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**CLIPPER GROUP REPORTS SUBSTANTIAL COST ADVANTAGES OF USING TAPE  
IN TIERED STORAGE APPROACHES**

*Study Demonstrates 23X TCO Savings and 290X Energy Advantage by Utilizing Tape*

**SILICON VALLEY, CALIF. — (May 28, 2008) —** The results of a cost analysis that includes a review of potential hardware, energy and environmental costs highlights the potential advantages of using tape in tiered storage infrastructures and substantial business savings when compared to all-disk archiving solutions.

The sponsored white paper, written by David Reine and Mike Kahn of The Clipper Group, looked at total costs of ownership over a five year period for the long-term storage of data in tiered disk-to-disk-to-tape versus disk-to-disk-to-disk solutions. After factoring in acquisition costs of equipment and media, as well as electricity and data center floor space, Clipper found that the total cost of SATA disk archiving solutions were up to 23 times more expensive than tape solutions for archiving. When calculating energy costs for the competing approaches, the costs for disk were up to 290 times that of tape.

“Our goal was to answer the overriding question of ‘how much does it really cost?’ to provide readers with a balanced ‘apples to apples’ comparison of these two archiving approaches,” said Mike Kahn, Managing Director, The Clipper Group. “In the end we have determined that a blended environment of disk and tape is the right configuration, incorporating both high performance disk to satisfy contracted SLAs along with the lower TCO figures of tape for long-term storage.”

“While the CIO might be anxious to push forward with newer technology, our paper shows that disk-only archiving solutions are not a replacement for tape if cost is at all an issue -- disk should be used to complement tape,” said Dave Reine, Director, Enterprise Systems, The Clipper Group. “Our findings show that there are substantial potential savings when using tape in tiered approaches, and even when you factor in de-duplication, tape-based strategies still provide an estimated 5:1 cost advantage over de-duped disk in archiving.”

Findings of the report include:

- The total cost of ownership of SATA disk archiving solutions is about 23 times that of tape-based archive solutions
- Tape is the more energy efficient choice for the data center, providing up to a 290:1 advantage on energy costs
- Tape is the more economical solution for long-term storage requirements for mid-sized data centers
- Tiered D2D2T solutions can be justified on acquisition costs alone
- Employing de-duplication can bring down the overall TCO of SATA-based archiving solutions, but tape-based archiving still has an estimated 5:1 advantage

“Tape is an integral component of a user’s information infrastructure strategy,” said Cindy Grossman, Vice President, Tape and Archive Systems, IBM. “A tiered storage blend of disk and tape can help the IT manager address a myriad of data center goals that include SLA performance targets, disaster recovery, archive, data security and of course, TCO and energy consumption.”

LTO tape technology provides advanced backup and archiving features that are required in today’s data centers, including 256-bit drive-level data encryption, WORM support, high capacity -- up to 1.6TB per cartridge -- and blazing performance at up to 240MB/second (LTO-4 at 2:1 compressed to support data retention needs. With low energy consumption, tape technology can also provide organizations with a green alternative for the data center, providing energy savings for businesses.

The Clipper Group paper, “Disk and Tape Square Off Again – Tape Remains King of the Hill with LTO-4,” is available for download from [www.ultrium.com/whitepapers](http://www.ultrium.com/whitepapers). A companion webcast, hosted by Reine and Kahn, is available for archived viewing at [www.ultrium.com](http://www.ultrium.com).

### **How to License LTO Ultrium Technology**

Buyers seeking LTO Ultrium format-compliant products should look for the LTO Ultrium format compliance verification trademarks on both tape drives and data cartridges. Storage and media manufacturers interested in licensing LTO formats may obtain information by contacting the LTO Program through [www.ultrium.com/contact.php](http://www.ultrium.com/contact.php). The LTO Program has historically offered several different license packages – from enhanced packages that provide the specifications and licenses to manufacture LTO Ultrium products, to basic packages, providing LTO format specifications and guidelines for interchangeability.

## **About Linear Tape-Open (LTO)**

The LTO format is a powerful, scalable, adaptable open tape format developed and continuously enhanced by technology providers HP, IBM Corporation and Quantum Corporation (and their predecessors) to help address the growing demands of data protection in the midrange to enterprise-class server environments. This ultra-high capacity generation of tape storage products is designed to deliver outstanding performance, capacity and reliability combining the advantages of linear multi-channel, bi-directional formats with enhancements in servo technology, data compression, track layout, and error correction.

The LTO Ultrium format has a well-defined roadmap for growth and scalability. The roadmap represents intentions and goals only. There is no guarantee that these goals will be achieved. Format compliance verification is vital to meet the free-interchange objectives that are at the core of the LTO Program. Ultrium tape mechanism and tape cartridge interchange specifications are available on a licensed basis. For additional information on LTO, visit [www.trustlto.com](http://www.trustlto.com) and the LTO Program Web site at [www.ultrium.com](http://www.ultrium.com).

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