Plasmon

White Paper

The Risks of Archiving on Tape

A document that outlines the trade-offs of tape technology vs. UDO in an archive environment

November 2007

Table of Contents

1 The Risk of Archiving on Tape

1.1 Introduction

Both UDO and magnetic tape media can be used for the archival storage of corporate records. At first glance, tape may appear to be an appropriate technology, but closer inspection exposes technical, operational and financial concerns when applying tape media to long-term storage. Designed specifically for record archiving, UDO provides advantages that cannot be matched by tape technology. This document covers a variety of important subjects from record authenticity to off-line capabilities and explains how UDO outperforms tape in an archive environment.

1.2 Record Authenticity

Magnetic tape is a rewritable media. The WORM tape products use the same media, but employ some form of a software/firmware lock to prevent the drive from erasing and rewriting. This technique only emulates the native attributes of UDO Write Once media. With True Write Once UDO media, it is physically impossible to modify data once written. This is why UDO is often referred to as the "gold standard" for record authenticity. It complies with industry regulations for record authenticity in a way that cannot be matched by either magnetic disk or tape technology. This level of record authenticity is critical for many organizations and is one of the principle reasons UDO is chosen over tape for archival storage.

1.3 Media Life and Maintenance

Tape is a very delicate media and can be affected greatly by environmental conditions and improper handling. While the quality of tape media has improved over the years it must be maintained very carefully if it is being used for long-term record storage. To maximize the life of tape it must be stored in very low humidity environments. To prevent film adhesion, tape should be exercised and retentioned on a regular schedule. Most importantly, error rates on individual tapes should be monitored and as rates rise, data should be refreshed by writing it to new tapes. How frequently these maintenance procedures are performed depends on company policies and the value of the data. If data is written on a tape and left for 5 years without any proactive maintenance, there is a very high risk of data loss. Average refresh cycles can be as short as two to three years.

By contrast, UDO is a very stable, non-magnetic, media that is much less sensitive to environmental conditions (temperature and humidity) and requires no proactive maintenance. Records can sit untouched on UDO media for many years without fear of media deterioration. Customers using UDO can expect to migrate data to newer technology every 8–12 years rather than the 2 or 3 years recommended for tape.

1.4 Data Destruction

While long-term record retention is critical in all archive environments, the need to physically destroy records when they reach the end of their life can be equally important for certain record sets. This requirement is being driven by industry regulations that define very specific retention periods and corporate policies that look to mitigate risk by destroying records when legally acceptable.

While it may be possible to delete a header that points to a file archived on tape, it is impossible to physically destroy individual records. The only way to physically destroy a record written to tape is to totally rewrite the tape, minus the unwanted file(s). This is not only extremely impractical; it also severely compromises data authenticity as records are moved from tape to disk and back to tape. Because there is no verification process, chain of custody can be lost.

Compliant Write Once UDO media has been developed specifically to accommodate the data destruction requirement. With all the security of True Write Once UDO media, Compliant Write Once provides the additional capability to physically destroy individual records on demand. "Shredded" data sectors on UDO Compliant Write Once media are completely destroyed, providing the highest possible standard for assured data destruction and offering unmatched archive flexibility.

1.5 Media Damage

Tape is subject to physical wear since the media is handled by the drive and passed over recording heads. This creates tape wear, which can be very uneven if some parts of a tape are accessed more frequently than others. It is not uncommon for tapes to break and if this happens, all the records on the tape are lost. UDO media is never handled physically. The drive laser reads and writes the media without making physical contact so there is no media wear and virtually zero risk of catastrophic media failure.

1.6 Access Performance

Tape provides very good read and write streaming performance, which is important for backup operations, but is not the type of performance required in most archive environments. If there are going to be bottlenecks in an archive, they are typically as a result of high concurrent user access. To minimize performance bottlenecks, it requires a technology that provides quick random access. The random access on tape is very slow, taking minutes to load, search, retrieve, rewind and eject the media. Here again, UDO performs well since it provides very fast random access (35msec seek times). Any file in a UDO archive can be retrieved in less than 19 seconds.

1.7 Drive Resource Requirements

With archives it is important to understand the typical access patterns in order to properly size the archive resource, including the number of drives required in the library. Since the full exchange time on tape systems is so much slower than UDO, it will always require more tape drives than UDO drives to meet the same access pattern requirements. More drives means additional cost and greater maintenance overhead.

1.8 Offline Media

Because UDO is such a stable and physically robust media, it is very practical to employ an off-line media strategy for library expansion or as part of a disaster recovery strategy. When stored in typical office conditions, UDO media is extremely stable and requires no periodic maintenance. This is not the case for tape. Off-line tape must be stored in climate controlled environments away from magnetic field contamination. Tapes that are not stored properly and are not retentioned, monitored and refreshed on a periodic basis are at serious risk. This level of proper maintenance is very difficult with off-line media, creating a real dilemma when trying to implement an off-line tape strategy.

2 Summary

Tape is an extremely good media for short-term, high performance backup (low value data), but is a very difficult fit for the long-term storage of valuable records. What may seem like a slight $/GB price advantage for tape storage, is very quickly compromised when you consider the trade-offs of tape technology in an archive environment. Tape was designed for backup. UDO was designed for archival storage so it is no surprise that the attributes of UDO are much more appropriate for long-term record retention.

Plasmon offers the only enterprise-class active archive solution that ensures data permanence, authenticity, access, longevity and removability, at the low total cost of ownership that businesses demand.

Archive Without Compromise.™

Plasmon is ISO 9001 certified.

WP_TROAOT 11.07

Plasmon

Global Sales

Americas & Asia Pacific Sales HQ
370 Interlocken Blvd., Suite 600
Broomfield, CO 80021
800.451.6845
Sales@plasmon.com

EMEA Sales HQ
Whiting Way, Melbourn
Hertfordshire, SG8 6EN
+44 (0) 1763 262963
Sales@plasmon.co.uk

Plasmon.com