

APNS

Swift - iOS 앱 개발 심화과정

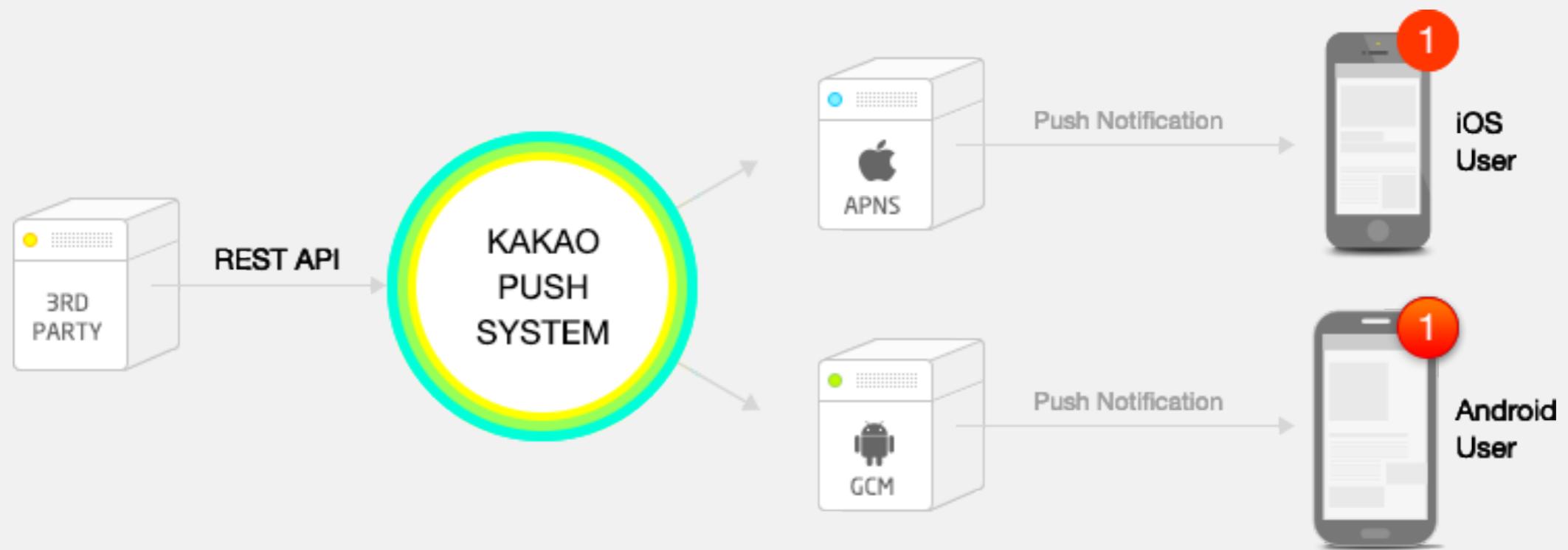


APNS

목표

Apple Push Notification Server를 처리하는 방식과
앱 내에서 다양한 알림에 대해 알아본다.

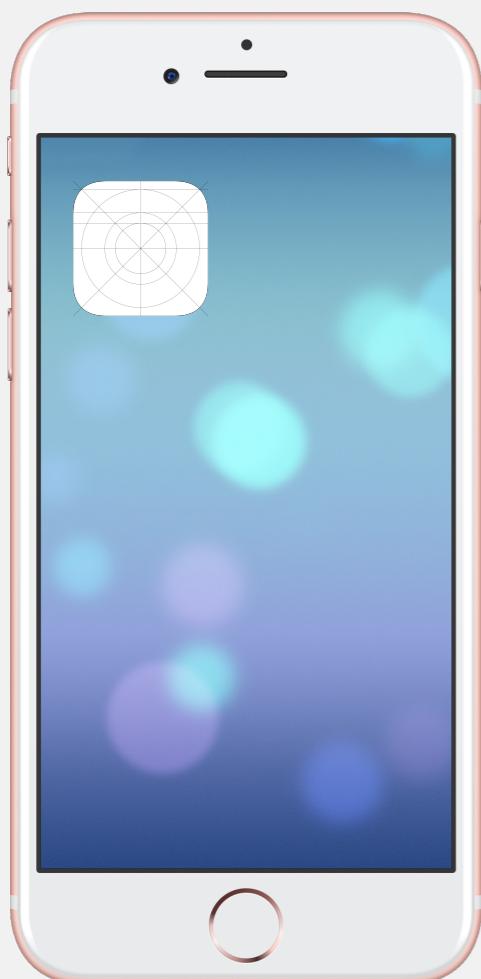
Apple Push Notification Service



Apple Push Notification Service

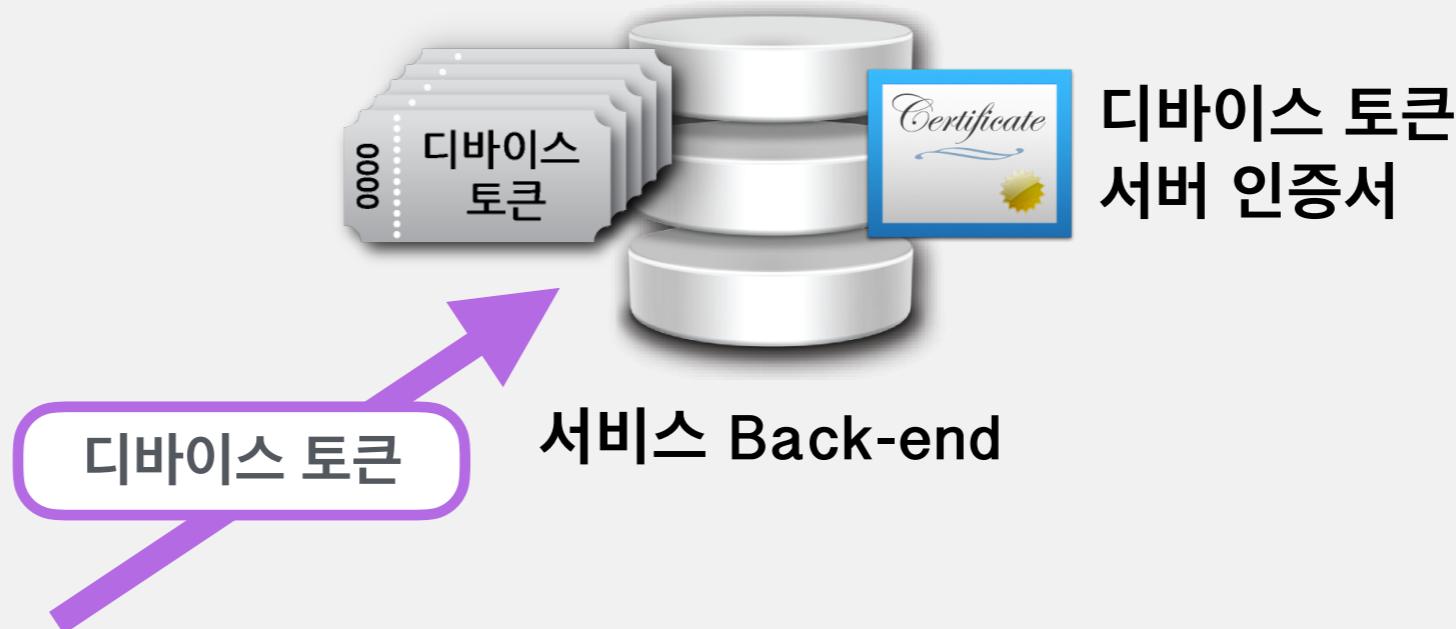
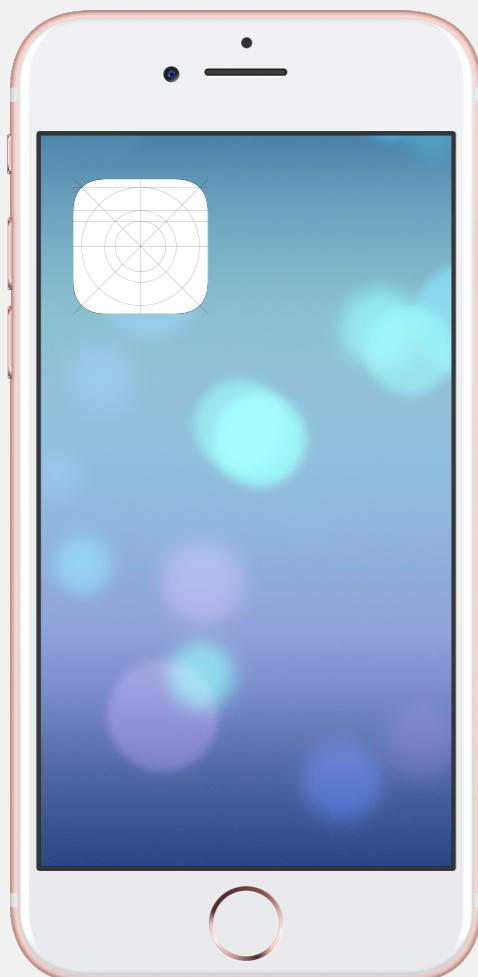


Apple Push Notification Service

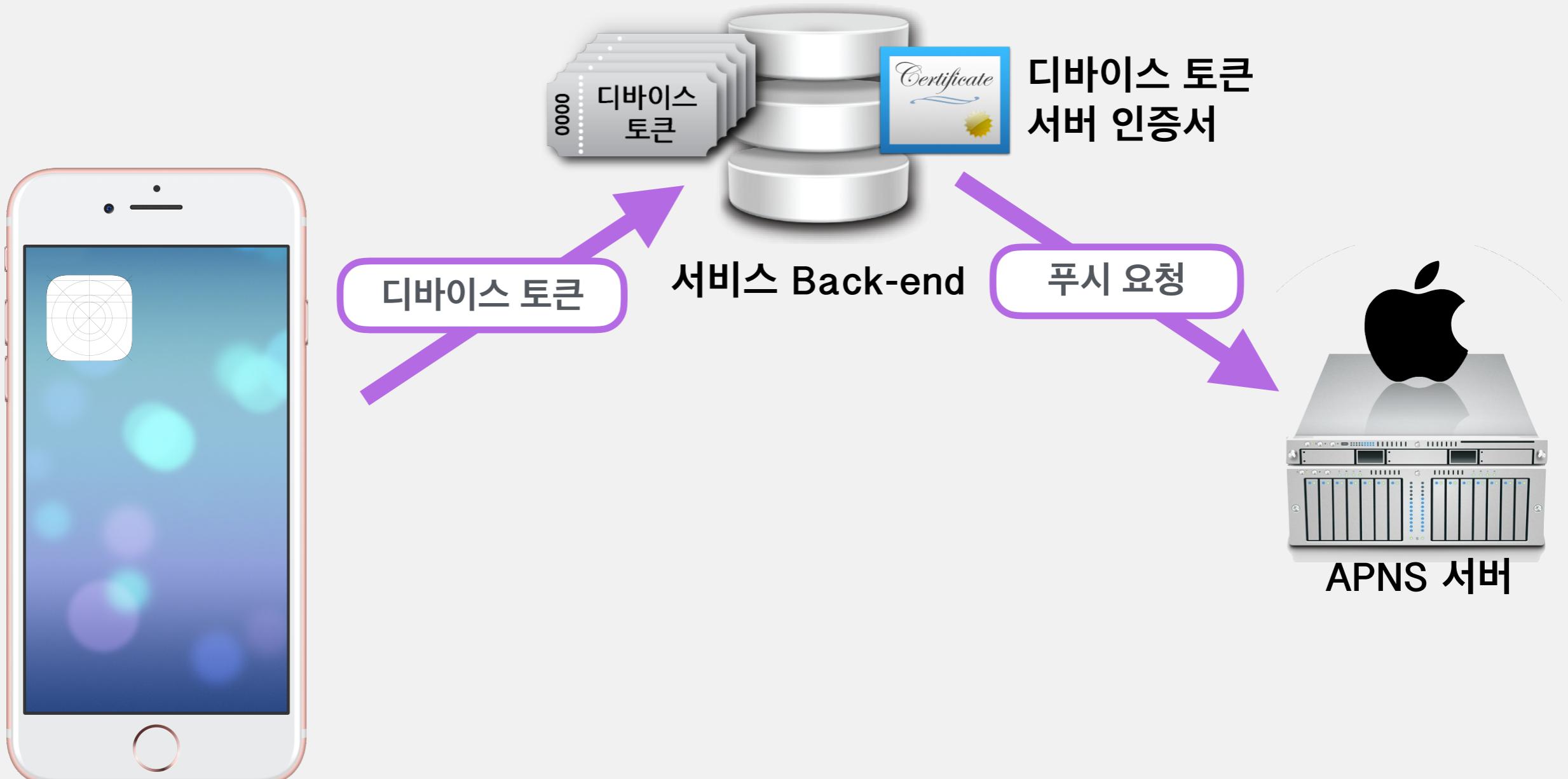


서비스 Back-end

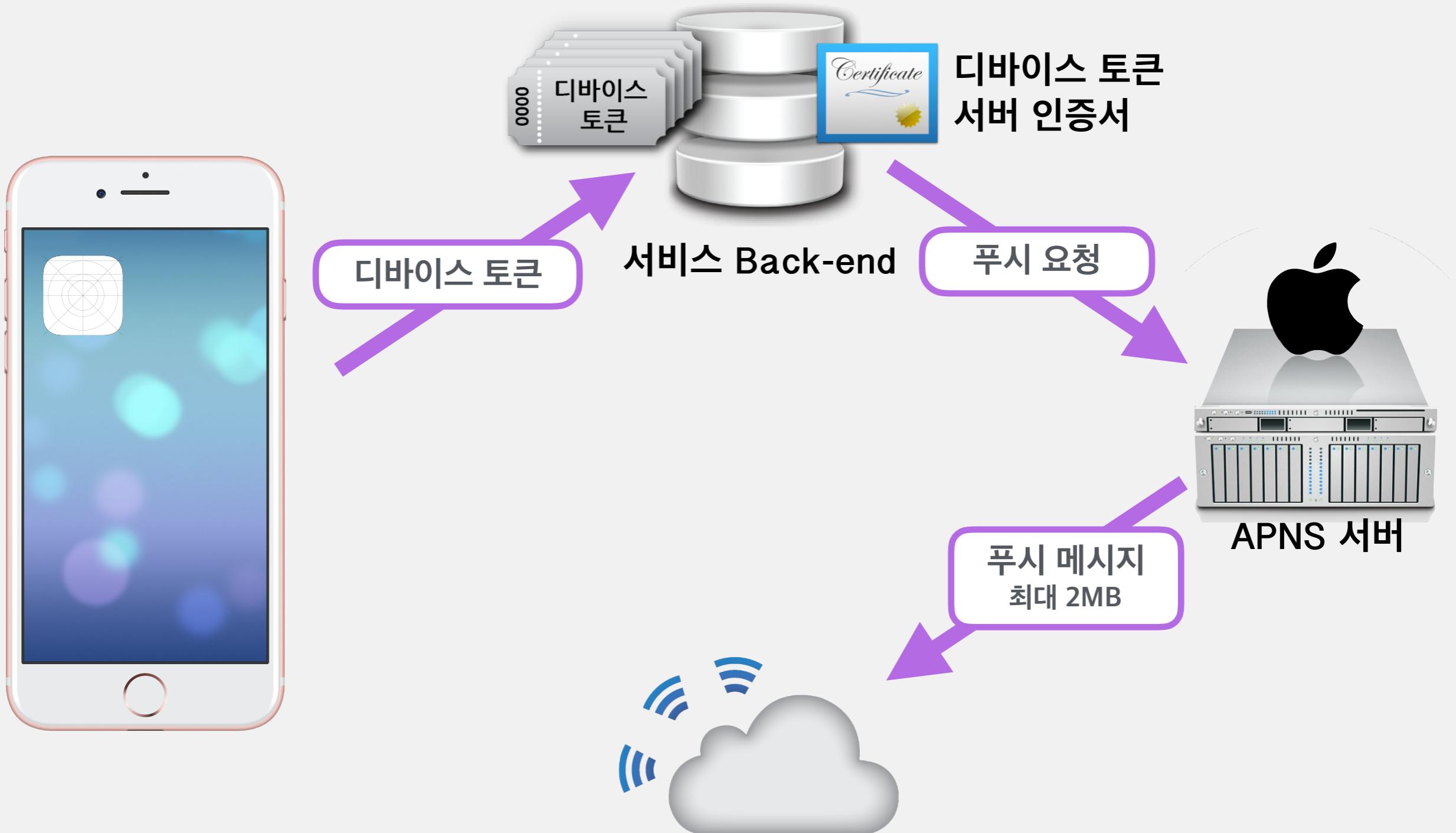
Apple Push Notification Service



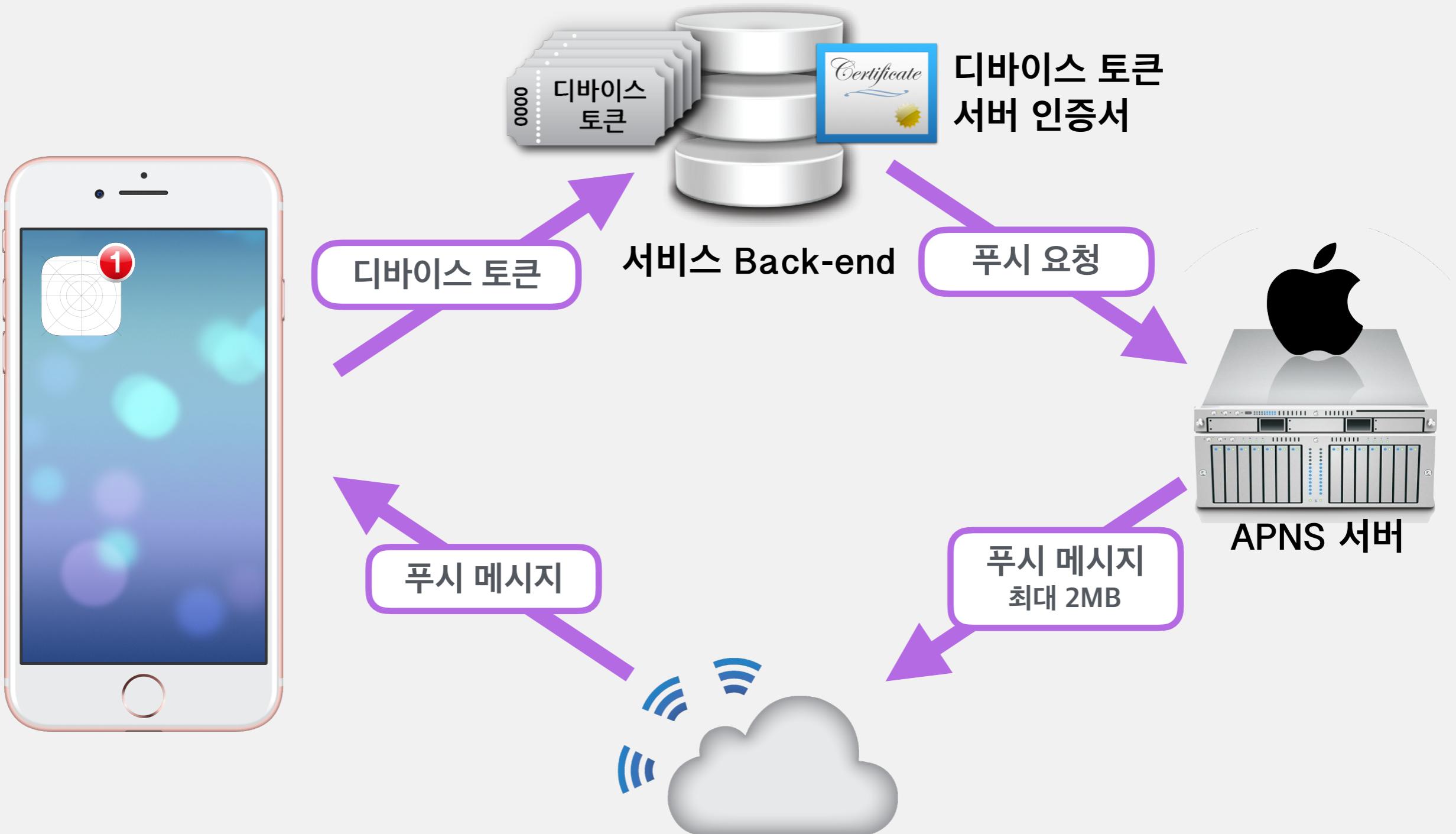
Apple Push Notification Service



Apple Push Notification Service



Apple Push Notification Service



Notification

앱 또는 서비스가 사용자에게 무엇인가를 알림

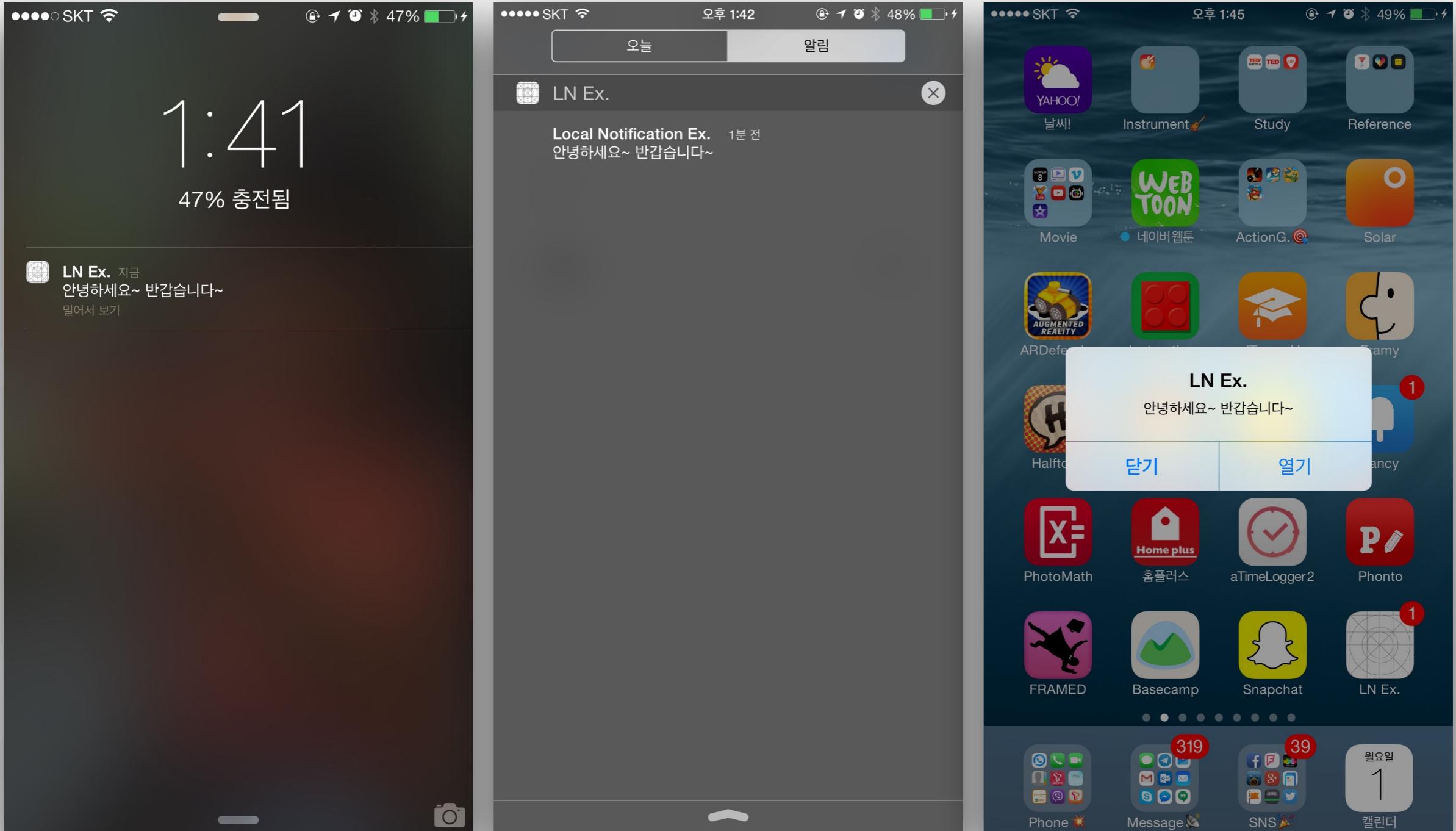
Local Notification과 Remote Notification으로 구분

UIApplication을 통해 관리

NotificationCenter와는 다른 개념

- ~~NotificationCenter는 KVO(Key-Value Observing) 기반의 알림~~

Notification



Local Notification

UILocalNotification을 이용하여 앱 자체에서 생성된 알림

시간 스케줄링 혹은 정의된 위치 정보에 대한 이벤트

앱 아이콘 뱃지 카운터와 함께 Alert이나 배너로 표현

To-do 관련 앱들에서 주로 이요

iOS 7 이하에서 사용과 iOS 8 이상에서의 사용이 약간 다름

- 권한, 액션 추가

Notification 권한

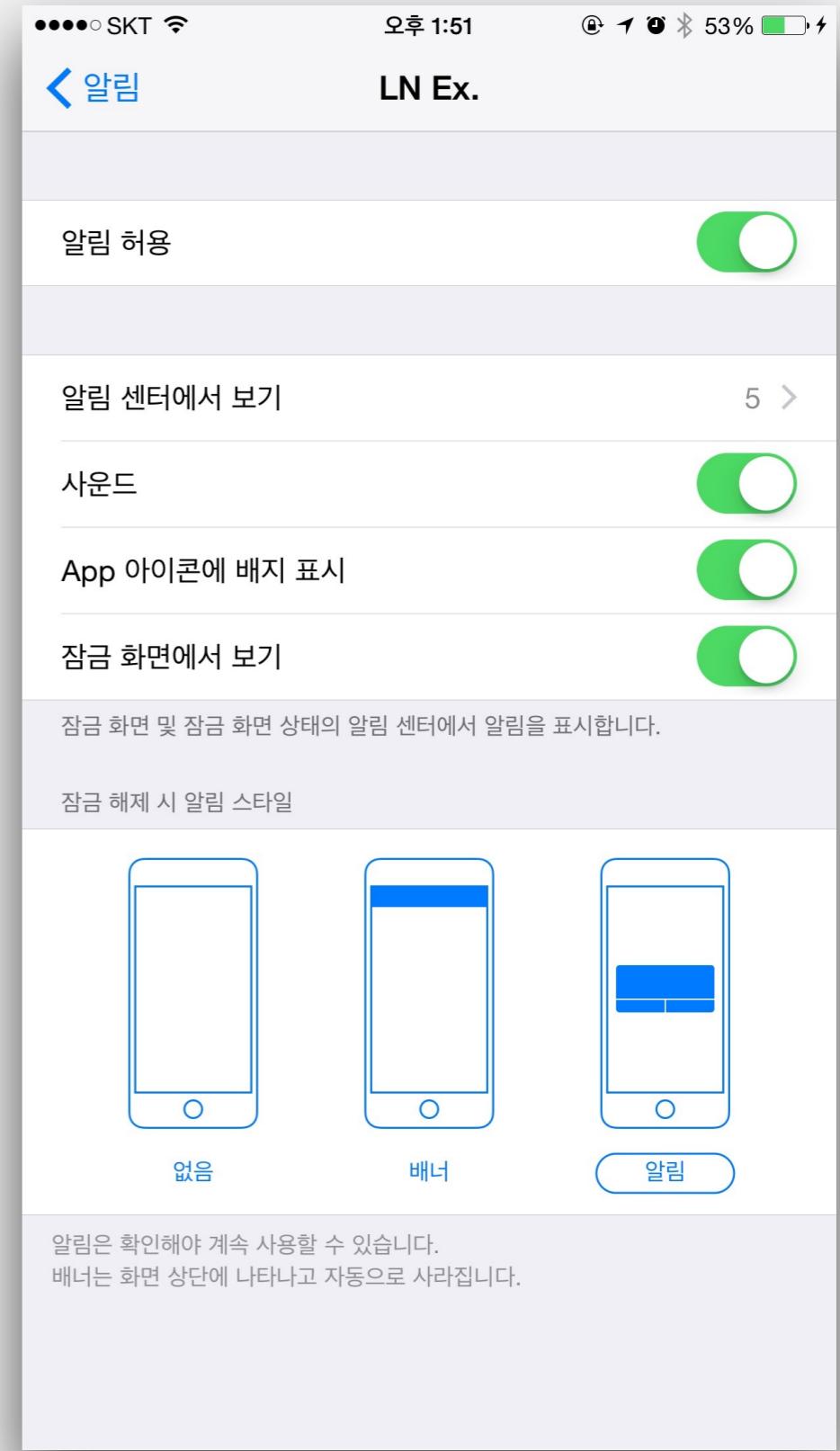
Local Notification 역시 사용자의 알림 권한을 요구하게 됨 - iOS 8 이상

- iOS 7까지는 Remote Notification만 권한 필요했음

UIUserNotificationType

- Badge
- Sound
- Alert

registerUserNotificationSettings:로 시스템 등록



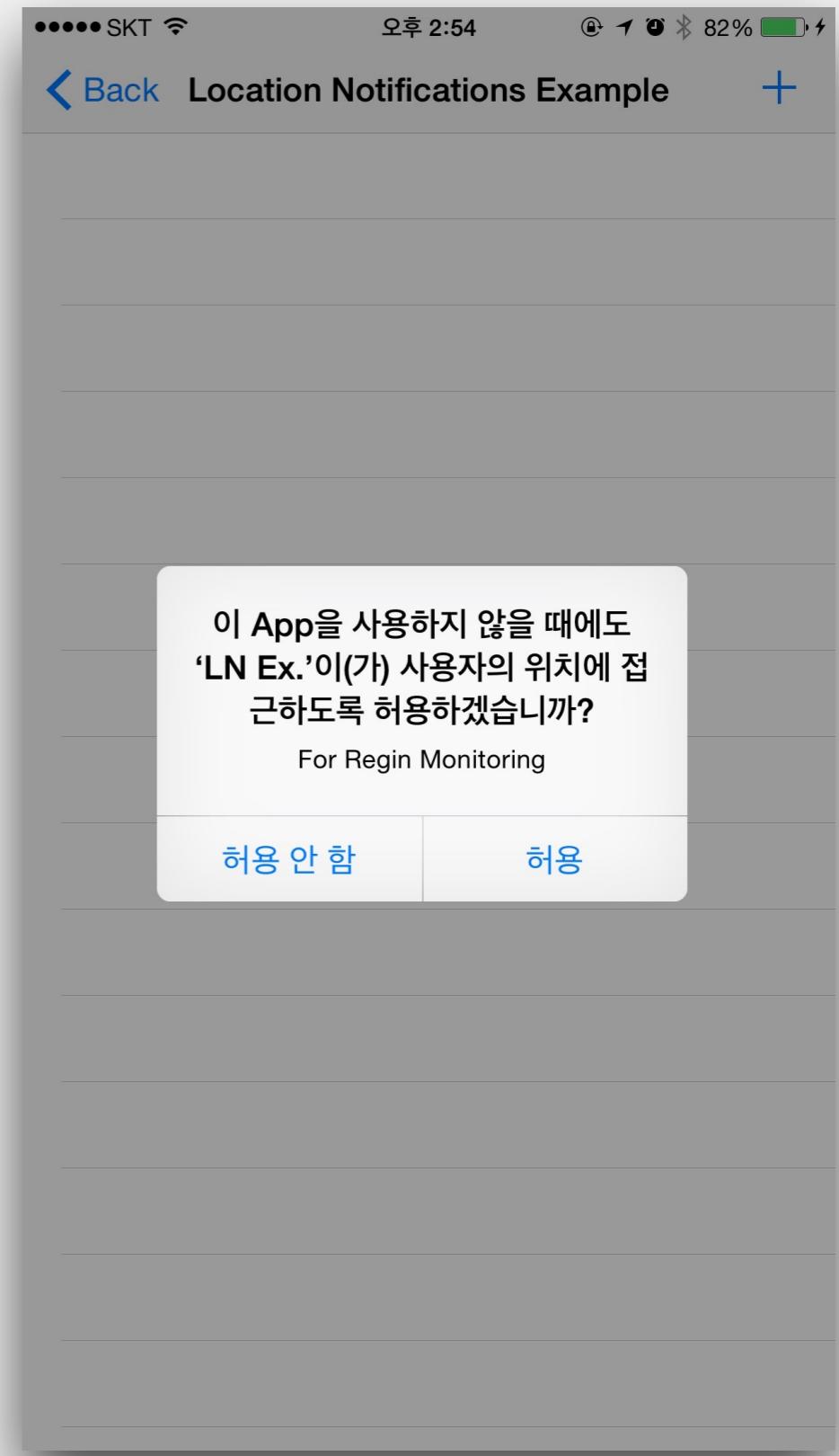
위치 기반 Notification

CLCircularRegion을 이용한 Local Notification

CoreLocation Service(CLLocationManager) 이용에 대한 사용자 권한 필요

NSLocationWhenInUsageDescription에 대한 메시지를 plist에 정의해야 함

최대 16개 이내로 Notification을 생성 권장



Remote Notification

서버에서 APNS를 통해 단말에 보내는 Notification

현재 대부분 앱들이 사용

사용자로부터 Notification에 대한 권한을 획득해야 함

사용을 위해 애플 개발자 포털 사이트에서 인증서 생성 필요

“Slient” Push Notification 지원 - iOS 7 이후

APNS

Apple Push Notification Service

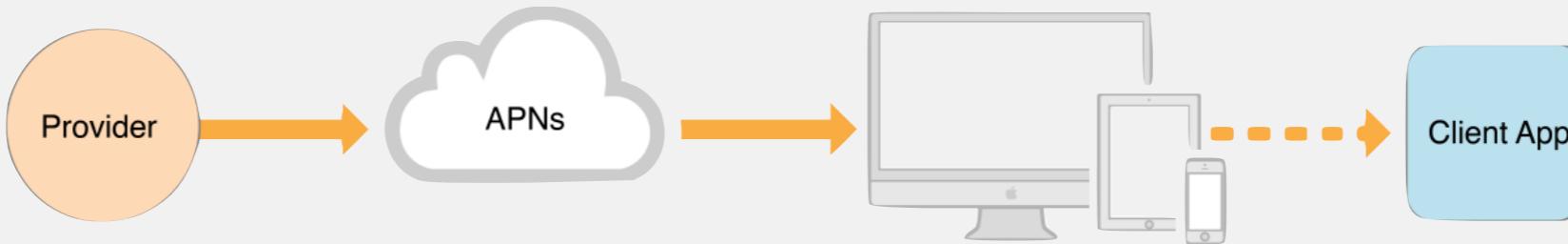
모든 iOS 구동 기기의 Remote Notification은 APNS를 거쳐야 함

단말이 서버로 전달할 Push Token을 생성함

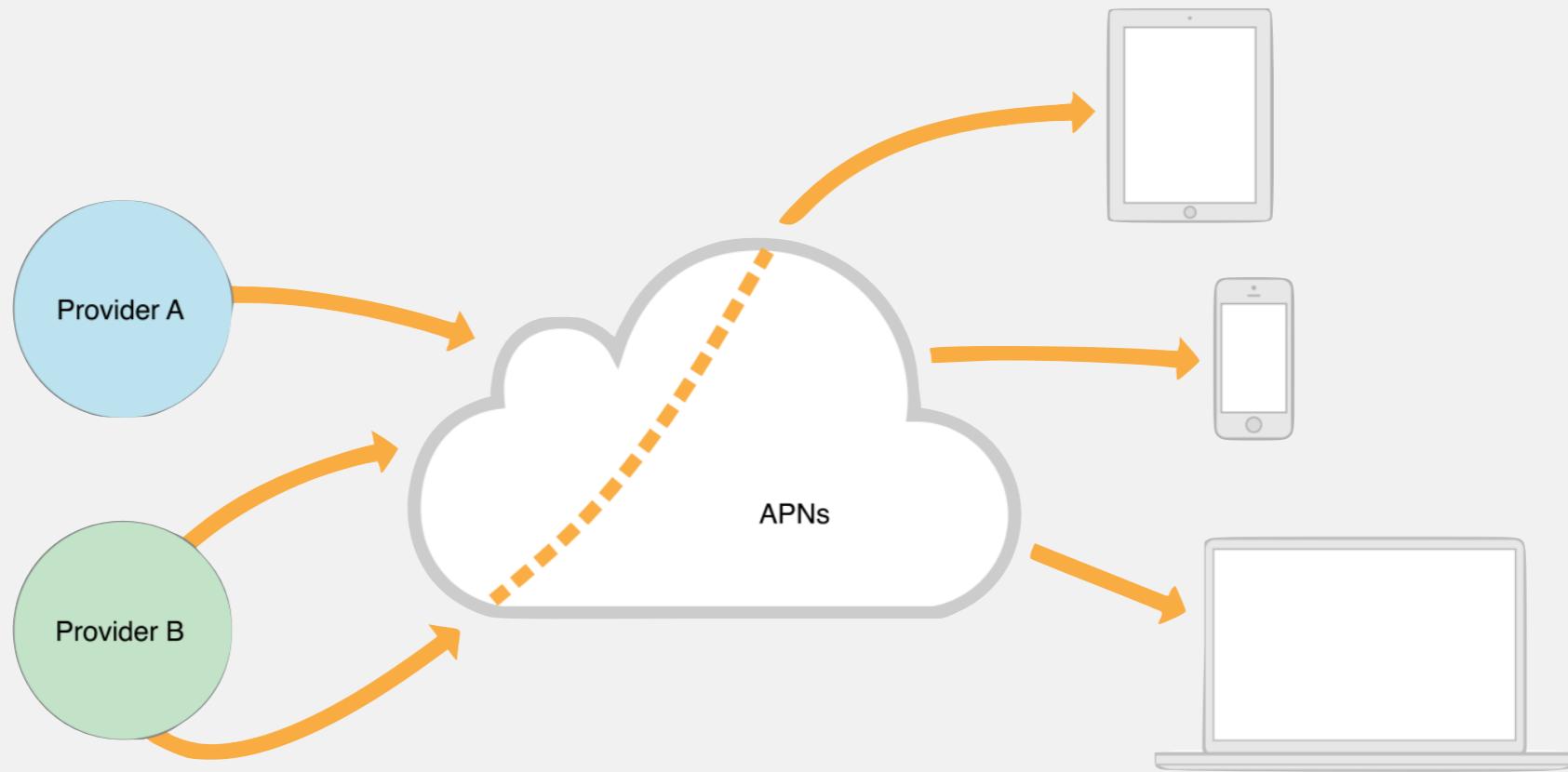
알림을 받을 단말이 알림 수신을 못할 경우 APNS에 정의된 일정 시간동안 알림을 저장해 보류한 뒤 전달

- 보증되지 않음

APNS



Provider to a client app



Multiple providers to a multiple devices

Remote Notification

Local Notification은 단말 자체에서 notification에 대한 scheduling을 수행하지만 remote notification은 서버에서 수행

APNS는 단지 push에 필요한 정보를 수신하여 발신하므로 스케줄링은 각 서버에서 이뤄져야 함

이런 수고를 덜고자 Remote notification을 지원하는 다양한 서비스들이 상용화됨

- Google Firebase
- Amazon Simple Notification Service
- MS Azure 알림 허브
- IBM Bluemix Push Notification Service
- SAP Fiori

Device Token

Push Token으로도 알려짐

AppDelegate의 메소드에서 획득 이후 코드 구현

```
optional func application(_ application: UIApplication,  
didRegisterForRemoteNotificationsWithDeviceToken deviceToken: Data)
```

미리 등록한 인증서와 token 두 가지를 이용하여 remote notification 를 단말에
보낼 수 있음

Payload basis

서버에서 단말에 Notification을 보내기 위한 규약

“aps”키를 가지는 JSON Dictionary 형태의 plain text

Key	Value type	Comment
alert	string or dictionary	If this property is included, the system displays a standard alert. You may specify a string as the value of <code>alert</code> or a dictionary as its value. If you specify a string, it becomes the message text of an alert with two buttons: Close and View. If the user taps View, the app is launched. Alternatively, you can specify a dictionary as the value of <code>alert</code> . See Table 3-2 for descriptions of the keys of this dictionary.
badge	number	The number to display as the badge of the app icon. If this property is absent, the badge is not changed. To remove the badge, set the value of this property to <code>0</code> .
sound	string	The name of a sound file in the app bundle. The sound in this file is played as an alert. If the sound file doesn't exist or <code>default</code> is specified as the value, the default alert sound is played. The audio must be in one of the audio data formats that are compatible with system sounds; see Preparing Custom Alert Sounds for details.
content-available	number	Provide this key with a value of <code>1</code> to indicate that new content is available. Including this key and value means that when your app is launched in the background or resumed, <code>application:didReceiveRemoteNotification:fetchCompletionHandler:</code> is called. (Newsstand apps are guaranteed to be able to receive at least one push with this key per 24-hour window.)

alert의 child properties

Key	Value type	Comment
title	string	A short string describing the purpose of the notification. Apple Watch displays this string as part of the notification interface. This string is displayed only briefly and should be crafted so that it can be understood quickly. This key was added in iOS 8.2.
body	string	The text of the alert message.
title-loc-key	string or null	The key to a title string in the <code>Localizable.strings</code> file for the current localization. The key string can be formatted with %@ and %n%@ specifiers to take the variables specified in the <code>title-loc-args</code> array. See Localized Formatted Strings for more information. This key was added in iOS 8.2.
title-loc-args	array of strings or null	Variable string values to appear in place of the format specifiers in <code>title-loc-key</code> . See Localized Formatted Strings for more information. This key was added in iOS 8.2.
action-loc-key	string or null	If a string is specified, the system displays an alert that includes the Close and View buttons. The string is used as a key to get a localized string in the current localization to use for the right button's title instead of "View". See Localized Formatted Strings for more information.
loc-key	string	A key to an alert-message string in a <code>Localizable.strings</code> file for the current localization (which is set by the user's language preference). The key string can be formatted with %@ and %n%@ specifiers to take the variables specified in the <code>loc-args</code> array. See Localized Formatted Strings for more information.
loc-args	array of strings	Variable string values to appear in place of the format specifiers in <code>loc-key</code> . See Localized Formatted Strings for more information.
launch-image	string	The filename of an image file in the app bundle; it may include the extension or omit it. The image is used as the launch image when users tap the action button or move the action slider. If this property is not specified, the system either uses the previous snapshot, uses the image identified by the <code>UILaunchImageFile</code> key in the app's <code>Info.plist</code> file, or falls back to <code>Default.png</code> . This property was added in iOS 4.0.

Extended Payload

```
{  
  "aps" : {  
    "alert" : {  
      "title" : "Game Request",  
      "body" : "Bob wants to play poker",  
      "action-loc-key" : "PLAY"  
    },  
    "badge" : 5,  
  },  
  "acme1" : "bar",  
  "acme2" : [ "bang", "whiz" ]  
}
```

```
{  
  "aps" : {  
    "alert" : {  
      "loc-key" : "GAME_PLAY_REQUEST_FORMAT",  
      "loc-args" : [ "Jenna", "Frank" ]  

```

Remote Notification을 위한 준비

애플 개발자 포털에서 인증서를 생성하여 다운로드

- <http://developer.apple.com>

다운로드 받은 인증서와 개인키를 서버에 등록

development / distribution 용도를 각각 등록하며 각별한 주의!

Remote Notification을 위한 준비

이름	▲ 종류	수정일	만료	키체인
Apple Development IOS Push Services: com.y8k.weirdmeet	인증서	--	2016. 5. 31. 오후 5:04:28	로그인
WEIRD_PUSH_CERT	공개 키	--	--	로그인
WEIRD_PUSH_CERT	개인 키	--	--	로그인

ID

Name:

Prefix:

ID:

Application Services:

Service	Development	Distribution
App Group	<input checked="" type="radio"/> Disabled	<input checked="" type="radio"/> Disabled
Associated Domains	<input checked="" type="radio"/> Disabled	<input checked="" type="radio"/> Disabled
Data Protection	<input checked="" type="radio"/> Disabled	<input checked="" type="radio"/> Disabled
Game Center	<input checked="" type="radio"/> Enabled	<input checked="" type="radio"/> Enabled
HealthKit	<input checked="" type="radio"/> Disabled	<input checked="" type="radio"/> Disabled
HomeKit	<input checked="" type="radio"/> Disabled	<input checked="" type="radio"/> Disabled
Wireless Accessory Configuration	<input checked="" type="radio"/> Disabled	<input checked="" type="radio"/> Disabled
iCloud	<input checked="" type="radio"/> Disabled	<input checked="" type="radio"/> Disabled
In-App Purchase	<input checked="" type="radio"/> Enabled	<input checked="" type="radio"/> Enabled
Inter-App Audio	<input checked="" type="radio"/> Disabled	<input checked="" type="radio"/> Disabled
Apple Pay	<input checked="" type="radio"/> Disabled	<input checked="" type="radio"/> Disabled
Passbook	<input checked="" type="radio"/> Disabled	<input checked="" type="radio"/> Disabled
Push Notifications	<input checked="" type="radio"/> Enabled	<input checked="" type="radio"/> Configurable
VPN Configuration & Control	<input checked="" type="radio"/> Disabled	<input checked="" type="radio"/> Disabled

Edit

Push Notifications
Enabled

Apple Push Notification service SSL Certificates
To configure push notifications for this iOS App ID, a Client SSL Certificate that allows your notification server to connect to the Apple Push Notification Service is required. Each iOS App ID requires its own Client SSL Certificate. Manage and generate your certificates below.

Development SSL Certificate

Name: Apple Development iOS Push Services:
Type: APNs Development iOS
Expires: 2016. 5. 31 Revoke Download

Create an additional certificate to use for this App ID. Create Certificate...

Production SSL Certificate

Create certificate to use for this App ID. Create Certificate...

Remote Notification을 위한 준비

The screenshot shows the Xcode Organizer interface. At the top, there's a section for "Signing Identities" with two entries: "iOS Development" and "iOS Distribution", both listed under "Platform: iOS" and "Status: Valid". Below this is a "Provisioning Profiles" section. A provisioning profile named "10Ducks_adhoc" is selected, highlighted with a blue bar at the top. This profile is an "iOS Team Provisioning Profile" for com.10ducks. It has an expiration date of "2016. 3. 29." and is currently "Active (Managed by Xcode)". To the right of the selected profile, its details are displayed: Name: iOS Team Provisioning Profile, Type: iOS Development, App ID: (partially visible), Certificates: 1 total, Devices: 8 total, Enabled Services: Game Center, In-App Purchase, Push Notifications, Expires: May 31, 2016, and Status: Active (Managed by Xcode). At the bottom of the provisioning profiles list is a refresh icon. At the very bottom of the window are three buttons: "Delete", "Edit", and "Download".

Signing Identities	Platform	Status
iOS Development	iOS	Valid
iOS Distribution	iOS	Valid

Provisioning Profiles	Expiration	Entitlements
10Ducks_adhoc	2016. 3. 29.	
iOSTeam Provisioning Profile: com.10ducks		
iOSTeam Provisioning Profile: *		

iOSTeam Provisioning Profile: iOS Dev... ● Active (Managed by Xcode)

PROV

Name: iOSTeam Provisioning Profile:
Type: iOS Development
App ID:
Certificates: 1 total
Devices: 8 total
Enabled Services: Game Center, In-App Purchase, Push Notifications
Expires: May 31, 2016
Status: ● Active (Managed by Xcode)

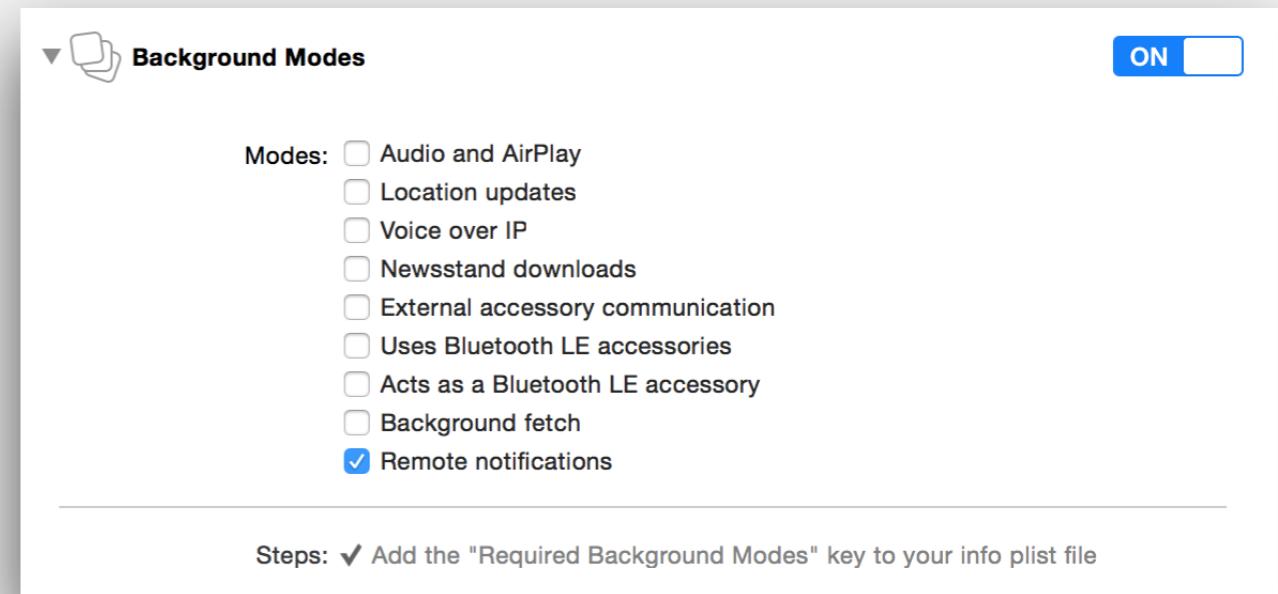
Delete Edit Download

Silent Remote Notification

알럿이나 배너를 보여주지 않고 앱이
백그라운드에서 무언가를 수행하게
하는 notification

content-available 값을 1로 줌

프로젝트 세팅의 Capabilities 내의
Background Modes 항목에 있는
“Remote Notifications” 체크



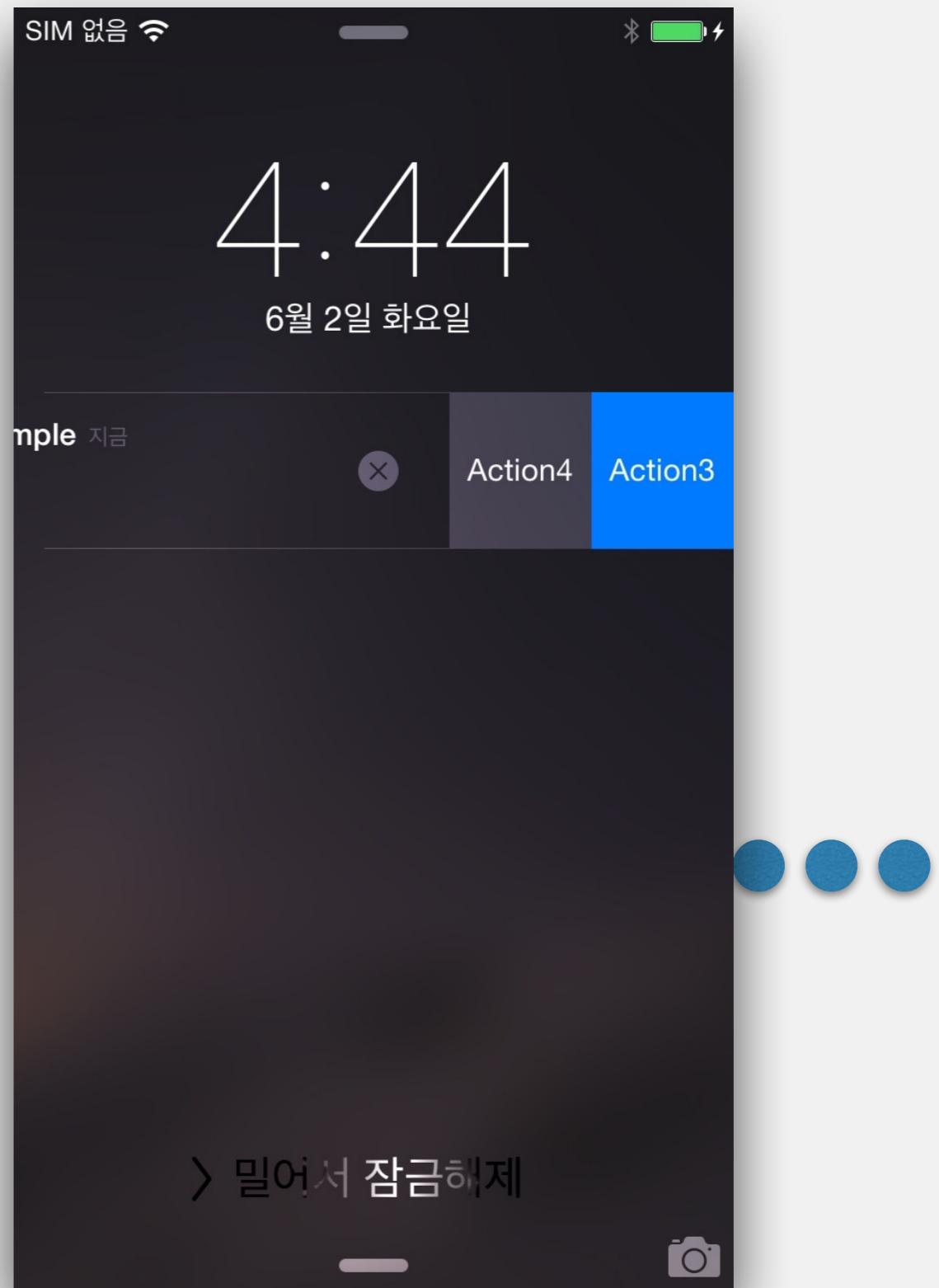
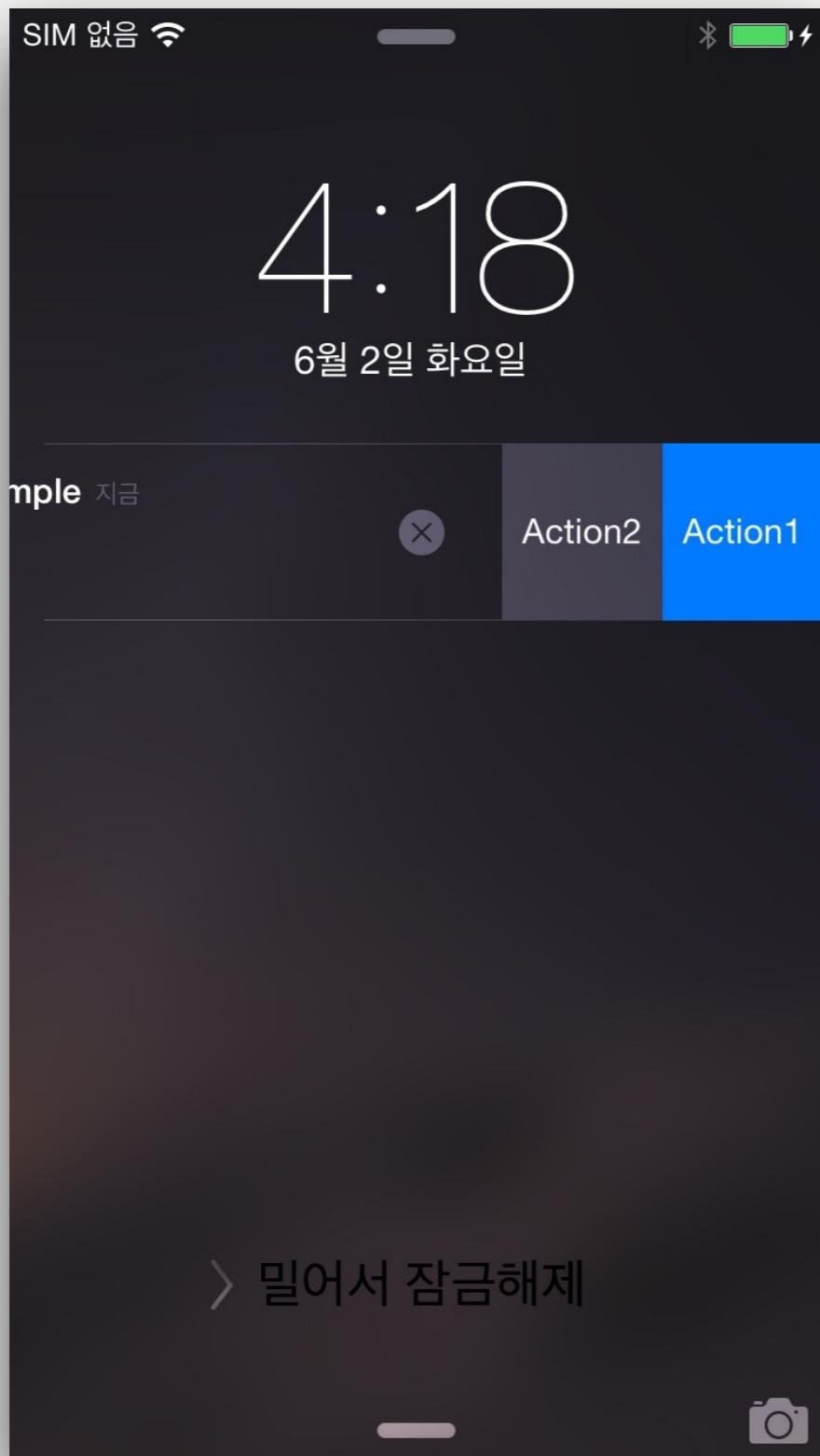
Actions & Categories

각 카테고리에 다수의 액션이 존재하는 방식

각 액션은 수행해야 할 기능에 대한 정의



Actions & Categories



Action

iOS 8 이상의 Push / Local Notification에서 지원

iOS 7 이전에는

- payload에 별도의 scheme을 적용
- didReceivedNotification 메소드에서 분기

사용자는 잠금화면에서 액션 선택

앱은 백그라운드에서 해당 작업 수행가능

Action을 위한 Payload

category identifier 추가

256Byte에서 2046Byte로 확장

UIUserNotificationAction

Inherits NSObject | Conforms Equatable, Hashable 등 총 6가지

- 노티피케이션이 배송되면, 시스템이 커스텀 버튼을 디스플레이.
- 버튼을 탭하면 앱을 시동하고 지정된 액션을 수행할 기회를 준다.
- 버튼을 설정하고, 해당 기능 수행을 위한 정보를 얻는다.
- 액션을 모아 카테고리를 만든다.

UIUserNotificationCategory

Inherits NSObject | Conforms Equatable, Hashable 등 총 6가지

- 액션들을 캡슐화
- 로컬 노티의 경우 설정시 카테고리 이름을 사용
- 리모트 노티의 경우 서버가 페이로드의 카테고리 키에 액션 그룹을 지정

UIUserNotificationCategory

Inherits NSObject | Conforms Equatable, Hashable, CVarArg

- 앱에 의해 디스플레이되는 통지의 타입을 캡슐화
- 시각/청각적인 통지를 사용하는 앱은 그 타입을 등록해야 함
- UIApplication의 registerUserNotificationSettings: 메소드 이용

```
func registerUserNotificationSettings(_ notificationSettings: UIUserNotificationSettings)
```

- 액션 그룹을 설정하면 해당 노티가 왔을 때 각각의 액션을 더해준다.
- 사용자가 버튼을 탭하면 시스템이 앱을 깨워서 로컬/리모트 노티 종류별 메소드 실행.

UIUserNotificationCategory

Inherits NSObject | Conforms Equatable, Hashable 등 총 6가지

- Launch Option Key의 일종
- 이 키는 처리할 로컬 노티가 존재한다는 것을 나타냄
- value에는 처리해야 하는 UILocalNotification 오브젝트

Launch Option Key

UIApplicationLaunchOptionsLocalNotificationKey

- 이 키는 처리할 로컬 노티가 존재한다는 것을 나타냄
- value에는 처리해야 하는 UILocalNotification 오브젝트

UIApplicationLaunchOptionsRemoteNotificationKey

- 이 키는 처리할 리모트 노티가 존재한다는 것을 나타냄
- value에는 리모트 노티의 페이로드가 있는 NSDictionary 오브젝트

Action 처리

application:handleActionWithIdentifier:forLocalNotification:completionHandler:

- 사용자가 로컬 노티에 대해 액션 버튼을 누르면 실행되는 함수

```
- (void)application:(UIApplication *)application  
handleActionWithIdentifier:(NSString *)identifier  
forLocalNotification:(UILocalNotification *)notification  
withResponseInfo:(NSDictionary *)responseInfo  
completionHandler:(void (^)(void))completionHandler;
```

application:handleActionWithIdentifier:forRemoteNotification:completionHandler:

- 사용자가 리모트 노티에 대해 액션 버튼을 누르면 실행되는 함수

```
optional func application(_ application: UIApplication,  
handleActionWithIdentifier identifier: String?,  
forRemoteNotification userInfo: [AnyHashable : Any],  
completionHandler: @escaping () -> Void)
```