

Flash Storage Moves Closer to CPUs

In a bid to maximize the speed advantage of solid-state storage, more vendors are promoting approaches that move it closer to the CPUs that process stored data.

By Stephen Lawson - CIO
Thu, August 04, 2011

SAN FRANCISCO—Solid state drive (SSD) vendor STEC Inc. Thursday (Aug. 4) launched a new family of high-endurance, enterprise-class solid-state accelerators (SSAs) and launched the company's first software product—a caching software to accelerate access to data on SSDs.

STEC (Santa Ana, Calif.) said the Kronos SSA family integrates PCI Express and flash technologies onto a compact, power-efficient, on-board ASIC-based card. The Kronos accelerators avoid taxing the host system's memory and CPU cycles to perform flash management tasks, freeing them for more critical functions, such as application acceleration, according to the company.

"Everything gets run and executed from the card itself," said Scott Stetzer, vice president of technical marketing at STEC. "We aren't taxing the CPU. We aren't taxing the host."

The Kronos PCIe SSA family provides super low-latency and accelerated responses to host requests via its PCIe implementation, according to STEC. The SSAs enable IT consolidation (server virtualization) and server consolidation in virtualized environments, while still providing accelerated access to data and supporting the high transaction rates required by e-commerce and financial applications, according to the firm.

The Kronos PCIe accelerator family consists of three models: Kronos PCIe SSA; Kronos Turbo PCIe SSA; and Kronos Bi-Turbo PCIe SSA. The family supports a range of SLC and MLC user capacities from 300 gigabytes to 1.95 terabytes and all models achieve a read access time of 50 microseconds and a write access time of 30 microseconds, STEC said.

STEC's EnhanceIO SSD caching software accelerates data access and enables cost-effective server scalability to support the growing number of users and larger data volumes now prevalent in the data center, according to the firm. This host-based software implements SSDs as a performance cache for hard disk drive storage and provides a reliable, easy and flexible way to integrate into existing server infrastructures while minimizing total cost of ownership, according to the company.

EnhanceIO works with all commercially available SSD devices—including SAS, SATA, Fibre Channel and PCIe devices—to accelerate enterprise applications running under Windows, Linux or VMware operating systems, STEC said.

"There is a lot of flexibility in the software package.," Stetzer said.

EnhanceIO SSD cache software is designed to integrate the SSD device below the server's application layer so that the host CPU and memory resources are not significantly impacted and the full I/O capabilities of the SSD device itself can be realized in a manner that is easy to implement and is transparent to the server OS, applications and underlying storage, according to STEC. The company maintains that this system infrastructure enables the best of both worlds—the full performance benefits of SSD technology coupled with the storage capacity benefits of HDDs.

In a benchmark test of Oracle servers, EnhanceIO SSD cache software enabled 2.5 times faster throughput while serving 3.5 times more concurrent users, according to STEC. Through additional testing in a 10-terabyte direct attached storage environment, EnhanceIO software provided between twice and 10 times the performance—depending on the application—when compared to an all-HDD solution, STEC said.

EnhanceIO is now sampling to early access customers, STEC said.