

SETAO

Depends on Pillar to Keep Things Moving



SETAO (Société d'Exploitation du Tramway et du réseau de bus de l'Agglomération d'Orléans) manages the urban transportation network of the city of Orléans, about 130 km (80 miles) southwest of Paris in north-central France. With about 100,000 passengers per day, SETAO manages data from their trams and buses, vehicle radios, billing systems, electrical systems, traffic lights, and video feeds from surveillance cameras throughout the city. In addition to gathering and maintaining this information, the company reacts to accidents and other traffic problems by analyzing alternatives and making real-time traffic information available to its network of vehicles via mobile devices and makes surveillance data available for law enforcement.

Challenge

The SETAO transportation management network, run from two virtualized data centers in Orléans, spans 24,000 kilometers and includes nearly 1,100 pieces of equipment and 300 mobile devices. In this bustling metropolis, the public transportation system runs day and night to carry about 100,000 daily passengers – and so SETAO's network must be highly available, always running and accurately capturing data in order to monitor and alert users of possible breakdowns in real time. To manage this massive amount of data, the company maintains 15 Oracle databases and other applications on 70 virtual machines using VMware.

"We record all events on the networks," said Olivier Parcollet, IT Manager at SETAO. "Many of the linked infrastructures in the town – radio, police stations, electrical system – are integrated to this project in terms of data."

The company also runs sophisticated traffic simulation software which, in the event of a major accident or other issue, enables them to explore different re-routing scenarios to find the optimum response to keep traffic flowing.

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However, the company experienced reliability issues with their NetApp storage infrastructure. During an electrical outage, their storage system was badly impacted and they were unable to recover all the data. They were experiencing performance issues due to resource contention, and they needed to greatly improve performance to better support their simulation application. They were also concerned about scalability, as they knew they would quickly need to add more capacity to accommodate a video archive project.

"We realized that in order to add capacity to our NetApp system we couldn't just add new drives," Mr. Parcollet said. "We would have to stop our existing solution and actually exchange it with the manufacturer to get a system with more capacity."

Solution

Parcollet and his team began looking for a system that could easily be scaled, was simple to operate, that met their requirements for low environmental impact, and would be reliable – even during an interruption of electricity. They compared systems from NetApp, EMC, and Pillar Data Systems. After running tests on these systems, they found that an Oracle request ran 7 to 10 times faster on the Pillar Axiom. They also stressed the systems and found that while some of the systems demonstrated a drastic reduction in performance and reliability, the Pillar Axiom remained stable.

In the end, they chose two Pillar Axiom SAN systems, replicated between their two data centers, each with 16TB of capacity. Soon after deployment they added an additional 50TB to support a project to store and manage video from municipal surveillance cameras. To accommodate their transportation simulation application, they later added Pillar's SSD Bricks to their Axiom storage system.

Results

The first benefit the team realized from their purchase was a fast, easy deployment and data migration. SETAO's customers require constant uptime, so the IT team needed to deploy the system without taking any systems down. Using the IPStor migration tools, the team completed the entire deployment and data migration over the course of a single weekend, all without system disruption. When they later added three SSD Bricks to the system, the upgrade project took just four hours with no service interruption. The new Pillar Axiom system quickly lived up to the IT team's expectations concerning its high level of performance. Because of the ease of provisioning and its ability to manage multiple tiers of data without contention, the new system gave them greater flexibility and the ability to put more energy into development instead of fixing problems. When they added SSD to their system, the performance gain was nothing short of striking.

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An important part of this high performance is Quality of Service (QoS). This feature of the Pillar Axiom uses classification, or tiering, of data to avoid contention during times of stress or high load on the system. Not only does this improve overall performance, it also adds more system predictability.

The value of Pillar's QoS feature became even more apparent when the team added SSD to their existing Pillar Axiom. While they use the SSD Bricks for their very compute-intensive simulations, they use the SATA Bricks on the same system and at the same time for overall production and the massive video archive project. With other vendor solutions, if you were to mix SSD and SATA in the same solution you would see significant performance reductions. Pillar's QoS allows these technologies to be deployed across different service

levels on a single system while ensuring that the proper service level goes to each.

"We use the system for coordination of services," Mr. Parcollet said. "Adding high-performance SSD to the regular SATA means we can boost the performance of our premium class of service by 20X. All of our tiers of storage are running on the same system, and all performing exactly as we expect." Nearly as important as high performance was the need for a system that is simple to use. With only ten people with one SAN expert to manage the entire always-up system, the IT team at SETAO is not very big. Although a very sophisticated system, the Pillar Axiom features an intuitive user interface that makes it easy for even a non-expert to use. This enabled the team to easily take control of the solution without having to refer to documentation or calling in an expert. This simplicity means the team can spend their time to focus on the core business instead of tuning systems. The Axiom allows them to be customer-oriented, not IT-oriented.

As a company of the French government, SETAO is very conscious of the need to employ "green" technologies and minimize environmental impacts. This is another factor that they tested when they were evaluating competing systems and chose the Pillar Axiom. Axiom is a pioneer in green technologies in the storage industry. After noting the IOPS per TB, the footprint, and the energy consumption of competing systems, Mr. Parcollet found that the Pillar Axiom yielded a very aggressive ratio – the best in the industry, in fact.

"The storage efficiency was very important when we chose the Axiom," Mr. Parcollet said. "We realized that after just under one year in production, we could reduce our annual electricity bill by 6 times. We need 650 Watts of electricity to run the Pillar Axiom, but we would have needed 4,000 Watts with the competing systems – all with the same capacity. It's a very impressive ratio."

Including savings in power, space allocation, labor, and equipment; SETAO's total cost reduction due to deploying the Pillar Axiom was about 25 to 30 percent, or about 3–400K euros over three years. Another benefit of the Axiom became apparent at to the IT team at SETAO when they added new Bricks to the system. Not only could they add Bricks with no downtime; the modular, distributed architecture of the Pillar Bricks means that each time capacity is added, new controllers are added to the system too – scaling performance as the capacity is scaled.



As to the company's experience with occasional electrical outages: the reliability of their new system was proved when, just weeks after the deployment of the new Pillar Axiom system, there was another interruption of electricity. The Pillar Axiom remained stable during the event with no downtime, due to the fully redundant design of the system and its built-in battery backups.

The most dramatic benefit SETAO has seen from their Pillar Axiom is improved performance when running traffic simulations. Using a SATA system it took about two hours to run a single simulation to reach a decision. Using SSD, they can run multiple scenarios and reach a decision in real-time. Faster processing means faster reactions to accidents or other traffic impacts – meaning the travelers in Orléans spend less time sitting in traffic.

"Now with the SSD system we can simulate in real-time, which was not possible before," Mr. Parcollet said.

"Today we can run several scenarios in real time and make the right choice at the right moment. Now traffic problems can be almost immediately resolved. From legal archival projects on VTL, to standard mission and critical applications, to very high critical applications like being able to run 20 or 30 times more simulations per day," said Mr. Parcollet. "The Pillar Axiom is a solution which is able to manage our multi-tier projects."

Pillar Axiom Storage System