



TechTalk – Quarkus3+Monitoring

TechTalk – Quarkus3+Monitoring - 05.06.2024





WELCOME! 😊



Introduction to Monitoring

Werner Vogels (CTO of Amazon)

Everything fails all the time. Monitoring and observability are key to understanding the failure and resilience patterns of your systems, and to building more robust applications.

Martin Fowler (Software Developer and Author)

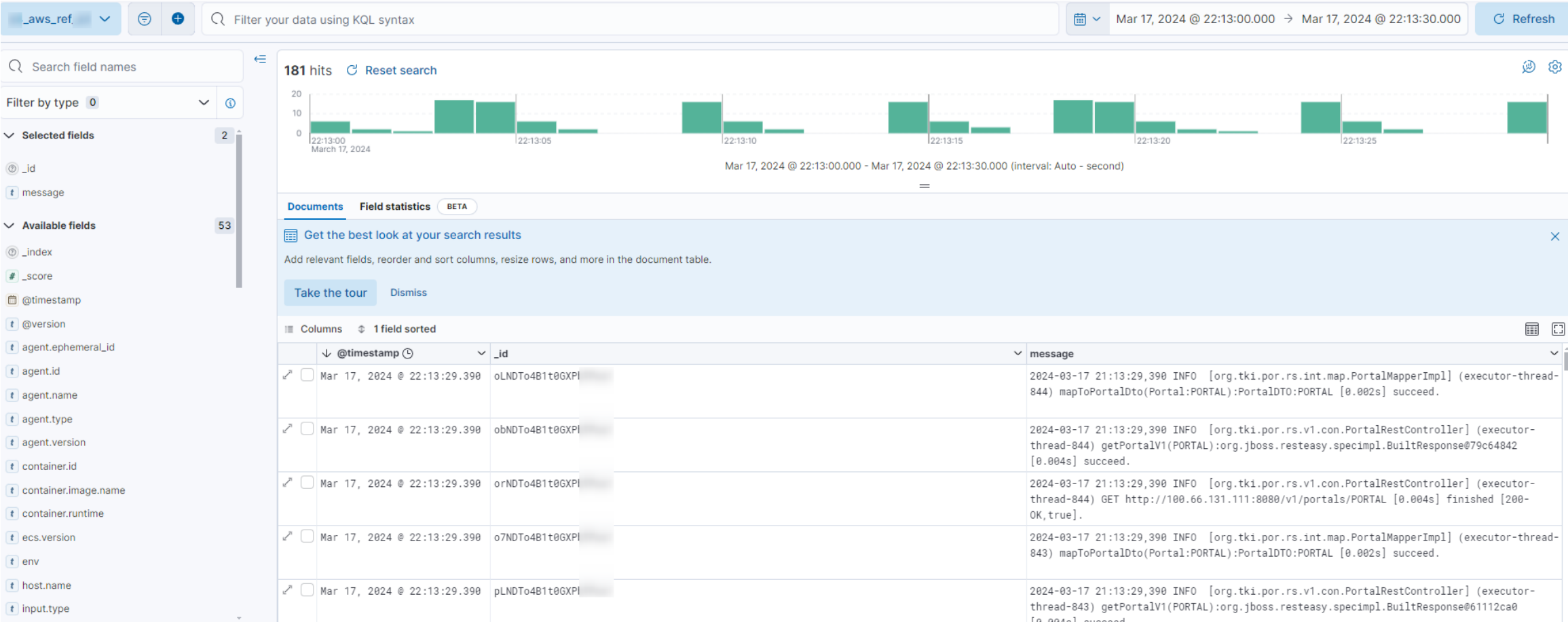
If you can't measure it, you can't improve it. Monitoring is essential to understand performance and to ensure that systems meet user expectations.



Why application monitoring?

- Get a visual understanding of what an application is doing, what is normal operations, what not. Visualisation is important
- Get a **visual understanding** of what an application is doing, what is normal operations, what not. Visualisation is important
- **Data driven development:** Measure efficiency of your code
- **Data driven operations:** Quantify application health
- **Data driven business:** Get metrics on the behaviour of the users

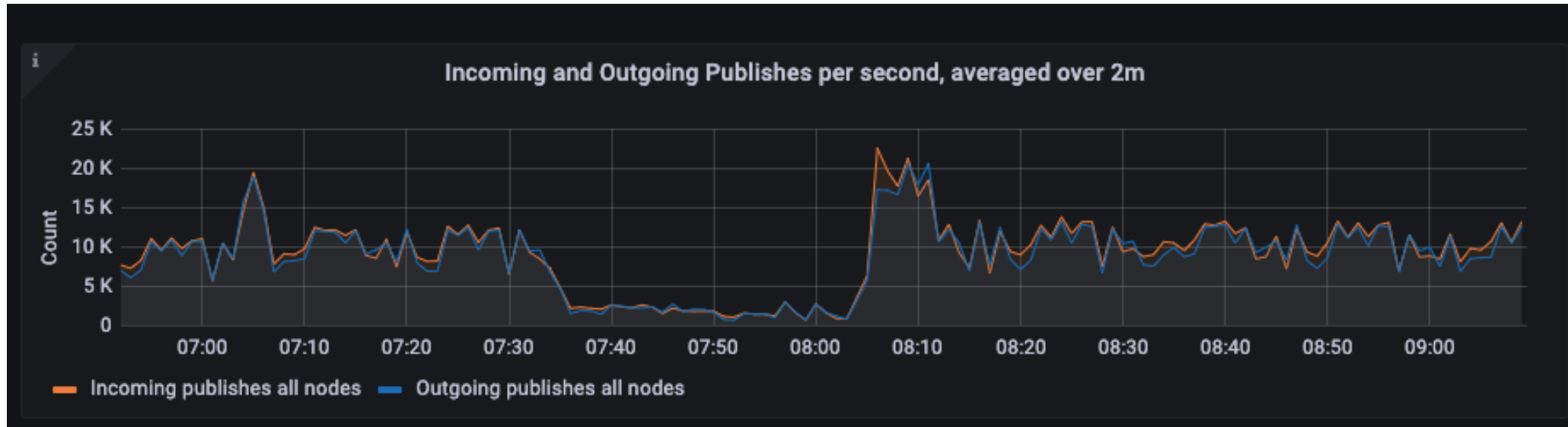
What's Kibana?





We as humans are very good in detecting visual anomalies

Publishes outage





In order to measure something you need a metric

- Counter
- Gauge
- Timer

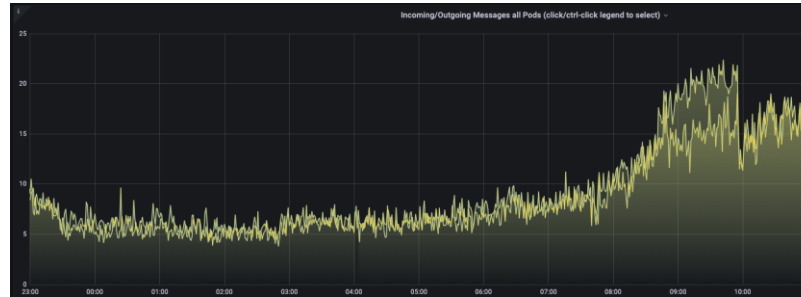




Further examples of metrics

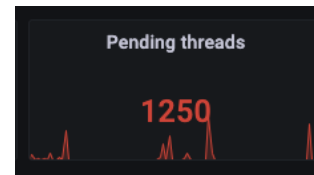
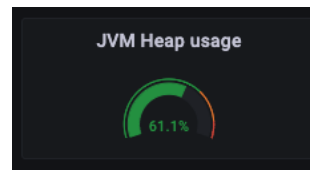
Counter

- Number of errors
- Number of user requests



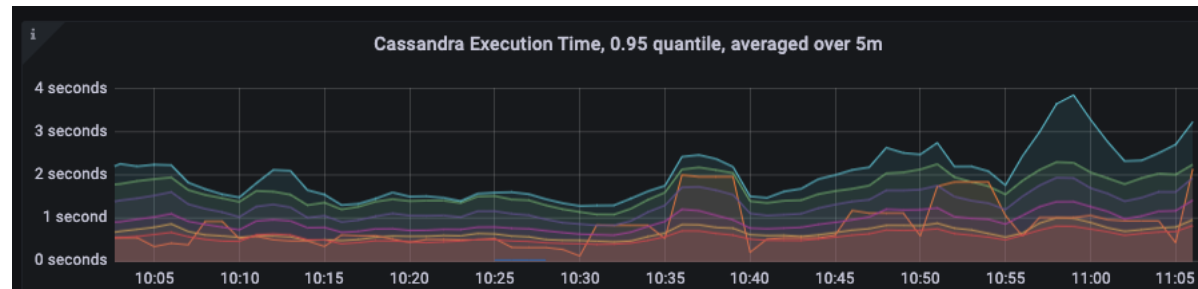
Gauge

- Available heap
- Number of connections



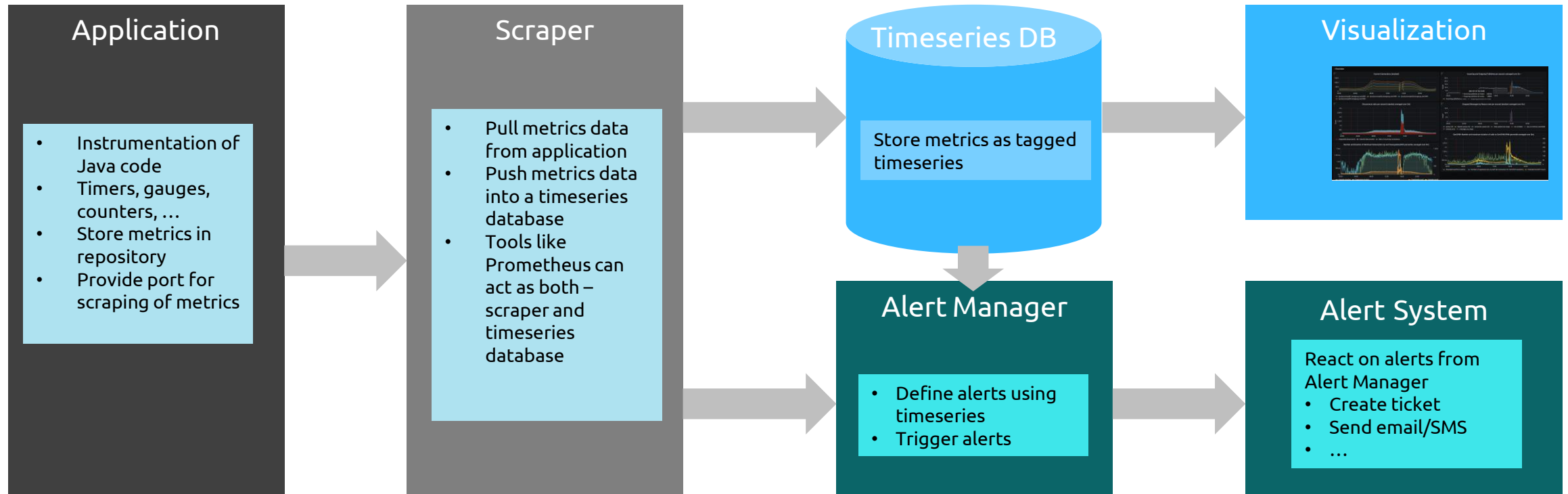
Timer

- Time needed for user request
- Latency of DB access





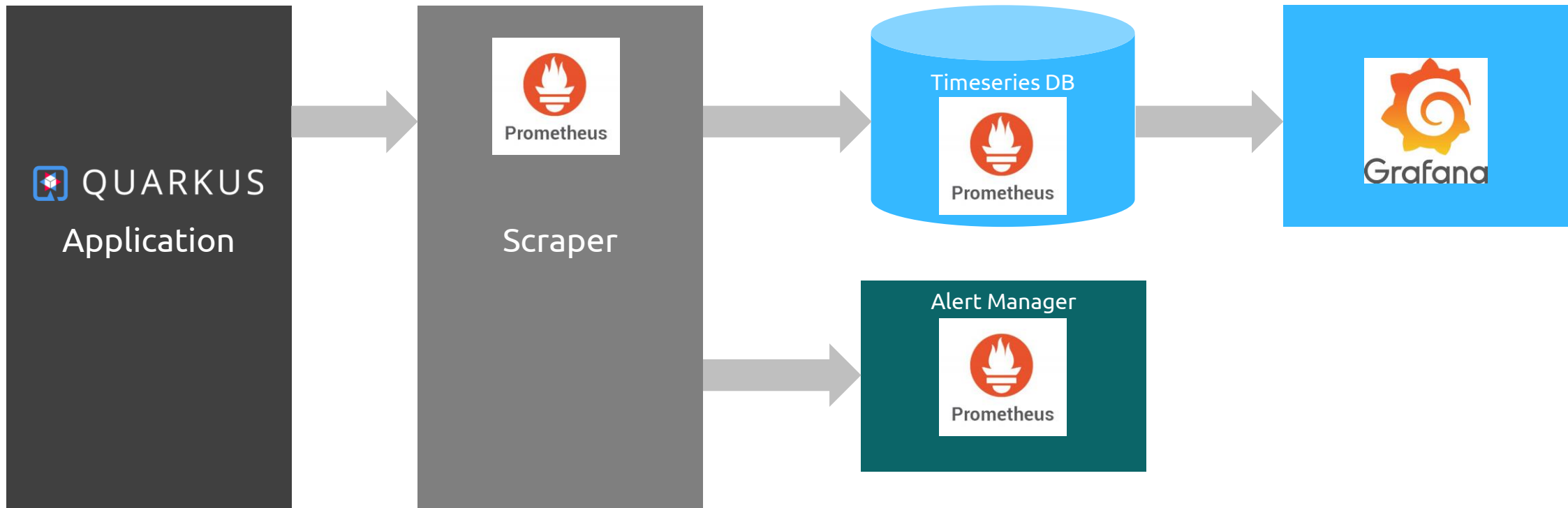
Components of Application Monitoring





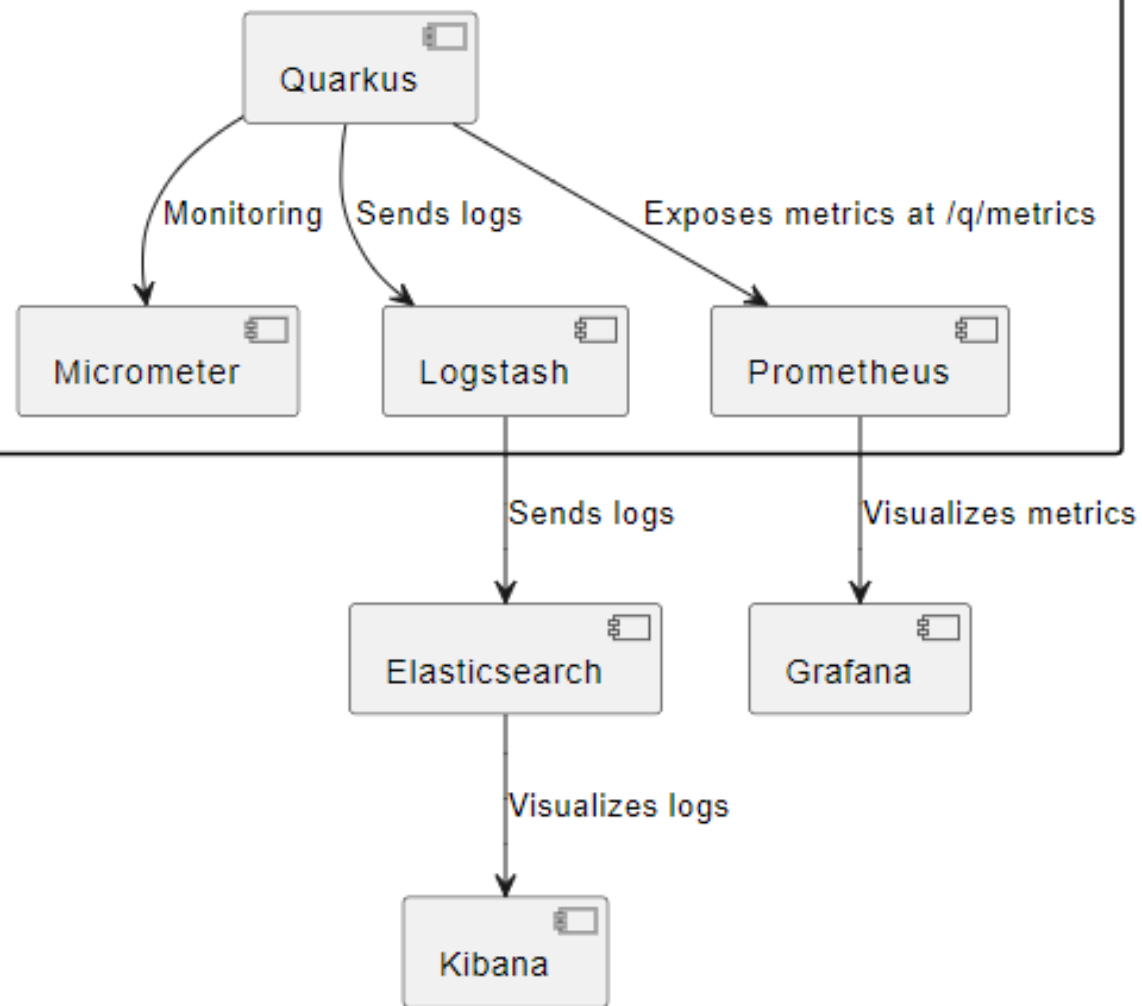
Prometheus and Grafana

- Prometheus is an open-source systems monitoring and alerting toolkit
- Open-source visualization and analytics software
- Dashboards with the JSON configuration
- Multiple data source support (Prometheus, InfluxDB, Graphite, Elasticsearch, Cloudwatch)
- Grafana **doesn't store** any data, it **only** visualize data coming from integrated datasources





Quarkus Application





```
filip@LCE55700:~/projects/TTT/techtalk-quarkus3-monitoring$ tree -L 2
.
├── LICENSE
├── README.md
├── app
│   ├── LICENSE
│   ├── README.md
│   ├── mvnw
│   ├── mvnw.cmd
│   ├── pom.xml
│   ├── scripts
│   ├── src
│   └── target
├── docker-elk
│   ├── LICENSE
│   ├── README.md
│   ├── docker-compose.yml
│   ├── elasticsearch
│   ├── extensions
│   ├── grafana
│   ├── kibana
│   ├── logstash
│   ├── prometheus.yml
│   └── setup
├── grafana
│   ├── dashboards
│   ├── grafana.ini
│   └── provisioning
└── qr.svg
```



```
<dependency>
  <groupId>io.quarkus</groupId>
  <artifactId>quarkus-logging-gelf</artifactId>
</dependency>
<dependency>
  <groupId>io.quarkus</groupId>
  <artifactId>quarkus-scheduler</artifactId>
</dependency>
<dependency>
  <groupId>io.quarkus</groupId>
  <artifactId>quarkus-rest</artifactId>
</dependency>
<dependency>
  <groupId>io.quarkus</groupId>
  <artifactId>quarkus-arc</artifactId>
</dependency>
<dependency>
  <groupId>io.quarkus</groupId>
  <artifactId>quarkus-micrometer-registry-prometheus</artifactId>
</dependency>
```



```
1 package com.capgemini;
2
3 import ...
4
16
17 @Path("/example") 1 usage Filip Forszpaniak *
18 @Produces("text/plain")
19 public class ExampleResource {
20     private static final Logger LOG = Logger.getLogger(ExampleResource.class); 7 usages
21
22     private final LinkedList<Long> list = new LinkedList<>(); 3 usages
23     private final MeterRegistry registry; 8 usages
24     private final Random random; 5 usages
25
26 @ ExampleResource(MeterRegistry registry) { no usages Filip Forszpaniak
27     this.registry = registry;
28     registry.gaugeCollectionSize( name: "techtalk.example.list.size", Tags.empty(), list);
29     random = new Random();
30 }
31
```



```
32  @GET 1 usage Filip Forszpaniak * Forszpaniak, Today • Added app quarkus3
33  @Path("gauge/{number}")
34  public Long checkListSize(@PathParam("number") long number) {
35      if (number == 2 || number % 2 == 0) {
36          // add even numbers to the list
37          list.add(number);
38          LOG.infof(format: "Added even number: {}", number);
39      } else {
40          // remove items from the list for odd numbers
41          try {
42              number = list.removeFirst();
43              LOG.infof(format: "Added odd number: {}", number);
44          } catch (NoSuchElementException nse) {
45              LOG.errorf(format: "Number: {} not found in a list", number);
46              number = 0;
47          }
48      }
49      return number;
50  }
```

elastic

Find apps, content, and more.

^/

D

Discover

New

Open

Share

Alerts

Inspect

Save

logs-*

+

Filter your data using KQL syntax

Last 90 minutes

Refresh

Search field names

0

Selected fields

1

message

Popular fields

1

message

Available fields

18

@timestamp

@version

data_stream.dataset

data_stream.namespace

data_stream.type

facility

host

level

LoggerName

message

Severity

source_host

SourceClassName

SourceMethodName

SourceSimpleClassName

Thread

Time

version

Auto interval

No breakdown

100,000

80,000

60,000

40,000

20,000

0

10:25 June 5, 2024

10:30

10:35

10:40

10:45

10:50

10:55

11:00

11:05

11:10

11:15

11:20

11:25

11:30

11:35

11:40

11:45

11:50

Jun 5, 2024 @ 10:24:49.875 - Jun 5, 2024 @ 11:54:49.875 (interval: Auto - minute)

Documents (1,321,343)

Field statistics

Columns 2

Sort fields 1

Get the best look at your search results

Add relevant fields, reorder and sort columns, resize rows, and more in the document table.

Take the tour

Dismiss

@timestamp

message

Jun 5, 2024 @ 11:31:12.173

Generated random number: {}

Jun 5, 2024 @ 11:31:12.173

quarkus3-monitoring stopped in 0.019s

Jun 5, 2024 @ 11:31:12.173

Generated random number: {}

Jun 5, 2024 @ 11:31:12.173

Generated random number: {}

Jun 5, 2024 @ 11:31:12.173

Generated random number: {}

Jun 5, 2024 @ 11:31:12.173

Added even number: {}

Rows per page: 100

<

1

2

3

4

5

>

Quarkus3+Monitoring | Filip Forszpaniak , Adrian Slobodzian | 05.06.2024

© Capgemini 2024. All rights reserved | 16



Metrics endpoint:

← → ↺ 🏠 ⓘ localhost:8080/q/metrics

```
# HELP worker_pool_ratio Pool usage ratio
# TYPE worker_pool_ratio gauge
worker_pool_ratio{pool_name="vert.x-internal-blocking",pool_type="worker",} NaN
worker_pool_ratio{pool_name="vert.x-worker-thread",pool_type="worker",} 0.005
# HELP http_server_connections_seconds_max The duration of the connections
# TYPE http_server_connections_seconds_max gauge
http_server_connections_seconds_max 64.032282067
# HELP http_server_connections_seconds The duration of the connections
# TYPE http_server_connections_seconds summary
http_server_connections_seconds_active_count 2.0
http_server_connections_seconds_duration_sum 69.322556628
# HELP worker_pool_queue_delay_seconds_max Time spent in the waiting queue before being processed
# TYPE worker_pool_queue_delay_seconds_max gauge
worker_pool_queue_delay_seconds_max{pool_name="vert.x-internal-blocking",pool_type="worker",} 0.0
worker_pool_queue_delay_seconds_max{pool_name="vert.x-worker-thread",pool_type="worker",} 4.38003E-4
# HELP worker_pool_queue_delay_seconds Time spent in the waiting queue before being processed
# TYPE worker_pool_queue_delay_seconds summary
worker_pool_queue_delay_seconds_count{pool_name="vert.x-internal-blocking",pool_type="worker",} 0.0
worker_pool_queue_delay_seconds_sum{pool_name="vert.x-internal-blocking",pool_type="worker",} 0.0
worker_pool_queue_delay_seconds_count{pool_name="vert.x-worker-thread",pool_type="worker",} 117.0
worker_pool_queue_delay_seconds_sum{pool_name="vert.x-worker-thread",pool_type="worker",} 0.019542544
# HELP jvm_threads_started_threads_total The total number of application threads started in the JVM
# TYPE jvm_threads_started_threads_total counter
jvm_threads_started_threads_total 95.0
# HELP system_cpu_count The number of processors available to the Java virtual machine
# TYPE system_cpu_count gauge
system_cpu_count 6.0
# HELP jvm_threads_peak_threads The peak live thread count since the Java virtual machine started or peak was reset
# TYPE jvm_threads_peak_threads gauge
jvm_threads_peak_threads 75.0
# HELP jvm_info_total JVM version info
# TYPE jvm_info_total counter
jvm_info_total{runtime="OpenJDK Runtime Environment",vendor="Eclipse Adoptium",version="17.0.11+9",} 1.0
# HELP process_files_open_files The open file descriptor count
# TYPE process_files_open_files gauge
process_files_open_files 379.0
# HELP process_uptime_seconds The uptime of the Java virtual machine
# TYPE process_uptime_seconds gauge
process_uptime_seconds 6430.761
# HELP http_server_active_requests
# TYPE http_server_active_requests gauge
http_server_active_requests 1.0
# HELP http_server_bytes_read Number of bytes received by the server
# TYPE http_server_bytes_read summary
http_server_bytes_read_count 0.0
http_server_bytes_read_sum 0.0
# HELP http_server_bytes_read_max Number of bytes received by the server
# TYPE http_server_bytes_read_max gauge
http_server_bytes_read_max 0.0
# HELP netty_eventexecutor_tasks_pending
# TYPE netty_eventexecutor_tasks_pending gauge
netty_eventexecutor_tasks_pending{name="vert.x-eventloop-thread-2",} 0.0
netty_eventexecutor_tasks_pending{name="vert.x-eventloop-thread-1",} 0.0
netty_eventexecutor_tasks_pending{name="vert.x-eventloop-thread-0",} 0.0
netty_eventexecutor_tasks_pending{name="vert.x-acceptor-thread-0",} 0.0
netty_eventexecutor_tasks_pending{name="vert.x-eventloop-thread-5",} 0.0
netty_eventexecutor_tasks_pending{name="vert.x-eventloop-thread-4",} 0.0
netty_eventexecutor_tasks_pending{name="vert.x-eventloop-thread-3",} 0.0
# HELP jvm_gc_overhead_percent An approximation of the percent of CPU time used by GC activities over the last lookback period or since monitoring began, whichever is shorter, in the range [0..1]
# TYPE jvm_gc_overhead_percent gauge
jvm_gc_overhead_percent 0.0
```

☐ Use local time ☐ Enable query history ☒ Enable autocomplete ☒ Enable highlighting ☒ Enable linter

Q

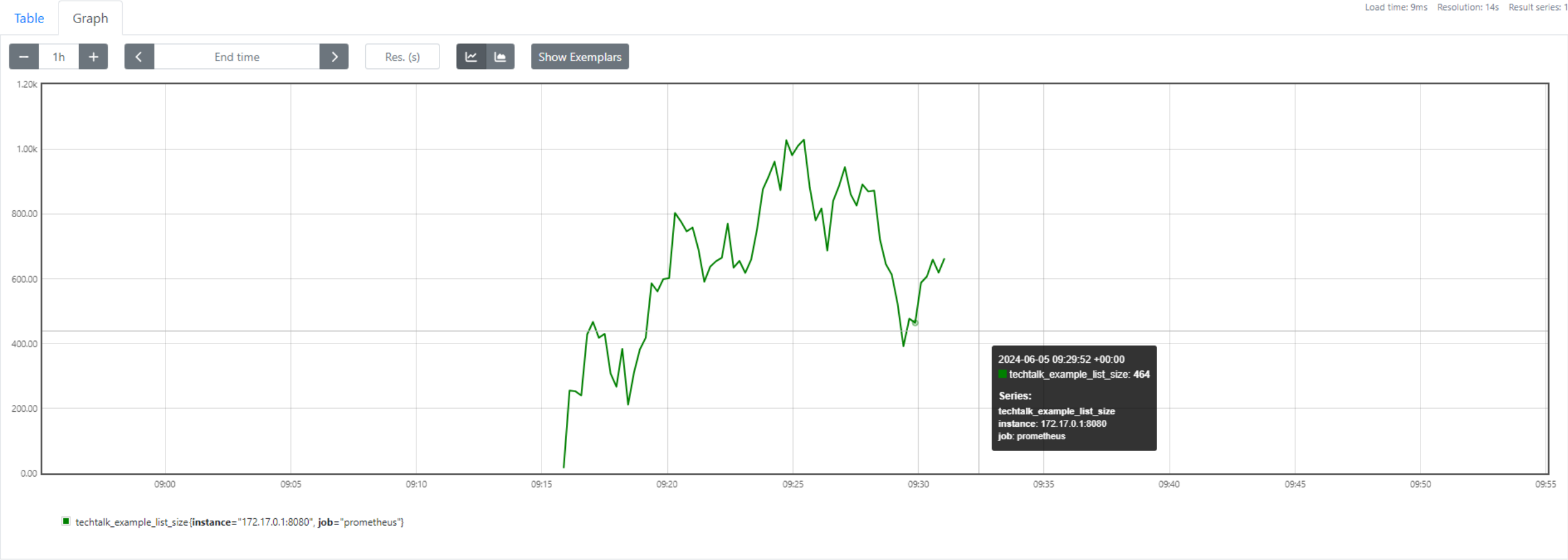
techtalk_example_list_size

⌵

🌐

Execute

Load time: 9ms Resolution: 14s Result series: 1



Remove Panel

Add Panel



History

Data source ⓘ

Prometheus ▾

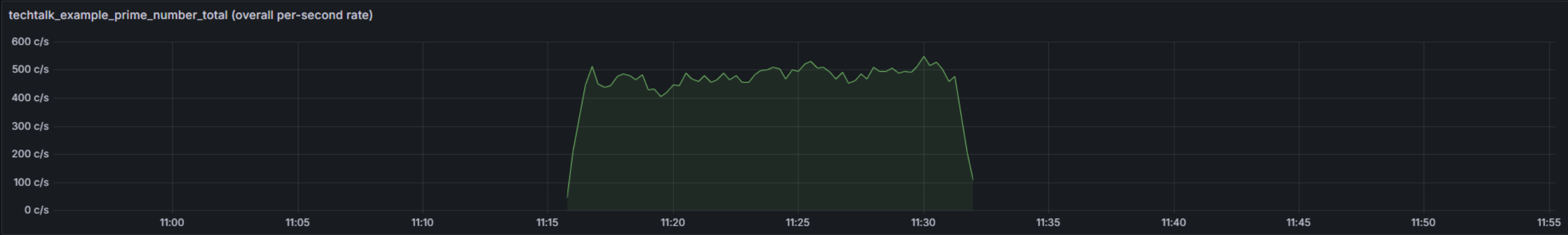
+ Add label

🕒 Last 1 hour ▾

🔍

🔄 ▾

⚙️ ▾



Overview Breakdown Related metrics

Select new metric

Description	Type	Unit	Labels
No description available	counter	Unknown	instance job type

Data source ⓘ

Prometheus + Add label

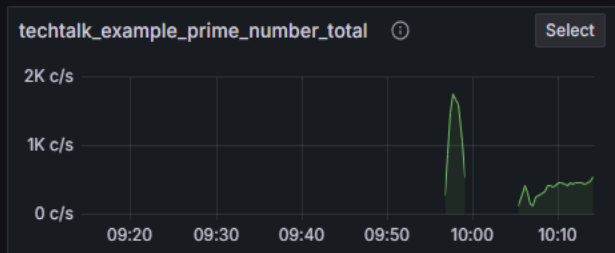
Last 1 hour 🔍 ↺ ⚙️



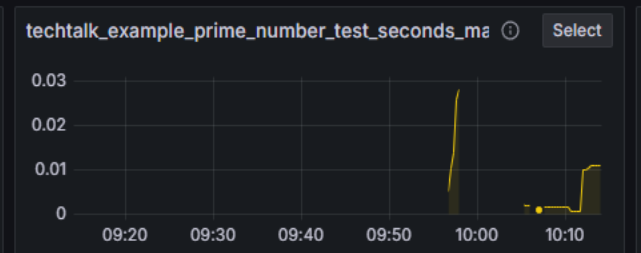
Overview Breakdown **Related metrics**

Select new metric 🔍 ↺ ☆


techtalk_example_prime_number_total ⓘ Select




techtalk_example_prime_number_test_seconds_ma ⓘ Select



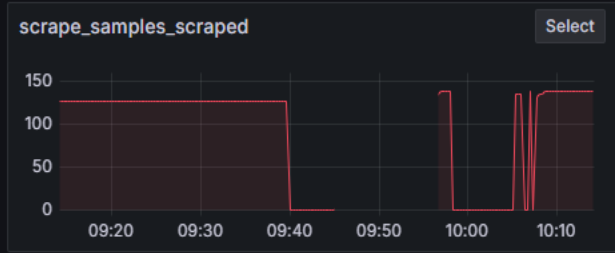
techtalk_example_prime_number_test_seconds_sui ⓘ Select



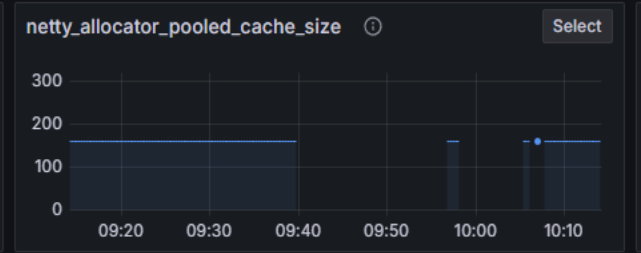
techtalk_example_prime_number_test_seconds_co ⓘ Select



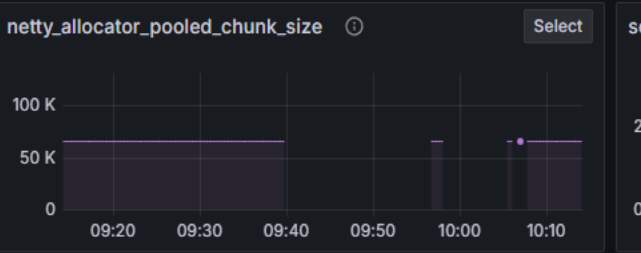
scrape_samples_scraped ⓘ Select



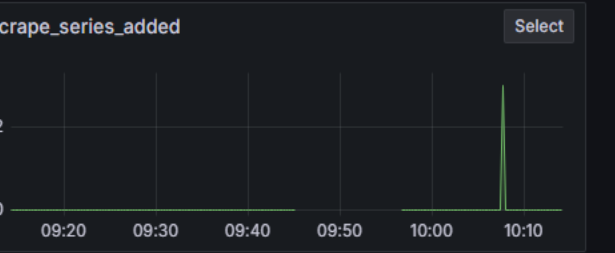
netty_allocator_pooled_cache_size ⓘ Select



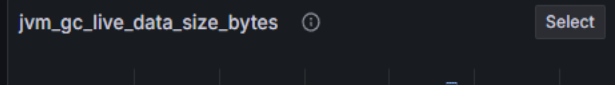
netty_allocator_pooled_chunk_size ⓘ Select




scrape_series_added ⓘ Select



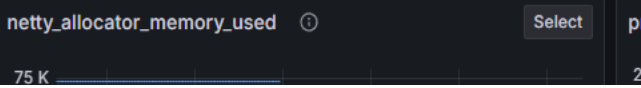
jvm_gc_live_data_size_bytes ⓘ Select




jvm_threads_live_threads ⓘ Select



netty_allocator_memory_used ⓘ Select



process_files_max_files ⓘ Select







Video



Summary & questions



<https://github.com/forszpanen/techtalk-quarkus3-monitoring>

About Capgemini

Capgemini is a global business and technology transformation partner, helping organizations to accelerate their dual transition to a digital and sustainable world, while creating tangible impact for enterprises and society. It is a responsible and diverse group of 340,000 team members in more than 50 countries. With its strong over 55-year heritage, Capgemini is trusted by its clients to unlock the value of technology to address the entire breadth of their business needs. It delivers end-to-end services and solutions leveraging strengths from strategy and design to engineering, all fueled by its market leading capabilities in AI, cloud and data, combined with its deep industry expertise and partner ecosystem. The Group reported 2023 global revenues of €22.5 billion.

Get the future you want | www.capgemini.com



This presentation contains information that may be privileged or confidential and is the property of the Capgemini Group.

Copyright © 2024 Capgemini. All rights reserved.