



PathScale Enables Enhanced Cluster Computing Power for Nobel Prize-Winning Economics Research Team



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-- Donour Sizemore, University of Chicago ERC Technical Programmer and Numerical Analyst

Organization:

**University of Chicago,
Economics Research Center**

Industry:

Academic and Scientific Research

Location:

Chicago, IL

Applications:

**Custom-Coded Statistical Analysis
Written in Fortran and C**

Solution Set:

**Linux Cluster Based on
Sun Fire™ V20z Opteron™ Servers**

PathScale Products Used:

PathScale EKO Compiler Suite™

BUSINESS CHALLENGE: Economics research teams under the direction of Nobel Prize-winning Economist James J. Heckman, Ph.D., perform numerically-intensive micro-economics analyses. With traditional analytical techniques, computations would have taken years to complete. So instead, they write custom statistical applications in Fortran and C that require large amounts of memory and very fast processor performance.

“After many months of testing various options, we found that AMD Opteron™ clusters optimized with the PathScale EKO Compiler Suite were the fastest platform for our advanced statistical applications,” said Donour Sizemore, a technical programmer and mathematician who directs the computing efforts at the Economics Research Center. “We implemented a Linux cluster system based on Sun Fire™ V20z two-way Opteron rack-mount servers from Sun Microsystems.”



Sun Fire™ V20z Opteron-Based Server

WHY PATHSCALE? PathScale engineers worked with Sizemore and his team to optimize the performance of the Opteron processor for their specific computational needs, making significant improvements in processing speeds.

“The challenge with the Opteron is getting the CPU to achieve the performance that it is capable of delivering,” Sizemore explained. “PathScale optimized our applications so that our cluster runs about 15 percent faster and gives our researchers 20 extra days of compute time each year.”

DECISIVE PERFORMANCE AND SUPPORT:

Throughout the acquisition, the PathScale support team remained in direct contact with AMD’s research lab to ensure that the University of Chicago Economics Research Center would benefit from every possible Opteron system optimization.

“When we contact other vendors for support, all too often we have to struggle through layers of junior people,” Sizemore said. “When we turned to PathScale for assistance, we were immediately able to work with knowledgeable, senior technical people who quickly answered our questions and solved our issues.”

PathScale’s industry-leading Linux-cluster enhancement technology was a driving element in moving the University of Chicago to invest in an AMD Opteron-based HPC system.

“Our technical collaboration with PathScale took place in the middle of a pending purchase of a new HPC system, and the successful outcome definitely affected our decision. If the Opteron performance issues had not been resolved, we would probably not have purchased the Sun Fire V20z machines that we recently installed.”

The University of Chicago now operates one of the fastest Linux cluster systems being used for economics research, thanks to AMD, Sun Microsystems and PathScale.

“I’ve compared our new PathScale-optimized Linux cluster dollar per dollar to the supercomputers at Argonne National Labs here in Chicago. Considering how much we spent, our Opteron cluster is much faster than other comparably-priced systems,” Sizemore added.