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Convey Computer's New Hybrid-core Computer Delivers Increased Performance, Functionality, and Energy Efficiency

***Ships first system to the Georgia Institute of Technology to
accelerate research in data mining and analysis***

RICHARDSON, Texas (November 9, 2010) – Convey Computer™ Corporation announced today a new hybrid-core computer—the HC-1^{ex} – that extends the reach of hybrid-core computing, providing users with even greater performance, functionality, and energy efficiency. Convey shipped the first HC-1^{ex} system last month to the Georgia Institute of Technology (Atlanta, Georgia), who will use the system in the School of Computational Science and Engineering to accelerate data mining and analysis computations.

Convey captured the high-performance world's attention in 2008 when it launched the industry's first hybrid-core computer. Using the Convey HC-1, researchers and engineers worldwide are achieving orders of magnitude performance application increases in bioinformatics, data intensive computing, scientific research, automatic speech recognition, and more.

“As part of our involvement with the DARPA Computer Science Study Panel (CSSP), we are studying how to use heterogeneous computing systems to speed up statistical data analysis and mining applications,” stated Rich Vuduc, assistant professor in the School of Computational Science and Engineering (CSE) within the College of Computing at Georgia Tech. “These computations

can be slow because of hard-to-predict patterns of data access, for which the Convey memory subsystem has shown significant advantages over comparable platforms. The capability of the Convey HC-1^{ex} to create customized operations using the FPGAs is also extremely attractive, since it will allow us to study opportunities available to extend conventional instruction sets for this class of computations.”

Convey’s groundbreaking hybrid-core computing architecture tightly integrates advanced computer architecture and compiler technology with commercial, off-the-shelf hardware – namely an Intel® Xeon® processor and Xilinx® Field Programmable Gate Arrays (FPGAs). The systems help customers dramatically increase performance over industry standard servers while reducing energy costs associated with high-performance computing. Additionally, Convey systems are easy for programmers to use because they provide full support of an ANSI standard C, C++, and FORTRAN development environment.

Extreme performance

Convey’s HC-1^{ex} supports Xilinx Inc.’s Virtex-6 FPGA, an advanced, high-performance FPGA built on 40 nm process technology that provides 15 percent higher performance and 20 percent lower power consumption compared to competitive offerings. Virtex-6 devices operate on a 1.0v core voltage with a 0.9v low-power option.

“To offset the rising energy costs in HPC data centers, customers are looking to accelerate applications using energy efficient computing solutions. The inherent architecture of FPGA provides a high degree of parallelism to accelerate applications while consuming less power compared to competing solutions. We’re impressed with the innovative technology in the new Convey HC-1^{ex},” said Harvey Steele Jr., vice president, segment marketing and business operations, Xilinx, Inc. “By combining an off-the-shelf x86 server with our powerful and

efficient Virtex-6 FPGAs, Convey has come up with a platform that accelerates software applications on FPGAs giving users extreme performance, extended functionality, and exceptional energy efficiency.”

Compared to the Convey HC-1, the HC-1^{ex} provides three times the number of usable logic gates, which offers multiple benefits to the user. One of the most important benefits is increased parallelism, which directly translates into higher absolute performance.

For example, the HC-1^{ex} achieves more than two times the performance of the HC-1 running the Smith-Waterman algorithm, a widely used life sciences applications. The HC-1 performance of this algorithm was already the fastest implementation to date—172 times faster than conventional methods.¹ For the HC-1^{ex}, a highly-optimized version of the Smith-Waterman algorithm is 401 times faster than what is typically achieved on an x86 processor.²

Extended functionality

Another benefit of the additional gates is added functionality. Like the Convey HC-1, the HC-1^{ex} adapts to different workloads through *personalities*—instruction sets designed specifically to achieve orders of magnitude acceleration in a variety of applications. Personalities are extensions to the x86 instruction set that are implemented in hardware and optimize performance of specific portions of an application. Additional real estate in the HC-1^{ex} means that customers can implement even more functions and more complex portions of their applications in the coprocessor, further increasing opportunities for application acceleration.

¹ According to Convey's internal benchmarking, the Smith-Waterman algorithm runs 172 times faster on the HC-1 than a software implementation on an Intel Nehalem core.

² According to Convey's internal benchmarking, the Smith-Waterman algorithm runs 401 times faster on the HC-1^{ex} than a software implementation on an Intel Nehalem core.

Convey Launches New Hybrid-core Computer /

Through Convey's adaptive architecture, servers dynamically and transparently reload different personalities that are optimized for different applications. The ability to adapt the architecture to different applications means the Convey servers can be repurposed “on the fly”— making them flexible and extremely cost-effective in mixed-use environments.

Exceptional energy efficiency

The Convey HC-1^{ex} provides even greater energy efficiency than the HC-1, which already dramatically reduced power costs compared to conventional servers. When used as nodes in a HPC cluster, both the HC-1 and HC-1^{ex} deliver higher per-node performance, providing substantially better performance per watt than conventional clusters.

One rack of Convey HC-1 servers can replace as many as 10 racks of commodity servers, reducing floor space by 86%, datacenter watts by 91%, and a three year total cost of ownership by 75%. The HC-1ex comparisons are even more impressive, achieving even greater energy efficiency. One rack can replace as many as 16 racks of commodity servers, reducing floor space by 94%, datacenter watts by 93%, and a three year total cost of ownership by 90%.

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About Convey Computer Corporation

Based in Richardson, Texas, Convey Computer breaks power, performance and programmability barriers with the world's first hybrid-core computer—a system that marries the low cost and simple programming model of a commodity system with the performance of a customized hardware architecture. Convey brings decades of experience and intellectual assets to performance problem solving. Its executive and design teams all come from successful backgrounds of building computer companies, most notably Convex Computer Corporation and Hewlett-Packard. Convey Computer investors include Braemar Energy Ventures, CenterPoint Ventures, Intel Capital, InterWest Partners, Rho Ventures, and Xilinx. More information can be found at: www.conveycomputer.com.

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