

# Bandwidth boost ‘a big deal’ – and a money-saver



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## News

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## **Bandwidth boost ‘a big deal’ – and a money-saver**

by Tim Crosby

CARBONDALE, Ill. – Students in residence halls might notice their smart phones, tablets, computers and televisions streaming data more smoothly. The typical campus worker will see that video conferencing works better, while other Internet-based tools, such as email, likely won’t be noticeably different, although they will be harder behind the scenes.

But for the many researchers at Southern Illinois University Carbondale, a recent upgrade in campus bandwidth is giant leap forward, greatly advancing their ability to share and receive enormous amounts of data supporting cutting-edge research around the globe.

And all of this comes together with a substantial savings to the university.

Officials in the Office of Information Technology recently announced the campus’ bandwidth has increased from 3.1 gigabits-per-second to 7.4 gbps for everyday users. From the student streaming a movie on Netflix to a faculty member Skyping a lecture, such an increase will help meet ever-growing demand for more bandwidth on the so-called “Campus Area Network,” officials said.

On the research side, however, the recent upgrades increased the bandwidth from 45 megabits-per-second all the way up to 10 gbps. Federally funded improvements to statewide networking infrastructure allowed SIU to pursue the increased bandwidth connection to Internet2, a separate testing-ground networking environment created in the late 1990s and aimed at developing advanced Internet technologies for use by universities, private companies and government laboratories.

At the same time, the university will be paying far less than what it has paid in years past, even as its bandwidth has increased, said Scott Bridges, interim assistant provost and chief information officer at SIU. Annual cost to the university has hovered around \$360,000, but next fiscal year, officials expect that amount to drop to around \$230,000.

Another benefit of the recent improvements stems from the fact that SIU now has three Internet service providers, which can serve as redundant back-ups should one or two of them experience an outage.

Bandwidth refers to the size of the “pipe” through which data can flow. The Southern Illinois region, in general, traditionally has faced challenges with access to bandwidth given its rural nature and low population density.

The SIU campus, for years a leader in bandwidth access with its demands for everyday usage and larger-scale needs of research, often sat right on the edge of the “redline,” past which data flow would slow down considerably.

“Bandwidth is an important recruitment marketing tool for students, faculty and staff, but it is also important in terms of the day-to-day academic, research and administrative activities,” Bridges said. “And it’s a big deal. For years we’ve been trying to find ways to economically boost our bandwidth, and the numbers finally met. This is important for research as well as recruitment here at SIU.”

Bridges credited Rustomji “Gi” Vania and Michael Shelton, both deputy directors of information technology, with working on the project and bringing it to fruition over a number of years.

“These two, along with their teams, have worked very hard on this over the last few years to make this happen,” Bridges said.

SIU’s connection to Internet2 previously was accomplished through a connection to the Illinois Century Network and was limited to 45 mbps. With the recent improvements, researchers now have a dedicated 10 gbps connection to Internet2 directly through the Metropolitan Research Education Network, making it possible to stream much larger amounts of data quickly and efficiently.

At the same time, officials in early November also added Cogent, another service provider, which provides another 5 gbps of bandwidth for everyday Internet users.

But even as the university increased bandwidth, the cost came way down thanks to the Illinois Century Network, which for the first time was able to provide SIU with a series of point-to-point transit networks that allowed officials to tap into one of the biggest crossroads of networking in the country.

This new connection allowed SIU to buy a 40 gbps connection to Starlight, a so-called “fiber hotel” based on the campus of Northwestern University in Evanston. The university currently utilizes just 15 gbps of this connection, leaving room for future growth.

“Many, many networks originate at Starlight,” Vania said. “It is THE nexus for the United States and it provides fiber connections that go all over the world. We had wanted to be there forever, it became available so we took advantage of it.”

Having access meant the price fell steeply. The university now will only pay about \$1 for each mbps in bandwidth connection, where it was recently paying about \$4.50 for the same connection.

While most of the savings for this year will be eaten up by some equipment purchases needed to move the project forward, next year SIU will reap the substantial financial benefits. And at the same time, its students, researchers and staff will enjoy the many benefits of access to broader bandwidth.

“This all means so much more research can go on, more entertainment for students, video conferencing won’t be jerky,” Shelton said. “It’s a major improvement all around.”

Jim Garvey, interim vice chancellor for research at SIU, said university researchers in all disciplines will benefit greatly from increased transmission speed and quantities of data. Faculty with computationally intensive research will now be able to push enormous packets of complicated data from the desktop to supercomputers anywhere. Faculty also will be better able to telecommute with colleagues, conduct lectures and access high-quality virtual conferences, all of which will enhance research activity across the campuses, he said.

“Physical models of art, biological specimens, archaeological artifacts, buildings, engineered materials, geological formations and almost any other thing that historically required a field trip for study are being digitized into enormous data files, which can either be explored virtually on desktops or reproduced with 3D printers,” Garvey said. “Our increased bandwidth ensures that our faculty and students can take advantage of and contribute to these exciting virtual platforms, which are going to level the playing field for research and lead to new, multidisciplinary innovations.”

Garvey said having access to adequate bandwidth is essential in today’s rapidly evolving academic environment, which he compared to things only previously seen in futuristic movies depicting virtually unlimited capacity for data storage and visualization.

“The winners in research and education will be the institutions that can efficiently access and make sense of this second world of opportunity,” he said.

Bridges said the information technology department is not resting on these latest accomplishments, and that officials fully expect the need for bandwidth to continue increasing.

“Even now we’re looking ahead to the future and what our needs will be just a few years from now,” he said.