

► VIDEOGRAPHY.COM: LIGHTING AS STORYTELLING: LEARN FROM CSI



\$4.99

the print and online resource for the video production professional

# videography

February 2005

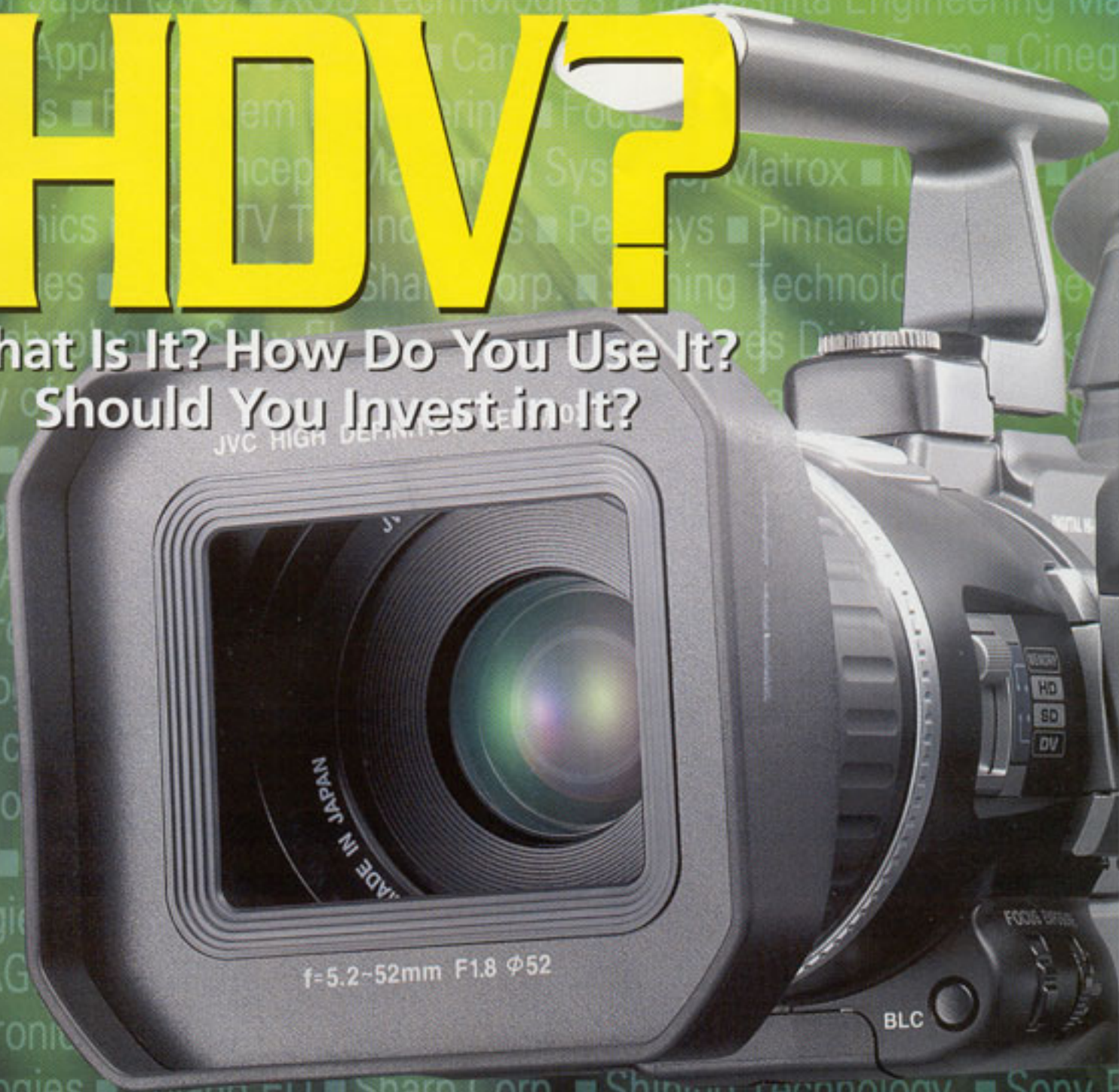
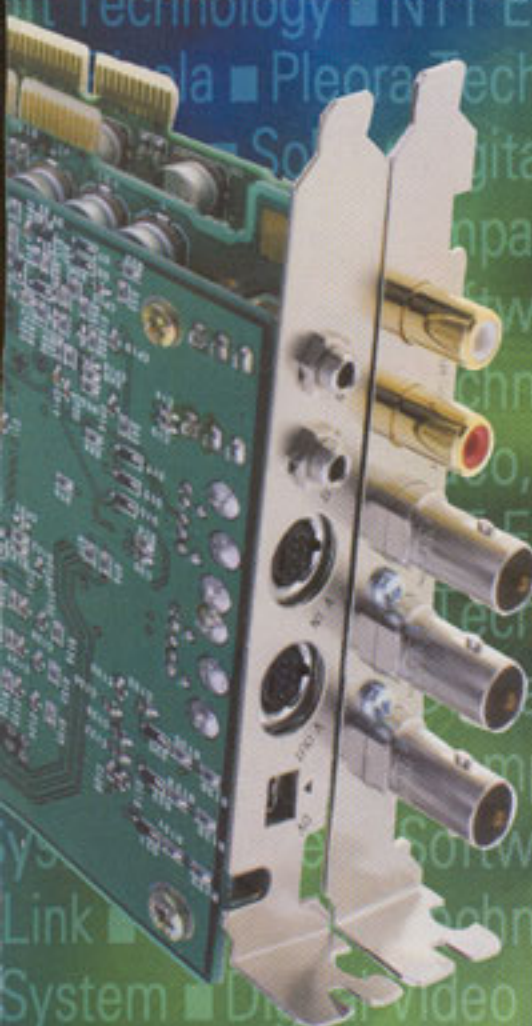
► **ONLY IN  
VIDEOGRAPHY:**  
**Mark Schubin**  
Reports from the  
HPA Tech Retreat

► **MANAGING  
YOUR POST  
WORKFLOW**  
Lessons from  
*The Aviator*

what's the  
deal with

# HDV?

What Is It? How Do You Use It?  
Should You Invest in It?



► **Hustle  
& Flow**

Can Super 16 Work  
for Independent  
Filmmakers?



CMP



# 1 Beyond HD Pro

## Can You Really Edit Uncompressed HD on a Budget?

Oliver Peters

We are two years away from the original FCC-mandated analog television cut-off date of Dec. 31, 2006; although this directive specifies over-the-air digital transmission, not necessarily HDTV, high-definition production and post are certainly big factors that every program supplier and broadcaster should evaluate. Although easy integration of computers and video components for DV and uncompressed SD post has become commonplace, many folks have unsuccessfully tried to extend this same "do it yourself" approach to inexpensive HD editing workstations. Unfortunately, the data throughput required by HD taxes even the most advanced systems. Though HDV may be the answer for those whose needs are satisfied by a compressed HD format, the answer remains murky for those who need the highest image quality offered by uncompressed HD. How can a facility work with uncompressed HD without breaking the bank?

In the November issue of *Videography* I high-

lighted 1 Beyond's Harmony shared storage solutions, which have already found success with such clients as the VOOM HD satellite network. This month I take a closer look at 1 Beyond's editing workstations to see why clients—who could write a check for virtually any of the "big name" systems—choose to implement solutions offered by this relatively small firm. Terry Cullen, a computer industry veteran with a passion for video, started 1 Beyond eight years ago as a video systems company dedicated to supplying high quality, end-to-end solutions based on open systems and digital video technology. In the early days, that meant DV; since about 2003, however, even Cullen's largest clients are looking for cost-effective solutions for requirements such as high-def broadcasting. As Terry's guest in the company's Boston-area offices, I took a closer look at the result of these development efforts: the 1 Beyond HD Pro high-definition editing workstation.

### 1 Beyond HD Pro Hardware

It all starts with the foundation. The HD Pro units are a custom-fabricated PC workstation built into a

---

heavy aluminum, low-noise, self-contained cabinet. The heart of the system is a motherboard with dual-Intel Xeon processors. These chips run in the hyper-threading mode to deliver the processing power of four 3.6GHz CPUs. My HD Pro workstation was configured with 1 Beyond's HotRock storage system, which consists of an array of high density drives in a segmented RAID 3 configuration. To reduce noise and heat, the HotRock solution uses higher density IDE drives that run at a cooler 7,200 RPM instead of smaller 15,000 RPM SCSI drives. Each of these removable drives is connected to its own private bus. They are striped through a SATA controller as RAID 3-protected storage and can deliver a sustained data rate of over 400MB/s—plenty for multi-stream 10-bit uncompressed high definition video. In addition to the "online" HotRock storage, the HD Pro cabinet also contains "nearline" storage in the form of a set of removable drives that can be used for redundant media backup or archival storage of projects and media. No special software is required, since Windows XP already includes all the necessary backup utilities.

The combination of the storage architecture and the cabinet design results in a quiet and cool unit, but the best thing is to have no equipment in the editing suite at all. Each HD Pro workstation comes with the Silent Partner remote system operation option, which enables a client to place the system and disk arrays up to 60 feet away and extend cables so that only necessary devices are on the desktop, such as monitors, keyboard, mouse, speakers and DVD/CD drives. HD Pro comes with all of the standard computer peripherals: USB, FireWire, floppy disk. Even the system drive is removable, which is an important consideration in government and corporate installations where security is of concern and drives and even whole computers are often placed in a safe. The typical HD Pro workstation—equipped with software, an SD/HD SDI card and 2.5TB of HotRock storage—sells in the low-to-mid-\$30K range (or around \$800/month on a lease). You can expand up to 7.5TB of internal storage or integrate HD Pro into a Harmony shared storage network.

#### **Bluefish 444**

Since 1 Beyond is not just an NLE provider, the company's workstations can be optimized for DVD authoring, graphics and other special tasks. Today, of course, my focus is HD post. As a reseller and partner to a number of companies, 1 Beyond can offer NLEs configured with the Bluefish444, Blackmagic Design or Canopus SD and HD video capture/output cards. Generally, these choices offer *uncompressed* editing driven by Adobe's Premiere Pro software—the exception is the Canopus HD card, a cost-effective *compressed* HD solution that operates under Canopus' Edius software. Bluefish444 is Digital Voodoo's brand name for its PC (Windows and Linux) line of products. Digital Voodoo has been doing 10-bit SD and HD longer than nearly anyone else and is now optimizing codecs to run best under Windows with multiple processors.

The Bluefish444 HD|Fury card inside the HD Pro system I tested offers input and output of 10-bit, 4:2:2 SDI and HD-SDI video and eight channels of AES/EBU digital audio. It will simultaneously play out HD and a downconverted SD signal. The card also includes onboard tri-level sync, which is critical for any 23.98p/24p projects. For applications requiring 4:4:4 video I/O, 1 Beyond can configure its systems with Bluefish444's HD|Lust or HD|IridiumXP cards. There are also plenty of options for customers who want SD and DV configurations.

The HD|Fury card includes drivers for both Premiere Pro and After Effects, so you can see your edits and compositions on an HD monitor.

To keep a customer's HD monitoring costs low, 1 Beyond also sells Samsung flat panel video screens and HD-SDI-to-DVI converters so that the designer/editor can see HD video playback on a moderately priced but gorgeous display. I was able to bounce between the two open applications and see HD video output. For now, these uncompressed HD solutions offer single-stream, real-time performance, since HD|Fury has no additional onboard hardware to process multiple streams of real-time HD data.

### Adobe Digital Video Collection

The 1 Beyond editing configuration is based on the complete suite of professional applications from Adobe, which includes Premiere Pro, After Effects, Photoshop CS, Encore DVD and Audition. Adobe offers one of the most seamless video bundles, covering all the bases for editing, audio, graphics, effects and DVD authoring. Adobe Premiere Pro was updated to version 1.5 at NAB '04 after having been available for a little more than a year. The new version was introduced as a completely rewritten update of Premiere and addresses most of the professional concerns editors had with the earlier versions. Aside from GUI and feature improvements, there are major advances "under the hood" that take advantage of Windows XP media handling and the opportunities offered by the new SD/HD digital cards. The list of improvements includes multiple sequences, use of CPU and GPU power for real-time previews, AAF support, better interchange with other Adobe products, accurate built-in software videoscopes and advanced color correction. In short, Adobe has brought a professional editing application to its PC customers that offers many of the best features of Avid and Apple Final Cut Pro editing. Adobe Premiere Pro 1.5 also includes some of the most advanced audio editing features of any NLE—like sample-based 24-bit/96kHz audio and native 5.1 surround mixing within the editing timeline, which many clients feel is essential for HD editing.

In the context of the 1 Beyond HD Pro systems, Premiere Pro's normal 8-bit video processing actually operates in 10-bit space when combined with Bluefish444 uncompressed YUV HD codecs, so image quality is as good as it gets and media handling is superb. I tested a batch capture from a Panasonic D5-HD VTR. No hiccups or dropped frames. When you play HD media, control of the video clips is very responsive using any of the controls, whether those are the standard J-K-L keys on

the keyboard, Premiere Pro's on-screen jog wheel and shuttle sliders, or your mouse. Thanks to the HotRock storage, the media manipulation on the HD Pro units is some of the most responsive I've seen.

Rendering is a necessity once you add transitions or effects, so having the extra processing power is a must. For instance, a :01 dissolve rendered in about three seconds, an :08 clip with three simple picture-in-picture effects took about two minutes, and a :10 single-layer clip with a slow zoom and Z-rotation rendered in about a minute. If you want more complexity, moving into After Effects is as simple as opening the Premiere Pro project within After Effects. Build your composition and then simply copy and paste the AE timeline back into Premiere Pro. During my test, nearly all of the standard AE effects came across, with exception of the Synthetic Aperture color-correction plug-in. Alternatively, you can render in After Effects and import QuickTime, AVI or image sequence files back into Premiere Pro. It seemed to me that render times for compositions were slightly faster inside Premiere Pro than After Effects, probably due to the optimization by Bluefish444 of its HD codecs for Premiere Pro. Terry Cullen mentioned that newly optimized plug-ins will have been released by the time this article is in print; the plug-ins should cut these render times in half.

### Value Added

1 Beyond has focused on some unique services in its end-to-end approach to make HD post more affordable. The most expensive investment in gearing up for HD is usually the VTR; to mitigate that cost, 1 Beyond has partnered with several Digital Video Transfer Centers. This is where the nearline transfer storage comes into play. If you can't justify the purchase or rental of an HD deck, then ship your drives and tapes to a 1 Beyond center, which will capture the media for you. These are shipped back and you transfer the media from the nearline storage to the internal HotRock array for editing. Once you've finished your cut, consolidate the final media on the nearline drives and ship them back to the transfer center, where the sequence will be recorded to a master tape, along with any combination of dubs that you might need. Seems like a great solution for customers with only the occasional high-def project. ▼

*Oliver Peters is an Orlando-based postproduction consultant who specializes in editing and interactive media. He may be reached at [www.OliverPeters.com](http://www.OliverPeters.com).*