

全集中發送! 打造時速發送千萬筆訊息的通知服務

陳俊毅 / Levi Chen Infra Team
Sr.Technical Manager



2014/09 joined 91APP

Infra Team

Sr. Technical Manager

- Conferences Speaker
 - SRE Taiwan
 - DevOps Taiwan
 - DevOpsDays Taipei 2019

Infra Team 的定位

作為 91APP Platform 的 PaaS Provider

Cloud & Operation & Common Service

Infra and Cloud Operation



Global Cloud/Network Architecture



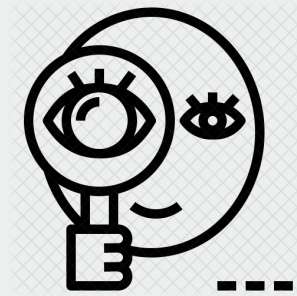
Capacity Planning



Cloud Resources Cost Optimized



DDoS Response Team



Bottleneck Investigate



Disaster Recovery

Common Service



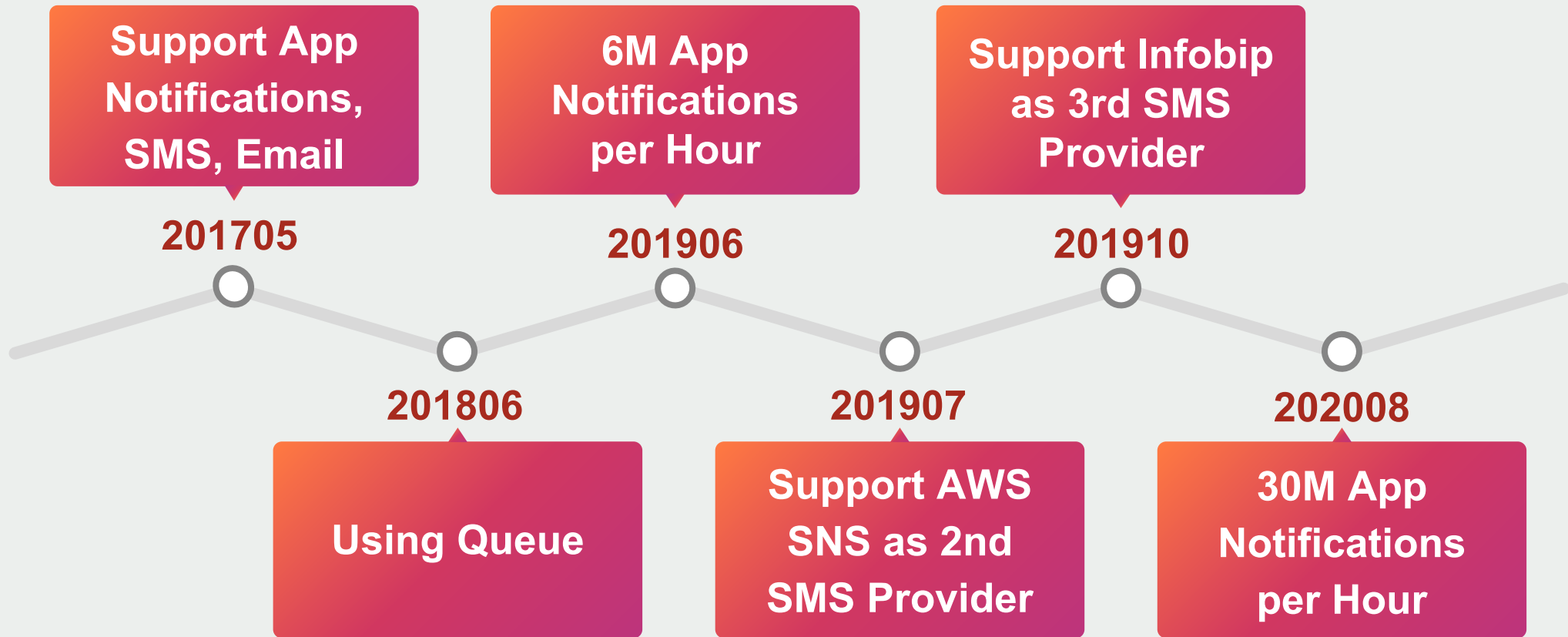
Notification Service

Node.js

App Notification: 60M per hour

SMS: 1M per hour

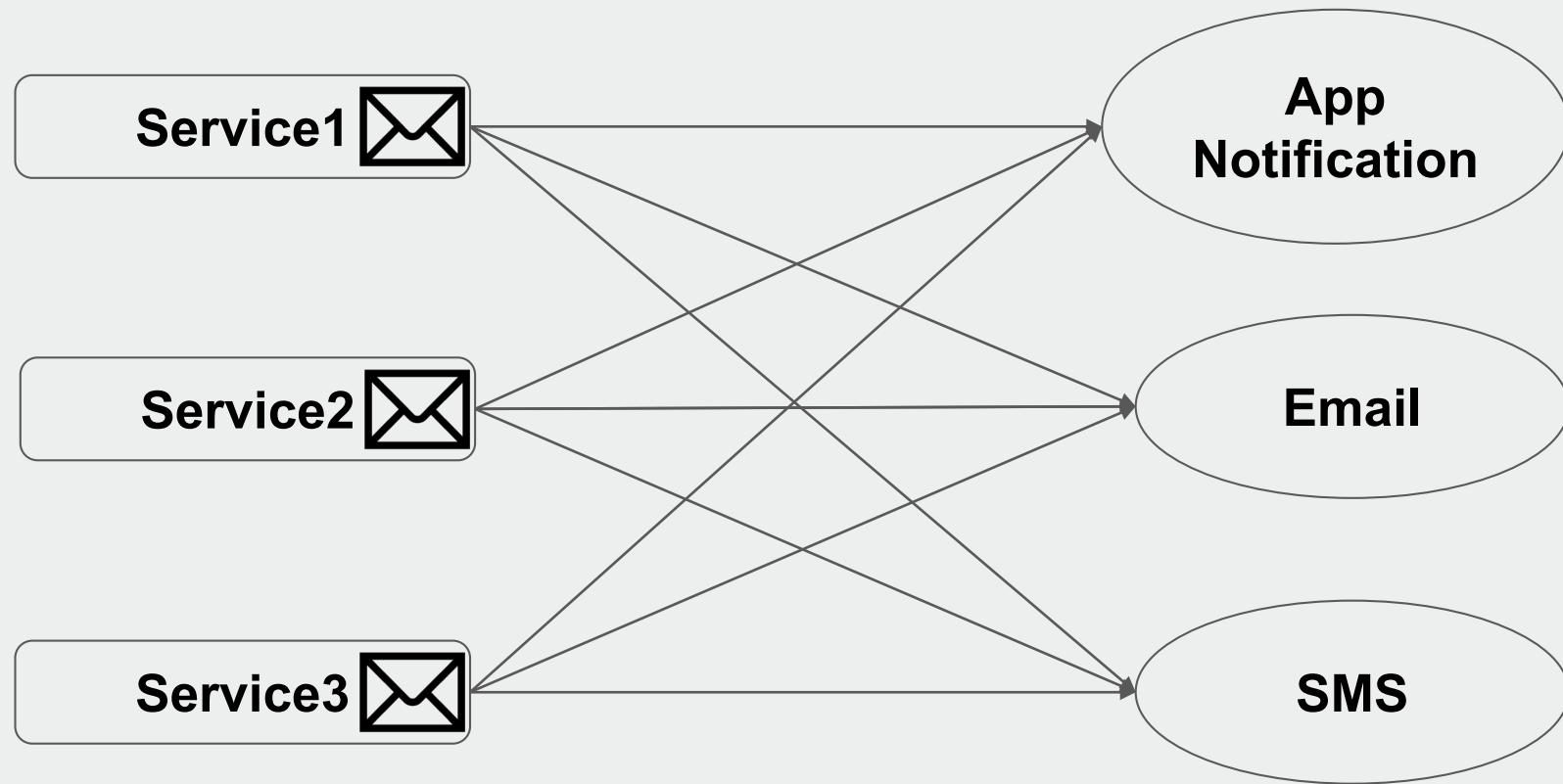
Email: 1M per hour

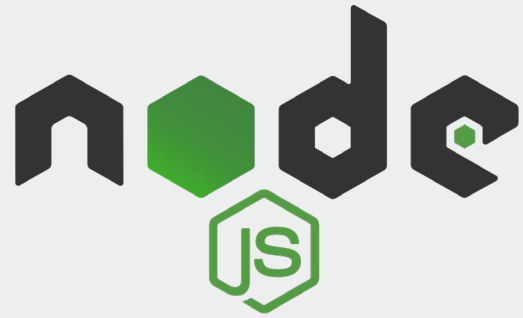


Why Does 91APP Need Notification Service?



Reason #1 Do not Repeat Yourself





The Waste of Development Resources

10 Services

x

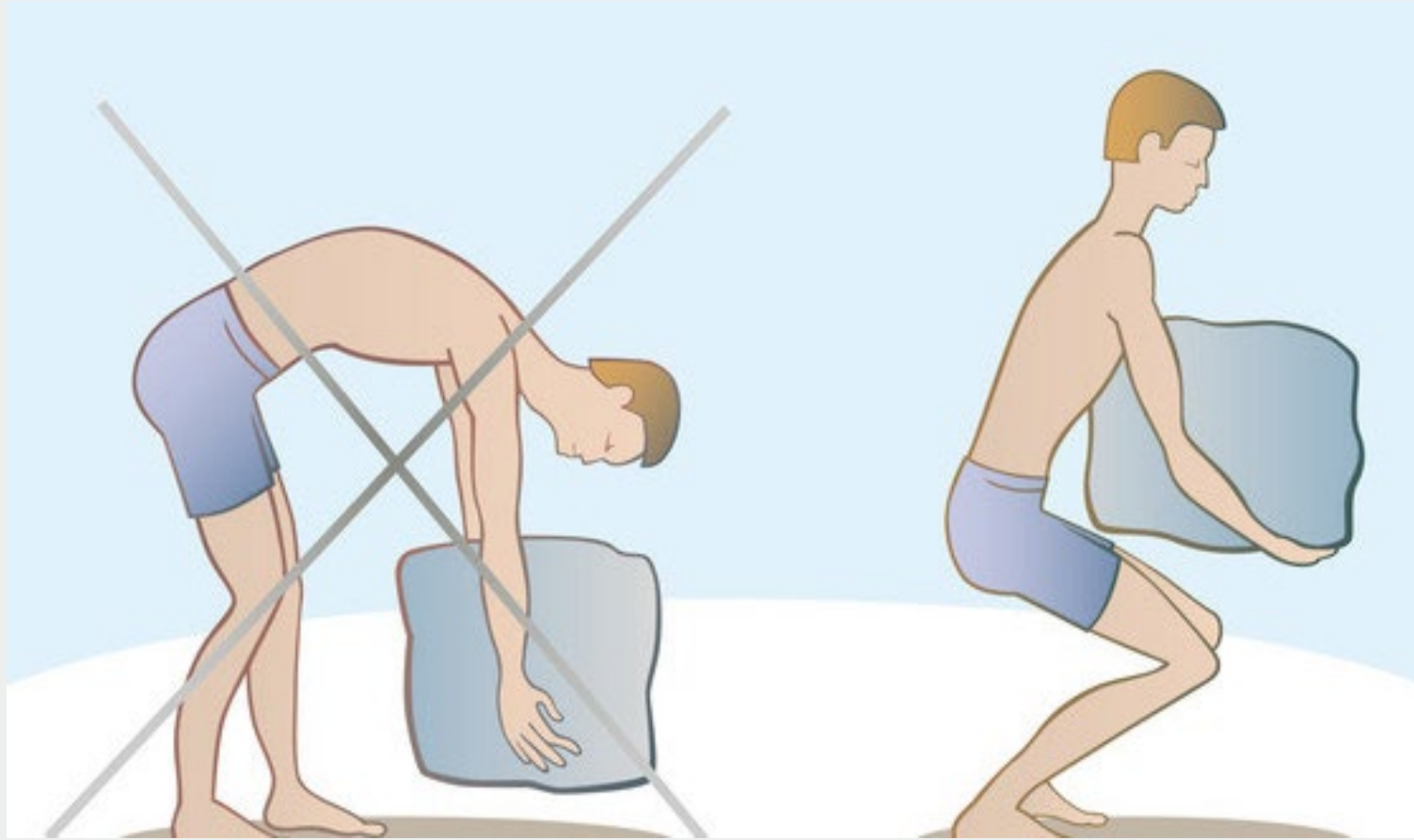
4 Features

x

10 days

=

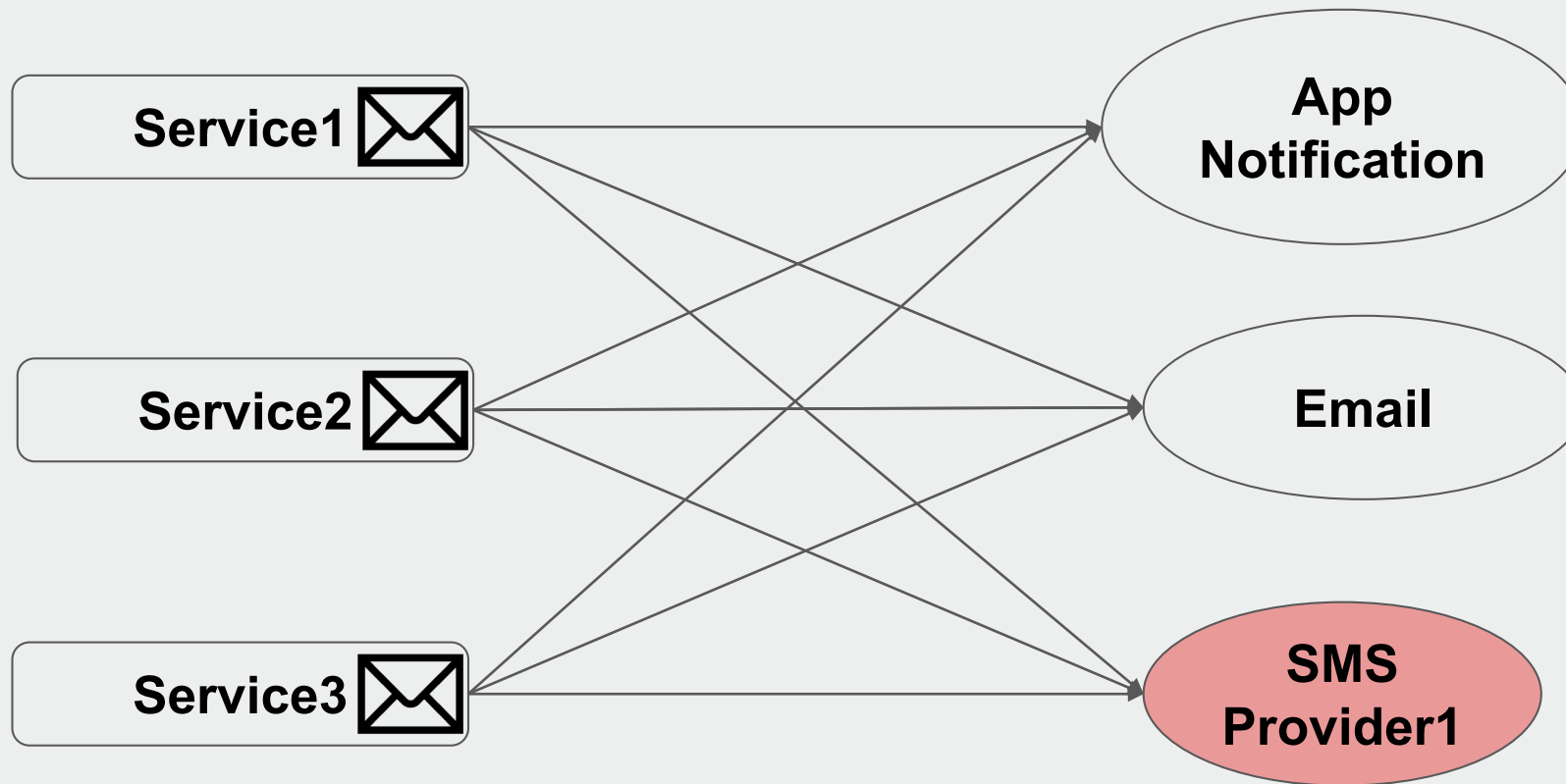
400 days

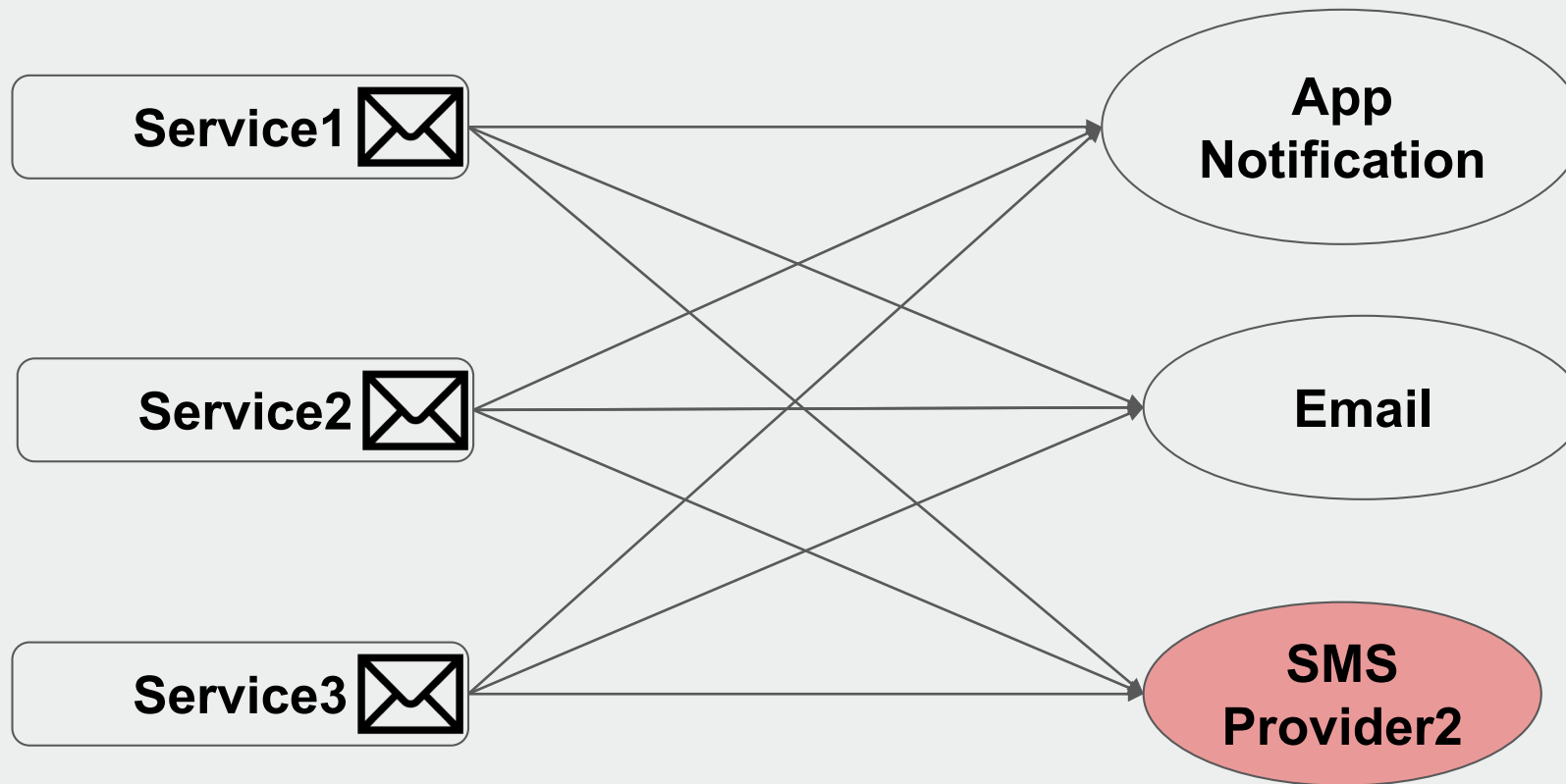


Deliver 30M Messages per Hour within Every System?



Reason #2 Interface





The Waste of Development Resources

10 Services

x

1 Features

x

10 days

=

100 days



Reason #3 Using Different Technology in Different System



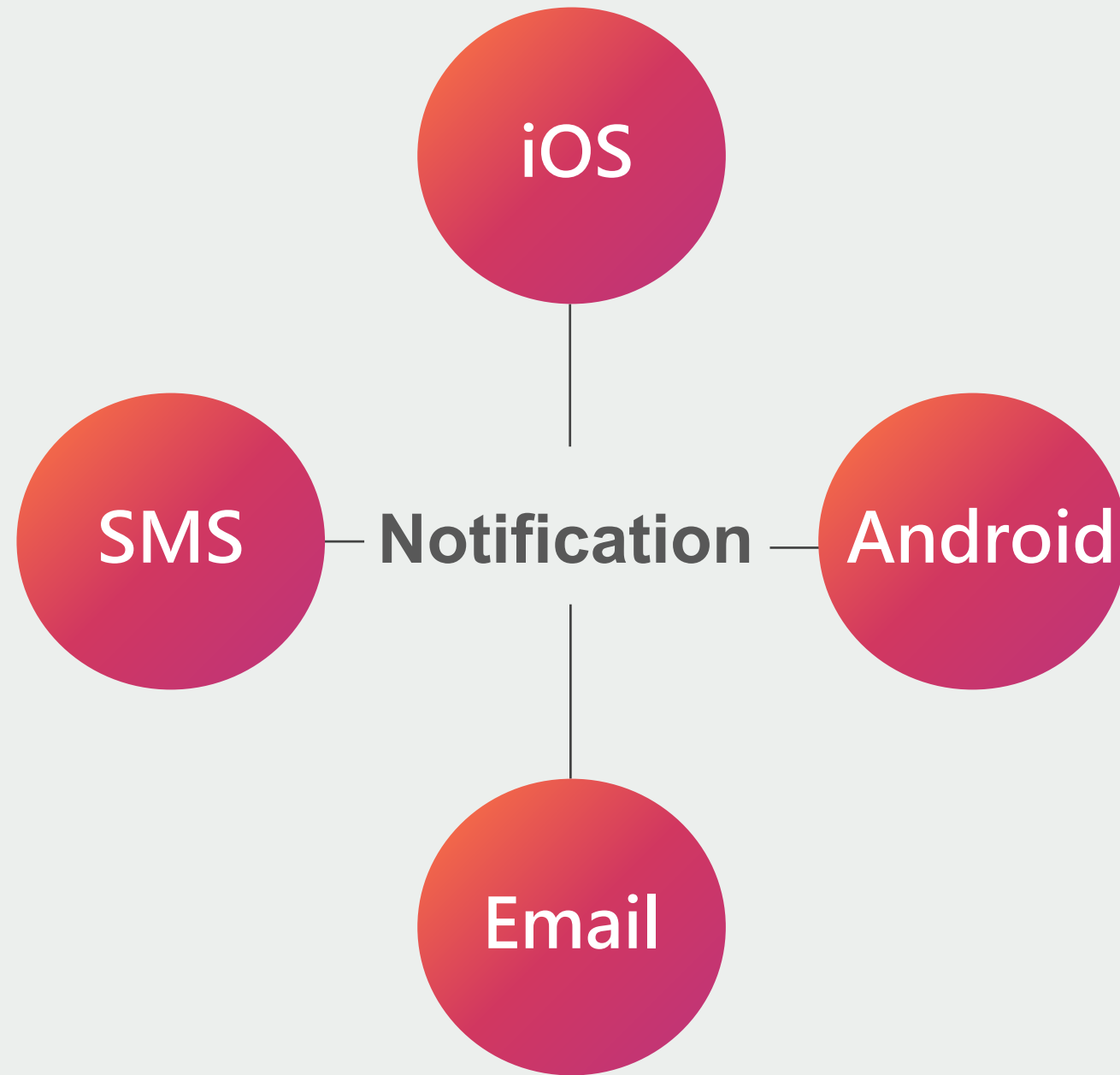


Using Kubernetes

Challenges



Challenge #1 - Resource Isolation





Challenge #2 - Multiple Tenancies

91APP

品牌新零售
虛實融合OMO最佳夥伴

Over 10,000 Customers

Timberland

Keds

Triumph
黛安芬

MAKE UP
FOR EVER
PROFESSIONAL - PARIS

FamilyMart

PHILIPS



TOMS

Chantelle
PARIS

THEFACESHOP
NATURAL STORY

durex

logitech

Levi's



Mode Marie
曼黛瑪璉

ARWIN
雅聞集團

SIMMONS

STUDIO A

Columbia

SKECHERS

SO NICE

康是美
COSMED

La new

王德傳
Wang De-Chuan
Four Chinese Tea
Since 1882

BLUE WAY

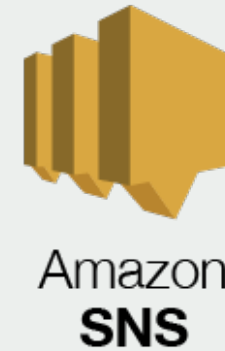
BRAPPERS

STAYREAL

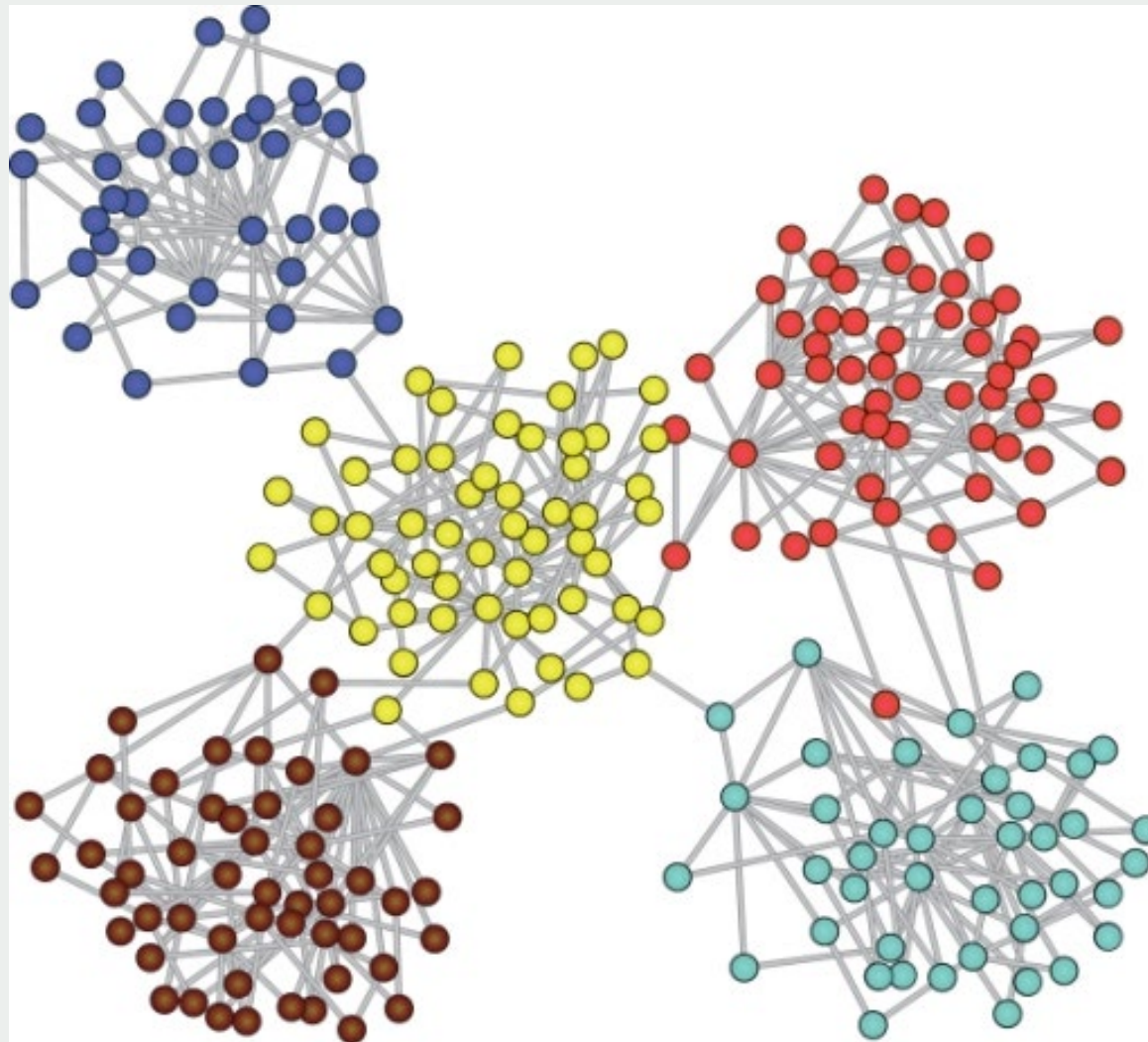
MEMEBOX

DAPHNE

乾唐軒
ACERA



Too Complicated to Use Firebase or AWS SNS



Clustering

<https://github.com/topics/graph-clustering>



Challenge #3 - Multiple Environments



Expand to New
Markets

2013 TW

2018 MY

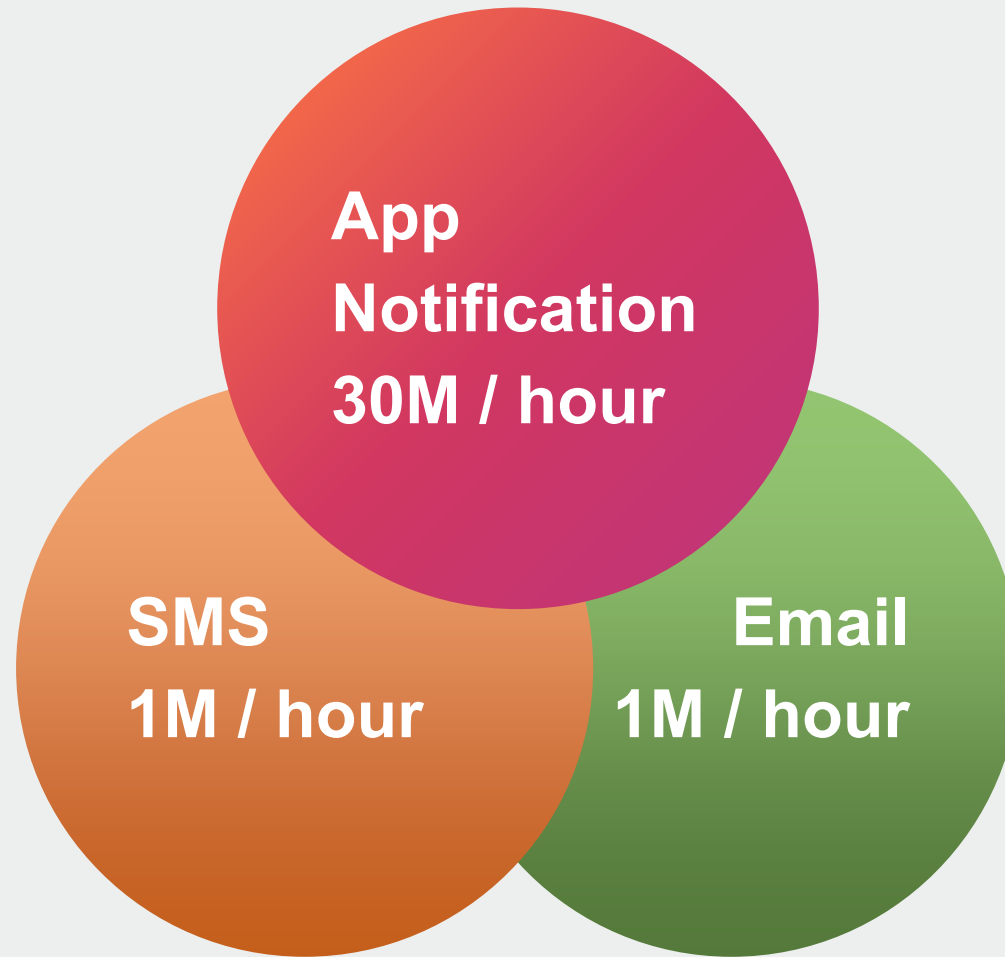
2019 HK

© Vemaps.com



Challenge #4 - Performance

<https://www.dnaindia.com/business/column-what-constitutes-a-high-performance-rewards-and-recognition-system-2569292>

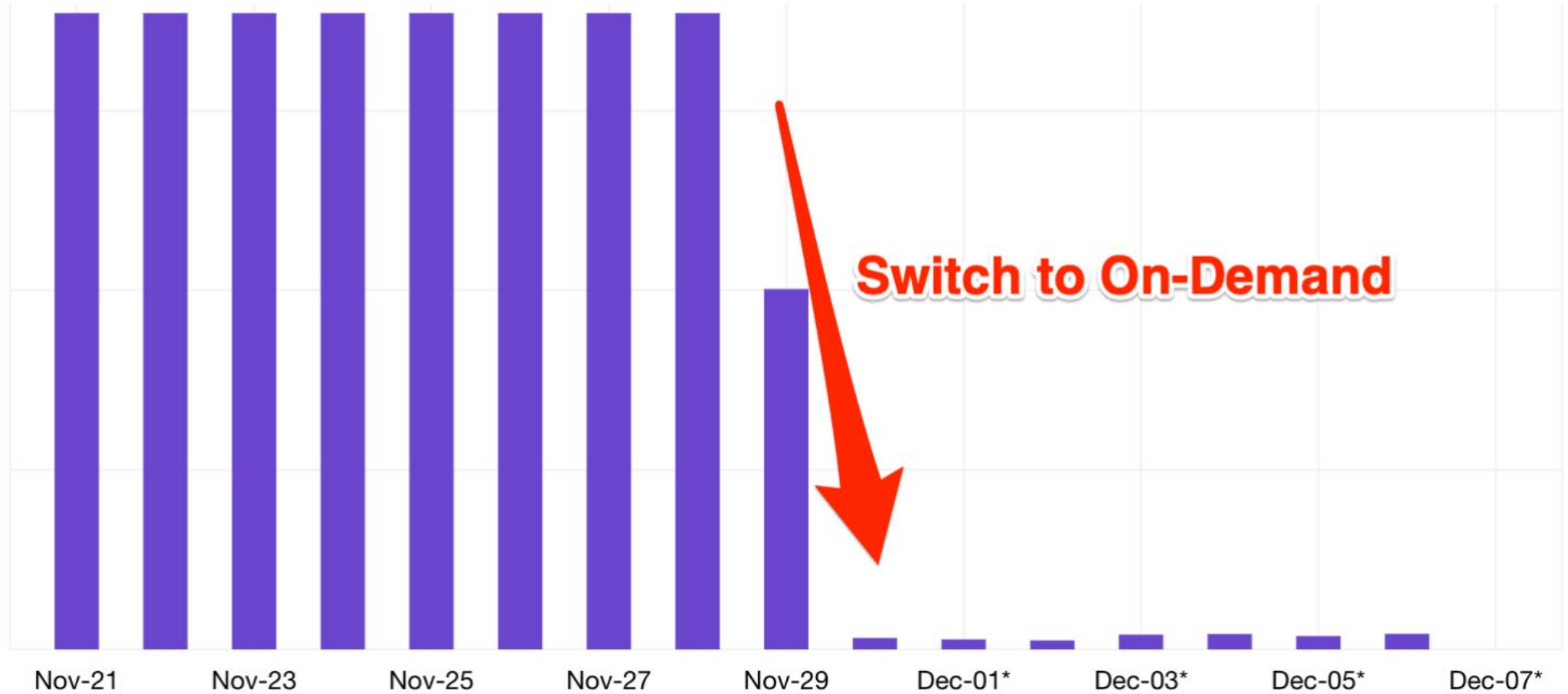




Challenge #5 - Scalability

<https://www.cloudtp.com/doppler/why-elastic-applications-are-key-to-your-cloud-future/>

Costs (\$)



Provisioned v.s On-Demand



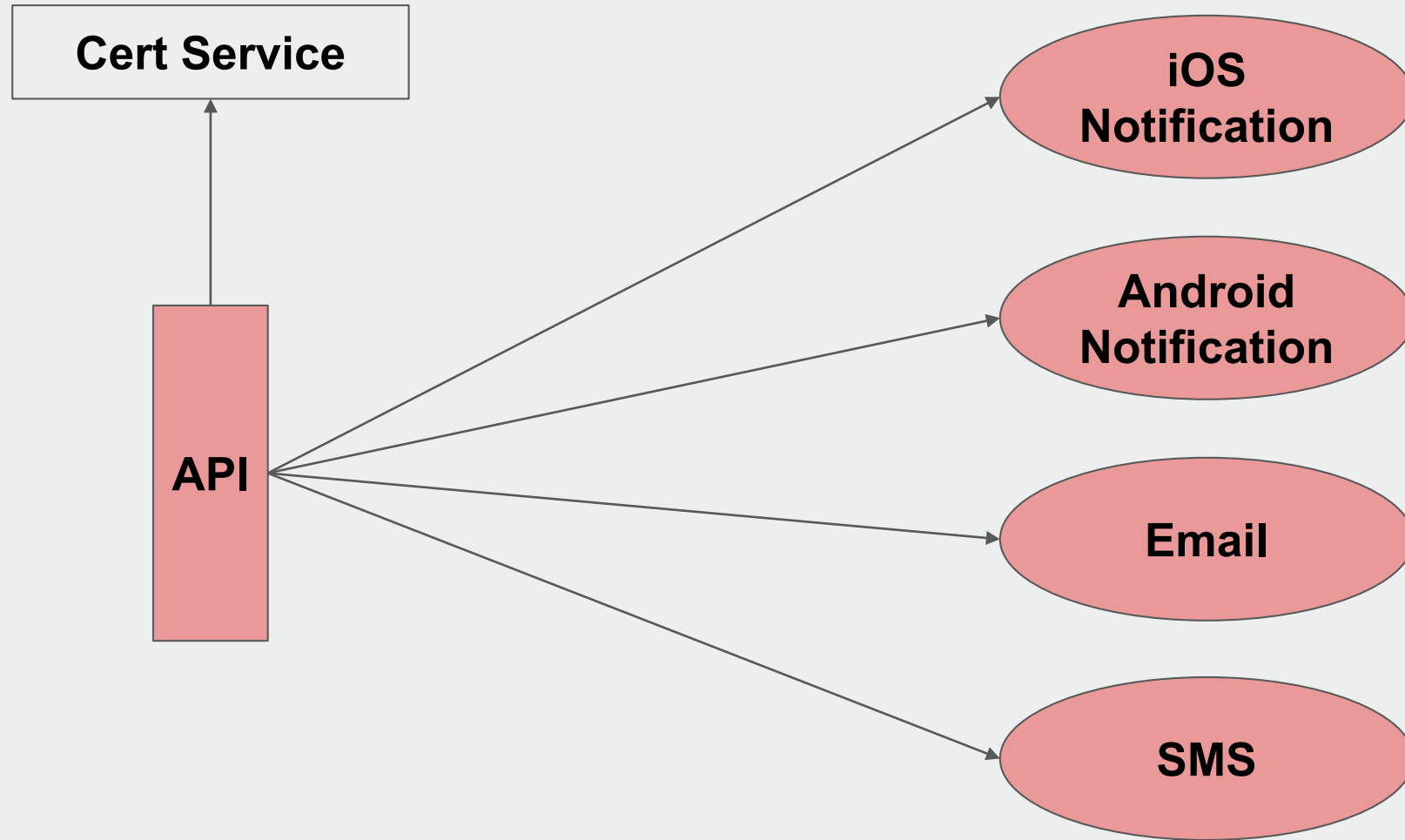
Challenge #6 - Delivery by Priority

- ☐ Multiple Tenancies
- ☐ Resource Isolation
- ☐ Delivery by Priority
- ☐ Multiple Environments
- ☐ Scalability
- ☐ Performance

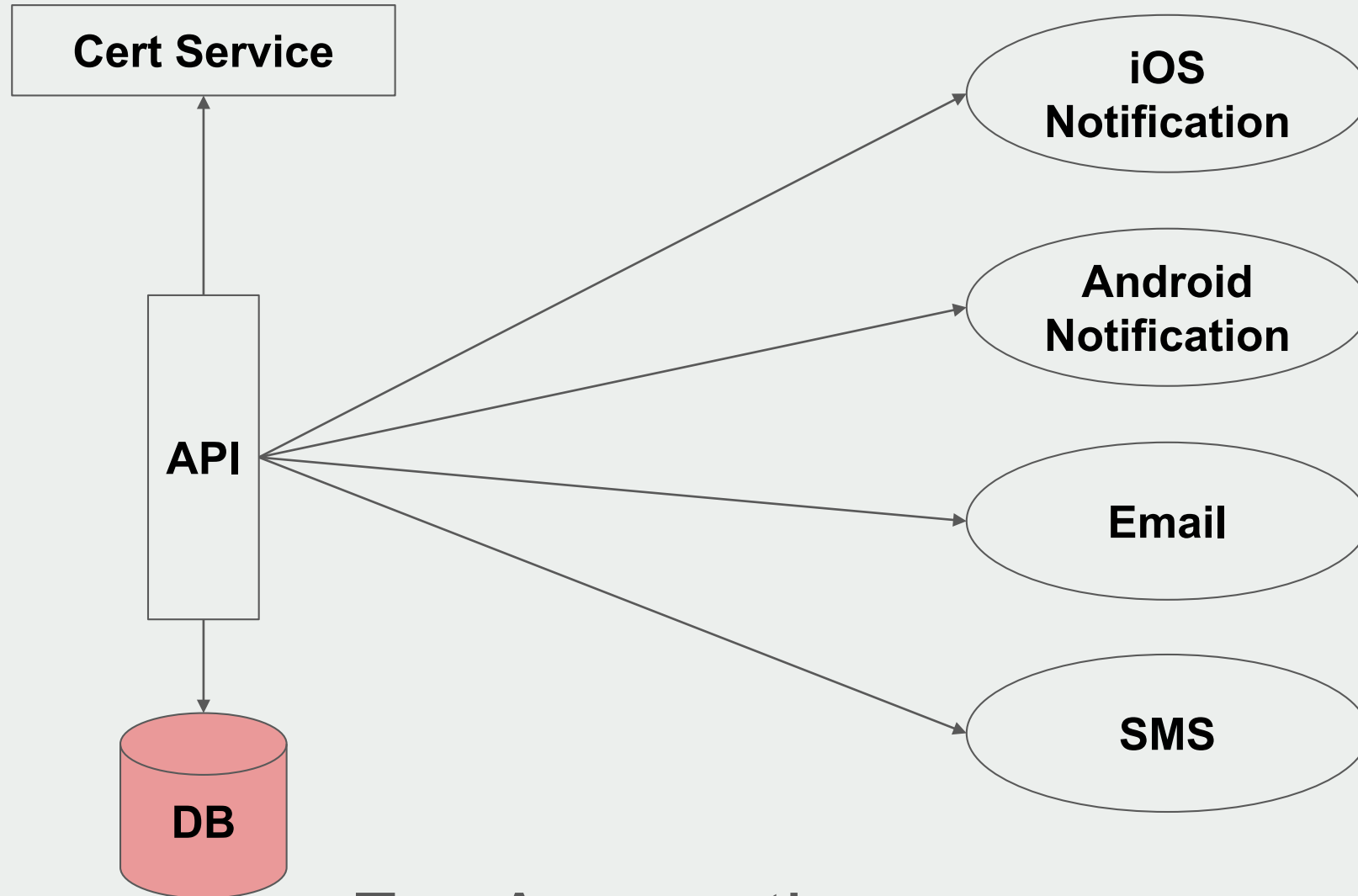
How To Do It?

Cert Service

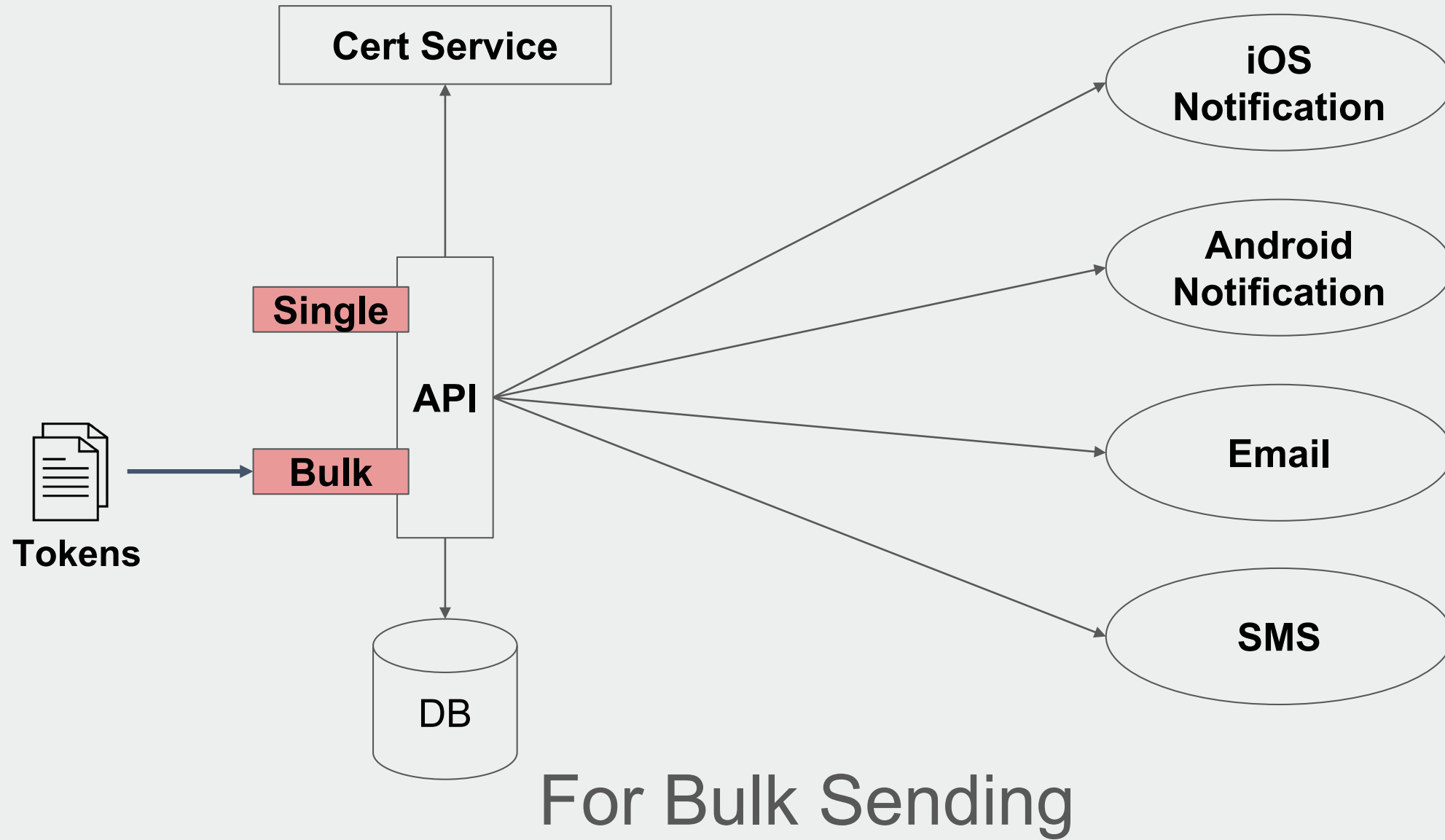
Certificate Service for Thousands of Apps



For Sending Single Notification



For Accounting



- ☒ Multiple Tenancies
- ☐ Resource Isolation
- ☐ Delivery by Priority
- ☐ Multiple Environments
- ☐ Scalability
- ☐ Performance

解密 91APP Queue System

Steven Tsai

<https://www.youtube.com/watch?v=E1pxP0wuGso>

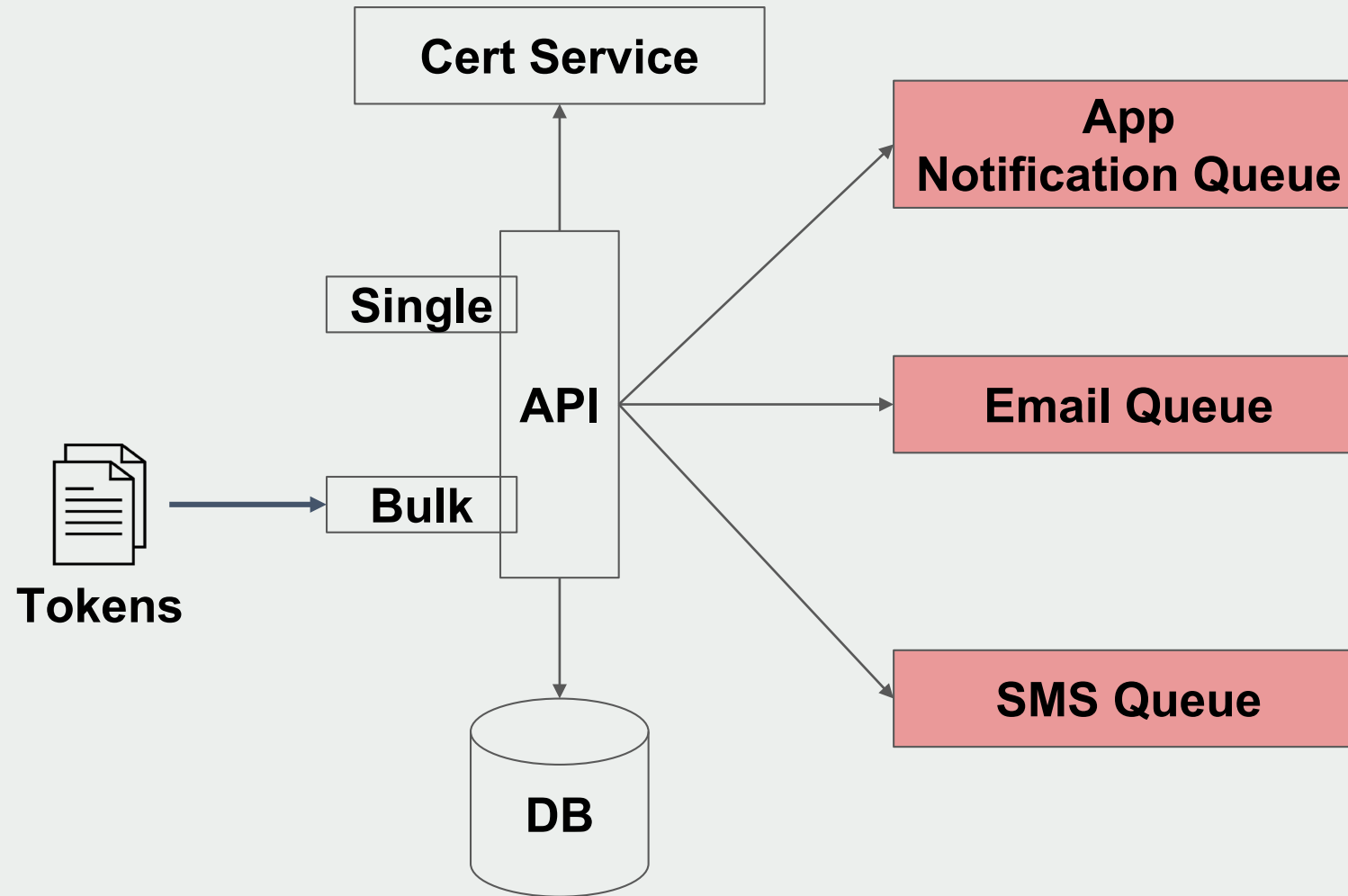
結論

91 RECAP

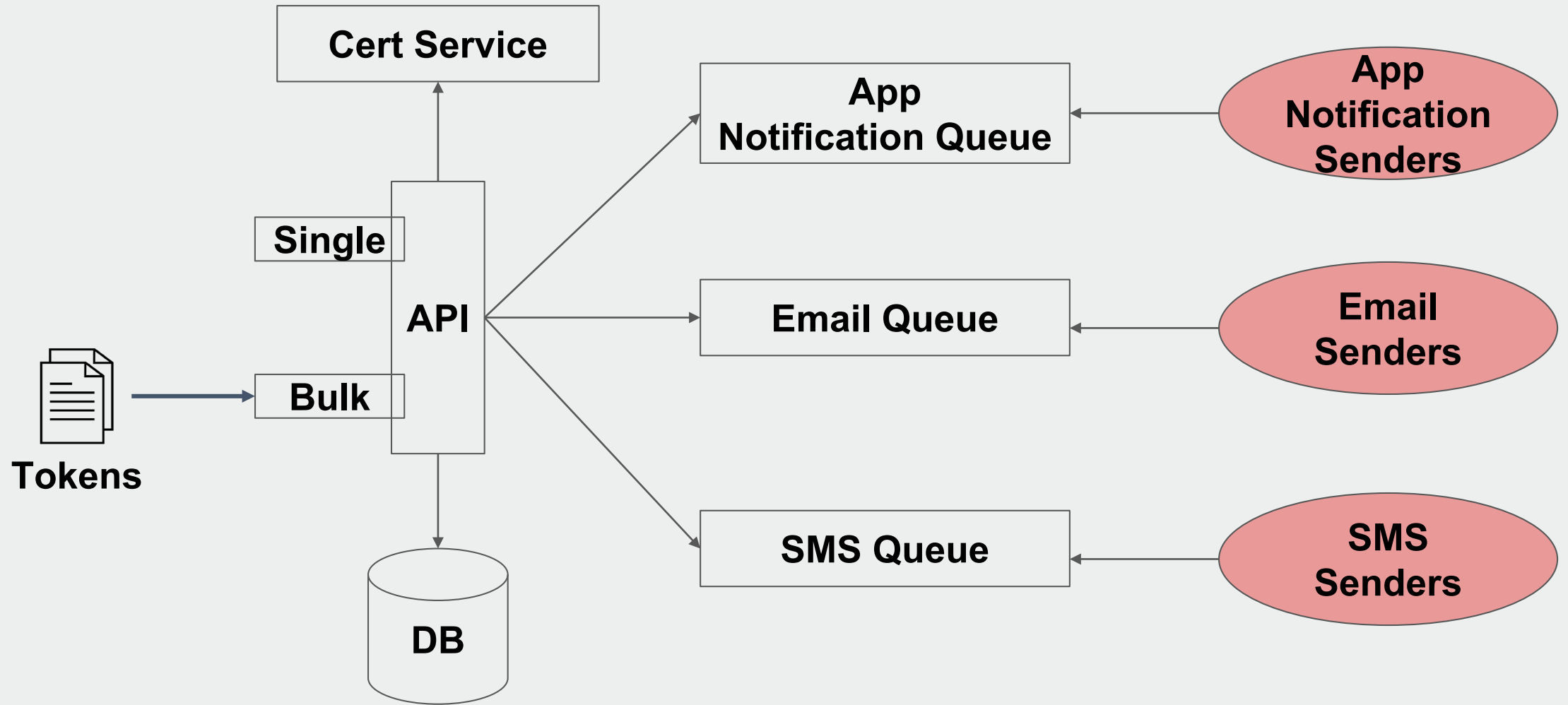
1. Queue 可做為瞬間巨量時各服務間的緩衝工具
2. Queue 可做為服務之間解藕的工具
3. 我關心什麼？定義屬於我們的指標
4. 搭配成熟的工具來降低維運監控的難度。例如：CloudWatch、
Container



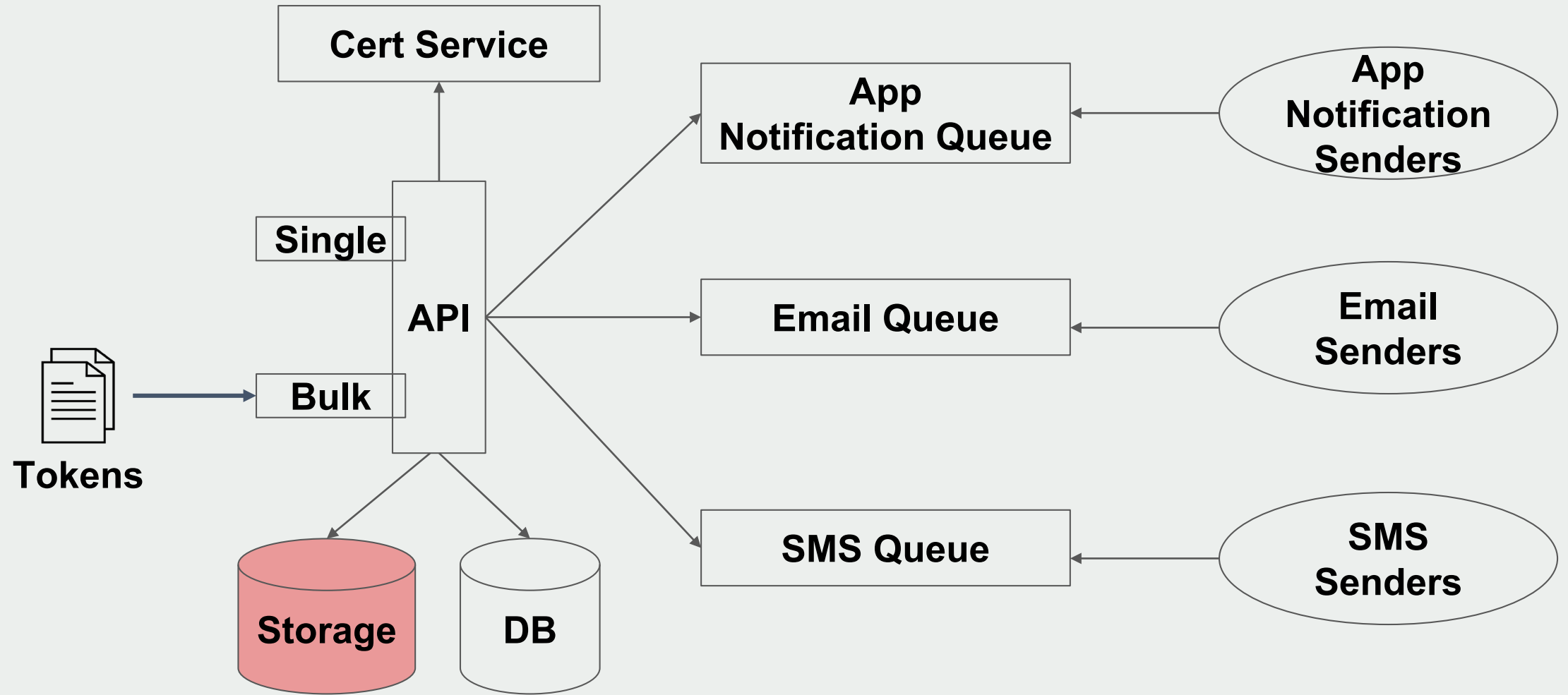
Queue



Scalability and Resource Isolation: 6M/hour Notifications

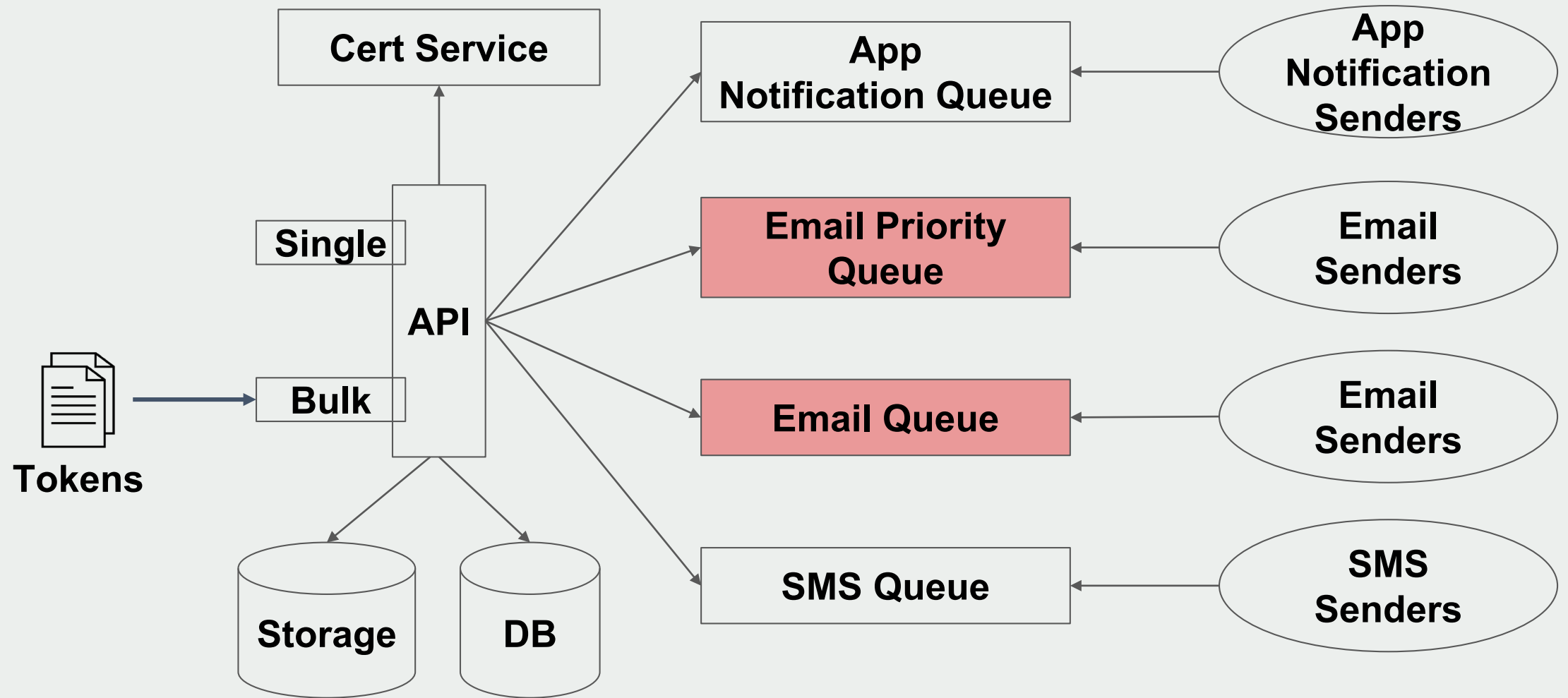


Scalability and Resource Isolation: 6M/hour Notifications



Scalability and Resource Isolation: 6M/hour Notifications

- ☒ Multiple Tenancies
- ☒ Resource Isolation
- ☐ Delivery by Priority
- ☐ Multiple Environments
- ☐ Scalability
- ☐ Performance



Delivery by Priority

- ☒ Multiple Tenancies
- ☒ Resource Isolation
- ☒ Delivery by Priority
- ☐ Multiple Environments
- ☐ Scalability
- ☐ Performance

從零開始的 Configuration Management

Levi Chen @ DevOpsDays Taipei 2019

91APP

Configuration Hierarchy (Source)

G _{lobal}	R _{egio}	M _{arket}	S _{ho}
Default Settings Schema Comments	Regional Settings		Shop Id: 9527
		tw	Shop Id: 9528
	ap-northeast-1	hk	
	ap-southeast-1	my	
/{module}/global.json		/{module}/{region}/{market}.json	
/{module}/{region}/global.json		/{module}/{region}/{market}-{shop}.json	

1

{ }

region

1

{ }

tw

1

▼

{

2

{

"SMSProvider": "AWS-SNS"

3

}

hk

1

{

2

{

"SMSProvider": "Infobip"

3

}

my

```

1  {
2    "SMSProvider": "Mitake",
3    "EmailProvider": "AWS-SES",
4    "iOSNotificationProvider": "APNS",
5    "AndroidNotificationProvider": "FCM"
6  }

```

global

Configuration Build Tools: Cfgctl

- Command line interface for building configuration hierarchy
- Test for Configuration
- JSON -> Key-Value pairs
- Build and deploy configuration to 3 types of storages
 - Local files
 - Consul
 - S3

Configuration Hierarchy (Build)

G lobal Default Settings Schema Comments	R egio Regional Settings	M arket	S hop Shop Id: 9527
		tw	Shop Id: 9528
	ap-northeast-1	hk	
	ap-southeast-1	my	

```

/{module}/index.json
/{module}/{market}.json
/{module}/{market}-{shop}.json

```

```
1 {
2   "$build-tool-version": "0.8.0",
3   "$config-version": "1.1.0",
4   "SMSProvider": "Mitake",
5   "EmailProvider": "AWS-SES",
6   "iOSNotificationProvider": "APNS",
7   "AndroidNotificationProvider": "FCM"
8 }
```

TW

```
1 {
2   "$build-tool-version": "0.8.0",
3   "$config-version": "1.1.0",
4   "SMSProvider": "AWS-SNS",
5   "EmailProvider": "AWS-SES",
6   "iOSNotificationProvider": "APNS",
7   "AndroidNotificationProvider": "FCM"
8 }
```

HK

```
1 {
2   "$build-tool-version": "0.8.0",
3   "$config-version": "1.1.0",
4   "SMSProvider": "Infobip",
5   "EmailProvider": "AWS-SES",
6   "iOSNotificationProvider": "APNS",
7   "AndroidNotificationProvider": "FCM"
8 }
```

MY

Benefits of Configuration Hierarchy

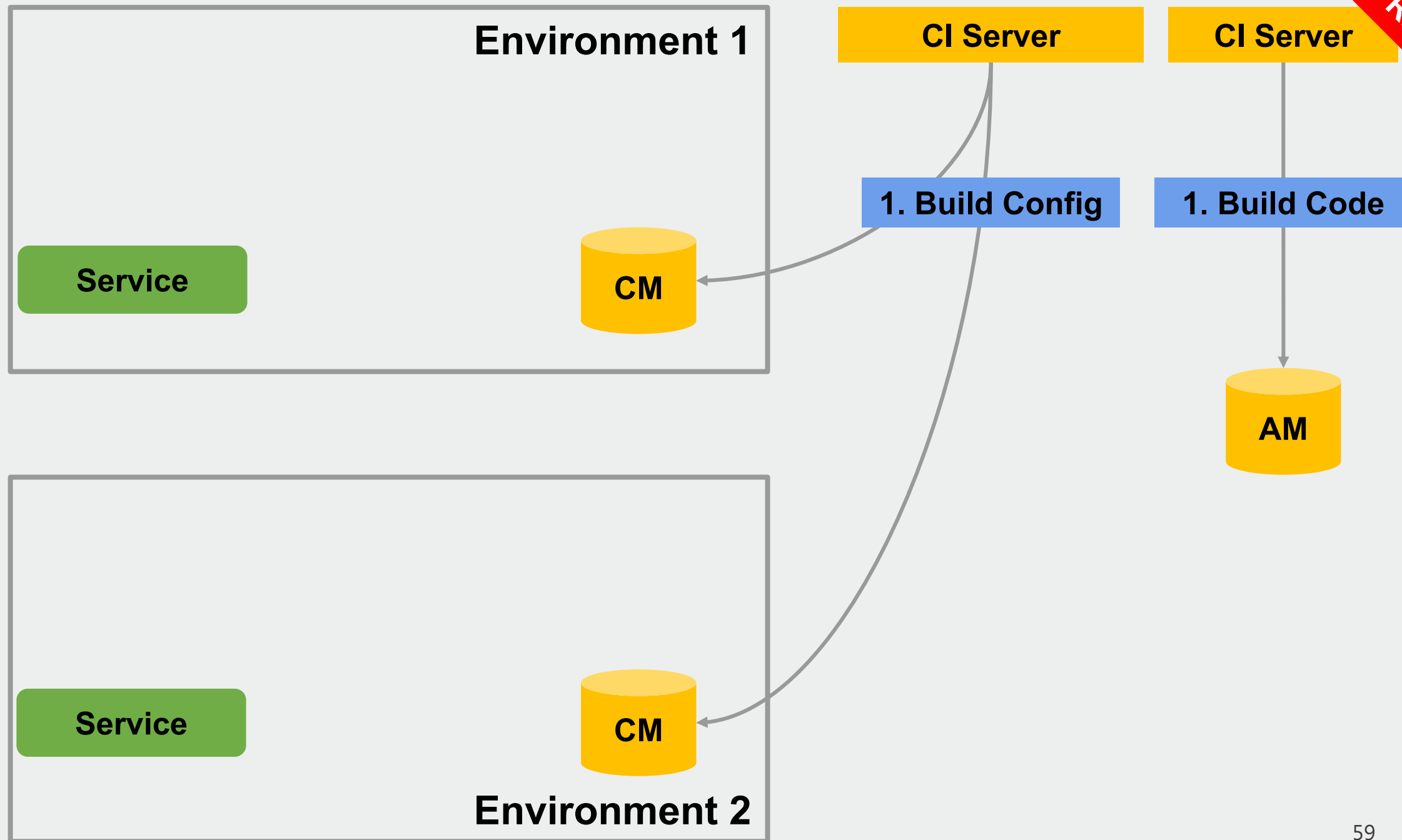
- Tenancies level configuration
- No copy paste (remove redundant configuration)

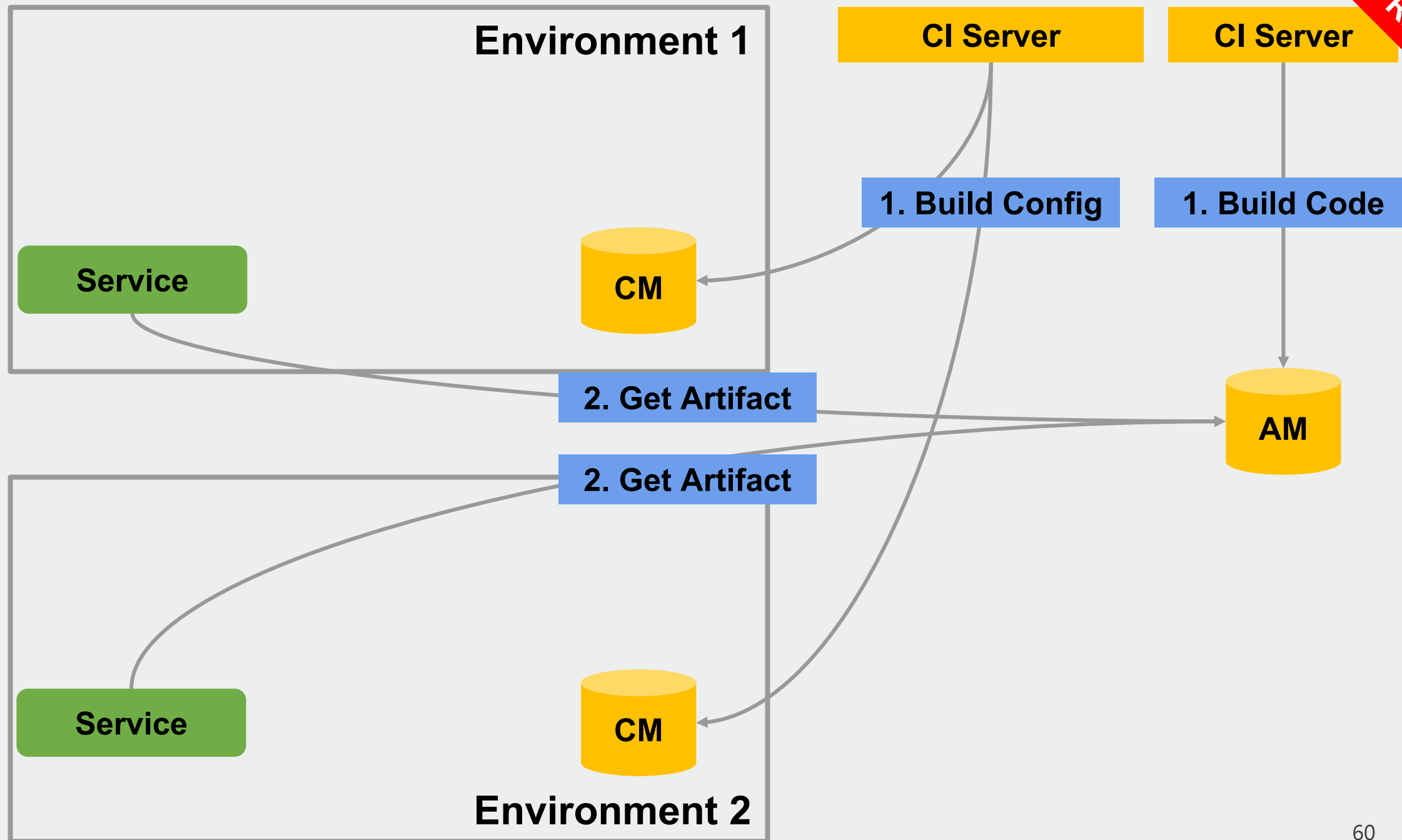


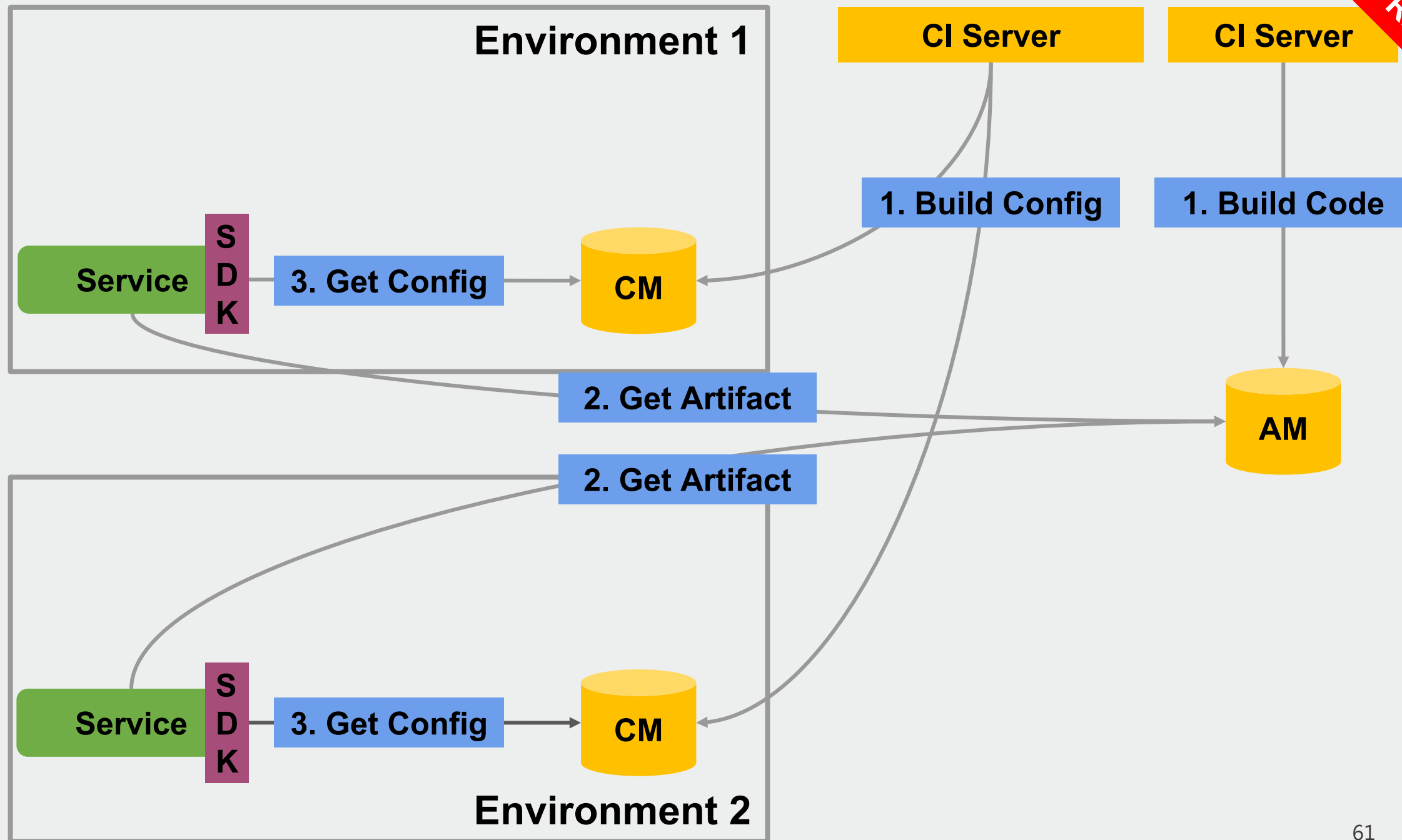
CI Server

CI Server









- ☒ Multiple Tenancies
- ☒ Resource Isolation
- ☒ Delivery by Priority
- ☒ Multiple Environments
- ☐ Scalability
- ☐ Performance

91APP

TECH -
DAY

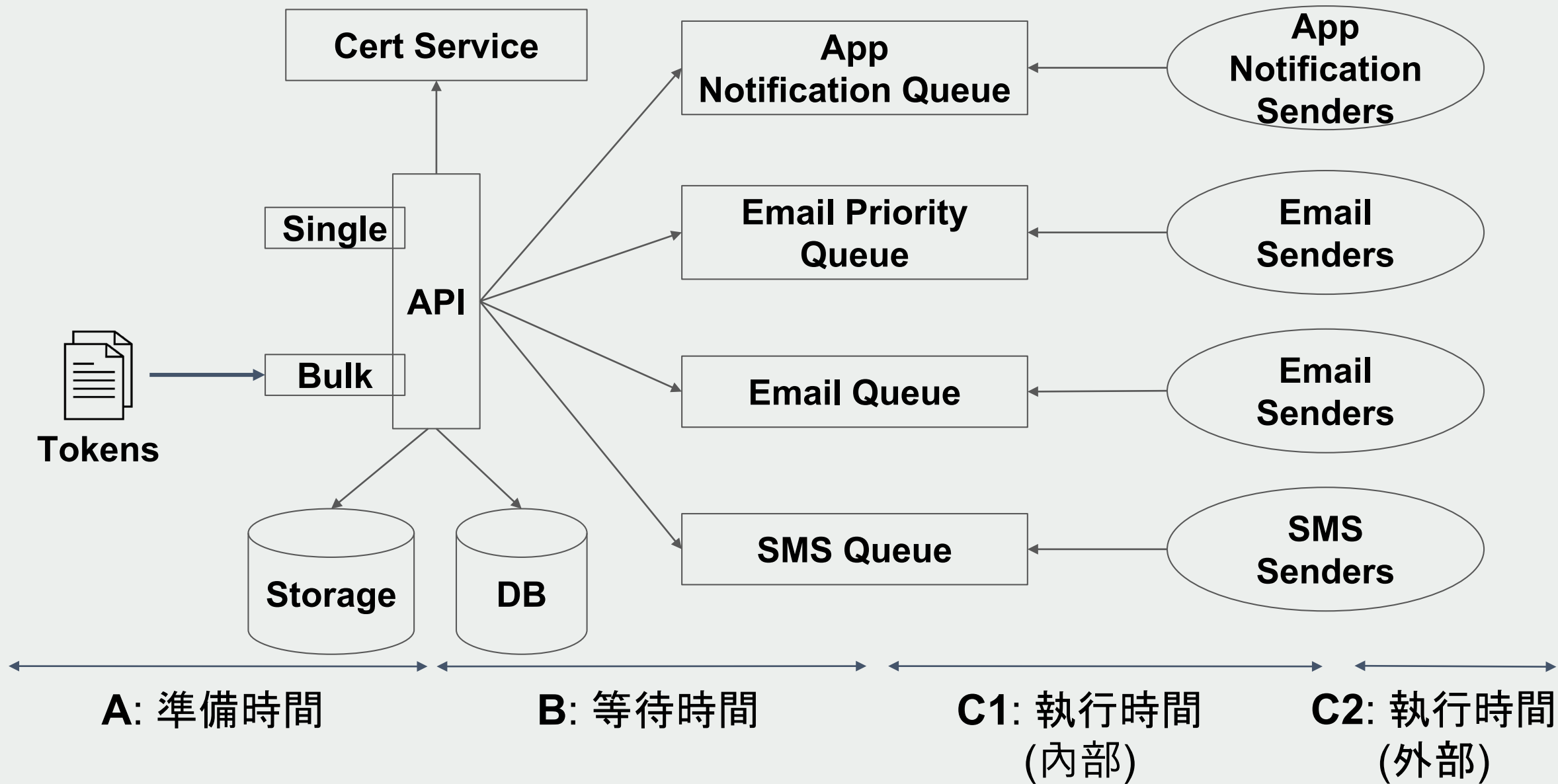
2020

RECAP

非同步系統的服務水準保證

淺談非同步系統的 SLO 設計

吳剛志 / Andrew Wu (91APP 首席架構師)



我們期待的目標是? (SLO)

業務端的期待:

消費者按下“發送驗證簡訊”，**5 秒內** 就要完成送出。

工程端的理解:

$$(A) + (B) + (C1) + (\text{C2: 簡訊商} \rightarrow \text{電信商} \rightarrow \text{手機端 的時間}) < 5 \text{ sec}$$

難以量測, 並非 91APP 內部維運的服務範圍。
初期定義先排除這個部分。

經過觀察, 內部系統能在
5 sec 內完成送出, 就能滿足期待。

取而代之, 透過與外部服務商要求 SLA 作為替代。

診斷：有監控數據 (診) 才能找出效能瓶頸的所在 (斷)

RECAP

如果：

(A) 的數值過高：前端系統產生驗證簡訊的速度太慢；

(B) 的數值過高：訊息在 Queue 裡面排隊花太多時間

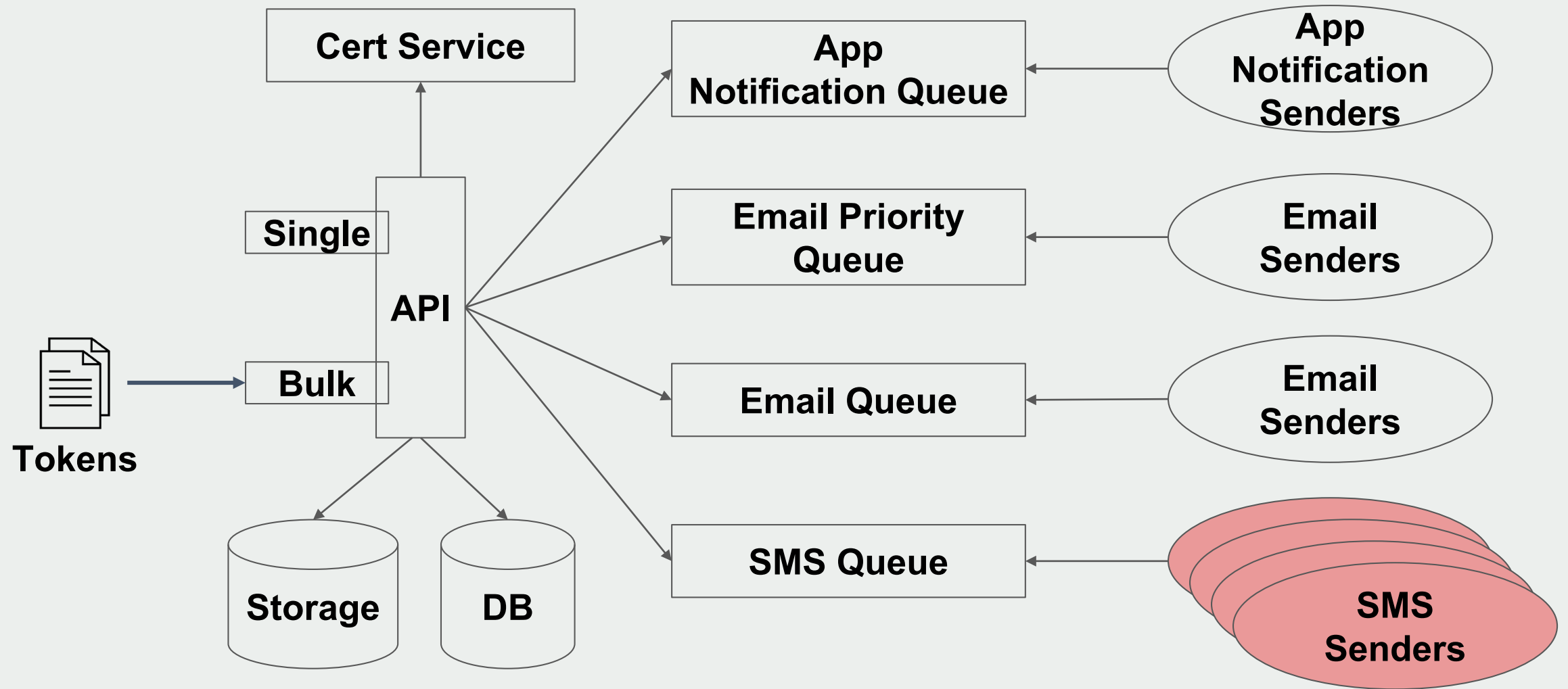
Queue 堆積太多行銷簡訊

(D) 過高, 訊息堆積太多

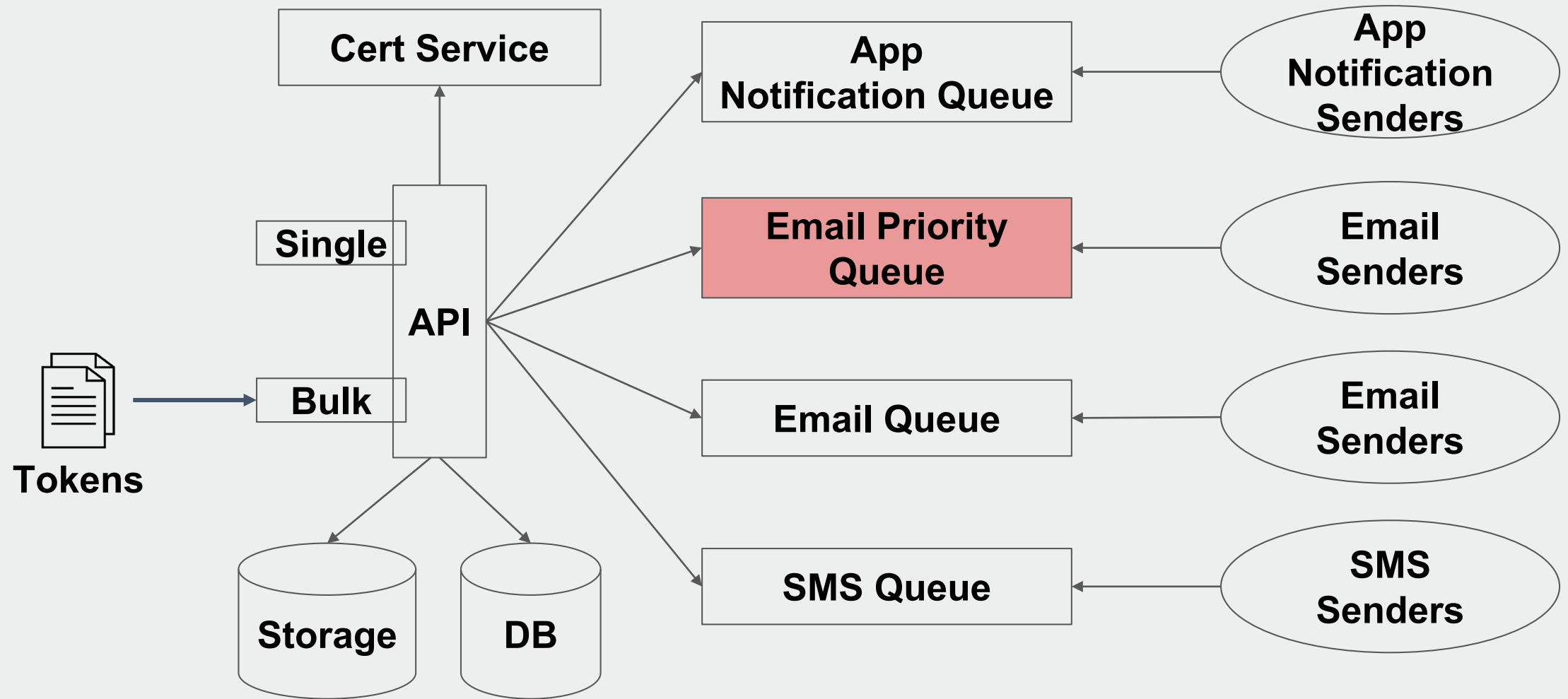
(D) 不高, 訊息消化太慢

(C1) 的數值過高：訊息消化太慢 (查詢資料庫，套用訊息內容等等)

(C2) 的數值過高：第三方的處理效能太慢

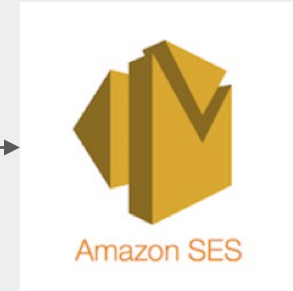
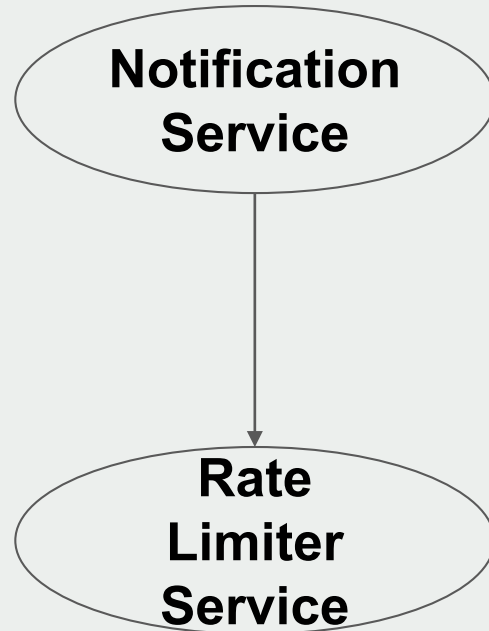


Solution #1, Message Worker Scaleout ...

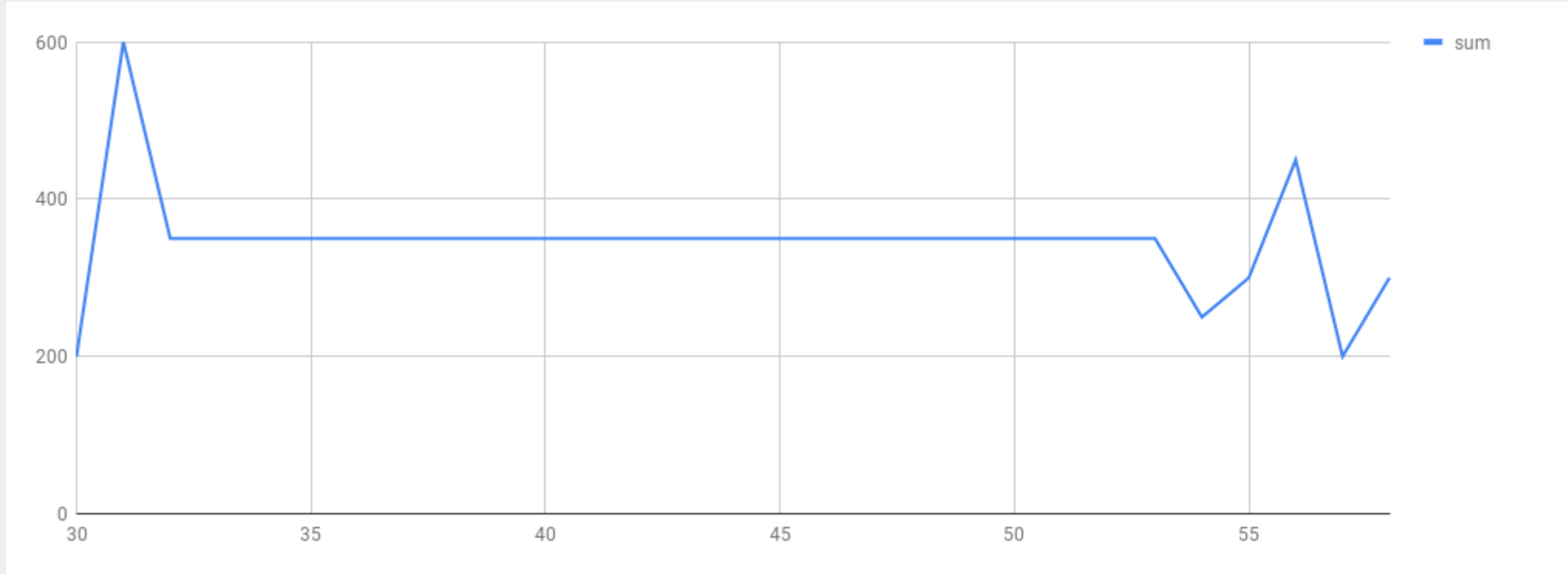


Solution #2 - Grouping, Delivery by Priority

91APP



<https://blog.levichen.tw/the-traffic-control-in-distributed-system-7fdf342b88b7>



- Multiple Tenancies
- Resource Isolation
- Delivery by Priority
- Multiple Environments
- Scalability
- Performance

What Do We Have Now?

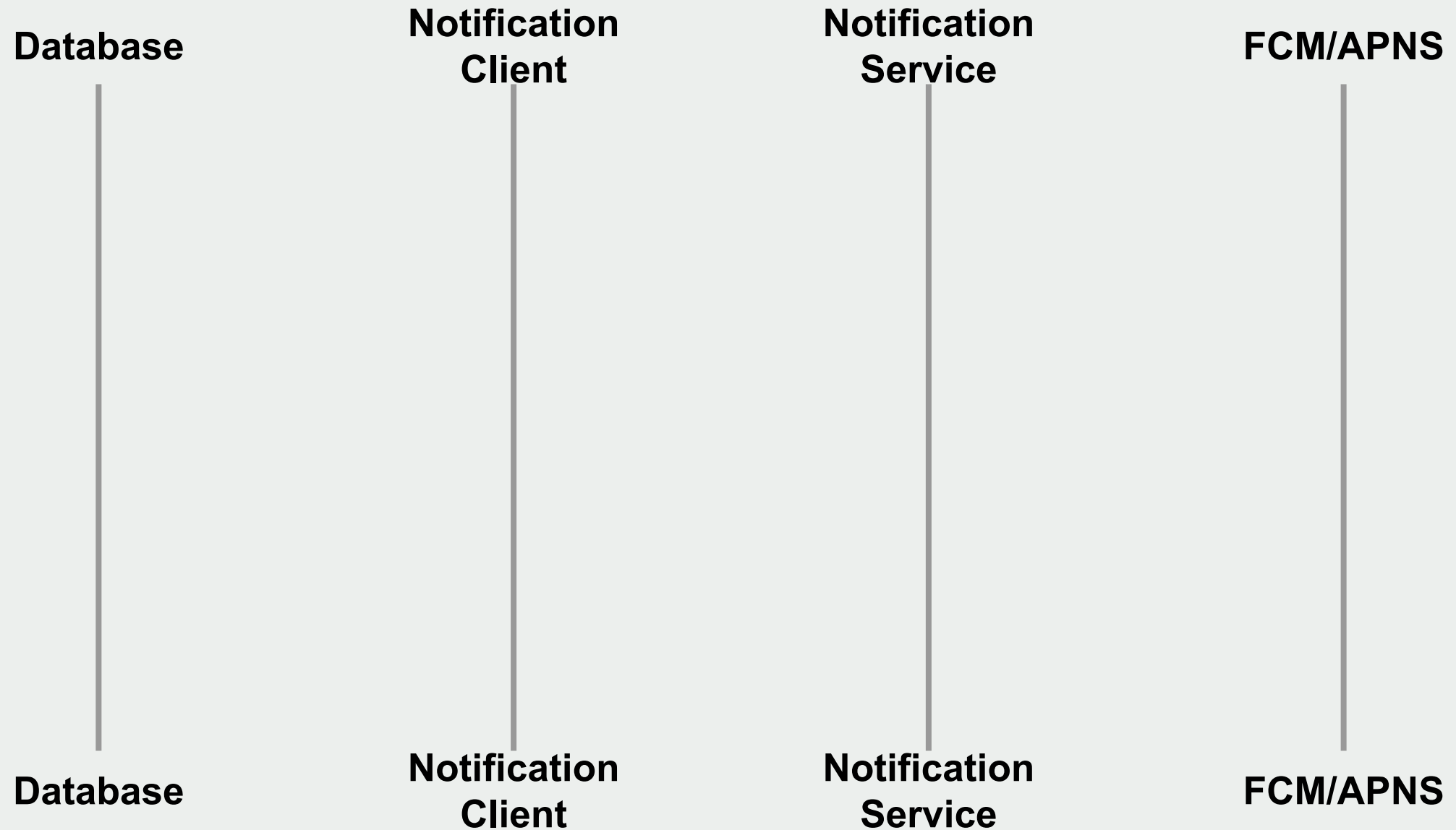
- Certificate Service
 - For multiple Tenancies
- Using Queue
 - Single, bulk delivery with different SLA
 - Resource isolation
 - Scale as we need
 - Delivery by priority
- Using Configuration Management
 - Deploy to multiple markets

Our Target in 2020 1111

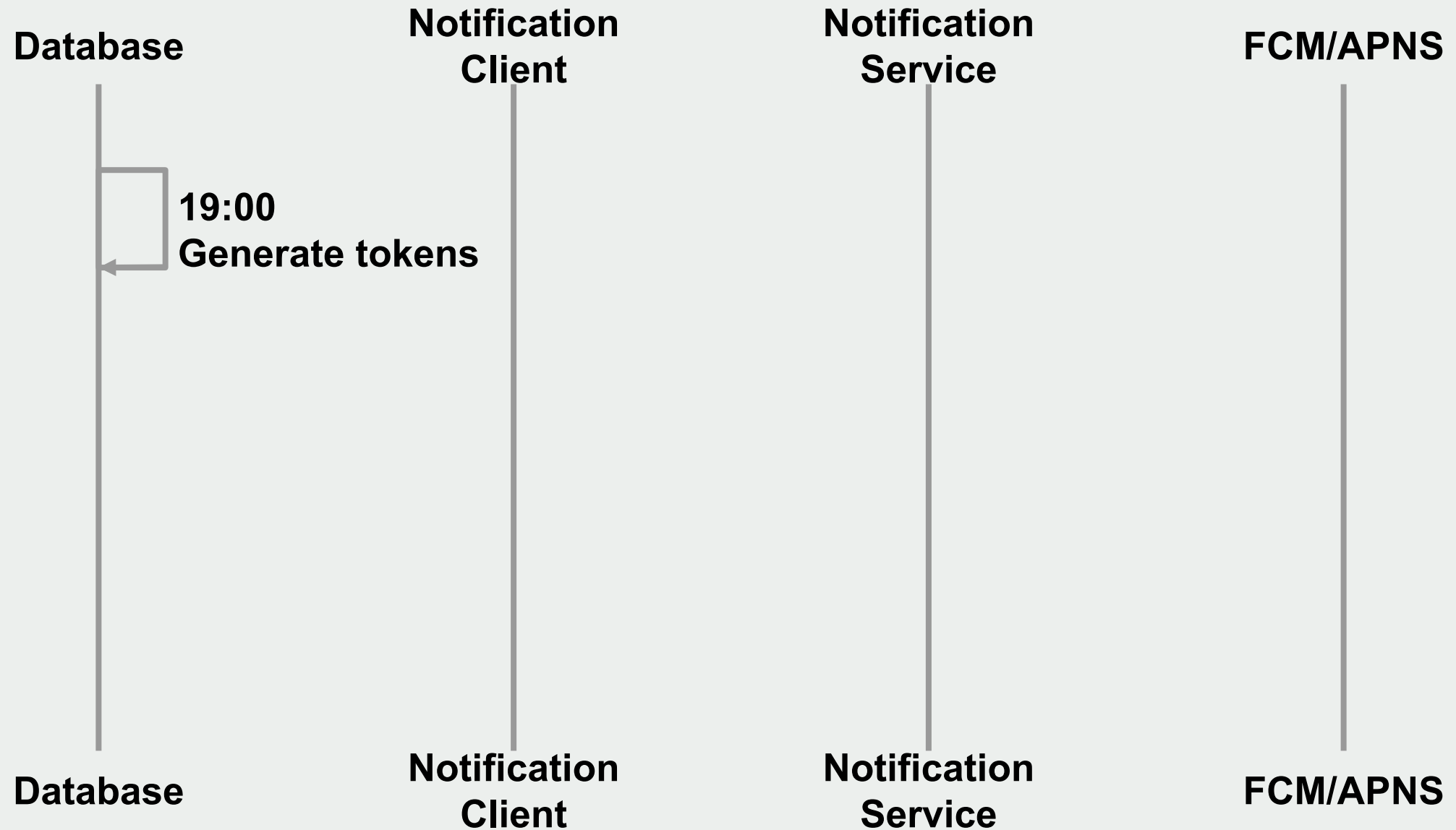


Deliver 60M App Notifications per Hour

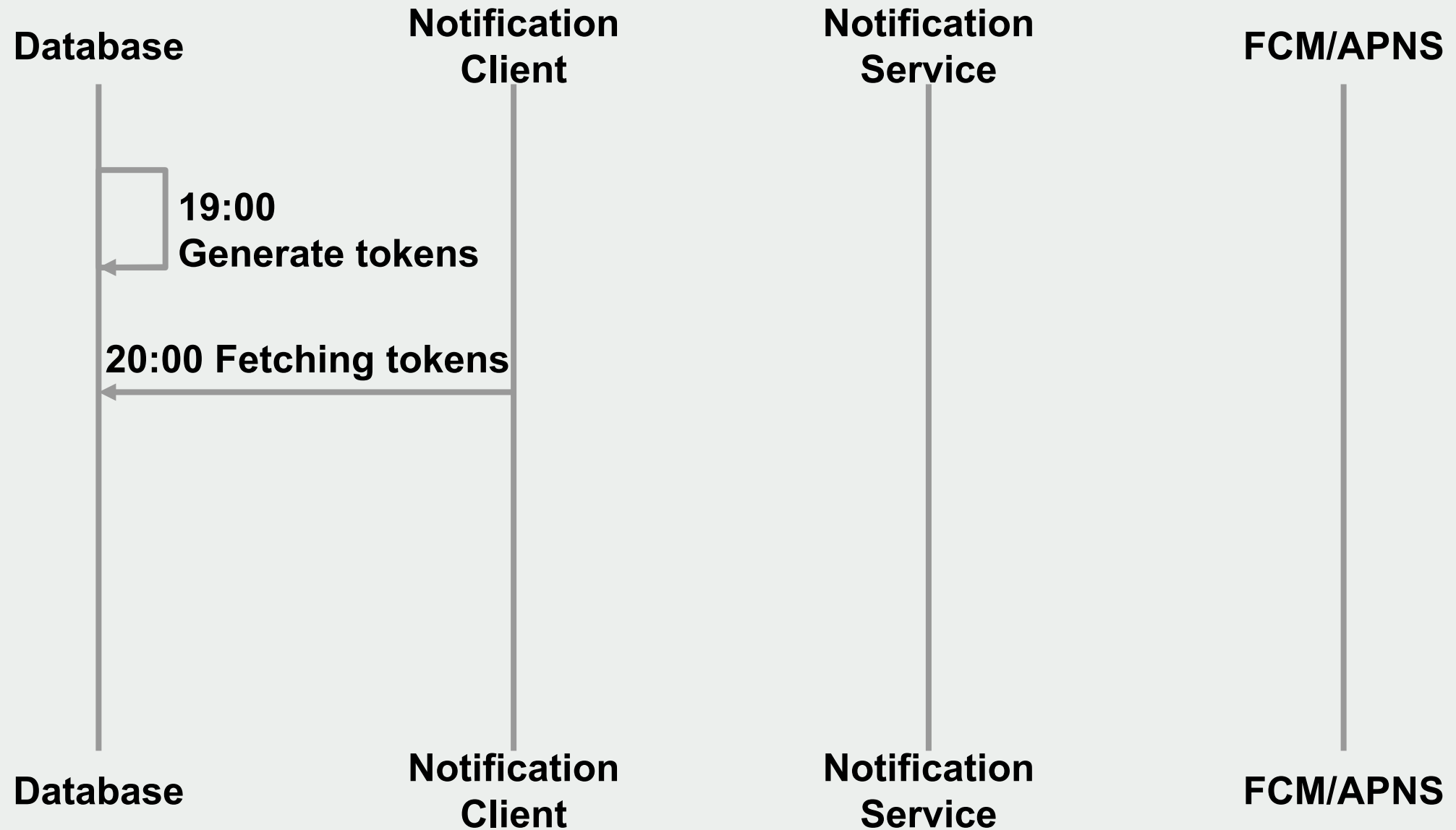
Sending a Broadcast Notification at 20:00



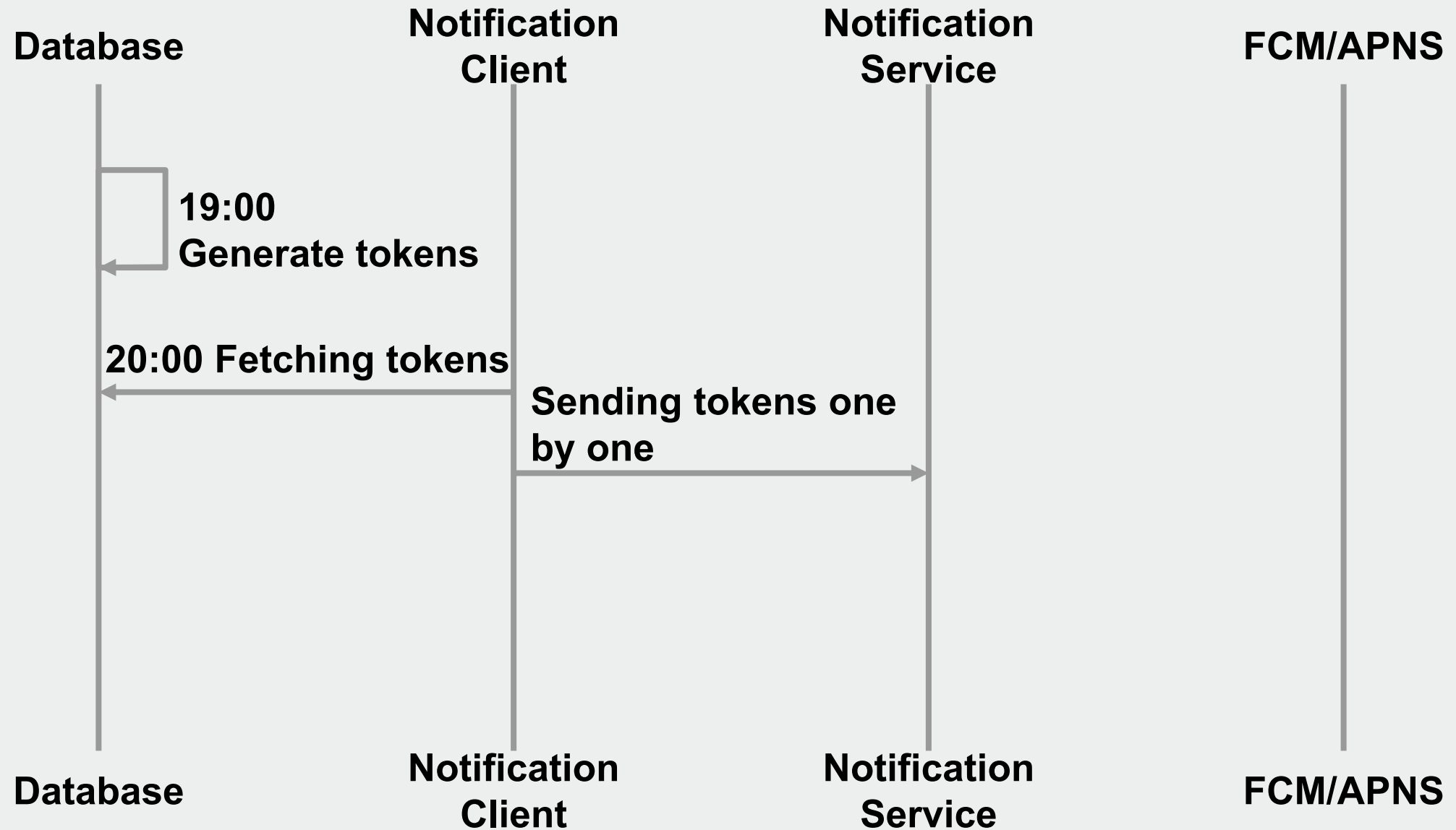
Sending a Broadcast Notification at 20:00



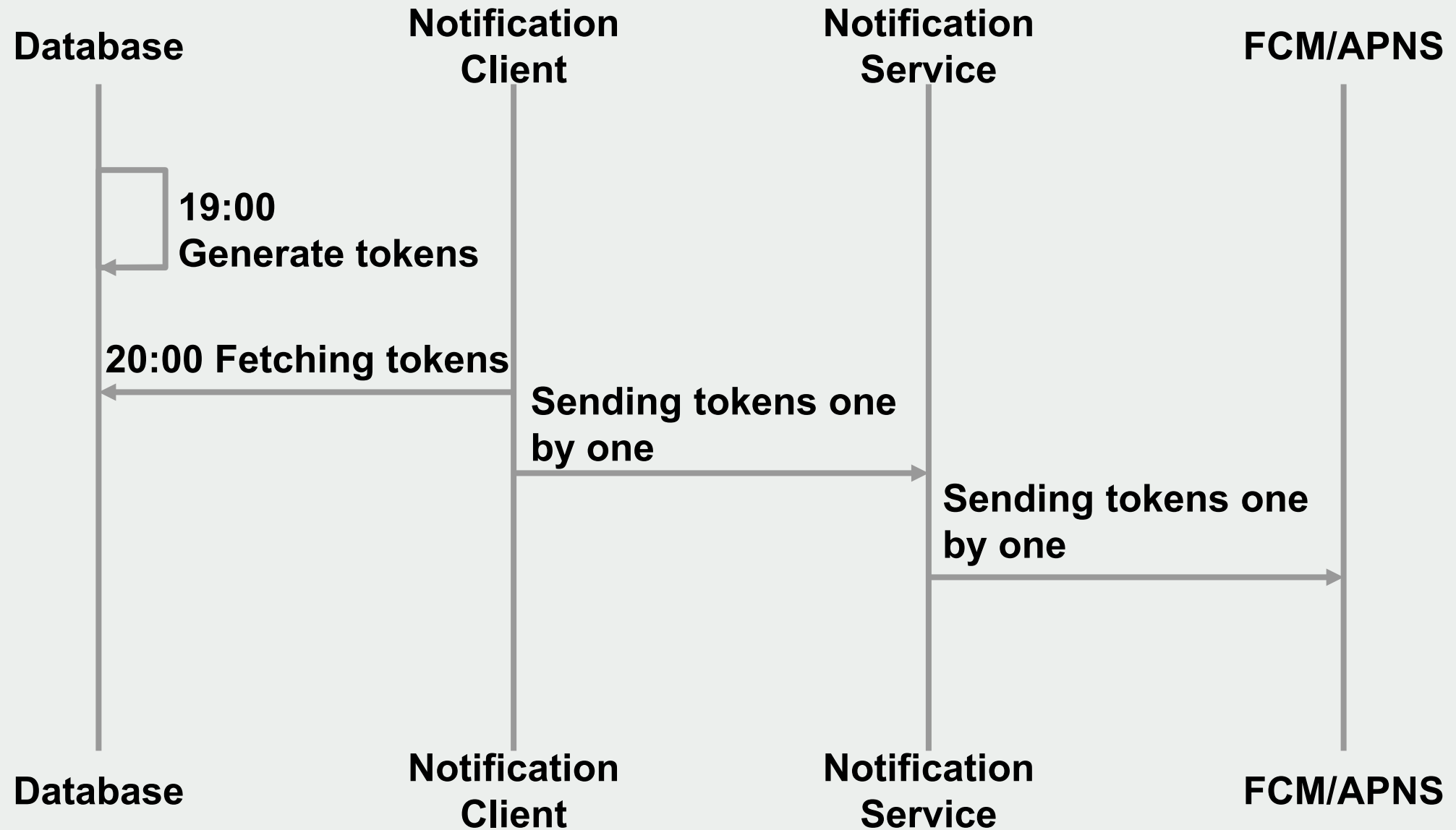
Sending a Broadcast Notification at 20:00



Sending a Broadcast Notification at 20:00

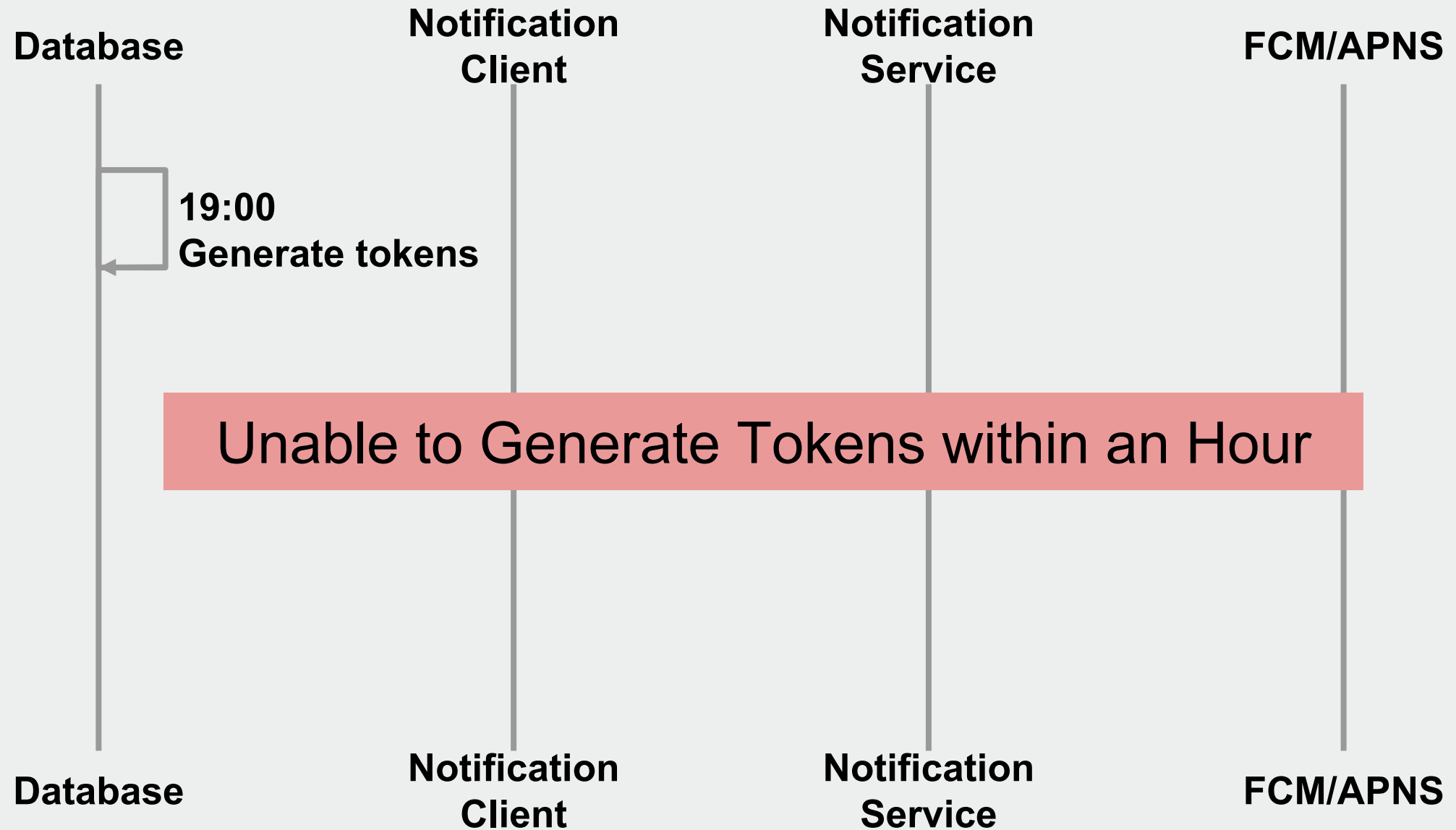


Sending a Broadcast Notification at 20:00

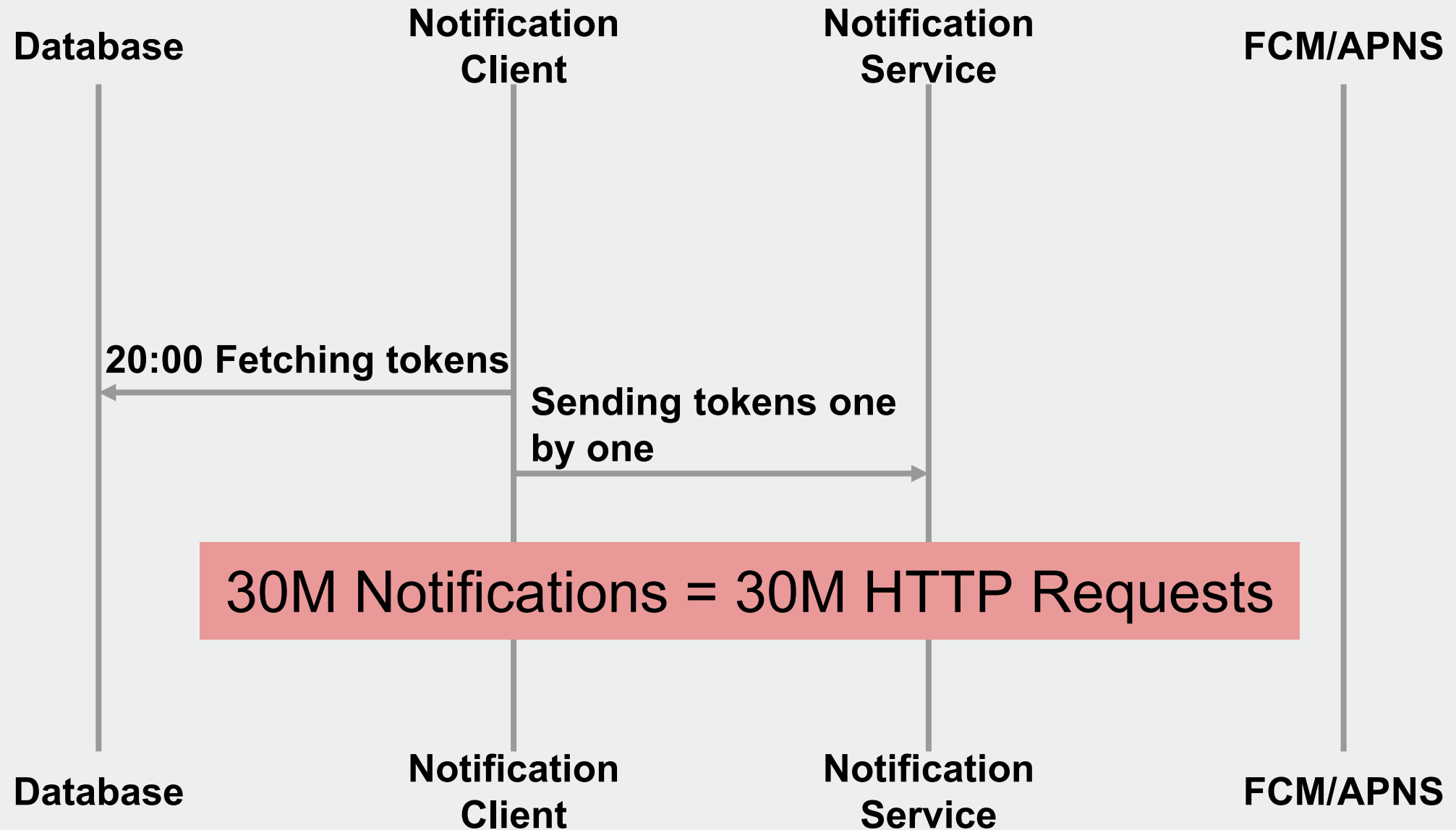


The Bottleneck

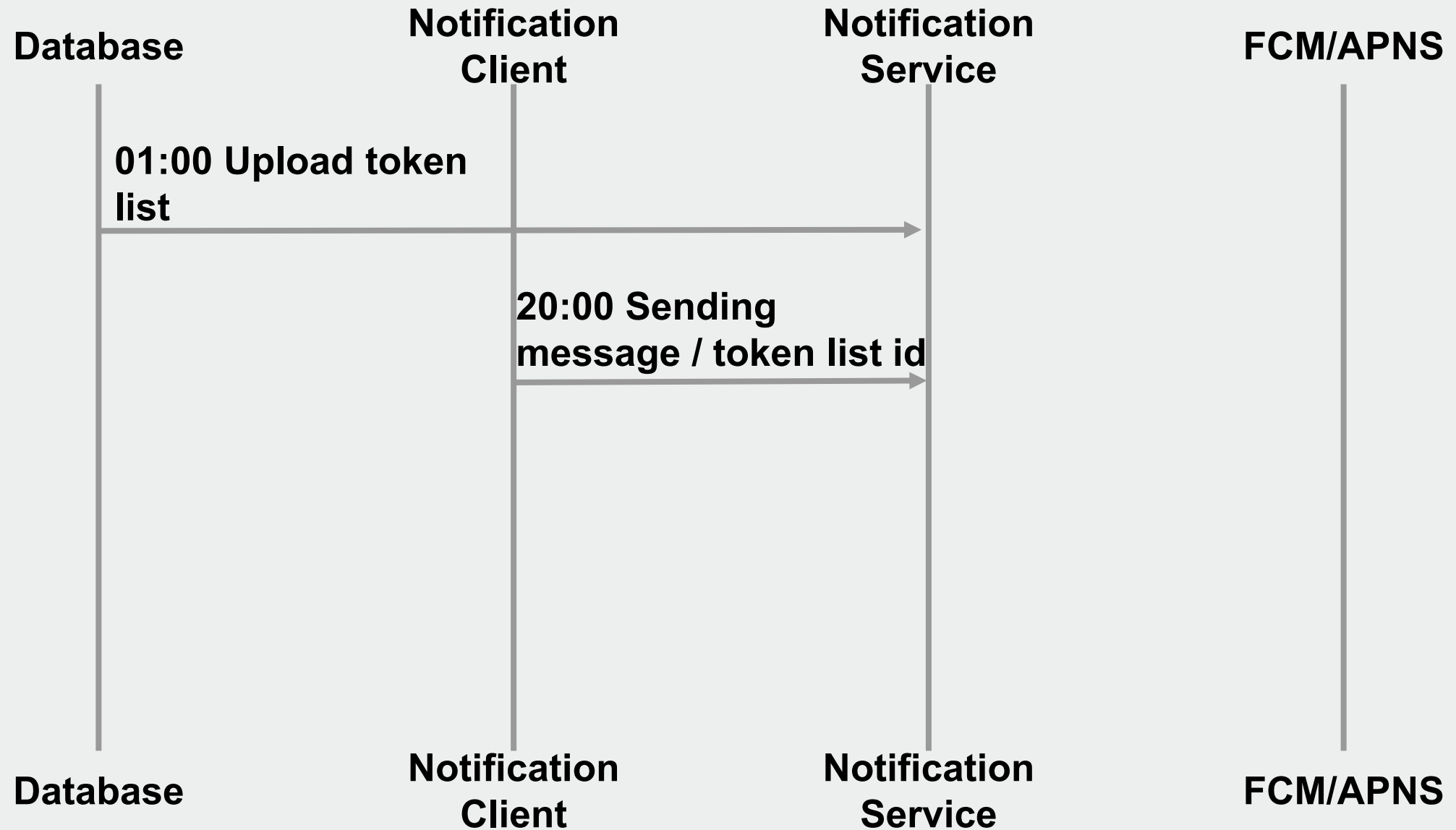
Sending a Broadcast Notification at 20:00



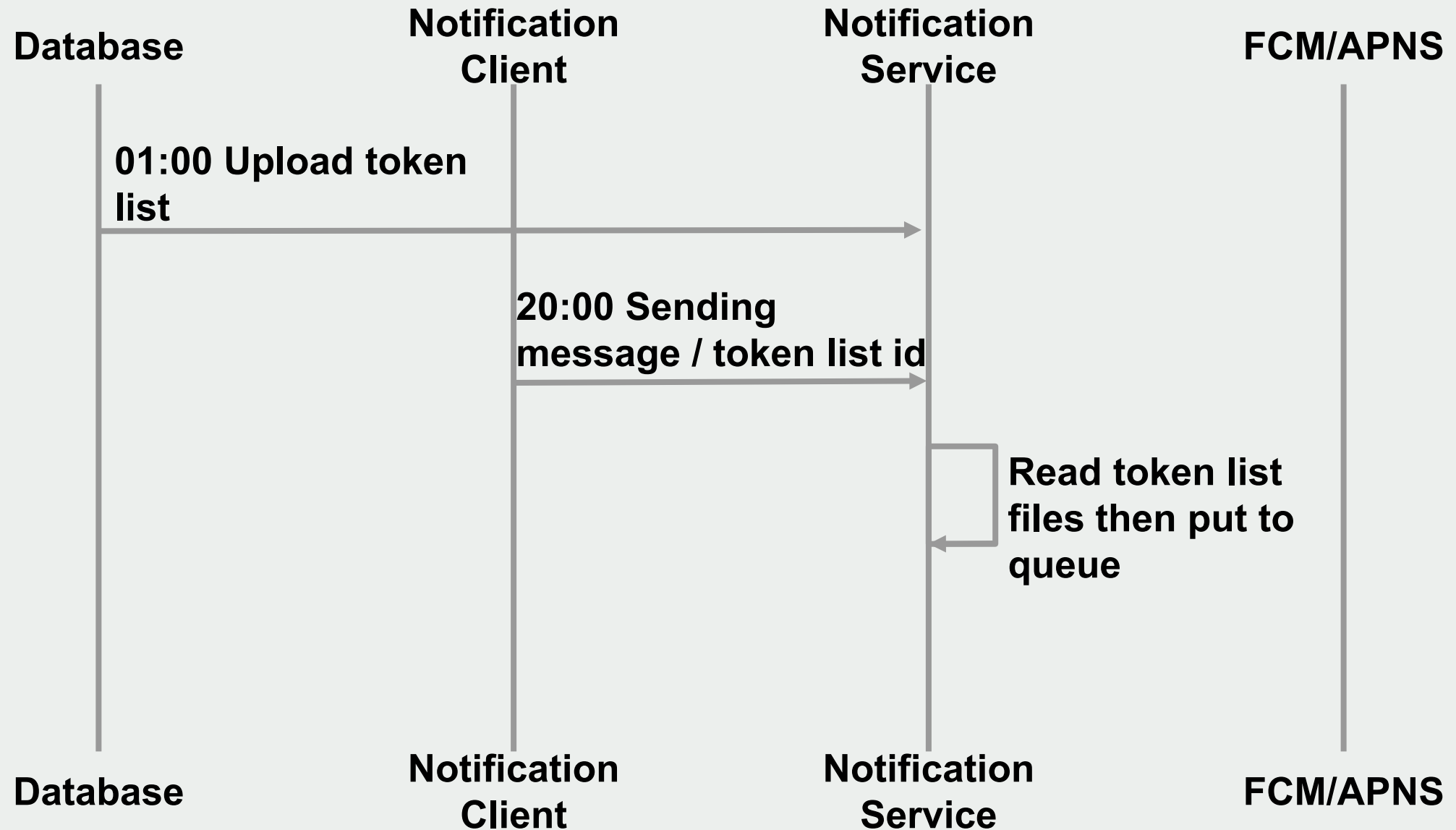
Sending a Broadcast Notification at 20:00



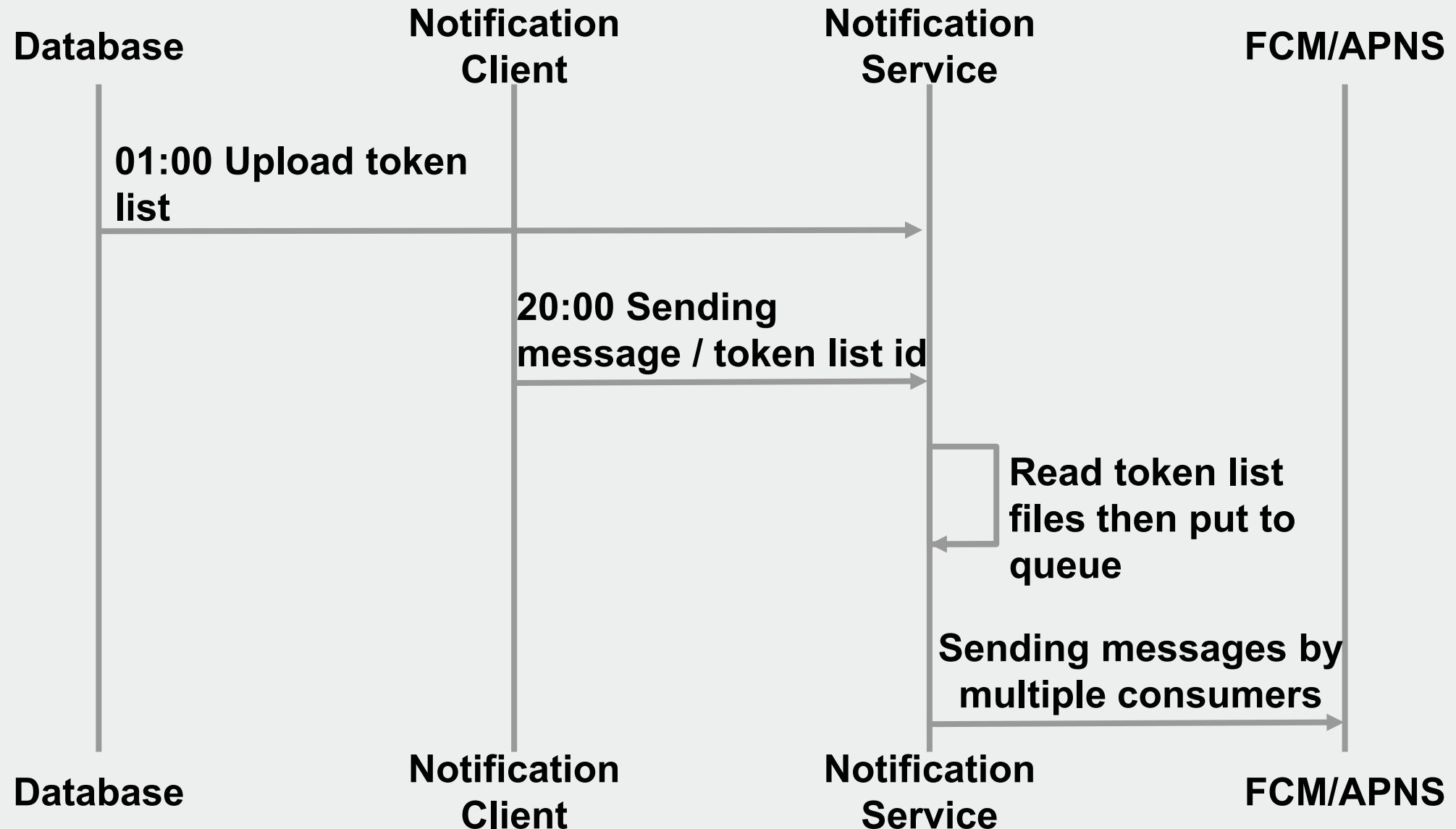
Sending a Broadcast Notification at 20:00



Sending a Broadcast Notification at 20:00



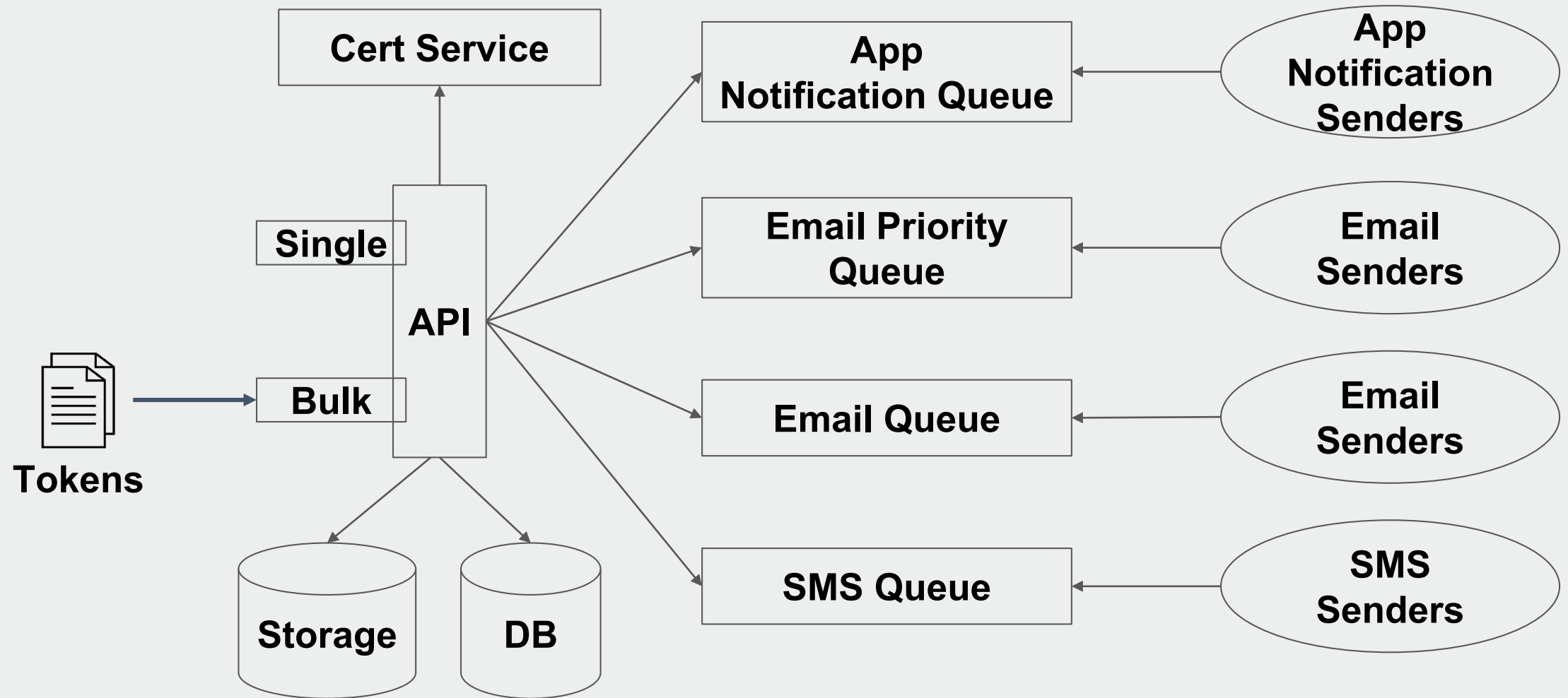
Sending a Broadcast Notification at 20:00



- Multiple Tenancies
- Resource Isolation
- Delivery by Priority
- Multiple Environments
- Scalability
- Performance

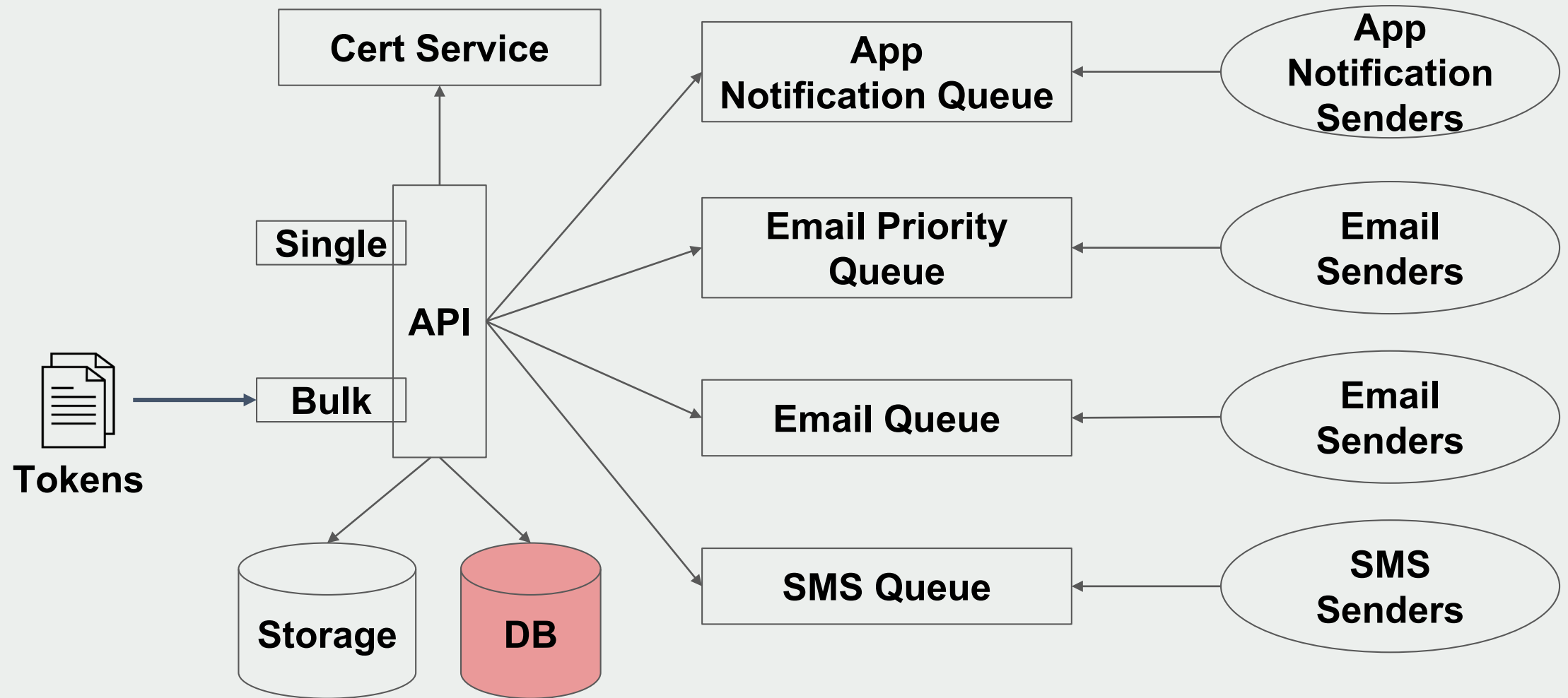
These Things are Also Important

- The support from boss
- Good development process
 - API Swagger doc
 - System benchmark doc
- Communication Skill
- Tech Skills



Next Steps

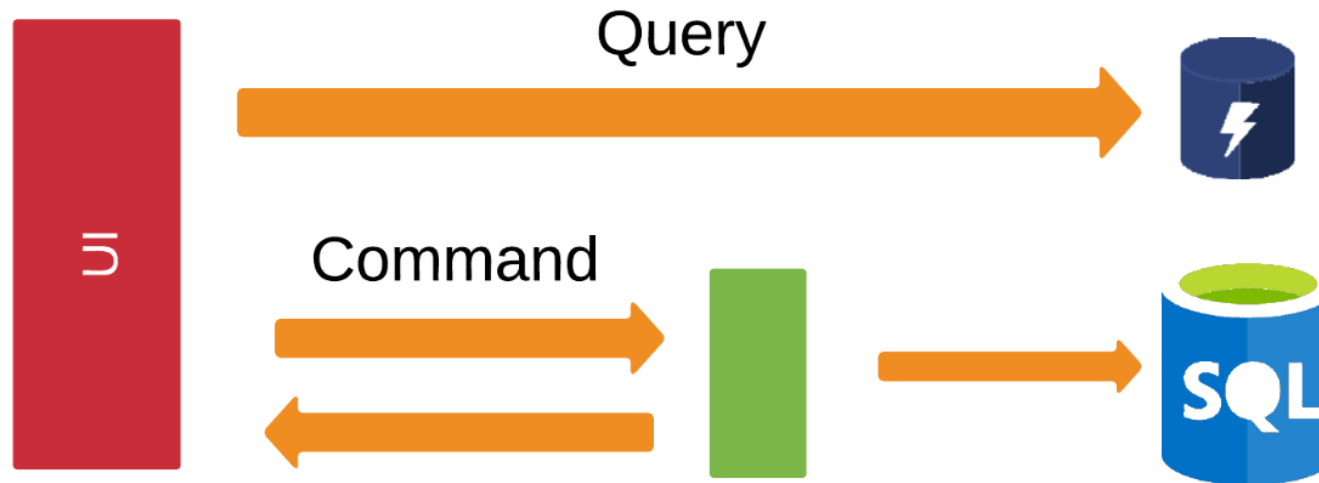
Fee and Common Log



CQRS
CQRS
CQRS

CQRS

CQRS
CQRS
CQRS



CQRS (Command Query Responsibility Segregation)

91APP

TECH -
DAY

2020

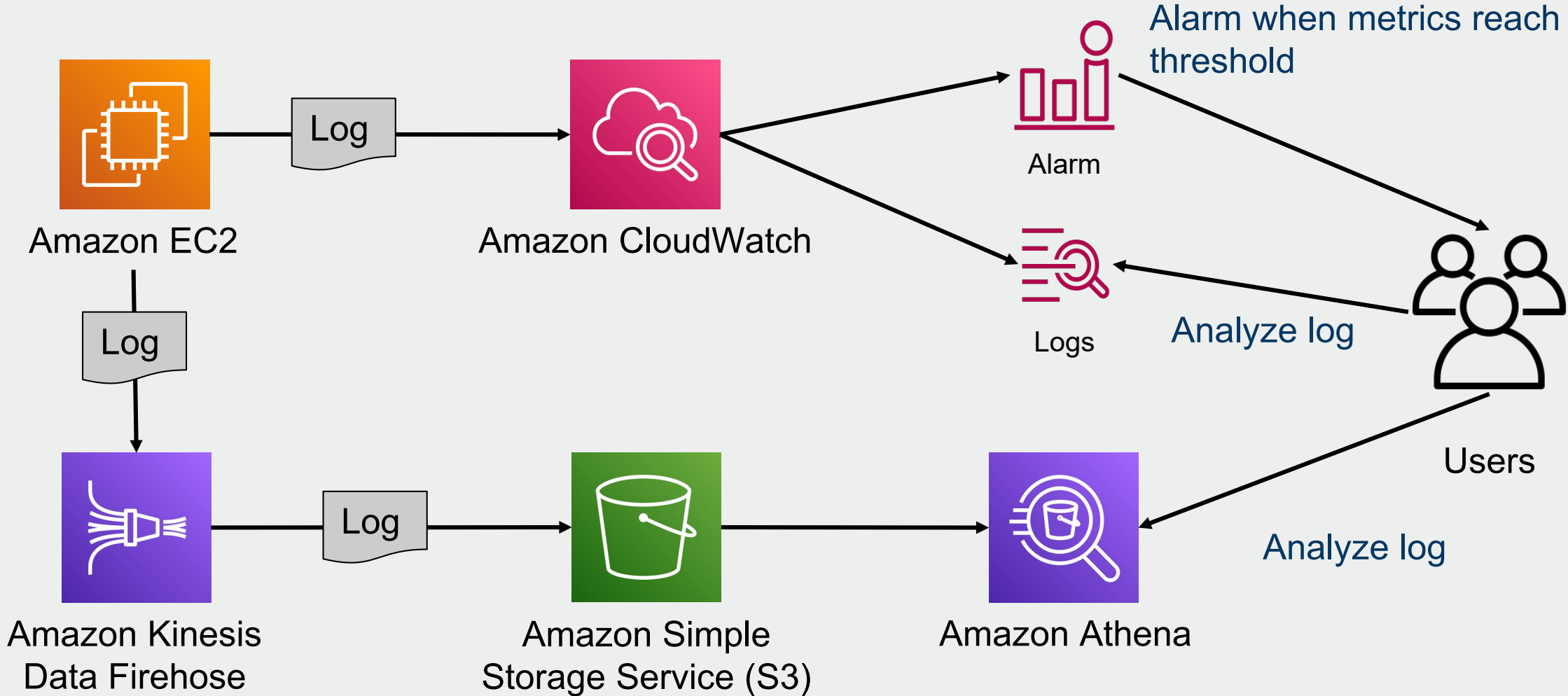
RECAP

如何面對雙十一的海量數據： 分析 TB 級日誌的實踐

徐靖翰 / Hans Hsu

Infra Team
Sr.Engineer

91APP Log Practice - Architecture



Summary

Summary

- Only do it when necessary
- Eating your own dog food

Thanks for your listening.

謝謝你的聆聽。