Observability Now:
A Hybrid Approach to Open Telemetry Instrumentation

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Open Telemetry: The Open Standard

- OpenTelemetry (OTel) is an open-source framework for collecting telemetry data
- Supports multiple backends—send your data to Elastic, Grafana, Datadog, or any OpenTelemetry-compatible system.
- Works with Next.js, Express, Node.js/NestJS, GraphQL and many common libraries
- Widely Adopted: Backed by CNCF, used in cloud-native and microservices architectures.

Why Observability Matters

Observability isn't just collecting data—it’s about making sense of it.

The Three Pillars:

- **Logs** (what happened),
- **Metrics** (how it's performing),
- **Traces** (how it flows).

Your Approach Matters:

- **Automatic instrumentation** gives broad coverage but lacks business-specific details.
- **Manual instrumentation** provides deep insights but takes more effort.
- **Hybrid instrumentation** = best of both worlds.

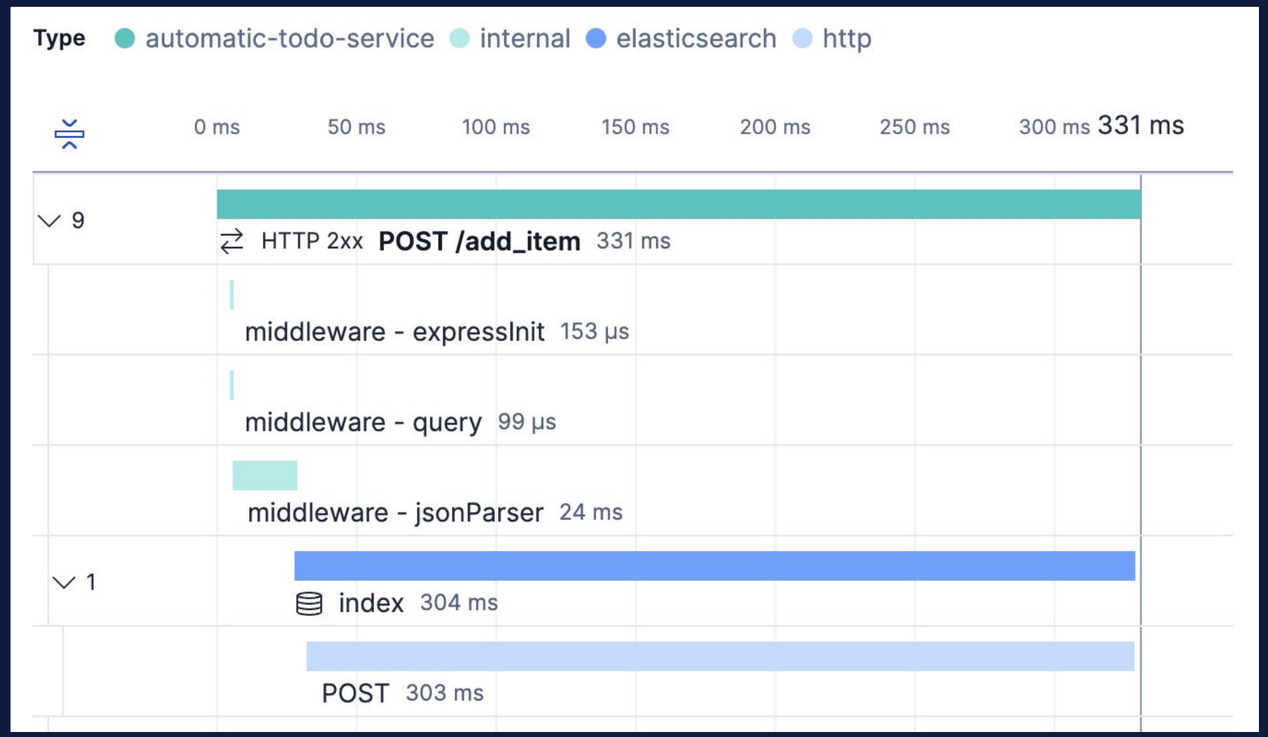
Automatic Instrumentation - Quick and Easy

Pros:

- Fast setup, minimal code changes.
- Covers HTTP, database calls, gRPC, and other libraries.
- Great for getting started.

Cons:

- Generates a lot of spans—some unnecessary and costly.
- Lacks business logic context (e.g., order processing steps).
- Might not always provide enough detail for debugging.



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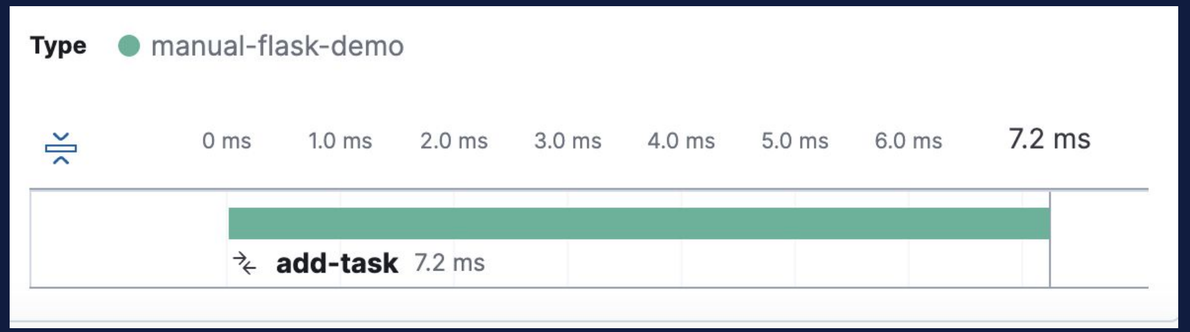
Manual Instrumentation - Granularity and Control

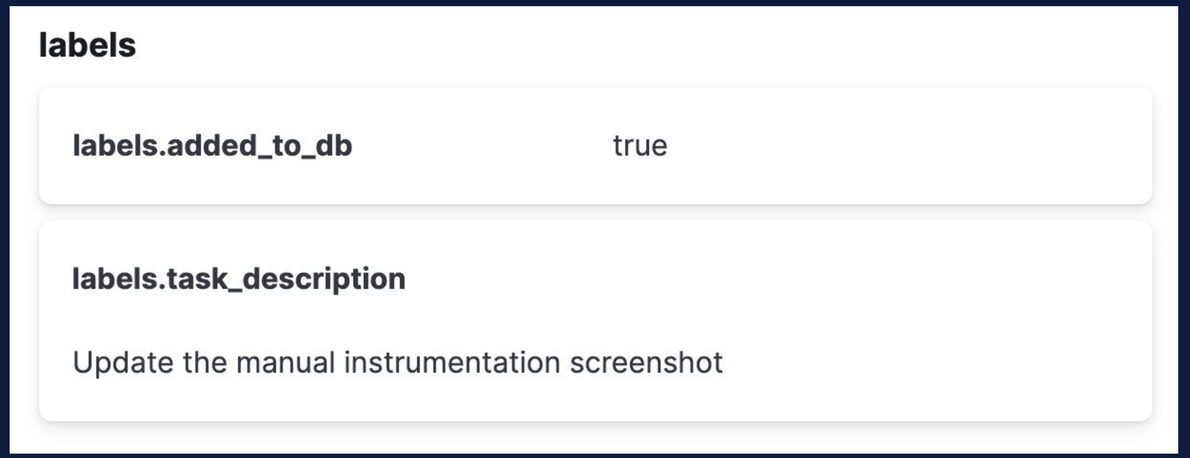
Pros:

- Lets you define meaningful spans where it matters most.
- Helps track critical business flows (e.g., “Order Validation,” “Payment Processing”).
- Reduces noise—focuses only on what matters.

Cons:

- Requires developer effort.
- Risk of missing instrumentation without careful planning.





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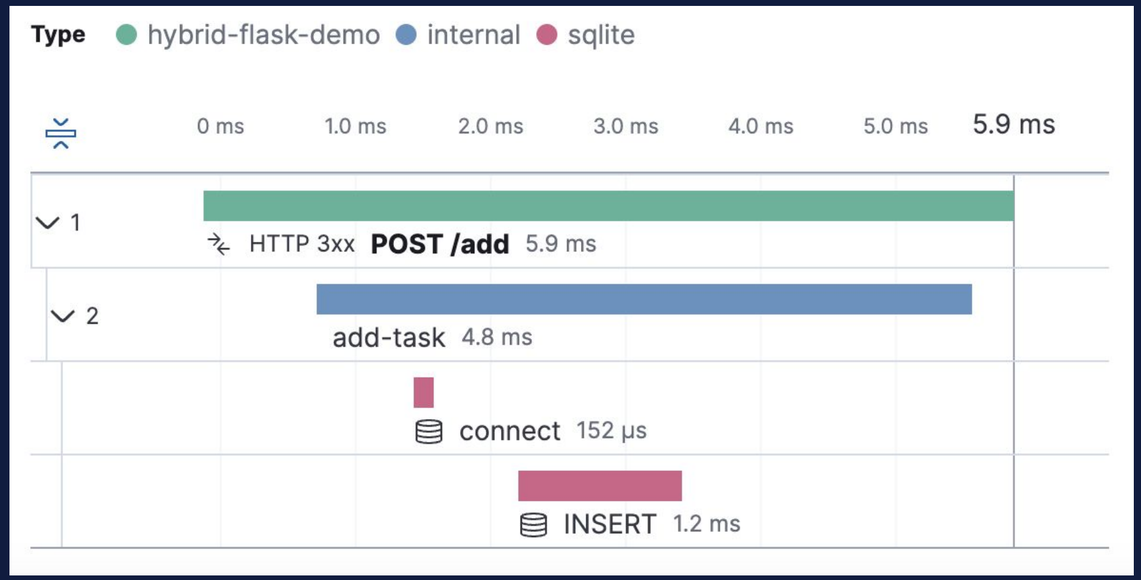
Hybrid Instrumentation - The “sweet spot”

Start with automatic instrumentation, then refine using manual spans.

Use OpenTelemetry config options to dial back and reduce noise:

- Exclude unnecessary libraries
- Adjust overall sampling rates
- Use span processors for filtering

Let **automation** handle the heavy lifting, then use **manual** spans to enhance critical workflows.



labels

labels.added_to_db	true
labels.process_runtime_description	3.12.3 (main, Jul 31 2024, 20:00:15) [Clang 15.0.0 (clang-1500.3.9.4)]
labels.task_description	Give away more swag so you don't have to carry it all home
labels.telemetry_auto_version	0.46b0

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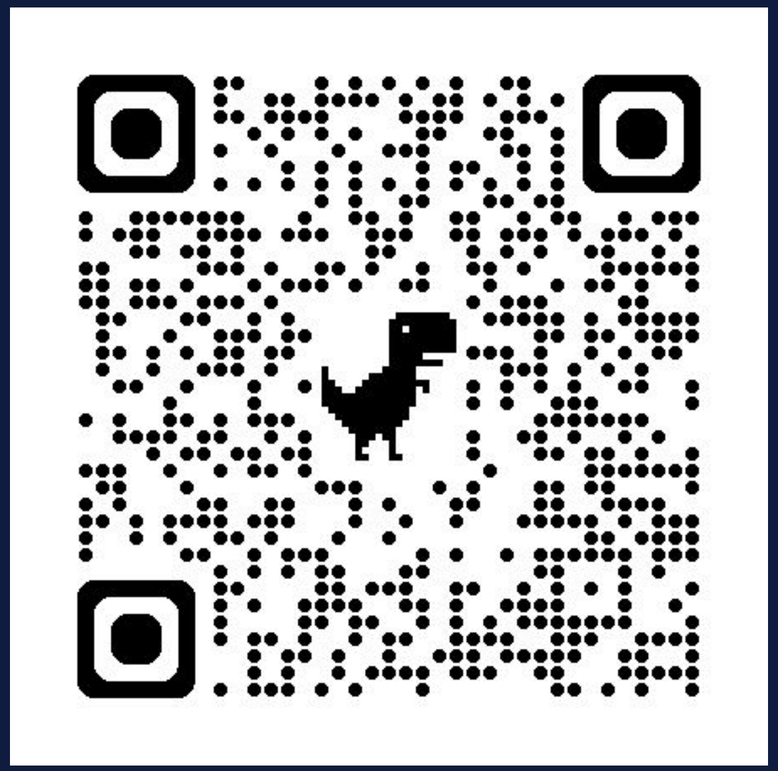
What just happened?!

- Observability with Open Telemetry isn't about *more* data—it’s about the *right* data.
- **Automatic** instrumentation gets you started fast, but **manual** spans add clarity.
- Elastic and many other Data Platforms provide powerful tools to visualize and refine your telemetry.
- Start simple, find your data, pull back the data pressure.
- Take a look at my sample demos for all three scenarios!

Thank you!



github.com/justincastilla/cascadiajs-lightning-observability

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