

Fluent & Microsoft Team to Deliver 64-bit FLUENT on Windows Clusters

By Diana Collier, Barbara Hutchings, and Rongguang Jia, Fluent Inc.



Water ski jumper simulation showcased on the 64-bit Windows cluster at SC05
 Courtesy of Sports Engineering Group, Sheffield Hallam University; postprocessed using EnSight from CEM

ing the way for cluster-based FLUENT simulations for Windows users. With this 64-bit support, Windows users will now be able to run much larger simulations than currently feasible and they will also see performance improvements due to the enhanced memory management and wider memory bandwidth available with 64-bit processors.

This good news for Windows users is the result of close collaboration between Fluent and Microsoft. With excellent technical support from Microsoft, Fluent's development team has optimized FLUENT 6.3 on CCS. The resulting cluster solution uses the Microsoft MPI (Message Passing Interface) software layer for data communication between processors on the cluster, and supports a variety of interconnect options including Gigabit Ethernet (GigE), Infiniband, and Myrinet. FLUENT 6.3 also takes advantage of the Microsoft job scheduler that ships with CCS, providing an off-the-shelf solution for launching and controlling jobs on the cluster.

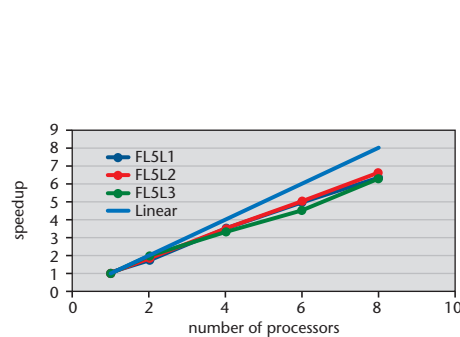
Benchmarking

The performance of 64-bit FLUENT under CCS is excellent. Speed improvements for serial performance, relative to the 32-bit FLUENT version, are in the range of 10-30% for many of the examples in Fluent's standard benchmark problem set. Parallel scaling is also quite good. Initial scaling studies using the larger benchmarks on a Windows CCS cluster are on par with what is observed on similarly configured clusters running Linux. For example, on an 8-CPU cluster connected with GigE, a speed-up of 6.4 was obtained using the FL5L2 benchmark.

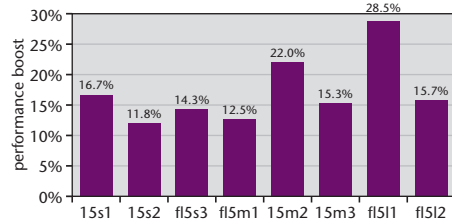
Supercomputing 2005

Microsoft showcased their new high-performance computing platform at Supercomputing 2005 (SC05), held in Seattle November 14-18, 2005. FLUENT was proud to be part of the Microsoft exhibit, demonstrating FLUENT 6.3 running as a 64-bit application under Windows Compute Cluster Server 2003 on a 16 CPU cluster provided by IBM and using a Myrinet interconnect. The showcased simulation was a multi-million cell model of a water ski jumper, courtesy of Sports Engineering Group, Sheffield Hallam University. In fact, several Fluent partners at SC05 demonstrated FLUENT simulations running on CCS clusters, including Dell, Mellanox, Voltaire, and Broadcom. The widespread success of these demonstrations, using pre-release versions of both the operating system and FLUENT, was a confirmation of Microsoft's stated goal to provide HPC solutions that are easy to deploy, operate, and integrate with existing infrastructure and tools. ■

For information on obtaining FLUENT 6.3 beta for Windows Compute Cluster Server 2003, contact your local Fluent account manager.



Parallel performance of 64-bit FLUENT running the FL5L1, FL5L2, and FL5L3 large benchmark cases, using Windows CCS 2003 on 3.4 GHz Intel EM64T dual-CPU nodes connected with gigE



Serial performance boost with the 64-bit solution, relative to 32-bit, for the small (FL5S1 and FL5S2), medium (FL5M1, FL5M2, and FL5M3), and large (FL5L1 and FL5L2) benchmark cases

THE AVAILABILITY OF 64-BIT off-the-shelf computing from Intel and AMD has provided great value to Fluent customers seeking to run larger, more memory intensive CFD simulations. With the upcoming release of FLUENT 6.3, 64-bit will become an option to customers running the Microsoft® Windows® operating system.

Many FLUENT customers are already running a 32-bit version of FLUENT on the 64-bit Windows XP operating system, but in this configuration FLUENT does not take advantage of extended memory addressing. With FLUENT 6.3, full 64-bit capability will be supported on both desktop and server systems running Windows. On the server side, FLUENT 6.3 has been ported and optimized to run under the new Microsoft® Windows® Compute Cluster Server 2003 (CCS) operating system, open-

More.info@
www.microsoft.com/windowsserver2003/ccs/overview.msp