

# RADIO WORLD

Your guide to radio technology

radioworld.com | July 6 2022 | \$5.00



## Radio in the hybrid age

Laptops and smartphones are the new stars of this trend in station operations.

### What's the word on Descript?

This multimedia software does plenty that is useful for radio applications.

### Tips in Workbench

Tower signs, free meters, saddle air conditioners and more.

### Mixing it up

Buyer's Guide features consoles and mixers from eight leading manufacturers.



0000044488

DAVID GLEASON  
CONSULTANT & MUSIC SPECIALIST  
UNIMISION RADIO  
80980 BELLEVUE  
LA QUINTA CA 92253-5647  
P0002

#BXNNTQJ \*\*\*\*\*AUTO\*\*3-DIGIT 922  
#0009751 9# RDWA 0009751 E2111  
|||||



## WEBDAD 3.0

Radio Automation accessible from your browser. Schedule a demo today!

# It couldn't be easier...

*16 Channel Console Shown*



▲  
THE ENGINE

▲  
YOUR ENTIRE STUDIO I/O

▲  
THE FUTURE  
Expanded I/O or  
More Networked Studios

100% WHEATNET-IP COMPATIBLE



THE INTELLIGENT NETWORK

Made here in New Bern NC

**AUDIOARTS ENGINEERING**  
PRECISION ENGINEERED

**FOLLOW US**

www.twitter.com/radioworld\_news

www.facebook.com/RadioWorldMagazine

**CONTENT**

**Managing Director, Content & Editor in Chief** Paul J. McLane,  
paul.mclane@futurenet.com, 845-414-6105

**Content Producer & SmartBrief Editor** Elle Kehres,  
elle.kehres@futurenet.com

**Technical Advisors** Thomas R. McGinley, Doug Irwin

**Technical Editor, RW Engineering Extra** W.C. "Cris" Alexander

**Contributors:** Susan Ashworth, David Bialik, John Bisset, Edwin Bukont, James Careless, Ken Deutsch, Mark Durenberger, Charles Fitch, Donna Halper, Alan Jurison, Paul Kaminski, John Kean, Gary Kline, Larry Langford, Mark Lapidus, Michael LeClair, Frank McCoy, Jim Peck, Mark Persons, Stephen M. Poole, James O'Neal, John Schneider, Dan Slentz, Dennis Sloatman, Randy Stine, Tom Vernon, Jennifer Waits, Steve Walker, Chris Wygal

**Production Manager** Nicole Schilling

**Managing Design Director** Nicole Cobban

**Senior Design Directors** Lisa McIntosh and Will Shum

**ADVERTISING SALES**

**Senior Business Director & Publisher, Radio World**

John Casey, john.casey@futurenet.com, 845-678-3839

**Publisher, Radio World International**

Raffaella Calabrese, raffaella.calabrese@futurenet.com, +39-320-891-1938

**SUBSCRIBER CUSTOMER SERVICE**

To subscribe, change your address, or check on your current account status, go to www.radioworld.com and click on Subscribe, email futureplc@computerfulfillment.com, call 888-266-5828, or write P.O. Box 1051, Lowell, MA 01853.

Licensing/Reprints/Permissions

Radio World is available for licensing. Contact the Licensing team to discuss partnership opportunities.

Head of Print Licensing Rachel Shaw licensing@futurenet.com

**MANAGEMENT**

**Senior Vice President, B2B** Rick Stamberger

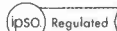
**Vice President, Sales & Publishing, B2B** Aaron Kern

**Vice President, B2B Tech Group** Carmel King

**Vice President, Sales, B2B Tech Group** Adam Goldstein

**Head of Production US & UK** Mark Constance

**Head of Design** Rodney Dive



**FUTURE US, INC.**

130 West 42nd Street, 7th Floor, New York, NY 10036

All contents ©Future US, Inc. or published under licence. All rights reserved. No part of this magazine may be used, stored, transmitted or reproduced in any way without the prior written permission of the publisher. Future Publishing Limited (company number 02008885) is registered in England and Wales. Registered office: Quay House, The Ambury, Bath BA1 1UA. All information contained in this publication is for information only and is, as far as we are aware, correct at the time of going to press. Future cannot accept any responsibility for errors or inaccuracies in such information. You are advised to contact manufacturers and retailers directly with regard to the price of products/services referred to in this publication. Apps and websites mentioned in this publication are not under our control. We are not responsible for their contents or any other changes or updates to them. This magazine is fully independent and not affiliated in any way with the companies mentioned herein.

If you submit material to us, you warrant that you own the material and/or have the necessary rights/permissions to supply the material and you automatically grant Future and its licensees a licence to publish your submission in whole or in part in any/all issues and/or editions of publications, in any format published worldwide and on associated websites, social media channels and associated products. Any material you submit is sent at your own risk and, although every care is taken, neither Future nor its employees, agents, subcontractors or licensees shall be liable for loss or damage. We assume all unsolicited material is for publication unless otherwise stated, and reserve the right to edit, amend, adapt all submissions.

Radio World (ISSN: 0274-8541) is published bi-weekly with additional issues in February, April, June, August, October and December by Future US, Inc. 130 West 42nd Street, 7th Floor, New York, NY 10036. Phone: (978) 667-0352. Periodicals postage rates are paid at New York, NY and additional mailing offices. POSTMASTER: Send address changes to Radio World, PO Box 1051, Lowell, MA 01853.



Future plc is a public company quoted on the London Stock Exchange (symbol: FUTR) www.futureplc.com

Chief executive **Zillah Byng-Thorne**  
Non-executive chairman **Richard Huntingford**  
Chief financial officer **Penny Ladkin-Brand**  
Tel: +44 (0)1225 442 244



**Please recycle.** We are committed to only using magazine paper which is derived from responsibly managed, certified forestry and chlorine-free manufacture. The paper in this magazine was sourced and produced from sustainable managed forests, conforming to strict environmental and socioeconomic standards. The manufacturing paper mill and printer hold full FSC and PEFC certification and accreditation.

# A solid return for PREC

## Fresh faces and a successful scholarship effort



**Paul McLane**  
Editor in Chief

I've been doing this long enough to remember reporting on the launch of the Public Radio Engineering Conference and the subsequent creation of the Association of Public Radio Engineers. So it's gratifying to see the organization doing well, including attracting some new blood.

APRE President Victoria St. John said PREC attendance was higher

than in 2019.

"When the executive committee and I were talking and thinking about what success would look like, we thought 'Well, if we can get even 30 people to sign up that would be success,'" St. John told Radio World's Elle Kehres.

"Just getting it back together was really important to us. We ended up with 114 people, 30 online and the rest in person."


St. John, director of operations for Vermont Public Radio, said, "The highlight of this conference for me and for the board was the amount of scholarship winners that came to the conference and also remotely experienced it. Our partnership with NPR sent around 27 young — not necessarily chronologically but new to the engineering community — people to the conference."

She said our industry's focus on multiplatform delivery can make recruitment difficult.

"The types of brains that it takes to be a broadcast engineer are now being pulled in other directions, to other bright, shiny opportunities."

APRE this year presented 11 scholarship opportunities for people to attend PREC in person, including hotel and airfare, or remotely — the most ever.

"That's huge. Bringing new blood into the industry is so important," St. John said.

Shown below are APRE's board, from left: Victoria St. John, Jonathan R. Clark, Pierre Lonewolf, Jim Gray, Bill Bennett, Elizabeth Acle, William Dahlstrom, Scott Hanley, Shane Toven and Darrell McCalla. 



## THIS ISSUE

**NEWS**

**3** From the Editor

**4** Newswatch

**5** Hybrid station operations are here to stay

**FEATURES**

**10** Workbench: Fred gives us a sign ... from 1991

**14** Descript is a powerful audio tool

**BUYER'S GUIDE**

**20** Wheatstone Toucher & Rich supports

**22** CH Media mines a diamond

**23** Axia Quasar XR impresses at EMF

**24** Reading service deploys Arrakis boards

**26** Type R is Calrec's radio flagship

**OPINION**

**29** Let's talk streaming, surround and upmixing





## Use Ch. 6 for Real Radio, NPR Says

As the FCC ponders a final decision about the future of Franken FMs, National Public Radio senses an opportunity to create new noncommercial educational radio stations.

The commission has opened a notice of proposed rulemaking on the future of FM6 stations, those low-power digital television stations whose analog audio can be received by radios at 87.75 MHz.

NPR submitted an idea that piggybacks on whatever conclusion the FCC eventually adopts. It proposes to repurpose Channel 6 spectrum (82–88 MHz) for new FM services in locations where those channels are not being used to provide “actual television programming” by Channel 6 LPTV and full-power stations.

The idea of using spectrum just below the current FM band for new radio services has been bruited before but never gained serious traction.

But with the commission apparently open to allowing LPTV stations to use that spectrum for radio services not originally foreseen by the regulators, NPR is raising the issue afresh.

Thirteen FM6 stations are operating with STAs allowing them to use a hybrid configuration of ATSC 3.0 digital and a separate analog FM radio transmitter as an ancillary service. NPR believes this is contrary to statute and poor public policy.

“NPR maintains that the spectrum occupied by a single TV Channel 6 station could potentially accommodate up to 30 new FM stations,”

the FCC wrote in its NPRM, “exponentially increasing the variety of programming available for a diverse audience.”

NPR believes repurposing the spectrum would be a “far better use of a scarce resource” than FM6 audio operations. “NPR also argues that it would increase the opportunities for diverse providers to provide local public interest programming for unserved and underserved audiences, especially in the rural parts of the country.”

The commission asked for comment, noting that “Today’s FM radio receivers cannot tune down to the rest of the (proposed radio) spectrum, 82.1–87.5 MHz. We invite comment on how this technical roadblock should influence our consideration of this issue.”

Among other questions the FCC asked is whether such stations should be limited to noncommercial educational purposes, and whether interference would be a concern. The commission is taking comments about this and many other questions surrounding FM6 stations in Docket 03-185.



Above Read James O’Neal’s three-part series about FM6 online at [tinyurl.com/franken-6](http://tinyurl.com/franken-6).

# control who's in control

# BURK TECHNOLOGY

Control who has access to your remote sites with Arcadia by Burk. Designate rights for individual channels or for entire sites or regions. Each user gets only the access they need.

Arcadia is built for security minded broadcasters. Each remote site connects to Arcadia via encrypted TCP/IP. Users connect using HTTPS.



Call us at **866-903-2157** or visit [www.burk.com/arcadia](http://www.burk.com/arcadia)

**MADE IN THE USA**



Getty Images/JDawnlrk

## Writer



Randy J. Stine

Radio World's lead news contributor wrote about supply chain problems in our previous issue.

# Hybrid station operations are here to stay

## Remote work innovations becoming permanent

**Y**ou've seen those clever and sometimes comical return-to-work memes on social media, and IRL — in real life — most radio station staff are back in the building.

But it's clear that the pandemic transformed how many radio stations operate. Remote hardware and IT best practices took on unprecedented importance as work from home became commonplace. Technology experts say their companies are still utilizing hybrid mechanisms and that in many cases, tech innovations have made their broadcast operations more flexible and secure.

The massive WFH shift in broadcast created a need for larger bandwidth infrastructure, remote computer management, additional firewalls, antivirus/malware management systems and new access policies. There also has been an increased focus on virtualization and cloud technologies.

Broadcast engineers and IT staff were forced to embrace technology to make hybrid operations as easy and automated as possible at their clusters.

"The real stars of this effort, aside from our amazing employees and technical staff, are the laptop computer and smartphone," said

Mike Everhart, corporate director of engineering for Alpha Media. "The availability of cloud-based applications and mobile apps to support our workflows made it an easy transition."

He says the company is now better positioned to overcome the major workflow issues COVID caused

"Hardware and software designed for the mobile environment makes it happen — laptops, smartphones, audio codecs; USB-capable microphones and audio interfaces in the workers' hands; and VPN-accessible, web-enabled or cloud-based applications like traffic



## Station Operations

scheduling, automation playout and office suite tools," he said.

### Labor-intensive

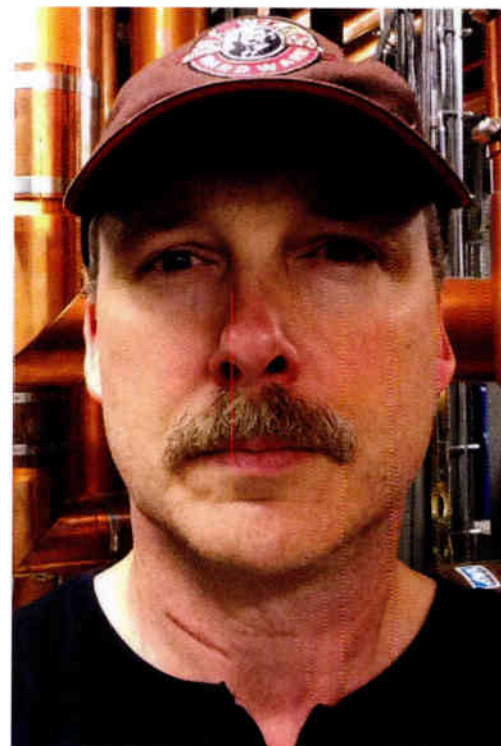
All-news radio operations were especially challenged at the height of the pandemic because of the manpower needed to run those stations. Social distancing for large staffs in on-air studios still has to be considered.

"We now look at everything we do through the WFH prism," said George Molnar, senior director of technology for Washington's WTOP(FM) and Federal News Network.

"We're migrating to Microsoft 365 in part to provide in-the-cloud access and remote collaboration tools. We've deployed scores more laptops. Our meetings routinely feature a dial-in line for staff who are working remotely. We've beefed



Photo by Jim Peck



“The real stars of this effort, aside from our amazing employees and technical staff, are the laptop computer and smartphone.”

up our remote transmitter control systems, too.”

Molnar says the IT and engineering staffs developed realistic and practical mitigations, utilizing equipment like Comrex Access units and Skype, to get the job done during the pandemic, which led to more flexibility without adding unnecessary costs and complexity.

“Even today our hybrid world has reporters, who would have normally come to the on-air studio and sat at a microphone, but instead are now reporting remotely from a nearby small studio in the newsroom. They're more comfortable, and in some cases the lack of a commute gives them more time to develop their stories. This new model may actually be better than the old way,” Molnar said.

As of May 2022, some staffers continued to work from home but 90% of the team was back in the studios.

“Turns out some reporters are secretly geeks who have substantial setups at home. This, coupled with their willingness to help others, made the transition to WFH way easier and identified a resource for future needs.”

### Security focus

Lamar Smith, vice president of engineering for Beasley Media Group, says as the pandemic unfolded the company deployed a large number of laptops to accommodate working from home.

“Along with deploying laptops came an increased security risk

**Above**  
Lamar Smith and  
Mike Everhart

to our computer networks and infrastructure. This required upgrades and changes; some examples are our VPN services, hardware monitoring, hardware tracking, and monitoring of use of the equipment were all deployed,” Smith said.

“These types of items are all critical to keep a heightened approach to the cybersecurity risks that we all face in today's world.”

Beasley Media Group has most of its employees back in the office, Smith said, but it implemented several measures to allow for occasional hybrid operations when necessary.

The company was in the middle of deploying WideOrbit Automation for Radio across its markets just as the pandemic began, Smith said. Being a



### Are You Hybrid?

Tell us how hybrid working arrangements have affected your company.  
Email  
[radioworld@futurenet.com](mailto:radioworld@futurenet.com)



# GO LIVE

## Anywhere, Anytime

**Wherever you need to broadcast from, the ViA delivers rock-solid live audio anywhere, anytime.**

The Teline ViA can be used to stream live from anywhere, anytime. Call the game live from the stadium, or off-tube from the studio, or even your own home! With up to 7 IP interface options and 3 independent bidirectional audio streams, plus record, playback, AGC, EQ and compression - the ViA has you covered for even the most complex and demanding setups.

((( ViA )))

**Teline**   
The Codec Company

Americas: +1-317-845-8000 | International: +61-8-9413-2000 | [tieline.com/contact/](http://tieline.com/contact/)



## Station Operations

beta tester for the software company allowed for some creative thinking.

"WideOrbit was able to get development very quickly in place for us to use their new remote client software, which allowed staff to interact with our WideOrbit system with all the same familiar software screens that they have been using in our studios," Smith said. "This has become our standard way of voice-tracking and will remain in place."

All of that remote work created obvious cybersecurity concerns, Smith said, which meant beefing up security with new VPN services and multi-factor authentication along with very strict firewalls.

"The ways of handling remote on-air personalities, and how their content is delivered, have been innovative, and the effects will be felt going forward," he said.

Will such changes mean Beasley needs studios with a smaller footprint in the future? Smith doesn't see the pandemic or hybrid work solutions as "changing the landscape or size" of the company's studios, but he does expect more use of products to add content remotely.

"These items won't be to replace the in-studio operations, but instead, items that will enhance our content."

### New normal

Sarah Foss, chief technology officer at Audacy, says the media company had to address data privacy and security at the onset of WFH and implement new processes and train staff to ensure compliance. "We still have a number of home-infrastructure issues that plague our help desk," she said.

Foss, Smith and Molnar participated in an NAB Show session on this topic. Foss said Audacy has shifted a

number of enterprise and operational technologies to virtual and cloud-based to accommodate the ongoing shift to hybrid work.

"For instance, we have recently replaced our entire phone systems to Zoom including business lines for our teams. This, like our shift to heavy use of cloud IT and production tools, allows us to leverage talent wherever they may be in a secure, standardized manner," Foss said.

Audacy's technical teams created "bubbles" in each station at the start of COVID and used the Slack app to create chat rooms. The company continues to utilize cloud computing strategies as it emerges from the pandemic.

"Cloud is here to stay. Hybrid is the way forward. Period. With our talent, brand managers and production teams working from multiple locations, we have seen creativity and innovation from these groups that we want to leverage across markets," Foss said.

And as the radio business radically changes based on listeners' needs, content capabilities and technology innovation, Foss said: "All the Audacy radio markets, digital operations, podcasting studios and gaming company recognize that we must lean in to change with our expectations, systems, work environment and priorities to meet our listeners where they are." 🌐

**Below**  
George Molnar  
and Sarah Foss

“ Turns out some reporters are secretly geeks who have substantial setups at home. ”



Photo by Jim Peck



Photo by Jim Peck

### WE LOVE RADIO

It touches us. It unites us.

It brings us hope and helps us feel less apart.

**THANK YOU FOR BROADCASTING.**

Trust that we're here to support you.

Worry-Free  
Transmission

Become  
Radio  
Matters

nautei



# SR

POWERED BY SIMPLICITY.  
ENGINEERED FOR EASY.



 **QUASAR**

Cutting the learning curve means creating more content. You'll broadcast with more flexibility and ease with a streamlined surface design and intuitive, revolutionized workflows. Elegantly engineered to be easy for any user, from seasoned pro to guest operator, Quasar SR delivers exceptional value through cost-efficiencies, reliability and simplicity.

Discover how the Quasar SR delivers broadcast performance that makes our customers' lives easier and audio better.

[TelosAlliance.com/QuasarSR](http://TelosAlliance.com/QuasarSR)

 **Telos  
Alliance**

TelosAlliance.com | [inquiry@telosalliance.com](mailto:inquiry@telosalliance.com) | +1.216.241.7225

World Radio History



John Bisset

CPBE

With more than 50 years in broadcasting, the author is in his 32nd year writing Workbench. He handles western U.S. radio sales for the Telos Alliance and is a past recipient of the SBE's Educator of the Year Award.



## Fred gives us a sign ... from 1991

Unwanted visitors will have a reason to think twice

If you've attended an SBE Ennes Workshop, you probably have met Fred Baumgartner, who unselfishly has devoted countless hours of time to the society.

Now retired, Fred recently visited a transmitter site that he built a million years ago (well, maybe 30), for the first time in decades.

Back then, Fred thought the sign shown here might be a good idea and would help prevent vandalism. As far as he knows, it has achieved that goal for all these years.

A 2022 version of the sign might drop the tower information, since you ID towers these days, as you know. The reference to videotape is dated, of course; and Fred wonders if anyone would answer a telephone these days.

Lots of big lights also illuminate the building at night — there's nowhere to hide.

Fred hid the camera, an inexpensive model, in a PVC pipe that looked like a vent; it had a great view.

The return path was for ENG, so rather than send color bars back to the station, it was the camera feed. There were also cheap cameras in the building itself, so you could see smoke or an intruder. This was all before IP, of course.

The point of Fred's sign was to make sure that folks with bad intentions were aware that someone ... a real person

... was keeping an eye on things and might hunt a would-be vandal down if they misbehaved.

Fred's experience is that without a sign like this, a concrete block fortress can seem mysterious, depersonalized and isolated — a tempting target and possibly unmonitored.

Of course if someone really wanted to shoot out the tower lights or steal the copper, they could do it. But like your front-door lock at home, the sign is about keeping good people good.

### Free meter

Portsmouth, R.I., engineer Ihor Slabicky saw our mention in the May 11 column of the Darkwood website and their free volume indicator applications.

Ihor reminds us that engineers can visit the Orban website for a free meter as well. The URL to download your Orban Loudness Meter is [www.orban.com/meter](http://www.orban.com/meter). (Quick quiz: What does URL stand for? Answer at the end.)

### Well, aren't you a site ...

Speaking of URLs, Paul Sagi writes from Malaysia with an interesting site: .



### Send Us a Sign

Your tips help guide others on their journeys through radio. Email [johnpbisset@gmail.com](mailto:johnpbisset@gmail.com).

Above

An informative warning sign to dissuade vandals.





**Far left**  
The OSLO Mini-Split Air Conditioner straddles the windowsill.

**Left**  
This desk stand with adjustable height and angle promises to provide comfortable viewing.

**Below**  
This freeware loudness meter is offered by Orban.

PCrisk is a cyber-security portal, informing internet users about the latest digital threats. The content is provided by security experts and professional malware researchers.

For instance an interesting article on malware removal can be found at [www.pcrisk.com/how-to-remove-spyware](http://www.pcrisk.com/how-to-remove-spyware).

Meanwhile Dan Slentz has another site you'll want to visit. Engineers are expected to fix everything, right? Well, this site offers free repair guides for "everything," written by everyone!

You'll find repair assistance for PCs, phones, electronic gear, household products, cameras, even medical products, with nearly 90,000 manuals. Sorry, no transmitters ... yet!

The URL is simple: [www.ifixit.com/](http://www.ifixit.com/).

## Keepin' it cool

Dan also read about a small 6,000 BTU mini-split air conditioning system by Oslo. He writes that small stations or low-budget operations can face cooling issues in makeshift studios. The issue is the sound generated by a typical wall-mount or window air conditioner. This model isolates the compressor and exchanger from the blower.

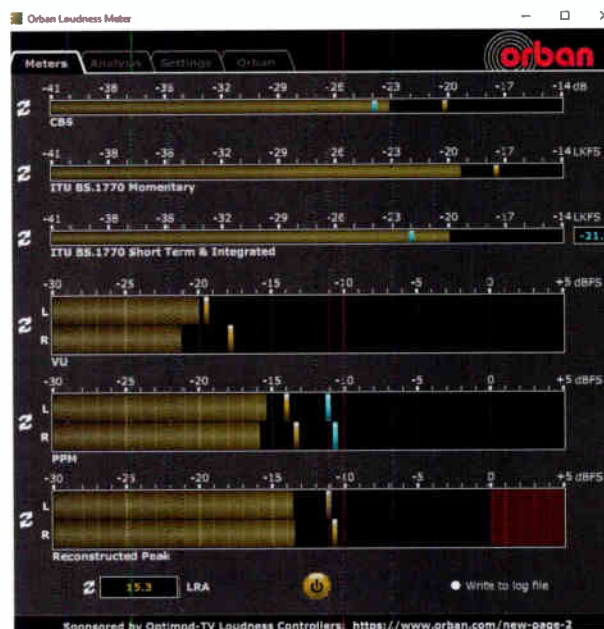
As you can see in the figure, the device straddles your windowsill. The cost is under \$600.

One useful feature is resumption of operation if there is a power failure. The Oslo fits windowsills with up to an 11-inch clearance.

For more information, search "Saddle Air Conditioners" at <https://surfingrhino.com/>.

## LISEN up


More and more phones and tables are finding their way into studios. Dan also found a useful cellphone/tablet stand for under \$20 on Amazon. It accommodates thick cases, has a weighted base and is compatible with both mobile phones iPads or tablets.



Enter "LISEN cell phone stand" in the Amazon search block.

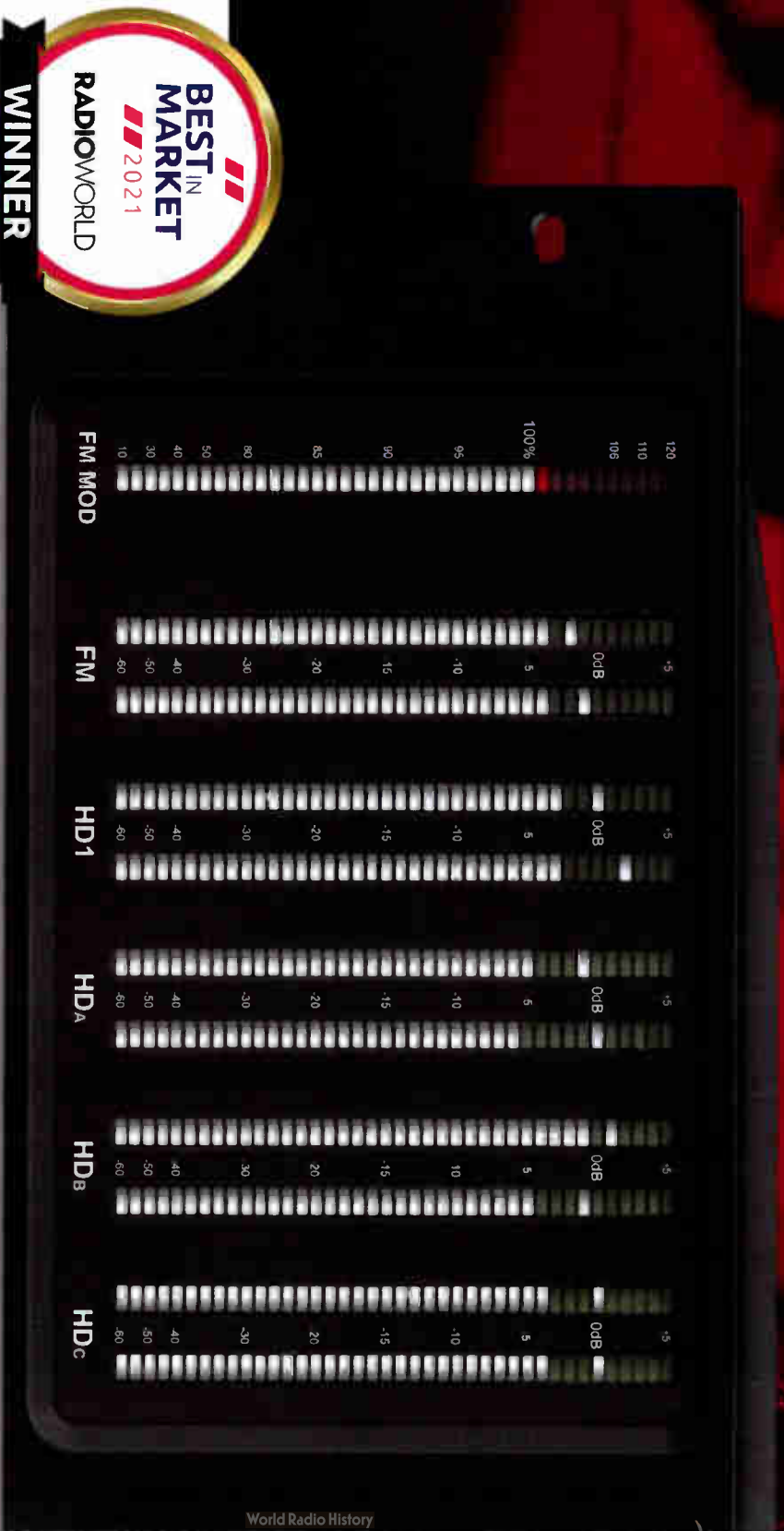
## Quiz answer

URL stands for Uniform Resource Locator. As explained by the site [developer.mozilla.org](http://developer.mozilla.org):

"A URL is nothing more than the address of a given unique resource on the Web. In theory, each valid URL points to a unique resource. Such resources can be an HTML page, a CSS document, an image, etc. In practice, there are some exceptions, the most common being a URL pointing to a resource that no longer exists or that has moved. As the resource represented by the URL and the URL itself are handled by the Web server, it is up to the owner of the web server to carefully manage that resource and its associated URL." 

# NEW MODEL 551

## HD Radio Modulation Monitor



## ADVANCED FM & HD RADIO SIGNAL MONITORING

- ▶ 3U package features a 7-inch touch screen display & wide-range LED level meters
- ▶ Displays HD Radio™ album artwork & station logos on the front panel display and Web interface
- ▶ Measures real-time audio diversity delay between the FM and HD1 broadcast
- ▶ Off-air program audio available simultaneously FM & HD1 – HD4 as L/R-analog, AES3-digital and Dante® AES67 AoIP streaming

### WHY INOVONICS?

- Quality Solutions. Competitive Prices.
- Quick to install. Easy to Program.
- Three-year Factory Warranty.
- Quality after-sales service.



# WHAT RADIO ENGINEERS ARE SAYING

*What a terrific product. When we were developing HD Radio I believed we needed an IBOC quality monitor, **this surpasses anything that I envisioned.** Terrific job.*

**- GLYNN WALDEN**

Founding Partner & VP Engineering USADR/iBiquity



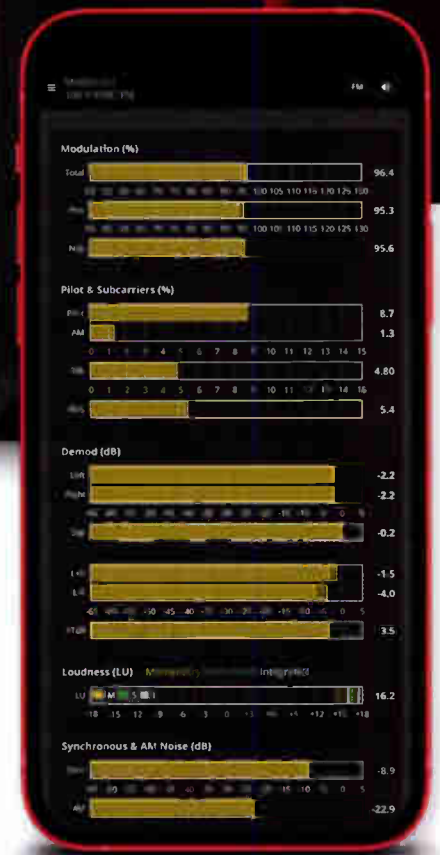
551 & 552  
Responsive  
Web Interface

MODEL 551 - HD Radio Modulation Monitor

ALSO AVAILABLE MODEL 552



FOR REMOTELY OPERATED SITES



551 REAR I/O



PRODUCT PAGE



www.inovonicsbroadcast.com  
sales@inovonicsbroadcast.com  
831-458-0552



Writer



Dan Slentz

The author has more than four decades of technical and on-air experience in radio, TV, cable and AV including service at AFN (AFRTS) in Spain while serving in the U.S. Air Force.



Learn More

There is a plethora of training videos and explanations about Descript on YouTube, and its website [www.descript.com](http://www.descript.com) contains a lot of useful, impressive information.

# Descript is a powerful audio tool

"All-in-one video/audio editing, as easy as a doc"

**T**he fields of radio broadcasting and podcasting are not quite siblings, but in many respects they're not much farther apart than cousins. Equipment can overlap, and sometimes the same software is used.

Designers of products for podcasters often assume that an operator will be less experienced or skilled. It's not necessarily the case; but innovations can make new software and hardware more intuitive for people not accustomed to technology.

One innovative piece of software is Descript.

Designed for MacOS (10.11) or Windows 10 (and later), it's an all-in-one offering that provides video editing, audio editing, auto transcription and many features. It's marketed for podcasting, video editing, screen recording and transcription applications.

Though the basic version is free, additional transcribing can cost \$12 and up per month, with a discount for a year prepaid. There are "Creator," "Pro" and "Enterprise" levels.

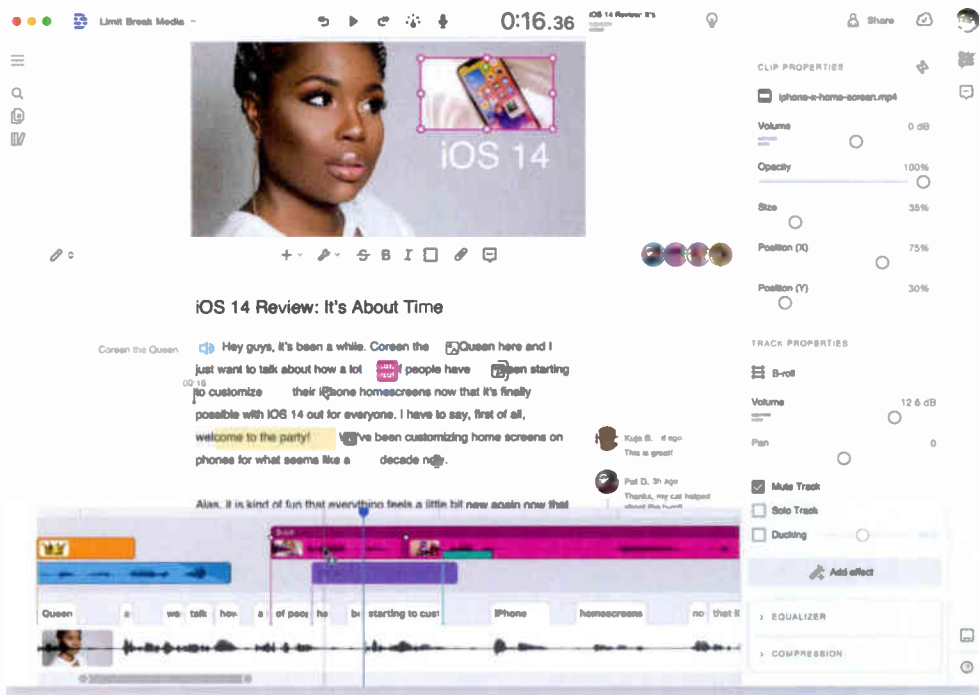
Descript's website says its users include familiar media names such as Audible, WNYC, ESPN and iHeartMedia.

## Editing on the fly

If someone ever designed editing software for your six-year-old child or for your grandma, this might be it, because it is intuitive — easy to use, smooth in editing.

It probably wouldn't work well to replace traditional craft editing software like Adobe's Audition or Pro Tools or even Audacity. But it certainly can speed up podcast editing, whether video and/or audio. And it has many features that allow you to add music to the background or still video or even pre-recorded video from a file.

Whether you're working with a video recording or just audio, the software is based on converting the recording to text, then editing based on a script.



This is where the magic happens. Once it's in script form, you can edit it like any Word document. The audio/video editing will automatically follow what you've done with the text script.

If you didn't like something you said and you remove the text, the audio/video editing performs the matching function.

Of even more interest is changing what you've said. Descript will take those words and edit them in rearranged form.

On testing this, I found that the "realism" of the delivery post-edit will depend on just how the word was spoken originally. So this can be a little "hit or miss," though it's still cool.

In my testing with ingested content and recordings, it did an impressive job, and my edits often produced a natural-sounding delivery.

There's a function to "de-ummm," "de-ahhh," "de-errr." "de-like" and "de-kinda," for speakers who throw those fillers in their delivery, and it's done automatically. It's called "remove filler words." There's even a "shorten word gaps" function for cleaning up excessive pauses automatically.

Though not offering all the features of craft audio and video editors, Descript does have features that we're

**Above right**  
This image from the Descript website shows advanced editing including insertion of additional content into edit, including video with picture-in-picture effect, still images, background music additions and editing changes.





## We planned ahead, so you don't have to. All of our Consoles, AoIP and Automation are in stock.

With global shortages on IC's and other parts, we made it a priority to prepare ahead so you don't have to. Simply buy the hardware when you need it.

### ARC-5

5 Channel - 1 Stereo Output Bus  
\$699

### ARC-8

8 Channel - 1 Stereo Output Bus  
ARC-8: \$949 | ARC-8-Blue: \$1,199

### ARC-Talk-Blue

8 Channel - 1 Stereo Output Bus  
\$1,199



### ARC-10 Series

10 Channel - 2 Stereo Output Buses  
ARC-10U: \$1,849  
ARC-10UP: \$2,249  
ARC-10BP: \$2,799  
Add Bluetooth for \$300

### ARC-15 Series

15 Channel - 2 Stereo Output Buses  
ARC-15BP: \$4,099 | ARC-15BP-Blue: \$4,399

### MARC Series

15 Channel - 3 Stereo Output Buses  
Modular analog, up to 30 (A/B) inputs.  
MARC-15-8: \$5,825 | MARC-15-12: \$6,349  
MARC-15-15: \$7,375



### DARC Series

4 to 16 Channels  
AoIP, Dante enabled.

DARC Virtual: \$1,000 | DARC Surface 8: \$3,600  
DARC Surface 12: \$5,100



### APEX Automation

Powerful & dynamic radio automation software and hardware.

APEX HD: \$100/mo or \$2,699 | APEX Pro: \$125/mo or \$5,999



IT'S ALL IN WHEATNET IP



THE INTELLIGENT NETWORK

## LXE: Software Configured



**ConsoleBuilder** Customize your buttons, knobs & motorized faders

**ScreenBuilder** Create custom touchscreens

**Layers** Set up and run multiple layered input sets simultaneously

**Automix & Live Presets** Enjoy coffee while LXE does the work

[wheatstone.com/lxe-rw21a](http://wheatstone.com/lxe-rw21a)



World Radio History

**BLADE-4  
COMPATIBLE**



IT'S ALL IN WHEATNET IP



THE INTELLIGENT NETWORK

# GSX: Ready To Go



**Cost Effective** The power of LXE, trimmed down, ready to go  
**Turnkey** Preconfigured buttons, knobs & faders  
**Options** Add ScreenBuilder, ConsoleBuilder, Layers, Automix, & more

[wheatstone.com/gsx-rw21a](http://wheatstone.com/gsx-rw21a)

**Wheatstone**  
UNUSUALLY ACCURATE PRECISION

**BLADE-4  
COMPATIBLE**

# Audio Tools

familiar with including non-destructive multi-track editing, titles, transitions and key-frame animation, audio mixing and mastering ("rubber-banding audio levels"). And it allows you to export the project to pro applications like ProTools, Adobe Audition or Premier, and Final Cut.

Another function of Descript allows for intuitive multi-user collaboration of editing, so multiple people can work on it at the same time.

For fun, I transferred into Descript some footage from a comedy show that included a singer with music and people speaking at the same time. The software did an admirable job in deciphering the spoken word with music under it. That's not easy for speech-to-text conversion to do.

Some of the text conversion was funny or strange — Diet Sprite turned into Diet Striding — but when you consider that the text is simply your guideline for editing, it doesn't hurt the editing aspect.

The video and audio editing take on a different feel with Descript. In fact, you more or less edit the text to edit the audio and video content.

By dragging a still image between the text, it edits itself into the video. Clicking on the image allows you to adjust the length of its appearance in the video. The same holds true for dragging audio and video content into the text script. It then places itself into the audio/video edit.

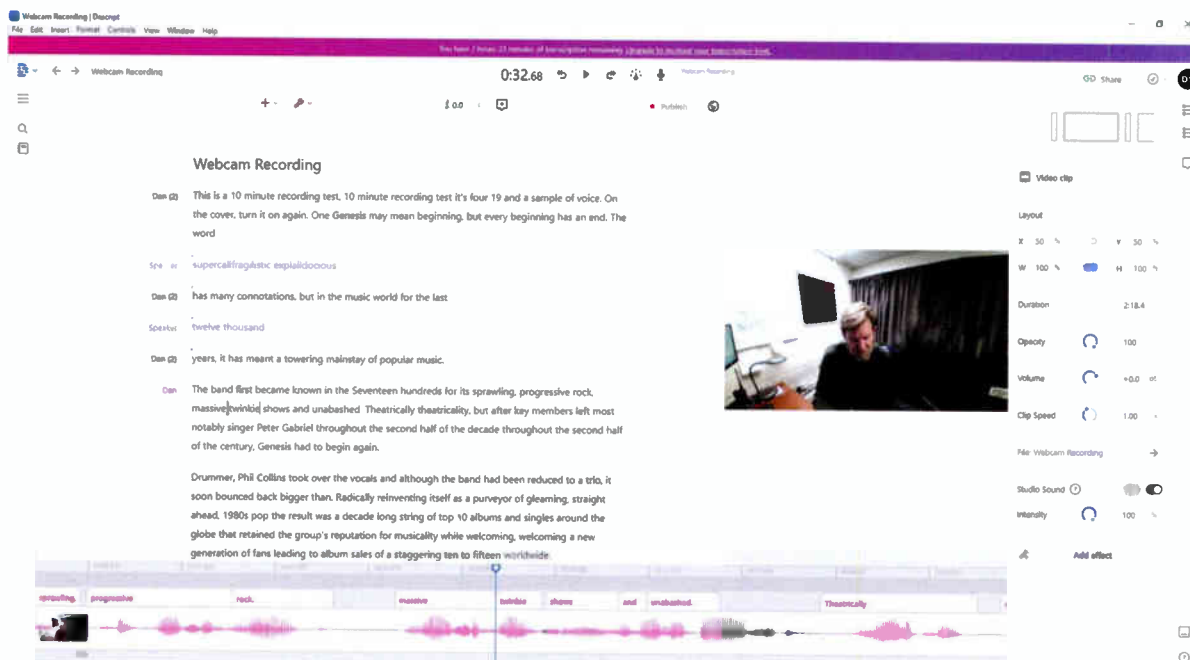
Since Descript works off the script, it provides timing marks and allows you to adjust edits based on time. For back-timing and producing an exact length show, this can help simplify time compression or expansion (to meet a timed window).

There are auto functions to remove background noise, clean up audio, auto-level the sound and even process the sound. The video aspect of the software allows for titles and "lower thirds" (adding names, titles, etc.), plus effects and transitions.

## Impressive, scary

A unique AI feature is Overdub. This opens a Pandora's box of possibilities, good and bad.

Your voice file is sampled and this allows for something that is NOT possible with craft editing: You can type within the script under "overdub" new words or things that had not been said during the recording, which are then injected using AI in your own voice.



**Above**  
Here I'm testing the speech recognition aspect and creating overdub audio edits. Video is from a webcam.

Yes, the computer generates your own voice and reasonably matches your true voice.

Be aware that Descript actually pulls in your voice to their server and creates the sampling, which they say takes two to 24 hours to sample. You also must read and record a disclaimer indicating this is, in fact, your voice and that they are allowed to do this.

Is it convincing? Well, to a degree.

Like most AI sampling, it is a human voice that has been sampled and converted, but what I call "emotional inflection" is not, at least to this point, possible with the AI voices and sampling I've experienced.

People who do voice work will understand that emotion and inflection in the delivery of a script are critical to "the sell" of the copy, and at this point only a human truly understands the meaning of his/her words to convey that emotion.

Maybe someday the AI will recognize the meaning of the words and the true meaning of the sentence and somehow modify that delivery. But for now the jobs of voice-over people seem safe in that respect.

Of course, this means there is no need to go back in the studio to record new lines, as the AI overdub can be used for corrections. But you can feel the potential for a person's voice to be "stolen," despite well-intended precautions.

It's interesting to see the many possibilities and uses for this software. It is a unique and interesting way to edit both audio and video.

To really comprehend exactly what it's capable of doing, I recommend downloading it and playing with the software. Visit [www.descript.com/download/windows](http://www.descript.com/download/windows). You might find it helps change the way some of your talent edits and how you get content to the web or social media.

It certainly will make you wonder what's next. 🤖



50+ YEARS  
ENGINEERING  
THE FUTURE.



Shine on.  
The all-new diamond.



lawo online/diamond-R/V  
diamond video



www.lawo.com

www.lawo.com

World Radio History

# BUYER'S GUIDE

Consoles & Mixers

## About Buyer's Guide

The Buyer's Guide section appears in every other issue, focusing on a particular category of equipment and services. It is intended to help buyers know what's on the market and gain insight into how their peers are using such products.

# Wheatstone supports Toucher & Rich

### Custom touchscreens facilitate quick network sends

**F**aders fly during "The Toucher & Rich Show" that airs mornings on Beasley's WBZ(FM), "98.5 The Sports Hub," flagship station for the Boston Bruins, New England Patriots, Boston Celtics and Revolution teams.

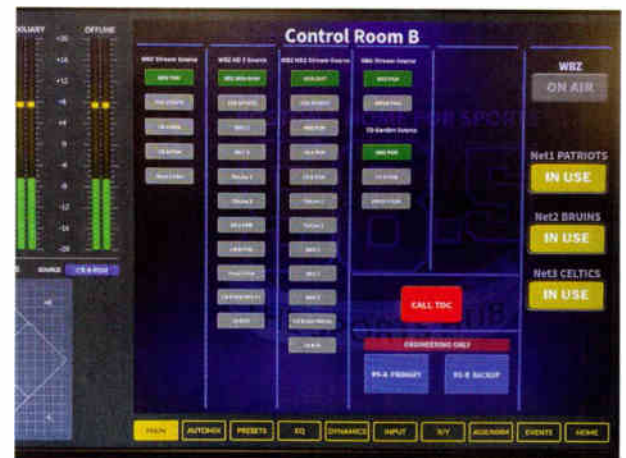
Two LXE console surfaces, one in the talk studio and another in a control studio, sync fader moves for the six mic positions in the talk studio.


Shown is host Fred Toucher at the controls of the WheatNet-IP audio networked LXE. Studios are fast-paced, with contributor feeds coming in and network feeds going out. The Sports Hub has custom touchscreens above LXE consoles for quick network sends to the Westwood One syndication headend along with the correct automation tones and triggers.

"When they hit the Patriot button, that gives them control of those triggers and that particular delay as well as talkback in certain places in the talk studio and control rooms, depending on which network they're talking with," said Dennis Knudsen, Beasley Boston director of engineering, who did the routing backend scripting for Beasley Boston's four music stations and enlisted the help of Chris Penny with Agile Broadcasting to script routing for the WBZ 98.5 network end.

LXE console surfaces have automated mix-minus and associated connections so that the right mix-minus, codec return feed and GPIO logic follow sources during live commentary, play-by-plays or for other incoming feeds.

Toucher and Rich are Fred Toettcher and Rich Shertenlieb. In addition to



station syndication of Bruins, Patriots and Celtics games, The Sports Hub syndicates "Toucher & Rich" nationwide as its number-one show dominating Boston ratings for male and adult audiences 25 to 54. 

#### Right

Fred Toucher works at the Wheatstone LXE console.

#### Below right

The custom touchscreen includes sports routing — the buttons on the right — programmed by Chris Penny; other routing by Dennis Knudsen.



#### More Info

<http://wheatstone.com>

## REAL TIME BUILT-IN INSTRUMENTATION

Comprehensive Monitoring & Control  
100% Remote Access

[nautel.com/AUI](http://nautel.com/AUI)





## Tech Update

### AEQ Atrium Provides Audio Muscle



AEQ's Atrium is a digital audio mixer for production and radio and TV broadcast applications that have heavier operational requirements.

"Manage up to 1,000 channels of local or IP audio controllable through one or more surfaces, each with up to 90+ motorized and pageable faders," the company states.

Its new X\_CORE engine can be shared by six consoles and handles audio in all popular professional formats.

"It also allows the transport of inputs and outputs and control through the different elements of a system, such as routers, audio codecs, broadcast telephone systems, broadcast automation or intercom." That includes control over AEQ NetBox4 MH and StudioBox microphone, headset and studio signalling interfaces located in the studio.

Each surface can be customized, so for example each channel with motorized fader can be set in an A/B configuration, or a user can create up to eight channel pages. Each channel can have direct access to pre-defined bus sends, or channels can be defined for bidirectional multiplexing so that each user has the mix of all but themselves.

"Or handle multi-channel groupings like 5.1. Mixed or special ways of working can be configured with flexible programming of channels and keys to act on the routing of the console, or have several control stations on the same console, to facilitate the work of the presenter or producer."

Features include memory for instant recovery of scene and processes; mix automation with autogain and automix function; numerous audio processing functions; and a virtual console application for PC that supports remote control and maintenance.

Users include La Guancha in Canary Islands, IB3 Radio in the Balearic Islands, Badalona Comunicació at Catalunya and MBC in Mauritius. 📡

Info: [www.aeqbroadcast.com](http://www.aeqbroadcast.com)

### Audio Chameleon C4 Livestream processor



ANGRYAUDIO

[AngryAudio.com/AudioChameleon](http://AngryAudio.com/AudioChameleon)

### Social Distancing SINCE 2015

#### PROFESSIONAL REMOTE MONITORING

FROM ANY LOCATION. ON ANY DEVICE.

AM | FM | HD | DAB | DAB+

TAP INTO YOUR BROADCASTS WITH AN EASY TO USE WEB INTERFACE INOVONICS' EXPANSIVE OFFERING OF REMOTE MONITORING EQUIPMENT

**INOVONICS**  
BROADCAST

Everything you need. **The iXm bundle.**  
Get the iXm along with first-class accessories. For an unbeatable price.



[www.yellowtec.com](http://www.yellowtec.com)

**YELLOWTEC**

**SR**

POWERED BY SIMPLICITY.  
ENGINEERED FOR EASY.



[TelosAlliance.com/QuasarSR](http://TelosAlliance.com/QuasarSR)

**Telos Alliance**



Broadcasters General Store  
Family Owned & Operated Since 1979



Your source for broadcast equipment and services.

Contact us for a quote today!

352-622-7700 [www.BGS.cc](http://www.BGS.cc)



# CH Media mines a diamond

Lawo consoles serve Swiss private broadcaster



**More Info**  
Visit [www.lawo.com](http://www.lawo.com) or email  
[info@lawo.com](mailto:info@lawo.com).

Swiss private broadcaster CH Media has installed seven new Lawo diamond mixing consoles in the on-air control rooms and production rooms at Zurich's Radio 24.

Diamond is a modular AES67-compliant AoIP console, which gives buyers the flexibility to design consoles that meet their operational requirements, according to Lawo.

"Because diamond is IP-native, its modules can be combined into a traditional single-unit mixer, or used separately as distributed surfaces that all work together," the company states.

At Radio 24, the three on-air studios share an identical setup. Workstations for a host and co-host, a news position, plus space for two guests are integrated into a table in the center of each studio. The host operates a 12-fader diamond with central control module, which is split into two sections and flush-mounted into the desk, and is complemented by a Lawo VisTool control screen.

The co-host also has a four-fader diamond control surface, plus VisTool and playout system screens. A two-fader diamond module for the newscaster completes each studio.

Dominik Widmer, host of the Radio 24 morning show, described

the diamond as intuitive — fast and comfortable to work with. "After a short time, you operate it without even looking." He said users appreciate the logically arranged controls, the feel of quality and its compact size. "The table can be used optimally, leaving plenty of space for notes and other things."

Diamond complies with current AoIP standards including AES67/ Ravenna audio-over-IP networking standards as well as ST2110-30/-31 and ST2022-7. It is powered by Lawo's Power Core DSP mixing engine, which in addition to AES67 and MADI ports provides expandable I/O via plug-in cards for analog, AES3 and Dante.

The diamond surface supports console sizes from two to 60 physical faders, and up to 120 virtual faders. A new Virtual Extension option provides touchscreen operation of console functions as well as integrated control of other studio hardware and software.

The consoles can be remote-controlled via LAN or WAN via PC connection with access to every function, suitable for distributed facilities and work-from-home applications. 3

**Its modules can be combined into a traditional single-unit mixer, or used separately as distributed surfaces that all work together.**

**Above**  
Dominik Widmer, Radio 24 morning host, with Lawo diamond mixing console



# Axia Quasar XR impresses at EMF

Visual and touch cues help make for a "no-mistake show"



**More Info**

<https://success.telosalliance.com/axia-quasar-aqip-mixing-console-family>

**A**xia Quasar XR consoles are in use at the new studio headquarters of Educational Media Foundation — parent company of the K-Love and Air1 radio networks — in historic Franklin, Tenn.

Principal Studio Engineer Bill Jackson said the DJs can feel the substance of these surfaces.

"Our staff of hosts, co-hosts, board operators, call screeners and show producers are hands-on with these Quasar consoles every day. The response we get is actually 'positive and encouraging,' just like our K-LOVE slogan."

To Jackson, the issue of "feel" for the air talent is crucial.

"They may not realize it, but all the visual and touch cues from the console help make for a 'no-mistakes' show, without them worrying about how or where their next audio source is."

He said EMF's Axia consoles in Rocklin, Calif., and Indianapolis "always delivered in terms of reliable and intuitive operation. When we tested the Quasar console we knew we had to install them in our new studio facility.



"We've also put Quasar XR consoles in our off-site backup facility. The K-Love and Air1 audio program goes nationwide to over 1,000 transmitter sites. The audio and the program execution are consistently top-shelf."

Skip Mahaffey, who is half of the popular duo Skip and Amy, described the Quasar XR console as "clean, concise and responsive, one of the best I've worked with in the past 40 years. Brilliant machine."

**Right**  
Lauree Austin works the Axia Quasar XR

## AES Silence Monitoring Made Easy



### AES Audio Sentinel® 4»Web Web-enabled Four Channel AES/EBU Silence Monitor

Monitor four AES/EBU inputs for digital audio silence, stereo out-of-phase conditions, and AES error. When silence, out-of-phase audio, or AES error is detected the unit can be configured to send email alarm messages, SNMP traps, and trigger open collector alarm outputs. Featuring a HTML5 web interface and support for: SSL/TLS email (Gmail, etc.) and SMS-email notification.

Broadcast Tools is a Veteran Owned Business



Designed, Assembled and Supported  
in WA State, USA.

**BROADCAST**  
*t o o l s*  
**PROBLEM SOLVED**  
[www.broadcasttools.com](http://www.broadcasttools.com)





# Reading service deploys Arrakis boards

Cincinnati volunteers find MARC-15 easy to use



**More Info**  
[www.arrakis-systems.com](http://www.arrakis-systems.com)

**R**adio Reading Services of Greater Cincinnati is using two MARC-15 consoles by Arrakis. Since 1977 Radio Reading Services has provided access to print material for 13,000 listeners living in Greater Cincinnati who are blind, visually impaired or unable to read conventional print. Volunteers read local and national newspapers, popular magazines, grocery store ads and public service announcements for its listeners to participate fully in their communities.

"Listeners access RRS through a subcarrier of WGUC," said Manager of Volunteer Services Jennifer M. Holladay. "Each radio receiver has been tuned to receive our station because we provide our listeners access to copyright materials."

She said RRS updated very old sound boards to the MARC-15 board.


"The choice to go with the MARC was an easy one since we have had the first one for a couple years now. Staff

and volunteers access the boards and find them very efficient to use."

Holladay likes the multiple outputs so that more than one volunteer can record at one time, and the efficiency to control playback features.

"The modular nature of the MARC was valuable for us, so that we can customize the board to fit our needs. We also appreciated that the MARC is a larger board, which gives us enough inputs to connect all of our equipment."

The MARC-15 is a 15-channel analog modular board with three stereo outputs. Connections are by balanced RJ-45.

Available modules include microphone, stereo line, phone, studio monitor and USB. With the latter, a user can play and record in digital with a Windows PC or Mac, connected by USB cable, or record audio from the board with any third-party software. 

**Above**  
 Anthony DeGregorio with the MARC-15 Board.



**Staff and volunteers access the boards and find them very efficient to use.**



**VX Series** 150 W to 5 kW FM Analog Transmitters



**10 NEW** Nautel Transmitters

Learn more at [nautel.com/new](http://nautel.com/new)





## Tech Update

### On-Hertz FAM: Audio Production Unplugged

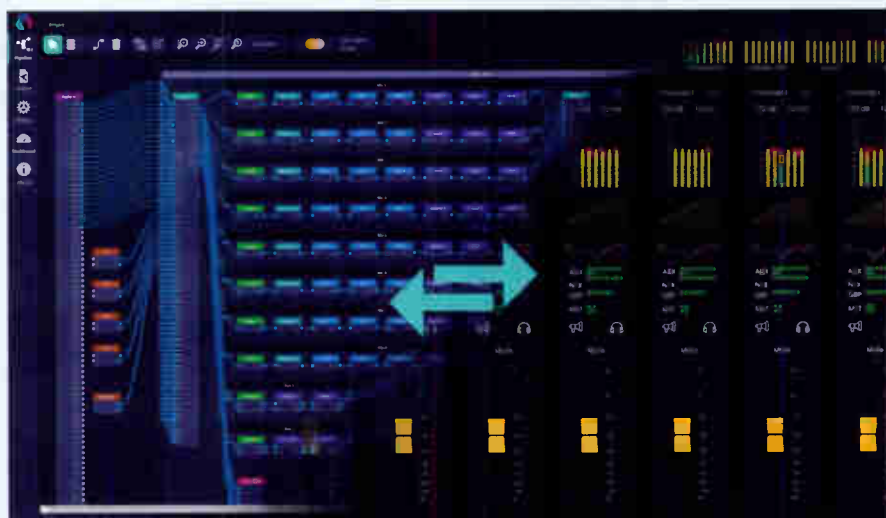
The Flexible Audio Mixer “bridges the gap between the technical architects and end users,” according to On-Hertz.

It says engineers will appreciate the modularity of its software-, API-based engine for creating new signal flows, while operators will like the FAM for its familiar interface, controls and faders. Entirely software-based, it runs on off-the-shelf IT equipment, on Windows or Linux/Docker.

The operators define the number and types of channels required in their specific use case in a few clicks. The user interface and back-end audio pipeline are dynamically built by the audio engine.

Features include broadcast-grade processing capabilities such as EQs and dynamics.

The FAM can be assigned to an external hardware controller if required; it is kept in sync with the various audio channels and banks.



“With the look and feel of a physical audio mixer, other audio nodes can be added manually, preserving the exceptional modularity and versatility of the software, API-based engine.”

It combines technologies usually found in separate devices including routing, mixing, AoIP contribution, IP protocols, playout and monitoring.

Intro video: [https://go.on-hertz.com/FlexibleMixer\\_intro](https://go.on-hertz.com/FlexibleMixer_intro)



World Radio History

IT'S ALL IN WHEATNET IP THE INTELLIGENT NETWORK

## SET UP A HOME STUDIO IN MINUTES

Our software (and hardware) solutions provide intuitive tools to let you work from home seamlessly, with minimal setup.



## REMOTE SOLUTIONS

Learn more: [wheatstone.com/remote-solutions-rw21a](http://wheatstone.com/remote-solutions-rw21a)

**Wheatstone**  
WIRELESS AUDIO PERFORMERS™

phone +1.252.638-7000 | [wheatstone.com](http://wheatstone.com) | [sales@wheatstone.com](mailto:sales@wheatstone.com)

# Type R is Calrec's radio flagship

Henry Goodman says new options include a Talent Panel and GPIO unit

**C**alrec Audio, which formed as a mic manufacturer in 1964, now makes a range of audio broadcast equipment. Its products are designed, manufactured and tested at its headquarters in West Yorkshire, England, and the company has an office in California offering sales, support and logistics.

Henry Goodman is director of product management.



**RW** What would you say is the most important trend in the design and manufacture of radio consoles?

**Henry Goodman:** The flexibility to distribute productions across multiple locations both in terms of equipment and people is driving new technological and workflow approaches. The ability to control your audio console either remotely from a tailored IU or worksurface is key to these developing remote applications.

For the Calrec Type R for Radio, working natively within an IP environment is a key enabler for this style of distributed production. The modularity of the Type R for Radio surface panels together with the ability to customize the functionality presented on the soft panels makes it easy for users to tailor their specific remote needs and desires.

**More Info**  
Visit <http://calrec.com>

**RW** Is Type R for Radio your flagship model for radio applications?

**Goodman:** Yes, and recently we added a compact Talent Panel to it, which allows users to switch between multiple sources via its integrated, hi-res TFT and adjust headphone volume with a dedicated rotary control. Four switches mean the panel can be customized to the individual user with common functions like talkback and cough switches; this ensures only essential controls are close to hand. We've also added a new GPIO unit 1U box for Type R which delivers an additional 32 GPOs and 32 GPIs for interfacing with external systems such as playout, phone systems, codecs and more.

**RW** Can you give examples of client applications?

**Goodman:** South African community radio station Radio Rosestad 100.6 FM in Bloemfontein is using a six-fader Type R for Radio console with one large soft panel (LSP), plus a small soft panel (SSP) for exclusive use by guests. Also in South Africa is internet radio station VibeZ Live, which uses a six-fader Type R for Radio with dual layer functionality for extra faders with a simple button touch. The station also added a large soft panel (LSP) with feature sets pre-loaded for more control.

**RW** How has the surge in the demand for remote audio workflows affected you?

**Goodman:** With the rise of remote working and remote production, we felt it necessary to expand our recently launched Sound Institute with the rollout of an audio over IP training course. The AoIP course provides a comprehensive understanding of AoIP from basic to advanced practices and it dovetails with us taking the lead in AoIP product development and deployment with Type R and ImPulse.

**RW** What else should we know?

**Goodman:** As mentioned, we've been busy adding new features to Type R for Radio, including the Talent Panel that connects directly to the console AoIP network allowing a user to monitor selected sources as well as providing Talkback and Cough facilities. The new GPIO unit extends physical GPIO connectivity. Within a single Type R for Radio core, we have enabled the ability to run up to three independent audio mixers, each with its own dedicated mixing, routing and monitoring engines. Type R for Radio core hardware redundancy is now also offered with an optional secondary mirrored core providing full system core hardware failover redundancy in addition to network redundancy. **R**



**NM-250 MKII - Newsroom Mixer**

**Features:**

- Built In Talkback System with 2 Send and Receives
- 1 Unbalanced Input /Output for computer Sound Card
- 1 Unbalanced Stereo Front Panel Jack Input
- 1 Balanced Mono Line Input for Telephone Hybrid
- 2 Balanced +4 dBm Stereo Line Inputs
- 2 Balanced Mono Mic Inputs
- Monitor Select (Mixer Output or Off Air)
- LED Meter Display
- Phantom Power Built In (48v)
- Built In Cue System with Dimming

**Dixon Systems**  
800-779-7575  
[www.ram68.com](http://www.ram68.com)



## Tech Update



### Logitek Updates Consoles, Engines

Logitek has announced several updates for its JET67 and JetStream Plus AoIP engines, which it says bring enhanced productivity to the mixIT and Helix audio consoles.

“For users needing to incorporate Dante sources, those sources are now automatically discovered and included with AES67 and local sources in the source selection lists above each fader on mixIT and Helix control surfaces,” it said. “This bypasses the need for external routing software such as Dante Controller.”

The JetStream Plus has been updated with an auto-mixer function, which prevents phasing effects between multiple microphones by automatically reducing the gain of unused mics and enforcing a maximum combined level of all open mics.

New for the Helix control surface is the Helix-Softkey module, a user-programmable module that provides an array of user programmable buttons that interface with Logitek’s CommandBuilder scripting language. Clock and timer functions are also available on the module.

Also available for the Helix is the new Version 2 software release, which provides improved fader response time, more accurate metering, and easy access to the switched meter source selector.

Logitek says the mixIT and Helix consoles provide advanced touchscreen control functions and easy operation at affordable prices. Both consoles are scalable, with the mixIT available in sizes ranging from six to 18 faders and the Helix in sizes ranging from six to 36 faders. Helix models are available for both radio and TV applications; a virtual version of Helix that operates on the Microsoft Surface Studio PC is also available. mixIT systems start at \$5,445 (including the JET67); Helix surfaces start at \$7,280 (JET67 or JetStream Plus required).

Info: <https://logitekaudio.com/>

## TUNWALL RADIO SWITCH AND TRANSMITTER CONTROLLERS



AM/FM/MULTI-SWITCH AND CUSTOM DESIGNS

330.995.9642

[www.tunwallradio.com](http://www.tunwallradio.com)

## TRANSMITTER ENGINEERING

### Victory RF, LLC

Veteran industry transmitter technician **Richard Hinkamper** has launched a new contract engineering service. Victory RF specializes in maintenance, upgrading, installation and relocating Harris, Harris Broadcast and GatesAir transmitters such as models Z, ZHD+, ZHDc, ZHDs, ZX, FAX and FLX.

With over **33 years of extensive experience** including hundreds of field trips and thousands of customer troubleshooting calls, **Richard Hinkamper** has a proven track record of successful results.

**Want to know more or discuss your transmitter maintenance needs?** Call +1 217 242 0889 or visit our website at <https://VictoryRF.com>

## Plug & Play Detection



### Silence Sentinel® RJ

#### Dual Channel Stereo Silence Sensor

The Silence Sentinel RJ is a two-channel analog stereo silence detector and phase monitor with an integrated 2x1 stereo audio switcher, perfect for automatic back-up switching when silence is detected. It features RJ45 audio I/O and pluggable screw terminal block connectors for alarm relay outputs and remote control inputs.



# BROADCAST EQUIPMENT EXCHANGE



**Rebuilt Power Tubes  
1/2 the cost of New!**

Se Habla Español

# ECONCO

Se Habla Español

Tel: 800-532-6626 Web: [www.econco.com](http://www.econco.com)  
Intl +1-530-662-7553 Fax: +1-530-666-7760



Keeping you on the  
air since 1934

ISO 9001 Certified

**NEW POWER TUBES**

Triodes  
Tetrodes  
Pentodes

**NEW SOCKETS &  
REPLACEMENT PARTS**

Worldwide Availability

Made in the U.S.A.

Call (800) 414-8823  
Int'l (650) 846-2800  
Fax (650) 856-0705

Visit our Website at  
[www.cpii.com/eimac](http://www.cpii.com/eimac)

**CPI**  
Communications  
& Power Industries

**Oldies  
Music  
for  
Radio**

**RadioMusic.com**

**1-844-RADIO-MUSIC**

**CORNELL-DUBILIER  
MICA CAPACITORS**

FROM STOCK

**VACUUM  
CAPACITORS**

FROM STOCK

**HIGH ENERGY CERAMIC  
CAPACITORS**

**SURCOM  
ASSOCIATES**

5674 El Camino Real, Suite K  
Carlsbad, California 92008  
(760) 438-4420 Fax: (760) 438-4759  
e-mail: [link@surcom.com](mailto:link@surcom.com) web: [www.surcom.com](http://www.surcom.com)

**AMergency!**

We stock low power  
components for  
temporary & aux  
AM applications.

Transmitters (to 10W)  
Antennas (to 270W)  
Prefab Groundplanes  
Accessories  
Rentals

**Any frequency. Anytime.**

**theRADIOsource.com**

**NCE FM STATIONS FOR SALE:**

**\$400,000 for both!**



KJLV 98.5. 100-watt signal covers most of Central OR; Medras, Redmond, Prineville, subcarrier in Bend. 52.7FM.  
KJTV 101.5. 480W - Covers The Central-Oregon River-Gorge communities and well into So. WA. \$125K. Both setup for remote broadcasting.

**2 LPTV STATIONS FOR SALE:**

K22LE-D & K240C-D TV. Both 50W and currently operating with all Larcen system. Licenses and gear go to best offer.  
CONTACT: Jeff Cotton - [jc@openskyradio.org](mailto:jc@openskyradio.org)

**Bible Broadcasting Network**

**International Datacasting  
Star-One  
Satellite Receivers**



**3 NEW/UNUSED  
\$350 each**

**75 USED AND WORKING  
\$250 each**

SHIPPING AVAILABLE AT BUYER COST.

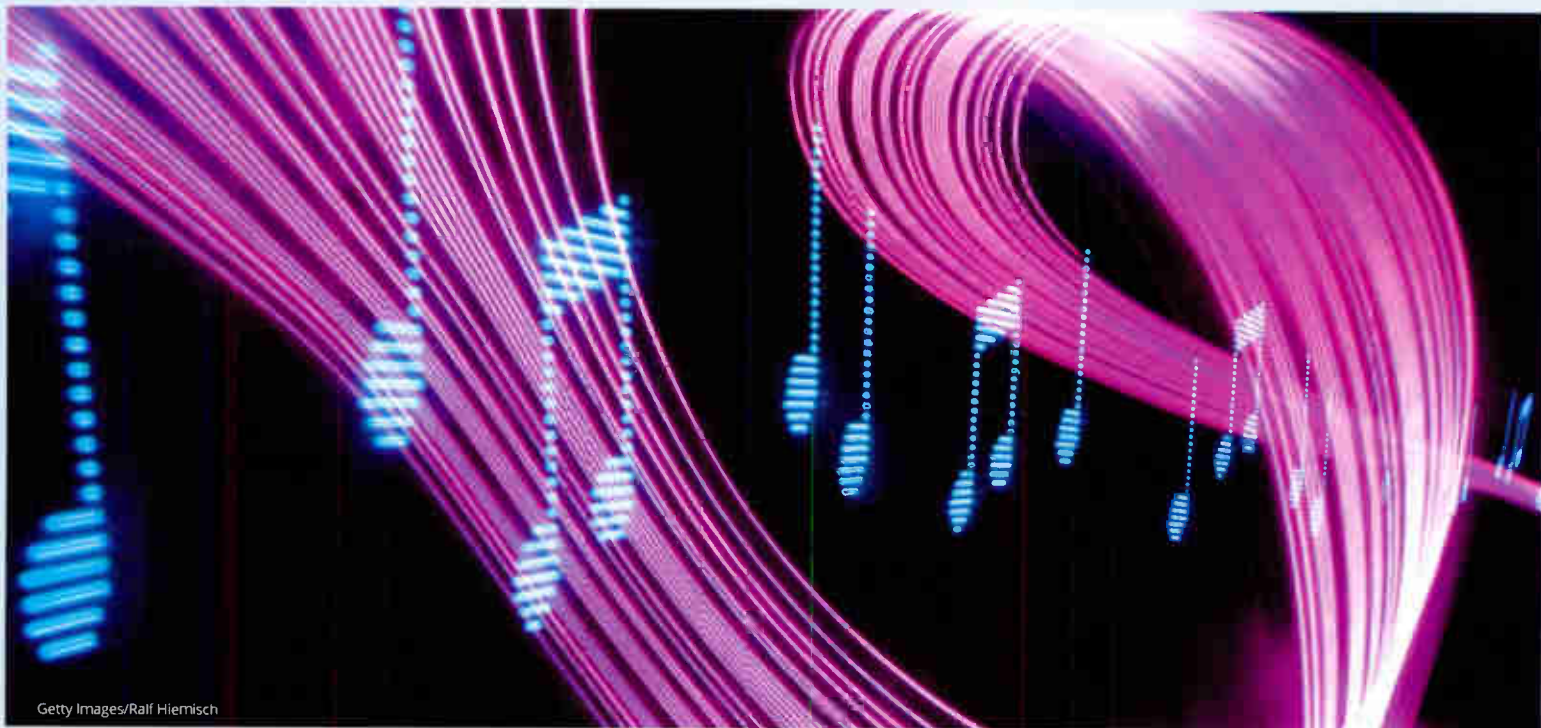
[EQUIPMENT@BBNMEDIA.ORG](mailto:EQUIPMENT@BBNMEDIA.ORG)

Without  
**advertising**  
a terrible  
thing happens...

**...nothing.**

For more information contact  
**John Casey** at  
1-845-678-3839 or email  
[john.casey@futurenet.com](mailto:john.casey@futurenet.com)





Getty Images/Ralf Hiemisch

Writers



Robert Orban

Consultant, Orban Labs Inc.



Greg Ogonowski

President, StreamS/Modulation Index LLC

# Let's talk streaming, surround and upmixing

Orban and StreamS/Modulation Index have been down this road

In his commentary "Déjà Vu: The Streaming 'Wow Factor,'" which appeared on this page recently, Frank Foti rightfully points out the advantages of good stereo-to-surround upmixing for 5.1-channel listening of music sources originally mixed in stereo.

This is old news to Orban. In 2013 we developed a proprietary upmixing algorithm called Optimix. The upmix is artifact-free and sounds convincingly like true surround material.

It is directionally stable with a solid center channel and effective envelopment, and it avoids the "image steering pumping" introduced by consumer upmixers that have been repurposed for transmission. It can operate in two modes: "Wrap-around" puts the listener in the middle of the musicians, while "Frontal" extracts ambience and reverberation from the input program material and places these in the surround channels while keeping the musicians in the left-front, center, and right-front. It does not add artificial reverberation.

Optimix includes a robust algorithm that eliminates the effects of phase and azimuth skew in the upmix. This ensures crisp, highly intelligible dialog and other center-channel material.

Simple phase correctors add time delay to the "earlier" channel, which can correct tape head gap skew in analog recordings. However, the Optimix phase corrector can simultaneously correct multiple phase errors having different delays.

For example, it can correct gap skew while also correcting the acoustic comb filtering that occurs when one source (like a snare drum) leaks into multiple microphones during the original recording. In a commercially released CD track that somehow slipped through label quality control, we have demonstrated its correcting a polarity-reversed lead vocal while preserving the instrumental bed, an extreme test.

When phase correction is off, Optimix is fully downmix compatible — its output downmixes to the original stereo input. This is important because surround streams will often be played on stereo or mono players. With phase correction active, the stereo downmix can actually sound more present and detailed than the original stereo input while still preserving its artistic intent. Mono reproduction from devices like cellphones and smart speakers benefits even more.

Originally developed for our 8685 Optimod-TV surround processor, Optimix is included in Orban's Optimod-PCn

1600 streaming/mastering processor, which runs natively on x86 platforms.

The 1600PCn can be configured for stereo input and 5.1-upmixed output, or for true 5.1 input. In the latter case, Optimix detects whether the input material is two-channel stereo or surround and automatically upmixes stereo material.

### Industry firsts

Surround streaming is also old news to StreamS/Modulation Index LLC.

Our developers created the legacy Orban Opticodec-PC streaming encoder software, which was first to provide AAC/HE-AAC/USAC (xHE-AAC) audio encoders. At the Hollywood Surround Awards in 2004, Orban provided the world's first live surround stream using aacPlus (now HE-AAC) Surround for AOL/Winamp and demonstrated MPEG-Surround at NAB 2011.

However, in 2014 StreamS abandoned MPEG-Surround in favor of Multichannel AAC because no MPEG-Surround player implementations were available for major platforms



### How to Comment

Radio World welcomes letters to the editor via email to [radioworld@futurenet.com](mailto:radioworld@futurenet.com).

due to licensing expense. StreamS demonstrated Multichannel AAC live streaming at NAB 2014 and IBC 2015.

Today, both Mac and Windows operating systems offer built-in Multichannel AAC and Lossless without need for additional software and/or licensing in apps.


Audio-only audiences expect the same reliability and performance they get from major video streamers like Apple, Netflix and Amazon. MP3/ICY has developed a well-deserved reputation for unreliable, poor-quality audio streaming.

StreamS instead provides AAC codecs inside modern, reliable HLS and MPEG-DASH transport technologies. The current StreamS Encoders deliver dependable, standards-based CMAF HLS streaming for both live and file (on-demand) podcasts with feature-rich on-time metadata. These encoders and compatible players are all available for stereo 2.0 and surround 5.1/7.1 modes, either upmixed or discrete, and will play almost everywhere.

Using HTML5-MSE, it is easy to develop full-featured browser players with real-time metadata. StreamS offers free HTML5-MSE reference player code. No software player or app installation is necessary; consumers access the player through the content provider's website. Full 5.1/7.1 playback simply requires an HDMI connection between a surround receiver and a computer or browser-supporting player device.

The StreamS HiFi Radio app for iPhone, iPad and Apple TV has long offered many surround streams. Through our special relationship with Fraunhofer, the StreamS HiFi Player Apps provide Multichannel AAC with a special Fraunhofer AAC decoder integrated into our custom HLS player engine.

Those content providers and broadcasters looking to improve their streaming products owe it to themselves to learn more about this modern standards-based technology at [www.indexcom.com/products/optimodpcn/](http://www.indexcom.com/products/optimodpcn/) and [www.indexcom.com/products/encoder/](http://www.indexcom.com/products/encoder/).

**Note:** aacPLUS is a registered trademark of Coding Technologies GmbH. xHE-AAC is a registered trademark of Fraunhofer in Germany, United States, and other countries. 

“Audio-only audiences expect the same reliability and performance they get from major video streamers like Apple, Netflix and Amazon.”



### Readers' Forum

## Let's talk about mono

In "Let's Talk About Mono" on [radioworld.com](http://radioworld.com), David Bialik wrote: "Many FM broadcasters are sending the programming out on both the left and the right channel, plus lighting the FM pilot. Why?"

I would remind Mr. Bialik that the pilot is also required for proper decoding of many SCA services (which in many cases are more valuable than the main channel programming) as well as the RDS service in most radios. Without the 19 kHz pilot, those other important services simply won't work on many (most) receivers.

I agree with him on the idea that streams should be in mono if they have no need for stereo programming, as it would use half the bandwidth for the same audio quality. However many cheap or free streaming software programs cannot be set up for true mono operation. Also, many of those stereo commercials are inserted into the streams by the streaming service provider, not part of the actual program stream.

*Bart Jones  
Contract Engineer,  
Nebraska and Kansas*



# EBOOKS: Tools for Strategic Technology Decision-Making

Radio World's growing library of ebooks can assist you in maximizing your investment in an array of platforms and tools: licensed transmission, online streaming, mobile apps, multicasting, translators, podcasts, RDS, metadata and much more.

The ebooks are a huge hit with readers. They help engineers, GMs, operations managers and other top radio executives — radio's new breed of digital, cross-platform decision-makers — understand this new world and thrive in it.



2wcom • ENCO • N...



Burk • MaxxKconnect • Nautel • RCS • Shivoly

**RADIOWORLD**

Visit [radioworld.com/ebooks](http://radioworld.com/ebooks)

FUTURE



## Make Your Streams Stand Out

**Stream up to eight programs at once**, each with four outputs for a total of 32 streams.

**Full suite of stream-specific audio processing tools.** Optimize performance of audio content.

**AAC, MP3 and Opus encoders.** Reaching a broad range of end user devices and players.

**Metadata agnostic.** Lua transformation filters adapt metadata input from any automation system into any required output format.

**Cloud-ready for the future**, yet compatible with standard CDN and streaming platforms now. Supports HLS, Icecast, RTMP, and RTP streams.

**All-inclusive Linux and AoIP appliance.** No Windows® drivers, updates or PC needed.

Add Streamblade to any audio network via WheatNet-IP, analog, AES3, or AES67 inputs or add Wheatstream to any existing WheatNet-IP or AES67 compatible networks.



### **STREAMBLADE & WHEATSTREAM** STREAMING AUDIO PROCESSORS

[wheatstone.com/stream-rw21a](http://wheatstone.com/stream-rw21a)