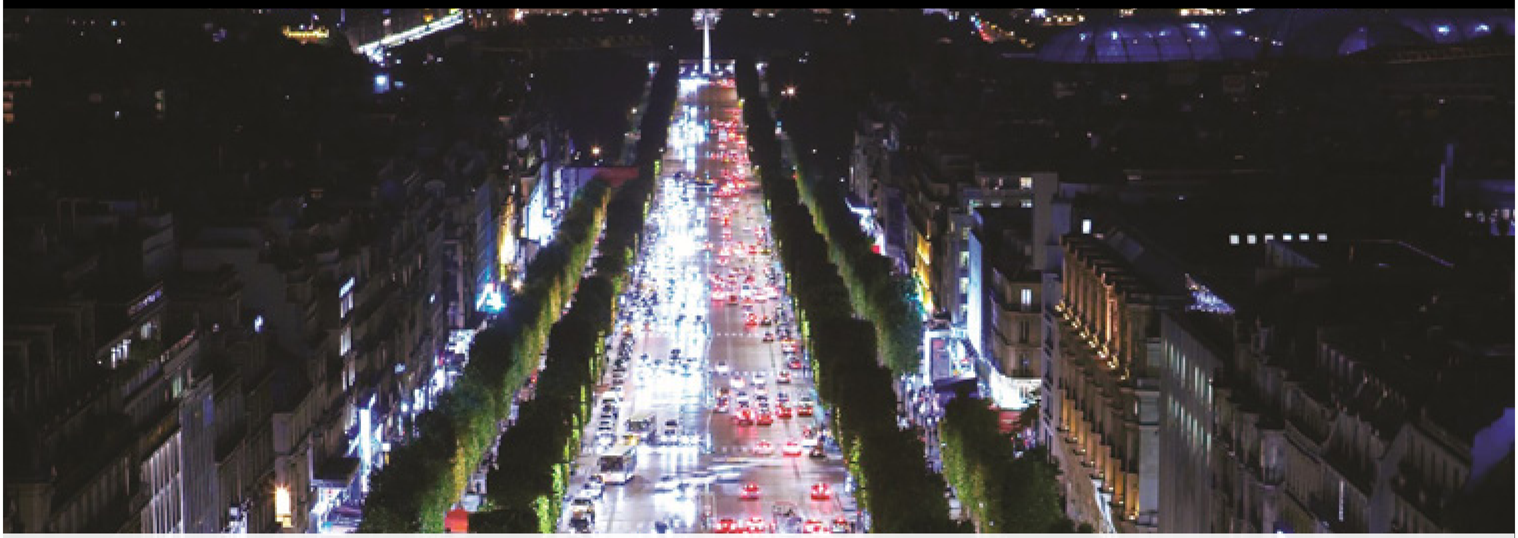
Tape IT

HP OEM NEWSLETTER – October 2011

Contents



IDC Research shows that tape usage remains strong for data protection across Europe

IDC have recently published a series of Country Spotlights on Data Protection for the UK, France, Germany and Italy (please click on the link to see a PDF copy of the country specific report). The report findings were based on studying country economic conditions combined with end-user survey-based research in order to show data protection investment characteristics within each country.

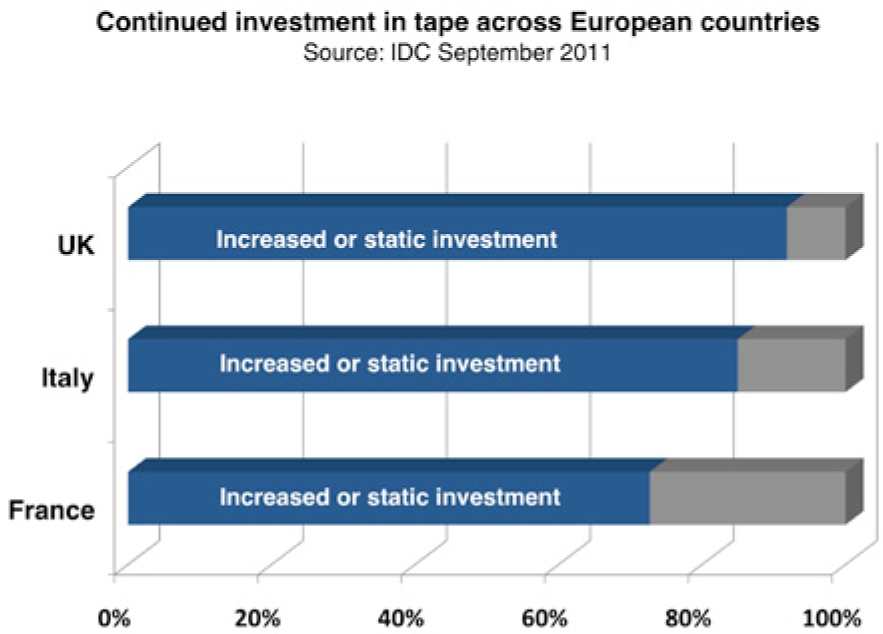
Note that these IDC studies were sponsored by EMC, and hence much of the commentary within the published report is disk-oriented. Despite this, the underlying data and trends support the ongoing strength of tape for data protection in general, and for data archive in particular.

Some of the key findings from the IDC Spotlight on Data Protection reports are summarized over the page.

Continued investment in data protection despite economic downturn

- IDC forecasts that French organizations' IT spending will recover faster than in other European countries. Storage technologies remain the key area of IT investment with 47% of French organizations planning to speed up storage investment in 2011.
- IT budgets have been freed up in Germany with 77% of companies planning to increase storage spend. IDC figures indicate that investment in both tape and disk technology is set to increase.
- IDC research shows that UK spending on storage systems and software showed robustness and performed above expectations in recent quarters. IDC expects the UK data protection market to remain strong.

Tape plays the central role



- 73% of the 98 companies in France surveyed either plan to increase (16%) or keep flat (57%) their spending on tape drives, tape libraries and tape media.
- Tape is still the prevalent data protection technology in Germany, despite disk storage growth.
- 85% of the 61 companies in Italy surveyed either plan to increase (35%) or keep flat (50%) their spending on tape drives, tape libraries and tape media.
- 90% of UK respondents claimed to use tape in their organization and only 8% claimed that migrating away from tape to disk was a priority at all. There are no signs of any significant drop-off in future spending on tape.

"Companies still view tape as a viable and cost-effective medium for long term data archiving". Daniel Bizo, IDC Analyst, June 2011

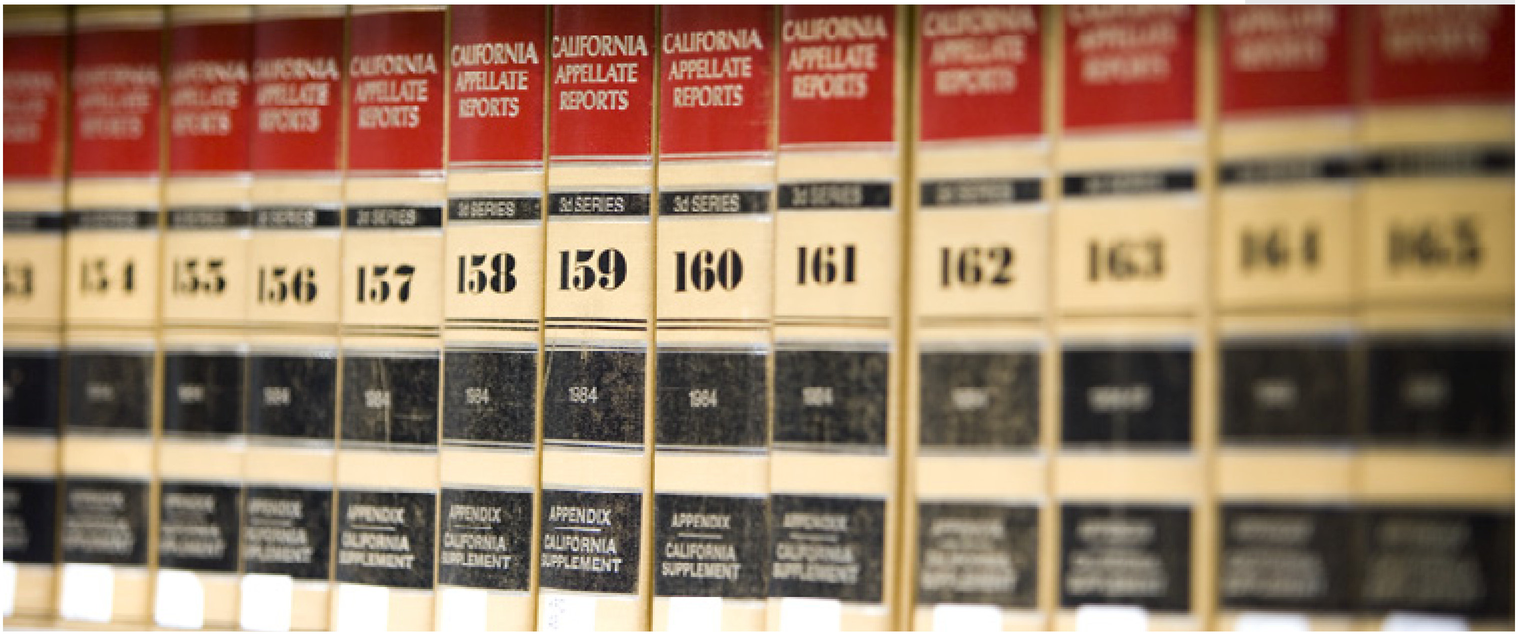
Archiving is the single biggest driver of storage spending

- Archiving data is the single biggest reason for storage spending in the UK; nearly half of the respondents named data archiving in their top three priorities for storage purchases.
- Archiving will attract most future storage spending in Germany.
- Document digitalization is seen as a way to improve processes in France. A large number of projects especially in the public sector are expected to use document digitalisation in 2011. This process directly impacts the amount of data French IT organizations have to manage and protect.

Country specific commentary

1. Italian companies are still investing more in tape-based storage solutions than European organizations on average.
2. There is a very effective ecosystem built around tape in the UK, including best practices and tape vaulting service companies.
3. Addressing power and cooling demands is becoming top of mind in Germany.

The IDC research and spotlight reports show that while the macroeconomic environment is having a harsh impact on IT budgets, relentless data growth has meant that spending on storage and data protection remains a priority. Budget-savvy IT Managers across Europe are balancing the requirement for higher performance solutions with the need to control storage costs. Consequently tape remains a central data protection technology with the majority of users continuing to invest in tape-based solutions to complement disk. In particular tape is increasingly providing the most power-efficient and cost-effective solution to the problem of long-term data archival.



Video surveillance market takes notice of LTO tape

Video Surveillance systems are everywhere and create an enormous number of digital video file assets. High definition (HD) and Megapixel systems in particular are becoming more commonplace. New security systems employing the latest IP (Internet protocol) camera technology have introduced video surveillance capabilities to an even broader marketplace, generating even more assets to store, protect, and retain.

The financial burden of digital storage on overall surveillance spend has increased exponentially over the past 10 years, while at the same time vastly increasing the usefulness of CCTV systems as investigative tools. As a result a number of new appliances have been introduced aimed at reducing the TCO of longer term video asset retention. These new appliances employ a multi-tiered storage approach, combining disk with LTO tape drives to support greater scalability, extended file retention, and reduced costs.

The growing video surveillance storage market

Analysts are predicting a rapid growth in the storage market for video surveillance over the next few years as a consequence of growing numbers of video surveillance cameras with increasingly sophisticated data capture. The latest forecast from IMS Research[1] suggests that the worldwide market for video surveillance storage will exceed $5.6bn in revenue and 3.2 exabytes[2] of capacity in 2013.

The video surveillance storage market has already evolved over the last decade, moving from VHS to DVR (digital video recorders) and later to NVRs (network video recorders), and more recently to IP SAN-based storage (internet protocol storage-area-networks). The IMS research also suggests that IP SAN storage will grow faster than the any other storage type between 2008 and 2013, and that horizontal storage platforms (i.e. those supporting video surveillance across the lifecycle from capture to archival), will provide almost 50% of the enterprise and IP storage market used for video surveillance by 2013.

Today's video storage challenges

Complying with regulations – every organization must have a method in place for managing video content, regardless of the intent or purpose behind the surveillance camera. Legal policies in many US states and European countries require video surveillance data to be stored for extended periods of time, often up to two years or more.

Complexity – there are a multitude of different systems and media types, each designed for a single purpose and each unable to interchange with other systems. Data may need to be migrated from one solution to another for process and storage purposes. This adds a level of complexity as well as time and effort in keeping track of the footage, and importantly being able to find the footage when required.

Difficulty in scaling up to keep pace with data growth – growing amounts of video surveillance equipment, increasing definition and file size, and the need to retain data for longer all add pressure to video surveillance storage capacities. Organizations may be forced to write over or purge data in order to free-up storage, risking non-compliance with regulations.

[1] IMS Research published in April 2010 : http://imsresearch.com/press-release/Video_Surveillance_Storage_Market_to_Exceed_$56bn_by_2013&from=
[2] IMS Research published in February 2010: http://technology-press-release.com/index.php?start=378

Video surveillance asset management (vSAM)

Video surveillance asset management (vSAM) is gaining recognition as a way to bring "best practices" to the expanding storage market, supporting data growth while controlling costs. Multi-tier storage management and video retention policies automatically move video to less expensive storage media such as LTO-5 tape which dramatically improve per-gigabyte storage costs and make it affordable to retain rather than overwrite video.

Managing video assets through the lifecycle means that users can take full advantage of megapixel cameras, 30 frames per second recording, high-quality bit rate video images, without resorting to expensive primary storage.

A number of appliances have been introduced that incorporate vSAM; instead of simply overwriting the previous day's, week's, or month's captured video assets on primary storage or storing massive amounts of mostly low-value data, vSAM can relocate video data, in it's entirety, to LTO tapes.

Five reasons for LTO-5 in vSAM

1. **Make the most of expensive primary storage** – capture video in the highest quality and at the highest performance, and then migrate files to lower cost LTO tape with high speed streaming to free up the original media. There is no need to lose files by overwriting media.
2. **Scale capacity without scaling budget** – expand capacity and retention periods by purchasing only additional LTO tapes so that customers can "pay as they grow" by simply purchasing additional offline media as capacity expands. In contrast, the traditional hard disk only solution requires the purchase of additional disk-based storage units as well as the media. As soon as the unit is filled, customers must purchase an entire new disk system if they intend to expand their video retention resulting in periodic outlay of substantial amounts of money.
3. **Deliver long-term retention** – LTO tape media is specified with a shelf-life of up to 30 years and can therefore dependably retain assets for compliance purposes.
4. **Easily find files again when needed** – indexing, thumbnails and low-resolution companion files enable fast location and play back for any videos of interest even when they are offline.
5. **Every day savings** – LTO-5 media costs about four cents per gigabyte based on current market prices, while enterprise class hard disk systems typically cost 20 cents per gigabyte. Additionally there are significant power and cooling cost savings. Unlike disk, video assets retained on LTO-5 tape are offline, only requiring power when a tape is mounted into a drive and the file retrieved.

"Every time I calculate power consumption for tape systems vs. disk systems, tape systems win. The reason for this is that tapes in slots take up no power at all; tape drives use very little power while they're not doing anything, and you need far fewer tape drives than you need disk drives. You buy the disk system once; you power it all day long every day." Curtis Preston[3]

[3] Backup Central Blog, April 2011 see - http://www.backupcentral.com/mr-backup-blog-mainmenu-47/13-mr-backup-blog/376-have-we-put-tape-out-to-pasture-too-soon.html

Tape's continued cost advantage over disk – a TCO Study

A recent report from analysts Enterprise Systems Group (ESG) details the savings to be made by long-term storage of data on tape as opposed to disk.

View the webinar from ESG's Mark Peters or read the associated whitepaper for more information.

A further TCO study by The Clipper Group[4] showed that when storing data over a 12-year period, spinning disks used 238 times more energy than a tape-based archival solution.

Example - Sans Digital Video Surveillance Appliance (SD VSA)

"Using hard disk only systems —the traditional approach— for all of your video surveillance storage means you're paying too much, you're sacrificing retention, and you're probably missing out on the highest quality recording you can afford" Sans Digital 2011

Sans Digital of California USA, produces Video Surveillance Appliances (SD VSA), that are focused on the data record, store and manage aspects of forensics-based video surveillance. These appliances deliver video data lifecycle management through multi-tiered storage.

How Sans Digital works with LTO-5 Tapes

The Sans Digital VSA enables low-resolution companion files to be stored on hard-disk based SAN and NAS storage devices, while the higher-resolution original video asset can be migrated, under full management, to long-term storage on LTO tape.

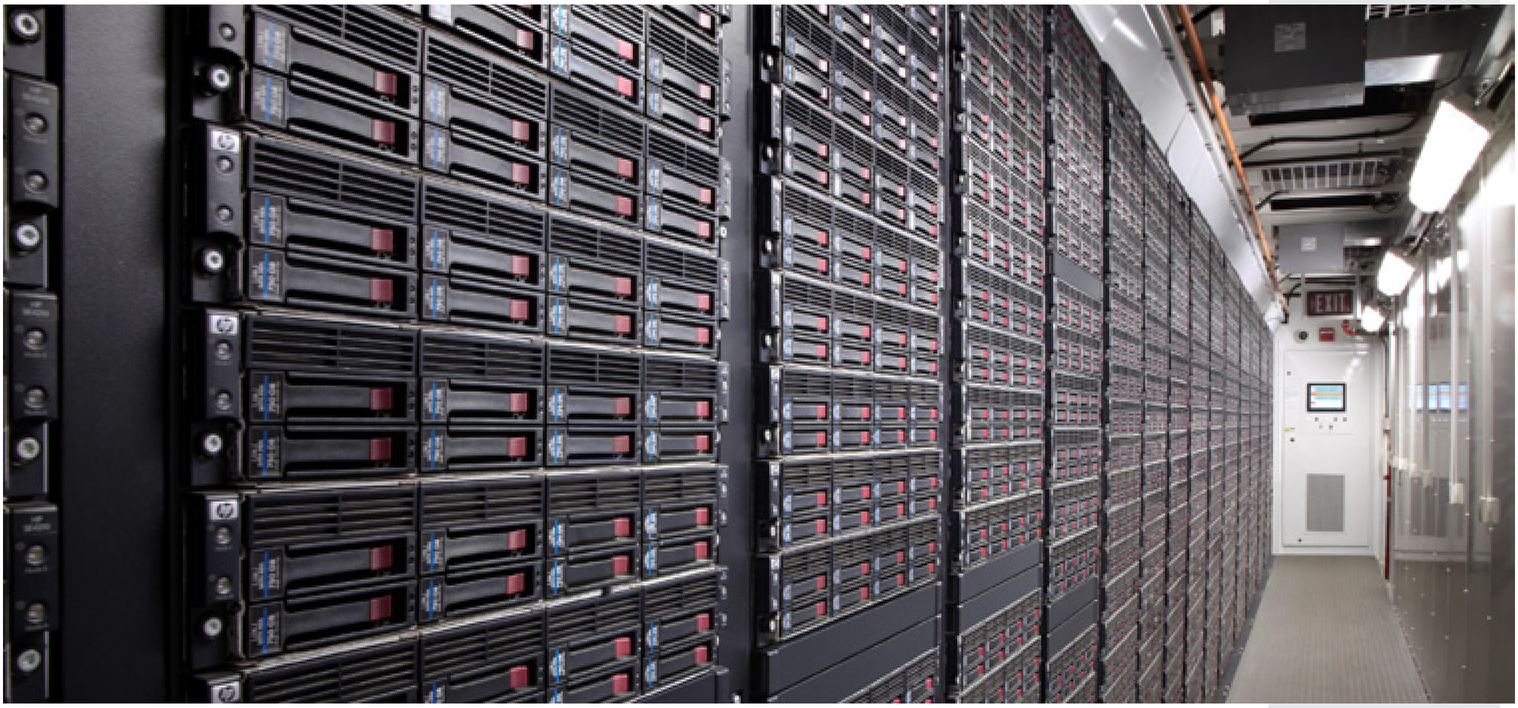
SD VSA can mitigate the cost of a traditional hard disk-only storage system that rises steeply and steadily for each incremental retention period by using tape as a secondary tier of storage.

"The data tape based architecture, integrating LTO-5 into a SAN or NAS vSAM environment is by far the most affordable, managed, long-term video storage infrastructure. It has a modest initial acquisition cost and then user's only need to add in the cost of purchasing additional data tape cartridges." Sans Digital 2011

[4] In search of the long-term archiving solution, The Clipper Group, December 2010

Why tape is more extendable than either HDDs or SSDs

Areal density has long been the key measure of the extendibility of storage devices, including hard disk drives (HDD), tape cartridges and solid state flash drives (SSD). Increases in areal density generally result in higher capacity storage within the same footprint without adding to cost.



The importance of areal density

Areal density is defined as the number of bits stored per unit area. Research and development of technologies often focuses on ways in which this areal density can be increased, storing more bits per unit, (typically gigabits per inch), without creating issues of noise and instability in the read/write process. Areal density projections are the basis of technology roadmaps; they define the potential storage capacity and performance of any storage technology.

Over the last six years tape, flash and HDD have been characterized by annual areal density increases of around 40%. This increase rate implies that over the last six years areal density has increased by a factor of 8X. The question becomes, 'how sustainable is this growth for each technology in the future?'

Why tape is more extendable in the long-term

The potential for sustained annual areal density increase rates for tape is significantly greater than that for SSD and HDD due to a number of factors:

1. **Tape starts ahead of the game** - the present tape bit cell area and bit cell volume is a factor of 200 – 300x larger than the respective SSD and HDD bit cell area and volume. This provides flexibility to increase bit density within the cell without concerns over bit stability.
2. **Tape offers greater stability** - larger bit cell area relative to HDD and SSD means that tape areal density will increase with minimum impact on bit stability. HDD in particular requires increasingly narrow track sensors, and additional assistance to manage the thermal issues intrinsic to disk media durability, in order to overcome any instability caused by higher bit densities.
3. **Tape is independent of lithographic technology advances** - areal density increases in SSD media is reliant on enhancements to lithographic technology beyond its current roadmap. This is also a factor in the ability for HDD to increase its density. The areal density of tape, on the other hand, remains unconstrained by lithography; the necessary areal density gains could come from improvements in track pitch alone.
4. **Tape extensibility is relatively free of cost constraints** – cost is a huge component in the ability to extend SSD storage due to the complexity of storage wafers. Cost also has a bearing on future HDD progression which requires transition to innovative technology in order to overcome technology limitations.

Conclusion

In a recent InfoStor Blog, Henry Newman refers to the ability of tape to offer sustained annual density increases up to double those of HDD or SSD, to refute the claims of tape's imminent demise.

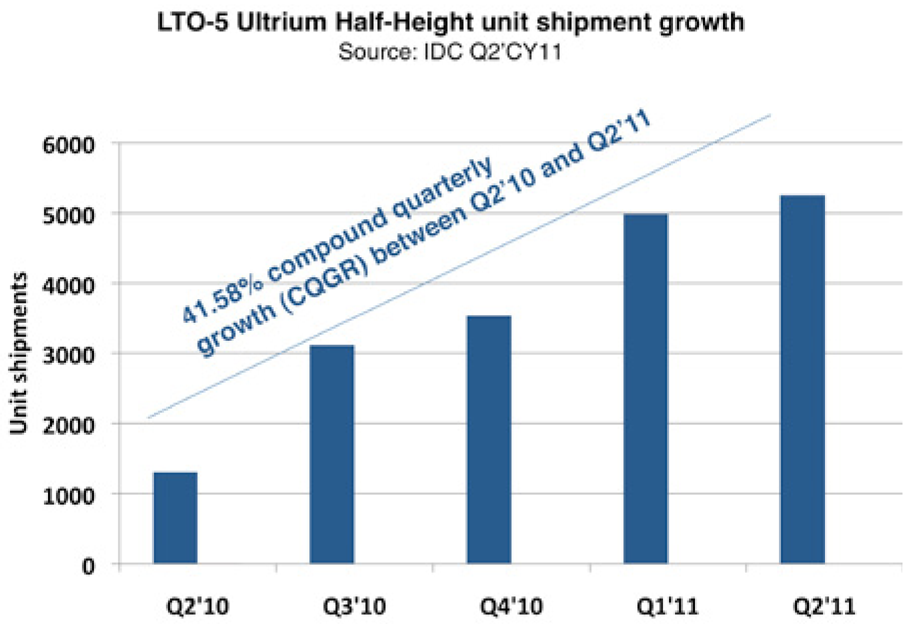
"Unless there is some major technology breakthrough, I do not see how storage hierarchies of tape disk and flash change"
Henry Newman, InfoStor

LTO-5 Half Height (HH) Tape Drive and LTO Tape Automation market continues to grow in 1H CY11

IDC's newly released WW Tape Drive Branded Market Share[5] data paints a positive picture for the worldwide LTO-5 HH tape drive and LTO tape automation markets in 1H 2011 and reflects continued widespread end user and partner recognition for the value that LTO tape provides. According to IDC, the world-wide branded tape drive and automation market was worth $915m in the first half of calendar year 2011.

LTO-5 Half Height Tape Drive shipments continue to ramp in 2011

LTO-5 half-height drives remain the growth sweet spot in the stand-alone tape drive market, providing an optimal price performance combination and growing (in volume) at a compounded annual quarterly rate of 41.58% between Q2 CY10 and Q2 CY'11.



LTO Tape Automation delivers growth

WW LTO automation revenue increased by approximately 5% year-on-year between 1H CY10 and 1H CY11. This increase was the result of strong year-on-year revenue growth of 25% in the LTO automation 101-500 slot category. There was also unit growth of 2% and strong revenue growth of 4% in the 21-100 slot automation categories.

The strength in the tape automation market is evidence to support the upward revisions made to IDCs annual tape automation forecast published in June 2011[6], which included an increase to the midrange tape library forecast of 30% year on year between 2010 and 2015 with revenues raised by as much as 55%. The upward trend in tape library figures clearly indicates that end users continue to recognize the value of automated tape backup and archive in the data center. Tape continues to uniquely deliver a combination of high capacity and low cost of ownership for dependable long-term data retention.

[5] IDC Q2 2011 Branded Tape Market Segmentation Report, published September 2011
[6] Worldwide Tape Automation 2011-2015 Forecast Update and 2010 Vendor Shares, June 2011