

CTC acquires new high-performance computer cluster

By Margaret Corbit

The Cornell Theory Center (CTC) has acquired a new 128-processor, high-performance computer cluster to meet a growing demand for large-scale parallel computing resources. The new Velocity+ cluster, funded through CTC's Advanced Cluster Computing Consortium (AC3), is the latest Windows-based Dell/Intel/Microsoft cluster to be installed at CTC. Velocity+ will be dedicated to applications aimed at solving highly complex problems in fields such as molecular modeling and multiscale materials simulation.

The need for additional resources for large-scale applications at CTC became apparent almost immediately after Velocity came into full production in March. "The user migration to Velocity has proven very successful," said CTC Executive Director Linda Callahan. "Many parallel users are reporting extremely good performance and scalability."

Said CTC Director Thomas F. Coleman, "You might say we quickly became victims of our own success. As new parallel users scaled up to larger runs, overall demand for Velocity made it difficult to provide sufficient resources for the key research areas of protein folding and multiscale materials that are highly parallel, large-scale applications and challenge the limits of any system."

AC3 partners Dell, Intel, Microsoft, and Giganet worked with CTC to provide the required capabilities and to demonstrate the effectiveness of industry-standard hardware and software for the most complex high-performance computing problems.

One of the strategic applications lined up to run on Velocity+ comes from CTC's Parallel Processing Resource for Biomedical Scientists, which is funded by the National Center for Research Resources. Other applications are at the Computational Materials Institute (CMI), which focuses on multi-scale collaborations across disciplines and institutions aimed at the design of algorithms and systems for multi-scale engineering.

Said Anthony I. Ingraffea, CTC associate director and CMI lead researcher, "One of CMI's goals is to provide multiscale computing on demand from the desktop -- which means that researchers can predict materials performance at the atomic level all the way up to the product level."

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