

# Best Practices for Responsible Disposal of Tape Media

*The Environmental and Economic  
Benefits of Recycling vs. Destruction*

**White Paper**

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## Introduction

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Tape media continues to be the most widely used technology for storing and protecting digital data. Beginning in the early mainframe era and continuing to today, magnetic media continues to provide the most cost effective means for storing and protecting digital data. Nearly every organization uses tape for daily and weekly backups as well as long term archive storage. Even a medium size enterprise may consume hundreds of tapes yearly and for the largest enterprises, usage of thousands of tapes per year is very common. In managing tape media, organizations are challenged with the task of disposing of tape properly when it reaches end of life. Tape disposal is not a trivial matter for two major reasons. First, tape contains valuable company information and this information must be either erased or destroyed so that it does not fall into the wrong hands. Second, tape media is not a biodegradable material and it is highly desirable to eliminate it from the solid waste stream. This white paper will examine the issues that impact tape media disposal and will make recommendations for its responsible handling and disposition.

### **Tape Media Background**

Virtually every enterprise uses tape media for protecting and storing digital data. In its many shapes and sizes, magnetic tape media has served every computer from the mainframes of the early 1960's to the latest computers of the 2000's. From the 100 megabyte reel tapes of 1960's to the very latest LTO formats approaching 1 terabyte of data per tape, tape has been consistently used for digital storage. All types of digital information is stored on tape including engineering data, financial data, email, and unstructured file system data and the use of tape media is growing sharply. The cause for this increase is two fold. First of all the total amount of electronic information is growing sharply. In 2000, the University of California Berkeley completed a seminal study on the growth of digital information. The Berkeley study found that 93% of all newly created information was digital and that the amount of digital information is doubling every year. At the same time, there is increasing legal and regulatory pressure to store electronic information longer. Much of the data that tape contains is governed by federal and state regulations such as Health Insurance Portability and Accountability Act (HIPPA), Gramm-Leach-Bliley Act, Sarbanes-Oxley Act and California SB 1386. Federal and state regulations mandate that the sensitive information contained on tape be protected. This makes the disposal of tape media a serious concern to the public and private sectors. Depending on the violation, improper disposal of tape media could result in fines or other serious penalties.

### **Environmental Concerns**

One difficulty with tape media disposal is that tape media is not a biodegradable product making it a challenge to dispose of responsibly. The plastic and metal components that make up tape are destined to become solid waste and sit in landfills for hundreds of years. The best landfills are not completely tight throughout their lifetimes and a certain amount of chemical and metal leaching will occur. There is also a risk that tape media might end up in an illegal land fill or be incinerated, releasing toxic material into the atmosphere. Low cost bidders for media disposal, for example, may be working through brokers to send media to developing countries or to illegal waste dumps in the U.S. to reduce disposal costs, so be careful! Your tapes, and the data they contain, may cross borders and change hands many times before being destroyed. This adds risk as tapes may be lost or stolen in route. A responsible alternative to tape media destruction is recycling.

Recycling is now the norm in companies where paper recycling and ink cartridge recycling is practiced. And for good reason: recycling helps the environment and saves money. The recycling of printer ink cartridges for reuse is now a mainstream practice where once it was considered unusual. As a responsible means of managing tape disposal, recycling can dramatically reduce the amount of solid waste contributed to landfills.

## Media Disposal Methods

Two principle methods exist for the disposal of tape media. One method is to physically destroy the tape media and the second is to fully eradicate the data on the tape. The destruction process is simply to physically cut and pulverize the media. Specialized commercial equipment is designed for this purpose. Tape is fed into these machines and ground into small pieces. The end result is solid waste that must be disposed of in an authorized land fill. Incineration is another method of tape destruction. All the material is completely incinerated and there is no solid waste to dispose of. The challenge of incineration is the byproduct of burning a tape is thick black smoke and the release of toxic gasses. Whatever method is performed to destroy tape media, the media needs to be disposed of in an environmentally acceptable manner. Always work only with a reputable disposal service provider who uses only approved disposal methods and can provide you with a certificate guaranteeing that your tape has been properly disposed of.

## Data Eradication Method

The second method of disposal involves erasing the existing data from the tape. Proper erasure removes the risk that the pre-existing data on the tape falls into the wrong hands. Erasing is the process of applying a high intensity magnetic field to the media to re-arrange the magnetic particles effectively erasing all existing data. Magnetic degaussing will leave the media with no preference to orientation, rendering previous data unrecoverable. The 3480, 3490, DLT and SDLT tapes are examples of tapes that can be erased many times without any reduction in their useful life.

In order to properly degauss magnetic media, a magnetic force (gauss) of 2 to 3 times greater than the media to be degaussed must be created. Home VHS tapes have a magnetic strength (650 oersteds) as compared to computer cartridges (1800 oersteds). Because of this difference, "home" degaussing equipment designed for VHS tapes will not do a complete job of erasing computer cartridges. Only professional grade degaussing equipment, correctly calibrated and operated will do a proper job of erasing computer cartridges.

Not all popular computer cartridges can be degaussed. For example, the 3590, LTO, 9840 and 9940 cannot be degaussed and must be properly overwritten. Special programs are available that write a pattern of ones and zeroes to these tapes to effectively erase the data they contain and make them ready for reuse. Professional Guidelines for proper tape degaussing are available from the Dept. of Defense 5220.22-M. and National Security Agency and computer manufacturers such as IBM. These guidelines stipulate the proper methods to use for certain media types.

Note: The entire data eradication process can often be completed on-site to ensure total data security.

Product Type	Ok to Degauss
AIT 1,2,3,4	Yes
DC100/1000	Yes
DC-2XXX	Yes
Travan 1,2,3	Yes
DC-6XXX	Yes
Magnus	Yes
SLR-5	Yes
DDSX	Yes
DAT	Yes
Mammoth	Yes
34X0	Yes
DLT X	Yes
SDLT X	Yes

**Table One - Tape Media Types Ok to Degauss**

Product Type	Rewriting Req'd
Travan 4,5,7	Yes
SLR-6,7	Yes
3590(J)	Yes
3590E(K)	Yes
9940 / 9940	Yes
LTO 1,2,3	Yes

**Table Two - Tape Media w/ Magnetic Tracking**

## Tape Disposal Best Practices

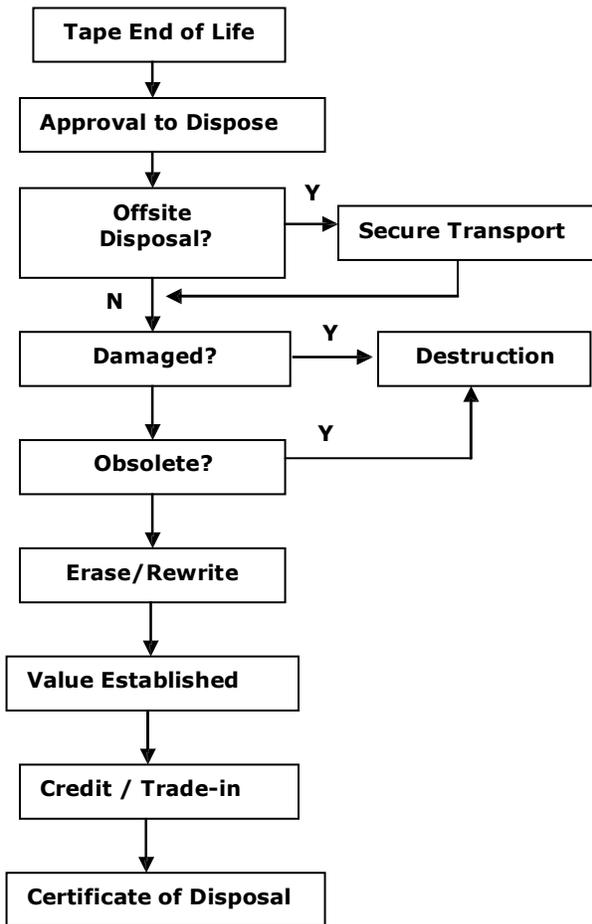
When tape media has reached the end of its useful life, you have several important decisions to make. (Figure one.) To reduce the risk of losing confidential data, the easy decision may be to destroy the tape, but this carries a cost burden and it impacts the environment. The decision to recycle tape has advantages for the environment and for reduced cost, but it carries the risk of data loss. Here are some guidelines to help you make the best decision.

First, you require approval from your organization to dispose of the tape media. Be prepared to disclose the contents of the data, its age and whether or not it contains sensitive or confidential information. When you have approval to dispose of the media, your first decision is whether to dispose of the media onsite or at an offsite facility. By disposing of tape media onsite, you can make sure that the tapes are not lost or stolen and that the disposition processes are handled 100% to your satisfaction. A reputable disposal service provider can bring in the degaussing (or rewriting) equipment onsite and manage it with trained personnel. For tape media that contains highly sensitive information, this provides a means of recycling tape media vs. destruction. Tape disposed of offsite at a facility provided by the disposal service provider will require

pickup at your facility. Best practice is to use secure pickup and tracking of the media to reduce the chance of improper handling and loss during transport.

Next, consider the physical condition of the tape itself. Is the tape still usable or is it damaged or broken? Very often tape is obsolete, old and worn out or simply damaged and cannot be used again. This tape has no more useful life and should be destroyed. More commonly, your tape media is in perfect working condition. Keep in mind that tape media is designed for many years of continuous use, and it is quite common to find tape that has “barely been used” in the trash bin. The reason for this is that tape is often used for long-term backup periods and it may have spent the majority of its life sitting on a shelf. Just because a tape is two years old, does not mean it has been used continuously. Rather, it is more common to find tape that has only been used for a fraction of its useful life.

Another cause for tape obsolescence is the rapid turnover of tape technology. Because tape technology changes so rapidly, organizations often find themselves upgrading to the newest tape technology, obsolescing older tape media in the process. Perhaps, your organization recently upgraded from the older DLT IV format tapes to the new LTO high capacity tapes. Many organizations have made this transition in recent years, resulting in thousands of obsolete DLT tapes. Any tape media that is still in good condition and free from physical defects is perfect for recycling.



**Figure One. Tape Disposal Best Practices**

## The Benefits of Tape Recycling

The most environmentally sound decision is to recycle tape. Used tape media that is not physically damaged and has not exceeded its end of useful-life can be sold to reputable disposal service providers who will securely remove all existing data from the tape and certify secure data eradication by providing a certificate of data destruction. The data eradication process requires specialized equipment and trained personnel and it should only be managed by an experienced disposal service provider. Your organization will benefit from a professional service provider who will manage the entire disposal process from pick-up at your site to delivery of all proper certificates of disposal. You are assured that your data does not fall into the wrong hands and that the environment is not impacted.

The recycling of tape media is an environmentally superior alternative to disposal. Recycling is also a cost-effective solution. The cost to have tape removed and physically destroyed can be as much as \$3 to \$8 per tape. This fee covers the cost to securely transport tape to the service facility and perform its destruction and disposal. For recycling, the cost for tape disposal is very different because the end product can be reused and has value. The end product of tape destruction is solid waste and has no value. Disposal service providers who recycle can reduce the disposal cost by selling the end product for certified reuse. They can pass these savings to you, making recycling far more cost effective than physical destruction. Often the net financial result is a positive contribution to the tape owner of either cash or credit for new tapes.

### Managing the Security Risk

Data security is a major issue for tape – just ask Iron Mountain who lost 40 backup tapes in May 2005 of one of its clients. The data on these tapes contained the social security numbers for 600,000 employees. The loss of this data was a very serious matter. The major risk that tape disposal presents is the miss-handling of confidential information. This risk exists for both tape destruction and tape recycling. Take for example the chance that an un-reputable disposal service provider fails to destroy the tapes; but rather sells them for reuse or loses them in transit due to poor controls. This is clearly a risk that must be mediated upfront when considering destruction. Disposal service providers who legitimately recycle tapes must use the proper degaussing equipment and must follow strict guidelines to ensure that all data is 100% erased. In all situations when dealing with disposal service providers, their reputation is the most important factor to consider.

New security technologies are available that can reduce the risk of losing confidential data. Encryption technology can be applied to the tape header or to the entire tape to ensure that the data on the tape can never be read by an unauthorized person. Encryption uses a special encryption key that is only known to the authorized person who encrypted the data. The trend is for enterprises to encrypt data on tape to protect against accidents such as the one that struck Iron Mountain. When more and more data is encrypted on tape, the risk of losing confidential data will be eliminated clearing the way for more tape recycling and its benefits to the environment and bottom line of the companies making this choice.

## Conclusion

Your company relies on tape to protect all of its digital assets and you must manage tape securely throughout its entire life cycle including end-of-life. At end-of-life you have important decisions to make regarding the secure disposal of media. Your decision to have tape destroyed may appear to offer the least risk; but it is costly and negatively impacts the environment. The decision to recycle media offers a much lower cost and greatly reduces the impact on the environment. Tape recycling should only be handled by a trusted disposal service provider who can guarantee secure handling and the 100% erasure of all confidential data and provide certificates of data destruction for all tapes processed. By working to ensure your data is disposed of by a reputable disposal service provider, you can manage your tape media end-of-life in a responsible manner that balances company security, environment concerns and cost.



**Recycle Your Media** is the secure end-of-life data solution for certified disposal of all tape media. Full services are available to pick-up tape media onsite, transport and handle disposal. Tape media that is tested and suitable for reuse can be erased and recycled avoiding any environmental impact. Services are available for all formats of data media products - DLT, SuperDLT, LTO, 3480/3490/3590/3592, T10000, TK50, 4mm, 8mm, AIT, 9-track, diskettes and more. Our 25+ years in the business of managing tape media disposal and recycling gives us the experience and resources to deliver results that are guaranteed. Contact us at 1-949-757-0100 or visit us at [www.RecycleYourMedia.com](http://www.RecycleYourMedia.com)