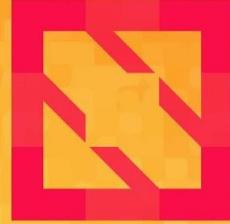






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OpenTelemetry: The First Release, What's Next, and How to Get Involved



Presenters



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Sergey Kanzhelev
SWE at Microsoft
[@SergeyKanzhelev](https://twitter.com/SergeyKanzhelev)



Tristan Sloughter
SWE at Postmates
[@tsloughter](https://twitter.com/@tsloughter)



Chris Kleinknecht
SWE at Google
[@c24t](https://twitter.com/c24t)



Morgan McLean
PM at Google
[@mtwo](https://twitter.com/mtwo)

OpenTelemetry



OpenTelemetry makes robust, portable telemetry a built-in feature of cloud-native software.

OpenTelemetry



API

Integrations

Libraries

Exporters

Collector

Contributors



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dynatrace



Postmates



Google Cloud



Uber

Contributors



How Things Work: Membership



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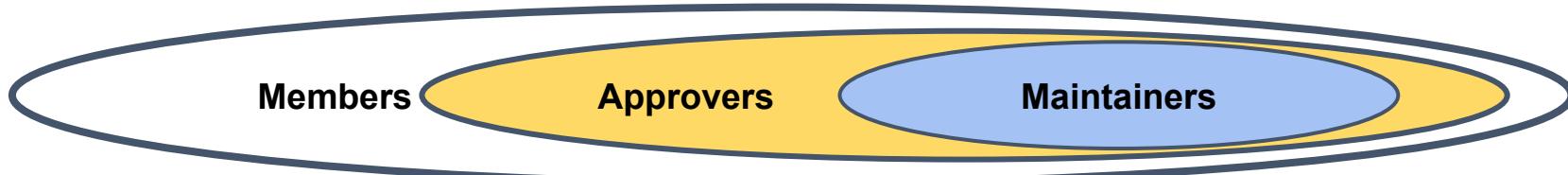
OpenTelemetry is free, vendor neutral set of libraries that anybody can use.

We value and welcome contributions!

Three levels of engagement thru contributions:

- Member
- Approver
- Maintainer

Project contains of multiple special interest groups.



How Things Work: Project Vision



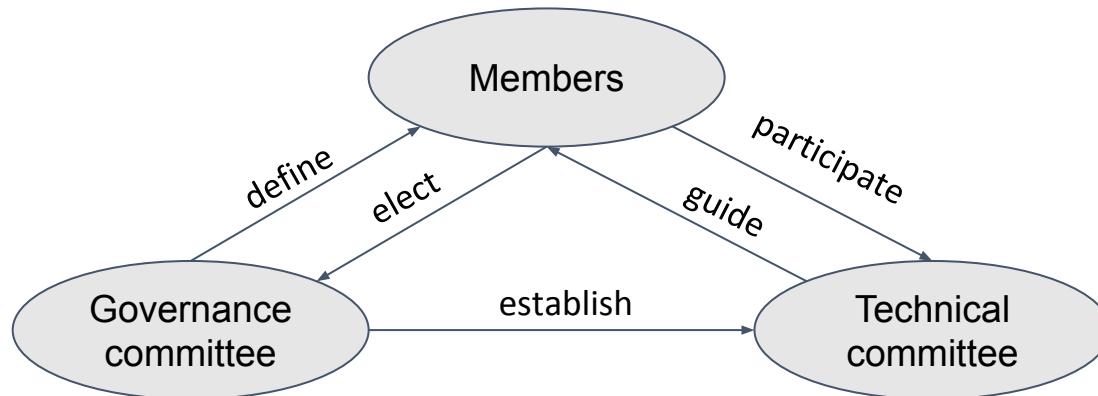
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“If you want to go fast, go alone, if you want to go far, go together”

There is a structure in place to ensure that we all building the same project:

- Project members are building the project
- Elected governance committee defines and uphold the project vision
- Technical committee shape the vision into the specifications

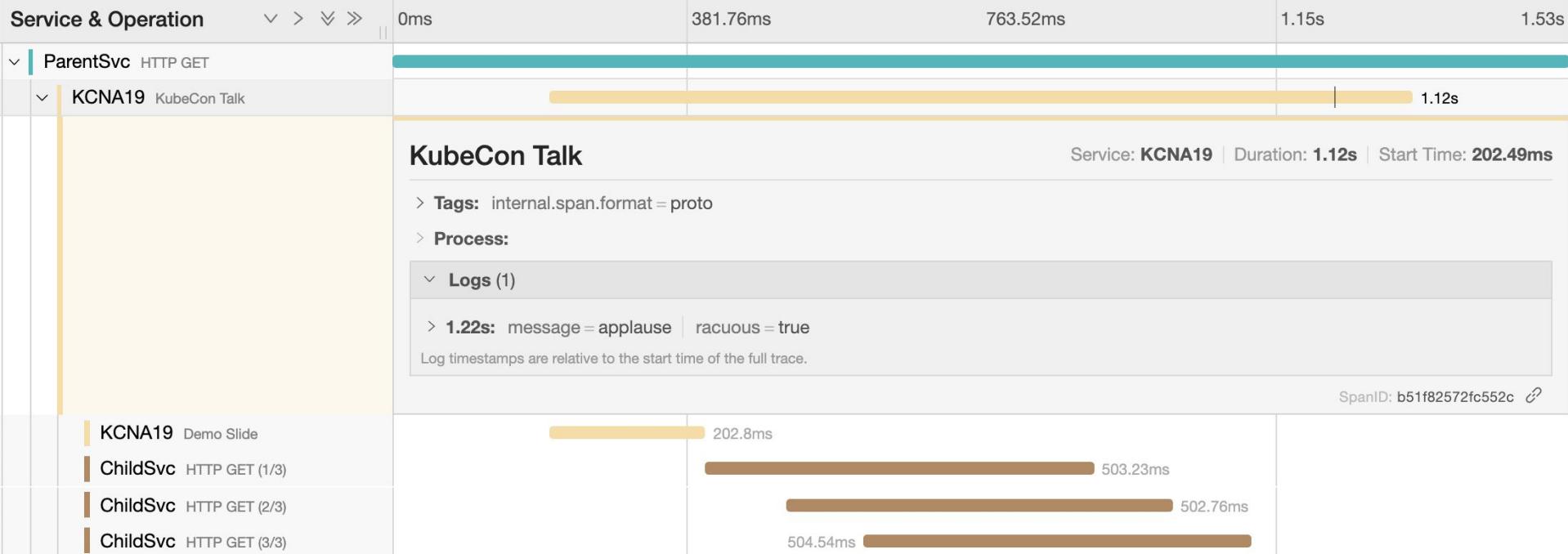
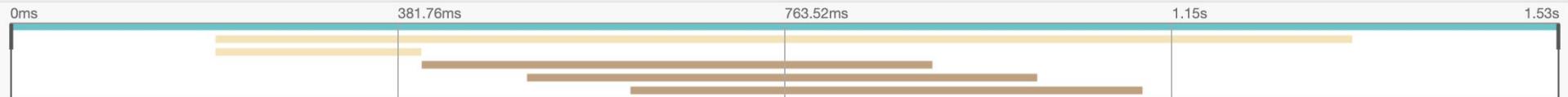


Telemetry in Action



Telemetry in Action

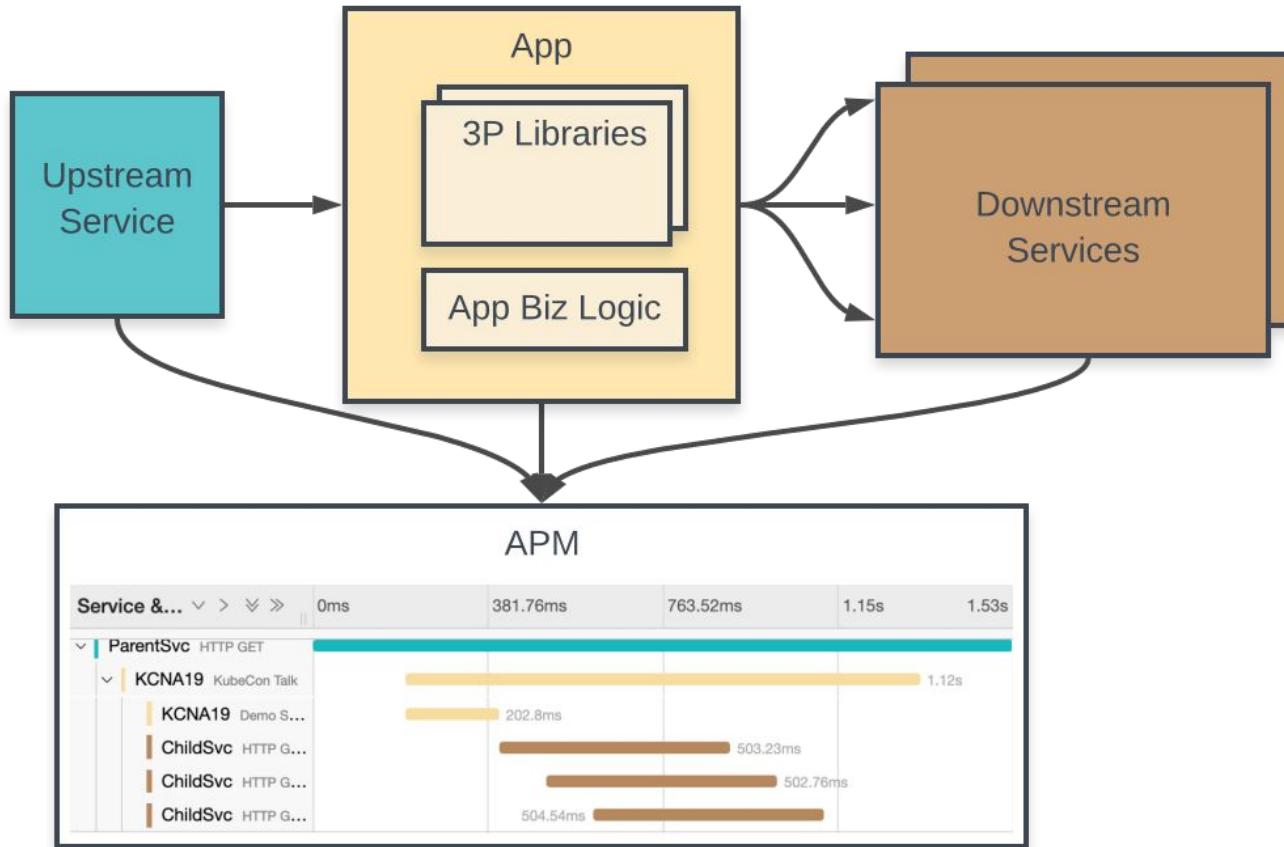
Trace Start November 20 2019, 11:36:32.640 Duration 1.53s Services 3 Depth 3 Total Spans 6



Telemetry in Action

```
1 Span(  
2     name="kubecon_talk",  
3     context=SpanContext(trace_id=0xdead, span_id=0xbeef)),  
4     events=[  
5         'name': 'applause',  
6         'attributes': {'raucous': True},  
7         'timestamp': '2019-11-21T12:00:00Z'  
8     ],  
9     parent=SpanContext(trace_id=0xdead, span_id=0xb0e)),  
10    start_time='2019-11-21T10:55:00Z',  
11    end_time='2019-11-21T12:25:00Z'  
12 )
```

Telemetry in Action



Telemetry in Action



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OpenTelemetry enables you to:

- Instrument application and library code
- Propagate context between services
- Export telemetry data to APM backends



Telemetry in Action



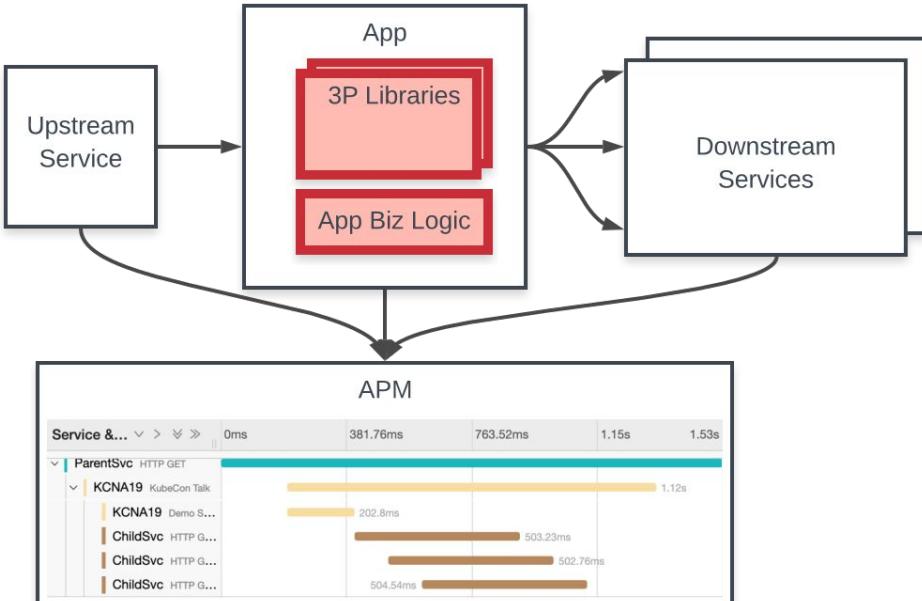
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Instrument application and library code

- Generate spans and metrics
- Only depend on API package, low overhead by default
- May get "for free" via libraries or auto-instrumentation



Telemetry in Action



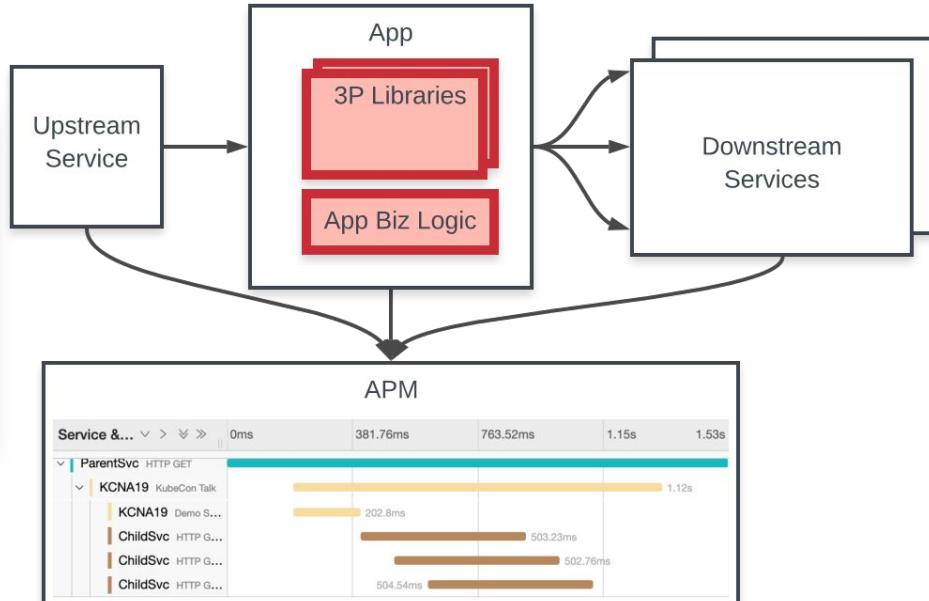
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Instrument application and library code

```
1 from opentelemetry import trace
2
3 tracer = tracer()
4
5 # Create a span!
6 with tracer.start_as_current_span("kubecon_talk") as span:
7     give_kubecon_talk()
8     span.add_event("applause", {"racuous": True})
```



Telemetry in Action



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Propagate context between services

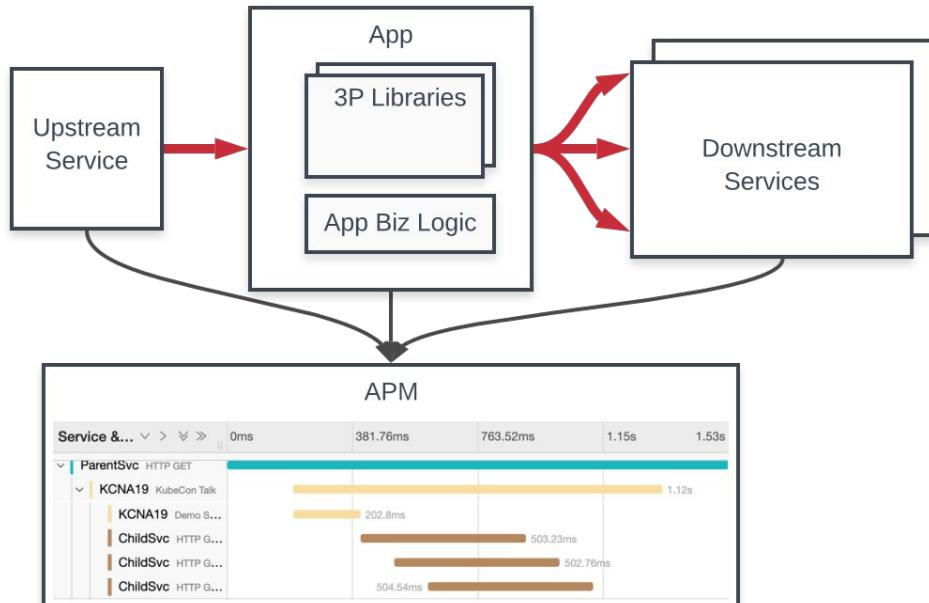
Incoming

- Deserialize request metadata
- Inject into application context

Outgoing

- Serialize some application context
- Attach as request metadata

E.g. [w3c/trace-context](https://w3c.github.io/trace-context/)



Telemetry in Action



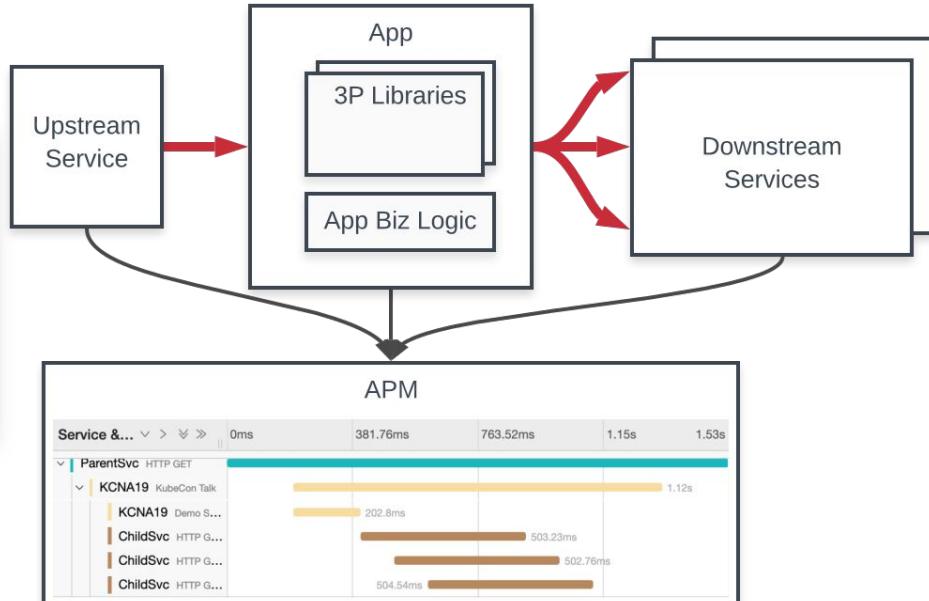
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Propagate context between services

```
1 # Accept B3/zipkin trace headers
2 propagators.set_global_http_textformat(B3Format())
3
4 # Handle incoming requests via Flask
5 flask_app.wsgi_app = OpenTelemetryMiddleware(flask_app.wsgi_app)
6
7 # Add metadata to outgoing requests via Requests
8 opentelemetry.ext.http_requests.enable(tracer())
```



Telemetry in Action



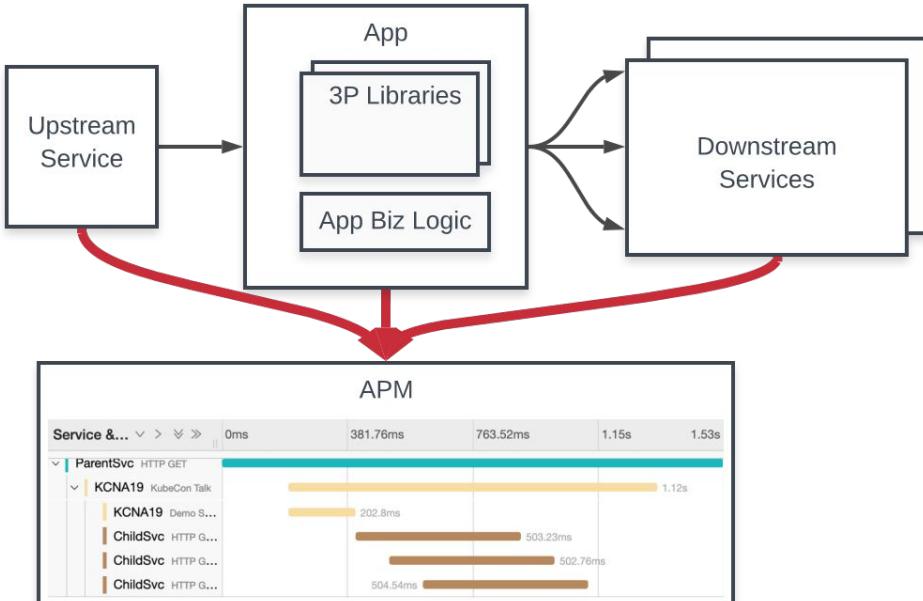
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Export telemetry data to APM backends

- APM vendors maintain exporters
- May export to multiple backends at once
- Export to agent/collector to swap other exporters out at run time



Telemetry in Action



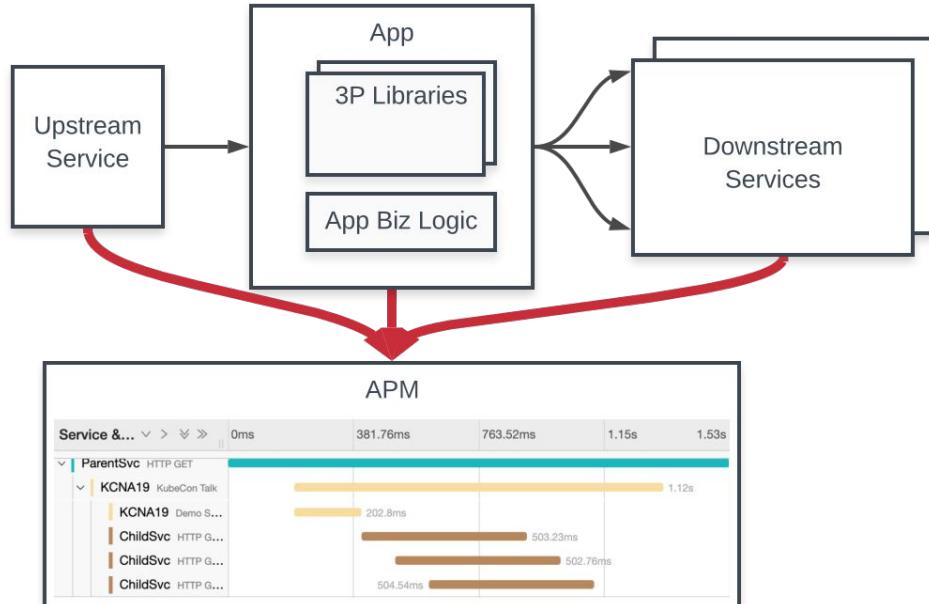
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Export telemetry data to APM backends

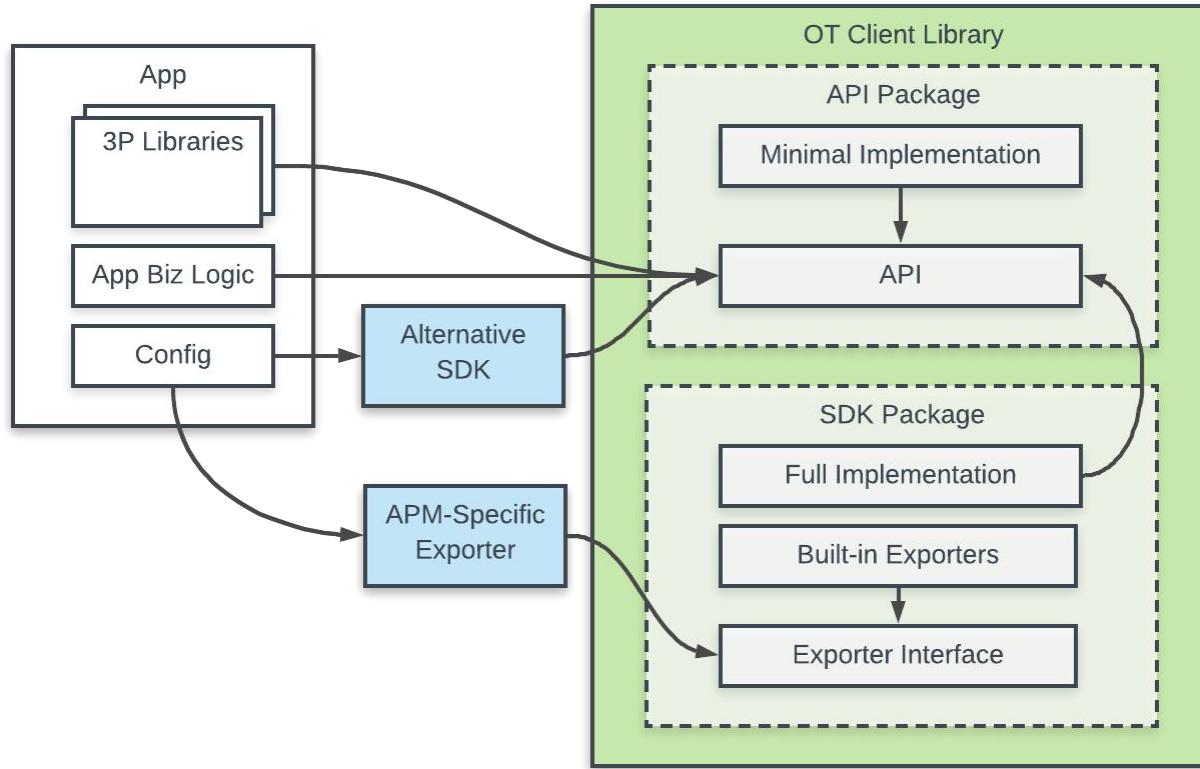
```
1 tracer = trace.tracer()
2
3 tracer.add_span_processor(
4     BatchExportSpanProcessor(
5         JaegerSpanExporter(
6             service_name="KubeCon Demo",
7             **jaeger_config
8         ),
9         **batching_config
10    )
11 )
```



Architecture



Architecture



OpenTelemetry Personas



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OpenTelemetry is designed for multiple users, each with different use cases and goals

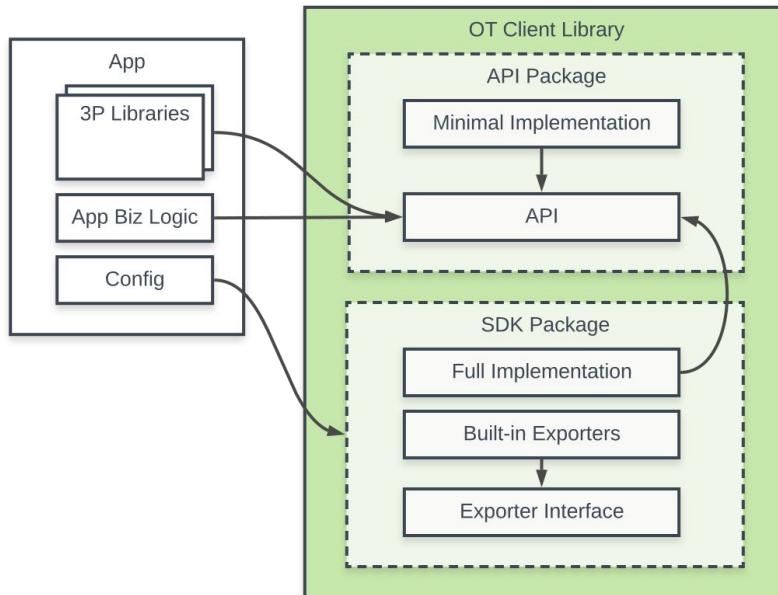
- Application developers
- Library owners
- APM vendors



Persona: Application Owner

End-users/developers/operators of applications that need instrumentation
(Postmates, Walmart, etc.)

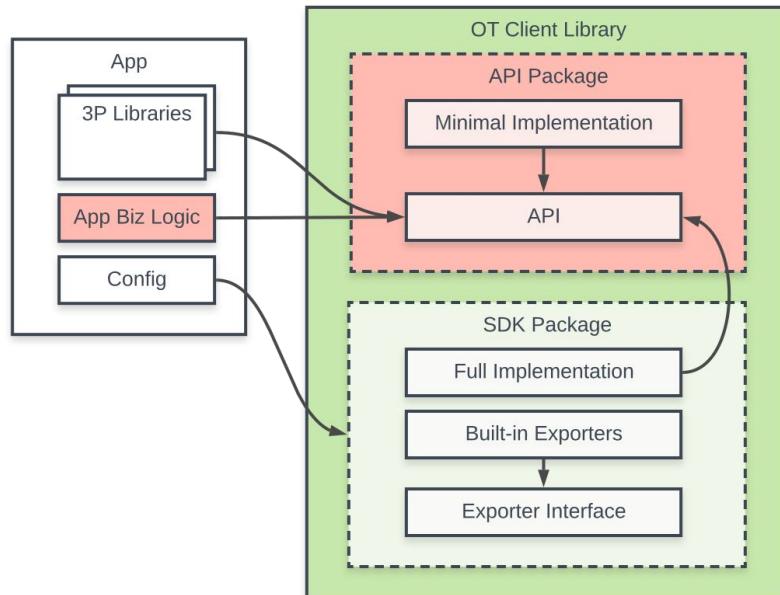
- Application code is instrumented with OT API package
- Load a specific version of the SDK, which may vary by deployment



Persona: Application Owner

End-users/developers/operators of applications that need instrumentation
(Postmates, Walmart, etc.)

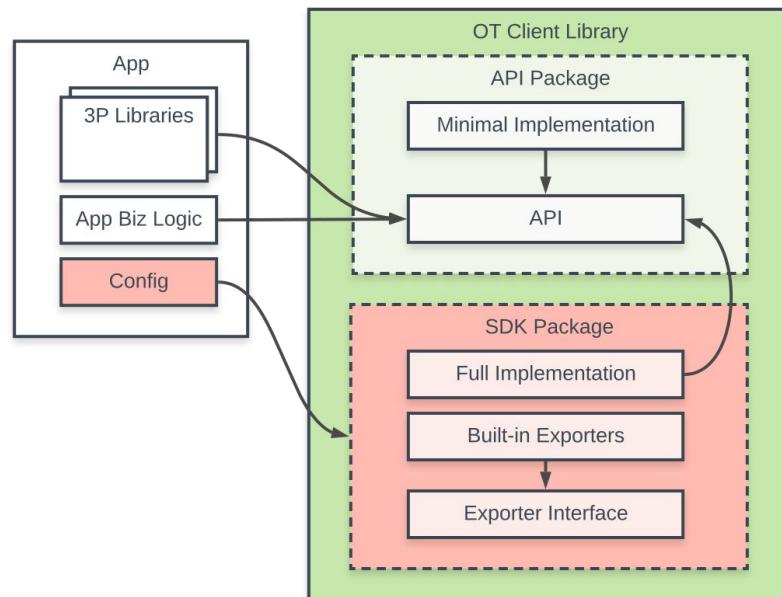
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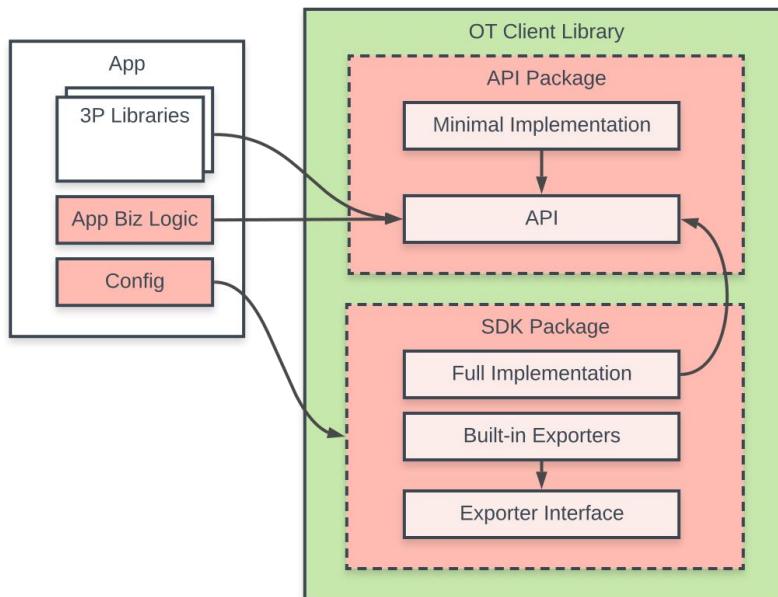
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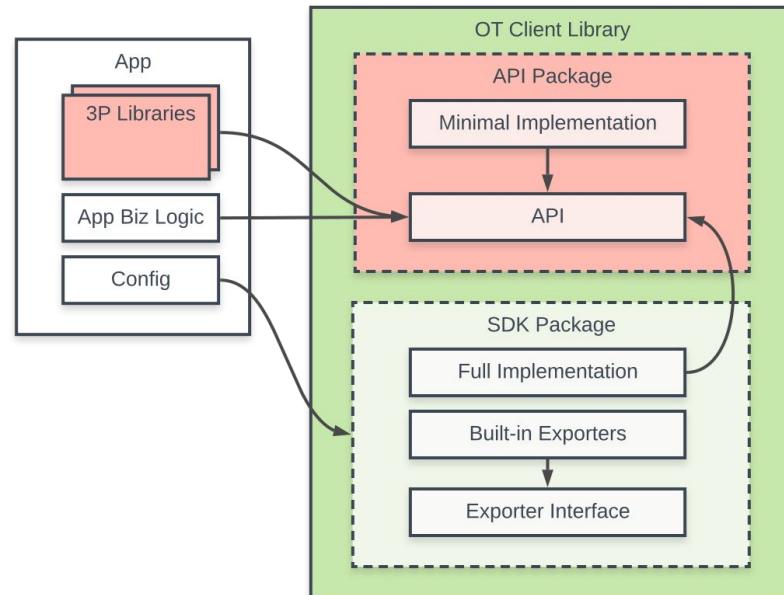
- Application code is instrumented with OT API package
- Load a specific version of the SDK, which may vary by deployment



Persona: Library Owner

Library owners/maintainers who want to maintain integrations (MongoDB, JDBC, etc.)

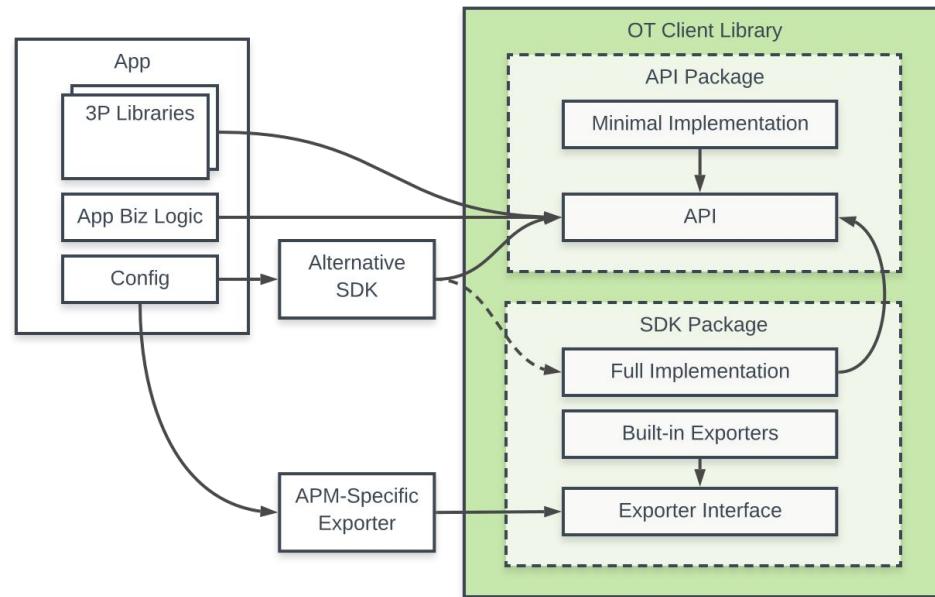
- Value performance, ease of maintenance
- Should depend on API package only
- Libraries instrumented with OpenTracing or OpenCensus will continue to work with OpenTelemetry



Persona: APM Vendor

Telemetry vendors who need to build exporters and understand where the market is going (Dynatrace, New Relic, Datadog, etc.)

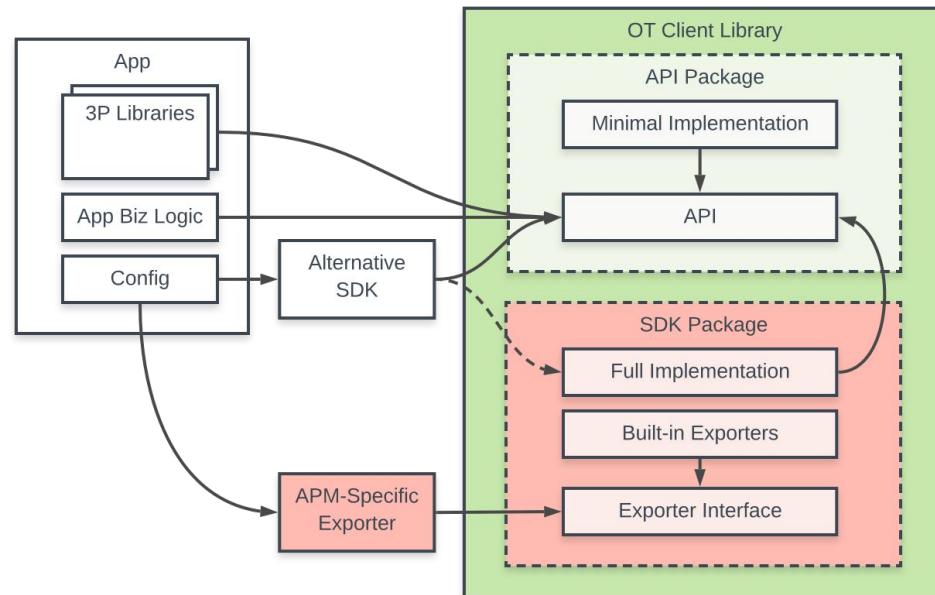
- May need advanced features specific to their APM service
- Write custom exporters to send telemetry data to their agent or service
- May extend the SDK, e.g to act on span start and end events
- May ship their own SDKs to replace those that ship with client libraries



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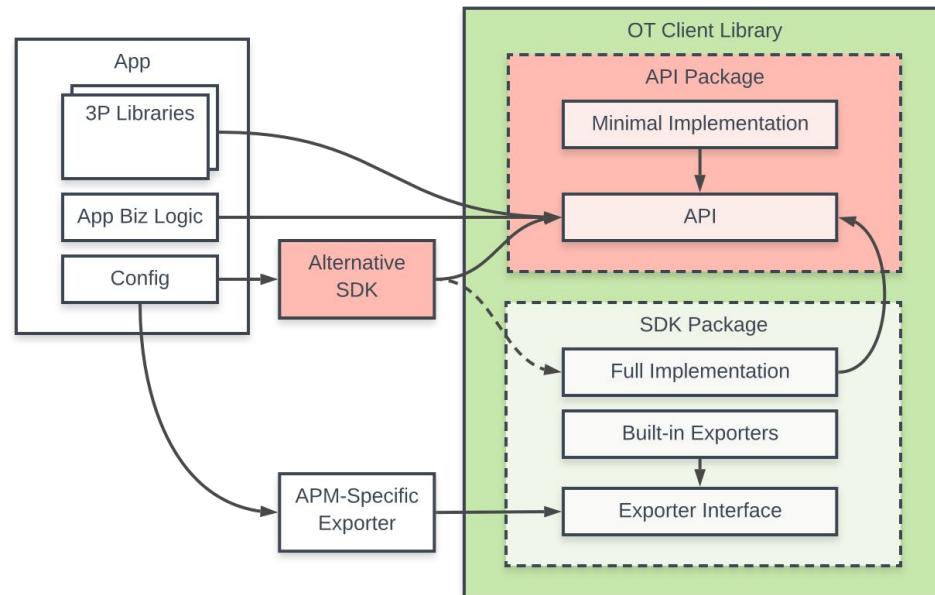
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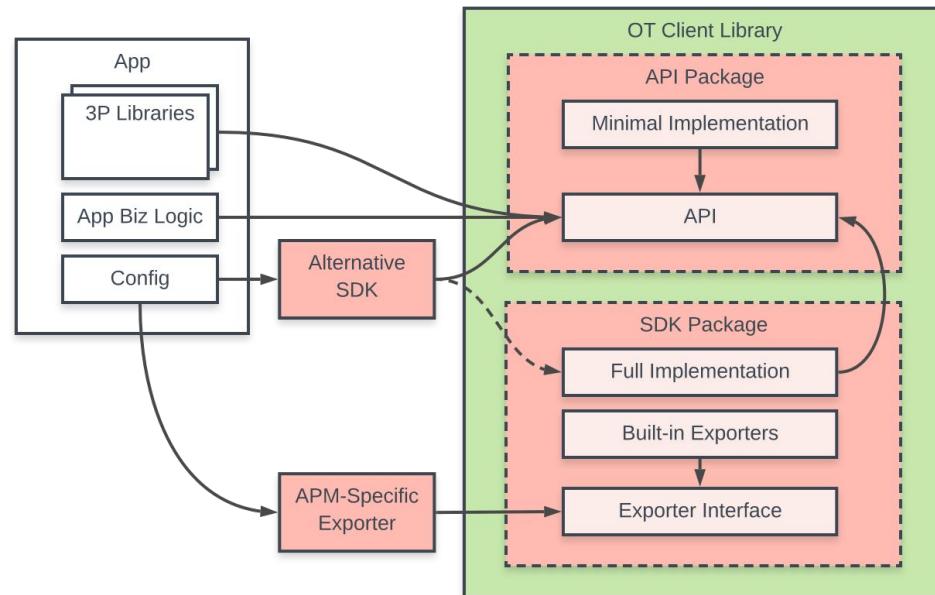
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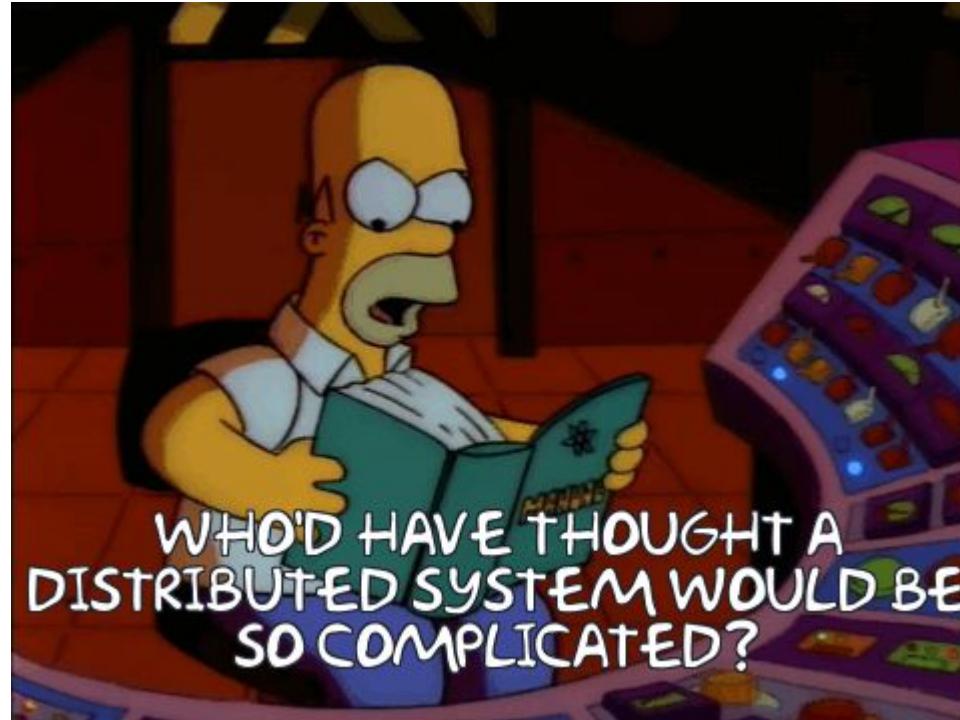
OpenTelemetry Components



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OpenTelemetry Components

OpenTelemetry includes:

- Client libraries in multiple languages
- Specification, data format, and semantic conventions
- Integrations for other libraries/frameworks/etc.
- Exporters for APMs
- A standalone collector

Component: Client Libraries

Clients in multiple languages that generate telemetry data

E.g. [opentelemetry-python](#)

- Tracing
- Metrics
- Logs (someday)
- Separate API and SDK packages
- Other utilities
 - Context propagation, both in- and intra-process
 - Resource detection

Component: Specification



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The specification describes how client libraries should behave, which components belong to API and SDK packages in each language

[opentelemetry-specification](#)

- Includes a data format for exporters and agent/collector protocol
- Includes semantic conventions for field names

Component: Exporters

Exporters format and ship telemetry data to specific APM backends

E.g. [opentelemetry-ext-jaeger](#)

- Exporter interface included in the SDK package
- SDK also includes utilities for exporters: batching, retrying, etc.
- Configured application-wide: switch APMs, switch exporters without changing application code

Component: Integrations



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Multiple kinds of integrations and extensions:

- Framework (web/service)
 - Deserialize request metadata, inject into application context
 - Generally creates a span, metrics for each handled request
- Protocol/transport
 - E.g. W3C-HTTP, gRPC
 - Text and binary format options
 - Framework integrations may use protocol integrations
- Other libraries, especially databases
 - Integrations only depend on API package
 - E.g. [opentelemetry-ext-pymongo](#)

Component: Collector

Standalone agent or service that provides smart trace sampling, metrics aggregation, and other advanced features

[opentelemetry-collector](#)

- App exports to OT agent, which exports to other APM backends
- Single binary with two deployment options:
 - "Agent" sidecar that runs on same host/pod as app
 - "Collector" standalone application that runs independently

What should you do next?



If you are already involved

- Keep it up!
- Help others get involved
- Tell your friends and coworkers!
- Join a SIG, if you haven't already



To start using OpenTelemetry



- Head over the docs <https://opentelemetry.io/docs/>
- Choose your language and checkout the Quick Start
- If no Quick Start exists yet, see the individual [repos on Github](#)

Tracing

- [Quick Start](#)
- [API Reference](#)

This page contains documentation for OpenTelemetry Ruby.

Quick Start

Please note that this library is currently in *alpha*, and shouldn't be used in production environments.

The API and SDK packages are available on rubygems.org, and can be installed via `bundler` :

```
bundle install opentelemetry-api
bundle install opentelemetry-sdk
```

From there, you should be able to use opentelemetry as per the following:

Tracing

- [Quick Start](#)
- [API Reference](#)

This page contains documentation for OpenTelemetry Go.

Quick Start

Please note that this library is currently in *alpha*, and shouldn't be used in production environments.

First let's install the API and SDK packages

```
go get -u go.opentelemetry.io/otel
```

From there, you should be able to use opentelemetry as per the following:

Already using OpenTracing/Census?



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- Take a look at the OpenTelemetry implementations for the languages you are using
- Try them out and send feedback
- Try the [OpenTelemetry collector](#) for collecting OpenTracing data
- Look at the available OT/OC shims

The screenshot shows the GitHub repository page for 'OpenTelemetry'. At the top, there's a header with the repository name, a brief description ('OpenTelemetry makes robust, portable telemetry a built-in feature of cloud-native software.'), and a link to the website (<https://opentelemetry.io>). Below the header, there are tabs for 'Repositories' (22), 'Packages', 'People' (81), 'Teams' (29), and 'Projects'. A section titled 'Pinned repositories' displays four pinned repositories: 'community' (OpenTelemetry community content, 104 stars, 50 forks), 'opentelemetry-specification' (Specifications for OpenTelemetry, Go language, 335 stars, 82 forks), 'oteps' (OpenTelemetry Enhancement Proposals, Go language, 29 stars, 28 forks), and 'opentelemetry.io' (The OpenTelemetry website and documentation, HTML, 28 stars, 25 forks). At the bottom of the page, there are search fields for 'Find a repository...', dropdown menus for 'Type: All' and 'Language: All', and a 'Top languages' chart showing the most active languages in the repository.

OpenTelemetry

OpenTelemetry makes robust, portable telemetry a built-in feature of cloud-native software.

<https://opentelemetry.io>

Repositories 22 Packages People 81 Teams 29 Projects

Pinned repositories

community

OpenTelemetry community content

★ 104 ⚡ 50

opentelemetry-specification

Specifications for OpenTelemetry

Go ★ 335 ⚡ 82

oteps

OpenTelemetry Enhancement Proposals

Go ★ 29 ⚡ 28

opentelemetry.io

The OpenTelemetry website and documentation

HTML ★ 28 ⚡ 25

opentelemetry-proto

Shell ★ 29 ⚡ 16

Find a repository... Type: All Language: All

opentelemetry-python

The OpenTelemetry Python Client

python tracecontext opentelemetry correlationcontext

Top languages

Go Shell Erlang Java C# C

Want to start contributing?



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- <https://opentelemetry.io/get-involved/>
- Find the OpenTelemetry repo you'd like to contribute to
- Fork it!
- Look for “good first issues” in the Issue tracker and update the issue to note that you are working on it
- Or just find something interesting to you or missing that you need

Filters ▾

Labels 18 Milestones 5 New issue

Clear current search query, filters, and sorts

<input type="checkbox"/> ⓘ 1 Open	<input checked="" type="checkbox"/> 1 Closed	Author ▾	Labels ▾	Projects ▾	Milestones ▾	Assignee ▾	Sort ▾
<input type="checkbox"/> ⓘ Error logging with EventSource	area: SDK good first issue up-for-grabs	#85 opened on Jun 3 by SergeyKanzhelev	SDK v0.2 compl...	16			

Your org wants to give support



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- Meet us after the presentation
- Introduce yourself on gitter
[open-telemetry/community](https://gitter.im/open-telemetry/community)



W3C Trace Context



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“Standards form the fundamental building blocks for product development by establishing consistent protocols that can be universally understood and adopted.”

OpenTelemetry makes telemetry a built-in feature of cloud-native software:

- best practices
- great libraries
- standards

Join W3C Distributed Tracing WG: <https://github.com/w3c/distributed-tracing-wg>

Trace Context

W3C Proposed Recommendation 21 November 2019

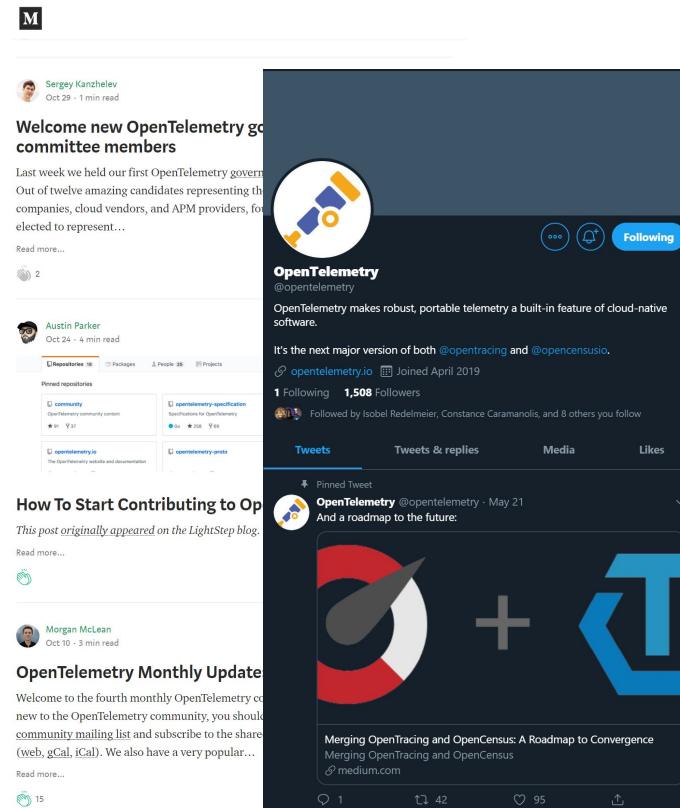


Non-code Participation

There are many ways to participate including many non-code contributions:

- Share your story via blogs and events
- Help to reach out to more people
- Plan and triage work
- Do reviews, file issues and share feedback

Join our community!



Sergey Kanzhelev Oct 29 - 1 min read

Welcome new OpenTelemetry governance committee members

Last week we held our first OpenTelemetry governance meeting. Out of twelve amazing candidates representing the community, companies, cloud vendors, and APM providers, four were elected to represent...

Austin Parker Oct 24 - 4 min read

It's the next major version of both @opentracing and @opencensusio.

[@opentelemetry](https://opentelemetry.io) Joined April 2019

1 Following 1,508 Followers

Morgan McLean Oct 10 - 3 min read

OpenTelemetry Monthly Update

Welcome to the fourth monthly OpenTelemetry community update. If you're new to the OpenTelemetry community, you should join our community mailing list and subscribe to the shared calendar (web, gCal, iCal). We also have a very popular...

OpenTelemetry makes robust, portable telemetry a built-in feature of cloud-native software.

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[@opentelemetry](https://opentelemetry.io) Joined April 2019

1 Following 1,508 Followers

Followed by Isobel Redelmeier, Constance Caramanolis, and 8 others you follow

Tweets Tweets & replies Media Likes

Pinned Tweet

OpenTelemetry @opentelemetry · May 21

And a roadmap to the future:

OpenTelemetry Monthly Update

Welcome to the fourth monthly OpenTelemetry community update. If you're new to the OpenTelemetry community, you should join our community mailing list and subscribe to the shared calendar (web, gCal, iCal). We also have a very popular...

Merging OpenTracing and OpenCensus: A Roadmap to Convergence

Merging OpenTracing and OpenCensus

[@medium.com](https://medium.com)

1 42 95

Tell us how you use OpenTelemetry



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OpenTelemetry has no way of knowing how you use the project.

Tell us about your scenarios:

- What environments you use it
- How do you use it, what do you like the most
- What's missing

This and other feedback you can share via various communication options:

Gitter: <https://gitter.im/open-telemetry/community>

GitHub: <https://github.com/open-telemetry/community>

E-mails: cncf-opentelemetry-community@lists.cncf.io

SIG and community meetings: [calendar](#)



Q&A



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Governance committee joins us for panel Q&A

- Ben Sigelman, LightStep
- Bogdan Drutu, Google
- Constance Caramanolis, Splunk
- Liz Fong-Jones, Honeycomb
- Morgan James McLean, Google
- Sarah Novotny, Microsoft
- Sergey Kanzhelev, Microsoft
- Ted Young, LightStep
- Yuri Shkuro, Uber



