



## Increasing Scalability of Tier-2 Storage — Overland Storage Upgrades NEO with LTO-5

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### Management Summary

When do you replace your automobile? It might depend on mileage? Is your commute two miles or is it closer to an hour on highways and city streets? Do you upgrade to a brand new model every year in order to take advantage of the latest features? Some drivers with high mileage requirements upgrade to a new car to get new features, such as a hybrid engine to save on gas or a GPS system integrated with on-line traffic reports to help avoid a myriad of traffic jams. For others, gas economy is not an issue. Many drivers simply are concerned about the cost of keeping their car on the road and will upgrade to a new model when their warranty is up, every three-to-five years. For still others, upgrading to a *new* model means trading in their ten-year-old clunker for a three-year-old used car with improved mileage and fewer repairs required. It may simply come down to reducing the total cost of ownership (TCO) for your driving needs. This is a story all too familiar to anyone managing an enterprise data center in the 21<sup>st</sup> Century.

**With the cost of energy rising and servers proliferating, data center consolidation has been a major concern for every enterprise, regardless of size.** New multi-core processors and server virtualization have enabled the IT staff to replace an aging fleet of x86 servers, sprawling throughout the data center, consolidating multiple applications on fewer servers to improve resource utilization, preserving energy and floor space, as well as reducing a significant amount of complexity. **Unfortunately, server consolidation does not address all of the data center's consolidation issues.** With data exploding throughout the enterprise, storage capacity is doubling every 12 to 18 months. **A significant percentage of enterprise storage is dedicated to data protection activities, including backup and archiving.** Disk-to-Disk (D2D) backup procedures have become popular recently for the short-term backup of data, in order to provide an instantaneous recovery process, and to maintain continuity for data center operations. However, in order to reduce the TCO of the IT infrastructure, long-term backup and archiving have used, and will continue to use, tape as a target medium in order to take advantage of its low cost, portability, energy efficiency, longevity (up to 30 years) and compliance features, such as WORM and encryption. **With a shrinking backup window and limited rack and floor space, the need for an automated tape solution with higher-capacity cartridges and drives with greater throughput becomes more urgent.**

One company with a track record of providing an evolving family of automated tape solutions is Overland Storage with the *NEO Series* tape libraries. Equipped with LTO tape drives, NEO provides the capacity and throughput required by data centers with serious data protection issues. With their newest announcement of the availability of LTO-5 tape drives, Overland has raised the ceiling for NEO while protecting the investment already made in enterprise data protection. To learn more about LTO-5 and NEO, please read on.

### IN THIS ISSUE

➤ The Enterprise Data Center .....	2
➤ LTO-5 to the Rescue .....	2
➤ Overland Storage LTO-5 NEO Solution .....	3
➤ Conclusion .....	4

## The Enterprise Data Center

For 60 years, the enterprise data center has seen a wide variety of architectures come and go, and in some cases, come back and go away again. The *big glass house* has given way to *distributed computing*, which has given way to *scale-up architectures*, which has given way to *client-server*, which now has given way to *scale-out environments*. However, when all is said and done, **magnetic tape not only survives, but it thrives, providing the IT staff with the capacity, portability and longevity that it needs to preserve enterprise data and maintain business continuity.**

Over the past few years, data center storage has undergone an era of unprecedented growth. Between mergers and acquisitions, consolidations and virtualizations, industry regulations and government compliance, the enterprise data center is storing more data, and more kinds of data, structured and unstructured, such as audio and video, and more copies of data (to mitigate risk) than ever before. Storage needs are doubling every twelve to eighteen months. Floor space, energy, and administrative costs are consuming the IT budget, not to mention maintenance and other operational expenses. **The acquisition costs for much of this storage may be fairly stable, but the ancillary costs contribute heavily to the TCO of the IT infrastructure.**

Primary storage will continue to find a home on a heterogeneous mix of disk devices, consisting of the highest-performing Tier-0 SSDs, high-availability Tier-1 Fibre Channel (F.C.), and high-capacity Tier-2 SATA, as will backup copies for data with immediate recovery requirements. Enterprise RPO and RTO policies will dictate which backup information needs to reside on disk. **Best practices for data retention in the data center dictate that long-term storage of email and other compliance documents and archiving environments, however, will continue to reside on tape in order to protect the enterprise and its officers from failure to comply with internal policies and government regulations.** A majority of enterprises currently use both tape and disk to store information, with many of them planning to increase their use of tape. **In the end, it doesn't matter where the information came from, it must be protected.** In fact, some data centers that may have evolved to a D2D environment, now find themselves returning to tape in order to take advantage of its high capacity, portability, low-cost WORM, and

### Exhibit 1 – Advantages of Tape in the Data Center

- **Lower TCO** – Tape provides the data center with a lower cost for acquisition and operational costs;
- **Energy Efficiency** – enabling the “green” enterprise to fulfill its corporate obligation;
- **Data Security** – through WORM and encryption;
- **Portability** – to enable off-site data protection;
- **Automation** – for high performance and to help eliminate human error;
- **Data Retention** – with up to 30 years of shelf life for the media; and
- **Scalability** – With a space efficient architecture via high capacity in a small footprint.

Source: LTO Program

encryption technologies. These are all innovations introduced on tape - *LTO tape* - realizing the economies available in terms of energy and other environmental factors contributing to a lower TCO<sup>1</sup>, as a result of a reduction in the number of cartridges required. For a full set of advantages available from properly deploying tape in the data center, see Exhibit 1, above.

## LTO-5 to the Rescue

As with many other elements of an IT infrastructure, tape has seen a variety of architectures come and go over the years. Currently, the accepted standard in the data center for attachment to both commodity and other server architectures is LTO technology. **With a decade of history in data protection, LTO technology has proven itself with multiple generations of increased performance and capacity, and even more significantly, multiple sources of both LTO tape drives and LTO media.** With January's announcement<sup>2</sup> of the release of the LTO-5 specification, the rationale for tape has increased – to provide the data center with even more capacity and performance, as well as additional

<sup>1</sup> See the issue of *Clipper Notes* dated October 21, 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/TCG2008056.pdf>.

<sup>2</sup> See *The Clipper Group Navigator* dated January 29, 2010, entitled *LTO Program Announces Next Gen Tape – LTO-5 Raises the Bar for Tier-3 Storage*, available at <http://www.clipper.com/research/TCG2010002.pdf>.

functionality to enhance the long-term storage and archiving capability of the enterprise data center.

With LTO-5, the capacity for a single media cartridge has increased to 1.5 TBs of uncompressed data. This is a fifteen-fold increase in capacity in only 10 years. The native data transfer rate also has increased, from 15 MB/second (MB/s) with *LTO-1* to 140 MB/s with LTO-5, almost ten-fold. Over that time span, we have seen the inclusion of an integrated WORM capability beginning with *LTO-3* and embedded encryption with *LTO-4*. With LTO-5, we see the inclusion of media partitioning, as part of the LTO-5 specification to improve data management and access through the enablement of self-describing media containers and structured data on tape.

The availability of the latest LTO specification provides the tape library suppliers with a blueprint for the delivery of a commodity architecture to simplify the preservation of data and lower the TCO of the IT infrastructure. How that specification is translated into deliverable products is left up to the individual providers. One of those providers is Overland Storage, a company with 30 years of experience in delivering multiple, successful storage solutions to the IT industry. As the first tape automation vendor to announce availability of the LTO-5 technology, Overland has once again proven its leadership in storage. With both new NEO LTO-5 solutions as well as upgrades to the *NEO E Series* and the *NEO 8000 Series* libraries, Overland has enabled increased scalability for data centers of all sizes.

### Overland Storage LTO-5 NEO Solution

An enterprise's data is one of its most critical assets. Keeping that data stored, accessible, and secure has become a complex and expensive issue as data continues to grow, regulatory requirements become more stringent, and distributed environments reach around the world.

Overland Storage has committed itself to provide comprehensive, reliable, and extensible storage solutions. In order to protect their customer's investment in NEO data protection and archiving solutions, Overland has introduced the LTO-5 drive into their library architecture in order to provide the latest innovation in high capacity storage. With LTO-5 deployed in NEO Series libraries, the data center can overcome limitations being experienced in floor space, resources, and IT budget, consolidating their back-

### Exhibit 2 – NEO LTO-5 Features

- **Compact, high-capacity storage** – With up to 3PB of storage utilizing no more than 14 Sq. Ft. of data center floor space, NEO provides superior data density;
- **Highly Flexible, scalable design** – LTO-5 NEO libraries enable users to grow into, not out of, their storage investment;
- **Redundant power and robotics capabilities** – Ensuring constant access to enterprise data;
- **Effortless data management** – NEO provides the data center with the capability to monitor and manage the backup and archive process from anywhere in the world.

*Source: Overland Storage*

up and archive environments.

With storage capacities ranging from 45TB to 3PB, and data transfer rates as high as 24 TB/hour, NEO libraries can deliver almost twice the capacity of LTO-4-based libraries, with a 20% increase in data throughput. **Overland Storage has positioned NEO with LTO-5 to satisfy the demands of an enterprise looking for new high-capacity, high-performance backup and archiving platforms, or the enterprise needing to upgrade their existing NEO systems.** See Exhibit 2, above, for a list of NEO automated backup and archive features with LTO-5.

It must also be noted that moving to LTO-5 technology is not the only option to upgrade NEO storage capacity. The design of the NEO libraries allows data centers that may still be using previous-generation technologies, such as LTO-3, to upgrade easily to LTO-4 technology, still achieving significant improvements in capacity and throughput while remaining within restrictive budgetary limitations.

### *NEO E Series*

The NEO E Series was designed to address the most challenging midrange storage requirements, and to ensure enterprise backups are faster, smarter, easier, and more economical. The E Series consists of the *NEO 2000E* and the *NEO 4000E*. Both models combine ease-of-use for backup and archive with the scalability, reliability, serviceability, and data availability that enterprises have come to expect from Overland. Built with a modular design, a NEO E Series

library allows the data center to scale both 30- and 60-cartridge modules together for maximum flexibility. When deployed with redundant high-performance robotics, redundant power and embedded diagnostics for proactive remote monitoring, NEO E libraries deliver industry-leading reliability to ensure that enterprise data is readily accessible and available. With embedded connectivity for SAS and F.C., a NEO E Series library can attach seamlessly to your network infrastructure, providing affordable connectivity with future-generation interface technologies.

#### NEO 2000E

Configurable with up to two LTO-3, LTO-4, or LTO-5 drives, the NEO 2000E can scale up to eight modules in a single rack, with 30 cartridges per module. Deployed with LTO-5:

- A 2000E has a native capacity of up to 45 TB of backup/archive data per module, with a maximum compressed capacity of 720 TB in a scaled configuration.
- A 2000E module has a maximum native data transfer rate of 1 TB/hour, with a compressed rate of 2 TB/hour.
- A 2000E provides connectivity via either 6 Gb/second (Gb/s) SAS or 8 Gb/s F.C.

#### NEO 4000E

Configurable with up to four LTO-4 or LTO-5 drives, the NEO 4000E can scale up to four modules in a single rack, with 60 cartridges per module. Deployed with LTO-5:

- A 4000E has a native capacity of up to 90 TB of backup/archive data per module, with a maximum compressed capacity of 720 TB in a scaled configuration.
- A 4000E module has a maximum native data transfer rate of 2 TB/hour, with a compressed rate of 4 TB/hour.
- A 4000E provides connectivity via either 6 Gb/s SAS or 8 Gb/s F.C.

#### NEO 8000 Series

If your enterprise requires a long-term, cost-effective data protection solution for the data storage and archiving of larger amounts of mission-critical data, then the NEO 8000 Series may provide you with the scalability and flexibility that you are looking for. The NEO 8000 tape library has been designed with the robustness and reliability features needed by the most demanding data center environments.

The NEO 8000 can accommodate the ac-

celerated data growth being experienced in today's data center and is ideally situated to support the consolidation of a rapidly expanding infrastructure. The NEO 8000 has scalability from a base configuration of 100 cartridges to a scaled configuration with as many as 1000 cartridges, with a total compressed capacity of 3PB, providing the enterprise with investment protection into the future. A base configuration can support as many as 12 LTO-4 or LTO-5 drives with a maximum compressed data transfer rate of 12 TB/hour. The scaled configuration can support up to 24 LTO drives, with an LTO-5 transfer rate of 24 TB/hour. The NEO 8000 with LTO-5 can connect to the data center network with 8Gb/s native F.C.

The NEO 8000 provides the data center with intelligent, proactive remote management that can lower the TCO of the IT infrastructure and improve data availability. The NEO 8000 eliminates single points of failure with robotic fail-over, redundant hot-swap power, high-performance drive management, and advanced diagnostics. The NEO 8000 also protects your data from unauthorized use with AES 256-bit encryption.

#### Conclusion

If your enterprise needs to reduce the TCO of the IT infrastructure for the long-term backup and archiving of the data center environment, Overland Storage's NEO libraries with LTO-5 technology provide the ideal solution. LTO-5 tape enables the IT staff to take advantage of higher capacity and throughput, lower cost, portability, energy efficiency and longevity, with WORM and encryption compliance. With data exploding, the backup window shrinking and available rack and floor space disappearing, there is an urgent need for a scalable, easy-to-use automated tape library with the reliability necessary to protect the enterprise's mission-critical data. If this is the profile for your enterprise, Overland's NEO Series may be what you seek.



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