LSU to get powerful computer
Tezpur has three times the power of Super Mike

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For its latest technology trick, LSU will unveil a computer this summer with powers that transcend the everyday mind, placing the university among the nation's top five supercomputing campuses.

Tezpur, the university's next supercomputer, and other upgrades will triple the collective computing power of LSU circuits to 21.9 trillion numerical operations per second.

The $2 million project will boost LSU research efforts, university officials said. Half the investment will go to Tezpur, a supercomputer that supplants the 2002 vintage Super Mike at a third of the cost with three times the power.

At the same time, the university will upgrade its existing Pelican supercomputing cluster with another 28.8 terabytes of disk storage: That's trillions of bytes. The average personal computer deals in mere millions and billions of bytes.

Brian Voss, LSU's chief information officer, describes the Pelican cluster as a kind of fighter jet for fast-processing needs while Tezpur is the military equivalent of a C5 transport aimed at heavier volume needs.

"What this does is enable LSU not only to keep pace but to get into the top tier of major universities," said Voss, adding that three LSU research professors — Sumanta Acharya in mechanical engineering and Randall Hall and Ben Chen in chemistry — are advancing research grant funds they've attracted to pay for 10 percent of the new investment.

Acharya said the changes are critical to advancing the quality and pace of his research.

About 700 university researchers with high-capacity needs use the supercomputing environment now, a number that Voss and Ed Seidel, the director for the Center for Computation and Technology, hope to enlarge.

Tezpur is named for the world's hottest hybrid pepper cultivated to date. It's inevitable that the supercomputer will lose its leading-edge status, but Voss predicts an effective lifespan of about four years.

A list of the world's Top 500 supercomputers ranked Virginia Tech highest among universities at No. 20 at the end of 2005, followed by USC at No. 24. The list is maintained by the University of Mannheim in Germany, the University of Tennessee and the federal Department of Energy's National Energy Research Scientific Computing Center. Seven of the Top 10 are in the United States, with all but an IBM supercomputer in New York belonging to federal research centers.

But the landscape for universities is changing, Voss said. Indiana recently announced it is acquiring the fastest supercomputer owned by a university, measured at 20 teraflops — or 20 trillion floating point operations per second, a key scientific benchmark.

The rating of LSU's new supercomputer will be at least 15 teraflops, enough to crack the top five among campuses, "so you can see we're within striking distance of the top in terms of universities," Voss said.

In 2004, Louisiana launched the four-year, $40 million Louisiana Optical Network Initiative, or LONI. Voss said Tezpur will benefit both LONI and the National LambdaRail, a network developed for university and private sector research, as the National Science Foundation and other research engines require more and more inter-campus collaboration.

LSU's supercomputing mission advances basic scientific research, but byproducts of that research will impact economic development in the region, Voss said. Large research universities helped spawn Silicon Valley in California and the Research Triangle Park in North Carolina, where supercomputing networks date back to the 1980s.

"Why that ends up being a key fact is it's not just the faculty and the researchers who are drawn to those universities, it's the students who are drawn to those universities because those faculties and resources are there," Voss said, pointing to Apple Computer's Steve Jobs attending the University of California-Berkeley and Bill Gates attending Harvard as examples of campuses igniting research transfer into private sector companies.

So far, LONI's biggest prize in the public research sector came with the October announcement of a $16.9 million award over five years from the National Institutes of Health for the Idea Network of Biomedical Research Excellence project. The joint effort of LSU-Baton Rouge, LSU Health Sciences Center, the University of Louisiana at Monroe, Southern University-Baton Rouge, Louisiana Tech and LSU-Shreveport will benefit from LONI's coming online by the end of 2006.

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