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Modernizing IT at a medieval university

With a heritage that dates back to as early as the 11th century, the University of Pisa meets the far-reaching demands of a modern university with the latest storage solutions from Dell Technologies.

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Maurizio Davini
CTO, University of Pisa

Organization needs

The University of Pisa serves nearly 50,000 students with the help of more than 3,000 faculty and staff across 20 departments. To keep pace with the growing demands for robust, responsive information access, remote learning, and the latest research tools and capabilities, the university needed a reliable, high-performance IT infrastructure.

Organization results

- 5x faster data processing to meet faculty, staff and student needs.

- 80% better performance on a wide variety of essential applications.

- No downtime or data loss, ensuring essential services always remain available.

- Supports leading-edge teaching and research.

Solutions at a glance

- Dell EMC PowerMax

- Dell EMC PowerStore

- Dell EMC PowerScale

- VMware vSphere

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> CTO, University of Pisa

Woven into the fabric of Pisa, a city of 100,000 in Italy's Tuscany region, the University of Pisa was founded in 1343, with a legacy that dates back to law classes taught several centuries earlier. Today, the University of Pisa is among the most prestigious in Europe—with a world-class faculty and a mission to continually be on the cutting edge of scholarship and research.

The university has 20 departments—from the humanities to the sciences, math, engineering, law and medicine—citywide. These departments are connected by 65 kilometers of fibre and four data centers with up to 3PB of storage. With demands increasing to support students, instructors, researchers and staff, the university made a major investment in the latest technologies.

"The University of Pisa is one of the oldest in the world," says Maurizio Davini, chief technology officer at the university. "Over the past few years, we've completely redesigned our IT, innovating in every area from computing to storage to networking."

Top grade for mission-critical applications

The university has relied on Dell Technologies systems for years. This includes servers, storage, workstations, desktops, laptops, tablets and more. The cornerstone of the university's storage is Dell EMC PowerMax, with two arrays installed using Dell EMC SRDF/Metro in an active-active configuration across data centers.

"We chose PowerMax because it was the first NVMe platform for enterprise storage," Davini comments. "We rely on PowerMax for mission-critical applications such as administrative functions, teaching and labs—because if these workloads stop, we're closed."

The workloads run in a highly available, resilient and cost-efficient virtualized environment supported by VMware vSphere. Solutions include a virtual desktop infrastructure (VDI) powered by a hyperconverged infrastructure, as well as distributed Oracle databases running on a large cluster of virtual machines.

Prior to PowerMax, the university's IT platform had not been performing as required. With applications evolving, Davini and his team recognized the need for significantly improved latency and reliability.

5x faster processing

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"With PowerMax, our applications run up to five times faster," notes Davini. "We conducted a user survey, and everyone was satisfied with how quickly things got done. About 80 percent of the overall performance improvement is from how the database performs on PowerMax."

He continues, "We did a lot of development with Dell Technologies and Intel on NVMe. We love how the technology is used in PowerMax because we know it's the future of storage. Installation was easy, and there's been no downtime or data loss."

Enhancing research efforts

The University of Pisa has also installed the data-centric, highly intelligent Dell EMC PowerStore to handle block storage for scientific computing applications at the core of its research efforts.

"The end-to-end NVMe design of PowerStore within our VMware virtualized environment is critical for our biological and medical research," Davini states. "The performance is quite good, and the platform offers the outstanding scalability we were looking for."

Davini also appreciates how PowerStore's "always on" data reduction improves efficiency and lowers costs without compromising performance.

AI and high-performance computing

For artificial intelligence (AI) and bare-metal high-performance computing, the university chose Dell EMC PowerScale all-flash network-attached storage.

"We use AI for large-scale simulations such as computational fluid dynamics or chemical reactions, as well as image and language analyses," explains Davini. "We anticipate our unstructured data doubling within a year. The PowerScale OneFS is exactly what we were looking for. We love the performance, reliability, scalability, flexibility and ease of configuration of PowerScale.

"A great part of our success is because of our Dell Technologies platforms, as well as the support and strong relationship we have," Davini remarks. "I would say 90 to 95 percent of our systems are from Dell Technologies."

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