

The background features a vibrant, multi-colored abstract design. On the left, there are overlapping, wavy, organic shapes in shades of red, orange, and yellow. On the right, a bright white light source emits a series of sharp, radiating lines in various colors, including blue, green, and yellow, creating a sunburst or starburst effect. The overall composition is dynamic and energetic.

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The bridge to possible

Unlock Intersight monitoring with OpenTelemetry

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DEVNET-2118

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Webex spaces will be moderated by the speaker until June 9, 2023.



<https://ciscolive.ciscoevents.com/ciscolivebot/#DEVNET-2118>

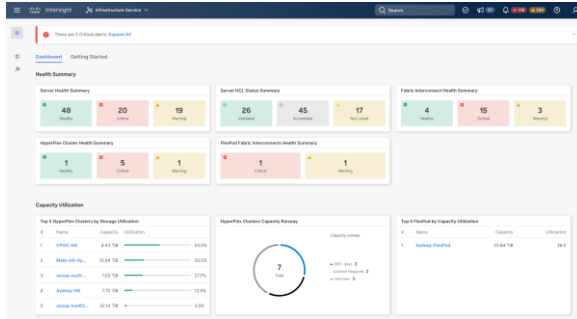
Agenda

- The Challenge
- Enter OpenTelemetry
- Intersight and OpenTelemetry?
- Key Takeaways

The Challenge



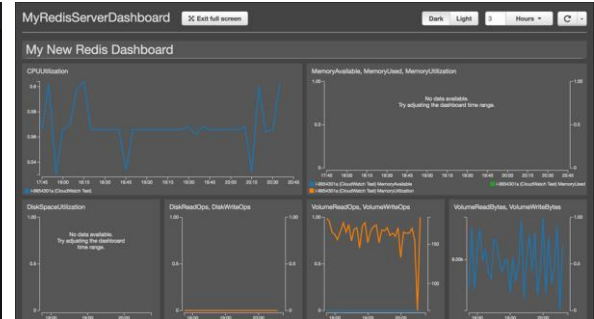
Silo'd data stores and dashboards



Infrastructure
team

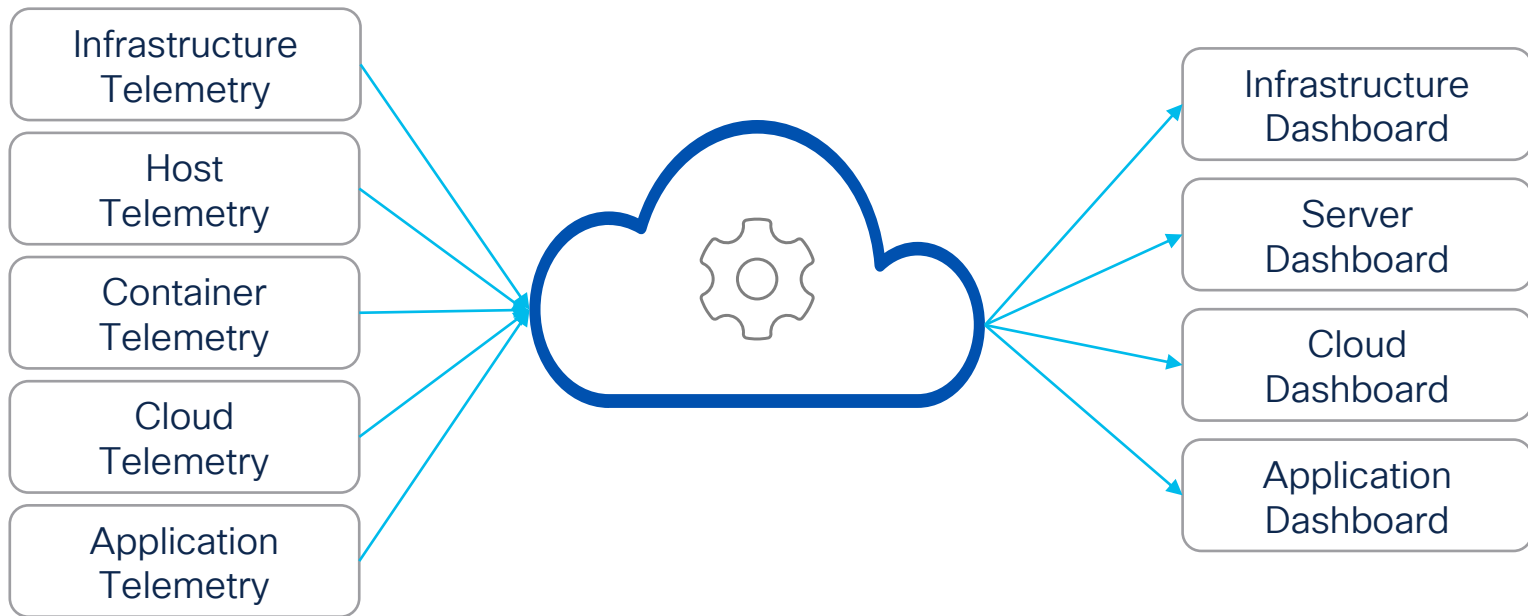


Virtualization / Systems
team



Cloud
team

What if there was a way to democratize that data?





Enter OpenTelemetry



What is OpenTelemetry?

“OpenTelemetry is a collection of tools, APIs, and SDKs. Use it to instrument, generate, collect, and export telemetry data (metrics, logs, and traces) to help you analyze your software’s performance and behavior.”

OpenTelemetry Signal Types

Metrics

a set of measurements collected at regular intervals

Logs

strings of structured or unstructured text with an associated timestamp

Traces

chains of events (or transactions) between different components in an application

Relevant OpenTelemetry Terminology

API

In the OpenTelemetry project, used to define how telemetry data is generated

SDK

A telemetry SDK implements the OpenTelemetry API in a specific language

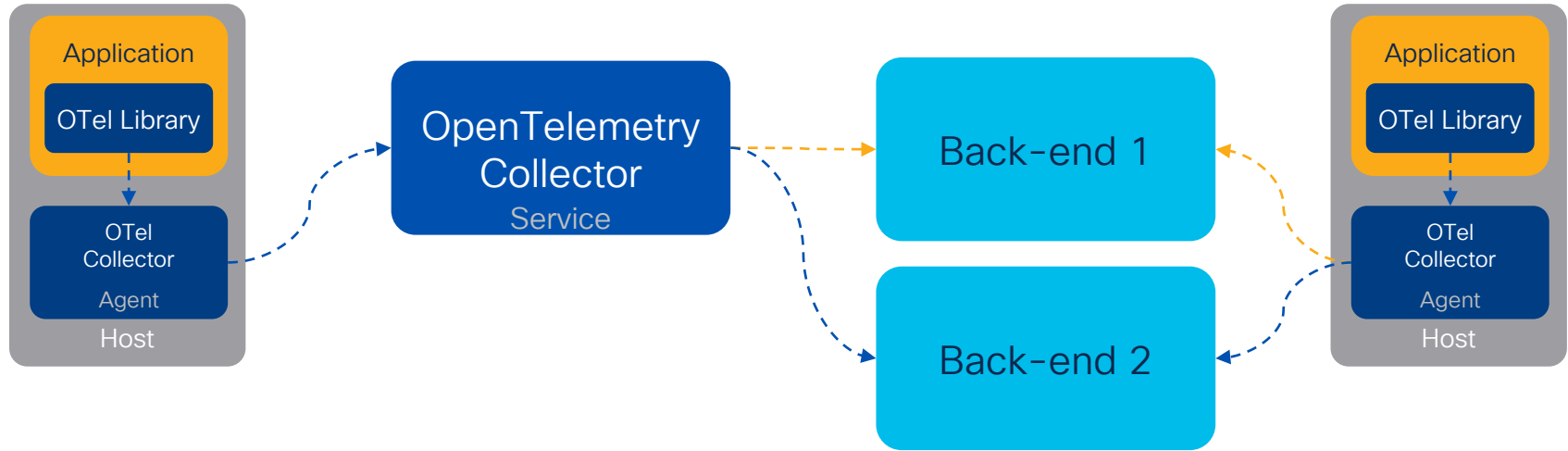
Semantic Conventions

Defines standard names and values of Metadata in order to provide vendor-agnostic telemetry data.

OTLP

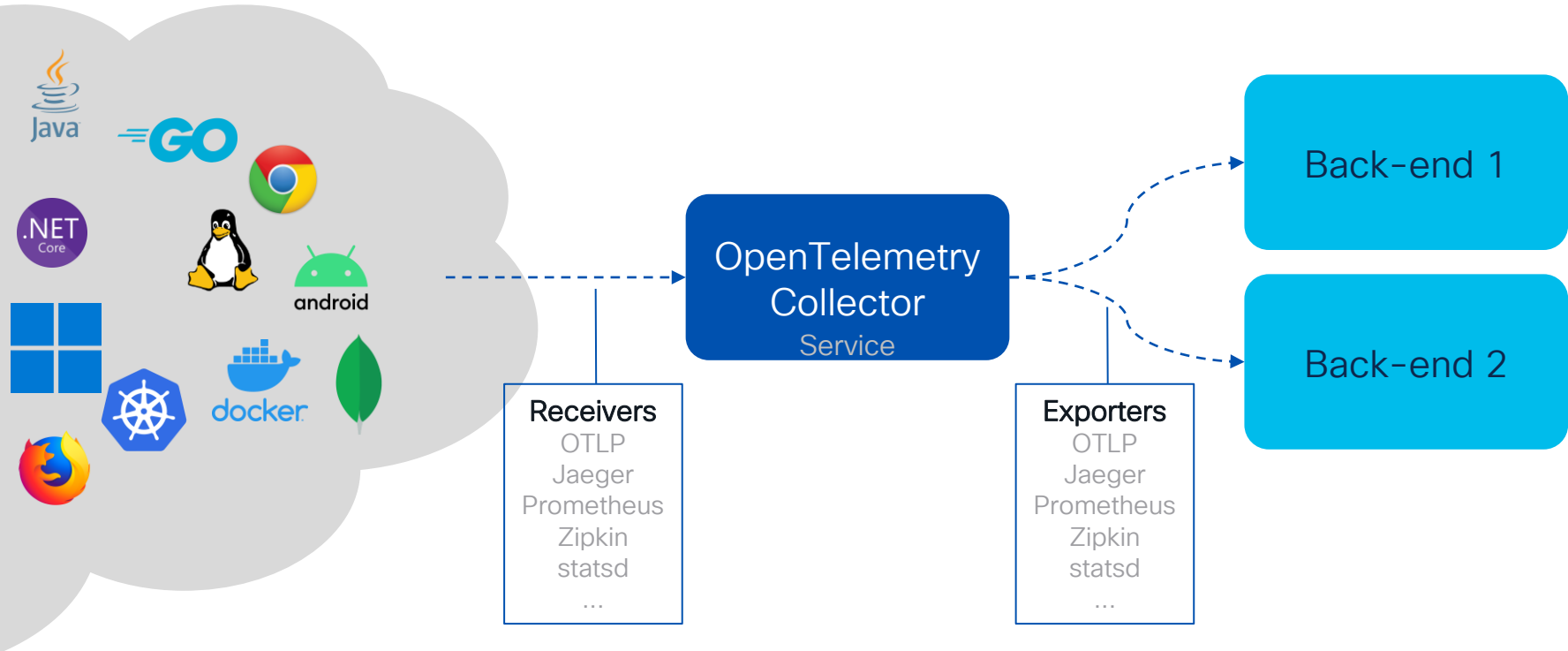
OpenTelemetry Protocol (OTLP) defines the protocol used to exchange data between the client and the server over gRPC or HTTP

OpenTelemetry reference Architecture

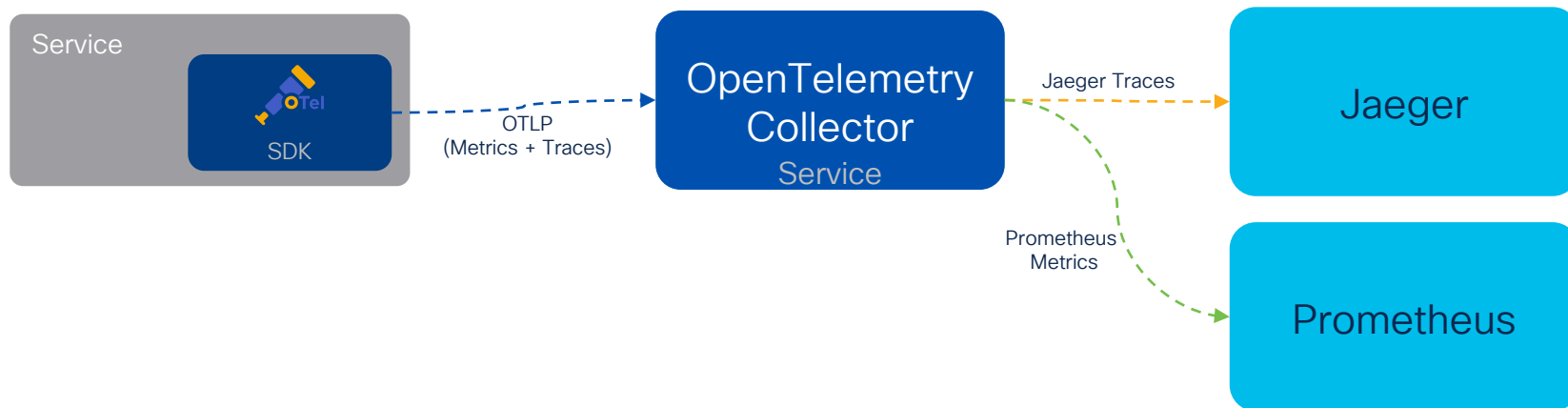


---➔ Metrics + Traces
---➔ Metrics

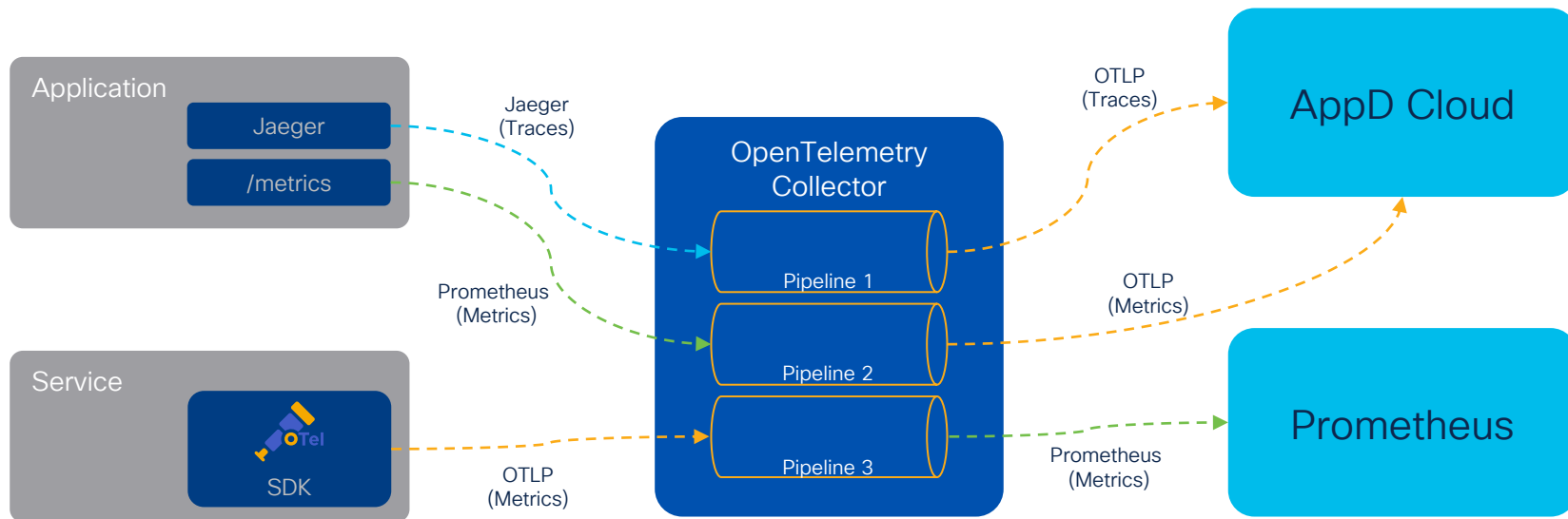
OpenTelemetry Collector as protocol translator



Collector Use Cases (1)



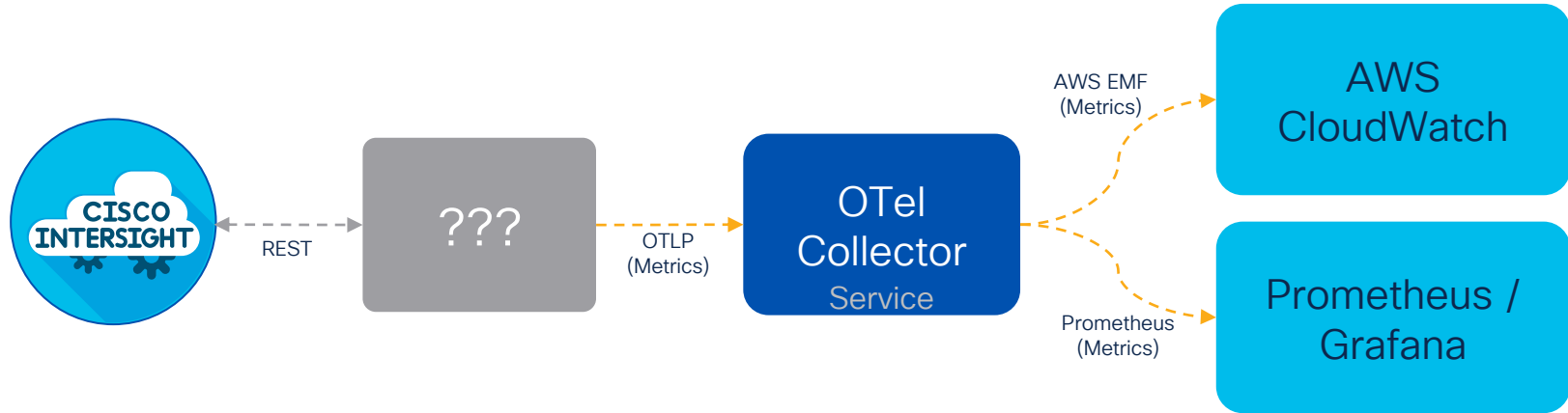
Collector Use Cases (2)



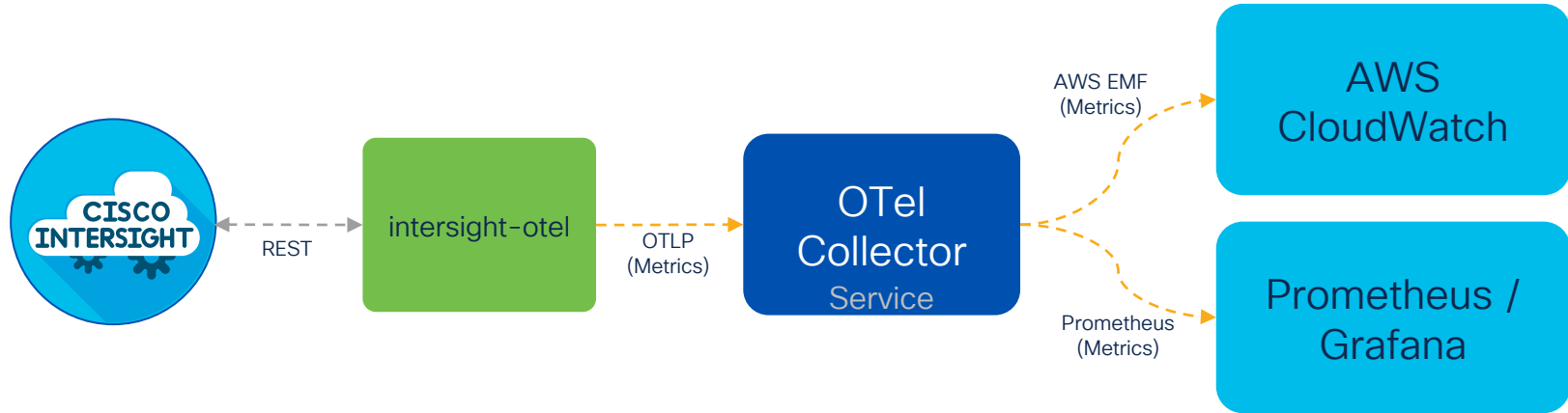
Intersight and OpenTelemetry?

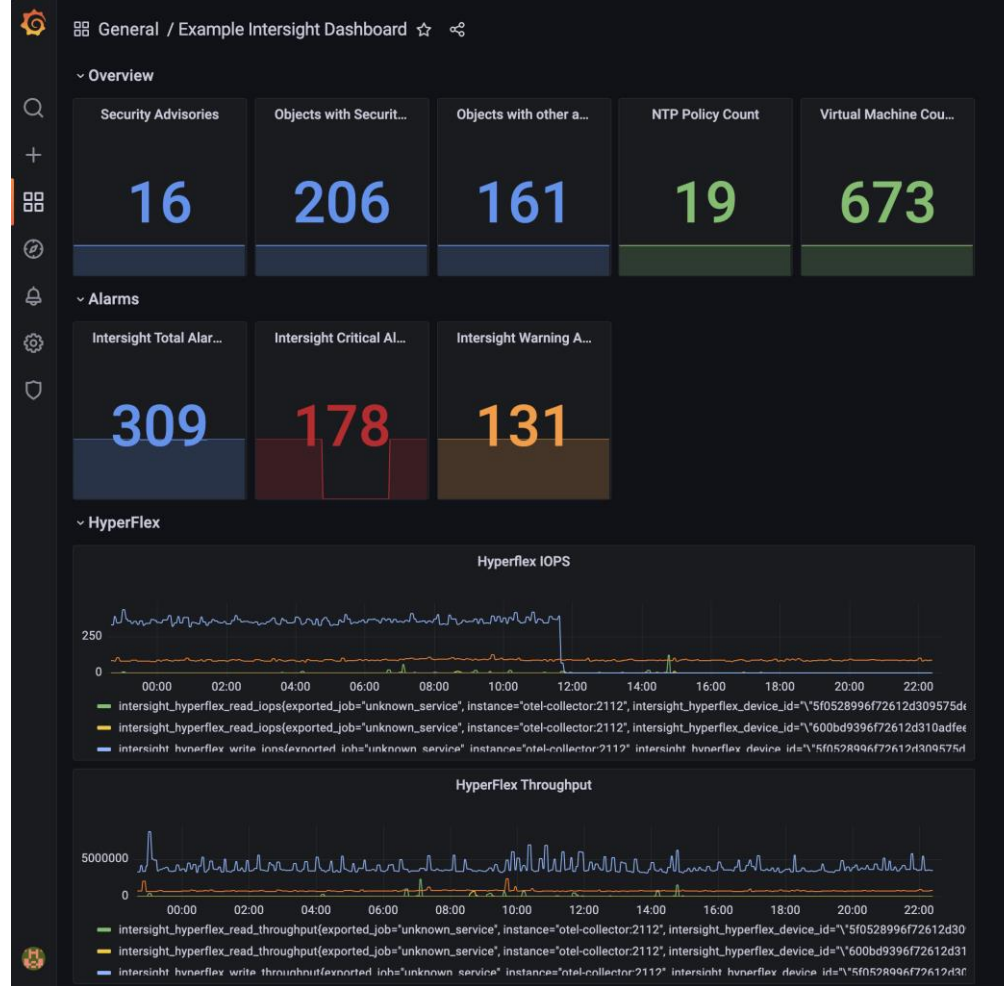


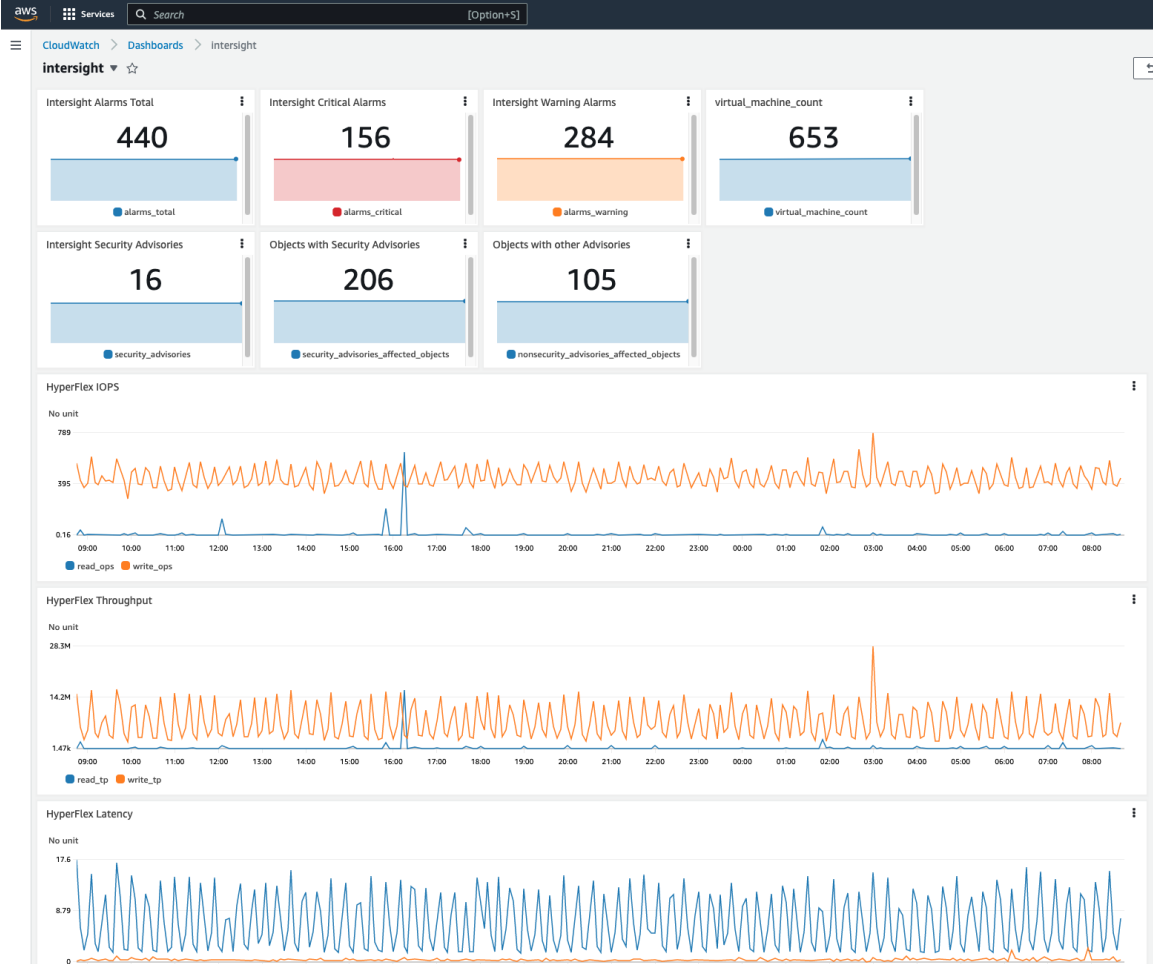
Intersight and OpenTelemetry?



Intersight and OpenTelemetry







What is intersight-otel?

- Lightweight collector (written in Rust)
- Periodically polls Intersight API to retrieve metrics
- Extremely configurable – API requests and metrics generated are configuration not code
- Available as binaries for multiple platforms or container image to run on Docker, Kubernetes, AWS ECS, etc.
- <https://github.com/cgascoig/intersight-otel>

Configuration overview

```
key_file = "/etc/ismetricskey/intersight-key.pem"
key_id = "0123456789abcdef01234567/0123456789abcdef01234567/0123456789abcdef01234567"
otel_collector_endpoint = "http://otel-collector:4317"
```

```
[[pollers]]
name = "virtual_machine_count"
api_query = "api/v1/virtualization/VirtualMachines?$count=true"
aggregator = "result_count"
interval = 300
```

```
[[pollers]]
name = "ntp_policy_count"
api_query = "api/v1/ntp/Policies?$count=true"
aggregator = "result_count"
interval = 300
```

```
[[tspollers]]
name = "hx_performance"
datasource = "hx"
dimensions = ["deviceId"]
filter = { ... }
aggregations = [...]
post_aggregations = [...]
interval = 300
```

Global configuration

- Intersight auth
- Otel destination

Regular Pollers

Call a regular Intersight API and extract a metric value

TimeSeries Pollers

Query the Intersight “TimeSeries” API for metrics

Regular Pollers in action

```
[[pollers]]
name = "virtual_machine_count"
api_query = "api/v1/virtualization/VirtualMachines?$count=true"
aggregator = "result_count"
interval = 300
```



intersight-otlp

OTel
Collector


```
GET https://intersight.com/
api/v1/virtualization/VirtualMachines?$count=true
```

```
{
  "ObjectType": "mo.DocumentCount",
  "Count": 658
}
```

```
Metric #4
Descriptor:
  -> Name: virtual_machine_count
  -> Description:
  -> Unit:
  -> DataType: Gauge
NumberDataPoints #0
StartTimestamp: 2023-05-05 05:33:15.411738108 +0000 UTC
Timestamp: 2023-05-10 08:04:15.41354285 +0000 UTC
Value: 658.000000
```

result_count
aggregator

TimeSeries Pollers - API

 **Intersight**

Developer Center

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Service

Intersight

API Reference v1.0.11-12203

Q Search...

telemetry/timeboundaries

telemetry/TimeSeries

POST

Perform a Druid TimeSeries request.

telemetry/Topns

terminal/AuditLogs

terraform/Executors

thermal/Policies

top/Systems

POST

/api/v1/telemetry/TimeSeries

REST Client

●

Request Model

queryType: string

+ dataSource: object

descending: boolean Whether to make descending ordered result. Default is false(ascending).

+ intervals: array A JSON Object representing ISO-8601 Intervals. This defines the time ranges to run the query over.

+ granularity: object

+ filter: object

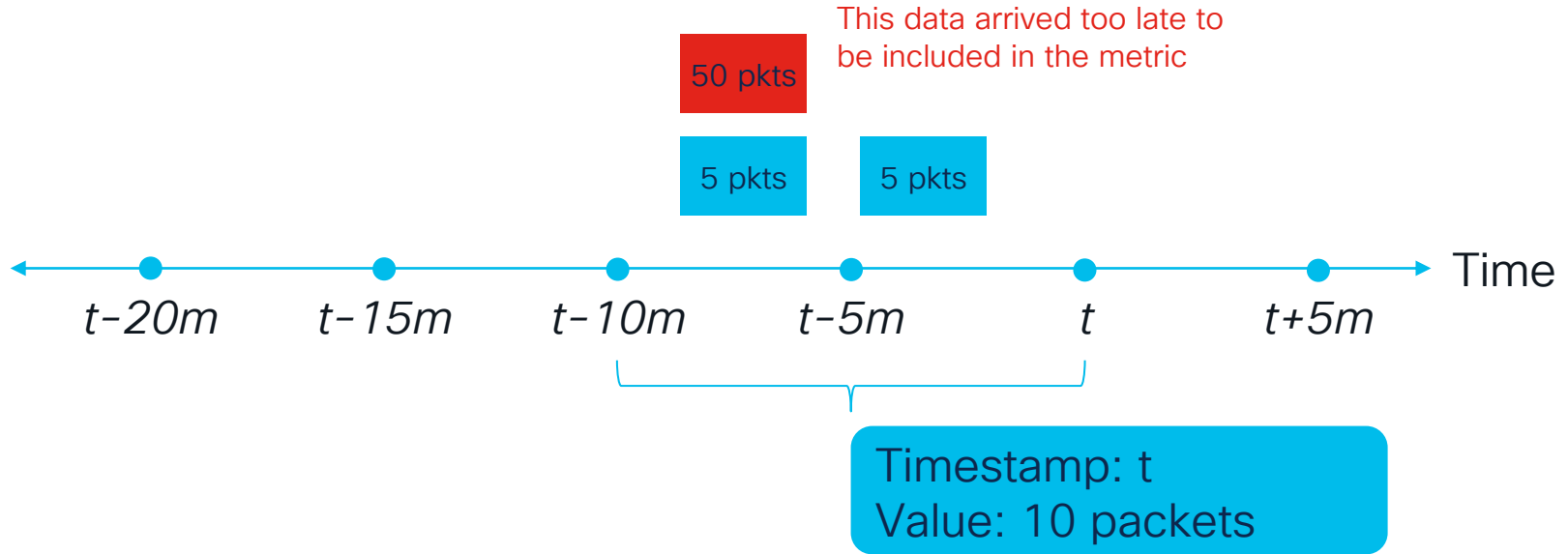
+ aggregations: object Aggregation functions are used to summarize data in buckets. Summarization functions include counting rows, calculating the min/max/sum of metrics and retrieving the first/last value of metrics for each bucket. Additional summarization functions are available with extensions. If no aggregator is provided, the results will be empty for each bucket.

+ postAggregations: object Post-aggregations are specifications of processing that should happen on aggregated values as they come out of Apache Druid. If you include a post aggregation as part of a query, make sure to include all aggregators the post-aggregator requires.

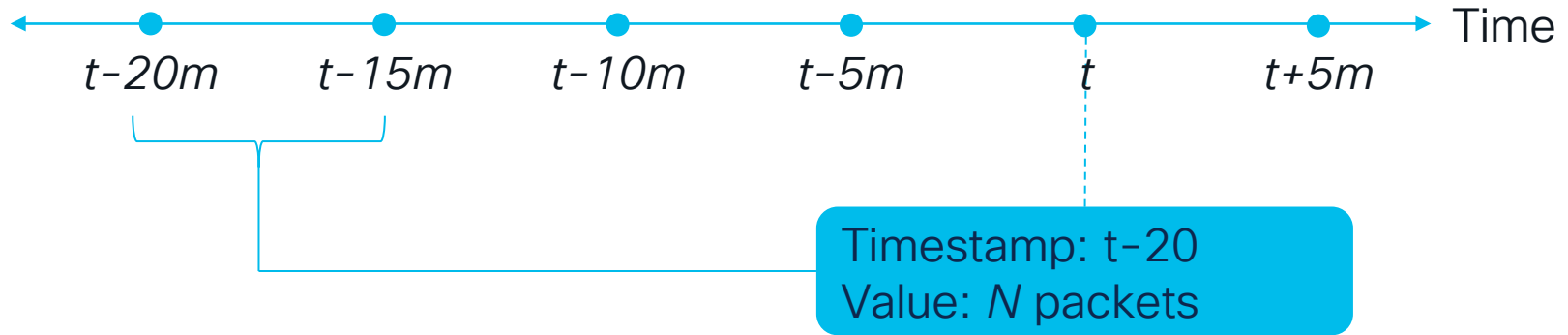
limit: integer An integer that limits the number of results. The default is unlimited.

+ context: object

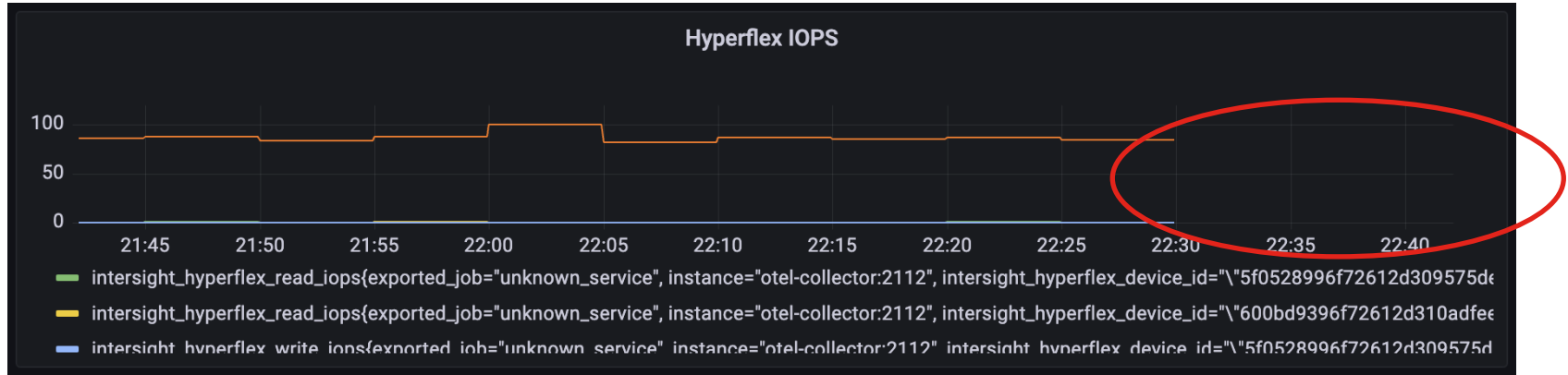
TimeSeries Pollers – Naïve strategy



TimeSeries Pollers – Actual strategy



TimeSeries Pollers





Demo time!

Key Takeaways



Key Takeaways

- OpenTelemetry provides a vendor-agnostic telemetry framework
- Once in OpenTelemetry we can do almost anything with that data
- Think of OpenTelemetry Collector as a protocol translator for telemetry
- *intersight-otel* can generate OpenTelemetry metrics from almost any Intersight API call you can think of
 - Please try it out
 - Give feedback
 - “Star” / “Watch” the GitHub repository for updates

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The bridge to possible

Thank you

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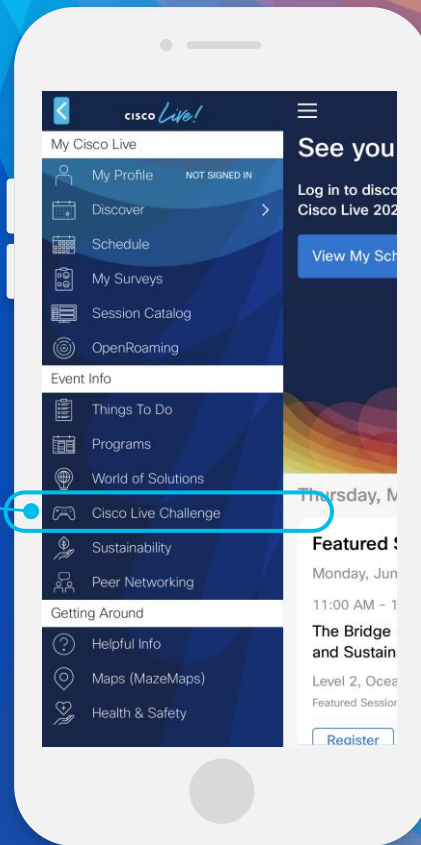
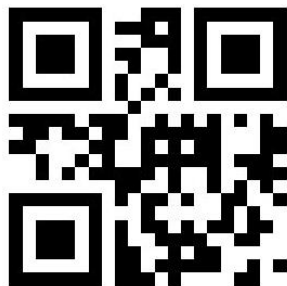
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- 4 Click the + at the bottom of the screen and scan the QR code:



The background is a vibrant, abstract graphic. It features a central bright white light source from which numerous colorful rays emanate, creating a sunburst or starburst effect. The rays transition through a spectrum of colors including yellow, orange, red, and various shades of blue and green. Overlaid on this are large, flowing, wavy shapes in similar colors, giving the overall impression of energy, movement, and a digital or network theme.

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