

Broadcast ENGINEERING®

THE JOURNAL OF DIGITAL TELEVISION®

Data management for broadcast

Think of data as dollars

Emergency power systems

California was only a test

also: **NAB Update**
Hundreds of new products



#BXNCFHL *****AUTOM 5-DIGIT 33155
#02291789# 9999 39 02 BE Q 7
J R MEYERS PRESIDENT/CEO
UNITED RADIO NETWORK
4700 SW 75TH AVE
MIAMI FL 33155-4473



System Integration by MCSi, Inc.

The Weather Channel's TV-80 Console

"ONE OF OUR KEY REQUIREMENTS was the ability to support many more microphones, mix-minuses for IFBs, and satellite sources without routing and patching sources and inputs. WHEATSTONE's TV-80 audio console was the logical fit for our needs. It featured eight internal mix-minuses and was 'tried and true' technology. Its preselects with Event Computer give us the expansion and flexibility needed to satisfy a diverse range of needs, from live production out of multiple sets and studios to pre-production for specially produced programming.

THE WHEATSTONE FACTORY commissioning and training worked out very well. It was well coordinated and the operators (both old and new hands) seemed to understand the console, the layout, and the functionality. There have not been any major operational 'bugs' using the audio console live on-air and

user satisfaction with the console has been very good. Setup time and ease of operation have improved significantly. To date we have not had any service needs."

— John Orr, Mgr., Broadcast Engineering Projects

"YOU JUST CAN'T GO WRONG with WHEATSTONE. Their boards are intuitive and clean sounding, and you can track signal flow at a glance. In my eyes the greatest feature of the TV-80 is their mix-minus bus system. *Anyone out there who's 'faking' mix-minus by using submasters or an external box will wonder how they did without it.* The TV-80 is a definite time saver, both in installation and operation. It makes audio operators more confident and reduces show prep time—we're now able to do more and better pre-production. Definitely WORTH EVERY PENNY!"

— Craig Reeves, Audio Engineer



Wheatstone Corporation

tel 252-638-7000/fax 252-635-4857/sales@wheatstone.com / www.wheatstone.com

Circle (101) on Free Info Card

copyright © 2001 by Wheatstone Corporation
specifications and features subject to change without notice

Juggling Too Much? Harris Can Help!

Taking care of today's broadcasting needs while moving toward a digital future is a tough juggling act. You need to maintain and, perhaps, upgrade current systems. Maybe you're even contemplating complete station makeovers. Fortunately there's a company with the resources and dexterity to help you maintain your balance: Harris.

Automation

Whether you need single-channel, multi-channel, or news solutions, Harris has a scalable automation solution to fit your precise requirements.

Transmission

Harris has everything from replacement parts for your current transmitter to a new analog or digital transmission system.

- TV - UHF, VHF, DTV, DVB-T
- Radio - AM, FM, IBOC, DAB
- STL - single to multiple site linking

Systems

Who but Harris offers everything from a single console to the design and installation of entire radio, TV, and mobile studios? Come see our line of DTV products to help you manage your entire system.

Service

Harris installs, maintains and repairs everything it sells. And our broadcast training centers are available to make your team as self-reliant as possible.

Don't Drop the Ball

Let us show you our newest solutions. Come to our booth to discuss your particular balancing act. You'll find us in booth L5023, ready to help.

next level solutions

SERVICE

SYSTEMS

AUTOMATION

TRANSMISSION

www.harris.com

HARRIS

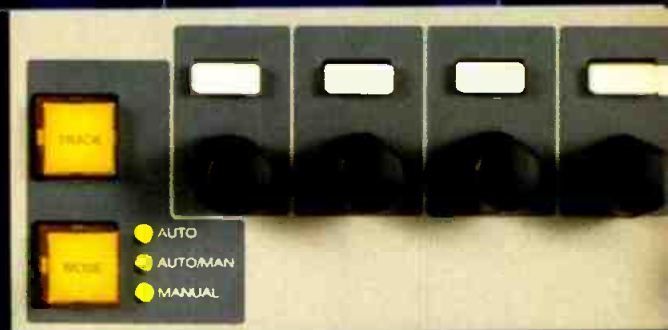
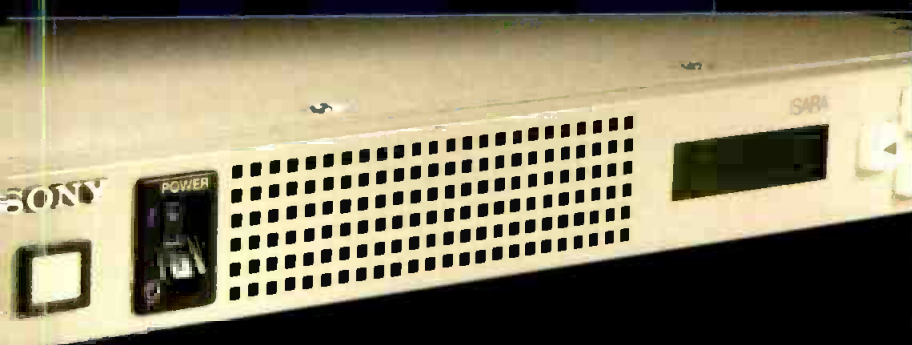
Circle (104) on Free Info Card

WHO BUILDS THE BEST MASTER



SONY

CONTROL SWITCHER?



YOU DO.

One-size-fits-all master control switchers may have been fine in the days of one-size-fits-all broadcasting. But the Anycast™ environment demands more. You may need to be ready for multicasting. Or central casting. You may need to originate more channels of programming — without consuming any more square feet of space. That's why your next master control switcher should be designed by the world's foremost expert on your needs. You. That's the concept behind Sony's ISARA™ master control switcher.

It's the fully-modular, incredibly flexible, consummately scalable switcher that puts you in total control. Go ahead. Combine processor frames to originate up to 25 simultaneous channels of programming from a single control surface. Mix and match modules to select exactly the control and processor options you want. Every step of the way, the ISARA system conserves space. Each ISARA channel frame is just one rack unit high, while the control surface can be smaller than a PC keyboard!

The ISARA system is so compact because its design is smart enough to integrate with the routing switcher, machine control and external monitoring you already have. And because you're not duplicating functions, you're not duplicating costs.

So the ISARA master control switcher doesn't only match your needs, it also meets your budget.

1-800-472-SONY ext. ISARA
www.sony.com/professional

ISARA

IN THIS ISSUE



ON THE COVER: The National Geographic Channel Base Camp Studio offers a street-level view of live television for passersby. The studio is visible from the street through large, partially color-corrected, double-pane picture windows. Photo by Anice Hoachlander.

Features

92 NAB Update

By BE Staff

A look at more digital offerings at this year's NAB.

148 Data management in broadcast

By Carole Hogan

A look at the role an integral data management structure and interface for a large video server plays in today's broadcast facilities.

154 Power quality: Ensuring equipment lives up to its promise

By T.K. Wong

Station engineers must take into account the impact of digital equipment on grounding, harmonic distortion, voltage reference and AC magnetic interference in order to ensure superior power quality.

Beyond the Headlines

NEWS

- 16 Senate and House hold DTV hearings

FCC UPDATE

- 22 Multiple ownership rules clarified

BUSINESS MODELS

- 24 Powell's FCC: Let the private sector decide

By the Numbers

STATE OF THE INDUSTRY UPDATE

- 32 News applications and editing

Digital Handbook

TRANSITION TO DIGITAL

- 34 HDTV data multiplexing, Part 2

COMPUTERS AND NETWORKS

- 40 Cable and wiring for LANs

STREAMING MEDIA

- 48 Audio and video compression

(continued on page 8)



“There’s nothing better..”

**“DVCPRO50 clearly builds on DVCPRO25, which
has been an excellent workhorse format for us.**

We knew how reliable DVCPRO50 would be.

**It’s cost-effective and the quality is excellent—
there’s nothing better for our needs.”**

- Dale Kelly, senior vice president, Pappas Telecasting



When Pappas Telecasting, the nation’s largest private station operator, wanted the best possible format for Azteca America, its new Spanish-language network, the choice was easy: DVCPRO50. Citing both backwards compatibility with 25Mbps DVCPRO and a clear migration path to HD, Pappas chose the award-winning

format for acquisition through production. “Everything we’re currently building is 4:2:2 601-based, so DVCPRO50 fits perfectly with our new network requirements,” said Pappas Sr.V.P. Dale Kelly. DVCPRO50 is the world’s first 4:3/16:9 production format to deliver a complete I-frame, 50Mbps, 4:2:2 studio quality production chain from field acquisition through editing to program transmission. Join forward-looking station groups like Pappas in selecting the interoperability and quality of DVCPRO50. To learn more, call 1-800-528-8601 or visit our web site at www.panasonic.com/broadcast.

Panasonic®
Open systems. Open minds.™
www.panasonic.com/broadcast

Systems Design & Integration

SYSTEMS DESIGN SHOWCASE

- 52 National Geographic Channel Base Camp Studio
- 60 Real Broadcast Network's Internet Broadcast Operations Center
- 66 Fox Sports Net

TRANSMISSION & DISTRIBUTION

- 78 When the thunder dies away

PRODUCTION CLIPS

- 84 The real story about 16/9 and switchable cameras

SYSTEMS INTEGRATION

- 88 MPEG splicing in station operations

New Products & Reviews

APPLIED TECHNOLOGIES

- 160 The Tektronix PQM300 QoS monitor
- 164 AgileVision's AGV-1000 system solution
- 168 Oxtel's Imagestore Interactive
- 172 MedioStream software-based encoders
- 176 Bitcentral solutions for satellite broadcasting

TECHNOLOGY IN TRANSITION

- 180 Editing systems

BUSINESS WIRE

- 186 Business highlights from broadcast and production

Departments

- 12 Editorial
- 14 Reader Feedback
- 222 Classifieds
- 228 Advertisers Index
- 230 EOM

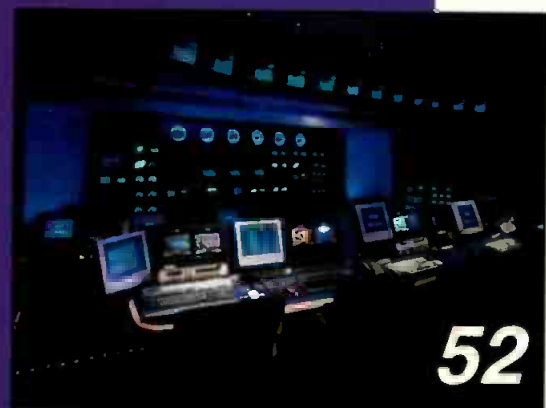
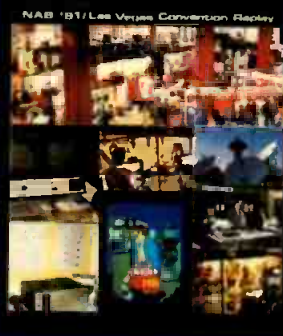
FREEZE FRAME

A look at the technology that shaped this industry.

Electronic cinema isn't new

The world of electronic cinema isn't as new as you might think. Name two of the first cameras shown at NAB '81 designed to emulate 35mm film-like operation. Hints: one of the manufacturers is still a key player today. One camera used t-stops instead of f-stops for exposure. Enter by e-mail. Title your entry "Freeze-frame-April" in the subject field and send it to: editor@intertec.com. Correct answers received by June 1, 2001, will be eligible for a drawing of *Broadcast Engineering* T-shirts.

BROADCAST
engineering



If you don't sound good, you don't look good.

For desktop video production, presentations or multimedia authoring, sounding good means using the best audio mixer you can plug into: The VLZ[®] PRO compact line from Mackie Designs.

Easy to use.

You don't have to be an A/V nerd to get the most out of a Mackie compact mixer. They come with informative manuals written in real English. And they're backed by the most responsive tech support department in the industry. Controls are intuitive and simple to operate.

Easy on the ears.

Our VLZ PRO line sets the standard for low noise and high headroom. Equipped with audiophile-grade XDR[™] microphone preamps, they're the compact mixer of choice for network sports and news location sound, major recording studios, touring groups and post facilities worldwide.

A size for every application.

VLZ PRO mic/line mixers range from the 16-input/16-mic-preamp 1604-VLZ PRO to the 12-input/4-mic-preamp 1202-VLZ PRO. Each is surprisingly affordable and designed to let your production sound as good as it looks.

Get the whole VLZ PRO Story.

Call toll-free for an incredibly detailed 72-page product catalog complete with Hook-up Guide. Or visit our web site for more information.

Circle (105) on Free Info Card

↓ 1604-VLZ PRO

↓ 1642-VLZ PRO

↓ 1202-VLZ PRO

← 1402-VLZ PRO

MACKIE

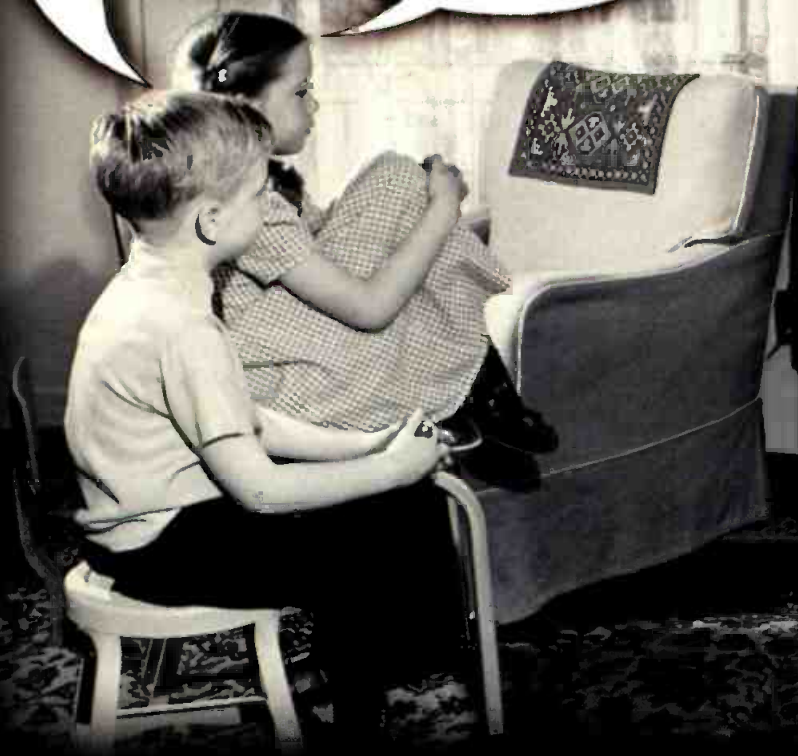
www.mackie.com • 800.258.6883

VLZ PRO mixers are made by real Mackies like these folks in scenic Woodinville, USA.

IN THE EVOLUTION OF GRAPHICS...

It doesn't look like much now, but one day there'll be colorful pictures and awesome graphics.

Neat!



CHYRON NEVER LOOKED BETTER.

CHYRON'S INTEGRATED GRAPHICS SOLUTION: MORE BROADCASTERS LIKE WHAT THEY SEE.

Chyron's **Duet**® with **Lyric**® and **Aprisa**® is fast becoming the best-integrated graphics solution in the broadcast industry. This powerful fusion of technology proves once again why the Chyron name is synonymous with television graphics excellence.

Years after the introduction of their iNFiNiTi! Character Generator, Chyron's Duet, Lyric, and Aprisa systems are **breaking sales records**, while providing the industry with enhanced graphic tools at very competitive prices.

Chyron customers enjoy advanced features, including **Lyric** 2D/3D text, graphic, and keyframe animation software. The easy-to-use creation and playback graphics package is the premiere application for the **Duet Video Graphics Engine**. In addition, iNFiNiTi! users can exchange messages directly into Lyric software, while Lyric can also be used off-line with Windows NT. With Duet, automation has never before been so simple. Basic web-style applications can be easily tailored to manipulate **multiple clocks and ingest external data** for real-time, automated display alongside Lyric.

Aprisa provides centralized Clip/StillStore services that can be browsed or played out from any point in the Chyron graphics network, a true fast track for moving your graphics from production to instant on-air recall. This object-oriented video server provides maximum flexibility when mixing different audio, video, and key elements. Aprisa can also recall these new associations to air **faster than any other product on the market.**

In addition to outstanding technology, Chyron's commitment to customer service is stronger than ever, including ongoing support for established products.

In the words of one customer, Chyron's Duet running Lyric Character Generator and the Aprisa Video Graphics Server "lets us push out twice as much volume - all at the high standards our viewers expect. It allows us to not only maintain quality, but also to increase it." Perhaps that's why when more and more broadcasters take a closer look at Chyron's powerful, integrated graphic solution, they like what they see.



CHYRON GRAPHICS DIVISION
5 Hub Drive • Melville, NY 11747
631-845-2000 • Fax 631-845-3895 • www.chyron.com
Duet, Lyric and Aprisa are registered trademarks of Chyron Corporation. ©2001 Chyron Corp.



Circle (106) on Free Info Card

Starting a new relationship

Have you ever second-guessed yourself about one of those “life decisions”? You’d done all your homework and worked things through carefully only to discover that you’d made a mistake. You find yourself unhappy, unfulfilled, alone, but there’s nothing you can do. It hurts doesn’t it?

You’d had some good times, sure, but you also found yourself occasionally wondering if you’d made the right choice. Could I have done better? Did I settle because it was time and it was easy to say yes? Would my life have been better if I’d chosen differently? Would I be happier if, only if?

For me that commitment was made several years ago. But, as time passed, the relationship began to sour. Things weren’t bad, but they weren’t good either. I began yearning for more excitement, variety ... well, you get the idea.



Soon I found myself cruising the local establishments. I told myself I wasn’t really “looking,” but I was. How can guys not look? You’re out shopping, minding your own business, but then, across the showroom floor or on TV, that sexy model. I looked. I’ll admit it. I’ve got eyes like every other red-blooded American guy. But I didn’t act on the impulse — remember that commitment thing?

Making a significant life change isn’t easy. It took me a long time to get the courage to do it. After all, decisions like these can be expensive. I spent almost a year just talking about what I was going to do. But I didn’t do it. Friends even wagered that I wouldn’t take the plunge. “Once bitten, twice shy,” right? With one bad experience I wasn’t looking to repeat that mistake.

By early fall I decided it was really time to break it off, and I did. So over the last six months I began venturing out more often, looking, but not really looking. It was the right time to make this change in my life. Even so, I was determined to not repeat the

mistakes of the past. This time, before I made another commitment, I was convinced that the older-but-wiser approach would serve me well.

I played the field. In case you’ve been out of action for a while, let me tell you there is more variety out there than you ever thought. Times sure have changed, and anything goes today.

I even read books on this stuff. No quick decisions for me. Hours on the Internet, sometimes lurking in chat rooms hoping to learn from others’ mistakes. Slow and easy, step by step.

Finally, after the holiday season, I found myself tiptoeing toward another commitment. It was frightening. Could I do this again? Would it work out or would I find myself back in that old rut — unhappy, but having made a decision and sticking with it? Would I be satisfied? Would the results be what I wanted, what I needed? Would I be happy?

I finally did get the courage to say yes. I’m convinced it was the right thing to do. I know you all wish me the best of luck. And I promise to keep you posted on how things go. The new HDTV set will be delivered next week. I can’t wait. Anyone want my old set?

Brad Dick

Brad Dick, editor

Send comments to:
direct: editor@intertec.com
website: www.broadcastengineering.com



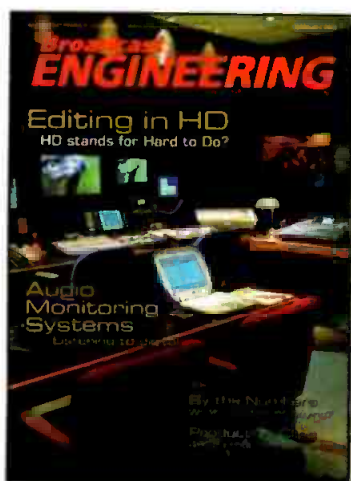
Fix your Incoming Feeds

The Miranda *imaging* Series provides broadcasters with the most integrated and compact solution for decoding, equalizing, synchronizing, processing and adjusting video and audio signals regardless of original format. All the functionality you need on two compact cards, allowing multiple channels per frame to be fixed. Connect to this our highly adapted control solution and you will be able to weather the worst of feeds with ease.

Incoming Feed Processing An *imaging* Series Solution



Reader Feedback



Mad about audio

I'm a student electronics engineer in Belgium. I have to make an essay about MADI. I can't find any information about it. Can you give me more information about what it is and how it works?

KIM VERBEKE
BELGIUM

From *Broadcast Engineering's* sister publication, *BE Radio*:

MADI is an abbreviation for Multi-channel Audio Digital Interface. It is a standard described by the Audio Engineering Society (AES) standards committee as AES-10 and AES-10id. With it, 56 channels of audio in the form of 28 AES-3 (AES/EBU) format signals can be sent across a single cable. (A single AES-3 channel has two channels by definition.) Its purpose is to provide a more simple means of distributing many channels of audio without the need of multiple cables or paths.

A MADI signal is transmitted via coaxial (AES-10) or fiber optic (AES-10id) cable. These signals are multiplexed — not compressed — so it is a lossless transport mechanism.

MADI is used within facilities to send many audio channels from one point to another. Many routing switcher manufacturers use MADI to connect multiple inputs and outputs to their distribution matrix. Large console manufacturers also use MADI to simplify their input configurations. Some facilities use MADI simply as a point-to-point distribution

method to reduce the cable requirements.

You can purchase a copy of the formal standard by contacting the company that publishes all the Audio Engineering Society standards, Global Engineering Documents, at 1-303-397-7956, 1-800-854-7179, or online at <http://global.ihs.com>.

CHRISS SCHERER
EDITOR, *BE RADIO MAGAZINE*

Need Townsend parts?

Recently a reader asked for help in locating parts for Townsend transmitters. Here's a source: Dave Compton 304-622-9622 or 304-622-9839.

Turn on the lights

I am trying to identify a light control unit associated with one of our towers. Attached is a picture of it. Do you recognize this lighting control? Can you help me locate someone who could supply parts?

JIM BARNES



The question was passed to our transmission guru, Don Markley. It took him about 20 minutes to locate the answer. The tower lighting unit is a ROHN FA2SS1, built around 1982. Parts are still available from:

ROHN Industries Inc.
P.O. Box 2000
Peoria, IL 61656
800-225-7646; 309-697-4400
Fax: 309-697-5612
www.rohnnet.com
mail@rohnnet.com

Recent Freezeframe winners

December: "Identify the FCC chairman called both "visionary" and a "one-man wrecking crew." The correct answer was Mark Folwer. Shame on those of you who have (or used to have) First Class licenses. Mr. Folwer was responsible in getting that license eliminated.

Correct answers supplied by:

Tom Anderson
KHQ-TV
Spokane, WA

and,

Mike Norton
Wisconsin Public Television

January: "What (now renamed) company introduced a 7lb ENG camera at the 1976 NAB convention calling it the "Women's lib camera?" The camera was introduced by Thomson-CSF Labs and officially called the Microcam. Fully loaded it weighed 12.5lbs. The whimsical name didn't stick for obvious reasons.

Correct answers supplied by:

Dave Kosh
Waterman Broadcasting

and,

Tom Anderson
KHQ-TV
Spokane, WA

Don't miss this month's Freezeframe question on page 8. Answering the question correctly will win you one of the newly designed *Broadcast Engineering* T-shirts and fame by being published in this magazine. ■

on the web www.broadcastengineering.com
a member of digital media net

DV 8. DV 12.

Perfect balance despite the ups and downs ...



SONY



...of electronic reporting.

Compact digital cameras have become hugely popular. They are fast, light and highly versatile. But do they ensure a smooth take? How do you prevent vibration? What about fast panning? Special applications? Or shooting in dreadful weather conditions? You'll find that Sachtler provides the support you never had before for a digital camera. And including all the things you

expect from Sachtler: fluid damping in five steps, touch and go for speedy changes of location, and highly sensitive counterbalance – also in five steps.

You need to use a heavy lens? Or a lighting system? DV 8 and DV 12 have a carrying capacity of up to 10 kg/22 lb and 12 kg/26 lb. Even fast panning won't spoil your report.

DV 8. DV 12. Because you have so much to report.

sachtler
corporation of america

55, North Main Street, Freeport NY 11520
Phone: (516) 867-4900
Fax: (516) 623-6844
www.sachtler.de
3316, West Victory Blvd., Burbank, CA. 91505
Phone: (818) 845-4446



Every scene is seen better
with a Sachtler.

See us at NAB Booth #L9545

Circle (108) on Free Info Card

www.americanradiohistory.com

News



Senate and House hold DTV hearings

BY LARRY BLOOMFIELD

A suggestion at recent Senate hearings that broadcasters need more time to transition to digital television was not well received by lawmakers. Even so, by the time the hearings concluded most agreed that a delay was inevitable. Following the hearing, Senator John McCain (R-AZ) said an extension was practically a done deal as "there's no chance in Gila Bend, Arizona" that broadcasters could make their deadlines. "You're looking at the power of the broadcasters," he told reporters. "I guarantee you there will be (an extension). I can assure you they have sufficient clout to extend these deadlines."

There was exasperation in McCain's voice over what he perceives as industry foot-dragging. The Senator's tenacity on this issue is somewhat more tempered recently and he has said on other occasions that extensions in the process would come as no surprise. Other senators who give the impression that they

too are tiring of the digital TV novella have joined him.

Remember, it was McCain who did not want to allow broadcasters to have the extra channels they need to facilitate the switch to digital TV, calling it

Telecommunications Subcommittee headed by Rep. Fred Upton (R-MI), held a similar hearing just two weeks later on the same subject with an emphasis on the views of private industry. The message to the House Subcommittee was a reprise of

"You're looking at the power of the broadcasters. I guarantee you there will be (an extension)."

a \$70 billion giveaway, preferring instead to auction those frequencies to the highest bidder.

The Senate is not the only body that shows movement on the deadlines for auctioning the returning spectrum. The FCC has postponed the channels 60-69 auction and the Bush budget anticipates that an auction for channels 52-59 will also have to be rescheduled.

Not to be outdone, the House

the earlier Senate hearings.

Neither of the lawmakers' hearings produced any suggestions or replacement time schedules for the DTV turnaround, but with an expected \$7.5 billion in spectrum sales by 2011, they're not likely to let it slip too far. ■

Hollywood's HD sneak attack

Copyright, probably Hollywood's biggest fixation, hasn't as yet gotten the press in the digital era that other issues have received. It is a topic of gargantuan proportion at the studios and among producers, and it is slowly becoming an issue that will affect the entire television industry.

Hollywood has settled, for the time being, on HDTV as a distribution standard to theatres. There is no question that 35mm film is capable of better quality than what HDTV has to offer. However, the argument has been made from a financial standpoint that if in the estimation of consumers HD is of roughly the same quality as 35mm film and costs less, it is still a viable alternative.

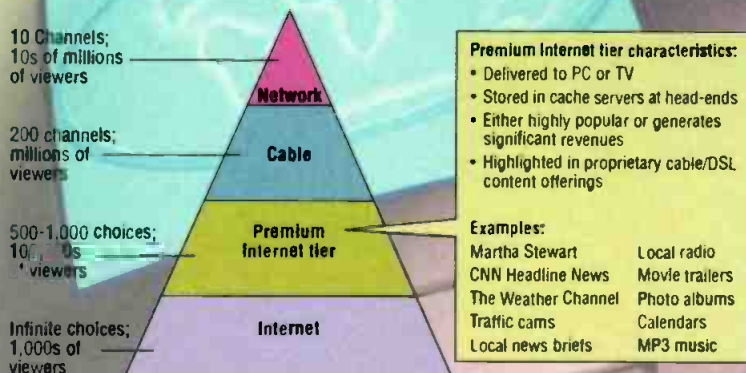
This is an important topic to broadcasters, but for different reasons.

FRAME GRAB

A look at the issues driving today's technology.

Tomorrow's tiered content will combine TVs and the net.

By 2003, PCs will make up only one half of broadband devices. TVs and game consoles will dominate the other half.



SOURCE: Forrester Research www.forrester.com

EXCLUSIVE NAB PRODUCT INTRODUCTION

We're EASY...

EASY ON THE AIR!
EASY on the eyes.
EASY on the ears.
EASY on the budget.
EASY on the maintenance.
EASY on the Alka Seltzer®

Introducing the System 5-B

The broadcast production audio console of the future from Euphonix.

Designed with your needs in mind.

Standard configuration includes: Innovative networked architecture, GPI/O, stereo channels, multi format channels, expanded I/O capability, backstop PFL and audio and video control room monitor selectors.

24/7/365 – Fault-Tolerant by DESIGN

Come spend 5 minutes behind your next console, the System 5-B at NAB Booth R3005

www.euphonix.com

Headquarters
(Silicon Valley, USA)

650 855 0400
info@euphonix.com

Los Angeles
(West US & Int'l)

818 766 1666
richn@euphonix.com

New York
(East US)

212 889 6869
info@euphonix.com

Nashville
(Central US)

615 327 2933
mfranklin@euphonix.com

London
(Europe)

+44 (0)20 8901 7510
milesr@euphonix.com

Tokyo
(Japan)

+81 (0)03 3288 4423
ez04767@niftyserve.or.jp

 **Euphonix**
HIGH DEFINITION AUDIO

Circle (109) on Free Info Card

www.americanradiohistory.com

At first blush there doesn't seem to be a problem with carrying movies on cable or satellite. However, in negotiations over the past few months the studios have been pressuring the cable and satellite companies to decrease the resolution of high-definition digital video, lowering the quality of service (QoS) so there is less incentive for the consumer to copy it. Studios defend their actions in the name of "copyright protection."

Hollywood executives and producers see the exchange of music on the Internet as a pattern that relates to their industry as well. Most motion picture studios have strong ties with the music recording industry and their fears of digital-content swapping were not alleviated with Napster's agreement to start charging for music downloaded online. If anything, the horror of copyrighted music being spread freely around the world via the Internet has fueled fears among movie executives, who see digital video as next in line.

Hollywood is taking no chances. The Motion Picture Association of America (MPAA), which represents the Hollywood studios, is waging a quiet war in negotiations with distributors of its

watching the programs by recording them on their digital VCR.

The Supreme Court decided the personal use recording issue in 1984 when it ruled in favor of the consumer in *Sony vs. Universal Studios*. Now, the MPAA would have us all turn back the clock and revisit these issues. "There is no technology other than downres-ing

"There is no technology other than downres-ing to protect it from being copied and retransmitted on the Internet."

[reducing resolution] to protect it from being copied and retransmitted on the Internet," says MPAA vice-president Fritz Attaway.

"Downres-ing" is nothing new. One Hollywood engineer recalls "At the O&O [network owned and operated station] where I worked back in the 1980s, just after installing our new second generation color cameras, we were told to cut back on the resolution because the new equipment showed up all the imperfections on the face of

between making money and making life easier and better."

The MPAA dipped into its bag of statistics saying Hollywood loses \$250 million annually in the U.S. due to video piracy and the figure is \$2.5 billion a year, world wide. MPAA also claims digital technology will permit video pirates to make pristine copies even down several generations because picture quality doesn't degrade with each copy made as it does with traditional videocassettes.

Representative Rick Boucher (D-VA.), recently commented that "The public is going to be pretty incensed that the quality of programming they were promised isn't delivered."

Despite all this, Hollywood has gotten the ears of at least twelve Capitol Hill lawmakers who as recently as this March, sent a letter to FCC Chairman Michael Powell asking for his support on the digital TV copy issues that would restrict otherwise free over-the-air content.

The two-page document has some rather familiar signatures: Rep. W.J. "Billy" Tauzin (R-LA), chair of the powerful House Commerce Committee, and Rep. Fred Upton (R-MI), chair of the House Telecommunications Subcommittee, Rep. Edward Markey (D-MA), Rep. Cliff Stearns (R-FL), Sen. Barbara Boxer (D-CA), Sen. John Breaux (D-LA), Sen. Fritz Hollings (D-SC) and Sen. Ted Stevens (R-AK), and all members of the House or Senate Commerce Committees.

Lawmakers have said that without copy protection, the foundations of over-the-air broadcast would be threatened,



products to prevent the "Napsterization" of digital video and the perceived ruination of their multibillion-dollar industry.

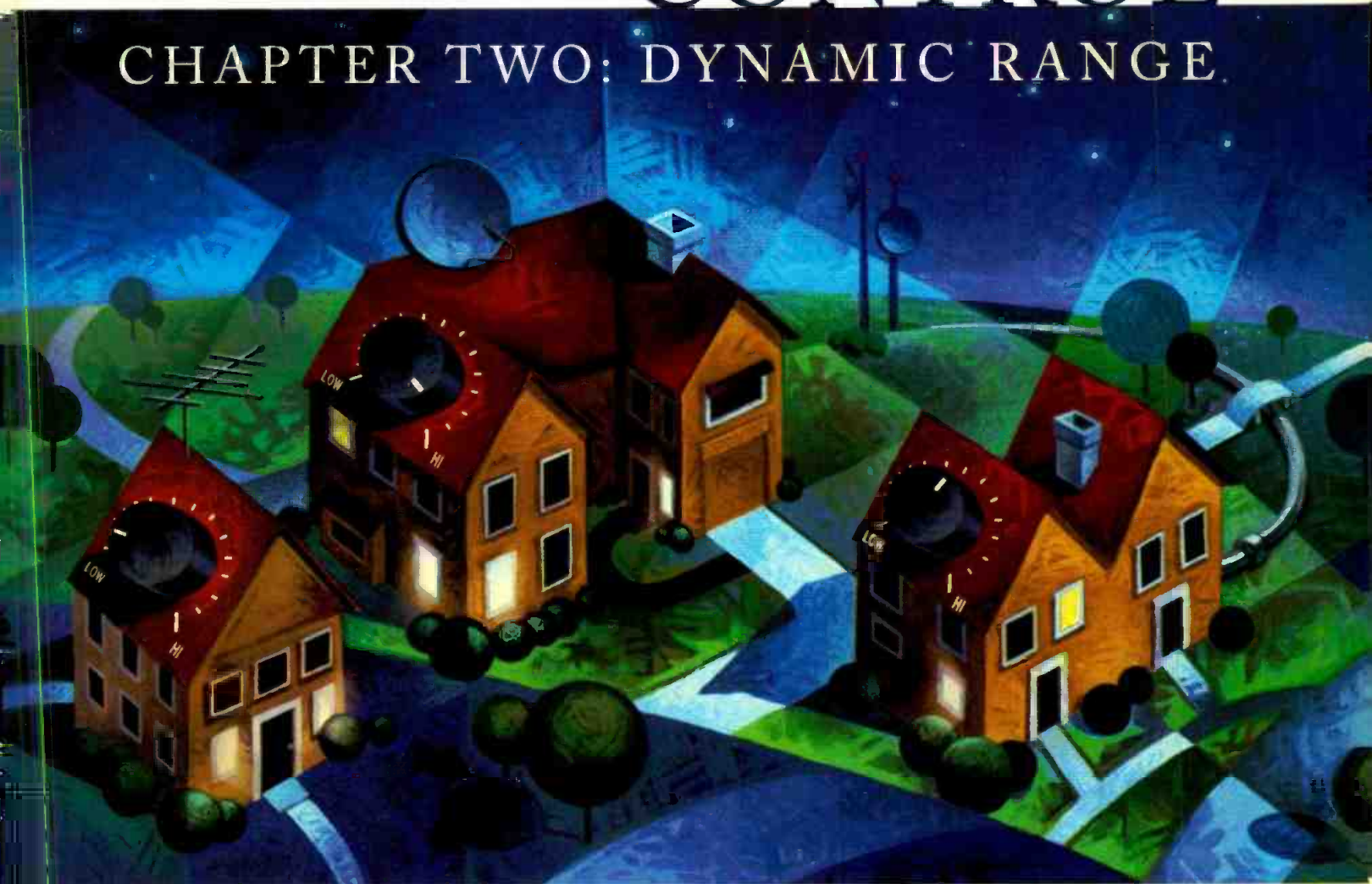
It is important to think of the implications that this whole issue generates. People who pay from \$3000 to \$15,000 for a digital TV expect to see every pixel their set is capable of displaying and, should they choose, be able to delay

one of the high-priced news anchors when makeup wasn't able to easily cover them."

Michael Petricone, general counsel for the Consumer Electronics Association countered, "They aren't trying to preserve, but to cut back the rights consumers have had for 20 years to record video — so as to make even more money." Jim

METADATA^{FOR MAXIMUM} CONTROL

CHAPTER TWO: DYNAMIC RANGE



Dolby Digital uses metadata to change the entire television listening experience. Whether viewers have mono, stereo, or 5.1 systems, Dolby Digital provides the best audio television offers.

Dynamic range control (DRC) parameters set during program production ensure optimal DTV audio presentation in home environments, and also offer choice. Dolby Digital preserves the full dynamic range, however, consumers can apply DRC to limit dynamics for late-night viewing, turn off DRC to maintain full dynamics for home theaters, or choose a setting in between.

With the new DP570 Multichannel Audio Tool, program producers and broadcasters can easily select DRC profiles and hear their effects in real time. For more information, please visit our website.

www.dolby.com/metadata



BREAKING SOUND BARRIERS

Dolby Laboratories, Inc. • 100 Potrero Avenue • San Francisco, CA 94103-4813 • Telephone 415-558-0200 • Fax 415-863-1373
Wootton Bassett • Wiltshire SN4 8QJ, England • Telephone (44) 1793-842100 • Fax (44) 1793-842101 • www.dolby.com

Dolby and the double-D symbol are trademarks of Dolby Laboratories. © 2001 Dolby Laboratories, Inc. S01/13579

Circle (110) on Free Info Card

www.americanradiohistory.com

since content providers would be reluctant to sell to broadcasters, turning to cable instead, which is based on paid subscription.

"Congress has a long-standing commitment to free, over-the-air television," the letter stated. "And for good reason: Millions of American households, particularly those that cannot afford subscription-based services like cable and satellite, continue to rely on free-over-the-air television for their entertainment and news information."

Despite this, Powell has strongly intimated that the issue of copy protection should be resolved on Capitol Hill and not by the FCC.

In what appears to be an important victory for the entertainment industry,

both Disney and Fox have argued that it is not enough to only protect cable programming. The dichotomy is that most of the studios also have serious, deep-rooted interests in television, owning entire networks, not to mention a significant number of television stations. Not all Tinsel Town executives are singing the same song, however. Sony and Warner Bros. have indicated they would accept copy protection that covered cable programming and not broadcast.

Where does this leave us? Despite the millions of dollars each television station has or will have to invest in the digital television rollout, until these and other issues are resolved, TV set manufacturers will remain in limbo because there is no licensing agreement in place. ■

Superconductor breakthrough

As broadcast equipment becomes more sophisticated, especially in the digital domains, the speed at which information is transferred, processed, etc., through the equipment itself, becomes a very important factor. With computer processors that drive broadcast equipment today operating in the Gigahertz range, what good does it do if the remainder of the infrastructure works considerably slower?

Superconductors will go a long way in resolving this issue. Earlier this year, researchers led by Dr. Jun Akimitsu of Aoyama Gakuin University in Tokyo achieved a significant milestone when they announced that magnesium boride, a readily available metal compound known since the 1950s, has unexpectedly turned into the latest breakthrough in superconductors technology.

Magnesium boride is commonly used in some chemical reactions, but no one had ever tested its worth as a superconductor at low temperatures, where it demonstrates properties of moving electrons with virtually no resistance.

After hearing about Dr. Akimitsu's discovery and working with the substance, Dr. Paul C. Canfield, a professor of physics at Iowa State University and a researcher at Ames Laboratory said: "It's a fantastic discovery! We've been able to do a lot of neat stuff with

it in the past month."

The material is very light and, from reports, is easier to work with as compared with the more complex superconducting materials such as the copper oxides, a so-called high-temperature superconductor. The more complex superconducting materials work at higher temperatures, but magnesium boride is comparatively inexpensive, selling for about \$175 per 100-gram bottle.

Dr. Canfield said he and his colleagues at Iowa State and Ames Laboratory have worked extensively investigating magnesium boride and have already fashioned superconducting wires by exposing fibers of boron to magnesium vapors. At present, though, the wires are short, only couple of inches long, and brittle. Dr. Canfield said: "It's not something you can curl around your finger."

But then, who'd want to curl it around their finger? Magnesium boride, as a superconductor, is such only at temperatures up to minus 389 degrees, or about 29 degrees higher than any other simple metallic compound. Although not the solution, it is being hailed as a significant step in that direction, so stay tuned. ■

FCC moves on cable caps

The U.S. Court of Appeals has thrown out Federal Communications Commission (FCC) restrictions on the number of subscribers cable operators can serve.

The ruling specifically addressed regulations that limited cable companies from serving more than 30 percent of all cable and satellite subscribers in the U.S. Additionally, the court threw out restrictions that prevent cable systems from carrying affiliated programming on more than 40 percent of their channels and sent the rules back to the FCC.

"The horizontal limit interferes with petitioners' speech rights by restricting the number of viewers to whom they can speak," Judge Stephen Williams wrote for the court. "The vertical limit restricts their ability to exercise their editorial control over a portion of the content they transmit."

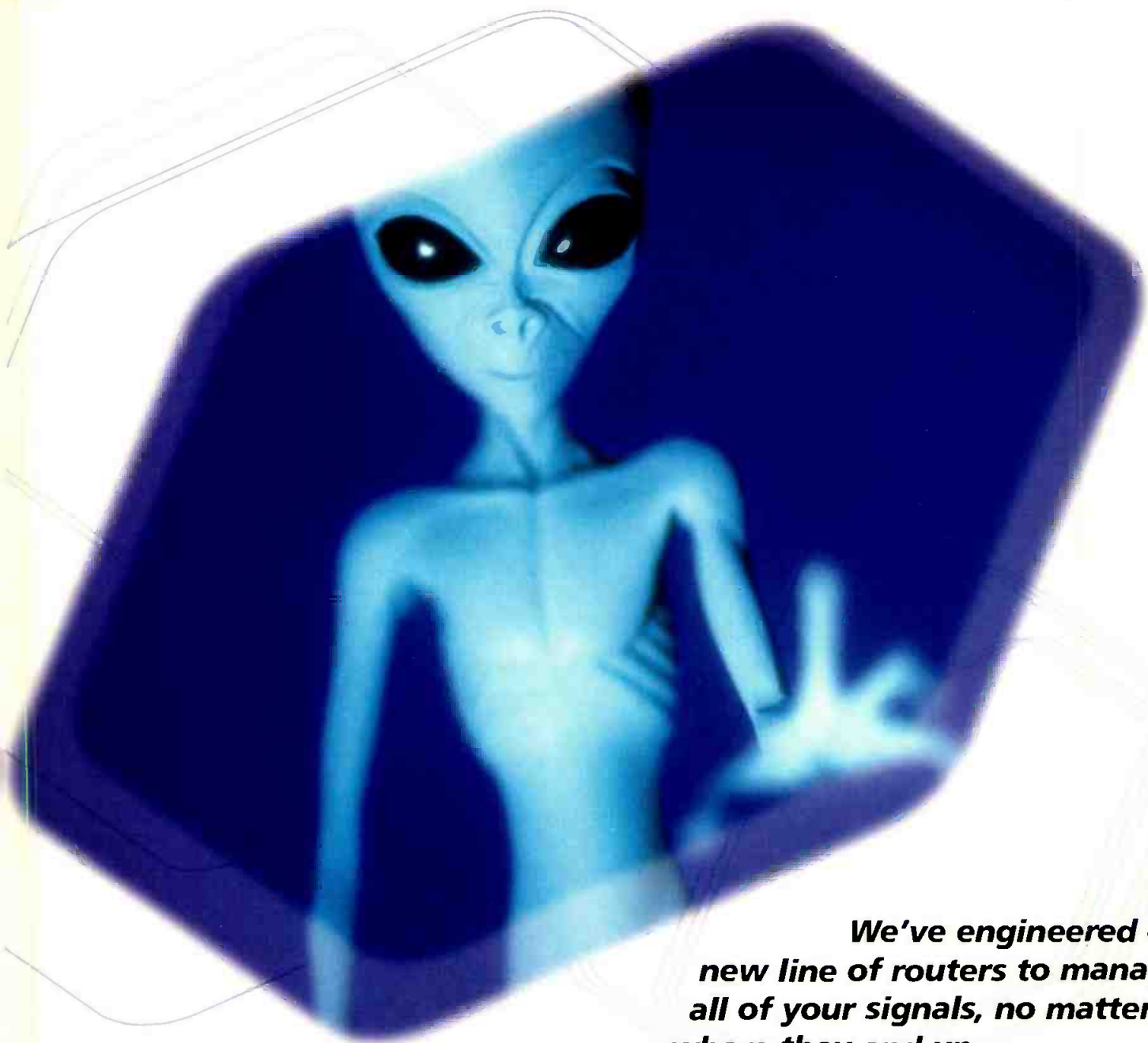
The court's ruling is a plus for such cable companies as AT&T Broadband, the nation's largest. The panel also struck down an FCC rule that required that subscribers served by Time Warner Entertainment, or TWE, in which AT&T is a limited partner with AOL Time Warner Inc., be counted against AT&T's ownership limit. That rule pushed AT&T over the 30 percent limit when it merged with the MediaOne Group, forcing AT&T to divest either its stake in TWE or in the Liberty Media Group.

Where this is seen as good news for AT&T and other cable companies, consumer groups see the elimination of such limits as bad news. Many believe that the ruling provides greater incentive for cable companies to limit programming choices to their own programs instead of providing the wider array of programming consumers may want.

This U.S. Court of Appeals action may have far reaching effects, setting a precedent that could open the door for future revisions to the ownership "caps" on broadcast television stations, a heated issue in broadcast circles. ■



Send questions and comments to:
larry_bloomfield@intertec.com



***We've engineered our
new line of routers to manage
all of your signals, no matter
where they end up.***

It's simply not satisfactory that nearly every broadcast signal in the world runs through a piece of our equipment. "Every signal in the galaxy", sounds so much better. Which is why we've introduced a stellar new line up. The Concerto™, Tempo™ and Bravo™ compact routers, all of which nicely orbit the industry-leading Grass Valley 7500 series.

Based on the exceptional, patent-pending FlexPoint™ and FlexFrame™ technologies, these routers offer you downright cosmic flexibility. Now, and in the future. Even better, these nimble signal management products offer unmatched adaptability and scalability at a very reasonable price. They even work well with alien entities—like other company's products. It's just one of the benefits offered by this complete media infrastructure solution, which includes the new Encore™ facility management system.

In short, you now have the freedom to build the digital media infrastructure you need here and now, without having to worry about where you're headed. To learn more about the new Grass Valley Group line of routing solutions, visit our Web site today. www.grassvalleygroup.com/ad/routers



Multiple ownership rules clarified

BY HARRY C. MARTIN

In January, the FCC released a decision addressing 14 petitions for reconsideration dealing with the new TV duopoly and cross-ownership rules.

The new TV duopoly rule, effective in November 1999, permits an entity to own two television stations licensed in the same DMA if: (1) the grade B contours of the stations do not overlap, or (2) one of the two stations is not ranked in the top four by Nielsen and at least eight independently owned TV stations (including NCE-TV stations) would remain post-merger.

The new radio-TV cross-ownership rule, adopted at the same time, permits an entity to own up to two television stations (if permitted under the TV duopoly rule) and any of the following radio station combinations in the same market:

(1) Up to six radio stations in any market where at least 20 independent "voices" would remain in the DMA post-merger ("voices" are radio or TV stations, daily newspapers, cable systems or radio stations with reportable Arbitron shares in the DMA).

(2) Up to four radio stations in any market where at least 10 independent voices would remain post-merger.

(3) One radio station (AM or FM) notwithstanding the number of independent voices in the market.

(4) In those markets where the rule will allow parties to own eight outlets in the form of two TV stations and six radio stations, a party can own, alternatively, one TV station and seven radio stations.

Duopoly rule

The revisions to the TV duopoly rule drew the most fire, with petitioners seeking reconsideration of the amended rule's requirements regarding (1) geographic scope, (2) the requirement that at least one of the stations being acquired not be among the four highest-ranked stations in the DMA, (3) the requirement that eight independently-owned stations remain in the DMA after a merger, and (4) the policy, also adopted in 1999, that waivers of the duopoly rule would be considered only in cases of failed, failing or unbuilt stations.

Petitioners argued that common owners would not run the same programming on multiple stations in the same market, and therefore would not hurt diversity. The Commission rejected that argument, but addressed the question of how to resolve a tie for market rank. In such cases, duopoly applicants will now have to submit detailed tie-breaker information on audience share.

The Commission also acknowledged that its decision to require eight broadcast TV stations remain in the market was an exercise in line-drawing. However, the Commission said that it was a justified approach because the line was drawn in a way that preserves a reasonable balance of efficiencies and robust diversity in a market.

However, the Commission relaxed its duopoly rule so that it only will count as among the eight market stations those stations whose Grade B signal contours overlap with the Grade B contours of at least one of the stations in the proposed combination. The intent of the modification is to prevent common ownership in geographically large DMAs where one party could own two overlapping stations even though most of the stations in the DMA do not serve the area served by those two. A similar rule will apply to media voices. The only television stations that will be counted toward the eight stations that need to remain in the

market are those that are independently-owned and operating full-power stations within the DMA of the TV station's community of license which have Grade B signal contours that overlap with the Grade B signal contour of one of the TV stations involved in the merger.

The Commission reaffirmed its decision not to permit the transfer of a duopoly unless it adheres to rules or waiver standards in place at the time of the transfer, and continued to allow common ownership of two TV stations if they are licensed to communities in different DMAs, even if their Grade B contours overlap.

Cross-ownership rule

The recent order also reaffirmed the Commission's earlier decisions to (1) count noncommercial stations and daily newspapers as voices in a market, (2) to grandfather radio and TV combinations previously formed pursuant to a waiver, and (3) to prohibit the transfer of a radio/TV combination unless it meets a waiver standard.

LMA issues

The Commission also affirmed its earlier decision to grandfather television station LMAs entered into before Nov. 5, 1996, through the conclusion of the 2004 biennial review. It rejected the requests that it allow existing LMAs, especially grandfathered LMAs, to convert to duopolies. The option will not be extended to existing LMAs because, although the parties to existing LMAs may have had reasonable expectations of being able to maintain an LMA entered into before the Commission expressed an unequivocal LMA policy, those same parties have no such reasonable expectation of automatic conversion to duopolies. ■

Harry C. Martin is an attorney with Fletcher, Heald & Hildreth PLC, Arlington, VA.

Dateline

Radio stations in the following locations must file their biennial ownership reports on or before June 1, 2001: Arizona, DC, Idaho, Maryland, Michigan, Nevada, New Mexico, Ohio, Utah, Virginia, West Virginia and Wyoming.



Send questions and comments to:
henry_martin@intertec.com

YOU'VE DREAMED OF A 2-CHANNEL UHF FULLY USER SYNTHESIZED INTERCOM.

STOP DREAMING. NOW YOU CAN OWN IT.

The most versatile wireless intercom ever!

- 2 intercom channels
- stage announce with relay closure
- wireless talkaround
- 1,440 frequencies
- all metal belt packs
- and so much more.

RadioCom™ BTR800

UHF FULLY USER SYNTHESIZED TWO-CHANNEL WIRELESS INTERCOM

For more information please call 1-800-392-3497

©2001 Telex Communications, Inc.

Come see it at NAB, Booth L8763

Circle (112) on Free Info Card

Powell's FCC: Let the private sector decide

BY MARK R. SMITH

With George W. Bush now at home (finally) and starting his wild ride from the White House, change is obviously in the air within the federal government, and it's not all about tax cuts and campaign finance reform.

One change that's already taken place is at the Federal Communications Commission (FCC), where fellow Republican Michael Powell, who had served as a Commissioner, succeeded Democrat William Kennard as chairman earlier this year.

Aside from finding a successor to soon-to-depart Commissioner Harold Furchtgott-Roth as well as to Powell's old seat (both of which will be filled by Republicans), his FCC is in the midst of "internal reform efforts" slated to make the organization "more efficient, more decisive and more responsive," said a recent press release, to the whirlwind changes in the technology and telecommunications markets.

That's nothing too mind-boggling since people were expecting some political-speak right after a change in presidential administration. But they're also hoping something breaks concerning technical deadlocks that have plagued the broadcast industry. Externally, there are a number of issues on the table these days, notably concerning digital broadcast standards and cable must-carry.

New man in charge

One Washington industry source who requested anonymity remarked that there's no question Michael Powell has a different agenda than William Kennard.

"Powell will be more reactive than proactive in responding to issues," the source said. "Kennard clearly had a social engineering agenda in terms of trying to adopt government mandated free time for politicians and launching a ban on hard liquor advertising (which he eventually dropped). But I think

Powell will be much more cognizant of political sensitivity, in terms of how Congress reacts to what he does. He'll keep them in the loop. One of Kennard's problems was not consulting with Congress before proposing some of his activist agenda."

Cable and commercial broadcasters are digging in for a long hard fight.

Powell is already cultivating support from key members of Congress who can provide him political cover, agreed Ken Johnson, spokesman for Congressman Billy Tauzin's office (R-LA) who is the head of House Energy & Commerce Committee.

Johnson said Powell would be "much less of an activist chairman. His core philosophy involves letting the markets work as freely as possible. I don't think you'll see him meddling in the private business of companies like his predecessors, Kennard and Reed Hundt. Powell recognizes that the FCC is answerable to Congress and not the White House."

DTV, or not DTV

The first source said Kennard did nothing to advance the DTV agenda and noted that Powell has already asked for Congressional direction on the issue. Today, the number of finished DTV installations stands at 185, including most big four (ABC, CBS, Fox and NBC) affiliates in the top 30 markets.

Powell offered what must have sounded like words of encouragement in a recent news conference, saying that the FCC will "do whatever it takes to clarify the legal and regulatory environment" so that concerned private sector businesses can "continue to make investments."

Michael Petricone, vice president of technology policy for the Consumer Electronics Association in Arlington, VA, said he thinks the FCC has been supportive of DTV. "The train certainly hasn't derailed from our perspective. DTV sets are selling at a clip

that's in line with historical sales of other new consumer electronics products when they were introduced to the market." Those figures reveal that 625,000 digital sets worth \$1.4 billion were sold in 2000, five times the amount from 1999.

The one thing that would be helpful, he said, is more content. "The vast majority being broadcast on digital stations is still upgraded analog, which is limited by the resolution of the source material. That's not a big consumer draw. Consumers want the best quality and, save CBS, it's slim pickings'."

With the May 2003 deadline for all stations, commercial and public, to go digital, the problem isn't that the industry hasn't been on the ball, Petricone said, but technical issues that have caused problems -- cable systems not carrying the digital signals being an example. Also, many DTV sets sold lack a DTV tuner.

Still, he sees a rosy horizon, noting a 40 percent price drop in the last year and a Zenith set on the market for less than \$1000. "I suspect you'll see further reduction as the year goes forward, if history is any guide. And as price drops, functionality rises."

Cable must-carry

The FCC has tentatively concluded that cable operators are not required to

think live production
think flexible, reliable, fast
think of control at your fingertips
think playback, sizing, keying
think beyond a conventional server
think recording and editing
think of the possibilities
introducing Clipbox Studio FX



new thinking, quantel thinking



Circle (113) on Free Info Card

www.americanradiohistory.com

carry the digital signals of broadcasters. But that's still a top telecommunications issue Congress will be confronted with, with the cable and commercial broadcasters digging in for a long hard fight.

One observer said that he sees no problem with cable must-carry "since the cable industry is rolling out digital channel capacity on a rapid timetable. There's no evidence to suggest must-carry would be a problem. Cable operators would prefer carrying channels in which they own a financial stake, as

opposed to local broadcast channels in which they don't."

But only a handful of cable systems are carrying the digital signals of local broadcasters at present, he said, adding that two-thirds of all viewing on a cable system consists of local broadcast channels.

It's key that cable companies cooperate, Petricone added, pointing out that 70 percent of viewers get their signal via cable.

But the folks at the National Cable

Television Association in Washington don't see it quite that simply. "For broadcasters to presume entitlement to a privately built infrastructure is inappropriate, especially when they bring nothing new to the mix," stated Marc Osgoode Smith, senior communications director. "The physics don't lie. And if there's a legal mandate to carry programming that has yet to draw the attention of consumers, then certain networks and services like high-speed Internet, telephony and new digital video channels already on the market won't make it."

"If our customers want all of these signals, it would be competitive suicide not to carry them," he bluntly continued. "The government should not force an unknown business plan

**Powell would be
"much less of an
activist chairman. His
core philosophy
involves letting the
markets work as freely
as possible."**

down the throats of consumers who are already enjoying the fruits of these new services."

Smith added that broadcast networks are the predominant owners of cable programming, citing the example of CBS' corporate ties to Viacom and its MTV Networks, and Disney's ownership of ABC and its cable properties like ESPN and the Disney Channel.

Where will it end

"Consumers are stuck in the middle of an ongoing fight between broadcasters, cable operators and manufacturers. They all have different agendas," observed Johnson. "But even consumers who aren't tech savvy understand that we're in a tech shakeout. No one wants to get stuck with a first-

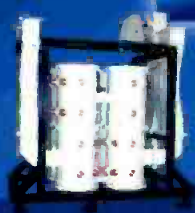
Visit Us at NAB!
See the latest in advanced broadcast
technology. LVCC, Booth L10414,
and Sands, Booth S2722

There's only one thing you need to know about broadcast—Andrew.

*Andrew offers the industry's most
complete range of products and solutions:*

- Broadcast Antennas
- Filters and Combiners
- RF Components
- Coaxial Rigid Line
- HELIAX® Air Cable
- Waveguide
- Pressurization Systems

—all backed by a full line
of system engineering services
and the industry's best
warranty.



ANDREW

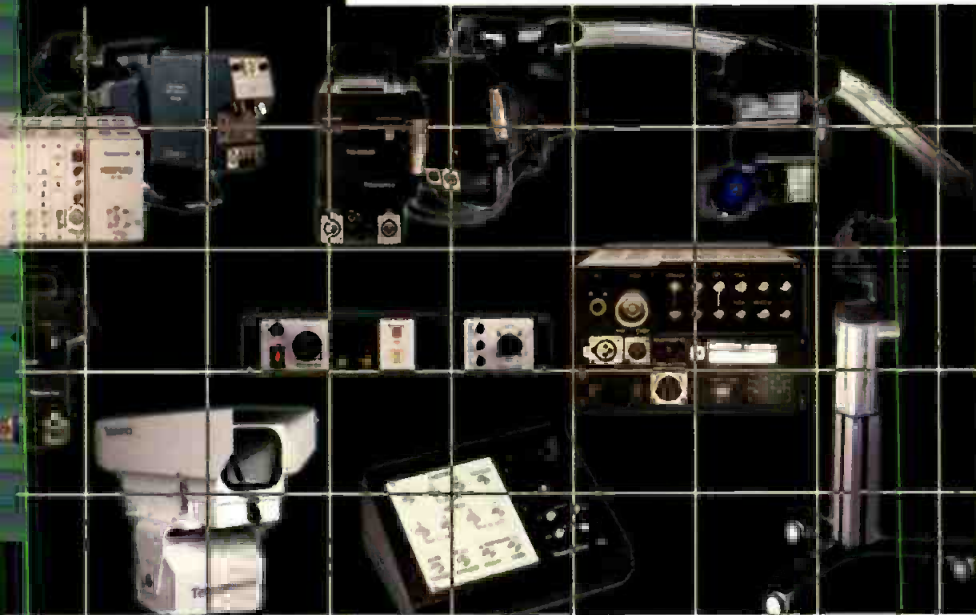
Broadcast at its Best

1-800-DIAL-4RF
www.andrew.com

Circle (114) on Free Info Card

TAKE CONTROL.

Comprehensive Camera Control Systems
Inside and Out.



Pan & Tilts

Control Panels

Control Receivers

Control Software

Trolley Systems

Elevator Systems

Weatherproof Systems

ITV Systems

Triax Systems

Coax Systems

Accessories

Only Telemetrics delivers comprehensive camera control for virtually any application. Because Telemetrics offers comprehensive camera robotics and camera control system solutions. Whether employed as stand-alone or customized integrated systems, they provide the most versatile and advanced camera control capabilities in the industry.

Telemetrics offers the largest line of camera robotics systems equipment available. Including pan/tilt mechanisms, trolley systems, camera elevator systems, controllers, control software, weatherproof systems and accessories. For easy integration, Telemetrics camera robotics systems are compatible with equipment from leading manufacturers. And Telemetrics camera robotics systems are world renowned for engineering, performance and reliability. It's the added assurance you get with Telemetrics.

For the longest distances to the most obscure camera robotics locations, Telemetrics has the camera control solution you need. Component and composite triax systems in NTSC and PAL. Coax composite systems using easily field repairable coax cable. And coax/fiber systems to cover extreme distances without repeaters. Telemetrics also offers you more versatility with direct docking, hip-pack or break-out adapters. It's all you need to configure your camera locations exactly the way you want them.

Take control of all your camera systems inside and out with Telemetrics – the leader in camera robotics and control systems technology.

Telemetrics

CAMERA CONTROL SYSTEMS

6 Leighton Place, Mahwah, NJ 07430, USA
201-848-9818 • Fax 201-848-9819
www.telemetricsinc.com

Circle (115) on Free Info Card

generation digital set that's outdated in sixth months."

Programmers are reluctant to provide content, manufacturers build fewer sets and consumer scratch their heads. Where will it end?

No one knows, but Johnson still offered his long-term forecast. "This century, a TV should not be the centerpiece of our home entertainment center, but the centerpiece of our home information center.

"We're trying to get everyone mov-

ing in the same direction. Congress is making stations go digital, yet there's no business plan for them to make money. It's like Doublemint gum, but you don't double your pleasure, you double your expense. And now they don't know if they can get the digital signal on cable besides."

Mark R. Smith is a freelance writer and has covered broadcasting and post production for a decade. He resides in Odenton, MD, and can be reached at msmith1277@aol.com.

Broadcast ENGINEERING

www.broadcastengineering.com

**For a daily look at
broadcast**

Daily News

and news archives

Monthly

NAB Preview

DTV Answer Book

DTV Marketplace

FASTtrack

Features

Beyond the Headlines

Industry Survey

Digital Handbook

Systems Design

Showcase

New Products & Reviews

Departments

Web Exclusives

Editorial

by Charlie White,
"Peek Inside! Engine Room
Editorial: Full Speed Ahead."

Features

■ Wide Screen Scam

■ Guest Editorial by Tim
Thorsteinson: How the
Internet Plays into the
Broadcast Market.

■ New FCC Chairman: DTV
Deadlines Unrealistic

Buyers Guide

Product index

Web addresses

Manufacturer/Dealer addresses

Systems integrator addresses



Digital Media **NET**
Where the Creative Community Meets

on the
web

www.broadcastengineering.com
a member of digital media net

**No CRT problems
with our NEW Digi Scope and LCD Scope
Multi-Format Test and Measurement
products - we guarantee it!**



See us at
NAB 2001
on Booth L6130

Hamlet launch the latest Digi Scope and LCD Scope ranges. Leading the way, building on fifteen years of experience and inventive solutions, to provide top of the range production, engineering, test and measurement products - of superior quality.

Ideally suited for Digital, Analog, Video and Audio environments they provide two new methods of ensuring your attention to detail - including Gamut checking. With numerous add on options you can select the signal formats, facilities and functions you want, when you want them.

These new units are easy to operate, they look good and feel good, but best of all they are Guaranteed NOT to suffer from CRT problems, High Maintenance costs and where applicable, limitations on there display outputs.

E-mail or call us to obtain more details.

..... from the innovators of superior products at sensible prices.

BOX 6530, Malibu, CA 90264 • Phone: 310-457-4090 • Fax: 310-457-4494
Web: www.hamlet.us.com • E-mail: sales@hamlet.us.com

HAMLET
EXCELLENCE IN VISION

Circle (116) on Free Info Card

EEV IOTs from Marconi

your best investment
for the future

- > Proven Digital Performance
- > Proven Analog Performance
- > Highest Powers Available
- > Widest Product Range
 - Plug-Ins
 - Build-Ups
- > Off the Shelf Replacement Tubes
- > 24 Hour 7 Day Tech Support

**Innovative Energy
Saving Solutions**

Marconi Applied Technologies



USA

T (914) 592 6050

F (914) 592 5148

Toll free 1-800 342 5338

E-mail MTech.usa@marconi.com

UK

T +44 (0) 1245 493493

F +44 (0) 1245 492492

E-mail MTech.uk@marconi.com

FRANCE

T (331) 6019 5500

F (331) 6019 5529

E-mail info.marconitech@gec-france.fr

www.marconitech.com

Circle (117) on Free Info Card

Marconi™

S E E U S A T N A B B O O T H # L 1 2 5 4 5



OPTICOMM

OPTICAL FIBER NETWORK SYSTEMS

RGB Video, Audio/Voice/Data Comm Links

The Latest in Fiber Optic Technology

Experience the Future of Fiber Optic Broadcasting

The DVX-5000 uncompressed digital transport system is opening up a new realm in broadcasting using advanced **DIGIBAND™** technology from Opticomm.

DIGIBAND™ DVX-5000
The Next Generation in Fiber Optic Transmission



DIGIBAND™

HDTV, DVB & SDI Systems

DVX-5000

Fiber Optic Serial Digital Video

Uncompressed Digital Transport

- Singlemode (1310, 1550nm) 20dB laser-based 40Km operation over one fiber
- Component Video per SMPTE 259M, 292M, ITU-R 601, CCIR 656
- 143/177/270/360/540/600Mb/s and 1.485 Gbps Digital SDI/MSDI
- 10 Bit Code Uncompressed BER 10⁻¹⁴
- Complies with ANSI/SMPTE T14.22.4 4:2:2 and 4:4:4 data transmission
- Compatible with NTSC, PAL, and SECAM video signals
- Digital Audio AES/EBU Tech 3250E 24 bits
- Not susceptible to EMI or RFI & no ground loops
- Desk-Top Stand Alone or Rack-Mount

OPTICOMM designs and manufactures high quality baseband broadcast fiber optic video, audio and data transmission equipment. Our products offer solutions to a wide range of applications demanding high quality transparent fiber optic transmission.

19" Rack Mount Chassis
12 Slots/12 Channels & 10 Slots/20 Channels Redundant

OPTICOMM Corporation

6046 Cornwell Stone Ct. W. #209

San Diego, California 92121

(858) 450-0143

fax (858) 450-0155

info@opticomm.com

www.opticomm.com

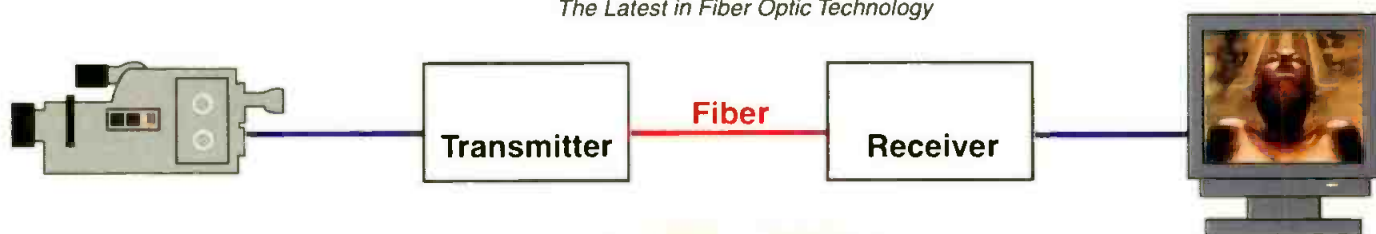


OPTICOMM

OPTICAL FIBER NETWORK SYSTEMS

RGB Video, Audio/Voice/Data Comm Links

The Latest in Fiber Optic Technology



**Full Duplex T3 & E3
Fiber Optic Data Link**



**CCTV Video Mini/Micro/Std
Composite & Mono/Sync Link**



**High Resolution RGB-Video HDTV,
VGA, SVGA RGB/SUN/SGI/HP**



**Dual/Quad/Eight Channel FM
Video/Audio/Data MUX Link**



**Micro Data 8 Channel MUX Data
Voice, TTL, Contact Systems**



**DTCR-1, 2, 4, 7 Desk-Top Card
Rack and 19" Rack Mount Chassis**



**Duplex Video FM with Multiple (Stereo)
Audio and/or Data for PTZ Link**



**Video FM with Simplex (Stereo)
Audio or Data for PTZ Link**



Opticomm Corporation 6046 Cornerstone Ct. W. #209 • San Diego, California • 92121

Phone (858) 450-0143 • www.opticomm.com • Fax (858) 450-0155

Circle (118) on Free Info Card

www.americanradiohistory.com

By the Numbers

BY BRAD DICK, EDITOR

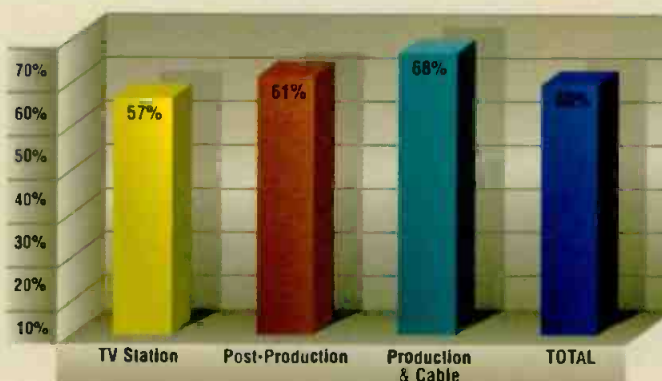
In Part 2 of our series looking at industry spending plans, we examine the state of editing technology. The data in this report was gathered from *Broadcast Engineering* readers in late winter.

The field of editing is one area in which old habits die hard. I was recently in one of the largest TV network newsrooms in Japan. In that one room, I counted more than 100 Sony decks assembling newsclips by the old punch-

and-crunch method. Why not use NLE? For their particular application, VTR editing is reliable, well understood and relatively inexpensive. Who can argue with that? So what are the NLE plans for our U.S. readers?

Who has NLE capability?

Production and cable facilities rank highest in terms of NLE usage. However, there's not a lot of difference based on the type of facility. Television stations rank lowest in terms of NLE capability, running at 57 percent, and post production houses barely higher at 61 percent. The production and cable locations show the highest current usage of NLE at 68 percent. Combined, 60 percent of all types of facilities report having NLE capability.

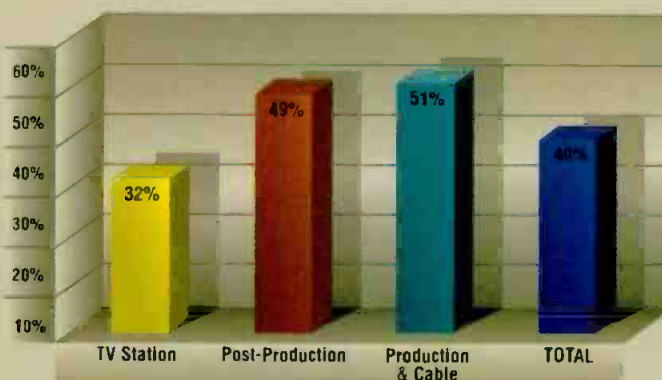


Adding new NLE this year?

Respondents were then asked about their plans to purchase NLE technology in 2001. A disappointing 32 percent of television stations report any plans to buy additional NLE capability this year. Looking at the other side of this equation, almost 52 percent of the TV stations said they would not be adding NLE technology this year. Sixteen percent did not answer the question.

The numbers are much better for production, cable and post facilities. About 51 percent of the production and cable facilities report that they will be buying new NLE hardware this year. About the same percentage of post houses, 49 percent, say they plan to add to their NLE equipment lineup in the next nine months.

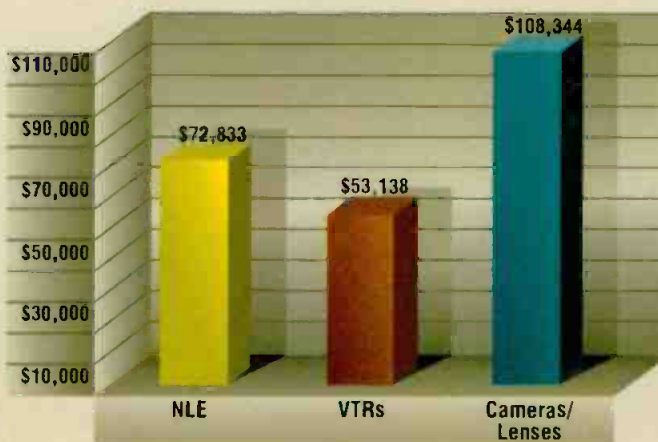
Looking at the overall response, almost 49 percent said they would not buy NLE equipment this year. Twelve percent of the respondents did not answer this question. So, is NLE hot? I think not.



How much will you spend?

It's hard to know whether the answer to this question is good or bad news, at least as a measure of industry health. The survey asked for predicted equipment budgets for seven classes of equipment. It turned out that spending for NLE was the second highest, led only by planned spending on cameras and lenses.

Predicted spending for NLE equipment this year is \$72,833. That will buy you a lot of software packages, or a small but full-featured newsroom or production system.



- LCD displays
• I/O configurations
• Input carrier detection
• Matrix status

Large tactile
illuminated buttons

Data rates
up to 360 Mb/s

SMPTE 259M
compliant

16 presets

2 levels of controls

RS-232 or
RS-422 control

Remote
Control Panel

DXP 88 SDI

Internal
international
power supply

Automatic
cable equalization

8 inputs with
equalized & buffered
loop-throughs

8 outputs on
dual buffered &
re-clocked BNCs

External
reference

DIGITAL XPOINT

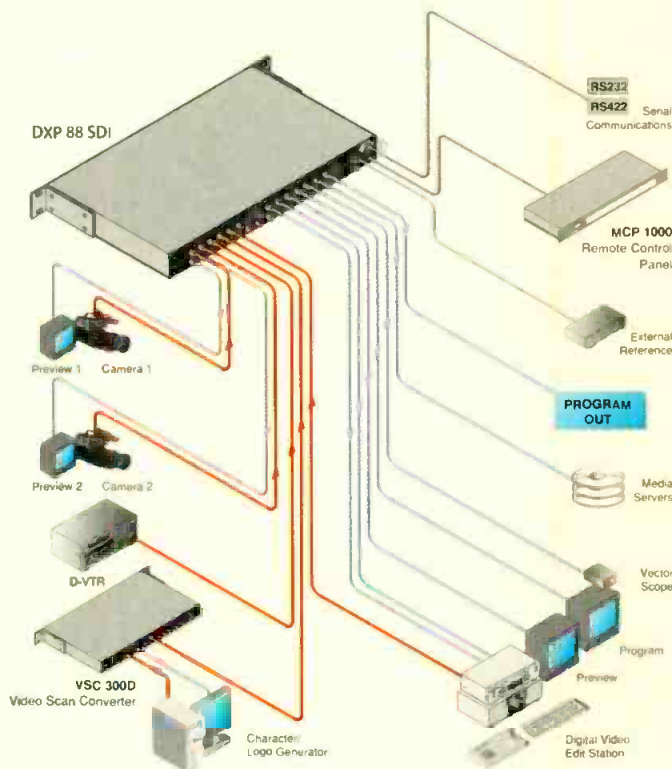
Extron® Matrix Switchers Go Digital

Introducing Digital XPoint—the new line of digital matrix switchers from Extron Electronics. The Digital XPoint matrix switcher line is the ideal solution for switching multiple serial digital video signals to multiple digital video sources in production studios, staging applications, non-linear editing suites, and broadcast studios.

Currently, the Digital XPoint line includes two models: the DXP 88 SDI (eight input, eight output) model and the DXP 44 SDI (four input, four output) model. Digital XPoint matrix switchers come standard with front panel control. Remote control is available using Extron's remote keypad (MKP 1000) and/or remote control panel (MCP 1000). Control using a third party control system can be done via RS-232 or RS-422.

Features:

- Inputs with equalized and buffered loop-throughs
- Outputs on two buffered and re-clocked BNCs
- Automatic rate selection—the matrix can automatically accept four SMPTE 259M data rates, including: 143, 177, 270, 360 Mb/s. It's capable of switching 4fsc (composite) or 4:2:2 (component) serial digital video transmission standards
- Automatic input cable equalization—typically equalizes greater than 300m at 270 Mb/s of Extron SHR or equivalent high quality cable
- Digital Sync Validation Processing (DSVP™)—when input serial data is locked, the matrix indicates the presence of a carrier source and data rate
- 16 global memory presets
- Extron's Simple Instruction Set (SIS™) for easy to use RS-232 control



For complete details, visit Extron's Web site at:
www.extron.com/4/digitalxpoint

Extron® Electronics

800.633.9876 • www.extron.com

Come see us at
NAB
Sands Booth #M7936



Extron Electronics, USA
1230 South Lewis Street, Anaheim, CA 92805
800.633.9876 714.491.1500 FAX 714.491.1517
USA

Extron Electronics, Europe
Beeldschermweg 6C, 3821 AH Amersfoort
+31.33.453.4040 FAX +31.33.453.4050
The Netherlands

Extron Electronics, Asia
135 Joo Seng Rd. #04-01, PM Industrial Bldg.
+65.383.4400 FAX +65.383.4664
Singapore 368363

Extron Electronics Information
ExtronWEB™: www.extron.com
ExtronFAX™: 714.491.0192
24-hour access—worldwide!

Circle (119) on Free Info Card

Copyright © 2001 Extron Electronics. All rights reserved. All trademarks mentioned are the property of their respective owners.

Transition to Digital



HDTV data multiplexing, Part 2

BY MICHAEL ROBIN

This article is a continuation of our March HDTV data multiplexing article. It will deal with audio data multiplexing in the horizontal ancillary data space (HANC).

General considerations

The most important use of the HANC data space is for the insertion of audio signals. SMPTE Standard 299M, 24-Bit Digital Audio Format for HDTV Bit-Serial Interface defines the mapping of 24-bit AES digital audio data and associated control information into the ancillary data space of HDTV signals conforming to the SMPTE 292M standard.

For intrastudio applications the preferred implementation is an audio sampling rate of 48kHz synchronous to video. As an option the standard supports AES audio synchronously or asynchronously sampled at frequencies in the range of 32kHz to 48kHz. Audio is defined as being synchronous with the associated video if the sam-

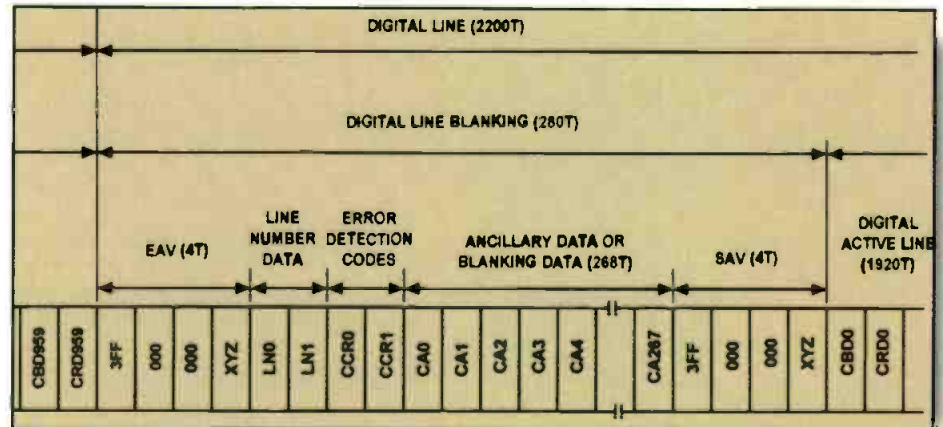


Figure 1. Details of the horizontal blanking interval of the CB/CR bit-parallel datastream.

pling rate is such that the number of audio samples occurring within an integer number of video frames is itself a constant integer number.

The standard provides for the embedding of a minimum of two audio channels (one audio pair) to a maximum of sixteen audio channels (eight audio pairs). The audio channels are combined, where appropriate, into groups of four (two audio pairs). Each group is identified by an ancillary data ID.

The horizontal blanking interval

Figure 1 shows details of the horizontal blanking interval of the CB/CR bit-parallel datastream of a source format D (1920x1080i). In this format the total line duration is 2200 samples of which 1920 are active line samples. This leaves a total of 280 samples during the horizontal blanking interval. Excluding the TRS (EAV and SAV), line number and error detection leaves a total of 268 unused words to be used to transport ancillary data. The structure of the horizontal blanking interval is as follows:

- EAV: End of active video TRS consisting of four words: 3FF,000,000,XYZ;
- The line number data: Two words LN0 and LN1;
- The error detection codes: Two words CCR0 and CCR1;
- Ancillary data or blanking data: 268 words identified as CA0 to CA267;
- SAV: Start of active video TRS consisting of four words: 3FF,000,000,XYZ.

The audio data packet

Figure 2 shows the structure of an audio data packet. Audio data derived from two channel pairs (two AES data streams or four individual audio channels) are configured as an audio data packet consisting of:

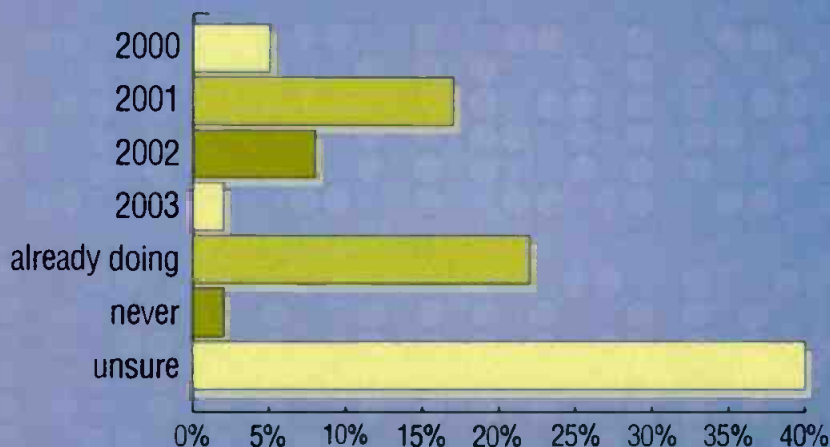
- ADF: Ancillary data flag consisting

FRAME GRAB

A look at tomorrow's technology.

2001 is key year for asset management.

Most TV stations don't know when they'll install asset management stations.



SOURCE: SCRI www.scri.com

Hey Mike,
Having a great time! Thanks to my new,
reliable distributed routing system,
I can finally get away.
Get a life, buddy —
buy an Integrator!
—Sam



- ★ **Blue³ Dynamic Routing Fabric** means maximum reliability, scalability and flexibility
- ★ **Field expandable** from 32x32 to 512x512
- ★ **Able to mix and match signal formats** in the same frame
- ★ **Supports HD, SDI, Analog Audio/Video, AES/EBU, ASI, DS-3/E-3, RS-232/422**
- ★ **All key active components are front-loading and hot-swappable** for easy maintenance
- ★ **Protects your operation with redundant power supplies, logic cards, serial & X/Y ports**
- ★ **Distributed routing design safeguards against loss of critical inputs**

Go ahead, relax! While you're catching some much needed R&R, you can be sure that your Integrator router is on the job.

Based on Leitch's groundbreaking Blue³ Dynamic Routing Fabric, every large Integrator system provides you with:



Rock-solid Reliability — If one frame, card or internal circuit fails, the system's distributed design guarantees that critical sources will still get to their destination. The revolutionary Blue³ technology makes this a truly self-healing router network!

Super-sized Scalability — Integrator allows you to start small but think big. From 32x32 to 512x512, your needs will never outgrow your system.

Mind-blowing Flexibility — Multiple signal formats? No worry! Integrator can handle them all within the same frame.

But best of all, Integrator provides you with peace of mind. So while Mike spends his weekends at the office with his router, you can spend yours getting reacquainted with life.



See us at NAB Booth #L8620

Hong Kong +852 2776 0628 Canada +1 (416) 445 9640 USA East +1 (800) 231 9673 USA West +1 (888) 843 7004 Europe +44 (0) 1483 591000
Australia +61 (2) 9939 3355 Japan +81 (3) 5423 3631 Brazil +55 (11) 3151 5093 Latin America +1 (305) 512 0045

©2001 Leitch Technology Corporation

Circle (120) on Free Info Card

www.leitch.com
1-800-231-9673

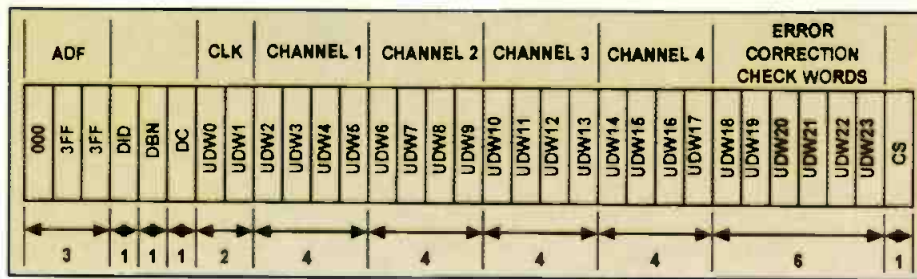


Figure 2. The structure of an audio data packet.

of three words 000,3FF,3FF;

•DID: One data identification word. Value depends on the respective audio group;

•DBN: One data block number word;

•DC: One data count word;

•UDW: 24 user data words UDW0 to UDW23;

•CS: One checksum word.

The UDW consists of three types of data: •CLK: Two audio clock and phase data words UDW0 and UDW1;

•CHn: 16 words UDW2 to UDW17 identifying the four audio channels of a group;

•ECCs: Error correction codes consisting of six data words UDW18 to UDW23.

Embedding the audio packets

Audio data packets are multiplexed into the HANC data space of the C_B/C_R bit-parallel datastream with the exclusion of the line right after the switching line to avoid possible audio clicks. In the 1125/60 format the switching point exists in lines 7 and 569, hence the audio data packets are

Bit Number	UDW2	UDW3	UDW4	UDW5
b9 (MSB)	not b8	not b8	not b8	not b8
b8	even parity (1)	even parity (1)	even parity (1)	even parity (1)
b7	aud 3	aud 11	aud 19	P
b6	aud 2	aud 10	aud 18	C
b5	aud 1	aud 9	aud 17	U
b4	aud 0 (LSB)	aud 8	aud 16	V
b3	Z	aud 7	aud 15	aud 23 (MSB)
b2	0	aud 6	aud 14	aud 22
b1	0	aud 5	aud 13	aud 21
b0 (LSB)	0	aud 4	aud 12	aud 20

NOTES
 (1) Even parity for b0 through b7
 (2) Z = AES block sync
 (3) U = AES user bit of channel
 (4) P = AES parity bit of channel
 (5) aud(0-23) = 24-bit AES audio data of channel
 (6) V = AES channel status bit
 (7) The value of V, U, C and P is equal to that of the respective AES subframe

Table 1. Typical bit assignment of audio data. (Reference Figures 2 and 3.)

not permitted on lines 8 and 570. Figure 3 shows the manner in which an audio packet is formatted from two AES datastreams (e.g. 1 and 2). The audio of each channel consists of 29 bits as follows:

are embedded into four 10-bit words. Table 1 shows the typical manner in which the 29 channel bits are embedded in four 10-bit words, in this example UDW2, UDW3, UDW4 and UDW5. This representation is for one audio data packet carrying four audio channels from AES/EBU datastreams 1 and 2. Carrying 16 audio channels requires an additional three audio data packets containing, respectively, data from AES/EBU datastreams 3 and 4 (four channels), 5 and 6 (four channels) and 7 and 8 (four channels). Each group of four channels is identified by the DID word.

Embedding of audio control packets

Audio control packets are multiplexed into the HANC data space of the Y bit-parallel datastream. They are transmitted once every field in the second line after the switching line, respectively on lines 9 and 571. The audio control packet contains data used in the process of decoding the audio datastream. Figure 4 shows the structure of the audio control packet.

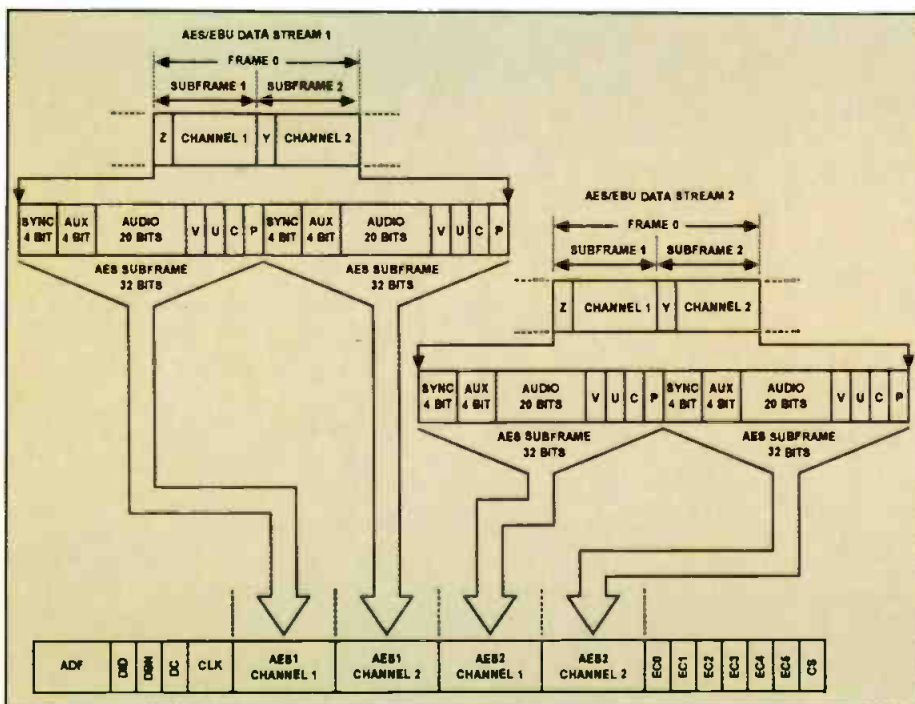
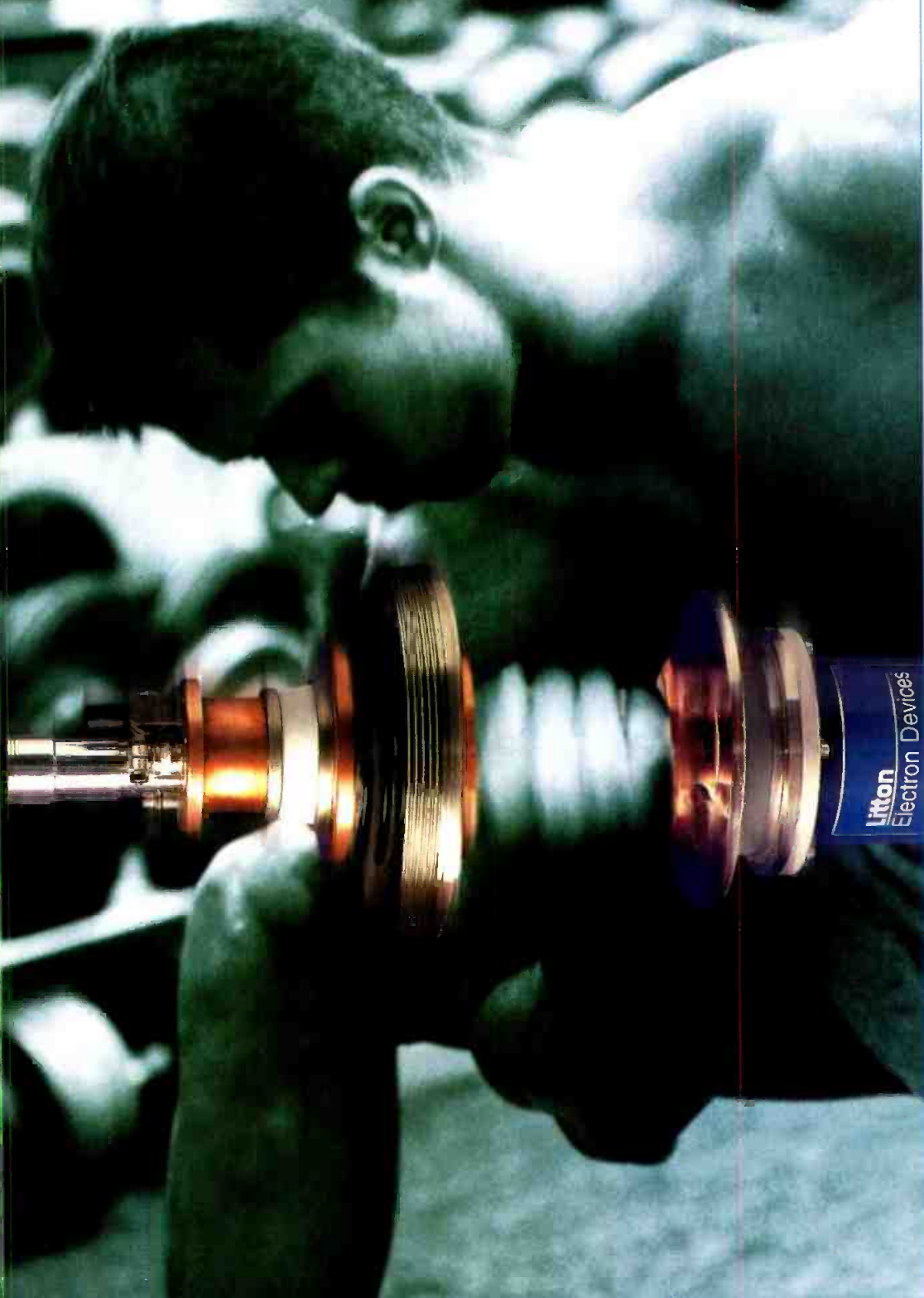


Figure 3. Audio data packet formatting from two AES/EBU datastreams.

Pump Up Your Profits...



...WITH 50% ENERGY SAVINGS
IN YOUR DTV TRANSMITTER

LITTON CEA



Want a leaner,
meaner transmitter?

By reducing energy
consumption 50%,

Litton's Constant Efficiency
Amplifier saves you money and
puts the strength back in your
bottom line.

The Litton CEA can pump up to
120 kW at peak power. And with
our renowned 24/7 support and
next-day delivery, the CEA brings
Litton's trademark service and
reliability to the next-generation
of high-power broadcast tubes.
It's like having a personal power
trainer right at your side.

Don't let needless energy
expenses slow down your digital
television operations. Put the
Litton CEA to work for you.

*For more information about
Litton solutions, call us at
(800) 861-1843 or visit our*

Web site: www.littonedd.com/uhf

Circle (121) on Free Info Card

Litton

Technology. Solutions. Results.

1035 WESTMINSTER DRIVE
WILLIAMSPORT, PA 17701
OUTSIDE THE U.S. CALL: (570) 326-3561
See us at NAB Booth #L5119

It consists of:

- ADF: Ancillary data flag consisting of three words 000,3FF,3FF;
- DID: One data identification word. Value depends on the respective audio group;
- DBN: One data block number word;
- DC: One data count word;
- UDW: Eleven user data words UDW0 to UDW10;
- CS: One checksum word.

Conclusion

HDTV audio embedding as described in the SMPTE 299M sets the standard for future studio applications which require at least six audio channels (5.1). In this example we have described the

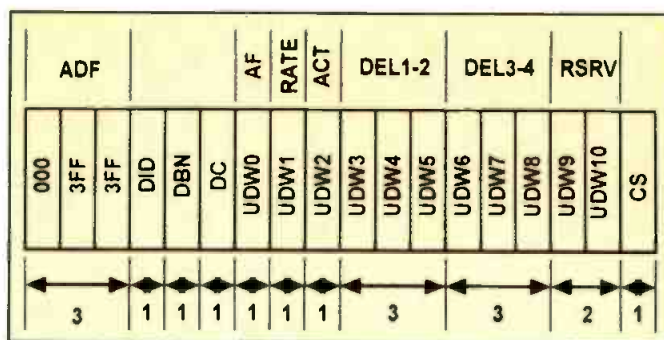


Figure 4. The structure of an audio control packet.

HDTV audio embedding as described in the SMPTE 299M sets the standard for future studio applications that require at least six audio channels.

The UDW consists of five types of data:

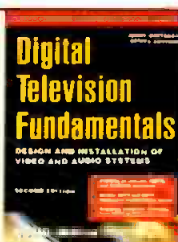
- AF: Audio frame number data;
- RATE: Sampling rate;
- ACT: Active channels;
- DEL *m-n*: Indication of the amount of accumulated audio vs. video delay;
- RSRV: Reserved for future use.

manner in which audio is embedded in a 1920x1080i HDTV format. Other formats described in the SMPTE 292M Standard have different horizontal blanking structures and the audio embedding will differ somehow from the example discussed here. As in SDTV

embedded audio applications there is always the possibility of getting audio clicks with live source switching, so an enlightened decision needs to be made whether to embed or not to embed. ■

Michael Robin, former engineer with the Canadian Broadcasting Corporation's engineering headquarters, is an independent broadcasting consultant in Montreal, Canada. He is the co-author of Digital Television Fundamentals published by McGraw-Hill.

The Second Edition of Michael Robin's book may be ordered directly from the publisher by calling 800-262-4729. It is also available from several booksellers.



On-Screen Serial Digital and Analog Video Monitoring and Measurement

SDM-560M

Serial Digital/Composite Monitor with Measurements



On-screen display of SD 601 input signal

- Serial Digital 601 (525/625) and Composite (NTSC/PAL) video signal monitoring
- Composite and SD 601 display outputs for routing and standard picture monitor on-screen display
- Unique split-screen display with picture, waveform, vector, audio, Picture Guard and SD 601 signal status
- Auto-measurement screens with numeric readouts on key analog and SD 601 signal parameters
- Error detection and reporting with VITC or real time/date stamp
- Full featured waveform and vector displays for SD 601 input in Composite or Component format
- Signal strength, EDH and jitter monitoring
- Gamut error detection with pixel bright-up feature
- Audio monitoring for four channels of embedded audio, analog or AES-3 external input audio
- Audio level and phase display
- Remote control via RS-232



Engineering Emmy Award

Magni Systems, Inc.

22965 NW Evergreen Parkway, Hillsboro, OR 97124 U.S.A.
VOICE: 1-503-615-1900 / 800-237-5964 / FAX: 1-503-615-1999
E-MAIL: sales@magnisystems.com
www.magnisystems.com

MAGNI®

Now it's looking good

Circle (121) on Free Info Card

Visit us at NAB Booth #L11373



The Omneon Networked Content Server. The All-in-One Infrastructure for Digital Media.

It's here: the industry's first data-type independent, shared-storage infrastructure for digital media. A storage architecture to support your applications, in multiple data types, over any transmission method. Making the real-time creation, management and distribution of digital content easier than ever before. Enabling a world of new revenue-generating services – from enhanced TV, to rich media streaming, HDTV and beyond. And it's available today.

- Format-independence supports many media formats on a single platform
- Distributed I/O topology allows the addition of inputs and outputs as needed
- System scalability grows from a few to many channels, and to thousands of hours of media storage
- Intuitive Web-based system manager and configuration tool runs from a standard Web browser
- Industry standard control protocols support a choice of applications for transmission, collaborative production, media and asset management
- Extended File System allows simultaneous access to all content on all channels

Discover the Omneon difference at
www.Omneon.com

NAB Booth # L529
Circle (122) on Free Info Card



OMNEON
VIDEONETWORKS



Cable and wiring for LANs

BY BRAD GILMER

There has been a definite increase in the amount of networking technology installed in television facilities around the world. The reasons for this are clear. Over the last three years, network speeds have increased by a factor of ten. Technologies on the horizon promise another tenfold increase in 18 months or so. At the same time, consumer demand for these technologies has driven the prices down dramatically. 10Base-T hubs are now in the \$20 range, 100Base-T hubs can be had for \$125, and Gigabit Ethernet hubs are now available for around \$1500. This low-cost, high-speed network technology has moved networking into the fast lane.

Basic topologies

Ethernet is by far the most common technology in use today. Fibre Channel and ATM are also finding their way into the television plant. While Ethernet and Fibre Channel are used widely within a facility, with a few exceptions, ATM is generally employed to connect one facility to another.

There are four basic topologies

employed in computer networks today. These are point-to-point, star, Thinnet, and switched fabric.

Point-to-point

Figure 1 illustrates point-to-point topology where each node is directly connected to the next without any intervening hardware. The most common systems using this topology are

deal with this problem is to employ two loops. Another way that designers deal with this problem is to move to the star topology depicted below.

Star

Figure 2 illustrates star topology where each node is connected to a hub or concentrator. This is the basic building block of most Ethernet deployments.

Over the last three years, network speeds have increased by a factor of ten, with another tenfold increase in 18 months or so.

fiber channel arbitrated loop (FC/AL) and token-ring.

Point-to-point topology is low-cost, but it has a big drawback. It is subject to many single points of failure. Since each computer is connected to the loop, a failure of any cable, any computer, or any network interface card can cause all computers to be unable to communicate. A common way to

It is also used in Fibre Channel networks when designers want to protect the user from the problems described above.

A disadvantage of star topology is its somewhat higher cost. A big advantage of this topology is that all most all hubs can isolate a faulty node so that this connection does not affect other computers attached to the network.

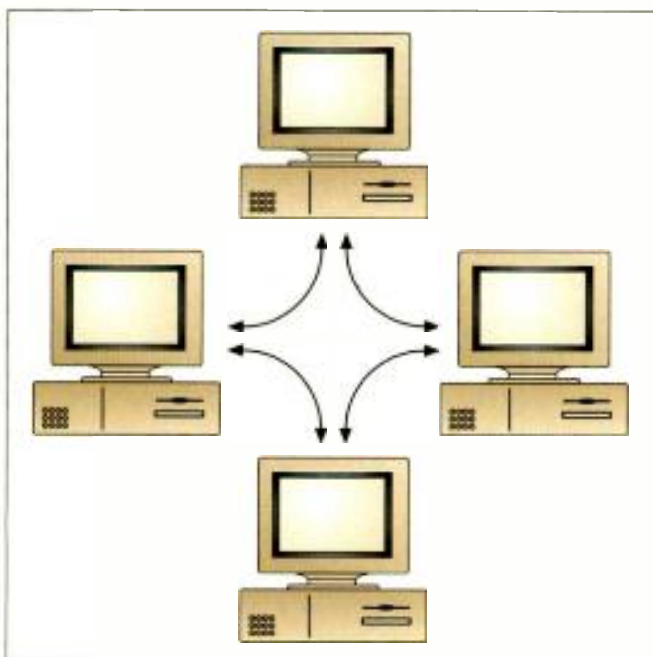


Figure 1. Point-to-point topology

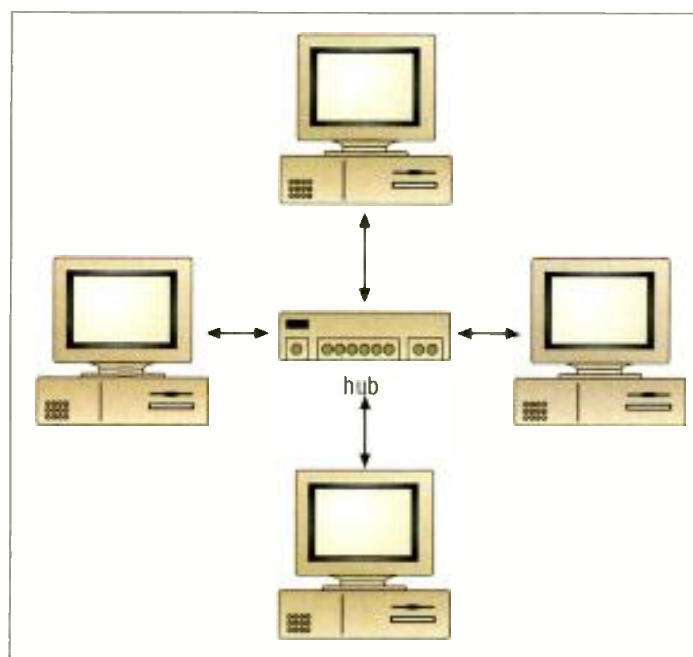
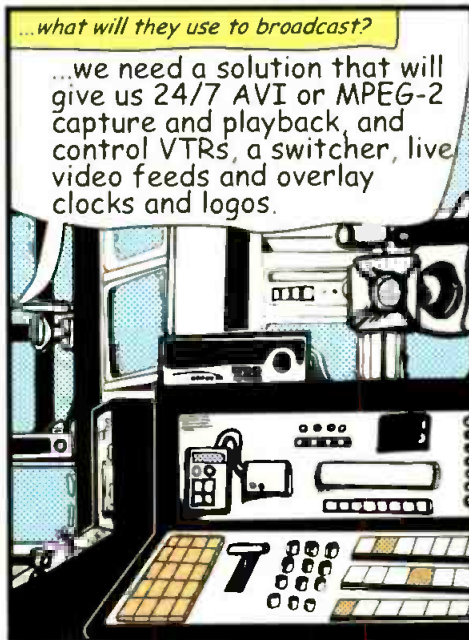


Figure 2. Star topology

Sometimes you can have it all.



Inscribe E-Clips is the solution for 24/7 broadcasting. **Inscribe E-Clips** is a reliable, video clip, playback system that will play video 24/7, even unattended. **E-Clips** can capture and playback VTR events, live feeds, AVI and MPEG-2 files. Now you can maximize your existing resources and extend your broadcast capabilities with less effort. If you want a complete broadcast solution, you need **E-Clips**.

Inscribe E-Clips - Everything you need for 24/7 broadcasting.

For more information visit - www.inscribe.com

Visit Inscribe at NAB 2001-Booth #54832

Circle (123) on Free Info Card



inscribe
TECHNOLOGY

International Headquarters/North & South American Sales—26 Poplar Street, Waterloo, Ontario, Canada N2J 3C4 Toll-free: +1.800.363.3400 Tel: +1.519.570.9111 Fax: +1.519.570.9140 European Sales—Zijdsloot 72, 1431 EE Aalsmeer, The Netherlands Tel: +31.207.380930 Fax: +31.207.380939 Asia-Pacific Sales—Level 9, AIG Building 1-1-3 Marunouchi, Chiyoda-ku, Tokyo 100-0905, Japan Tel: +61.3.5288.5237 Fax: +61.3.5288.5111 Inscribe is a registered trademark and E-Clips is a trademark of Inscribe Technology Corporation. Other products names mentioned may be registered trademarks or trademarks of their respective companies.

Of course, the hub is a single point of failure, and steps should be taken to minimize risk in this area.

Thinnet

Figure 3 illustrates Thinnet topology in which all computers connect to a common cable. Thinnet is based on RG-58 Coaxial cable, "T" connectors and 50-ohm terminators. This topology was very popular a number of years ago, but is now largely obsolete.

Thinnet is inexpensive, but if connection fails, it will affect all computers on the network. Also, termination of cables is time-consuming and prone to error. Furthermore, Thinnet typically costs more per connection than other technologies available.

Switched fabric

The fourth topology is switched fabric. (See Figure 4.) Switched fabric topologies are commonly used in

switched networks such as Ethernet or Fibre Channel and ATM.

Switched networks can provide the highest aggregate bandwidth of any topology currently available short of dedicated point-to-point networks. Switched fabric networks will be the basis of most high-speed networks of the future.

The party line

With the exception of switched fabric topology, as the number of nodes on the network increases, performance decreases. This is because these networks connect everyone together on one big party line. As with an old-style telephone party line, if more than one person talks, it can be very confusing to determine what is being said.

In the past, network designers resolved this problem by keeping individual network segments small. They connected a number of segments together with bridges to build larger networks. (Bridges isolate the chatter on one network segment from another and only send messages across segments when required.) This solves the party line problem to some extent, but it does not fix it entirely. If you are unfortunate enough to share your segment with a fileserver, graphics workstation, or other high-bandwidth user, you will still notice a significant decrease in performance whenever these high-bandwidth devices are active.

The advantage of switched fabric

So what is the difference between a switched fabric and other topologies?

The biggest difference is that a switch can give you a dedicated full-bandwidth segment all to yourself. This means that if you are running a 10-, 100-, or 1000MB network, you will have access to all that bandwidth (less overhead, of course).

Another big difference is that, once you go to a dedicated segment, you are able to use full duplex communications – that is, you can send and receive data at the same time. Remember that in other systems, one person talks while everyone else listens.

Furthermore, in particularly heavy usage situations, you can install more than one network connection to a device to provide simultaneous dedicated full bandwidth connections.

Be careful what
you ask for...
YOU
JUST might get
GOT IT!

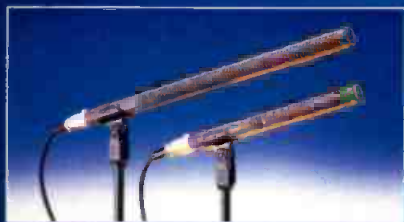
Two new stereo shotguns from Audio-Technica

The AT815ST and AT835ST were developed at the request of broadcasters for reasonably priced, easy to handle, compact M-S stereo shotguns.

Self-contained, simple operation and light weight provide unequalled mounting versatility.

Two internally-matrixed left/right stereo modes and a non-matrixed M-S mode are switch-selectable.

Proven performance in demanding sports and field applications.



AT815ST AT835ST

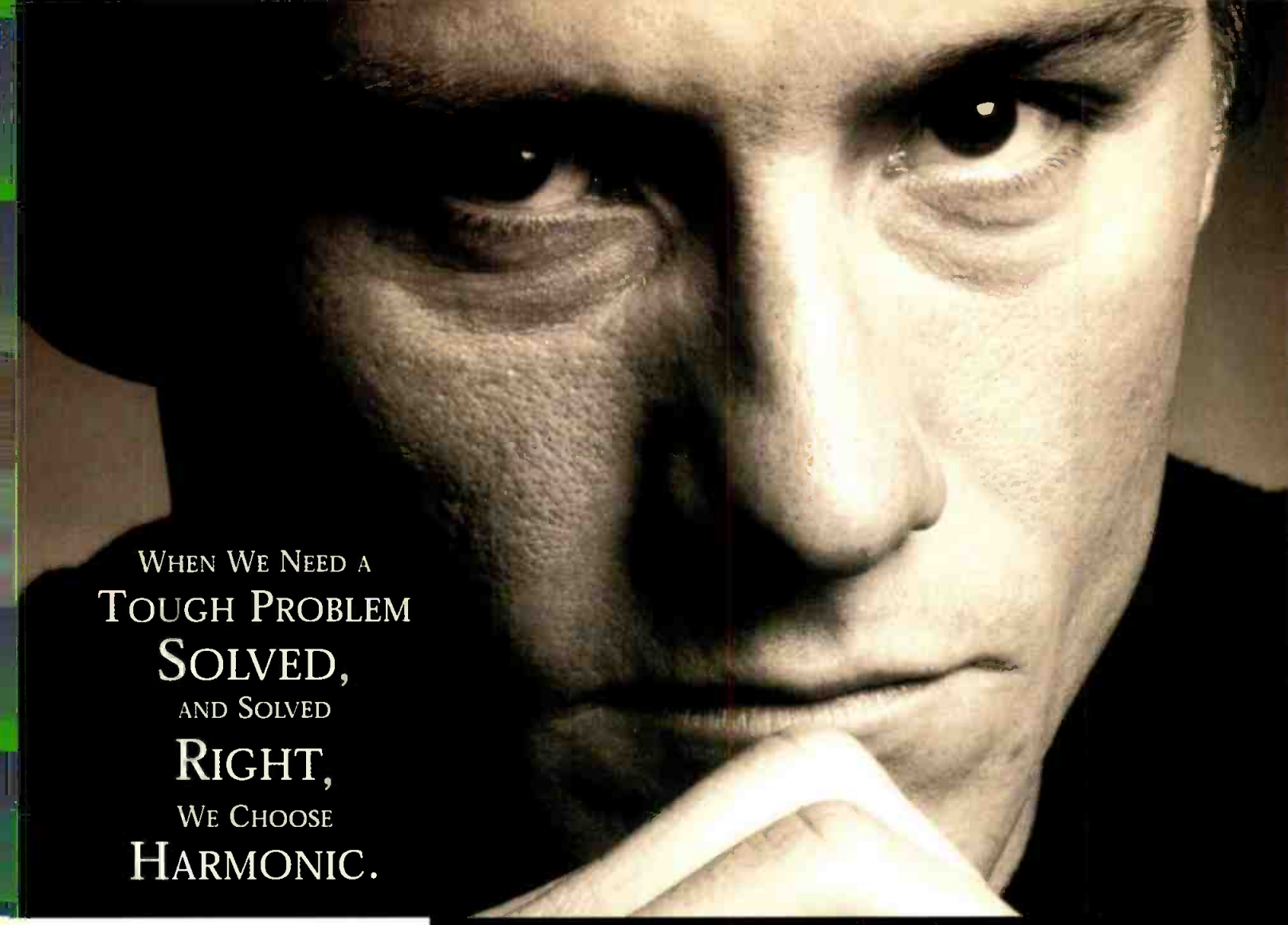
To get more information, just ask! Call, write or fax today.
Or visit our Web site at www.audio-technica.com.



audio-technica.

Audio-Technica U.S., Inc. | 1221 Commerce Drive, Stow, OH 44224
330.686.2600 | Fax: 330.686.0719 | E-mail: pro@atus.com | www.audio-technica.com

NAB Booth #R2647



WHEN WE NEED A
TOUGH PROBLEM
SOLVED,
AND SOLVED
RIGHT,
WE CHOOSE
HARMONIC.

**THE TOUGHER YOUR PROBLEM,
THE HARDER WE WORK.**

Face it, many companies provide broadband solutions. Unfortunately, few of these solutions work the way they're expected to. Which is why more and more broadband service providers are bringing their architectural problems to Harmonic. Simply put, our solutions work, 24 x 7.

**WE DELIVER BROADBAND INNOVATIONS –
FROM THE HEADEND ACROSS THE ENTIRE NETWORK**

Harmonic knows broadband networks inside and out. Our world-class expertise in advanced fiber optic networks and digital video systems helps service providers stay competitive and get to market faster with delivery of video, voice and data over broadband networks.

At Harmonic, we'll do whatever it takes to solve your toughest broadband problems quickly. Our digital and fiber optic engineers are technically astute, highly responsive, and totally committed to developing innovative optical networking, digital video systems, and high-speed data solutions that work.

No matter how difficult your broadband challenge may be, Harmonic can help solve it. For more information, visit www.harmonicinc.com. Or call us +1.408.542.2500.

CALL US ABOUT YOUR TOUGH PROBLEMS IN:
Optical Access Networks | Digital Video Systems
IP Data Gateways | Network Management
System Integration

Smart Solutions for Broadband Systems



Harmonic

Circle (125) on Free Info Card

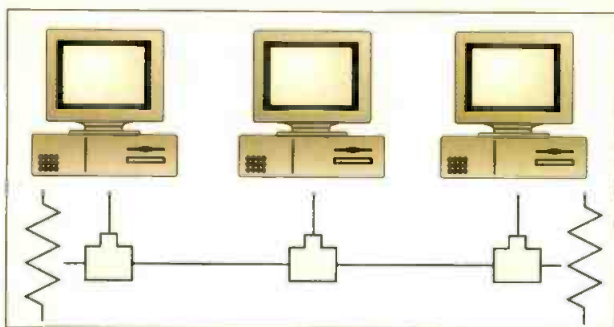


Figure 3. Thinnet topology

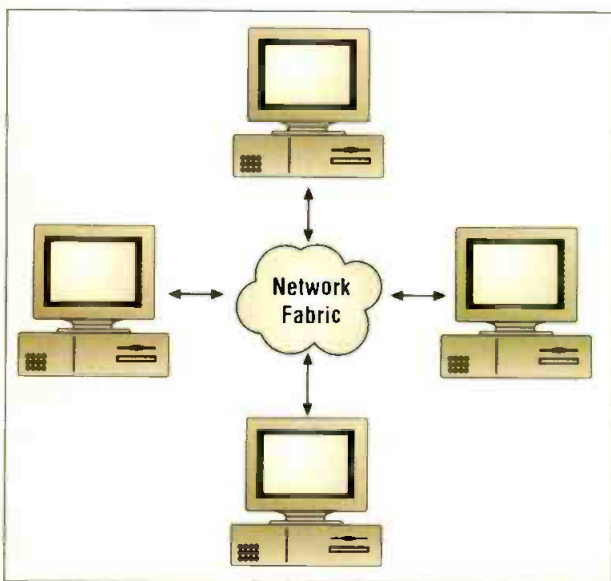


Figure 4. Switched fabric topology

Figure 5 illustrates how you might construct a switched network to provide very high bandwidth connectivity to a server and a graphics client while providing conventional connectivity to typical desktop users.

Note that the server is given two 100Mb full duplex connections to the switch. Because it is the only computer on these nodes, it has the full 100 megabits available on each link. It is possible to add more than two cards to a server, increasing the available network bandwidth even further. (There is no point in increasing the network bandwidth if the server has I/O or other limitations.)

Second, note that the graphics workstation has a dedicated 100Mb full duplex link to allow it to exchange very large files with the server.

Third, note that the Ethernet hub provides desktop clients access to the same high performance server, but over much slower 10Mb shared links.

Finally, note that the graphics workstation can consume all its available network bandwidth to the server without affecting any of the desktop connections.

cable, you are asking for problems. I once had a network installation that was built with CAT 5 components, all except for a jumper panel that used some flat ribbon jumpers. The jumpers were not CAT 5 rated. As a result, the network was unpredictable, and in some cases, would not function at all. Replacing the non-rated jumpers with

Wiring

Most networks today are based upon unshielded twisted (UTP). Fiber is also gaining in popularity, but that is a subject for another article. UTP is popular because of its low cost and ease of installation. However, there are some things to be aware of. If you are planning a new network installation, be sure that you build it with CAT 5E components. (CAT 5 was the rating for network installations up to 100Mb/s. Cat 5 has been Extended for use up to 1000Mb/sec or one Gigabit. The "E" in CAT 5E stands for Extended.) CAT 5E assures that your wiring will be capable of supporting Gigabit+ Ethernet speeds. If you use CAT 3 or conventional telephone

CAT 5 components fixed the problem. You might save some money by purchasing less expensive wire, terminating blocks or patch panels, but in doing this, you may be exposing yourself to problems down the road. When you look at the total cost of a network installation, wiring and components are frequently a small part of the total cost of the system.

As network speeds increase, new technologies building on this speed emerge. Storage Area Networking or SAN is one example. SAN is shared storage where the storage in a computer or server is physically separate from the computer itself. Multiple computers can connect to the same storage across a high-speed network. One can easily imagine a high-speed network with SAN to provide access to a pool of shared storage. Nonlinear editors, graphics workstations and other systems could share the storage. Such designs were not possible just a few years ago.

New networking equipment and techniques are being developed all the time. One thing is for sure – broadcasters will be at the forefront of this technology employing high speed networking in video applications. ■

Brad Gilmer is executive director of the AAF Association and president of Gilmer & Associates, a broadcast consulting firm.



Send questions and comments to:
brad_gilmer@intertec.com

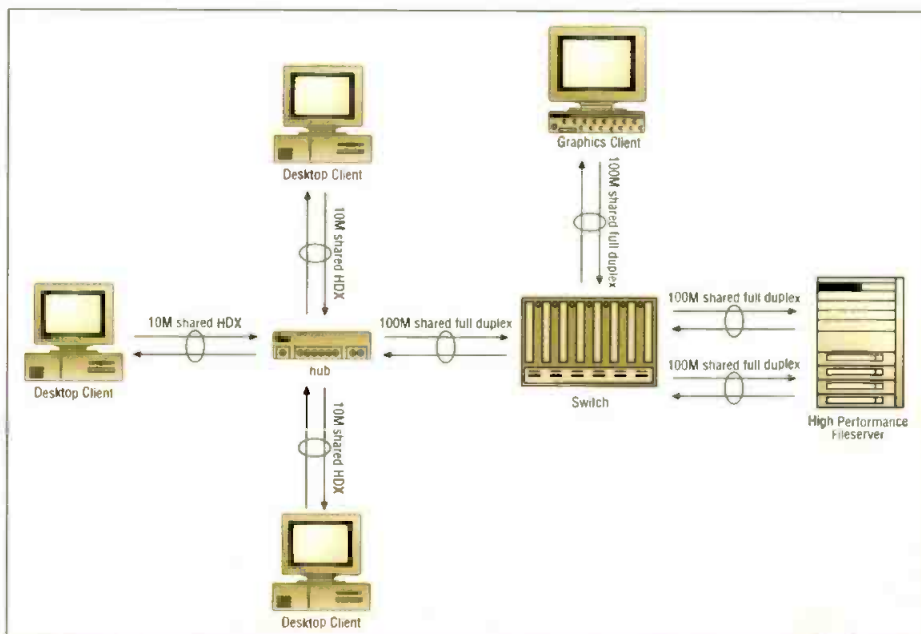


Figure 5. An example of a high-performance switched topology network.

FloriCal is Reliability



- **Multi-Channel**
- **WebCasting**
- **CentralCasting**
- **Enterprise Storage**
- **Asset Management**
- **Remote Off-Line Editing**
- **Station Group Consolidation**



f L O R I C A L
S Y S T E M S



Circle (126) on Free Info Card

www.florical.com
sales@florical.com
tel: 352.372.8326
fax: 352.375.0859

We think outside the box. Then put it all inside.

RELIABILITY ROUND THE CLOCK.
FULLY DUAL REDUNDANT PSUS,
WITHOUT SACRIFICING MODULE
SLOTS.

THERMAL CONTROL
PREVENTS
OVERHEATING. FAN
SPEED VARIES
AUTOMATICALLY TO
OPTIMIZE OPERATIONAL
CONDITIONS.

FAN REPLACEMENT TAKES JUST
MINUTES AND DOES NOT REQUIRE
DISCONNECTION OF SIGNAL I/Os.

ALL CARDS HOT-PLUGGABLE
TO REDUCE DOWN-TIME

NO-COMPROMISE EMC MEASURES
GUARANTEE CONSISTENT SIGNAL QUALITY.
DETAILS SUCH AS BERYLLIUM SEALS, HINGE
DESIGN, SELECTIVE PAINTING, POWER
SUPPLY FILTERS AND FERRITES ON ALL
OUTPUTS PROVIDE COMPREHENSIVE, HIGH
QUALITY SHIELDING AGAINST ELECTRO-
MAGNETIC PROBLEMS.

EASE OF CONFIGURATION, WITH ANY
MIX OF VIDEO, AUDIO, DIGITAL
AND ANALOG CARDS, SIDE-BY-SIDE,
IN THE SAME BOX.

IQ Modular

Intelligent System for the Digital Era

Today's complex digital networks demand more from modular systems than just the conventional box of cards.

When we designed IQ Modular we brought fresh thinking to every detail of its design, not forgetting value for money.

The result is a truly intelligent infrastructure solution at a highly competitive price.

As well as such practical features as hot-pluggable modules and PSUs and temperature-sensing fans, IQ Modular offers the unique advantage of integral intelligence within every module.

This means that all essential information about any module - its status, menu structure and PC window, is held on the card itself, so it can be downloaded instantly into your control system via RollCall, our network management system.

You can reconfigure or add any of the two hundred and fifty modules in our range and they will automatically self-register, eliminating the need to reprogram your remote control software.

It's thinking like this that makes IQ Modular the automatic choice for the digital era.

INTEGRAL INTELLIGENCE IN EVERY MODULE AIDS AUTO-CONFIGURATION, MANAGEMENT AND MONITORING VIA ROLLCALL.



VIDEO DELAY FROM FUNCTIONS LIKE FRAME SYNCHRONIZATION CAN BE AUTOMATICALLY TRACKED AND LINKED TO RELEVANT AUDIO DELAY UNIT WITHOUT EXTERNAL CABLING.

EXCELLENT PACKING DENSITY. UP TO SIXTEEN MODULES PER 3RU BOX. SIX PER 1RU.

ROBUST CONSTRUCTION SAFEGUARDS OPERATION. RUGGED STAINLESS STEEL BOX PROTECTS MODULES FROM FAILURE THROUGH STRESS, SHOCK OR WARPING.



VIDEO

ANALOG TO DIGITAL CONVERTERS, DIGITAL TO ANALOG CONVERTERS, SDI DECODERS, ENCODERS, SYNCHRONISERS, ANALOG AND SDI DISTRIBUTION AMPLIFIERS, SDI ROUTERS, ASPECT RATIO CONVERTERS, LOGO GENERATION AND DIGITAL PROC AMP CONTROL.

VIDEO-AUDIO

AUDIO EMBEDDING AND DE-EMBEDDING MODULES TO COVER ALL SCENARIOS.

AUDIO

ANALOG TO DIGITAL CONVERSION, DIGITAL TO ANALOG CONVERSION, ANALOG AND AES/ EBU DISTRIBUTION, AES/ EBU SYNCHRONIZING, SAMPLE RATE CONVERTING, RE-MAPPING AND ROUTING.

MPEG INFRASTRUCTURE

MPEG COMPATIBLE DISTRIBUTION AMPLIFIERS, SWITCHERS AND TRANSPORT STREAM MONITORS. OPTIONS ALSO INCLUDE PROGRAM TEMPLATE MATCHING AND PICTURE APPRAISAL RATING.

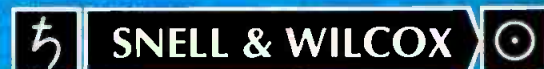
CONTROL

RANGE OF CONTROL PRODUCTS TO OPERATE OVER THE ROLLCALL NETWORK, INCLUDES 1U ACTIVE FRONT PANELS, ROUTER CONTROL PANELS, ROLLPOD CONFIGURABLE PANELS, GPI AND SERIAL CONTROL MODULES, AND AUTOMATIC CHANGEOVER SWITCHES.

IQ MODULAR



IQ MODULAR IS COMPATIBLE WITH ROLLCALL, THE INTELLIGENT BROADCAST MANAGEMENT SYSTEM FROM SNELL & WILCOX.



Engineering with Vision

Tel: 408 260 1000 www.snellwilcox.com

Circle (127) on Free Info Card

www.americanradiohistory.com

Audio and video compression

BY STEVEN M. BLUMENFELD

Those of you who have been reading my columns for a while know I have often pontificated on the wonders of audio/visual compression. Also you have read my views on content not really being useful unless it can be characterized and found. Over the years I have written about companies like Virage that have been working on systems to automate the classification and recognition of content.

I find myself smack dab in the middle of yet another hot area – speech and data recognition. So I look to my old friends on the MPEG committees once again for help with standardized data models that describe content.

Its current thrust is MPEG-7, the completion of which is scheduled for July 2001.

MPEG-7, formally named “Multimedia Content Description Interface,” aims to create a standard for describing the multimedia content data that will support some degree of interpretation

of the information’s meaning and can be passed onto or accessed by a device or a computer code. According to the official MPEG website, MPEG-7 is not aimed at any one application. It will provide *standardized* support to a broad range of applications.

MPEG-7 tries to solve the problem of searching and managing huge amounts of digital data. The question of identifying and managing content is not just restricted to database retrieval applications such as digital libraries but extends to areas like broadcast channel selection, multimedia editing and multimedia directory services.

While audio and visual information used to be consumed directly by humans, increasingly audio/visual information is created, exchanged, retrieved and re-used by computational systems. Image understanding (surveillance, intelligent vision, smart cameras, etc.), media conversion (speech to text, picture to speech, speech to picture, etc.), information

retrieval (quickly and efficiently searching for various types of multimedia documents of interest to the user) and in-line filtering of content receiving multimedia data items which satisfy the user’s preferences) represent specific computer uses of this information.

The goal of the MPEG-7 standard is to develop forms of information representation that go beyond the compression-based (such as MPEG-1 and MPEG-2) or even objects-based (such as MPEG-4) representations. Since the standard can be passed onto a device or a computer code, content encoded in the MPEG-7 standard could be referenced in many different ways. Possibly a verbal reference to a news item, such as “Florida elections,” could bring up your latest newscast on the recount.

The MPEG-7 descriptions do not depend on coded representation of the material. The standard builds on MPEG-4, which provides the means to encode material as objects having certain relations in time (synchronization) and space (on the screen for video, or in the room for audio). If the material is encoded using MPEG-4, it will be possible to attach descriptions to elements (objects) *within* the scene, such as audio and visual objects.

The committee decided to base the textual representation of content descriptions on the Extensible Markup Language (XML) as the language of choice. The growing popularity of XML usage on websites to describe and collect data will facilitate interoperability in the future.

When MPEG-7 is fully implemented, it will make the Web as searchable for multimedia content as it is searchable for text today. This would apply especially to large content archives, enabling people to easily identify content. The information used for content retrieval can be used by computational agents for selection and filtering of personalized material.

On the consumer side new applications based on MPEG-7 descriptions will allow

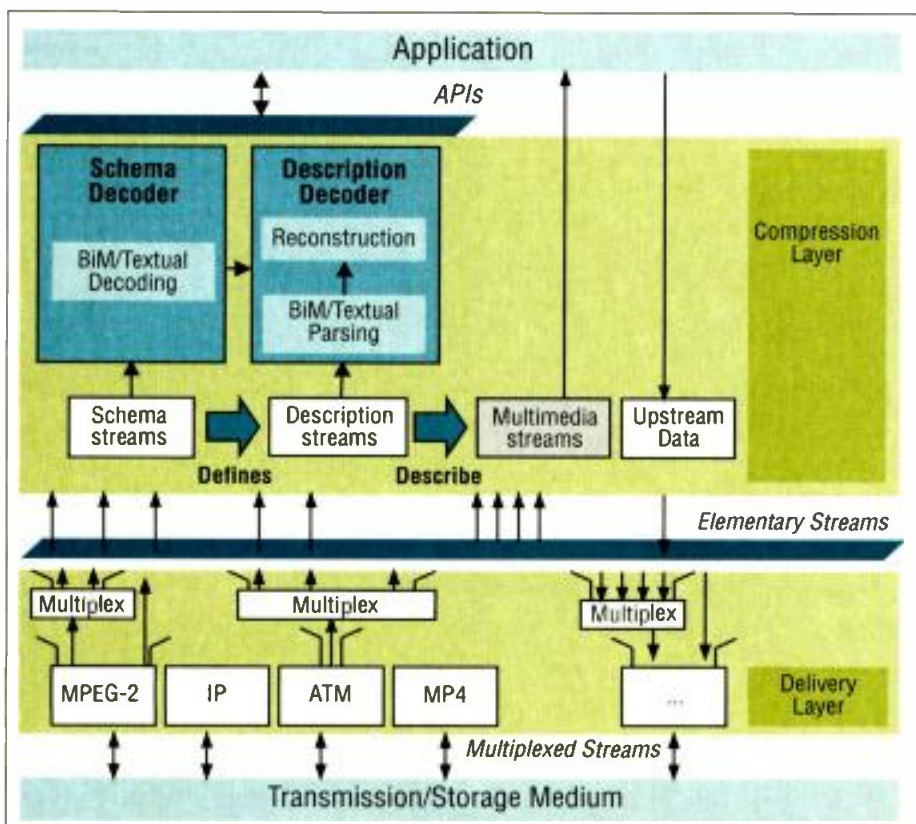


Figure 1. MPEG-7 aims to standardize the syntax of metadata across applications.

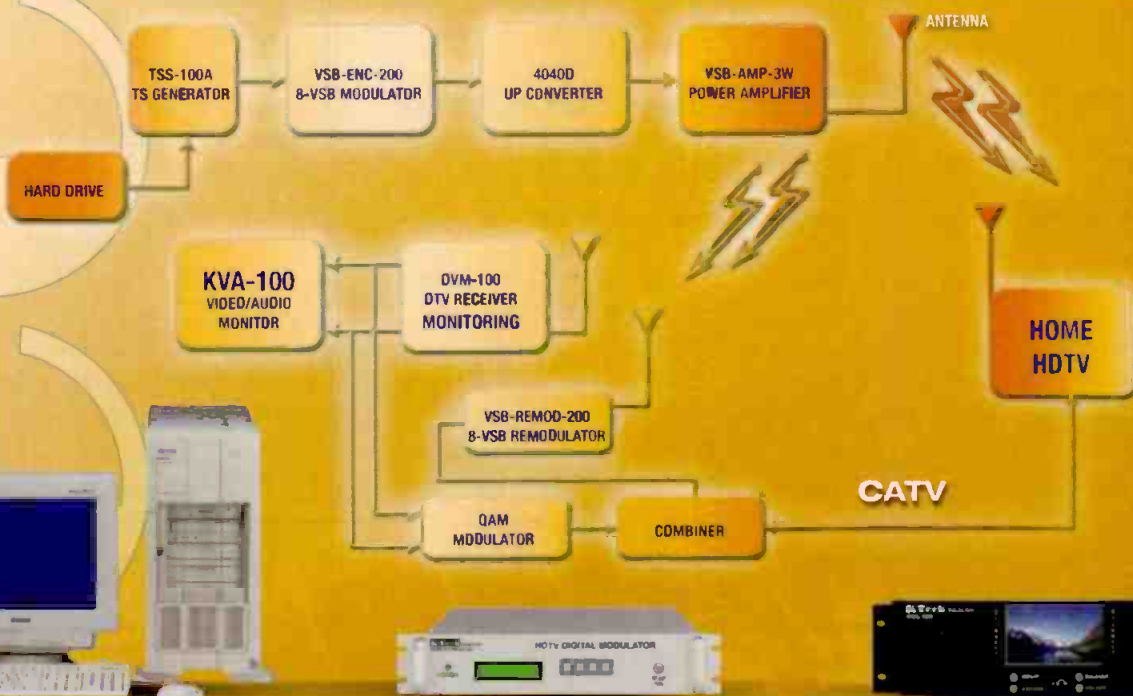
KTech

TELECOMMUNICATIONS, INC.

Leading Excellence in DTV Broadcast Engineering Technologies

Video Server • 8-VSB DTV Modulator

8-VSB Reference Receiver • Power Amplifier • Video Audio Monitor



Video Server

MPEG2 Generator/Recorder

TSS-100A is a video server based on a scalable power PC engineering workstation. Using high speed SCSI-II LVD hard-drives, its maximum capacity is limited to 100-Gbytes of Raid-0 storage capability. This unit is designed to transfer files by FTP, Internet, LAN, CD-ROM and SCSI. It generates MPEG2 files through DVB-ASI, SMPTE-310M and DVB-SPI outputs and records through DVB-ASI and SMPTE-310 inputs. Rack mounted and portable computer versions are also available.

8-VSB Modulator

VSB-ENC-200 is an 8-VSB modulator that conforms to the ATSC Terrestrial DTV Transmission Standard. Its input requires MPEG2 transport stream in SMPTE-310M, DVB-ASI or DVB-SPI format. The output is available on 44.0MHz I.F. or a fixed channel RF. A variable frequency up-converter is also available as an option. External 10MHz reference input or internal 10MHz OCXO frequency source can be used to set the output frequency. Linear and non-linear precorrection is available as an option.

Video Audio Monitor

The KVA-100 is a rack mountable 6" diagonal unit LCD display, 16X9 aspect ratio, 640X350 resolution, L/R speakers, Volume meters, RGBHV input (BNC).

8-VSB Reference Receiver

DVM-100 is an 8-VSB Professional Receiver that accepts RF CH2-CH69 input, DVB-SPI input/output, DVB-ASI input/output, SMPTE-310M input/output and produces outputs in RGBHV video, VGA video, Y Pb Pr, Analog L & R audio, and Dolby Digital AC-3 audio. Video Modes: 1080i, 720p, 480p, 480i, NTSC Composite (BNC, SDI), PSIP Display, EPG. This product is useful in DTV monitoring and testing.

8-VSB Frequency Translator

The VSB-FREQ-100 is an 8-VSB channel converter, this unit performs tuning channels between VHF 2 - 13 and UHF 14 - 69 and produces an output frequency from 7 to 810 MHz. The LCD displays all input and output frequencies for an easy operation. This unit performs no demodulation.

8-VSB DTV Translator

VSB-REMOD-200 is an 8-VSB Translator that receives an 8-VSB signal via on-air or cable, demodulates to baseband data, corrects multipath errors by Forward Error Correction and Equalization techniques, Updates PSIP and re-modulates the baseband data into a new 8-VSB signal. A fresh copy of the original DTV signal is reproduced to extend your DTV coverage area.

KTech

TELECOM

DTV BROADCAST PRODUCTS

15501 San Fernando Mission Blvd. • Ste 100 • Mission Hills, CA 91345

Phone (818) 361-2248 • Fax (818) 270-2010

e-mail: sales@ktechtelecom.com • web: www.ktechtelecom.com

Circle (128) on Free Info Card

fast and cost-effective usage of the underlying data. My favorite would be an application that allowed semi-automatic multimedia presentation and editing.

The information representation specified in the MPEG-7 standard provides the means to represent coded multimedia content description information. The entity that makes use of such coded representation of the multimedia content

and descriptors. The DDL defines the syntactic rules to express and combine description schemes and descriptors.

The DDL has to be able to express spatial, temporal, structural and conceptual relationships between the elements of a DS, and between DSs. It must provide a rich model for links and references between one or more descriptions and the data they describe. In addition, it must be

metadata related to the creation, production, usage and management of multimedia, as well as to describing the content directly at a number of levels including signal structure, features, models and semantics. Typically, the multimedia DSs refer to all kinds of multimedia consisting of audio, visual and textual data, whereas the domain-specific descriptors, such as for color, texture, shape, melody and so forth, refer specifically to the audio or visual domain. As in the case of descriptors, the instantiation of the DSs can in some cases rely on automatic tools, but in many cases will require human involvement or authoring tools.

In this new paradigm we are given a glimpse of a world in which all data/content is accessible by various devices using real world descriptions/locators. With the constant influx of so much new content, if there's not a standardized way to describe, characterize and find it, does the content really exist at all? Does content exist, if there is not a system to find it?

The majority of this article was taken from N3752- Overview of the MPEG-7 Standard (version 4.0). For more on MPEG-7 go to www.cseit.it/mpeg/. ■

Steven M. Blumenfeld is currently the GM/CTO of AOL. – Nullsoft, the creators of Winamp and SHOUTcast.

If there's not a way to describe, characterize and find content, does it really exist?

is generically referred to as "terminal."

As Figure 1 shows, the delivery layer encompasses mechanisms allowing synchronization, framing and multiplexing of MPEG-7 content. The transport/storage of data can occur on a variety of delivery systems. The delivery layer demuxes data so it can provide the compression layer with elementary streams. Elementary streams consist of consecutive individually accessible portions of data called access units. An access unit is the smallest data entity to which timing information can be attributed.

At the compression layer, the flow of access units is parsed and the content description is reconstructed. Access units are structured as commands encapsulating the description information. Commands provide the dynamic aspects of the content. They allow a description to be delivered in a single chunk or to be fragmented in small pieces. They allow basic operations on the content such as updating a descriptor, deleting part of the description or adding new Description Definition Language (DDL) structure.

The main tools used to implement descriptions are Descriptors (Ds) and Description Schemes (DSs). Descriptors bind a feature to a set of values. Description schemes are models of the multimedia objects and of the universes that they represent, e.g. the data model of the description. They specify the types of the descriptors that can be used in a given description and the relationships between these descriptors or between other description schemes.

The DDL forms a core part of the MPEG-7 standard. It provides the solid descriptive foundation by which users can create their own description schemes

platform and application independent and human- and machine-readable.

A DDL Parser capable of validating description schemes (content and structure) and descriptor data types, both primitive (integer, text, date, time) and composite (histograms, enumerated types), is also required.

The purpose of a schema is to define a class of XML documents by applying particular constructs to constrain their structure: elements and their content, attributes and their values, cardinalities and data types. Schemas can be seen as providing additional constraints to DTDs or a superset of the capabilities of DTDs.

XML is an excellent choice to adopt as the basis for the DDL because of its potential widespread adoption and the availability of tools and parsers. As XML was not designed specifically for audio/visual content, certain specific MPEG-7 extensions are required.

Descriptors

The MPEG-7 descriptors describe the following types of information: low-level features such as color, texture, motion, audio energy and so forth; high-level features of semantic objects, events and abstract concepts; content management processes; and information about the storage media.

It is expected that most descriptors corresponding to low-level features will be extracted automatically, whereas human intervention will be required for producing the high-level descriptors.

The DSs are categorized as pertaining specifically to the audio or visual domain, or pertaining generically to the description of multimedia. For example the generic DSs correspond to immutable

Encoding for broadband

By Laura Collins, Associate Editor

Zapex recently introduced the ZP-330 and 230 MPEG-2 video and audio encoders for digital compression. A new Program Stream feature allows for the encoders' use in broadband and streaming applications, while the Transport stream is used for broadcast and cable applications. The ZP-330 is able to encode video and Dolby digital audio simultaneously. On-board transport stream multiplexers enable users to feed output from the encoders into a DVB card.

Encoder chips improve image quality and reduce bit rates by using multiple algorithms to examine every macro-block. Automatic scene change detection enables the encoders to eliminate block artifacts by detecting subtle changes in the video. ■

Intense every night doesn't have to mean out of control.



Avid Unity™ for News integrates all parts of your news environment to make sure everyone – from the newsroom to the promotion department to master control – is informed and seamlessly working in parallel.

Avid Unity for News allows multiple users to simultaneously access the same media at the same time to help you get late-breaking news to air faster than ever before. When used with NewsCutter® nonlinear news editing systems and AirSPACE™ servers you can simultaneously create and play out content to air and to the Web.

With an integrated Avid environment, the intensity of your day is focused on what you care about most – getting the story to air first.

Visit us at NAB 2001, Sands M8318.

To receive a FREE technology brief on Avid Unity for News, visit www.avid.com/broadcast_eng or call 1-800-949-AVID [2843].

web | video | film | audio | animation | effects | workgroups

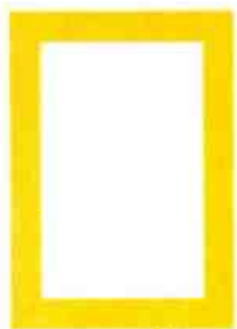
Avid

© 2001 Avid Technology Inc. All Rights Reserved. Product specifications are subject to change without notice. Avid and NewsCutter are registered trademarks and Avid Unity and AirSPACE are trademarks of Avid Technology, Inc. All other trademarks contained herein are the property of their respective owners. 27474600301

Circle (129) on Free Info Card

www.americanradiohistory.com





NATIONAL GEOGRAPHIC

By Paul Rogalinski and Adam Semcken

CHANNEL Base Camp Studio



The production control room, shown above, serves as the central hub of the National Geographic base camp facility, with all support rooms (CER, Playback, Audio Control, Video Control) located immediately adjacent. Photos by Anice Hoachlander.

Not all 24-hour cable channel start-ups launch with the luxury of a powerful brand name like The National Geographic Society. With over 100 years of successful magazine distribution, an internationally recognized logo and the successful show, *Explorer*, already in widespread distribution, The National Geographic Channel was poised to take the next logical step.

When setting out to conceive, design and build a 24-hour cable start-up production facility the most important steps occur at the beginning. Identifying top-level goals for the facility, selecting the project team and establishing an on-air deadline frames the structure for the undertaking.

Project planning

Partnering with FOX Broadcasting, the National Geographic Channel assembled a team of consultants, project managers, architects and designers to build their new "base camp" studio in Explorers Hall at NGC headquarters in Washington D.C. Andrew Wilk, executive vice president of Programming, Production and News, established the team and led the effort to bring a state-of-the-art image of The National Geographic Society to air. Janson Design Group Architects, Production Design Group and Lighting Design Group were brought aboard to design the structural, architectural, acoustic and signature on-air look of the glass-enclosed, street-level studio.

The National Geographic Channel identified several key technology requirements for their new facility. They wanted a flexible approach to systems design, a growth-oriented facility based on a digital platform and a backbone that could make the transition to high definition in the future. The Systems Group (TSG) was selected to join the team in early February and began the conceptual design effort to address these goals.

TSG helped to refine NGC's staffing model and budgetary operational costs, as well as investigating choices for playback format, edit platform and facility connectivity. Concurrently, TSG's engineering and planning departments began developing the top-level systems design, signal flow, project timeline and detailed equipment schedule that would be necessary to build the facility.

The effort associated with building a new facility, free of established paradigms and legacy commitments, presents different challenges than an entrenched

broadcaster or existing operation. As the National Geographic Channel facility began as a clean sheet of paper, the goal was to implement a design that utilized established technology while taking advantage of newer methods and systems where appropriate.

Several vendors, manufacturers and tape formats were considered during the conceptual design efforts. Price and performance factors, as well as service history and reliability, were integral to the selection process. The resulting equipment and technology complement was based on a proven SDTV core with infrastructure capable of supporting uncompressed HDTV, as well as alternate data-based transfer and interconnect methods.

Technical facilities

The National Geographic Channel facility core operates within the CCIR-601 specification, allowing both SDI video and SDTI data transfers. The infrastructure is based upon Belden 1694A coax and ADC MVJT-series coaxial jackfields. This, in conjunction with stringent adherence to cable management standards providing a 4-inch minimum bend radius, will allow the facility to pass uncompressed SMPTE 292M throughout the core.

AES-3ID coaxial audio is the plant standard, allowing for future use of both Dolby E and AC-3 compression schemes. Digital audio parameters are standardized to 48kHz sampling, 24-bit, -20dBfs reference level.

The facility routing core is based on the Philips Venus 2001 architecture. The Venus 2001 serial video matrix is configured for wideband operation, allowing ASI, 270Mb/s and 1.485Gb/s operation.

As systems design efforts proceeded, The Systems Group worked closely with Janson Design Group to establish all aspects of the room requirements for the facility. Workflow, equipment and personnel heat loads, humidity levels, HVAC requirements, power needs and cable access were evaluated for each of the proposed technical spaces. Fit and finish details for the control room areas were developed to complement the studio look and address the ergonomic needs of the operators. Finally, an overall facility layout including detailed room descriptions was



The studio showcases the unique artifacts and extensive photographic archives of the National Geographic Society.

created based on the operations model established earlier.

The team decided that the street-level facilities would include a studio, production control room (PCR), audio control room (ACR), video control room, tape playback room and central equipment room (CER). The 8000-square-foot studio would be separated from PCR by a wall of glass, so that on-camera views could include activities in the control room. The second floor of the new facility would include six nonlinear edit rooms, a media library (which would serve as a duplication and tape storage center, as well as a shared tape source for the edit rooms) and a graphics center (GFX). The graphics room would be located near the edit rooms for efficient operational workflow. Connectivity to support

areas on the campus includes the main auditorium and an insert studio in the M Street building.

The project schedule specified construction completion to occur in phases so the integration team would get access to the 27-rack central equipment room and three of the six edit rooms in late August. This allowed TSG technicians to begin work on the core facility router, reference head-end, intercom and transmission wiring while general construction continued on the rest of the facility.

The remaining rooms were turned over roughly every two weeks. Subsystems for each area were fabricated, tested and packed at TSG in Hoboken and then delivered to the site for installation. Due to the shared construction environment, a final walkthrough

Amazingly
the gear box
held out to the final lap.....



Circle (130) on Free Info Card

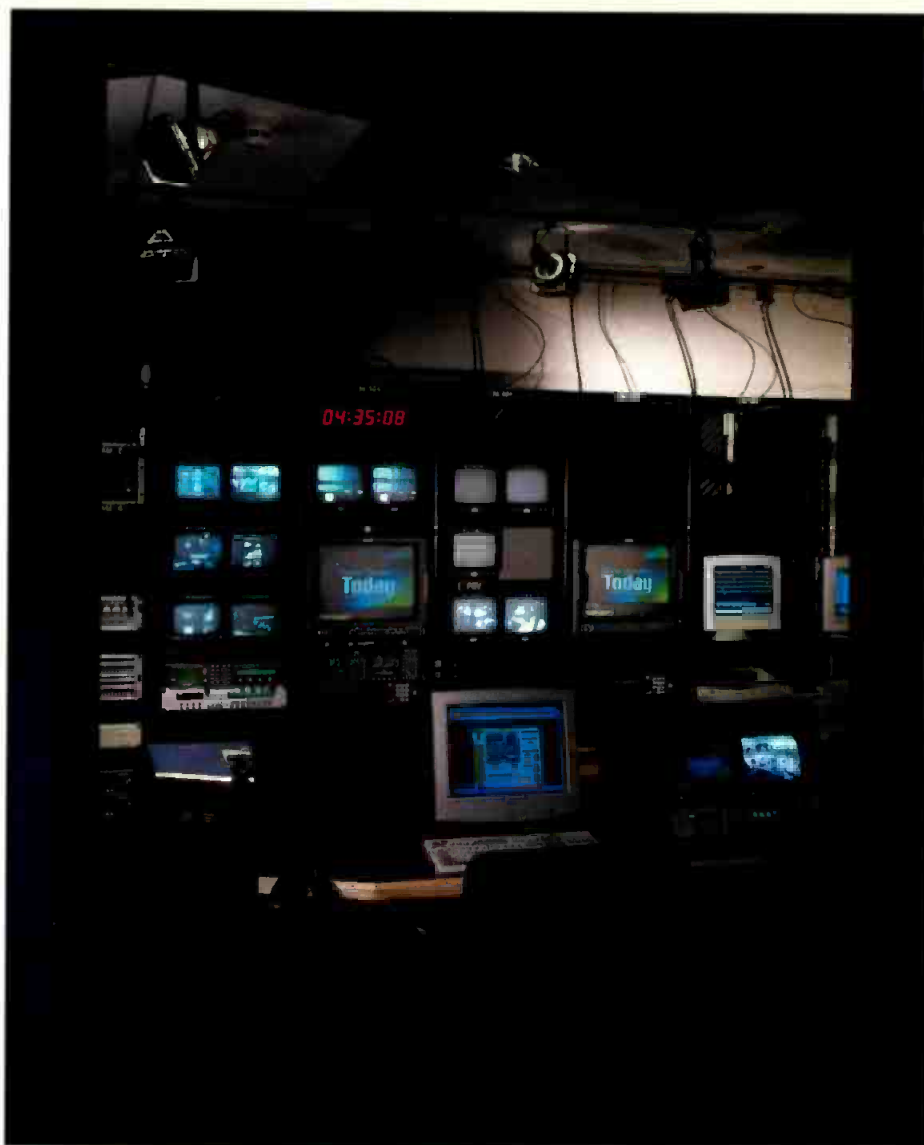
www.americanradiohistory.com

operator is responsible for painting the set monitors. This is accomplished with Videotek SDC-101 color correctors and Vistek V1642 processing amplifiers. Facility triax patching is provided in VCR, using Trompeter JSI-24W triaxial jackfields.

Panasonic DVCPRO represented the best systemic implementation for the facility. Field tapes shot on DVCPRO camcorders are ingested directly into the NewsBYTE edit systems, without a resultant compression path. The finished NewsBYTE element can be transferred directly to a GVG PDR-404 DVCPRO Profile file server, again within the data realm, for playout.

Six identical Panasonic NewsBYTE NLE edit rooms are located on the second floor of the facility. The VTM-190 feeds into a 21-inch SVGA monitor, identical to the main bin monitor for the NewsBYTE, eliminating all color temperature and chromaticity inconsistencies. A Panasonic BTM-series broadcast monitor is included for NTSC confidence.

The Graphics Center is located adjacent to the NewsBYTE edit rooms and is outfitted with a Quantel Paintbox F.A.T., Chyron Maxine, Ross CDK-104 and three Apple PowerMac G4 CPUs with



A view into the video control room from production control. The VCR utilizes four Ikegami HL-45 camera systems, Videotek SDC-101 color correctors and Vistek V1642 processing amplifiers.

Project Team

National Geographic Channel
Andrew Wilk, Executive V. P.,
Programming, Production & News

Janson Design Group LLC
Dennis Janson, Architect
Joe Montalbano, Acoustic Designer
Production Design Group
James Fennhagen, Set Design
Lighting Design Group
Steve Brill, Lighting

Systems design and integration
The Systems Group
Paul Rogalinski, Project Manager
Adam Semcken, Project Engineer
Darwin Clermont, Integration
Supervisor
Jim Tome, Jr. Project Engineer
Larry DeFazio, Lead Technician

Installation technicians
Alex Blanding
Tashon Boone
Skip Hughes
Will Jimenez
Steve Losquadro
Jose Morales
Bob Schanz
Joseph Kiernan

Digital Voodoo's D1 Desktop 64AV uncompressed capture board. The Ross CDK-104 keyer is used for video-based still image compositing.

providing SDI and AES signal paths.

The National Geographic Channel launched Jan. 1, 2001, on DirecTV from their new Base Camp Studio. The set

The graphics room would be located near the edit rooms for efficient operational workflow.

Also on the second floor, the Media Library serves as the VCR hub for all post-production requirements. A pool of seven source decks and four VHS target decks round out the system. All VCRs within the Media Library are interconnected to a Leitch X-Plus-series router through NTSC and stereo analog audio interfaces, while the digital machines are connected to the core routing system, simultaneously

elements, core systems technology and facility workflow efficiencies can be seen on the daily NGC broadcasts, the results of a successful project team. ■

Paul Rogalinski is a project manager at The Systems Group. He was Project Manager for the National Geographic Channel Base Camp studio construction. Adam Semcken is a senior project engineer for The Systems Group and was the project engineer on the National Geographic Channel Base Camp studio construction.

The Next Level of SHOPPING

www.DigitalMediaShopper.com

NEWSLETTERS

A Digital Media Net Community

Need Information About a Product?

Click on image to **Read a Review**

More About DMN

Click on image to **Watch a Demo**

More About DMN TV

Click on image to **Ask a User**

More About the WWUG

Click on image to view **Buyers Guides**

Search All of DMN

SHOPPER

Special Offers From DMN Preferred Vendors

THE ELECTRONIC MAILBOX

www.videoguys.com

The DTV Editing & Production Experts!

+ 30-Day Money-Back Guarantee

+ FREE Technical Support

ORDER ONLINE & SAVE!

CLICK HERE to find out more about this vendor.

DV DIRECT 888.383.3439

DPS DIGITAL PROCESSING SYSTEMS

Over 200 Vendors.

Specializing in Digital Content Creation.

CLICK HERE to find out more about this vendor.

eMac software.com

CLICK HERE to find out more about this vendor.

BH

CANON XL-1

NEW MINI DV CAMCORDER

16X OPTICAL/32X DIGITAL

2000A COLOR VIEWFINDER

3 CCD, INTERCHANGEABLE LENSES

In Stock \$3699.95

List Price: \$4699

CLICK HERE to find out more about this vendor.

Ask the DMN Preferred Vendors for their Best Price!

Welcome to Digital Media Shopper, the digital media market's one-stop shop for the tools and applications needed by professional content creators.

How does this work?

Name:

Email:

Please send me a quote on the following:

Submit a quote request on the tools you want.
Let the best prices come to you, in your e-mailbox.

Read the latest expert reviews!
Watch video demos of the products you need!
Get feedback from other professionals in the Users Forums!
View and compare products with DMN Buyer's Guides!



Digital Media NET

Where the Creative Community Meets
www.digitalmedianet.com

Announcing DMN Shopper

Real Broadcast Network's Internet Broadcast Operations Center

by Mark Siegel

Real Broadcast Network (RBN) is among the busiest broadcast networks in existence. While a traditional broadcast network today puts out between one to five signals, RBN pumps out 3000 programming signals of information 24 hours a day from its new all-digital Internet Broadcast Operations Center (BOC). In addition, RBN has the ability to pump out close to three times that amount due to the system's expandability.



Real Broadcast Network employees at the RBN Event Management System for proprietary traffic and billing. This is the main area of the IBOC control room.

Canon



DIGI SUPER
DIGITAL DRIVE
DD

CANON'S NEW "FUTURE PROOF" HDxs LENSES MAXIMIZE EVERY CAMERA'S PERFORMANCE.

Canon's new, complete line of all digital HDxs lenses brings exceptional image quality to any HDTV or SDTV broadcast camera. Engineered to maximize the camera you own today, or will buy tomorrow, these 'Future Proof' lenses feature Canon's exclusive HDxs optical technology: advanced specs in a lighter package.

Lenses include: A new DIGI SUPER 86 TELExs version of the incredibly popular DIGI SUPER 86xs, both with 'proven' built-in image stabilization. The first portable EFP lenses (40X HDxs) with Digital Drive and built-in image stabilization, the HJ40X10B IASD-V and

HJ40X14B IASD-V (Tele). Two 21X HDxs lenses with Digital Drive, the HJ21X7.8B IRSD/IASD, the lightest, smallest ENG Tele package; and the HJ21X7.5B IRSD/IASD, an EFP lens specifically designed for studio and field production. The 16X HDxs standard lens, HJ16X8B IRSD/IASD. An 11X HDxs wide-angle lens, the HJ11x4.7B IRSD/IASD, the widest angle HD lens ever made.

Canon's complete line of HDxs lenses, give you more than the widest range of applications and the best performance. They make your camera's images even better, any camera. That's something to look into.



HJ11X4.7B
Wide

HJ16X8B
Standard

HJ21X7.8B
Tele ENG

HJ21X7.5B
Tele EFP

HJ40X10B
HJ40X14B
EFP w/stabilizer

XJ25X6.8BIE-D
Studio

XJ86X9.3BIE-D
XJ86X13.5BIE-D (Tele)
Field w/stabilizer

For more info: Call 1-800-321-HDTV
(In Canada: 905-795-2012)
<http://www.canonbroadcast.com>

Maximize Your Camera's Performance.

Canon **KNOW HOW™**

Canon and Canon Know How are trademarks of Canon Inc. ©2001 Canon USA, Inc.

Circle (132) on Free Info Card

With its integration experience and expertise in mind, Digital System Technology was brought in by RBN to help modernize its facilities. The network was operating with an antiquated analog system, and the goal was to upgrade its facilities into a forward-looking, fully digital streaming media center with a design created around the notion of the entire system being automation capable.

Utilizing a palletization technique to reduce on-site integration and installation time, a complete digital core was constructed and tested featuring all necessary processing equipment off-site before it was moved into the roughly 1800-square foot space created for the Internet BOC. Space directly adjacent to the analog studio was used for the new BOC.

Though it was challenging to work with the limited space available for the new center, limited power proved to be a tougher obstacle. However, as the RBN building is an expansive 286,000



Custom-designed Pinnacle StreamFactory encoders for audio and video developed specifically for RBN.

challenge, the system had to be brought up quickly — approximately 45 days from the execution of order to go online. The new system had to be put

down existing equipment while people were working on the equipment being torn down. At completion of the new BOC, the majority of the analog equipment was gone.

With the new BOC, RBN is the first organization in the country to execute the full analog-to-digital conversion, including the digital processing and encoding of a digital signal directly to the Web. Another unique aspect of this system is that it marks the first time a streaming media company seriously considered and then implemented noise reduction within the streaming path. For this entire process, DST integrated Snell & Wilcox IQ Modular Series products with adaptive comb filters for decoding, frame synchronization and noise reduction purposes. Snell & Wilcox rack-mounted Kudos series converters were installed for the A/D conversion occurring directly from the satellite.

After conversion, the noise reduction process begins. By using noise reduction, the encoding process for RBN is much easier on storage and in streaming bits. Pinnacle Systems developed the system's encoders specifically for RBN, which funded the development of the product. (Though it consulted on the development of the encoder and integrated it into the system, the encoder selection was the only part of the system that did not come through DST.)

RBN pumps out 3000 programming signals of information 24 hours a day from its new all-digital Internet Broadcast Operations Center (BOC).

square feet, additional power from other sections of the building was tapped with the help and expertise of an electrical contractor. On top of this

online while working around RBN's existing 24-hour broadcasting schedule, which entailed building consoles, setting up workstations, and tearing



Racks of Symetrix 422 and 221 auto-levelers and other terminal equipment. The Symetrix units feature adjustable auto-leveling and automatic gain control.

There is something out there.



Delivered **FREE** to your
e-mail box with the latest news and
information from the broadcast industry.

News from:

BroadcastEngineering.com

DTVProfessional.com

WBEOnline.com

BERadio.com



The search is over, sign up now!
<http://www.waveformnewsletter.com>

Digital Media **NET**
Where the Creative Community Meets

WWW.digitalmedianet.com



WaveForm

The Newsletter For the Broadcast Industry



A rear view of the ADC audio patchbay setup (left) and the Symetrix auto-levelers (right).

Routing

RBN stressed the need for high-volume stream requirements from the start. A compact system had to be designed due to space issues, and the system had to be efficient and ultimately expandable. In the streaming media industry, there is a lot of redundancy within the streams, so that was addressed as well.

Considering all of these factors, DST decided to install a Philips 64x64 serial digital matrix routing and switching system. However, this has since been upgraded to a Philips 96x128, opening the doors for RBN to handle 128 discrete streams through its Internet BOC. The expandability does not stop there: The facility has the capability with its current design to upgrade to a 256x256 routing system. The flexibility of the Philips routing systems is essential to the growth of this facility.

Perhaps the most essential component DST implemented within the new BOC is CompuSat, an automated dish

control and satellite recording system. RBN programs its internal scheduling and billing system, which directs the CompuSat system to preprogram all satellite feeds coming through the facility. The process of recording and receiving the satellite feeds is thereby automated. CompuSat steers the satellite dishes and tunes the receivers, bringing the programming seamlessly and directly into the facility. For

only products capable of adjustable auto-leveling as opposed to strict, non-adjustable clamping. The auto-levelers feature automatic gain control to fix audio levels being fed from the phone couplers. The two-channel 422s repair the audio by raising or lowering the levels as needed before feeding the signals into the Philips routing system, and as mentioned, are manually adjustable.

RBN is also using the Snell & Wilcox RollCall Network Management and Control system to provide a continual real-time display of the status on the entire system's equipment. This software also allows many of the system's

components to be fully flexible and controllable over a WAN. Essentially, if RBN were to open more facilities in the future, operators could control all aspects of the switching and routing and adjust the processing equipment from one central location through the existing network.

When it came time for launch in August 2000, there were the inevitable few hiccups. As the sparking of each new facility is unique, a few problems are normal. The main issue was crosstalk within the phone coupling setup. Signals were mixing across coupled phone lines, creating a challenge that would prove most difficult to address. DST developed an isolator that separated the signals and confined them to their own lines.

Another problem that was minor in comparison was the need to switch the auto-leveler models initially provided by Symetrix to another model better suited for this facility.

An added bonus of this system is that it is moveable. Due to DST's palletization technique, the system can be broken down in two days, relocated and reinstalled in its current layout within seven days. Therefore, if RBN ever outgrows its current facility space and needs to move to a larger building, DST can smoothly relocate the facility. ■

Mark Siegel is vice president of DST, Washington.



RBN, this is important because they stream live events more so than any competitor. Most facilities streaming video for Internet broadcast record the event first and play it back later, which is exactly like a system recently integrated at Navisite.com. RBN instead receives a live satellite feed and sends it straight out over the Internet.

RBN accepted the recommendations for all other essential integrated products, including Symetrix 422 and 421 auto-levelers, Ikegami monitoring walls and Circuit-Werkes phone couplers. The Symetrix auto-levelers were vital for the facility and desirable above all competitive units as they were the

THE AZDEN 1000 SERIES... A QUANTUM LEAP!

The sleek all new Azden 1000 Series, featuring the 1000URX receiver, 1000BT bodypack transmitter, and 1000XT plug-in transmitter, delivers performance and features usually associated with systems costing thousands more.



- 121 UHF channels (723-735MHz) user-selectable, with LCD readout.
- True diversity system with 2 complete front-ends and high-gain antennas.
- Proprietary DLC (Diversity Logic Control) circuitry for reduced dropouts.
- State-of-the-art dielectric filters throughout, for improved image rejection and superior diversity isolation
- High 5th order filters for improved S/N ratio.
- Multi-function LCD shows channel number and frequency, battery info, AF level, and diversity operation.
- Ultra small, lightweight, and externally powered.
- Mic/Line-out switchable, Earphone-out w/level control.
- Bodypack transmitter (1000BT) with reduced current-drain for improved battery life, is available with Azden EX-503H, Sony ECM-44H or ECM-55H.
- Plug-in transmitter (1000XT) works with dynamic or phantom power mics.

Note: Order cables specifically for your camera and battery configuration.

System prices start at \$1350 MSRP

The 1000URX receiver is also available with the Anton Bauer "Gold Mount", as the 1000URX-AB



147 New Hyde Park Rd., Franklin Sq. NY 11010
(516) 328-7500 • FAX: (516) 328-7506

E-Mail - AZDENUS@AOL.COM • web site: www.azdencorp.com



by Steve Lewis

Unabashed enthusiasm for sports programming, with all its variety and action, has propelled the Fox Sports Network (FSN) to the attention of most sports TV viewers. FSN is distributed through a network of regional cable channels and is currently building on a base of 62 million homes in the U.S. and over 8 million homes in the Latin American market.

In response to the demands for additional programming and the desire for a digital redesign, the network has expanded its

Fox Sports Net



The Los Angeles-based Network Operations Center (NOC) provides command and control over 21 national FSN news bureau locations.



Opportunity knocks and knocks and knocks ...

Let it in with the one resource
for all your custom MPEG solutions.



How will you capitalize on the full potential of your broadcast business? Unlock all the opportunity with the single source for digital delivery, Thomcast. Superior technology, like our OpenMux[®] real-time multiplexing, is redefining broadcasting. From DTV transmission and Data Broadcasting to Encoding Systems and MPEG man-

agement solutions for video, audio, data and IP, we'll customize a solution to maximize all your bandwidth. Backed by the industry's most versatile portfolio of digital products, services and training, the Thomcast team can open new doors for growth and profitability. Make us the single source for all your solutions.



NAB Booth L-9000



THOMCAST

Where innovation is always in the air.

www.thomcast.com

Tel 413.569.0116

Circle (135) on Free Info Card

DTV transmission Data Broadcasting Encoding Systems MPEG management solutions Data IP

existing operations by implementing an innovative network communications scheme and incorporating new digital television interconnection solutions. Driven by the national production needs of *The Regional Sports Report*, FSN evaluated numerous technical

San Francisco. The completed ATM network and operation enables, manages and transfers programming services among its distributed partners around the country.

The turnkey engineering design tasks included the development and delivery

network design is also equipped with effective signal management solutions to address its mission critical communications requirement. Redundant DS-3 and OC-3 circuits are utilized to keep potential telecommunications interruptions to an absolute minimum.

The new ATM network, the Fox Video Network (FVN), includes 20 regional locations connected with the main FSN facilities in Los Angeles and Houston.

strategies to create a new content distribution network. This broadcast project goes beyond the usual digital upgrade description because FSN decided to build its national network around ATM architecture. In fact, it is the first customer-controlled ATM/Switched Virtual Circuit (SVC)-based system in the U.S.

Using their groundbreaking networking capabilities, the network and its regional affiliates are now equipped to better leverage their collective regional and national sports programming to satisfy sports-hungry viewers everywhere.

Introduction to FSN

The Fox Sports Net main properties include national production and origination facilities located in Houston and Los Angeles. Paired with those facilities are 20 regional FSN affiliate sports bureaus. These include joint ownership arrangements with industry players such as NBC, Cablevision, and Comcast. A new program, *The Regional Sports Report*, is a twice-daily half hour show produced in nine regions and aired in all 22 regions that comprise FSN.

After Fox considered several approaches to create and support a collaborative, production process, a TCP/IP network emerged as a viable and cost-effective solution. FSN team decided on the new networking and communications architecture to share program information among the far-flung group partners and facilities including regional sports channels in New York, Washington, Chicago, Miami and San

of new signal and control systems at each bureau location. The substantial origination operations at the main locations in Houston and Los Angeles were engineered to meet the 24/7 operational requirement incorporating fault tolerant considerations. The new

FSN transitions to the Fox Video Network (FVN)

Driven by the fault tolerant nature of broadcast designs, an exhaustive analysis of telecommunication and broadcast alternatives was conducted to evaluate a prospective broadcast-ready and cost effective solution. The key cost component of the FSN digital upgrade, beyond investments in new digital broadcast systems, centered on the utilization of a 500Mb/s guaranteed bandwidth solution built around a national ATM network. Older cost structure models for telecommunications circuits were giving way to this new aggregate bandwidth and pricing model.



A national map is displayed of FSN's ATM SVC connections across the country.

We offer

what our
competitors do.
(Just years sooner.)



At Encoda Systems we believe you shouldn't have to wait for the latest automation technology, so we offer it today. Managing over a billion dollars in media revenue every week, Encoda has become one of the leading automation providers in the world. We take a comprehensive view of your workflow and integrate it with the latest technology – turning your facility into an advanced centralized operation. And with our longstanding partnerships within the industry, we've set the standard for multichannel and end-to-end integrated solutions, unifying the business process with your automation needs.

Drake Automation/DAL, Columbine JDS and Enterprise are now Encoda Systems, Inc.

Stop by our HAB Booth – LUCC 12220 and see what tomorrow's technology looks like, today.

www.encodasystems.com

Circle (136) on Free Info Card



Encoda Systems™

It was determined that using TCP/IP protocols would be adequate for delivering MPEG file transfers but FSN also needed to use the network for multiple live streams mixed with the other less time-dependent video traffic. An analysis showed that ATM's Quality of Service (QoS) offerings could support various kinds of simultaneous network traffic. ATM can prioritize signals such as high priority live video streams that use a CBR connection alongside simple MPEG-2 file transfers that use ABR (Available Bit Rate) connections. ATM's

time-based guaranteed delivery capability along with its ability to integrate the local regions' OC-3 and DS-3 circuits provided FSN with an end to end networking solution that met all its communications needs.

The provisioning of a guaranteed bandwidth solution was pursued through national telecommunications vendors. FSN finally chose the ATM architectural component based upon the long-term trends and selected a cost-effective aggregate offering through Williams Communications.

The new ATM network, the Fox Video Network (FVN), includes 20 regional locations connected with the main FSN facilities in Los Angeles and Houston. FSN's leading edge approach and its cost-effective underpinnings are bolstered every day by the phenomenal bandwidth expansion of the IP-based networking that continues unabated, everywhere.

The FSN plan to create a comprehensive design and to build new facilities at selective Fox locations proceeded. This project effort included a comprehensive solution to be integrated at each of the regional sports bureaus. FSN worked closely with a team of vendors to develop important design and technical functions and to solve critical management and control problems associated with the new digital operation.

The design process

Fox selected Communications Engineering, Inc., (CEI) to design, engineer and integrate the FSN facilities including the main Network Operations Center (NOC) in Los Angeles. Each of the 20 FSN regional affiliate locations also received an integrated ATM-based MPEG-2 system solution. FSN's new ATM-based network enables peer-to-peer connections between all locations in the country and supports simultaneous, bidirectional transfer of program content and control signals. The major technical and vendor solutions used in the FSN network are Tandberg's comprehensive MPEG compression/decompression systems and Marconi ATM and TCP/IP network switches.

FOX Sports Net approached Tandberg Television as a key component of the national video over ATM network due to Tandberg's turnkey solution for live streaming MPEG-2 video over ATM. Tandberg's comprehensive solution, which included sophisticated software management tools, was attractive since it enabled FSN to work with one vendor as opposed to several, therefore eliminating a number of potential incompatibility issues. The compression and decompression processing of program material is delivered through a series of encoders, decoders, and ATM network interface cards. Marconi (formerly Fore Systems) was chosen due to its carrier class ATM experience and extensive networking product line.

Best Value \$1.40@100 Pcs. \$1.22@1000 Pcs.

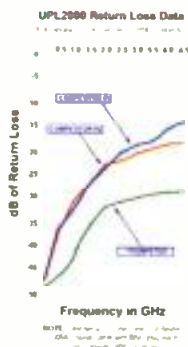
HDTV I.Q. Test



Find the true 75 ohm digital connector

Don't be fooled into believing that yesterday's BNC's are up to the demands of digital broadcasting. You need the true 75 ohm connection that you get with the new sleek, black UPL2000 from Trompeter. It is the only BNC designed for high bit-rate digital video signal transmission and offers significant performance advantages over standard BNC's (@1.485 Gbps >8db return loss improvement). Built rugged to deliver reliable performance over time, the UPL2000 is priced right and available today.

Don't compromise your signal with yesterday's connectors. Do digital right with the sleek, black UPL2000.



Straight, 45° and 90° models. Various dia. cable sizes to support broadcast, post production and CATV headends.

TROMPETER
ELECTRONICS, INC.

GET QUOTES FAST... VISIT OUR WEBSITE TODAY!
www.trompeter.com or call: 800 982-2629

Circle (137) on Free Info Card

Booth #L4631

Encoda.

Because it works so much better when everybody's pulling in the same direction.



Columbine JDS, Enterprise and Drake Automation are now Encoda Systems.

Today, if your assets aren't working together efficiently, you can expect chaos. Buying and selling programming, optimizing inventory, automating master control – it's all become extremely complex. Enter Encoda Systems. All the most trusted names – Columbine JDS, Enterprise and Drake Automation – coming together as one company. With Encoda Systems, the convergence of

technologies and the integration of systems enterprise-wide are now a reality. Broadcasting and cable companies can be linked with advertisers, agencies and reps by one of the industry's leading providers of e-business technology. For greater profitability through total asset management, look to the one and only company that can get your assets working together.



Encoda Systems

www.encodasystems.com

See us at NAB LVCC 12220

Columbine

JDS

Enterprise

BMS

BIAS

Paradigm

CCMS

Spotdata

DAL/Drake

DMAS

MCAS

Circle (138) on Free Info Card

www.americanradiohistory.com

FSN also desired to manage its own telecommunication network and Marconi's control software enables FSN to monitor and control its network of ATM switches located throughout the country. Communications Engineering Inc. (CEI), at its facility in Newington, Virginia, integrated the Tandberg and Marconi systems along with other broadcast technologies such as routing, monitoring, communications, and test & measurement solutions. A self-contained system was designed and built for each of the 20 FSN regional affiliate locations.

In the initial phase, FSN deployed 40 of Tandberg Television's E5610 encoders and 85 Alteia decoders. At each of the regional sites, original analog or digital program material is passed into an E5610 encoder, an MPEG-2 DVB compliant compression engine, which produces a DVB ASI transport stream. With a built-in ATM Network Interface Card, the E5610 encoder converts the DVB ASI transport stream to ATM packets through the encoder output, which feeds directly into the Marconi switches. The stream passes through a FVN connection link to another location's ATM Network Interface Card where it is converted from ATM packets back to a DVB ASI signal. The DVB ASI signal then becomes an input to the Alteia decoder, which outputs the original broadcast quality audio and video into a server or tape device. The FSN network is designed to pass professional contribution quality 4:2:2 audio and video at an average bitrate of approximately 20 Mb/sec. The high compression quality achieved with the E5610 encoder when paired with a 20 Mb/sec. transmission bitrate supports FOX Sports requirement to maintain exceptional video quality through multiple generations of encoded program material.

NOC

The FSN Network Operations Center could have been situated almost anywhere given

the relatively small footprint of technology that actually manages and monitors the distributed technology components of FSN's peer-to-peer network. The NOC was built near other Fox broadcast operations in Los Angeles with the main components consisting of an equipment center and control room that houses the video/control display wall and operations consoles. A key consideration to the 24/7 operation is the FSN control and monitoring of all systems and locations comprising the FVN. The NOC uses a series of comprehensive software management tools designed into consoles in the main NOC room and displayed on a sophisticated monitor wall.

Master Control display

The custom monitor wall and operators consoles designed by CEI incorporate a combination of 9- and 14-inch broadcast monitors, flat panel computer displays, and eight 50-inch LCD Rear Projection Displays. The display systems are integrated with a multi image display system that allows the NOC operators to dynamically select a variety of video sources and control monitoring maps to be presented on the 50-inch LCD displays. Prearranged combinations of inputs can be alternatively displayed or blended on the LCD rear projection screens to support simultaneous view-

ing of picture quality, individual component health status, or ongoing communications connections and traffic. CEI worked with FSN operators to design flexibility into the control room's consoles, monitor wall and monitor bridge fixture, and developed control software to streamline operations. FSN operators are provided efficient access to the NOC's extensive technical systems, analysis tools, signals, and communications controls.

In order to keep track of the numerous program sources that appear on the presentation displays, a source identification system was incorporated into FSN's under monitor displays. Information to drive the source ID displays is derived from the routing and control switching systems. The NOC's control software polls the status of the various technology systems and presents color-coded alerts with specific FSN systems and locations identified. These alerts are superimposed on a national map thus aiding the FSN monitoring process. Color-coding (Green, Yellow or Red) as well as audible alarms immediately cue the operators to a telecommunications connection or equipment failure. The alarm and control management tools help the operators prioritize the multitude of activities being monitored across the widely dispersed but highly interdependent systems.



The center's displays and software management systems provide up-to-the-second feedback on FSN operations.

You Are Invited



TO THE PREMIERE PRESENTATION OF

360 Systems®

NETWORKED AUDIO SYSTEMS
FOR TELEVISION BROADCAST

AT THE CONVENTION OF THE
NATIONAL ASSOCIATION OF BROADCASTERS



APRIL 23-26, 2001



LAS VEGAS CONVENTION CENTER
BOOTH R-2741 – NORTH HALL

www.360systems.com



The center was modelled to optimize operators' functions, which includes systems monitoring of remote news bureau locations.

Monitoring and software controls

The monitoring system for the TCP/IP network is built around the SNMP (Simple Network Management Protocol) and uses Hewlett Packard's Open View software system. FVN's in-band monitoring and control signals utilize the same ATM network connections and systems as the programming. The following software monitoring tools help FSN to iden-

- The NOC also uses ForeView software from Marconi to manage the distributed ATM systems and network devices that link servers, workstations, and telecommunication circuits distributed throughout the country. The FSN operators are presented with location maps illustrating the operational status and health of the widely distributed ATM and TCP/IP network technology

Flexible peer-to-peer communications arrangement enables the FSN partners to share programming material without direct and constant intervention.

tify nonperforming systems, efficiently address operations issues, and timely facilitate smooth network operations:

- As part of an end-to-end solution, FOX Sports Net utilizes Tandberg Television's new control software, Cortex, to support system control, monitoring, scheduling, resource and bandwidth allocation. With its client-server based architecture and comprehensive feature set, the Cortex software solution enables FOX Sports Net to implement the centralized monitoring and control procedures required for the extensive switched video network

that comprises the Fox Video Network.

- CEI designed and developed a Panja (AMX) -based control system that monitors the health and controls the operation of each regional site's rack of broadcast technology. Any interruption of signal flow will provide a visual alarm on the national map that is displayed within the Fox NOC.

While the NOC in Los Angeles monitors and maintains control over the performance of the national network, each regional sports bureau can and will create its own communications sessions with the other locations of the

Equipment list

Bureau Locations

APC Matrix UPS System
 EVERTZ small SDI Router
 MARCONI/FORE ATM Switch
 MARCONI/FORE Ethernet Switch
 IKEGAMI 9" Color Video Monitor
 IMAGE VIDEO Under Monitor Display
 LEITCH Xplus
 LEITCH Frame and Signal Processing Systems
 TANDBERG VAM ClipCourier
 TANDBERG MPEG encoders
 PANJA (AMX) Systems
 ROSS encoders
 TEKTRONIX Serial Digital Component Monitor
 WOHLER monitors
 RTS TW Communications System

NOC

BEST POWER Axxium UPS System
 CEI Monitoring & Control
 CEI Custom Display and Monitor Wall
 CEI Monitoring & Control Console
 EXTRON Computer Video Distribution System
 MARCONI/FORE ATM and Ethernet Switches
 HAFLER Power Amplifier
 IKEGAMI 9" & 14" Color Monitors
 IMAGE VIDEO Under Monitor Display
 LEITCH Xplus
 LEITCH Frames and Signal Processing Systems
 LINK Genflex D/A Sync Generators
 McCURDY Audio Metering
 MIRANDA Multi Image Display Systems
 TANDBERG MPEG Encoders
 PANJA (AMX) Systems
 ROSS encoders
 VIEWSONIC Flat-panel LCD displays

Cheetah

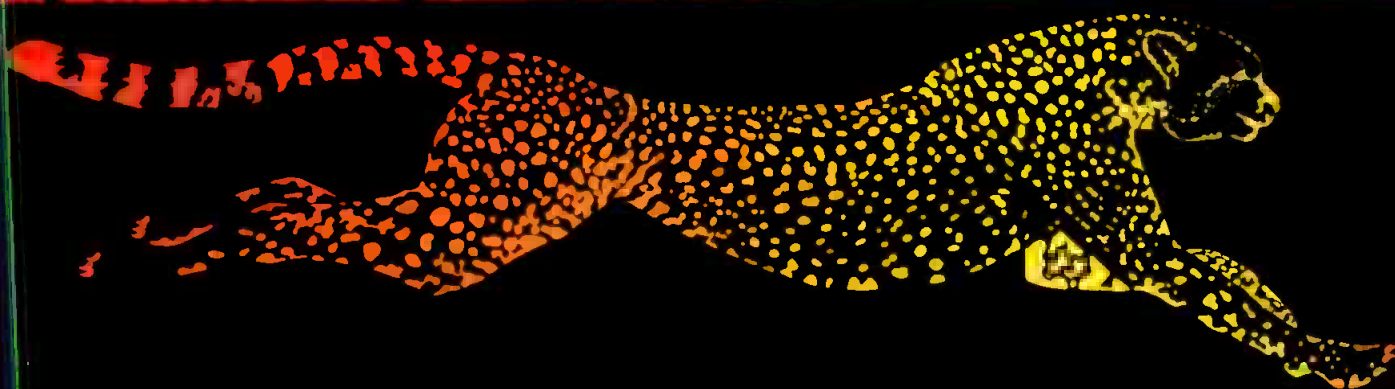
High-speed HD/SD routing switcher

64x64

128x128

256x256

512x512



The **Cheetah** provides a comprehensive solution to today's multi-format digital switching requirements. Engineered for HDTV operation, the **Cheetah** can also handle SDI signals in the same frame. Each block of 16 inputs or 16 outputs can be either copper or fiber. Monitor grade video DAC outputs are available as an option, an industry first! An ethernet control interface is also provided.

- Four standard frame sizes, from 64x64 to 512x512
- SDI or Multi-Rate (3Mb/s to 1.5 Gb/s) cards with reclocking
- Mix copper or fiber inputs and outputs in the frame
- Single or dual outputs
- AC or -48DC power supplies

NAB 2001
The
Convergence
Marketplace

Booth L8757
LVCC Central Hall 4



PESA
Switching
Systems

35 Pinelawn Road • Suite 99E • Melville, NY 11747 • salesinfo@pesa.com

Tel: 631-845-5020 • 800-328-1008 • Fax: 631-845-5023 • www.pesa.com

Circle (140) on Free Info Card

www.americanradiohistory.com

Fox Sport Network. The flexible peer-to-peer communications arrangement enables the FSN partners to share programming material without direct and constant intervention of the LA NOC operations staff.

With the implementation of this ATM/SVC video network, the FSN controls its own feeds, manages its own resources and bandwidth allocation. An immediate advantage of this arrangement is that it eliminates delays associated with scheduling and booking feeds from a third party provider. Further, FSN has realized significant cost savings associated with the ATM network compared to the transmission costs of a traditional satellite or point-to-point fiber network. By having a combination of dedicated ATM/IP bandwidth capacity, encoders and decoders, and a network control system all operational 24/7 from the NOC in Los Angeles, FOX Sports Net



The NOC oversees and monitors the operations health of the Fox Video Network.

has more flexibility, reliability and control while simultaneously lowering total operational costs.

Above all, FSN is pleased about its current cost advantages and the performance of its ATM-based Fox Video Network. As FSN's experience grows, it is anticipated that additional Fox signals and programming will migrate to the FVN such as event backhaul and other more critical content distribution tasks.

FSN's future operational efficiency will also increase due to the expected availability of increasingly lower cost IP network bandwidth services in the market.

The reality of broadcast operations today is that you must do more and better with less, and that is a good description for FSN's upgraded facilities. ■

Steve Lewis is director of sales and marketing for Communications Engineering, Inc.

SELLING EQUIPMENT?

GET IT SOLD!

It's Fast and Easy on Digibid!

digibid.com

the professional equipment marketplace

www.digibid.com

©2001 Digibid, an IndustryClick community. All Rights Reserved.



The most exciting rewards program just got even better... it's now online!



www.sonyrewardingrecording.com

The Sony Rewarding Recording™ Program is how we thank our Professional Media customers for their loyalty. . . and online convenience now makes the

program better than ever. Every qualifying purchase you make earns dollars toward great rewards—including Sony Consumer Electronics products, Sony apparel, retail gift certificates and more. Visit www.sonyrewardingrecording.com and see all that the program has to offer.

Nobody brings you quality and reliability like Sony Professional Media—or rewards you with a program quite like Rewarding Recording.

Look for this logo—and buy where it counts!





When the thunder dies away

BY DON MARKLEY

The subject of lightning protection has been treated before in these pages (some would even say that it has been beaten to death). Therefore, let it be assumed that the tower has been appropriately equipped with funny looking, spiny things; the ground system is appropriately bonded and buried; and all possible precautions have been taken.

And then, there is a blinding flash of light and a very loud bang when lightning hits despite your precautions. For a while, one will usually sit quite still in an effort to perform a quick inventory of one's own vital functions. Once it is realized that no injury has occurred, other than a possible need to change clothes, a few things will start to become apparent. First, there is a funny smell in the air. Hopefully, it will only be ozone and not smoke. The next few realizations come quickly. It is dark, it is very quiet, nothing is running and the production people are asking

what happened. They are usually a little slow in noticing things that are subtle, such as lightning. If the chief engineer's job has been done well and the management has permitted

equipment doesn't have to keep the whole station running for an extended period. It is only necessary to keep the essential systems running until the standby generator has started and is

The standby power plant is expected to stay in its own little room, be ignored and still spring to life to save the day. Sounds like the chief engineer, doesn't it?

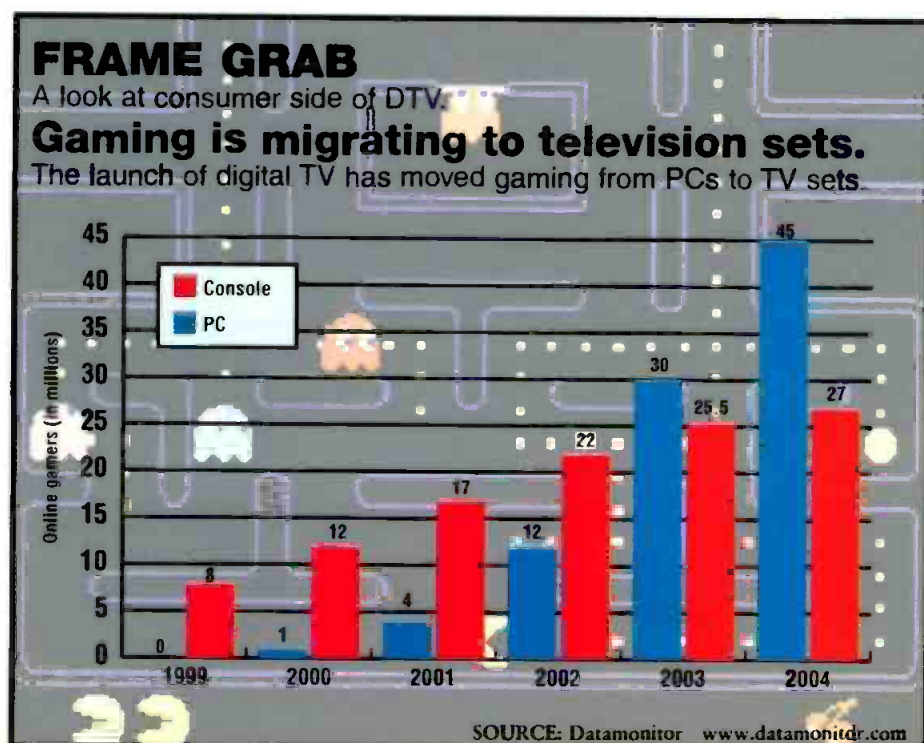
reasonable funding, the station will come back to life as the standby generator comes on line.

In fact, today's technology can even eliminate the gap when the station is down waiting for the standby generator. Uninterruptible power systems (UPS) are available to keep the whole plant running for a brief period, even including very large transmitters. UPS

on line. One or two minutes are more than satisfactory. By then, a modern standby plant is more than ready to accept the full station load until the primary power source is available. Then the UPS can again keep the necessary systems running while the switch is made back to the utility power system. In addition, a UPS will eliminate the glitches that often occur in the building power when switches are made.

Actually, the UPS system doesn't have to be sized to keep everything on line. For example, the building heating and air conditioning systems can wait for the standby plant to come on line. They should, if properly designed, cycle back on line without any difficulty. In a similar fashion, such short-term non-essentials as outside lighting, signs and even the tower lights can wait for the generator. However, as the UPS will probably be added to an existing plant, it may be less expensive to simply buy a larger unit than to rewire the distribution system to bypass smaller non-essential loads.

To be realistic, most stations won't opt for a UPS that is big enough to carry the whole load. Management will probably accept the momentary





GOOD THINGS

come in small packages

What's small, powerful, and all cooped up until NAB? The newest in digital video connectivity from THOMSON multimedia Broadcast and Network Solutions—and you can take a peek at an exclusive booth showing. It's your chance to see the most dense product of its kind in the industry. Together with our new line of Interface Products, they'll ensure you'll find everything you need for your broadcast solution from the industry leader, THOMSON multimedia Broadcast and Network Solutions.

Be sure to stop by Booth L5010 at NAB.

This announcement is so big, it's worth packing into your schedule.

THOMSON MULTI
MEDIA
BROADCAST & NETWORK SOLUTIONS

Circle (142) on Free Info Card

www.americanradiohistory.com

break in power while the generator comes on line. In that case, it makes a lot of sense to install several smaller UPS systems to keep some systems on line over the break. For example, a small UPS such as is available at any electronics super-market will work to keep the control circuits and exciter in the transmitter up and running. In these days where the transmitters have multiple computer systems in operation, this can avoid glitches requiring

rebooting from occurring. The transmitter will stay ready to come back on line with only the high power systems down. The UPS in the transmitter control and exciter circuits will keep those systems ready to resume operation, but some precautions need to be taken.

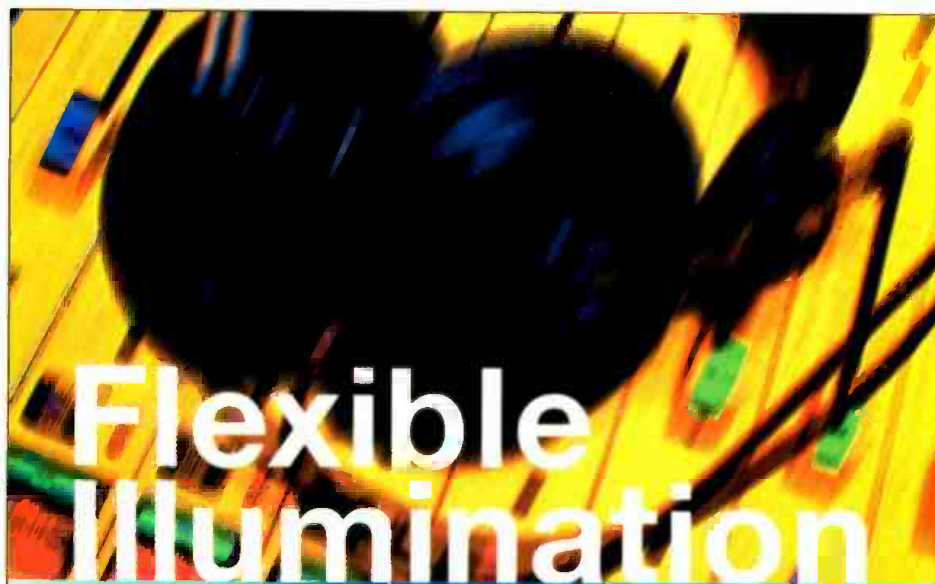
In some transmitters, maintaining the control systems with no power to the high voltage or high power circuits can result in a big bang when power returns. For example, step-start circuits

may not realize that there has been a break in the power. As a result, high voltage can be applied instantly to amplifiers that have been without filament voltage, magnet currents, etc. That can result in the resumption of power being accompanied by loud and expensive noises and the recognizable odor of burnt carbon. Before a UPS is installed in the control circuits, check with the manufacturer of your transmitter to determine just what systems can be safely included in the standby feed.

In addition to the transmitter exciter and control systems, many of the studio systems can benefit from a UPS. This would include a number of pieces of equipment that are digital and controlled by computers. It isn't really the total loss of power that can cause this equipment to enter La La Land. Most systems will tolerate a clean break in

In addition, run the plant often enough to use up the full tank of fuel annually.

power just as they handle being switched off. While they may require a little time to boot back up, most equipment will return to a reasonable state on the return of clean power. Some equipment will actually return to the exact mode in operation when power failed although many may require that you bring them back from some default mode. The problem is when the power fluctuates as the utility system attempts to recover from its own problems. Everyone has experienced this problem during storms. The electrical power may experience short-term transients as distribution circuit breakers reset after faults or as the power system eliminates feeds to downed power lines. The power may come and go two or three times or drop to a low level during such situations. This introduces some really ugly glitches into system power supplies that operate computer driven controllers. The computers see



from the 'Three-in-One' Series 95

Specifically designed for audio studio use, Series 95 switches from EAO make it easy to see the status of each switch function at a glance.

One touch changes the illumination color and a choice of sizes ensures flexible switching at your fingertips.



EAO Switch Corporation 198 Pepe's Farm Road Milford, CT 06460
Tel (203) 877-4577 Fax (203) 877-3694 Email info@eaoswitch.com

www.eao.com

e a o ■

Circle (143) on Free Info Card

Get the **picture?**

Are you **focused** on what
our innovative broadcast
solutions can do for you?



See us at booth# S4859

- **ATM:** Flexibility through dial-on-demand connectivity
- **ATSC:** Send opportunistic data with your HDTV
- **Distribution:** Halve your satellite space costs
- **OB:** Clearly covering every angle on the move
- **DTH:** Turnaround digital content for less money
- **Broadband:** Streaming media at broadcast quality

TANDBERG
Television

Check out www.hotstuff-tv.com

TANDBERG Television • Norway +47 67 11 6200 • UK +44 (0) 2380 484000 • USA +1 407 380 7055 • Hong Kong +852 2899 7000 • Australia +61 2 9356 8599

Circle (144) on Free Info Card

www.americanradiohistory.com

incoming pulses, albeit from the wrong inputs, that look like more ones and zeros, and attempt to include them in their operation.

The UPS systems will eliminate most if not all of those glitches, even if the final result is that the systems will end up being without power. At least the break will be clean rather than erratic and noisy. Those same glitches can result from the switchover from main to auxiliary power. In this respect, the UPS is used not as much for the standby

power aspect as for valuable power conditioning.

One more item in the whole chain should still be considered. The standby power plant is expected to stay in its own little room or enclosure, be ignored almost all of the time and still spring to life to save the day. Sounds like the chief engineer, doesn't it? It will fulfill that role only if it also receives a little tender loving care. Most large plants are diesel powered. Diesel fuel is susceptible to some really

nasty critters that love to live in that atmosphere. These can build up to the point where they occupy most of the volume of the fuel tank and have to be physically removed. They can be avoided by adding appropriate fuel additives. These additives can be found at most truck stops. Even better, try visiting a marine supply store. Boaters tend to let their craft sit through the winter without operation. That allows the bacteria to build in the fuel tank and cause great difficulties in the spring. The additives need to be put into the fuel to prevent such growths. They will work after the fact by killing off the intruders, but the result will be continuing problems with fuel filters as dead bacteria plug them. The solution is to prevent the bacteria from forming in the first place. In addition, run the plant often enough to use up the full tank of fuel annually. That not only exercises the plant but keeps reasonably fresh fuel on hand.

The regular exercising of the standby plant serves a number of functions. First, it is good for the engine itself to be operated. Some manufacturers strongly advise that their engines be operated at least once a month and that the operation be long enough to bring all operating temperatures up to normal values. In addition, this will assure that the starting batteries are maintained at full charge. Engine block heaters must be checked to determine that they are operating normally. Nothing will make the chief engineer look more foolish than a trip to the auto supply store for batteries or a can of ether when the generator won't start when needed. The suits in the front office become unhappy when they have authorized big bucks for a standby plant and still find themselves in a dark, cold office with no hot coffee. ■

Don Markley is president of D.L. Markley and Associates, Peoria, IL.



Send questions and comments to:
don_markley@intertec.com



**View an online
product demo
whenever you
see this logo.**

www.broadcastengineering.com

Zandar
TECHNOLOGIES

MULTIVIEWERS

		MX Series Pre-Configured Displays 4-16 Analog Inputs in 1RU Composite, SVideo & YUV/ RGB Out Full Screen VGA Out
Omni Video Series User Customisable Displays PIP Re-Size, Move, Overlay Choice of Analog or SDI Systems Logo, VU Meters, LAN Control, Sequencer PCI Card/SDK for OEM's		
		HiResolution Mix of Analog, Computer or Digital Sources User Customisable Displays Output to SXGA Modular Architecture up to 26 inputs
	Benefits Save on Space, Power & Costs Create Exciting Displays Optimise use of Large Displays Control & Manipulate Graphics	

A Solution for Every Need

IRELAND: TrioTech House, Abbey Road, Deansgrange, Co Dublin, Ireland.
Tel: +353 1 2808945 Fax: +353 1 2808956
Web: www.zandar.com E-mail: sales@zandar.com

USA: 305 Vineyard Town Center, Suite 295, Morgan Hill, CA 95037, USA
Tel: 408 782 9725 Fax: 408 782 9825 E-mail: advancedms@msn.com

Come See Us at NAB L155

Circle (145) on Free Info Card

Today's broadcasting requires the seamless integration of **stills, clips, and animation**

Show openings
Bumpers
Instant cues
Live playback



Images courtesy of TSN

"Kaydara mediastore provided us with instant cues to images and animations, all the stuff we use to dress up our [Olympic coverage]. Trying to create these effects without Kaydara mediastore would have been a nightmare for us."

- Paul McLean, producer, TSN

What if you could get everything you need to play back cutting-edge live broadcast content in a single unit?

Kaydara **mediastore** is the only broadcast solution on the market that supports stills, clips, and animation in one reliable, easy-to-use, and cost-effective workstation.

Kaydara **mediastore** - the integrated and scalable mixed-media solution for live broadcasting.

- Stills, clips, and multi-layered animation in one box
- Intuitive user-interface minimizes ramp-up times
- Reliable and cost-effective
- Easy to integrate with existing equipment
- Perfect for everything from show dressing to complete productions

To learn more about Kaydara products:

- Visit www.kaydara.com
- E-Mail at info@kaydara.com
- Call 1-888-842-6842 (North America) or 1-514-842-8446

Come and see us at NAB, booth #S3263



Delivering the mixedmedia™ pipeline

The real story about 16/9 and switchable cameras

BY CHRIS BEAUPARLANT

In today's video market, there seems to be a lot of confusion as to what is needed for lenses to work in accordance with switchable cameras. It is assumed in today's market that one needs a switchable lens to work with a switchable camera. This is not the case (although some would try to market it that way). This brief explanation should help in your understanding.

There are all sorts of cameras

have a 16/9 sensor.

Figure 1 demonstrates what happens to the field of view of your picture when you use a switchable camera with a 16/9 sensor.

In 2/3-inch format cameras the image diagonal (distance from one corner of the CCD to the other) of the sensor is 11mm. Each lens manufacturer makes the image circle in accordance with this 11mm sensor. Other-

wise the lens is vignetting (not covering enough) or spilling light.

Do some calculations for the widest focal length of the 12x5.3A1FHR. $F = 5.3$

Given the diameter of 11mm, we can calculate the picture

Where: $\alpha = 1/2$ field angle; F = focal length; X = horizontal image size; Y = vertical image size

(4/3)

$$\begin{aligned} \text{tg } \alpha &= x / 2F = 8.8 / 2 \cdot 5.3 \\ 2\alpha &= 79.4^\circ \end{aligned}$$

(16/9)

$$\begin{aligned} \text{Tg } \alpha &= x / 2F = 9.58 / 2 \cdot 5.3 \\ 2\alpha &= 84.2^\circ \end{aligned}$$

One conclusion that we can see already is that a 16/9 sensor has a wider field of view than a 4/3 sensor even though it is still 2/3-inch format or 11mm diagonal.

The same calculation for a 16/9 camera sensor operating in a 4/3 mode gives:

$$\begin{aligned} x/y &= 4/3 \\ x &= 7.19\text{mm} \\ y &= 5.39 \\ \text{Tg } \alpha &= x / 2F = 7.19 / 2 \cdot 5.3 \\ 2\alpha &= 68.3^\circ \end{aligned}$$

Compared to the angle of view with a standard or native 4/3 sensor, the loss is only from $79.4^\circ - 68.3^\circ$, approximately 11° (hardly noticeable even at a close distance).

Suppose this was a standard or native 4/3 sensor. Then the comparable focal length is:

$$\begin{aligned} \text{tg } \alpha &= x / 2F \\ \text{tg } 68.3^\circ / 2 &= 9.58 / 2 \cdot F \\ 0.68 &= 4.4 \\ F &= 6.5 \text{ mm.} \end{aligned}$$

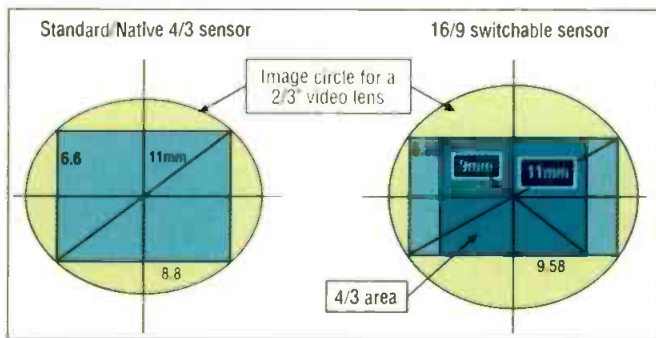


Figure 1. Field of view cropping inherent in switchable cameras with 16/9 sensors.

available today, each with their own unique features and benefits. However, when it comes to the switchable sensors, there are only two basic types. The following is a description of those two basic types from all of the camera manufacturers that give you the possibility to switch from 16/9 mode to 4/3 mode with the same sensor/CCD.

1. Cameras with a 4/3 sensor: These cameras can switch the picture height to make the 16/9 aspect ratio. These cameras only limit the vertical angle of view (cropping off the top and bottom to make the 16/9 ratio). This is not seen as a problem in the industry today.

2. Cameras with a 16/9 sensor. These cameras can switch the picture width to make the 4/3 aspect ratio. These cameras only limit the horizontal angle of view (cropping off the sides of the picture). This is not as big a problem as some camera and lens manufacturers are making it. Up to now all switchable cameras except Philips'

width x and the picture height y for the standard 4/3 and 16/9 ratio.

4/3 Standard/Native sensor

$$\begin{aligned} x/y &= 4/3 & x^2 + y^2 &= 11^2 \\ y &= 3/4 x \\ x &= 8.8 \\ y &= 6.6 \end{aligned}$$

$$\begin{aligned} x^2 + 9/16 x^2 &= 11^2 \\ 25/16 x^2 &= 11^2 \\ 5/4 x &= 11 \end{aligned}$$

16/9 sensor in 16/9 mode

$$\begin{aligned} x/y &= 16/9 \\ y &= 9/16 x \end{aligned}$$

$$\begin{aligned} x^2 + y^2 &= 11^2 \\ x^2 + 81/256 x^2 &= 11^2 \\ 337/256 x^2 &= 11^2 \end{aligned}$$

$$\begin{aligned} \sqrt{337/16} x &= 11 \\ x &= 9.58 \\ y &= 5.39 \end{aligned}$$

The horizontal angle of view can be calculated from the following equations:

Focal length/ angle of view 4/3 sensors as in brochures	Angle of view for 16/9 sensor in 16/9 mode	Angle of view for 16/9 sensor in 4/3 mode	Comparable focal length 16/9 sensor in 4/3 mode
5.3 mm / 79.4	84.2	68.3	6.5 mm
5.2 mm / 80.4	85.3	69.3	6.4 mm
4.8 mm / 85	90.2	73.7	5.9 mm
8.3 mm / 56	60.0	46.8	10.2 mm
8.0 mm / 57.6	61.8	48.4	9.8 mm

Table 1. A comparison of different lenses with focal length and angle of view for different aspect ratios.

16/9 situation				4/3 situation			
f as in brochures	angle of view 2α	Tangent α	distance meters D	angle of view 2α	Tangent α	distance meters D	δ meters
5.3 mm	84.2°	0.90	1.10	68.3°	0.68°	1.40	0.38
5.2 mm	85.2°	0.92	1.00	69.3°	0.69°	1.44	0.36
4.8 mm	90.2°	1	1	73.7°	0.75°	1.33	0.33
8.3 mm	60.0°	0.58	1.7	46.8°	0.43°	2.3	0.6
8.0 mm	61.8°	0.6	1.8	48.8°	0.45°	2.2	0.6

Table 2. Results of the differences in distance 16/9 vs. 4/3.



Take The Guesswork Out Of Your Buying Decisions.



Predicting future data rates is anybody's guess. With ADC Super Wideband™ (SWB) routers you don't have to. Install an SDI router today, and seamlessly upgrade to

SWB tomorrow. Our routers simultaneously handle multiple data rates from 3 Mbps to over 1.5 Gbps, and our customer support is legendary. ADC Super Wideband™ routers give you one less thing to worry about, now and in the future. To learn more, call 1.800.719.1900 in North America or +1.530.265.1000 worldwide. Or visit us at www.adc.com/broadcast.

Equipment

Software

Services



The **Broadband** Company

Circle (147) on Free Info Card

www.americanradiohistory.com

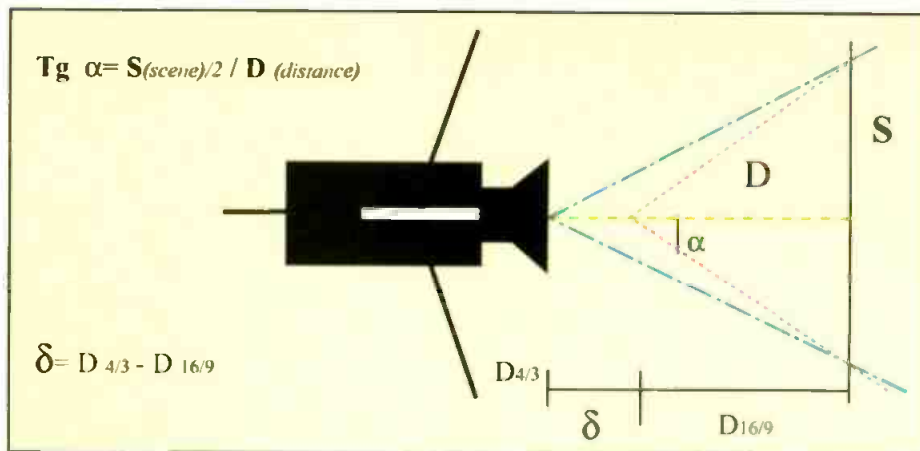


Figure 2. Formula for calculating the distance from the camera to the object.

Table 1 compares different lenses with Focal length and Angle of view for different aspect ratios.

Some practical calculations on distance camera to object.

Shooting in 16/9 with a given width of a scene we can calculate the distance from the camera to the object using the formula shown in Figure 2:

Suppose we have a 16/9 sensor in a switchable camera and a scene of 2M.

As seen in Table 2, if you switch from 16/9 to 4/3, the difference in angle of view forces a step or two backward with the camera (δ in the table) if you want to keep the same scene width/field of view. It is not worth the cost and weight difference for purchasing a switchable lens. Do not be fooled by the smoke and mirrors of some of the industry's marketing scams. You do not need a switchable lens for a switchable camera unless you are completely confined to a tight studio that does not allow any backward movement to make up for the loss of field of view when working in 4/3 mode on a 16/9 camera.

Conclusions

1. With a switchable camera with a 16/9-format sensor we lose angle of view only in the 4/3 mode. The use of a 0.8 range reducer in 4/3 mode can compensate the narrowest field of view if the minimal difference cannot be tolerated.

2. One step backwards has the same effect.

Options:

1. Purchase normal/standard/non-switchable lenses and get the most for your money

2. On all studio lenses an extra 0.8 Range reducer is available if there is no room to move back.

3. All ENG lenses can be delivered with a 0.8 Range reducer instead of the 2x Range extender. Any ENG lens that is modified can be transferred to original 2x RE on request up to eight years after delivery. ■

Chris Beauparlant is national sales manager for Angenieux.

www.myat.com

Another Missed Delivery?

You Have a Choice: Maalox® or MYAT

We Get It Right, On Time, Every Time

You need more than a good antacid if your rigid transmission line systems and components aren't delivered on time. That's why you should call MYAT. We've built a 50-year reputation for dependability by creating and delivering exceptional broadcast solutions on time, every time.

Our experienced, knowledgeable people are skilled at tackling the most challenging broadcast situations with innovative applications of the latest technologies. The result is not merely a product. It's a solution as unique as your requirements.

Plus no one can match MYAT's responsiveness.

Nearly every item we make is perpetually in stock thanks to sophisticated inventory control systems.

So if your next transmission line challenge makes your stomach burn, don't grab the antacid. Instead reach for the phone. Dependable relief from MYAT is just a call away.

Visit us at NAB Booth #L4618

To receive your FREE product catalog, contact us at 201-767-5380 or www.myat.com

1 - 2 0 1 7 6 7 - 5 3 8 0
www.myat.com

Circle (148) on Free Info Card



**Never
Miss
A Beat**

Monitor Your System and Take Control

- ♥ **Windows®-based software provides customizable monitoring with real-time command and control**
- ♥ **Network and component topology management for the equipment on your network**
- ♥ **Centralized or distributed monitoring of equipment on your network**
- ♥ **Remote control of all CCS components with specific control parameters and alarm settings for each device**
- ♥ **Configurable alarm notification for CCS or SNMP devices on-screen, to a database, or by email.**
- ♥ **Secure access to network resources by user groups and individual settings.**

Monitoring your system is as vital as monitoring your health. After all, maintaining stable signals is essential to your livelihood.



So make an appointment with Pilot™, the foremost expert of our unprecedented Command Control System (CCS). Pilot is on duty 24 hours a day so you will stay informed, make sound decisions — react quickly.

Like having your own personal physician, Pilot will provide monitoring, diagnostics and control for devices on your network — ensuring that your system always maintains a clean bill of health.

With Pilot at the heart of your system, you'll never miss a beat.

See us at NAB Booth #L8620

www.leitch.com
1-800-231-9673

Hong Kong +852 2776 0628

Canada +1 (416) 445 9640
Australia +61 (2) 9939 3355

USA East +1 (800) 231 9673
Japan +81 (3) 5423 3631

USA West +1 (888) 843 7004
Brazil +55 (11) 3151 5093

Europe +44 (0) 1483 591000
Latin America +1 (305) 512 0045

Circle (149) on Free Info Card

©2001 Leitch Technology Corporation

MPEG splicing in station operations

BY LAURA COLLINS, ASSOCIATE EDITOR

The general subject of MPEG splicing has been done to death over the last few years. However, this is a subject that won't go away soon. As standards evolve and more practical experience is gained working with MPEG transmission of HDTV and multicast programming, systems and facilities will continue to be faced with new challenges.

A case in point is determining what role MPEG splicing will play in minimizing and avoiding decompression-recompression cycles (and the resultant picture degradation) in the process of manipulating video at the station level. Of course the goal is to do all of our splicing, inserting and branding within the compressed domain. And of course, we can only do that at I frames because all other frames within the GOP are either predictive or bi-directionally interpolated information that reconstruct video frames later on at the decoder. So, what's a master control operator to do? We'll take a look at some present-day solutions and some future considerations.

Commercial broadcasters

Today, most commercial stations receive HDTV signals as MPEG-2 bitstreams at 45Mb/s. They download the signal and encode it to baseband HDTV and SDTV. The incoming 45Mb/s bitstream provides enough information for the station's decoder to produce a robust HDTV signal that stands up to the MPEG-to-baseband conversion. This signal is usually handed off to the local routing matrix for

While the development of MPEG standards and tools for MPEG splicing is desirable, so far baseband conversion has been the standard practice in today's commercial environments because the results are within an acceptable range, at least for now. However, this is most likely a situation that will eventually demand improvement. I firmly believe HD viewers will be here soon, and advertisers will follow.

Think about the energy and talent

Of course the goal is to do all of our splicing, inserting and branding within the compressed domain.

further manipulation and on-air control. The baseband video is used for operations that require manipulation on the pixel level, including logo insertion, ad insertion and any editing that takes place. The HDTV signal is then encoded to a 19.4Mb/s MPEG-2 bitstream for transmission.

that high end productions throw at compression and then consider the weakest link in the image path up to the transmitter. While the encoders that are available do a fairly good job, they have the burden of being a one-size-fits-all black box. There are real and perceived differences between the quality of compression that can be obtained by a trained compressionist eyeballing every scene in an expensive compression suite and an automated one-size-fits-all black box solution at the master control switcher. Ad agencies are likely to want to control the compression quality of their commercials by distributing 19.4Mb/s pre-compressed MPEG video to broadcasters. They might have the expectation or even the requirement to avoid degradation at the station level through the introduction of further decompression-recompression cycles.

One approach to this problem is to splice the pass-through MPEG-2 transport stream downstream from the master control switcher. In this configuration the output of the master control switcher is routed to an encoder. The resultant bitstream is then spliced



MPEG splicing helps stations maintain picture quality by avoiding decompression-recompression cycles in editing systems like the one at Texas Cable News (shown above). Photo courtesy Concept: Benson & Rice.

Tadiran Scopus has a new name



scopus
Network Technologies

Scopus Network Technologies is expanding its quality MPEG-2 DVB offerings to the broadcast world.

Scopus Network Technologies is evolving to serve your growing needs for digital delivery over broadband networks.

And Beyond.

scopus.
Broadening Your Scope.

Contact us at: ***info@scopususa.com***

Offices: USA - Miami, New Jersey, Puerto Rico, San Diego (858) 618-1600;
Mexico - (+52 44) 51952-1396; China - (+86-10) 6524-9705;
India - (+91-2712) 43462; Israel (Headquarters) - (+972-3) 557-6200



Visit us at NAB 2001.
Booth # S-5372
April 23-26,
Las Vegas, USA

Circle (150) on Free Info Card

www.americanradiohistory.com

into the pass-through program feed in a downstream splicer before routing to the transmitter. This approach maintains the integrity of the pass-through feed; however, it can only be achieved at I frames. The spot can be transferred to a local file server as a pre-encoded 19.4 MPEG-2 file. Downstream of your master control switcher the I frames are lined up at predetermined splice points and "spliced" into the on-air bitstream. Now, as an advertiser, I'm fairly confident that the quality is going to be consistent regardless of the transmit path.

PBS stations

The PBS stations are in a different situation, and one that creates a greater immediate challenge. PBS stations are receiving network feeds that are prepackaged at 19.4Mb/s. There are good reasons for this practice. The most pressing is that many PBS stations do not have the budgets to build an extensive internal DTV infrastructure. If they are fed MPEG streams that are already optimized for broadcast, all they need to do is pass the signal through to the transmitter, a

much less costly approach.

However, there is still a need to manipulate the program for local branding and other functions. The problem is that the incoming 19.4Mb/s signal does not stand up to the process of decoding to baseband, processing and re-encoding to a new 19.4Mb/s MPEG bitstream anywhere near as well as the incoming 45Mb/s stream in the previous example.

Downstream splicing

Splicing downstream from the master control switcher is a solution to this problem. This effectively becomes a master encoding step that combines elements created at the station level and output by the master control switcher with elements being fed from other sources and passed through.

Ultimately, the desired requirements for the downstream splicer are that it be visually and syntactically seamless, maintaining the integrity of both the visual continuity and the structure of the bitstream.

There are several manufacturers of MPEG splicers, and products are available that allow you to splice into the

transport stream in a number of different ways. Some methods involve the use of markers in metadata that indicate safe splice points in transport streams. One method is to drop to black for a few seconds or freeze a frame of video and then clear the memory buffer and start a new group of pictures with a new I frame. Another manufacturer uses proprietary algorithms to analyze bitstreams on the fly and determine safe splice points in real time. Another method drops to baseband, logs the incoming GOP/macroblock structure, performs operations in baseband, and reapplies the original GOP structure. There are a number of different ways to do it, each with its own pros and cons.

For now, making decisions with regard to MPEG splicing is a matter of careful consideration of both the available technologies and the specific requirements of a given application. With this in mind, it is reasonable to expect significant advances in the design and implementation of MPEG splicing technology as managing DTV signal paths becomes increasingly central to station operations. ■

The Fiber Optic System that Transports it All



Things to see at NAB

- How to extend Triax cameras
- How to distribute HDTV/SDI
- How to Fiber ENG & OB remotes
- How to specify new STL
- Demo of latest install tricks

VIPER II™

The most widely used fiber optic system for television production and distribution just got easier to use. With advanced electronics, electro-optics and hot-swappable packaging, the Viper II meets all challenges in your facility's video and audio communications. Name your fiber application—pre-fibered facilities, STLs, remote broadcasts, metropolitan video links—the Viper II handles the job.

- Multiplexed NTSC/PAL video, audio & data
- HDTV—19.4 Mbps to 1.5 Gbps uncompressed
- 601 serial digital interface (SDI)
- Wavelength division multiplexing (WDM)
- Universal 16-slot card frame or "throw down" modules
- Redundant power and UPS options

The Viper II is a multifaceted tool that's flexible, affordable and reliable. It's one more reason why facilities that choose fiber, choose Telecast.



Telecast
Fiber Systems, Inc.

(508) 754-4858 • sales@telecast-fiber.com • www.telecast-fiber.com

NAB Booth #L9568

Circle (151) on Free Info Card

All These Formats . . .

Digital Betacam



Betacam SX



Digital-S



One Worldwide Standard.

S-VHS



Digital-Disk



Mini-DV



DVC Pro



SP Beta



DV-Cam



Every new format and every new camera has one thing in common. They all have exclusive Anton/Bauer features as original equipment - Gold Mount bracket, InterActive viewfinder fuel gauge, UltraLight Automatique circuitry, Digital Battery.

High performance camera products deserve high performance, reliable power. Choose from the latest cell technology of the Anton/Bauer HyTRON 50 and 100, to the long lasting ProPac and TrimPac, to the powerful economy of the ProFormer.

Isn't it good to know that there is one standard that will always be there?

antonbauer

The worldwide standard®

Circle (152) on Free Info Card

For information contact Anton/Bauer or any Anton/Bauer dealer or distributor worldwide.

Anton/Bauer, Inc. 14 Progress Drive, Shelton, Connecticut 06484 USA • (203) 929-1100 • Fax (203) 925-4988 • www.antonbauer.com
Singapore Office - Anton/Bauer 100 Beach Road, # 33-05 Shaw Towers, Singapore 189702 • (65) 2975784 • Fax (65) 2975778

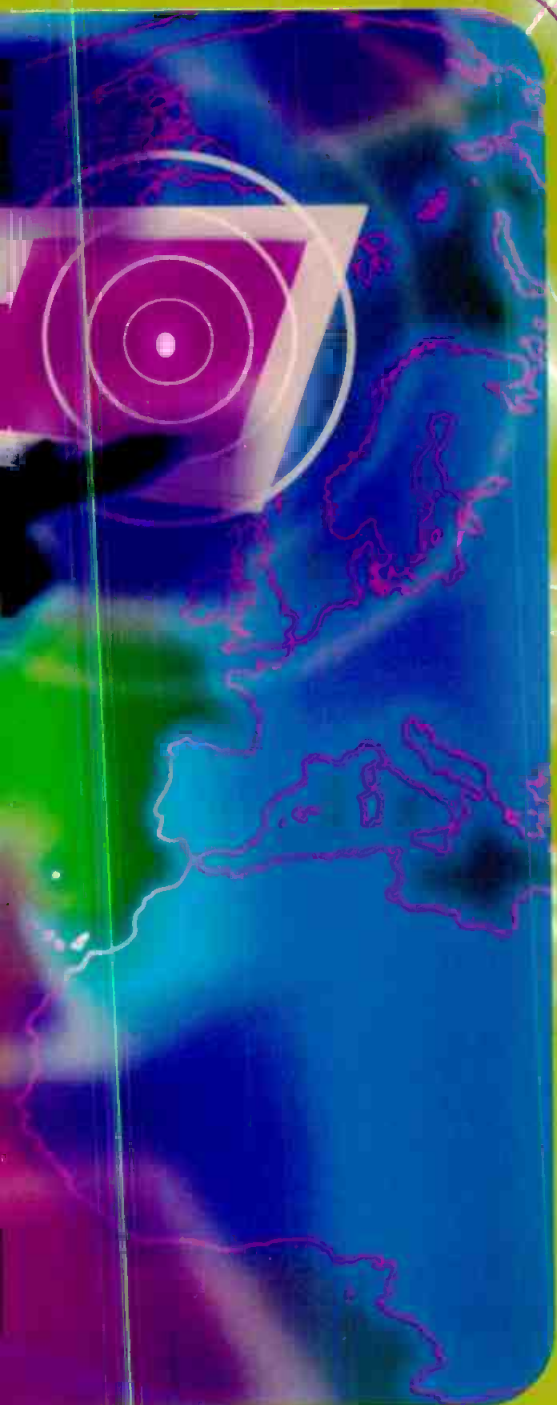
D

T

V

update





NAB marks the start of the broadcast year. It all begins and ends in Las Vegas. Much like when the new models roll out in Detroit, each year the eager flock to the NAB show to see the newest fixes for their digital problems. To help you in your search, we continue our look at the products making their debut on this year's showroom floor.

LENS

16x9 Abakus HD "Stadium":

Offers a 170-degree horizontal view and a full 210-degree diagonal angle of view in 16:9; also features controlled distortion; ideal for opening shots at stadium events.

818-972-2839; fax: 818-972-2832; www.16x9inc.com

Booth: L11368 Circle (275) on Free Info Card

NETWORK VIDEO SOLUTION

2netFX/Helius multicast transmission system:

System gives users the ability to deliver, store and play back MPEG video and graphics; Helius components and software will be integrated into 2netFX's ThunderCast IP server, which manages and streams MPEG video on Ethernet-based networks; Helius' broadband satellite IP routers, gateway devices and storage products enable the integrated —system to bridge the "last-mile" gap for on-premise delivery; connected to a dish and the customer's network, a Helius router can receive content sent by satellite and store, cache or play it back on a networked PC using the 2netFX Stream Rider Player.

408-232-1600; fax: 408-232-1601; www.2netfx.com; 888-764-9020; fax: 801-764-9022 www.helius.com

Booth: E6424, E5545 Circle (276) on Free Info Card



DIGITAL DISK RECORDER

Accom WSD/HD digital disk recorder:

High definition was designed for electronic film, graphics/effects, and editing applications in a networked, multiuser, multiformat environment; system can record/play SD/601 digital as well as HD formats, including 24p, on a clip-by-clip basis.

650-328-3818; fax: 650-327-2511; www.accom.com

Booth: S4806 Circle (277) on Free Info Card

ANIMATION SYSTEM

Accuweather Galileo:

Weather forecast production system offers 32-bit animated graphics in either static or animated 2D or 3D formats; new integrated user interface automates the process of building a weather show and generates on-screen graphics as a user edits scenes; features animated surface maps that use key frames and a choice of static or time-animated contour lines on maps; also features pan and zoom to allow users to pinpoint specific areas with a DMA in a forecast; system has live background video capability, and the ability to output on-air presentations as Web pages.

800-566-6606; 814-237-0309; fax: 814-235-8609;

www.accuweather.com

Booth: i5949 Circle (278) on Free Info Card



ACOUSTIC PANELS

Acoustical Solutions AlphaSorb:

Can be installed as lay-in ceiling tiles or may be integrated into wall or ceiling systems; available in factory finished or unfinished wood; available in 1 1/16-inch or 2 1/16-inch thick with NRC ratings of .80 to 1.00.

800-782-5742; 804-346-8350; fax: 804-346-8808;

www.acousticalsolutions.com

Booth: L6218 Circle (279) on Free Info Card



Economical Tape Storage Doesn't Have to Be Messy

Even in today's world of digital media storage, hard copies of all those video tapes are going to pile up on you.

Winsted has a full line of storage solutions for tapes of all sizes and types. The pullout design shown here maximizes the use of your valuable storage space by giving you **100% space efficiency** in confined areas such as room alcoves or set-backs. Pullout cabinets save floor space because they eliminate the multiple aisles common in other tape library systems.

Winsted offers a complete tape library design service with no cost or obligation. Just estimate the number of tapes to be stored

including future expansion and tell our design engineers the amount of floor space available.

We'll provide you with detailed drawings and it's a free service.

We can even arrange for installation. Winsted also has a full line of tape storage accessories including: tape shelf labels, plastic dividers, and tape carts.

For a full catalog of Winsted furniture including other styles of tape storage systems visit

our website at **www.winsted.com** or

telephone Winsted at **800-447-2257**.



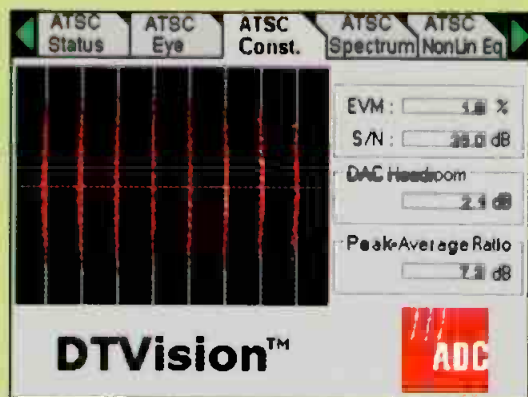
To order a free catalog today call:
800-447-2257



Circle (153) on Free Info Card

***Preferred by Professionals
Worldwide®***

See us at NAB Booth #L9517



SIGNAL ANALYSIS SYSTEM

ADC DTVision:

Digital signal analysis and testing system features linear performance graphs, allowing users to view system amplitude and group delay characteristics so changes in RF system performance can be identified and corrected; nonlinear performance graphs show variations in phase and gain as a function of the RF envelope.

530-265-1000; fax: 530-265-1010; www.adc.com/broadcast

Booth L9857 Circle (280) on Free Info Card

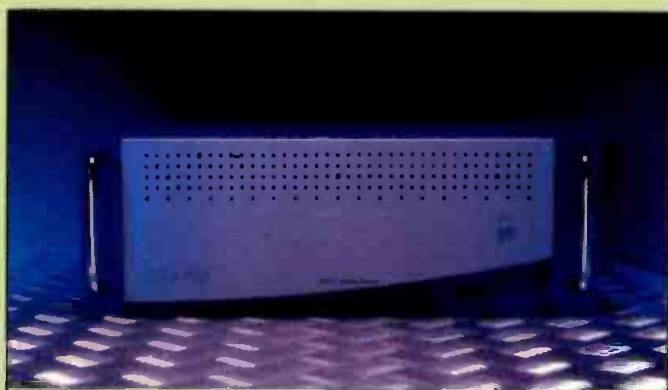
DIGITAL UHF IOT TRANSMITTER

ADC Visionary:

Offers enhanced performance with the addition of LD-MOS driver amplifiers and Marconi plug-in IOTs; provides power levels up to 180kW on average; uses ADC's DSP-based DT2B modulator and Adaptive Digital Equalization, which continually tracks and corrects linear and nonlinear distortions.

530-265-1000; fax: 530-265-1010; www.adc.com/broadcast

Booth L9857 Circle (281) on Free Info Card



TRANSMISSION MONITORING PRODUCTS

Adherent AD973/974:

973 provides single stream monitoring in a 1U chassis; 974 offers monitoring of up to eight streams in a 4U package; web-based GUI enables broadcast status to be checked from any remote location.

+44 1223 200 700; fax: +44 1223 200 701; www.adherent.com

Booth: (Sencore) L417 Circle (282) on Free Info Card



INTERFACE/FRASTORE PCI CARD

AJA Video HD-NTV:

Features two channels of HD-SDI I/O; can key HD stills from memory over live video, capture to print HD images, capture and output HD stills; offers mixer/keyer functions, split screen and genlock; features additional Photoshop and PowerCG plug-ins for editing and creating HD stills and slates.

800-251-4224; fax: 530-274-9442; www.aja.com

Booth L10286 Circle (283) on Free Info Card



TELESCOPING MASTS

Allen Osborne Associates Hilomast NK.9:

Mast raises to 30 feet and retracts to only 7.4 inches; mountable on any vehicle either inside or outside; mast is able to go into any underhang or garage; weighs 40 pounds, so that an engineer can also put it inside of the vehicle for security.

805-495-8420; fax: 805-373-6067; www.aoa-qps.com

Booth: L9772 Circle (284) on Free Info Card

Introducing the new undisputed battery champions of the world.

The new Aspen Bricks

- Direct Sony V-Lock compatibility.
- Connects to Anton Bauer Gold Mount with Aspen exclusive Klix-on adapter.
- Replaceable battery core will save hundreds of dollars over battery lifetime.



- Available in Aspen's 3-Stud Platinum Mount.
- Half the price of lithium equivalents.
- Safe, reliable power on demand.
- Patented cell safe technology.
- Available in both NiCd and NiMH configurations.

SCORECARD

	Round one	Round two	Round three	Round four	Round five	Round six	Round seven	Winning
	Weight	Wattage	Direct V-Lock	Charge time	Power port	List price	2-channel charger	rounds
Heavyweight								
Aspen NHP-100	6 lbs	100 WH	Yes	4 hours	Yes	\$495	\$595	6
Sony BPL-90	3 lbs	90 WH	Yes	5.6 hours	No	\$880	\$660	2
Anton Hytron 100	6 lbs	100 WH	No	4 hours	No	\$695	\$995	2
Middleweight								
Aspen NHP-65	2.25 lbs	65 WH	Yes	2.5 hours	Yes	\$325	\$595	5
Sony BPL-60	2 lbs	60 WH	Yes	3.7 hours	No	\$540	\$660	1
Anton Hytron 50	1.9 lbs	50 WH	No	2 hours	No	\$495	\$995	2

See us at NAB Booth #L329

Circle (154) on Free Info Card

Winner by unanimous decision.

Anton Bauer and Hytron are registered trademarks of Anton Bauer
Sony is a registered trademark of Sony

ASPEN
ELECTRONICS INC.

5152 Bolsa Avenue, Suite 103 Huntington Beach, CA 92649
714.379.2515 Fax 714.379.2517 www.aspenelectronics.com





40 X 11 ZOOM LENS

Angenieux Extreme Tele Zoom:

Delivers a focal range of 40x11 to provide camera operators with a high degree of versatility and coverage capabilities; features the longest focal length available with low ramping: F440mm (1 degree) at f/4 and F880mm (1/2 degree) with a 2x extender; offers high-resolution optics; digital performance features a wide variety of zoom modes and focus servo controls.

973-812-3858; fax 973-812-9050; www.angenieux.com

Booth L9046 Circle (285) on Free Info Card



ON-CAMERA BATTERIES

Anton/Bauer Hytron 100:

Capable of operating HD cameras for over two hours and typical camcorders for up to four hours; charges on any Anton/Bauer charger; offers a two year warranty.

203-929-1100; fax: 203-9299935; www.antonbauer.com

Booth L7030 Circle (286) on Free Info Card



View an online product demo whenever you see this logo.

www.broadcastengineering.com



ON-CAMERA LIGHT

Anton/Bauer Ultralight System:

New accessories include a 20W HMI head module that turns any Ultralight2 into an on-camera fill light; UL-Softbox attaches to any head module for cinema-style soft lighting effects; Premier Shooters Package contains all accessories to meet every shooting and lighting situation: extra head modules, wide angle and daylight filters, wide selection of gels with a quick change holder.

203-929-1100; fax: 203-9299935; www.antonbauer.com

Booth L7030 Circle (287) on Free Info Card



MIC PRE-AMP

Aphex Systems Model 1100:

Discrete Class-A tube mic pre-amp features integral 24-bit 96kHz A/D converters, MicLim peak limiter and LoCaF low-frequency cancellation filter handles rumble and wind blast overload.

818-767-2929; fax: 818-767-2641; www.aphex.com

Booth R2034 Circle (288) on Free Info Card

MPEG-2 EDITORS

Applied Digital AEdit MPEG-2 Segmenter:

Editor allows users to browse an MPEG-2 file and trim or remove segments without having to uncompress the material; system performs frame-accurate edits on I, P or B frames in long GOP MPEG-2 format; allows users to prepare EDIs so edits can be performed with another nonlinear editor if desired.

352-338-0516; fax: 352-338-1108; www.applied-digital.com

Booth: L10452 Circle (289) on Free Info Card

ALPHA 100

One digital console that stands out from the rest.

Designed for Live Production and On-air use with redundant systems and hot-swap electronics

Superior ergonomics for speed, accuracy and ease of use

A no-compromise specification to meet the most demanding Broadcast requirements

Superb audio specification for an open, transparent sound

Over 35 years of Calrec craftsmanship and broadcast experience ensure reliability,
quality and long-term performance

NAB LVCC R2569

CALREC DIGITAL - NOW AND FOR THE FUTURE

Circle (155) on Free Info Card

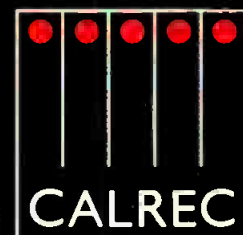
FOR FURTHER INFORMATION CONTACT

Studio Consultants (New York) Tel : (212) 586 7376 Fax : (212) 582 2169 e-mail : scidoug@aol.com
Redwood (LA & Nashville) Tel : (615) 871 0094 Fax : (615) 872 7080 e-mail : redwood@isdnn.net

CALREC AUDIO LIMITED

Nutclough Mill, Hebden Bridge, West Yorkshire, HX7 8EZ, UK

Telephone : +44 (0) 1422 342159, Fax : +44 (0) 1422 845244 E-mail : enquiries@calrec.com Website : www.calrec.com



NEWSROOM SYSTEM

Avid NewsCutter XP 2.0:

New release offers full support for Avid Unity for News, including MediaManager and TransferManager; allows user to edit while recording; features auto voice over, which allows one keystroke set-up for voiceovers; Script-based In/Out allows the insertion or deletion of word changing the timing of edits; Send to playback lets you keep editing while moving a story to AirSPACE or another playback server.

800-949-AVID; fax: 978-640-1366; www.avid.com

Booth M8318 Circle (297) on Free Info Card

DIGITAL NEWSROOM ENVIRONMENT

Avid Unity for News:

Provides a shared storage and networked environment for iNEWS, NewsCutter and AirSPACE technologies; also feature MediaManager and TransferManager, which provide critical capabilities for finding and moving media assets with the click of a mouse.

800-949-AVID; fax: 978-640-1366; www.avid.com

Booth M8318 Circle (298) on Free Info Card

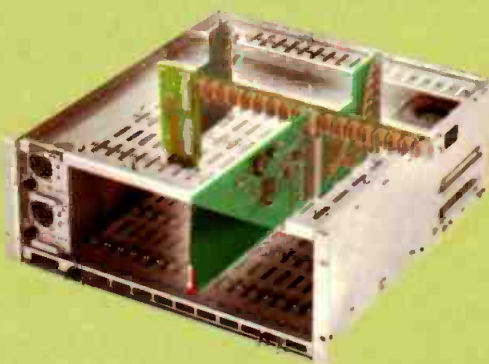
LINE FEED BROWSE SYSTEM

AVS MultiBrowse:

Entry-level, standalone browse system supporting four lines of both audio and video feed; allows up to 25 users to simultaneously access and browse incoming and outgoing feeds from their desktop PC or workstation; user has range of viewing, marking and control functions available; operators are able to switch between inputs, view all four sources at once, mark In and Out timecode sections of video stream and produce shot lists for reference or editing.

801-975-9799; fax: 801-975-0970; www.avsgmedia.com

Booth 12234 Circle (299) on Free Info Card



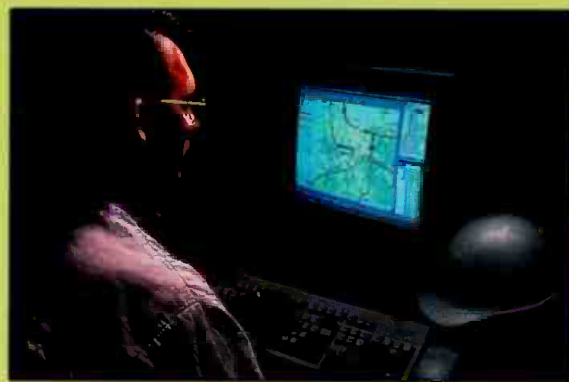
MODULAR SIGNAL PROCESSING SYSTEM

Axon Synapse:

System is high density, offering 18 cards in 4RU; offers flexible remote control capabilities, Ethernet-based remote control interface; is Internet enabled and receives updates of firmware through Internet connection; allows full monitoring of all parameters, audio level control and channel swapping.

+31 13511 6666; fax: +31 13 511 4151; www.axon.nl

Booth L1541 Circle (300) on Free Info Card



NETWORK MONITORING SYSTEM

BarcoNet Rosa 3.0:

Features a quick, efficient, user-friendly solution for managing all network elements by a single, vendor independent management system.

800-992-5016; fax: 770-590-3610; www.barconet.com

Booth S5360 Circle (301) on Free Info Card

DUAL ANALOG AUDIO CABLE

Belden 9451D:

Addition to Belden's audio cabling line features two twisted pairs with 22AWG tinned copper conductors and polyolefin insulation; cable conductors are color-coded red and black; easy termination via an aluminum-polyester Beldfoil shield bonded to the jacket, featuring a 22AWG drain wire inside the shield; each pair has a PVC jacket and is joined in a Siamese construction.

800-BELDEN1; 765-983-5200; fax: 765-983-5294; www.belden.com

Booth: L8783

Circle (302) on Free Info Card





**View an online
product demo
whenever you
see this logo.**

www.broadcastengineering.com



VistaLINK™

Your Eyes & Ears for Monitoring Single or Multi-Channel Operations



Let Evertz be your eyes and ears for monitoring! Using VistaLINK™ technology, Evertz can provide the answer to your multi-channel monitoring and reporting needs. VistaLINK™ offers centralized remote monitoring via SNMP and TCP/IP with automated alarms, reporting, logging and more...

Tel: 905-335-3700 Fax: 905-335-3573
www.evertz.com

evertz

See us at NAB - Booth #L12146

Circle (157) on Free Info Card



DIGITAL AUDIO CONSOLE

Calrec Audio Alpha 100

Fifth-generation Calrec desk features assignable digital control surface providing 48 multitrack/matrix outputs, 20 auxiliary buses, eight audio groups and four main outputs – each of which can function as mono, stereo or surround; all desk functions are saved to snapshots and full-system reset is achieved without audio interruption.

+44 1422 842 159; fax: +44 1422 845 244; www.calrec.com

Booth R2569 Circle (303) on Free Info Card



WIRELESS TRANSMISSION SYSTEM

Canon DT-50/SDI:

Latest version of its CanoBeam line allows full-bandwidth wireless transmission of a wide variety of digital video signals; system is ideal for transmitting sports events and news over 2km with a direct line of sight; sets up quickly and requires no license or frequency allocation.

800-321-4388; fax: 201-816-2909; www.canonbroadcast.com

Booth L10436 Circle (304) on Free Info Card



LIGHTWEIGHT EQUIPMENT CASES

Cases Plus TC2000 Series:

Designed with extra emphasis on strength, style and comfort; outer shell is high density thermofoamed polyethylene plastic giving it chemical resistance and high durability; a gasket in valance seal between the body and the top of the case closure seals out water, salt air and dust; equipped with wheels and telescoping handles.

800-9982-1880; www.casesplus.com

Booth E3914 Circle (305) on Free Info Card

GRAPHIC PROCESSOR

Chyron Aprisa family:

Robust new 4RU hardware design includes redundant, hot swap power supplies and front loading, removable SCSI drives with RAID 0, 3, or 5 options; CG Playback Option plays back rolls, crawls, and flipbooks in an independent frame buffer that can be layered with key over the clip playback; Web Streaming Option streams out the entire DDR program buffer in Real G2 or ASF formats.

888 4 CHYRON; fax: 631-845-3867; www.chyron.com

Booths I6631, L12300 Circle (306) on Free Info Card

FIBRE CHANNEL STORAGE SOLUTION

Ciprico 2Gb JBDD

Expands real-time performance to 200MB/s per disk array; upgradable from 1Gb to 2Gb solution with a lower performance parity rate.

800-727-4669; fax: 763-551-4002; www.ciprico.com

Booth M8336 Circle (307) on Free Info Card

cantus

More Reliable than Analog!



Radio



Theater



Television



Opera



Film Post



OB Van

24/7 on-air work demands reliability. The CANTUS Digital Console by STAGETEC has demonstrated that reliability in over 130 installations world-wide. Day in, day out. And since CANTUS is all digital, there are no analog pots and switches to go noisy or open. CANTUS – Simply better than analog!

- Fiber Optic Interconnect of all hardware
- LCRS, 5.1, 7.1 Surround Panning
- Integrated digital NEXUS I/O plant-wide router
- N-1 with Auto Talk-Around™
- No fans, low power consumption, very low weight
- Totally Hot Swappable
- German Reliability and Audio Quality



US Distribution by:

GMA, LLC
18314 Kinzie St
Northridge, CA 91325
Phone: 818 701 6201
Fax: 818 701 9545
Email: fader@pacbell.net

STAGETEC GMBH
Industriegebiet See
D-96155 Buttenheim
Germany

Phone: +49 9545 440 300
Fax: +49 9545 440 333
Email: sales@stagetec.com
www.stagetec.com



Circle (158) on Free Info Card

www.americanradiohistory.com

INTELLIGENT VIDEO SCALER

Communications Specialties Deuce MC:

Converts standard TV video to high-resolution, non-interlaced video with a user-selectable motion compensation feature that can be set based on the specific input source image; also features three scaled output resolutions, standard line doubling and quadrupling outputs, composite, S-Video and YcbCr component inputs and RGB or YcbCr component outputs plus an RS-232 remote.

631-273-0404; fax: 631-273-1638; www.commspecial.com

Booth M8767 Circle (308) on Free Info Card



CHARACTER GENERATORS

Compix Video CG:

Comes complete with a high-quality and high-capacity PC; standalone turnkey systems are available with standard studio industrial strength rackmount cases; systems are compatible with composite video, S-Video or component video formats; all systems feature Alpha Key - 256 level linear key out.

310-320-8937; fax: 310-320-8938; www.compixmedia.com

Booth S2847 Circle (309) on Free Info Card

DATABASE INTERFACE SOFTWARE MODULE

Crispin WebAgent:

Interfaces with Crispin's database, AssetBase; checks video servers and other resources to make sure they're online and available; gathers information on the server, material ID, comment and duration from these devices if available; generates dublists for Crispin's Dubber 2000 module; takes translated traffic files from AssetBase to generate discrepancy reports and gathering typical traffic log information; can only be used in conjunction with AssetBase.

919-845-7744; fax: 919-845-7766; www.crispincorp.com

Booth: L12568 Circle (310) on Free Info Card

DIGITAL CHROMA KEYS

Crystal Vision Safire:

Allows users to make fine adjustments for optimized edges, shadow processing, internal and external masks, and linear key, mix and wipe modes; features a 266mm x 100mm board, which fits into Crystal Vision's standard interface frames, allowing six chroma keys in 1U or 12 in 2U.

+44 1223 506 515; fax: +44 1223 506 514; www.crystalvis.com

Booth: L116 Circle (311) on Free Info Card

SAN SCALABILITY DIMENSION

DataDirect Networks Pay as you Grow:

New program launched across the company's SAN appliance family supplies users with higher levels of capacity in increments on an as-needed basis; the first level of the plan is the SAN directiON SAN appliance, which provides for the requirements of small workgroups and clusters; users can move from this system to the larger SAN DataDirector SAN appliance configurations according to the amount of storage they need; SAN appliance hardware and software needed for future applications can be installed now, and the user can pay only for the part of the configuration actually in service.

800-322-4744; 818-700-7600; fax: 818-700-7601;

www.datadirectnet.com

Booth: S5319 Circle (312) on Free Info Card

IMAGE SERVER

da Vinci Gallery:

Resolution-independent image server used in conjunction with 2K Color Enhancement System's internal frame store; allows colorist to compare, wipe and mix images in the frame store or live images with those in the Gallery; another feature is 10-bit log over HD I/O for data transport of RGB 16x9 images in real time.

919-845-7744; fax: 919-845-7766; www.crispincorp.com

Booth: L6406 Circle (313) on Free Info Card

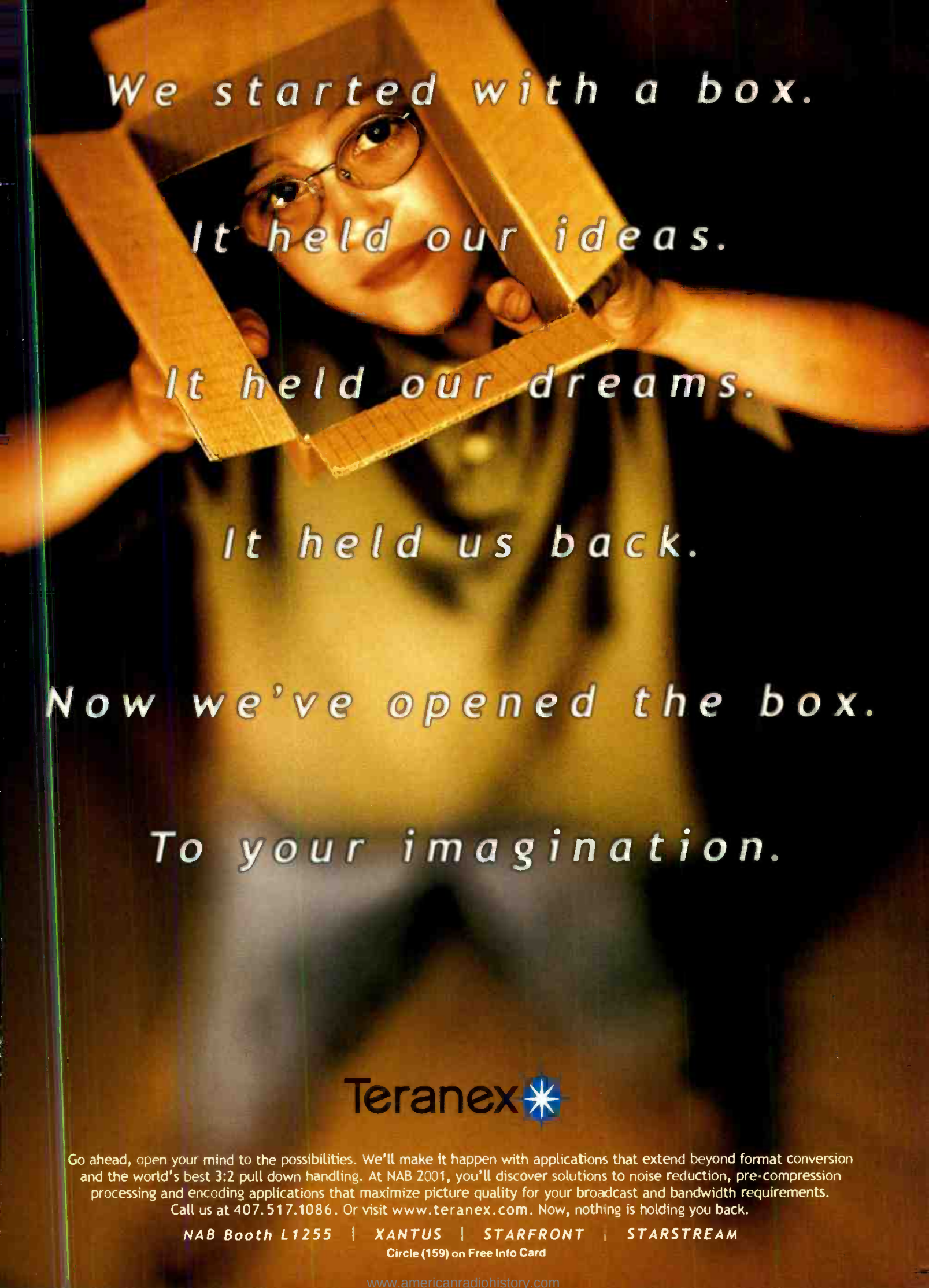
A/D CONVERSION MODULE

dB Technologies M*AD-824:

24-bit 96kHz module provides dB's dB*44-96 multichannel conversion system, which supports four slots for M*series modules; module is used with a M*Sync-1 clocking module, which provides internal and external word clock or AES sync capabilities for the M*AD-824; clocking module supports 44.1-, 48-, 88.2- or 96kHz, plus varispeed rates.

323-845-1155; fax: 323-845-1170; www.aidinc.com

Booth: R2855 Circle (314) on Free Info Card



We started with a box.

It held our ideas.

It held our dreams.

It held us back.

Now we've opened the box.

To your imagination.

Teranex 

Go ahead, open your mind to the possibilities. We'll make it happen with applications that extend beyond format conversion and the world's best 3:2 pull down handling. At NAB 2001, you'll discover solutions to noise reduction, pre-compression processing and encoding applications that maximize picture quality for your broadcast and bandwidth requirements. Call us at 407.517.1086. Or visit www.teranex.com. Now, nothing is holding you back.

NAB Booth L1255 | XANTUS | STARFRONT | STARSTREAM

Circle (159) on Free Info Card

NEWSROOM AUTOMATION SYSTEM

DCM/Autocue WinCue family:

WinCueTx, WinCueNews; and WinCueNet form an integrated software family that provides flexible, innovative and seamless solutions for transmission facilities, production offices and newsrooms; new features include cuts-only video editing, desktop edit facilities, a variety of web interfaces, prompter integration, and extended automation event handling.

704-377-1496; fax 704-377-6336; www.dcm.net

Booth L12158 Circle (315) on Free Info Card

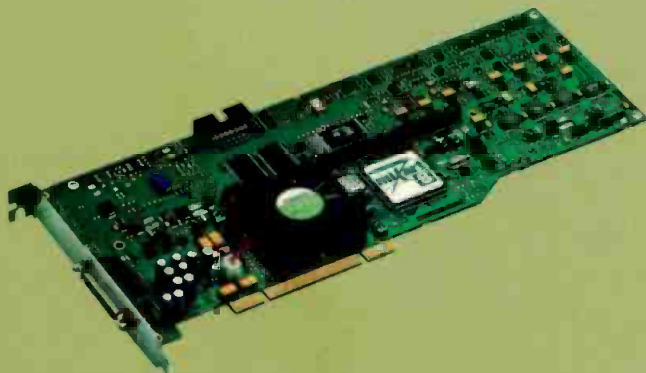
UHF PANEL ANTENNA

Dielectric Communications Deltalite:

Broadband, low-windload UHF panel antenna for the load conscious broadcaster; simple proven feed system design offers a high level of reliability.

866-DIELECTRIC; fax: 207-655-7120; www.dielectric.com

Booth L1429 Circle (316) on Free Info Card



AUDIO PROCESSOR

Digigram miXart:

Based on Motorola's PowerPC processor; includes scalable PCI cards with multiple analog and digital signal paths with on-board processing; other features include customizable editing and mixing software that can be integrated into the user's application, as well as an SDK for additional development; now available with eight analog input/output paths, four studio-quality microphone preamps and MIDI.

703-875-9100; fax: 703-875-9161; www.digigram.com

Booth: R2773 Circle (317) on Free Info Card

EDITING SOLUTION

Discreet Edit 6:

Advances support of jobnet, Discreet's NT based, real-time workgroup SAN solution to enable sharing of media assets; offers embedded content creation, encoding and web streaming capabilities with support for QuickTime, Windows Media Player and RealNetworks codecs.

800-869-3504; fax: 800-305-6442; www.discreet.com

Booth S4100 Circle (318) on Free Info Card

DIGITAL FRAME SYNCHRONIZER

Dolby Laboratories DP583:

Accepts all Dolby E and Dolby Digital frame and data rates, as well as PCM inputs and provides an output that has been reframed to match local plant reference; also allows post facilities to record Dolby E streams to non-video recorders, such as 20-bit DAT.

800-33-DOLBY; fax: 415-863-1373; www.dolby.com

Booth R2715 Circle (319) on Free Info Card

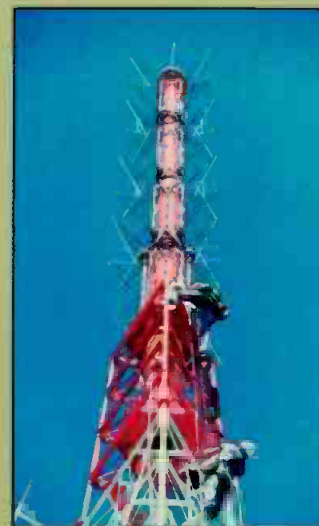
ANTENNA SERVICES

Doty Moore Antenna services:

New turnkey service for the procurement and installation of antenna systems; Doty Moore provides technical specifications, tower analysis tower modification, transmission line and antenna installation.

972-5560-9500; fax: 972-293-1255; www.spectrasite.com

Booth: L12611 Circle (320) on Free Info Card



VIDEO SERVER

Editing Technology Corp. ETC! FSC 1000:

New Windows version of the system; the server-based system can be used to replace videotape cart systems; new Windows interface offers familiar Windows features to facilitate user operation; users can sequence segments containing multiple elements, load them directly onto the server, name the clips or elements to be played and assign them a mode and length of play.

818-840-1101; fax: 818-556-3973; www.etcedit.com

Booth: L1269 Circle (321) on Free Info Card

PROGRAM CONTROL SYSTEM

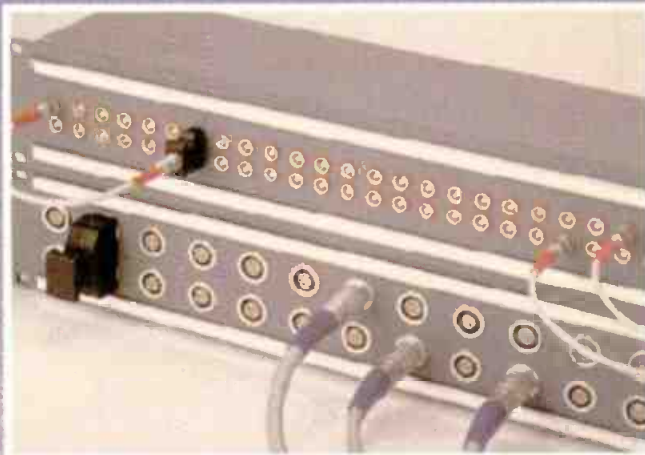
Encoda Paradigm Program Control module:

Encoda is offering the control module for the first time in an application service provider (ASP) environment for broadcast station groups and multichannel cable networks; allows users to manage programming assets, staff, content, material and related expenses from a notebook computer.

303-237-4000; fax: 303-237-0085; www.encodasystems.com

Booth: L12220 Circle (322) on Free Info Card

Get LEMO™ for your Broadcasting Connections



LEMO offers the following for the Audio and Video Industry:

- Connectors – Microphone, Triax,* Fiber, Hybrid**
- Patch Panels – HDTV, Audio, Video, Fiber Optics
- Cable Assemblies
- Custom Designs

*4A Triax Series is intermateable with Kings Triloc® including the use of the same crimp tool/dies.

**New SMPTE approved connectors used at the Olympic games.

Call us and find out why LEMO is your one-stop shopping source for high quality circular connectors



LEMOVERA
ELECTRONIC CONNECTORS



See us at NAB Booth #L5354

LEMO USA, Inc. • P.O. Box 2408 • Rohnert Park, CA 94927 • Website: www.lemousa.com
(800) 444-5366 • (707) 578-8811 • Fax (707) 578-0869 • E-mail: lemous@lemo.ch

Circle (160) on Free Info Card



MULTIMEDIA INSERTION TECHNOLOGY

Enseo DVinci:

Provides video and graphics mixing capabilities, including transparent graphics and hardware-assisted rolls and crawls.

888-478-2687; 972-234-2513; fax: 972-680-7144; www.enseo.com

Booth: M7871 Circle (323) on Free Info Card

MONITOR STAND

Ergo 2000 CSD-15VA:

Fold-over design enables the unit to hold a 15-inch monitor, 101-key keyboard and a trackball in 3RU of vertical space and only 20 inches of depth; this configuration allows users to incorporate KVM switches, power conditioners and other accessories behind them; users can toggle between live video, computer signal and antenna feed.

800-635-9297; 714-992-0874; fax: 714-992-2131; www.ergoind.com

Booth: L414 Circle (324) on Free Info Card

AUDIO MONITORING SOFTWARE SYSTEM

Euphonix E-Deck:

E-deck allows users to access audio files of mixes from anywhere in the world via a secure server and personal computer; Listen-In feature enables real-time remote monitoring of live studio sessions through a PC; application is optimized for a range of connection speeds; playback is via PCM stereo at rates up to 24-bit/96kHz, with 24-bit/96kHz surround mixes available.

818-766-1666; fax: 818-766-3401; www.euphonix.com

Booth: R3005 Circle (325) on Free Info Card

PORTABLE FIBER OPTIC MODULES

Evertz 2405 series:

Wavelength conversion capability allows cost-effective wavelength conversion (eg 1313nm<>1550nm) to be accomplished in a single module, allowing compatibility between incoming/outgoing feeds and native system wavelengths.

905-335-3700; fax: 905-335-3573; www.evertz.com

Booth L12146 Circle (326) on Free Info Card



COMPUTER-TO-VIDEO SCAN CONVERTERS

Extron 300D:

Features user-selectable levels of horizontal and vertical filtering, high levels of color bit depth and autoscanning technology; capable of autoscanning images up to 1600x1280 resolution at 100kHz horizontal and 120Hz vertical frequency; RS-232 controllable with SIS and RGBS/HV as well as component, S-Video and composite video.

800-633-9876; fax: 714-491-1517; www.extron.com

Booth M7936 Circle (327) on Free Info Card

VIDEO SWITCHER

Extron SVS 100:

Four input, one output video switcher offers seamless switching, switching effects, picture controls, audio switching, user presets, vertical blanking and genlock capability; NTSC and PAL compatible, offers two composite and one S-Video outputs.

800-633-9876; fax: 714-491-1517; www.extron.com

Booth M7936 Circle (328) on Free Info Card



JIB

EZ FX Jib and Handle:

User-friendly jib arm is lightweight, portable and easy to set up; wide range of camera movement created by the jib produces smooth floating camera shots and simulated dolly moves.

407-877-2335; fax: 407-877-6603; www.ezfx.com

Booth S4205 Circle (329) on Free Info Card

Your Most Important Links in the Digital Media Chain



We have you covered every step of the way

PHILIPS
BROADCAST

THOMSON BROADCAST SYSTEMS

NEXTREAM
Interactive Video Networks and Services

Move your company into the digital age with state-of-the-art products, systems, and services from Thomson Multimedia. Our Broadcast & Network Solutions division is now providing key infrastructure products and services for the entire entertainment industry.

Creation: Thomson Broadcast Systems and Philips Broadcast are now united, allowing you to master all the technologies for digital broadcasting, including systems development and integration expertise. Our technology supports digital imaging, film processing, and video servers. We rank second in the world in digital broadcast systems and can provide solutions for the immediate and future needs of the content and broadcast industries. www.thomsonbroadcast.com

Protection: Our state-of-the-art systems protect your original content creation as well as distribution.

Distribution: With Nextream, which is already the leader in European interactive video networks, we can now provide end-to-end solutions via cable, satellite, or terrestrial for TV operators, MSOs, and Telcos. www.nextream-online.com

Display: More consumers depend on Thomson and its RCA brand of digital set-top satellite receivers than any other brand. And we offer integrated terrestrial and satellite digital TV products for the home, too. www.rca.com

Thomson Multimedia Broadcast & Network Solutions includes Thomson Broadcast Systems, Philips Broadcast, and Nextream. Advanced technology and services from Thomson Multimedia — Your Most Important Links in the Digital Media Chain.

www.thomson-multimedia.com



THOMSON MULTI
MEDIA
BROADCAST & NETWORK SOLUTIONS

Circle (161) on Free Info Card

www.americanradiohistory.com



CABLE SIMULATOR

Faraday Technology Remote Cable Clone:

New version of Faraday's Cable Clone can be remotely controlled via an RS 232 interface; allows users to automatically switch between various lengths of simulated cable, rather than actually switching manually between different lengths of cable to test for the crash point of digital equipment; system allows for repeatability in the field.

+44 1782 661 501; fax: +44 1782 630 101; www.faradaytech.co.uk

Booth: L331 Circle (330) on Free Info Card

EDITING SYSTEM SPEED ENHANCEMENT

Fast Sales US InTime Option:

Rendering technology for accelerating even extremely complex compositing; six additional processors enhance the system to provide parallel processing power for either FAST's silver or purple NLE systems.

800-249-FAST; www.fastsalesus.com

Booth S4817 Circle (331) on Free Info Card

FIBER OPTIC DATA SYSTEM

Fiber Options RingMaster:

Self-healing, field selectable systems has floating master capability, in which one module must function as a master for control purposes so that if power fails, the system can continue to function; can be configured as point-to-point, drop-and-insert, or self-healing ring configuration; an 18dB optical budget for long-distance performance is standard.

800-342-3748; fax: 516-567-8322; www.fiberoptions.com

Booth S4166 Circle (332) on Free Info Card

DESKTOP EDITOR

Florical Systems NewsClipper:

Enables low-resolution desktop editing of raw news footage, saving time and expense; provides either cuts-only edited master high-resolution files or air or and EDL for use with any Avid, Sony or other editor using CMX EDLs.

352-372-8326; fax: 352-375-0859; www.florical.com

Booth L1317 Circle (333) on Free Info Card

FIREWIRE CABLE

FOCUS Enhancements (formerly Videonics) Distance DV:

Carries DV signals over distances of 10 to 50M; comprised of a single IEEE-1394-compatible cable with proprietary filter and equalizer that reduces noise and signal attenuation; cables available in 10, 20 and 50 meter lengths and each ships with locking four to six pin adapters.

800-338-3348; fax: 408-866-4859; www.videonics.com

Booth S5309 Circle (334) on Free Info Card



MULTISCREEN PRESENTATION SWITCHER

Folsom ScreenPro Plus:

Integrated package simplifies system interconnections, setup and control for presentations with up to three screens; features an intuitive user interface and a modular internal design; allows operators to select from up to sixteen universal inputs accepting composite video, s-video, component video, and computer video sources (640x480 VGA to 1600x1200 UXGA); system supports fourteen transition effects, including dissolves, wipes, cuts, and fade.

888-414-SCAN; 916-859-2500; fax: 916-859-2515; www.folsom.com

Booth: M9168 Circle (335) on Free Info Card



We Have Your Directions

Concept and Design by: THE DIGITAL OASIS INC.

Utah Scientific can help you find your way through the maze of options to the most cost-effective and future-proof digital transition plan for your facility.

Be sure to visit us at NAB (Booth L10452) to see what we are doing to make it even simpler for you to chart a course to the digital future.

Bring this ad with you to get a free compass and register for one of the GPS receivers we will be giving away in a drawing every day.

UTAH SCIENTIFIC

New Directions in Digital Switching

www.utahscientific.com

Corporate Headquarters

4750 Wiley Post Way, Suite 150, Salt Lake City, UT 84116 USA

Ph: 801.575.8801 • Fax: 801.575.3099 • Email: sales@utahscientific.com

Circle (162) on Free Info Card



VIRTUAL STUDIO SYSTEM

For-A digiWarp-EX:

Simple, cost-effective virtual studio system with 2048 x 2048 pixel, high-resolution background that allows no picture deterioration during zooms; easy system setup and breakdown for increased mobility when changing studio locations; auto defocus background in response to camera zoom.

212-861-2758; fax: 212-861-2793; www.for-a.com

Booth: L8612 Circle (336) on Free Info Card

AUDIO PROCESSOR AND DELAY

Fortel DTV DAS-441:

I/Os include two stereo pairs of balanced analog audio and two AES pairs of unbalanced digital audio; digital I/O uses 75-OHM BNC connectors for ease of installation; reference quality 24-bit A/D and D/A conversion at 96kHz for the analog I/Os ensures maximum transparency; maximum I/O levels are +28dBu.

800-530-5542; fax: 404-885-1501; www.fortelDTV.com

Booth L1261 Circle (337) on Free Info Card



HDTV CINE-STYLE LENS SET

Fujinon XA87x lenses:

offer 87x magnification ideal for sports shooting and other applications where extreme close-ups and high-image quality are critical; lenses feature focal lengths up to 2300mm; XA87 series is available with an optional integrated image stabilizer.

800-553-6611; fax: 973-633-5216; www.fujinon.com

Booth L8739 Circle (338) on Free Info Card

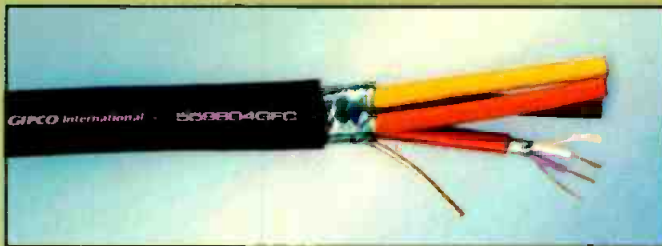
STAND-ALONE IMAGE STABILIZER

Fujinon Image Stabilizer:

Compatible with most of Fujinon's existing field lenses.

800-553-6611; fax: 973-633-5216; www.fujinon.com

Booth L8739 Circle (339) on Free Info Card



MULTI-PAIR CABLES

Gepco 5596GFC Series:

Next-generation 110Ω AES/EBU digital audio multi-pair cable is designed for both superior electrical and mechanical performance; highly accurate for transmission of all formats of AES3 digital audio, including 24-bit, 96kHz; features an extended 12.3MHz bandwidth, ultra-low attenuation and jitter, mechanical stability and a 110W impedance.

800-966-0069; fax 847-795-8770; www.gepco.com

Booth: L5856 Circle (340) on Free Info Card



FACILITY CONTROL SOLUTION

Grass Valley Group Encore:

An open, scalable solution for facility control provides centralized and distributed router and machine control, remote monitoring and diagnostic capabilities and signal-integrity analysis to expand the capabilities of their LAN, Wan and video networks, thus maximizing signal management infrastructure investments; design will enable tighter integration with automation systems, third-party routers and other equipment, system promotes greater inter- and intra-facility integration.

800-824-5127; fax: 530-487-3755; www.grassvalleygroup.com

Booth L10409 Circle (341) on Free Info Card



smoke

online editing & finishing

they like to watch.

smoke from Discreet gives you the tools to keep eyes riveted to the screen.

All eyes are on you to create visually-stunning work. **smoke** gives you the power to deliver it. With **smoke** you can quickly and easily finish picture, sound, graphics, and effects. Sophisticated vertical timeline editing gives you unlimited layering potential, with a versatile 3D compositing environment based on Discreet's Academy Award®-winning **flame**® and **inferno**®. And because **smoke** is format independent, you can produce once and easily distribute to HDTV or standard definition. So you can define your own standard of creativity.

Visit www.discreet.com or call 1.800.869.3504

Visit us at NAB Booth # S4100

Circle (163) on Free Info Card

discreet

ONSCREEN ONLINE

ROUTER SERIES

Grass Valley Group Concerto, Tempo and Bravo:

Each series offers a flexible, future proof design for a variety of applications – from multiscreen presentations to video and audio over broadband networks to traditional television-related uses; Concerto series features FlexFrame technology to enable format mixing within a single frame while supporting SD and HD video signals, AES/EBU digital audio; Tempo series offers FlexPoint technology that lets users configure 34 ports as I/Os; Bravo series provides entry-level series of fixed configuration utility routers.

800-824-5127; fax: 530-487-3755; www.grassvalleygroup.com

Booth L10409 Circle (342) on Free Info Card

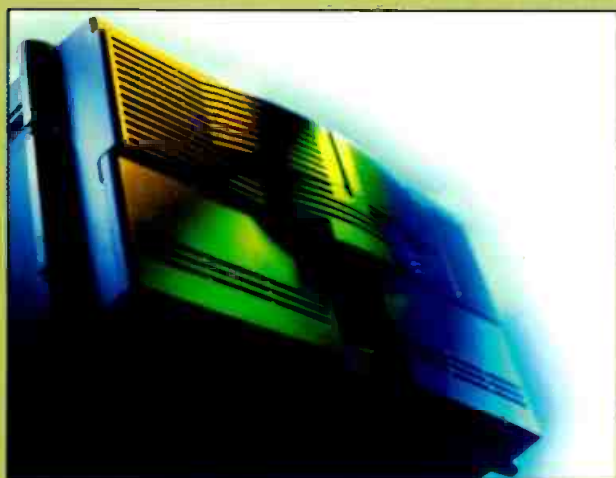
NEWSROOM SYSTEM

Grass Valley Group Vibrant Digital News Production System:

PC-based software solution includes FeedClip, and interactive feed capture system, NewsEdit, a nonlinear editing system, and NewsQ, a low-cost playback application; provides native MPEG, DV and DVCPRO support and data throughput rates of up to 50Mb/s.

800-824-5127; fax: 530-487-3755; www.grassvalleygroup.com

Booth L10409 Circle (343) on Free Info Card



PRODUCTION SYSTEM

Grass Valley Group Vibrant/Profile platform:

new platform technology utilizing the Vibrant Digital News Production Workgroup system and a new version of the Profile XP Media Platform for production; together, the products provide flexible, end-to-end support of both DVCPRO- and MPEG-based news production environments; system incorporates the Grass Valley MAN real-time shared storage option for the Profile XP Media Platform and the Profile Network Archive partial file restore software; compliant with the Grass Valley Group's ContentShare software platform for media asset management to allow integration with third-party systems such as VNI News Tracker and Avid's iNews Media Browse.

800-824-5127; fax: 530-487-3755;

www.grassvalleygroup.com

Booth L10409 Circle (344) on Free Info Card



VIDEO MEASURING SET

Hamlet ADEPT:

DV-ready, entry-level, multiformat-capable, measuring set provides S-Video and composite and component 625/525 multistandard measurement and monitoring capability; SDI and Firewire are optional inputs; waveform and vectorscope displays of signals are depicted as familiar composite or component traces and output to any composite or S-Video monitor.

+44 0500 625 525; fax: +44 1494 791 283; www.hamlet.co.uk

Booth L6130 Circle (345) on Free Info Card

MPEG-2 ENCODER MANAGEMENT SYSTEM

Harris FlexiCoder:

Software application that replaces the GUI on the Flexi-Coder chassis used for operation and control; enables broadcasters to remotely configure and control their Harris encoder as well as their ATSC satellite decoder (Harris NETplus) and ATM/IP communications link (Harris LINKplus); also enables the encoding system to be linked to the Harris Broadcast Manager.

800-622-0022; fax: 513-459-3890; www.harris.com

Booth L5023 Circle (346) on Free Info Card



DIGITAL AUDIO RECORDER

Henry Engineering DigiStor II:

Solid state digital audio recorder that can store up to 16 minutes of audio with a bandwidth of 7kHz; can record from a microphone or line level source; supports multiple play modes and features full remote control capability.

626355-3656; fax: 626-355-0077; www.henryeng.com

Booth R2132 Circle (347) on Free Info Card

STANDBY VIDEO SYSTEM

Horita SVS-50:

Self-contained video system that outputs standby full/SMPTE color bars with a source ID video overlay whenever a loss of normal video is detected; overlay can be up to nine lines or 20 characters each and can include a time and date display.

949-489-0240; fax: 949-489-0242; www.horita.com

Booth L9773 Circle (348) on Free Info Card

When Chicago's Tallest Building Needed 15 Channels* - They Came To the Leaders in Broadband Technology!

Chosen, by TrizecHahn Property Group, for over 30 years of global manufacturing experience, RFS is the leader in broadband technology.

Our broadband RF systems offer the most flexible and customized arrangements for the DTV Market and beyond.

RFS designs and manufactures broadband panel arrays, slot antennas, and combiners for adjacent and non adjacent channels designed to suit your needs.

Complimented by a full range of rigid and flexible line along with complete accessories which have been reliably manufactured and supplied to the broadcast market for decades. RFS is your Total Systems Solution provider - come take a fresh look, we will deliver.

**DTV Ready....
DTV Proven!**

RADIO FREQUENCY SYSTEMS

RFS Broadcast

59 Dodge Avenue

North Haven, CT 06473

Tel: 203-239-3311 Fax: 203-239-9260

email: info@rfsbroadcast.com

web: www.rfsbroadcast.com

*Customer Requirements: 5 Channel, 7 Channel, and 3 Channel System.



Circle (164) on Free Info Card

First Sears Building Broadband Panel Array Antenna

NEWS AND SPORTS AUTOMATION SYSTEM

IBIS SprinTx:

Integrates seamlessly with servers and newsroom computer systems from all major manufacturers and uses MOS protocols to ensure that the playout module can automatically be updated with any changes to the transmission schedules.

+44 1458 851150; fax: +44 1458 851170; www.ibistv.co.uk

Booth L11520 Circle (349) on Free Info Card

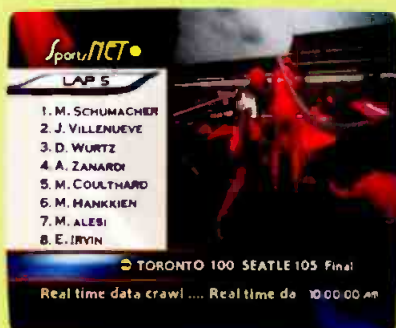
LOGGING SOFTWARE

Imagine Products MacTEP V7.0 and V8.0:

New versions feature compatibility with Apple's Final Cut Pro editor and OS 9.1 compliance; Final Cut Pro file export enables users to select and transfer logged shots for batch digitizing; HTML publishing feature allows for simple posting to the Web and offers the ability to save logs to searchable CDs; V8.0 adds Auto Capture Technology features allowing multifile searching of subdirectories or of the entire hard drive.

317-843-0706; fax: 317-843-0807; www.imagineproducts.com

Booth: i6755 Circle (350) on Free Info Card



GRAPHICS SOLUTION

Inscriber LIVE!RTX:

Includes development tools for the creation of custom information channels that combining streams of dynamic data with video; provides live titling solutions any application and features robust and flexible video clip playback, a simplified programming interface and sophisticated layering of active graphics, digital clips and background video.

800-363-3400; fax: 519-570-9140; www.inscriber.com

Booth S4832 Circle (351) on Free Info Card

DATACASTING CONTENT PROTECTION

Irdeto Access CypherCast:

IP/Internet digital conditional access solution allows the broadcast of up to 1000 individual multicast streams arrayed in up to 100 distinct program services for as many as 250,000 subscribers in a local viewing area; on the receive end, content can be accessed and decrypted through secure smartcard technology.

+31 23 556 2222; fax: +31 23 556 2240; www.irdetoaccess.com

Booth i6842 Circle (352) on Free Info Card

DTV TRANSMITTER

Itelco 50kW UHF:

Features an exclusive exciter system, a patented Switch Mode Beam Power Supply and the Itelco Supervisory System for remote monitoring and control; will accept IOT output devices from any major manufacturer; very small footprint.

303-464-8000; fax: 303-464-8770; www.itelco-usa.com

Booth L1417 Circle (353) on Free Info Card

TELECINE

Innovation TK Millennium Machine 70mm gate/4K high-speed data option:

New option for ITK's Millennium telecine enables 4K data transfers; users can now transfer both 65mm and 70mm film formats, including large formats like the 15-perf; same features are available when working with the 70mm format, including the same zooms, pans and rotates, as well as video processing with the same real-time aperture and primary and secondary color corrections.

+44-1992-553533; fax: +44-1992-558979; www.innovation-tk.com

Booth: L6356 Circle (354) on Free Info Card



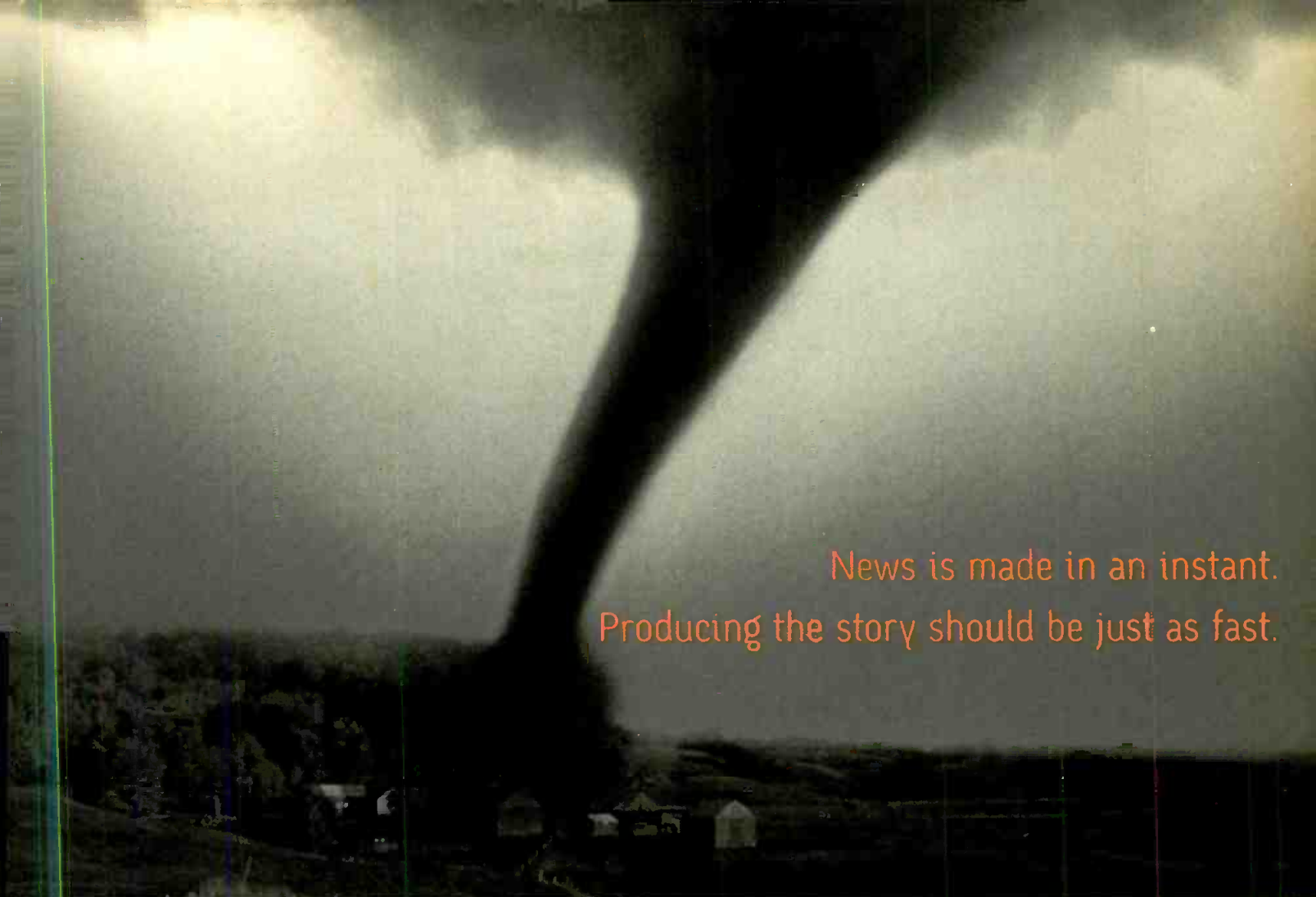
LIGHTING

K5600 Joker-Bug 800:

Comparable to a 3200/4000W quartz fixture but with a power draw of only about 12.5Amps; small quiet ballast can be easily hidden and greatly reduces the risk of overloading any circuit.

800-662-5756; fax: 818-762-6629; www.k5600.com

Booth L5356 Circle (355) on Free Info Card



News is made in an instant.
Producing the story should be just as fast.

Chances are, you've heard that digital technology can help produce news faster and easier. With an SGI Media Server™, the evolution to digital can happen just as fast. The new SGI video server distributes media as data for browsing and sharing content over standard data networks, allowing you to leverage your existing infrastructure for repurposing content. Plus, our multi-format, resolution-independent solution delivers simultaneous input, serving, and play-out of video, eliminating the need for independent devices. These advantages – as well as 24x7 service and support – help make your transition to digital quick and easy. To learn more about SGI Media Commerce™ solutions, visit our Web site or call 1-800-800-7441.

www.sgi.com/go/broadband

NEW MPEG-2 MODEL AT NAB BOOTH S4132

sgi™
One step ahead

The new SGI Media Server • Up to 8 video channels • Video file transfers • Multi-format video I/O support

© 2000 Silicon Graphics, Inc. All rights reserved. Silicon Graphics is a registered trademark, and SGI, the SGI logo, One step ahead, SGI Media Server and SGI Media Commerce are trademarks, of Silicon Graphics, Inc.

Circle (165) on Free Info Card

www.americanradiohistory.com

BROADCAST, POST ASSET MANAGEMENT SYSTEM

Keyvia Key-MediaWorks Asset Management System 1.3: Complete environment for managing broadcast digital assets by combining asset management, recording automation, proxy browsing and marking into a scalable client/server architecture; LAN-based PC workstation are able to browse and mark digital assets under configuration using a frame-accurate, low-res proxy.

514-876-2855; fax: 514-876-3664; www.keyvia.com

Booth: M10226 Circle (356) on Free Info Card

CONNECTORS

Kings Electronics 7760 Series Fibre-Cam Tri-Loc: Hybrid fiber optic/electrical connector meets SMPTE 304M electrical and optical performance requirement; features field serviceable fiber optic terminations, polarized key mating and Kings Tri-Loc style connector body; design features direct crimp on outer cable braid, internal strength member, and power and audio contacts.

888-909-5551; 803-909-5000; fax: 803-909-5092;

www.kingselectronics.com

Booth: L9039 Circle (357) on Free Info Card

ROUTING SWITCHER

Knox Video Chameleon 256:

Matrix can be expanded in multiples of 32 from 32x32 to 256x256 by inserting audio or video cards into a 12U rackframe; audio and video frames are linked together via serial cable; audio-follows-video or audio can be routed separately; internal milspec power supply is 110V/230V auto-sensing; command options including SAI.VO, batch and strings are available via RS232 or the optional front panel controller; serial protocol is simple ASCII.

301-840-5805; fax: 301-840-2946; www.knoxvideo.com

Booth: L9054 Circle (358) on Free Info Card



8VSB MODULATOR

Ktech Telecommunications VSB-ENC-200:

Modulates MPEG-2 transport stream into an 8VSB signal using linear and nonlinear pre-correction techniques; accepts SMPTE-310 or DVB-ASI @19.392Mb/s transport stream inputs and produces a 44MHz IF 8VB signal at output.

818-361-2248; fax: 818-270-2010; www.ktechtelecom.com

Booth L577 Circle (359) on Free Info Card



MULTIFORMAT DIGITAL VIDEO GENERATOR

Leader Instruments LT 442D:

Provides two SDI outputs conforming to SMPTE 292M and eight channels of embedded AES/EBU digital audio in compliance with SMPTE 299M; six channels of AES/EBU digital audio are available in stereo pairs from three dedicated BNC connectors; generator genlocks to tri-level sync as well as NTSC or PAL black burst and offers advance/delay settings of up to ± 100 lines and ± 1100 pixels in one-pixel increments; analog outputs include tri-level sync, horizontal and vertical drive.

800-645-5104; 714-527-9300; fax: 714-527-7490; www.leaderusa.com

Booth: L8777 Circle (360) on Free Info Card



OSCILLOSCOPES

LeCroy Waverunner-2 series:

Two- and four-channel digital oscilloscopes feature 350- to 500MHz bandwidth, a sampling rate of 1- to 4GS/s, memory up to 8Mpts, and WavePilot and QuickZoom for easy access to signal measurements; units also feature an Advanced Trigger Package offering runt and slew rate triggering.

800-553-2769; 914-425-2000; fax: 914-578-5985; www.lecroy.com

Booth: S3312 Circle (361) on Free Info Card

NEWSROOM SYSTEM

Leitch NewsFlash II

Nonlinear editor is fully integrated with Leitch's VR Technology servers; suite includes BrowseCutter's journalist workstations and access to archival media using DVD archiving.

800-231-9673; fax: 757-548-4088; www.leitch.com

Booth L8620 Circle (362) on Free Info Card

The Avica Platform for Digital Media



**Avica Technology introduces an advanced range of products,
expressly designed for telecine suite mastering.**

- ▼ AVICA MOTIONSTORE ▼ AVICA STILLSTORE ▼ AVICA PROJECTSTORE
- ▼ AVICA PROJECTVIEW ▼ AVICA DATASTORE ▼ AVICA FILMSTORE



Avica Technology Corporation

1201 Olympic Boulevard, Santa Monica, California 90404 USA
Phone (310) 450-9090 Fax (310) 450-5353 E-mail: contact@avica.com

www.avicatech.com

Come see us at NAB,
Sands Booth S-3869
April 23-26

Circle (166) on Free Info Card

All product names, the Avica logo and Avica Technology are trademarks of Avica Technology Corporation. © 2001 Avica Technology Corporation

HIGH-POWER BROADCAST TUBE

Litton Electronic Devices L-4299

Constant Efficiency Amplifier:

Next-gen high-power tubes for UHF; operates a peak powers up to 120kW, offers high efficiency in comparison to standard IOT when operated in digital services.

800-861-1UHF; fax: 570-326-2903; www.littonedd.com

Booth: L6119 Circle (363) on Free Info Card

MPEG ENCODER

Logic Innovations IPE:

Supports SNMP, the IPE and Transport Stream Multiplexer, allowing data management and control from the broadcasters network management of choice; designed for encapsulation Internet data into an MPEG transport stream for broadcasting across satellite, cable and terrestrial networks.

888-34-LOGIC; fax: 619-455-7273; www.logici.com

Booth: E3217 Circle (364) on Free Info Card

ROUTER CONTROLLERS

Logitek Route3:

Rack-mounted controller for Logitek's Audio Engine offers full input selection control for three devices with a simple, easy-to-learn interface, same labels that display on any Logitek control surface are displayed in the units Route3 LCD window.

713-664-4470; fax: 713-664-4479; www.logitekaudio.com

Booth: R2147 Circle (365) on Free Info Card

MONITORING HARDWARE

Magni Systems SDM-560 Monitor:

Serial digital /composite video and audio monitor provides efficient monitoring of 601, composite video and audio; features routable displays, embedded audio decoding and metering, auto-measurement, alarming, reporting and complete remote control.

800-237-5964; fax: 503-615-1999; www.magnisystems.com

Booth L11373 Circle (366) on Free Info Card

IOT

Marconi Applied Technologies IOTD3100W:

Capable of 110kW peak digital or 55=5.5kW combined analog amplification, this plug-in IOT offers ease of installation and high-performance.

800-342-5338; fax: 914-592-5148; www.marconitech.com

Booth L12545 Circle (367) on Free Info Card

STREAMING MEDIA DESIGN SOFTWARE

Media 100 iFinish 4 PowerGrade series:

Allows web-designers to develop high-quality interactive digital media content for Windows 2000; enables the embedding of interactive instruction directly into streaming media programs to trigger visual, content rich capabilities, including Java, Flash and graphics.

800-773-1770 ; fax: 508-624-9384; www.media100.com

Booth: I6511 Circle (368) on Free Info Card

MPEG-2 ENCODER

MedioStream MediaPRO-XLT:

Interface to legacy systems with input of composite video, analog or AES/EBU audio, SDI or ASI; offers laptop docking module for input and output interfaces; output can be either MPEG-2 4:2:0 or 4:2:2 formats; real-time encoded events can also be transcoded into Windows Media, Real G2 and Quicktime formats.

408-452-5500; fax: 408-452-5522; www.mediostream.com

Booth: E5845 Circle (369) on Free Info Card

WIDEBAND CHANNEL COMBINER

Micro Communications Wideband Channel Combiner:

Provides high-power channel combining in multichannel sites where channels are spread across a wide frequency range; meets the requirements of installations running at high ERPs.

800-545-0608; 603-624-4351; fax: 603-624-4822;

www.mcibroadcast.com

Booth: L8768 Circle (370) on Free Info Card

TRIPOD SYSTEM

Miller Camera Support HD 100 tripod:

Lightweight, two-stage carbon fibre system offers Quick-Lok vertical leg clamping, slip carry handle and variable mid-level spreader.

973-857-8300; fax: 973-857-8188; www.millertripods

Booth: L10773 Circle (371) on Free Info Card

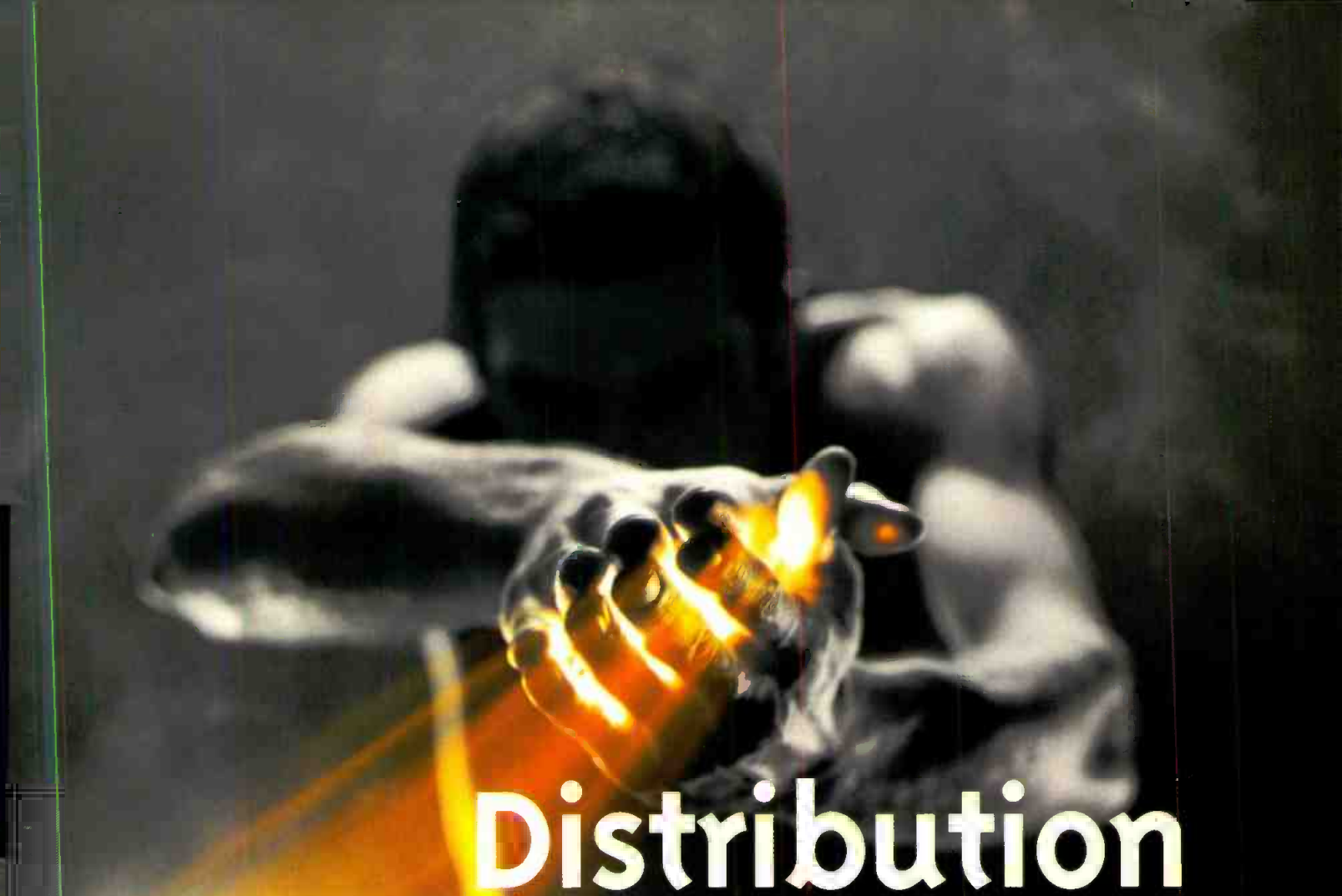
ROUTING SWITCHER SERIES

Miranda-Network:

Features a complete range of models for signal formats that include analog and digital video, analog and digital audio, HD SDI (SMPTE 292M), RS-422, and the popular datcom formats.

514-333-1772; fax: 514-333-9828; www.miranda.com

Booth: L8632 Circle (372) on Free Info Card



Distribution

MONITORING

CONTRIBUTION

WORKFLOW

Open new perspectives in broadcast distribution.

Statewide digital networks, major broadcasters and post-production companies are using BarcoNet encoders and decoders for the quality and flexibility that result in cost-effective operation of your distribution network.

BarcoNet's encoders and decoders offer a great variety of versatile MPEG-2 encoding solutions featuring common ATM, satellite and cable interfaces for primary distribution, studio/transmitter links, and local encoding and decoding applications.

BarcoNet's capability for sharing High Definition and Standard Definition programming between multiple locations in one single network means you can build and rebuild your networks, while always getting the most out of your investment.

www.barconet.com



CONNECTING WORLDS TRANSMITTING IDEAS

Circle (167) on Free Info Card

See Us at NAB Booth #S5360

FREQUENCY MEASUREMENT SYSTEM

Modulation Sciences Precision Frequency Measurement Panel:

Provides NTSC and 8VSB frequency measurement for television carriers; measures local or off the air frequencies to an accuracy approaching one part in a billion.

800-826-2603; 732-302-3090; fax: 732-302-0206; www.modsci.com

Booth: L4416 Circle (373) on Free Info Card

CABLE CONNECTORS AND BULKHEADS

Neutrik BNC75:

Offers a push-pull version that makes assembly quick and simple and requires a standard center contact crimp die after cable preparation; includes screw lock cable retention with superior pull strength provided by the jacket.

732-901-9488; fax: 732-901-9608; www.neutrikusa.com

Booth: 11636 Circle (374) on Free Info Card

SATELLITE INTERACTIVE TERMINAL OUT-DOOR UNIT

Newtec America SIT ODU:

Features integrated 30GHz/12GHz or 30GHz/20GHz design compatible with DVB-RCS; available in 0.5, 1 or 2 watts; return channel is up to 2Mb/s with antenna sizes 60 to 90cm.

203-323-0042; fax: 203-323-8406; www.newtec.be

Booth: T550 Circle (375) on Free Info Card

SATELLITE-TRANSMITTER LINK

Nucomm Microwave V Stream:

STL featuring 8VSB modulation; offers digital signal monitoring with SMPTE 310 and ASI digital interfaces.

800-9-NUCOMM; 908-852-3700; fax: 908-813-0399;

www.nucomm.com

Booth: L3854 Circle (376) on Free Info Card

MEDIA PRODUCTION TOOL

Omneon Video Network Networked Content Server System with FAST's purple:

Omneon and FAST Multimedia AG have integrated FAST's purple DV editing system to Omneon's platform; the platform's open, standards-based infrastructure serves multiple applications; the integrated system utilizes 1394 I/O with FAST's purple, the I/O serving as an edge device allowing direct transfers to a common file system.

408-585-5000; fax: 408-585-5090; www.omneon.com

Booth: L529 Circle (377) on Free Info Card



DIGITAL VIDEO SYSTEM

Opticomm DVX-5000 System

Universal multimedia digital transport system for distribution over wide area networks including PAL, NTSC and SECAM for multichannel QAM or VSB signals; offers transmission signals for the transport of digitized video, audio and control data signals over single-mode fiber; uncompressed 10-bit serial digital video system at 143, 177, 270, 360, 540 and 622Mb/s data rate is free of adjustment over a wide dynamic range; digital signal offers receiver output stability not affected by the fiber, attenuation, aging, splicing or other factors;.

858-450-0143; fax: 858-450-0155; www.opticomm.com

Booth: S3047 Circle (378) on Free Info Card

VIDEOGRAPHICS WORKSTATION

Orad Hi-Tec Systems DVG-10:

PC-based system for virtual sets, on-air graphic and sports simulations; features high performance 3D graphics.

212-931-6723; fax: 212-931-6730; www.orad-ny.com

Booth: S5332 Circle (379) on Free Info Card

VIDEO SERVER

Orad Hi-Tec Systems Forum:

Records and plays on six channels concurrently; features slow motion, video effects, and editing and control using the Elephant remote control; offers provisions for networked operations for use in sports productions.

212-931-6723; fax: 212-931-6730; www.orad-ny.com

Booth: S5332 Circle (380) on Free Info Card

High Density Matrix

Step up to Datatek

Tie Line System

The Datatek D-2800 Router

reflects the experience of Datatek's 30 years in the design and manufacture of broadcast-quality routing switchers.

With a large number of systems in use worldwide, the D-2800 is available for:

Serial Digital Video

Synchronous Digital Audio

Asynchronous Digital Audio

Analog Video

Stereo Analog Audio with mode switching

RS-422 Bi-Directional Data

Time Code

Field Expandable

Front Access for all Modules

Extensive Control Panel Selection

For additional information:
Datatek Corporation
1121 Bristol Road,
Mountainside, NJ 07092
Tel: 908-654-8100 • 800-882-9100
Fax: 908-232-6381
www.datateknj.com

See us at Booth L9949
Circle (168) on Free Info Card

D
DATATEK
CORP.

CHARACTER GENERATOR

Oxtel Easytext:

Integrated option to the Imagestore master control and channel branding system; can render static or scrolling characters over custom backgrounds; uses text fed directly via multisession automation; combination of Easytext with Imagestore allows a squeeze and reveal program schedule to be played out, combining a DVE transition with text insertion direct from a playlist.

+44 1491 820 000; fax: +44 1491 820 001; www.oxtel.com

Booth: L147 Circle (381) on Free Info Card



HIGH-DEFINITION CAMCORDER

Panasonic Broadcast AJ-HDC27A:

30frames/s to 60frames/s, dual-frame-rate, progressive-scan (720p) DVCPRO HD camcorder is based on a newly developed 1.1-million-pixel, 2/3-inch, three-CCD IT imaging system; offers a sensitivity of f/11 at 2000lux; provides 46 minutes of recording, two channels of 16-bit/48kHz digital audio, power consumption of 30W, and uses standard, 2/3-inch bayonet lenses; HD-DSI output enables full-color live and tape playback; 8MB multimedia card stores camera setups.

800-528-8601; 323-436-3500; fax: 323-436-3660; www.panasonic.com

Booth: L7020 Circle (382) on Free Info Card

AUDIO INPUT ADAPTER

Panasonic AJ-CA910:

Adapter increases audio channels of Panasonic's AJ-D910WA and AJ-D900WA 50Mb/s DVCPRO50 camcorders from two channels to four; features an LED audio level indication, audio level volume and phantom power supply (+48dB), as well as two inputs/outputs.

800-528-8601; 323-436-3500; fax: 323-436-3660; www.panasonic.com

Booth: L7020 Circle (383) on Free Info Card

VIDEO SWITCHER

Panasonic AW-SW300:

Live/non-live video switcher features four inputs, either composite or s-video; powered by AC or 12 volt DC; also features a built-in frame synchronizer, black-burst output and a variety of basic wipes; other features include a super impose key and intercom/tally capabilities.

800-528-8601; 323-436-3500; fax: 323-436-3660; www.panasonic.com

Booth: L7020 Circle (384) on Free Info Card

VIDEO PRODUCTION SYSTEM

ParkerVision PTV Studio NEWS:

System features integrated video, audio, machine, camera and teleprompter functions; operators can control the system from a one- or two-operator station, available in Digital 16, Digital 24 and Digital 24 Plus! Systems; several package options available, several including ParkerVision's three-CCD robotic pan/tilt cameras and multicamera controllers.

800-532-8034; fax: 904-731-0958; www.pvtv.com

Booth L541 Circle (385) on Free Info Card

ROUTER

PESA Switching Systems Cougar HD/SD:

Supports either HDTV or SDI input and output cards; can be configured as 4x4 or expanded up to 32x32 capacity.

800-328-1008; 631-845-5020; fax: 631-845-5023; www.pesa.com

Booth: L8757 Circle (386) on Free Info Card

HD PRODUCTION SWITCHER FAMILY

Philips Broadcast Seraph:

Includes full range switchers from one mix effects band up to four; HD formats include 1080i, 720p, and 24p.

800-962-4287; fax: 818-729-7710; www.broadcast.philips.com

Booth 5010 Circle (387) on Free Info Card

PRODUCTION SWITCHER

Philips Broadcast DD35:

Now has HD/SD SimulCast networking production; simultaneous SD and HD production from a single switcher panel; up to eight M/Es with intelligent access; internal DVE and RAM storage capability including 2D DVE effects in 3D space as well as up to 32 seconds of video clip storage and/or still store applications.

800-962-4287; fax: 818-729-7710; www.broadcast.philips.com

Booth 5010 Circle (388) on Free Info Card

Everybody Wants **More**

Everybody is clamoring for more content, more choices and more bandwidth. When the pressure is on, programmers, broadcasters and service providers need the versatility delivered by PowerVu® digital content distribution systems.

More Content. Develop customized, targeted programming lineups for any market.

More Bandwidth. Squeeze more channels into your bandwidth.

More Choices. Launch made-to-order interactive solutions with versatile encoders, receivers and multiplexers, plus our Explorer® digital set-tops.

We know digital and how to deliver it. Wherever you operate in the content distribution chain, when your customers want more, you can deliver with PowerVu digital.

And **PowerVu**
Delivers

Want MORE?

See PowerVu at NAB Booth S4142

Call 770.236.6190

www.scientificatlanta.com



**Scientific
Atlanta**

Bringing the Interactive
Experience Home™

Circle (169) on Free Info Card

*Bringing the Interactive Experience Home™ is a trademark of Scientific Atlanta, Inc. PowerVu and Explorer are registered trademarks of Scientific Atlanta, Inc.

DVE

Pinnacle Systems DVEXcel:

New frame-based DVE offers choice of one, two, three or four channels, each with video and key and three separate DVE engines; features include deep defocus and chroma keying and new effects.

650-526-1600; fax: 650-526-1601; www.pinnaclesys.com

Booth: L11327 Circle (389) on Free Info Card

UNIVERSAL 10-BIT SYNCHRONIZER

Pixel Instruments VS-5200:

Offers multiformat inputs and outputs and a built-in heterodyne TBC; provides selectable inputs in serial digital, composite analog, component analog and Y/C, as well as simultaneous outputs in the same formats; the system's DDO pulse output is used to control the audio delay of the AD-300 for automatic lip sync correction.

408-871-1975; fax: 408-871-1976; www.pixelinstruments.com

Booth: L430 Circle (390) on Free Info Card

ROBOTIC POSITIONING EQUIPMENT

Pro/Four Video Products 2000RP:

Remote positioning equipment features an onboard digital receiver, including control, power and video, and new "true balance" load balancing system; also features a new optical encoder closed-loop servo control design, which insures preset positioning accuracy as fine as one arc minute; unit is intended for use with cameras weighing up to 35 pounds.

813-447-6389; 800-457-8130; fax: 813-447-5166; www.pro-four.com

Booth: S4062 Circle (391) on Free Info Card

TELEPROMPTER SOFTWARE

QTV WinCueLT:

Upgrade to QCPWIN prompter program; operates in a Windows95/98NT environment; features spell check, hard copy and support for thousands of scalable True Type fonts; system is multilingual; inserts error marks while scrolling; operates on a laptop or desktop; no preview screen is needed.

212-460-9050; fax: 212-328-1699; www.qtv.com

Booth: L12158 Circle (392) on Free Info Card

LIVE PRODUCTION SERVER

Quantel Clipbox Studio:

Offers access to video clips and stills for studio programming; provides resizing and re-aspecting capabilities for each output through internal 2DDVEs; this feature allows for windowed over-the-shoulder style presentation; internal mixers provide cross-fade capabilities between channels and on-board key combiners allow for live compositing of foreground over background.

203-656-3100; fax: 203-656-3459; www.quantel.com

Booth: L11520 Circle (393) on Free Info Card



HD VIRTUAL SET

Radamec HD Scenario:

Offers an upgrade path for Virtual Scenario users to move SD virtual studios to HD; utilizes high-definition inputs/outputs; processes real-time high definition or standard definition upconverted background video and key into its background and foreground; features an HD chromakeyer and HD still store; can be operated manually or robotically.

877-RADAMEC; 732-246-0906; fax: 732-448-1184; www.radamec.com

Booth: L1441 Circle (394) on Free Info Card

UNDER-MONITOR DISPLAY PANEL

RCI Custom Products Electro Luminescent series:

Lightweight electronic identifier for video monitors and flat panel displays; offers three standard lighting colors; features a wide range of options for font selection and text size; EL technology provides a long-life method of back lighting.

301-984-2202; fax: 301-984-9473; www.rcicustom.com

Booth: M9824, M9825 Circle (395) on Free Info Card

BROADBAND ANTENNA

RFS Broadcast RD Series:

Designed for the digital NTSC/DTV market; wideband (100MHz), low VSWR, low wind load; allows use of a single UHF TV antenna for multichannel NTSC/DTV applications; features include single or dual option, power rating up to 200kW NTSC and top-or-side-mount configuration.

203-239-3311; 203-239-9260;

www.rfsamericas.com

Booth: L9528 Circle (396) on Free Info Card



MICROWAVE LINK

RF Technology ACL-Series:

Link is analog, digital-ready or digital, available in a 2- to 16GHz frequency range; systems can be configured for QPSK, 16QAM or COFDM for transmission of ATSC/HDTV, DS3, E3, E2, E1 or T1; interfaces include G.703, SMPTE-310M and DVB-ASI; features protected/diversity terminals with errorless changeover, adaptive equalization and multiplex equipment; ACL also supports the transmission of analog video and up to six audio subcarriers.

800-762-4369; 203-866-4283; fax: 203-853-3513;

www.rftechnology.com

Booth: L12549 Circle (397) on Free Info Card

The OMNI Digital series of MPEG-2/DVB Receivers and Decoders is a technology breakthrough for professional broadcast applications, with QPSK inputs and 422P@ML and MP@ML processing, and a full array of VBI features. Options include 8-PSK and ASI input as well as DolbyTM AC-3 audio.

But when you add advanced software like Standard's new SRC4, you get something far more: complete control of all parameters for up to 99 receivers and 49 dish controllers from a single screen display.

Intended for use in broadcast Master Control Rooms, SRC4 dramatically simplifies receiver and dish control by allowing the user to save, recall and edit parameters simply by clicking on the screen.

SRC4 is also the software of choice for Standard's MT930-B. Get the full story. Call us at 800.745.2445, or visit us online at www.standardcomm.com.



U.S.: (800) 745-2445
Canada: (800) 638-4741
Europe: 44 1923 800 510
Latin America: 55 11 3887 6598



**Standard
Communications**

Meeting tomorrow's standards today
Come see us at NAB, Booth #T1134
www.standardcomm.com

Circle (170) on Free Info Card

www.americanradiohistory.com

NONLINEAR EDITING SYSTEM

Richardson Electronics Syntax Media Systems: Multimedia nonlinear editing system is based on third-party editing software; system is tested and configured by Syntax Media Systems and assembled by Richardson Electronics to offer a step-by-step process to deliver video programs either to CD-ROM or the Internet.

800-348-5580; 630-208-2200; fax: 630-208-2550; www.rell.com

Booth: L6122, R2325 Circle (398) on Free Info Card

RECEIVERS/DEMODULATORS

Rohde & Schwarz EFA:

Enhancements to the EFA product family handle digital 8VSB and analog System "M" modulation, as well as US cable; systems demodulate digital formats to MPEG-2 transport at SMPTE 310 or ASI serial interfaces; System "M" is demodulated to baseband video/audio; demodulators utilize a measurement grade RF front end.

301-459-8800; fax: 301-459-2810; www.rohde-schwarz.com

Booth: L5750 Circle (399) on Free Info Card

MASTER CONTROL SWITCHER

Ross Video CDK 111:

Single DA-sized card provides video mixing, keyer with built-in animated logo storage and frame synchronizers for every input; other features include full preview, program bypass relay and automation port.

613-652-4886; fax: 613-652-4425;

www.rossvideo.com

Booth: L11639

Circle (400) on Free Info Card



FILM CLEANING SYSTEM

Research Technology International EXCEL 2000:



Motion picture film cleaning system developed by Lipsner-Smith Company for applications where a solvent-based cleaning system is not required; removes dirt and contamination from film using four molded polymer rollers, before passing film through eight softnap rotary buffers with environmentally safe fluids.

800-323-7520; 847-677-3000;

fax: 847-677-1311; www.rtico.com

Booth: L7045

Circle (401) on Free Info Card

TOWERS

Sabre Communications guyed and self-supporting towers:

Sabre provides parts and accessories for towers, monopoles and HF antennas regardless of original manufacturer; other services include structural analysis of any tower, turnkey site construction, tower inspections and project management.

800-369-6690; 712-258-6690; fax: 712-258-8250; www.sabrecom.com

Booth: L1412 Circle (402) on Free Info Card

RANDOM ACCESS VIDEO RECORDER

SADiE Portia:

Eliminates the need for a VTR in track laying and dubbing in post production; system allows video to be recorded into a normal SADiE EDL and accessed with the audio; video appears as a dedicated stream in the EDL so video and audio can be scrubbed simultaneously.

615-327-1140; fax: 615-327-1699; www.sadie.com

Booth: E5935 Circle (403) on Free Info Card



CHARACTER GENERATORS

SAV Kronoss:

Offers real-time positioning, rotation and resizing; features simultaneous video and audio, AES/EBU digital and analog audio in/out with fade, and an additional built-in keyer for external sources.

33 1 53 38 22-00; fax: 33 1 42 40 47 80; www.sav-broadcast.com

Booth: L436 Circle (404) on Free Info Card

STATISTICAL MULTIPLEXER

Scientific-Atlanta PowerVu BitMizer:

Offers high-density grooming and MQAM modulator; provides end-to-end solution for cable headends.

770-903-5000; fax: 770-903-4617; www.sciatl.com

Booth: I7246 Circle (405) on Free Info Card

Trying to take video to the next level?
Remember, the world's counting on you.



COMPUTING

COMMUNICATIONS

VIDEO



Testing Video Equipment Designs Video—the world can't get enough of it. And we design more tools for testing it. Tools that analyze and measure every type of video out there—analogue or digital, baseband or MPEG. Now you can quickly debug, characterize, and verify all your ingenious new product designs. Hey, the world is waiting. For information about set top box, MPEG codec, multiplexer testing, and more, call 800-426-2200 x3070 or visit www.tektronix.com/videodesign

Tektronix®

© Tektronix, Inc. 2001. All rights reserved. TEKTRONIX is a registered trademark, and the Tektronix logo is a trademark of Tektronix, Inc.

Circle (171) on Free Info Card

www.americanradiohistory.com

DSNG ENCODER

Scopus (formerly Tadiran Scopus) CODICO E-1700:

Features built-in modulator to allow for encoding and modulation in one unit.

858-618-1600; fax: 858-618-1615; www.tadiranscopus.com

Booth: S5372 Circle (406) on Free Info Card

MPEG-2 VIDEO SERVER SYSTEM

SeaChange International Broadcast MediaCluster 1230/50:

Server system scales from a cluster of three computer servers to larger clusters with dozens of I/Os and terabytes of storage for use in mid-sized to large-scale broadcast operations; can store more than 4.2TB of video; supports up to 42 I/Os delivering 30Mb/s MPEG-2 4:2:2 long-GOP video, with two 24-bit uncompressed AES audio channels each.

978-897-0100; fax: 978-897-0132; www.schange.com

Booth: L917 Circle (407) on Free Info Card

DIGITAL CONSOLE

Sennheiser Electronics Sensory Compact:

Offers 32 mic/line inputs and eight line-only inputs feeding 32 patchable input channels; each channel includes a digitally controlled preamp, a low-cut filter and a gate/expander, as well as four bands of fully-parametric equalization and a four-digit label display; 12 busses mix down to three masters: L/R-mono, LCR or user-defined arrangements; the unit also has 16 matrix outputs with full digital processing.

860-434-9190; fax: 860-434-1759; www.sennheiserusa.com

Booth: R2253 Circle (408) on Free Info Card

PRODUCTION TRUCK

Shook Advantage Series A-16 EFP:

Custom 24-foot truck contains Ikegami HL-45WBT 16:9-4:3 cameras and monitors, as well as a Grass Valley Group 1200 SDI switcher and Sony DNW-500 Digital VCRs; also contains Leitch terminal hardware and router system; other equipment includes Soundcraft audio, STI IFB and Telex intercom.

888-651-5775; 210-651-5700; fax: 210-651-5220; shook-usa.com

Booth: OD306 Circle (409) on Free Info Card

AES SYNCHRONOUS DIGITAL AUDIO

Sierra Video Systems Yosemite:

Available in 3RU 64x64, 4RU 96x96 and 5RU 128x128 matrix sizes; module filters audio stream inputs at any rate through its internal sample rate converter and converts to the desired output sample rate; also features optional "bypass mode," which allows the input synchronizing circuit to be bypassed for non-AES/EBU signals.

530-478-1000; fax: 530-478-1105; www.sierravideo.com

Booth: L3750 Circle (410) on Free Info Card

DIGITAL AUDIO CONVERTERS

Sierra Video Systems DigiLinux:

Converters contain two identical stereo 24-bit A/D and D/A converters; analog end accepts full differential audio, while the digital end supports either AES or SPIF formats; analog-to-digital converter operates either locked to an external AES audio stream or free-running via a stable internal oscillator with selectable sample rates; AES-to-analog converter uses the same PLL technology to lock to the input digital audio stream.

530-478-1000; fax: 530-478-1105; www.sierravideo.com

Booth: L3750 Circle (411) on Free Info Card

SIGNAL LOSS DETECTION SYSTEM

Sigma Electronics SDX:

Detects the loss of a video source into Sigma's routing switchers and automatically switches to a preselected alternate source; panel is user programmable and occupies 2RU.

717-569-2681; fax: 717-569-4056; www.sigmaelectronics.com

Booth: L12639 Circle (412) on Free Info Card

VIDEO SOLUTION

Silicon Graphics Zx10 Visual Workstation:

Features two new video-enabled configurations; PCI video option supports uncompressed 10-bit YUV and 8-bit RGB (with alpha) SD video input/output; digital media solution offers SGI's exclusive Graphics to Video output with Wildcat 4210VIO graphics; options will be available as a bundled solution with two different configurations.

650-960-1980; 800-800-7441 fax: 650-933-0819;

www.sgi.com/go/broadband

Booth: S4132 Circle (413) on Free Info Card

ASSET MANAGEMENT SYSTEM

Silicon Graphics SGI StudioCentral Library 3.0:

Flexible, scalable system provides immediate access to storing, securing and managing digital assets including versioned/non-versioned text files and streaming media; can be used as a single workstation or multiple workgroups; provides StudioCentral server functionality from any platform.

650-960-1980; 800-800-7441 fax: 650-933-0819;

www.sgi.com/go/broadband

Booth: S4132 Circle (414) on Free Info Card

Leader Does It Better!



Model LV 5836B

Model LV 5152DA



Now, the Most Complete HDTV Audio/Video Test Solutions You Can Use!

See it to believe it! This new Leader Instrument system offers both digital video and digital audio testing in a single rack-mount package. It honors Leader's tradition of creating complete, flexible test systems with analog monitoring capabilities built-in to expand versatility. Here are some feature highlights:

LV 5836B - Surround Digital/Analog Audio Monitor

- Receives Extracted Digital Audio (AES/EBU) from LV 5152DA or use stand-alone.
- Monitors 6-CH of Dolby Digital and 5-CH of Analog Audio
- Innovative Sound Image Display Enables Fast Sound Setup in Production.
- Matrix Multi-CH Display Permits Audio Component Phase Comparisons.
- Simultaneous Level and Phase Monitoring Screens.
- 6-CH Bargraph Display.
- CH Status Data Screen and Bit Dump.

LV 5152DA - HD Digital/Analog Waveform Monitor

- All the features of the Award Winning LV 5150D and LV 5152D

PLUS:

- Multi-Format HD Monitor sets up for: 1080i (60/59.94/50), 1080p (30/29.97/25/24/23.98/24sF/23.98sF), 1035i (60/59.94) and 720p (60/59.94).
- Waveform, Vector, Picture Monitor and X-Y Modes.
- 8-CH AES/EBU Digital Audio Outputs (16, 18, 20 or 24 bit).
- RGB Gamut Error and P-P Readout of Waveform Components.
- Hex Data Dump, Extensive Error Logging, Custom Alarms.

Prove It To Yourself!

Call 1-800-645-5104 For A Free On-Site Evaluation Today

Some of Our Customers...

• ABC • Bexel • CBS • Crawford Communications • DaVinci • Foto-Kem • Laser Pacific • Lighthouse Digital • N-Vision
• Pacific Video • PESA • Sony Pictures (HD) • Tapehouse Editorial • Universal Studios • Utah Scientific • Warner Bros.

1 800 645-5104 / www.LeaderUSA.com

LEADER

FOR PROFESSIONALS WHO KNOW
THE DIFFERENCE

6484 Commerce Drive, Cypress, CA 90630 Tel: (714) 527-9300 Fax: (714) 527-7490
Regional Offices: Atlanta, Boston, Chicago, Cleveland, Dallas, Los Angeles

See us at NAB Booth #L8777

Circle (172) on Free Info Card

www.americanradiohistory.com

DIGITAL MEDIA SOLUTION

Silicon Graphics SGI Onyx3000:

New HD/SD option supports HD uncompressed video in and out with real-time colorspace conversion; the system with the option supports HD 10-bit RGB or 10-bit YUV and SD 10-bit RGB or 10-bit YUV; also provides application support for 2k x 2k 24fps and is OpenML-compatible.

650-960-1980; 800-800-7441 fax: 650-933-0819;

www.sgi.com/go/broadband

Booth: S4132 Circle (415) on Free Info Card

UPCONVERTER

Snell & Wilcox Premier HD5500 PhC:

10-bit motion-compensated device upconverts 525/625 SD video signals to HDTV 1.48Gb/s output formats; utilizes Ph.C, proprietary motion compensation technology; supports field rate standards conversion as part of the upconversion process—for example, 525/60 to 1080i/50.

408-260-1000; fax: 408-260-2800; www.snellwilcox.com.

Booth: L10428 Circle (416) on Free Info Card

MIXING SOFTWARE

Solid State Logic Axiom-MT, V2.7:

New software for Axiom-MT features automatic mix latency management through the Mix Align feature; also offers choice of four EQ algorithms and ability to globally cycle through aux pages for quick interrogation of channel auxes; displays all channel inserts on the central screen; system allows inserts, multitrack outputs, EQ and dynamics presets to be cleared or routed individually or in an incremental range.

212-315-1111; fax: 212-315-0251; www.solid-state-logic.com

Booth: R2515 Circle (417) on Free Info Card

DVD AUTHORIZING SOLUTION

Sonic Solutions DVD Fusion for Windows:

Integrated DVD production system features drag and drop authoring, integrated image compositing, and real-time video and audio encoding; also features direct-to-DVD writing, a text generator and a timeline-based user interface; the system supports eight audio streams and 32 subtitles; provides control of Sonic's studio-quality MPEG-2 real-time video encoder.

888-Sonic-4U; 415-893-8000; fax: 415-893-8008; www.sonic.com

Booth: S4826 Circle (418) on Free Info Card

DIGITAL MEDIA STORAGE

Sony MUS-2000:

The MUS-2000 is part of the MUP-2000 series content management networked system; provides multiaccess capability with high-speed file transfer rates and 288GB capacity; features RAID-5 HDD technology providing a self-diagnostics function and auto data recovery; other features include hot-swappable HDDs and backup power supply.

800-686-SONY; 201-930-1000; fax: 201-930-4752;

www.sony.com/professional

Booth: L11600 Circle (419) on Free Info Card

HSM AND DATA MOVER

Sony PetaServe/PetaBack V2.00:

Functions between data or video servers; optimized for Sony's PetaSite automated tape libraries and DTF computer tape drives; "middleware" manages disk and tape capacities, automates daily maintenance and volume management; system is SAN ready; Solaris 8 support allows the host installed by the UltraSPARC III processor to use the software.

800-686-SONY; 201-930-1000; fax: 201-930-4752;

www.sony.com/professional

Booth: L11600 Circle (420) on Free Info Card

DVD AUTHORIZING SYSTEM

Sony DVA-700BSC:

Offers an Instant Authoring function for entry-level users of DVD authoring; converts videotape to high picture quality DVD-Video; DVD-video produced by the system can be used as client copies, automatic repeating displays at stores or for video archives, etc.; system can also be used as a one-pass encoder for DVD authorware.

800-686-SONY; 201-930-1000; fax: 201-930-4752;

www.sony.com/professional

Booth: L11600 Circle (421) on Free Info Card

READER/WRITER WITH INTERFACE

Sony MLU-200/MLT-200:

Allows users to store and access production-related information using a non-contact read/write system during the shooting and pre-editing processes; users can check cassette information and cue data on a Tele-File memory label by bringing the reader/writer close to the label; Sony's MLT-200 serves as an interface between the MLU-200 and a PC, and can be used as a battery charger for the MLU-200.

800-686-SONY; 201-930-1000; fax: 201-930-4752;

www.sony.com/professional

Booth: L11600 Circle (422) on Free Info Card





PLAN FOR 100% FAULT-RESILIENCE. AT 50% OF THE COST.

Build your fault-resilient operation with SeaChange and cut your server costs in half. Other video servers require that you copy each and every video file to achieve 100% fault resilience.

That can double your storage costs. However, through its patented architecture and innovative software, the SeaChange Broadcast MediaCluster® provides total fault resilience with one file copy. No costly mirroring required. SeaChange does the job of two for the price of one. Just think how much you'll save in storage, space and maintenance — especially as your operation grows.

Your counterparts worldwide are deploying Broadcast MediaCluster servers to ensure profitability, improve performance and slash costs. Not to mention prepare for multichannel broadcasting, IP streaming and HDTV. SeaChange does it all. With your existing equipment. With 100% fault resilience, 100% of the time.

To learn how the SeaChange Broadcast MediaCluster can cut your server costs in half, visit www.seachangeinternational.com. Or call 978-889-3081 to receive a free video on our MediaCluster single-copy advantage.



www.seachangeinternational.com



©2001 SeaChange International, Inc. 124 Acton Street, Maynard, MA 01754
phone: 978-897-0100 fax: 978-897-0132 All rights reserved.
MediaCluster is patented, and is a registered trademark of SeaChange International, Inc.



SEACHANGE
INTERNATIONAL

Changing television for good.

Circle (245) on Free Info Card

www.americanradiohistory.com

MONITOR

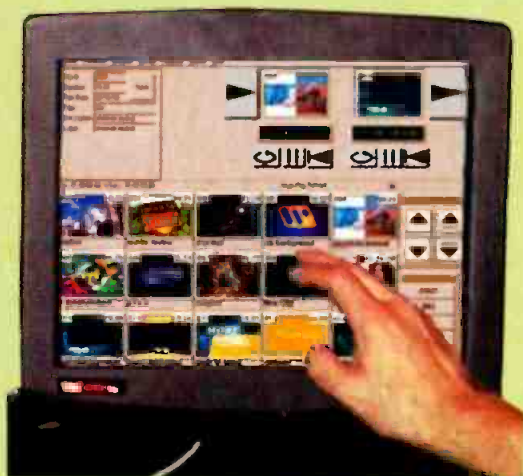
Sony BVM-F24U CineAlta monitor:

16:9 widescreen flat CRT monitor with a 24-inch viewable area; allows for critical evaluation of e-cinema content, including motion pictures produced in 1080/24p; multihigh scan monitor can display analog RGB and HD-SDI signals at horizontal frequencies of 54- to 90kHz and vertical frequencies of 48- to 75Hz; monitor accepts dual-link 4:4:4 mode HD-SDI signals.

800-686-SONY; 201-930-1000; fax: 201-930-4752;

www.sony.com/professional

Booth: L11600 Circle (423) on Free Info Card



UNINTERRUPTIBLE POWER SUPPLY

Staco Energy Products Encore:

The system's power-conditioning feature protects against brownouts, surges, sags, spikes and other power anomalies; fully SNMP capable; includes power management software that provides for remote management of all aspects of power protection; system features external battery packs with independent chargers for scalable unlimited runtime, front-access hot-swappable batteries, and voltage regulation incorporating double boost and double buck.

937-253-1191; fax: 937-253-1723; stacoenergy.com

Booth: L12252, L12253 Circle (426) on Free Info Card

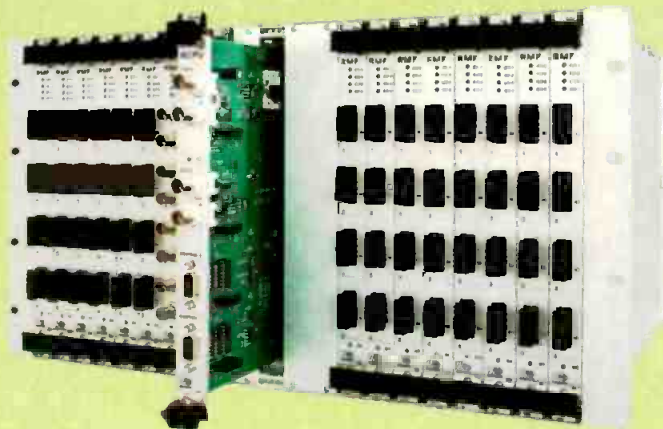
DUAL-CHANNEL PRODUCTION SYSTEM

Spencer Technologies Newstore:

Provides storage for stills, clips, looping backgrounds and animations with linear keys; also stores custom video transitions and audio effects; each channel includes a DVE, linear keyer, and analog and digital input/output; system allows networked graphic files to be converted to video and linear key for key channel synchronization.

818-771-1850; fax: 818-771-1855; www.spencer-tech.com

Booth: L9057, L11639 Circle (424) on Free Info Card



STREAMING MEDIA TOOL

Splitstream XPRESS:

Uses cellular technology to transport high speed audio and video at 30fps; multiple cell channels on standard cellular networks are used to transmit video and audio, including wireless, cell phone, DSL, telephone and satellite; signals are compressed and transmitted and then reassembled at the receiving location into a single stream, with buffering, caching and error correction using the XPRESS' Divide/Tag technology.

310 277-3887; www.splitstream.tv

Booth: L6130 Circle (425) on Free Info Card

DIGITAL ROUTER

Stagetec Nexus Star:

Features 100MHz twin-switch fabric design; can be configured for up to 4096 I/Os; uses 16 I/O cards, each handling 256 I/Os; in distributed system, additional base devices can be added and connected to the Nexus Star as needed; provides sample rate conversion over a range of 26K to 52K; fully synchronous system.

+49 951 972 25 25; fax: +49 951 972 25 32; www.stagetec.com

Booth: R2181 Circle (427) on Free Info Card

MRX
MIDSIZE ROUTING SWITCHERS



**MRX™ by Sigma. 32 x 32 = 1 RU,
the formula for compact routing.**

Sigma Electronics has done it again. Introducing the new MRX Series™ of compact routing switchers. Only one rack unit high – perfect when space is at a premium. And, with specifications that meet the most critical applications.

Add levels and functions as required. Need a channel of audio? ...add a 1 RU, 32 x 32 frame. The MRX™ can switch eight control levels.

A variety of control panels including alphanumeric are available. For computer control via RS232/RS-422, check out our new SigMatriX™ software.

MRX™, the new formula for midsize compact routing switchers. As an added benefit, all components are covered by Sigma's 5-Year Parts & Labor Warranty.

Contact us now for product information or to locate your nearest Sigma dealer.

See us at NAB Booth #L12639



Distribution



Switching



Timing



Encoding
Decoding



Digital



Transcoding



SIGMA ELECTRONICS INC.
www.sigmaelectronics.com

1184 Enterprise Road
PO Box 448
East Petersburg PA 17520-0448
(717)569-2681 TELEPHONE
(717)569-4056 FAX



TOWER FABRICATION

Stainless Inc. Fabrication Services:

Stainless' manufacturing facilities are certified by the American Institute of Steel Construction and feature custom, computer-controlled equipment for the manufacture of broadcast towers; fabrication services include metallurgical analysis, certified welders and continuous testing guarantee.

972-550-9500; fax: 972-550-9595; www.spectrasite.com

Booth: L12611 Circle (428) on Free Info Card

VIDEO-ON-DEMAND SOLUTION

Streaming21 streaming solution:

System allows for the delivery of broadcast quality video and audio streams through global IP networks to interactive set-top boxes; this allows viewers to watch programming when they want rather than having to wait for a pre-programmed broadcast time to watch a limited number of movies; created in conjunction with Neon Technology and Sigma Designs; Streaming21 will contribute carrier-class delivery and a content distribution platform, to which Neon will add their SurfReady set-top box environment, using Sigma Design's decoder chips to allow for easy Internet access and high-quality video.

888-88STREAM; www.streaming21.com

Booth: E3239 Circle (429) on Free Info Card

DIGITAL MIXING CONSOLE

Studer On-Air 1000:

Available in versions for analog and digital environments; both versions feature 10-input faders, 20 inputs and two master faders, as well as the Touch'n'Action graphical user interface; settings can be personalized and stored for each operator.

+41 1 870 75 11; fax: +41 1 870 71 34; www.studer.ch

Booth: R2125 Circle (430) on Free Info Card

AUTOMATION SYSTEM

Sundance Digital FastBreak Automation Version 2.0:

Offers robust, scalable and frame-accurate control of video server and other station peripherals in either single or multichannel configurations; operates under Windows 2000; elements can be operator and time-of-day triggered; each may include an unlimited number of secondary events.

972-444-8442; fax: 972-444-8450; www.SundanceDigital.com

Booth: L1355 Circle (431) on Free Info Card

PORTABLE FLASH MEMORY RECORDERS

Superscope Technologies Inc/Marantz PMD690:

Records stereo and mono digital audio using the media of PC cards; also available as the PMD680 mono-only version with a telephone input/output; audio files can be transferred to a computer for editing, archiving or uploading to the Internet; also features multiple compression settings to extend recording times on smaller-capacity PC cards; can record in the MP2 format; also records uncompressed 16-bit PCM digital audio as a Wave or Broadcast Wave file; includes a built-in non-destructive EDL system to allow users to place reference marks and create custom playback sequences.

630-820-4800; fax: 630-820-8103; www.marantz.com/product/professional

Booth: R191, R1846, R2929 Circle (432) on Free Info Card

DIGITAL AUDIO DELAY UNIT

Symetrix 6100 Broadcast Audio Delay:

First in the AirTools family; 24-bit digital delay unit prevents unwanted profanity from reaching the airwaves; the unit delays the program until up to 20 seconds of 20kHz bandwidth stereo audio is stored in memory; if a person on a telephone line says something inappropriate, it can be dumped before it is aired; unit offers additional features, including an automation interface for network broadcasts.

425-787-3222; fax: 425-787-3211; www.symetrixaudio.com

Booth: R2153 Circle (433) on Free Info Card



QPSK/8PSK/16QAM MODULATOR

Tandberg SM5600:

Offers optional Dynamic Pre-Correction system to protect against potential distortion; distortion is usually prevented by backing signals off from saturation; DPC technology corrects earth station uplink and satellite-based distortions while allowing the system to operate at saturation; the system allows smaller dish sizes and smaller earth station amplifiers to be used.

949-757-0488; fax: 949-757-0489; www.tandbergtv.com

Booth: S4859 Circle (434) on Free Info Card

DIGITAL BROADCAST MAXIMIZER

TC Electronics DBMAX V2.60:

New software release for the maximizer features new spectral stereo enhancer insert, an improved automatic gain controller with up to 9.9dB/sec; also features an additional Extra Soft Clipper in the Final Limiter; other features include distortion canceling and input channel swap function to allow right and left channels to be reversed; allows bypass of the input filters.

805-373-1828; fax: 805-379-2648; www.tcelectronic.com

Booth: M9639, R2101 Circle (435) on Free Info Card



AUDIO-TO-VIDEO DELAY CORRECTOR

Tektronix AVDC100:

Provides in-service monitoring and correction of A/V delay errors that occur during compression or other processing; allows user to reliably deliver video of definable quality; uses digital watermarking technology to embed audio time reference signals into video programming near the point of audio/video content creation, so lip-sync error can later be detected and corrected by analyzing the watermark and adjusting the audio delay.

800-835-9433; 503-627-7111; fax: 503-222-1542; www.tektronix.com

Booth: L9534 Circle (436) on Free Info Card



SEE US
AT NAB 2001

If you want to monitor MPEG-2 based Digital TV the proven AT970 Stream View Plus from Adherent offers you the chance to monitor multiple channels, automatically, at any one time locally or anywhere in the world via the Web MSM management system. And because not every one has the same requirement for monitoring streams, our advanced user defined template checking system enables you to ensure that your transport stream contains all of the programmes you expect to broadcast. Every time.

email: info@adherent.com

ATSC DVB
Broadcasting

Adherent

TRIED. TESTED.



AUTOMATIC MONITORING WITH THE DEPENDABLE AT970

WWW.ADHERENT.COM

WAVEFORM MONITORS

Tektronix WFM601/WFM601/1700 series:

Waveform monitors measure and monitor baseband video signals.

800-835-9433; 503-627-7111; fax: 503-222-1542; www.tektronix.com

Booth: L9534 Circle (437) on Free Info Card

MULTICHANNEL CAMERA-MOUNTED MULTIPLEXER

Telecast Fiber Systems CopperHead:

Fiber optic multiplexer can be mounted on ENG and SNG cameras for remote television production; single optical fiber carries bi-directional signals to and from the camera, including program video and audio, return video and audio, intercom, black burst, tally and camera control data; lightweight tactical fiber increases camera-to-vehicle distance and eliminates grounding problems and signal interference.

508-754-4858; fax: 508-752-1520; www.telecast-fiber.com

Booth: L9568 Circle (438) on Free Info Card

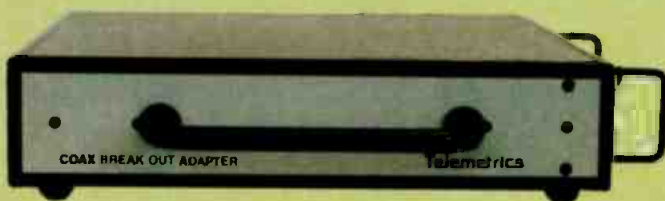
MODULAR ROUTING SYSTEM

TeleCast Group/Sandar MF 1500:

2U routing, distribution and changeover system capable of handling SDI, ASI and G703 signals; enables a mix of a matrix, distribution, changeover or switch of signal modules and analog/digital routing; equipped with dual power, N+N redundancy and has RS-232 or RS-422 control.

+47 33 44 72 00; fax: +47 33 44 72 01; www.telecast.no

Booth R1663 Circle (439) on Free Info Card



ADAPTER

Telemetrics B0A:

Enables users to connect all the devices required for video production plus power to a control room through a single coax cable connection, rather than multiple cables, video equalizers and frame synchronizers; the B0A uses industry standard input connectors for a camera, monitor, teleprompter and microphone, as well as for a pan/tilt mechanism and a headset/intercom.

800-424-9626; 201-848-9818; fax: 201-848-9819;

www.telemetricsinc.com

Booth: L6054 Circle (440) on Free Info Card

PROMPTING SOFTWARE

Telescript PRO:

Windows NT/2000-based software works with off-the-shelf hardware to virtually eliminate compatibility problems; offers multiple monitor support to accommodate simultaneous prompting and control operations.

201-767-6733; fax: 201-784-0323; www.telescript.com

Booth L11073 Circle (441) on Free Info Card



INTERCOM

Telex BTR-800:

Two-channel, fully UHF intercom system; allows two distinct channels of intercom to be accessed by one or more wireless extensions to the intercom system; user synthesized to allow broadcasters to keep intercom systems clear of other wireless equipment; allows users to send a dry line level audio signal at +8dB to a given destination, allowing users to trigger a two-way radio and have audio be routed over it or any closure-activated device.

800-392-3497; 952-884-4051; fax: 952-884-0043; www.telex.com

Booth: L8763 Circle (442) on Free Info Card

NOISE REDUCTION SYSTEM

Teranex Starfront:

Features intelligent motion-based pixel-by-pixel filtering and automatic handling of the video-based content (30fps) and film-based content (24fps); other features include 3:2 pull-down handling and 32-point interpolation on down-sampling to CIF and QCIF image sizes.

407-517-1086; fax: 407-517-1101; www.teranex.com

Booth: E4211 Circle (443) on Free Info Card

MEDIA DELIVERY PLATFORM

Terayon CherryPicker 7000:

System also optimizes bandwidth; statistical re-multiplexing technology allows operators to unbundle and combine compressed streams from a variety of input sources in order to create an output multiplex to deliver customized programming; real-time switching and splicing take place completely in the compressed digital domain; system is capable of changing bit rates from input to output; remote and local video and audio, digital ad insertion, and other operator-provided content can be seamlessly integrated into the digital service.

888-7TERAYON; www.terayon.com

Booth: E5142 Circle (444) on Free Info Card

DIGITAL TRANSMITTER

Thomcast Communications Ultimate 1kW Digital Transmitter:

Feature solid state and cable-free design, providing the advantage of ease of maintenance and high reliability; also features LDMOS amplifiers, compact design, integrated cooling system and a standby second exciter option.

413-569-0116; fax: 413-569-0679; www.thomcastcom.com

Booth L9609 Circle (445) on Free Info Card

MPEG-2 MULTIPLEXER

Thomson Broadcast/Nextream DBX 4300 Broadmux:

Re-multiplexing solution for Digital Broadcasting Centre and Distribution applications such as DVB-S, DVB-C, DVB-T; multiplexes up to 26 MPEG-2 single or multiple service transport streams to form a multiple program transport stream.

800-882-1824; 201-569-1650; fax: 201-569-1511; www.thomsonbroad.com

Booth: L9000 Circle (446) on Free Info Card

DIGITAL VIDEO MIXER

Thomson Broadcast Alteo:

Designed for applications from 1.5 M/E to 3.5 M/E; module-based architecture allows operators to combine panels of different sizes to meet their needs; features can be configured "live."

800-882-1824; 201-569-1650; fax: 201-569-1511; www.thomsonbroad.com

Booth: L9000 Circle (447) on Free Info Card

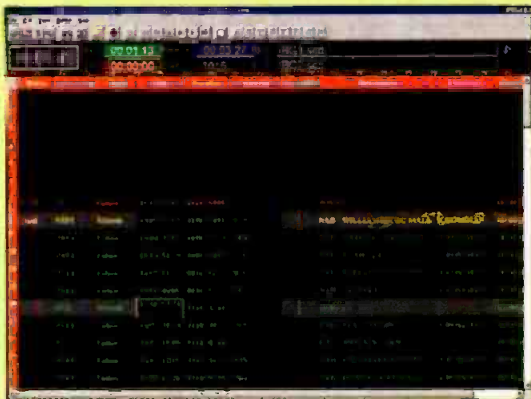
FIBRE CHANNEL SAN

Transoft Networks FibreNet 3:

Features a new GUI, optimized security features and administrator controls including global volume sets and useful read/write and mounting options.

800-949-6463; 805-883-4300; fax: 805-883-4387; www.transoftnetworks.com

Booth: i6463 Circle (448) on Free Info Card



AUTOMATION SYSTEM

Utah Scientific MAX series:

MAX-MC provides master control automation with enhanced multi-channel features and a suite of tools for managing server-based on-air systems; MAX-RX provides event-based automation for playout systems that do not need a master control switcher; MAX-RS offers time-based router automation for repetitive tasks such as recording incoming program feeds and switching outgoing lines.

801-524-9999; fax: 801-524-0555; www.utahscientific.com

Booth: L10452 Circle (449) on Free Info Card

SEE US
AT NAB 2001

AD920, the first truly hand held analysis tool from Adherent's proven range of broadcast tools. Designed as a platform to analyse MPEG streams, the unit gives total confidence in installation and maintenance of the ever complex broadcast infrastructure. An innovative, practical portable test device, AD920 is designed to provide an at a glance, portable method of validation, ensuring the key elements of your transport stream are right every time.

Web Site: www.adherent.com
email: info@adherent.com

Adherent

ATSC D3
Digital Video
Broadcasting

WITH THE OUTSTANDING AD920

HANDHELD REAL TIME ANALYSIS

LIGHT SPEED





DVD ARCHIVING SOLUTION

Vela Rapid Access DVD Archiving:

Built around the RapidAccess video server, as well as specialty management software and third-party DVD-RAM library systems, including from JVC and ASACA; compresses material in MPEG-2 digital format and transfers it to rewriteable DVD-RAM disks.

727-507-5300; fax: 727-507-5311; www.vela.com

Booth: L346, M8329 Circle (450) on Free Info Card

DVD-RAM LIBRARY SYSTEM

Vela DVD-based Archive system:

Automated system offers integrated HSM system; utilizes DVD-RAM to automatically store, manage and retrieve media files with the RapidAccess Video Server.

727-507-5300; fax: 727-507-5311; www.vela.com

Booth: L346, M8329 Circle (451) on Free Info Card

MEDIA DELIVERY PLATFORM

Vertigo Multimedia Producer ON AIR 2.0:

Includes Producer Interactive, an authoring and control tool for interactive TV applications, and Producer Mobile, a system that enables the delivery of content to mobile devices such as wireless phones; cross-media platform automates content delivery.

514-397-0955; 877-483-7844; fax: 514-397-0954; www.vertigo.net

Booth: E3147 Circle (452) on Free Info Card

SCANNERS

Videomagnetics Drum concentricity, TP gauge:

Solid design tool to check tip projection and set upper drum concentricity on BetaCam SP machines.

800-432-3887; fax: 719-3910-1316; www.videomagnetics.com

Booth L4419 Circle (453) on Free Info Card

MOTION CONTROL WORKSTATIONS

Video Robotics RoboEFX:

PC-based systems take static images and make pans and tilts of 12" in length; can perform continuous rotation and zooms in real time; selectable speed and ramping achieves smooth, fluid movement.

818-386-0185; fax: 818-386-0195;

www.videorobotics.com

Booth L4433

Circle (454) on Free Info Card



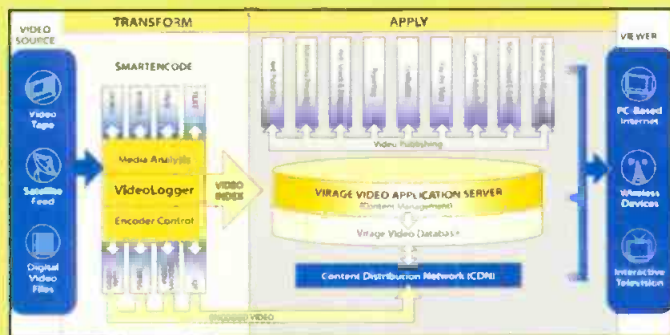
FRAME AND CARD SYSTEM

Videotek Uniframe:

System consists of the DL-810U serial digital legalizer, MADA-110U monaural audio distribution amplifier, SADA-205U stereo audio distribution amplifier and UDA-110U video distribution amplifier; DL-810U solves serial digital video gamut correction and legalizing issues, and offers real-time evaluation of the video signal on a pixel-by-pixel basis; distribution amplifiers accept high-impedance balanced or unbalanced inputs, or looping or terminating single inputs, as well as producing identical isolated outputs.

800-800-5719; 610-327-2292; fax: 610-327-9295; www.videotek.com

Booth: L9622 Circle (455) on Free Info Card



VIDEO PLATFORM

Virage Video Application



Internet Video Application Platform allows video to be published, managed and distributed as easily as text; supports enterprise-scale deployments of video and provides the user with the necessary infrastructure for seamlessly integrating Internet-ready video into a web-site or corporate intranet.

650-573-3210; fax: 650-573-3211; www.virage.com

Booth: M10053 Circle (456) on Free Info Card

HDTV UPCONVERTER

Visual Matrix MiniXBox-HDU:

Provides aspect ratio controls, advanced filters and digital HDTV outputs; housed in a 2U chassis; features a front panel that has a four-line LCD display providing access to all functions; separate horizontal and vertical filters provide an extra level of control for the elimination of flicker, alias and Moire controls.

818-843-4831; fax: 818-843-6544; www.visual-matrix.com

Booth L4623 Circle (457) on Free Info Card



FIBRE CHANNEL SWITCH

Vixel 7200:

Reduces the limitations of SCSI or Ethernet-based storage and ensures reliable, high-bandwidth image transfer during the editing and storing process, enabling streaming media solutions to deliver content at maximum speeds.

425-806-5509; fax: 425-806-4050; www.vixel.com

Booth L1394 Circle (458) on Free Info Card

SEE US
AT NAB 2001

In style. The award winning AD954 Stream Grabber from Adherent is the simplest and neatest solution for field engineers working on compression equipment installation and service. Weighing in at 1.3kg and the size of an average mouse mat, AD954 Stream Grabber is ready to use wherever you are. It functions at bit rates of up to 90Mbit/s, at which it can record up to 30 seconds of transport stream. So if you need to use a comprehensive monitoring and analysis tool for MPEG-2, DVB or ATSC on the move it has to be the Stream Grabber. Don't hit the road without it.

Web Site: www.adherent.com
email: info@adherent.com

ATSC DVB

Adherent

RAPID RESPONSE

PORTABLE MONITORING AND ANALYSIS WITH THE SPECTACULAR AD954

Circle (175) on Free Info Card



RACK-MOUNTING CARD FRAME

Ward-Beck Systems Serialboxx:

A new concept in connectivity; it comprises a versatile rack mounting card frame and a series of plug-in amplifier modules; the various amplifier modules are designed to handle analog and digital video signals; the plug-in models that will debut at NAB 2001 include: serial digital video, AES audio, analog video and analog audio modules.

800-771-2556; 416-335-5999; fax: 416-335-5202; www.wbsltd.com

Booth: R2124 Circle (459) on Free Info Card

AUDIO METER

Ward-Beck Systems XTM4:

Dual domain, extended range stereo audio meter indicates audio level on both VU and PPM panel meters; phase is indicated on an eight segment led bar graph; analog audio connections are made on rear panel XLRs and/or front panel 1/4-inch TRS jacks; digital audio connections are made on rear panel XLR or BNC connectors and/or a front panel 1/4-inch TRS jack.

800-771-2556; 416-335-5999; fax: 416-335-5202;

www.ward-beck.com

Booth R2124 Circle (460) on Free Info Card

AUDIO DAS/CONVERTERS

Ward-Beck Systems POD series:

Includes POD 19, an SDI/AES demuxer; POD 20, an SDI re-clocking DA; and POD 21, a 6x1 digital video switcher.

800-771-2556; 416-335-5999; fax: 416-335-5202;

www.ward-beck.com

Booth: R2124 Circle (461) on Free Info Card



DAW

WaveFrame FrameWorks/DX 3.3:

Features up to 64 channels of 24-bit audio (32 channels at 96-kHz), sophisticated real-time cross fades, automated mixing including 5.1 surround, direct output to CD-R devices or DDP tape, AVI and QuickTime digital video support, AC-3 and DTS encoding options plus DSP plug-in effects and Direct-X support.

510-594-9455; fax: 510-654-8370; www.waveframe.com

Booth R1905 Circle (462) on Free Info Card



3D VIRTUAL WEATHER SYSTEM

Weather Central WalkOnWeather:

Patented technology that uses one camera, one key wall and a specially equipped LiveLine Genesis to allow talent to interact in real-time with 3D weather maps and animations for a creative impact on viewers.

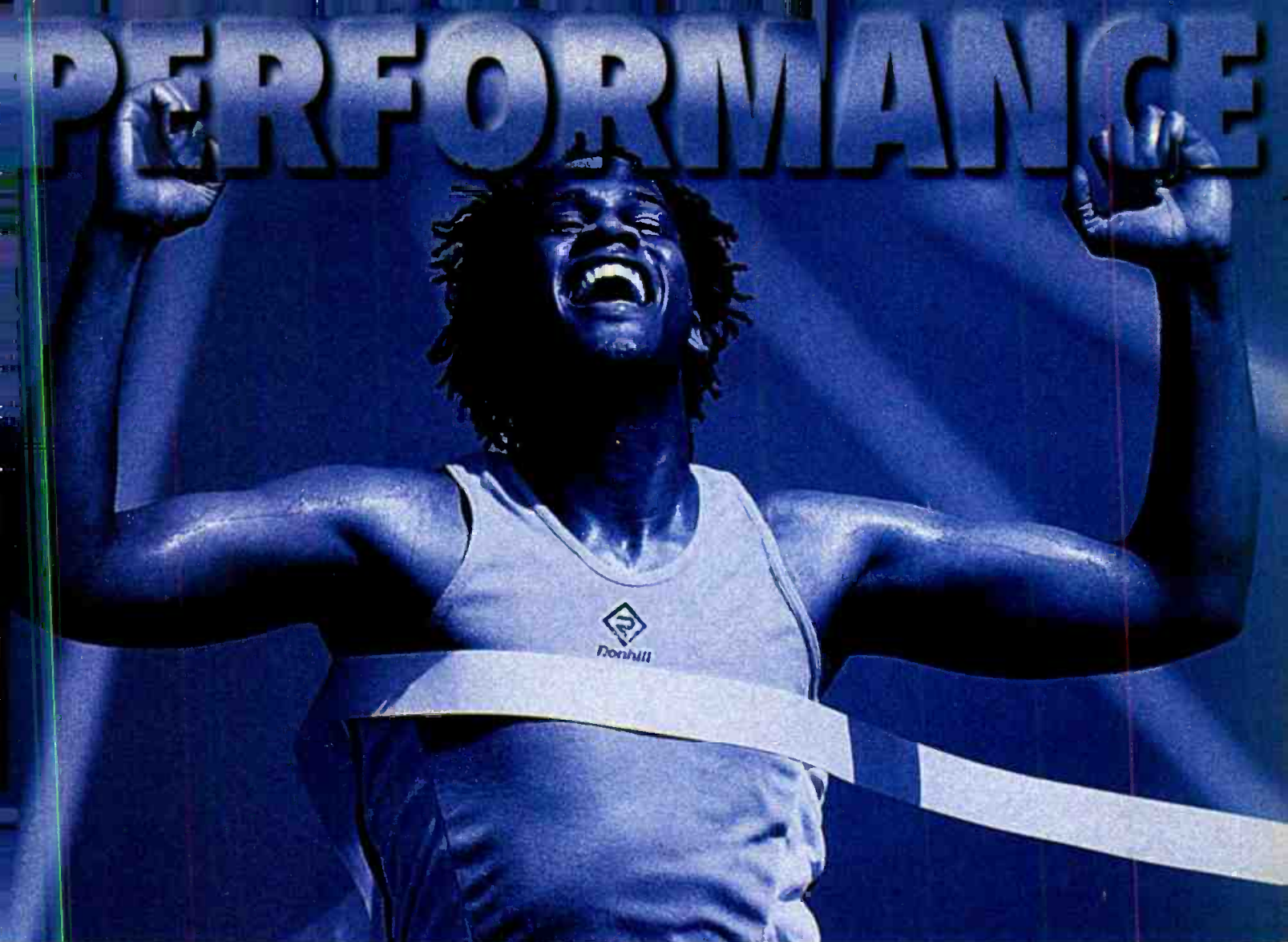
608-274-5789; fax: 608-278-2746; www.wxc.com

Booth L11651 Circle (463) on Free Info Card



**View an online product demo
whenever you see this logo.**

www.broadcastengineering.com



THE SYNAPSE SYSTEM DOES IT ALL!

SYNAPSE, THE MODULAR MEDIA SYSTEM THAT OFFERS:

- High density (18 cards in 4RU)
- Flexible remote control capabilities
- Ethernet based
- Remote controllable with a web-browser
- Remote firmware updates through the internet
- Combined logic to lower system cost
- Reduced amount of re-clocking stages
- Full monitoring of all parameters
- Audio level control and channel swapping
- Card swapping with automatic update of card settings



THE MARK OF DIGITAL ACHIEVEMENT

See us at NAB Las Vegas, Booth #L1641

AXON DIGITAL DESIGN BV THE NETHERLANDS, PHONE: +31 13 511 6666. UNITED KINGDOM, PHONE: +44 118 973 8920. U.S.A., PHONE: +1 888 919 9379 (U.S.A. toll free).

<http://www.axon.tv> E-mail: info@axon.tv

Circle (176) on Free Info Card

www.americanradiohistory.com

NETWORK CONTROL

Wegener COMPEL:

Patented network control system that administers receivers both as individual sites and as groups; more than just permissioning a receiver, system issues commands that are accurately synchronized with video and audio programming.

800-848-9467; fax: 770-623-0698; www.wegener.com

Booth S3420 Circle (464) on Free Info Card



AIRBORNE CAMERA SYSTEM

Wescam 16SS1000:

Features a digital three-CCD color video camera, a Canon lens; nine axes active gyro and passive line of sight stabilization, a 2x motorized focal length extender, switchable 16:9/4:3 formats, digital video outputs, reduced fatigue digital hand controller or console and the Smart-link SID system.

800-668-4355; fax: 905-689-6827; www.wescam.com

Booth L1365 Circle (465) on Free Info Card

ROUTER NETWORK

Wheatstone AES router network:

System uses high-speed bi-directional fiber optic studio-to-hub links.

252-638-7000; 252-637-1285; www.wheatstone.com

Booth: R2205 Circle (466) on Free Info Card

ACOUSTICAL SOLUTION

Whisper Room soundwave deflection system:

Users can attach panels designed to redirect and trap soundwaves to eliminate unwanted reflections and standing waves.

423-585-5827; fax: 423-585-5831; www.whisperroom.com

Booth: M10451 Circle (467) on Free Info Card



MULTIMEDIA DESK

Winsted VersaDesk Model E4242:

Ergonomically designed wraparound workstation consists of a 59-inch wide, 30-inch deep curved main desk with a 15-inch deep monitor riser and casters so the desk can be repositioned according to users' needs; two side rack cabinets offer 14U of equipment space.

800-559-6691; 952-944-9050; fax: 952-944-1546; www.winsted.com

Booth: L9517 Circle (468) on Free Info Card

FACILITY MANAGEMENT SOFTWARE

Xytech Systems FMS 2000 Version 4.0:

System provides more comprehensive search capabilities and smoother flow in data entry through improved integration between updated Duplication, Vault and Shipping modules; the Scheduling module allows companies to manage the usage of personnel, equipment and conference rooms and quickly view general facility usage on a daily, weekly and monthly basis; it also allows tracking of overall usage of resources by clients and projects over time.

818-767-7400; fax: 818-767-7430; www.xytechsystems.com

Booth: i6763 Circle (470) on Free Info Card



DOWNCONVERTER SERIES

YEM HDC-2000 and 3000:

Converts from HD analog signals YpbPr to SD-SDI 4:2:2 signals and SD analog composite signals; responds to four input signal formats: 1080/23.976P, 1080/29.97P, 1080/59.94i and 1080/25.; output signal is 1080/25 at 625/50i (PAL) and 525/59.94i (NTSC); offers 2:3 pulldown processing and three modes of aspect ratio conversion: squeeze, letterbox and edge crop.

310-544-9343; fax: 310-544-9363; www.yem.com

Booth L340 Circle (471) on Free Info Card

Scan Do SELECT

Computer to Video Scan Converter

Communications
Specialties, Inc.

INPUT

POWER

TEST



**The first name
in scan converters
is the only name you need:
Scan Do.**

**Any application. Any requirements.
We've got the scan converter that's right for you.**

What's in a name? When it comes to scan converters, the answer is *everything*. Discerning professionals have been relying on Scan Do,® the market leader in scan conversion technology, for over ten years — since it launched the very concept of affordable, high-performance scan conversion. Scan Do has also continued to define industry standards, first introducing such features as one-button image magnify, a built-in test pattern generator and dual PC/Mac compatibility. It's no wonder that from traditional video production and broadcast applications to videoconferencing, presentation and even today's video-streaming environments, Scan Do is scan conversion.

Scan Do Select

Providing professional quality video at the lowest price, Scan Do Select offers high-resolution support, outstanding flicker reduction, a multiple step high-res zoom and RS-232 remote control — the perfect package for many presentation and streaming applications.

Scan Do Pro II and Pro II/D

Add fully timeable genlock, component video output, advanced filtering and the option of SDI (serial digital video) output, and you've got a scan converter for almost any professional video application, including live broadcasts, editing and post-production.

Scan Do Ultra and Ultra/D

For those "Ultra" applications, this top-of-the-line scan converter offers the highest resolution conversion and includes features such as full video processing controls, continuous zoom with panning and five memory presets.

All Scan Do scan converters deliver superior reliability and flexibility, are designed for simple, intuitive ease of use and come with a three-year warranty and 30-day satisfaction guarantee. Find out which model is right for you. Full product specs are available online at www.commspecial.com.

**Whatever your requirements, accept no imitation.
Remember that "scan conversion" is spelled with only six letters: SCAN DO.**

COMMUNICATIONS SPECIALTIES, INC.
World Headquarters
Hauppauge, New York
Tel: 631-273-0404 Fax: 631-273-1638
www.commspecial.com
Email: info@commspecial.com

Scan Do

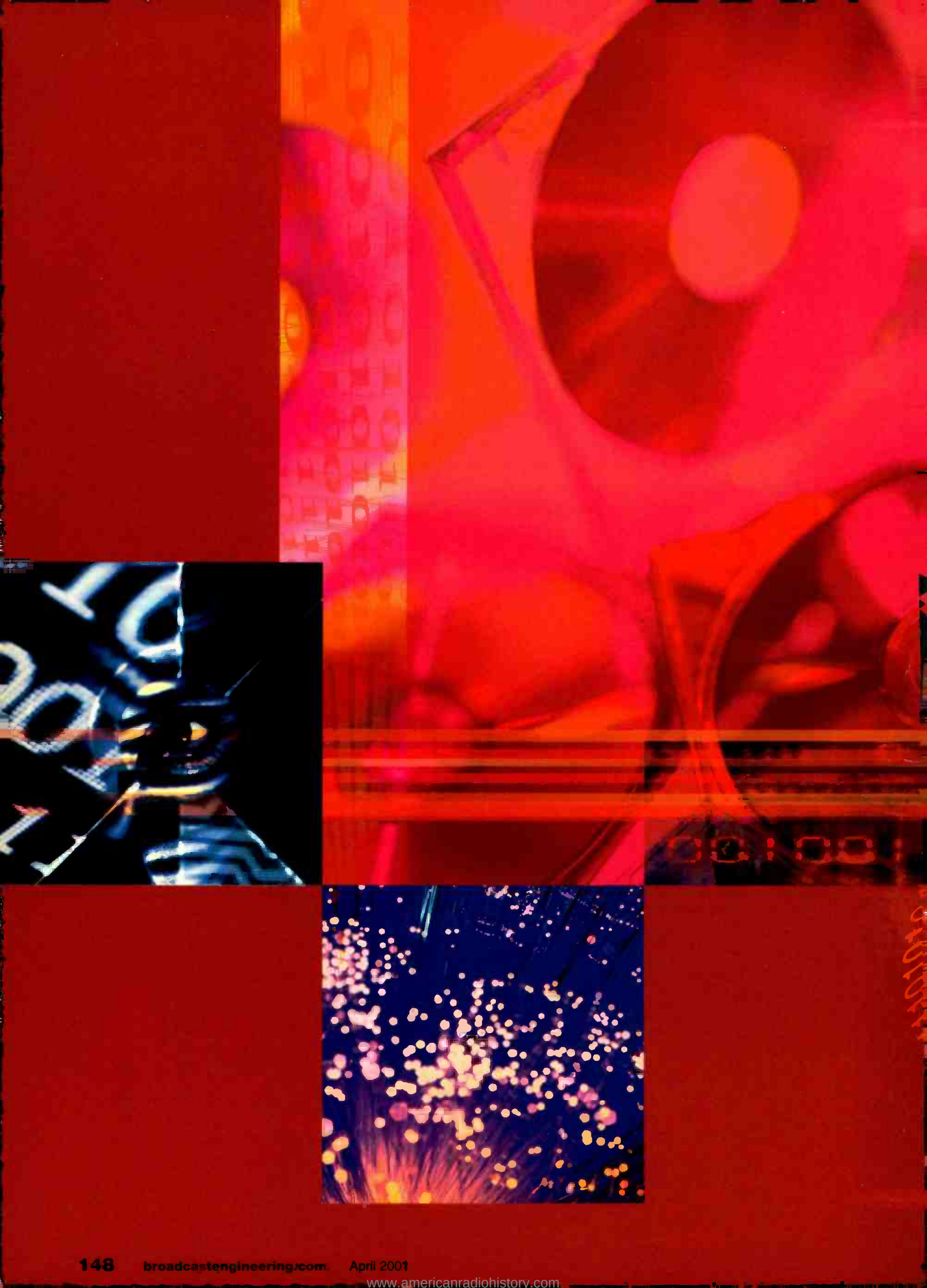
Scan Do is a registered trademark of Communications Specialties, Inc. ©2001 Communications Specialties, Inc.

Circle (177) on Free Info Card

COMMUNICATIONS SPECIALTIES PTE LTD
Singapore
(Serving the Asia Pacific Region)
Tel: +65 837 8790 Fax: +65 333 0501
www.commspecial.com
Email: csiasia@commspecial.com

See us at NAB Booth M8767

www.americanradiohistory.com





data management in broadcast

By Carole Hogan

The case for digitization in broadcast is compelling. It is based on a variety of factors such as exponential leaps in the amount of content that must be processed and stored, superior quality of data content, speed of access to data content, speed of editing and other content preparation. Digitization also allows re-purposing of content to meet ever-increasing

viewer demand, and reduction of labor costs in individual facilities as steps in the workflow require less human involvement to accomplish.

With the digitization of broadcast facilities comes a requirement for a new and different type of material management paradigm. Computer-based systems and digital storage devices linked together by high-speed networks demand a different management model than the traditional approach of real-time device control. While it is always possible to throw hardware at any problem, it is efficient data content management products that can be expected to dominate this changing market. This article should serve as a technical primer for the broadcast IT professional facing the upcoming digital challenge.

With the advent of digitization, broadcast users are presented with "devices," i.e., computers, IP-based networks and data-based storage systems, that offer unlimited potential for solving workflow requirements. However, this potential is only realized with intelligent

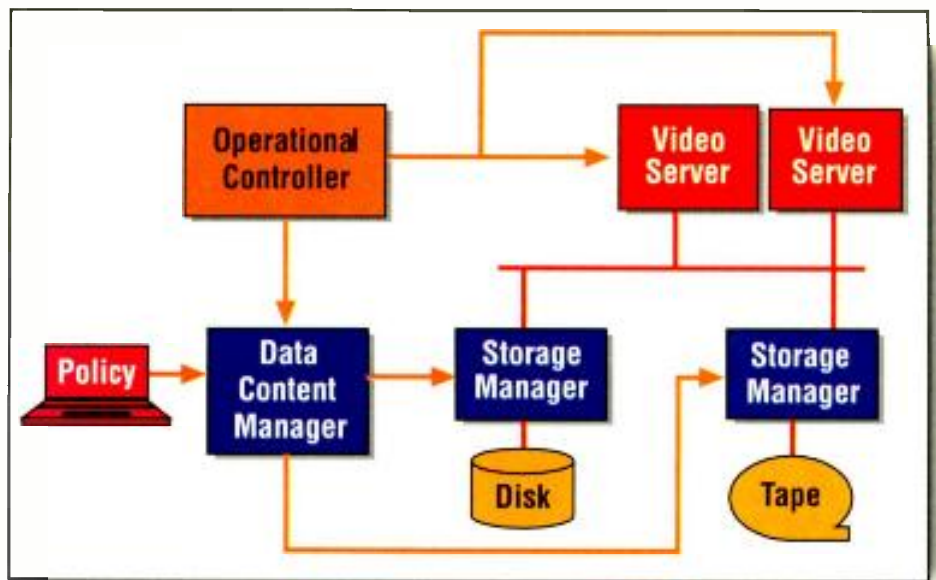


Figure 1. Relationship between the operational controller, the data content manager, the storage managers and the video servers.

As digitization blossoms in broadcast, users are defining increasingly sophisticated requirements for data content management. Because models vary, content management must be flexible enough to meet requirements for seamless management of data, both within single and connected facilities.

More specifically, material is acquired

The data content manager must get the data content where it needs to be when it needs to be there. To perform this data content distribution task intelligently, the manager accepts policy that takes into account several crucial factors including the facility's operation workflow, the quantity of data that is ingested, the throughput requirements that must be met as the data is moved between connected facilities, the redundancy requirements of the operation and budgetary constraints.

Data content management policies fall into the following categories:

1) Sophisticated data content management techniques using heterogeneous storage devices in complex, distributed environments.

2) Compensating for data content management shortcomings in other system components executing in multi-vendor environments.

3) Meeting operational redundancy requirements and, where necessary, implementing traditional disk storage space conservation.

Once these policies are defined, the data content manager should automatically put them into effect as the operational controllers issue commands to the data content manager. The manager should carry out these commands using the policies specified by the user's policy inputs.

The policies that intelligent data content management software must be

Users are defining increasingly sophisticated requirements for data content management.

software management. Software that constrains video servers to the role of videotape recorders or data storage systems to analog archives denies users the benefits of digitization. Yet, it is precisely these benefits that users now need.

The intelligence that must exist in the management of "digital hardware," i.e., video servers, IP-based networks and data-based storage systems, falls into two categories:

1) Getting the data content where it needs to be when it needs to be there, with a minimum risk of failure and at a minimum cost; and,

2) Providing user access to the data, through interfaces such as GUIs, efficiently and at a minimum cost.

by or ingested into a facility in several ways — analog tape and satellite download being two prominent examples. The acquisition generally includes encoding the materials onto ingest video servers, a process that is managed by real-time operational controllers, and a QA review.

Once the material has been encoded and has passed QA, it becomes data content that must be dealt with. At some point, play-to-air video servers, again at the direction of real-time operational controllers, decode the content for broadcast. But, what happens to the content between ingest and play to air? Where does it go? How does it get there? How is it provided to the play-to-air servers in time for broadcast?

capable of implementing include the following courses of action.

Configurable data paths

Users today state data content management requirements that demand placement of data content on storage devices best suited to the content's characteristics. This

must be able to specify when each file is copied to tape and when it is deleted from disk.

On the caching side, users, through policy inputs, must be able to define whether files on data tape are copied first to disk storage and then to the video servers or directly from tape to the video servers or to disk

What happens to the content between ingest and play to air? Where does it go? How does it get there?

means that each piece of content must be stored on the data storage device that is optimum for the user's environment, e.g., disk or data tape or disk and data tape simultaneously. This also means that, once stored on these devices, files must be transferred back to video servers directly from the storage device that is optimum for the user's environment, i.e., data tape, disk or data tape to disk and video server simultaneously. (See Figure 1.)

These requirements dictate the existence of policies that permit the users to define data migration (copy to storage) and caching (copy from storage) paths between disk storage, data tape storage and the video servers on a file-by-file basis. On the migration side, users must be able to dictate the "data path" of each file ingested into the data content management system, e.g., whether it will reside first on disk and then on data tape, or just on disk or just on tape. If files reside first on disk and then on tape, users

and the video servers simultaneously. These data path configuration policies allow disk storage and tape storage to exist in a peer relationship. No hierarchy of storage devices is assumed or required.

The peer-to-peer relationship between storage managers and the devices they manage permits users to receive optimized data content management for all files in the environment as well as the best use of their data storage devices. This flexibility allows data content to be managed according to workflow requirements, not according to the fixed dictates of inflexible software.

Automatic management of multiple target restore

Broadcast users often install their video servers in a primary-backup configuration. In this configuration, the primary servers ingest the material and deliver the material at the direction of the operational controllers. In the event that a primary server is not available, its companion

backup server assumes the role of the primary.

Populating the backup servers with the same data content as the primary servers is referred to as *mirroring*. Users require that the mirroring occur simultaneously. They do not want a window of time when the content on the backup servers is less than what is on the primary servers. This creates the possibility of delivering "black air" if a backup server becomes the primary during this window of time. Data content manager policy inputs that specify automatic mirroring of the backup servers must be available.

The ability to automatically trigger simultaneous restores of files to a designated set of destinations satisfies these requirements. Referred to as multiple target restore, it is the ability to read a file once from its storage device and transfer it simultaneously to two or more destinations. The destination servers can be pairs of primary-backup servers or a set of video servers and disk storage in the data content management system.

High-performance disk storage management

Some broadcast user environments have special high-performance data transfer requirements. In these environments, data tape as a storage device is a necessity due to the large quantity of content that must be stored, but the speed of access from tape is not sufficient to meet throughput requirements.

Two such high-performance mechanisms are locality of reference and file leader caching. Locality of reference links specified files together as a collection of files for migration and caching purposes. File leader caching permits the first few data blocks of a file that resides on tape storage to remain on disk storage. The data content manager must accept policies that identify files for leader caching as well as the amount of file data to retain on disk storage. The manager must also manage the continuous stream of content to the video server.

Both the file leader caching feature and the locality of reference feature

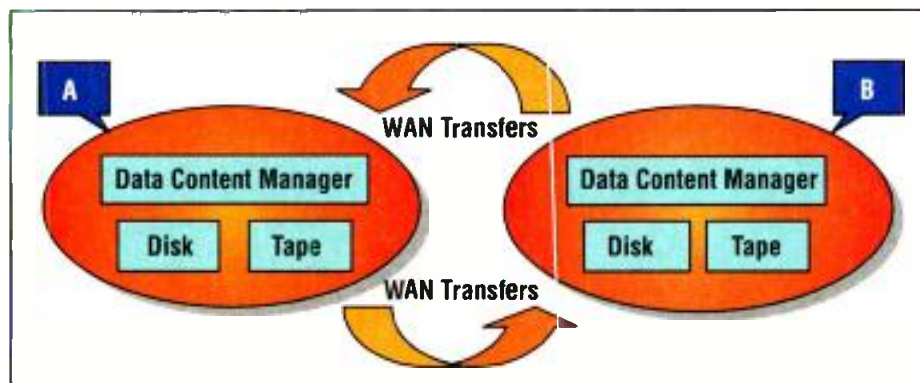


Figure 2. WAN connectivity between two sites.

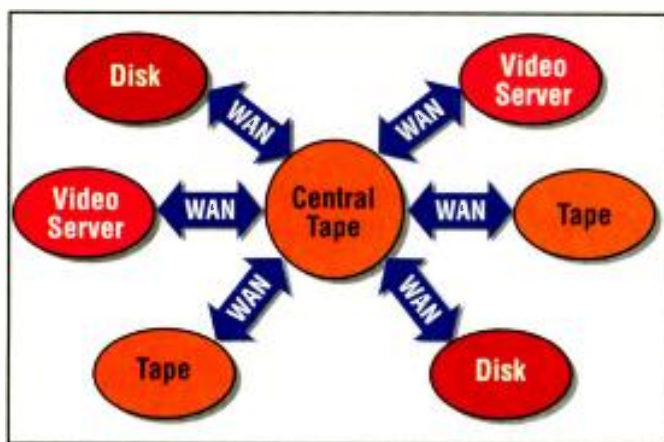


Figure 3. Remote sites are connected to a central system by an IP-based WAN topology.

significantly expedite access to data content stored on tape. Users who demand high-speed access to content stored in the data content management system but who also must store most of the content on tape require them.

Efficiently managing small amounts of disk storage

Not all users can afford the expense of large quantities of costly video server disk or even data content management disk storage. However, due to content access profiles and throughput requirements, a small amount of disk storage is often necessary for these users. The challenge in these environments is to manage relatively small quantities of disk storage efficiently.

Efficient management of small quantities of disk demands automated management algorithms that: begin migrating a file to tape before the entire file is on disk; delete a file from disk immediately after it has been copied to tape; begin restoring a file from disk to the video server before the file is completely on disk from tape; and delete a file from disk immediately after the file has been restored to the video server.

Managing WAN transfers

Users with environments that include several geographically distant sites often require transfers of data among these sites. Examples of such users include television networks, co-operating station groups or competing stations that share common facilities. In today's environment, geographically distant sites can be

connected through IP-based wide area networks (WANs). (See Figure 2.)

The data content management requirements defined by these users are complex and include several degrees of the following capabilities: viewing and modifying meta-

data for files at remote sites; both pushing and pulling files to remote sites; and, persistence in overcoming transitory WAN failures. The file transfers must be capable of being initiated either by operator command or automatically according to site data content management policy. Because metadata viewing and modification are required and because time-critical file transfers are part of the daily operational mix, traditional store-and-forward management systems are insufficient.

As a further requirement, the automated WAN metadata and file transfers must be initiated independently of the operational controllers that may be installed at the sites. (See Figure 3.) This is because those controllers are generally not well suited

for data content management in an environment where complex network transfer algorithms and persistence over transitory failures are required. Even so, the controllers at the destination sites must be informed of the transfers once they are complete so that the files may be included in the playlists.

Finally, the WAN transfers must be routable in several ways:

- Local data content management system to remote data content management system;
- Local data content management system to remote video server;
- Local video server to remote data content management system;
- Local video server to remote video server;
- Remote data content management system to local data content management system;
- Remote data content management system to local video server;
- Remote video server to local data content management system;
- Remote video server to local video server;
- Remote data content management system to remote data content management system;
- Remote data content management system to remote video server;
- Remote video server to remote data content management system; and,
- Remote video server to remote

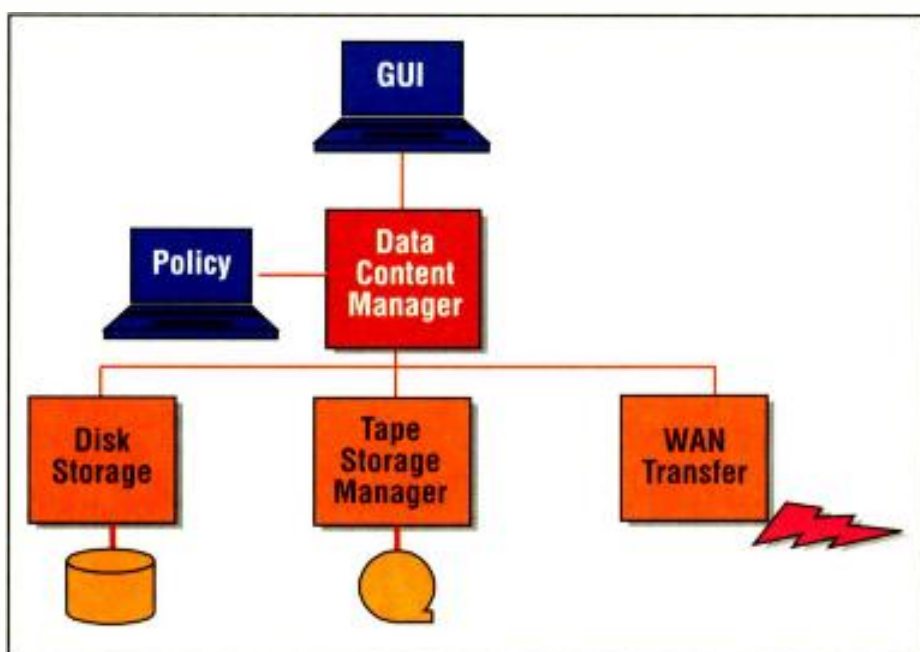


Figure 4. A local site with the capability to route data content to a remote site or from a remote site through the data content manager's use of its WAN transfer agent.

video server.

All use the same data content management software. The policy inputs accepted by the data content manager must accommodate each of these specifications, and the data content manager must distribute the metadata and the data content as specified, using software-based WAN transfer agents. The WAN transfer agents are connected to the other sites through an IP-based network that must be capable of supporting the throughput requirements of the user's workflow model. (See Figure 4.)

Auto backup and restore from secondary systems

Broadcast users with large budgets and strong aversions to single points of failure often install secondary storage systems to protect against the loss of the primary systems. To be

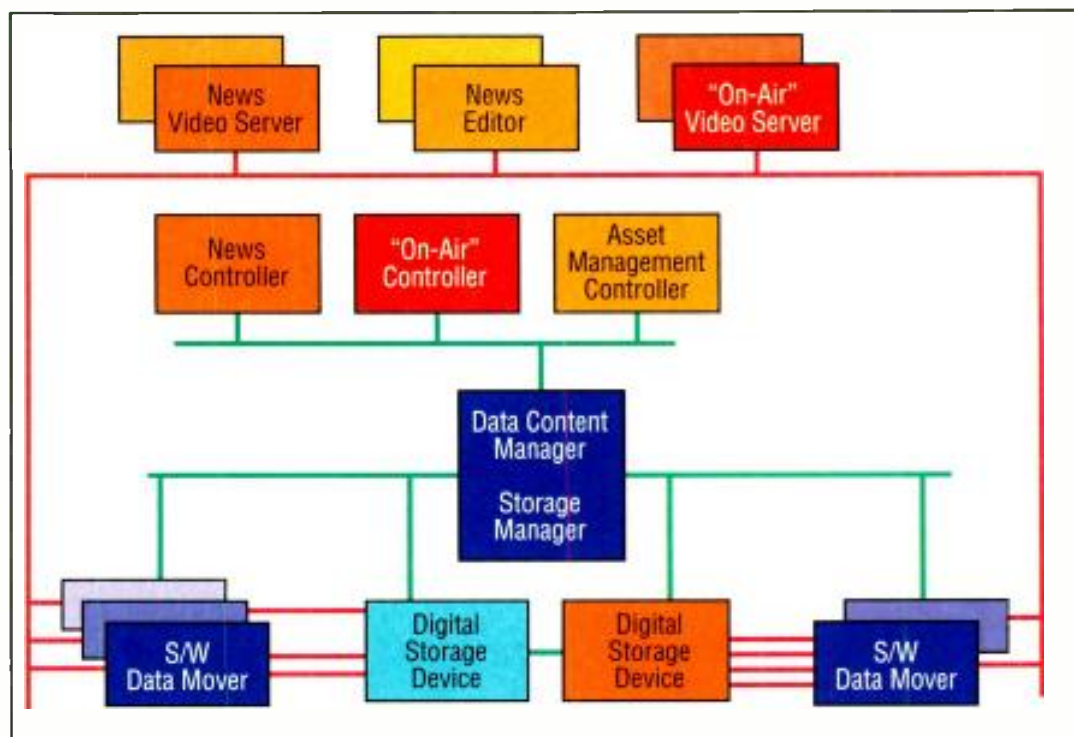


Figure 5. Distributed architecture of a storage manager that is storing and retrieving data content with three different departments under the direction of a data content manager

become unavailable. The data content manager should accept policy inputs to fulfill this vital role because it is data content management in character and because it provides significant value add to the user environment. As part of the policy inputs, the data content manager

to overcome the limitations of the operational controllers to exploit the power of the storage management system.

Overcoming operational shortcomings in the controllers is a task that falls to the data content manager. The manager must be able to expand upon the metadata that is specified by the controllers, in cases where the specified metadata is minimal, so that users can benefit from the metadata features of the storage management system. How that expansion is achieved depends on the nature of each piece of metadata. Sometimes the expansion can be based on other information received from the controllers. Sometimes the expansion is based on information specified independently by the users through policy inputs to the data content manager.

The technology described herein is currently implemented at WWOR in Secaucus, NJ, and at TVA in Montreal, Canada, which has allowed effective utilization of existing manpower to support operational consolidation of television broadcast stations. ■

Carole Hogan is director of archive solutions for EMC Media Solutions Group.

The speed of access from tape is not sufficient to meet throughput requirements.

useful, these secondary systems must be mirrored automatically and concurrently with the data content that is deposited into the primary systems. Also, if a primary system fails, the content must be automatically retrieved from the secondary system. Finally, the secondary system may be located at a site that is geographically remote from its primary counterpart or it may be located at the same site as the primary system.

Operational controllers generally lack the capability to manage secondary storage systems — either to populate them or to restore from them when primary storage systems

must be provided with objective criteria to determine when the primary system has failed, e.g., through explicit notification of the failure, through a stated number of communication failures, etc.

Expanding metadata

Operational controllers often have minimal capability to use the metadata features implemented in sophisticated storage management systems. On the other hand, a storage manager, as shown in Figure 5, offers the metadata features because users require those features. The challenge in these circumstances is

Power quality:

Ensuring equipment
lives up to its promise





Today's broadcast systems, like the server farm shown left, are intolerant of voltage sags, blips and noise. The first step in ensuring clean power is to measure line noise and distortion.

UPS generator systems like the ones shown at far left are common at broadcast facilities. Unfortunately, they can also be generators of noise. Be sure backup power voltage is carefully filtered and regulated before it is connected into the station power grid.

By T K Wong

Three forces are driving the changeover to digital transmission in the entertainment industry today: the Federal Communication Commission's intention to mandate digital television broadcasting in the near future; advances in digital technology itself — including lighting

Just as in any data processing equipment, digital broadcast equipment uses the binary logic system — a series of ones and zeroes — to encode, transmit and decode data. So it is not surprising that broadcast equipment is subject to the same forces that cause your PC to crash at the most inopportune moments.

A number of key elements affect power quality in broadcast facilities: grounding, harmonic distortion, voltage reference and AC magnetic interference. Analog and digital facilities vary somewhat in the degree to which these elements affect broadcast quality.

Grounding: Proper grounding design has always been an essential element in

switch mode power supply that is both sensitive to, and a source of, harmonic disturbance in the power supply. The more the power supply is disturbed by the addition of digital electronic components, the greater the impact on transmission quality.

Clean voltage reference: For digital equipment that utilizes zero crossing of the reference voltage to maintain

the analog world to mitigate common mode noise, or "hum," in the network. The dynamic components in most analog equipment are affected by frequency disturbances in the system. A clean ground will minimize those effects in analog as well digital facilities.

Harmonic distortion: Although grounding remains essential in digital systems, prevention of harmonic disturbance is even more crucial. Each piece of digital equipment contains a

computation clock cycles, a clean voltage reference also is crucial. Even slight notches or variations at the voltage references will cause malfunctions.

AC magnetic interference: Advanced digital audio and video equipment is also sensitive to AC magnetic fields. An elevated low-frequency AC magnetic field is known to cause loss of data in high-speed transmission, as well as slow-downs in transmission speed due to increased error rates. All facilities contain some type of main electrical room, containing transformers, uninterrupted power systems and other high-current carrying equipment, which is a well-known source of magnetic fields. Yet in many broadcast facilities, critical equipment is located in a space nearby a main electrical room. This is especially true of older broadcast facilities without optimal conditions for effective space planning.

The fact is that when equipment problems occur at a digital broadcast facility, it often is difficult to identify the source of the problem. Steps taken at the outset of a renovation or fit out of a new facility to assure the highest quality power will reduce the likelihood of having to track down bugs in the power system.

For entertainment facilities housing studios, control rooms, AVID bays and related technical spaces with high concentrations of digital electronic

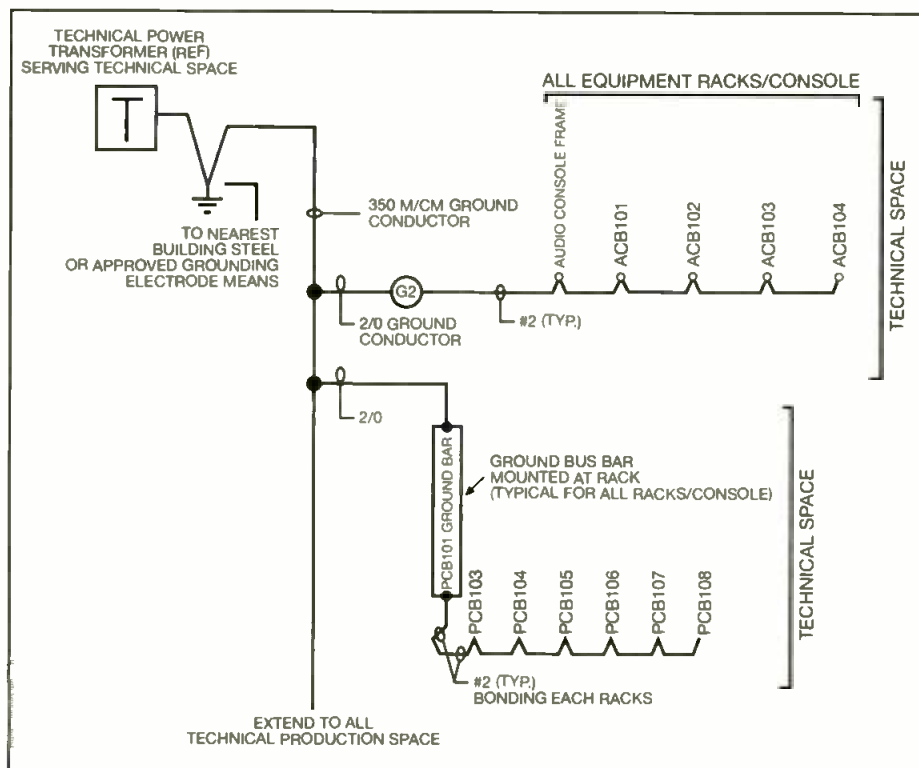
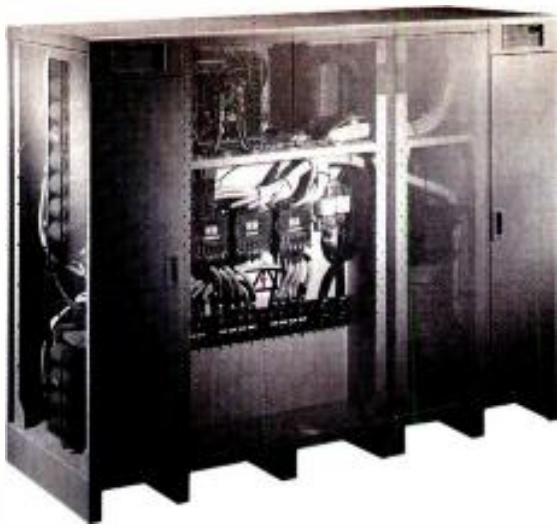


Figure 1. Most applications do not require sophisticated isolated ground power or other expensive grounding methods. A radial/star grounding scheme, shown here, is effective, economical and meets code requirements.



Some UPS systems provide an on-line, double conversion process where the load is fully isolated from primary line disturbances. Shown is a 150-300kVA, three-phase UPS system from Oneac.

As for technical grounding, simple radial/star grounding is not only compliant with NEC code and economical, but it also is effective in almost all digital broadcast applications. (See Figure 1.) Most applications simply do not require sophisticated isolated ground power or other expensive grounding methods. Instead, all equipment racks with associated ground bus bars can be bonded with ground conductors, and the main connection back to the ground source located at the rack nearest to the building's steel structure. This is a simple, economical and effective approach.

Equipment, a well-planned electrical infrastructure is crucial in ensuring power quality. It begins with the basics, something apparently as "simple" as the conventional techniques used in effective branch circuit design can ensure power quality. Yet the basics often are overlooked in designing an electrical infrastructure. Later,

Experience shows that problems with grounding often can be traced to subpar code compliance, not the grounding approach *per se*.

By definition, electrical noise is random voltage fluctuation with broad-band spectrum content up to 200KHz. The induced electrical voltage in inter-

One of the simple methods to determine grounding issues is to measure neutral-ground bond at panels that served the equipment and at load side. The neutral to ground voltage should be between 1V to 5V to maintain desired operation. Continuity test between equipment racks ground bonding is also recommended to ensure that all the network racks are at the same ground reference.

Minimizing harmonic distortion

In a fully digital facility, it is essential to recognize the potential for harmonic distortion and take steps to minimize it. An effective solution for low zero sequence harmonic distortion is installation of a low zero sequence impedance harmonic filter at each panel serving electronic equipment. (See Figure 2.) This type of filter also significantly reduces common system noise. Where a filter cannot be installed at the panel, it may be necessary to specify a rack-mounted filter on each rack. This is effective, yet more expensive.

Proper space planning — locating panels and electrical distribution equipment closer to the load — also reduces harmonic distortion caused by feeder impedance. Sometimes it is difficult to implement this type of solution due to the constraints imposed by an existing facility. Non-technical people may question the aesthetics of this type of solution ("Why do we have this ugly wall panel here?"). An effective approach is to secure everyone's buy-in, including the architect, by explaining the benefits. Of course, compromise sometimes is necessary — there is always a cure, although it may be more expensive.

Power quality assessment is recommended for existing facilities that experiencing harmonic distortion. Power disturbance monitoring utilizing a state-of-the-

It is essential to recognize the potential for harmonic distortion and take steps to minimize it.

expensive solutions may have to be implemented.

For example, there are many cases in which poor power quality has been traced to an undersized neutral conductor. This is a common problem in older buildings. In the past, the National Electrical Code (NEC) allowed downsizing of the neutral conductor because it was considered a non-current carrying conductor in a three-phase shared neutral system. That is no longer the case. In fact, the triplen harmonics generated by today's electronic equipment has turned these formerly neutral conductors into current-carrying conductors. In many renovations, power quality can be improved simply by replacing the old wire with a properly sized neutral conductor.

connecting system is variables of the inductance, the peak current noise or impulse and the rise time of the peak current. For example, conductor with 40 nanoHenry/inch inductance, at high frequency of peak current noise of 5A with 1 nano-seconds, the induced potential voltage developed is $(40 \times 5) / 1$, which results in 200V peak per inch across the connection. This interference will distort most interconnect signal transmission.



A facility-wide UPS system needn't power everything. Focus first on critical on-air and playout systems that may fail with even a millisecond interruption in power.

art spectrum analyzer provides detailed information about the power waveform. The information includes total harmonic distortion (THD) for voltage and current, breakdown of the harmonic components and its magnitude, frequency analysis, and other more useful information. The information will provide a trend of power system, which will help the designer to evaluate effective mitigation methods. Per IEEE 519 standard, the recommended THD for voltage is between 1.5 percent and 5 percent, depending on the magnitude of voltage distribution. As for current distortion, the recommended THD is between 5 and 20 percent depending on the ratio of the short circuit to the rated load current at the point of common coupling (PCC), which is the electrical service entrance. In broadcast facilities, the voltage distributions are typically 4160V, 480V/277V and 208/120V. Therefore, as a good rule of thumb, the voltage THD should be limited to 5 percent. As for current THD, because the recommended percentage is based on PCC it should not be applied at the load side. The harmonic current distortion generated by load should be compared to the actual distribution to evaluate if in fact the distortion is severe. For example, a 10A load generating a 50

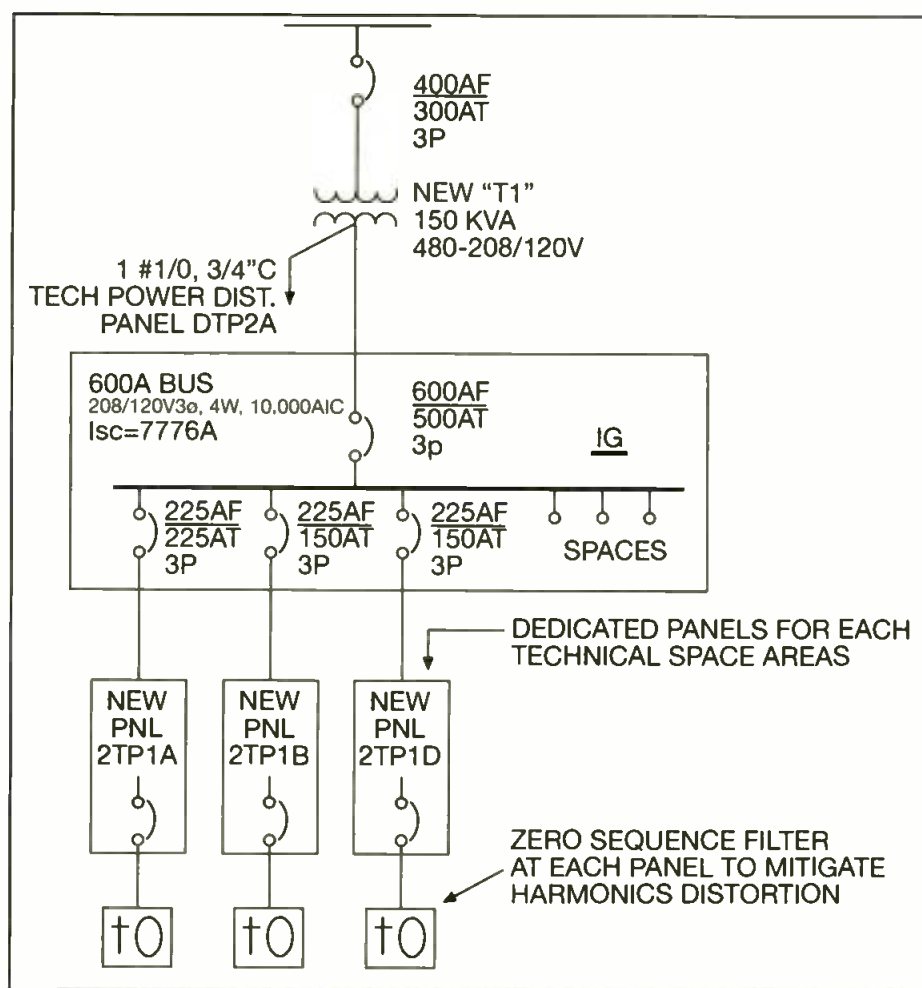


Figure 2. Zero sequence harmonic filter distribution. Implementation of a low zero sequence impedance harmonic filter is an effective solution for both harmonic disturbances and common system noise.

new build-outs, routing and placement of any equipment carrying high current should be carefully coordinated

sitive equipment a few feet away from the source will decrease the impact dramatically. However it is all relative to the strengths of the magnetic field.

All of these examples illustrate an important, yet often under-appreciated principle of value engineering: first investigate the feasibility of the least-complex, least-expensive effective solution.

With each passing year, entertainment production equipment becomes more sophisticated, more powerful and more compact. The increasing use of digital equipment will require a parallel evolution in the design of electrical infrastructure to meet the need for superior power quality. It is the only way to ensure that digital broadcasting technology lives up to its promise. ■

T.K. Wong, P.E. is a senior associate with Entertainment Market Focus Group at Syska & Hennessy, a consulting engineering firm.

Although grounding remains essential in digital systems, prevention of harmonic disturbance is even more crucial.

percent current THD in a 225A distribution system is still acceptable because the actual contribution to the system is minimal.

Mitigating magnetic fields

Space planning also is crucial in reducing the risk of interference from elevated low-frequency magnetic fields. High-current carrying equipment, such as transformers and feeders, should be strategically located and routed whenever possible. In older facilities and

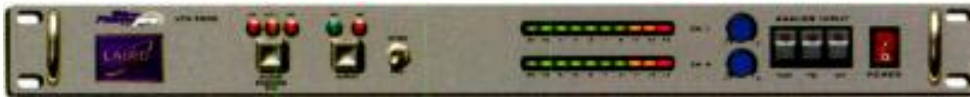
to limit AC magnetic interference in sensitive areas. However, where the layout cannot be modified due to existing real estate constraints, interference can be mitigated by properly shielding the room, another effective but very expensive solution.

An AC magnetic source of 6mGs and greater is known to cause interference with computer video display monitors. AC magnetic source magnitude decreases inversely proportional to the cube of distance ($1/d^3$). Therefore placing sen-

FIREPOWER

Transform your existing analog audio and video equipment into an important part of your IEEE1394 (DV) digital environment. Laird Telemedia is the world leader in broadcast quality FireWire® media conversion. Our 30 year reputation delivers the longevity and reliability broadcasters demand.

component



LTM-5500 Component, Composite, Y/C, Balanced Audio, NTSC/PAL, VU Meters, Bidirectional, Level Controls, 1RU, Made in USA
Optional Full Machine Control Interface Available for Mac and PC



composite



LTM-5000 Composite, Y/C, Balanced Audio, NTSC/PAL, VU Meters, Bidirectional, Level Controls, 1RU, Made in USA
Optional Full Machine Control Interface Available for Mac and PC

field fire™

LTM-FFP Laptop Editor Companion Media Converter. Component, Composite, Y/C, Balanced Audio, NTSC/PAL, 8.5"W x 9"L x 1.5"H, NP-1 Battery or AC Powered, Cordura Field Case, Made in USA. Perfect Companion for the Avid Xpress™
Optional Full Machine Control Interface Available for Mac and PC



For More Information
www.lairdtelemedia.com
800-898-0759
FAX 845-339-0231

Visit Laird
NAB
The Convergence Marketplace
2001
Las Vegas, Nevada
April 23-26
Booth L9577, Main Hall

© 2001 Laird Telemedia. All rights reserved. FireWire is a registered trademark of Apple Computer, Inc. AVID Xpress is a registered trademark of AVID Technology, Inc.

Laird Controls The New Media.™

Circle (178) on Free Info Card

www.americanradiohistory.com

Applied Technology

The Tektronix PQM300 QoS monitor

BY RAUL MARTINEZ

The advent of digital television and accompanying compression techniques require video program providers — whether they be TV broadcasters, cable or satellite providers, network operators or Internet service providers — to redefine how they evaluate program quality and provide quality of service (QoS) assurance to the viewer. MPEG video compression can result in picture degradation. Content providers must rely on sophisticated test and monitoring equipment to ensure the high level of picture quality that today's viewers expect.

Tektronix is developing MPEG and picture quality monitoring solutions that help program providers reliably transmit video at a guaranteed level of quality to the viewer. The QoS systems also enable customers to optimize utilization of available bandwidth.

Bandwidth management is important for two reasons. First, picture defects can displace bits that would normally be allocated to video content. Second, the customer would ideally want to allocate bandwidth on a program-by-program basis, based on the program content. For example, a news program would ideally be allocated less bandwidth than a sporting

event. The sporting event's content is dynamic, motion-filled, and requires more bits and therefore greater bandwidth. A news broadcast is comparatively static and requires fewer bits and less bandwidth.

For example, based on the content, a news program would ideally be allocated less bandwidth than a sporting event.

The bottom line is that bandwidth is money. The Tektronix PQM300 multichannel QoS monitor is a real-time, continuous solution for enhanced video quality monitoring that provides tools for bandwidth management. This enables users to ensure the quality of the video they provide their viewers, while protecting and generating more revenue for their services.

The system provides continuous signal monitoring to detect critical quality problems in the distribution of compressed digital video. It provides a tool for automated monitoring of ITU-R 601 serial digital video and composite analog video. It can quickly notify operators of problems with the video and help engineers diagnose and document picture quality problems within the video distribution network.

Network monitoring

The system's networking capabilities enable monitoring of up to eight channels, making it ideally suited for multichannel sites in a geographically dispersed network. The user can detect

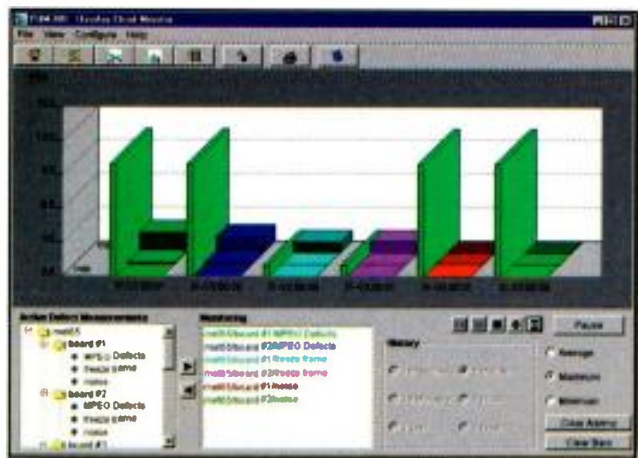
picture defects including MPEG blockiness, repeated frames and uncorrected noise using the Picture Defect Index (PDI) scale, which was derived from the industry-standard Picture Quality Rating (PQR) scale.

Tektronix established the PQR metric as a means of assessing picture quality by making full-reference measurements. The correlation between the PDI and PQR metrics allow users to make picture quality measurements for in-service monitoring situations where the reference video necessary for full-reference measurement is not needed.

The system provides a solution for in-depth quality monitoring of two or more channels of digital video information. It is effective for large, distributed networks requiring a flexible, extensible solution with simple alarm views and mechanisms that can be remotely monitored from network operation centers. Users can gain more robust access control and increased information through quality histories and defect logs for all of the simultaneously monitored programs.

The system's network capability enables users to construct an automated network monitoring system or incorporate picture quality monitoring into an existing system. The number of channels can be increased as monitoring needs change. For increased flexibility in larger facilities, multiple units may be networked to provide centralized monitoring.

The monitoring system supports SNMP network management protocol to enable



A screen shot of the PQM300's graphic user interface.



MICROWAVE RADIO COMMUNICATIONS

Key Products

- Analog and digital newsgathering systems
- Analog and digital fixed microwave links
- Analog and digital central receive systems
- Portable video and data microwave links

Markets Served

- Commercial television networks and stations
- Public television networks and stations
- Wireless broadband networks
- National defense and security agencies

Company Profile

Microwave Radio Communications (MRC) designs, manufactures and markets microwave radio systems and accessories for broadcasting, telecommunications and government applications. Founded as part of Microwave Associates in 1963, MRC has become the leading provider of analog and digital video microwave systems to television broadcasters in North America and a major provider worldwide.

As the world's broadcast organizations convert to digital technologies for contribution and distribution, MRC's innovative product lines are developing an increasing share of the market. The MRC TwinStream™ dual-carrier radio system brings together the leading analog and digital video microwave prod-

ucts. This allows broadcasters to transport new digital television services on the same RF channel as their existing analogue service. MRC TwinStream™ is the leading studio-to-transmitter link and multi-hop network system in the US and is building a worldwide reputation for quality.

The MRC CodeRunner™ has become the leading platform in North America for organizations seeking robust and bandwidth efficient digital ENG transmission. The use of new COFDM technology is ideal for television news, sports and special event coverage. New versions of the CodeRunner™ are gaining acceptance in defense, security and television broadcast organizations internationally.

Contact Information

Microwave Radio Communications
101 Billerica Ave. Bldg 6
North Billerica, MA 01862 USA

Tel: +1-978-671-5700
Email: info@mrcbroadcast.com
Web: www.mrcbroadcast.com

**Visit us at NAB 2001
Booth #L6420
See New Radio, Transmitter & Antenna Products**



Circle (179) on Free Info Card

www.americanradiohistory.com

remote monitoring and prompt response. The SNMP protocol gives facilities the ability to display remote units as icons on a network monitoring workstation and monitor their status. It also supports leading Web browsers to enable remote operation of multiple units. These capabilities allow the system to provide monitoring capabilities for multiple channels in any number of locations.

Because picture quality is monitored at the video layer, even if the network receives all the bits, they may still face picture quality issues. If the video signal entering the network has noise, the signal may already be compromised and at risk of deteriorating further if it is compressed in any way. Noise and compression defects use bits that would normally be allocated to the video signal; thus the viewer is receiving an MPEG transport stream that is compromised.

The QoS monitoring system addresses DTV dynamics by allowing users to quickly identify the most common visual impairments, including blockiness, frozen and repeated frames, loss of service, and Gaussian noise, before

they become viewer complaints. In-service, continuous monitoring of all frames assures that the most visually annoying picture defects are detected

The bottom line is that bandwidth is money.

and logged for all monitored programs. Detection of an image defect or impairment signals an alarm, identifying the channel on which the problem exists.

System enhancements

A new graphical user interface enables users to identify, diagnose and correct program errors more accurately. Remote protocol monitoring has been added to send picture quality defect alarms to a central location. This also allows users to pinpoint the exact time and location of errors and then print program error logs.

The graphic user interface incorporates three new views for increased usability. A bar-chart display features a five-point scale for more objective analysis of picture quality during non-alarm-generating conditions. The confi-

dence view offers a near real-time image of a monitored program as an alarm is triggered. Splash View allows numerous PQMs to be displayed in a near real-

time thumbnail format, to allow for monitoring of non-alarm signal conditions across the entire network.

Relay outputs in the system provide customers with additional options for notifying operators of picture quality problems, while an integrated LCD display eliminates the need for a separate VGA monitor as a local display for the instrument.

The measurement capability of the PQM300, its current multichannel ability, and its networking and automation capability allow users to preserve their initial investment in picture quality monitoring by purchasing additional capability as their needs grow. ■

For more information circle (250) on the Free Info Card.

Raul Martinez is a product marketing manager at Tektronix, Inc.

Want COFDM?
Want smaller and lighter?
Want lower cost?

**Come see what
BMS is unveiling
at NAB 2001!**

BOOTH L6101

BMS Broadcast
Microwave
Services, Inc.
A COMA Company

P.O. Box 84630 San Diego, CA 92138-4630
<http://www.bms-inc.com> email: sales@bms-inc.com
Fax: 858.560.1637 Phone: 858.560.8601 800.669.9667

Circle (180) on Free Info Card

More Zoom.

WITH ANGENIEUX TELE LENSES.

Now you can get closer to the action than ever before. With 40X and 26X High Resolution Series Tele Lenses. They deliver more zoom than any tele field lenses in the industry. And deliver more of the performance, reliability and features that are quickly making Angenieux the choice for high performance lenses.

Angenieux's 40 X II Extreme Tele Zoom is the EFP lens the industry has longed for. Its lightweight design is packed with Angenieux performance. Plus a big 40X focal range. And the 26 X 78 HR Series Tele Lens brings every shot into range with all the features you want - less the weight.

Angenieux HR Series Tele Lenses feature more of the optical performance that Angenieux is renown for around the world. With precision crafted glass and advanced electron beam coatings for the highest levels of performance and clarity. And minimal flare and ghosting to produce vivid images with enhanced contrast and highly accurate color reproduction.

Angenieux's HR Series Tele Lenses also offer more of the reliability you've come to expect from Angenieux. Their high quality construction assures consistent operation on the road day after day. It's hard to believe such precision crafted lenses could be so tough.

Get more zoom - performance, reliability and features - with Angenieux HR Series Tele Lenses. More or less, only you can make the decision.

For more information
call 973-812-3858,
e-mail angenieux@tccus.com, or
visit our web site at
www.angenieux.com.



Circle (181) on Free Info Card

angenieux

www.americanradiohistory.com

hanced TV channel features three choices of video and associated text streams – for instance, “Latest headlines,” “Sports results” and “Weather.”

The equipment configuration behind this type of Enhanced TV channel is shown in Figure 2. The system comprises three Imagestore Interactive

units operating in parallel, all set to give congruent DVE squeezes of the primary video input. A second program input to the units is used for mixing interstitial material. For clarity, four servers are shown, under automation control, to provide the video and audio for each channel although,

in reality, these may be four outputs from a common server. Channel branding is common to the three channels and is accomplished in the graphics area using PC-based applications for image browsing, animation compilation and editing, text template creation, and media loading. Each channel's dynamic textual information is automated, using a simple program designed to send the relevant text and control messages to each Imagestore Interactive via Ethernet. This text automation is linked to the main station automation. The three video outputs are then fed to the MPEG multiplexer.

This modular approach has numerous advantages for the broadcaster. The system is based on components widely used in the broadcast industry and supported by the principal vendors of station automation.

The single automation interface for the system, which supports the mixing, branding and effects systems, simplifies and streamlines system automation. This high level of integration also reduces equipment costs and rack space requirements. The system offers integration with other established systems and applications for easy graphics creation.

To back up the automation, a range of remote panels are available, including a full master control surface that can control interactive channels, as well as multiple other SDI outputs equipped with Imagestore master control and channel branding systems. This enables the Imagestore to effectively integrate interactive television alongside other channels.

For more information circle (253) on the Free Info Card.

Neil Sharpe is marketing manager at Oxtel.

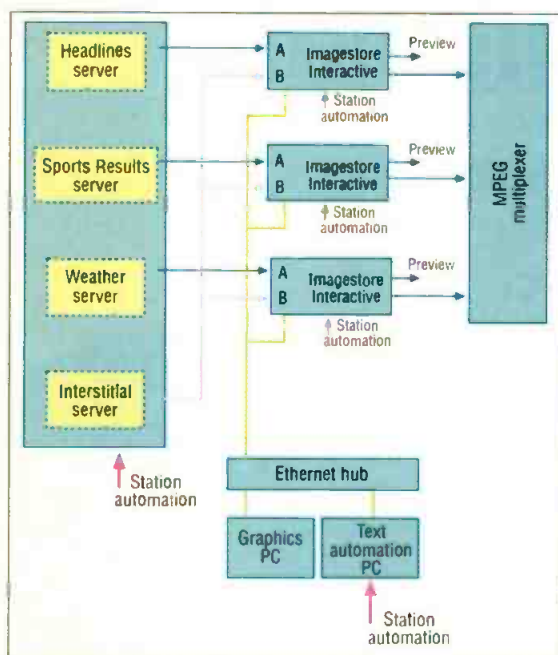


Figure 2. Imagestore Interactive system for creating Enhanced TV channel.

Digital Video Quality Analyzer DVQ

- Realtime measurement
- No reference signal required
- SSCQE scaling of quality levels
- Monitoring of picture freeze, picture and audio loss
- Recording of quality profile (long term)
- ITU-R 601 and MPEG2 inputs
- Professional Profile 4:2:2
- Histogram representation of quality levels
- Internal event and error report and statistics
- Program decoding



ROHDE & SCHWARZ

Internet: <http://www.rohde-schwarz.com>

ROHDE & SCHWARZ, INC.
7150-K Riverwood Drive
Columbia, MD 21046-1245
Phone: (301) 459-8800
Fax: (301) 459-2810
Circle (185) on Free Info Card



We put POWER in your hands...

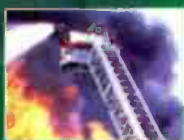
DIGI POWER

When you're looking for the most powerful control, versatility and exclusive digital features, your looking for DigiPower from Fujinon. DigiPower is a standard feature on all HDTV and broadcast zoom lenses.

At the heart of the new DigiPower system is a CPU which provides precise control data for zoom and iris. An integral Flash ROM is programmed with lens specific information allowing each servo unit to be tailored to a specific lens model. Software updates are easily accomplished by "flashing" the ROM.

To complement the most powerful digital features in the market is Fujinon's exclusive AT2 Aspheric Technology. This technology reduces distortion at wide angles, improves corner resolution, reduces glare and reflections, and allows chromatic aberration to be managed throughout the zoom range.

When you consider our superior lens technology and our exclusive digital features, it's time you put power in your hands... Fujinon DigiPower.



DIGITAL QUICK ZOOM

"Quick Zoom" speed is improved to 0.7 seconds end to end. "Quick Zoom" provides for a rapid zoom movement to the telephoto position to check focus by the simple press of a button. Releasing the button returns the lens to the previously selected zoom position.



CRUISE ZOOM

Pressing the C/Z switch while zooming will fix the zoom speed at the existing rate. This allows slow zoom times of up to 70 seconds.

ONE SHOT PRESET

A one shot memory allows the zoom position to be preset and recalled at any time with the simple touch of a button.



RS232 PORT

The RS232 port allows control of lens functions while providing for diagnostics during servicing.



DIGITAL ZOOM SPEED

The maximum zoom speed of the seesaw zoom switch can be user selected in seven increments providing precise repeatability.



Broadcast & Communications Products Division

See us at NAB L8739

FUJINON INC. 10 High Point Dr., Wayne NJ 07470-7434 (973) 633-5600

FUJ PHOTO OPTICAL CO., LTD. 1-324 Uetake, Omiya City, Saltama 330 Japan; Phone: 048-668-2152, FAX: 048-651-8517

www.fujinon.com



Circle (186) on Free Info Card
www.americanradiohistory.com

MedioStream software-based encoders

BY KEITH DUNFORD

MPEG video and audio compression was launched into the professional broadcast arena just over a decade ago. The early market leaders, Compression Labs (CLI) and General Instrument (GI), provided the industry with MPEG-1 encoders and decoders that could significantly reduce the cost of operating program contribution and distribution networks. These companies were soon joined by a number of U.S. and international competitors providing second generation, higher performance MPEG-2 products that were smaller, cheaper and easier to operate.

Application-specific encoders and decoders came along in the mid-1990s to address television networks' need to improve their capability and efficiency in news gathering and special event broadcasting. This was followed later in the decade by ATSC-compliant encoders utilizing advanced technology that enabled satellite networking of high definition television to become an economic reality.

Unlike the early MPEG-1 products, which largely used discrete circuit processing, the majority of MPEG-2 encoders have used RISC chip sets integrated with other circuit elements. This resulted in a lower cost but somewhat inflexible hardware architecture. Although the price of MPEG encoders has fallen over time, they remain an expensive item that has become a necessity in modern television operations.

The next generation of MPEG-2 encoders is about to arrive, promising to solve many of the issues related to flexibility and cost involved in encoding operations. This recent breakthrough has been achieved through advances in MPEG-2 real-time software encoding that can eliminate many of the restrictions associated with RISC processors.

A small number of companies are in

the late stages of developing software-based encoding systems that allow real-time MPEG-2 and other compression formats to be processed using standard computer hardware. Software-based encoding systems provide a greater degree of encoder flexibility and improved performance when compared with RISC chip-based encoders.

The next generation of MPEG-2 encoders is about to arrive, promising to solve many of the issues related to flexibility and cost.

The software encoder price is also expected to be significantly less than current implementations. Additionally, software-based encoders can be expected to provide inexpensive and simple upgrades as the performance of standard computer hardware improves.

A software-based alternative to chip-set MPEG-2 encoders has been made possible largely through the significant progress made on commercial CPU architecture over the past several years, which has especially focused on improving multimedia processing capability. For example, new dedicated CPU instructions have been developed to help process Digital Cosine Transforms (DCTs) and other computational-intensive or repetitive processes involved in video encoding and decoding. These new instructions are called Single Instruction Multiple Data (SIMD) and can apply the same operation to multiple data segments at the same time, significantly increasing data processing efficiency.

Another critical improvement in PC performance has been the increased bandwidth to move around the huge amounts of data encountered in high-resolution video. For example, the bot-

tleneck between the graphic card and the CPU has been eased thanks to the new AGP bus. The system bus bandwidth has been increased dramatically to facilitate large amounts of data processing, faster RAM has become available, and new instructions have been added to better manipulate complex data segments. Each of these

improvements has contributed to bringing software-based MPEG-2 encoding and decoding to market as a low cost, flexible alternative to chip-set based dedicated hardware solutions.

MedioStream will demonstrate its real-time, broadcast performance MPEG-2 encoder at NAB 2001 to offer real-time software encoding solutions for the professional, industrial and consumer market sectors.

The CAMpeg RT real-time digital video-to-MPEG-2 transcoder encodes real-time digital video from a DV camcorder at full D1 (720x480) resolution and at 30fps (29.97fps) into MPEG-2 ML@MP format. The system provides near broadcast quality for personal video production at an affordable price.

Significant system requirements must be met in order to process real-time video. A computer with a Pentium III processor operating at 600MHz or higher or a 1GHz Pentium III processor is recommended to obtain best results with aggressive video and for simultaneous encode/decode operations. The system must also have 128MB of RAM, a 10GB hard drive and an AGP video graphics card with 8MB of RAM. It operates with Windows 98 SE (second



VL-2 Plus

Two channel sequential quick charger with AC adaptor.



VL-4S

Four channel SIMULTANEOUS fast charger, charges four Endura E-50 V-Mount batteries in 2.5 hours or less!



Digi-View™

The Endura Digi-View feature displays accurate battery capacity in the camera viewfinder.



PowerLink™

Every Endura battery comes standard with the PowerLink™ system that allows two batteries to be stacked together for an extra boost of power.

Up to 100 watts!



P-VS Plate

Universal plate connects to cameras to allow use of Endura E-50 V-Mount batteries. P-V/P-VS Plates feature a tap 2 pin DC out connector. Synchron automatically activates on-camera lights

THE NEW STANDARD™ LITHIUM ION BATTERY PACK & CHARGER

I·D·
IDX Smarter Technology

NAB Booth L9583

Tel: (310) 891-2800 Fax: (310) 891-3600 Email: idx.usa@idx.tv Web Site: www.idx.tv

Circle (187) on Free Info Card

www.americanradiohistory.com

edition), 2000 and 2000 Pro. Input from a DV camcorder to the computer is accomplished with an IEEE1394 (Firewire) adapter and cable or a PC-MCIA card for laptop computers.

The company's second product targeted at the semi-professional and industrial market was beta tested during the first quarter of 2001, and is expected to be available by mid year. The product, named CAMpeg PRO, has an advanced user interface and processing features that provide improved performance and flexibility to the operator in the encoding process. The system processes real-time video at full D1 resolution in both NTSC and PAL standards. An upgrade to the system will allow the real-time transcoding of MPEG-2 encoded content to popular video streaming formats such as Windows Media, Real G2 and Quicktime. The product will also encode MPEG-1 for CDR authoring.

The third and most advanced product has been provisionally named Mediopro and will be shown for the first time at NAB 2001. The

company will offer two variants of the MPEG-2 software-based encoder system to meet the requirements of different operating environments. The basic product will provide digital-only in-



CAMpeg PRO and system configuration

put from either IEEE 1394 (Firewire) or 10/100baseT Ethernet. A higher priced variant will provide an interface to legacy systems where input might be composite video, analog or AES/EBU audio, SDI, or ASI. Mediopro-XLT will be supplied with a laptop docking module providing the input and

output interfaces in the mixed analog/digital system. The output can be either MPEG-2 ML@MP (4.2.0) or ML@SP (4.2.2) formats. MPEG-2 real-time encoded events can also be trans-coded

ed into Windows Media, Real G2 and Quicktime formats for streaming.

The system is a next generation Digital News Gathering (DNG) encoder, providing new technical and operational features.

DSNG is recognized as one of the most significant advances in the news media industry. The transition of software encoding will significantly enhance the capability. Global news networks are constantly seeking new technologies that can provide a competitive advantage with lower operating cost. There is a significant opportunity for software-based encoders in transportable systems that require improved operating flexibility, high performance, lightweight and lower cost than the current generation of MPEG-2 encoders.

The system will be supplied as an integrated hardware and software system, featuring a Pentium III (1GHZ) tower or laptop computer, input/output interface module, cables, Windows OS, encoder /decoder software package and 24-hour customer support. A mobile news gathering solution can be easily integrated with a high-end notebook computer and professional DV camcorder. This, and the potential for improved operational and technical performance, promises to take MPEG-2 encoding to the next level. ■

Keith Dunford is a partner at Exam Associates, a consulting group specializing in digital media technology applications.

Digital Video Conversion and Interface Products by AJA Video

PCI Cards

HD-NTV PCI Bus HD-SDI Video Interface/Framestore	\$7900
SD-NTV PCI Bus SDI Streaming Video Interface	\$2,395

Miniature Converters

HD10C HD-SDI D/A Converter w/SVGA Mode*	\$2,495
HD10M HD Analog to NTSC Monitoring Downcnvrtr.*	\$ 800
D10C SDI to Component Analog Converter, 10-bit *	\$ 800
D10A Component Analog to SDI Converter, 10-bit*	\$1,200
D4E Serial Encoder, SDI to NTSC/PAL or Y/C*	\$ 250
D5CE Serial Encoder, SDI to NTSC/PAL /w Component*	\$ 375
D5D Decoder, 3-line Comb Filter, NTSC/PAL to SDI*	\$ 595
DWP Power Supply, 110 Volt (*requires power supply)	\$ 40

Rack Mount Products

R20D Decoder, 5-line Comb, NTSC/PAL to SDI, 10-bit	\$1,300
R20E Encoder, SDI to NTSC/PAL or Component, 10-bit	\$1,300
FSG Frame Sync/Genlock Module (fits R20E/D Cards)	\$ 600
R44E Four Channel SDI to NTSC/PAL Converter	\$ 990
RD5AD Dual Universal A/D Converter NTSC/PAL or Component to SDI	\$1,600
RD5CE Dual Universal D/A Converter SDI to NTSC/PAL or Component	\$1,300
R5CE Universal Monitoring Distribution Amp, 1X4	\$ 590
FR1D 1-RU, Forced-Air Cooled, 4-Slot Frame, Dual Power Supply	\$ 895
FR2D 2-RU, Forced-Air Cooled, 10-Slot Frame Dual Power Supply	\$1,490

www.aja.com
toll free 800-251-4224
international 530-274-2048

AJA VIDEO

Circle (188) on Free Info Card



Solid-State M Series Transmitter for the Nation's Capital.

NBC's WRC-TV will be broadcasting from the Nation's Capital with their new LARCAN 60kW transmitter.

WNBC-TV and KNBC-TV are covering the Nation's No. 1 and No. 2 markets in New York and Los Angeles with their new M Series transmitters.

What are you buying?

LeBLANC BROADCAST INC.

Ray Carnovale, President 905.844.1242 • LBI Denver, Sheryl Richmond 303.665.5016

• West: Dave Hill 650.692.7000 • Bob Palmer 360.403.1960

• Central: Tony Guess 940.682.4147 • East: Frank Davis 281.296.8132

www.leblanc-group.com/lbi

www.larcan.com

Circle (189) on Free Info Card

www.americanradiohistory.com

Surf our Website for more
digital and analog
transmitter solutions.

NAB BOOTH L10445

Bitcentral solutions for satellite broadcasting

BY KEN PIQUELLE

End-users, suppliers, service providers, integrators and enterprise businesses in the digital broadcasting and satellite communications industries operate in a highly fragmented market with nearly 1500 equipment manufacturers and distributors worldwide. Companies typically require multiple discrete components manufactured by different equipment suppliers, making it difficult — and expensive — for procurement departments to access information regarding product specifications, pricing and availability.

California-based broadband technology provider bitcentral sees an emerging opportunity to assist these companies by providing them with a single-site destination offering industry-specific information, news, employment opportunities and interactive discussion forums. This infrastructure serves as a resource facilitating business transactions between buyers and sellers of digital broadcasting and satellite communications equipment, wireless bandwidth and technical services. Bitcentral offers new and pre-owned equipment and a wide range of services including technical support, training, engineering, consulting and system configuration assistance.

These customized resources assisted Educational Service District 101 in updating its STEP•Star nationwide satellite program. ESD 101 is one of nine regional agencies in the State of Washington established by law to provide cooperative and informational services to local school districts and to assure equal opportunities for everyone.

In 1969 the Washington State Board of Education created a statewide system of intermediate school districts, or ISDs, to meet the needs of local school districts.

In 1972, the state board reviewed the needs of each geographic region

and reduced the number of ISDs from 14 to 12. In 1975 the ISDs were renamed educational service districts, or ESDs.

ESD 101 launched its STEP•Star nationwide satellite program in 1986. Eventually the district was able to

bid specifications and teachers requirements, Savitz literally built the entire system from the ground up.

The original STEP•Star system used DigiCipher compression technology, which limited the amount of programming ESD 101 could offer. John

The new compression system enabled ESD 101 to expand their programming.

procure grants that allowed it to purchase its own equipment, hire its own talent, and produce programming in-house. In 1996 the district hired an engineer, John E. Savitz, to design, build and implement their studios, control rooms and satellite delivery system in an empty school building. Basing his designs on initial technical

Savitz, engineer of technology and telecommunications for the district, persuaded ESD 101 to switch to the more versatile MPEG compression system using equipment and integration services from bitcentral.

According to Savitz, Bitcentral provided the agency with a complete turn-key solution demonstrating a thorough



ESD 101 utilized broadband services from bitcentral to migrate to MPEG compression equipment in its uplink room, shown above.

Spotting the best Scan Converter should always be this easy.



You're looking at the best autosync video scan converter available anywhere. The CGC-4000 can turn your high-resolution desktop workstation, PC or Mac presentations into broadcast-quality videos.

CGC-4000 features:

- Broadcast-Quality NTSC/PAL Output
- Full 24-bit Digital Signal Processing
- True Autosync Operation
- Dynamic Pan & Zoom
- Optional SDI Output (4:2:2)
- Betacam, S-Video (Y/C) Outputs
- Auto & User-Selectable Filtering
- RS-232 Interface
- 15-pin Connector for PC Applications
- Full 3-year Warranty

Enhance your image, put a Folsom Video Scan Converter to work for your next application.

Circle (190) on Free Info Card

©2000 Folsom Research, Inc. All rights reserved.

See us at NAB Booth #M14368

**Serial
Digital
Output
(4:2:2)**

**Computer
-To-
Video**

**Broadcast
Quality
Output**

**RS-232
Interface**

To get information,
see a free demonstration,
or to order, call us or
visit us online at: **www.folsom.com.**

FolsomTM
RESEARCH
Enhance Your Image

1-888-414-SCAN

tel 916.859.2500 fax 916.859.2515

11101-A Trade Center Drive Rancho Cordova, CA 95670

understanding of the district's RFP. The company installed, configured and tested the network to ensure full operation and gave ESD 101 a one-year warranty on the entire system.

With DVB-compliant MPEG compression in place, ESD 101 was able to operate three channels on one-third of a transponder, compressing the signals

served as a deterrent to signal piracy and allowed ESD 101 to control how many hours of programming a viewer received — from an hour of programming on a single channel to all programming on three channels. Equally important, encryption allowed ESD 101 to deny access to some programs, such as those directed to correctional

the district the capabilities they wanted. Bitcentral also worked with manufacturers to get ESD 101 an extra year of warranty.

Today, ESD 101's programming is broadcast to almost every area of the 50 states and beyond. Viewers watching the live, interactive broadcasts can telephone to ask questions on-air, which greatly enhances the learning process. All a subscriber needs to receive the Ku band signal is a 1.2-meter fixed dish, one of ESD 101's receivers and a coaxial cable. The district maintains its own 1.2-meter dish on site so they can constantly monitor their programming to ensure everything works.

At last count, ESD 101 had about 20,000 registered K-12 students at sites receiving direct classes on downlinks, 1 million homes receiving the K-12 programs on cable and over 6 million homes receiving the adult literacy programs on cable. The K-12, Adult Literacy and the Correctional Learning Network are growing rapidly.

Ken Piquelle is director of marketing for bitcentral.com.

Equally important, encryption allowed ESD 101 to deny access to some programs.

into a smaller space. The new compression system enabled them to expand their programming to include the Corrections Learning Network for corrections officers and inmates.

The system also permitted ESD 101 to provide conditional access through encryption. The STEP•Star program includes receivers with smart cards in them. Each receiver is registered in the STEP•Star database. Whenever a receiver is turned on, it receives a signal from the database that either allows or disallows access. This

officers that might be inappropriate for other viewers.

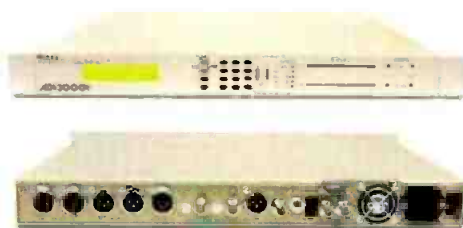
Bitcentral also installed a Ku-band uplink for ESD 101. The district spent money on the front end so that subscribers could access educational programs inexpensively.

Working with PanAmSat, ESD 101's satellite provider, bitcentral installed, configured and tested a sophisticated uplink that allowed the district to operate three channels on the Galaxy 10R, Transponder 15 — the most powerful Ku band available — giving

SYNCHRONIZING SOLUTIONS FOR VIDEO AND AUDIO

Universal Synchronizer with TBC **VS-5200**

Selectable inputs of composite, component, SDI and YC video for multi-format applications. Video outputs in all four formats allow transcoding from the selected input to all outputs simultaneously. Auto-mode TBC is standard.



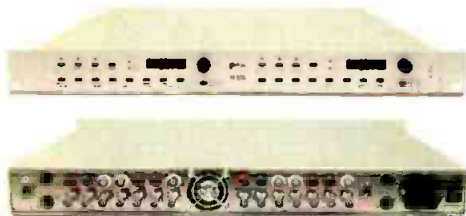
Video Delay Detector **DD-2100**

Measures up to 9 fields of delay through a video processor by correlating the input and output active video. The measured delay is continuously updated and controls the AD-3000 to automatically eliminate lip sync errors.



Audio Processor and Delay **AD-3000**

Automatic lip sync correction with compatible synchronizers or the DD-2100 Delay Detector. Pitch correction allows rapid delay changes without artifacts. Stereo analog, balanced and unbalanced digital inputs and outputs are standard, as is a sample rate converter.



PIXEL
INSTRUMENTS CORPORATION



Pixel Instruments Corp.
110 Knowles Drive
Los Gatos, CA 95032

408-871-1975
Fax: 408-871-1976
www.pixelinstruments.com

**NAB 2001 Booth L430
LVCC North Hall N4**

Circle (191) on Free Info Card

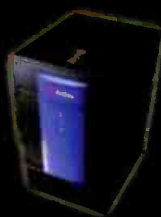


JUST GOES TO SHOW YOU
HOW IMPORTANT IT IS TO
HAVE A GOOD ROLE MODEL.



The Epica-128 is the next big evolution in large I/O matrix switching. Featuring modular architecture, this box gives you serious field expandability—start as small as 16 x 16 and scale up to 128 x 128. And it packs a punch too, delivering a full 300 MHz of Ultra-Wideband performance. All at a price that's virtually unheard of for a matrix

Introducing the

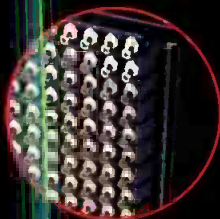


epica
128™

switcher of such stature. And best of all, the Epica-128 comes with the AutoPatch lifetime parts warranty.* If anything should need repair or replacement, we'll take care of it free, forever. To learn more about the Epica-128, call 800-622-0246 ext. 3181 or visit www.autopatch.com/epica.

All the power of the Epica-256 in a new 128 x 128 size.

Tech-Box



- Ultra-Wideband 300 MHz bandwidth in a fully loaded 128 x 128 configuration.
- Routes composite, Y/C, S-Video, RGB, component HDTV, analog audio, Serial Digital, and more.
- Input/Output: Both modular in increments of 16 to a maximum of 128 per signal type.
- 32-bit processor with Ethernet, LonTalk®, and RS-232/422. AutoPatch "Virtual Matrix" programmability.
- I/O boards and power supplies are hot-swappable and feature tool-free extraction.
- Integrated self-diagnostic suite minimizes downtime.

See us at NAB, Booth #M8360

A Division of XN Technologies, Inc.

2416 Cheney-Spokane Rd., Cheney, WA 99004-0350
509-235-2636 ext. 3181 (U.S.) 800-622-0246 ext. 3181 Fax 509-235-2646
www.autopatch.com

©2001 XN Technologies, Inc.

*Subject to certain conditions. See warranty brochure for details.
LonTalk® is a trademark of Echelon Corporation.



AUTOPATCH™

Rewriting the Rules of matrix switching.

Circle (192) on Free Info Card

Editing systems

BY JOHN LUFF

In the early years of television any editing was done strictly on film. Programs that needed the sophistication that editing allowed had to use both film production techniques and tools. In the balance, the ability to broadcast a program more than once was also protected, for at that time there was no effective means of recording a program without using film. The technique of recording after video production (live only) was called kine-scope, a process in which a film camera was used to capture a program from a CRT in real time. Once the video was transferred to a non-electronic medium all manner of well-established film techniques could be used.

By the mid-1950s a number of research commercial departments in the U.S. and elsewhere had been working hard to find a commercially viable approach to recording the electronic images without chemical photography. Ampex, and later RCA, Sony, Panasonic, Bosch, Hitachi, NEC and others achieved considerable success in making increasingly more practical electronic copies of the live images. However, it was a number of years before practical electronic editing was perfected. For a decade editing was done by physically splicing videotape segments together in the same manner as film was physically spliced. Indeed editors used bins like film professionals to store clips (more accurately called waste baskets in the janitorial industry).

In the 1970s, "Rowan and Martin's Laugh In" took such efforts to new heights with literally hundreds of splices in some programs. While this was thoroughly enjoyable television, it was equally impractical for wide use in production. For instance, a split edit (one where video and audio cuts are not coincident) were impossible. The push to create usable electronic editing was spurred on by Hollywood's need to be able to produce electronically like

they did with film, in the theory that video production would be as cheap or cheaper than film approaches.

However, unless you physically cut videotape (or use modern computer-based editing tools), video editing is relegated to a linear process in which scenes are transferred (dubbed) from original videotape to the master recording used for air. While beyond the scope of this article, it is important to realize the precision with which this

more capable. Companies including RCA and Ampex created systems that used special-purpose, hardware-programmed computers to control multiple VTRs and provided in some cases GPI control over production switchers and other devices to make integrated systems almost possible.

CMX however took a fresh look at the problem and created software to be run on a general-purpose computer that took control of VTRs, ATRs, pro-

With disk space as cheap as paperclips, load time is considerably less of an issue.

had to be done. Scenes had to be written on the master tape in sequence, from the head of the program to the tail, and the tracks on the tape had to be precisely controlled to allow the playback of the edited signal by mechanical means with considerable hysteresis. To edit one had to begin erasing old video as the head passed the erase head, and a precise amount of time later begin recording the new material exactly where the erasure had started. Eventually, methods using tones on a cue track permitted "precisely" repeatable edits, though there were no methods to achieve time synchronization between VTRs unless the editor had extraordinary skill and the VTRs were carefully maintained.

In the early 1970s a timecode that could be recorded on tape and used to both synchronize transports and accurately control the timing of edits was developed by commercial companies and standardized by the SMPTE (SMPTE 12M is still titled "Time and Control Code"). Initially, implementations were still finicky and prone to less than perfectly repeatable results, due in part to the analog nature of the timecode. Over time, the systems utilizing this common "sync track" grew

duction switchers and audio consoles in a more powerful environment. The CMX 300 and its successor products were the mainstay of the production industry for nearly 20 years. It certainly was true that no early computer editing system radically changed the topology of the editing landscape, as scenes were still laid down in strictly controlled places on the tape. However, it was now possible with adequate care to make a "tracking edit" in which a scene could be spliced to itself visually seamlessly and reliably. This was a breakthrough capability that today is still critically important to many production processes. An editor for film spent most of his or her time thinking about the flow of the content. A video editor typically was a technician who understood what made the complicated process tick and fixed the often-broken equipment.

As the cost of the hardware and the sophistication increased, producers demanded less-expensive facilities to use to make first-cut decisions at lower cost. The software and other tools were created in less expensive incarnations using the then new U-matic 3/4-inch videotape format as a less-expensive medium less prone to technical complications



FAMILY VALUES

An Entire Family of Solutions for Aural and Video Demodulation

The head of the family is the remarkable...



msi 320 Precision Video Demodulator for NTSC.

Simple, reliable and easy to use, it comes with a guarantee of support until the last analog station goes off the air. It is also available with a family of accessories designed to solve the kinds of problems you face every day.

Accurate BTSC stereo measurements



The **SRD-1** connects to the **msi 320** to offer the only traceably calibrated stereo standard available. It provides Left & Right or Sum & Difference in either BTSC or Equivalent Mode, with or without pre-emphasis.

Automatic calibration with Tektronix™ 751 Modulation Monitor



The **msi 751** Interface used with the **msi 320** is the only combination available that lets you take advantage of the automatic calibration feature of the 751 Modulation Monitor.

An easy-to-read Modulation Metering Panel



Total modulation meter and peak flasher of Model **TVMM-1** autorange so the definition of 100% modulation is always correct regardless of the combination of BTSC signals in use. It provides convenient front panel meter indications of Total Modulation, SAP, PRO and Pilot Injection.

RF Preamplifier provides additional gain for distant reception



Model **msi 100** is an RF preamplifier for optimum reception of a distant signal. It is available with an optional 10 MHz on-channel filter to provide the ultimate in low intermod performance permitting reception of a distant signal even when a powerful transmitter is nearby.

Carrier Failure Alarm



Model **CF 320** provides a contact closure on loss of signal

NAB BOOTH# L4416

But don't just take our word for it. Find out for yourself why a growing family of satisfied users agrees that the **msi 320** is the best value available today.

Contact Modulation Sciences, Inc., 12A World's Fair Drive, Somerset, NJ 08873.

Phone: 732-302-3090. Fax: 732-302-0206.

Or visit our website at <http://www.modsci.com> E-mail: sales@modsci.com



Circle (193) on Free Info Card

www.americanradiohistory.com

TECHNICAL DIRECTORS TAKE CONTROL

When you really need fast and precise control, the essential key is DNF's Production Switcher Interface.

- Give your production switcher control of video servers, VTRs, DDRs, graphic and audio sources.
- Access multiple channels simultaneously.

Production Switcher

• Access pre-programmed sequences with one button.

• Deliver fast, accurate, repeatable effects.

• Create bullet-proof transitions.

• Design dramatic show openings.

• Merge live action and effects fast.

Video Server

Call us when you're ready to take control.

DNF
CONTROLS

PUTTING YOU IN CONTROL

9970 Glenoaks Blvd. Suite D • Sun Valley, California 91352 • p.818.252.0198
www.dnfcontrols.com

Circle (194) on Free Info Card

and cheaper to run. In some environments the upward pressure began again, with offline editing booths acquiring editor-controlled audio consoles and larger production switchers. In some markets these tools were used as a final cut method.

However, the ability to replicate the film production process, which is essentially nonlinear in nature, had not yet been achieved. In a historical footnote, CMX produced the first nonlinear electronic editing system. The CMX 600 was intended strictly for offline purposes, as it was mono-

It is clear that we have indeed come a long way from razor blades for editing television content.

chrome, and the quality of the preview image was never intended for any more than first cut purposes. One could however take the decision list that was output to punch tape on a CMX 600 and input it to a CMX online editing system to auto-conform an edit master from the source material. Only a few CMX 600s were made, with some notably used in Hollywood by CBS with some success. The system cost hundreds of thousands of dollars, which in the mid-1970s was serious cash. It would be more than a decade before nonlinear editing would come back as a commercial product.

Other media were used for other attempts at nonlinear editing. Lucas Films invested in the creation of a system called Edit Droid (and Sound Droid), using analog laser disks as the playback media. The theory was basically, provide enough copies of the media on enough machines, and random access editing would look like it was utilizing a single copy of the media in a nonlinear process. Too complicated and too expensive for general use, the Edit Droid and some similar competitors withered.

The idea behind the Droid and CMX 600 was critical to the future of editing. Playback in real time with immediate nonlinear access to any scene would make practical a new class of tools. It still would not quite emulate film, but if the software controlling the process was sophisticated enough, the editor might escape the technology and begin to go back to thinking only (actually *principally*) about content. To a large measure the cat was finally out of the bag, and the effect on the production process was profound.

When it became possible to compress video, put it on computer disks and play it back in a truly random access manner, the Holy Grail was within sight. Avid, and then an increasing number of competitors, achieved considerable commercial success as soon as the technology became practical. At first these rudimentary computer editing systems were still offline tools, but as the quality of compression and the speed of computers improved they moved closer and closer to the mainstream of electronic editing.

Today products we generally categorize as nonlinear editors supply fully acceptable quality for most editing

Carlson

Architecture
Engineering
Broadcast Systems
Construction
Program Management

Atlanta
Boston
Charlotte
Chicago
Dallas
Denver
Kansas City
Los Angeles
Milwaukee
Minneapolis
New York
Phoenix
San Francisco

Booth L265 LVCC North Hall
www.carlsonolutions.com 312-255-0060

Circle (195) on Free Info Card

The World's Smallest Master Control Switcher!

You Just Know that People are Going to Talk.

The Ross CDK-111

is the worlds smallest digital master control switcher. A single D.A. sized card provides video mixing, a keyer with built in animated logo storage, frame synchronizers on every input, full preview, a program bypass relay and an automation port.

In addition to master control applications, the CDK 111 is ideal as a mixer for digital edit suites, commercial insertion, flight packs, microwave trucks and as a Synergy production switcher DSK extension.

CDK
MICRO
MASTER
CONTROL



**Switchers, Keyers,
& Terminal Gear**

Tel: (613) 652-4886 Fax: (613) 652-4425
solutions@rossvideo.com

Circle (196) on Free Info Card

www.rossvideo.com

NAB Booth
L11639

needs, including uncompressed editing of both 525 video and HDTV. While this history lesson may be a long way to go to get to today, it is clear that we have indeed come a long way from razor blades for editing television content. Computer editing has now begun to move down to the home PC with IEEE 1394 interfaces to remarkable consumer cameras permitting convincing quality and considerable sophistication in editing products in wide distribution.

Now we have software that can provide many of the functions of a very expensive linear editing bay. But though we have indeed come a long way, we still do not have tools in software that can totally replace some linear editing functions, nor all of the capabilities of a fully configured linear editing bay. One of the limitations of nonlinear processes is the acquisition process itself.

In film the camera original is seldom edited directly. In early videotape editing with razor blades that was also true. The original is simply too valuable to risk losing it in the editing process. Film editing eventually conforms the camera original to the edited version, producing a clean copy only after the decisions are final.

Nonlinear editors do the same thing for different reasons. Fundamentally the camera original (videotape in almost all cases) is transferred, or dubbed, to the computer-accessible media because it has to be done for most systems to work. Thus the "load" time must be allocated before editing can begin. When nonlinear editors first became available, and disk space was quite limited, this was a severely limiting factor. A one-hour documentary

offer the freedom to complete a project, or portions of one, in a linear fashion when appropriate, while accessing the essence of nonlinear techniques as well.

The future holds interesting possibilities as the power of general-purpose computers begins to achieve performance levels orders of magnitude higher than that used in the first nonlinear systems. One powerful concept that will certainly come to



Today's nonlinear editors, like the Sony XPR1 shown above, provide new functionality in the editing process.

with a 20:1 shooting ratio became an exercise in media management at least as complicated as linear editing. With disk space as cheap as paperclips, load time is considerably less of an issue. However the load time issue is not eliminated by the quantities of bits available.

Imagine a single shot brought in to a session on tape. To use it one must ingest it (load) to the system, and then proceed with the edit. What if there are dozens of such shots, like there might be in the case of a news editing environment? It actually can be less efficient to edit nonlinearly in such circumstances. The ability to preview non-destructively, as well as to use features like fit to fill and other capabilities at will, makes nonlinear systems shine. But when a simple cuts-only program that is well understood and not subject to an interactive editing process, it may well be faster to lace up the tape, dump it to the master and move on.

Linear editing systems that grew out of the early CMX 300 linear editing systems can provide features that strictly nonlinear systems cannot. They can operate in a hybrid environment for instance — utilizing disk drives for random access features, but also accessing "linear tools" like VTRs and production switchers — to achieve the best of all worlds. Sony, Accom and others provide just such systems and

fruition is that of "proxy editing." Consider doing all your editing on inexpensive platforms using low bit rate proxies of the actual media with modest quality, but no reduction in production capability. Then the metadata representing all of your decisions is applied to the actual media stored elsewhere in the same compute environment, but executed on platforms with higher capability and sophisticated algorithms. By taking this approach, many people could be editing the material simultaneously and non-destructively. It would also allow an environment in which the expensive tools needed to do high-quality work need only be purchased once. The proxies for those tools could be much less expensive, turning back the clock to the early days when offline editing was done in less expensive editing bays with U-matic proxies of high-quality media. At the end of a session you might simply hit the print button and the final copy of the program would be assembled and delivered over the WAN to the distributor for release to air, while you retained the original media and the proxies in a secure environment controlled by the owner of the content. ■

John Luff is vice president of business development for AZCAR USA.

**View an
online
product
demo
whenever
you see
this logo.**

www.broadcastengineering.com

“WITH AYSIS AIR, WE CAN
MIGRATE TO DIGITAL WITH
A PROVEN, GREAT-SOUNDING
AND POWERFUL PLATFORM.”

MOBILE DIGITAL PRODUCTION

The Aysis Air digital broadcast console,
now also available in a reduced size version
Aysis Air Mobile - incorporates:

- Up to 96 channels and 48 clean feeds
- A freelance-friendly, knob-per-function control surface; get it right first time
- Rapid and powerful project management for fast setup on location
- Instant snapshot reset of any or all channel parameters
- 5.1 surround with simultaneous stereo and mono mixing
- Fiber-optic remote mic amps option
- An integral router for multiple resource sharing
- New RIO Grande option provides additional 192 analog and 96 digital I/Os

Contact SSL for a demonstration, and
discover why over 50 Aysis Air digital
broadcast consoles are in service
throughout the world.



“When we were building our new remote truck we chose the Aysis Air Mobile, based on the dependable, high profile event experiences that other broadcasters are having with their consoles. Remember, in a live situation there's no second chance on an event—no take two. When building a truck it's important to design into it considerations for both today's business and for future expansion. Aysis Air keeps us prepared for any eventuality that may come along, and has proved very reliable and stable for live broadcasting.”

SHAWN O'SHEA, DIRECTOR OF ENGINEERING AND OPERATIONS,
SOUTHWEST TELEVISION (SWTV) - A DIVISION OF CORE DIGITAL TECHNOLOGIES



Solid State Logic

INTERNATIONAL HEADQUARTERS

Begbroke Oxford OX5 1RU England Tel: +44 (0)1865 842300 Fax: +44 (0)1865 842118

Email: sales@solid-state-logic.com www.solid-state-logic.com

Circle (197) on Free Info Card



NEW YORK
+1 (212) 315 1111

LOS ANGELES
+1 (1)323 463 4444

TOKYO
+81 (0)3 5474 1144

PARIS
+33 (0)1 3460 4666

MILAN
+39 039 2328 094

TORONTO
+1 (1)905 655 7792

SINGAPORE
+65 (0)438 2272

Business highlights from broadcast and production

BY NANCY INWOOD, ASSISTANT EDITOR

While Sony will show plenty of new products at NAB2001, the focus is on the introduction of a wide range of integrated solutions and products for what it calls the new broadband era. The company's corporate theme at NAB, for this year's NAB is *An Anycast World*. Sony will demonstrate a range of technologies to help users "Produce once and distribute many". Based on the company's commitment to supporting broadband-based, networked products, the *Any-cast* philosophy is clearly demonstrated in the Sony's NAB booth.

Crucial to the concept is a broadband interconnection, both for content producers and distributors. Sony is showing how content can be distributed through a variety of ways, OTA, satellite, cable, even wireless broadband. The value to the professional is being able to produce content once and still be able to distribute and display it on a variety of devices. A range of broadband content generation and distribution systems, from the XPRI digital content creation system to the networked, and Bulldog-driven, media asset management platform are available for demonstrations. The thread; "any content for any purpose, over any number of channels, on any viewing device, all networkable and IP ready is clearly visible and exhibited throughout the booth.

Also key is Sony's support to an "open systems" approach to equipment design. The company is showing technology partnerships and products from several partners including; Quantel, Leitch, FAST, Discreet, Panavision, Omnibus, Sierra, Evertz Microsystems, DaVinci and others.

ABC affiliate WISN-TV made a significant investment in **Panasonic** DVCPRO equipment to upgrade its news operations. The purchase was valued more than \$1.1 million and

included 88 pieces of DVCPRO gear, including AJ-LT85 laptop editing systems, AJ-D850 studio recorder/editors, AJ-D450 studio recorder/editors, AJ-D440 player/edit source decks, AJ-D250 desktop recorders and AJ-D230H desktop recorder/players, as well as AG-A850 edit controllers.

Televisa (Mexico City, Mexico), the largest Latin American television broadcaster, has made a multi-million dollar purchase of 50Mb/s DVCPRO50 and 25Mb/s DVCPRO camcorders and VTRs to cover parts of its operations. Televisa, the world's leading producer and broadcaster of Spanish-language television, has been using the **Panasonic** D-3 format since 1993.

Televisa's purchase consisted of the full line of DVCPRO50 VTRs, including the AJ-D960 studio editing VTRs, AJ-D950 studio VTRs, AJ-D910WA camcorders and AJ-LT95 laptop editors. The DVCPRO equipment bought included AJ-D610WA camcorders, AJ-D450 VTRs, and AJ-LT85 laptop editors.

Dreamtime Holdings has purchased **Panasonic's** AJ-HDC27A dual frame rate progressive scan DVCPRO HD camcorder and AJ-HD150 DVCPRO HD studio VTR to support this multi-faceted assignment. Dreamtime Holdings has an agreement to provide HD production services both at NASA's several ground centers and in orbit.



Westwind Media has installed two **Snell & Wilcox** HD1010 eight-input, high-definition television productions

Screen Shot

Panasonic 480p equipment used to shoot Caporale Studio's feature film

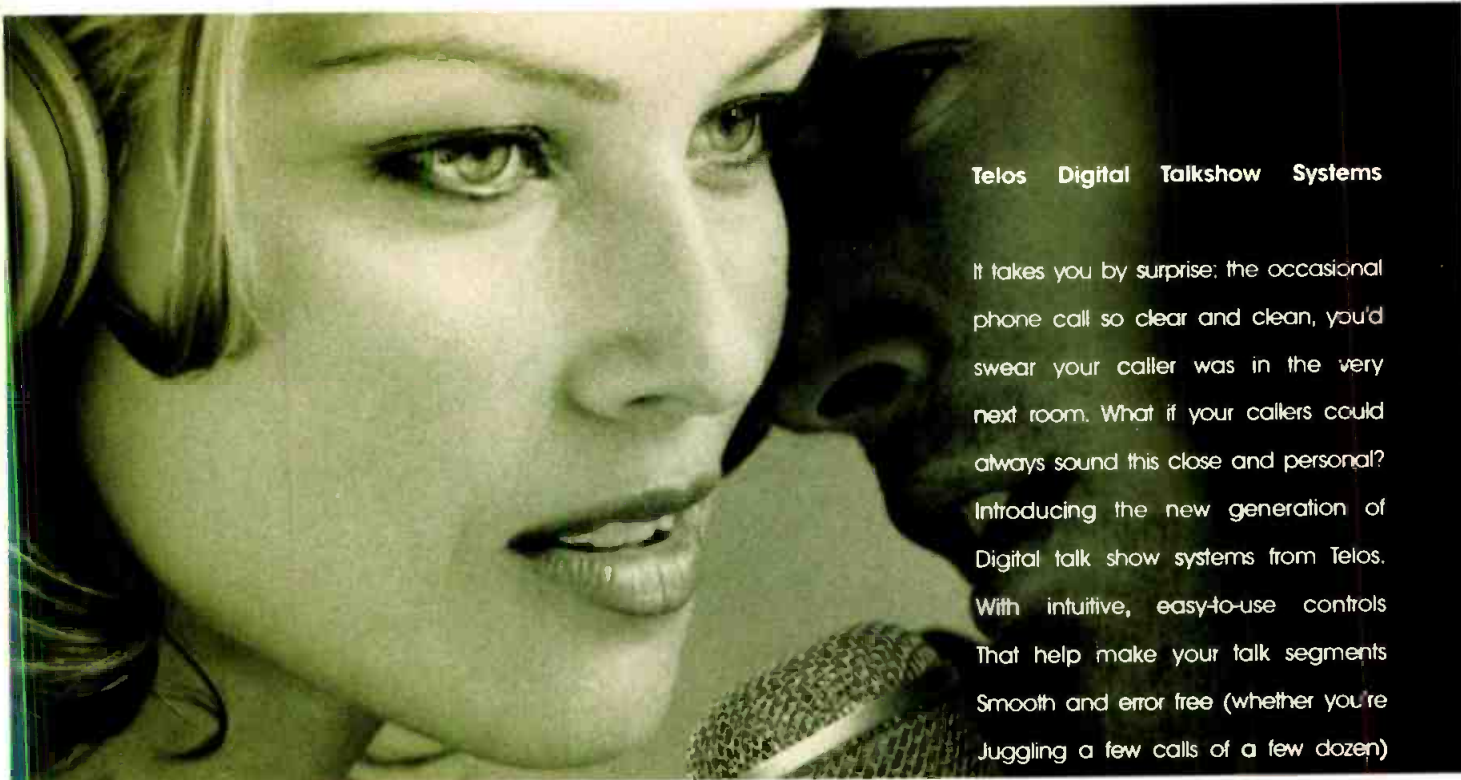
Caporale Studios purchased Panasonic Broadcast's AJ-PD900WA 2/3-inch DVCPRO50 Progressive camcorder both for theatrical feature production and general assignments, which range from national commercials to industrial video to video news releases.

Principal Michael Caporale, a veteran of both illustrative still photography and film production, recently served as director of photography on a 120-minute theatrical feature, "Ball of Wax," shot in its entirety with the AJ-PD900WA. Caporale also has used the DVCPRO progressive camcorder to service his existing accounts, for example, shooting a documentary for a local school for gifted children.

Solid State Logic console used to broadcast NBA All-Star game

Sundance, the newest addition to the five-truck hybrid digital fleet of live broadcast expandable production trucks owned by Core Digital Technologies-SWTV, used its new 96-channel Solid State Logic Aysis Air Mobile Digital broadcast console to broadcast the live Turner Network feed at this year's NBA All-Star game. The game was held at the MCI center in Washington, D.C. Freelance A1 operator, Jonathan Freed mixed the feed.





Telos Digital Talkshow Systems

It takes you by surprise: the occasional phone call so clear and clean, you'd swear your caller was in the very next room. What if your callers could always sound this close and personal? Introducing the new generation of Digital talk show systems from Telos. With intuitive, easy-to-use controls That help make your talk segments Smooth and error free (whether you're Juggling a few calls of a few dozen)

And the latest advances in digital phone hybrids from the company that invented them. Never have your callers sounded so consistently loud and crystal clear - it's the next best thing to having them there. Don't just talk to your audience... get intimate.

Talk radio is suddenly intimate

Telos Systems and Systems Wireless... Connected.



Telos TWOx12™ Integrated Talkshow System
Using POTS or ISDN lines, the TWOx12 handles up to 12 callers on two built-in digital hybrids. The intuitive phone controller turned even the wildest talk shows.

Telos
and
Systems
WIRELESS
SALES SERVICE RENTALS
www.systemswireless.com

See us at NAB Booth #L12549



Visit Systems Wireless and ASG at NAB 2001 in the Audio Hall at **BOOTH #R2763** April 23-26, and demo the **Telos TWOx12™**
SYSTEMS WIRELESS (un) LIMITED / ASG SALES: 1.800.542.3332

Circle (198) on Free Info Card

switchers in two of the facility's telecine bays. The dual-format switchers, which feature both high-definition and standard-definition electronic frames, are being utilized in the postproduction of television programs such as "NYPD Blue" and "City of Angels."

The Bulldog Group and **Sony Electronics** recently announced that Sony had acquired a minority equity position in Bulldog and will serve as the exclusive distributor of Bulldog software in the U.S. The relationship will allow Sony's Systems Integration Center to distribute and resell Bulldog software to its customers in Japan as well as the US. Sony plans to develop add-on software modules to provide advanced capabilities for professional video applications, including frame accurate and low-res proxy editing.

WABC-TV in New York City recently selected eight **Fujinon** A17x17.8BERM lenses for field production on the station's local "Eyewitness News" program and one A10x4.8BERM for in-studio imaging on the nationally syndicated "Live with Regis and Kelly Show."



Fletcher Chicago purchased its first set of **Fujinon** HDTV Cine Style Prime

lenses. Fletcher Chicago decided to purchase its first set of Fujinon HDTV Cine Style Prime lenses after witnessing them in action at a Sante Fe Workshop class, "High Definition Advanced Cinematography," in late October. All lenses in the Cine Style Prime series feature marking for zoom, focus, and iris-and cine-compatible gearing for interfacing with existing cine controls and matte boxes. The HA5B-10 features an angle of view of over 87 degrees, with focusing as close as 0.5 meters. At the other end of the line, the HA40B-10 features an angle of view of slightly over 13 degrees and a focusing range of 0.5 meters to infinity.



Soundtrack Boston, a seven-room full-service recording and post-production facility, recently installed a **Sony** DMX-R100 digital console in its newly refurbished Studio E. Soundtrack engineer Mike Sachs pilots the suite for a diverse clientele that encompasses commercial, corporate and film assignments.

Telestream has entered into an OEM agreement with **WAM!NET** a leading information technology services provider to bundle Telestream ClipMail Pro and ClipExpress store-and-forward

Sennheiser teams up with the XFL to produce more bashing and smashing

For all those who believe the bashing and smashing that is so much a part of football has gone unheard of for a long time will be glad to hear that the XFL, NBC Sports, Scharff Weisberg and Sennheiser have all teamed up to provide better sound quality at XFL games. The XFL has decided to hook up its players with more wireless microphones both on and off the field. The result is a "more real than real" experience.

The audio coordinator responsible for the endeavor is Jeff Cohen of JPC Systems. Cohen requested a list of Sennheiser wireless equipment to bring the XFL's vision to life. Scharff Wiesberg rents and maintains all the Sennheiser RF equipment for NBC Sports. The majority of the players are wired with Sennheiser wireless microphones, as are the coaches and referees, and there are parabolic dishes directed at the Neumann KM 183s to pick up sounds from the huddle. Sennheiser shotgun microphones capture the emotion in the locker room as well.



Television Automation Solutions



Winning Service
Breakthrough Pricing

When Every Play Counts

FASTBREAK

Intelli-sat Sales View

FastBreak TimeLiner

AUTOMATION

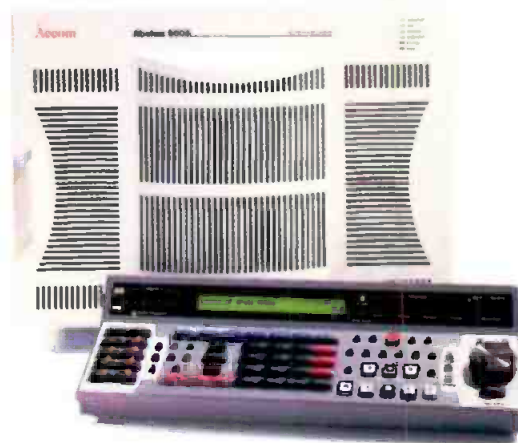
visit us at
NAB Booth
#L1355

Sundance Digital, Inc. 4500 Fuller Dr. Ste. 205 Irving, TX 75038 USA 972-444-8442 www.SundanceDigital.com

Circle (199) on Free Info Card

Abekas 6000

MultiFlex ■ DTV Server



{THE NEW MATH}

DEMO THE ABEKAS 6000 TO SEE HOW
VERSATILE A SMART VIDEO SERVER CAN BE



Believe these numbers: Eight record and playback channels. 24/7 reliability. Over 192 hours of shared local storage. One to eight control panels for ease of use. Zero periodic VTR maintenance.

The **Abekas 6000** digital video server is smart! It can do the work all other servers can't. It's flexible — handles news, on-air and post with equal agility. It's stable and reliable — no Windows O/S, with optional parity and redundancy built in. Finally, and most importantly, it's Abekas — you know it will exceed your expectations.

GET BOTH
MPEG
AND **DVCPRO**
IN ONE SERVER

The **Abekas 6000** is tackling the demands of mission-critical television around the world — in both studio and mobile environments. So eliminate your VTR headaches.

Enjoy the peace of mind that is **Abekas 6000**.

Arrange for a personal demo, by visiting www.accom.com
See it and you will believe.

See us at NAB Booth #S4806

Accom.

Circle (200) on Free Info Card

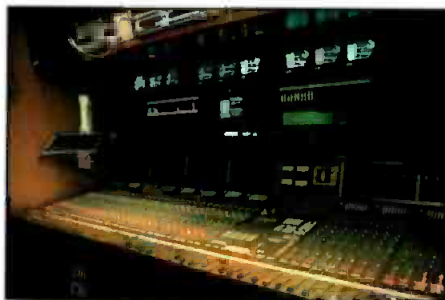
www.americanradiohistory.com

EMC² World Cup of Golf uses Live slow motion replay engines

The EMC² World Cup of Golf in Latin America consisted of four days of live broadcasting, retransmitted in more than 140 countries and reaching millions of viewers. More than 80 television production specialists were flown in for the event. The specialists brought with them their regular gear however, this broadcast system also incorporated 3x EVS LSM 6 channel Live slow motion replay engines. Each system permanently recorded signals from either two or four dedicated cameras, but routing allowed any other camera on the green to input to any LSM temporarily. That much slow motion replay facility a golf contest may seem overdone. In this case, however, some other LSM features were used extensively. Golf lovers around the globe were able to follow the event through live quality broadcast.

media delivery appliances with WAM!NET Compressed Video Delivery Services.

Telestream's ClipMail Pro and ClipExpress are desktop MPEG appliances optimized for easy media encoding, decoding, network delivery and viewing. These store-and-forward media devices are an important component of WAM!NET's turnkey Compressed Video Delivery Service. Via this service, WAM!NET's customers are able to quickly and easily deliver video from any computer desktop or Telestream video appliance, streamlining the creative review, network clearance and content distribution processes.



SWTV (Southwest Television) installed **Solid State Logic's** Aysis Air

Mobile Digital Broadcast Console, making the entire production chain digital. Servicing mostly live high-end sports and entertainment events, the reputation of the Aysis Air convinced SWTV to include the console in the advanced digital environment.

Oxtel has installed an Imagestore for KERA, the public broadcasting organization for North Texas. KERA purchased the master control and channel branding system to assist its transition to a multichannel digital operation in addition to transmitting two analog program streams. KERA installed Imagestore in KERA's Master Control. An additional unit is scheduled to be installed in the coming months. Imagestore's keying layers will be used for inserting logos and captions.

Keops Broadcast has announced that it has signed an agreement with **SGI** under which SGI will resell and integrate The Keops MediaWorks digital asset management system through its Professional Services group worldwide. Keops' MediaWorks integrated media environment combines asset management, recording automation, desktop video browsing, marking and broadcast playlist generation into a scalable client/server architecture.

Sony announced first results of development tools to allow content to be moved between SDTI-CP and the Material eXchange Format (MXF) format. MXF allows for easy exchange of material between file servers, tape streamers and digital archives.

The MXF project is a joint development between the Pro-MPEG forum and the AAF Association. The goal is to provide a seamless transfer between the real-time applications of video/audio content producers and networked systems. Sony's work will include full Metadata support based on XML data interfaces. Sony also announced that its products would fully support MXF. Technology demonstrations were available in the Pro-MPEG and Sony booths.

Steele VFX and Fence Post have recently installed **Quantel's** Henry Infinity to finish high-end commercials.

Now You Can Have Higher Accuracy Plus Value GPS MASTER CLOCK & TIME CODE GENERATOR



QUALITY STANDARD FEATURES:

- SMPTE/EBU, ESE, IRIG-B, ASCII Time Code Outputs • 1PPS Output
- 8 Satellite Tracking • Battery Back-up • GPS "Lock" Indicator
- Automatic Daylight Savings Time Correction • Time Zone Offset • Antenna
- 45 nanosecond accuracy • 3 Year Warranty • Plus More, for just **\$2495**

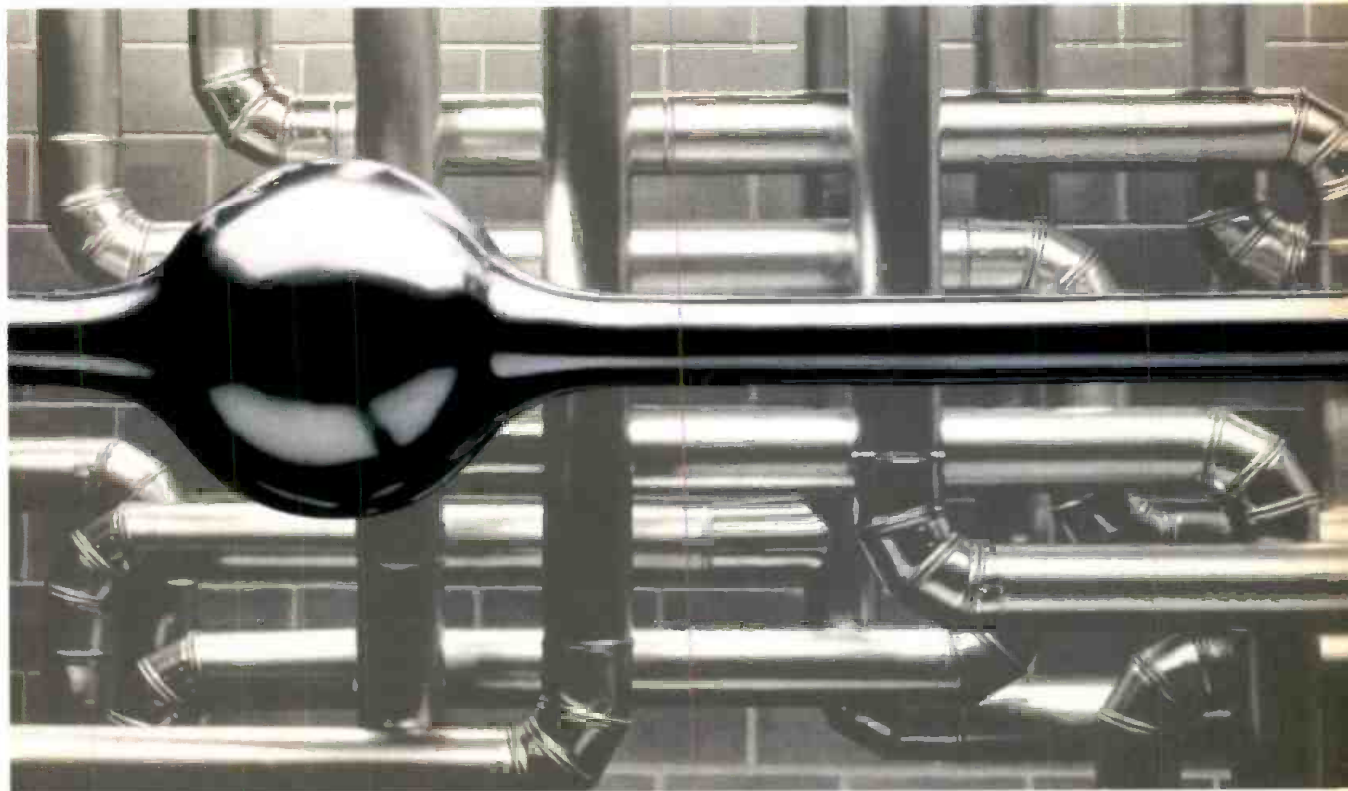
AVAILABLE OPTIONS:

- Parallel BCD Output • 1 KPPS • 10MHz Output • 220 VAC • 12-35 VDC
- Video Inserter • Video Sync-Generator • Hourly contact closures



142 Sierra Street • El Segundo, CA 90245 USA
Phone (310) 322-2136 • Fax: 310.322.8127
www.es-e-web.com

DTV Transmission So Much Content—So Little Bandwidth



Your allotted DTV bandwidth may look like a big pipe today, but—tomorrow promises greater opportunities for more services:

- High Definition Television
- Multi-channel Standard Definition Television
- Program Information
- Datacasting
- Streaming Video
- And more...

The DigiCipher® II ATSC compliant encoding system employs sophisticated compression and multiplexing technology to make the most of your bandwidth—while maintaining the highest quality pictures. And it's backed by the resources of an unparalleled technology innovator: **General Instrument, now Motorola's Broadband Communications Sector**. With nearly a decade of experience in helping customers deliver more digital content



Motorola's DigiCipher® II HD Encoder.

in less space, we have the track record and experience to act as your partner throughout the entire digital migration process. When choosing encoding systems for the long term remember...nobody delivers DTV better than Motorola.

Contact us at 800-385-5843 for more information or visit us at www.motorola.com/broadband

NAB Booth #L716

Circle (202) on Free Info Card

© 2000 Motorola, Inc. All rights reserved. (M) and Motorola, and DigiCipher are registered trademarks of Motorola, Inc. General Instrument Corporation is a wholly owned subsidiary of Motorola, Inc.



MOTOROLA

Broadband Communications Sector

FloriCal System's AirBoss automated control system now supports Kay-dara mediastore, a next-generation media server designed to provide broadcast facilities with fast access to stills, audio/video clips, animation and graphics. The combination of these technologies allows broadcast facilities to easily access and manipulate various types of media in demanding broadcast environments.

Dielectric Communications has signed a definitive agreement to purchase **TCI International**. The transaction is subject to approval by the shareholders of TCI. Dielectric's acquisition of TCI further broadens Dielectric's varied product offerings to U.S. broadcasters for TV and FM products and international broadcaster in the high- and medium-frequency spectrum.

Inscriber Technology has integrated Inscriber's text and graphics technology into **Quantel's** new platform, combining to form the new iQ system.

Quantel iQ meets challenges by delivering a networked workflow solution with a powerful image processing engine at its heart that handles and combines all resolutions, from SD to HD and beyond. Quantel iQ is shipping with its own editing application, Qedit, and Inscriber's Qscribe, a customized module that directly utilizes Inscriber's text generation capabilities, combined with Inscriber's workflow design that is optimized for speed and flexibility.

Keywest Technology has acquired **Video Data Systems** of Hauppauge, New York. The agreement gives the company exclusive rights to manufacture, sell and distribute all VDS products.

SeaChange International will provide video server systems for **Azteca America Incorporated**, a new national broadcast television network aimed at serving the U.S. Hispanic community. Azteca America is a joint venture between Pappas Telecasting and TV Azteca. Azteca America will rely on

Broadcast MediaCluster to handle the large volume of video content that will be delivered daily to their affiliates.

USA Cable has selected **A.F. Associates** (AFA) to design and construct their new digital Network Operations Center (NOC) located in Jersey City, New Jersey. The existing origination facility is undergoing a complete transformation from a hybrid analog/digital infrastructure into a fully digital, multi-channel NOC, employing advanced archiving and digital asset management systems. AFA expects the new facility to be fully operational in the spring of 2001. USA Cable's new NOC will employ the latest automation and digital asset storage technologies, including the first ADIC AML/2 near-line archive system employed in the country.

The **BBC** is to set up a new limited liability company, **BBC Technology Limited**, following approval from the Secretary of State for Culture, Media and Sport, to create the new wholly owned subsidiary. BBC Technology

work can flow downhill, too.

Some dish it out. Others have to take it. Smart ones figure a way out and retire their hip waders. So next time you're waist deep in editing, on-air playout or archive dysfunction, you'd want to be in the latter category. Enter **WORKFLOW™** without wading in too deep, we write code to interface specifically with whatever you've got, to unclog your, well, clogs. A roto-rooter just for your pipes. Keeps things flowing smoothly instead of making a mess on the floor.

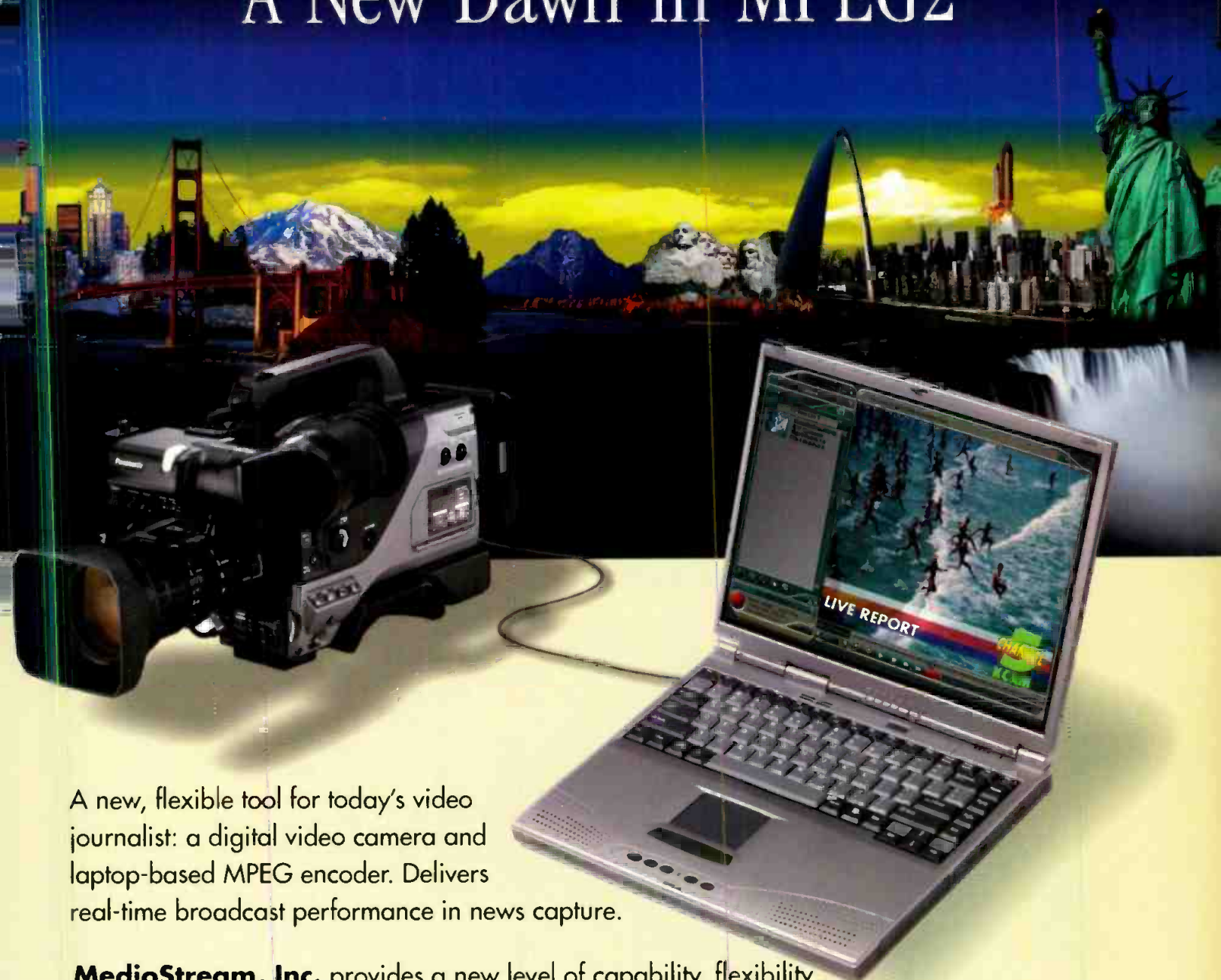
sgl discreet

10 PARTNERS WORKFLOW™ 214 496 9300 877 464 6461 10PARTNERS.COM



Circle (203) on Free Info Card

A New Dawn in MPEG2



A new, flexible tool for today's video journalist: a digital video camera and laptop-based MPEG encoder. Delivers real-time broadcast performance in news capture.

MedioStream, Inc. provides a new level of capability, flexibility and cost reduction in real-time MPEG2 encoding for Digital News Gathering supporting both NTSC and PAL standards at full D1 resolution. Complete high-performance PC or Laptop based systems start at an amazingly low price. Call us for a demonstration of the latest in MPEG2 processing.

Circle (204) on Free Info Card



Come See us at Sands Booth E5845

mediostream
www.mediostream.com
Tel. 408.452.5500

© 2001 MedioStream Inc. All rights reserved. All other marks, trademarks and registered trademarks are the properties of their respective owners.

will offer access to engineering skills across a whole range of broadcast and Internet related technologies. Digital technology is opening up powerful and exciting new opportunities for companies to communicate with their customers and their staff.

NEP Super Shooters purchased a 60-channel Calrec S2 analog mixing console from **Calrec Audio**. The desk will go into NEP's new Super Shooter Seven truck to exclusively cover the Senior PGA Golf Tournament for 35 weeks of the year. NEP is an outside broadcast company with 31 vehicles on their roster, they now have three 60 channel S2 desks, two of which were converted from S series consoles purchased in 1995.

Minerva Networks announced a partnership with **SGI** aimed at developing a marketing complete solutions for the delivery of IP Television services over broadband networks. Minerva has integrated its IP Television service management software with Linux-based SGI 1200 and SGI 1450

servers. Minerva also announced it will support the SGI Origin family of streaming servers. The integrated server and management solution is combined with Minerva's carrier class streaming encoders, DVB-to-IP gateways, and media transcoders.

Equi=Tech has outfitted a plant in Sausalito, CA, with balanced power from Equi=Tech. Having added state-of-the-art 24-bit mastering services to its menu, balanced power had become more a matter of need than just one of preference. The upgraded Equi=Tech Model ET12.5W, was chosen for the plant's power upgrade.

NDS recently opened up an office in New York. NDS opened the NY office to focus on developing interactive TV systems and applications for the U.S. market. The new office is hoping to strengthen NDS's 24x7 customer support capabilities as well.

NDS also was chosen by **iBlast** to provide datacasting services for its highly anticipated national datacasting network in the U.S. NDS and iBlast

are joining forces to deliver fast, broadband content to over 90 percent of U.S. households and offer broadcasters a new revenue stream. iBlast becomes the first major datacasting customer for NDS in the U.S.

BOXX Technology, provider of digital content creation systems for the entertainment and digital film industries, announced Rainbow Studios has installed 3DBOXX systems to enhance productivity and increase system performance in its digital production pipeline.

National Mobile Television, provider of mobile television production equipment, and **Activate**, a digital media infrastructure services company, announced a joint marketing agreement to provide customers with high-quality, on-location production services and end-to-end Webcasting solutions. This alliance integrates NMT's capabilities as a supplier of remote mobile television production trucks for broadcast, cable, the Internet and corporate television program production with Activate's range of digital media services, including production and distribution of online live and on-demand events in all major industry standard formats.

Bexel Corporation, a television production equipment rental company, has purchased **Sony's** HDW-F900 digital camcorders. The Bexel Corporation first ordered 10 of the cameras, has ordered five since the original order and plans to purchase another 15 within the year. In addition, Bexel plans to purchase about \$1 million more in accessories to complement the cameras.

Radamec Broadcast Systems has opened a parts center in New York. Radamec's new parts center in New York is capable of supplying customers with critical replacement parts on the same day or overnight.

Accom announced that TechTV purchased seven AFFINITY nonlinear editing systems. TechTV produces shows that help viewers improve their computer knowledge and participate



Fiber Optic Camera Cable and Assemblies

Gepco's new HDC920 hybrid fiber optic camera cable is designed for High Definition cameras that utilize the new SMPTE optical fiber format. It features the low loss of optical fiber, along with the performance that Gepco camera cable is known for.

- **Flexible** and UL rated versions
- Strength member for added durability
- Tested for optical return and insertion loss
- **Terminated** assemblies or **bulk** cable
- SMPTE 311M and 304M compliant

GEPCO
INTERNATIONAL, INC. Tactical fiber for HD & DTV remote optical systems also available

1-800-966-0069 www.gepco.com email: gepco@gepco.com

Circle (205) on Free Info Card

The Most Demanding Markets

Chicago



Boston



Los Angeles



New York



Dallas



Demand Itelco

Across the country and around the world, the most trusted name in transmitters is Itelco. Whether you're replacing an existing analog plant, fulfilling the requirements of the DTV mandate—or both—you can count on Itelco's complete transmission solutions. Engineered excellence means reliable operation year after year. Stringent design specifications guarantee unrivaled on-air performance. Our unique Itelco Supervisory System provides single-point monitoring and control of multiple transmission sites. No wonder Itelco's been the choice for more than 14,000 installations since 1961.



NAB, Booth #L1417

7575 West 103rd Avenue, Suite 110
Westminster, CO 80021
Tel: (303) 464-8000 Fax: (303) 464-8770
E-mail: tvsales@itelco-usa.com
www.itelco-usa.com

Circle 173 on Free Info Card
www.americanradiohistory.com

Ikegami[®] congratulates Burst Communications

for providing
ten years of dedicated service
to professionals who use video, audio and
broadcast television equipment and systems.



Burst Communications, Inc. • 8200 South Akron Street, Suite 108 • Denver, CO • 80112
Phone: 303-849-9800 • Fax: 303-849-9890 • www.burstvideo.com
Offices in CA, AZ, TX, UT, NM, KS & OR

Circle (207) on Free Info Card

more fully in the digital age. In all, seven existing edit suites are being upgraded to AFFINITY and with two suites already completed.

Sony Electronics has entered into an agreement with DNF Controls to offer complete server solutions for customers of Sony's MAV-555 multi access video disk recorder. The combined Sony MAV-555/DNF DMAT sports controller and MAV-555/DNF 2034CL Shot box recorder premiered at the 2000 summer games in Sydney, Australia. Now Sony is offering a third control option, DNF's production switcher interface.



Telemetric's camera robotics systems were installed throughout the Florida State Capital to provide comprehensive coverage of government sessions in the state senate, house and chamber. Florida Channel WFSU-TV, which is owned by Florida State University, provides the video feeds for airing on several different broadcast and cable channels to provide state-wide access to the programming. More than 50 of Telemetric's PT-HP Camera Robotic Pan/Tilt Systems have been installed in the state capital building.

Philips and **Dolby Laboratories** have cooperated in a project to find a solution for handling Dolby E and metadata in a standard master control environment, which will provide broadcasters another tool to solve the challenges of handling multi-channel audio. The goal of the two companies is to aid broadcasters in delivering the high-quality audio increasingly demanded by viewers.

Sony Data System Division has added **Harris Corporation** to its growing list of Sony Data System Value added resellers. Harris Corporation provides

OVERKILL.
There's no such thing
when it comes to
your business.



Unique Power Solutions For Industry Worldwide

UPS • Power Conditioners • Voltage Control • Variable Transformers

You can't afford power problems. With everything else you're responsible for, you need power protection you can trust. More broadcasters rely on Staco Energy Products Co. regulators than any other. They're built tough, with rock-solid technology, to handle high overload conditions with the tightest voltage regulation available, so you can depend on them.



Now with a **FULL 3 YEAR WARRANTY**, because peace of mind comes with knowing you have the best power protection available, backed by over 60 years of experience in the power industry. Visit us at the NAB 2001 show, booth L12252 and see Staco Energy's newest and most dependable products designed to protect your business.

Get serious about your power protection.

Call us toll free: 866-261-1191,
or visit www.staco-solutions.com

Circle (206) on Free Info Card

See us at NAB Booth #L6561/L6661

Which hat?



Is your business best defined as content creation, management, or distribution? Perhaps you see your job as technical, management, operations, or production. Most likely your job requires you to be comfortable with more than one hat?

At IBC, the world's electronic media event, there is something to suit everyone. If your job involves understanding the tools and technology solutions that are driving the electronic media revolution you cannot afford to miss IBC2001.

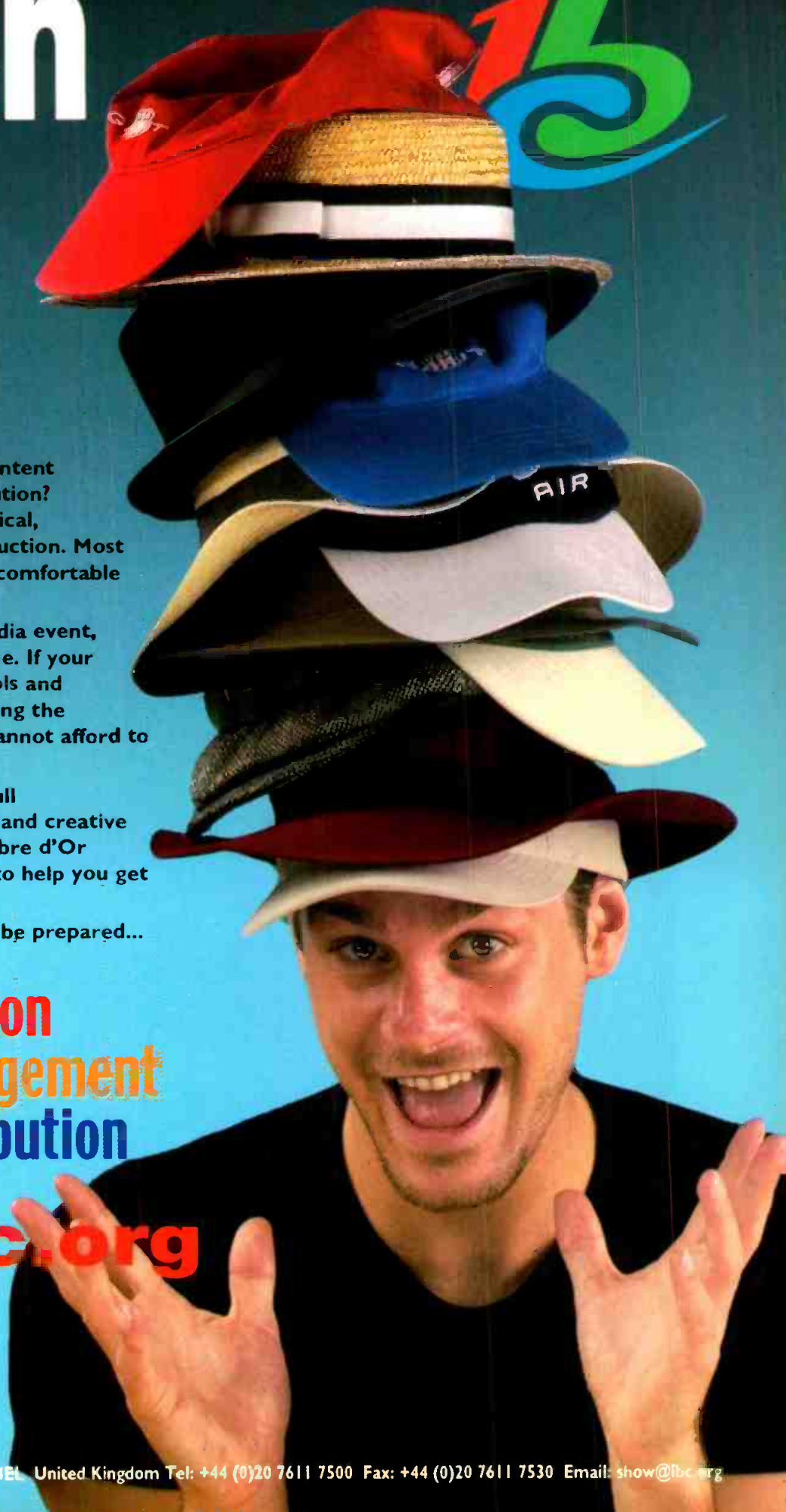
45,000 visitors, 800 exhibitors, a full programme of technical, business and creative conference sessions plus the Nombre d'Or programme festival will be there to help you get to grips with the state-of-the-art

So plan your visit to IBC2001 and be prepared...
...for every occasion

Creation
Content - Management
Distribution

www.ibc.org

IBC2001
RAI Amsterdam
13 - 18 September
Exhibits 14 - 18

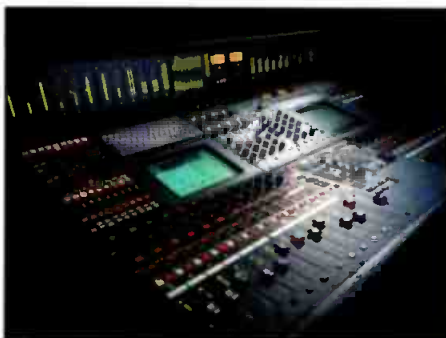


high-end broadcast and production systems to broadcasters in the U.S. and around the world. Harris Corporation has just completed its first purchase of a Sony DMSB150L Petasite with Sony DTF-2 drives which will be installed at Seattle's KCTS in an automated commercial insertion system with Avalon software and Grass Valley Group profiles.



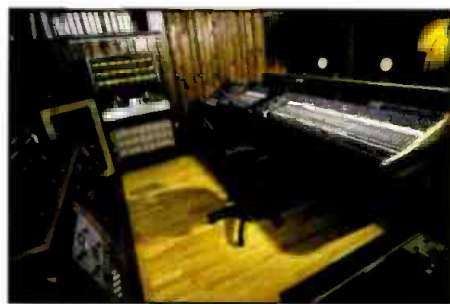
Snell & Wilcox completed installation of its IQ Modular Series featuring Roll-Call Network Management System in the all-digital Internet broadcast operations center for **Real Broadcast Network**

(RBN). The IQ Modular products are complete with rack-mounted A/D converters and adaptive comb filters for decoding, frame synchronization and noise reduction purposes.



The National Geographic channel, a new U.S. cable channel and a partnership between national Geographic Television and Fox Cable Networks Group, installed an **AMS Neve** Libra Live Series II digital broadcast console to use in its Washington D.C. studio. The console will be used initially for pre-production and live production of National Geographic Today, National Geographic

Channel's on hour-long daily news program. The Libra Live Series II made its working debut on January 7.



Jarvis Studio recently purchased an **API** Legacy console. The console is the second largest API Legacy console in New York City. The console was so large it would not fit in the elevator to make it to its final destination on the sixth floor. In order to place the 64-channel Legacy with Flying Faders in Jarvis Studio's a crew was hired to "fly" the console in through the sixth floor window using a crane. In addition to its window-delivered Legacy, Jarvis houses an array of outboard equipment, speakers and microphones.



Think of it as alphabet soup for the digital soul.

This is a must-attend seminar for all decision-makers involved in television & production.

November 28-30, Hyatt Regency Grand Hall, Atlanta, Georgia

The **Digital Television** conference provides the expertise and training you need to make your facility successful in

today's increasingly competitive world. It provides intensive and specialized instruction in the latest in DTV

technology, operations and practices. Don't let your career—or facility—miss this opportunity.

Brought to you by:
Broadcast Engineering
millimeter
Video Systems
World Broadcasting Engineering

DIGITAL
TELEVISION2001
CONFERENCE & EXHIBITION

For more information contact: Christina Toole • Phone: 913-967-7556 • Toll free: 800-453-9621 • Fax: 913-967-7251 Attn: Christina Toole • Mail: DTV2001 Seminar • 9800 Metcalf Ave • Overland Park, KS 66212 • USA
Web Site: www.dtvconference.com

Field proven reliability in HDTV STL Systems



HDL System



V-Stream



Dual Stream

**What's New
in COFDM for ENG?**
See us at NAB
Booth #L3854

A full spectrum of solutions.

Nucomm Brings Peace of Mind to Your HDTV Transition with Field Proven STL Solutions.

Multiple Hop? Long Path? Duplex? Nucomm has a system for every application and budget.

The line up includes:

DUAL STREAM — Transports NTSC and HDTV

Uses Spectrally efficient 8VSB Technology

- 5 internal audio subcarriers
- Digital signal monitoring capability
- Proprietary SMPTE 310M De-jitter circuitry
- Standard T1 Data Pack
- SMPTE 310M & ASI Interfaces Standard

V-STREAM

Uses Spectrally efficient 8VSB Technology

- Transports 19.39 signal, ASI SMPTE 310M Interface + T1
- Cost efficient solution

HDL SYSTEM

- DS3/E3 applications

Innovation and reliability has been the hallmark of Nucomm microwave systems.

Nucomm offers complete technical services and systems support unparalleled in the industry.

Join the growing number of broadcasters who have come to rely on Nucomm for their microwave needs.

For additional information contact us today!

Tel: 908-852-3700 • Fax: 908-813-0399

www.nucomm.com

Nucomm

MICROWAVE SOLUTIONS FOR THE DIGITAL AGE

™

Prime Image, manufacturer of digital video and audio processing equipment recently shipped unit number six thousand of the Model 5011 line of Time Base Corrector-Synchronizer-Freeze. The six-thousandth Model 5011 shipped to Warner Brothers. Other customers of Prime Image are the government of Israel, ESPN, Panasonic Systems Engineering and Norsat International.

The Nebraska Educational TV has added three **Angenieux** 60x9.5 HD OB lenses to its mobile production unit. The Angenieux lenses are being employed for a wide range of productions including sports, concerts and performing arts.

Crosscreek Television Productions has ordered a Grass Valley Kalypso Video Production Center from the **Grass Valley Group**. The order was Crosscreek's second in six months. The company will use the new system in its Voyager IV truck primarily for coverage of the National Hot Rod Association Winston Drag Races.

Toshiba has announced that it is employing **Vela's** CineCast family of MPEG decoding products to enhance its distribution capabilities. The Vela products include the CineCast Quad, CineCast Quad Pro, and the new CineCast HD series of MPEG-2 decoders. Toshiba's use of the CineCast HD/2 marks the unit's worldwide debut and compliments the CineCast family with analog composite, component and HD-SDI video outputs. While both the CineCast Quad and Quad Pro offer four-channels of MPEG-2 decoding with individual genlock inputs, each channel of the CineCast Quad Pro also features serial digital video outputs, dual analog stereo audio, dual AES/EBU digital audio, and embedded SDI audio support.

The Public Broadcasting Service (PBS) and **Triveni Digital** announced a partnership for trials of PBS enhanced programming in four episodes of "Scientific American Frontiers" that has aired on four local PBS stations beginning March 27. The trials will be the first digital terrestrial (over-the-air)

broadcast of interactive TV enhancements using the Advanced Television Enhancement Forum (ATVEF) Transport Type B specification. ATVEF Transport B allows the enhanced content to be broadcast with the program, rather than requiring a connection to the Internet, thereby speeding up the delivery of the enhancements to the viewer.

NEP Super Shooters have ordered three **Calrec Audio** C2 mixing consoles to provide supplemental applications to existing Q2 audio consoles. The C2s, one each of 60, 48 and 36 channels, are the first to ship to NEP, who already have seven Q2s, two S2s and two S Series desks. The 60-channel console is the largest C2 Calrec manufacture and is only the second to be made since its launch in 1998.

Telestream and **Vsoft** have announced a partnership involving integration of Telestream's MPEG media encoding/delivery appliance products and Vsoft's MPEG media management software tools. This product integration provides a seamless solution

sierravideo systems

Think Big, Think Yosemite.

Rugged reliability in an affordable, feature-rich routing switcher.



See us at NAB Booth # L3750

ROUTING SWITCHER FEATURES

- Analog and/or Digital
 - SDI and AES/EBU with synchronous option
 - Wideband analog available
- Sizes range from 64x64 up to 128x256
- Compact frames expandable from 32x32
- Analog frames are upgradeable to digital
- Frames connect to all Tahoe/Shasta Frames (up to 8 levels)
- Redundant power supplies and control processors available
- Variety of control panels
- Flexible control software

Need Custom? Call Us!

www.sierravideo.com
tel 530.478.1000
 PO Box 2462 Grass Valley, California 95945 USA

Circle (209) on Free Info Card

Integral DVE for squeeze and reveals

Video and multi-group audio mixing

Animation
or still
insertion
from
internal
storage



Choose story

Latest headlines

Sports results

Weather

Customized
on-air
time and
temperature



Latest headlines

Simons wins 100m Gold medal...

...New World Record...

Jackson wins Silver medal, Adams gets Bronze.



To select



200 minutes of audio
storage for voice-overs

Character generator
with real-time rendering

Designed for interactive
television applications

Have you been given the Impossible Mission?

Management wants powerful master control and channel branding to capture viewers' attention, with 'hooks' for interactive services. *Engineering* needs a system to simplify the station automation. And *Finance* wants all this at a manageable price! It may seem impossible ... if you don't know about Oxtel's Imagestore 2.

Yes Jim, Oxtel's Imagestore has set the standard around the world for highly automated but creative master control and channel branding. The system can bring your station output right up to date with dynamic DVE moves, voice-overs, and graphics which enhance programming, including Interactive television (iTV) branding: all in an easily automated IRU box.

Imagestore's A/B video mixer can provide multi-group, audio mixing for multi-lingual and 5.1 broadcasting. Two keying layers can insert stills, animations, and clocks from internal storage. Up to 4,000 frames of video can be stored, along with up to 200 minutes of digital audio.

An integral DVE can perform 'squeeze and reveals', and a range of remote panels, including a full master control surface, can control up to 200 channels.

Imagestore is now also available with Easytext for real-time rendered character generation, using text fed via the automation or Ethernet interfaces.

We hardly need to stress the sensitivity of this information: imagine if this ad should fall into your competitor's hands! Call us today!



Imagestore 2 with A/B mix, two keying layers, DVE, audio mixing, and video/audio storage. Now available with Easytext CG.



Easytext template designed on PC



Text entered via automation interface



find out more
on the web
www.oxtel.com

Oxtel Inc.
35 Airport Road
Suite 250, Morristown
NJ 07960 USA

telephone 877 446 9835
(toll free in USA)
main telephone 973 683 0800
email sales-usa@oxtel.com

for the acquisition, delivery and management of high-quality digital media.

The partnership has enabled Vsoft and Telestream to develop file compatibility and metadata interchange to facilitate smooth and reliable operation between their products. Both companies share a common goal of replacing cumbersome handling of physical videotape with efficient digital media management and distribution solutions. The companies also share many of the same dealers, making one-stop shopping easy for their company.



In all five redundant multichannel systems will be installed at NBC's New York and Burbank facilities. The five systems will consist of **Tandberg**

Television's E5611 encoders, evolution 5000 multiplexers, 8PSK-compliant modulators and a total of three Director network management and receiver control systems. In addition, 975 Alteia plus receivers will be supplied to affiliates across the country.



Norsk Lydskole, part of the Nordic Institute of Stage & Studio, has retrofitted its studio A to create a state-of-the-art digital studio. It has installed a **Soundtracs** DS-3 digital production console. The DS-3, 32-bit floating-point console digital console, replaced a Tascam M700 analog console.

Jonas Jensen Studios (Seattle, WA), a television and film studio facility recently invested in a complement of **Panasonic** DVCPRO50 equipment. Jonas Jensen's equipment roster includes the AJ-PD900WA 2/3" DVCPRO50 Progressive camcorder, the AJ-PD950A DVCPRO50 Progressive studio VTR, the AJ-D95 desktop DVCPRO50 AC/DC VRT and AJ-D90 dockable DVCPRO50. The facility also has access to a full range of Panasonic HDTV and DTV gear that equips a 58-foot HDTV mobile production truck that it operates and manages for The Ackerley Group.

People



Doug Butler

Doug Butler has been named director of engineering at A.F. Associates (AFA), a leading systems integrator servicing domestic and international clients. Butler will be responsible for the ongoing development and daily management of AFA's project engineering team. He will work closely with Jim McGrath, AFA's senior vice president of engineering and technology.

Staco Energy Products has announced **L. Mark Yaeger** as its new vice president of sales and marketing. Yaeger has had an extensive sales career in the electrical power and controls industries holding the positions of regional sales manager, national sales manager and director of sales.

Robin Shahid has been named assistant chief engineer at WLVI (WB56), Boston's WB affiliate and Tribune Broadcasting station. Shahid will be responsible for running day to day operations of WB56's engineering department. He will manage a staff of 34 technicians and engineers, as well as oversee all engineering and building operations.

GeoVideo Networks announced the appointment of **Phil Thompson** to the position of senior vice president of engineering. Thompson will lead GeoVideo's network data center strategy, which will initially focus on the

WORKING YOUR SHIFT IN ANY OTHER CHAIR MAY CONSTITUTE A MEDICAL EMERGENCY.



Designed to achieve maximum user comfort and long-term reliability Domore sets the standard for your industry... with a history to prove it. 24 hours a day, 7 days a week. Most notably, Domore 24-7s exceed the specifications for the only test of Intensive Use accepted by the U.S. Govt., and it's all achieved in high style and superior ergonomic comfort.



The 3312 HB for Intensive Use.

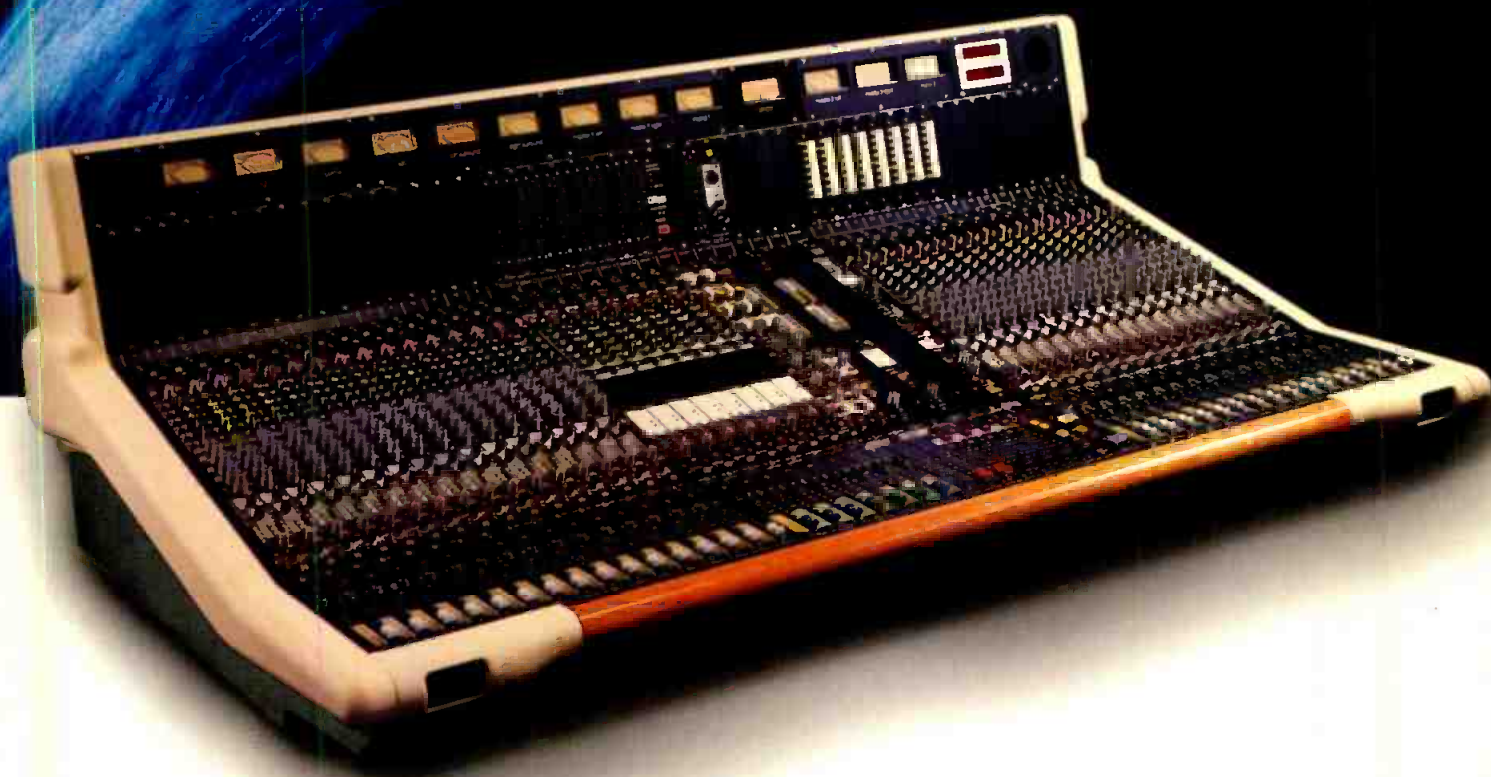
2400 Sterling Avenue, Elkhart, Indiana 46516 219.293.0621 Fax: 219.294.6176

domoredo3.com email: info@domoredo3.com

Circle (212) on Free Info Card

MIDAS B2000 BROADCAST

TELEVISION AUDIO PRODUCTION CONSOLE



“From The Manufacturer Of The Finest Live Performance Consoles
For Theatre And Sound Reinforcement,
Comes The Midas Broadcast 2000”

“One Less Thing To Worry About When On Air”

NAB Booth #L8763

Klark Teknik Group

Klark Teknik Building, Walter Nash Road, Kidderminster, Worcestershire, DY11 7HJ. England.

Tel: +44 (0) (1562) 741515 Fax: +44 (0) (1562) 745371

Circle (213) on Free Info Card

www.americanradiohistory.com

development of the industry's first controlled broadband video network. Thompson will oversee a product development center in Monmouth county, NJ, that will provide network interoperability testing, systems engineering, software development, hardware and software testing, and quality assurance for GeoVideo's fiber network.



Jim Hurwitz

Jim Hurwitz will be joining the staff of Telecast Fiber Systems as a U.S. sales manager for the Western region. Covering an area that reaches from the Pacific coast to the Mississippi, Hurwitz will oversee sales of the company's proprietary portable and fixed fiber optic systems optimized for the television broadcast industry.

Bernie Keach will head the sales territories as the new West coast regional sales manager for Sierra Video. Also supporting Sierra Video Systems will be **Marty Morgan** who will be the new Central regional sales manager.



Jeff Riser

as the director of broadcasting and media.

John Russell was named chief engineer for Young Broadcasting's KCAL 9-TV in Los Angeles. Russell left KICS-TV as chief engineer to go to KCAL 9, bringing over 20 years of engineering experience to Your Broadcasting's

KCAL 9. He will oversee all technical aspects of KCAL 9's operations and reports directly to the general manager.

Snell & Wilcox named **Tom Lang** and Eloy Chairez vice president/general manager Eastern region and Western region, respectively. Lang had been general manager of the Eastern region prior to his promotion and Chairez was previously district manager for the Southern California region.

Avica Technology named **Don Bird** vice president of sales and marketing for both U.S. and international operations. Bird brings with him 12 years of experience after being at 360 Systems where he was vice president of corporate development. ■



Cases

50 YEARS OF CASE AND PACKAGING SOLUTIONS

Protecting valuable equipment is what we do

Whether your application calls for one enclosure or many, we can support your engineered needs. Consider this:

- We offer protective cases in deep drawn aluminum or thermofomed and roto-molded polymers.
- Custom or stock, we offer many products off the shelf.
- We have a team of engineers to help bring your concept to reality.

1-800-416-9025 • www.zerocases.com

Circle (214) on Free Info Card

At Fiber Options We Asked the Question, What are the three most important things to a Broadcast Engineer?

You told us — **Solutions, Solutions, Solutions.**



Fiber Options is your premier solution provider for these familiar applications-

Solution 1: B730DV

250C short-haul digital video plus field-selectable duplex data

Solution 2: B705V

250C short-haul digital video

Solution 3: B742AV

250C short-haul digital video and stereo audio

These are just a few of the products we have for broadcast and pro video applications.

Fiber Options

80 Orville Drive, Bohemia, NY 11716
Tel: 800-342-3748 • Fax: 877-342-3732

Fiber Options
...light years ahead™

www.fiberoptions.com

Circle (215) on Free Info Card

make manage move | media™

For hands-on demonstrations of the Avid | iNEWS

broadcast tools and partner integration solutions,

visit the Avid | iNEWS Booth #L11377 in

the Las Vegas Convention Center at NAB.

To experience the complete Avid Solution, visit

the Avid Booth #M8318 at the Sands Expo Center.

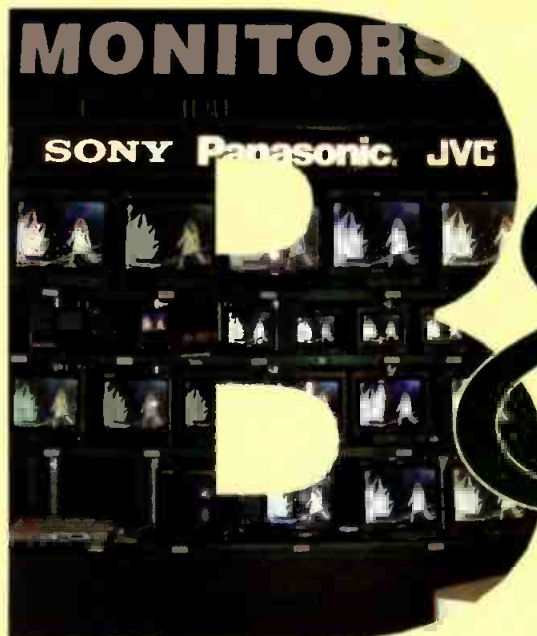
Avid | iNEWS™

avid.com

inewsroom.com

Circle (216) on Free Info Card

www.americanradiohistory.com



COME VISIT OUR SUPERSTORE

420 Ninth Ave.

*Between 33rd & 34th Streets,
New York, N.Y. 10001*

Store and Mail Order Hours:

Sun. 10-5, Mon. thru Thurs. 9-7

Fri. 9-2, Sat. Closed

For Orders Call:

800-947-9928

212-444-5028

or FAX (24 Hours):

800-947-9003

212-444-5001

We Ship Worldwide



www.bhphotovideo.com

FOR ORDERS CALL:
800-947-9928
212-444-5028

OR FAX (24 HOURS):
800-947-9003
212-444-5001

MOST ORDERS SHIPPED
WITHIN 24 HOURS
OVERNIGHT SERVICE AVAILABLE

www.bhphotovideo.com

420 Ninth Ave. (Bet. 33rd & 34th St.) New York, N.Y. 10001

SONY DSR-PD150

3-CCD Mini DVCAM Camcorder

High quality acquisition in the DVCAM component digital format, as well as In DV, allowing up to forty minutes recording on one tape Mini DVCAM tape or over a full hour in the DV mode. Suited for Event Videography and Video Journalist applications. This compact camcorder features three newly developed 1/3 inch 380K pixel CCDs with increased resolution and sensitivity at reduced noise and vertical smear.

- Allows two scanning modes: 480 progressive (for still) or interlaced (for video).
- Complete Professional Audio functions with two built-in XLR inputs.
- Built-in electronic zoom lens features Autofocus and SuperSteadyShot with an MTF 12X high quality optical lens with manual Zoom, Focus and Iris control.



- Built-in slot for a flash memory card or Memory-Stick for still image storage. Up to 988 JPEG pictures can be stored in one 64 MB MemoryStick. The stored images can be mixed or keyed to the live image allowing logo insertion and/or mix effects.
- High resolution (500 lines) B&W viewfinder and a color swing out bright color LCD panel are included.

Sony DSR-PD150 List Price\$4,000
For B&H priceCall

DSR-250 3-CCD DV & DVCAM

Introducing everything you need in an event camera and more. The new completely digital DSR-250 from Sony is a high image quality reduced size camcorder which has been optimized for shooting events and parties. Every feature you could want is included in this revolutionary acquisition tool.

- Manual or automatic functioning: Focus, Iris, Shutter-speed, Zoom, Gain (3 positions and memory).
- Flip out 2.5" 200,000 dot LCD monitor, finally available on a professional camera • Time date stamp • Soft Shutter pad
- 58mm lens with 12x optical zoom.
- Advanced optical stabilization allowing for a high quality digital zoom out to 24x, with a maximum digital zoom out to 48x.
- Assignable time code (Rec Run, Free-run, User-bt)
- 16 bit 2 channel audio recording, or 12 bit 4 channel.
- Digital in/out (IEEE1394) and analog in/out.
- Still image capture onto memory stick • Upload graphics from memory stick or USB adapter, software included
- Phantom 48V power • Built in speaker • Directional microphone in pro mic holder, 2 XLR audio inputs • Wireless remote
- Built in edit controller. Equipped with an iLINK interface, allowing camcorder to serve as edit player or recorder.
- External 12V supply/Connection for light. The DSR-250 is equipped with light output (DC 12 V, maximum 30 watts).

Sony DSR-250 List Price\$5,900
For B&H priceCall

DSR-300A 3-CCD Digital (DVCAM) Camcorder

Inheriting many of the same features and functions as the DSR-130, the affordable DSR-300A actually extends operational convenience with a range of new features and peripheral products. Remarkably compact and lightweight, the improved DSR-300A provides high mobility without compromising picture quality and can be held comfortably on your shoulder through the longest shoots and gives videographers the ability to acquire their footage quickly and easily.

- LSI Digital Signal Processor (the very same one used by the DCR-D30 cameras) for a high signal-to-noise ratio of 62 dB.
- Both mini cassettes (PDV-M series) and standard cassettes (PDV series) can be used with the DSR-300A. With PDV-184ME (standard), a maximum recording time of 184 minutes can be achieved. They can also play back tapes recorded in the consumer DV format
- For operational convenience while shooting, the Time Code is superimposed on the viewfinder screen or MONITOR DUT Screen, even during playback
- DXF-301 viewfinder featuring variable peaking, 3 level tally light and a white LED light with 2 levels of intensity to illuminate the lens setting • IEEE1394 iLink (out only)

Sony DSR-300A List Price\$9,900
For B&H priceCall



The 11-pound shoulder-style camcorder delivers many functions offered in Panasonic's most popular DVCPRO camcorders, including a 4-position ND/CC filter, the ability to increase gain up to +36dB for shooting in dim light, User Scene Memory storage, and a 6-speed shutter with synchro scan for the flicker-free shooting of CRT displays.

JVC

GY-DV500U 1/2-inch 3-CCD Professional DV Camcorder

The GY-DV500 combines the convenience and cost-effectiveness of Mini DV with the performance and features you need. Incorporate three 1/2-inch 380,000 pixel IT CCDs for superior picture performance (equivalent to 750 lines of resolution) superb sensitivity of F11 at 2000 lux and minimum illumination of 0.75 lux (LoLux mode). Rugged construction with a rigid diecast magnesium housing. Extremely portable, compact and light weight (less than 11 lbs. fully loaded). Additional features like the menu dial and Super Scene Finder assure ease-of-use and shooting flexibility, while the IEEE1394 and RS-232 interface allow integration into various non-linear and post-production systems. A professional camcorder in every sense, the compact, lightweight GY-DV500 redefines acquisition for corporate, educational, cable and broadcast production, as well as wedding videography and multimedia applications.



Professional Performance

- 3 1/2" 380,000 pixel IT CCDs with 750 lines of resolution.
- F11 at 2000 lux • Black Stretch/Black Compress function
- An advanced color matrix circuit ensures natural color.
- LoLux mode increases sensitivity with almost no increase in noise
- Multi-zone iris weighting system offers accurate auto exposure under any condition.
- Viewfinder status displays audio indicator, tape and battery remaining time, VCR operation and warning indicators.
- Menu dial lets you quickly navigate through the viewfinder menu.

Professional Audio

- Two 16-bit 48-kHz channels or two 12-bit 32-kHz channels with a dynamic range of 85 dB
- Two XLR-balanced audio inputs with 48v phantom power and manual audio control.
- Side-mounted speaker for playback.

Automatic Functions

- Continuous Auto Black (CAB) circuit assures perfect Black Balance in a changing environment.

- Full Auto Shooting (FAS) mode for point-and-shoot ease of operation. Automatic video level control (ALC) is also activated, along with Extended Electronic Iris (EEI) and Full Auto White, which provide both variable gain and variable shutter.
- ALC (Automatic Level Control) with EEI for continuous shooting in all light levels

Special Purchase

BUY any JVC GY-DV500U Package:

- GY-DV500U with Viewfinder and Lens Outfit
- GY-DV500U with Bescor ST144 Kit
- GY-DV500U with Viewfinder, Lens and AB1 Kit
- GY-DV500U with Viewfinder, Lens and AB2 Kit
- GY-DV500U with Viewfinder, Lens and IDX
- GY-DV500U with Studio Kit

and RECEIVE FREE:

- Anton Bauer Battery Kit A Value of 999.95
- OR: IDX Battery Kit A Value of 849.95

GY-DV550U 1/2" 3-CCD DV Camcorder

Introducing the Versatile GY-DV550 from JVC. Designed by professionals, for professionals, the GY-DV550 is the world's first DV camcorder to offer studio camera capability. Thanks to the built-in 26-pin interface, you can connect the GY-DV550 to a CCU for remote-controlled studio operation or backup recorder in the field. But that's not all. It also comes with pool feed input/output, so you can transfer image data back and forth to another camera or cameras, making it ideal for special shooting situations such as press conferences, exclusive interviews, and sporting events. Record isolated camera views (ISO-Cam) during a live multi-camera shoot, making it ideal for parallel shooting at live concerts and other events. Naturally, we've made sure the GY-DV550 is equipped with all the other capabilities you need, including a standard 1/2-inch bayonet mount for use with a great diversity of professional lenses, bidirectional IEEE 1394 (NTSC) two 48 kHz 16-bit digital PCM audio channels, and a built-in SMPTE or EBU timecode reader/generator, as well as XLR microphone inputs, audio outputs, headphones output, and both composite and Y/C outputs. Maximum versatility, top-level performance, and superior cost-efficiency make the GY-DV550 the smart solution for producers who need a camcorder capable of doing double-duty in both the studio and the field.

Ready for EFP remote control (RM-LP57/LP55) The EFP remote connects directly to the GY-DV550 for precise control over the video parameters.

Return video output for Tele-Prompter Tele-Prompter capability assures full support for studio program production.

Genlocking function To meet the demand for systemization, the GY-DV550 is equipped with a genlocking function that includes SC lock to assure high-resolution pictures.

State-of-the-art 1/2" 3-CCD image pickup Incorporates three 1/2" 380,000 (NTSC)/440,000 (PAL) pixel interline-transfer CCDs. Each CCD is equipped with highly advanced circuitry that eliminates vertical smear when shooting bright lights in a dark room. Lag and image burn are also reduced to indiscernible levels, while high sensitivity of F11 at 2000 lux assures creative flexibility and simplifies lighting requirements.

SR-VS10U

MiniDV and S-VHS VCR Combo

The HR-DVS1U is a unique all-in-one video solution combining MiniDV and Super Hi-Fi Stereo in one VCR. The MiniDV deck allows direct playback of cassettes you've recorded on a MiniDV camcorder without any cables to connect. One easy solution!

- Mini DV Format & High Resolution Super VHS and VHS
- DigiPure Technology w/ TBC and 4MB Frame Memory
- PCM Digital Audio (DV) and Hi-Fi Stereo with MTS Decoder • Jog/Shuttle on Remote
- VCR Plus+ with Cable Eye Cable Box Controller
- Insert Editing with Flying Erase Head • Plug & Play
- Audio Dubbing • Auto Index and Index Search



- DA4(Double Azimuth) Head Helical Scan System
- Digital AV Tracking • Express Programming • Auto SP-EP Timer Recording • Active Video Calibration • Multi-Brand TV/DSS Compatible Remote with Jog / Shuttle
- S-video Input on Front / Back Panel • Two S-Video Output on Back Panel • Rear AV INPUTS, Gold Plated Front Inputs
- DV Playback Component Video Output, Two A/V Outputs

Mini DV 3-CCD Camcorder

This lightweight unit uses the mini-DV format, large diameter lens, and a 3-CCD image sensor to deliver the high recording quality needed for professional use.

- High-Quality DV Recording
- Records on Mini DV cassettes in either SP (standard Play) or LP (Long Play) mode
- Records audio either as 16-bit 2 channel, or 12-bit 4-channel
- Superior 3-CCD Picture Quality
- 1/4 inch, 270K-pixel IT 3CCD image sensor • 43 mm filter

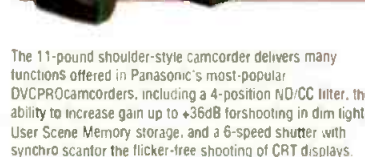
- 12x Optical zoom
- Gain Up to +12dB
- Neutral Density Filter
- Manual Focus, Manual Iris
- New Shoulder-Type Design
- Excellent Shooting Stability
- Light weight weighing approx. 6 lbs. • Extremely mobile
- i-Link (DV IEEE1394) Terminal



Panasonic AG-DVC200 Full Size DV Camcorder

The Industry's first DV camcorder to utilize large DV cassettes

The AG-DVC200 1/2" 410,000-pixel IT 3-CCD DSP camcorder records for an astounding 4-1/2 hours (270 minutes), and offers an interchangeable bayonet mount lens that permits users to use their favorite 1/2" lens. With the incredible ability to shoot at F11 in lighting as low as 0.5 lux, the AG-DVC200 delivers an outstanding 800 lines of horizontal resolution, an IEEE 1394 interface, a signal-to-noise ratio of 62dB, and very low smear.



The 11-pound shoulder-style camcorder delivers many functions offered in Panasonic's most popular DVCPRO camcorders, including a 4-position ND/CC filter, the ability to increase gain up to +36dB for shooting in dim light, User Scene Memory storage, and a 6-speed shutter with synchro scan for the flicker-free shooting of CRT displays.

FOR ORDERS CALL:

OR FAX (24 HOURS):

800-947-9928

800-947-9003

212-444-5028

212-444-5001

**MOST ORDERS SHIPPED
WITHIN 24 HOURS**
OVERNIGHT SERVICE AVAILABLE
www.bhphotovideo.com

Anton Bauer

HyTRON 50 Battery

Weighing a mere 31oz (880 grams) and packing 50 Watt-hours of energy - enough to operate a typical ENG camcorder for two hours, the HyTRON 50 is the most advanced lightweight battery in the industry.

- Made possible by recent advancements in a cell technology originally designed for the mobile computing industry, it incorporates nickel metal hydride cells that provide the highest energy density of any rechargeable cylindrical cell available. High performance is further assured through the integration of Anton/Bauer InterActive digital technology.
- Equipped with an on-board "fuel computer" which monitors energy input and output as well as critical operating characteristics and conditions. This data is communicated to the InterActive charger to ensure safety and optimize reliability.
- In addition, remaining battery capacity information is available by means of an LCD display on each battery and in the viewfinder of the most popular broadcast & professional camcorders.
- Special low voltage limiter prevents potentially damaging overdischarge.

Specifications: 14.4 V, 50 WH (Watt Hours)
5-3/4" x 3-1/2" x 2-1/4", 1.9 lbs (880g)
Typical runtime: 2 hours @ 25 Watts 3 hours @ 17 Watts

QUAD 2702/2401

Four-Position Power/Chargers

The lightest and slimmest full featured four position chargers ever, they can fast charge four Gold Mount batteries and can be expanded to charge up to eight. They also offer power from any AC main: In a package the size of a notebook computer and weighing a mere four lbs! The 40 watt 2401 can charge ProPacs in two hours and TriPacs in one. Add the Diagnostic/Discharge module and the QUAD 2401 becomes an all purpose power and test system. The 70 watt QUAD 2702 has the module and is the ultimate professional power system.

I.D.

E-50

Endura V-Mount Battery Pack



E-50

Endura V-Mount Battery Pack

- The V-Mount or wedge-mount battery mounting connection is being found on more and more of today's camcorders. Due to this prevalent battery mounting system, IDX has developed the Endura Lithium Ion V-Mount battery system to work directly with these newer camcorders.
- The IDX Endura batteries incorporate Synchron technology, which automatically engages an on camera light whenever the record button on the camera is activated.
- The E-50 Lithium Ion Endura is a sleek and durable 50W, 14.4V battery.
- A PowerLink is included, as standard equipment with every Endura battery. This allows two batteries to be piggybacked together in order to double the power of this lightweight battery.

Special Purchase \$299.95

SONY 800 SERIES

UHF WIRELESS MICROPHONE SYSTEMS



Consisting of 5 handheld and bodypack transmitters and 6 different receivers, Sony's UHF is recognized as the outstanding wireless mic system for professional applications. Operating in the 800 MHz band range, they are barely affected by external noise and interference. They incorporate a PLL (Phase Locked Loop) synthesized control system that makes it easy to choose from up to 262 operating frequencies, and with the use of Sony's pre-programmed channel plan, it is simple to choose the correct operating frequencies for simultaneous multi-channel operation. Additional features, like space diversity reception, LCD indicators, reliable and sophisticated circuit technology ensure low noise, wide dynamic range, and extremely stable signal transmission and reception. Ideal for broadcasting stations, film production facilities, and ENG work.



SONY

DSR-20/40 DVCAM Player/Recorders

The DSR-20 and DSR-40 are versatile DVCAM VCRs with compact chassis and a variety of convenient functions for recording, playback and simple editing. They feature Auto Repeat Playback, Power-On Recording/Playback, multiple machine control interfaces and i.Link (IEEE1394) input and output. And, of course, they offer the stunning image and sound quality inherent to the DVCAM format.

- **i.LINK** They both offer i.LINK (IEEE1394) input/output. In addition, in the "Digital dubbing including TC Copy" mode, full information of video, audio and time code of the original tape can be copied to another tape. Especially useful when making working copies of the original tape.
- **Inputs and Outputs** They provide a full range of analog video inputs and outputs for integration into current analog-based systems. They both offer composite and S-Video input/output, while the DSR-40 (only) offers a component output as well. The DSR-20 is equipped with analog audio inputs and outputs (RCA), the DSR-40 with RCA inputs and XLR-balanced output. These connections in combination with their i.LINK interface allow a smooth transition to an all digital system in the future.
- **Smooth Playback Functions** Automatic repeat function for repeated playback. After reaching the end of the tape, the DSR-20/40 automatically rewinds the tape, then starts playing back the segment again.

DSR-20 Only - The DSR-20 can be powered by AC or DC.

- Equipped with Control L interface, the DSR-20 can perform simple Time Code based editing when connected to another DSR-20 or other similarly equipped VCRs/cameras.

DSR-40 Only • Equipped with an RS-422A interface, it can perform as the editing player in A/B roll or cut editing system.

- They are capable of searching for Index Points, which are recorded on the tape as "in-point" marks every time a recording starts. They can also search for photo data recorded on a DVCAM cassette by the DSR-200A/300/PD-100, or where the recording date has been changed.
- **Reference Input** External sync input enables synchronized playback with other VCRs. Especially important in A/B Roll configurations. In addition, the DSR-40 only allows adjustment of H-sync and SC phase via the menu.
- **Control S Interface** The DSR-20/DSR-40 have a Control S input allowing control via the optional DSRM-20 Remote Control.

DSR-20 List Price \$3,950 For B&H price Call
DSR-40 List Price \$5,100 For B&H price Call

- In addition to Control L, the DSR-20 also incorporates an RS-232 interface for remote control of basic VCR functions from a PC.
- Supplied with the RMT-DS20 Wireless Remote for control of basic VCR functions.

The DSR-40 is not equipped with a synchronization capability, the editing accuracy is performed by pre-roll and play.

DSR-30 DVCAM Digital VCR

The DSR-30 is an industrial grade DVCAM VCR that can be used for recording, playback and editing. DV sampling 4:1:1 sampling digital component recording with a 5:1 compression ratio provides spectacular picture quality and multi-generation performance. It has a Control L interface for editing with other Control L based recorders such as the DSR-200A DVCAM Camcorder or another DSR-30. It also has a continuous auto repeat playback function making it ideal for kiosks and other point of information displays.

- Records PCM digital audio at either 48kHz (16-bit 2 channel) or at 32kHz (12-bit 4 channel).
- Equipped with Control L, capable of SMPTE Time Code based accurate editing even without an edit controller. Built in editing functions include assemble and separate video and audio insert.
- By searching for either an Index point or Photo Data recorded by the DSR-200A camcorder, the DSR-30 drastically cuts the time usually required for editing. The DSR-30 can record up to 135 Index points on the Cassette Memory thanks to its 16K bits capability.
- Audio lock ensures audio is fully synchronized with the video for absolute precision when doing an insert edit.



Sony DSR-30 List Price \$4,475
For B&H price Call

UVW-1200/UVW-1400A

Betacam SP Player • Player/Recorder

The UVW-1200 and UVW-1400A are non-editing VCRs which deliver Betacam SP quality and offer features for a wide range of playback and recording applications. RGB and RS-232 interface make them especially ideal for large screen, high quality video presentation, scientific research and digital video environments.

- Ideally suited for work in computer environments, because RGB signals can be converted into component signals and vice versa with minimum picture degradation.
- 25-pin serial interface allows external computer control of all VCR functions based on time code information. Band rate can be selected from between 1200 to 38,400 bps.
- Built-in Time Base Stabilizer (TBS) locks sync and subcarrier to an external reference signal as well as providing stable pictures. High quality digital dropout compensator further ensures consistent picture performance.
- Equipped with two longitudinal audio channels.
- Auto repeat of entire or a specific portion of the tape.

- Built-in character generator can display VTR status, time code, self-diagnostic messages, set-up menu, etc.
- Both read LTC Time Code and UB (User Bits). The UVW-1400A also generates LTC and UB (Free-Run/Rec-Run).
- Control of jog, shuttle, playback, record, pause, FF and REW with the optional SVRM-100A Remote Control Unit.
- Composite and S-Video as well as component via BNCs which are switchable to RGB output. The UVW-1400A has two switchable sync connectors and a Sync on Green.
- Built-in diagnostic function and hour meter.

UVW-1200 List Price 6,200 For B&H price Call
UVW-1400A List Price 8,400 For B&H price Call

UVW-1600/UVW-1800

Betacam SP Editing Player • Betacam SP Editing Recorder

The UVW-1600 and UVW-1800 are the other half of the UVW series. They offer the superiority of Betacam SP with sophisticated editing features. They feature an RS-422 9-pin interface, built-in TBCs and Time Code operation. Inputs/outputs include component, composite and S-Video. All the features of the UVW-1200/1400A PLUS—

- Optional BVR-50 allows remote TBC adjustment.
- RS-422 interface for editing system expansion.
- Two types of component output: via three BNC connectors or a Betacam 12-pin dub connector.
- Frame accurate editing is assured, thanks to sophisticated servo control and built-in time code operation.

UVW-1600 List Price 9,600 For B&H price Call
UVW-1800 List Price 11,300 For B&H price Call

PVM-14M2U/14M4U & 20M2U/20M4U

13-inch and 19-inch Production Monitors

Sony's best production monitors ever, the PVM-M Series provide stunning picture quality, ease of use and a range of optional functions. They are identical except that the "M4" models incorporate Sony's state-of-the-art HR Trinitron CRT display technology and have SMPTE C phosphors instead of P22.

- HR Trinitron CRT enables the PVM-14M4U and 20M4U to display an incredible 800 lines of horizontal resolution. The PVM-14M2U and 20M2U offer 600 lines of resolution. M4 models also use SMPTE C phosphors for the most critical evaluation of any color subject.
- Dark tint for a higher contrast ratio (black to white) and crisper, sharper looking edges.
- Each has two composite, S-Video and component input (R-Y/B-Y, analog RGB). For more accurate color reproduction, the component level can be adjusted according to the input system. Optional 8KM-101C (video) and 8KM-102 (audio) for SMPTE 259M serial digital input.
- Beam Current Feedback Circuit
- 4:3/16:9 switchable aspect ratio.
- True multi-system monitors they handle four color system signals: NTSC, NTSC 4.43, PAL & SECAM.

- External sync input and output can be set so that it will automatically switch according to the input selected.
- Switchable color temp: 6500K (broadcast), 9300K (pleasing picture). User preset (3200K to 10000K).
- Blue gun, undercan and H/V delay capability

PVM-14M2U List Price 1,265 For B&H price Call
PVM-14M4U List Price 1,570 For B&H price Call
PVM-20M2U List Price 2,525 For B&H price Call
PVM-20M4U List Price 2,920 For B&H price Call



PROFESSIONAL VIDEO TAPES



Professional Grade VHS			
PG-30	2.29	PG-60	2.39
PG-120	2.51		
Broadcast Grade VHS Box			
BGR-30	3.49	BGR-60	3.99
BGR-120	4.61		
H471S S-VHS Double Coated			
ST-30	6.99	ST-60	7.49
ST-120	7.99		
M221 Hi 8 Double Coated			
Metal Particles		Metal Evaporated	
P630HMP	4.49	E630HME	7.69
P660HMP	6.29	E660HME	10.49
P6120HMP	8.49	E6120HME	13.99
M321SP Metal Betacam (Box)			
05S	10.99	10S	11.99
30S	13.99	60S	20.99
90S	32.99		
DP121 DVC PRO			
12M (Med.)	7.49	23M	8.79
33M	10.99		
63M	19.99	66L	22.50
94L	30.99	126L	39.99

maxell

Broadcast Quality Hi8 Metal Particle			
P6-30 HM BQ	5.39	P6-60 HM BQ	6.09
P6-120 HM BQ	7.99		
PA PLUS VHS			
T-30 Plus	1.69	T-60 Plus	1.99
T-90 Plus	2.09		
T-120 Plus	2.19	T-160 Plus	2.69
H67-PLUS VHS (Box)			
HGXT-60 Plus	2.69	HGXT-120 Plus	2.99
HGXT-160 Plus	3.99		

BQ Broadcast Quality VHS (Box)			
T-30 BQ	3.89	T-60 BQ	3.99
T-120 BQ	5.99		
BQ Professional S-VHS (In Box)			
ST-31 BQ	6.79	ST-62 BQ	6.99
ST-126 BQ	7.45	ST-182 BQ	13.99

Betacam SP			
B30MSP	13.49	B60MLSP	19.99
B90MLSP	27.95		

Panasonic

Mini DV Tape			
AY DVM-30	6.49	AY DVM-30 (10 Pack)	ea. 5.99
AY DVM-60	6.99	AY DVM-60 (10 Pack)	ea. 6.49
AY DVM-80	12.99	AY DVM123EB	20.95

DVCPRO			
AJ-P12M (Medium)	7.99	AJ-P24M	9.99
AJ-P33M	11.49	AJ-P66M	19.49
AJ-P66L (Large)	20.99	AJ-P94L	29.99
AJ-P126L	38.95		

SONY

Hi-8 Professional Metal Video Cassettes			
P6-30 HMPX	4.79	E6-30 HMEAD	6.99
P6-60 HMPX	5.79	E6-60 HMEAD	9.99
P6-120HMPX	8.99	E6-120HMEAD	13.99

PR Series Professional Grade VHS			
T-30PR	2.39	T-60PR	2.59
T-120PR	2.79		

BA Series Premier Hi-Grade Broadcast VHS (In Box)			
T-30BA	3.69	T-60BA	4.19
T-120BA	4.99		

MO Master Quality S-VHS (In Box)			
MQST-30	7.49	MQST-60	7.69
MQST-120	7.99		

BRS 3/4" U-matic Broadcast Standard (In Box)			
KCS-10 BRS (mini)	8.99	KCS-20 BRS (mini)	9.99
KCA-10 BRS	8.99	KCA-20 BRS	9.49
KCA-30 BRS	10.69	KCA-60 BRS	14.99

XBR 3/4" U-matic Broadcast Master (In Box)			
KCS-10 XBR (mini)	9.79	KCS-20 XBR (mini)	11.29
KCA-10 XBR	10.29	KCA-20 XBR	11.79
KCA-30 XBR	13.29	KCA-60 XBR	17.39

BCT Metal Betacam SP Broadcast Master (In Box)			
	Single	10 Pak/Ea.	50 Pak/Ea.
BCT-5M (small)	10.99	9.99	9.19
BCT-10M (small)	11.49	10.29	9.79
BCT-20M (small)	12.99	11.49	10.99
BCT-30M (small)	13.49	12.49	11.99
BCT-30ML	13.49	11.99	
BCT-60ML	20.99	19.99	18.99
BCT-90ML	30.99	28.99	27.99

BCT-10M (small)	11.49	10.29	9.79
BCT-20M (small)	12.99	11.49	10.99
BCT-30M (small)	13.49	12.49	11.99
BCT-30ML	13.49	11.89	

BCT-60ML	20.99	19.99	18.99
BCT-90ML	30.99	28.99	27.99
PDV Mini Series Professional DVCAM Tape (w/memory chip)			

Mini DV Tape			
DVM-30EXM w/Chip	12.79	DVM-60EXM w/Chip	16.99
DVM-30EX "No Chip"	11.99	DVM-60EX "No Chip"	12.99
DVM-30PR "No Chip"	7.99	DVM-60PR "No Chip"	9.75

Full Size DV Tape with Memory Chip			
DV-120MEM	24.99	DV-180MEM	26.99



Cards

B&H

PHOTO - VIDEO - PRO AUDIO

TO INQUIRE ABOUT YOUR ORDER:
800 221-5743 • 212 239-7765
OR FAX 24 HOURS:
800 947-2215 • 212 239-7549

420 Ninth Ave.
(Bet. 33rd & 34th St.)
New York, N.Y. 10001

COMPUTER VIDEO EDITING

matrox
Digital Video Solutions

Advanced Realtime Features

DigiSuite LX board offers more realtime features than any other product on the market. You get multiple 2D DVE processors, multiple channels of YUV color correction, independent transparency control on all layers, 32-bit animated graphics, two advanced chroma/luma/matte keyers, a customizable wipe generator, variable speed motion control, and perfect audio sync. You can also add a 3D DVE channel with the MAX option.



DigiSuite LX

DigiSuite LX offers all the great features of the best-selling Matrox DigiSuite platforms, plus DV, MPEG-2, and 1394 support. DigiSuite LX provides native DV and MPEG-2 editing under Windows 2000 • Award-winning realtime feature set • Native-DV and 50-Mbps MPEG-2 editing

- 4 in/4 out, balanced/unbalanced analog I/O • Audio clock locked to video reference ensures perfect synchronization in accordance with SMPTE-272M and AES11-1991 • MPEG-2 output for DVD and CD authoring • 1394, analog component, Y/C, and composite support built-in
- Integrated web video creation tools
- Field-proven, reliable technology

SDI Option

- Provides serial digital (SDI) video and AES/EBU digital audio I/O

Adobe Turnkey System

- Pentium III 866 processor • 300 watt Full tower
- Asus CUSL2 motherboard • 40GB 30GB System drive
- PNY 256MB SDRAM memory • Windows 2000
- 48X CD ROM Drive • Matrox G450 Dual Display Card
- Adaptec 29160 LVD-160 SCSI Card
- Seagate 73GB LVD-160 SCSI Drive • 3.5" floppy drive
- 102 Button Keyboard • Microsoft Trackball mouse
- DigiSuite LX • Adobe Premiere 6.0 Editing Software
- 19" Mitsubishi Diamond Plus Monitor
- 90 day Free Tech Support
- Fully assembled and tested

\$6,999

Incite Turnkey System

- Pentium III 866 processor • 300 watt Full tower
- Asus CUSL2 motherboard • IBM 30GB System drive
- PNY 256MB SDRAM memory • Windows 2000
- 48X CD ROM Drive • Matrox G450 Dual Display Card
- Adaptec 29160 LVD-160 SCSI Card
- MEDEA 120GB Drive Array • 3.5" floppy drive
- 102 Button Keyboard • Microsoft Trackball mouse
- DigiSuite LX • Incite 800 Editing Software
- 22" Mitsubishi Diamond Plus Monitor
- Sony DRV-100 Internal DV Tape Drive
- 90 day Free Tech Support
- Fully assembled and tested

\$11,999

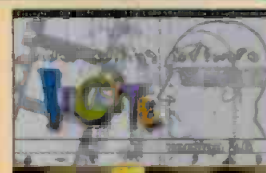
Incite Software for DigiSuite

Incite is a non-linear editing software designed to run on Matrox DigiSuite hardware. Incite provides an easy to use editing interface, multiple editing modes, a powerful toolkit with extensive utilities, more than 15 simultaneous real-time effects with unlimited keyframing for up to 2 layers of video + 1 layer of live input video + 1 graphic layer, tools for multilayer compositing and advanced compositing, real-time titling and graphics, as well as an extensive range of options that will quickly expand your editing software into a fully equipped editing suite.

For the local studio, the editing toolkit must be extensive. Incite provides features like media logging and batch capturing, 4 editing modes (TV, Film, Ripple and Get Trimmed), three point editing, quick transition creation, virtually unlimited real-time possibilities (including easy to build DVE, video key and motion effects), real-time animated titling & graphics features that will satisfy the most demanding client, templating and cut/copy/paste

features for rapid application, filters and effects rendering for multilayer compositing, 3rd party FX integration, consolidate storyclips and batch re-digitizing ... Just to cite a few key features.

For large post-production houses and broadcasters they key concepts are speed and integration. Live input and hybrid editing features, VLAN control for up to 31 VTRs, integration of 3rd party effects hardware directly on the Incite timeline, and the ability to work with multiple formats (from Lossless MJPEG to DV and MPEG-2). As for speed, the number of real-time effects is unsurpassable while all effects that need to be rendered are rendered in the background.



On-line Express

Professional Editing for DigiSuite

Powerful, Intuitive and Freeform Editing

On-Line Express offers advanced editing tools and a freeform timeline which allows you to focus on your creativity and maximize your productivity. Edit multiple layers freely by moving single clips, blocks of clips or entire timelines without constraining modes.

Multi-Cam Editing - Whether or not you shot multi-camera, you will love the unique Multi-Cam feature. On-Line Express allows you to easily scrub and view 4 simultaneous camera angles for selecting desired cut points.

Powerful Media Management - On-Line Express provides the tools necessary to organize, sort and retrieve your digital content. With unlimited bins, projects and timelines you can easily open multiple timelines and bins and freely cut and paste between them.

Auto Storyboard - This unique feature allows you to instantly create programs with dissolves and audio crossfades without working on the timeline!

Supported Hardware

On-Line Express was designed specifically for the Matrox DigiSuite hardware. Support of Dual monitor display with the use of Matrox G400 or G450 VGA boards. Whether you are editing in MPEG-2 or streaming to the web, On-Line Express has a solution for you.



on-line Turnkey System

- Pentium III 866 processor • 300 watt Full tower
- Asus CUSL2 motherboard • IBM 30GB System drive
- PNY 512MB SDRAM memory • Windows 2000
- 48X CD ROM Drive • Matrox G450 Dual Display Card
- Adaptec 29160 LVD-160 SCSI Card
- JEMS 292GB LVD-160 (10K) SCSI Array • 3.5" floppy
- Sony DRV-100 Internal DV Tape Drive
- 102 Button Keyboard • Microsoft Trackball mouse
- DigiSuite LX • on-line Express Editing Software
- Dual 22" Mitsubishi Diamond Plus Monitors
- 90 day Free Tech Support
- Fully assembled and tested

\$19,999

Avid

Xpress DV

Powerful Video Editing Tools

Avid Xpress DV software combines powerful video and audio editing tools, digital masking, and extreme ease of use. Captures and edits DV video, adds effects, mixes audio, and outputs over IEEE1394 FireWire. Or transcodes the content to all major new media formats. MPEG-1 (for CD-R) MPEG-2 (for DVD-ROM) QuickTime or AVI for computer based presentations or for streaming on the web. As a member of the Avid Xpress Family, The Xpress DV offers the same Avid graphical user interface (GUI) used in the very high-end Avid products, powerful audio and video tools.

- Pentium III 866 MHz / 1 GHz CPU
- 128mb/256mb RIMM (RDRAM) memory
- Matrox G450 32mb Graphics Card
- 20GB ATA100 IDE (7200 RPM) System Drive
- 40GB ATA100 IDE (7200 RPM) System Drive
- 48X IDE CD ROM Drive • 3.5" Floppy Drive • Windows NT

Express DV on Dell Precision 220 Workstation

866 MHz Processor,
128mb RDRAM
\$4,499

1 GHz Processor,
256mb RDRAM
\$4,999

DELL

Precision 220

Workstation Bundle

Shown with optional Monitor



canopus

DV-Rex M3

Mobile Real-Time DV Editing Workstation

Add portability to your video editing. This light weight unit sets up in minutes and comes with a flip down keyboard and a 15" high resolution LCD panel. Works with both analog and DV I/O allowing you to combine footage from analog and DV sources. Incorporates the latest computer components including dual Pentium III CPUs, 256MB RAM, Xplode effects acceleration and expandable storage options.

Some real-time effects include, transitions, up to 10 tracks of titling, luma keying, color correction, slow-motion and picture-in-picture. Audio effects include echo, reverb, and parametric and graphic equalization.



\$7,499.95

PINNACLE SYSTEMS

CineWave

Non-Linear Editing Package

Revolutionary non-linear editing package that delivers the power of true uncompressed video with Apple's Final Cut Pro. Using Pinnacle's new HUB3 video processor, the CineWave combines infinite layering, incredible effects, advanced compositing tools and accurate motion tracking with all the major video formats in compressed or uncompressed video. Based on the new dual process or Apple G4's, CineWave delivers the worlds first scalable desktop video system capable of outputting both Standard Definition and High Definition simultaneously.

Includes • Comotion Pro • Hollywood FX



Apple

G4/Final Cut Pro

Good System

- Includes: • Apple G4/466 Computer
- Final Cut Pro version 2.0 editing software
- Total of 256MB of memory
- 45GB of ATA/100 storage
- CD-RW rewritable CD writer
- Final Cut Tutorial CD
- Mitsubishi Diamond Pro 2040 22" Monitor
- Apple Care-three year warranty
- Complete System integration and testing

\$4,599.00

Great System

- Includes: • Apple G4/533 Computer
- Final Cut Pro version 2.0 editing software
- 60GB of ATA/100 storage
- Total of 256MB of memory
- CD-RW rewritable CD writer
- Artek Boris Graffiti CG Program
- Final Cut Tutorial CD
- Mitsubishi Diamond Pro 2040 22" Monitor
- Apple Care-three year warranty
- Complete System integration and testing

\$5,399.00

Best System

- Includes: • G4/533 DUAL Processors
- Final Cut Pro v2.0 editing S/W
- 150GB (2x75) of ATA/100 storage
- VST Ultratrek IDE controller card
- ATI Rage Orion dual display card
- Total of 256MB of memory
- Artek Boris Graffiti CG Program
- Final Cut Tutorial CD
- 2 Mitsubishi Diamond Pro 2040 22" Monitors • CD-RW writer
- Apple Care-three year warranty
- Complete System integration and testing

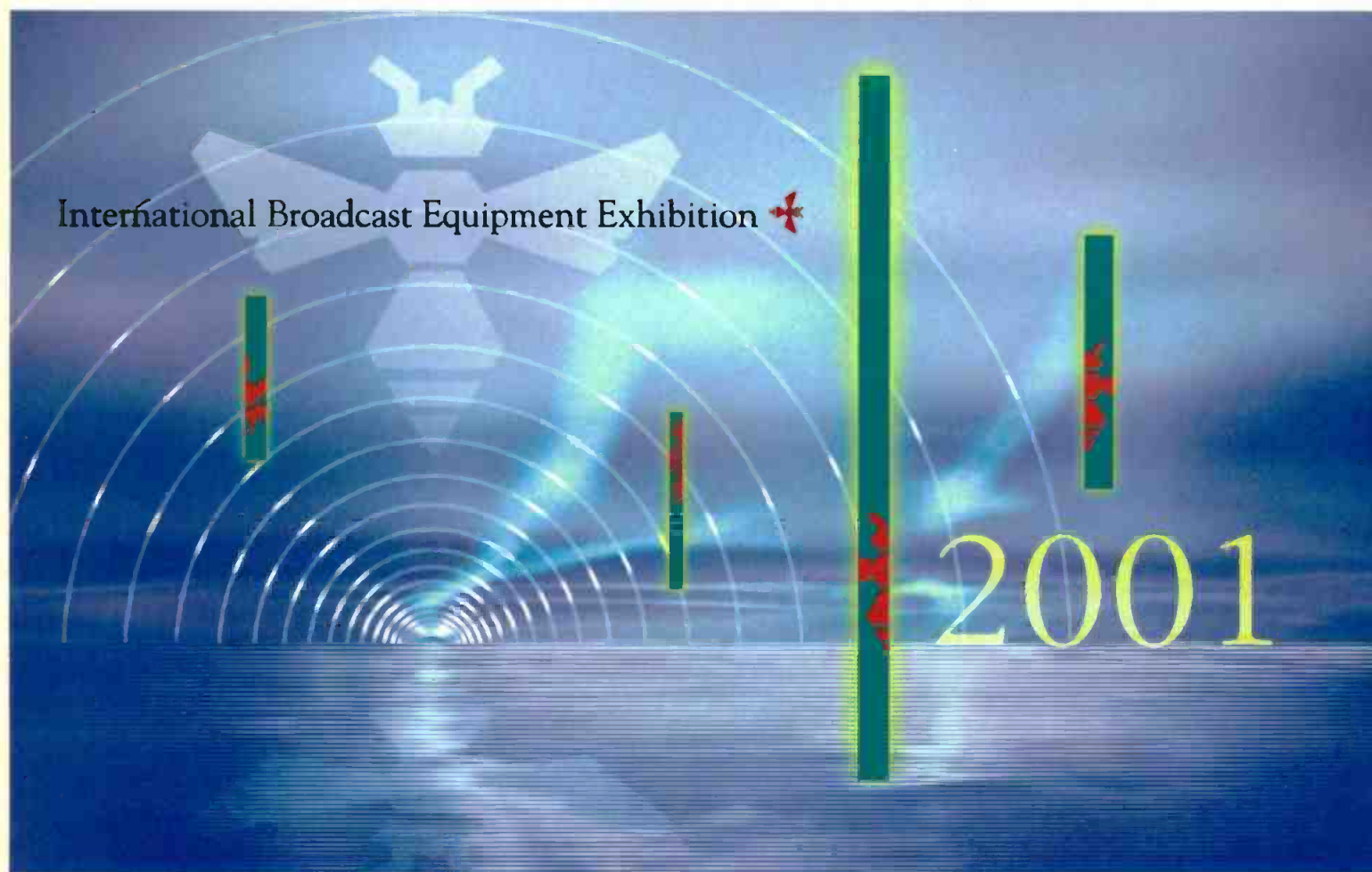
\$7,999.00



Inter BEE 2001

International Broadcast Equipment Exhibition 2001

November 14-16, 2001 Nippon Convention Center (Makuhari Messe)



Secure a place in the future of broadcast.

Professionals in the broadcast, video, and audio technology industries consider the International Broadcast Equipment Exhibition (Inter BEE) to be one of the most important events of the year. For 2001, we anticipate a larger turnout than ever before.

More than 500 exhibitors and an impressive 30,000 industry members from around the world are expected to attend, offering unique opportunities for marketing, networking, and the gaining of inspiration. It is also the ideal venue for conveying your identity and message to the industry.

Inter BEE 2001 will also host a range of symposiums, forums, and seminars led by prominent broadcasting, audio, and video software producers, as well as systems hardware developers. Insights will be gained into the future of broadcast, securing an edge for all who attend.

For more information on Inter BEE 2001, contact:

Japan Electronics Show Association

Sumitomo Shibadaimon Bldg. 2 Gokan, 1-12-16, Shibadaimon, Minato-ku, Tokyo 105-0012, Japan
Fax.: +81-3-5402-7605 E-mail: bee@jesa.or.jp URL: <http://bee.jesa.or.jp/>



Exhibition Categories

- Audio Equipment ● Cameras and Related Equipment
- Recording Equipment
- Editing and Production Equipment
- Electronic Displays ● System Conversion Equipment
- Output Systems ● Relay Systems
- Transmission Systems ● Lighting Equipment
- Measuring Equipment ● Transmission Cables
- Electronic Power Units ● HDTV Systems
- Satellite Broadcasting Systems ● Virtual Systems
- CG Production Systems ● DVD Systems
- Multimedia Systems ● Software
- Multiplex Broadcasting Systems ● Others



Mark Smirnoff

To The Power of Maxell



Mark Smirnoff, President-Studio Services for Modern VideoFilm, is totally blown away by the consistently superior quality of Maxell Professional products. "The key to surviving Modern VideoFilm's ever demanding needs of video tape stock is reliability, durability and great customer service and Maxell delivers all three." Maxell's media family includes digital products like Digital Betacam, Betacam SP, Betacam SX, DVCPRO, HD CAM, D-5, D-3 and D-2.



Can you depend on your professional media? You can reach Mark Smirnoff at msmirnoff@mvfinc.com

Take your professional media to the power of Maxell.



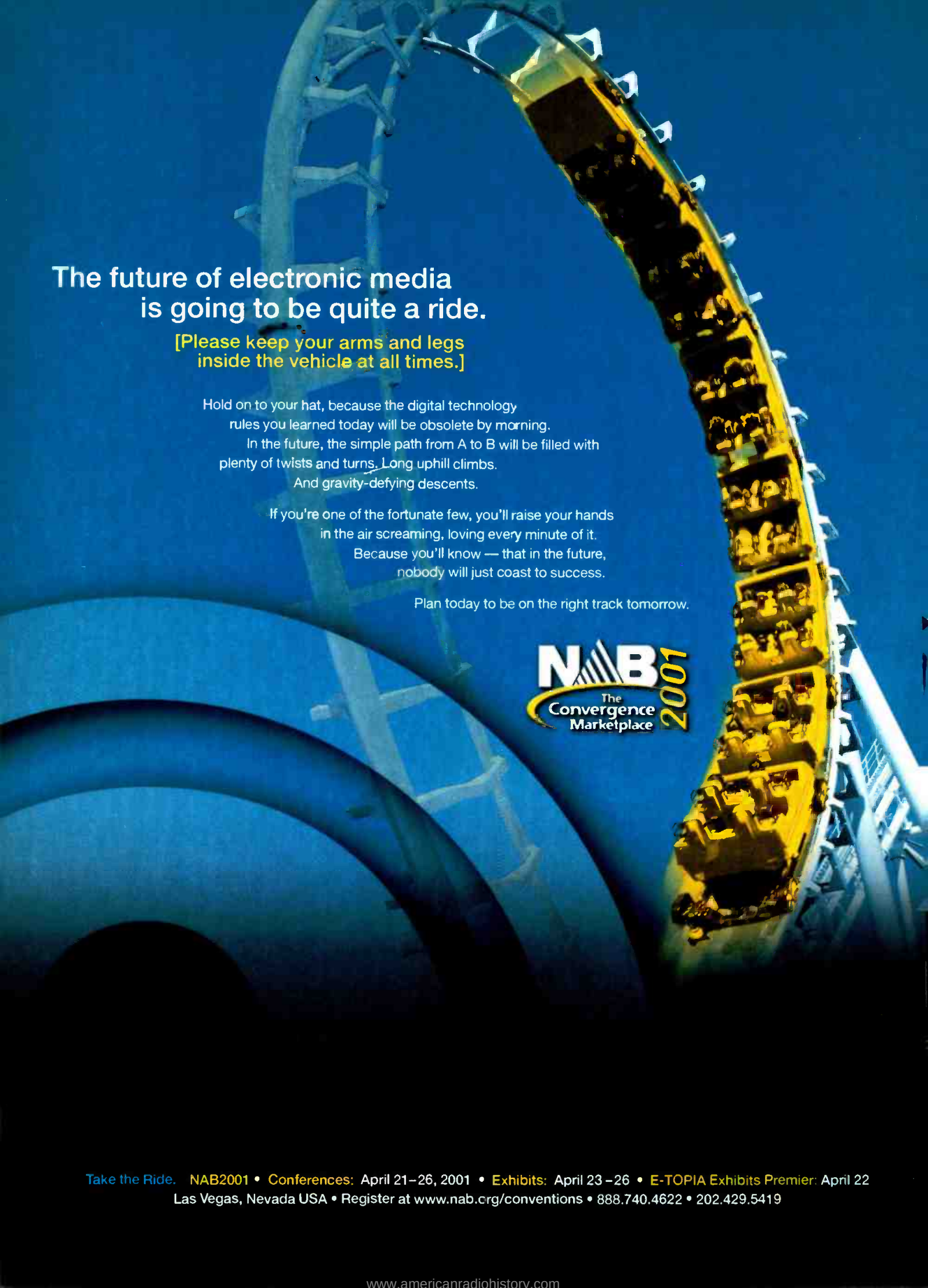
maxell

PROFESSIONAL

To learn more about Maxell Professional Media, call 1.800.533.2836 or visit our website at maxellpromedia.com

Circle (234) on Free Info Card

www.americanradiohistory.com



The future of electronic media is going to be quite a ride.

[Please keep your arms and legs
inside the vehicle at all times.]

Hold on to your hat, because the digital technology
rules you learned today will be obsolete by morning.

In the future, the simple path from A to B will be filled with
plenty of twists and turns. Long uphill climbs.

And gravity-defying descents.

If you're one of the fortunate few, you'll raise your hands
in the air screaming, loving every minute of it.

Because you'll know — that in the future,
nobody will just coast to success.

Plan today to be on the right track tomorrow.



Take the Ride. NAB2001 • Conferences: April 21–26, 2001 • Exhibits: April 23–26 • E-TOPIA Exhibits Premier: April 22
Las Vegas, Nevada USA • Register at www.nab.org/conventions • 888.740.4622 • 202.429.5419

VIDEO D.A.'S

OVER 10,000
WORLDWIDE



ES-207A
\$175

BROADCAST QUALITY

- 1x4 • Gain • Adjustable
- Equalization-Compensates for 1000' of RG-59/U • Response-10 Hz to 10 MHz • Propagation Delay-3nS.

Many Other Audio & Video D.A.'s
Including Rack Mount Versions

3 Year Warranty



310-322-2136
FAX 310-322-8127
www.e-se-web.com

Circle (219) on Free Info Card
See us at NAB Booth #5730

Better SDI From Analog Sources



The DEC-312S 12-bit Decoder Synchronizer converts your composite analog sources to SDI with extremely accurate YC separation and without unwanted comb artifacts.

Unmatched noise immunity lets you lock to virtually any signal without freezing or loss of video.

Visit us at www.fortelDTV.com to learn about the Integrity™ system of frame synchronizers, decoders, encoders, digitizers and digital audio processors.



1-800-530-5542
404-885-9555
Fax: 404-885-1501

Circle (220) on Free Info Card
See us at NAB Booth #L1261 LVCC

HORITA®

**Sure, we could build a sunroof
into our SCT-50, but do you
really need one?**



**The Simple Way to Add
Titles/Captions & Time/Date to
Video - SCT-50 - \$329**

- ✓ Stand alone or RS232 controlled "Industrial CG" adds up to 9 lines of 20 characters each of *text/symbols*. Change size, contrast, background, position, etc.
- ✓ Time display can include tenths of seconds.
- ✓ Individual or group control of up to 99 units using a single RS232 port.
- ✓ Includes easy to use DOS "pop-up" screen editor that maintains 100 separate screens.
- ✓ Battery backed-up internal clock-calendar.

Unconditionally Guaranteed

HORITA®
Stuff You Can Use™

Performance • Quality • Reliability • Simplicity

Contact your local video dealer or
call (949) 489-0240 www.horita.com

Circle (221) on Free Info Card
See us at NAB Booth #L9773

I·D· Lithium Ion

NAB Booth L9583

WORKS

Better...
Longer...
Smarter...

But Costs & Weighs Less!



**What's YOUR Excuse for
Lugging Bricks?**

IDX Technology
Tel: (310) 891-2800 Fax: (310) 891-3600
Email: idx.usa@idx.tv Web Site: www.idx.tv

Circle (222) on Free Info Card, See us at NAB Booth #L9583

April 2001

Broadcast Engineering

217

TERACOM

COMPONENTS

For Users - By Users

SYSTEM SOLUTIONS

for
FM, VHF, UHF
DTV/DVB

Filters
Combiners
RF Components
Antenna Systems
Transmission Line
Cable Connectors
Engineering Software

For Further Information Please Contact:

Tel: +1 207-627-7474

Fax: +1 207-627-7473

Email: larry.boone@teracom-c.com

Web: www.teracomcomponents.com

Visit Us @
Booth 1909
Radio Hall



Circle (224) on Free Info Card

Today's and Tomorrow's
Long-term
Format Conversion
Solution.

XANTUS



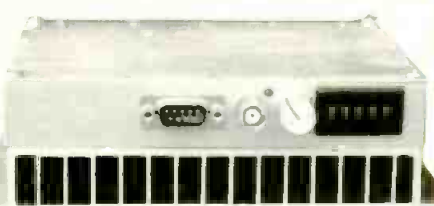
DTV Format and Standards Conversion Applications

- Superior picture quality via powerful platform
- Conversion and processing options may be added via CD ROM
- Supports current and future DTV standards

www.teranex.com
407-517-1086



Circle (225) on Free Info Card



VIDEO EQUIPMENT

FCC TYPE ACCEPTED

2.0, 2.5 & 7.0 GHz. BANDS

Video Links
Tower Cams
Weather Stations
Antennas

TRON-Tek, Inc.

6570-B East 51st Street
Tulsa, Oklahoma 74145
888-819-4877
<http://www.tron-tek.com>
email: tron@ionet.net

Circle (223) on Free Info Card

SONY



DSR-1500

100%
format friendly
editor

Upgrade without spending a fortune.
Make a trade at Studio Exchange!

Studio Exchange

Buy - Sell - Trade
New and Used

816 N. Victory Blvd.
Burbank, CA 91502

818-840-1351

Find us on the web at
Studio-exchange.com

Email for quotes:

Paul@studioexchange.com

Circle (226) on Free Info Card

CueBrowser



The multi-purpose asset review and management system that views low-resolution MPEG-1 digital assets from a computer desktop. It reviews material, segments programs and creates edit decision lists. CueBrowser operates on the Windows NT platform and provides shuttle/jog control using a graphical slider control.



FLORICAL
SYSTEMS

www.florical.com
sales@florical.com
tel: 352.372.8326
fax: 352.375.0859

Circle (227) on Free Info Card

DA-3100



PESA has upgraded its popular distribution amplifier line to take advantage of new developments in connector technology. It is now possible to offer analog, SDI and HDTV distribution amplifiers in the same low cost frame.

- 10 Cards in 2RU video or audio frames
- Wide selection of DA's and conversion cards
- Analog, SDI and HDTV in the same frame
- Single or dual power supplies



PESA
Switching
Systems

Tel: 631-845-5020
1-800-323-1008
Fax: 631-845-5023
www.pesa.com

Circle (229) on Free Info Card
See us at NAB Booth #L8757

Systems WIRELESS

www.systemswireless.com

Systems Wireless provides specialized knowledge in

- Sales
 - Rentals
 - Service
- of wireless broadcast equipment

including:
wireless microphones
wireless intercom systems
wireless IFB
wireless video

Contact us at:

swl@swl.com
800.542.3332

Circle (228) on Free Info Card
See us at NAB Booth #2763



Fear Not Any Feed!

Digital Processing Synchronizer

- 12-Bit Component Digital Video Processing
- Proprietary Multi-Mode Adaptive Comb Filter Decoder
- DigiDuplex Mode Provides Bi-Directional Analog/Digital Interface
- Integrated Video Framestore with Linear Keyer
- Animated AV Logo Inserter Option
- DV (1394) I/O Option

www.leitch.com
1-800-231-9673

Circle (230) on Free Info Card, See us at NAB Booth #L8620

The GALLERY

TALLY MAPPER™

- ◆ Tally Routing & Mapping
- ◆ One Button Operation
- ◆ Store Maps Internally
- ◆ Edit From a PC/Laptop



A Compact Solution,
Ideal for Mobile Units and
Multiple Production Setups.

Videoframe™
Control System Solutions
Tel: 530-477-2000

www.videoframesystems.com

Circle (231) on Free Info Card

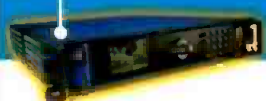
Everything Depends
on the Way You

Start

So start delivering affordable, reliable
video content with the **PowerVu Plus™**
Originator™ Encoder

- Secure broadcast applications —
PowerVu® CA and BISS
- Multichannel systems —
On-board mux
- Data broadcasting
- Built-in color video monitor
- 2U profile — ideal for SNG
or Contribution Feeds

More affordable. More reliable.
More powerful. Easy to use.



Want MORE?

See PowerVu at
NAB Booth S4142
Call 770.236.6190

www.scientificatlanta.com



**Scientific
Atlanta**

Bringing the Interactive
Experience Home.

Circle (232) on Free Info Card
See us at NAB Booth #S4142

Videoscope

7825 NW 29 STREET SUITE 145 MIAMI, FL 33122

TEL: 305-463-9449 FAX: 305-463-7889

SPARE PARTS SPECIAL SONY

MODEL	PART #	PRICE
PVW2600	DBR41R	\$425.00
PVW2650	DBR33R	LLAMAR
PVW2800	DBR39R	\$625.00
UVW1800	DBR39R	\$625.00
UVW1200	DBR41R	\$425.00
UVW1600	DBR41R	\$425.00

PINCH ROLLERS

SERIES UVW.....\$39.99
SERIES PVW.....\$39.99

MAINTENANCE KITS

PVW2600/UVW1600		PVW2800/UVW1800
HEAD DBR41R		HEAD DBR39R
PINCH ROLLER		PINCH ROLLER
LINING ASSY		LINING ASSY
REEL MOTOR		REEL MOTOR
CLEANING ROLLER		CLEANING ROLLER
\$625.00		\$825.00

INCREDIBLE SAVINGS ON U-MATIC MACHINES



VP-7020.....\$395.00

VO-5800.....CALL

VO-5850.....CALL

EVERYTHING IN STOCK!!!!!!

We have over 1/2 of million dollars in spare parts with discounts up to
75% off the wholesale price and ready to ship.

If you want to obtain a complete list of the parts with prices and
availability gives a call or send an e-mail and we will be glad to send you a
copy.

We will meet or beat any price

Web: www.videoscope.org E-mail: sales@videoscope.org

Circle (233) on Free Info Card



See online product demonstrations for these hot products.

Check them out at

www.broadcastengineering.com

Now you can see the industry's hottest products on *your* computer. Every advertisement and new product announcement featuring the Demo Room logo has a



streamed demonstration online. You can also view archived demos of previous Demo Room Stars from the Entertainment Technology online network.

Visit the Demo Room today!



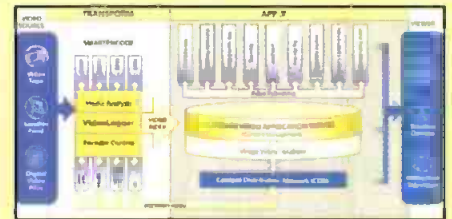
Tektronix AVDC100

Tektronix's AVDC100 audio-to-video delay corrector provides in-service monitoring and correction of A/V delay errors that occur during compression or other processing. The system uses digital watermarking technology to embed audio time reference signals into video programming. At any point downstream another AVDC100 can analyze the watermark and measure the lip-sync error. The system can then adjust the audio delay to ensure constant and proper alignment of the program audio and video signals. The AVDC100 corrects up to 30 fields or 1/2 second of variable lip-sync error when the video is delayed relative to the audio. After installation, all processing is automatic with instrument status instantly available from the two-line LCD panel and front panel LEDs.



**Grass Valley Group
Vibrint/Profile
platform technology**

In Grass Valley Group's new platform technology, the Vibrint Digital News Production Workgroup system and a new version of the Profile XP Media Platform work together to provide end-to-end support of both DVCPRO- and MPEG-based news production; new platform technology also features the Grass Valley MAN real-time shared storage option for the Profile XP Media Platform and the Profile Network Archive partial file restore software; system is compliant with the Grass Valley Group's ContentShare software platform for media asset management, allowing for integration with third-party systems such as VNI News Tracker and Avid's iNews Media Browse.



**Virage Video
Application Server**

Virage's Internet Video Application Platform allows video to be published, managed and distributed as easily as text. The platform supports enterprise-scale deployments of video and provides the user with the necessary infrastructure for seamlessly integrating Internet-ready video into a website or corporate intranet. The server enables users can create and maintain video-rich websites. Users can customize presentation of content to create new revenue streams and business applications. The system also allows searchable access to video collections. The video server integrates video with advertising, commerce, community, and other value-added applications.

Professional Services

JOHN H. BATTISON P.E.
CONSULTING BROADCAST ENGINEER,
FCC APPLICATIONS AM, FM, TV, LPTV
Antenna Design, Proofs, Fieldwork
2684 State Route 60 RD #1
Loudonville, OH 44842
419-994-3849 FAX 419-994-5419

NETCOM
STATE OF THE ART ENGINEERING
FOR AUDIO AND VIDEO
ENGINEERING DESIGN • CAD DRAFTING SERVICES
CABLE FABRICATION • PRE-WIRED PATCH PANEL RACKS
SYSTEM INSTALLATIONS • EQUIPMENT SALES
(201) 837-8424
FAX: (201) 837-8384
1465 PALISADE AVE., TEANECK, NJ 07666

D.L. MARKLEY
& Associates, Inc.
CONSULTING ENGINEERS
2104 West Moss Ave.
Peoria, Illinois 61604
Phone (309) 673-7511 • FAX (309) 673-8128
www.dlmarkley.com
Member AFCCE

video, audio, & automation electronics
serving manufacturers & systems integrators

electronics R & D
& custom product design

BARANTI GROUP INC
Professional Engineers
Ontario

phone (905) 479-0148
fax (905) 479-0149

AVID Symphony
"We'll beat other prices"
DCTV
special offer
(212) 966-4510 x288
www.dctvny.org

GILMER & ASSOCIATES, INC.
TECHNOLOGY / MANAGEMENT CONSULTANTS

BRAO GILMER
PRESIDENT

2207 RINGSMITH DR
ATLANTA, GA 30345
TEL (770) 414-9952
FAX (770) 493-7421
EMAIL bgilmer@airnet.com

Classifieds For Sale

www.bcs.tv
**We Buy
Trade
Consign
& Sell**
**The Best New &
Used Broadcast
Video Equipment
In The World**
Most Equipment is Warranted, Parts & Labor

BCS
BROADCAST
STORE

LOS ANGELES
818.551.5858
NEW YORK
212.268.8800
MIAMI
305.266.2112
Go With The Best e-mail: sales@bcs.tv

Circle (240) on Free Info Card

DIGITAL DISTRIBUTION AMP.
1 IN 4 OUT

- High Quality
- Low Cost
- Mini Pack
- Mounting Ears

\$285.00

GMZ Electronics.com
866.269.8442
email@gmzelectronics.com

**FOR
TOP
QUALITY
CASES**
WWW.chellis.com
TEL: 800-466-3351

VIDEO/AUDIO TEST PATTERN
SOURCES, DIST. AMP's & more.
Many Formats, Great prices.
GEKCO Inc. www.gekco.com
Toll Free: 888-435-7221

Complete News Network Facility For Sale
News Production & Sat. Distribution Eqp.
Equipment to be sold as Total Package
Eqp for sale- with or without Building.
Includes: Sony Network Control Center.
Robotic News Studio. (2) Sat. Uplink Trucks
Sat Control System. (4) Sat. Uplink Systems.
Multiple Downlink Systems
Sony Server Based Edit System.
14 ENG Camera Packages (SX)
Graphics & Audio Production Systems
Contact Bruce Staffel (210) 867-2811
or 210-490-4025

**PTL TEST
EQUIPMENT, INC.**
Save 30% - 70% on quality
reconditioned test equipment.
Tektronix - Hewlett Packard -
Leader - Videotek - MSI, etc.
Video - RF - Microwave - Fiberoptics
Phone (561) 747-3647
Fax (561) 575-4635
E-Mail: PTLTE@BELLSOUTH.NET
WEBSITE: WWW.PTLTEST.COM
BUY-SELL-LEASE-TRADE

WWW.BROADCASTENGINEERING.COM

Classifieds For Sale

Radial Broadcast Ready!



1-800-939-1001

AcousticsFirst
Toll-Free Number: **888-765-2900**

Full product line for sound control and noise elimination.
Web: <http://www.acousticsfirst.com>

PHILIPS VENUS 96 x 96 serial digital video router, with PS-400 power supply, manuals. CP-3000 control panels also available. Good condition, perfect for expanding existing Philips/BTS routing systems. \$42,500.00 For information e-mail info@filmworkers.com or call 312-664-9333.

Own a Part 15 FM broadcasting network like Radio Tour/Hawaii www.radiotour.net
e-mail - radiort@aloha.net

AVID'S For Sale! Inferno For Sale!

MC OFFLINE \$Call	Pre-Owned Specials		We will Purchase any Avid, Quantel Discreet Logic, Sony, All Decks, Grass Valley, Abekas, Camera's
MC 1000 \$Call	MC 9000XL	Inferno	
MC 9000 \$Call	MC 1000XL	Smoke	
Xpress Deluxe \$Call	Symphony 3.0	Quantel	
MC Film Composer \$Call	Avid DS 3.01	Domino	
MC 1000XL Mac/NT \$Call	Hendry Infinity Unlimited Layers		
MC 9000XL Mac/NT \$Call			
Xpress Elite Mac/NT \$Call			

Digital Reality

714-755-5580 (Office) 949-279-1087 (Cell)

Circle (241) on Free Info Card

PROFESSIONAL TELEPROMPTING SOFTWARE

for W95/98/W2000/NT. Affordable & easy-to-use.
Ask about our Broadcast Engineering discount.
Download FREE full functioning demos
www.drs-digitrax.com or call
530-666-4025

WhisperRoom INC.
SOUND ISOLATION ENCLOSURES

PH: 423-585-5827
FAX: 423-585-5831
E-MAIL: whisper@lcs.com
WEB SITE: www.whisperroom.com
116 S. Sugar Hollow Road
Morrislawn, Tennessee 37813

Vocal Booths
Broadcast Booths
etc....

Classifieds Services

Classifieds Equipment Rental

RENT Avid
Delivered. Anywhere.

MEDIA COMPOSER & DRIVE RENTALS

800.800.1361

MOVING PICTURE

Broadcast ENGINEERING
THE JOURNAL OF DIGITAL TELEVISION

Jennifer Shafer
1-800-896-9939
Classified Advertising Manager

THE DIGITAL ADDRESS THAT ECLIPSES THE REST.

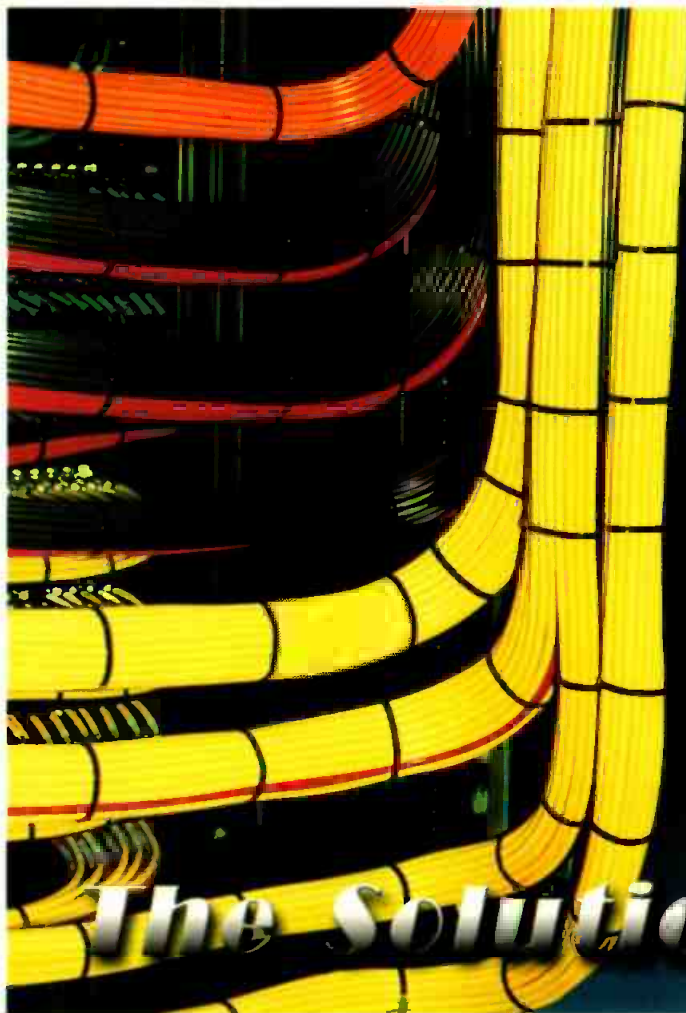
GE SATCOM C3

- Full Time Digital DigiCipher II Channels
- Fully Protected & Non-Preemptable
- Prestigious Cable Neighborhood at a Down-To-Earth Price

JONES EARTH SEGMENT

Contact: Doug Greene at 303.784.8809 or dgreene@jonescorp.com

Circle (242) on Free Info Card



Reflections IN Video

RIV ENGINEERING

WWW.RIVENGINEERING.COM

SALES@RIVENGINEERING.COM

**SYSTEMS INTEGRATION
ENGINEERING & SERVICE
SINCE 1978**

**6910 HAYVENHURST AVE, SUITE 100
VAN NUYS, CA 91406**

818.787.4552

The Solutions Provider

Circle (243) on Free Info Card

END OF YEAR LIQUIDATION.....ALL IN STOCK

SONY VO-9850 WITH TC....	300 HRS	\$4200.00
SONY VO-9800 WITH TC....	400 HRS	\$2400.00
SONY VO-9600		\$1100.00
SONY DSR-20 WITH 8 HRS.....		\$2600.00
SONY DSR-40	NEW	\$4150.00
SONY BVW-75 WITH TC.....		\$9900.00
SONY UVW-1800 WITH 400 HRS.....		\$6800.00
SONY VP-9000.....		\$1200.00
SONY VO-5850.....		\$750.00
SONY DVW-A500.....		\$42,000.00 B STOCK
SONY DVR-20.....		\$12,000.00
SONY DVR-28.....		\$19,500.00
SONY SVO-5800.....		\$3300.00
SONY DSR-80.....		\$7600.00 (55 HOURS)
SONY RM-450.....		\$999.00 (MANY AVAIL)
JVC-GYDV-500 USED.....		\$4150.00

These are just some of the specials....many more available....along with "closeouts, equipment auctions, rent to own plans, and high end broadcast equipment liquidations....we are part of a worldwide network:

WWW.AUDIOVIDEOSEARCH.COM • WWW.BROADCASTEQUIPMENTAUCTIONS.COM
(FREE TO USE) • WWW.HIGHENDBROADCAST.COM (LIQUIDATION WEBSITE)

WWW.SEARCHANDSELLIT.COM OWNED AND OPERATED BY U.S. CONGLOMERATIVE WORLDWIDE
1-818-562-3230

We have very low hours machines...they are hand picked by our engineering and sales staff.

Circle (244) on Free Info Card

ROHDE & SCHWARZ

Service & calibration of broadcast test & measurement equipment, analog & digital. For information call our toll free number: 1-877-438-2880

**Invest your
advertising
dollars where
your prospects
invest their
time...**

**Broadcast
ENGINEERING**
THE JOURNAL OF DIGITAL TELEVISION

Leave behind the traffic and congestion... and join one of the nation's highest-tech companies in Cheyenne, Wyoming. Here, you'll find a vibrant western city with clear skies, a lower cost of living and outstanding recreational and cultural amenities. You'll also find EchoStar, the leader in DBS (direct broadcast satellite). We have six satellites in orbit, with three more to launch in the future. Our DISH Network has over 5 million customers. And in Cheyenne, we have the nation's largest and most technically-advanced uplink center.

Consider joining us as:

- **Video Broadcast Engineer**
- **Earth Station Technicians**
- **Regional Field Engineers** (Chicago, Baltimore, Dallas, Sacramento)

You won't be in the metropolis any longer, but still a short drive from Denver, CO, and on the leading edge of technology. EchoStar offers excellent compensation and benefits that include matching 401(k) and profit sharing. To learn more and apply, visit our Web site. You may also forward your resume indicating job title in cover letter/subject heading to: **EchoStar Uplink Center, Attn: HR, 530 EchoStar Drive, Cheyenne, WY 82007. Fax: (307) 633-5533. E-mail: hr.cheyenne@echostar.com.**

Equal Opportunity Employer.

www.echostar.com

ECHOSTAR

dish

NETWORK


WE PLACE ENGINEERS • TECHNICIANS

Employer Paid Fees - Confidential
20 Years Personal Service
All locations in the
USA, Canada and Mexico



MAIL & FAX:
KEYSTONE INT'L, INC.

Dime Bank, 49 S. Main St., Pittston, PA 18640 USA
Phone (570) 655-7143 • Fax (570) 654-5765
website: keystoneint.com

We respond to all
Employee & Employer Inquiries
ALAN CORNISH / MARK KELLY

01/01

FOX 28, WSJV South Bend, Indiana is seeking a hands-on Assistant Chief Engineer. Primary responsibility is overseeing UHF transmitter maintenance and operation. Other duties to include studio equipment installation and repairs and be familiar with Mac and PC operating systems. FCC license or SBE certification required. Send resume, references and salary requirements to Rick Owens, Chief Engineer, Fox 28, P.O. Box 28, South Bend, IN 46624. No phone calls. EOE

MAINTENANCE TECHNICIAN WPVI-TV has a full-time position for qualified broadcast maintenance technician. Minimum of 5 years experience in broadcast TV maintenance necessary. Requires thorough knowledge and skills to run application programs for maintaining and controlling station automation, production/master control/routing switchers, still stores, video servers, and DTV encoders. Should be knowledgeable in maintenance and repair of analog broadcast equipment, and state of the art digital equipment. Position requires varied shifts, including nights and/or weekends. Mail resume or fax 215-581-4515 (no calls) to James D. Gilbert, Director of Engineering, WPVI-TV, 4100 City Ave., Suite 800, Philadelphia, PA 19131 EOE

MAINTENANCE/SYSTEMS ENGINEER: Immediate Opening - Full-time Position Self-motivated engineer wanted for video post-production facility. Experience with digital and analog signal systems and/or network systems a plus. Salary commensurate with experience. Send inquiries to: Randy@ForestPost.com

VERMONT PUBLIC TELEVISION TRANSMITTER MAINTENANCE TECHNICIAN: Maintain, install, and align transmission and related equipment such as UHF transmitters, microwave equipment, and test equipment at mountain top location. Must have a thorough working knowledge of video, audio, and RF technologies. Minimum of two years in high powered transmitter maintenance and FCC General Radiotelephone license required. Trouble shooting skills will be required from component level to systems level using meters, scopes, and spectrum analyzers. Working knowledge of microprocessor based equipment is a must. Competitive salary and benefits. Send cover letter and resume to: Vermont Public Television, Attn: Employment Office, 88 Ethan Allen Avenue, Colchester, VT 05446. Equal Opportunity Employer.

WANTED: Maintenance, design & production engineers for busy production equipment company. Knowledge of all formats, analog & digital VTR's, cameras, terminal equipment. Resumes to sdwyer@wexdervideo.com

BROADCAST MAINTENANCE ENGINEERS

NOW IS YOUR CHANCE TO WORK WITH THE LATEST TECHNOLOGY IN THE INDUSTRY!

CNN has an excellent opportunity for you to take your career to the next level. We are in search of Broadcast Maintenance Engineers with experience in digital audio and video production systems. You will play an integral role in the engineering of our 24-hour Cable News Networks.

CNN is a worker friendly environment that offers a competitive salary, continuing education and training. We offer excellent 401K matching, Braves/Flaws/Thrashers tickets, free AOL account, etc. Casual dress, 24 X 7 shift work, opportunities for advancement. Chance to train and work on the newest technology. A great company and a tremendous opportunity to work in the technology capital of the South!



THE WORLD'S
NEWSLEADER

Send Resumes to: David Costar, Technical Recruiter, cnn.engr.jobs@turner.com; 250 Williams St., Ste. 1250, Atlanta, GA 30303
EMAIL PREFERRED, no phone calls please!

Candidate should have an Associate degree (or equiv.) in electronics and 4 years minimum experience as a Maintenance Engineer working in television. Computer and Networking skills, and a strong knowledge of TV systems are highly desirable. Must be able to perform electronic repair and maintenance to the component level. SBE Certification a plus!

BROADCAST ENGINEER

DENVER, COLORADO

The position will be responsible for the day-to-day technical operation and maintenance of a new studio facility for nightly news production. Experience with a full range of production equipment is essential, including studio and ENG cameras, VTRs, audio consoles, linear and non-linear edit suites, and transmission equipment. Knowledge of Avid Newscutter and Phillips production switchers and routing systems a plus. Must be a self-starter and able to work a flexible shift. 3 years broadcast engineering experience and SBE certification preferred.

Qualified candidates apply on-line at <http://fox.recruitingcenter.net/publicjobs>, code #KC103861, or by mailing resume and cover letter to Fox Cable Networks, HR Dept. (#KC103861), 10000 Santa Monica Blvd., Los Angeles, CA 90067. EOE.



CHIEF ENGINEER is needed in Hudson, Massachusetts for WHUB-TV/WHUB-DT. Qualifications: Minimum of 5 years experience as an Assistant Chief Engineer or a Chief Engineer. Experience in all areas of television system maintenance required including "hands on" maintenance and repair of analog and digital UHF television transmitters and associated processing equipment, satellite down link and fiber optic systems. Must be familiar with FCC rules and regulations and be capable of preparing and managing capital and operational budgets. Familiarity with operation and support of computer systems and computer networks also required. SBE/FCC certification a plus. Send or fax resume and cover letter to: WHUB-TV Gerard Gerrits Jr., 71 Parmenter Road, Hudson, MA 01749. Fax: 978-562-1166 Email: gerritsG@usabroadcasting.com



weather.com

BROADCAST SYSTEMS ENGINEER

Will maintain and repair analog, digital, video and audio systems; including routers, switchers, automation systems, VTR's, cameras, and related broadcast technology. Must have ability and desire to develop skills in UNIX, Windows NT, and networking systems. Required: 4 years experience as Broadcast Maintenance Engineer, with TV broadcast related systems and equipment.

Come join our team! Send your resume today to: Jobs@weather.com, *Reference " Engineer BEng" in response.

The Weather Channel, 300 Interstate North Parkway, Atlanta, GA 30339

TV CHIEF ENGINEER wanted for Full Power UHF station in the Iowa City Iowa. Responsible for hands-on installation and maintenance of studio broadcasting equipment, maintaining the on-air performance and FCC compliance of the broadcasting facility. DVC Pro, UHF, computers and LAN network experience a plus. SBE certification or FCC license a plus. Must be able to troubleshoot electronic and mechanical systems to the component level. Position Open until filled. Mail resume to: KWKB-TV, 1547 Baker Avenue, West Branch, IA 52358, Attn: Mark Culbertson, General Manager Fax: 319-643-3124, E-mail: markculbertson@kwkb.com

WWW.BROADCASTENGINEERING.COM

TV MAINTENANCE TECHNICIAN: WTAE-TV, the Hearst-Argyle ABC Affiliate in Pittsburgh, has an immediate need for an experienced maintenance person. Ideal candidate should have significant experience working with Windows NT operating system, Unix, Mac, OS, PCS, and computer network techniques in general. Candidates experienced with Television transmitters, DVC Pro and Beta SP videotape formats, Sony LMS, video switchers, audio consoles, studio cameras, ENG, SNG, and automation equipment will be given preference. Experience with digital video is a plus. SBE certification preferred. Must have a valid driver's license. Motor Vehicle Record check required. Salary up to high \$40s annual, commensurate with experience. Benefits include medical, dental, 401(k), pension plan, and an employee stock purchase plan. For consideration send resume and cover letter including source of referral to: Code MT-021401, WTAE-TV, 400 Ardmore Boulevard, Pittsburgh, PA 15221. WTAE-TV is an equal opportunity employer.

STUDIO MAINTENANCE ENGINEER: Must be able to perform the following duties: install and maintain studio transmission equipment including video switchers, audio consoles, DVE, CG, SS, cameras, and robotics. Familiarity with automation systems and master control environment. Should possess a general computer/networking background. Must be able to work on a rotating shift schedule. Candidate should have an engineering degree or equivalent technical training. SBE/FCC certification a plus. If you want to be a part of the exciting transition to HDTV in the most exciting city in the world, please send your resume and cover letter: Kurt Hanson, Chief Engineer, WABC-TV, 7 Lincoln Square, New York, NY 10023. No telephone call or faxes please. We are equal opportunity employer.

ASSISTANT CHIEF ENGINEER: KMAX-TV, Sacramento, CA. Minimum five years experience in television operations and maintenance. Strong background in transmitters, translators and microwave systems. SBE Certification a plus. Resumes to: KMAX-TV; 500 Media Place; Sacramento, CA 95815. EOE

**Broadcast
ENGINEERING**
THE JOURNAL OF DIGITAL TELEVISION

MASTER CONTROL OPERATOR

Telemundo, the fastest growing Hispanic broadcast network seeks: Master Control Operators experienced with Louth Automation for immediate full time openings. Prior experience with manual switching operations a plus. Bilingual (Spanish/English) preferred. Various shifts available. We offer an excellent benefits package & great working environment. Salary starting at \$40k+/yr. This is not an MIS/Computer related job. EOE, M/F/D/V.

Please send all resumes and salary requirements to:

Telemundo Network Group LLC

Attn: Human Resources 2290 West 8th Avenue, Hialeah, FL 33010
Fax: (305) 889-7079. Email: gxorejas@telemundo.com



TRANSMITTER ENGINEER (BROADCAST ENGINEER SR), TUCSON, AZ: KUAT Communications Group, the public television and radio service in Southern Arizona, seeks applicants to provide technical support to broadcast facilities in repair, maintenance, installation and modification of high power transmitting equipment in the studio and at remote sites. For more information regarding KUAT, the U of A, and the Tucson area, browse the KUAT home page at: <http://www.kuat.org/> REQ'D: Associate's degree in electronics, broadcasting or related field AND 3 years of experience in broadcast engineering which includes equipment repair & installation; OR, 5 years of experience in broadcast engineering which includes equipment repair and installation. Salary: up to \$33,107 annually plus complete UA benefits. To apply, please submit a letter of interest and resume referencing Job #19853 to Human Resources, 888 N Euclid, #114, P.O. Box 210158, Tucson, AZ 85721-0158. Review of materials will begin 3/2/01 and will continue until the position is filled. The University of Arizona is an EEO/AA Employer-M/W/D/V.

FIELD SUPPORT SPECIALIST, OmniBus Systems Inc. (OSI) seeks individuals for its expanding US East Coast office. Installation/configuration and commissioning of OSI and related OEM equipment and software. Knowledge of PC networks/operating systems required, broadcast equipment an advantage. Update OSI project documentation, communicate with R&D, customer support departments. Frequent travel. Competitive compensation, generous vacation, 401K, benefits. Please send resume and cover letter to: Omnibus Systems Incorporated. Fax: (530) 470-1718 email: opportunities@omnibussystems.com No phone calls, please. www.omnibus.tv We are an Equal Opportunity Employer.

CHIEF ENGINEER: CONUS Communications, the pioneer in 24/7 satellite newsgathering, is seeking a Chief Engineer in the St. Paul, MN, office. Responsibilities include: · Overseeing the day-to-day operations of the company's engineering department including maintenance, inventory, staff recruitment, training, and personnel reviews · Receiving direct reports from satcom operations, broadcast engineering, information services, and field engineering departments Qualifications include: · College degree preferred and at least 10 years of relevant experience required · FCC General Radio Telephone license required · Must be qualified to hold a commercial driver's license and must be able to obtain security clearance if needed · High degree of organizational skills and ability to function as a team leader · Good maintenance skills in television broadcast production and satellite transmission of television programming · Familiarity with computers and local area networks · Business training and previous supervisory experienced preferred. Interested candidates should please send / fax resume to: CONUS Communications, Human Resources Department, Job # 16-01, 3415 University Avenue, St. Paul, MN 55114. Fax: (651) 642-4314 Email: apply@hbi.com Jobline: (952) 253-5780 No Telephone Calls Please. An Equal Opportunity Employer

MEDIA MAINTENANCE/ELECTRONICS TECHNICIAN, Full-time permanent lead techposition. Need a self-motivated individual with video system experience and strong service bench skills. Obtain application from jobs@bcc.ctc.edu. Call BCC Jobline at 425-564-2082. www.bcc.ctc.edu/joblist/ Open until filled. EEO.

Ad Index

	Page #	Reader Service #	Advertiser Hotline	Website Address
Accom	189	200	650-328-3818	accom.com
ADC Broadcast Products	85	147	800-726-4266	adc.com/broadcast
Adherent Ltd. 139, 141, 143	175			adherent.com
AJA Video	174	188	530-274-2048	aja.com
Andrew Corp. 26	114		708-349-3300	andrew.com
Angenieux	163	181	201-812-3858	angenieux.com
Anton/Bauer	91	152	800-422-3473	antonbauer.com
APW Zero Cases	204	214	801-298-5900	zerocases.com
Aspen Electronics	97	154	714-379-2515	aspenelectronics.com
Audio-Technica U.S., Inc. 42			330-686-2600	audio-technica.com
Audiovideo Search.com	224	244	818-562-3230	audiovideosearch.com
AutoPatch	179	192	509-235-2636	autopatch.com
Avica Technology Group	121	166	310-450-9090	avicatech.com
Avid Technology	51	129	800-949-2843	avid.com
Axon Digital Design BV	145	176	888-919-9379	axon.nl
Azden Corp. 65	134		516-328-7500	azdencorp.com
BarcoNet	123	167	770-590-3600	barconet.com
B&H Photo-Video	206-209	217-218	212-239-7500	bnhphotovideo.com
Broadcast Microwave Services . 162	180		858-560-8601	bms-inc.com
Broadcast Store	222	240	818-551-5858	broadcaststore.com
Burst Communications	196	207	303-649-9600	burst.com
Calrec Audio Ltd. 99	155		142-284-2159	calrec.com
Canon USA Broadcast Lens	61	132	800-321-4388	usa.canon.com
Carlson	182	195	415-677-0141	carlson.dc.com
Chyron Graphics	10-11	106	631-845-2000	chyron.com
Ciprico	165	182	800-727-4669	ciprico.com
Comark/Thomcast	67	135	888-872-8505	thomcastcom.com
Communications Specialties 147	177		631-273-0404	commspecial.com
Datatek, Inc. 125	168		800-882-9100	datateknj.com
Dielectric	167	183	207-655-4555	dielectric.com
Digibid	76		609-720-4607	digibid.com
Digital Reality	223	241	714-755-5580	
Discreet Logic	115	163	800-869-3504	discreet.com
Digital Media Online	59,63,101		714-384-3058	digitalmedianet.com
DNF Industries	182	195	818-252-0198	dnfcontrols.com
Dolby Labs Inc. 19	110		415-645-5000	dolby.com
Domore Inc. 202	212		219-293-0621	
DTV	198			
E.A.O. AG	80	143	203-877-4577	eao.com
Encoda Systems	69,71	136,138	303-237-4000	encodasystems.com
ESE	190,217	201,219	310-322-2136	ese-webcom
Euphonix	17	109	650-855-0400	euphonix.com
Evertz Microsystems Ltd. 103	157		905-335-3700	evertz.com
Extron Electronics	33	119	714-491-1500	extron.com
Fiber Options	204	215	800-342-3748	fiberoptions.com
FloriCal Systems Inc. 45,219	126,227		352-372-8326	florical.com
Folsom Research Inc. 177	190		916-859-2500	folsom.com
Fortel DTV	169,217	184,220	404-885-9555	forteldtv.com
Fujinon	171	186	800-553-6611	fujinon.co.jp
Gepco	194	205	847-795-9555	gepco.com
Grass Valley Group	21	111	800-998-3588	grassvalleygroup.com
Hamlet Video	28	116	310-457-4090	hamletvideo.com
Harmonic	43	125	408-944-6700	harmonicinc.com
Harris Corp./Broadcast Div. 3	104		800-4HARRIS	harris.com
Horita	217	221	949-489-0240	horita.com
IBC	197			ibc.org
IDX Technologies	173,217	187,222	310-891-2800	idxtek.com
iNews	205	216	608-273-5876	inews.com
Inscriber Technology	41	123	800-363-3400	inscriber.com
Inter BEE	195			bee.jesa.or.jp/
I.O. Partners	192	203	214-496-9300	iopartners.com
Itelco	195	173	303-464-8000	itelco-usa.com
Jones Earth Segment, Inc. 223	242		303-784-8809	jonesradio.com
Kaydara	83	146		kaydara.com
Ktech Telecommunications	49	128	818-361-2248	ktechtelecom.com
Laird Telemedia	159	178	800-898-0759	lairdtelemedia.com

Sales Offices

WEST

Duane Hefner
5236 Colodny Ave., Suite 108
Agoura Hills, CA 91301
(818) 707-6476
Fax: (818) 707-2313
dnhefner@worldnet.att.net

EAST

Josh Gordon
335 Court Street, Suite #9
Brooklyn, NY 11231
(718) 802-0488
Fax: (718) 522-4751

EAST/MIDWEST

Joanne Melton
5 Penn Plaza, 13th Floor
New York, NY 10001
(212) 613-9709
Fax: (212) 563-3025
joanne_melton@intertec.com

INTERNATIONAL

Richard Woolley
Tony Chapman
P.O. Box 250
Banbury, Oxon OX16 8YJ U.K.
+44 (0) 1295 278407
Fax: +44 (0) 1295 278408
richardwoolley@compuserve.com

REPRINTS

Reprint Management Resources
(717)399-1900
Fax: (717)399-8900

JAPAN

Orient Echo, Inc.
Mashy Yoshikawa
1101 Grand Maison
Shimomiyabi-Cho 2-18
Shinjuku-ku, Tokyo 162, Japan
(3) +81 3235-5961
Fax: (3) +81 3235-5852

CLASSIFIED ADVERTISING OVERLAND PARK, KS

Jennifer Shafer
P.O. Box 12901
Overland Park, KS 66282
(800) 896-9939 (913) 967-1732
Fax: (913) 967-1735

LIST RENTAL SERVICES

Lisa Majewski
9800 Metcalf
Overland Park, KS 66212-2215
(913) 967-1872
Fax: (913) 967-1897

CUSTOMER SERVICE:

913-967-7107 OR 800-441-0294

BROADCAST ENGINEERING (ISSN 0007-1994) is published monthly (except semi-monthly in May and December) and mailed free to qualified persons by Intertec Publishing, 9800 Metcalf, Overland Park, KS 66212-2216. Periodicals with Ride-Along Enclosure postage paid at Shawnee Mission, KS, and additional mailing offices. Canada Post International Publications Mail (Canadian Distribution) Sales Agreement No. 0956295. POSTMASTER: Send address changes to *Broadcast Engineering*, P.O. Box 12902, Overland Park, KS 66282-2902. CORRESPONDENCE: Editorial and Advertising: 9800 Metcalf, Overland Park, KS 66212-2216 Phone: 913-341-1300; Edit. fax: 913-967-1905. Advert. fax: 913-967-1904. ©2001 by Intertec Publishing. All rights reserved.

	Page #	Reader Service #	Advertiser Hotline	Website Address
Leader Instruments Corp.	133	172	800-645-5104	leaderusa.com
LeBLANC Broadcast Inc.	175	189		leblanc-group.com
Leitch Incorporated	BC,35,87,103,120,149		800-231-9673	leitch.com
Lemo USA Inc.	109	160	800-444-5366	lemo.ch
Litton Electron Devices	37	121	800-861-1843	littonedd.com
Mackie Designs Inc.	9	105	800-258-6883	mackie.com
Magni Systems	38	121	800-258-6883	magnisystems.com
Marconi Applied Technologies ...	29	117	914-592-6050	marconitech.com
Maxwell	215	234	800-533-2836	maxellpromedia.com
Medio Stream	193	204	408-452-5500	mediostream.com
Microwave Radio	161	179	978-671-5700	mrcbroadcast.com
Midas, an EVI Audio Co.	203	213	+441562741515	
Miranda Technologies Inc.	13	107	514-333-1772	miranda.com
Modulation Sciences	181	193	732-302-0206	modsci.com
Motorola Broadband	191	202	215-323-1000	motorola.com/broadband
MYAT	86	148	201-767-5380	myat.com
NAB Broadcasters	216		888-740-4622	nab.org
Nucomm Inc.	199	208	908-852-3700	nucomm.com
Omneon	39	122	408-558-2113	omneon.com
Opticomm Corp.	30-31	118	858-450-0143	opticomm.com
OxTel	201	211	877-446-9835	oxtel.com
Panasonic Broadcast & Digital	7		800-528-8601	panasonic.com/broadcast
PESA Switching Systems ..	75,219	140,229	800-328-1008	pesa.com
Philips Broadcast	79	142	801-972-8000	broadcast.philips.com
Pixel Instruments Corp.	178	191	408-871-1975	pixelinstruments.com
Quantel Ltd.	25	113	446-354-8222	quantel.com
Reflections in Video	224	243	818-787-4552	
RFS Broadcast	117	164	203-239-3311	rfsbroadcast.com
Rhde & Schwarz	170	185	301-459-8800	rsd.de
Ross Video Ltd.	183	196	613-652-4886	rossvideo.com
Sachtler Corp.	15	108	516-867-4900	sachtler.de
SeaChange	135	234	978-897-0100	schange.com
Scientific-Atlanta, Inc.	127,220	169,232	770-236-6189	sciatl.com
Scopus Network Tech.	89	150	+97235576200	
Sierra Video Systems	200	209	530-478-1000	sierravideo.com
Sigma Electronics Inc.	137	174	717-569-2681	sigmaelectronics.com
SGI	119	165	650-933-6988	
Snell & Wilcox Ltd.	46-47	127	408-260-1000	snellwilcox.com
Snell & Wilcox Ltd.	55,57	130	408-260-1000	snellwilcox.com
Solid State Logic	185	197	+441865842300	solid-state-logic.com
Scny Broadcast & Professional Co.	4-5		800-472-7669	sony.com/professional
Scny Recording Media	77	141	800-439-SONY	
Staco Energy Products Co.	196	206	513-253-1191	stacoenergy.com
Stagetec GMBH	105	158	818-701-6201	stagetec.com
Standard Communications	129	170	310-532-5300	standardcomm.com
Studio Exchange	218	226	818-840-1351	studio-exchange.com
Sundance Digital	188	199	972-444-8442	SundanceDigital.com
Systems Wireless Ltd.	187,219	198,228	800-542-3332	systemswireless.com
Tandberg Television	81	144		hotstuff-tv.com
Tektronix	131	171	503-627-2151	tektronix.com
Telecast Fiber Systems Inc.	90	151	508-754-4858	telecast-fiber.com
Telemetrics, Inc.	27	115	201-848-9818	telemetricsinc.com
Telex	23	112	877-863-4169	telex.com
Teracom	218	224		
TeraNex	107,218	159,225	407-517-1086	teranex.com
Thomson Broadcast	111	161	800-882-1824	thomsonbroad.com
Trompeter Electronics	70	137	805-497-6400	trompeter.com
Tron-Tek, Inc.	218	223	918-663-4877	tron-tek.com
Utah Scientific	113	162	801-575-8801	utcomteckvideo.com
VideoFrame	220	231	530-477-2000	videoframesystems.com
Videoscope	220	233	305-463-7880	videoscope.org
VideoTek, Inc.	IBC	102	800-800-5719	videotek.com
Wheatstone Corporation	IFC	101	252-638-7000	wheatstone.com
Winsted Corporation	95	153	800-559-6691	winsted.com
Zandar Technologies	82	145		zandar.com
360 Systems	73	139	818-991-0360	360systems.com

EDITORIAL

Brad Dick, Editor
Jim Saladin, Senior Associate Editor
Laura Collins, Associate Editor

ART

Laura Jones, Art Director

TECHNICAL CONSULTANTS

Brad Gilmer, Computers & Networking
John H. Battison, P.E., Antennas/Radiation
Michael Robin, Digital Video
Donald L. Markley, Transmission Facilities
Harry C. Martin, Legal
Larry Bloomfield, News Technology Editor
Paul McGoldrick, Industry Watcher

BUSINESS

John Torrey, V.P. Entertainment Division
Dennis Triola, Group Publisher
Jennifer Weir, Marketing Director
Sonja Shaffer, Advertising Coordinator
Mary Mitchell, Classified Ads. Coordinator
Sherri Gronli, Corporate Circulation Director
Gayle Hutchens, Circulation Manager

INTERTEC Publishing

Timothy M. Andrews, Chief Executive Officer
Ron Wall, President
John Skeels, President, Corporate Services
Stephanie Hanaway, Div. Dir. of Marketing

PRIMEDIA Business to Business Group

Craig Reiss, Chief Creative Officer

PRIMEDIA Inc.

Tom Rogers, Chairman and CEO
Charles McCurdy, President
Beverly C. Chell, Vice Chairman

MEMBER ORGANIZATIONS

Sustaining Members of:
• Acoustical Society of America
• Society of Broadcast Engineers
• Society of Motion Picture and TV Engineers
• Society of Cable & Telecommunications Engineers

Member, American Business Media

Member, BPA International

Affiliate Member,

International Teleproduction Society



BROADCAST ENGINEERING is edited for corporate management, engineers/technicians and other management personnel at commercial and public TV stations, post-production and recording studios, broadcast networks, cable, telephone and satellite production centers and networks.

SUBSCRIPTIONS: Non-qualified persons may subscribe at the following rates: United States and Canada; one year, \$65.00. Qualified and non-qualified persons in all other countries; one year, \$80.00 (surface mail); \$145.00 (air mail). Subscription information: P.O. Box 12937, Overland Park, KS 66282-2937.

Photocopy authorization for internal or personal use is granted by PRIMEDIA Intertec, provided that the base fee of U.S. \$2.25 per copy, plus U.S. \$00.00 per page is paid directly to Copyright Clearance Center, 222 Rosewood Dr., Danvers, MA 01923. The fee code for users of the Transactional Reporting Service is ISSN 0361-0942/2001 \$2.25+00.00. For those organizations that have been granted a photocopy license by CCC, a separate system of payment has been arranged. Prior to photocopying items for classroom use, contact CCC at (978)750-8400. For large quantity photocopy or reprint requirements contact Reprint Management Services, 717-399-1900. For microfilm copies call or write Bell & Howell Info., 300 N. Zeeb Rd., P.O. Box 1346, Ann Arbor, MI 48106-1346. Phone: (313)761-4700 or (800)521-0600.



©2001 by Intertec Publishing. All rights reserved.

The government wants to help

BY PAUL MCGOLDRICK



Although news out of Los Alamos is usually rather muted, the Department of Energy's National Laboratory has been the subject of the news rather more often in the last year than wanted by the Department: From a suspected spy, with hard drives that should have been in the vault being found by the copier, to a devastating fire that was started by another Government department, the Lab has had its share of reporters' ink. Now a breakthrough in compression algorithms brings the Lab right into the broadcasting arena.

The Lab announced that an algorithm that was developed for image compression in underground nuclear testing is "capable of compressing a HDTV datastream to the point where the HDTV and analog signals can be broadcast over the same channel." The implications of this technology are quite staggering – and maybe even offer a lifeline for some small market stations.

Instead of simulcasting analog and DTV on different channels the Lab is saying that you can broadcast your analog signal and then superimpose your DTV data with that signal. The result is certainly analogous to the conversion days of monochrome to NTSC – and it also has some limitations with a not-completely-perfect compression/decompression. But it would mean that an older analog receiver could take the signal as transmitted and think it is an NTSC signal; the digital receiver, with a software loop, would identify the digital data in the channel and extract it for reception and decoding. The losses in the digital signal are stated by the Lab to be about 20 percent of what would have been transmitted for a full HDTV signal stream. One of the problems, apparently, is that sync signals have to be left untouched so there is "dead" processing

time during those intervals when a digital receiver would still be working away.

The exact operation of the algorithm isn't being discussed by the Lab but, apparently, the vestigial sideband is being employed with some sort of quadrature modulation that the analog receiver does not understand, and

modification like this practically impossible. There also needs to be testing done very quickly to see whether this new format of signal allows the present channel allocations to still work; certainly it is unlikely that the scientists at Los Alamos have considered such mundane needs.

The implications of this technology are quite staggering – and maybe even offer a lifeline for some small market stations.

some letter-boxing space is also used which the analog receiver will see as gray instead of black.

The phrasing by the Los Alamos statements, using the algorithm's developer (George Nickel) as the mouthpiece, tends to suggest that the Lab thinks there would be the chance for the existing analog channel to have the DTV signal added to it; but it is obviously too late to stop the roll out of the new channels allocated to broadcasters. In any case, the older channels have been virtually presold, with their auction values already included in the Government's budget numbers. But even the notion that a broadcaster could still broadcast an analog signal – but on the new channel – is rather exciting. Those with analog receivers could simply retune to the new channel and the original channel could be closed down. As the market gets more used to DTV the costs of making the conversion to a digital receiver will tumble and, eventually, the analog service could be curtailed.

If this technology is going to be used, things need to be addressed quite smartly – before there are enough HDTV receivers or tuners sold to make a

This is something that needs to be brought to the attention of the FCC as swiftly as possible. Instead of being in a punishing role for what it perceives are delay tactics by broadcasters, here is a chance for the Commission and broadcasters to both get what they need at the same time. And it makes possible that the switchover date for the standards can really be met – which will please the fiscal hearts in Congress as well.

But there is a snag to all this. The Lab considers this compression algorithm to be a commercial thing – something to license. That is simply impossible if there is to be universal adoption of such a standard, and I have a really hard time understanding how taxpayers can cough up for research such as this and not be allowed to reap the rewards of it. This is not like a NASA project that turns into a commercial product to be manufactured and sold by a company who is at risk with its funds in doing so; this should be a public standard. Then we will be able to say, at least once, that the Government was here to help us. ■

Paul McGoldrick is an industry consultant based on the West Coast.

Preview
at NAB '01
Booth #L9622

Bucky Is Baffled.

Chief Engineer Bob Can Help.



We Are Here.



The **Videotek STM-350** is the solution!

In the past, when Bucky had serious technical problems Chief Engineer Bob would come to his rescue, at any cost, to save the day.

Now, when Bucky is confronted with baffling technical issues, Bob can evaluate the situation and cost effectively take immediate corrective action. From anywhere in the world, Bob can use his computer and, in real-time, view the critical video and audio parameters, assess the situation and make the technical call.

The Videotek STM-350 Streaming Test and Measurement instrument, in conjunction with the already popular VTM-300/400HD On-Screen Monitors, provides the perfect networked, quality assurance solution. Alarm data, waveforms, vector, video and audio displays can be viewed from any remote site, using standard LAN, WAN or Internet connections, in real-time.

Today, the problem is solved quickly with Videotek's STM-350. Bucky goes on with the show. Bob is satisfied with a job well done, and costs to management are dramatically reduced. Another successful team effort with the latest test and measurement technology from Videotek.

So find out for yourself what hundreds of leading broadcast facilities already know—when you need dependable, reliable broadcast signal solutions—**WE ARE HERE.**

Call Videotek today!

VIDEOTEK
A Zero Defects Company

People Who Use Videotek Think Clearer.SM

Toll Free: 800-800-5719 www.videotek.com
Direct: 610-327-2292

Circle (102) on Free Info Card

www.americanradiohistory.com



True Sharing?

**It's the key reason
our transmission servers have grown up
strong and powerful.**

In 1994, we pioneered the shared-storage server architecture that broadcasters are rapidly adopting as today's standard. And while our competitors are still figuring out how to best implement it, we've been refining its integration for years. Why is this important for you?

Your transmission server must be absolutely reliable and easily scalable, while lowering your costs of operation. A true shared-storage solution from Leitch delivers all of that in the easiest-to-operate and most flexible server on the market. Our Fibre Channel architecture provides simultaneous direct access



for as many as 44 users, to up to 7 terabytes of content. And that's with no file transfers. None.

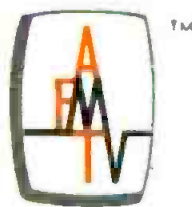
Single channel or multi-channel master transmission. From basic commercial insertion to round-the-clock program payout. Stand-alone stations or group operations linked via IP WAN networking. But don't just take what we're telling you on faith. Call us. We'll show you how integrating the industry's most powerful transmission server into your operation can be like – well, child's play.

See us at NAB Booth #L8620

Talk to Leitch. The people who invented the shared-storage broadcast server.

Hong Kong +852 2776 0628 Canada +1 (416) 445 9640 USA East +1 (800) 231 9673 USA West +1 (888) 843 7004 Europe +44 (0) 1483 591000
Australia +61 (2) 9939 3355 Japan +81 (3) 5423 3631 Brazil +55 (11) 3151 5093 Latin America +1 (305) 512 0045

www.leitch.com
1-800-231-9673



Broadcast Engineering

*the technical journal
of the broadcast-
communications industry*



**Remote
broadcasting**

A classic renewed.



The first issue of *Broadcast Engineering* magazine rolled off the presses in May, 1959, almost 39 years ago. Throughout those years, *Broadcast Engineering* was the relied upon technical resource and trusted friend of engineers and technical managers—something we're very proud of. Over those years, you might say we've become the classic in the field where others have come and gone.

Almost two years ago we began a detailed study of readership needs. Now, after more than 2000 surveys, after almost 100 telephone interviews, after hundreds of hours of staff labor, we present the results of those efforts: a newly designed *Broadcast Engineering*. We call it a classic renewed.

So thanks for making *Broadcast Engineering* magazine a part of your professional career for the past 39 years. We're proud to have played an important role in broadcasting's history—and we look forward to continuing our leadership in tomorrow's exciting digital future!

Broadcast Engineering — The Journal of Digital Television