



## **RAIDers Of The Lost Archives**

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Since the first grainy, black and white images were beamed into our living rooms, television has been an integral part of our culture. How many thousands of hours of classic (and not-so-classic) programming, moments in history, even advertising, have we shared, briefly, over the decades?

While it's heartening to think those radio and TV waves are still zipping through space to eventually be intercepted by appreciative galactic neighbors, it's even better knowing that our broadcast history is being safeguarded for our own future generations at the Museum of Television & Radio through digital RAID (Redundant Array of Independent Disks) systems from California-based Nexsan Technologies. Several months back, the Museum had two Nexsan disk-based ATAboy2 InfiniSAN systems installed and has been putting them through the paces since.

### **A Cultural Repository**

Founded in 1975 by William S. Paley, the Museum's mission is to collect, preserve, and interpret television and radio programming and to make that information available to the public. With locations in New York City and Los Angeles, the Museum archives over 75 years of television and radio history on analog and digital videocassettes. Its current collection numbers about 110,000 selections, gleaned from news, public affairs, arts, sports, comedy and variety programming, as well as commercial advertising.

"The Museum of Television & Radio is content-based," says Fred Cotton, director of engineering at the Museum and the man charged with safeguarding the collection. "You won't find an old TV set as a museum piece." What visitors will find are cultural nuggets such as the I Love Lucy "Chocolate Factory" episode, Neil Armstrong's moon walk, the unaired pilot of All In The Family, or a 1939 experimental NBC broadcast, entitled "Streets of New York: Where Poverty Is No Crime," the oldest American-produced program in the archives.

New content is contributed each year from commercial networks, the Public Broadcasting Service, cable services, local radio and television stations, advertising agencies, Internet sites, and networks from other countries, among others. The material is chosen according to its artistic, cultural, and historical significance.

Also in the archives are more than 1,000 videotaped educational seminars conducted at the Museum since 1981 and featuring some of the most creative and influential members of the industry. It has established an education program for groups and students from the elementary to the university level that is designed to foster critical thinking through interpreting and analyzing television programs. And, with material gathered from the archives, the Museum organizes major screening and listening series, festivals, and education classes each year, focusing on various topics of social, historical, popular, or artistic interest.

Ironically, the Museum's charter of offering its riches to the public puts its very assets in jeopardy. The videotapes, masters of which are kept in off-site temperature- and humidity-controlled warehouses, have been degrading with time and repeated viewings. It was obvious that if something weren't done, at some point, countless hours of programming would be lost forever. Cotton decided that "something" was needed to transfer the videotapes to a digital data storage system. Nexsan Technologies, an engineering design and manufacturing company located in Woodland Hills, CA, would provide the storage system.

### **Saving History**

Cotton puts it succinctly: "Basically, we're a videotape facility. Tape and film slowly degrade over time so the archive is slowly degrading. What we want to do is go back to the masters and digitize the content."

He began combing literature and speaking to people, which led him to Nexsan. Cotton, who states he's no IT guru, said of the company, "They seemed to be something I could handle, so I contacted them and spoke with Brendan." Brendan Kinkade, VP of marketing for Nexsan, brought his own level of dedication to the project, dubbed the Digital Media Initiative. "The reason I got involved with this is that I came from a long background in the broadcast industry and I saw a real need to be of help in protecting what I believe to be some of the finest moments in the history of recorded media," he says.

While ensuring the long-term survival of the collection was of prime concern, there were other important considerations. For instance, digitally stored content would provide greatly improved public access. Currently, with the cumbersome videotape format, there can be a considerable wait to view a program. Moreover, while multiple copies of many of the more popular selections exist, in most cases if viewers want to watch the same program they can only join it "in-progress." With a digitized system, however, the number of people with instant access would be limited only by the number of viewing stations.

Plus, with the archive growing at the rate of about 3,500 new programs per year, storage and the constant copying of tapes were becoming critical concerns. Speaking of the collection, Cotton says, "Physically, it's very large. There's warehousing off-site which you're paying for and warehousing in the building which takes up a lot of real estate. Plus, we have a sister Museum on the west coast so everything has to be duplicated for them. There's a lot of shipping of tapes back and forth which is time-consuming and expensive."

Cotton examined several options, including simply duplicating the original master tape, which would gain a reprieve of perhaps another 25 years. "That's a viable way of doing it but it's not buying us any new technology, like video-on-demand or immediate access," explains Cotton. It also didn't address storage or quality considerations. Other technologies were considered and abandoned, as well. They just didn't provide all the desired features. "Then we said, 'Let's push the envelope.' Let's say we really want to put this on hard drive. This is how Nexsan came into play," says Cotton.

Nexsan provides storage-centric hardware and application-based solutions. Its products feature fault tolerance, redundancy, storage virtualization, data replication, and support RAID levels 0, 1, 0/1, 3, 4, 5, 10, and 15. They are system independent, supporting SAN and DAS configurations, and Full Fabric, Fiber, SCSI, or ATA (Advanced Technology Attachment).

"Originally I was looking at SCSI-based items: drives, storage," Cotton explains. "We said, 'this is what we want but it's cost-prohibitive at this time.' Then when I met up with Brendan at Nexsan they were using the concept of normal ATA drives to keep the cost lower, with SCSI I/Os for speed, and they have a very nice RAID system. We've been testing it on RAID level 5. I've got about 250 hours [of transferred programming] right now in a single RAID storage unit, what they call the ATAboy system."

The Nexsan disk-based ATAboy2 InfiniSAN systems are RAID-configured, correct cost D2D storage solutions that provide enterprise-level features and performance, with capacity reaching multi-terabytes in compact 3U rack-mount units. The ATAboy2 systems in the Museum installation have 14 hard drives each, with 12 active, one parity, and one hot spare in each chassis. Their features include pre-emptive degradation monitoring and phone-home alert, web-based GUI management, redundancy, and hot swapability.

Equally important to the Museum, a non-profit organization, was the savings afforded by the prevalence of ATA (the same kind of technology found in desktop computers). "Nexsan has brought economies of manufacturing to RAID storage," says Kinkade. Because of its proprietary use of ATA, the company can offer 'solutions' with everything you would want from a very, very expensive disk-based storage system, only delivered at a cost that competes with or is even less than tape," Kinkade explains. "Our products offer the same benefits and features as systems that cost three to 10 times as much." The systems installed in the Museum offer 120 GB per drive at a cost of less than five tenths of a cent per MB.

There are currently two ATAboy2s in the New York location and Cotton has been putting them through their paces for about two months. He says the system is still in a beta-site testing stage and that one of his jobs is to "break it." He explains that he hates to sound facetious, "but if the entire collection's on it, I want to know what's going to go wrong and when. Unfortunately, I haven't broken it yet."

As the initiative moves into its second phase, there are plans to add another two ATAboy2s in Los Angeles. They'll also be upgrading to Nexsan's newer, greater capacity systems (180 GB disk drives) and will begin to "fast-track" the data transfer, though Cotton admits that's a "massive, multi-phase, multi-year project" that won't be ready to unveil for quite some time.

#### The Future: Will IT Kill The Video Star?

The Museum of Television & Broadcast is currently engaged in a drive to acquire more international programming. "The Museum has made a deal with mainland China. We've received about 1,000 hours of programming, with a portion of it never seen anywhere except in China," explained an enthusiastic Cotton. They also hope to add content from Spain, Portugal, Italy, and the Latin-American community. "It's not just mainstream, old-fashioned USA. There's a big international flavor," says Cotton.

Regardless of origin, the programming certainly won't be viewed the way it used to be. "Instead of a video world, it's IT, it's a computer world. Instead of a TV monitor in front of [the Museum patrons], there'll be a computer screen with a keyboard and mouse. There'll be an Internet browser-type page they can search," explains Cotton, who obviously looks forward to the many possibilities.

Things look bright for Nexsan Technologies as well. "We're seeing a lot of Nexsan's ATA technology in the digital cinema, broadcast, and video world. We're coming out with some new products that we think will address this market, even the smaller-end kind of desktop video market.

"I think that it's the future. I think that most of these big broadcasters need to digitize their content and protect it. All the big networks, film libraries, everyone is going to want to get that content onto a stable, secure platform -- one they can protect for years to come. Some of these [assets] are priceless works of art, and they're being lost."

With advancements in digital technology coming at this pace, that won't be for much longer.

Info: The Museum of Television & Radio, (212) 621-6800 or (310) 786-1000, or visit the website at [www.mtr.org](http://www.mtr.org); Nexsan Technologies, (818) 715-9111, or [www.nexsan.com](http://www.nexsan.com)