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Gain Better Observability with OpenTelemetry and InfluxDB

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Agenda

- Introduction to OpenTelemetry and logs, traces, and metrics
- Overview of InfluxDB Cloud powered by InfluxDB 3.0
- Live Demo of Observability App
  - Jaeger
  - Grafana
  - Hot R.O.D.
  - Telegraf
- Learning Resources
- Q&A

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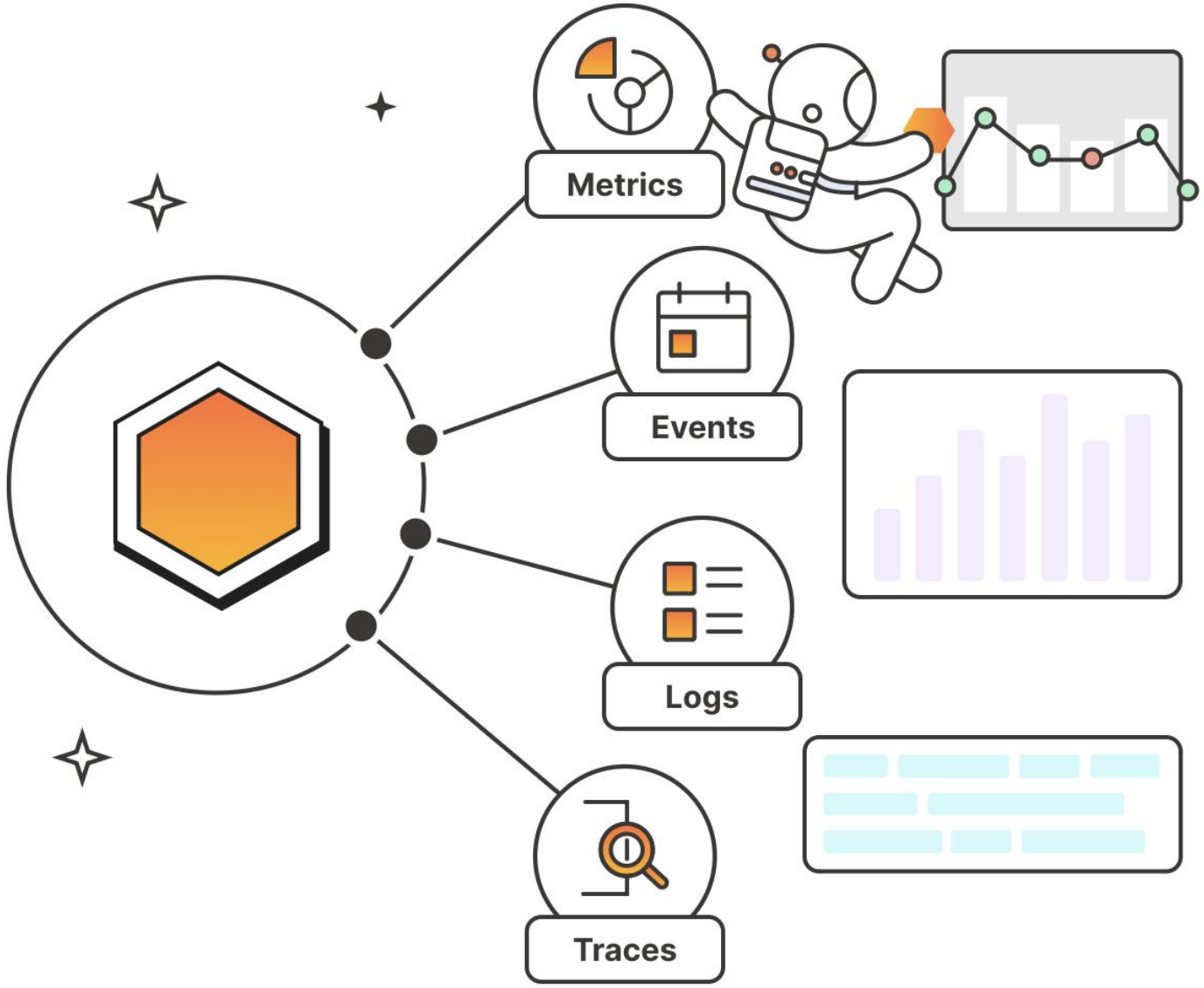
Introduction to OpenTelemetry

OpenTelemetry is an open-source CNCF project providing tools to collect and export telemetry data for analyzing software performance.

Reference: https://opentelemetry.io/

What is Observability?



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Events	Metrics	Traces	Logs
Debugging & Correlation of incidents	Monitoring system health, overall trends	Debugging, Diagnosing latency issues	Debugging
Discrete occurrence or actions at irregular intervals	Numerical data point, scalar values at regular intervals	Record of a request's path through a distributed system using trace ID.	Structured / Unstructured event data with timestamp
HTTP Request/Responses, User Signups, Clicks etc	%CPU of Usage, No. of Errors	trace_id: abc123 ├── frontend [100ms] ├── auth_service [50ms] └── database [200ms]	{"type": "user_login","timestamp": "2024-03-15T10:30:00Z","user_id": "12345","device": "mobile","location": "US-NYC"}
InfluxDB	InfluxDB	New Relic, InfluxDB*	Splunk, InfluxDB*

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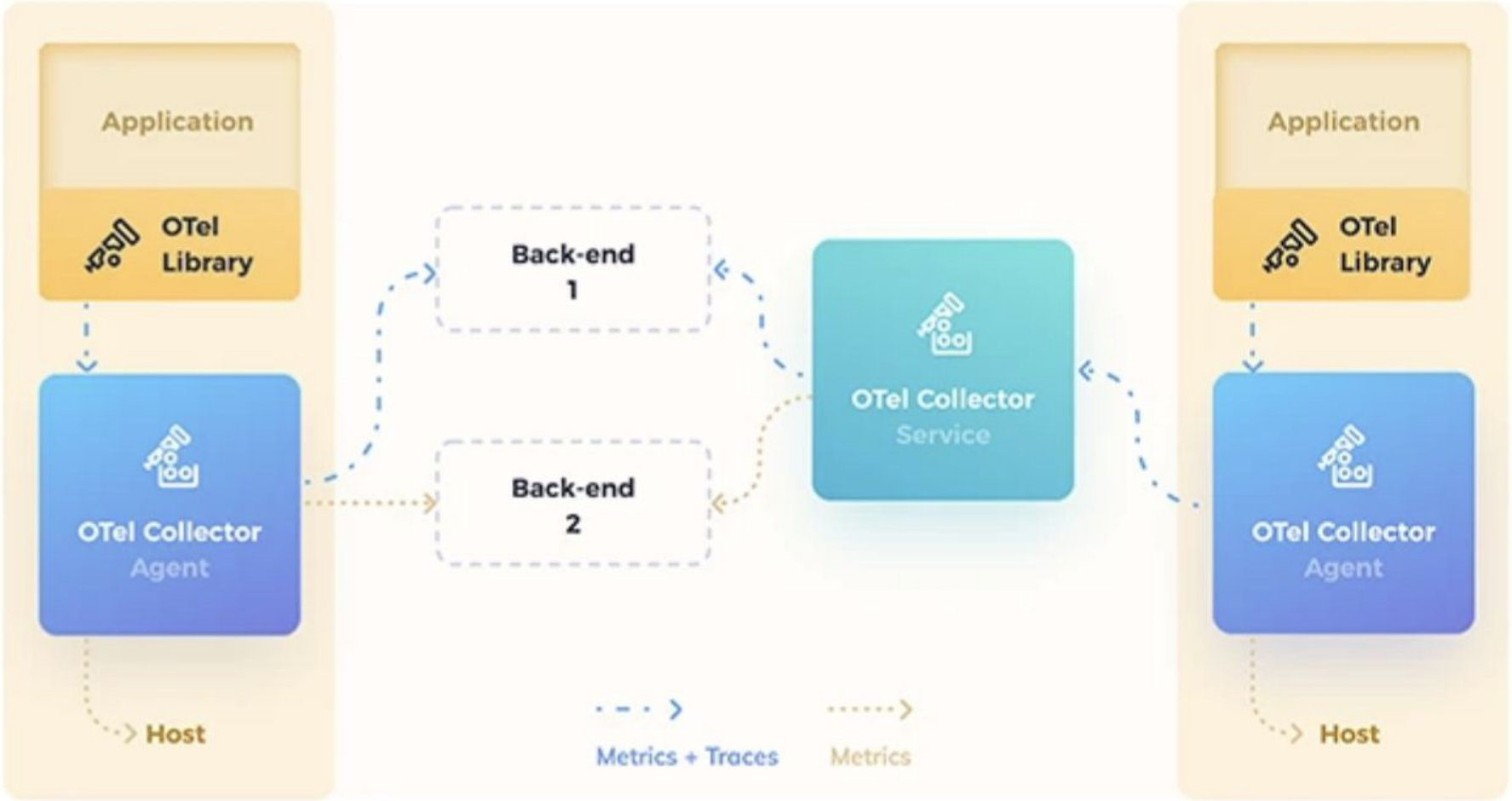
OpenTelemetry key concepts



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What can OpenTelemetry do for me?

- A single vendor-neutral collector binary and a vendor-agnostic instrumentation library that can be deployed in a variety of ways with support for both automatic and manual instrumentation.
- An end-to-end implementation to generate, emit, collect, process and export telemetry data.
- Full control of your data with the ability to send data to multiple destinations in parallel through configuration.
- Open-standard semantic conventions to ensure vendor-agnostic data collection
- A path forward no matter where you are on your observability journey.

Overview of InfluxDB Cloud

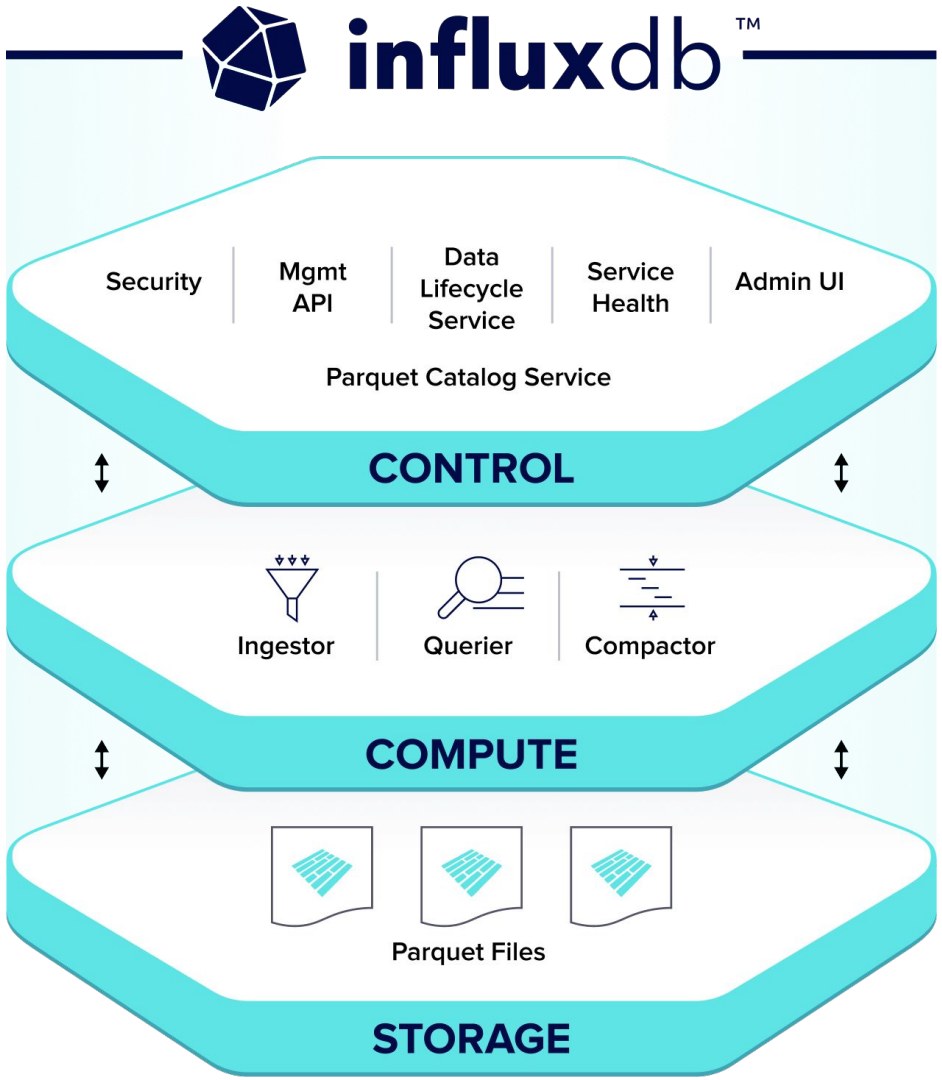
InfluxDB 3.0 : Built on Modern Open Source Stack

Apache Flight
Transport columnar data at high speeds based on Arrow format

Apache DataFusion
Fast query execution engine written in Rust

Apache Arrow
Optimized for running large analytical workloads

Apache Parquet
Open column-oriented file format designed for efficient data storage and retrieval



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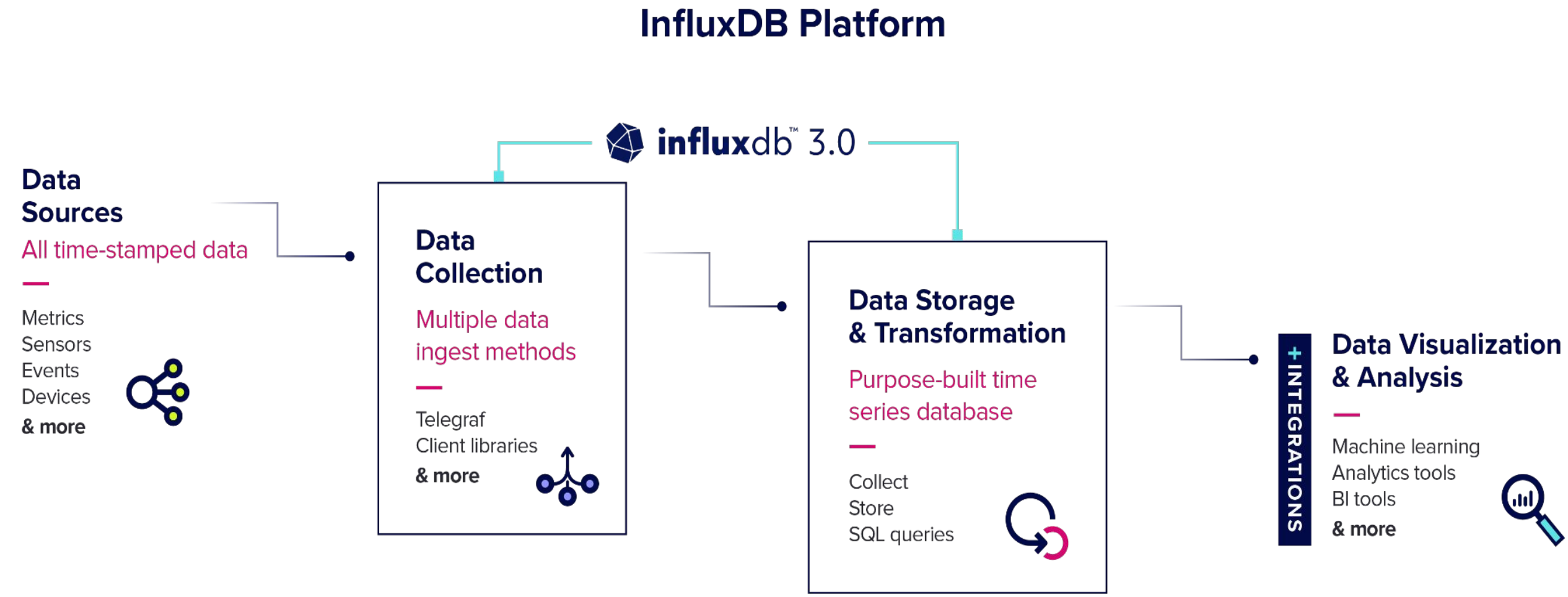
Typical Architecture & Deployment



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Unlimited cardinality

InfluxDB 3.0's database engine is designed to handle high cardinality datasets without compromising performance. Track your devices or software instances on many dimensions. This is what will allow us to store logs and traces, instead of only metrics.

Native SQL support

InfluxDB 3.0 features native SQL support. Most developers (and all data scientists) are already familiar with SQL, so teams can gather insights faster and with less friction. We are also working on expanding what you can do with SQL to allow downsampling, aggregation, and other key features.However, InfluxDB IOx also supports InfluxQL and Flux. Once again, we’re taking backwards compatibility seriously.

High-performance data ingestion

InfluxDB 3.0 is designed to handle high write and query loads, making it suitable for processing massive amounts of monitoring data in real-time. Its high-performance capabilities help developers capture and analyze data to identify patterns, trends, and anomalies, which leads to faster and more informed decision-making.

Seamless integration with observability tools

InfluxDB 3.0 integrates with popular observability tools such as Grafana, Jaeger, and OpenTelemetry to create a powerful ecosystem for monitoring, tracing, and visualizing your infrastructure. It also integrates with pandas and other data science tools to take action on your data.

Introduction to InfluxDB Observability Project

OpenTelemetry with InfluxDB

This demo provides a practical example of integrating InfluxDB, a high-performance time series database, with OpenTelemetry, an open-source observability framework, to achieve real-time monitoring and tracing of a distributed application.

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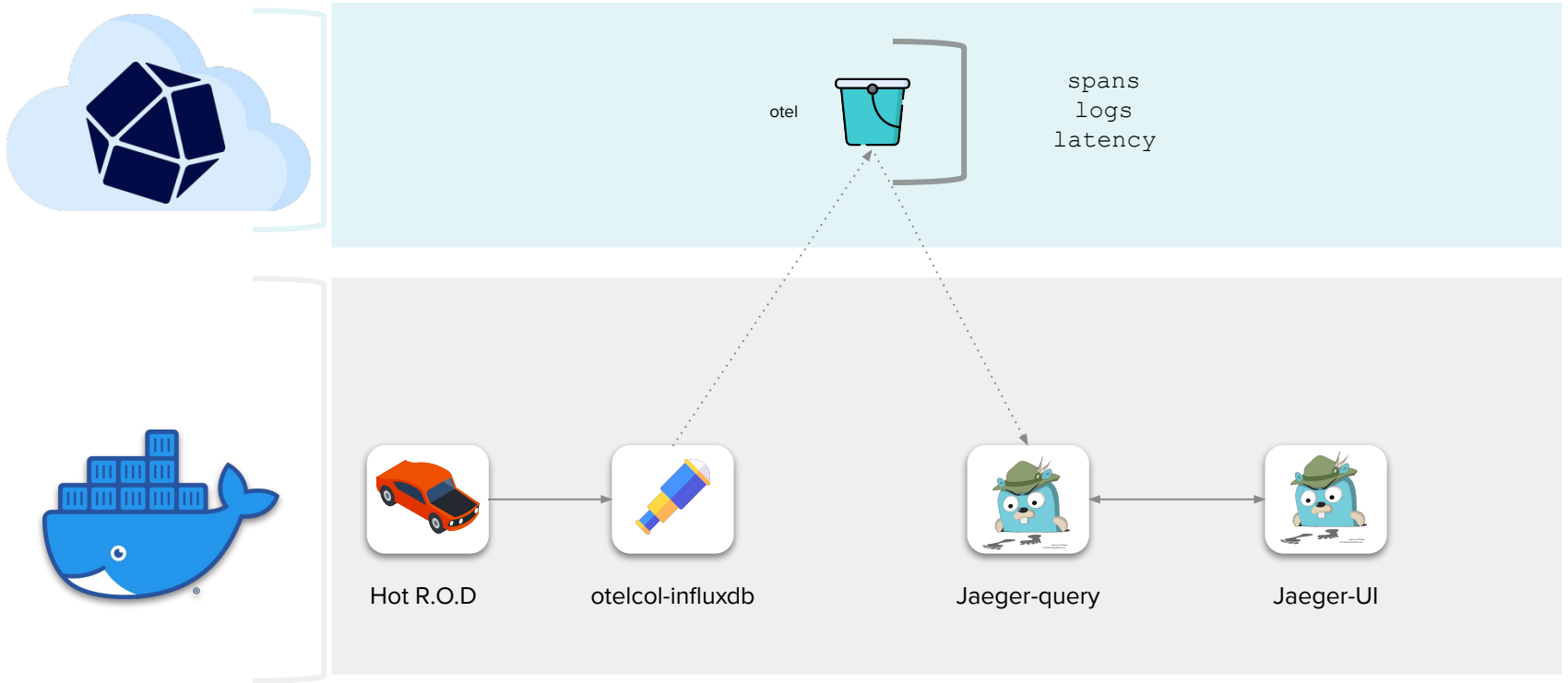

https://github.com/influxdata/influxdb-observability

- Aims to provide a standard for converting **OTEL -> InfluxDB Schema** and **InfluxDB Schema -> OTEL**
- Parts of **otelcol-influxdb** can be replaced with **Telegraf**

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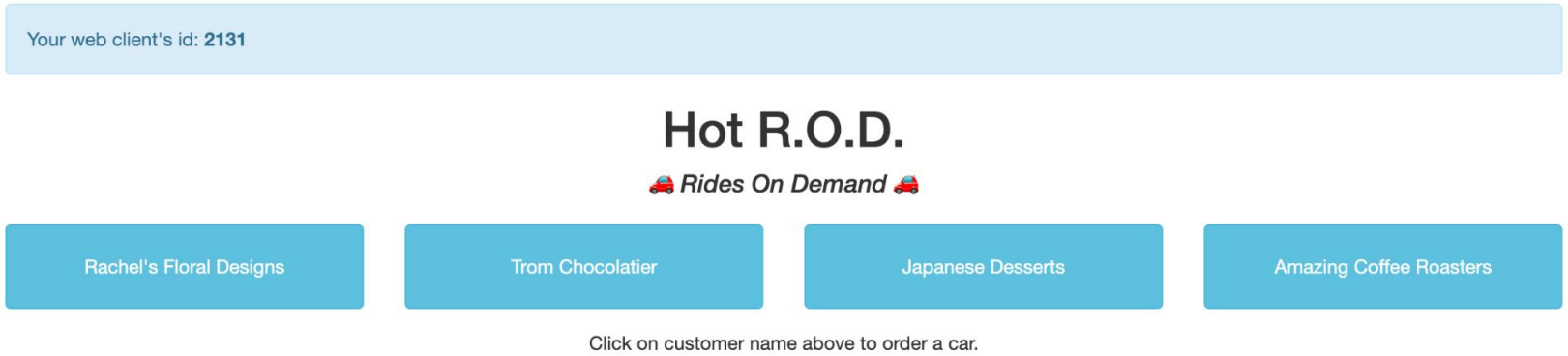
Hot R.O.D - Rides on Demand



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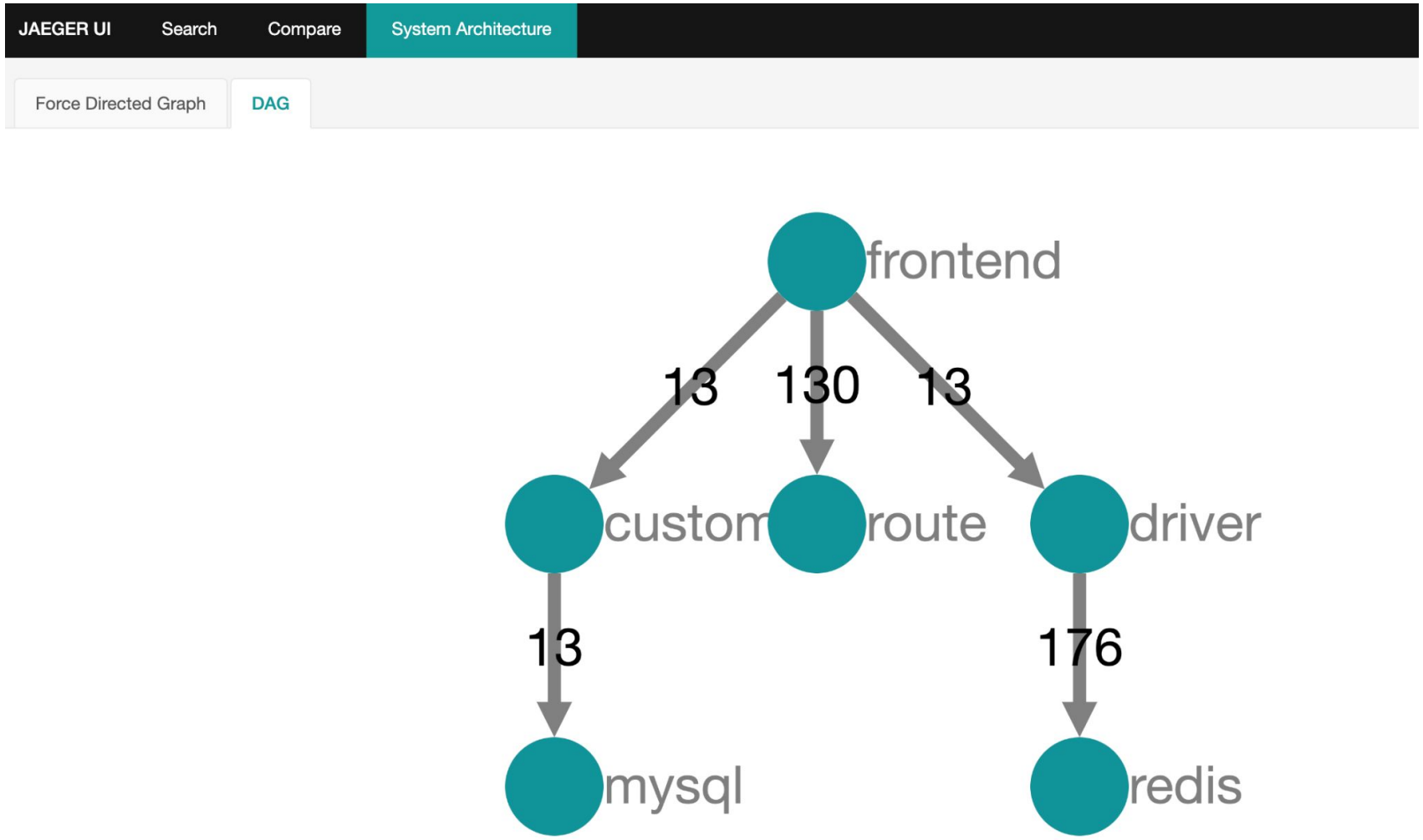
Jaeger



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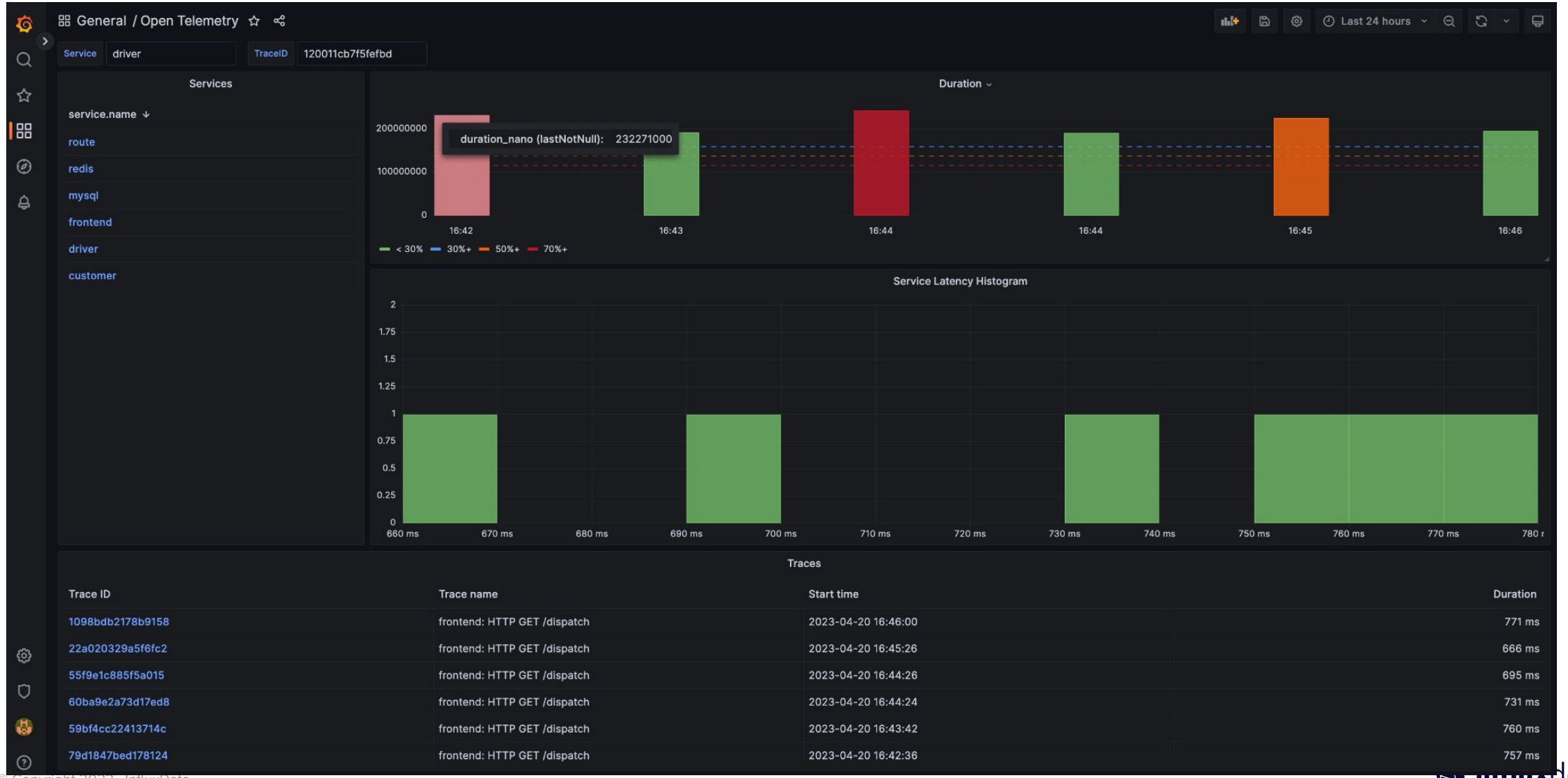
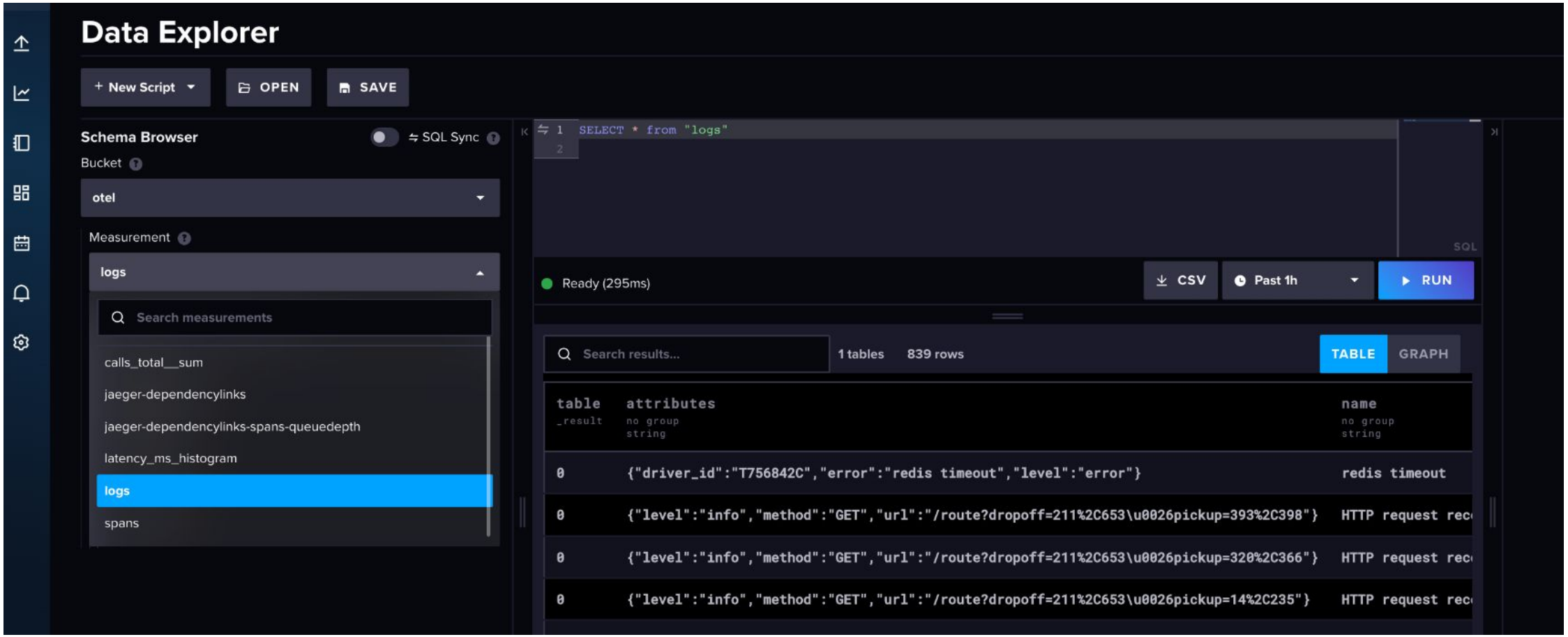
Grafana



InfluxDB Cloud



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Running InfluxDB Observability Demo

1. Sign up / Login to InfluxDB Cloud account
2. Create 2 buckets, “otel” and “otel-archival” where “otel-archival” has a longer retention policy.
3. Clone/Download sample app from GitHub
4. Update “.env” file with the cloud account information.
5. Install flight-sql as per the README.md.
6. Build and run the docker images as per the README.md.
7. Import your dashboard with the JSON at **demo/grafana/dashboards/** into Grafana.
8. Create traces by clicking on a customer on the HotRod application.

Live Demo

Resources

Sign up for Free

- www.influxdata.com/cloud
- via cloud marketplace aws Google Cloud Microsoft Azure

Resources

- Sample app demo (GitHub): https://github.com/InfluxCommunity/influxdb-observability
- OpenTelemetry Demo: https://opentelemetry.io/docs/demo/
- Jaeger: https://www.jaegertracing.io/
- Blogs : https://www.influxdata.com/blog
- Documentation: https://docs.influxdata.com
- InfluxDB University (free training): https://influxdbu.com
- Community: https://influxcommunity.slack.com & https://community.influxdata.com

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THANK YOU