

The A to Z of iStor

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Abstract: By focusing intently and solely on the needs of the SMB market, iStor has managed to develop a compelling mix of attributes for its iSCSI SAN offerings with the overriding goal of truly simplifying storage for SMB users. Its custom-ASIC approach allows the company to offer systems that are easy to use at an attractive overall cost—despite including advanced functionality such as virtualization and 10 GbE support.

The Market, the Company, and the Product

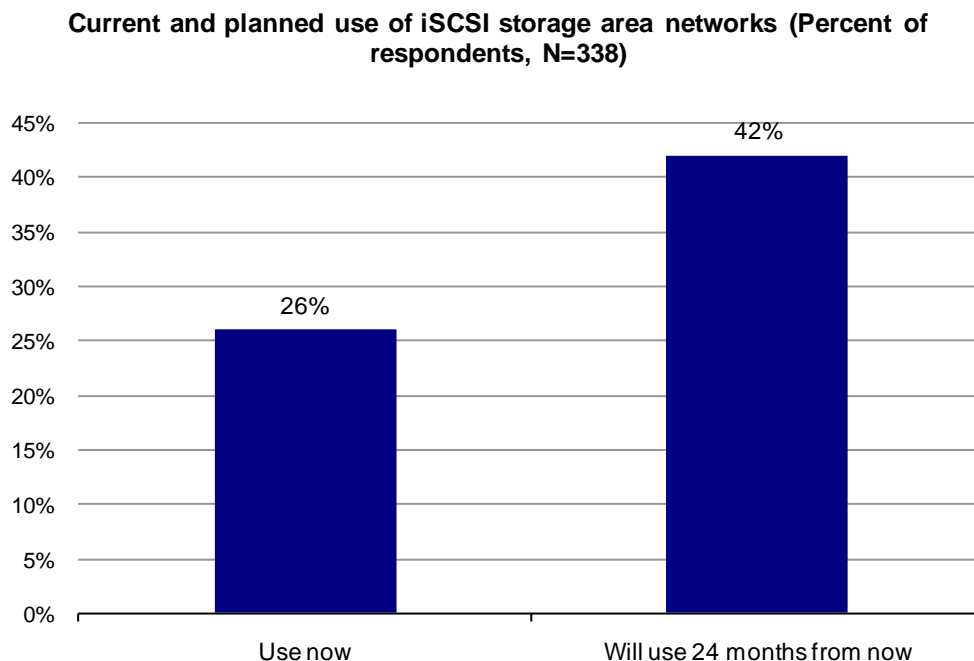
iStor started in 2002 with the aim of using purpose-built technology to provide cost, performance and power-saving advantages to mid-sized users of networked storage. The firm now finds itself at the potentially beneficial crossroads of two important market dynamics:

- 1) **The SMB need for multi-terabyte configurations.** This significant growth in demand for online storage is the result of changes in both applications and in compliance, including:
 - a. An overall increase in data-intensive and image-based applications.
 - b. A continuing shift to electronic records and messaging.
 - c. A significant desire to move archive data from offline to online storage. The volumes involved can be extremely large and while this move is partly about operational efficiency, it is mainly a response to regulatory requirements for online access in areas where offline storage had traditionally been considered acceptable.

- 2) **The rapid adoption of iSCSI storage.** The main contributory factors for this are ease of use and price:
 - a. iSCSI SANs are based upon the technologies (TCP/IP networking and SCSI disk protocols) and supporting skills that have been common in the SMB space for over two decades. The inherent nature of the technologies, combined with user comfort and knowledge, translates to low risk and less specialized training.
 - b. The rapid decline in iSCSI disk system pricing is making multi-TB online systems economically viable for many SMBs.
 - c. Very recent research from ESG has looked specifically at the adoption rates of iSCSI in the SMB market. Figure 1 confirms the continued march of the protocol into this market. From today's usage level, an additional 16% of SMB users say they will have an iSCSI SAN at some stage in the next 24 months—an increase of more than 60% over the current adoption rate.

As these market dynamics intertwine and coalesce, further functionality is demanded from and added into SMB storage systems. Which is chicken and which is egg doesn't matter—what is important is that, whereas multi-TB complexes are the norm in large IT enterprises and such organizations have invested in the facilities and skills necessary to manage this scale of online storage, there has been neither the need for nor the history of equivalent investments among SMBs. While advanced storage management capabilities and virtualization are great tools across the board, in the SMB space, they must also be simple and cost-effective.

This is the opportunity that iStor chose to address by creating a product with a value proposition that rides the iSCSI storage wave, yet adds functionality and a price structure specifically suited for the SMB market. In choosing to focus on a particular market, iStor ensures that the correct question is addressed: it should be less about 'why iSCSI?' and more about 'how are SMB users going to manage the deluge of applications and data effectively, inexpensively and easily?'

FIGURE 1. ISCSI ADOPTION RATE

Source: ESG Research Report, Medium-Size Business Server & Storage Priorities, June 2008

iStor's products can be summarized as 'hardware-accelerated, virtualized, iSCSI RAID systems.' Within that description are many things you might expect in today's storage world—for example, users can mix and match SAS and SATA drives (both 1 TB and high availability drives have recently been announced)—and even the capacities of those drives—and components are hot-swappable and upgradable. But there are also some aspects that are not so standard.

A Number of Pleasant Surprises

First, at the heart of the iStor system lays the main surprise: a purpose-built ASIC, rather than the general purpose processors still found in most storage systems (whether 'high' or 'low' end). This drives extreme cost efficiency by combining higher performance with power efficiency (the ASIC consumes only 11W, which can result in overall system power savings of up to 150-200W compared to a traditional server-based storage solution). The ASIC architecture also already enables 10 GbE wire speed storage, which is going to become increasingly important (see side bar: 10 GbE).

Secondly, the system comes with some sophisticated virtualization functionality, which is presented and managed via an exceptionally easy to use GUI. With no LUNs to configure and no need to understand the complexities of RAID, users only need to answer a few questions in everyday language in order to manage the overall storage pool—even if they choose to override the default settings and become 'advanced.' Examples include defining the capacity, data protection, and quality of service needs for different users or applications. This last point—specific application awareness—is a leading-edge function just beginning to make inroads across the industry. And if any change is needed, the system can be reconfigured on the fly with marginal or no impact on performance or users because a) this is all handled outside of the data-path and b) because of the power of the ASIC.

The smaller surprises are perhaps the most intriguing, certainly proving that iStor is aiming to be far more than a component integrator. The company was recently granted a patent pertaining to the elimination of the RAID write penalty and also employs a feature that waits to see if 'failed' drives recover before actually 'pronouncing them dead' (the vast majority of drives replaced in any system are declared NFF—No Fault Found—when investigated by the manufacturer). This function uses 'micro rebuilds'—logs are made to other drives during the 'wait and see' period, and are moved back to the original drive if it is found to be OK.

10GbE... Reaching a Tipping Point?

Although One Gigabit per second Ethernet (1 GbE) is the customary network interface today, the mass adoption of 10 GbE (which offers much improved throughput performance and bandwidth), is close to—or maybe at—a tipping-point. Changes in both supply and demand are creating a, self-fulfilling circle of ability and need to move to 10 GbE. On the *supply* side, the cost per Gb/s of 10 GbE ports has now crossed below that of 1 GbE ports—traditionally, this is a key indicator of the imminent mass-adoption of a new generation of networking technology. On the *demand* side of the equation, throughput needs are beginning to exceed current bandwidth capabilities, driven mainly by increased consolidation and server virtualization. After all, increased utilization of servers and storage is only ultimately good if the ‘access pipes’ grow or all we do is create bottlenecks.

iStor saw the market value of 10 GbE early on and has already been shipping the capability for a couple of years; this means that it has gained the experience to give users confidence, and that the capability is already built into its systems, so users can make the transition from 1 GbE networks to 10 GbE networks whenever they are ready.

Simple and Maniacal SMB Focus

The story so far sounds good, but the extent of iStor’s eventual success will be determined by more than just product attributes and the increased market adoption of iSCSI. To succeed, iStor must focus on the needs of its chosen market—and focus assiduously on no more and no less. The pun is too tempting to ignore: iStor must keep its ‘i’ on the prize. It is a delicate balance: the company must provide outstanding, even surprising, value where it is applicable to the majority of the chosen SMB space without getting dragged into providing every feature that might be appreciated or needed only by a minority. As long as it provides the bulk of the value at a fraction of the price (the classic opportunity for a fast follower), iStor will maximize its chances of turning product excellence into market success.

As iStor brings ‘value virtualized storage’ to the SMB space, it must be proud rather than apologetic if its users might lose the opportunities of a few ‘bells and whistles’ in the process. It must highlight what *is* being provided and emphasize the overall value—this is the ‘car for the people’ to drive when the people are still riding horses. The lack of, say, a leather interior or alloy wheels should not be the focus of discussion. So, what should the focus be for iStor? The best option is management ease and the way that plays into the overall total cost of ownership. With so much focus on the dramatic reduction in disk systems’ acquisition costs and the equally fervent pursuit of ‘green’ cost improvements (both of which are waves iStor can also ride), it is all-too-easily overlooked that acquisition costs are invariably a minority of the true total ownership and management costs of storage over its life. The majority of the cost is created by allocation, management and protection of the storage resources among users and applications. Even with low acquisition costs, these operational costs can make ownership of multi-TB disk systems problematic for many SMBs. The two main factors that can drive reductions in these costs are the ability to share the storage effectively among both users and applications and the ease of managing and administering the storage—both areas in which iStor excels. It can help to provide similar benefits for storage in the SMB space to those already available from server virtualization and can enhance savings through ease of administration and management, as well as low training that the GUI enables (which traditionally are among the most staff—and therefore cost—intensive activities in SMB IT operations).

The Bottom Line

iStor clearly has an impressive array of features to offer the SMB space. While the ‘i’ in its name obviously refers to IP and iSCSI, it could just as well be an ‘i’ as in iPod—which seems to have come to be the requisite naming convention these days for anything that is ‘cool,’ innovative and just a tad clever. It certainly warrants that.

It is hard to argue with the overall product package that iStor has put together—the ASIC, the virtualization and GUI, 10GbE and so on. It represents significant technologies put together in a way that is easily consumable for the mass market. As with all new, smaller companies, it is the move to market awareness and acceptance that is invariably more challenging. However, at least the company is clearly focused on the SMB space and it must avoid the temptation to do more or to add more features and functions than are needed in that area. Right now, it

has a clear message of low complication, high usability and—crucially—extreme compatibility. This mix might be its best bet to put a stake in the ground, ‘making storage something that smaller operations really don’t have to worry about.’ Indeed, iStor is not looking to be anything other than a pure ecosystem fit; this is in stark contrast to many of its larger competitors that seek to compete with, or alter and own, chunks of ecosystems.

The company must maintain its maniacal focus on its chosen market, on simplicity and—even though it sounds superficially disingenuous—be comfortable with the fact that it is not necessarily the absolute ‘best’ in every given category. Too many companies focus so much effort on chasing each bell and whistle that comes around from each competitor that they don’t bother to stop and ask if anyone in their target market cares or not. The storage business has, in many ways, become similar to the CRM market—a lot of competitors fighting battles for features that far too few buyers put any stock into. Building a system that is “pretty enough,” but works instantly and easily at a fraction of the cost of most will appeal to a very, very broad audience. In fact, iStor should actually publicize that this stance is entirely intentional and is a strength because it is not aiming to win any category other than optimum overall SAN storage for the SMB market. As prospects see what they can get for their money, they will most likely be pleasantly surprised at how this strategy translates to end-user value.

Overall, iStor is a surprising emerging vendor with a well thought out approach that offers value to a specific market. Naturally, it could always do more. ESG expects more functions to be announced in the fall—and no doubt, at some stage a logical move into the VDI space—but would encourage iStor to now focus on gaining rapid market traction, even at the expense of new features. Its pure and simple ecosystem play is attractive in a world that doesn’t need additional complexity and it may just have settled upon the right product for the right place at the right time.