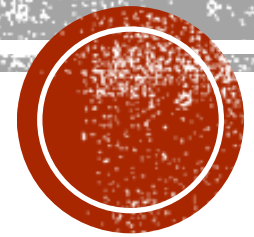
END-TO-END TRACING, TRACING KUBERNETES



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Taiga: https://tree.taiga.io/project/msdisme-2018-bucs528-template-7/

GitHub: https://github.com/BU-NU-CLOUD-SP18/Cross-Layer-Tracing-in-Kubernetes

REVIEW

- Kubernetes: Kubernetes is a orchestration system serves on cluster of computers.
- Tracing: Trace events labeled by a unique request ID to know applications' behavior.
- Control plane: The decision making part of Kubernetes which decides what has to be done with each containers according to its description
- Data plane: enforces all of control plane's decisions, Allows applications to remain agnostic to their surroundings
- Jaeger: A distributed tracing system used for monitoring microservices-based distributed systems.
- HotRod: An application that can find out drivers nearby.

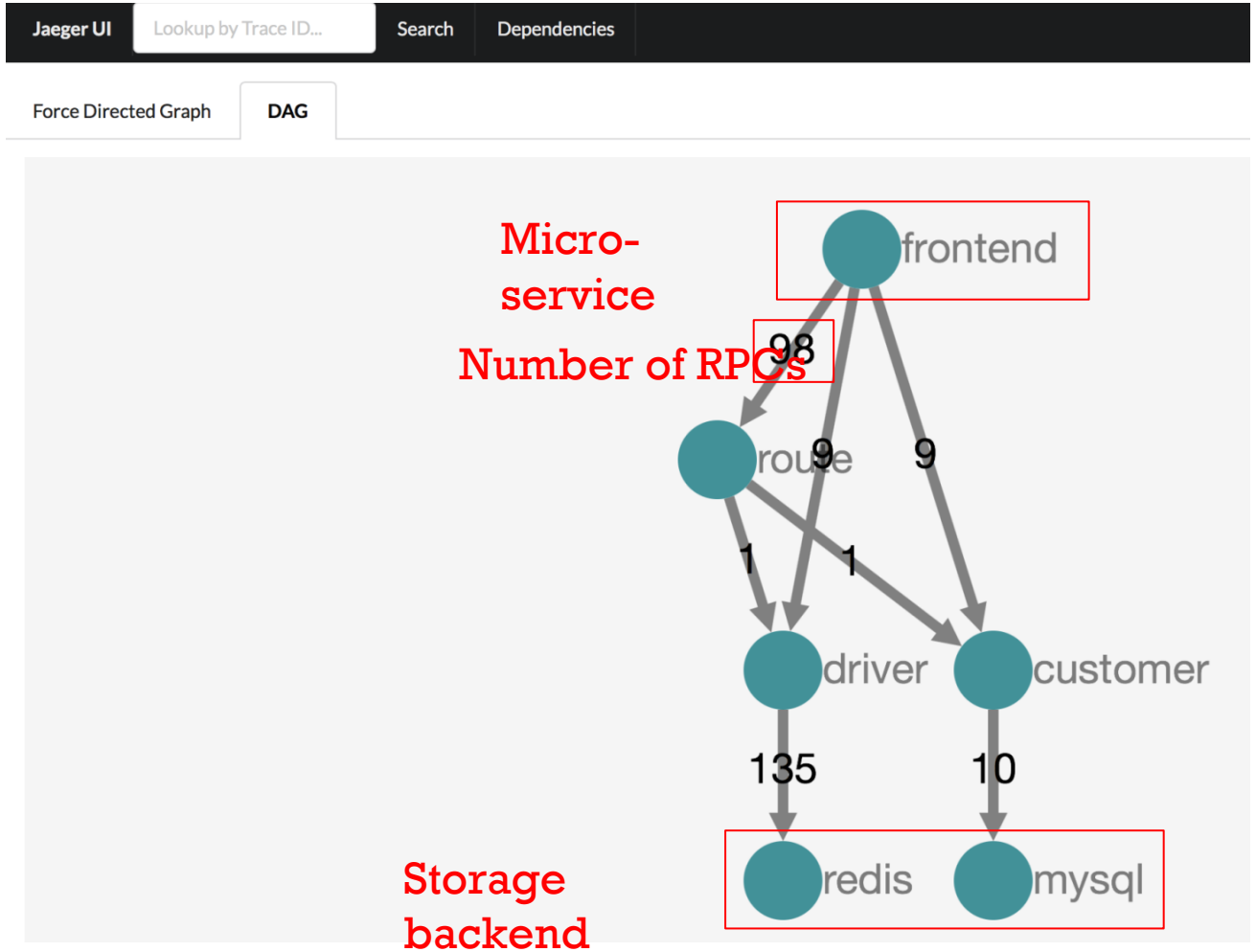
VISION & GOALS

- End-to-end tracing for app behavior on Kubernetes
- Identify issues (bottlenecks, latency issues etc.)
- Add in trace points to “data plane” features
- Make it scalable

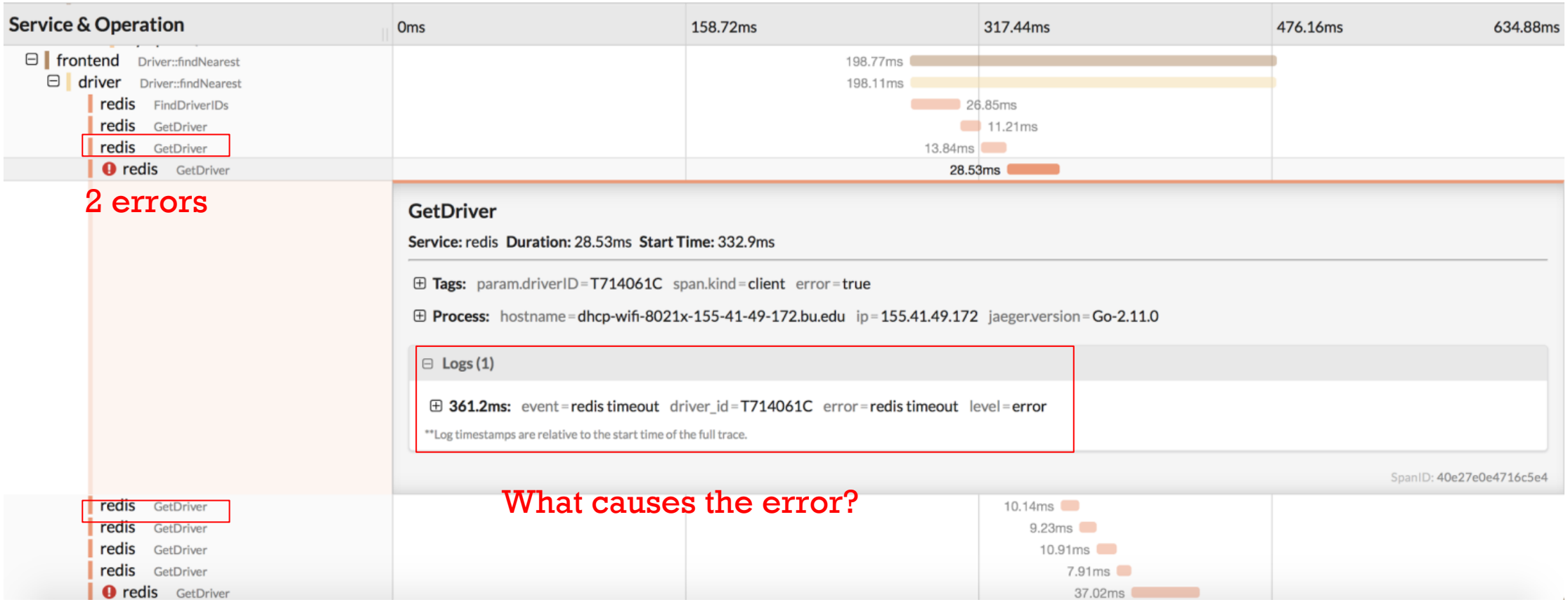
PREVIOUS WORK

- Read paper about Google Dapper
- Read paper about Facebook Canopy
- Run Hotrod locally and tracing with Jaeger

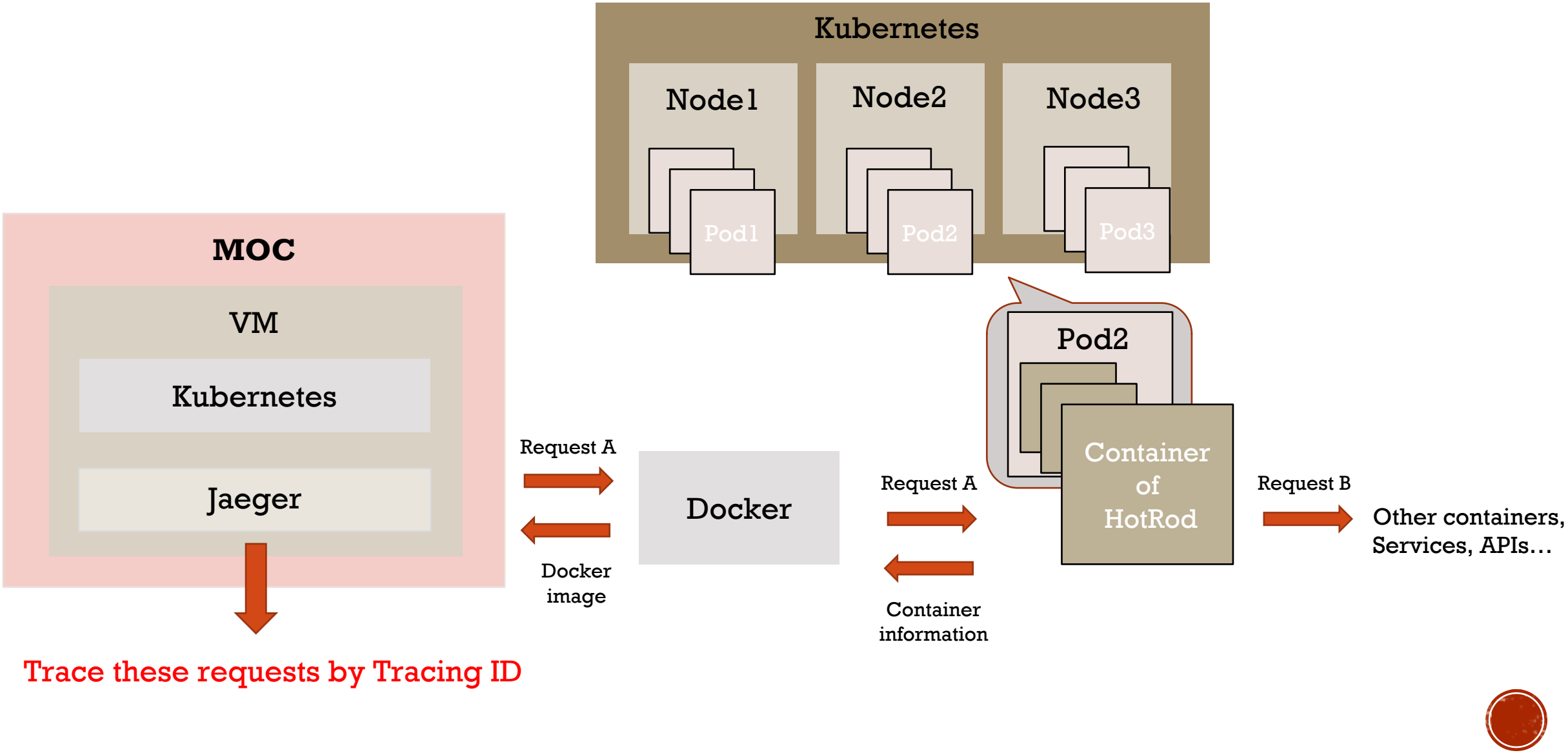
TRACING WITH JEAGER



TRACING WITH JEAGER

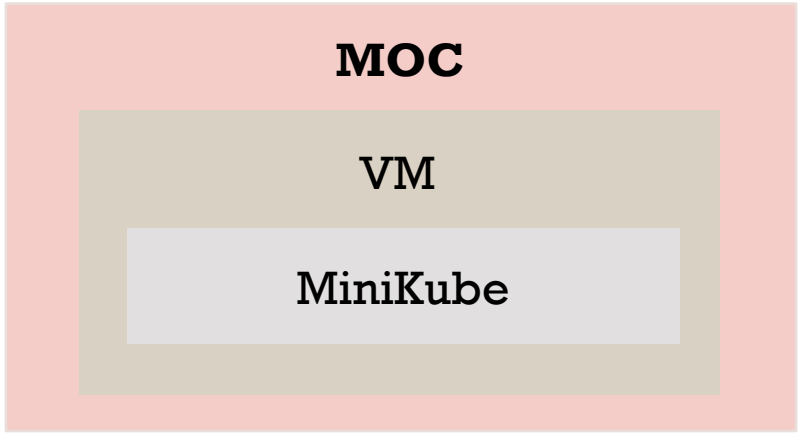


ARCHITECTURE



CURRENT WORK

- Deploy MiniKube on MOC to find local datapath



- Run a hello world program in Kubernetes and check the verbose log
- Using the log, Understand the Kubernetes' source code related to dataplane

RELEASE PLANNING

- One person
  - Deploy Kubernetes in the MOC(1 week)
  - Deploy HotROD into the Kubernetes (1 week)
  - Deploy Jaeger in Kubernetes and show that we can collect tracing events with Jaeger(2 weeks)
- Other people
  - Find Kubernetes datapath(core work, >=1 month)
    - Read source code
    - Deploy a logging tool
  - Add tracing points in datapath(core work, >=1 month)

THANK YOU!

Questions?