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Mauro Cacciafani
IT Infrastructure Manager
Publiacqua

When Italian water company Publiacqua S.p.A. contracted to manage the integrated water service of the central Valdarno local authority water board, it recognized the need for a new enterprise storage solution. Publiacqua turned to Hitachi Data Systems for the technology to cope with the increase in data volumes and tackle mission-critical workloads easily. HDS successfully implemented Hitachi Virtual Storage Platform (VSP), an enterprise storage system that offers the best performance in this sector in terms of both power and scalability.

Since 2002, Publiacqua S.p.A. has been contracted to manage the integrated water service of the central Valdarno local authority water board, a key organization in Tuscany covering 4 provinces: Florence, Prato, Pistoia and Arezzo. A third of the regional population (approximately 1,277,000 inhabitants) lives in the 49 municipalities served, which is where Tuscany’s main economic activities take place. Publiacqua was formed in 2000 on the initiative of the municipalities in which the company operates, and is responsible for the collection, treatment, piping and distribution of drinking water.

The company manages a complex and well-structured plant system, starting with the large facilities of the Tuscan capital (ranging from drinking water plants in Anconella and Mantignano to the San Colombano water treatment plant). Throughout the area it manages, the company looks after wastewater collection and purification, in addition to drinking water distribution, as its plant in San Colombano is a center of excellence.

Benefits at a Glance
- Reduced time and costs spent classifying data.
- High scalability.
- Simplified maintenance.
- Greater overall efficiency.
The integrated management of the water service in such a large area, as well as information growth within the corporate data center, necessitated the consolidation of corporate data. The data was previously distributed across multiple medium and large storage platforms, including a Hitachi Universal Storage Platform, to manage the information from over 350,000 users and 650 employees. Although the company was satisfied with the performance and service levels guaranteed by Hitachi Data Systems, to ensure competition and full transparency, it announced a tender to choose the best solution that would enable it to meet its new data management needs.

The Challenges and Requirements

The main requirements from the new solutions taken into consideration were that these would be designed to easily tackle mission-critical workloads, therefore meeting strict stability requirements by combining high availability and high computing capacity.

One of the main requirements during the analysis phase was to build an enterprise storage configuration that would allow Publiacqua to coordinate migration to the new platform while ensuring the required business continuity levels as much as possible.

The Solution: Industry-Leading Hitachi Enterprise Storage

The chosen design was that proposed by TAI Software Solutions, a system integrator with its headquarters in Florence and a longstanding Hitachi TrueNorth Partner. The TAI proposal used high-performance Hitachi solutions that would cater for the specific requirements and presented a clear implementation design. One of the deciding factors for the choice was the proposed solution’s high level of scalability: the initial footprint and the overall growth of capacity, in terms of both available storage and computing power.

In fact, after taking the Publiacqua’s challenges into careful consideration, Hitachi Data Systems proposed the enterprise-level Hitachi Virtual Storage Platform (VSP) as a reference solution. VSP offers the best performance in the sector in terms of power as well as available resources and scalability.

In particular, the solution implemented by Publiacqua offers a significant amount of raw disk space available in solid-state disk (SSD) format, which ensures the highest speed of data access, while also delivering the option to expand the total storage capacity to particularly high levels.

Other features that supported Publiacqua’s choice of the Hitachi solution included:

- Performance levels of the front end and of the available Fibre Channel ports that are in line with best practices in the industry.
- Faster back-end data access, due to general-purpose processors for supporting management that do not have to manage the data channel.
- Energy-saving capabilities, both in terms of the use of space and therefore of energy consumption for cooling.
- Innovative cache backup management, which is no longer applies exclusively to batteries, but also to the dedicated SSD disk.

The Benefits: Speedy Implementation, High Performance

Once the project had been jointly defined by Hitachi, TAI and Publiacqua, the entire startup and production implementation process, including data migration, was completed in just over 10 days. During this time, disruption to the company’s normal operations was kept to a minimum. Hitachi Dynamic Tiering software, contributed to the speedy process by allowing data to be distributed across different storage tiers, maximizing performance, and reducing the time and costs spent classifying data.

“The excellent system implementation was made possible not only by Hitachi Virtual Storage Platform features, but also, mainly, by the continuous dialog and the integration of various highly qualified professionals within the technical structure of Publiacqua, its partner TAI, and Hitachi Data Systems. They led the entire operation impeccably, keeping to the agreed schedules,” said IT Infrastructure Manager at Publiacqua, Mauro Cacciafani. “It should also be noted that the transition to the new system, which has also led to storage consolidation in a single platform, with considerable maintenance and management advantages, occurred in a way that was completely transparent for our users. Being able to perform all the operations while the system is live, a typical feature of the VSP enterprise solution from Hitachi Data Systems, has allowed us to avoid any downtime or disrupted service throughout the migration process.”

VSP has renewed the concept of distributing the processing capacity by splitting the flow of data access into functional blocks. Specifically, the maximum processing capacity in VSP directors (the general-purpose processors for all management activities) is equal to 8 Virtual Storage Director VSD x 4-core Intel Xeon, reaching a total of 32 cores. Moreover, the back-end and front-end processing capacity was engineered by HDS, using dedicated ASICs to achieve the best performance.

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In addition to the advantages I have already mentioned, the Hitachi Data Systems solution, which has been fully operational since the beginning of 2012, allows Publiacqua to manage all of our storage centrally, with considerably simplified maintenance and greater overall efficiency,” Cacciafani continues. “The performance of the new solution is entirely in keeping with expectations and with what we had expected from TAI, who offered invaluable support during the implementation and configuration phases.”

Finally, an additional feature that proved to be a winner for the VSP solution is the “virtualization” capability. This ability allows administrators to scale the infrastructure on additional storage devices directly connected to the VSP itself and managed through a unified front end.

“Even now, after some time, we are completely satisfied with the choice we made, which, in terms of performance and service, exceeded our best expectations. These were already high as we were well aware of the service levels Hitachi Data Systems provides,” Cacciafani recalls.

“Through organic growth and the implementation of increasingly innovative services, the data Publiacqua manages is constantly increasing in volume, complexity and sensitivity. This is precisely why further expansion of disk space is currently in progress, using capacity already present in the VPS boxes, distributed according to the paradigm of Hitachi Dynamic Tiering on 3 types of disk,” he explains. “This became necessary because of recent business challenges in work force management and optimization, characterized by high-performance expectations and a significant increase in information related to the control of operational processes. We therefore shortly expect to set up a disaster recovery system that will make full use of the replication functionality inherent in HDS systems,” he concludes.