Clean telemetry: sampling, filtering and high-signal data

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More data is not more insight. Clean telemetry means each signal is there for a reason, is consistent across services and can be trusted when something goes wrong.

TL;DR The short version

- More data is not more insight: every signal should have a purpose, be consistent across services and be trustworthy.
- Head sampling decides at the start of a trace; tail sampling decides at the end and can keep errors and slow requests.
- Filter and redact in the Collector, write down a telemetry standard, and review new instrumentation like code.

Read online, listen to it, or change the text size: https://blogs.iictp.org/clean-telemetry-sampling-and-filtering

Principles

- **Purpose:** every signal answers a question someone asks.
- **Consistency:** the same names, units and labels across services.
- **Context:** traces linked to logs and metrics through shared identifiers.
- **Restraint:** drop what is never used.

Techniques

- **Head sampling** decides at the start of a trace; **tail sampling** decides once the trace is complete and can keep errors and slow requests.
- **Filtering and redaction** in the Collector remove noise and sensitive data.
- **Structured logs** with stable fields are easier to search and cheaper to store.

Keep it clean

1. Write down the telemetry standard and share it.
2. Review new instrumentation like new code.
3. Check periodically which data is used.
4. Remove what is not.

Related credential: Clean Software Telemetry Practitioner. Explore the exam facts and syllabus.

Sources and further reading

1. OpenTelemetry. Sampling. opentelemetry.io/docs/concepts/sampling/.

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