



# Introduction to Google Cloud Platform

September 24, 2016

DC DevFest

Yufeng Guo  
Developer Advocate



@yufengg

<#>

# Who are you?



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# 01 Introduction

What is Google Cloud Platform

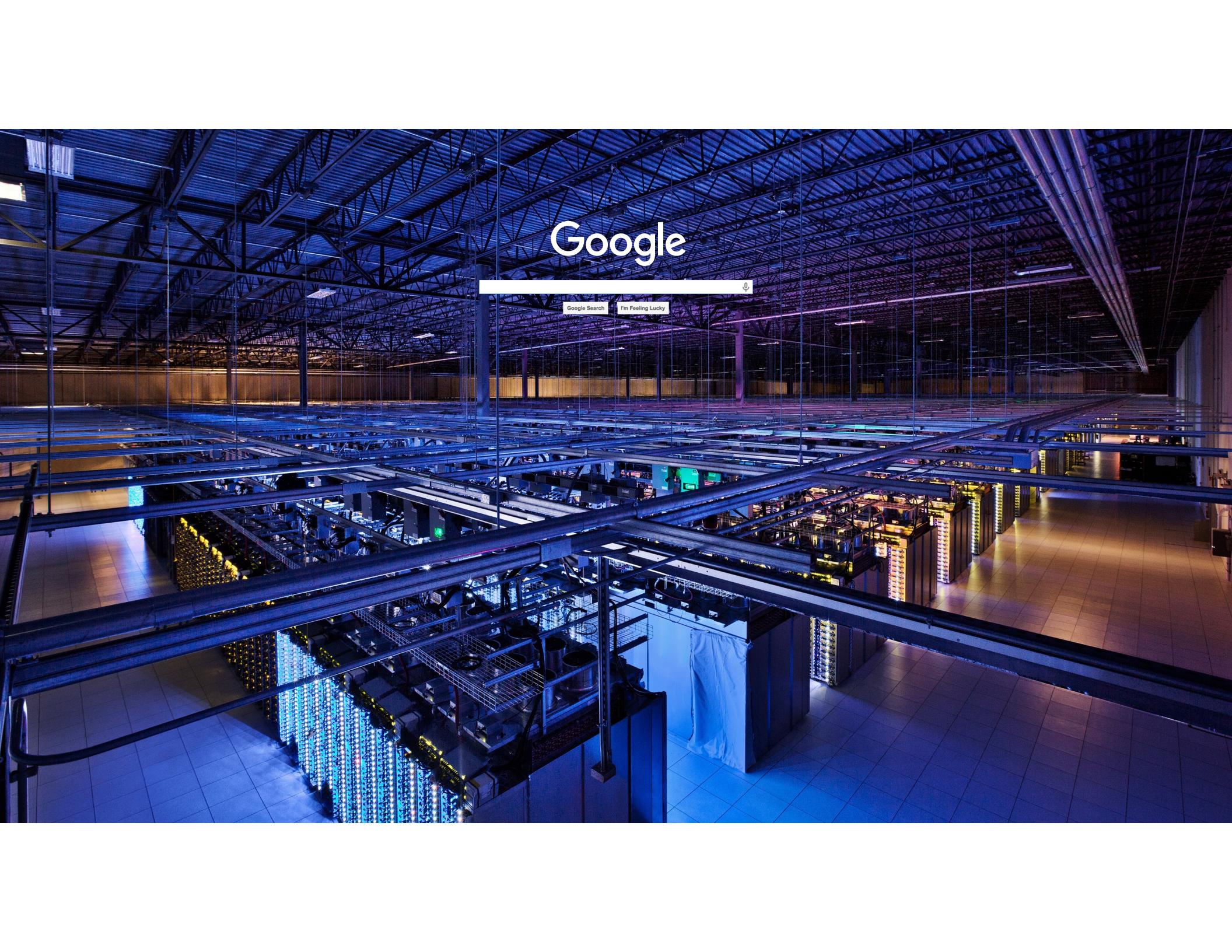


# Google

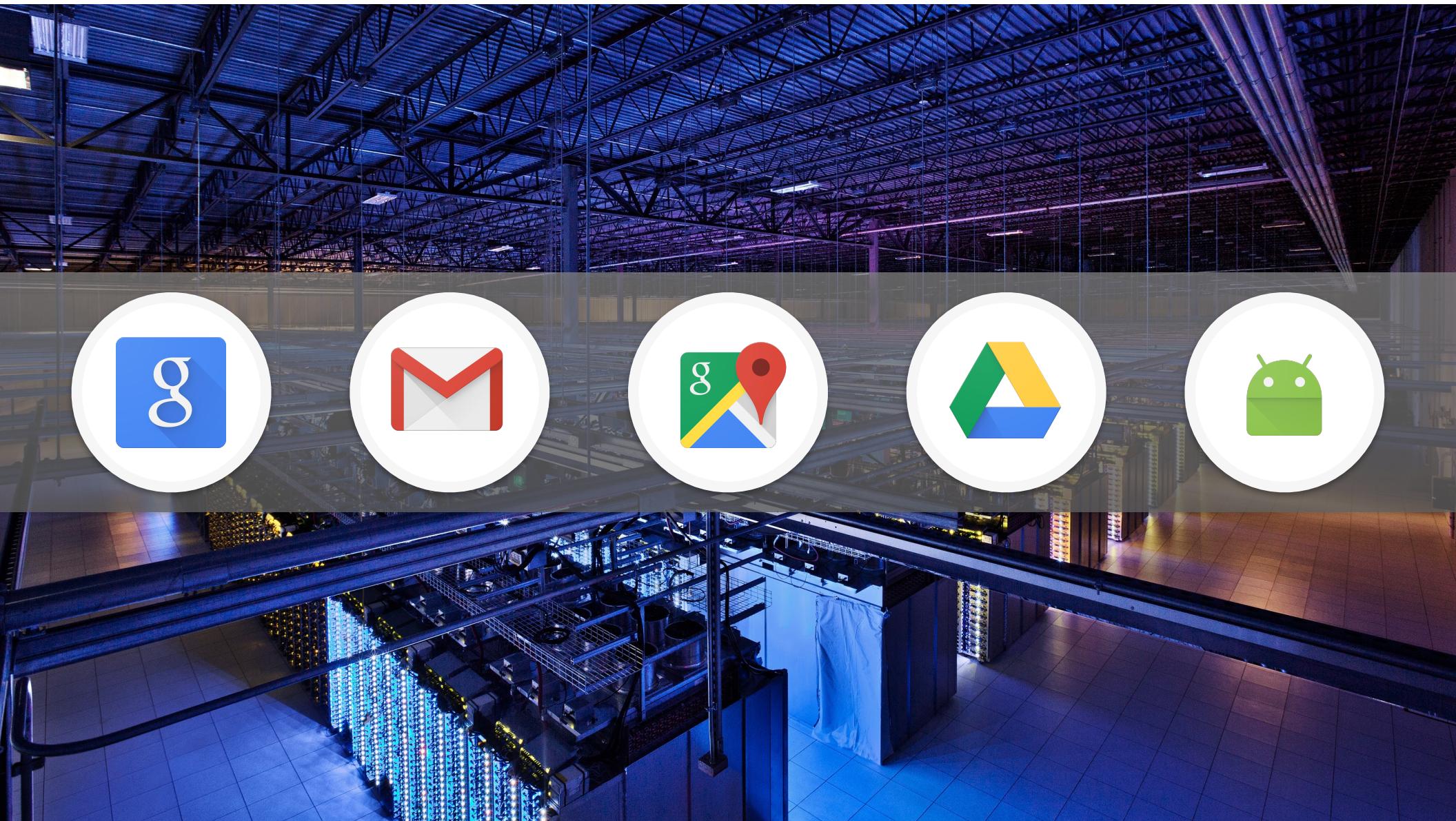
Google Search

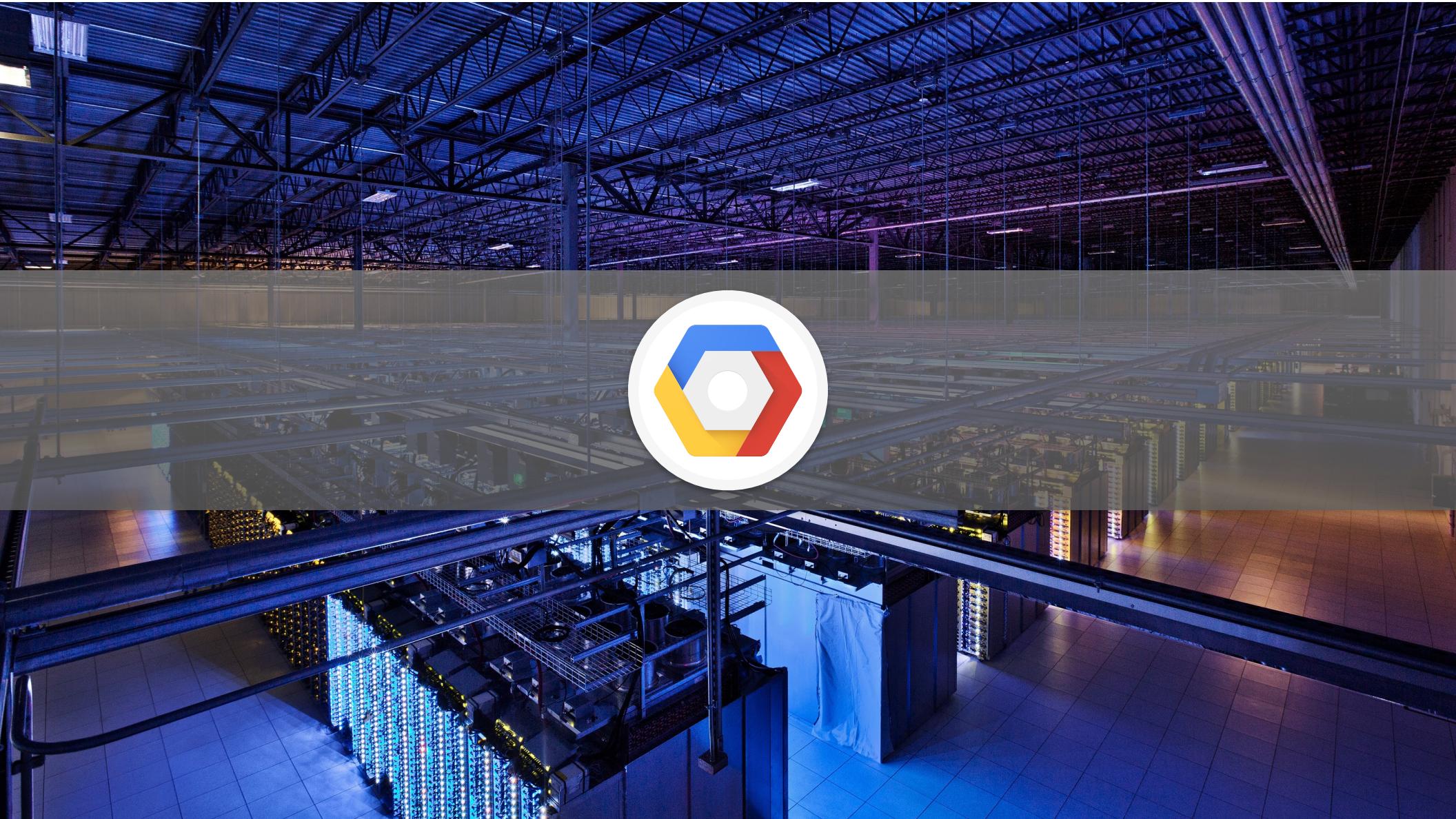
I'm Feeling Lucky



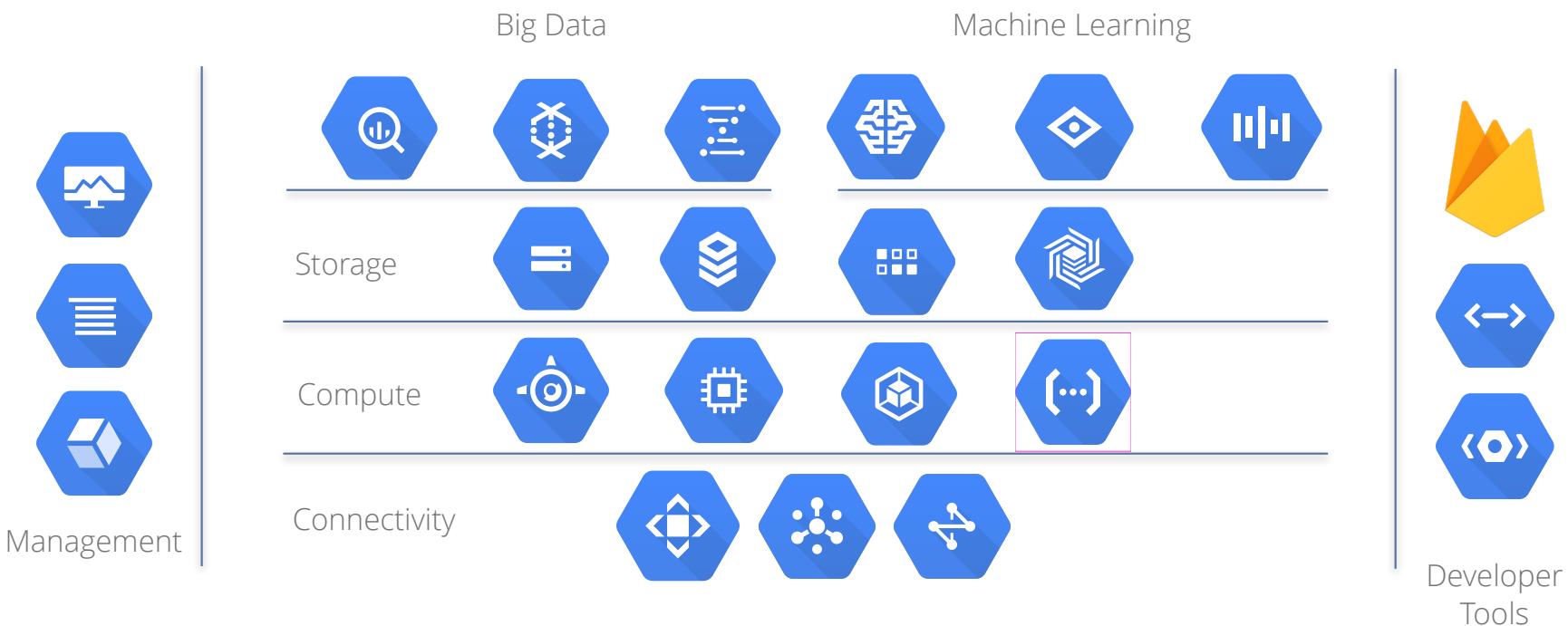
Google

Google Search I'm Feeling Lucky





# Google Cloud Platform



# Cloud Bingo

- Did we hit all of the buzzwords?
- Did we say “Cloud” Enough?



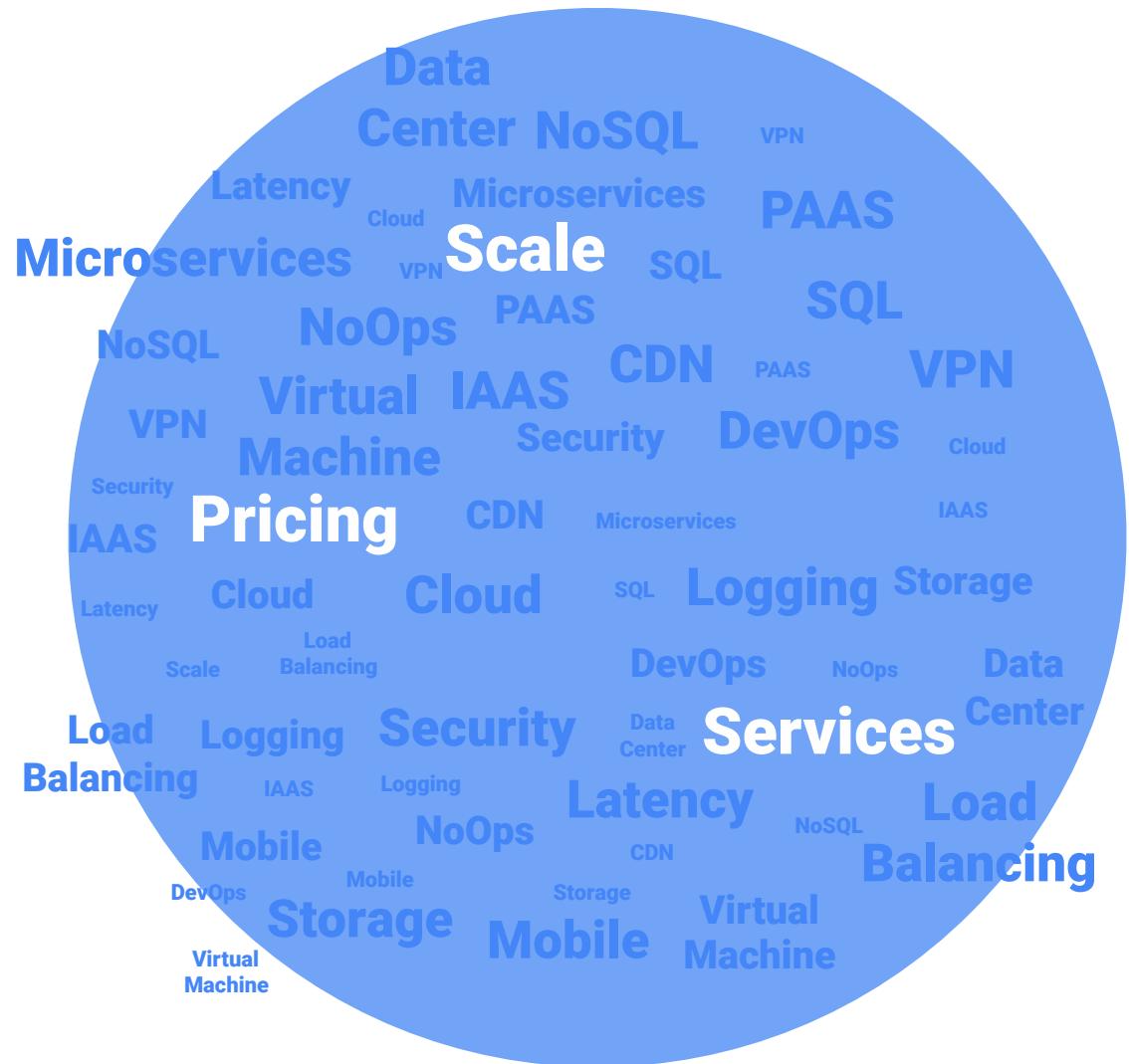
# What's the difference?



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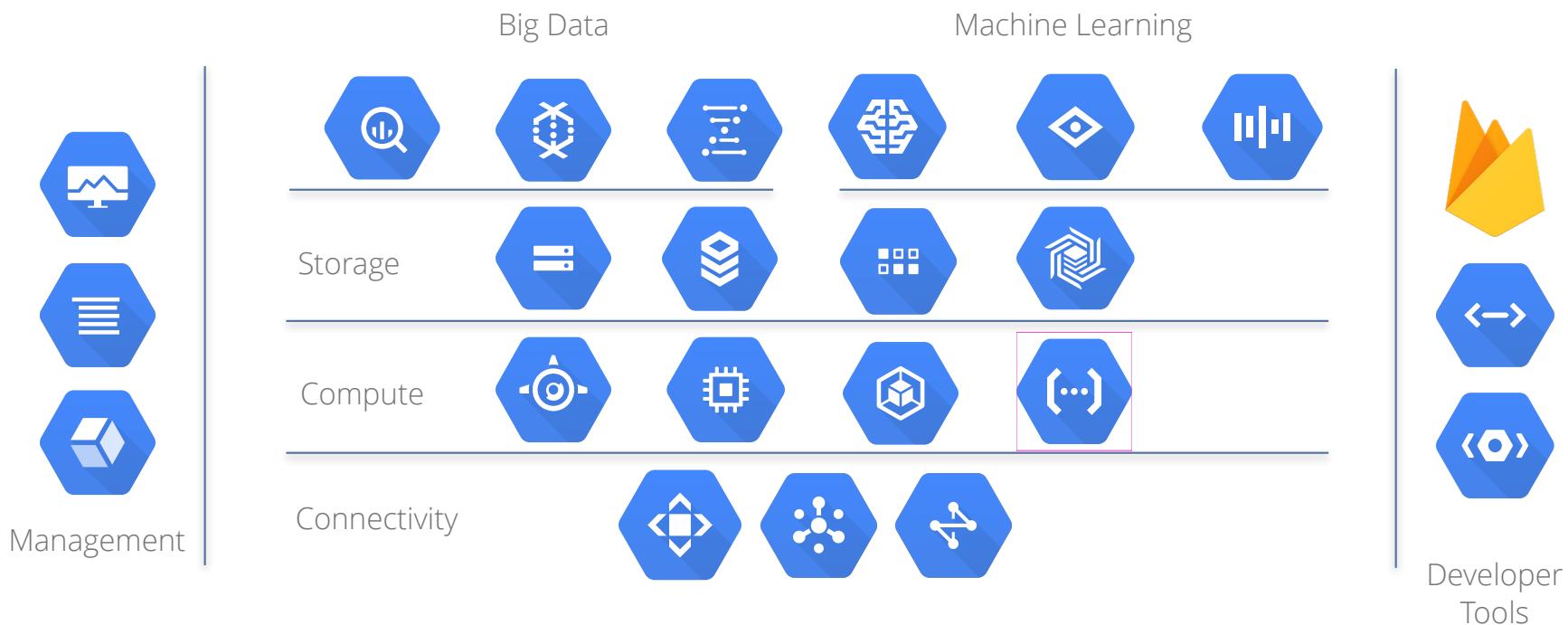
# Difference



# Google Cloud Platform

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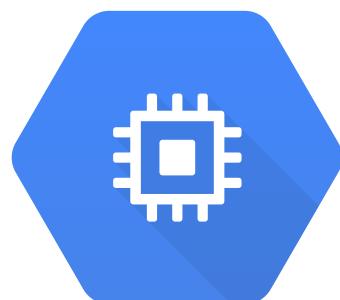
# Google Cloud Platform



# Highlight



App Engine



Compute  
Engine



BigQuery









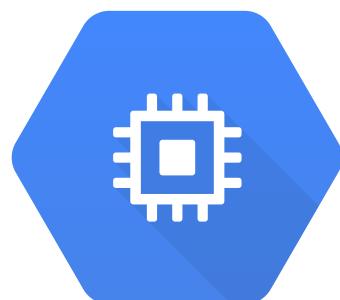




# Highlight



App Engine



Compute  
Engine



BigQuery



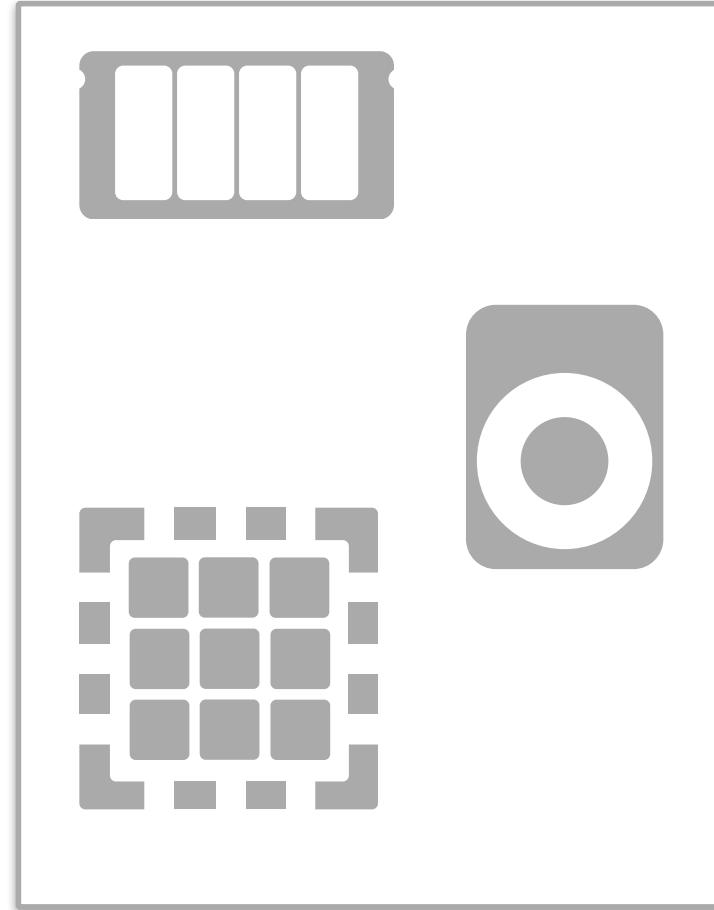


# 03 Compute Engine

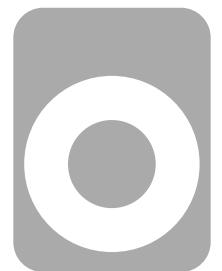
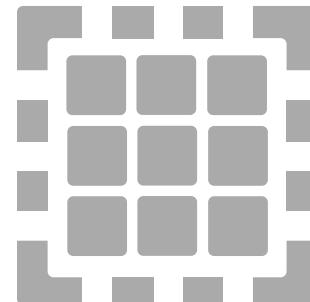
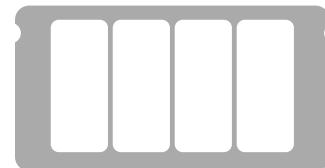
Infrastructure as a Service



# What is a computer?



# What is a Virtual Machine?



# GCE instances are better VMs



# GCE Instance are better

- Google Network
- Fast Spin up
- High Bandwidth
- Consistent
- Storage Options
  - Standard
  - SSD
  - Attached SSD



# Billing

- Per minute billing
- Sustained use discounts
- Preemptible VMs

Machine type	Virtual CPUs	Memory	GCEU <sup>1</sup>	Lowest price <sup>2</sup> (USD) per hour with full sustained usage	Typical price <sup>3</sup> (USD) per hour	Full price <sup>4</sup> (USD) per hour without sustained use	Preemptible price <sup>5</sup> (USD) per hour
n1-standard-1	1	3.75GB	2.75	\$0.035	\$0.038	\$0.050	\$0.015
n1-standard-2	2	7.5GB	5.50	\$0.070	\$0.076	\$0.100	\$0.030



# ML based usage alerts

Resolved: Overutilized VM instance

briandorsey-k8s :

Improve performance by changing the type of your virtual machine instance that needs more resources. [Learn more](#)  
May 29, 2016 at 11:00:18 PM UTC+9



Modify the instance type

```
$ gcloud compute instances stop ${instance_name} --zone ${zone} --project briandorsey-k8s
```



```
$ gcloud beta compute instances set-machine-type ${instance_name} --machine-type ${new_machine_type_name} --zone ${zone} --project briandorsey-k8s
```



```
$ gcloud compute instances start ${instance_name} --zone ${zone} --project briandorsey-k8s
```



Overutilized instance

Name	Zone	Current limits	Recommended machine type	Estimated additional costs per month
kube-relay	us-central1-f	f1-micro (1 vCPU, 614 MB)	g1-small (1 vCPU, 1.699 GB)	\$13.66



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**Markus Persson**

@notch

Follow

Not only does everything just WORK, Google Cloud also tries to make you save money. 5/5, would Cloud again.

Instance "webserver-1" is underutilized. You can save an estimated \$66 per month by switching to the machine type: custom (2 vCPUs, 5 GB memory). [Learn more](#)

[Dismiss](#)

RETWEETS

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LIKES

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6:24 AM - 12 Sep 2016



[131](#)

706

...

<https://twitter.com/notch/status/775324325855518720>



**Markus Persson** @notch · 14h

Of course, I'm not going to fall for this attempt to make me spend less money on them.



[17](#)

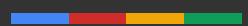
316

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Demo: Compute Engine Ease





# 02 App Engine

Platform as a Service



# App Engine

- Platform as a Service
- Built in services
- Auto Scaling
- Supports:



Python



Java



PHP



Go



Ruby



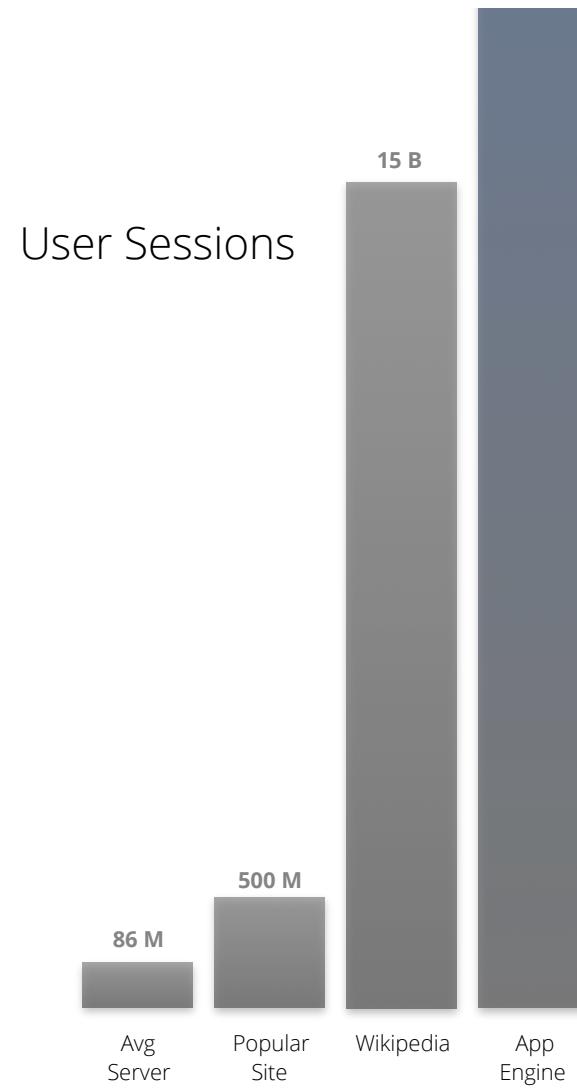
Node



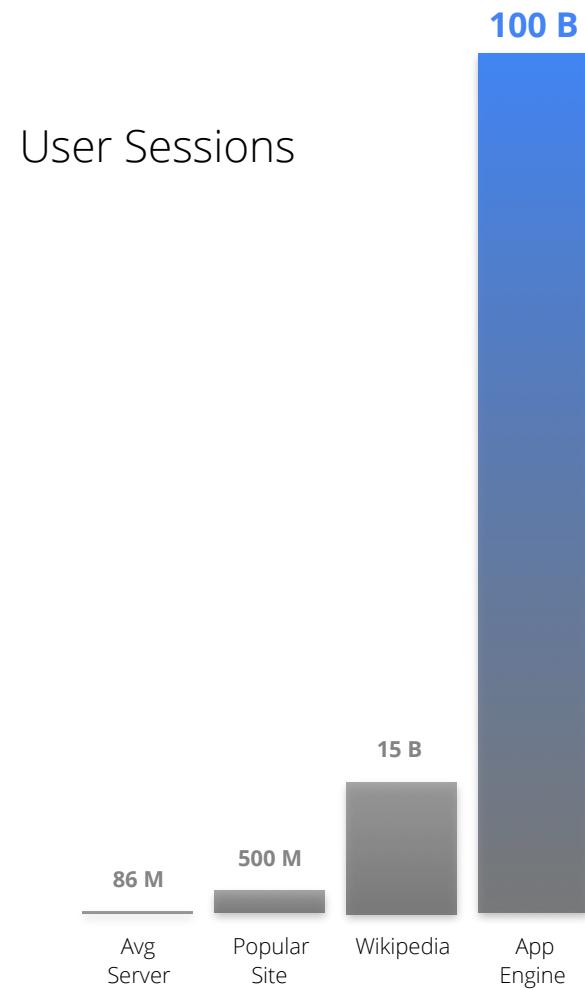
Containers



# App Engine



# App Engine



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# SongPop

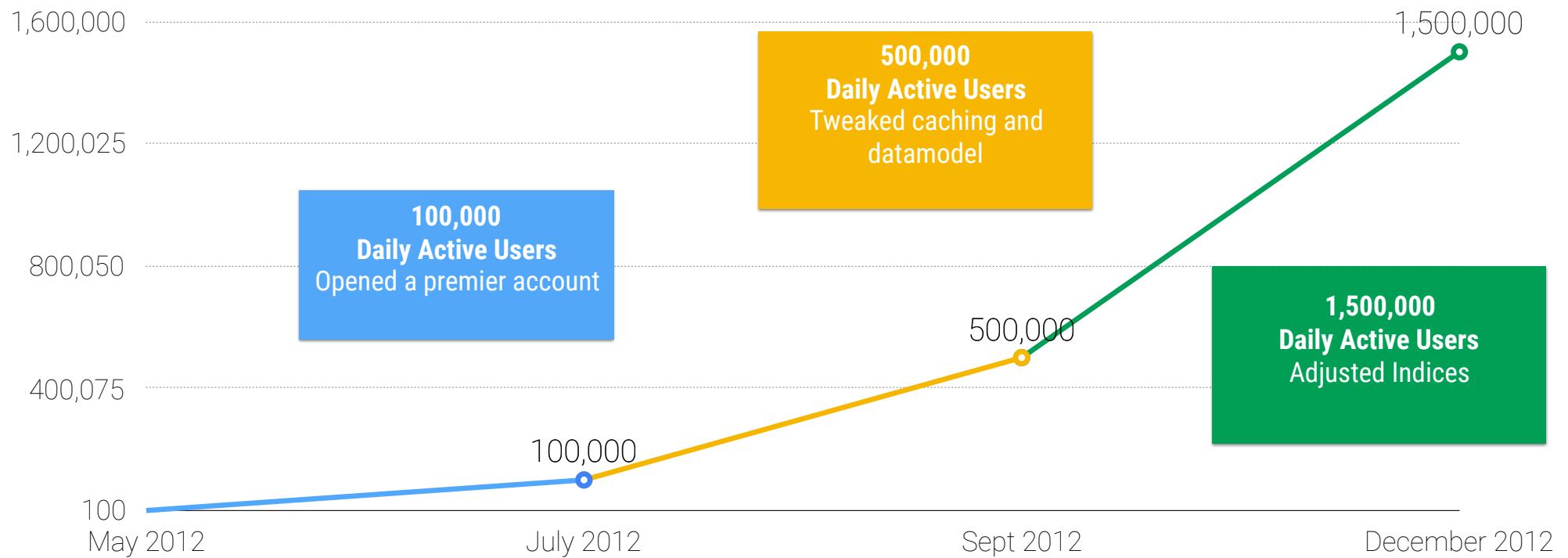
- Casual Game
- 6 Engineers



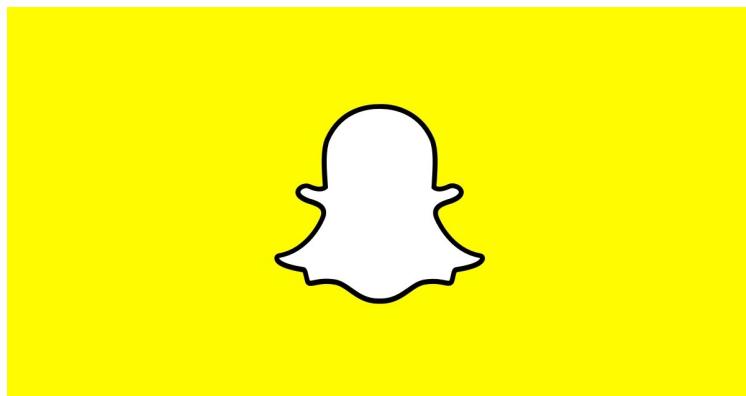
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# SongPop



I can haz moar Customers?

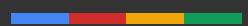


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## Demo: App Engine Scaling





# 04 BigQuery

BigData as a Service



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# Big Query

- Scan Terabytes in seconds
- Use SQLish Queries
- REST, Web UI, ODBC

The screenshot shows the Google BigQuery web interface. On the left, there's a sidebar with 'COMPOSE QUERY' and 'Query History' buttons, and a 'BigQuery Playground' section containing links to various datasets like 'freebase', 'showdown', 'wikipedia', etc. The main area contains a query editor with the following SQL code:

```
1 SELECT Sum(requests) as requests, title
2 FROM [wikipedia.usage2015]
3 WHERE source = 'en'
4 AND length(title) > 2
5
6
7 GROUP EACH BY title
8 ORDER BY requests desc
9 LIMIT 100;
```

Below the code are buttons for 'RUN QUERY', 'Save Query', 'Save View', 'Format Query', and 'Show Options'. A message box at the bottom says 'Query complete (36.3s elapsed, 1.13 TB processed)'. The results table shows 7 rows of data:

1	1842008162	Main_Page
2	58968979	Academy_Awards
3	48653503	Special:Search
4	28763595	File:Squeeze_down_in_the_valley.jpg
5	18607213	Malware
6	14461002	Special:HideBanners
7	8929399	Liberland

At the bottom, there are navigation links: 'First < Prev Rows 1-7 of 100 Next > Last'.

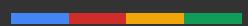


Google Cloud Platform

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Demo: BigQuery



# Count Shakespeare

```
SELECT count(word)  
FROM publicdata:samples.shakespeare
```



# Count to a Million

```
SELECT sum(requests) as total  
FROM [fh-bigquery:wikipedia.pagecounts_20151109_18]
```



# Count to a Billion

```
SELECT sum(requests) as total  
FROM [fh-bigquery:wikipedia.pagecounts_201505]
```



# Count to a Trillion

```
SELECT
    SUM(requests) AS total
FROM
    TABLE_QUERY(
        [fh-bigquery:wikipedia],
        'REGEXP_MATCH(
            table_id,
            r"pagecounts_201[3-4][0-9]{2}$$")')
```



# Run a RegEx on a Hundreds of Billions

```
SELECT
    SUM(requests) AS total
FROM
    TABLE_QUERY(
        [fh-bigquery:wikipedia],
        'REGEXP_MATCH(
            table_id,
            r"pagecounts_201[3-4][0-9]{2}$")
        ')
WHERE
    (REGEXP_MATCH(title, '.*[dD]inosaur.*'))
```



Awesome-sauce bonus round

## Tabs vs Spaces on Github

1 Billion files  
14 Terabytes of Code

<https://medium.com/@hoffa/400-000-github-repositories-1-billion-files-14-terabytes-of-code-spaces-or-tabs-7cfe0b5dd7fd>



# Rules

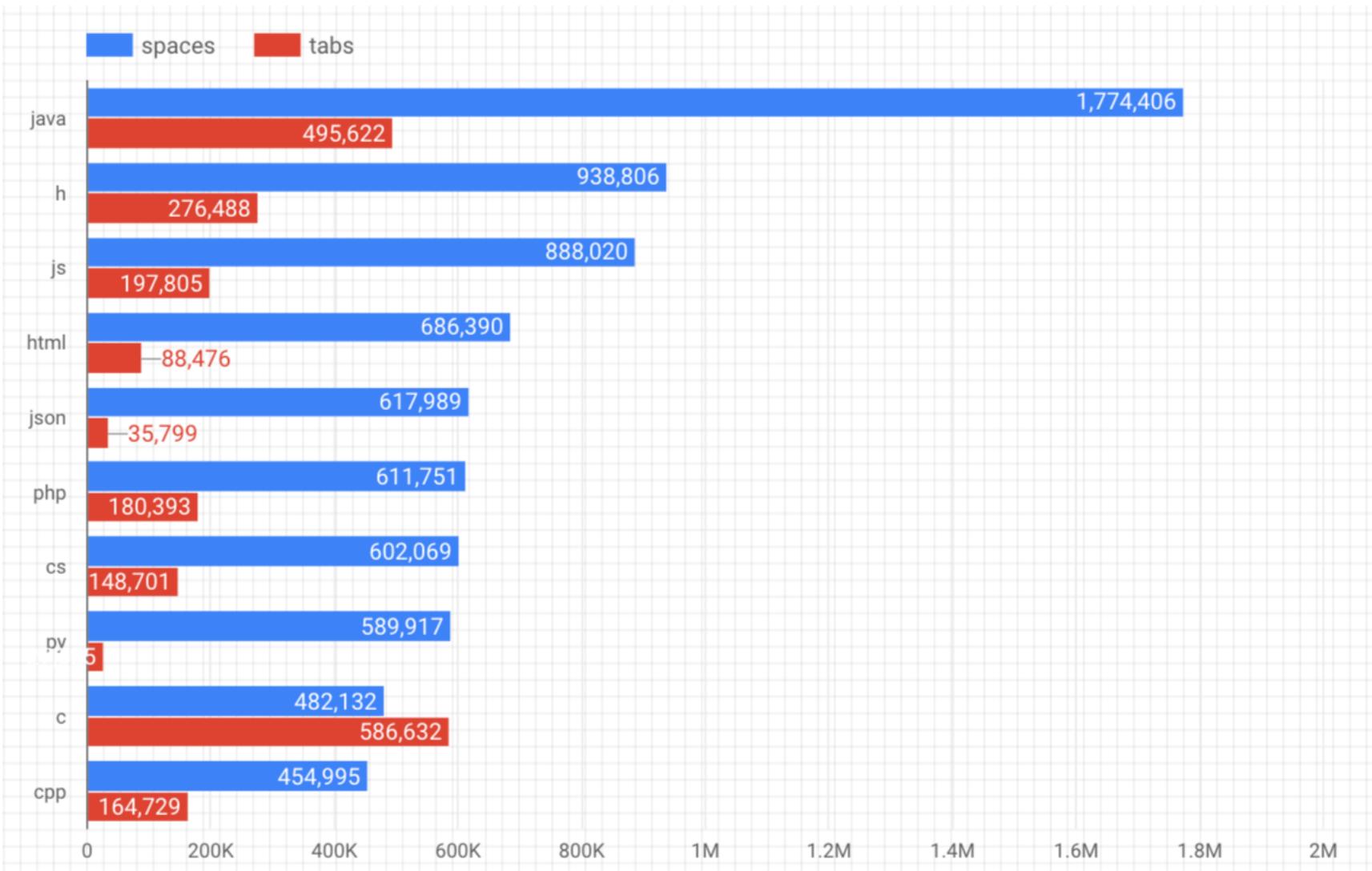
- Data source: GitHub files, stored in BigQuery.
- Stars matter: The top 400,000 repositories during the period Jan-May 2016.
- No small files: Files need to have at least 10 lines
- No duplicates: Duplicate files only have one vote
- One vote per file: Some files use a mix. Take the majority.
- 10 Top languages: .java, .h, .js, .c, .php, .html, .cs, .json, .py, .cpp, .xml, .rb, .cc, .go



# Long queries are long

```
SELECT ext, tabs, spaces, countext, LOG((spaces+1)/(tabs+1)) lratio
FROM (
  SELECT REGEXP_EXTRACT(sample_path, r'\.([^\.]*$)') ext,
         SUM(best='tab') tabs, SUM(best='space') spaces,
         COUNT(*) countext
  FROM (
    SELECT sample_path, sample_repo_name, IF(SUM(line=' ')>SUM(line='\t'), 'space', 'tab')
  WITHIN RECORD best,
         COUNT(line) WITHIN RECORD c
  FROM (
    SELECT LEFT(SPLIT(content, '\n'), 1) line, sample_path, sample_repo_name
    FROM [fh-bigquery:github_extracts.contents_top_repos_top_langs]
    HAVING REGEXP_MATCH(line, r'[\t]')
  )
  HAVING c>10 # at least 10 lines that start with space or tab
)
GROUP BY ext
)
ORDER BY countext DESC
LIMIT 100
```







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- Tech talks

- Codelabs

- Mentor hours

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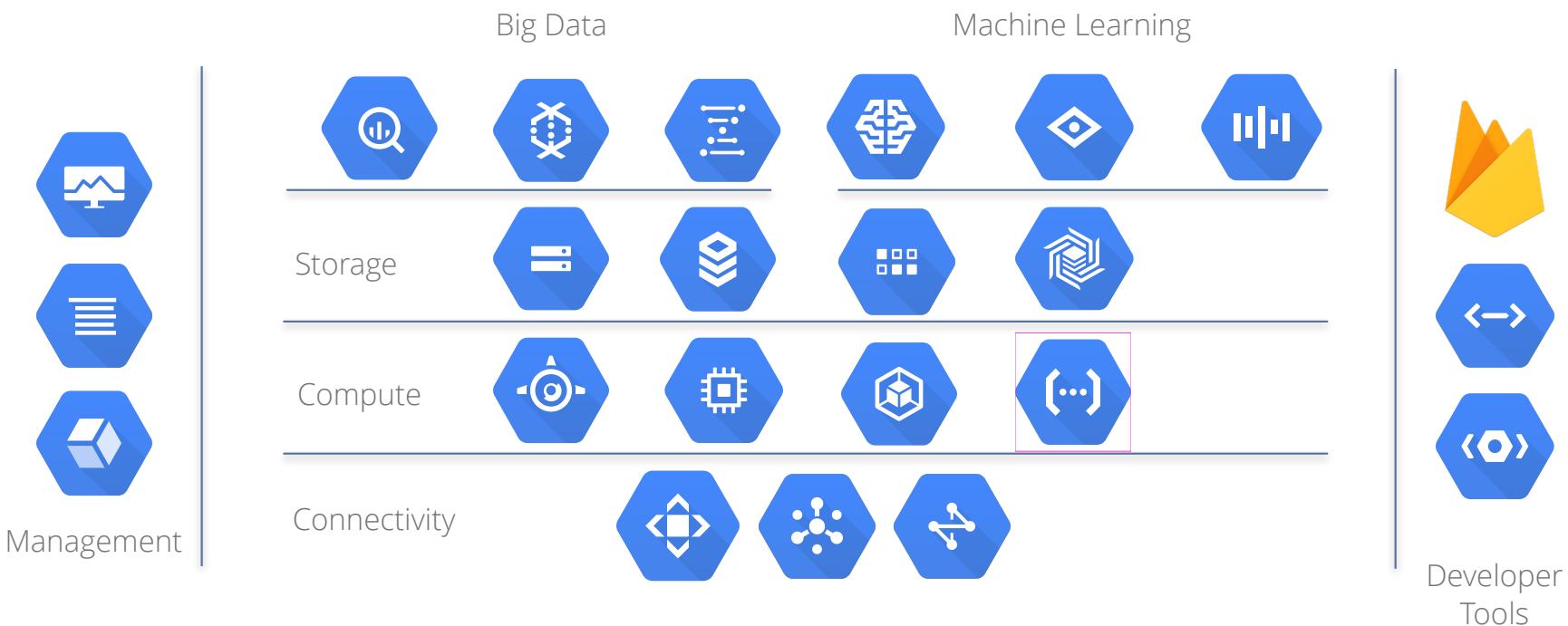


# 05 Conclusions

Bringing it home



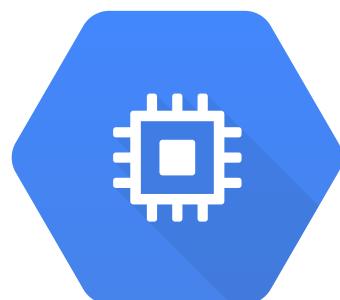
# Google Cloud Platform



# Story



App Engine



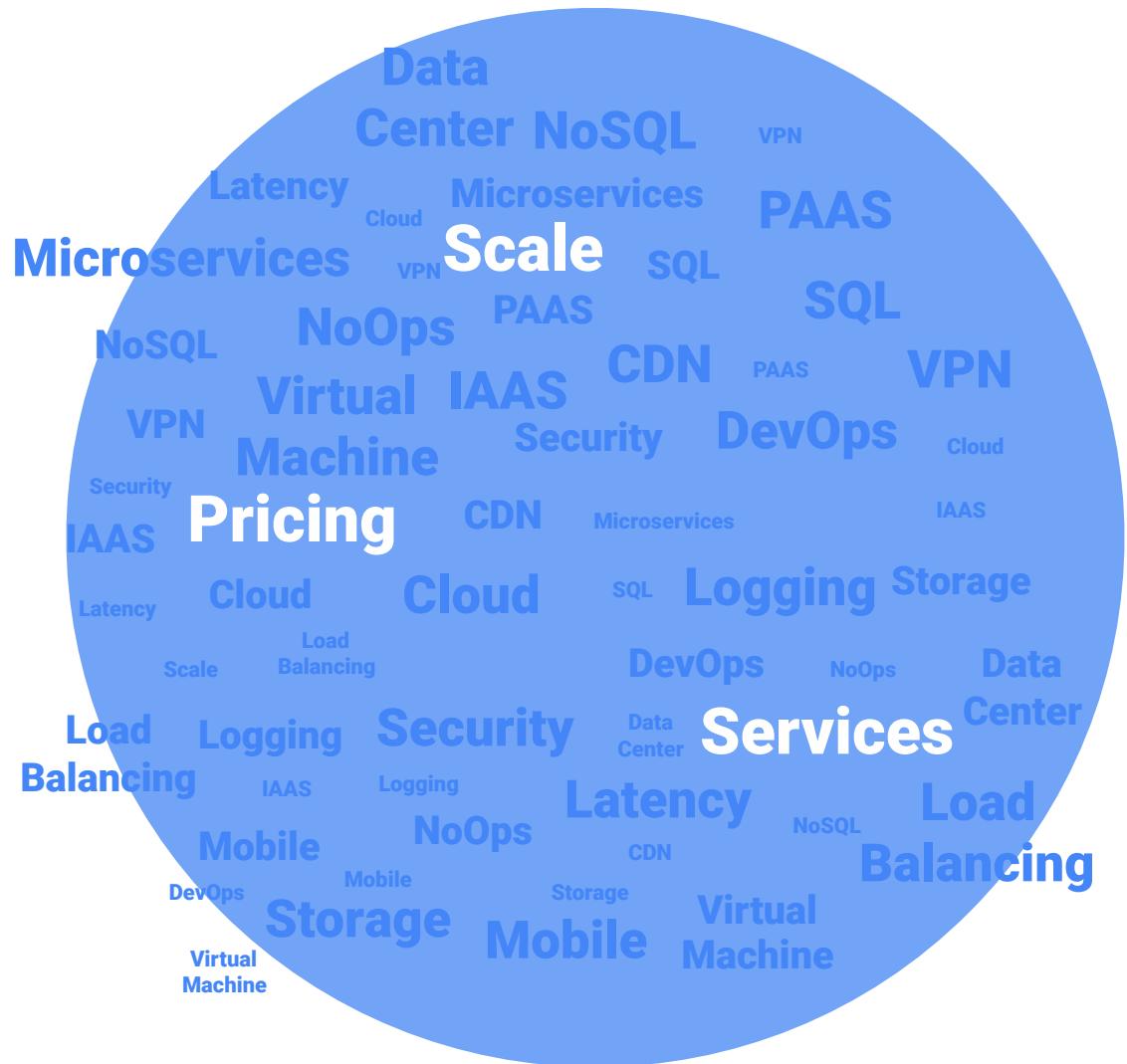
Compute  
Engine



BigQuery



# Difference



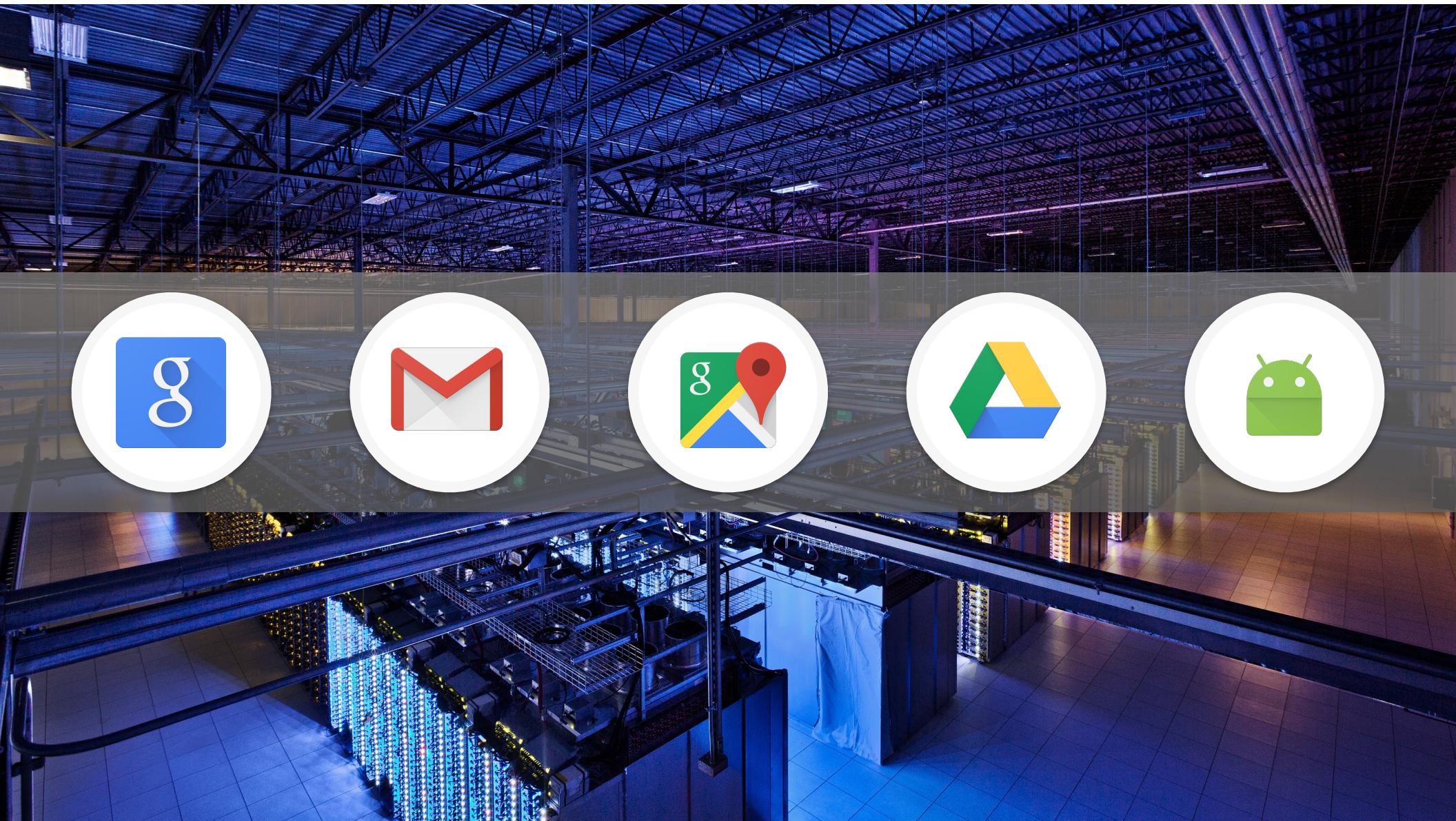
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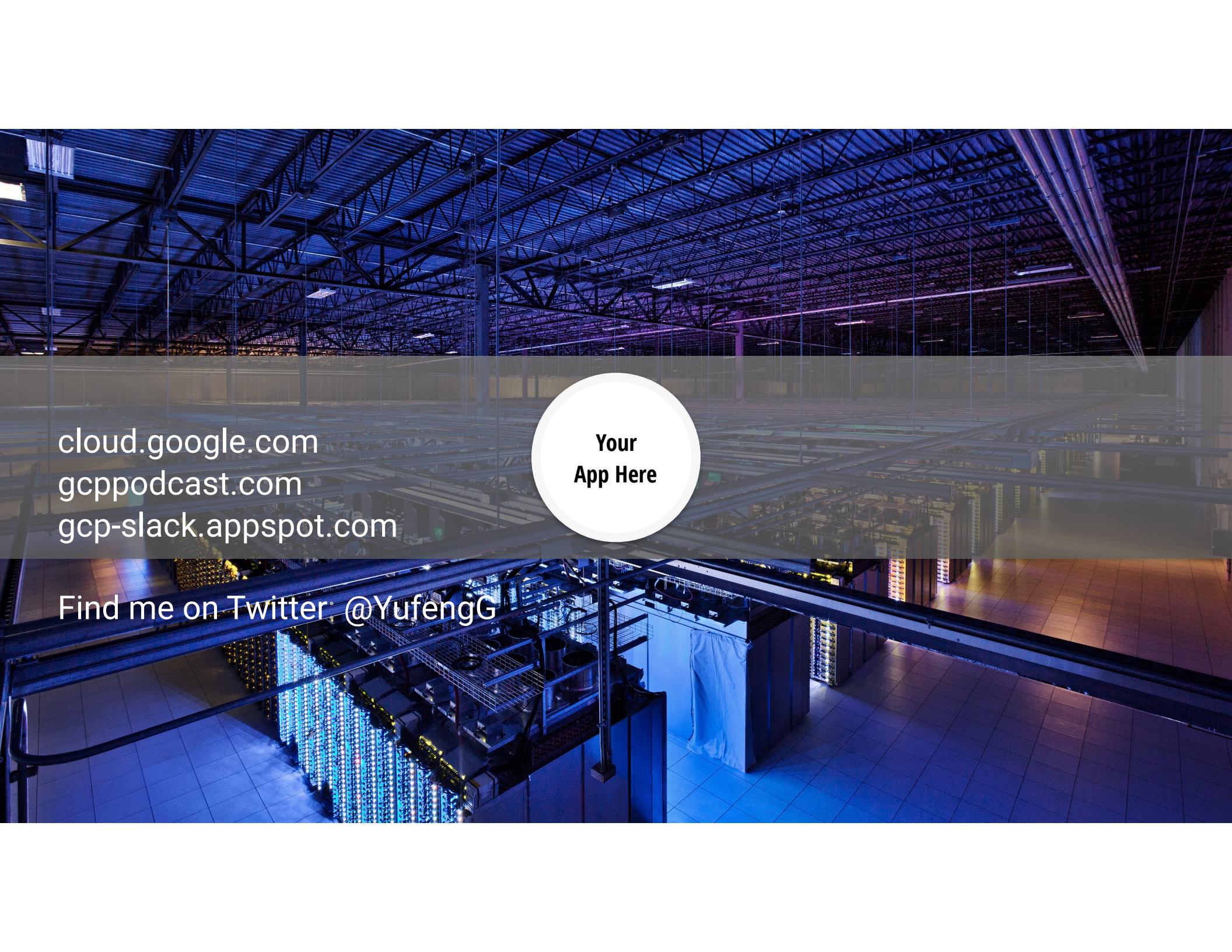
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# Many Clouds









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gcppodcast.com  
gcp-slack.appspot.com

Your  
App Here

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# Next Steps

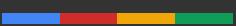
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[gcppodcast.com](http://gcppodcast.com)

[gcp-slack.appspot.com](http://gcp-slack.appspot.com)



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# Thank You

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