

Syracuse University, IBM, New York State launch one of the world's greenest data centers

Syracuse University, with partners IBM and New York State, today celebrated the construction of its new Green Data Center (GDC)—a showcase of world-class innovations in advanced energy-efficient information technology and building systems.

GDC announced in late May 2009 and constructed in just over six months, the \$12.4 million, 12,000-square-foot facility (6,000 square feet of infrastructure space and 6,000 square feet of raised-floor data center space) uses an innovative on-site power generation system for electricity, heating and cooling, and incorporates IBM's latest energy-efficient servers, computer-cooling technology and system management software.

When the GDC becomes fully operational in January, it is anticipated to use about 50 percent less energy than a typical data center in operation today, making it one of the world's "greenest" computer centers.

SU will utilize the center as its primary computing facility. In addition, as part of the GDC project, IBM and SU intend to establish a GDC Analysis and Design Center in 2010 to offer research and analysis services for clients and others who want to build new energy efficient data centers or optimize the efficiency of current centers.

IBM has provided more than \$5 million in equipment, design services and support to the GDC project, including supplying the power generation equipment, IBM BladeCenter, IBM Power 575 and IBM z10 servers, and a DS8300 storage device. The New York State Energy Research and Development Authority (NYSERDA) contributed \$2 million to the project. And Sen. David Valesky today announced he had secured \$500,000 in additional funding from the New York State Senate.

The project is an example of IBM's Smarter Planet initiative, focused on helping clients use digital intelligence to improve products or entire systems. IBM intends to showcase the data center and its energy-efficient technologies to help clients design new data centers or improve their current operations. The center will expand SU's leadership in the development and use of "green" innovations in nationally strategic domains.

Coupling new technology with new uses of existing technology, the innovations pioneered in the GDC will make advances in energy efficiency possible in data centers from downtown Manhattan to emerging nations.

"Together, IBM and Syracuse are tackling a significant problem—how to address the skyrocketing amount of energy used by today's data centers, which is impacting businesses and institutions of all sizes," says Vijay Lund, vice president for cross-IBM offerings in IBM's Software Group. "We looked beyond conventional wisdom and addressed the broader issues of where and how to generate the electricity, how to cool the data center and how to make the

computers more effective and efficient. This unique end-to-end focus has resulted in a smarter, cost-effective, greener data center.”

“The cross-sector collaboration at the center of this project epitomizes *Scholarship in Action*,” says SU Chancellor and President Nancy Cantor. “IBM, New York State and SU have formed a community of experts, pooling our resources and talent to develop innovations that will enable greener, more cost-effective computing across the globe. Most importantly, the discoveries we make here will drive innovation that serves the public good.”

“The Green Data Center is a smart investment,” says Sen. Valesky. “By partnering with public and private organizations, Syracuse University will set a great example and provide much-needed resources for companies and organizations that are looking to reduce both IT costs and their carbon footprint.”

“Syracuse University’s new data center, with the assistance of New York-based IBM, will be a model of energy efficiency for New York and the world,” says Francis J. Murray, president and chief executive officer of NYSERDA. “The collegiate, corporate and governmental partnership involved in this project showcases New York’s leadership in developing cutting-edge energy technologies and represents an important step forward in reaching Gov. David Paterson’s ambitious goals for reducing our energy consumption and improving our environment.”

The growing demand for computing, Internet and online services has led to the growth of data centers and resulting dramatic increases in their energy consumption and costs. A typical data center uses up to 30 times more energy than a typical office building, and total data center energy use is doubling every five years. Improving data center energy efficiency offers significant energy cost savings and environmental benefits to organizations and businesses.

The SU GDC features an on-site electrical tri-generation system that uses natural gas-fueled microturbines to generate all the electricity for the center and cooling for the computer servers. The center will be able to operate completely off-grid.

IBM and SU created a liquid cooling system that uses double-effect absorption chillers to convert the exhaust heat from the microturbines into chilled water to cool the data center’s servers and the cooling needs of an adjacent building. Server racks incorporate “cooling doors” that use chilled water to remove heat from each rack more efficiently than conventional room-cooling methods. Sensors will monitor server temperatures and usage to tailor the amount of cooling delivered to each server, further improving efficiency.

The GDC project also incorporates a direct current (DC) power distribution system. In a typical data center, alternating current (AC) electricity is delivered by a central power plant through the local utility’s electric grid and then converted to DC to power the servers. This conversion process results in power loss. By directly generating DC power on site, transmission and conversion losses are eliminated.

The GDC was designed and built by Syracuse-based VIP Structures. The project is registered with the U.S. Green Building Council. SU is seeking certification under the USGBC’s

Leadership in Energy and Environmental Design (LEED) program, with a goal of achieving a Silver rating.

For more on the GDC, including video and photos, visit <http://syr.edu/greendatacenter/>.