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COLUMBUS BUSINESS FIRST

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State OKs souping up supercomputer

Business First of Columbus - by Kevin Kemper

An expansion of one of the world's most powerful supercomputers this summer is expected to bring millions of federal research dollars to Ohio academics and expand the state's burgeoning biosciences industry.

The **Ohio Supercomputer Center** is planning a $4 million expansion of its Glenn IBM 1350 supercomputer, roughly tripling the computing power of the machine, named after former senator and astronaut John Glenn.

"With the expansion we will probably be in the top five academic supercomputers in the country and within the top 50 supercomputers in the world," said Kevin Wohlever, the state agency's director of supercomputing operations.

How fast will the computer be? The center estimates it will have peak computing power of 70 teraflops, up from its 22.

"A gigaflop is a billion operations per second," Wohlever said. "A teraflop is 1,000 times that."

Janet Adams | Business First

Ohio Supercomputer Center executives Kevin Wohlever, right, and Ashok Krishnamurthy are adding processing power in a bid to keep the state in the race to attract businesses that rely on complex simulations.

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All those ones and zeros moving at the blink of an eye will enable researchers and businesses to model car collisions, the interaction of molecules inside the body and the spread of an avian flu strain. The expansion can't come soon enough. Two months after the supercomputer became operational last January, it reached capacity.

The state **Controlling Board**, which oversees state spending, approved the center's $4 million request Jan. 26.

Virtual modeling

The **Ohio Board of Regents** established the Supercomputer Center as a shared resource for graduate-level students and academics. It brought its first computer online in 1987, and since then has operated more than 27 supercomputers, which have also been used by public and private companies. It has run a series of supercomputers, Wohlever said, because the machines stay relevant only for two to three years.

While the machines are powerful, they are no more complex than personal computers, said Ashok Krishnamurthy, the center's senior research director.

"The chips we're using are no different than the high-end chips used on a good desktop computer," Krishnamurthy said. "Ours are just configured differently."

The Glenn supercomputer has 900 nodes, each containing four processors. When all the nodes are connected, it becomes the equivalent of 3,600 computers.

The supercomputer sits in a nondescript building on OSU's west campus. Inside it's little more than rows of cabinets holding racks of computer cores. Researchers book either part or all of its processing power to analyze data and access it over the Internet. Demand is high because of the modeling work scientists and researchers conduct.

"Computing and modeling is where the future is moving," Krishnamurthy said. "Physical tests are expensive and companies want to be able to simulate tests in a computer because it's more cost-effective."

Rather than spend hundreds of thousands of dollars to build a vehicle prototype that might serious safety problems, for instance, supercomputers allow prototypes to be tested virtually at far less cost.

Boost for biosciences

Virtual modeling is especially useful to bioscience and health-care, said Bill Tacon, senior director of work force and education at BioOhio, a state-chartered agency that promotes the industry. He said supercomputers are needed to analyze data from clinical research conducted by doctors and pharmaceutical companies.

BioOhio is working with the Supercomputer Center on the expansion of the Glenn computer, Tacon said, so the state's bioscience industry will be ready to take advantage of an expected increase in research funding from the **National Institutes of Health** under the Obama administration.

"We believe that this expansion will give us the capacity to put ourselves on a posture to go after millions in NIH funding," said Supercomputer Center Executive Director Stanley Ahalt.

One researcher who hopes to take advantage is Daniel Janies, associate professor of biomedical informatics at Ohio State. His research tracks bird flu strains from bird to human and region to region. There is so much data involved that the use of a supercomputer is the only way to analyze it.

"To feel like we've figured out a story of avian flu would take many person-years on a PC," Janies said. "But using a supercomputer, it takes that down to a month."

Ohio Supercomputer Center

- Business: Operates and administers Ohio's shared supercomputer.
- Based: Columbus
- Executive director: Stanley Ahalt
- Employees: 45
- Supercomputer: Glenn IBM 1350
- 2009 operating budget: $4.1 million
- Web site: osc.edu

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