

The Cloud to the rescue!

What the Google Cloud Platform can make for you

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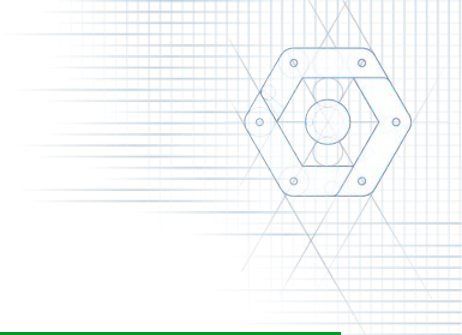


So ... what is the cloud?

The Google Cloud Platform



The Google Cloud Platform



Compute



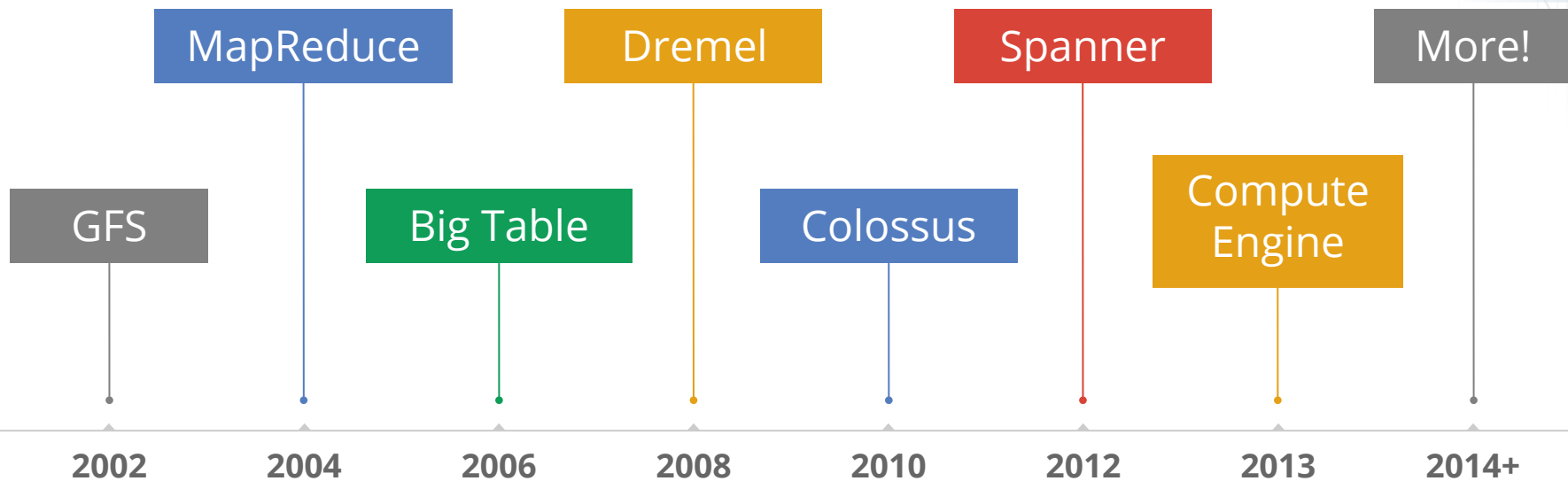
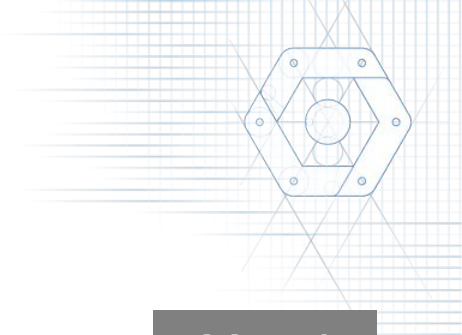
Storage



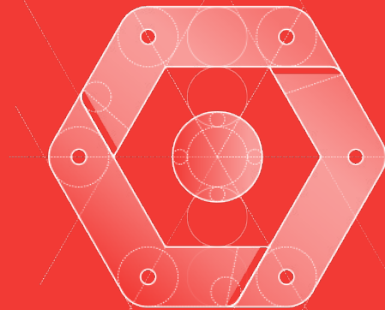
Services



Standing on the shoulders of giants



Compute



Compute

IaaS vs. PaaS: How to Choose?



IaaS

Infrastructure-as-a-Service

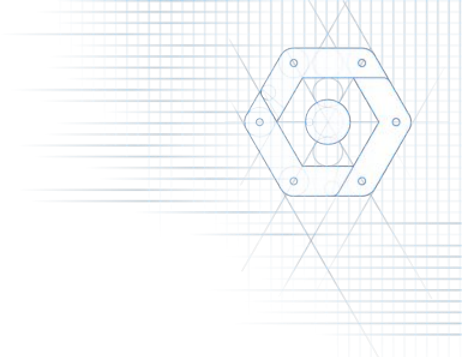
Compute Engine



PaaS

Platform-as-a-Service

App Engine



Google Compute Engine

- Infrastructure-as-a-Service
- High performance virtual machines that run on Google's infrastructure
- Connected with the Google Network
- Run Linux and Windows OS



Instance Types

standard

- For workloads with balanced CPU-memory requirements

highmem

- For workloads with higher memory requirements

highcpu

- For CPU intensive workloads

Shared Core Instances

- g1-small, f1-micro
- For inexpensive prototyping and staging workloads

Instance Type	Virtual Cores	Memory (GB)
n1-standard-1	1	3.75
n1-standard-2	2	7.5
n1-standard-4	4	15
n1-standard-8	8	30
n1-standard-16	16	60
n1-highmem-2	2	13
n1-highmem-4	4	26
n1-highmem-8	8	52
n1-highmem-16	16	104
n1-highcpu-2	2	1.8
n1-highcpu-4	4	3.6
n1-highcpu-8	8	7.2
n1-highcpu-16	16	14.4



HTTP and JSON API

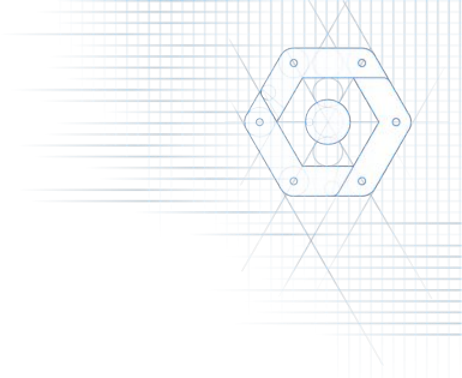
```
$ gcloud auth login
```

```
$ gcloud compute instances create my-instance --zone us-central1-a
```

```
$ gcloud compute instances list
```



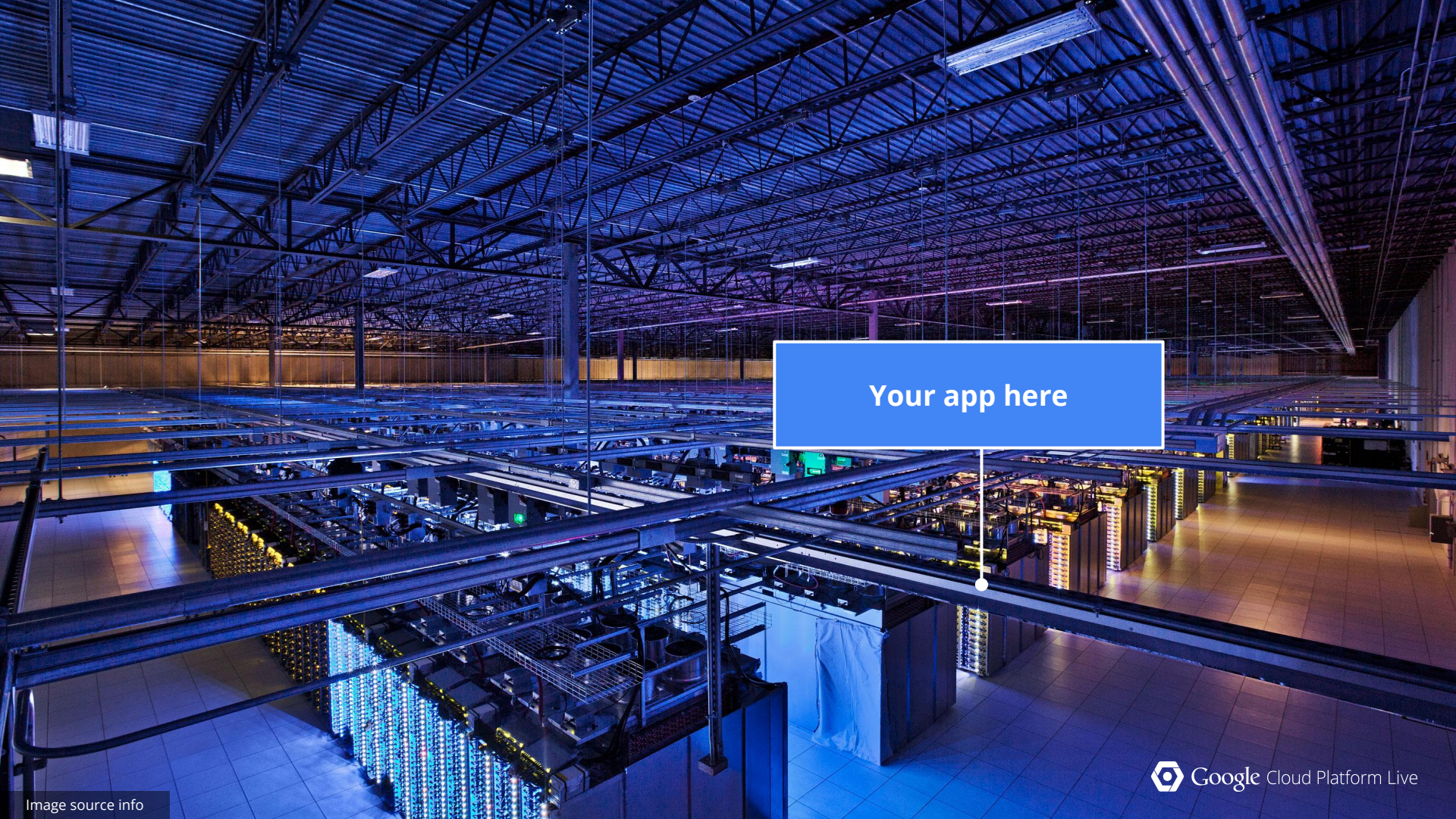
Web UI



The screenshot shows the Google Cloud Platform console dashboard for a project named "Stupid Ideas". The browser address bar shows the URL <https://console.cloud.google.com/home/dashboard?project=stupid-ideas>. The dashboard is organized into several sections:

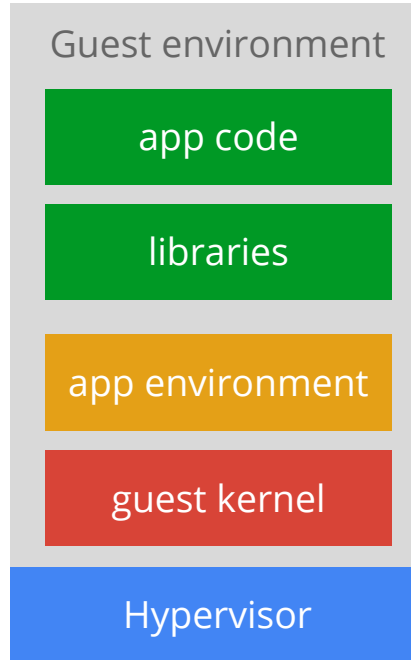
- Project:** Stupid Ideas (ID: stupid-ideas (#724754297618))
- Resources:**
 - Compute:** Compute Engine (13 instances)
 - Storage:** Cloud Storage (1 bucket)
 - Big Data:** BigQuery (1 dataset)
- Explore other services:** Tour the console, API (Enable APIs and get credentials like keys)
- Compute Engine Metrics:**
 - CPU (%):** A line chart showing CPU usage fluctuating around 30% until 3:05 PM, then dropping to approximately 10%.
 - APIs:** A line chart showing requests per second fluctuating around 6 until 3:05 PM, then dropping to approximately 2.
- Google Cloud Platform status:** All services normal.
- Billing:** \$106.74 (Approximate charges so far this month)
- News:** Manage your logs with the Cloud Console mobile app (8 hours ago), Enhancements to Container Engine and Container Registry (1 day ago), Faster builds for Java developers with Maven Central mirror (6 days ago).
- Documentation:** Google Cloud Platform Documentation





Your app here

Typical serving stack



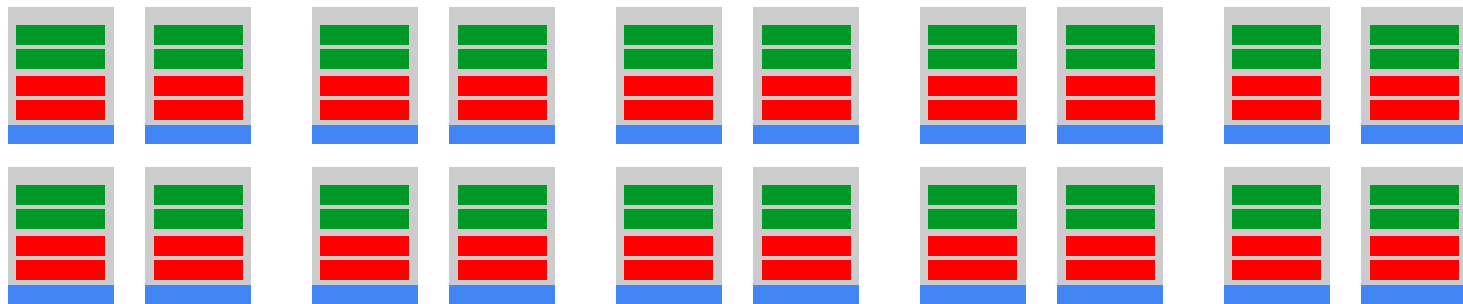
[Image source info](#)



Typical application serving stack



Load balancer



[Image source info](#)

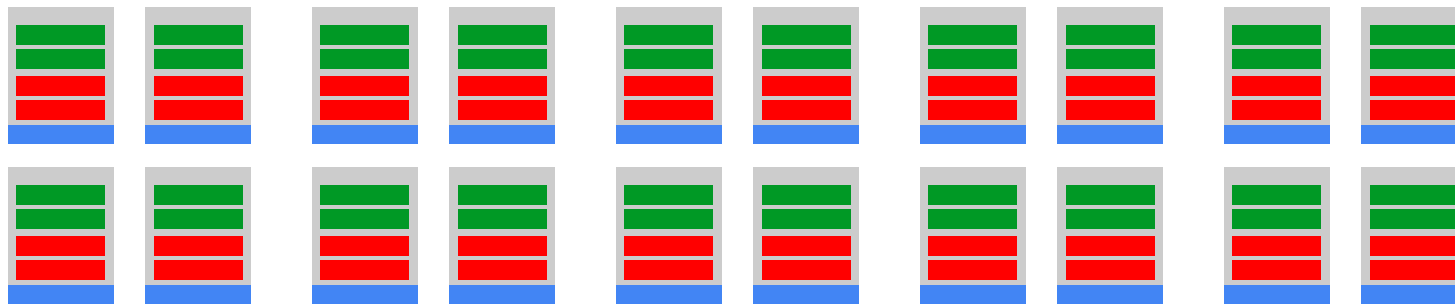


Typical application serving stack



Load balancer

Auto scaler



[Image source info](#)



Typical application serving stack

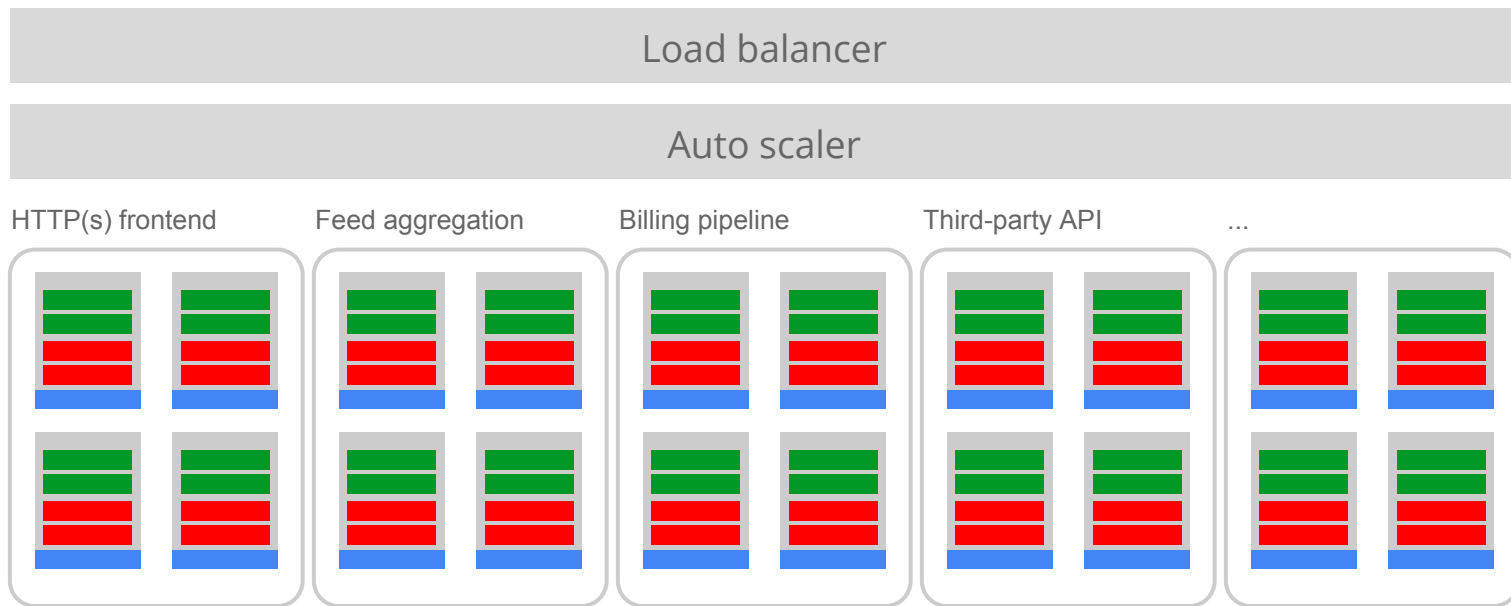
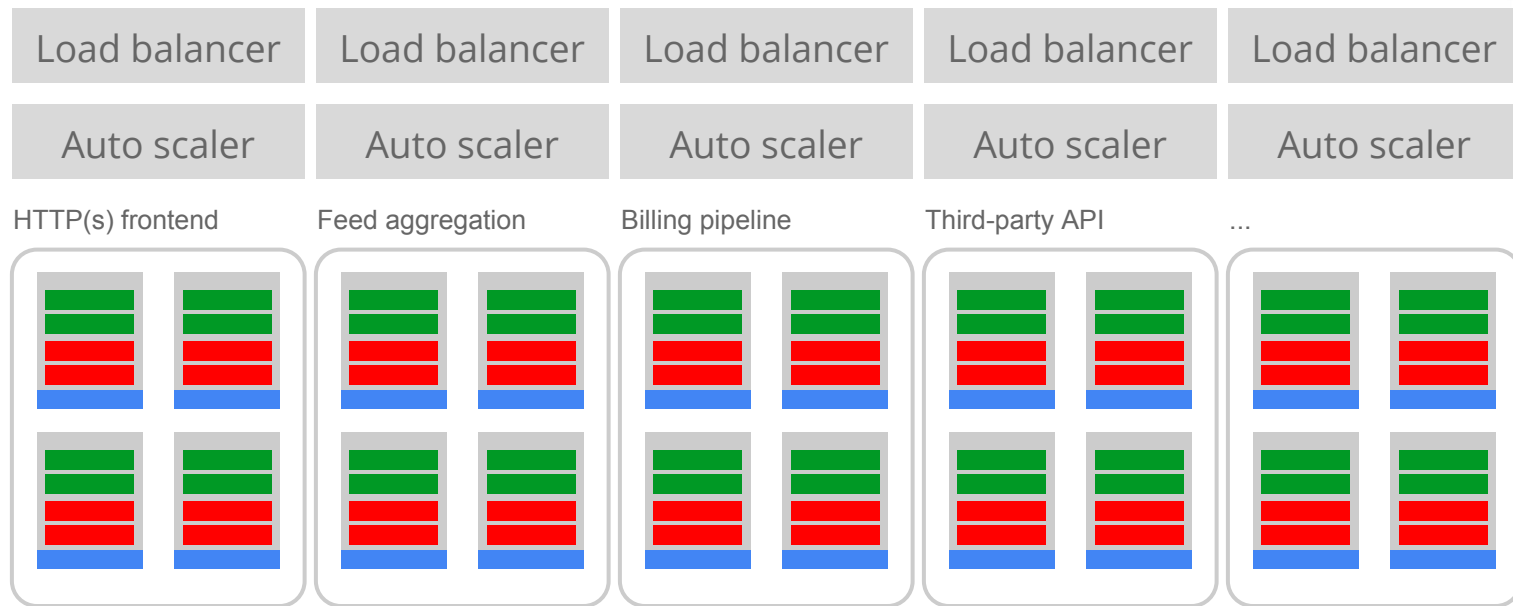


Image source info



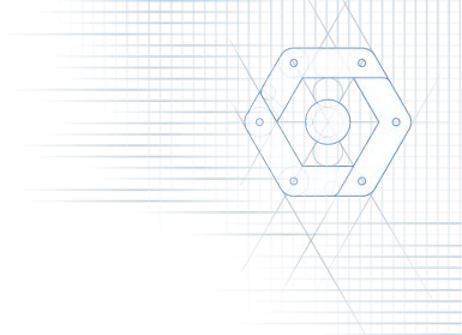
Typical application serving stack



[Image source info](#)

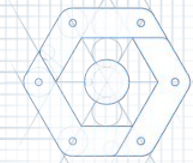


Typical application serving stack



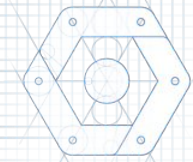
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Complexity emerges quickly...





Complexity emerges quickly...

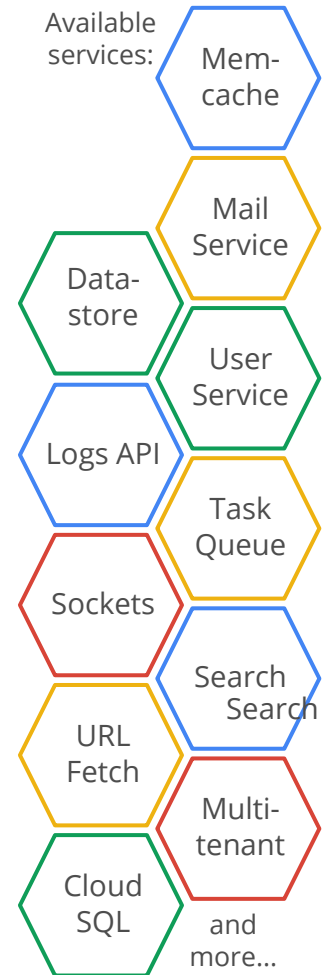
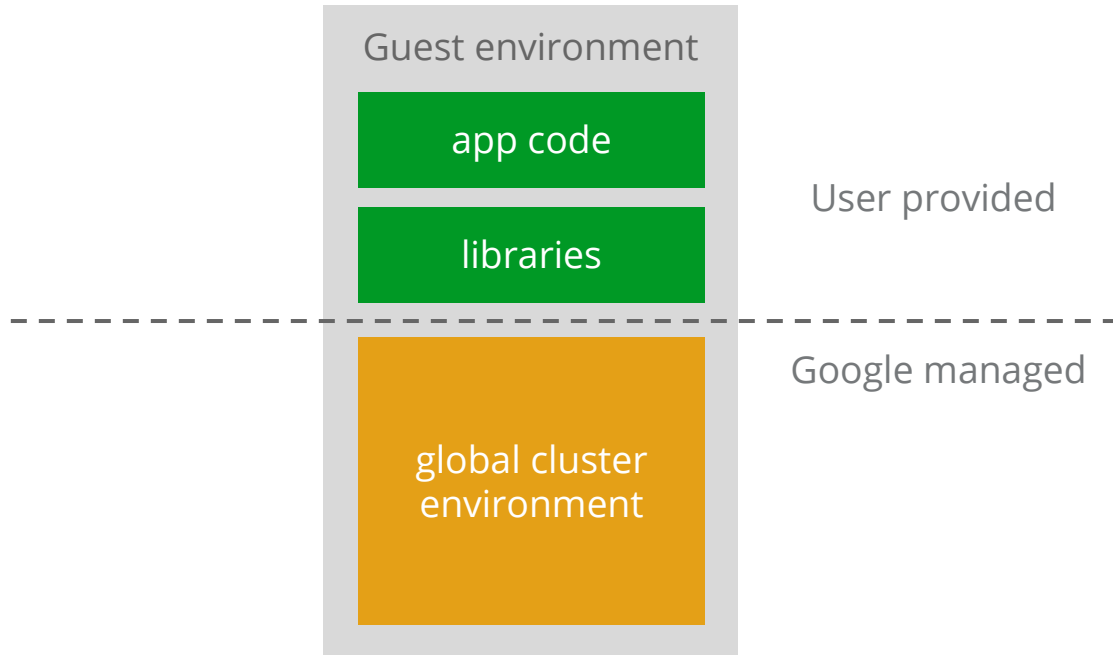
updates, rollouts, rollbacks, traffic splitting,
experiments, monitoring, and logging



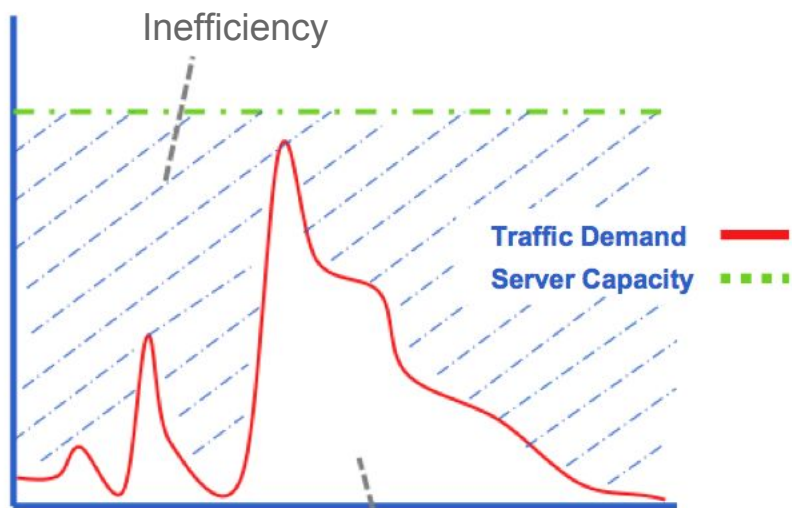
Google App Engine

- Platform-as-a-service
- “I’ll write the app, you manage my servers.”
- Easy to build, easy to maintain, and easy to scale
- Support for Python, Java, PHP, Go and more languages on the way



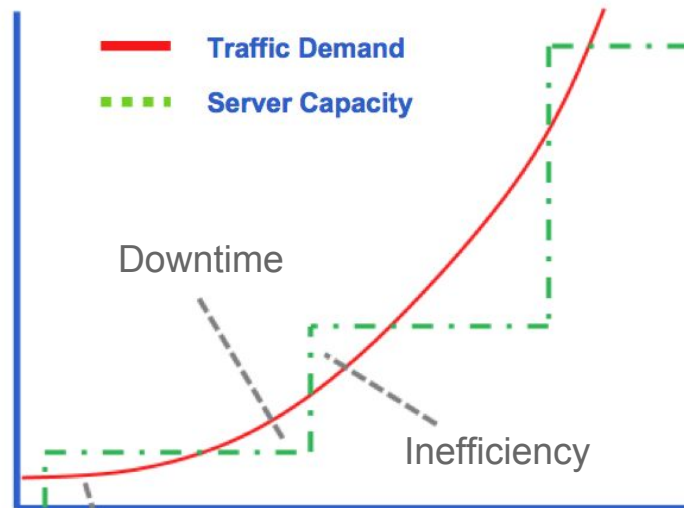


Volatile Demand Fluctuation



With App Engine
only pay for what you use

Steady Demand Growth

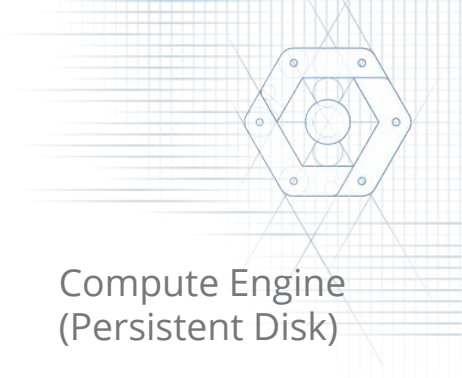


With App Engine
scale with efficiency and reliability

Storage



Storage Options for All Needs



Cloud Datastore



NoSQL

Cloud SQL



SQL

Cloud Storage



Blob

Compute Engine
(Persistent Disk)



Block

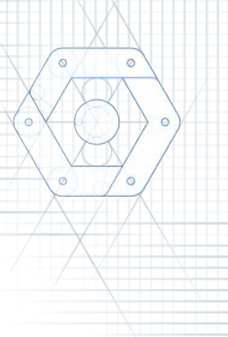


Google Cloud Datastore

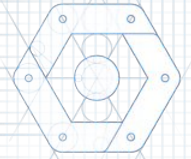
- Fully managed, schemaless NoSQL storage service for non-relational data
- Native App Engine support and REST API access
- Built for scale and reliability
- SQL-like syntax for querying



BigTable and Megastore: Built on Google's Technology



Cloud Datastore Key Concepts



	Datastore	RDBMS
Category of object	Kind	Table
One entry/object	Entity	Row
Unique id of entry	Key	Primary Key
Individual data	Properties	Field

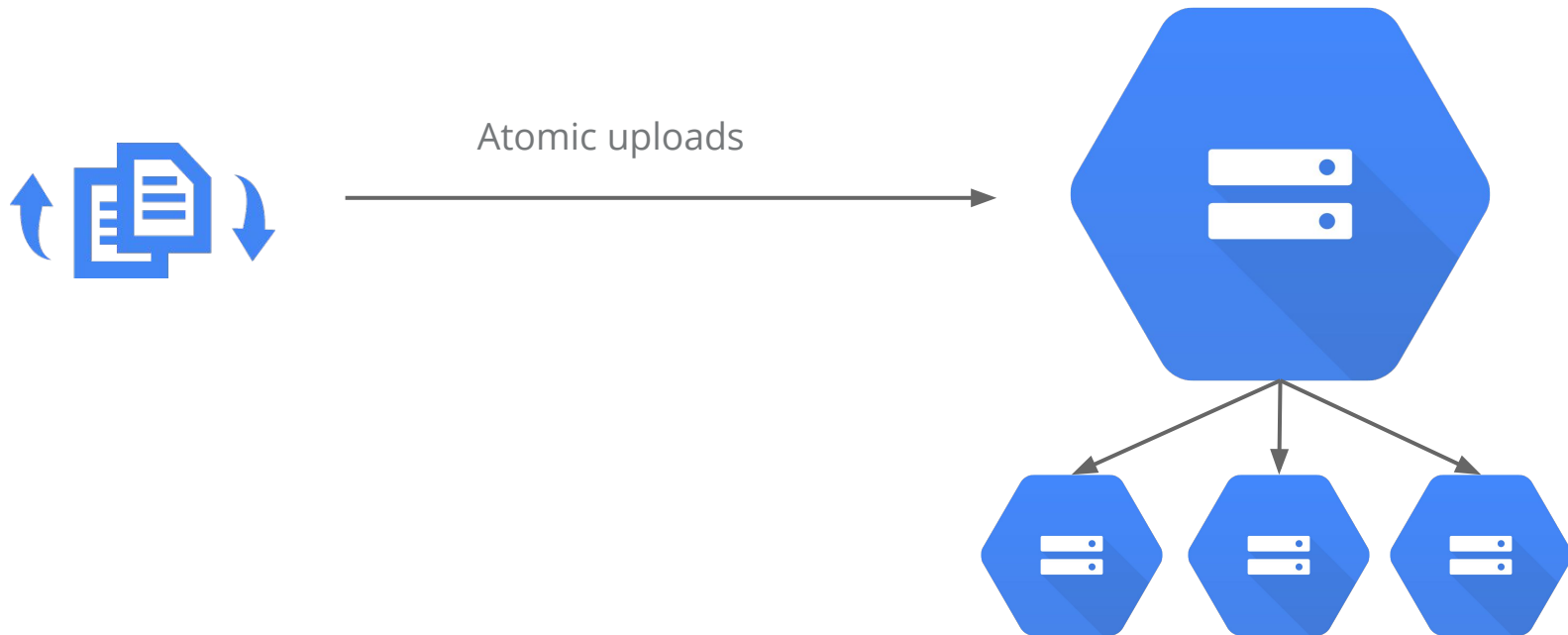


Google Cloud Storage

- Store big files on the cloud
- Standard, highly durable storage or more cost-effective Durable Reduced Availability (DRA) storage
- Global Edge Caching
- Server-side encryption
- Powerful access controls and OAuth 2.0 authentication



Strong Global Consistency



Google Cloud Storage vs. Google Drive



Google Cloud Storage

Durable, scalable, and highly available storage service.



Google Drive

File storage and synchronization service with collaboration features.

Using gsutil

```
$ gsutil mb gs://cats gs://dogs
```

```
$ gsutil cp -m *.jpg gs://cats
```

```
$ gsutil acl set bucket-owner-full-control gs://cats
```



Persistent Disk

- Disk storage for your VM
- Networked set of disks
- Up to 10 TB Persistent Disk
- Encryption on the wire and at rest
- IOPS scale with volume size



Services



BigQuery

- Crunch TBs in seconds!
- Interactive queries with SQL style



Open Source



Open Source

Kubernetes

- Container Orchestration
- Easily deploy and scale Docker containers
- Easy service discovery
- Completely developed in the open



Open Source

Tensor Flow

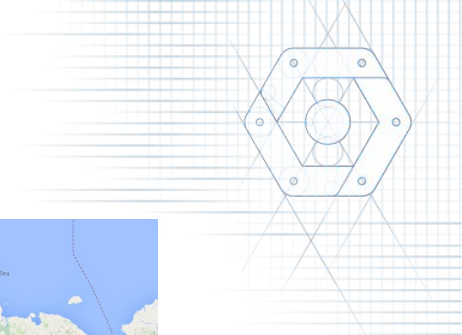
- Originally developed by the Google Brain Team
- Easy to use Machine Learning
- Any computation you can express as a computational flow graph you can compute with Tensor Flow
- Completely developed in the open





A use case

LGBT events on a map



LGBT events on a map

Goals:

- globally accessible
- anyone can submit events
- ready for success
 - what if we get a million visits per day?
 - and ... what if we get zero visits?



Our data

Event:

- Title
- Description
- Location
- Date



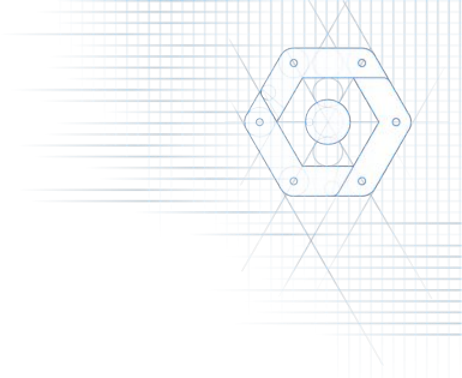
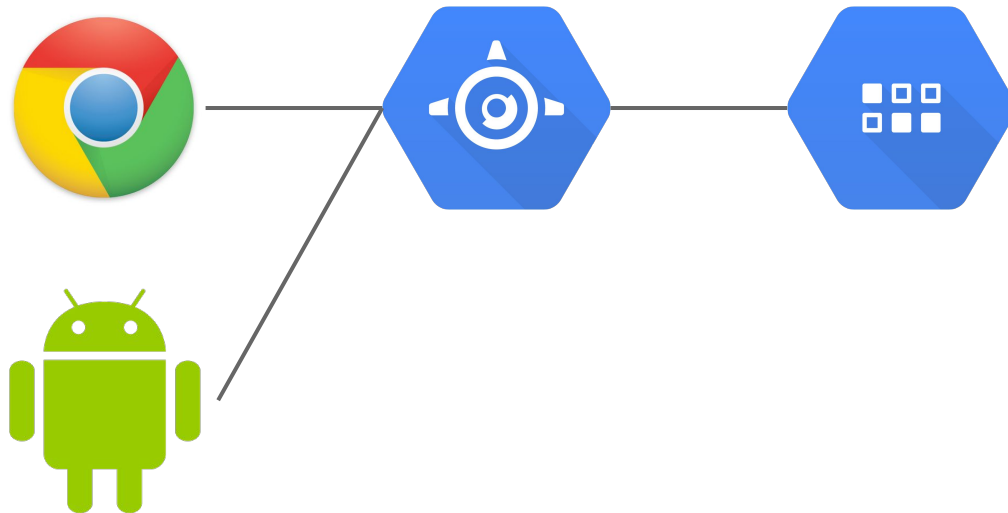
Our server

REST API:

- list events
- add event
- search events by location
- search events by name
- etc ...



Architecture



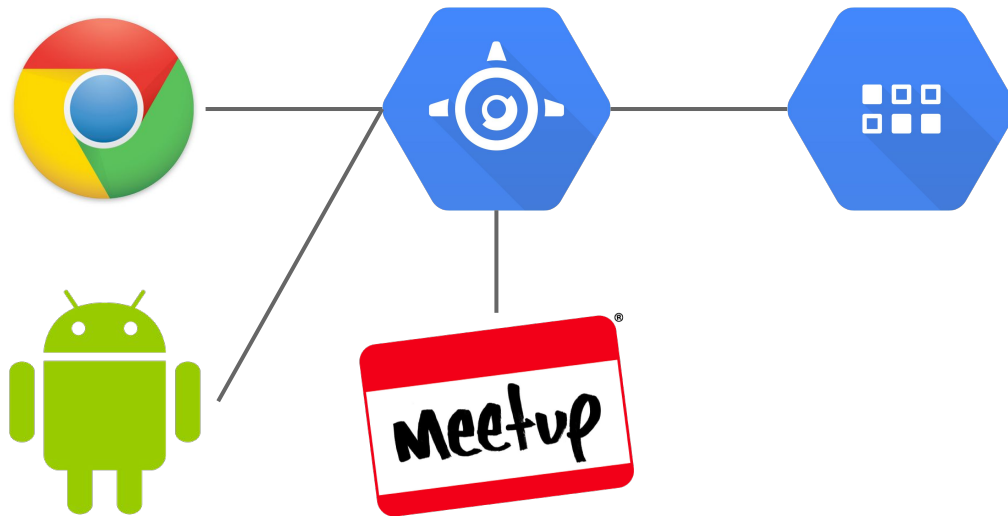
Making it better

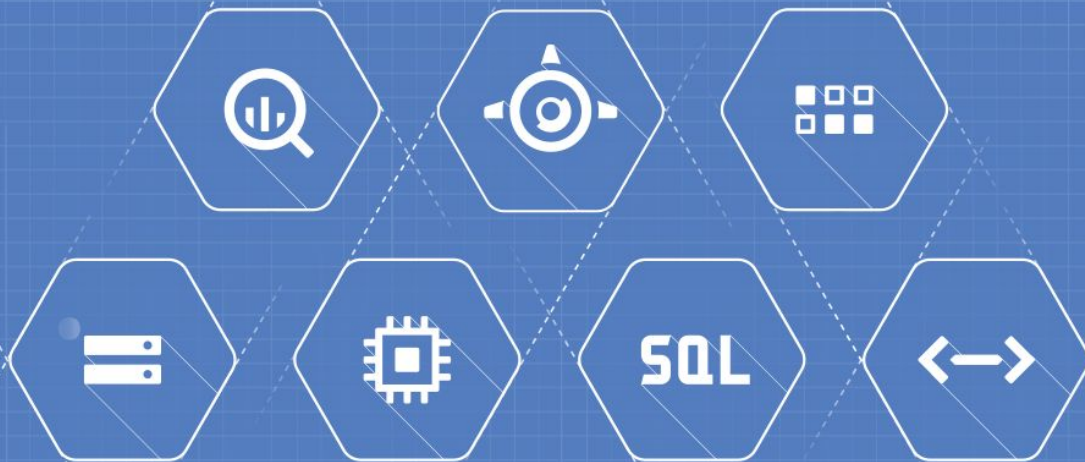
Fetching events from the web

- using multiple APIs
 - meetup.com
 - eventful.com
 - any others!



Architecture





Ask me anything!

Thank you!

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