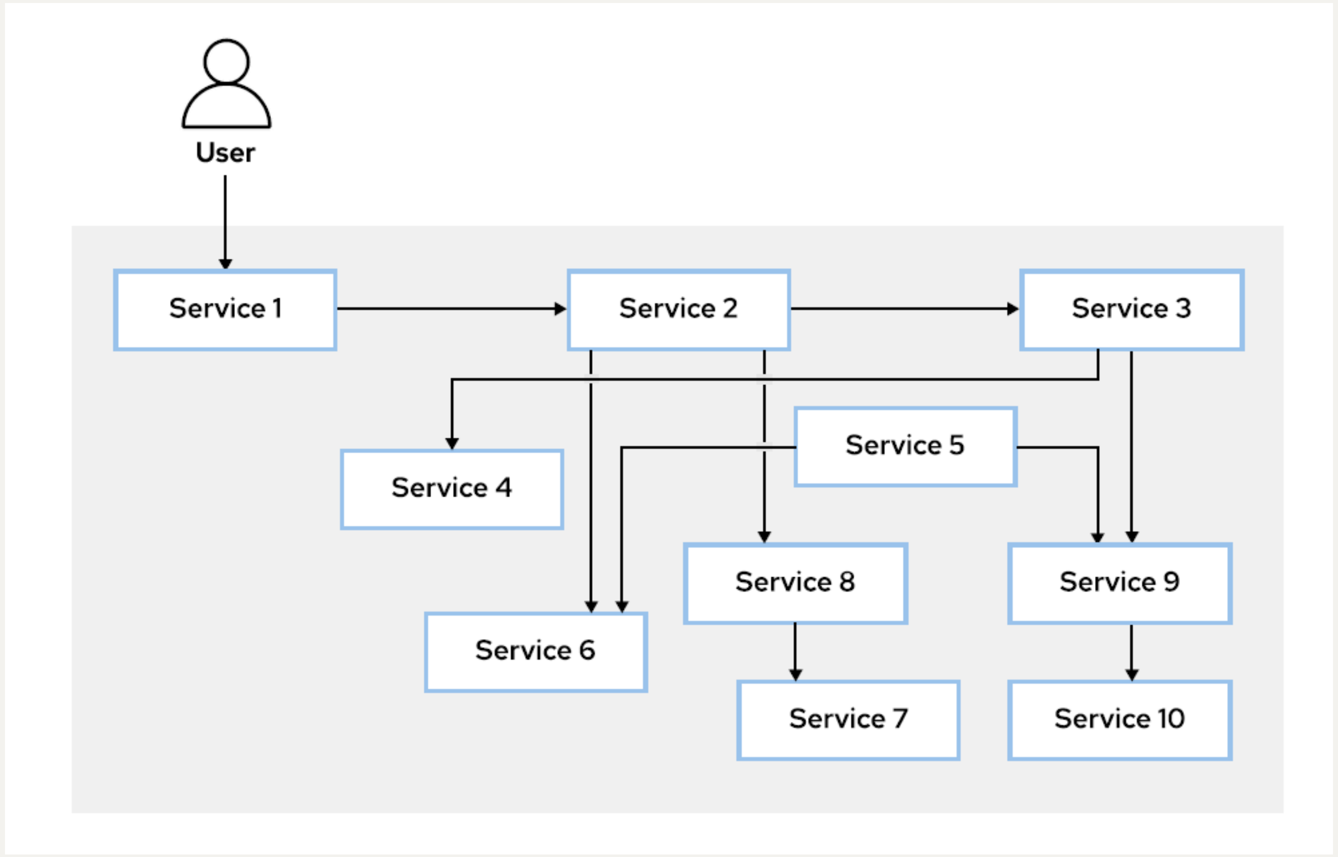
Quarkus Tracing

Quarkus usa

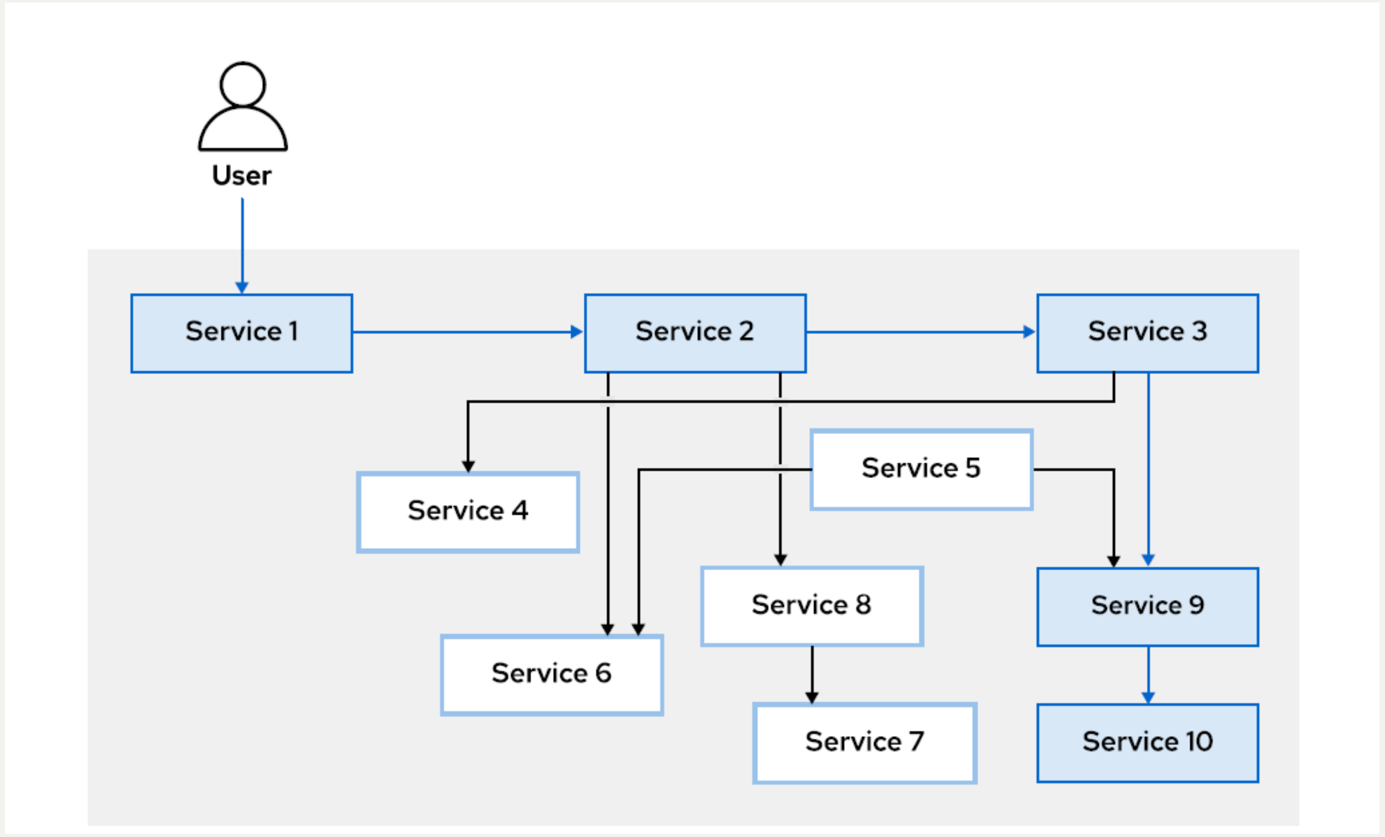
- OpenTracing



Sin tracing

Quarkus usa

- OpenTracing



Con tracing

Traces y Span en Tracing Distribuido

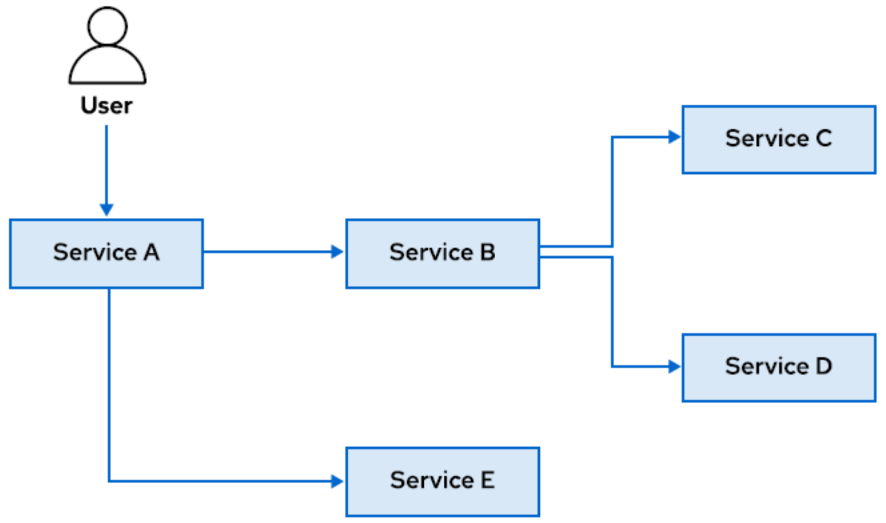


Figure 8.7: Request call path

Span

A Span represents a logical unit of work, which has a unique name, a start time, and the duration of execution. To model the service call flow across a set of services, Jaeger nests spans by execution order.

Trace

A Trace is an execution path of a request through a set of services, and is comprised of one or more spans.

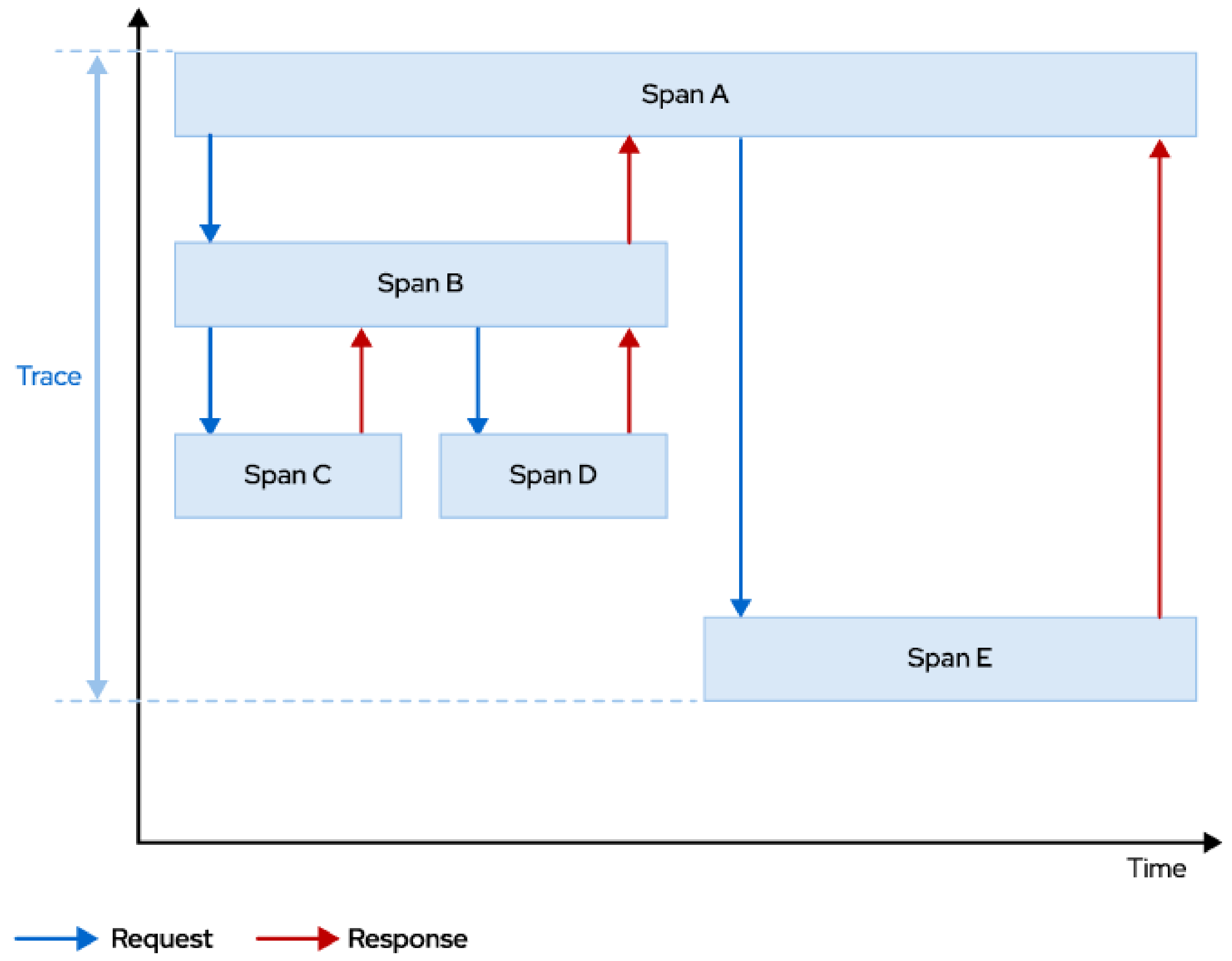
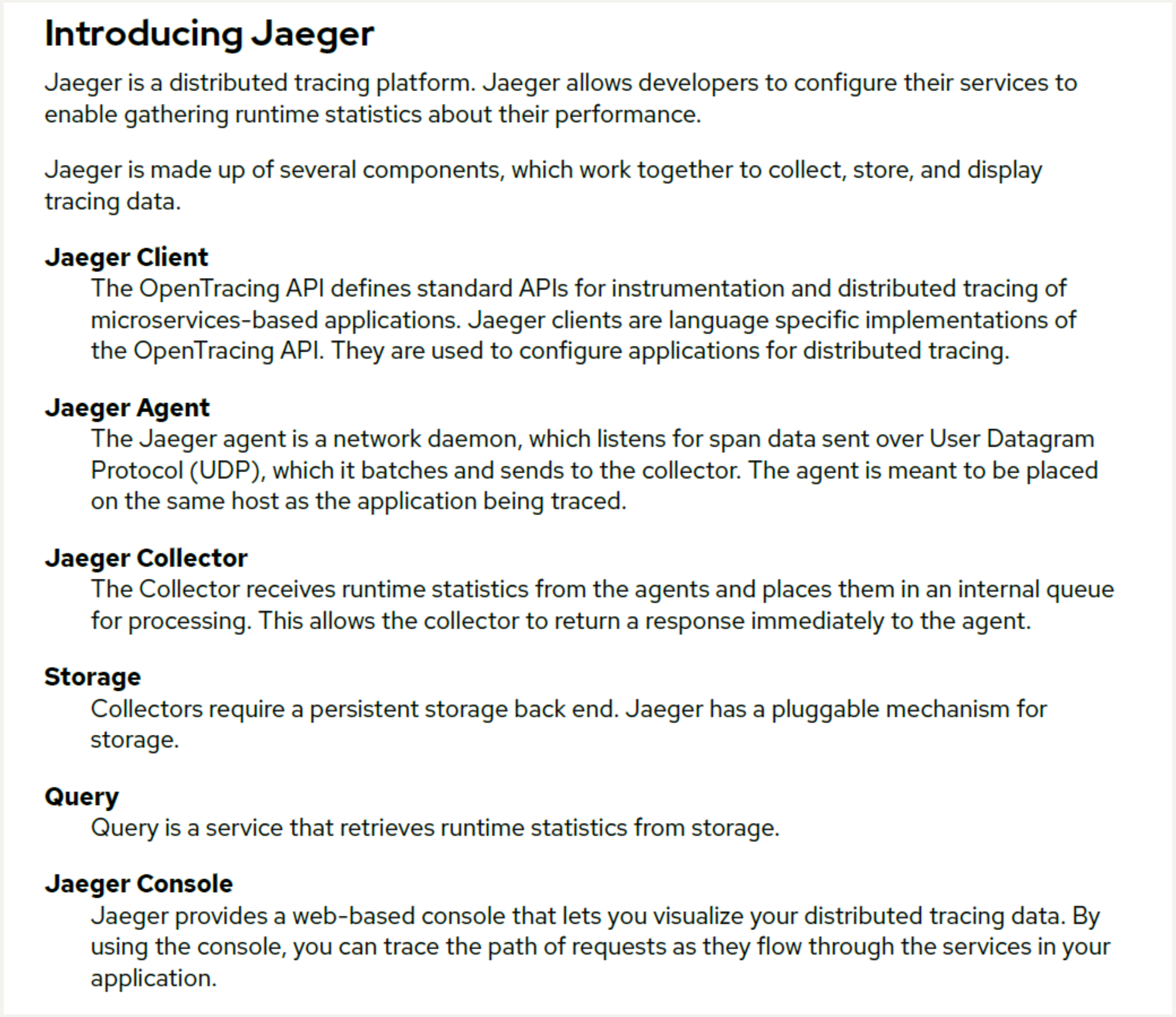


Figure 8.8: Traces and spans



Introducing Jaeger

Jaeger is a distributed tracing platform. Jaeger allows developers to configure their services to enable gathering runtime statistics about their performance.

Jaeger is made up of several components, which work together to collect, store, and display tracing data.

Jaeger Client
: The OpenTracing API defines standard APIs for instrumentation and distributed tracing of microservices-based applications. Jaeger clients are language specific implementations of the OpenTracing API. They are used to configure applications for distributed tracing.

Jaeger Agent
: The Jaeger agent is a network daemon, which listens for span data sent over User Datagram Protocol (UDP), which it batches and sends to the collector. The agent is meant to be placed on the same host as the application being traced.

Jaeger Collector
: The Collector receives runtime statistics from the agents and places them in an internal queue for processing. This allows the collector to return a response immediately to the agent.

Storage
: Collectors require a persistent storage back end. Jaeger has a pluggable mechanism for storage.

Query
: Query is a service that retrieves runtime statistics from storage.

Jaeger Console
: Jaeger provides a web-based console that lets you visualize your distributed tracing data. By using the console, you can trace the path of requests as they flow through the services in your application.

1)

```
<dependency>
    <groupId>io.quarkus</groupId>
    <artifactId>quarkus-smallrye-opentracing</artifactId>
</dependency>
```

2)

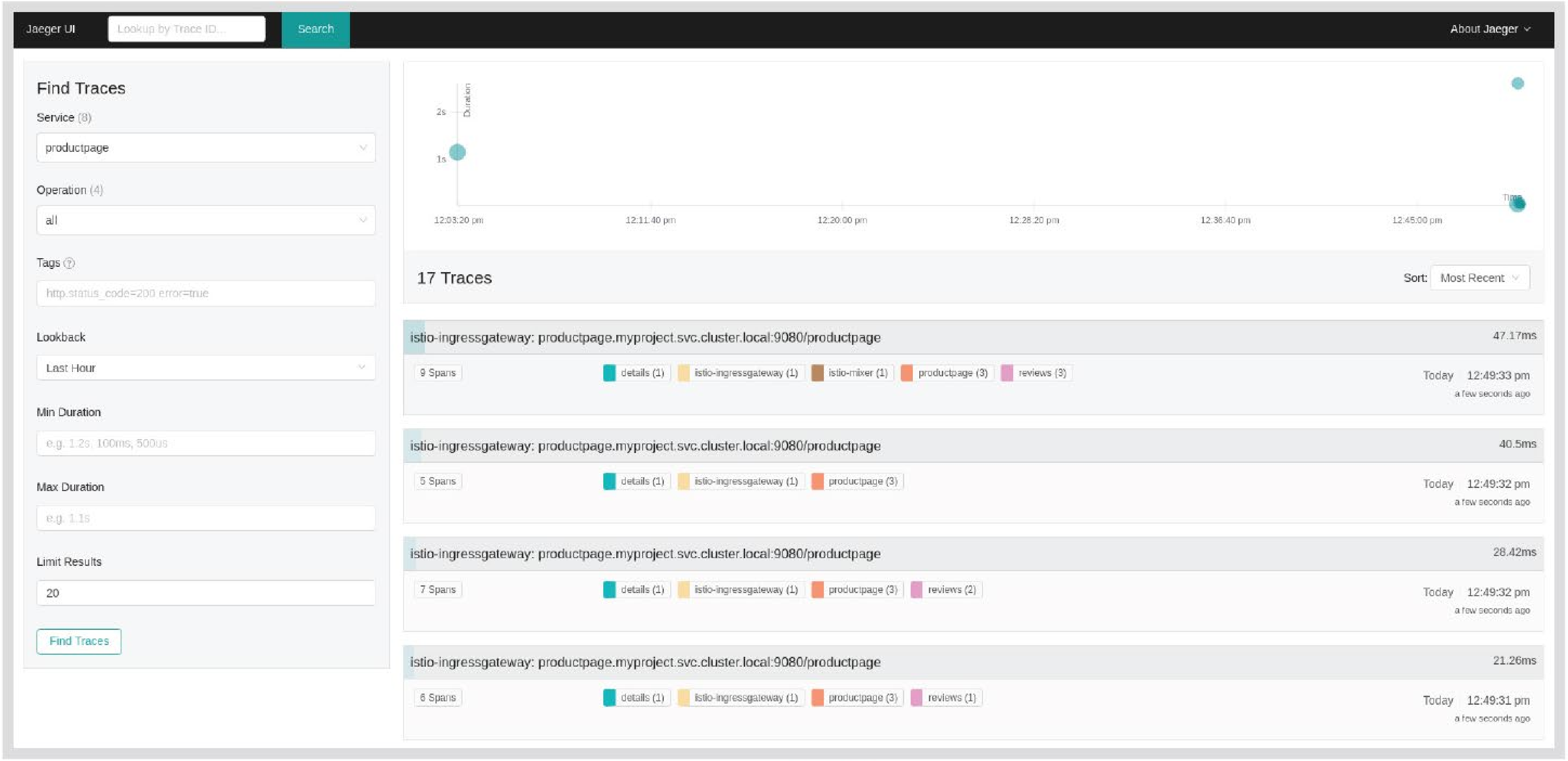
```
quarkus.jaeger.service-name=myservice 1
quarkus.jaeger.sampler-type=const 2
quarkus.jaeger.sampler-param=1 3
quarkus.jaeger.endpoint=http://localhost:14268/api/traces 4
quarkus.jaeger.propagation=b3 5
quarkus.jaeger.reporter-log-spans=true 6
```

1. A unique service name to identify traces and spans sent to Jaeger. You can identify traces and spans by using this name in the Jaeger web console.
2. Indicates the rate at which traces and spans should be collected from this application. Options include; `const` (collect all samples), `probabilistic` (random sampling), `ratelimiting` (collect samples at a configurable rate per second), and `remote` (control sampling from a central Jaeger back end). Refer to https://www.jaegertracing.io/docs/1.20/sampling/ for more details.
3. Indicates the percentage of requests for which spans should be collected. This value should be between zero and one. A `0` value indicates no sample collection, and a `1` indicates collecting all samples (100%). This value should `not` be set to `1` in production environments with many requests. This is usually set to `1` in development and QA environments to debug and troubleshoot inter-service latency and performance issues.
4. The URL of the Jaeger collector. By default, the local collector receives traces and spans through UDP. You can configure the application to send traces over TCP on cloud and secure enterprise deployments where UDP multi-casting is usually disabled.
5. Indicates Jaeger to propagate all `x-b3-*` related headers. This is required to construct the parent-child relationships in the call graph.
6. Logs span information for all incoming and outgoing traffic from the application.

NOTAS

- Por defecto, OpenTracing le agrega tracing a todos los REST endpoints donde hagas @GET y @POST.
- Puedes usar opcionalmente @Traced en tu capa de servicio o capa de datos para hacer Troubleshooting y encontrar los cuellos de botella.

Jaeger ScreenShots



Find Traces

Service (8): productpage

Operation (4): all

Tags: http.status_code=200 error=true

Lookback: Last Hour

Min Duration: e.g. 1.2s, 100ms, 500us

Max Duration: e.g. 1.1s

Limit Results: 20

17 Traces — Sort: Most Recent

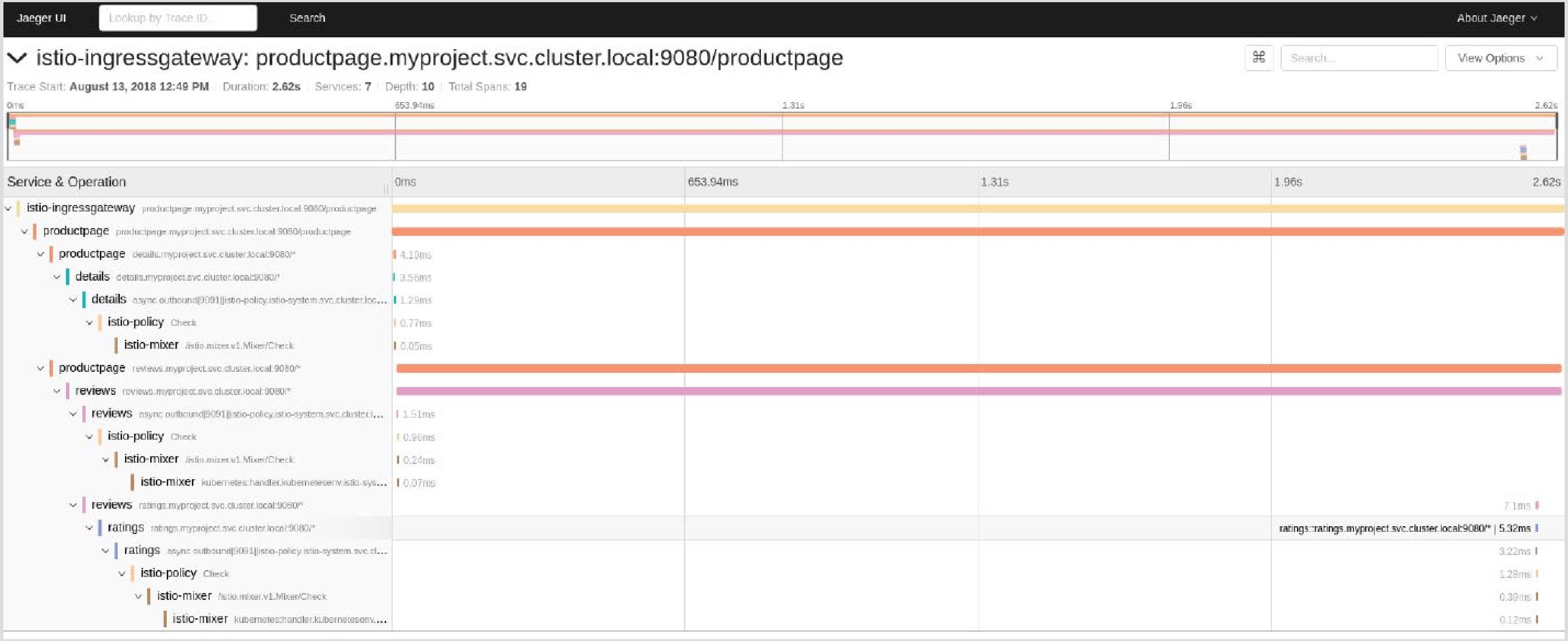
istio-ingressgateway: productpage.myproject.svc.cluster.local:9080/productpage — 47.17ms
9 Spans — details (1), istio-ingressgateway (1), istio-mixer (1), productpage (3), reviews (3) — Today 12:49:33 pm, a few seconds ago

istio-ingressgateway: productpage.myproject.svc.cluster.local:9080/productpage — 40.5ms
5 Spans — details (1), istio-ingressgateway (1), productpage (3) — Today 12:49:32 pm, a few seconds ago

istio-ingressgateway: productpage.myproject.svc.cluster.local:9080/productpage — 28.42ms
7 Spans — details (1), istio-ingressgateway (1), productpage (3), reviews (2) — Today 12:49:32 pm, a few seconds ago

istio-ingressgateway: productpage.myproject.svc.cluster.local:9080/productpage — 21.26ms
6 Spans — details (1), istio-ingressgateway (1), productpage (3), reviews (1) — Today 12:49:31 pm, a few seconds ago

Figure 8.9: List of traces



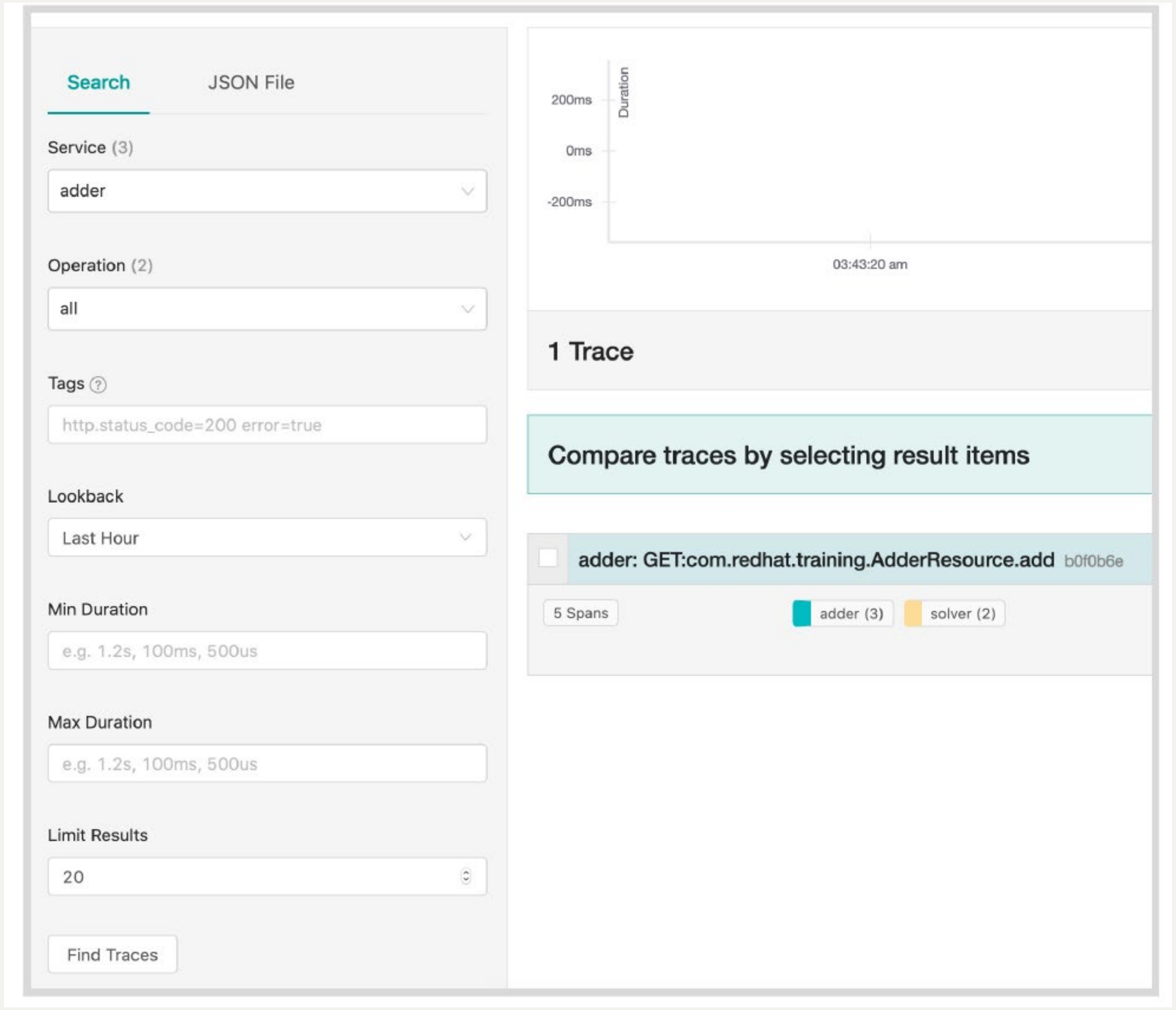
```
istio-ingressgateway: productpage.myproject.svc.cluster.local:9080/productpage
Trace Start: August 13, 2018 12:49 PM | Duration: 2.62s | Services: 7 | Depth: 10 | Total Spans: 19

0ms                653.94ms              1.31s              1.96s              2.62s

Service & Operation                                                              
istio-ingressgateway  productpage.myproject.svc.cluster.local:9080/productpage
  productpage  productpage.myproject.svc.cluster.local:9080/productpage
    productpage  details.myproject.svc.cluster.local:9080/*                        4.10ms
      details  details.myproject.svc.cluster.local:9080/*                          3.56ms
        details  async outbound|9091||istio-policy.istio-system.svc.cluster.loc...  1.29ms
          istio-policy  Check                                                      0.77ms
            istio-mixer  /istio.mixer.v1.Mixer/Check                               0.05ms
    productpage  reviews.myproject.svc.cluster.local:9080/*
      reviews  reviews.myproject.svc.cluster.local:9080/*
        reviews  async outbound|9091||istio-policy.istio-system.svc.cluster.l...   1.51ms
          istio-policy  Check                                                      0.96ms
            istio-mixer  /istio.mixer.v1.Mixer/Check                               0.24ms
              istio-mixer  kubernetes:handler.kubernetesenv.istio-sys...           0.07ms
        reviews  ratings.myproject.svc.cluster.local:9080/*                        7.1ms
          ratings  ratings.myproject.svc.cluster.local:9080/*    ratings::ratings.myproject.svc.cluster.local:9080/* | 5.32ms
            ratings  async outbound|9091||istio-policy.istio-system.svc.cl...      3.22ms
              istio-policy  Check                                                  1.28ms
                istio-mixer  /istio.mixer.v1.Mixer/Check                           0.39ms
                  istio-mixer  kubernetes:handler.kubernetesenv....                0.12ms
```

Figure 8.10: Trace details

Recursos

- https://www.jaegertracing.io/
- https://opentracing.io/guides/java/

EJERCICIO TRACING



Service (3)
adder

Operation (2)
all

Tags
http.status_code=200 error=true

Lookback
Last Hour

Min Duration
e.g. 1.2s, 100ms, 500us

Max Duration
e.g. 1.2s, 100ms, 500us

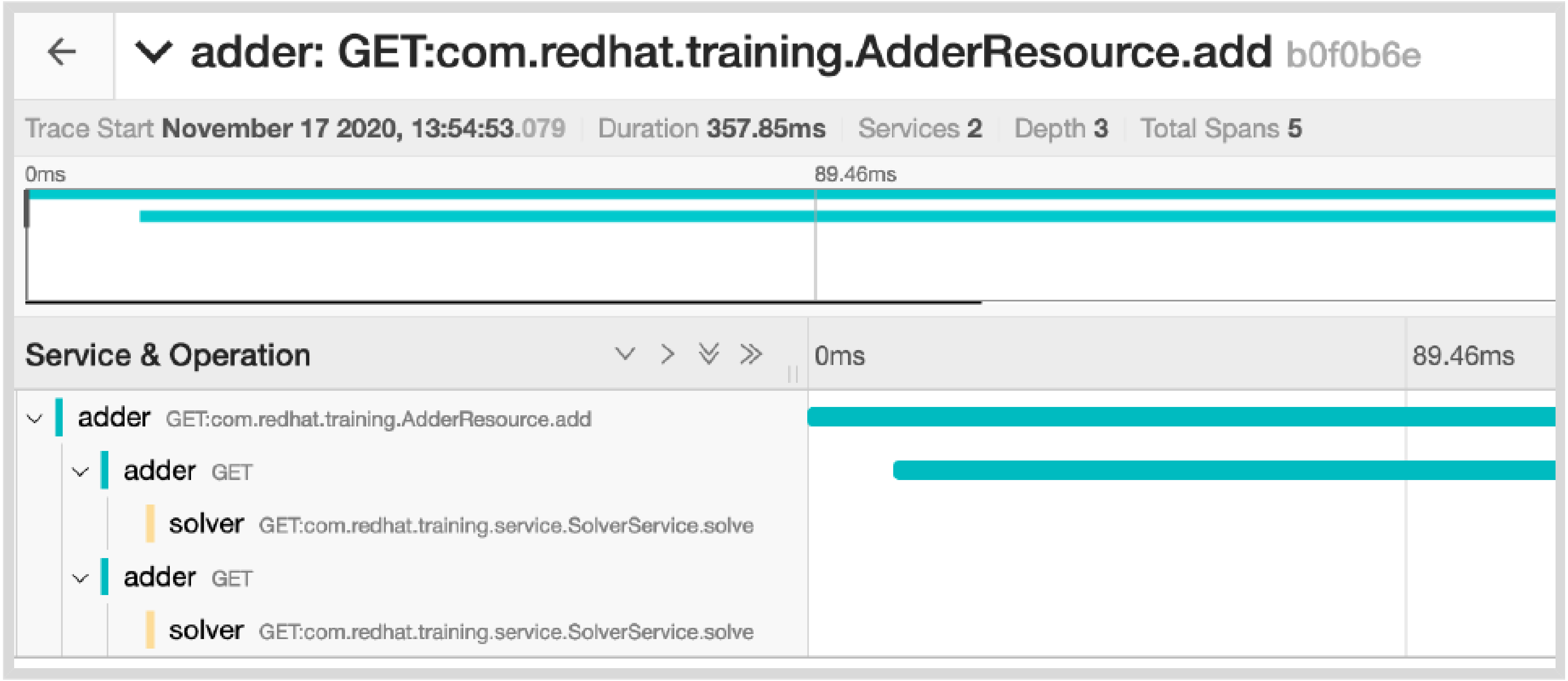
Limit Results
20

1 Trace

Compare traces by selecting result items

adder: GET:com.redhat.training.AdderResource.add b0f0b6e

5 Spans adder (3) solver (2)



adder: GET:com.redhat.training.AdderResource.add b0f0b6e

Trace Start **November 17 2020, 13:54:53**.079 | Duration **357.85ms** | Services **2** | Depth **3** | Total Spans **5**

Service & Operation	0ms · 89.46ms
adder GET:com.redhat.training.AdderResource.add	
adder GET	
solver GET:com.redhat.training.service.SolverService.solve	
adder GET	
solver GET:com.redhat.training.service.SolverService.solve	