

Five Reasons Why Hybrid NAS is Today's Hottest Opportunity in Storage

Experts project skyrocketing demand for fast, cost-effective ways to store ever-rising quantities of unstructured data.

Ask a typical storage vendor where the money's at these days, and they'll probably point you to cloud-based and software-defined solutions. Ask a storage expert, though, and they're likely to name a less glitzy technology with a far longer pedigree: Network-attached storage generally and hybrid NAS particularly.

Indeed, according to veteran storage analyst Greg Schulz, of Server StorageIO and UnlimitedIO LLC, hybrid NAS solutions sit right at the sweet spot where five crucial trends converge:

1. Data volumes are exploding. The “digital universe” of electronic information is doubling in size every two years and will reach 44 zettabytes in 2020, according to IDC. That's 44 trillion gigabytes.

A growing portion of that information, moreover, consists of unstructured data ranging from spreadsheets and documents to videos and photographs to big data repositories and Internet of Things output. In fact, analysts at Gartner estimate that unstructured data volumes are currently expanding 35 percent a year. In aggregate, organizations worldwide will need to double their unstructured data storage capacity every three years to accommodate that growth.

2. NAS devices are the key to storing unstructured data. Though they've been around for decades, NAS arrays remain the most efficient and effective option available for housing file-based information. What's more, the latest NAS products come with sophisticated “single pane of glass” management software; snapshotting, replication, and de-duplication functionality; and built-in support for a wide assortment of protocols, including everything from Microsoft SMB to the Hadoop Distributed File System.

3. NAS solutions are a perfect fit for many of today's fastest-growing workloads. Global sales of video surveillance technology, for example, will rise at a 17 percent CAGR to \$88.25 billion in 2024, according to Transparency Market Research. Similarly hot file-based solution categories like virtual desktop infrastructure, business analytics, and content management all require NAS infrastructure as well.

4. Not surprisingly, given all of the above, the global NAS market is set to expand at a 26 percent CAGR through 2019, according to analyst firm Technavio.

5. Hybrid NAS solutions take NAS to new heights of power, convenience, and cost-effectiveness. Such systems empower businesses to construct tiered storage environments in which frequently accessed, performance-sensitive data resides in a solid-state cache while less-used bulk data sits on economical SATA disk drives. The best models also feature automated management capabilities and dense, energy-efficient designs that reduce administrative overhead and power outlays while conserving valuable server room floor space.

In short, while it may not generate as much buzz as other storage technologies, hybrid NAS is sure to generate plenty of revenue in the years ahead for the channel pros who sell it. Solution providers looking to get in on that action should partner up now with a vendor offering fast and efficient hybrid NAS systems featuring flexible, open architectures and best-of-breed components.



Hybrid Storage Arrays

As hard drives, SSD drives, and RAID technologies advance, network storage array systems are now available with near SSD performance at SATA prices and density. The advantage to purchasing such a system is that it uses open technology, as opposed to proprietary technology from the traditional “storage” vendors. This allows companies like Nfina Technologies™ to build storage arrays using best in class components, and provides customers with more choice and flexibility.

IOPS

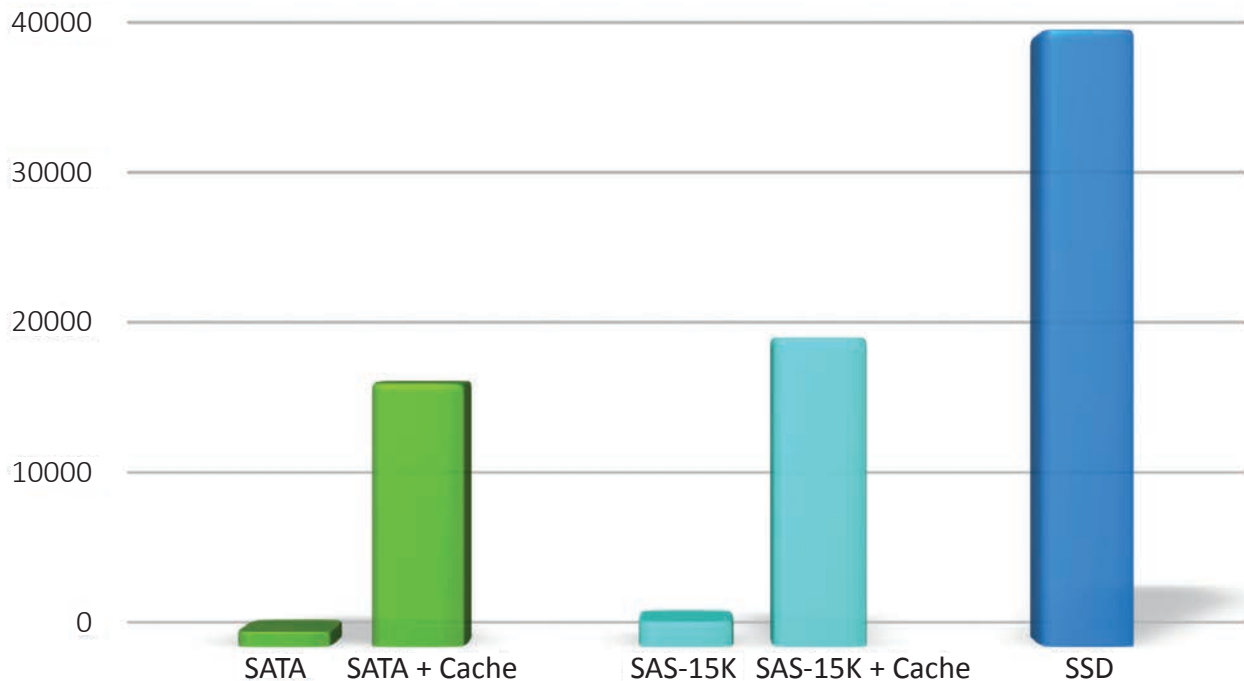


Table 1 As measured with IOMETER. Queue depth = 16. Cache is 240GB in RAID 0, Network Array is RAID 0. Read = 50%, Write = 50%, Random=50%, Sequential = 50%, LSI® MegaRAID® SAS9260CV-8i card.

Referring to table 1, we have the following results:.

Unit Under Test	IOPS
SATA (RAW)	993
SATA + Cache	16,249
SAS-15K (RAW)	1,569
SAS-15K + Cache	19,015
SSD	38,069

Hybrid Storage Arrays

Price versus Value Comparison

For the sake of comparison, a 48TB NAS with dual 10G Fibre Channel and 480GB of cache will be considered.



An Nfina Technologies 714i20 SATA system will occupy 2U of rack space, and cost under \$13K.

An Nfina Technologies 714i20 SAS-15K system, including five 602 JBODs, will occupy 12U of rack space, and cost ~\$35K. This system measured a 17% increase in performance over the SATA cached system and costs more than ~3.3x.



An Nfina Technologies 814i4 SSD system will occupy 2U of rack space, and cost ~\$50K. This system would measure a 2x increase in performance over the SATA cached system, and costs more than ~4x.

Discussion of Chosen Test Parameters

The SATA drives used in the test were Seagate® Constellation® ES.3 (4TB, 7200 RPM) drives.

The SAS drives used in the test were Seagate® Cheetah® 15K.7 (600GB, 15K RPM) drives.

The SSD drives used in the test were Intel® 480GB drives.

This test used a queue depth of 16. Using a higher QD will increase performance of all members. This test also used a 50/50 Read/Write setting and a 50% random/sequential setting. If the settings were to favor Read over Write (e.g. 90/10) and favor sequential over random (say 90/10), significantly higher performance numbers would have been reported for all (e.g. ~45K cached, ~60K SSD). In this real world scenario, the cached system performance nearly approaches the pure SSD system.

Although these arrays were configured in RAID 0 for this test, no significant reduction was seen when set for either RAID 5 or RAID 6.

The cache was set for RAID 0 as well in these tests. For SANs, this is the appropriate setting. However, for NAS systems, RAID 1 caching is preferred, and depending on the test, an average degradation of ~20% is to be expected.

Conclusion

Nfina Technologies has created a high performance cost effective hybrid storage array offering that uses best in class components. These include: Intel® Processors, High Density Enterprise class SATA drives, an Enterprise class SSD cache, and LSI® advanced RAID cards.