
Google
Developers

Entrepreneurship, HTML5 and Google Cloud Platform

Google™ 12

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Google I/O 12

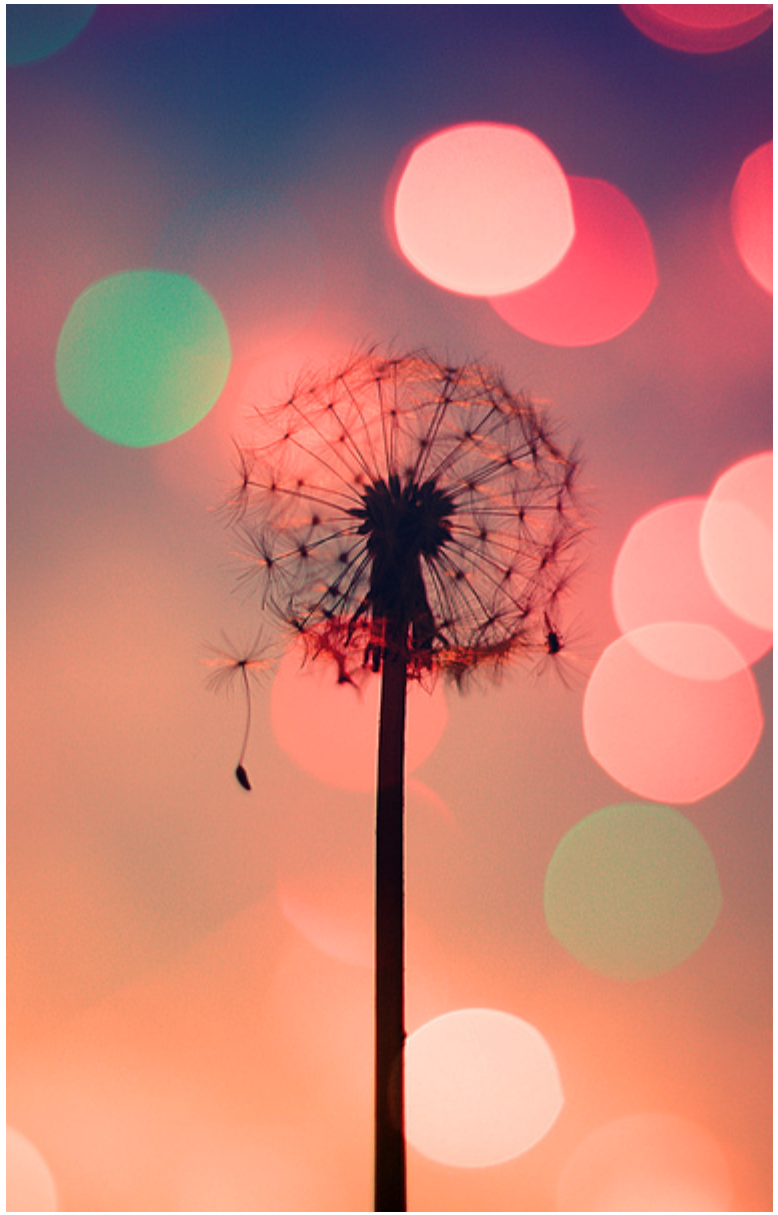
Entrepreneurship

Entrepreneur

A person who organizes and operates a business or businesses, taking on greater than normal financial risks in order to do so.

How To Move The Needle?

- **Focus - Focus - Focus**
- **Passion**
- **Execution**
- Plan and have clear strategy
- Find good/great advisors and be willing to listen



Keep in mind

- **Companies are doing things in an efficient way.**
- Technology is (almost) comodety
- Competition is everywhere
- Real need / Nice to have

Google Cloud Platform

Why Google Cloud?

Improve Business Focus
Concentrate on your core mission

Cost Savings

Save on capital
and operational costs

Powerful Infrastructure

Leverage massive, scalable computing power

Why Google Cloud?

Improve Business Focus

Concentrate on your core mission

"If we didn't have Google App Engine, **we'd be spending a lot more time figuring out server setup** and working on routers. Our ability to focus on the actual product is the benefit of Google App Engine." – *Ben Kamens, Lead Developer, Khan Academy*

- Costly and complex to plan, manage infrastructure
- Stay focused on your core business
- Improve developer efficiency, time-to-market

Why Google Cloud?

Cost Savings

Save on capital, operational, personnel costs

"Rather than building your own infrastructure and taking time and resources away from your company, you can use Google's infrastructure and know that **it's scalable and secure**." *– Brigitte Ganter, Director of Product, DNAnexus*

Offload software, hardware, engineering costs

No up-front expenditure

Pay for actual usage, not peak or potential capacity

Why Google Cloud?

Powerful Infrastructure

Leverage massive, scalable computing

"Using Google App Engine and Google Cloud SQL make our applications go live in half the time and have provided us with **hassle-free control over all processes**." –
Yogesh Agarwal, CEO, Daffodil Software

Tried and true global infrastructure

Leverage Google's innovation

Scalable, reliable and secure with an Enterprise SLA

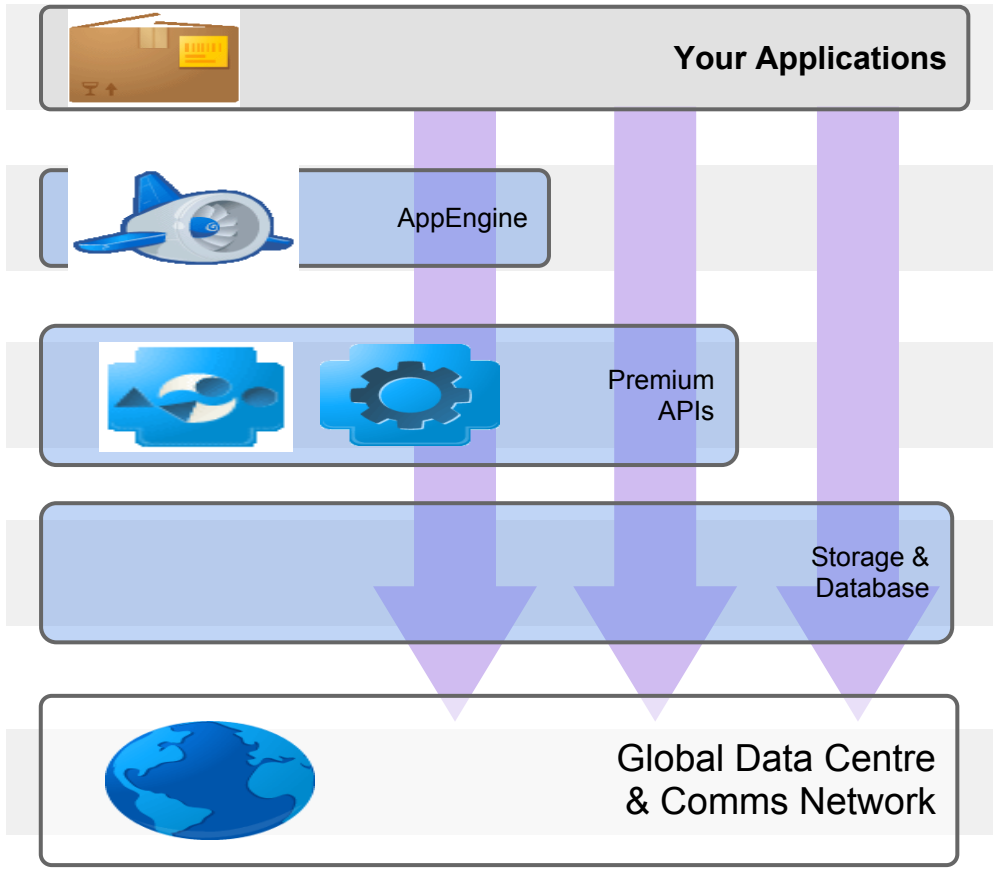
Integrated Platform

Google Cloud Platform:

an integrated collection of
infrastructure, platform and data services.

Build and run your applications, store and analyze your data.

**Leveraging
Google's Platform**



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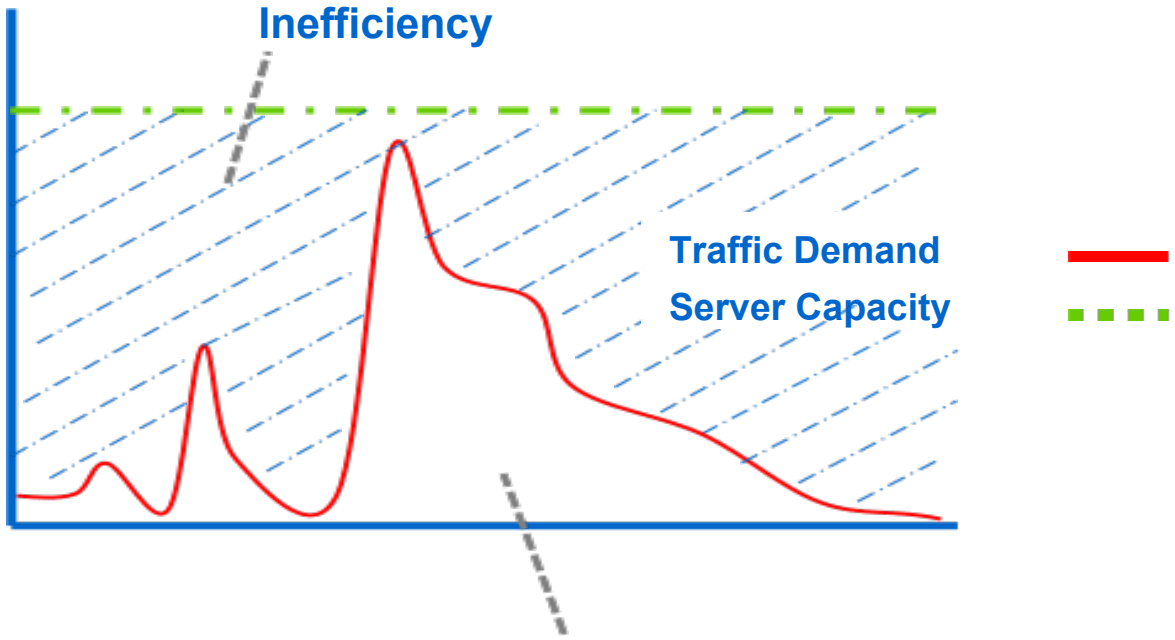
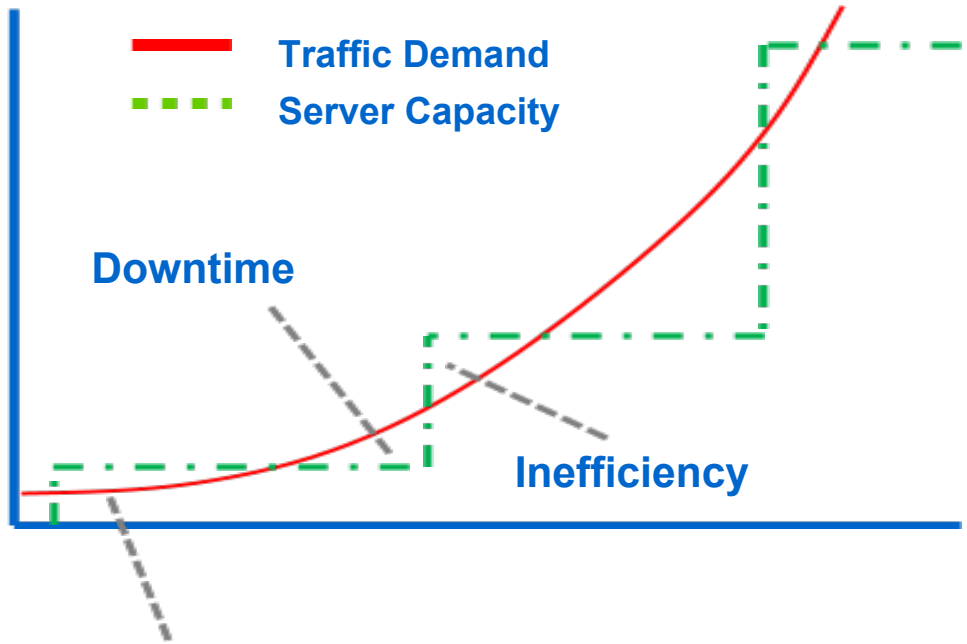
Hosting Challenges

Volatile Demand Fluctuation



With App Engine
only pay for what you use

Steady Demand Growth



With App Engine
scale with efficiency and reliability

Product Summary

Google™

Google App Engine
Powerful, scalable application development and execution environment.

Google Cloud Storage
Store, access, and manage your data.

Google Big Query
Analyze terabytes of data in seconds.

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Product Summary

Google Cloud SQL
Familiar relational database, with cloud benefits.

Google Translate API
Reach global audience with zero effort

Google Prediction API
Understand and leverage your data for business insight

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Google App Engine

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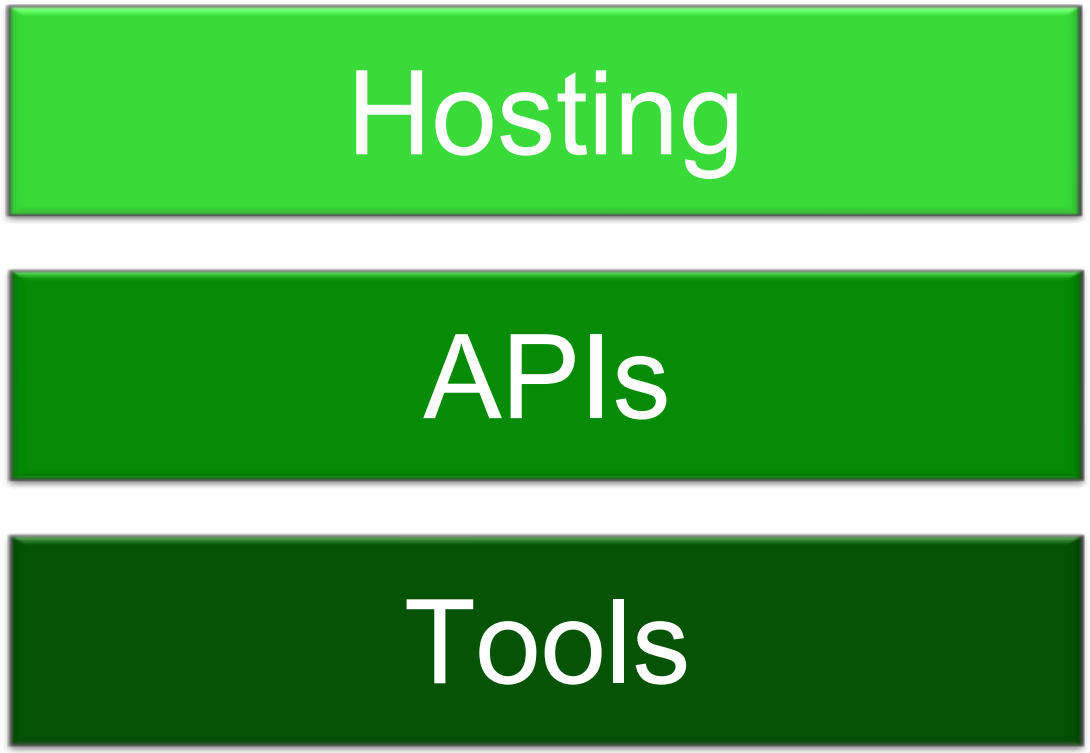
Full Development Platform



App Engine helps reduce development time and speeds time to market.

- Easy to build
- Easy to manage
- Easy to scale

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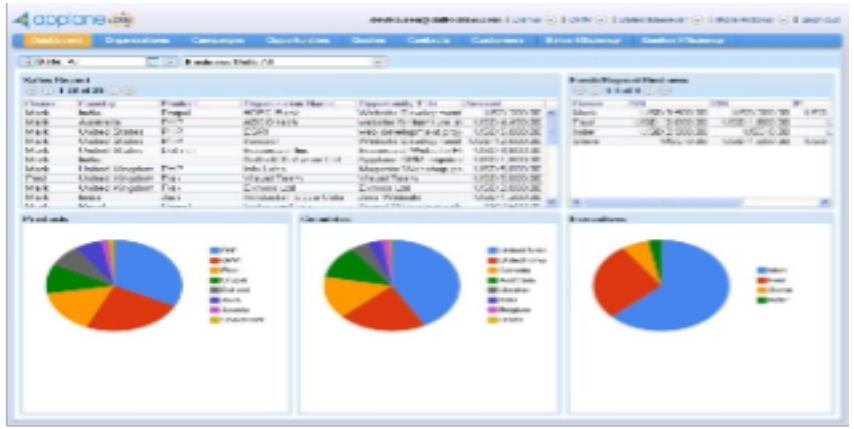
Diverse Use Cases

Website Hosting

- Reach global audiences with ease
- Efficiently handle heavy, variable, or unpredictable load
- Serve dynamic content based on business logic

Enterprise Applications

- Intranet, extranet applications
- Integrate with existing investments
- Scale geographically on demand with no extra effort



App Engine Model

Three Execution Environments

Diversity to meet all application development needs

Front-end

short-lived request handling
(30s limit)

Task queues

Background tasks and scheduled events

(10 min limit)

Back-end

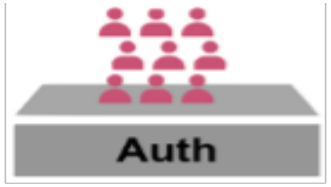
Long-running computation
(no time limits, more resource allocation)

Rich APIs

App Engine APIs

- Datastore: schemaless object store (high replication)
- Cloud SQL: fully managed SQL database
- Blobstore: large object blob storage
- Memcache: distributed in-memory data cache
- Multitenancy: segregate data to serve multiple customers with one application

- URL Fetch: high-performance http/https requests
- XMPP: connect to chat services
- Channel API: persistent connections with other applications
- Mail: send -- and receive -- email



- Users API: integrate with Google Accounts -- including enterprise Google Apps
- OAuth: industry standard authentication

... and more!

Rich APIs

- And other Google APIs
  - Platform: storage, SQL, language, prediction...
  - Apps: email, calendaring, productivity and collaboration for your enterprise
  - Maps: rich geo-location data and mapping

- And your own APIs
  - Connect to any web service
  - Access your existing investments using the Secure Data Connector

Google Cloud Storage

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Storage Challenges

Purchase

Maintain

Patch

Fix

Replication?

Location?

Disaster recovery?

Performance?

Google Cloud Storage

Google™

Speed

Global Network
Lowest latency for rapid access

Data Center Efficiency
Maximal service at critical need

Reliability

World-Class Reliability
99.9% SLA

Availability of your Data
Read-Your-Write-Consistency

Scalability

Unlimited Objects
There is no limit to # objects

Big Object Size
Up to 5 Terabytes per object

Uses

Content Delivery & File Sharing

Active Archiving

Application Storage

Computation

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Data Collaboration

Google

Control and Share Data

- User and Group ACLs
- Authenticated and anonymous browser-based downloads
- OAuth 2.0
  - Widely adopted open standard
  - Authorize web apps without sharing login/password
  - Authorize different apps with separate tokens
  - No request signing needed
- Share with anyone, anywhere

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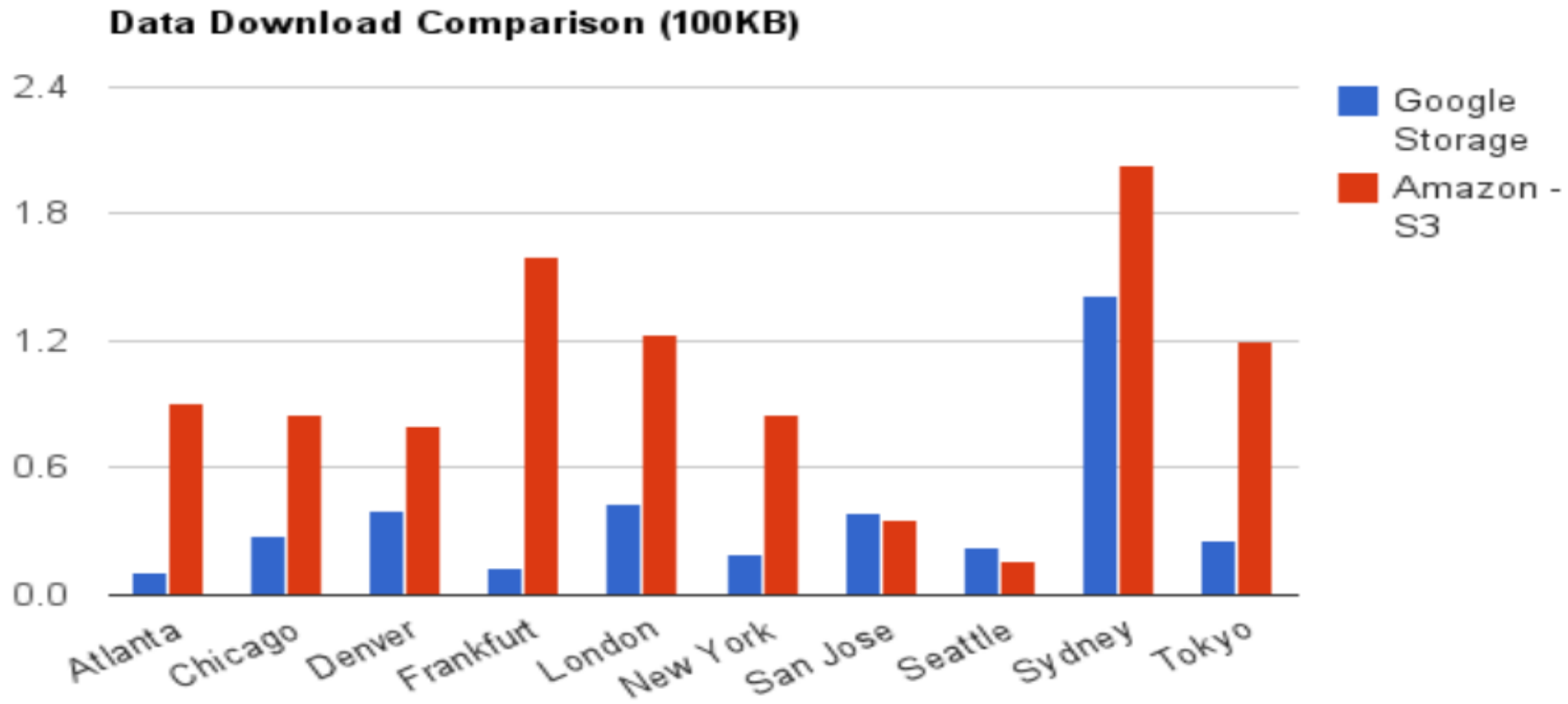
Global, Scalable Infrastructure Google™

Less is more



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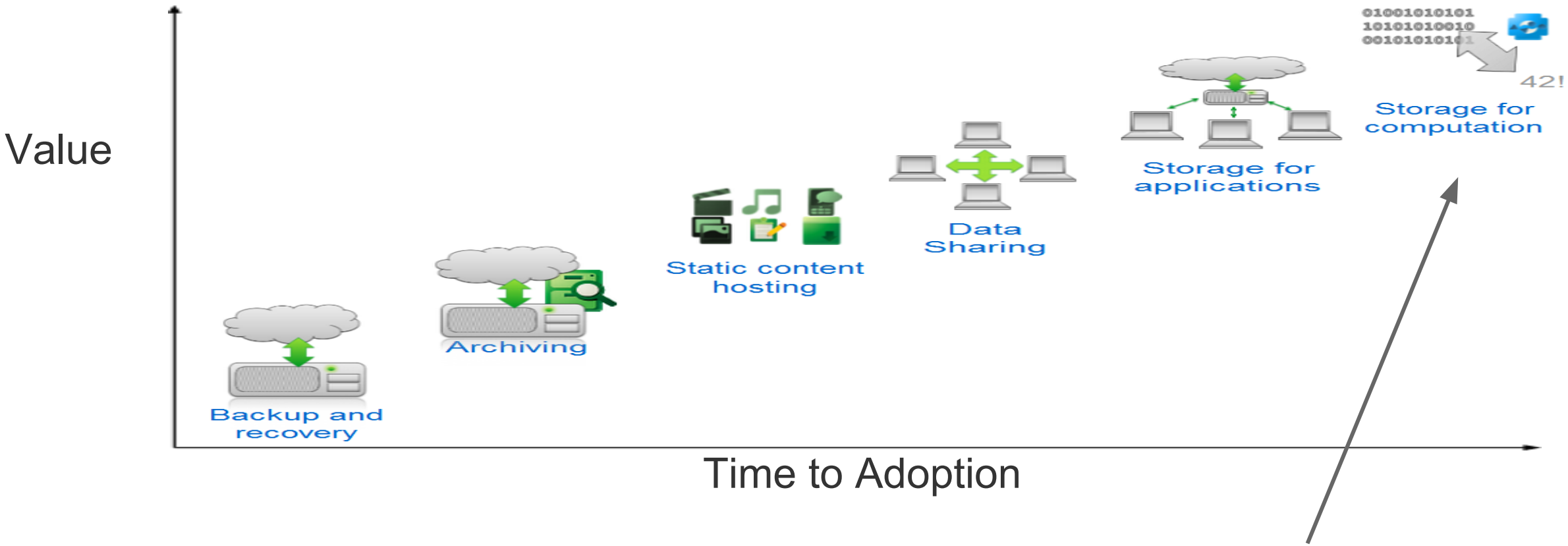
Use Cases



Analyze terabytes of data with just a click of a button

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Google Big Query

Compose Query

```
SELECT timestamp, title, COUNT(*) as cnt
FROM publicdata:samples.wikipedia
WHERE LOWER(title) CONTAINS 'speed' AND wp_namespace = 0
GROUP BY title, timestamp ORDER BY cnt DESC LIMIT 20;
```

RUN QUERY Query complete (4.1s elapsed, 11.5 GB processed)

Query Results

Download as CSV Save as Table

Row	timestamp	title	cnt
1	1196276720	New Hampshire Motor Speedway	2
2	1187028345	Speedway World Team Cup	2
3	1043861144	Speed of gravity	2

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Instant Data Analysis

Google™

"a few seconds"

Billions of rows of data → Google BigQuery → **Analysis**

Interactive Tools

Spam

Trends Detection

Web Dashboards

Network Optimization

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Google Premium APIs

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Google Prediction API

Google

Classify, predict, and find patterns in data

Inputs → Predictive Model → **Output**

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Google Prediction API

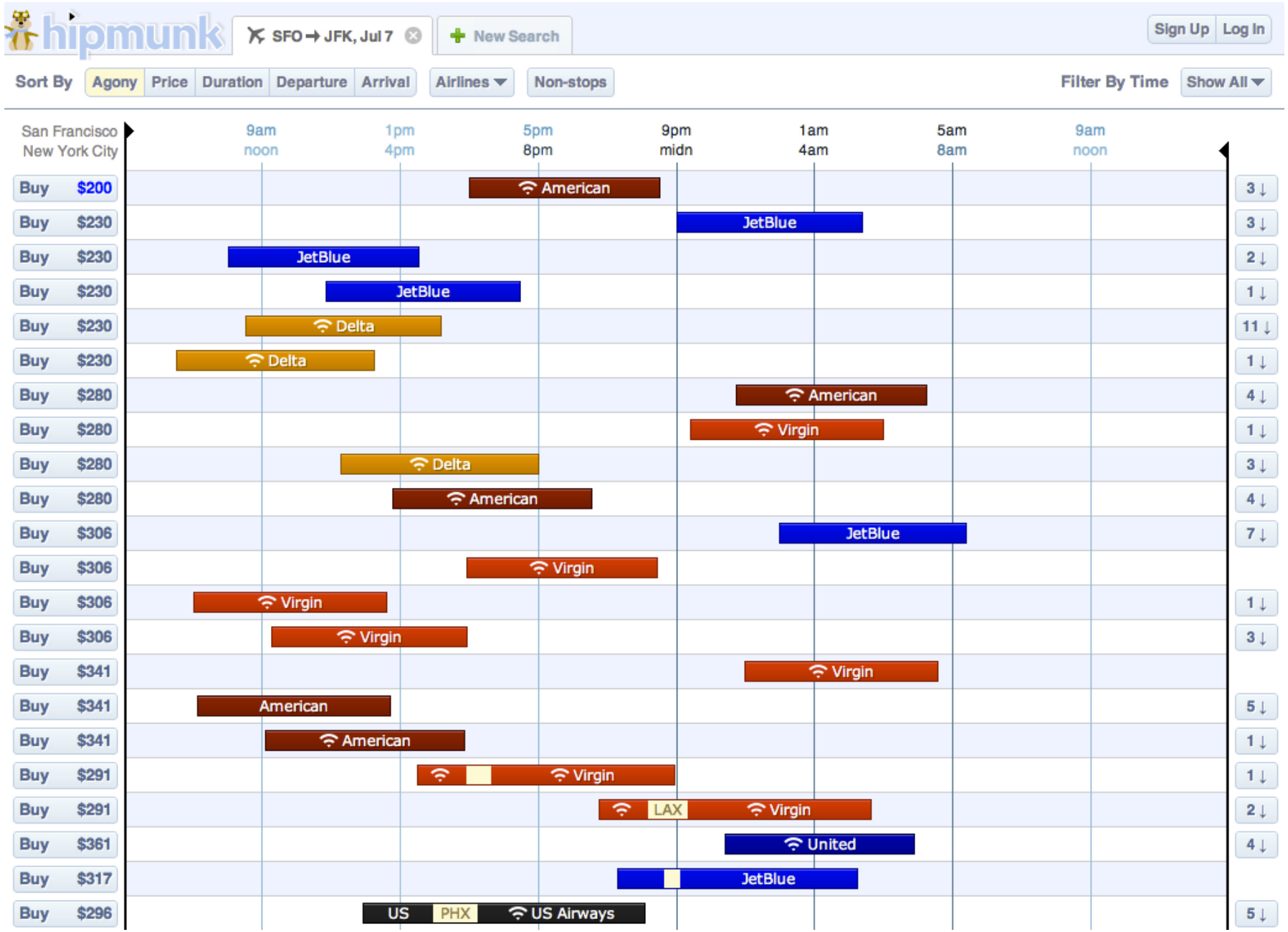
Machine learning in 4 simple steps:

1. Create training data
2. Upload data
3. Run Prediction API against data
4. Issue prediction queries
    - Optionally, send additional data

Modern Web Applications

Modern Web Applications

- Self Contained & Functional
- "Offline First"
- Client Side Architecture & MVC Frameworks
- Device Aware / 60fps



http://goo.gl/5cJwH

#io12

My Chrome Theme

chrome | 1. Import your image | 2. Add some color | 3. Install & share

Create your own Chrome theme

Add a personal touch to your browser. Build and share custom Google Chrome themes with your own photos and designs in just three simple steps.

START MAKING THEME >

FIND MORE THEMES IN THE CHROME WEB STORE

© Google Privacy Policy

Share: +1 8k

http://goo.gl/Y6AG1

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Client Side Frameworks

- Ember.js - Don't waste time making trivial choices
- Backbone.js - Gives structure to web applications by providing models with binding, collections and views
- Angular.js - AngularJS lets you extend HTML vocabulary for your application

More: addyosmani.github.com/todomvc/

Offline - Why?

- Airplane, road trip, deserted island
- Flaky connections (e.g. cafes, car)
- Better performance
- Consolidates the concept of permanent app you will have always available

* We will use: Lawnchair for our demo.

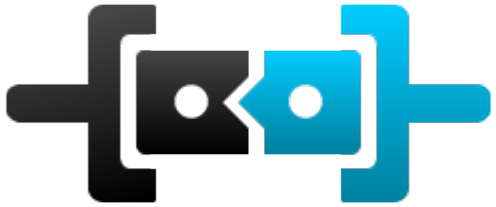
Offline - How?

- Storing assets: AppCache
- Storing data: localStorage, IndexedDB, File API.
- Offline first:
  - Pretend that there's no internet connection
  - Implement a sync layer that works only when online.

```
navigator.onLine & window.(ononline|onoffline)
```

Do More For Your Users

Web Intents is a framework for client-side service discovery and inter-application communication



Google Chrome Frame

Chrome Frame is an open source plug-in that seamlessly brings Google Chrome's open web technologies and speedy JavaScript engine to IE

```
<meta http-equiv="X-UA-Compatible"
content="chrome=1">
```

```
X-UA-Compatible: chrome=1
```

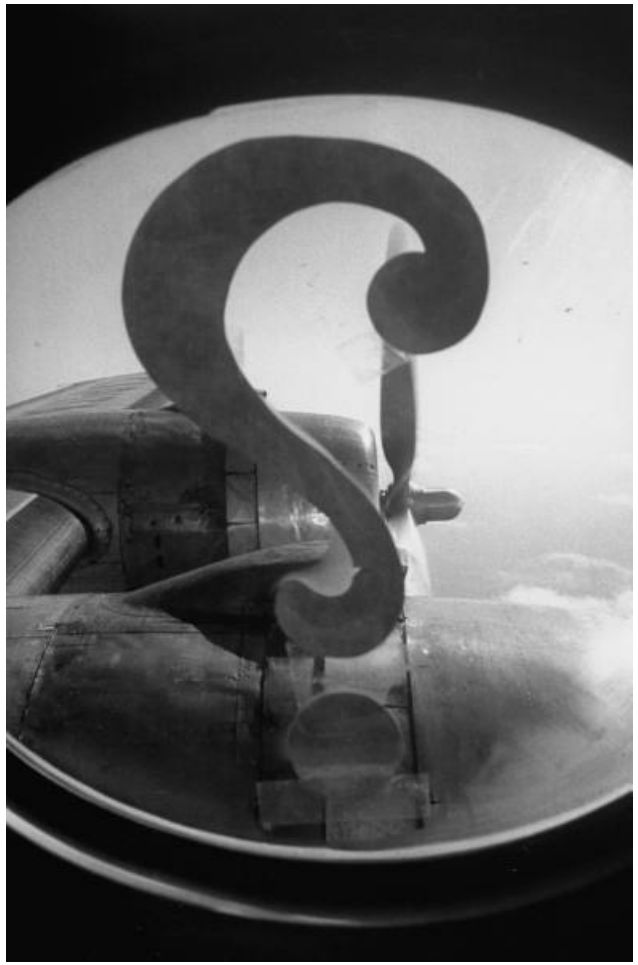
Modern Web Apps and The Server Conundrum

All modern web apps have to deal with a "home" server

- Offload Computation
- Sharing and Collaboration

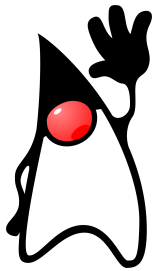
But who wants to run a server

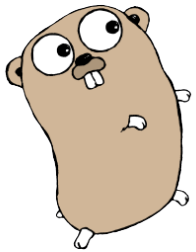
- Spikey traffic
- Client Server communication
- Serialization
- OAuth Dance



App engine to the rescue

- Make it easy to build
- Easy to run and manage
- Easy to scale
- Free to get started, pay for what you use
- Not just for web serving, but also data persistence





python™

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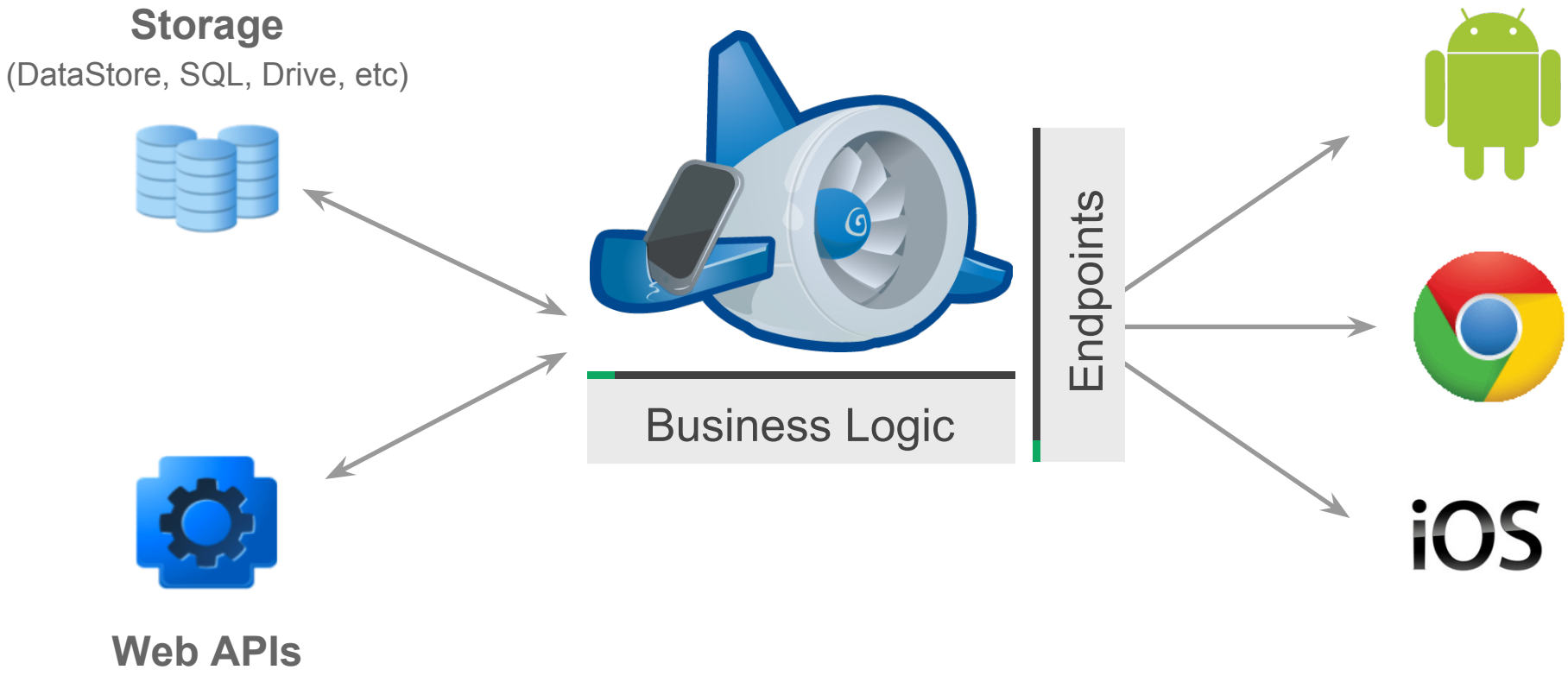
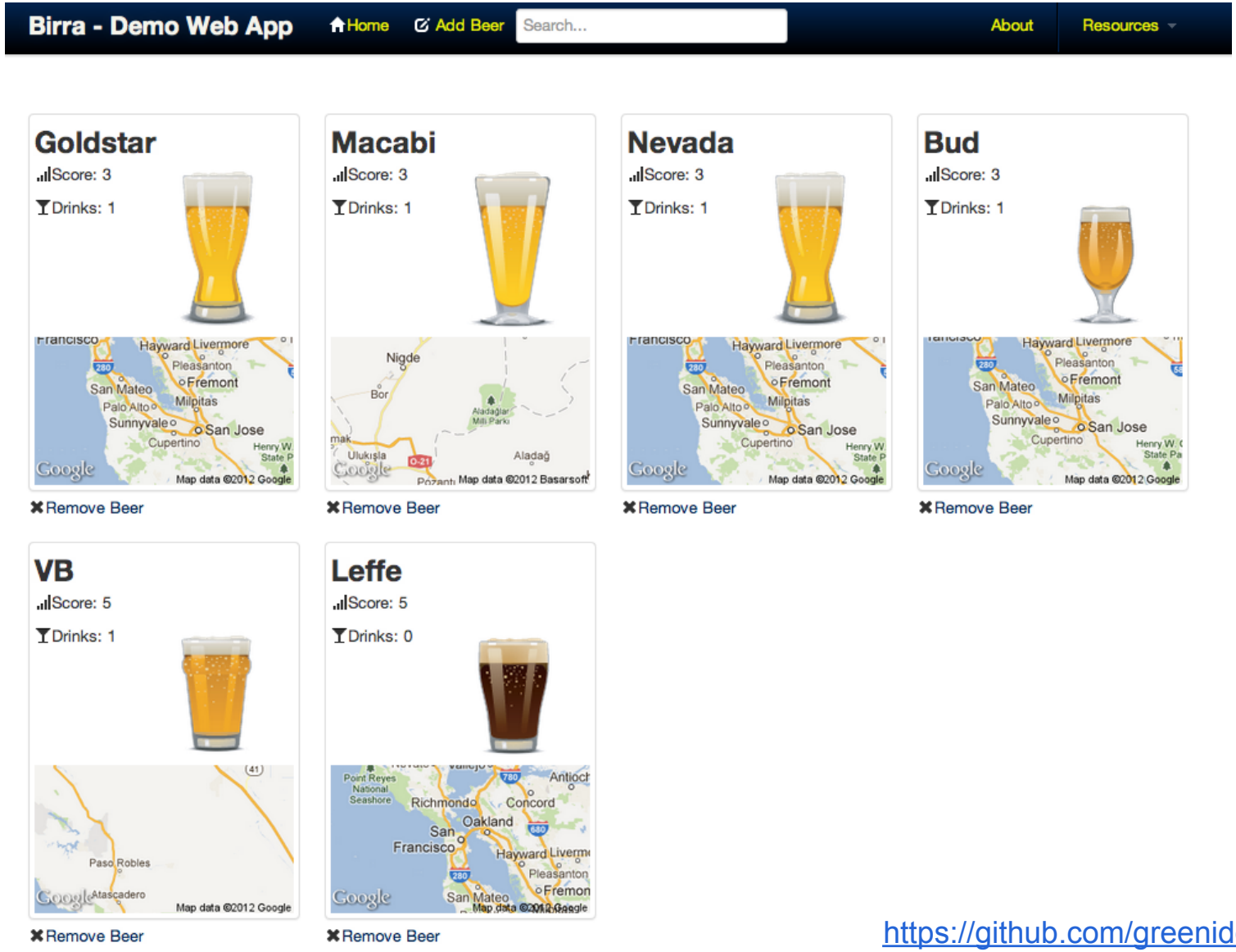
Google Cloud Endpoints:

APIs for Mobile and Web Backends Made Easy!

Trusted Tester



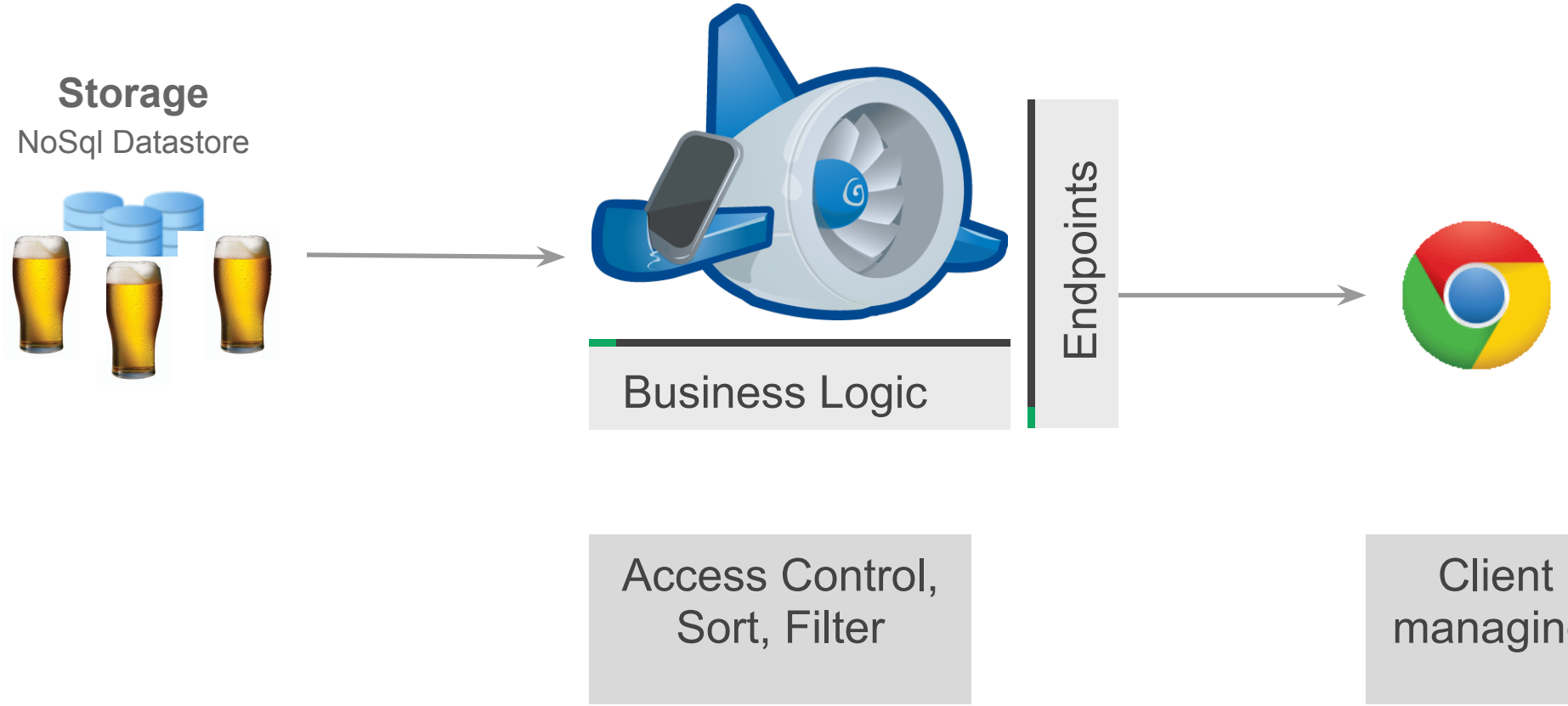
Demo



https://github.com/greenido/backbone-bira

Google Cloud Endpoints for Beer!

Beer Rating and Review Application



Demo!

Beers On!

Load Test Results - From laptop wifi

```
% ab -n9000 -c100 http://birra-io2012.appspot.com/
```

```
Percentage of the requests served within a certain time
(ms)
  50%    263
  66%    321
  75%    370
  80%    390
  90%    449
  95%    536
  98%    649
  99%    715
 100%   3858 (longest request)
```

> 90% of requests below 1/2 a sec

Load Test Results - From Compute Engine

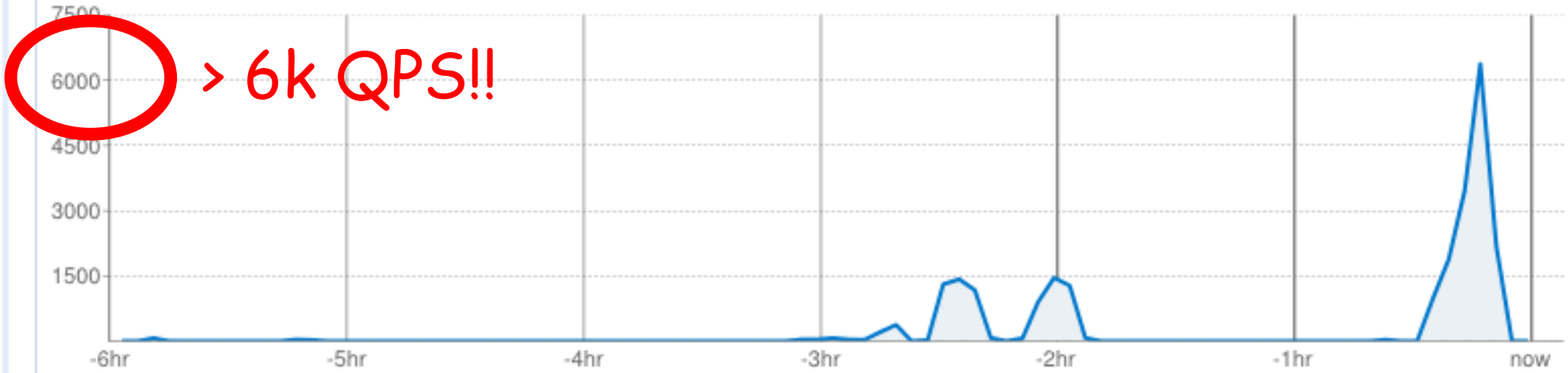
```
% ab -n1000000 -c10 http://birra-io2012.appspot.com/
```

```
Percentage of the requests served within a certain time
(ms)
  50%      6
  66%      6
  75%      6
  80%      6
  90%      7
  95%      7
  98%     11
  99%     17
 100%   3019 (longest request)
```

> 95% less than 7ms

Charts

Requests/Second | 6 hrs | 12 hrs | 24 hrs | 2 days | 4 days | 7 days | 14 days | 30 days



> 6k QPS!!

Instances

Number of Instances - Details	Average QPS	Average Latency	Average
2 total	0.000	Unknown ms	69.3 MBy

Billing Status: Enabled (Daily budget: $100.00) - Settings

Quotas res

Resource	Usage	Billable	Price	Co
Frontend Instance Hours	5.30 Instance Hours	0.00	$0.08/ Hour	$0
Backend Instance Hours	0.00 Instance Hours	0.00	$0.08/ Hour	$0
Datastore Stored Data	0.00 GBytes	0.00	$0.008/ GByte-day	$0
Logs Stored Data	0.01 GBytes	0.00	$0.008/ GByte-day	$0
Task Queue Stored Task Bytes	0.00 GBytes	0.00	$0.008/ GByte-day	$0

Key Take Aways

Building modern applications with HTML5 and App Engine

AppEngine makes for easy deployment at scale

Build interactivity by leveraging Cloud Endpoints

Use JavaScript Client Library

Exploit Modern Browser Features:

- Offline
- Geo
- Web Intents

Questions?

Ido Green
Developer Relations
Google Chrome Platform
plus.ly/greenido

Access: http://endpoints-trusted-tester.appspot.com

App:: **http://birra-io2012.appspot.com/**

Code: https://github.com/greenido/

Slides: ido-green.appspot.com

Thank you!

Credits

- Offline - http://www.flickr.com/photos/11384441@N06/5102925749/
- Road - http://www.flickr.com/photos/95572727@N00/4848088053/