

## LTO-3 Drive Performance with Compressible Data

### Comparing HP's LTO-3 Tape Drive and IBM's LTO-3 Tape Drive

In today's fast-paced business environment, data backup windows are increasingly important. The best way to optimize your data backup window is to select a tape drive that provides the highest performance for your data set. According to IDC analysts, of the available tape technologies today in the midrange sector, the LTO-based tape drive technology is the clear winner. LTO tape drives commanded 91.4% of the market share for midrange tape drives in Q3 2006.

High capacity and performance contribute to the success of the LTO-3 tape drives in the marketplace. Performance specifications of this type of drive include:

- 400 GB of capacity/ 800 GB with data compression
- Transfer rate of 80 MB/s (native)/ ~160 MB/s (with data compression)

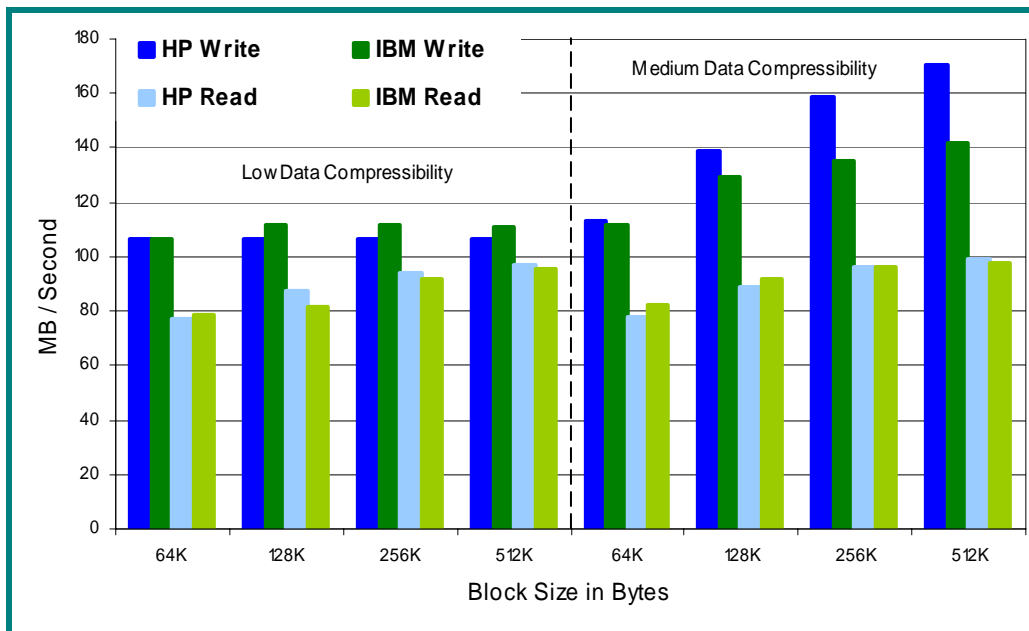
Once you determine that LTO-3 tape drive is the one for you, the next decision is which one to use. Percept Technology Labs, an independent 3<sup>rd</sup> party lab compared two LTO-3 tape drives available on the market today –HP's StorageWorks Ultrium 960™ tape drive and IBM's TotalStorage 3580™ tape drive.

Both the HP LTO-3 tape drive and the IBM LTO-3 tape drive offer similar feature sets. Important things to consider when comparing tape drives:

- Write/read speed (with and without compression)
- Block size

As part of a competitive study that Percept Technology Labs performed on two mid-range tape library systems, HP LTO-3 tape drive performance was compared to the IBM LTO-3 drive. A baseline performance for each tape drive was established by streaming data to the tape drives and then assessing the data throughput by timing the write/read operations. The graph below shows the comparative throughput performance of the HP LTO-3 tape drive vs. the IBM LTO-3 tape drive.

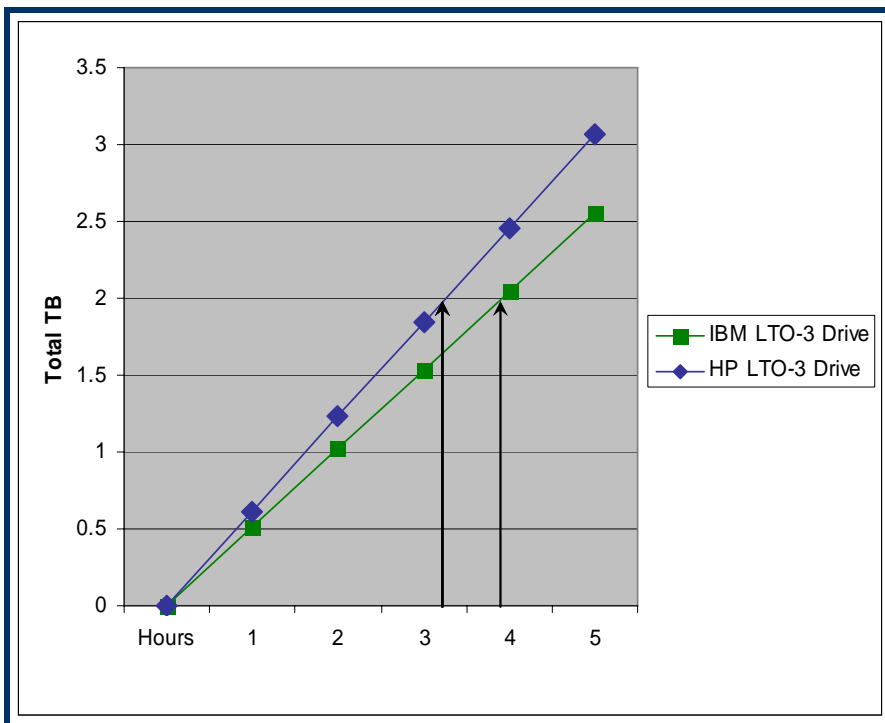
**Figure 1: Drive Baseline Write / Read Rates**



Each write operation transferred 20 GB of data in the form of a different compressible pattern. The write operation was followed by read commands. Each write/read was performed using varying block sizes from 64 KB to 512 KB in order to measure the effect of data block size on transfer rate. The tests results show that, in the most common block size range (64KB to 512KB) using medium data compressibility, the HP LTO-3 tape drive offers the fastest data transfer rate. When the data is less compressible, the difference between the two drives is dramatically reduced.

The difference between the HP and IBM drives when using the 256KB block size is 23.4 MB/second while the difference between the drives when using the 512KB block size is 28.5 MB/second. When backing up a significant amount of data, this difference is pronounced. If your company backs up 2TB of data nightly, you can see the time difference in the graph below. There is an approximately 15% increase in speed seen with the HP LTO-3 tape drive.

**Figure 2: Hourly Delta Between Tape Drives Using 512KB Block Size**



This graph shows us two things. The first thing is the time difference when backing up 2 TB of data. It will take 3.9 hours to back up 2 TB of data using the IBM drive vs. 3.25 hours using the HP drive. This equates to approximately 40 minutes difference. Additionally, you can see that in 5 hours, the IBM drive will have backed up a little over 2.5 TB of data versus the HP drive, which has completed a 3TB data backup in the same time span.

Two important results of tape drive performance are a shorter backup window and the ability to back up more data in a given amount of time. When backing up compressible data, Percept found that in the medium data compressibility arena, the HP LTO-3 tape drive provides these results for its users.

#### About Percept Technology Labs

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