



Nexsan Lowers TCO for Storage for SMEs, Again!

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Management Summary

Whenever we go shopping, we aim for the best value for our dollar. If we are in the supermarket, we look for the box of cereal with the lowest cost per ounce, but for two people, the best value may not be right if the large box of cereal will be stale by the time that we reach the bottom. If we are a family of six, however, we might want to try Sam's Club or Costco for the *giant* size, although you also need to be sure that the super-sized box will fit onto your pantry shelf. Similarly, if you are shopping for a combination refrigerator/freezer, you may want to ensure that *both* components have the right *capacity* for your family, that the appliance is *energy efficient*, and that the *cost* meets the family budget. All factors, capacity, cost, and energy efficiency, need to be considered in the decision-making process.

The CIO of any small or medium-sized enterprise (SME) is familiar with this scenario, as he or she goes through the same thought process whenever the IT staff needs to replace or expand some component of the IT infrastructure in their modest data center. One element of that infrastructure that recently seems to be continually expanding is the storage area network, or SAN. Between the necessity to support mission-critical data on Tier-1 primary storage, doubling in size every 12 to 18 months due to growing customer data, and the requirement to keep multiple copies of business-critical data on Tier-2 storage for backup and disaster recovery purposes, the data center has been stretching the IT budget to the max and becoming more complex. In addition, the IT staff must maintain a wide-range of historical financial data for compliance and regulatory purposes, perhaps forever. It behooves the CIO and IT staff to change the existing storage paradigm, especially if the data center is still using a DAS architecture or a siloed environment with Tier-1 storage isolated from Tier-2 and Tier-2 from Tier-3. In order to simplify the storage environment and reduce costs, while still expanding total capacity for both high-performance mission-critical data and Tier 2 data, **the SME data center needs to deploy a simplified solution with energy-efficiency and the capability to support an integrated implementation.**

Where the more current, large enterprise data center is involved heavily in the deployment of Fibre Channel storage, the SME is more likely to be deploying a mix of SAS-based storage for Tier-1 needs with SATA-based arrays for their Tier-2 solutions. One storage vendor that appears to be on top of this scenario is Nexsan, a leading provider of disk-based storage systems designed for the long-term retention of both mission- and business-critical data. In its tenth year, Nexsan has established a reputation for storage system innovation, first with SATA and now with SAS arrays. In 2008, Nexsan responded to customer requirements with the introduction of their first SAS product, the *SASBoy*, a 14-drive SAS array capable of supporting 4.2TB of fixed-content data with up to 2,500 IOPS from disk. Nexsan has now taken the next step, introducing the *SASBeast*, an enterprise-level, dynamically multi-tiered array system capable of supporting up to 42 SAS drives with 18.9TB of capacity or a mix of both SAS and SATA drives for integrated simplicity and increased capacity. To learn more about Nexsan and SASBeast, please read on.

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SMB Data Center requirements

The data center of any SME faces the same issues as those of even the largest enterprise, simply on a different scale. Instead of supporting thousands or tens of thousands of users with hundreds of terabytes of data, and growing, the SME may *only* be supporting 500 to 1000 users, on possibly more than 100 servers, with between 25 to 50 TBs of data, *and growing*. The proliferation of open systems servers throughout the data center, and the enterprise, has resulted in uncontrolled server sprawl, adding complexity to an already complex IT infrastructure. Unfortunately, the mono- and dual-processor open system servers are usually running at less than 20% efficiency, with 80% of the system resources, and electrical energy and cooling, lost. This complexity and waste cannot help but increase the total cost of ownership (TCO) of the data center in terms of the costs of maintenance, systems management, energy, and floor space.

To reduce wasteful practices, the IT staff must change the architectural infrastructure of the data center. They need to change the IT paradigm by removing complexity from the data center through the consolidation and virtualization of enterprise servers and the deployment of a scalable, integrated storage area network, or SAN.

Through consolidation, the IT staff can simplify the *physical* management of existing enterprise resources throughout the data center, replacing under-utilized, under-performing servers with new, multi-core processors in multi-socket systems. This will enable the data center to reduce the server count by a factor of up to 10:1, lowering the TCO of the data center. The flexibility of these servers enables the improvement of server utilization through the virtualization of the server environments, via applications such as *VMware*.

By virtualizing multiple mission-critical, and business-critical, applications within a single physical server, the data center not only improves server utilization but also *increases* the I/O activity of the virtualized environment to the SAN. **This results in the need for an affordable storage solution, with higher throughput, higher capacity, and better energy efficiency to meet the unique scalability demands of a growing SME, mindful of the growing need for higher performance.**

An increased number of virtual servers will clearly drive a significantly higher number of I/Os onto the SAN that might exceed the throughput

capabilities that most SMEs have installed over the past decade with direct-attached devices (DAS) or entry-level SANs. **The mid-sized data center must plan today for a throughput capable of supporting the integrated, multi-tiered storage requirements that applications will demand six months and a year from now.** This includes primary storage for fixed content data and the SME database, as well as a secondary tier of storage for nearline, vaulting, archiving, and disk-to-disk (D2D) requirements. Furthermore, in order to reduce the TCO of the SAN, most mid-sized data centers will need to implement some form of energy management to help control the cost of storage.

As data ages, the urgency to access it decreases. *Mission-critical* applications typically have a requirement for near instantaneous access to storage. Therefore, the SME staff tends to store this information on the fastest, yet most economical, media available. Today, that would mean high-speed SAS¹ drives running at 15K RPM with a throughput of 3Gb/s. As you might suspect, this is a more expensive option than lower cost SATA drives. On the other hand, the data for *business-critical* applications, such as archive or backup, do not necessarily have to be on *Tier-1* drives. This secondary data can be on *Tier-2* drives, typically high-capacity SATA drives running at 7200 RPM. The data center needs to be able to deploy a SAN that has the flexibility to deliver this type of heterogeneous infrastructure. The ability of a SAS SAN to also manage SATA drives positions SAS arrays at the head of this queue.

In addition to cost and scalability issues, the SME is also most concerned about ease of use and the reliability, availability, and serviceability (RAS) features of their storage infrastructure. The SAN must be easy to deploy and manage – this is mandatory!

One company that has been addressing all of these factors on an SME level is Nexsan. With a ten-year reputation for innovation, Nexsan has an installed base of over 21,000 storage platforms, with extensive experience in deploying both SATA and SAS arrays. In addition, Nexsan introduced its own brand of energy-efficient disk storage with the announcement of *AutoMAID* in

¹ SAS, or Serial Attached SCSI, is a point to point protocol that replaces the parallel SCSI technology that first appeared in the 1980s. Current plans indicate that SAS will double its present speed to 6Gb/s this year. In addition, SAS also supports SATA drives.

2006. Now, Nexsan has incorporated AutoMAID into their latest SAS storage with the announcement of their *SASBeast* line of arrays.

What is AutoMAID?

At a time when energy conservation and thinking *green* have become staples of any enterprise's social policy, Nexsan has delivered its innovative AutoMAID technology to promote energy efficiency without a significant performance penalty. **Supported in both SAS and SATA environments, AutoMAID is a multi-level energy-saving technology that enables the IT staff to conserve 20%, 40% (SATA only), or 60% of the energy that would otherwise be consumed. Alternatively, the data center can achieve maximum performance and the lowest latency with AutoMAID turned off.** AutoMAID differs from traditional *MAID* architectures, which usually have an *on* or *off* approach, and only is supported on SATA drives. When *off*, MAID² takes minutes to wake up, limiting its use to archiving and similar applications. AutoMAID's faster response from its reduced state enables a broader set of application use, in fact, enabling the IT staff to create a multi-tiered storage architecture for SME data as it ages. See Exhibit 1 for a description of the various levels of AutoMAID that can be assigned by drive.

Nexsan's SASBeast

Responding to customer requirements for an energy efficient, high-density SAS storage system, in June of 2008, Nexsan introduced the *SASBoy* Array for fixed content or long-term secondary disk storage. *SASBoy* is a 14-drive SAS chassis, capable of supporting up to 4.2TB of SAS storage, using 300GB, 15K RPM drives with AutoMAID management to control energy consumption. Following on the heels of that successful launch, Nexsan has now taken the next step up the scalability and performance ladder with the introduction of *SASBeast*. Designed to support not only fixed content and long-term secondary disk storage, *SASBeast* can also support primary Tier-1 storage for SME databases and similarly high-demand applications. These capabilities enable Nexsan to introduce the *SASBeast* into a wide spectrum of market oppor-

Exhibit 1 – Levels of AutoMAID

- **Level 1** – Unloads the read/write heads, saving up to 20% of the energy, yet still providing sub-second response time.
- **Level 2** – Unloads the heads and slows disk rotation to 4000 PM, saving up to 40% of the energy, with a 15 second recovery time.
- **Level 3** – Puts the drives in sleep mode with power on resulting in a 60% (or higher) savings, with a 30-45 second recovery time.

Source: Nexsan

tunities, not only the generic SME space, but also local government, financial, and medical arenas, as well as for digital security and high performance computing solutions.

The *SASBeast* is a high-performance, high-capacity, energy-efficient SAS-based RAID storage array that is ideal for transaction processing as well as for higher-capacity Tier-2 storage requirements. As a third-generation design, with a very credible installed base of Nexsan systems, *SASBeast* has the enterprise reliability that every data center demands, including fully redundant components³, an innovative anti-vibration design to maximize drive reliability and a horizontal mid-plane design to maximize airflow and cooling. With the scalability to grow to a very dense array of 42 450GB SAS drives and 18.9 TBs of SAS capacity, all in a 4U chassis, *SASBeast* also has the flexibility to include high-capacity SATA drives in the chassis configuration⁴, with separate storage tiers for different applications. In addition, the *SASBeast* can also support both Fibre Channel (FC) and iSCSI operations simultaneously, with connections for up to 2x2x4Gb FC hosts and 2x2x1Gb iSCSI hosts. Furthermore, the IT staff can deploy the *SASBeast* with up to four hardware RAID⁵ engines per chassis and up to 4GB of cache per active-active dual controller system. These features provide the data center with the flexibility it needs to meet the requirements and urgencies of the modern data center.

With the flexibility of both SAS and SATA, *SASBeast* can deliver the high performance required by applications such as Exchange, and the high capacity required by D2D backup applica-

² MAID, or Massive Array of Idle Disks, was designed for Write Once, Read Occasionally persistent data and typically has only 25% of its drives powered on and spinning at any given moment.

³ All RAID controllers, fans, power supplies, and drives are redundant and hot-swappable.

⁴ *SASBeast* can be configured with up to 14 SAS disks and 28 SATA disks or up to 28 SAS disks and 14 SATA disks.

⁵ Supports RAID 0, 1, 1+0, 4, 5, and 6.

tions. With a maximum performance rating of 10,000 IOPS in a non-cache RAID configuration with a throughput of 1,400 MB/s, the SASBeast can deliver Tier-1 support for the most demanding SME, and with the innovation of AutoMAID, can deliver that performance in a very green, energy-efficient manner, without compromising performance. **With AutoMAID, the SASBeast can access up to seven separate tiers of storage, with three tiers for SAS and four tiers for SATA.**⁶ In addition, with the capability to mix up to 42 SAS and SATA drives in a single 4U-chassis, Nexsan provides the SME data center with the density required to minimize capital expenses, provide improved ROI results, and to simplify management to a single chassis. With an entry-level price of \$38,800 for a SASBeast with 14 x 300 GB SAS drives, the SME can attain the performance needed to meet mission-critical expectations while conserving natural resources and retaining the flexibility required to meet future requirements. A fully-loaded SAS system can be deployed for only \$4,200 per TB.

The SASBeast is operating system independent, with no drivers required. It has a web-browser GUI that supports email alerts and SNMP traps, as well as an RS-232 management port. The *NexScan* management interface is built into the SASBeast controller eliminating the requirement for a separate server to manage the array. *NexScan* includes *TeleGuard*, Nexsan's call-home feature, and *WorldView*, which enables management of multiple Nexsan arrays.

Conclusion

With the availability of both SAS and SATA devices in the same array, Nexsan provides the data center with high performance and high capacity in a single, integrated package. With connections for both FC and iSCSI, SASBeast can deliver consolidated storage to both your mission-critical and business-critical hosts, simultaneously. With a single, scalable array, the data center can reduce the TCO of the storage area network and accelerate the ROI of the IT infrastructure.

SASBeast enables the IT staff with the capability to protect the investment made in the storage architecture today, knowing that this single array can provide flexible growth, up to 42 drives, in either performance, by adding more SAS drives, or in capacity, by increasing the

number of SATA drives deployed. SASBeast also provides the same RAS features normally found in more expensive solutions, improving the reliability of the SAN and extending the life of the storage environment. SASBeast provides the functionality of Tier-1 storage at a Tier-2 price.

With AutoMAID, the SME can contribute to meeting corporate environmental goals, protect natural resources, and reduce the amount of electricity required to drive and cool the data center without impacting performance. This will enable the CIO to extend the life of the data center, eliminating the potential of building a new one!

If these benefits are attractive to you, you may want to investigate the opportunity of putting this beast in your data center. Nexsan's SASBeast might be the answer you seek.



⁶ With AutoMAID set to 0%, 20%, 40%, or 60% savings.

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