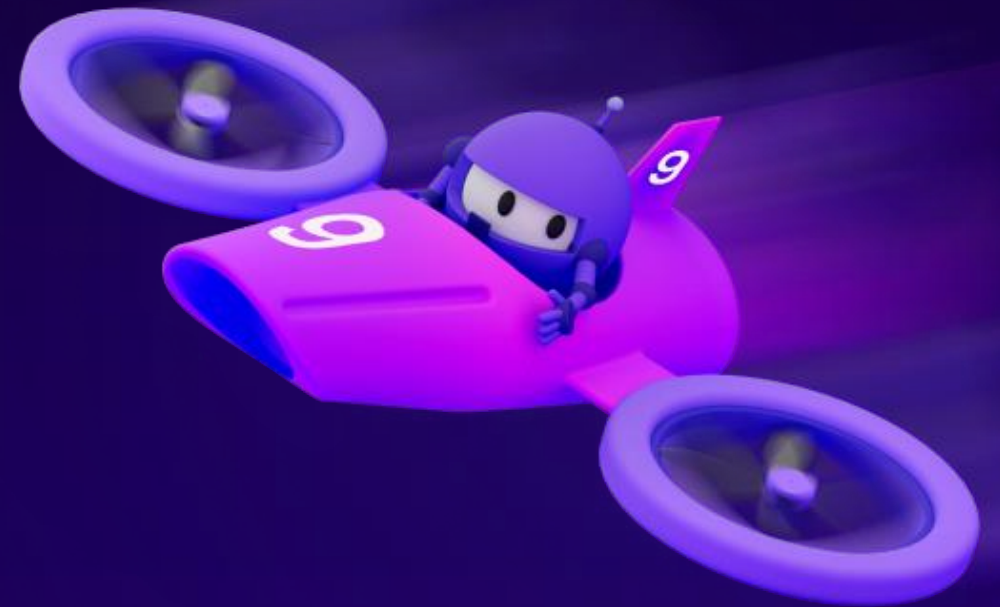


Getting Started with OpenTelemetry in .NET

Frank Boucher – Cloud Advocacy - Microsoft

Jason Hand – SRE/DevOps/AI Advocacy - Datadog



Getting Started with OpenTelemetry in .NET



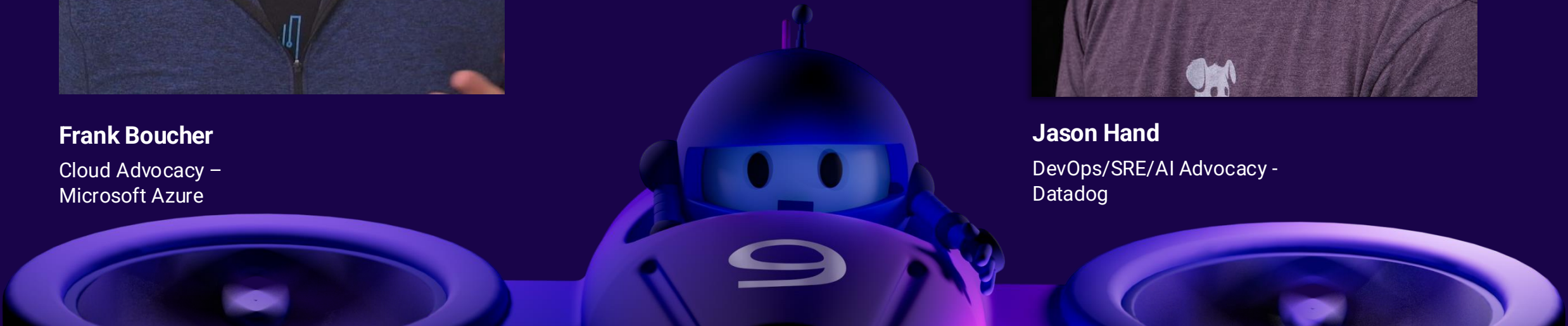
Frank Boucher

Cloud Advocacy –
Microsoft Azure



Jason Hand

DevOps/SRE/AI Advocacy -
Datadog



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?



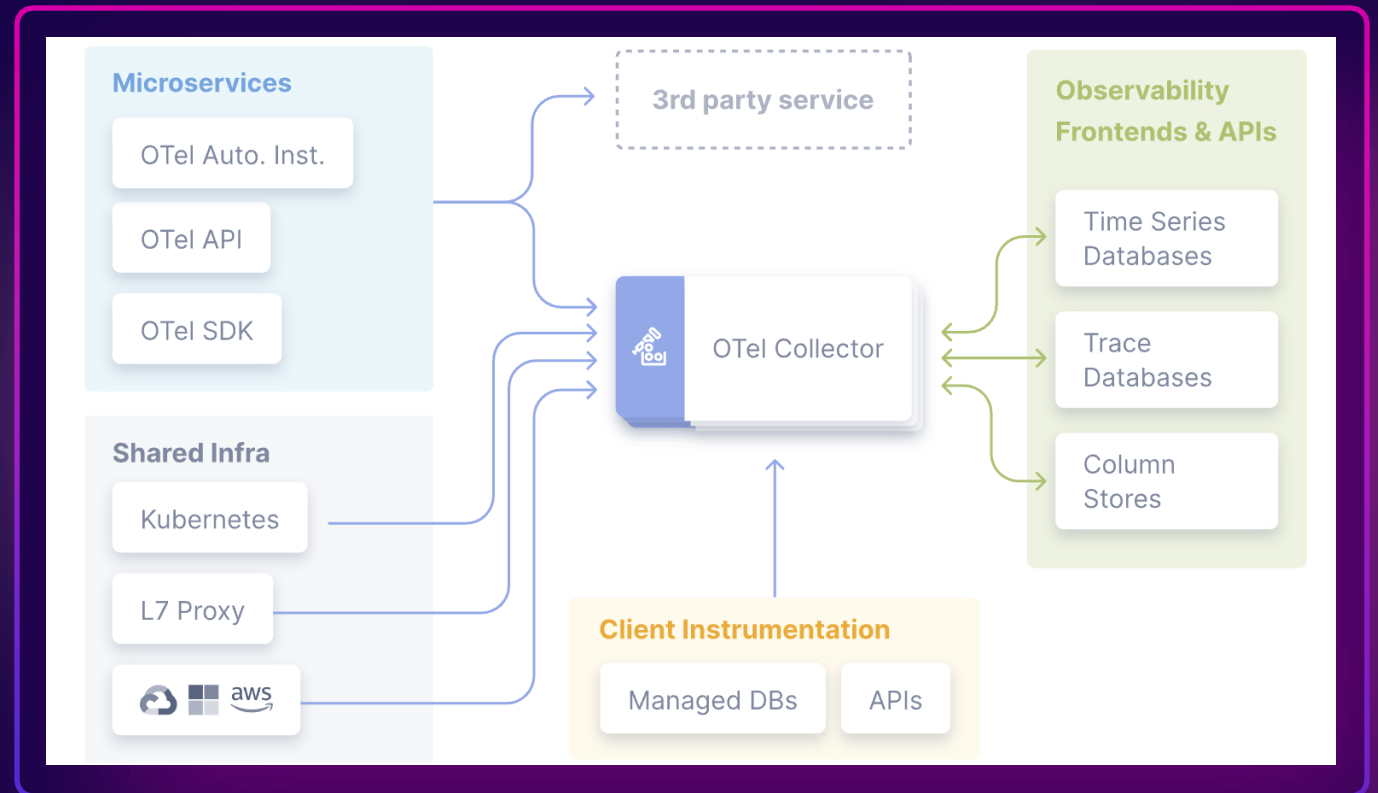
**Collection of APIs
and SDKs**

**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

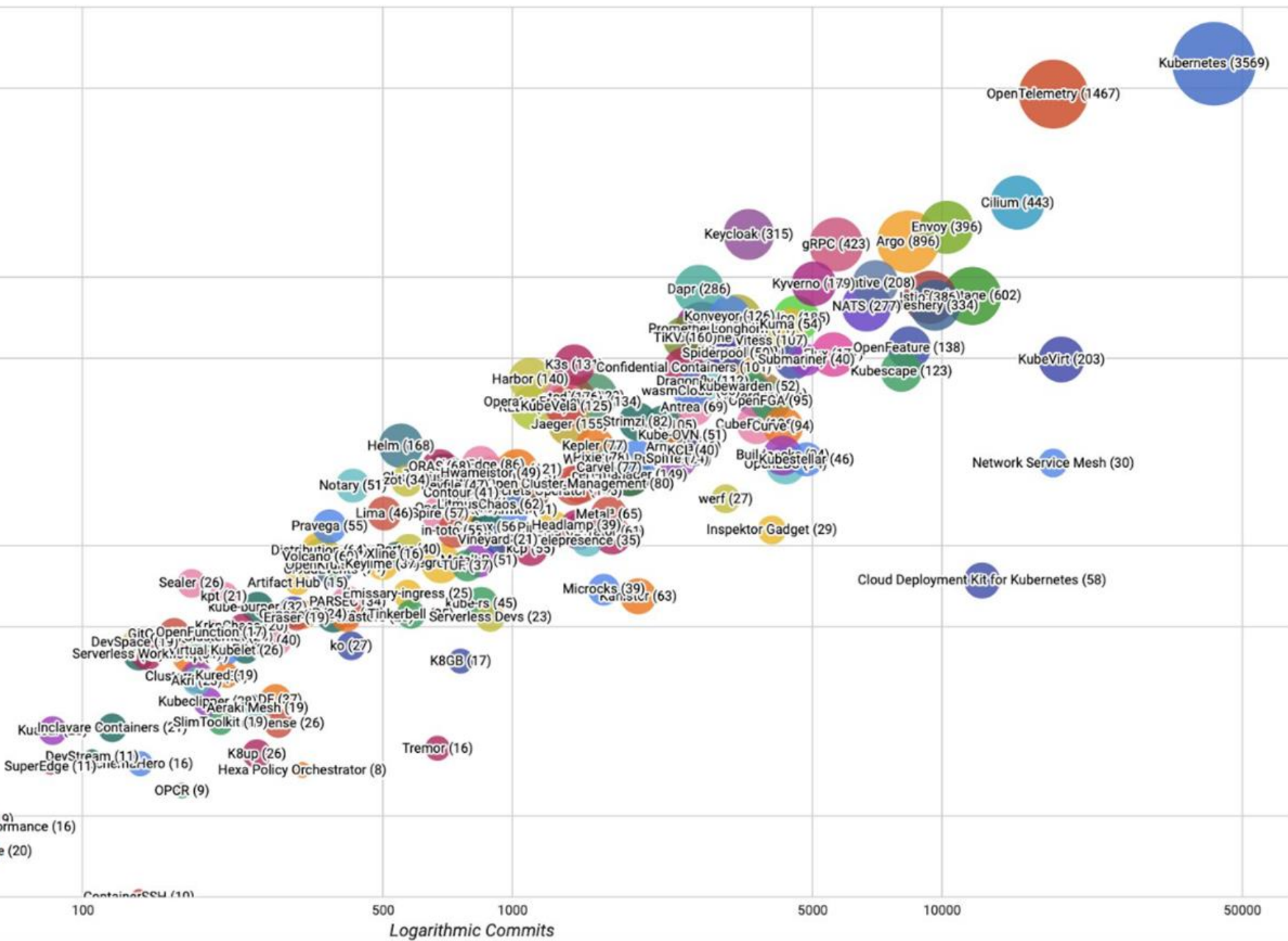
Use a processor to filter out sensitive data

Exporters

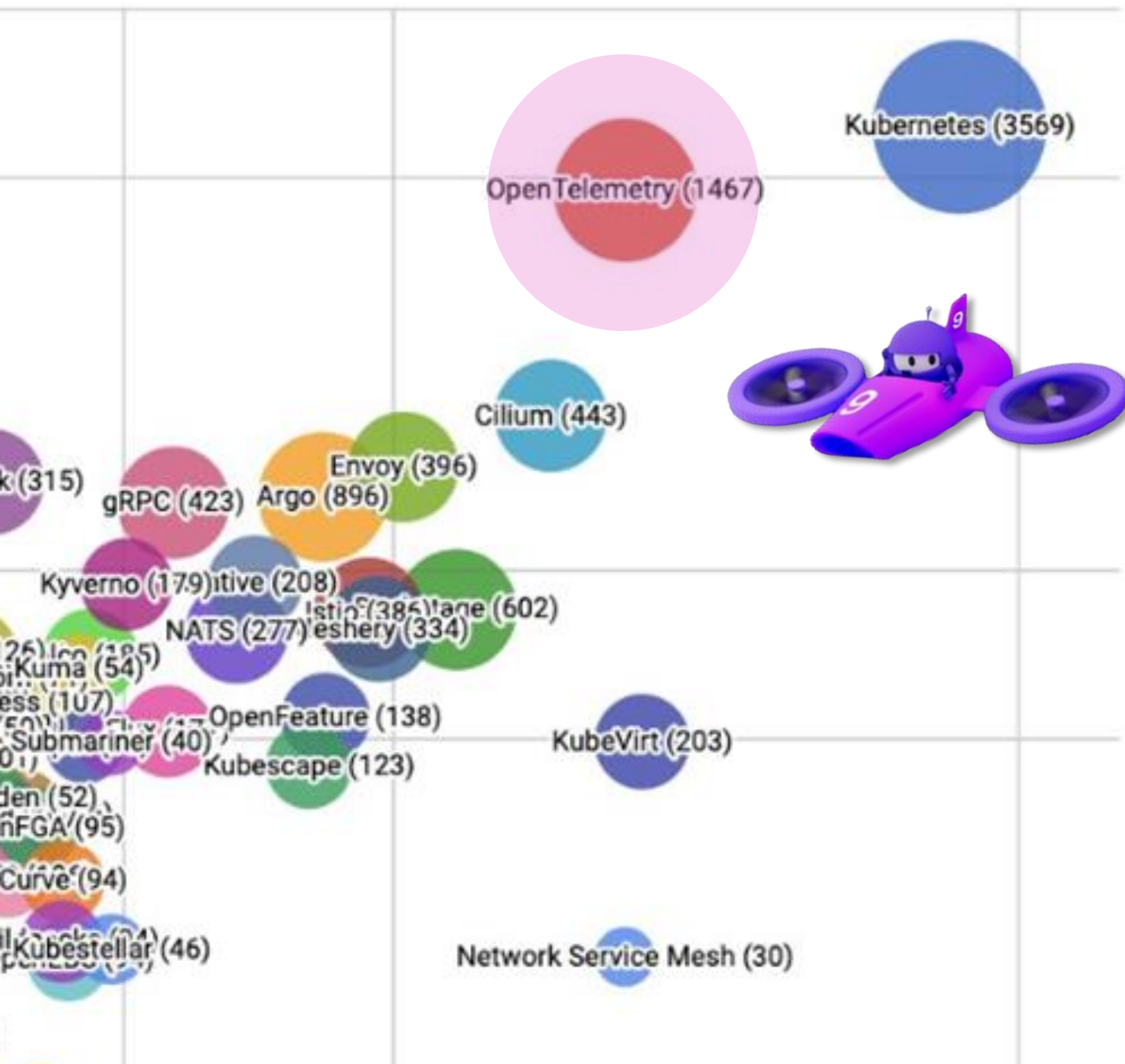
Export the telemetry data to both Datadog and another vendor for visualization and analysis

Connectors

Connect traces to metrics for additional performance insights



- Kubernetes (kubernetes.io) 3569 authors
- OpenTelemetry (opentelemetry.io) 1467 authors
- Argo (argoproj.github.io) 896 authors
- Backstage (backstage.io) 602 authors
- Prometheus (prometheus.io) 458 authors
- Cilium (cilium.io) 443 authors
- gRPC (grpc.io) 423 authors
- Envoy (www.envoyproxy.io) 396 authors
- Istio (istio.io) 386 authors
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- Fluentd (fluentd.org) 261 authors
- Fluid (github.com/fluid-cloudnative) 249 authors
- Crossplane (crossplane.io) 238 authors

Benefits of OpenTelemetry



Data Portability

Data Flexibility

Tool Convergence

Cost Control

**Support for Rust,
Swift, Elixir**





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.

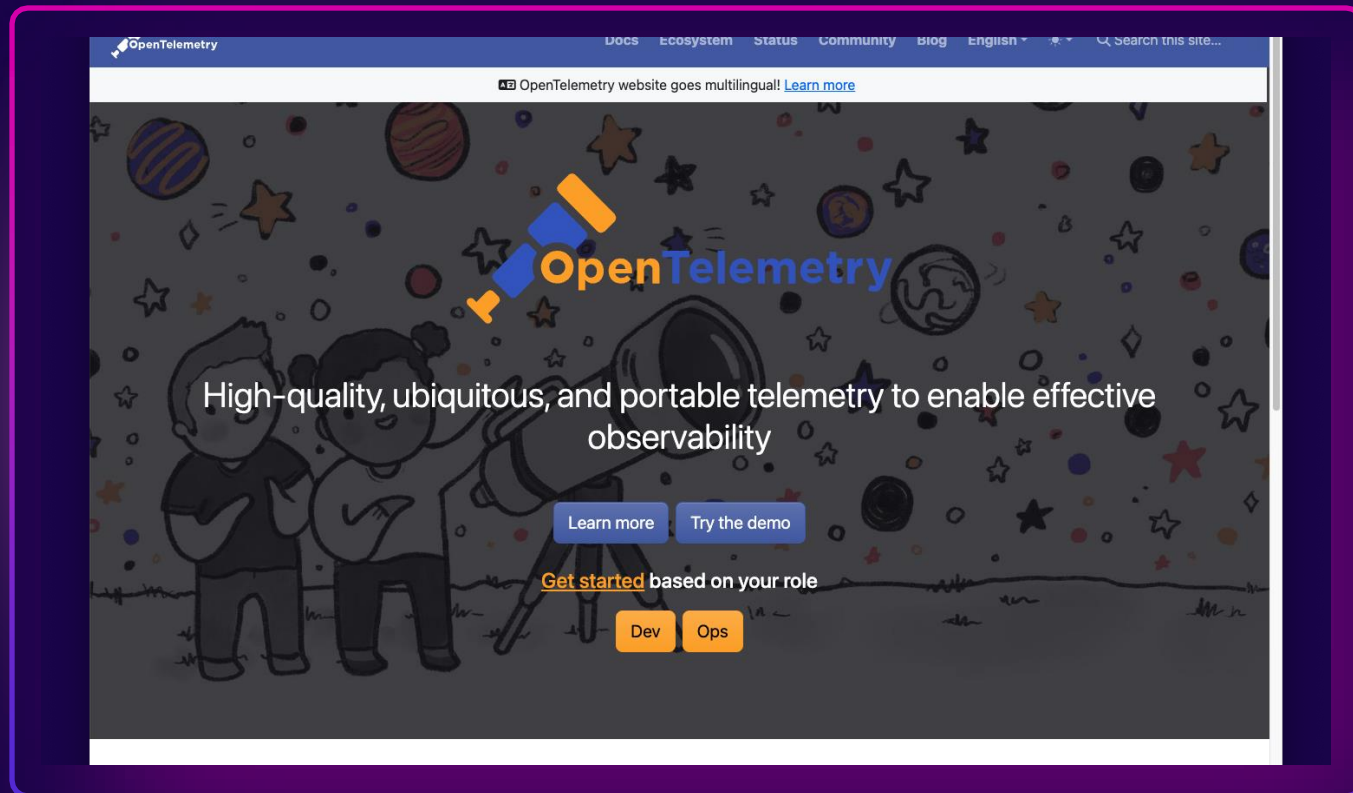


+



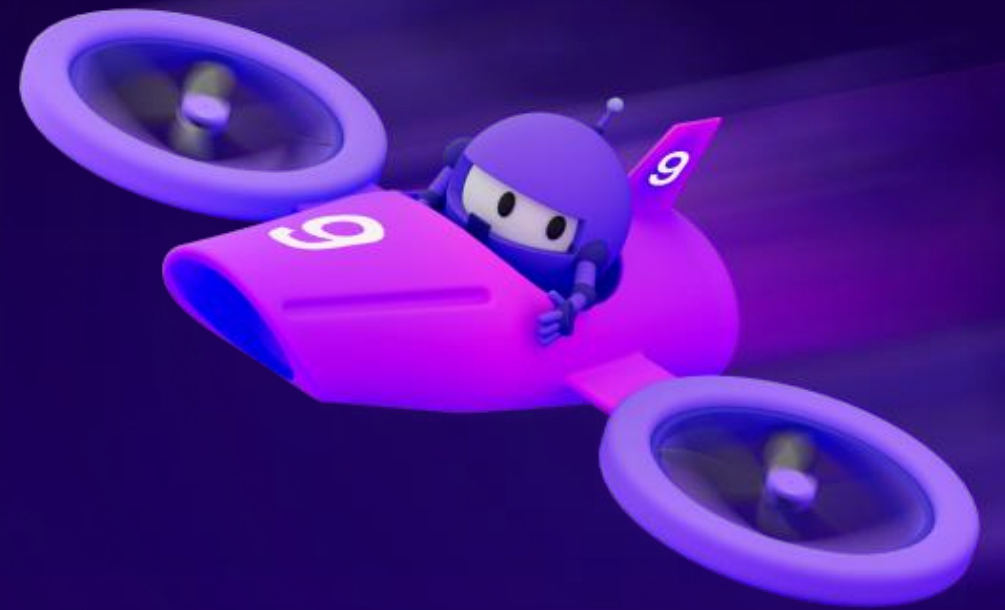
OpenTelemetry

opentelemetry.io/docs/what-is-opentelemetry

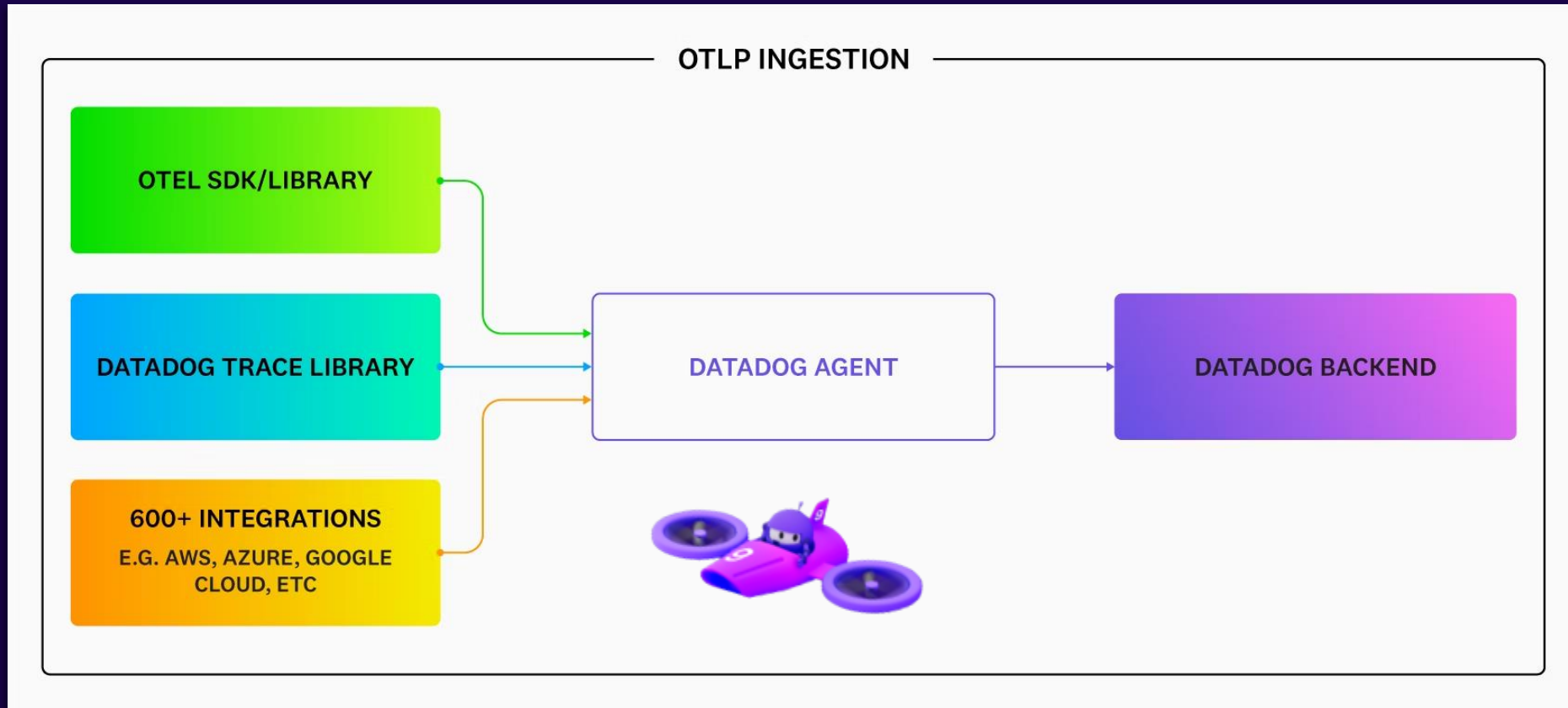


Demo:

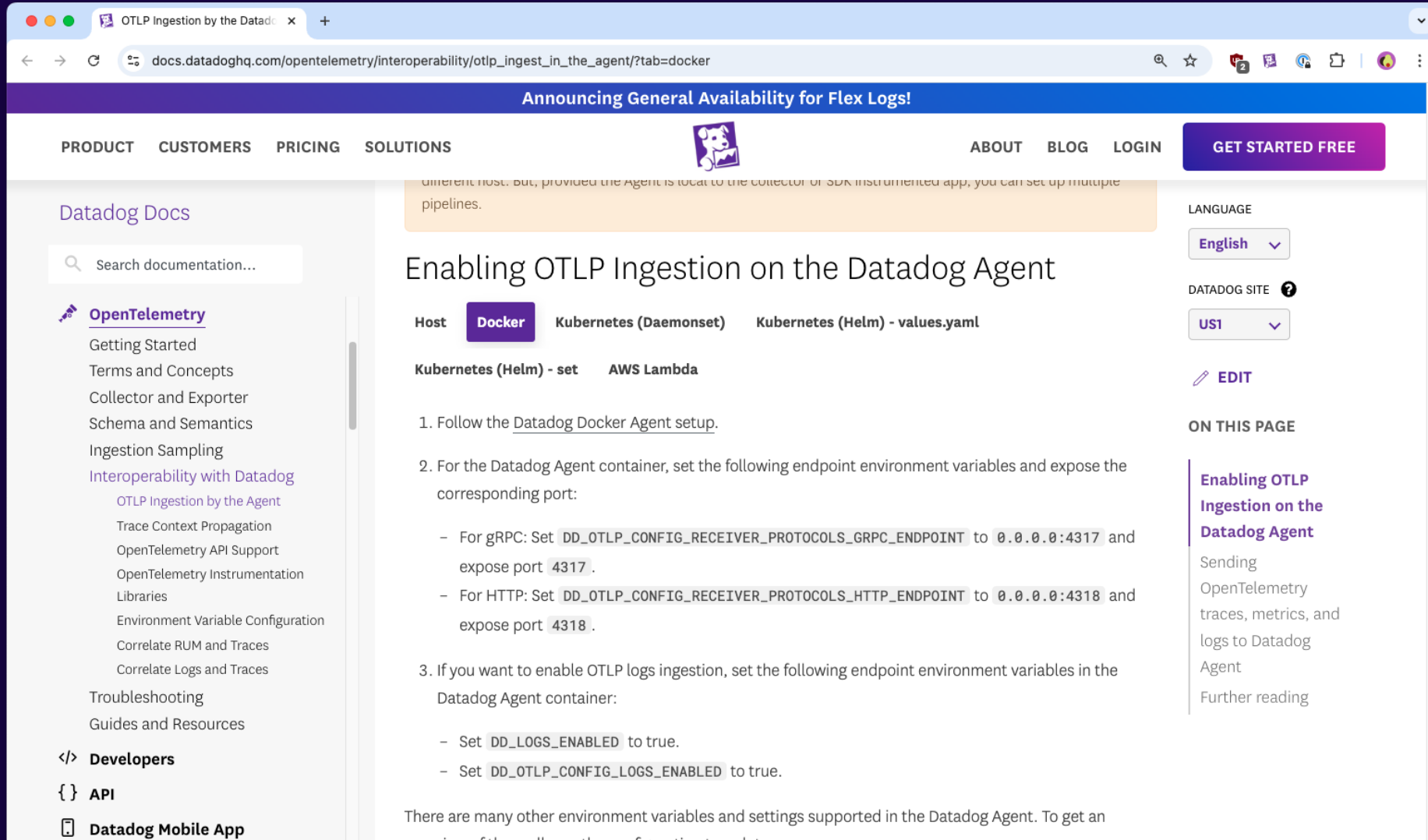
OTEL & .NET Aspire



OpenTelemetry in Datadog



OpenTelemetry in Datadog



The screenshot shows a web browser displaying the Datadog documentation page for enabling OTLP ingestion on the Datadog Agent. The browser's address bar shows the URL: `docs.datadoghq.com/opentelemetry/interoperability/otlp_ingest_in_the_agent/?tab=docker`. The page features a navigation bar with links for PRODUCT, CUSTOMERS, PRICING, SOLUTIONS, ABOUT, BLOG, LOGIN, and a GET STARTED FREE button. A sidebar on the left contains a search bar and a list of documentation topics, including OpenTelemetry, Getting Started, Terms and Concepts, Collector and Exporter, Schema and Semantics, Ingestion Sampling, Interoperability with Datadog, and more. The main content area is titled "Enabling OTLP Ingestion on the Datadog Agent" and includes tabs for Host (Docker), Kubernetes (Daemonset), and Kubernetes (Helm) - values.yaml. The Docker tab is selected, showing a list of steps to follow for enabling OTLP ingestion. The right sidebar contains a LANGUAGE dropdown (English), a DATADOG SITE dropdown (US1), an EDIT button, and a section titled "ON THIS PAGE" with links to "Enabling OTLP Ingestion on the Datadog Agent", "Sending OpenTelemetry traces, metrics, and logs to Datadog Agent", and "Further reading".

OTLP Ingestion by the Datadog Agent

docs.datadoghq.com/opentelemetry/interoperability/otlp_ingest_in_the_agent/?tab=docker

Announcing General Availability for Flex Logs!

PRODUCT CUSTOMERS PRICING SOLUTIONS ABOUT BLOG LOGIN GET STARTED FREE

Datadog Docs

Search documentation...

OpenTelemetry

- Getting Started
- Terms and Concepts
- Collector and Exporter
- Schema and Semantics
- Ingestion Sampling
- Interoperability with Datadog
 - OTLP Ingestion by the Agent
 - Trace Context Propagation
 - OpenTelemetry API Support
 - OpenTelemetry Instrumentation Libraries
 - Environment Variable Configuration
 - Correlate RUM and Traces
 - Correlate Logs and Traces
- Troubleshooting
- Guides and Resources

Developers

- API
- Datadog Mobile App

different host. But, provided the Agent is local to the collector or SDK instrumented app, you can set up multiple pipelines.

Enabling OTLP Ingestion on the Datadog Agent

Host **Docker** Kubernetes (Daemonset) Kubernetes (Helm) - values.yaml

Kubernetes (Helm) - set AWS Lambda

- Follow the [Datadog Docker Agent setup](#).
- For the Datadog Agent container, set the following endpoint environment variables and expose the corresponding port:
 - For gRPC: Set `DD_OTLP_CONFIG_RECEIVER_PROTOCOLS_GRPC_ENDPOINT` to `0.0.0.0:4317` and expose port `4317`.
 - For HTTP: Set `DD_OTLP_CONFIG_RECEIVER_PROTOCOLS_HTTP_ENDPOINT` to `0.0.0.0:4318` and expose port `4318`.
- If you want to enable OTLP logs ingestion, set the following endpoint environment variables in the Datadog Agent container:
 - Set `DD_LOGS_ENABLED` to true.
 - Set `DD_OTLP_CONFIG_LOGS_ENABLED` to true.

There are many other environment variables and settings supported in the Datadog Agent. To get an

LANGUAGE

English

DATADOG SITE ?

US1

EDIT

ON THIS PAGE

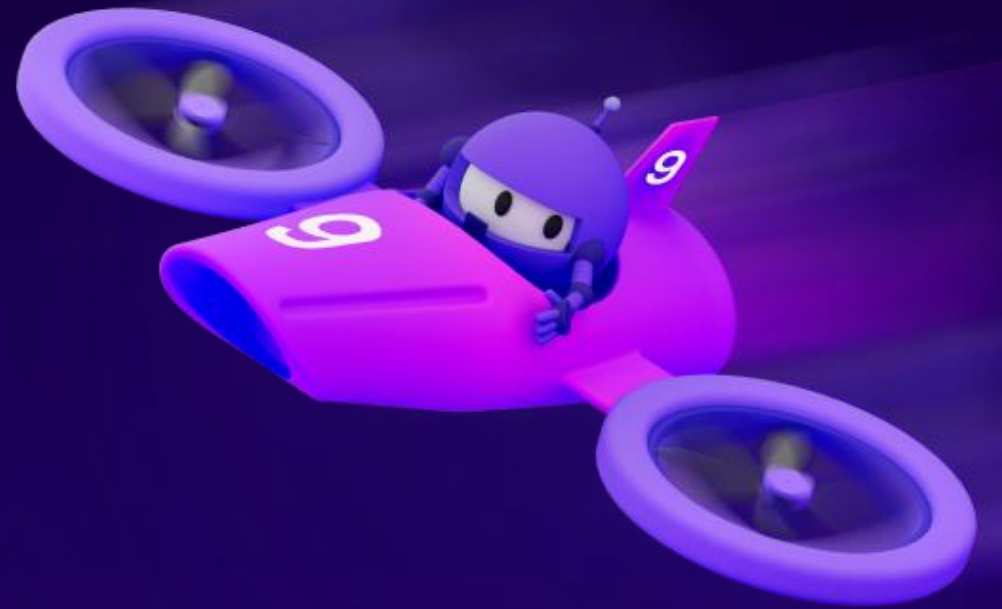
Enabling OTLP Ingestion on the Datadog Agent

Sending OpenTelemetry traces, metrics, and logs to Datadog Agent

Further reading

Demo:

OpenTelemetry in Datadog





Resources

Unify your OpenTelemetry and Datadog experience with the embedded OTel Collector in the Agent

Register Now: State of Cloud Costs Livestream

PRODUCT CUSTOMERS PRICING SOLUTIONS DOCS

ABOUT BLOG LOGIN GET STARTED FREE

Lutao Xie

Published: June 06, 2024

Integrations Marketplace Developer Platform **Agent** Fleet

Fleet Automation Manage Agents Upgrades Policies

Views My View

Centrally manage all your Datadog Agents in one place

195 agents are due for an upgrade

Agents on versions earlier than 7.52.0 are out-of-date. Upgrade to the latest version 7.54.1.

Start Agent Upgrade

Agent on ip-172-25-122-36.ec2.internal

Agent Info Configuration Integrations Support

Agent information

Version 7.52.0

OTel Collector version v0.102.0

Remote Config CONNECTED

API Key Id 60793952-6022-4

API Key Name prod-eks-otel-col

Product enabled

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.NET Languages Features Workloads APIs Troubleshooting Resources

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Learn / .NET

Example: Use OpenTelemetry with OTLP and the standalone Aspire Dashboard

Article • 08/29/2024 • 2 contributors

Feedback

- .NET tools and diagnostics
 - > .NET SDK
 - > .NET CLI
 - > Integrated development environments (IDEs)
 - > MSBuild and project files
 - > Global and local tools
 - > Additional tools

Ingest OpenTelemetry logs with the Datadog Agent

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ABOUT BLOG LOGIN GET STARTED FREE

Ibraheem Aboulmaga

Lutao Xie

Published: October 10, 2023

Ingest OpenTelemetry Logs

Published: June 06, 2024

Logs Log Explorer Live Search

Views My View

Aug 14, 2023 at 16:40:21.000 (14 days ago)

View in Context

HOST mymachine

SERVICE log4j-example

SOURCE otel_log_ingestion

ALL TAGS

dataatlog.index:demo dataatdog.submission_auth:private_api_key online_archives:test:false otel_source:datadog_agent

Resources

Issued: 2024-11-05

Certificate ID: bxjzgdmt6

THIS CERTIFICATE IS AWARDED TO

Jason Hand

who has completed all the requirements for the course
Introduction to OTel with Datadog



Issued: 2024-11-01

Certificate ID: 7frs0ap2r7

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Understanding OpenTelemetry



learn.datadoghq.com



Get .NET 9



Download .NET 9
aka.ms/get-dotnet-9

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>

Let's Learn .NET Aspire video

Thank you

