Microservices Minus the Hype

How to Build and Why

Mark Heckler

Principal Technologist/Developer Advocate

Pivotal Software, Inc.

www.thehecklers.org

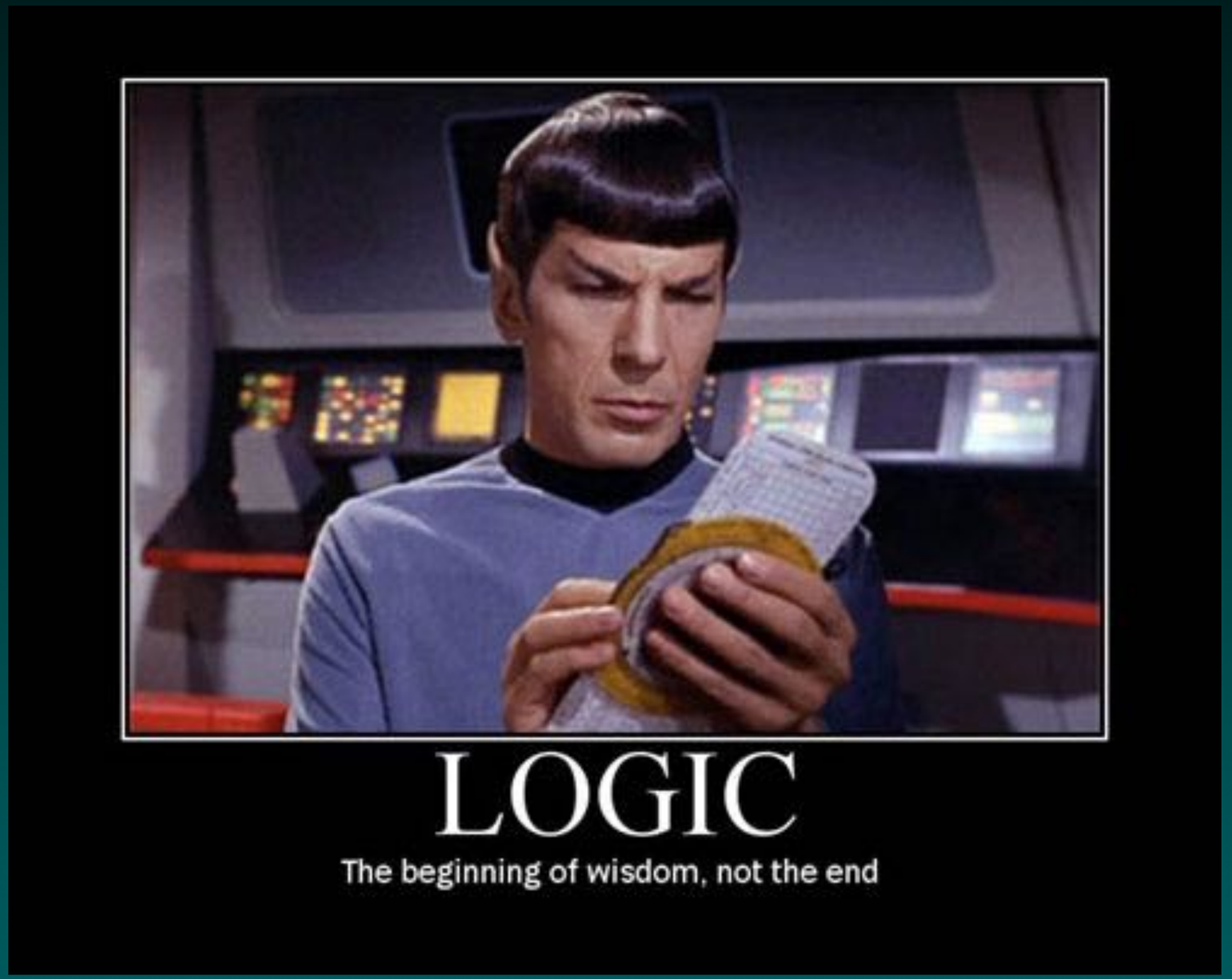
mark@thehecklers.org

@MkHeck

Who am I?

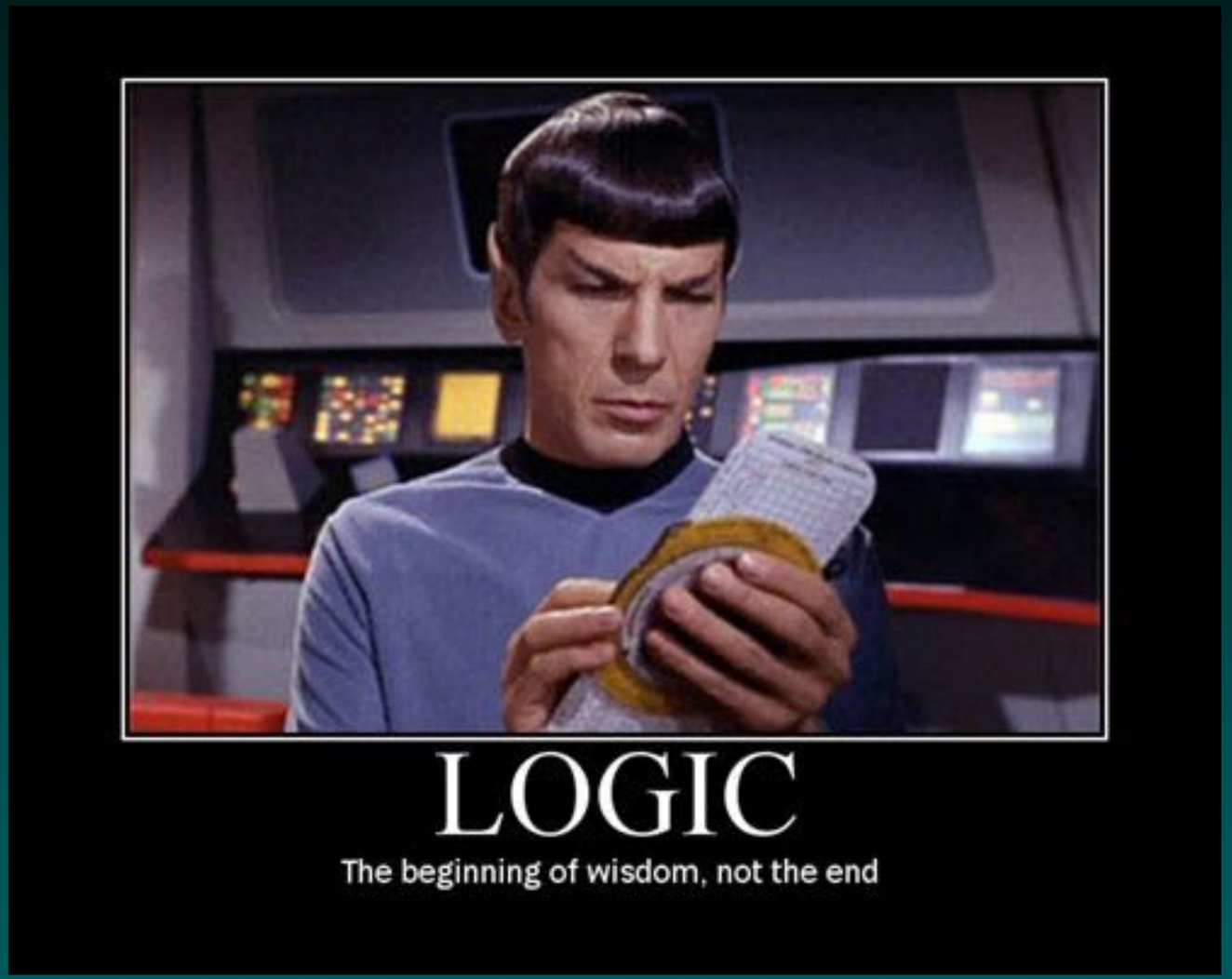
- Author
- Speaker
- DEVELOPER
- Java Champion
- Survivor of many monoliths
- Seeker of a better way

The Goal: This



The Goal: Not This

The Goal: This



The Goal: Not This

THE Goal

Alternative(s)

Monoliths

That’s one big app!

Characteristics

- Single logical executable
- Shared data across functionality
- Control flow change impossible
- Non-granular app modification
- Non-granular scaling

- Attachment to language, platform
- Low cohesion, high coupling
- Failure of part == failure of whole*
- Mental model “complete” for smaller systems

Microservices

Assemble to make
“more than meets the eye”

Characteristics

- Independently deployable & executable
- Focused services
- Control flow changes trivial
- Non-disruptive change
- Effective & efficient scaling
- Polyglot “Plus”
- High cohesion, low coupling
- Failure is isolated
- Manageable mental model

WAIT!

Isn’t this just warmed-over SOA?

No

SOA vs. Microservices

- Conceptually similar
- Implementation draws clear distinction

"...the microservice style is very similar to what some advocates of SOA have been in favor of. The problem, however, is that SOA means too many different things, and that most of the time that we come across something called 'SOA' it's significantly different to the style we're describing here, usually due to a focus on ESBs used to integrate monolithic applications.

...

This common manifestation of SOA has led some microservice advocates to reject the SOA label entirely, although others consider microservices to be one form of SOA, perhaps service orientation done right. Either way, the fact that SOA means such different things means it's valuable to have a term that more crisply defines this architectural style."

Martin Fowler, "Microservices and SOA"

“Microservices is an evolution of SOA concepts that can provide additional benefits to adopting organizations. The benefit of Microservices over ‘traditional’ SOA is speed and agility for making changes, and the ability to make changes with less overall cost and less impact on the existing infrastructure. Microservices involves a different approach, as well as some different uses of technology.”

“The Great Debate: Microservices vs SOA”

SOA vs. Microservices

SOA

- MACROservices
- Heavier: SOAP + XML
- More coupled ceremony
- Dumb endpoints, smart pipes
- Orchestrated
- This makes it much more difficult to scale

Microservices

- More focused (but more of them)
- Lighter: REST, XML or JSON
- Low ceremony, low coupling
- Smart endpoints, dumb pipes
- Choreographed
- Built to scale

Microservice Gains/Losses

Microservices Architecture Gains

- Scalability
- Efficiency
- Effectiveness
- Velocity
- Optimization
- Interoperability
- Availability
- Independence
- Cost savings
- Increased revenue
- Less complexity*
- Control

Microservices Architecture Losses

- Greater complexity (macro level)
- Better architects needed
- Single data repository for organization
- Change...seriously
- Greater complexity - it bears repeating

The Play-Doh™ Principle Applies

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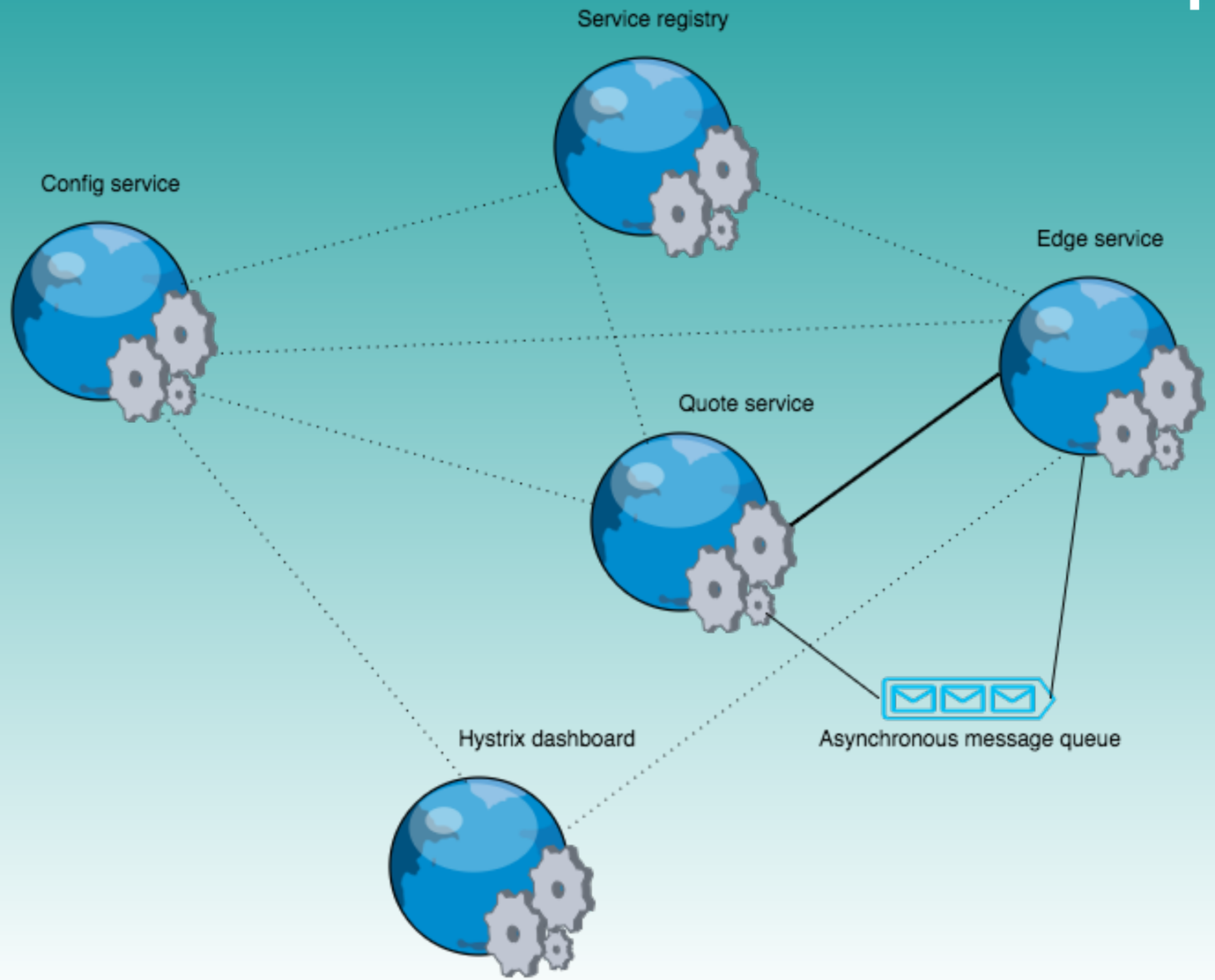
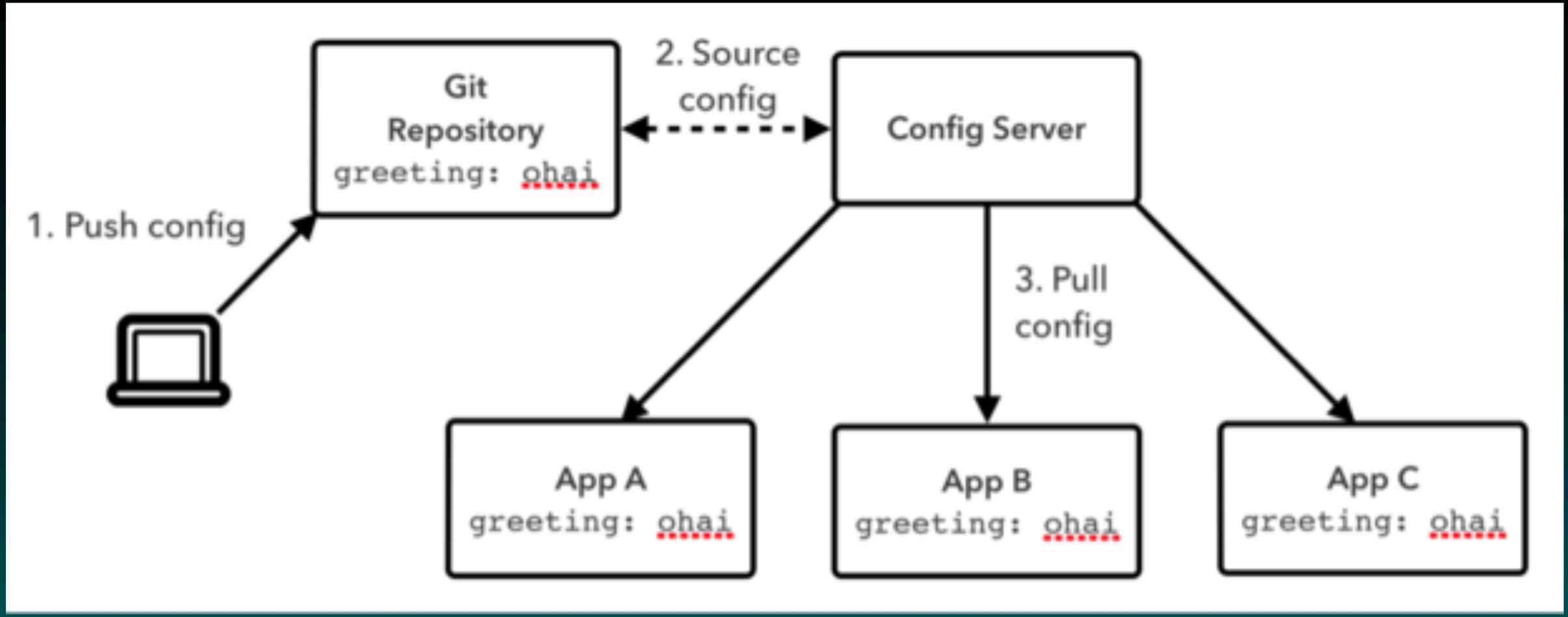
It's always easier to combine small, self-contained code or data than it is to decouple code or to parse data.

What Do I Need to Execute?

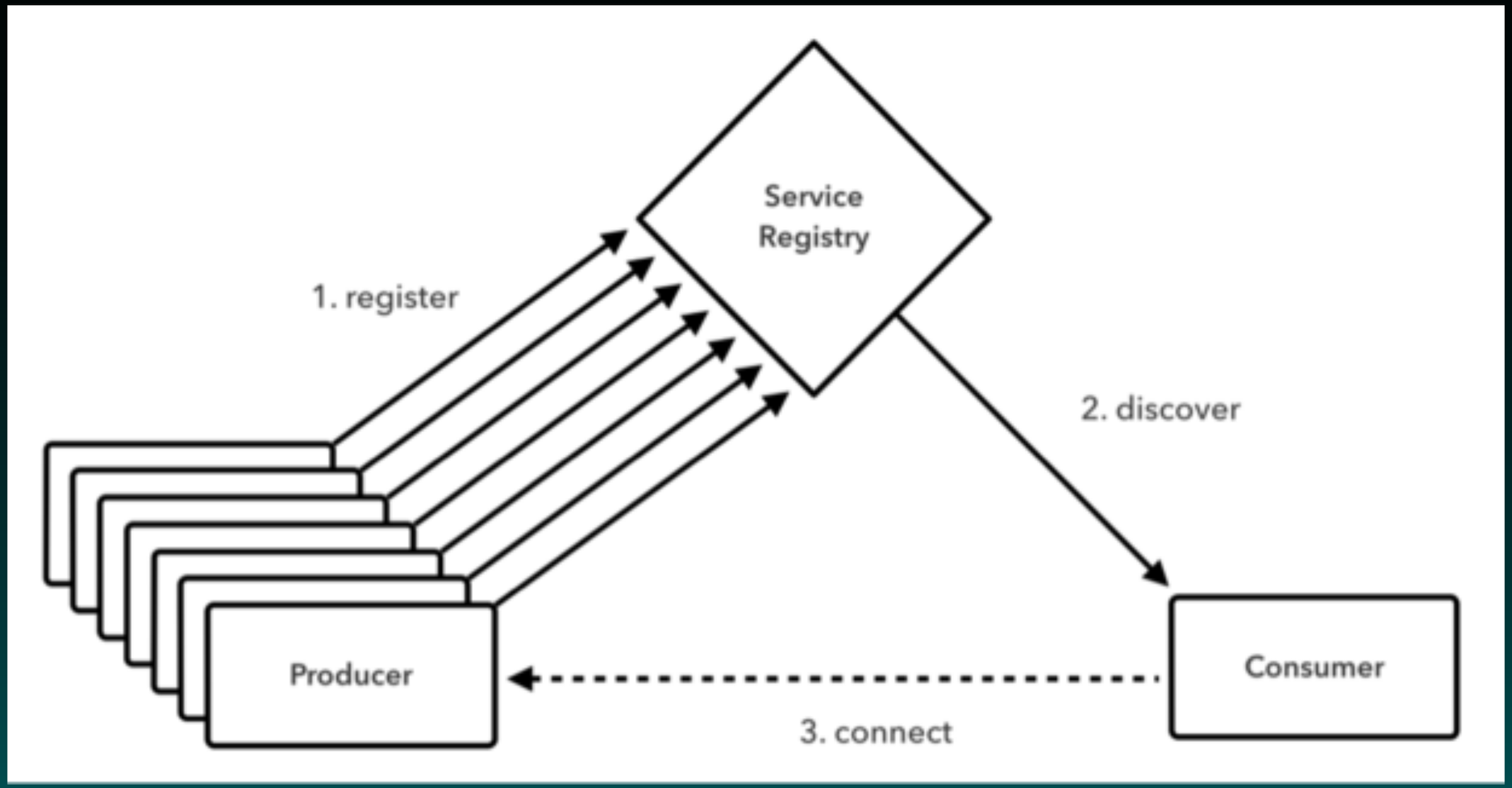
Microservices: An Example



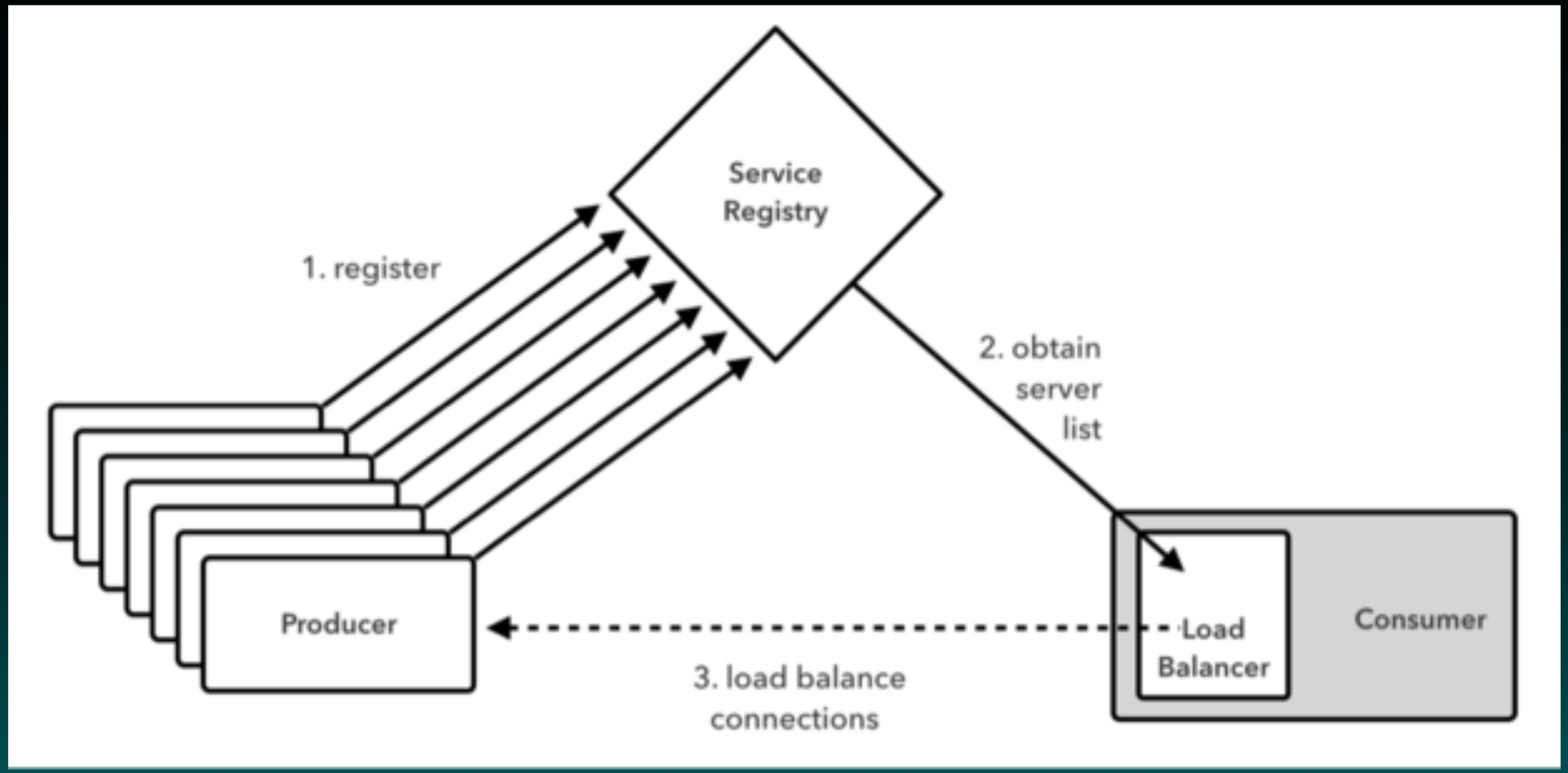
Config Service



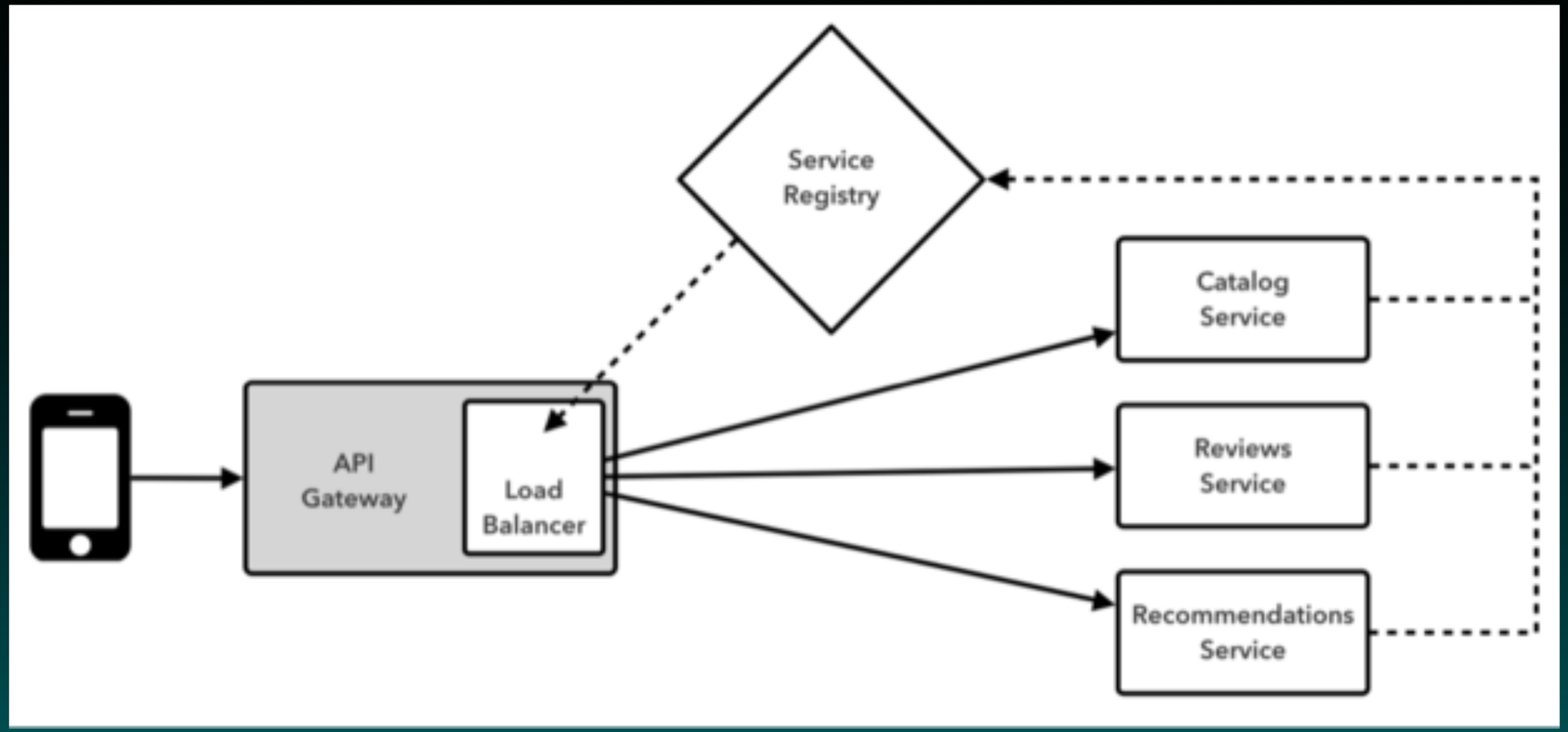
Service Discovery



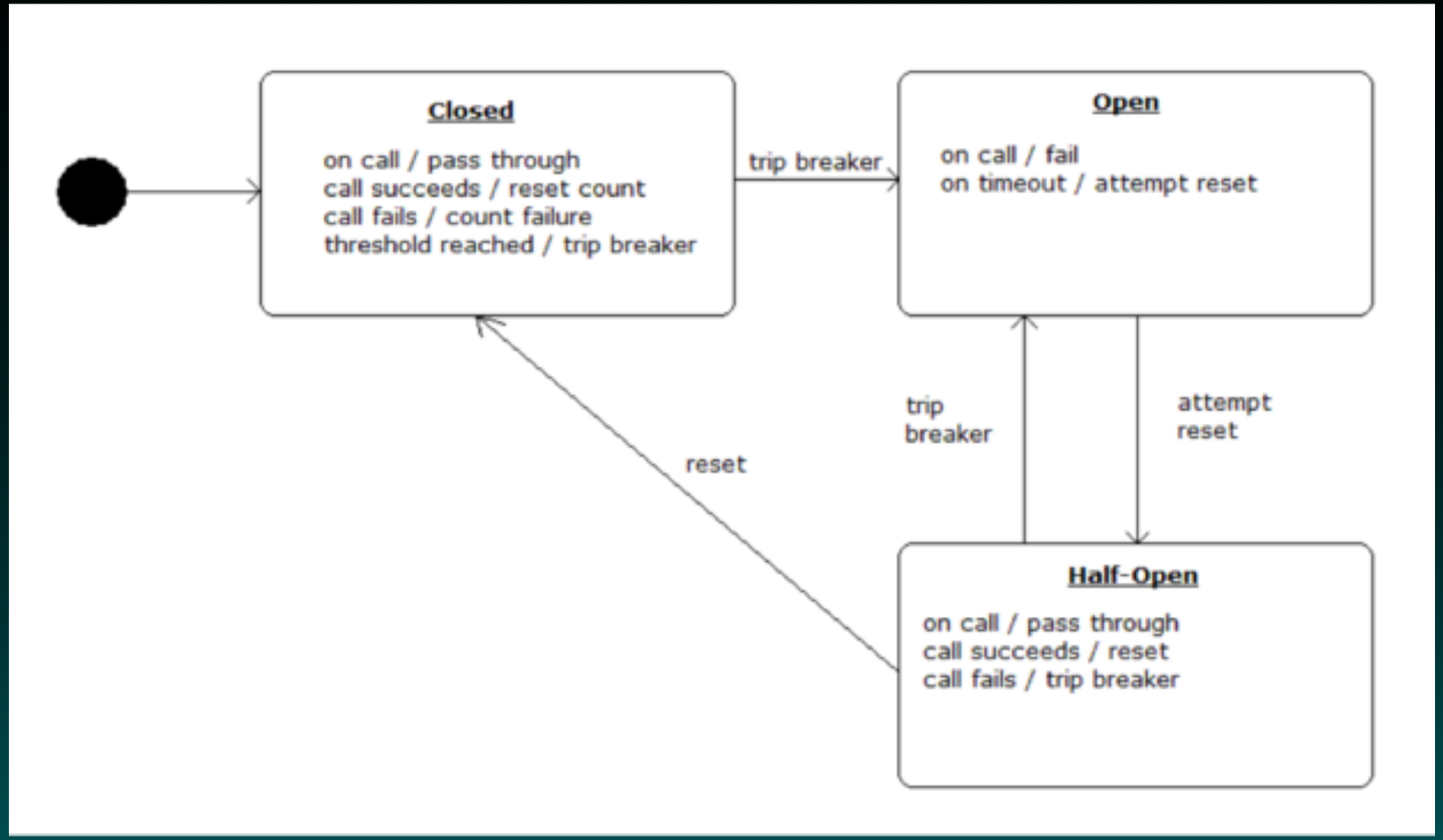
Client-side Load Balancer



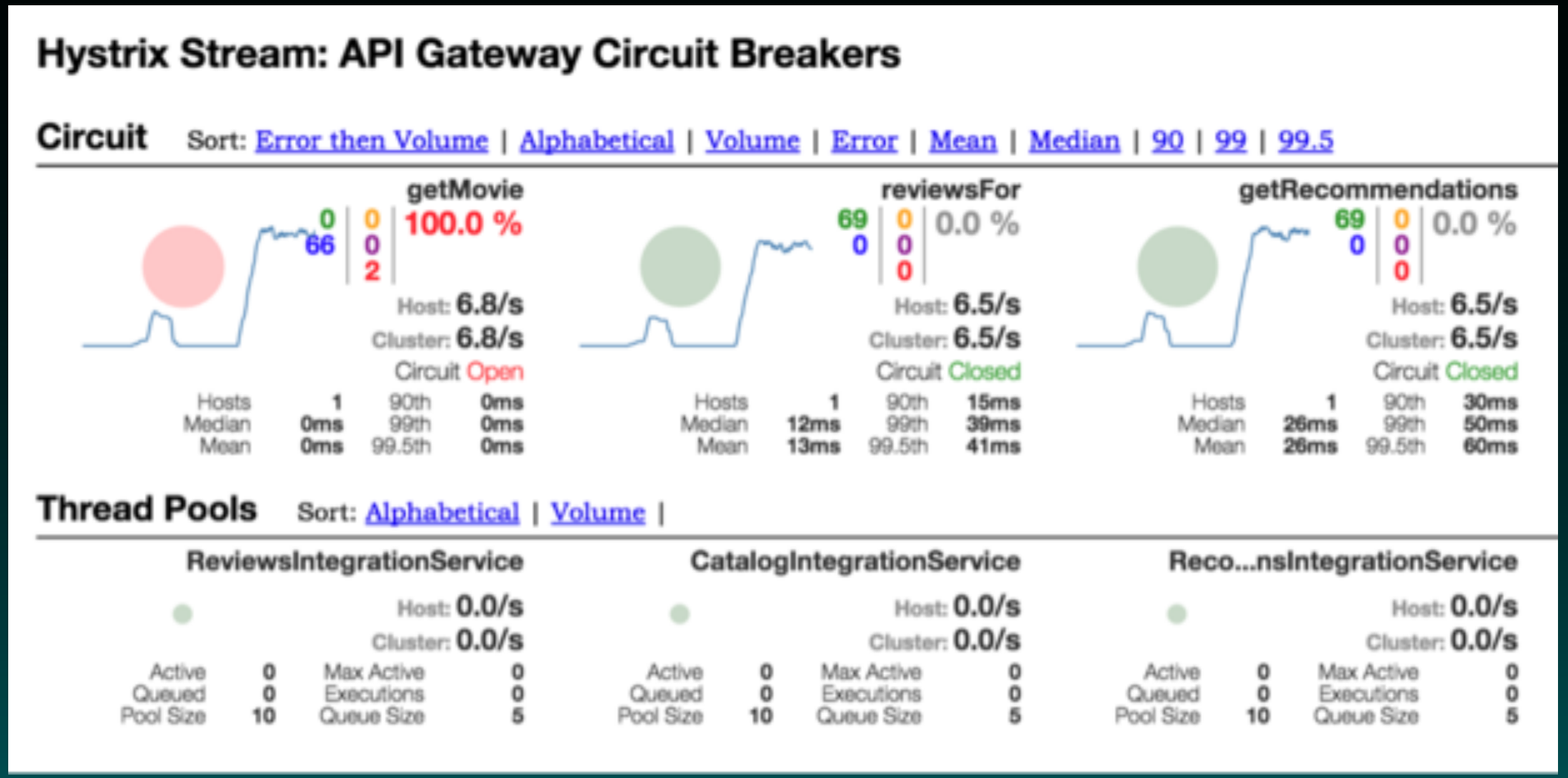
Intelligent Router

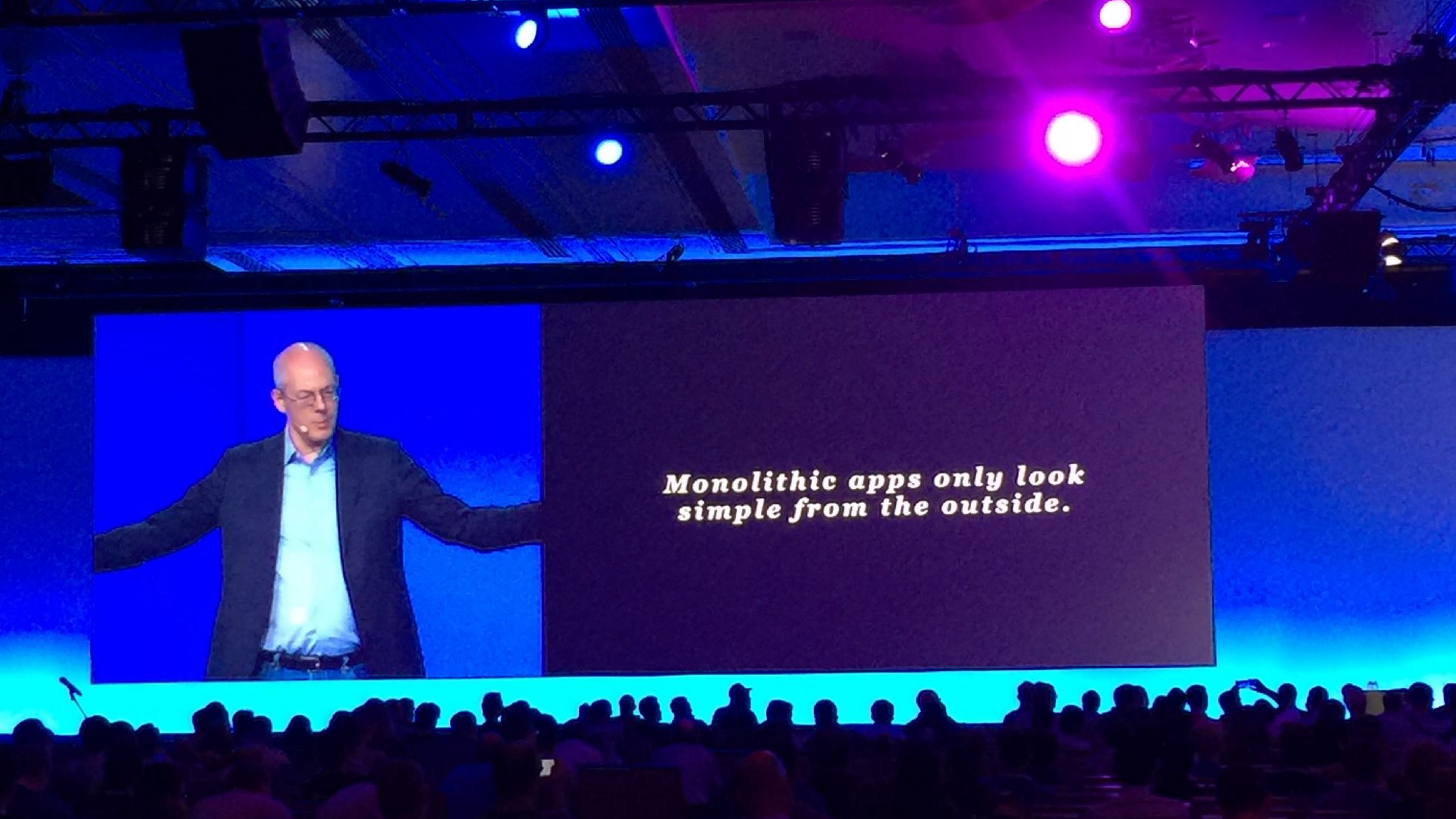


Circuit Breaker



Circuit Breaker Dashboard




Monolithic apps only look
simple from the outside.


Microservices enforce
separation that makes
them less complicated.

Thank You for Participating!

- Helpful Links
  - 12 Factor apps: 12factor.net
  - Spring Initializr: start.spring.io
  - Spring Cloud OSS: http://projects.spring.io/spring-cloud/
  - Cloud Foundry: cloudfoundry.org
  - Pivotal Web Services: run.pivotal.io
  - Example projects: https://github.com/mkheck/LOTE

Keep the discussion going on Twitter!

@MkHeck