



## **Service Organization Controls (SOC) 3 Report**

**Report on the Google Apps for Work, Google Drive for Work (Google Apps Unlimited), Google Apps for Education, Google Cloud Platform and Other Google Services Relevant to Security, Availability, Processing Integrity, and Confidentiality**

**For the Period 1 May 2014 to 30 April 2015**

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**Google's Management Assertion Regarding the Effectiveness of Its Controls  
Over the Google Apps for Work, Google Drive for Work (Google Apps Unlimited), Google  
Apps for Education, Google Cloud Platform and Other Google Services (System)  
Based on the Trust Services Principles and Criteria for Security, Availability, Processing  
Integrity, and Confidentiality**

Google Inc. (the Company) maintained effective controls over the security, availability, processing integrity and confidentiality of its Google Apps for Work, Google Drive for Work (Google Apps Unlimited), Google Apps for Education, Google Cloud Platform and Other Google Services (System) to provide reasonable assurance that:

- the System was protected against unauthorized access, use, or modification;
- the System was available for operation and use, as committed and agreed;
- the System processing was complete, accurate, timely, and authorized; and
- the System information designated as confidential was protected as committed or agreed

during the period 1 May 2014 through 30 April 2015 based on the security, availability, processing integrity, and confidentiality principles set forth in the American Institute of Certified Public Accountants' (AICPA) TSP section 100, *Trust Services Principles, Criteria, and Illustrations for Security, Availability, Processing Integrity, Confidentiality, and Privacy*.

Our attached System Description of the Google Apps for Work, Google Drive for Work (Google Apps Unlimited), Google Apps for Education, Google Cloud Platform and Other Google Services (System) identifies the aspects of the System covered by our assertion.

**GOOGLE Inc.**

15 July 2015



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## Report of Independent Accountants

To the Management of Google Inc.:

We have examined management's assertion that Google Inc., during the period 1 May 2014 through 30 April 2015, maintained effective controls to provide reasonable assurance that:

- the Google Apps for Work, Google Drive for Work (Google Apps Unlimited), Google Apps for Education, Google Cloud Platform and Other Google Services System was protected against unauthorized access, use, or modification;
- the Google Apps for Work, Google Drive for Work (Google Apps Unlimited), Google Apps for Education, Google Cloud Platform and Other Google Services System was available for operation and use, as committed or agreed;
- the Google Apps for Work, Google Drive for Work (Google Apps Unlimited), Google Apps for Education, Google Cloud Platform and Other Google Services System processing is complete, valid, accurate, timely, and authorized;
- information within the Google Apps for Work, Google Drive for Work (Google Apps Unlimited), Google Apps for Education, Google Cloud Platform and Other Google Services System designated as confidential is protected as committed or agreed

based on the criteria for security, availability, processing integrity and confidentiality in the American Institute of Certified Public Accountants' (AICPA) TSP Section 100, Trust Services Principles and Criteria, for Security, Availability, Processing Integrity, Confidentiality, and Privacy. This assertion is the responsibility of Google Inc.'s management. Our responsibility is to express an opinion based on our examination.

Our examination was conducted in accordance with attestation standards established by the AICPA and, accordingly, included (1) obtaining an understanding of Google Inc.'s relevant security, availability, processing integrity and confidentiality controls, (2) testing and evaluating the operating effectiveness of the controls and (3) performing such other procedures as we considered necessary in the circumstances. We believe that our examination provides a reasonable basis for our opinion.

Because of inherent limitations in controls, error or fraud may occur and not be detected. Furthermore, the projection of any conclusions, based on our findings, to future periods is subject to the risk that the validity of such conclusions may be altered because of changes made to the system or controls, the failure to make needed changes to the system or controls or deterioration in the degree of effectiveness of the controls.



In our opinion, management's assertion referred to above is fairly stated, in all material respects, based on the aforementioned criteria for security, availability, processing integrity and confidentiality.

*Ernst & Young LLP*

15 July 2015



**Description of the Google Apps for Work, Google Drive for Work (Google Apps Unlimited), Google Apps for Education, Google Cloud Platform and Other Google Services System**

**Google Overview**

Google Inc. (“Google”) is a global technology service provider focused on improving the ways people connect with information. Google’s innovations in web search and advertising have made Google’s web site one of the most viewed Internet destinations and its brand among the most recognized in the world. Google maintains one of the world’s largest online index of web sites and other content, and makes this information freely available to anyone with an Internet connection. Google’s automated search technology helps people obtain nearly instant access to relevant information from their vast online index.

Google offers Internet-based services and tools that user entities can access to communicate, collaborate, and work more efficiently. The following Google product offerings automatically saves all work performed by user entities in the cloud and enables user entities to work securely, regardless of where they are in the world and what device they are using.

Google Apps for Work, Google Drive for Work (Google Apps Unlimited), and Google Apps for Education, hereafter described collectively as “Google Apps,” include:

<b>Products</b>	<b>Google Apps for Work</b>	<b>Google Drive for Work (Google Apps Unlimited*)</b>	<b>Google Apps for Education</b>
Gmail	✓	✓	✓
Google Calendar	✓	✓	✓
Google Classroom			✓
Google Contacts	✓	✓	✓
Google Docs	✓	✓	✓
Google Drive	✓	✓	✓
Google Forms	✓	✓	✓
Google Groups	✓	✓	✓
Google Hangouts	✓	✓	✓
Google Sheets	✓	✓	✓
Google Sites	✓	✓	✓



Products	Google Apps for Work	Google Drive for Work (Google Apps Unlimited*)	Google Apps for Education
Google Slides	✓	✓	✓
Google Talk	✓	✓	✓
Google Tasks	✓	✓	✓
Google Vault	✓	✓	✓
Google Apps Admin Console	✓	✓	✓
Google Apps Script	✓	✓	✓
Admin SDK Application Programming Interfaces (APIs)	✓	✓	✓
Product APIs	✓	✓	✓
Inbox by Gmail	✓	✓	✓

\*Google Apps Unlimited is the premium version of Google Apps. In addition to the features available in Google Apps for Work, it includes unlimited storage space and Google Apps Vault for everyone in user's organization. It also offers additional Drive administration, auditing, and reporting features.

Google Cloud Platform allows businesses and developers to build and run their applications on Google's Cloud using the following services, hereafter described collectively as "Google Cloud Platform":

- Google App Engine
- Google BigQuery
- Google Cloud Datastore
- Google Cloud SQL
- Google Cloud Storage
- Google Compute Engine
- Google Genomics

Google social and communication services, hereafter described collectively as "Other Google Services," include:

- Google Now
- Google+



Google's product offerings including Google Apps, Google Cloud Platform and Other Google Services provide the unique advantage of leveraging the resources of Google's core engineering team while also having a dedicated team to develop solutions for the corporate market. As a result, these Google offerings are positioned to innovate at a rapid rate and provide the same level of service that users are familiar with on google.com.

Google Apps, Google Cloud Platform and Other Google Services are targeted to small businesses, medium businesses, and large corporations alike. These products provide what business organizations typically require, including the following:

- Multi-user collaboration
- No special hardware or software required by the enterprise
- Security and compliance features
- Seamless upgrades

The products are comprised of communication, productivity, collaboration and security tools that can be accessed from virtually any location with Internet connectivity. This means every employee and each user entity they work with can be productive from anywhere, using any device with an Internet connection.

The Google Apps, Google Cloud Platform and Other Google Services covered in this system description consist of the following services:

#### *Gmail*

Gmail is a cloud-based email service providing web browser and mobile interfaces. Gmail provides customizable email addresses which include the user entity's own domain, mail search tools and integrated chat. Users can compose and manage email, filter for spam and viruses. It is fully integrated with other Google services such as Calendar, Groups and Drive.

#### *Google Calendar*

Google Calendar is a cloud-based calendaring service providing web browser and mobile interfaces. Calendar is an application that enables individuals and corporations to coordinate and schedule people, meeting rooms and other resources. Users can create events, send invitations, share schedules and track RSVPs. It is fully integrated with other Google services such as Gmail, Drive and Hangout.

#### *Google Classroom*

Google Classroom is cloud-based school communication and assignment management tool. It allows users to create and join classroom groups as teachers and students, distribute and grade assignment as a teacher, or view and submit assignments as a student. Classroom is only available to Apps for Education users.



### *Google Contacts*

Google Contacts is a cloud-based contacts service providing web browser and mobile interfaces. It allows users to import, store and organize contact information about people and businesses with whom they communicate. Not only can each contact contain basic information such as names, email addresses and phone numbers, but also can include extended information like physical address, employer, department or job title. Users can also create personal groups of contacts to email many people at once. It is fully integrated with other Google services such as Gmail, Drive and Groups.

### *Google Docs*

Google Docs is an online word processor that lets users create and format text documents and collaborate with other users in real time. Documents can be private or shared, and multiple people can edit the same document at the same time. Comments can also be left in the document, and documents can be exported to other file formats.

### *Google Drive*

Google Drive is a cloud-based storage solution, where users can create, share, collaborate and keep their files. It provides the sharing controls for files and folders, including Google Docs, Sheets and Slides, as well as any other file type. Drive comes with desktop and mobile apps, making it much easier to upload, synchronize and access files from any device. It is fully integrated with other Google services such as Groups, Hangouts and Gmail.

### *Google Forms*

Google Forms is an online data collection tool that lets users collaboratively build and distribute surveys, polls and quizzes. Google Forms provides real-time analysis of structured form response data through integration with Google Sheets.

### *Google Groups*

Google Groups is a cloud-based rostering service providing web browser and mobile interfaces. It allows online creation and management of user groups. Groups users can engage in discussions about a specific subject; organize meetings, conferences or social events among members of a group; find people with similar hobbies, interests or background; share file and calendar events; read groups posts through email, the online interface or both; and more. It is fully integrated with other Google services such as Gmail, Drive, and Calendar.

### *Google Hangouts*

Google Hangouts is a real-time communication and messaging application that allows users to send and receive messages, photos and videos and make one-to-one and group video calls of up to 15 users at a time. It is available on mobile and desktop devices and is fully integrated with Google products such as Gmail, Drive and Calendar.



### *Google Sheets*

Google Sheets is an online spreadsheet application that lets users create and format spreadsheets and simultaneously work with other users. Spreadsheets can be private or shared, and multiple people can edit the same spreadsheet at the same time. Comments can also be left in the spreadsheet, and spreadsheets can be exported to other file formats.

### *Google Sites*

Google Sites is a cloud-based publishing service providing web browser and mobile browser interfaces. It allows the creation of site pages to share and collaborate on documents, videos, schedules and more. It can be published as an internal or an external facing web site. It is fully integrated with other Google services such as Drive and Groups.

### *Google Slides*

Google Slides is an online presentation application that allows users to show off their work in a visual way and present to audiences. Presentations can be private or shared, and multiple people can edit the same presentation at the same time. Comments can also be left in the presentation, and presentations can be exported to other file formats.

### *Google Talk*

Google Talk is an application that enables text, video and voice communications. Users can initiate a chat, invite friends to a chat and place phone calls to any landline or mobile phone number included in Gmail contacts.

### *Google Tasks*

Google Tasks is an online application that allows users to create task lists and tasks. It is integrated with Gmail and the Google Calendar applications.

### *Google Vault*

Google Vault is corporate solution that provides additional storage and searching tools to manage critical information and preserving important corporate data. Vault helps protect user entities with easy-to-use searches so they can quickly find and preserve data to respond to unexpected customer claims, lawsuits or investigations during the electronic discovery (eDiscovery) process. Additionally, Vault gives Google Apps user entities the extended management and information governance capabilities to proactively archive, retain and preserve Gmail and on-the-record chats. With the ability to search and manage data based on terms, dates, senders, recipients and labels, Vault helps user entities find the information they need, when they need it.



### *Google Admin Console*

Google Admin Console, formerly Google Apps Control Panel, is a cloud-based user and device administrative service used to configure the different applications, perform user management, utilize admin tools, etc. Users can initiate transactions such as creating user accounts to give users access to various Google Apps services, and managing Google services settings.

### *Google Apps Script*

Google Apps Script is a JavaScript cloud scripting language that provides easy ways to automate tasks across Google products and third party services. Users can define the set of transactions their scripts can initiate and process.

### *Admin SDK*

The Administrative Tools for Google Apps within the Admin SDK are used to manage users, groups, devices and apps, create custom usage reports and migrate email and groups to Google Apps.

- *Admin Settings API*  
The Admin Settings API allows administrators of Google Apps domains to retrieve and change the settings of their domains in the form of Google Data API feeds. These domain settings include many of the features available in the Google Apps Admin Console.
- *Directory API*  
Google Apps and reseller administrators can use the Directory API to manage Mobile and Chrome OS devices, groups, group aliases, members, organizational units, users and user aliases.
- *Domain Shared Contacts API*  
The Domain Shared Contacts API allows client applications to retrieve and update external contacts that are shared to all users in a Google Apps domain.
- *Apps Email Audit API*  
The Email Audit API allows Google Apps administrators to audit a user's email, email drafts and archived chats.
- *Calendar Resource API*  
The Calendar Resource API allows Google Apps administrators to retrieve and manage the Google Calendar resources of their domains in the form of Google Data API feeds.
- *Email Settings API*  
The Email Settings API allows website administrators to offer their users co-branded versions of a variety of personalized Google applications, such as Google mail.



- *Groups Migration API*  
The Groups Migration API lets account-level administrators migrate emails from public folders and distribution lists to Google Groups discussion archives.
- *Groups Settings API*  
The Groups Settings API allows account-level administrators to manage the group settings for their Google Apps account.
- *Enterprise License Manager API*  
The Enterprise License Manager API allows administrators to assign, update, retrieve and delete user licenses.
- *Reports API*  
The Reports API lets the account administrators customize usage reports.
- *Reseller API*  
The Reseller API can be used by authorized reseller administrators and reseller's service integrators to place customer orders and manage Google Apps monthly post-pay subscriptions.

#### *Product APIs*

- *Gmail Representational State Transfer (REST) API*  
The Gmail REST API is a RESTful API that can be used to access Gmail mailboxes and send mail. For most web applications (including mobile apps), the Gmail API is the best choice for authorized access to a user's Gmail data for Google Apps users.
- *Drive REST API*  
The Drive REST API is a RESTful API that can be used to Create, Open, Search and Share contents in Google Drive for Google Apps users.
- *Calendar API*  
The Calendar API is a RESTful API that allows client applications to access and edit Google Calendar data for Google Apps users.
- *Contacts API*  
The Contacts API can be used to create new contacts, edit or delete existing contacts and query for contacts that match particular criteria for Google Apps users.
- *Tasks API*  
The Tasks API provides access for searching, reading and updating Google Tasks content and metadata for Google Apps users.
- *Sites API*  
The Sites API allows client applications to access, publish, and modify content within a Google Site, create and delete sites. The API is available to both Google Account and Google Apps users.



- *Sheets API*  
The Sheets API enables developers to create applications that read and modify the data in Google Sheets.
- *Apps Activity API*  
The Apps Activity API allows client applications to retrieve information about a user's Google Apps activity. Currently, the API supports retrieving activity from the Google Drive service regarding changes to a user's Google Drive files. This provides additional functionality on top of the existing Drive API for an app to perform tasks such as displaying activity on a user's files, tracking changes to specific files or folders and alerting a user to new comments or changes to files.

### *Inbox by Gmail*

Inbox by Gmail is the Gmail next generation inbox designed to help people keep track of everything they need to get back to at a later time. It is available on Android, iOS and web.

### *Google App Engine*

Google App Engine is Google's Platform-as-a-Service (PaaS) offering used to build web applications on Google's infrastructure. Google App Engine enables users to build and host web apps on the same systems that power Google applications. App Engine offers fast development and deployment; simple administration, with no need to worry about hardware, patches or backups; and effortless scalability. Google App Engine users can define the set of transactions their applications can initiate and process.

### *Google BigQuery*

Google BigQuery is a fully managed data analysis service that enables businesses to analyze Big Data. It features highly scalable data storage that accommodates up to hundreds of terabytes. It enables companies to import multi-terabyte datasets, query interactively and securely share the results within their organization.

### *Google Cloud Datastore*

Google Cloud Datastore provides a managed, NoSQL, schema-less database for storing non-relational data. Cloud Datastore automatically scales with your users and supports transactions, as well as robust queries.

### *Google Cloud SQL*

Google Cloud SQL stores and manages data using a fully-managed, relational MySQL database. It is a highly available hosted SQL-based storage solution that allows users to create, configure and use relational databases that live in Google's infrastructure. Cloud SQL is tightly integrated with Google App Engine, Compute Engine, Cloud Storage and other Google services.



### *Google Cloud Storage*

Google Cloud Storage is a service for storing and accessing user data on Google's infrastructure. The service combines the performance and scalability of Google's cloud with advanced security and sharing capabilities. Users can define the set of transactions their applications can initiate and process.

### *Google Compute Engine*

Google Compute Engine offers scalable and flexible virtual machine computing capabilities in the cloud. Google Compute Engine allows users to solve large-scale processing and analytic problems on Google's computing, storage and networking infrastructure. Users can launch virtual machines on-demand, manage network connectivity using a simple but flexible networking solution and access a variety of data storage alternatives from their virtual machines.

### *Google Genomics*

Google Genomics provides an API to store, process, explore and share DNA sequence reads, reference-based alignments and variant calls, using Google's cloud infrastructure.

### *Google Now*

Google Now provides personalized and contextual suggestions and recommendations via mobile, desktops and wearable devices. Google Now delivers customized and highly relevant information users care about automatically based on the settings they choose. Simple cards bring the information such as weather, traffic and stock prices that users want to help manage the users' day.

### *Google+*

Google+ is a social networking platform that is fully integrated with other Google products. Users create and are able to manage their own Google+ profile. Google+ allows users to create and share content with each other. It also enables users to select and organize people into groups for optimal sharing across various Google products and services.

## **Infrastructure**

Google Apps for Work, Google Apps, Google Cloud Platform and Other Google Services run in a multi-tenant, distributed environment. Rather than segregating user entity data to one machine or set of machines, data from all user entities is distributed across a shared infrastructure. For Google Apps, Google Cloud Platform and Other Google Services, this is achieved through a Google distributed file system designed to store extremely large amounts of data across many servers. Structured data (e.g., emails, docs, sheets, etc.) is then stored in large distributed databases, built on top of this file system. Alternate storage procedures are documented and in place for backing up and recovering customer data. Data is chunked and replicated over multiple systems such that no one system is a single point of failure. Data chunks are given



random file names and are not stored in clear text so they are not humanly readable. Gmail backups are periodically performed to support the availability of user entity data. Gmail data restore tests are continuously performed on a rolling subset of data to confirm the ability to recover customer data from backup tapes.

#### *Data Centers and redundancy*

Google's computing clusters are architected with resiliency and redundancy in mind, helping minimize single points of failure and the impact of common equipment failures and environmental risks. Dual circuits, switches, networks, and other necessary devices are utilized to provide redundancy. Facilities infrastructure at the data centers has been designed to be robust, fault tolerant, and concurrently maintainable.

Critical data is replicated to at least two (2) data centers and provides high availability by dynamically load balancing across those sites. Google applications are designed to anticipate and tolerate failures of components. Such protections are also designed to ensure that services are available in the event of natural disasters.

#### *Authentication and access*

Strong authentication and access controls are implemented to restrict administrative access to Google Apps, Google Cloud Platform and Other Google Services production systems, internal support tools, and customer data. Machine-level access restriction relies on a certificate based distributed authentication service, which helps to positively identify the resource access requester. This service also offers transport encryption to enhance data confidentiality in transit. All data traffic is encrypted between Google production facilities.

Google follows a formal process to grant or revoke employee access to Google resources. Both user and internal access to customer data is restricted through the use of unique user IDs. Unique user IDs, strong passwords, One-Time-Passwords (OTP) and periodic reviews of access lists are performed to help ensure access to customer data is appropriate and authorized.

### **Data**

Google provides controls at each level of data storage, access, and transfer. Security controls, which isolate data in the cloud, have been developed alongside the core infrastructure technology since the system's inception. Security is thus a key component of each of Google's cloud computing elements (e.g., compartmentalization, server assignment, data storage, and processing). Google has established training programs for privacy and information security to support data confidentiality. All employees are required to complete these training programs annually. All product feature launches that include new collection, processing, or sharing of user data are required to go through an internal design review process. Google has established incident response processes to report and handle events related to confidentiality. Google also establishes agreements, including non-disclosure agreements, for preserving confidentiality of information and software exchange with external parties.



## People

Google has implemented a process-based service quality environment designed to deliver the Google Apps, Google Cloud Platform and Other Google Services to customers. The fundamentals underlying the services provided are the adoption of standardized, repeatable processes, the hiring and development of highly skilled resources, and leading industry practices. Google's repeatable process model includes key infrastructure and product related processes controls over security, availability, process integrity, and confidentiality.

Formal organizational structures exist and are available to Google employees on the Company's intranet. The intranet provides drill-down functionality for identifying employees in the operations team. Google has developed and documented formal policies, procedures, and job descriptions for operational areas including data center operations, security administration, system and hardware change management, hiring, training, performance appraisals, terminations and incident escalation. These policies and procedures have been designed to segregate duties and enforce responsibilities based on job functionality. Policies and procedures are periodically reviewed and updated as necessary