A supplement to *Broadcast Engineering* - December 2004

Broadcast Engineering®

THE JOURNAL OF DIGITAL TELEVISION

2005

2005 DIGITAL REFERENCE GUIDE

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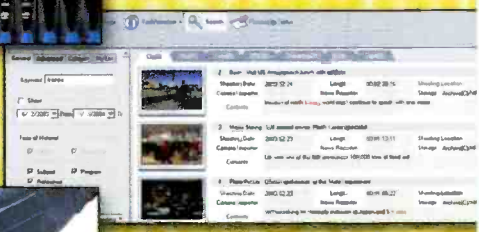

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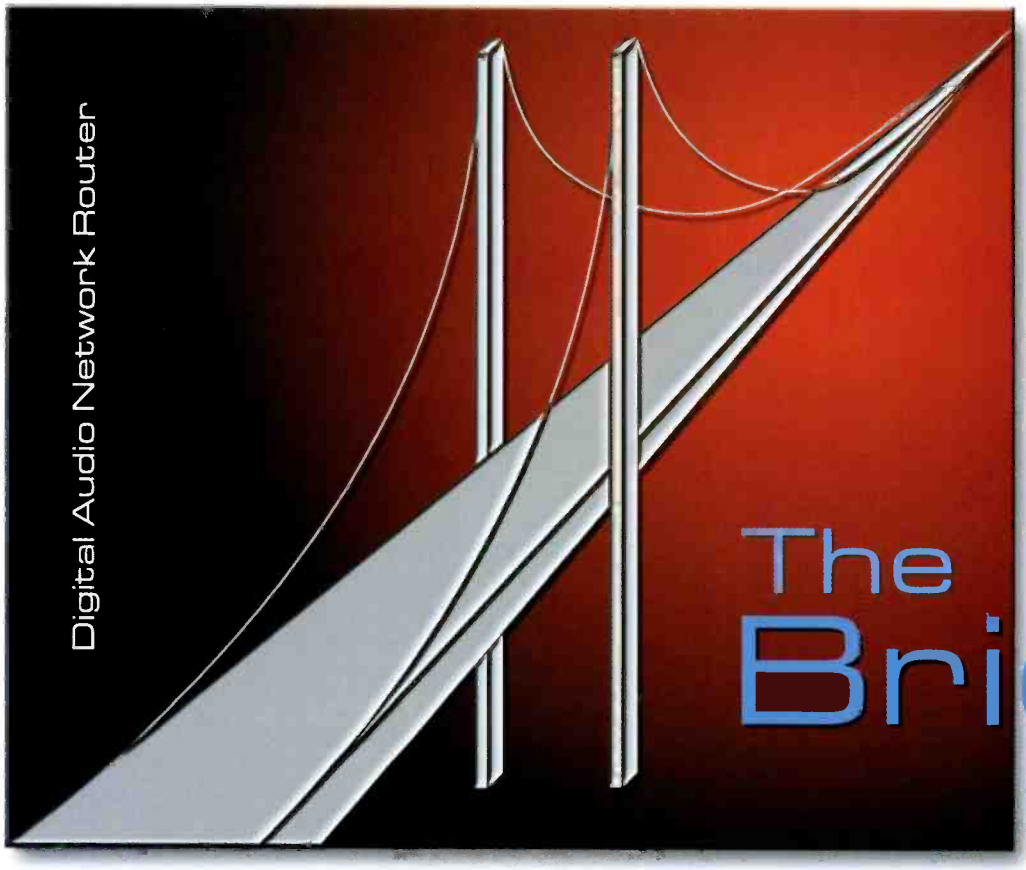
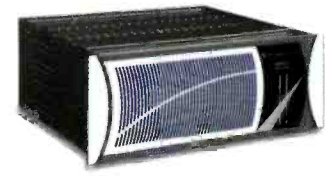


The Bridge Router can hold all the electronics you'll need for a small console: I/O cards, mix engines, and DSP processors. Naturally it can also have automatic fail-over DSP and CPU cards to keep you on-air. You can expand the system with a simple cage-to-cage interconnect.

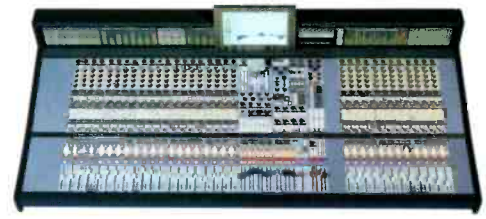


It's not just a Digital Console, It's an ENTIRE Audio Infrastructure

You Can Start with a simple AES router with analog and digital inputs and outputs. From there you can add logic I/O cards and scheduling software; you can link multiple master bridge cages together to achieve thousands and thousands of I/O ports; you can create a custom system that includes multiple smaller remote satellite cages— with everything interconnected via CAT5 or fiberoptic links.

But That's Just the Beginning: you can also add mix engine cards, interface to your automation system; you can choose from two different WHEATSTONE series control surfaces (D-5.1 or D-9), each specially configured for production room, on-air or remote truck applications. We also provide a full complement of Ethernet protocol remote router control panels, as well as a complete family of plug-in modules that interface the routing system to existing Wheatstone digital and analog standalone consoles.

The D-9 is Compact yet Powerful:
It can route, generate and monitor 5.1 surround signals and produce simultaneous 5.1 and stereo master signals for your dual broadcast chain. The console also provides extensive, rapid communication paths throughout your entire Bridge system. Motorized faders and control setting storage and recall make show-to-show transitions fast, easy and accurate.



Wheatstone Knows Live Audio. The D-5.1 is loaded with MXMs, foldbacks, and clear easy-to-read displays. You'll have all the power you need when the news breaks! Its intuitive layout helps your operators work error-free, and it can handle and generate all the 5.1 content and simultaneous stereo capability any large or medium market station could need.

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Read,vote and win
a Broadcast Engineering T-shirt!

This year's *Digital Reference Guide* gathers in one printed source all the information you need to locate products and vendors for your next project.

The information is provided by more than 1000 vendors in response to e-mails requesting data. This publication summarizes their responses, listing products manufactured, corporate phone numbers and addresses. If you need to find product vendors, start with the Product Index on page 6.

If you're looking for contact information for a specific vendor, turn to page 87.

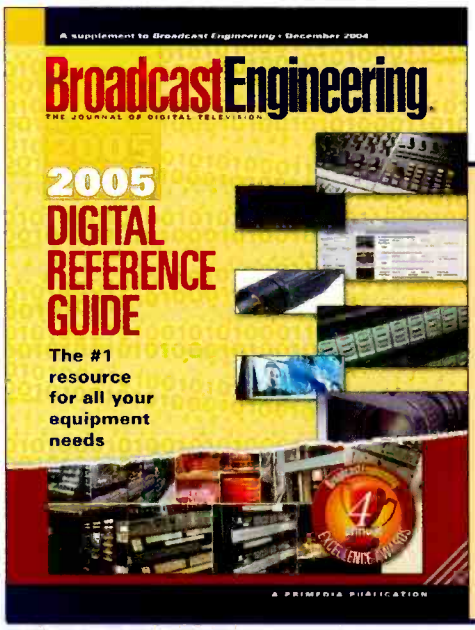
This entire publication is duplicated on the *Broadcast Engineering* Web site. You can search electronically for any vendor or product information with a click of your mouse.

This year's Excellence Awards encompass 32 entries from around the world. This is where the reader gets to make the decision.

After reading the entries, which begin on page 53, go to the *Broadcast Engineering* Web site and click on the Excellence Awards button. You will be taken to the voting page. Select one project entry from each of the seven categories as your favorite. Then provide your e-mail address if you want to be entered in the drawing for T-shirts. Your e-mail address will only be used for that purpose.

Complete your voting by Feb. 1, 2005. The winners of the Excellence Awards will be announced in the March pre-NAB issue.

Brad Dick
Editorial Director



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Cover designs by art director Robin Morsbach

Dailies on Maxell DVD.
Get as close to film as possible.

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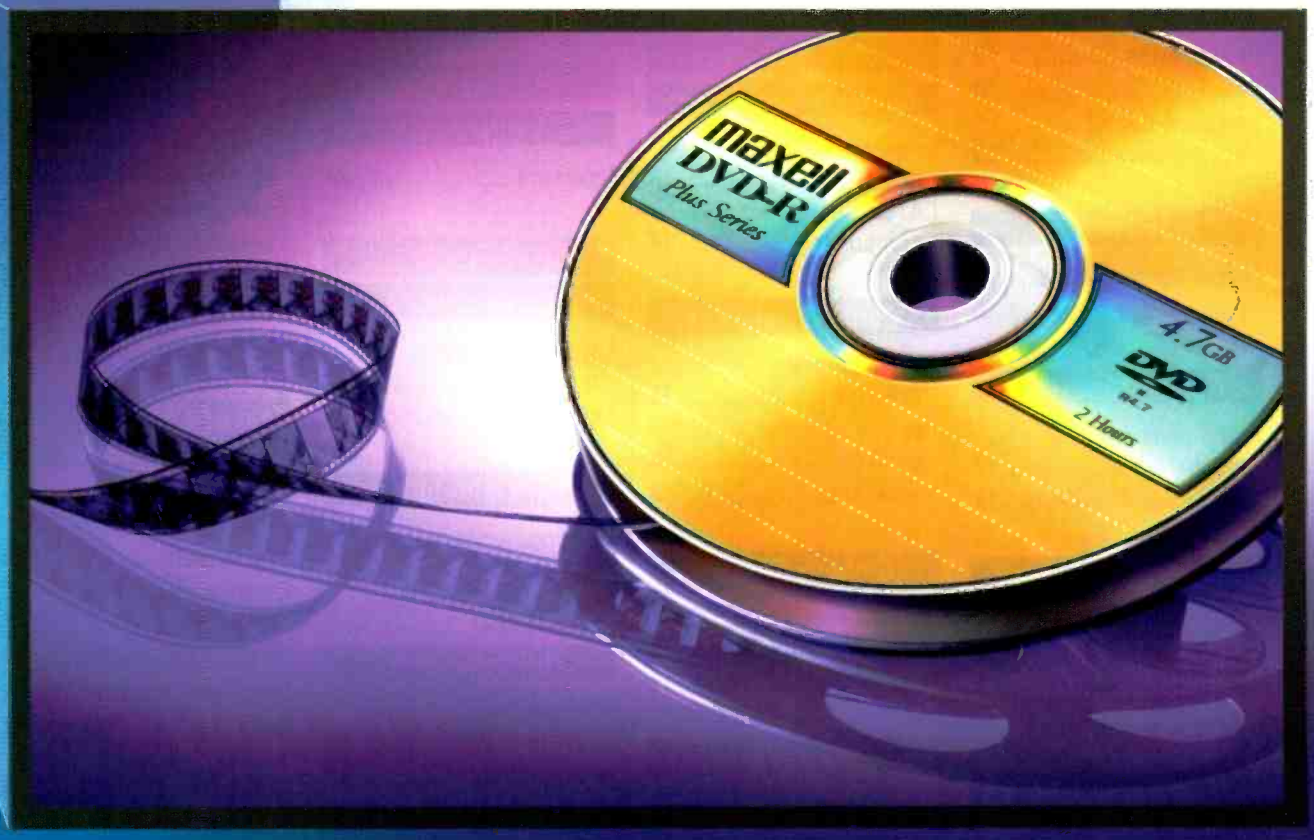

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NEW
HJ21ex7.5B
21x EFP
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COMTEK
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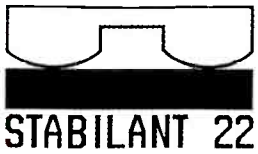

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Vizrt
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SUNDANCE DIGITAL

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Asset management systems

A.F. Associates
408-487-6000

Associated Press ENPS
202-736-1100

Autocue Systems
800-293-0118

Avid Technology
978-640-6789

BBC Technology
818-840-9770

Blueline Technology
972-353-2583

Cinegy
+49 89 23 88 5360

Communications Engineering
703-550-5800

COMMUNICATIONS ENGINEERING, INC.

Communications Engineering, Inc. is an independent, systems integrator, operating nationwide to provide the broadcast and telecommunications industries with technology consulting, systems design, engineering, project management, and integration. CEI's goal is to provide solutions tuned to each client's needs. We welcome the opportunity to discuss how CEI can be your solutions partner.

Crispin
919-845-7744

Cyradis Technology Group
519-940-3937

Dalet Digital Media Systems
212-825-3322

Digital Design Group
408-727-2447

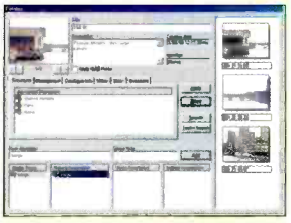
Digital Transaction Group
512-837-3737

Editware
530-477-4300

Encoda Systems
303-237-4000

Florical Systems
352-372-8326

Harris, Broadcast Communications Div.
513-459-3400



Invenio, an enterprise-wide digital media asset management solution, provides broadcast, media, and entertainment companies advanced, rich-centric tools for the improved management of their operations. It includes dynamic new ingest, cataloging, advanced thesaurus and archiving tools. Designed for easy of operation and efficient workflow, Harris' rich media management portfolio forms the foundation of your facility's evolution from manual media management. Our media asset management products rely on universal network connectivity and standard protocols. Additionally, Invenio provide strong rights administration and management through Microsoft(tm) User Policy Guidelines.

IBIS
877-541-IBIS

Imagine Products
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Masstech Group
905-886-1833

MCSI/Broadcast Solutions Group
770-447-1001

MicroFirst
201-651-9300

MSD Digital Media Group
703-890-1000

National TeleConsultants
818-265-4400

Nesbit Systems
609-799-5071

Nextamp SA
+33 299 6162

OmniBus Systems
303-237-4868

Pebble Beach Systems
441737821522

Pro-Bel
631-549-5159

Scheduall
954-334-5406

SGT
+33 1 64 73 74 74

Software Generation (SGL)
+44 238 0233322

Sundance Digital
972-444-8442

Thomson Grass Valley
530-478-3000; 800-547-8949

Video Technics
404-327-8300

Wegener
770-814-4000

Master control switchers

Crispin
919-845-7744

Cyradis Technology Group
519-940-3937

Evertz
905-335-3700

Leitch
818-525-2599; 888-843-7004

Miranda Technologies
514-333-1772

NVISION
530-265-1000

PESA Switching Systems
631-845-5020; 800-328-1008

Pro-Bel
631-549-5159

Quartz Electronics
530-265-2815

Thomson Grass Valley
530-478-3000; 800-547-8949

Utah Scientific
801-575-8801

PSIP and DTV encoders

Crispin
919-845-7744

Motorola Satellite & Broadcast Network Systems
858-404-2933

Thales Broadcast & Multimedia
413-998-1100; 800-288-8364

Thomson Grass Valley
530-478-3000; 800-547-8949

TV business automation (traffic systems)

Crispin
919-845-7744

Encoda Systems
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Product Directory

TV facility automation

Arcatron
602-843-2589

Associated Press ENPS
202-736-1100

Blueline Technology
972-353-2583

BUF Technology
858-451-1350

Crispin
919-845-7744

Cyradis Technology Group
519-940-3937

Digital Transaction Group
512-837-3737

Encoda Systems
303-237-4000

EVS Broadcast Equipment
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Florical Systems
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Hi Tech Systems
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IBIS
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JT Communications
352-236-0744

Leightronix
517-694-8000

MATCO
831-336-9626

MicroFirst
201-651-9300

Omneon Video Networks
408-585-5105; 866-861-5690

OmniBus Systems
303-237-4868

Pebble Beach Systems
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Pro-Bel
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Pro-Bel's Morpheus automation provides playout of not only conventional content, but also multi-media and data-based content. The innovative Media Ball concept allows complex events to be packaged to provide simple presentation to the operator and easy manipulation within a schedule. Morpheus also has its own highly advanced media management system. www.pro-bel.com

Sandeann Industries
512-863-2421

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Software Generation (SGL)
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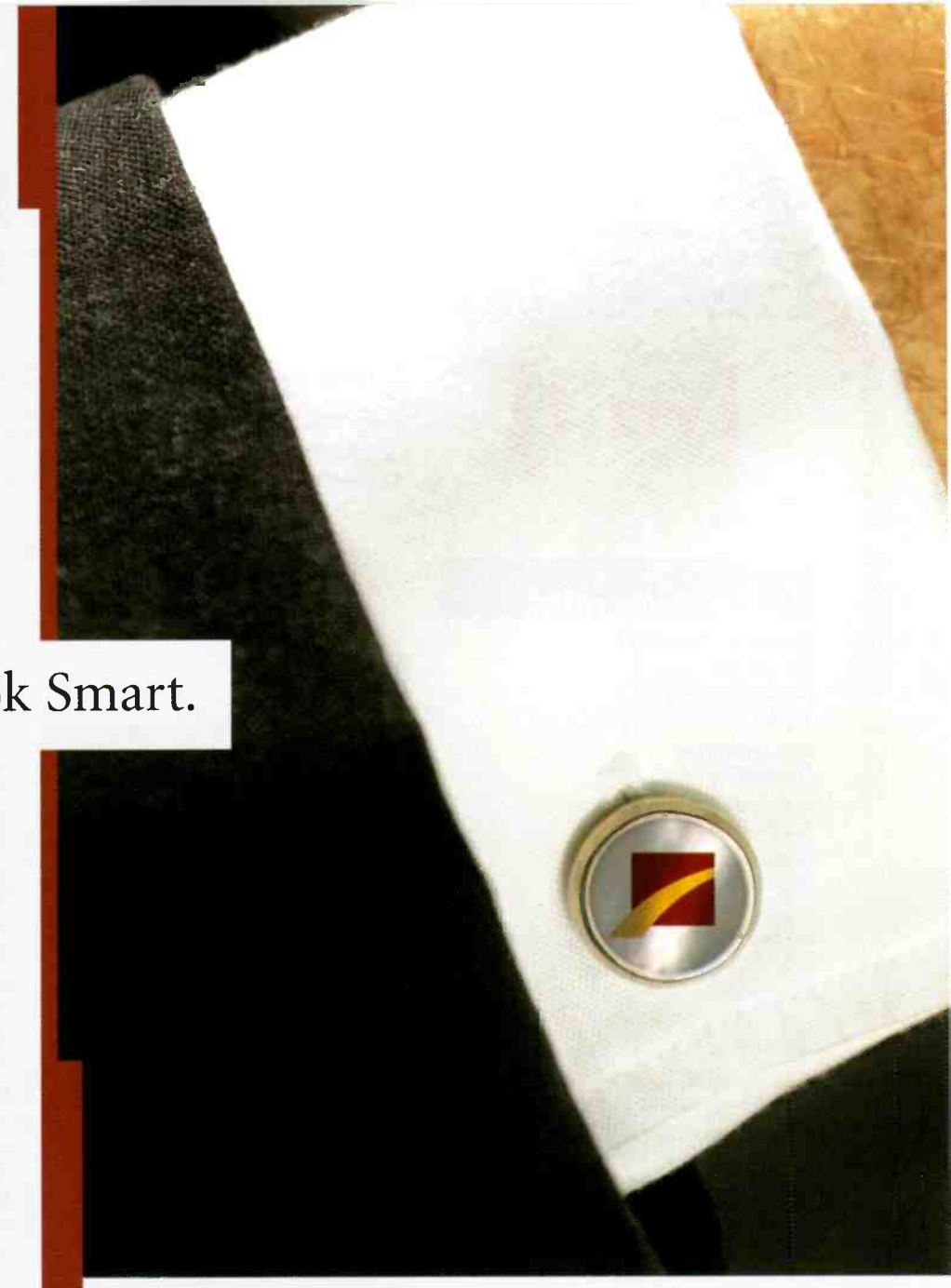
Sundance Digital
972-444-8442

Titan is a highly-scalable solution to control hundreds of channels in one facility, or centrally manage playlists at multiple sites. It's the latest in Sundance Digital's transmission automation product line-up, sharing functionality modules, such as Media Prep, Intelli-Sat and ProgramView with FastBreak Automation. Titan's distributed processing architecture assures "mission-critical" reliability.

Telestream
530-470-1300



Look Smart.

Choosing Sundance Digital to be your automation provider isn't only good for operations. After all, making the smart decision always makes you look good. Not to mention that the smart call helps you avoid the other call — the one that gets you out of bed in the middle of the night.

Point being, the people at Sundance understand what you expect from an automation company, and they deliver on all counts. Reliability, professionalism, customer service, technical support, flexibility, integrity and rock-solid software. All these advantages make Sundance Digital the world's best automation value — and choosing that value makes you look smart.

Not to mention better rested.

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Video Design Software
631-249-4399

Videomedia
208-762-4162

Vizrt
212-560-0708

TV news automation systems

Associated Press ENPS
202-736-1100

Autocue Systems
800-293-0118

Avid Technology
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Broadcast Software Solutions
770-978-9450

Comprompter
608-785-7766

Crispin
919-845-7744

Dalet Digital Media Systems
212-825-3322

IBIS
877-541-IBIS

Inscriber Technology
519-570-9111; 800-363-3400

Media Computing
480-575-7281

MicroFirst
201-651-9300

MSD Digital Media Group
703-890-1000

National TeleConsultants
818-265-4400

OmniBus Systems
303-237-4868

ParkerVision
904-737-1367

Pebble Beach Systems
441737821522

Pinnacle Systems
650-526-1600

Pro-Bel
631-549-5159

Quantel
203-972-3199

Ross Video
613-652-4886

Scheduall
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DVC Digitalvideo Computing GmbH
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EVS Broadcast Equipment
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Faraday Technology
+44 1782 661 501

Harmonic
408-542-2500

Hitachi Denshi America
516-682-4427

IPITEK
760-438-1010

Leightronix
517-694-8000

MCSI / Broadcast Solutions Group
770-447-1001

Motorola
858-455-1500

Motorola Satellite & Broadcast Network Systems
858-404-2933

Multidyne Video & Fiber Optic Systems
516-671-7278

Nickless Shirmer & Co
859-727-6640

Optibase
650-230-2432

Opticomm
858-450-0143

Patriot Antenna Systems
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Scientific-Atlanta
770-236-5000

Scopus Network Technologies
609-987-8090

SkyStream Networks
408-616-3300

Standard Communications
800-745-2445

Thomson Grass Valley
530-478-3000; 800-547-8949

Triveni Digital
609-716-3500

Videotek
610-327-2292; 800-800-5719

Wegener
770-814-4000

Wohler Technologies
650-589-5676; 888-5WO-HLER

Xintekvideo
203-348-9229

Zandar Technologies
+353 1280 8945; 321-939-0457

CATV system components

ATCi
480-844-8501

AutoPatch
509-235-2636

BarcoNet
770-236-5000

Broadata Communications
310-530-1416

Burst Electronics
505-898-1455

Gloriole Electroptic Technology
416-225-8051

Harmonic
408-542-2500

Int'l Fiber Systems
203-426-1180

IPITEK
760-438-1010

Kathrein Scala Div
541-779-6500

Keywest Technology
913-492-4666

Mixed Signals
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Patriot Antenna Systems
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Scientific-Atlanta
770-236-5000

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SkyStream Networks
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Camera remote controls

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Camplex
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Product Directory

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Panther GmbH
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Telemetrics
201-848-9818

Vinten
845-268-0100

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Addenda Electronics
831-372-6205

Broadata Communications
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Canon Broadcast and Communications
201-816-2900; 800-321-4388

Comprompter
608-785-7766

Fujinon
973-633-5600

Hitachi Denshi America
516-682-4427

Innovision Optics
310-453-4866

Panther GmbH
+4989 613 90018

ParkerVision
904-737-1367

Radamec
732-846-0500

Spencer Technologies
818-771-1850

Telemetrics
201-848-9818

Vinten
845-268-0100

Virtual sets

Cartoni USA
818-760-8240

Radamec
732-846-0500

Replica Technology
716-337-0621

Vinten
845-268-0100

Vizrt
212-560-0708

CAMERA SUPPORT

Camera support products (tripods)

Bogen Imaging
201-818-9500

Cartoni USA
818-760-8240

Frezzi Energy Systems
973-427-1160

Glidecam Industries
508-830-1414

Miller Camera Support
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Steadystick GmbH
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Vizrt
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Pan/tilt heads

Allen Osborne Associates
805-495-8420

Bogen Imaging
201-818-9500

Cartoni USA
818-760-8240

Directed Perception
650-342-9399

Frezzi Energy Systems
973-427-1160

Fujinon
973-633-5600

Glidecam Industries
508-830-1414

Innovision Optics
310-453-4866

Miller Camera Support
973-857-8300

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Vinten
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Panasonic Broadcast Europe
+49 611 235 0

Sony Electronics
201-930-1000

Studio Exchange
818-840-1351

Thomson Grass Valley
530-478-3000; 800-547-8949

Camera accessories

16x9
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Angenieux
973-812-3858

Camplex
620-342-7743

Century Optics
818-766-3715

D.W. Electrochemicals
905-508-7500

Electrophysics
973-882-0211

Evertz
905-335-3700

Glidecam Industries
508-830-1414

IDX System Technology
310-891-2800

Image Video
416-750-8872

Link Research
+44 01923 200 900

LitePanels
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Miller Camera Support
973-857-8300

Miranda Technologies
514-333-1772

Obarrio y CIA
541 145 430643

Petroff Matte Boxes
818-760-8290

Schneider Optics
818-766-3715

Sony Electronics
201-930-1000

Telemetrics
201-848-9818

Telescript
201-767-6733

Thomson Grass Valley
530-478-3000; 800-547-8949

Videomagnetics
719-390-1313

Vinten
845-268-0100

Cameras

ARRI
845-353-1400

Band Pro Film & Digital
818-841-9655

Electrophysics
973-882-0211

GE Interlogix
800-343-3358

Hitachi Denshi America
516-682-4427

Ikegami
201-368-9171

Panasonic
800-528-8601

ParkerVision
904-737-1367

Studio Exchange
818-840-1351

Thomson Grass Valley
530-478-3000; 800-547-8949

Videomagnetics
719-390-1313

WolfVision
650-802-0786

CGS

Character generators

Aston Broadcast Systems
+44 1252 836 221

AVS Graphics & Media
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Broadcast Software Solutions
770-978-9450

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Chyron
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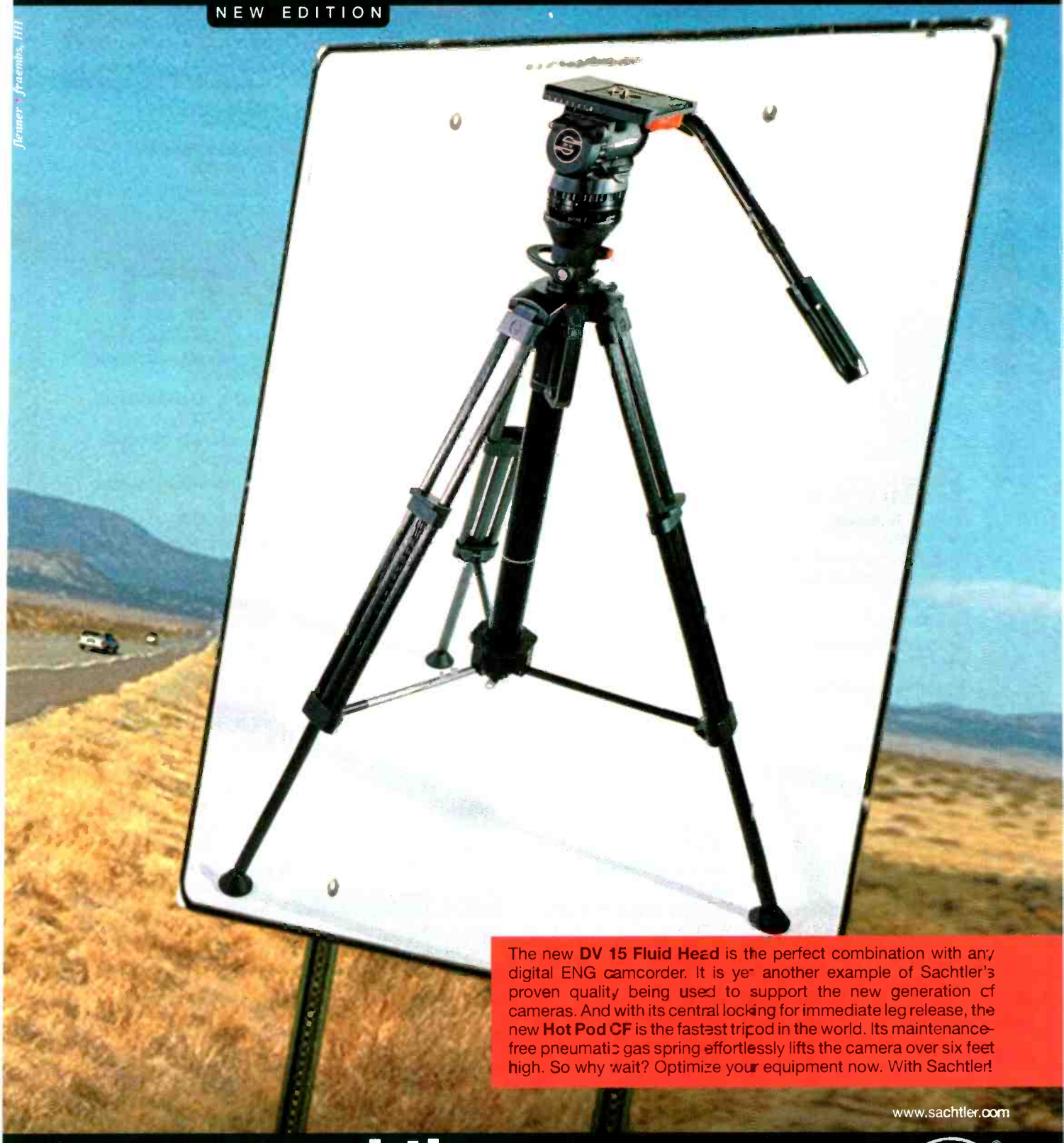

The new **DV 15 Fluid Head** is the perfect combination with any digital ENG camcorder. It is yet another example of Sachtler's proven quality being used to support the new generation of cameras. And with its central locking for immediate leg release, the new **Hot Pod CF** is the fastest tripod in the world. Its maintenance-free pneumatic gas spring effortlessly lifts the camera over six feet high. So why wait? Optimize your equipment now. With Sachtler!

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corporation of america

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Freeport, N.Y. 11520
Phone: (516) 867 4900
Fax: (516) 623 6844
email sachtlerUS@aol.com

3316, West Victory Blvd., Burbank. CA. 91505
Phone: (818) 845-4446

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e-mediavision.com
+44 208 755 2014

EEG Enterprises
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Evertz
905-335-3700

Future Works
408-428-0895

Horita
949-489-0240

Inscriber Technology
519-570-9111; 800-363-3400

Keywest Technology
913-492-4666

Leitch
818-525-2599; 888-843-7004

MagicBox
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Miranda Technologies
514-333-1772

Multidyne Video & Fiber Optic Systems
516-671-7278

Pinnacle Systems
650-526-1600

Pixel Power
954-943-2026

Softel
+44 118 9842151

Spencer Technologies
818-771-1850

Thomson Grass Valley
530-478-3000; 800-547-8949

vizrt

Vizrt
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Teleprompters and prompting software

Autocue Systems
800-293-0118

BDL-Autoscript
+44 20 7538 1427

Comprompter
608-785-7766

Computer Prompting & Captioning - CPC
301-738-8487

Evertz
905-335-3700

Listec Video
561-683-3002

QTV
203-406-1400

Telescript
201-767-6733

COMPUTERS

Computer accessories

Bella
818-563-9500

D.W. Electrochemicals
905-508-7500

Network Technologies
330-562-7070

Trenton Technology
770-287-3100

Weircliffe Int'l
+44 1392 272 132

Computer networking products

Ciprico
763-551-4000

DVC Digitalvideo Computing GmbH
+49 8152-93010

Gloriole Electroptic Technology
416-225-8051

IPV
+44 1223 477 000

Masterclock
636-724-3666

MSD Digital Media Group
703-890-1000

Multidyne Video & Fiber Optic Systems
516-671-7278

Trenton Technology
770-287-3100

Computer systems

Arista
510-226-1800

Trenton Technology
770-287-3100

Data multiplexers

DVC Digitalvideo Computing GmbH
+49 8152-93010

Multidyne Video & Fiber Optic Systems
516-671-7278

Opticomm
858-450-0143

Zandar Technologies
+353 1280 8945; 321-939-0457

Data storage systems

Blueline Technology
972-353-2583

Ciprico
763-551-4000

DVC Digitalvideo Computing GmbH
+49 8152-93010

EMC
508-435-1000

Imation
651-704-4000

Masstech Group
905-886-1833

Orad
212-931-6723

Silicon Graphics (SGI)
650-960-1980

Spectra Logic
303-449-6400

Data transmission systems

DMDsecure
+31 20 330 3372

DVC Digitalvideo Computing GmbH
+49 8152-93010

Int'l Fiber Systems
203-426-1180

Opticomm
858-450-0143

SysMedia
+44 1293 814 200

Video cards

AJA Video Systems
530-274-2048

DVC Digitalvideo Computing GmbH
+49 8152 93010

Matrox Electronic Systems - Video Products Group
514-685-2630

Opticomm
858-450-0143

Snell & Wilcox
212-481-2416

ViewCast
972-488-7200

Zandar Technologies
+353 1280 8945; 321-939-0457

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Supplier type

AZCAR
724-873-0800; 888-873-0800

Broadcast Richardson
630-208-2200

Broadcast Supply Worldwide
253-565-2304

CEI COMMUNICATIONS ENGINEERING, INC.

Communications Engineering
703-550-5800

Digital Systems Technology
770-638-1378

Discount Video Warehouse
800-323-8148

DVC Digitalvideo Computing GmbH
+49 8152-93010

MCSI/Broadcast Solutions Group
770-447-1001

Nickless Shirmer & Co
859-727-6640

Presentation Systems Design
636-225-3637

Professional Communications Systems
813-888-5353; 800-447-4714

Roscor
847-299-8080

Skyline Broadcast
866-804-1184

Studio Exchange
818-840-1351

Systems Wireless
703-471-7887

TecNec
845-246-0428

DESKTOP VIDEO

Desktop Video

AJA Video Systems
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Product Directory

Laird Telemedia
845-339-4555

Matrox Video Products Group
514-685-2630

Pinnacle Systems
650-526-1600

TV Magic
858-650-3155

ViewCast
972-488-7200Wohler Technologies
650-589-5676; 888-5WO-HLER

Zandar Technologies
+353 1280 8945; 321-939-0457

DIGITAL AUDIO WORKSTATIONS

Digital audio workstations

Digigram
703-875-3100

Euphonix
650-846-1142

TeraTek Software
+33 1 42 62 06 20

DUPLICATION

Duplication

SF Video
415-288-9400

Sony Electronics
201-930-1000

TV Magic
858-650-3155

FILM EQUIPMENT

Film Equipment

ARRI
845-353-1400

Astro Systems
818-848-7722

Cartoni USA
818-760-8240

Panther GmbH
+4989 613 90018

RTI - Research Technology Int'l
847-677-3000

Thomson Grass Valley
530-478-3000; 800-547-8949

Vinten
845-268-0100

GRAPHICS

Animation/graphics software

2d3
949-472-9140

auto.des.sys
614-488-8838

Bauhaus Software
210-212-7530

Chyron
631-845-2000

da Vinci Systems
954-688-5600

Kaydara
514-842-8446

Leitch
818-525-2599; 888-843-7004

Linker Systems
949-552-1904

MyWeather
608-441-0400

Orad
212-931-6723

Replica Technology
716-337-0621

Side Effects Software
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ULTIMATTE
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Vizrt
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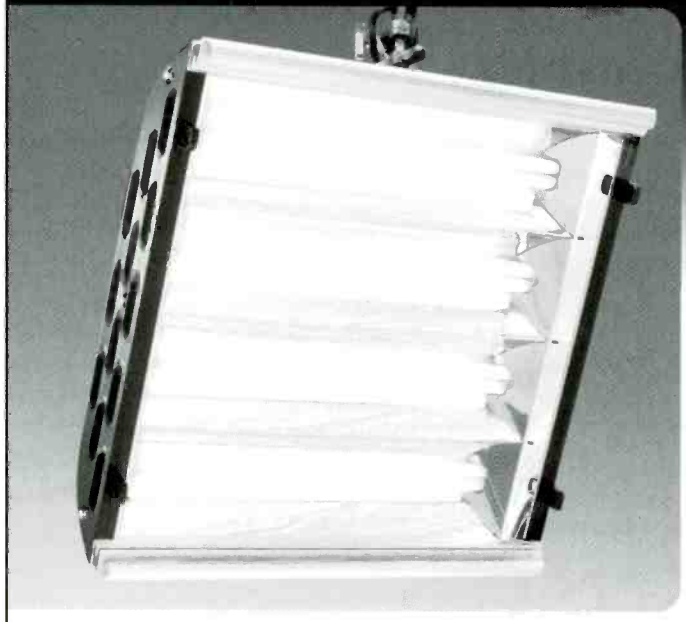
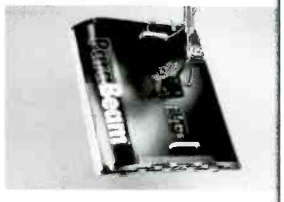


The New Look of Kino Flo®

Kino Flo® unveils a dazzling luminaire guaranteed to raise your IQ (illumination quotient). The ParaBeam® 400 look is hip. The light is cool. A smart choice for studios, the ParaBeam can dish out more than a 3K softlight on less than two amps! Its intense beam of True Match® light can focus into the far corners of a set. All ParaBeams come complete with flicker-free DMX dimming, gel frame, egg crate louver and diffuser.

ParaBeam®



www.kinoflo.com

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818 767 6528 voice • 818 767 7517 fax

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Photo of New York Network studios by Joe Schuyler.

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Animation/graphics systems

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Chyron
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Discreet Logic
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e-mediavision.com
+44 208 755 2014

Kaydara
514-842-8446

Leitch
818-525-2599; 888-843-7004

Linker Systems
949-552-1904

Meteorlogix
952-882-4576

Miranda Technologies
514-333-1772

Orad
212-931-6723

Pixel Power
954-943-2026

Quantel
203-972-3199

Replica Technology
716-337-0621

Silicon Graphics (SGI)
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Video Design Software (VDS)
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703-471-7887

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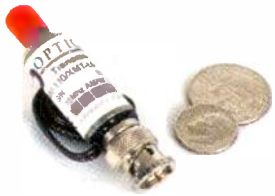

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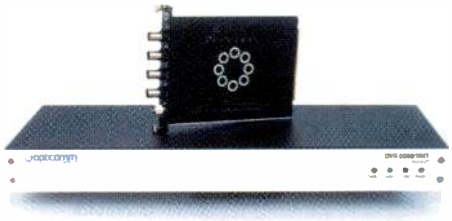

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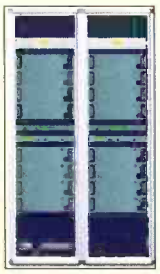

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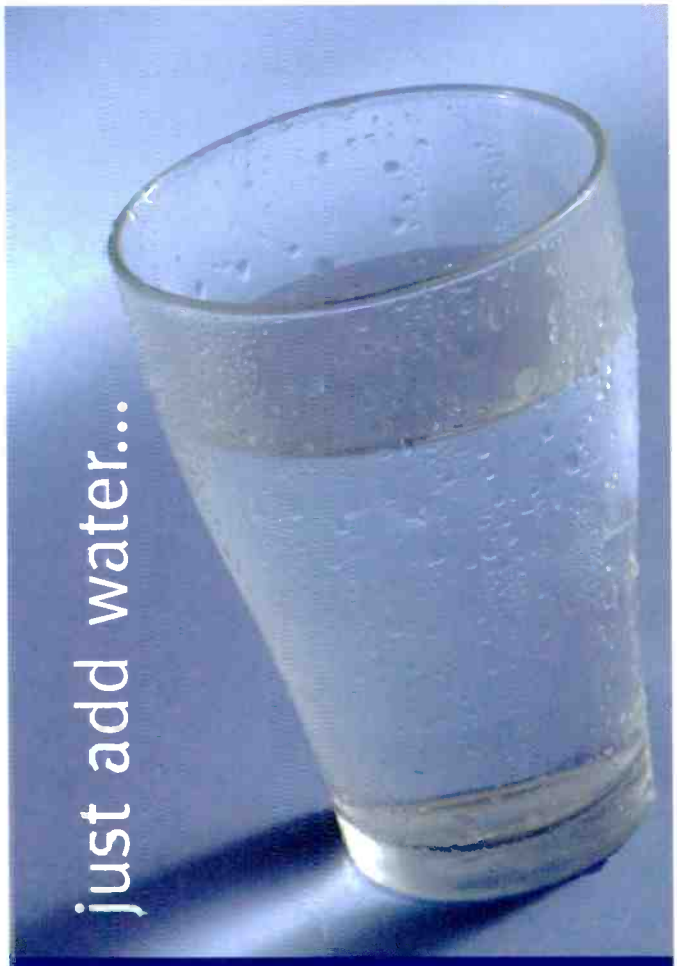

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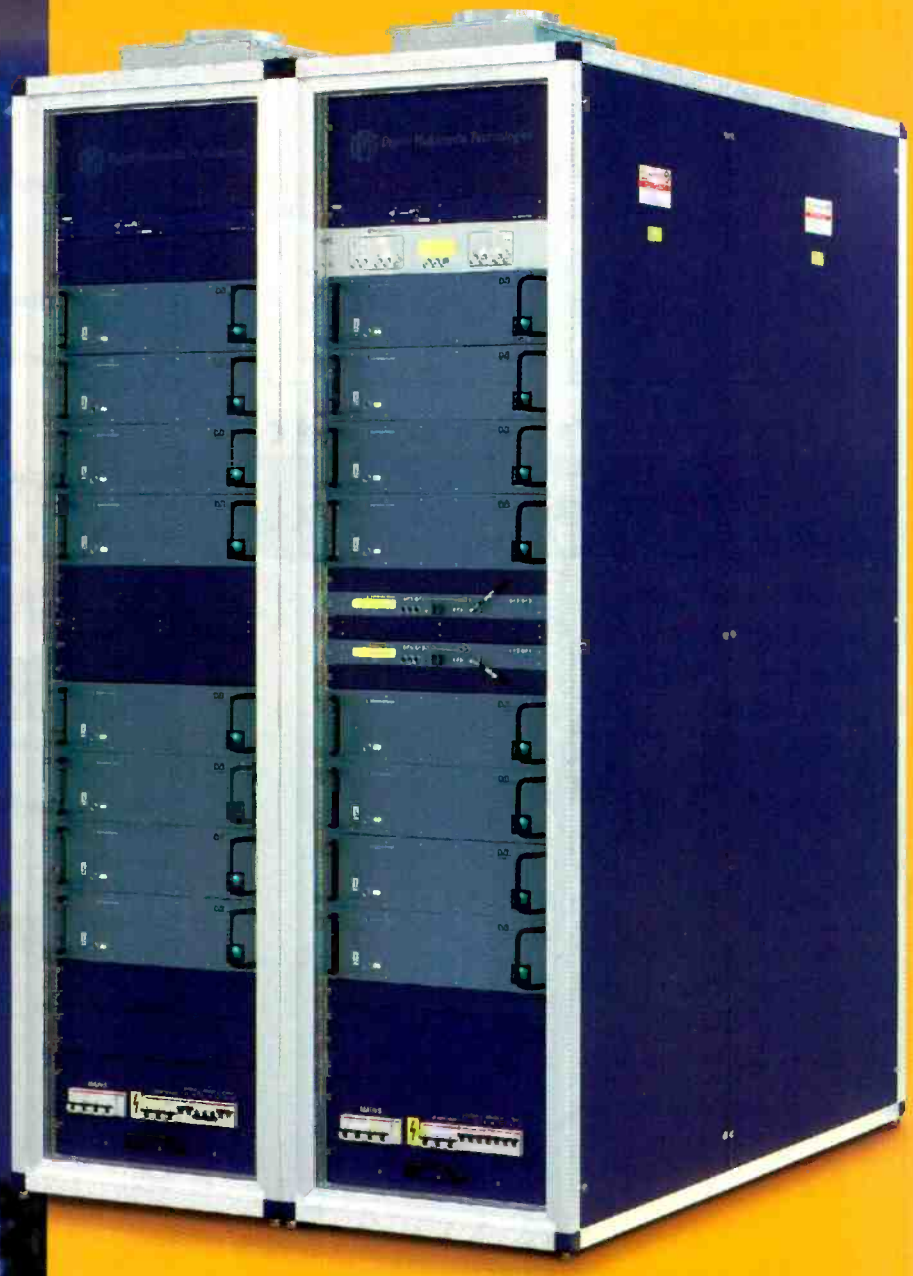

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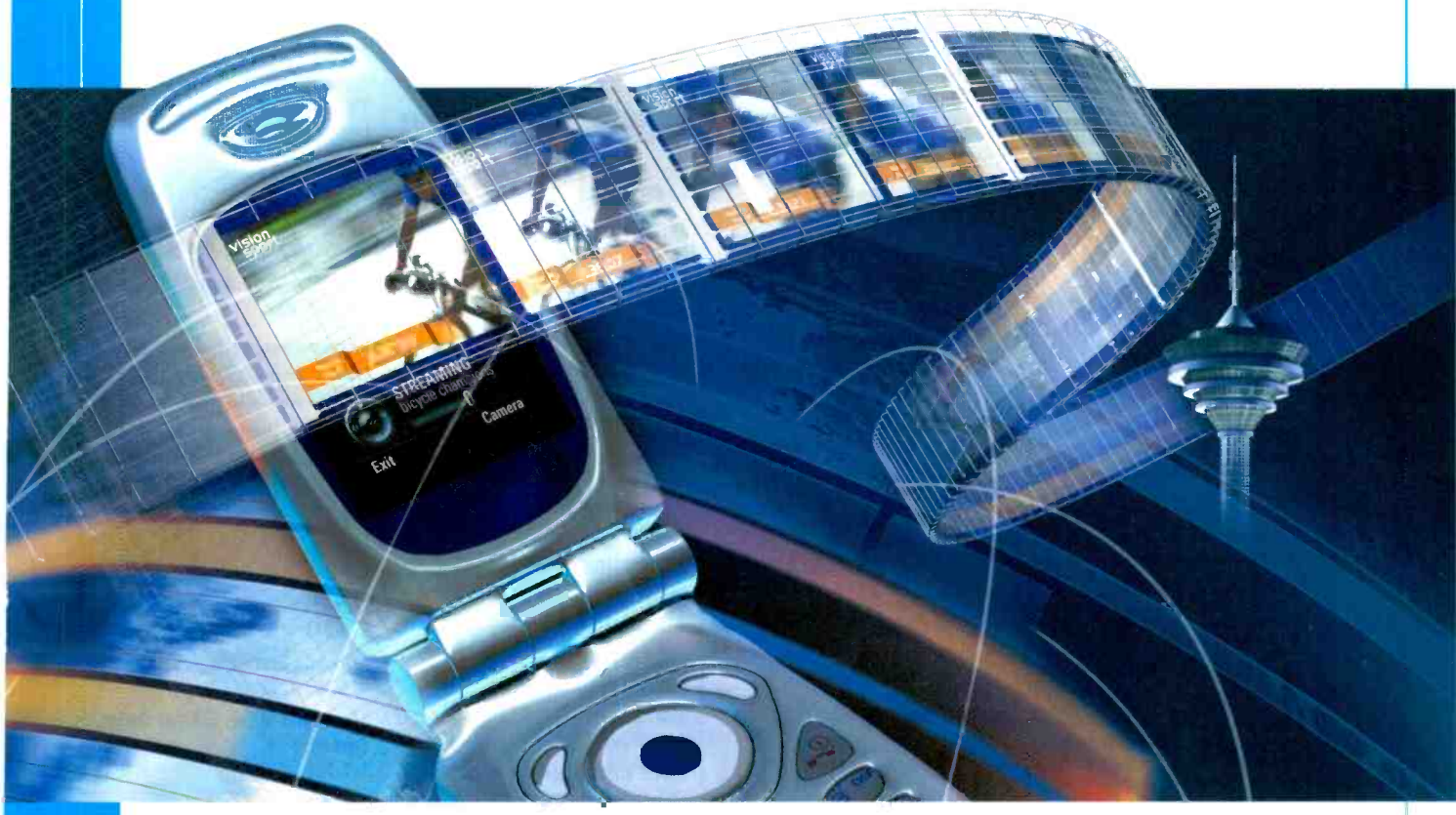

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Comprehensive Video Group
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Gepco
847-795-9555

Hosa Technology
714-736-9270

Mogami America
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Mohawk- A Belden/CDT
978-537-9961

MXL Microphones
310-333-0606

Nemal Electronics Int'l
305-899-0900

Whirlwind
585-663-8820

Audio connectors

ADC
952-938-8080; 800-366-3891

Broadcast Richardson
630-208-2200

Fischer Connectors
678-393-5400

Lemo USA
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Mogami America
310-333-0606

Neutrik USA
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Fiber-optic cabling

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Fischer Connectors
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Hosa Technology
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Knight's Communications
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Lemo USA
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Mogami America
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Anixter
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Clark Wire & Cable
847-949-9944

Components Express
630-257-0605

Comprehensive Video Group
800-526-0242

DVC Digitalvideo Computing GmbH
+49 8152 93010

Gepco
847-795-9555

Hosa Technology
714-736-9270

Mogami America
310-333-0606

Mohawk- A Belden/CDT
978-537-9961

Multidyne Video & Fiber Optic Systems
516-671-7278

Nemal Electronics Int'l
305-899-0900

Network Technologies
330-562-7070

Video connectors

ADC
952-938-8080; 800-366-3891

Broadcast Richardson
630-208-2200

Components Express
630-257-0605

Comprehensive Video Group
800-526-0242

Extron Electronics
714-687-6335

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The *Broadcast Engineering* editors are proud to bring you the fourth Annual Excellence Awards for technology innovation and construction. This year's entries total 32, a 25 percent increase over last year.

These awards represent the *crème de la crème* of system integrators, vendors and facilities. The stations, networks and facilities you see here are some of the best examples of using technology to its highest advantage. You can learn from these entries and apply the techniques and solutions for your own needs.

What helps make the *Broadcast Engineering* Excellence Awards so special is that readers help select the winners. Here's how you can participate — and win!

Read each of the entries on the following pages. They are broken down by technology/application category. Select one favorite from each category.

Go to the *Broadcast Engineering* Web site, *www.broadcastengineering.com*, and click on the Excellence Awards button. You will be taken to the voting page. Click the button next to your favorite installations to vote. If you'd like to be entered into the drawing for one of 50 *Broadcast Engineering* T-shirts, simply provide your e-mail address. It will be used only to notify winners. It will not be used for any other purpose.

T-shirts will be mailed shortly after the winners are selected.

Place your vote by Feb. 1, 2005.

Then, watch for the March 2005 issue of *Broadcast Engineering* to see the winning installations. Winners will receive their award plaques at the 2005 NAB convention.

Brad Dick

Brad Dick
Editorial Director

This year's entries are:

New studio technology — HD:
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AP
improves connections to the White House

The Associated Press (AP) reaches more than one billion people per day with video, audio, text, photos and graphics. It operates with 3700 employees spread throughout 240 worldwide bureaus.

The AP's Washington, DC, broadcast news center is tethered tightly to its White House satellite site, but it has long sought a solution to increase the flexibility of routing feeds between the two facilities. When the White House press office asked them to relocate a few doors down the hall from its former space, the organization took advantage of the move to revamp its routing infrastructure.

Its White House routing system, comprised of Network Electronics' VikinX A1616 and V1616 routers, had previously been controlled solely from a P-16 Pro-XY control panel located onsite. The engineering staff designed a configuration that would allow remote operation of the White House routers via THOR – a PC-based control platform - from its Washington, DC, K Street broadcast news center. The new system gives the AP an additional measure of flexibility and off-site control capability.

THOR uses a traditional telephone dial-up to connect a stand-alone modem — no PC needed on the remote end — directly to the routers' RS-232 control port. Once connected, control is achieved via the basic point-to-point switching feature of the GUI interface on a PC with real-time switching capability.

With the new system, feeds from numerous White House positions — the briefing room, north lawn, rose garden, stake out, and more — are monitored by the K Street staff, recorded, edited and distributed to any number of news agencies. The new system has made it possible for the AP to be in two places at once by eliminating the need for maintaining an on-site White House operator. Now news and announcements are covered as they happen — not when someone gets there!

Design Team

AP:
- Steve Kuhn, dir. of eng.
- Larry Gold, broadcast eng.
- Jim Ray, sr. broadcast eng.
- Nicholas Ray, consultant

Network Electronics:
- Cameron Francis, CEO, U.S.
- Mitch Hayden, VP tech. sales and service
- Andre S. Nilsen, sr. SW eng.

Cardone Solomon and Associates
- Ken Valentine, manufacturers rep.

Equipment List

Network Electronics
- A1616 router
- V1616 router
- P-16Pro-XY control panel
- Stand-alone modem
- THOR control software with remote connections feature pack

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CBC

centralizes presentation, branding and control

This past fall, CBC/Radio-Canada's French-language TV network began consolidating presentation operations for its 10 regional stations and one specialty station. This project involved moving automation, playout, master control and channel branding for all of the network's regional stations to its headquarters in Montreal. The system was designed to provide expansion capacity for up to nine additional channels and to bring greater control and consistency to the network's facilities.

A key element in the design of the project is the close integration of Encoda station automation with the master control switching and channel

branding equipment from Miranda and VertigoXmedia.

This system allows three operators at the network to control as many as 10 channels. It is based on a combination of Miranda's Imagestore branding processor and VertigoXmedia's CG. Automation normally carries out control of the master control switching and branding. Operators may also use a VertigoXmedia touchcontrol panel to manually address signal routing, switching and branding operations for any individual TV program channel.

New branding equipment will make noticeable changes to on-air presentation over the coming months, with more added channel branding and program junctions. The system will enable the use of graphics, character generation, animations, 3-D DVE effects and multichannel voice-overs.

A Thomson Grass Valley routing switcher feeds sources for the master control area, with Miranda Densité series interfaces providing conversion and distribution.

Another major challenge for the network was effective monitoring of the 11 independent channels generated from Montreal, as well as the signals from all of the network's remote facilities.

Two Miranda Kaleido-K2 dual-head, 32-input multi-image display processors, which output to three Barco rear-projection cubes, perform local video and audio monitoring in the Montreal playout center. Close integration between the processors, the automation and the Omneon Spectrum media servers will allow the operators to monitor the current and next clips via UMDs, along with associated clip timing information. The advanced monitoring wall will also provide monitoring of closed captioning, and extensive video, audio and metadata alarm reporting.

The system is designed to allow close integration with the multi-image display processor system. Alarms generated from remote sites are presented on the main monitoring walls in Montreal and Toronto to further strengthen centralized monitoring.

The current system is equipped for SD playout, but the station plans for HDTV playout in the next months. ●

Design Team

CBC:
- Daniel Guévin, mgr.
- Philip Kelly and Marc Cavanagh, electronic associates
- Érik Gaudin and François Legrand, sys. designers
- Bertrand Turgeon, dir., broadcast services
- Daniel Langevin, supervising tech.
- Pierre Bourdeau, Montreal MC supervisor
- Gaétan Touchette, master tech.

Communication DIDCOM:
- Daniel Despa, consulting eng.

Applied Electronics:
- Yvon Cardinal, project mgmt.
- Serge Desrosiers, service eng.

Equipment List

Miranda
- Imagestore automation
- Densité converters and DAs
- iControl control and monitoring
- Kaleido-K2 display processors

Barco rear-projection cubes

Omneon
- Spectrum media servers

VertigoXmedia graphics auto.
- Vertigo CG

Thomson Grass Valley
- Trinix 256X256 router
- Encore control system

Encoda automation

TANDBERG TV satellite equip.

CNBC's
all-digital workflow model

CNBC began full operations in late 2003, following 12 months of planning and integration by The Systems Group (TSG) along with a seamless migration from their former facility. With a focus on streamlining workflow, CNBC took advantage of an all-digital workflow model in a tapeless environment, custom-designed for the network's rapid-fire broadcasting style. A hierarchical media asset management system keeps materials available as long as needed, while archiving CNBC's valuable productions. The system handles multiple signal streams for increased throughput. Incoming material is instantly available at numerous workstations. As material arrives, it is immediately recorded in multiple levels of resolution in order to avoid repetitive operations. Producers view the material in real time at their desktops, while editors simultaneously begin cutting the breaking news story.

TSG placed nearly 4,000,000ft of cable throughout this highly networked facility. Using a workgroup strategy, the integrator delivered a facility where signals course through 100 analog audio and 250 coax jackfields (digital video with embedded audio) in 350 racks that deliver sounds and images from four studios, as well as locations around the world. The facility features 60 camera drops at 39 broadcast service panels, four production control rooms, 20 nonlinear edit rooms, 24 graphics workstations and 80 Leitch NEO frame syncs. The Satellite Operations Center uses four 67in projection screen monitors that are viewed from five user operating stations capable of handling all inbound and outbound transmissions. Each station is equipped with a Miranda K2 monitor wall processor and a 64² Quintech L-band router, which routes feeds from 70 remote sources via DS3 fiber connection. CNBC communicates from 250 intercom panels over a 544x544 intercom.

The facility also hosts 10 Thomson Grass Valley Vibrant editing systems and 10 Avid rooms.

Design Team

CNBC:
Steve Fastook, VP, technical and commerical operations
Peter Smith, VP, advanced tech.
Jim Starzinski, project eng.
The Systems Group:
John Meusel and Joseph Policastro, project mgrs.
John Zulick, John Hoit, Christian Darr and Andrew Morris, sr. systems engs.
Larry DeFazio, Mike Ferentinos and DJ Rice, installation supervisors
Hemant Ganesh and Jose Morales, lead techricians

Equipment List

Miranda Kaleido K2 multi-imagers
Avid NEWS Newsroom system
Leitch NEO frame synchronizer
Thomson Grass Valley Profile servers
ContentShare
NewsBrowse
NewsQ Pro
NewsEdit workstations
Trinix router
Sony MVS-8000 production switchers
BVF-950 studio cameras
DVE systems and CRT monitors
Calrec Sigma 100 digital audio consoles
Hydra networking system
Clarity digital projectors
Pinnacle Systems FXDeko
Systems Wireless 48-channel mics
Encoo central file server with CADPro32 workstations

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CNBC's

new facility streamlines news production

The new CNBC facility serves 400 employees and occupies a 355,000sq ft building featuring a massive signal distribution routing switcher, computer-based satellite operation, three fully networked audio/video control rooms, a SAN for editing and graphics creation, and a massive archiving system.

A large central equipment room with 450+ racks houses video and audio equipment and an array of IT gear facilitating functions such as archive, browse and access to metadata. The system also powers all on-air data applications, including the station's real Timestock ticker, real-time charts and boards, and the 3-D network ID bug.

CNBC selected a Thomson Grass Valley digital news production system. The NewsBrowse Web-based browsing/editing application can be accessed by up to 120 journalists. Using the system, satellite operations and media operations staff can initiate both scheduled and "crash" server recordings on 16 channels. These 16 channels of ingest are part of a Profile Open SAN system that connects to 10 NewsEdit nonlinear systems. The NLEs allow journalists to perform cuts-only editing at their desktop, create EDLs and then send them to the editors for final editing.

Once a news story is complete, editors transfer their finished files to redundant play-to-air Profile servers that all the control rooms can access. NewsQ Pro software linked to an Avid iNews NRCS controls these servers. After the story has aired, archivists move material out of the SAN to an ADIC data tape robotic system running MC/Avalon software.

Arriving analog and digital video and audio signals are immediately converted to SDI and routed through a Trinix 512x1024 digital video routing switcher, managed by an SMS-7000 control system.

Three digital production control rooms are built around Sony MVS-8000 switchers with Sony DVE systems, handling Sony BVP-950 cameras.

The satellite operations control center handles up to 200 live remotes a day by communicating with 18 satellite receivers, 62 frame syncs, the Trinix digital video routing switcher from seven workstations over a private LAN.

Design Team

Architects, HLW International
The Philips Group
Sony Systems Integration
The Systems Group:
Craig Diana, CD Mgmt. group
NBC:
Peter Smith, VP of adv. tech.
Jim Starzynski, principal eng.
Eric Pohr, VP of engineering
CNBC:
Steve Fastook, VP of tech. op.
Pat Twomey, mgr. of grap. tech.
Tony Alicea, dir. of IT on-air op.

Equipment List

Calrec
Sigma 100 audio consoles
Hydra networking system
EMC
Avalon EM software
Network-attached storage
Thomson Grass Valley
SAN with ContentShare
NewsBrowse and NewsEdit
Profile servers
Trinix router
Sony Electronics
MVS-8000 production switchers
BVF-950 studio cameras
DVE systems and monitors
Miranda Technologies
Kaleido-K2 display processors
Leitch NEO frame synchronizers
Avid iNEWS NRCS
Image Video under-monitor dsp.
Adobe Photoshop and AfterEffects
Pinnacle Systems FXDeko
Enzo central file server
Clarity Digital projectors

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CNN NY

From downtown to way uptown

Time Warner Center was more than a corporate milestone for Time Warner — it marked a pivotal event for CNN as well. For the first time, the network had the opportunity to build a broadcast facility from the ground up. By the time construction of Time Warner Center began, CNN New York had already outgrown its location, and the lack of space had forced technical managers to install gear in less than optimal areas. And, in early 2002, six new hours of television programming were added to the New York production mix.

This programming expansion, and the desire to centralize key production areas like terminal gear, graphics and media operations, prompted a redesign of the technical plans. As a result, the new facility now houses three large and three small production studios (nearly 10,000sq ft total), four large production control rooms, 15 edit

suites, and nearly 4000sq ft of equipment space in terminal gear. In all, 50,000sq ft of technical space was built, supported by facilitywide intercoms, routers and video server access.

The physical size of the space made it necessary to co-locate production studios and control rooms with proximity to terminal gear and/or vertical risers between floors. Design was critical to maximizing cable management and to minimizing cable lengths, and the problems caused by long distances between user interfaces and gear mounted in equipment racks.

The network told design architects to keep technical areas as centralized

as possible, using cable management as a primary design factor. Besides this, CNN needed technical spaces that would meet rigorous acoustic standards, as well as provide adequate ceiling clearances for lighting. The facility also required edit suites large enough to accommodate multiple people and media operations with adequate monitoring for all incoming and outbound feeds, server ports activity and ingest management.

Aside from serial digital receive and transmission capabilities, the facility is also HD-capable for greater business flexibility down the road. The design team deliberately selected switchers, routers, studio cameras and distribution equipment that had built-in HD capability, or, at the very least, logical upgrade paths that would not require major conversion work.

The greatest challenge was the schedule, and the sheer volume of wiring and work that had to be done in order to move on time. Ultimately, CNN contracted Sony Systems Integration

and A.F. Associates to design and build the broadcast technical facility. The network worked with Pinnacle Systems to design and implement a facility production server, which is used for all video media production, including ingest, edit and playback. Sumitomo fiber fills conduits throughout the shared Time Warner Corporate and retail spaces to remote broadcast service panels, all of which are directly wired back to the terminal gear room.

Design Team

CNN:
- Dave Silver, VP of eng., Atlanta
- Jeff Polikoff, VP of eng., New York
- Jeff Gershgorn, dir. of eng., New York
- Lisa Pedrogo, project mgr.

Sony S.I.C./A.F. Associates:
- Keith Jackson, project dir.
- Steve Sabin, project mgr.
- Howard Dixon, Nand Ganesh, Mark Willet and Mike Duomo, project eng.

Equipment List

- Thomson Grass Valley 512x512 Trinix Router
- RTS/Telex intercom
- Sony MVS-8000 prod. switcher
- Pinnacle Systems
  - Production server
  - Encoders and decoders
  - Liquid Blue edit systems
  - Vortex Desk Edit
  - Vortex Browse
- Ardendo DART
  - Aardcap

Crawford Communications

consolidates with *ENCOMPASS*

To keep up with a growing demand for its network origination services, Crawford Satellite Services, of Crawford Communications in Atlanta, undertook a significant expansion of its tape storage and network playout capabilities. The expansion included greater automation and integration of its broadcast equipment and media management systems.

Dubbed "ENCOMPASS" (ENCOde, Manage and Protect your Assets), the project consolidated many separate control rooms and workflows into a single operation, while also assembling the company's media assets within redundant data tape archives. The enhancement of Crawford's technical operations area under ENCOMPASS has unified the ingest, storage and network playout workflows; increased storage for clients' assets; and simplified tracking of those assets with an online media asset management system.

OmniBus Systems' Colossus multichannel automation system serves as the basis for consolidation of the company's network origination operations, enabling the company to leverage its existing equipment in a more streamlined workflow characterized by improved resource sharing, substantial cost savings and better overall broadcast services.

Colossus controls SGI, Pinnacle and Omneon video servers and a Masstech storage management system, interfacing with five different traffic systems for flexible playout of 37 redundant channels. OmniBus device drivers control traditional equipment while bridging the gap between video, audio, Internet and data-streaming applications. For the company's media archive, Spectra Logic provided the data storage robot, a Spectra T950 with Python architecture, that incorporates four Sony SAIT data tape drives.

The team selected each piece of equipment for its ability to operate in accordance with traditional IT data practices rather than traditional broadcast practices. Vendors involved in ENCOMPASS worked together to help build a highly interactive system, providing some custom "glue" that links off-the-shelf equipment together for seamless integration in a smooth workflow.

Among the advances afforded by the ENCOMPASS project is the ingest of asset masters into the facility's storage system at the appropriate resolution. Redundant copies are made automatically in the Spectra Logic data tape robot, eliminating the many thousands of hours of tape duplication previously required. Generation loss, due to tape duplication, also has been eliminated. A new proxy generation system allows each client to view its entire media library online via the Internet.

Shelved tapes are tracked with a Network Library System (NLS) database, which has been integrated with the Masstech asset management system to simplify operations and reduce the possibility of playout error.

The scalability of this integrated automation, storage and playout system provides a quick and affordable means by which Crawford can multiply its channel output. Completed this past May, the new tapeless workflow achieved through ENCOMPASS enables a faster time-to-air, permitting the company to deliver a higher-quality product to its clients. ●

Design Team

Jim Schuster, sr. vp, satellite op.
Michael Connell, dir., advanced technology (ENCOMPASS)
Don Rodd, CE, satellite op.
Bill Elsholz, lead broadcast eng., satellite
Jay Pound, database admin.
Carol Burton, network op. traffic mgr.

Equipment List

OmniBus Systems Colossus multichannel automation
SGI
Video servers
Near-line storage network CXFS shared file system
Pinnacle video servers
Omneon video servers
Spectra Logic T950 archive
SonySAIT archive
Masstech storage management

Daystar
turns to a scalable infrastructure

The Daystar Television Network, the second largest Christian television network in the United States, serves 55 TV stations. In January 2004, the network made its transition to digital, moving into a brand-new building equipped for digital operations.

The engineering team evaluated, selected and integrated solutions for the facility's new studios and control and edit rooms. The network has been buying stations rapidly, its numbers doubling each year until two years ago. The advanced network infrastructure the team put in place required scalable systems that could match this growth, which has continued at a rapid pace.

The new infrastructure uses PESA Switching Systems routing switchers and Pinnacle MediaStream 8000 servers. They are managed and monitored by Miranda Technologies master control systems, to bring feeds from cameras to production, the control room and to audio engineers. Upon realizing that its 256x256 PESA Cheetah routing switcher would not be able to accommodate the facility's signal volume, Daystar worked with PESA to bring in a larger 512x512 Cheetah. The new digital routing switcher handles SDI, HDTV and other non-standard digital signals in a single frame.

The network is also using PESA's TDM large-scale audio routing switcher and building it out to 512x512 as needed. The network relied on PESA gear for broadcasts in its old facility and brought some of that gear, including a 48x96 RM5000 analog router, over to the new facility to route signals for the building's security system.

The team also upgraded the facility's Pinnacle 700 series server to the MediaStream 8000 for use as an on-air master control server with 1500 hours of storage — four times the storage available with the network's previous server system. A second smaller system serves as a production server.

Two Miranda Presmaster 2 multichannel master control switchers are at work in the network operations center (NOC) to handle the facility's local television station, the network feed to satellites, the fiber feed to the cable companies and other projects.

Seven Miranda Kaleido-K2 multi-image display processors — three located in the NOC, three in production and one in audio — enable monitoring of feeds throughout the facility. The company's iControl is used for monitoring and control over IP.

A Raritan system installed on the computer network gives up to 64 workstations and 128 computers (expandable to 256 computers) — through password protection — access to every computer system used for engineering. This in turn allows engineers to see all of the facility's processors, automation, servers, graphics, intercom and other devices.

PESA, Miranda, Pinnacle and Raritan helped Daystar modify its infrastructure when it became clear that it was expanding much faster than expected. Now, with flexible and highly scalable systems serving as the foundation for its broadcast operations, Daystar can continue to expand with confidence. ●

Design Team

Daystar:
- Steve McNeal, dir. of eng.
- Jeff Little, sr. network and communications eng.
- Charles West, sr. prod.eng.
- Wayne Cook, sr. digital video systems eng.
- Frank Thomas, digital video systems eng.
- Tom Phillips, display systems and documentation

Equipment List

PESA
- Cheetah routing switcher
- TDM audio routing switcher

Pinnacle MediaStream 8000 servers

Miranda
- Presmaster 2 multichannel master control switchers
- Kaleido-K2 multi-image display processors
- iControl monitoring and control
- SDI converters, A/D, D/A

Raritan Computer remote access system

Hitachi Z-3000 cameras

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Discovery Communications'

Creative & Technology Center

Communications Engineering (CEI) completed turnkey project services for the design and construction of the new Discovery Creative & Technology Center (DCTC) for Discovery Communications (DCI).

The project consisted of relocating the 24-hour production operation facility to a 54,000sq ft renovated office space. A key feature and design directive was to configure the nonlinear suites for greater creative and scheduling flexibility. The team added support for both NTSC and PAL signals in every suite, along with support for a number of HD equipment and HD signal formats. They used custom auto-sensing reference switching and a dedicated reference router to accommodate the reference needs for these signal rates and formats, allowing every HD resource to select between multiple tri-level reference rates.

Two major concerns drove design structure: providing an immense amount of heat generation and dissipation and maintaining the support equipment for individual suites in as close proximity to the suite as practical. The solution involved creating two medium-sized equipment cores as the heart of the structure. Any signal or equipment can be routed virtually anywhere in the facility. The two cores work together to interconnect all equipment through the facility router and HD transport.

Another goal was to allow for the quick and easy repurposing of any edit suite. To achieve this all rooms terminate to a custom-built breakout panel. The plenum cables connect to jumpers in the rack, which then connect to the equipment I/O. A room makeover simply requires changing jumpers in the core and rewiring in the suite. The structured cabling included running an extensive complement of data cable to all broadcast suites with support and collaboration from the IT department.

Each Avid suite is part of a cluster consisting of its own media storage, computer, audio/video engine and external support VTRs. PAL and NTSC decks are assignable through the router. Each suite is wired for a legalizer for proc amp corrections, ensuring that post-production signals meet Discovery's technical standards for on-air quality.

Design Team

Joe Strobel, project mgr.
Brinton Miller, sr. design eng.
Paul Sherriffs and Tim Bailey, design engineers
Marcie Serrano, asst. design eng.
Bill Beckner, director of integration services
Vernon Benson and Jeff Bates, integration supervisors
Don Brassell, mgr. of system support
Tom Perrell, system support eng.
Charlie Biggs, systems eng.
Andy Solywoda, broadcast service eng.

Equipment List

Acoustic Systems custom booths
ADC jackfields
Belden cable
Dolby E decoders and interfaces
Evertz VistaLINK HD-SDI DAS
Gefen fiber-optic cables
ISIS ARS-204 switchers
Leitch
- AES/EBU router and master clock

Sony
- BVM20GIU, BVM "D," and PlasmaPro flat-panel monitors
- HDCAM
- Downconverters

Studio Technologies
- Studio Comm Surround monitors
- Mic panels

Tektronix
- Multiformat generators
- Waveform monitors

Thomson Grass Valley
- Trinix and Concerto routers

NVISION data router
Yamaha digital mixing consoles

Elon University's

communications upgrade

Built in 1968, the McEwen building of Elon University in North Carolina originally served as the campus library. Today, the fully renovated facility houses a state-of-the-art communications school.

The design firm Jova/Daniels/Busby of Atlanta was hired to rethink the structure and how a new generation of students would learn, work and create.

The solution involved a complete interior renovation and a 4700sq ft addition of two television studios for a total of 38,500sq ft — almost double its previous space.

As the team began to define the spaces, one aspect of the renovation became clear — the new interior would have to provide an engaging and active environment to address the needs of the future. Research shows that this new generation of students is accustomed to multiple sources of information all at once. The digital age has created a student body very different from their predecessors.

To provide a conducive environment, the designers used color and spatial elements to integrate the newest in teaching technology. Hallways are designed in a way that casual conversations can happen along the main axis of all three floors. Comfortable seating and dramatic lighting are used to bring students and faculty together in an informal setting.

The top floor includes an executive conference room that looks down on the first-floor broadcasting studios.

McEwen's main floor houses Elon's two broadcast studios, one with a professional-quality news set and the other constructed to provide the flexibility to produce sports shows, game shows, talk shows and musical events. Studios, control rooms and editing suites are available to students and maintained by a full-time engineer. A computer lab on this floor provides students with a high-tech connection to digital information. Plasma screens, data projectors and desktops are also available.

On the lower level of McEwen, the editing suite houses DVD and video production. Editing suites with media

software and equipment give young directors the tools necessary to hone their craft. Digital cameras and recording equipment are also available for students to check out.

Design Team

Elon University:
- Neil Bromilow, P.E., dir. of construction mgmt.
- Dr. Gerald Gibson, faculty project liaison
- Chris Fulkerson, asst. VP for tech.

Jova/Daniels/Busby:
- Roy Abernathy, managing principal, COO
- Andy Akard, project mgr., principal, dir. of architecture
- Handan Nazli, project architect

Consultants:
- George Keck, Keck Construction, general contractor
- Mark Valenti, Sextant Group, acoustic/communications consultant
- Doc M. Raines, Jr., P.E., Hibble, Peters and Dawson (mech./electrical/plumbing consultant)

Equipment List

Sony
- DXCD50SL studio cameras
- MVS-8000 digital switcher
- DSR-25 DVCAM decks

Listec T2012P LCD 15in prompter
360 Systems Image Server 2000
Chyron Duet LE CG
Adobe After Effects, Motion
Apple Final Cut Pro 4.5
Avid Newscutter NLEs
GenArts plug-in packages

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EuroNews
replaces tape-based system

EuroNews, a multilingual news channel covering world news from a European perspective, has 12 satellite feeds taking down world news programming all day, every day and broadcasts simultaneously in English, French, German, Italian, Portuguese, Russian and Spanish. With an aging tape-based workflow and a library of over 38,000 tapes from 12 years of broadcast, EuroNews selected SGI to design and integrate a complete digital IT solution based on SGI media server for broadcast and SGI InfiniteStorage NAS2000 systems for its new digital ingest and news production facilities in Lyon, France. The new ingest and news production digital infrastructure is designed to replace the tape-based system and eliminate the use of tape storage, which required a large amount of tape-manipulation and tape-regeneration efforts.

EuroNews required fast and immediate sharing of content while ingesting for nonlinear editing workstations. In the new digital workflow – first used for coverage of the Athens Olympic Games in August 2004 – one SGI media server for broadcast ingests the 12 satellite feeds or taped footage. Ingested content is simultaneously transferred to the SGI InfiniteStorage NAS2000, consisting of SGI TP9300 and TP9300S storage systems. The storage systems offer a high-bandwidth gateway to a multiple drive datatape StorageTek L700e library controlled by SGI InfiniteStorage data migration facility (DMF), data lifecycle-management software that manages and stores more than 40TB of content.

As the system streams content onto the central storage, it saves substantial time because editing can immediately commence on the NAS2000, using six Pinnacle Systems Liquid chrome nonlinear editors. As ingest occurs, program feeds – especially longer items – can be indexed or derushed. For example, an hour-long news feed can be viewed in high resolution (to ascertain picture quality) and several minutes of clips selected for conservation. The clips are then sent to the Octopus transcoder, which transcodes the high-bit-rate version to low-resolution.

From the NAS 2000, journalists are able to browse everything inside the central storage using 120 Octopus NRCS workstations and the Octopus database to select their clips and edit their stories. Aveco Astra from the Czech Republic, integrated with the Octopus newsroom, handles automation for the ingest channels. Journalists then write voice-over scripts to ac-

company the selected clips for the news stories. Seven journalists for each of the seven languages then record audio for the news story in small studios equipped with MixNews, a system created by EuroNews. MixNews stores all the different language audio. As MixNews plays the audio out to two video servers, the second SGI media server for broadcast sends the edited video to the same servers, which record both video and audio as the complete news story, in seven language versions, plays to air. Harris handles automation for playout. ●

Design Team

EuroNews:
- Claude Bruyas, head of I.T. and project mgr.
- Laurent De Rodez, head of post-production
- Alan Mercer, resources dir.
- Enrico Moresi, head of ingest and transmission

SGI:
- Yannick Agaesse, project mgr.
- Philippe Churlet, broadcast consultant
- Manuel Ferreira, account mgr.
- Frédéric Guiot, solution architect
- Lionel Obry, storage consultant

Equipment List

SGI
- Media servers for broadcast InfiniteStorage (NAS 2000 server, DMF, TP9300, TP9300S)

Aveco Astra automation
Pinnacle Liquid chrome NLEs
Octopus newsroom system
EuroNews MixNews
StorageTek L700e library
Harris automation

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FOX SPORTS'
digital overhaul

Premier Media Group, operators of FOX SPORTS ONE and TWO in Sydney, Australia, selected SGI to install a complete digital infrastructure for D10/MXF operation.

Media throughout the facility is SD widescreen. Although the channel outputs are 16:9, they are formatted for 4:3 active safe area for a number of legacy distribution channels. The introduction of digital interactive TV services in Australia requires multiple program streams for live sporting events.

For transmission and ingest, the group purchased three five-channel MXF format media servers with redundant SGI InfiniteStorage RAID arrays and TP900 storage. This is supported by a SAN with TP9100 and TP9300 storage, sufficient to store 70 hours of D10 material in the MXF format and 10 years of on-line browse material. A tape library that archives low-resolution browsing material and 30Mb/s high-resolution D10/MXF clips operates under data-lifecycle-management software. Ardendo software applications manage VTR ingest, schedule automated ingest from live sources and the Odetics videotape robot, and transcode for browse/edit and key frame extraction. The automated DART ingest application manages automated routing for ingest to servers. Ardeno handles media-file management to the storage solution and from storage to the transmission servers, as well as the interface to future NLEs and graphics workstations.

From ingest to playout of MXF, an ARDOME Enterprise MAM solution provides comprehensive asset management. It interfaces with the traffic and automation solutions and permits enterprise-wide desktop browse/editing and high-resolution conforming of MXF files for transmission or fulfillment. Within the InfiniteStorage solution, an Origin 350 file server provides NFS and SGI InfiniteStorage Shared Filesystem CXFS file services to Ardendo servers and desktop systems to support browsing, editing, storage and recovery. CXFS allows users to share files instantly across hardware platforms and among multiple operating systems. The server also hosts DMF software, which provides user-configurable software tools to manage migration of media between TP9100 and TP9300 disk-based storage and the PetaSite datatape archive. An InfiniteStorage TP9300 Serial ATA storage array, providing shared disk storage for up to 10 years for instant access to on-line low-resolution proxies in MPEG-1 format and all metadata, is also attached.

Software installations include the IRIX OS for the media server and Origin 350, and SAMBA protocol for file serving to Windows OS-based PCs. The SAN is prepared for an NFS server for file serving to UNIX servers and CXFS shared file system clients for two Ardendo servers based on the Linux operating system, two SGI IRIX systems and two Windows 2000 PCs.

This new shared file system will help the network expand. It recently added two new channels, FUEL and HOW TO, to its existing FOX SPORTS ONE and FOX SPORTS TWO channels. ●

Design Team

Premier Media Group:
- Chris Rauchle, dir. of broadcast op.
- Andrew Bradley, on-air services mgr.
- Michael Day, CE
- Susan Vine, project mgr.

Silicon Graphics (SGI):
- Greg Doyle, system architect
- David Honey, project mgr.
- Mike Grayson, system integration
- Mark Magallo, account mgr.

Ardendo:
- Eric Bafors, project mgr./team leader
- Mikael Wahlberg, software development
- Martin Fellbrink, software development

Equipment List

SGI
- Media Server
- InfiniteStorage TP900
- InfiniteStorage TP9100
- InfiniteStorage TP9300
- InfiniteStorage DMF data lifecycle management software
- Origin 350 file server
- InfiniteStorage shared file system CXFS
- InfiniteStorage TP9300 serial ATA storage array

IRIX OS
Sony PetaSite tape library
Odetics videotape robot
Ardendo ARDCAP
- DART
- ARDENC

ARDOME Enterprise MAM
SAMBA protocol
Snell and Wilcox Aspect ratio conversion

HDNews
automates production and control processes

HDNews offers late-breaking stories, current headlines, features, national and regional weather, and sports news and highlights exclusively in HD.

The studio where VOOM produces HDNews was originally built for SD production. To meet the needs of HD, the network stripped the old operation and rebuilt it. Innovative design, careful selection of equipment and some custom solutions were necessary to allow them to completely automate the production and master control processes.

VOOM selected Diversified Systems to provide all of the engineering design, equipment procurement, integration, installation and documentation.

The first challenge was the timeline. The project began in September 2003, yet needed to be fully operational by the start of 2004. The team began installation immediately, and the effort progressed in parallel with the design, customization and integration of technologies from several vendors.

The design team focused on integrating technologies to support a highly automated operation capable of delivering up-to-the-minute information with minimum intervention from the staff. HDNews produces a live segment once per hour, recorded to server and rotated throughout the hour. The staff needed a method to update the graphics information so it was always current and up-to-date — even if the underlying program was being replayed. The technical infrastructure, however, needed to have the flexibility to handle live shots and news bulletins without making the automated systems go haywire. This was a technical hurdle and an engineering challenge.

VertigoXmedia developed a customized, template-based interface between the newsroom system, graphics systems and playout servers. They developed a solution to embed data cues within the vertical interval of the live and recorded video programs. These cues triggered the Vertigo system to query respective databases for updated information, feed the updated information to the graphics systems and insert the new graphics into the program stream. The network chose ENPS as the newsroom system and the primary user interface

for most of the production elements. Engineers create graphics for broadcast through an effective use of templates that connect the Vertigo system, PixelPower, Vizrt and Panasonic graphics systems. Both production and master control HD content is ingested, managed and played out on a Thomson Grass Valley managed area network. 1 Beyond editing systems are connected directly to a SAN from LSI Logic, providing editors with instant access to video resources. Weather information is automatically updated throughout the hour and fed from an AccuWeather system. Equipment from Ipitec and Evertz multiplexes the full-band program stream and transports it over fiber to Cablevision's uplink facility in Bethpage, NY.

VOOM HDNews went on air as planned in January and expects an expanding viewership as the HD consumer market continues to grow.

Design Team

VOOM:
- Milan Krainchich, dir. of op.
- William Wright, general mgr.

Diversified Systems:
- Phil Bernal, project eng.
- TJ Beardsmore, project mgr.

Equipment List

- 1 Beyond Pro HD editor
- AccuWeather graphics system
- AP ENPS NRCS
- Ipitch
  - Opus HD MC switcher
  - Integrator HD 96x72 router
- Panasonic
  - DVCPRO HD100 recorder
  - AV-CGP500 graphics processors
  - AK-HC930 HD cameras
- PixelPower Clarity graphics
- Sony DMX-R100 5.1 surround audio mixer
- Thomson Grass Valley
  - Kalypso HD switcher
  - XP media platforms
- VertigoXmedia
  - Xmedia server
  - Xstudio template creation tool
  - Xnews ENPS plug-in
  - Xpanel on-air
- Vinten
  - Robotics series 200 control
  - SP-2000/X-Y Free roaming servo pedestal
- Vizrt Artist software
- Panasonic AV-CGP500 HD render

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HD production trucks

move toward a uniform design

The demand for HDTV coverage of live TV events has created an incentive for mobile production companies to put more multiformat production trucks on the road. Traditionally, the mobile production market uses two distinct truck designs: those geared toward entertainment events and those specialized for sports events. Equipment and format requirements have differed for these two types of vehicles. Now, new technologies are driving toward one flexible design to allow coverage of a wide variety of events.

Game Creek Video and New Century Productions have begun using a new design. Their adoption of HDTV has given rise to a design concept where routers can address everything from monitors to external connector panels. The ability to save and recall settings systemwide allows them to quickly configure the production environment and minimize setup time. Diversified Systems assisted in engineering and integrating these trucks.

New Century required two production units. NCP VII was designed to handle the largest shows in television, while NCP IV was built for weekly network sports productions. ESPN, CBS and FOX are the primary clients for these mobile units.

Two new trucks built for Game Creek are identical, although the requirements for their intended network destinations — ESPN and YES Network — had quite different production requirements. Designing a flexible infrastructure allowed Game Creek to keep costs under control by using a single design and duplicating the installation.

A key decision in the construction of all these trucks was adoption of SD monitoring for the majority of the sources. The trucks use HD monitors only in critical viewing areas. The teams installed downconverting distribution amplifiers on all sources and tied control of the HD program router to an SD composite router for monitoring. This provided a transparent monitoring solution for the production crew while significantly lowering the cost of monitoring.

Evertz provided distribution, up/downconversion, crossconverters and frame syncs, all controlled by their network control panels. Many different technologies were applied to achieve the level of flexibility required by the end users.

These next-generation trucks can be seen at major sporting and entertainment events throughout the country.

Design Team

Diversified Systems:
- Duane Yoslov, VP, op.
- Nequin Scott and Adam Salkin, lead engs.
- Mike McKee and Marcus Mahan, implementation

Game Creek Video:
- Pat Sullivan, president
- Paul Bonar, dir. of eng.
- Jason Taubman, eng. in charge

New Century Productions/WFMZ:
- Mike Werteen, VP of marketing
- Mike Mundt, sr. VP of eng.
- Jack Fakkala, eng. in charge

Equipment List

Game Creek Video Trucks:

PESA
- 128x128 HD router
- 256x256 SD composite router

NVISION 144x144 AES audio router

Thomson Grass Valley Kalypso 4M/E HD switcher

Calrec Alpha 100 audio console

Sony HDCAMs

Canon lenses

New Century Productions Trucks:

Utah Scientific
- 128x128 HD router
- 256x384 SD composite router
- 208x176 AES audio router
- 256x256 analog audio router

Thomson Grass Valley Kalypso 4M/E HD switcher

Yamaha PM1D audio console

Calrec Alpha 100 audio console

Ikegami HD cameras

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KCEN-TV's
long-term planning pays off

In 1999, KCEN, a privately held NBC affiliate covering the Temple/Waco, TX, market, took the 2006 "digital dictum" as an opportunity to get started on right away. They received help with their advance planning from Professional Communications Systems (PCS), a systems integrator based in Tampa, FL.

KCEN engaged PCS consulting services to create a five-year plan in conjunction with its management, other outside firms and the equipment manufacturers. The plan would allocate resources and phase in the project with a minimum of interruption and an organized approach to capital investment.

The first step was a detailed scope of work document, a general timeline, and the corresponding equipment and services to support it. The plan called for the station to

employ the latest technological innovations available in the industry that were appropriate for the size of the station and the market. The implementation had to be cost-effective, meet all needs and be completed within the allotted time frame. Also, the team had to make three surrounding news bureaus compatible to ensure consistent broadcast quality.

The design and installation process of phase one began with the replacement of the spot playback system with server-based commercial playback designed to operate under automation control. In conjunction, all of the ENG and production equipment was updated from analog to the Panasonic DVCPRO digital format.

Phase two involved upgrading graphics capability with a Chyron multichannel digital production system, including a Duet character generator and an Aprisa still store.

In phase three, a Wheatstone broadcast audio mixing console was added.

Design Team

KCEN:
- Randy Odil, VP and general mgr.
- Dan Archer, chief eng.

Professional Communication Systems:
- Larry Stephen, sales support and project mgmt.
- Glenn Thomason, dir. of eng.
- Rich Merriam, sr. design eng.
- Clay Kwitkowski, installation tech.
- Bill Blush, VP, sales

Equipment List

- Panasonic DVCPRO50 ENG
- Sundance automation
- Chyron
  - Digibox graphics
  - Duet CG
  - Aprisa still store
- Wheatstone TV-80 audio console
- Axcera transmitter
- NVISION
  - 128x128 MC switcher routing and distribution
- Thomson Grass Valley 3M/E Zodiac
- HDTV pass-through systems

Phase four was planned to meet the FCC 2003 deadline. PCS designed and integrated an HDTV pass-through to support digital transmission while the tower and RF system were upgraded.

In the fourth quarter of 2004, the fifth and final stage in the five-year plan was completed — under budget. PCS upgraded the infrastructure of the broadband-capable digital operations, including a multichannel

NVISION master control switcher, NVISION multilevel routing and distribution and a Thomson Grass Valley Zodiac platform. Redesign of the existing monitoring, EAS and critical path signal distribution was required to support the new infrastructure.

KCEN chose PCS due to its history of designing, installing and supporting small to mid-market TV broadcast systems.

KIRO-TV's
automation of news

KIRO-TV in Seattle has long known the value that quality technology brings to its viewers and news staff. So, the station made a commitment early in 2003 to bring full digital automation to its newsroom.

Its informal research became serious right away and, after several months, it produced a short list of vendors. The station chose a solution based around its existing Avid iNEWS newsroom computer. It replaced its tape editors with Avid's NewsCutter, added Avid's Unity and AirSPACE for a server/airplay system and brought in Sundance Digital's NewsLink automation to tie them all together, handle playout and assure a growth pathway.

One issue in selecting the news automation was KIRO's history with Sundance Digital's FastBreak automation in master control. Another was NewsLink's highly efficient playout control. A third factor was the range of devices NewsLink could automate into iNEWS: video servers, editors, graphic devices, camera robotics, audio and switchers. KIRO settled on automating playout of its server, still stores, and CGs and elected a staged rollout to begin with its AirSPACEs.

Efficiency was an important requirement. Previously, as many as five devices operated before an assigned story was ready for air. Now the edit moves from each stage while remaining inside the same system.

During the news program itself, adding and dropping stories required many steps to remove old video and insert new video. Even KIRO's crew could not wrangle tape at this level of competitiveness without the occasional airing of black or wrong content. Now, the producer simply revises the rundown, NewsLink immediately re-stacks clips for the AirSPACE and the right video is always cued and ready.

With so much riding on the success of its news, KIRO insisted on physical redundancy for its playout. NewsLink assisted by automatically cuing the same ID in both primary and backup AirSPACE channels, then by gang-rolling them in locked sync.

A key part of KIRO's look evolved from using taped bumps to break. After the installation was underway, the station realized that the fourth AirSPACE channel it was dedicating for bumps and teases must always appear at the same switcher channel rather than automatically checkerboarding across channels after a rundown change. It was discovered that this capability was already available by using a NewsLink control initially designed for managing moving backgrounds.

What surprised KIRO was the detailed understanding of station operations it found in the Sundance developers and code writers. KIRO has been pleased with the responsiveness Sundance has shown handling the issues that inevitably arose. The result has been a system that exceeds its specifications, and pulls all devices together in a tight, unified operation.

With NewsLink as the automation umbrella over its news workflow, KIRO's newsroom operations have become streamlined, and it is on-air reliable. In a testament to KIRO's confidence in the stability and capability of its new system, the station actually took it on-air midway into the November 2003 sweeps. And an unanticipated benefit they all noticed is a new-found quiet in the control room during commercial breaks. Instead of the traditional chaos associated with the urgency to align production devices and cue stories, the producer and technical director are able to discuss quality, content and effects issues. ●

Design Team

KIRO-TV:
- John Walters, dir.of eng.
- Ray Maker, sr. broadcast eng.
- Scott LaPlante, news op. mgr.
- Walt Farley, news dir.
- Sterling Davis, VP eng., Cox Broadcasting

Sundance Digital:
- Fred Schultz, VP, news automation
- Chris Simpkins, sr. developer, news

Equipment List

Sundance Digital NewsLink news automation

Avid
- iNEWS NRCS
- AirSPACE and Unity servers
- NewsCutter NL

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KLCS-TV/DT

deploys digital content distribution solution

In January 2004, KLCS completed the installation of a digital content distribution model able to reconfigure bandwidth and satisfy both over-the-air and classroom audiences. The project enables the station to provide educational content directly to the desktops of more than one million students and teachers in the Los Angeles County School District (LAUSD). Systems integrator TV Magic guided the project.

KLCS required a reliable and flexible combination of equipment that would allow large volumes of material in various file formats to flow seamlessly between various stages.

The upgrade included integration of a 28-channel Omneon Spectrum media server system controlled by Sundance Digital's Titan automation

software. The server allows engineers to separate studio and edit content, play-to-air material, streaming channels, and other assets into different volumes on the same server so that the facility's automation system sees only the material relevant to it.

The server is also integrated with Pinnacle Liquid series production applications mounted on a GVS SAN/NAS for shared storage and near-line archiving. Together, these systems allow operators to mix compression formats on a single timeline, offer compatibility with the firewire drives deployed in Ikegami field cameras outfitted with nNovia hard-disk recorders, and provide an easy to use solution with enough horsepower to accomplish higher-end effects in real time.

Triveni Digital's Skyscaper system, coupled with Sundance Digital's

Seeker asset manager, provide the interface teachers use to request delivery of content to individual school campuses. Sundance's Titan automation enables GUI-based, dynamic reassignment of playlist control. Sundance Archive Manager, in combination with Avalon, oversees near-line storage and retrieval of media for play to air, while the Sundance Intelli-Sat application schedules and records KLCS' incoming satellite content.

Teachers can now browse or search the entire contents of the KLCS media library, which include not only video and audio, but also PowerPoint presentations, lesson plans and other resources. Once a teacher requests digital content, the high-res version is datacast to the school's edge server for playout. The system allows teachers to search and browse for material without leaving their desktop.

Design Team

TV Magic
Gus Allmann, Kathy Ogburn and Deen Humphus, design
Janet Crumb, installation, DST
Gonzales/Goodale Architects:
Gary Popenoe, architect
KLCS:
Alan Popkin, dir. of op. and engineering
James Mason, CE
Martin Miller, sr. eng.
Vernardo Watts, maint. eng.
Khanh Pham, network eng.

Equipment List

Omneon Spectrum media server
Sundance Digital
Automation
Intelli-Sat
Triveni Digital Skyscraper
Avalon IDM and XDSM archive manager
GVS Metropolis SAN/NAS
Leitch
NEO SuiteView
Integrator GOLD SDI
Opus MC switcher
DPS-575AV synchronizer
6800+ video/audio conversion
880-Series stereo audio DAs
CCS Pilot and navigator
Pinnacle Liquid Edition and blue
Dielectric 888 antenna
TANDBERG encoders and IRDs
MRC DAR Plus microwave
For-A Harabi switcher
Evertz 9625 LGA
Ikegami HL-DV7AW cameras
nNovia QuickCapture drives
Sony DMX-R100 console
Digital Rapids StreamZ 2500 Web encoders
K-Tech DM-100 DTV monitoring
Rohde & Schwarz T&M

KTVK-TV's
station automation solution

In late 2003, Belo media company embarked on a plan to centralize the master control operations of its four Arizona stations and their DTV counterparts from KTVK-TV's remodeled Phoenix facility.

Because the plant's aging cart machine was close to retirement, KTVK chose to start centralcasting and installed an automation and video server large enough to run all four stations.

The solution is based around a Sundance Digital Titan multichannel automation system that operates four SD channels and four HD channels. Belo chose the system for its ability to manage Belo's widespread geographic sites. This enabled the organization to add multicasting capabilities or additional zones of control as needed in the future. The company customized the system to allow for alternate logs for rain delays and to enable it to insert pitcher relief breaks for live programming and sports shows.

Titan controls a Thomson Grass Valley Profile 3500 Open SAN system that was designed to store SD and HD material and can upconvert and downconvert in real time. All receivers for incoming feeds, the station's routing switcher and an RF router fall under Titan as well. The station can transition to HD when needed. The facility went from a totally analog and tape-based operation running on rudimentary automation, to a fully digital automated, server-based system running four stations.

Even before planning began on the centralcasting project, the decision was made to produce a newscast for sister station KMSB-TV using the KTVK newsroom. To do this, fiber was leased to connect the two facilities. The centralcasting model made the fiber costs much more palatable.

The team introduced video-over-IP technology to send nine streams of SD video and two SMPTE 310 streams from the Phoenix location to Tucson. Seven SD streams for live video and editing were returned over multiple duplex fiber paths furnished by COX. Because Tucson produces its own local programming and commercials, a small Profile and Sundance Media Prep station were installed in that location. A Gateway transfers the video files to Phoenix for playout. The Tucson station also has the ability to take control of its channels through a Titan Air Control station.

The facility was originally designed to house two TV stations and two radio stations, so space was sufficient for the master control room expansion. During construction, KTVK was able to parallel the two operations so the operators moved from one to the other. The organization now produces twice as much with a smaller team in Phoenix and no MC operators in Tucson. ●

Design Team

Belo:
- Craig Harper, Reed Wilson and Wayne Kube

KTVK-TV:
- Jim Cole and Mike Lopez

KMSB-TV:
- Lou Medran

Thomson Grass Valley:
- Richard Brown and Sam Peterson

Sundance Digital:
- Robert Johnson, Eric Harrington, Brij Singh and Sean Pendleton

Equipment List

Sundance Titan automation

Thomson Grass Valley
- 3500 XP Profile
- Redundant Profile Open SAN system
- M2100 MC switchers

Ciprico RAID chassis

San Valley 2000 Gateways

Cisco
- 4000 series switch
- 7800 series router

TANDBERG
- E5710 encoders
- TT6120 / TT1260 decoders

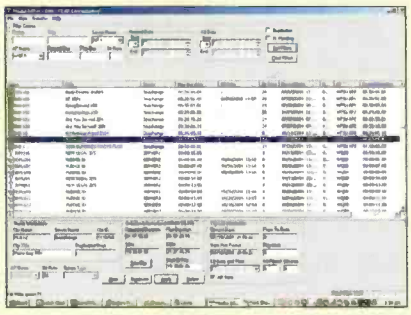
KVAL-TV installs modern automation

KVAL-TV phased in centralized programming with its first Media Pool multi-channel video server in 1995. By 2000, it was feeding five zones covering most of western Oregon from one control room. Much of the programming is identical, but the zones break away for local news, sports and other programs. All station breaks are fed from the central location's video server. In addition, hourly five-minute news cut-ins on a cable news channel are also scheduled using the video server, as well as a time-shift with different commercial content for the evening news on a different channel. As its old server neared retirement, the station considered modern automation solutions.

With a high volume of daily local spots and live programming, and a commitment to serving advertisers promptly with last-minute traffic changes, the station opted to remain a mostly hands-on operation, and automate only those areas where it would deliver a significant advantage.

The station approached MicroFirst for operator-assist functions for a new Omneon server. The station needed to be able to start playing each server source instantly from independent GPIs, as well as rescue from GPI in case of a false start. Other needs included end-of-station-break GPI outputs, the ability to place comment text in a playlist and an automatic refresh of durations and titles if clips were replaced.

Because the manual control room "take" switch is the break cue (with no preroll), there was concern about avoiding dead air while waiting for the server to respond. Automation typically starts events at the top of the second; but the station wanted to start immediately from the cue and have tight back-to-back play. The system offers an immediate-start feature to keep the station looking clean on-air, even through tight network breaks and cut-ins.



Several of its features helped to improve workflow, especially the ability to import/export current air schedules directly from/to plain text files, and the ability to filter imported schedules to a specific time. When coping with a late-running sporting event or special, it's easy to delete individual spots, drag and drop individual commercials or entire breaks for make-goods, and skip forward in the schedule to any point. The interface can display up to four schedules tiled vertically. In edit mode, an edit panel occupies the lower part of the screen. The user interface was easy to learn because of its Windows-like drag-and-drop functionality.

The media editor program displays the server's database with faster and easier-to-use sort-and-filter options than the station's old system. The station also can export the database to a text file to share on the intranet with remote traffic and sales departments. It takes only a few clicks to copy a clip, and users can trim clips easily by clicking "trim clip" to load a clip in the dub/trim window. Also, with multiple stations and departments responsible for managing server inventory, building, importing and executing a single daily clip-deletion list saves the staff from one-at-a-time deletions.

After dealing with huge numbers of playlist changes during the last election season, the station knew it had to streamline that process. The operator now simply uses the time-filter function to import the changes directly into the on-air schedule. This lets the staff respond to advertiser's needs with error-free control.

We found that additional channels, devices and workstations may be added without altering the original system design. The digital automation system is capable of recording or airing multiple simultaneous program services.

Design Team

KVAL
- Jim Bowen, VP of eng.
- Dan Stoe, chief eng.
- Steve Nordby, software projects coordinator

MicroFirst Engineering
- John Beneat, EVP/CTO
- Rick Sonderfran, lead software programmer
- Jerry Berger, VP/GM
- George Teplansky, sales support specialist

Equipment List

MicroFirst DAS
- GPI 16x16

Omneon server

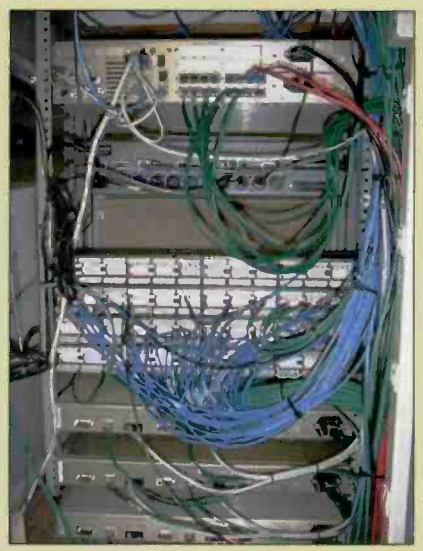
KWTV-TV
improves connections with sister station

Compared with many digital transformations and complete station overhauls, the system upgrade for KWTV-TV in Oklahoma City is a relatively short story. But the impact of the system upgrade is significant, considering the implications of the convergence of broadcast systems and IP technology.

KWTV and its sister station KOTV-TV in Tulsa were co-producing two sports programs and needed a new environment for creating high-quality programming. They chose Professional Communications Systems (PCS) to integrate a server-based commercial playback system that operates under automation control. The integrator also installed a new digital intercom system to provide two-way communication for the stations using IP technology.

One problem encountered involved tying the intercom platforms to the WAN connecting the stations. The team solved the problem in part by deploying a Trilogy Mercury IP-based intercom system to integrate KWTV's Commander matrix intercom with KOTV's existing RTS Adam system.

There were anticipated challenges, as well as those that could not have been anticipated due to the newness of the technology being implemented. But, overall, the project was a success, as both stations are now capable of video, audio and intercom communication over a DS3 line. Seven duplex audio communication trunk lines provide real-time communication among TDs, directors, producers and on-air talent. ●



Design Team

KWTV:
- Rob Krier, VP and general mgr.
- Julie Cameron, dir. of engineering
- Don Linquist, maint. tech.

Professional Communications Systems:
- Larry Stephen, sales and project support
- Glenn Thomason, dir. of engineering
- Clay Kwitkowski, installation tech.
- Bill Blush, VP, sales

Equipment List

Trilogy
- Commancer intercom system
- Mercury IP intercom system

Thomson Grass Valley Profile XP video servers

Harris automation system

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KVIE-TV
adds a digital transmitter

KVIE-TV had large aspirations. Its chief goal was to install a digital system in its existing building, using equipment that would not be obsolete as the station moved to its final digital channel. They also wanted a system that made full use of IP technology for lower operational costs. To meet its goals, the station selected Thales' MSDC transmitter.

The first step was to fit the new DTV system in an existing analog transmitter building housing dual 30kW Ch6 transmitters. This seemed impossible because no easily accessible excess space was available. However, the team created the needed space by

reducing the size of several storage rooms and office areas.

The station installed a WAN connecting the studio, transmitter site and other sites with wireless 5.8GHz IP radios moving data at 18Mb/s. Using the IP-compatible board in the transmitter and software allows KVIE to access the DTV transmission system anywhere there is an Internet connection. Thales engineers can also access the system remotely via a secure VPN for setup, control or troubleshooting.

Another challenge was the lack of space for the high-voltage power supply (HVPS) and cooling condenser system. Refrigeration air conditioning cools the building for the analog

transmitter. The A/C compressors were relocated to the roof to make room for the HVPS. Because the transmission building sits on 13ft high stilts to keep the facility above the San Joaquin Delta flood plain, the team attached additional steel reinforcement beams to the floor to handle the weight of the HVPS. The DTV transmitter cooling condensers were mounted on a frame suspended above the roof to allow for roof maintenance, and shock-mounted to minimize vibration to the building. The mask filter was wedged into the ceiling of the building, leaving a scarce 2in clearance between one outside wall and 2in clearance on the opposite side of the filter and air conditioning ductwork.

To meet its second goal — equipment that would work for all UHF channels — the station used 5in heliax for the transmission line. In addition to economic benefits, this approach was much quicker and more efficient — installation on the 2000ft tower took only a week. The match into this transmission line/antenna load is superior to the match into the station dummy load.

Because KVIE-TV uses a VHF lowband channel, the building has only a 120/208 VAC service. The new transmitter required a 480 VAC service. Installing a new 480 VAC service into the building was an extremely costly and time-intensive proposition. Thankfully, the existing service

had excess capacity, including a backup generator. Power needs were supplied by a 208-to-480 VAC step-up transformer with sufficient capacity for two MSDC UHF IOT transmitters. Thales' Paragon requires a smaller 480 VAC service than typical IOT transmitter systems.

Design Team

Thales Broadcast & Multimedia:
- Gordon Gummelt, dir. of broadcast eng.
- Ted Karam, dir. of digital and software eng.
- Fred Stefanik, mgr. analog and mixed signal eng.
- Bill Yorns, project mgr.
- Rodney Cole, app. eng.

KVIE:
- Michael Wall, VP of tech.

Richard Green & Associates

Equipment List

Thales
- Paragon transmitter
- View control software

Jampro Antennas JSM-32/53 antenna

Andrew HJ9-50 5in heliax transmission line

UHF broadcasting doesn't get any better than this

THALES

DCX Paragon MSDC-IOT
Thales' DCX Paragon is designed to provide broadcasters with the most cost-effective and efficient transmitter ever created. DCX Paragon utilizes Soft Arc Technology™ (SAT), which eliminates the need for a crowbar, dramatically increasing the transmitters' overall reliability. Designed with cost of ownership in mind, DCX Paragon has a beam efficiency of up to 60%. Available in oil-cooled and liquid-cooled versions, UHF broadcasting doesn't get any better than this.

www.thales-bm.com

Media General

centralizes master control

In early 2001, Media General Broadcast Group began to merge the operations of their 26 broadcast TV stations. By combining these operations, the network could minimize capital investment costs and reduce overall operational expenses.

The plan was to first standardize and centralize traffic operations, then centralize master control duties and distribute the operations workload among the stations. The results would be substantial improvements in operational efficiency with no loss in reliability, minimal capital outlay and low interconnection costs. The team selected Florical Systems' automation as the means to achieve these goals.

When the company centralized traffic operations in 2001, they improved efficiencies with standardized reporting, quicker access to avails information for sales, and better customer service. The next step involved centralization of master control for 12 stations at a hub in Spartanburg, SC.

The hub monitors and controls the automation systems located at each of the 11 spoke stations. The hub can modify the schedule for any channel right up to the next event to air. Each automation system controls video servers, switchers and logo inserters at the local station. The WAN in Spartanburg performs most system control functions. The network features three separate backup circuits. However, in the unlikely event of a WAN failure, the local stations can quickly switch to local mode and maintain automated operations until the WAN connection is restored.

Program acquisition is streamlined with a central ShowTimer system that prepares both the master and the stations' daily recording schedules. This system sends commands over the WAN to each station's device server to control the local equipment to position dishes, tune receivers and record satellite feeds used by the station. Each station maintains a copy of the daily recording schedule for use by a local backup controller in the event of loss of connectivity to the hub. The local controller also allows the remote station to add recordings to the master record schedule in Spartanburg.

The local view of the master record schedule enables operators to ensure that all recordings for a program start at exactly the same time. Each station is assigned programs to segment and time. Timing data is stored in a central media database available to all stations. Because all recordings of a program start at the same universal coordinated time, there is no need for adjustments to reconcile different start times. The result is that the labor to time program segments is not only distributed across all stations, but also significantly reduced.

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Design Team

Media General Broadcast Group:
- Ardell Hill, sr. VP, broadcast op.
- Mark Turner, dir. of info. tech.
- Matt Heffernan, general mgr., central broadcast op.

Florical Systems:
- Jim Moneyhun, president
- Eric Piard, Ph.D., CTO
- Jeff Gierhart, sr. systems eng.

Equipment List

Florical
- AirBoss automation
- AirBoss Editor
- MediaFiler asset ingest
- MediaTimer segmenting
- MediaMaster AMS
- ShowTimer satellite record scheduler
- SatelLink satellite dish and receiver control

Thomson Grass Valley
- iDVR video servers
- Saturn MC switchers
- M2100 MC switchers

SeaChange MediaClusters
Utah MC-500 MC switchers
Leitch
- Logomotion I and II logo inserters
- Panacea

Quintech RF router
Agile-Omni 830 and 930 sat. receivers
TANDBERG Altaeia sat. receivers
Scientific-Atlanta DSR 4810 sat. receivers
Patriot RCI-2000 and RCI-1000 antenna controllers
Microfirst 1610 microcontroller

Media General
deploys digital automation

In early 2004, Media General Broadcast Group began centralizing master control operations for 12 of its 26 TV stations. By converging their operations, it would minimize capital investment costs and reduce operational expenses.

The stations chosen for the centralization project were selected primarily because of their common network affiliation with CBS. WSPA in Spartanburg, SC was chosen as the location for the new central broadcast operations center.

The company created a plan that would build on the previously created centralized traffic operations concept that was placed in service in 2001. The goals of centralizing master control operations included substantial improvements in operational efficiency, high reliability, minimal capital outlay and low interconnection costs.

To minimize interconnect costs the organization adopted a distributed control approach. This approach leaves all video content and switching functionality at the local station but allows control from the operations center. Monitoring is performed using low data-rate video encoders. Very early in this project, engineers realized that the relatively high latency of low data-rate video monitoring would pose a problem when operators were switching commercial breaks in live programs such as sporting events.

As a result, they developed a solution to the live switching problem — to provide the operations center with network satellite receivers, which would mirror the network receivers located at each remote station. This would allow the operations center to virtually eliminate monitoring latency for live network events. However, it required a receiver controller that could mirror the CBS satellite receiver switching systems at each station.

Media General contacted MicroFirst and reviewed the system requirements. Within 45 days, Microfirst supplied the MPC-1610 controller, a digital automation system that solved the problem. The operations center installed a controller and a satellite receiver for each station and worked with CBS and MicroFirst to configure them for mirroring. The satellite monitoring system began working in July 2004.

The MPC-1610 controllers at the broadcast operations center have been a key component in minimizing interconnection costs while maintaining a high degree of product quality. These controllers also met the company's goal of improving competitiveness and profitability by reducing capital outlay.

Design Team

Media General
- Ardell Hill, sr. VP, broadcast op.
- Mark Turner, dir. of info. tech.
- Matt Heffernan, general mgr.

MicroFirst Engineering
- John Scarpa, president
- John Beneat, CTO
- Jerry Berger, VP/GM

Equipment List

- MicroFirst MPC-1600 Digital Earth station controller
- GI 4800 satellite receiver

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Morgan Stanley

replicates World Trade Center facility

When Morgan Stanley began planning the communications center for its new headquarters in Purchase, NY, the company contacted The Systems Group (TSG) to replicate the original facility it had designed and built four years earlier in NYC's World Trade Center. The financial group needed to be capable of broadcasting news and interviews internally among the staff, and to affiliates and broadcasters worldwide.

The centerpiece of the facility is a noise-isolated production studio. A deep cut through the concrete floor around the entire studio acoustically decouples it from traffic in the busy corridors on three sides. Four Ikegami HL-45AW digital triax cameras can be connected to the control room from any of four broadcast service panels (BSPs) located on different walls of the studio. Using a TSG custom triax patch panel that unites camera trunks from around the building, the signals connect to a Thomson Grass Valley Zodiac switcher. The 2.5M/E switcher

has a Dveous/MX dual twin effects package. The team selected Pinnacle FXDeko II and Thunder for CG and still store, and an Ultimate II for chroma key effects.

The production control room has a traditional two-tier configuration, with the technical deck closest to the monitor wall and the producer's deck behind. In order maintain contact in fast-turnaround situations, the audio operator is located at the far end of the rear production deck. They chose a Harrison Pro950-EX analog broadcast console as the audio mixer. The audio accessory rack was built into the wall behind the operator, giving arm's

length access. A sound-treated door sealed the back of the accessory rack.

Video is distributed over a component serial digital interface on Sony DVCAM 1800's record/play DV tape machines. Video trunks extend to auxiliary locations in the large complex without concern for equalization for long runs. The facility also features three nonlinear Avid edit rooms and Media Composer Adrenaline systems. An Avid Unity LANshare EX ties the systems together and allows editors to access clips from a central server.

A 500-seat room serves as a theater or as a live stage auditorium. There are also two completely remote-controlled Ikegami HC-250 cameras on Vinten robotic heads spaced about 20ft apart at the rear of the room. These cameras' pan, tilt, zoom and focus functions are at the hand of the technical director back in the control room. In addition, three more BSP locations were provided for up to six cameras that can be placed at the front, back or sides of the auditorium.

An isolated machine room houses most of the equipment mainframes. This separates noisy fans and whirling disc drives from the operating areas where critical listening and communications occur between staff members.

Design Team

Morgan Stanley:
- Eric Davis, VP, dir. of TV and video comm.
- Andrew Stauffer, producer and studio mgr.

The Systems Group:
- John Meuse, project mgr.
- Mike Panico and John Zulick, project engs.
- DJ Rice, Rich Citelli and Larry DeFazio, integration supervisors
- Roger Ferris, architect

Plaza Construction, general contractor

Belway Electrical Contracting, electrical contractor

Equipment List

RTS/Telex Adam Communications

Pinnacle
- FXDeko II graphics system
- Thunder still store

Sony DVCAM 1800

Ikegami monitors

Harrison Pro950-EX console

Avid Media Composer Adrenaline editing
- Unity LANshare EX

Thomson Grass Valley
- Concerto SDI 64x64 router
- Concerto analog audio and CTC 8900 series DAs

Leitch NEXIO servers

Sundance automation

TBC consoles

Sahara TV's
seamless automation

The recent explosion of entertainment and news channels across the Middle East prompted Sahara TV to improve the competitiveness of its Hindi entertainment channel, located at the Noida facility near New Delhi.

The plan entailed launching seven 24-hour news channels, with the majority of their content resources shared from one facility, while concurrently migrating to digital. Another goal was to improve their journalists' control over the production technology. The ultimate goal was to build a completely integrated, seamless system of diverse equipment that would operate under the control of a powerful, easy-to-use automation system.

Sahara TV chose Leitch's NEXIO NewsNet system as the technical core for its ability to meet the network's key requirements: scalability and highly efficient content sharing. It enables the network to easily and economically add channels, bandwidth and storage, and allows all of the channels and network ports to simultaneously access content without restriction. Using the nonlinear editors, journalists now

have access to clips in shared storage the moment ingest begins.

The facility now houses three fully mirrored domains with total storage capability of more than 3500 hours to support its current and future news channels. NEXIO NX2000MS mirror server provides data mirroring in each domain and keeps the content in main and backup systems synchronized.

The system links the facility's ENPS newsroom computer system with automation tools for sequencing broadcast news stories. Automation by OmniBus Systems ensures all systems are integrated and MOS-compliant.

The automation, coupled with Leitch distribution and routing systems,

handles ingest simply and efficiently despite the size of the system. To maintain optimum quality during ingest, Leitch DPS-575 digital processing synchronizers and NEO Simplicity modules (DAS-3901) with full control are installed in each path, converting analog audio to digital and synchronizing it to the video.

Thousands of feeds are recorded on a daily basis, so all feeds are given a specific name or ID through the automation so they can be easily located and accessed from the massive database. The ingested feed is stored in DV-25 format (high resolution) on the SAN, accessible by the editors in the NewsFlash craft edits, and in MPEG-1 format on the browse server, accessible to the journalists sitting on the ENPS terminals through the hybrow application. Completed rundowns are published from the ENPS terminal, and on-air clips are taken to air from OmniBus. NEXIO PlayList works as a backup to the facility's automation system.

Design Team

Sahara TV:
- F.S. Chauhan, VP of eng.
- Nitin Raghuvanshi, system eng./coordinator
- Anand Kumar Singh and Tanmoy Sarkar, system and network engs.
- Yamunesh Rastogi and Raj Yadav, system engs.

Leitch Technology:
- Somu Patil, area account mgr.
- Dave Chawner, dir. of app. eng.

Shaf Broadcast Pvt. Ltd.:
- P. R. Suresh and Mr. Arindam Mohanty, directors
- Anilkumar S. Tanwade, broadcast eng./coordinator

Equipment List

Leitch
- NEXIO NewsNet newsroom
- NEXIO NX4000TXS servers
- NEXIO NewsFlash FX NLEs
- NEXIO Pilot
- NEXIO Playlist event sequencer
- InstantOnline EDL conformance engines
- Integrator Gold wideband digital multi-rate router
- Panacea Clean Switch
- DPS-575 digital processing synchronizer
- SuiteView multi-source display processor
- NEO Simplicity processing modules
- LogoMotion II logo inserter
- DCS Navigator control and monitoring software

Telescript teleprompters
Pinnacle DekoCast graphics
Vizrt graphics
ENPS news production system
OmniBus systems automation

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Mt. Wilson Group

builds collective DTV facility

When four Los Angeles broadcasters set out to build their DTV facilities, they saw similar needs and realized that there would be substantial benefit in joining forces. The Mt. Wilson Group Project was formed to meet those needs. The group is made up of KDOC-DT, KJLA-DT, KOCE-DT and KXLA-DT, all of which serve Los Angeles.

The goal of the system design was to combine the analog and digital facilities of all four stations into a single facility on Mt. Wilson. Because it is in an ideal location to serve the Los An-

geles basin, it is extremely popular and available floor space and tower space are limited.

To accommodate the transmission equipment, American Tower built a three-story satellite transmitter building, along with a master combining room and 400ft tower. The high-power digital and analog transmitters are located on the first and second floors of the facility, with the third floor used for auxiliary equipment, a complete maintenance shop and spare parts storage.

To minimize tower space requirements, the plan called for all of the stations to share two broadband panel antennas. Radio Frequency Systems (RFS) designed a combiner/filter system to feed four channels into each antenna during normal operation. The system is also capable of routing any of the channels to either antenna,

effectively providing each station with a master and a backup antenna. This arrangement meets the group's desire for system redundancy. To take advantage of economies of scale, the plan also called for the use of a common transmitter manufacturer, make and model. This would allow for common spare parts, as well as common knowledge between station engineers about the operation and maintenance of the selected transmitter.

The group chose Axcera as the solution. In order to achieve the desired level of redundancy in the transmis-

sion system, they installed transmitters for the DTV channels and HP100DAW units for the analog. The transmitters are capable, respectively, of output powers of 50kW average DTV and 100kW peak visual analog. These are dual-IOT transmitters equipped with dual exciters, ensuring a high level of system redundancy. The team worked closely with multiple RF system manufacturers to integrate the complex filter/combining network with the transmitters. They also worked together to ensure that the adaptive correction would continuously optimize the performance of each transmitter, even in the presence of multiple combined channels.

Currently, seven of the eight transmitters are on the air and providing reliable service to the LA basin, with plans to relocate the final analog transmitter to the site in the near future.

Design Team

Mount Wilson Group:
- Roger Yoakum, dir. of engineering/CE, KOCE
- Ken Brown, CE, KJLA and KXLA
- Roger Knipp, CE, KDOC
- Bradley Moore, project mgr., KOCE
- Greg Brenner, sys. eng., KOCE

The Merrill Weiss Group:
- Merrill Weiss, president

Axcera:
- Dale Dalesio, dir. of engineering
- Ed Ritz, field service eng./ project mgr.
- Mike Rosso, VP of sales
- Russ Erickson, regional sales mgr.

Equipment List

Axcera Visionary
- DT HP50DDW
- Visionary HP100DAW

RFS
- Combiners
- Broadband panel antennas

MYAT digital mask filters

The Most Versatile IOT Transmitter Available

Axcera's Visionary transmitters lead the industry in versatility. These amazing transmitters offer broadcasters the choice of single or multi-collector IOT amplifiers from various manufacturers, with air, oil, water, or water/glycol cooling, for analog or digital operation, all in the same transmitter design. And to protect your investment into the future, systems can be configured for easy field conversion between analog and digital operation and between various tube technologies with nearly 100% re-use. Industry leading technology and the ability to choose - from Axcera, the RF experts.

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the rf experts

TNT
unleashes programming in HD

Turner Broadcasting System launched its first regularly scheduled HD broadcast in May 2004. The network implemented the all-server operation along the lines of existing networks by using the same program flow and workflow processes. This presented some challenges because the all-server operation required hardware that in some cases did not exist. HD clip servers, Dolby E support and the complex server architecture required to meet the project's goals called for first-time implementations planned by the network's netops engineering staff and designer/integrator AZCAR.

The project planning began in the fall of 2003. To fit into the facility, the team had to implement a seamless transition for the building's routing systems. These were already multiformat but considerably too small to accommodate the expansion without affecting the on-air quality of the 19 entertainment networks that originate within the facility. Several Thomson Grass Valley Trinix routers were installed in parallel with existing systems. Outputs migrated when operations would be unaffected. The highly redundant nature of the netops signal path eased the transition.

The team also installed terminal equipment and MPEG encoders from Snell and Wilcox, under control of the Roll Call control and monitoring system. Chyron provided HD Clip servers and Quartz provided QMC HD master control switchers with 5.1 surround support. Dolby E is the house multichannel standard, and is supported by Sony SRW series VTRs. Program content is cached to Pinnacle servers from Sony Flexicarts under Pro-bel automation. Evertz provides unattended continuous QC of ingested feeds.

The team, which included a full-time site staff of 29 installers and managers, installed more than 500,000ft of cable during an intensive six-month installation. ●

Design Team

Turner Entertainment Networks:
- Ron Tarasoff, VP, broadcast technology and eng.
- Naveed Aslam, sr. dir. of eng.
- Patrick Popham, project mgr.
- Jack Gary, project eng. lead

AZCAR:
- Tom McDonough and Andrew Cox, project engs.
- Matthew Brown, project mgr.

Equipment List

- Thomson Grass Valley Trinix and Apex routing switchers
- Pinnacle Systems HD servers
- Dolby E encoders and decoders
- Quartz QMC HD MC switchers
- Snell & Wilcox
  - modular equipment
  - MPEG encoders
- Barco Hydra projection displays
- Pro-Bel automation

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Turner Studios
adds HD capability

This year, as the penetration of HDTV has increased, Turner Studios decided to upgrade its facility, which was built in the late 90s, in order to improve their ability to produce in HD. In addition to editorial, mixing, and graphics services, it was necessary to add HDTV commercial integration for live programming, as well as convert one studio control room to full HD capabilities. New Sony HD cameras replaced SD-only cameras, and will allow production in both HD and SD. In both of the control rooms (PCR-24, a new control room for integration, and PCR-22, renovated for studio production) Thomson Grass Valley Kalypso HD production switchers were installed. The monitor walls were installed with Evertz MVP video processors chosen to feed NEC color LCD displays. In the integration control room, eight 40in displays were used, and in the larger production control room 21 displays satisfied the needs of the varied programming produced by Turner Studios. In PCR-22, Turner used mounts that allow "columns" of displays to be turned in to face the center of the room, as well as moved forward and back on linear bearings to set the viewing distance to suit individual productions.

AZCAR was selected to both design and integrate the new control rooms.

The work included increasing the size of the routing systems considerably, as well as upgrading a significant amount of infrastructure from SD-only to SD and HD capability. The routing switchers presented a considerable challenge since the operation is virtually 24/7. To accomplish the transition, they devised a plan using DAs and splitters to feed both the old and new routers simultaneously, and then migrate outputs one-at-a-time when they were not in use. The process took several weeks, but the new routing system (a Thomson Grass Valley Trinix multiformat HD/SD with Apex audio routing) was able to run in parallel on the Jupiter control system while the transition was in progress. The control system is one of the largest in existence, with 52,000 lines of custom programming, and 52 levels.

The new integration control room was first used for the NBA Western Conference Finals in May. Following the installation of the Sony HD cameras, the studio control room went online in October for the first time with NBA broadcasts.

Design Team

Turner Studios, Atlanta:
- Craig Heyl, sr. VP
- Kevin Shorter, VP engineering
- Jeff Sharp, dir. of engineering

AZCAR:
- Mike Walker and Jim Naughton, project engs.
- Marty Skoff, project mgr.

Equipment List

Thomson Grass Valley
- Trinix and Apex switchers
- Kalypso HD

Dolby E encoders and decoders

Evertz
- Modular equipment
- MVP series monitor processor

NEC LCD displays

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WABC-TV

replaces transmitter at ESB and 4TS

Following the loss of the World Trade Center, WABC-TV needed to replace its transmission facilities serving the New York metropolitan area. As part of this plan, the station wanted to ensure that any future catastrophic loss would not leave it without the ability to maintain full-power-service to its viewing public. The station decided to construct two transmission facilities — one at the Empire State Building (ESB) and the other at Four Times Square (4TS). WABC chose The Systems Group to provide the engineering and implementation services for the baseband systems at both facilities.

Of both sites, the ESB was the preferred location from an RF perspective, but the building facilities were lacking. After much negotiation, engineering, modifications and construction, the ESB was brought up to a level to support many of the major TV broadcasters in the New York market. Even with these modifications, WABC still had issues with redundancy, reserve power and having all of their transmission facilities in one location.

As a result, the station decided to construct a second transmission facility at 4TS. This facility is essentially a duplicate of the ESB facility.

Although the baseband systems for the transmitters were straightforward, much attention was given to the issue of redundancy, especially in light of the difficulties of returning to air after Sept. 11.

The focus was to provide a high order redundancy to ensure that the station would recover from any potential disaster affecting either of the two locations. The design rule dictated that there be duality for all audio and video systems. All air path electronics were required to have dual power supplies. Any processing device had to have relay bypass to eliminate the loss of signal in case of equipment failure.

All NTSC program feeds are delivered to the transmitters from the 66 St. broadcast center as redundant embedded SMPTE 259 signals. All NTSC signals are encoded at the transmitter to maintain excellent signal quality for broadcast. The DTV signal is delivered as a redundant SMPTE 310 signal and distributed to the primary and secondary exciters. A transmitter-studio link provides both sites with quality control, temporary ENG feeds or facilities monitoring via a security camera system.

At the ESB location, only a backup NTSC transmission cluster can run independently of the primary transmission cluster. The primary and backup facilities are interconnected electronically. However, in times of a serious failure of the primary, the backup transmitter has a completely separate control system, transmission feeds, support systems and a generator.

The station selected Harris Recon for its control system for integrated transmitter controls and status monitoring. The challenge in this case was to provide the required control redundancy corresponding to the multi-transmitter plan at ESB. The engineering team devised a complex scheme to interconnect the primary and backup control systems. This allowed the primary control system to work as a single system for daily operation, with the backup system working independently if required. This included not only the status of critical transmission systems, but also the secondary monitoring of the base building HVAC, fire and the emergency generator.

The ESB location was completed in late 2003, with the 4TS location completed in May 2004.

Design Team

WABC-TV:
Bill Beam, project dir.
The Systems Group:
Joe Policastro, project mgr.
Mike Panico, project eng.
Rich Citelli, integration

Equipment List

Fortel FS-411A frame sync.
Thomson Grass Valley 8900 series video distribution
Benchmark MF-302WEC/DA-102DM audio distribution
Leitch FR-X routing
Evertz X-0401 ATSC routing
Harris Recon transmitter controls

WCPO-TV
simplifies and streamlines

On Sept. 30, 2002, the city of Cincinnati committed to a $140 million expansion of its convention center, a project that would require the relocation of WCPO-TV. The move to a new building was to be completed by June 1, 2004. To make this deadline on schedule, the station completed a three-year project in just 18 months.

They designed and built a new facility that would give the station a fully digital foundation, offering SD that could easily be adapted to HD in the future. WCPO-TV hired A. F. Associates (AFA) to complete this project.

The station's new digital workflow is centered on two Omneon Spectrum media server systems, one for production and the other for playout. Scalability was a key factor in choosing these systems, which allow engineers to add and subtract I/Os without taking the whole system down. It also offers both SD and HD operation and compatibility with the station's editing systems.

The short time frame was the overriding consideration for the project. Broadcast systems couldn't be installed until the construction areas were clear of hazardous materials.

The team integrated Crispin automation with the server in a master control environment. The systems operate in conjunction with IQ modular systems from Snell & Wilcox. The station is also using Snell & Wilcox RollCall to enable remote configuration and control functionality over infrastructure hardware, with management and monitoring via the RollMap system.

The Panasonics newsBYTE DVCPRO editing systems were integrated with an Omneon server for news production under Avid iNEWS newsroom automation. The merging of the two technologies provides commonality between the facility's master control and production workflows while reducing staff training time. Apple Final Cut Pro (FCP) is used with an Apple Xserv OS X-based, rack-mounted server and Xserv RAIDs. The FCP systems also may be integrated with the Omneon server in the future.

NVISION supplied master control and routing systems. In addition to unique crosspoint redundancy, the router systems offered built-in analog-to-digital conversion that saved the station thousands of dollars in outboard equipment. The NVISION products allowed the station to build an SD- and HD-compatible master control for the price of an SD-only system — and simplified operation considerably. ●

Design Team

AFA:
- Tom Michales and Steve Vitale, sr. project mgrs.
- Harry Thompson, sr. project eng.
- Anthony Kilkenny, project leader/site supervisor

WCPO-TV:
- Joe Martinelli, dir. of eng.
- Tom Talley, CE

Scripps Broadcasting Group:
- Mike Doback, VP eng.

Equipment List

- Omneon Spectrum media servers
- Crispin automation
- NVISION
  - NV8256-Plus digital video router
  - NV7256 digital audio router
  - NV5128-MC multichannel MC switcher
  - NV9000 control system
- Snell & Wilcox
  - IQ Modular systems
  - RollCall
  - RollMap
- Thomson Grass Valley
  - Kalypso switchers
  - LDK 6000 cameras
- Panasonic
  - newsBYTE editing systems
  - DVCPRO25 ENG cameras
- Apple
  - Final Cut Pro
  - AppleXServ
  - Xserv RAIDs
- Avid iNEWS automation
- Sony video monitors
- Cisco data routing
- TEC production consoles
- Shadowstone studio lighting
- Ascent Network Services satellite install.
- Technology Division satellite install.

WealthTV

reaches out to homes with HD format

When the founders of WealthTV listed goals, they had a few specific demands: It had to broadcast in HD, be equipped with the highest quality and launch in late Q2 2004.

WealthTV selected A. F. Associates (AFA) and Ascent Media's Systems & Technology Services (S&TS) to provide an all-encompassing end-to-end solution — from production to playout through satellite systems. The start-up cable network and satellite facility, located in San Diego, was designed, built and launched in HD on June 1, weeks ahead of schedule. It was the first project to be built in AFA's new West Coast facility.

Handing over the technical portions of the project to a systems integrator allowed network executives to concentrate on programming. The network serves as a shopping channel for the wealthy and provides a diversion for those who are entertained by a luxurious standard of living. Visual broadcasts were essential.

The 40,000sq ft facility uses HD technology by Sony. The all-HD system features an MVS-8000 production switcher and routing and monitoring. Dolby surround sound processing is featured with a DMXR100 audio mixer. Three HDC930 cameras with Vinten tripods and pan/tilt heads grace a 47x48ft studio.

The station uplinks twin signals to PanAmSat Galaxy 13, an HD neighborhood for national cable networks. Ascent Media S&TS headed up the satellite uplink and encoding aspects of the project by providing a turnkey system that included dish installation. The primary signal is HD 1080i. In addition, the station is broadcasting a downconverted standard digital signal to reach the maximum number of subscribers.

Harris automation runs master control with Pinnacle video servers. Dolby 5.1 encoders feed the audio along with the video to Motorola encoding equipment for the uplink. The station chose a Discreet Logic smoke editor for its multiple post-production suites. Apple Final Cut Pro running on Apple G5 computers fills in the edit area with the ability to finish in full-resolution HD.

The network initially reached approximately 750,000 subscribers and hopes to be received in 80 million homes around the globe via cable and satellite service providers. ●

Design Team

A. F. Associates:
- April Calou, project mgr/lead eng
- Elena Gribanova, MC design
- Tim Mundorff, post-production design
- Sandi Wolfe, production control design
- Patrick Jordan, installation supervisor
- Sheri Martin, Ta Bi, Loung Bi and Thana Vatananan, installers
- Mary Ollerton, CAD
- Dan Burdick, CAD

Equipment List

Sony
- MVS-8000 switcher
- Routing switchers
- HDC930 cameras
- Mixing

Pinnacle servers
Harris automation
Dolby digital surround
Blue Sky speakers
Apple
- Final Cut Pro editing
- Xserve RAIDs

AJA Video
Discreet Logic smoke editing
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Protools audio sweetening
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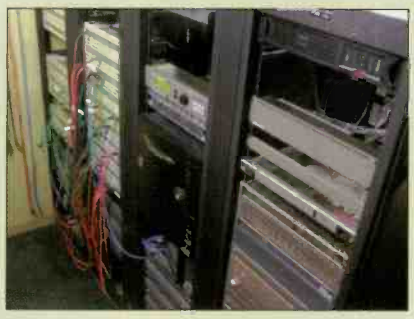
Willow Creek
constructs new production facility

Willow Creek Community Church's production ministries provide video productions and technical support for visual communication at services and events. The church unveiled a new digital video facility this September.

As the church made plans for a new 7200-seat auditorium, the need for a new control room became a priority. The primary goal in building the new video production space was to serve post and live production requirements by centralizing tape operations and video engineering in one location. Other goals included sharing resources between post and live event productions and having enough space in the present with room for future growth. The church also wanted to put an infrastructure in place for expansion to HD. All this needed to happen within close proximity to the auditorium.

The church selected Ross Video to design the facility. It was built with 16:9 screens with the ability to easily feed overflow and other areas a 4:3 signal, using Ross' Synergy 4 SD production switcher to handle dual aspect ratios. They chose options such as internal DVE squeeze and tease 3-D effects and the ability to run servers with VTR control to coincide with the production switcher. The Ross Talia routing system incorporates all SDI I/O and routes the signals through the facility. At the same time, RossGear terminal equipment distributes, converts and monitors audio and video.

One key factor in planning the new facility was to incorporate existing live production equipment while adding new technology. While the live production design allowed for nine cameras, existing Sony D30 and D35 cameras, and wiring for three rentals, there is room to expand to up to 18 cameras in the future. Post-production design required Discreet and Apple Final Cut edit suites.



They installed a virtual monitor wall using Miranda processors, plasma screens and LCD displays. Mitsubishi Diamond Vision LED screens were chosen for the main large-screen viewing in the auditorium. The flexibility of the LED screens allows for position and movement to accommodate the production. They are either placed separately at the sides of the stage or together in the center forming one large 14x48ft screen. The main auditorium also incorporates supplemental video displays. The team chose video projection, LCD and plasma screens for these viewing areas.

Design Team

Acoustic Dimensions:
- Stu Reynolds, video designer

Roscor:
- John Gephardt, video eng.

Equipment List

Ross Video
- Synergy 4 digital switcher
- Talia Kondor facility routing
- RossGear terminal equipment

Mitsubishi
- Diamond Vision LED walls
- Plasmas

Panasonic
- Plasmas
- DVCPRO50 decks
- DVD recorders

Sony
- CRT and LCD monitors
- D35 cameras
- MAV-555 server
- DSR-DR1000 recorders

Videotek sync generator
Clear-Com digital matrix
Apple Final Cut Pro edit suites
Discreet fire edit suite
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WTTA-TV

powers up with new transmitter

In August of 2003, WB-affiliate WTTA-TV launched WB38 News at 10 p.m. to better serve its Tampa Bay, FL, community. The newscast features local coverage as well as national and international stories.

This past year, station management determined that the power costs to run the station's old transmitter were unreasonably high; plus, the equipment was breaking down constantly . The transmitter facility is almost an hour from the studio, which means a reliable system was essential to prevent the loss of valuable airtime. The station selected a new QDCN2 (Quantum water-cooled two-tube ESCIOT MSDC-equipped analog/digital transmitter). The unit replaced a three-tube pulsed klystron system that provided 120kW peak sync output power. The new transmitter would supply the same output power as the old system, but would result in significant redurced utility costs.

The engineers' task was to keep the old transmitter going while the new transmitter was being installed in the same room. One of the limitations was the space. Equipment had to be moved many times to get things "shifted" into place. A team of WTTA-TV and Ai engineers worked closely together to accomplish the moving project. The new heat exchangers had to go where the old ones were already

placed. The new HVPS also had to go in the same area as the old ones. The team accomplished this with few problems, and the placement is now working fine.

There were also other limitations. When construction began in April, steel was unavailable and so, in turn, was conduit. Construction came to a halt until after the May ratings book, until conduit was on-site.

Then, the team had one month to finish the project before the July ratings book. The change was made overnight on June 28. The plumbing, hanging of the RF system, placement of cabinets, inter-cabinet wiring, etc., were all completed successfully.

The new transmitter provides a cleaner picture and signal. And the power bills, including air conditioning, went from more than $20,000 down to $8000 per month. It is more reliable, has newer technology, runs cooler than the old transmitter and takes up less space. The weather in Tampa, FL, can be hot, humid, wet, moldy and windy. There is a great deal of lightning activity. The power lines can bounce around quite a lot, but the new transmitter proves to work efficiently. ●

Design Team

Acrodyne (Ai):
Andy Whiteside, VP, eng.
Ray Kiesel, VP, research and dev.
Jay Gamerman, project mgr.
Jeff Powis, project mgr., site layout, installation/commissioning

Equipment List

Ai QDCN2 transmitter

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AccuWeather
State College, PA; Tel: 814-235-8600; Web: www.accuweather.com

Acterna - Cable Networks Div.
Indianapolis, IN; Tel: 800-478-4424; Web: www.acterna.com

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Adtec Digital
Nashville, TN; Tel: 615-256-6619; Web: www.adtecinc.com

Advanced Test Equipment Rentals
San Diego, CA; Tel: 858-558-6500; Web: www.atecorp.com

Advent Communications
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10706 Beaver Dam Rd, Cockeysville, MD 21030; Tel: 410-568-2105; Toll Free: 800-523-2596; Fax: 410-568-1546; E-mail: mark.polovick@acrodyne.com; Web: www.acrodyne.com; Contact: Mark Polovick

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Alpha Video & Electronics
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Anritsu
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Audio Accessories
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Audio-Technica US
Stow, OH; Tel: 330-686-2600; Web: www.audio-technica.com

Audioarts Engineering
New Bern, NC; Tel: 252-638-7000; Web: www.wheatstone.com

Aurora Video Systems
Sterling Heights, MI; Tel: 586-726-5320; Web: www.auroravideosys.com

auto.des.sys
Columbus, OH; Tel: 614-488-8838; Web: www.formz.com

Autocue Systems
Charlotte, NC; Tel: 800-293-0118; Web: www.autocue.com

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Barco Visual Solutions
Kennesaw, GA; Tel: 770-218-3200; Web: www.barco.com

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Bauhaus Software
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Blueline Technology
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Ramsey, NJ; Tel: 201-818-9500; Web: www.bogenimaging.us

BOXX Technologies
Austin, TX; Tel: 512-835-0400; Web: www.boxxtech.com

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Las Vegas, NV; Tel: 702-365-5155; Web: www.transaudiogroup.com

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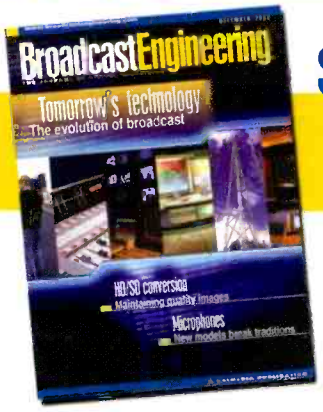

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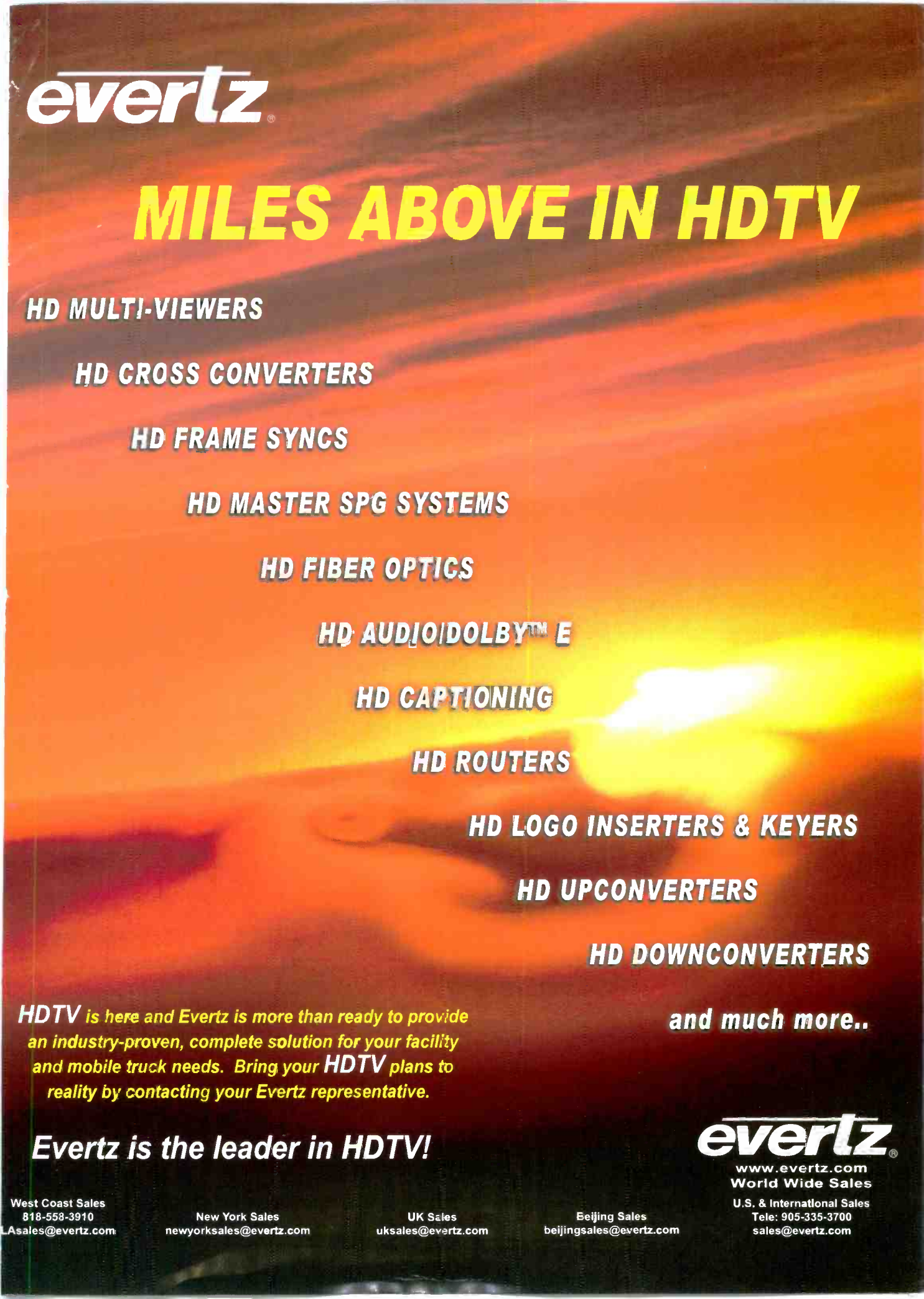
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