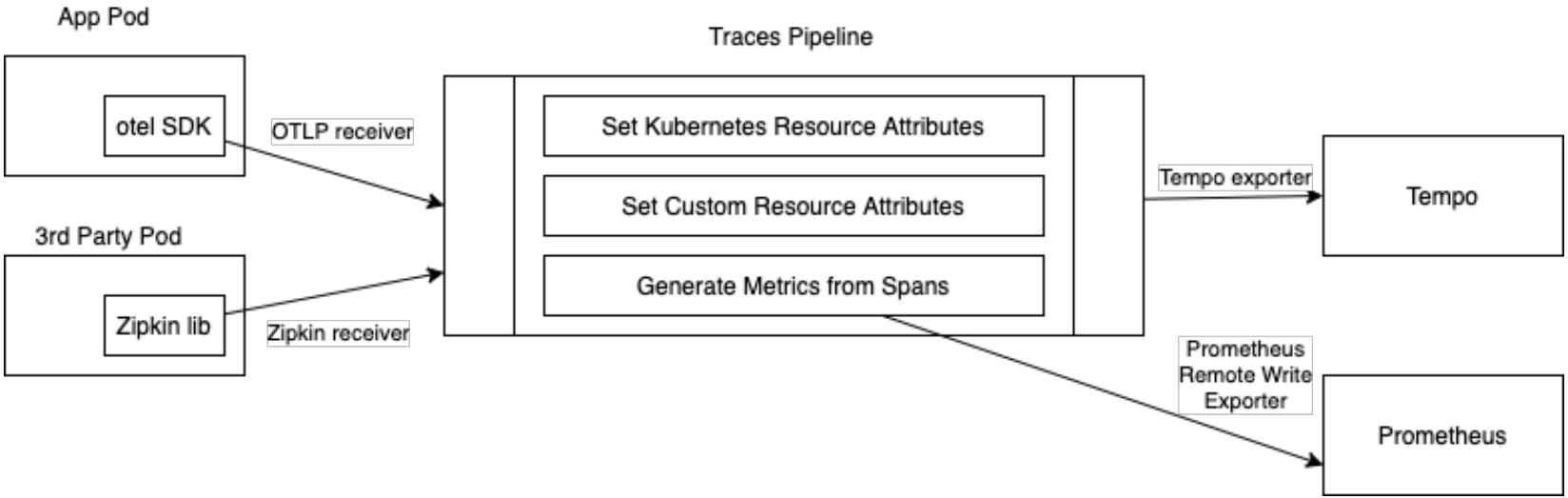
IMPLEMENTATION

Metrics Pipeline



IMPLEMENTATION

Traces Pipeline



IMPLEMENTATION

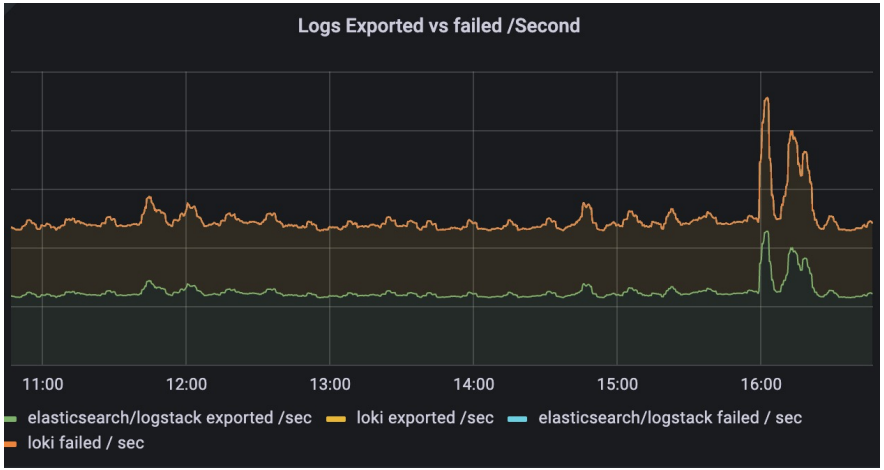
Custom (logs) processors

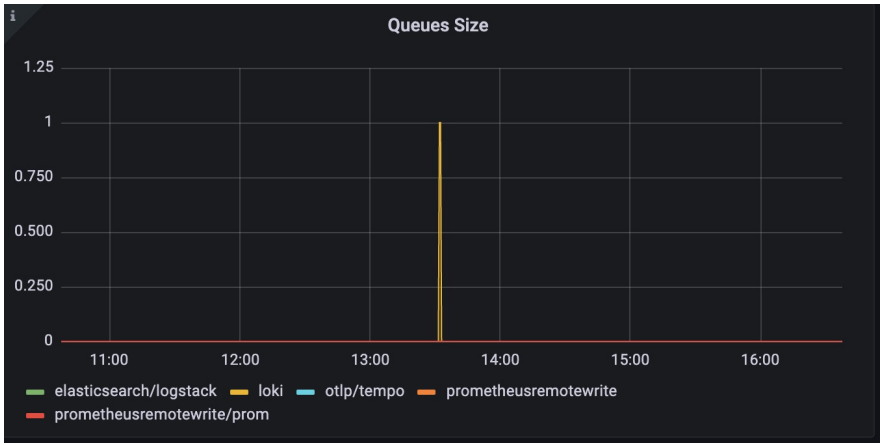
```
func (p *logProcessor) ProcessLogs(ctx context.Context, logs pdata.Logs) (pdata.Logs, error) {
    rLogs := logs.ResourceLogs()
    for i := 0; i < rLogs.Len(); i++ {
        rLog := rLogs.At(i)
        ills := rLog.InstrumentationLibraryLogs()
        for j := 0; j < ills.Len(); j++ {
            ls := ills.At(j).Logs()
            for k := 0; k < ls.Len(); k++ {
                record := ls.At(k)
                record.Body()
                record.Attributes()
                rLog.Resource().Attributes()
            }
        }
    }
    return logs, nil
}
```

IMPLEMENTATION

Monitoring the collector

- Per component instance metrics





DEMO

Exemplars - in Grafana

ADOPTION

Changing people's mindsets about monitoring

POC & demo

- Start with a single service, end to end
- **Showcase the result**: how correlation can help get a better understanding of the system
- Provide value to the users

Formalize

- **ADR**: Architecture Decision Records
- Explore different solutions
- Highlight benefits and shortcomings
- Write standards and conventions

BENEFITS

Of adoting OpenTelemetry

Reducing cognitive load

- Single stack
- Semantic convention
- Simpler to use and operate

Towards observability

- (almost) no more silos
- Auto generation of metrics from traces
- Easier troubleshooting and understanding of the platform

Owning the pipeline

- No lock-in
- Extensible platform
- Open source
- Active development

SHORTCOMINGS

Various level of maturity depending on the components

- Logs data model is not stable yet – although in practice it should not change
- Prometheus metrics labels naming convention vs Otel semantic convention
- Prometheus Exemplars are not fully supported

WHAT'S NEXT

Our next steps

Tracing first

- Simplify instrumentation
- Generate metrics and logs from traces at the collector level

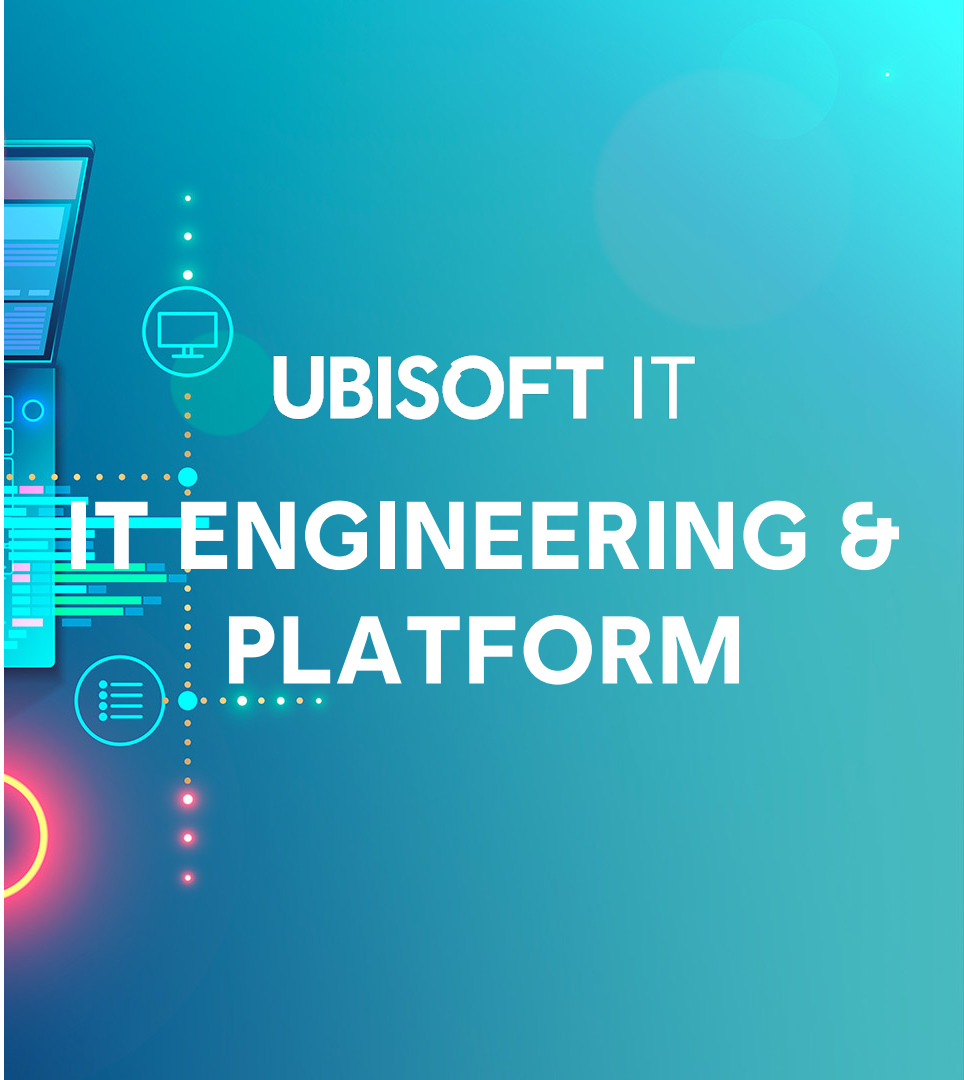
Continuous Profiling

- Parca – inspired by Prometheus
- Would be great to collect profiles from the OpenTelemetry Collector
- Backends: Parca, Pyroscope, …

CONCLUSION

1. **BREAK THE SILOS**
2. **UNIFIED PLATFORM**
3. **EMBRACE THE COLLECTOR**
4. **ENJOY**

THANK YOU!




Q&A