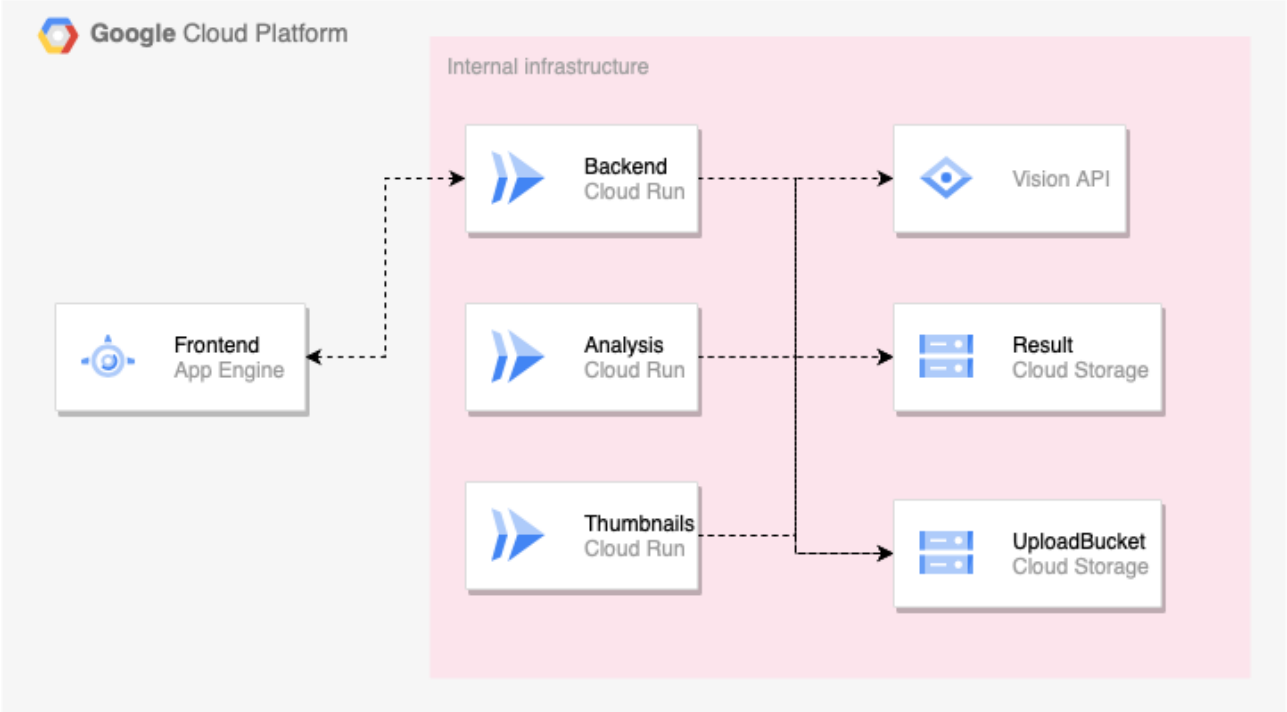
CSC 847
Project 1 - Report

Google Billing policy

What is Google's billing policy for your PhotoBook app?

The PhotoBook App is composed of multiple serverless services like Google App Engine (GAE), Google Cloud Run, Google Cloud storage, and Google Cloud Build.

The picture below shows the project architecture.



The main advantage is that those services are run only when necessary, as the opposite of Google Compute Engine, for instance, which runs the program permanently even if no one uses it.

So the billing policy is "*pay only for the resource you are using*", which significantly reduces the cost.
The last project cost around $3, while this one cost only $0.05, even if it ran longer.

Challenges

This project was full of interesting challenges.

Connect services

The first challenge was to correctly manage the interaction between all services.
Some services like *analysis* and *thumbnails* are triggered by events that happened on another bucket, they are also interested in other services to finally reinsert data into the bucket.
This sort of supply chain requires a precise configuration, and it was very hard to test locally if this was working. Fortunately, it was pretty fast and easy to deploy.

Focus on using useful service

The project tutorial used *Firestore* to store the result of the IA vision. However, this was useless because labels could be directly stored in the picture.
This is what I finally did after meeting permissions issues on my backend.
The issue with cloud providers is that we may be tempted to use all their services, but it sometimes leads to more complex problems and an architecture impossible to migrate.

Manage permissions

Managing permissions to let services interact together was painful. Google Cloud Platform has a powerful IAM system, but it takes time to use it correctly.
I followed tutorials to understand permissions and which services needed what, but it took me time.
There are so many permissions and possible combinations that it is hard to do the right thing even if it works.

Google App Engine

Google App Engine is a powerful tool to deploy an application directly from source code.
The advantage is the gain of time: GAE only needs a prepared (compiled or built) artifact to deploy the application, manage the network and security. And all of this in a serverless way so it reduce cost.
It removes a layer of complexity when deploying applications and ensures it is done correctly.

However, it cannot replace the work of DevOps when the application needs a special kind of configuration. The lack of control may be a problem with time and leads to a lock that requires a lot of time to get rid of.
The deployment is also pretty slow compared to vanilla solutions.

I think GAE is great to ship projects and proof of concepts but it should not be used for large-scale projects because it's important to keep control of the DevOps and its infrastructure.

Compared to the first project, it was way simpler to deploy the whole application. The Photobook app has 4 independent services but this was faster to deploy than the 2 services of the first project.