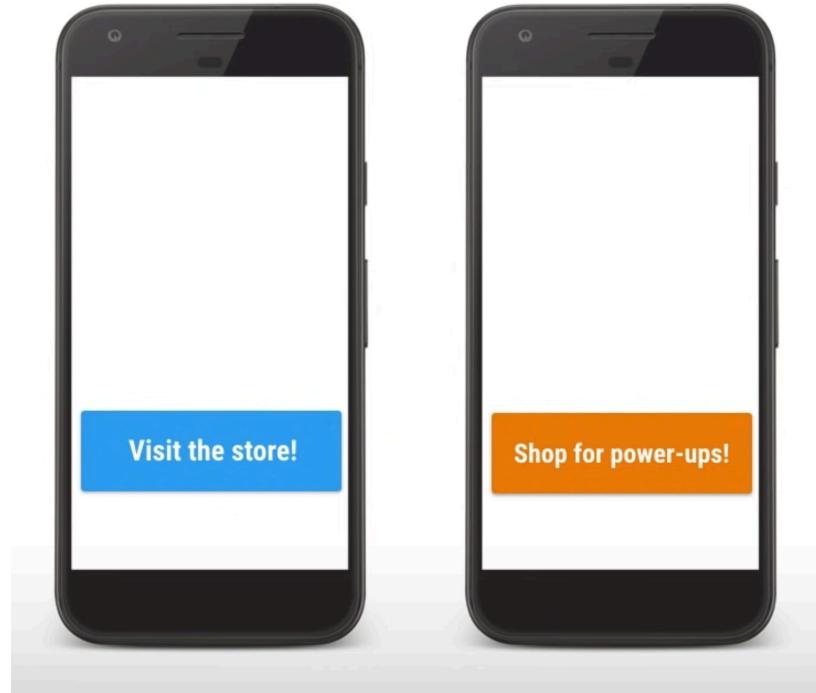


Firebase AB Testing Notes



准备

[Firebase Remote Config](#), 配置下发能力集成，配置为Key-value pairs

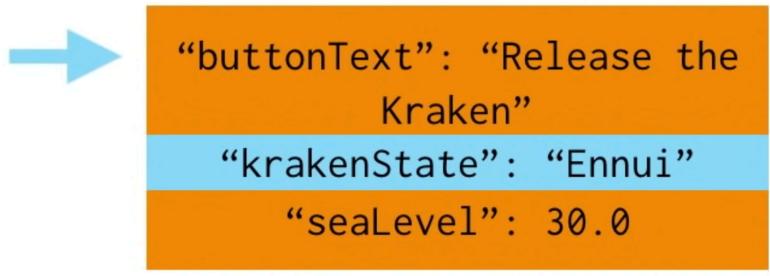
Default Values

```
"buttonText": "Release the  
Kraken"  
"krakenState": "Enraged"  
"seaLevel": 30.0
```

Downloaded Values

```
"krakenState": "Ennui"
```

buttonText = “Release the Kraken”



产品功能AB测试demo

目标：测试UI文字和颜色对用户登陆的影响



建立测试，圈选用户（版本，目标人群 etc.）

1 Experiment basics

Name
Sign in panel test

Description (optional)
Some tests to see if we can get more people to sign in

Target users 圈选用户

App	iOS com.google.kerp.ABTesting
Device language	English

AND

Percentage of target users ⑦

5 %

实验/方案 配置

✓ Experiment basics

Sign in panel test
10% of users matching 2 targeting criteria

2 Variants

		UI 文字	UI 颜色	
		signInRequestTe...	slideyViewColor	ADD PARAMETER
25%	Control group ⑦	(no value)	(no value)	
25%	Safe and secure	Keep your data safe	(no value)	
25%	Green background	(no value)	#57BB8A	
25%	Safe and green	Keep your data safe	#57BB8A	

ADD VARIANT

PREVIOUS NEXT

设定目标事件



Experiment basics

Sign in panel test

10% of users matching 2 targeting criteria



Variants

4 variants

Experimenting with signInRequestText and one other



Targeting (0 - 14 days)

Retention (15+ days)

Other analytics events
(Maximize event occurrence)

- Crash-free users
- mainMenu
- screen_view
- slideyViewDisplayed
- userSignedIn (selected)
- user_engagement

metric, such as a conversion event, below.
Variants that best achieve this goal will be deemed experiment leaders. [Learn more](#)



Retention (4-7 days) X

Crash-free users X



Experiment basics

Sign in panel test

10% of users matching 2 targeting criteria



Variants

4 variants

Experimenting with signInRequestText and one other



Goal

What are you trying to optimize? Choose a metric, such as a conversion event, below.
Variants that best achieve this goal will be deemed experiment leaders. [Learn more](#)

userSignedIn ▼

Other metrics to track

Metric +

Daily user engagement X

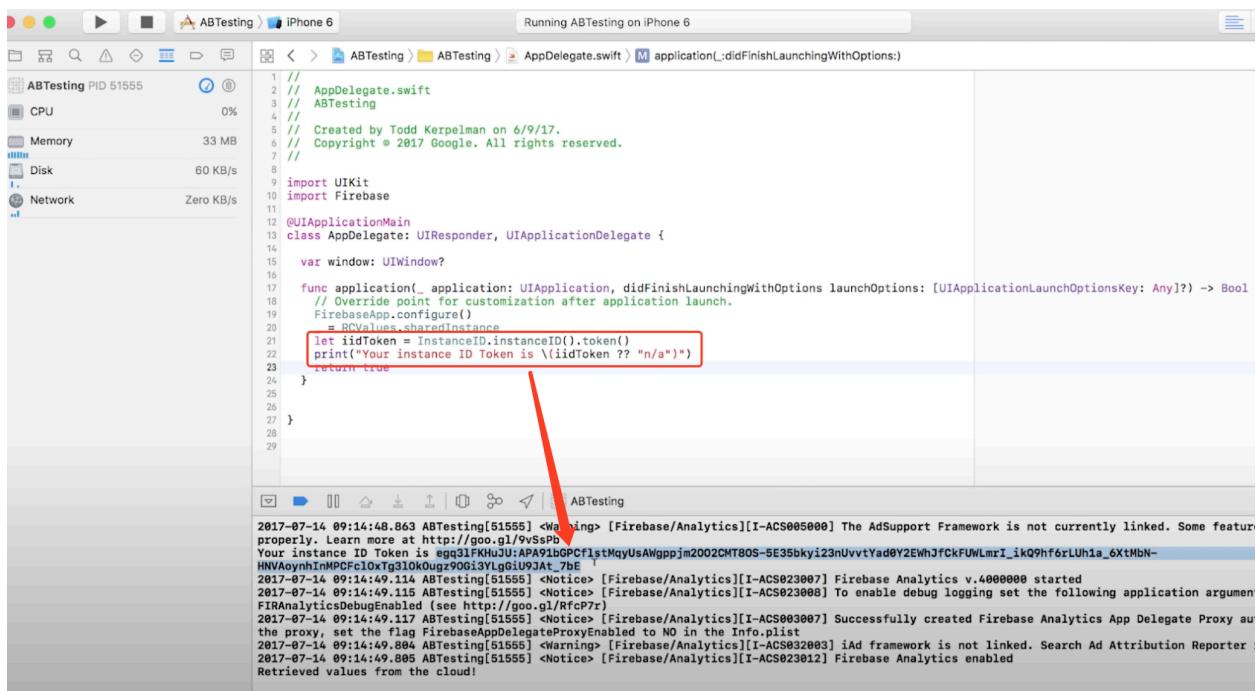
Retention (4-7 days) X

Crash-free users X

通过Firebase SDK获取instance id

InstanceID.instanceID().token() iOS

FirebaseInstanceId.getInstance().getToken(); 安卓



The screenshot shows the Xcode interface with a project named "ABTesting" running on an iPhone 6 simulator. The code in AppDelegate.swift demonstrates how to retrieve the instance ID:

```
// AppDelegate.swift
// ABTesting
// Created by Todd Kerpelman on 6/9/17.
// Copyright © 2017 Google. All rights reserved.

import UIKit
import Firebase

@UIApplicationMain
class AppDelegate: UIResponder, UIApplicationDelegate {

    var window: UIWindow?

    func application(_ application: UIApplication, didFinishLaunchingWithOptions launchOptions: [UIApplicationLaunchOptionsKey: Any]?) -> Bool {
        // Override point for customization after application launch.
        FirebaseApp.configure()
        = RCVValues.sharedInstance
        let iidToken = InstanceID.instanceID().token()
        print("Your instance ID Token is \(iidToken ?? "n/a")")
        return true
    }

}

let iidToken = InstanceID.instanceID().token()
print("Your instance ID Token is \(iidToken ?? "n/a")")
```

A red arrow points from the line `let iidToken = InstanceID.instanceID().token()` in the code editor down to the corresponding line in the Xcode log output, which displays the actual token value.

Xcode Log Output:

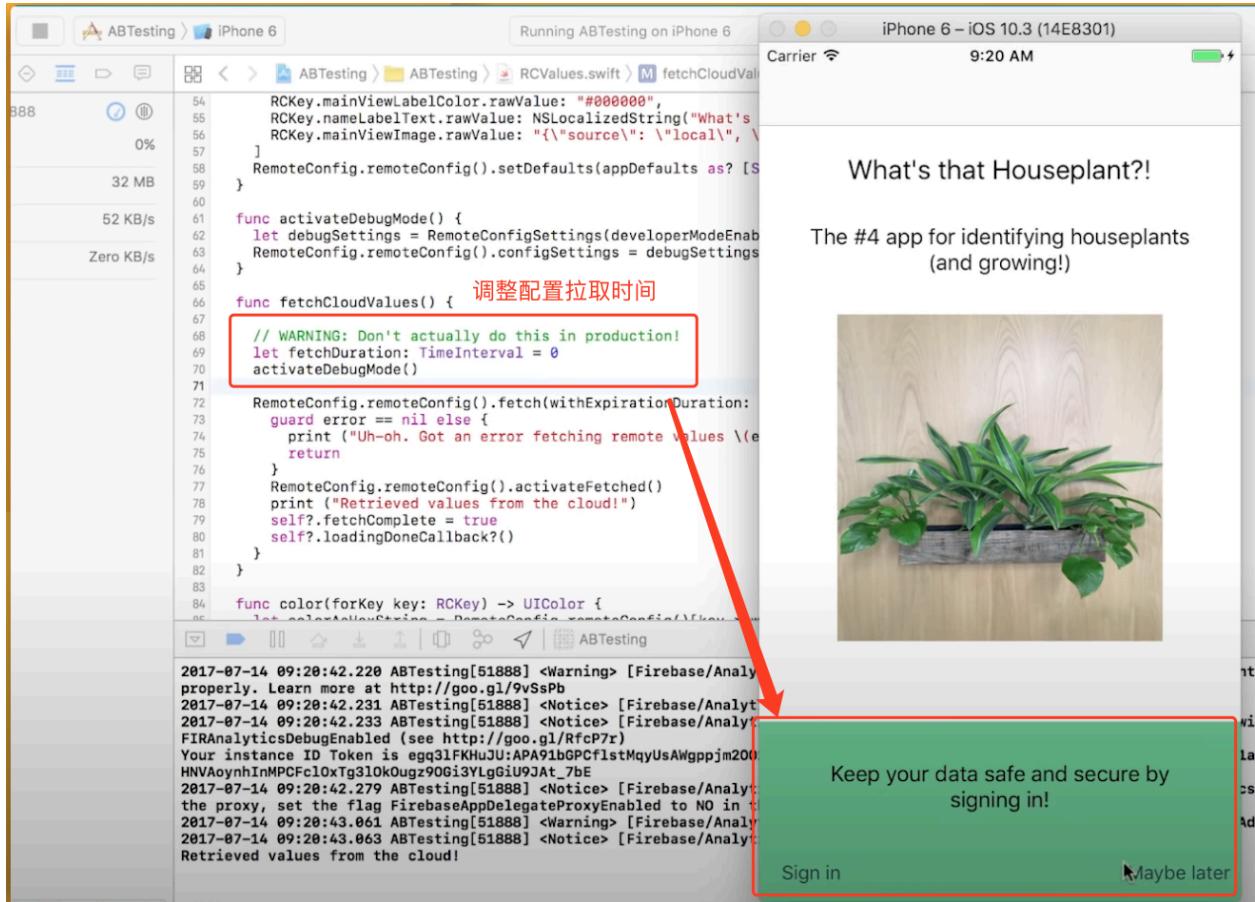
```
2017-07-14 09:14:48.863 ABTesting[51555] <Warning> [Firebase/Analytics][I-ACSO05000] The AdSupport Framework is not currently linked. Some features may not work properly. Learn more at http://goo.gl/9VsSPb
Your instance ID Token is egq3lFKHuJU:APA91bGPFcIstMqyUsAWgppjm2002CMT80S-5E35bkvi23nUvvtYad0Y2EWhJFCkFUWLMrI_ikQ9hf6rLUh1a_6XtMbN-HNNayohnhInMPDFc10Xtg310Khugz90613YLg0Iu9jAt_7BE
2017-07-14 09:14:49.114 ABTesting[51555] <Notice> [Firebase/Analytics][I-ACSO23007] Firebase Analytics v.4.000000 started
2017-07-14 09:14:49.114 ABTesting[51555] <Notice> [Firebase/Analytics][I-ACSO23008] To enable debug logging set the following application argument: FIRAnalyticsDebugEnabled (see http://goo.gl/RfcP7z)
2017-07-14 09:14:49.117 ABTesting[51555] <Notice> [Firebase/Analytics][I-ACSO03007] Successfully created Firebase Analytics App Delegate Proxy at the proxy, set the flag FirebaseAppDelegateProxyEnabled to NO in the Info.plist
2017-07-14 09:14:49.804 ABTesting[51555] <Warning> [Firebase/Analytics][I-ACSO32003] iAd framework is not linked. Search Ad Attribution Reporter
2017-07-14 09:14:49.805 ABTesting[51555] <Notice> [Firebase/Analytics][I-ACSO23012] Firebase Analytics enabled
Retrieved values from the cloud!
```

下发配置到测试终端看效果

The screenshot shows the Firebase Remote Config interface. A red box highlights the top navigation bar: "What's that Houseplant" → "Remote Config" → "Experiment – Sign in panel test". Below this, the "Details" section shows the experiment was created 0 minutes ago, targeting 10% of users matching 2 criteria across 4 variants and 0 test devices. The "Description" field contains: "Some tests to see if we can get more people to sign in". The "Targeting and distribution" section shows targeting 10% of users matching the app "com.google.kerp.ABTesting" and language "English". The "Variants" section lists four variants: "Control group" (25%), "Safe and secure" (25%), "Green background" (25%), and "Safe and green" (25%). The "Test devices (draft only)" section has a "MANAGE TEST DEVICES" button, which is also highlighted with a red arrow.

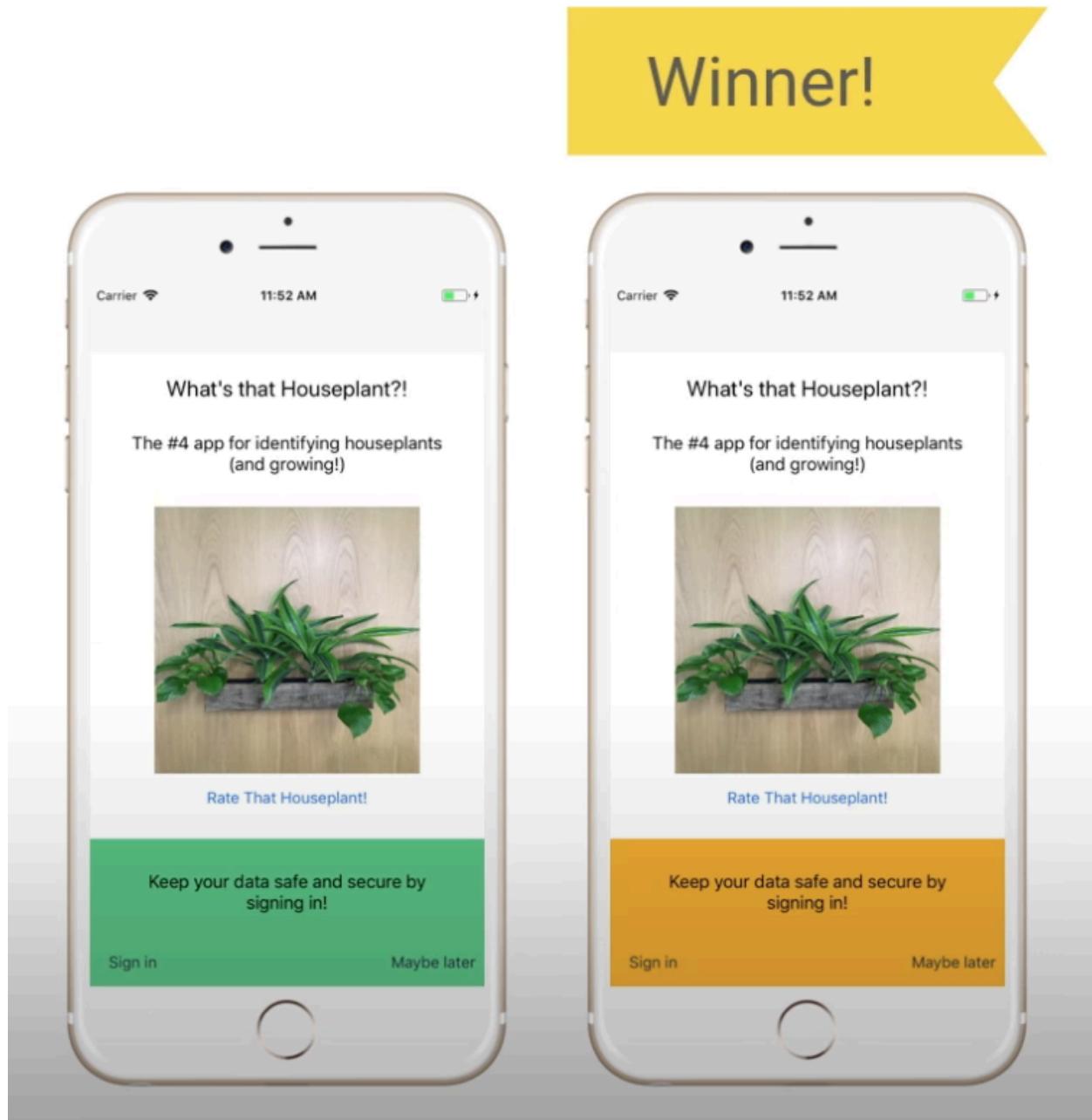
The screenshot shows a modal dialog titled "Test devices for 'Sign in panel test'". It contains instructions: "You can test specific variants by entering the Firebase Instance ID tokens for your test devices below". Below this, there is an "AB 测试 UI" section. On the left, there is a "Variant" table with four rows: "Control group", "Safe and secure", "Green background", and "Safe and green". The "Safe and green" row is highlighted with a red box and a mouse cursor. On the right, there is an "Instance ID token" input field containing the value "egq3lFKHuJU:APA91bGPCflst...". At the bottom right of the dialog is a large blue "SAVE" button.

测试终端查看效果



效果满意就可以开始推送，可以逐步扩大测试人群和最终部署winner顺利的话。

测试结果分析



我们用Bingo Blast 这个游戏AB测试结果来看下真实数据，这个测试是用来看广告对churn的影响

Ads impact on churn

2 variants • Started Sep 27, 2017

No leader found

Experiment overview

No leader found
Next, stop the experiment and evaluate the details below STOP EXPERIMENT

There is no leader in achieving your primary goal
Retention (1 day) Total Users
4.1K
22 today

Details Started Sep 27, 2017 100% of users matching 1 criteria 2 variants

Improvement overview

Variant	Retention (1 day)	Daily user engagement	Crash-free users	Purchase revenue	Retention (4–7 days)
Control group 2127 users	Baseline	Baseline	Baseline		
Ads disabled 1997 users	-7% to 13%	-5% to 7%	0% to 0%		

Improvement overview

Variant	Retention (1 day)	Daily user engagement	Crash-free users
Control group 2127 users	Baseline	Baseline	Baseline
Ads disabled 1997 users	-7% to 13%	-5% to 7%	0% to 0%

The screenshot shows a performance dashboard with the following data:

Variant	Retention (1 day)	Daily user engagement	Crash free users	Purchase revenue	Retention (4 - 7 days)
Control group 2127 users	Baseline	Baseline	Baseline	Baseline	Baseline
Ads disabled 1997 users	-7% to 13%	-5% to 7%	0% to 0%	-44% to 153%	-8% to 12%

A red arrow points from the text "单独指标细节" (Detailed metric information) to the "Retention (1 day)" dropdown menu.

Retention (1 day) ▾

Variant	Improvement	Probability to beat baseline	Probability to be best variant	Retention rate	Retained users
Control group 2127 users	Baseline	Baseline	29%	27.05% to 30.91%	616
Ads disabled 1997 users	-7% to 13%	71%	71%	27.76% to 31.77%	594

指标细节是个范围值，都是预测的范围，这个案例就没有一个清晰胜出的方案。

消息推送AB测试demo

[Firebase Cloud Messaging](#), 需要使用Cloud Messaging库

目的:通过不同消息推送，来测试目标事件达成效果

配置步骤相同，反而相对简单

Experiment basics
Houseplant rating test
10% of users matching 2 targeting criteria 圈选用户

2 Variants

		消息体
50%	Control group ②	Houseplant ratings now available in the app!
50%	Better recommendations	Want better recommendations? Rate your favorite houseplant!

[ADD VARIANT](#)

[PREVIOUS](#) [NEXT](#)

3 Goal

Message options
Send now

Variants
2 variants

3 Goal

What are you trying to optimize? Choose a metric, such as a conversion event, below.
Variants that best achieve this goal will be deemed experiment leaders. [Learn more](#)

Sent (Maximize event occurrence)

Other metrics to consider (4–7 days) Crash-free users Notification open

Metric + houseplant_rated screen_view session_start slideyViewDisplayed user_engagement

[PREVIOUS](#)

Message options
Send now

✓ Variants
2 variants

✓ Goal
Sent > Opened > houseplant_rated

4 Message options

Delivery date ② Time Time zone ②

Send Later ▾	10/17/17 ▾	12:00 PM	(GMT-07:00) Los Angeles Time
--------------	------------	----------	------------------------------

发送时间配置

Recipient time zone

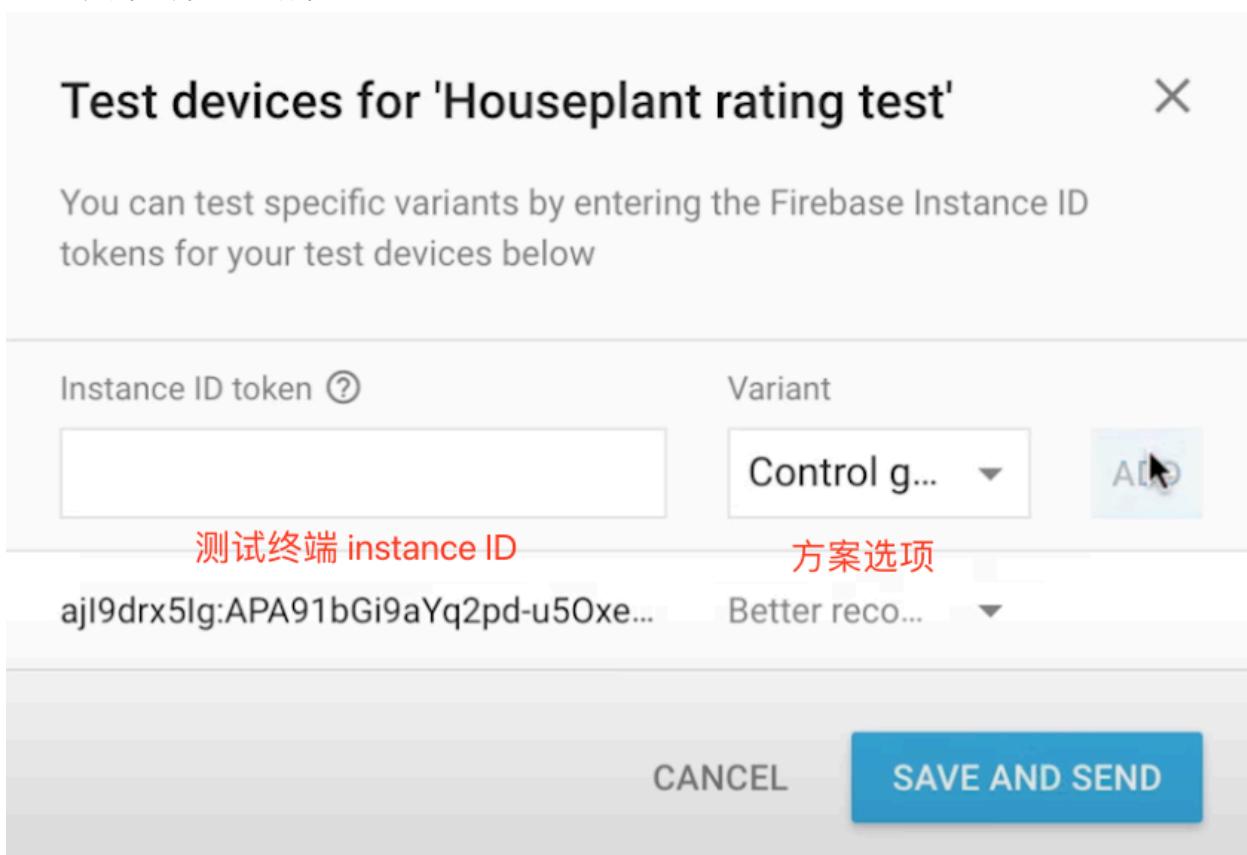
给测试终端发消息看效果

Test devices for 'Houseplant rating test' X

You can test specific variants by entering the Firebase Instance ID tokens for your test devices below

Instance ID token ②	Variant	Add
<input type="text"/>	Control g... ▾	Add 
测试终端 instance ID	方案选项	
ajl9drx5lg:APA91bGi9aYq2pd-u50xe...	Better reco... ▾	

CANCEL SAVE AND SEND



测试结果

Improvement overview

Variant	Daily user engagement	Retention (4–7 days)	Notification open	Purchase revenue	level_up
Control group 2980 users	Baseline	Baseline	Baseline	Baseline	Baseline
back_to_school 2980 users	↑ 2% to 26%	-15% to 21%	↑ 180% to 2,241%	-70% to 419%	-6% to 41%
level_up_to_unlock 2980 users	↑ 7% to 31%	-4% to 35%	↑ 323% to 3,291%	-55% to 590%	-5% to 43%

Daily user engagement ▾

Variant	Improvement	Probability to beat baseline	Probability to be best variant	Duration per user	Total duration
Control group 2980 users	Baseline	Baseline	<1%	00:40:39 to 00:49:15	933:10:47
back_to_school 2980 users	2% to 26%	99%	21%	00:46:14 to 00:55:47	1088:53:02
level_up_to_unlock 2980 users	7% to 31%	100%	79%	00:48:16 to 00:58:06	1286:54:40

● Control group
● back_to_school
● level_up_to_unlock
↔ Conversion between steps

Users in variant

level_up

扩大实验人群

Experiment – Houseplant rating test ALPHA

Experiment overview

Experiment is runnning Gathering data to inform the next iteration

There is no mainMenu

Details Status Variants Improvement overview

INCREASE DISTRIBUTION ...

Total Users: 0 0 today

Increase Distribution

Current Distribution: 20 of the target

Delivery date: Send Now

CANCEL SEND

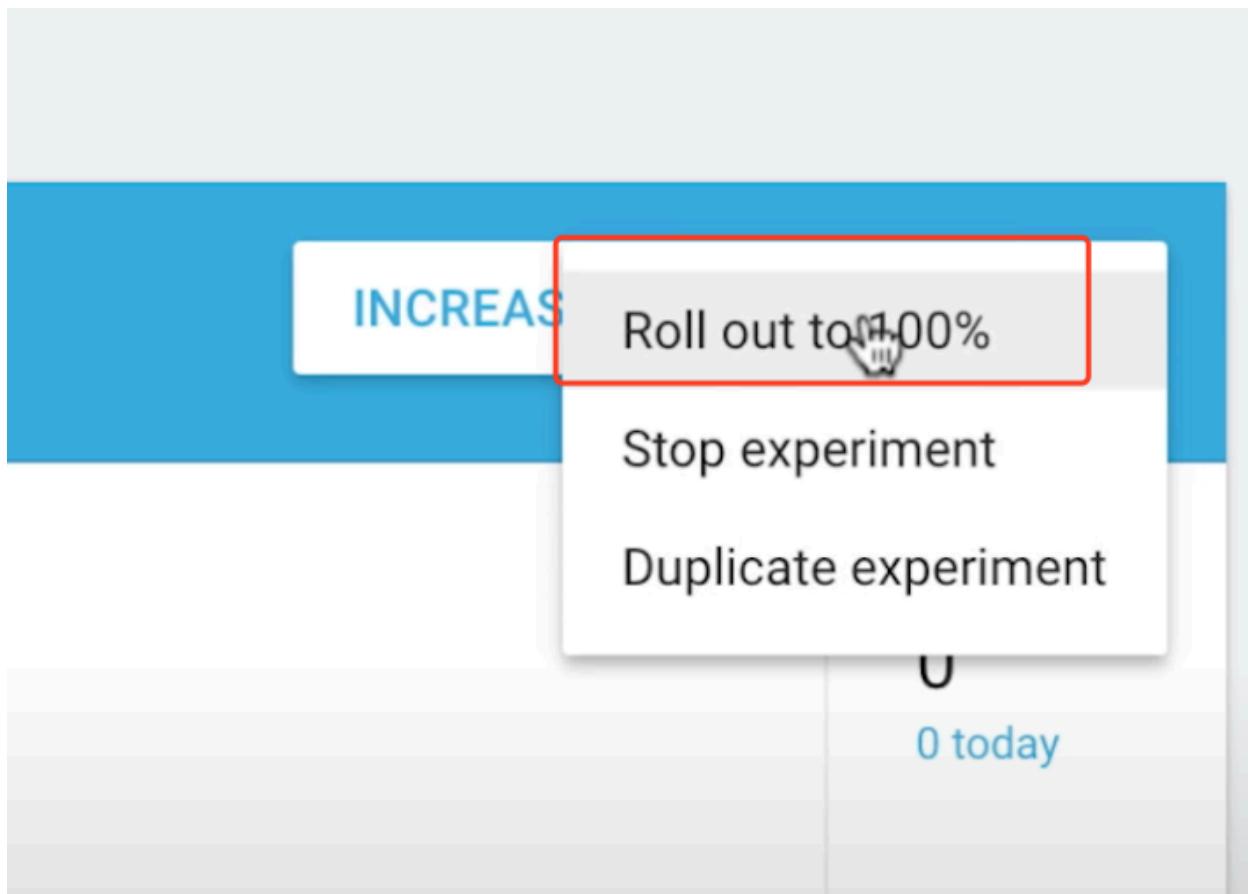
Variant: mainMenu Daily user engagement Retention (4–7 days) Crash-free users Notification open

Control group

Improvement overview

Variant	mainMenu	Daily user engagement	Retention (4–7 days)	Crash-free users	Notification open
Control group					

成功测试部署



明细数据分析（云平台收费项目：BigQuery 存储+计算）

Firebase 实验编号

The screenshot shows the Firebase A/B Testing interface. The URL in the browser bar is 'https://project/bingo-blast-abcde/experiments/results/34'. The main content area displays the title 'Experiment — Ads impact on churn' with a 'BETA' badge. Below it, the text 'Experiment overview' is visible. On the left sidebar, under the 'Project Overview' section, there are links for 'ELOP', 'Authentication', and 'Database'. The top navigation bar includes the project name 'Bingo Blast – A/B Testing – Fire' and a gear icon.

BigQuery 表结构

明细分析

实验圈选用户会作为用户属性标签打在事件数据上

New Query

```
1 #standardSQL
2
3 SELECT user_prop.value.value.string_value, event.name
4 FROM `bingo-blast-174dd.com_redhotlabs_bingo_ANDROID.app_events_20171010`,
5 UNNEST(user_dim.user_properties) AS user_prop,
6 UNNEST(event_dim) AS event
7 WHERE user_prop.key = "firebase_exp_34"
8 AND event.name = "display_admob_ad" LIMIT 20
9
```

Valid: This query will process 8.29 MB when run.

RUN QUERY ▾

Save Query

Save View

Format Query

Show Options

Results

Explanation

Job Information

Download as CSV

Download as JSON

Sav

Row	string_value	name
1	0	display_admob_ad
2	0	display_admob_ad
3	0	display_admob_ad
4	0	display_admob_ad
5	0	display_admob_ad

相关明细分析案例：

https://github.com/cloudymoma/gcp-playgroud-public/blob/master/BigQuery/Firebase_Funnel_and_Retention.md

数据打通：

<https://github.com/cloudymoma/gcp-playgroud-public/blob/master/BigQuery/Firebase%20%26%20Bigquery.pdf>

附录

为什么需要激活事件

参与测试圈选用户 Participants	激活事件 Visit Storefront	目标事件 Make Purchase	Conversion?
5000	250	50	1%
5000	250	56	1.1%

Participants	Visit Storefront	Make Purchase	Conversion?
5000	250	50	20%
5000	250	56	22.5%

某些情况下会影响计算结果，这块要具体问题具体分析。

链接

<https://zhuanlan.zhihu.com/p/208520237>

<https://cloud.webeye.com/tech-blog/firebase-shen-qing-gong-neng-zai-na-li-jie-mi-a-b-test-qa.html>

<https://blog.csdn.net/kmyhy/article/details/80333451>

<https://www.volcengine.com/theme/3937255-F-7-1>

<https://www.gameres.com/867343.html>

