

## SIX QUICK TIPS

# Establishing A Tape Backup Replacement Cycle Or Policy

## Keep Tapes In Top Condition To Maintain Data Integrity

by Chris A. MacKinnon

**TAPES AND TAPE DRIVES** have been part of robust and reliable backup plans for years. But there are common mistakes people make that can increase the chance of tape drive failure. However, if you establish a tape backup replacement cycle or policy, your tape backups should be reliable, last longer, and save you money in the long run.

### Performance Means Everything

Sending data to tape drives today becomes a bigger challenge as drive technology increases in both capacity and throughput. Doug Cole, partner with LH Computer Services ([www.lhcomp.com](http://www.lhcomp.com)), says with LTO-5 rated at a line speed of 140MBps, it is often difficult to keep those drives spinning at a consistent rate. "It's

#### Most Sensible Tip:

### Create A Multilevel Backup Strategy

When it comes to data protection, don't keep all your eggs in one basket. Tim Willis, marketing manager with BackupAssist ([www.backupassist.com](http://www.backupassist.com)), says a multilevel backup strategy can prevent several problems. First, because tapes wear out, don't rely on a single backup. Second, make sure your window of coverage is large enough; most people only notice data loss days after it occurs. Finally, don't rely on a single local backup. Should your primary backups be destroyed, having copies of critical data offsite (e.g. in the cloud) means you always have access to your data.

#### Best Tip:

### Choose The Right Media

There are many options to consider when selecting media for your tape library. Doug Cole, partner with LH Computer Services ([www.lhcomp.com](http://www.lhcomp.com)), says experience has proven that selecting cheaper, less expensive brands of media tends to lead to more retries and I/O errors. "Always shop pricing," he says, "but often simply selecting the lowest cost media will lead to more headaches and less dependable backups or archives."

important to avoid starting and stopping your tape drives," he says. "Implementing a D2D2T (disk-to-disk-to-tape) scenario can often improve this performance bottleneck and avoid extra stress to both the tape drives as well as the media, extending the life of both."

Tape drives have a specified duty cycle, which is an indication of the workload a drive can endure each day. According to Tim Willis, marketing manager at BackupAssist ([www.backupassist.com](http://www.backupassist.com)), while a drive with a duty cycle of 100% may operate continuously with no ill effects, a drive with a duty cycle of 50% should not be operated for more than 12 hours a day.

"A simple way to gauge the reliability of a tape drive is to find out the MTBF

(mean time between failure) as specified by the manufacturer," Willis says. "You should note, however, that the MTBF is usually specified at a certain duty cycle. For example, consider a Travan tape drive with a MTBF of 370,000 hours at a 20% duty cycle. The drive will only have an average of 370,000 hours between failures if it is run less than 20% of the time (about 4.8 hours per day). Running the tape drive for any longer will reduce the reliability of the drive."

### Don't Underestimate Cleaning, Maintenance & Certification

Cleaning magnetic data tape definitely has its benefits. Eugene S. Hahn, general manager at Tri-Magnetics ([www.tri-magnetics.com](http://www.tri-magnetics.com)), says that using a cleaning blade can remove up to 95% of dropouts (data loss). "Burnishing also removes contaminants from the tape surface," he adds. "You can use contaminant removal on the oxide side and on the Mylar side. Also, when re-tensioning a drive, use two-pass cleaning from EOT (end of tape) to BOT (beginning of tape)." Hahn says because tape can shed debris, the contaminants or clumps of oxide can pose hazardous to the write and read heads.

LH Computer Services' Cole says that keeping the environment surrounding the tape library clean, including the regular replacement and cleaning of cabinet filters, is very important. "Dirt and dust particles that make their way into the tape path will only lead to problems," he says. "Regular scheduled cycling of your cleaning tapes through each drive is recommended. Follow the drive manufacturer's best practice schedules."

Hahn also points out the many benefits of a tape certification program. If a company wants to redeploy used tape to other departments or divisions, they can submit them to a certification program. Hahn says each tape is physically inspected for mechanical defects and is completely eradicated to erase the previous data, which will ensure an accurate write and read evaluation of the test pattern that is applied.

### Consider Capacity & Quality

Tape drives use compression to fit more data on each tape. BackupAssist's Willis says some files, such as video and sound files, are, however, hardly compressible, so he says not to rely too heavily on the compressed capacity advertised when choosing a tape drive. "You should also choose a tape capacity that will allow for future data growth," he says.

According to Tri-Magnetics' Hahn, it's also important to grade tape into quality levels to determine the right allocation of a tape to its proper storage usage. "For example, a marginal error cartridge may be safely used as a scratch cartridge for limited use," he says. "And a higher standard should be expected from an offsite cartridge because a restore may be required from it after having been in storage for several years."

### Archive & Monitor Tapes Regularly

BackupAssist's Willis says that as an added precaution, tape should be taken

offsite periodically so that a backup always exists at a second location. "To meet legal compliance regulations, some businesses need to store many types of data (email, documents, financial records, patient medical records, etc.) for long periods of time," he says. "In some cases, information must be preserved indefinitely."

Willis says all good backup strategies should allow you to restore from the previous working day. "Sometimes, however, data loss may not be discovered for days or weeks after it occurs," he says. "Your

backup strategy should allow you to restore data from previous weeks, months, and even years. This is best achieved by archiving some of your tape backups. Archived tapes are stored permanently, preferably offsite in a secure location, and are never overwritten. As a minimum, yearly and quarterly tapes should be archived, so that data will be available for many years to come."

According to Tri-Magnetics' Hahn, it is essential to monitor tape usage and error rates to determine the condition and reliability of the tape in use and, in turn, the need to evaluate or retire. "When an error becomes present, it is time to closely monitor the tape or transfer the data and submit the tape for evaluation and certification service," he says. "This service determines the historical data of each tape and the condition before the tape undergoes eradication, cleaning, and certification. Not only will this type of service determine the current condition of the tape, but also the ability to accurately write and read to the tape without one data mismatch." ■

## BONUS TIPS

#### ■ Use the right transfer rate.

Tim Willis, marketing manager with BackupAssist ([www.backupassist.com](http://www.backupassist.com)), says that if data transfer to the drive is considerably slower than the drive's data transfer rate, the tape drive will suffer from start-stop motion as it waits for

more data to arrive. It's easy to imagine the wear and tear this places on the tape, and how the integrity of data on the tape can be severely degraded.

■ **Handle and store your tapes properly.** Be careful not to drop tapes when

carrying them, and store tapes in a sturdy, fireproof safe to keep them out of harm's way, Willis says. When operating tape drives, keep them away from carpets and other sources of contaminants.

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