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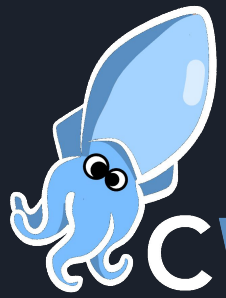


CW Cloud

Let's discover together the next generation of observability with logs and traces: Quickwit

Fork-IT in Tunis, 05/04/2025

QUICKWIT

Who am I ?

Idriss Neumann

Founder and CTO of cwcloud.tech

SRE/Platform Engineer specialist

OSS contributor

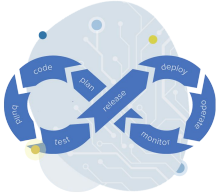
idrissneumann

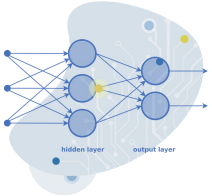
ineumann.fr

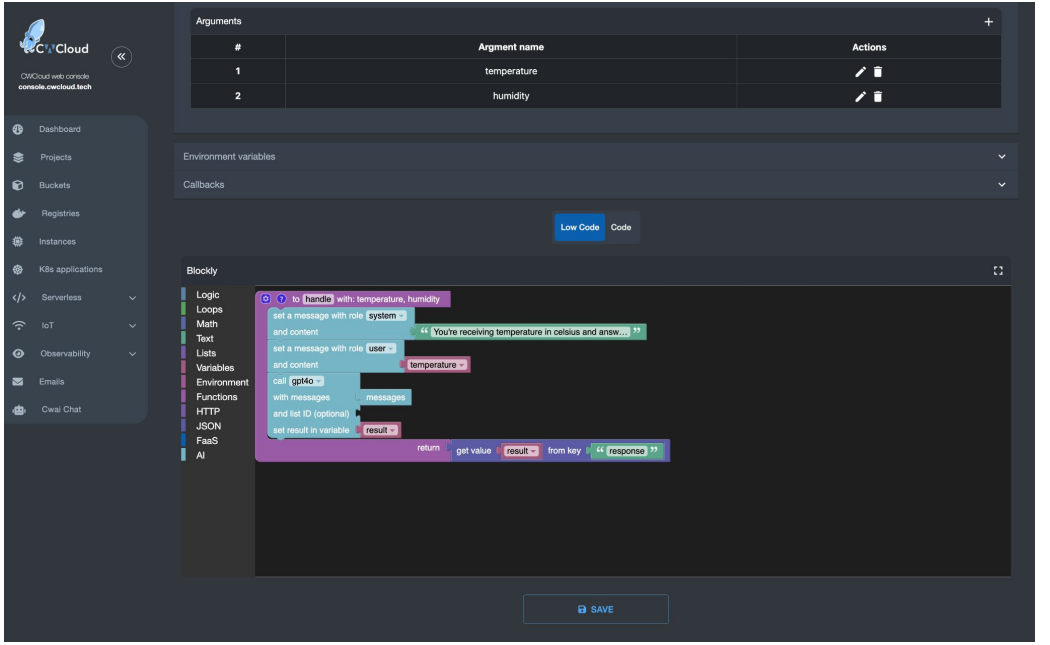
Who are we?

Software editor based in Paris and Tunis

Multicloud DaaS, FaaS and ML/ops platform to accelerate your development and deployment







Website: cwcloud.tech

What is observability?

Definition of observability and its three pillars: logs, metrics and traces

Observability is the ability to measure a system's current state based on the data it generates, such as **logs**, **metrics**, and **traces**.

Logs

Timestamped records produced by an application in order to provide context and details for troubleshooting

Metrics

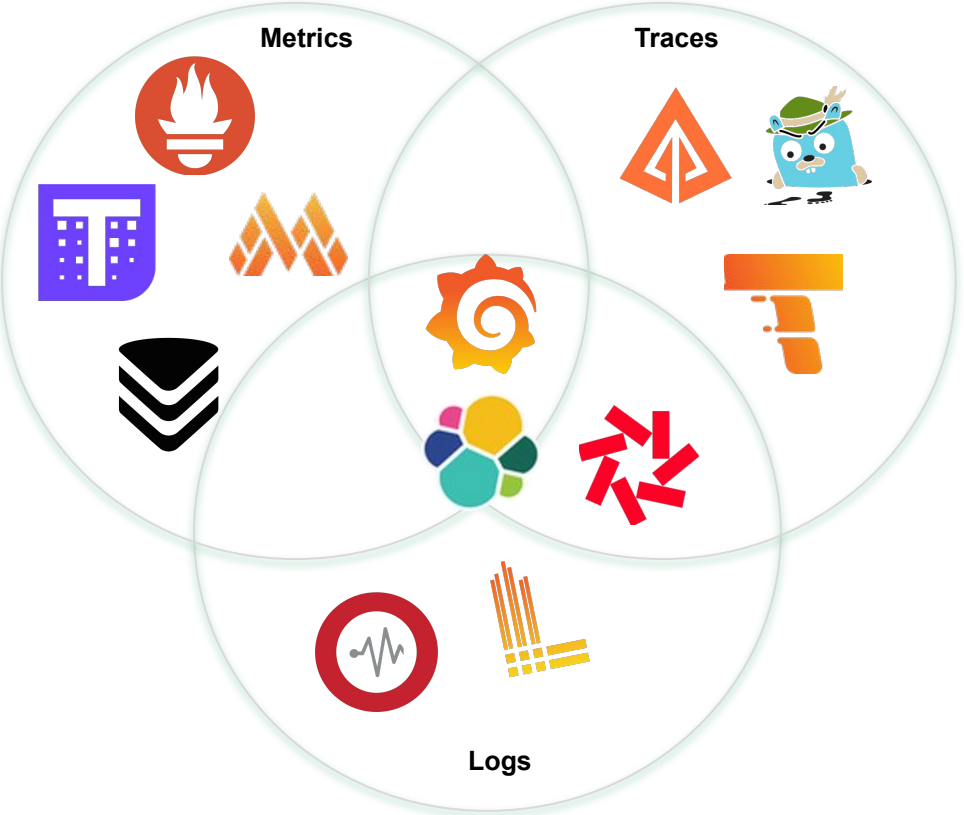
Digital representation of data measured over interval of time

Traces

Representation of causal relationships between events in a distributed system

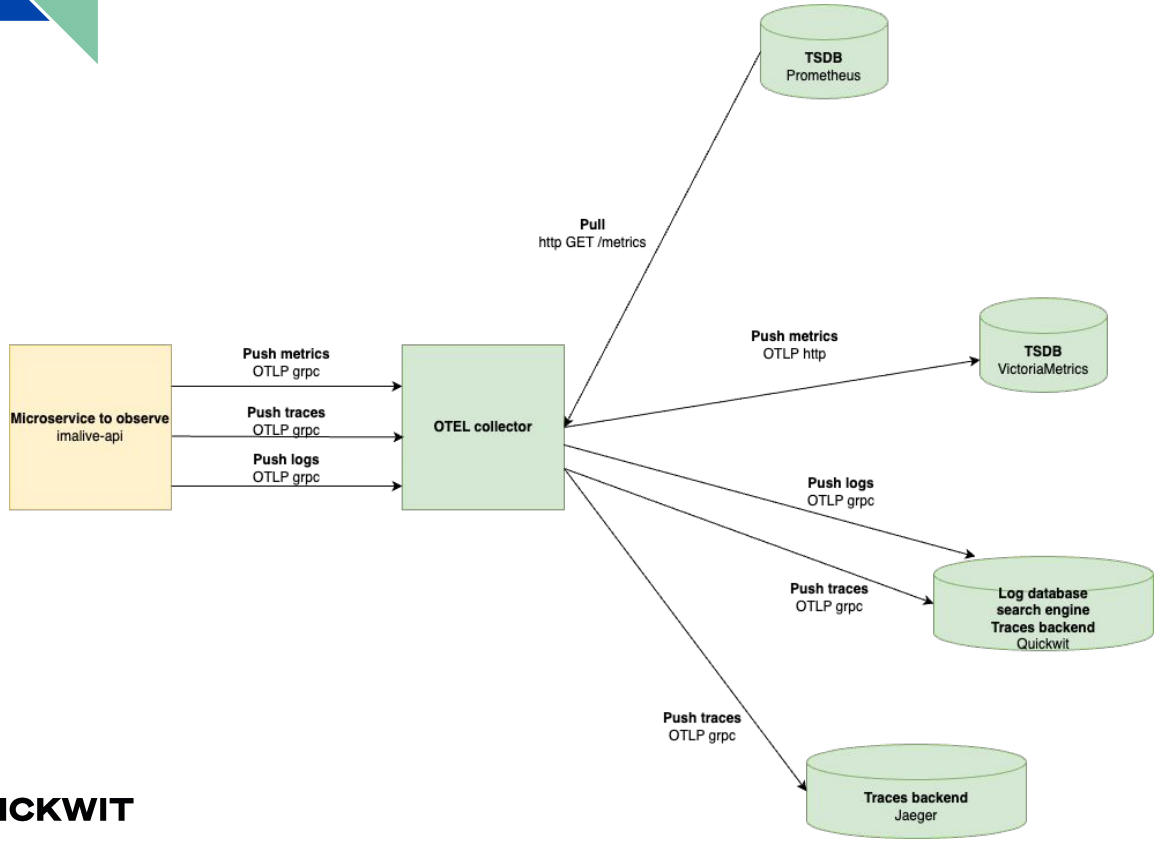
Observability landscape

Most of the well known tools



What is OpenTelemetry?

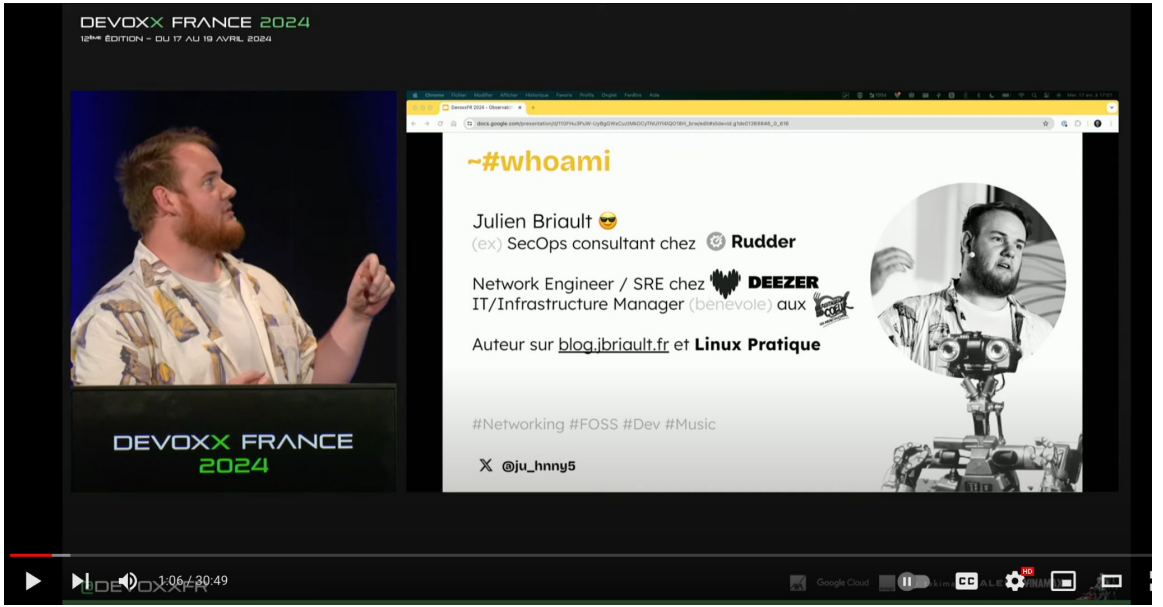
An observability standard for collecting traces, metrics and logs and ensure interoperability



Website: opentelemetry.io

What is VictoriaMetrics?

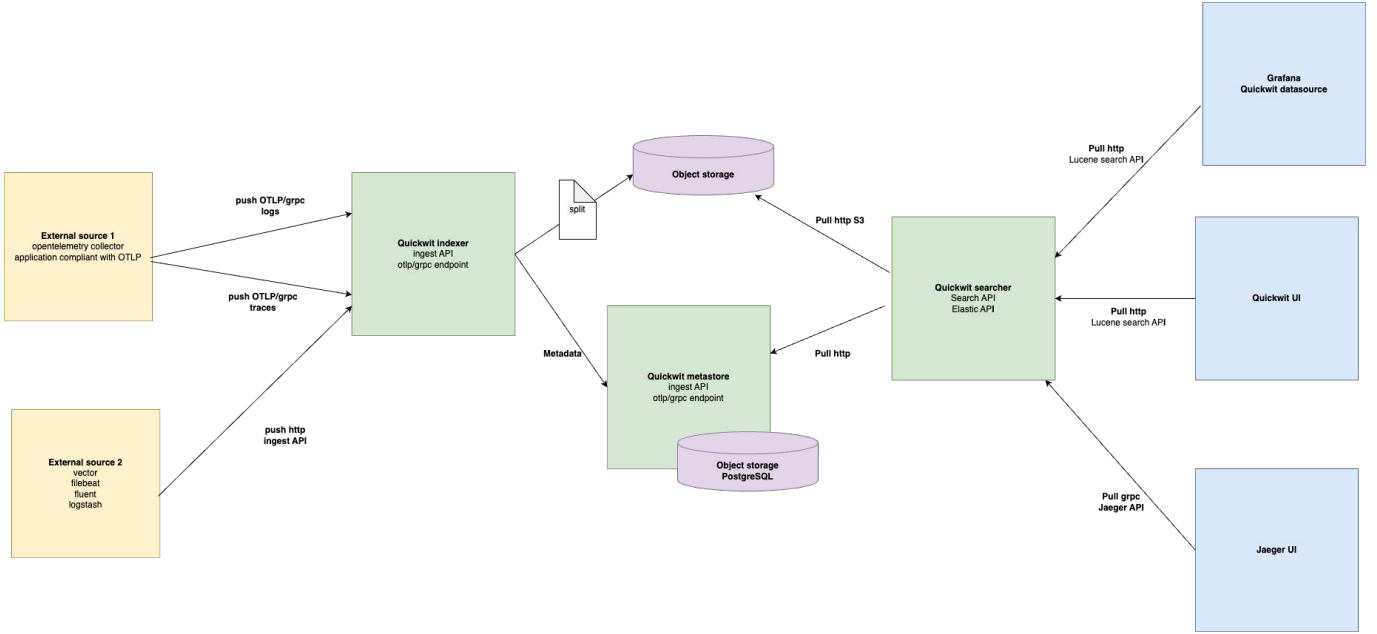
A quick aside to go see Julien's talk



Julien's talk "*Observabilité : dépoussiérer Prometheus avec VictoriaMetrics*": youtu.be/bzLtWjUj2k0

What is Quickwit?

Search engine solution competing with Elasticsearch, OpenSearch, and Grafana Loki
A bit of the best of both worlds combined
Very fast, written in Rust and owned by datadog



Website: quickwit.io

QUICKWIT

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Why choosing Quickwit?

The reasons for our choice of this solution

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Docker in production, is it really bad?

Kubernetes or not, that's the question

Quickwit, the next generation of modern observability

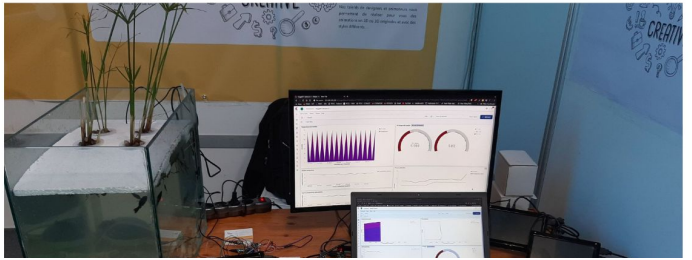
September 4, 2024 · 6 min read

Idriss Neumann
founder cwcloud.tech

In this blog post, I'll try to explain why we moved from ElasticStack to Quickwit and Grafana and why we choosed it over other solutions.

First, we've been in the observability world for quite some time and have been using ElasticStack for years. I personally used Elasticsearch for more than 10 years and Apache SolR before for logging and observability usecases even before Elasticsearch's birth!

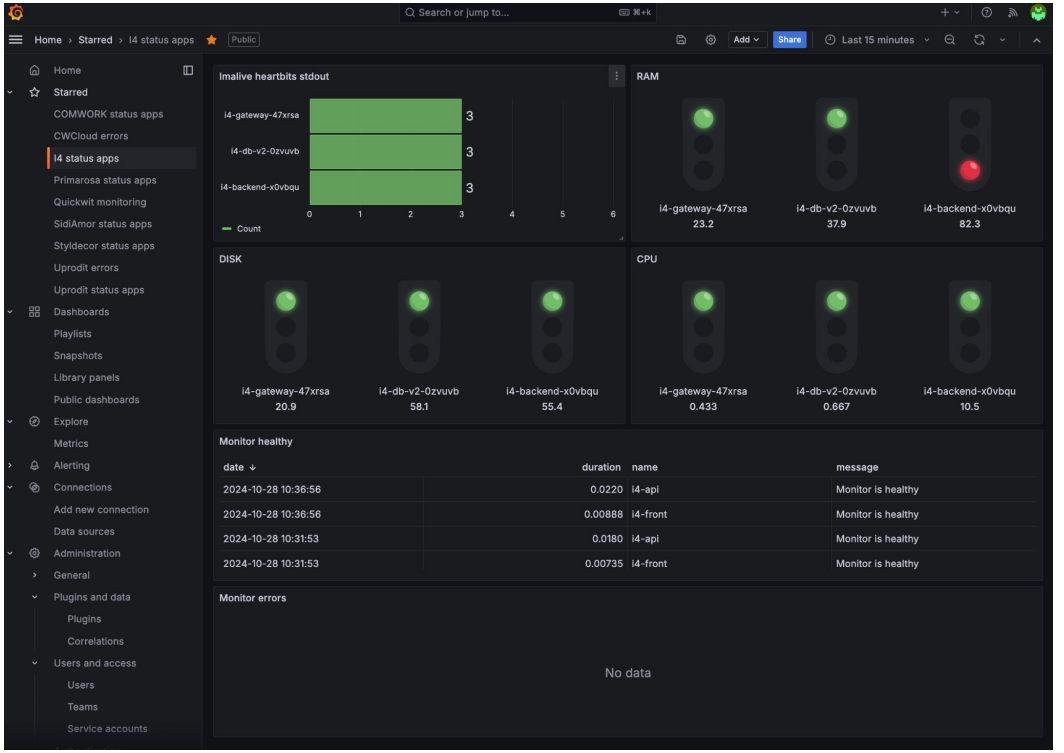
We also succeed to use ElasticStack for *IoT* (*Internet of Things*) projects and rebuilt our own images of Kibana and Elasticsearch for ARM32 and ARM64 before *Elastic* (the company) starts to release official images. We had a lot of fun with it.



Link: cwcloud.tech/blog/quickwit

Quickwit for prometheus metrics?

We have also made this choice and explain the pros and cons



Link: cwcloud.tech/blog/quickwit-metrics

Basics index mappings with Quickwit

Field types

- ➔ `text`: string / plain text
- ➔ `datetime`: date / timestamp
- ➔ `i64`: integer (64 bits)
- ➔ `f64`: floatting number (64 bits)
- ➔ `u64`: unsigned integer (64 bits)
- ➔ `ip`: IP address
- ➔ `bytes`: binary value or base64 representation
- ➔ `json`: dynamic object

Composite types

- ➔ `array`: list of fields
- ➔ `object`: nested object structure

Link :
quickwit.io/docs/configuration/index-config#doc-mapping

Basics Quickwit's query

Structure of a query

```
field:condition
```

- ➔ `field:value`: term clause
- ➔ `field:value*`: term prefix clause
- ➔ `field:IN [val1 val2 ...]`: term set clause
- ➔ `field:"sequence of words"`: phrase clause
- ➔ `field:"sequence of words"*`: phrase prefix clause
- ➔ `field:[0 TO 1000]`: range clause
- ➔ `*`: all

Link:
quickwit.io/docs/get-started/query-language-intro

Basics Quickwit's query

Logical operators

```
NOT field:condition
```

```
field1:condition1 OR field2:condition2
```

```
field1:condition1 AND field2:condition2
```

By default, a AND operator is assumed

```
field1:condition1 field2:condition2
```

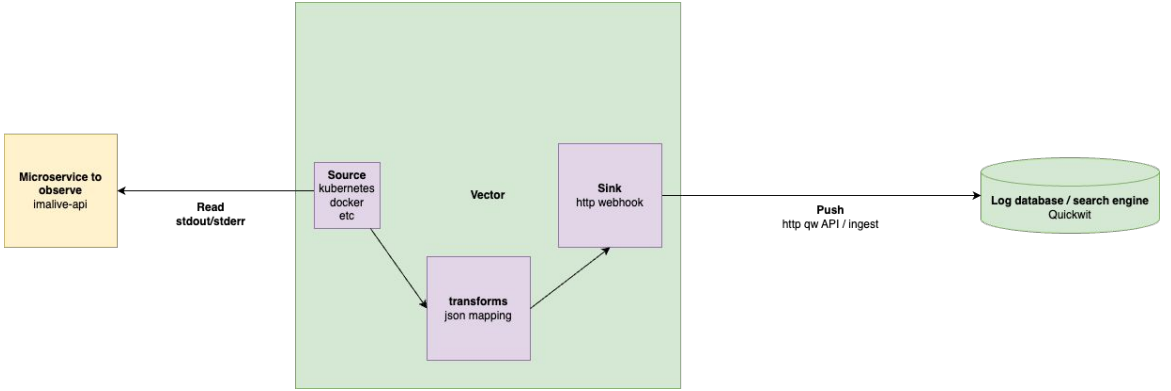
You can also group your queries with parenthesis:

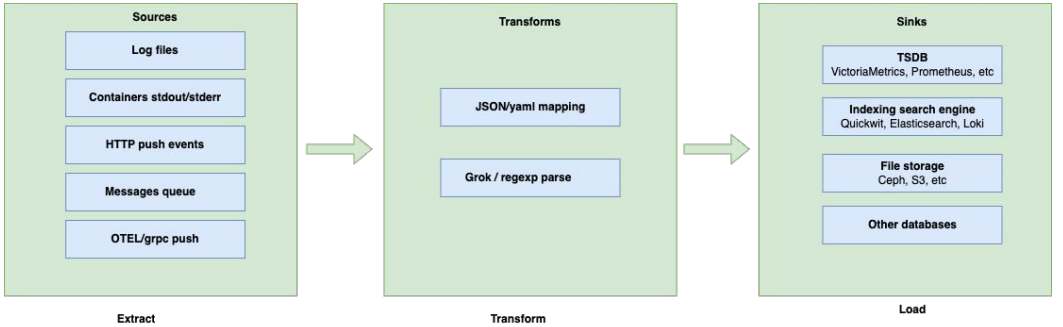
```
field1:condition1 AND NOT (field2:condition2 OR field3:condition3)
```

Link:
quickwit.io/docs/get-started/query-language-intro

What is Vector?

Very fast and low footprint observability agent and ETL
Written in Rust and owned by datadog as well





Website: vector.dev

How to use Vector with Quickwit?

Tutorial to collect logs with Vector and index-it in the default otel-logs index

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DNS issue with Grafana
Update your password
Change storage to object storage
Grafana datasource for logs
Grafana datasources for traces
Correlate logs and traces
Logs and traces ingestion

In addition to the quickwit's API and two OTLP endpoint for grpc and http protocols:

- otlp/grpc: `https://otlp-grpc.{your_instance_hash}.quickwit.comwork.(cloud|dev|info)`
- otlp/http: `https://otlp-grpc.{your_instance_hash}.quickwit.comwork.(cloud|dev|info)`

Those endpoints are authenticated with the same credentials (defined in the `qw.keys` file).

You can directly plug your applications with otlp or continue to send logs via the quickwit `/ingest` endpoint.

If you're using docker and you want to index the `stdout` and `stderr` of your containers, or if you want to index a classic log file produced by an application on the filesystem, we recommand you to use vector.

Here's an example of configuration (file `/etc/vector/vector.yaml`) who's ingesting the `stdout` and `stderr` of docker containers and log files produced by a gitlab instance :

```
sources:
  log_docker:
    type: docker_logs

  log_files:
    type: file
    include:
      - "/var/opt/gitlab/gitlab-ci/builds/*/*/*.log"

transforms:
  remap_app_logs:
    inputs:
      - "log_files"
      - "log_docker"

    type: "remap"
    source: |
      .timestamp_nanos, _ = to_unix_timestamp(.timestamp, unit: "nanoseconds")

      .message = string!(.message)

      if contains(.message, "error", case_sensitive: false) || contains(.message, "errno", case_sensitive:
        .message = replace(.message, r'^ERROR:[^:]*:', "")
        .severity_text = "ERROR"
```

Tutorial:
cwcloud.tech/docs/tutorials/observability/quickwit

QUICKWIT

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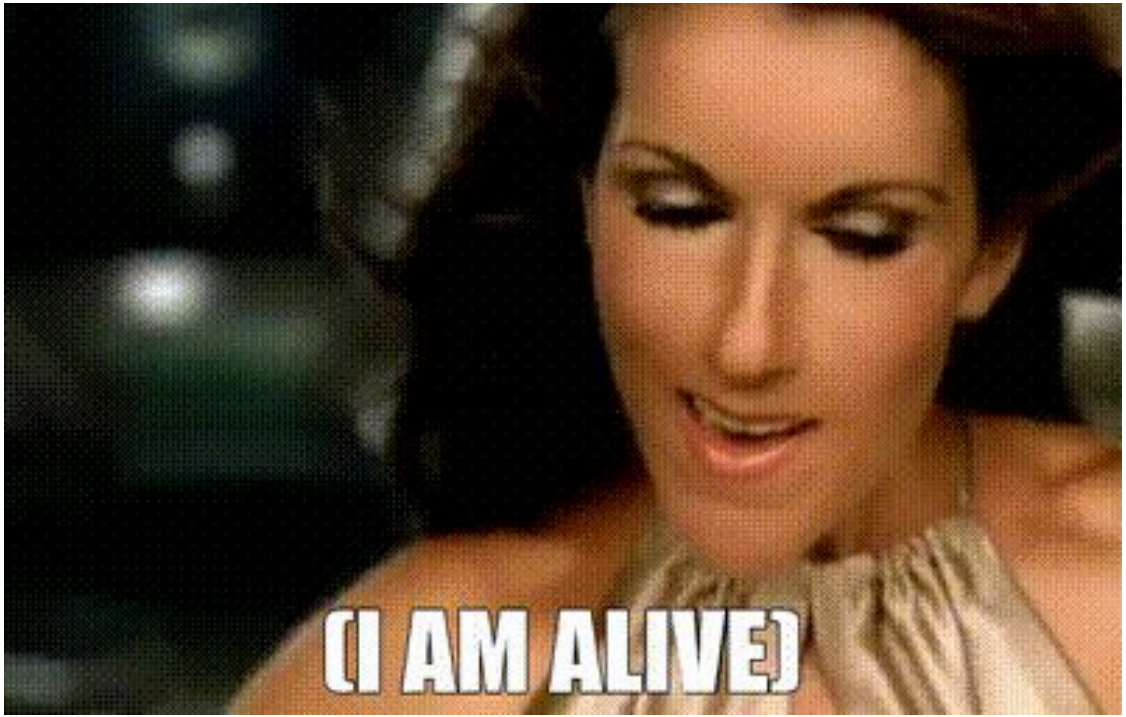
What is Imalive ?

Host metrics exporter (RAM, CPU, Disk) with a heartbit
Compliant with Prometheus / OpenMetrics and OpenTelemetry format



Repo :
gitlab.comwork.io/oss/imalive

Demo

What if we got down to the real deal?

QUICKWIT quickwit-default-cluster

Docs

Discover
- Query editor

Admin
- Indexes
- Cluster
- Node info
- API

Index ID: otel-traces-v0_7

Fields
- B trace_id
- T trace_state
- T service_name
- J resource_attributes
- U resource_dropped_attributes_count
- T scope_name
- T scope_version
- J scope_attributes
- U scope_dropped_attributes_count
- B span_id
- U span_kind
- T span_name
- T span_fingerprint
- D span_start_timestamp_nanos
- D span_end_timestamp_nanos
- U span_duration_millis
- J span_attributes

RUN

No date range

```
1
```

13 hits found in 0.01 seconds

2024/09/13 12:49:27
resource_attributes: {"telemetry.sdk.language":"python","telemetry.sdk.name":"opentelemetry","telemetry.sdk.version":"1.27.0"} scope_name: utils.otel service_name: imalive-grafana-imalive span_duration_millis: 0 span_end_timestamp_nanos: 1726231767360967000 span_fingerprint: imalive-grafana-imalive1imalive-monitors span_id: b46321d8f2ddd395 span_kind: 1 span_name: imalive-monitors span_start_timestamp_nanos: 1726231767360749000 trace_id: 81fbcfa36439d3d3e5992aa29287f781

2024/09/13 12:49:17
resource_attributes: {"telemetry.sdk.language":"python","telemetry.sdk.name":"opentelemetry","telemetry.sdk.version":"1.27.0"} scope_name: utils.otel service_name: imalive-grafana-imalive span_duration_millis: 0 span_end_timestamp_nanos: 1726231757359066000 span_fingerprint: imalive-grafana-imalive1imalive-monitors span_id: 5c260beccf43853e span_kind: 1 span_name: imalive-monitors span_start_timestamp_nanos: 1726231757358842000 trace_id: 6b7b1853261adf860a32af423a769b80

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2024/09/13 12:48:59
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resource_attributes: {"telemetry.sdk.language":"python","telemetry.sdk.name":"opentelemetry","telemetry.sdk.version":"1.27.0"} scope_name: utils.otel service_name: imalive-grafana-imalive span_duration_millis: 12026 span_end_timestamp_nanos: 1726231751149173000 span_fingerprint: imalive-grafana-imalive1imalive-heartbit span_id: 6aafa72599e44088 span_kind: 1 span_name: imalive-heartbit span_start_timestamp_nanos: 1726231739122791000 trace_id: c14a04ea75ce818f7ae949e627a80665

2024/09/13 12:48:52
resource_attributes: {"telemetry.sdk.language":"python","telemetry.sdk.name":"opentelemetry","telemetry.sdk.version":"1.27.0"} scope_name: utils.otel service_name: imalive-grafana-imalive span_duration_millis: 0 span_end_timestamp_nanos: 1726231732709895000 span_fingerprint: imalive-grafana-imalive1imalive-monitors span_id: d7e4dc5a0740055c span_kind: 1 span_name: imalive-monitors span_start_timestamp_nanos: 1726231732709803000 trace_id: d0d133bbe08aa19464e33d539f559b8b

Repo:
gitlab.comwork.io/comwork_public/talks/forkit-quickwit

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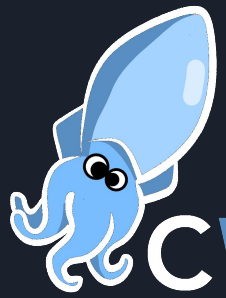

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Thanks !

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