

# Towards Cross-Layer Telemetry

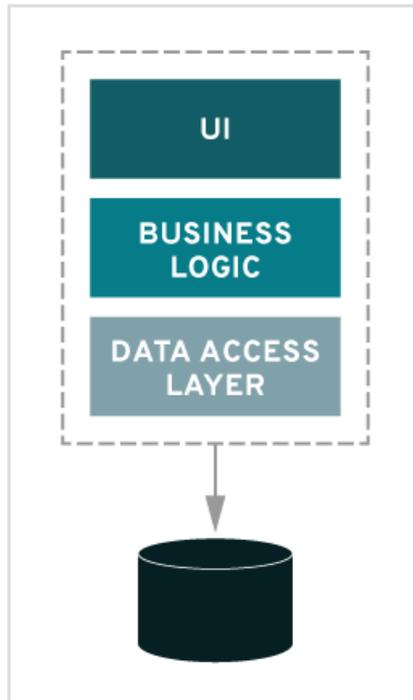
Justin Iurman, Frank Brockners, Benoit Donnet



ANRW'21, July 26-30 2021 (virtual)

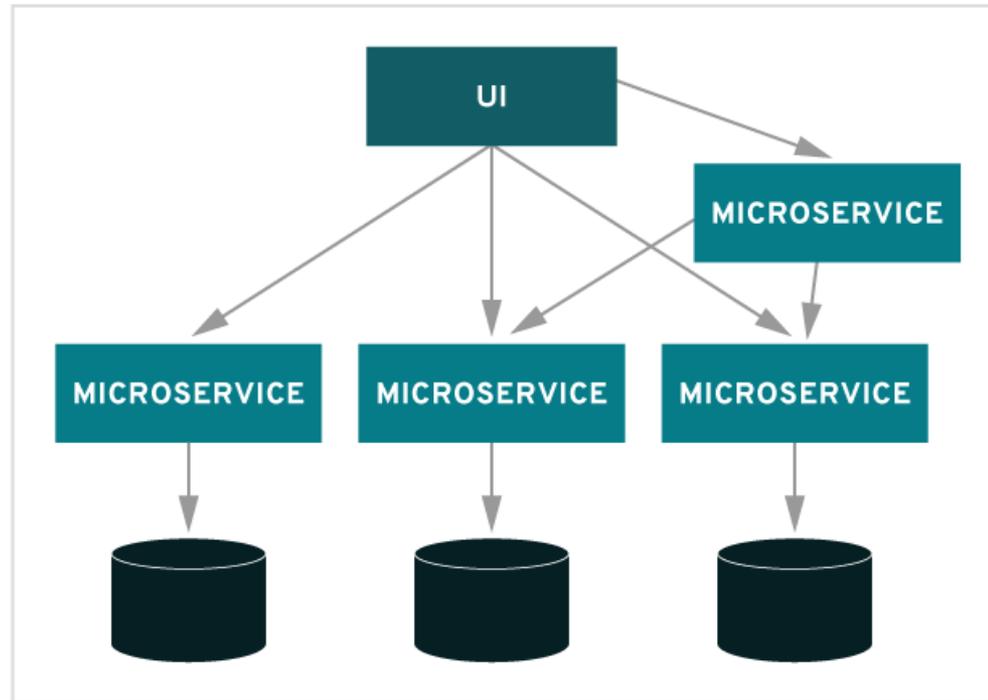
# Microservices

MONOLITHIC

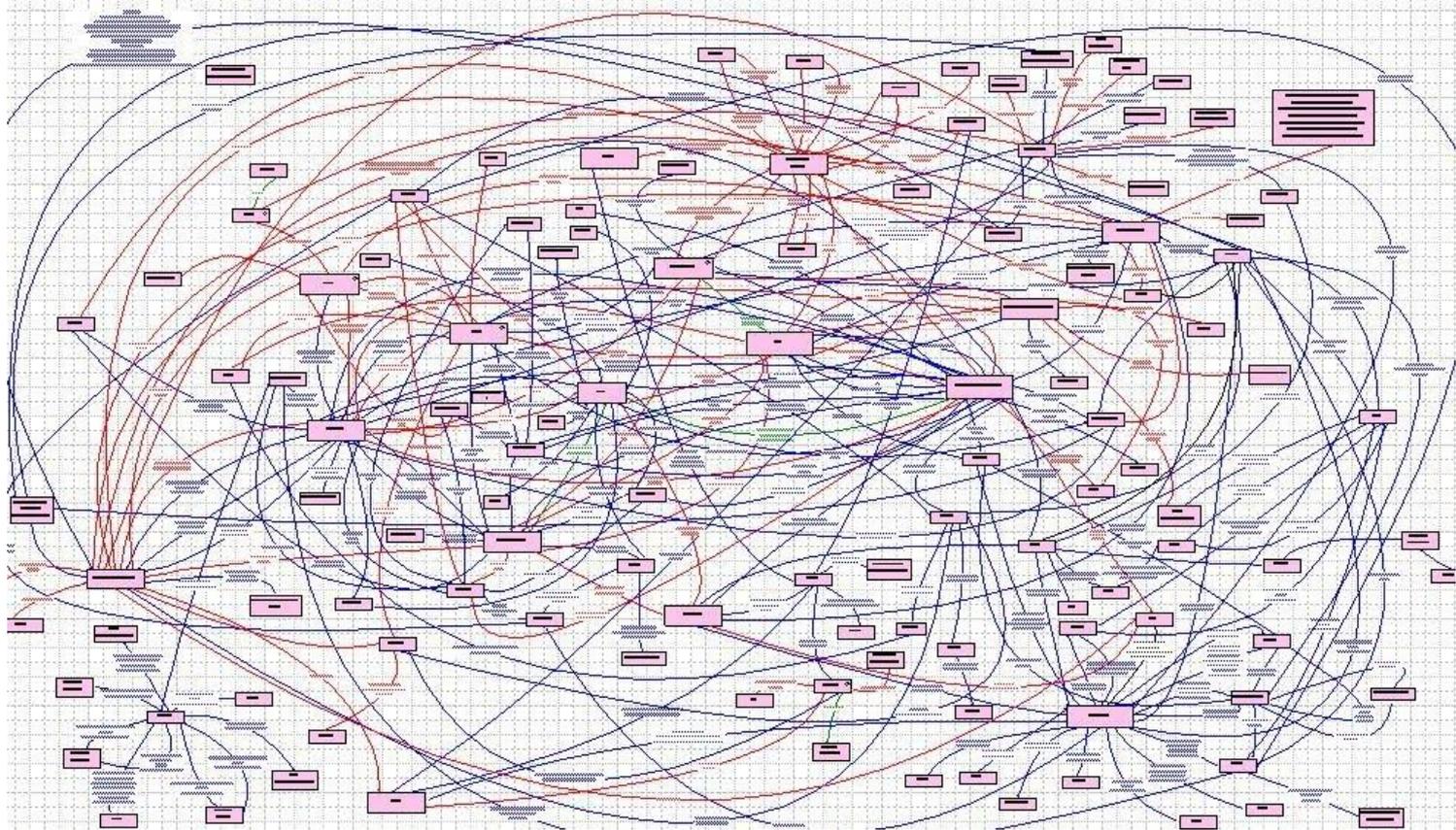


VS.

MICROSERVICES

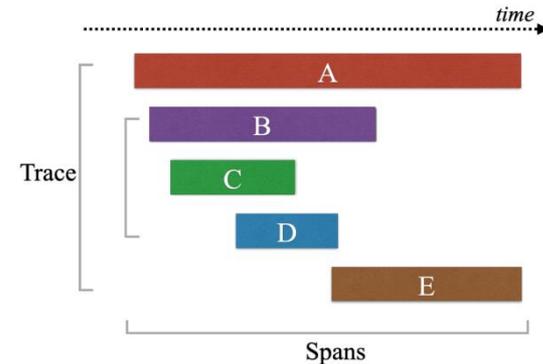


# Still confident to debug this one?



# Application Performance Management

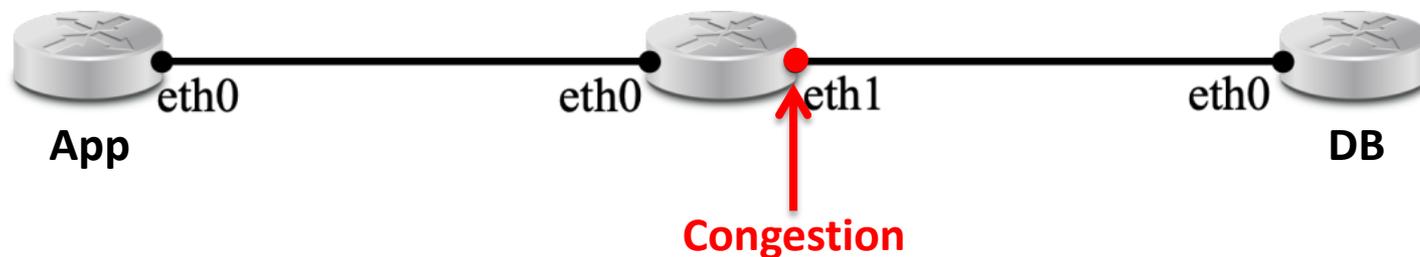
- Distributed tracing tools (e.g. Jaeger)
- Very useful for (spaghetti) microservices



# Application Performance Management

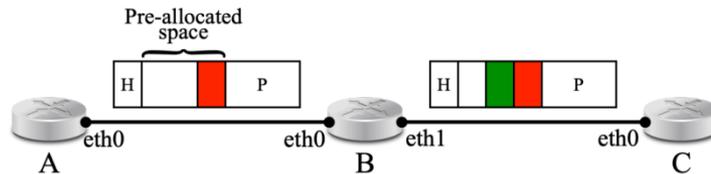
- BUT... what if my DB lookup is slow?
  - Is it the app?
  - Is it the server, or the DB?
  - Is it a network issue?
  - Is it Chuck Norris' fault?

→ We don't know **why** or **where** the problem *exactly* is, we only know it is *slow*.

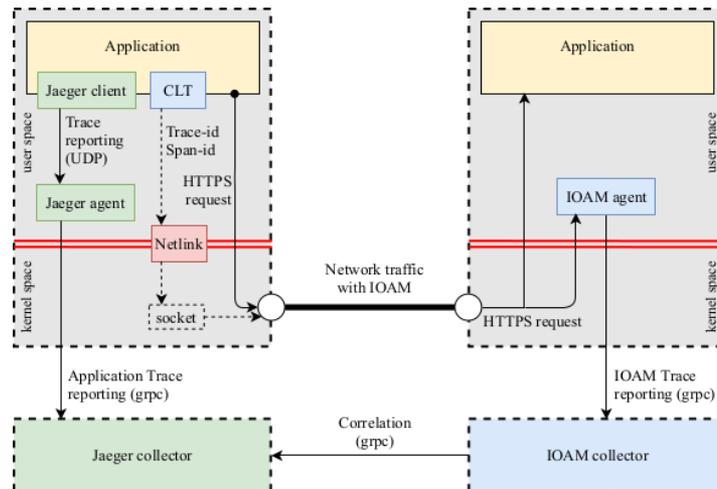


# Cross-Layer Telemetry

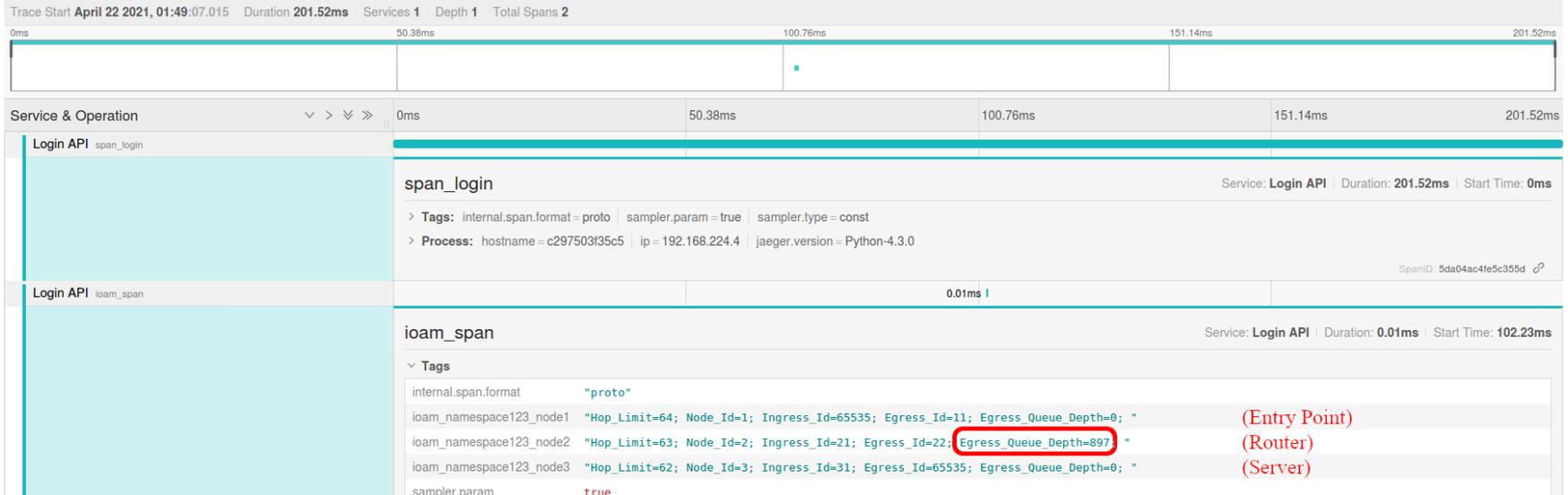
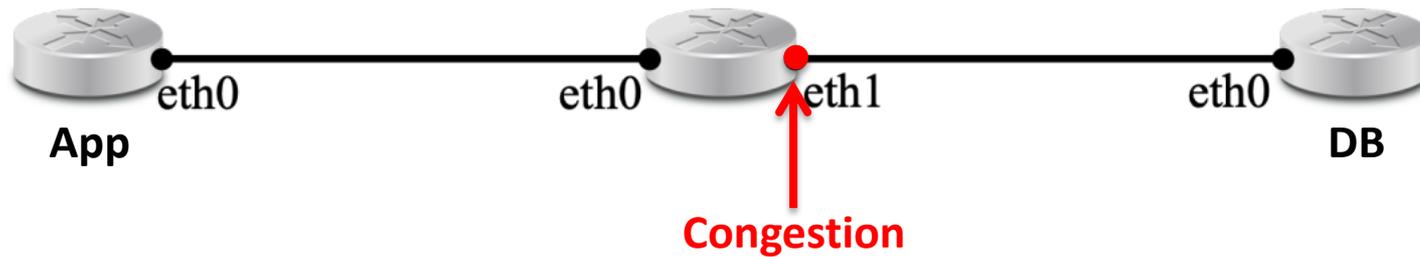
- Solution: include L3-L4 in tracing tools visibility
- (1) Find a way to correlate APM (e.g. Jaeger) traces with network traffic
  - use IOAM to carry both trace and span IDs in packets



- (2) Find *when* and *how* these IDs should be injected
  - (when?) at socket creation vs when sending data
  - (how?) send\* API modification vs new syscall vs netlink call



# Cross-Layer Telemetry



# Conclusion

- Hot topic in the industry
- CLT solves challenges in the (microservice) tracing world
- Next steps to improve it
- Github: <https://github.com/iurmanj/cross-layer-telemetry> (+ demo video)

# Thank you!

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