StorageTek Redefines Tape Automation

It is no secret that StorageTek was in dire straights in the mid-1980s. The company was about to go bankrupt, strict cost-cutting measures were the rule, and morale was all but existent. But that did not stop a bunch of head-strong engineers from going forward with a design for the industry's first successful automated tape library: the StorageTek 4410.

In fact, Ryal Poppa, CEO of the then struggling company, was so gung ho about the new library that he bet his business that this revolutionary system—a marriage of tape drives and robotics—would return the company to profitability. Though many thought he was crazy, his prediction would prove correct. Since then, StorageTek has shipped over 12,000 enterprise tape libraries.

Not since StorageTek introduced this first library in 1987 has there been so much anticipation about a new tape library than there is over the StorageTek StreamLine SL8500. Due out in the first half of next year, the library represents the next quantum leap forward in tape automation.

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The Good News

There is much good news about the StorageTek StreamLine SL8500 Modular Library System. The new library supports STK T9840 and T9940 tape drives as well as SDLT 600 and LTO Gen 2 drives. Up to 64 tape drives can be integrated into the library and with all of the drives hot-swappable. The SL8500 can connect to multiple operating systems, including z/OS, UNIX , Linux and Windows platforms. And it requires less floor space and provides more scalable performance and higher availability than previous-generation libraries.

Floor Space

As its name suggests, the StreamLine is slim and sleek, taking up a lot less floor space than its predecessor: the PowderHorn 9310 Automated Tape Library. Modules, such as the Library Management Unit, Library Control Unit, and the drive frames, which took up additional floor space outside of the PowderHorn

library, have been integrated into the new library. And service clearances have been minimized to just the ends of the library—in contrast to the rectangular libraries from other vendors, and StorageTek's own circular 9310, which require service clearances around their perimeters. In fact, the SL8500 can be placed next to a wall—something not possible with the PowderHorn. Cartridges are also placed more closely together than in previous models, saving additional floor space. The net result: an equivalently-equipped SL8500 requires about one-half the floor space of the 9310.

Performance

How do you improve the performance of a robot? You can either make it move faster or you can do what StorageTek has done and add a lot more robots. StorageTek makes room for all these robots by running them along rails on the interior of the outside walls rather sitting them in the middle of the library as it did with the PowderHorn.

One robot stretches from the floor to the top of the library, servicing all of the cartridges in the library. An additional robot can be added to boost performance (and reliability). In a two-robot configuration, one robot services the cartridges on the left side of the library; the other, cartridges on the right. If one robot should fail, the second robot pushes it out of the way and gains full access to all of the cartridges.

Up to six additional robots can be added for high-performance environments. In a four-robot configuration, the robots each access several rows of cartridges. In an eight-robot configuration, four robots service the left side of the library, while the other four service the right side.

That's a lot of robots for a library designed to hold more than 8,500 cartridges at maximum capacity!

Availability

How do you improve availability? Add another robot. In the multiple-robot configuration, if one robot fails the others continue to operate; the failed robot is pushed out of the way to the library's "front door" where it can be accessed and replaced without requesting the library be down. That's good news for customers.

StorageTek reduced the number of control boards from 60 (in the PowderHorn) to 1, improving overall availability. And the company simplified installation too. While a single Powderhorn can take about 50 hours to install, three engineers can complete an SL8500 installation in about eight hours—an improvement of more than 50%!

New Software Intelligence

StorageTek is planning some big software enhancements for future releases of the SL8500. For example, it will introduce software that will allow customers to write backups to a disk buffer first and then to tape. If the backup job encounters a problem writing to a particular tape drive or cartridge, the software will redirect the backup job to another drive or cartridge, thereby eliminating one cause of backup failures.

The virtual offering integrated within the library will also allow customers to share tape drives across all supported operating systems. Support for drive sharing can reduce the number of required tape drives in heterogeneous environments.

New compliance regulations require customers to retain various types of information for extended periods. In many cases, the information may reside on older generations of tape drives and cartridges that are past their useful lives. StorageTek will offer new software that will tell customers which cartridges have reached the end of their useful lives and will automatically—and transparently—migrate data to newer tape drives and cartridges. Doing so will help make the transition to newer technology drives less painful.

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The Bad News

Loyal StorageTek customers are in for a long wait. Though the product was unveiled at the StorageTek Forum in October—with much fanfare and positive response from user attendees—the library will not become generally available until the second quarter of 2004. And new software enhancements, such as automated media migration, will be available in a phased approach, with full functionality available within one year.

Additionally, the new SL8500 library has limited pass-through support. Pass-through ports on older libraries allow cartridges to be moved from one library to another as needed. The SL8500 will only be able to pass cartridges back-and-forth to other SL8500 libraries (there is no pass-through compatibility with older libraries).

On the positive side, two connected SL8500's can share 4 pass-through ports between them for increased performance and redundancy. And with StorageTek's Automated Cartridge System Library Software (ACSLS), up to 32 SL8500 libraries can be managed from one central location—that's 272,000 slots.

And for those of you who liked the "window wall" feature of the PowderHorn—you're out of luck. It has been replaced with a perforated metal window. While the window means customers must get a little closer if they wish to see the robots at work, it does add a level of mystique to the library, and it serves a practical purpose—uniform airflow to its internal electronics.

Lastly, don't expect a huge cost break. While StorageTek has not revealed specific pricing for the new model, we expect it to be priced somewhat higher than that of a similarly configured PowderHorn. But the SL8500 will provide considerable improvements in performance, availability and serviceability.

Conclusion

StorageTek made a calculated decision to announce this new library in front of their customers and strategic partners, 6 months before the product's general availability. In doing so, the company generated a lot of excitement about the new library. In fact, some users actually wanted to place orders for it at the event.

StorageTek claims that the library has been in development for three years and is based on input from many of its customers. The company appears to have listened well: It does not require downtime for maintenance; floor-space requirements are significantly lower; redundant robots ensure that works goes on even if a robot fails; and, in the near future, intelligent software will allow sharing of tape drives, eliminate some backup headaches, and automatically migrate data to newer tape drives and cartridges.

With that said, it is up to StorageTek to deliver on its promise.

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