

## Does Recycling Tape Make Sense?

Despite warnings, the market for recertified data cartridges remains big. The lower cost of recycled tape can be alluring to those who are looking for ways to manage cost in an environment of ever-shrinking operating budgets. Should buyers beware or can they be confident when utilizing recertified media?

### Go Green, Save Money and Recycle By Peter Groel

Recertified data cartridges are available at a fraction of the cost of new cartridges. Recertified tapes can be a great buy or they can pose a risk to data and to data storage equipment. The purpose of recertification is twofold: the data of the original cartridge owner should be completely erased, and the buyer should be completely aware of the quality of the cartridge.

On the surface, it is reasonable to think that data cartridges should be perfectly safe to be reused by another organization. Most data cartridges are kept in a well-maintained environment. Tape is mainly an archive medium; cartridges are often written just once and likely never read again. After all, vendors of new cartridges specify thousands of passes for their cartridges. While all this may be generally true, significant potential problems remain with traditional recertification processes.

A recertified cartridge offered for sale may have been used thousands of times and may be past its lifetime. Even if its past use is still within the specified number of passes, it could have been used in contaminated tape drives, which have worn the tape by scratching its surface and by damaging its edges. Tape wear creates debris. Debris can stick to the tape surface and create areas from which previously recorded data cannot be recovered. Debris can also be transferred out to the tape drive itself. Once contaminated, a tape drive can damage a good cartridge.

Is it possible to know the quality of a used cartridge? Unfortunately, there is no industry standard.

#### Erasing Original Data

Most organizations that sell recertified cartridges offer some protection to the original owner of the cartridge such as erasing the data before the cartridge is sold. Erasing may simply mean that a new label is written at the beginning of tape. When the cartridge is later read in a tape drive, the drive will merely read the new label and will not access any previously written data. While re-labeling offers some protection, the previously written data are still on the tape.

Erasing sometimes means that the entire tape has been written with new data. Although this offers a higher degree of protection to the previous owner that the data are removed, it is still possible to access the overwritten data. In order to securely remove old data, erasing must be done with a magnetic field that is several times the strength of the field that wrote the original data. It is never sufficient to simply overwrite old data with the same type of drive that wrote the original data.

#### Cartridge Quality

Reliable information about cartridge quality can be elusive. Some organizations use the number of previous mounts as an indication of the remaining life-cycle of the tape. But the number of times a tape was previously mounted is a meaningless indicator of cartridge quality. Counting the number of write errors during the overwrite process is also a poor indication of the cartridge quality. A low error count during the streaming write of the overwrite process does not translate into an equally low error count with a different tape drive at the buyer's location.

There are eight rules of recertification.

1. Clean the tape. Clean tapes are perhaps the most important element of a well-maintained tape library. Used, and even new, tapes can carry debris that will damage your tape drives. The recertification process should include cleaning the entire tape.
2. Erase all data not merely the first few records. The magnetic field strength of the erase head should be many times that of the write head of the tape drive. This will ensure that none of the old data remain.
3. Check the tape edge. Because the edges of tapes typically wear first, worn edges are an important early indication of future problems.
4. Check the cartridge history. The previous performance of the cartridge is an excellent indicator of its future behavior. Fortunately most tape cartridges contain a memory chip that records the entire history of the cartridge. This step should not be overlooked during recertification.
5. Do no damage. The damage caused by the recertification process can be subtle and not immediately apparent. While writing a cartridge to its maximum capacity may seem like a good way to erase the data and to check its quality, tapes are written in a serpentine fashion which requires numerous passes of the tape through the drive's tape path. This reduces the tape's life cycle. Erasing the data and cleaning the tape should be done in one single pass.
6. Define the recertification quality score. As part of the recertification process, all available tape and cartridge history information should be compressed into a single cartridge quality score number. Buyers can then require that cartridges have scores above their individually determined quality score threshold.
7. Inform the buyer. When was the tape erased (if it was erased), by whom, and with what equipment? Was the tape cleaned, the tape edge checked, the cartridge history evaluated? What were the results of these and other tests? This information should be kept for each cartridge. The best place for it is right in the cartridge, in the cartridge memory chip containing the tape's history. The memory chip contents are instantly accessible through the tape drive whenever a cartridge is loaded. Low-cost, stand-alone devices that access and display this information are also available.
8. Time equals money. Be economical. The recertification process should be fast and cheap. Because writing a tape to capacity can take more than two hours, overwriting increases the cost of the recertification process. To be economical, specially designed equipment is needed that cleans and tests the tape in a single pass in just a few minutes.

If a vendor follows most or all of these rules, the right purchasing decision was made. Go green, save money, and recycle!

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