

Helium? Shingles? What's That Got To Do With Archiving?!

It's human nature to judge the new in terms of what we already know, especially when an innovation challenges established concepts, writes Alan Hoggarth, MD, Disk Archive Corporation.

In terms of large-scale storage for media content and other forms of data, conventional wisdom has it that certain types of storage technology are only good for certain roles. Disk is for immediate access in NAS or SAN configurations, and tape is for long-term storage. The inherent characteristics of tape and disk seem to define these roles, and storage strategies for the broadcast industry (and others) have evolved accordingly.

But what if those 'inherent characteristics' change to allow one technology to step out of its role and play more than one part? This is exactly what has happened in the case of storage, where disk technology is developing and mutating in ways that allow disks to be used for archive and content library applications. It's a little counter-intuitive perhaps to think of infrequently-accessed content being stored on spinning disks, but this is essentially where the change has come about: the disks in a disk archive only spin up on demand. This apparently simple change has profound consequences.

Naturally there's an acronym for an array of disks designed to provide very large storage capacity with low power consumption by spinning up and down as required. MAID-III (Massive Array of Independent Disks) is actually the third evolution of the idea, superseding MAID-I and MAID-II, both of which were RAID based and offered relatively little in the way of benefits. In MAID-III, each disk in the massive array is totally independent, and can be started and stopped individually for reading and writing when needed.

The ALTO storage system uses MAID-III technology, and as a solution for storing infrequently-accessed content it offers many advantages over tape libraries, and over other forms of disk-based storage such as simple RAID NAS systems. Comparing the pros and cons of tape libraries and NAS solutions, it's clear that neither is ideal. Robotic tape libraries are expensive for small archives, but NAS is expensive for large ones. The immediate access of a NAS solution isn't required for archives, but the media access time of a robotic tape library is too long.

Robotic tape libraries need downtime, and NAS disks only have a short operational life. With tapes you know where your media is located, but you need an expensive device to access them locally. Tape robots use less power and dissipate less heat than NAS, but tape and mechanical maintenance costs are high.

"Helium generates less turbulence than air, allowing a closer head to disk interface and more densely packed platters, giving enterprise-class performance in an inert environment, totally protected from atmospheric dust and humidity"

ALTO's MAID-III technology gives much faster access to the content than tape, maintenance requirements are much lower and maintenance is simpler than with tape or NAS. Files are written to individual media so you can take your content out of the system on a single disk (and address it with any PC if you need to), and the disks are idle until needed so they last longer and there's much lower power consumption.

This combination of talents makes MAID-III very suitable not just as an alternative for data-tape archiving, but also as a way of combining the archive function with cost-effective cache storage for news production and post-

production workflows, content libraries for VOD, or to feed HD/SD integrated playout solutions.

With ALTO you only have to populate the frame with as many disks as you need now, and can add others later, getting more TB for your money each year, or the same TB for less money.

The technology allows users to source their own disks to populate the array, and disks can be added individually as and when more capacity is needed, allowing expansion to come out of OPEX budgets. And since disk development is being driven by massive online data centers, the capacity of an array can increase rapidly as newer, larger disks are added.

Driven by the huge demand from Data Centers, disk technology is developing in a way that is making ALTO even more attractive for media storage. A single 3.5-inch hard drive can now store up to 6TB of data in a sealed, Helium-filled enclosure. The Helium generates less turbulence than air, allowing a closer head to disk interface and more densely packed platters, giving enterprise-class performance in an inert environment, totally protected from atmospheric dust and humidity.

Surprisingly the lower turbulence of the helium translates to 50% lower power consumption, further reducing the TCO of the Archive. Another new technology, eminently suitable for deep archives and preservation is Shingled Magnetic Recording which reduces the recording track width to squeeze even more data onto the platters. SMR is bringing massive increases in capacity with access times and workload capabilities that are spot-on for ALTO.



Disk Archive

With the rapid pace of development, the dilemma could be when to jump on board with any new technology without the usual "buyer remorse" when something bigger and better comes along. This is where another important attribute of the ALTO architecture comes into play with the ability to mix different disk capacities from any of the principal vendors in any slot, so it's a case of buy-as-you-go, not buy and regret!

Year by year, archives and content libraries become more important and central to the media industry. MAID-III offers both immediate and long-term advantages: easy to integrate into production, backup and other workflows, with low total cost of ownership, high performance, and low environmental impact, MAID-III can play a lot of roles outstandingly well.

www.diskarchive.com



Demand from Data Centres is making ALTO ever more pertinent for media storage requirements