KubeCon + CloudNativeCon North America 2026 · Observability Day

OpenTelemetry Far and Wide

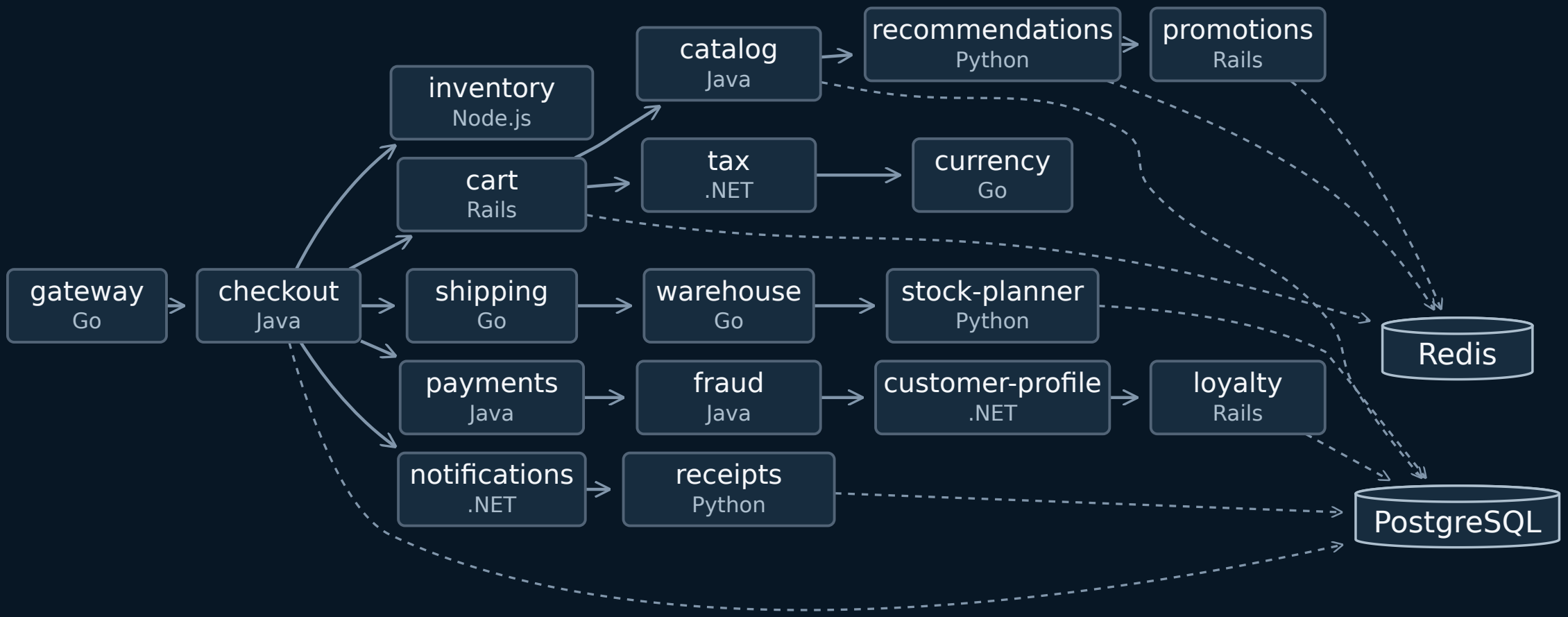
Tyler Yahn
Splunk, a Cisco company

Nikola Grcevski
Grafana Labs

Why is checkout taking so long?

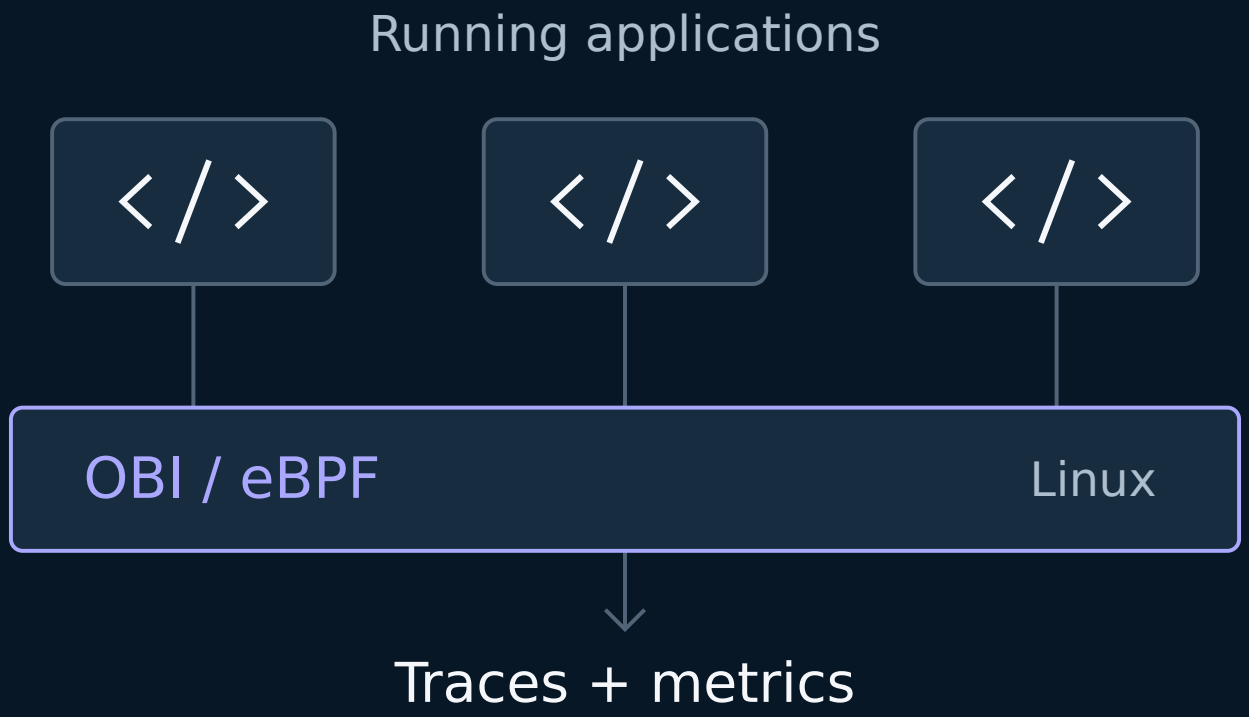


18 services. One customer request.



OBI

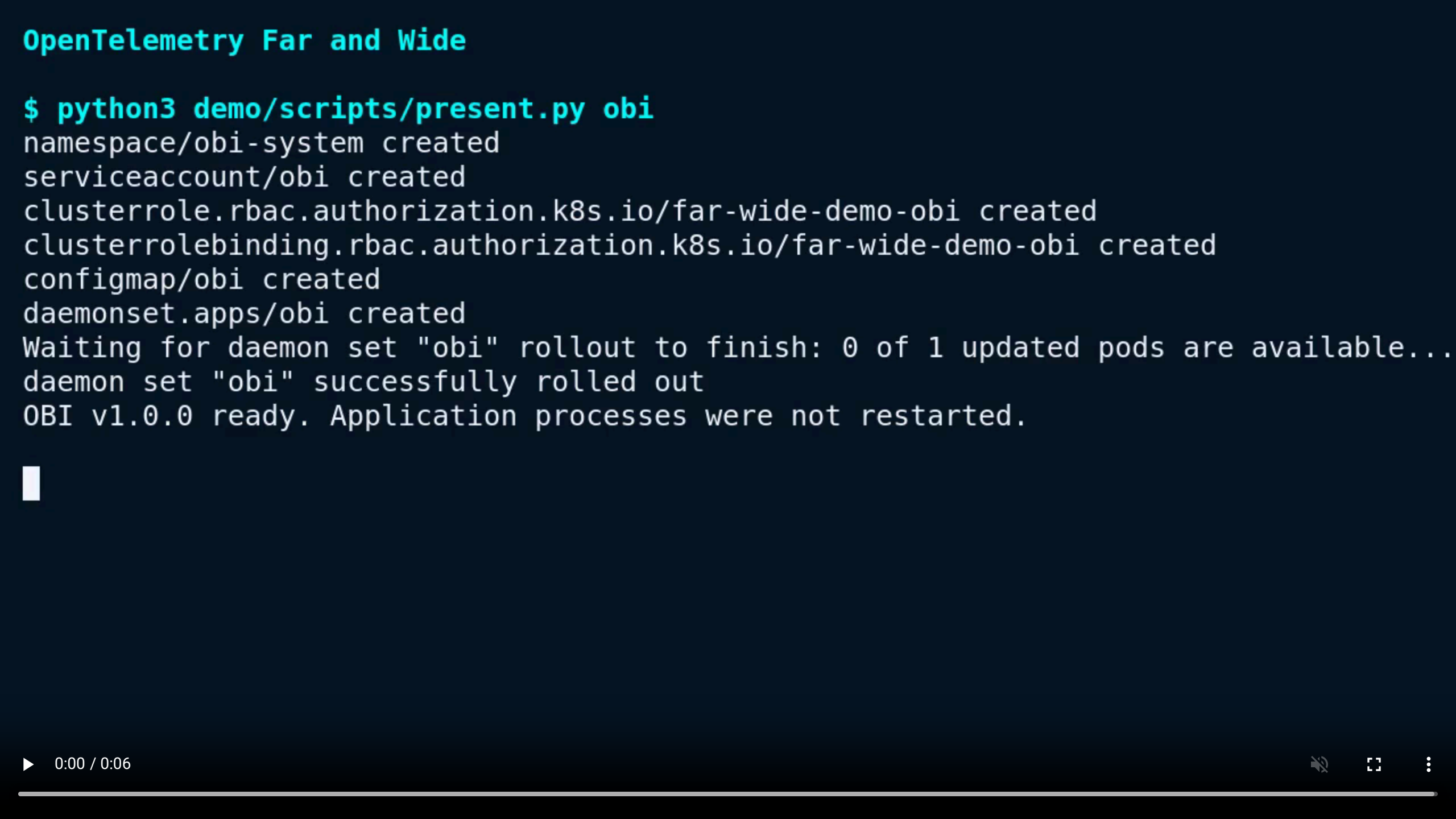
OpenTelemetry eBPF Instrumentation



0 code edits **0** restarts

Atlanta · 2025

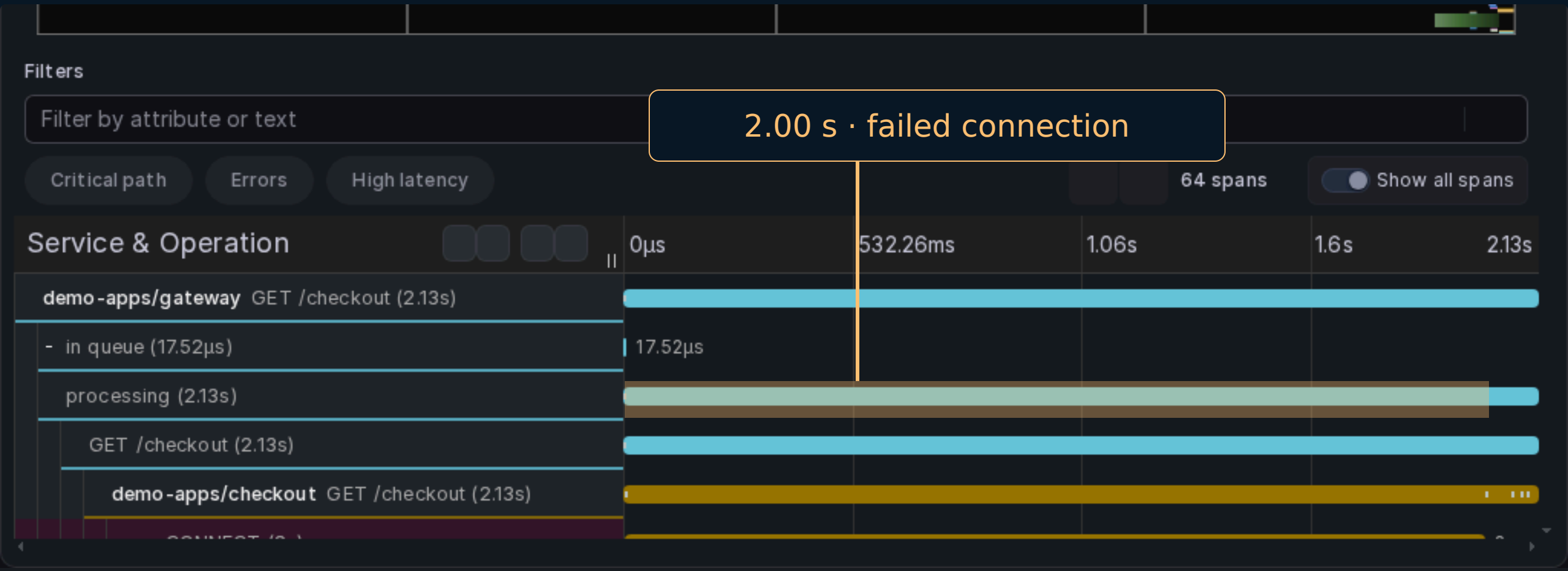
Debugging Your Cluster
When It’s on Fire


OpenTelemetry Far and Wide
$ python3 demo/scripts/present.py obi
namespace/obi-system created
serviceaccount/obi created
clusterrole.rbac.authorization.k8s.io/far-wide-demo-obi created
clusterrolebinding.rbac.authorization.k8s.io/far-wide-demo-obi created
configmap/obi created
daemonset.apps/obi created
Waiting for daemon set "obi" rollout to finish: 0 of 1 updated pods are available...
daemon set "obi" successfully rolled out
OBI v1.0.0 ready. Application processes were not restarted.
0:00 / 0:06

Find the two-second wait

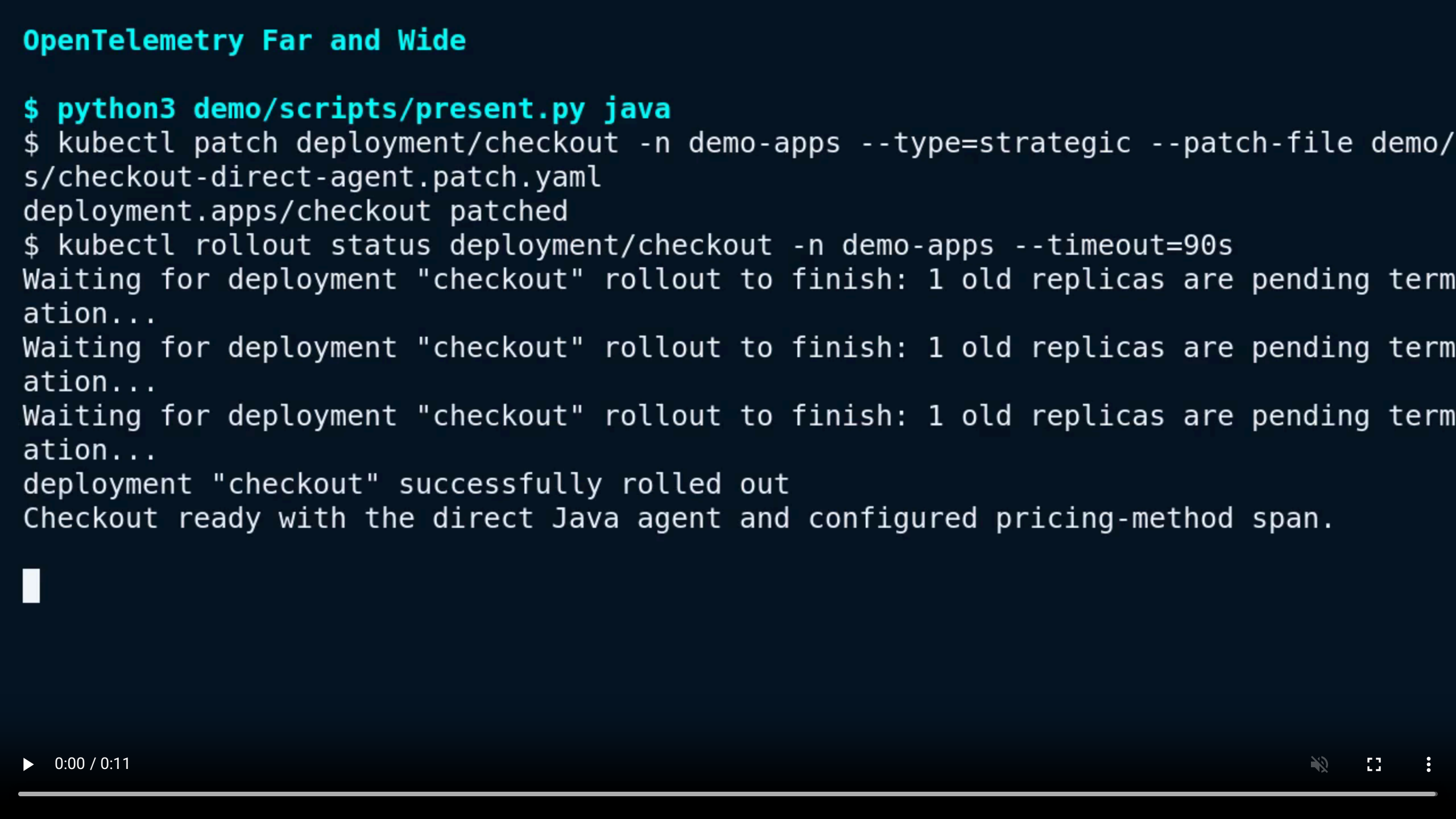


Find the two-second wait

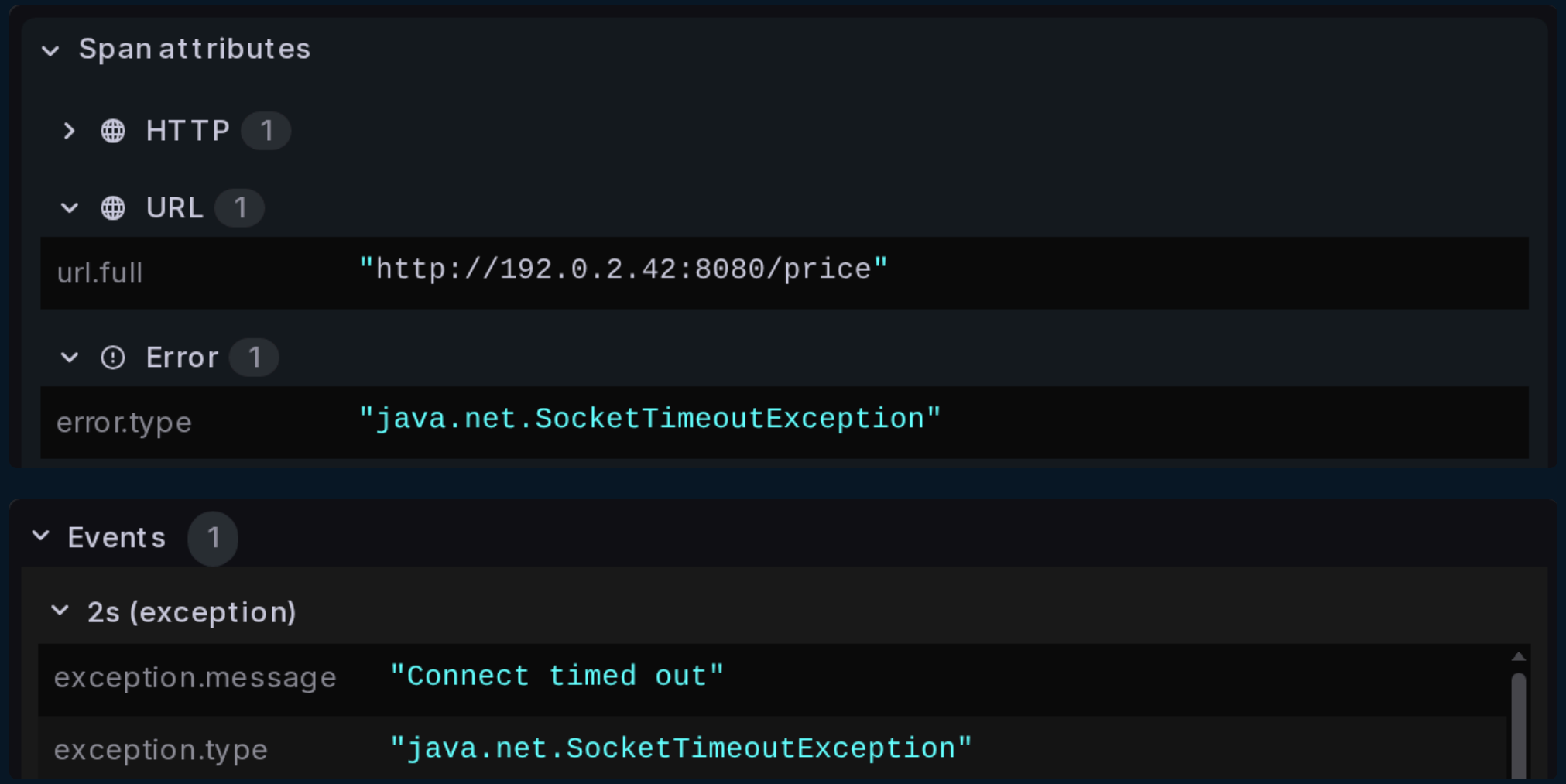


Add Java detail to Checkout

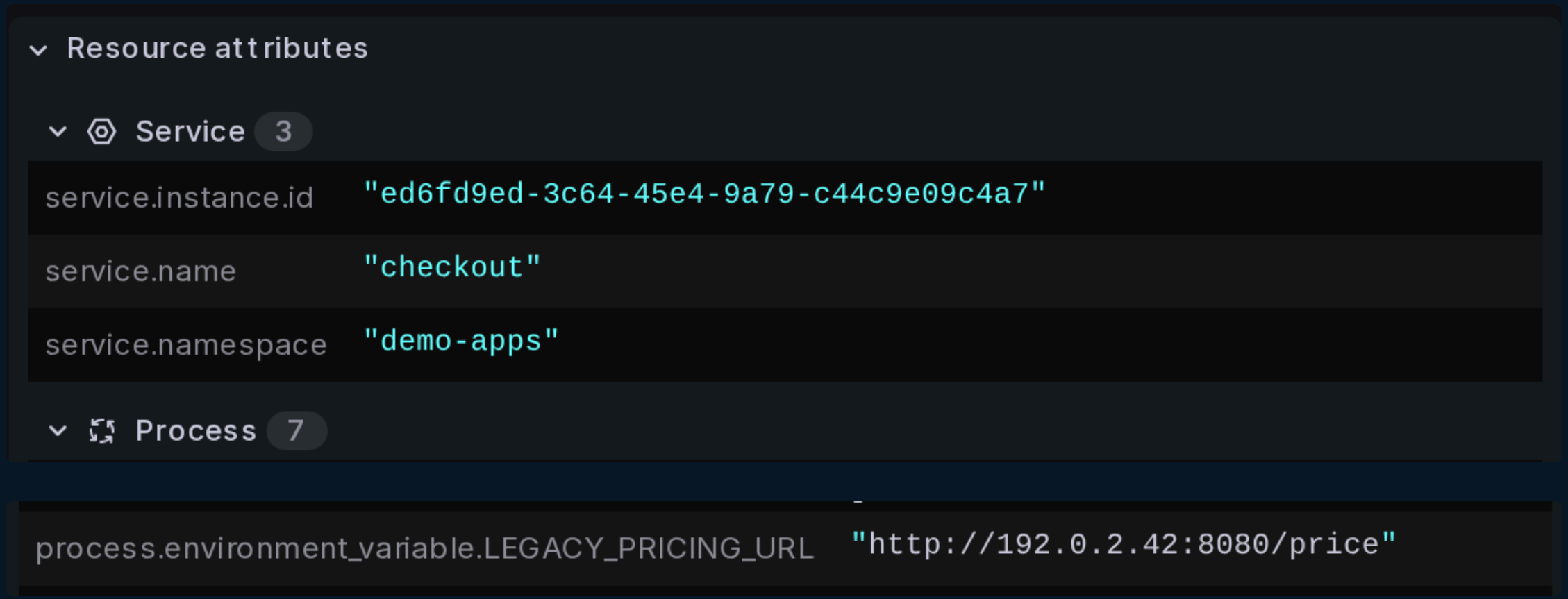
```
JAVA_TOOL_OPTIONS: >-
  -javaagent:/java-agent/opentelemetry-javaagent.jar
OTEL_SERVICE_NAME: checkout
OTEL_EXPORTER_OTLP_ENDPOINT: >-
  http://lgtm.observability.svc.cluster.local:4318
```

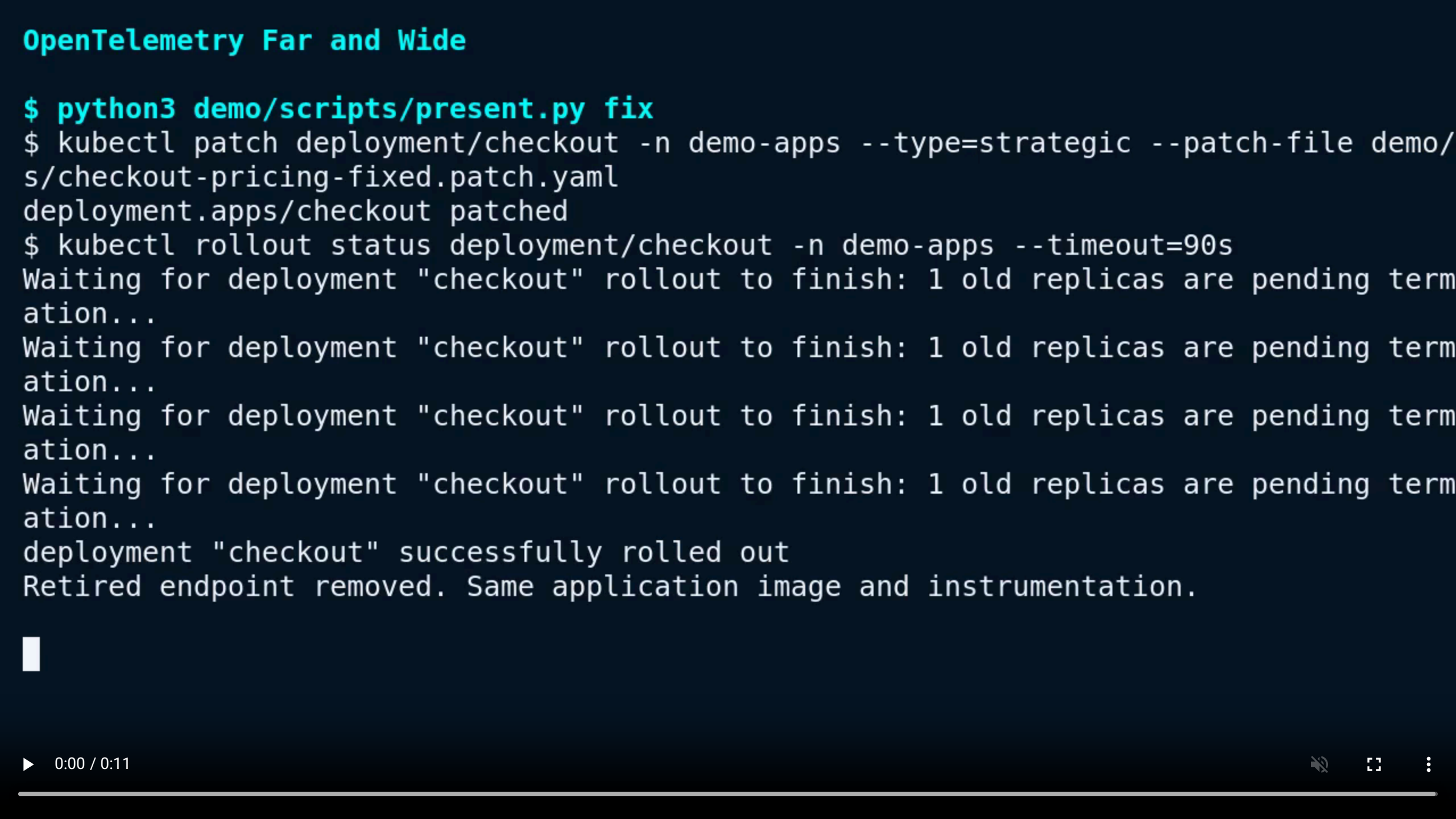

OpenTelemetry Far and Wide
$ python3 demo/scripts/present.py java
$ kubectl patch deployment/checkout -n demo-apps --type=strategic --patch-file demo/
s/checkout-direct-agent.patch.yaml
deployment.apps/checkout patched
$ kubectl rollout status deployment/checkout -n demo-apps --timeout=90s
Waiting for deployment "checkout" rollout to finish: 1 old replicas are pending term
ation...
Waiting for deployment "checkout" rollout to finish: 1 old replicas are pending term
ation...
Waiting for deployment "checkout" rollout to finish: 1 old replicas are pending term
ation...
deployment "checkout" successfully rolled out
Checkout ready with the direct Java agent and configured pricing-method span.
0:00 / 0:11

The failed call timed out



A retired endpoint, still configured



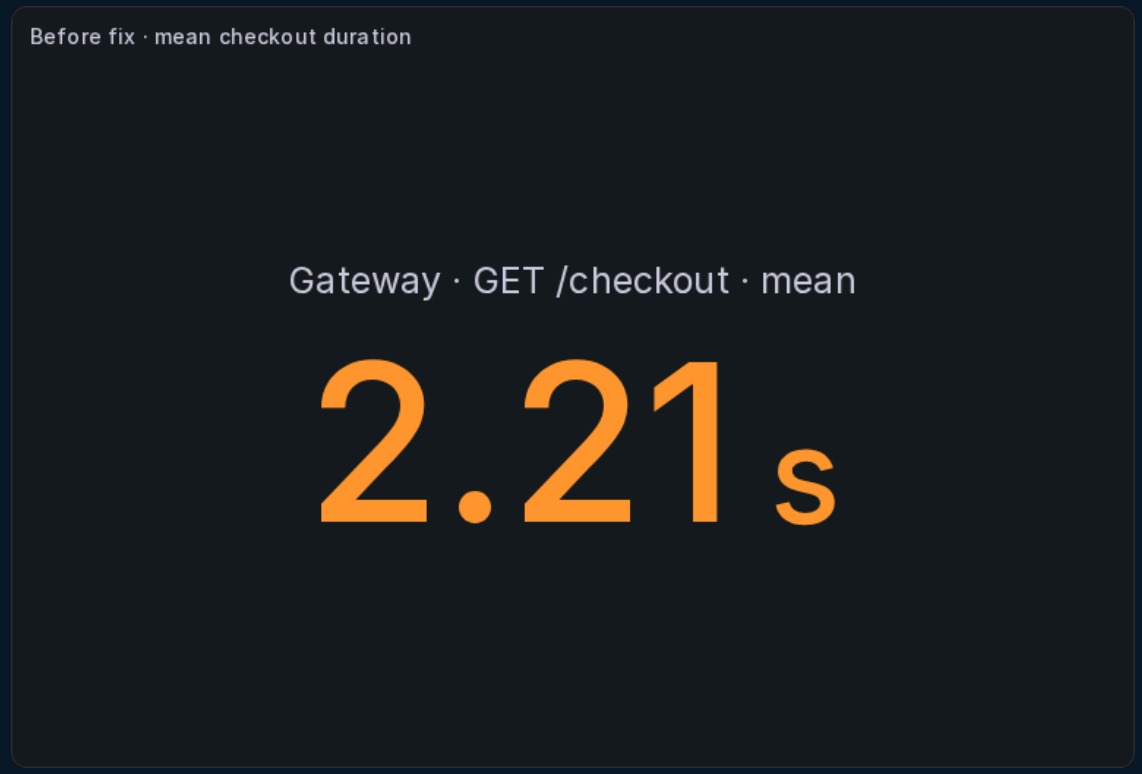

OpenTelemetry Far and Wide
$ python3 demo/scripts/present.py fix
$ kubectl patch deployment/checkout -n demo-apps --type=strategic --patch-file demo/
s/checkout-pricing-fixed.patch.yaml
deployment.apps/checkout patched
$ kubectl rollout status deployment/checkout -n demo-apps --timeout=90s
Waiting for deployment "checkout" rollout to finish: 1 old replicas are pending term
ation...
Waiting for deployment "checkout" rollout to finish: 1 old replicas are pending term
ation...
Waiting for deployment "checkout" rollout to finish: 1 old replicas are pending term
ation...
Waiting for deployment "checkout" rollout to finish: 1 old replicas are pending term
ation...
deployment "checkout" successfully rolled out
Retired endpoint removed. Same application image and instrumentation.
0:00 / 0:11

The next checkout skips the failed call

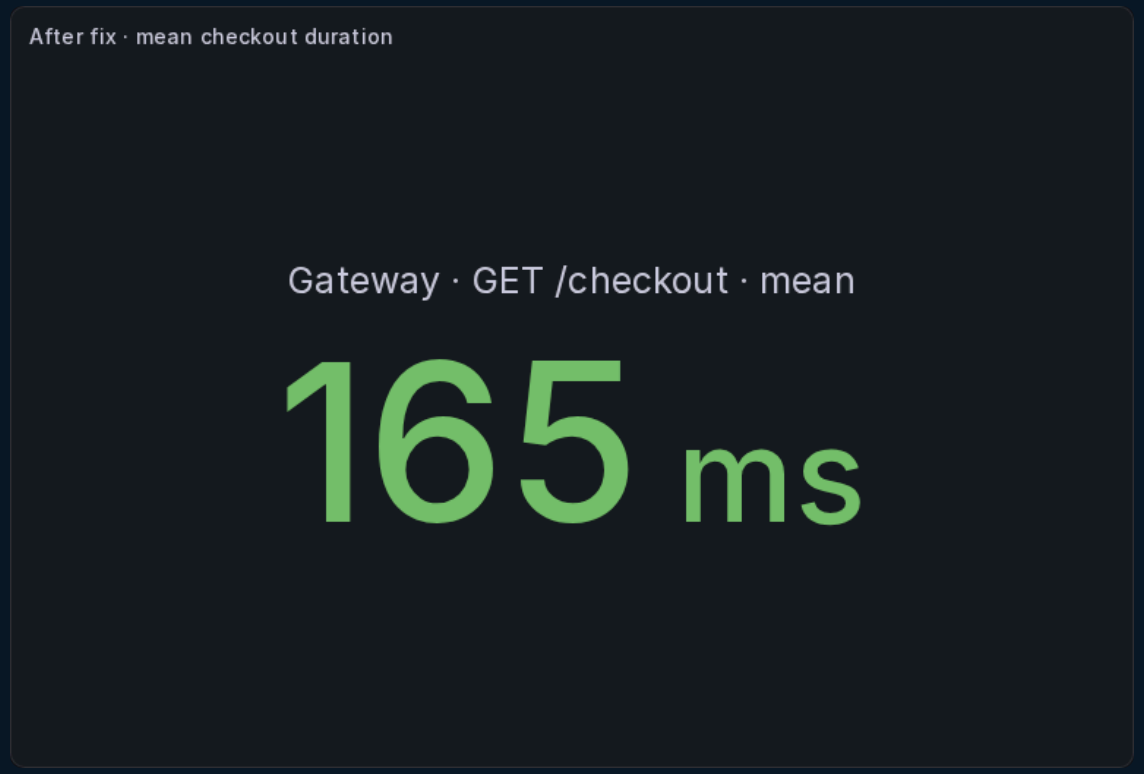


The wait is gone

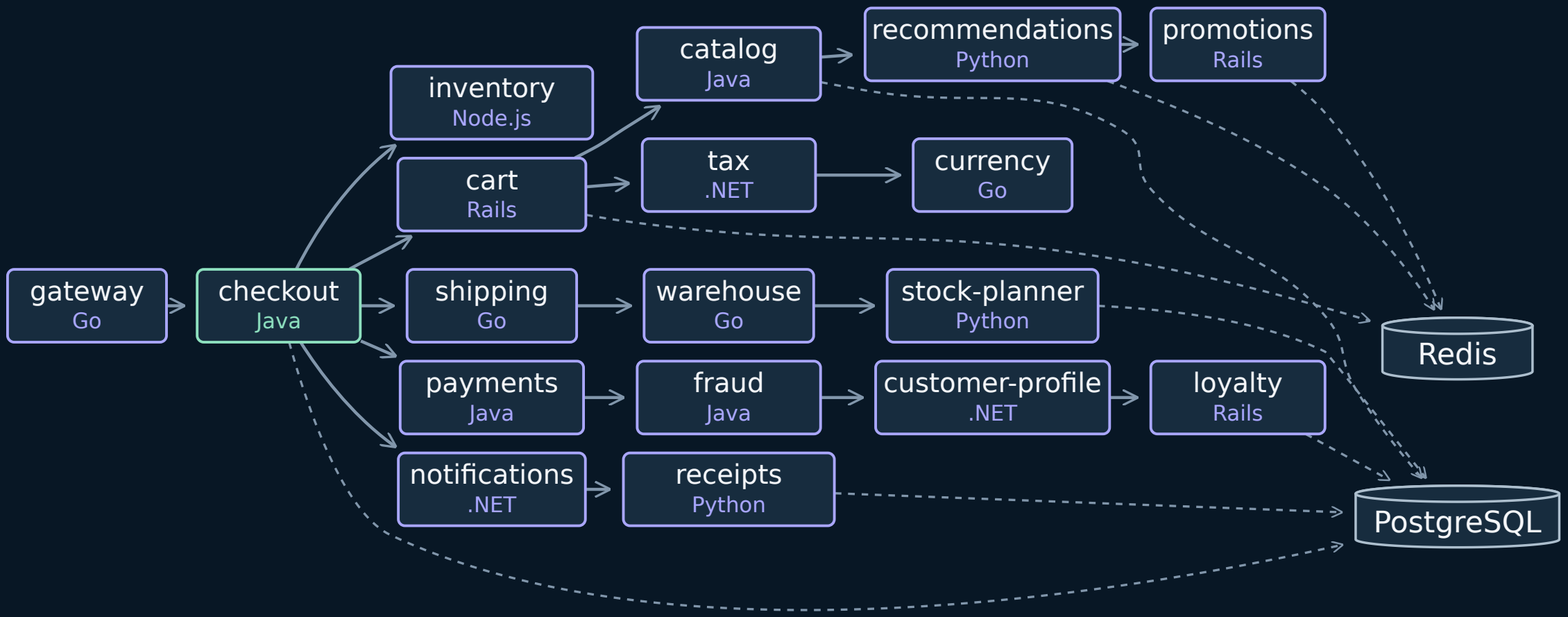
Before fix



After fix



What about the other 13?



The annotation is the easy part

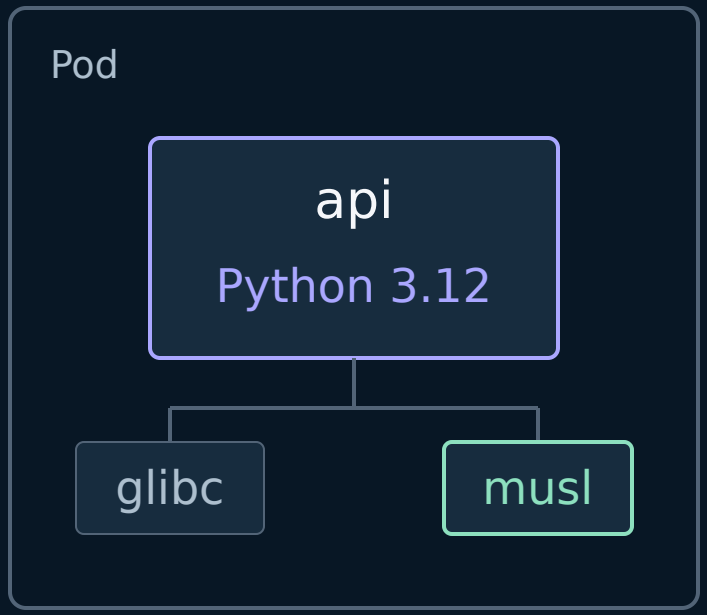
OpenTelemetry Operator · reporting-api

`instrumentation.opentelemetry.io/`

```
inject-python: "true"
otel-python-platform: "musl"
```

Instrumentation.spec.python.image `platform/python-agent:py312-musl`

Match the image



The annotation is the easy part

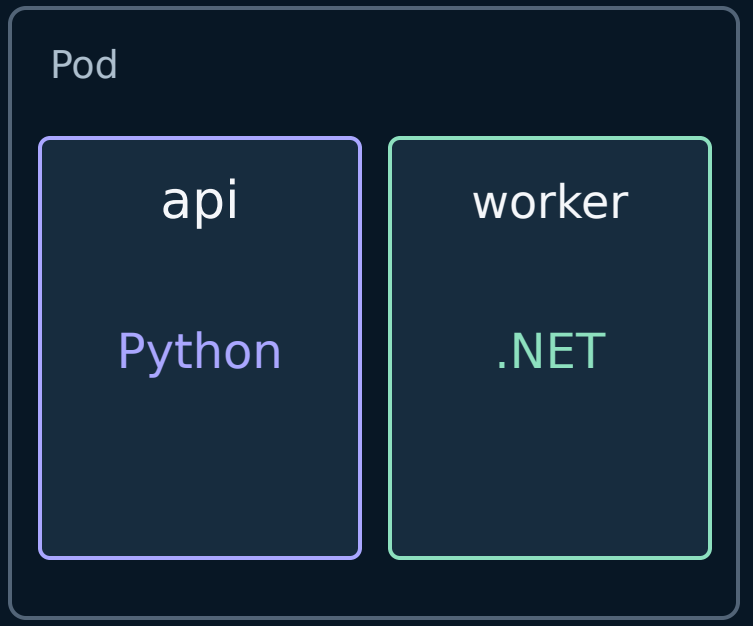
OpenTelemetry Operator · reporting-api

`instrumentation.opentelemetry.io/`

```
inject-python: "true"
otel-python-platform: "musl"
python-container-names: "api"
inject-dotnet: "true"
dotnet-container-names: "worker"
otel-dotnet-auto-runtime: "linux-musl-x64"
```

Instrumentation.spec.python.image `platform/python-agent:py312-musl`

Target the containers



The annotation is the easy part

OpenTelemetry Operator · reporting-api

`instrumentation.opentelemetry.io/`

```
inject-python: "true"
otel-python-platform: "musl"
python-container-names: "api"
inject-dotnet: "true"
dotnet-container-names: "worker"
otel-dotnet-auto-runtime: "linux-musl-x64"
```

Instrumentation.spec.python.image `platform/python-agent:py312-musl`

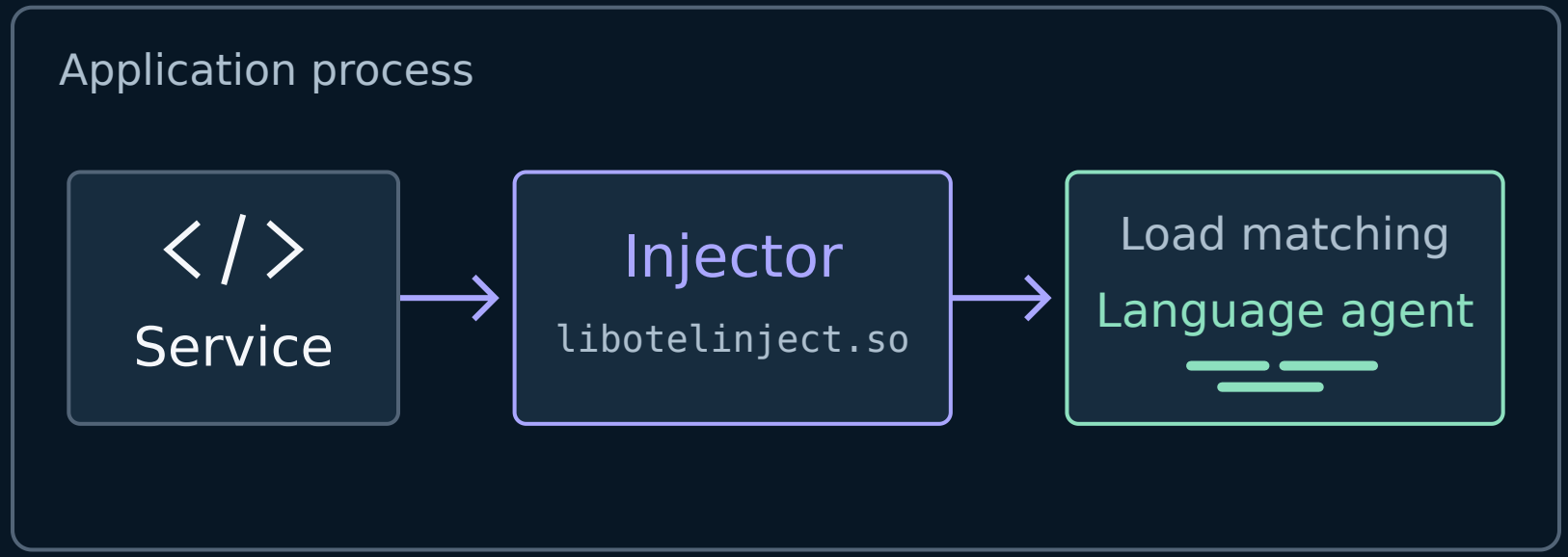
Payload Permissions Export Rollout

Coordinate the change



OpenTelemetry Injector

At process startup



Java · Node.js · Python · .NET · Ruby

Project + docs

opentelemetry-injector

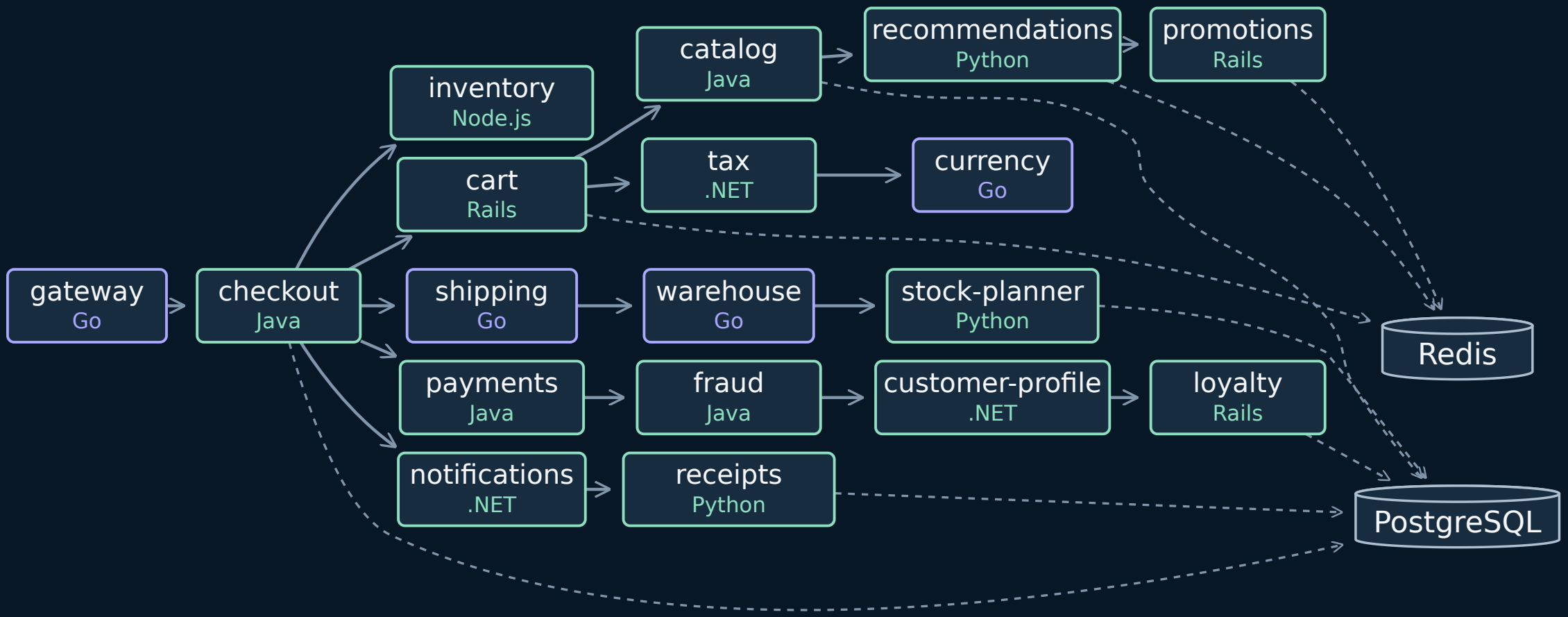
```
++++++++++++++++++++++++++++++*...+.....+...+.........+....+.+.................
..+......+..+.+..+++++
-----
secret/otel-injector-tls created
namespace/otel-injector-system configured
serviceaccount/otel-injector created
clusterrole.rbac.authorization.k8s.io/otel-demo-injector unchanged
clusterrolebinding.rbac.authorization.k8s.io/otel-demo-injector unchanged
role.rbac.authorization.k8s.io/volume-probes created
rolebinding.rbac.authorization.k8s.io/volume-probes created
deployment.apps/otel-injector created
service/otel-injector created
mutatingwebhookconfiguration.admissionregistration.k8s.io/otel-demo-injector created
Waiting for deployment "otel-injector" rollout to finish: 0 of 1 updated replicas ar
available...
deployment "otel-injector" successfully rolled out
make: Leaving directory '/home/tyler/Documents/talks/KubeCon_NA_2026/OpenTelemetry-F
-and-Wide/components/otel-injector-operator'
$ kubectl apply -f demo/k8s/fleet-instrumentation-base.yaml
instrumentation.demo.opentelemetry.io/cluster created
RIO demo controller ready; shared defaults prepared; no namespace enrollment yet.
```

0:00 / 0:10

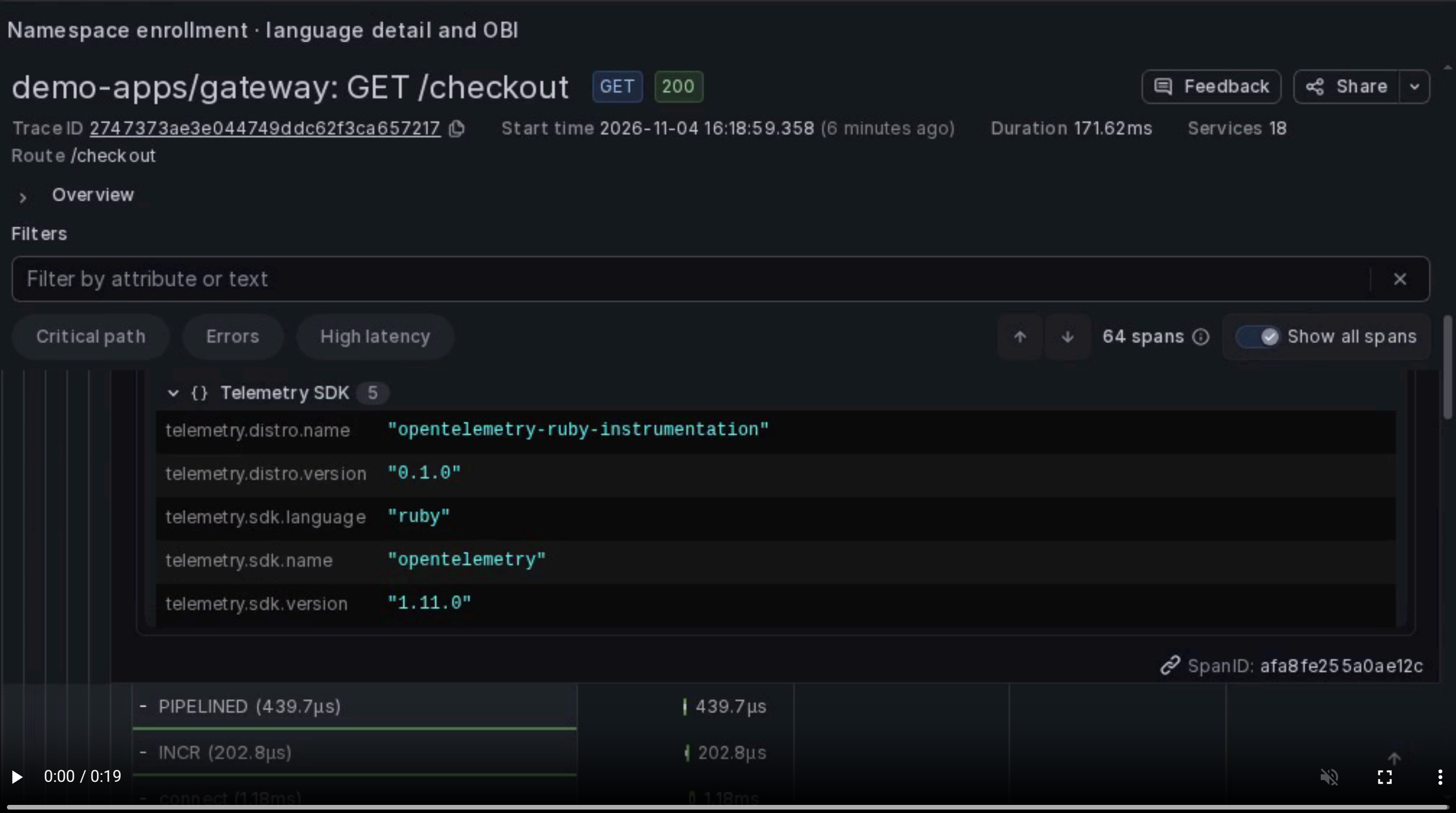
Instrument this namespace

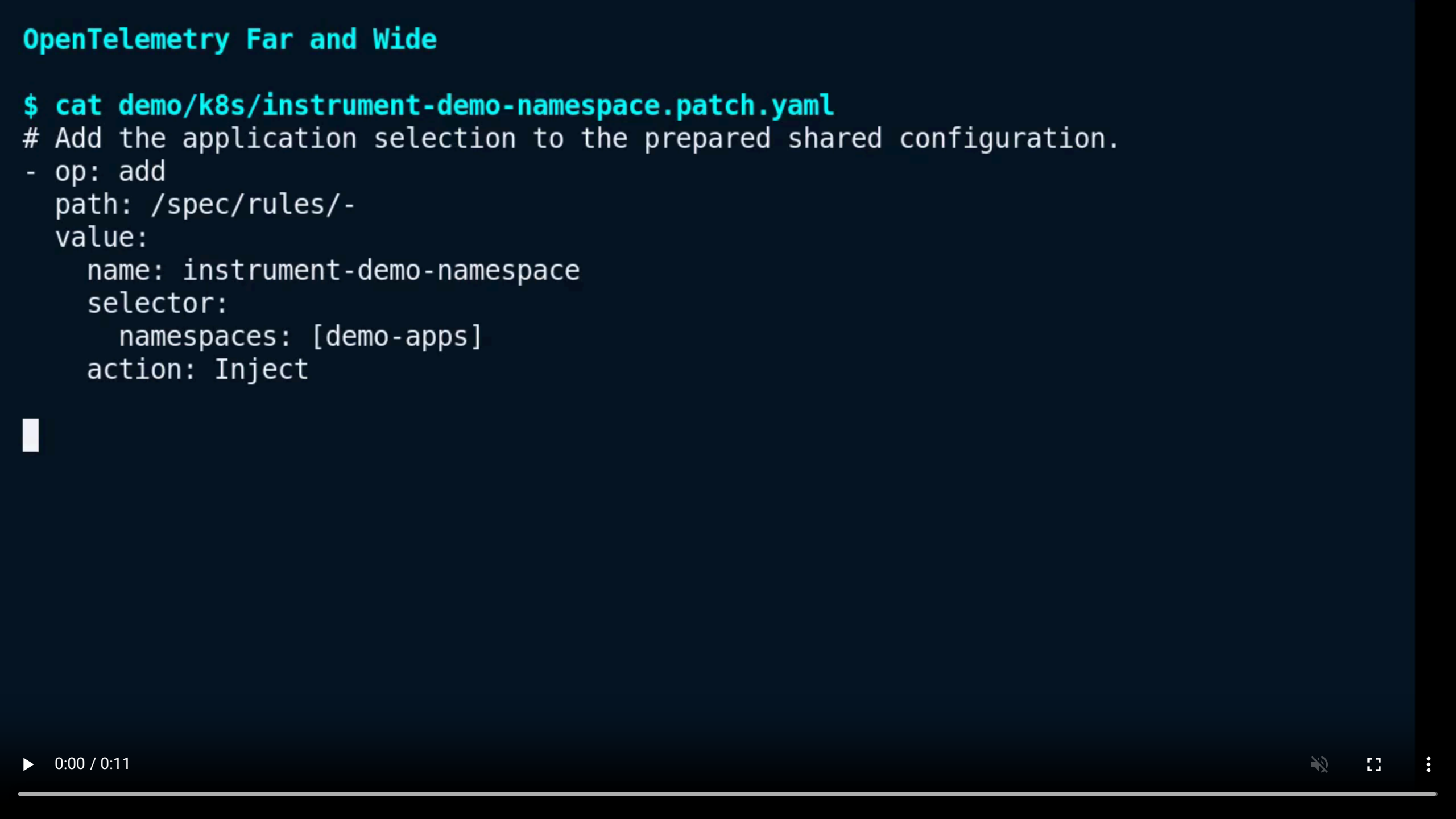
```
selector:
  namespaces: [demo-apps]
action: Inject
```

Language detail. OBI alongside it.

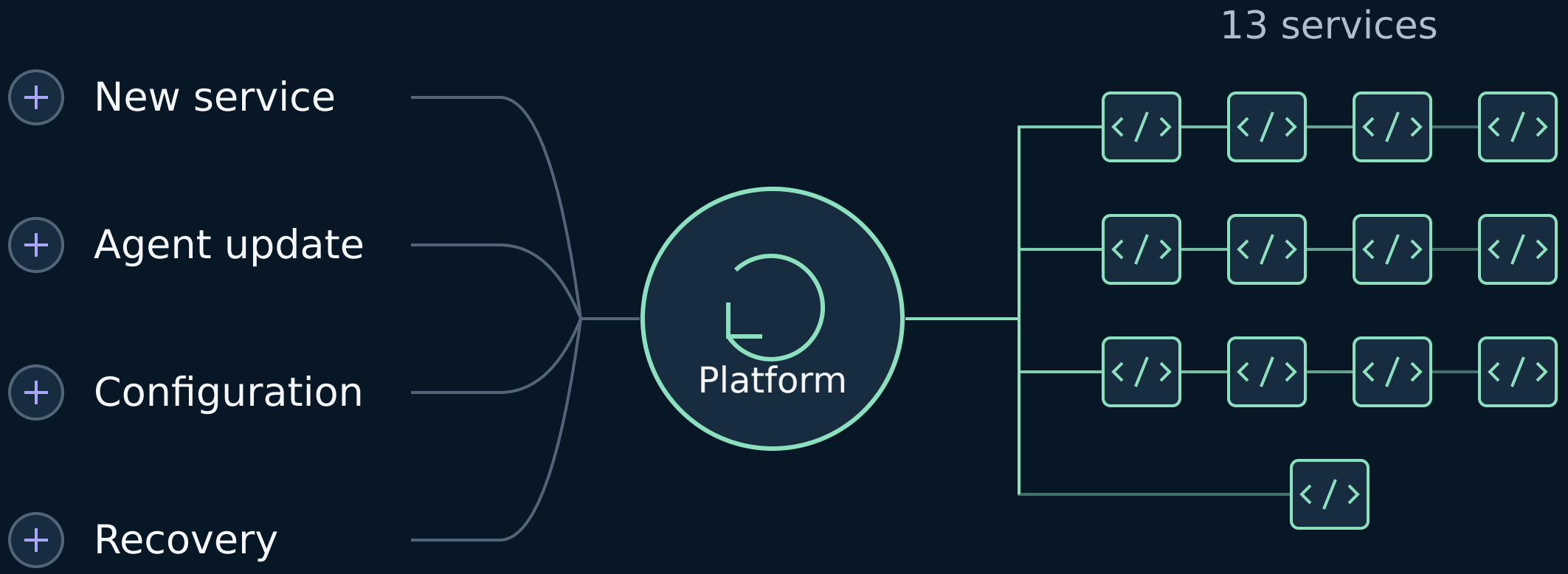


- 14 language agents
- 4 with OBI

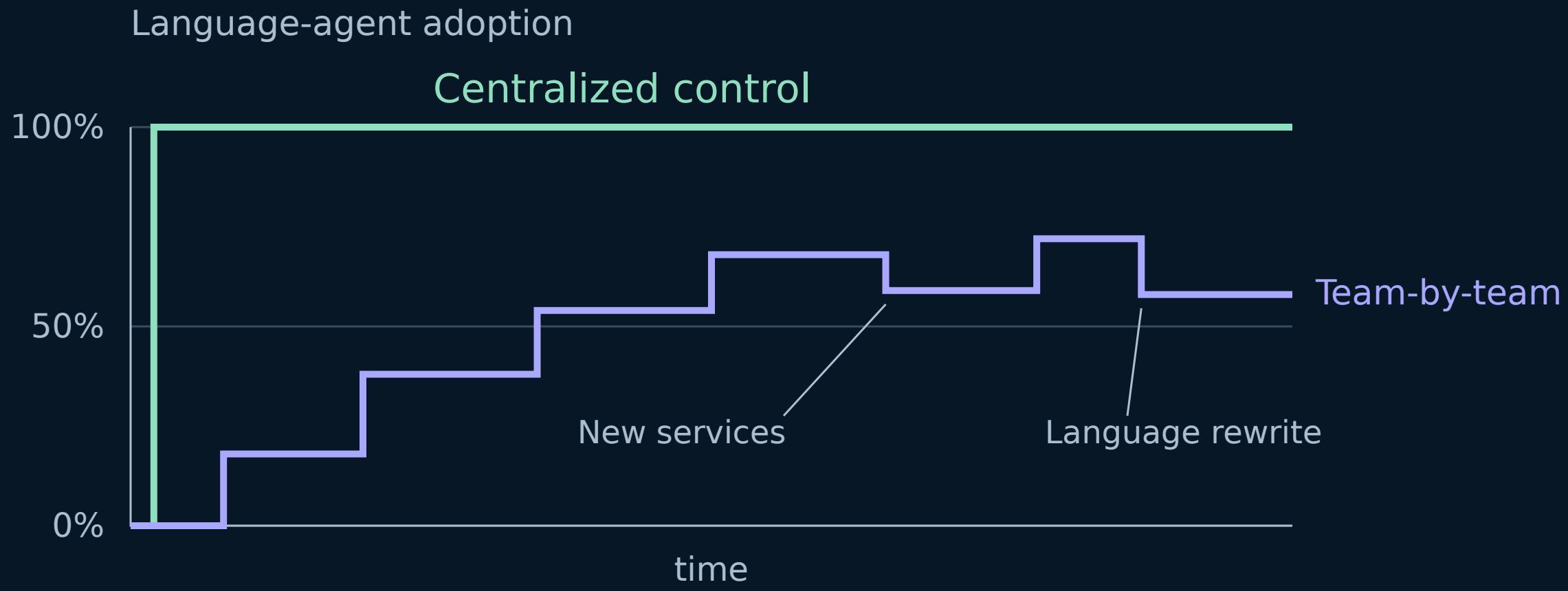

Namespace enrollment · language detail and OBI
demo-apps/gateway: GET /checkout
GET
200
Feedback
Share
Trace ID 2747373ae3e044749ddc62f3ca657217
Start time 2026-11-04 16:18:59.358 (6 minutes ago)
Duration 171.62ms
Services 18
Route /checkout
Overview
Filters
Filter by attribute or text
Critical path
Errors
High latency
64 spans
Show all spans
{} Telemetry SDK 5
telemetry.distro.name "opentelemetry-ruby-instrumentation"
telemetry.distro.version "0.1.0"
telemetry.sdk.language "ruby"
telemetry.sdk.name "opentelemetry"
telemetry.sdk.version "1.11.0"
SpanID: afa8fe255a0ae12c
- PIPELINED (439.7µs)
439.7µs
- INCR (202.8µs)
202.8µs
- connect (1.18ms)
1.18ms
0:00 / 0:19

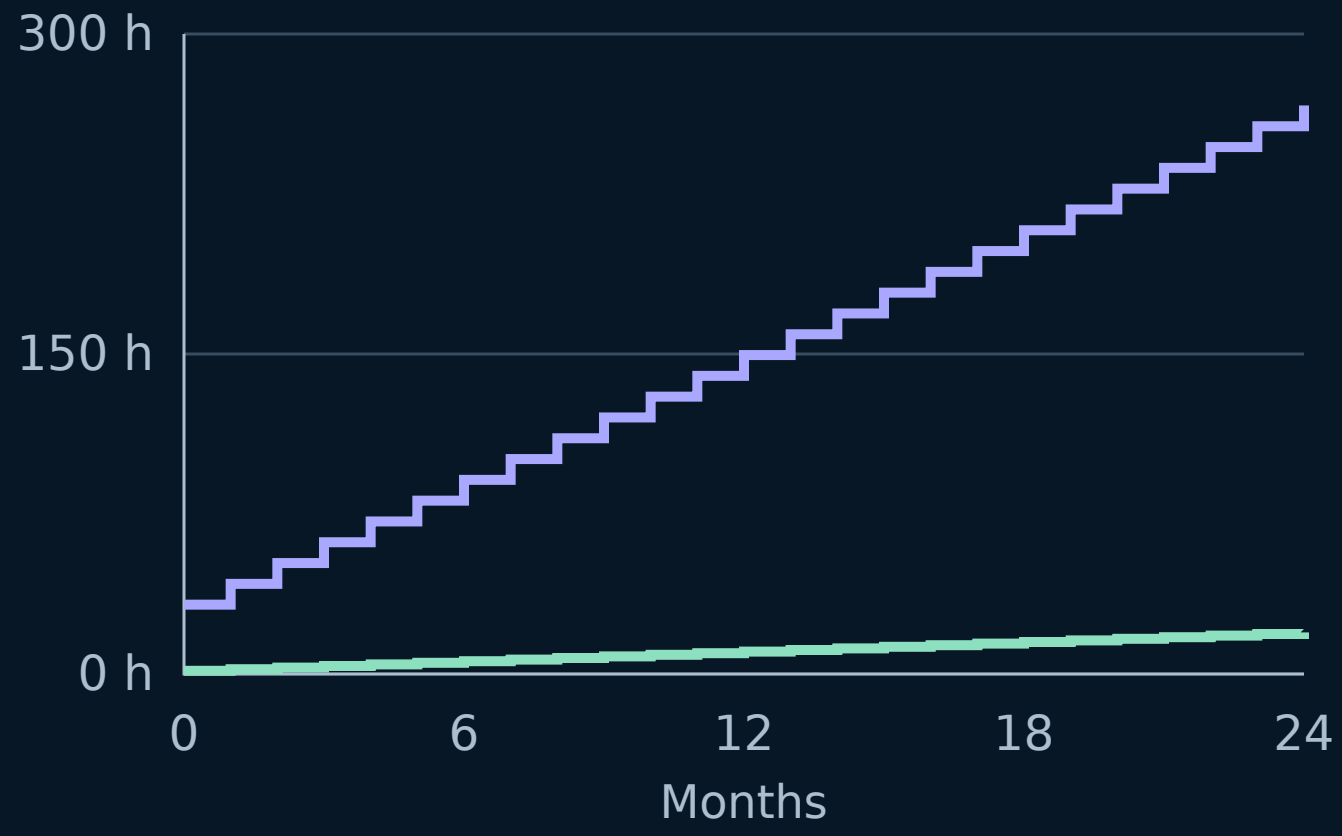

OpenTelemetry Far and Wide
$ cat demo/k8s/instrument-demo-namespace.patch.yaml
# Add the application selection to the prepared shared configuration.
- op: add
  path: /spec/rules/-
  value:
    name: instrument-demo-namespace
    selector:
      namespaces: [demo-apps]
    action: Inject
0:00 / 0:11

Maintain once. Roll out together.



Make coverage the default





Distributed ownership
266.5 hours

Centralized control
19.5 hours

247 hours

freed over two years

$24,700 at $100/hour

18 services · monthly updates

OpenTelemetry. Ready to install.

2.21 s → 165 ms

1 namespace

14 agents + 4 with OBI



Demo + slides



RIO



Give OBI a star