



# SMaSH

(Software Maven School at Hanyang University ERICA)

## Day 7.

# Mobile App with AWS

Channy Yun

AWSKorea, Tech Evangelist

# 모바일 개발 … 중요한 점은…

- 1 어떻게 모바일 앱을  
특별(Unique)하게 만들것인가?
- 2 시간은 어디에 더 집중해서  
써야 할까?

1 == 2

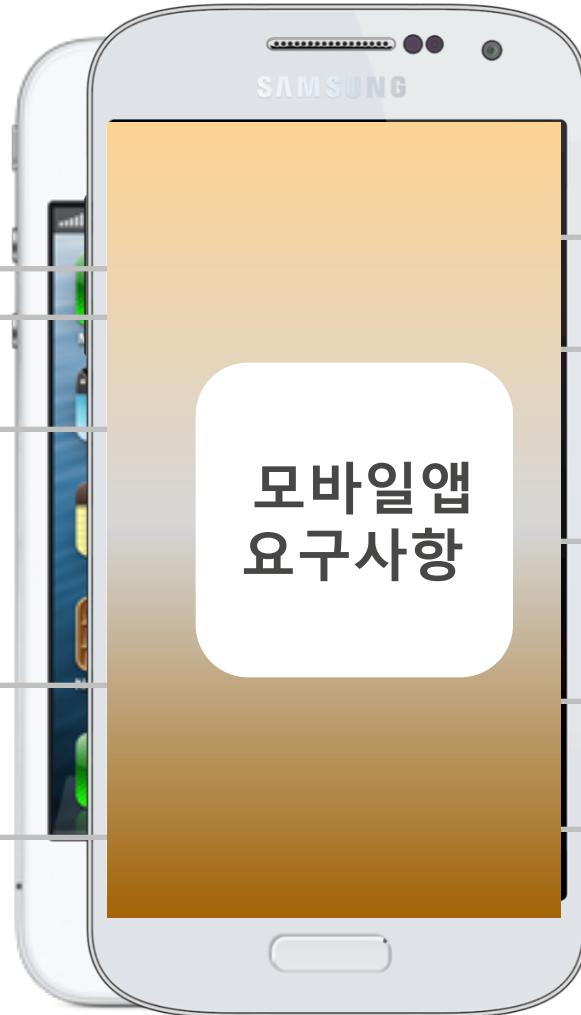
사용자 인증

사용자 권한 부여

인증정보 단말간 공유

사용자 행동 분석

재방문 추적



미디어의 저장 및 공유

미디어 전송

푸시 알림 전송

공유 데이터의 저장

실시간 데이터 스트림 처리

# 모바일 개발자 가라사대…

## 모바일 앱 코드

사용자 인증 및 관리  
사용자 데이터 싱크  
비동기 커뮤니케이션  
활성 디바이스 분석  
사용자 행태 분석  
사용자 참여 분석  
푸시 노티피케이션

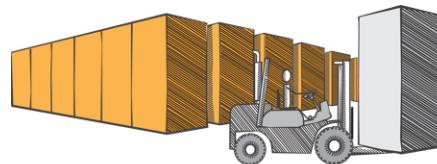
사용자 이벤트 기능처리

플랫폼 독립적 모바일 백엔드  
데이터 유효성 및 전송  
파일 및 미디어 저장  
공유 데이터베이스 스토리지  
데이터 수집  
기타등등…

## 직면한 문제점

### 플랫폼 파편화

확장성 높은 동기화의 어려움  
앱 관리 및 운영 비용 증가  
핵심 UX 만드는데도 시간 증가  
사용자에게 줄 핵심 기능 구현 시간 저하



앱개발은 만만한 작업이 아니다!

# AWS 가라사대…



# AWS 모바일 빌딩 블럭



# AWS Mobile SDK



제품 및 서비스

AWS Mobile SDK >

관련 링크

AWS 모바일 서비스

Amazon Cognito

Amazon Mobile Analytics

Amazon SNS Mobile Push

AWS Lambda

## AWS Mobile SDK

AWS Mobile SDK는 고품질 모바일 앱을 빠르고 쉽게 개발할 수 있도록 지원합니다. Amazon Lambda, S3, DynamoDB, Mobile Analytics, Machine Learning, Elastic Load Balancing, Auto Scaling 등 다양한 AWS 서비스에 손쉽게 액세스할 수 있습니다.

AWS Mobile SDK에는 iOS, Android, Fire OS 및 Unity용 라이브러리, 코드 샘플, 설명서가 포함되어 있으므로, 이를 사용하여 다양한 디바이스와 플랫폼에서 뛰어난 사용 환경을 제공하는 앱을 개발할 수 있습니다.

## Mobile SDK에 대한 새로운 소식

다운로드: <http://aws.amazon.com/ko/mobile/sdk>

The image shows three separate download sections for the AWS Mobile SDK, each enclosed in a red rectangular border. The first section is titled 'iOS용 AWS Mobile SDK' and contains a yellow 'iOS SDK' button and a blue 'GitHub에서 소스 가져오기' (Get source from GitHub) link. The second section is titled 'Android 및 Fire OS용 AWS Mobile SDK' and contains a yellow 'Android SDK' button and a blue 'GitHub에서 소스 가져오기' link. The third section is titled 'Unity용 AWS Mobile SDK' and contains a yellow 'Unity SDK' button and a blue 'GitHub에서 소스 가져오기' link.



## Amazon Web Services

### Compute

- EC2 Virtual Servers in the Cloud
- EC2 Container Service Run and Manage Docker Containers
- Elastic Beanstalk Run and Manage Web Apps
- Lambda Run Code in Response to Events

### Storage & Content Delivery

- S3 Scalable Storage in the Cloud
- CloudFront Global Content Delivery Network
- Elastic File System PREVIEW Fully Managed File System for EC2
- Glacier Archive Storage in the Cloud
- Import/Export Snowball Large Scale Data Transport
- Storage Gateway Integrates On-Premises IT Environments with Cloud Storage

### Database

- RDS Managed Relational Database Service
- DynamoDB Predictable and Scalable NoSQL Data Store
- ElastiCache In-Memory Cache
- Redshift Managed Petabyte-Scale Data Warehouse Service

### Networking

- VPC Isolated Cloud Resources
- Direct Connect Dedicated Network Connection to AWS
- Route 53 Scalable DNS and Domain Name Registration

### Developer Tools

- CodeCommit Store Code in Private Git Repositories
- CodeDeploy Automate Code Deployments
- CodePipeline Release Software using Continuous Delivery

### Management Tools

- CloudWatch Monitor Resources and Applications
- CloudFormation Create and Manage Resources with Templates
- CloudTrail Track User Activity and API Usage
- Config Track Resource Inventory and Changes
- OpsWorks Automate Operations with Chef
- Service Catalog Create and Use Standardized Products
- Trusted Advisor Optimize Performance and Security

### Security & Identity

- Identity & Access Management Manage User Access and Encryption Keys
- Directory Service Host and Manage Active Directory
- Inspector PREVIEW Analyze Application Security
- WAF Filter Malicious Web Traffic

### Analytics

- EMR Managed Hadoop Framework
- Data Pipeline Orchestration for Data-Driven Workflows
- Elasticsearch Service Run and Scale Elasticsearch Clusters
- Kinesis Work with Real-time Streaming data

### Internet of Things

- AWS IoT BETA Connect Devices to the cloud

### Mobile Services

- Mobile Hub BETA Build, Test, and Monitor Mobile apps
- Cognito User Identity and App Data Synchronization
- Device Farm Test Android, Fire OS, and iOS apps on real devices in the Cloud
- Mobile Analytics Collect, View and Export App Analytics
- SNS Push Notification Service

### Application Services

- API Gateway Build, Deploy and Manage APIs
- AppStream Low Latency Application Streaming
- CloudSearch Managed Search Service
- Elastic Transcoder Easy-to-use Scalable Media Transcoding
- SES Email Sending Service
- SQS Message Queue Service
- SWF Workflow Service for Coordinating Application Components

### Enterprise Applications

- WorkSpaces Desktops in the Cloud
- WorkDocs Secure Enterprise Storage and Sharing Service
- WorkMail PREVIEW Secure Email and Calendaring Service

US East (N. Virginia)

US West (Oregon)

US West (N. California)

EU (Ireland)

EU (Frankfurt)

Asia Pacific (Singapore)

Asia Pacific (Tokyo)

Asia Pacific (Sydney)

**Asia Pacific (Seoul)**

South America (São Paulo)

Explore the next generation of AWS cloud capabilities. See what's new

### Service Health

All services operating normally.

Updated: Nov 10 2015 14:17:01 GMT+0900

[Service Health Dashboard](#)

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Editor

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## 사용자 인증

 Amazon Cognito  
(Identity Broker)

## 사용자 권한 부여

 AWS Identity and  
Access Management

## 인증정보 단말간 공유

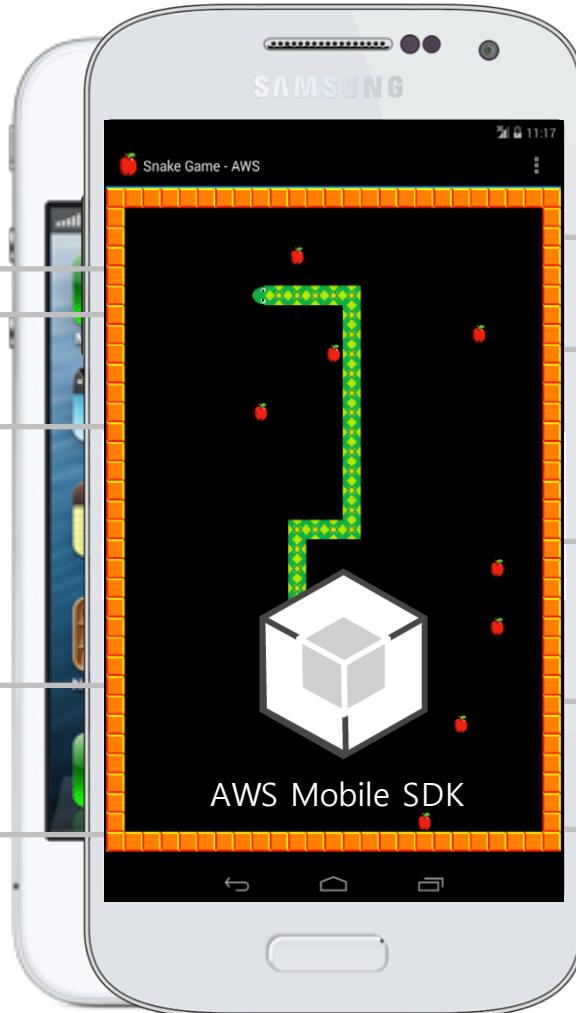
 Amazon Cognito  
(Sync)

## 사용자 행동 분석

 Amazon Mobile  
Analytics

## 재방문 추적

 Amazon Mobile  
Analytics



## 미디어의 저장 및 공유

 Amazon S3  
Transfer Manager

## 미디어 전송

 Amazon CloudFront  
(Device Detection)

## 푸시 알림 전송

 Amazon SNS  
Mobile Push

## 공유 데이터의 저장

 Amazon DynamoDB  
(Object Mapper)

## 실시간 데이터 스트림 처리

 Amazon Kinesis  
(Recorder)



# Amazon Cognito

Amazon Cognito helps you securely store, manage, and sync identities and data across multiple devices, platforms, and applications.

[Get started](#)

## Manage identities

Amazon Cognito creates unique identifiers that let you recognize end users across devices and platforms. With Amazon Cognito, you can support unauthenticated identities, identities from your own authentication system, as well as those from public providers including Amazon, Facebook, and Google.



## Keep your AWS resources safe

Amazon Cognito automatically delivers temporary, limited privilege credentials for your application to access AWS resources. You can also use the Cognito unique identifier in your Identity and Access Management policies to manage access to your AWS resources.



## Stay in sync

Save data to your end user profiles and keep it in sync across all of the user's devices. Amazon Cognito creates a local, cached copy of your data so your application doesn't have to worry about intermittent connectivity. With a single sync command, the data is synchronized with the cloud storage and the user's devices.

# Amazon Cognito 소개

## 1

간단한 인증 방식  
제공 및 접근  
관리



다양한 소셜 로그인  
방식을 통해 쉽게  
로그인 가능

## 2

디바이스 및  
플랫폼간 데이터  
동기화



디바이스 및 플랫폼  
관계 없이 사용자 인증  
및 데이터 동기화

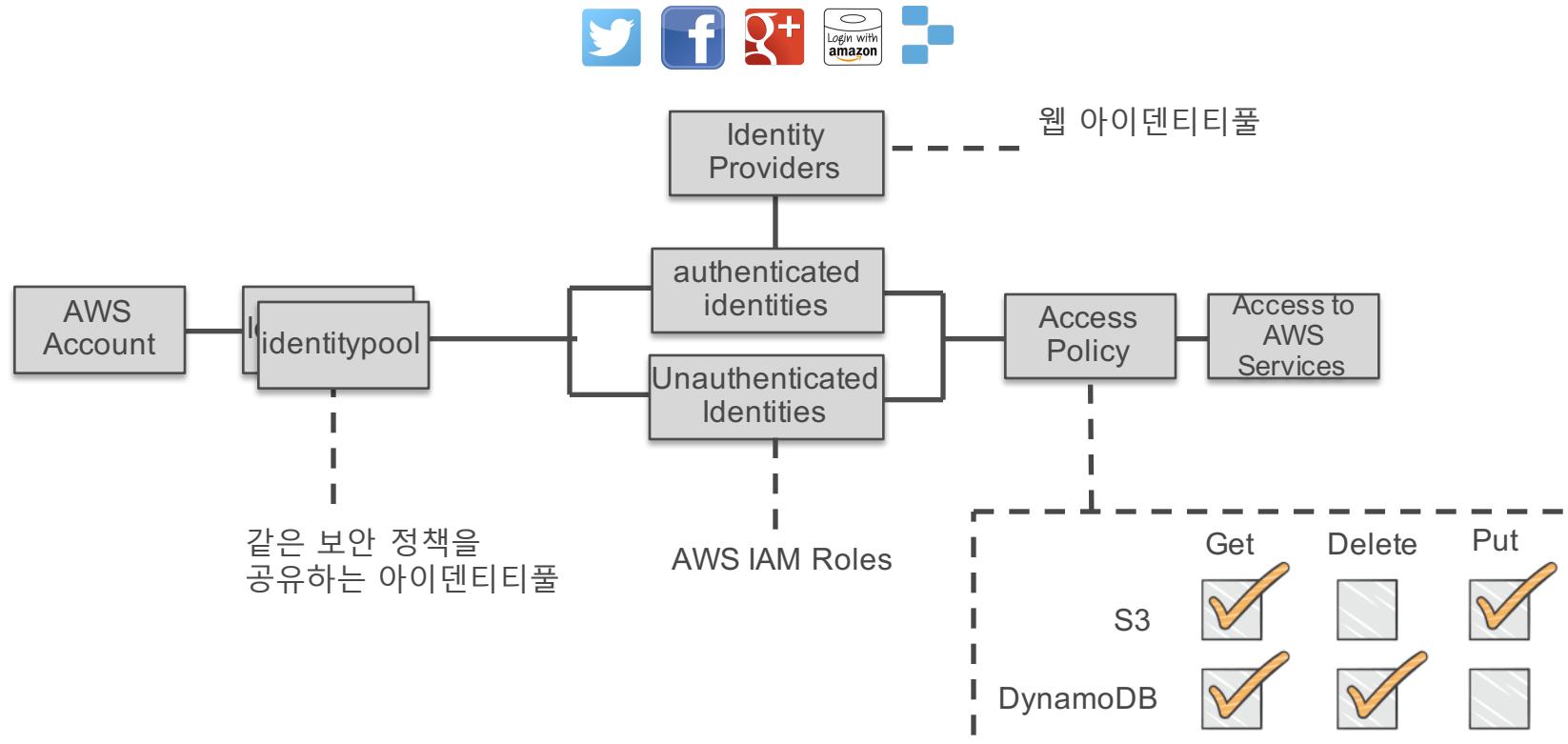
## 3

가장 안전한  
베스트 프랙티스  
적용



모바일 및 AWS 전체  
서비스에 적용 가능한  
안전한 아이덴티티 관리

# Amazon Cognito: 인증 체계도



# 단계1: Identity Pool 생성

The screenshot shows the AWS Cognito service page. At the top, there are navigation links for AWS, Services, and Edit. Below that, the Amazon Cognito logo is displayed. A prominent blue button labeled "Create new identity pool" is highlighted with a red rectangular border. To the right of this button, there is a section titled "Channy App" which displays "Identities 0 | Change 0.0%" and a grid of empty columns.

The screenshot shows the "Getting started wizard" for creating a new identity pool. The title "Getting started wizard" is at the top. Below it, there are two steps: "Step 1: Create identity pool" and "Step 2: Set permissions". The "Step 1" section is active and titled "Create new identity pool". It contains a description: "Identity pools are used to store end user identities. To declare a new identity pool, enter a unique name". Below this, the "Identity pool name" field is set to "Channy App", with a green checkmark icon indicating validation. An example placeholder "Example: My App Name" is shown below the input field. There are two expandable sections: "Unauthenticated identities" and "Authentication providers". Under "Unauthenticated identities", there is a checkbox labeled "Enable access to unauthenticated identities" which is checked. Under "Authentication providers", there is a row of buttons for "Amazon", "Facebook", "Google+", "Twitter", "OpenID", and "Custom". The "Amazon" button is highlighted with an orange bar. At the bottom, there is a field for "Amazon App ID" with the placeholder "Optional" and an example value "amzn1.application.188a56d827a7d6555a8b67a5d".

# 단계2: 기본 IAM Role 생성

By default, Amazon Cognito creates a new role with limited permissions - end users only have access to Cognito Sync and Mobile Analytics. You can modify the roles if your application needs access to other AWS resources, such as S3 or DynamoDB.

▼ Hide Details

**Role Summary** [?](#)

**Role** Your authenticated identities would like access to

**Description** Cognito.

**IAM Role**

**Role Name** Cognito\_123Auth\_Role

▶ View Policy Document

**Role Summary** [?](#)

**Role** Your unauthenticated identities would like access to

**Description** Cognito.

**IAM Role**

**Role Name** Cognito\_123Unauth\_Role

[Don't Allow](#) [Allow](#)



# 단계3: SDK 다운로드 및 샘플 코드 적용

Identity pool  
Dashboard  
**Sample code**  
Identity browser

## Getting Started with Amazon Cognito

Platform **Android** ▾

### ▼ Download the AWS SDK

[Download the AWS SDK for Android](#) [Developer Guide](#)

### ▼ Get AWS Credentials

```
// Initialize the Amazon Cognito credentials provider
CognitoCachingCredentialsProvider credentialsProvider = new CognitoCachingCredentialsProvider(
    myActivity.getContext(), // Context
    "us-east-1:e2e79cba-870a-4329-ac3c-ffd1ea02a206", // Identity Pool ID
    Regions.US_EAST_1 // Region
);
```

### ▼ Store User Data

```
// Initialize the Cognito Sync client
CognitoSyncManager syncClient = new CognitoSyncManager(
    myActivity.getContext(),
    Regions.US_EAST_1, // Region
    credentialsProvider);

// Create a record in a dataset and synchronize with the server
Dataset dataset = syncClient.openOrCreateDataset("myDataset");
dataset.put("myKey", "myValue");
dataset.synchronize(new DefaultSyncCallback() {
    @Override
    public void onSuccess(Dataset dataset, List newRecords) {
        //Your handler code here
    }
});
```



# Amazon Cognito: 동기화 기능 예제



1

## CredentialsProvider 및 CognitoClient 초기화

```
provider = new CognitoCachingCredentialsProvider (context, AWS_ACCOUNT_ID,  
COGNITO_POOL_ID, COGNITO_ROLE_UNAUTH, COGNITO_ROLE_AUTH, Regions.US_EAST_1);  
  
cognito = new CognitoSyncManager (context, Regions.US_EAST_1, provider);
```

2

## 원하는 데이터 셋이나 키/값 설정

```
cognito.openOrCreateDataset(datasetName);  
dataset.put(key, value);
```

3

## 데이터 동기화

```
dataset.synchronize(new SyncCallback(){...});
```





# Amazon Mobile Analytics

Amazon Mobile Analytics is a service that lets you easily collect, visualize, and understand app usage data at scale.

Amazon Mobile Analytics is designed to deliver usage reports within 60 minutes of receiving data from an app so that you can act on the data more quickly. The service is free for up to 100 million events per month.

[Getting Started Guide](#) | [View Amazon Mobile Analytics Demo](#)



## Step 1. Go to Cognito

Setup Amazon Cognito Identity Pool to securely access data from your app. If you already have Amazon Cognito Identity setup, you can skip to step 2.



## Step 2. Easily Download and Integrate SDK

Download and integrate the AWS Mobile SDK with your iOS, Android, or Fire OS apps.



## Step 3. View Reports

View engagement and monetization data for your app

# Amazon Mobile Analytics

“간단하고도 비용 효율적인 모바일 앱 분석 도구”

1

빠르다!



다양한 통계 분석을  
60분 이내에  
수행 가능

2

비용이  
저렴하다!



수백만의 사용자로 부터  
오는 수십억건 데이터도  
무료로 분석 가능!

3

데이터는  
나의 것!



수집된 데이터는  
모두 자신의  
AWS 자원에 저장!



Overview

Active Users

Sessions

Revenue

Retention

Custom Events



## Lifetime Users ⓘ

**505,616** iOS: 84,547 Android: 382,456 Fire OS: 38,613

## Daily Active Users (DAU) ⓘ

Avg. 2,914 | Change ▲ 4.7%



## Monthly Active Users (MAU) ⓘ

Avg. 5,577 | Change ▲ 0.6%



## Lifetime Value per User ⓘ

**\$0.65 USD** iOS: \$0.65 USD | Android: \$0.65 USD | Fire OS: \$0.65 USD

(한라인코드로만도 추가 가능)

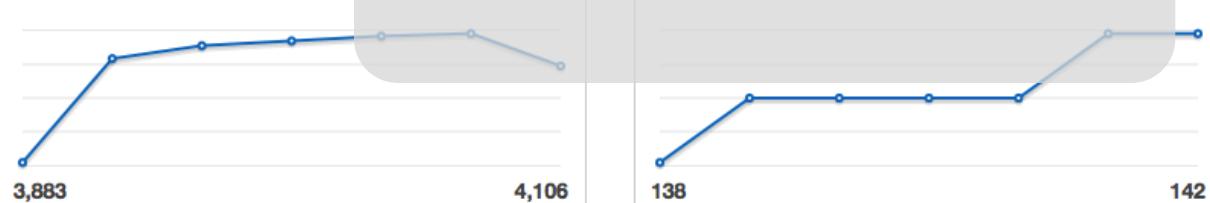
## Sticky Factor ⓘ

Wt. Avg. 0.52 | Change ▲ 4.1%



## Total Sessions ⓘ

Avg. 4,112 | Change ▲ 5.2%



## 1. Monthly Active Users (MAU)

Avg. 1,108 | Change ▲ 28.1%

## 2. Daily Active Users (DAU)

## 3. New Users,

## 4. Daily Sessions,

## 5. Sticky Factor,

## 6. 1-Day Retention,

## 7. Avg. Revenue per DAU,

## 8. Daily Paying Users, ⓘ

## 9. Avg. Paying DAU Avg. 140 | Change ▲ 2.9%



Overview

Active Users

Sessions

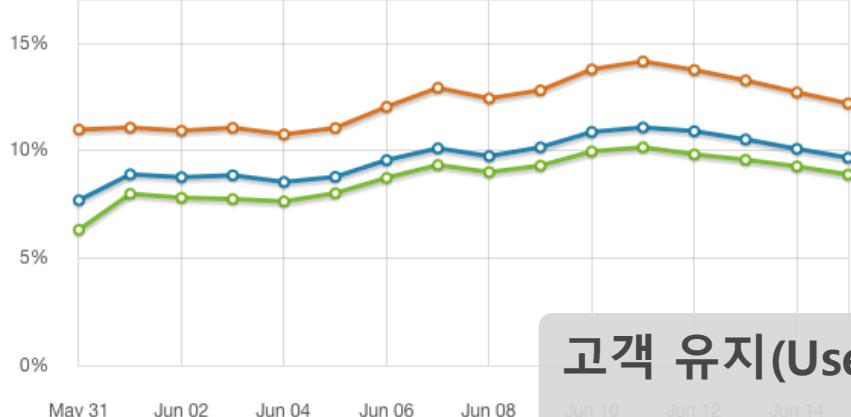
Revenue

Retention

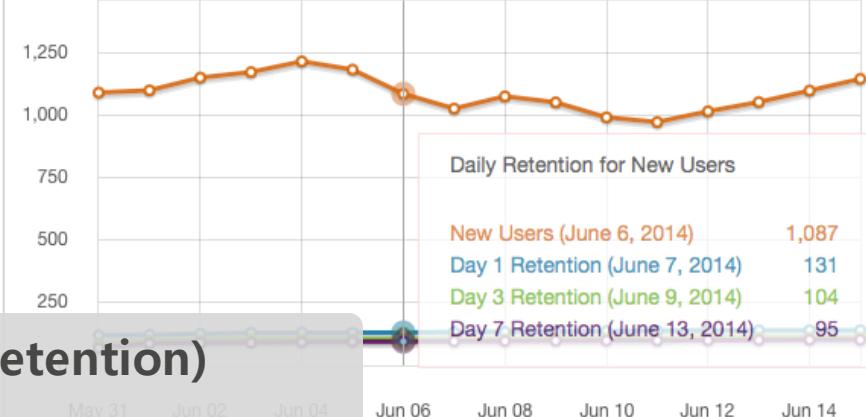
Custom Events



## Daily Retention for New Users - Percentage ⓘ

[CSV](#)

## Daily Retention for New Users ⓘ

[CSV](#)

## 고객 유지(User Retention)

마케팅 이벤트 및 UI 변경, 신기능 추가 등에  
대한 사용자 반응을 신속하게 체크 가능

## Weekly Retention for New Users - Percentage ⓘ

[CSV](#)

20%

## Weekly Retention for New Users ⓘ

[CSV](#)

# Mobile Analytics 적용 코드 예제



1

## 앱 코드에서 MobileAnalyticsManager 초기화

```
private static MobileAnalyticsManager analytics;  
analytics = MobileAnalyticsManager.getInstance(  
        this.getApplicationContext(), "yourCompany.yourAppId",  
        Regions.YOUR_REGION, config, cognitoProvider );
```

2

## OnResume() 혹은 OnPause() 추가

```
analytics.getSessionClient().resumeSession();  
analytics.getSessionClient().pauseSession();  
Analytics.getEventClient().submitEvents();
```

3

## 별도 원하는 추가 이벤트 수집의 경우 선언

```
EventClient eventClient = analytics.getEventClient();  
MobileAnalyticsEvent visitEvent = eventClient.createEvent("speedSet");  
eventClient.recordEvent(visitEvent);
```

## App Management

### Auto Export Settings

The Auto Export to Amazon S3 and Amazon Redshift feature lets you archive and access raw events from your S3 bucket, and conduct custom analysis using SQL queries on your app data in Redshift. Pricing information to use the Auto Export feature can be found [here](#).

The Auto Export feature is configured as follows:

 Amazon Redshift	 Amazon S3 Bucket	 AWS IAM Role
Redshift CloudFormation Stack Deployed <a href="#">Click Here to Open Stack in the CloudFormation Console</a>	snakeappevents	arn:aws:iam::809189701920:role/mobileanalytics-autoExportToS3

## Manage Apps

[Add an App](#) [Rename App](#) [Configure Auto Export to Redshift + S3](#) 

<input type="checkbox"/> App Name	App ID	Integration Steps	Auto Export
<a href="#">AnotherApp</a>	a24d94cafe5a4d36ae4a672f9ef28c72	<a href="#">View Integration Steps</a>	 Redshift +  S3
<a href="#">MyNewApp</a>	64698cda83d24aebb806398c473a33b7	<a href="#">View Integration Steps</a>	 Redshift +  S3
<a href="#">MySecondApp</a>	530b78bf976c4bdccb1d87db444350db9	<a href="#">View Integration Steps</a>	 Redshift +  S3
<a href="#">MyThirdApp</a>	10717699bf8a4ac38a306fa50ee7164c	<a href="#">View Integration Steps</a>	 Redshift +  S3
<a href="#">Snake</a>	27abe7bb7542b6666ae3e1f40c246b92	<a href="#">View Integration Steps</a>	 Redshift +  S3



# Simple Notification Service

Amazon Simple Notification Service (SNS) is a fast, flexible, fully managed push messaging service.

[Get Started](#)



## Broadcast notifications to any destination

Amazon SNS lets you send notifications to multiple destinations in a single broadcast. Destinations can be mobile devices that are iOS, Android, Windows, or FireOS based. You can also use Amazon SNS to broadcast messages to destinations that are AWS Lambda, Amazon SQS, HTTP, Email or SMS based.



## Global & Fast at massive scale

With Amazon SNS, you can send billions of notifications across the world. Amazon SNS is available in all regions of AWS and is designed to handle your most stringent latency needs.



## Use any language or platform

You can choose from a variety of programming languages or platforms to send notifications via Amazon SNS such as Java, .NET, Node.js, PHP, Python, or Ruby.

# Amazon SNS 모바일 푸시



Internet



**Amazon SNS**  
Cross-platform  
Mobile Push



Apple APNS



Google GCM



Baidu CP



Amazon ADM



Windows WNS and  
MPNS



With Amazon SNS,  
developers can  
send push  
notifications on  
multiple platforms  
and reach mobile  
users around the  
world

# 단계1: 토픽(Topic) 생성

The screenshot shows the AWS SNS Topics page. At the top, there is a navigation bar with the AWS logo, a Services dropdown, and an Edit dropdown. Below the navigation bar, the left sidebar contains links for SNS Home, Topics (which is selected and highlighted in orange), Applications, and Subscriptions. The main content area has a title 'Topics' and three buttons: 'Publish to topic', 'Create new topic' (which is highlighted with a red box), and 'Actions'. A 'Filter' section is also present. A modal dialog box is open in the center, titled 'Create new topic'. It contains instructions: 'A topic name will be used to create a permanent unique identifier called an Amazon Resource Name (ARN)'. There are two input fields: 'Topic name' with the value 'Channy-App' and 'Display name' with the value 'App Noti'. At the bottom right of the dialog are 'Cancel' and 'Create topic' buttons.

SNS Home

**Topics**

Applications

Subscriptions

Topics

Publish to topic

Create new topic

Actions

Filter

Create new topic

A topic name will be used to create a permanent unique identifier called an Amazon Resource Name (ARN).

Topic name Channy-App

Display name App Noti

Cancel Create topic

# 단계2: 애플리케이션(Application) 등록

The screenshot shows the AWS SNS console with the 'Applications' tab selected. A modal dialog box is open, titled 'Create platform application'. Inside the dialog, it says 'Enter application name and select the push notification platform for your application.' The 'Application Name' field contains 'Channy-Noti'. The 'Push Notification Platform' dropdown is set to 'Google Cloud Messaging (GCM)'. Below the platform selection, there is a note about entering credentials for connecting to the selected platform. An 'API key' field contains the value 'AlzaSyADasdaajadasjjada'. At the bottom right of the dialog are 'Cancel' and 'Create Platform Application' buttons.

SNS Home

Topics

**Applications**

Subscriptions

AWS Services Edit Channy Yun

## Applications

Create platform application

Enter application name and select the push notification platform for your application.

**Application Name** Channy-Noti

**Push Notification Platform** Google Cloud Messaging (GCM)

Enter the credentials your application uses to connect to the selected push notification platform. By uploading these credentials to Amazon SNS, you are indicating you have the right to use these credentials and are allowing Amazon SNS to use them on your behalf.  
[Learn more.](#)

**API key** AlzaSyADasdaajadasjjada

Cancel Create Platform Application



# 단계3: SDK 다운로드 및 샘플 코드 적용

```
public class AWSSNS
{
    public static AmazonSNSClient getInstance(String region)
    {
        AmazonSNSClient client = new AmazonSNSClient(Cognito.getProvider());
        client.setRegion(
            RegionUtils.getRegion(region)
        );

        return client;
    }
}

if (gcm == null)
{
    gcm = GoogleCloudMessaging.getInstance(getApplicationContext());
}

deviceIdentifierForGCM = gcm.register("████████");

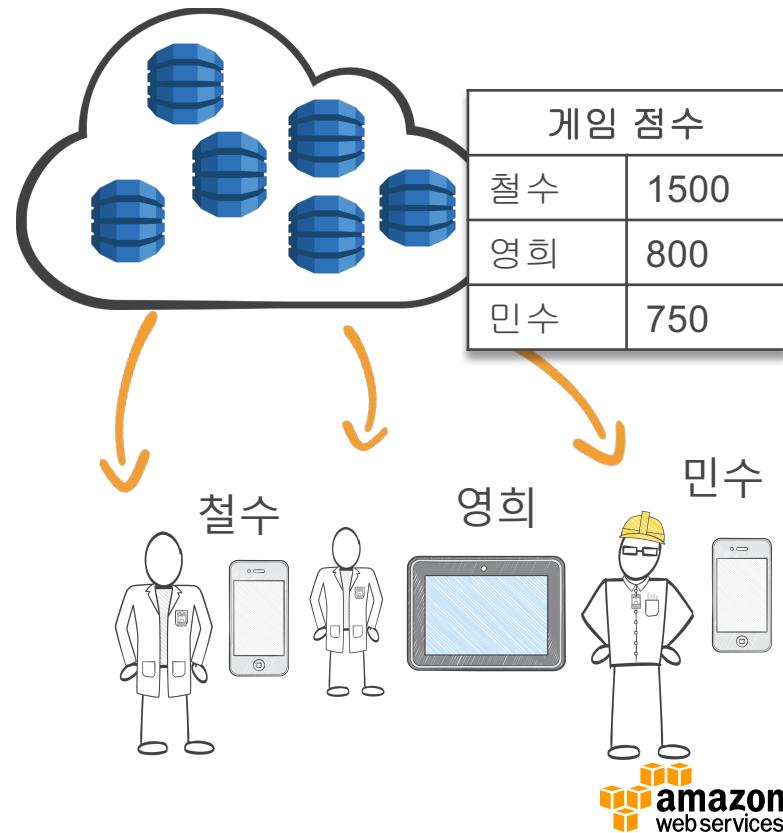
SubscribeRequest reqSubscribe = new SubscribeRequest(
    arnSNSTopic,
    "Application",
    endpoint
);

SubscribeResult resSubscribe = snsClient.subscribe(reqSubscribe);
```



# Amazon DynamoDB Connector: Object Mapper

- 자연 속도 없이 빠르게 데이터 추가 및 높은 성능을 가진 DynamoDB를 앱에서 간단한 코드로 접근 가능
- 모바일 클라이언트 데이터를 그대로 싱크 가능
- 멀티 디바이스에서 쉽게 이용 가능



# S3 Connector: 모바일 전송 관리



멀티 파트 데이터 업로드(photos, videos, audio)  
빠른 다운로드(e.g. assets)  
자동 재시작  
중단/재시작/취소 기능 제공  
네이티브 OS 친화적

Amazon S3 connector를 통해  
동적으로 게임 자원을 백그라운드로  
다운로드하여 사용자 경험이  
늘어났습니다



Douglas Hare  
CEO, Outplay Entertainment

앱스토어 출시 사이클과 상관 없이  
동적으로 자원을 업데이트할 수  
있었으며, 170MB가 넘는  
다바이스별 이미지를 모바일에서  
직접 다운로드하여 서버 확장성을  
고려할 필요가 없이 더 품질 높  
고해상도 이미지 전송도 가능



# S3 이미지 관리 예제



1

```
// Creating the transfer manager  
TransferManager transferManager = new TransferManager(credentialProvider);
```

2

```
// Upload image  
Upload upload = transferManager.upload(BUCKET_NAME, fileName, file);  
// Download image  
Download = transferManager.download(BUCKET_NAME, mKey, file);
```

3

```
// Pause, and Resume  
try {  
    PersistableDownload persistableDownload = download.pause();  
    //do something if we didn't abort  
} catch(PauseException e) {  
    //do something if we aborted  
}  
download = transferManager.resumeDownload(persistableDownload);
```



# Amazon Kinesis Connector for Mobile Apps



Amazon Kinesis를 통해  
실시간 사용자 액션을  
직접 모바일로 전송하여  
분석 할 수 있었습니다.



# 사용자 인증



Amazon Cognito  
(Identity Broker)

# 사용자 권한 부여



AWS Identity and  
Access Management

# 인증정보 단말간 공유



Amazon Cognito  
(Sync)

# 사용자 행동 분석



Amazon Mobile  
Analytics

# 재방문 추적



Amazon Mobile  
Analytics



# 미디어의 저장 및 공유



Amazon S3  
Transfer Manager

# 미디어 전송



Amazon CloudFront  
(Device Detection)

# 푸시 알림 전송



Amazon SNS  
Mobile Push

# 공유 데이터의 저장



Amazon DynamoDB  
(Object Mapper)

# 실시간 데이터 스트림 처리



Amazon Kinesis  
(Recorder)



# AWS Lambda

AWS Lambda is a compute service that runs developers' code in response to events and automatically manages the compute resources for them, making it easy to build applications that respond quickly to new information.

[Get Started Now](#)

[Learn more about AWS Lambda](#)



Respond quickly to new information



Run your code without managing infrastructure



Cost-effective and efficient

# AWS Lambda: 이벤트 기반 코드 실행 (서버 없이)

“서버 없이도 클라우드 기반 무상태(Stateless) 함수 실행”

1

서버 설치 불필요  
실행 시간에 따라 과금



2

유연한 자동 확장

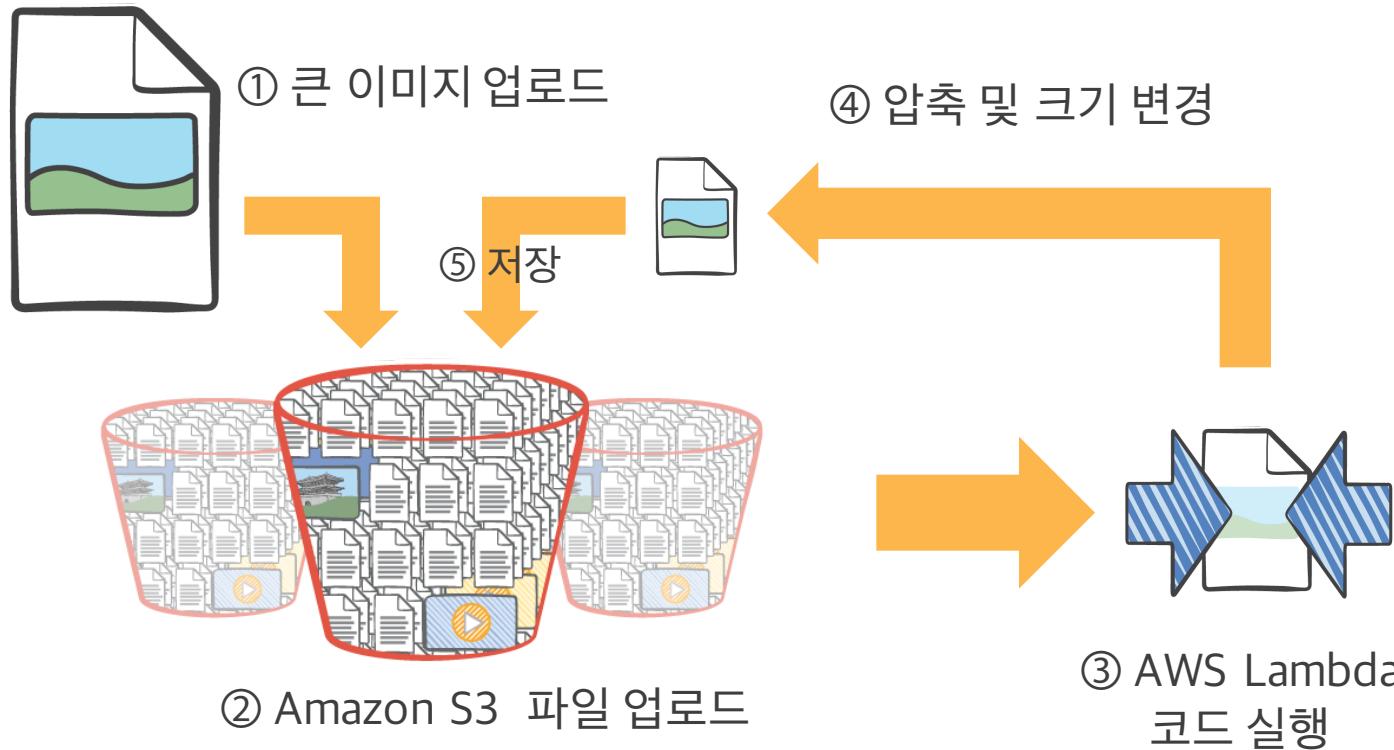


3

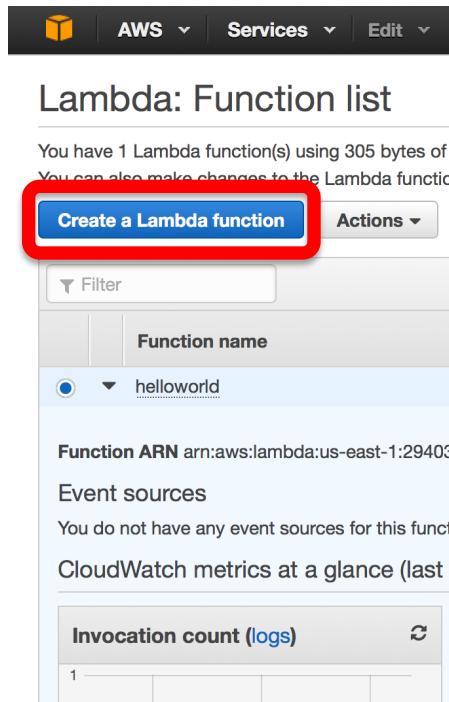
프로그램 코드



# AWS Lambda를 활용한 썸네일 생성하기



# 단계1: Lambda 함수 만들기



Lambda: Function list

You have 1 Lambda function(s) using 305 bytes of c  
You can also make changes to the Lambda function

Create a Lambda function Actions ▾

Filter

Function name
helloworld

Function ARN arn:aws:lambda:us-east-1:294038

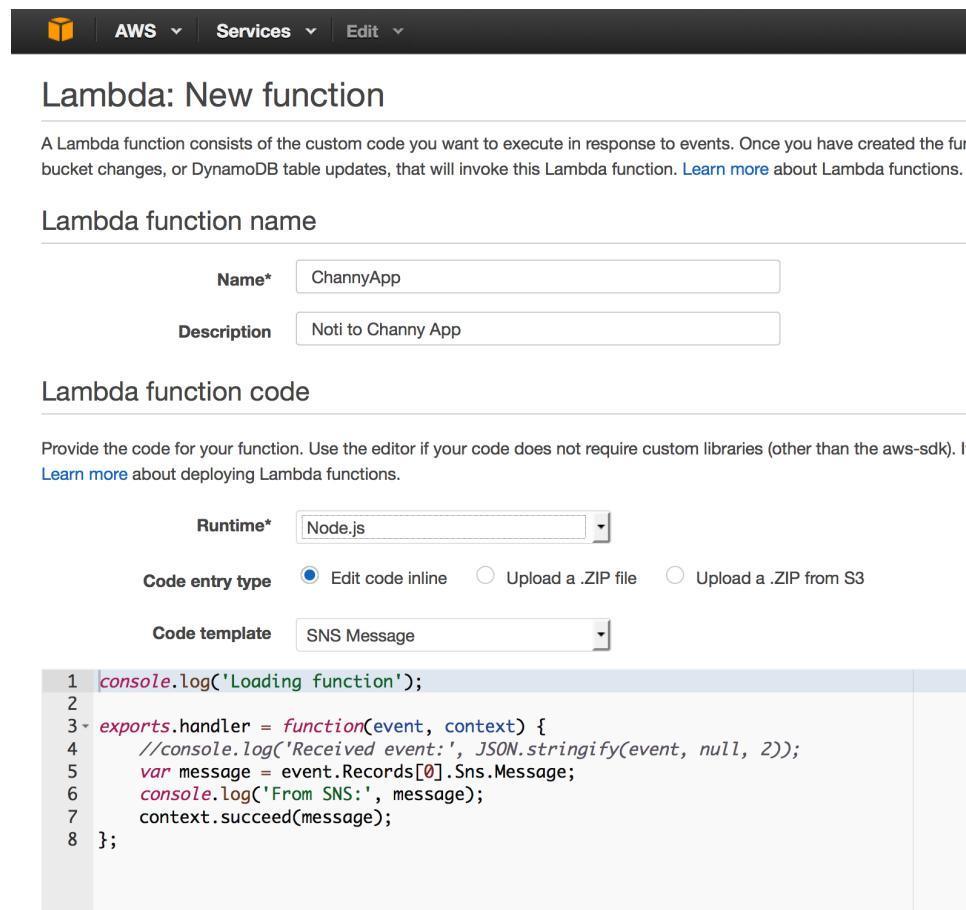
Event sources

You do not have any event sources for this function.

CloudWatch metrics at a glance (last 2 hours)

Invocation count (logs)

1		



## Lambda: New function

A Lambda function consists of the custom code you want to execute in response to events. Once you have created the function, it can be triggered by S3 bucket changes, or DynamoDB table updates, that will invoke this Lambda function. [Learn more](#) about Lambda functions.

### Lambda function name

Name\* ChannyApp

Description Noti to Channy App

### Lambda function code

Provide the code for your function. Use the editor if your code does not require custom libraries (other than the aws-sdk). If you need to use custom libraries, upload a .ZIP file.

Runtime\* Node.js

Code entry type  Edit code inline  Upload a .ZIP file  Upload a .ZIP from S3

Code template SNS Message

```
1 console.log('Loading function');
2
3 exports.handler = function(event, context) {
4     //console.log('Received event:', JSON.stringify(event, null, 2));
5     var message = event.Records[0].Sns.Message;
6     console.log('From SNS:', message);
7     context.succeed(message);
8 };
```



# 단계2: 테스트 해보기

## Lambda: Edit/Test helloworld

Try manually invoking your function with sample events from different sources. The event parameters contain information that your code can use.

Please remember this will actually execute the code, so please comment out any actions you don't want to take!

### Sample event

Hello World

```
1 {  
2   "key1": "value1",  
3   "key2": "value2",  
4   "key3": "value3"  
5 }
```

### Function code

Edit code inline

Upload a .ZIP file

Upload a .ZIP from S3

```
1 console.log('Loading function');  
2  
3 exports.handler = function(event, context) {  
4   console.log('value1 =', event.key1);  
5   console.log('value2 =', event.key2);  
6   console.log('value3 =', event.key3);  
7   context.succeed(event.key1); // Echo back the first key value  
8   // context.fail('Something went wrong');  
9 };
```

▶ Change function configuration and role

▶ Change advanced settings

[Go to function list](#)

[Invoke](#)



# 단계3: 실행 결과 디버깅

## Execution result

The area below shows the result returned by your function execution using the context methods. [Learn more](#) about returning results from your function.

```
"value1"
```

## Summary

**Request ID** 1bf5ff52-2625-11e5-8e5e-ddca575803f0

**Duration** 1.44 ms

**Billed Duration** 100 ms

**Memory Configured** 128 MB

**Max Memory Used** 27 MB

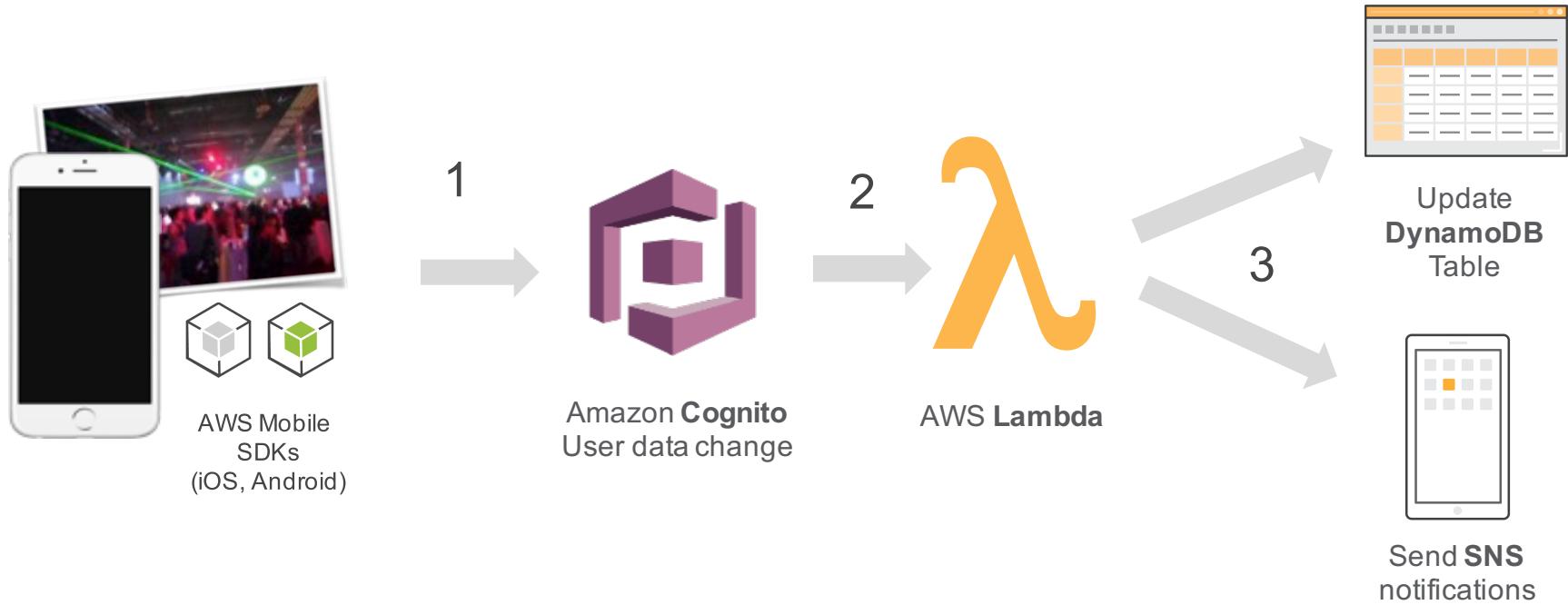
## Execution logs

The area below shows the logging calls in your code. These correspond to a single row within the CloudWatch log group corresponding to this Lambda function. [Click here](#) to view the CloudWatch log group.

```
START RequestId: 1bf5ff52-2625-11e5-8e5e-ddca575803f0
2015-07-09T10:27:34.262Z      1bf5ff52-2625-11e5-8e5e-ddca575803f0  v
2015-07-09T10:27:34.262Z      1bf5ff52-2625-11e5-8e5e-ddca575803f0  v
2015-07-09T10:27:34.262Z      1bf5ff52-2625-11e5-8e5e-ddca575803f0  v
END RequestId: 1bf5ff52-2625-11e5-8e5e-ddca575803f0
REPORT RequestId: 1bf5ff52-2625-11e5-8e5e-ddca575803f0 Duration: 1.44 ms
```



# 활용 예제: Data Triggers-Mobile Backend



# 다양한 활용 예제

- S3에 ZIP 파일 업로드시 자동 압축 해제 하기
- S3에 동영상 파일 업로드시 인코딩 하기
- S3에 XLS 파일 업로드시 DynamoDB로 저장하기
- S3에 정적 블로그 호스팅 하기
- Node.js 문자 인식 라이브러리로 이미지내 문자 인식하기
- Node.js 크롤러를 이용한 간단한 웹 크롤러 개발하기
- Node.js 활용 Cron Job 만들기

<https://github.com/awscode/lambda-snippet>



# 모바일 활용 전략

Amazon  
Cognito

Any



AWS에 안전한 인증

Amazon  
Cognito

SNS



푸시 동기화

S3 +  
Analytics Amazon Redshift



통계 데이터 S3/Redshift  
자동 백업

DynamoDB Lambda



DynamoDB 업데이트시 기능 동작

Amazon  
Kinesis

Lambda



실시간 스트림 유입시 기능 동작

S3

Lambda



S3에 파일 변화시 기능 동작

SNS

Lambda



푸시와 함께 기능 동작

Amazon  
Cognito

Lambda

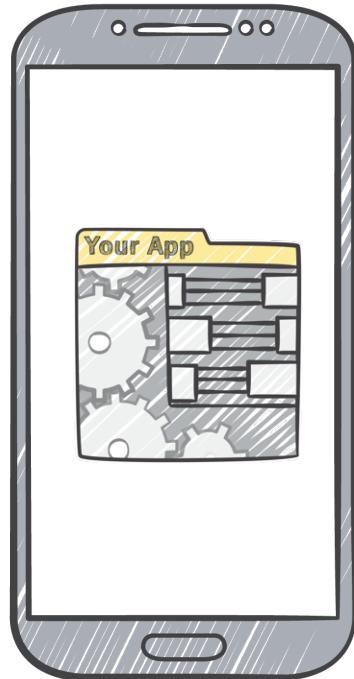


데이터 싱크 시 기능 동작

Amazon  
Cognito

Amazon  
Kinesis

# 모바일 빌딩블럭: 사진 공유 앱을 생각해 봅시다!



## 원하는 기능

소셜 로그인

사진 업로드

사진 편집

사진 공유

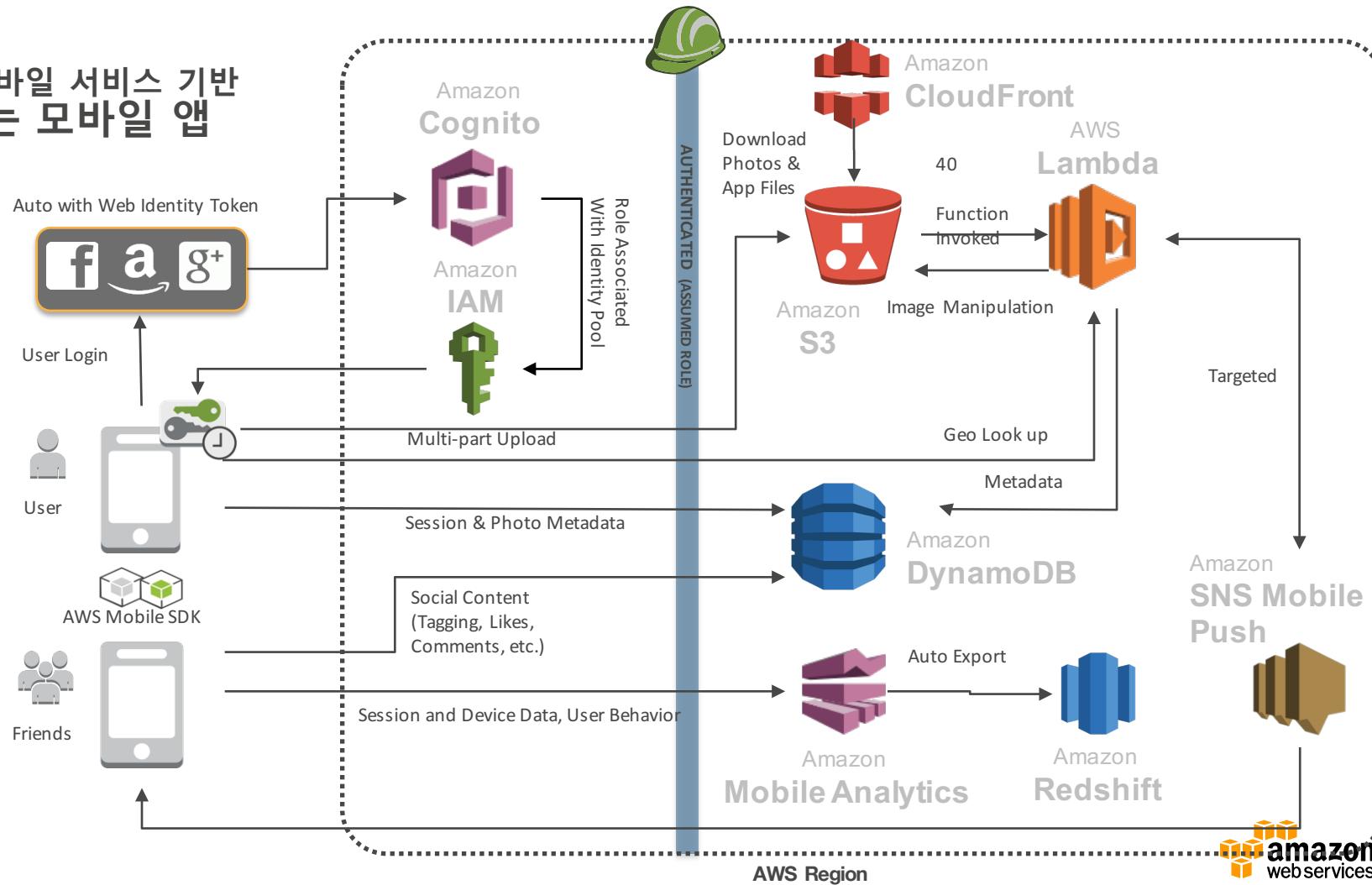
메타데이터 저장 (사진 찍은 날짜, 장소 등)

메타데이터 검색

친구에게 알리기

사진 저장 및 전달

# AWS 모바일 서비스 기반 서버없는 모바일 앱



# Amazon API Gateway



“확장성과 보안성 높은 API 개발, 관리 모니터링 서비스”



API 버전  
관리



API 트래픽  
관리



데이터 캐싱

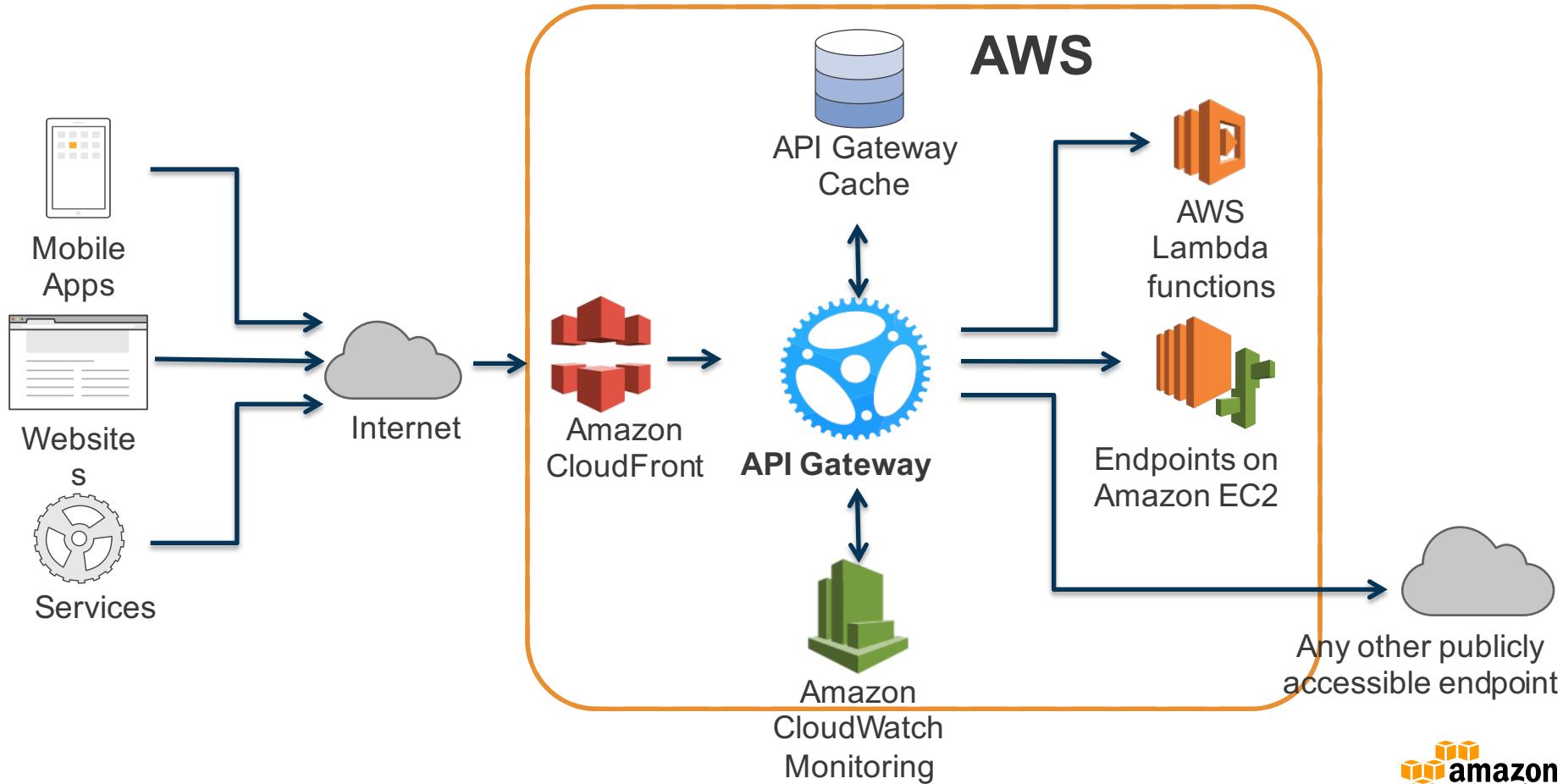


인증 및 보안



SDK 자동  
생성

# API Gateway 모식도



# Amazon DeviceFarm

new

“클라우드를 통해 간단하게 모바일 앱 테스트 가능!”

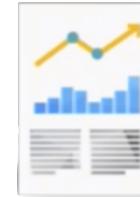


실제 기기에서  
자동 테스트

안드로이드, iOS  
및 Fire OS 지원



앱 및 디바이스  
설정 가능



세부 테스트 결과  
및 로그 분석

# AWS 모바일 무료 서비스



**Free Tier**  
(for first 12 months):  
1 Million syncs/month  
+ 10GB of storage for  
Amazon Cognito



**Free Tier:**  
100 Million events  
every month



**Free Tier:**  
1 Million push  
messages every  
month



**Free Tier : 1M free**  
requests per month  
400,000 GB-  
seconds of  
compute time per  
month

<http://aws.amazon.com/mobile>

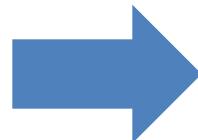
# AWS Mobile Hub (Beta)

1. 통합 콘솔 화면

2. 기능별로 미리 구현 완료

3. 자동 서비스 제공

4. 자동 생성 앱



결과: AWS 기반 모바일 앱 자동 제작

# AWS Mobile Hub 시작하기

The screenshot shows the AWS Mobile Hub console interface. On the left, there's a sidebar with icons for Configure, Build, Test, Analytics, Resources, Feedback, and English. The main area has a dark background with orange text. It says "Build, test, and monitor your mobile apps with AWS Mobile Hub". Below that is a "Project name" input field with "What is your project name?" placeholder text. A large blue "Get started" button is centered. To the right of the button is a "Overview" section with a detailed description of what AWS Mobile Hub is and how it works. At the bottom, there's a "Getting Started" section with a brief description. The footer contains copyright information, privacy policy, terms of use, and links for feedback and language selection.

Mobile Hub

Andy Kelm ▾ Support ▾

Configure

Build

Test

Analytics

Resources

Feedback English

Build, test, and monitor your mobile apps with AWS Mobile Hub

What is your project name?

Project name

Add and configure AWS features for your mobile app

Create project

Cancel

Download source, SDKs and a working sample app

Test your app on real devices

Monitor app usage and key metrics

View the status and health of your mobile app projects

Get started

Overview

The AWS Mobile Hub (Beta) provides an integrated console experience to help you build, test and monitor usage of your mobile apps. The first step is to create a project, and then you can select and configure the features you want to add to your mobile app. Once you have selected and configured features for your project, the Mobile Hub will automatically provision AWS service resources for you and generate a working quickstart app that uses those service resources. You can download the customized quickstart app for either iOS (Objective-C) or Android (Java).

Getting Started

Give your project a name and start by selecting and configuring features to add to your quickstart app.

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# 단계 1. 기능 선택하기



## User Sign-in

Let your users sign in with public identity providers or your own identity system.

Powered by Amazon Cognito



## Push Notifications

Send push notifications to individuals or groups of users.

Powered by Amazon SNS



## App Content Delivery

Store app assets like resource files in the cloud. Download and cache files in your app.

Powered by Amazon S3 and CloudFront



## User Data Storage

Store files for your users in the cloud, and store and sync user data in key/value pairs.

Powered by Amazon Cognito and S3



## App Analytics

Collect app usage information and analyze key metrics.

Powered by Amazon Mobile Analytics



## Cloud Logic

Run your backend code in the cloud.

Powered by AWS Lambda



# 사용자 로그인





User Sign-in

Let your users sign in with public identity providers or your own identity system.

Powered by Amazon Cognito

**+**

## 로그인 방법 찾기:

- 게스트, 선택 혹은 강제 선택 가능

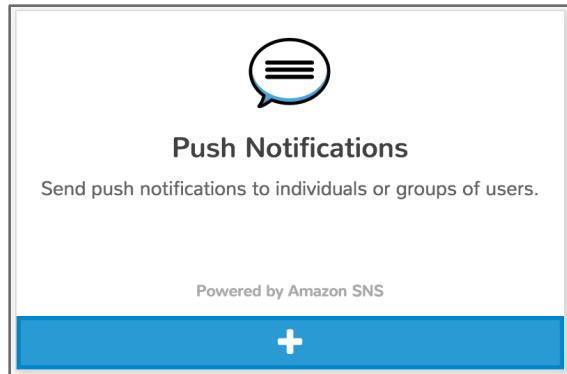
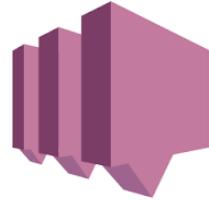
## 소셜 로그인 기능 선택:

- Facebook (Google, Twitter, Amazon)
- 자체 로그인 가능

## 빠르게 로그인 기능 통합 가능

Powered by Amazon Cognito Identity

# 푸시 알림



## 앱에서 푸시 알림 보내기

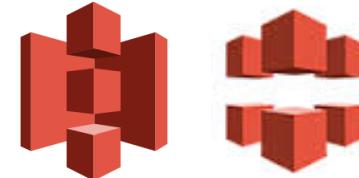
- iOS or Android
- 1:1 or topic/subscription based

## 빠른 기능 적용

- 알림 시작/중지 기능
- SNS에 푸시 토큰 자동 등록
- 토픽 선택 가능

Powered by Amazon SNS

# 콘텐츠 배포





**App Content Delivery**

Store app assets like resource files in the cloud.  
Download and cache files in your app.

Powered by Amazon S3 and CloudFront

+

## 클라우드에 파일 및 자원 저장

- 예제: 프로그램이 사용하는 파일, 각종 이미지 파일

## 더 빠른 배포를 위해 CDN 사용 가능 (선택 사항)

## 디바이스 내 캐시 제공 가능

- 최대 캐시 사이즈 정하기
- 캐시를 할 파일 선택 가능

Powered by Amazon S3 and CloudFront

# 사용자 데이터 저장





**User Data Storage**

Store files for your users in the cloud, and store and sync user data in key/value pairs.

Powered by Amazon Cognito and S3

**+**

## 사용자 프로필 이미지

- 사용자 접근 제어 가능

## 사용자 프로필 데이터

- Key-value pairs
- 디바이스별 사용자 로그인 동기화 가능

## 샘플 앱 기능

- 파일 탐색 기 및 색상 선택기

Powered by Amazon S3 and Amazon Cognito Sync

# 앱 데이터 분석





**App Analytics**

Collect app usage information and analyze key metrics.

Powered by Amazon Mobile Analytics

**+**

## 앱 사용량 분석 가능

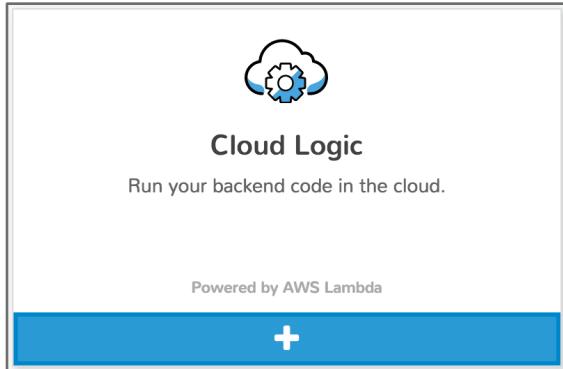
- Session, monetization, and custom events
- Monitor active users, monetization, retention

## 세 가지 이벤트 형식 포함

## 모바일 허브에서 대시보드 접근 가능

Powered by Amazon Mobile Analytics

# Cloud logic



Run back-end code in the cloud

- Share functions across apps
- Update on the fly without app submissions

Call directly from your mobile app

- You define inputs/outputs

Write in Java, Javascript, or Python

You write code, we manage infrastructure

Powered by AWS Lambda



# 단계 2. 소스 패키지 다운로드

The screenshot shows the AWS Mobile Hub interface for an application named "App1". The left sidebar contains icons for Configuration, Build, Test, Analytics, and Resources. The main area is titled "Build" and displays two icons: an Apple logo for iOS and an Android robot for Android. Below these icons is a blue button labeled "Download iOS source package". To the right of the download button, there is a section titled "System Requirements" which lists the need for Xcode 7.0 or newer. Another section titled "Install Xcode" provides a link to the official download page: <https://developer.apple.com/xcode/download>. At the bottom of the screen are two buttons: "Skip" and "I'm done with this step".

Mobile Hub > App1

Andy Kelm Support

Build

Configure

Build

Test

Analytics

Resources

Build

Download iOS source package

1. Setup

Integrated Development E...

2. Compile and Run

3. Discover

4. Develop

5. Troubleshoot

System Requirements

Your system must include the following:

- Xcode 7.0 or newer

Install Xcode

If you have not already installed the Xcode IDE (Integrated Development Environment) on your host, you can do download it from the following location:  
<https://developer.apple.com/xcode/download>

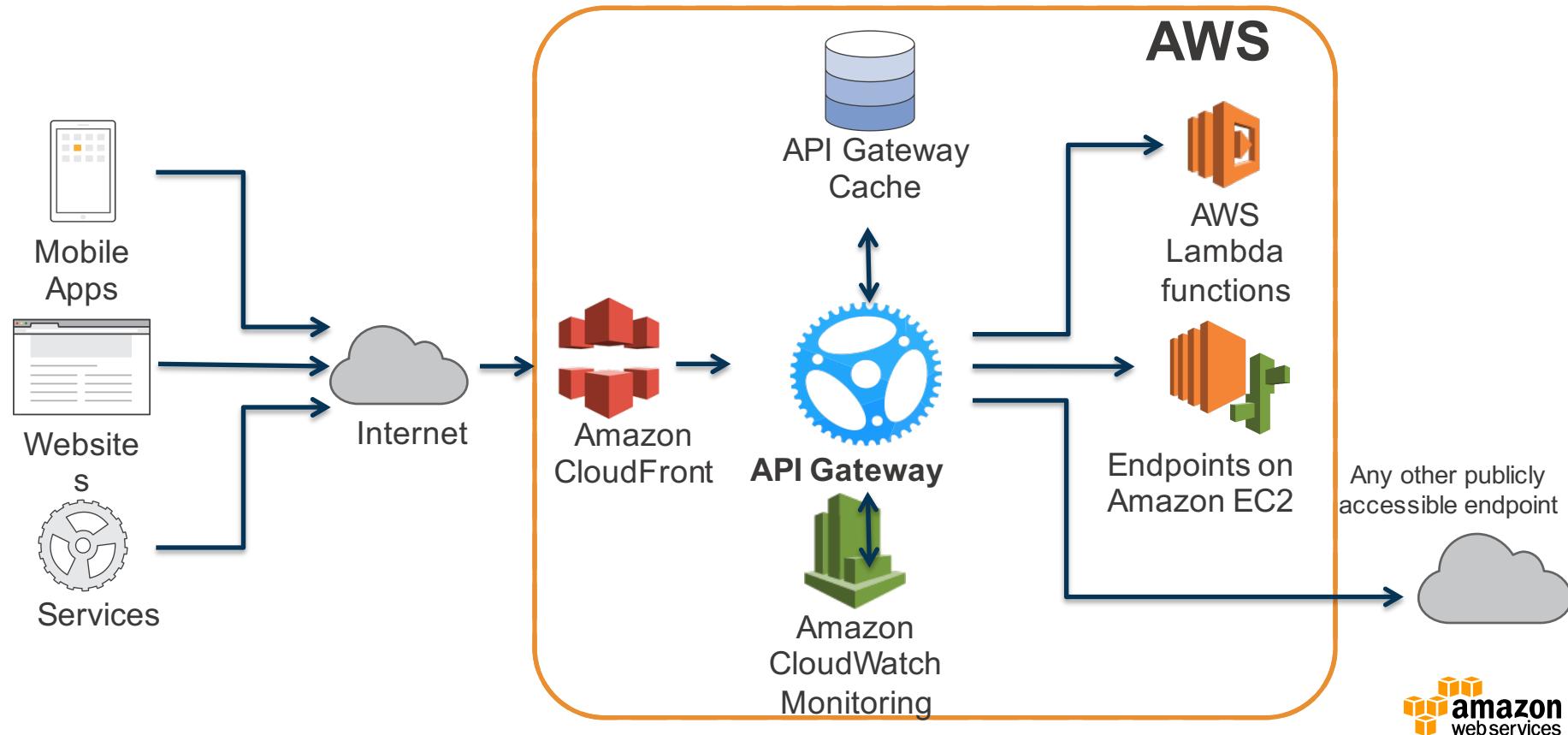
Skip I'm done with this step

# 단계 3. 앱 빌드 및 테스트 - Amazon Device Farm

The screenshot shows the AWS Mobile Hub console interface. On the left, a vertical sidebar contains icons for Mobile Hub, Configure, Build, Test, Analytics, and Resources. The main area displays the 'Mobile Hub > App1' view for the file 'daumapp-v86.apk'. The navigation bar includes 'Andy Kelm' and 'Support' dropdowns. Below the navigation, the file name 'daumapp-v86.apk' is shown with links to 'Summary', 'Samsung Galaxy S5 (T-Mobile)', and 'Screenshots'. The 'Screenshots' tab is selected, showing three screenshots of the app running on a Samsung Galaxy S5 device. The first screenshot shows the home screen with various app icons. The second screenshot shows a T-Mobile TV interface with a message about updates. The third screenshot shows a web browser with a message indicating no recent pages.



# 단계 4. 모바일 백엔드 - Amazon API Gateway



# NEXT

- Lab 1: Mobile Hub로 안드로이드 앱 만들기
- Lab 2: AWS 모바일 서비스로 게임 샘플 확인하기
  - Enhancing Your Android Application Using AWS Mobile Services  
<https://run.qwiklab.com/focuses/preview/1255>
  - <https://github.com/awslabs/aws-mobile-self-paced-labs-samples>
- 참고 사항
  - 여러분의 프로젝트에 AWS 모바일 서비스 적용하기
  - Amazon Device Farm 및 API Gateway 사용해 보기
    - <http://www.slideshare.net/awskorea/aws-api-gateway-device-farm>
    - <http://bit.ly/awskr-2015-08-webinar-api-gateway-device-farm>

