



Simplifying Entry-Level Backup/Recovery — Quantum Offers New Scalability for the SMB

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Management Summary

For a long time, the American consumer has been led to believe that *bigger was better*. The classic example of this is the *supermarket*. In the supermarket, or “big box” store, consumables were packaged for families of six to eight, or more, and priced accordingly; as the size of the package went up, the unit price usually went down. Obviously, the total price was always going up! However, as family sizes began to shrink, so did the popularity of oversized packaging, as cost and associated waste became more of a concern. Manufacturers have become more responsive to the needs of the consumer.

This story, however, is a little different in the data center. Here, storage needs have continued to grow with no relief in sight. In response, manufacturers of disk and tape storage products have concentrated their efforts on fulfilling the needs of the largest sites, those with the most data to save and the biggest budgets, many times ignoring the requirements of the Small and Medium sized Business (SMB). These SMBs have many of the same problems as the largest enterprise, especially in the area of backup and archiving, only at a much different scale. SMBs do not have to backup petabytes (PBs) of information weekly. They are content to *merely* backup terabytes (TBs) of data! Unfortunately, these TB requirements are also growing, from 1 to 5 TBs up to 40 to 50TBs, or even more. SMBs require an entry-level tape library for long-term backup and archiving that is both low cost and scalable to satisfy their needs today and tomorrow.

There are a number of vendors who address the SMB space. Unfortunately, many of them compete with similar products, preferring to compete on price rather than features and function. One company that has chosen to do the competition “one better” is Quantum®, who has recently announced two new models to their line of entry level tape libraries, the *Scalar® i40* and the *Scalar i80*. Where the competition typically presents a single 24-slot library for their base product and a single 48-slot model for the SMB with a higher capacity requirement, Quantum has introduced the *Scalar i40* for the first-time library user with a base capacity of 25 slots (*one* better), but with capacity on demand scalability to 40 slots. Likewise, the *Scalar i80* is initially configured with 50 slots (*two* better) and scalability to 80 slots. To learn more about Quantum’s entry-level libraries, please read on.

The SMB Backup Requirement

Every data center, whether enterprise or SMB, is currently experiencing a period of unprecedented growth within their data storage environment. Most are expanding their information capacity by 50% to 70% annually, while many are doubling capacity in the same period. **It is an absolute truth that storage requirements will continue to increase in 2010, and beyond.**

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This uncontrolled data growth is placing a financial burden on the IT budget, as the CIO attempts to control the total cost of ownership (TCO) of the data center environment. The IT staff not only has to acquire additional primary storage platforms, but it also must take steps to ensure the long-term retention and protection of that data in order to comply with government and corporate compliance regulations. This growth is wreaking havoc with business processes, especially the backup process.

Data center backup is pervasive; it touches all applications and it touches all offices, local and remote. The data center's backup window is fixed; it cannot get any wider, yet the increase in the amount of data required for backup continues to grow. Data backup performance has become a key issue with every IT staff. Many enterprises have migrated to a disk-to-disk (D2D) storage environment in order to facilitate the short-term backup and recovery process and to help avoid disrupting mission-critical application performance. However, as the amount of data to be saved long-term continues to grow, total storage capacity and the bounds of the backup window are often exceeded. To compensate, many data centers implement data deduplication strategies in order to control the amount of storage required.

However, the TCO and data protection challenges of a D2D environment can create an onerous burden on the IT budget¹, even when data deduplication is deployed. The IT staff must cope with the acquisition and ancillary costs associated with the power required to drive and cool the expanded storage architecture, the space required to house the disks, and the additional technology needed to protect the data from unauthorized access.

Virtualization is compounding the data center's backup issues. As more and more applications are consolidated and virtualized onto a single platform, or multiple platforms, throughput on a single pipe becomes another constricting factor to the backup window.

As the value of data decreases with age, many CIOs are looking at a disk-to-disk-to-tape

(D2D2T) environment, with an upgraded network, deploying tape to reduce the TCO and energy use for long-term storage as well as to enable manageable data protection strategies. The data center must be able to cope with all of the components of an entire information infrastructure. Most *enterprise* data centers have a staff necessary to assemble the required components, and knit them together into a patchwork quilt. *Can the SMB? How can a data center with limited staff create a working solution to their information storage and management dilemma?*

First, we must determine what the real issues are for D2D2T backup performance. The IT staff must be concerned with the amount of data being saved, the rated throughput of the tape drive, and the storage capacity of a media cartridge. Virtualization has added a new wrinkle. With the consolidation and virtualization of multiple applications onto a single server, the IT staff has to manage the backup of multiple data sets on a single data path. If the path is not fast enough, the high-speed tape drives being used will not be able to maintain their rated throughput, reducing the chances of completing the operation in the allotted window.

While the *enterprise* data center may have a plethora of resources and budget to retain and secure the information infrastructure with high-end disk arrays, Tier-2 disk as a D2D target, tape silos, data deduplication, and encryption appliances with key encryption management, the SMB may not. SMBs need an entirely different solution. They require a low-cost, open system, turnkey solution. They need a solution, such as *LTO*² technology, to protect their investment in existing data as it scales into the future. Implementing *LTO-4*³ tape drives in a scalable configuration can enable the SMB data center to protect previous *LTO* investment with backward compatibility, while increasing cartridge capacity and throughput at the same time, positioning the data center for future growth. *LTO-4* tape provides an ideal, secure medium that is also portable, for use as an archive and for disaster recovery. *LTO-4* is self-encrypting at the drive level, using the highest

¹ See the issue of *Clipper Notes* dated February 13, 2008, entitled *Disk and Tape Square Off Again – Tape Remains King of the Hill with LTO-4*, and available at <http://www.clipper.com/research/TCG2008009.pdf>.

² Linear Tape Open.

³ See the issue of *Clipper Notes* dated July 12, 2007, entitled *LTO-4 Pounces into the Data Center with New Life, Greater Capacity, and Higher Performance*, and available at <http://www.clipper.com/research/TCG2007073.pdf>.

regulatory requirements, and can create unalterable WORM⁴ media to satisfy any auditor.

The SMB needs a flexible information infrastructure with an entry-level automated tape backup or archive solution with integrated software to manage the library, monitoring both drives and media in order to alert the IT staff of any pending difficulty. Space and power are significant issues for the SMB. The SMB requires a compact configuration with a high-density capacity to make up for a lack of floor or rack space. Portability is mandatory for the offsite storage of information for archive or disaster recovery purposes. Portability, however, also implies additional requirements for data protection. The SMB must have the ability to encrypt, automatically, any data that will leave the confines of the data center to ensure the increased security of archived data. Furthermore, the SMB must be able to manage the encryption keys, and, again, do it automatically. In addition, the SMB must be able to prove that data has not been altered, requiring support for WORM media to ensure compliance with all industry and government requirements.

With a limited budget, flexibility is a critical factor for the SMB in terms of use of tape as a sequential autoloader or a random access library. This requires the availability of a barcode reader for identification of the correct cartridge. The tape platform must also include replaceable magazines and an I/O station to enable continuous operation.

Management is another important element in an information infrastructure. Even more than the enterprise, the SMB requires a web-based management capability to enable the remote management of autoloader/library functionality for remote offices, especially when the backup is occurring in off-hours on an unattended system.

Every data center needs a coherent backup strategy. The SMB needs to find a partner who can assist them in building that strategy. One such partner is Quantum, along with their resellers, a leading supplier of backup appliances for both short-term and long-term requirements.

Quantum's Scalar Solution

Every data center requires a reliable long-term backup solution, with restore certainty, in order to guarantee the security of its data. Short-term backup can be handled with Quantum's *DXi*TM Series of D2D appliances consisting of an entry level *DXi2500-D* for requirements up to 5TB, up to the *DXi7500* for data centers protecting more than 100TB of primary data. Long-term storage is handled by the Quantum Scalar family of tape libraries, from the *Scalar i40* and the *Scalar i80*, particularly well suited for an SMB environment, up to the *Scalar i500* for mid-market and *Scalar i2000*⁵ for larger enterprises. Designed for ease of use, these libraries completely satisfy the needs of a small- or medium-sized business, as well as the remote offices of larger enterprises. The Scalar libraries save IT staff time as a result of a simplified deployment and on-going management, as well as integrated scalability. Both models are economical, with the capacity and throughput to backup all of today's data within the prescribed backup window, yet have the flexibility to scale for future growth. Most significantly, these entry-level libraries contain Quantum's *iLayer*⁶ software, allowing the IT staff to setup, manage, and service the *i40* and *i80* with the same features and functions to simplify tape management.

Designed to be suitable as the first library purchase for the SMB, the *Scalar i40* supports up to two half-height, or one full-height LTO-4 drives and 40 cartridge slots including up to 5 import/export slots, via two 20-slot magazines, in a 3U rack-mount chassis on a capacity-on-demand basis, with a base configuration of 25 active slots, *one more* than the standard competitive models. However, the base *i40* can be upgraded to support all 40 slots via a software license only; no hardware upgrade is required. The base *i40* is designed to protect a primary data base of 2-4TB with up to 20TB of storage capacity, up to 32TB in a fully configured model.

⁵ See [The Clipper Group Navigator](#) dated April 14, 2005, entitled *The ADIC i2000 – More Than Just Another Tape Library*, available at <http://www.clipper.com/research/TCG2005021.pdf>.

⁶ See [The Clipper Group Navigator](#) dated November 17, 2005, entitled *ADIC Continues Tape Leadership Role – Delivering Automation Solution to Mid-Range*, available at <http://www.clipper.com/research/TCG2005072.pdf>.

⁴ Write Once, Read Many.

The Scalar i80 provides even more configurability for the growing SMB. The Scalar i80 supports up to five half-height or three full-height LTO-4 drives and 80 cartridge slots including up to 10 import/export slots, via four 20-slot magazines, in a 6U rack-mount chassis on a capacity-on-demand basis, with a base configuration of 50 active slots, *two more* than the standard competitive models. However, the base i80 can be upgraded to support all 80 slots via a software license only; no hardware upgrade is required for the i80, either. The base i80 is designed to protect a primary data base of 4-8TB with up to 40TB of storage capacity, up to 64TB fully configured.

With LTO-4 drives, the Scalar libraries use the fastest, most secure commodity tape drive available. With a current native capacity of 800GB, LTO-4 has a throughput up to 120 MB/s. With a 2:1 compression ratio, this increases to a capacity of 1.2TB per cartridge with a throughput of 240MB/s. With at least two drives installed in a library, this should be sufficient for most SMBs to satisfy their backup window. Moreover, with LTO-5 on the way in 1H10 with a capacity up to 3.2TB and throughput up to 360MB/s, any SMB will have plenty of headroom for future scalability.

Integrated encryption within the LTO-4 drives solves half of the problem of securing the SMB's data from prying eyes. The other half is being able to decrypt the data when a recovery is required. To complete the solution, the Scalar i40 and i80 can take advantage of the encryption key management capabilities of the leading backup applications for simple, basic encryption key management for the SMB. Quantum also offers the *Scalar Key Manager* as a centralized key management solution for the midrange and enterprise.

One of the most significant differentiators of Quantum's tape library family is the integration of the Quantum iLayer software, a best-in-class, intelligent management and monitoring facility, with features that were previously only available in Quantum's enterprise and mid-range-class tape automation products. No other products on the market offer that degree of *integrated* proactive monitoring and diagnostics. However, to-date these high-end management features have been unattainable for the SMB data center.

With iLayer, the data center can reduce

library management time by more than 50% and, with an easy-to-use interface, does not require a highly skilled administrator to keep the library operational. Designed with proactive diagnostics for predictive analysis and corresponding corrective actions, the Scalar libraries can avoid downtime, eliminating unnecessary service calls. iLayer monitors hundreds of events within the library, providing the IT staff with detailed library, drive, connectivity, and media status at any point in time, alerting the IT staff of potential failures before they cause a failed backup or, worse, a failed recovery.

Remote browser-based management of the i40 and i80 is standard on all models. All models are qualified for either a 4Gb Fibre Channel (FC) connection or a 3Gb SAS link to ensure enough throughput in support of multiple LTO-4 drives.

At an entry price of \$7,499 (US) with one drive, the Scalar i40 is affordable by any SMB with backup storage issues. With an entry price of \$9,399 (US), the Scalar i80 provides an economic solution for the SMB with growth on the horizon.

Conclusion

With a long history of innovation, Quantum has taken a commodity LTO-4 drive and surrounded it with hardware and software automation to simplify the long-term backup and archiving of mission- and business-critical SMB data. If you are looking for an affordable and secure means to protect the most vital resource in your data center, your data, check out Quantum's Scalar line. It may be just what you are seeking.



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