

## NBA Entertainment: It's NAS- and SAN-tastic

*The NBA's new IT infrastructure relies on NAS and custom software, with plans to move to a SAN and shared file system.*

*By Zachary Shess*

When you strip away the three-point shots, slam dunks, and fast-paced action, the National Basketball Association (NBA) is a business. And like any business, managers are constantly looking to provide their customers with additional services that can leverage existing resources while maintaining, if not minimizing, operational costs.

Also like any successful business, savvy marketing can create demand for products. Perhaps better than any other US professional sports league, the NBA markets its star players to a global audience, which has created worldwide demand for the action.

When the NBA season opens next week, NBA Entertainment's digital facility in Secaucus, NJ, will be buzzing with activity, with staff editing, producing, and distributing digital content globally every night. NBA Entertainment also produces NBA TV, video packages for NBA.com, voice-on-demand packages for cable partners, short packages for cell phone distribution, and customized video for online viewing on Websites worldwide. Soon NBA Entertainment will also index and serve video to the NBA Basketball Operations Group, which oversees the rules and referees of the game.

Not surprisingly, with all that content to manage and deliver the IT staff at NBA Entertainment wanted to ensure its overall workflow was as efficient as possible to improve the production of editing teams. Previously, each editor was assigned what amounted to a network drive for storage. These "content silos" made it difficult to share data or to re-use content for other projects.

"It was no longer practical to produce something for a single media. Today, we need to be able to have that footage accessible by all the editors for a variety of uses," says Steve Hellmuth, senior vice president of technology at NBA Entertainment. "For any company, it's important to be able

to centralize resources-in our case, the digital archives of NBA games-and be able to leverage that content and produce more.”

With that fundamental game plan, the NBA IT team’s other primary objective was to implement a streamlined networked storage infrastructure with enough capacity and bandwidth to handle more digital content online, eliminate the content silos, and centralize access across all content editors.

As they evaluated their storage options, NBA Entertainment sought a solution specifically designed to work effectively with its huge, data-intensive video files. Because of its background in providing storage technology to broadcast entities, NBA Entertainment wanted to capitalize on SGI’s NAS, file system software, and data-migration technology customized for the broadcast video market. In choosing the SGI InfiniteStorage NAS 2000 disk array, coupled with SGI’s software, NBA Entertainment could immediately achieve its goal of pooling and networking capacity across its video-editing workstations as well as its low- and high-resolution encoders. Having the NAS server also enabled staff to incorporate and serve files from an existing StorageTek Streamline SL5000 tape library.

With the enormous size of broadcast video files, the NBA IT staff also wanted to minimize moving these big data chunks around the network and instead consolidate it in one storage pool. Using SGI’s InfiniteStorage Shared Filesystem CXFS software, IT staff will be able to help facilitate multiple editors accessing files without duplication or data movement while improving access speeds.

Data migration across tiered storage platforms was also required. With a current capacity of 20TB and plans to move to as much as 50TB in the future, it made the most economic sense for the NBA IT staff to be able to easily move data from online storage to less-expensive tape media. By utilizing SGI’s Data Migration Facility (DMF) software, NBA Entertainment can migrate game files based on policies relating to the size and age of the files, for example.

Being able to easily migrate data while maintaining quick access times had a positive trickle-down effect. Editors now have the ability to pull out specific blocks of game footage for editing without having to download an entire three-hour game. Previously, every two weeks video editors held a meeting to determine what content they would keep on disk, store on tape, or just flush from their Grass Valley video servers. Having the ability to assign content to the best-suited storage device, coupled with more pooled capacity, eliminated those meetings, freeing up IT staff time and eliminating the need to make difficult decisions about which footage to keep.

“We’ve seen a 40% increase in editing output with a 30% reduction in costs,” says NBA Entertainment’s Hellmuth. “As you consolidate storage and make the files more readily accessible, you’re able to see increases in productivity as well as cost savings.”

## **From Mikan to Shaq-online**

Increasing capacity and implementing policy-based data migration also enabled the NBA to undertake an ambitious IT initiative to digitize and store footage of old Sony Betamax tapes of games going back to the 1950s. With an estimated 400,000 tapes in storage, Hellmuth says he’ll be excited to eventually have every game online and no longer be concerned with media maintenance and purchasing since Betamax tapes have about a 12-year lifespan.

## **Looking ahead**

With their NAS implemented, NBA Entertainment’s broadcast production facility is now better able to instantly capture every play of every game, categorize it, and store it for fast and easy retrieval. Future plans include developing pattern-recognition technology that enables overhead cameras to track the on-court movements of every player and then render their actions in 3D so coaches can interactively study offense and defense movements from any angle.

Eventually, the InfiniteStorage NAS array will act as a gateway with a SAN behind it. With approximately 100 video-editing machines accessing information, NBA Entertainment plans to add three SGI TP9300 disk arrays that will act as caches serving files through a 2Gbps Fibre Channel switch. The system can also be upgraded with SGI’s InfiniteStorage Shared Filesystem CXFS software to combine the benefits of NAS and SAN while providing shared file access.