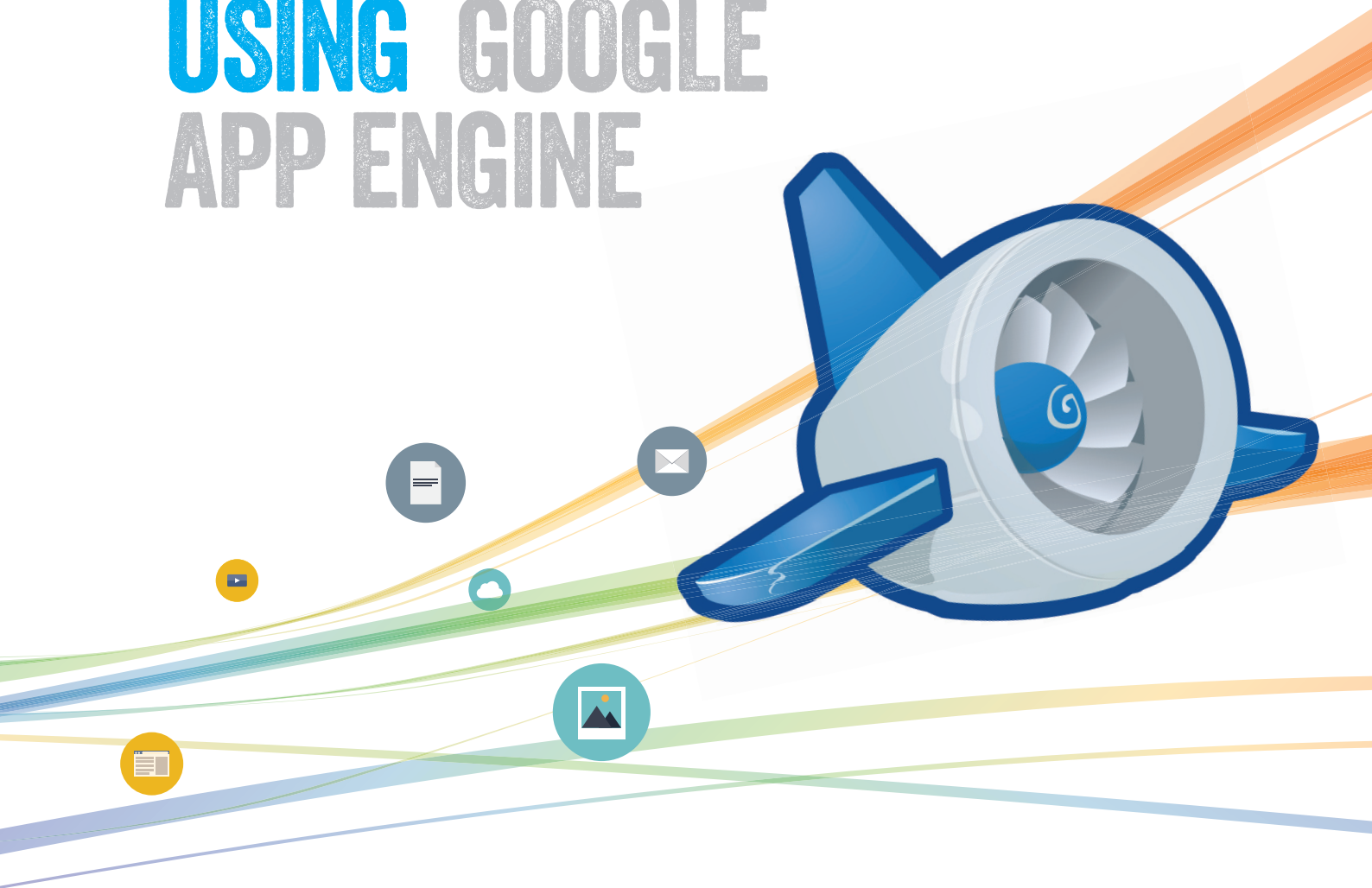


# BUILDING COLLABORATIVE WEB APPLICATIONS USING GOOGLE APP ENGINE



*Using the power of Google to create top notch  
web applications with Google App Engine*

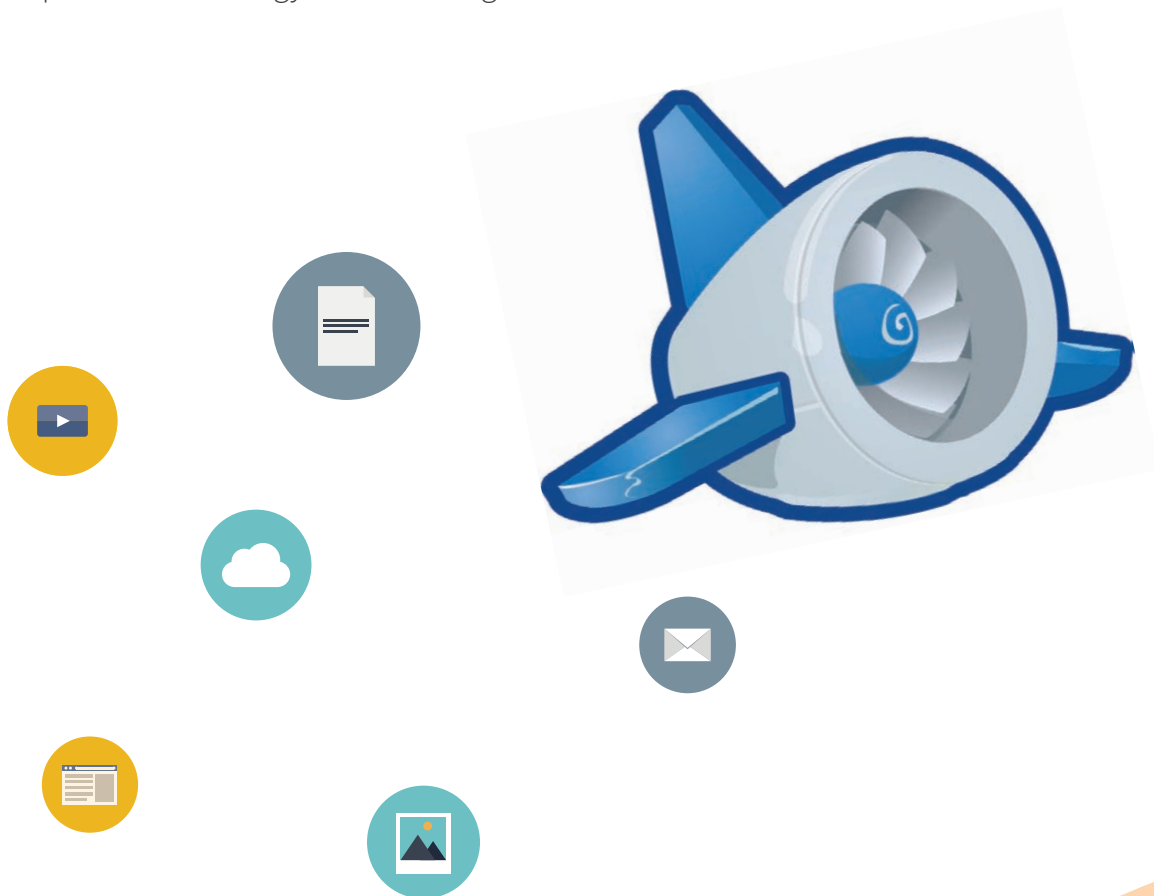
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01

# GOOGLE APP ENGINE – WHAT IS IT?

Google App Engine is Google's application development and hosting platform. It offers a fully integrated development environment in PAAS model, with many top advantages, such as free start-up, easy scalability, high speed, super-reliability, and cost-effectiveness, minus the need for assembly.

You can use Google App Engine to develop and deploy high-traffic web applications, sans the burden of high-traffic infrastructure, and yet use the same potent technology behind Google's own websites.



# 02

## KEY COMPONENTS

To get started, the developer supplies a URL for the application to the Google App Engine, and the Google App Engine transmits the code to the development platform.

The App Engine administers the web application lifecycle, which includes standard tasks like request logs, updating the application version, verifying the application status, handling the underlying database, and managing workflow. It integrates all development tools into a single environment, and offers several add-on services, such as:

- Infrastructure as a Service (IaaS) by Google, which allows developers to scale the capacity up or down, on demand
- Google Accounts for authentication
- BigTable platform for data management
- Google native file system (GFS)
- A distributed storage system that handles big structured data

It also incorporates infrastructure services such as load balancing, persistent storage with queries, sorting and transactions, programming interfaces that support user authentication functions, timed tasks for prompting events at indicated times and fixed intervals, among others.

Google offers [a special development stack](#) to work with the App Engine in the cloud. This “scalable serving infrastructure” integrates the Python runtime code, Java runtime code, a Software Development Kit (SDK) for developers to write application code, a web-based administration console, and a data store or software layer to store the web application’s data. These sets of tools come configured to connect the web application code to the Google environment.

# 03 COLLABORATIVE DEVELOPMENT

A big advantage of the Google App Engine is the possibility to leverage it for collaborative development, using multiple developers.

Adding multiple developers to a single app development project is easy in any Google project:

1. Use the Permissions pane in the admin console to add the developer logins and authorizations.
2. Invite other Google accounts, as required, to collaborate on the application, from the Application Console Developers page.

Once this is done, authorized developers will be able to deploy new application versions using the [App Engine Python SDK](#) command, `appcfg.py`. This command allows users to upload new versions of the code, configuration and static files, manage data store indexes, and download log data.

Google App Engine allows the administrator to use any Version Control System, and host it anywhere. The popular option, Git or GitHub, works fine, just as anything else. Using a free GitHub account means that the repository is open for public viewing, meaning it becomes a de-facto open source project. However, by using a paid GitHub account, it is possible to make private repositories, accessible only by the selected members.

Furthering the cause of collaboration, the App Engine facilitates easy testing and validation. Every time a developer writes a piece of code, the engine runs it through a comprehensive range of rigorous tests automatically, from straight forward unit tests to extensive integration tests that involve all the services in the product. The code goes to production automatically if the tests pass. This not only makes things easier when multiple developers are involved in a single project, it also provides quick feedback to the developers, improving their productivity.

# 04 DEVTABLE

While the Google App Engine Software Development Kit (SDK) offers a great experience for developers, it is not yet supported on mobile or web platforms. Using DevTable—a hosted integrated development environment (IDE)—fills the void and improves collaborative development in its own right.

DevTable offers a single and unified development environment accessible online from any device or location. It spares developers the need to install and run the App Engine Software Development Kit (SDK) locally and facilitates editing and deployment of apps using Python directly on the cloud.

The process is simple and straightforward:

1. Login to DevTable to create a new project using the provided Google App Engine template.
2. The instructions will explain how to create a new App Engine app and authorize DevTable to deploy on the developer's behalf. [DevTable uses OAuth deployment](#); hence, the user's Google password is not required. [OAuth](#), an open standard to authorization, allows resource owners to authorize a secure delegated third-party access without them sharing login credentials. OAuth facilitates different access levels and access granularity, leaving the user in control of what to share.
3. Click the Run Project button and select View on App Engine Mimic to deploy the Mimic bootstrap code to a special version of the app. Each time this page is refreshed the newest code is pulled from the DevTable project, which means that editing and testing code becomes very easy and seamless.
4. Developers can leverage the real-time collaboration support on offer to pair program and App Engine app simultaneously across the globe.

# 05

## GOOGLE DRIVE

The Google App Engine not just facilitates collaborative app development, but also makes it easy to roll out collaborative apps where users can share files and documents, or contribute. In this, Google Drive API plays a big part.

Google Drive allows users to create documents, Excel sheets, slides, and also a host of other functionality, and collaborate in real-time. The Google Drive API makes it possible to add this real-time collaboration power to apps. The API adds network communication, storage, presence, conflict resolution, and other collaborative details to the mix.

Developing the Drive Realtime API is simple. The API provides collaborative versions of familiar data objects such as lists, maps, strings, and JSON values. It also synchronizes and stores modifications to these objects automatically. It is possible to add change event handlers to these collaborative objects so that the app can react to changes from other collaborators. The app reads from and writes to these objects like any other local object.

The Google App Engine integrates seamlessly with Google Drive. For instance, using the Google File Picker API to choose files from the user's Google Drive and the Google Drive API to download the chosen files, all within the app, becomes very easy. App users may also get functionality to fix appointments with Google Calendar, save documents in Google Drive, raise invoices through Google Spreadsheets and consolidate emails by subject matter with the help of a Gmail gadget.

# 06 SET UP COLLABORATIVE USER

By default, the app would facilitate universal collaboration. However, it is possible to use the Google App Engine to restrict the users of the application and the data to one organization or a group, making it an internal collaboration platform. This is achieved by configuring the app to solicit the credentials of the account from a precise existing Google Apps domain. For this, simply select “edit” under the text “Open to all Google Accounts” at the initial create application page and select “Restricted”.



# 07 OTHER COLLABORATIVE FEATURES

Google App Engine offers many other communication and collaboration services that further the cause of collaborative apps:

- The platform makes it possible to generate public wikis for the service with the help of Google Sites.
- It is possible to add other Google collaborative features, such as Google Hangouts that make it easy to organize high definition video meetings via Hangouts with up to 15 people over laptop, tablet or phone.
- After deployment, it is possible to connect via email with the users via branded email addresses and the Gmail experience, without going out of the platform.

Google is on a mission to become the dominant force in all aspects of computing, and thanks to this, app developers and users have never had it so easy.

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