

Computer Technology Review®

THE STANDARD OF EXCELLENCE FOR STORAGE TECHNOLOGY INFORMATION

SAIT Cartridge First To Break 1TB Barrier

By Brett Schechter

Enterprise tape storage has not exactly riveted the attention of Information Technology leaders. The norm in this market has been a succession of modest performance increases—new variations on familiar half-inch tape cartridges and linear-serpentine recording, such as Super DLT 320 and LTO Ultrium generation 2. But a new enterprise-class half-inch cartridge is rewriting the rules and transforming the economics of tape storage. The new SAIT format is set to trigger resurgent interest in tape for enterprise storage vertical applications.

Four factors set SAIT apart. First, the new format delivers the world's highest storage capacity, best-in-class storage density and top-notch transfer speed, redefining what is possible in tape storage. Second, SAIT offers the industry's most far-sighted roadmap for compatible growth, pointing to a future that's both brighter and much closer than many had thought possible. Third, SAIT currently delivers the industry's lowest consumable cost per

gigabyte, a decisive advantage in today's IT environment. Fourth, SAIT is easily integrated into today's world-class tape libraries, thanks to its half-inch media form factor.

Buoyed by these four advantages, SAIT has generated powerful momentum in the industry. Sony manufactures SAIT tape, SAIT drives and the S-PetaSite library, also based on SAIT. The new format has also attracted a true second source of both tapes and drives: Matsushita, known in the U.S. for the Panasonic brand. In addition, many tape automation vendors have expressed their interest to integrate SAIT drives and media into their half-inch tape library solutions. These companies include leaders like ADIC, Qualstar and Spectra Logic.

This article will review the requirements for future tape storage, showing how SAIT compares to other choices. It will examine some issues surrounding tape format migration, and it will review some of the most urgent vertical applications where SAIT is best qualified to solve end-user problems. These include content creation, email archiving, medical information,

storage consolidation and replacing disk arrays.

Meeting Brutal Requirements

The future will not be kind to many existing tape formats. The challenge is both technical and economic as the cost-per-megabyte of hard disk storage continues to drop. Low-cost disk arrays may, in fact, overtake conventional tape roadmaps as early as 2004. To remain relevant, tape must match increasing hard disk capacity while decisively beating hard disk pricing.

In the race to stay ahead of hard disk economics, SAIT has a tremendous head start. The SAIT data cartridge is the world's first to break the 1TB barrier. A single SAIT cartridge can hold up to 1.3TB of data, using 2.6:1 ADLC compression. That's over three times the capacity of the next-best super cartridge.

For skeptics who demand more than the top-line specifications, SAIT continues to impress. SAIT native storage capacity leads the industry at 500 gigabytes (GB). Transfer rates are equivalent to the industry's best: approaching 78

mega-bytes (MB)/second compressed, 30 MB/s uncompressed.

This high performance sets the stage for an even more impressive future. The SAIT roadmap embraces five generations, extending out to SAIT-5 with a native capacity of 10TB by 2011.

Redefining the Library

Even in the first-generation SAIT (SAIT-1), the format's capacity overturns expectations of how much can be stored in current automated systems. With SAIT, an average 14-rack unit/72 slot library can now hold over 90TB with compression. And 1,000 slots can now hold 1.3 petabytes, compressed.

Write Once/Read Many (WORM) capability, which will be available in SAIT by the end of the year, is one other practical advantage of SAIT that makes it well suited for enterprise applications. WORM positions the tape technology well for the increasing requirements for permanent record keeping in healthcare and financial services.

In terms of storage capacity, data density, and the scope of the roadmap, no tape is bet-

ter prepared for the practical requirements of future enterprise storage than SAIT. The following outlines how these advantages play out in specific enterprise storage applications.

Digital Content

Broadcasters and media companies recognize the opportunity to store all of their content in an easily accessible, thoroughly catalogued digital

Email Archiving

As messaging systems become more vital to the enterprise, they also face greater storage challenges. Messaging systems already contain an estimated 60 percent of enterprise information. Over 80 percent of end-user email applications make it difficult or impossible to retrieve archived messages. IT administrators spend an average of six hours per week recovering old messages and eight hours per

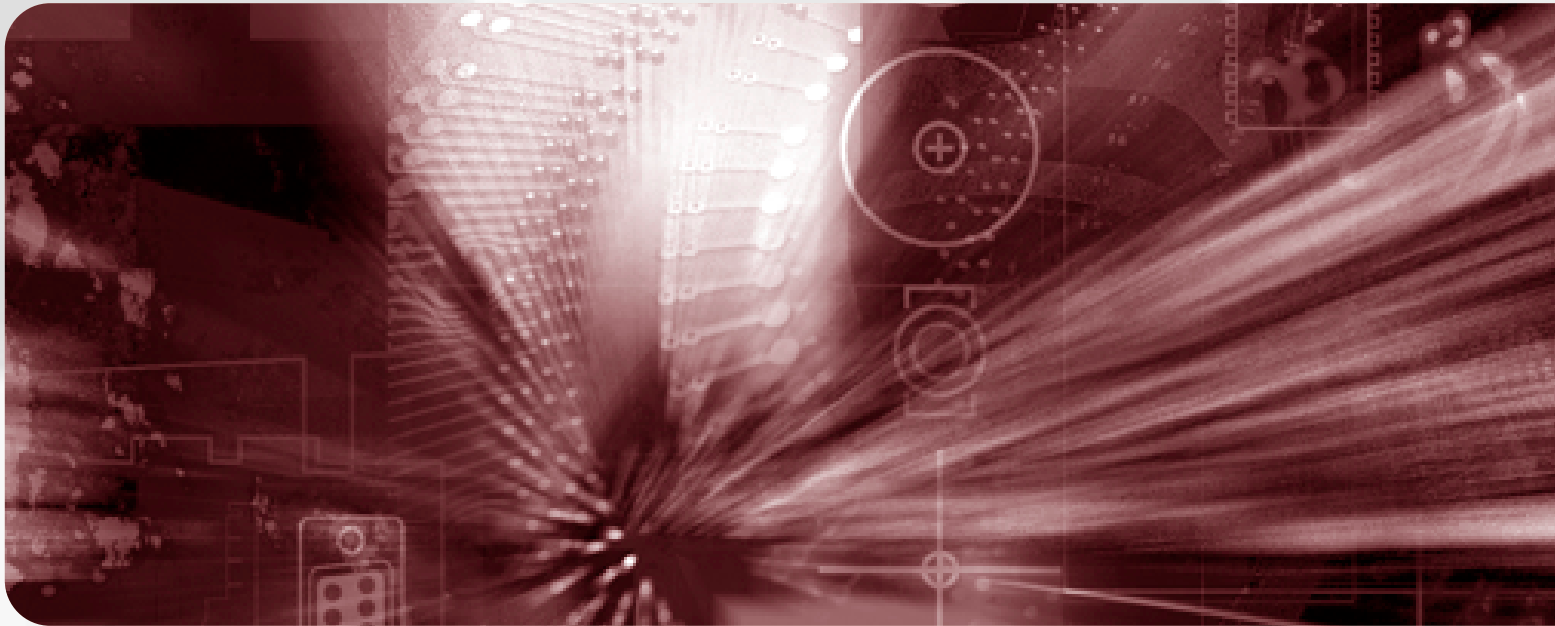
Medical Imaging

Perhaps you've seen the TV commercial showing patient records readily available to emergency and trauma physicians. With the average radiology patient study consuming 30-50GB worth of Digital Imaging and Communications in Medicine (DICOM) information, this is no simple task.

SAIT becomes both the enabler and one of the few cost-effective methods for hospitals

sil fuel. Their efforts require seismic studies that represent a gusher of data. A single study might comprise 120GB. The value of this data is ongoing, requiring massive archives and a long archival life. Additionally, geologic 3-D imaging requires fast access.

SAIT reduces the cost and increases the speed at which this precious data can be modeled. SAIT enables both near-line modeling and cost-effective



library. This can replace analog tape and film libraries, acting as a centralized repository for moving pictures, music, video and graphics. Imagine a news agency scouring thousands of videocassettes to locate a presidential speech from 1965. SAIT tapes can store thousands of hours of video footage, all searchable and retrievable via Web browser by a summer intern. SAIT used in current Hierarchical Storage Management (HSM) or Active Archival implementations makes this a reality. SAIT reduces costs and improves return on investment. It boosts operational efficiency, providing fast access and fast retrieval for large files.

week backing up email systems. The advent of corporate instant messaging promises only to exacerbate these problems.

In this environment, SAIT can make a monumental difference. A single tape cartridge can hold a full year's worth of typical email activity generated by 3,000 users. SAIT can help IT departments realize huge cost economies in email archiving. But, the *real* savings will be due to sparing man-hours and complexity in restoration. When a company's legal department wants to access an email exchange from four years ago, with proper access rights, they will be able to do so without IT intervention. SAIT means more data, and more highly available data.

and smaller medical imaging clinics to store, restore and distribute vital images. At speeds approaching 78 MB/s with compression, SAIT can even transfer files faster than entry-level ATA hard drives! SAIT can also store data for Hospital Information Systems. In fact, SAIT can lower costs by consolidating different islands of information into a single, highly efficient resource. SAIT will also offer the valuable WORM option, which can provide additional security of patient data.

Oil and Gas Seismic Data Processing

Oil company scientists and government researchers are scouring the globe, looking for cheaper, cleaner sources of fos-

sil fuel. Their efforts require seismic studies that represent a gusher of data. A single study might comprise 120GB. The value of this data is ongoing, requiring massive archives and a long archival life. Additionally, geologic 3-D imaging requires fast access.

Scientific and Academic Computing

Biotechnology, physics and chemistry all involve massive data storage at the cutting-edge of computing technology. High Performance Clusters (HPC) enable institutions on tight budgets to achieve super computing power. With these HPC engines, massive amounts of research data are being spawned. The problem then becomes how to cost-effectively archive the output.

SAIT once more acts as an enabler. Researchers can store petabytes of information in cost-effective, space-efficient tape libraries. SAIT's den-

sity leadership simply leaves more room for more servers, lowers the cost of consumables and allows more servers to be purchased.

National Defense and Intelligence

We live in uncertain times, and geopolitical unrest is putting new pressures on the ability of government agencies to reliably archive, quickly retrieve and

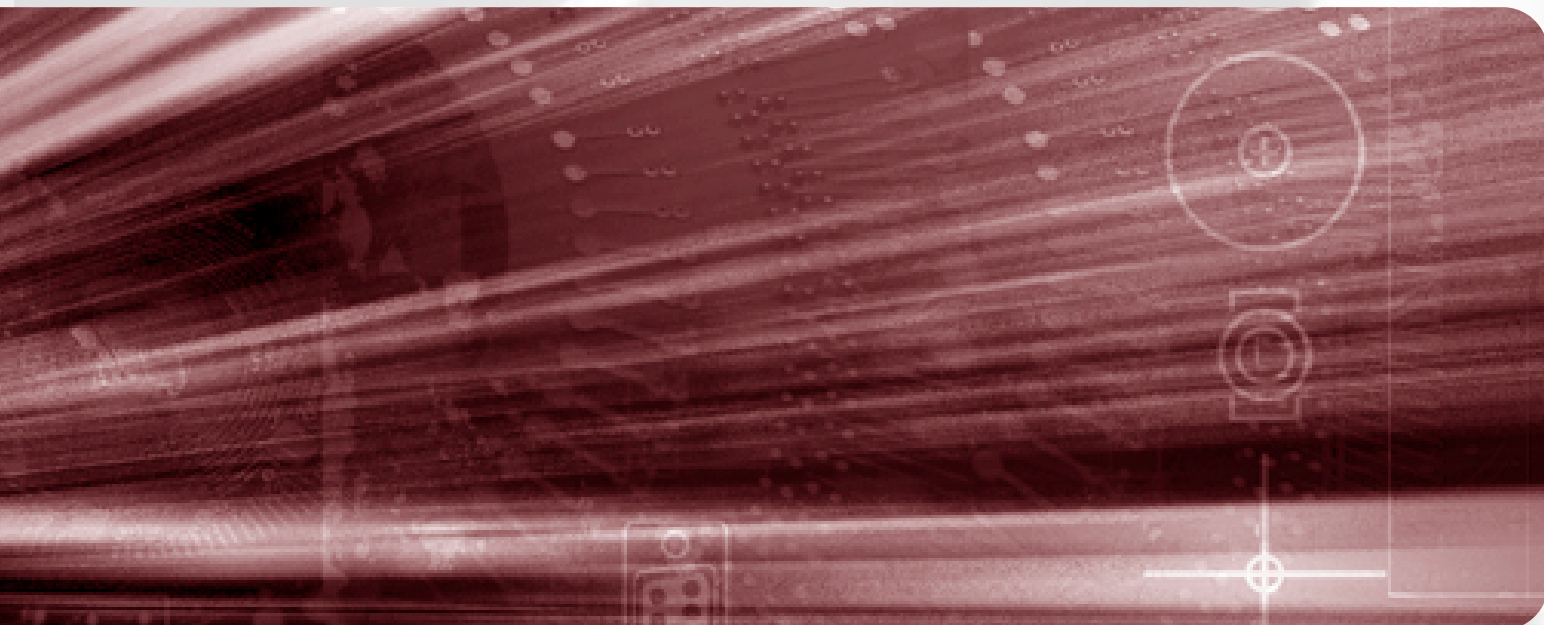
efficiently manage enormous data center space, which can mean a fast return on investment.

SAIT tape also functions beautifully in tape libraries that currently use other half-inch cartridges. Today, better libraries can be partitioned to support multiple tape formats concurrently, with SAIT as the central repository for archived data. SAIT's economy of scale, ease of integration, and high

Displacing Magneto Optical

Compared to magneto optical disk storage, SAIT is a performance breakthrough. SAIT offers much lower cost per megabyte, much greater throughput, much higher scalability and the availability of a future WORM option for files that must not be modified. SAIT also offers proven, reliable media with long archival life.

up to 1.3 terabytes compressed in a single cartridge—three times the storage of the next-best format. This is way beyond the usual industry game of leapfrog. To put it in perspective, the last time a technology had such a clear capacity advantage, it became the de facto standard. **CTR**



effectively analyze military data and signals intelligence. In addition, government IT budgets are tight. SAIT provides the high reliability, mammoth scalability and low cost to meet our country's needs.

Storage Consolidation

Some enterprises are still struggling with disparate storage systems from multiple vendors that use a variety of technologies. SAIT can consolidate and rationalize, streamline and simplify. SAIT makes it simple and straightforward to replace decentralized storage with enterprise-wide access. A high-capacity tape conserves pre-

speed make it a natural choice as the archival champion.

Replacing Disk Arrays

Mirrored arrays are expensive to maintain—and do not represent an archival medium. SAIT offers massive storage, along with a future WORM-based archiving option, to meet regulatory needs. SAIT drives approach 78 MB/s throughput with compression. Large libraries with multiple SAIT drives can saturate even a 2GB Fibre Channel SAN. SAIT offers high-performance, scalable storage, using removable, portable, storable tape cartridges.

A Few Final Thoughts

At a time when other enterprise-class tape formats are threatened by low-cost hard disk arrays, the new SAIT format stands apart. SAIT sets new standards for capacity and data density. It establishes an impressive new roadmap to storing 10TB native on a single cartridge by 2011. It is poised to open up a new range of vertical applications. Yet, SAIT maintains the industry-standard form factor, for compatibility with existing mass storage libraries.

What's more, end-users do not need to wait to realize a benefit with SAIT. Even in its first generation, SAIT delivers

Brett Schechter is senior national tape OEM marketing manager for Sony Electronics' Business Systems & Solutions Company (San Jose, Calif.)

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