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Small Business + Data Growth = No Problem — Overland Storage Introduces NEO 100s

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Management Summary

Summertime is upon us, as the temperatures reach, and exceed, 90^oF. Okay, would you believe 100^o? As we prepare to go to the shore to try to cool off, we pack a beach umbrella, chairs, a blanket, food, and a device to enable us to enjoy some music while we bake in the sun. Do you remember when that meant lugging a rather large “boom box” radio from the parking lot to your blanket? In fact, that radio could entertain half of the beach, whether or not they wanted to listen to your stations! You did not even get to pick the songs; you got what the DJ selected! Today, you can get more entertainment from your smart phone or a device strapped to your arm than could be provided by that “boom box” and the music can be personalized by you. Isn’t technology wonderful!

Technological advancements in the data center have also never been greater. The size and power of the IT infrastructure has never been better. We are reducing the size of the infrastructure and increasing its power, at the same time. Look at the microprocessor: you can see a history of improvements that exceeds the imagination. From the single-core *Intel 8080* in 1974, running at 2MHz, to the latest *Intel Xeon* processors of today, with eight cores and sixteen threads running at 3.8GHz, the data center has been able to reduce the size of the IT environment, enabling the consolidation and virtualization of multiple mission-critical applications onto a single platform, reducing energy consumption, floor space, and administrative costs, helping to reduce the total cost of ownership (TCO) of the IT infrastructure. This enables the smaller business or remote location to automate an entire operation onto a single server, providing a reduced TCO for CPU processing and disk storage. Unfortunately, due to the growth of data, the same cannot always be said for the backup/recovery or archiving in the smaller office. While significant attention has been paid to the largest enterprises where “big data” brings “big dollars”, little has been done to automate the lower-end of the spectrum, where data grows as well, perhaps forever, albeit at a reduced capacity when compared to larger enterprises.

The typical tape library may be appropriate for a mid-sized or enterprise requirement, but it is overkill for the SMB who is just beginning the journey toward automating his environment while coping with data growth. What is needed here is a low-cost, scalable, yet compact, autoloader with the reliability and functionality found in higher priced libraries. Because of the low-cost associated with this type of device, some vendors have shied away, aiming for a bigger bang for the buck.

One company that has paid attention to the smaller business is Overland Storage. Their *NEO S-Series* continues to provide data centers with a wide variety of low-cost tape library solutions. Now, with the *NEO 100s*, Overland Storage has extended their range to include the customer whose needs are limited to an autoloader, rather than a full-blown library. To learn more about the *NEO 100s*, please read on.

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SMB Data Center Requirements

Every data center, enterprise or SMB, has been experiencing a period of unprecedented data storage growth. Most are doubling their storage capacity every 12 to 18 months, while others are experiencing even greater growth. This growth places a tremendous burden on a limited IT budget, as the smaller business attempts to control the TCO of its data center. The IT staff (if there is one) not only has to acquire additional primary storage, but they also must take steps to ensure the long-term preservation of important business information. Some businesses have adopted a disk-to-disk (D2D) storage solution, instead of D2T (disk-to-tape), to facilitate the backup/recovery process, as the amount of data being saved often stretches the bounds of the recovery window and, also, often disrupts application performance when a recovery is required. The TCO and data protection challenges of a D2D environment, however, can create an unacceptable burden on the IT budget¹ for the long-term preservation of data. The IT staff must cope with D2D acquisition and licensing costs plus the ancillary costs, such as the power required to drive and cool the expanded architecture, the space need to house the disks, and the additional technology needed to protect the data from unauthorized access.

For these reasons, many IT personnel are looking for an affordable, high-capacity backup and archive capability, such as a D2D2T environment, deploying tape to reduce the TCO and energy consumption of long-term storage as well as to enable manageable data protection strategies. In fact, with the improved throughput performance of the newest tape architectures, some data centers are even looking to adopt, or return to, a more direct D2T architecture. In addition to the improved performance, tape provides the smaller business with:

- Affordability
- Reliability
- Scalability
- High capacity in a compact format
- Energy efficiency
- Portability and
- Ease of use

The smaller business must be able to cope

with all of the components of an entire information infrastructure. An enterprise data center may have the resources necessary to assemble the required components, and knit them together into a patchwork quilt. *Can the smaller business? How can a data center with limited staff create a working solution to their information dilemma?* The SMB environment requires an efficient, cost-effective long-term storage solution that makes offline storage an easy-to-use reality for the business with a limited budget and little or no trained staff available.

While the enterprise data center may have a plethora of resources, and budget, to retain and secure adequately the information infrastructure with high-end disk arrays, Tier-2 disk as a D2D target, tape libraries, and data deduplication and encryption appliances, the SMB does not. SMBs need an entirely different solution. Small (or remote) offices with a limited budget also need simple, affordable data protection. They require a low-cost, open, turnkey solution to manage backups and archives. They need a solution like the latest *LTO*² technology, to protect their investment in existing data. **Implementing a new LTO-5³ tape solution can replace older, unreliable standalone devices and facilitate data preservation within the existing IT budget, even enabling the data center to protect previous investments with the capability to write to LTO-4 cartridges and read from LTO-4 and LTO-3 cartridges, while LTO-4 enables the ability to write to LTO-3 cartridges and read from LTO-3 and LTO-2 cartridges.**

The SMB needs a flexible IT infrastructure with an entry-level automated, scalable tape backup or archive solution, in a desktop or rack-mounted configuration, so that you are not dependent on a clerk to remember to change the cartridge. Space and power are significant issues for the SMB. The SMB needs a compact configuration with high density to make up for a lack of floor or rack space. Portability is mandatory for the offsite storage of information for data protection purposes, for archiving of data over the long term, and/or for disaster recovery. Portability, however, also implies additional requirements for data protection. The smaller business needs the ability to encrypt any data that will leave the

¹ See the issue of *Clipper Notes* dated December 20, 2010, entitled *In Search of the Long-Term Archiving Solution – Tape Delivers Significant TCO Advantages over Disk*, and available at <http://www.clipper.com/research/TCG2010054.pdf>.

² *Linear Tape Open*, also called *Ultrium*.

³ See *The Clipper Group Navigator* entitled *LTO Program Announces Next Gen Tape – LTO-5 Raises the Bar for Tier-3 Storage* dated January 31, 2010, and available online at <http://www.clipper.com/research/TCG2010002.pdf>.

confines of the data center to ensure the increased security of offsite data. The SMB also may need to prove that retained data has not been altered, requiring support for WORM⁴ media to ensure compliance with all industry and government required norms.

With a limited budget, flexibility is critical for the SMB, in terms of accessing multiple cartridges with a single tape drive. Often this is accomplished with an autoloader⁵, a random-access cartridge picking device. These require the availability of a barcode reader for identification of the correct cartridge and the availability of replaceable magazines and an I/O station to enable continuous operation. Management and administration are other important elements in the information infrastructure. Even more than the enterprise, the SMB requires a web-based management capability to enable the remote management and administration of autoloader/library functionality for remote offices. One company that has paid particular attention to the needs of the SMB and enterprise departments is Overland Storage with their *NEO S-Series*.

The Overland Storage NEO Family

Overland Storage continues to deliver a wide range of tape libraries to the IT community with the latest technology available. In March, 2010, Overland introduced LTO-5⁶ into their product set. With the *NEO 200s* and the *NEO 400s* tape libraries, Overland delivered automated storage to small and mid-sized enterprises with moderately growing data storage needs. Unfortunately, these libraries did not extend down into the arena where the most budget-conscious smaller businesses, along with remote locations of larger enterprises, needed to operate – under \$5,000. The cost of even the smallest library could not be justified in many of these environments where existing data protection requirements are fulfilled with a desktop tape drive.

In order to address these smaller businesses, Overland decided to scale the NEO family

⁴ WORM=Write Once, Read Many.

⁵ What is the difference between a fully-functional library and an autoloader? In many cases, it simply is reducing the scalability and limiting the architecture to one drive and less than ten cartridges in a small form factor, thus reducing the cost significantly, without affecting the functionality required to backup and archive vital data, in order to preserve and protect it and to meet government and industry standards.

⁶ See [The Clipper Group Navigator](#) entitled *Increasing Scalability of Tier-2 Storage – Overland Storage Upgrades NEO with LTO-5* dated March 28, 2010, and available online at <http://www.clipper.com/research/TCG2010013.pdf>.

again, this time downward, in order to capture the attention of businesses that simply could not afford a full-blown library capability. They chose to expand NEO with an autoloader, instead of a library. A single drive, however, implies a single-point-of-failure; however, the reliability of LTO-5 (discussed below) mitigates most of that risk.

The NEO 100s

With the availability of LTO-4 and LTO-5 technology in an autoloader, a single 1U shelf is capable of holding a magazine with multiple tape cartridges and one drive that has the capability to store and access up to 3TB of compressed data⁷ on one cartridge. It can transport it at up to an impressive 280MB/second. This is exactly what Overland Storage has done with their *NEO 100s*. In fact, one NEO 100s magazine can hold nine LTO-5 cartridges with up to 27 TBs of compressed capacity. If the data center is still using LTO-4 technology, the magazine can hold 14.4 TBs.

First and foremost, Overland Storage has made data protection available to the business with the tightest budget restrictions. As a part of that concern for cost, the NEO 100s has been positioned at list prices that are less than \$4300 configured with an LTO-5 drive and less than \$3300 when deployed with an LTO-4 drive. This means that data can be stored for as little as \$.23/GB using LTO-4 drives and cartridges, and a remarkable \$.16/GB with LTO-5 drives and cartridges.⁸ It can be managed with virtually no administrative costs by means of an intuitive, web-based remote management interface or via the touch-screen on the front panel. In fact, the NEO 100s also has affordable warranty extensions to provide the tape administrator peace of mind.

It provides the smallest data center with the improved reliability of an automated tape handling solution with a removable, nine-slot

⁷ Assuming a 2:1 compression ratio.

⁸ Until the end of September, Overland has bundled LTO-5 and LTO-4 NEO 100s offerings (OV-NEO100s5PR and OV-NEO100s4PR) that include ten tape cartridges. To get the above-cited costs per GB, we divided the list prices above (which are the same for the bundles) by the total capacity of the nine cartridges (and ignored the tenth, as a spare). The tape capacities used assume a 2:1 compression ratio. The result is the cost per GB if all of the available tape capacity is used. Your actual results will vary and will be more than these costs per GB, because you probably will not fill each cartridge to the maximum capacity. Nonetheless, the cost for Overland's solutions are very attractive, given the automation and capabilities provided.

magazine, plus it offers a special slot for the import and export of single cartridges and a barcode reader to expedite cartridge identification. All of these will improve the reliability of using tape. Because of the portability that is essential for the transport of cartridges off-site, the encryption and WORM capability of LTO-5 is critical to ensure the security and protection of enterprise data.

When it comes to reliability, clearly LTO-5 comes out ahead, when compared to disk. For example, the reliability of high-capacity SATA drives is quoted at one error in 10^{15} bits. In comparison, LTO-5 drives have a bit error rate of one error in 10^{17} bits. *No wonder your IT staff worries about the RAID technology required when deploying those unreliable disks!* When comparing the NEO 100s to other autoloaders, once again it comes out ahead. Using Mean Cycles Between Failures (MCBF) as the measuring stick⁹, NEO robotics are rated at 3,000,000 cycles, significantly better than competitive products from Tandberg and Quantum, which are rated at 500,000 and 400,000 cycles, respectively.

With a 1"U" form factor, the NEO 100s minimizes precious rack space, leaving ample space for the servers and disks essential to the operation of the business. This is ideal for the business with a data center which needs to be able to fit in a closet. Yet, despite the compact configuration, the NEO 100s provides the data center with ample capacity and headroom to scale even higher, just by moving to a later generation drive, when needed.

With LTO-5 media, the NEO 100s can hold up to 27 TBs (compressed), or 14.4 TBs with LTO-4 media. With LTO-5 drives, the NEO 100s has a throughput up to 1 TB/hour via a 6 Gb/second SAS interface. However, this is not the ceiling for capacity and throughput. The LTO Program already has announced the coming of the next generation of LTO with *LTO-6*¹⁰. With a compressed capacity scheduled to be up to 6.25 TBs per cartridge, a NEO 100s magazine should be able to support up to 56.25 TBs with a throughput of up to 400 MB/second once Overland qualifies and offers it.¹¹

⁹ MCBF is a count of the mechanical cycles of grabbing a cartridge and inserting it into the drive.

¹⁰ See the LTO-6 Announcement Letter at <http://www.lto.org/pdf/LTO%20PR%20Maintains%20Top%20Momentum.pdf>.

¹¹ However, the NEO 100s is fixed, non-upgradable solution. If you need more capacity than is available for the LTO generation that you have selected, you will have to replace the

Conclusion

Why should the smaller business be looking at the NEO 100s? First, the NEO 100s provides the smaller business with the perfect low-cost, efficient, entry-level, automated storage solution for the long-term preservation of data. **With LTO-5, the NEO 100s has superior capacity and scalability in a compact configuration, making more sense (and less cents) on a cost/GB basis, if you have more than a little data to store.** With nine cartridges in a magazine, it provides the data center with the density it requires to preserve valuable floor space. LTO technology also provides the data center with superior reliability and manageability. **All of these factors contribute to a lower TCO, making the NEO 100s an extremely effective storage solution for the SMB.**

If your business is looking for its first automated tape solution, or simply planning for future growth, now is the time to investigate how Overland Storage's NEO 100s can help solve your data growth problems.



entire NEO 100s unit or move up to another member of the NEO S-Series family.

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