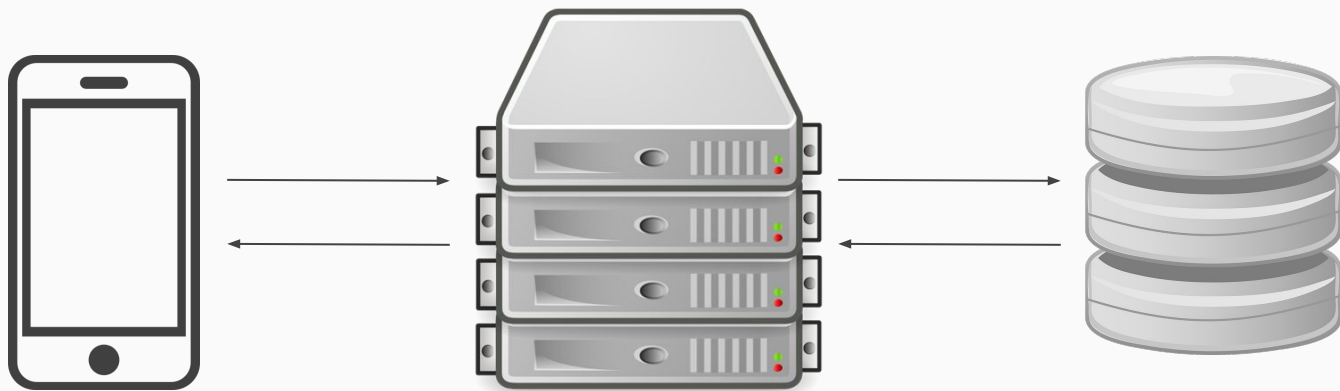


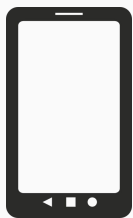
# Intro to Firebase

张乐 @天津GDG

# 通常的App(Mobile / Web)开发



# 使用Firebase开发App



APP +  
Firebase SDK



Firebase

## **Realtime Database**

Store and sync app data in realtime

## **Storage**

Store files with ease

## **Cloud Messaging**

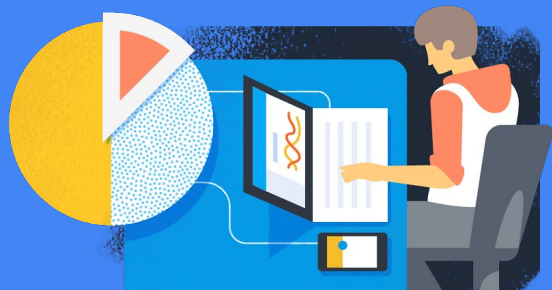
Deliver and receive messages across platforms reliably

## **Authentication**

Reduce friction with robust authentication

# Firestore有啥好处？

创业团队常常面临的问题和挑战



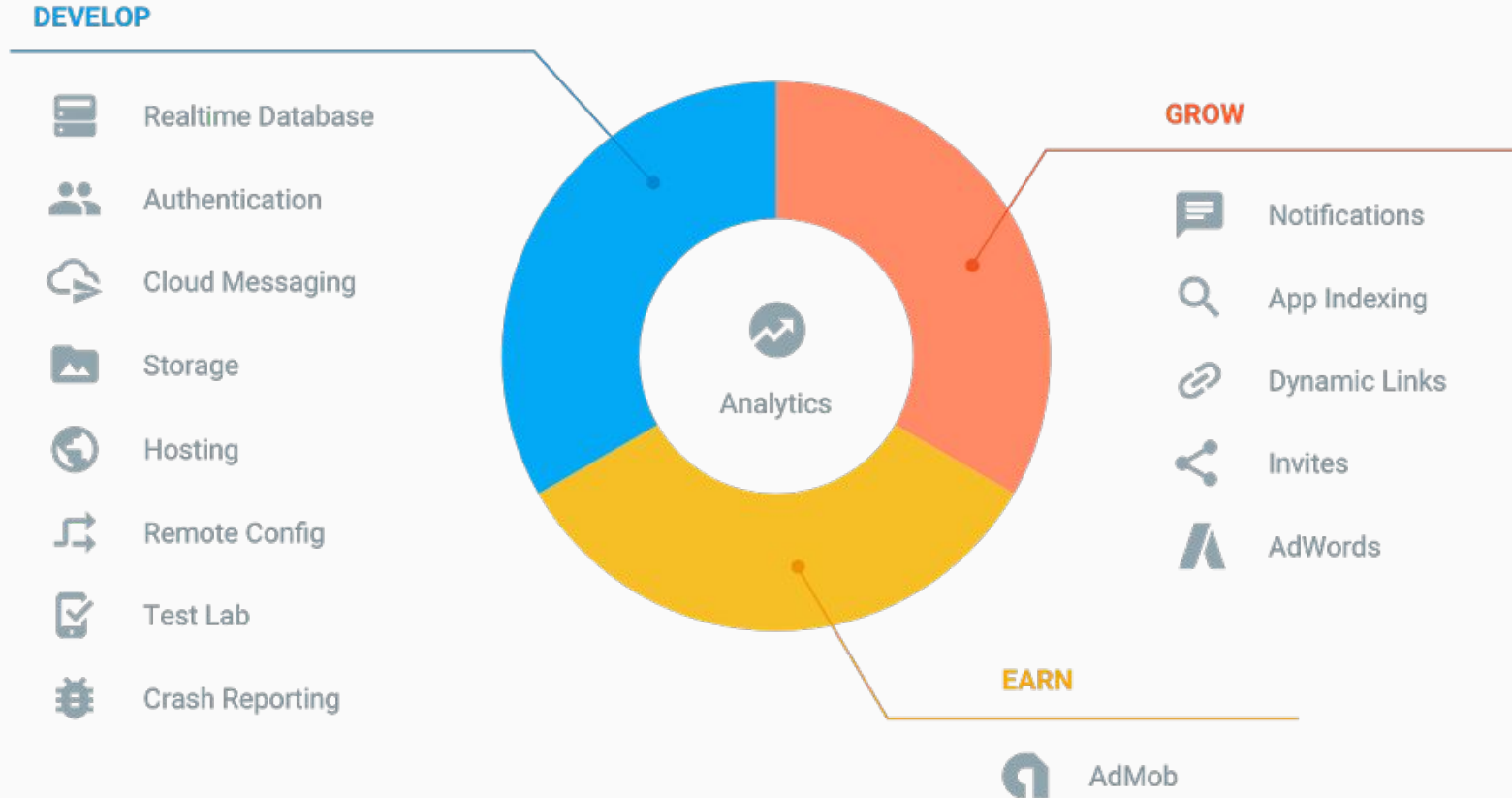
- 技术方面：是否能实现？
- 产品方面：打造用户喜爱的产品？
- 市场方面：如何推广？
- 财务方面：如何盈利？如何生存？
- 运维方面：如何面对大规模的增长？





# Introducing Firebase

# Firebase All Features :





# Develop

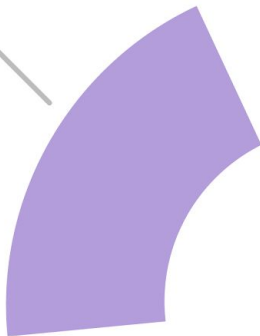
---

## Backend Services

Realtime Database

Authentication

Hosting



# Develop

Backend Services

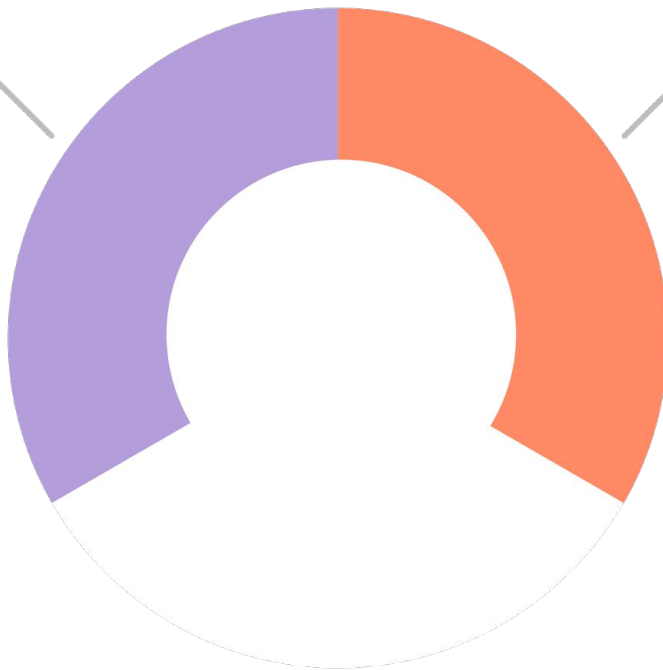
App Quality Services



# Develop

Backend Services

App Quality Services



# Grow

Acquisition

Re-Engagement

# Develop

Backend Services

App Quality Services

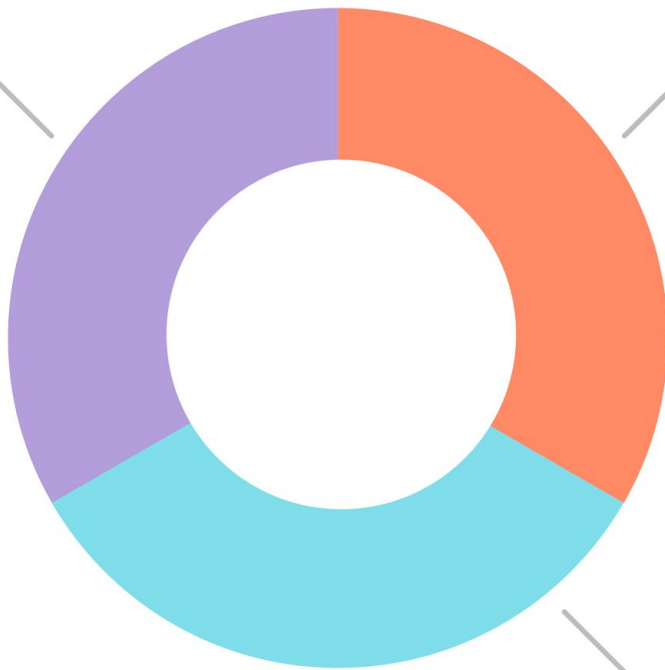
# Grow

Acquisition

Re-Engagement

# Earn

In-app Ads



# Develop

Backend Services

App Quality Services

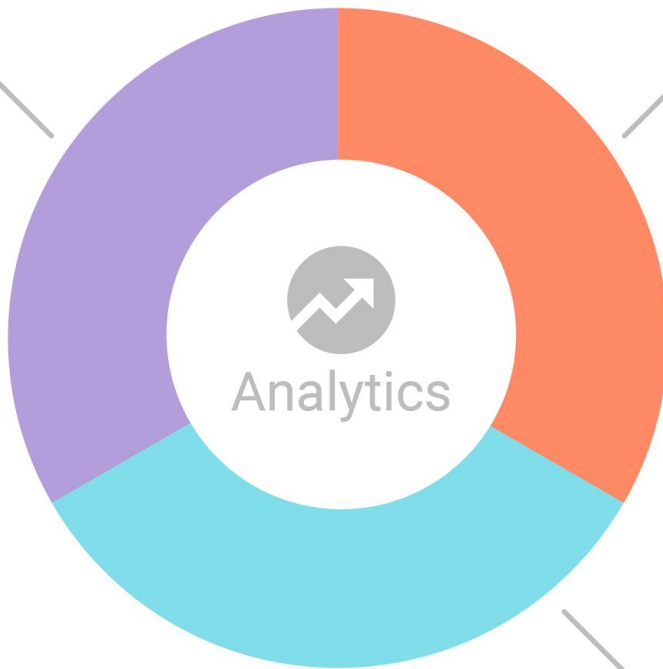
# Grow

Acquisition

Re-Engagement

# Earn

In-app Ads





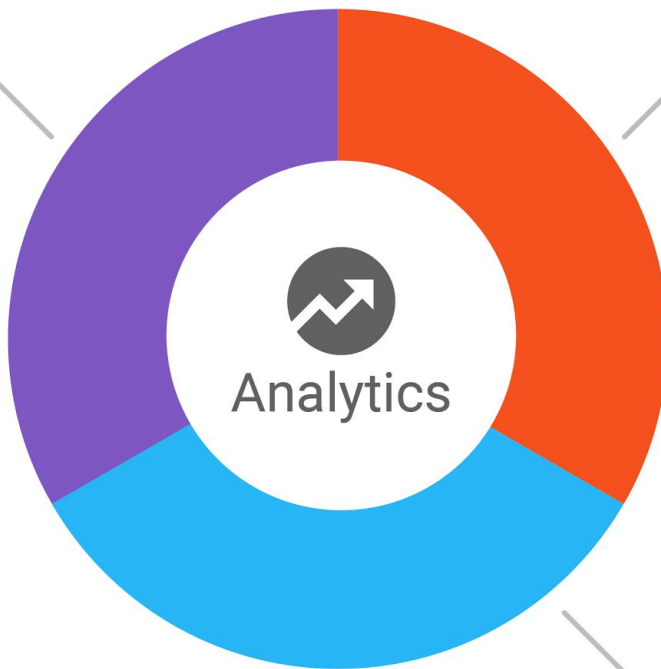
# Develop

## Backend Services

- Realtime Database
- Authentication
- Hosting
- Storage
- Cloud Messaging
- Remote Config

## App Quality Services

- Test Lab for Android
- Crash Reporting



# Grow

## Acquisition

- Dynamic Links
- Invites
- AdWords

## Re-Engagement

- Notifications
- App Indexing

# Earn

## In-app Ads

- AdMob



**Developer experience matters**



**Cross-platform**



**Integrated**

Welcome to Firebase! Get started here.



Add Firebase to  
your Android app



Add Firebase to  
your iOS app



Add Firebase to  
your web app

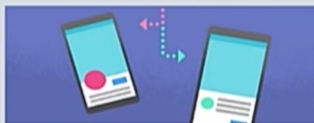
### Discover Firebase



#### Notifications

Manage notification campaigns and send messages to engage the right users at the right moment

[GET STARTED](#)



#### Remote Config

Customize and experiment with app behavior using server-side configuration parameters

[GET STARTED](#)



#### Analytics

Get detailed analytics to measure and analyze how users engage with your app

[GET STARTED](#)



# Analytics

- Designed for apps
- Event and user centric
- Connects across Firebase
- **Free & unlimited**





# Bingo Blast



## Your mobile apps

ADD APP

com.redhotlabs



Analytics (last 30 days)

146

Monthly active users

\$0

In-app purchases

Crashes (30 days)

0

Users impacted

0

Errors

com.redhotlabs.bingo



Analytics (last 30 days)

21.5K

Monthly active users

\$3,239

In-app purchases

Crashes (30 days)

3.61K

Users impacted

8.07K

Errors

com.redhotlabs.bingo



Analytics (last 30 days)

5.41K

Monthly active users

\$2,578

In-app purchases

Crashes (30 days)

2.59K

Users impacted

9.3K

Errors

rer



Explore Firebase Analytics →

0

Monthly active users

\$0

In-app purchases

Crashes (30 days)

0

Users impacted

0

Errors



# Analytics

iOS com.redhotlabs.bingo

DASHBOARD

EVENTS

AUDIENCES


ATTRIBUTION

FUNNELS

COHORTS

USER PROPERTIES

 Add Filter 

 Last 30 days  
 Compared to Mar 19, 2016 - Apr 17, 2016

## Active users



## Average revenue

ARPU	ARPPU
Monthly	Monthly
\$0.48	\$24.32
-12.4%	-24.9%
Weekly	Weekly
\$0.22	\$15.71
-39%	-35.4%
Daily	Daily
\$0.04	\$5.35
-62.4%	-46.9%

## first\_open attribution

180 days ending May 17

Source	First Open	Lifetime Value (LTV)
(direct)	15K	\$0.55
Aarki	3	\$5.00
Millennial Media	2	\$0.00
AdColony	1	\$0.00

## Retention cohorts

6 weeks ending May 17

	Week 0	Week 1	Week 2	Week 3	Week 4	Week 5
	100%	19.4%	12.9%	10.1%	8.9%	7.2%
Apr 3 - Apr 9						
Apr 10 - Apr 16						

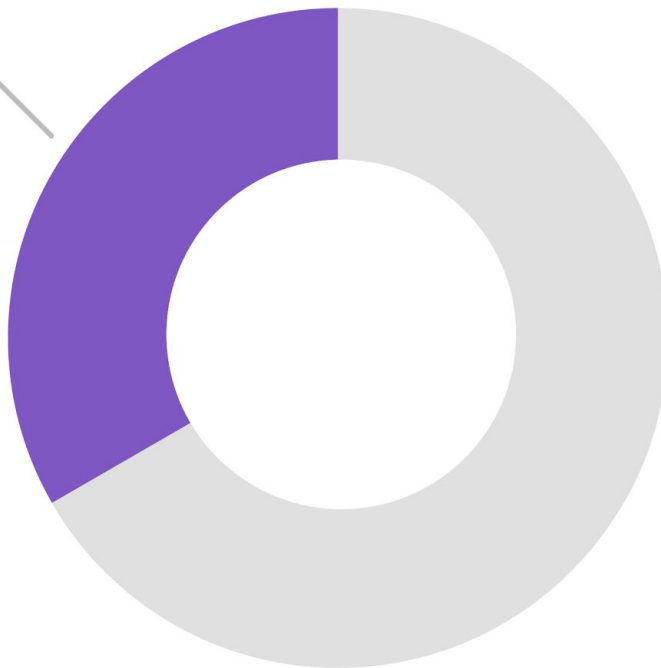


# Developing your app

# Develop

## Backend Services

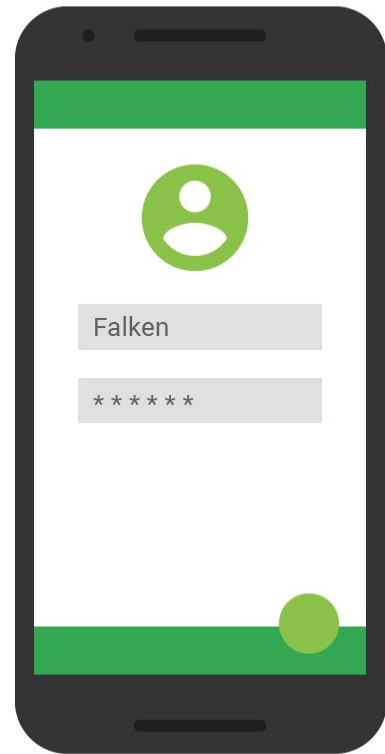
Realtime Database  
Authentication  
Hosting  
Storage  
Cloud Messaging  
Remote Config





# Authentication

- Authentication & account management
- Supports:
  - Email & password
  - Social providers
  - Existing auth systems





# Realtime Database

- Cloud-hosted NoSQL database
- Synchronization & conflict resolution
- Access directly from your app



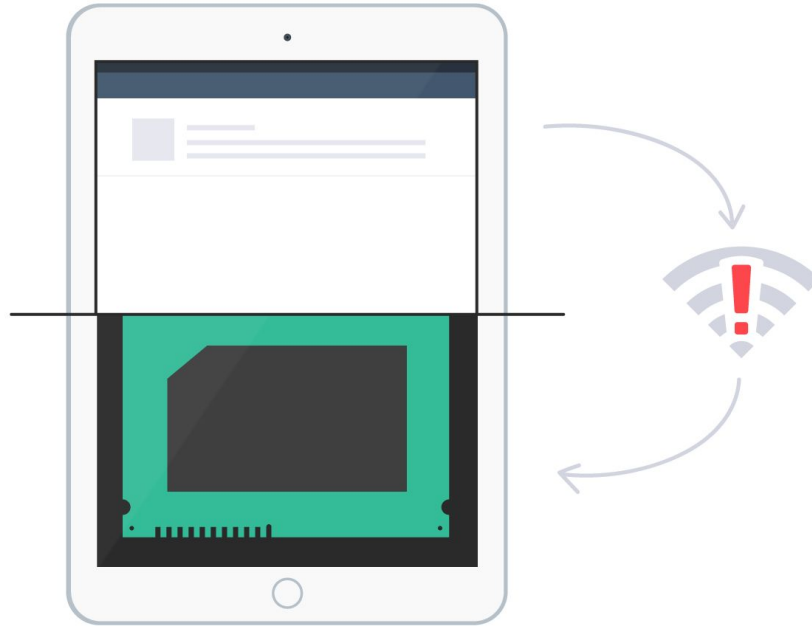


# Realtime Database





# Realtime Database





# Realtime Database







# Hosting

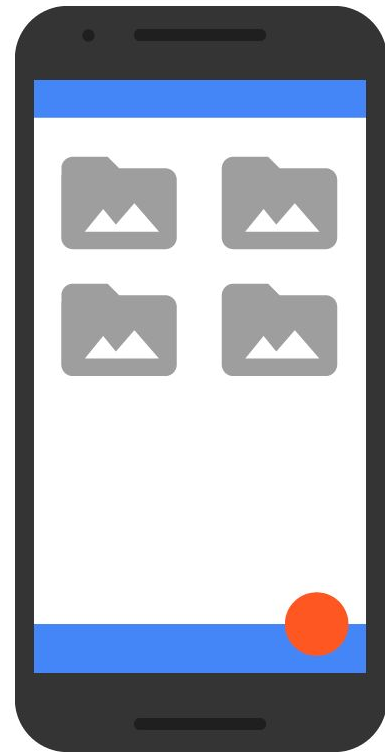
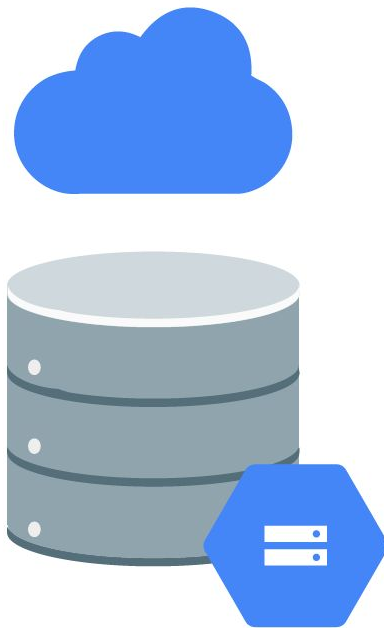
- Serve static assets
- SSL by default
- **New:** free custom domains





# Storage

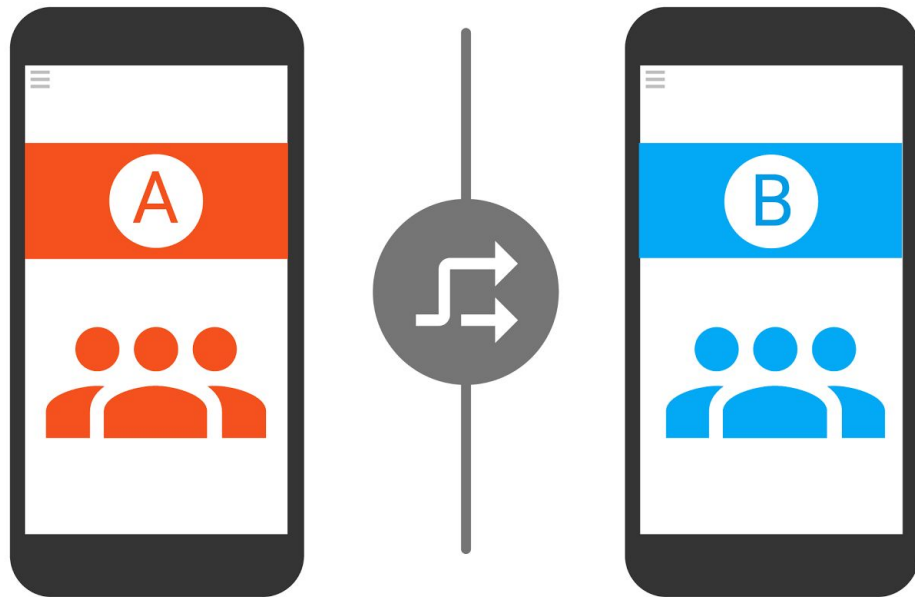
- Easy file storage
- Handles poor connectivity
- Backed by & accessible from Google Cloud Storage





# Remote Config

- Run A/B experiments or change app behavior
- Control custom key-value pairs from the Console
- Changes propagate instantly



Bingo Blast

Analytics

DEVELOP

Auth

Database

Storage

Hosting

Remote Config

Test Lab

Crash

GROW

Notifications

Dynamic Links

EARN

AdMob

 Blaze  
Pay as you go [MODIFY](#)

## Remote Config


PARAMETERS


CONDITIONS

ADD PARAMETER

level_1_time	60	
level_2_time	50	
level_3_time	40	
level_4_time	35	
level_5_time	30	





 Bingo Blast
 



 Analytics
 
DEVELOP


 Auth
 


 Database
 


 Storage
 



 Hosting
 



 Remote Config
 


 Test Lab
 


 Crash
 
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 Pay as you go
 
MODIFY


## Remote Config




PARAMETERS
CONDITIONS
NEW CONDITION



 = iOS Users
 
applies if OS type is Android

 = Android Users
 
applies if OS type is Android

 = 10% - Experiment A
 
applies if User in random percentile <= 10 %


The order of conditions determines their evaluation order. Parameter values are determined by the first true condition.



 Bingo Blast 



 Analytics


DEVELOP



 Auth


 Database


 Storage



 Hosting



**Remote Config**


 Test Lab



 Crash

GROW


 Notifications


 Dynamic Links

EARN


 AdMob

Blaze  
 Pay as you go **MODIFY**

## Remote Config

PARAMETERS

**CONDITIONS**

### Define a new condition

Use conditions to provide different parameter values if a condition is met

Name

Color

Canadian Purchasers



Applies if...

App ID



iOS com.redhotlabs.bingo



User in audience



 Canadian Purchasers






AND

CANCEL

**CREATE CONDITION**


NEW CONDITION


 **Bingo Blast** 

 **Analytics**

DEVELOP

 **Auth**

 **Database**

 **Storage**

 **Hosting**

 **Remote Config**

 **Test Lab**


 **Crash**

GROW

 **Notifications**

 **Dynamic Links**

EARN

 **AdMob**

**Blaze**  
Pay as you go [MODIFY](#)

## Remote Config

[PUBLISH CHANGES](#)

[DISCARD ALL](#)



PARAMETERS

CONDITIONS

[ADD PARAMETER](#)

level\_1\_time 60

level\_2\_time 50

Parameter key ⓘ

level\_3\_time

Value for **Canadian Purchasers**

50

Add value for condition ▾

[DELETE](#)

Default value

40






[CANCEL](#)

[UPDATE](#)

level\_4\_time 35


level\_5\_time 30



 Bingo Blast 



 Analytics


DEVELOP



 Auth


 Database


 Storage



 Hosting



 Remote Config


 Test Lab



 Crash

GROW


 Notifications


 Dynamic Links

EARN


 AdMob

Blaze   
 Pay as you go

## Remote Config

PARAMETERS

CONDITIONS

PUBLISH CHANGES

DISCARD ALL



ADD PARAMETER

level_1_time	60
level_2_time	50
level_3_time	50
level_4_time	50
level_5_time	30

Once you publish, changes are **immediately available** to your apps and users.

CANCEL

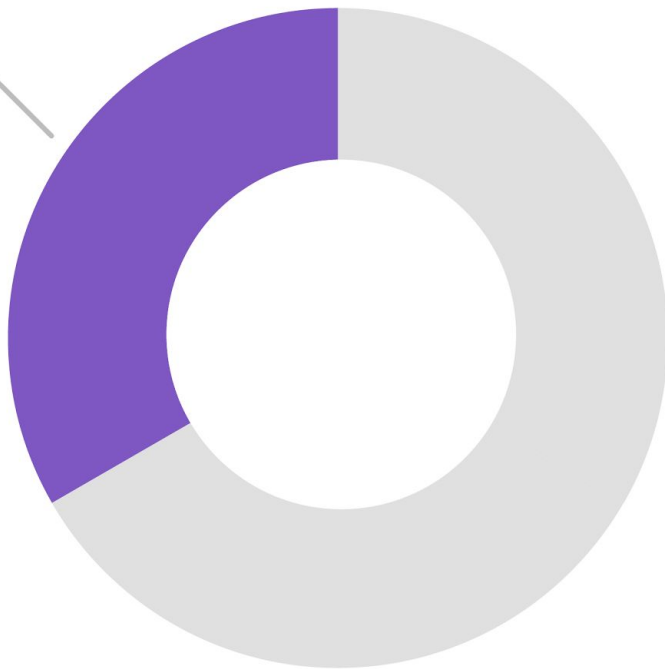
PUBLISH CHANGES



# Develop

## App Quality Services

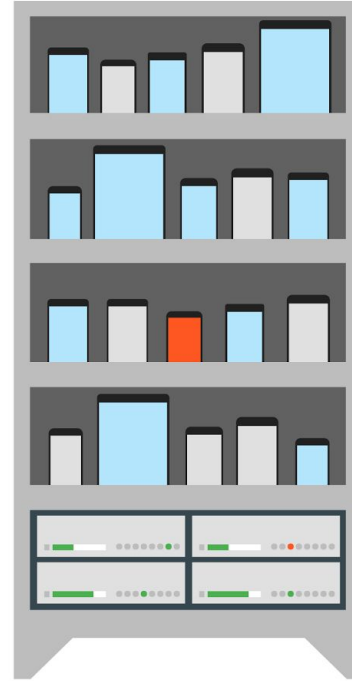
Test Lab for Android  
Crash Reporting





# Test Lab for Android

- Test on the most popular devices before you ship
- Reports & screenshots
- Robo & custom tests



I'm Hungry

← Matrix #905493

Robo test, 15 hours ago

Failed	Passed	Skipped	Inconclusive
0	10	6	0

Test execution	Duration	Locale	Orientation	Issues
<a href="#">Moto X, API Level 19</a>	10 min 57 sec	English, United States	Landscape	—
Galaxy S6, API Level 22	10 min 19 sec	English, United States	Portrait	—
Nexus 5, API Level 22	11 min 57 sec	English, United States	Landscape	—
LG G3, API Level 19	11 min 12 sec	English, United States	Landscape	—
Nexus 5, API Level 22	11 min 27 sec	English, United States	Portrait	—
Galaxy S6, API Level 22	10 min 42 sec	English, United States	Landscape	—
LG G3, API Level 19	10 min 51 sec	English, United States	Portrait	—
Nexus 5, API Level 19	11 min 28 sec	English, United States	Landscape	—
Moto X, API Level 19	9 min 15 sec	English, United States	Portrait	—

<https://firebase.corp.google.com/project/bingo-blast-1746d/testlab/history/tb.eef6a1689b95fa0d2/matrices/9054930510631230116/executions/ba.1e6d41e480773ec37>

✓ Passed 📅 5/17/16 10:42 PM 🕒 10 min 57 secs 🌐 English, United States 🖥 Landscape
[VIEW SOURCE FILES](#)
[LOGS](#) [SCREENSHOTS](#) [ACTIVITY MAP](#) [VIDEOS](#)

Warning and higher

☒ Styled

	22:42:44.444	<b>IRSensorHub</b>	Exception talking to sensorhub, request: 3  java.lang.IllegalArgumentException: found version: 6, expected: 2 to 5  at com.motorola.actions.SensorHub.nativeSetIR Tuning(Native Method) at com.motorola.actions.SensorHub.b(SourceFile:17) at com.motorola.actions.SensorHub\$1.handleMessage(SourceFile:102) at android.os.Handler.dispatchMessage(Handler.java:102) at android.os.Looper.loop(Looper.java:136) at android.os.HandlerThread.run(HandlerThread.java:61)
	22:42:49.453		Exception talking to sensorhub, request: 3  java.lang.IllegalArgumentException: found version: 6, expected: 2 to 5  at com.motorola.actions.SensorHub.nativeSetIR Tuning(Native Method)


**Bingo Blast**



**Analytics**

DEVELOP


**Auth**


**Database**


**Storage**


**Hosting**


**Remote Config**


**Test Lab**


**Crash**

GROW


**Notifications**


**Dynamic Links**

EARN


**AdMob**

**Blaze**  
 Pay as you go
 MODIFY

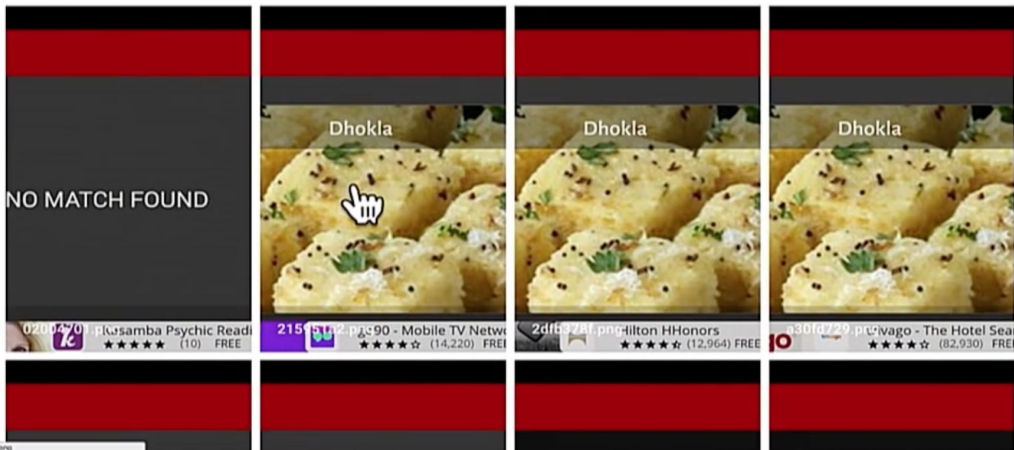
I'm Hungry > Matrix #905493

← Robo test, Moto X, API Level 19
 ?

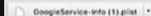
✔ Passed
📅 5/17/16 10:42 PM
⌚ 10 min 57 secs
🌐 English, United States
🖼 Landscape

[VIEW SOURCE FILES](#)


LOGS
 SCREENSHOTS
 ACTIVITY MAP
 VIDEOS



storage.cloud.google.com/test-lab-dffacrvf65nu-ku1hbdar43ym/-/2155142.png




 Show All

 **Bingo Blast** 

 **Analytics**

DEVELOP

 **Auth**

 **Database**

 **Storage**

 **Hosting**

 **Remote Config**

 **Test Lab**

 **Crash**

GROW

 **Notifications**

 **Dynamic Links**

EARN

 **AdMob**

**Blaze**  
 Pay as you go MODIFY

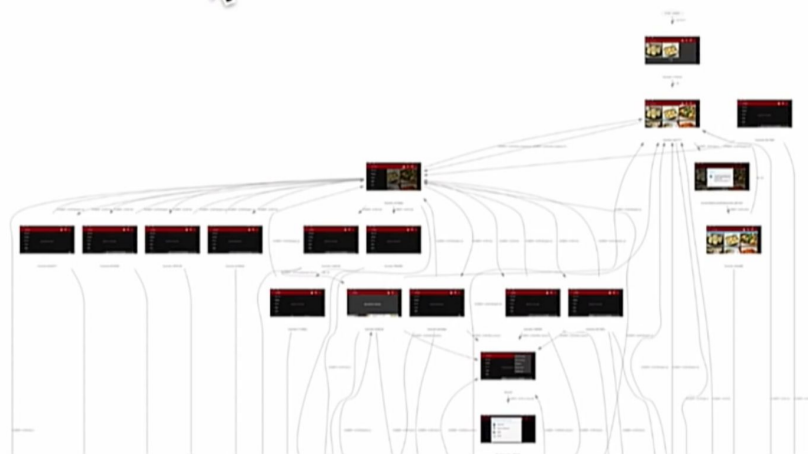
I'm Hungry > Matrix #905493

← Robo test, Moto X, API Level 19 ?

✓ Passed 📅 5/17/16 10:42 PM 🕒 10 min 57 secs 🌐 English, United States 🖥 Landscape

[VIEW SOURCE FILES](#) 

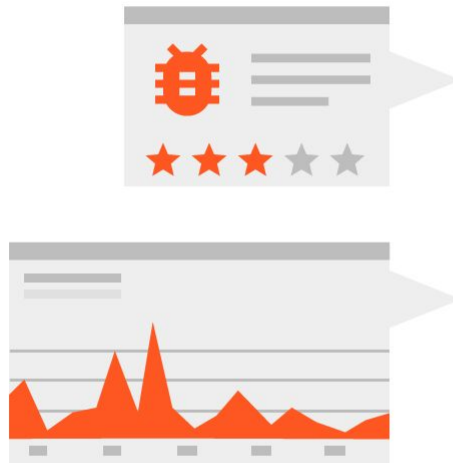
[LOGS](#) [SCREENSHOTS](#) [ACTIVITY MAP](#) [VIDEOS](#)





# Crash Reporting

- See crashes & impact
- Version & OS drill-down
- Integrated with Analytics





 Bingo Blast 


 Analytics

DEVELOP


 Auth


 Database


 Storage


 Hosting


 Remote Config


 Test Lab


 Crash

GROW


 Notifications


 Dynamic Links

EARN


 AdMob

Blaze MODIFY  
 Pay as you go

## Crash Reporting BETA

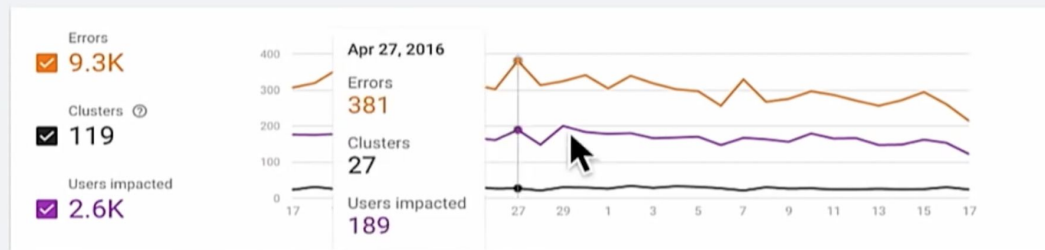
iOS com.redhotlabs.bingo  

DASHBOARD SYMBOL FILES


 Filter All app versions 


 24 hrs 48 hrs 7 days 30 days 6 months

### Overview

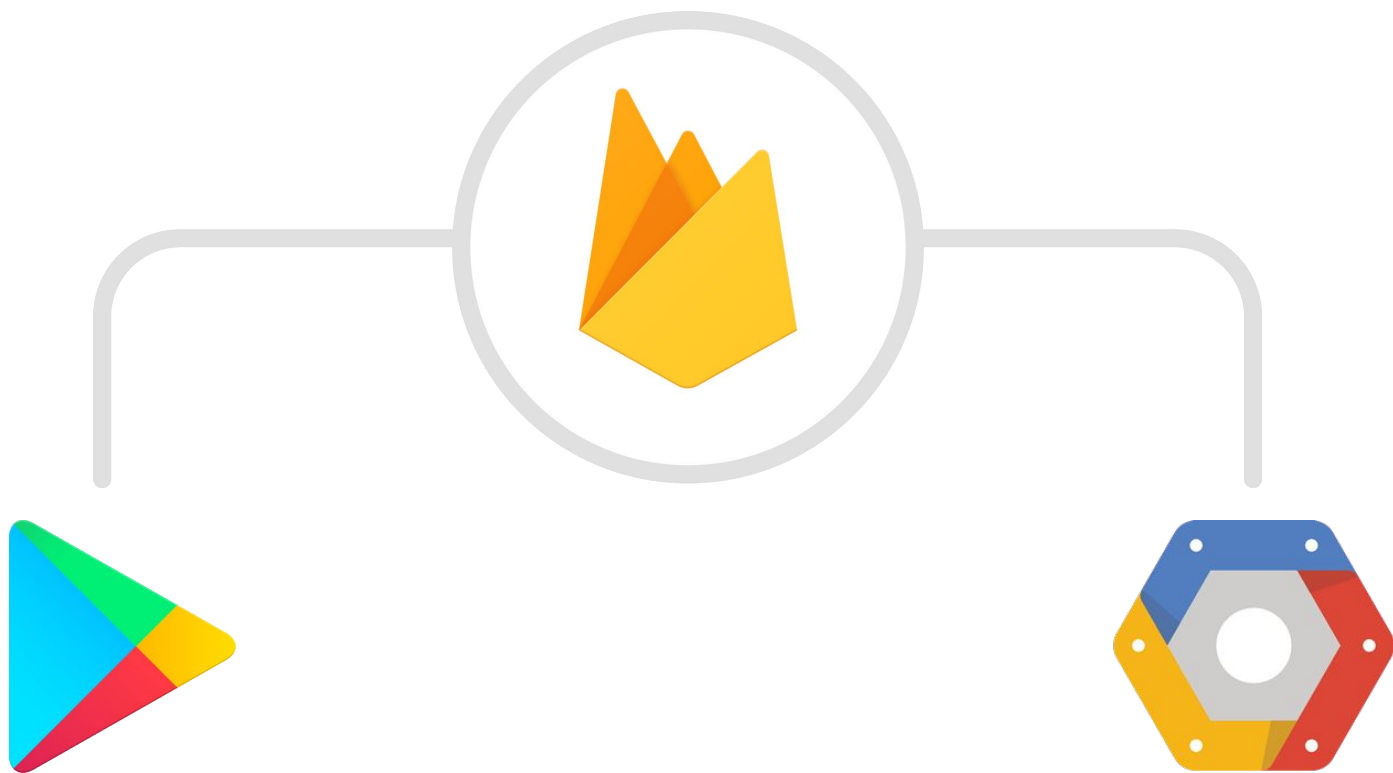


### Clusters

Errors	Users	Last version	Stack trace
5249	1262	1.9.32	<b>Curl_close + 6293412</b> cocos2d:extension::CURLRa11::~CURLRa11() (cpp:273)
850	173	1.9.32	<b>-[TrackingLocalStorage backgroundPendingTrackingResult:withUrl:] + 7616528</b> TrackingURLDelegate::onLoad(sdkbox::XMLHttpRequest const&) + 7616780
519	506	1.9.32	<b>Curl_failf + 5486310</b>


 Show All 

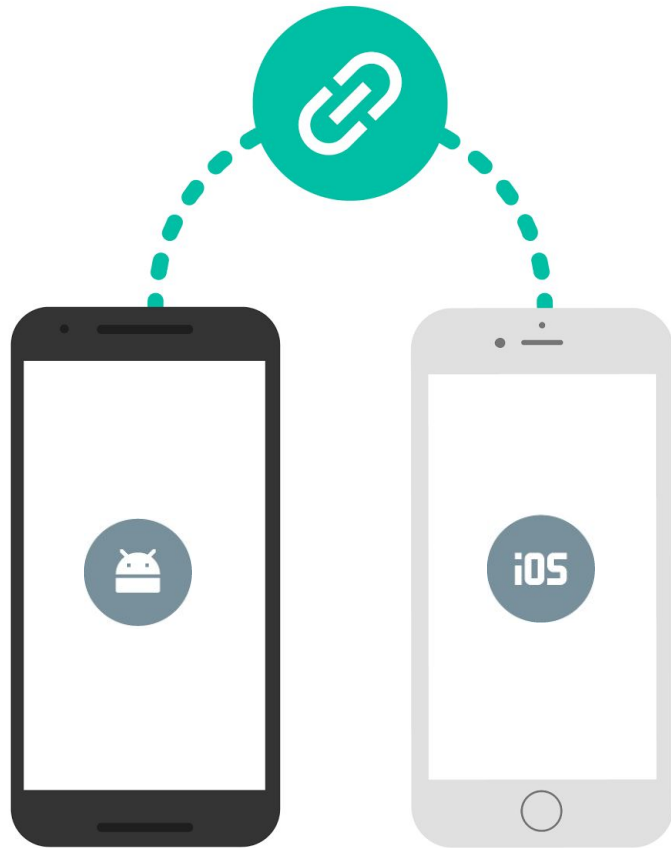






# Dynamic Links

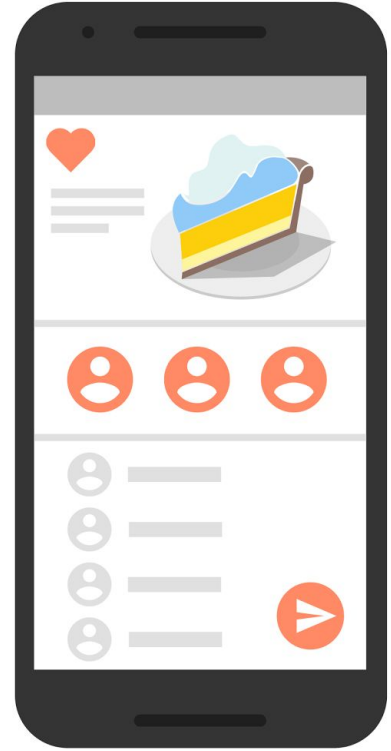
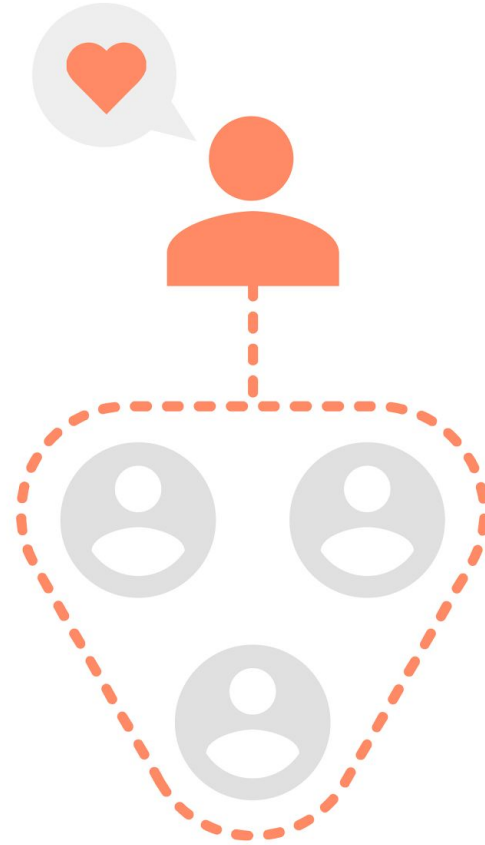
- Customize different user experiences via a single URL
- Works across platforms
- Preserves URL state, even through app install flow
- Analytics insights





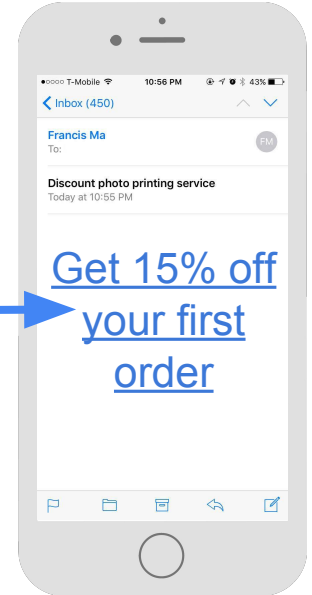
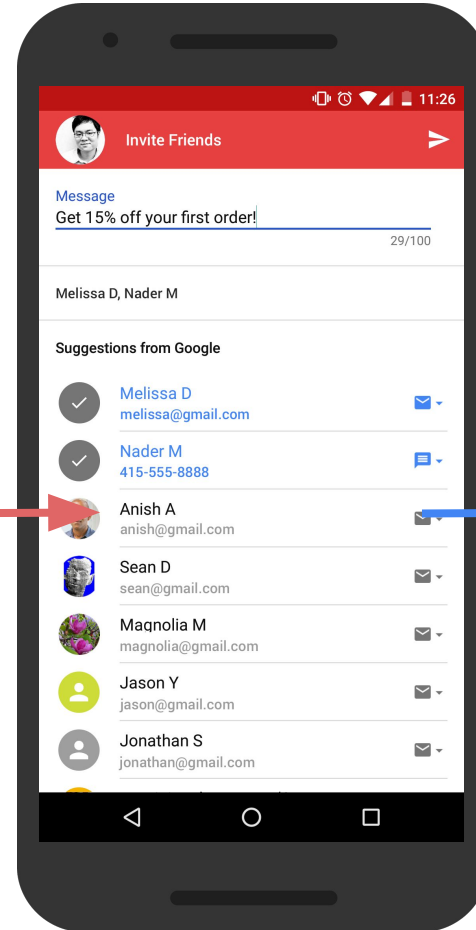
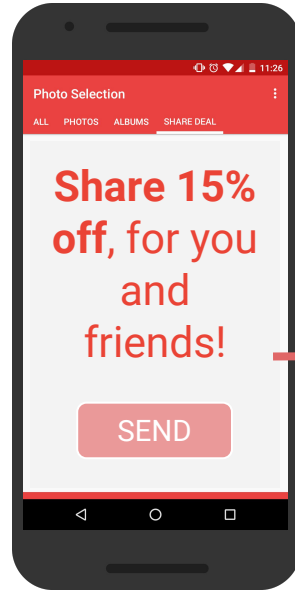
# Invites

- Drop-in widget for app sharing
- Supports SMS and Email
- Recipient suggestions from Google
- Built on Dynamic Links





# Invites in action



**Grow**



**Re-Engagement**

Notifications

App Indexing



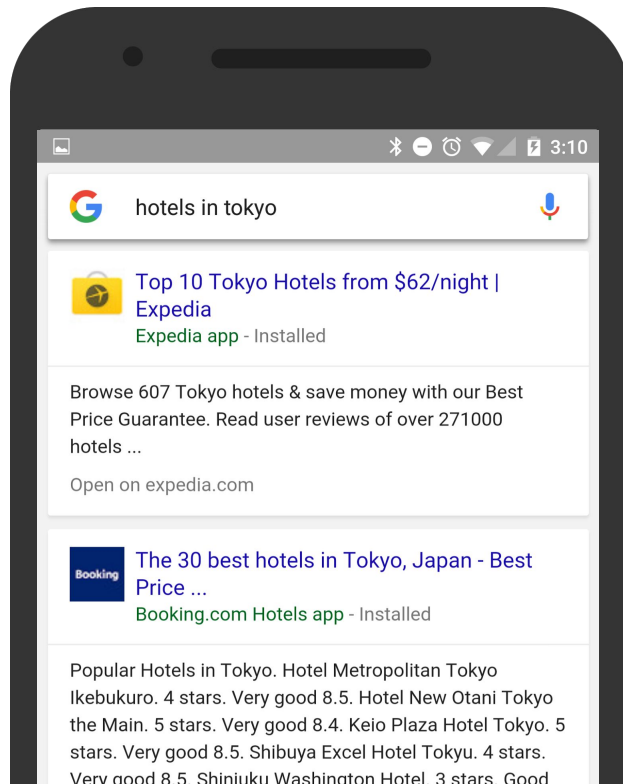
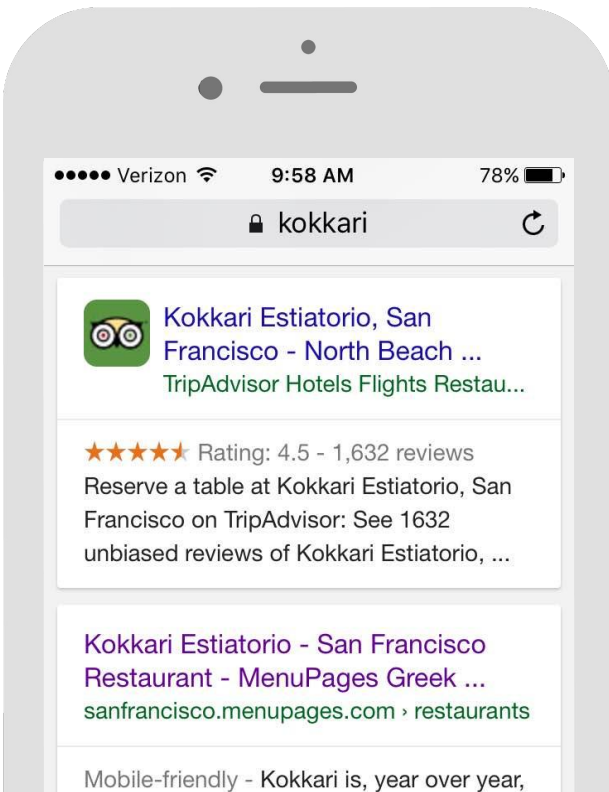
# App Indexing

- Integrate with Google Search
- Index app content
- Boost search ranking





# App Indexing





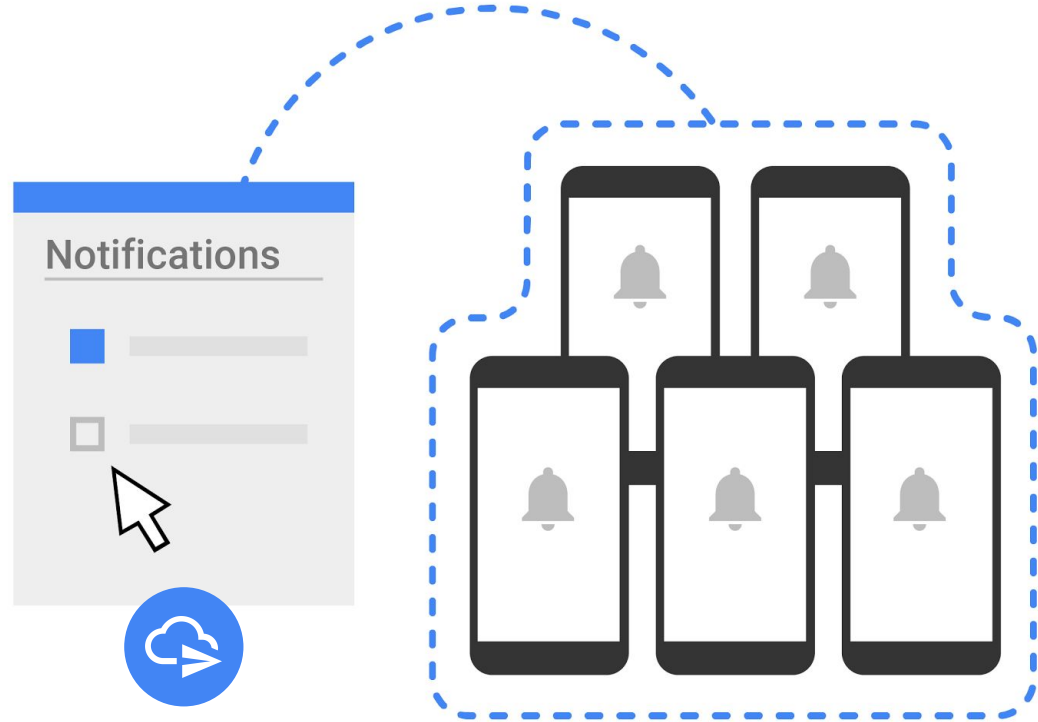
Firebase Cloud Messaging

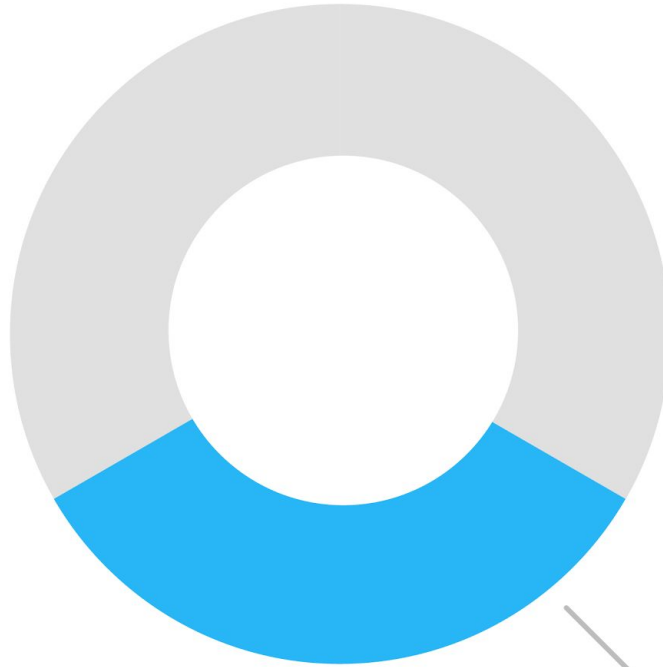




# Notifications

- Simple UI, with no coding
- Built on Cloud Messaging
- Audience targeting
- Conversion funnel insights





**Earn**

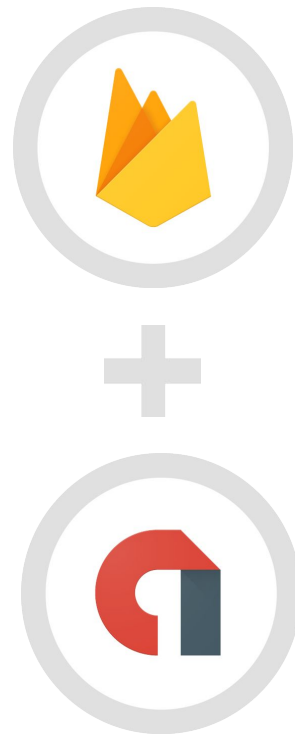
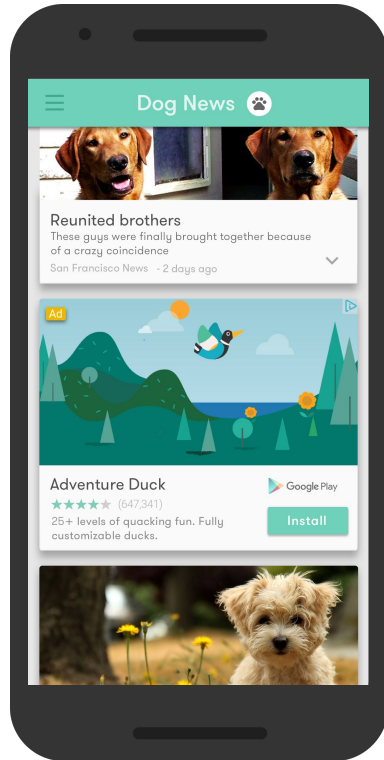
In-app Ads

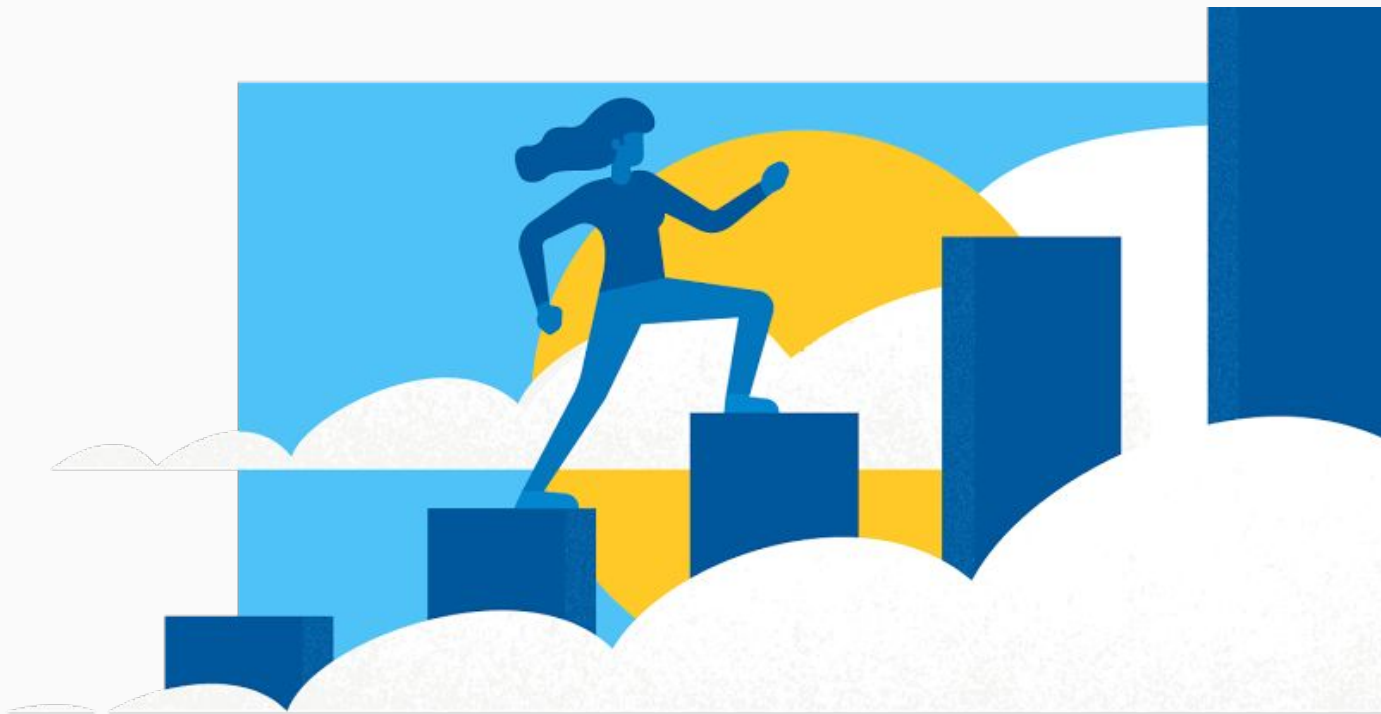
AdMob



# AdMob by Google

- Engaging formats: video, interstitial & native
- 1M+ apps using AdMob
- Integrated with Firebase SDK

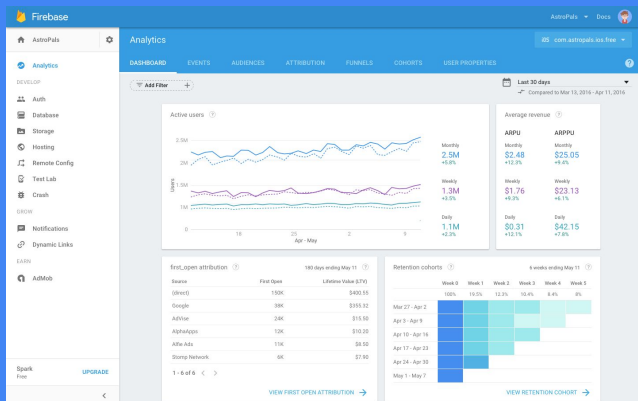




Firebase 让开发者专注产品，助力 app 快速改进，以及精准的推广。

# Firebase 核心功能 Analytics

- ❖ 和其它功能联通的报表展现
- ❖ 强大的事件支持：
  - 完善的默认事件
  - 自定义事件
- ❖ 强大的用户定义



# 面向开发者的功能

## Realtime Database

基于云端的NoSQL数据库，数据存储为JSON格式。能实现毫秒级的多点同步，并且支持App离线使用。

## Storage

存储支持。实际就是 Google Cloud Storage 的封装。结合 Authentication 实现UGC内容(图片、音频、视频)的存储。

## Remote Config

不需要发布App新版本，既可远程配置，支持根据各种条件返回配置。可做A/B 测试，结合Analytics，可对App快速进行更改迭代。

## Cloud Messaging

Firebase Cloud Messaging (FCM)是基于Google Cloud Messaging，提供了跨平台(Android、iOS和Web)的解决方案，实现可靠稳定、零成本的消息和通知的分发和接受。

## Authentication

用户认证，支持现成的Facebook、Twitter、GitHub和Google多种帐号体系，也支持邮箱密码注册、匿名帐号和帐号关联服务，认证UI可自定义。开发者不需要自己开发鉴权系统，节省大量时间。

## Hosting

资源托管，CDN 支持、SSL支持。

## Crash Reporting

报表做得很不错。支持自定义日志。

## Test Lab

用于真机测试。国内有些替代解决方案。目前按设备时长收费。

*Cloud Messaging、Crash Reporting、Test Lab 是 app 开发的标配。Realtime Database、Remote Config、Authentication、Storage、Hosting 则是『无服务器』化的支持。*

# 面向业务增长的功能

## Notifications

发送免费无限的通知(支持OS和Android);可以直观的看到消息的效果,结合 Analytics, 对指定用户发送 Notification, 比如给加入购物车但未付款的用户发送代金券。

## App Indexing

将 web 和 app 联系起来, 在搜索结果页展示 app 信息, 点击即可安装或者打开指定页面。

## Dynamic Links

适用于推广, 尤其是个性化推广, app 安装后可进入指定页面;也可用于 app 指定内容的分享。结合 Analytics, 效果一目了然。

## Invites

可以让你的客户很容易的分享app。和 Dynamic Links 一样, 集成之后, 用来作类似优惠码邀请这样的功能, 结合 Analytics 进行数据分析。

## Adwords

初次可针对特定人群进行广告推广, 后续可选用 Analytics 中的特定人群, 比如安装后付费的用户, 以提高转化率。

# 应用场景

## ❖ App 快速开发

对于小团队, 资源有限, 『无服务器』加快了开发速度。Crash Reporting, Test Lab 等功能提高了 app 质量。

## ❖ 基于数据的产品改进

开发集成后可用 Firebase 进行快速的实验和改进。针对不同的用户, Remote Config 给出不同的配置, app 以此提供不同的功能。通过 Analytics 可直观地看出效果好坏, 改变 Remote Config 的值进行功能的全量开放。数据真实, 速度快, 非常高效, 而这所有的一切, 一个人就可完成。

## ❖ 市场推广

SEO, 邀请, 分享, 广告, 定向 Notification 解决了很大一部分的市场推广问题。



# Firebase × Arduino × LEGO Workshop from GDG Summit

## 硬件：

- ❖ 拼装 Lego 积木：生活大爆炸的 21302 这款。Lego 官网售价 \$47.99, 美国亚马逊上是 \$45.43。
- ❖ Arduino 硬件：Wio Link 主板 + 5 个传感器（振动马达、光线传感器、LED 红灯、小风扇和控制开关）

## 软件：

- ❖ Install [Arduino 1.6.9](#)
- ❖ Install [Arduino ESP8266 core](#)
- ❖ Download [FirebaseArduino library](#)

## 具体步骤参见：

[https://github.com/googlesamples/firebase-arduino/tree/master/examples/FirebaseRoom\\_ESP8266](https://github.com/googlesamples/firebase-arduino/tree/master/examples/FirebaseRoom_ESP8266)

## 玩法：

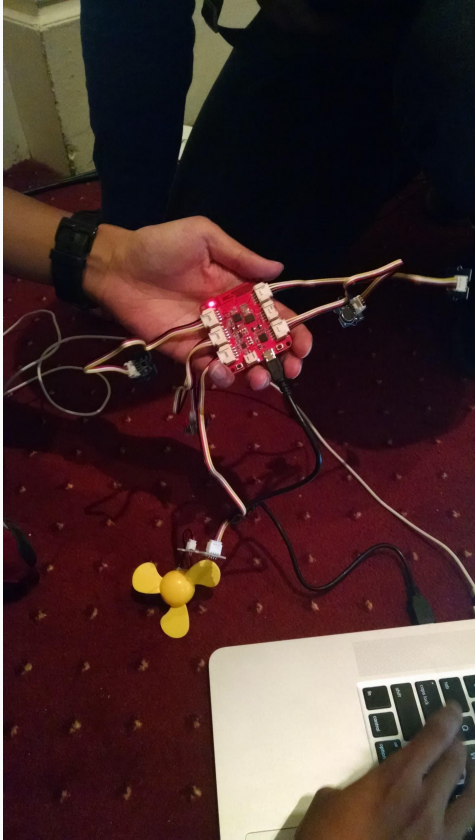
在 Firebase 控制台上修改相应传感器的值(0,1), 就可以触发相应的动作。

## 更多 Arduino + Firebase 的 示例访问：

<https://github.com/googlesamples/firebase-arduino>



# Firestore × Arduino × LEGO Workshop from GDG Summit



# Firebase 资源

- ❖ <https://firebase.google.com>
- ❖ [YouTube Firebase channel](#)
- ❖ [Google I/O 2016: Firebase 演讲及介绍视频](#)
- ❖ [Google I/O 2016: Firebase Codelab](#)