Amarena **Delivers Lightning Fast Pandemic Response with Ondat**

Rapid Kubernetes Development with Scale, Performance and Enterprise Resilience

The Customer

From its early start supplying stereo equipment, then household furnishings and popular furniture brands to customers in French overseas territories, CAFOM Group has built out its distribution business to supply popular brands such as BUT, Habitat, First Deco and Darty in over 7 territories globally, with revenues of over €370M in 2020.

Industry: Distribution

Location: France

Amarena was established as a separate agile subsidiary of CAFOM in 2020, to foster a new startup culture for delivering innovative digital solutions to the group. The team's baptism of fire was a critical, time-sensitive project to CAFOMs business during the COVID19 pandemic: creating new localized online marketplaces for the group's brand portfolio and for other European players.

> For our team, Kubernetes is the only sensible starting place for creating modern, scalable, digital business solutions. But building for the CAFOM Group we need to combine fast, agile development cycles together with solid, scalable eBusiness apps. It is vital that we build on a secure, highly-reliable underlying database and storage architecture.

Explains Paul Guichon, Director of Site Reliability Engineering (SRE) at Amarena.

The objective was to overcome import tax complexity, making it easier for CAFOM's overseas customer base to make online purchases during periods of lock-down.

The Challenge

The Amarena team wanted to build stateful, transactional applications in Kubernetes: using container based development for speed, simplicity and future scalability. To speed development further, the team were looking to 'lift and shift' sections of program code from CAFOM's legacy, monolithic application to run as services on the new Kubernetes platform.

The project demanded hourly reindexing of catalogue items from thousands of suppliers, with descriptions and price lists for hundreds of thousands of products. Above all, reliability was key, as during periods of lock-down this was the only shopping experience for a majority of customers and CAFOM's main source of revenue.

It was straightforward for developers to use the standard Kubernetes Operators for key open source components such as MySQL, Elasticsearch, Solr and Prometheus.

However, they were still left with significant problems around Persistent Volumes and stateful storage.

Installing databases and other stateful applications on Kubernetes using popular Operators utilizes the standard CSI driver to access your platform's default networked block storage. While this is fine for development or small projects, in production and at scale, this results in I/O performance that is slow and typically, highly erratic. Moreover, the storage (Persistent Volume) is only available to a single node in the cluster, with the potential for a dramatic impact on both resilience and recovery times, as well as longer term cost and efficiency.

"If a node goes down, we lose the application and the data," Guichon explains. *"In this situation the Kube scheduler would normally move the workload to a new node, but if the data is tied to the initial failed node, this achieves nothing. The entire resilience provided by Kubernetes is essentially redundant."*

"Not only this, the scheduler normally moves workloads around between nodes to achieve the most efficient use of resources. This core function of Kube is also rendered useless if Persistent Volumes are tied to one single node."

The Ondat Solution

Performance and Reliability

When the team discovered Ondat, they found that they were able to use faster, high performance local storage, which could be made available to every node in the cluster. In addition, Ondat's sophisticated software control plane meant data was effectively replicated across the nodes, providing a highly redundant solution. If a node went down, workload could be rescheduled to a new node and the storage was instantly available.

Developer Self-Service

But this was not the whole story, Amarena explored other Kubernetes storage plane solutions which achieved something similar. However, as well as struggling to match Ondat's resilience and IOPS performance, these were simply too complex. The developers did not want to be trapped in the intricacies of storage architecture. For them, the attraction was that Ondat gave them fast, simple access to Persistent Volumes and the ability to fire up stateful applications and databases in a few clicks.

"Ondat gave us the best of both worlds: a flexible, sophisticated back-end solution for provisioning true enterprise-grade storage into Kubernetes; alongside a simple self-service front end for our development

team to just consume Persistent Volumes," continues Guichon. *"It is like a set of solid Guardrails that the development team barely even notices, they are blissfully unaware of how well they are doing things, this is a true 'shift left' solution."*

"The SRE team can rest assured that new developments are built on solid infrastructure. And perhaps most importantly, we now have the confidence to take vacation once in a while!"

Portability for the Future

The final decisive factor that sealed the deal was around Ondat's ability to work with any Kubernetes implementation across public, private or hybrid cloud. The Amarena team took the decision to build the initial applications on OVH's hosted bare-metal servers, with Kubernetes running in a VM on the Proxmox hypervisor.

"This limits both risk and cost compared to running directly on Public Cloud," Guichon explains. *"Ondat is not tied to any broader choice of architecture, it works perfectly with our choice of private cloud, but it also allows us to move the applications to other platforms and consume other services in the future when we need to scale."*