

## Brazil's UNESP Gets LatAm's Most Powerful Computer Network

Contributed by Newsroom  
Friday, 20 June 2008

Brazil's UNESP (São Paulo State University) will be installing in the coming weeks its new computer cluster, known as GridUNESP, which will be the largest computing cluster in Latin America spanning across seven different sites in São Paulo State, in Southeast Brazil.

Based on Sun Microsystems technology, the new system should give research groups in the University access to the highest levels of processing capacity and data storage capacity to be used for particle physics, genetics, meteorology, medicine, and other areas of scientific investigation.

The central cluster of systems, which will be installed at the new UNESP campus in Barra Funda, a São Paulo city neighborhood, will have 2048 processing nuclei and a compute capacity of 23.2 teraflops. The complete system which is made up of the central cluster and seven others will total 33.32 teraflops (33 trillion calculations per second).

GridUNESP will have a high speed connection to the North American Internet2 by means of the MetroSampa Network - which inter-connects educational, cultural, and research institutions in the metropolitan region of São Paulo - and also to the Open Science Grid, which integrates computer resources in 50 sites across the United States, Europe, Asia, Australia, and Latin America

"Sun was selected as it showed the best technical expertise and the best price from the bids submitted," said GridUNESP's general coordinator, Sérgio Ferraz Novaes, professor of the Theoretical Physics Institute (IFT) at UNESP.

GridUNESP will have centralized administration, operation, and maintenance, and will be accessible to any researcher in the University.

According to Novaes, the project will deal with research areas that require processing, analysis, and storage of a large amount of data, such as genetic sequencing, weather forecasting, molecular and cellular modeling, reconstruction of medical images, development of new materials, quantum chemistry, large-scale numerical simulations, and high energy physics, among others.

The cost of the project, at around US\$ 3.1 million, was financed by the Ministry of Science and Technology, via the Studies and Projects Finance Plan (FINEP). The computational infrastructure, which consists of a central cluster and seven other secondary clusters, will be spread amongst the following campuses: Araraquara, Bauru, Botucatu, Ilha Solteira, Rio Claro, São José do Rio Preto and São Paulo.

"With its multi-campus structure, UNESP has the profile of an institution that could benefit greatly from this layout. A network that interconnects the principal processing and data storage centers in the University will allow an equitable distribution of these resources, allowing virtually everybody to access a computational infrastructure that would be unavailable or extremely unbalanced if set up another way," explains Novaes.

"The progress of our research will be helped in terms of speed of calculation and availability of memory. It will also facilitate interaction between the different theoretical research groups," affirms Elson Longo, professor of the Institute of Chemistry (IQ) at the Araraquara campus, and also coordinator of the Multidisciplinary center for Ceramic Material Development.

GridUNESP will give the University the capacity to integrate major international projects in the area of Grid computing, according to Gastão Krein, Director of IFT, at the São Paulo campus.

For physician Ney Lemke, of the Institute of Bioscience (IB) at the Botucatu campus, studies in the areas of biology and medical physics will be greatly enhanced. "With the computing capacity of GridUNESP, research calculation times will be reduced, which will allow us to carry out more detailed studies at a faster pace."

For Adriano Mauro Cansian, coordinator of the Safety research Laboratory of the Institute of Biosciences, Arts and Exact Sciences (IBILCE), at the São José do Rio Preto campus, the project to detect attacks on large-scale computer network infrastructure, on which he works with his team, will benefit from the processing and data storage capacity. "We also believe that the grid will allow more flexible processing in carrying out the analyses that are intended to detect attacks in real time."

According to Carlos Thomaz, high performance computing specialist, Sun Microsystems of Brazil, the GridUNESP project represents a new standard for the Brazilian academic community. "The project consists of a combination of interconnected clusters, forming a computation grid along the lines of those in Europe and North America. Challenges such as this are not dealt with just by systems, but also by using an infrastructure specifically defined to meet the needs of UNESP, encompassing software, hardware, and principally service solutions."

Joaquim Merino, Sun Microsystems sales executive, states that, "The GridUNESP project is a pioneer in the implementation of a computational grid that connects the largest research centers in the world, such as the Open Science Grid (OSG). We expect this project to be not only a great success for UNESP, but also for the whole Brazilian scientific community."