Nominee: SanDisk

Nomination title: FlashSoft removes storage I/O bottlenecks to accelerate applications

SanDisk FlashSoft is a software package which enables solid-state storage in the server to enhance storage performance, by removing I/O bottlenecks, while maintaining complete compatibility with currently deployed storage systems – it is usable with any standard SSD (PCIe, SAS, eSATA) from any vendor.

This cost-effective high performance flash solution delivers benefits to application performance, virtualization infrastructure, and storage efficiency. It allows companies to maximize data center application performance at the best total cost of ownership.

FlashSoft Software places minimal overhead demand on memory and CPU. Through sophisticated circular buffer algorithms and a design focused specifically on flash memory, it requires a modest allocation of working memory and negligible CPU resources. FlashSoft software can manage a cache up to 2TB in size using only 140MB of system memory.

FlashSoft for VMware vSphere

•   Increases application performance in virtual machines by 2 to 4 times or more (Results from TPC-C based OLTP workload test. System under test: Dell R720. Performance numbers are tpmC scores.)

•   Increases VM density by 3x or more.**(Results from SPECvirt_sc2010. System under test: Dell 810.)

FlashSoft for Linux

•   Increases performance for Oracle, MySQL, ERP, BI and other applications on Linux.

•   Improves OLTP performance by a factor of 3 to 5 times.(As measured using an OLTP benchmark suite on MySQL 5.5)

•   Supports up to 8 TB of caching on a single server to accelerate extremely large datasets

FlashSoft for Windows Server

•   Increases performance of Windows Server applications such as MS SQL Server, MySQL, and SharePoint to increase application performance, typically between 3 to 5 times (As measured using an OLTP benchmark suite with MS-SQL Server.)

•   Cost effectively reduces transactional latency

FlashSoft's intelligent software running in the server seamlessly incorporates the server-based flash storage into the storage stack, executing I/O operations for the hottest data directly within the server. By coordinating the server-resident data with underlying storage, the software can prevent the problem of data being isolated from storage systems and their functions. And it requires no modification to applications or the server OS and fully supports existing disk-based storage infrastructure.

Most importantly, the software can automatically determine what data I/O should be served from the server-based flash. The administrator can identify the applications and storage volumes whose I/O is most mission-critical, and the software can do the rest. The software is transparent to the applications and virtual machines in the server, and is similarly non-intrusive to existing storage systems. The proprietary FlashSoft technology caches frequently accessed data on low-latency solid-state devices installed in the server. By directing I/O for hot data to the SSD device in the server rather than underlying storage, FlashSoft software removes the I/O bottleneck slowing application performance. The software supports solid-state devices from virtually any vendor, and is compatible with enterprise flash interfaces including PCIe, SAS or SATA.

One of the dilemmas data center managers face today is the high cost of flash-based storage systems impose for the performance benefit. In contrast, there are a number of important cost benefits of software-enabled flash in the server:

Deploy the amount of flash precisely where it's needed. Flash in the storage architecture is a tide that raises all boats. Flash in specific servers delivers the benefits to those servers precisely, and even the software can target the storage volumes and virtual disks that are most important to your business needs.

Choose the flash you need. An advantage of a software-based approach to managing server flash is that you can select the flash that suits your needs, in terms of performance, capacity, server compatibility and budget.

Move storage I/O traffic off storage and into servers. When you deploy solid-state storage in servers, you don't just improve application performance. You move the majority of your storage I/O traffic off your storage network. That means that you don't just get faster "storage performance." You get greater capacity and longevity from the systems you already own.

This is the key to the hidden value of server-based solid-state storage: You can postpone very expensive expansions, upgrades and overhauls of existing storage systems through a far smaller expenditure on server flash and software. And – let's not forget – you're doing this while delivering the best solution for your organization's application performance needs.

Leverage existing storage investments and strategy. The purpose of server-side flash should be to complement existing storage systems, so you can add flash performance to your storage without replacing your existing storage. On the one hand, the cost of acquisition alone is reason enough, but an additional benefit for many organizations is that this non-intrusive solution means they preserve existing IT processes and policies that an architectural change would have disrupted.

FlashSoft software is installed directly in the servers requiring acceleration for flexibility in flash hardware selection. It is highly scalable, with 2TB cache size, 2048 volumes supported by a single cache and 4 separate caches on a single server(so up to 8 TB of caching on a single server to accelerate extremely large datasets). It also offers support for multiple SSDs, including SSD concatenation and it offers "safe write-back" caching through mirroring using identical SSDs.

For all of these reasons, FlashSoft contributes greatly to the future of server acceleration by presenting a cost-effective, time saving strategy for maximizing the performance of existing IT infrastructure. With FlashSoft CIOs are able to increase the computing power of existing servers while reducing future hardware and software costs.

Why nominee should win

•   Dynamically directs I/O activity to solid-state storage within the server significantly reducing I/O latency with minimal overhead. Can managing a cache of 2TB using only 140MB of system memory

•   Uses any SSD interface (SATA, SAS, PCIe), any vendor, server or storage infrastructure. Requires no modifications to virtual machines, applications, networks or storage arrays

•   Works with flash architecture to maximise SSD performance and endurance

•   Configurable; identification and management of active data can be precisely tuned to application workload, SSD and storage infrastructure.

•   Enables minimal SSD capacity to deliver performance improvements comparable to that of a much larger amount of flash-based storage.