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Data Destruction Standards

Beyond DoD

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In the late 1990s, The U.S. Department of Defense (DoD) published specific standards to ensure secure data destruction from magnetic hard drives and magnetic tapes. A lot has changed since that initial standard was published.

Lifespan has published many articles on the subject of secure data destruction, the original DoD "standard" and current technologies and standards. Our goal is to provide reliable information to IT organizations related to end-of-life data security and compliance. We have compiled three of our most-referenced articles on the subject in this document to provide an overview of this important subject.

Included:

1. The DoD Standard: Useful or Obsolete?

2. Two Methods of Secure Data Destruction for Tapes

3. Should You Ask for a DoD Data Wipe?
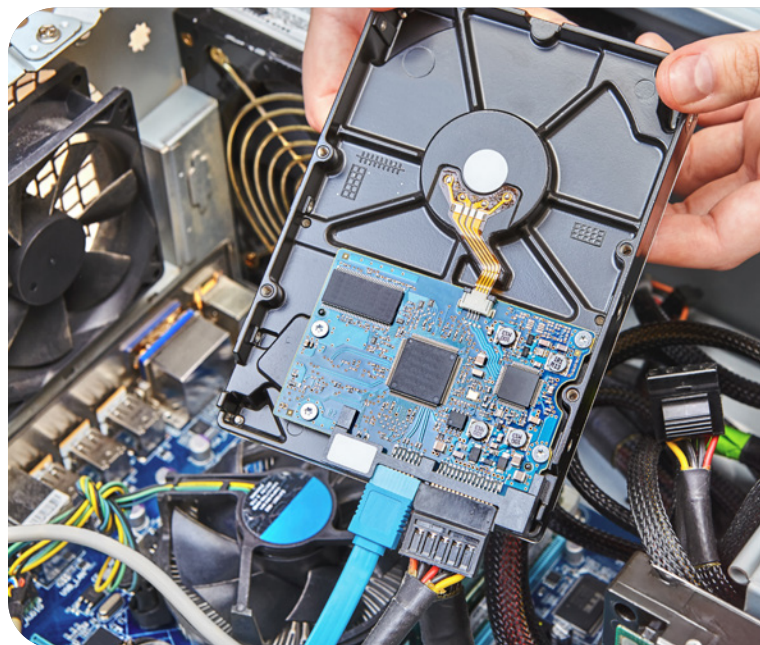
The DoD Standard: Useful or Obsolete?

Back in the 1990s, a standard for the destruction of sensitive data was created by the Department of Defense for hard drives and media being disposed of by the government's defence and security agencies. Coined the "DoD wipe", the process involved a 3-pass over-write procedure that would effectively erase data from a hard drive. At the time there were no other standards – government or industry – so most enterprises adopted this "DoD wipe" as their own policy. Even to this day, many companies will insist on this "DoD wipe" or "3-pass", despite it being obsolete as a government standard. The current reference standard is the NIST 800-88, Rev 1 document (which was published in 2015).

At the point of publication, the DoD wipe procedure made a lot of sense. But now there's little reason for the 3-pass wipe. Compared to 20 years ago, we have better hard drive technology and erasure software, and documented processes to ensure the erasure is successful.

Why a 3-pass procedure was chosen
So why were three passes the magical number for the erasure of data? Why not two or four or ten? Quite simply, it was thought that three was a good number. There was no testing that demonstrated three passes would be more effective than two or less effective than four. Based on the then-current hard drive technology, more than one pass was believed to be needed because of the precision of the write head and the way the firmware read and wrote to each sector. One pass might not get every sector overwritten, every time. A number was chosen that satisfied the needs of the Department of Defense.

Improvements in Drive Technology
When the DoD standard was adopted, technology was not nearly as advanced as it is now. In the 1990s, data sanitization practices were developed for slow magnetic hard drives with capacities less than 1 megabyte, and it was shown that a series of three manual passes would be sufficient. What may confuse some non-IT professionals is why a single pass would now be as effective as three passes, based on the fact that hard drives have a much greater capacity. The reason for this is that two types of technology have advanced since the DoD standard was created. The first involves the technology of the hard drives that are in use. Today's drives are much more precise than older magnetic drives, which means that the head will write over every sector reliably with just one pass. The second improvement in technology comes from the software tools that have been created to assist in the procedure. Software tested and certified such as that from Tabernus or Blanco enable verifiably overwrites with detailed records.

Risk vs. Cost
It's a given that the less work that needs to be done, the lower the cost will be. A 3-pass procedure takes, you guessed it, three times as long as a single pass. This is significant with higher density drives. A 1Tb drive can take hours to fully wipe once (time varies depending on the drive interface, and the systems being used). Additional costs to do additional overwrite passes only increase processing costs and do not technically reduce risk.

Number of Passes vs. Process
There is at least as much risk in the process for data destruction as there is in the technical erasure process. This process includes how you store, track and ship hard drives from the time you retire them until you dispose of them, what procedures your ITAD vendor has in place to ensure and document data destruction and also the quality assurance procedures.

Of course, if your company policy insists on 3-pass (or any number higher than 1) the software tools can be set to automatically perform the multiple passes and record the results. You should consult with a Data Destruction expert to determine the best options for your company. A NAID AAA-certified company will have the expertise and the processes in place to ensure the security of your data.

Two Methods of Secure Data Destruction for Tapes

Does your company have volumes of backup tapes in your data center or offsite? If your company is at the end of a data retention period or is ready to release or purge old archived data, you may come across hundreds or even thousands of tapes that contain important company data. Knowing what procedure is best to sanitize all of this data is crucial. There are two main options, physical destruction, and data destruction. One method may be better for you than the other depending on your company, the type of data, where it's stored, and how many tapes you need to securely sanitize.

LTO DLT Tapes for Data Destruction resized 600Physical Destruction - Shredding
This is the 'brute force' option for data destruction. With this method, tapes are shredded, leaving the media unusable and scattered into small individual pieces that cannot be made whole again. With this method, the data on the tapes themselves remains intact. This usually won't matter, though, since reconstructing a shredded tape would be nearly impossible. It does make a mess, though. The volume of a tape increases by 4x after shredding.

Data Destruction - Degaussing
Degaussing is the only completely reliable way to sanitize data on magnetic storage media and is approved by the NSA and other major government agencies. The process eliminates the remnant magnetic field which holds the information on storage media such as tapes and hard drives.

Although degaussing leaves the media physically intact, the process will securely and completely sanitize the media and render it useless when done correctly. LTO and DLT tapes contain a factory-written magnetic servo signal that is destroyed along with the data during the degaussing process.

One advantage of not physically destroying the media is that it is much easier to store and transport after the process is complete. A degaussed tape takes up the same amount of space it did before the data was destroyed, allowing the tapes to be transported or stored in containers. A good way to dispose of the degaussed tape is via an incinerator used for power generation. There are a number of these facilities around the country, though not in every state.

Know your degausser! Though handheld degaussers exist, they are slower and require a specific procedure to ensure full data destruction. They are also made for use on hard drives, and should not be used for degaussing tapes! Conveyor degaussers can wipe media in a continuous stream, and some can process nearly 2,000 tapes or hard drives per hour. Conveyors are also mobile, and the process can be performed inside offices, data centers, storage locations, and more. All that is needed is a 120V power source and adequate space.

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To learn more detailed information about the process of degaussing, request our degaussing technical brief and 10 Myths About ITAD Data Erasure. In both, you'll learn more about NSA standards for degaussing and data destruction, Oersteds and Coercivity, and why not all degaussers are created equal.

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