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A supplement to the
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A glimpse at some recent news out of the storage world.

COVER: Thanks to Hitachi, G-Tech, Netapp, EMC Isilon and Drobo for providing our cover imagery.

EDITORIAL

RANDI ALTMAN

Editor-in-Chief
(516) 797-0884
raltman@postmagazine.com

MARC LOFTUS

Senior Editor/Director of Web Content
(516) 376-1087
mloftus@postmagazine.com

MICHAEL VIGGIANO

Art Director
mviggiano@postmagazine.com

ADVERTISING

MARI KOHN

Director of Sales
(818) 291-1153 cell: (818) 472-1491
mkohn@postmagazine.com

GARY RHODES

Eastern & Intl Sales Manager
(631) 274-9530 cell (516)410-8638
grhodes@copcomm.com

LISA BLACK

Marketing & Sales Executive
(818) 660-5828
lblack@copcomm.com

CUSTOMER SERVICE

620 West Elk Ave, Glendale, CA 91204
csr@postmagazine.com
(800) 280-6446
opt 2 (publishing), opt 1 (subscriptions)

LA SALES OFFICE:

620 West Elk Avenue,
Glendale, California 91204
(800) 280-6446

WILLIAM R. RITWAGE

President / CEO

Post



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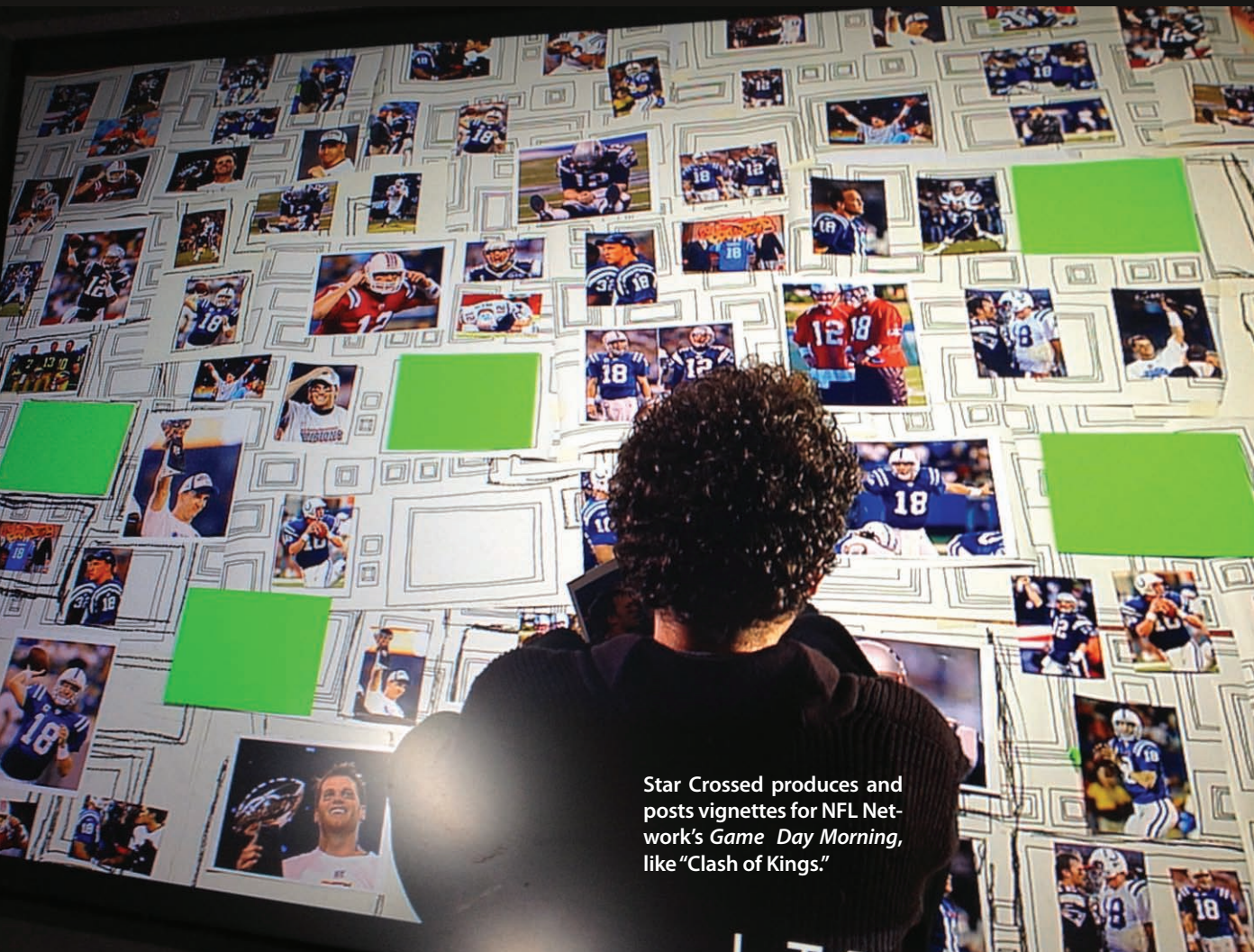
Powering the World's Networks and Storage

Storage Solutions

A handful of studios talk about their ever-expanding needs.

By Christine Bunish

Post production facilities today are spoiled for choice as far as storage solutions are concerned. Choosing the right system for high-volume, data-intensive post is critical to successful outcomes, and manufacturers are brimming with products to meet every need.



Star Crossed produces and posts vignettes for NFL Network's *Game Day Morning*, like "Clash of Kings."



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GeekBeat.TV co-host/CEO John Pozadzides:

“We deal with so much data, tremendous file sizes and can easily run out of space.” He invested in a Drobo B800i because their disk packs can be instantly upgraded to gain more room.



STAR CROSSED PICTURES

New York City-based Star Crossed Pictures (www.star-crossedpictures.com) creates documentary, branded entertainment and sports content from concept to delivery. Faced with 15 shows, all in post production at the same time, early last year the production company found itself in need of shared storage so multiple editors could access assets simultaneously.

“We had all these shows to deliver, all with a good amount of footage requirements,” says Star Crossed president/executive producer Stephen Palgon. “We probably had need of shared storage before, but we made do with copying things over to multiple drives. It was a clumsy way to operate,” he admits.

Star Crossed’s tech expert researched storage solutions and came out in favor of Small Tree products. “It seemed like everything was very streamlined and easy,” Palgon says. “We had a number of conversations with them and were comfortable with the product and support we would get from them. We don’t have a full-time tech support staff, so it was important that Small Tree delivered on that.”

The production company invested in a 24TB Small Tree GraniteStor Titanium8 Ethernet-based shared storage solution for professional video editors. “It’s been very good for us,” he reports. “For us, it’s really about the ability of multiple systems — our Apple Final Cut Pro 7 editing systems and editors working from home — to share the same footage and project files.

Star Crossed needs to meet many deadlines for a full roster of shows. When the GraniteStor Titanium8 storage was installed, Star Crossed was working on 10 half-hour episodes of *Beginnings* for MSG about players for teams playing in Madison Square Garden relating how their childhood dreams have been realized; five half-hour episodes of *The Garden Transformed* for MSG about the building’s three-year refurbishing; and three- to four-minute featurettes for NFL Network, which air on *Game Day Morning* and in the Web series *The Season* on nfl.com.

In addition, Star Crossed was working on a dozen or so shows for the just-launched Pac12 Network. “Everything hit about the same time,” says Palgon. “The Titanium8 is working smoothly and saves us a lot of time. A lot of manufacturers talk about giving good post-sales support and don’t, but Small Tree’s support has been a nice surprise for us!”

GEEKBEAT.TV

Named by Apple iTunes as Top Tech Podcast of 2012 and usually ranked in the top five tech news shows around the world, *GeekBeat.tv* can be watched in different variations on YouTube, iTunes and the Youtoo TV network. Daily editions of the show air Monday through Thursday in a news magazine format; a one-hour show is streamed live on Friday on YouTube, Justin.tv and Ustream.

Headquartered in Dallas, *GeekBeat.tv* (www.geekbeat.tv) has a 4,000-square-foot studio with sets for its daily pre-recorded and live streamed shows; Canon Vixia, XF300 and

STORAGE SOLUTIONS

5D Mark III cameras; and a number of Apple MacBook Pro edit stations running Final Cut Pro.

The company uses a host of Drobo products for its primary storage needs: a Drobo 5D to store and back up files for studio shoots, a Drobo Mini to do the same on location, a Drobo 5N to share files within the network for post production, and Drobo B1200i and B800i devices for archiving.

"GeekBeat is just one of our shows. We've done over 1,000 videos in the last two and a half years," explains CEO and show host John Pozadzides. "We deal with so much data, tremendous file sizes and can easily run out of space. We have no time to take 10TB of data and move it around in the network — although we have a Cisco Gigabit Ethernet backbone here.

"We bought a Drobo B800i because disk packs can be instantly upgraded to gain more room, which is unheard of! The B800i uses iSCSI transfer protocol that's so fast — even through the Gigabit Ethernet network, it's as fast or faster than the normal internal hard drive in the machine. It virtually attaches to each of our Mac Pro edit stations so we have great speed and security, although iSCSI drives can't be shared."

For sharing, Pozadzides opted for the 5N file server, which holds raw show footage, intros and commercials. "It's all there for anyone to grab assets," he says. "I just shot footage at Mac World in San Francisco on a Canon 5D, pulled out the Mini and my MacBook Air with Thunderbolt, and ingested all the raw video onto the Mini until I got back to the office, where we offloaded the Mini to the 5D. We avoid risks we'd get using individual drives — every show is money to us."

Each Drobo 5D for editing is outfitted with five 3TB drives and configured with dual-disk redundancy, which can keep data safe even if two drive failures should occur. Having experienced a single drive failure in the past, Pozadzides decided "to go with dual-drive redundancy on everything, including the Mini. I don't want to sweat out another possible drive failure in the middle of a rebuild."

About 30 days after editing is done, raw files are deleted and the finished videos are archived on the B800i or B1200i devices, freeing up storage on the 5D again.

Since GeekBeat.tv also produces *WebBeat*, *My Mobile Life* and several shows for local stations, the company needs



VH1's Love & Hip Hop: NFGTV boasts 48 edit stations and calls on Facilis storage solutions. See page 8.

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Ex-Wives of Rock: In the last two years Tricon went from requiring 10TB of storage to about 100TB of storage.

to consider expansion possibilities. "What we have now should last for years: Every year hard drives get bigger and cheaper. We're now buying 3TB hard drives, but we could replace them with bigger drives and instantly gain more capacity; we can mix different drive sizes with no other configuring. We could effectively double our storage space with every new generation of drives. Or we could just add another."

TRICON FILMS & TV

Tricon Films & TV (www.triconfilms.com) in Toronto does "it all, from conceptualizing series to distributing them — and everything in between," says IT manager Chris McLaughlin. The company produces long-form TV and documentary features; its *Ex-Wives of Rock* has just been renewed for a second season and its US coproduction, *Nadia G's Bitchin' Kitchen*, is in season two of the on-line process at Tricon.

"For the longest time we acquired everything on tape or disk," says McLaughlin. "Now that we're almost exclusively using the Canon C300, Panasonic AF100 and Panasonic GH3s, we can no longer grab a tangible storage device from a shelf; everything goes to hard drive arrays and LTO tape and has to stay on the arrays for the duration of the cut."

In the last two years Tricon went from requiring 10TB of storage to approximately 100TB of storage — and its previous NAS solutions are still in use. "Our storage requirements increased enormously," McLaughlin notes. "We had looked at a lot of solutions in the past. Some had problems, some had very little track record, some had costs we couldn't justify. Then a former colleague, who is now a reseller, told me about Rorke."

Rorke Data's Strawberry server piqued his interest. McLaughlin checked out online demos and decided that it would fit Tricon's existing workflow. He met with Rorke reps and felt that a Galaxy Aurora array with Strawberry server would deliver "the best bang for the buck."

So the company installed a Galaxy Aurora array with 72TB of raw storage and 60TB of usable storage. "The beauty of the Aurora is that it's highly configurable, so put a Strawberry server on top of it and you have a fast, large and cost-effective video server," McLaughlin says.

"One of the system's top-selling features was its speed. We have 16 Avid Media Composers in offline suites and need every megabit we can get out of the Aurora."

Thanks to multi-camera shoots an offline editor may be working with footage from "upwards of nine cameras at any one time — all high-res. We work at full resolution in offline then transcode to DNx for finishing on Nitris," he explains. "So we need throughput to support nine high-resolution feeds with no problem. With all our broadcast deadlines, Strawberry helped us deliver on time, every time."

McLaughlin gives kudos to the "totally expandable" nature of the system. But the current solution should last for a while. When he ordered the Rorke, McLaughlin "took into account everything shot on cards, instead of tape or disk, and calculated the storage requirements. I got roughly 40TB for a production season with everything online at high resolution at any time. Then I added another 50 percent for overhead. I figured that should hold us until we double our size."

That sounds like a good, long time, but Tricon has been in expansion mode for the last few years. "Every year we get busier," McLaughlin reports. "But even if we get an increase in production for our post department, it will be a drop in the bucket to increase our capacity for our current storage arrangement, which is the idea: to keep our costs down and productivity uninterrupted."

ENCORE HOLLYWOOD

With Encore Hollywood's already substantial list of television programming growing daily, the noted post house (www.encorehollywood.com) found itself needing more high bandwidth and another tier of redundancy for file storage, says VP of engineering Jay Bodnar. A fan of NetApp

storage solutions, the facility went back for more, installing E5460 and E5424 SANs totaling 1.426 Petabytes (PB) of additional modular data storage, whose connectivity is shared with its Level 3 sibling in Burbank, Encore VFX in Toronto and Encore's TV presence in Vancouver, New York and London.

"SANs are integral to our facility. We do a lot of finishing, color correction and conform — we're always touching files and need quick access; nearline or offline storage won't work for us," Bodnar says.

Encore Hollywood uses the larger E5460s to store lots of media for shows such as *CSI*, *CSI: New York*, *Revenge*, *Hawaii Five-O*, *Castle*, *Body of Proof*, *Revolution* and *American Horror Story*. The company works on a slate of 42 shows a year.

"The performance of the 5460s controller allows us to access files quickly — there's 130TB behind it," Bodnar says. The smaller 5424s handle dailies processed at the facility and are a source for concurrent client deliverables.

"We looked at all the systems, and have a good relationship with Integrated Media Technologies, a NetApp vendor," he explains. "We spent a lot of time talking to IMT and the NetApp folks about how we wanted to use storage, they understood the challenge at hand and the best



Encore uses larger NetApp E5460s for shows like *CSI*.

tool-set for the job."

Bodnar says Encore can justify its extensive storage capacity "because the bandwidth required to access files is still high. When things become cloud-based it will be different. But for now, using the right equipment makes the hassles of moving files around invisible to our clients."

Bodnar cites the E-series' performance, reliability, scalability



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ity, “great” price point and green efficiencies. “We’ve managed to replace 700TB of legacy storage with 1.426PB of NetApp storage while keeping the power load the same. That’s significant. We were at the limits of power we could get from the Department of Water & Power, but by investing in NetApp storage solutions we became more power efficient. That’s a big deal.”

PAPER ROUTE PRODUCTIONS

Reality programming is the specialty of Paper Route Productions (www.paperouteproductions.com) in Pearl River, NY, and its current show offerings have a decidedly north-

raw footage probably takes up 24TB,” McFadden says.

Assets stay native XDCAM for editorial “so our bandwidth isn’t huge — that’s why the iSCSI protocol is working for us. Since we don’t need the higher bandwidth of Fibre, we were able to create a high-performance SAN using the cheaper Ethernet. Even without Fibre, the Evos have enough bandwidth to handle multiple streams of Avid DNxHD.”

The New York City facility will not only be installing a roster of Avids but also the latest version Evo server with Avid Bin sharing capabilities. “We haven’t needed Bin sharing in the past, but it will be very useful for our new Avids,” notes



ern accent. The company just wrapped season one of *Buying Alaska*, about real estate with northern exposures, and is shooting and posting season two of *Yukon Men*, about survival in remote outposts. They air on Destination America and Discovery, respectively.

To handle post workflow for the series Paper Route has 15 edit bays at its Pearl River headquarters. They use software from Adobe, Apple and Avid, and all pull from the same source material on Evo shared storage.

The company sports three SNS Evo shared storage solutions with a total capacity of 80TB. A New York City-based office is slated to open soon with Avid Media Composers on board.

Two of the Evo servers were installed before post production supervisor Joe McFadden joined Paper Route. “They were selected for their affordability and easy expansion,” he says. “When I first arrived our storage was about half this size. Using the expansion bays, we were able to double storage space by adding a single chassis and today’s larger hard drives.”

The run ‘n’ gun style of image capture for *Yukon Men* consumes a big chunk of the Evo servers. “A season’s worth of

Paper Route, which has 15 edit bays, just wrapped *Selling Alaska* for Destination America.

McFadden. “Not too many storage solutions support that function besides Avid’s own Isis and Unity.”

He says that the ability to continue using the company’s existing CAT 6 network has been extremely convenient. “A story producer can come in to view footage, hook up their laptop and access the network,” he reports. In addition, with “the Evos’ SAN management software, SANmp, there is no need for a metadata controller, and you can manage read/write privileges with the click of a button.”

NFGTV

Content creator NFGTV (www.nfgtv.com) is based in New York City where it produces and posts the reality series *Love & Hip Hop*, now in its third season on VH1; the spin off *Love & Hip Hop: Atlanta*; and *Taking Atlanta*, which is currently in production and will air on Bravo.

The company boasts 48 edit stations, which are a mix of Avid Media Composers and Apple Final Cut Pro 7 systems.

When technical director Brian Douglass came on board a

few months ago, NFGTV had already invested in a pair of Facilis TerraBlock 24D multi-platform shared file systems. Each 24-bay chassis offers 48TB of storage for a total of 96TB with the two systems. Smaller RAID solutions handle back-ups for camera rolls and LTO tape.

"We initially got one TerraBlock 24D, but they knew the company was growing quickly, so they purchased the second one," he explains. "TerraBlock allows us to have a lot of users. We can set up multiple volumes and share them with small groups. Or we can set up partitions for certain jobs. The systems' easy user management helped drive the decision to purchase them."

Douglass notes that several firmware and software updates have helped increase TerraBlock's reliability and stability, particularly in terms of "managing and expanding volumes once we've created them."

Growth and expansion are continuing factors at NFGTV. "We're pushing the TerraBlocks to their limits but have seen no overall performance issues," Douglass says. "We did switch to using ProRes Proxy for offline and cutting at DNx 36 — that probably helps us. We don't online on these edit systems since they are all running gigabit connections. We treat online as an independent process, separate from the TerraBlocks, with a mix of RAID solutions."



Charlie Bonifacio, Arc Productions' in-house animation director, in the artists area.

As the company prepares to post its new series, *Taking Atlanta*, about the city's next-generation movers and shakers, and has more programming in development, Douglass expects to be looking for additional storage solutions. "We're thinking about a third TerraBlock with more bandwidth or just an expander to increase storage. Either way, it's almost time."

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Arc Productions uses BlueArc solutions for projects like *Matt Hatter Chronicles* for Platinum Films. Terry Dale is inset.

ARC PRODUCTIONS

As a CG animation studio that works on everything from theatrical feature films and TV series to Web series and game cinematics, Toronto's Arc Productions (www.arcproductions.com) deals with "massive amounts of data moving around continuously at a high rate," says VP of infrastructure and training, Terry Dale. "So we need very high-performance storage. We have a very large render-farm in-house, and it makes a lot of demands on our storage subsystem."

As an example, *Halo 4: Forward Unto Dawn*, a 75-minute Web series released by Microsoft and 343 Industries, put a heavy load on the system, due to the high complexity of the VFX integration, specifically the creature work the studio was tasked with. In total, the project generated approximately 180,000 hours of render time.

Arc Productions has been a BlueArc customer for the last half-dozen years, and has followed the storage solutions to Hitachi Data Systems when that company acquired BlueArc. "Hitachi has one of the best storage subsystems — the hardware and technology the data is stored on — on the market," says Dale. "And BlueArc has one of the best server-head components. So that now gives us the best of both worlds."

Arc Productions has been using three BlueArc Titan 3 heads with about 400TB behind them. "As Arc continues to grow, we need to stay one step ahead, and that requires an ongoing evaluation and upgrade of our storage needs," Dale says. That growth is epitomized by both *Matt Hatter Chronicles* for Platinum Films and HiT Entertainment's *Thomas & Friends*, which generate a heavy load on the system in terms of sheer volume of data that needs to be stored. The two shows have accumulated over 169TB of data combined.

Arc Productions is moving to four BlueArc Mercury heads with a new Hitachi disk subsystem underneath. "We'll have

the same 400TB to start with but expect to expand well beyond that," Dale reports. "The new equipment will boost our performance, and the newer-generation head has new features and functions so we can be a lot more flexible in the way we deal with data."

The new version of Mercury software offers new monitoring and data management tools, which will enable the studio to "move data quickly, get on and off the system fast and migrate hot data to a lower tier," he says. "When we're heavy into production, our loads are fairly high: We generate and regenerate approximately 1-2TB every other day in the rendering or reiterative process. As shots are completed, the data pool gets more stable, but we need to turn around data very quickly and at a high rate. BlueArc has the only systems that can handle anything we throw at it."

SKYWALKER SOUND

Lucasfilm's Skywalker Sound (www.skysound.com) in Nicasio, CA, has been using Atto Technology's HBA cards with a Hitachi Data Systems subsystem for at least eight years now. The company's latest acquisition is Atto's ThunderLink, which enables storage and network connectivity for SAS, SATA, Fibre Channel or Ethernet devices for Thunderbolt-enabled hosts.

"We got ThunderLink for a very unglamorous reason: We needed to build more edit systems and integrate them with our subsystem," says Danny Caccavo, an engineer in digital editorial services. "All of our sound editors, mixers and Foley recordists need shared storage with our Pro Tools systems, and since about 2003 it's been done with fibre. Filmmaking is such a cooperative venture; it allows us to load-balance all the work and make efficient use of everyone's time."

Shared storage also enhances creativity. "If someone is pre-mixing dialogue or sound effects and the background has already been cut, it allows them to hear the context of



Skywalker Sound's technical building.

what they're doing," he explains. "Sometimes, as people are working, they can see sounds magically appear online."

Caccavo says that when reasons of capacity required Skywalker Sound to create more edit stations, the Mac-based house opted not to throw more money at old-technology Mac Pro workstations. "We didn't want to invest in more Mac Pros right now when we expect them to be refreshed

in a few years. As we had need for mobile rigs we decided to build more with MacBook Pro Retinas — although we're not using them in a mobile way. And we needed ThunderLink to work with them."

Since Skywalker Sound already uses Atto HBAs, they initially tried a Sonnet Thunderbolt expansion chassis/Atto HBA configuration but ran into issues with the CommandSoft FibreJet SAN management software.

"So Commandsoft helped us make the software work just fine with ThunderLink. Atto also did a firmware update for us. We found ThunderLink's cooling fan a little too loud, so they gave it a tweak, and that's now rolling into production for everyone."

Caccavo isn't surprised that Atto had the solution Skywalker Sound needed when it set out to boost its edit station capacity. "Atto is the approved vendor of Fibre cards for Avid. I had a history with them when I was at Avid, and Skywalker's had a history with them, too. So they were a known quantity to us."

Although ThunderLink has only been in place for about two months, it's already being used on feature film projects in-house at Skywalker Sound, he reports. **IPOST**



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Storage News

G-Tech offers new hard drive support, upgrades G-Speed

CULVER CITY — G-Tech (www.g-technology.com) is now shipping its popular G-Drive mini and G-RAID mini external storage solutions with new, high-quality 1TB, 2.5-inch 7,200RPM hard disk drives from HGST. The new Travelstar drive is the first and, according to the company, boasts 7,200RPM performance in PCMark Vantage testing.

Delivering up to 136MB/s performance, the G-Drive mini is designed for users demanding high performance and high capacity from their portable storage device. The G-RAID mini is suitable for video, still shooters or editors working on location.

In addition, G-Tech has announced that its G-Speed RAID external storage solutions now come equipped with 4TB HGST Ultrastar drives, high capacity and reliable enterprise-class hard disk drives. With 7,200RPM performance, 64MB cache and the highest 2.0 million-hour mean-time-between-failure HDD specification, the G-Speed family (G-Speed Q, G-Speed eS and G-Speed eS Pro) is designed with the post workflow in mind.



CalDigit offers discounts to schools, students

PLACENTIA, CA — A new program from CalDigit offers major discounts on its storage solutions for film schools and individual students to help equip tomorrow's talent with professional tools. The discount for film schools and students is 15 percent off MSRP/RRP pricing.

All interested film schools will be given expert advice from CalDigit's customer support teams about the products that best meet their needs. CalDigit has been providing storage solutions to content creators for more than 10 years, and its partner companies are some of the leading hardware and software vendors in the content creation industry.

For full terms and conditions regarding the CalDigit Film School Program, visit <http://www.caldigit.com/film-schoolprogram/filmschool.asp> or contact education@caldigit.com.

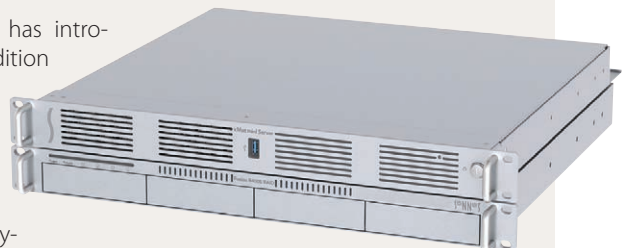
Sonnet intros xMac mini RAID server bundle, upgrades Tempo

IRVINE, CA — Sonnet Technologies (www.sonnettech.com) has introduced its xMac mini RAID server bundle, which, with the addition of a video capture card and pro broadcast or editing software (sold separately), transforms a Mac mini into a standalone play out/ingest server.

The value-added systems include the xMac mini server PCIe 2.0 expansion system/1U rackmount enclosure for Mac mini with Thunderbolt port. It mounts the Mac inside a specially-designed enclosure containing two PCI Express (PCIe) slots that connect to the computer through its Thunderbolt port, with the Thunderbolt-optimized Tempo SATA Pro 6Gb/s SATA PCIe 2.0 eSATA controller card plus the Fusion R400S RAID 1U rackmount, four-drive hardware RAID 5 SATA storage system.

The xMac mini RAID server is available without drives and in 8TB, 12TB and 16TB configurations starting at \$1,595.

In other news, Sonnet also has upgraded its Tempo SSD and Tempo SSD Pro 6Gb/s SATA PCIe 2.5-inch SSD cards to support booting in Mac Pro computers (early 2008 models and newer). With this update, users can boot from a Mac Pro even in a RAID 0 configuration with two solid-state drives. Booting is also supported for Windows 7 and 8 computers, as well as Server 2008 and 2012 (although not from a RAID drive).



Tiger adds hardware to its storage solution

SOFIA, BULGARIA — Tiger Technology (www.tiger-technology.com), which for the past 10 years has been providing SAN management software, has decided to take more control over their product by offering an integrated software/hardware appliance.

“When building a SAN, you typically have to rely on the reseller or the end-users to put together the solution,” says director of sales, Bernard Lamborelle, “but certain features are hard to implement when you are only controlling the software.”

Tiger has begun quietly shipping the new Tbox, which they say offers everything a typical post house would look for in a shared storage solution, including ease of use. “Post facilities are in a unique position in terms of storage requirement — they have a huge need for capacity and performance but little IT expertise, unlike bigger companies with dedicated staff. These are often a few guys in a shop producing content, they don’t have the time.”

Tbox uses standard components for the hardware and add a special sauce based on metaSAN and meta-LAN technology. It also integrates Fibre Channel and 1/10GbE (they use both 1GbE and 10GbE). “So it’s all the standards that people want to use, plus Fibre is more often used for 2K and 4K, while 1/10GbE is becoming increasingly affordable. It also includes auto-defragmentation of the file system that automatically gets to work when it senses lack of activity.

There are options available based on amount of storage or connectivity users require. The goal, says Lamborelle, was to keep it as simple as possible for the user — connect the storage to your computer, download and install the driver, and you are ready to collaborate.

None of the complexity that is associated with SAN.



Users can connect up to 16 clients directly on the box but can add a switch for as many as needed. Tiger emphasizes, there are no software licenses to manage.

At NAB, the company will show how multiple Tboxes can be unified in a single storage pool. Tiger has also been working with IBM and will be showcasing how LTO-based LTO tape libraries can participate in a tiered-based storage solution using Tiger’s CluStore, so all content looks like one logical volume.

Their current workflow app, ProjectStore, gives editors the option of working on a large volume or to create virtual workspaces that are private and allow the creator control of who sees the content and what content can be shared. It supports Avid bin locking. Version 3 introduces “storage content awareness,” so if you are working on an NLE from Avid, Apple or Adobe, Tbox will automatically recognize files, how the project was built and what clips are being used and for what project. Lamborelle refers to it as a sort of MiniMAM.

Tbox pricing varies between low \$20K to mid \$40K, depending on capacity (16TB-64TB) and connectivity (all models equipped with 8x 1GbE, and then add up to 4x 10GbE or up to 8x FC or a mix).

By Randi Altman

EMC’s Isilon scale-out NAS now supports 4TB

HOPLINTON, MA — EMC Isilon has further extended the benefits of its scale-out NAS solutions in archival storage with new support for 4TB drive technology. This new support enables a single Isilon volume to scale up to 20 petabytes, delivering 33 percent more capacity per rack and using 30 percent less power per rack. Support for 4TB drives also permits Isilon to boost resilience at scale with faster rebuild times for failed drives and superior data protection for simplified management of archive data.

EMC has also made EMC’s Syncplicity cloud-based online file sharing service for beta, with the option for customers to use either Isilon scale-out NAS or Atmos object-based storage for storing files on-premise or the cloud. This approach gives IT new options for managing files and more control over where managed files reside while offering users a secure, easy-to-use solution for file sync and sharing across all of their computers and devices.





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