

스프링 캠프 2018 후기

개발 3팀 허원철

Track A

Track B

12:00 등록

-

13:00

13:00 개회 및 축사

-

13:10

13:10 희망을 찾기 위한 우리의 여정, Coupang MSA

-

14:00

14:20 이벤트 기반 분산 시스템을 향한 여정 (journey to event-driven distributed system with spring, aws)

-

15:10

15:10 Coffee Break

-

15:50

15:50 11번가 Spring Cloud 기반 MSA 전환 1년간의 이야기

-

16:40

17:00 MSA를 위한 Spring Cloud와 Kubernetes

-

17:50

Track A

Track B

12:00 등록

-

13:00

13:00 개회 및 축사

-

13:10

13:10 Consumer Driven Contract 기법을 활용한 마이크로서비스 API의 진화

-

14:00

14:20 쿠팡 Kotlin Backend 적용기

-

15:10

15:10 Coffee Break

-

15:50

15:50 Spring Hazelcast IMDG Integration & JPA Caching with Hazelcast IMDG (가칭, 수정 예정)

-

16:40

17:00 MicroProfile (for Enterprise Java Microservices)

-

17:50

Keyword

MSA

왜 MSA가 주목받게 되었을까요?

공통적인 문제

까다로운 코드 수정
너무 많은 테스트
장기간의 배포
코드 충돌

...

MSA란?

Monolith
vs
Micro Service

User Service
Coupon Service
Order Service
Article Service
...

API Gateway

User Service

Coupon Service

Order Service

Article Service

User Service

Coupon Service

Order Service

Article Service

...

API Gateway

혹시 **Infra** 헬 게이트 냄새가
느껴지지 않으시나요?

Order Service

Coupon Service

Article Service

NETFLIX

NETFLIX

MSA를 제일 잘 하고 있는 곳

NETFLIX

5명

어떻게?????

그렇다면 국내는?

쿠팡, 11번가

그 외에도 많겠죠?

현재 진행형 MSA 경험담

11번가

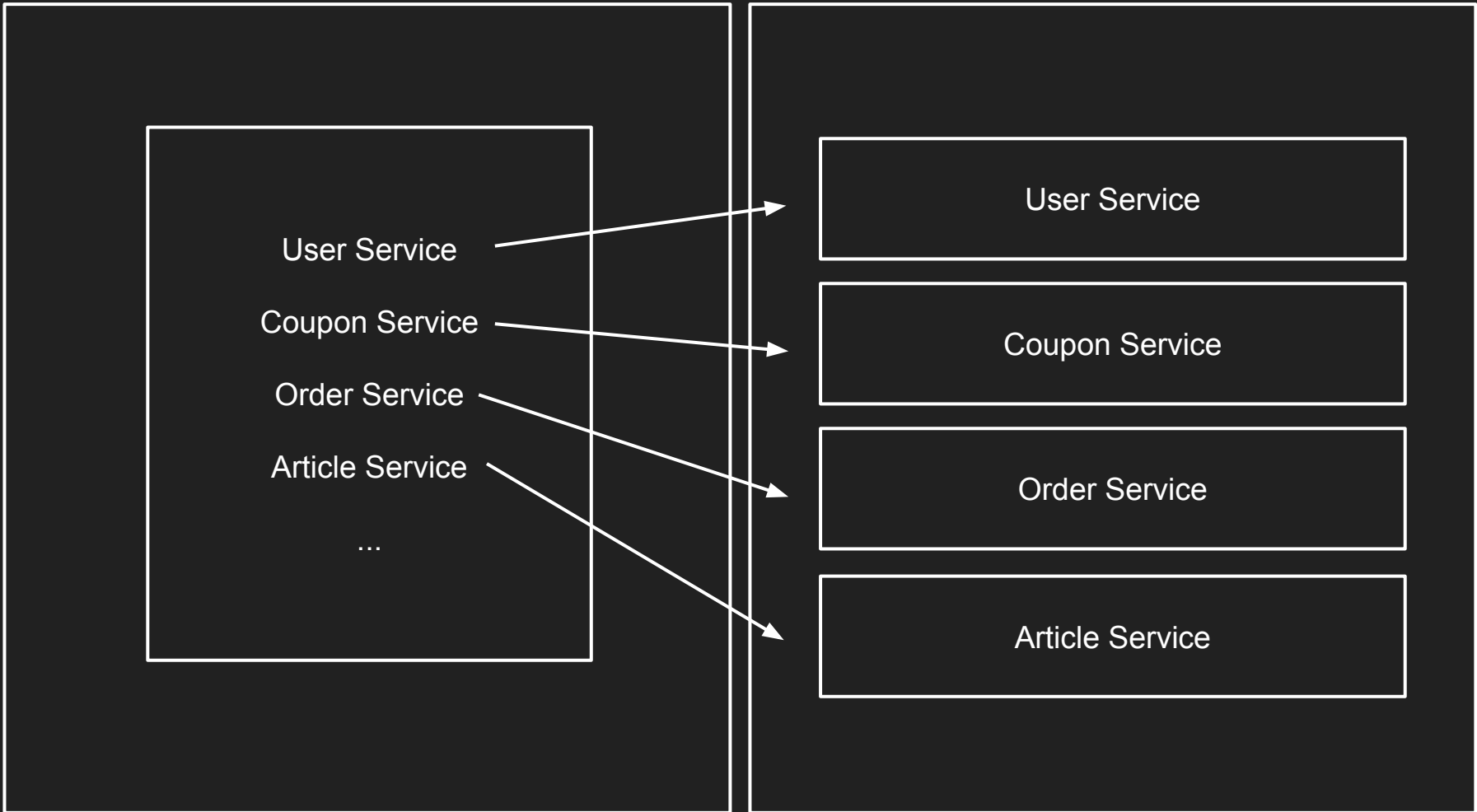
- 모놀리식 (공통 모듈만 200만 줄)
- IDC
- 자체 API Gateway

과감한 수정은 전사 장애다.

MSA 도입하자

MSA 도입

- 레거시를 운영하며 독립 서비스들로 조금씩 이전
- 기능별로 DB Flag를 두고 Switching
- 약 1년 4개월



User Service

Coupon Service

Order Service

Article Service

...

User Service

Coupon Service

Order Service

Article Service

User Service

Coupon Service

Order Service

Article Service

...

인증 처리는?
공통 처리는?

User Service

Coupon Service

Order Service

Article Service

API Gateway

User Service

Coupon Service

Order Service

Article Service

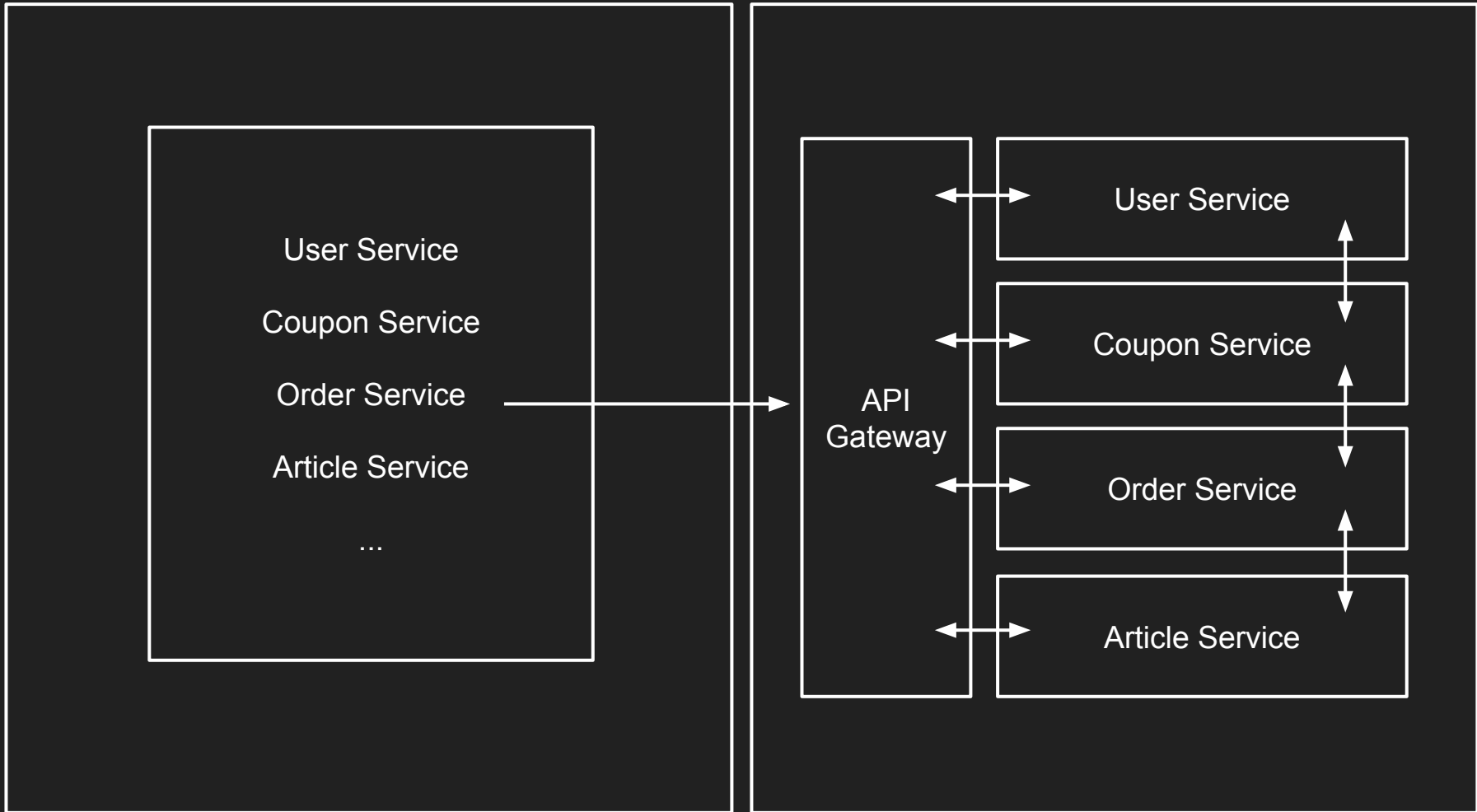
...

User Service

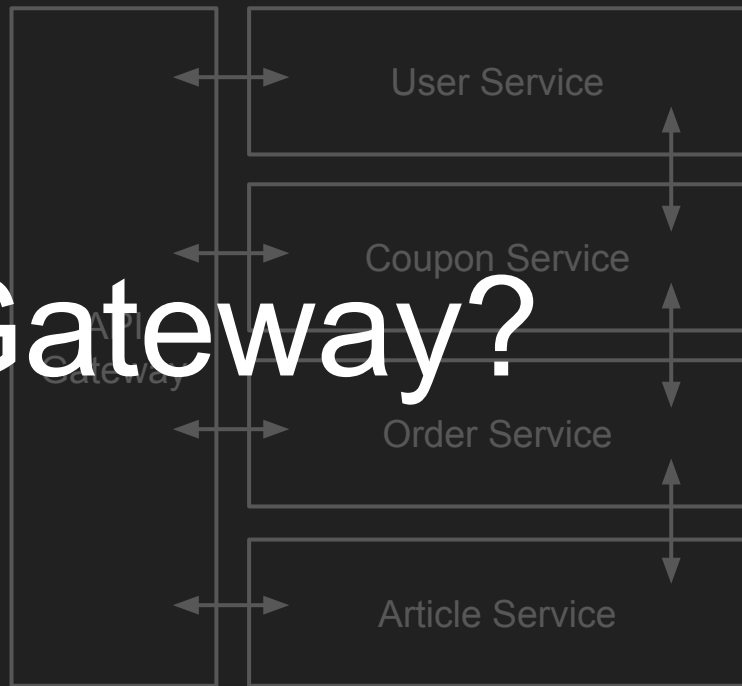
Coupon Service

Order Service

Article Service



자체 API Gateway?



플랫폼 선정

- Netflix OSS (MSA를 위한 다양한 오픈 소스 제공)
- Spring Cloud (Netflix와 더불어 12 factors를 준수)
- Spring Boot (초기 생산성 빠름)

플랫폼 선정

- Netflix OSS (MSA를 위한 다양한 오픈 소스 제공)
- Spring Cloud (Netflix와 더불어 12 factors를 준수)
- Spring Boot (초기 생산성 빠름)

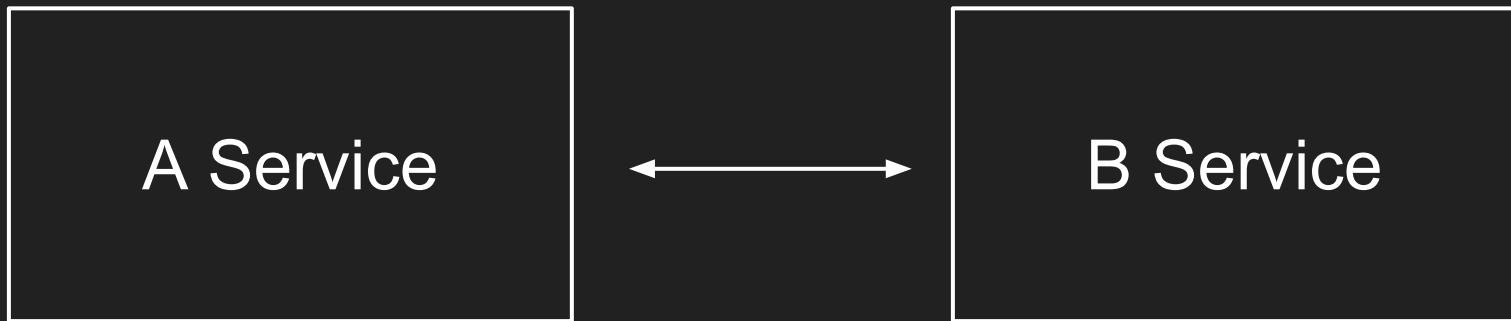
연동이 쉽다



Hystrix, Ribbon, Eureka, Zuul
Zipkin, Admin

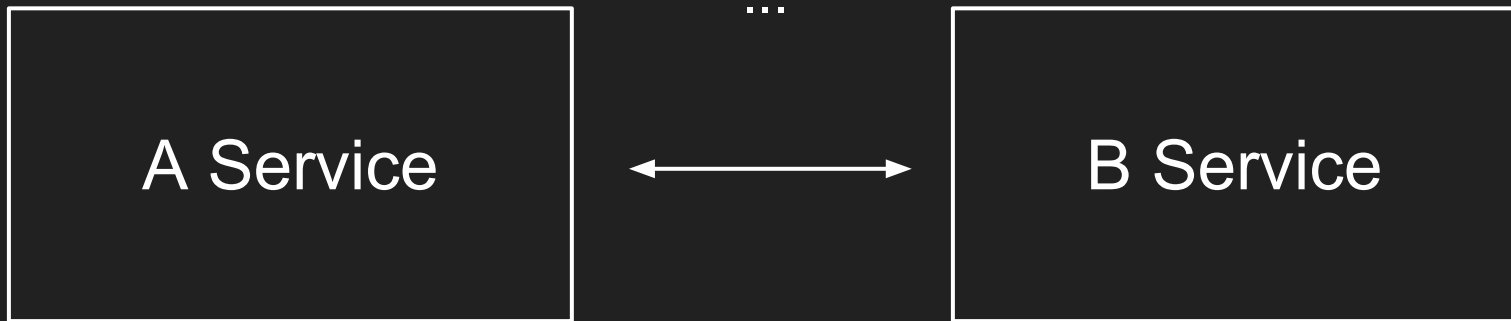
Hystrix

- Netflix 오픈 소스
- Circuit Breaker



Hystrix

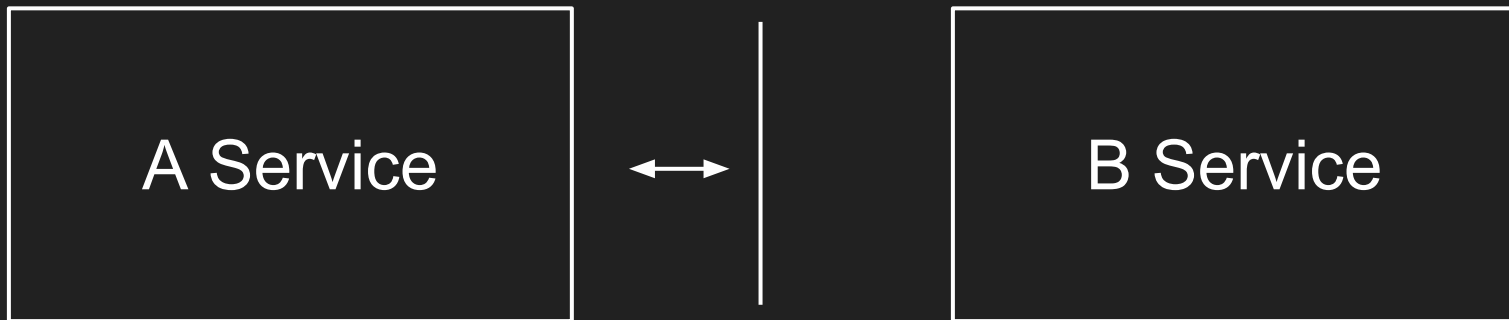
- Netflix 오픈 소스
- Circuit Breaker



Hystrix

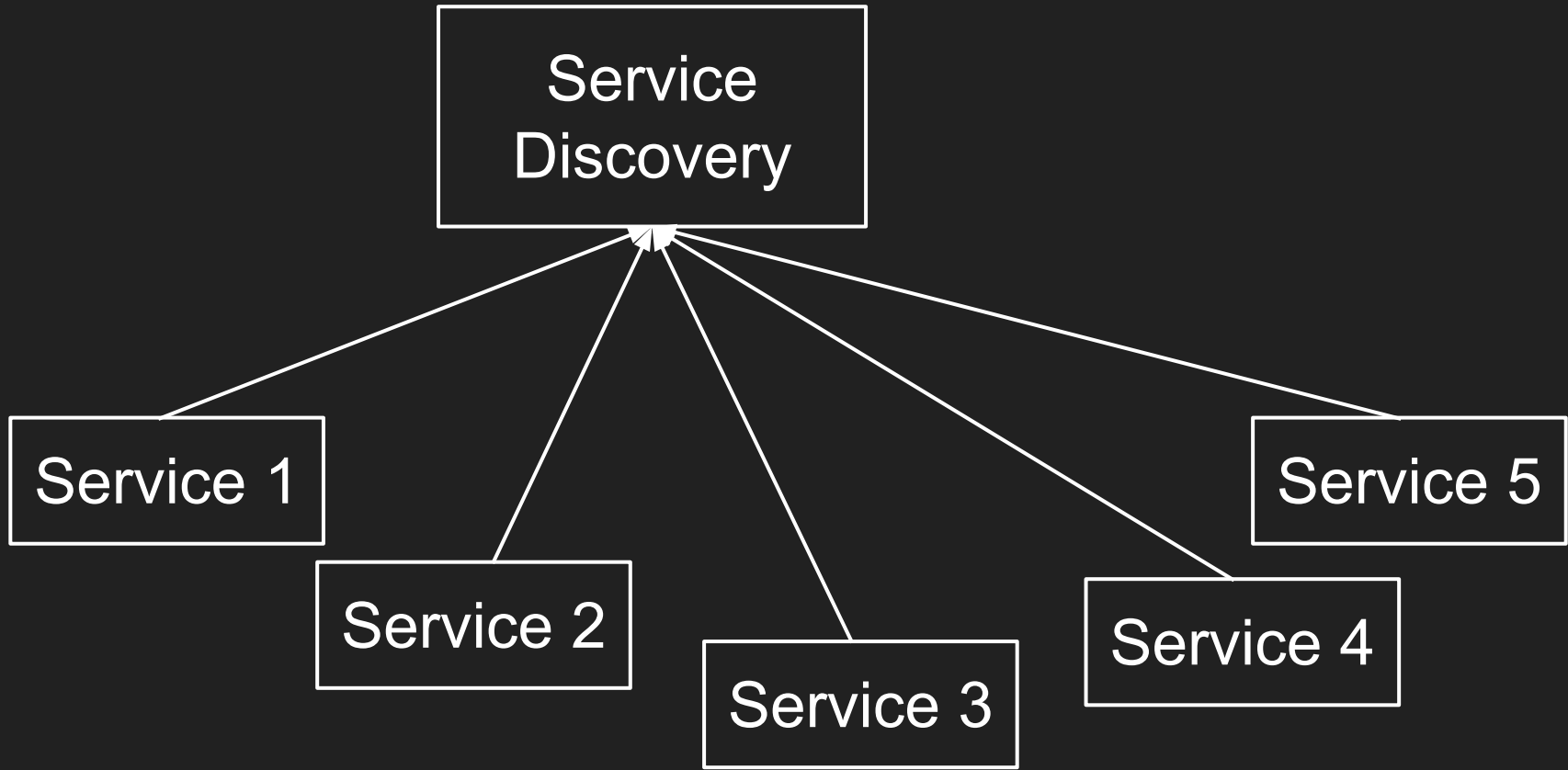
- Netflix 오픈 소스
- Circuit Breaker

에러율
초과



Eureka

- Netflix 오픈 소스
- Service Discovery
- Ribbon과 같이 쓰면 효과적이다.



System Status

Environment	test	Current time	2016-10-31T15:57:31 -0400
Data center	default	Uptime	00:03
		Lease expiration enabled	false
		Renews threshold	0
		Renews (last min)	8

DS Replicas

localhost

Instances currently registered with Eureka

Application	AMIs	Availability Zones	Status
CONFIGSERVER	n/a (1)	(1)	UP (1) - 192.168.2.158:configserver:8888
HYSTRIXDASHBOARD	n/a (1)	(1)	UP (1) - 192.168.2.158:hystrixdashboard:7979

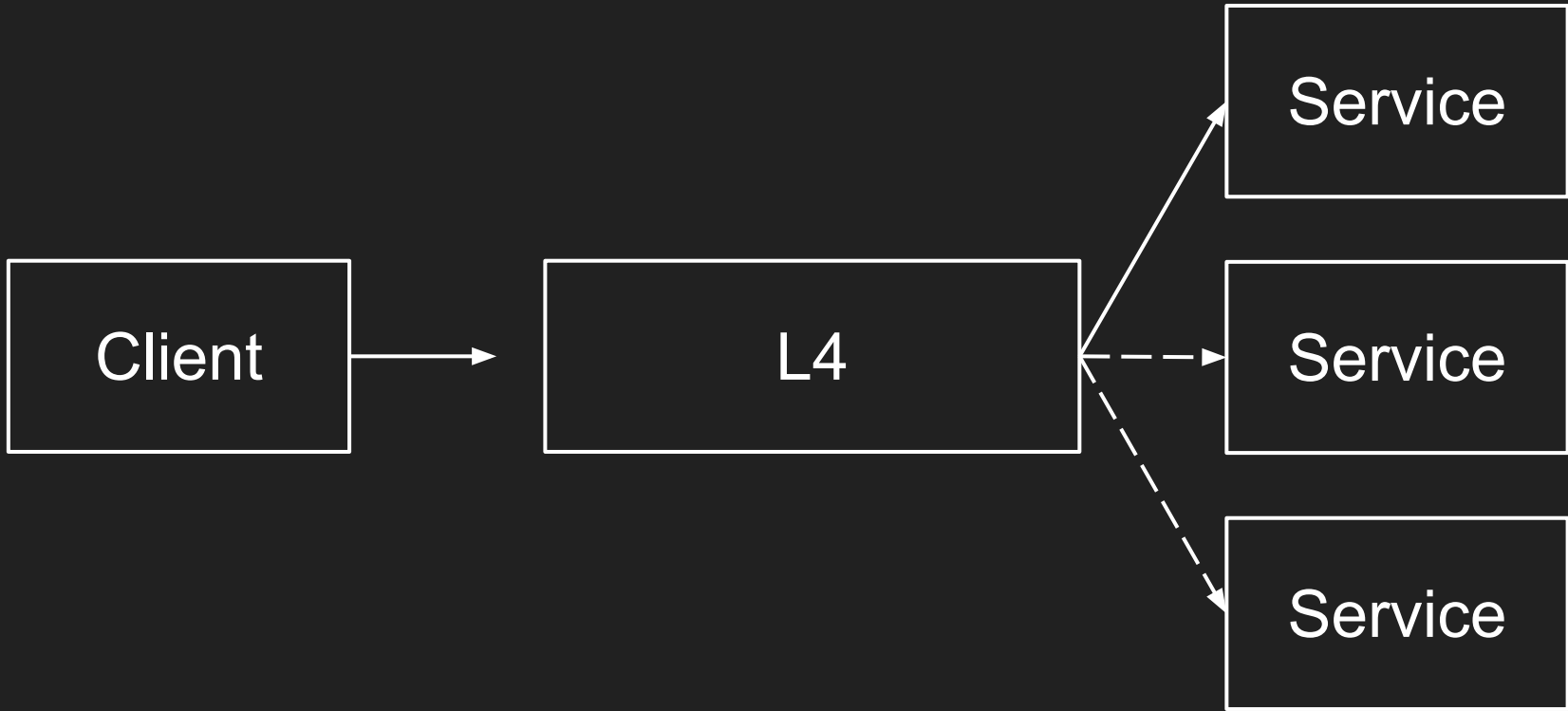
General Info

Name	Value
------	-------

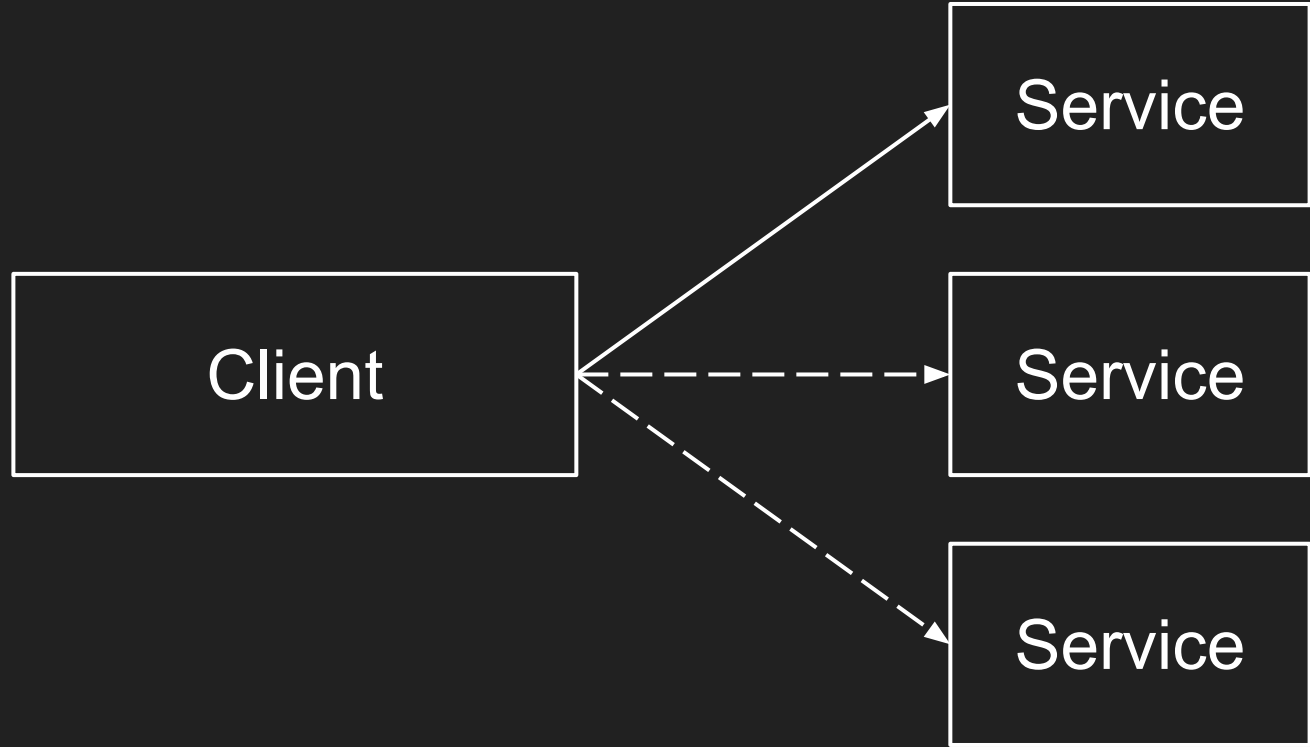
Ribbon

- Netflix 오픈 소스
- Client Side Load Balancer

Server Side Load Balancer



Client Side Load Balancer

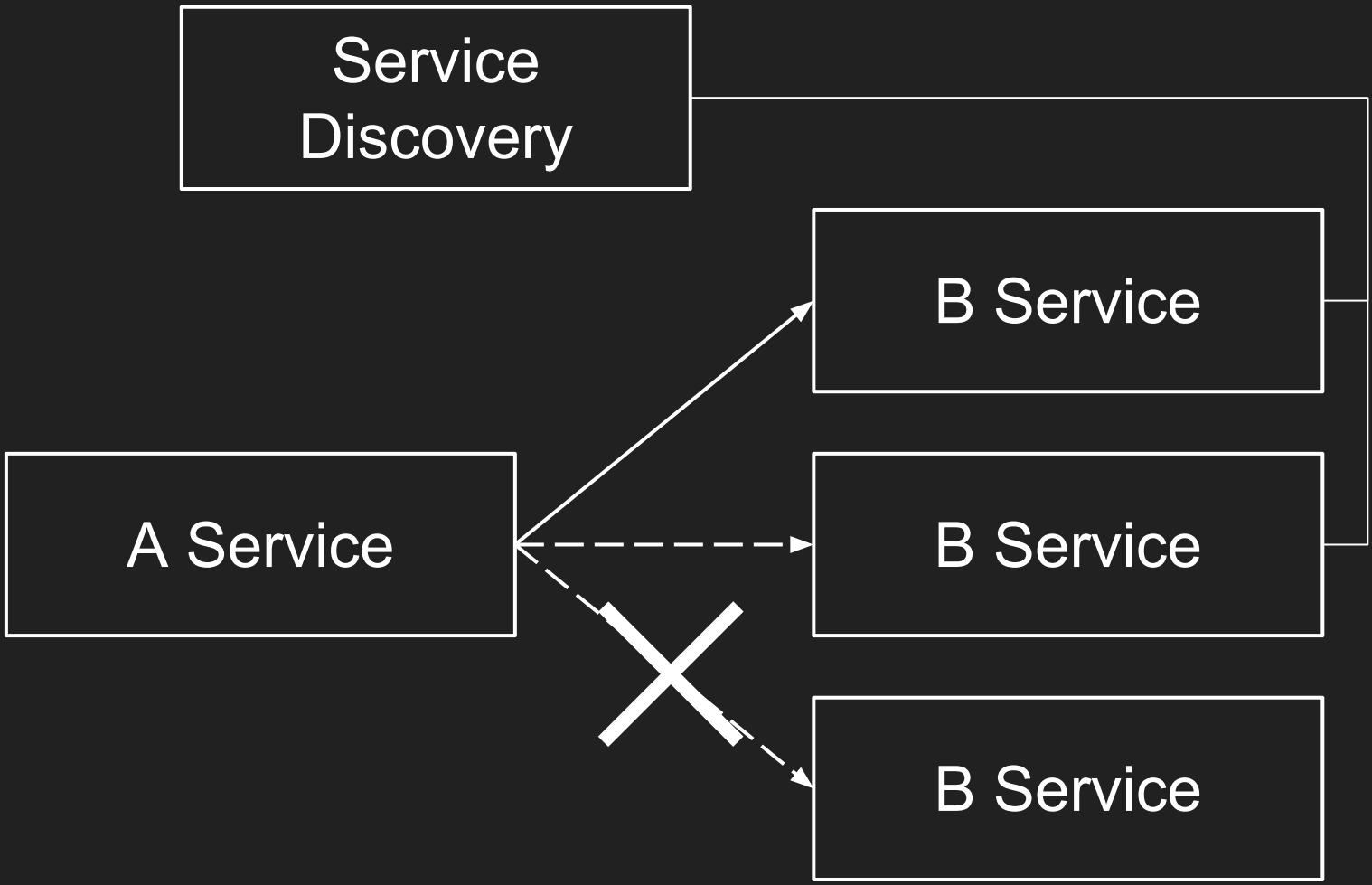


Eureka와 Ribbon

Ribbon과 같이 쓰면 효과적이다?

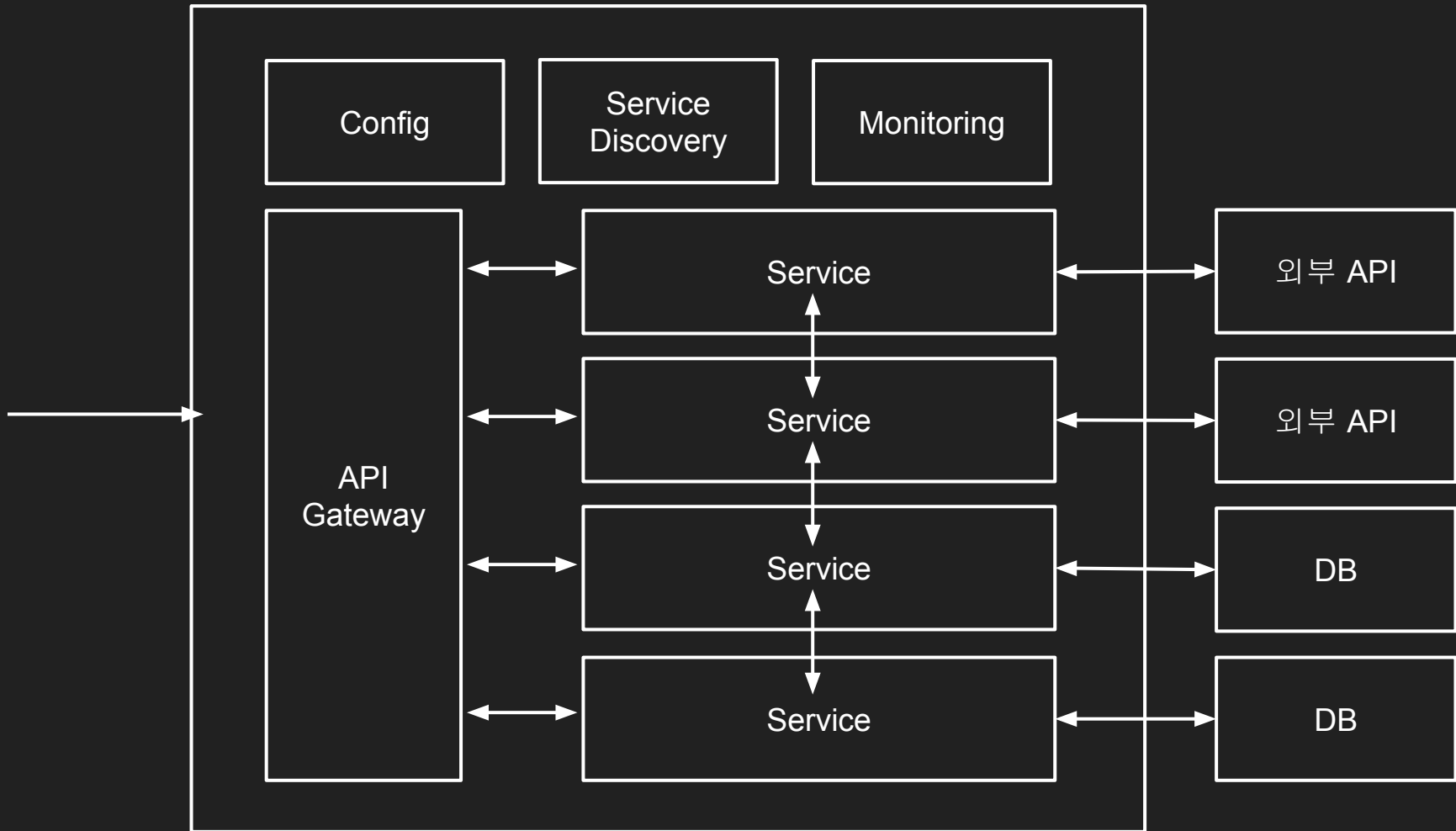
- Eureka에 등록된 Service 리스트를 기반으로 분산

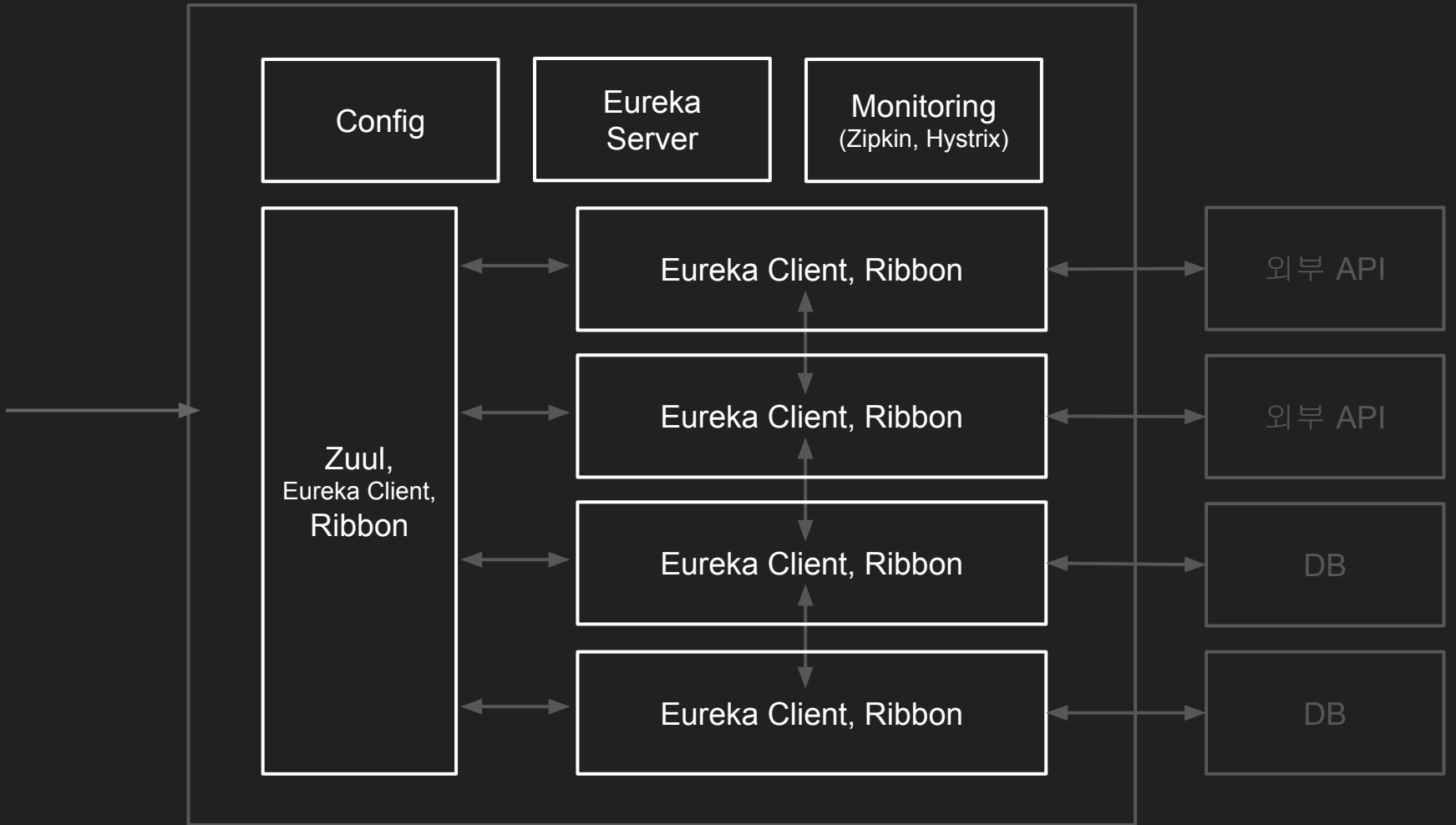
이외에도 많은 것들이 Eureka와 연동해도 효과적(Hystrix, Zuul, ...)

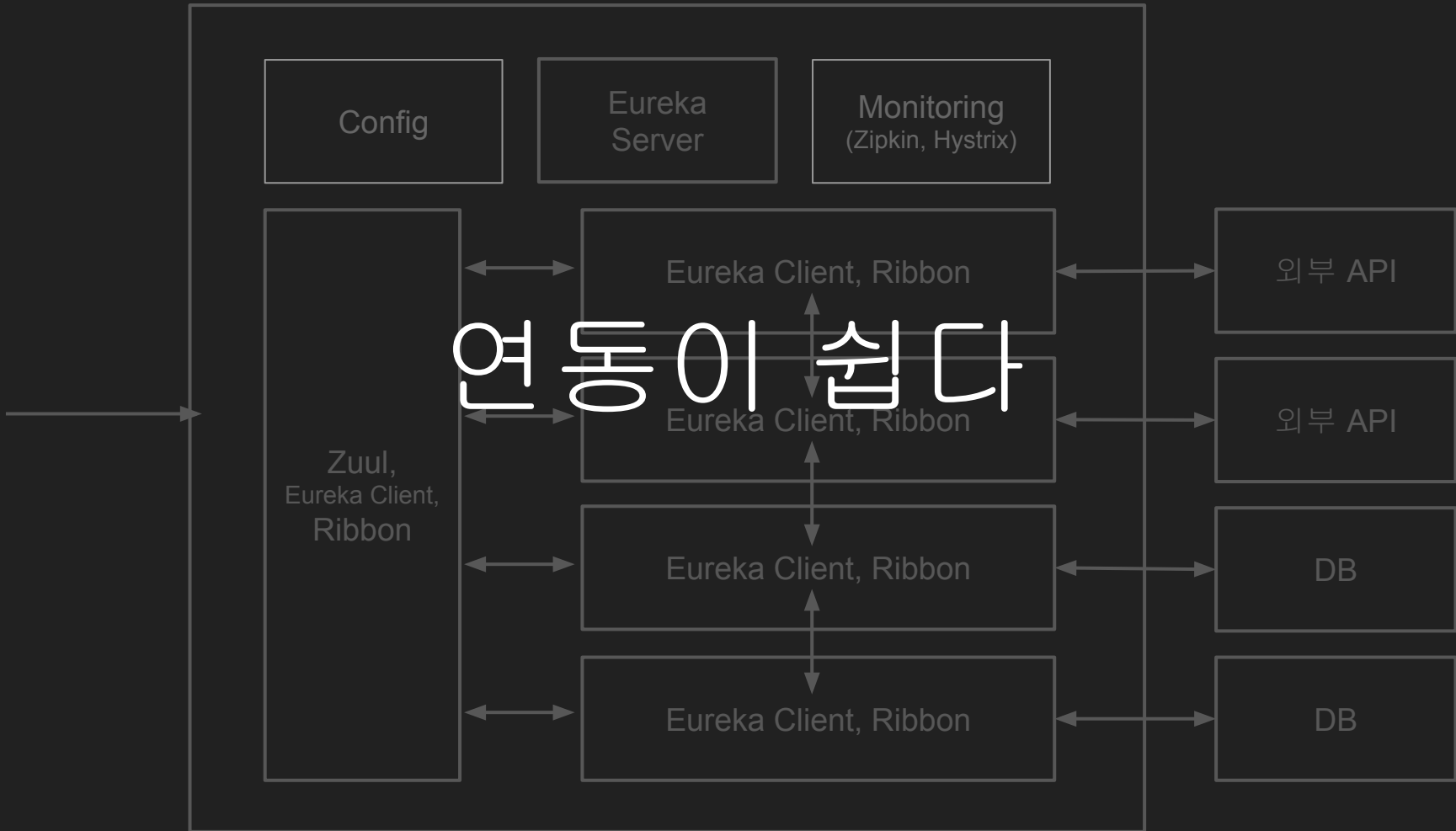


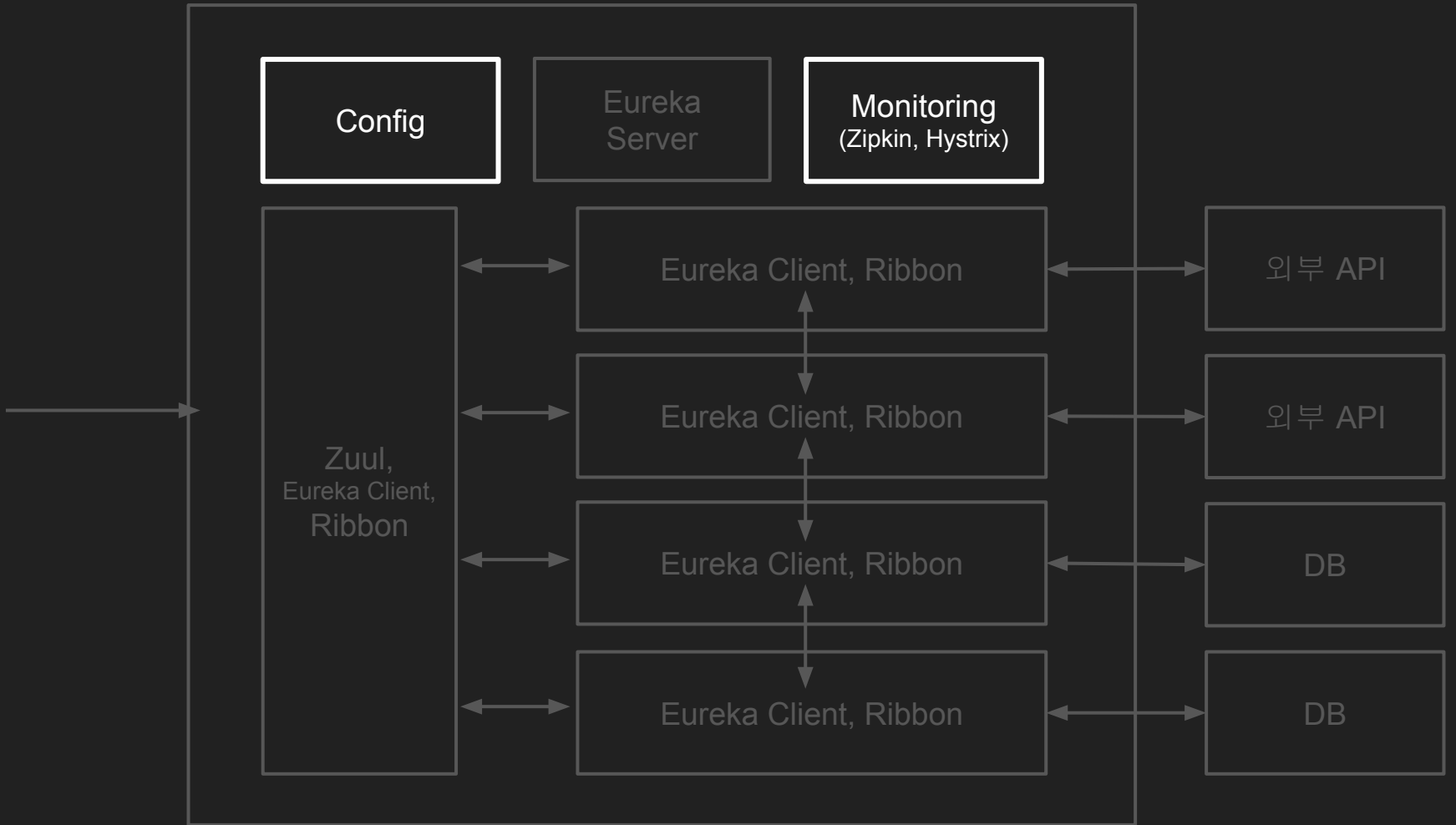
Zuul

- Netflix 오픈 소스
- API Gateway(Router and Filter)









Monitoring

- Trace 모니터링
- Hystrix 모니터링
- Spring Boot Admin

Zipkin

- 트위터에서 개발
- API간의 호출 추적
- Trace, Span
- Spring Cloud Sleuth

Duration: 3.871s Services: 2 Depth: 5 Total Spans: 5

JSON

Expand All Collapse All Filt... ▾

service1 x3 service2 x3

Services		774.263ms	1.549s	2.323s	3.097s	3.871s
- service1	3.871s : http://readtimeout	.	.	.	.	.
- service1	3.860s : first_span	.	.	.	.	.
- service2	3.557s : http://readtimeout	.	.	.	.	.
- service2	3.520s : second_span	.	.	.	.	.
service2	3.015s : http://blowup	.	.	.	.	.

Hystrix Dashboard

- turbine으로 통합 가능

ABCallServiceInternal

191,390 | 0 | 0.0 %
0 | 5 |
1

Host: 32.9/s

Cluster: 19,139.6/s

Circuit Closed

Hosts	581	90th	17ms
Median	6ms	99th	64ms
Mean	10ms	99.5th	114ms

IdentityCookieAuth

190,804 | 0 | 0.0 %
0 | 50 |
0

Host: 32.8/s

Cluster: 19,085.4/s

Circuit Closed

Hosts	581	90th	1ms
Median	0ms	99th	34ms
Mean	1ms	99.5th	49ms

CinematchGetPredictions

80,105 | 5 | 0.0 %
0 | 0 |
0

Host: 13.8/s

Cluster: 8,011.0/s

Circuit Closed

Hosts	581	90th	22ms
Median	3ms	99th	122ms
Mean	11ms	99.5th	312ms

CryptexDecipher

74,718 | 92 | 0.0 %
0 | 0 |
58

Host: 12.9/s

Cluster: 7,486.8/s

Circuit Closed

Hosts	581	90th	11ms
Median	3ms	99th	67ms
Mean	10ms	99.5th	405ms

CinematchGetMovieRatings

60,672 | 2 | 0.0 %
0 | 0 |
0

Host: 10.4/s

Cluster: 6,067.4/s

Circuit Closed

Hosts	581	90th	41ms
Median	14ms	99th	143ms
Mean	21ms	99.5th	215ms

VideoHistoryGetBookmarks

48,281 | 60 | 0.1 %
0 | 0 |
0

Host: 8.3/s

Cluster: 4,834.1/s

Circuit Closed

Hosts	581	90th	26ms
Median	8ms	99th	104ms
Mean	13ms	99.5th	158ms

Spring Boot Admin

- Actuator(메모리, GC 등등)

spring-boot-admin-example

[Details](#) | [Logging](#) | [JMX](#)

Application raw JSON

id	spring-boot-admin-example
version	1.1.0-SNAPSHOT

Health Checks raw JSON

Application	UP
Datasources	UP
PrimaryDataSource Datasource	UP HSQL Database Engine
SecondaryDataSource Datasource	UP HSQL Database Engine
Diskspace	UP 141,536M free / 10M threshold

Memory

Total Memory (131.58M / 322.50M)	41%
Heap Memory (131.58M / 322.50M)	41%
Initial Heap (-Xms)	62.00M
Maximum Heap (-Xmx)	876.50M

JVM raw JSON

Uptime	00:00:06:13 [d:h:m:s]
Available Processors	4
Current loaded Classes	6571
Total loaded Classes	6572
Unloaded Classes	1
Threads	26 total / 23 daemon / 26 peak

Garbage Collection

Ps_marksweep GC Count	2
Ps_marksweep GC Time	177 ms
Ps_scavenge GC Count	9
Ps_scavenge GC Time	130 ms

Datasources

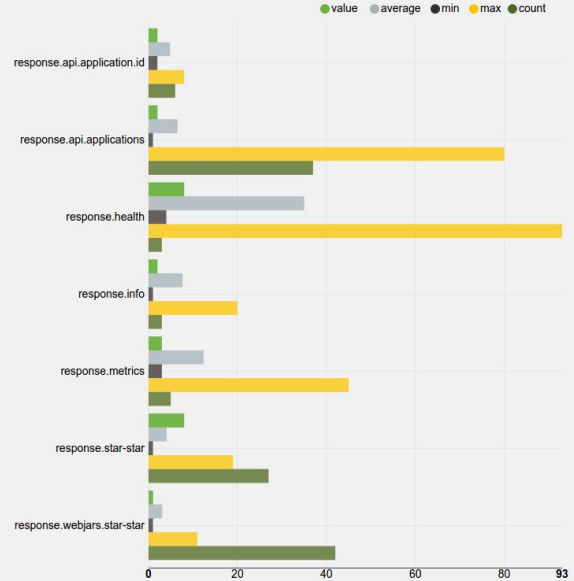
Primary Datasource Connections (active: 41)	41%
Secondary Datasource Connections (active: 27)	27%

[Metrics](#) | [Environment](#) | [Properties](#) | [Classpath](#)

Counters



Gauges



쿠팡

- PHP에서 Java 전환
- 모놀리식에서 마이크로서비스 전환
- Cloud 전사 서비스 이전

쿠팡

- PHP에서 Java 전환
- 모놀리식에서 마이크로서비스 전환
- Cloud 전사 서비스 이전

모놀리식에서 마이크로서비스 전환 - 방법

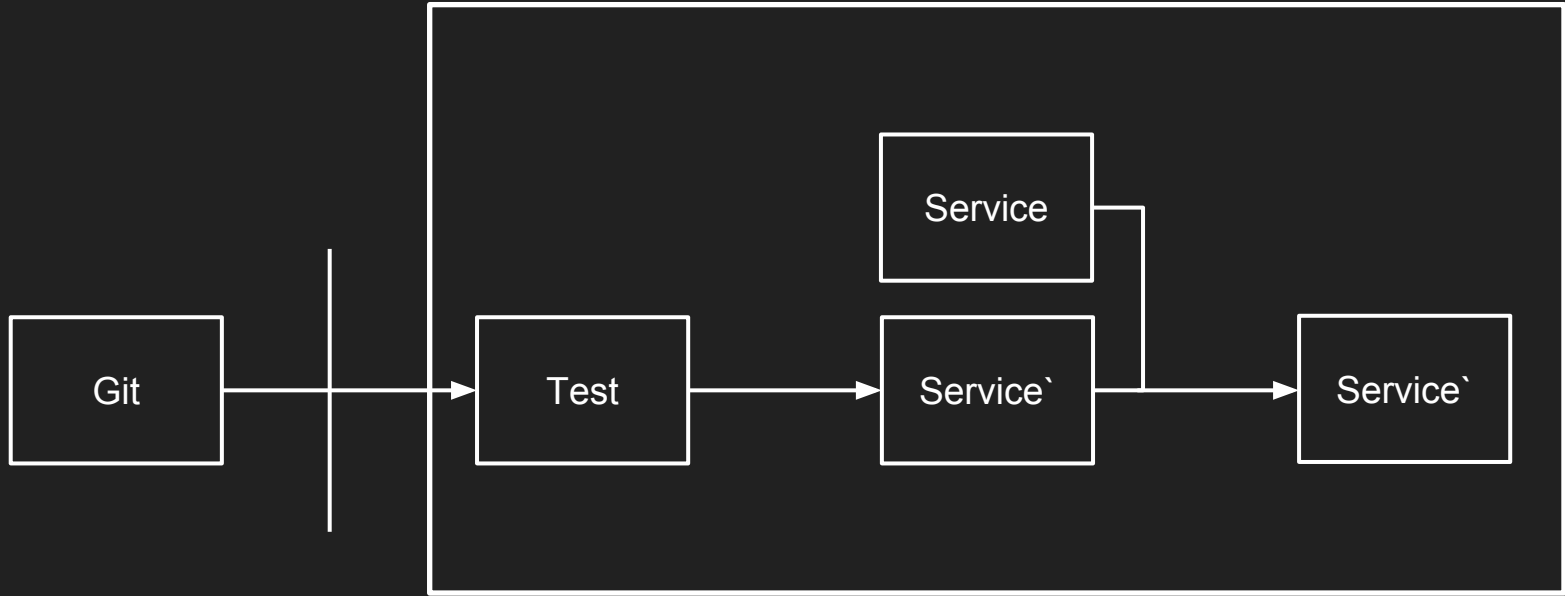
- 도메인에만 개발만 할 수 있도록 제공
- API Helper 제공
- 트랜잭션은 MQ로 전환

이렇게 한다고 끝일까?

- ?00 : 서비스 개수
- 10000+ : 인스턴스 개수
- 100+ : 하루 배포 횟수
- 2000+ : 하루 배포 서버 개수
- 10000+ : API 개수

인스턴스 10개만 넘어가도
관리가 힘들다

관리 시스템, 배포 시스템 구축



Metric 비교

오픈 소스는 없을까?

Container Orchestrator

Docker Swarm
Kubernetes

...

Docker Swarm
Kubernetes

...

Docker Swarm

K8S

...

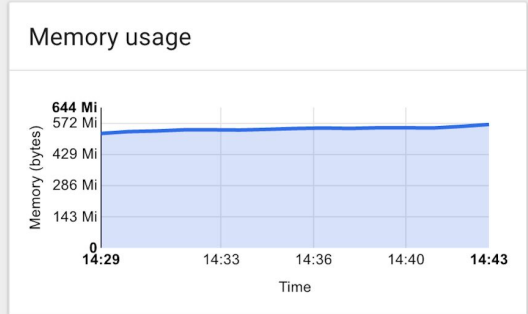
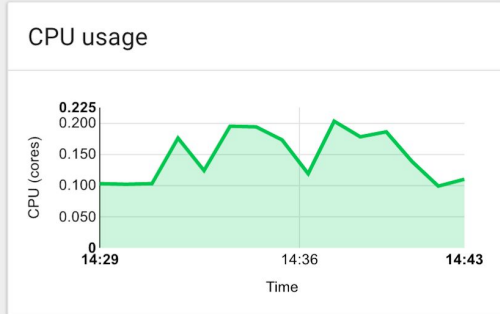
K8S

- Google 엔지니어들이 개발
- 컨테이너
 - 스케줄링
 - 확장
 - 관리
 - 모니터링
- Master, Node



kubernetes

- Admin
- Namespaces
 - Nodes
 - Persistent Volumes
-
- Namespace
- kube-system
- Workloads
- Deployments
 - Replica Sets
 - Replication Controllers
 - Daemon Sets
 - Stateful Sets
 - Jobs
 - Pods**
- Services and discovery
- Services



Pods

1 - 10 of 18

Name	Status	Restarts	Age	CPU (cores)	Memory (bytes)
✓ dashboard-same-i...	Running	0	14 minutes	0	5.4 Mi
✓ fluentd-cloud-logg...	Running	0	2 months	0.01	120.8 Mi
✓ fluentd-cloud-logg...	Running	0	2 months	0.009	94.3 Mi
✓ fluentd-cloud-logg...	Running	0	2 months	0.014	174.3 Mi
✓ heapster-v1.2.0-4...	Running	0	10 days	0.002	44.8 Mi

많은 클라우드에서 서비스로 제공
(ex. Amazon EKS)

느낀 점

- 12 factors를 잘 준수하자
- 오픈소스를 활용하자
- 버릴 것은 과감히 버리자
- 마이크로 서비스가 무조건은 아니다
- 클라우드를 적극 활용하자
- 메시지 큐를 보다 많이 사용해 보자
- 작은 것부터 분리해 나간다면 우리도..?
- MSA가 먼저일까? Cloud가 먼저일까?

- <https://ixor.be/ixorsite/wp-content/uploads/2016/11/logo-davy.001.jpg>
- <https://raw.githubusercontent.com/spring-cloud/spring-cloud-cli/master/docs/src/main/asciidoc/images/spring-cloud-launcher-eureka-dashboard.png>
- <https://raw.githubusercontent.com/spring-cloud/spring-cloud-sleuth/master/docs/src/main/asciidoc/images/zipkin-error-traces.png>
- https://cdn-images-1.medium.com/max/800/0*y3gG7jxuNIMjM_vj.png
- <https://blog.codecentric.de/files/2014/12/screenshot-details-160x300.png>
- <http://www.stickpng.com/img/icons-logos-emojis/tech-companies/netflix-logo>
- <https://d33wubrfki0l68.cloudfront.net/e6bda94ebf94cc460db5cdc42bbfdb8f95f5f7ce/fd28b/images/docs/ui-dashboard.png>