

Cloud Computing Project

Group 10

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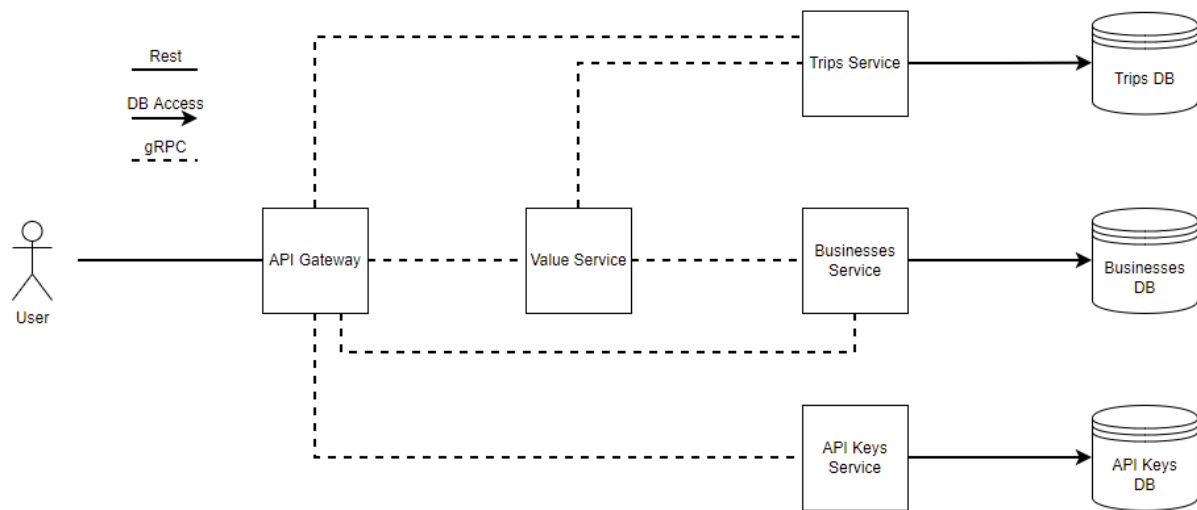
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Use Cases

Role	Functionalities
Any	Get the value associated to a business
	Get the value associated to a location delimiting by a coordinate and a radius
	Get the value associated to a location delimiting by two coordinates
	Get the value associated to a location delimiting by a coordinate and time needed to get there by foot
	Get the top valued businesses
Admin	Add/Update/Remove a trip to the data used to calculate the value
	Add/Update/Remove a business to the business data
	Create/Revoke an API key
	Manage an API key quota

Preliminary Architectural Design



On one hand, since our original data only specifies individual trips made in NYC, and knowing that our end goal is to provide a count of trips in a given location, we need a way to transform the data in a way that makes the time needed to get a response from our services feasible.

On the other hand, the only way we can get the list of businesses in a location is through a public API that has a limited number of requests per day. In order for our services not to have limits, and to optimise the speed in which we answer requests, we choose to keep a local database of the businesses and populate by the means of admin requests to insert new businesses without duplication.

With this objective in mind we will use the API Gateway to insert new data into the data bases, validate API keys and also access the business value by using the Value Service.

As there is no reason to have users on our system, we chose to use only API keys in order to limit the use of the API, instead of any other authentication methods. Although, there will be roles associated with the keys, such as Admin or Consumer.

To note that the technologies to be used in every component are still to be decided.

Components

- API Gateway. Acts as a reverse proxy to accept and redirect requests to a set of services.
- Value Service. Service responsible to provide an estimate of a zone or business value based on nearby movements.
- Trips Service. Service that provides information about trips made by taxis or Uber drivers.
- Trips DB. Database that will hold data regarding trips.
- Businesses Service. Service responsible to create and provide information about businesses.
- Businesses DB. Database to hold data regarding businesses.
- API Keys Service. Service that provides API keys management features.

- API Keys DB. Database to hold API Keys and their quotas.

Interactions

- We will use a RESTful API to answer user requests since they are very flexible and easy to use.
- For inter service communication we choose to use gRPC given its performance and security.