LTO Tape Erasure Third Party Verification

Performed by Kroll Ontrack®

"The Most Complete and Secure LTO Tape Service Available!"

The Question

Can LTO tape be erased for reuse, eliminating all possibility of data recovery?

Background

All organizations that use LTO data tapes share the same risk: how to be certain that data is fully erased if the tape is redeployed. LTO media is laid out with 4 data bands positioned between 5 narrow servo bands. The servo bands are used to keep the head precisely aligned with the data tracks. Due to the use of these magnetic servo bands, data cannot be erased using degaussing methods without also erasing the servo bands and permanently damaging the tape.

When redeploying or responsibly disposing of LTO tape media, the challenge is how to fully erase all the existing data without damaging the servo bands. This can be done by doing a one pass overwrite of the entire tape but this process will take hours and the Department of Defense recommends three passes to ensure that the data is fully masked. When faced with the task of processing hundreds or even thousands of LTO tapes for redeployment or disposal, the total time required could be weeks or months. Commercial vendors who claim that they can securely "sanitize" or "eradicate" LTO media face this same challenge. Even if they performed only a one pass overwrite the total time necessary would make the project unmanageable and unprofitable. The best that most commercial vendors can do is to "reset" or "over write" the tape with a very short file and an End of Data (EOD) mark at the beginning of the tape. This prevents normal tape operations from accessing the data passed this EOD mark but leaves almost all the data beyond. Some vendors may state that they will perform a "full overwrite" but the time required and economics make this extremely difficult.

Blind Test

Kroll Ontrack was contracted to perform a simple 'blind' test using two sample LTO tapes to validate our claim that 99.9% of the existing data remains on LTO tapes that have been sanitized or eradicated by writing a small file and a new end of data (EOD) mark. We claim that although this process blocks data from the view of standard tape drives the data is remains accessible and readable through forensic procedures. The premise of the test is very simple. If the claim that commercial vendors make about erasing LTO tapes is true, then given a sample tape, Kroll Ontrack should be unable to read any underlying data from eradicated or sanitized tapes. If Kroll Ontrack were able to access the data, it would prove that overwriting a small portion of the tape is not a valid means of eliminating data on LTO tapes. In this case an enormous risk would remain that sensitive data could fall into the wrong hands.

Kroll Ontrack was also provided with two LTO tapes that had been erased by our proprietary LTO Erasure Service. This service claims to be the only proven service that completely erases LTO tapes and therefore completely removes any risk of sensitive data ever being recovered. Our Erasure process should further keep the erased tape completely functional and in a condition to be re-deployed like a new tape. If Kroll Ontrack is able to access underlying data on the tapes erased by our process then our claims are false. If Kroll Ontrack cannot mount the tapes erased by our process, then our claims are also false because the tape is not re-useable.

Kroll Ontrack

Kroll Ontrack is widely regarded as the expert in magnetic data recovery. Kroll Ontrack[1] provides technology-driven services and software to help legal, corporate and government entities as well as consumers manage, recover, search, analyze, produce and present data efficiently and cost-effectively. In addition to its award-winning suite of software, Kroll Ontrack provides data recovery, paper and electronic discovery, document review, computer forensics, secure information services, ESI and jury consulting, and trial presentation services.

Verification Test

Four LTO 2 tapes were provided for the testing. The validation began on or about February 17, 2010 and concluded on February 19, 2010. All testing was performed at the Kroll Ontrack facility in Eden Prairie Minnesota. Only Kroll Ontrack personnel were present during the testing. The basic test was to provide four sample tapes to Kroll Ontrack. All four tapes contained existing data at the outset. Two were over written with a new end of data mark (EOD), one with a small file the other with 10,000 blocks of random data. The two remaining tapes were fully erased using our proprietary LTO erasure procedures. Kroll Ontrack would mount each tape and attempt to recover any existing data using its standard data recovery tools.

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[1] For more information about Kroll Ontrack and its offerings please visit www.krollontrack.com

Test Results

The following table describes the pre-existing content of each tape and the results of the recovery performed by Kroll Ontrack. Keep in mind, the contents of each tape was unknown to Kroll Ontrack before and during the testing.

	EXISTING DATA	TEST RESULTS
TAPE A	Tape A was written and then completely erased by --- LTO Erasure Process and a new FID file was written.	Kroll Ontrack was unable to retrieve any underlying data. Kroll Ontrack was able to identify the tape history from its computer chip that the last 4 drives this tape was in 1) IBM 6810 192430, 2) IBM 6810 209545, 3) IBM (no serial), 4) IBM (no serial).
TAPE B	Tape B was written and then fully erased by --- LTO Erasure Process and no new FID file was written.	Kroll Ontrack was unable to retrieve any underlying data. The tape was ejected from all drives except the Certance LTO 3 device, but was unable to access any data. Kroll Ontrack was able to get the last 4 drives this tape was in. 1) HP HUL2 M00422, 2) HP HUL3 C01155, 3) HP HU10 6519Y, 4) Certance HX100MM.
TAPE C	Tape C was written and then partially over written with a small data file and a new End of File Mark was written.	Kroll Ontrack was able to access the underlying data and identified it as a Tivoli backup. 180.8 GB of the backup data set was recovered. Kroll Ontrack also accessed the last 4 drives this tape was in 1) HP HU10 52666K, 2) IBM 6810 280774, 3) IBM 6810 280774, 4) IBM 6810 017044.
TAPE D	Tape D was written and then partially over written with 10,000 blocks of random data and a new End of File Mark was written.	Kroll Ontrack found a pattern fill for about 10,000 blocks (assuming this was the over written data), and Kroll Ontrack was able to access the underlying data that followed. The data recovered was identified as a Net Vault backup, about 250 GB. Also accessed were the last 4 drives 1) HP HU10 601LH5, 2) HP HU10 601LH5, 3) IBM 6810 192430, 4) IBM 6810 192430.

Conclusion

Kroll Ontrack was unable to recovery any from tapes A and B erased using our process. This validates our claim that our proprietary LTO Erase method offers 100% LTO data erasure. Tape A was fully erased and performed perfectly after the process and testing. Tape B did not have a FID file and thus would not mount, which is consistent with LTO behavior. If a tape can be identified as being used, then a FID file is expected and a mismatch tape should not be useable. Tape A is an example of how we process each LTO tape for 100% erasure.

Both tapes C and D were "sanitized" and/or "eradicated" by the standard methods employed by other commercial vendors and in both cases Kroll Ontrack was able to successfully recovery data. This test is proof that overwriting the beginning of the tape and re-writing a new end of data (EOD) Mark does not guarantee that all data is safely removed from the tape. This test is proof that data still remains on the tape and that it can be recovered. Be certain there is an enormous risk that data may fall into the wrong hands when LTO tape is sanitized using these inadequate methods.

This validates our claim that only commercial vendors using our equipment can completely erase LTO tapes.