FUJITSU

Case Study

Increased power and HPC capacity in the research area of the University of Granada.

"Fujitsu's supercomputing solution enables the University of Granada to meet user needs and the large power and computing capacity requirements demanded by research."

The customer

Customer: University of Granada (UGR)
Industry: Education / Research
Employees: 5.850
Website:http://www.ugr.es

The challenge

To increase HPC efficiency, capacity and power in the local university and in Andalusia as a whole and, where possible, to boost energy efficiency, thus meeting growing demand.

The solution

Installation of a Fujitsu PRIMERGY CX250/RX350/RX500 HPC cluster with 1,808 cores (3,616 threads in total), 4.28 TByte RAM, 72 TByte of shared storage and Infiniband QDR interconnection.

The customer

The University of Granada (UGR) was founded in 1531 and continues a long teaching tradition that links with that of the Madrasa of the last Nasrid Kingdom. It has five campuses and a sixth one under construction, which is about to be inaugurated (PTS – Health Sciences Technology Park), in the city of Granada (Spain), plus another two campuses in Ceuta and Melilla (Spain), in North Africa.

UGR has nearly 60,000 graduate and postgraduate students and another 20,000 who complete complementary studies (languages, summer courses, etc.). It employs 3,650 professors and over 2,200 office workers, technicians and service staff.

UGR, and particularly its Communications Networks and Computing Services Centre (CSIRC), have been involved with supercomputing since 1989. In 2006 it implemented the Andalusian Scientific Supercomputing Network in Granada at the initiative of the Regional Government of Andalusia and the University of Granada itself. The University built the Supercomputing centre at that time, where the first equipment for this supercomputing network was located. The first node was called UGRGRID and was included on the TOP500 list of the most powerful computers in the world in 2007.

Challenges

There were several challenges to be overcome:

- Increased power, capacity and energy efficiency of the HPC solution in order to be able to meet growing demand.
- Guarantee future integration and compatibility between Lustre and Infiniband systems.
- Offer the greatest possible number of Rmax Tflops on x86-64 processors.
- Volumes of temporary storage shared by all the cluster nodes using the Lustre file system

Products and Services

- Installation of a Fujitsu PRIMERGY CX250/RX350/RX500 HPC cluster with 1,808 cores (3,616 threads in total), 4.28 TByte RAM, 72 TByte of shared storage and Infiniband QDR interconnection.

Benefits

- Adaptability to real user needs; shorter queues-work times, greater number of available cores, faster computing speed, possibility of working with GPUs...
- 10 x power and computing capacity.
- Compatibility between the existing and future system.
- Easy maintenance and use by staff.
- Smaller size and greater energy efficiency

The solution

From the outset, Fujitsu understood UGR's business strategy and its line of action and investment. This is why it offered a solution best suited to the needs of its intensive computing services. In addition, the solution provided is very likely to become a source of income for UGR, as it can be extended to outside companies. It is also part of the actions included in the university's BioTic CIE (Campus of Int'l Excellence).
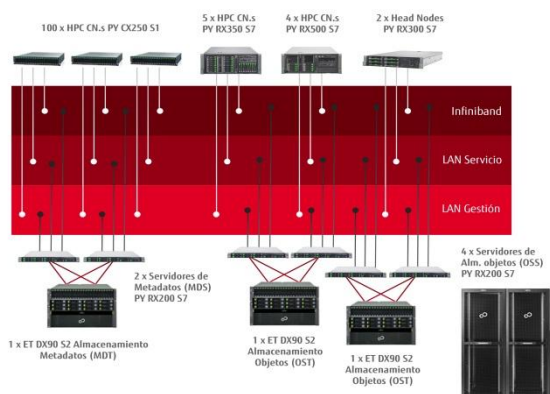
The solution and its benefits:

- Substantial increase in processing capacity (up to 3,072 parallel processing slots)
- Reduced latency in intercommunication between subprocesses (non-blocking 40 Gbps Infiniband)
- Increased Lustre storage capacity (90 TBytes)
- Increased bandwidth with the storage network (64 Gbps)
- Energy efficiency
- New 500-slot processing queue (8 FPUs)
- Non-parallel slots increased to 256
- Possibility of addressing up to 256 GB RAM per process
- Increased storage capacity for projects with large requirements
- Parallel programming in GPUs
- Increased computing power (x 10... up to 40 Linpack Tflops)

Benefits

Fujitsu's solution has provided regular users with an HPC system that offers greater capacity and computing speed, as well as new and more efficient work queues for their projects, providing substantial improvements in the time needed to obtain results.

According to Juan Martos Moya, CSIRC Director, "*Fujitsu's supercomputing solution has enabled us to add new work groups to the system, who can make the most of the new capabilities offered, such as GPU computing*." UGR has also improved its global image as an organisation that supports research, thanks to a sustainable, scalable and highly energy efficient solution.

Jesús Rodriguez Puga, head of the research support service at the CSIRC, added: "*Fujitsu fits perfectly with our university's commitment to science and research, with decades of tradition, recognitions and success*". Another major benefit is that the HPC project carried out by Fujitsu at the University of Granada can expand, since its design is completely scalable and demand is forecast to grow. In addition, its use for intensive computing can be combined with self-managed cloud-computing (on-demand computing grids for researchers).

Juan Martos Moya described the relationship between Fujitsu and UGR as follows: "*Fujitsu has proved to be the ideal partner for the current and future plans of UGR for supporting research. Our previous experience and collaboration have been positive and it is willing to support us in all kinds of future projects with the best possible technical and human resources.*"

In short

The increase in power and computing capacity provided by Fujitsu's solution has enabled UGR to complete research work more efficiently and obtain faster results. Thanks to this it has been possible to successfully carry out over 96 research projects and complete more than 64,700 jobs.

About Fujitsu

Fujitsu is the leading Japanese Information and Communication Technology (ICT) company and offers a full range of technology products, solutions and services. Its 170,000 employees provide support to customers in over 100 countries. We use our experience and the power of ICT to shape the future of society with our customers. For more information, visit http://www.fujitsu.com/es

Contact
FUJITSU
Camino Cerro de los Gamos, 1
28224, Pozuelo de Alarcón (Madrid)
Tel: +34 91 784 9000
Website: www.fujitsu.com/es
2014-04-09

http://www.fujitsu.com/es/casestudies/