OpenTelemetry explained: one standard for traces, metrics and logs

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OpenTelemetry (OTel) is an open-source, vendor-neutral set of APIs, SDKs and tools for producing and exporting telemetry. It is a project of the Cloud Native Computing Foundation. Instrument once, and send the data to the backend you choose.

TL;DR The short version

- OpenTelemetry is an open-source, vendor-neutral CNCF standard for producing and exporting traces, metrics and logs.
- You instrument once, so switching or adding a backend does not mean re-instrumenting every service.
- Start with auto-instrumentation on one service and a Collector that sends data to your chosen backend.

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The three signals

- **Traces:** the path of one request through many services.
- **Metrics:** numbers over time, such as request rate or error rate.
- **Logs:** records of events.

The pieces

- **APIs and SDKs** for your language, to create telemetry in code.
- **Auto-instrumentation** for common libraries.
- **OTLP,** the protocol for sending telemetry.
- **The Collector,** a service that receives, processes and forwards telemetry to one or more backends.

Why it matters

Because the instrumentation is standard, switching or adding a backend does not mean re-instrumenting every service. That lowers lock-in and makes consistent telemetry across teams realistic.

Getting started

1. Pick one service and add auto-instrumentation.
2. Run a Collector and send data to a backend.

3. Add custom spans for your key business operations.
4. Agree naming conventions across teams.

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

Sources and further reading

1. OpenTelemetry. What is OpenTelemetry? opentelemetry.io/docs/what-is-opentelemetry/.

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