



A Giant Step Forward for LONI

The Louisiana Optical Network Initiative, a.k.a. LONI, has taken a giant step forward.

Three of the fiber-optics network's IBM P5 high performance "grid" computers that will interconnect mainframe computers at Louisiana's major research universities are in place at Louisiana State University and A&M College (LSU), Louisiana Tech University (Tech), and Tulane University (TU).

The supercomputers earmarked for Southern University and A&M College (SU), the University of Louisiana at Lafayette (ULL) and University of New Orleans (UNO) are next in line for delivery.

Speaking at the inauguration ceremony of Tulane's computer, Governor Kathleen Babineaux Blanco referred to LONI as "a project that is already transforming Louisiana into a major player in the world of high-speed computing. But it's much more than that. It is significant, even symbolic, that in the very heart of post-Katrina New Orleans, Louisiana has laid one of the cornerstones of a technology infrastructure that will play a critical role in our state's economic future. New Orleans is truly once again open for business."

As an immediate benefit of LONI, the Louisiana Board of Regents joined the National LambdaRail (NLR). A nationwide grid-computing infrastructure, NLR is expected to have the same effect on the nation's technological development as the interstate highway system has had on interstate commerce. Governor Blanco announced a pledge of \$40 million over 10 years for the initiative at a September 2004 LONI forum sponsored by the Regents, LA EPSCoR and LSU Center for Computation and Technology.

"The positive implications of LONI and our participation in the National LambdaRail cannot be overstated," said Commissioner of Higher Education E. Joseph Savoie. "Louisiana now has a place at the table in the world of supercomputing. The future of university research in Louisiana — and the kind of economic development that can accrue as a result — looks bright indeed."

"This is one of the fastest computers in the nation and will allow our scientists to perform calculations on physical and physiological systems that have not been possible until now. In addition, this will help us to collaborate with other high-caliber researcher globally," said Dr. Yvette Jones, Tulane's Senior Vice President for External Affairs and Chair of the Biosciences Subcommittee of the Economic Development Committee of Mayor Ray Nagin's Bring Back New Orleans Commission.

"Finally, we anticipate that resources such as this will improve the overall environment for scientific discovery and help us attract scientists to New Orleans. This is phenomenally important to our region in the post-Katrina environment. All in all, this is a great day for scientific computing."

LONI, which will access NLR by means of a node located in Baton Rouge, will allow researchers to transmit data at speeds several thousand times faster than previously possible. It will eventually connect colleges and universities in every region of the state.



Steve Barry, left, and Ron Manuel from IBM setting up the supercomputer at Louisiana Tech University.

How fast is faster?

"Faster than a speeding bullet or the blink of an eye," says Dr. Sumeet Dua, a Tech Assistant Professor of Computer Science. Referring to Tech's supercomputer by its nickname, a derivative of the university's "Tech blue" and bulldog mascot, he says:

"In the time it takes a bullet to travel one foot, 'Bluedawg' will complete 330 million calculations; in the time it takes to blink, the computer will complete two billion calculations.

"Using high-speed optical fiber, we can transfer the entire plain-text holdings of the Library of Congress from one coast to another in about 72 minutes. Using a standard cable modem, it would take more than three years."

LONI Impacts

Dr. Les Guice, Louisiana Tech's Vice President for Research and Development and Chair of the LONI Management Council, said that "LONI will have impacts on research and development in this state in ways that we cannot even envision at this early juncture." He adds that users can come from virtually any discipline, although generally, most will be science and engineering faculty. "Anyone, however, who has a need for high-performance computing — a business professor who might need complex calculations for the stock market, for example — will be eligible."

"LONI puts Louisiana in a national leadership position, not only in deploying the most advanced high-tech infrastructure, but also in using it for scientific, engineering, arts, and business applications," says Dr. Edward Seidel, Director of LSU's Center for Computation & Technology and a recently named member of NLR's Science Research Council. "Through the LONI network, researchers at campuses hundreds of miles apart will be able to visualize research data in real time."

Charles McMahon, LSU Deputy Chief Information Officer and Executive Director, Network Infrastructure and Research Enablement, says that the IBM P5 is in a class of its own. He adds that "its capabilities attract collaboration and bring researchers

Continued on pg 2

Continued from pg 1

more tightly into the same web. We are creating an environment that leverages all of our universities and helps solve bigger problems than any one researcher or university could on its own.”

Dr. Ramu Ramachandran, Tech’s Associate Dean for Research and Graduate Studies in the College of Engineering and Science, who is engaged in nanotechnology simulations whose commercial applications will be hastened with the help of network, says: “LONI’s advent means Louisiana isn’t standing in anyone’s shadow. It’s the most advanced network in the country. Others states will have to play catch-up.”

Louisiana Department of Economic Development Technology Industry Director Bob Fudickar, who is also a member of the LONI Management Council and was on hand for Tech’s IBM P5 ‘plug-in’ says: “The dynamics of academics, research and economic development depend heavily on technological superiority. Many of our State’s current and future startup technology companies stand to benefit significantly from LONI, especially in the area of product development.”

LONI Delivers

LONI has already delivered on one of its key selling points — its ability to attract federal research dollars that Louisiana institutions might otherwise have had to forego, said Dr. Harold Silverman, LSU Interim Vice Chancellor for Research and Graduate Studies, and Board of Regents EPSCoR Committee Chair.

“LONI was a significant factor in the decision of the National Institutes of Health’s Idea Network of Biomedical Research Excellence (INBRE) to award a five-year \$16.9 million grant to a collaborative research project involving six Louisiana institutions. The project is establishing a multi-disciplinary research network with a scientific focus that will build and strengthen the partnering institutions,” says Dr. Silverman, who is also the projects principal investigator. The participating institutions are LSU, LSUHSC, SU, Tech, the University of Louisiana at Monroe, and LSU-Shreveport.

Citing another example, he points to a \$400,000 National Science Foundation (NSF) funded project involving researchers at LSU, LSUHSC, SU, and UNO. They are focusing on the design and deployment of new kinds of physical interaction devices and associated software systems to simplify, strengthen, and extend computer visualization. Among the research projects likely to be enhanced are investigations into eye diseases, environmental science, and the impact of hurricanes on coastal erosion.

National LambdaRail Completes Revolutionary Nationwide Advanced Network Infrastructure

National LambdaRail (NLR), a consortium of leading U.S. research universities and private sector technology companies, has completed deployment of a nationwide advanced optical, Ethernet and IP networking network infrastructure on more than 15,000 miles of fiber optic cable across the United States.

NLR provides researchers with up to 40 individual lightpaths — each of which can transmit data at 10 gigabits per second and be used to deploy dedicated side-by-side, but physically and operationally separate, production and experimental networks. The infrastructure is the result of over three years of work and nearly \$100 million in funding by members.

Yet another funded project in which LONI played a key role, is an initial \$70,000 NSF grant, this one to researchers from Tech, LSU, ULL, UNO, LSUHSC and Children’s Hospital. The investigators are assembling a multi-disciplinary, multi-institutional team to develop a data repository of Louisiana bio-medical-related data that would include biomedical, biological and clinical data ranging from free-text notes and instrument reads to microscope images, all accessible through LONI.

Referring to the projects as leading indicators of the high level of success that Louisiana faculty are already having in securing multi-institutional research grants, Dr. Guice, who is also a member of the LA EPSCoR Committee, says that “it is particularly gratifying to see the tremendous collaboration that is already occurring between researchers at our LONI institutions as they begin to capitalize on this new information expressway.”

LA EPSCoR and the Board of Regents consider LONI “a major tool” for sustaining collaborations among Louisiana’s higher education institutions, says Dr. Michael Khonsari, LA EPSCoR Project Director and the Board’s Associate Commissioner for Sponsored Programs Research and Development.

“The grants are further affirmation of the wisdom of Governor Blanco’s support for the creation and long-term maintenance of LONI,” adds Dr. Savoie. “Federal funding at this level is economic development in its purest form, and that doesn’t even count the enormous economic potential of the future applications of this research. Moreover, because of the research capability that LONI will continue to afford our universities, we can expect much more federal funding in the future.”



Louisiana EPSCoR
P.O. Box 3677
Baton Rouge, LA 70821-3677