



Research Note

Quantum Improves the World of Professional Video

We are inundated daily with news clips. We start our mornings watching the news events and end our evenings the same way. Yet, unless we work in the professional video industry, we probably spend very little time wondering what happens to the miles and miles of video clips that are recorded and broadcast.

Every day, technicians employed at companies such as CNN, NBC, and CBS, face the task of receiving, editing, digitizing, and archiving all that videotape. The current workflow to step that videotape from creation to archive is a long and cumbersome process, involving many manual handoffs from one step to another. However, new standards address this problem and Quantum is right in the forefront with new tape technology that works with this new standard.

The Current Workflow

Videotape of the day's top news events arrives at an editor's station, from which it is sent to post-production, where it is edited to fit into the allocated news time slot. Then the videotape is walked to the next station, where it is ingested, or digitized, to a file format. It is next sent to a playout station so it can be aired on a TV network. Later, the videotape is labeled and placed in an archive; it must be re-digitized for each subsequent use.

Now you may think that yesterday's news is old news, with scant need to retrieve it from the archives. However, when Bill Clinton's relationship with Monica Lewinsky made the headlines, CNN was the first company to locate the film clip of Bill hugging Monica at a political rally. They sold that clip around the world. Finding old news clips is a very profitable business, but a difficult job under the current workflow.

The problem with today's processes can be summarized in one word: incompatibility. When videotape is stored on disk, there are many different proprietary file formats and types of compression that can be used by the different applications that process the audio and video media. Current file editing applications cannot read and share the information stored in the metadata. This inability to share metadata makes the process unwieldy and time-consuming.

The New Standard—MXF

The broadcasting industry needed a quicker and more efficient way to process and store news clips. Collaboration on a new industry standard, called Material Exchange Format, or MXF, has been led by the Professional MPEG Association, the Society of Motion Picture and Television Engineers, the European Broadcasting Union, and the Advanced Authoring Format Association.

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MXF is a standardized file format that encapsulates audio and video data, called an essence and associated metadata in the same file wrapper. While other file formats for the media industry exist, this is the first file format that is operating-system-independent and video-format-independent. Files can be edited on a Windows, Unix, Linux, or Mac platform and can be in MPEG, DV or any other available format. This interoperability is achieved through rich metadata support which not only describes the file format but also can contain information, such as the shooting location, that would previously have been stored in handwritten notes.

With the new standard, the workflow can be simplified and automated. Cameras using the MXF file system can transfer the images to disk storage. Here, an essence can be retrieved and edited and specific notes describing the clip can be added to the metadata. Later, the essence can be retrieved for airing or archiving to tape. The need to digitize (or re-digitize) the videotape is eliminated, as are the manual handoffs. The result: a streamlined process with each essence surrounded by extensive descriptive metadata that allows any recorded event to be located and processed quickly.

How Does Quantum Fit In?

So, how does Quantum fit in with this new standard? Archived news clips have a long life. They are not deleted but stored forever, since it is not possible to predict which of yesterday's news clips will be the moneymaker of tomorrow. These data stores continue to grow and grow, requiring cost-effective storage. Here is where Quantum fits in. They have developed new technology, called the SDLT 600A, that allows MXF data to be stored and *viewed* on tape cartridges.

The SDLT 600A ("A" stands for "access") enhances the existing SDLT 600 tape drive. It can attach to any network and is accessible to every workstation. It can be rack-mounted, attached to a library, or even set up on a tabletop next to a workstation.

The existing SDLT 600 drive can store about 300 GB of uncompressed data on a cartridge—more than six hours of high-density audio and video content—and transfer that data at about 36 MB/sec. What has been added to the SDLT 600A are firmware enhancements and a new board which supports gigabit Ethernet, SCSI, and Linux and runs FTP with MXF software. The new drive delivers a tape-based file system that can be accessed from any platform with FTP. A Java applet allows any browser to view and retrieve files stored on the tape.

Quantum calls this new technology DLTxchange. Now, anyone connected to the network can view the metadata and retrieve any clip by timecode on any Super DLTtape IIA cartridge. Quantum has already incorporated the SDLT 600A into its published roadmap for its other tape drives. Future versions of the SDLT 600A drive will have the same capacity and performance boosts that are planned for the standard SDLT 600 drives, although these enhancements will be delivered slightly after they are available for the standard drives.

The Right Choice?

Quantum has been a provider of storage products for the IT data center, where their automated tape and disk solutions have been used to support traditional backup and archive applications. Developing specific technology for the professional video market is a change from their previous engineering and marketing efforts. But it is a change that makes a lot of sense. The professional video market can be considered a niche market, but it is a niche market with very large storage requirements. As the MXF standard becomes commonplace, we expect that Quantum will see strong demand for its SDLT 600A with DLTxchange products. The SDLT 600A is in beta testing, but has already gained the attention of many video IT professionals as well as two industry awards at the National Association of Broadcasters Convention.

Storing audio and video essence on tape is cost-effective. While there has been a great deal of coverage in the press about inexpensive disk solutions, tape continues to maintain its lead as the least expensive medium on which to store large quantities of data. The introduction of software that allows metadata to be viewed on a tape cartridge provides a new level of practicality for tape.

The professional video industry is not the only industry that could benefit from a marriage of file-based standards and tape technology such as SDLT 600A with DLTxchange. Numerous other private and public companies need to manage large amounts of video. When you enter a large department store or a terminal in a major airport, drive through a toll booth on an interstate highway, or take money out of an ATM, the chances are fairly high that your image has been caught on tape. If you have visited Las Vegas and tried to beat the odds at the gaming tables, the chances are excellent that your luck (or lack of it) has been recorded. Hospitals and clinics could certainly use an affordable and practical way to store and retrieve digitized MRIs and X-rays on tape, since HIPAA legislation dictates that these tests be kept for years and years.

Quantum's SDLT 600A with DLTxchange technology is a merger of file-based technology and tape. It's a merger that makes a lot of sense by bringing the economies of tape to a high-storage-growth market.