

Hybrid Storage Arrays and the Importance of Software

Written by Ken Clipperton
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Guest Editorial by Ken Clipperton, Senior Analyst at DCIG



The growing importance of software in storage systems was certainly on display at VMworld 2013. I'm not talking about virtualization and the software defined data center; though virtualization *is* a critical driver of this trend. *I am talking about impact of software on the design of storage systems and how that software delivers capabilities of value to businesses.*

As I have [noted elsewhere](#) , traditional storage architectures have trouble delivering the performance businesses expect. Storage has always been the bottleneck in overall system performance, and advances in processor, memory and networking technology--especially when coupled with virtualization--have made that bottleneck painfully obvious. Now smart software engineers at well-known storage companies as well as startups are delivering storage systems that actually leverage these hardware advances to bring storage performance in line with current requirements.

A powerful demonstration of this truth comes in the arena of Hybrid Storage Arrays. The storage software developed for these arrays takes advantage of a new generation of multi-core processors, large amounts of DRAM and the introduction of flash memory into the enterprise storage marketplace. Earlier generations of hardware were insufficient to power advanced capabilities like in-line deduplication and in-line compression, but the new generation delivers the necessary power. Beyond the current generation of hardware, this advanced storage software is well positioned to take advantage of forthcoming advances in hardware--riding Moore's Law into the future.

This new reality has evidently not gone unnoticed by enterprises. A recent survey of more than

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1,200 IT professionals--most from companies of 100 to 1,000 employees--documents the rise of hybrid storage systems. According to the Imation-sponsored survey, "The majority of respondents are employing or planning to deploy a hybrid storage approach to meet storage demands of virtual servers." This number rises to 69 percent for respondents with greater than 250TB of virtualized storage."

One powerful example of this trend is the new ZS3 line of Oracle ZFS Storage Appliances. Software capabilities took center stage in the Oracle announcement of this new Hybrid Storage Array series; with Oracle Intelligent Storage Protocol (OISP), Automatic Data Optimization (ADO), Hybrid Columnar Compression (HCC), the ZS3's SMP Operating System and intelligent caching algorithms being credited with delivering unprecedented levels of Oracle Database efficiency, performance and storage utilization. In a recent article, DCIG Principal Analyst Jerome Wendt notes that "Oracle reports that it has seen some customer databases achieve up to 75X increases in performance...when compared to existing high performance storage arrays (think NetApp and EMC as opposed to DAS)."

Another example of software advancing Hybrid Storage System capabilities was Tegile's announcement of a new software release for their Zebi Storage Arrays. This release of the Zebi software delivers an 80% increase in IOPS performance and a more VM-aware storage management experience.



This lometer screen shot from Tegile's VMworld booth [right] shows a Zebi HA2800 delivering 360K IOPS. This result was achieved on the exact same hardware as last year's 200K system.

A major business value that results from this "pure software" approach versus software embedded in ASICs is that the improvements can often be rolled out to existing arrays in the field. In this particular instance, existing Tegile customers will get a no charge 80% performance boost on their existing storage investment along with reduced administration costs.

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Software is driving a whole new level of storage system capabilities. These include exponential increases in performance that simultaneously enable businesses to achieve dramatic improvements in application performance, storage efficiency, and data center capacity. These business benefits are clearly displayed in the current generation of Hybrid Storage Arrays, which may very well explain their rapid adoption in the enterprise.

[DCIG](#) is in the final stages of preparing a number of Hybrid Storage Array Buyer's Guides that will give organizations the opportunity to do "at-a-glance" comparisons between many different hybrid storage arrays that meet this definition. [The Guides](#) will enable them to more quickly sort through the many available hybrid storage arrays to identify a short list of arrays that meet their specific needs. From that point they can focus their product evaluation energies on those selected arrays and move to the competitive bid process more quickly.

Ken Clipperton is a Senior Analyst at DCIG, a group of analysts with IT industry expertise who provide informed, insightful, third party analysis and commentary on IT hardware, software and services. Within the data center, DCIG has a special focus on the enterprise data storage and electronically stored information (ESI) industries.

Prior to joining DCIG, Ken was the senior information technology professional at a series of three private universities in the USA over a period of more than 20 years. Ken has served on multiple corporate and state-wide technology advisory boards. In 2000, Ken was a key leader in the creation of the world's first comprehensive wireless community at Buena Vista University, a project called eBVyou.

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