

Case Study

Ludwig-Maximilians-University

»Our long experience with Fujitsu hardware has always been incredibly positive. It is excellent value for money.«

Dr. Hermann Gump, Procurement Services, Ludwig-Maximilians-University, Munich (LMU)



The customer

Country: Germany
 Industry: Education and Research
 Founded: 1971 (Physics Faculty)
 Employees: 3,500 employees and students
 Website: www.physik.uni-muenchen.de/



The customer

The Physics Faculty was founded in 1971 and is closely linked to the names of the major scientists who worked at Ludwig-Maximilians-University, Munich, including six Nobel prize winners: From Wilhelm Conrad Röntgen, who was awarded the 1901 Nobel Prize, through to Theodor Hänsch, who was awarded the 2005 Nobel Prize for Physics. Today, the faculty, whose own history bears witness to the development of Physics into a discipline in its own right, remains a leading light internationally both in research and education. In fact, in the most recent QS World University Rankings by Subject, which highlights the world's top universities in a range of subjects, the faculty came 13th overall. The faculty teaches all the main fields of modern Physics.

The challenge

Workstations at the Physics Faculty of LMU Munich typically have a service life of five years. At the end of 2013, 109 workstations within the Theoretical Physics and Meteorology departments had reached the end of their service lives and needed to be replaced by high-performance, low-maintenance systems that would also be quiet to run.

The solution

The Theoretical Physics and Meteorology departments within the Physics faculty at LMU Munich have similar processing requirements: they require distributed computing rather than super computer applications. "The workstations are used primarily for numerical simulations," explains Ralph Simmler from IT Services within the Physics faculty, adding: "The Biophysicists, for example, calculate protein folding processes, the Nanophysicists the transition of structure borders, and the mathematical physicists and string theorists tend to use mathematical software, such as Mathematica and Matlab, a program for interactive numerical mathematics."

The calculations are usually made in the cluster, to which every workstation is connected and contributes processing power. Additional computing power is supplied by several large servers within the faculty's server room. "Our largest systems are FUJITSU PRIMERGY CX400 S2 servers," advises Simmler. Resource management software handles all user requests for computer resources – whether from workstations or thin clients – and distributes them over the various processors based on utilization. The grid engine system thus prevents one machine from blocking too much CPU power or memory, evenly distributing processor load over all processing units.

The challenge

Fast, high-performance hardware is essential for the complex simulations and calculations performed by the scientists at Ludwig-Maximilians-University (LMU). The existing 109 workstations within the Meteorology and Theoretical Physics departments no longer met these requirements and needed to be replaced by new, higher performance systems. In view of the fact that the computers were situated directly at the workstations instead of a central server room, quiet operation was a key criterion for LMU in its search for new hardware. Reliability and low maintenance were also high on the list.

The solution

The outdated workstations have now been replaced by 109 FUJITSU CELSIUS M720 workstations, each of which is equipped with an Intel® Xeon® processor E5-2650 with eight cores, allowing the processing of 16 threads in parallel. Featuring noise emissions of only 20 dB (A), the machines help to create a quiet working environment. High performance is guaranteed thanks to the 32 GB memory, NVIDIA® NVS™ 300 graphic cards and a 128 GB SSD.

The benefit

- Extremely quiet system (only 20 dB(A)) with optimized heat management and quiet fans
- High productivity thanks to high-performance multi-core processor
- Excellent value for money
- Professional, responsive communication with the advisers at Fujitsu in Augsburg
- Close proximity to the production site permits greater flexibility and shorter delivery times. It also offers the option of on-site server testing
- Good, long-standing business relationship, both with Fujitsu directly and with Microstaxx, LMU's exclusive sales partner
- Short supply channels through partner Microstaxx

Products and services

- 109 FUJITSU CELSIUS M720 workstations with Intel® Xeon® E5-2650 processors, 32 GB memory, 128 GB SSD, NVIDIA® NVS™ 300 graphics cards and 2 Terabyte Seagate hard drives
- Ubuntu operating system

However, local processing power is required for some applications, specifically, graphically-supported programs, such as COMSOL Multiphysics, which is used to model and simulate every system based on physical effects. To be able to provide this local processing power and guarantee a seamless connection to the cluster, LMU decided to procure 109 FUJITSU CELSIUS M720 workstations, equipped with an Intel® Xeon® E5-2650 processor with eight cores, which are able to process 16 threads in parallel. By day, the computers use mostly local processing power, whereas by night the calculations are performed in the cluster.

The benefit

According to Dr. Hermann Gumpff from Central Procurement Services at LMU, "Fujitsu is one of our most important partners." One benefit is the short supply channels and delivery times offered by the manufacturer. In addition, Fujitsu is the only remaining hardware manufacturer to still manufacture systems within Germany. Not only does it produce 12,000 client computing devices, 950 server/storage systems, 50 racks and 8,000 system boards every day at its Augsburg factory, it is also responsible for the global production of the FUJITSU CELSIUS workstations and FUJITSU PRIMERGY servers. Dr. Gumpff has also been delighted with its long-standing relationship with Fujitsu Service, especially with regards to driver support.

One more benefit, and a particularly important one in this case, is the much quieter operation of the Fujitsu workstations compared to other similar systems. This was a key requirement given that the systems are located directly at the employee and student workstations.

Conclusion

"We have an excellent long-standing relationship with Fujitsu. We particularly appreciate the professional, responsive communication with our contact persons and the fact that most of the products are manufactured at the Augsburg site, giving us more flexibility, shorter delivery times and the opportunity to test servers on site. They are also quick to supply workstations on loan whenever we require them."

Dr. Hermann Gumpff, Central Procurement Services, Ludwig-Maximilians-University, Munich (LMU)

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