intro to tracing-based SLOs

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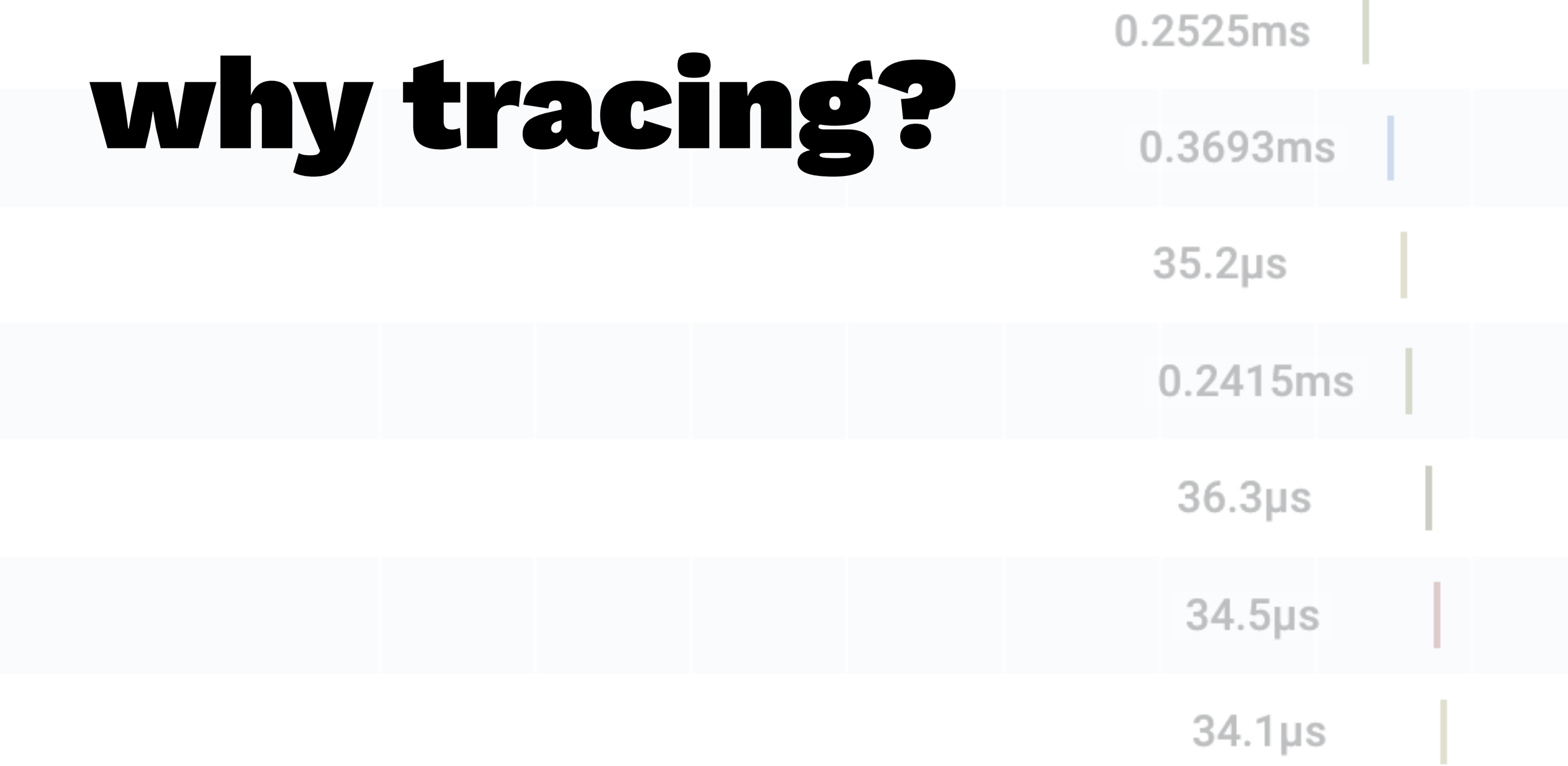
why tracing?



use OpenTelemetry

auto-instrumentation for HTTP and gRPC

— request duration
— status codes
— client calls vs. server responses

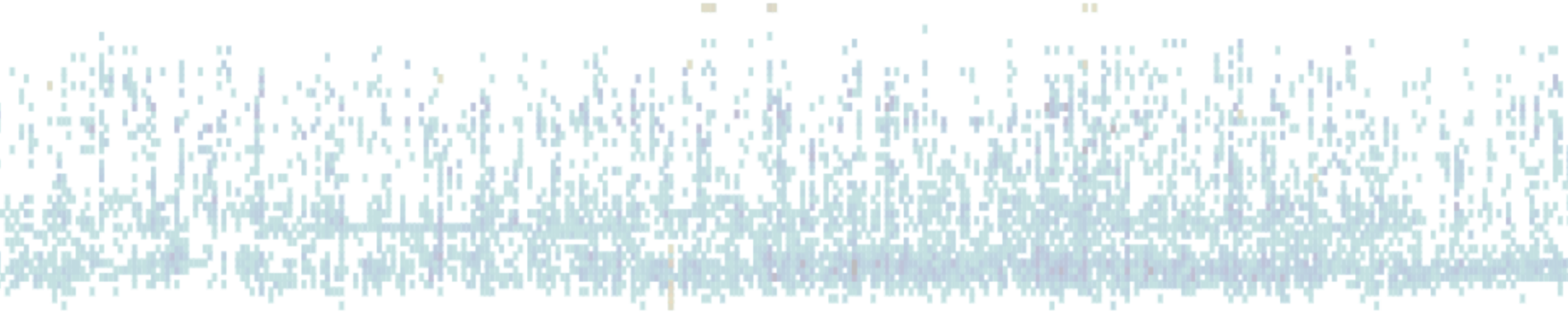
traces are fancy structured logs


```
{
    "Timestamp": "2022-04-15T18:24:32.987575281Z",
    "duration_ms": 42.076192,
    "http.method": "GET",
    "http.scheme": "https",
    "http.status_code": 200,
    "http.host": "api.awesome-service.net",
    "http.target": "/all-the-things",
    "service.name": "awesome-service",
    "trace.trace_id": "11d8692d1cb9d55436c1a656999e0608",
    "trace.span_id": "4f87aa2321768f18",
    "trace.parent_id": "3a7caf3aaba06a5f"
}
```

observability == exploration

→ broad view: what's slow?
→ zoom in: what's different about this slow traffic?
→ zoom out: is this kind of traffic always slow?
→ zoom in...

tracing-based SLOs



instrument your code

```
func (m Action) BootDeviceSet(ctx context.Context, ...) (result string, err error) {
	tracer := otel.Tracer("pbnj")
	ctx, span := tracer.Start(ctx, "client.SetBootDevice", trace.WithAttributes(
		attribute.String("bmc.device", device),
		attribute.Bool("bmc.persistent", persistent),
		attribute.Bool("bmc.efiBoot", efiBoot),
	))
	defer span.End()
	// . ˙ ₒ . ˙ ° ✯ ˙ . ˙ ☆ ˙ °  ˙ ₒ .
	//    ✧ set boot device ✧
	// . ˙ ₒ . ˙ ° ☆ ˙ . ˙ ✯ ˙ °  ˙ ₒ .
}
```

defining a tracing-based SLI

— filter to what’s relevant

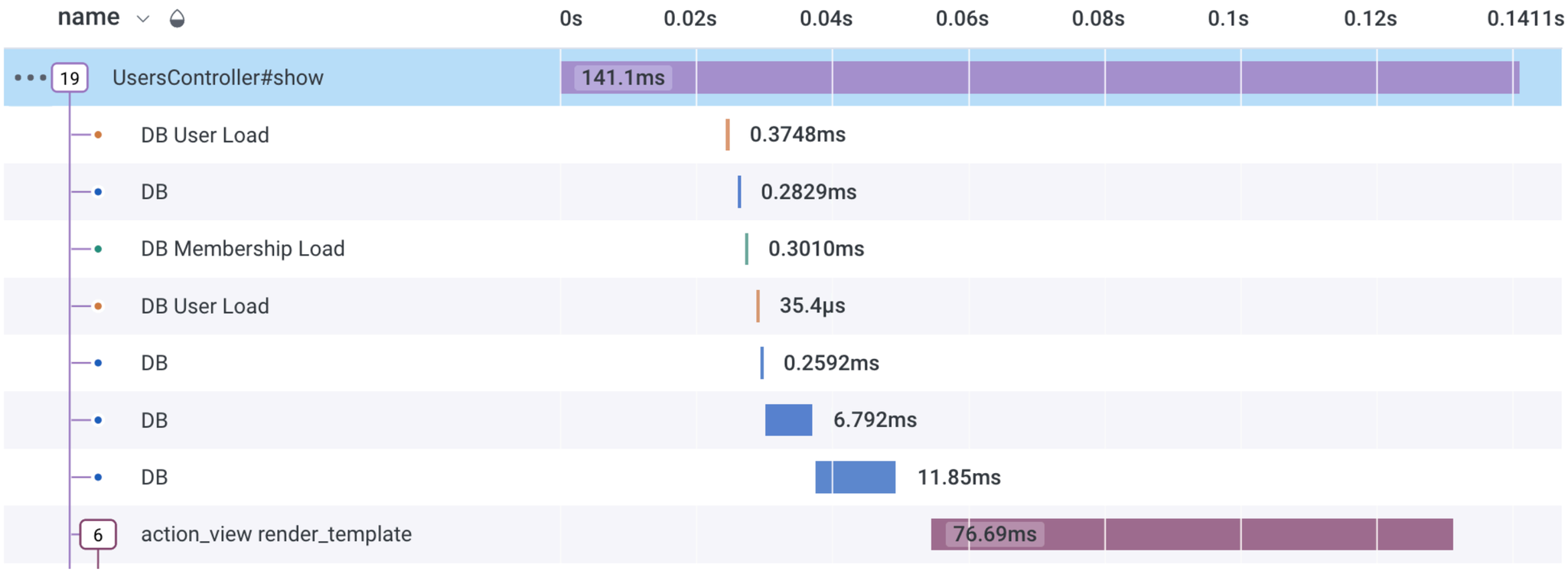
— define a condition for "good"

SLI: overall traffic

filter to what's relevant

```
IF(
    // root spans
    trace.parent_id == undefined
          AND
    // responding to client calls
    span.kind == "server"
)
```

root span of the trace



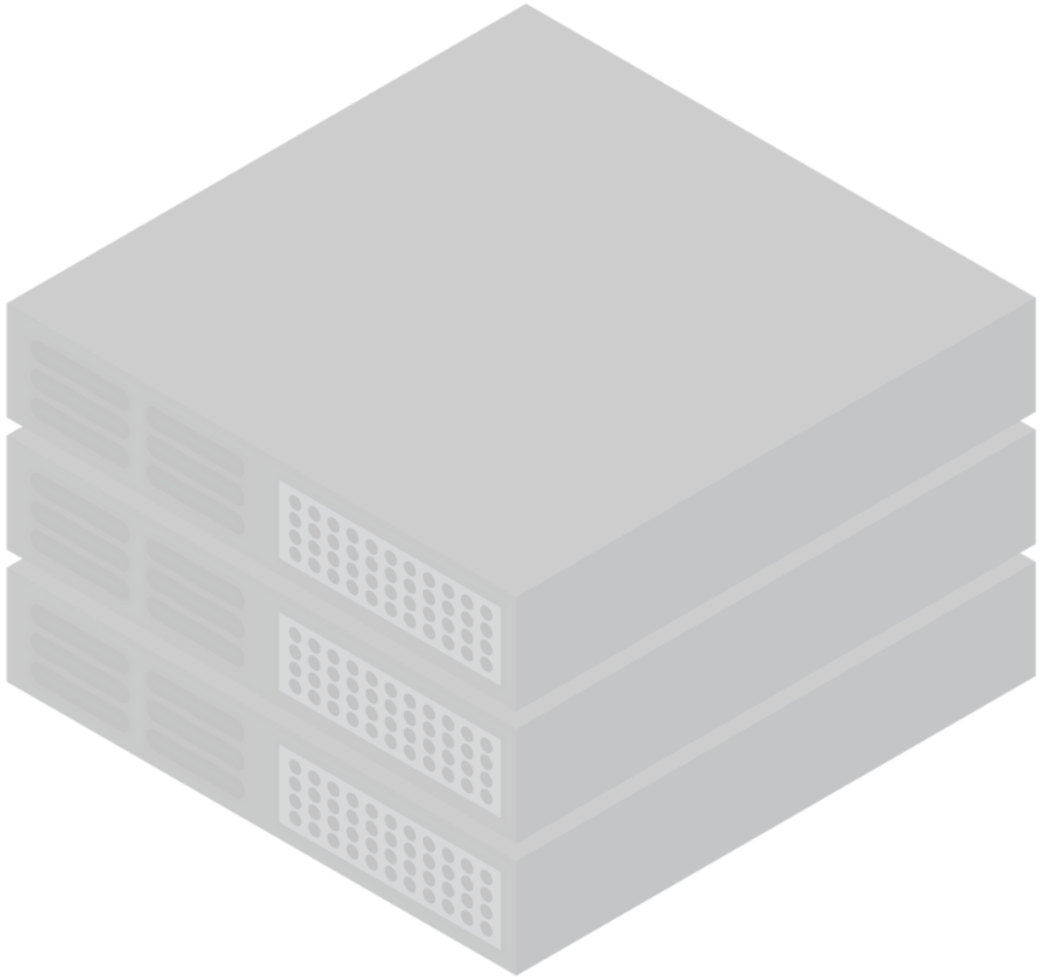
filter to what's relevant

```
IF(
      trace.parent_id == undefined
            AND
      span.kind == "server"
            AND
      // filter out employee traffic
      user.staff != true
            AND
      // filter out internal bot traffic
      user.bot != true
)
```

define a condition for “good”

```
IF(
        // should not return a server error
        http.status_code < 500
                AND
        // should return in less than 1s
        duration_ms < 1000
)
```

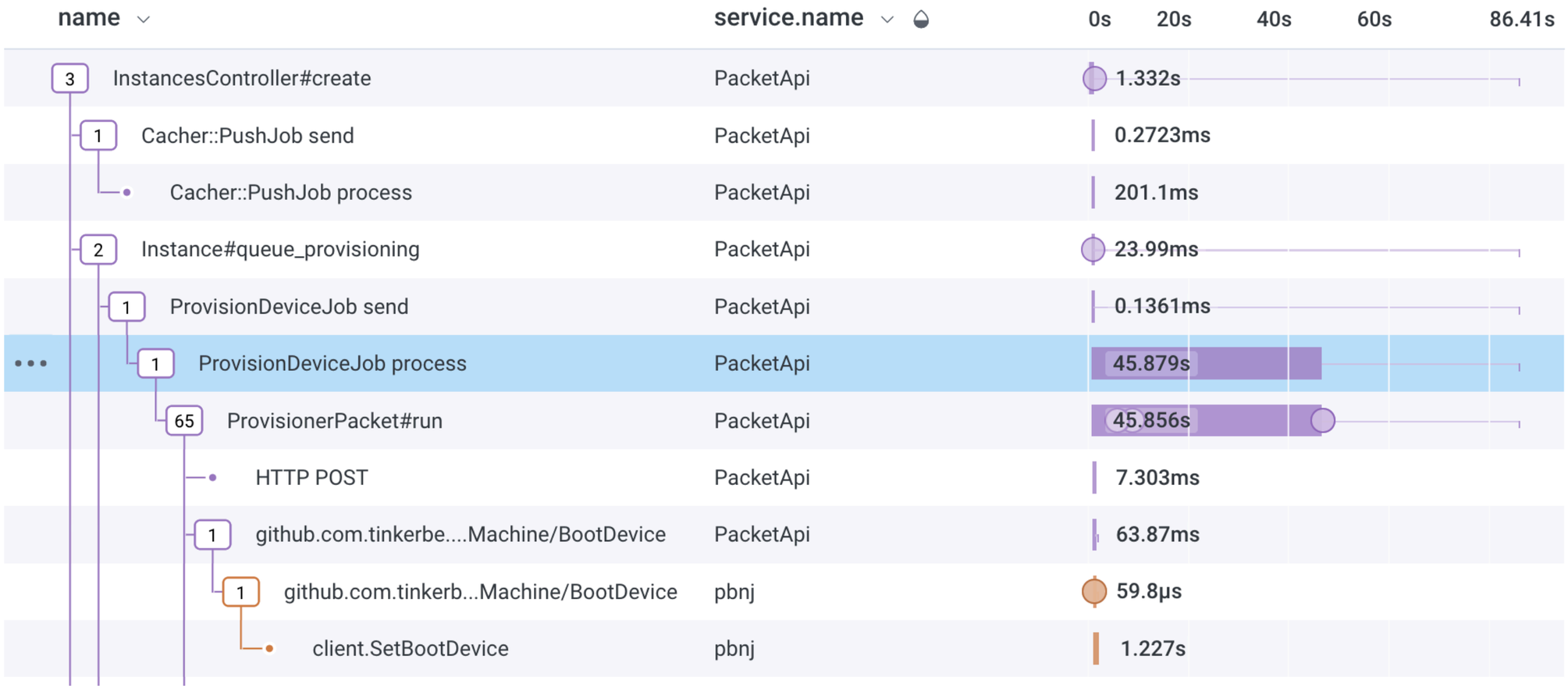
SLI: provisioning



filter to what's relevant

```
IF(
        // just the provision job
        name == "ProvisionDeviceJob process"
)
```

ProvisionDeviceJob



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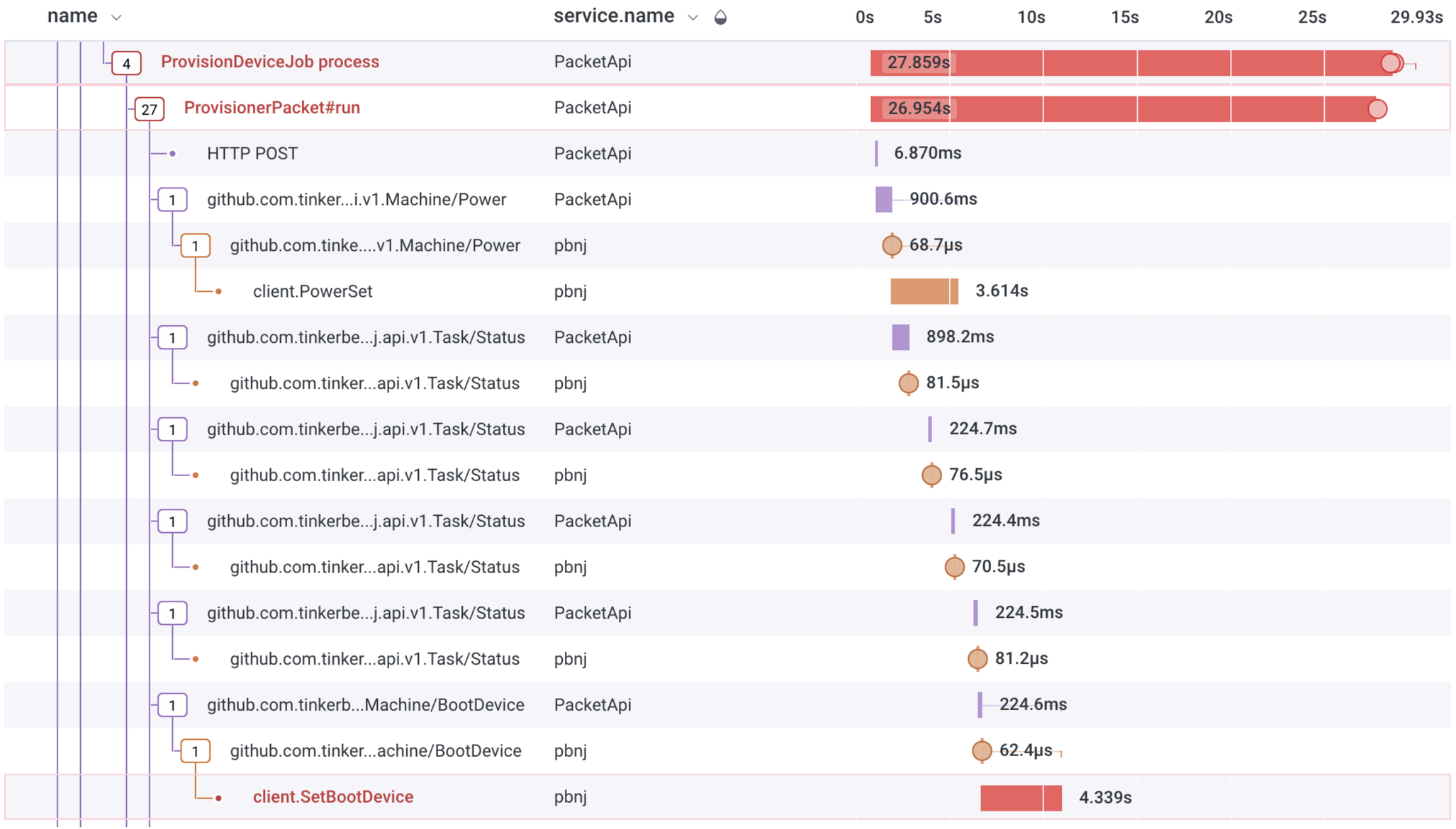
name
service.name
0s
5s
10s
15s
20s
25s
29.93s
4 ProvisionDeviceJob process PacketApi 27.859s
27 ProvisionerPacket#run PacketApi 26.954s
HTTP POST PacketApi 6.870ms
1 github.com.tinker...i.v1.Machine/Power PacketApi 900.6ms
1 github.com.tinke....v1.Machine/Power pbnj 68.7µs
client.PowerSet pbnj 3.614s
1 github.com.tinkerbe...j.api.v1.Task/Status PacketApi 898.2ms
github.com.tinker...api.v1.Task/Status pbnj 81.5µs
1 github.com.tinkerbe...j.api.v1.Task/Status PacketApi 224.7ms
github.com.tinker...api.v1.Task/Status pbnj 76.5µs
1 github.com.tinkerbe...j.api.v1.Task/Status PacketApi 224.4ms
github.com.tinker...api.v1.Task/Status pbnj 70.5µs
1 github.com.tinkerbe...j.api.v1.Task/Status PacketApi 224.5ms
github.com.tinker...api.v1.Task/Status pbnj 81.2µs
1 github.com.tinkerb...Machine/BootDevice PacketApi 224.6ms
1 github.com.tinker...achine/BootDevice pbnj 62.4µs
client.SetBootDevice pbnj 4.339s

filter to what's relevant

```
IF(
        // just the provision job
        name == "ProvisionDeviceJob process"
                AND
        // filter out internal test projects
        project.test != true
)
```

define a condition for “good”

```
IF(
        // should not fail
        error != true
)
```

you can do this!

— add OpenTelemetry auto-instrumentation

— observe and learn

— define basic SLIs

— add custom instrumentation

— observe and learn

— define ✨ fancy ✨ SLIs

thanks for watching!

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