Cloud Services

Semester 6

Table of contents

Why cloud services?

In this day and age, speed of development and performance is everything. More and more products are coming out every day and the only way to stay relevant and bring out a product fast is by delegating some of the computing necessities to a cloud-based solution.

There are many providers out there, all with different pricing plans and benefits, but the most popular are AWS, Azure and Google's solutions. The choice between those is usually decided between the pricing options, as well as the compatibility with the product's technology stack.

In the following chapters there will be a breakdown of each cloud technology choice and the reasoning behind that decision. Additionally, remarks will be given for why some of the features can be developed without the need of cloud delegations.

Project Context

In order to best understand the reasoning of each cloud choice, a brief overview of the product is necessary.

CopyCloud is a digital marketing platform that enhances creators' creativity and productivity with the use of artificial intelligence. Furthermore, the platform has a social aspect, in the sense that users can share their documents/marketing copy generations with other users. Users can also collaborate together in a shared project.

In order to satisfy the above mentioned requirements, the platform needs to be both performant and reliable. This means that no matter how much the user base grows, the technologies must be used in an extendable manner and should scale vertically.

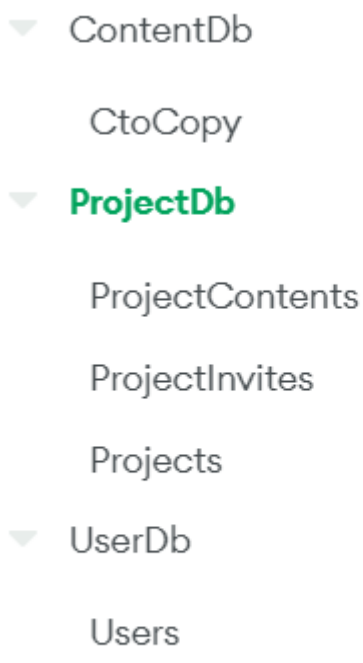
Tech utilities such as user authentication and securing passwords, scalable data storage, platform reliability and availability have all been delegated to credible cloud-based providers.

Scalable data storage

Reliable data storage is usually one of the biggest tasks when creating a software product. When picking a technology, developers must think ahead of time and imagine scenarios of when the user base grows exponentially (unless the product needs are limited).

In the context of CopyCloud, users would be generating a lot of content with different formatting and fields. To support this, a NoSQL technology was chosen, as objects do not need to be strictly related to each other.

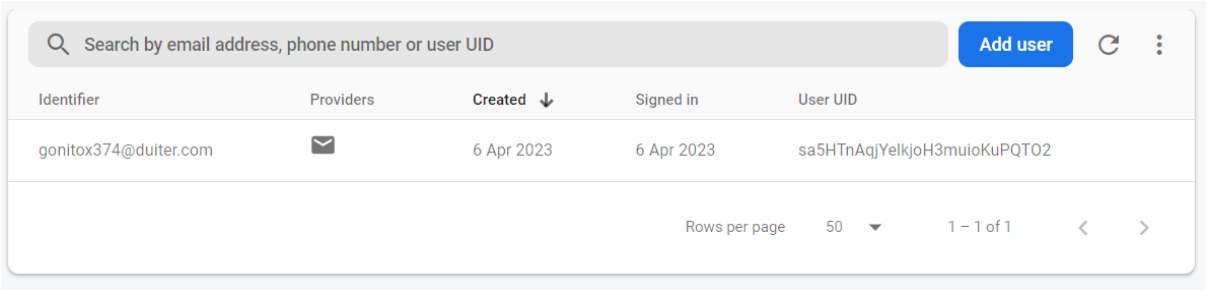
The specific technology of choice is MongoDB. It offers a free starter plan that can be used for testing, as well as out-of-the-box data sharding, which allows for better horizontal scaling.



Delegating Authentication

Securing user passwords can be an increasingly difficult task. Additionally, coming up with a custom system for implementing SSO (Single-sign only) and token based authentication (JWT) would be re-inventing the wheel.

In order to scale with users and provide the ability to register with email and password, but also keep the option of using your google/facebook account, Firebase has been chosen as a cloud solution. It provides an affordable and easy to set up API which allows for the integration with simple email and password, google or even temporary accounts.



Handling emailing

In order to send marketing notifications, software updates or for functionalities within the system itself, an emailing server must be used.

Setting up one from scratch can become difficult to manage and secure, especially as the user base grows and the application's functionality requirements progress.

For this, Azure Emails has been chosen as the technology for emailing. They provide an easy to set up server that can scale vertically when needed. It is also a pay-per-use plan, which means that when there's less traffic, it would also cost less.

Message communication

In order to make the application reliable, especially under high traffic and on system shutdown, a proper microservice architecture must involve messaging communication.
A cloud solution here is key, as it allows out of the box message storage and prevents the loss of data if the system were to malfunction or shut down completely.

For this technology choice, Azure Messages has been chosen as a provider for queues and topics. Azure further provides out-of-the-box dead lettering, as well as up to 30 days message storage.