

Google™



Life of a Google API Developer

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Tony Aiuto

David Gibson

May 10, 2011

Life of a Google API Developer

Hashtags: `#io2011` `#GoogleAPIs`

Feedback: `http://goo.gl/KAkkZ`

Life of a Google API Developer

Background

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Background

Building an application

- get inspired
- learn about APIs
- start coding
- add app identity
- tour the sample
- finish the app

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- signup
- access
- traffic controls

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Who are You?

- This is a 101-level session

Who are You?

- This is a 101-level session
- We assume
 - you are familiar with Java
 - (this talk applies to other languages)
 - you have little to no experience with Google APIs
 - you like to dive in and learn

Which Google APIs?

- Google APIs that are RESTful
 - Methods are HTTP verbs
 - Resources are JSON docs @ URLs

Which Google APIs?

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 - Resources are JSON docs @ URLs
- All new APIs are built on a common infrastructure
- How Google Builds APIs - I/O 2010
<http://goo.gl/MZ5Up>

Which Google APIs?

- Google APIs that are RESTful
 - Methods are HTTP verbs
 - Resources are JSON docs @ URLs
- All new APIs are built on a common infrastructure
- How Google Builds APIs - I/O 2010
<http://goo.gl/MZ5Up>
- Examples:
 - Buzz, URL Shortener, Latitude, Prediction, ...
 - Older APIs are migrating ...

What's New in Google APIs

- Google APIs Explorer

What's New in Google APIs

- Google APIs Explorer
- Google APIs Client for Java

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- Google APIs Client for Java
- Google APIs Console

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Summary

You know what really annoys me

- Look at my recent buzz posts - <http://goo.gl/fk4kC>

You know what really annoys me

- Look at my recent buzz posts - <http://goo.gl/fk4kC>
- I *could* shorten my URLs manually

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- But *why* doesn't Buzz auto-shorten my URLs?

You know what really annoys me

- Look at my recent buzz posts - <http://goo.gl/fk4kC>
- I *could* shorten my URLs manually
- But *why* doesn't Buzz auto-shorten my URLs?
- Hey! I can build an app for that!

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Summary

Learn to use Google APIs

- Step 1: Read the Docs

- Buzz API

- <http://code.google.com/apis/buzz/>

- URL Shortener API

- <http://code.google.com/apis/urlshortener/>

Learn to use Google APIs

- Step 1: Read the Docs

- Buzz API

<http://code.google.com/apis/buzz/>

- URL Shortener API

<http://code.google.com/apis/urlshortener/>

- Step 0:

- Just try them out ...

Introducing Google APIs Explorer

- A web tool that lets you
 - List all available APIs
 - Make any API request, see the HTTP response
 - Send authenticated requests

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- A web tool that lets you
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<http://code.google.com/apis/explorer>

APIs Explorer



APIs Explorer Using Public Access. [Switch to Private Access](#) with scope:

Select a service	Select a version	Select a method	Fill in parameters
diacritize Diacritize API	v1 Documentation	url.get Expands a short URL or gets creation time and analytics.	*shortUrl = <input type="text"/> The short URL, including the protocol. (string)
moderator Moderator API		url.insert Creates a new short URL.	projection = <input type="text"/> Additional information to return. (string)
shopping Search API for Shopping		url.list Retrieves a list of URLs shortened by a user.	
translate Translate API			
urlshortener URL Shortener API			<input type="button" value="Execute"/> * required field

History

Introducing Google APIs Explorer

- A web tool that lets you
 - List all available APIs
 - Make any API request, see the HTTP response
 - Send authenticated requests

<http://code.google.com/apis/explorer>

- Built using Google APIs Discovery Service
 - "Building Custom Client Libraries for Google APIs"
Tomorrow @ 10:45a
<http://goo.gl/io/CyYj7>

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Summary

Get a Client Library

- We've rebuilt our client libraries
- Many languages supported
 - Java
 - Python
 - PHP
 - .NET
 - Ruby
 - ...

<http://code.google.com/apis/discovery/libraries.html>

- Today we're going to use Java

Google APIs Client for Java (Beta)

- Base library
 - pluggable HTTP transport
 - pluggable JSON / XML parser
 - OAuth2 helper classes

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Google APIs Client for Java (Beta)

- Base library
 - pluggable HTTP transport
 - pluggable JSON / XML parser
 - OAuth2 helper classes
- API specific libraries
 - service and data model classes
- Announcing v1.4, now in Beta

<http://code.google.com/p/google-api-java-client/>

Tip: Discuss and then document [each teammate's project duties](#).

Project Information

★ Star project
[Activity](#)  High
[Project feeds](#)

Code license
[Apache License 2.0](#)

Labels
[Google](#), [Android](#), [AppEngine](#), [Java](#),
[Library](#), [OAuth](#), [JSON](#), [XML](#), [Atom](#),
[GData](#), [REST](#), [RSS](#), [AtomPub](#)

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[mstahl@google.com](#),
[alopyrev@google.com](#),
[afeldman@google.com](#),
[aiuto@google.com](#),
[moshenko@google.com](#),
[jhartman@google.com](#)
[12 committers](#)
[1 contributor](#)

Your role
[Owner](#)

Featured

Downloads
[google-api-java-client-1.3.2-alpha.zip](#)
[Show all](#)

Links

[Developer's Guide](#) | [Download Library](#) | [JavaDoc \(JDiff\)](#) | [Support \(Questions, Bugs\)](#)

Google APIs Client Library for Java

Written by Google, this library is a flexible, efficient, and powerful Java client library for accessing any HTTP-based API's on the web. It is the recommended library for accessing Google API's based on REST or JSON-RPC.

Supports these Java environments ([details](#)):

- Java 5 (or higher) standard (SE) and enterprise (EE)
- Android 1.5 (or higher) ([details](#))
- Google App Engine

Take a look at a [short YouTube sample](#), and the list of all [Google API samples](#).

See the [Support](#) page to ask questions, report bugs, discuss the library, read the announcements, or find out about what "alpha" means to us.

Features

Detailed download and setup instructions can be found [here](#). Maven users simply include:

```
<dependency>
  <groupId>com.google.api.client</groupId>
  <artifactId>google-api-client</artifactId>
  <version>1.3.2-alpha</version>
</dependency>
```

Supports these authentication methods ([details](#)):

- [OAuth 1.0a](#)
- [OAuth 2 draft 10](#)
- [Android AccountManager](#)
- Legacy Google methods: [ClientLogin](#) and [AuthSub](#).

Real Programmers™ don't read documentation

- You could read the documentation, but ...
- What luck!
 - Google APIs Client for Java has Samples
<http://goo.gl/UK3ef>
- Let's Start with the Buzz Sample
 - Lists your recent buzzes
- Download - Build - Run!



google-api-java-client

Google APIs Client Library for Java

[Project Home](#) [Downloads](#) [Wiki](#) [Issues](#) **Source** [Administer](#)

Repository: [Checkout](#) **Browse** [Changes](#) [Clones](#) [Request code review](#)

Source path: hg/ Branch: Tag:

Directories

Filename

- ▼ hg
 - ▶ [bigquery-json-clientlogin-sample](#)
 - ▶ [buzz-json-oauth-sample](#)
 - ▶ [calendar-v2-atom-android-sample](#)
 - ▶ [calendar-v2-atom-oauth-appengine-sample](#)
 - ▶ [calendar-v2-atom-oauth-sample](#)
 - ▶ [chrome-licensing-json-oauth-sample](#)
 - ▶ [diacritization-json-sample](#)
 - ▶ [discovery-appengine-sample](#)
 - ▶ [discovery-sample](#)
 - ▶ [docs-v3-atom-oauth-sample](#)
 - ▶ [latitude-json-oauth-sample](#)
 - ▶ [mavenrepo](#)
 - ▶ [moderator-json-oauth-sample](#)
 - ▶ [picasa-atom-android-sample](#)
 - ▶ [picasa-atom-oauth-sample](#)
 - ▶ [prediction-json-clientlogin-sample](#)
 - ▶ [verification-jsonc-sample](#)
 - ▶ [youtube-jsonc-sample](#)

[.hgignore](#)

[.hgtags](#)

Demo: Running the Buzz Sample

Real Programmers™ DO read comments

BuzzSample.java:

```
/** Value of "Client ID" from Google APIs console.  
    See http://code.google.com/apis/console */  
static final String  
    CLIENT_ID = "enter_client_id";  
  
/** Value of "Client secret" from Google APIs console. */  
static final String  
    CLIENT_SECRET = "enter_client_secret";  
  
/** Redirect URIs must be 'urn:ietf:wg:oauth:2.0:oob'  
    for native apps */  
static final String  
    REDIRECT_URIs = "urn:ietf:wg:oauth:2.0:oob";  
  
/** Buzz scope needed by the sample */  
static final String  
    SCOPE = "https://www.googleapis.com/auth/buzz";
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```

Branding information

The following information is shown to users whenever you request access to their private data.

Product name: URLShortener

Google account: tony.the.developer@gmail.com

Edit branding information...

Client ID for installed applications

Client ID: 1095592944692.apps.googleusercontent.com

Client secret: ND17geuzgA90rwymlwRJO6T6

Redirect URIs: urn:ietf:wg:oauth:2.0:oob
http://localhost

Reset client secret...

Create another client ID...

Simple API Access

An API key cannot be used to access protected user data. [Learn more](#)

API key: AIzaSyA4zjZg0cwykB63DV_hbf9XhYsv1-9AH18

Activated on: Apr 13, 2011 3:26 PM

Activated by: tony.the.developer@gmail.com – you

Generate new key...

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BuzzSample.java:

```
/** Value of "Client ID" from Google APIs console.  
    See http://code.google.com/apis/console */  
static final String  
    CLIENT_ID = "4930773.apps.googleusercontent.com";  
  
/** Value of "Client secret" from Google APIs console. */  
static final String  
    CLIENT_SECRET = "yWXWdbQ6oBmXBuo4VuuiIVUM";  
  
/** Redirect URIs must be 'urn:ietf:wg:oauth:2.0:oob'  
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Demo: A Working Sample App

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- **tour the sample**
- finish the app

Managing projects

- signup
- access
- traffic controls

Summary

Code: Build a Service Request Factory

```
import com.g.a.services.buzz.v1.Buzz;  
import com.g.a.client.http.javanet.NetHttpTransport;  
import com.g.a.client.json.jackson.JacksonFactory;  
  
// Select an HTTP transport and a JSON parser  
// appropriate for our execution environment  
HttpTransport transport = new NetHttpTransport();  
JacksonFactory jsonFactory = new JacksonFactory();  
  
// Create a factory for service requests  
Buzz buzz = new Buzz("My App", transport, jsonFactory);
```

Code: Build a Service Request Factory

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import com.g.a.services.buzz.v1.Buzz;  
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```

Code: Authenticate using OAuth2

```
ClientIdentity identity = new OAuth2ClientIdentity(
    CLIENT_ID,
    CLIENT_SECRET);

// Create a local server flow
LocalServerFlow localServerFlow =
    new LocalServerFlow(identity, scopes);

// Get an accessToken
String token = localServerFlow.getAccessToken();

// Use this token on all subsequent requests
buzz.setAccessToken(token);
```

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buzz.setAccessToken(token);
```

The sample hides the details of OAuth2

Code: Make a Request

```
import c.g.a.services.buzz.v1.model.Activity;
import c.g.a.services.buzz.v1.model.ActivityFeed;

...
Buzz.Activities.List request =
    buzz.activities.list("@me", "@self");
request.maxResults = 10;
ActivityFeed feed = request.execute();

if (feed.items == null) return; // No posts
for (Activity activity : feed.items) {
    String post = activity.buzzObject.content;
    System.out.println("Buzz post: " + post);
}
```

Code: Make a Request

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    System.out.println("Buzz post: " + post);
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Summary

Find and Replace URLs

```
class RegexSubstringReplacer {  
    RegexSubstringReplacer(String source, String regex);  
  
    Boolean next() { ... }  
  
    String currentMatch() { ... }  
  
    void replaceWith(String newText) { ... }  
  
    String result() { ... }  
  
}
```

Find and Replace URLs

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}
```

Add URL Shortener to your Project

- Accept the TOS for URL Shortener

Add URL Shortener to your Project

- Accept the TOS for URL Shortener
- Build service request factory for URL Shortener

```
import com.google.api.urlshortener.v1.Urlshortener;  
  
HttpTransport transport = new NetHttpTransport();  
JacksonFactory factory = new JacksonFactory();  
Buzz buzz = new Buzz("App Name", transport, factory);  
  
Urlshortener urlshortener =  
    new Urlshortener("App Name", transport, factory);
```

Shorten the URLs

```
String shortenContentUrls(String text) {
    RegexSubstringReplacer replacer =
        new RegexSubstringReplacer(text, URL_REGEX);
    while (replacer.next()) {
        String originalUrl = replacer.currentMatch();
        if (originalUrl.startsWith("http://goo.gl/"))
            continue;

        Url requestBody = new Url();
        requestBody.longUrl = originalUrl;
        Urlshortener.Url.Insert request =
            urlshortener.url.insert(requestBody);
        Url response = request.execute();
        replacer.replaceWith(response.id);
    }
    return replacer.result();
}
```

Shorten the URLs

```
String shortenContentUrls(String text) {
    RegexSubstringReplacer replacer =
        new RegexSubstringReplacer(text, URL_REGEX);
    while (replacer.next()) {
        String originalUrl = replacer.currentMatch();
        if (originalUrl.startsWith("http://goo.gl/"))
            continue;

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```

Shorten the URLs

```
String shortenContentUrls(String text) {
    RegexSubstringReplacer replacer =
        new RegexSubstringReplacer(text, URL_REGEX);
    while (replacer.next()) {
        String originalUrl = replacer.currentMatch();
        if (originalUrl.startsWith("http://goo.gl/"))
            continue;

        Url requestBody = new Url();
        requestBody.longUrl = originalUrl;
        Urlshortener.Url.Insert request =
            urlshortener.url.insert(requestBody);
        Url response = request.execute();
        replacer.replaceWith(response.id);
    }
    return replacer.result();
}
```

Update the Activities Feed

```
for (Activity activity : feed.items) {  
  
    String oldContent = activity.buzzObject.content;  
    String newContent = shortenContentUrls(oldContent);  
    if (!newContent.equals(oldContent)) {  
        activity.buzzObject.content = newContent;  
        Buzz.Activities.Update updateRequest =  
            buzz.activities.update(  
                "@me", "@self", activity.id, activity);  
        Activity result = updateRequest.execute();  
    }  
}
```

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Demo: Let's see this puppy in action!

Did Anything Happen?

- Check the Buzz feed again <http://goo.gl/fk4kC>

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- get inspired
- learn about APIs
- start coding
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Managing projects

- signup
- access
- traffic controls

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Signing Up

- You're becoming a partner
 - You can track usage of your app
 - Google can contact you
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- The Terms of Service
 - The agreement protects both parties
 - Read it (once)!

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Accessing Services

- You need to identify yourself for two purposes
 - To access Google services (not user related)
 - To access user data (with user permission)

Accessing Services

- You need to identify yourself for two purposes
 - To access Google services (not user related)
 - To access user data (with user permission)
- Unregistered Experimentation is OK
 - May get limited service access
 - e.g., fewer APIs, lower QPS
 - May get limited user data access
 - e.g., public feeds only

Branding information

The following information is shown to users whenever you request access to their private data.

Product name: Google I/O Demo Project

Google account: david.logad@gmail.com

[Edit branding information...](#)

Client ID for web applications

Client ID: 935896916610.apps.googleusercontent.com

Client secret: Oi4n83I9qqWVadUBPNk4QLSZ

Redirect URIs: none

JavaScript origins: none

[Edit settings...](#)

[Reset client secret...](#)

[Create another client ID...](#)

Simple API Access

An API key cannot be used to access protected user data. [Learn more](#)

API key: AIzaSyAwizREIv3K9VQC0ybh2uMCHwZR9qkbQo8

Activated on: Apr 20, 2011 5:22 PM

Activated by: david.logad@gmail.com – you

[Generate new key...](#)

API Keys for Public Access

- App just needs to access a public Google service

API Keys for Public Access

- App just needs to access a public Google service
- Your API Key
 - Grab and Go
 - Send on all requests (GET or POST)

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```
https://www.googleapis.com/urlshortener/v1/  
url?shortUrl=http://goo.gl/fbsS&  
key=AIzaSyAwizREIv3K9VQC0ybh2uMCHwZR9qkbQo8
```

(try it! <http://goo.gl/Nhm7a>)

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- Simple shared-secret security
 - Protect it on your server
 - Can be referer-locked for browser usage

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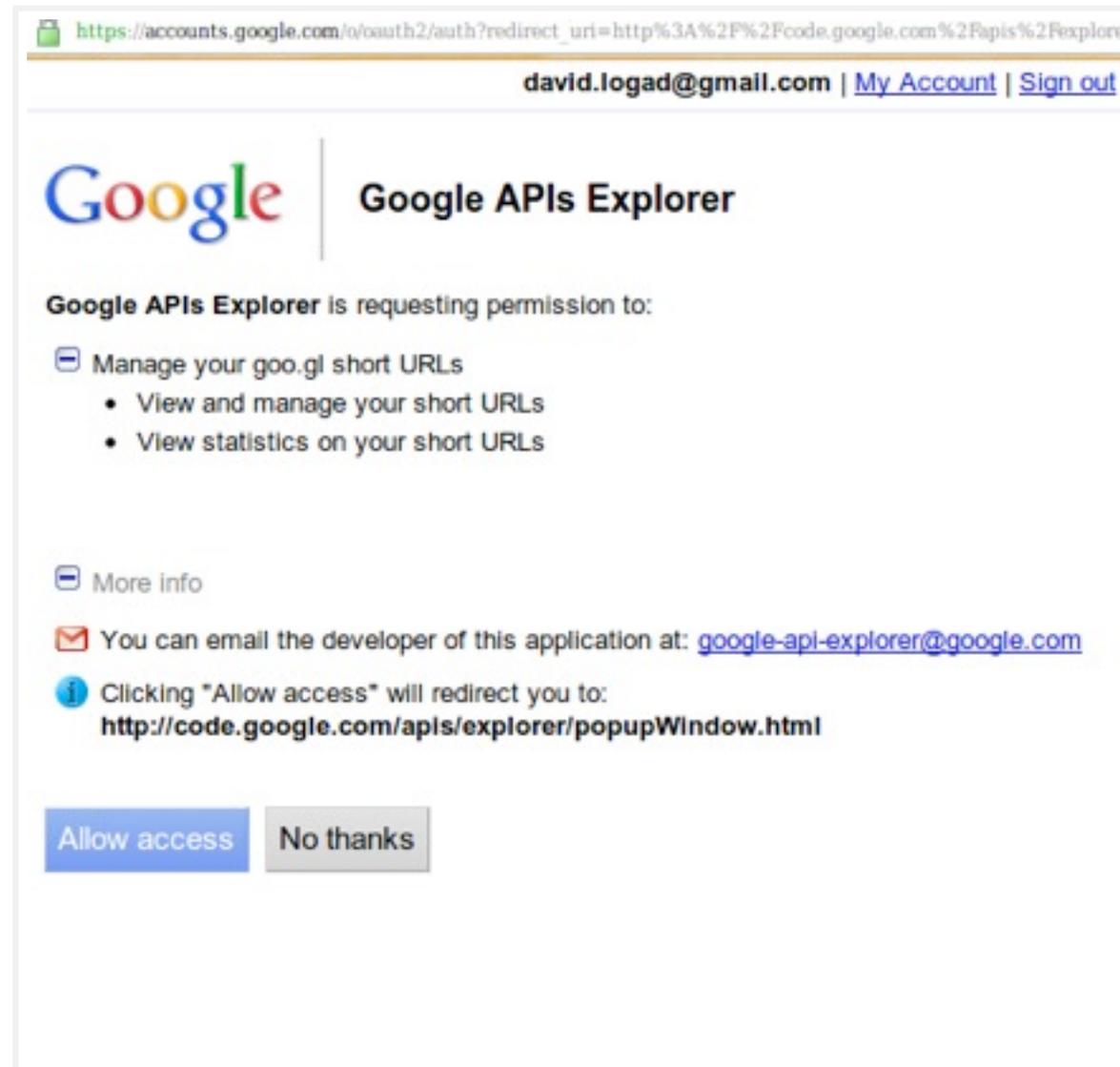
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User-delegated access: OAuth 2.0

How does the user provide access to an app, without providing their password?

1. App asks Google to present a permission dialog
2. Google gives access credentials back to App (in various ways)
3. App uses credentials to request user's data



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JavaScript Flow URL

```
http://code.google.com/apis/  
explorer/popupWindow.html  
#access_token=XXXXX
```

Web Server Flow URL

```
https://www.example.com/  
oauth2callback?code=YYYYY
```

Local Server Flow URL

```
http://localhost/  
oauth2callback?code=YYYYY
```

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```
https://www.google.com/m8/  
feeds/contacts/default/full  
?oauth_token=ZZZZZZ
```

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4. User can revoke

<https://accounts.google.com>

Google accounts

Authorized Access to your Google Account

Connected Sites, Apps, and Services

You have granted the following services access to your Google Account:

- Google APIs Explorer — Google URL Shortener [[Revoke Access](#)]

User-delegated access: OAuth 2.0

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More about Auth:

"Identity and Data Access:
OpenID and OAuth"

Tomorrow @ 1:45p

<http://goo.gl/io/TmcV9>

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Traffic Controls

- All new APIs have a default daily limit (per app)
 - Sufficient for many small-to-moderate size sites
 - More available on request, esp. academic usage
 - We are introducing some billable APIs

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- You can set a limit on user traffic (per IP)
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Traffic Controls

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- You can set a limit on user traffic (per IP)
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 - Allow bursts of traffic if your application needs it
- What if your server is proxying user requests?
 - **userip** parameter does per-user metering for you:
 - [https://www.googleapis.com/api/request?
key=...&userip=...](https://www.googleapis.com/api/request?key=...&userip=...)

Billable APIs

- High volume traffic has real serving costs
 - Set daily limits
 - Charge for high volume
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Billable APIs

- High volume traffic has real serving costs
 - Set daily limits
 - Charge for high volume
 - Payment is also a way to improve the quality bar
- Process
 - Register a credit card
 - Set a daily maximum
 - All billable APIs receive an increased limit
 - Use a "production" project to separate traffic
 - Billing is monthly

DEMO: Traffic Controls and Billing

[Development](#)
[Production](#)

Make some traffic:
<http://goo.gl/Nhm7a>

DEMO: Traffic Controls and Billing

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What's New in Google APIs

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What's New in Google APIs

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- APIs Explorer
- **Google APIs Client Library for Java**

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What's New in Google APIs

- APIs Explorer
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For More Information

- Download today's sample
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- More client libraries
 - Python, .NET, PHP, Ruby, ...
 - <http://code.google.com/apis/discovery/libraries.html>

More at Google I/O 2011

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Q&A: Hashtags: [#io2011](#) [#GoogleAPIs](#)
Feedback: <http://goo.gl/KAkkZ>



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