



LTO-Still Current After All These Years

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Recently Announced-LTO 11 and LTO12

Just last October, the LTO Consortium announced that two new generations of LTO were to be added to the product roadmap, LTO 11 and LTO 12. This was the first major addition to the LTO product line since 2014, when the roadmap was extended to generation 10. These products are expected to push the availability of LTO into the late 2020's. Just as interesting, LTO 12 is projected to have a native capacity of 192 TB or 480 TB compressed *per cartridge!* Imagine, half a petabyte of data on a single cartridge you can hold in the palm of your hand.

A little history...

LTO Ultrium tape was first made available to the marketplace in 2000. Developed and controlled by a consortium of companies, Hewlett-Packard Enterprise, IBM, and Quantum, LTO quickly became the dominate enterprise tape drive type, competing favorably with DAT, DLT, AIT, and all other mid-range devices. Actually, both DLT and AIT are no longer in production, having been entirely displaced by LTO.

Currently LTO is in its eighth generation, with the release of LTO 8 last year. LTO 8 media will provide a native capacity of 12 TB per cartridge (30 TB compressed) at a cost of pennies per gigabyte. Each generation of LTO has enhanced both media capacity and speed, while allowing for media compatibility with previous generations. Protection of customer investment in LTO is a major criterion of the product line; the recent announcement continues this tradition.

Tape in the Cloud

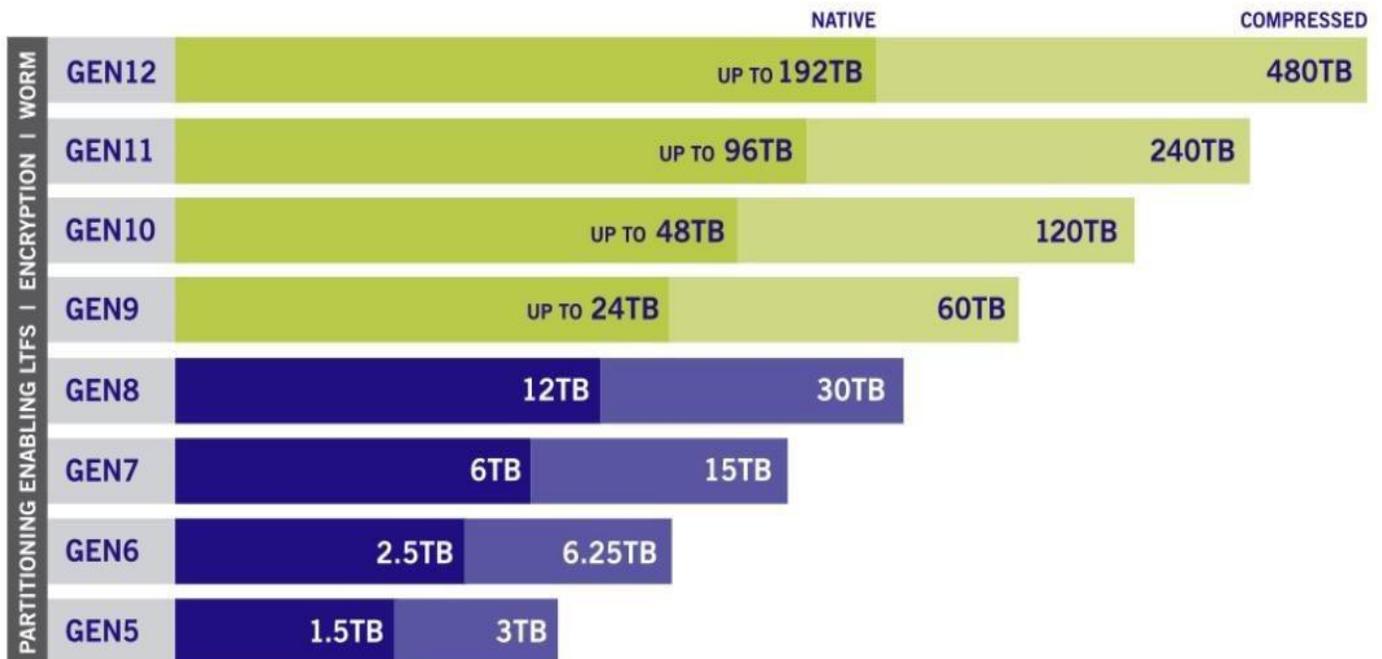
Tape in the "Cloud"- of course! Many cloud data centers own massive tape libraries for long-term lowest-cost data storage. Scientific users combining cloud and tape include CERN, the Argonne National Laboratory, and NASA. In broadcasting, where absolutely massive amounts

of digital film and television data require archiving, The Discovery Network is a top example. In education, USC (University of Southern California) uses tape-based storage to archive digital holdings in the cloud. Importantly, tape allows reduced size of Cloud data repositories by allowing “cold” data to be move off more expensive disk. Tape and “Cloud” are partners, not adversaries....

LTO Specifically for HPE NonStop Customers

Tributary Systems, HPE’s OEM Tape supplier, first introduced LTO 2 for attachment to HPE NonStop servers in 2003. Since then, five generations of LTO have been qualified by Tributary Systems, and future qualifications are in the planning stages. For the past 15 years, LTO tape drives have proven to be extremely reliable and robust while managing big data for the world’s most demanding customers. Today, LTO is the only tape technology HPE NonStop continues to employ in mission critical server applications.

LTO ULTRIUM ROADMAP ADDRESSING YOUR STORAGE NEEDS



NOTE: Compressed capacity for generation 5 assumes 2:1 compression. Compressed capacities for generations 6-12 assume 2.5:1 compression (achieved with larger compression history buffer).

SOURCE: The LTO Program. The LTO Ultrium roadmap is subject to change without notice and represents goals and objectives only. Linear Tape-Open, LTO, the LTO logo, Ultrium, and the Ultrium logo are registered trademarks of Hewlett Packard Enterprise, IBM and Quantum in the US and other countries.

And when you need HPE NonStop Server to Cloud Backup, Tributary has your solution ready now!

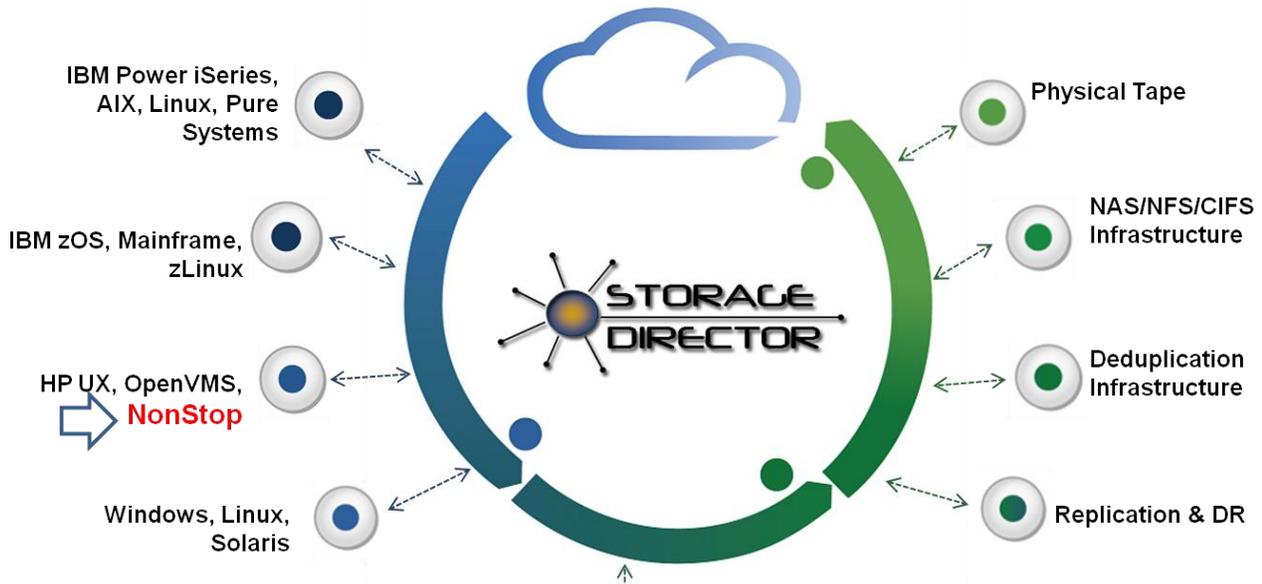
For NonStop customers requiring Cloud Backup, Tributary System's Cloud Object Storage is the solution. Employing advanced IBM COS technology coupled with TSI's proven Storage Director as the "front end", NonStop customers can transparently take advantage of Cloud Object Storage (COS) without any changes to their NonStop applications.

Storage Director, is a policy-based, tiered, and virtualized software product especially designed for backup which can be seamlessly integrated with any media, including tapes, disk drives, virtual environments and NonStop or other proprietary server environments, plus open systems. Storage Director can group data into different pools and apply different protection policies at different times across any storage medium simultaneously. TSI has gained a massive strategic edge as it has entered into a synergistic partnership with IBM to provide their latest Cloud Object Storage technology. Combining the capabilities of Storage Director while endorsing long-term archival to Object Storage is where TSI sees the data backup and retention market evolving. Tributary is the only company in the marketplace that can backup all NonStop mission-critical servers using a single solution. In addition to Storage Director's AES 256-bit encryption, data is also erasure-coded in the storage tier. From a performance standpoint, Tributary's solution can ingest data at a rate of 12TB per hour and restore at about 8.5TB per hour. Should a flash storage be used in the cache layer, the ingestion rate goes up to 37TB per hour and restores at 35TB per hour; these are metrics that are unmatched in the market. Thus, Tributary's IP, when combined with IBM's Cloud Object Storage solution, imparts exclusive cutting-edge data storage and management capabilities that can be well extended beyond public cloud models—into hybrid and on- premise environments—and also offers double-layered security for NonStop clients.

For more information visit www.tributary.com



Cloud Integration into IBM Cloud Object Storage (ICOS)



TSI's "All-Encompassing" Storage Director Solution offers NonStop to ICOS connectivity along with multiple other server/storage compatibility options!

All Backup Application Support: CommVault, Simpana, Tivoli Storage Manager, Symantec NetBackup, Symantec Backup Exec, CA Arcserve, Veeam