

Into the cloud... Based on a true story

Managing traffic spikes for your website and optimising costs with the Public Cloud





Initial infrastructure cost
divided by 2



Infrastructure size
multiplied by 10



Usage
multiplied by 5

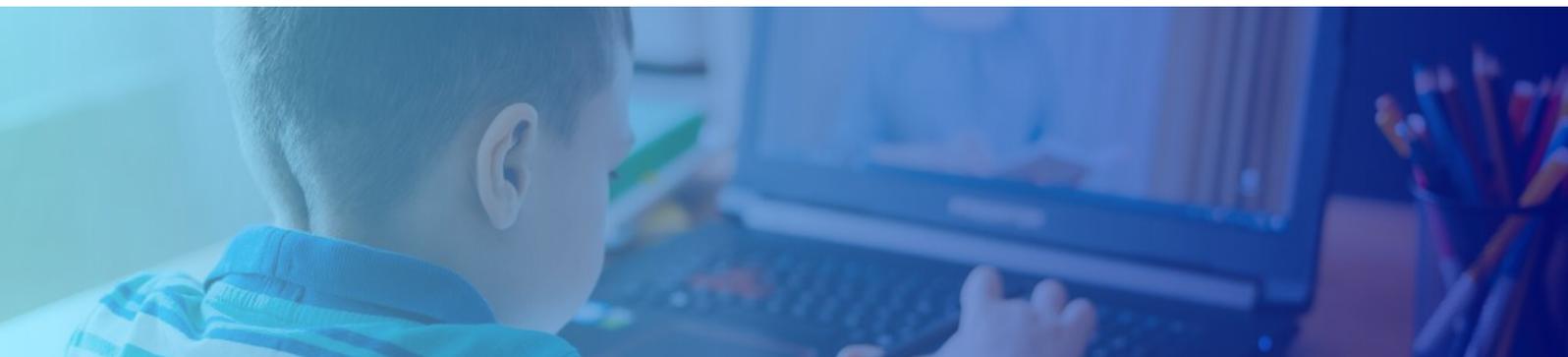
The background

Aplim, from the Aplon group, is a company specialised in publishing management software for schools, from nursery school to higher education. Its customers are mainly French private schools.

Aplim ranks number one in its market segment. So what is its secret to success? It offers fully customisable and configurable solutions that can meet all needs — registration, school life (attendance, canteen, exit authorisation), calendars, workspaces, marking, emails, accounting, billing, etc.

The EcoleDirecte solution was released in 2000, and is based on Charlemagne software. 20 years later, it is used by more than 1.5 million students, 3 million parents, 300,000 teachers and 80,000 administrative managers.

Although distance learning was already widespread, it became the norm very suddenly due to the COVID-19 health crisis, and the lockdown imposed in France on 17th March 2020. Since then, the [ecoledirecte.com](https://www.ecoledirecte.com) website has received more requests than ever. In order to ensure educational continuity, French educational institutions were forced to adapt their way of working. The website managed by Aplim then experienced very high traffic spikes. Fortunately, by integrating new services in advance and automating their existing infrastructure, they were able to handle this massive influx of concurrent connections. This preventative measure has proven to be beneficial for the company and its users.



The challenge

Aplim processes a high volume of personal data relating to the education of French students. Since protecting this data is a major challenge, it was vital for the company to host it in France. And with OVHcloud's range of datacentres, such as those in Roubaix, Gravelines and Strasbourg, their specifications were met.

"It was very important for our data to be hosted in France."

Steve Giraud, Development Manager, Aplim

It was also necessary for Aplim to be able to manage the costs associated with its infrastructure, while also scaling it up. Following a meeting at the OVHcloud Summit 2019, the company decided to test Public Cloud services. Then, in early 2020, Aplim began to extend this solution to part of its infrastructure, with Public Cloud instances rather than Hosted Private Cloud hosting. Its technical team then entered into a new phase of deployment industrialisation. They discovered how easy it is to operate on the Public Cloud, with quick resource delivery and the availability of standard OpenStack APIs. With the proof of concept (PoC) proving conclusive, the company turned to hybrid cloud, which integrates public cloud services into the existing infrastructure.

"For the core of our infrastructure, we needed a solution that we knew well."

Steve Giraud, Development Manager, Aplim

With this solution, Aplim could put the initial platform deployed at OVHcloud to good use, based on the Hosted Private Cloud solution. Their technical team benefits from the flexibility and robustness of VMware's software suite, while increasing the load-absorbing capacity.

The company has seen an emergence of new needs for optimising EcoleDirecte's infrastructure. It was time to find solutions to manage traffic spikes related to fluctuations in activity, and the exponential increase in storage and backup space.

These needs can be observed according to two scenarios:

Scenario 1 - Temporary and predictable traffic spikes. Aplim knows that a large number of students connect to its platform on Mondays, Tuesdays and Wednesdays between 4pm and 10pm. This is a regular cycle, during which they need to provide enough resources, so that services respond as quickly as they do during off-peak periods.

Scenario 2 - Unpredictable and longer traffic spikes. Even before COVID-19, Aplim was conscious of the need to be able to scale up quickly and efficiently, if required. While predictable traffic spikes are easily manageable, unexpected traffic spikes can quickly become a challenge.



The solution

The initial architecture deployed on Hosted Private Cloud hosts all services — the public website, part of the API servers, the databases, and backups.

The advantage of this solution is that it is very easy to scale vertically when a database requires more resources, for example. The VMware cluster, located in the Roubaix datacentres, can also be extended into hosts or datastores.

Aplim's storage requirements skyrocketed during the COVID-19 lockdown. To meet these requirements, the company added 10 new 3TB SSD datastores to its Hosted Private Cloud infrastructure.

“To scale, we needed a lot of flexibility, an API so that our DevOps could manage the resources, and the ability to deploy across multiple datacentres. We were able to do this with the vRack and Public Cloud.”

Steve Giraud, Development Manager, Aplim

However, as mentioned above, Aplim faces two possible scenarios. And they are not very compatible with any type of infrastructure based solely on the Hosted Private Cloud. To address the scenario in which unpredictable and longer-lasting traffic spikes occur, the company created a PoC in which Public Cloud instances are used.

Furthermore, during temporary and predictable traffic spikes — like in Scenario 1, where the timing and variation is well-known — with a Public Cloud solution, it is very easy to schedule and industrialise instance booting on demand for specific time slots.

Since it is so easy to create and remove resources, instances are only billed for 72 hours per month, instead of 720. This is a ratio of 10 — which allows for quick, reliable service during traffic spikes, along with significant cost control. The API servers that run IIS are scaled horizontally, and are multiplying with the automation implemented by Aplim. This feature is particularly well-suited to stateless application layers — as is the case for these API servers — and can be used to optimise expenditure. Consequently, the PoC was quickly conclusive.

When the French government announced the lockdown and educational continuity in mid-March 2020, Aplim was able to handle the increase in the number of daily visits. The website has grown from 1 million predictable, temporary connections per day to 5 million long connections per day.

“We can create instances automatically every evening to handle regular traffic spikes, and we can also do so manually if there is a specific need for it. And we can do this all in a few minutes!”

Steve Giraud, Development Manager, Aplim

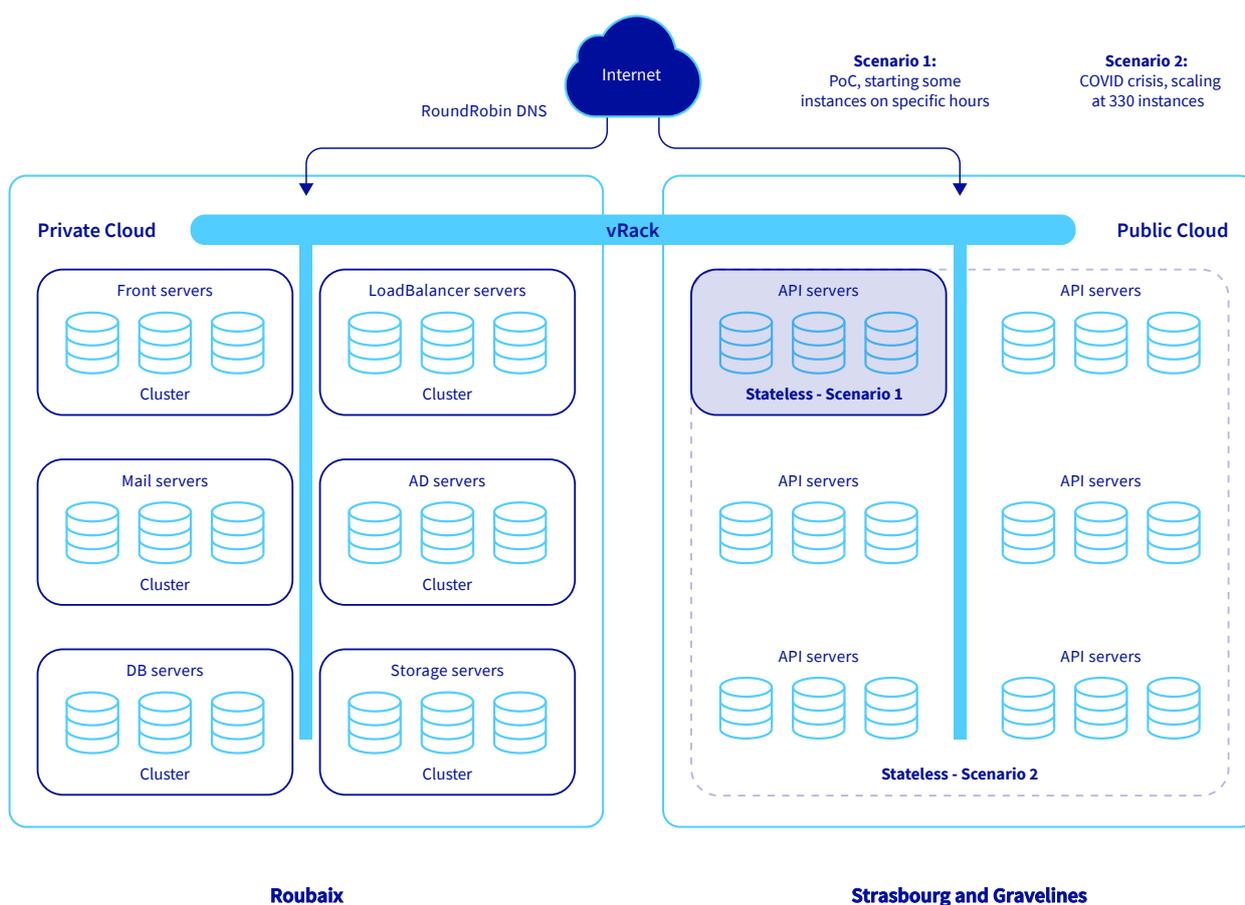
With this experience, Aplim was immediately able to react to the resurgence of these connections en masse. In fact, whereas the API servers and around 30 instances provided sufficient response time, they needed to add 300 in a few days to handle the increase in traffic.

All of the teams’ work towards maximum deployment industrialisation has paid off in this context. Instead of booting 30 instances as they would normally, they needed to run these routines 300 times during the first traffic spikes in mid-March 2020.

Thanks to the reactivity of OVHcloud's datacentre teams and hardware availability, 4,800 vCores and 18TB of RAM could be delivered in a few days. These 300 instances, connected to the rest of the architecture through the vRack private inter-datacentre network — and industrialisation via Public Cloud services — meant that the company could handle traffic spikes during this exceptional period.

What is a traffic spike?

A traffic spike is a sudden increase in the number of requests sent and/or received by a server over a short period of time. Without an adapted infrastructure, a spike in traffic can cause service downtime, and make it potentially unavailable to users.



The result

Even though the infrastructure scale multiplied by 10, and usage multiplied by 5, with the adoption and introduction of the Public Cloud before the healthcare crisis, the price was halved for the initial platform. This approach has resulted in maximum cost control.

With the industrialisation provided to Aplim's Hosted Private Cloud solution and extended with the Public Cloud, the infrastructure could perform all of its functions without any incidents. A team of developers was also specifically deployed during the pandemic to create distance learning tools. The company received nothing but positive feedback from its customers and users. Some public institutions have even reached out!

Several best practices can be drawn from this experience. Firstly, for the industrialisation of every action on the infrastructure — you can automate everything via API. Secondly, we can look at load balancing, which is an essential condition for scaling horizontally. Finally, high availability for services. It is managed by self-healing mechanisms, and depends on the software building blocks deployed. If this high service availability is stateless like API servers, a simple kill/create mechanism enables them to easily respond to all kinds of situations. If this software building block is stateful, a cluster mechanism will then manage self-healing. By following all of these principles, the Public Cloud features enable any company to handle both predicted and temporary traffic spikes, and unpredictable, intense traffic spikes.

EcoleDirecte is a constantly evolving solution that aims to implement new features, such as the integration of Object Storage, in order to resolve document storage issues.

OVHcloud is a global, hyper-scale cloud provider that offers businesses industry-leading performance and value. Founded in 1999, the group manages and maintains 30 datacentres across four continents, deploys their own fibre-optic global network and controls the entire hosting chain. Relying on their own infrastructures, OVHcloud offers simple and powerful solutions and tools that put technology at the service of business, and revolutionise the way that our more than one million customers around the world work. Respect for individuals, freedom and equal opportunities for access to new technology have always been firmly rooted principles of the company. "Innovation for freedom".