GET THE FACTS:
LTO Tape Reliability $aves

"It's not the things that people don't know which hurt them; it's the things they know which ain't so."   - Mark Twain

Don't listen to the hype. Tape remains one of the most reliable storage solutions available.

Some of the hype said that 71% of tape restores fail, which is not true. This figure is commonly attributed to Gartner, which never produced a paper with that statistic. W. Curtis Preston, Mr. Backup at BackupCentral.com, thoroughly researched and explained this misquoted statistic in a recent blog post at www.bit.ly/curtis71.

The Truth About Backups

The truth is that most backup and restore failures are not due to hardware failures whether the backup was to disk or to tape. Most backup problems are attributed to administrative or software miscues.

Despite some of the so called "facts" that are cited – or more accurately: myths that are erroneously repeated – tape is actually one of the most reliable solutions available, with bit error rates that best those of disk.

PUBLISHED VALUES FOR BIT ERROR RATE (BER)

Tape drives		
Midrange (typical LTO-7 Ultrium drive)	Hard Error Rate	1×10^{19} bits

Disk (FC, SAS, SATA)		
Enterprise FC/SAS	Hard Read Errors per Bits Read	1 sector per $1 \times 10E^{16}$ bits
Enterprise SATA	Hard Read Errors per Bits Read	1 sector per $1 \times 10E^{15}$ bits
Desktop SATA	Hard Read Errors per Bits Read	1 sector per $1 \times 10E^{14}$ bits

BER is a measure of the effectiveness of reading data from disk or tape drives. In the case of a unrecoverable error, BER is the number of user bits transferred between two unrecoverable error events. To put this into data storage terms, for LTO-7 tape, that would be 1 error event in 1.25 exabytes or every 200,000 LTO-7 cartridges compared to 1 error event in 125 TB or every 20 enterprise 6 TB SATA disks. LTO Ultrium tape products are designed to deliver outstanding performance, capacity and reliability.

Disk and Tape Play Key Roles in the Storage Hierarchy

Disk can provide fast recall performance to help address service levels that demand quick response to customer inquiries. Tape, being offline and portable, can provide the ultimate data protection needed to protect these valuable data assets against the corruption and threats that can attack online data such as software errors, virus, hacker, or disgruntled employee. As the disk data ages and becomes infrequently accessed it should be moved to tape to help conserve the energy needed to power and cool the spinning disks and to reduce overall storage costs. Tape has been shown to have about 15 times lower cost than disk for long term storage of data (see the Clipper Group white paper on long term archive TCO at Ultrium.com).

LTO technology has long been a core component of successful data storage best practices. Low cost and reliable, LTO Ultrium tape storage can provide for years of protection at a cost much lower than other storage solutions.

The reality is that a strategic tiered blend of disk and tape technologies can help organizations address performance, data protection, cost and energy control, compliance, security and long term retention requirements.

QUICK QUIZ - Which of the following best describes LTO Ultrium tape?

- ☐ High capacity and streams very fast
- ☐ Provides read after write verification for reliable writes
- ☐ Offers servo tracking to help ensure precision head alignment
- ☐ Has better bit error rates than disk
- ☐ Provides vendor options with up to 250,000 drive MTBF hours
- ☑ All of the above

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