Getting Started with OpenTelemetry in .NET

Frank Boucher – Cloud Advocacy - Microsoft

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What is OpenTelemetry?

OpenTelemetry (OTel) is an open source, vendor-neutral observability framework for **instrumenting, collecting, and exporting** telemetry data such as **metrics**, **traces**, **logs**, and **profiling**

OpenTelemetry is **NOT** a monitoring/observability platform

Note: OpenTracing and OpenCensus merged into OpenTelemetry

What is OpenTelemetry?

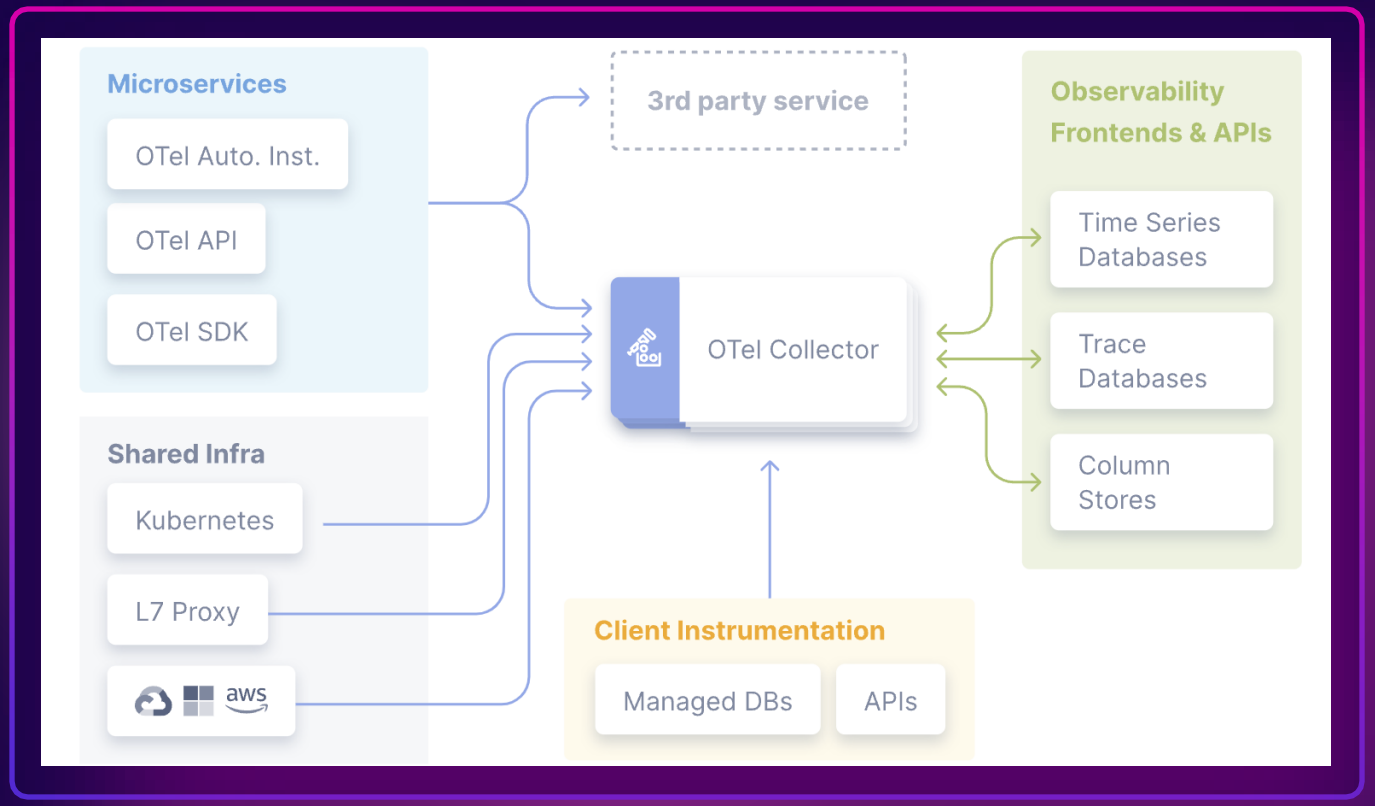
Collection of APIs and SDKs

Semantic Conventions

Tools

OpenTelemetry Components

- OTLP protocol
- Semantic conventions
- OpenTelemetry APIs
- Language SDKs
- OpenTelemetry Collector
- A library ecosystem
- OpenTelemetry Operator for Kubernetes, OpenTelemetry Helm Charts, and community assets for FaaS



OpenTelemetry Collector Pipeline

Receivers

Receive traces from your Java application using the OTel Java SDK as well as Prometheus

Processors

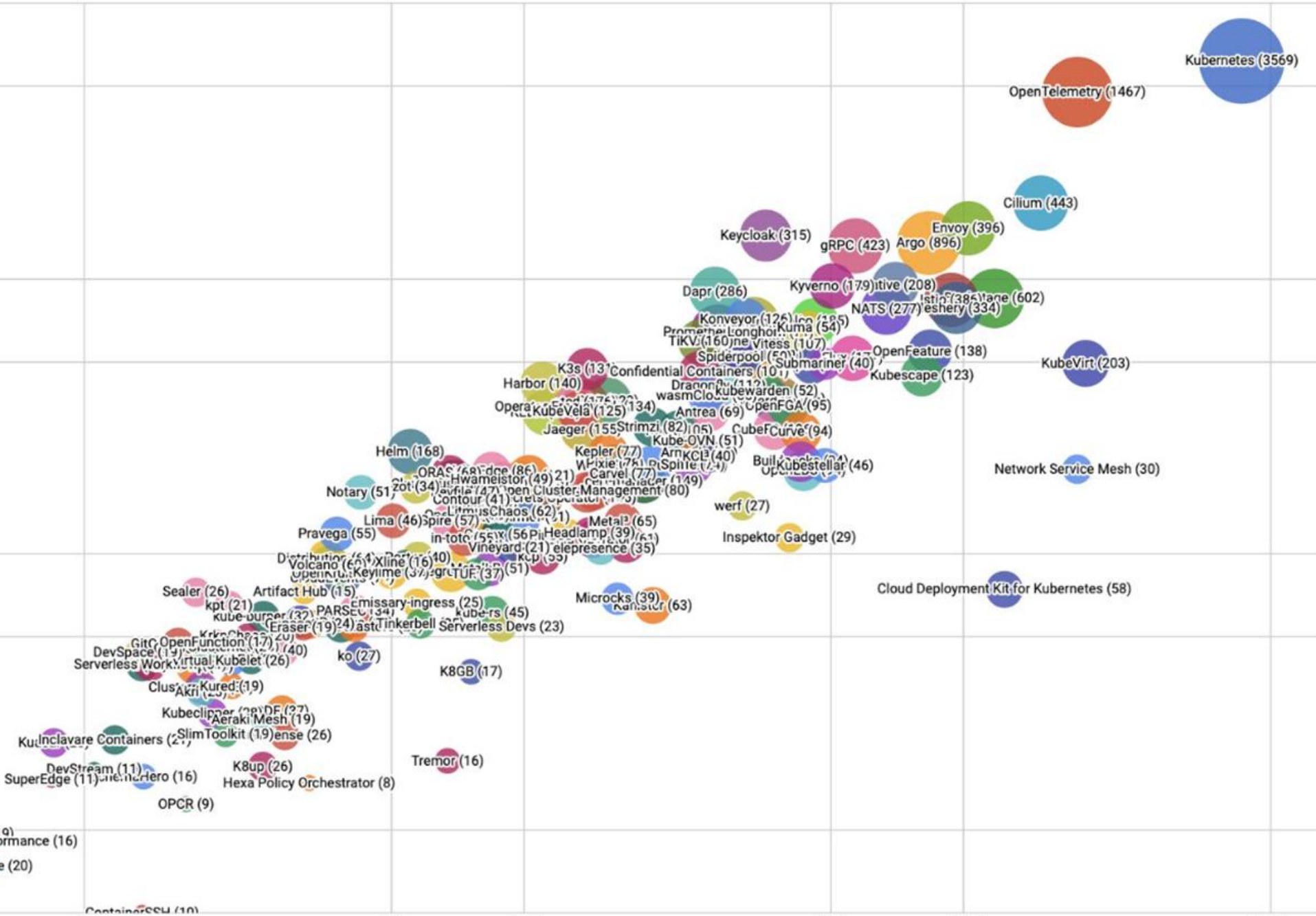
Use a processor to filter out sensitive data

Exporters

Export the telemetry data to both Datadog and another vendor for visualization and analysis

Connectors

Connect traces to metrics for additional performance insights



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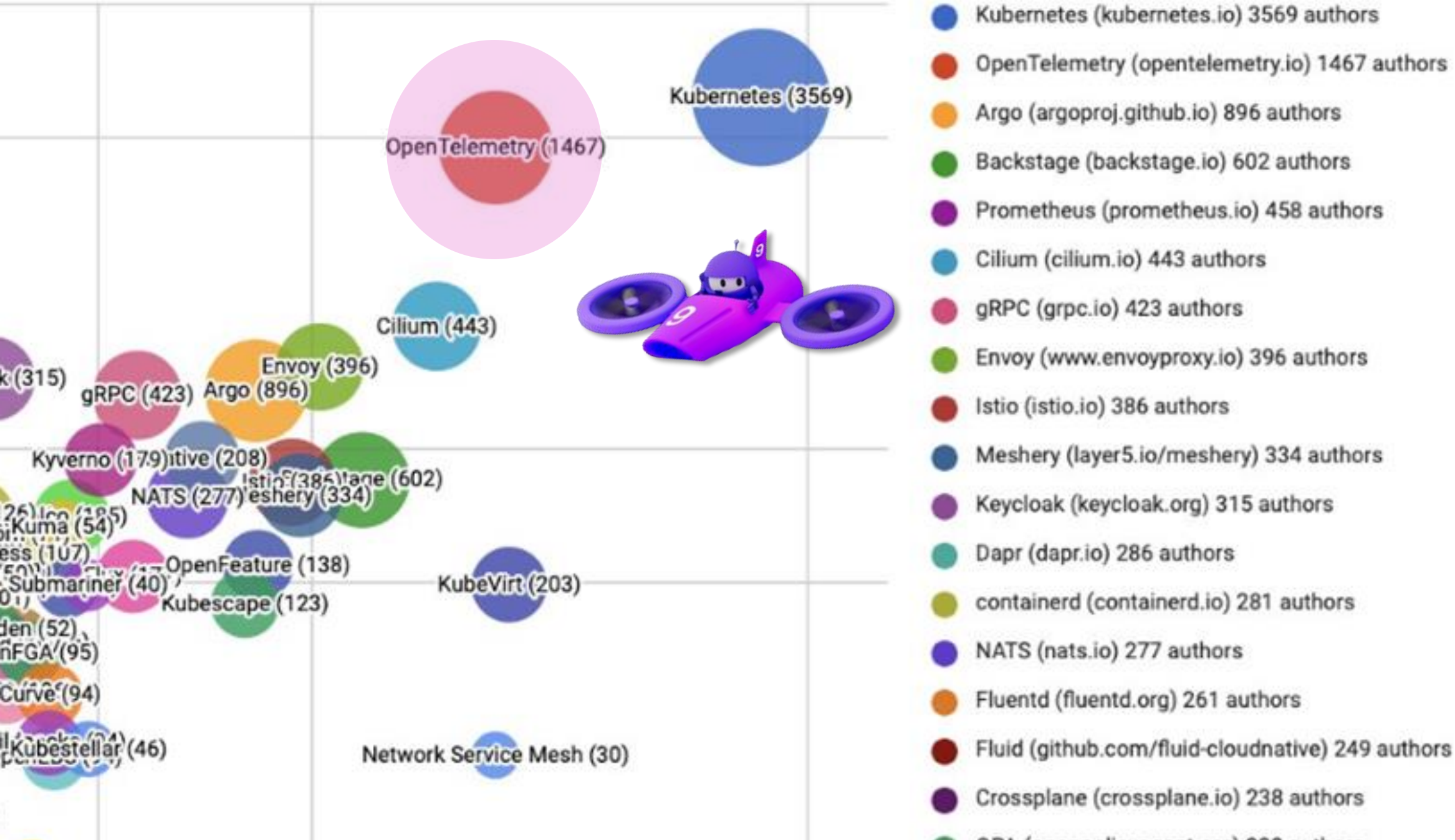

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Benefits of OpenTelemetry

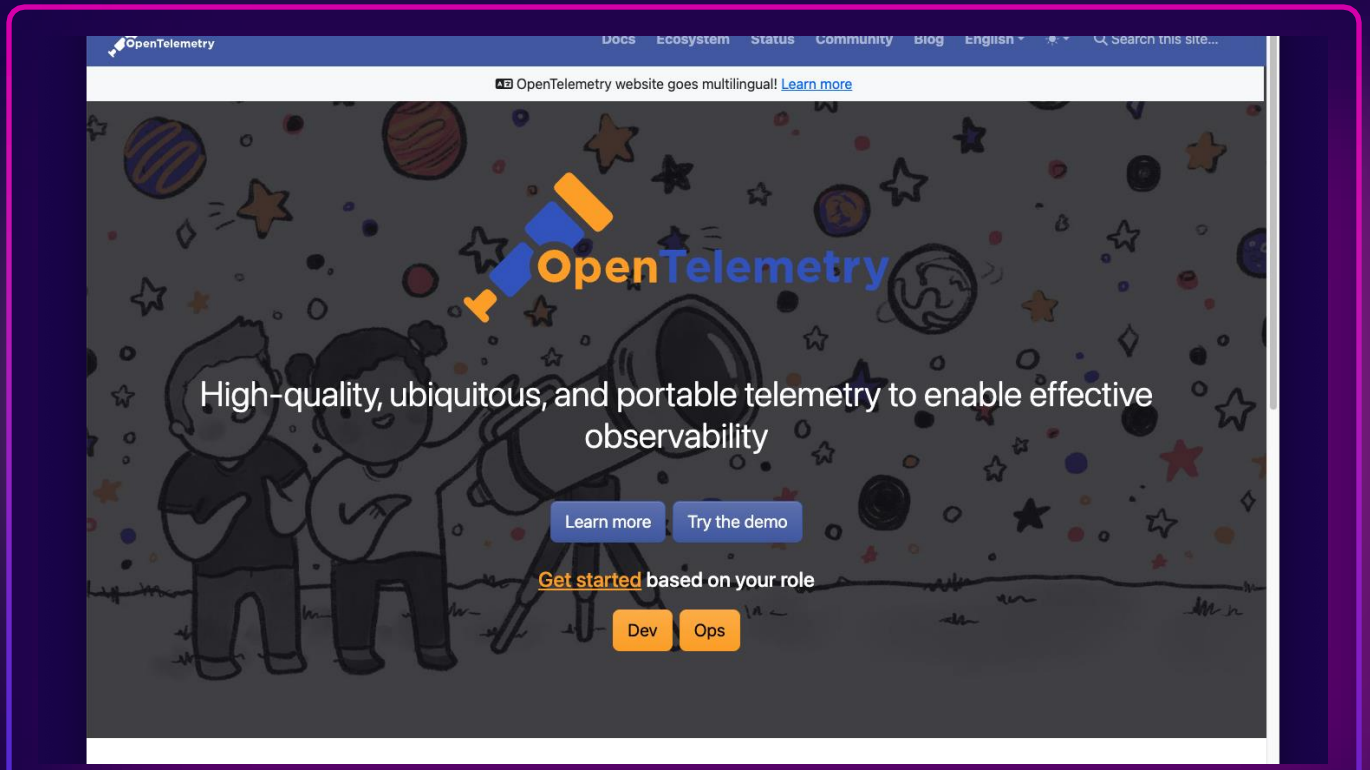
- Data Portability
- Data Flexibility
- Tool Convergence
- Cost Control
- Support for Rust, Swift, Elixir
- OpenTelemetry

A major goal of OpenTelemetry is that you can easily instrument your applications or systems, no matter their language, infrastructure, or runtime environment.

The storage and visualization of telemetry is intentionally left to other tools.

OpenTelemetry

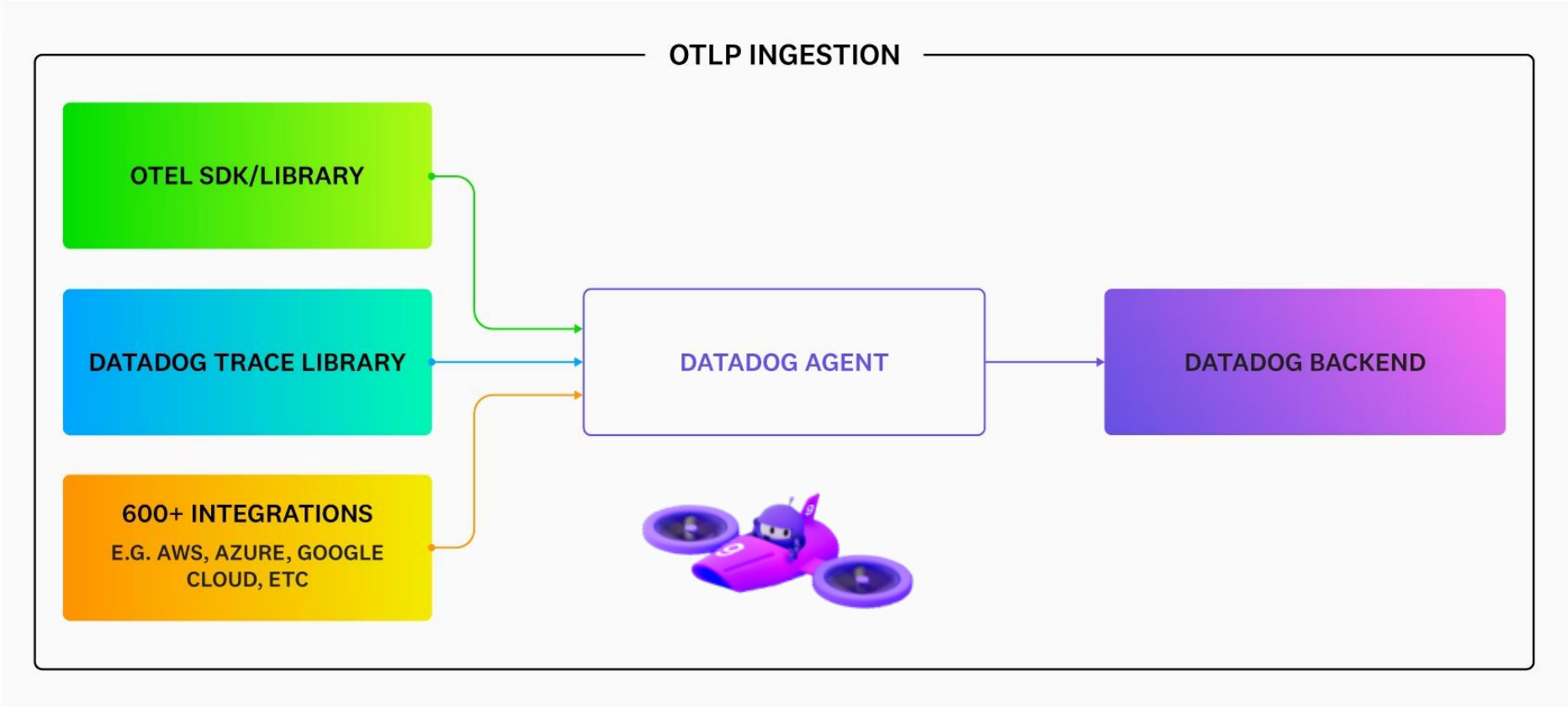
opentelemetry.io/docs/what-is-opentelemetry



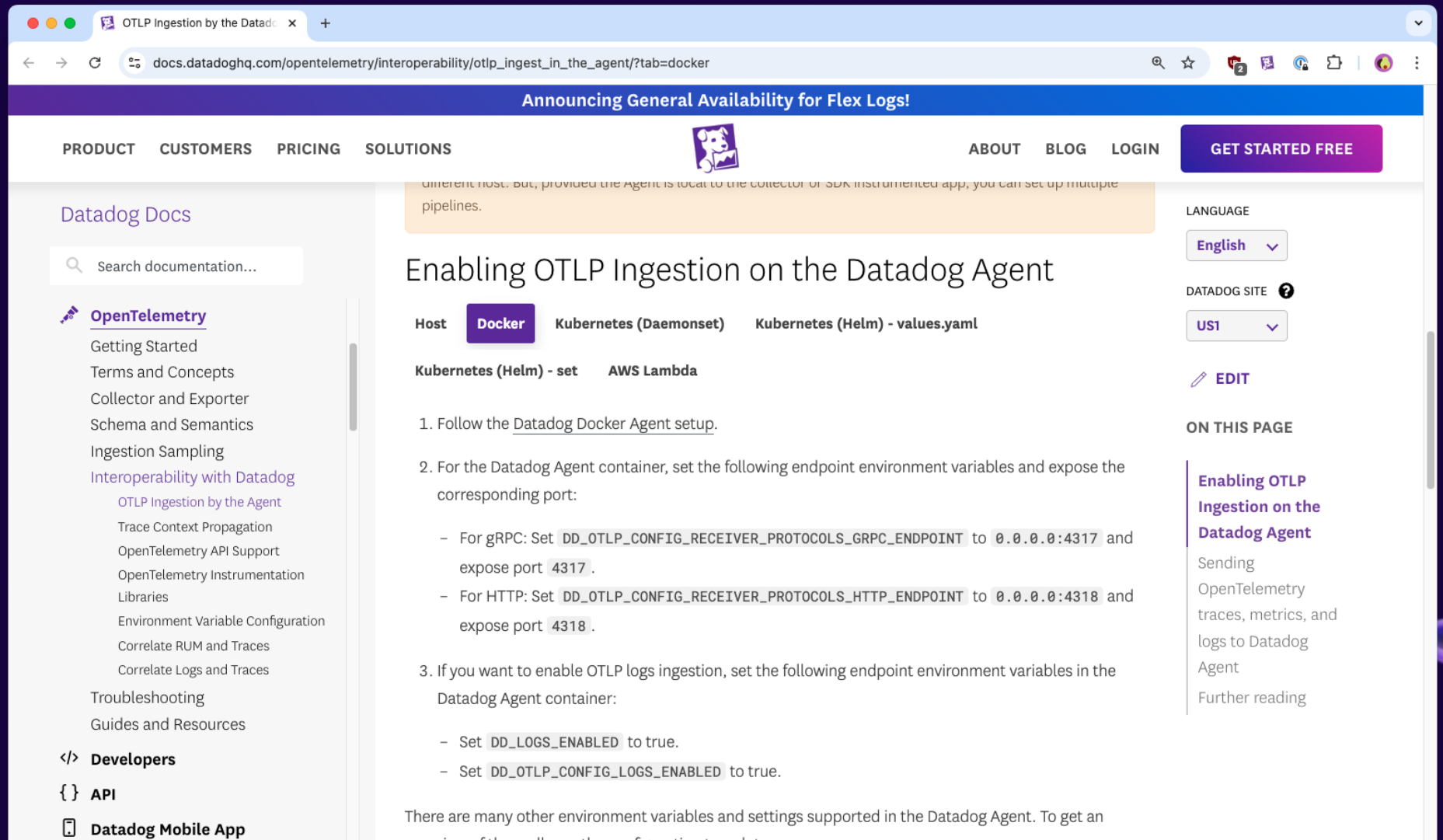
Demo:

OTEL & .NET Aspire

OpenTelemetry in Datadog



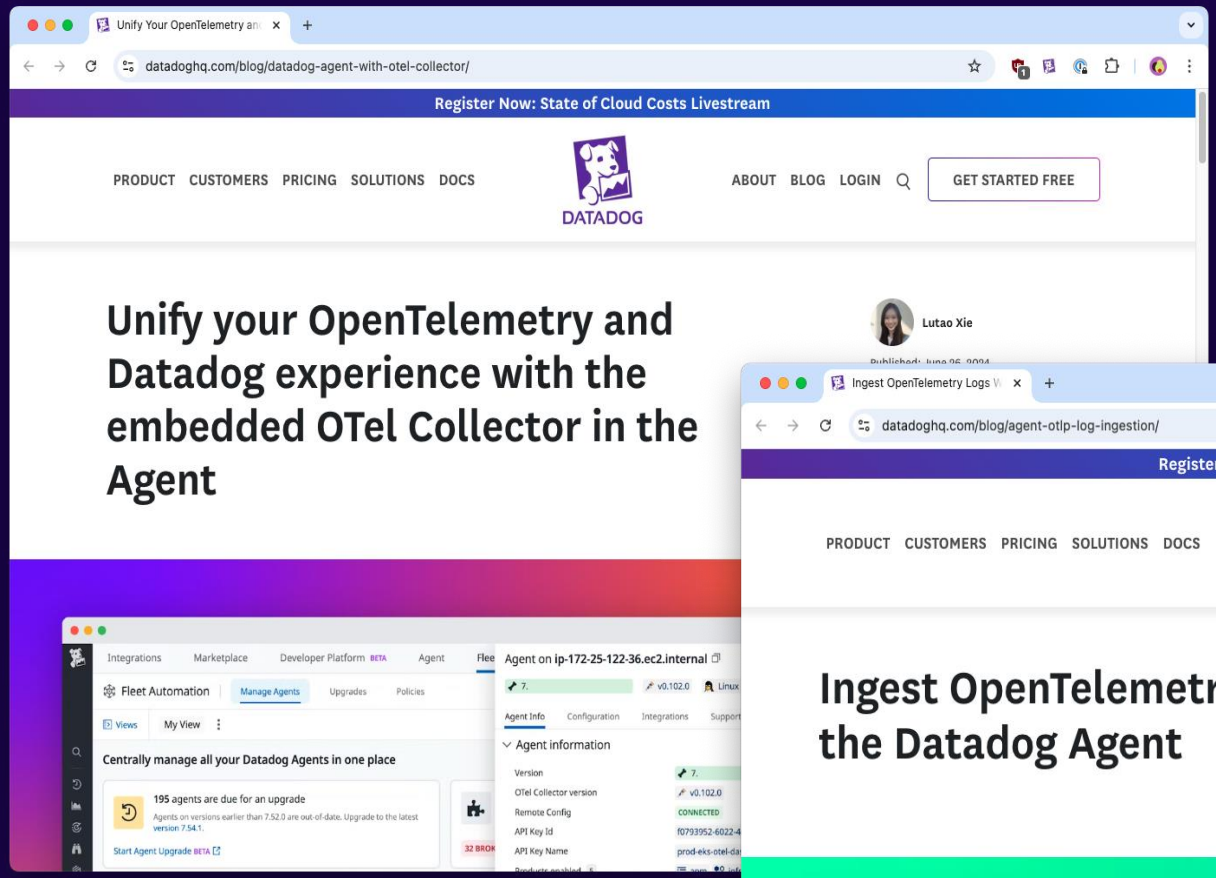
OpenTelemetry in Datadog



Demo:

OpenTelemetry in Datadog

Resources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OTel Collector version
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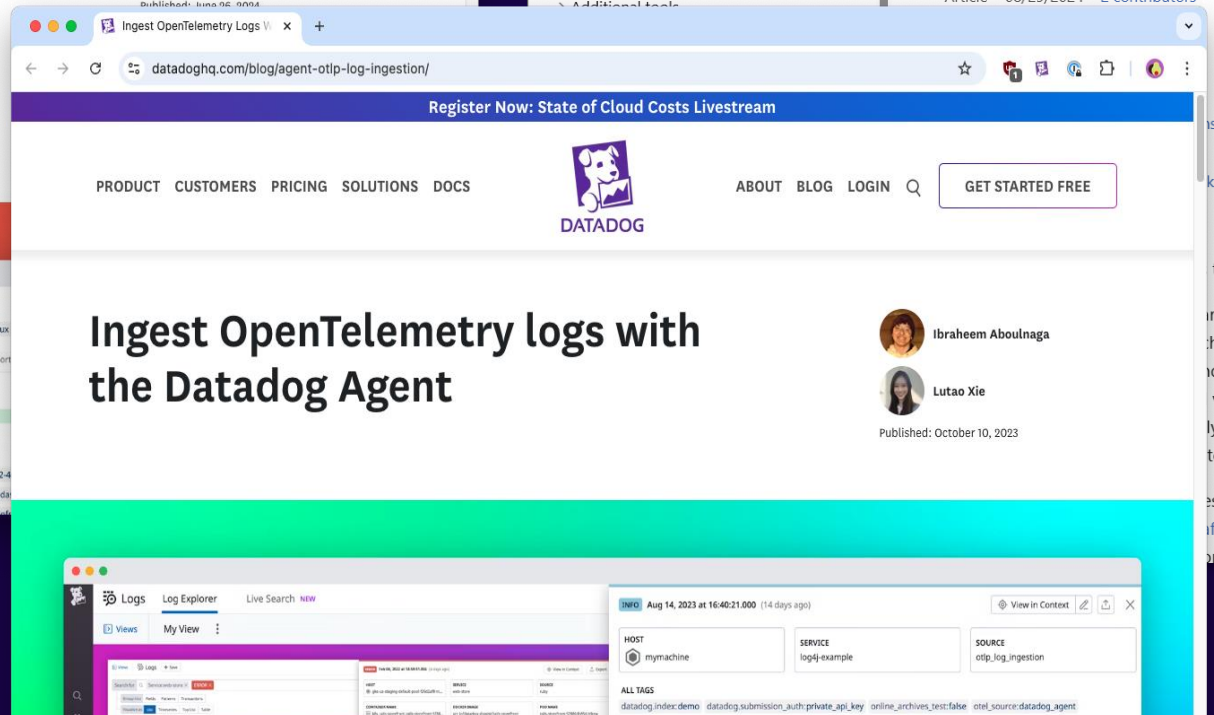
API Key Name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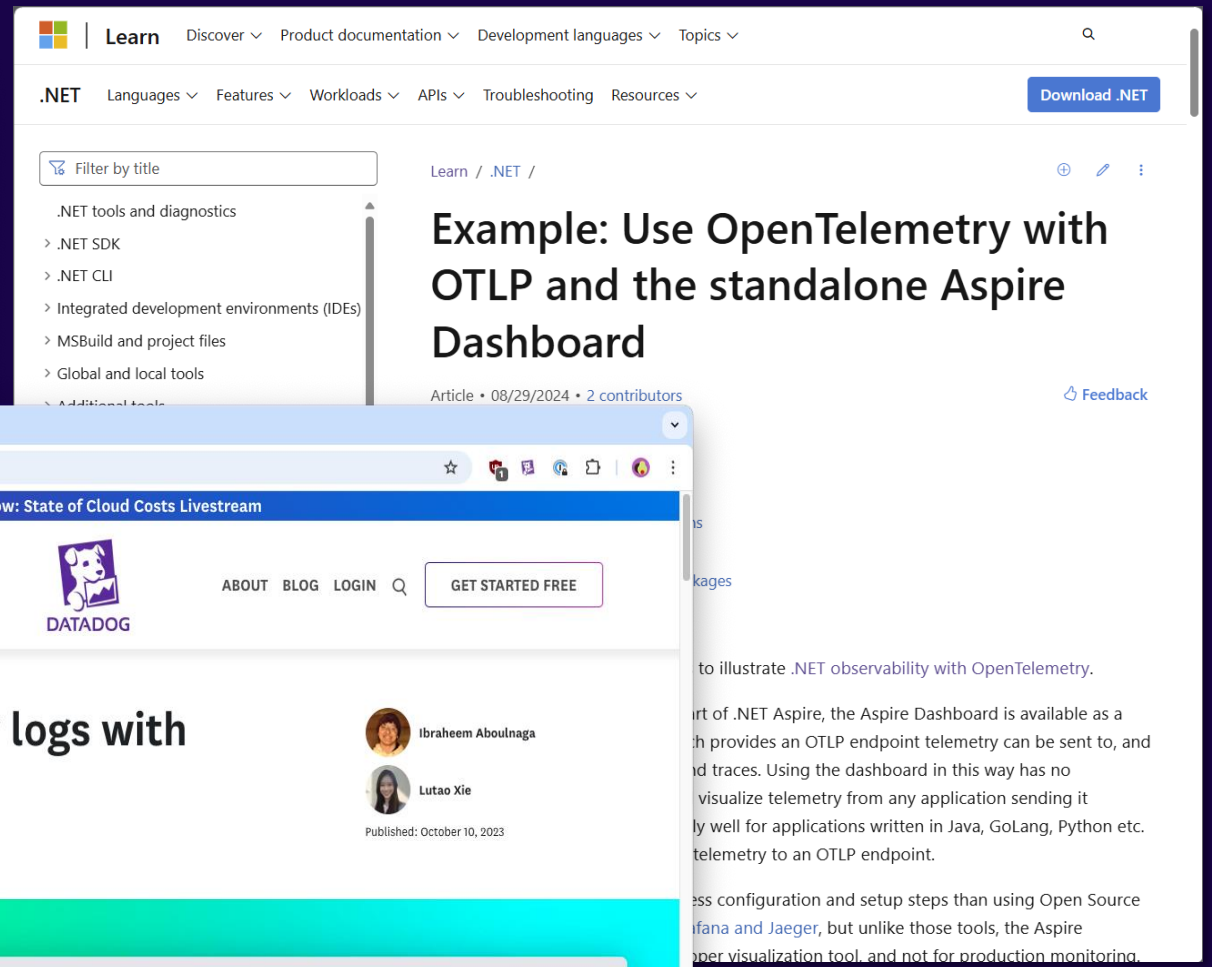
mymachine
SERVICE
log4j-example
SOURCE
otlp_log_ingestion
ALL TAGS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Example: Use OpenTelemetry with OTLP and the standalone Aspire Dashboard
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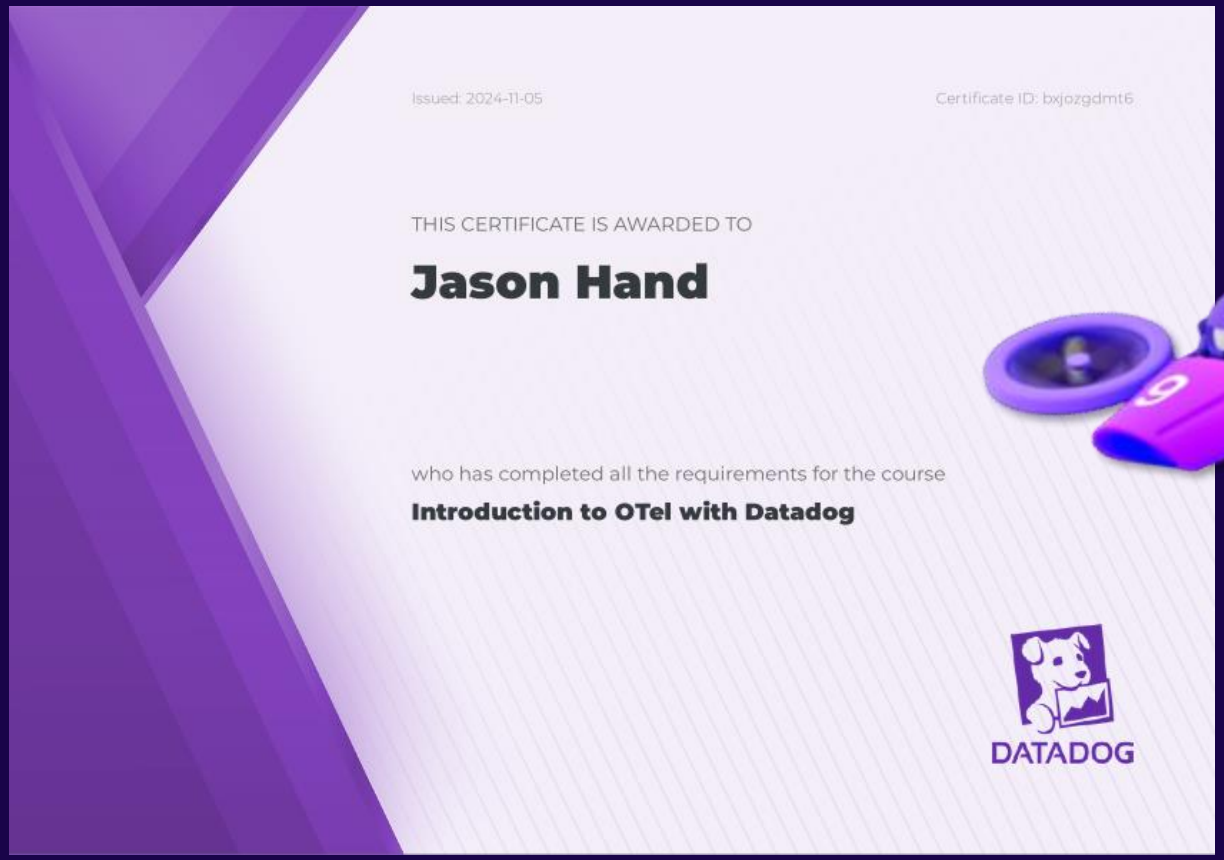
to illustrate .NET observability with OpenTelemetry.
rt of .NET Aspire, the Aspire Dashboard is available as a
h provides an OTLP endpoint telemetry can be sent to, and
d traces. Using the dashboard in this way has no
visualize telemetry from any application sending it
ly well for applications written in Java, GoLang, Python etc.
telemetry to an OTLP endpoint.
ess configuration and setup steps than using Open Source
fana and Jaeger, but unlike those tools, the Aspire
per visualization tool, and not for production monitoring.

Resources



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Resources

https://github.com/jasonhand/DotNetConf24

GitHub repository (companion content and links)

https://c5m.ca/otel-demo

.NET Aspire & Otel Workshop. Reproduce the session demos.

https://www.youtube.com/watch?v=8i3FaHChh20

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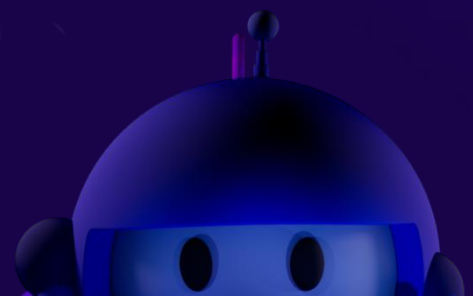
Thank you