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Serving the Broadcast, Cable, Production, Post Production, Business and New Media Markets

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VOLUME 23, NO 9 • MAY 4, 2005

WHAT'S INSIDE

Cable Sends Mixed Messages

Despite embracing tech, doubts remain

by Gary Arlen

SAN FRANCISCO

Video-on-demand reigns supreme. In an engaging, but unscientific, poll at each general session of the National Cable & Telecommunications Association's (NCTA) convention here last month, attendees were asked to rank key factors in the cable business during the year ahead, using an interactive device at their seats. Invariably, VOD was the top objective, sometimes notching 56 percent of the votes amidst a roster of five options, usually including digital video recording, high definition TV and voice over Internet protocol (VoIP).

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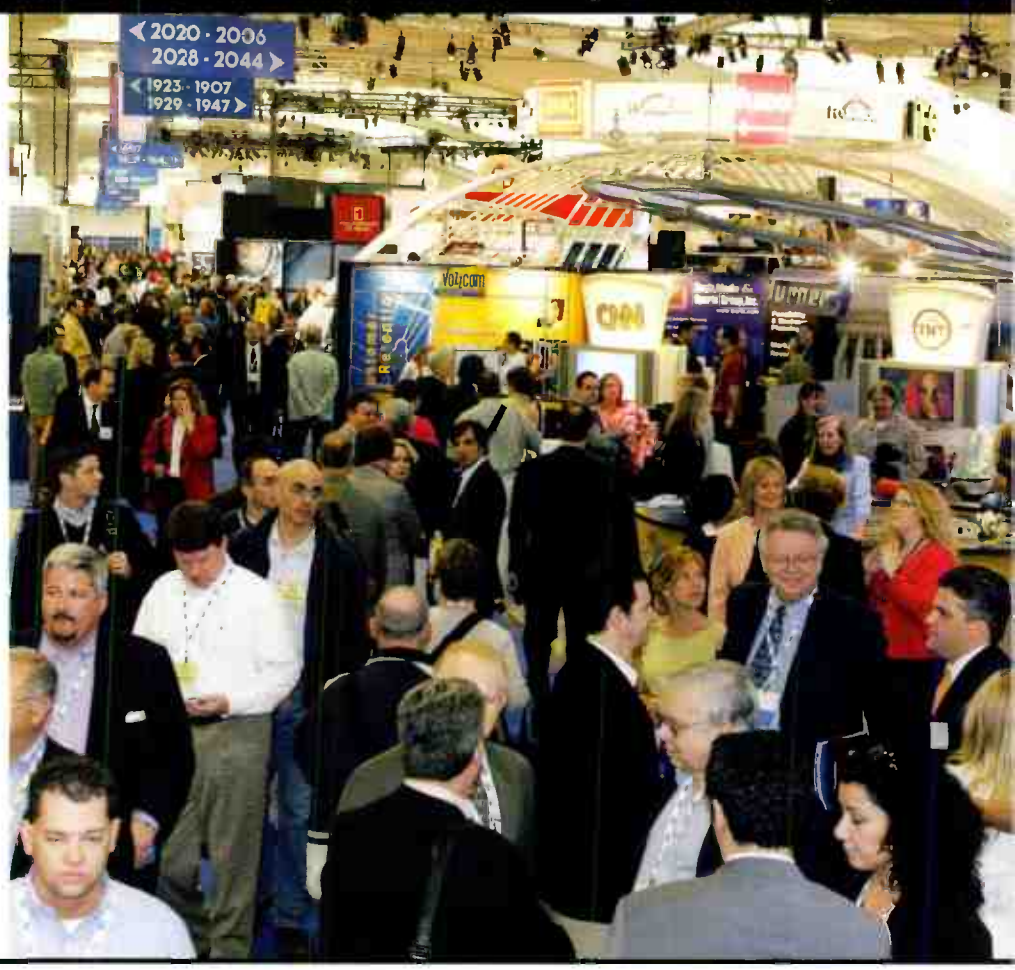

Microsoft Pushes IT Workflow

Software giant rolls out CSF for production, broadcast

by Craig Johnston

REDMOND, WASH.

Corporations have long used their IT infrastructure to streamline their operations and reduce costs, but broadcasters, television and film production facilities, because of their specialized tools, have found integrating IT an expensive proposition.

"People would come in and do a custom integration between an asset management system and an Avid, as an example," said Carlos Montalvo, chief marketing officer and vice president of business development for asset management developer North Plains Systems Corp., based in Missisauga, Ont.

"So long as that was the norm, it was going to be very, very hard for television studios, broadcast studios, or any one who is producing video-based content to start getting the types of cost reduction, cost efficiencies, time to market that have already been proven in the corporate space."

LACK OF INTEROPERABILITY

Microsoft, Inc. didn't have to look outside its own front door to realize these problems in video production; the company's own Microsoft Studios experienced the same problems with the lack of interoperability between devices and departments

But the software giant also did its homework with broadcast and production facilities, as well as a number of vendors supplying production devices to the marketplace.

MICROSOFT, PAGE 16

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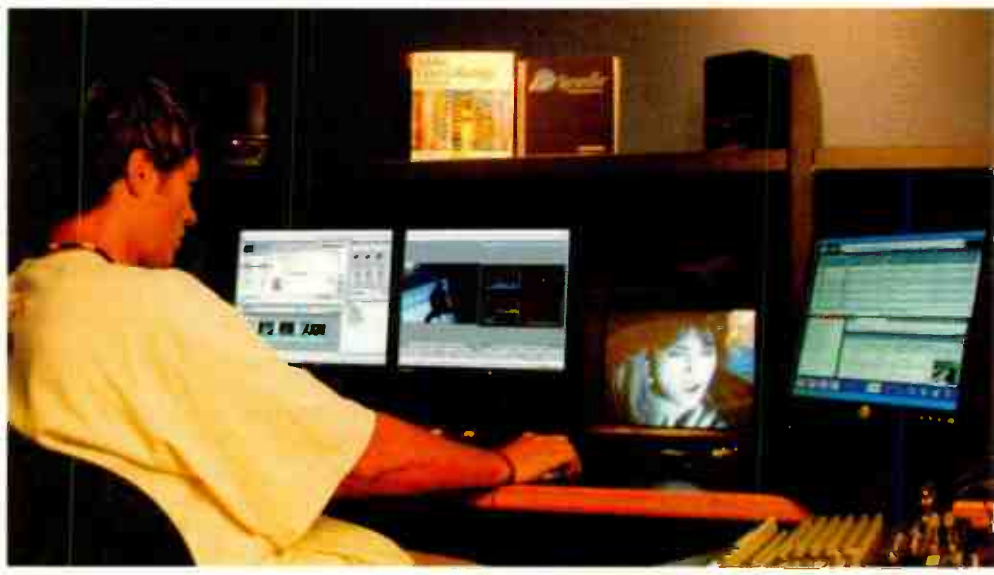

CONTRIBUTING WRITERS

NAME:
Karl Paulsen

COLUMN:
Media Server Technology

Over the years, we've observed the delivery model for moving images evolve from the over-the-air broadcast to cable/direct-to-home transmission and more recently to the Internet. One of the latest permutations is streaming media. Originally defined as just "multimedia" ... 22

NAME:
Randy Hoffner

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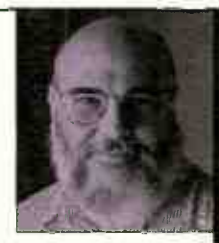

NAME:
Andy Ciddor

COLUMN:
Let There Be Lighting

I was recently checking over the list of equipment that a rental company proposed to supply for a project. The rental specification was rather loose, having originated from the production manager, as the LD hadn't started when the spec was written. As the rental ... 28

FROM THE EDITOR

Cable Notes

Technology is a double-edged sword. It's given us incredible media choices but it has also opened a Pandora's box of troubles, from piracy to excess and bad taste, (Remember Bruce Springsteen's ode to cable, "57 Channels and Nothing's On"?) Last month's NCTA show, however, illustrated the cable industry's enduring belief that, although expensive to implement, technology is the answer to its future.

DVRs for example, will figure quite prominently in cable's future; if you didn't think so before, the Comcast-TiVo agreement certainly got your attention. We are just now beginning to realize the vast potential of DVRs, which could become the dark horse of the cable industry. Cable operators are adamantly opposed to the concept of à la carte; legislators are considering extending indecency standards to cable and satellite. Some of those same legislators are linking the concept of à la carte as a way to resolve the indecency issue for Pay TV. But is it too radical to think that DVRs could be the answer? Possibly, but with the rapid growth in storage and compression, customers could pick and choose their programming on a daily, monthly or weekly basis that would fit their schedules and tastes and download everything to their DVRs, therefore bypassing the "one size fits all" style of today's cable tiers.

DVRs are just one of the hot technology items on cable's plate this year. Who knows what will come next year as the cable industry contemplates a rapidly changing technology landscape.

* * * *

With this issue, we bid adieu to our long-time Technology Editor, Bob Kovacs. Bob joined IMAS Publishing in the late 1990s, bringing his expertise, background and dry wit to the pages of **TV Technology**. Bob is not leaving our industry, however; if you're involved in the BAS 2 GHz transition, you may run into him from time to time. We wish Bob the best and acknowledge his outstanding contributions to the magazine. Best of luck, Bob!

Tom Butts
Editor
tbutts@imaspub.com

LETTERS

Send to Editor, TV Technology at e-mail *tvtech@imaspub.com*

Getting Mighty Crowded

Dear Mario:

I was wondering what your thoughts were about how things will be a few years down the road concerning DTV.

I've been enjoying OTA HDTV for several years now and I show anyone who has any interest just how eye-popping HD can be. What I'm afraid of is the multicasting aspect of this, which I'm starting to see happening now. As the OTA channels start adding subchannels to the mix and take away bandwidth from the primary HD channel, the quality really goes down quickly. Before you know it, the HD channel looks worse (blockier) than the NTSC channel does, especially if you have a lot of high motion content.

The local public broadcaster in my area does an "HD Virginia" reel a couple times an hour and most of the shots (mostly static) look superb, but anything with motion looks very bad. They currently multicast four channels during the daytime and two during primetime and weekends. Do you expect this to eventually be the case, or do you expect that technologies will arrive to allow multicasting without having an effect on the primary HD channel (better compression technologies)? But, if better technologies arrive to do this, won't the broadcasters just keep adding channels? I'm sure they would reach the point where they wouldn't do more channels, but what will HD look like then? Please advise.

Bob Bush
Warrenton, VA

Mario replies:

If there's money to be made, broadcasters will multicast or datacast. And you can't rely on improved compression. Broadcasters are required by law to use MPEG-2 for their primary video. So the multicasts could conceivably use AVC, but the main HD program couldn't.

Sorry to be the bearer of sad tidings.

Your pal,
Mario

Why Fly?

Dear Walter Schoenknecht:

I enjoyed your article about post 9/11 travel, ("Going On-Location in a Post 9/11 Environment," March 9). I can certainly relate to the problems of flying with gear these days. I had just finished a shoot in Princeton, N.J. on Sept. 10, 2001 and was scheduled to fly home from NYC on 9/11. Instead I went to work for "60 Minutes," one of my regular clients, and shot pieces about the disaster for Lesley Stahl and Ed Bradley.

I finally managed to get home a week later by flying out of Philadelphia. But you would have thought I was carrying dynamite by the way they inspected my camera equipment, and I guess I don't blame them.

Several times since then I've had every single case—and if I travel with everything it's 30 cases—hand searched at the airport. Other travelers have missed their flights waiting on security to finish searching my bags so they can get to those belonging to the other passengers. And you're in real trouble if you fly into one airport but fly out of another, because each of your tickets shows up on the computer as a dreaded one-way fare, singling you out for special attention by the TSA. I now try to arrive at the airport a minimum of two hours before I need to board. At least now it's a little better flying out of Atlanta since they have the new inspection machines and rarely hand check any more. But you never know...

But what I mostly do now is drive. If it's a six hour drive or less it's actually faster to drive than to fly if you factor in the time it takes to rent a van (or two) and claim the bags (if they all arrive). I probably have $6000 invested in Atlanta shipping cases that now spend most of the time empty in my basement. If I do have to fly, Delta is still at $35 per bag for media equipment, but it's pretty rare to find a ticket agent these days that knows that.

Rob Rainey
Norcross, Ga.

TV TECHNOLOGY
THE DIGITAL TELEVISION AUTHORITY

Vol 23 No 9 May 4, 2005

Telephone: (703) 998-7600
Editorial fax: (703) 820-3245
e-mail: tvtech@imaspub.com
Online: www.tvtechnology.com

The staff can be contacted at the phone extensions listed or via e-mail using first initial, last name @imaspub.com

Publisher: Eric Trabb 732-845-0004
Associate Publisher: Marlene Lane ext. 128

Editor: Tom Butts ext. 122
Managing Editor: Deborah McAdams ext. 177
Technology Editor: Bob Kovacs ext. 150
Associate Editor: Lauren Evoy Davis ext. 149

News Correspondents: Susan Ashworth, Frank Beacham, Robin Berger, Mary Gruszka, William T. Hayes, Craig Johnston, Claudia Kienzle and John Merli

Production Director: Davis White ext. 132
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Ad Traffic Manager: Lori Behr ext. 134
Classifieds/Product Showcase Coordinator: Linda Sultan ext. 109
Ad Coordinator: Caroline Freeland ext. 153
Circulation Manager: Kwentin Keenan ext. 108

President/CEO: Stevan B. Dana ext. 110
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Chief Financial Officer: Chuck Inderrieden ext. 165

TV Technology (ISSN: 0887-1701) is published semi-monthly by IMAS Publishing (USA), Inc. 5827 Columbia Pike, Third Floor, Falls Church VA 22041. Phone: 703-998-7600. FAX:703-998-2966. The international edition is published monthly along with the month's second domestic edition. Periodicals postage paid at Falls Church VA 22046 and additional mailing offices. POSTMASTER: Send address changes to TV Technology, P.O. Box 1214, Falls Church VA 22041.

For address changes, send your current and new address to TV Technology a month in advance at the above address. Unsolicited manuscripts are welcome for review; send to the attention of the appropriate editor. REPRINTS: Reprints of all articles in this issue are available. Call or write Emmily Wilson, P.O. Box 1214, Falls Church, VA 22041. (703) 998-7600 ext. 148 Fax: (703) 671-7409. Member, BPA International.

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Executives Appointed

LAKE SUCCESS, N.Y.

Canon U.S.A. has selected Yoroku Adachi as its new president/ CEO and managing director of the company's board of directors.


Yoroku Adachi

Outgoing President/ CEO Kinya Uchida will return to the company's Tokyo headquarters where he will serve as advisor. Uchida has been the president since 1999 and during his leadership the company's sales and revenues grew 16 percent.

Adachi worked for Canon U.S.A. from 1978 through 1992 and returned to Canon, Inc. in 1993 when he was named general manager of the photo products marketing management division.

In 2001, he was appointed president and CEO of Canon China and Canon Hong Kong as well as Chairman of Canon Singapore. In 2004, sales in Asia increased 61 percent, according to the company.

WASHINGTON

Brian Roberts, president and CEO of Comcast Corp. has been elected Chairman of the Board of Directors of the National Telecommunications Association (NCTA). In addition, Nick Davitzes, CEO Emeritus, A&E Television Networks was elected vice chairman, Tom Rutledge, COO Cablevision Systems Corp., was elected treasurer and Bob Miron, Chairman & CEO, Advance Newhouse Communications was elected Secretary.

People

BAS Relocation Schedule Announced

WASHINGTON

Last month Nextel filed its BAS Relocation Schedule and Implementation Plan with the FCC. It lists the markets that will be relocated by the end of stage one (currently Sept. 7, 2006) as well as those that will be relocated by the end of stage two (currently Sept. 7, 2007).

While Nextel said it was committed to completing the BAS (broadcast auxiliary service) relocation process by Sept. 7, 2007, it warned the stage one schedule "may need to be adjusted to account for unforeseen circumstances or complications in a particular market." MSTV, NAB and SBE filed a request to extend the deadlines for completing mandatory negotiations with Nextel that were established in the Report and Order. Nextel has expressed strong support for the proposal, which remains pending at the FCC.

In the BAS Relocation Schedule, Nextel, in many cases, combined multiple DMAs into a "market cluster" to be converted at one time.

Market clusters in stage one include: Atlanta, Chicago, Detroit, Houston/San Antonio/Austin, Kansas City, Las Vegas, Miami, New England, Phoenix, San Francisco, Tampa/ Orlando, Fla., and Washington, D.C. All other market clusters are in stage two. More information is available at the BAS relocation Web site: *www.2GHzRelocation.com*.

2 GHz Transition

Survey: Cable Theft Rates Fall

WASHINGTON

The number of cable thefts by consumers has declined by more than 50 percent in four years, according to a survey commissioned by the National Cable & Telecommunications Association (NCTA). The drop is attributed in part to the migration to digital TV.

The study reported that digital cable, high-speed Internet access and VoIP were found to have low theft rates, less than one percent. The theft rate for analog service stands at 4.65 percent (the percentage of theft per 100 homes the cable network passes) down from 11.5 percent found in the NCTA's 2000 survey.

Another way that groups are fighting theft is by identifying unauthorized connections and converting those accounts to paying subscribers.

"Cable's new advanced services not only have delivered increased value to our customers, they've also established new barriers to theft," said Nilda Gumbs, director of NCTA's office of cable signal theft.

Although theft rates are declining, the survey reported that annually the cable industry is losing $4.76 billion in unrealized revenue, down from the $6 billion that the 2000 survey reported as an annual loss.

In 1986 The NCTA Office of Cable Signal Theft was created as a team effort between NCTA and the Motion Picture Association of America (MPAA).

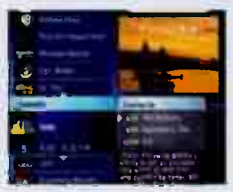
Cable

OCAP Update

LOUISVILLE, COLO.

Several new developments in the rollout of the Open Cable Application Platform (OCAP) spec were announced at the recent NCTA show.

SeaChange International reported that South Korean cable operator CJ CableNet launched the world's first OCAP-based on-demand interactive TV service using SeaChange's VOD and IP Video Systems platform.



CJ CableNet's OCAP-based Hello D applications include local weather and news, games and SMS (short message service), as well as commerce applications including reservations for local gold "tee times" and theater tickets. CJ CableNet has 1.2 million subscribers throughout S. Korea.

On the set-top side, Digeo, which markets the Moxi interactive cable platform, announced support for the OCAP CableCARD Host Interface Licensing Agreement (CHILA). The agreement will make Digeo set-tops compatible with all cable conditional access standards.

OCAP is a middleware software layer specification to enable the developers of interactive television services and applications to design products that support any cable television system in North America, independent of set-top or television receiver hardware or operating system software choices.

iTV

Sooner Tuners

WASHINGTON

As much as Rep. Joe Barton (R-Texas) would like to craft a comprehensive telecom reform bill, it appears to be emerging in bytes and pieces.

The chairman of the House Commerce Committee started talking tuners last month. He told a room full of lawyers that he and his colleagues were preparing to ask the FCC to move up the integrated tuner deadline, according to several reports.

The current FCC mandate calls for phasing in digital over-the-air tuners according to screen size. The final deadline for all TVs (with analog demodulators) to also have digital reception is July 1, 2006—a full six months after the date that Barton would like to shut off analog TV signals. He would prefer to see the tuner mandate kick in completely before, rather than after, the analog shutdown.

Meanwhile, the Consumer Electronics Association would prefer to chuck the phase-in and go with an overall deadline of March 2006. The tuner mandate now calls for set makers to put digital demodulators in half of all 25- to 35-inch TV receivers and all those larger by July 1. The CEA contends that during the transitional phases, consumers tend to avoid sets with digital demodulators because of the price premium. Without a labeling law, however, it's not clear if consumers understand thatthe price premium represents the difference between a TV that gets over-the-air signals and one that soon will not.

Indecency is another item on deck, and while not traditionally included in telecommunications law, it may become so, de facto, as legislators look to take it across media platforms. Barton was still talking about bringing cable under indecency regulations as the NAB show approached. The chairman has often noted that most people don't discern between broadcast and cable channels, especially with 200 or so channels to surf. However, with broadcast indecency bills halfway through the chute on Capitol Hill, it's unlikely that cable will get indecent exposure during this congressional session.

Deborah McAdams

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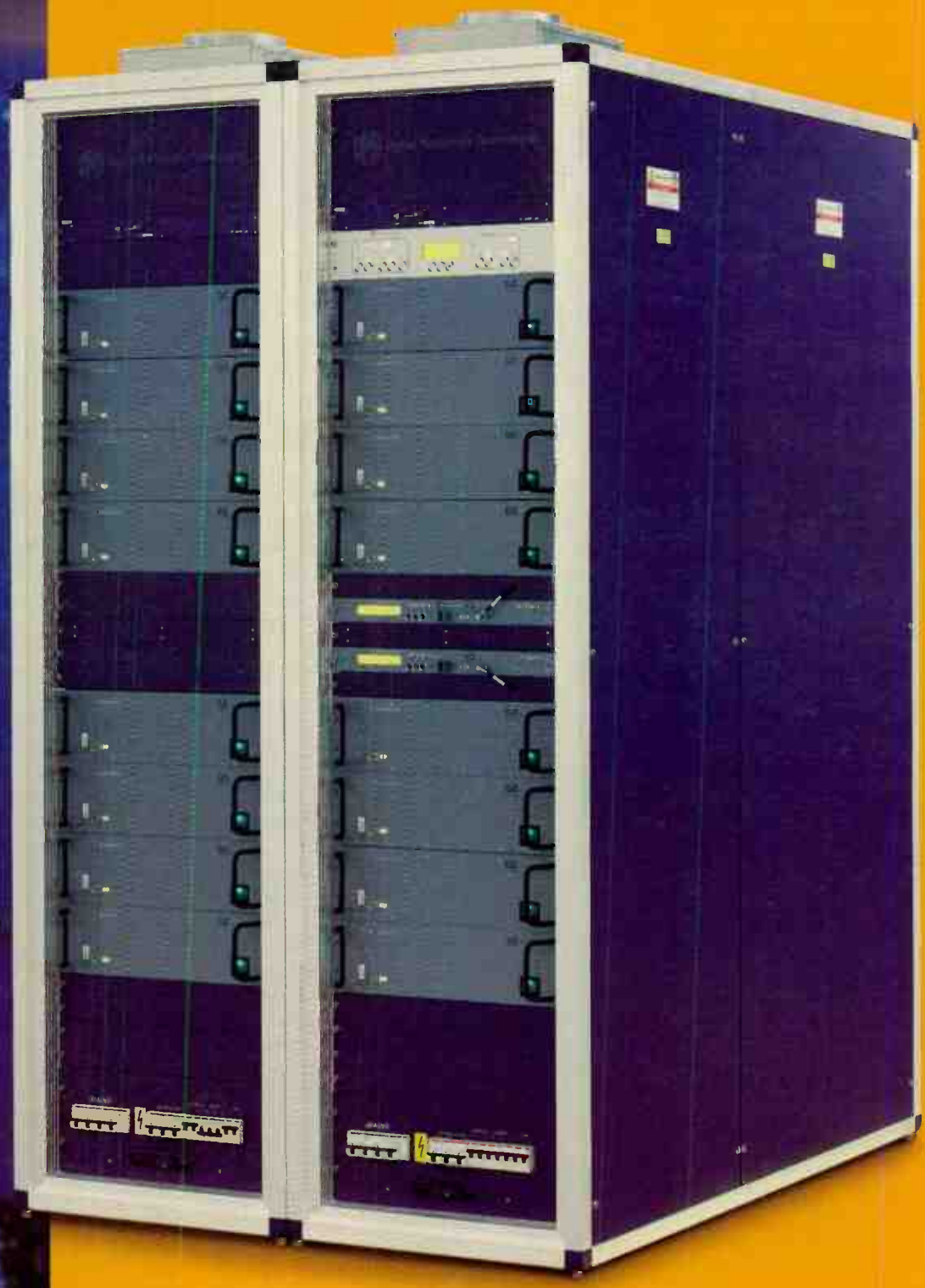

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NBC Adds DTV Value with Weather Plus

First DTV-only network to reach 60 percent of U.S. TV households by summer

by Mary C. Gruszka

NEW YORK

Since the 2004 launch of its NBC Weather Plus digital channel, the first DTV-only network in the U.S, according to NBC Universal, the peacock network has signed up enough affiliates to reach more than 60 percent of the U.S.

"We have about 20 stations on the air now and commitments from others by the summer," said Michael Steib, NBC Weather Plus vice president. Major station groups signing on include Hearst-Argyle, Gannett, Belo, New York Times, Post Newsweek, Raycom Media, Clear Channel Communications and all the NBC O&Os, according to Steib.

In addition to over-the-air carriage on stations' digital terrestrial channel, NBC Weather Plus is available on cable in more than 7 million homes, with distribution agreements with Comcast, Cox, Charter and Time Warner Cable. Some affiliates are also streaming the feed, like 9news.com, KUSA in Denver. NBC Universal also hopes to expand coverage and explore other platforms for NBC Weather Plus.

Steib said that the rollout has been a success in providing both a service to local communities and generating revenue for the stations.

"We have found a way to carve out part of the spectrum to create a new channel, one that contains quality national content from NBC Weather Plus and NBC News with coverage from our local NBC affiliate partners," Steib said

L-BAR

The Weather Plus screen is divided into two main sections, a 2/3-screen squeezed-back video part toward the upper right, and an L-bar graphics section framing the left and bottom part of the screen.

The live video section contains content including live or recorded video with meteorologists, weather maps and other weather information, as well as commercials. The L-bar is for graphic content such as the five-day forecast, current conditions in different areas around the region or country, local time, updates like airport closings and school closures, as well as a section for ad placement.

This content is created with Weather Central Weather Plus and LIVE systems weather graphics hardware, software and data for both national and local weather information.

"The NBC Weather Plus local system is similar to the interface meteorologists are already used to," Steib said.

NBC Weather Plus is also made possible, in part, by technology that allows the sharing of an HD channel with at least one SD service on a single 19.4 Mbps ATSC stream.

The network and affiliate systems are similar.

The network feed, which originates from the NBC Weather Plus studio in Secaucus, N.J., is a subservice of the NBC East/West high-definition feed. It contains elements from a Weather Central "Live" computer (with custom software for NBC Weather Plus) and video playback from a Leitch Nexio server. There are actually two "Live" computers, so the network can stay on the air while a schedule is being updated in the inactive PC.

The Weather Plus screen is divided into two main sections, a 2/3-screen squeezed-back video part toward the upper right, and an L-bar graphics section framing the left and bottom part of the screen.

The actual total bit-rate for the NBC HD feed is considerably higher than a standard ATSC ASI stream, although the format is still ASI. This allows for local modification (branding, etc.) and re-encoding of the HDTV feeds with minimum artifacts, and it accommodates the Weather Plus network feed, which is about 3 Mbps.

At the affiliates, "both the HD feed and the NBC Weather Plus feed are decoded to baseband [HD-SDI and SDI], since both signals need to be modified with local elements before they are broadcast," Steib said.

Affiliates can elect to air the national NBC Weather Plus feed or insert local content into all or part of it. The flexibility of the system allows affiliates to key over the part taken up by the 2/3-screen squeezeback, substituting local content for the national feed. The affiliates also can replace the L-bar with a local one.

Since a number of sources, like live studio or remote feeds or existing weather systems could be incorporated into the squeezeback, the system includes video and audio routing matrices, as well as an optional video server for recorded sources.

Also included are a video keyer and DVE for squeezeback. The squeezebacked video is reunited with audio in an audio embedder, the output of which feeds Weather Central. There the squeezebacked picture can be integrated with a local L-bar.

Weather Central, in addition to creating weather information, is used to develop playlists for automated operation. The keyer, routing matrix and video server all can be controlled by Weather Central to change content elements, insert local content into or over the national feed, and insert commercials.

The Weather Central ouput can go to a bypass switcher (which will automatically take the network feed if the local feed fails) and is next encoded into an ASI stream. This Weather Plus SD ASI stream, at approximately 3 Mbps, is then multiplexed with the station's HD 19.4 Mbps ASI stream into a multiplexer/processor that produces a single 19.4 Mbps ATSC stream for broadcast.

"It's a cost-effective infrastructure, highly automated and affordable for affiliates," Steib said.

Leitch and Grass Valley, listed as preferred vendors, developed turnkey systems to meet NBC requirements. Equipment is installed by the stations, but the companies provide commissioning and training, in addition to systems design and project management.

THE LEITCH SOLUTION

The Leitch solution includes an optional Nexio server for stored sources.

"We have integrated our Nexio server to Weather Central's playlist control for playback of server-based material, i.e., commercials, packages, talking heads, etc.," said Douglas Korte, vice president, system sales & engineering, Americas, Leitch Technology. "Switching of the routers and keyers is controlled by Weather Central but also supports standard protocols, opening the possibility for control from other applications, such as automation, if required."

Also included are a Panacea SDI video/audio router, Videotek AES audio-only router, ARC3901 aspect ratio converter (for the squeezeback), DSK6801 keyer, MXA6800+C2D audio multiplexer (and other NEO and 6800 cards) and the DTP 110 digital turnaround processor.

The type of encoder used for the output of Weather Central is determined by the stations and includes encoders from Harmonic, Tandberg Television, Tiernan or Harris, according to Brian Cabecerias, vice president of Americas Sales for Leitch. Some stations also opt to install output decoding and monitoring, NTP (network timing protocol), and A/D converters.

The DTP does bit-rate reduction and statistical multiplexing, and it can also insert EAS scrolls, logo overlays and PSIP in the MPEG domain, according to Korte.

"The DTP is not a standard statistical multiplexer," Korte said. "We take the 19.4 Mbps HD signal and bit-rate, reduce it to around 16 Mbps and maintain the HD quality."

Then the HD and up to four SD feeds are dynamically multiplexed together, sharing and balancing the bits around nominal data rates for each channel, based on the needs of the program content.

"DTP does a processing called rate shaping, which is akin to statistical multiplexing," Cabecerias said.

"DTP takes advantage of the MPEG processing knowledge we gained when Leitch purchased AgileVision," Korte said. "We've taken some of AgileVision's MPEG processing and ported it to a standard computing platform, making it more affordable for a broader market while maintaining quality."

The output of the DTP in the Leitch system feeds an ASI to SMPTE 310 converter that is then sent to the station's transmitter.

THE THOMSON SOLUTION

The Grass Valley solution includes a Nextream N4433 IRD satellite receiver and a Quartz DVE-Keyer with pre-sized squeezeback for local content insertion, according to Tom Hindle, director of national and strategic accounts for Grass Valley. "The system also performs AES audio stream de-embedding/re-embedding for 'breakaway' to local audio content," he said. NBC supplies music, which the stations can use when a weather map or other graphics have no audio of their own.

A Grass Valley Nextream ViBE dual-pass MPEG-2 encoder converts the embedded SDI output of the local Weather Plus system to ASI for input to the Terayon BP5100 Mux/Groomer/Recoder. The Mux/Groomer performs the dynamic statistical multiplexing of up to three SD ASI inputs (one of which is Weather Plus) plus one HD signal to produce an ATSC 19.4 Mbps output. It also takes in PSIP data.

The ViBE encoder is based on the Thomson 3G video compression chip, according to Hindle. "The better job the encoder does ahead of the multiplexer, the higher the quality of the picture at the lower bit-rate," he said.

The Mux/Groomer is also fed a backup ASI national weather feed, and a loss of video alarm by the ViBE encoder triggers the Mux/Groomer to switch to the backup.

That ASI from the Mux/Groomer is then sent to a Linx ASI to SMPTE 310 converter before being sent to the transmitter.

Grass Valley is also supplying its M-series two-channel record/two-channel playout server for local content storage. ■

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Metadata: Ready When You Are?

Sportscasters increasingly turn to metadata to track highlights

by Robin Berger

LOS ANGELES

Highlights solutions are the hot apps for sportscasters—as long as they can manage and access them easily and cost effectively.

"Most of the entertainment companies do not own the rights to the footage," said Janet Gardner, president of The Perspective Media Group, a San Francisco-based consultancy that advises clients like Fox, the BBC and Scripps Networks on media management. "This limits how material is repurposed and the amount of investment that an entertainment company might put into funding or archiving it over a long period of time."

In contrast, there's a clear-cut business model for production solutions. Gardner sees "a big win" in tagging the highlights components with metadata early on and making them available to production groups ASAP, using content management tools.

"The biggest shift that has allowed them to do that is digital file-based media," she said. "With [for example] Dixon or Colledia at the front, there's enough metadata to start to hook with digital content, leveraging it," she said. ESPN used Siemen's Business Services' Colledia for Sport and Colledia Control Components to round out its media asset management and production systems. Fox overlapped the data provided from EVS field drives at the Super Bowl with Dixon Sports Computing's DXIS system for highlights to provide an application for producers.

THE BIG SCORE

NBC used the Cyradis CTG-1000 to send low-res proxy files to Blue Order's media management platform at the 2004 summer Olympics.

The most immediate benefit to NBC was giving production groups ready access to content. And, because digital video was available as it was being recorded, the crew could begin assembling in-and-out cues for editing before the recording stopped.

Loggers will be able to concentrate more on highlights at the upcoming Winter Olympics in Turino, Italy.

"We're taking all the live stats [results feeds] from the Olympic Organizing Committee and using that information as a layer of metadata," said Greg Lau, NBC Olympics' vice president of information technologies. "We can do the foundation-level logging [start list, athlete names, standings, scores] automatically."

During the upcoming games, NBC will also extend the mission of Jacksonville, Fla.-based contractor Information Display Systems to send stats feeds to the Internet and cell phones. The data, Lau said, can be readily fed to any platform because it is captured in XML.

According to David Mazza, senior vice president of engineering for NBC Olympics, NBC can now "find shots we could never find before." Access benefits extend beyond production to employees in NBC's research department, helping them identify "ratings spike" events.

The Dixon Archive Selecter

"They were able to go right in, pull up that night's reference recording and see exactly what was on at that point in time—no muss, no fuss, no bother," said Mazza.

Sports production is not a large market compared to the Global 2000 corporate sector most sought by vendors, said Gardner. And sportscasters want to buy customized solutions, not the less labor-intensive, off-the-shelf database management tools.

These two factors, plus a perceived downturn in the economy and a noted acquisition feeding frenzy over the past three to four years, have thinned the ranks of vendors catering to sportscasters.

NBC control room in Athens

But the popularity of content management tools has made them a component in many traditional broadcast products, said Gardner, citing Quantel's asset management offerings and Avid's Unity product line as evidence of this trend.

CHALLENGES

Gardner believes the biggest challenge for sportscasters is creating a model to tag information from a wide array of sources and aggregate it into a workable database.

But HDTV has complicated the process.

"In the last eight to ten years, a lot of the manufacturers had standardized digital file formats—with MPEG and MXF files, we would have been very close to having a nice, closed-loop system that involved a tapeless workflow," said NBC's Mazza. "Unfortunately, there is no emerging HD file standard for production."

HDTV has also brought bandwidth constraints.

"The bandwidth required for HD at least triples your disk requirements," said Mazza. "We still do a good portion [of the 20,000 to 30,000 hours of recording] on videotape because the cost of storage and tape far outweighs the cost and complexity of storing it on disk for the short term we're there."

Mazza is looking for a file handoff solution that lets any manufacturer's product send files to any other manufacturer's product.

"A huge step was made with the MXF standardization," said Mazza. "But MXF is just a wrapper—inside there's just a compressed file."

If that file is not compatible with other software, the system won't be able to read it, he said.

Mazza also stressed the importance of finding an e-VTR for HDTV.

"Blue Order will make the transition hook up," he said in reference to NBC's solution. "But Sony does not, as yet, have an e-VTR for HD—no proxies to make the system work." ■

Making the Most of IT

Broadcasters, producers take advantage of advances

by Craig Johnston

SEATTLE

A TV Rip Van Winkle who awoke in the technical space of a recently rebuilt broadcast station today, after 20 years asleep, would be in for a shock.

"Your broadcast infrastructure is rapidly evolving into a robust IT infrastructure," said Steve Hellmuth, senior vice president, technology and operations at NBA Entertainment.

Whether it's a network like Hellmuth's NBA TV or a local affiliate, old Rip would find the modern broadcast facility is an information technology plant that happens to specialize in video. The advantages of IT are just too good to pass up.

KLRT

"We looked at it along the lines of, 'if we could make machines do the majority of the work, that was our approach,'" said Errett Porter, director of engineering at Little Rock's KLRT (Fox). The station built its news operations around Video Technics NewsFlow and AP's ENPS computerized newsroom.

Porter said he and his predecessor have eliminated the need for humans to move video materials from place to place. "We're trying to touch it as few times with a human as possible." One step that makes that possible is establishing an ID to follow the video through the entire news process.

"When [the producer] gets their rundown set for the day, an associate producer will then go in and drop in a clip request," he said. "It assigns an ID for that story so that when an editor or another producer or the news director, whoever, looks at that rundown, it shows that the clip has already been requested."

When the story comes in from the field on DVCPRO or DV tape, it is ingested at one of the NewsFlow edit stations, using the pre-assigned story

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...in a nutshell

SONY

video production to go.

Now you can take video production anywhere... at any time... for anyone. Because now Sony introduces the AWS-G500 Anycast Station™ live content producer. Switch seamlessly between anything, whether computer graphics, digital still images, pre-recorded video clips or live camera feeds. Use it for any event, including news, seminars, business meetings, distance learning, religious services or high school sports.

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It's no surprise that the amazingly versatile AWS-G500 Anycast Station live content producer was named a *Broadcast Engineering* Pick Hit at NAB 2004.

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THE ANYCAST STATION SYSTEM OFFERS STANDARD:

Primary Inputs 1 to 4: Analog composite, S-Video, DV/Primary inputs 5-6: RGB (XGA, SXGA)

The Anycast Station system can be reconfigured by the user to fit specific requirements. Each input on these modules can be assigned to any of the primary inputs.

Each video input module also includes a 6 pin i.LINK®* IEEE 1394 connector which allows the user to record each isolated video input onto a standard i.LINK IEEE 1394 video compatible external hard disk drive.

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Sony's virtual monitor bank includes live video displays of all your sources, Program and Preview, Streaming Video Output and more – all on one compact, LCD display!

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It's not just a six-input audio mixer. It's 48 kHz audio with incredible 24-bit processing.

SWITCH PC GRAPHICS & VIDEO.

Transition seamlessly between XGA/SXGA graphics, digital still images and video. Switcher operates at 1280 x 1024 resolution and offers a Mix/Effects bank. Plus Downstream Key and fixed station logo.

YAKETY YAK.

Talkback microphone and intercom connector are built in.

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Operate Pan / Tilt / Zoom for Sony VISCA™-interface cameras, including the new three-CCD BRC-300 broadband remote camera.

RIDE THE SONY SHUTTLE.

i.LINK VTR control and basic control functions of external hard disk drives used for playing back video material.

WIRELESS KEYBOARD.

Basic text typing capability.

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The Anycast Station system allows seamless, live switching. Each input source supplied is up-converted and processed within a 1280 x 1024 progressive domain to allow switching between sources of different resolutions while keeping picture degradation to a minimum.

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The built-in streaming encoder and web server can handle several simultaneous web clients. Or connect to a service provider to let the entire world tune in!

SONY

Broadcast quality. The perfect complement to the Anycast Station system, the BRC-300 broadband remote camera is Sony's first pan/tilt/zoom camera to offer the quality of three Sony CCDs.

Projected gains. The 15-pin RGB output is perfect for driving a Sony projector, such as VPL-FX51. So you can show the whole team PowerPoint® presentations, prerecorded video clips and live camera feeds – in any combination!

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SONY

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Preserving Broadcast's Legacy

Many factors go into determining feasibility of digitizing, tracking legacy assets

by Claudia Kienzle

HAMILTON, N.J.

With the proliferation of media outlets all hungry for content, there is newfound demand for classic television shows and historically significant footage. Somewhere in the dusty stacks of videotapes in a television station's storage room or basement may be valuable gems that could find a new audience and generate new revenue.

If this older footage were converted to digital files stored on disk-based storage units, managed by a Media Asset Management (MAM) system, it would be easier to search, access, repurpose, distribute and preserve.

But vendors of MAM systems say that the business case for bringing older footage into the digital domain depends upon many factors, including the potential market for the contents, the expense of digitizing it, the cost of the MAM software, and the cost of maintaining antiquated analog tape decks just to play back the tapes.

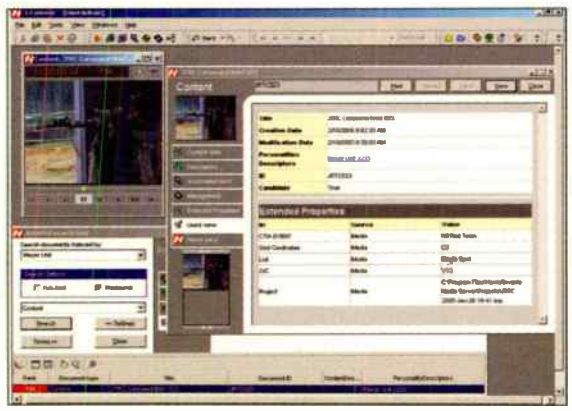
HIERARCHY OF VALUE

"Only the broadcaster can determine if it's worthwhile to digitize and repurpose the video stored in the basement. While they may be under-valuing those assets, they are also staring in the face of a very costly proposition—perhaps hundreds of thousands of dollars—to move those assets from their physical archive to their active digital archive," says Jason Danielson, senior director, solutions, for Omneon, in Sunnyvale, Calif. "Even if the broadcaster already has ample digital storage space, the process is still not free. It requires manpower and sophisticated MAM software."

For some, Danielson said, it might be prudent to keep the older analog video equipment in working order and to keep assets on their original masters. For others, it might be better to ingest these videotapes into the digital archive at once, especially if there's an immediate need for it or if production companies or broadcasters are willing to license the rights to it. Or, broadcasters can simply archive-on-demand, bringing tape-based assets into the digital archive, as they are needed.

Although Omneon does not offer its own MAM system, the Omneon Spectrum media server has a robust media API and supports industry-standard file transfer protocols to allow third-party vendors—of automation, MAM, conversion and other systems—to access and manage the server's media content.

"There are two approaches broadcasters can take: digitize legacy content into digital media files stored on a server; or leave the essence on videotape and just capture the metadata to track the contents of that tape repository. While there are many reasons to digitize a tape-based library—to search and track the content, repurpose it, stream it over the Internet, preserve it, license it to others, and more—it may not be cost-effective for every broadcast operation," said John Wadle, vice president of technology at OmniBus Systems, in Denver, Colo.



Harris Invenio Media Asset Management incorporating the I-Content tool.

"It's difficult to say whether it's worthwhile to digitize legacy assets. It will vary depending upon the type of content. So each station must assess the potential of its own tape-based archive before incurring the expense of digitizing it," said Wadle.

Omnibus offers OPUS Content Management, a suite of software components that facilitate proxy encoding, annotation, searching, viewing and device control, as well as interfacing with enterprisewide MAM systems.

FORMATS WITH A FUTURE

"With regards to legacy video assets, where older videotapes and machines are not falling apart, we recommend pulling that video content into your digital archive as needed. However, where tape machines are deteriorating, and users want to preserve it, there's no choice but to invest the time to digitize it into the digital file-based domain," said David Schleifer, vice president broadcast and workgroups for Avid Technology, Inc.

"To guarantee access to digital files well into the future, we highly recommend using open-standard formats, like MXF, which serves as an ideal wrapper for the essence media. Essence media can be maintained in DV, DVCPRO, MPEG, or IMX file formats, among others. HD content can be archived in DNxHD, a codec format we developed to ensure future access to HD media files," said Schleifer. Whereas most HD codecs are proprietary or optimized for a camera format, DNxHD can be downloaded from Avid's Web site (www.avid.com) to support digital files for MAM and archiving efforts.

Avid offers Media Manager, a MAM software system that is integrated within its newsroom and production systems so that MAM is handled as a background process. Media Manager automatically gathers information about each media asset being ingested into any Avid workstation.

"The biggest reason broadcasters should manage their older, tape-based media assets is that the tapes can be stored anywhere, making them difficult to locate, and it's expensive to maintain a tape-based environment. Tapes deteriorate and, and if there's only one copy, the content can be lost forever," said Sarah Foss, director of product marketing, digital asset management, Harris Corporation's Broadcast Communications division, Sunnyvale, Calif. "A digital environment prolongs the life of digital assets, and provides a more efficient way of repurposing them, for greater efficiency and cost-savings."

Implementation of Harris' Invenio MAM system at N.Y.-based Rainbow Network Communications (RNC) has improved RNC's profit margins by generating new DTV broadcasting opportunities. RNC is using the Harris Invenio tool suite to search, browse, catalog, archive and control its automation system, which maintains and updates the vital metadata associated with media files for RNC's new VOD (video-on-demand) service.

"If the goal is to increase the visibility of assets by different departments, broadcasters need to make sure staff members are keying in the metadata necessary to increase the chances of retrieval," said Foss. Harris also offers Arkemedia, another intelligent, enterprise, Web-based content management system with tools for ingest, search, browse and media management.

A SEAMLESS FIT

"We designed our MAM tool so that it would work seamlessly with existing systems within the broadcast facility—such as traffic, automation, nonlinear editing systems and video servers," said Joe French, senior vice president of sales for Masstech Group Inc., in Toronto, Ont.

Masstech's MassStore content management system was chosen by KCTS, the public television station in Seattle, Wash., to solve several problems, including making content and metadata more accessible via Windows; creating a proxy version of archived content that could be searched and edited; and interfacing with a Harris automation system, SeaChange video servers and a Sony Petasite tape archive.

"The entire ingest, archive and playout workflow was streamlined with MassStore, which tracks and manages media assets automatically and makes them readily available to the Harris automation system," said Bud Alger, engineering manager for KCTS. "Media preparation and program segmenting have been made more efficient through the use of MassStore's MassBrowse feature. And, with the automatic preparation of the proxy and the Web-based user interface, it's now easier to find content and view it at our desktops."

By automatically creating the proxy that users can browse and edit, French said, "It's not necessary to move the full-resolution master copy, which makes the workflow much more efficient."

FUTURE-ORIENTED STRATEGY

"With respect to digitizing legacy assets, the challenge to broadcasters is whether to fully digitize their material or just computerize their indexes. Full digitization would yield the ability to visually browse during research as well as preserve the content," said Rich Stora, director of broadcast operations, for Irving, Texas-based Sundance Digital.

"If a good electronic database exists that describes the assets, then it can all be imported into the new system. Otherwise, manual transcription will be required. If they choose not to digitize the material, then they will have to rely on the accuracy of the labels on the physical media," said Stora.

Designed for broadcast, Sundance's Seeker digital workflow management system ties different departments—traffic, production, editorial and master control—together so that each knows what the other is doing, as well as the whereabouts of media assets. Seeker also "seeks out" metadata from various broadcast devices in the pipeline and integrates it into its own indexing.

"We have seen several cable channels make some hay from old, sometimes forgotten, programming," said Stora. "My advice to broadcasters is to maybe think twice about disposing of old video material, or letting it languish. If the media had value once, it often has a way of gaining value again." ■

IT Video

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ID to index it. If time allows, the reporter can rough-cut, or at least log the material, at his or her desktop in low-resolution video.

If it's a race to get the video on the air, "they will go into the edit suite and look over everything, and then do the cut there," said Porter. KLRT has five NewsFlow edit stations in the building, and a sixth in its MicroSat van. With the van parked at the station, it can be connected to the network-attached storage via CAT 6.

"We've got 6 terabytes of storage spaced across four NAS boxes," said Porter. The edit bays are split among three of the NAS boxes, "to try to keep the traffic broken down to where, if we hit a crunch, and there's a bunch of late-breaking stories, we don't have all the edit suites pushing to the same box."

When editing is finished, the video is pushed to a VideoTechnics Apella Clip Server, which interfaces with ENPS to put the stories in show order.

The KLRT satellite truck uses VideoTechnics' NewsFlow

Material on the servers is archived onto DVD after a week.

Porter gives the system high marks for learn-ability. "Once you've been taught, you're looking at the system saying 'It's incredible how much this system actually does for me.'"

TWIN CITIES PUBLIC TV

Public stations need to keep track of a lot more video program material than at their commercial brethren because many of the programs come with three-year licenses, said Bruce Jacobs, chief technologist at Twin Cities Public Television.

"We really look at ourselves as one kind of large unit working together, IT and broadcast engineering."

—Steve Hellmuth, NBA

That goes doubly so for TPT due to its duopoly operation, broadcasting on Channels 2 and 17 in the Twin Cities. Jacobs said the library is typically about 10,000 hours of material. "We get full utilization of that [long license] investment only if we use the programs, and the only way we can use them is if we keep them."

TPT installed Sundance Digital's Titan multichannel automation system, putting the operator console in one of the former side-by-side Master Control rooms and turning the other into an ingest room with dual prep stations.

For reliability, both the Omneon video server and automation system sport a primary and backup; the Masstech nearline storage has redundant power supplies as well as RAID controllers and drives.

Jacobs said a key to the system is the information sharing between the ProTrack traffic system from Myers

IT VIDEO, PAGE 14

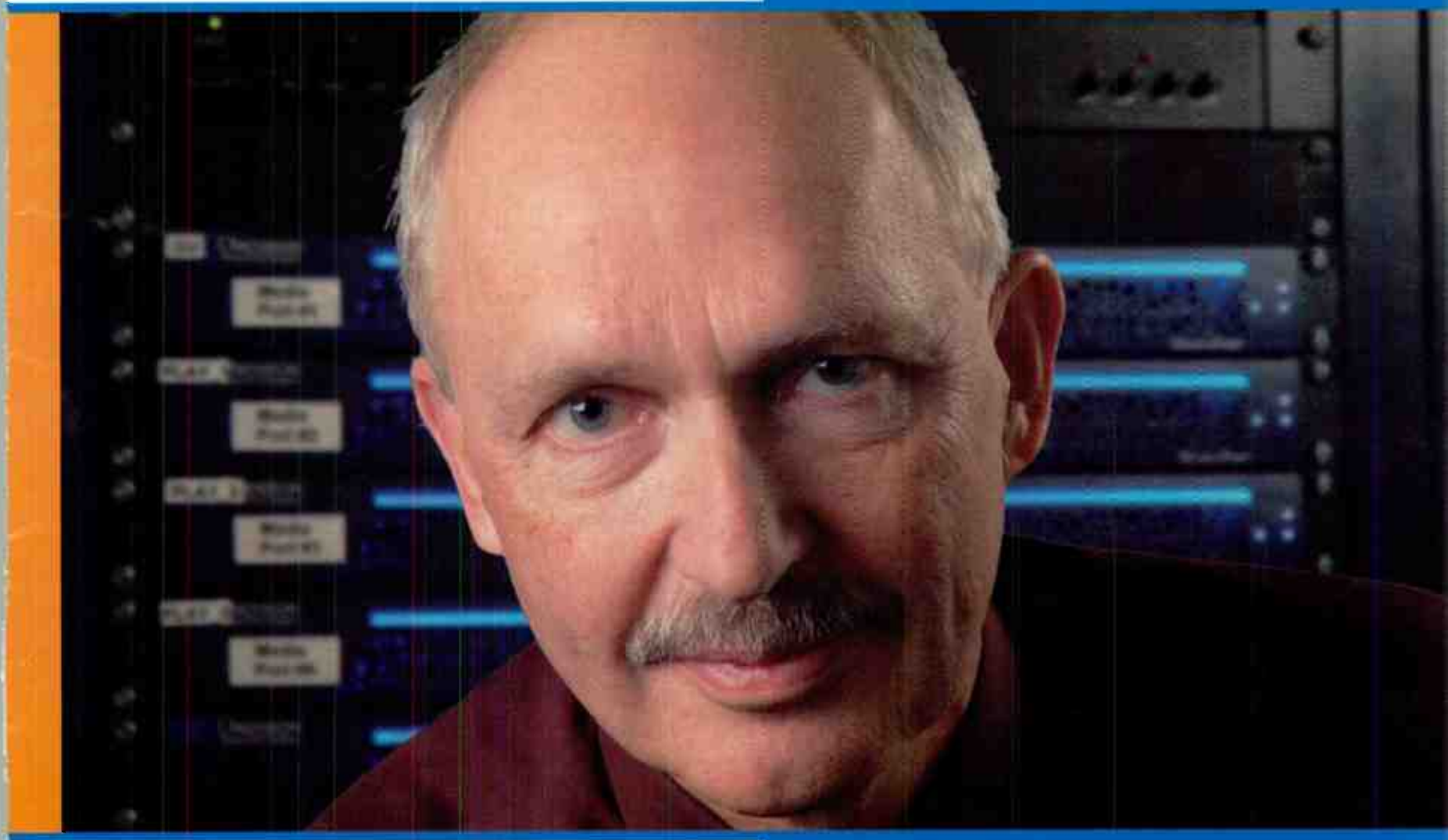
"We selected Omneon servers and shared storage for playout, and have since connected our production processes. Omneon is the one solution that fits our tight budget, meets all our requirements today and supports us as our needs change."

Helge Blucher
Vice President
Detroit Public Television

Detroit Public Television operates on a very tight budget with limited resources. When it came time to select a media server, they needed a cost-effective solution that gave them both operational efficiencies and the flexibility to satisfy multiple requirements.

With Omneon Spectrum™ media servers, Detroit Public TV implemented a solution that worked across their entire operation. Built around the concept of Smart Scalability™, Omneon Spectrum systems can be configured to meet precise format, channel count, bandwidth and storage specifications. What's more, Omneon Spectrum systems can then be expanded in smart, manageable increments—without replacing the original system and in many cases, without taking the system off-line.

To learn more about the unique advantages of an Omneon Spectrum media server system visit www.omneon.com.



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IT Video

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Information Systems and the Sundance automation. "One of the things that attracted us to both ProTrack and Sundance is that they talk to each other quite nicely."

A Sundance Intelli-Sat Broadcast Record Manager system controls satellite feeds scheduled by ProTrack, and the metadata accompanying downlinked material is fed into ProTrack. The video material is transcoded by a Telestream FlipFactory and passed into storage.

Locally produced material has metadata derived from the original work order. ProTrack relays the metadata from both external and local productions to the Titan automation system.

Operators check to see the actual program timing matches the metadata, and any corrections are relayed by the Titan back to ProTrack, which also keeps track of a program's license expiration date, and tells the Titan when to delete material from storage.

A Web interface allows all material in the archive to be viewed by anyone with appropriate permission.

As for programming that's been sitting on the shelf on videotape, when its next run approaches, ProTrack prompts the Titan to order it ingested into digital form.

The IT-based system has allowed TPT to realize real savings, reducing manpower by three staff positions.

NBA ENTERTAINMENT

"We really look at ourselves as one kind of large unit working together, IT and broadcast engineering," said NBA Entertainment's Hellmuth. "We also look at ourselves as being very, very data-driven and organized with data."

The data he referred to begins with statistics entered at each NBA arena as a league game is played. A statistician might record a jump shot by a particular player as a three-pointer and the X, Y and Z location where he took the shot. The same timecode generator coding the feed leaving the arena also timestamps each statistical entry.

Video feeds of all NBA games being played are received at the NBA Entertainment studios in Secaucus, N.J., along with the statistical data string. The video material is ingested into Grass Valley Profile servers, and the statistics are annotated by loggers on Virage logging stations.

The logger tightens up in- and outpoints for plays on the video, adds color information ("Iverson pumps arm") and rates the play for entertainment value. "Now we have video on servers, indexed with statistics, available for editors in our nonlinear editing environment," said Keith Horstman, director of NBA Entertainment IT.

NBA Entertainment actually has two editing environments. One is the Grass Valley Vibrint system for quick, news-style editing. While games are under way, the facility provides new, fresh highlight packages every 15 minutes.

The other editing platform, reserved for higher-end, craft editing is a Pinnacle edit system on an SGI platform. All the indexed video, including nongame material, is available to both systems.

An NBA Entertainment server facility

The facility is designing a deep digital archive for past games footage, but currently records all games to digital Betacam tape. Location of the material on those tapes is added to the logging information so historical video can easily be retrieved.

In addition to video material provided to the NBA TV channel, NBA Entertainment operates its own VOD service, and it pushes video highlights out to cell phones and over the Web.

"It's one of the fun things about working here at the NBA," said Horstman. "When we do development on our statistical tools, the development we do on our Web site is immediately extensible to the broadcasts, and it shows up in the broadcasts and in our NBA ticker that you see at the bottom of our TV channel."

So IT is rapidly becoming the name of the game in a broadcast plant—witness KLRT Director of Engineering Errett Porter's career path. Prior to his current position, he said, "I was the IT guy." ■

Channel 242: *Birds of the Rainforest*

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BT Creates Media 'Buzz'

Satellite provider announces multimillion-dollar investment in worldwide Mediahive expansion

by Robin Berger

WASHINGTON

In an effort to appear more media-savvy, BT Broadcast Services, the world's oldest communications company, has changed the name of its digital media and broadcast arm to BTM&B (BT Media and Broadcast).

In the process, it has integrated another sector of BT (British Telecom)—BT Rich Media—that develops channels for digital content. It will also work with a second—the recently established BT Entertainment division—to further facilitate delivery.

The initiative includes a plan to invest tens of millions of dollars in "Mediahive," the BT digital management content platform, and to launch digital media "hives" in Europe, Asia and the United States within the next two years.

SPECIAL DELIVERY

In short, the company wants to convince content rights owners that it can deliver any time, anywhere to any device.

"They see an underserved market today—the management and distribution of digital content," said Patrick Mahoney, senior analyst for consumer technologies and services at The Yankee Group, a Boston-based media research firm. "Given their global network capabilities, and the market finally readying itself for the digital distribution of content, BT's got an opportunity."

Mahoney explained market readiness as evidence of ample broadband penetration and consumers' appetite for more bandwidth-intensive content. As for the BT makeover itself, Mahoney sees the move as a good one.

"I think it's important for companies like BT, who have been steeped in a telco/networking background, to try to rebrand their image," he said. "A dedicated focus more toward media and content will enable them to hopefully get more discussions with the content companies."

MEDIAHIVE

BT describes Mediahive as an "integrated encoding, storage, and management and distribution platform for digital TV, film, music and graphics media."

At its core is a storage area network with a capacity of 3 million GB.

Mediahive ingests content and digitizes it into the appropriate format at rates of 30 kbps to 270 Mbps, according to the company. It then repurposes and redistributes content to channels-to-market, including playout services to TV; broadcast archive and clip sales; advert and program distribution; secure streaming or downloading to broadband internet and mobile; and digital screen media for retail environments and corporate networks.

Bill McNamara, GM, BT Media & Broadcast

To date, content is integrated into the BTM&B international fiber and satellite network, controlled by the International Media Centre at BT Tower in London.

"We've been moving the digital content management system along for about five years," said Bill McNamara, general manager of BTM&B, the Americas, based in New York. "We finished the project in 2002 and have continually enhanced it."

McNamara noted that the tens of millions of dollars in new capital over the next 24 to 48 months would largely finance "ingestion points and Mediahive capabilities throughout the world."

HIVES IN THE MAKING

Despite the official terminology, Mediahive—or simply "hive"—is also used to describe an ingestion point in the system. The difference between a hive and a teleport is the extent to which the former can repurpose content.

"A teleport would typically take in MPEG-2 DVB video and be an essential switchpoint in turning it around for distribution," McNamara said. "A Mediahive would repurpose the MPEG-2 DVB format into any format necessary to get out to the mobile phone, desktop or personal digital assistant."

Right now, the only bona fide hive is in London's BT Tower.

The company is looking to build its first new hive in the U.S., most likely in the Los Angeles area, said McNamara. He noted that BT has a teleport with room in the nearby community of Marina del Rey. McNamara estimated construction on the site would begin within the next 12 months. He believed that the construction of a second site in continental Europe would begin within 12 to 24 months, and a third in Asia would begin within the next two years. ■

Microsoft

CONTINUED FROM PAGE 1

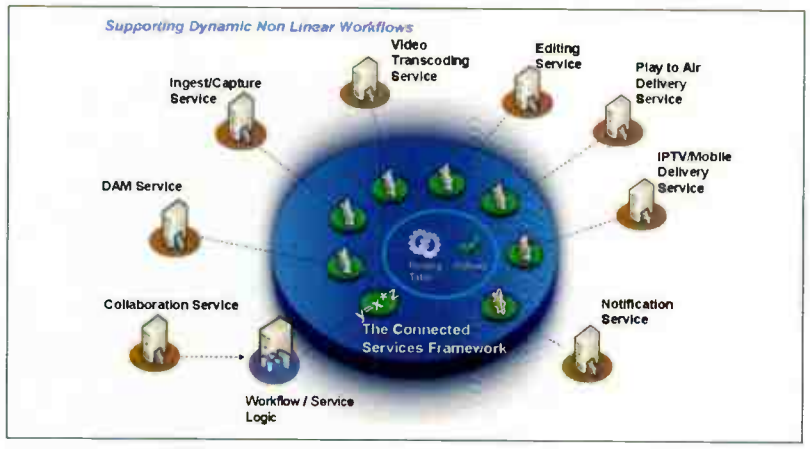
Earlier this year, the company introduced Microsoft Connected Services Framework (CSF). Last month, just prior to NAB, Microsoft announced a CSF application for broadcast, video and film production facilities.

A demo at Microsoft's NAB booth followed an end-to-end production facility workflow, where HD material from a Panasonic P2 camera was transcoded through a Telestream FlipFactory and ingested into an OmniBus server, indexed and cataloged by a North Plains asset management system and edited on an Avid editor.

Sony Pictures Entertainment became the first company in the broadcast and film industry to adopt CSF.

"By installing the Microsoft Connected Services Framework, Sony Pictures Entertainment has been able to extend our existing production environment to enable new services, increase interoperability, improve workflow management and reduce costs," said Jerry Ledbetter, vice president of Digital Media Initiatives for SPE.

CSF is an integrated, server-based software for building and managing services, using a service-oriented architecture (SOA) and industry standards such as Extensible Markup Language (XML), Simple Object Access Protocol (SOAP) and Web Services Description Language (WSDL).



A diagram of the CSF workflow

"Connected Services Framework provides the missing link in making media workflows as 'off the shelf' as possible," said David Heppe, senior vice president, sales and marketing at Telestream, based in Nevada City, Calif. "Vendors write connectors once to a common service that shares content and communicates with other apps."

TRACKING PROJECTS

Microsoft's David Alstadter, senior director with Microsoft Worldwide Media & Entertainment Group, spent 17 years in production and post production in Los Angeles. "One big issue that I faced when I was supervising post production was how do I track where a project is in real time, how do I know if I'm on-time to deliver [the project]?" he said.

CSF allows managers to monitor a project's process via Web interfaces. And through a Live Communication Server, different parties in the production will be able to stay in contact by IM-ing each other.

"The editor can notify the producer through an IM that a piece of content has arrived or is completed," said David Chow, senior product manager with the Microsoft Worldwide Media & Entertainment Group.

"And the producer can notify all their reviewers that they need to review this content by a certain date."

Alstadter noted getting approval from various producers and production heads is another task CSF streamlines by "taking out the human intervention of taking a tape out and walking it over to someone's office, or worse, driving it up to their house on Mulholland Drive in L.A."

Instead, those who need to sign off on a project can access an approval copy over the Web in the format they need. "[Editing people] want to review it with a lot more details, with timecode, timestamp, a lot of the editing details involved," said Chow.

"Other executives just want to see it laid back on a device at home, through a set-top box," he said. Connected Services allows them to review their approval copy either at a SharePoint portal or through a Media Center PC.

The Connected Services Framework is bundled with six modules for connecting devices. Chow notes that this allows customers to test the CSF system in a partial sense in their facility before jumping in with both feet. ■

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The 5.1 Challenge

The roadmap to surround sound has many detours

by Mary C. Gruszka

NEW YORK

5.1 surround sound is an important element of the HDTV viewing experience, adding excitement to a movie or immersing viewers in a sporting event.

Discrete 5.1 audio refers to three front channels—left, center, right (L, C, R); two rear (surround) channels—left and right (Ls, Rs); and one lower bandwidth (in terms of bits used for coding), low-frequency effects channel (LFE). A consumer with an AC-3 decoder can produce all these signals from a full 5.1 source.

DOWNMIXING

Unfortunately, for audio mixers, there are only a small percentage of viewers actually listening in discrete. Many folks may be listening to surround sound, but it is surround sound that has been matrixed to two channels and then decoded back to surround.

The type of surround in these circumstances can vary depending on the encoder/decoder used. Until recently, it was common to create a mono and band-limited surround channel that was connected to one or two surround loudspeakers. Newer encoder/decoders provide separate full-bandwidth left and right surround, along with the usual front left, center and right signals. But none so far, produce the low-frequency effects channel.

Even with surround encoding/decoding technology readily available, many, if not most, viewers hear 5.1 not as surround sound at all, but downmixed to either stereo or mono.

The 5.1 audio mixer for TV, then, can't just create a discrete channel mix and leave it at that. As stereo mixes need to be auditioned in mono to ensure compatibility (no out-of-phase or out-of-polarity surprises), 5.1 mixes need to be checked, not only in discrete, but in mono, stereo, matrixed left and right (also referred to as left-total (Lt) and right-total (Rt)), and matrix-decoded.

Fred Aldous, Fox Sports audio consultant/senior mixer in NEP's SS-18 production truck

"The problem is that a lot of things that sound artistically acceptable in discrete 5.1 will totally trash the surround sound decoder, and even worse will trash the stereo and mono," said Eric Small, chief technical officer of Somerset, N.J.-based Modulation Sciences, Inc.

Here are some tips to help avoid these compatibility problems.

Be careful about positioning something in full surround as that could make the downmixed stereo sound strange. Crowd noise needs to be listened to carefully. Out-of-phase components can create unexpected and possibly unwanted surround signals.

Treat the Lt and Rt signals with same good engineering practices as stereo. The signal paths should be identical, with the same high-frequency response, and low distortion, and no clipping.

Any compression on the Lt and Rt channels should be cross-coupled. If not, the stereo will be degraded and, as Small said, the surround will make you seasick.

Doing subtle things in discrete mixing can end up being heard as unsubtle changes when decoded. Many of the new smart decoders tend to snap a signal to a particular channel.

Remember that the Lt/Rt downmix doesn't contain any of the LFE channel. So if you want enough bass to be reproduced on a matrixed, stereo or mono system, make sure to add it into those channels, and not just reserve it for the LFE channel.

Of course, sometimes rules are meant to be broken by artists who understand what they are doing, backed by their years of experience in mixing 5.1 for TV.

Take, for example, Emmy-award winning audio consultant Fred Aldous, who is the senior sound mixer for Fox Sports.

Aldous tends to reserve the LFE for those with discrete 5.1 systems, giving them that something extra.

Generally, stereo synthesis should be avoided because the comb filtering, phase shifting and other processing needed to produce a more spacious two-channel soundfield can wreak havoc with surround decoders. What may sound fine in stereo can be an aural imaging nightmare in surround.

But Aldous judiciously adds in a stereo synthesizer on the handheld camera mic mix (each handheld has only one mic) to widen the sound a bit and prevent the mix from collapsing to the center channel. He assigns the output from the stereo synthesizer to the front left and right channels only, and doesn't synthesize them so wide as to affect the surround.

Aldous offered a couple other tips: "Make sure announcers are in the center and mix everything else around it," he said.

Make sure that the center channel doesn't get lost in the Lt/Rt mix. The most common setting for matrixed downmixing is to attenuate the center channel by 3 dB. If there's too much going on in the other channels, the center channel can easily be masked.

Aldous also upmixes stereo sources, like videotaped highlight reels, to synthesized 5.1 with a Dolby DP564. The goal is to keep the soundfield consistent.

George Craig, audio specialist for KTVU in Oakland, Calif., said his station will use a Linear Acoustic upMAX 2251 for upmixing the station's stereo programs and commercials to be compatible with Fox Sports 5.1 baseball games.

Is upmixing Lt/Rt compatible? Aldous said yes, but he only upmixes once to avoid artifacts.

Tim Carroll, president of Morris Plains, N.J.-based Linear Acoustics said, "it is completely compatible, and sounds reasonably good. Do a good stereo mix that is also mono-compatible and it will upmix fine. Upmixing is a necessary evil for now.

The world would be great if everything was 5.1 channels, or if switching the AC-3 encoder between 5.1-channel and two-channel modes didn't make

5.1 CHALLENGE, PAGE 20

Cable

CONTINUED FROM PAGE 1

Yet the audience's enthusiasm—and the widespread sales pitches for VOD services at convention sessions and on the exhibit floor—did not always match the reality preached by cable system executives or top Hollywood executives.

For example, at a "Hollywood Squires" session featuring studio chiefs, the emphasis was on protecting their current, profitable DVD sales. Hence Disney's incoming CEO Robert Iger envisioned that it will be "10 years out [until] we see VOD rivaling the DVD business." He voiced concern that VOD will "cannibalize" existing revenues and then joked that Disney's "DVD business makes more money than Comcast does, which is why they wanted to buy us"—a reference to last year's unsolicited and eventually aborted Comcast takeover of Disney.

NBC-Universal Chairman/CEO Robert Wright, also on the panel, thought that VOD might emerge a bit sooner—possibly in "five years."

"You can't put any money on the table now from VOD, so it's DVDs today," Wright said.

News Corp. President/COO Peter Chernin, who has overseen Fox's digital initiatives, joined the chorus of technology skepticism, praising DVDs and bluntly characterizing "everything else is a negative: HD [high definition TV] is a cost center, so is launching new networks; DVR threatens our ad business."

Further contributing to the VOD cynicism were skirmishes such as one that erupted during a panel on "On-Demand Advertising."

Jon Mandel, chairman of MediaCom, a New York-based ad agency, accused fellow panelist David Cassaro, president of Comcast Network Sales, of not sharing information about VOD viewership and not giving advertisers or program suppliers a reasonable share of subscription VOD fees. Channing Dawson, senior vice president, new ventures at Scripps Networks, joined the fray, arguing that the advertising community "needs a whole lot more than can be delivered" by cable operators today.

INDECENCY & DTV INDECISION

As the VOD battles raged inconclusively, the firestorm about media "indecency" and DTV also danced through San Francisco's Moscone Convention Center, where 17,000 attendees raced through a compressed 2.5-day agenda.

New FCC Chairman Kevin Martin barely touched on DTV during his quick appearance. In an on-stage interview with Fox News Channel's Stuart Varney, Martin merely acknowledged that the DTV transition will be one of his top priorities.

Martin focused his remarks on indecency, saying, "It will be for Congress to end up figuring out what they think the appropriate rules should be." Martin also said that he encourages cable companies to create a family-friendly programming tier in response to parents' concerns about content inappropriate for children. He called it an "opportunity" for the cable industry "to speak to the consumers and the parents."

Members of Congress at the convention were less reticent in their comments about indecency and DTV.

House Judiciary Committee Chairman James Sensenbrenner (R-Wisc.) said he would like to see criminal prosecution "rather than the regulatory process" used to enforce broadcast indecency rules. He pointedly chastised the FCC fines on stations as inefficient, and said that, "People who are in flagrant disregard [of indecency rules] should face a criminal process."

Sen. Ted Stevens (R-Alaska), visiting the convention and meeting privately with cable executives—but making no public presentation—indicated that he was impressed with the blocking technology that NCTA executives showed him at a Best Buy display. Cable officials who accompanied Stevens on his tour of the show floor said that the Senator and other policymakers were satisfied that the set-top box control capabilities would give parents authority over what their kids can watch; but the cable executives offered no details about the availability of this service.

Sensenbrenner and Rep. Anna Eshoo (D-Calif.) spoke at an invitation-only policy luncheon, during which the DTV transition was a major topic.

"The transition to DTV is long past due," said Eshoo, who sits on the House Telecommunications Subcommittee. "I don't want to go to another hearing with a demonstration of DTV. It's about time. A line is going to be drawn. There were legitimate issues... about the cost of the changeover, [but] it's the time to get this done."

Sensenbrenner took a more measured approach.

"Let's not forget about consumers," he said. "I do think a deadline has to be set and enforced," but he cautioned that the deadline "should be reasonable."

"Once it's set, it should be met," Sensenbrenner said.

As for subsidies to pay for set-top decoders for homes unable to afford such boxes, Sensenbrenner uttered an unequivocal "No," while Eshoo bluntly said that idea is "not going anywhere."

And on the equally contentious issue of digital must-carry (multicasting), Sensenbrenner asked rhetorically "Has the fat lady sung?" and then to much laughter from his audience of cable executives, he answered himself: "The fat lady has a large repertoire."

Sensenbrenner and Eshoo also confronted the much-discussed update of the 1996 Telecommunications Act.

"I am struck by what we didn't know at the time of the '96 bill," Eshoo said. She predicted that there "won't be a wholesale rewrite," but confirmed that "Chairman [Joe] Barton (R-Texas) is committed to doing something." Eshoo warned that "broadcasters had better get set" for changes.

Digital TV was also the topic of several convention sessions, generating mixed messages about cable's rollout agenda.

"We don't have a burning desire to hasten" HDTV rollout, said Roger Keating, president of Time-Warner Cable's Los Angeles division. He acknowledged that "we want to be there," but said, "channel additions are slow" and that "we view the free HiDef tier as a real differentiator to satellite."

Keating also asserted that HD "won't work well over IP networks," an allusion to the looming competition from SBC's fiber optic telephone TV networks that are coming into his territory. He stressed that, "I would like to sell more [HDTV] on the premium tier" and noted that his company has seen "steady but gradual growth of HD, but let's not rule out analog yet."

"It will take a decade, maybe two, before we see all-HD" service, Keating predicted.

Clint Stinchcomb, Discovery HD Theater general manager and senior vice president, said that like most program providers, he is "platform agnostic" about distribution. Stinchcomb observed that customers who have HD service ask when more Discovery programs will be available in high definition format.

"One of the unexpected" questions that Stinchcomb frequently receives is, "When are you going to do 'American Chopper' [a popular motorcycle series] in HD?" He said that the show is now available in high-def.

"What we will do depends on the [cable] operators," Stinchcomb added. "Until the current analog space is reclaimed by the operators, there won't be a rush" to adding HD.

Daniel Darling, executive vice president, Turner Entertainment Group, said, "Eventually we'd like to do everything in HD. Now is the time to kick HD into gear." But he stopped short of committing to an all-HD timetable.

Another panelist, LG Electronics vice president John Taylor, focused on CableCard deployment, urging cable operators to "embrace the CableCard," and acknowledging that the current negotiations for the bi-directional set-top agreement between cable and consumer electronics parties plus Hollywood continues to face "a long, hard road."

iTV REVIVAL

The copyright and related issues affecting CableCard tied into several other NCTA sessions—which also saw a revival of interest in interactive TV, a topic that has been dormant for several years.

Cisco Systems CEO John Chambers, on an opening panel, cited the industry's move "from transactions to interactions"—a deft reference to the renewed attention to interactive TV in its various forms at the convention. Chambers also acknowledged the entertainment industry's over-arching concern about piracy, asking rhetorically, "If you had security, would transactions come faster?"

Fellow panelist Larry Page, co-founder and president of Google, also acknowledged the appeal of interactivity, and teased about his company's plans to move into the video on-screen search and navigation business. Although Page offered no details about such relationships, Google unveiled its role in the newly renamed "Current" network, formerly known as INdTV, headed by former Vice President Al Gore. The youth-oriented network will run homemade videos submitted by its target audience and through a Google alliance, the channel will be promoted online and material submitted. Details of the relationship were not disclosed. Current is now available via DirecTV and a handful of cable systems.

As for the NCTA show itself: interactivity was largely limited to those unscientific polling devices on delegates' chairs during the general sessions. ■

5.1 Challenge

CONTINUED FROM PAGE 18

glitches in millions of decoders, but for now this is not true."

The worst-case scenario, and something to generally avoid, is to upmix a program, then downmix and upmix (matrix decode) again.

Different audio mixers have developed their own routines for monitoring the different audio formats for compatibility.

Aldous said that for the first 10 to 15 minutes of a show, he listens to the Lt/Rt downmix created by a Dolby Pro Logic II encoder on the truck. "That's the mix that most of the world will hear," he said.

After that he switches to discrete 5.1 monitoring "to make sure the 5.1 mix is where it should be." With 5.1 and various downmix audio formats available on the monitor section of the audio console, Aldous is able to check among them for compatibility.

With all that goes on behind the scenes during live television, switching from format to format is not as easy to do as in post production.

TOOLS OF THE TRADE

A number of tools of the trade make life easier. There are 5.1 phase scopes and level meters from companies like DK Audio, Leader Instruments and Wohler Technologies, which indicate if the discrete soundfield is within proper parameters.

SpiderVision from Modulation Sciences, Inc. (and developed with Neil Muncy) does something different in that it takes in the Lt/Rt feed, produces a visual display of a matrix-decoded soundfield, and shows where compatibility problems occur.

Aldous is a big fan of SpiderVision. Even when he's mixing in 5.1 discrete, he is able to keep an eye on the matrixed feed. Aldous also uses SpiderVision in his home listening room, where he often critiques his mixes from a recording off his cable system.

Getting audio metadata right means that the listener will hear the sound as it was meant to be. Make sure metadata follows the program all the way through. If the Dolby Digital (AC-3) encoder is set to external, and external metadata disappears, the encoder could revert to internal presets, which may or may not match the program. If a 5.1 program is suddenly re-coded as a 2/0 program, only the front left and right channels will be present, with all center channel dialogue lost.

When in doubt, use the defaults. As Carroll said, "you have a better chance of getting it right leaving the AC-3 encoder in default than passing actual metadata."

Generating correct metadata isn't as daunting as it may seem, although ensuring that it follows the program can be. Dolby-E helps in this respect as the metadata is carried along with the bit-rate-reduced, multiplexed eight-channel audio on an AES pair.

The Dolby DP570 multichannel audio tool determines, among other parameters, the all-important dialogue normalization (dialnorm) value. The DP570 outputs a datastream, and the metadata values derived from the unit can also be manually entered into an AC-3 encoder.

A new version of the Linear Acoustic LA-5124 StreamStacker De-Multiplexer/AC-3 Splicer includes AutoNorm that measures long-term dialogue loudness per ATSC standards, and inserts the correct value into one or more pre-compressed Dolby Digital (AC-3) streams. With this system there is no need for decoding and re-encoding or for manually setting audio metadata parameters. The first version of AutoNorm uses the Dolby LM100 loudness meter.

Creating a compelling 5.1 audio broadcast is a challenging, but rewarding endeavor. For someone new to this, allow the time to critically listen (in a well-designed listening environment) to various programs in all their formats, then experiment, listen again, use the tools and do more listening, but have fun. ■

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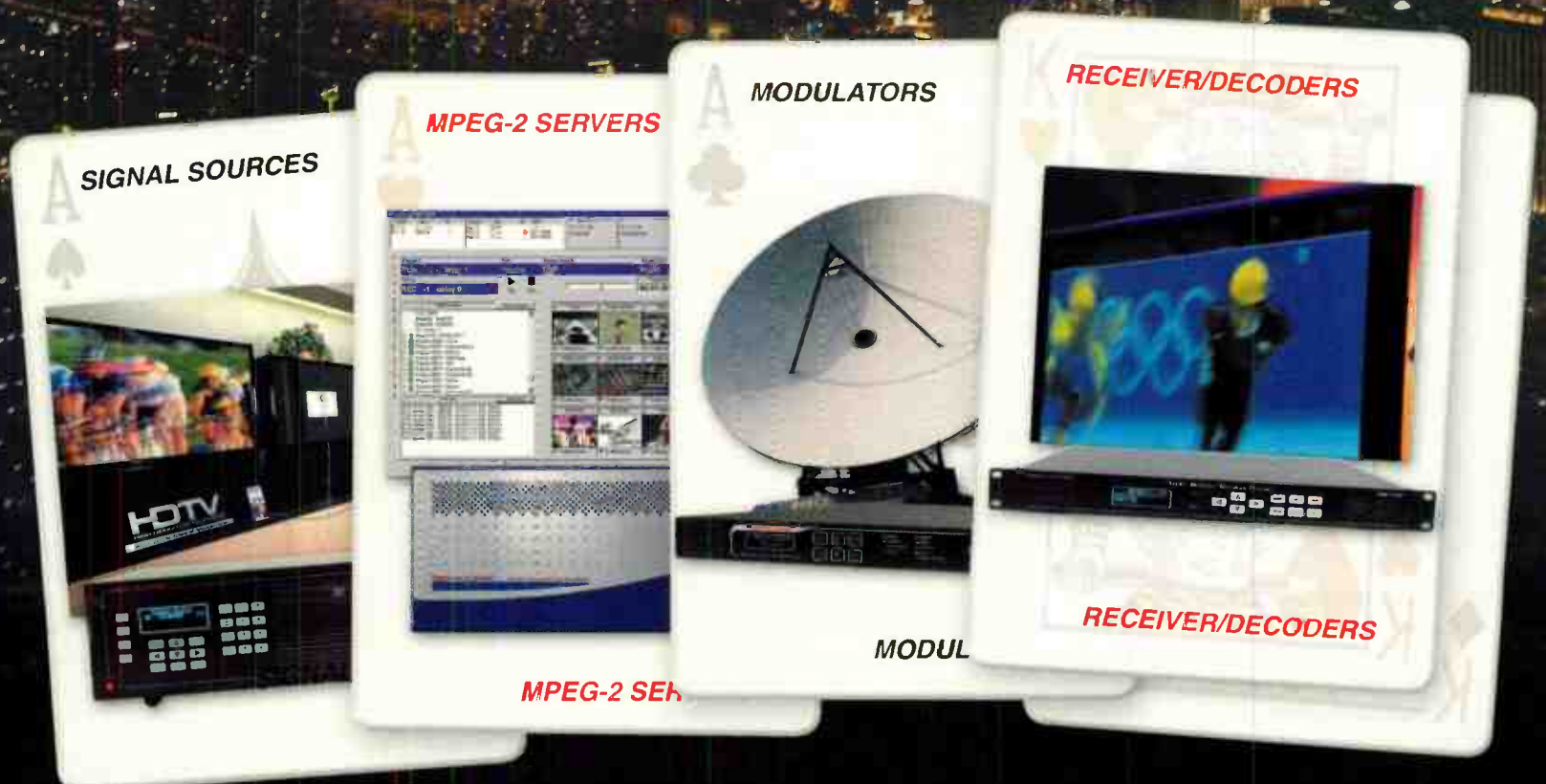

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MEDIA SERVER TECHNOLOGY

Karl Paulsen

Standards and Protocols In Streaming Media

Over the years, we've observed the delivery model for moving images evolve from the over-the-air broadcast to cable/direct-to-home transmission and more recently to the Internet. One of the latest permutations is streaming media. Originally defined as just "multimedia" (video, audio and data), streaming media technologies continue to be cast into new applications, extending services heretofore reserved for CRT raster-based images to the domains of the PC, home entertainment and mobile cellular technologies.

The server, protocol and network architectures for streaming content to multiple devices find their evolution in videoconferencing. Whether for personal desktop or widespread delivery, the serving device formulates a system for conveying messages and information to a plethora of end devices.

VIDEOCONFERENCING

The standards for videoconferencing, such as H.320 and H.323, shaped this growth and made possible extended applications for the delivery of streaming media. From an evolutionary perspective, videoconferencing technologies have come from dedicated environments governed in part by protocols that were created some 15 years ago. The ITU (International Telecommunications Union) developed the foundations for these protocols, which have since evolved onto the PC domain and are now coming back to the home entertainment environment. Note that the Telecommunication Standardization Sector of the ITU is referred to as ITU-T—when you see reference to T.38, this is the group that addresses such agendas as voice-over-IP, fax-over-IP and more.

H.320, adopted by the ITU in 1990, is the umbrella protocol that handles real-time voice and data communications and conferencing over switched or dedicated ISDN links. Additional protocols then describe such items as call setup between terminals and the handling of data connections. H.320, the once traditional videoconferencing protocol, has been all but replaced by H.323—partly because H.320 terminals are expensive and are generally implemented in dedicated videoconference rooms, which are rapidly being replaced by desktop technologies.

H.320 was never desktop-centric; it required expensive ISDN telecommunications lines and dedicated hardware on each end. As bandwidth costs continue to drop, and availability soars, the Internet has motivated the creation of a videoconferencing technology that produces better results at less cost than traditional H.320 terminal-based systems.

The replacement technology, H.323, with Version 1 adopted in 1996 and superseded by Version 2 in 1998, was developed from the onset for delivery over IP and has extended the H.32x family of standards for the encoding and decoding of audio and video streams. Together with the data-sharing protocol of T.120, H.323 defines a new set of Internet-based communications.

Today, with Version 5 (adopted in 2003), H.323 videoconferencing has all but replaced H.320 video switching. For example, Microsoft's NetMeeting supported its audio and videoconferencing features based on H.323.

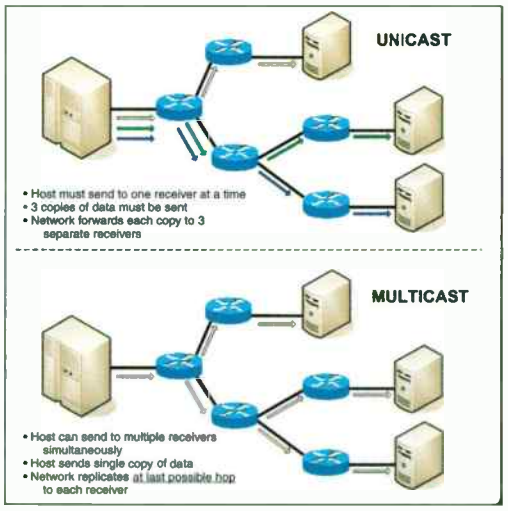


Fig. 1

The protocols generally utilized in many of the multimedia delivery mechanisms are embedded into two of the better known ITU-T protocols described within T.38: UDP and TCP.

UDP (user datagram protocol), which runs on top of IP networks, provides unreliable, unordered data delivery between devices. UDP lacks retransmission and data-rate management services, yet it commands a high-priority status on the Internet, in turn yielding a generally continuous, uninterrupted service, ideal for media streaming over public and private networks.

Another common application for UDP is the transport of time-sensitive information, such as VoIP. UDP is also fast enough for real-time video and audio delivery. Specified in RFC 768, UDP is generally considered a Layer Four protocol (Transport Control) in the OSI stack. Layer Four is responsible for maintaining the end-to-end integrity and control of the network data session.

The protocol that provides for the reliable data delivery of data between devices connected to an IP network is TCP (transmission control protocol). TCP is a virtual circuit protocol that includes an error-correction mechanism at the router level and ensures the integrity of a stream of datagrams across a network. Generally considered a Layer Four protocol in the OSI stack, TCP is specified in RFC 793, which has been updated by RFC 3168.

IP (Internet work or Internet Protocol) remains the most widely used packet-switched communication protocol for the transport of information between computer systems, especially via the Internet. IP defines the nature of the format of the data packets, and it provides a mechanism that ensures the integrity of a datagram—a packet of data—from node to node, at a "best effort," meaning it provides no assurance of delivery. Note, again, TCP detects errors or lost packets and provides a means of recovery. Referred to as a Layer Three protocol, IP is specified in RFC 791, which is updated by RFC 1349.

UNICAST & MULTICAST

For streaming media, two choices exist—unicast and multicast. (See Fig. 1). In unicast, the server serves streams to each and every unique client requesting access. Conversely, in a multicast connection, only one served stream is sent to all clients.

Multicast produces the most efficient use of bandwidth when enabled for several clients, making it well-suited to services such as video-over-IP. Multicasting uses the same bandwidth for dozens of clients as it does for one; however, it may require that all routers in the path have software, firmware or, in some

cases, hardware updates. Furthermore, for multicast delivery, the entire path must be multicast-enabled, frustrating many private network providers.

MMS or Microsoft Media Server protocol is the proprietary Microsoft network streaming protocol and is used extensively by Microsoft media player software. MMS protocol can be used on top of TCP and UDP transport protocols over any network medium, with its primary use being the streaming of live or prerecorded audio and video to computers that do not require downloading a file before playing it.

The server, protocol and network architectures for streaming content to multiple devices find their evolution in videoconferencing.

RTSP (real-time streaming protocol) is a control or communication protocol used between client and server; RTP (real-time transport protocol) is the data protocol used by the server to send data to the client. Rather than first downloading a file to the client, RTP plays it in real time, which differentiates it from HTTP (hyper-text transfer protocol) and FTP (file transfer protocol). Often, the real-time protocols are indicated as one, shown as RTSP/RTP. Some services, such as RealSystem Server, will use RDT, its own proprietary data channel, for the delivery of content to RealONE players.

Streaming media servers often use specialized protocols to stream their content over the public Internet. HTTP/TCP protocols are used by Web servers to get streams through firewalls, which are often set up to block UDP traffic.

AUDIO & VIDEO CODECS

Codecs define the format of audio and video information. Two codecs, G.711 for audio and H.261 for video, are required by H.323. Through H.323, products are enabled to negotiate functionality for nonstandard audio and video codecs.

As determined by the ITU, H.323 terminals must be able to send and receive A-law and Ì-law coding algorithms (G.711). Additional audio and video codecs provide a variety of standard bit-rate, delay and quality options that are suitable for a range of network selections.

G.711, H.261 and the two default codecs preferred for NetMeeting connections (G.723 and H.263) offer the low bit-rate connections necessary for audio and video transmission over the Internet. The codec that transmits audio at 48, 56 and 64 kbps is G.711, a high bit-rate codec appropriate for audio over higher-speed connections.

To send and receive voice communications over the network, G.723 allows audio to be transmitted at 5.3 and 6.3 kbps. For VHS quality video imaging in the 64 kbps range, H.261 is considered appropriate.

H.263 specifies the format and algorithm used to send and receive video images over the network; it supports common interchange format (CIF), quarter-common interchange format (QCIF) and subquarter-common interchange format (SQCIF). H.263 is excellent for Internet transmission over low bit-rate connections.

Finally, at the higher end of the spectrum, Advanced Video Coding (AVC) has certainly become one of the most recently noticed changes in the media, broadcast and telecommunications industries. Also known by its ITU nomenclature, H.264 is well-poised to become the industry recognized standard for delivery of media to a range of audiences. ■

Karl Paulsen is vice president of engineering for AZCAR. Contact him at karl.paulsen@azcar.com.

TECHNOLOGY CORNER **Randy Hoffner**

CRTs Give Way to New Era of Display Technology

Today, it is apparent that the venerable CRT television set that we have been watching since the 1950s is living on borrowed time. This set of circumstances has been brought about by a convergence of factors, including the recent abundance of advanced displays with expanding performance and shrinking price tags; the increasing availability of HDTV programming; and the inconvenience in size and weight of CRT displays, particularly larger ones.

In past columns, we examined some of the new display technologies on their way to replacing the CRT. Some of the advanced display technologies most commonly encountered today include liquid crystal displays (LCDs), plasma display panels (PDPs) and digital micromirror devices (DMDs).

One of the newest display technologies to be seen at the 2005 CES show, and soon to hit the marketplace, is the surface-conduction electron-emission display (SED). Some of the above-mentioned technologies may be applied to flat-panels, some to projectors and some to both.

There are other, less common devices and technologies, but these are the ones we are most likely to encounter. Meanwhile, back in the lab, brand- new technologies are being investigated. Let's look at some of those.

NANOTECHNOLOGY

One new area that is being intensively investigated (not to say mined) is carbon nanotechnologies. Work on carbon nanotechnology for television displays is proceeding in two directions: carbon nanotubes and, yes, diamonds.

The displays using these technologies are called field emission displays, or FEDs, and are thought by their proponents to be capable of delivering better images at less cost and with the expenditure of less energy than LCDs or PDPs.

In an FED device, an electron emitter is located a short distance from a phosphor screen. This device operates similarly in many respects to a CRT, except that the electron emitter in a CRT—the cathode—must be heated to stimulate electron emission.

In the FED, the emitter device emits electrons using a process called quantum tunneling. Quantum tunneling is a concept that is no less difficult to understand than any other quantum mechanical concept. In essence, it works because under some conditions, an electron is able to jump or "tunnel" through a classically forbidden energy state.

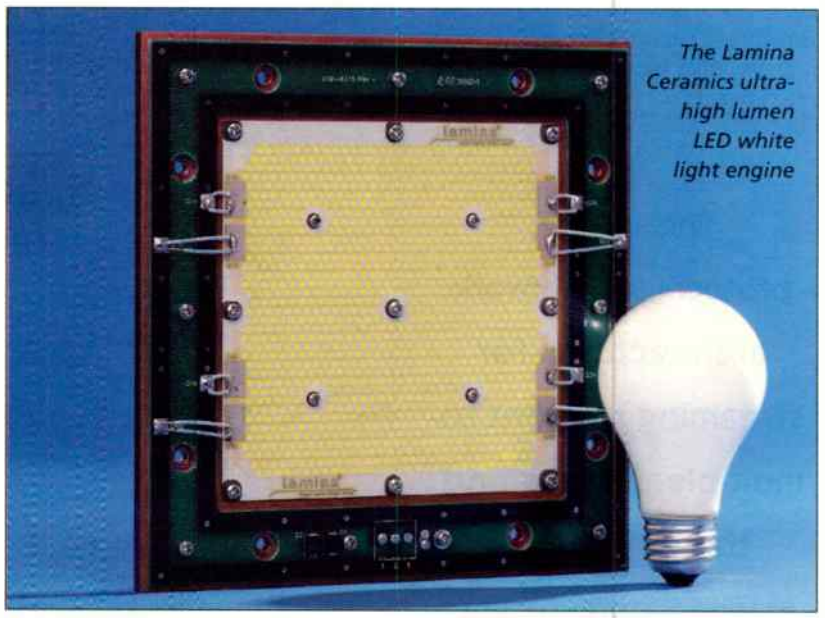
A high voltage propels the emitted electrons across the vacuum gap, causing them to strike a phosphor-coated anode area, which in turn causes the phosphors to glow.

Because the emitters do not require heating, many small emitters may be packed closely, and the distance between emitter and phosphor may be quite short. Thus, the sweeping electron beam of a CRT, and its beam-steering apparatus, are replaced with a separate electron emitter for each pixel. The same phosphors as those used in CRTs may be used, and the net result is said to be a flat-panel display with viewing characteristics that resemble a CRT.

The quantum tunneling process is also said to be much more energy-efficient than a CRT or an ionized plasma display device. A similar quantum tunneling emission and phosphor display mechanism is used in the SED, although the emitter particles used in SEDs are not carbon.

Carbon nanotubes are synthetically generated microtubes comprised of large carbon molecules. The tubes form into cylinders that are about 1 to 3 nanometers in diameter, and hundreds of thousands of nanometers in length. This form of carbon is highly conductive. Companies are now claiming the capability to manufacture substantial quantities of both single- and multiple-walled carbon nanotubes that are suitable for use as FED emitters. Another company is currently trying to develop an FED using another form of carbon—diamond dust.

DISPLAY, PAGE 31



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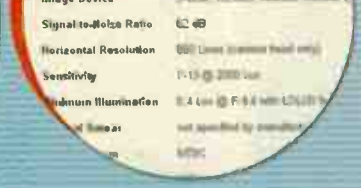

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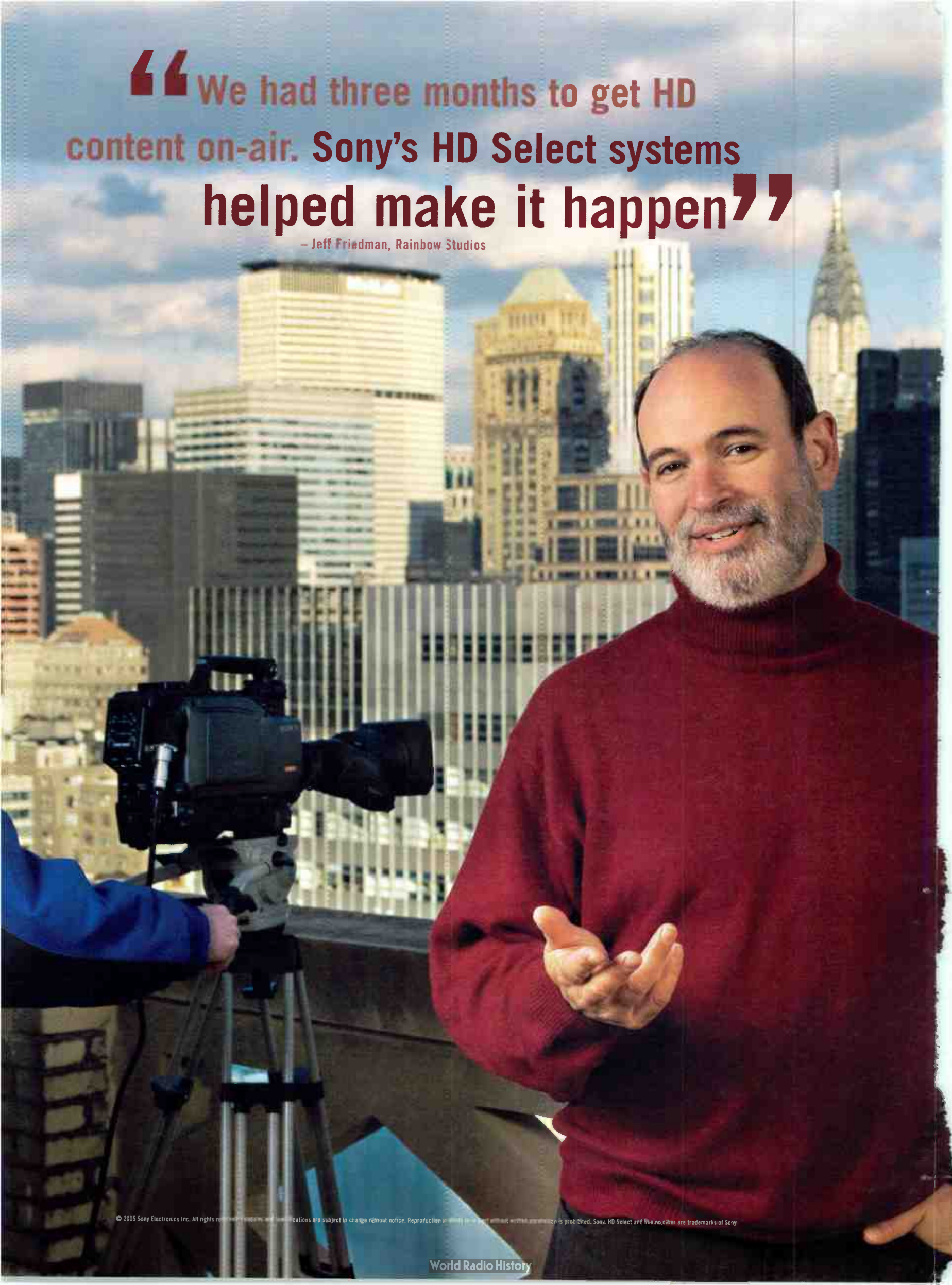

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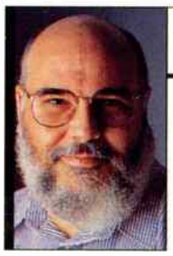


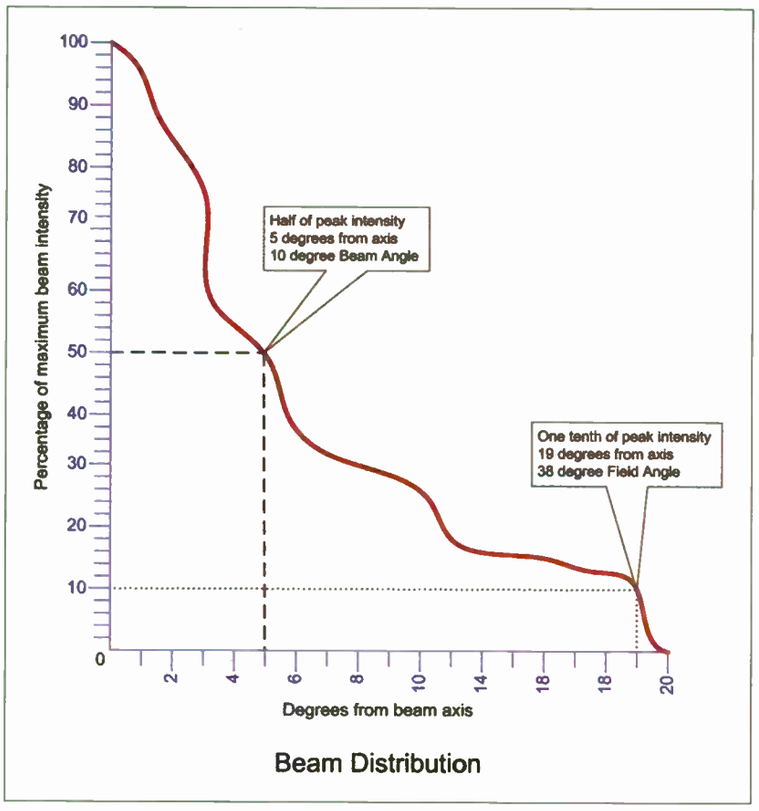
LET THERE BE LIGHTING — Andy Ciddor

Specious Specifications: Works of Fiction

I was recently checking over the list of equipment that a rental company proposed to supply for a project. The rental specification was rather loose, having originated from the production manager, as the LD hadn't started when the spec was written. As the rental company's itinerant lighting consultant, I was asked to review the list to make sure that the equipment they were purchasing and the subhiring for the project would do the job properly.

What I discovered was a mistaken assumption that the model number for a luminaire actually reflected its performance characteristics. Perhaps, when lighting was simply about building and using luminaires to create the best pictures possible, it was acceptable to call a spot "20-35" because its beam varied from 20 to 35 degrees.

However, lighting equipment has become a line of products that require marketing with stylish product brochures and names that evoke power, coolness or technological innovation. As a result, model numbers are just numbers and spec sheets have tended to become works of speculative fiction.



Beam Distribution

POETIC LICENSING

A couple of years ago when the price of hard disk space became trivial, I ripped my entire CD collection to the hard drive of one of my computers so I could listen to continuous music while I worked.

I also invested in a moderately decent pair of desktop loudspeakers that can output a peak of about 8 W per channel. Up until that time, I had a cheap (sub-$10) pair of powered speakers that were quite adequate for reproducing the squeaks and beeps that let you know that your printer is out of paper or that you have received a new e-mail.

These speakers, which were barely capable of a couple of hundred milliwatts at around 10 percent total harmonic distortion, came in a box that claimed "Total music output 80 W."

Now, while I realize that the claimed 80 W is the combined power of both channels, I'm utterly bewildered how it's possible to massage a few hundred milliwatts onto a few tens of watts. I have long been aware of that remarkable audio equipment marketing tool, peak momentary performance output, or PMPO. My reading on the definition of PMPO indicates that even this formula is only capable of exaggerating power output by two to 10 times, not the thousands printed on the box.

Although marketing hype in the lighting business has yet to attain these levels of sophistication, a few strategies are still in common use to embellish the capabilities of luminaires. The most prevalent of these is to exaggerate the flood/spot range of the optics, by mixing measurements of beam angle and field angle, through the use of phrases such as "beam size" or "beam range."

FUN WITH NUMBERS

The two commonly used measures of beam size—beam angle and field angle—are clearly and unambiguously defined. Beam angle is the angle that encompasses the part of the beam that varies from peak brightness down to half of the peak brightness. Hence its alternate name, the one-half peak angle. In video terms, this is the area in which the beam varies by up to one *f*-stop and is seen as the main, bright portion of a luminaire's beam.

Field angle is defined as the angle that encompasses that part of the beam that varies from peak brightness down to one-tenth of that intensity. Unsurprisingly, its alternative title is the one-tenth peak angle. In video term, this covers the area in which the beam varies by approximately 3.3 *f*-stops and is the majority of the luminaire's beam.

In addition, the beam quality of many luminaires can be tweaked from a "peaky field" setup, where the light is concentrated into a hot spot (used to highlight a particular point of interest in a picture), to a "flat field" setup, where the light is spread as evenly as possible for consistent illumination of a working area.

The marketers' sleight of hand with these numbers involves quoting the narrowest beam angle in peaky configuration as the low number in the beam range, and the widest field angle in flat-field setup as the high number.

Light output figures are another favorite area for information enhancement. Output is often quoted for the luminaire fitted with the brightest lamp that can be shoehorned into the luminaire, even if its objective life, voltage or color temperature makes it impractical for general use.

Light output figures can be enhanced by using terms such as "total lumens" or just "lumens," (which can entail all light coming from the luminaire—including the stuff leaking out of the back), rather than the standard measure of "beam lumens" or "total beam lumens," which measures only that light contained within the half-peak component of the beam.

Thankfully, the marketing of lighting equipment hasn't quite reached the level of nonsense associated with audio products, where terms such as natural, warm, soft, bright, round, digital and analog are wielded with great precision to describe the (possibly nonexistent) differences in sound quality between microphones, compressors, consoles, delays, loudspeakers and even cables, patchbays and batteries.

Nevertheless, a quick look through the equipment catalogs on your shelves or on the Web will reveal that even the most respected brands of luminaires have specification sheets that omit the words "beam angle" or "half-peak angle" from their graphs, or only use "lumens" for the output figures.

While these may turn out to be perfectly innocent omissions, the injunction caveat emptor (let the buyer beware) is at least as important in lighting as anywhere. ■

Andy Ciddor has been involved in lighting for more than three decades as a practitioner, teacher and writer. You can reach him via e-mail c/o TV Technology.

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Photo: Steve Jordan

NET SOUP

Frank Beacham

Static Begins to Clear on How Internet Affects TV

In early 1996, when this column was conceived, there was a strong suspicion that the Internet would eventually have a significant impact on broadcast television. It wasn't clear at the time whether TV and the Internet would become partners, competitors or perhaps, mortal enemies.

Some of the murkiness is beginning to clear. Thanks to vastly improved and lower-cost Internet technology, more users and new data on human behavior, we are getting a clearer picture of how television and the 'net are co-existing.

RAPID CHANGE

The average Internet user in the United States spends three hours a day online. Internet users watch television for one hour and 42 minutes a day, compared with the national average of two hours. Much of that online time is devoted to work; more than half to communications.

These facts were revealed in a new survey by the Stanford Institute for the Quantitative Study of Society, a research group that has been exploring the social consequences of the Internet. The results of the survey were first made public by The New York Times.

For the average survey respondent, an hour on the Internet reduces time spent watching TV by about 10 minutes, or about a half-hour per day for the average Internet user who is online about three hours per day.

This snapshot comes in a time of extraordinary change in the United States. It's easy to forget that the first Web browser appeared in 1994.

Since then, net connectivity has gone from almost zero to about 60 percent of Americans. An additional 10 to 15 percent have access at their workplace or school, and an estimated 70-75 percent now have an e-mail address.

The survey reveals how much the Internet has become embedded in American life, both at home and at the office, where about a third of one's total time on the Internet is consumed. But for most users, the Internet is a means of communication.

About 57 percent of Internet time is spent on e-mail, instant messaging or in chat rooms. Of this 57 percent, work-related communications constitutes about one-third; communication with friends, one-third; and family, about one-sixth.

However, unlike the telephone, the Internet enables activities beyond communication. The remaining 43 percent of time on the Internet is spent playing games (8.7 percent), surfing (15 percent) and shopping (10 percent).

Internet users watch television for one hour and 42 minutes a day, compared with the national average of two hours.

Perhaps you'll recall a study a few years ago that found increasing physical isolation among Internet users. The very idea that the Internet hampered social relationships caused outrage among those who were then promoting the concept of the great "information highway."

This is the same group of researchers at Stanford who released that controversial report in 2000. This time, the researchers told The New York Times they have gathered further evidence that Internet use has reduced the time people spend socializing and even sleeping.

According to the study, not only does an hour of time spent using the Internet reduce TV time by 10 minutes, but that hour also reduces face-to-face contact with friends, co-workers and family by 23.5 minutes, and it shortens sleep by 8.5 minutes.

For the average 'net user, that translates into 70 minutes less face time and 25 minutes less sleep.

"People don't understand that time is hydraulic," meaning that time spent on the Internet is time taken away from other activities," Norman H. Nie, director of institute, told The Times.

The latest study also found that online gaming is a major part of Internet use. Users reported that they spent 8.7 percent of their Internet time playing online games.

One of the most remarkable statistics the report discovered is that as much as 75 percent of the population in the United States now has access to the Internet at home or work. Nie mentioned that the expansion of Internet use has been nearly as fast as that of the telephone, even though computers are more "complicated" to use.

Those complications represent an amazing time-waster for Americans. Despite marketing claims that PCs boost personal productivity, respondents reported spending 14 minutes daily dealing with computer problems. That would suggest that Internet users spend a total of 10 workdays each year trying to fix their PCs.

Another negative factor is spam, which is costing a huge loss of time for e-mail users. The survey found that about five minutes out of every hour on the Internet (more than 8 percent of the total time online) are spent dealing with spam. This translates into more than 10 full (eight-hour) workdays per year, assuming the computer is used daily for 50 weeks out of the year.

Finally, in compiling a demographic picture of net users, the study found that unemployed people spend more time online than other Internet users. They are followed by the disabled and by full-time students. Full-time students use instant messaging more than other Internet users, while the unemployed and the disabled spend more time than others in chat rooms.

While overall Internet use does not differ by gender, female respondents on average use e-mail, instant messaging and social networking more than men. Men devote more time to browsing, newsgroups and chat rooms. Younger people, between 18 and 29 years of age, favor interactive forms of online communication—instant messaging and chat rooms—over e-mail, which appeals to older people.

The data in the study titled "What Do Americans Do On The Internet?" indicates that Internet users, particularly younger ones, are moving away from traditional, passive television viewing as they integrate the Internet deeper into their daily lives.

However, the Internet, especially in areas such as news and information, may actually be developing into a new form of television for a generation weaned on interactive communications.

Perhaps, in the next study, we'll find that the Internet has caused traditional television media to morph into something quite new and different.

(The full Internet report summarized in this story can be downloaded at: *www.stanford.edu/group/siqss/.*) ■

Frank Beacham is an independent writer and producer based in New York City. He can be reached through TV Technology.

Display

CONTINUED FROM PAGE 24

Bear in mind that not every technology that shows promise in the research lab will become a commercial success. Two recent advanced display technologies offer instructive examples. One of these is organic light emitting devices, or OLEDs, which are organic chemical compounds that emit light when stimulated with electricity.

While OLEDs are found today in small-screen applications such as cell phone and auto radio displays, they have not, as yet, fulfilled their early promise in larger, flat-panel television displays.

Another technology is liquid crystal on semiconductor (LCOS), a device that is a hybrid of DMD and liquid crystal technologies. LCOS was embraced about two years ago, by a number of companies with big, recognizable names, to be used as a microdisplay projection engine. Many, if not most of those companies have dropped their work in the LCOS display area, leaving the continuing development of LCOS to smaller boutique companies. There are many hurdles to clear to turn a promising laboratory breakthrough into a successful commercial product, and time will tell whether these new, cutting edge display technologies find their way into homes or not.

Work on carbon nanotechnology for television displays is proceeding in two directions: carbon nanotubes and, yes, diamonds.

THE LIGHT CONGRESS

In addition to new display engine technologies, the recent Light Congress, held in New York, revealed that other new, interesting technologies with potential television display applications are emerging.

For example, Congress attendees saw a demonstration of a new 28,000-lumen white LED spotlight. To put this into perspective, a 75 W incandescent light bulb generates about 1,000 lumens of light, so this 5-inch-square device containing 1,120 LEDs generates as much light as about 28 75 W bulbs, at a color-corrected temperature of 5,500 Kelvin.

Presumably, this LED spotlight generates much less heat than 28 75 W light bulbs. One of the biggest problems its developers had to overcome, in fact, was to efficiently wick heat away from the LEDs, as heat causes the LED devices to dim and eventually to break down physically

Another new device shown at the Light Congress was a spectrally programmable light engine. In this device, white light is separated into spectral components by a diffraction grating, and aimed at a digital micromirror device. By properly controlling the micromirrors, both the spectral content of the output light and the intensity of each spectral component appearing in the output, can be controlled. Both of these lighting technologies have interesting implications for flat-panel and projection displays.

These are some of the most recent new developments in display devices and technologies. Others will, without doubt, appear. After a number of decades in which only a single type of display, the CRT, was available, we are now living in an exciting era in television display technology. ■

Randy Hoffner is a manager of technology and strategic planning in New York. Write to him c/o ***TV Technology****.*

USER REPORT

Snell & Wilcox Frees Liberty

by Eric Bergman
Chief Engineer
WTOL-TV

TOLEDO, OHIO

As chief engineer at WTOL-TV, one of 15 network-affiliated television stations owned by the Liberty Corporation, I've had the chance to be involved in the selection of broadcast equipment for all Liberty stations.

Obviously, a diverse assortment of products is required to get programming to air but for conversion, processing and distribution in all our stations, we rely on Snell & Wilcox. Digital production switcher integration, digital router I/O processing and digital master control systems for Liberty stations are all being developed using Snell & Wilcox modular products.

Our dedication to these systems began with a search for the best composite video analog-to-digital converter. In 2002, we started with a single Snell & Wilcox IQ frame and an HD-5200 upconverter at each station as a part of our single-rack DTV solution. Since then we've undertaken a substantial installation of the company's modular equipment in our stations, now totaling more than 100 frames and nearly 1,000 cards with more added regularly.

The depth of Snell & Wilcox's product line, combined with a powerful control and monitoring system that is flexible enough for both engineers and operators, has made this the right choice in terms of value and utility. Had we chosen any lesser option, we would find ourselves today beset with growing pains and a needless multiplicity of vendors.

Among the most important Snell & Wilcox products we've integrated into our facilities are the range of IQ Modular conversion, processing, synchronization and distribution cards under the control of Roll Call, a PC-based control application.

Terry Witherspoon, a maintenance engineer for WTOL, points out one of the station's networked Snell & Wilcox modules.

DEFEATING DELAY

We recently added a new branding device in master control to run weather alerts, sports scores and tickers. The device added one frame and 65 µsec of delay to the video path, causing switching glitches—we used Snell & Wilcox audio delay modules and an SDI frame synchronizer to equalize this delay and maintain lip sync, thus eliminating these artifacts.

Another special project coming to Liberty stations is a 24/7 local weather channel, which requires embedded audio, in this case with approximately six frames of video delay. Here we used Snell & Wilcox A/D converters as well as audio embedders and de-embedders, controlled by the company's Roll Call networked control system. Roll Call and the IQ modular cards made it very easy to implement such solutions.

Our engineers appreciate the power and flexibility of Roll Call because it gives them the ability to see and make adjustments to any card in any frame, using a PC display in tandem with monitors and scopes. This makes setup, troubleshooting and maintenance in our plants much easier.

Today's TV plant has such a diverse mix of equipment, each frequently with its own PC-based GUI or a little LCD display and a corresponding gaggle of buttons, knobs and nested menu instructions. These demand that technicians have great memories, or ample spare time to reacquaint themselves with the peculiarities of each device every time they use it.

With Snell & Wilcox, it's all in front of the user, presented on the screen in a consistent and complete manner. Diehards can still get at a card's general settings via the card edge.

TAKING ROLL CALL

Roll Call enables use of a simple system comprising one frame with a few cards or an integrated complex system across many frames in one or multiple sites, each site having redundant control networks. All are implemented using dedicated coax and an Ethernet LAN/WAN. Liberty stations have both coax and Ethernet control capability, and it gives engineers the "warm fuzzies" to know that a failure in a LAN or WAN component will not interfere with local control of the system using the coax network.

Adaptability to the task at hand is another mark in favor for Snell & Wilcox modular products. Most broadcast operators are very familiar with setting up video levels on live shots or program feeds. In this situation, working with a control system that can be configured to function for both operators and engineers really makes a difference.

To this end, we use Roll Pod, essentially a set of programmable knobs and buttons that control only those features required by the operator, to eliminate unnecessary complexity for the operator and thereby simplify life for engineers.

Snell & Wilcox certainly passes the "If I had it to do it over again" test in equipment purchasing. We're very confident that the broad range of equipment we've put in place so far will provide us a sound technical core for the future. ■

Eric Bergman is the chief engineer for WTOL-TV and can be reached at ebergman@wtol.com. *The opinions expressed above are the author's alone.*

For more information, contact Snell & Wilcox at 818-556-2616 or visit www.snellwilcox.com.

BUYERS BRIEFS

The BrightEye line of compact video converters from **Ensemble Designs** are self-contained devices that interface to a range of standard-definition video formats, including SDI, analog component, analog composite, and Y/C. Some of the products in this line are the BrightEye 1 TBC/framesync with bi-directional A/D and D/A conversion, the BrightEye 2 analog-to-SDI converter and the BrightEye 16 TBC/framesync with D/A conversion and audio de-embedder.

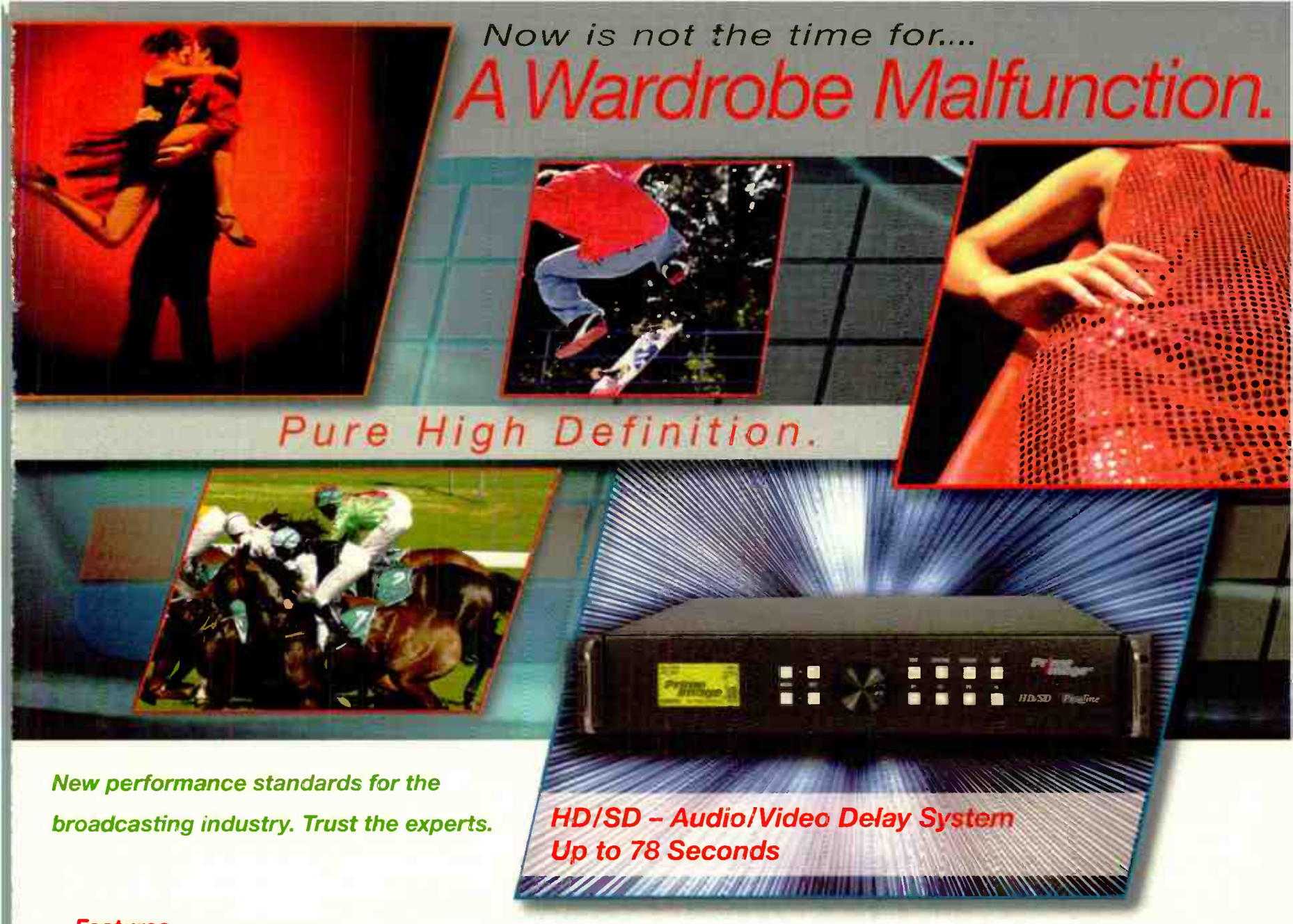
Also from Ensemble Designs is the Avenue modular system, which provides IP control over a range of processing products, switchers and distribution amplifiers. For more information, contact Ensemble Designs at 530-478-1830 or visit *www.ensembledesigns.com*.

The FLX-1HD-6SD-V5 FlexiCoder from **Harris Broadcast** is a modular MPEG-2 encoding system consisting of one high-definition encoder and six standard-definition encoders. The system architecture allows it to support any application from a low-cost standalone SD encoder to a fully redundant HD and multichannel system.

The FlexiCoder has a variable compression rate, dependent upon the application or the source, which allows the signal to be delivered at maximum image quality and minimum network bandwidth. For more information, contact Harris Broadcast at 513-459-3400 or visit *www.broadcast.harris.com*.

The ES-488U from ESE is a SMPTE timecode reader/generator that can do a video insert for window dubs. The unit features presetable time and user bits, longitudinal and VITC timecode, reading capability from 1/30 to 30x speed, and SMPTE, EBU and film modes.

For more information, contact ESE at 310-322-2136 or visit *www.ese-web.com*.



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USER REPORT

Prime Image Is a Bleeping Success

by Darryl Rose
Director
TimeDelay.tv

LONDON

I am an editor by trade and have worked on numerous live programs, including ABC's "Good Morning America," tennis on ESPN, NBC and CBS, boxing on HBO and Olympics coverage. I have always had to work under pressure in a live environment and it is my background in live broadcasts that led me to set up Time Delay, Europe's only company dedicated to broadcast censorship and time shifting.

I needed a product that was solid-state (no hard drives for me!), robust, reliable and flexible, and that came within budget. It turned out that the D1 Pipeline from Prime Image was the best product for my business needs.

One problem I consistently encounter are satellite feeds from the United States with slight lip-sync problems. With these programs, the pictures can lead the sound just as often as the sound can lead the pictures. The D1 Pipeline solves these problems because I can delay either pictures or sound independently of each other, in frame increments.

I also need a product that could be used to instantly cut out profanity on hit reality shows like "I'm a Celebrity, Get me out of Here!" and "Hell's Kitchen," A Fox show that will begin later this month with fiery-tempered chef Gordon Ramsay. The D1 makes it easy to handle profanity situations.

Darryl Rose uses the Prime Image D1 Pipeline to re-time and delay satellite feeds.

FIVE-SECOND DELAY

For profanity situations, I dial in a five-second delay on the D1 and as soon as I hear a forbidden word (and/or video), a button is pressed the content is removed a second before the word has been said. The button is kept pressed for as long as necessary and the profanity is automatically replaced with live effects/video from an aux source.

The D1 Pipeline solved another problem during the European Football Championships in London, where my main and back-up feeds going via two separate satellite paths were not synchronous on the switcher. I delayed the main feed by a few frames so both were in sync.

I just returned from CABSAT in Dubai (the NAB of the Middle East), where I found another problem solved by the D1 has solved. In this case, it was a satellite broadcaster that regularly re-broadcasts live feeds of U.S. networks but replaces the U.S. commercials with its own.

Although transmission controllers are given rough times for breaks, they were often caught flatfooted and parts of the U.S. commercials went to air by mistake. By implementing a slight delay, operators now can see breaks coming and U.S. commercials are replaced seamlessly with the broadcaster's own.

I am really looking forward to purchasing Prime Image's new switchable High-Definition/SDI Pipeline, which can delay up to 78 seconds in SDI or 13 seconds in HD. It can work in both PAL and NTSC, 120V or 240V, so it really is a device that I can use across the globe. ■

Darryl Rose is the director of TimeDelay.tv and can be reached at darryl@timedelay.tv.

For more information, contact Prime Image at 408-867-6519 or visit www.primeimageinc.com.

BUYERS BRIEF

The HD Scan XTD 920 from **Analog Way** is a computer-to-HDTV scan converter that allows you to convert graphic images up to 1600 x 1280 pixels into digital HDTV. The HD Scan features real-time conversion with aspect ratio adjustment and zoom up to 200 percent. The XTD 920 comes with dual HD-SDI output and accepts tri-level sync. An HD-SDI genlock is also provided synchronization to an external HD keyer or switcher.

For more information, contact Analog Way at 212-269-1902 or visit *www.analogway.com*.

USER REPORT

Network Electronics Serves By Request

by David Haralambou
President
By Request Communications

MARLBOROUGH, MASS.

By Request Communications is a broadcast systems integrator and we have been growing rapidly.

To keep up with customer demands, we always look for unique products that fill a gap. We have been working with Network Electronics for more than a year on some great products and one that we keep coming back to is the V106DEQ dual-DA with equalization.

By Request has been building remote-controlled camera control systems that are basically a studio in a box—just add talent and away you go. Two important factors with these systems are their size and reliability.

Since the systems are installed in customer-controlled locations, we do not always get the best temperature and power conditions. The Network Electronics V106DEQ has held up well where other products have not.

This is no accident—the construction methods used to build these DAs are unique. At only 1 RU high and less than two inches deep, they also give us plenty of room to pack in other equipment from the rear if needed.

LOOPING INPUTS

The unit itself contains two 1x6 analog DAs with EQ. The inputs are looping, which give us options when we cable the system. Built-in termination DIP switches mean you are never looking for a terminator (which also keeps down cost, since every penny counts). Additionally, there are DIP switches on each channel for ground lifting.

The best part from our point of view is the EQ section. Although EQ adjustments are on the front of the unit, there are four DIP switches on the back that can be set to lock out the front panel. This keeps wandering tweakers from going where they do not belong after we leave the client.

Overall, we have been very happy with the performance of these units. They are not as glamorous as servers or STL links, but they are the kind of product you can set and forget.

By Request Communications has been very happy with their performance and now includes a Network V106DEQ standard with every remote studio package we build.

By Request builds remote control systems that are a "studio in a box."

Having shipped 12 systems this year already, we always keep a few V106DEQs on the shelf. ■

David Haralambou is a member of the SBE and the president of By Request Communications. He can be reached at shack@brcom.com.

For more information, contact Network Electronics at 801-495-1635 or visit www.network-electronics.com.

BUYERS BRIEFS

The CLK-50 from **Torpey Time** is a clock/timer with DQS timecode that is pulse-width modulated onto RS-422 signal levels. Time is transmitted in 24-hour format only, at a rate of 30 Hz. The company's remote displays can display either 24-hour or 12-hour time, as all have switches to select 12-hour mode.

The CLK-50 can select either Standard Time or Daylight Savings Time instantly. The unit references to either 50 or 60 Hz power line frequency, which it automatically detects and adjusts itself accordingly. For users who want higher accuracy and whose facilities are equipped with a sync generator, the CLK-50-1 can be referenced to an NTSC color subcarrier.

For more information, contact Torpey Time at 800-387-6141 or visit *www.torpeytime.com*.

The DE-41 from **Hotronic** is an analog standard-definition video delay that comes in eight-frame and 16-frame versions. Both versions use 8-bit resolution and four-times subcarrier sampling to maintain signal quality, and both can set delay down to a single field. The DE-41 is a half-rack unit and two can fit side-by-side in 1 RU.

For more information, contact Hotronic at 408- 378-3883 or visit *www.hotronics.com*.

The **Laird Telemedia** LTM-6000 Inertia bidirectionally converts component, Y/C, composite, SDI and DV formats. With both BNC and FireWire (IEEE-1394) connections, the LTM-6000 and interface nearly any type of standard-definition into any other type.

Inertia also contains a Cat 5 AV output as well as a FireWire line driver that allows a device to be up to 70 feet away.

Also from Laird Telemedia is the LTM-DVBETA, which bridges the gap between the SDI products and FireWire DV. This product provides bi-directional signal conversion from IEEE-1394 DV to SMPTE-259M SDI digital with embedded AES/EBU audio.

For more information, contact Laird Telemedia at 845-339-9555 or visit *www.lairdtelemedia.com*.

The E5780 from **Tandberg Television** is a high-definition MPEG-2 encoder for ATSC broadcasting. Offering both standard and high definition encoding modes, it can encode at multiple profiles in both HD and SD modes. The E5780 offers 4:2:0 encoding while, the top of the range, E5782 can encode both 4:2:0 and 4:2:2 profiles.

For more information, contact Tandberg Television at 407-380-7055 or visit *www.tandbergtv.com*.

Designed to fit any **Sigma Electronics** 2100-series frame, the DAC2100 is a 10-bit 4:2:2 SMPTE 259M serial digital-to-analog composite, Y/C and component (YPbPr and RGB) converter.

The unit's 10-bit encoding engine over-samples outputs at 8:8:8 for improved signal performance. An internal VCXO with de-jitter loop filter (to 3 Hz) removes digital jitter before the encoding process. An optional genlock circuit color-frames the DAC2100 for timed environments.

For more information, contact Sigma Electronics at 717-569-2681 or visit *www.sigmaelectronics.com*.

PRODUCTS & SERVICES SHOWCASE

PRODUCTS & SERVICES SHOWCASE

USER REPORT

Cobalt Digital Delivers for NEP

by George Hoover
Senior Vice President, Engineering
NEP

PITTSBURGH

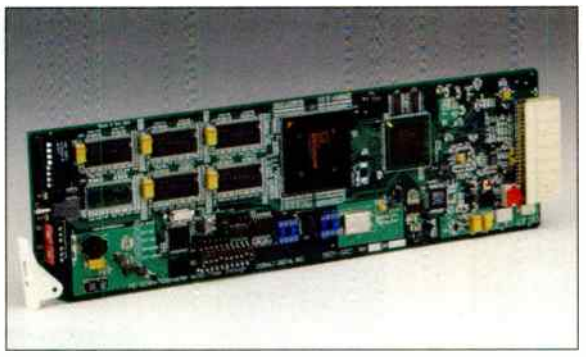
At NAB2004, NEP approached Cobalt Digital for a modular product that downconverts high-definition video to standard-definition and also provides aspect-ratio conversion.

When we deploy our HD mobile units at remote events we need to distribute standard-definition copies of dozens of feeds. These include switcher M/Es and clean feeds for international broadcasters, as well as for local SD production and monitoring.

Cobalt developed and designed the 5821-D downconverter, delivering a working product to us in six weeks. We took delivery and started using the units in June 2004 and have since purchased more than 240 Cobalt 5821-D downconverters—with plans to purchase more.

We've used the 5821 at our biggest events including broadcasts of the Super Bowl and the Academy Awards. We've not had one failure and the product has delivered everything we asked for and more. We are especially happy with its low power consumption, small footprint and affordable price.

There is no other moderately priced product in the marketplace of which I am aware that downconverts 720p video with field lock. Field lock is necessary when converting from progressive to interlace scan in order to consistently and correctly establish field one in the interlace world.



The Cobalt Digital 5821-D is an HD downconverter with aspect-ratio conversion and NTSC field lock.

Another feature that we use a lot is the aspect-ratio converter, which enables us to stretch out or narrow up downconverted video according to client requirements. The 5821 can pass through SDI video and since the aspect ratio converter works in all modes, we have often used the 5821 as an SDI aspect-ratio converter. There have been many times when this has come in handy for us.

BROADCAST QUALITY

The 5821's downconverted output is broadcast quality. The unit offers dual-rate inputs with auto-detection and automatically detects whether you are inputting an SDI or an HD-SDI signal at both NTSC and PAL frame rates.

We use the units in Leitch 6800+ frames but they are compatible with other industry-standard card frames as well as Cobalt Digital supplied frames. Cobalt designed the 5821 cards for low power consumption and we can put as many as 14 cards in a 2 RU 6800+ frame—a great feature in a mobile unit where space is always an issue.

The unit has two SDI and one analog output, so we have also used the 5821 to drive analog monitors. Other features include the ability to add 3:2 frame-rate conversion in order to take film rate video (23.98 frames per second) to a 59.94 frame rate.

The 5821 supports 16 channels of embedded audio with delay. The 10-bit conversion offers high quality and the 12-bit encoding to analog composite also supplies a high quality signal.

There are four user programmable overlays and both 4:3 and 16:9 safe-area reticules are available for use. The 5821 also offers rules-based aspect-ratio settings; we can configure the 5821 to output video in a specific aspect ratio according to whether it detects SDI or HD-SDI at its input.

At the end of the day what is most important is that the 5821-D is affordable, reliable, offers high quality and gives us the features and performance that we need at NEP. ■

George Hoover is the senior vice president of engineering for NEP and can be reached at georgeh@nepinc.com. *The opinions expressed above are the author's alone.*

For more information, contact Cobalt Digital at 217-344-1243 or visit www.cobaltdigital.com.

USER REPORT

For-A Colors 'Canadian Idol'

by Charlie Goldman
Independent Video Operator

TORONTO

These days, event production is becoming an increasingly multimedia affair.

Audiences are no longer content to see a performer singing or dancing across a stage; they want a splash of plasma displays in the background, showing anything from different angles of the performer to video that complements the on-stage action. Making video in the monitors match the stage performance is a major challenge that I've encountered many times over the course of my career as a video operator.

In my opinion, the key to addressing this issue successfully is having a high-quality, versatile color corrector on hand.

When it comes to setting up these monitors, I basically function as a colorist. I primarily work on music and awards shows, but I also do some episodic television. I set up the look of cameras and make sure all the cameras are matched in terms of color and resolution.

The author poses on the set of "Canadian Idol."

With the advent of multimedia production, color correctors have become more important to my job than ever. I need to match the increasing amount of outputs that viewers now encounter in the same program.

It's necessary for me to have a color corrector with the full RGB complement, including whites, gamma, black, plus the chroma/luminance section: saturation, hue, black stretch, luminance and set-up level. Currently, I use For-A's DCC-700, a digital component color corrector and signal processor, for most of my work.

SET DESIGN ELEMENT

Most of the shows I work on incorporate on-set monitors and displays, often as part of the actual set design. For example, "Canadian Idol," which I worked on last year, had 12 plasma screens on the set as part of the show.

The crew switched various feeds to the displays, showing different video images in each one. It was very important that video images on the displays matched perfectly in terms of color and resolution. In turn, their images had to match the overall video image of the performance on the stage.

In order to correct display image problems, I use the DCC-700 to disassemble a composite or digital component signal back into its RGB basics, then rebuild the signal for a perfect match. What I like about the DCC-700 and other For-A color correctors is that they disassemble the input composite video signal in the same fashion that cameras assemble their video composite signals. Essentially, they act like another camera, so I can custom-tailor the response of a particular video signal.

Another feature I find useful in the DCC-700 is the "scene file" function, which allows me to store up to 99 color-correcting settings. Once I match the color settings between the cameras and the projectors during rehearsal, I can set the DCC-700 in the scene file for the actual event.

When an event is live, such as a sports program with a wireless camera, there is often no opportunity to preview and set up a color-corrected signal. Only an experienced operator can match a camera quickly and accurately without the aid of color charts and calibration signals.

Now more than ever, video operators must contend with multiple displays on set, a background that is as much a part of the show as are the singers or dancers in the foreground. When we capture foreground events in crisp, clear video, we must make sure that the background displays are equally crisp and clear.

That's why it's essential to have a versatile color corrector. In my opinion, For-A's color correctors offer this and that's why I've been using them for more than a decade. ■

Charlie Goldman is a freelance video operator from Toronto and can be reached at charlivision@interhop.net.

For more information, contact For-A at 714-894-3311 or visit www.for-a.com.

USER REPORT

Ross Gets HD With Precision

by Siegfried Margies
President
Precision Transfer Technologies

OTTAWA, CANADA

Precision Transfer Technologies is a media services company in business more than 10 years, with offices in Ottawa and Toronto. We offer video transfer services from every format, including HD.

I have more than 25 years experience in the broadcast industry. Throughout my career, I have used various products from Ross Video and have a good working knowledge of the company's products.

After thoroughly researching new terminal equipment for monitoring SD and HD in all-digital environments, Ross' GearLite DAC-9213-R multidefinition distribution and monitoring converter was the only box with the ability to do SD and HD conversions without being tied to a specific product line. The major advantages were the versatility and cost-effectiveness of the product.

Siegfried Margies uses Ross converters to monitor HD signals.

By not being tied to a single monitor type and rack space, we knew the product had more longevity. Previously we've used other products accepting only HD—ultimately, choosing the DAC-9213-R made sense and was an easy decision. We have experience using other Ross products and all have had exemplarily performance.

EASY INSTALLATION

Installation of the DAC-9213-R was a snap. It was delivered pre-configured from Ross and we didn't need to adjust any settings to make it usable—all we had to do was plug-and-play. The converter conveniently mounts right behind the monitor.

Precision Transfer Technologies is using the DAC-9213-R for monitoring SD and HD signals. This product is not vaporware—it works and no upgrades are required, unlike many other HD products currently on the market.

In addition, Ross' sales support and customer service has been excellent. The company is reliable and we know if we have any concerns we can pick up the phone and give the support staff a call anytime.

The DAC-9213-R gives us the ability to streamline the monitoring process, making us more efficient. We're really impressed with this product and have recommended it to our clients as a device to help them in their monitoring stream for SD and HD. ■

Siegfried Margies is the president of Precision Transfer Technologies and can be reached at ziggy@precisiontransfer.com.

For more information, contact Ross Video at 613-652-4886 or visit www.rossvideo.com.

TBC/A-to-D

Fortel DTV

3305 Breckinridge Blvd., Ste. 118
Duluth, GA 30096

The following is a compilation of opinions solicited from users of the month's featured product, as well as general specifications and other pertinent information.

KEY FEATURES

- A/D and D/A conversion in a single card
- Precision NTSC filtering
- Audio embedding/de-embedding capability
- Built-in test signal generator

USER	Patrick Roche New York Network 518-443-5333	Earle Engel Patlin Electronics 330-659-9673	Ron Eden KGTV 619-237-6370	Jason Taubman Game Creek Video 603-882-5222
WHAT MODEL(S) DO YOU HAVE?	FS411 (15 of them)	FS411	FS511 (three of them)	FS514 (45 of them)
HOW IS IT USED?	Video timing; A/D & D/A conver.	Video timing; A/D & D/A conver.	Video timing; A/D & D/A conver.	Video timing; A/D & D/A conver.
HAS IT PERFORMED AS EXPECTED?	Above expectations	Yes	Haven't really used them yet	Exceeded our expectations
WHAT FEATURES DO YOU LIKE THE MOST?	Clean video; modular; control panel	Filtering capability; control panel	Control panel	Small size; control panel; optional color correction
WHAT FEATURES DO YOU LIKE THE LEAST?	None	Loads into frame from the rear	Cards must be used sequentially	Rackmount is odd
HOW LONG HAS IT BEEN IN SERVICE?	Three years	Four years	Just got them	One year
HAVE YOU HAD ANY EXCESSIVE MAINTENANCE PROBLEMS?	One problem, fixed by software	No	No	No
HOW WOULD YOU RATE THE MANUFACTURER'S SERVICE/SUPPORT?	Excellent	Very helpful	So far, so good	Excellent
WHERE WAS THE EQUIPMENT OBTAINED?	Don't know	N/A	Manufacturer	Manufacturer
WHAT WAS THE DECIDING FACTOR FOR YOUR PURCHASE?	Small size; company experience	Clean video; dependable	Looks well built; has both analog and digital	Price, size and quality

For more information, contact FortelDTV at 770-806-0234 or visit www.forteldtv.com.

REFERENCE GUIDE

The Reference Guide is a selected sampling of current products. Specifications and prices are supplied by the manufacturer and are subject to change without notice. *Information compiled by Kelly Brooks.*

HD A/D AND D/A CONVERTERS

MANUFACTURER	MODEL	TYPE A/D OR D/A	INPUTS	OUTPUGS	VIDEO FORMATS	FEATURES	PRICE
AJA Video 530-274-2048 *www.ajavideo.com*	HD10C2	D/A, standalone	HD-SDI	2xHD-SDI; RGB/YPrPb	1080i, 1080p, 720p	HD-SDI and SDI D/A 10-bit converter	Call for pricing
Cobalt Digital 217-344-1243 *www.cobaltdigital.com*	HD8024	Up/down/cross-converter D/A, rackmount	SD-SDI, HD-SDI	2x input copies, 2x up/down/cross-converted output HD: HD-SDI, XGA	1080i/p/sF 720p, 486i and 576i	Proc amp, user programmable, overlay reticules, front contro panel, remote control, full apsect ratio	$5,495
Ensemble Designs 530-478-1830 *www.ensembledesigns.com*	7900 Avenue	Up/down/cross-converter D/A rackmount	HD-SDI, SD-SDI	HD-SDI, SD-HDI	1080i. 720p, 525 (NTSC) 625 (PAL)	Frame sync, proc amp, ARC, optional 8-ch. audio mux/demux, audio tracking delay, 16- and 24-bit	Call for pricing
Grass Valley 607-775-2165 *www.grassvalley.com*	2090MDC	D/A	HD-SDI	NTSC/PAL, SDI and YUV/RGB down-converted outputs	1035i, 1080i, 720p	50, 59.94 and 60 Hz field/frame rates	Call for pricing
Leitch Technology 888-231-9673 *www.leitch*	X75HD	D/A	HD-SDI, SD-SDI	Two composite SD YPrPb, SD RGB	1080i, 720p, 480i	Broadcast quality downcoversion with both digital and composite outputs	Call for pricing
Miranda 973-379-0089 *www.miranda.com*	SDM-873p	D/A	SDI/HD-SDI	CAV (RGB, YPrPb)	525i, 625i, 720, 1080p, 1080i	Automatic input scan-rate detection, supports direct output p to PsF, PsF to p. 3:2 insertion, Panasonic Varicam mode	Call for pricing
Prime Image 408-867-6519 *www.primeimageinc.com*	HD-I/O	Up/down converter D/A and A/D	HD-SDI, SDI-HD	HD-SDI composite SDI-HD component	480i, 480p, 576i, 576p, 1080i, 1080p	Proc amp, test generator, audio embedder, de-embedder	Call for pricing
Pro-Bel 631-549-5159 *www.pro-bel.com*	3417	D/A	HD-SDI	2x HD-SDI, YPrPb, XGA	1080i	XGA computer monitor output, test signal mode, error pulse output	Call for pricing
Ross Video 757-482-6619 *www.rossvideo.com*	DAC-9213-R	D/A standalone	MD-SDI (SD or HD)	2x MD-SDI, RGB, YPrPb	1080i, 1080p, 720p, 480i	Auto-sense, SD/HD input, 2x reclocked outputs, 11-bit processing, 10-bit DAC, 30 MHz bandwidth	$1, 195

COMPANY PROFILE

Terayon Evolves, Focuses on Video

by Lauren Evoy Davis

SANTA CLARA, CALIF.

Founded in 1993, Terayon Communication Systems, a provider of digital video networking applications, started out as a cable modem company.

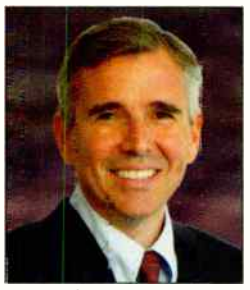
The company focused on the data-over-cable service interface specification (DOCSIS) used for high-speed data distribution over cable television system networks.

"We followed the DOCSIS path with the standardization of the technology and led the development and acceptance of the DOCSIS 2.0 spec with CableLabs, on both the modem and the CMTS side," said Andrew Steele, vice president of marketing and business.

ROUNDING A CORNER

Since that time, the company has expanded its services beyond providing cable modem termination system (CMTS) equipment to cable operators, to becoming a supplier of digital video processing technology to cable MSOs, broadcasters, satellite providers and telcos.

During the summer and fall of 2004—when Terayon was ready to upgrade its cable customers with its new DOCSIS 2.0 CMTS system—it realized the industry was not ready to upgrade.



Jerry Chase, CEO of Terayon

As a result, the company strategically decided to stop investing in the DOCSIS 2.0 system and began moving in the direction of video.

"We're seven months at putting video at the center of what we're doing," said Jerry Chase, CEO of Terayon. Chase joined the company in September 2004 after serving as the chairman and CEO of Thales Broadcast & Multimedia for three years.

Terayon has approximately 215 employees mostly focused on its video business.

Terayon began its evolution into the video business when in 1999, it acquired Imedia—a producer of routing and re-multiplexing systems for digital video—which had developed a platform called the "CherryPicker," a line of statistical multiplexers.

Today, the Terayon DM Network CherryPicker is a statistical, multiplexing, rate shaping and grooming, ad insertion and graphical overlay tool. Other gear that the company currently offers includes the BP5100 broadcast platform and the CP7600 multichannel integrated edge decoder.

"The CherryPicker product family is really the flagship of our digital video business," Steele said.

The North American cable market is the main customer base for the product and customers include Charter, Comcast, Cox Communications, DirecTV, EchoStar and Fox Broadcasting, among others.

"Anywhere you're managing real-time digital video transport streams, that's where our product plays; across geographies, across cable, satellite, telcos; but the vast majority is from North American cable," Chase said.

The company has also expanded its reach into European and Asian markets with its cable modem products.

NEW GEAR AT NAB

The company's new digital motion graphics overlay technology was demonstrated at NAB2005 in Las Vegas. Terayon took its BP 5100 broadcast platform, launched in 2004 and deployed first with Fox Broadcasting, and enhanced the complexity and level of graphics and video overlays that broadcasters can do for localizing content.

The BP 5100 enables channel branding of MPEG video with frame-accurate program splicing and advanced multicasting. Currently deployed at Fox and NBC, the broadcasters overlay animated graphics directly in 1080i content.

Along with the advances in its graphic insertion technology that the company debuted at NAB, Terayon is focused on expanding its position in local digital ad insertion, which is a big part of the company's business in cable. Terayon is also focused on providing broader support for IP-delivered video.

Terayon's gear currently performs splicing for local ad insertion, as well as grooming and statistical remultiplexing.

Because the company is able to do that at the central and edge points of networks, those are also the same places where broadcasters may want to insert digital rights management data. This enables the company to possibly implement broadcast flag technology that can be inserted into over-the-air content to prevent mass copyright infringement.

"The broadcast flag issue is something that comes up now and again in discussions with our customers," Steele said.

However, the issue is still hung up in the courts and Terayon is not focusing too much R&D on the technology until a final ruling is made about the flag. ■

TERAYON

4988 Great America Pkwy.
Santa Clara, Calif. 95054

Tel: 408-235-5500
Fax: 408-727-6204

www.terayon.com

USER REPORT

Miranda Makes Majestic Video

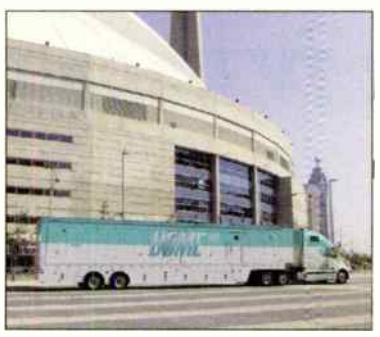
by Curtis Skinner
Manager of Engineering
Dome Productions

TORONTO

Dome Productions was founded in 1989 to provide live event coverage for televised events originating out of Rogers Centre, previously known as the SkyDome.

Since then, our company has expanded its services to include remote production facilities, crews, transmission services and turnkey project management services for clients across the United States and Canada.

To meet the growing demand for high-quality mobile production, in 2004 we expanded our fleet to a total of eight units with the addition of "Majestic," one of North America's largest and most technically capable multiformat high-definition mobile units. (See "Canada Leaps Into Live HD Production," Jan. 5, 2005.) Majestic is a 53-foot-long mobile unit with a 51-foot expando section, and it features 10 Thomson/GVG LDK-6000 HH Worldcam cameras, a GVG Kalypso HD switcher, six servers, six VTRs and a Calrec Alpha 100 Digital audio board. Designed to be flexible and meet the demands of a variety of mobile applications, the unit can work in 1080i and 720p as well as standard-definition TV.



Dome's Majestic truck gets ready for a shoot at the Rogers Centre.

We selected Miranda's QUC-801i HD upconverter, QDC-801i HD-to-SDI downconverter and other signal-management systems to connect the mobile unit to the outside world by processing incoming feeds and outgoing signals. Miranda's HD products are well suited for Majestic because they're easy to use

MIRANDA, PAGE 44

BUYERS BRIEFS

The PRC-970 from **Link Electronics** is a processing amplifier in a 1 RU chassis. The unit features video and chroma level circuitry called Dual Slope Release (DSR). DSR constantly monitors sync tip, peak whites and chroma level, and keeps each parameter within NTSC specified limits.

Another feature that is important for transmitter site operation is the video detect/auxiliary select function. If the primary video feed is lost, the PRC-970 automatically checks for an auxiliary input. If no aux signal is present, the unit outputs blackburst.

For more information, contact Link Electronics at 573-334-4433 or visit *www.linkelectronics.com*.

The MCP-601-A and MCP-601-D from **Magni Systems** allow direct encoding of digital DVI to video, have high-quality keyers and provide video push-squeeze digital effects. The MCP-601-A has analog video input and outputs, as well as a genlock scan converter with overlay and digital video effects for customers working in analog video facilities.

The MCP-601-D with SDI video inputs and outputs is a digital-ready genlock scan converter with overlay and digital video effects. Both products have analog VGA as well as digital DVI inputs.

For more information, contact Magni Systems at 503-615-1900 or visit *www.magnisystems.com*.

USER REPORT

AJA Converters Hit the HD Road

by Rick Hayes
Chief Engineer
Mira Mobile Television

LAKE OSWEGO, ORE.

Since 1982, Mira Mobile Television has provided high-end video production services for live events and taped programs from sports, corporate and entertainment venues throughout the western United States and Canada. Today, Mira is the largest mobile facilities provider north of Los Angeles.

Late last year, we put our new HD truck, M-5, into action. The M-5 is a 53-foot trailer with a 51-foot expanding-side, featuring the new Sony HDC1500 HD cameras that acquire 1080/60p video, operating from either triax or fiber cable. The M-5 dual-feed facilitates production of two separate programs from the same mobile unit in standard-definition and high-definition.

When we considered video conversion from A/D and D/A for external feeds and VTR interfacing, we had to have the best possible quality and reliability. We had already been using a number of AJA's converters for many years and the company was recommended again for this application, so we went ahead and made the purchase.

In the remote business, we have just a few hours to make sure our setup is ready to go and we can't afford problems. AJA products are plug-and-play—we don't have to worry about them because their quality has always been dependable and they perform as expected.

For our M-5 truck, we bought AJA's D5D composite and S-Video analog-to-SDI converter, the D5DA multiformat SDI distribution amplifier and the HD10DA dual-rate HD/SD distribution amplifier.

CONVERT AT THE PANEL

We regularly receive analog video feeds coming from outside the truck. It is our standard operating procedure to make this conversion at the I/O panel so I don't have to worry about an analog signal running through our system.

AJA Video's D5D is useful for bringing video from timebase-corrected analog composite equipment into a serial digital environment. The D5DA SDI DA is capable of re-clocking SDI, making it handy for multifunctional requirements over long cable runs.

And the HD10DA is the perfect solution for the HD environment where there often are cable runs of several thousand feet running to multiple locations. The HD10DAs are placed down the line to boost and re-clock the signal, ensuring the highest HD quality.

One of the first projects we did with our M-5 was the on-air graphics for the

Mira's M5 production truck uses AJA Video DAs and converters.

Sacramento Kings' basketball games. Clean, on-air graphics packages were a significant concern for the Kings because they were using an SD character generator. We used Chyron's Duet, along with AJA's HD10DA.

Clients who specify HD are very quality conscious, so it was important that the video quality be top-notch. When we experimented with the available converters, the Kings' producer/director quickly noticed the quality difference between the AJA and others.

We do a lot of other sporting events as well as special events like MacWorld in San Francisco this year. This was Apple's worldwide HD video products announcement, so the company wanted to use an HD mobile unit to display its products on large, HD video monitors in meeting rooms and in external HD transmissions.

HD ROLLOUT

For MacWorld, we handled the HD rollout using the M-5 truck. We used AJA's rackmount RH10UC upconverter to process some SD feeds; the units worked very well and the video looked great. We also had very long cable runs to distribute HD to the projectors, which required us to use HD10DA distribution amplifiers to reset the level, re-clock, then output it to various locations.

Our experience with AJA's converters in our SD trucks for analog-to-digital conversion had already shown us the reliability of the company's SD converters. The throwdown (miniature) DAs are reliable and rugged, and hold up under rugged field conditions. We've never had a failure, despite considerably rough handling of the converters.

The quality of the converters and distribution amplifiers in our new HD truck has been terrific. ■

Rick Hayes is the chief engineer for Mira Mobile Television and can be reached at rhayes@miramobile.com. *The opinions expressed above are the author's alone.*

For more information, contact AJA Video Systems at 530-274-2048 or visit www.aja.com.

USER REPORT

Grass Valley Wins Court TV Ruling

by Paul Kelly
Director of Engineering,
Court TV

NEW YORK

Court TV's facility in New York City employs about 300 people and handles dozens of analog and digital feeds daily.

In our facility, accurate signal processing and routing serves as the foundation upon which all our production and distribution systems are based. Signals have to get to where they are supposed to go, in the proper format, on a round-the-clock basis, without human intervention.

We are in the process of migrating our 12-year-old analog systems to digital. One step is to convert Court TV's live daytime analog production to digital using Grass Valley equipment and we are in the process of building a control room that will be on-line later this year.

The Grass Valley Kameleon frames fit a variety of the company's Gecko cards.

By year's end, the daytime production chain at Court TV will be all-digital.

We currently have satellite backhauls that come in as analog signals routed through our switcher and converted to SDI. We also get a number of digital backhaul feeds that we need to route to our analog production areas for editing and effects, even as we monitor the signals in digital in master control for QC purposes.

We chose three Grass Valley Kameleon signal conversion frames and numerous Gecko modules to keep both the transcoding and the embed/de-embed processes invisible to our production staff. In all these cases, the Kameleon/Gecko modules convert signals that are then distributed to various locations throughout the facility in the proper format.

Grass Valley processing equipment was chosen because the product line offers a variety of analog and digital options. In addition, we can control and change signal paths quickly, through an Internet browser interface and Grass Valley NetCentral control software that gives us SNMP-based remote monitoring and Web-based control.

For our primary satellite backhauls, we use digital IRDs that provide an SDI output with embedded audio. These signals are distributed to Kameleon frames for conversion and distribution to our analog and digital facilities.

The Grass Valley Newton control panel gives us fast, Ethernet-based access to the modular products like the Kameleon and it has the ability to manage multiple sources from a single unit. This is especially useful in our backhaul environment, where five Kameleon modules are processing incoming satellite feeds.

EASY CONVERSION

We like the modularity of the Kameleon platform and its backplane architecture that allows me to easily convert from analog sources to a combination of analog and digital. This is proving to be a valuable feature as we make the transition from analog to digital.

The new digital signal paths we implemented using Grass Valley equipment prepare us for the future. When we make the move from SD to HD, our Kameleon frames will easily fit HD cards.

The advantage with the Kameleon frames is that moving to HD will involve simply swapping out Gecko cards. ■

Paul Kelly is the director of engineering for Court TV and can be reached at kellyp@courttv.com. *The opinions expressed above are the author's alone.*

For more information, contact Grass Valley at 818-729-7711 or visit www.grassvalley.com.

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USER REPORT

Leitch Converts KLCS

by Alan Popkin
Director of Technical Operations and TV Engineering
KLCS
LOS ANGELES

KLCS is a PBS member station licensed to the Los Angeles Unified School District. One of only five educational stations in the nation licensed to a K-12 school board, our mission is to provide for the educational and instructional needs of the second largest DMA in the United States—nearly 16 million viewers throughout Southern California—with a special emphasis on the needs of LAUSD.

Broadcasting 24 hours a day, KLCS also produces more than 700 original television programs each year, which is more local programming than any other station in Los Angeles.

In order to meet the FCC mandate and the needs of our large, diverse viewing audience, KLCS made the shift to DTV in April 2003, becoming one of the first totally automated, integrated tapeless environments, including field production, studio production, satellite acquisition and editing. Today, we support our analog channel and four SD multicast channels, with plans to layer on HD in June.

In addition, we datacast four high-bitrate streaming channels and also use our DTV channel to deliver near video on demand (NVOD) over the air to nearly one million students and teachers of LAUSD.

The control room at KLCS shows the fruits of several conversion processes performed by Leitch equipment.

In moving from a traditional analog plant to a tapeless environment, we needed to examine our workflow from start to finish, accomplish our current goals and also allow for future expansion. In addition, we needed to provide a significantly larger range of services without increasing personnel.

COMPLETE FACILITY REBUILD

With San Diego-based systems integrator TV Magic, we decided to undertake a complete facility rebuild, incorporating a fully embedded digital strategy to minimize wiring costs and build in needed flexibility.

Since we are a public entity, a public bid was necessary when it came to selecting our new infrastructure. We examined the market carefully and concluded that Leitch Technology provided the best value to meet our station's complex needs.

Leitch's 6800+ modular interface platform met all our core processing and distribution requirements in all signal formats (SD, HD, ASI, Data, analog/digital conversion), and the company's CCS Pilot and Navigator software applications provide control and monitoring for the integrated system. Our master control build was particularly complex, due to space limitations and the number of signals we needed to monitor.

With nine different video streams for air, six satellite feeds and a microwave feed, monitoring critical applications presented a significant challenge. Leitch's NEO SuiteView modular multisource display processor, which is scalable up to 44 inputs in 3 RU and controlled by the company's CCS system, allowed us to create a customized, system-wide monitoring solution tailored to our operation.

EXPANSION PATH

NEO SuiteView not only provided us with the necessary feature set—including handling of embedded feeds—but also allowed for an expansion path that we have already started. Leitch will be adding an analog audio module to enable us to monitor our off-air signals without conversion.

All the Leitch equipment is highly intuitive and our staff has had little trouble on the operational level. In any installation of this scale, there will be issues but Leitch responded quickly with the necessary technical information and support. The company also seeks user feedback for improvement of its products and we have seen several upgrades in feature sets due to our input.

Our configuration today is really that of a data center as opposed to a traditional TV environment. We use the video spigots and distribution where appropriate for the mission, but the bulk of the plant is really IT.

By gaining a full understanding of the direction we were headed during the design process, Leitch's team was able to provide solutions for a new style of TV station, one that integrates traditional video infrastructure and legacy analog—as well as embedded digital and future HD—with the necessary IT infrastructure. ■

Alan Popkin, director of technical operations and TV engineering at KLCS-TV/DT, supervises the technical operation of the facility including design and build. He can be reached at alan.popkin@lausd.net. *The opinions expressed above are the author's alone.*

For more information, contact Leitch Technology at 800-231-9673 or visit www.leitch.com.

Miranda

CONTINUED FROM PAGE 41

and allow operators to make quick adjustments and configuration changes within the time constraints of mobile production.

SAVING SPACE

Housed in a 4 RU Symphonie frame, the QUC-801i HD upconverter units from Miranda help save space in the truck while enabling our engineers to convert SDI camera signals and incoming feeds to HD-SDI format. Also installed in the Symphonie frame is the 10-bit QDC-801i downconverter with 3D interlacing, edge detection and interpolation.

Dome Productions was awarded the 2004 Gemini Award for Outstanding Technical Achievement for the design and build of Majestic. Since its launch in March 2004, we have compiled a list of high-profile events and satisfied clients across North America including NBA Toronto Raptors basketball, the Much Music Video Awards, NHL Stanley Cup playoffs, and the U.S. Presidential Inauguration.

Our company's ability to bring top broadcast technologies into a truck like Majestic is one of the reasons Dome Productions is a leading provider of mobile television production services in Canada. With Miranda's conversion products we can go seamlessly from doing a 720p sporting event one day to a 1080i concert the next day.

With Miranda's solid i-Control system and the company's commitment to keep our internal processing on the leading edge, we expect Majestic to be one of the top HD mobile production units well into the future. ■

Curtis Skinner is the manager of engineering for Dome Productions and can be reached at cskinner@domeprod.com. *The opinions expressed above are the author's alone.*

For more information, contact Miranda Technologies at 514-333-1772 or visit www.miranda.com.

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Sony Betacam 537A w/PVV1A back w/Angenieux 9-126 w/2X doubler, original hard case & PortaBrace soft case, Anton Bauer Titan pwr sply & chrgr w/1 Hytron 120 digital batt & 2 Trimpac 14 batts, Anton Bauer Ultralight 2 mounting plate, mic, etc & one new case of Beta30 tapes, privately owned w/limited use, xlnt cond, $4000/firm. R Manning, 305-538-3270.

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Cartoni heavy duty tripod floor spreader, like new, $225; Scriptboy wireless time code reader, $575. Alex, 727-595-6050.

Sony DXE40 VF, like new, in box, never used, incl mount, $250; Panasonic WV-VF65B VF, like new, never used, incl mount, $250. M Bacon, 330-963-7763.

Varizoom VZ-Pro-L remote zoom control for most Sony & Canon mini DV camcorders with a Lanc jack; like new, $220. G Parr, 805-681-0415 x22 or gparr@glendon.org.

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Trompeter JS-40 video patch panels, normalling jacks, in great cond, BO. A Wudel, 712-362-7939 or AlWud2002@yahoo.com.

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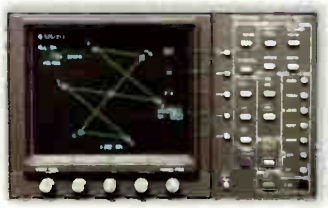

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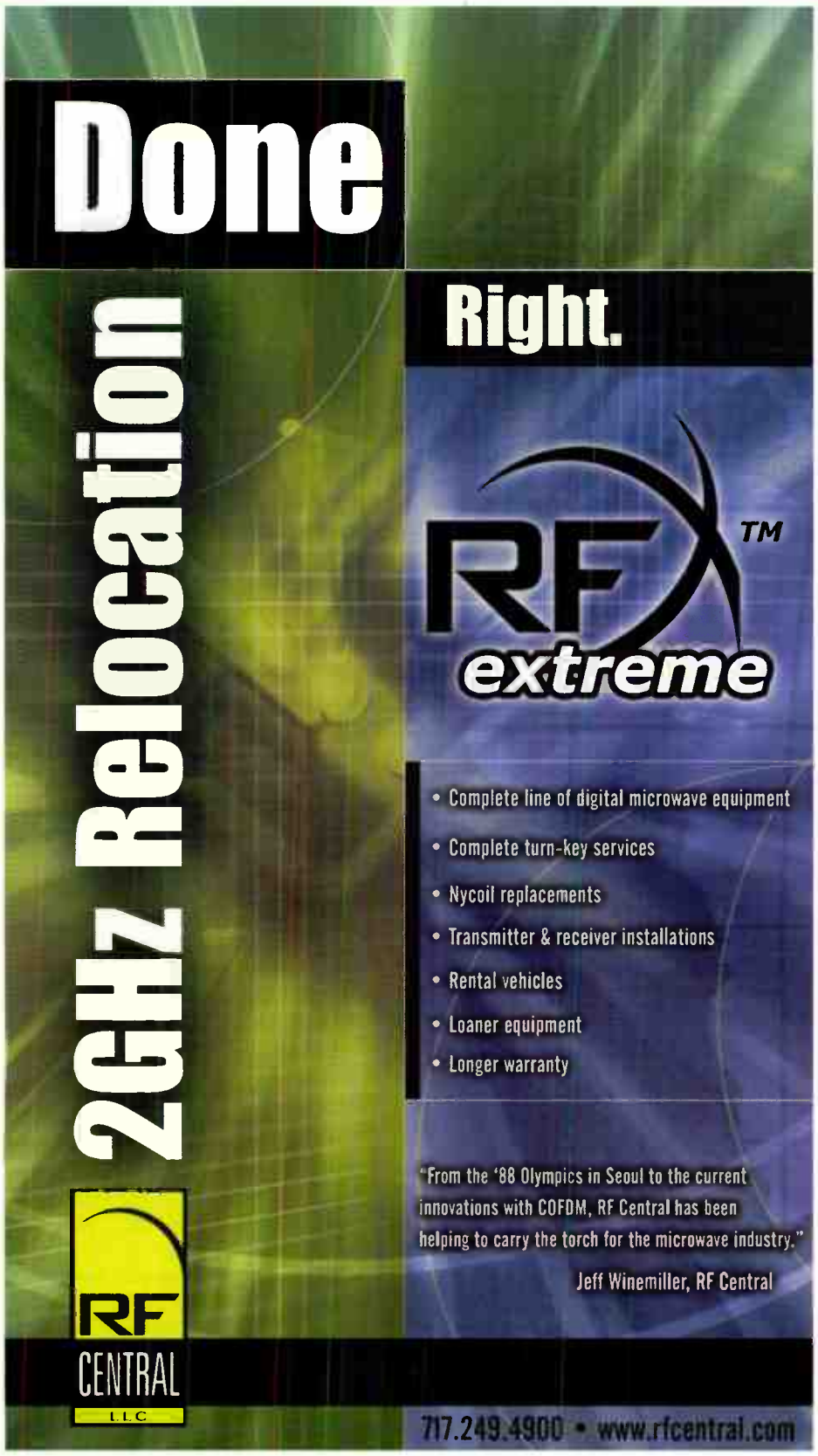

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Leitch Mix-7001 multi-function digital frame, $500; Grass Valley Series 8900 Frames w/redundant power supply, $600; GVG 8501 video DA's, $150; GVG 8551 audio DA's, $150; GVG 8936 cards, $250; Sony BVX-D10/BVR-11, $4250. 818-788-4700 or www.tvprogear.com.

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Sony UVW-1800, lw hrs $5500; Sony PVW-2800, $6000; Sony BVW-70 from $6500; Sony BVW-65, $2000; Sony DSR-2000, new, $11500; Sony DSR-1500A, new, $4950; Sony DSR-45, new, $3995; Panasonic AJ-D950 DVCPRO 50 rcdr, lw hrs, $7950; Sony VO 9850 w/timecode, $1200; Sony VO 9800 w/timecode, $1000; Accom WSD Xtreme, $3500. 818-788-4700 or www.tvprogear.com.

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Business News

VSG, Bexel to Provide HDTV Systems

MOONACHIE, N.J & BURBANK, CALIF.

Broadcast systems integration firm Venue Services Group and broadcast equipment supplier Bexel have formed a partnership to provide fiber systems to the broadcast market.

Together, VSG and Bexel—a subsidiary of the Vitec Group—will provide end-to-end systems requiring fiber, design and integration, specifically in conversions to HDTV.

"We are interested in assisting our clients by providing full systems design and integration for their projects to complement our fiber optic networks," said Scott Nardelli, director of Bexel Broadcast Services Fiber Optic Solutions.

The Bexel BS Fiber Division has created fiber network systems and tested/supported infrastructures for the Academy Awards, PGA Championships, FIFA World Cup Soccer, Rolling Stones Tour and others.

VSG—a subsidiary of National Mobile Television—has completed systems integration for broadcasters in regional networks, (New England Sports Network, Madison Square Garden Network), professional leagues (National Football League), sports arenas/stadiums (Fleet Center, Fenway Park) and religious broadcasting (Free Chapel Worship Center, Bethany Harvest and Solid Rock Church). ■

Echolab, Crystal Vision Form Partnership

BILLERICA, MASS. & CAMBRIDGE, U.K.

Echolab and Crystal Vision have formed a technology and marketing partnership.

Echolab will offer its customers a comprehensive interface tool and provide U.K. manufacturer Crystal Vision with a sales and support network for its North American customers.

The companies are also jointly developing products that connect digital studio equipment to an analog infrastructure. Initially, they have created three converter products that integrate with Echolab's switchers. Echolab will also sell 60 Crystal Vision interface and keying modules in the United States. The company has developed a frames system to house the boards that offers flexibility with the mixing of HD and SD video and audio modules in 4U, 2U, 1U and desk top box sizes.

Also, churches, sports stadiums and colleges, Echolab's broadcast customer base, will have access to Crystal Vision's product line. ■

A.F. Associates Gets Rebranded

NORTHVALE, N.J.

Systems integrator A.F. Associates has been rebranded Ascent Media Systems & Technology Services.

The organization—part of Ascent Media Network Services (AMNS)—will continue under the leadership of executive vice president Tom Canavan, and includes the original east coast facility, west coast facility, the AMNS operating unit in Palm Bay, Fla. and a newly-launched systems integration presence in London.

Besides system integration, Ascent Media Systems & Technology Services provides engineering, consulting and technology support technologies for broadcast, cable, satellite, telecom, production/post and corporate video industries.

AMNS is part of Ascent Media Group, based in Santa Monica, Calif. ■

360 Systems Moves to New HQ

WESTLAKE VILLAGE, CALIF.

Due to the growth of its video sever division, 360 Systems has acquired a new building for its headquarters.

The 23,000 square foot facility in Westlake Village, Calif. will house the engineering, sales, marketing and manufacturing employees.

After introducing its Image Server product line, the company experienced a hike in growth, 400 percent in 2004, according to 360 Systems.

Starting May 1, the company's headquarters will be located at 31355 Agoura Road, Westlake Village, Calif. 91361. All telephone numbers will remain the same. ■

Broadcast Consultants Launch New Firm

WASHINGTON, D.C.

Three well-known technical consultants have merged their broadcast and consumer electronics practices to create a new firm, Meintel, Sgrignoli and Wallace.

William Meintel of TechWare, Gary Sgrignoli of Sgrignoli Consulting and Dennis Wallace of Wallace & Associates will focus on the DTV transition.

Meintel notes that the transition to digital broadcasting has obstacles to overcome, but he said that the new firm would meet the challenges of final channel election, facility construction and coverage analysis.

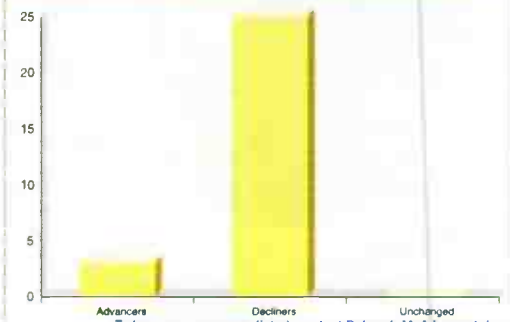
Meintel's firm, TechWare provided analysis tools to the FCC and he has worked on policy and regulatory matters for industry trade associations.

Sgrignoli worked with the Zenith Electronics to develop and test the 8-VSB modulation system used by the ATSC DTV standard.

As a consultant, Wallace specialized in RF propagation measurements, transmission systems and regulatory and policy issues.

Both Sgrignoli and Wallace have received the Matti S. Siukola award by the IEEE. ■

WIN-LOSE RATIO



TOP ADVANCERS BROADCAST STOCKS
(APRIL 1 - APRIL 15)

Paxson + 75.81%
EW Scripps + 8.88 %

TOP DECLINERS BROADCAST STOCKS
(APRIL 1 - APRIL 15)

ACME – 20.57%
Nexstar – 17.82%

TOP ADVANCERS TV STOCKS
(APRIL 1 - APRIL 15)

Leitch + 1.98%

TOP DECLINERS TV STOCKS
(APRIL 1 - APRIL 15)

SeaChange – 19.92%
Pinnacle – 12.68%

To have your company listed, contact Deborah McAdams at dmcadams@imaspub.com.

TV Tech STOCKS as of Apr. 15

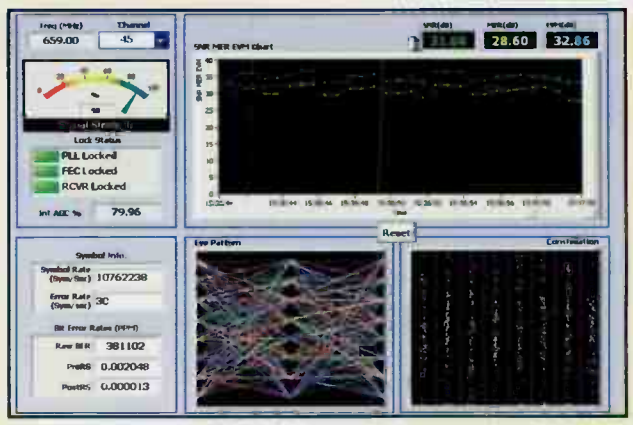
Company Name	52-Week Range	Apr. 1	Apr. 15	% Change
Avid	40.90 - 68.35	54.96	49.22	-10.44%
Belden1	5.56 - 24.59	22.15	20.94	-05.46%
Ciprico	3.15 - 7.21	4.55	4.41	-03.08%
Harmonic	4.86 - 12.40	9.55	8.9	-06.81%
Harris	21.19 - 35	32.56	31.08	-04.55%
Leitch	6.11 - 11.2	8.09	8.25	01.98%
LSI Logic	4.01 - 9.18	5.51	5.12	-07.08%
Pinnacle	3.25 - 9.91	5.6	4.89	-12.68%
Sci. Atlanta	24.61 - 36.50	28.37	26.96	-04.97%
SeaChange	10.04 - 19.75	12.95	10.37	-19.92%
Tektronix	22.04 - 35.00	23.78	22.19	-06.69%

Broadcast STOCKS as of Apr. 15

Company Name	52-Week Range	Apr. 1	Apr. 15	% Change
Acme	4.20 - 8.19	5.3	4.21	-20.57%
Belo	18.00 - 29.90	23.95	23.26	-02.88%
Emmis	17.08 - 25.63	19.17	17.62	-08.09%
Entravision	6.85 - 9.52	8.67	8.28	-04.50%
Fisher	45.02 - 52.60	51.14	50.5	-01.25%
Gray	11.20 - 16.19	14.28	13.62	-04.62%
Hearst Argyle	22.57 - 27.48	25.61	25.15	-01.80%
Nexstar	5.92 - 13.17	6.96	5.92	-14.94%
Lin TV	16.31 - 24.30	16.78	16.52	-01.55%
Paxson	0.48 - 4.00	0.62	1.09	75.81%
Sinclair	6.12 - 14.20	7.88	7.75	-01.65%
Liberty	38.50 - 48	40.05	38.2	-04.62%
Unlvision	25.80 - 36.79	27.62	26.32	-04.71%
Young	7.43 - 18.36	8.23	8.01	-02.67%
Tribune	38.51 - 51.90	39.19	38.55	-01.63%
Meredith	44.51 - 55.94	46.59	44.81	-03.82%
EW Scripps	44.73 - 54.65	48.08	52.35	08.88%

8vsb RECEIVER/ANALYZER

The msi-4400 8vsb ANALYZER—a cost-effective tool for receiving and evaluating 8vsb signals without breaking your budget.



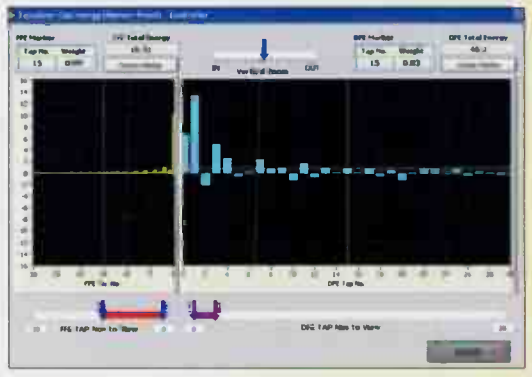
Hardware

A single rack unit controller, the **msi-4400** Analyzer receives and processes the 8vsb signal using a Windows-based PC. Front panel indicators show the status of alarms, and confirm RF level and signal strength. External connections for alarms, and transport stream in LVDS, SMPTE 310M and DVB-ASI formats are all accessible from the rear panel.

✓Accurate

Software

The **msi-4400** Analyzer's software runs on a Windows-based computer. The software provides a complete display that shows the critical 8vsb parameters in a clear, easy-to-understand format:



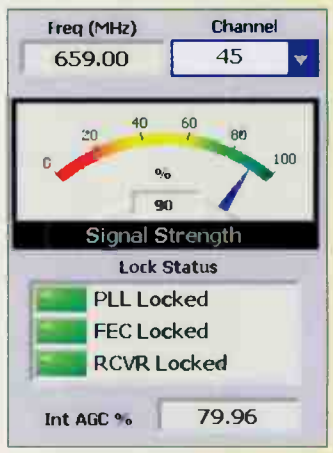
- Eye Pattern Diagram
- Constellation Display
- Signal Strength Metering
- Signal to Noise/MER/EVM Readout and Strip Chart
- Tap Weight Equalizer Graphs
- Data Logging
- Bit Error Rates
- User-configurable alarms with E-mail notification

✓Affordable

You can configure the tap weight scale display, data logging, SNR/MER/EVM strip charting and full remote control to meet your specific requirements.

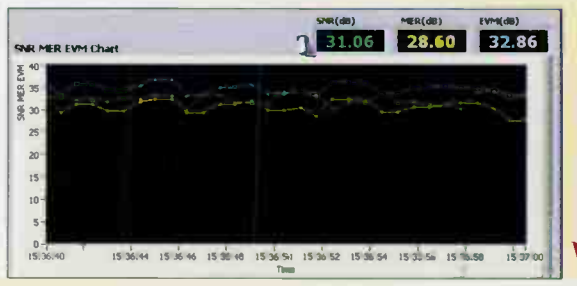
All reports and controls are available locally on a rack-mount PC or a laptop computer, or from a remote location through the Internet.

The **msi-4400** Analyzer is covered by MSI's three-year warranty.



Introductory price: $9860

✓Comprehensive



msi modulation sciences inc.
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