Join us for KubeCon + CloudNativeCon Virtual

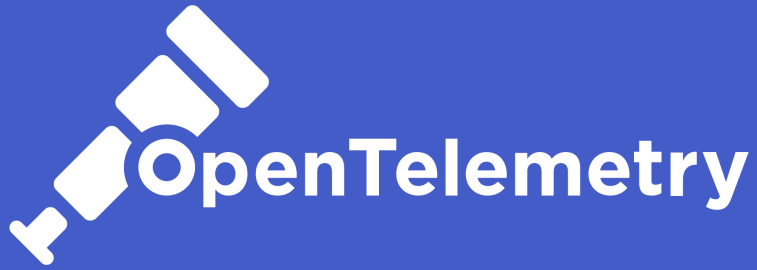
Event dates: August 17-20, 2020

Schedule: Now available!

Cost: $75

Register now!

Observability of multi-party computation with



July 23, 2020

Agenda

- Observability and OpenTelemetry
- Multi-party computation and its challenges
- Observing multi-party computation
- Demo
- Consortium architecture
- Demo
- Benefits of driving with observability

Introductions

@_tmio

atoulme

https://antoine.toulme.name

Antoine Toulme

Engineering Manager, Splunk
DLT Team

Previously:

- CTO, Whiteblock
- Blockchain Protocol Engineer, ConsenSys
- Engineering Manager, Acer Cloud

@dwmcallister

dwmcallister

https://medium.com/@dwmcallister

Dave McAllister

Senior Technical Evangelist, Splunk Observability

Previously:

- Scalyr
- Solace
- Stanford University
- Red Hat
- Adobe

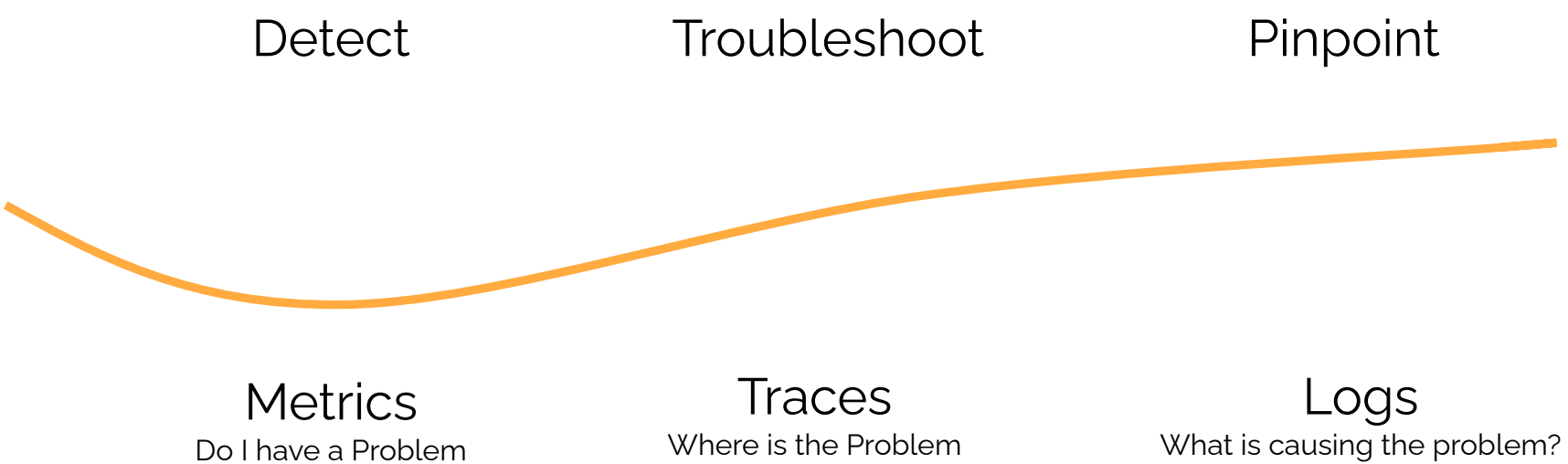
Observability and OpenTelemetry

A Brief View of Observability

TL;DR: Observability is a quality of software, services, platforms, or products that allows us to understand how systems are behaving.

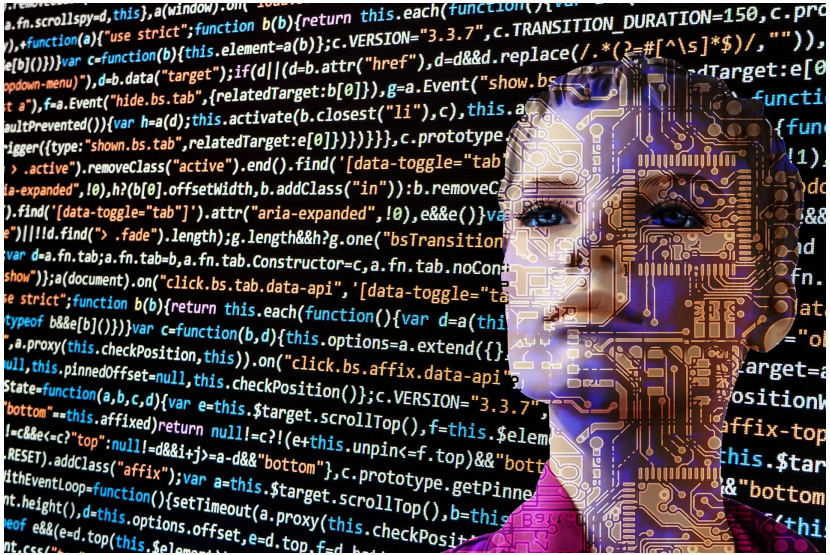
For Engineering purposes: Designing / Defining the exposure of state variables in a manner to allow inference of internal behavior.

Three Primary Pillars of Observability



Data is the Driving Factor for Observability

- Full-fidelity metrics and traces
- Open standards, open source data ingest
- All the data, all the time



OpenTelemetry and Our Needed Data

	Tracing	Metrics	Logs, etc
Instrumentation APIs			
Canonical implementations			
Data infrastructure			
Interop formats			

OpenTelemetry and Logs (Incubating!)

- The Log Data Model Specification :

  https://github.com/open-telemetry/oteps/blob/master/text/logs/0097-log-data-model.md#motivation
- Designed to map existing log formats and be semantically meaningful
- Mapping between log formats should be possible
- Three sorts of logs and events
  - System Formats
  - Third-party applications
  - First-party applications

OpenTelemetry and Logs

Two Field Kinds:

- Named top-level fields
- Fields stored in key/value pairs

Field Name	Description
Timestamp	Time when the event occurred.
TraceId	Request trace id.
SpanId	Request span id.
TraceFlags	W3C trace flag.
SeverityText	The severity text (also known as log level).
SeverityNumber	Numerical value of the severity.
Name	Short event identifier.
Body	The body of the log record.
Resource	Describes the source of the log.
Attributes	Additional information about the event.

Observability drives Evidence-based Debugging

Debugging for complex systems is iterative

- Start with a high-level metric
- Drill down and detangle based on fine-grained data/observations
- Make the right deductions based on the evidence

Multi-party computation

Evolution

Multi-party computation

- Fax
- EDI
- RPC
- Web services
- Distributed systems
- Multi-party computation

Challenges

A series of black boxes

- Hand offs invite blind spots
- Asynchronous
- No way to map the data journey

Those systems are not observable.

Observability and multi-party computation

Best of breed systems

Collaborate without compromising on safety and integrity

- Hyperledger Fabric - 2015
- Quorum - 2017
- Hyperledger Besu - 2019

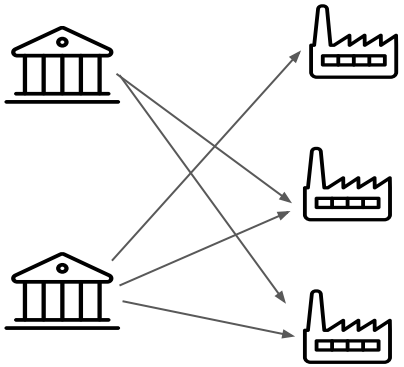
Metrics, traces, logs and ledgers

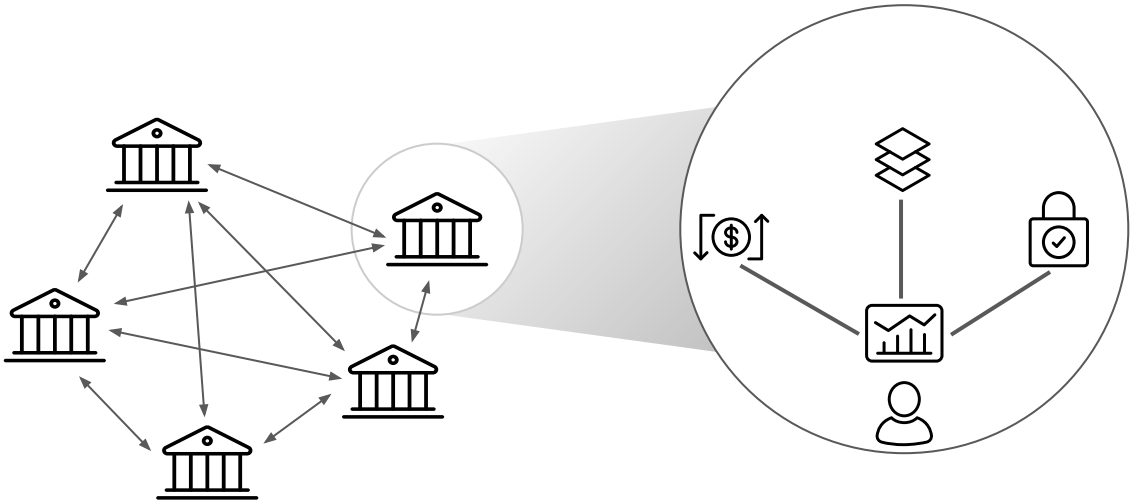
- Environment metrics
  - Machine metrics
  - Network metrics
  - Middleware metrics
- Transaction traces
  - Impacted state
  - Events
  - Driving cause and effect
- Logs
  - System logs
  - Application logs
  - Client logs
- Ledger data
  - Block and transaction data
  - Chaincode events
  - Mempool data
  - Consensus

Demo!

Consortium architecture

Consortiums





Demo!

Observability benefits

Good for tech

It's the new test in production

- Open all the black boxes
- Insights for your A/B testing
- Boost your continuous deployment

Better for business

A new way to corner data for better insights

- Collaboration between parties
- Fraud prevention
- Great auditing
- Faster time-to-market

Learn more

Do this next

- Get involved with OpenTelemetry
  - https://opentelemetry.io/
- Learn more about Hyperledger
  - https://www.hyperledger.org/
- Watch more webinars
  - https://www.cncf.io/webinars/how-opentelemetry-is-eating-the-world/
- Check out some cool code
  - https://github.com/open-telemetry/opentelemetry-collector/releases/tag/v0.5.0

Thank You!