Radio®
THE RADIO TECHNOLOGY LEADER

Radio heads West

Your preview to the NAB Radio Show

Managing Technology
Digital evaluation tools
Page 10

Trends in Technology
The inside track on automation systems
Page 16

Facility Showcase

Entravision in LA finds a new home
Page 26

Field Reports
Greater Media Detroit logs the Telos Profiler

Page 46

Salem plots with V-Soft
Page 50

On Location
Lakers Radio covers the NBA playoffs
Page 54

Product Preview

What to see at the NAB Radio Show
Page 64

ONE DIGITAL SYSTEM STANDS OUT

NAB RADIO BOOTH 705
1-888-GET-SCOTT

Scott Studios

10 YEARS OF RADIO

A PRIMEDIA Publication

ANY SOURCE TO ANY FADER!

THE AUDIOARTS ENGINEERING D-16

IT LOOKS EXPENSIVE — BUT IT'S NOT!

THIS NEW RADIO CONSOLE from Audioarts combines the benefits of a ROUTER *and* an AUDIO CONSOLE into one COST-EFFECTIVE digital package, *letting you route any input to any fader or to any monitor feed,* with all sources clearly shown in bright LED dot matrix displays right above the faders and monitor level controls.

A COMPACT TABLETOP DESIGN, the D-16 has the features you need: both analog and digital PROGRAM and AUDITION stereo outputs, 2 MONO analog outputs, 14 input faders plus 2 caller faders, 4 mic preamps, control room and studio monitoring, built-in cue and headphone amps (with concealed headphone jack) —even four internally generated mix-minus outputs!

WITH 24-BIT A>D and D>A inputs and outputs and sample rate converters on every AES digital input, the *D-16 will work with virtually any digital source gear you have*. It can run your source machines too (up to eight of them)—all opto-isolated. Its DSP DIGITAL METERING simultaneously displays VU columns and peak hold fullscale digital so you can be assured of pristine performance. Its powerful caller tools generate mix-minuses automatically, and you can program any of its four MXM outputs to be pre or post fader.

And with Wheatstone's extensive digital background and reputation you can be assured that the D-16 is a *great* console!

AUDIOARTS® ENGINEERING

252-638-7000 / www.audioarts.net / sales@wheatstone.com

copyright © 2004 by WHEATSTONE CORPORATION

You've Got To Hear This!
HARRIS
eXtreme digital...
RADIO
www.broadcast.harris.com • 1-800-622-0022

Contents

Radio
THE RADIO TECHNOLOGY LEADER
Radio Magazine
www.beradio.com
September 2004 • Volume 10, Number 9

www.beradio.com

Features

16 Trends in Technology: Automation
by Chriss Scherer
More than audio playback alone

26 Facility Showcase: Entravision Los Angeles
by Matt Sheahan
A casa grande in LA

32 NAB Radio Preview
by Chriss Scherer and Kari Taylor
San Diego here we come.

44 NAB Radio Exhibits Map
Find your way around the convention.

54 On Location: Lakers Radio
by Stephanie Snyder
KLAC covers the basketball playoff.

58 Facility Showcase: WNOP
by Allen Singer
Sacred Heart University spreads the word.

Columns

Viewpoint 08
by Chriss Scherer
The attraction to jukebox radio

Managing Technology 10
by Kevin McNamara
Digital still needs to be tested.

FCC Update 14
by Harry C. Martin
The FCC considers the NTA proposal.

Departments

Online 06
at www.beradio.com

Field Report: Telos Profiler 46
by Michael Kernen

Field Report: V-soft FMCONT 50
by Carl Gluck

NAB Radio Product Preview 64
by Kari Taylor

Reader Feedback 73

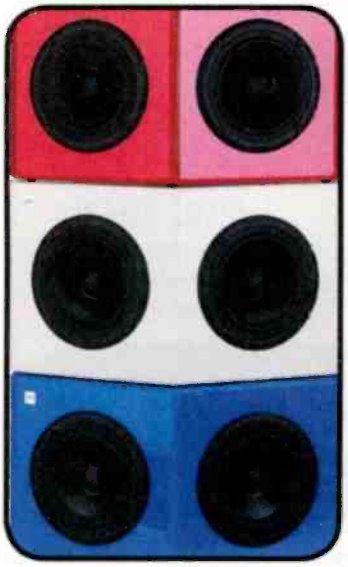
Classifieds 80

Contributor Pro-File 81
Meet Kevin McNamara

Sign Off 82
by Kari Taylor
Multitasking with radio

64

ON THE COVER:
San Diego hosts the 2004 NAB Radio Show. The always-comfortable climate should be a welcome attraction for the radio fall fest. Cover design by Michael J. Knust.



True Sound is...

The most unique and versatile book shelf speaker available today. The LB-100 utilizes liquid gel technology for increased performance and an outstanding sound. The compact design allows for easy placement in the listening environment. Available in over 35 different colors to choose from. Call us or visit our web site for a dealer near you, or to request a catalog.

- Semi-isobaric design
- Dual 5.25" drivers
- 8.5" x 15" x 8.25"
- 200 watts RMS cap.
- .25" Acrylic construction

See why we say ***Big Sound...Little Package!***

Liquid Acoustics™

714-690-5934

www.liquidacoustics.com

Currents Online

Highlights of news items from the past month

Court: File Sharing Companies Not Liable

All because Grokster and Streamcast software can be used for legitimate purposes.

Moseley Signs Licensing Deal With APT

The agreement allows Moseley to use APT's Apt-x algorithm for three years.

Avid to Acquire M-Audio

M-Audio becomes a business unit of Digidesign.

Cox Radio to Expand IBOC Rollout

Cox will upgrade 80 percent of its stations over the next four years.

KCSN Begins Testing IBOC Booster

Transmission tests began in mid-August using IBOC equipment from Broadcast Electronics.

Site Features

NAB Radio Update

Get ready for the NAB Radio convention with our weekly e-mail newsletter. Read it online or subscribe today.

Radio NAB RADIOUPDATE

IBOC Update

Stay on top of the latest IBOC and DAB technology news with our twice-montly e-mail newsletter.

Digilink-Xtreme

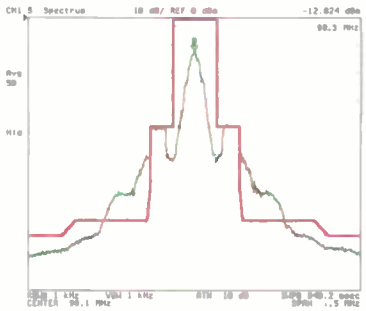
the NEXT generation for DLII, DLIII, and DL-IV systems...

... The #1 manufacturer of satellite automation systems for Radio introduces Digilink-Xtreme, the most important advance in Radio automation in more than a decade. Combining the best of PC computers and the best of professional Broadcast audio hardware, Arrakis re-invents Satellite automation, ... again !

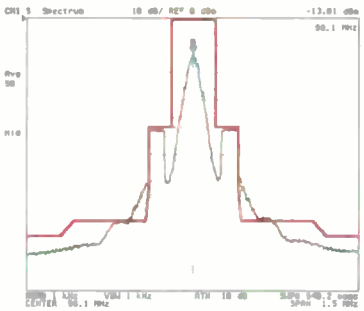
only $2,495 plus PC

call 970-461-0730 ext 329

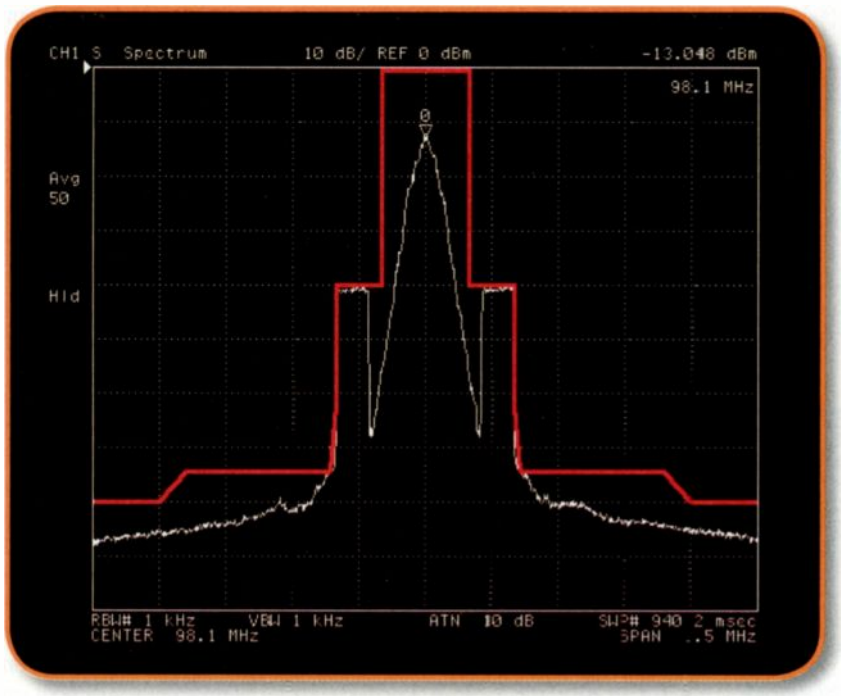
arrakis systems inc. www.arrakis-systems.com (970) 461-0730



Going...



Going...



Gone.

Introducing Nautel's Newest Cutting Edge FM Technology – **Digital Adaptive Pre-Correction**

V10 with M50

Worried about not meeting the HD Radio™ mask requirements? After all, you wouldn't want to interfere with someone else's signal. Nautel's new M50 digital FM exciter samples the all-digital or hybrid HD Radio™ output of the V10, 10 kW FM transmitter and dynamically applies digital adaptive pre-correction. This means no expensive external bandpass filter and no additional tuning. Even better, because the M50 continuously monitors and adjusts the RF output, your performance is optimized regardless of environmental changes and your signal will always be within spectral limits.

To learn more about how we can perfect your HD Radio™ signal, visit our website www.nautel.com.

HD Radio
Pure Digital. Clear Radio.

nautel

SIMPLY THE BEST ENGINEERED TRANSMITTERS

Phone: +1.902.823.2233 | Fax: +1.902.823.3183 | info@nautel.com | www.nautel.com

Virtuoso and Maestro are registered trademarks of Nautel Limited. All rights reserved. HD Radio is a trademark of iBiquity Digital Corp.

The Ipods are coming

I am not a typical radio listener, and neither are you. We work closely to radio. I may no longer have keys to a transmitter site, but I still listen critically. Whether it's thinking about how I would tweak a processor setting or determining the possible reason for that last on-air glitch, when I listen to the radio I know what is going on and why. The average listener does not, nor does he care.

The listener wants to be entertained or informed. Unfortunately for radio, the venues available to a listener have increased. Radio market shares may appear to be stable, but while the percentage of an audience listening to a station remains the same, the size of that audience is shrinking.

The typical radio user listens because he likes the current song or is interested in the topic being discussed. If he doesn't like the next song or topic, he changes the station. If he is loyal to a station, he'll be back. If he's a button-pusher looking for instant gratification, who knows where he'll go next. It's this tendency to seek other options that continues to erode the radio audience.

I'm guilty of some of this button pushing. I have a few favorite stations in Kansas City, and when I want something else—or something not being played on the radio—I turn to my CD player. I don't have a portable media player. I always thought that taking the time to load music into a device so that I could listen to it anywhere at anytime was an unnecessary practice. Besides, I like the spontaneity of radio. You don't know what's next (although with some formats you have a good chance of guessing).

It's this spontaneity that always put radio on top for me. But this is no longer the exclusive ability of terrestrial radio. Satellite radio channels can provide this spontaneity across 100 channels. That's a large palette from which to choose. Listeners like the spontaneity of radio, but they also like the ability to have some control over it as well.

That's where the portable media player fits in so well. My friend owns a unit that stores nearly 5,000 songs or 330 hours of audio at a decent encoding rate. This player, about the size of a deck of cards, holds his entire CD collection. My entire collection exceeds this capacity, but I can't imagine listening to everything in my collection in a continuous run.

My friend uses his player all the time. Not owning one, I assumed that he would have to set playlists every day to begin his listening experience. Sometimes he does. Most of the time he selects a random play mode, which has several variations. Yesterday he chose to listen to a single artist all day.

I asked him about loading material into the unit. For me, taking the time to transfer 300 CDs sounds like cruel punishment. Using his desktop PC, he ripped the CDs and then loaded them through the player's USB connection. The time investment is actually minimal. A few mouse clicks to start the process and then he walks away. Simple. The time to program the unit for his next listening session is also usually done during downtime, such as waiting in line.

The role of establishing technology usage trends is normally left to a younger crowd. With so much technology firmly planted, radio is not only losing the 14-year-old, we are now losing the 30-somethings and more. My friend is now a minor member of the radio listening crowd, thanks to his exposure to the new competition for radio.

Entertainment on demand, personal media players, broadband and satellite delivery, and other yet-to-be invented technologies will continue to reduce the size of the radio listening audience. The added capabilities of digital radio can slow this erosion and maybe even stop it. Radio's long-term survival depends on radio joining the modern age and becoming an active player once again.

Chriss Scherer, editor
cscherer@primediabusiness.com

Send comments to: **E-mail:** *radio@primediabusiness.com*
Fax: *913-967-1905*

GET IN ON THE ACTION... ON OR OFF SHORE.

Matrix Portable:
Delivering the sound of the gun going off to listeners around the world is as simple as pressing a button. The Comrex Matrix, equipped with our optional GSM Module, combines an integrated mobile phone and an advanced Comrex codec to deliver broadcast quality 7kHz audio over standard cellular connections (15kHz over POTS). The results? Your listeners hear the wind in the rigging – the sound of a half-a-boat-length victory with detail that's unprecedented.

Matrix Rack:
Sure all the action is in the field (or off shore...), but a great remote needs a great home base. And there's nothing better than the Matrix Rack. It's compatible via POTS and ISDN with ALL Comrex codecs as well as those from nearly everyone else. Perfect for receiving those GSM calls from the field. Make the Matrix Rack the center of communications for ALL your remotes.

Grab your audience by the ears and give them the full experience – not just a story.

Doing a remote? Put Comrex on the line.

COMREX

Toll Free: 800-237-1776 • www.comrex.com • e-mail : info@comrex.com
19 Pine Road, Devens, MA 01434 USA • Tel: 978-784-1776 • Fax: 978-784-1777

Test and measurement in the digital age

By Kevin McNamara, CNE

Maintaining quality and reliability in a modern digital facility presents some new and significant challenges when compared with traditional analog methods. A few engineers believe it is easier to maintain a digital audio chain because they no longer need to deal with the audible effects of ground loops, noise, crosstalk and mismatches typical in some analog signal paths. Digital signals, on the other hand, either provide flawless audio or dead silence, right? Wrong! Digital infrastructures require a great deal of care when designing, constructing and testing the various paths where digital audio signals travel.

Ethernet testers can evaluate cables, but also provide information on network traffic.

Let's envision a fully digital broadcast facility. It might house several fully automated stations under one roof. The operation requires a combination of digital and analog signal paths to handle the diversity of the various stations, however all of the program and production audio is fully digital to the transmitter site. Analog and digital signal are routed with a large multi-format routing switcher. The respective stations use an extensive digital microwave system. Several channels of digital audio (traditional and IBOC) are transmitted over a 45MHz DS3 radio system to one transmitter site (hub), then each digital channel is split off and fed to other stations over a lower bandwidth 1.5MHz DS1 microwave system. The facility also streams digital audio to the Internet, as well as real-time news, weather and traffic to various websites.

I use this example to illustrate the variety of test and measurement requirements that are currently or will likely be in use the near future. Our facility uses several types of signals operating over a wide variety of protocols and transport methods. These signals include analog, AES/EBU digital and S/PDIF digital formats. The transport protocols that carry these audio formats include Ethernet, Fibre Channel, DS1 and DS3 operating over physical media that include standard single pair shielded, CAT-5, fiber optic, coaxial and wireless media. Protocols such as TCP/IP and IPX are also used extensively for general office LAN and Web server applications.

If you are the engineer of this facility, here are a few pieces of essential test equipment that should be close at hand.

Cable tester

No toolbox should be without some type of cable tester. While most cable testers troubleshoot Ethernet cabling, some also offer the ability to analyze other cabling such as basic paired/shielded, coaxial and fiber optic media. Most networks rely on unshielded twisted pair cable (UTP) as a means to interconnect devices. Because the UTP cable uses copper conductors, it is subject to the usual electrical characteristics, notably signal attenuation and frequency losses that vary directly with its length. Currently, Ethernet networks operate in full-duplex, which means that transmitted and received data is carried simultaneously. Two of the four pairs within the UTP cable are used to transmit and receive. The problem with this arrangement is that the signal levels for transmitted and received data at any given termination point may have extremely different levels. This imbalance could create the problem of near-end cross talk (NEXT). NEXT is created when the transmitted electrical signal (current) on one pair of wires forms a magnetic field, which couples to the pair carrying the received signal. This problem generally occurs at the UTP cable end because this is where the transmitted signal is highest relative to that measured on the received pair, and because the cable pairs may be untwisted to facilitate attachment to the RJ-45 connector, promoting more efficient coupling.

The interference created as a result of NEXT can have severe effects on the performance of the network. For higher performances, Category 5e (CAT-5e) cabling or higher variations of the NEXT measurement are specified. These measurements include equal-level far-end crosstalk (ELFEXT), power sum near-level crosstalk (PSNEXT) and power sum equal-level crosstalk (PSELFEXT), which are derived from calculations, not a specific measurement.

Ethernet network analyzers

A network analyzer is a useful, albeit expensive, tool for documenting and troubleshooting LANs, WANs and even fibre-channel based storage area networks (SAN). These tools allow a network engineer to perform the cable testing functions previously discussed and to monitor and quantify the packets of data traffic moving across the network. These testers provide a comprehensive suite of tools that

Commander G3

Modular Stereo POTS • ISDN • GSM Codec

Introducing the new Tieline Commander G3

At Tieline, we've taken a fresh approach to audio codec design. Now you can customize your audio codec to suit your exact needs for remote broadcasts and STLs. You only pay for what you need and we're the first to be compatible with most major ISDN and POTS codecs in your rack.

Think of the new Commander G3 as a codec foundation with two expansion slots which accept your choice of POTS, ISDN and GSM modules. You simply buy what you need.

For example, if you need a mono 15kHz POTS codec, simply buy the Commander G3 with a POTS module for one low price. Need 15kHz Stereo or dual mono over POTS? Just add another POTS module.

If you're looking for a mono/stereo ISDN codec without POTS, you can buy a Commander G3 with an ISDN module only. It comes with G.711, G.722, and Mpeg Layer 2. Tieline's "Music" algorithm also delivers an astounding 15kHz stereo over a single ISDN B channel! You can always add a POTS or wireless GSM module later if you need.

Need a stereo ISDN STL with automatic failover to 15kHz mono POTS? Buy the Commander G3 with POTS and ISDN modules plus Tieline's new Freedom Failover software kit.

Plug in the GSM module and deliver up to 7.5 kHz over GSM networks and up to 15 kHz over HSCSD wireless networks.

Control your remote talent's mic input gain from the studio and send simultaneous audio, serial data and relay activation in either direction.

We've even created digital matrix router software which enables you to cue audio off air, create a local audio intercom, and talkback to the studio all without interrupting your broadcast.

The new Tieline Commander G3 is simply the world's most powerful, flexible and customizable codec. It's even compatible with your Comrex** Vector, Matrix, Blue and Musicam Liberty POTS codecs.

Every Tieline codec comes with a two year warranty plus the support of an experienced engineering team with more than 25 years in the broadcast industry right here in Indianapolis. That's why hundreds of stations, major radio groups and networks across America use Tieline to deliver audio every single day.

Hurry, free demonstration Commander G3's are limited. Call you favorite broadcast dealer or call us at 800-950-0750 to book your free demo.

Tieline® TECHNOLOGY

**Comrex and Musicam are registered trademarks of each respective corporation

Call: 800 950 0750

www.tieline.com/be

give several views of a network, including discovery of network devices attached to the network; detailed information about those devices including network addresses, names, type of device and protocols used; logical mapping of all devices and connections within a LAN or WAN; detailed IP information; network usage statistics; data performance measurements; and network error information.

Digital audio test systems

The digital audio interfaces prominent in radio broadcasting are either the AES/EBU or the S/PDIF format. While the formats are similar in many respects, the S/PDIF format is commonly associated with consumer electronics, and was formally standardized under a document called IEC958 (for professional and consumer electronics). The AES/EBU standard deals with professional digital audio applications. What is most similar is that each of these formats will operate without the benefit of external timing. The self-clocking feature makes it easy for a digital audio device to interface with other digital audio devices simply by setting the sample rates the same, usually 48KHz (professional) or 44.1KHz (consumer), although other (less common) rates can be used.

Audio test generators and testers provide an easy way to verify performance.

A variety of specialized test systems for the testing of digital audio systems are currently available. The test systems are packaged as stand-alone test systems, custom PC-based hardware/software analysis packages or a combination of both. Most professional digital audio systems use AES/EBU, specifically the AES3 standard, however most can also analyze S/PDIF signals.

The majority of problems found in digital audio systems can be traced to one of the following four conditions.

1) Improper/defective cabling – The additional capacitance caused by excessively long or improperly terminated cables will increase the incidence of bit errors and consequently data losses in a system due to improper timing or insufficient amplitude to adjacent device.

2) Insufficient signal amplitude – Because clocking/synchronization is derived from the transition of the data bits, digital stream may become unreliable or non-existent.

3) Mismatched sample rate – This can be easily detected with a test device.

4) Excessive jitter – Jitter can take different forms, but it can be generally described as any deviation from a perfectly stable clock signal. Jitter can be caused by improper cabling, high noise levels or excessive crosstalk.

An investment in the proper test equipment equates to significant savings of time and increased reliability.

McNamara is president of Applied Wireless.

Reduce Your Work Load

Save Time and Money With SCMS!

- 28 Years of Personal Service
- Experienced Technical Staff
- New & Rebuilt Audio & RF
- Extensive Rental Fleet
- Rep for 600+ Companies
- Trade-ins Welcomed

Mid-South Sales:
Bob Mayben
Voice: 877-391-2650

Central Sales:
Bernie O'Brien
Cell: 731-695-1714

West Coast Sales:
Doug Tharp
Sales: 866-673-9267

Mid-West Sales:
Mary Schnelle
Sales: 1-800-245-4307

South-Atlantic Sales:
Art White
Sales: 770-632-1295

North-East Sales:
Jim Peck
Sales: 315-623-7655

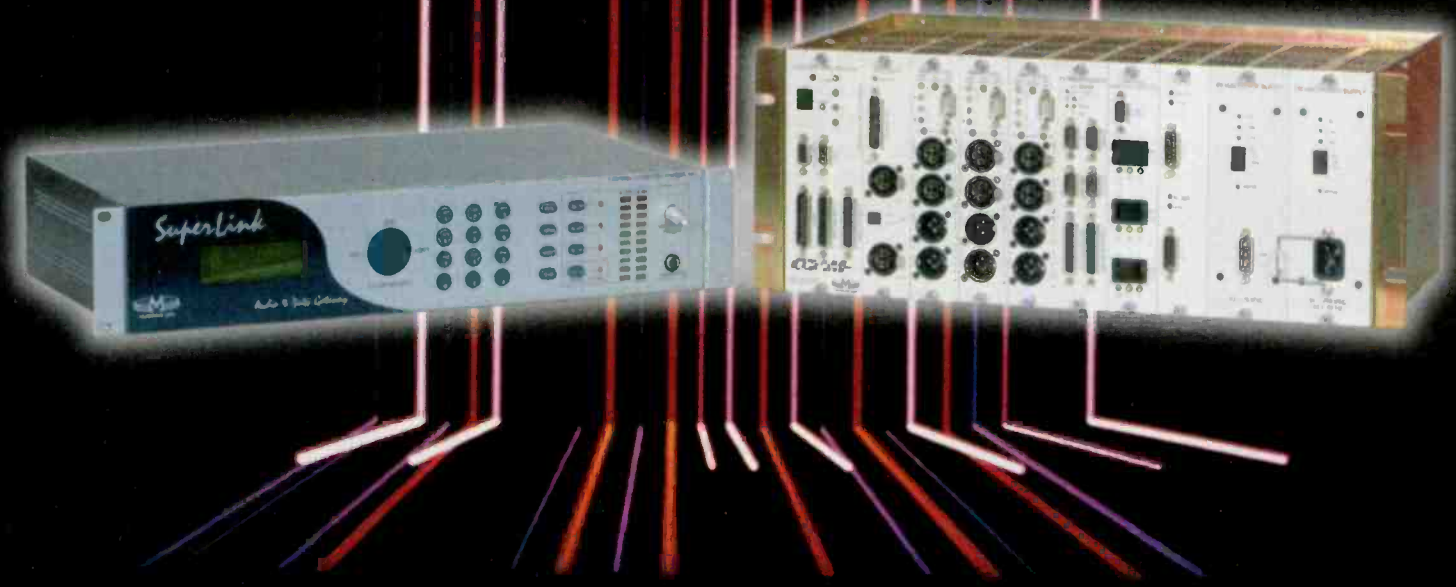
CORPORATE SALES OFFICE
Pineville, N.C.

Call: BOB, MIKE, ERNIE or MATT

***Toll FREE* 1-800-438-6040**
1-704-889-4508
***Fax* 1-704-889-4540**
e-mail sales@scmsinc.com
www.scmsinc.com

SCMS INC.
YOU KNOW WE KNOW RADIO!

FLEXIBLE AUDIO LINKS FROM MUSICAM USA
for STL, Point to Point, Point to Multipoint

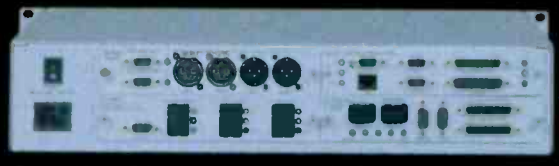


For mission-critical audio transmission, nothing beats TEAM™ and SuperLink™. Both give you these advantages:

- Connect directly to T1 or E1 transmission lines
- Support multiple channels of program audio, data and contact closures
- Linear PCM or encoded audio with multiple algorithms
- Streaming audio
- Automatic backup via ISDN

A variety of hot-swappable Function Modules lets you design a system that meets your needs today, and then expand it for tomorrow.

When you have audio to send, TEAM and SuperLink are the rugged, solid and flexible way to go. Call us, or your MUSICAM USA Distributor, with your application requirements.



SuperLink rear panel configured for bi-directional T1 program transmission with automatic ISDN backup.

MUSICAM USA

MUSICAM USA
670 North Beers Street, Bldg. #4
Holmdel, NJ 07733 USA
732-739-5600
732-739-1818 fax
sales@musicamusa.com
www.musicamusa.com

MUSICAM USA is the d/b/a of Corporate Computer Systems, Inc.

FCC Update

Displacement relief for FM translators?

By Harry Martin

The National Translator Association (NTA) has petitioned the FCC to amend the FM translator rules to permit an FM translator displaced from its current operating channel by a new or modified full-power FM station to immediately apply to move to any available FM channel. Currently, displaced translators must wait for the next FM translator application filing window to file the application.

FM translator stations, which generally operate at much lower power than full-power FM stations, are licensed by the FCC as secondary to full-power FM stations. When a new full-power FM station commences broadcasting or an existing full-power FM station modifies its coverage, existing FM translators causing interference to the new or modified full-power stations must immediately cease broadcasting and are displaced from their current operating channels. FM translators receiving interference from new or modified full-power FM stations are similarly displaced as their signals can no longer be heard.

Under the existing FM translator rules, a displaced FM translator may immediately apply to move only to adjacent channels, none of which may be available. Before the displaced FM translator can move to a non-adjacent available channel, it must cease broadcasting and wait several years for the FCC to open an FM translator modification application filing window and then process and grant the numerous applications filed during the window. Commercial translator applicants may have to go to auction to secure a replacement frequency. Meanwhile, the public loses the broadcast service being provided by the FM translator.

The NTA last fall asked the FCC to change its rules to help existing FM translators in this situation. In particular, the NTA proposed that existing FM translators forced to cease operating because they are causing or receiving interference should be permitted to immediately apply to move to any available FM channel. The NTA's proposal would afford the same opportunity for permittees of authorized but unbuilt FM translators precluded from commencing operations because they are expected to cause or receive interference. The NTA also asked that applicants for new FM translators expected to cause or receive interference be permitted to immediately amend their applications to propose available non-adjacent FM channels. In June, the FCC requested comments regarding the NTA's request. Comments filed in response supported the NTA.

Whether and when the FCC may move on to actually propose and adopt rule amendments to assist displaced FM translators remains to be seen. The problem is likely to become more aggravated in the near term, as more FM translators are likely to be displaced when the FCC auctions new FM channels and authorizes new full-power FM stations to operate on the channels. The current rules provide virtually no relief to affected translator licensees and permittees. While they are entitled to file displacement applications, they cannot do so until a new filing window for such applications opens. It may be years before the FCC opens its next FM translator modification application filing window. The last such window opened in March 2003, and in the intervening 16 months the FCC has still processed only a relatively small number of the thousands of applications filed in that window. None of the mutually exclusive applications have been processed.

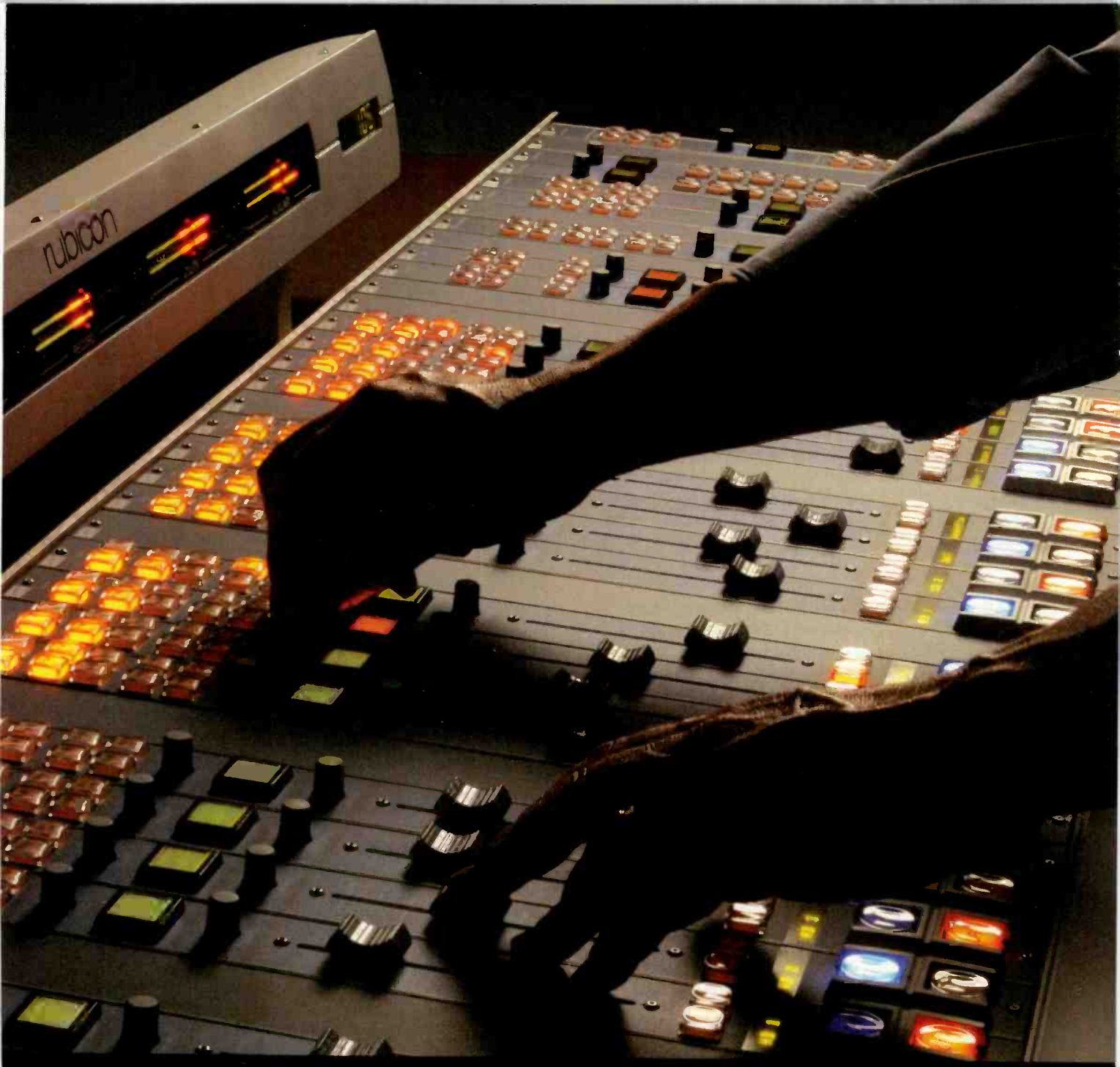
Recent FCC fines

A Florida AM station was fined $1,000 for not having a fence after the station's general manager told the FCC inspector they could get closer to the tower by avoiding the main gate and walking around to the side that had no fence. Another Florida AM station was fined $7,000 for not having its gate locked. An Arkansas AM was fined $4,400 for having numerous openings in its fence; the FCC was not impressed with the station's argument that a no trespassing sign served the same purpose.

Martin is president of the Federal Communications Bar Association and a member of the firm of Fletcher, Heald & Hildreth, Arlington, VA. E-mail martin@fhhlaw.com.

Dateline:

Oct. 1 is the deadline for radio stations in Iowa and Missouri to file their renewal applications, ownership reports and EEO program reports. Oct. 1 also is the date radio stations in Colorado, Minnesota, Montana, North Dakota and South Dakota must begin their pre-filing renewal announcements. Issues/programs lists for the third quarter must be placed in all radio station public files by Oct. 10.



AT LAST, A BOARD GEEKS AND JOCKS CAN BOTH DROOL OVER.

Fact is, SAS packs so much sophistication and capability into the depths of the new **Rubicon**™ control surface that even the most intensive major market programmer or board operator will swoon. Yet Rubicon is so intuitive, so comfortable, so easy to use, the weekend intern is sure to sound like a pro.

SAS Connected Digital Network™

Rubicon Control Surface
32KD Digital Audio Router
RIOLink™ Remote I/O

Here's why:

Frequently used controls are always right at the operator's fingertips. And for the power-user, the SAS multi-function "dynamic control matrix" provides quick access to deeper capabilities. In other words, Rubicon has a bucket-load of features for the simplest or most complex of broadcast-related tasks.

And should you think form to precede function, you'll find Rubicon's clean, easy-to-understand interface wrapped up within a custom-configured, drop-dead gorgeous frame.

Best of all, Rubicon is engineered by the brand synonymous with the finest in digital audio routing and network design. When it comes to quality and reliability, our name is all over it. rubicon™

Come see for yourself Rubicon's brains and beauty, power and performance.

It'll be love at first sight.

Engineering great radio.™

SIERRA AUTOMATED SYSTEMS

For more information call 1.818.840.6749,
email sales@sasaudio.com or visit www.sasaudio.com.

Managing Content

By Chriss Scherer, editor

Beyond audio storage and playback

The current trend in facility design involves two major components to complete an on-air system. One element is the audio routing and mixing functions, which are becoming increasingly tied together. The other is the audio storage and playback system, commonly referred to as an automation system. From the humble beginnings as a way to provide unattended playback of scheduled material with various mechanical methods, today's automation systems are computer-based and provide much more than just audio playback.

What has long been called an automation system was at one time singular in function; it now actually handles various automated tasks. The primary function is content management: storage and playback of audio files on demand. Add to this the ability to load schedules and apply certain rules to fill time automatically and you describe nearly all the systems available today.

While audio storage and playback are still the key functions, an automation system has actually shifted its primary function to become a facility event controller. Through event triggers, such as contact closures, serial data strings and other control paths, the automation system is able to automatically record audio feeds or capture audio files and control external equipment such as audio processors, routing switchers and satellite receivers.

WAN, LAN, thank you ma'am

The need for interaction, control and insertion from a distance has become important, as have WAN-based media sharing and the ability to manage multiple stations from a central site.

Computers excel at storing and manipulating data, so affecting audio data is a natural function. However, new data needs have become important for stations. Program-associated data (PAD)—

Resource Guide

An overview of available automation systems

see page 18 for an explanation of the abbreviations

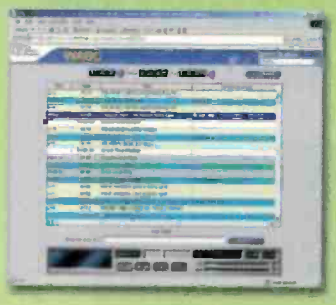
OS	Modes	Sound Cards	Third-party RAID support?	File Formats	Non-native file support?	Control	PAD	Playback Modes	Purchase	Support
AEQ • *Mar4Win* •*www.aeq.es*										
W	M, L, F, S, T	Digigram	yes	*	*	S, E, C, E@sy	*	L	P	*
Features: Modules available for new editing, voice tracking, scheduling;										
Arrakis • *Digilink Extreme* • *www.arrakis-systems.com*										
W	M, L, F, S, T	any	yes	W, 2, 3	yes	S, C	separate	L, S, N	P,L	T
Features: 16×3 switcher with built-in audio cards required for satellite operation; switcher also facilitates installation and separates PC functions from broadcast functions										
Broadcast Electronics • *Audiovault* • *www.bdcast.com*										
W	M, L, F, S, T	Digigram, Soundblaster	yes	W, B, 2, 3	yes	S, E, C	separate	L, S, N	P,L	U
Features: Includes integrated CD ripper; supports multiple sample rates and compression types simultaneously from a single audio channel										
Broadcast Software International • *Simian* • *www.bsiusa.com*										
W	M, L, F, S, T	any	yes	W, B, 2, 3, TM Century, Dolby AC-2	*	S, C	*	L, N	P	T
Features: Spanish menus; programmable hot keys; rotating carts										
Broadcast Software International • *Wavecart* • *www.bsiusa.com*										
W	M	any	*	W, B, 2, 3, TM Century, Dolby AC-2	*	*	*	L	P	*
BTSG • *Generation IV* • *www.btsg.com*										
W	M, L, F, S, T	any	yes	W, B, 2, 3	yes	S, E, C, I/O boards	separate or imbedded	L, N	P,L	T
Features: Available as a full or modular system										

table continued on p. 20

The New MASTER CONTROL™ XV

Three more reasons to make the switch!

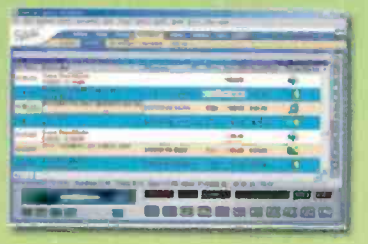
Internet Voice Tracking™
Use top talent from across town or around the world.



24 Hour Support
The average RCS support call is answered by a real human being in 12.5 seconds.* If you have a question, we've got the answer no matter what time.

*From internal document (12/1/02 - 11/30/03) based on 27,075 calls.

Living Log™
No more copying log out and into the studio. All schedule changes are immediate.



See the difference, hear the difference, get the best!

RCS 25th Anniversary

Master Control is Selector*smart.
For live-assist, automation, satellite, Internet and remote broadcasting.

Internet Voice Tracking™ is protected by US Patent 6,223,210

Call, click or email now:
914-428-4600
info@rcsworks.com
www.rcsworks.com/howitworks

the basics of song title and artist name—are being used today to feed RBDS encoders and station websites with "now playing" information. This data will also be transmitted on an IBOC stream. With plans to provide radio receivers with more detailed displays, additional data can also be provided, such as an artist's concert dates and information about the performer. Similar added data can be applied to commercial audio files as well.

This data can be tied to audio files and delivered on a schedule through the automation system. The PAD information is likely already part of the stored audio file, so retrieving it for on-air delivery is not a complex matter. This data may be a part of the audio stream or a separate data stream.

The supplemental PAD, such as concert dates or artist news, can also be stored and retrieved as needed. Most systems already have the capability to provide live copy with any audio file. This live copy is simply stored data. Not to over simplify the idea, but data is data to a computer, regardless of whether it is fed to an in-studio monitor or made available to an RBDS stream.

Multi-channel audio is a developing technology for IBOC. There are currently two ways it is being developed. The Tomorrow Radio project, a joint effort between NPR, Harris and Kenwood, adds a supplemental audio channel (SAC) in addition to the main channel so that two program streams are created. Most automation systems can handle more than one program stream, although it is preferable to have a separate workstation to provide the second stream as backup. The other form of multi-channel audio of IBOC is surround sound. While still dealing with audio data, surround-sound files will have a different format than traditional mono or stereo files. Systems vary in this capability today, but it is something to keep in mind if your station is considering an IBOC roll-out with an eye to the leading technology.

Abbreviations

* - check with manufacturer

OS:
W - Windows 2000 or XP
L – Linux

Modes:
M – manual
L - live assist
F - full automation
S - Satellite
T - timed recording/playback

Formats:
W - WAV
B - BWF
2 - MP2
3 - MP3
A - Apt-x
C - Cart Chunk

Control:
S - serial
E - Ethernet
C - contact closures

Playback Modes:
L - from local sound card
S - from server sound card
N - over network to workstation sound card

Purchase:
P - full purchase
L - ongoing license fee

Support
U - free unlimited
T - tiered support based on contract terms

Need Mission Critical Protection?

...Install STABILINE® Parallel or Series Design TVSS.

Reliable and Low Cost Protection for Service Entrance, Distribution and Branch Panel Protection. Since 1938, Superior Electric has been manufacturing and marketing Power Quality Solutions. Choose from:

CS1 Series - All mode, Parallel, MOV & Filter Technology. Surge Amp Capacity ratings from 60 to 300kA per mode. Options include integral disconnect switch, NEMA 4X fiberglass or NEMA 4/12 metallic enclosures. Standard and advanced monitoring packages. The ultimate in Service Entrance and Mission Critical protection. UL 1449 Second Edition, UL 1283 Listed, cUL. 7-year Warranty.

CS2 Series - High Performance Series Design with current ratings of 150 to 4000 amps and Surge Amp Capacity ratings of 320 or 640kA per mode. All mode protection provided via model specific inductive elements and hybrid, field replaceable TVSS circuits. UL 1449 Second Edition, UL 1283 Listed, cUL. 5-Year Warranty.

PT1 Series - All Mode, Parallel, MOV & Filter Technology. Robust and low Cost. Prewired pigtail conductors. LED visual protection status. Surge Amp Capacity ratings of 25, 50, 80 or 100kA per mode. UL 1449 Second Edition, UL 1283 Listed, cUL. 5-Year Warranty.

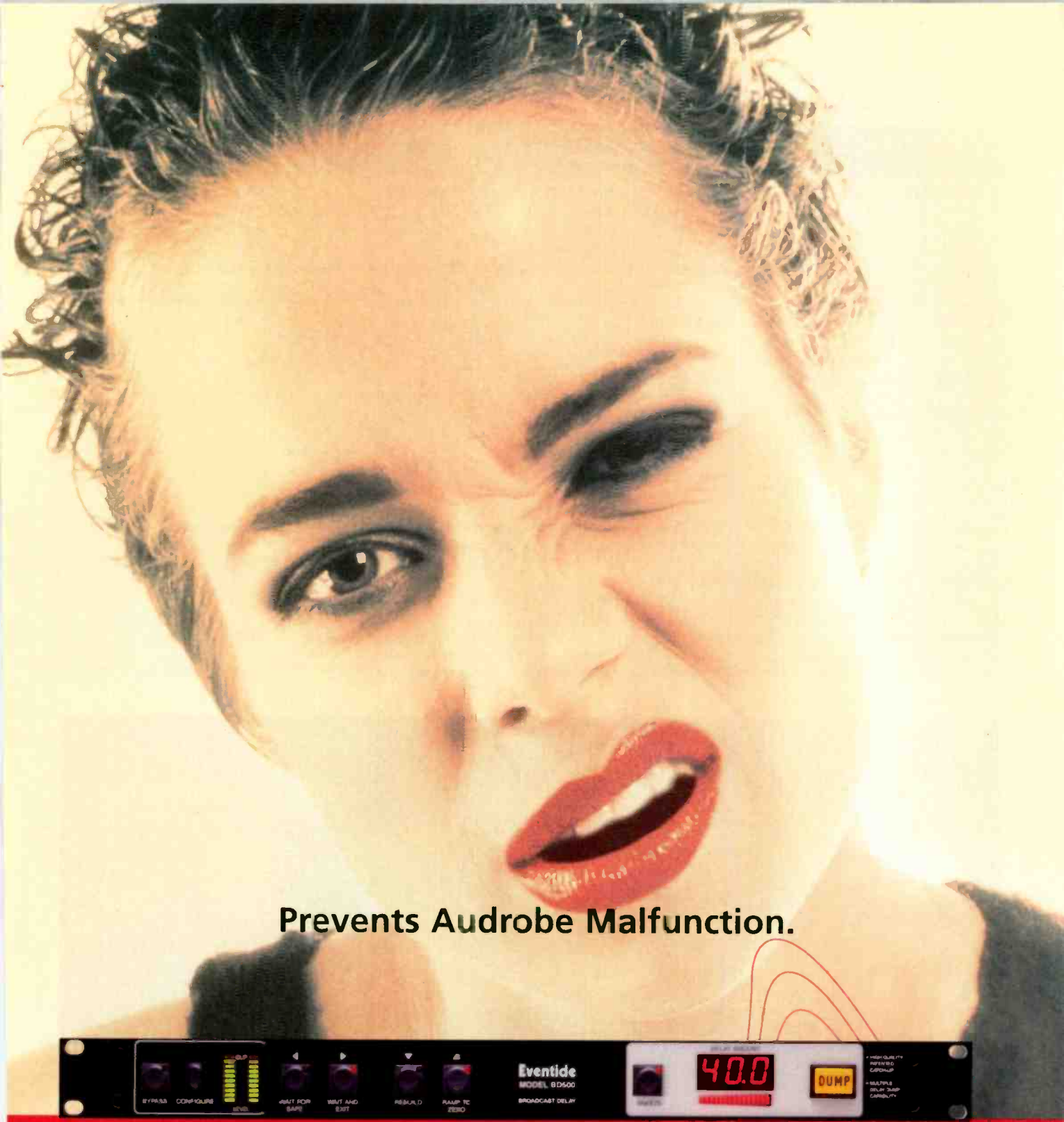
CS2 Series

PT1 Series

CS1 Series

Superior Electric
383 Middle Street • Suite 105 • Bristol, CT 06010 USA
Web Site: www.superiorelectric.com

Telephone and Fax Numbers		Toll-Free (in USA and Canada only)
Telephone	860-585-4500	1-800-787-3532
Fax	860-582-3784	1-800-821-1369



Suffering from Cursing Callers? Foulmouthed Fanatics? Lewd Loudmouths? Obscene Orators? Profane People-in-the-Street? The Eventide BD500 profanity delay cures all of these ills!

Its new 40-second delay also protects against slander and transgressions more subtle than those famous "seven words." What's more, multiple DUMP segments give you the ammo to dispatch the Serial Slimer.

Take advantage of the decades of experience and trust behind every Eventide DUMP button. Protect your station with the BD500 profanity delay.

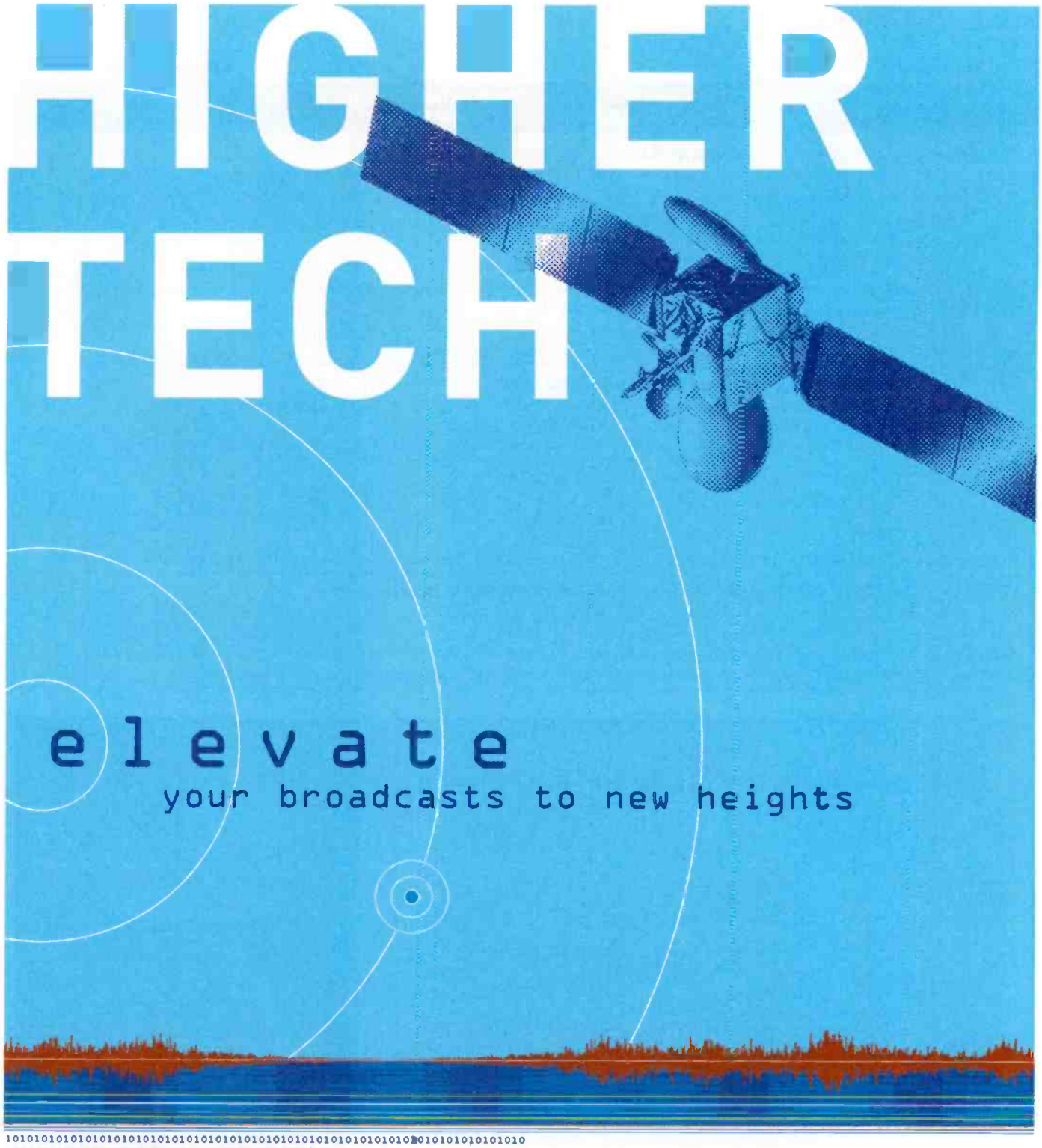
Eventide®

BROADCAST DIVISION

One Alsan Way
Little Ferry, NJ 07643
(201) 641-1200
www.eventide.com
broadcast@eventide.com

Eventide is a registered trademark of Eventide Inc. © 2004 Eventide Inc.

OS	Modes	Sound Cards	Third-party RAID support?	File Formats	Non-native file support?	Control	PAD	Playback Modes	Purchase	Support
Computer Concepts • *Maestro* • *www.computerconcepts.biz*										
W	M, L, F, S, T	any	yes	W, B, 2, 3, A, C, WMA	yes	S, E, C	separate	L, S, N	P	U, T
Features: Voice tracking via Internet; voice tracking in air studio while on-air; built-in air studio phone recorder-editor; Protégé is the a la carte version of Maestro										
Dalet • *Dalet Plus* • *www.dalet.com*										
W	M, L, F, S, T	Digigram, Soundblaster	yes	W, B, 2, 3, WMA	yes	S, C	separate	L	P	T
Features: Modular system design; redundant architecture										
D.A.V.I.D. • *Latitude* • *www.digasystem.com*										
W	M, L, F, S, T	Digigram, Lynx	yes	W, B, 2, 3, Dalet SND, MFX, WMA, Realaudio	yes	S, E, C	separate or imbedded	L, N	P	T
Features: Content Bridge exports and imports files; multi-tier rights management including personal desktop configuration; content distribution and exchange via WAN/MAN; Web-based remote reporter kit										
Enco • *DADpro32* • *www.enco.com*										
W	M, L, F, S, T	Digigram, Audioscience	yes	W, B, 2, 3, plays AC-2	yes	S, E, C	separate	L, N	P	U
Features: Command language to program complex tasks; conditional programming language for if-then-else administration; Customizable interface for screen colors and layout; security to enable or lock out features										



EXPAND COVERAGE, IMPROVE RELIABILITY AND REACH NEW AUDIENCES WITH SATELLITE.

Increasingly, broadcasters and program producers are looking **UP** to discover the benefits of satellite for delivering audio, video and data content to owned-and-operated stations, affiliates and cable headends—across the street or across the country. At NPR Satellite Services®, our comprehensive satellite solutions provide affordable and reliable coverage of all 50 U.S. states, Mexico and the Caribbean. From space segment and equipment to engineering design and ongoing support, we provide everything needed to get your content **UP** there, to help you spread the word down here. To find our more, **call NPR Satellite Services at 202.513.2626**—and discover some very down-to-earth value.

npr satellite services

WWW.NPRSS.ORG/BE

ALWAYS ON.

Resource Guide

OS	Modes	Sound Cards	Third-party RAID support?	File Formats	Non-native file support?	Control	PAD	Playback Modes	Purchase	Support
Netia • *Radio-Assist 7.5* • *www.netia.fr*										
W	M, L, F, S, T	Digigram, Sounblaster, M-Audio, Terratec, Soundmax, Yellowtec	yes	W, B, 2, 3	yes	*	separate or imbedded	L	L	T
OMT • *Imediatouch* • *www.imediatouch.com*										
W	M, L, F, S, T	any	yes	W, B, 2, 3	yes	S, E, C	separate	L	P	T
Features: Version 2.2 adds features to eliminate downtime with redundant databases										
On Air Digital • *Radio Suite* • *www.onairusa.com*										
L	M, L, F, S, T	Audioscience, Soundblaster	yes	W, B, 2, 3, A, ADPCM	yes	S, C	separate	L, N	P	U
Features: Includes Radio Suite Linux; software encoding and decoding; interfaces with all Windows-based editors, news systems, CD rippers										
Pristine Systems • *CDS32* • *www.pristinesys.com*										
W	M, L, F, S, T	Audioscience	yes	W, 2, 3, A, Dolby AC-2, Cart Chunk	yes	S, E, C	separate or imbedded	L, N	P	T
Features: Includes music scheduling, voice tracking, editor, RBDS text output, Website text output, audio browser software, audio grabber										
Prophet Systems • *Nexgen 101* • *Innovationswww.prohetsys.com*										
W, L	M, L, F, S, T	any	yes	W, B, 2, 3	yes	S, E, C	separate or imbedded	L, S, N	P	T
Features: Central database and storage can be on Linux; includes integrated automatic music scheduling; optional profanity control module; automatic hot sparring redundancy for on-air workstations; automatic program logging and archive module										

NEW!

StudioDrive makes your PC a studio-in-a-box!

StudioDrive is a 6-input stereo mixer that makes your PC a self contained fully integrated studio! Perfect for radio automation, newsrooms, PC edit suites, emergency studios, remotes, LPFM.

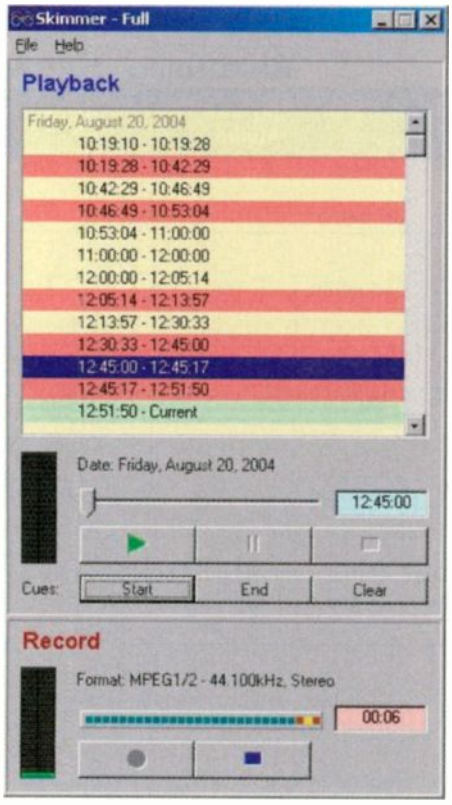
- Mic input w/ remote
- 4 stereo Line inputs
- Telephone coupler
- Mix-minus built in
- Monitor system w/automatic muting
- AIR Monitor input
- Mic Tally controls On The Air lights
- Headphone output

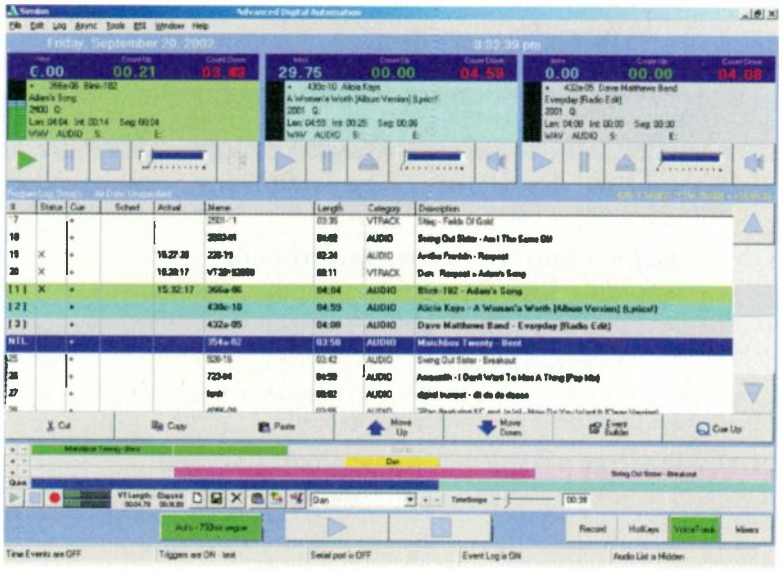
HENRY ENGINEERING

Call BGS for great deals on Henry products! *www.bgs.cc*

352-622-7700

Broadcasters General Store





Get Skimmer FREE this month when you buy Simian

Purchase a copy of Simian digital automation this month and receive a free copy of Skimmer, BSI's audio logger.

Simian is a powerful, reliable, and affordable automation system, with the most complete feature set in the industry. The $1499 Simian is touch-screen compatible, has easy voice-tracking, and runs on a standard Windows PC, using standard Windows (linear or compressed) audio files.

Skimmer is a fast, customizable audio logging application. We've sold hundreds at $299. Some of the features include:

- Automated or manual operation
- Set your own output folder
- Customizable automated file naming
- Compression (MP3 CODEC included)

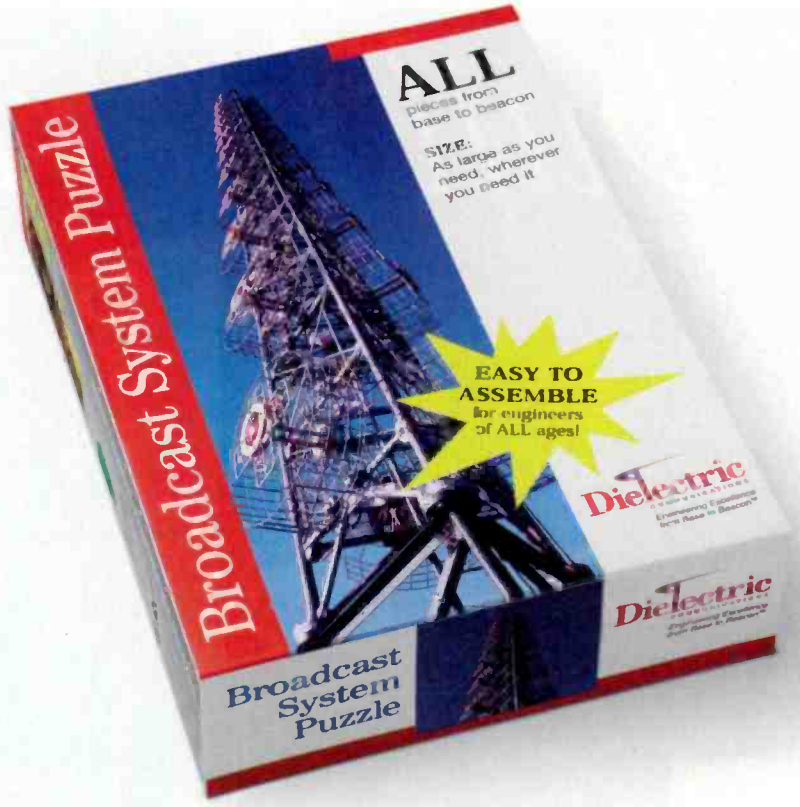
Save $299 when you buy Simian now!

BSI

www.bsiusa.com sales@bsiusa.com 1-888-BSI-USA1
Broadcast Software International

OS	Modes	Sound Cards	Third-party RAID support?	File Formats	Non-native file support?	Control	PAD	Playback Modes	Purchase	Support
Register Data Systems • *The Phantom* • *www.registerdata.com*										
DOS	M, L, F, S, T	any	yes	*	*	S, E, C	separate	L	P	U
RCS • *Master Control* • *www.rcsworks.com*										
W	M, L, F, S, T	Digigram, Moto, M-Audio, Soundscape	yes	W, B, 2, Cart Chunk	yes	S, E, C	separate	L, N	L	T
Features: Living Log eliminates reconciliation; Internet Voice Tracking; Internet Proof Schedule; drag and drop files to editors; e-mail trouble alerts; Segue Editor; programmable Hot Keys										
Scott Studios • *SS32* • *www.scottstudios.com*										
W, L in beta	M, L, F, S, T	any	yes	W, B, 2, 3, A, WMA, Cart Chunk	yes	S, E, C	separate	L, S, N	P	U, T
Features: Remote control of up to 48 systems via one Internet computer; remote control by DTMF, remote control by Pocket PC; voice tracking via Internet; voice tracking in air studio while on-air; timing adjustment with Audioscience sound card; built-in air studio phone recorder-editor; RBDS out can insert spots in text, weather, contests										
Wireready • *Controlready* • *www.wireready.com*										
W	M, L, F, S, T	any	yes	W, any supported by sound card	yes	S, E, C	separate or imbedded	L	P	T
Features: Integrated newsroom and wire capture system in same software; logic operations are independent of sound files and traffic logs; imports traffic and music schedules independently; audio file information is stored in the audio file; automation can distribute information via RBDS and update station websites; can find audio from backup sources including FTP and autofills if needed; can launch third-party applications										

Radio and TV broadcast systems made simple.

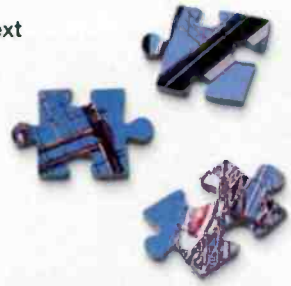


Dielectric has all the essential pieces to make your TV or radio project anything but puzzling. From design and site surveying, to excavation and construction, rigging and maintenance — we'll connect you with everything you need from the transmitter output, including:

Towers • Rigid or flexible transmission lines • Lighting • Antennas • Combiners • RF Systems

The warranty you want. The capability you need. The experience you demand.

Put Dielectric to work on your next project and watch everything seamlessly come together in picture perfect fashion.



Dielectric
COMMUNICATIONS
Engineering Excellence from Base to Beacon™

1-866-DIELECTRIC • www.dielectric.com

FACILITY SHOWCASE

Build it big, build it right

Inside the air studio at Super Estrella, one of the 27 new studios built in Los Angeles.

27 New Studios for Entravision in Los Angeles

By Matt Sheahan

The Entravision Communications-Radio Division developed a plan to create a new, centralized facility for its radio stations in Los Angeles that would also house its satellite operations from Campbell, CA, near San Jose. This would prove to be a significant move. The target date was for the facility to be completely operational by early 2004.

Entravision has created one of the largest U.S. Hispanic radio networks in the nation, reaching a potential audience of more than 20 million listeners. The new Entravision facility houses a number of the company's flagship broadcast networks including Radio Romantica, which consists of adult-contemporary, romantic ballads and current hits; Radio Tricolor, which is a personality-driven, Mexican country-style format; and Super Estrella, which is music-driven, pop and alternative Spanish rock.

The new studios are located on the Miracle Mile in Los Angeles, in the same building that houses Miramax and *Variety*.

www.beradio.com September 2004 27

Build it big, *build it right*

One of the significant integration challenges was logistical. CSS used its Pre-Build Solution for this integration project. The majority of the wiring infrastructure was built, tested and documented at the CSS facility in Colorado and then shipped to Los Angeles for final installation.

With the assistance of Omnirax, CSS was given a working template of the three types of studio to be installed: on-air, production and imaging. Using these templates, CSS built most of the wiring infrastructure without having to be on-site. CSS used Stardraw Studio Documentation Software for this project, which facilitates the process of creating detailed engineering schematic of the studio infrastructure.

The corridor walls have an open space at the top that conceals the wiring trough. The designer used this space to provide colorful, indirect lighting, which provides a changing palette of colors.

JUST ENOUGH TEST

Is your bulky bench analyzer more test than you use and more weight than you want?

Sophisticated Minstruments from NTI give you just enough test capability, plus functions not even available on their larger siblings... and these flexible instruments fit in the palm of your hand

ML1 Minilyzer
Analog Audio Analyzer
- Level, Frequency, Polarity
- THD+N & k2→k5
- VU+PPM meter/monitor
- 1/3 octave spectrum analyzer
- Frequency/time sweeps
- Scope mode & AFILS

MR1 Minirator
Analog Audio Generator
- Sine, Square wave & Sweep
- Pink & White Noise; Polarity
- Low Distortion
- Bal & Unbal Out

DL1 Digilyzer
Digital Audio Analyzer
- AES, SPDIF, ADAT
- 32k to 96k sample rates
- Digital THD+N, Level, Frequency
- Status/User bits
- Error logging

NEW! AL1 Acoustilyzer
Acoustics & Intelligibility analyzer
- Real Time Analyzer
- Reverb Time (RT60)
- STI-PA option
- Zoom FFT
- THD+N, Frequency,

NTI Americas Inc
PO Box 231027
Tigard, Oregon 97281 USA
503-639-3737
www.nt-instruments.com
americas@nt-instruments.com

The main lobby at the Entravision studios.

A project of this scale required all the participants to work closely to meet the specific deadlines. The Entravision engineering staff, Wheatstone, Omnirax and CSS collectively solved the common last-minute issues that arose, smoothing the integration process.

One unique design element solved a challenge in cable routing. Instead of running cable through conduits or beneath floors, a cable trough soffit was built into the hallway walls. The walls stop about one foot short of the ceiling. Over the top is a cable tray that is about 1' wide and 8" deep. Cables can be easily added or accessed with minimal effort. This soffit also houses the hallway lights, creating an aurora borealis effect throughout the facility.

Today, the Entravision LA stations broadcast full-force from their new studios on the Miracle Mile. All studios are fully functional and Entravision is back to the business of increasing its visibility as one of the nation's dominant Hispanic-language broadcasters.

Sheahan is the communications manager at CSS, Wheat Ridge, CO.

Soffit detail photos by Rick Hunt, VP and director of radio engineering, Entravision Communications.

Equipment List

Belden wire and cable
Bose speakers
DBX Quantam II
Dorrough 280 meters
Drawmer DA-6 distribution amps
Enco DADpro32
Gepco wire and cable
Hafler P1000 amplifiers
LPB Silent Booms
Middle Atlantic racks
Neutrik connectors
Omnirax furniture
Shure SM7-B mics
Stardraw Studio Documentation Software
Tascam 122 MK III cassettes
Tascam CD-450 CD players
Tascam DA-40 DATs
Tascam DDRW2000 CD recorders
Tascam MD-801R MKII Minidiscs
Telos Systems 2101 phone systems
Vox Pro editors
Wheatstone Bridge router
Wheatstone Gen-5 control surfaces

NAB Radio Show
Convention Preview

By Chriss Scherer, editor, and Kari Taylor, associate editor

The NAB Radio Show, held every fall, has seen a slow decline in attendance over the past few years. This changed last year when the convention was held in Philadelphia. Because of the success in 2003, the NAB Radio Show will return to land of cheesesteaks in 2005. This year, the convention heads west to the always-pleasant climate of San Diego.

As with previous conventions, plenty of events are scheduled for the three-day conference. Between the sessions, the exhibit floor and special presentations, you'll stay busy the entire time.

The sessions are always an anticipated event at the convention. This year's slate has a broad range of topics, but the engineering side has a focus on IBOC technology and applications that spans the three days. The HD Radio Workshop covers the entire IBOC chain, from audio origination to the antenna, and includes a section on test and measurement.

It's not strictly IBOC, however. While all the sessions have something to offer, some are probably more in line with your interests as a *Radio* magazine reader. We have included these sessions as well for your reference. The sessions start before the exhibit hall opens, so arrive early if you want to attend the sessions on Wednesday.

A preview of some of the products being exhibited is on page 64. Use the show floor map on page 44 to find your way. Also, look for some excursion ideas in the San Diego area.

See you in San Diego.

Session and Event Highlights

Wednesday, Oct. 6

Signal Performance and Antenna Systems for HD Radio

9 a.m. to 9:30 a.m.
An Overview of the HD Radio System

9:30 a.m. to 11 a.m.
AM Antenna Systems and HD Radio
Ben Dawson and Ron Rackley discuss the important aspects of AM antennas to IBOC performance. Following an explanation of the basics of modulation, the specifics of antenna-related factors, including impedance matching and bandwidth, will be discussed.

11 a.m. to noon
AM IBOC Installation and Performance Case Study
Tom Cox, Jeff Littlejohn and John Warner of Clear Channel will show several AM IBOC installations and cover topics related to the challenges of implementing IBOC at these facilities. Studio headphone monitoring and covering live events outside the studio will also be covered. In addition, perspectives on digital vs. analog coverage will be discussed.

WHAT'S YOUR DATA DILEMMA?

- Adding RDS?
- Installing a remote server?
- Changing remote control/telemetry?
- Need security and surveillance?

Lanlink is a bi-directional Ethernet and RS-232 serial data link operating in the license-free 900 MHz ISM band.

And it is so close to the 950 MHz STL band you can duplex into your existing antenna system.

Network your processing and even add Internet and email at the transmitter site too!

Let the digital STL experts at Moseley help you solve your data dilemma.

LANLINK

LAN EXTENDER/DATA LINK

CALL FOR MORE INFORMATION:

Dave Chancey 805-968-9621 ext. 213
Bill Gould 978-373-6303

Moseley

www.moseleysb.com

NAB Radio Show
Convention Preview

1:30 p.m. to 2 p.m.
The ERI Digital Radio Solution
Bill Harland of Electronics Research will review all the approved methods of implementing simulcast FM analog and digital IBOC transmission. The focus is on the elements that follow the transmitter outputs in configurations using separate analog and digital transmitters, which is the most common and complex implementation scenario.

2:30 p.m. to 3 p.m.
Strategic Planning for HD Radio Implementation
Bob Surrette of Shively Labs details the proper steps to take when implementing an IBOC strategy. He will present the pros and cons for each technique with background information that can help a station identify specific strategies.

3 p.m. to 4 p.m.
Avoiding the IBOC Gotchas
Steve Fluker of Cox Radio Orlando provides the insight to help stations avoid unexpected or unanticipated costs of installing an IBOC operation, from the studio to the antenna.

4 p.m. to 4:30 p.m.
One Site, 7 HD Radio Installations in Seattle
Clay Freinwald of Entercom reveals the details of the seven-station IBOC installation at the West Tiger Mountain transmitter site.

Show floor hours

Wednesday, October 6 ..... 5 p.m. to 8 p.m.
Thursday, October 7 ..... 9 a.m. to 5 p.m.
Friday, October 8 ..... 9 a.m. to 1 p.m.

Out & About in San Diego

Miramar Speed Circuit

Miramar Speed Circuit offers its guests an impressive 1/4 mile technical road course. The karts, which can travel up to 40 miles per hour and are equipped with Honda 6.5BHP engines. Each kart has ROC Timing, which electronically clocks each kart as it rounds the track to give detailed information for each lap completed. Walk-ins welcomed. The cost is $23.
www.miramarspeedcircuit.com

R A M

AUDIO SWITCHERS

RAMSYSCOM.COM

800 779 7575

SR 10

10 x 1 STEREO SWITCHER

SR 10M

10 x 1 STEREO SWITCHER WITH METERING AND MONITORING

SR 210

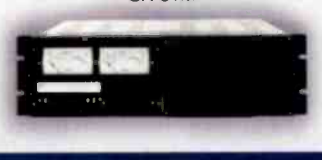
10 x 2 STEREO SWITCHER

SR 64

6 x 4 STEREO SWITCHER

SR 201

20 x 1 STEREO SWITCHER WITH PARALLEL REMOTE CONTROL

SR 61M

6 x 1 STEREO SWITCHER WITH METERING AND MONITORING

Other Sessions of Note

2:15 p.m. to 3:30 p.m.

The People Meter and Ratings: How are They Measuring Up?

After several years of testing and roll-outs in new markets, it's time for an in-depth update on the PPM, including a discussion of sample sizes. Also, a look at the other implementations and options that are available.

5 p.m. to 7 p.m.

Opening Reception on the Exhibit Floor

The exhibit floor officially opens with on Wednesday evening.

Out & About in San Diego

San Diego Aerospace Museum

The San Diego Aerospace Museum offers more than 65 aircraft and spacecraft, and an aviation library and archives. The museum also houses the International Aerospace Hall of Fame honoring engineers, pilots and aviation industrialists. Take a behind-the-scenes restoration tour, which is available for an additional fee. Open daily from 10 a.m. to 4:30 p.m.

www.aerospacemuseum.org

Thursday, Oct. 7

Transmitters, Tests and Measurements for HD Radio

9 a.m. to 9:30 a.m.

New Methods to Upgrade to HD Radio Transmission

George Cabrera of Harris will discuss information about two FM IBOC cost-reducing implementation methods: separate radiation and split-level combining.

9:30 a.m. to 10 a.m.

FM Broadcast Transmitter Site Conversion for HD Radio Transmission

Tim Hardy of Nautel will overview the transmission equipment requirements for FM IBOC, with an emphasis on the effect of transmitter non-linearity and its mitigation using digital adaptive pre-correction.

11 a.m. to 11:30 a.m.

FM IBOC Installations Real-world Case Study

Paul Shulins of Greater Media Boston describes the planning, budgeting, installation and maintenance of the FM IBOC systems installed in January 2004 on Greater Media's five Class B stations in Boston.

Marconi Radio Awards

Reception, Dinner and Show

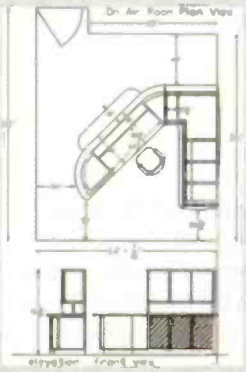
The awards recognize overall excellence in radio in five categories. Stations and personalities compete for this coveted award. Beginning at 6 p.m., the event is hosted by syndicated morning show personalities Bob and Tom.

OMNIRAX BROADCAST FURNITURE

Omnirax from Design to Production

- At Omnirax we work together with you from initial design concept all the way through finished product, ensuring that your furniture will provide you with years of satisfied use.
- Our strength is forging partnership relations where we can use our expertise to turn your ideas into reality. We are able to work to your exacting specifications or provide comprehensive design services that remove the guesswork from your investment.
- Our CAD/CAM process ensures precision fit and finish, repeatability, and ease of modification. All of our designs are rendered in the computer prior to manufacturing. We are able to make alterations and adjust to your equipment, guaranteeing you not only get what you want, but exactly what you need.
- We are small enough to give every job the personal touch, large enough to outfit a complete facility.
- The measure of our success is the achievement of a synthesis of form, function and ergonomic comfort.

CAD drawing



CAD rendering

P. O. Box 1792 Sausalito, CA 94966
800.332.3393 415.332.3392 FAX 415.332.2607
www.omnirax.com info@omnirax.com

Entravision Studio
Los Angeles, California

NAB Radio Show
Convention Preview

11:30 a.m. to noon
Measuring Your Hybrid IBOC Signal
David Maxson of Broadcast Signal Lab explores the complexities of measuring the IBOC signal. With the addition of a digital waveform to the analog, a host of measurement challenges arise relating to analyzing digital signal carriers and determining occupied bandwidth.

1:30 p.m. to 2 p.m.
AM Broadcast Transmitter Site Conversion for HD Radio Transmission
Wendell Lonergan of Nautel will discuss site requirements to transmit an IBOC signal. Problems encountered during various site conversions and solutions to these problems will be explained.

2 p.m. to 3 p.m.
Linearity Measurements of AM Transmitters for HD Radio Performance
Geoff Mendenhall of Harris will detail an independent measuring technique that predicts digital modulation performance without the need of an IBOC exciter/demodulator.

3 p.m. to 3:45 p.m.
Real Life Operation of an AM IBOC Facility
Tom Ray of WOR, New York, will take attendees through an AM IBOC installation from concept to operation.

3:45 p.m. to 5 p.m.
Developing a Troubleshooting Plan
John Bissett of Dielectric explains the method to adopt a logical troubleshooting process. While the focus will be transmitter troubleshooting, the skills can be applied to any repair situation.

Out & About in San Diego

The Antique Radio Store
Located in San Diego, this store refurbishes old radios and resells them. From antique parts to test equipment, this store has everything a radio enthusiast could want and more.
www.oldradiosrus.com

Radius-Xp ... studio furniture

the most POPULAR furniture lines ever...

new for 2003

... all plastic surface & trim design
... modular for flexibility
... highest quality materials
... precision crafted
... professional features
... many options available

This new studio furniture line is engineered for studio decors where non-wood trims are a design goal. Available in a wide variety of colors, this furniture will complement any size market application. The modular design enables the furniture to be ordered in almost any configuration that can be imagined.

only $2,995
call 970-461-0730 ext 329

arrakis systems inc. www.arrakis-systems.com (970) 461-0730

Other Sessions of Note

7:30 a.m. 8:45 a.m.
FCC Breakfast
FCC Commissioners Jonathan Adelstein and Kevin Martin are scheduled to appear. They will discuss the current regulatory issues facing radio broadcasters.

9 a.m. to 10:15 a.m.
Keynote Address
NAB President Eddie Fritts will give opening remarks before introducing the keynote speaker, who has not yet been announced.

11:45 a.m. to 1:30 p.m.
Exhibit Floor Lunch
Taking a cue from regional conventions, a free lunch will be available on the show floor.

2:30 p.m. to 4:30 p.m.
Live Remote Broadcast:
Dick Robinson's American Standards By The Sea
The music of Sinatra, Bennett, Basie, Rich, Callaway and many more are featured during the weekly syndicated show, which usually originates aboard a studio-equipped 70-foot yacht.

4:15 p.m. to 5:45 p.m.
Happy Hour & A Half
A social event at the end of the middle day.

6 p.m. to 9:30 p.m.
Marconi Radio Awards Reception, Dinner & Show
The awards ceremony recognizes stations for overall excellence. The hosts for the event will be syndicated morning personalities Bob and Tom.

Out & About in San Diego

San Diego Automotive Museum

This museum displays more than 80 automobiles and motorcycles from the Model T to the Maserati. An automotive research library is open to the public. Open daily 10 a.m. to 5 p.m.
www.sdautomuseum.org

Upgradeable!

Buy a Radio Systems' console with the confidence that you can always upgrade to the next level of performance.

Only Radio Systems protects your console investment by providing a program of significant styling and technical improvements for your still-dependable, but aging Radio Systems boards.

Upgrade from your older RS-Series console to a beautiful, fuller-featured Millenium console today, or buy a new Millenium board and upgrade to digital performance whenever you're ready.

Upgrade kits are inexpensive and available for field or factory installation.

601 Heron Drive Bridgeport, New Jersey 08014
(856) 467-8000 voice (856) 467-3044 fax
www.radiosystems.com

radio SYSTEMS

NAB Radio Show
Convention Preview

Friday, Oct. 8

Studios, Audio and Data for HD Radio

8:45 a.m. to 9:45 a.m.
Studio Equipment and Infrastructure
Jim Haupstueck of Harris, Ted Lantz of Broadcast Electronics and Chad Sterling of Dmarc Networks will discuss the IBOC broadcast audio chain.

9:45 a.m. to 10:45 a.m.
Studio Operations
Jay Adrick of Harris, Jeff Detweiler of Ibiquity and Frank Foti of Omnia Audio will discuss the challenges of processing for hybrid transmission and maintaining clean audio. Methods of emergency alerting will also be covered.

10:45 a.m. to 11:45 a.m.
Advanced Applications and Services
Frank Foti of Omnia Audio, Robert Hylkema of Teleatlas and Mike Starling of NPR will cover the enhancements of IBOC: multichannel audio, surround sound, data are more.

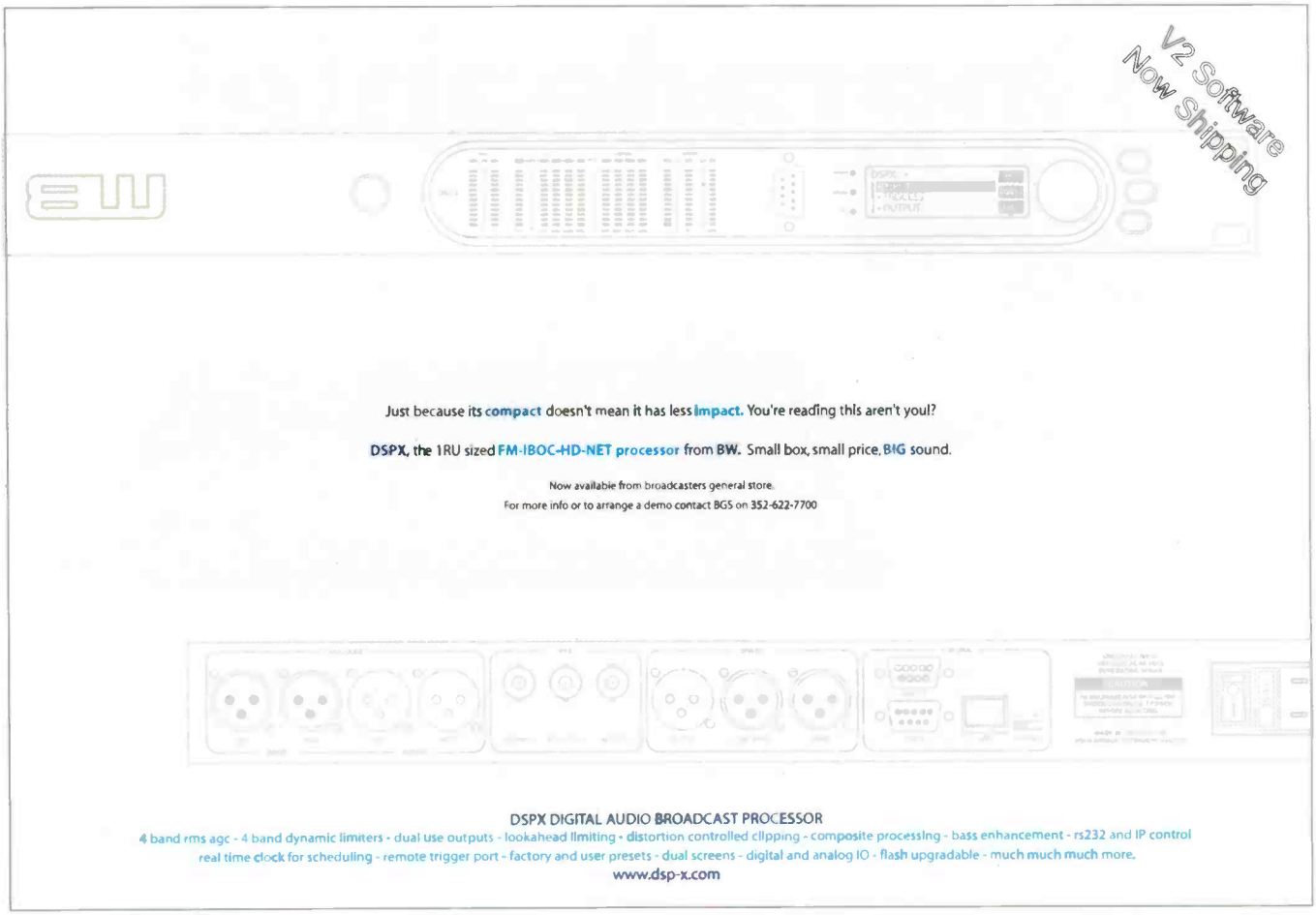
1:30 p.m. to 2p.m.
International Update: A Look at DAB Data Services and Opportunities for HD Radio

2 p.m. to 2:30 p.m.
Receiver Update
Mike Bergman of Kenwood will discuss the features of IBOC radios and preview some of the possible enhancements.

Out & About in San Diego

Mission Trails Regional Park

Located eight miles northeast of downtown San Diego, this park encompasses nearly 5,800 acres of natural and developed recreational areas. Featuring more than 40 miles of trails, boating on Lake Murray, camping at Kumeyaay Lake, numerous informative hikes and a Visitor & Interpretive Center, Mission Trails Regional Park provides a natural escape from the city.
www.mtrp.org



2:30 p.m. to 3 p.m.
Impulse Radio MAT Protocol
Paul Signorelli of Impulse Radio will discuss various methodologies for multiplexing data services over the transmission layer of the IBOC system.

Other Sessions of Note

7:30 a.m. to 8:45 a.m.
Breakfast with Charlie Cook
Charlie Cook, editor and publisher of *The Cook Political Report* and a political analyst for the National Journal Group, will share his views on politics and the November Presidential election at this breakfast session.

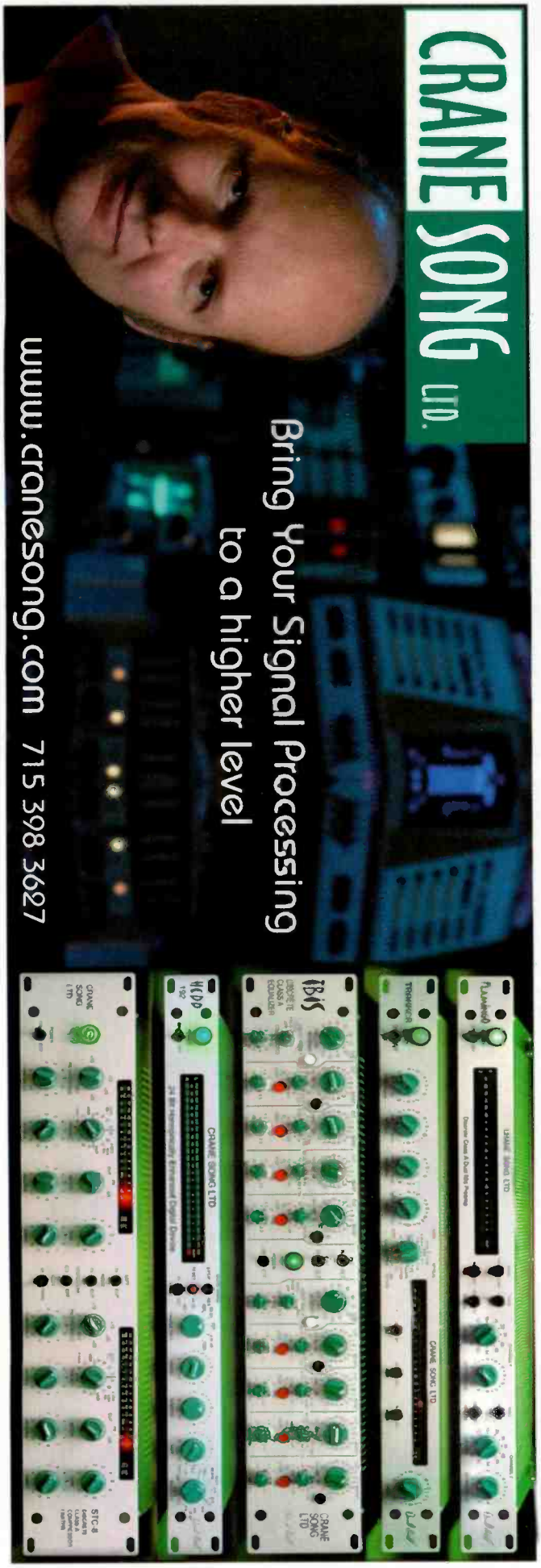
9 a.m. to 10:15 a.m.
HD Radio Made Easy
This session provides a non-technical review of IBOC digital radio, with insight to its revenue-generating potential. The panelists will discuss the special considerations in making the decision to commence IBOC operations.

Noon to 1:30 p.m.
Radio Luncheon
Clarke Brown, Jefferson Pilot Communication's president of the Radio Division, will receive the NAB National Radio Award at this year's Radio Lunch.

NAB Radio Exhibitors

615 Music Library 1012
ABC Radio 1206
Advertising Edge 104
AEQ 305
Air Force Recruiting 1107
American Blues Network 1106
Arbitron 1102
Armstrong Transmitter 1701
Army National Guard 1310
Arrakis Systems 606
Audemat-Aztec 1710
Bext 202
BIA Financial Network 1405
Billboard Radio Monitor 204
BMI 1407
Broadcast Electronics 702
Broadcasters General Store 510
Burk Technology 1505
Business Talk Radio Network 205
Coaxial Dynamics 1502
Communication Graphics 1200
Comquest Music Testing 306
Comrex 1005
D.A.V.I.D. Systems 1512
Dielectric Communications 905

issue advertisers shown in red



NAB Radio Show
Convention Preview

NAB Radio Exhibitors

Dmarc Networks	607
DRS Broadcast Technology	**1306**
Enco Systems	1112
Energy-Onix	1704
ERI-Electronics Research	**700**
Explosive Promotions and Events	1504
FamilyNet	907
FCC	308
Firstcom Music	212
Harris	**902**
Ibiquity Digital	1209
Inovonics	**302**
Intertech Media	1400
Jampro Antennas/RF Systems	200
KD Kanopy	1401
Larcan USA	208
LEA International	511
Logitek Electronic Systems	**100**
LR Money Machine	103
Mackay Communications	410
Marketron	909
Mayo Clinic	611
Media Professional Insurance	1300
Mediatouch	**613**
Megatrax	1708
Miller, Kaplan, Arase	309
Moseley Associates	**1404**
Musicam USA	**900**
National Hole in One/National Media	411
National Weather Service	300
Nautel	**1410**
Omnirax	**1707**
Open Radio Software	1703
Orban/CRL	**413**
Pike and Fisher/Rules Service Co.	**101**
Precision Communications	209
Prophet Systems Innovations	**709**
Radian Communications Services	304
Radio Advertising Bureau	F7
***Radio* magazine**	**1210**
Radio Music Licensing Cmte	F6
Radio Systems	**1110**
RCS	**106**
RF Parts	**1312**
Roll a Sign	1007
SCA Promotions	401
Scott Studios	**705**
Shively Labs	1403
Sierra Automated Systems and Eng	**812**
Stainless	206
Superior Electric	**303**
The Media Audit	403
Thermo Bond Buildings	310
Valcom Limited	1408
Visibility Solutions	110
V-Soft Communications	1109
Westar Music	203
Wheatstone	**500**

Turn to page 44 for a show-floor map.

issue advertisers shown in red

ONE DIGITAL SYSTEM STANDS OUT

The same way our red apple stands out from a group of green ones, savvy air talent knows Scott's SS32 stands out from other digital systems.

Scott Studios' is the easiest to use. Also, SS32 has many capabilities the others don't. Scott cart walls are so *intuitive* that anything you want is effortlessly on the air in a second or two.

Shown above is Los Angeles morning personality Shawn Parr of KZLA (FM) at his SS32. Emmis also uses Scott systems at KPWR (FM) in LA, in Chicago, St. Louis, and more.

When jocks think creatively, Scott's SS32 touchscreen enhances the flow and adds to the show.

Scott Studios' systems are powerful, yet simple to use. Jocks can color code labels, play Hot Keys at a touch, find anything fast on Cart Walls, and preview anything at any time—even audition the ending while the same cut is on the air.

New look...new features

With Scott Studios, nothing is static. Our 4,600 client stations give us new ideas that we offer to everyone.

Hook promos

Promos with hooks—short clips of upcoming songs—are easy to build in SS32.

Internet control and remote

SS32 auto-imports digital audio from wireless PDAs, laptops, weather services and MP3s.

Voice Tracker®

Scott's Voice Tracker via Internet doesn't require corporate or duplicate music libraries. A number of our stations sound better Voice Tracked than in their live shifts.

Fast phone editor

If a jock works alone, editing great phones is as fast as a flash! If air talent works with a co-host or producer, one can take calls while the other edits.

Free logging software

The FCC is likely to require all stations to archive broadcasts. New customers get free logging software you can run on any office computer. Why pay extra?

Not proprietary

SS32 works with ***any*** computers and sound cards. You only pay for the software features you'll use, so it's in ***your*** price range.

More stations choose Scott than the second and third ranked vendors combined. **Visit us in Booth 704 at the NAB Radio Show**, or call 1-888-GET-SCOTT today.

Scott Studios

13375 Stemmons Freeway, Suite 400

Dallas, Texas 75234 USA

1-888-GET-SCOTT

Some features described are optional. Systems are tailored to needs and budgets.

Leading POTS Codecs Compared.

	Comrex Matrix	Tieline Commander	Zephyr Xport
Audio Bandwidth @ 24 kbps @ 19 kbps	14 kHz 11.2 kHz	15 kHz 9 kHz	**15 kHz** **15 kHz**
Direct Internet Software Updates	No	No	**Yes, via Ethernet port**
Digital PC Audio Input	No	No	**Yes, via Ethernet port and supplied driver**
Audio Metering (XMIT/RCV)	Transmit only	One-at-a-time	**Simultaneous**
Audio Processing	None	Simple AGC	**Digital multi-band AGC with look-ahead limiter by Omnia**
Remote Control	No	RS-232 and dedicated computer	**Ethernet via Web browser**
Auto Dial Storage	19 Numbers	50 Numbers	**100 Numbers**
Frequently-Used Settings Storage	none	none	**30**
Standards-based POTS Codec	No - Proprietary	No - Proprietary	**Yes - aacPlus (MPEG HEAAC)**
Transmit-Receive Quality Display	No	Yes	**Yes**
Contact Closures	2	2	**3**
Display Resolution	120x32 LCD	120x32 LCD	**128x64 LCD**
Analog Cell Phone Interface	Optional	Standard	**Standard**
Mixer Inputs	1 mic, 1 mic / line	2 mic / line	**1 mic, 1 line**
Phantom Power	No	No	**Yes - 12 volt**
Automatic Voice-Grade Backup	No	No	**Yes**
Power Supply	External	External	**Internal auto-switching**
Local Mix Audio Outputs Headphone Line Level	 Yes Yes	 Yes No	 **Yes** **Yes**
Direct Receive Audio Output	No	Yes	**Yes**
Uses ISDN at the Studio Side for More Reliable Connections	No	No	**Yes - your Zephyr Xstream becomes universal POTS and ISDN codec.**
Available ISDN Option	$850.00 (adds MPEG L3 & G.722)	$850.00 (adds G.722)	**$495.00 (adds G.722 & state-of-the-art AAC-LD for high fidelity and low delay)**
List Price:*	$3,700.00	$3,650.00	**$2,495.00**

The world's most advanced POTS codec
is also the world's lowest priced POTS codec.

Telos
AUDIO | NETWORKS

* Refers to base MSRP without ISDN option as of 5/1/04. The Telos logo, Zephyr, Zephyr Xstream, Zephyr Xport are all registered trademarks of TLS Corporation. © 2004. aacPlus (TM) Coding Technologies. Comrex, Tieline and associated trademarks are property of their respective owners. Product specifications quoted from manufacturer's most current published documentation at time of printing.

The routing switcher gets a new twist.

(About five twists per inch, actually.)

Everybody needs to share audio. Sometimes just a few signals — sometimes a few hundred. Across the hall, between floors, now and then across campus. Routing switchers are a convenient way to manage and share your audio, but will your GM really let you buy a router that costs more than his dream car? Unlikely.

If you need a routing switcher but aren't made of money, consider Axia, the Ethernet-based audio network. Yes, Ethernet. Axia is a *true network*. Place our audio adapter nodes next to your sources and destinations, then connect using standard Ethernet switches and Cat-6. Imagine the simplicity and power of Ethernet connecting any studio device to any other, any room to any other, any building to any other... you get the idea.

Routers are OK... but a network is so much more modern. With Axia, your ins and outs are next to the audio, where they belong. No frame, no cards, no sweat.

Scalable, flexible, reliable... pick any three.
An expensive proprietary router isn't practical for smaller facilities. In fact, it doesn't scale all that well for larger ones. Here's where an expandable network really shines. Connect eight Axia 8x8 Audio Nodes using Cat-6 cable and an Ethernet switch, and you've got a 64x64 routing switcher. And you can easily add more I/O whenever and wherever you need it. Build a 128x128 system... or 1024x1024... use a Gigabit fiber backbone and the sky's the limit.

Are you still using PC sound cards?
Even the best sound cards are compromised by PC noise, inconvenient output connectors, poor headroom, and other gremlins. Instead, load the Axia IP-Audio Driver for Windows® on your workstations and connect *directly* to the Axia audio network using their Ethernet ports. Not only will your PC productions sound fantastic, you'll eliminate sound cards and the hardware they usually feed (like router or console input modules). Just think of all the cash you'll save.

There's a better way to get audio out of your PC. No more consumer grade '⅛" connectors – with Axia your digital audio stays clean and pristine.

Put an Axia Microphone Node next to your mics and send preamplified audio anywhere you need it, over Ethernet — with no line loss or signal degradation.

Put your preamps where your mics are.
Most mainframe routers have no mic inputs, so you need to buy preamps. With Axia you get ultra-low-noise preamps with Phantom power. Put a node in each studio, right next to the mics, to keep mic cables nice and tight, then send multiple mic channels to the network on a single Cat-6 cable. And did we mention that each Mic Node has eight stereo line outputs for headphones? Nice bonus.

Put your snake on a diet.
Nobody loves cable snakes. Besides soldering a jillion connectors, just try finding the pair you want when there's a change to make. Axia Audio Nodes come in AES/EBU and balanced stereo analog flavors. Put a batch of Nodes on each end of a Cat-6 run, and BAM! a bi-directional multi-channel snake. Use media converters and a fiber link for extra-long runs between studios — or between buildings.

An Axia digital audio snake can carry hundreds of channels of digital audio on one skinny CAT-6 cable. We know you're not going to miss soldering all that multi-pair...

With a little help from our friends.
A networked audio system doesn't just replace a traditional router — it *improves* upon it. Already, companies in our industry are realizing the advantages of tightly integrated systems, and are making new products that reap those benefits. Working with our partners, Axia Audio is bringing new thinking and ideas to audio distribution, machine control, Program Associated Data (PAD), and even wiring convenience.

Axia is already working with some great companies. Like Enco Systems, Scott Studios, Radio Systems, Balsys Technology Group, and of course Telos and Omnia. Check AxiaAudio.com/partners/ to find out who's next.

Would you like some control with that?
There are plenty of ways to control your Axia network. For instance, you'll find built-in webservers on all Axia equipment for easy configuration via browser. PathfinderPC® software for Windows gives you central control of every audio path in your plant. Router Selector nodes allow quick local source selection, and intelligent studio control surfaces let talent easily access and mix any source in your networked facility.

Control freaks of the world, rejoice: intelligent Axia mixing surfaces give talent complete control of their working environment. Reconfigure studios instantly and assign often-used sources just where they're most useful.

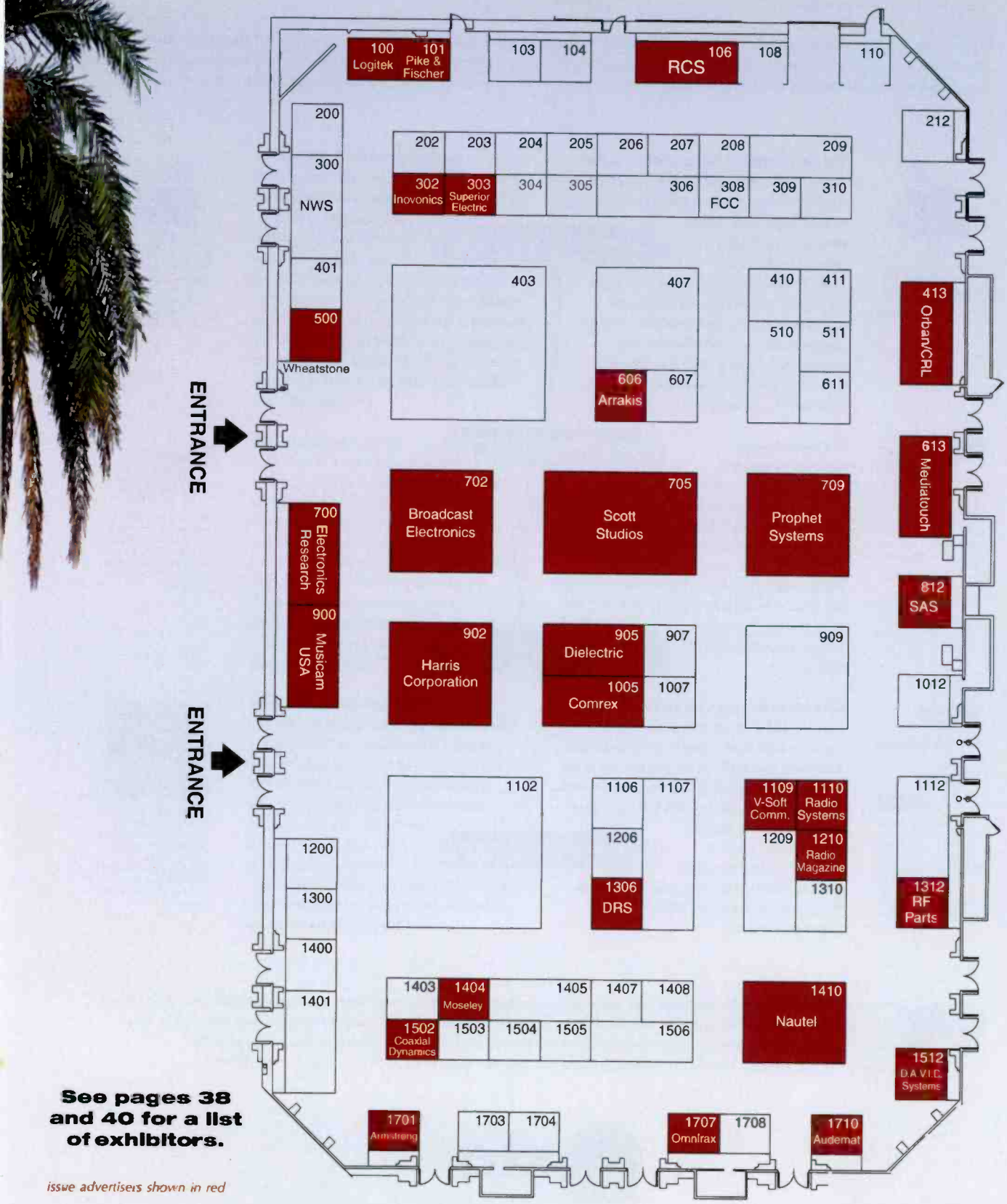
"This sounds expensive." Just the opposite, really. Axia saves money by eliminating distribution amps, line selectors, sound cards, patch bays, multi-pair cables, and tons of discrete wiring — not to mention the installation and maintenance time you'll recover. And those are just side benefits: our hardware is about half the cost of those big mainframe routers. That's right... *half.* Once you experience the benefits of networked audio, you will never want to go back. AxiaAudio.com for details.

AXIA
A TELOS COMPANY

© 2004 TLS Corp. All rights reserved. Axia, the Axia logo, Livewire, the Livewire logo, Telos, and the Telos logo are trademarks or registered trademarks of TLS Corp. All other trademarks and likenesses are property of their respective owners.

NAB RADIO SHOW

October 6-8, 2004



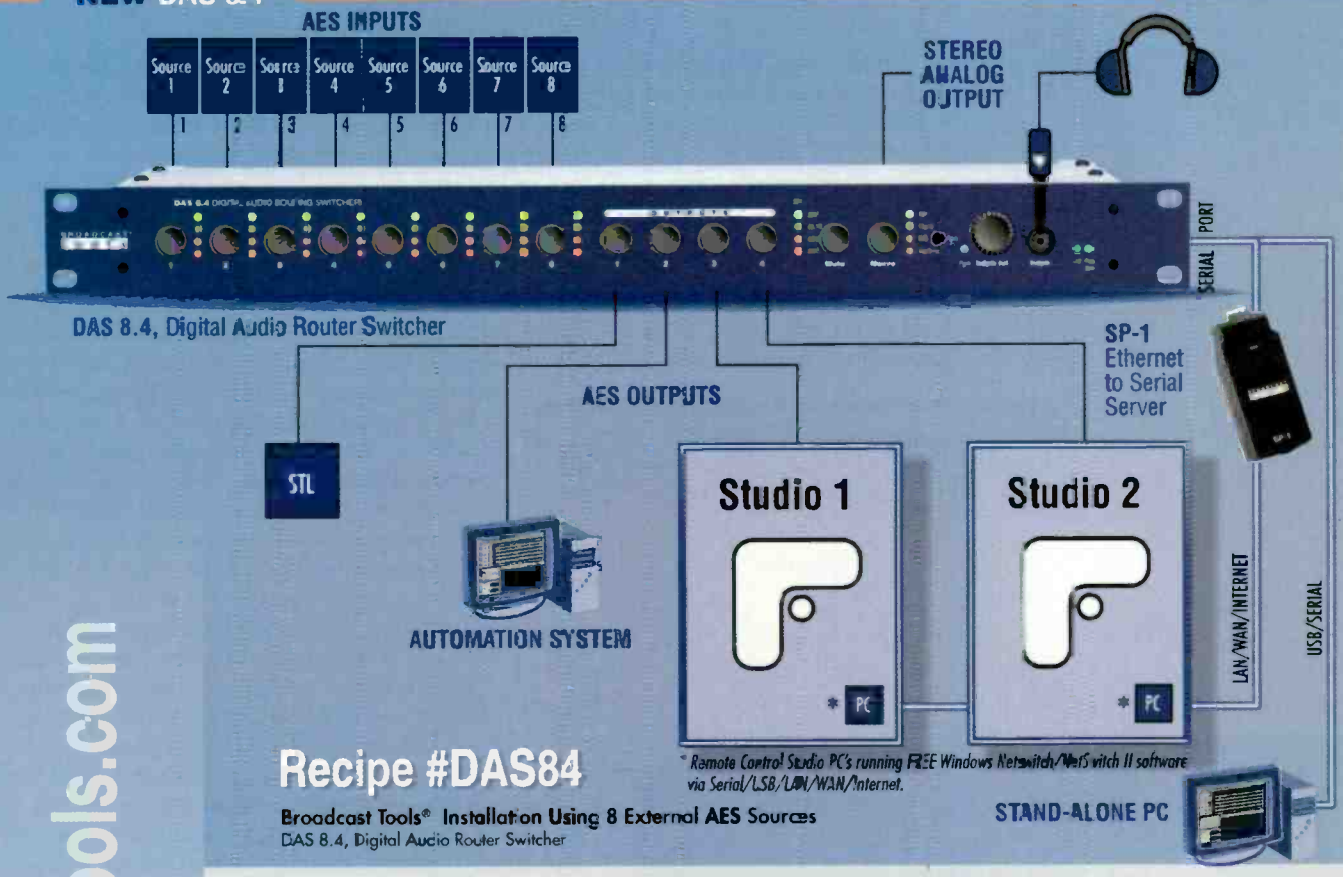
See pages 38 and 40 for a list of exhibitors.

issue advertisers shown in red

Solutions Cookbook

INNOVATIVE PROBLEM SOLVING TOOLS FOR BROADCAST

NEW DAS 8.4



Recipe #DAS84

Broadcast Tools® Installation Using 8 External AES Sources

DAS 8.4, Digital Audio Router Switcher

The Broadcast Tools® DAS 8.4 provides digital audio routing switching of any one of eight AES inputs to four AES outputs. Routing switching allows any one input to be assigned to any/or all outputs. No input mixing is permitted. The DAS 8.4 may be controlled via front panel switches, contact closures, 5-volt TTL/CMOS logic and/or the multi-drop RS-232 serial port. The front panel is equipped with input and output selection push buttons, output assignment led's, sample rate led indicators and a headphone jack with level control. Additional features: 96 KHz sample rate converter, 24-bit D/A converter with analog balanced stereo output, headphone amplifier and 16 x 16 GPIO port. Installation is simplified with removable screw terminals (Euro-blocks).

PRODUCT FEATURES

- Routing type switching, any one input may be assigned to any/or all outputs.
- Logic functions via microprocessor and non-volatile memory
- Internal digital/analog audio activity/silence sensor monitors any one-output channel. The unit is equipped with four front panel sample-rate led indicators, SS, Digital Error and ACT LED indicators; adjustable SS/DIG error alarm delay and restore duration. Analog silence sensor sensitivity set at -34db.
- Front panel input selection switches are provided for each input channel with separate output indicator LED's
- Power-up selection of inputs to outputs, mute or last source selected.
- Eight user configured macros
- Most configuration options via rear panel dipswitches.
- 16 input GPI port (Remote Control or PIP) with LED indicator.
- 16 open collector channel status outputs or programmable via burst commands.
- Remote control of most front panel functions and status.
- Multi-drop RS-232 serial port with data activity LED.
- Multiple units may be looped-thru to expand outputs.
- Depluggable screw (EURO-BLOCK) terminals for ALL connections.
- Multi-voltage power supply (220v CE, optional)
- 1-RU chassis

www.broadcasttools.com

Manufactured with Pride In the USA

Ph: 360.854.9559 • Fax: 360.854.9479
support@broadcasttools.com
www.broadcasttools.com

BROADCAST tools

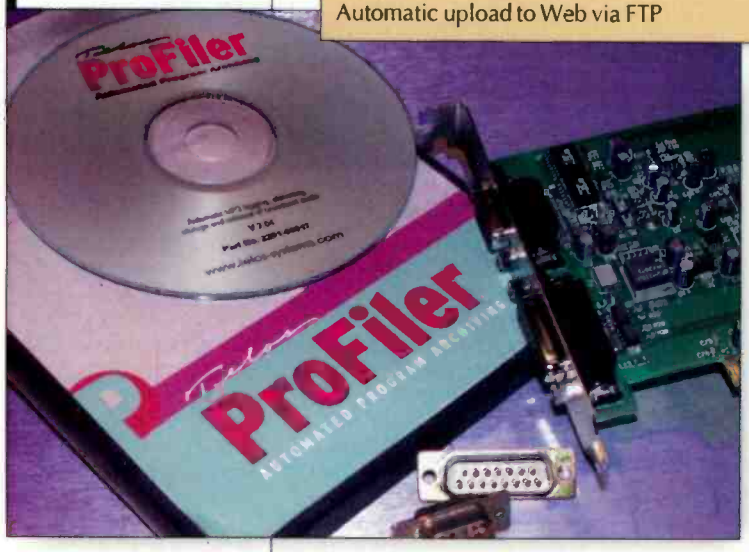
Telos Systems Profiler

By Michael Kernen

At first glance, the Profiler from Telos Systems appears to be a replacement for the modified cassette machine that exists in nearly every radio station. We've all installed such machines after spending hours trying to devise ways to keep the auto-stop feature from activating while the motor is stopped, or to keep the pause/run of the machine synchronized with the microphone on/off state. I've gone so far as to install breadboard circuits inside to convert the console logic to one the cassette machine could deal with. Many times, these machines would soldier on in the studio with little or no maintenance, but when they broke and the new one arrived—sans the needed modifications—hours were spent cooking up new modifications. The cassette's day is at sunset nonetheless.

Performance at a glance

- Pre-record buffer for skimming
- Supports bit-rates from 16 to 320kb/s
- Fraunhofer MP3 compression
- Multiple archive capability
- Simultaneous skimmer and logger
- Creates time-stamped audio files
- IP archive client access
- Automatic upload to Web via FTP



At closer inspection, the Profiler could replace the dreaded open-reel logger, too. How many times have you tried to find an air check on one of those historical artifacts? Never mind the abhorrent audio quality present on the segment you actually found; try sending that to a client.

The Telos Profiler is entirely digital and devoid of nasty mechanical mechanisms, tape heads and best of all, backroom modifications. Profiler runs on a Windows-based PC. The minimum PC specs are a Pentium-II/400MHz PC (or better) running Windows 2000 or Windows XP Professional with 128MB RAM and an open PCI expansion slot for the included balanced-I/O audio card. It requires 5MB of hard drive space for the system files. A minimum of 30GB free space is suggested for audio storage. The playback software requires a Pentium-class PC, 64MB RAM, Windows 95 or better and 5MB of hard drive space. Telos includes a 5V PCI card, so don't plan on running it on the newer 1RU computers that feature the 3.3V PCI slots.

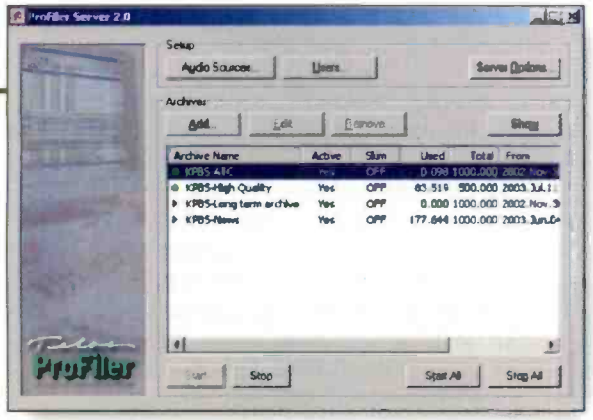
The benefits of the Profiler system are abundant. All audio is collected in the form of 15-minute chunks; these files can easily be transported via the LAN, USB memory drives or CD/RW. Copying these types of files happens at many times normal speed and you can easily fit several hours on a single CD. Profiler uses Fraunhofer MP3 compression so the files it creates are of respectable quality and can easily be imported into editing programs such as Pro Tools or Audition. We even re-air them in our weekend "best of" compilations.

Another feature of the Profiler system is its ability to act as a logger when the mic is closed and a skimmer when it is opened. The system will automatically increase the encoded bit-rate when it detects a contact closure so that live segments are captured in higher quality than the recorded programming—or the opposite, if you prefer.

Good housekeeping

Profiler keeps tabs on disk space and continually knocks the oldest element off to make space for the new ones. If you prefer, you could have a program such as Retrospect archive the files to an alternate location and keep an infinite history. Because each file is time stamped with the date and time, simple file copying will create a somewhat organized archive. Further organization is provided by way of folders that contain each day's audio. Any more organization would be manual or a function of the backup software you choose.

Experience to date with Profiler has shown more ups than downs. On the positive, the Profiler will continue to run without user intervention or maintenance. I'm archiving three streams at the 160kb/s 44.1kHz sample rate on two separate 1RU server-class machines. One of these machines has two Profiler cards and is responsible for two



The server software configures the various recording streams.

of the three stations we serve, the other has just one. Each card can be used in a dual-mono format so that this same hardware could be configured to archive six mono streams if I desired.

While reasonably well thought out and easy to use, we have experienced several crashes and some slow response times with Telos' client side software. Further investigation is needed to pinpoint the problem exactly, as the circumstances surrounding the crashes are unclear. I'm in favor of building a Web access system into the Profiler server software. This would allow jocks to review their air checks from home, programming personnel to acquire air checks for clients and PDs to review performances remotely. Telos would also do well to include a simple burn-to-CD feature that would make Profiler more accessible to the less computer savvy among us. I've found little use for the app that streams live audio over the network, though some engineers might and it sounds quite good. It can be configured for a different bit-rate than the archive so you can balance sound quality vs. network bandwidth according to your needs.

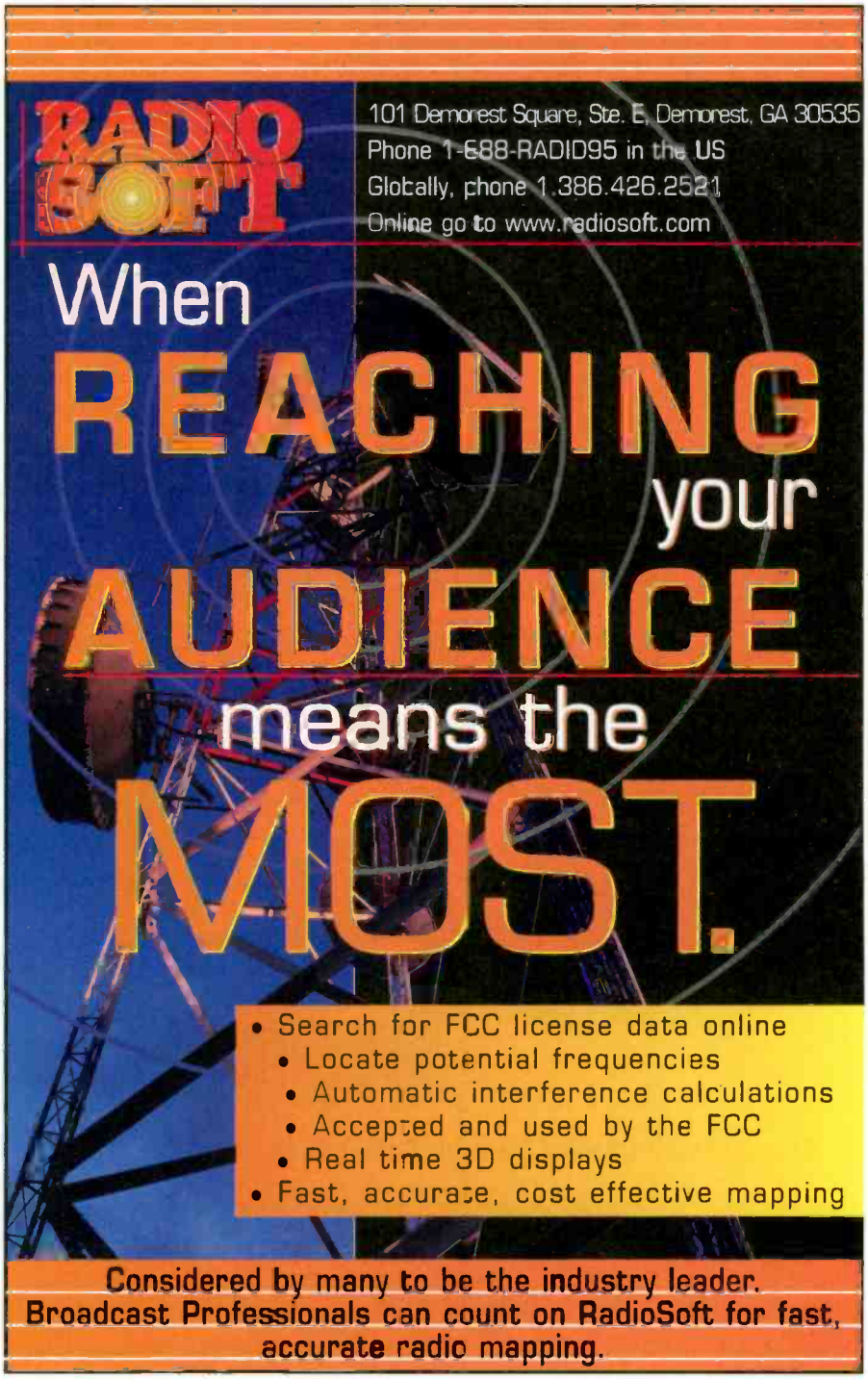
Extra credit

One hidden benefit of 24/7 logging is that it aids in troubleshooting. When someone reports an issue related to something that was on the air, all that is needed is the approximate date and time of the occurrence in order to review the affected audio. It actually helped us find a faulty fiber optic card in our distribution system by allowing me to hear what the reported static sounded like.

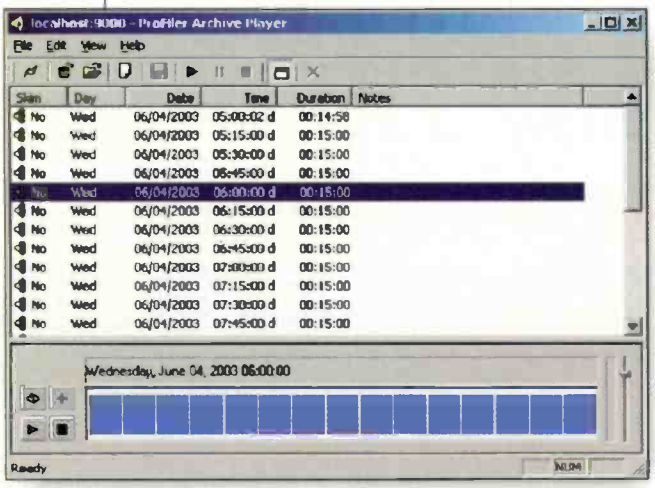
Telos uses a proprietary PCI audio card with a Crystal Fusion engine. Contact closures are sensed using a game port on that same PCI card. Telos documentation shows several pins on the port linked, but it is unclear as to whether the pins are already linked on the card or must be linked by the user. A

Telos Systems

P	216-241-7225
F	216-241-4103
W	www.telos-systems.com
E	info@telos-systems.com



suggestion would be to use an off-the-shelf audio board such as the Creative Labs Sound Blaster Live. That card maintains the needed game port but provides widespread driver support and the ease of simply picking one up at a local computer retailer.



The archive player software provides an interface to review archived audio elements.

Software security could be provided by use of a USB dongle or a software authentication system. In this way, future host PC technology could be more easily accommodated.

You can also create archives by daypart so that each talents show can be saved in a different shared folder on the network and security can be assigned accordingly. This would allow each talent access to only their audio. An e-mail feature would also be handy—each daypart could be sent to the inbox of the appropriate person at a reduced bit rate for review upon returning home. A slow-acting AGC would be helpful too, for those of us that wish to re-air Profiler audio and don't want to record the heavily processed air signal.

Whether it's to provide an affidavit for a client or fodder for station improvements, we are quickly finding the Profiler to be indispensable.

Kernen is chief engineer of Greater Media Detroit.

Editor's note: *Field Reports are an exclusive* Radio *magazine feature for radio broadcasters. Each report is prepared by well-qualified staff at a radio station, production facility or consulting company.*

These reports are performed by the industry, for the industry. Manufacturer support is limited to providing loan equipment and to aiding the author if requested.

It is the responsibility of Radio *magazine to publish the results of any device tested, positive or negative. No report should be considered an endorsement or disapproval by* Radio *magazine.*

Audio Distribution Done Right

*How many channels do **You** need?*

From a small 2 Channel Summing Box up to 60 Channels in 3RU - ATI has your solution.

MIC or Line Audio Digital Audio - AES/SPDIF Master Clock/Sync

Celebrating 25 Years of Innovation

Hear for yourself why more Engineers and Sound Professionals are specifiying Audio Technologies Inc.
For your nearest Dealer call +1-215-443-0330 or visit our new webpage at www.ATIaudio.com

Introducing NexGen101

Proven Prophet technology now sold bit by bit.

Run your radio station for $495! You buy only what you need. Add on features as your budget allows.

Software Packages

NexGen101 Core License $495 *Buy Now* ☑
Runs a single station in Automated or Live Assist modes. The core license is required on all NexGen101 workstations, and includes the ability to create and execute logs, basic audio element production, day of the week clock templates, and audio backup/load utilities. All other modules can be added to the core license to create multiple workstation configurations.

Live Control Package $404 *Buy Now* ☐
Useful for high energy morning shows. Create and play audio elements outside of the log for random access or auto-play, send artist/title information. Includes: Electronic Copy module, Cart Deck module, Button Bar module and RDS Export module.

Satellite Package $404 *Buy Now* ☐
Enables your station to run in satellite mode and automatically record satellite feeds, with local spot insertion and time and temperature announcements in your staff's voices. Includes: Satellite Mode module, Time & Temperature Announce module, DRR Automated Capture module, and GPI module.

Scheduler Package $404 *Buy Now* ☑
Schedule your station using either internal or external scheduling systems. Includes: MusicGen101 integrated music scheduler module, Traffic and Music Load module, Multi-User Access module for setting unique user permissions, and the Audio Archive module for enhanced audio management.

VoiceTRAC Package $404 *Buy Now* ☐
Record breaks, intros and outros for when you can't be live, but still want to sound like it. Includes: Basic VoiceTRAC module, Enhanced Production Interfaces module for third-party audio editors, CD Extractor/Audio Format Converter, and the Graphic VoiceTRAC Upgrade module for graphically based voice tracking and quick segue reviewing.

Buy Individual NexGen101 Software Modules for $101

Archive Module *Buy Now* ☐
Basic VoiceTRAC Module *Buy Now* ☑
Button Bar Module *Buy Now* ☐
Cart Deck Module *Buy Now* ☐
CDX/AFC Module *Buy Now* ☐
DRR Automated Capture Module *Buy Now* ☐
Electronic Copy Module *Buy Now* ☐
Enhanced Production Module *Buy Now* ☐
GPI Module *Buy Now* ☐
Graphic VoiceTRAC Upgrade Module *Buy Now* ☑
Multi-User Access Module *Buy Now* ☐
MusicGen101 Module *Buy Now* ☐
One year NexGen101 Software Updates *Buy Now* ☐
One year NexGen101 Support *Buy Now* ☐
One year NexGen101 Support Upgrade *Buy Now* ☐
RDS Export Module *Buy Now* ☐
Satellite Module *Buy Now* ☐
Time & Temperature Announce Module *Buy Now* ☐
Traffic and Music Load Module *Buy Now* ☐
Transfer Module *Buy Now* ☑

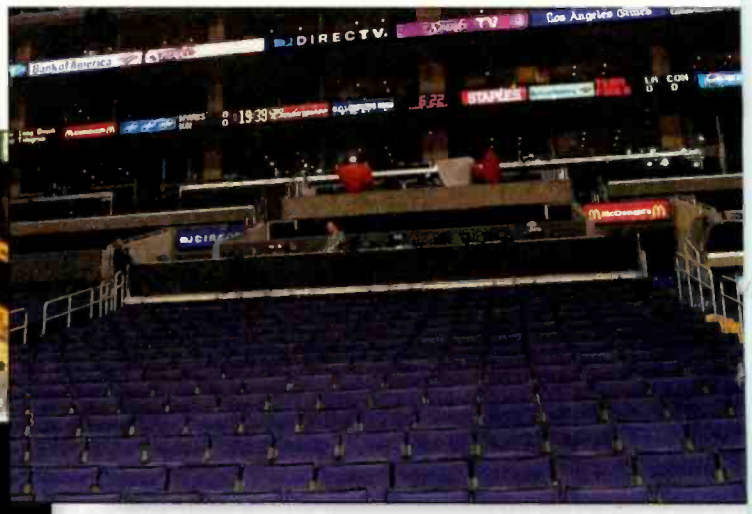
Visit us at NAB Booth #709

PSi
PROPHET SYSTEMS
innovations
1-877-774-1010
www.nexgen101.com

Proven Prophet Systems technology. Built by Prophet, backed by Prophet, designed for you.

Lakers Radio KLAC

The remote setup at the Staples Center.



The Chick Hearn Broadcast Position at Staples Center.

main ac power was accidentally cut off during the pre-game show. Now, the UPS provides a 15-minute power reserve in case of unexpected outages.

Even after a season of broadcasts, Dooley keeps busy with pre-game set up and monitoring during the game, however, it's the end of the night that really tests his skill.

"The 20 minutes after the last buzzer goes off is the most intense 20 minutes of my week," said Dooley. That is when he is running a post-game show, switching between the locker room and post game press conferences and feeding tape back to the station, all at the same time.

The venue

Opening Oct. 20, 1999, the Staples Center in Los Angeles was designed with broadcasters in mind. Planned to be a state of the art venue when it opened, the building houses 3.87 million feet of broadcast cable, 141,000 feet of fiber, and 500 phone lines.

"This is a high-profile building doing high-profile events, so we wanted it to be media friendly," said Steve Thrap, director of broadcast services at the Staples Center.

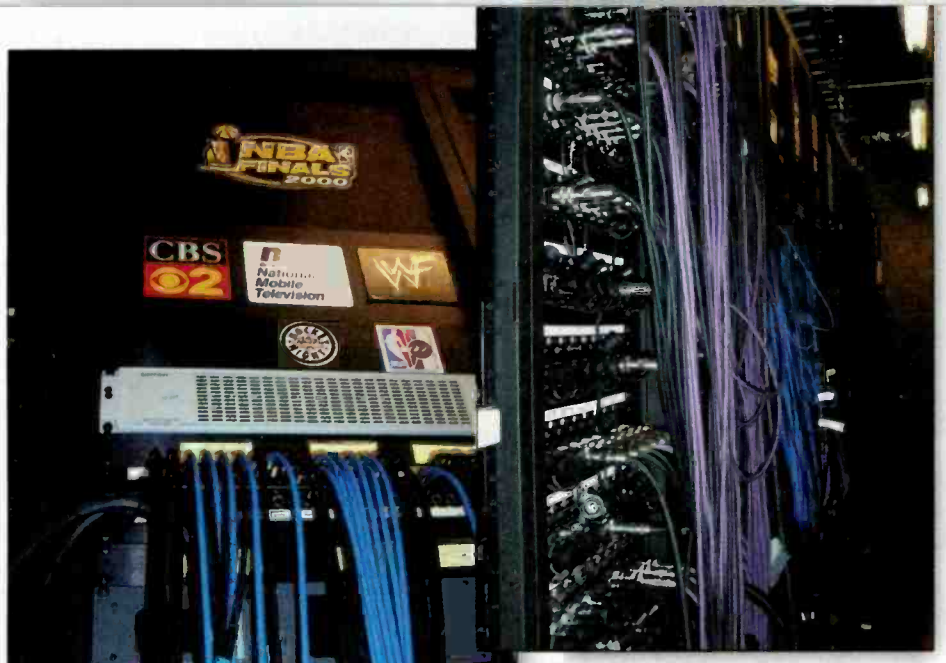
The only arena in the country with its own full-time broadcast department, the Staples center has 69 media panels throughout the building, linking all the common locations for camera and radio positions. All panels route to the main patch room where there are nearly 11,000 terminations for audio and video. The centralized location allows Thrap and his engineers to route the audio anywhere in the building. Old fashioned, copper patch cords provide the connections between the locations.

"Copper works, but if it doesn't we can route around it until we get it fixed," said Thrap.

Other arenas and stadiums have internal cabling, but it can be up to engineers to plug in themselves. Staples Center keeps computer records of every visiting team and network's preferences.

"They tell us they are coming and we set it up for them ahead of

ALTRONIC RESEARCH INC.
Complete line of RF coaxial dummy loads from 1kW to 1500 kW available in water cooled, air cooled, and self contained heat exchangers.
partnerships through performance
Altronic Research Inc.
P.O. Box 249
Yellville, Arkansas 72687
1.800.482.5623 in U.S.
870.449.4093
www.altronic.com
altronic@mtnhome.com



Overview of the patch room in the Staples Center, pre-wired for audio and video routing of NBA finals broadcast.

Audio patch panels in patch room of the Staples Center, wired for a radio broadcast of the WNBA Sparks.

time" said Thrap. During the NBA finals as many as seven radio broadcasts can come out of the arena at once. "It's a snap for them to just plug and play," said Thrap.

The studio

In May 2004, KLAC, part of Clear Channel Radio, Los Angeles moved to new studios in Burbank. John Paoli, chief engineer of KFI, KXTA and KLAC, coordinated the move. (Read the Facility Showcase on Clear Channel LA in the May 2004 issue of *Radio* magazine.)

The Lakers signal from the Staples Center comes into the studio across the ISDN lines and NBA-provided codecs. The codecs are programmed as a local source in the studio, but can be brought in to the Harris Vistamax router, allowing them to be routed to any room in the building. Presaved sessions on the Harris BMXD allow the console to recall settings for a variety of shows, taking only seconds to set the console for a Lakers game.

In addition to the signal from the arena, a third ISDN line is used to send a signal to Skyview Satellite Services in Arizona, which uplinks the broadcast for the Lakers Radio Network.

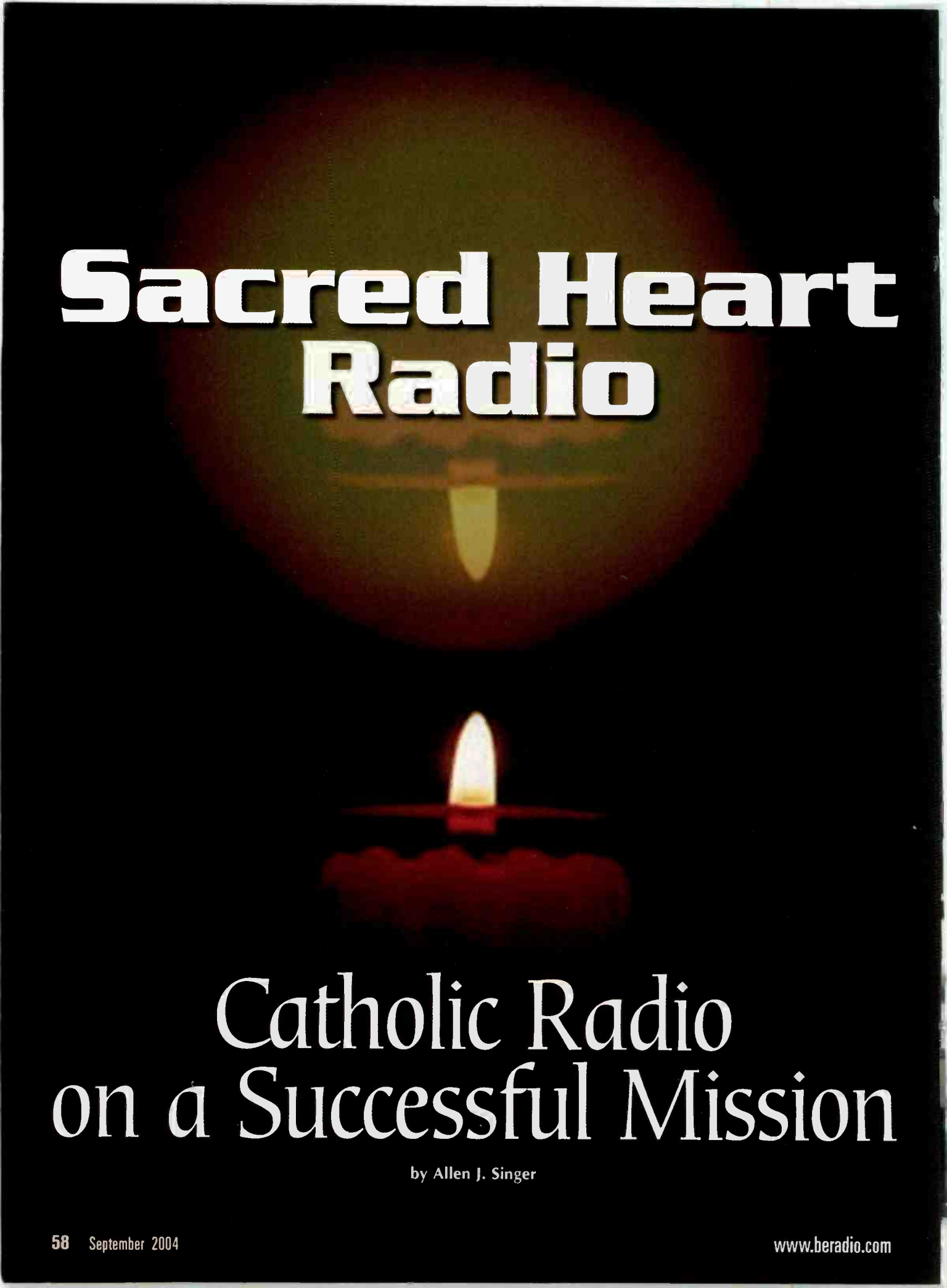
Frank Polak, who began producing the Lakers radio broadcasts 25 seasons ago, works out of a studio and office combination. During the games, the broadcasts originate from Polak's studio while the main KLAC air studio is used as a voice booth. Polak controls all the production elements across a dual-screen Prophet automation system and a talkback system keeps him in touch with the announce team at the arena. Three feeds leave the Lakers' studio, one to the transmitter, the second to the network and the third returns to the arena.

While KLAC is home to the Lakers from October to June, come summer, they don't just leave on vacation. That is when they switch to coverage of the WNBA Los Angeles Sparks broadcasts, following the same process and using the same systems honed for the Lakers.

Snyder is a consultant based in Los Angeles, CA.

Photos provided by Mike Dooley, John Paoli and Stephanie Snyder.

New Features Now Available !
FMB80 R·D·S encoder
The standard !
The encoder that never stops evolving...
New Song titles and artist information can be automatically wrapped around with text
New Text can be centered, customized and configured through a new HTML web page
New An internal scheduler can display messages at user specified times of day
Call now to get your free firmware version
& upgrade your FMB80 via FTP!
www.audemat-aztec.com North Miami Beach FL USA
tel: +1 (305) 692 7555 fax: +1 (305) 682 2233 - ussales@audemat-aztec.com
Audemat-Aztec
BroadcastingInnovation



Sacred Heart Radio

Catholic Radio on a Successful Mission

by Allen J. Singer

Ever since the earliest years of radio broadcasting, even when radio was still in its infancy, religious messages have been available somewhere on the dial. Whether from a dynamic preacher shouting from the pulpit or a more sedate call-in talk show, radio has enabled the spiritual word to be available to listeners all over the world. In the United States alone, listeners have a choice of more than 1,500 stations.

For those who follow the Catholic faith, however, the choices are somewhat limited. About 60 Catholic radio stations dot the airwaves from Cincinnati to Houston. Some of these stations operate out of back rooms of the owners' homes, rebroadcasting EWTN satellite radio. EWTN provides 24-hour Catholic programming for its affiliates: daily Masses, teaching programs, prayers and a variety of call-in talk shows.

Several of the affiliates are run by people who have never worked in broadcasting before. These devoted Catholics believe they were "called in faith" to deliver Catholic teachings over the radio, and their stations are supported by donations and underwriting. It is unusual for a station owner to have broadcasting experience, and even more unusual for the affiliate to offer local programming in addition to the satellite rebroadcast.

Sacred Heart Radio, WNOP 740 AM, in Cincinnati breaks that mold. This station is operated by Bill Levitt, a former radio imaging announcer, production director and general manager, with more than 30 years of broadcasting experience. Known as John Bogart on the air, Levitt nearly single-handedly runs his radio station, delivering 24 hours of programming to Cincinnati's 550,000 Catholic population, as well as streaming online at www.sacredheartradio.com.

Sacred Heart Radio is unlike most Catholic radio stations. Levitt fills several hours a week with locally produced programs including PSAs, promos, half-hour and full hour discussion shows and interviews, and various seasonal specials. Local bishops, priests and deacons are invited to share their viewpoints on various religion-oriented issues and other current topics. Most importantly, the station relies 100 percent on listener support; there is no underwriting on Sacred Heart Radio. The station is located at Our Lady of the Holy Spirit Center in Norwood, OH, a former seminary turned retreat center and public worship house. The Holy Spirit Center contains meeting halls, offices, dorm rooms and three chapels, with one that can hold more than 500 people. It is here that Sacred Heart Radio has found its home.

Before Catholic programming was introduced on 740 AM in 2001, WNOP broadcast jazz to a small, dedicated audience in Cincinnati. WNOP entered the airwaves in 1948 and over the years became a radio legend in the ears of jazz listeners, and in the eyes of many curious Cincinnatians. Its studios were housed in various locations around Cincinnati, including floating on a small barge (the Jazz Ark) on the Ohio River, playing records while the turntable bobbed up and down. After staying unprofitable for so long, in 1992, the station went to an all-CNN news format, and in 1994 went back to jazz, this time through local marketing agreements. Through the 1990s, revenues had increased at miniscule amounts, and the

The Holy Spirit Center in Norwood, OH, a community that is part of the Cincinnati metro area, houses the studios of WNOP.

Sacred Heart Radio

owner wanted to sell this money-loser. Many potential buyers made offers, promising to keep a jazz format, but the deals always fell through. In 2000 a local Catholic group put in a bid of $550,000 and followed through with a check, paid completely through donations.

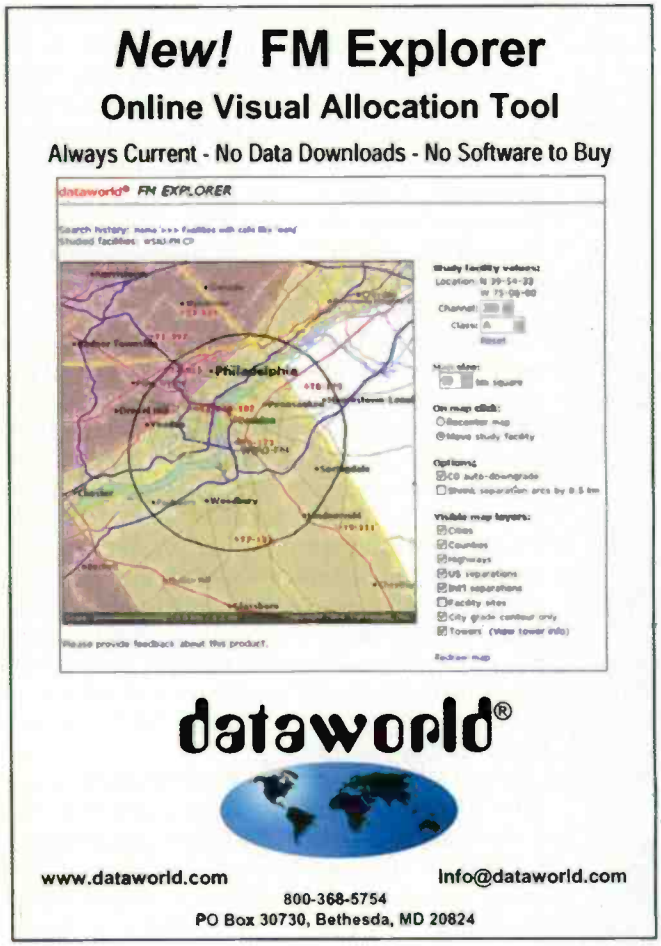
The unassuming lobby of WNOP welcomes visitors to the station.

The board of directors hired Bill Levitt, who located Sacred Heart radio into a former audio production studio in an old office building in Covington, KY. On Jan. 1, 2001, Sacred Heart Radio went on the air broadcasting EWTN mixed with some locally produced material. In the first recorded announcement, Cincinnati Archbishop Daniel Pilarczyk welcomed Sacred Heart Radio as Greater Cincinnati's Catholic radio station. Levitt installed a BSI Wavestation to maintain the 24-hour program as he tended to the duties of running the operation. He soon hired a part-time office manager to handle the fundraising and other bookkeeping.

Since its inception, Sacred Heart Radio has existed solely on donations by listeners, many of whom are on fixed incomes. These small donations add up and help keep the monthly $15,000 budget on track. It boils down to a $20 hourly cost to operate the station, and Sacred Heart Radio always has enough money. It is a 5013C company, non-profit, tax exempt and successful in its mission.

Time for change

Satisfied that the radio station would stay on steady financial footing, Levitt decided to move the station to a new facility. He and the Board of Directors chose some office space in the Holy Spirit Center in Norwood. This old seminary provided the perfect atmosphere to host a Catholic radio station. A location was chosen in the building and blueprints were drawn. Construction required gutting the chosen section and constructing new offices and studios.



Contractors began their work in October 2002. After the studs went up, the engineer ran wires between the studios, terminating to custom-made XLR panels for mic and headphone inputs. Microphones installed in the chapel are mixed down in the station's control room and fed live on the air.

The board estimated that $50,000 would be required to build the new facility. The Holy Spirit Center donated $20,000, and on-air solicitation brought more than $15,000 for construction. An additional $15,000 was raised to cover equipment costs. After just a few months of construction, Sacred Heart Radio was on the air.

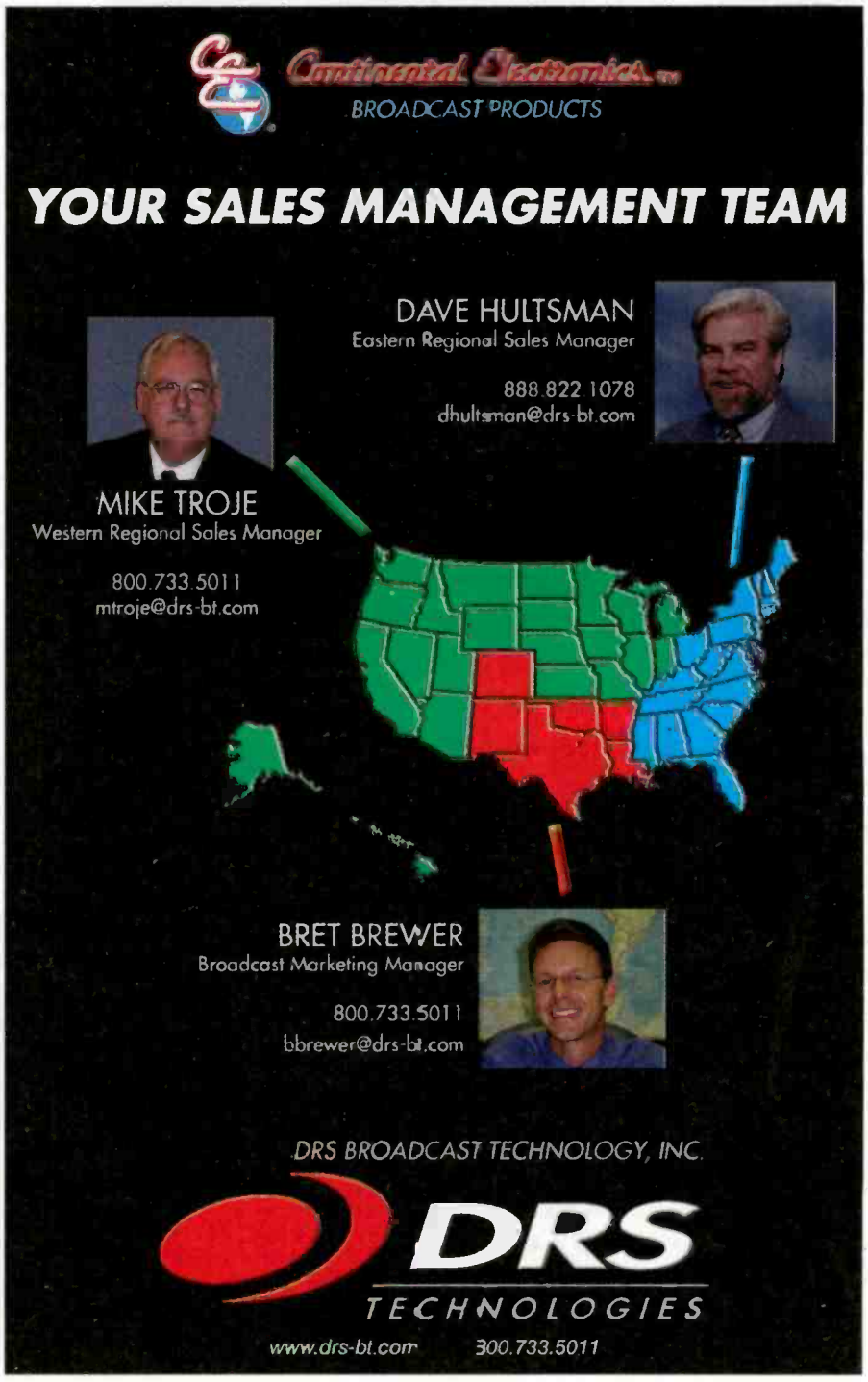
The new facility consisted of three studios, a lobby, two offices and storage. The main control room receives audio from EWTN Satellite Radio, brought to the station via a pair of 15KHz phone lines from the receiver at the transmitter site. Audio is routed through the air chain into the BSI Simian (which replaced the Wavestation months before), and also into the console. Simian records various EWTN shows throughout the day; both live satellite and Simian feed the console. Final audio is fed into an Aphex Compeller 320D, which helps level audio coming from two different sources—the Simian and the satellite. The Compeller was chosen for its digital inputs and outputs, for potential future conversion. A pair of 15KHz phone lines carry the audio back to the transmitter site to an Optimod 9200.

On one side of the control room is a talk/interview room containing four microphones. On the other side of the control room is the production studio where Levitt records his promos, IDs and various announcements. Protools is used for all production, as well as a CD library of sound effects and music. Levitt uses the latest technology to help run his station: the remote control software Radman can connect him from any computer in the country via the Internet. A lot of scheduling and maintenance is performed from the computer at Levitt's home.

A Windows XP Professional network links the six computers at Sacred Heart Radio. The BSI Simian computer, which contains five hot swappable SCSI drives, is the main network server. The production rooms contain three workstations, all of which use Protools, and are used for scheduling and graphic design for station newsletters. One computer is dedicated to running the webcast, and one other is used for correspondence with the benefactors. A final one is plugged into the network and is intended as a backup.

Equipment List

AKG K240 Studio headphones
Aphex Compellor 320D
BSI Simian
DBX 2031 EQ
DBX 266XL compressors
DBX 286A mic processor
Digidesign Protools
Event Project Studio 5 speakers
Gorman-Redlich EAS-1
Mackie SR 24-4
Mackie VLZ 1202
Orban 9200
Shure SM-7B mics
Tascam CD-A500 CD/cassette deck



Sacred Heart Radio

Levitt runs the station by himself, with part-time help from the engineer and an office manager. Simian keeps the station automated 24 hours, and Levitt continues to produce and air local material mixed with EWTN's programming, broadcasting at a 1,000W daytime, and 30W nighttime. A Canadian station plagues Sacred Heart's nighttime signal, and at 30W, it can be difficult to receive the station depending on the part of town the listener is in.

Levitt is addressing this issue, which has been problematic for many years. He hired the engineering firm Khanna and Guill to conduct studies on how they could increase their daytime power. On-air solicitations ask listeners to help support this new—and expensive—venture, and donations arrive daily to help pay for the upgrade to 2.5kW. After completion, and the purchase of a new transmitter among other equipment, the station's listening area will expand east, west and south, increasing listenership while completely protecting the Canadian station.

Bill Levitt in the control room taking care of the day's business.

Sacred Heart Radio is unique. It is a stark reminder to the broadcasting community that without listeners, the station cannot exist, unlike the popular thinking among the large radio conglomerates. Catholic listeners appreciate Sacred Heart Radio for its national and local content, and Bill Levitt delivers a good product with professional voicework and production. The end result is a station that stays interesting and informative, a standout from other faith-based radio stations. And although the fans of the old WNOP sorely miss their jazz music and favorite personalities, a new, even larger and more dedicated audience has embraced this station, continually supporting it, and bringing the Catholic message into their homes 24 hours a day.

Singer is a freelance writer and former radio engineer based in Cincinnati.

Operate any 3-phase broadcast transmitter from a 1-phase utility supply with the Phasemaster® Rotary Phase Converter

The most reliable alternative to utility 3-phase... AND the least expensive!

- High efficiency output
- Maintenance free operation
- True 3-phase, NOT open-delta
- Approved by all utilities
- Over 1000 TV and radio stations rely on **Phasemaster**

Turn any location into a 3-phase site within hours!
Save thousands of dollars on utility line extensions
Recommended by leading transmitter manufacturers

General Offices
604 N. Hill St.
South Bend, IN 46617
800-348-5257
574-289-5932 (fax)

Western Region
4127 Bay St. #6
Fremont, CA 94539
510-656-8766
510-657-7283 (fax)

Kay Industries
PHASEMASTER®
Rotary Phase Converters

The World Leaders in Single to Three-Phase Power Conversion

www.kayind.com info@kayind.com

BALSYS

Studio Installation
Studio Furniture
RF Installation

A unique combination of technical design and installation services with custom furniture design & fabrication, provides full service capabilities that assure new construction efficiency and quality as well as expansion of existing facilities at affordable cost.

Balsys provides any combination of turnkey, project oversight and coordination, or individualized services on a nationwide basis.

- ❑ Workflow & Systems Analysis
- ❑ Equipment Recommendations
- ❑ Furniture Design & Fabrication
- ❑ Wiring Design
- ❑ Prewiring & Test
- ❑ On-Site Installation & Test
- ❑ Training

- Studio Facilities
- Technical Operation Centers
- AM & FM Transmission Sites
  - Prefab Buildings
  - Towers & Antennas

Balsys Technology Group, Inc.
Balsys Wood Arts, Inc.
930 Carter Road #228 – 232
Winter Garden, FL 34787
Tel: 407-656-3719
Fax: 407-656-5474
sales@balsys.com
www.balsys.com

References Provided Upon Request – Balsys Is Fully Insured

"Value Is The Realization Of A Job Accomplished Professionally, On Schedule, And Within Budget"

2-for-1 Registration—NAB Members-only!

Register Today!

Charting Radio's Future

If you're in radio, this is your show! The NAB Radio Show® is a once-a-year opportunity to network with thousands of your peers from stations of all formats and market sizes. No other media reaches the audiences that radio can deliver — and no other event drives that message home like The NAB Radio Show®.

Navigating New Waters Together

Thursday / October 7

Group Executive Session

Group Executives Include:

Judy Ellis
Citadel Communications Corporation

Chesley Macdox-Dorsey
Access 1 Communications

Mark Mays
Clear Channel Worldwide

Peter Smyth
Greater Media Inc.

Co-Moderators:

Jay Mitchell
Small Market Radio Newsletter

Tom Taylor
Inside Radio

Friday / October 8

Breakfast with Charlie Cook

Sponsored by: RBC Capital Markets

Charlie Cook
Political Analyst

Friday / October 8

Radio Luncheon

NAB National Radio Award Recipient

Clarke Brown
Jefferson-Pilot Communications

Sponsored by: The Advantage of ASCAP

Clarke Brown

October 6-8, 2004

Manchester Grand Hyatt, San Diego, CA

visit www.nab.org/conventions/radioshow

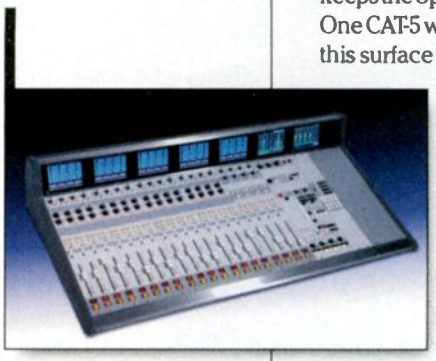
NAB Radio Product Preview

By Kari Taylor, associate editor

www.beradio.com

On-air control surface
Wheatstone
Booth 500

Generation 8: This control surface offers four faders dedicated to call-in segments to provide an interface to four callers or remotes, each with independent caller feed, independent fader feed, user-selectable talkback communication and adjacent channel linking. A dedicated LCD display screen keeps the operator informed and in control. One CAT-5 wire conveys all the control from this surface to Wheatstone's Bridge Router.



Any system audio source (inputs or mixes) is available to any console fader or monitor pot (source visibility software controlled). Set destinations for mixes, aux sends and mix-munis feeds to anywhere in the facility. The surface can store and name switch and fader settings for each operator's task and recall them by spinning an encoder and hitting a take button.

252-638-7000; fax 252-637-1285
www.wheatstone.com; sales@wheatstone.com

Modular automation system
Prophet Systems
Booth 709

Nexgen 101: The software runs a single radio station and is based on the Nexgen software. Users buy only what they need, and add features as the station grows or the budget allows. Start with the core software, which includes the ability to process a log, then add modules to grow the system functionality as needs change.

800-658-4403; fax 308-284-4181; www.prophetsys.com; sales@prophetsys.com

Audio control surface
Sierra Automated Systems
Booth 812

Rubicon: A stand-alone control surface, the Rubicon integrates into the SAS 32KD digital audio network for mixing, switching, level control and effects. Modular, customizable and fully programmable, this control surface is for a medium- or large-market facility. Each module features four program bus assignments and four effects/auxilliary sends. A VU/Peak LED meter bridge with a clock and a timer or a VGA monitor show metering.

818-840-6749; fax 818-840-6751
www.sasaudio.com; sales@sasaudio.com

RF components dealer
RF Parts
Booth 1312

Online catalog: A worldwide distributor for 34 years, RF Parts has released an expansion of its online catalog at www.rfparts.com. The catalog provides a listing of product information, product applications and product ordering with the company's secure ordering system. The catalog lists a complete line of power tubes for broadcast, industrial and communications, including Eimac, Amperex, Taylor, Svetlana, RFP and Econco brands along with a full range of sockets through 20kW.

800-737-2787; fax 760-744-1943; www.rfparts.com; rfp@rfparts.com

FM antenna for IBOC
ERI-Electronics Research
Booth 700

Dual-feed IBOC antenna: This dual-input, side-mounted FM antenna is designed for FM IBOC applications and is capable of transmitting the analog and digital FM signals without requiring a high loss hybrid combiner or the use of a circulator to attain the required isolation between the digital and analog transmitters. The antenna is a dual-input antenna design that excites all radiating elements with analog and digital signals. The antenna allows the use of a single antenna while eliminating the combining loss as is present in the 10dB hybrid combining method and it is able to achieve 1.05:1 VSWR for analog and digital inputs. It can achieve in excess of 30dB isolation between analog and digital inputs without using an isolator/circulator.

812-925-6000; fax 812-925-4030; www.ERIinc.com; sales@ERIinc.com

Internet voice tracker
Scott Studios
Booth 705

Voice Tracker: This system allows jocks to record air shifts from anywhere with an Internet connection, Windows computer and microphone. When used with Scott's SS32, times and current temperatures can air. Voice Tracker via Internet requires an Internet music server at the station to send compressed song heads and tails, in WMA format, to the announcer's headphones. It can automatically virus scan and place the recorded voice tracks in the air studio. Stations choose how many songs per hour an announcer is allowed to change for timing, or whether he must follow the log exactly.

800-SCOTT-77; fax 972-620-8811
www.scottstudios.com; info@scottstudios.com

Digital STL/TSL system
Moseley Associates
Booth 1404

Starlink 9003T1: This digital STL/TSL system for T1 circuits features new LAN connectivity for transmitting Ethernet to and from the transmitter site to support datacasting for HD Radio and RDS song title and artist data. A new six-port multiplexer and built-in CSU allows combining of these data channels with the program audio for direct connection to a T1 circuit making external interfacing equipment unnecessary. This system allows stations to transition the STL portion of their air chains to digital for IBOC. The T1 unit transports linear uncompressed stereo program channels at either 44.1 or 32kHz digital sample rates. Both AES/EBU digital and analog inputs and outputs and a serial data channel are built into the system. The SL9003T1 combines program audio with voice channels for telephones and data channels for communications and control for bidirectional transport over a single digital T1/E1 line, microwave radio or license-free 5.8GHz link.

805-968-9621; fax 805-685-9638
www.moseleysb.com; info@moseleysb.com

RF station monitor
Coaxial Dynamics
Booth 1502

81095: This microprocessor-controlled, rack-mounted Watchman monitor/alarm measures and displays forward and reflected power simultaneously in 50Ω transmission systems. Using LCD displays, it also provides direct reading of VSWR. It is compatible with the company's series of 7/8" to 6 1/8" line sections and will accept elements from less than 5W to 100kW full scale from 2MHz to 2.3GHz. Installation consists of the Watchman, a dual-socket line section and two elements for monitoring. The Watchman is supplied with two 25' dc cable assemblies for connection to the line section and a 6' ac power cord. An audible single tone alarm will indicate a system/transmitter malfunction. Relay contacts are provided for remote alarm and reset switching.

800-COAXIAL; fax 440-243-1101
www.coaxial.com; sales@coaxial.com

RBDS encoder
Burk Technology
Booth 1505

RDS Master: Audemat-Aztec and Burk Technology have introduced an RDS encoder powered by Audemat-Aztec's FMB80. The FMB80 is capable of scrolling song titles and artist information on any kind of RDS receiver using the scrolling PS feature. Communication with the automation software and configuration are simplified with serial and TCP/IP ports. The FMB80 has an embedded Web server and supports HTTP,TELNET, UDP and TCP protocols. Firmware upgrades can be flashed remotely using the FTP site.

800-255-8090; fax 978-486-0081
www.burk.com; control@burk.com

Now You Can Have Higher Accuracy Plus Value
GPS MASTER CLOCK
& TIME CODE GENERATOR

QUALITY STANDARD FEATURES:
• SMPTE/EBU, ESE, IRIG-B, ASCII Time Code Outputs • 1PPS Output
• 8 Satellite Tracking • Battery Back-up • GPS "Lock" Indicator
• Automatic Daylight Savings Time Correction • Time Zone Offset • Antenna
• 45 nanosecond accuracy • 3 Year Warranty • Plus More, for just $2495

AVAILABLE OPTIONS:
• Parallel BCD Output • 1 KPPS • 10MHz Output • 220 VAC • 12-35 VDC
• Video Inserter • Video Sync-Generator • Hourly contact closures

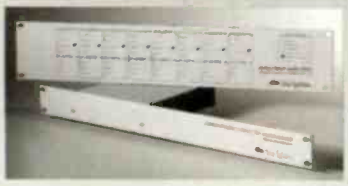
ESE
142 Sierra Street • El Segundo, CA 90245 USA
Phone (310) 322-2136 • Fax: 310.322.8127
www.ese-web.com

AM transmitter
Nautel
Booth 1410

J1000: The Jazz J1000 is a 1kW AM transmitter in a 19" rack mount package. It uses direct digital synthesis (DDS) technology to produce logic-level RF drive and modulation encoding. Ultra linear extended band performance supports HD Radio and DRM digital transmission formats. Control and monitoring is provided through a software-driven 240 x 64 graphic LCD display in conjunction with a diagnostic flow diagram. The redundant modular design has two complete and independent 500W wideband power modules comprising high efficiency RF amplifier, modulator, switch mode power supply and integral ventilation fan. The transmitter has provisions for six preset RF power levels.

207-947-8200; fax 207-947-3693
www.nautel.com; info@nautel.com

Product Showcase



Model RFC-1/B Remote Facilites Controller
• control transmiter from any telephone
• 8-64 channels of telemetry and control
• programmable control by date and time
• opt onal printer and modem adapters
• programmable telemetry alarms
• integrated rack panel

innovative solutions

Sine Systems, inc
615.228.3500
more information: www.sinesystems.com

50kW AM transmitter
Broadcast Electronics
Booth 702

4MX 50: The 50kW AM transmitter is based on a patent-pending modulation design and is about half the size of comparable models. The transmitter is IBOC and DRM compatible. Notable features include PA modules that can be accessed from the front of the transmitter, lift-off rear panels to provide access to power supplies and all ac connections, nighttime power capability as low as 250W, 15" XGA GUI for operation and diagnostics that are also available via IP, and power factor greater than 0.98.

217-224-9600; fax 217-224-9607
www.bdcast.com; bdcast@bdcast.com

Digital console
Radio Systems
Booth 1110

Millenium Digital: This console provides analog or digital inputs on every channel, 32-bit resolution, sample rate conversion on every input and CRT companion metering/timer and set-up display. All the outputs are available in analog or AES/EBU digital format and the console offers 10 extra auxiliary output busses. The system also features 10 fully programmable mix-minus outputs and a serial RS-232 interface.

856-467-8000; fax 856-467-3044; www.radiosystems.com; sales@radiosystems.com

Field strength meter
Audemat-Aztec
Booth 1710

Navigator 007: This portable FM field strength meter offers built-in modulation metering, stereo pilot monitor and RBDS monitor. It is delivered with an external GPS

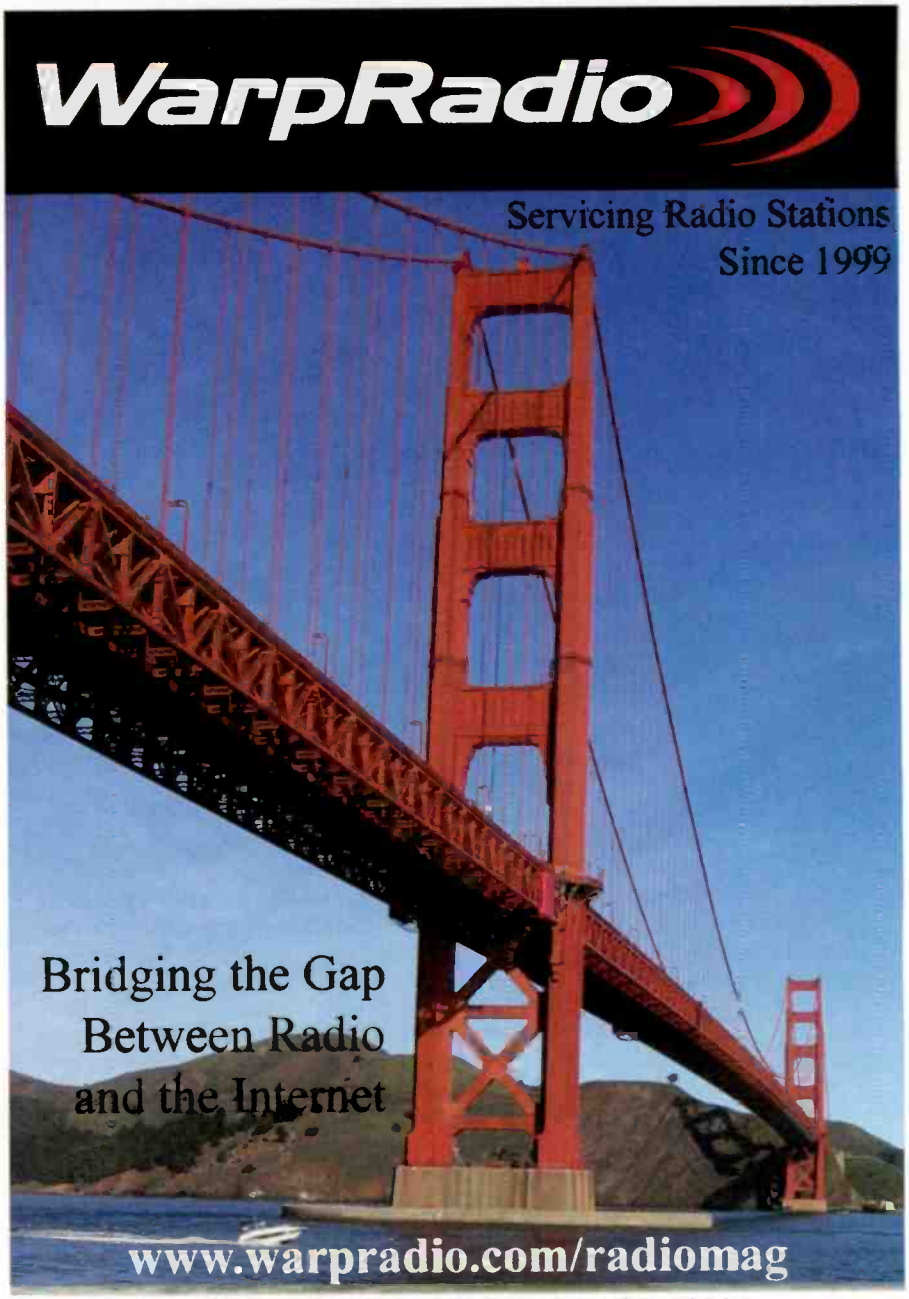
receiver for mobile RF survey on a single FM station. While driving, RF readings and GPS coordinates are recorded on a laptop. After the campaign, results can be viewed as a text file or can be exported to mapping or predictive software. The unit is accessed with any terminal program software. The unit includes a carrying case, with 115/230Vac power supply and vehicle power supply.

305-692-7555; fax 305-682-2233
www.audemat-aztec.com; contact@audemat-aztec.com

Solid-state
FM transmitters
DRS
Broadcast Technology
Booth 1306

Continental 815D5 and 815HD5: The new line of FM solid-state transmitters, beginning with the 815D5 and the 815HD5, is a 5kW solid state FM line with an RF combining and splitting system designed to withstand as much as three times its operating RF requirements to ensure long-term, reliable service in harsh and often time abusive loads. This transmitter line wields a unique combiner system that ensures that the most RF possible gets to the output in the event of single or multiple amplifier module failure. The 815 series includes 24.5" (12RU) of user-available 19" wide rack space and built in ancillary equipment power outlets. This area is located in a non-interlocked area and accessible from the front or rear.

800-733-5011; fax 214-381-3250
www.contelec.com; sales@contelec.com



10940 S Parker Rd. #516 Parker, CO 80134
email: sales@warpradio.com
303.799.9118 Fax: 303.790.8543

Expect MORE From Your AM Transmitter

Armstrong Transmitter X-1000B Made in USA

1KW HD Radio® ready AM Transmitter for under $10K

Built with dual hot-swappable 600 Watt RF modules capable of 150% modulation, X-1000B can bring that major market sound to your radio station. Engineered with the latest technological innovations, X-1000B offers high reliability, built-in redundancy and it is HD Radio® ready.

Best of all, our customers tell us that the money they save running the X-1000B pays for itself with savings in electricity and maintenance costs over an older transmitter ...and as a bonus they get exceptional reliability and that major market sound for free.

But, don't take our word for it. Talk to our customers already on-the-air with the X-1000B. Call or email for a users list and decide for yourself why owning this transmitter is a no-brainer.

ARMSTRONG TRANSMITTER CORPORATION

Tel 315-673-1269 / sales@armstrongtx.com / www.armstrongtx.com

® HD Radio is a registered trademark of iBiquity Digital Corporation.

Indecency Processor

No, this product doesn't remove naughty words, but if you do run a profanity delay or simply have a buildup of digital latency, talent can't listen to the processed air signal. Instead, their feed is probably direct from the console. Compared to the air sound, this can seem weak, dull and lifeless.

Our Model 255 Triband Spectral Loading™ processor has zero delay and can deliver a dense, tight, and punchy 'broadcast' sound to headphones and control room speakers... a sound you can't achieve with a general-purpose "utility compressor." Other 255 applications include the program feed to telephone hybrids and IFB processing.

Give talent and other house feeds a sound that's closer to your air sound. See your preferred equipment supplier for a demo of the 255 in your monitor channel.

Inovonics
1305 Fair Ave. • Santa Cruz, CA 95060
TEL: (831) 458-0552 • FAX: (831) 458-0554
www.inovon.com • e-mail: info@inovon.com

Model 255 – $2100

Visit www.inovon.com for full technical details

NAB Radio

Audio engine and consoles
Logitek
Booth 100

Digital console enhancements: Several enhancements have been introduced for the Logitek digital consoles including a two-stage talk show delay, silence-sense capability, EQ and dynamics processing, input metering on every fader and compression metering on faders where activated. The Optical STL is available as part of the Logitek Audio Engine and offers 64 channels of bidirectional audio to be sent as far as 10 miles without data loss or compression. The system also provides intercom functionality that can operate as a stand-alone system or as part of a Logitek digital console. Other enhancements include a full X-Y router, mixed analog and digital I/O, multiple mix-minus buses, IP and multisite operation, and physical and virtual controllers.

800-231-5870; fax 713-664-4479
www.logitekaudio.com; info@logitekaudio.com

Surge suppressor
Superior Electric
Booth 303

Stabiline TB1: The unit protects against damaging electrical disturbances, high frequency noise and high energy disturbances. Available in two sizes: 20A/ 45kA or 40A/65kA ratings. TB1 models use metal oxide varistors in parallel arrays placed at the input and output to protect critical loads from high-energy transient damage. They also use UL-recognized inductors and X and Y capacitors to filter error-producing high-frequency noise. Single-phase 120, 220 and 277Vac types provide three modes of protection. Split-phase 120/240 and two of three phase types provide six modes of protection.

800-787-3532; fax 860-582-3784
www.superiorelectric.com; info@superiorelectric.com

Product Preview

Production music
Westar Music
Booth 203

Music library: This company provides production music for broadcast, corporate video and multimedia use. Westar offers production library music in seven primary categories: Sports and Corporate; Rock, Dance and Pop; Jazz and Blues; Easy Listening; Country and Western; Drama and Film Scores; and Specialty Music. Within each category are many music genres and

styles. The website also offers resources to play audio demos for every CD and order a copy of a demo package, get a listing of the complete contents of its audio demo by CD number, track and title view its CD master list in order by CD number, and use the electronic cue sheet templates and music reporting information.

866-463-0100; fax 905-886-6800
www.westarmusic.com
info@westarmusic.com

Stand-alone automation system
Arrakis
Booth 606

Champion: This on-air workstation combines the company's Digilink Xtreme software and the Champ-6 workstation hardware. It features an embedded PC and audio playback system in a fanless unit. It has four stereo sound cards built in with play and record, analog and digital audio I/O and logic control for all four audio channels. It is Windows XP OS compatible with built-in networking for audio and schedule interfacing.

970-461-0730; fax 970-663-1010
www.arrakis-systems.com
sales@arrakis-systems.com

CBT Systems' Classic **ON-AIR Light** has become the hottest light in the industry. Its timeless design reminds us of the good old days. The aluminum housing is built using traditional sand casting methods, machined, and then polished to a chrome-like finish. The plexiglass window which comes standard in either blue or red can be ordered with optional legends like **Recording**. The unit can be mounted horizontally or vertically.

CBT Systems' **Classic** and **NEW Dual Lens ON-AIR Lights** can both be ordered at

www.cbtsystems.tv
858-536-2927

Customer Specific Solutions
for your acoustic environment

Blackbird Studio, Nashville
Photo by Glen Rose
Design by Michael Cronin

ACOUSTIC SYSTEMS
A Division of ETS · LINDGREN

Contact us at:
800.749.1460
www.acousticsystems.com
info@acousticsystems.com

Studio telephone access center
Comrex
Booth 1005

STAC6 and STAC12: These Studio Telephone Access Centers (STAC) for listener lines, talk shows and call-in segments incorporate two digital telephone hybrids handling up to four callers. It is offered in six and 12 phone line versions with the ability to upgrade in the field. The accompanying control surface supports unique producer and screener configurations. IP-based call screening and control is embedded, enabling operation from almost anywhere. Other unique features include auto-attendant and support of as many as four control surfaces.

800-237-1776; fax 978-784-1717
www.comrex.com; info@comrex.com

Audio processor
Orban
Booth 413

Optimod-FM 2300: Key new features of this processor include stereo enhancement, built-in Ethernet and RS232 serial connectivity, full-featured remote control through any Windows 2000 or XP PC, standard AES/EBU digital input/output, Orban's half-cosine interpolation composite limiter and a multiplex power controller for countries required to meet the ITU-R BS412 standard. The 2300 is targeted to small- and medium-market broadcasters as well as non-commercial and educational broadcasters. Supplied in a compact, 1RU chassis, the processor offers a processing chain that includes a stereo enhancer, AGC, equalizer, program-adaptive high frequency enhancer, two-band compressor/limiter, distortion-canceling clipper, overshoot compensator and stereo encoder with composite limiting. The main clippers and overshoot compensator operate at 256kHz sample rate and are anti-aliased.

510-351-3500; fax 510-351-0500; www.orban.com; custserv@orban.com

Radio automation system
D.A.V.I.D.
Booth 1512

Digasystem Latitude Edition: The Latitude Edition is a scalable platform with network capabilities designed for the demands of small to medium-size broadcasters. The basic version consists of three complete preconfigured workstations and a server with all of the software modules required for editing, organizing, scheduling and playing programming. Latitude can be upgraded by 20 options to add and customize additional features such as Web applications, automation, file transfer or import modules for a wide range of applications. Expansion with additional workstations or an update to the full version of a Digasystem installation is possible at any time.

703-396-4900; fax 703-396-4939
www.digasystem.com; info@digasystem.com

Digital FM processor
Inovonics
Booth 302

Omega_FM: A largely software-based digital on-air processor/generator, Omega_FM offers a short and direct program signal path that keeps latency at a minimum. The user interface includes a no-menu front panel setup that suits a variety of applications, or allows any PC to be connected for control over all processing parameters.

800-733-0552; fax 831-458-0554
www.inovon.com; info@inovon.com

RULES *to simplify compliance*
Full text of broadcast rules and FCC decisions.

UPDATES *to avoid surprises*
Daily updates and alerts to NPRMs, NOIs and more.

INSIGHTS *to improve planning*
Historical notes and digests plus news analyses.

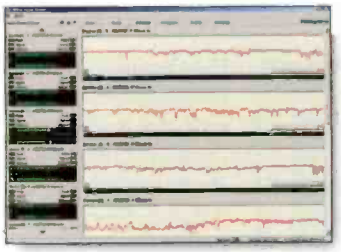
Yours all in *one* authoritative source:
BROADCAST REGULATION

Visit Pike & Fischer, Inc. at booth #101 at the NAB Radio Show, or contact Customer Care to find out how to get a 30-day trial of the all-new Broadcast Regulation Web site.

www.broadcastregs.pf.com
1-800-255-8131 ext. 248

Pike & Fischer, Inc.
1010 Wayne Ave., Suite 1400
Silver Spring, MD 20910

Digital logging device



Mediatouch
Booth 613

Imedia Logger: Ideal for time shifting, delayed broadcast, logging or skimming, this software can auto record without spots. This program can record 12 audio sources simultaneously, and each workstation can record 12 stereo sources at the same time. Users can record four streams from each audio source using multiple compression formats and recording qualities. This system uses MPEG 1 Layer 1, 2 and 3, PCM, Windows Media Audio and Real Audio files.

888-665-0501; fax 204-783-5805; www.mediatouch.net; omt@omt.net

Data importer, exporter

Harris
Booth 902

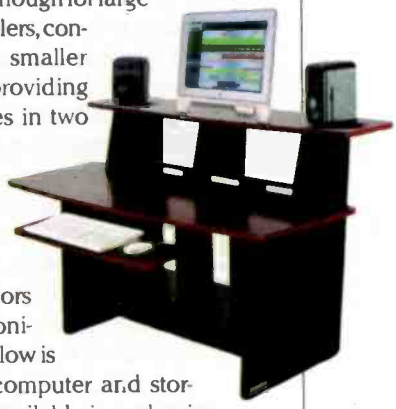
Flexstar HDI-100 and HDE-100: The Flexstar HDI-100 data importer and HDE-100 program exporter can broadcast supplemental audio and implement data services, maximizing available bandwidth within the transmission chain. The HDE-100 exporter multiplexes the data leaving the importer with a station main program channel and feeds all the data as one bandwidth-efficient bit stream to an IBOC exciter.

800-622-0022; fax 513-459-3890
www.broadcast.harris.com; broadcast@harris.com

Desk surface

Omnirax
Booth 1707

Presto: The desk surface of this product is wide enough for large keyboard controllers, control surfaces or smaller mixers, while providing eight rack spaces in two bays within easy reach. The shelf above the rack spaces can hold computer monitors and nearfield monitors. The shelf below is available for a computer and storage. The unit is available in melamine laminates or melamine with gray slate, mahogany or maple Formica top surfaces. The dimensions of this unit are: 37.13"H × 31.38"D × 55.9"W and weighs 125 pounds.



800-332-3393; fax 415-332-2607
www.omnirax.com; info@omnirax.com

Coaxial Dynamics'

Line of Liquid/Air Terminations are quickly becoming the industry standard for testing, adjusting and alignment of R.F. Transmitters.

Liquid/Air Cooled Loads are available to handle requirements from 600W to 12.5kW.

COAXIAL DYNAMICS
SPECIALISTS IN RF TEST EQUIPMENT & COMPONENTS

15210 Industrial Parkway, Cleveland, OH 44135
216-267-2233 800-COAXIAL FAX: 216-267-3142
E-Mail: coaxial@apk.net
Web Site: http://www.coaxial.com

DISCOVER MasterCard VISA

Imagine a backup audio system that's fluent in ...

analog
digital
composite
DTMF
MP2
MP3
WAV
html
and plain English

We did.

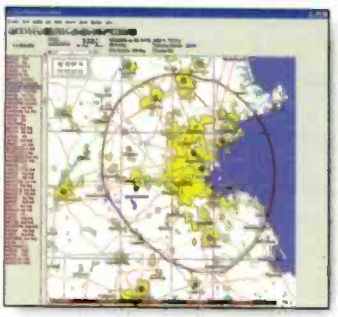
Coming this October

Online legal reference
Pike & Fischer
Booth 101

Web services: A subsidiary of The Bureau of National Affairs, this company has launched three legal reference services on the Web for cable, broadcasting and wireless professionals. The services, Cable TV Regulation, Broadcast Regulation and Wireless Telecommunications Regulation, offer subscribers desktop access to current FCC rules and regulatory information critical for industry compliance. Communications executives can quickly access current and proposed rules as well as all regulatory mandates issued by the FCC.

800-255-8131; fax 301-562-1521
www.pf.com; pike@pf.com

FM allocation program
V-Soft Communications
Booth 1109



FM Commander: The program uses a new mapping engine compatible with V-Soft's Probe 3 and AM-Pro polygon-based mapping databases. Some of the new features include the ability to automatically design directional antenna patterns with one click of the mouse, the ability to overlay population centroids, airports, towers and AM stations, interactive labeling and terrain profile graphing. The USGS National Elevation Dataset (NED) 30-meter database can be used with Probe 3, Terrain-3D and Plot Path.

800-743-3684; fax 319-266-9212
www.v-soft.com; info@v-soft.com

Call-in quick dialing
RCS
Booth 106

SMS short codes: The SMS short code 22022 and other short codes open a new avenue of messaging to and from radio station listeners. The codes allow a simple way to get instant input from the thousands of mobile phone users. The CSCA initiative of late 2003 was an agreement among the major telephone service providers in the United States to follow a common short code five-digit standard for allocating numbers across all carriers. This means broadcast contesting can be set for all mobile phones instead of just one carrier.

914-428-4600; fax 914-428-5922
www.rcsworks.com; info@rcsworks.com

Maximize your FM Station!

New! Success Starts with rfInvestigator V2.5

The software that works as hard as you do.

rfInvestigator V2.5 is our *most* flexible program yet.

Display Audemat-Aztec Navigator 100 & Navigator 007 field surveys.
Export propagation jobs for display in other maping programs.
Import contour information from other programs for your use.
One set of TOPO! Maps is Included with the program.

Display and Printing Improvements
Set colors and line weights for easier to read maps
Invert colors easily for faxing
Create your own map labels
Variable job scan range
Display ESRI Shape Files

"DA Design Tool" Improvements
Completely redesigned to work faster
Set your own antenna design limits
New booster designer

PL-SERVER
With this advanced module you can create path-loss files for propagation analysis in rfInvestigator.

DB-BUILDER is a "*behind-the-scenes*" utility program that downloads data from the FCC website and creates databases for our various products. ***Never buy*** another database!

Check out our other fine products on www.rfsoftware.com Today!

Call 352-336-7223 for information.
On-site Training Available

rfSoftware, Inc.
innovative engineering tools

The fall convention solution

have read several comments in trade publications that advocate making changes to the location or structure of the Radio/Audio hall at the Spring NAB convention in Las Vegas. One credible idea came from Neil Glassman.

While I understand and appreciate what Neil wants to accomplish by moving the Radio/Audio (R/A) Hall into what is now the South Hall, I feel that it is a bandage on a hemorrhage.

When the R/A section was located in the South Hall, many exhibitors in the R/A section complained that it was not big enough to efficiently house all of the vendors who wanted to exhibit there.

In time, the R/A section was bounced around the convention center and even reduced in size—despite the desire of more R/A manufactures wanting to exhibit—because of the demands of the large TV exhibitors.

We complained to deaf ears. It was obvious that those with the gold would rule this show; the gold of the huge prices the TV folks were willing to pay.

More often than not, small R/A companies were pushed into the fringes and found themselves like desert islands, drowning in an ocean of huge TV displays, being passed by the masses of TV attendees marching through. Foot traffic yes; foot traffic of quality, no!

Dealing with the problem

While it is an option to take a space equal in size to the present R/A hall in the middle of the South Hall as Neil suggests, the move would most likely alienate the NAB's largest exhibitors. It would force some out of the TV conclave and into the North Hall.

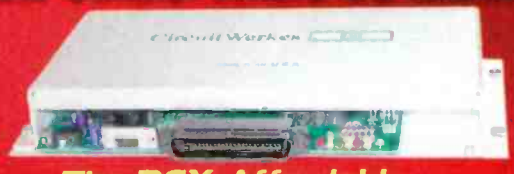
And the change wouldn't solve the R/A Hall problem. We would continue to bleed

Control Freaks!!

New Relay Multipliers & Converters Distribute Control Where It's Needed

The pREX Programmable Relay Multiplier & Function Converter

- Has 12 optocoupled inputs and 16 microprocessor-controlled relay outputs.
- Control any output or a group of outputs from a single input or from a group of inputs using logic modes like AND, OR, XOR, NOR, NAND, NXOR, Interlocked, etc.
- Output modes include: Momentary, Toggled, Leading or Trailing Edge, Pulse Stretching up to 45 hours, Input Debounce, Maximum Ontime, Minimum Ontime and more.
- Serial port for programming or controlling the relays using either terminal program or free GUI.
- 50-pin telco connector for instant punchblock connectivity. Telco block/cables also available.



The REX Affordable Relay Expander/Multiplier

- The REX accepts a wide variety of input signals & converts them to contact closure outputs.
- REX's optocoupled inputs can be driven from active high or low incoming signals.
- Each of the six inputs controls four SPST relays for a total of 24 outputs.
- The REX features a 50-pin telco (RJ-21) type connector that interfaces directly with prewired telco punchblocks. Type 66 telco punchblocks & cables are optionally available.

For more info visit www.circuitwerkes.com

CircuitWerkes, Inc. - 2805 NW 6th Street, Gainesville, Florida 32609, USA. 352-335-6555

as the R/A-related domestic attendance continues to shrink.

There would be no room to grow, with again the great potential to be shrunk back to the North Hall or drowned by the huge TV exhibits.

The NAB's Radio Committee needs to face the reality of the changing marketplace. They need to allow the convention department to eliminate the Fall Radio Show and consolidate it with the Spring Show making a single Radio Show a part of the spring convention.

Eliminating the fall show would infuse the R/A hall with more qualified attendees, as this would combine the large international attendee base of the spring show with all of the potential domestic radio attendees in Las Vegas.

The NAB would double the floor traffic in the R/A hall, which would help the R/A exhibitors not only justify the huge expense of attending the show, but it would also help the radio industry by getting the best and most creative minds together at one show.

These opinions are my own and do not in any way reflect the position or opinion of my employer or fellow employees at Armstrong Transmitter.

Ernie Belanger
sales and marketing manager
Armstrong Transmitter

comments?
radio@primediabusiness.com

Watching big brother

Chriss' August Viewpoint on logging requirements takes us down another slippery slope. During Watergate President Nixon believed the tapes would exonerate him, but instead had the opposite effect.

I believe it places a burden on some if not all broadcasters who will (if enacted) have to maintain another function of their broadcast outlet.

If it's a violation of community indecency values, let the petitions begin. Maybe the recordings would justify a broadcaster's position, but why would it allow such an incriminating device in a case. Public outcry over the incidency at last year's Super Bowl showed the indignation of viewers. Radio has the same watch dog.

Our satellite friends at XM and Sirius have a loophole because they are not affected by the potential rulemaking. Case in point: Opie and Anthony begin on XM in October.

Dick Tyler
retired ABC Radio network engineer
Burlington, NJ

Radio Gallery

Use Once a Day to Alleviate Traffic Congestion

Traffic and billing made easy with the affordable Traffic C.O.P. for Windows™

Take the headache out of controlling traffic with Traffic C.O.P. for Windows. Whether it's scheduling logs, printing invoices, or managing receivables, the Traffic C.O.P. will work for you. And, because it's Windows based traffic software, you get a modern, reliable and easy to use program—all backed by the superior customer support of Broadcast Data Consultants.

Isn't it time you get rid of congestion?

Call for your FREE CD demo today, or for more information, please visit our web-site.

Toll Free: 800-275-6204
www.broadcastdata.com

Broadcast Data Consultants,
51 South Main Ave., Suite 312, Clearwater, FL 33765

TRAFFIC C.O.P.™ FOR WINDOWS

The *AES-302* Digital Audio Switcher/Distribution System

Two Input Switcher
Automatic or Manual Switching
Optional Silence Sensor
Status Monitor with Memory
Front Panel Headphone Jack
High Quality 24 bit 96 KHz D/A Converter

Introducing the next generation digital audio switcher from BDI. Now you can have complete confidence in your signal path with the AES-302. Feed main and back up AES streams to the inputs and the selected feed is routed to four digital outputs and an analog stereo output. If a fault occurs, the automatic switcher selects the alternate feed. There is extensive front panel error and operational status and a headphone jack for confidence monitoring. The AES-302 has a remote control interface for easy attachment to remote control systems. The AES-302 is future proof too. The digital components mount to a plug in pc board which can be upgraded in the future should digital audio standards be enhanced or your requirements change. Call your local broadcast equipment dealer to order. Call us or visit our website for detailed information.

Broadcast Devices, Inc.
Tel. (914) 737-5032 Fax. (914) 736-6916
Website: www.Broadcast-Devices.com

bdi

Buy simplicity, reliability and service.

EAS

Price $1750.00

Equipment in-stock for immediate delivery.

Phone 740-593-3150

GORMAN-REDLICH MFG. CO.
257 W. Union St. Athens, Ohio 45701

FAX 740-592-3898

- 5 two-way RS inputs/outputs for computer, remote signboard & character generator
- 6 audio inputs on standard models. All audio inputs & outputs are transformer isolated from encoder-decoder board
- Automatic interruption of program audio for unattended operation
- 4 line 40 character LCD display with LED backlighting
- 20 key keypad to program unit, set modulation level, set input levels
- Now available with optional built in character generator which can crawl alert messages and station ID on the hour
- Will handshake with automation equipment
- 2 year warranty
- 2 minutes of digital audio storage
- 25 pin parallel printer port for external printer
- 52 terminals on the rear to interface with other equipment by removable plugs
- BNC fitting with 600 OHM balanced audio cut for second transmitter

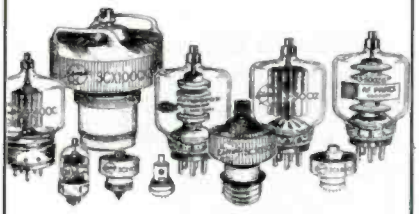
Web Site: www.gorman-redlich.com • E-mail: jimg@gorman-redlich.com

•Also available: weather radios, antennas for weather radios, crystal controlled synthesized FM digitally tuned radios, remote signboards, cables for interconnection, Character generators.

RF PARTS™ COMPANY

✓ Audio ✓ Broadcast
✓ Industrial ✓ Communications

Audio Tubes • Transistors
Modules • Gasfets • Coax
Capacitors • Rectifiers



Svetlana • Taylor • RFP • Eimac
Amperex • MA/Com • Motorola
Toshiba • Thompson • Mitsubishi

• Se Habla Español
• We Export

1968 35 2003 Year Anniversary

760-744-0700 • 800-737-2787
Fax: 760-744-1943
E-mail: rfp@rfparts.com

www.rfparts.com

Welcome to **Bay Country** BROADCAST EQUIPMENT

Your #1 Source For Quality Used Radio Broadcast Equipment.

View our latest list of equipment on-line at:
http://www.baycountry.com
or call and we will fax it to you.
All equipment sold with a 15 day return guarantee.

7117 Olivia Rd. • Baltimore, MD 21220 • Ph: 877-722-1031 • Fax: 786-513-0812
http://www.baycountry. com • e-mail info@baycountry.com

dataworld®

Engineering Tools	Marketing Tools	Management Tools
Feasability Studies	Custom Mapping	DataXpert™
Longley-Rice RSL	Demographic Reports	Coverage Maps
Maps & Population	Zip Code Pinpointing	FLAG℠ FCC Monitoring
Area-to-Locate Studies		LMA/Duopoly Studies

www.dataworld.com info@dataworld.com
800-368-5754 • 301-652-8822 • fax: 301-656-5341

A RECTIFIER TO FIT YOUR TRANSMITTER

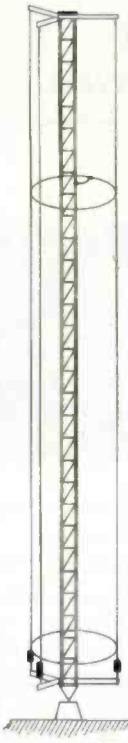
No matter what transmitter you own, we can provide quality rectifiers from stock. We have a reliable, cost-effective solution to meet the requirements of most AM and FM transmitters built since the 1950s at prices better than the manufacturers'.

WE HAVE CCA RECTIFIERS

QUICK, COST-EFFECTIVE & EXPERT SOLUTIONS

CKE

www.rectifiers.com
800-649-6370



REMEMBER THE *CORTANA* FOLDED *UNIPOLE ANTENNA?* WE STILL MAKE IT WITH THE SAME HIGH QUALITY MATERIALS AND WORKMANSHIP. IT FEATURES...

- BROAD BANDWIDTH *for better sound,*
- GROUNDED ANTENNA *for lighting & static electricity,*
- ELIMINATES ISOCOUPLERS *in VHF & UHF antenna lines,*
- BEST ANTENNA FOR DIRECTIONAL ARRAYS.

ALSO

DETUNING SYSTEMS FOR ANYTHING THAT DISTORTS YOUR AM COVERAGE PATTERN: TOWERS, POWER LINES, TANKS OR ANY METAL STRUCTURE.

FOR INFORMATION CALL, FAX OR WRITE:

nott ltd.

4001 La Plata Hwy
Farmington, NM 87401

phone 505-327-5646 fax 505-325-1142

Going Digital? Go GoldWAV!

GoldWAV™

26,000 songs in 16 bit, 44.1 stereo .WAV files with all the song data embedded.

Also available in GoldDrive MPEG Layer 2, Mode 2

And with the purchase of any GoldWAV or GoldDrive library you can acquire a matching, back-up, GoldDisc library for half price.

TM CENTURY

GoldDisc - GoldDrive - GoldWAV
The World Plays Our Music!

www.TMCentury.com
972.406.6800 ▪ TMCI@TMCentury.com

STATI-CAT

If lightning strikes on your tower are causing equipment damage and lost air time - the cost of Stati-Cat system may be recovered during your first lightning season.

AFFORDABLE - RUGGED LIGHTNING PROTECTION

The Stati-Cat Lightning Prevention System provides a continuous, low-resistence discharge path for the static electric charge on tall structures. DISSIPATION POINTS ARE 1/8" STAINLESS STEEL RODS (not wires) ground to needle sharpness.

Cortana Corporation, Inc.

Write or call toll-free for a free brochure!
P.O. Box 2548, Farmington, N.M. 87499-2548
Call 888-325-5336 Fax (505) 326-2337
cortanacorporation.com
cortana1@earthlink.net

The *Digital* Matchbox!

DigiMatch 2X6 converts digital audio between AES/EBU and SPDIF. It's also a ***digital DA,*** with six digital audio outputs!

DigiMatch 2X6 is in stock at all Henry Engineering dealers.

www.henryeng.com

(626) 355-3656

Tieline TECHNOLOGY

G3

Tieline i-Mix G3 delivers Athens games to millions of American sports fans.

Read the full story.

www.tieline.com/be/athens

Order your free demo today

HIGH VOLTAGE RECTIFIERS

Nobody Knows Them Better Than We Do

WE HAVE CCA RECTIFIERS

Don't pay ridiculous prices to OEMs for replacement rectifiers when we can provide an economical retrofit package that will more than do the job. The Model 51014 package shown is a single-phase, full wave bridge to retrofit all AM and FM transmitters to greater than 15 kilowatts, depending upon modulation method. Rectifier cards are rated at 24 KV per leg at a maximum forward current of 6 amps, suitable for plate supply voltages to 12 KV. Additionally, each diode is protected by both an MOV and a resistor.

QUICK, COST-EFFECTIVE & EXPERT SOLUTIONS

CKE HVC

www.rectifiers.com
800-649-6370

MOORETRONIX

Our client list continues to grow. We would like to Thank-You for your confidence and your purchases.

We now have in stock, SHURE, SM-5B, wind screens. These are from the OEM vendor and are priced at $60.00 per set. Make the best voice over microphone, new again!

We recondition Pacific Recorders BMX I-II-III, AMX, ABX and RMX mixing consoles. Let us re-work your console's modules. Obtain that added value from a proven winner. Quality built products last and last and last!

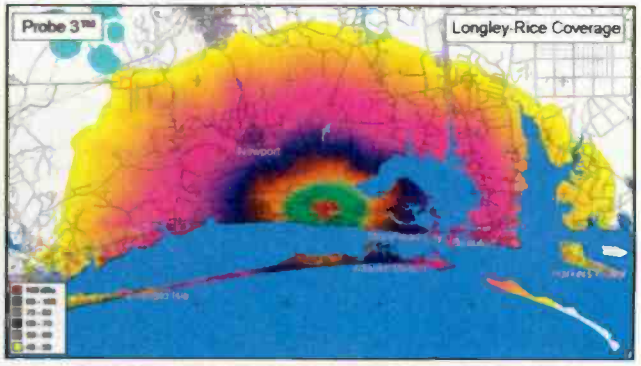
Check our WEB site for great buys on pre-owned broadcast gear. All equipment is repaired, tested and shipped with the manual.

Stretch your broadcast $$$ on quality, pre-owned equipment....sold with a warranty.

TEL 800-300-0733 • FAX 231-924-7812
WWW.MOORETRONIX.COM

VSoft COMMUNICATIONS
R.F. Communications Software and Engineering Consulting

The Leader in Broadcast Engineering Software



Professional software packages for FCC applications and predicting coverage.

- Create stunning "real-world" coverage maps and interference studies using Longley-Rice, PTP, Okamura/Hata and FCC with Probe 3™
- Search for FM channels under spacing and contour to contour protection using FMCont™.
- Prepare AM skywave and groundwave allocations studies and map FCC contours with AM-Pro™.
- Plot STL paths over 3D terrain with Terrain-3D™

Quality custom mapping and FCC engineering consulting available.
WWW.V-SOFT.COM (800) 743-3684

ERI®
Towers Above the Rest

Monopoles
Guyed Towers
Self-Supporting Towers
Structural Analysis
Tower Reinforcing

Since 1943, ERI has provided excellence in engineering, reliability in service, and years of manufacturing integrity.

Our past experience is your future guarantee.

Electronics Research, Inc.
7777 Gardner Road
Chandler, IN 47610
812-925-6000 www.ERIinc.com

Transcom Corporation
AM & FM Transmitters
Visit our new internet site at www.fmamtv.com

Fine Used AM & FM Transmitters. Authorized Representatives for all major equipment manufacturers. Let us send you a customized quote!

USED FM TRANSMITTERS

1kW	1998	Harris Quest Solid State
1.5kW	1987	BE FM1.5A
3.5kW	1988	BE FM3.5A
3.5kW	1992	Harris HT3.5
10/12kW	1980	CCA 12,000E
20kW	1978	Collins 831G2
25kW	1980	CSI T-25-FA (Amplifier Only)
25kW	1982	Harris FM25K
30kW	1986	BE FM30A
50kW	1982	Harris Combiner w/auto exciter-transmitter switcher

USED AM TRANSMITTERS

1kW	1982	Continental 314R-1
1kW	1987	Harris SX1A Solid State
2.5kW	1999	Harris "Gates 2" Solid State
10kW	1986	Harris MW10B
50kW	1985	Continental 317C2
50kW	1985	Harris MW50C3
50kW	1986	Nautel AMPFET 50 Solid State

NEW TV TRANSMITTERS ANALOG AND DIGITAL
VHF and UHF, 10 W to 10 kW
TV Antennas
TV STL

USED TV TRANSMITTERS
1kW UHF 1992 Acrodyne
10kW UHF 1999 Itelco T614C
(Like new-60 hrs. of use)

USED EXCITERS
Harris DIGIT, 2002
BE FX 30
Continental 802B

USED MISC. EQUIPMENT
Audio Amplifiers:
BGW 85
Crown D-75
Audiometrics Stereo Distribution Amplifier
Belar AMM3 Modulation Monitor
Mosely remote controls
Potomac Phase Monitor AM 19 w/sampler
Potomac Phase Monitor 1901 Digital 2Twr
Sola Voltage Regulator 60hz 1KVA s-phase
AND MUCH MORE.....
CALL US FOR A QUOTE !

P.O. Box 26744, Elkins Park, PA 19027
800-441-8454 (215-938-7304) Fax 215-938-7361

Mini Mix 8A
Proven...Affordable...
Reliable.

AUTOGRAM
800.327.6901
www.autogramcorp.com

Gallery

170,000 sq. ft. warehouse packed with a broad line of components and there is no minimum order.

New Products,
New Suppliers,
New Technologies,
New Catalog Every 90 Days!

MOUSER ELECTRONICS

(800) 346-6873 www.mouser.com

Mouser® and Mouser Electronics® are trademarks of Mouser Electronics, Inc.

AM Ground Systems

Reliable, On-Time Installation
Quality Workmanship
Ground System Construction,
Evaluation & Repair

www.amgroundsystems.com

1-877-766-2999

Nexus Broadcast
Quality Equipment, Low Price

Frequency Agile - Digitally Synthesized
Temperature & VSWR Protected
120 - 220 volts - Front Panel Controls
Stereo Generator/Processor (Optional)
One Year Parts & Labor Warranty

20 W Exciter	$850	100 W Exciter	$1795
250 W Exciter	$2995	100 W Amp.	$ 995
250 W Amp.	$1795	500 W Amp.	$3955
1KW Transmitter	$5995	1KW Amp.	$5495

Order Toll Free 800-219-7461
www.nexusbroadcast.com
P.O. Box 433 - Mt. Vernon, TX 75457

Marketplace

EAS MONITORING

YAGI ANTENNAS

WEATHER CHANNEL

FREQUENCIES 162.0? MHZ

FM FREQUENCIES

88 TO 108 MHZ
ALL FREQUENCIES FROM 88
TO 1000 MHZ AVAILABLE

SAMCO ANTENNAS, INC.

(817)-336-4351
www.samcoantennas.com
email:samyagi@flash.net

Classified

For Sale

Your *best* source for used Radio Broadcast Equipment

PIET

Pressman Engineering & Technology

We have a nice selection of previously used equipment at bargain prices. Please let us know what you are interested in!

CHECK OUT our latest list of equipment on-line at: www.pressman.net

8601 SW 102 Avenue • Miami, Fl 33173
305-215-0524 • (fax) 305-279-0090 • mail@pressman.net

Radio Classified

www.beradio.com

Professional Services

Structural Analysis

ERI

Electronics Research, Inc.
7777Gardner Road
Chandler,IN 47610
(812) 925-6000
www.ERIinc.com

REGISTERED PROFESSIONAL ENGINEERS — STRUCTURAL ANALYSIS — ERI Incorporated 1949 — TOWER REINFORCING

AW AppliedWireless
Kevin McNamara
President & CEO

Applied Wireless, Inc
. . . providing options.
PO Box 926
New Market, MD 21774
tel.: 301.865.1011
fax.: 301.865.4422
email: kevinmc@appliedwirelessinc.com
www.appliedwirelessinc.com

JOHN H. BATTISON P.E.
CONSULTING BROADCAST ENGINEER,
FCC APPLICATIONS AM, FM, TV, LPTV
Antenna Design, Proofs, Fieldwork
2684 State Route 60 RD #1
Loudonville, OH 44842
419-994-3849 FAX 419-994-5419

Representatives needed to sell "Studio In A Box"
Efron Computerized Studios, LLC now has prime territories nationwide available. Experience necessary with Radio Station/Studio operations and associated equipment. Sell exclusively or add to already established Rep. line. See www.radiofacility.com for product details. Send credentials to George Sullivan at gsullivan@radiofacility.com

RBDG
4006 BELT LINE SUITE 160 ADDISON TEXAS 75001
972/661-5222
www.rbdg.com
RUSS BERGER DESIGN GROUP
• RECORDING AND BROADCAST FACILITY DESIGN
• ARCHITECTURE/INTERIORS FOR ACOUSTICAL SPACES
• ROOM ACOUSTICS AND SOUND ISOLATION
• NOISE AND VIBRATION CONTROL

www.beradio.com

For Sale

AcousticsFirst™
Toll-Free Number: 888-765-2900
Full product line for sound control and noise elimination.
Web: http://www.acousticsfirst.com

SPACEWISE®
"The Price and Quality leader... In Broadcast Studio Furniture!"

HOME OF THE "BUDGET CRUNCHERS"

Affordably customized systems in several price ranges. Professional Quality furniture shop construction, components, real woods, and premium laminates. Built to order and easy to assemble. Economically and safely delivered crated to you! WHY PAY MORE ELSEWHERE? 25+ YEARS OF RADIO BROADCAST EXPERIENCE GOES INTO THE DESIGN OF OUR PRODUCTS!
CALL US - 800-775-3660
SEE US - WWW.SPACEWISE.COM

Radio
THE RADIO TECHNOLOGY LEADER
A PRIMEDIA Publication
www.beradio.com
radio@primediabusiness.com

Editor – Chriss Scherer, CSRE CBNT, cscherer@primediabusiness.com
Technical Editor, RF – John Battison, PE., batcom@bright.net
Associate Editor – Kari Taylor, ktaylor@primediabusiness.com
Sr. Art Director – Michael J. Knust, mknust@primediabusiness.com
Assoc. Art Director – Robin Morsbach, rmorsbach@primediabusiness.com

Technical Consultants – Harry C. Martin, Legal
Kevin McNamara, CNE, Computers and Networks
Mark Krieger, CBT, IBOC, Contract Engineering
Russ Berger, Broadcast Acoustics
Donald L. Markley, PE., Transmission Facilities

Senior Vice President – Peter L. May, pmay@primediabusiness.com
Publisher – Dennis Triola, dtriola@primediabusiness.com
Marketing Director – Christina Heil, cheil@primediabusiness.com
Vice Preisdent of Production – Lisa Parks, lparks@primediabusiness.com
Sr. Director of Production – Curt Pordes, cpordes@primediabusiness.com
Group Production Mgr. – Julie Gilpin, jgilpin@primediabusiness.com
Production Coordinator – Dana Honn, dhonn@primediabusiness.com
Classified Ad Coordinator – Michelle Hooper, mhooper@primediabusiness.com
VP Audience Marketing – Jerry Okabe, jokabe@primediabusiness.com
Audience Marketing Dir. – Barbara Kummer, bkummer@primediabusiness.com
Audience Marketing Mgr. – Sonja Rader, srader@primediabusiness.com

MEMBER ORGANIZATIONS
Sustaining Member of:
· Acoustical Society of America
· Audio Engineering Society
· Society of Broadcast Engineers
Member, American Business Media

PRIMEDIA
Business Magazines & Media
COO – Jack Condon, jcondon@primedlabusiness.com
Executive VP – John French, jfrench@primediabusiness.com
Sr.VP, Business Development – Eric Jacobson, ejacobson@primediabusiness.com

PRIMEDIA Inc.
745 Fifth Ave., NY, NY 10151
PRIMEDIA
Chairman – Dean Nelson, dean.nelson@primedia.com
President & CEO – Kelly Conlin, kelly.conlin@primedia.com
Vice Chairman & General Counsel – Beverly Chell, beverly.chell@primedia.com

SUBSCRIPTIONS: Free and controlled circulation to qualified subscribers. Non-qualified persons may subscribe at the following rates (prices subject to change): USA and Canada, 1 year, $50.00, 2 years, $95.00, 3 year, $140.00. Outside the USA and Canada, 1 year, $65.00, 2 years, $125.00, 3 years, $185.00 surface mail (1 year, $105.00, 2 years, $205.00, 3 years, $305.00 airmail delivery). For subscriber services or to order single copies, write to Radio, 2104 Harvell Circle, Bellevue, NE 68005 USA; call 866-505-7173 or 402-505-7173; or visit beradio.com.

ARCHIVES & MICROFORM: This magazine is available for research and retrieval of selected archived articles from leading electronic databases and online search services, including Factiva, LexisNexis, and Proquest. For microform availability, contact ProQuest at 800-521-0600 or 734-761-4700, or search the Serials In Microform listings at proquest.com.

REPRINTS: Contact Joel Banda at Wright's Reprints to purchase quality custom reprints or e-prints of articles appearing in this publication at 877-652-5295 or 218-419-5725. Instant reprints and permissions may be purchased directly from our website; look for the iCopyright tag appended to the end of each article.

PHOTOCOPIES: Authorization to photocopy articles for internal corporate, personal, or instructional use may be obtained from the Copyright Clearance Center (CCC) at 978-750-8400. Obtain further information at copyright.com.

PRIVACY POLICY: Your privacy is a priority to us. For a detailed policy statement about privacy and information dissemination practices related to Primedia Business magazines and Media products, please visit our website at primedlabusiness.com.

EDITORIAL, BUSINESS and CORPORATE OFFICE: Primedia Business Magazines & Media, 9800 Metcalf, Overland Park, KS, 66212; 913-341-1300; beradio.com, primediabusiness.com

Copyright 2004, PRIMEDIA Business Magazines & Media Inc. All Rights Reserved.

LIST RENTAL SERVICES
Marie Briganti
Statlistics
Phone: (203) 778-8700 x146
Fax: (203) 778-4839
primedia@statlistics.com

EDITORIAL REPRINTS
Joel Banda
Wright's Reprints
Phone: (877) 652-5295, ext. 106
jbanda@wrightsreprints.com

Sales Offices

NATIONAL SALES DIRECTOR
Steven Bell
Phone: 913-967-1848 *Fax:* 913-967-7249
E-mail: sbell@primediabusiness.com

EUROPE/UK
Richard Woolley
Phone: +44 1295 278 407 *Fax:* +44 1295 278 408
E-mail: richardwoolley@compuserve.com

CLASSIFIED ADVERTISING
Jennifer Shafer
Phone: 800-896-9939, 913-967-1732
Fax: 913-967-1735
E-mail: jshafer@primediabusiness.com

Online Sales & Marketing
Samantha Kahn
Phone: 212-462-3401 *Fax:* 913-514-7006
E-mail: skahn@primediabusiness.com

Contributor Pro-file

Meet the professionals who write for *Radio* magazine.
This month: Managing Technology, page 10.

Kevin McNamara
President
Applied Wireless
Elkins Park, PA

The technical consultant on management and computer technology, McNamara has more than 30 years of broadcast experience. He is the former director of engineering for the Beasely Broadcast Group, and he also held the positions of chief engineer at stations in Boston, Philadelphia and Washington, DC. His career has provided him with extensive broadcast facility design and construction experience. He has also presented papers at the NAB and NAB Radio conventions. He holds an Amateur Radio Advanced class license, he is a Certified Netware Engineer, and he is a member of the SBE and the IEEE.

Radio
THE RADIO TECHNOLOGY LEADER

Written by radio professionals
Written for radio professionals

Radio, Volume 10, Number 9, ISSN 1542-0620 is published monthly and mailed free to qualified recipients by PRIMEDIA Business Magazines & Media Inc, 9800 Metcalf, Overland Park, KS 66212-2216 (primediabusiness.com). Periodicals postage paid at Shawnee Mission, KS, and additional mailing offices. Canadian Post Publications Mail Agreement No. 40597023. Canada return address: DP Global Mail, 4960-2 Walker Road, Windsor, ON N9A 6J3. Additional resources, including subscription request forms and an editorial calendar are available online at beradio.com. To order single copies call 866-505-7173 or 402-505-7173.

POSTMASTER: Send address changes to *Radio*, P.O. Box 2100, Skokie, IL 60076-7800 USA.

Advertiser Index

	Page Number	Advertiser Hotline	Advertiser Website
Acoustic Systems	69	800-749-1460	www.acousticsystems.com
Acoustics First	52	888-765-2900	www.acousticsfirst.com
Altronic Research	56	800-482-5823	www.altronic.com
Armstrong Transmitters	68	315-673-1269	www.armstrongtx.com
Arrakis Systems	6, 36, 65	970-224-2248	www.arrakis-systems.com
ATI Audio Technologies	48	800-959-0307	www.atiguys.com
Audemat-Aztec	57	305-692-7555	www.audemat-aztec.com
AudioScience	60	302-324-5333	www.audioscience.com
Balsys Technology Group	62	407-656-3719	www.balsys.com
Broadcast Electronics	51	817-735-8134	www.bdcast.com
Broadcast Software International	23	888-BSIUSA1	www.bsiusa.com
Broadcast Tools	45	360-854-9559	www.broadcasttools.com
Broadcast Warehouse	38	+44-208-540-9992	www.broadcastwarehouse.com
CBT Systems	69	858-536-2927	www.cbt-net.com
Circuitwerkes	73	352-335-6555	www.circuitwerkes.com
Coaxial Dynamics	71	440-243-1100	www.coaxial.com
Comrex	9	978-784-1717	www.comrex.com
Conex Electro-Systems	52	800-645-1061	www.conex-electro.com
Continental Electronics	61	800-733-5011	www.contelec.com
Crane Song Limited	40	715-398-3627	www.cranesong.com
D.A.V.I.D Systems	55	866-41-DAVID	www.latitude-edition.com
Danagger Audio Works	71	888-892-8346	www.danagger.com
Dataworld	60	301-652-8822	www.dataworld.com
Dielectric	25	866-DIELECTRIC	www.dielectric.com
ESE	66	310-322-2136	www.ese-web.com
Eventide	19	201-641-1200	www.eventide.com
Harris Corp. Broadcast Div.	3	800-622-0022	www.broadcast.harris.com
Henry Engineering	22	626-355-3656	www.henryeng.com
Inovonics	68	831-458-0552	www.inovon.com
Kay Industries	62	800-348-5257	www.kayind.com
Liquid Acoustics	5	714-690-5934	www.liquidacoustics.com
Logitek	53	800-231-5870	www.logitekaudio.com
Mager Systems	24	623-780-0045	www.magersystems.com
Mediatouch	31	888-665-0501	www.omt.net
Moseley Associates	33	805-968-9621	www.moseleysb.com
Musicam USA	13	732-739-5600	www.musicamusa.com
NAB	63	202-429-5336	www.nab.org
Nautel Electronics	7	902-823-2233	www.nautel.com
NPR Satellite Services	21	202-513-2626	www.nprss.org/be
NTI Americas	30	503-639-3737	www.nt-instruments.com
Omnirax	35	415-332-3392	www.omnirax.com
Orban	29	510-351-3500	www.orban.com
Pike & Fischer	70	800-255-8131	www.broadcastregs.pf.com
Pristine Systems	20	800-795-7234	www.pristinesys.com
Prophet Systems	49	877-774-1010	www.prophetsys.com
Radio Computing Services	17	914-428-4600	www.rcsworks.com
Radio Soft	47	888-RADIO95	www.radiosoft.com
Radio Systems	37, 39	856-467-8000	www.radiosystems.com
RAM Broadcast Systems	34	847-487-7575	www.ramsyscom.com
rf Software, Inc.	72	352-336-7223	www.rfsoftware.com
Richardson Electronics	34a-d	800-737-6937	www.rfengineeredsolutions.com
SCMS, Inc	12	800-438-6040	www.scmsinc.com
Scott Studios	1, 41	888-GET-SCOTT	www.scottstudios.com
Sierra Automated Systems	15	818-840-6749	www.sasaudio.com
Sine Systems	66	615-228-3500	www.sinesystems.com
Stevens Billington	59	+44-1825-890111	www.stevens-billington.co.uk/usa
Superior Electric	18	800-787-3532	www.superiorelectic.com
Telos Systems	42, 43	216-241-7225	www.telos-systems.com
TFT, Inc.	28	408-943-9323	www.tftinc.com
TieLine Technology	11	888-211-6989	www.tieline.com
Warp Radio	67	303-799-9118	www.warpradio.com
Wheatstone	2, 83, 84	252-638-7000	www.wheatstone.com

This index is a service to readers. Every effort is made to ensure accuracy, but Radio magazine cannot assume responsibility for errors or omissions.

www.beradio.com

Sign Off

By Kari Taylor, associate editor

www.beradio.com

Do you remember?

With the active interest in on-air indecency, we looked through the archives and found an early entrant in the solid-state profanity delay arena.

In 1982, the Comex Systems Bleepmate 675 profanity delay provided six seconds of 7.5kHz bandwidth delay. The unity-gain device offered 72dB of dynamic range and selectable three-second or six-second delay modes. The unit was designed for conventional rack mounting and required 2RU. Distortion was less than one percent THD at 0dBm output with a maximum output of +12dBm and a frequency response maintained within ±1dB out of 5kHz with the -3dB point at 7.5kHz.

That was then

In this 1955 photo, Dick Brewer of WDLB-AM 1490 in Atlantic City, NJ, reads a commercial using an RCA 77-DX mic feeding an RCA BC-2B Consolette console. The WLDB studio was located on the 11th floor of the Senator Hotel in Atlantic City, NJ.

Featured in a 1955 article in the *RCA Broadcast News*, the station was outfitted almost completely with RCA equipment.

The RCA BC-2B Consolette was designed for use in small stations. One outstanding feature of the console was the mic preamps, which RCA used in other equipment. The tube preamp is still admired for its tonal qualities. The Consolette had eight pots and a master level control.

Sample and Hold

70 percent of media users consume more than one medium at a time.

While listening to the radio:

53.7% are online

46.9% are reading a newspaper

17.7% are watching TV

Source: www.Trendwatching.com.

The Wheatstone GENERATION-5 has the POWER and FEATURES Stations Demand the MOST

LOTS More!

Our Generation-5 provides your operators with a straightforward traditional control surface coupled with all the benefits of digital technology. It gives you the flexibility of system-wide source, mix and destination control (any signal any*where*), a powerful mix-minus section and a complete event store, name and recall system. One wire from this surface can control THOUSANDS of wires in your technical operations center.

And while the G-5 *feels* like an analog console, its DSP-based mixing engine keeps your digital sources digital while converting analog sources to switched digital, eliminating crosstalk and noise. It can furnish remote and telcom functionality on any input fader without fear of feedback—a real plus in back-to-back daily operations. Its built-in graphic displays keep operators on top of things with just a glance. And since the entire system is software based, you can accommodate any format with a press of a button.

Like all our Generation Series consoles, the G-5 has complete failsafe options available, such as automatic fail-over DSP and CPU cards and redundant power supplies. We can even provide scheduling software and studio mounted satellite cages that can be configured to mix independently from your main routing system.

*At **WHEATSTONE** we've built and sold over a thousand digital audio consoles.* The G-5 is a culmination of all that experience. *Benefit from our expertise — choose **WHEATSTONE**!*

Wheatstone

600 Industrial Drive, New Bern, North Carolina 28562
252-638-7000 / www.wheatstone.com / sales@wheatstone.com

copyright © 2004 by Wheatstone Corporation

Behind Every GOOD CONSOLE There's an EVEN BETTER ROUTER

GENERATION 4

A Straightforward, Easy-to-Use Control Surface

There's no long learning curve required to immediately start using this traditional layout specifically envisioned for operators of all skill levels.

***BRIDGE TECHNOLOGY** enables the GEN-4 surface to operate far beyond the limits of its studio mainframe. Integration with the Bridge digital audio network router provides systemwide access to all station on-air and off-air audio resources via interlinked CAT-5 or fiberoptic cable. And of course, we all know **EXPERIENCE COUNTS**! With over eighty Wheatstone Generation control surfaces already operating in the field, you can be assured your installation will proceed smoothly and on time.*

the digital audio leaders

Wheatstone

www.wheatstone.com

Copyright © 2004 by Wheatstone Corporation