



thinkcloud
with Google™

**Google Week
Israel June 2012**

Google™ Cloud Platform 2012

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Google Week
Israel June 2012

Business Trends

Google™



Local



Alone



Size



Global



Together

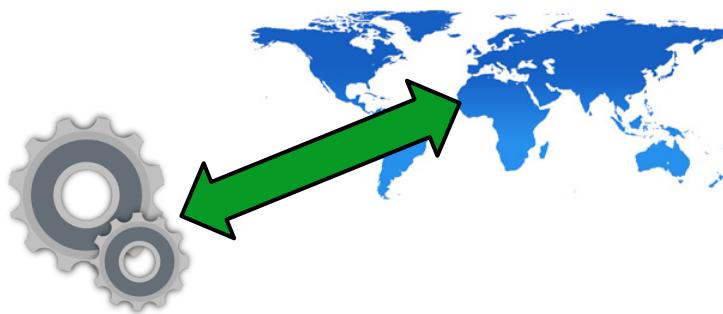


Speed

IT Consequences



Distributed data challenges

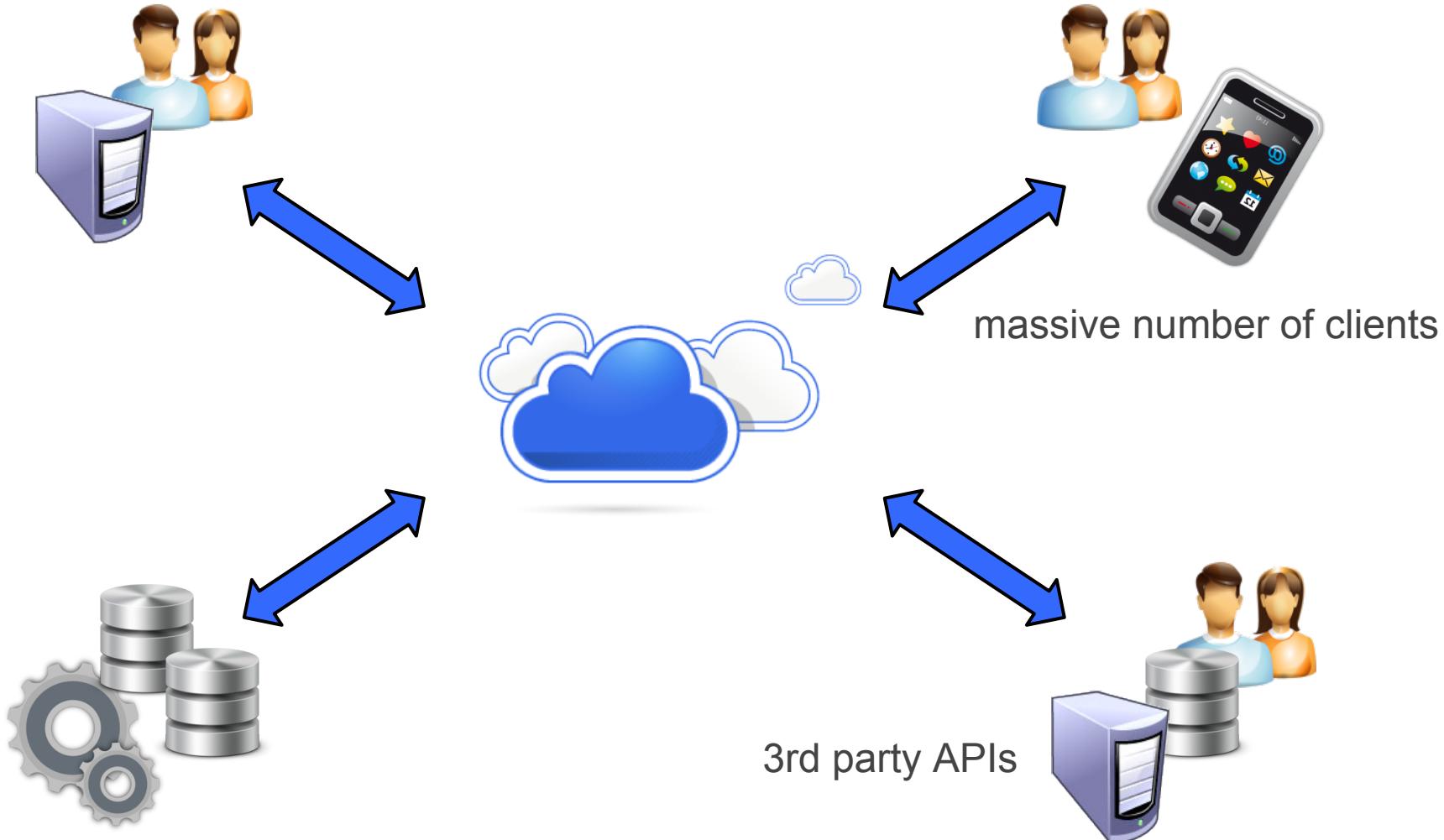


Global application delivery



Scaling challenges

Google Cloud Platform



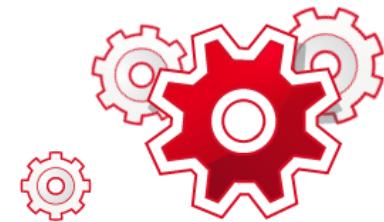
Why Google Cloud?



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, DNAexus

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

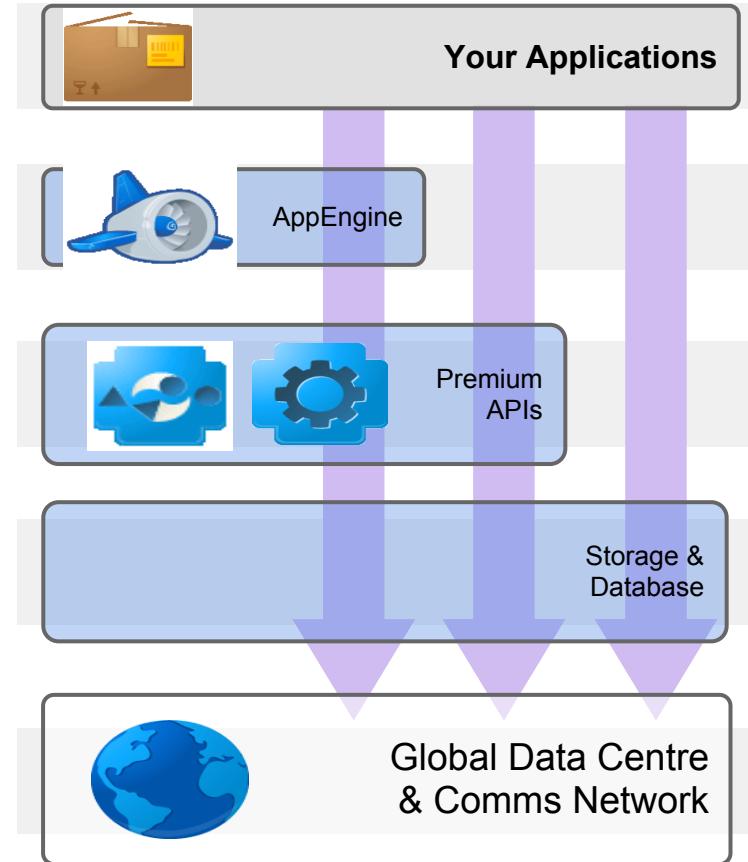


Google Cloud Platform:

an integrated collection of infrastructure, platform and data services.

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

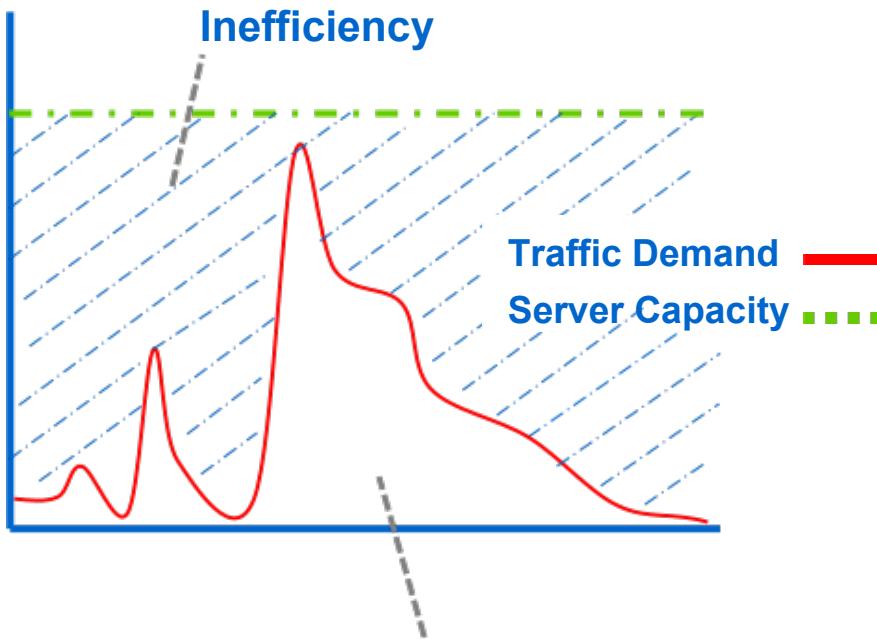
**Leveraging
Google's Platform**



Hosting Challenges

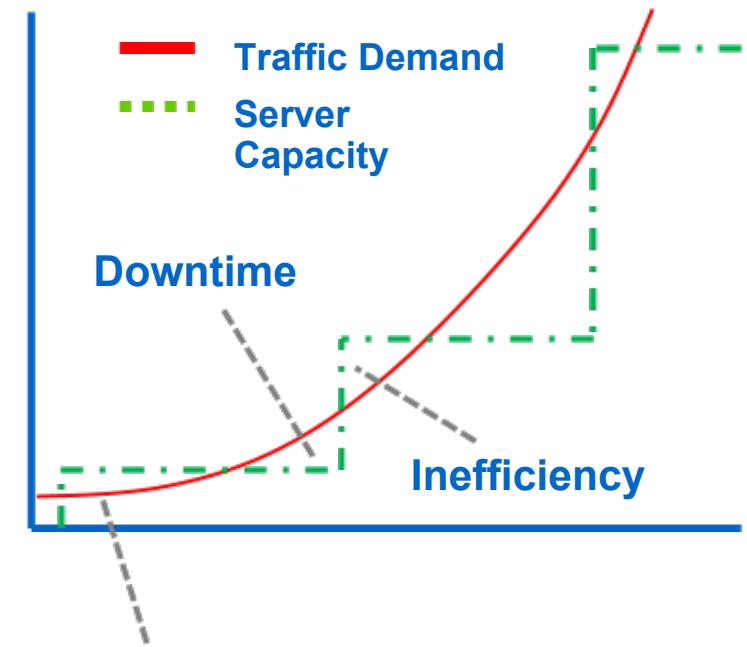


Volatile Demand Fluctuation



With App Engine
only pay for what you use

Steady Demand Growth



With App Engine
scale with efficiency and reliability

Product Summary



Google 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.

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

Google App Engine

Full Development Platform



Hosting

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

APIs

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

Tools

The App Engine Platform



- Develop in Java, Python, or Go
 - Familiar development environments with IDE plug-ins
- Versatile and extensible platform
 - Diverse process types for all application needs
 - Static or dynamic content
- **Easy** to get started and maintain
 - Create application and deploy in minutes
 - Rich administration with deep insights
- **Easy** to manage and operate
 - Automatic, transparent scaling
 - 99.9% SLA and enterprise support services

Diverse Use Cases

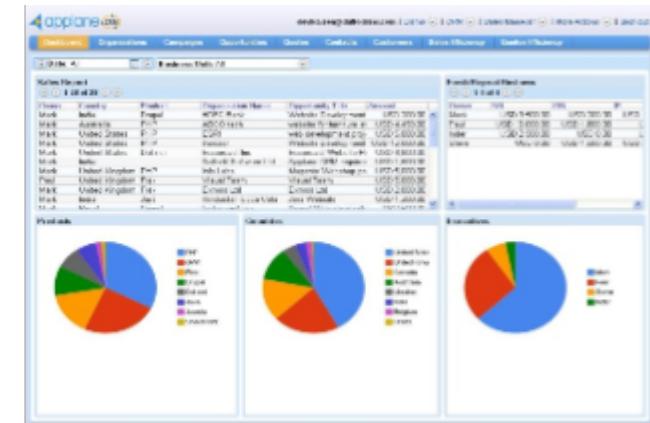


Website Hosting

- 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



Diverse Use Cases



Mobile App Development

- Heavy lifting for mobile apps
- Reduce time-to-market: focus on app development, not infrastructure requirements
- Reduce risk: removing upfront investment enables new projects



Game Development

- Serve highly variable, unpredictable traffic patterns
- Front-end HTML5 game hosting
- Back-end for all platforms: mobile, web, desktop games

Three Execution Environments

Diversity to meet all application development needs

Front-end

short-lived request handling
(30s limit)

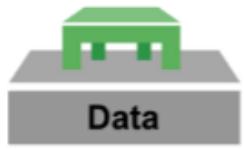
Task queues

Background tasks and scheduled events
(10 min limit)

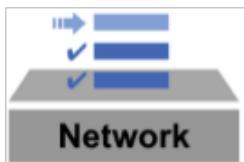
Back-end

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

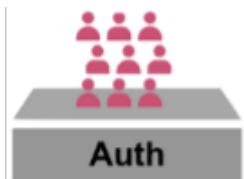
App Engine APIs



- 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



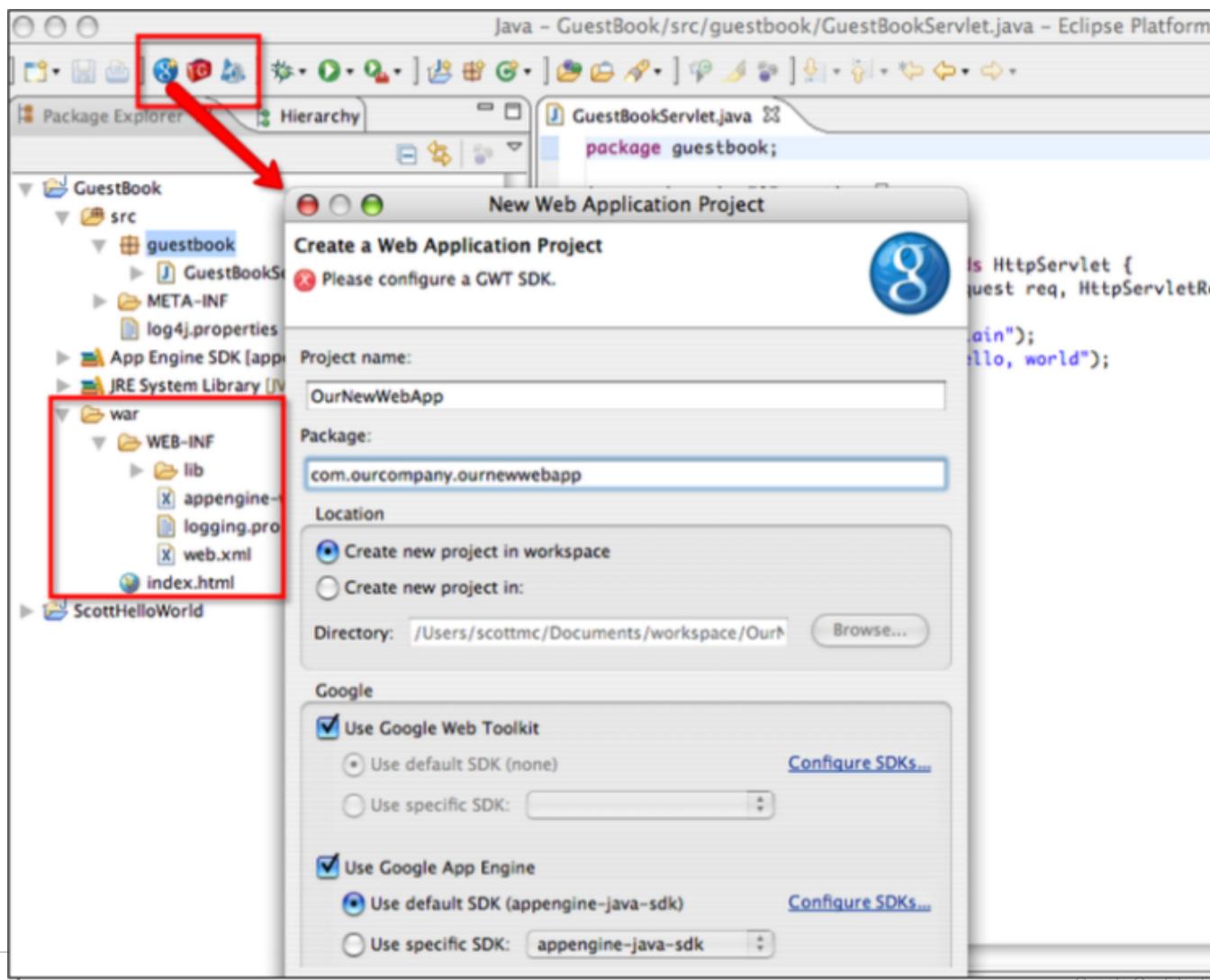
- And other Google APIs
 - Platform: storage, SQL, language, prediction...
 - Apps: email, calendaring, productivity and collaboration for your enterprise
 - Maps: rich geo-location data and mapping
- And your own APIs
 - Connect to any web service
 - Access your existing investments using the Secure Data Connector

Familiar Development Tools



- Google Plugin for Eclipse
- Tools and scripts for integrating with 3rd party tools
- Upload and download application source
- Developer ACLs
- Local development server and console
- Multiple concurrent application versions
- Usage Graphs
- Access logs

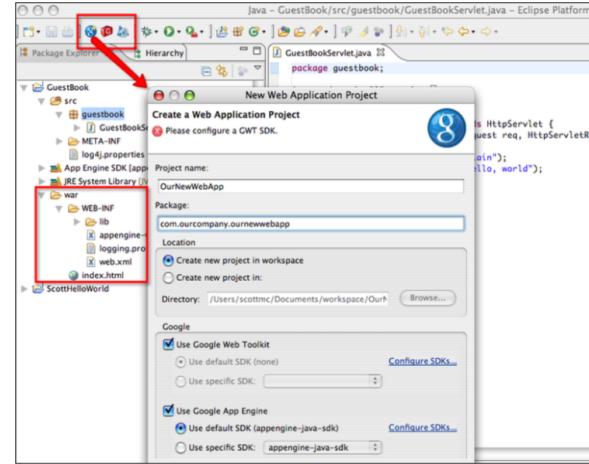
Google Plugin for Eclipse



Google Plugin for Eclipse



- Creating a new app
- Local Admin
- Deployment - one click



Quick Demo

Local SDK Console



The screenshot shows a web browser window titled "hellofbtest1 Development C..." with the URL "http://localhost:8086/_ah/admin/queues". The page is titled "hellofbtest1 Development Console". On the left, there is a sidebar with links: Datastore Viewer, Interactive Console, Memcache Viewer, **Task Queues** (which is selected), Cron Jobs, XMPP, and Inbound Mail. The main content area is titled "Task Queues" and contains the message: "Tasks will not run automatically. Select a queue to run tasks manually." Below this is a table with one row:

Queue Name	Maximum Rate	Bucket Size	Oldest Task (UTC)	Tasks in Queue	Action
default	5.00/s	5	None	0	<button>Flush Queue</button>

At the bottom of the page, it says "©2009 Google".

Detailed system view for local development server

Live Admin Console



onthafly Version: 1.54 [« Show All Applications](#)

Main

- [Dashboard](#)
- [Quota Details](#)
- [Logs](#)

Datastore

- [Indexes](#)
- [Data Viewer](#)

Administration

- [Application Settings](#)
- [Developers](#)
- [Versions](#)
- [Admin Logs](#)

Billing

- [Billing Settings](#)
- [Billing History](#)

Resources

- [Documentation](#)
- [Developer Forum](#)
- [Downloads](#)
- [System Status](#)

Charts [?](#)

Requests/Second [▼](#) all 24 hr 12 hr 6 hr

Billing Status: Enabled - [Settings](#)

Resource (reset every 24 hours. Next reset: 10 hrs) [?](#)

	Usage	Cost / Budget
Processor \$0.10/CPU hour	94% 48.30 of 51.30 hours	\$0.20 / \$0.40
Bandwidth In \$0.10/Gbyte	80% 12.00 of 15.00 Gbytes	\$0.20 / \$0.40
Bandwidth Out \$0.12/Gbyte	99% 14.10 of 14.17 Gbytes	\$0.17 / \$0.40
Storage \$0.005/Gbyte	25% 25.12 of 100.50 Gbytes	\$0.12 / \$0.40
Email \$0.0001/Message	20% 500 of 2500 Messages	\$0.00 / \$0.40

T = Free quota

Cost for the last 14 hours: **\$0.69**

Current Load [?](#)

URI	Req/Sec current	Requests last 12 hrs	Avg CPU last hr	% CPU last 12 hrs
/	450.0	450	2	0%

Errors [?](#)

URI	Count	% Errors last 12 hrs
/	39	9%

Transparent System Status

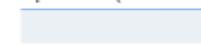


System Status

Current Availability

100%

Uptime (last 7 days)



Read latency (today)



Write latency (today)



	◀	▶	02/05/12	02/06/12	02/07/12	02/08/12	02/09/12	02/10/12	Yesterday	Today	Now
Serving											
Python	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Normal
Java	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Normal
Go	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Normal
APIs											
Datastore	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Normal
HR Datastore	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Normal
Images	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Normal
Mail	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Normal
Memcache	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Normal
Taskqueue	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Normal
Urlfetch	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Normal
Users	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Normal

The following symbols signify the most severe issue (if any) encountered during that day. Click a symbol in the table above to view a day's performance graphs.

✓ No significant issues 📆 Scheduled maintenance 🌐 Investigating ⚠ Service disruption 🤔 Unknown

Google Cloud Storage

Storage Challenges



Purchase

Maintain

Patch

Fix



Replication?

Location?

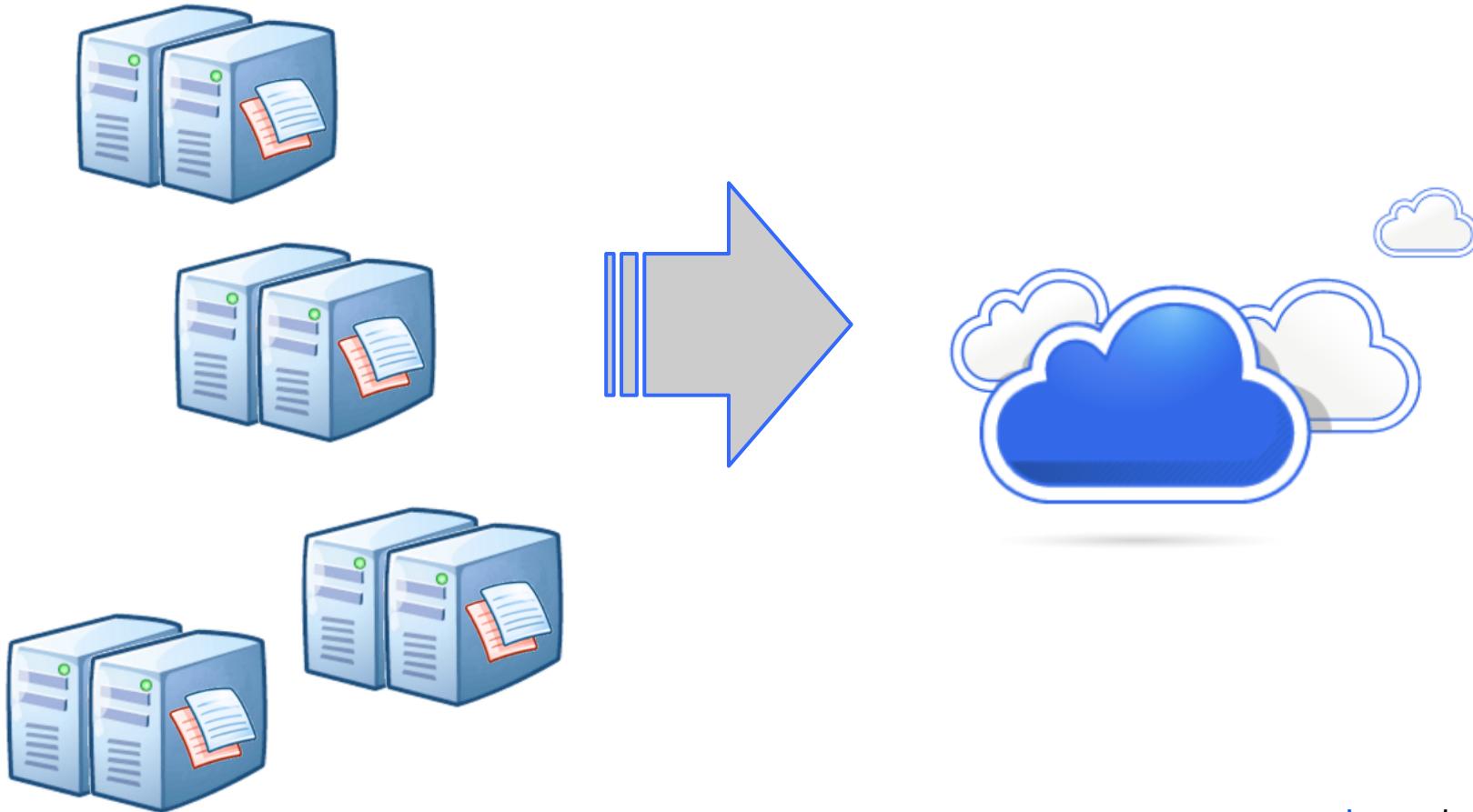


Disaster recovery?

Performance?

Scalable Cloud Storage

Google™



[Learn how](#)

Google Cloud Storage



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



Google Cloud Storage



- Highly replicated, strongly consistent
- Geo-located with automatic caching
- Streaming uploads and resumable transfers
- Easy ACLs for securing & sharing
- Detailed usage reporting
- 99.9% SLA

Accessible, manageable



- RESTful API
- SDKs, tools, rich ecosystem
- API console management

Data Collaboration



Control and Share Data

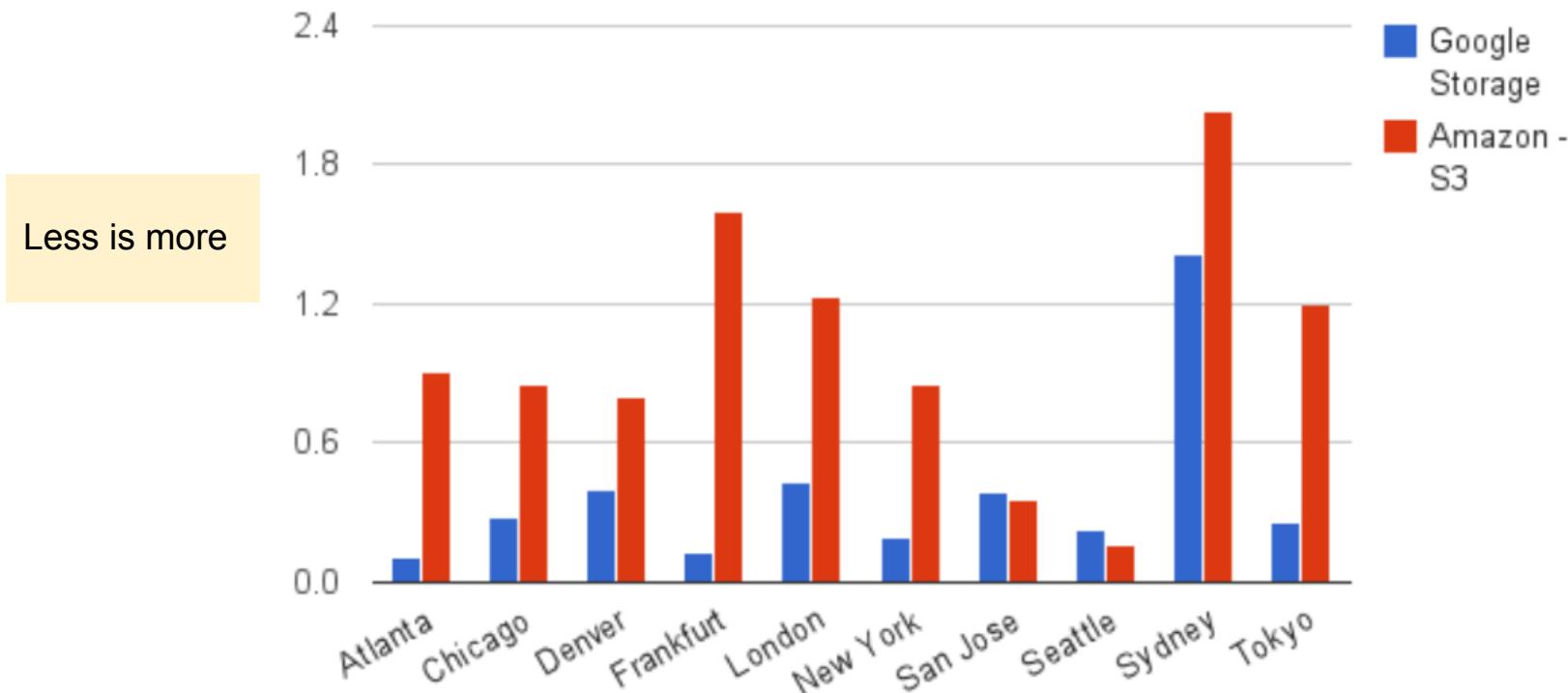
- User and Group ACLs
- Authenticated and anonymous browser-based downloads
- OAuth 2.0
 - Widely adopted open standard
 - Authorize web apps without sharing login/password
 - Authorize different apps with separate tokens
 - No request signing needed
- Share with anyone, anywhere



Global, Scalable Infrastructure

Google™

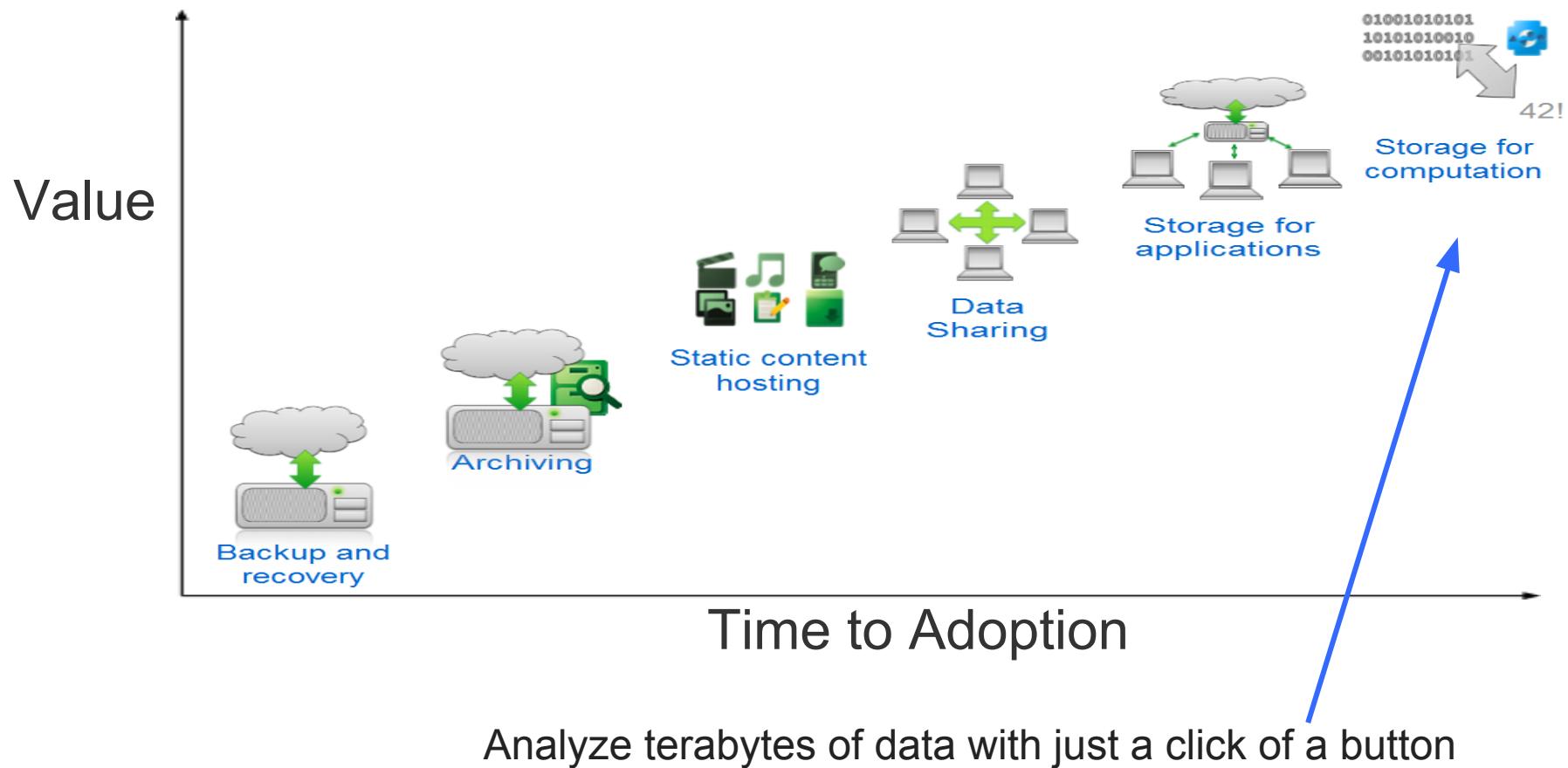
Data Download Comparison (100KB)



Less is more

Use Cases

Google™



Google Stores on Google



ChromeOS Binaries



USPTO Data



Geo-coded Photos



Partner Reporting



Partner Reporting



Google BigQuery



Google
Prediction API

google.org

Google research

Google Big Query

Compose Query ? X

```
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

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

Download as CSV Save as Table

Instant Data Analysis

Google™



Interactive
Tools



Spam



Trends
Detection

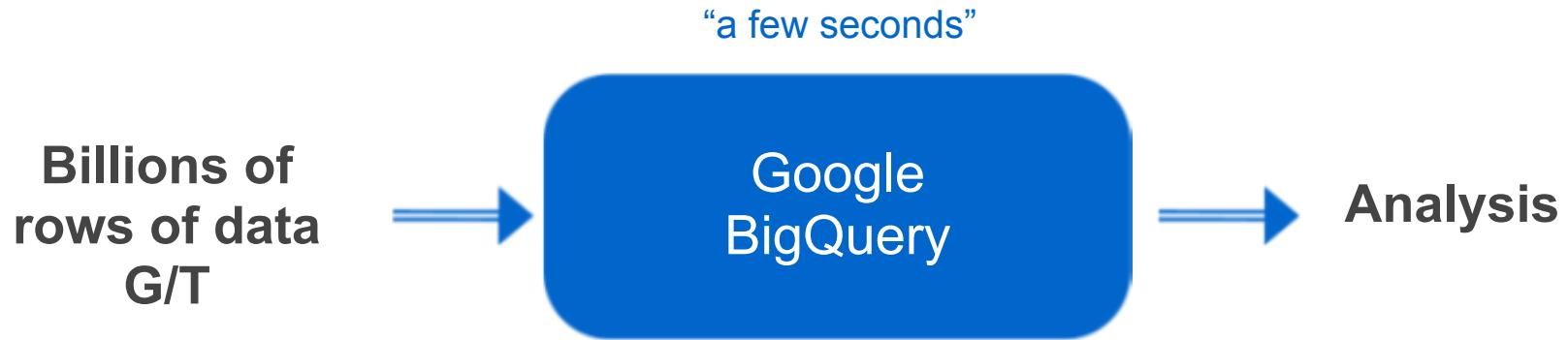


Web
Dashboards



Network
Optimization

Instant Data Analysis



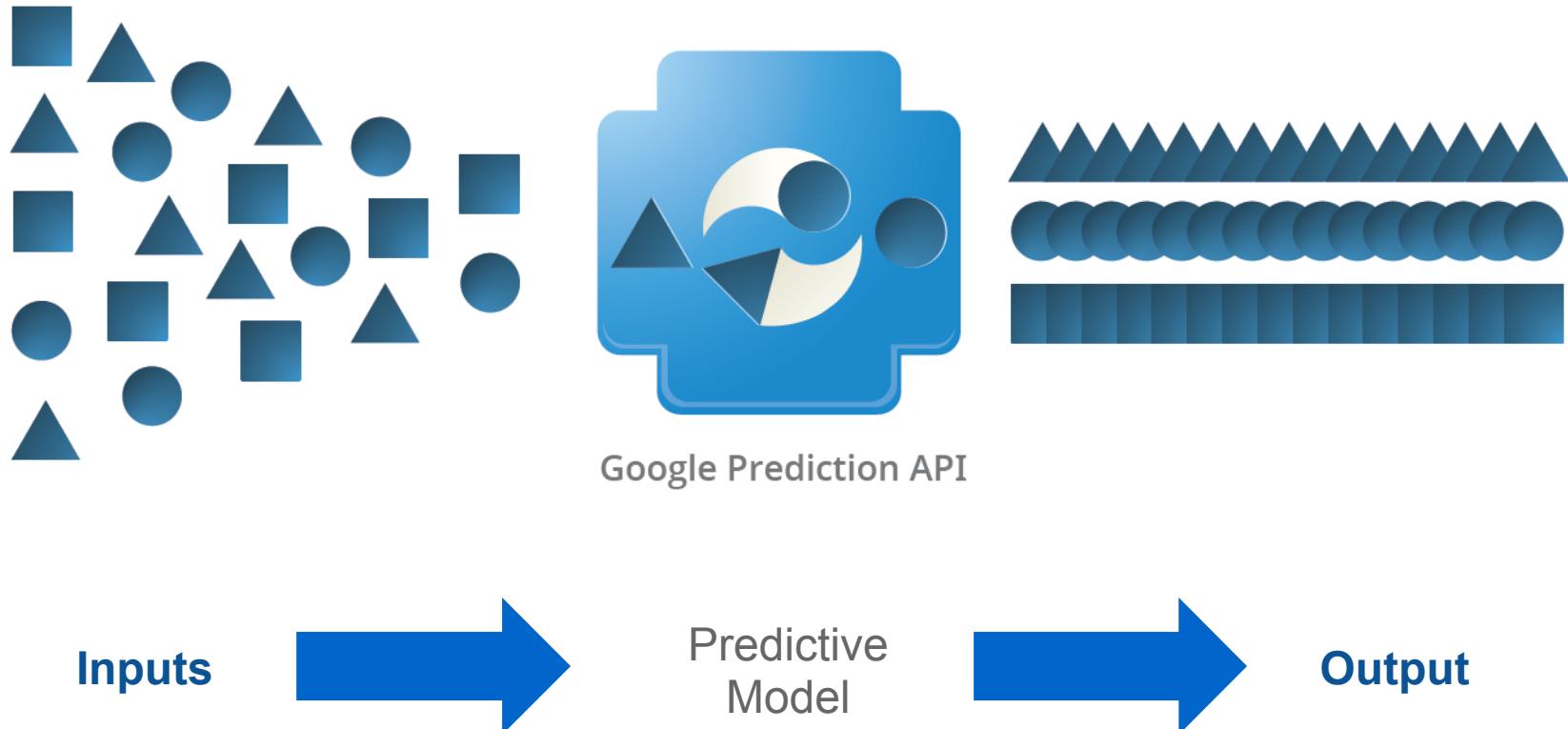
[**Quick Demo**](#)

Google Premium APIs

Google Prediction API



Classify, predict, and find patterns in data



Google Prediction API



Machine learning in 4 simple steps:

- Create training data
- Upload data
- Run Prediction API against data
- Issue prediction queries
 - Optionally, send additional data

Thank you!

Q&A
