



Spring Cloud Gateway

Resilience and Security

Thomas Vitale
GOTO Copenhagen
Nov 9th, 2021

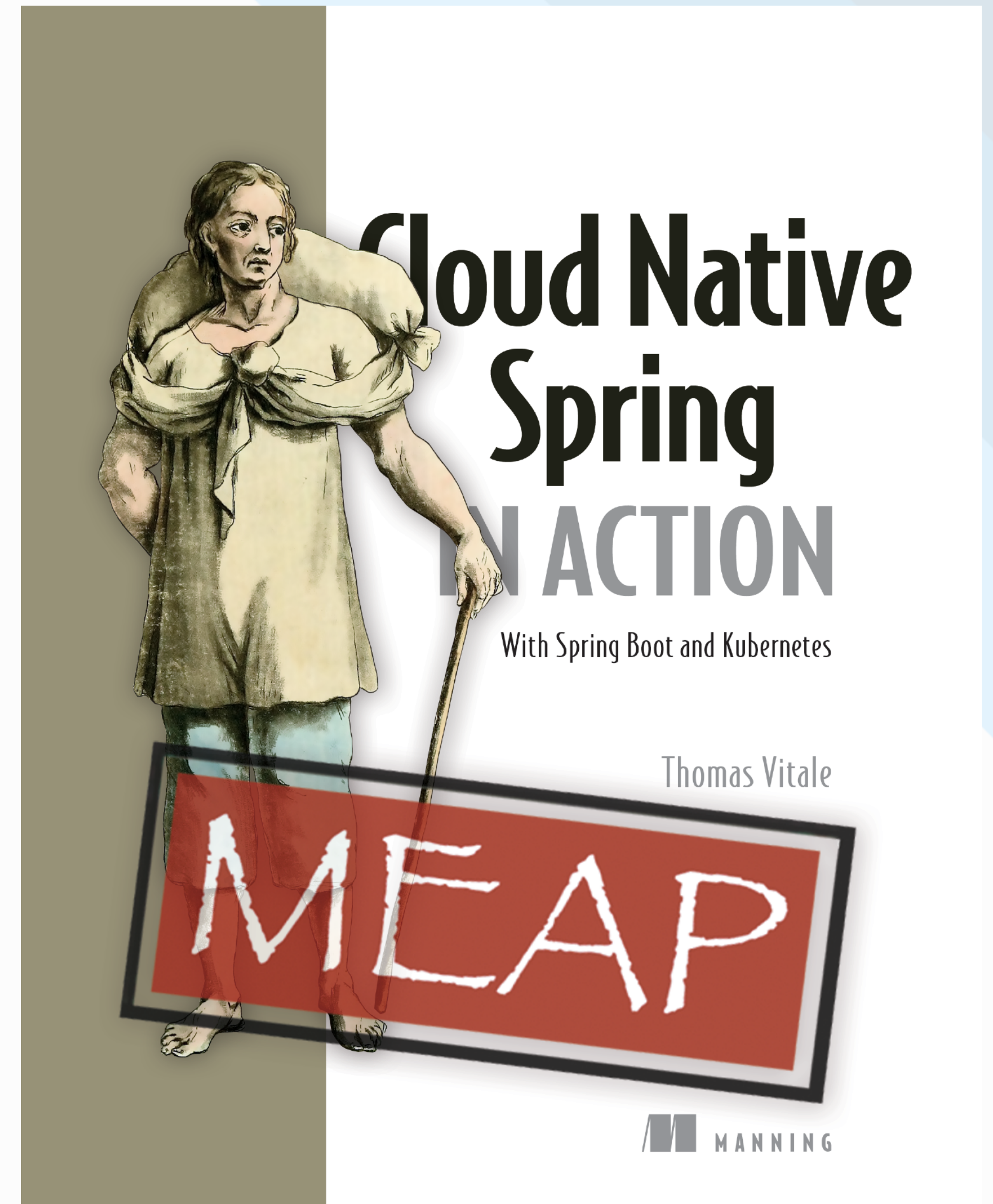
@vitaletomas

About Me

Thomas Vitale

- **Senior Software Engineer** at Systematic, Denmark.
- Author of “**Cloud Native Spring in Action**” (Manning).
- **Spring Security** and **Spring Cloud** contributor.

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API Gateway

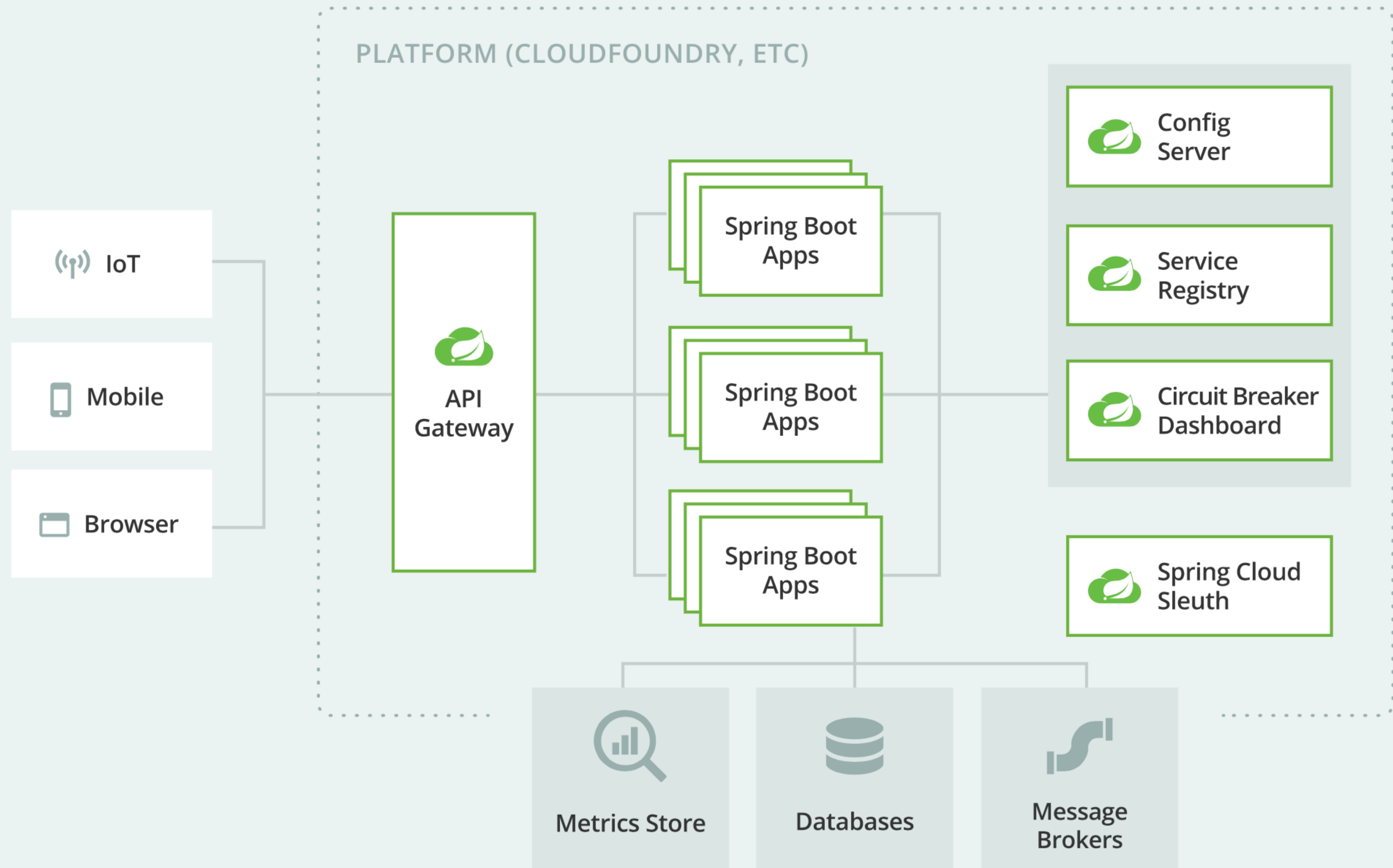
Scenarios

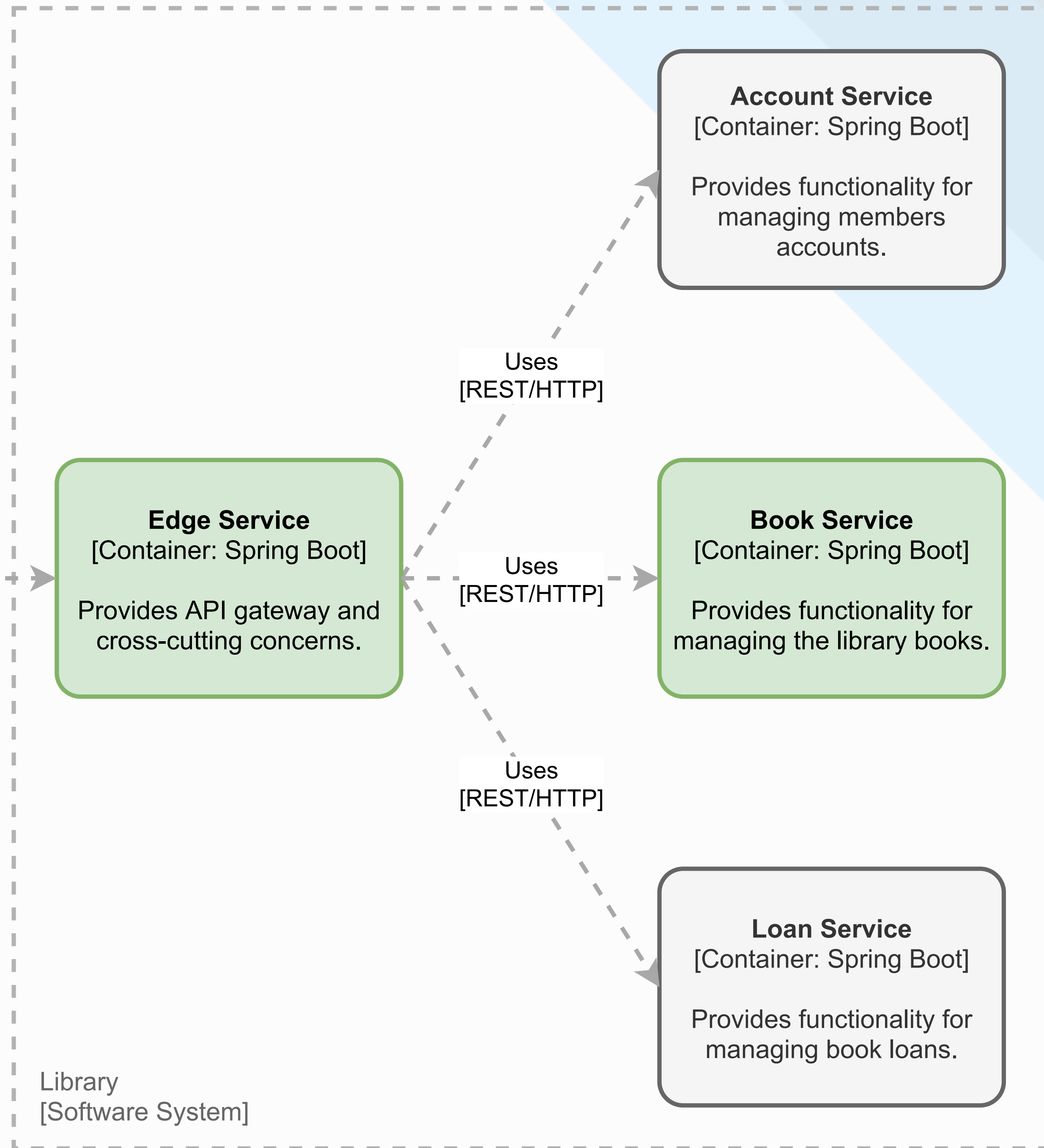
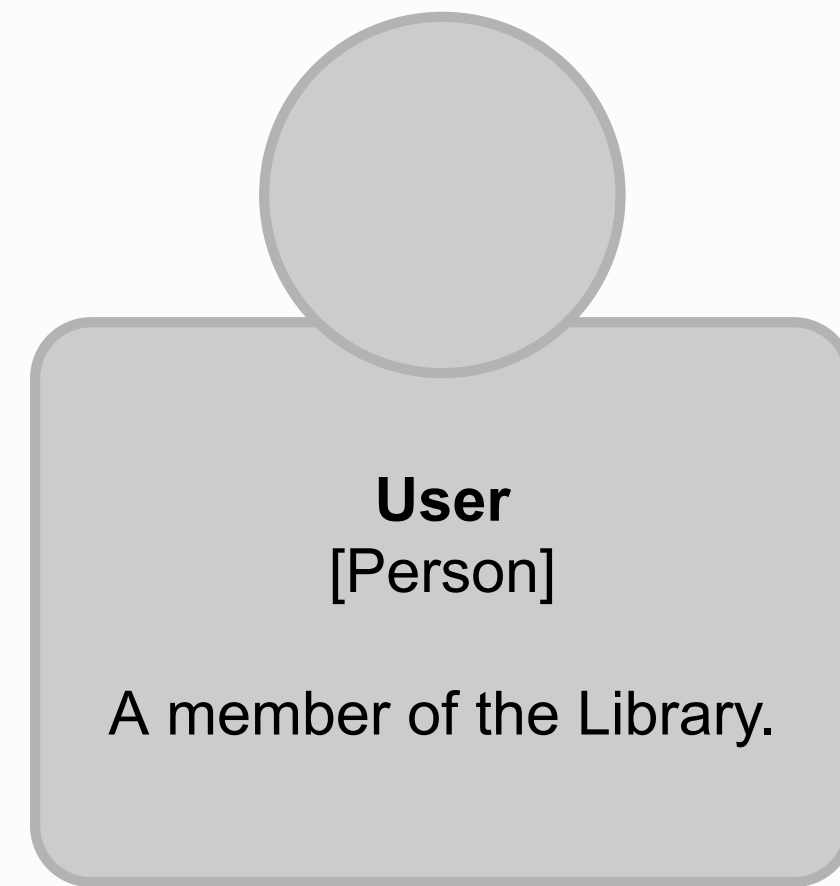
**Different clients need
different APIs**

Strangling the monolith

**Unified interface for
microservices**

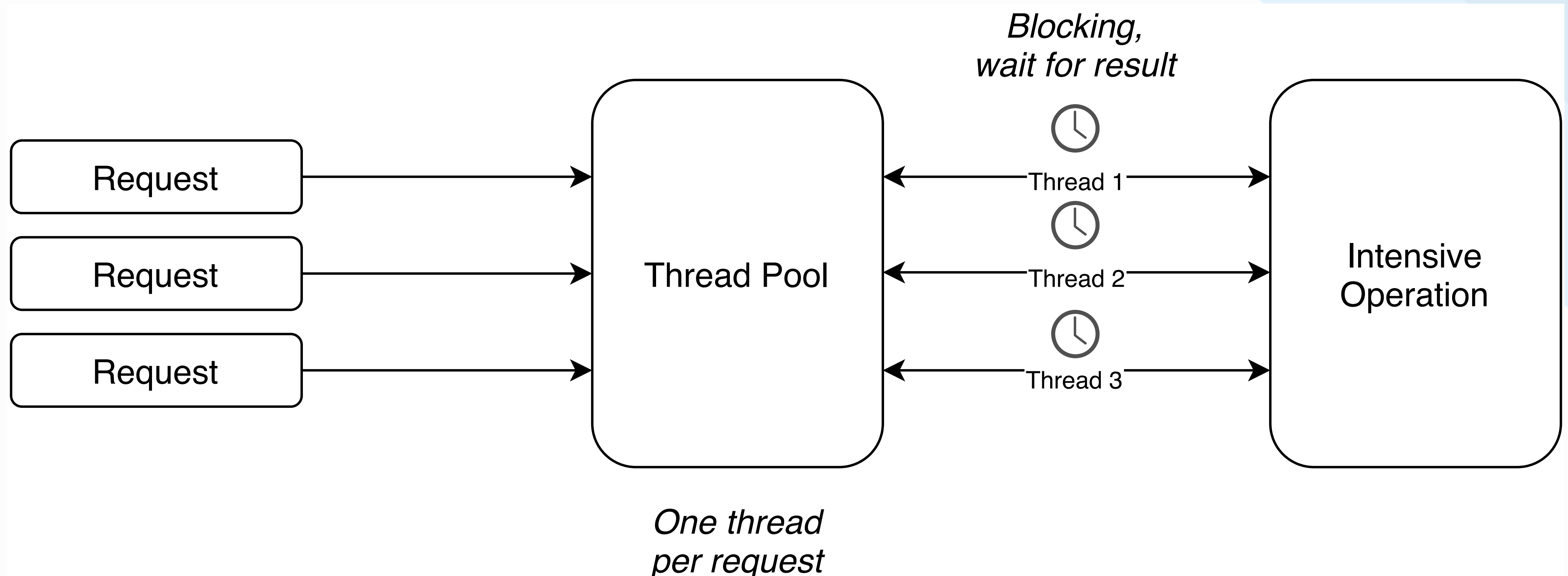
**Cross-cutting concerns in
distributed systems**



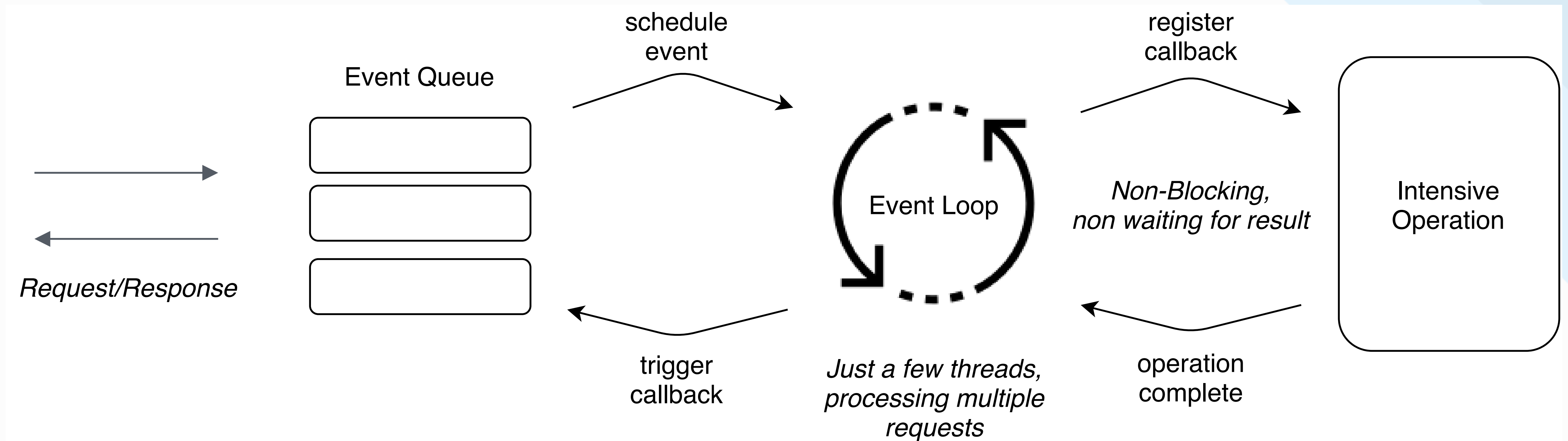


Reactive Spring

Thread-per-request

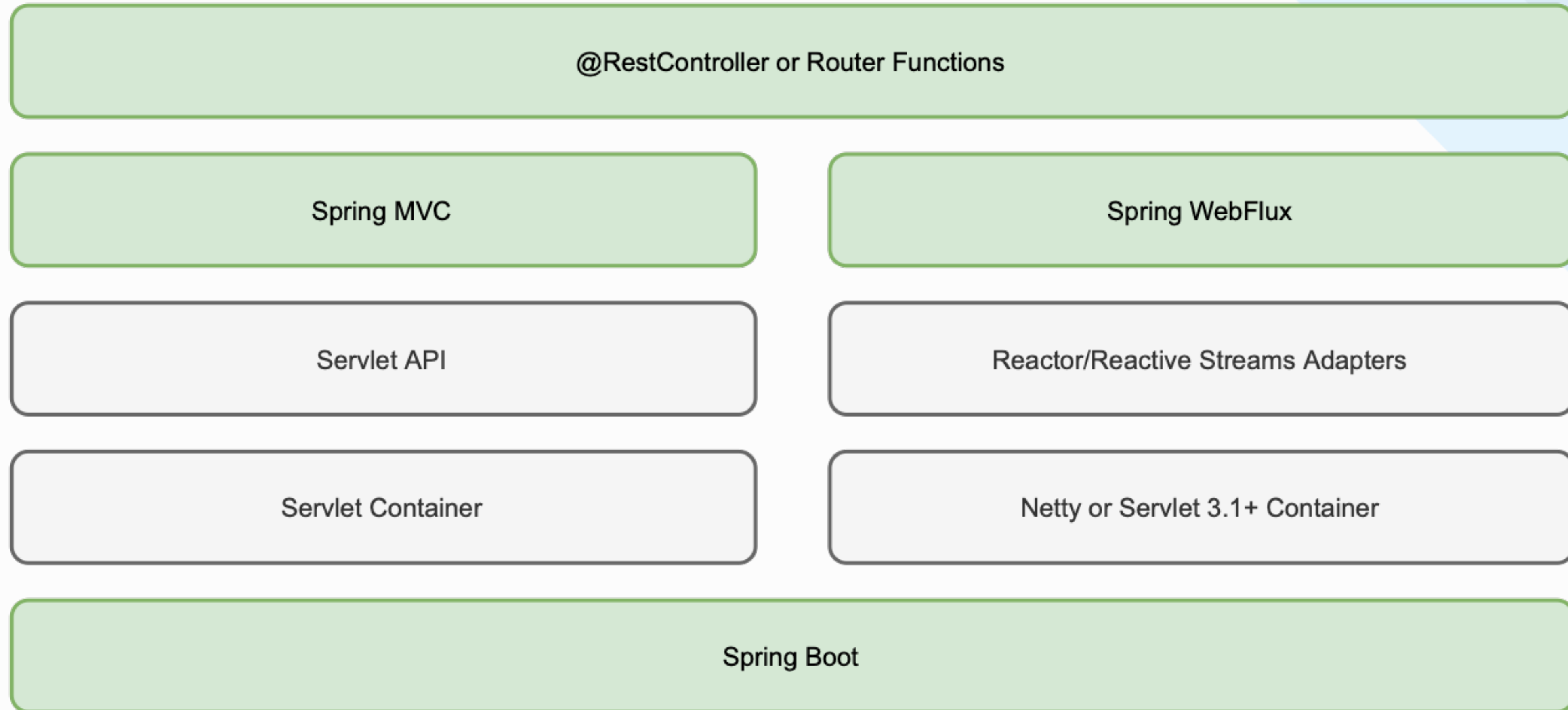


Event Loop



Servlet Stack

Synchronous and blocking I/O



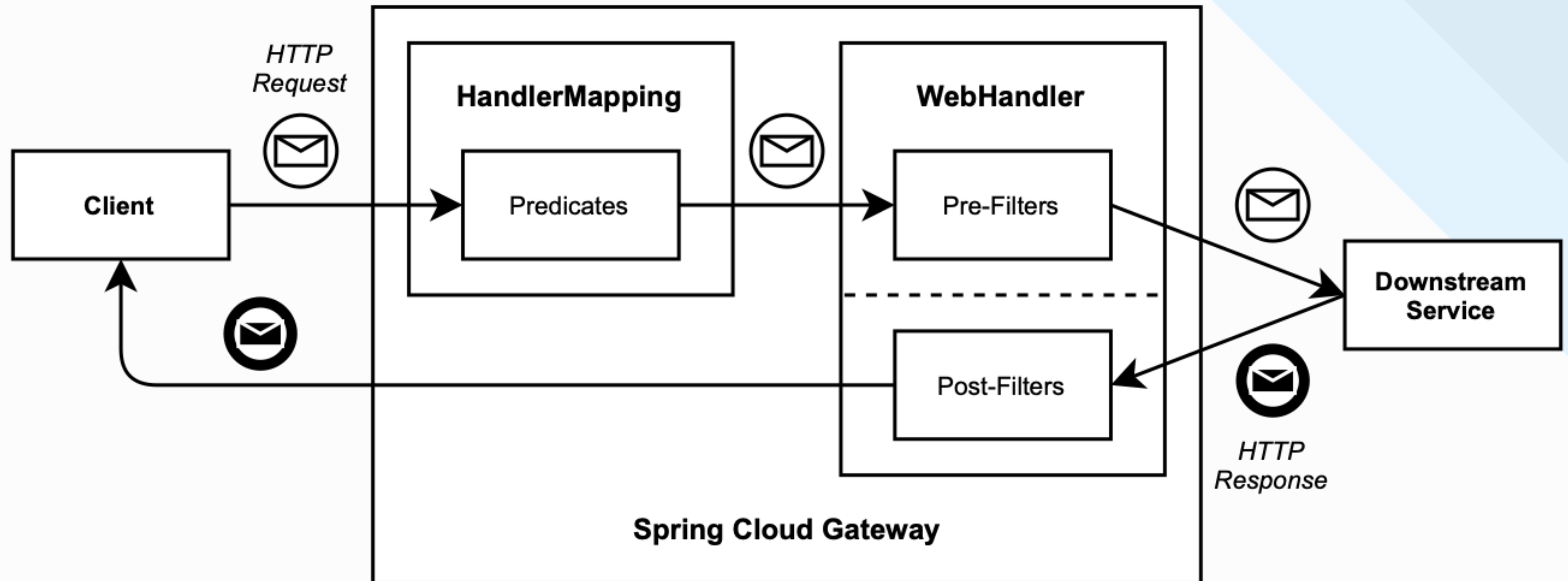
Reactive Stack

Asynchronous and non-blocking I/O

Routing



The Architecture



Resilience

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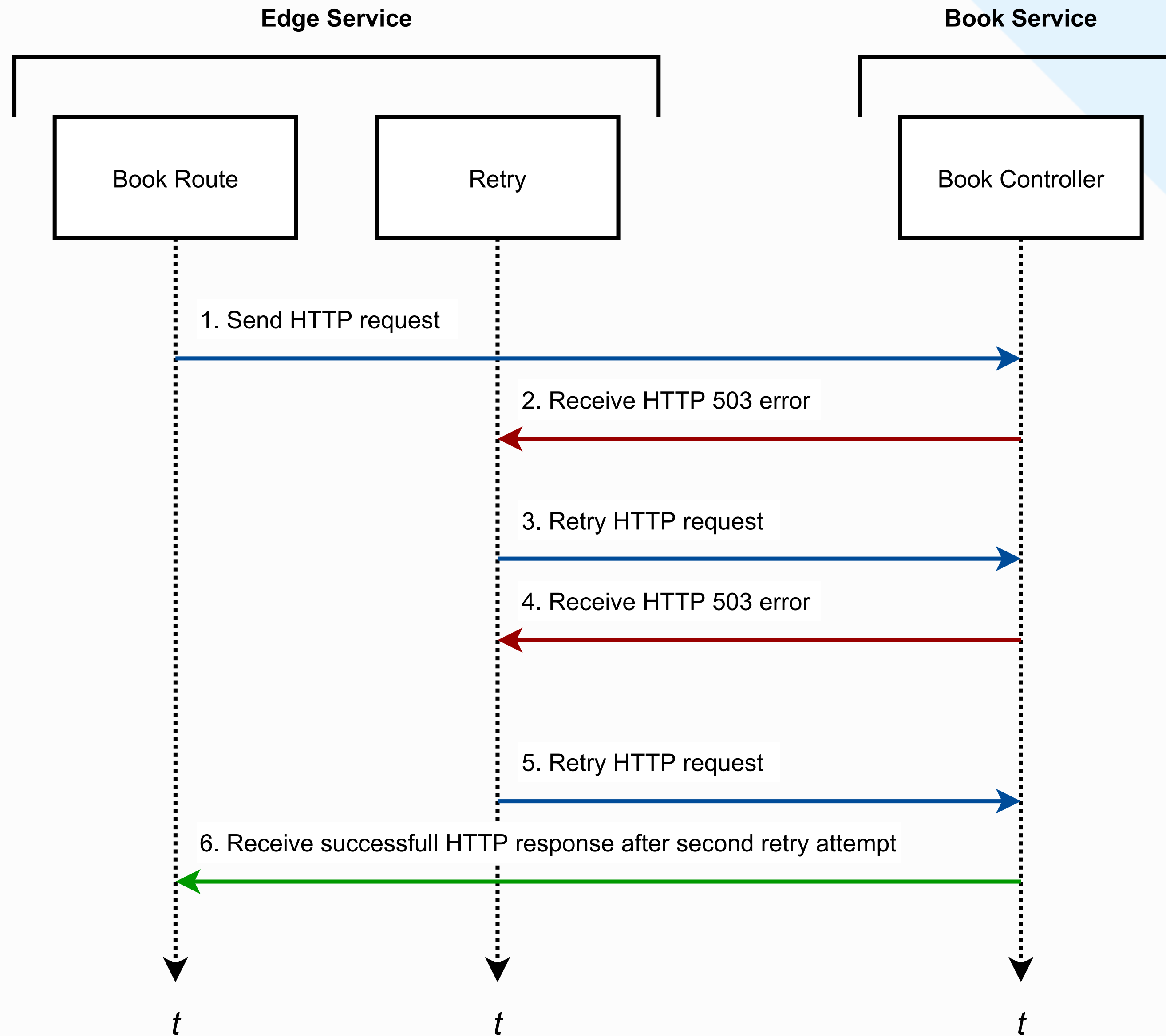
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Retry

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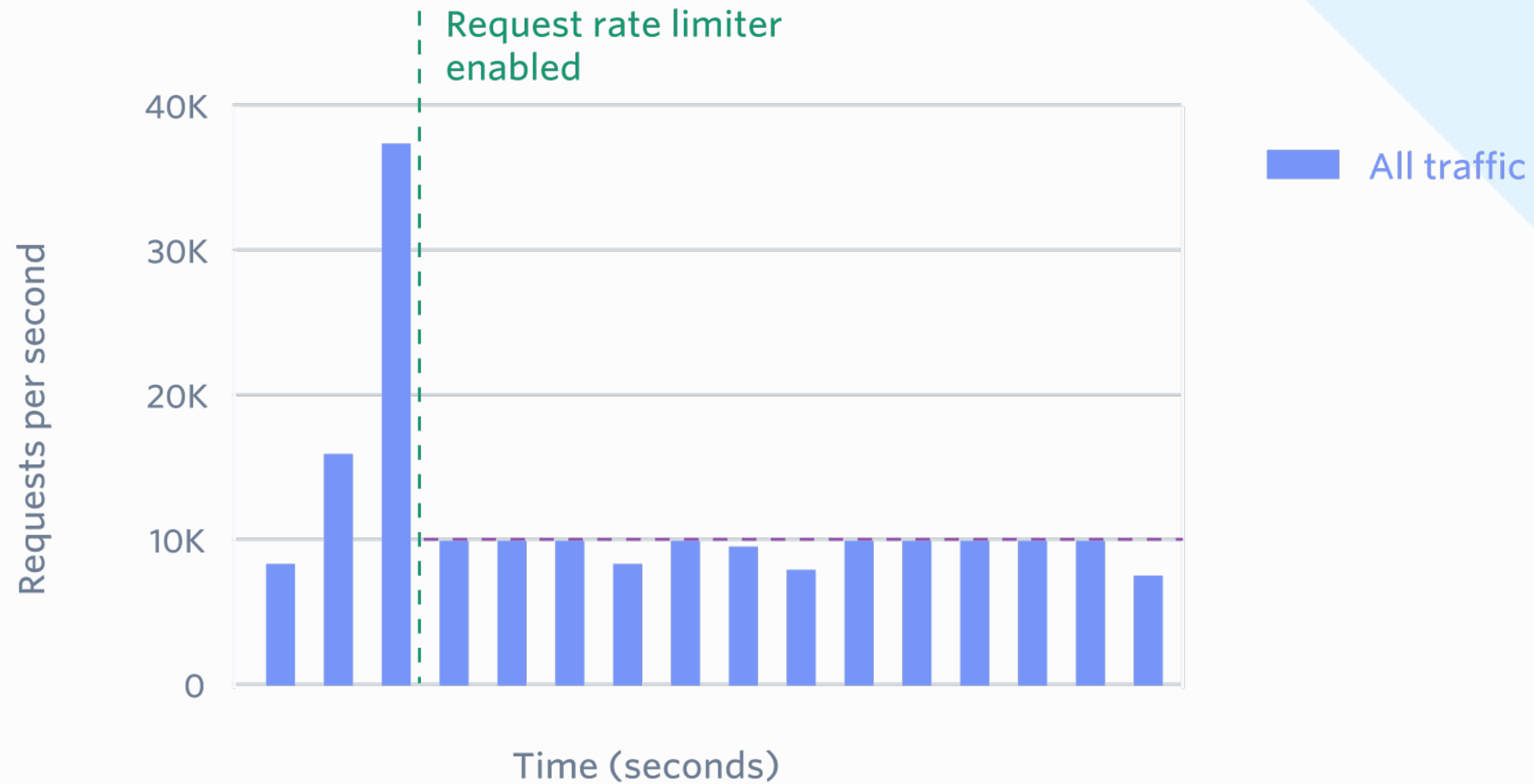
Retry



Request Rate Limiter

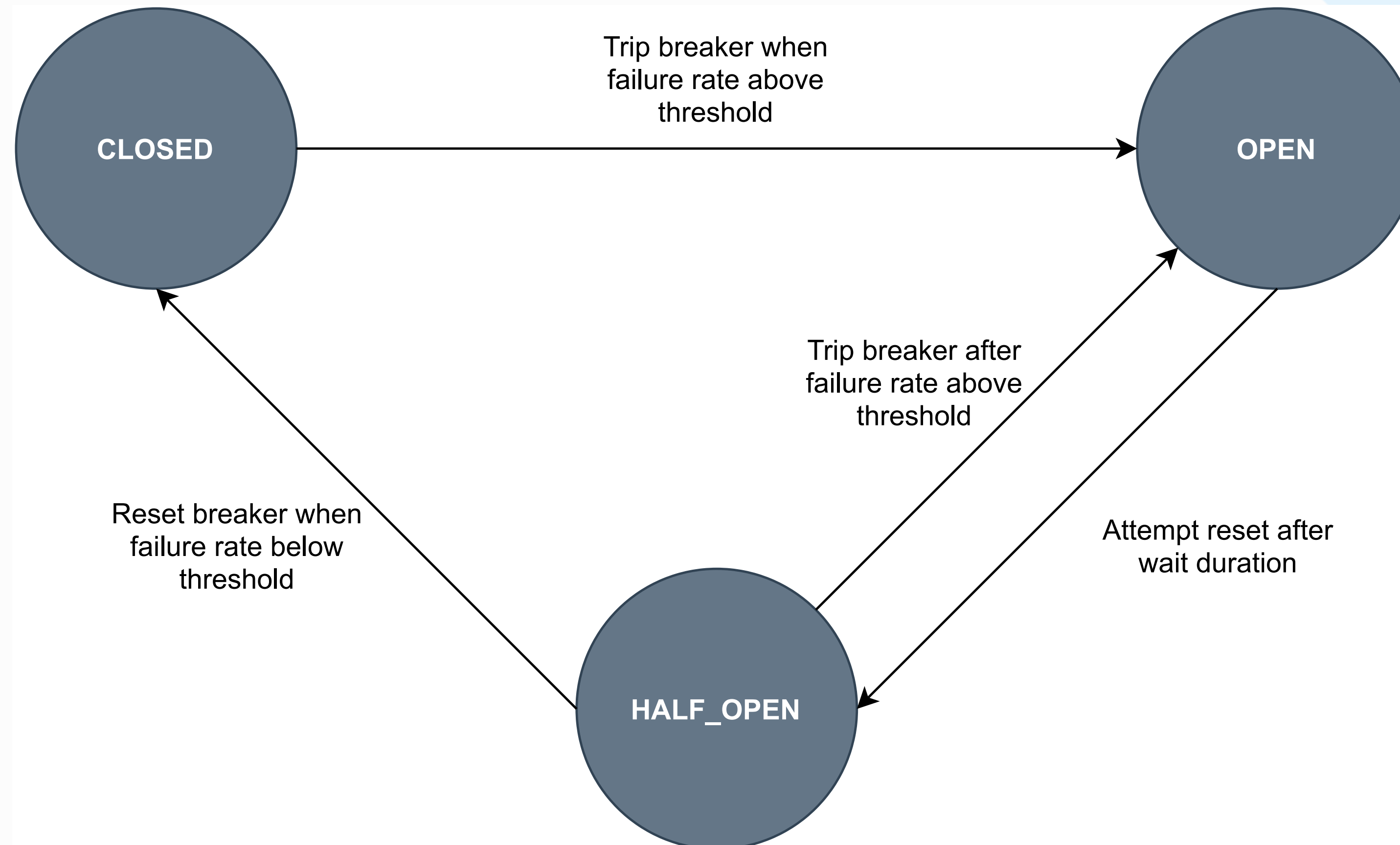
Rate Limiter

<https://stripe.com/blog/rate-limiters>



Circuit Breaker

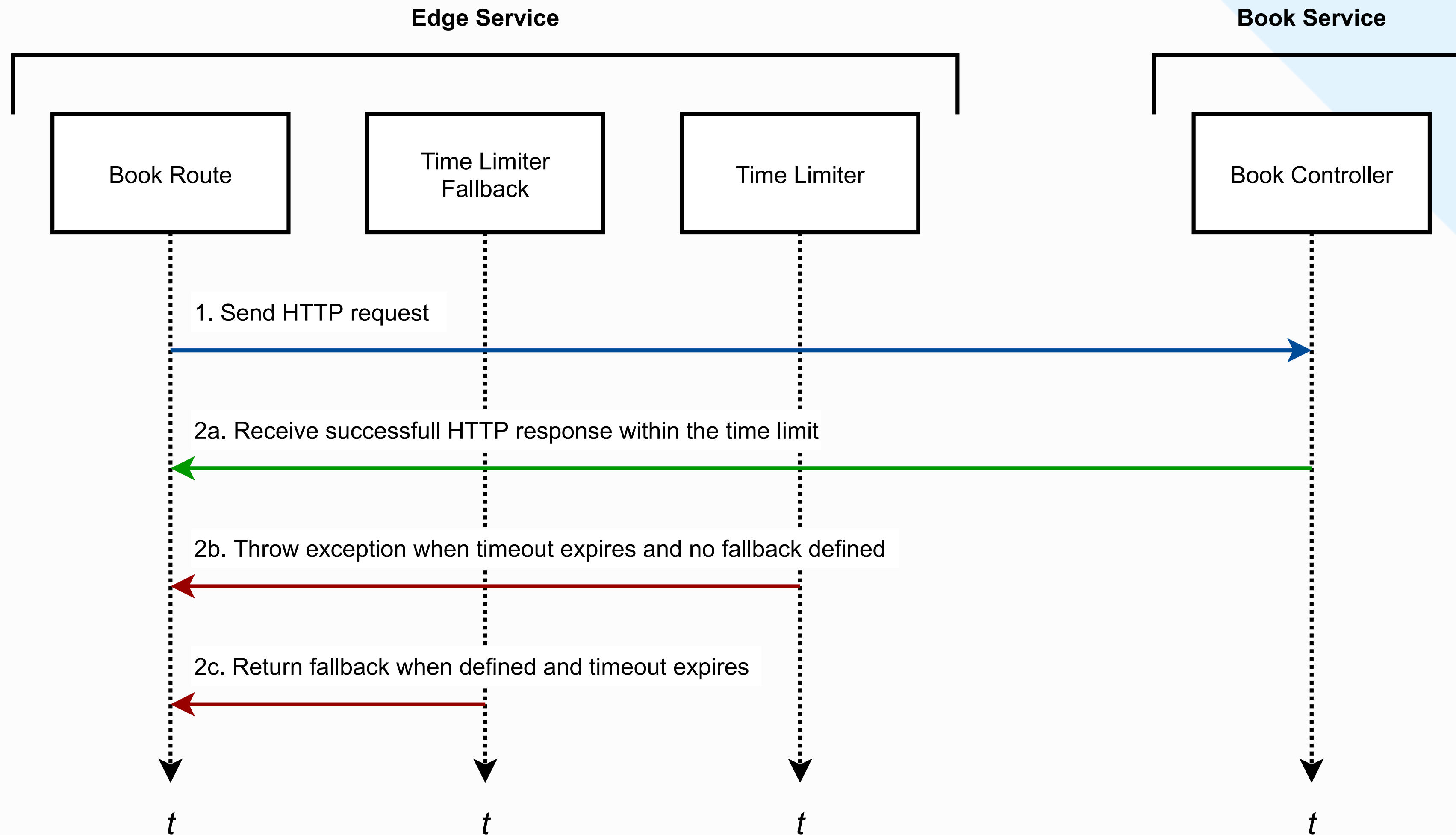
Circuit Breaker



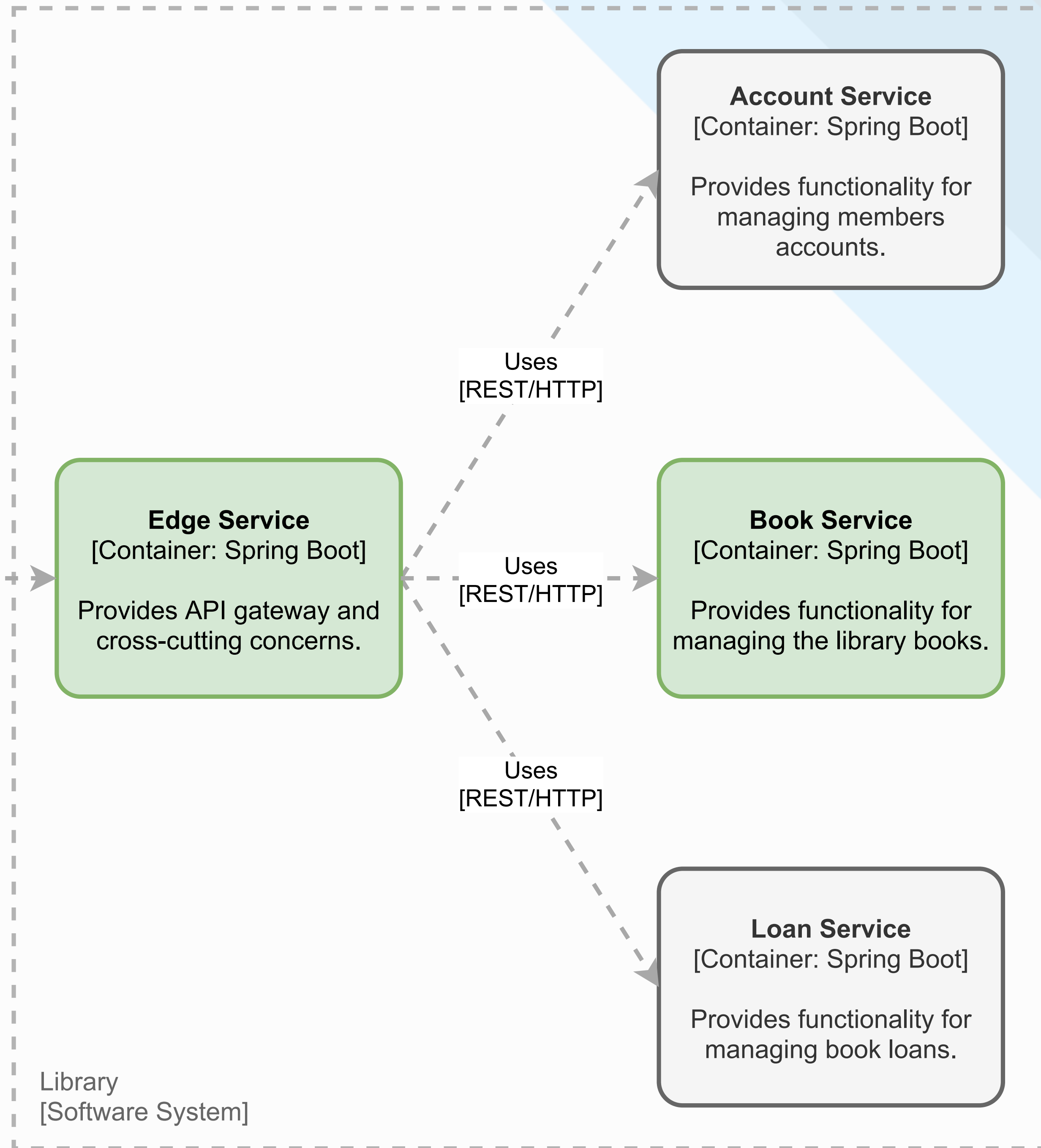
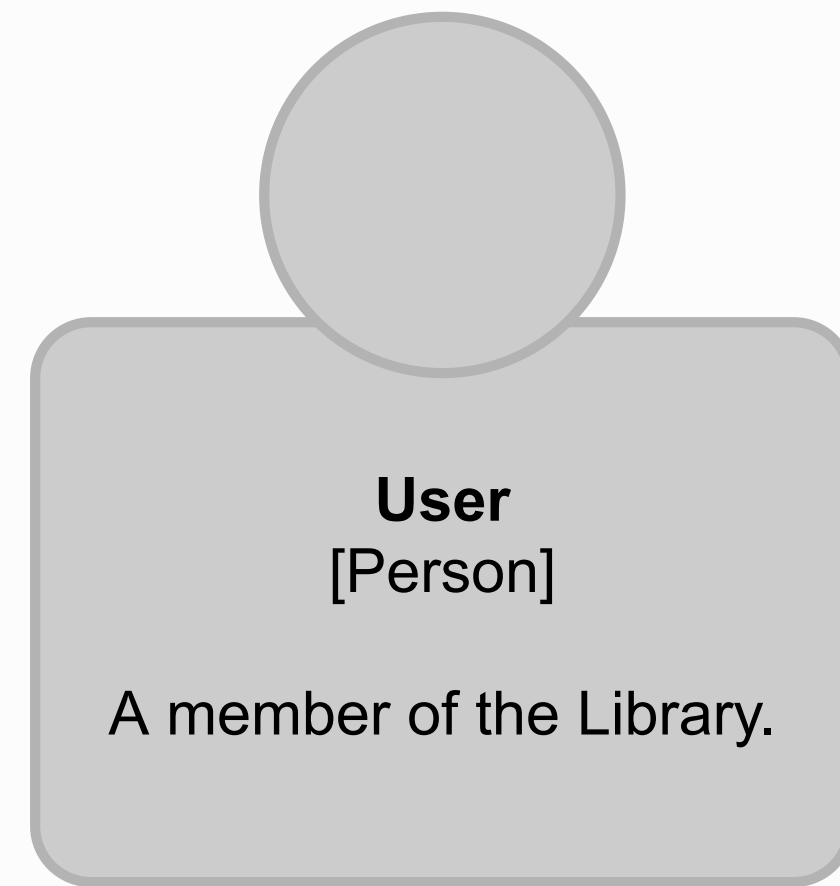
Time Limiter



Time Limiter and Fallback

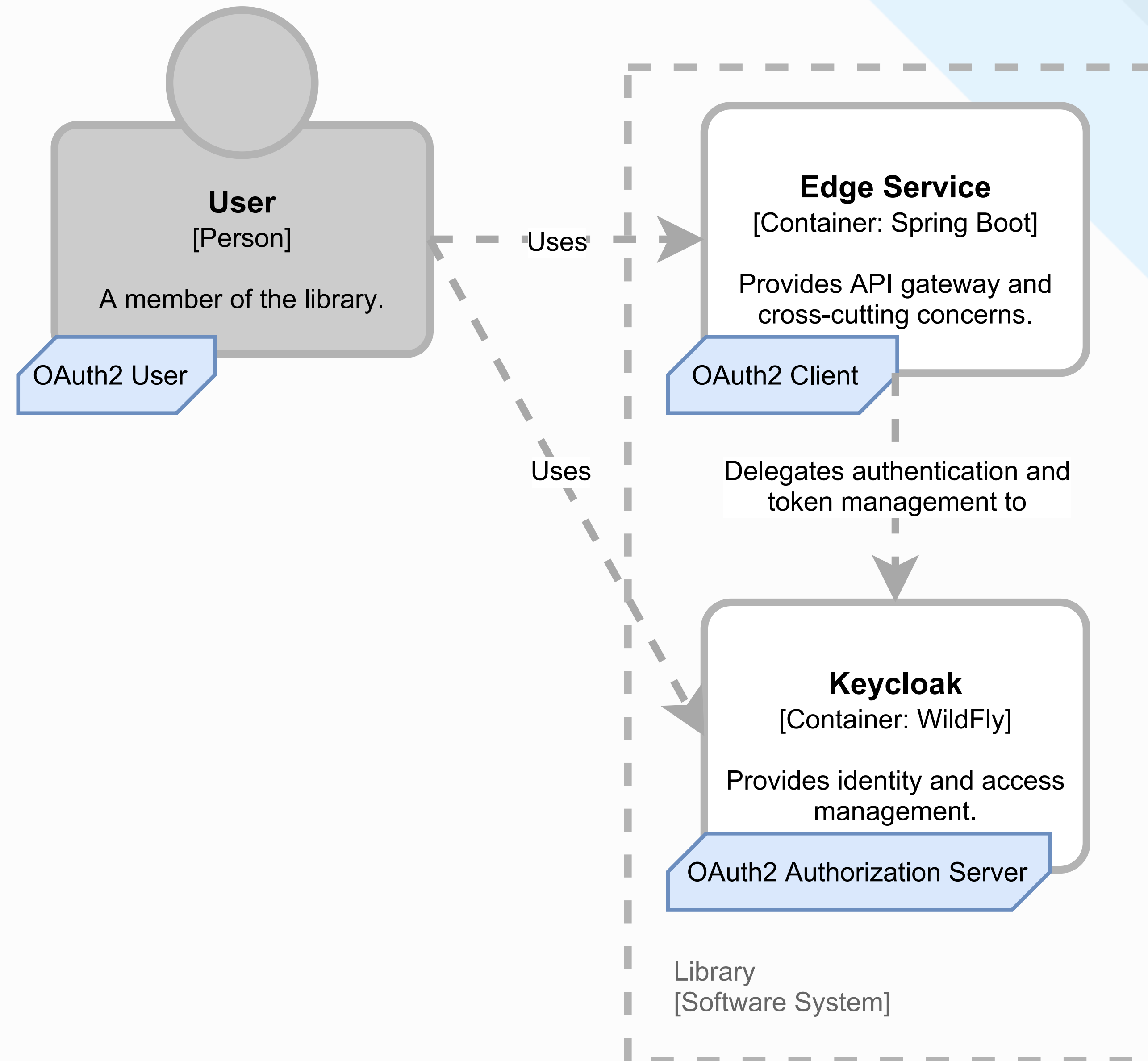


User Authentication



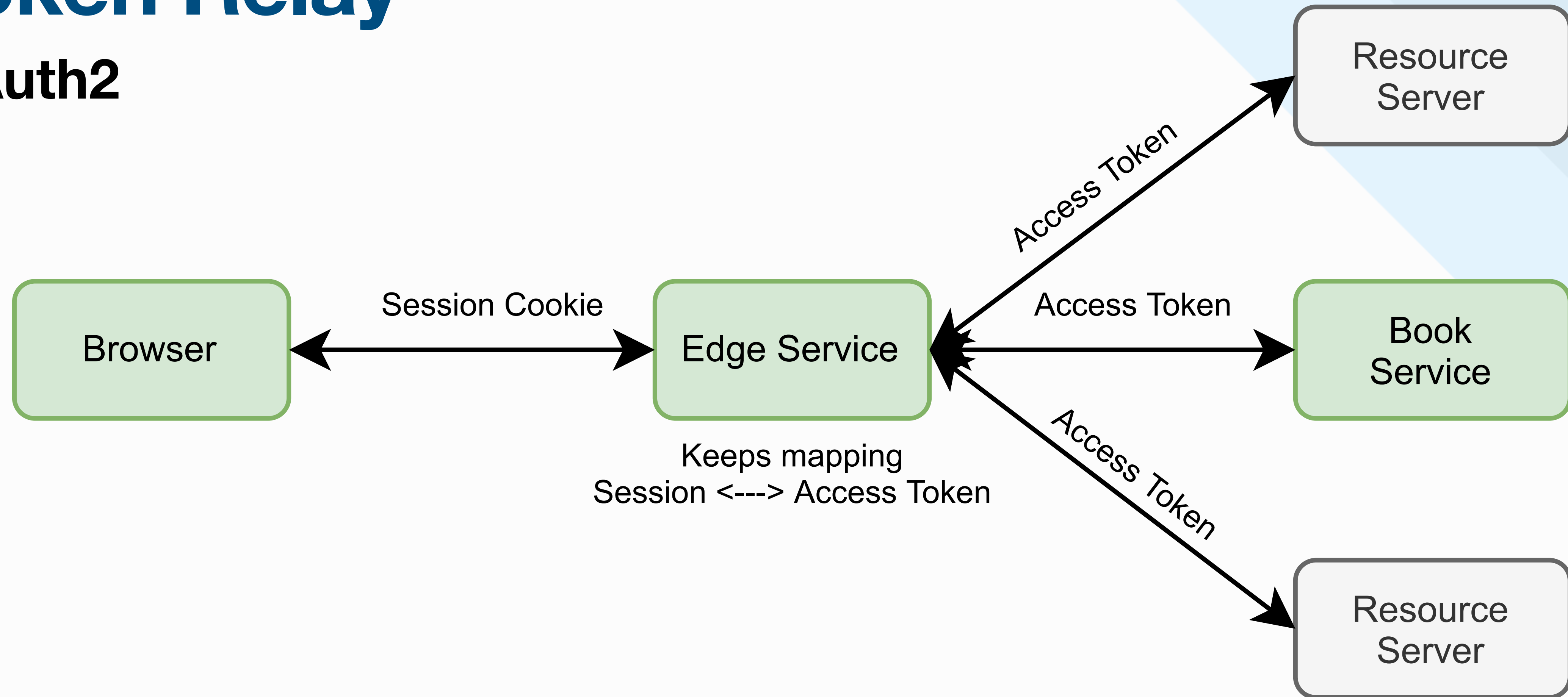
Login

OAuth2 + OIDC



Token Relay

OAuth2

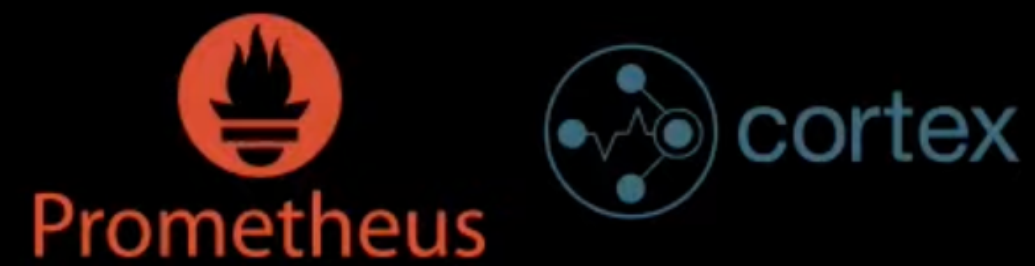


Observability

The curated open-source observability stack



Traces



Metrics



Logs



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