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Smarter phones.
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No need for cheesy A/V mixers - RAQ lets you put a networked, professional console anywhere, at a price that'll make the even stingiest GM smile.

Double your pleasure.
Did you know that one QOR.16 console engine will power 2 RAQ or DESQ mixing consoles? Makes your money go further on news bullpens, production pods, ingest stations, etc.

Step to the side.
Dirt and liquids: a console's most hated enemy. Element foils 'em with premium, side-loading conductive-plastic faders: dirt drops past, not in.

Who's da boss?
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Element modules are machined aluminum with wear-resistant Lexan inserts for long life. We've even designed custom-molded guides to prevent tears around the fader slot. No "ouchies" here.

Unlimited vision.
Some console makers give you "switched meters" to save costs. iQ does away with that annoyance: high-rez OLED displays meter all 4 buses at once.

Available in small, large, and OMG.
Whatever size console you need, Element can handle it, from 4 to 40 faders in single or split frames Huge selection of standard and motorized modules, too.

A low price shouldn't mean "cheap".
Other companies cut corners on their low-cost consoles. Axia packs in as much as possible. Real conductive-plastic faders, machined-aluminum work surfaces, anodized rub-proof markings, aircraft-grade switches. At a price less than some analog "bargain" consoles.

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Axia makes the switch.
No "plug-n-pray" unmanaged switches here; Axia builds our own custom zero-config, built-for-broadcast network switch right into our PowerStation and QOR console engines.

Show-off.
Element lets you store up to 99 Show Profiles - "snapshots" that recall channel sources, bus assignments, EQ settings, even fader positions. So every jock can have their own customized console.

Speak your mind.
Element consoles have comprehensive talkback features. You can talk directly to remote codecs, phone callers, adjacent studios... even individual talent's headphone feeds. Even our most cost-effective boards let you talkback to callers and codecs.

Big power, small price.
Radius loads you up with 8 faders, 4 mix buses, automatic mix-minus, onboard EQ and voice dynamics and more — for just $5990 USD. Shh... don't tell the accountants.

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When we introduced AoIP to radio in 2003, some folks thought we were off our nut. Today though, broadcasters agree: picking Axia is the right choice. With over 5,000 on air daily, broadcasters have voted Axia the world's most popular networked console.

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In fact, we calculate that thanks to our huge selection of frame, module and mixing engines, there are at least 32,209,982 different ways to order an Axia console. With that many options, you'd better get started now! Mmm... don't you just love that new-console smell?

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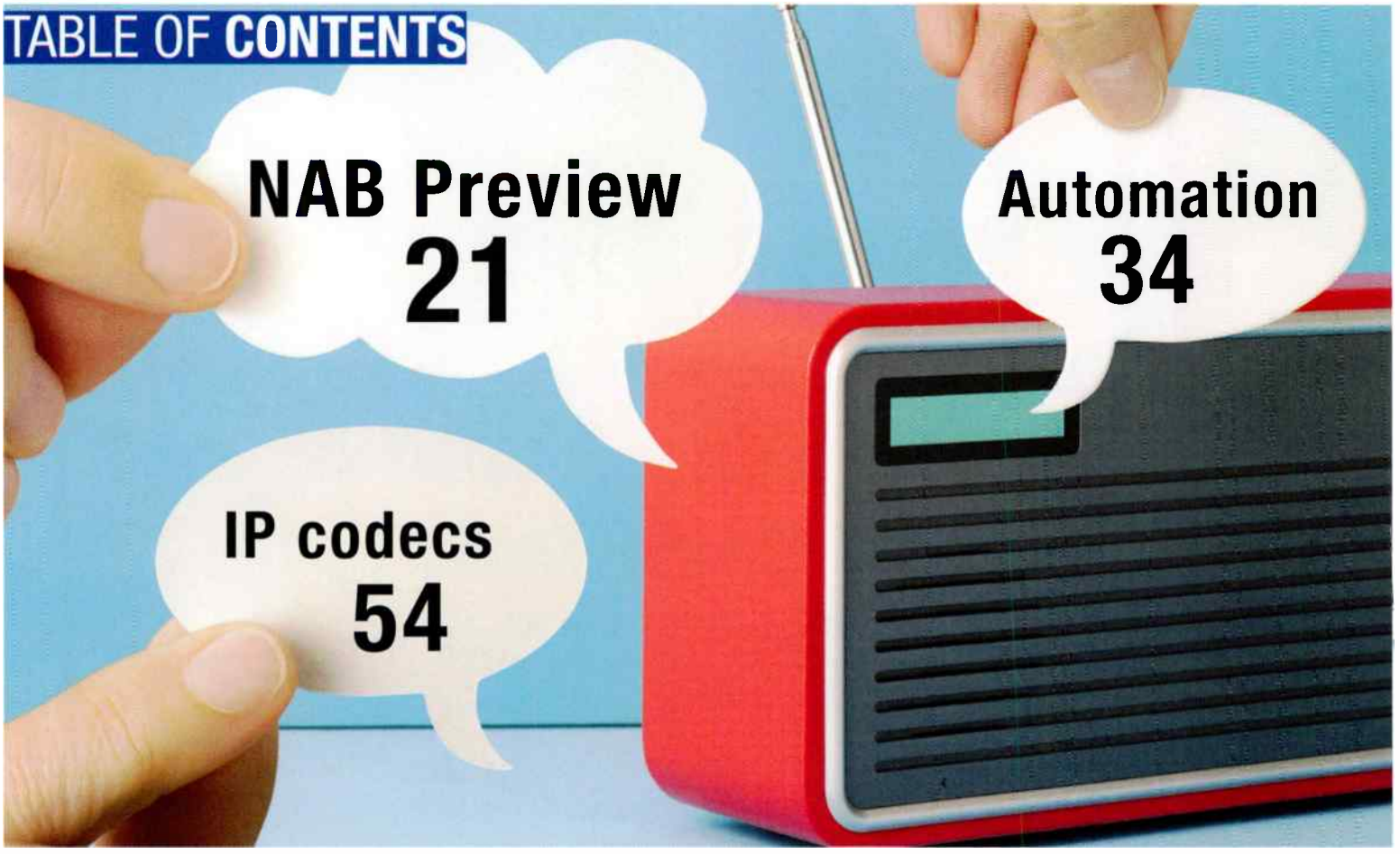

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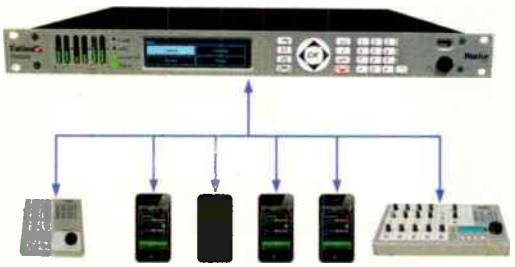

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Littlejohn, Seidel to Receive 2014 NAB Engineering Awards

Radio engineer Jeff Littlejohn of Clear Channel Media and television technology innovator Robert Seidel of CBS have been named the 2014 recipients of the National Association of Broadcasters Engineering Achievement Awards. The recipients will be honored at the NAB Show Technology Luncheon on April 9 in Las Vegas.

RADIO ENGINEERING ACHIEVEMENT AWARD

Jeff Littlejohn, as executive vice president, engineering and systems integration, oversees all technical aspects of Clear Channel's Media and Entertainment division. In his 20+ years in radio engineering, he has been a leader in technical improvements for broadcast radio and active on many industry committees.

TELEVISION ENGINEERING ACHIEVEMENT AWARD

Robert Seidel began his career with CBS in 1976 and is now vice president, engineering and advanced technology. He has been an industry leader in HDTV, the digital TV transition, and other innovative projects.

Read more at RadioMagOnline.com.

MORE WINNERS

The NAB Engineering Achievement Awards were established in 1959 to recognize an individual's accomplishments and contributions to the broadcast industry. An historical list of winners is available at: radiomagonline.com/currents/nab_engineering_award

2014 NAB Crystal Radio Awards Finalists Announced

The National Association of Broadcasters announced the 50 finalists for the 27th Annual Crystal Radio Awards. Since 1987, the NAB Crystal Radio Awards have recognized radio stations for their outstanding year-round commitment to community service. Winners will be announced and the finalists will be honored at the NAB Show Radio Luncheon, which will be held April 8 during the 2014 NAB Show in Las Vegas.

Crystal Radio Award finalists were chosen by a panel of judges representing broadcasting, community service organizations and public relations firms. Finalists will be honored and winners announced at the Radio Luncheon, where Yahoo tech columnist David Pogue will present a keynote address and popular national radio personality, television host and best-selling author Steve Harvey will be inducted into the NAB Broadcasting Hall of Fame.

See the full list of finalists at RadioMagOnline.com.

FCC Commissioners Clyburn, Pai, O'Rielly to Address 2014 NAB Show

Federal Communications Commissioners Mignon Clyburn, Michael O'Rielly and Ajit Pai will be featured in the session "Inside the Beltway Style" on April 8 at 2:30 p.m. during the 2014 NAB Show in Las Vegas. During the session, NAB Chief Operating Officer Chris Ornelas will lead a discussion with the commissioners on regulatory issues facing broadcasters, including the spectrum incentive auction, ownership regulation, radio revitalization and retransmission consent.

Mignon Clyburn has served on the Commission since 2009. She served as acting chairwoman from May - November 2013, becoming the first woman to head the FCC.

Ajit Pai joined the FCC as commissioner in May 2012 and is focusing on creating a regulatory environment in which competition and innovation can flourish, for the benefit of American consumers.

Michael O'Rielly joined the FCC in November 2013. Between 2010 and 2013, O'Rielly held several positions in the Office of the Senate Republican Whip, including policy advisor and deputy chief of staff and policy director for U.S. Senator Jon Kyl.

Read more 2014 NAB Show news at radiomagonline.com/convention_news/nab_show.

$1.24T

A Woods & Poole Economics report says local broadcasting generates $1.24 trillion in economic activity annualy, and 2.65 million jobs are attributable to commercial broadcast stations.

The FCC has proposed new rules to promote net neutrality. Two previous efforts failed.

In a recent column, Bob Struble said the trends toward broad connectivity and a competitive audio market are accelerating.

WideOrbit appointed Susie Hedrick as VP of sales and business development for radio. She was most recently senior vice president of sales and business development for Marketron.

NewBay Media's new Best of Show Awards, will be given to outstanding products at the NAB Show.

FIND THE MIC AND WIN!

Tell us where you think the mic icon is placed on this issue's cover and you could win a three-pack of Hosa HMIC-025 mic cables. Send your entry to radio@RadioMagOnline.com by April 10. Be sure to include your guess, name, job title, company name, mailing address and phone number. No purchase necessary. For complete rules, go to RadioMagOnline.com

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VIEWPOINT

Data Storage Could Use a Backup Plan

Data. It's everything we do, both professionally in radio and in our personal lives. Music, spots, metadata, equipment settings … and that's just on the engineering side. Add the data on the business side with accounting, advertiser information, sales info, human resources. And what do you have at home? Photos, videos, music, passwords …

I'm sure you run data backups at work. If you're smart you run data backups at home, too. I recently came across a photo album and lots of old records and it started the wheels turning. In the case of the physical materials I found, there are no backups. I don't plan to create copies of the old records (there's a financial gain planned for those), but the photos are important. I will scan and store those.

But that's where I focused my thoughts: the storage of this data. While most of us likely try to store materials in a logical place on a hard drive, then back up that hard drive regularly, it's not uncommon for items to be stored in a directory not included in the established backup plan. And quite often programs want to use their own paths for data storage, and not necessarily the paths you or I would pick.

With multiple users, the likelihood of missed items grows quickly. If you also maintain staff laptops, you know there are files being stored on the machines' hard drives that should be included in the backup process. That's a bigger challenge to cover, but it might be worth some investigation.

With all this in mind, it's probably a good idea to review your backup processes as well. When was the last time you verified the system in place? Was it all designed before Y2K as a preventative measure? If so, it's certainly past due for a review.

But even if the system was put in place within the past few months, there could be changes. Perhaps production decided to save materials on a different path. Maybe sales added a database that is saved in a location not in the backup path. These things happen, and they're not intentionally placed outside the continuation of a business plan. Also look into the default paths of the various programs and apps in use to ensure the default is within the backup scope.

Of course even with the best intentions and planning, something can still slip through the cracks. But it's better to find it in a routine check than when a crisis hits and everyone is scrambling.

BEST OF SHOW AWARD

Something new for 2014: Several NewBay Media publications, including *Radio* magazine, have launched the Best of Show Award. The NewBay Media Best of Show Award replaces several award programs including the Pick Hits, Cool Stuff and Star Awards.

Awards will be given by NewBay Media publications *TV Technology*, *Digital Video*, *Video Edge*, *Radio* magazine and *Radio World*, and all nominated and winning products will be recognized in a post-show, digital Best of Show Program Guide delivered to readers of these publications.

The nomination deadline is March 28, 2014. Find a link to the awards at RadioMagOnline.com.

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Testing AM Antennas

by Jeremy Ruck, PE

There are different ways, techniques, and equipment available to test antennas. As with any antenna system, regular testing as a component of an overall maintenance program will ensure maximum performance, and limit failure related downtime.

Generally speaking, we can cluster testing methodologies under two main headings: basic and advanced. Basic procedures can and should be performed by the station engineer. These procedures are supplemented by more involved methods usually performed by consultants or at the corporate level. This second group tends to be undertaken beyond the local level because of the substantial monetary investment required in equipment, often not possible at the local level.

At the heart of basic testing procedures are acquisition of phase monitor readings, common point and/or base current values, and monitor point or reference location field strength readings. Obviously, the availability and necessity of certain portions of this data will depend on the configuration of your antenna. Although no longer required by the Commission, maintenance of base current measurement equipment in directional antennas is highly recommended, as this data provides another cross-check of other parameters.

Frequent acquisition of this data will provide a good historical record, and will aid in determining if an anomaly is seasonal, or an indication of a more sinister issue. As a consultant, it can be somewhat frustrating assisting a facility where there is no such record. Even worse is the station where the locations of the monitor points are completely unknown. Don't be that guy.

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BAD READINGS

Anomalous readings in one sector of the data are not necessarily an indication of a substantial problem with the system. For instance, if the phase monitor readings are well out of tolerance, but the transmitter is still happy, base current ratios are within norms, and monitor points do not exceed limits, it is a good bet that the problem lies in the sampling system itself. Similarly, if a couple monitor points have drifted outside their limits, then we need to look at the environmental conditions to see if a point has gone haywire, or if there truly has been an increase in the radiated field along that azimuth. A series of field strength measurements on those azimuths compared to the last full proof will usually provide that answer.

Probably one of the most glaring exceptions to this may deal with common point current (for a directional) or base current (for a non-directional). Sudden changes in these values, coupled with an unhappy transmitter, almost certainly indicate an acute issue with the system, requiring additional testing, maybe even down to the component level. A more gradual change over time is likely more indicative of system aging, such as ground system deterioration. Either way, swapping the meter or inserting a similar meter in series will tend to confirm or exclude measurement error.

If the phase monitor readings have changed drastically, but everything else looks correct, a simple test can be performed to ensure the inputs are all still reading properly. A coax tee adapter can be installed on one of the phase monitor inputs. The sample from one tower can then be split between that input and another input. Working across all the inputs, the ratio and phase should be very similar on both channels being fed. If they are not, then it tends to point to a problem with the monitor.

BIGGER PROBLEMS

At the more detailed levels of testing, we drill down deeper into the array to look at what is transpiring there. To do this, a couple of more pricey pieces of test equipment make this job easier. First and foremost is the impedance bridge, with the network analyzer being

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the icing on the cake. Although some engineers have more or less relegated the impedance bridge to the shelf in favor of the network analyzer, I still consider the bridge the first line of attack.

The most versatile of the bridges is the operating impedance bridge. These designs allow measurement of impedances when the system is being driven by the transmitter. Currently available models typically allow for a 5kW maximum input power when modulating or 10kW with carrier only. The operating bridge also permits cold operation where the bridge is driven by a low-power driver, and the return signal picked up by a receiver. The most convenient way to do this is with package units such as the Potomac Instruments SD-31 or Delta Electronics RG-4B, although many other generators and receivers will work well.

The importance of being able to measure impedance in both cold and hot states cannot be understated. In directional antennas, the self impedance of the tower will be transformed to a different impedance when the array is active due to the mutual coupling between the elements. Additionally, other issues may only rear their ugly heads when there is a fair amount of power being shoved down the pipe.

The network analyzer is very valuable due to its ability to rapidly illustrate system conditions graphically. Base network analyzer models will be scalar versions, which look only at the magnitude component. Such models have limited usefulness since the all-important phase measurements are ignored. The big brother to the scalar models is the vector network analyzer, which will add the phase component. The big daddy of all, however, is the VNA with time domain capabilities. This allows testing of the transmission line portions of the antenna systems.

Due to technological increases, the size of the network analyzer has shrunk from a pile of boat anchors requiring a pickup truck, to models that now fit quite comfortably under an airline seat weighing less than 15 pounds. At the same time, the performance and options have increased, and the data presentation is much nicer. New high-performance models will still run from around $30,000 to eye watering prices in six figures, which tend to be out of reach economically for most stations.

However, one available model that has gained significant traction in the broadcast arena is PC-driven, about the size of two packs of smokes, and costs just under $3,000. What makes this particular model attractive, beyond the price and size, is the fact that it provides a wide range of data, including a distance-to-fault method. Due to the limitations of the design, the DTF will not provide data as robust as a powerful VNA, but will give a good first order approximation to potential issues with transmission lines in an AM system.

As we all know, an AM antenna is a living and breathing animal, and each has a unique personality. Some are nice and stable like grandma, while others can be as problematic as the most petulant teenager. There is no magic to testing them, but such efforts can be time consuming because of their size and complexity. In reality much of the run-of-the-mill testing required can be accomplished by the station engineer. The key is to know your antenna, stay on top of regular testing, and perform robust maintenance. All of these are tasks that are becoming more problematic due to economic and personnel considerations, but that is a discussion for another day.

Ruck is the principal engineer of Jeremy Ruck and Associates, Canton, IL.

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FCC Enforcement Items to Watch

by Lee Petro

Turns out Benjamin Franklin was wrong. Not only are death and taxes certain, a broadcaster can also expect the FCC's Enforcement Bureau to come knocking at some point. While one could hope that all is well on the home front, periodic and thorough reviews of your station's records and facilities can help avoid a hefty fine. Recent enforcement actions taken by the FCC illustrate the possible tripping points for broadcasters to avoid.

Tower and Lighting Violations. Just in the past month, the Enforcement Bureau has issued proposed forfeitures to six broadcasters for alleged violations of the FCC's tower and lighting rules. In one case, the fence surrounding the towers had fallen, providing unrestricted access to possible harmful radiation. Another forfeiture was imposed on a tower owner that had failed to keep the tower painted so that good visibility could be maintained. In another case, the FCC proposed a forfeiture of $20k to a licensee that constructed a tower, and then failed to paint it, or install the required lighting, for 10 years. Despite the fact that the station had participated in an alternative inspection program, and thus should have been exempt from FCC inspections for three years, the FCC stated that it maintains jurisdiction to resolve tower safety issues regardless of such participation. Licensees should also ensure that their tower's lighting remain functional. In a recent action, the FCC issued a forfeiture of $10k to a tower owner that failed both to monitor its lighting, and to notify the FAA that the lighting was not functioning, even after the FCC provide the licensee with notice of the problem.

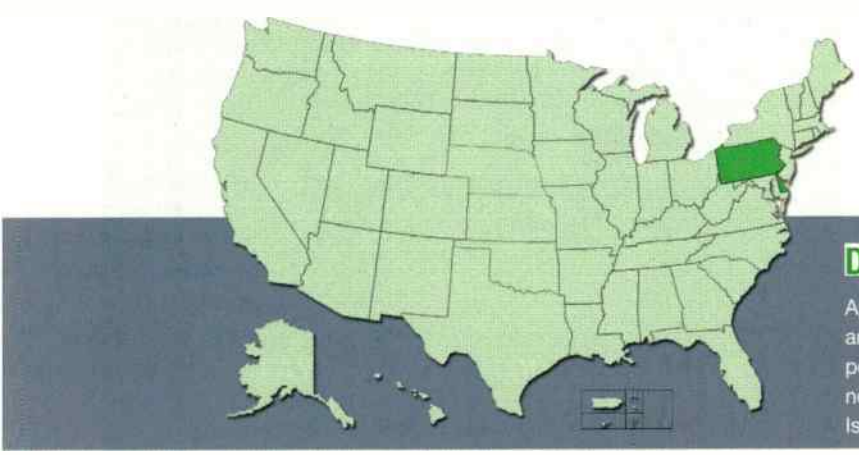
Public File Violations. Another frequent tripping point for broadcasters is maintaining the required documents in the station's local public inspection file. The FCC requires broadcasters to maintain records on a number of different subjects including the station's authorizations, pending applications, complaints from the public, and quarterly issues/programs lists. During the most recent renewal cycle, the failure of licensees to timely compile and place issues/program lists in the station's public file was a big source of violations and delays in granting renewal applications. For example, the FCC recently issued a $7,500 forfeiture to a broadcaster that had failed to place 15 quarterly reports in the public file. To help remedy the problem, the FCC has posted a self-inspection checklist for broadcasters, which includes a detailed list of the records to be maintained. Licensees should periodically review the file with the list in hand, to ensure that materials are not missing, outdated or have been removed without the station's knowledge.

Avoiding FCC Violations. Most of these violations could have been avoided by a timely review of the respective station's records and tower site. One way to help avoid violations (and the possible fines) is to participate in a state broadcaster association's alternative inspection program. If the station is clear of violations, the FCC is notified and the station is exempt from inspection for three years unless either a complaint is filed or there are suspected tower safety issues (see above). If the inspection discovers possible violations, the licensee is given time to correct the deficiencies, and may invite the inspectors back for a new inspection. While the state broadcasters charge a fee for such services, the amount of the fee is certainly less than the fine that would be imposed by the FCC.

Resolving Forfeitures. If the FCC finds a violation, it could issue a Notice of Apparent Liability for Forfeiture, in which it proposes a fine and offers the licensee an opportunity to present an explanation. The licensee may also present evidence that it lacks of the ability to pay the fine and seek a reduction or the adoption of a payment plan.

In addition, the FCC has entered into consent decrees with licensees that resolve rule violations. By entering into a consent decree, the licensee may be able to negotiate a reduction of the proposed forfeiture. Common in such decrees is the licensee's agreement to adopt a compliance program that may involve additional training of station staff, and additional FCC reporting requirements. Often times, these consent decrees are entered into in connection with the grant of a long-pending renewal or assignment application.

Petro is of counsel at Drinker Biddle & Reath, LLP. Email: lee.petro@dbr.com.



DATELINE

April/May: Stations in Delaware and Pennsylvania file License Renewal Application and EEO Program Report, and Noncommercial radio stations file Ownership Report (323-E) by April 1, 2014. Commence running License Renewal Post-Filing Announcements, continuing on April 16, May 1 and 16. All stations must place 1Q2014 Issues/Programs list in their public files by April 10, 2014.

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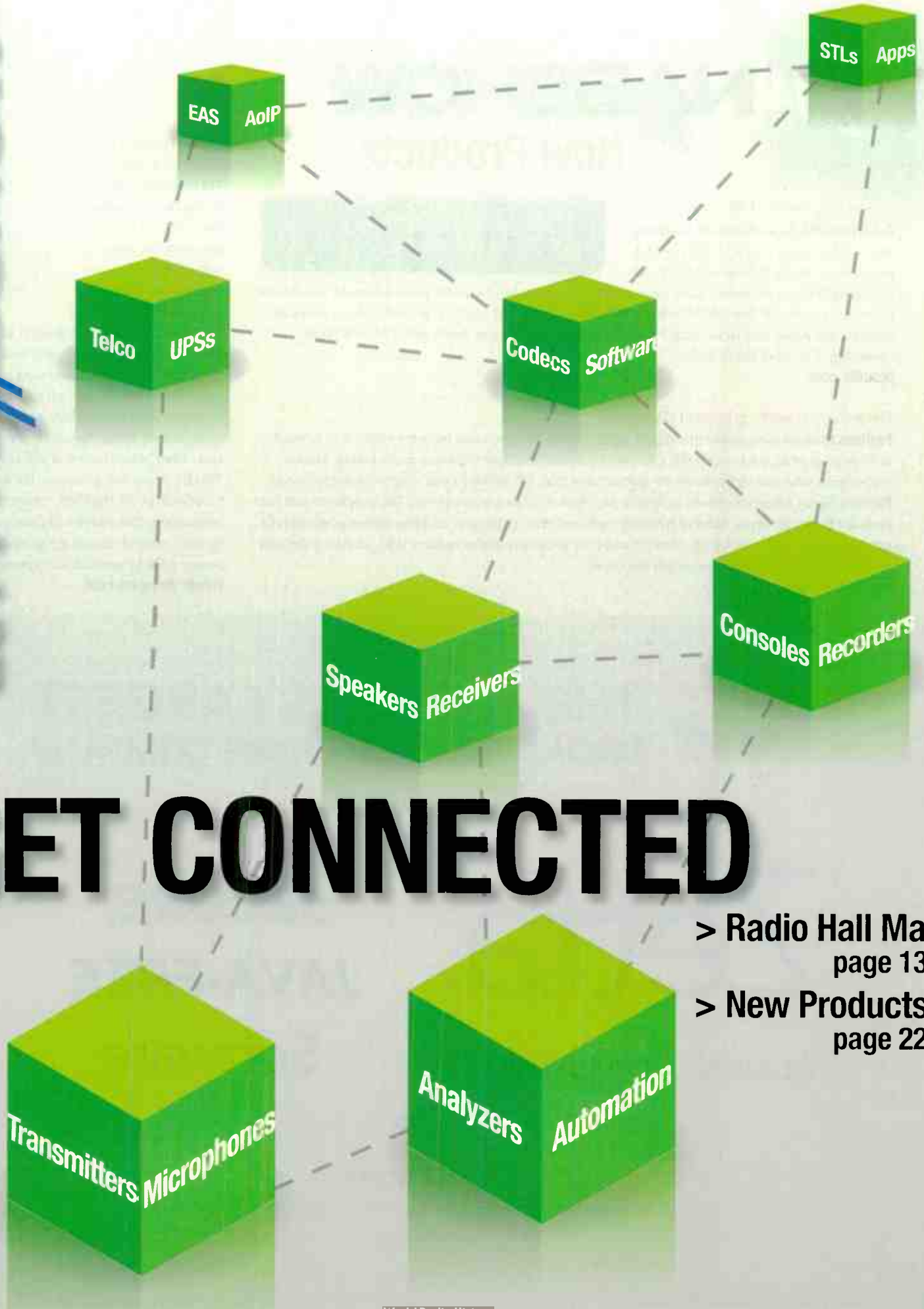
2014 NAB SHOW



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2014 NABSHOW New Products

Telephone interface | JK Audio

AutoHybrid IP2: AutoHybrid IP2 functions as a two-line Voice over IP (VoIP) hybrid, providing all of the features of a phone line hybrid including: call control, auto-answer, and conference. VoIP line setup and advanced call control features are provided through the internal Web server. Send and receive line-level audio is provided through rear panel XLR jacks. AutoHybrid IP2 also functions as an Audio over IP (AoIP) codec, streaming wide-band stereo audio.

jkaudio.com

Electronic payments program | Marketron

PayNow: Marketron estimates that digital payments can save the radio industry millions — as much as 75 percent in accounts receivable costs, so it launched PayNow to replace paper billing. Marketron estimates the industry collectively spends more than $40 million a year on processing payments. PayNow allows advertisers to electronically pay invoices from a secure portal. The benefits to radio stations are faster payments, reduced handling costs and error reduction, enabling station advertisers to pay invoices by credit card, e-check/ACH and GSA smart pay. It also reduces DSO, enables collection efforts and generally conserves station resources.

marketron.com

High-power FM transmitter | Rohde & Schwarz

THR9: The liquid-cooled R&S THR9 high-power FM transmitter provides output power ranging from 5kW to 40kW. It is digital-ready, making it well equipped to meet future demands because it supports both FM and digital standards in VHF band II such as HD Radio. Network operators will benefit from the MultiTX concept, integrating multiple transmitters into a single rack. The THR9 concept makes it possible to accommodate as many as four 10kW transmitters in a single rack. The FM transmitter is highly efficient: Two RF power components – the power combiner and the RF rigid line – have minimum attenuation. This enables efficiency values of up to 75 percent in analog FM mode and cuts energy costs by as much as 50 percent.

rohde-schwarz.com

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SECURE, JAVA-FREE Software
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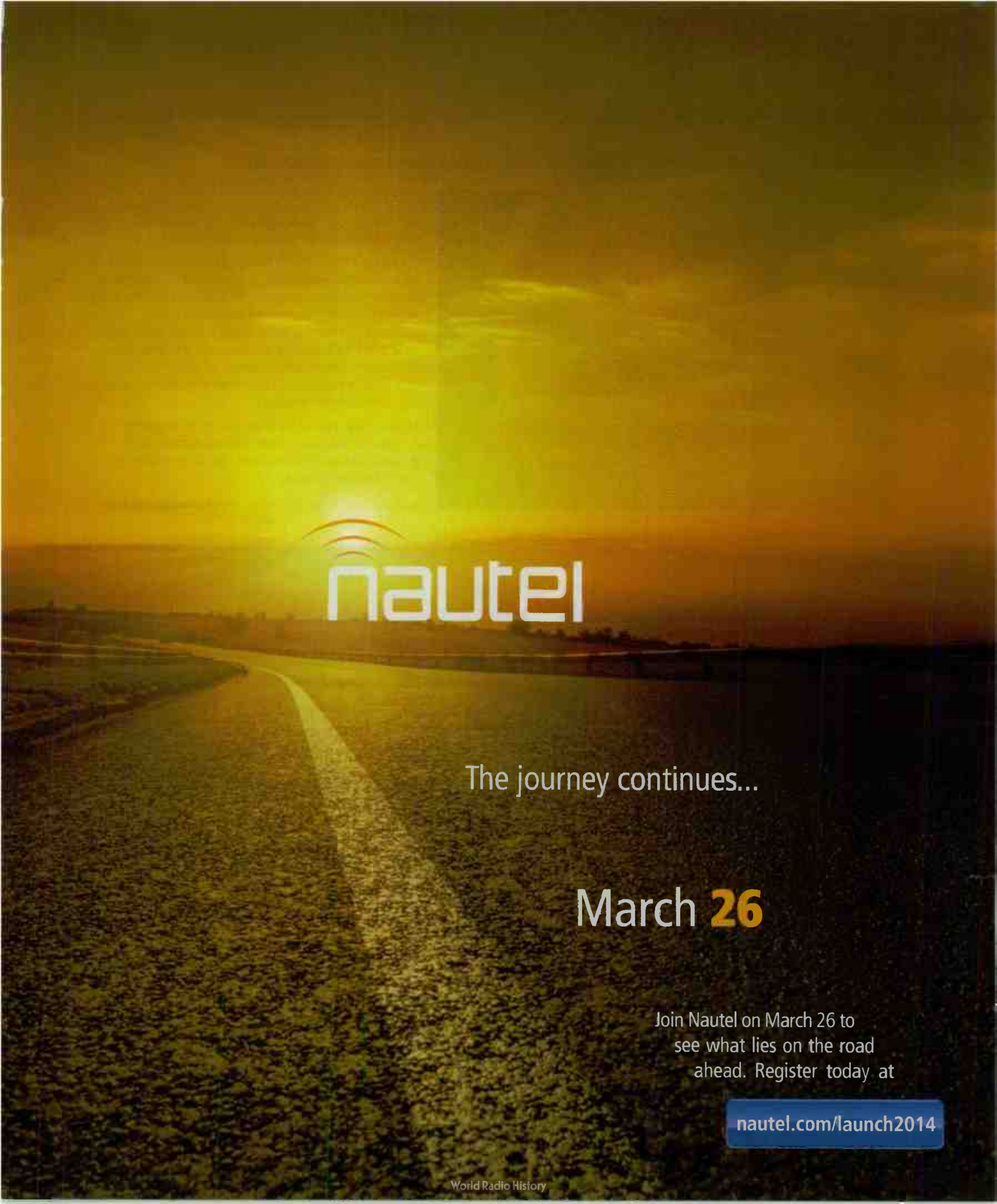


World Radio History

Jammin' Live and Local with WheatNet-IP: OK...the band just showed up...

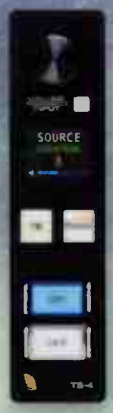
Your jocks are on the air, doing their thing, and who should walk in the front door? Carrie Underwood or the Kings of Leon with a few instruments and a song in their pocket.

If you have a WheatNet-IP Intelligent Network, plugging in is the easy part. Connect mics, synths and other instruments into the Wheatstone audio-over-IP network, and bring them up on the IP control surface like you do any source. Our WheatNet-IP Intelligent Network also makes a pretty good audio snake for sending guitar, keyboard and other feeds from the production studio to the on-air studio! You can fit a lot of audio channels down WheatNet-IP's Gigabit Ethernet pipe – we know, we've done it.

It just so happens that we have a few audio engineers at Wheatstone who know their way around live mixing. Go to our website for some helpful tips on setting up live performers in your studio.

Read the rest of the story here. INN8.wheatstone.com

TS-22



TS-4

TS-22 w/optional turret

AMERICA'S GOT TALENT (STATIONS)

These tiny talent stations are tremendously powerful. Both control surfaces feature microphone on/off/cough functionality, talkback buttons, and headphone amp with source selection and level control. The TS-22 adds six-button source selector, speaker with separate level control, built-in timer and six programmable buttons. Each connects to the Intelligent Network with a single CAT-6 cable.

DESIGNED & BUILT IN THE USA

Wheatstone

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phone 1.252.638.7000 | wheatstone.com | sales@wheatstone.com

World Radio History

Wheat on the Road for Super Bowl Week

The Dan Patrick Show took to the road - and brought our E-1 control surface with it...

...to cover all the happenings for its 350 affiliate stations during Super Bowl week. Our new M4-IP four-channel microphone processor went along too, and networked with the E-1 into the WheatNet-IP Intelligent Network. Meanwhile, back at the main Dan Patrick studios in Milford, Conn., engineers at a Wheatstone E-6 console were busy playing the show open, bumper music, call-ins and sound effects while receiving the remote signal from New York City, and then sending it all out to the world!

Click here to learn more: INN8.wheatstone.com

Aura8-IP: Processing for Podcasts

How aggressive should you set the processing for podcasts?

Just enough to raise the audio above any ambient noise for listeners who don't have noise cancelling headphones, but not so much that you remove all trace of quality for those who are downloading low bitrate podcasts. Unlike other audio processors, our Aura8-IP (which has eight modes, one of which you can use for podcasting) lets you selectively add AGC, compression or limiting by bypassing the other sections to give you the right amount of processing needed for podcasting.

Click here to learn more: INN8.wheatstone.com

CLUB WHEAT: INSIDE THE IDEA FACTORY

Wheatstone's madmen talk about HOW and WHY they are so driven to perfection. Watch the video now!

See the video here: INN8.wheatstone.com

BLADE HONING "01"

What's Inside A BLADE...part deux

Each BLADE on the Intelligent Network is exceptionally powerful... but do you know about the incredible functionality inside EVERY BLADE?

By now, it's a good bet you're aware of the WheatNet-IP Intelligent Network. You know about its advantages - how it's obsessively compulsive about redundancy. How it can repair itself, configure itself, run rings around the competition while still having much greater bandwidth (due to the WheatNet-IP system's Gigabit Ethernet throughput) - enough, in fact, to not only handle our increased functionality today, but well into the future.

Here's part two of our 2-part series entitled "What's Inside A BLADE". Obviously, we could go on forever. But we suggest you check WheatNet-IP out for yourself and learn just how much of a difference it can make.

Gigabit Ethernet
100/1000 Mbps permits robust operation and allows for exceptional expansion capabilities

DNA of the Entire Network Stored in Every BLADE
Every setting for every network device is stored inside every BLADE. Handy, if you ever need to replace a BLADE. Just plug it in and it learns from the network!

Silence Detection
Each output can trigger alarms or make a routing change

Built-in Web Server
so you can configure and control locally or remotely without having to run dedicated software

True Mono Channels No need to tie up stereo pairs

SNMP Messaging for alerts

Selectable Sample Rate 44.1 or 48 kHz

Front Panel Headphone Jack with source select and level control — monitor any system source

Visit us on the web to learn more! INN8.wheatstone.com

Wheatstone

World Radio History

2014 NABSHOW New Products

Radio automation system | WideOrbit

WO Automation for Radio with NextRadio and TagStation: Supporting visually enhanced free radio on select Sprint smartphones, this integration provides an enhanced experience to listeners, new revenue opportunities to radio stations and places stations on par with other music apps that deliver album content and other interactive elements. NextRadio is a hybrid radio smartphone app that provides a rich FM radio listening experience on a smartphone using a combination of the smartphone's built-in FM tuner and the Internet. TagStation is a cloud-based data service for enhanced radio broadcasting through the NextRadio smartphone app. TagStation supplements a radio broadcast with visual content and enhanced promos for display on the NextRadio app. The integration allows WideOrbit radio automation clients to deliver the title, artist and other music content information, in addition to visual ads and promos, along with their FM radio broadcasts to listeners' phones through the NextRadio platform.

wideorbit.com

Hybrid coupler | Delta Meccanica

1658: This 3dB hybrid coupler for 150kW of power for FM applications features isolation and a return loss of about 35dB. The design of this device made use of a computer simulation before passing to the prototype manufacturing. The requirement of this component has been generated by the fact that the Delta has acquired an order for the supply of a combiner with seven inputs, with a total final power to the output of 120kW system.

deltameccanica.com

EAS/CAP equipment | Digital Alert Systems

DASEOC M Series: These FCC-certified and FEMA IPAWS-conformant devices represent the only fully integrated EAS/CAP equipment capable of simultaneously providing all four EAS and CAP functions: CAP message origination, EAS encoding, CAP monitoring, and EAS decoding. Simultaneous alert origination to both EAS and CAP servers avoids message duplication, and the single-unit, single-interface approach assures that emergency managers won't need to purchase separate and disparate systems. Readily integrated into Web, satellite, and wireless systems, the DASEOC also promotes interoperability with a wide range of third-party applications and services to provide emergency managers with advanced text-to-speech capabilities.

digitalalertsystems.com

SkimmerPlus

BSI

Skimming, Logging and Air Checks with ease.

SkimmerPlus Features

- Creates high-quality and highly compressed files simultaneously
- Supports multiple professional audio formats, such as PCM MP2, and MP3
- Supports recording from triggers
- Automatically manage hard drive space
- Up to 24 record decks available
- Individually customizable title bars and record features for each deck
- Create and save event logs for fully customizable unattended recording
- Control over record break points for long-term recording
- Central skimming for multiple-station clusters

Web Server Features

- Access mic checks from the Internet with Web Interface
- Emailing of ftp links or audio files from Web Interface
- Supports user account creation
- Easily browse recordings with an intuitive web design
- Listening to last week's records is just a calendar's click away

www.bsiusa.com

For More Information Call: 1-888-BSI-USA-1 ~ Email: sales@bsiusa.com

World Radio History

The new liquid-cooled FM transmitter.

R&S®THR9 with highest efficiency and smallest footprint.

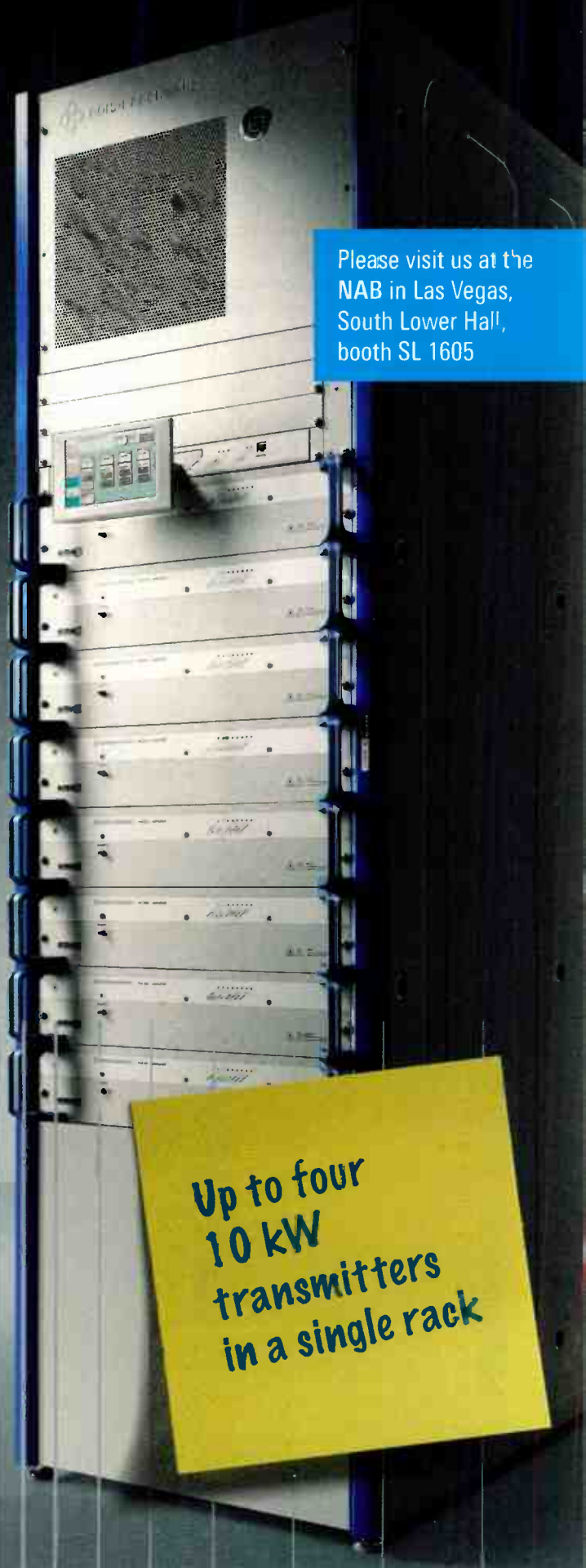
The new R&S®THR9 high-power transmitter for digital sound broadcasting combines

- Smallest footprint and unique flexibility with MultiTX concept
- Reliability and less maintenance with liquid cooling
- Highest energy efficiency up to 75%
- Up to 40 kW in one rack

It will reduce your overall operating costs in the network significantly. The R&S®THR9 is ready to go digital, making it ideal for the future of sound broadcasting.

Find the optimum solution for you.

www.rohde-schwarz.com/thr9



Efficiency to the Power of Five
E5
by Rohde & Schwarz

E⁵ – Efficiency to the power of five.

ROHDE&SCHWARZ

World Radio History

2014 NABSHOW New Products

Firmware update | Nautel

NV 4.0, NX 4.01: A key element to the update for both product lines is new test functionality, which allows real-time measurement of MER (Modulation Error Ratio). The measurements follow the new NRSC FM standard and do not require external equipment. MER metering is accessible from the Nautel Advanced User Interface (AUI) Constellation View display and may be viewed from the front panel 17" LCD touchscreen or via the Internet. Other updates addressed in the new firmware for both series include an updated Flash player; SMTP login capability for e-mail; port forwarding support; NTP (Network Time Protocol); the ability to save meters and critical parameters in memory; the ability to take action on audio loss in a manner similar to other Nautel products; restructured preset and sub-menu structures; SNMP (Simple Network Management Protocol) traps; summary alarms for remote interfacing and remote AUI timeout. NV-specific updates include PA field bias of individual stage amplifiers; a composite power limiter, left and right limiter; Asymmetrical HD Sideband support, HD PowerBoost support via presets and RF turn on delay for generator operation. NX-specific updates include a multi phase PDM cancellation routine, which results in an improved RF spectrum; a re-designed scheduler; USB audio (requires Nautel USB sound card) and playlist controller and Icecast/Shoutcast capability (Nautel USB sound card required).

nautel.com

Silence sensor | Sonifex

Redbox RB-SD1IP: The RB-SD1IP offers all of the functionality of the standard RB-SD1 with several extra capabilities. Ethernet connectivity provides the ability to set up and control the unit via a browser-based GUI. The network capabilities allow the user to more finely control silence level (-60dBu to 0dBu in 3dBu steps) and silence duration (1 second to 10 minutes). Users can also remotely lock/unlock the front panel controls on the unit and opt to use either the hardware-configured settings or Web-based settings. In addition to the front-panel LEDs the GUI home page offers a real-time view of signal levels and alarm statuses. Using the new browser GUI, left and right channels can be treated independently and remote relay triggers can be configured as one of many events including the new GPIO pins. Users can also choose to lock/unlock the use of the remote pins to control the unit and firmware updates can also be performed using the web GUI.

sonifex.co.uk

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AEQ

THERE'S A DIGITAL AUDIO CONSOLE FROM AEQ FOR EVERY NEED

We have the technology that allows us to offer a great variety of feature levels but always with the particular characteristics that you need for your broadcast operation:
reliability ensuring non-stop operation and excellent audio quality.

Digital Broadcast Mixers from US $ 5,199.00

- **NEW** - Audio over IP multi-channel network connectivity - **NEW**
- USB ports I/O - no need for audio cards for your broadcast automation system!
- Digital Telephone Hybrids fully integrated.
- MADI Links for Audio networking.

DIGITAL FOR EVERYONE!

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There are many new products to discover

AEQ at NAB 2014 Central Hall, Booth C3027

www.aeqbroadcast.com

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2014 NAB SHOW New Products

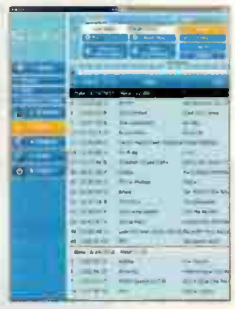
Coffee table book | Broadcast Music, Inc. (BMI)

"75 Years of American Music": To mark its 75th year milestone, BMI has announced a yearlong program of commemorative projects and events celebrating its history and contributions to the growth of American music. The program will kick off with the introduction of "75 Years of American Music," a coffee table book written and art directed by Bob Guccione, Jr., the founder of Spin magazine. "75 Years of American Music" will chronicle the story of American music as related through rare images, documents and interviews from the BMI archives interspersed with current voices from influential songwriters, music publishers and entertainment executives and tastemakers.

bmi.com

Mobile technology | RCS

RCS2Go: Merging the abilities of several products, including GSelector4 music scheduling software with its mobile compliment service Selector2Go, automation platform Zetta with its mobile sidekick Zetta2Go, users have greater ability to work remotely and have more control on-the-go. Adding the advanced traffic software Aquira and Aquira2Go, and RCSnews newsroom software, users can access all station functions from outside the studio.



rcsworks.com

Audio modules | WorldCast Systems APT

Oslo 1U E1/T1: Previously available only for IP audio transport, the Oslo 1U now offers greater flexibility in configuration and can be deployed in many different networks. Based on a modular architecture with four available slots, the unit can accommodate up to three audio cards when fitted with a new T1/E1 module. Each of these audio cards supports four channels of audio in simplex, duplex, analog or digital format and the configuration is fully software-selectable with no hardware switching required. Alternatively, when deployed for audio over IP transport, the unit can support up to 16 channels of audio across four AoIP modules. Each of these modules combines audio, IP transport, management and auxiliary data — the complete functionality of a codec unit — onto the single, plug-in module.

aptcodecs.com

World Radio History

a new perspective on radio

See the all new iMediaTouch Enterprise and iMediaLogger 5 at NAB 2014 – Booth C3031

iMediaTouch Enterprise

Next Generation Radio Automation featuring:

Advanced On-Air - Choose the features and screen layout with the new customizable user interface
SQL CMS - SQL based content management system
Media Portal - web based access to browse, play and download content
Advanced Fault Tolerance - Real Time SQL CMS back-up, Teaming, Store/Forward of content and schedules

iMediaLogger

All New iMediaLogger 5 featuring:

Enhanced Web Portal - a newly redesigned Web portal with an advanced web server.
Double Up Record - now supports up to 24 channels
Listen Live - real time preview of recording events
SQL CMS - SQL based content management system
Supplementary Media - distribute supplementary through the enhanced web portal

omt technologies

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2014 NABSHOW New Products

Audio logger | OMT Technologies

iMediaLogger 5: A newly redesigned Web access portal with an advanced Web server, offers new Web media access features and robust functionality. Web users can browse, play and download any content deployed by iMediaLogger. System administrators can manage user and group access as well as check system status, view schedules, feeds, diagnostic logs and user access logs. A new device configuration enhancement effectively doubles the number of recording channels available for each iMediaLogger. Listen Live offers a real time preview of current recording events through a Web interface. The implementation of a new SQL-based content management system provides iMediaLogger with a high performance CMS platform to deliver content, data and applications to users and groups. Supplementary media can now be distributed through the enhanced Web portal for easy access by users and groups. Advanced integration of AoIP technologies by Wheatstone and Axia provides additional possibilities for audio and control routing.

omt.net

Distributed audio systems | RDL (Radio Design Labs)

D Series-HA1A, D-TPSL1A: The D Series-HA1A is a two-pair receiver and audio headphone amplifier compatible with RDL Format A twisted-pair products. Each -HA1A receives stereo audio and 24Vdc power through a rear-panel RJ-45 jack fed from a Format-A sender. The left and right audio signals received on pairs B and C of the twisted pair cable are amplified and fed to the left and right channels of the output 3.5 mm mini-jack. The D-TPSL1A is the first product in the Format-A system to offer users both a stereo mini-jack and stereo RCA jack input in a single unit. Inputs may be connected using either the mini-jack input or the RCA jacks. Whichever input is used, the left and right channels will be summed to mono. The D-TPSL1A drives only one of the three available cable pairs. Audio signals and power on the remaining cable pairs are passed through. Therefore, two other single-pair mic-input or line-input senders may be chained with the D-TPSL1A, or a single two-pair sender may be connected. If three single-pair senders are connected on the same cable, each sender must feed a different pair: A, B or C.

rdlnet.com

DPS-100D True RMS Digital RF Power Meter

- Models available for all EIA transmission line sizes and include Type N and 7/16"
- Built in back-lit LCD simultaneously displays forward & reflected power, temperature, pressure and status icons.
- Built in web server for remote monitoring & control
- Error status alerts via email (user configurable)
- Browser friendly interface works on most popular browsers
- Suitable for Analog and/or Digital modulation formats and multi-carrier applications.
- Popular interface includes DC Voltage outputs, SNMP, and RS232/485 for connection to most remote control systems.
- Proprietary 3 Strike reflected power protection algorithm

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bdi

2.5/5/10/20 kW CF Series FM Bandpass Filters

- Light Weight Aluminum Construction
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P Cube FM band pass filters are a cost effective way to satisfy your station's filtering or combining needs. Low insertion loss and high rejection make them the best choice for cost-conscious stations.

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P Cube Inc.
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World Radio History

FM radio analyzer | Deva Broadcast

Radio Explorer II: This simple mobile tool evaluates the FM broadcast band congestion and stores all important radio broadcast parameters in a log file. The built-in FTP system allows downloading and managing of the files through Deva Device Manager Software. The fully DSP-based FM radio frontend tuner utilizes the latest technologies in the DSP processing of the FM signal for field surveys and on site monitoring of station complete signal. With just a click on the button, Radio Explorer turns into a tool for analyzing the signal strength and quality after repairs or setup of new equipment. This cost-effective device can measure RF level, MPX deviation, left and right audio levels, RF field strength, RDS and pilot injection levels. All measurements are visualized on easy to read OLED graphical display.

devabroadcast.com

IP audio codec | Tieline Technology

Bridge-IT XTRA: This high-performance STL and multipoint stereo IP audio codec has dual internal power supplies and supports six stereo multi-unicast audio streams over the public Internet. You can also combine Bridge-IT XTRA with Tieline's Report-IT Enterprise smartphone app to create a cost-effective, high-quality remote system. Simultaneous analog and digital AES/EBU audio outputs are provided on XLR connectors and it includes front and rear panel 1/4" stereo headphone outputs. Standard broadcast algorithms include Tieline Music and MusicPLUS, LC-AAC, HE-AAC v.1 and v.2,AAC-LD, AAC-ELD v1 and v2, aptX Enhanced, MPEG Layer 2, G.711, G.722 and MP3 playback. It also features an SD/SDHC card slot for MP2 or MP3 file audio backup.

tieline.com

FM rebroadcast receiver | Inovonics

AARON 650: Aaron 650 operates in either a composite pass-through or composite-regeneration mode.Composite pass-through eliminates retransmission delay (latency), and composite-regeneration lends the ability to completely reconstruct a baseband signal, even altering RDS messaging prior to rebroadcast. The back panel provides dual antenna inputs, dual composite outputs, balanced analog and AES-digital audio outputs, and remote IP access. Rear-panel and self-logging alarms constantly check for audio loss, RF loss, and RDS loss (or "hijacking"). Online notifications can alert personnel with e-mail or instant text messages when any of the alarms occur. The front panel displays left and right audio metering, local LED alarms and has an LCD screen with jog wheel for advanced control and editing of all operating parameters. Failover audio backup is provided via a front-panel SD card or Webstream should a signal go down.

inovonicsbroadcast.com

Cover the entire operation of a radio facility from acquisition to multi-platform broadcast! Manage your media seamlessly.

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World Radio History

"And More" Automation

Beyond scheduling, today's radio automation thinks outside the box.

By Doug Irwin, CPBE DRB AMD

Automation systems have evolved considerably over their decades of existence. At first, all that was needed was the playback of music and perhaps back-announcements and hopefully, commercials. Tape machines, and then tape machines plus cart machines, were all you needed to generate radio station programming — well, those, and a lot of patience.

Over the last 10 years though, those requirements turned into the most basic features. All automation systems out there are going to allow you to do the following:

> Schedule a music log, and playback of songs according to the log
> Schedule commercial content, and playback of spots according to the log
> Log reconciliations, to prove spots ran over-the-air
> In-house voice tracking
> Embedded recorder/editor

Without these five basic features, you don't have a system that is of any use in a real radio station. It's the "and more" that we'll focus on. The reality is, now you have to accommodate voice-tracking that can be done by remote talent; content management features for streaming audio or on-demand features like podcasting; and management of metadata (for now playing features) and perhaps social media functions as well.

I'll start with remote voice tracking and remote content insertion. iMediaTouch (from OMT Technologies) offers an option for its system called RemoteVT Portal. Like an in-house voice tracking system, this one also allows a remote user to drag and drop music intro and fade levels; it offers a music bed pop-in feature, with drag and drop underneath dry voice tracks; and the remote talent can add up to six tracks of sound effects to be mixed in with the dry voice tracks. iMediaTouch offers another option called iMediaImport, which automatically imports station content from a variety of sources, including FTP sites, production houses, network folders, and music and programming services, including NPR's Content Depot. Last but not least I'll mention iMediaAccess, which affords radio groups an interactive, remote interface to station clusters and individual stations within the cluster; modes include one-to-many where a user can access many individual stations or station clusters; many-to-one where many users can access a single station or station cluster; many-to-many where many users can access many stations or station clusters; and finally central-to-many where many users can access a single central facility that provides automated access to many other stations or station clusters.

ENCO's DAD has similar features. For example, in consideration of remote voice tracking, there's no need for uniformity or duplicate libraries on either end. ENCO's Gateway Internet file transfer utility transfers everything needed for voice tracking with surrounding material in headphones to the remote talent. When the remote talent

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NEW

AARON 650

Premium FM Rebroadcast-Receiver

UPDATE

DAVID IV

FM/HD Radio™ Broadcast Audio Processor

Version 3 update adds more features, new controls, and greater sonic power.

NEW

INOmini 402

RDS Sign-Driver/Receiver

Display your station's live RDS messaging for all to see.

Coming to NAB 2014

Booth #C2330

This year at NAB, come see **AARON 650**: a totally-new FM rebroadcast/translator receiver built to handle the most challenging reception scenarios. Listen live to the new **Version 3 features of our DAVID IV** FM audio processor, and see the new **INOmini 402 RDS Sign-Driver** in action.

3 year

MADE IN USA

INOVONICS BROADCAST

World Radio History

NEW...

ARRAKIS SYSTEMS INC.

DIGILINK~HD

Single station or Multi-station network

Scalable, high speed, easy to use, Live on Air & Automation systems for Radio

- Build your audience, and increase sales
- Single station to Multi-site Group
- On Air, HD2, or internet-only
- Encourages talent creativity
- Quick Remote Voice tracking
- Use your Music scheduler or ours
- Multi-sound card Console interface
- Live & Automated Games with Rain delay
- Share audio files across the hall or continent
- 16 stereo Input Routing switcher for Play & Record

powerful and yet AFFORDABLE by all !

For less than the cost of most Support programs you can have Digilink~HD.

As an example...

*** 4 On Air studio Cluster complete...**

only $500 per month

* includes:

Digilink~HD software for 4 on air studios, 4 Bridge docking stations (each has dual stereo sound cards and a 16 stereo input routing switcher), DHD~Tools software for 4 auxiliary studios (Traffic, Production, Voice tracking, more), free telephone customer support, free training at the factory studios, free software Updates and Upgrades... just add PCs, network, and optional Server.

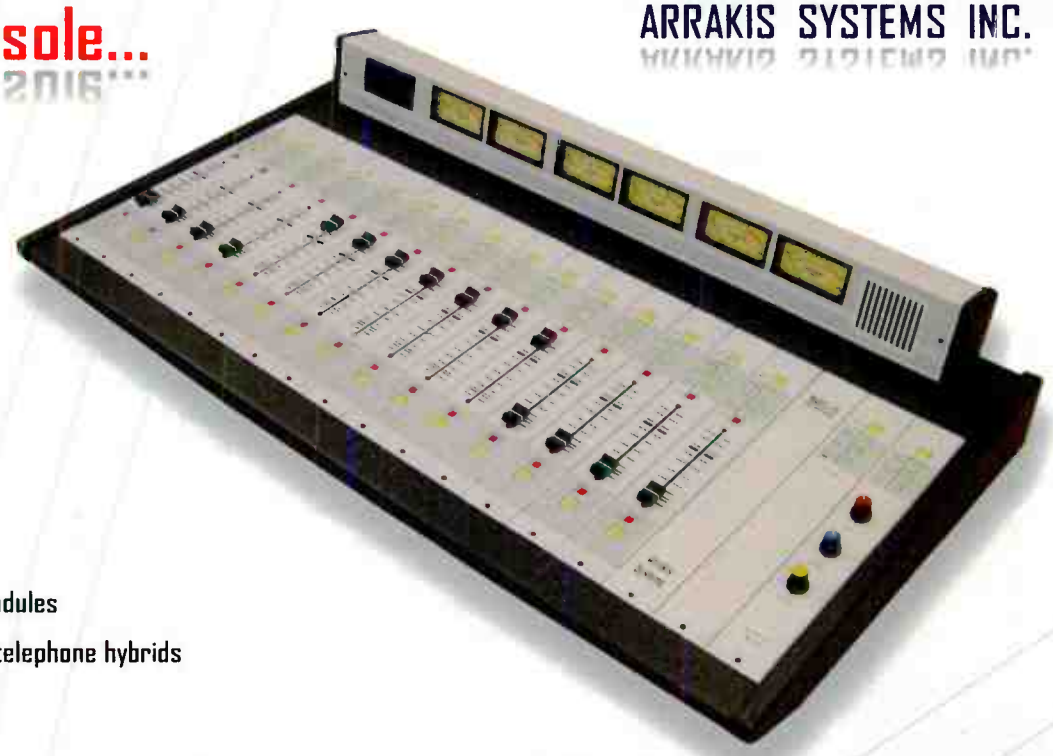
www.arrakis-systems.com

970.461.0730

World Radio History

Modular Radio Console...

ARRAKIS SYSTEMS INC.



MARC-15

- 15 channels, 30 inputs
- 3 stereo Output buses
- Control room & Studio monitors
- Cat5 cabling for today's infrastructure
- Analog & digital with USB sound card modules
- Dual conferencing Mix minus buses for telephone hybrids

the next generation of Analog-digital Radio console

speed ... power ... and control

very low profile tabletop design & fast access to level adjustments and cabling

conductive plastic faders and LED lighted switches for reliability. Socketed ICs for fast on site repair.

The MARC is a next generation analog console that mixes analog and digital technologies with USB PC sound card modules (on air software included) for Windows & Apple *PCs.

For today's cable infrastructure the MARC uses CAT5 cabling and RJ45 connectors (cables included). Three stereo buses, Studio monitor modules, digital Timer, plus dual conferencing phone hybrid mix minus buses handles the big jobs.

list price from **$5,495**

*USB sound card supports USB HID compatible PCs

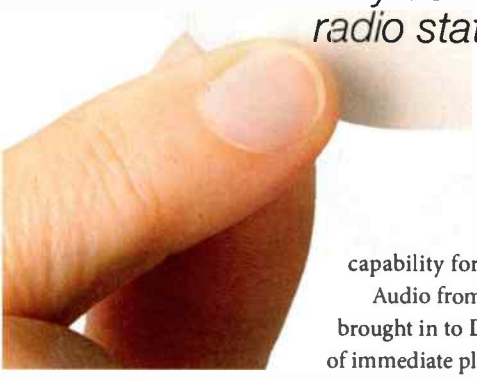
www.arrakis-systems.com

970.461.0730

World Radio History

is finished, Gateway immediately brings it back to the studio in the background. No user intervention is required, and the studio from which it will air can be left unattended. ENCO also has a Remote Voice Tracking Client/Server application that allows the use of central FTP server which can upload/download compressed tops and tails and associated voice tracks. A feature coming soon is the capability for voice tracking via a Web browser.

Without five basic features, you don't have a system that is of any use in a real radio station.



Audio from outside sources can be automatically brought in to DAD, via the Internet, with the capability of immediate playback, even during unattended hours; and, users can record and time-shift news, traffic reports, sports shows, and other weather and network features, with the capability of playing them back, even before they are finished recording.

For remote voice-tracking, WideOrbit (like other providers) allows the remote talent to be in a far-flung studio anywhere in the world. Remote voice tracks can be assigned from anywhere by way of a Web browser. When a music log is complete, the system sends the needed audio to the remote location, and e-mails the remote talent telling him that his shift is ready for tracking. When the remote talent is finished, the audio is automatically sent back to the station. Progress of the remote voice-tracking session can be monitored via a Web browser. WideOrbit also has provisions for remote content entry: Music can be recorded, imported, edited or converted in one location and automatically distributed to all relevant markets; imaging or commercials can be produced in one location and automatically distributed group-wide; non-audio files such as music or traffic schedules can be pushed to other markets as well. Each station can search the audio libraries in other markets, and download audio files directly into their own audio libraries. These tasks can be done via a Web browser on any computer on your WAN. One more interesting feature is WideOrbit's provision for automatic failover redundancy for important file transfers and for offsite storage and disaster recovery with automatic backup of all audio content.

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BSI's Data Repeater works with Simian, Op-X and most other automation systems that output song metadata via TCP/UDP, serial, or to a text or XML file to a hard drive, FTP or Web page. This data can be forwarded to eight TCP/UDP, seven HTTP call, or eight serial destinations. The Data Repeater can also generate three HTML pages using user-created HTML page templates. Once data is received, it can be forwarded in the format received to TCP and/or UDP ports, or reformatted using user-defined templates to any of the available destination types (TCP, UDP, HTTP, HTML, Serial, or command line). Each output profile uses its own template, so each data output profile can have a data format tailored to the specifications of the destination application or hardware device.

In the Broadcast Electronics AudioVAULT FLEX system, voice tracking is handled via an embedded segue editor. Song-voicetrack-song crossfades are created by adjusting the audio gain between transitions. Voice tracks can be recorded from multiple sources at the same time, for the same day; and from a central studio location programming can be syndicated.

RCS' new automation system is known as Zetta, and its Wancasting feature allows for manual or automatic distribution of asset audio and metadata; manual and automatic distribution of logs and voicetracks. It offers a means by which the user can prioritize transfers, making sure audio is delivered on-time. There's no limit to the number of destinations that can be configured in Zetta's Wancasting feature. Zetta voice tracking can be done in a number of ways: For both local and remote stations within the Zetta application itself and for remote sites using a Zetta IVT client; or, with the upcoming Zetta 2.9, using a Zetta2Go application which runs on a PC or Mac in a browser; or on a portable device (IOS, Android). Zetta provides both manual and automatic ways of content management: users can manually import in Zetta using the Media Import tool, drag and drop a file to the UI directly, rip a CD, drop files to a folder for Autoload, or get files from an FTP site. For redundancy purposes, you can have any number of machines on the network receive audio (and hence act as an audio store) and if one machine goes down, the operation of Zetta will not be affected.

IT'S THE DATA

One of the many ways automation systems have evolved over the last 10 years or so is in their capability in sending now playing (and other metadata features) to users of multiple and different content streams. ENCO's DAD system has a feature known as PADapult, which can be used to send this type of data out to 10 destinations simultaneously — for example, for HD Radio, RDS, and now playing for streams, station Web pages, and Twitter. You can schedule messages to be sent, or you can create messages and drop them in to the various content streams.

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STILL MORE CHOICES

Rivendell is a software automation system that gives the end user the ability to acquire, manage, schedule, and playout audio content. It has the many common features: support for PCM16 and MPEG-2 audio encoding/playback (using AudioScience or the Jack audio connection kit (see Jackaudio.org))and full voice-tracking and log customization. Rivendell is available under the GNU Public License. (The GNU General Public License is a widely used free software license, which guarantees end users (individuals, organizations, companies) the freedoms to use, study, share (copy), and modify the software.) Rivendell uses the GNU/Linux Operating system; AudioScience HPI Driver architecture; and, the MySQL database engine. All configuration in Rivendell is done via point-and-click interfaces, and up to three logs can run simultaneously from one computer. Oh – and did I mention that it's completely free and open, without software keys, dongles, or unlock-codes? 24/7 commercial support for the system is also available from Paravel Systems.

Dalet's Radio Suite is a production, playout and distribution system that affords the end-user centralized management of program content and metadata that includes a multi-station, multi-user scheduling engine and store-and-forward distribution platform; advanced recording and editing tools; remote voice-tracking capability; and, automated media distribution of associated metadata for multiple formats and multi-platform delivery systems, including podcasting, streaming, HD radio, DAB/DAB+ radio, and DRM radio.

Netia offers a system called Radio-Assist. Like all of the other automation systems we've covered, it affords the end-user capabilities for ingest, editing, scheduling, broadcast, multicast, archiving, data security and administration, all via a single user-interface. The Radio-Assist GUI allows the user to simultaneously access multiple production modules such as voice-tracking, recording/editing, scheduling,

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RESOURCES

Broadcast Electronics
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Broadcast Software International (BSI)
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Netia
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OMT Technologies
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RCS
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Rivendell
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WideOrbit
wideorbit.com

or management of metadata. Radio-Assist allows for multiple content streams to run in parallel — such as those for broadcast, streaming, and mobile services. Naturally, broadcasts can be done in automated or "live-assist" fashion.

Choosing an automation system for a radio station (or group) is likely one of the most difficult decisions a broadcast engineer is going to make. It's the one system that effects by nearly every department at the radio station, and it's the heart-and-soul of the entire operation. It's a very large capital purchase expected to run every minute of every day for years on end; it's not something you just toss if it doesn't work right. For those reasons the selection process should be comprehensive and thorough — in other words, study all the relevant features, from system to system, and see how they compare. Of course you'll consider your own prior experience with the various makes, and it makes sense to talk to trusted colleagues about their experiences with systems as well.

Irwin is RF engineer/project manager for Clear Channel Los Angeles. Contact him at doug@dougirwin.net.

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A Capitol Move

WUIS public radio puts IP routing to good use.

By Greg Manfroi

Last year, we moved the Illinois Public Radio bureau from a temporary location to a newly remodeled State Capitol Press Room. The previous setup for the Capitol bureau had two workstations with full-size broadcast consoles. The reporters wanted the news bureau to operate like an office with desks rather than a radio studio. We still had to produce broadcast-quality audio for 11 member stations. A weekly half hour forum must be originated with guests who need headsets to hear hosts on the other end of an ISDN line. I chose two eight-channel Wheatstone SideBoard control surfaces because I had installed a WheatNet-IP Intelligent Networkfour years ago to upgrade the studios of WUIS Public Radio located on the campus of the University of Illinois in Springfield.

Each SideBoard has a footprint of 6"×18", and I ordered them in the desktop mount configuration. Each Sideboard controls one of the two virtual mixers in a single I/O Blade, which is similar to an IP node.

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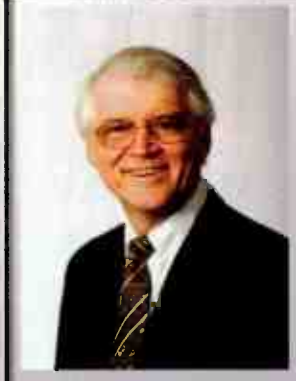
but with more functionality built-in. I made a short tether with strain relief for the CAT-6 and dc power cable so the SideBoards can be moved off the desks by the reporters if desired. This allowed for four microphones, two phone hybrids, one ISDN codec, three audio feeds from other areas of the Capitol, an aux input for a portable device,

The SideBoards are installed at work desks at the state capitol.



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- Greg Pyron, Earls Broadcasting, Branson, MO

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- Wayne Johnson, GM, Media Logic LLC/Sterling, CO

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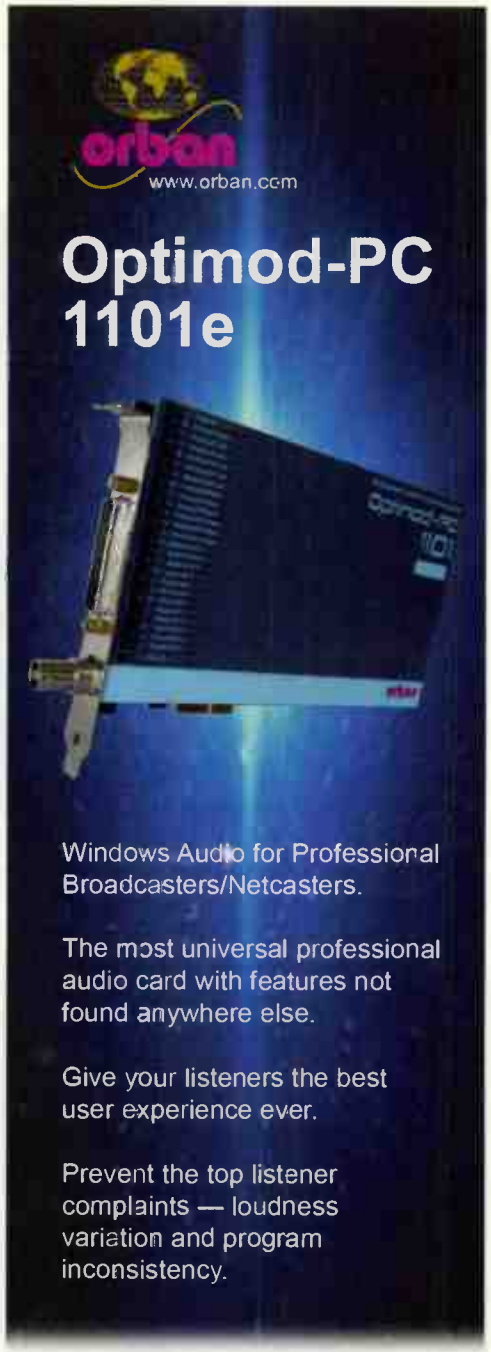
guest headphone feeds, three AoIP drivers for three computers providing four stereo channels of I/O per computer, and two legacy mini disc recorders. The only equipment on a reporter's desk is the SideBoard, two active audio monitors, a microphone, LCD screen, keyboard and mouse. All other equipment resides in a 19" rack on wheels in a corner of the bureau. Using the SideBoard scripts, I illuminate the programmable button LEDs for the hybrid and ISDN sends when active, and flash the button LEDs when the sends have been seized by the other SideBoard so the reporters always have a visual indication of who is feeding what.

Studio A is used for production and live programming.

AN IP FOUNDATION

Four years ago, I decided to install IP audio routing because I figured the system would reduce build time. Four years later, I'm still reducing my build time in just about any project I undertake — and there have been a few.

When I first installed the system, I was concerned about setting up the Cisco switches because I had no prior experience with an enterprise-class switch. Wheatstone assured me it had simple instructions to configure the switches. It actually was simple. The port settings are identical with the only difference being the speed. A port assigned to a physical Blade, which are similar to I/O nodes, is set for 1Gb/s. Ports for everything else on the network (IP drivers, controllers) are set to a lower speed for network efficiency. The first room I completed was a new on-air studio. After the first studio was done, I attacked the remaining studios one at a time, including one studio that consists of an Omnirax table with positions for one host and four guests. The host position has a Wheatstone GP16 panel. These little panels communicate via TCP/IP on an Ethernet connection. They run scripts that make them very versatile. Scripts are created with the script wizard and editor within the GP16P setup software provided by Wheatstone. The GP16 panel allows a program host to switch different sources to the speakers or headphones, provides talk-back to individual studios, and has a cough switch. The panel



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Studio C handles talk shows, interviews and fund drives. The GP16 panel is in this studio.

also controls the host mic and monitor speaker volume (with up/down buttons).

Fast forward a few years: We had a morning host that would sleep through the alarm clock on occasion and be late for the morning shift. I was asked if there was some way I could set something up to alert the host and news director if a warm body was not in the news booth to start morning drive. I use the programmable buttons on the E-6 control surfaces to allow operators to switch any studio direct to air. During morning drive, the news studio is manually switched direct to air by the morning host. An advantage to the programmable GP panel I had in the talk studio was that a script running on it can interact with other parts of the WheatNet-IP system. I added a periodic timer and startup subroutine to the GP16 script. The timer had a function that queried if the signal ID of a source (News Studio Program Buss A) was connected to a destination signal (Input to the Air Chain). If the condition was true, a soft logic input was set to the one state. This soft logic signal was connected to a physical logic signal using the Wheatstone IPNav software. I had a spare Broadcast Tools WVRC-8 remote control available, so the physical logic output was routed through a raise relay on the WVRC-8 remote control before connecting to a status input on the same remote control. A schedule programmed in the remote control closes the raise relay every weekday between 5:40 a.m. and 6 a.m. If the news booth is not routed to the air chain during this window an alarm condition is created and the WVRC-8 dials one of the news lines. The remote control is connected to the POTS line downstream

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Studio is B used for production and live programming.

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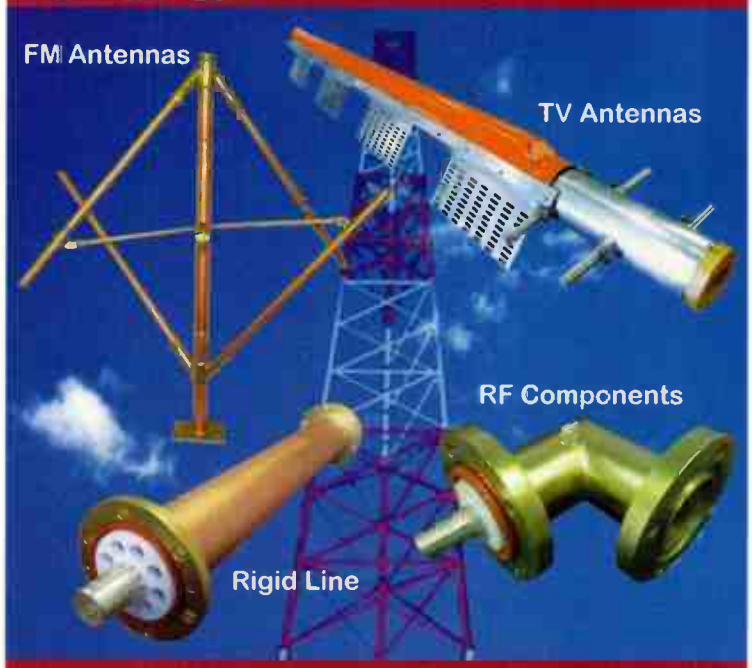

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TOC for WUIS, HD2, HD3 and a reading service

from a Comrex Stac hybrid so there is no possibility the remote control could disrupt a call that is being aired or recorded.

Wheatstone has scheduling software that could make the logic cross point connection only during the time window, but that would have been an extra cost and I already had the WVRC-8 remote control on hand.

STICK TO THE SCRIPT

The GP16 panel comes in handy when experimenting with scripts. I wanted to know if a script could be written to make one of Wheatstone's GP or LCX rack mount panels into an audio switcher with a safety button. I wrote a test script for that purpose and it worked as planned. To return the GP16 panel back to normal I just downloaded the original script back to the panel.

The Wheatstone AoIP drivers are handy in the news booth, and they are about half the cost of a professional four-channel sound card. Instead of having a generic source called

World Radio History

Studio D used for live news and news production

"Computer" I can name the AoIP sources with their function names. On one computer there are separate AoIP sources/destinations for Editor, Skype, Internet and NewsReady.

I had a number of speakers (the angled enclosure type that were ubiquitous on the walls of many radio stations in the 1970s) that were installed by being laid face down on top of drop ceiling tiles throughout the station. I feed them via a Wheatstone Blade output. Normally the speakers are fed audio from NPR's squawk channel. During EAS alerts our Endec decode relay causes a momentary connection to feed EAS alert audio to the speakers. In addition, EAS alert audio interrupts cue audio in every studio. There is a silence sensor that causes a momentary connection of alarm audio to the speakers. The source for the alarm audio is a LM556 timer circuit that emulates the Star Trek "Red Alert" sound. The drop ceiling panels are porous allowing the speakers to be audible everywhere in the station without having retro speakers hanging on the walls.

The IP system has proven to be a good fit for us, providing broadcast quality audio with easy configuration. We will be able to freely expand without disrupting operations.

Manfroi is the chief engineer for WUIS Public Radio in Springfield, IL.

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THE TECHNOLOGY BEHIND WUIS

Wheatstone SideBoard

SideBoard control surfaces in front of the WheatNet-IP network worked perfectly for the young reporters at WUIS-FM who wanted their Illinois State Capitol news bureau to look like an office but operate like the radio studio it is.

These small Wheatstone surfaces have all the necessary console controls, yet are compact enough to sit off to the side of a news desk. Each fader has ON/OFF switch, PGM and AUD bus assign buttons, a programmable button that can be used for source functions such as preset and talkback, plus a switch for accessing the central source selection rotary control.

The SideBoard (available in four- or eight-fader and tabletop or rack-mount models) interfaces to the WheatNet-IP Intelligent Network for accessing sources, triggering command and logic functions, and for routing audio.

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Advertisement

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Tips, Tricks and Hints

by Doug Irwin
CPBE DRB AMD

Test a Microwave Shot at the Receive Site

When building a new 950MHz microwave shot, it's good to know the fade margin you've achieved on the new link. Actually, this is a good thing to know regardless of whether the shot is new or old. Knowing how much signal is getting into the receiver — accounting for all the various losses in the system — can really help in troubleshooting a bad link. You can do this in a couple of different ways, but the easiest is to purchase some 50Ω type-N attenuators (in 10dB, 6dB and 3dB sizes) and simply put them in front of the receiver input, thus attenuating signals coming in. Keep adding attenuators until such time as you either a) squelch the receiver, or preferably b) hit the noise floor in the receiver output that you consider unacceptable for on-air use. (The receiver should squelch there anyway, right?)

I would consider a very strong link to have a 30dB fade margin; 20dB would be a good link; and at 10dB I would probably add an amplifier ahead of the receiver. (Some good sources are Advanced Receiver Research; Angle Linear; and Miteq.) Another thing I sometimes do (using the spectrum analyzer) is to look at other signals coming off the receive antenna on different frequencies. Take some notes on how strong they are, too. If one day you suddenly find that your STL signal is weak, take a look at the others you previously measured. If they've all gone down in level by 10dB (as an example) the problem is the near end. If only your signal has gone down by 10dB, the problem is at the far end. If there are any co-channel or adjacent-channel signals, it's a good idea to take notes about them as well. You would certainly want to know if a co-channel signal suddenly went up in level, or if a new one just showed up one day.

You can extend this idea to the transmit antenna as well. After the link is all up and running, at some point turn off the transmitter, and connect the spectrum analyzer to the transmit antenna, temporarily using it as the receive antenna. Make some notes about what you see coming in from the direction at which it's pointed. The strength of one or more of the received signals might help you troubleshoot path problems at a later date.

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WD-40 and Windex

Recently I was trying to find the bottle of Goo-gone around our shop and I simply couldn't locate it. One of my colleagues pointed out that WD-40 works almost as well – especially in a pinch. You probably would flinch – as did I – at having the unmistakable smell of WD-40 left over on a rack panel or rack shelf. Well, the second part of this trick is that Windex is very effective at removing the WD-40 residue (and its smell).

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Best Ways to Maintain Wiring Documentation

In last month's *Tech Tips*, I mentioned the upkeep of wiring documentation, specifically, using Microsoft Excel. It seems like a no-brainer because there are many good aspects to it: adding headers, columns, rows, pictures, hyperlinks, etc. But I sometimes find the necessity of formatting the cells to be bothersome and I suspect there are other programs better than Excel for this purpose. I'd like to hear your recommendations on a better piece of software for wiring documentation.

We're always looking for Tech Tips, and I know there are a lot out there. If you have some tricks up your sleeve that you'd like to share, by all means send them in! You don't have to write anything fancy; just pass them on to us to share. We'll always give you credit, and you could earn SBE recertification points. Send your tips to radio@radiomagonline.com.

Irwin is RF engineer/project manager for Clear Channel Los Angeles. Contact him at doug@dougirwin.net.

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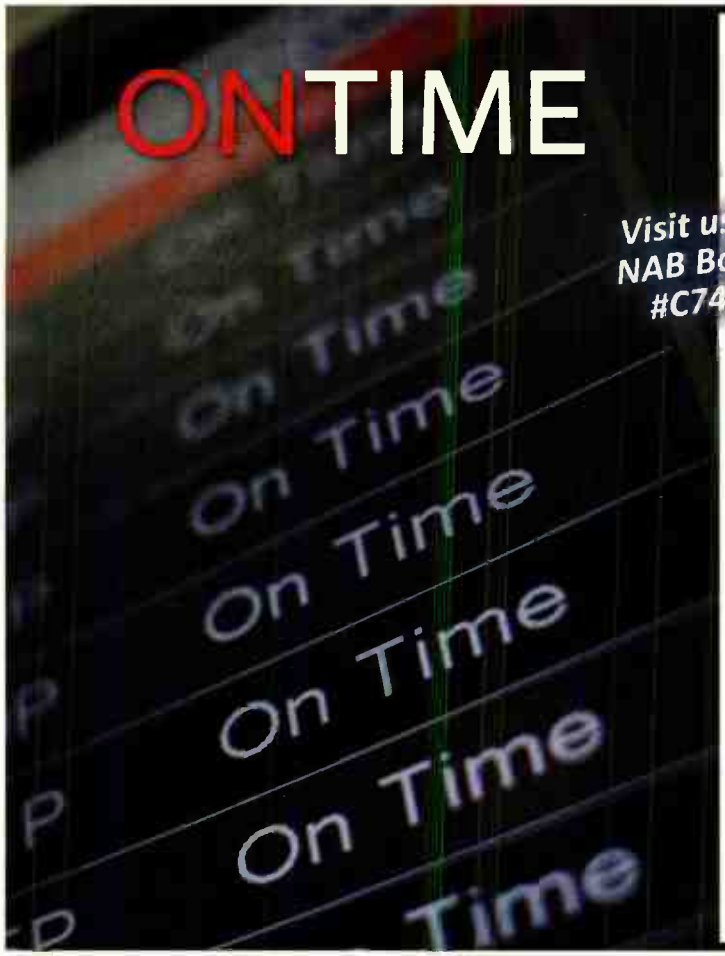

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Cloud Microphones Cloudlifter CL-1

by Chris Wygal, CBRE

The purchase of audio equipment can come as a mixed blessing. While the excitement of new toys is fun, the associated user's manual is sometimes a source of heartburn. Once in a while a plug-and-play product comes along that is easy to install and offers few visits to the accompanying literature. Rarely though does a product arrive with no user's manual! The Cloudlifter CL-1 Mic Activator from Cloud Microphones ships with a 137-word user's guide. Within minutes, you're up and running with an in-line device that adds extraordinary gain and brilliance to your broadcast microphone. It brings clarity and sonic personality out of your microphones that you've never heard before.

The CL-1 measures 4.5" × 2" × 1.5" weighs much less than 1-pound and sports a rugged steel design. With a female XLR on one end and male on the other, the box is to be situated inline between the microphone and input preamp. It has rubber feet for desktop use, and a handy strap for mounting or hiding in precarious locations. The CL-1 requires phantom power to operate, and it does not transfer the phantom power to the microphone. Consequently, it is ideal for ribbon, dynamic, crystal or any microphone that does not use phantom power. It is also compatible with tube, battery or power supply-driven microphones.

The CL-1 uses patented class-A discrete JFET circuitry to increase the microphone output by as much as 25dB. In situations where long cables are used, microphone outputs are low, or the SNR is hard to overcome the CL-1 is a perfect solution. Additionally, many of our favorite broadcast-standard studio microphones sport comparatively low output levels. This forces considerable compensation at the input stage of preamps and processors, which inevitably increases the noise floor. The magic behind the CL-1 is that it increases microphone output but not the noise. During testing, the additional 22dB allowed for less gain at the input of a standard mic processor. The noise from the microphone was not increased, but plenty of microphone signal was (finally!) going into the processor. In addition to the disappearing noise floor, the microphone itself was given a new lease on life, exhibiting new flavors and brilliance. The dynamic mic essentially performed like a condenser, but without the increased pickup pattern and annoying anomalies of a condenser mic!

By way of a wrap up, the CL-1 may very well save many-a-studio from new microphone or processor purchases. Why? Two primary factors involved in microphone replacement are performance and noise floor. The CL-1 drastically improves both. Additionally, for a complete studio microphone overhaul, the CL-1 is available as the CL-4, which makes four channels available in a 1RU box.

Wygal is the programmer and engineer for Victory FM at Liberty University, Lynchburg, VA.

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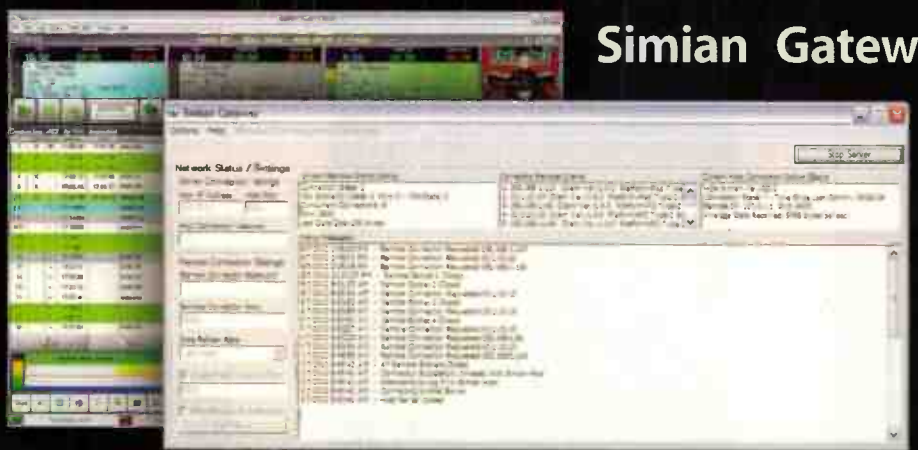

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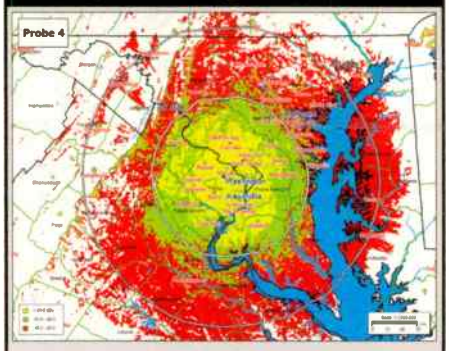

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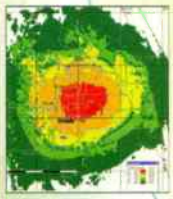

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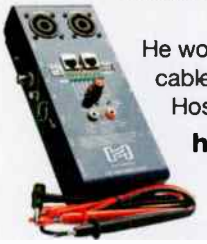

He won a CBT-500 cable tester from Hosa Technology.
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The mic was on the second support post under the ice bridge.

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World Radio History

Traditional Radio Still Strong With Millennials

by Chriss Scherer, editor

In Fall 2013, Edison Research released a research project called The New Mainstream on behalf of the Streaming Audio Task Force, which is a consortium of Pandora, Spotify and TuneIn. Edison has added to the report results with data from the study among the 18-34 demographic.

The study shows — not surprisingly — that changes in media consumption are more obvious in the younger age groups. The study shows that in every location of listening outside the car, online 18-34s are more likely to listen to online radio (including the streams of AM/FM stations) than radio from a traditional transmitter. The study attributes this change to the proliferation of smart phones.

The study also shows that Internet radio usage does not lead to a wholesale abandonment of traditional radio.

Source: Edison Research, The New Mainstream.

90% of online Americans listen to AM/FM radio

53% of online Americans listen to Internet radio

3,014 respondents, 12+

89% of online 18-34 y/o Americans listen to AM/FM radio

90% of online 18-34 y/o Americans listen to Internet radio

18-34 segment of respondents

PERCENTAGE OF 18-34 Y/O LISTENING TO:	PERSONALIZED RADIO	STREAMING LIVE	ON-DEMAND MUSIC
	67%	41%	35%

50 YEARS SBE. 1964-2014 This Month in SBE History

2014 Marks the 50th Year of the Society

THE NAME "ENGINEERS"

At various times there has been debate and even legal action on the use of the term "engineer" regarding the technical work of someone in broadcasting. While it's not currently being widely argued, the debate is not a new one. In the March 1966 issue of the Journal of the Society of Broadcast Engineers, SBE President John Battison noted an upsurge in trying to prohibit the use of the term engineer for those who are not licensed professional engineers.

Battison noted that the FCC had received requests to cease the use of "chief engineer" regarding the technical operator at a broadcast station. Battison, himself a registered professional engineer, argued that the "registration requirement really applies more to consulting engineers who hire themselves to public use ... that can have dangerous effects on public safety." The SBE suggested a letter campaign to all its members protesting the FCC deletion of the term "chief engineer" from official recognition.

Since then, and still today, the SBE has regularly voiced an opinion on the challenges to the use of the term engineer for broadcast engineers.

But the society's role in exclusively serving broadcast engineers changed in a short time. At the March 1969 board meeting, discussions began on whether cable TV engineers should be allowed to join the society. Without any language in the by-laws prohibiting their membership, it was determined that those individuals who were not specifically radio or TV broadcast engineers would be allowed to join if their experience so warranted membership.

CERTIFICATION

SBE Certification has become a cornerstone of the society's efforts. But certification was not part of the foundation of the group's effort. Initially, the SBE wanted to bolster FCC individual licensing with stricter requirements and rules requiring stations to employ certain operator license classes. But the FCC had a different view, and in time, individual licensing was slowly dismantled.

At the March 1973 board meeting, the idea to finally consider a non-regulatory approach to individual licensing was raised by board member Gene Hill. The idea was to specifically cover the skills of a broadcast engineer and not those who work outside broadcasting.

The idea did not take hold initially, as the SBE continued to push for mandatory licensing. But it was only two years later that the SBE finally approved its program of certification.

FCC FILINGS

At the March 1968 annual membership meeting, the SBE took its first steps in influencing the actions of the FCC, specifically, the SBE would begin to "take part in the day-to-day activities of the FCC ... [and] We should start expressing our opinions on the rulemaking decisions that are always going to the FCC.

While this marked the fist announcement of the society's intent, it would still be some before the SBE actually filed anything with the FCC.

Historical source: The History of the Society of Broadcast Engineer, 1964 - 1981, *by Bradley L. Dick, CPBE.*

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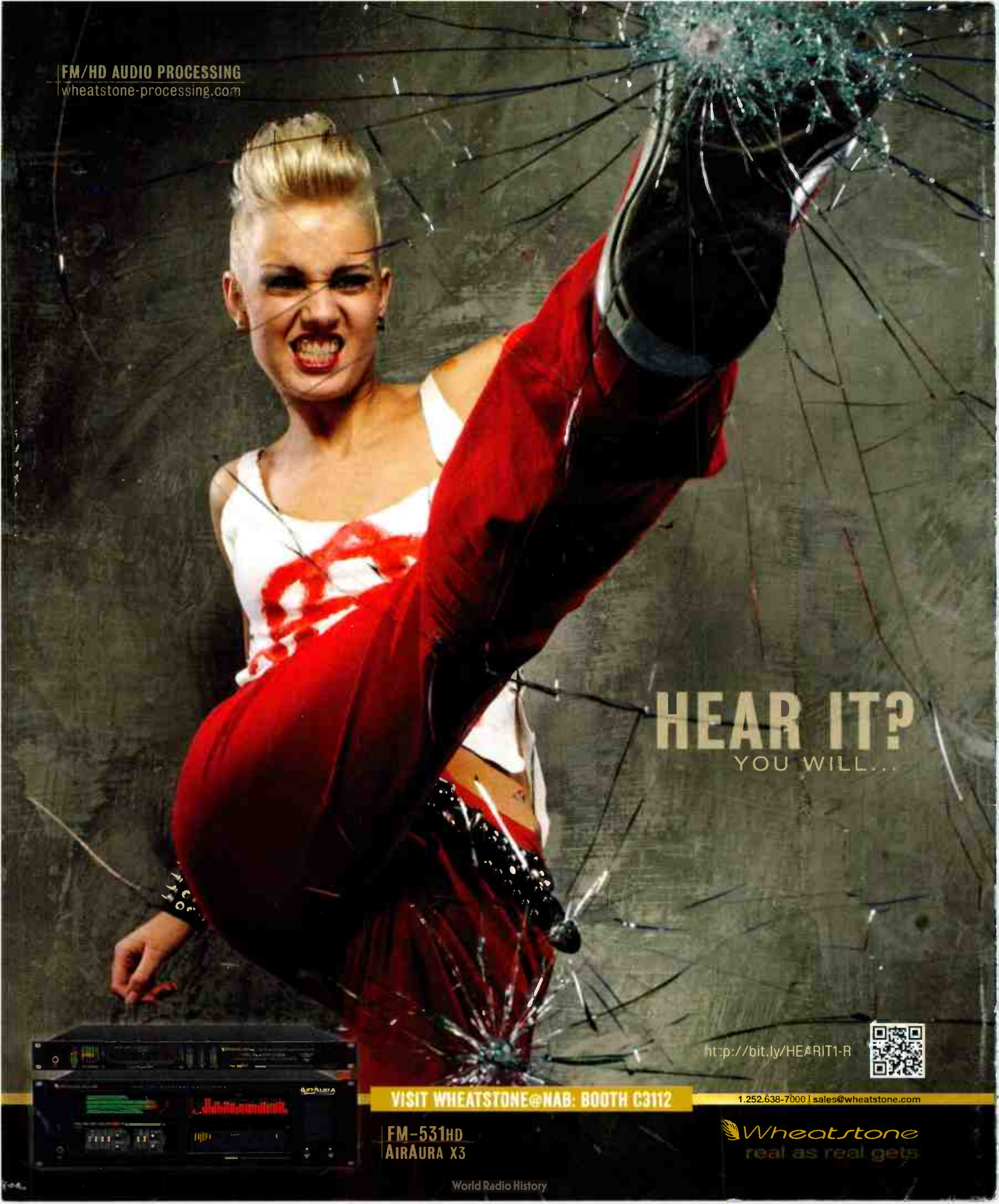
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