Google Cloud Client Libraries, Google Cloud SDK, and Google Firebase SDK

Developing Applications with Google Cloud Platform

CLOUD CLIENT LIBRARIES, CLOUD SDK, FIREBASE SDK

QWIKLABS SETTING UP A DEVELOPMENT ENVIRONMENT

Version 2.0
Last modified: 2017-09-25

What are the Google Cloud Client Libraries?

Client Libraries:

- Are the latest and recommended way to make requests to the server
- Provide idiomatic code in each language
- Receive performance benefits from gRPC APIs

Google Cloud

Google Cloud Client Libraries are the latest and recommended approach to making requests to the server. The Cloud Libraries make it easier to access API calls using your favorite programming language.

Google Cloud Client Libraries handle low-level communication with the server, including authentication with Google, and can be installed using familiar installation packages such as npm and pip. The Client Libraries also provide retry logic for transient network failures. Consult the Client Libraries documentation for more details.

Google Cloud Client Libraries provide idiomatic code in supported languages, which makes them easier to work with. Some libraries give you performance benefits from gRPC. Google Remote Procedure Calls (gRPC) is an open-source remote procedure call framework that can be run anywhere. gRPC makes it easier to build connected systems because it enables client and server applications to communicate transparently.

Google API Client Libraries should only be used if your programming language of choice isn't supported by the Google Cloud Client Libraries yet. They provide access to REST APIs only and do not support gRPC.

gRPC APIs: https://cloud.google.com/apis/docs/client-libraries-explained#grpc_apis
Authentication with Google: https://cloud.google.com/docs/authentication/

What languages are supported by the Google Cloud Client Libraries?


.NET


Go

Java

Node.js

PHP


Python


Ruby

Google Cloud

Google Cloud Client Libraries are the latest and recommended client libraries for calling Google Cloud APIs. Supported languages include .NET, Go, Java, Node.js, PHP, Python, and Ruby.

https://cloud.google.com/apis/docs/cloud-client-libraries

Get started with the Google Cloud Client Libraries

GitHub repos:

- Provided for each supported language and individual services
- Contain installation instructions and Client Library code

Reference libraries:

- Link to documentation
- Link to relevant StackOverflow posts
- Provide code examples

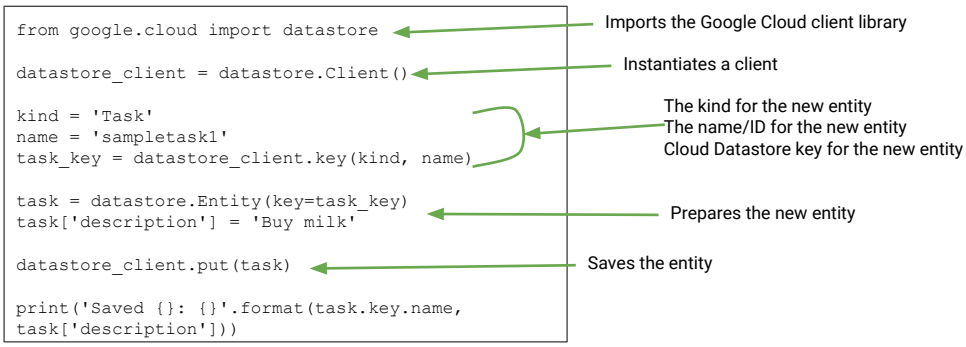
Google Cloud Client Library	Installation & Reference
Go	• GitHub Repo • Library Reference
Java	• GitHub Repo • Library Reference
Node.js	• GitHub Repo • Library Reference
Python	• GitHub Repo • Library Reference
Ruby	• GitHub Repo • Library Reference
PHP	• GitHub Repo • Library Reference
C#	• GitHub Repo • Library Reference

Google Cloud

You can pull the repo for the Google Cloud Client Libraries for each of the supported programming languages. The GitHub Repo page lists the services/APIs supported by each language's Cloud Client library and provides installation instructions. You can also download Cloud Client Libraries for individual Cloud Platform services. Reference libraries contain links to documentation and relevant StackOverflow posts and provide code examples. The reference libraries are your one-stop shop for information on a language-specific Google Cloud Client Library.

For direct links to GitHub Repos and Reference Libraries, see https://cloud.google.com/apis/docs/cloud-client-libraries.

Import the Datastore client library using Python



Google Cloud

Every package uses a Client as a base for interacting with an API. If your application is running on App Engine or Compute Engine, authentication for your application will "just work." If you don't explicitly provide credentials, the Client will reuse the credentials from the gcloud tool, assuming it has already been installed and authorized. The example demonstrates importing the Datastore client library, instantiating the client using default credentials, and adding an entity to the Datastore.

Google Application Default Credentials:
https://developers.google.com/identity/protocols/application-default-credentials
Authentication with the Python Client Library:
https://googlecloudplatform.github.io/google-cloud-python/stable/core/auth.html#overview

The Google Cloud SDK is a set of command-line tools

- The SDK:
  - Allows you to access GCP products and services
  - Consists of:
    - gcloud
    - bq
    - gsutil
  - Allows you to run tools
    - Interactively
    - In your automated scripts

Google Cloud

The Google Cloud SDK consists of three command-line tools: gcloud, bq, and gsutil. These tools allow you to access GCP products and services. You can run your tools interactively or in your automated scripts.

Google Cloud SDK Documentation: https://cloud.google.com/sdk/docs/

Google Cloud SDK: gcloud

- Is a command-line tool
- Allows you to perform common tasks on GCP
- Allows you to create and manage GCP resources

```
gcloud compute instances list

NAME              ZONE          MACHINE_TYPE  INTERNAL_IP    EXTERNAL_IP     STATUS
example-instance  asia-east1-b  n1-standard-1 10.240.95.199  107.167.182.44  RUNNING
example-instance2 us-central1-a n1-standard-1 10.240.173.254 23.251.148.121  RUNNING
test-instance     us-central1-a n1-standard-1 10.240.118.207 23.251.153.172  RUNNING
```


Google Cloud

The Google Cloud SDK is a set of command-line tools that helps you manage resources and applications hosted on GCP.

You can perform many common tasks on GCP using the command-line tool gcloud, including creating and managing resources for various services. Alpha and Beta commands provide additional functionality.

This example lists all the Compute Engine VM instances for your project.

https://cloud.google.com/sdk/docs/overview
https://cloud.google.com/sdk/gcloud/
https://cloud.google.com/appengine/docs/standard/java/tools/migrating-from-appcfg-to-gcloud

Google Cloud SDK: bq

- Is a command-line tool to work with Google BigQuery
- Allows you to manage datasets, tables, and other BigQuery entities
- Allows you to run queries

```
bq query "SELECT word, SUM(word_count) as count FROM publicdata:samples.shakespeare WHERE word CONTAINS
'raisin' GROUP BY word"

Waiting on job_dcda37c0bbed4c669b04dfd567859b90 ... (0s) Current status: DONE
+--------------+-------+
|     word     | count |
+--------------+-------+
| Praising     |   4   |
| raising      |   5   |
| raisins      |   1   |
| praising     |   8   |
| dispraising  |   2   |
| dispraisingly |   1   |
+--------------+-------+
```


bq is a command-line tool used to work with Google BigQuery. bq's primary purpose is running queries and it can also be used to manage datasets, tables, and other BigQuery entities.

https://cloud.google.com/bigquery/bq-command-line-tool

Google Cloud SDK: gsutil

- Is a command-line tool to perform tasks in Google Cloud Storage
- Allows you to:
  - Create and manage buckets
  - Upload, download, and delete objects
  - Move, copy, and rename objects
  - Manage access to stored data

```
gsutil cp Desktop/cloud-storage-logo.png gs://my-awesome-bucket

Copying file://Desktop/cloud-storage-logo.png [Content-Type=image/png]...
Uploading   gs://my-awesome-bucket/cloud-storage-logo.png:       0 B/2.58 KiB
Uploading   gs://my-awesome-bucket/cloud-storage-logo.png:       2.58 KiB/2.58 KiB
```


Google Cloud

gsutil is a command-tile tool used to perform tasks in Google Cloud Storage. You can use gsutil to create and manage buckets; upload, download, and delete objects; move, copy, and rename objects; and manage access to stored objects.

https://cloud.google.com/storage/docs/gsutil

Installing and configuring Google Cloud SDK

Install:

Initialize:

```
gcloud init
```

Use:

- Manage components
- Use gcloud Interactive Shell (Beta)
- Script gcloud Commands

Google Cloud

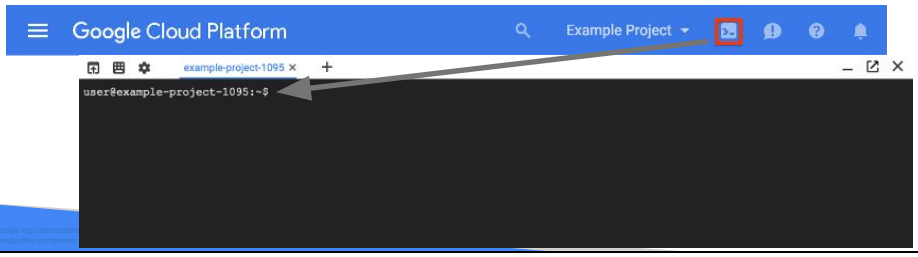
You can download and install Cloud SDK on Linux, Mac OS X, and Windows. You can install Cloud SDK using apt-get on Debian and Ubuntu.

Initialize Cloud SDK by running gcloud init. Once it is initialized, start using it! You can install and manage SDK components and use the gcloud Interactive Shell (in beta), which provides prompt completion and suggests flags. You can even script gcloud commands to automate your processes.

Downloads: https://cloud.google.com/sdk/downloads

Cloud Shell

- Is a browser-based command-line tool
- Gives you access to a temporary virtual machine instance with:
  - 5 GB of persistent disk storage
  - Pre-installed Google Cloud SDK
- Provides built-in authorization to Cloud Platform Console projects and resources
- Has a built-in code editor (beta)



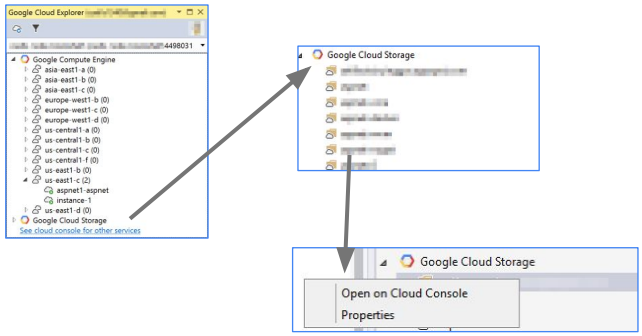
Google Cloud

Google Cloud Shell is a free admin machine with browser-based command-line access. It allows you to easily manage your infrastructure and application on Google Cloud Platform. It gives you access to a temporary virtual machine instance with 5 GB of persistent disk storage. When you start Cloud Shell, it provisions an f1-micro Google Compute Engine virtual machine running a Debian-based Linux OS. Cloud Shell instances are provisioned on a per-user, per-session basis. The instances persist only while your Cloud Shell session is active and terminate after an hour of inactivity. Google Cloud SDK comes pre-installed in Cloud Shell. Additionally, Cloud Shell has built-in authorization to your Cloud Platform Console projects and resources. Cloud Shell comes with a built-in code editor based on Orion to browse file directories and view and edit files, with continued access to Cloud Shell. Cloud Shell provides pre-installed language support for Java, Go, Python, Node.js, Ruby, PHP, and .NET.

https://cloud.google.com/shell/docs/

Cloud developer tools are available for various IDEs

- Android Studio
- Eclipse
- IntelliJ
- PowerShell (Beta)
- Visual Studio



Integrate with your favorite IDEs to accelerate your development on Google Cloud Platform!

Google Cloud

Google Cloud Platform provides cloud tools for various IDEs to facilitate development on Google Cloud Platform. Cloud tools are supported for Android Studio, Eclipse, IntelliJ, Powershell (Beta), and Visual Studio.

For example, Cloud Developer Tools for Visual Studio allows the developer to browse computer engine resources, storage buckets, and Cloud SQL instances from the IDE.

Cloud Developer Tools for Android Studio:
https://cloud.google.com/tools/android-studio/docs/
Cloud Developer Tools for Eclipse: https://cloud.google.com/eclipse/docs/
Cloud Developer Tools for IntelliJ: https://cloud.google.com/tools/intellij/docs/
Cloud Developer Tools for PowerShell (Beta):
https://cloud.google.com/tools/powershell/docs/
Cloud Developer Tools for Visual Studio:
https://cloud.google.com/tools/visual-studio/docs/

Google Firebase

- Is a mobile and web application development platform
- Supported platforms:
  - Android
  - iOS
  - Web
  - C++
  - Unity
  - Node.js
- Integration with Google Cloud Platform includes:
  - Firebase SDKs for Cloud Storage
  - App Engine standard environment + Firebase
  - Trusted execution added to your Firebase app
  - User authentication
  - Google Cloud Functions (Beta) for Firebase
  - Google Cloud Vision API
  - Google Cloud Speech API

Google Cloud

Google Firebase is a mobile and web application development platform. Supported platforms include Android, iOS, Web, C++, Unity, and Node.js.

Firebase is integrated with various services in Google Cloud Platform. The Firebase SDKs for Cloud Storage store files directly in Google Cloud Storage buckets, and you can use the Google Cloud Storage APIs to access files uploaded via Firebase SDKs for Cloud Storage.

Firebase SDKs for Cloud Storage use the default bucket for Google App Engine standard environment, so you can use the built-in App Engine APIs to share data between Firebase and your App Engine app. Additionally, you can retrieve, verify, and store user credentials using Firebase Authentication, the Google App Engine standard environment, and Google Cloud Datastore.

Google Cloud Functions (Beta) is GCP's serverless offering. Cloud Functions for Firebase lets you automatically run backend code in response to events triggered by Firebase features and HTTPS requests, and the code is stored in Google's cloud and run in a managed environment; no management or scaling of your own servers is required!

Other use cases include integrating your Firebase app with Google Cloud Vision and Speech APIs.

https://firebase.google.com/docs/
https://firebase.google.com/docs/storage/gcp-integration
https://cloud.google.com/appengine/docs/standard/python/authenticating-users-firebase-appengine
https://firebase.google.com/docs/functions/
https://cloud.google.com/solutions/mobile/firebase-app-engine-android-studio
https://firebase.google.com/docs/storage/gcp-integration