

Netlist Unveils HybriDIMM™ Storage Class Memory Product With Key Industry Partners

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IRVINE, Calif., Aug. 9, 2016 /PRNewswire/ -- Netlist, Inc. (NASDAQ: NLST), today announced the first public demonstration of its HybriDIMM™ Storage Class Memory (SCM) product at the Flash Memory Summit. Using an industry standard DDR4 LRDIMM interface, HybriDIMM is the first SCM product to operate in current Intel® x86 servers without BIOS and hardware changes, and the first unified DRAM-NAND solution that scales memory to terabyte storage capacities and accelerates storage to nanosecond memory speeds.



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HybriDIMM's breakthrough architecture combines an on-DIMM co-processor with Netlist's PreSight™ technology — predictive software-defined data management — to unify memory and storage at near-DRAM speeds. HybriDIMM dramatically improves application performance by reducing data access latency by up to 1,000 times¹ versus the fastest existing storage solution and provides up to 80% cost reduction² compared to the highest existing memory density for in-memory applications. HybriDIMM's robust feature-set encompasses the NVDIMM functionalities adopted by the industry.

"In today's data-saturated world, the challenge is in turning Big Data into actionable insight. By delivering the industry's first plug and play SCM solution, Netlist is enabling customers to process Big Data cost-effectively in memory and get to insights faster," said C.K. Hong, Chairman and Chief Executive Officer of Netlist. "We are excited to be working closely with global partners to promote an ecosystem for the rapid adoption of HybriDIMM by a broad user base."

"At Samsung, we are actively investing in the future," said Dong-su Kim, Ph.D., Vice President, Samsung Ventures America. "We are pleased to partner with Netlist, a company with a long-history of innovative memory technology solutions and intellectual property, to productize and drive broad market adoption." Samsung and Netlist signed a 5 year joint development agreement in November 2015.

"Integrated Device Technology (IDT) is excited to partner with Netlist as its preferred DDR4 LRDIMM chipset supplier for their trailblazing HybriDIMM for storage class memory. The convergence of memory and storage subsystems is enabling a whole new class of applications that will adopt IDT's DDR4 LRDIMM chipset to maximize performance and bandwidth," said Rami Sethi, Vice President and General Manager, Memory Interface Products at IDT. "HybriDIMM is an exciting and important example of such an application and expands IDT's addressable market for memory interface beyond traditional DRAM based modules into high capacity storage solutions."

"Today's data centers require flexibility to meet the ever-increasing demand for access to data," said Manoj Roge, Director, Data Center Strategy and Marketing at Xilinx. "HybriDIMM is a great example of how Xilinx's software-defined and hardware optimized approach brings value to key partners, such as Netlist, who are creating innovative high performance memory solutions to accelerate data in the data center."

"Carnegie Mellon Database Group is committed to actively working with leading industry partners like Netlist to develop the next generation of in-memory database management systems," said Andy Pavlo, Assistant Professor, Computer Science, Carnegie Mellon University. "The Netlist Storage Class Memory solution is a promising medium that will enable 'real-time' analytical database applications that go beyond what existing hardware can support today. We are excited to collaborate with Netlist and the Storage Class Memory ecosystem partners in our database research projects."

"The promise of SCM is to bridge the price-performance gap between DRAM and NAND. Others are attempting to cross this chasm with new proprietary materials. By combining the best attributes of widely available, proven technologies – DRAM's speed and durability with NAND's capacity, persistence and low cost – Netlist is able to deliver a cost-effective SCM product today," said Jim Handy, principal analyst, Objective Analysis. "The SCM market could exceed \$2 billion by 2020."

At the Flash Memory Summit, Netlist will be demonstrating its HybriDIMM SCM solutions through a live demo showcasing:

- The industry's first SCM product with plug and play DDR4 LRDIMM interface on an Intel x86 server without a BIOS change
- The industry's first SCM product concurrently presenting both block storage and byte addressable persistent memory, while running at near memory speeds

Netlist plans to provide samples of HybriDIMM to select customers starting later this year with volume production planned for the second quarter of 2017.

Netlist is a technology partner and official member of the Red Hat Connect for Technology Partners, SAP® PartnerEdge® open ecosystem, Cloudera Connect, Hortonworks Partnerworks, and MapR Converge programs, and is working closely with leading HybriDIMM ecosystem hardware and software partners.

Technical Summary of DDR4 HybriDIMM:

- Unifies memory and storage into one module (DIMM), breaking the decades-long limitations of the Von Neumann computing architecture
- Applies the predictive algorithms of the PreSight technology to pre-fetch and stage required data to scale memory to storage capacities
- Accelerates storage access time to near memory speeds using advanced buffering technology
- Allows multi-terabytes of persistent memory to run real-time in-memory applications on existing Intel-based servers at speeds an order of magnitude faster than NAND

- Generation I HybriDIMM: configurable 256-512GB NAND + 8-16GB DRAM per DIMM/ 1866 MTS 3DPC for Broadwell; Linux support; block storage, app direct mode
- Generation II HybriDIMM: configurable 1TB NAND + 32GB DRAM per DIMM/2400 MTS 2DPC for Purley; Linux, Windows support; block storage, app direct mode

About Netlist, Inc.

Netlist creates solutions that accelerate turning raw data into business insight. The company produces next generation persistent memory solutions that enable businesses to transact quicker, gain insight faster and reduce datacenter cost. Flagship products NVvault® and EXPRESSvault® accelerate system performance and provide mission critical fault tolerance. HybriDIMM™, Netlist's next-generation Storage Class Memory, lowers cost and improves performance of big data analytics and in-memory computing. The company holds a portfolio of patents, many seminal, in the area of hybrid memory, storage class memory, rank multiplication and load-reduction, among others. Netlist is part of the Russell Microcap® Index. To learn more, visit www.netlist.com.

Safe Harbor Statement:

This news release contains forward-looking statements regarding future events and the future performance of Netlist. A forward-looking statement is neither a prediction nor a guarantee of future events or circumstances and is based on currently available market, operating, financial and competitive information and assumptions. Forward-looking statements involve risks and uncertainties that could cause actual results to differ materially from those expected or projected, including, among others, risks associated with the launch and commercial success of our products, programs and technologies; the success of product, joint development and licensing partnerships; continuing development, qualification and volume production of HybriDIMM™, as well as our other products and technologies; the rapidly-changing nature of technology in our industry; risks associated with intellectual property, including patent infringement litigation against us as well as the costs and unpredictability of litigation over infringement of our intellectual property; volatility in the pricing of DRAM ICs and NAND flash; changes in and uncertainty of customer acceptance of, and demand for, our existing products and products under development, including predictions about the size of the market for our products; delays in our and our customers' product releases and development; introductions of new products by competitors; changes in end-user demand for technology solutions; and general economic and market conditions. Other risks and uncertainties are described in our annual report on Form 10-K filed on March 4, 2016, and subsequent filings with the U.S. Securities and Exchange Commission we make from time to time. Except as required by law, we undertake no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

Netlist Media Contact

Brainerd Communicators, Inc.

Mike Smargiassi/Sharon Oh

NLST@braincomm.com

(212) 986-6667

¹ Difference in data access time of microseconds for server storage and nanoseconds for HybriDIMM in server memory

² Based on current OEM price of 128GB DIMM and target price of 256GB HybriDIMM in 3TB systems configured for in-memory database

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