

Ball State Creates Supercomputer From Old Desktop Computers

MUNCIE, IND

APRIL 25, VOL. 19, NO. 5, PG 29

Discarded personal computers have been used to create a supercomputer at Ball State University. The effort, known as the Cluster Computer Research Project, involved collecting unwanted personal computers from a former lab in the school's College of Business and deploying them to build a computing machine designed to process complex mathematical problems for faculty research.

Students built the supercomputer at a fraction of the cost of a new one, says Dr. Fred Kitchens, management professor and faculty director of the project.

"A new system will cost an average of \$8 million and a lease runs about \$1 million annually. By using donated computers and having students set it up, the price tag for our unit is about \$500," he says.

The newly created system is based on the Beowulf-class supercomputers, named for the Scandinavian hero in the Old English epic.

"The world's fastest computers, including IBM's Deep Blue, are actually clusters of computers rather than a single unit," Kitchens says. "The Beowulf system was selected because the design accepts any computer, no matter what its speed, configuration or manufacturer."

Beowulf systems are used around the world for weather predictions, nuclear simulations, astronomical calculations, genetic algorithms, economic forecasts and data storage techniques. NASA created the first Beowulf system in 1994.

The first phase of the project began last fall with a group of five students in Kitchens' management class building a working model of a Beowulf-class system running the Linux operating system. The second phase is now under way and is working to expand the system, promote community awareness and begin using the system for research.

Kitchens says the project is an example of how reconditioning old personal computers may reduce a growing environmental problem. About 80 percent of used computers are sent to various locations in Asia where discarded materials are damaging the local environment.

"In underdeveloped countries, people frequently apply acid to used computer parts to extract small amounts of silver and gold. The acid and other hazardous materials such as lead, cadmium and mercury make their way into rivers and streams, causing unsafe living conditions," Kitchens explains.