

# All About That BAAS

Hey, Do I Really Need  
Back-End Services for My  
Mobile Game and if so  
Should I, Like, Build, Buy,  
or Rent?

**David Fox**

CEO, Double Coconut

**Email:** [david@doublecoconut.com](mailto:david@doublecoconut.com)

**Slides:** <http://blog.doublecoconut.com/>

**Relax!**



# DOUBLE COCONUT

## *Web & Mobile Game Dev Agency*

- **Educational** to **Match-Three** to **Real \$\$ Casino**
- Artsy **Indie** to **Big Budget** Multi-Player
- Built Servers + Admin Tools Large & Small
- Touched a LOT of BaaS

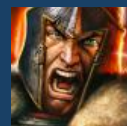
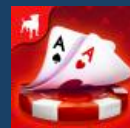
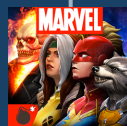
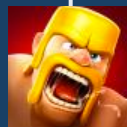
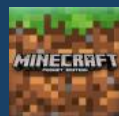
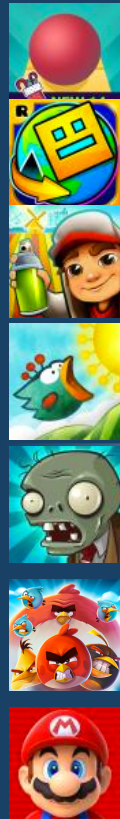




Indie

Budget

AAA



Single  
Player

Multi-Player

Async  
Turn  
Based

Sync  
Turn  
Based

Real  
Time

Indie

# No-Brainer



Budget

AAA



Single  
Player

Multi-Player

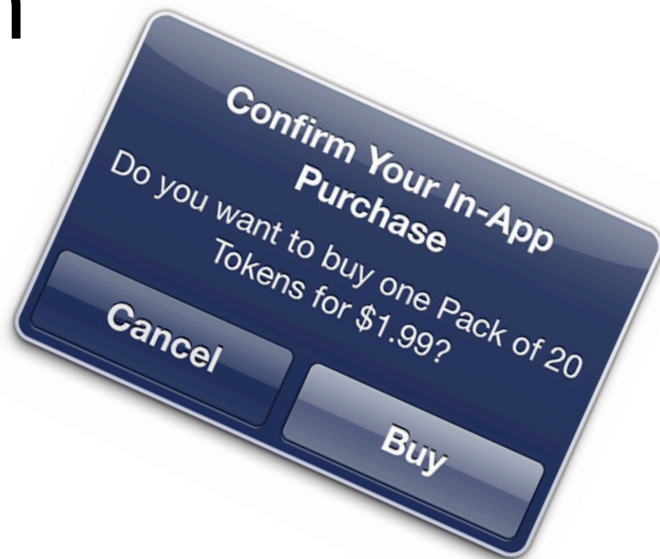
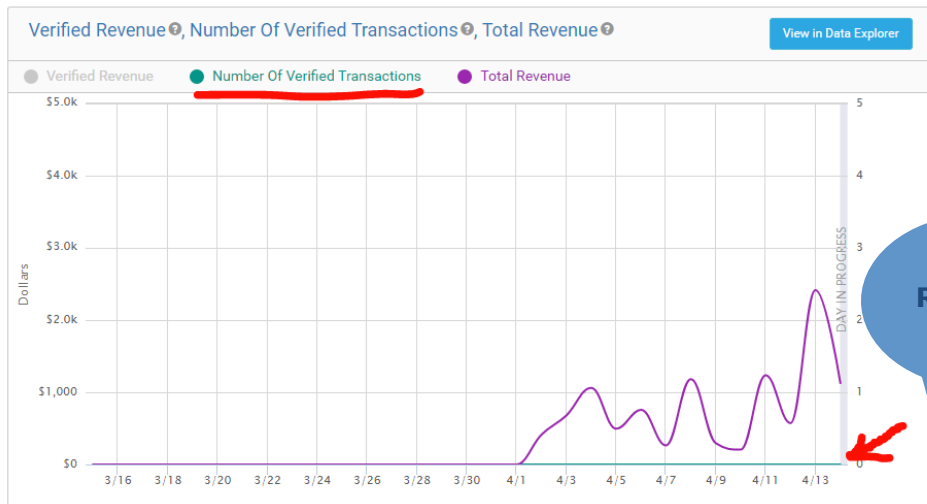
Async  
Turn  
Based

Sync  
Turn  
Based

Real  
Time



# IAP Receipt Verification





# Push Notifications

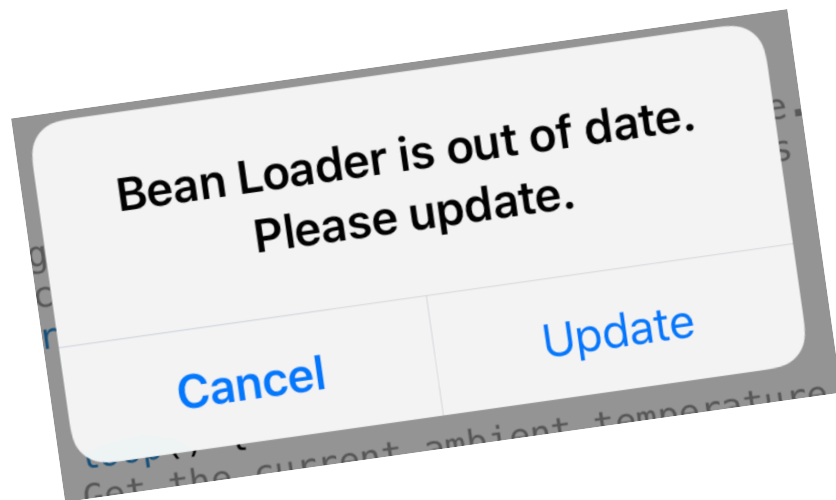
- Global Push Notifications
- Triggered APNs





# Check for Updates

- Update Available
- Breaking Change - Must Update







# Also...

- Analytics!





# ← Don't Need Full BaaS Provider!

- OneSignal
- DeltaDNA, GameAnalytics, Localytics, Mixpanel, Upsight, Etc.

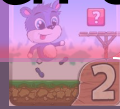
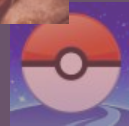
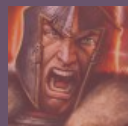
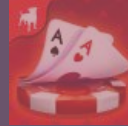
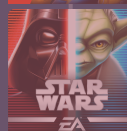
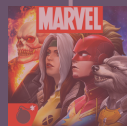
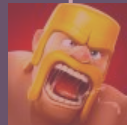
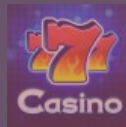
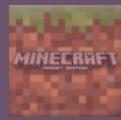
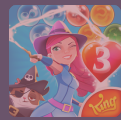
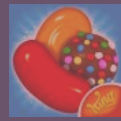
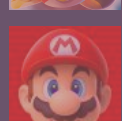
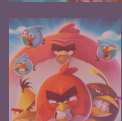
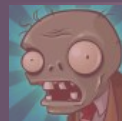
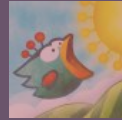
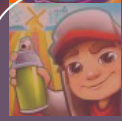


Indie

# Lame Brain: Some Server Smarts

Budget

AAA



Single  
Player

Multi-Player

Async  
Turn  
Based

Sync  
Turn  
Based

Real  
Time



# Leader Boards

- Your Own UI
- Optionally Integrated With:
  - Game Center
  - Google Play





# Viral Spreaders

- Share Score / Achievements
  - Facebook, Instagram, Twitter
- Share Screen Shot / Video
- Invites
  - Affiliate System w/ Rewards



Indie

# Bit O' Brain: Designers and Marketers

Budget

AAA

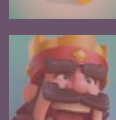
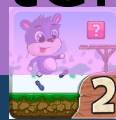
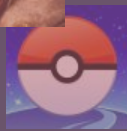
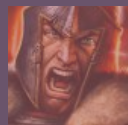
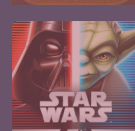
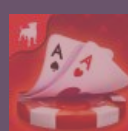
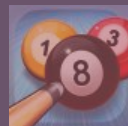
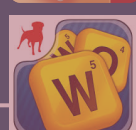
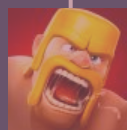
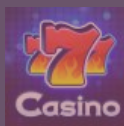
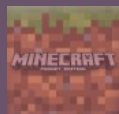
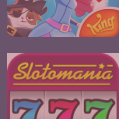
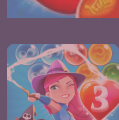
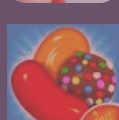
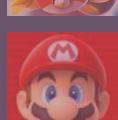
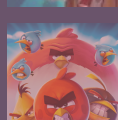
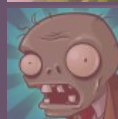
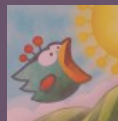
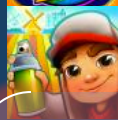
Single  
Player

Multi-Player

Async  
Turn  
Based

Sync  
Turn  
Based

Real  
Time



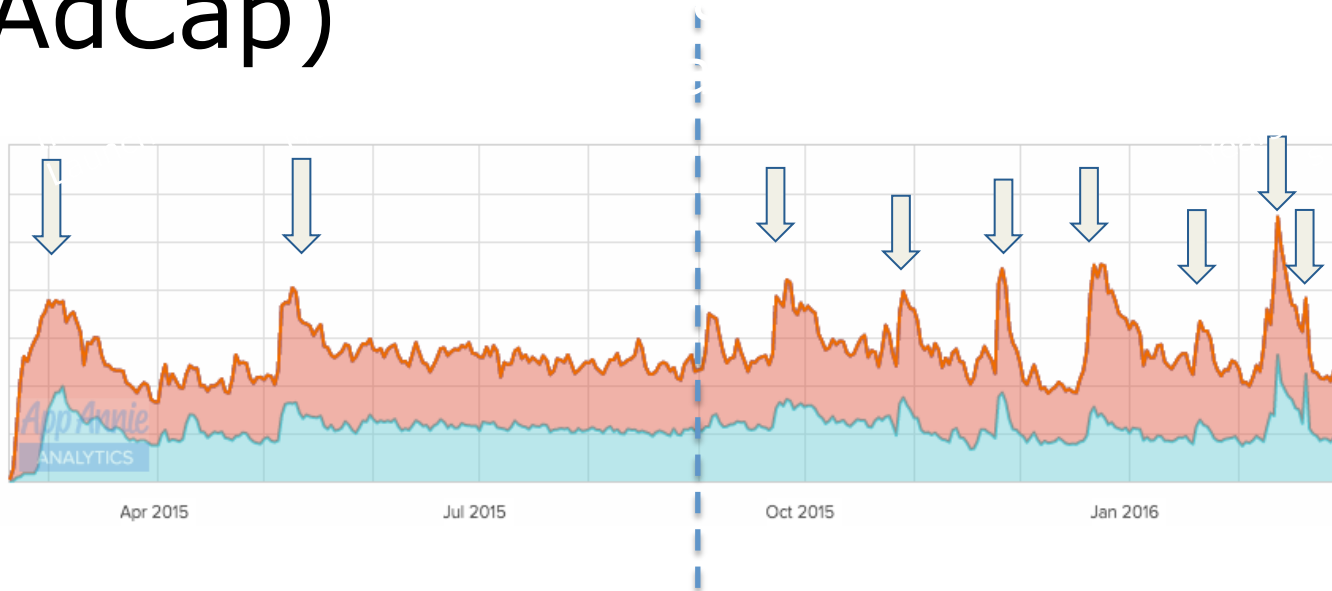


# Server-Driven Merchandising





# Why in-game events matter (AdCap)







# Back-End Key Vars

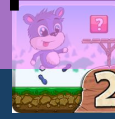
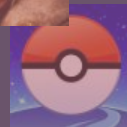
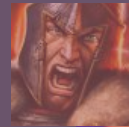
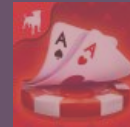
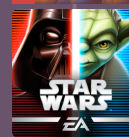
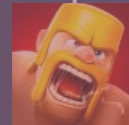
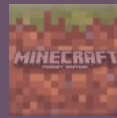
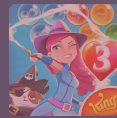
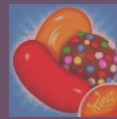
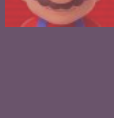
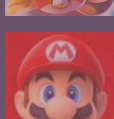
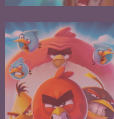
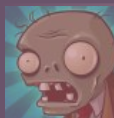
- Game Economy
  - Hard & Soft Currencies
  - Virtual Good Prices
  - Timers
  - Level-Up Thresholds
- Achievements
- Quests / Rewards

Indie

# Bold Brain: Cloud-Data-Driven

Budget

AAA



Single  
Player

Multi-Player

Async  
Turn  
Based

Sync  
Turn  
Based

Real  
Time





# Cloud-Based Level Design

Admins and Clients

- Admins
- Clients
- Create Admin

Store And Products

- Platform Store
- Game Store

Games And Editors

- Level Editor
- QA Level Editor

Settings Management

- Settings

Personal

- Profile

## Level Editor

Yerevan | New\_Test5 | Bronze | Version:1.0.0 | Random | Play | Save

Inventory

- [Green Gem]
- [Red Gem]
- [Yellow Gem]
- [Blue Gem]

Jewels

- [Blue Gem]
- [Purple Gem]
- [Green Gem]
- [Red Gem]
- [Random]

Generic Jewels Control

- ☒ Randomize
- ☒ Randomize
- ☒ Randomize
- ☒ Randomize

Last Edited By Vahagn's Mac

Collect Jewel

- 0
- 0
- 0
- 0

Collect Special Items

- 0
- 0
- 0
- 0

Destroy Obstacles

- 0
- 0



# Player Data in Cloud





# Player Authentication

- Anonymous (Device ID / GUID)
- Or Facebook
- Also:
  - IP, Email / Password
  - Twitter, Game Center, Google Play, Kongregate



# Player Management

- Purchase History
- Play History
- See & Change Current Data
- Invaluable for CS



# Cloud Save

- Cross-Platform Play
- Easy Continuation on New Device

A person wearing a Guy Fawkes mask and a grey hoodie is pointing directly at the camera. A laptop is visible in the foreground, partially obscured by the person's arm. The background is dark.

# Server Logic Is The Only Logic

- Server awards and deducts points + currency
- Difficult to cheat / hack

# Multi Player






























AAA

# Multi-Player

# Sync Turn Based

# Real Time



	Clash Royale		Supercell	
	Game of War - Fire Age		MZ	
	Mobile Strike		Epic War	
	Candy Crush Saga		King	
	Clash of Clans		Supercell	
	Pokémon GO		Niantic	
	Candy Crush Soda Saga		King	
	MADDEN NFL Mobile		Electronic Arts	
	MARVEL Contest of Cham..		Kabam	
	Toy Blast		Peak Games	
	8 Ball Pool™		Miniclip	

~**60%** Of Top-Grossing **50**  
Have Some **Multi-Player**  
Component

**75%** Of Top **20** Have  
**Strong Multi-Player**

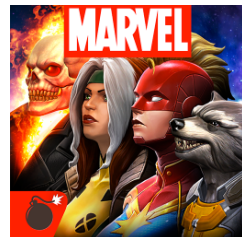
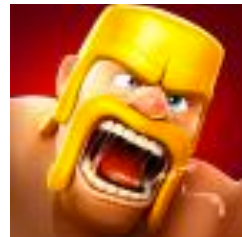






# Async “Data Vs. Data”

- Matchmaking
  - Friends List or Ranked Stranger
- Game State Coordination
- Don’t Need “Real” Multiplayer Services





# Turn-Based Async

- Matchmaking
  - Friends List or Ranked Stranger
- Invites
- Notifications
- In-Progress / Complete Games
- Messaging





# Semi-Real-Time Turn-Based

- Lobbies
  - Sort Criteria
- Chat + Emoticons
- Observing?
- Flawless Gameplay
  - Drop Ins/Outs + AI





# “Real-Time” Multi-Player

- Low-Latency
- State Synchronization
- Fair and Equal Timing
- Predictive Physics / Interpolation





# Beyond The Gameplay

- Teams / Guilds
- Location-Based
- Watching Games Live
  - Storing / Watching Replays
- Live Moderation of Chat
- Lifetime Chat History / Recall







So  
Much  
BAAS







GDC MOBILE  
SUMMIT

playfab

GDC

GAME DEVELOPERS CONFERENCE®

| FEB 27-MAR 3, 2017

| EXPO: MAR 1-3, 2017

#GDC17







- Founded 2014
- Seattle, WA
- 42M MAU
- Raised \$13M / VC-Backed
- Founders from Popcap & Uber Entertainment



# Trusted Publishers

- Jagex
- Capcom
- Rovio
- Atari
- BandaiNamco
- Miniclip
- Obsidian Ent
- TripWire
- Kongregate



# Solid SDK Support

- ActionScript
- Android
- iOS
- Unreal
- Unity
- JavaScript
- Marmalade
- cocos2d-x
- Corona
- C++
- NodeJS
- C#
- Java
- Xamarin
- Lumberyard



Economy



Leaderboards



Multiplayer



Content



Automation



Analytics



Add-ons



Settings



Admin



Help

LOGINS

15,054

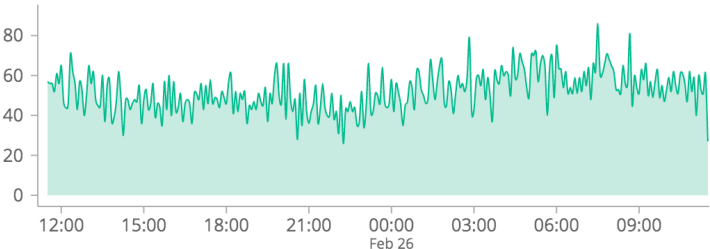
Last 24 hours

16,092

1 day ago -6.90%

24,779

7 days ago -64.60%



INSTALLS

1,711

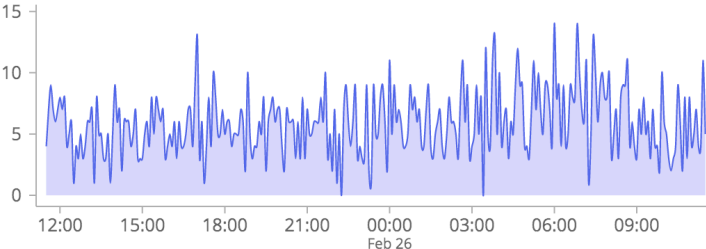
Last 24 hours

1,812

1 day ago -5.90%

2,798

7 days ago -63.53%



PURCHASES

0

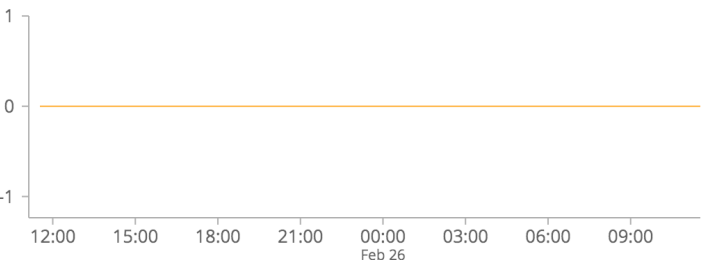
--

0

--

0

--



PURCHASE BREAKDOWN

--

--

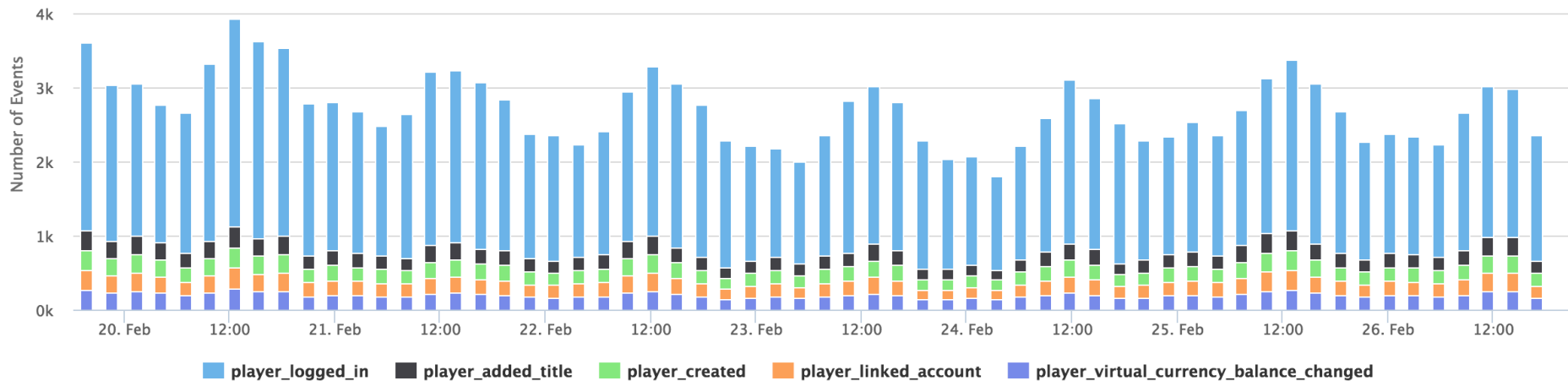
--




NONE

0

0

0



▶ Timestamp	Player	Event name
▶ 7:34 PM	57B116748539033D	 <b>player_logged_in</b> Custom Romford, GB (EU)
▶ 7:34 PM	7F89CA958D18F44A	 <b>player_logged_in</b> Custom Buena Park, US (NA)
▶ 7:34 PM	DE7F48D27AACAF63	 <b>player_logged_in</b> Custom Minot, US (NA)





Dashboard



Players



Economy



Leaderboards



Multiplayer



Content



Automation



Analytics



Add-ons



Settings



Admin



Help

Players

Segments

## Overview

E15C1C26D170BD8E

Players ▶ E15C1C26D170BD8E

Overview

PlayStream

Event History

Logins

Segments

Statistics

Player Data (Title)

Player Data (Publisher)

Virtual Currency

Inventory

Purchases

Friends

Characters

Multiplayer

Bans

RUN CLOUDSCRIPT

### PlayFab account

PlayFab ID

**E15C1C26D170BD8E**

Display name

Username

[no username]

Email

 UNLOCK

☐ Send password reset email

Update PlayFab account

### Details

First Login

2/9/2017 7:19:50 AM

Last login

2/26/2017 7:31:45 PM

Origination

Unknown

### Monetization

Value to date (USD)

\$0.00

City

San Salvador

Country

El Salvador



## Statistics

C3D70D86EFEC1775

Players ▶ C3D70D86EFEC1775 ▶ Statistics

Overview PlayStream Event History Logins Segments Statistics Player Data (Title) Player Data (Publisher) Virtual Currency Inventory

Purchases Characters Multiplayer Bans

Key	Value (number)
-----	----------------


xp	0
----	---


--	--


SAVE PLAYER STATISTICS


### GetPlayerStatistics Results


```
{
  "code": 200,
  "status": "OK",
  "data": {
    "Statistics": [
      {
        "StatisticName": "xp",
        "Value": 0,
        "Version": 0
      }
    ]
  },
  "CallBackTimeMS": 440
}
```


Dashboard


Economy


Players


PlayStream

Servers

Content

Reports

Add-ons

Settings

Title News

Title Data

File Management

Title Data

[WHAT'S THIS?](#)

TITLE DATA

[REMOVE](#)

[TALL DISPLAY](#)

[DOWNLOAD JSON](#)

[UPLOAD JSON](#)

<input type="checkbox"/> Key	Value
<input type="checkbox"/> feedbackUrl	http://mywebsite.com
<input type="checkbox"/> maxMovementSpeed	50
<input type="checkbox"/> monsterConfig	{\"Primal Ooze\":{\"SpawnWeight\":0,\"EncounterType\":\"Creep\",\"Description\" <a href="#">JSON</a>
<input type="checkbox"/>	

GetTitleData Results

```
{
  "code": 200,
  "status": "OK",
  "data": {
    "Data": {
      "feedbackUrl": "http://mywebsite.com",
      "maxMovementSpeed": "50",
      "monsterConfig": "{\"Primal Ooze\":{\"SpawnWeight\":0,\"EncounterType\":\"Creep\",\"Description\":\"\", \"Icon\":\"Ooze_1\", \"Spells\":{\"Spell1\":{\"SpellName\":\"Acid Bolts\", \"
```



# News & Events

Title News

NEW TITLE NEWS

DELETES TITLE NEWS

Date created	Status	Title
2/19/2016 6:19:36 PM	Published	Gold Bundle Anniversary Sale!
2/19/2016 6:16:16 PM	Unpublished	Valentine's is Live!
2/11/2016 5:08:20 PM	Unpublished	Version 3.0.1 Available Now!
2/2/2016 10:04:03 PM	Unpublished	New Year's Event LIVE NOW!
1/8/2016 6:55:52 PM	Unpublished	Holiday Event on NOW!

Edit Title News

Title News ▶ Edit Title News

TITLE NEWS CONTENT

Title

Gold Bundle Anniversary Sale!

Status

Published

Body

("body": "HUGE 1 Year Anniversary Sale on our largest gold packages for the next 6 hours only!", "new\_event": "true")

SAVE TITLE NEWS

CANCEL

Unlocked

HUGE 1 Year Anniversary Sale on our largest gold packages for the next 6 hours only!



## Modify Virtual Currency

C3D70D86EFEC1775

Players > C3D70D86EFEC1775 > Virtual Currency

Overview PlayStream Event History

Purchases Characters Multiplayer

### MODIFY VIRTUAL CURRENCY

Currency code (2 characters)

GO

Display name

Gold

\*Amount

100

Reason

Game Manager override

Comment

## Edit Catalog Item

Catalogs > main > Items > One

Items Bundles Containers Drop tables Stores

### PROPERTIES

\*Item ID

apple

Item class

Tags

Item Image URL

- ☐ Is stackable  
☐ Is tradable  
☐ Is a token for character creation

### PRICES

\* REMOVE

Currency	Amount
<input type="checkbox"/> GO	5
<input type="checkbox"/> Select one	

SAVE ITEM

SAVE AND EDIT

CANCEL

### DISPLAYED TO PLAYERS

Display name

Perfectly normal apple

Description

### CUSTOM DATA

EDIT AS KEY/VALUE PAIRS

### CONSUMABLE

☒ Durable

☐ Consumable

### CONVERT TO...

SHOW OPTIONS

Catalogs

Currencies

## New Store

Catalogs > main > Stores > New Store

Items Bundles Containers Drop tables Stores

### STORE NAME

\*Store Id

fruits

### STORE CONTENTS

+ ADD TO STORE [MODIFY PRICES](#) \* REMOVE

Item ID	Prices	
<input type="checkbox"/> apple	GO	RM
	<input type="text"/> 5	<input type="text"/> 0
<input type="checkbox"/> pear	GO	RM
	<input type="text"/> 3	<input type="text"/> 0
<input type="checkbox"/> grape	GO	RM
	<input type="text"/> 0	<input type="text"/> 0

SAVE STORE

SAVE AND EDIT

CANCEL





## GetStoreItems Results

```
{
  "code": 200,
  "status": "OK",
  "data": {
    "Store": [
      {
        "ItemId": "apple",
        "VirtualCurrencyPrices": {
          "GO": 4
        }
      },
      {
        "ItemId": "pear",
        "VirtualCurrencyPrices": {
          "GO": 2
        }
      },
      {
        "ItemId": "grape",
        "VirtualCurrencyPrices": {
          "GO": 1
        }
      }
    ]
  },
  "CallbackTimeMS": 63
}
```

OR?

## GetStoreItems Results

```
{
  "code": 200,
  "status": "OK",
  "data": {
    "Store": [
      {
        "ItemId": "apple",
        "VirtualCurrencyPrices": {
          "GO": 2
        }
      },
      {
        "ItemId": "pear",
        "VirtualCurrencyPrices": {
          "GO": 1
        }
      },
      {
        "ItemId": "grape",
        "VirtualCurrencyPrices": {
          "GO": 1
        }
      }
    ]
  },
  "CallbackTimeMS": 334
}
```

## PurchaseItem Results

```
{
  "code": 200,
  "status": "OK",
  "data": {
    "Items": [
      {
        "ItemId": "pear",
        "ItemInstanceId": "CD83F181AA9AF341",
        "PurchaseDate": "2016-08-15T18:25:33.076Z",
        "CatalogVersion": "main",
        "DisplayName": "I am not pear-shaped",
        "UnitCurrency": "GO",
        "UnitPrice": 2
      }
    ]
  },
  "CallbackTimeMS": 170
}
```



## GetUserInventory Results

```
{
  "code": 200,
  "status": "OK",
  "data": {
    "Inventory": [
      {
        "ItemId": "apple",
        "ItemInstanceId": "B469918022A09723",
        "PurchaseDate": "2016-08-15T18:16:49.737Z",
        "CatalogVersion": "main",
        "DisplayName": "Perfectly normal apple",
        "UnitCurrency": "GO",
        "UnitPrice": 5
      }
    ],
    "VirtualCurrency": {
      "GO": 95
    },
    "VirtualCurrencyRechargeTimes": {}
  },
  "CallBackTimeMS": 382
}
```

## Virtual Currency

C3D70D86EFEC1775

[Players](#) ▶ [C3D70D86EFEC1775](#) ▶ Virtual Currency

[Overview](#)

[PlayStream](#)

[Event History](#)

[Logins](#)

[Segments](#)

[Statistics](#)

[Player](#)

[Purchases](#)

[Characters](#)

[Multiplayer](#)

[Bans](#)

Code	Display name	Amount
GO	Gold	95



# CloudScript

```
1 handlers.bushelOnYourFirstDay = function(args) {
2   // The server API can add virtual currency safely
3   var addGoldResult = server.AddUserVirtualCurrency({
4     PlayFabId: currentPlayerId,
5     VirtualCurrency: "GO",
6     Amount: 500
7   });
8
9   // When the server grants items, there's no cost to the player
10  var appleBounty = server.GrantItemsToUser({
11    PlayFabId: currentPlayerId,
12    CatalogVersion: "main",
13    ItemIds: [ "apple", "apple" ]
14  });
15
16  // Like AddUserVirtualCurrency, it's safer to call UpdatePlayerStatistics from CloudScript
17  var updateStatistics = server.UpdatePlayerStatistics({
18    PlayFabId: currentPlayerId,
19    Statistics: [{
20      "StatisticName": "xp",
21      "Value": 10
22    }]
23  });
24
25  log.info("I have 500 gold, two apples and 10 XP!");
26 }
```

Applications include:

- Granting player rewards
- Validating player actions
- Resolving interactions between players
- Managing asynchronous game turns



# Add-Ons

- Kochava Attribution
- Branch Deep Linking
- Supersonic Ad Mediation
- Analytics
- Community
- Zendesk (Support)



**GDC MOBILE**  
— S U M M I T —



**GDC**

**GAME DEVELOPERS CONFERENCE®**

| FEB 27-MAR 3, 2017

| EXPO: MAR 1-3, 2017

#GDC17







- Founded 2013
- Dublin, Ireland
- Raised \$800K / Seed
- 35M MAU
- Founders from Online TV / Sky



# Trusted Publishers

- Telltale
- Mind Candy
- Ubisoft
- Stainless Games
- Beeline
- El Ray
- Gamigo
- Amazon Game Studios
- Square Enix
- PokerStars
- NYX Gaming Group



# Mega-SDK Support

- ActionScript
- Android
- iOS
- Unreal
- Unity
- JavaScript
- Marmalade
- cocos2d-x
- Corona
- C++



# Edit Player - 5602b603e4b093041a73eed2 - gstest

## Player Details

ID

User Name

Display Name

Hide On Leaderboards ☐ OFF

Save Changes

## Achievements

Earned

Cloud Achievement

Unearned

+

## Virtual Goods

Gold Coin

Save Changes

## Currencies

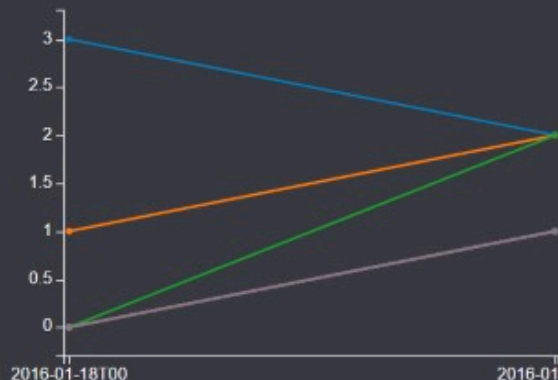
C1  C2

C3  C4

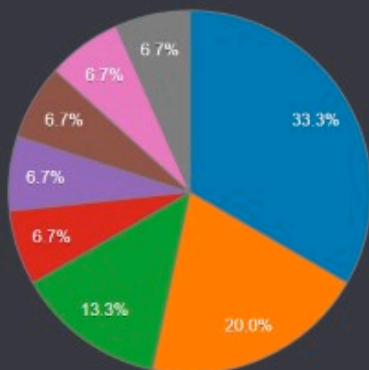
C5  C6

Save Changes

## Total Requests



## Total Requests



## Request Log

1 - 15 / 15 Page 1 / 1 Go

_source.@timestamp	_type	_source.@playerId	
2016-01-20T14:07:55.000Z	TeamChatMessage	5602b603e4b093041a73eed2	
2016-01-20T14:02:01.000Z	GetMyTeamsRequest	5602b603e4b093041a73eed2	
2016-01-20T14:01:39.000Z	GetTeamRequest	5602b603e4b093041a73eed2	
2016-01-20T13:59:34.000Z	GetTeamRequest	5602b603e4b093041a73eed2	
2016-01-20T13:59:07.000Z	AccountDetailsRequest	5602b603e4b093041a73eed2	
2016-01-20T13:58:56.000Z	LogEventRequest-HEX	5602b603e4b093041a73eed2	
2016-01-20T13:58:41.000Z	CreateTeamRequest	5602b603e4b093041a73eed2	
2016-01-20T13:57:29.000Z	AuthenticationRequest	5602b603e4b093041a73eed2	
2016-01-20T12:00:46.000Z	AccountDetailsRequest	5602b603e4b093041a73eed2	
2016-01-20T12:00:37.000Z	LogEventRequest-SetNum	5602b603e4b093041a73eed2	
2016-01-20T11:59:22.000Z	AuthenticationRequest	5602b603e4b093041a73eed2	





Game / Configurator / Virtual Goods



Configurator



Manage



Analytics



Experiments



Test Harness



NoSQL



Learn

## Virtual Goods

Short Code ▾

No Filter

Name

No Filter

BRONZE\_COIN

Bronze coin

HEART

Heart

SILVER\_COIN

Silver Coin

Showing 1 to 3 of 3

GOLD\_COIN

Segment

Short Code

GOLD\_COIN

Name

Gold coin

Description

Gold coin Virtual Good

Currency 1

1

Currency 2

Currency 3

Currency 4

Currency 5

Currency 6

iOS Product ID

Google Product ID

WP8 Product ID

Add

Actions



10

1

3. If we list the available Virtual Goods (submit *Store > ListVirtualGoodsRequest*), we see our Heart listed:

```
{ "@class": ".ListVirtualGoodsResponse",  
  "scriptData": null,  
  "virtualGoods": [ { "description": "An extra heart", "name": "Heart", "shortCode": "HEART",  
    "currency1Cost": 100 } ] }
```
















4. To buy a Heart we submit a [BuyVirtualGoodsRequest](#) (*Store > BuyVirtualGoodsRequest*):

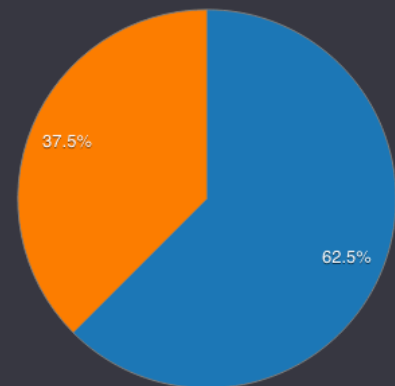
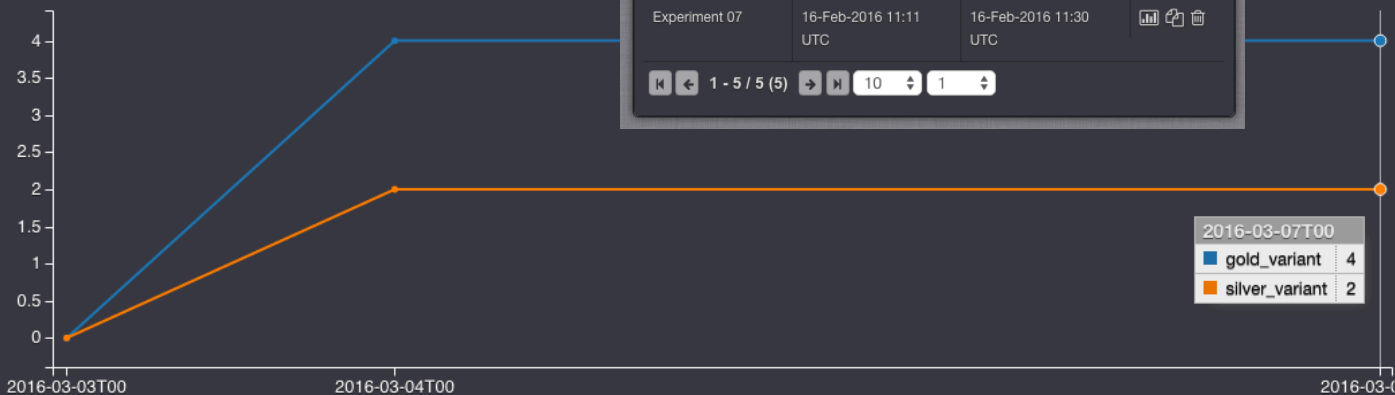
```
{ "@class": ".BuyVirtualGoodsRequest",  
  "shortCode": "HEART",  
  "quantity": "1",  
  "currencyType": "1"  
}
```

```
{ "@class": ".BuyVirtualGoodResponse",  
  "boughtItems": [ { "shortCode": "HEART", "quantity": 1 } ],  
  "scriptData": null }
```



## Complete Experiments

Name	Start date	End date	Actions
No Filter	No Filter	No Filter	No Filter
Experiment 03	15-Feb-2016 14:00 UTC	15-Feb-2016 14:30 UTC	  
Experiment 04	15-Feb-2016 14:44 UTC	15-Feb-2016 15:00 UTC	  
Experiment 05	15-Feb-2016 15:50 UTC	15-Feb-2016 15:55 UTC	  
Experiment 06	16-Feb-2016 10:30 UTC	16-Feb-2016 11:00 UTC	  
Experiment 07	16-Feb-2016 11:11 UTC	16-Feb-2016 11:30 UTC	  





# Create Own Dashboard / Admin



Game / Manage / Sales Events

Preview

Getting Started ▾



Configurator



Manage



Analytics



Experiments



Test Harness



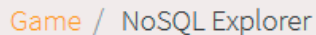
NoSQL

## Sales Events

Here you can View, Create, Edit or Delete Sales Events.

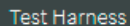
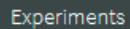
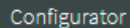
Create New

Event Name	Start Date	End Date	Status	Segment		
10% Tuesday	2016-10-17T12:51:00.000Z	2016-10-31T00:00:00.000Z		tenpc		



## Preview

Getting Started ▼



## Collections



- ▶ Leaderboards
- ▶ Running Totals
- ▶ Analysis
- ▼ System
  - challengeInstance
  - externalAuthentication
  - matchInstance
  - pendingMatches
  - player
  - playerMessage
  - playerTransactionAudit
  - teamChatHistory
  - teams
  - uploadedFiles
- ▶ Admin
- ▶ Runtime

player ✕

Find

Count

Insert

### Update

Remove

## Index

## Aggregate

Drop

## Stats

### Query

Sort

Page 10 of 10

## Fields

\_\_\_\_\_

Skip

0

Limit

100

Find

### Explain

Export

## Output

- ```

▶ {"_id":{"oid":"5792408c6cc8e27fffe92149"},"gameId":{"$numberLong":"358719"},"deviceRegIds":{"$set":{},"seg...
▶ {"_id":{"oid":"579240d56cc8e27fffe92360"},"gameId":{"$numberLong":"358719"},"deviceRegIds":{"$set":{},"seg...
▶ {"_id":{"oid":"5792410f6cc8e27fffe92509"},"gameId":{"$numberLong":"358719"},"deviceRegIds":{"$set":{},"seg...
▶ {"_id":{"oid":"579742353a32df04880b2c15"},"gameId":{"$numberLong":"358719"},"deviceRegIds":{"$set":{},"seg...
▶ {"_id":{"oid":"5797427a3a32df04880b2e56"},"gameId":{"$numberLong":"358719"},"deviceRegIds":{"$set":{},"seg...
▶ {"_id":{"oid":"57e400663a32df66cb467364"},"gameId":{"$numberLong":"358719"},"deviceRegIds":{"$set":{},"seg...

```



Configurator



Manage



Analytics



Experiments



Test Harness



NoSQL



Learn



Support

## Scripts



## ▼ Events

- ASSIGN\_COUNTRY
- AUTH\_PLAYER
- Award\_Achievement
- CC\_EVT
- EVENT\_10
- Get\_Pos
- GET\_RACE\_DATA
- getPlayerData
- GRANT\_CURRENCY
- HIGH\_SCORE
- Leaderboard\_Score
- LEADERBOARD\_SCORER
- LEVEL\_SCORE
- LOAD\_PLAYER
- PASSWORD
- PLANT\_SEED10
- PLAYER\_DATA
- PROG\_UPDATE
- RACE\_EVENT
- save\_data
- SAVE\_PLAYER
- SCORE\_EVT
- Set\_Pos
- SetScoreAndCalculateOutcome
- SetScoreOnChallenge



## CC\_EVT ✕

```
1 // =====
2 //
3 // Cloud Code for CC_EVT, write your code here to customize the GameSparks platform.
4 //
5 // For details of the GameSparks Cloud Code API see https://docs.gamesparks.com/
6 //
7 // =====
8 var eventAttr1 = Spark.getData().CC_ATTR
9 var eventAttr2 = Spark.getData().CC_ATTR_2
10 var eventAttr3 = Spark.getData().CC_ATTR_3
11
12 Spark.setScriptData("eventAttr1", eventAttr1.toUpperCase());
13 Spark.setScriptData("eventAttr2", eventAttr2 * 10);
14
15 eventAttr3.won = true
16 Spark.setScriptData("eventAttr3", eventAttrThree);
```

Save

Close

Delete





Configurator



Manage



Analytics



Experiments



Test Harness



NoSQL



Learn



Support

## Connection

Credential: debug ▾

Connected

Disconnect

Service URL: wss://preview-test.gamesparks.net/ws/debug-web/o358719xvku3

Auth Token: 9bf6916c-b8f4-44ae-b67d-162c0775d606

Player ID: 586b9086de3a881bf31dda99

## Requests

Authentication

Authenticate Player

Admin

Award Achievement

Analytics

Change Password

Leaderboards

Cloud Code Event

Misc

First Event

Multiplayer

Get Position

Player

Grant currency

Store

High Score

Teams

Leaderboard Score

Log Event

Leaderboard Scorer

Log Challenge Event

Level Score

Upload

Load Player Details

Scenarios

Plant Seed

Player

Progress Updates

Race Event

Retrieve race data

Save Player Details

Score Event

Set Position

## JSON

```
1 {
2   "@class": ".LogEventRequest",
3   "eventKey": "Set_Pos",
4   "POS": {
5     "x": 12,
6     "y": -8,
7     "z": 17
8   }
9 }
```

Send Request

## Debug

Requests

☒ Debug

Responses

☒ Debug

Messages

☒ Debug☒ Break on error

## Inspector

statementCount: 2

```
{
  "@class": ".LogEventResponse"
}
```

6

```
{
  "@class": ".LogEventRequest",
  "eventKey": "Set_Pos",
  "POS": {
    "x": 12,
    "y": -8,
    "z": 17
  }
}
```

5

```
{
  "@class": ".AuthenticationResponse",
  "authToken": "9bf6916c-b8f4-44ae-b67d-162c077",
  "displayName": "gs_display_name",
  "newPlayer": false,
  "userId": "586b9086de3a881bf31dda99"
}
```

```
{
  "@class": ".AuthenticationRequest",
  "password": "gs_password_12",
  "userName": "gs_player_12"
}
```



**GDC MOBILE**  
— S U M M I T —

brain  Cloud

**GDC**

**GAME DEVELOPERS CONFERENCE®**

| FEB 27-MAR 3, 2017

| EXPO: MAR 1-3, 2017

#GDC17





- Founded 1995 (bitHeads)
- Mobile Enterprise Apps
- Toronto, Canada



# Trusted Publishers

- Novarama
- Ubisoft
- Mochibits
- Get Set Games
- Spearhead Games
- Playbrains

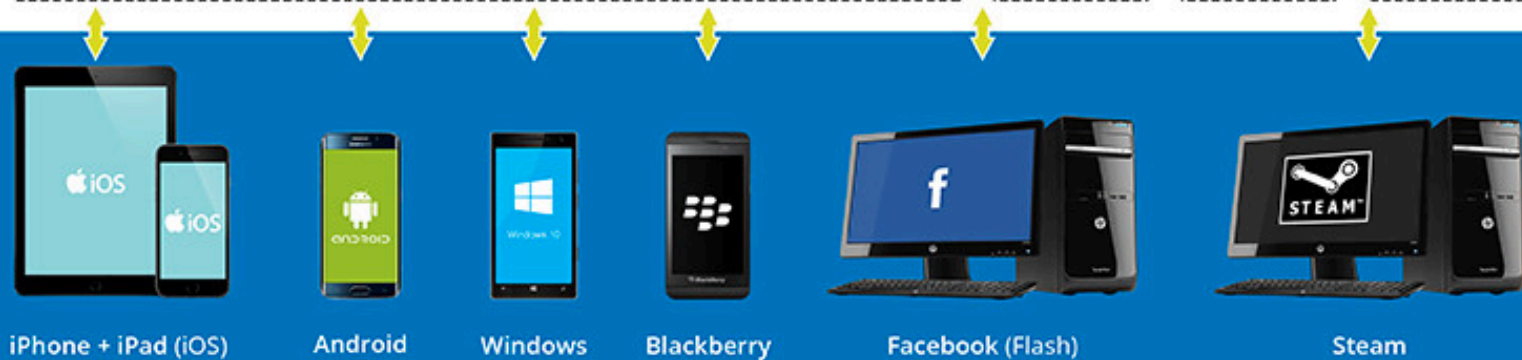
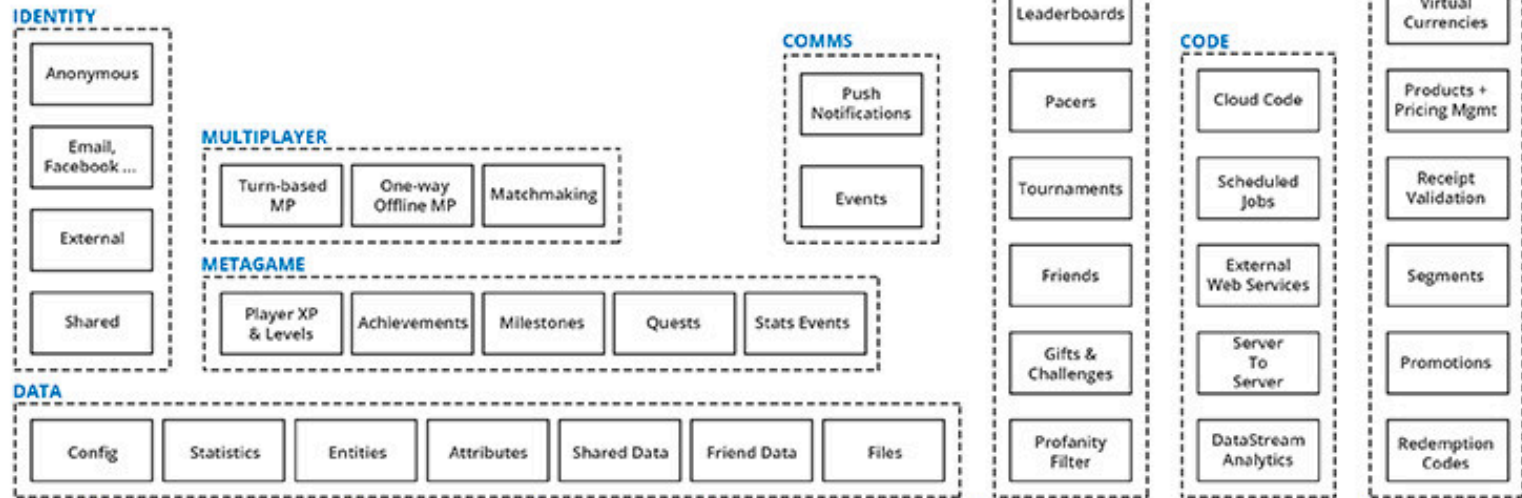


# Major SDKs

- iOS, Android, Windows
- Unity, cocos2d-x, Unreal

# brainCloud

## API Architecture





Profile ID

92d275b7-c9f8-4679-aeef-2d03cf42f287

Profile Name

Jun French

Save

XP Points

0

XP Level

0

Is Tester

☒

Created

2013-06-13 1:00:27

Last Updated

2014-12-05 1:36:18

Login Count

12

Language

fr

Timezone Offset

0

Country

ca

Amount Spent

\$12.96

| Currency Type  | Balance |
|----------------|---------|
| bar            | 12405   |
| coin           | 4207620 |
| coinMultiplier | 1       |

## Stats

4 records {...}

| Name              | Category   | Value |  |
|-------------------|------------|-------|--|
| DifficultyChanges | Settings   | 3     |  |
| RoundsWon         | RoundStats | 12    |  |





All Categories















Register Products

+ Add Product

## Edit Product - barBundle3Imp

+ Edit Product

| Item ID          | Category | Title                                                                                       | Price   |
|------------------|----------|---------------------------------------------------------------------------------------------|---------|
| barBundle1Imp    |          |  Bars      | \$0.99  |
| barBundle2Imp    |          |  Bars      | \$3.99  |
| barBundle3Imp    |          |  Bars      | \$9.99  |
| barBundle4Imp    |          |  Bars      | \$19.99 |
| barBundle5Imp    |          |  Bars      | \$99.99 |
| coinBundle1Imp   |          |  Coins     | \$0.99  |
| coinBundle2Imp   |          |  Coins     | \$3.99  |
| coinBundle3Imp   |          |  Coins     | \$9.99  |
| coinBundle4Imp   |          |  Coins     | \$19.99 |
| coinBundle5Imp   |          |  Coins     | \$99.99 |
| coinDoublersReg  |          |  Lucky Koi | \$2.99  |
| coinDoublersSale |          |  Lucky Koi | \$1.99  |

12 records



Delete

Item Id \*

barBundle3Imp

Title \*

Bars

Category

Description

Bundle of 160 Bars.

Product Type

Consumable

Virtual Currencies

bar

160

Prices

\$0.09

\$9.99



Not for sale (Default)





```
// Call the script
```

```
results = BrainCloudWrapper.GetBC().BrainCloudScript.RunScript(  
    "Tut1_AddTwoNumbers",  
    "{ \"num1\": 1, \"num2\": 2 }",  
    OnSuccess_AddScript,  
    OnError_AddScript,  
    null );
```

Service

Operation

Script

Run Script "Tut1\_AddTwoNumbers"

Description:

[View API](#)

## Parameters

```
1 {  
2   "scriptName": "Tut1_AddTwoNumbers",  
3   "scriptData": {  
4     "num1": 1,  
5     "num2": 2  
6   }  
7 }
```

```
{  
  "languageCode": "en",  
  "sessionId": "1uahbjmb5u9rncq5uuk7bojs87",  
  "amountSpent": 0  
}
```

## Request Script--Run Script "Tut1\_AddTwoNumbers"

```
{  
  "sessionId": "1uahbjmb5u9rncq5uuk7bojs87",  
  "messages": [  
    {  
      "service": "script",  
      "operation": "RUN",  
      "data": {  
        "scriptName": "Tut1_AddTwoNumbers",  
        "scriptData": {  
          "num1": 1,  
          "num2": 2  
        }  
      }  
    }  
  ]  
}
```

## Response -- (105ms)

```
{  
  "status": 200,  
  "data": {  
    "response": 3,  
    "success": true  
  }  
}
```

Gamification

Multiplayer

Leaderboards

Cloud Code

API Explorer

Scripts

API Hooks

Web Services

S2S Explorer

S2S Config

Segmentation

Notifications

Marketplace



# Turn-By-Turn Multiplayer

Match Status

All



7 records

Match ID

Owner

Created

Updated

Participants

Details

ccc47c08-2f63-49cb-969d-ee75e81b7e6b

true

08/21/2015 1:08:11 PM

08/21/2015 1:08:11 PM

UserA-248685244  
UserB-774629133



428ea480-3921-468c-8225-5a5a9081e3ab

true

08/21/2015 1:08:12 PM

08/21/2015 1:08:12 PM

UserA-248685244  
UserB-774629133





# "One-Way Multiplayer" (Data Vs. Data)

Match Status

All



Owner



6 records

Match ID

Owner

Created

Updated

Participants

Details

Stream

d1cb80e3--8de0-  
89903b6c103d

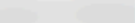
false

08/20/2015 11:52:49  
AM

08/20/2015 11:52:51  
AM

PLAYER



a657bce4--ab7a-  
d7b2e2bd839e

false

08/20/2015 11:52:46  
AM

08/20/2015 11:52:47  
AM

PLAYER





**GDC MOBILE**  
— S U M M I T —

SOLTR  
SOLTR

**GDC**

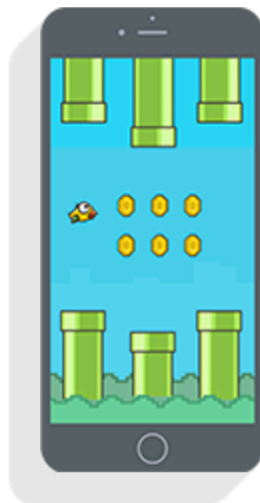
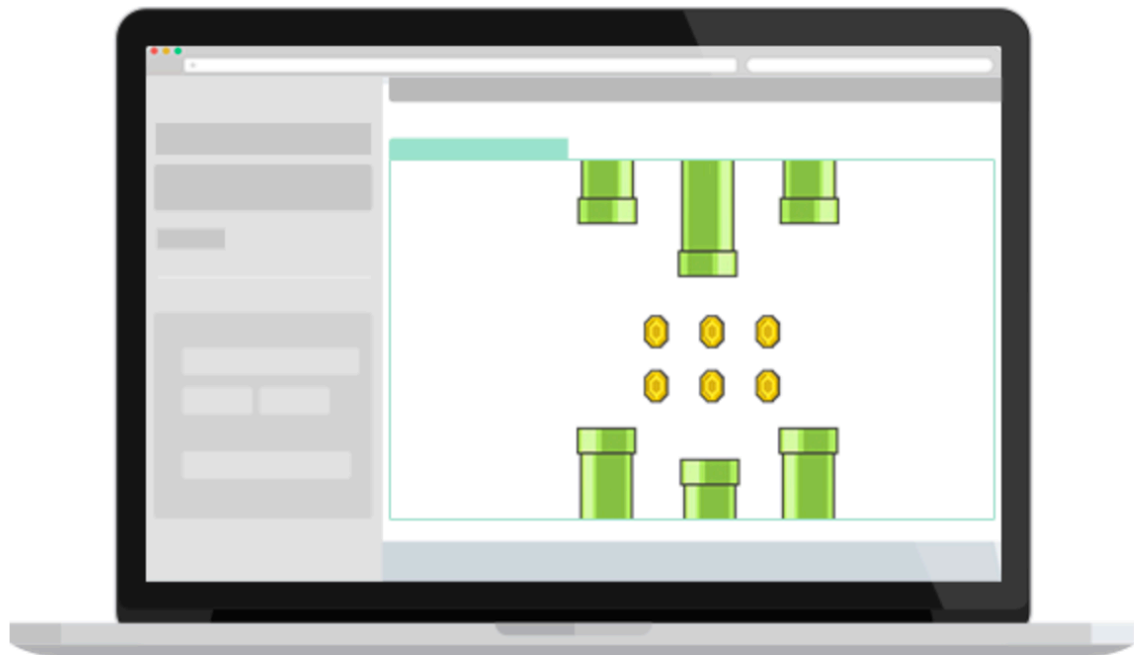
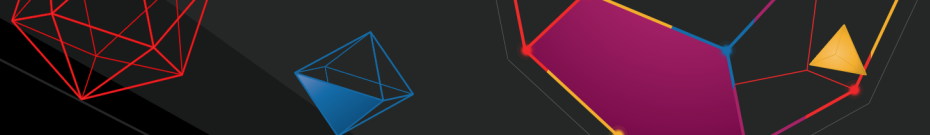
**GAME DEVELOPERS CONFERENCE®** | FEB 27-MAR 3, 2017 | EXPO: MAR 1-3, 2017 #GDC17





# Major SDKs

- iOS, Android, Unity, Flash, HTML5, REST







# FLOX

THE NO-FUZZ GAME BACKEND



# SDK Supports Only:

- ActionScript / Flash, ObjectiveC

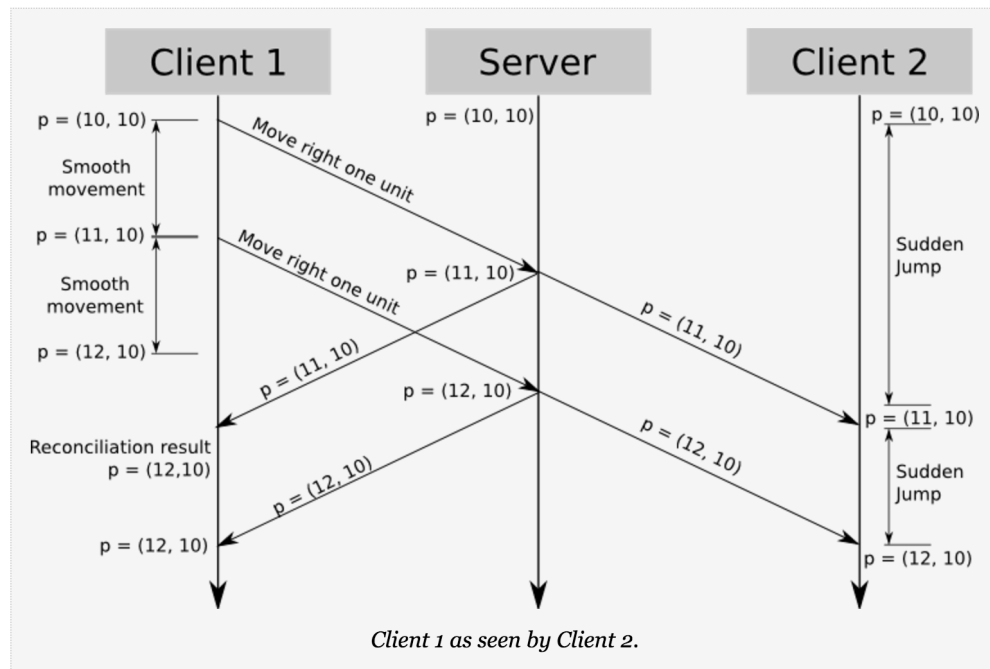
# Multi-Player BaaS





# "Real-Time" Multi-Player

- Seriously Tough
  - (Seriously!)





- Turn-Based “With Friends” Style
- Clash of Clans-Style
  - Fighting Against Another Player’s Game Data



- Real-Time, Turn-Based or MMO
- Many Packages
  - Peer to Peer, Lock-Step Physics, Chat, Voice,
- Major Publishers
  - InnoGames, WB Games, Sandbox, Nival
- Partnership w/ PlayFab



# unity Mutiplayer

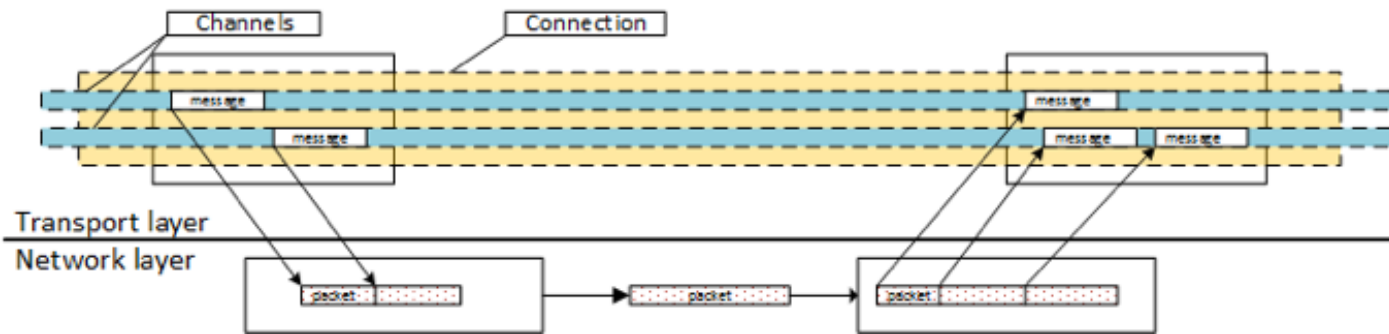
- High-Level API (HLAPI)
  - P2P: One Client Acts As Server (Host Mode)
  - Pay For: Matchmaking + Relay
  - Send/Receive Messages
  - State Synchronization
  - Remote Procedure Calls





# unity Mutiplayer

- Or Low-Level Support (LLAPI)
  - Write Atop Transport Layer (UDP Socket)
  - Low-Level Messaging





## Google Play Games Services

- Android
  - But Also iOS, C++, Rest, Unity
- Turn-Based or Real-Time
- Using Google Cloud Back-End
  - Confusing Pricing



# SmartFoxServer

massive multiplayer platform

- Optimized Socket Server
  - High-performance, scalable
- Client SDKs
  - Unity, HTML5, iOS, Android, Windows
- Not BaaS – Must Deploy
  - Jelastic, Vault Networks, Right Scale, Internap



## Heroic Labs

- Social / Realtime Apps
- Open Source
- Run on Own Servers / Cloud Provider
- Unity Only



# Many Others..

- ElectroTank
- uLink
- Forge
- DarkRift



# Union MOBA

- Playfab+
- Photon





# “Braincloud Bombers”

- Braincloud+
- Unity UNET
- Photon (Exit Games)



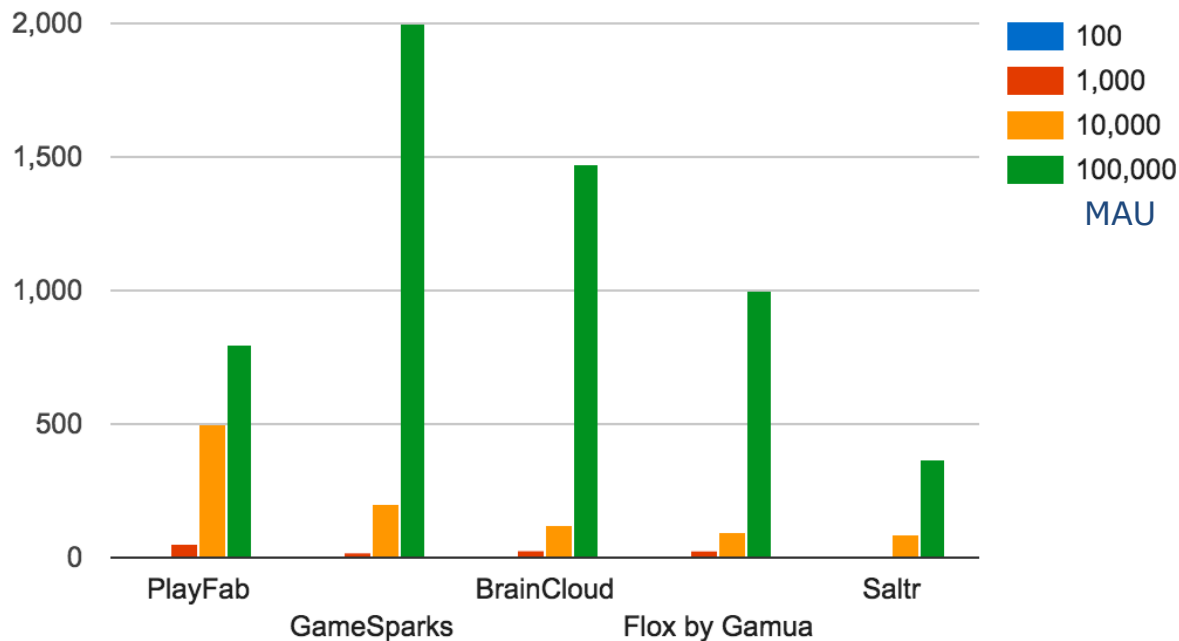


Pricing



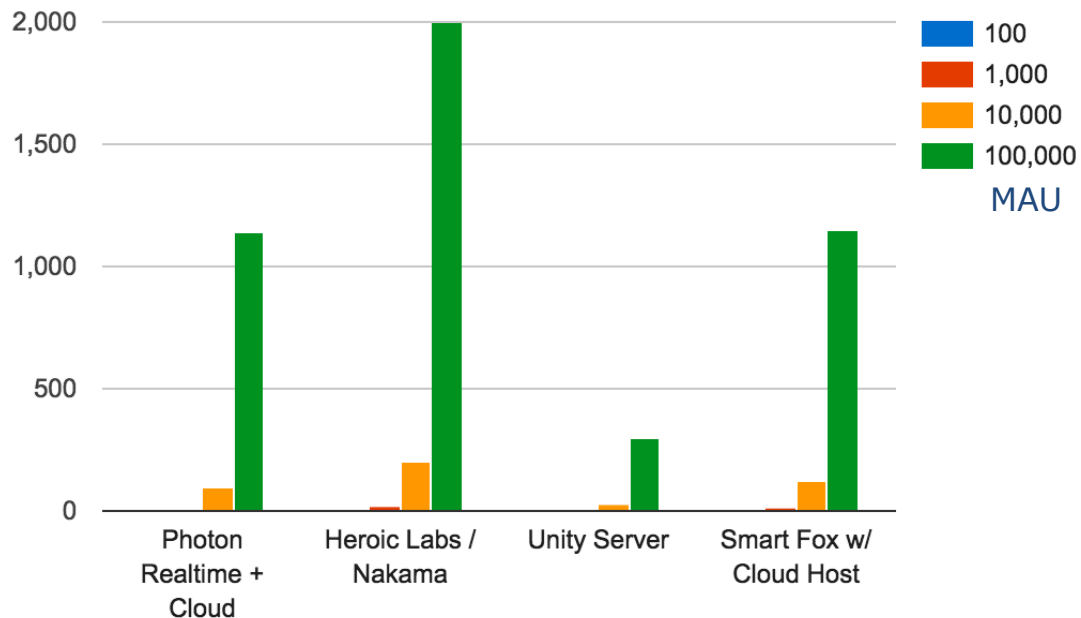


# Game BaaS Monthly Costs





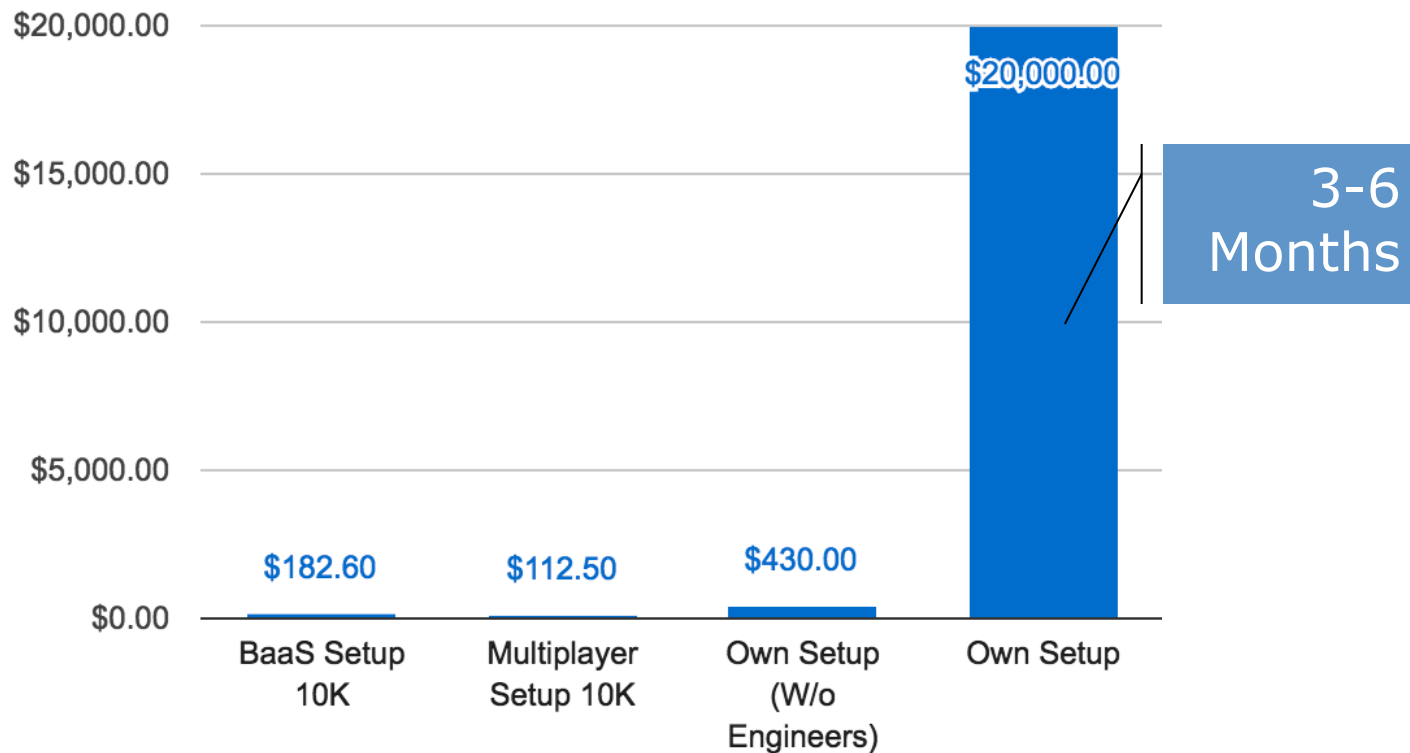
# Multiplayer Monthly Costs





# Vs. Rolling Your Own...

| MAU                       | 1,000           | 10,000          | 100,000         |
|---------------------------|-----------------|-----------------|-----------------|
| # Engineers               | 1               | 2               | 5               |
| DevOps + Engineering Team | 10,000          | 20,000          | 50,000          |
|                           |                 |                 |                 |
| CDN                       | 5               | 10              | 100             |
| Load Balanceer            | 10              | 20              | 200             |
| App Servers               | 30              | 300             | 3,000           |
| MySql DB                  | 50              | 100             | 1,000           |
|                           | <b>\$10,095</b> | <b>\$20,430</b> | <b>\$54,300</b> |





PAIN In  
The  
BAAS



# Not as Cheap As It Looks

- “Black Box” of Features
- Occasional Bugs
- Time-Consuming Customization



# Privacy

TOP SECRET//SI//ORCON//NOFORN



Gmail

facebook

msn

Hotmail

Google

YAHOO!



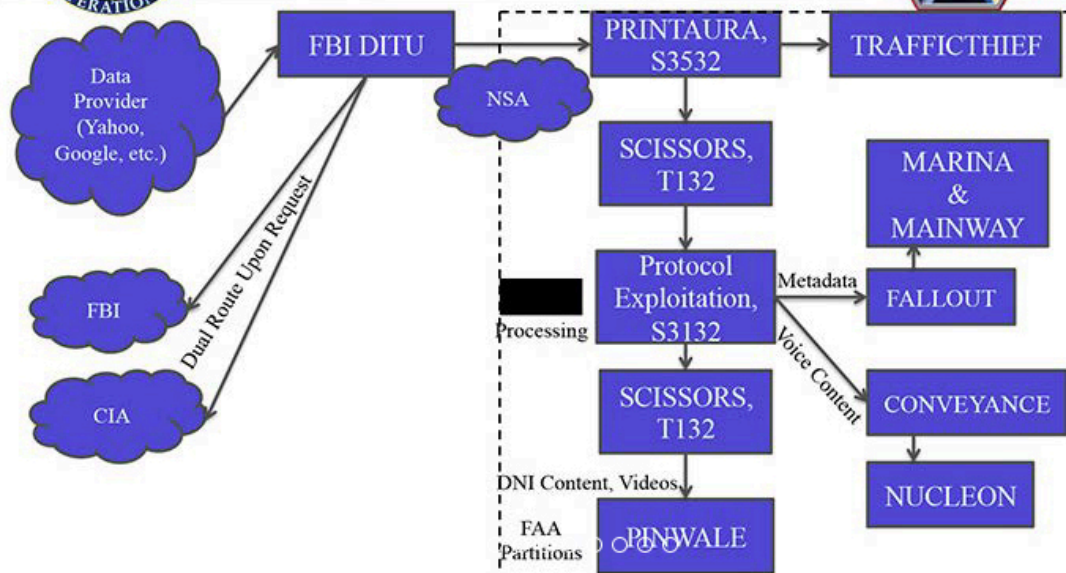
skype

paltalk.com

YouTube

AOL mail

(TS//SI//NF) PRISM Collection Dataflow



TOP SECRET//SI//ORCON//NOFORN



# They Die, You Die







# They Thrive... You Die!

- Vendor Lock-In “Extortion”
- Acquisition = One Customer





# Parse: A cautionary tale

↑ [-] **boxwood** 6 points 4 days ago

↓ As a student who has a few apps using Parse and a university funded project that uses it too.... fuck.  
Any recommendations for alternatives?

[permalink](#) [parent](#) [buffer](#)

↑ [-] **KILLFREE** - dunrite | nowPaper dev 18 points 4 days ago































↓ just curl up and die so you don't need to worry about it. :'(

[permalink](#) [parent](#) [buffer](#)

↑ [-] **boxwood** 5 points 4 days ago

↓ Solid plan.

[permalink](#) [parent](#) [buffer](#)

|                                                                                   |                          |                                                                                    |                 |                                                                                     |
|-----------------------------------------------------------------------------------|--------------------------|------------------------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------|
|       | Clash Royale             |      | Supercell       |      |
|    | Game of War - Fire Age   |    | MZ              |    |
|    | Mobile Strike            |    | Epic War        |    |
|    | Candy Crush Saga         |    | King            |                                                                                     |
|    | Clash of Clans           |    | Supercell       |    |
|    | Pokémon GO               |    | Niantic         |    |
|    | Candy Crush Soda Saga    |    | King            |                                                                                     |
|    | MADDEN NFL Mobile        |    | Electronic Arts |    |
|    | MARVEL Contest of Cham.. |    | Kabam           |    |
|    | Toy Blast                |    | Peak Games      |                                                                                     |
|  | 8 Ball Pool™             |  | Miniclip        |  |

Of the **Top 50 Grossing** Games...  
**All** have Proprietary Back-Ends\*



ROLL  
Your OWN  
BACK  
End



# Nothing Beats Bespoke

- Segmenting
- A/B Tests
- Integrated CRM
- Highly Custom Analytics
- All Tied to Economy / Merchandising





I love  
aggregated  
synergy, baby.



# Ingredients

- Game Server (PHP, Java, Node.JS)
- Admin Tool (CSS / HTML)
- Database (MySQL, Postgres, MongoDB)
- Cloud Provider (IaaS)
  - Azure, AWS, Google Cloud, Bluemix



# We Roll Our Own a LOT

- But We Have a Proven “Bag of Tricks”
- Custom Code Libraries
- Lotsa Experience





# Potential Cost Savings

- Engineering costs can reduce to 0...
- w/ Good monitoring / alerts
- If you get big enough, can optimize.



# Half-BaaSed (Not Game-Specific)

- Authentication / User Admin
- NoSQL DB
- Cloud Logic
- Basic Analytics
- Easy Client SDKs
  - iOS, Android, Unity, Web



# Half-BaaSed Leaders

- Google FireBase
  - NoSQL DB
- Amazon Web Hub
  - Cognito, Lambda, Dynamo
- Microsoft Azure App Service



# Many Others..

- Kinvey
- Kii
- App42 Cloud
- Usergrid



# Worth Thinking About...

- Up and running quickly!
- Can develop own dashboards
- + Own analytics
- More stable companies

Indie

Budget \ Effort

AAA

### PlayFab

At absolute minimum.

### GameSparks

If want to put in a bit more work.

### BrainCloud

Esp if you have light multi-player needs.

### Photon

(w/ PlayFab)

### GameSparks

Real Time

### BrainCloud

### Photon

### Unity MP

### Smart Fox

(Hosted)

(+Roll Own  
or  
PlayFab / GameSparks)

### Roll Your Own!!

If you know what you're doin'.

Single  
Player

Multi-Player

Async  
Turn  
Based

Sync  
Turn  
Based

Real  
Time



THANK  
YOU!

David Fox

CEO, Double Coconut

**Email:** [david@doublecoconut.com](mailto:david@doublecoconut.com)

**Slides:** <http://blog.doublecoconut.com/>