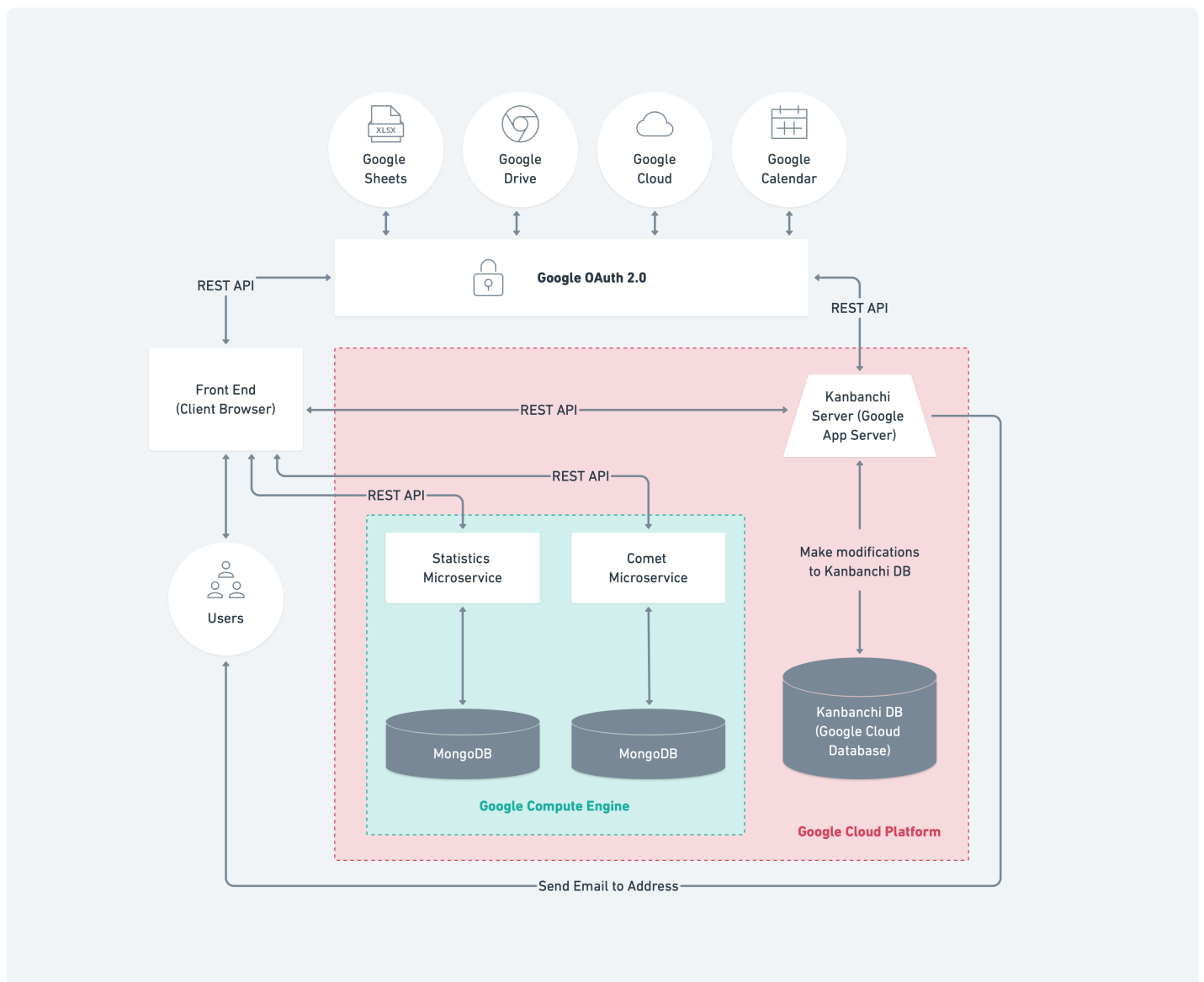


# Kanbanchi is built on Google Cloud Platform specifically for G Suite users

Kanbanchi is a virtual Kanban board with the Gantt chart for G Suite users, acting as an online software tool for task and project management and team collaboration. Any user with a Google account can directly access the Kanbanchi software without having to register separately. The tool allows creating dashboards, cards and lists which can then be used for project management and tracking. The Kanbanchi tool is integrated with G Suite (Google Drive, Gmail, Google Calendar).

## Solution Architecture Diagram



## Solution Architecture Description

The Kanbanchi application is hosted on the Google cloud [platform](#). The main application is deployed on [Google App Engine\(GAE\)](#) and uses Google Cloud [Datastore](#) in the backend.

In addition, there are 2 microservers which perform some individual tasks. These are set up on a [Google Compute Engine\(GCE\)](#). They are set up separately from the main server so as not to load the main server.

The Kanbanchi tool is implemented as a [Single Page Application](#). So when the application is requested the first time the main page is loaded. All further communication with the server happens via a [REST API](#) being invoked by the front end.

## Main Server

As mentioned above, the main server is implemented in Java and deployed on GAE. Once a user makes a request in the Kanbanchi application, the request is redirected to the main server. The server then processes the request, makes appropriate changes to the Kanbanchi file on the user's Google drive via [Google Drive API](#), updates the Kanbanchi database hosted on Google Cloud Datastore if required and sends the appropriate response to the client.

If a user requests to create a dashboard, the server creates a dashboard in the user's Google Drive via Google Drive API. This information is then saved in the Kanbanchi database and an appropriate response is sent to the client in order to open the created file.

All the Kanbanchi dashboards are saved as a file in Google Drive. The dashboard can be opened directly via the Google drive or from the Kanbanchi application itself. Users can share dashboards among one another.

## Microservices

As mentioned above, there are 2 separate microservices which perform some additional tasks. These are created via Node.js. Each microservice uses a separate [MongoDB](#) instance in the backend. Each microservice is described in detail in the next section.

### Comet Microservice

This microservice is used to provide real-time updates to users. It sends notifications from the server to clients (user's browsers) the moment any action has been taken. For example, if there are two users working simultaneously on a dashboard and one user takes an action (like creating a card), the other user is notified immediately without having to refresh the browser. This microservice is setup using Node.js.

### Statistics Microservice

This microservice is used for gathering statistical data. It gathers statistical data from the front end via a REST API. This will be used for providing graphics for paid subscriptions in the future. This microservice is setup using Node.js.

## Software Used

### User Interface

React & Redux & TypeScript

[Backbone.js 1.1.2](#)

[Underscore.js 1.8.3](#)

[jQuery 2.1.3](#)

[Grunt 1.0.1](#)

### Middle Tier

[Java 8](#)

In-House Custom Java MVC framework  
similar to Spring

Node.js (used by microservice)

Tomcat 7(used by microservice)

### Backend

Google Cloud Datastore

MongoDB (used by microservice)

### Supporting Infrastructure

Google Cloud Platform

Google App Engine

Google Compute Engine

Google Cloud Datastore

### External APIs Used

Google Drive API (For integrating with Google Drive)

Google Cloud Storage

Google Picker API

Google Sheets API

Google OAuth authorization

Google Calendar (For creating appointments in the user's calendar based on card data)