



RADIO WORLD

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In the U.K., Digital Listening Has Legs

But while advocates point to DAB progress, the outlook for analog switchoff is cloudier

BY JAMES CARELESS

LONDON — The United Kingdom has been a trailblazer and flag-bearer for Digital Audio Broadcasting technology, and the newer standard

DAB+. Both the BBC and private radio broadcasters have been offering DAB content on air since the 1990s. DAB radios have been heavily promoted here, and the U.K. government has thrown its weight behind switching off analog AM/FM in favor of digital DAB.

But while most of these efforts are paying off, there is no analog switchoff date for AM and FM because the majority of radio listening is still via analog, according to sources contacted for this story.

RESULTS

Regarding the progress, Radio Joint Audience Research (RAJAR), the U.K.'s official measurer of radio audiences, indicates 51 percent of U.K. adults 15+ listen to at least five minutes of radio each week via a digital platform; namely a DAB receiver, DTV or via the Web. This second-quarter 2014 data was released July 31.

U.K. listeners tuned in for an average

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The Roberts Revival U.K. DAB receiver merges 1950s retro styling and British patriotism with DAB functionality.



A St. Louis Post Dispatch employee reads the facsimile newspaper received over W9XZY. An RCA printer is shown. The black roller at the top contains the used carbon paper after the page has been printed.

Wide-World Photo, 1938

ROOTS OF RADIO

A Look Back at the Radio Newspaper of the Air

Radio facsimile technology never fully caught on, but what if it had?

BY JOHN F. SCHNEIDER

In the beginning, there were newspapers.

And then radio arrived, challenging the newspapers' journalistic monopoly.

At first, many newspapers fought the new competitor, refusing to print radio news or program schedules. But some went in the opposite direction, deciding to operate their own radio stations to augment their businesses. And finally, a few brave pioneering publications went even farther: They tried to deliver their

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Engineers Eye AM Problems, Solutions

AFCCE Symposium covers medium's past, present, future

BY JAMES O'NEAL

ROSSLYN, VA. — AM broadcasting (past, present and future) was the overall focus of the Association of Federal Communications Consulting Engineers' second annual technical symposium at the end of October.

Some 50 consulting engineers, FCC employees, broadcast engineers, equipment manufacturers and others attended the second annual technical symposium. Established in 1948, the AFCCE comprises communications engineers who practice before the Federal Communications Commission. Its chief stated function is to monitor the agency's technical policy to ensure that regulations issued by that organization "coincide as closely as possible with sound engineering principles," according to its website.

The consensus at the event was clear and loud: Manmade noise is the biggest technical problem facing U.S. medium-wave broadcasting.

"The AM band is subject to increasing interference from the proliferation of electronic devices and low-frequency radiators that distort AM signals more now than as recently as 10 years ago," said AFCCE President David Snavelly, a former AM station owner who runs an engineering consultancy.

"Improving the AM band's performance through revised technical standards [and] FCC enforcement in cooperation with industry leaders can improve listenership and revitalize the AM band."

Chris Horne, co-founder and chief technology officer of engineering consultancy Spectrum Velocity LLC, echoed Snavelly's remarks.

"AM listenership may die soon if the band is not managed by the FCC," said Horne. "As I ride down the highways and roads I like to listen to AM radio. The problem is that you can't hear the stations very well because of the power lines or other emitters."

ANTENNA HISTORY

Ron Rackley, principal and senior engineer at du Treil, Lundin & Rackley, discussed the evolution of antennas used for transmission in the lower-frequency portion of the spectrum. His history lesson spanned the antenna designed by Marconi for the first attempt at transatlantic communication attempt in 1901 to the folded monopoles of today.

Another history lesson of sorts was offered just outside the symposium presentation room by Kintronic Labs President Tom King and consultant Steve Smith. They brought along a C-QUAM-equipped demo setup to illustrate how good analog AM audio can sound and how AM stereo compares with AM audio transmitted via FM.

"What we're trying to do is highlight the differences in quality if we use full 10 kHz-wide analog AM radio," said King. "The idea is to show that the 15 kHz bandwidth of FM and the 10 kHz of wideband AM with stereo are closely comparable, and the standard bandwidth of [today's] AM — 2 kHz or so with no stereo — is awful by compari-



Photo by James O'Neal

David Snavelly

son. We're trying to illustrate what AM can do with the right radios.

"This is the way that you save AM radio — by making it listenable," he added. "When the listeners come back, the advertisers will come back and then the business will come back."

Asked about the resurrection of C-QUAM AM stereo in connection with the demo, King explained that it was an effort to reduce the price tag associated with developing an improved AM broadcast system.

"All the C-QUAM patents that Motorola had have expired," he said. "There are no royalties. This is now a public domain technology, and we think that it will reduce the cost."

Smith said that Kintronic Labs is planning to show a new technology receiver incorporating C-QUAM and other software-defined features at the 2015 NAB Show.

DIGITAL ON AM

Senior Director Advanced Engineering David Layer discussed results of the recently concluded tests of all-digital HD Radio on the AM band, in the context of AM revitalization. He spoke again on the topic at a subsequent meeting of SBE Chapter 37 at Hubbard Radio's historic transmitter site in Wheaton, Md.

"All-digital AM ... is something that keeps AM broadcasters in the band and may be a potential long-term solution for AM radio," said Layer. NAB Labs tested digital-only operation system at nine U.S. stations, as we've reported.

Proponents say the all-digital signal on AM is more immune to noise and interference than both the current hybrid digital system and analog.

But while all-digital signals can be received on AM HD Radio tuners

(continued on page 5)



Photo by Leslie Stimson

Engineers gather at a meeting of SBE Chapter 37 in Washington to hear a presentation by NAB Labs about its testing of all-digital modulation on the AM band. David Layer of NAB (not shown) also spoke at the recent AFCCE Symposium.

GatesAir CEO Takes the Long View

Argyris focuses the company on wireless OTA content delivery for radio and TV

The new CEO of GatesAir spent two decades of his career working as an executive in the oil and gas industry, where companies face billion-dollar decisions and where time “from concept to delivery” — from drilling an exploratory well to producing oil — can take more than a decade.

GatesAir, formerly Harris Broadcast, has been through a lot of changes in the past couple of years, as have the radio and TV industries on which it is built. I was curious to hear from Phil Argyris (“AR-jir-riss”) how he views his company’s mission and outlook.

I found that, like many top executives in broadcast supply, he tends not to get caught in the day-to-day whirl of ups and downs, and professes a confident view of our industry’s long-term soundness.

In 2013, Harris Corp. divested its broadcast operations, and they were acquired by the Gores Group, a private investment firm. Subsequently, Gores separated the broadcast business into entities called Imagine Communications and GatesAir, with Charlie Vogt leading both as chief executive officer at first. Imagine Communications would focus on IP, software-defined networks, cloud and multiscreen technology while GatesAir, a wholly owned but separate operating company, would serve wireless, over-the-air content delivery for radio and TV broadcasters.

This August, Vogt named Argyris



Phil Argyris became CEO of GatesAir in August. He joined former owner Harris Corp. in 2008.

to run GatesAir as CEO. Argyris holds an MBA in industrial relations and organization behavior from Temple University’s Fox School of Business Management and a bachelor of business administration in finance from Temple. He had worked in human resources with Amoco/BP from 1980 to 1999, then went to NCR Corp., where he was vice president of HR.

He joined Harris Corp. in 2003 and most recently held the position of VP/GM of transmission systems. His work

for Harris/GatesAir has included R&D, product line management and marketing roles.

WIRELESS DELIVERY

I asked Argyris how he defines the mission of GatesAir now.

“We’re still in the business of helping our customers drive the wireless delivery of content,” he told me by phone. “It’s not always a product delivery — you need to be building a solution for them — but as to our overall products, we’re a transmission company, primarily. Our mission is to drive over-the-air content with lower cost of ownership.”

While the company considers itself the world’s largest provider of radio transmitters and among the biggest providers of TV transmission, its products also create and transport content; it makes audio consoles, routing systems and audio distribution/STLs as well as transmitters.

GatesAir and its 300 or so employees are not entirely separate from Imagine; Vogt continues to oversee it, and “we’re still finishing the carveout,” Argyris said. “We also have a relationship in cross-selling; we’re part of the Gores team. But independence is their direction. We’re 95 percent there. We’re on our own; I remind our team of that all the time.”

Manufacturing and service are centered in Quincy, Ill., while engineering and product lines are in Mason, Ohio, near Cincinnati.

Change has brought a different feel to the company, he said. Whereas for-

FROM THE
EDITOR

Paul McLane



mer parent Harris Corp. focused largely on government business. “the speed at which we have to do things is really different. In our business at GatesAir, we have a more entrepreneurial view of things. And we don’t have to turn anywhere.” Important corporate decisions, he indicated, can be made in Quincy and Mason. His remarks echo what Chief Product Officer Rich Redmond told me earlier this year, that the company would be “a lot more nimble, focused, approachable.”

“FANTASTIC MEDIUM”

When Harris Corp. announced its broadcast divestiture plans in 2012, I wrote that companies tend not to exit markets they feel are strong and growing. The subsequent price paid by Gores seemed low compared to prior broadcast acquisitions Harris had made, particularly in TV; so taken together, along with the growth challenges faced by all commercial broadcast manufacturers in recent years, I wondered about the overall health of the underlying market.

In its public statements, GatesAir has indicated that booms in both content and demand for content are good for radio and TV networks. Also, it sees opportunities in the digital conversions happening around the world, particularly in emerging countries, as well as in a likely “repack” of U.S. wireless spectrum. And executives, at GatesAir and elsewhere, have told me the global RF market is healthier than many in the United States might realize.

Argyris himself is emphatic: He is bullish about over-the-air broadcast.

“We have a fantastic medium in the radio and TV world to deliver content in a really inexpensive way, because of our one-to-many technology. Whether it’s DAB in Europe or HD Radio in the United States, we’ve been able to allow the broadcasters to increase the amount of content they can deliver.”

The combination of technology, new standards and a “huge” global listening/viewing public is powerful, he said. As media evolve, broadcasters “are still an important piece of that formula. We were relevant 15 years ago, and we’re going to be relevant tomorrow.”

For instance, he said, “I had a conversation with four young people who described themselves as millennials. They describe how they cut the cord after growing up in a cable/satellite environment; they told me how they watch over-the-air TV as well as the Internet

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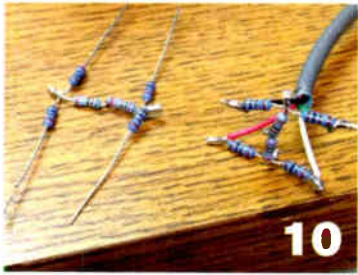
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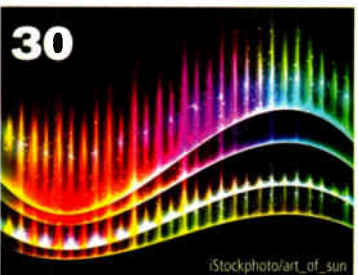
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now in the marketplace, the signal cannot be received on analog radios.

He acknowledged that the prospect of losing the existing base of analog receivers is a "big deal," but Layer said he believes more HD Radio receivers will come into the market as car radios.

iBiquity Digital projects 50 percent of new vehicles sold in the U.S. this year will include HD Radio and that the percentage will increase over time.



Photo by James O'Neal

Steve Smith, left, and Tom King show off their AM stereo demo.

If approved by the FCC, Layer believes the commission would authorize all-digital on AM for daytime use first, as the agency did with the hybrid system, and authorize nighttime later, meaning stations would still transmit an analog signal at night. That's because all-digital nighttime performance is affected by skywave propagation. "If the commission authorizes all-digital for daytime first, the industry will have a lot of opportunity to figure this out," says Layer.

He anticipates a field test report would be published in the 2015 NAB Broadcast Engineering Conference proceedings.

James O'Neal is technical editor of TV Technology and a frequent contributor to Radio World.

News Editor and Washington Bureau Chief Leslie Stimson contributed to this report.

NEWSROUNDUP

EAS: The FCC cautioned broadcasters to check encoders/decoders to ensure that a false alert — coded for an Emergency Action Notification and issued as part of an on-air bit on the "Bobby Bones Show" — was purged. If saved and not erased, it could still deliver at a later date.

The FCC's Public Safety & Homeland Security Bureau is concerned that the incident revealed potential flaws in the EAS system, and it launched an inquiry. It wants to explore how stations authenticate alert messages and what actions local public agencies take when faced with public confusion about an alert. Comments are due to the FCC in PS Docket No. 14-200 by Dec. 5.

The false alert gave the impression of originating from the White House. FEMA, responsible for originating national alerts, called the message inappropriate and, along with the FCC, was investigating. The Bobby Bones show originates from studios of WSIX(FM) in Nashville, Tenn., and is syndicated by Premiere Networks, part of iHeartMedia, which expressed regret for the incident.

HD RADIO: Mercedes-Benz has added HD Radio's Artist Experience feature to the automaker's 2015 C-Class line, available at dealerships now. Artist Experience is the ability to syn-

chronize visual images, such as album art and station logos, with broadcast audio for a richer visual experience. HD Radio is standard across the Mercedes vehicle product line.



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U.K. DAB

(continued from page 1)

age of 378 million hours on digitally-delivered radios each week. "DAB radio is still the most popular device when it comes to listening digitally, accounting for 65 percent of all digital hours," or 24 percent of total hours, according to a graphic at www.rajara.co.uk detailing Q2 2014 U.K. radio listening in general. According to a RAJAR breakdown of total digital listening, listening via digital television represents 13 percent, or 5 percent of total hours; and listening online represents 17 percent, or 6 percent of total hours.

Where do digital and DAB place overall in U.K. radio listenership? "The share of all radio listening via a digital platform now stands at 36.8 percent, the same as the corresponding period last year and slightly up on the previous quarter," according to RAJAR. That is up from 21.1 percent in the second quarter of 2009. "The share of listening to DAB has increased by 1 percent to 24.1 percent of all listening (23.9 percent in Q2, 2013)."

One last key fact according to RAJAR: "48.5 percent claim to have a digital set at home; up from 41.7 percent" in Q2 2013. That works out to 26 million U.K. residents age 15-plus, out of a total 15+ population of 54.6 million; 48.1 million tune into U.K. radio every week.

While DAB has made inroads into the U.K. market, those are not yet enough to motivate the country's government into setting a firm DAB switchover with an analog transmission sunset date. The reason: Based on the government's Digital Radio Action Plan, a switchover will not happen until "50 percent of all listening is to digital; and national DAB coverage is comparable to FM, and local DAB reaches 90 percent of the population and all major roads." That's according to version 10 of the plan, which was issued on Jan. 9 of this year.

Other benchmarks established by the government — DAB coverage being equivalent to FM for all stations that need to switchover to DAB, and more cars incorporating DAB receivers — have yet to be achieved. Fifty-five percent of new U.K. cars come with DAB tuners as standard equipment, according to proponents.

Against this backdrop, the minister

The Pure Evoke 2S features stereo DAB with wooden design.



The U.K. government's statement ... kicked its policy of mandatory DAB radio switchover into the long grass, never to be revisited.

— Grant Goddard

responsible for U.K. broadcasting — Ed Vaizey, minister for Culture, Communications and Creative Industries — has been non-committal about setting a DAB switchover date. "I have always said that the radio listener will lead the transition to digital," Vaizey said in a December 2013 speech. Based on the benchmarks his government has put in place, "We are not there yet. So now is not the time to switch over."

The most the U.K. government has committed to is reviewing the possibility of setting a DAB switchover date at the end of 2014.

AM/FM STILL A FACTOR

Compared to other nations, the U.K. has been successful in promoting DAB to the listening public.

That's in contrast to Canada, for example, where attempts to launch DAB since the 1990s have failed and regulators are now giving HD Radio another look.

Attempts to popularize DAB in the 1452–1492 MHz L-Band went so poorly — due to a lack of affordable receivers — that the service was officially terminated in 2012. This, despite DAB simulcasts of Canadian AM/FM stations being available in the country's major markets.

One factor that is affecting the DAB

is three times that of a portable analog radio receiver, and only 19 percent of radio users are likely to buy a DAB radio receiver in the next 12 months." This may also explain why listening to digital radio via smartphone/tablet is rising so fast in the U.K.: Why buy a new DAB receiver when you can get the content on your existing smartphone/tablet for free?

All told, Goddard is not convinced that the growth in digital radio listenership is sufficient to push the U.K. government to set a firm switchover date. In fact, "The U.K. government's statement in December 2013 kicked its policy of mandatory DAB radio switchover into the long grass, never to be revisited," he said.

The Roberts iDream 200 combines an iPod connection with a DAB clock radio.



rollout in the U.K. is its pre-Internet roots. DAB was conceived before the advent of the Internet, streaming media and wireless broadband. The impact of this fact is noted in RAJAR's Q2 report: 22 percent of adults "claim to listen to the radio via a mobile phone or tablet at least once per month," up 51 percent over Q2 2013.

Meanwhile, RAJAR's data shows that analog AM/FM remains the most popular source of radio listening at 56.6 percent; down from 58.6 percent a year earlier. Moreover, "66.6 percent of new radio receivers purchased in the U.K. are analog and cannot receive DAB," said Grant Goddard, a London-based media analyst specializing in radio. Goddard recently researched and authored a report for a commercial radio group on the issues surrounding the proposed DAB switchover.

That's just the beginning of the DAB issues Goddard's research discovered: "U.K. unit sales of DAB radio receivers peaked in 2008 and have since been in decline," he said. "The average retail price of a portable DAB radio receiver

INEVITABLE CHANGE

The fact that the DAB rollout is taking time does not change the fact that the medium is making serious progress, said Jane Ostler, communications director for Digital Radio U.K., the industry/government body leading the U.K.'s DAB promotional campaign.

Driving this growth is continued technological progress. "We're about to build a second commercial DAB multiplex, to bring even more AM/FM stations onto DAB," Ostler said. "And while more of the U.K.'s 30 million cars are replaced — about 2 million are scrapped annually — more cars on the road will be equipped with DAB receivers, until virtually all of them are."

Unlike Goddard, Ostler does not believe the DAB digital switchover question has been "kicked into the long grass, never to be revisited." Instead, Ostler expects that "the next two to three years will be crucial in terms of the medium's progress, and the government's ability to decide upon a firm switchover date based on meeting their 50 percent criteria."

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RAREY WILL LEAD RW ENGINEERING EXTRA

Radio World has named broadcast radio engineer Rich Rarey, CEA, CBNT, as technical editor of Radio World Engineering Extra, a NewBay Media publication now in its 11th year.

Rarey succeeds Michael LeClair, who has guided RWEE since its launch. Rarey is principal of RAREworks LLC, a consultancy firm dedicated to enriching the media landscape through the application of innovative technology. He is former director of NPR Labs.

LeClair relinquishes the editor's title due to increased responsibilities in his full-time job as chief engineer of Boston public station WBUR(FM) but will continue as a regular contributor to the publication. The change is effective with the February 2015 issue.

"We're thrilled that Rich will expand his role here by leading the editorial content of our Engineering Extra," said Paul McLane, editor-in-chief of Radio World and editorial director of NewBay Media's Broadcast Video Group. "When we launched this deep-dive technical publication, we knew we needed the right person to guide it; and Michael LeClair has been superb. We've been fortunate to have an engineer of his caliber leading RWEE for more than a decade. He's an insightful technology writer, an outstanding editor and a good friend.

"In Rich Rarey we welcome a veteran engineer and technologist who's been part of the Radio World circle of contributors for more than 20 years."

At NPR Labs, Rarey received industry accolades for the organization's work in media accessibility; imaginative solutions for real-time captioning; and creation of a novel, accessible national alerting infrastructure. His work was a key part in the development of technology for which NPR Labs received innovation awards from the National Association of Broadcasters and Consumer Electronics Association.

A radio and audio buff since age 13, Rarey graduated cum laude from Ohio University in Athens, Ohio, with a bachelor of science in communications. A week later, he joined NPR as engineer for its bureau in Chicago and went on to work with the public radio organization for 34 years. Over that time he was the first technical director of "Weekend Edition/Saturday with Scott Simon" and "Weekend Edition/Sunday with Susan Stenberg." He traveled widely as an NPR broadcast/recording tech; and he supervised the NPR Master Control facility, building and managing automated streams for NPR Worldwide and public station HD Radio channels. He developed software and maintained the automation system for NPR's first online audio stream at npr.org and helped move NPR into the 21st century by building ingest servers for audio through various channels.

Radio World Engineering Extra is produced six times annually and delivers hard-core technical content, white papers and columns to a targeted readership of industry engineering professionals. Subscribe at www.myrweemag.com/.



ARGYRIS

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on demand." The broadcast business, he said firmly, is viable. "I'm excited about it."

TCO

Expect the company to continue its emphasis on power efficiency and the concept of total cost of ownership, a financial term that helps buyers and sellers calculate both direct and indirect costs. For Argyris, TCO goes beyond transmitter specifications to overall use of the spectrum.

As an example on the video side, he pointed to the GatesAir LTE Mobile Offload project.

This technology, developed by the Institute for Communications Technology at the Technical University of Braunschweig in Germany, uses broadcasting to supplement mobile network bandwidth. If mobile network operators could offload video content to "high-tower, high-power" transmitters from GatesAir, the thinking goes, operators can reduce network congestion. The system is for the DVB-T2 broadcast standard used in Europe and elsewhere; GatesAir is working with the university to commercialize it and views the concept as a natural progression for UHF broadcasting.

IP infrastructure demand continues to be strong, Argyris said; and HD Radio provides opportunities, too. "As a business decision, is it a slam dunk?" he said of HD Radio. "No, but do I see movement? Yes. We have a good business." He senses opportunities for smaller stations and "fill-ins" to invest, for instance, and thinks HD Radio technology eventually may help bring more services to station offerings.

But he doesn't expect to see global radio consolidating around HD Radio or any one digital standard anytime soon. "There's too much invested in DAB in Europe. DRM has been a long-time standard but slow to take off; China has its own standard. For right now, I think that [global standard] train has left the station." Similarly, he doubts that a global TV standard is ahead anytime soon.

I'd also heard that uncertainty over U.S. spectrum auctions had caused a slowdown in TV RF spending, so I asked him about that.

"It depends on your timeframe," he replied. "We went through a massive amount of work for the [TV] analog shutoff; after that, things slowed." Over the past year and a half, TV equipment buyers hesitated, "but right now we're seeing some things pick up" as older infrastructure ages and as users pursue more efficient investments. While television "won't make a massive move" until the spectrum repack is worked out, he said, "I have seen positive movement."

Argyris, who moved abroad to work in oil and gas at age 30, knows every geographical region differs, as do the technical challenges from industry to industry.

But although petroleum infrastructure projects involved, as he put it, "a lot more zeroes," businesses are businesses; you have to understand your clients.

"We're here to stay. We plan on being an industry innovator. We do those things by listening to our customers."

NEWSROUNDUP

BOB SCHROEDER: Bob Schroeder died in October after an illness; he was 62, according to the New Jersey Broadcasters Association. He had retired as communications and warning officer for the New Jersey Office of Emergency Management in West Trenton, and was current president of the Delaware Valley Radio Association. He was active in SBE, ARRL and IEEE. He had worked on the air in radio as a young man, then was a studio engineer for New Jersey Public Television before joining the state Office of Emergency Management in 1983.

CONTEST RULES: The FCC intends to vote on modernizing contest rules this month. Entercom petitioned for a change two years ago, asking the agency to allow radio and TV stations to post contest rules online or disseminate them elsewhere off the air. Currently, rules must be announced on-air, leading to a long explanation that turns off listeners, according to stations; these stipulations were enacted to ensure that stations conducted contests fairly. NAB and NPR agreed with Entercom. FCC Chairman Tom Wheeler has put a Notice of Proposed Rulemaking "to give broadcasters greater flexibility in their disclosure of contest terms" on the Nov. 21 agenda. If passed, broadcast owners would have time to comment to the agency on any changes.

ONLINE PUBLIC FILE: A proposal to require radio stations to upload public documents electronically to an FCC website seems to be getting closer to reality. Since 2012, all TV stations have been required to do so in the name of transparency in political ad funding. Chairman Wheeler is circulating a Notice of Proposed Rulemaking to extend the obligation to the radio, cable and satellite industries. An FCC official says the item will seek public input about whether and how to phase in the obligation and whether certain radio stations should be exempt. NAB and numerous owners have said that if the commission does include radio, it should beef up its IT infrastructure first. The official told Radio World the agency is looking into the necessary requirements. Timing is not certain but online obligations could be in place for radio by the 2016 election cycle if the requirement passes.

PRPD: The Public Radio Program Directors Association has chosen Jody Evans as its president and chief executive officer. Evans currently is president and chief executive officer of Western North Carolina Public Radio, Inc., which operates WCQS(FM) in Asheville. Evans will replace Arthur Cohen as of Jan. 1. Cohen is retiring after eight years leading PRPD and a 35-year career in public broadcasting.



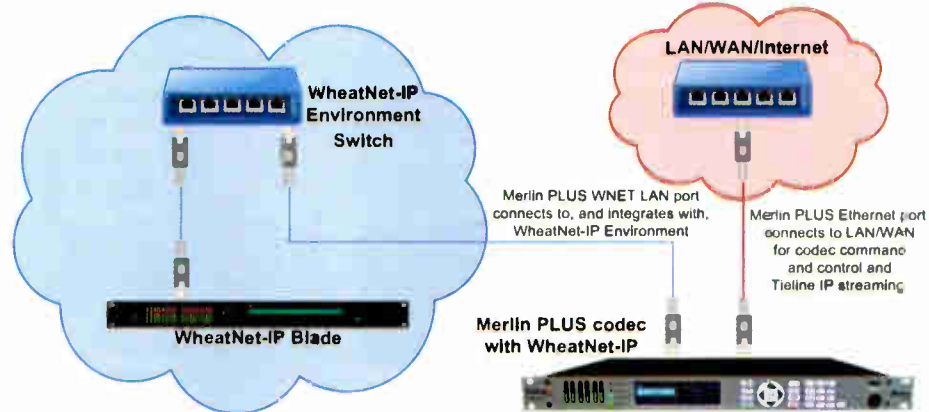
From one Environment to another



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Learn How to Add a Pad to a Punch Block

Also, protect your tower from frozen catastrophe

WORKBENCH

by John Bisset

Read more Workbench articles online at radioworld.com

Andy Soule is market engineering manager for Townsquare Media's Brewer, Maine, cluster. A syndicated show on Andy's country station recently changed

distributors; after the change, the staff heard distortion during the program. The audio sounded fine in the XDS receiver, but Andy determined the levels were too hot for the console.

He determined he needed a 6 dB pad to "pad down," or drop, the level. Andy had heard tales of pre-made pads that snap on in place of a bridge clip on a

punch block. That would have been perfect, but a quick Web search only came up with some out-of-stock options (and an \$80 price tag).

Andy needed to make his own, but he wasn't sure of an elegant way to insert the pad in the line. He was at the parts store picking up the resistors when he found a bottle of GC Electronics' Insulating Coating. Andy flashed back to a magazine article that had piqued his

interest years ago. It described how to assemble a small circuit, then dip it in an insulated coating, so it is like a single component.

The result is not pretty, but it is a lot smaller than if he had used tape or perf board. Some industry veterans may remember that "secret" RC time constants and certain IC assemblies were potted or sealed this way in some of the early audio processors.

By adding wires to the pads, Andy can punch down the wires and tuck them out of the way, making the assembly neat. And yes, as you can see in Fig. 5, Andy did label the assemblies so the next guy will have one less reason to curse his name.

Andy's going to try this approach
(continued on page 12)

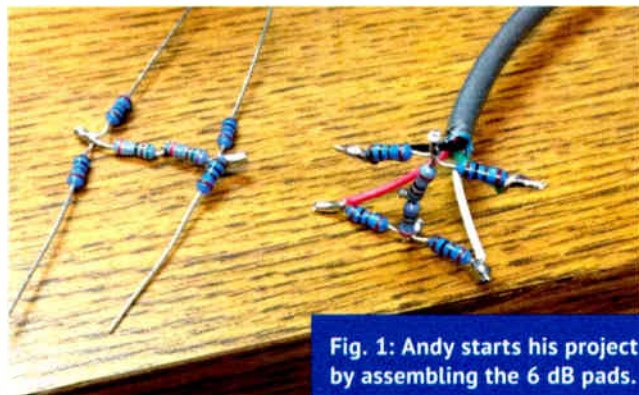


Fig. 1: Andy starts his project by assembling the 6 dB pads.



Fig. 2: Solder the pads to wire to punch easily on the blocks.



Fig. 3: The pad assembly is small enough that it can be dipped directly into the container.

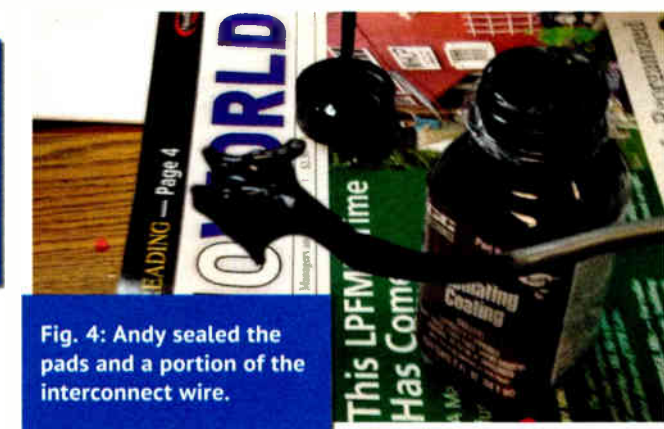


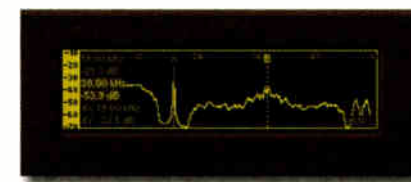
Fig. 4: Andy sealed the pads and a portion of the interconnect wire.



Fig. 5: The pad assembly is labeled and complete.



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- ✓ Remote Web access with off-air listening over IP.
- ✓ Failover audio via SD Card and Web-stream backup.



NEWSPAPER

(continued from page 1)

newspapers via radio facsimile.

In the early 1930s, radio facsimile looked like the dream application for newspapers. They could use their own local radio stations to deliver newspapers directly to consumers during over-night hours. It would eliminate the cost of printing and distribution and shift those costs onto consumers, who would provide their own printers and paper.

This led several radio stations and newspapers to experiment with facsimile transmission during the late 1930s.

THE FINCH SYSTEM

The person most responsible for this technology was William G. H. Finch. He worked for the International News Service and set up their first teletype circuits between New York, Chicago and Havana. He became interested in facsimile machines and eventually amassed hundreds of patents.

In 1935, he established Finch Telecommunications Laboratories to build and market his system. Although RCA had already developed a facsimile system, it was only focused on its commercial possibilities. Finch envisioned the delivery of newspapers to the public via radio facsimile.

The Finch system circumvented RCA's patents in several ways.

First, image details were transmitted by varying the amplitude of an audio tone, instead of its frequency.

Second, it recreated the image by

WOR

RADIO PRINT

WEATHER
Fair-Clear

FACSIMILE
Home Edition

Newark, N. J., Thursday, Feb. 10, 1938

RADIO OPENS VISUAL ERA

Miracles of Facsimile Transmission Are Utilized by WOR Engineers' New Home Radio Service

NEW YORK, Feb. 10 (two a.m.)—A new era in radio history was inaugurated over WOR here early this morning.

It marks the beginning of a new period in broadcasting's continual influence upon the progress and development of the world. For radio, since its inception as a modern marvel, has been planned for the ear alone.

Now—radio becomes visual! It records what it has

Is It For the Home?

Too often the most promising playthings of the research laboratory are widely proclaimed ready for instant use in the homes of the land. But frequently there has been either the bugaboo of expense or the fact that the machine was far too complex for a layman to operate.

An example of a news bulletin received on the Finch system.

generating an electric current at the tip of a stylus to trace the image onto thermally sensitive paper (the origins of the thermal paper still used by cash registers today). Synchronization between the transmitter and receiver used the 60 Hz line frequency. The Finch scanning head focused a pinpoint scanning spot on the document. A motor moved the scanner across the page while another

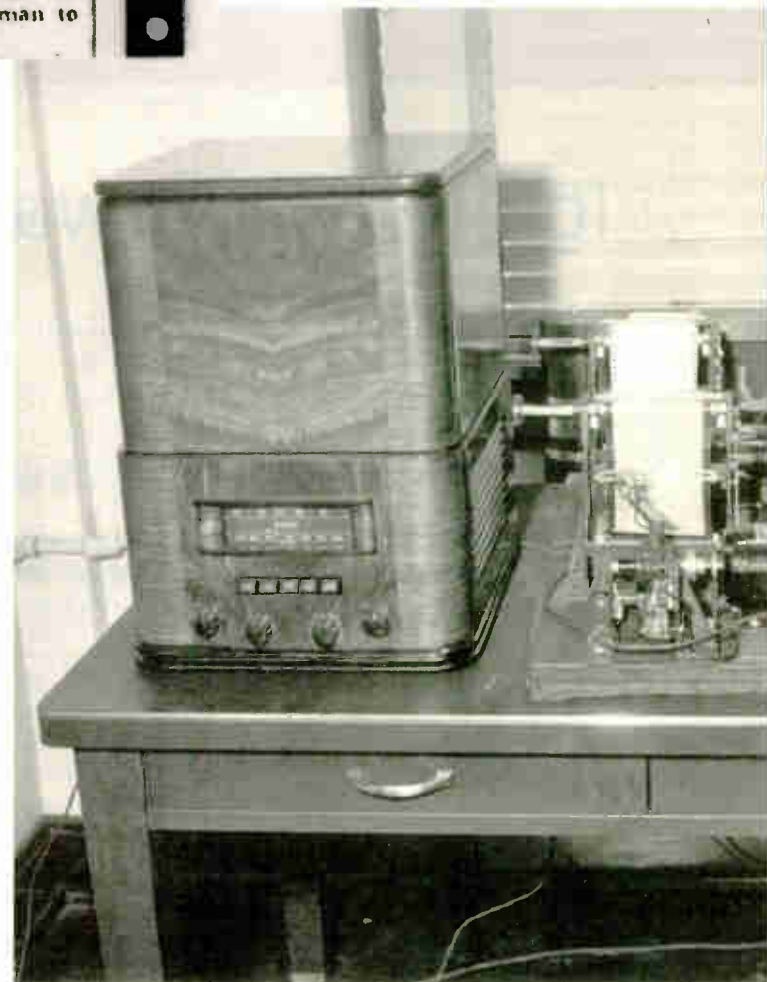
In the early 1930s, radio facsimile looked like the dream application for newspapers.

motor advanced the page at the end of each scanning line. Low frequency sync pulses were inserted at the end of each line. The result was an audio signal that could be fed into any conventional AM transmitter.

Finch receivers sold for \$125 and were housed in a one-foot-square wooden box that could be connected to the speaker of any radio receiver. The images were drawn onto a continuous



A home user receives a Detroit News bulletin from WWJ on her Finch facsimile printer, 1938.



roll of thermal paper 5 inches wide that sold for one dollar and would last about a week. The process was slow, taking about 20 minutes to print a 12-inch page, but a timer was used to capture the transmissions from a local AM station during overnight hours. Six hours overnight was enough time to print a six-page, two-column news bulletin.

Several stations received FCC permission in 1937 and 1938 to experiment with the Finch system. The first was KSTP in St. Paul, Minn. It was followed by WHO in Des Moines, Iowa; WGH in Newport News, Va.; WOR in New York; WGN in Chicago; WHK in Cleveland; WSM in Nashville, Tenn.; and WWJ in Detroit.

McClatchy Newspapers published the Radio Bee over KFBK in Sacramento and KMJ in Fresno, Calif. It required a staff of seven to produce the radio newspaper, and McClatchy bought 100 Finch receivers to distribute to listeners.

RCA ADAPTS

RCA, sensing it had missed an opportunity, quickly adapted its system for use by broadcasters.

The RCA system went into operation overnights on the St. Louis Post-Dispatch's station KSD in St. Louis in 1937. By late the following year, the service moved to an experimental ultra-high-frequency station, W9XZY, transmitting on 31,600 kHz with 100

watts. It had a range of about 20 miles. By using a dedicated transmitter for facsimile, the transmissions could be made during daytime hours, and so the Post-Dispatch transmissions now took place at 2 p.m. Also, ultra-high frequencies were less susceptible to radio static, which greatly disrupted the received image quality. RCA provided 15 receivers for the experiment, placing them at Washington University and in St. Louis area homes.

The receivers sold for \$260 each and combined an ultra-high frequency receiver and facsimile printer into a

single cabinet that had no controls or adjustments — the user simply kept the receiver supplied with rolls of carbon paper and white printing paper. RCA also demonstrated its facsimile system at the New York World's Fair in 1939, transmitting special "Radiopress" bulletins daily over WOR.

CROSLY GETS IN THE GAME

At the same world's fair, Crosley Radio Corp. surprised everyone by introducing its own facsimile machine called the "Reado," with two models selling for \$60 and \$80. (A timer to turn

the unit overnight cost an additional \$10.)

Powel Crosley had licensed the Finch technology and made some changes to reduce the cost. He produced an initial stock of 500 units and made plans to turn out up to 1,000 units a day. He began Reado facsimile transmissions during overnight hours over 500,000-watt WLW, which continued until 1942.

Most radio facsimile transmissions soon shifted from the AM band to the ultra-high frequencies. About a dozen of these experimental stations were built,

(continued on page 18)

A Crosley Reado with a shortwave receiver and Finch facsimile printer (removed from its cabinet) at WWJ in Detroit, 1940.

Courtesy of the Detroit News archives



NEW...

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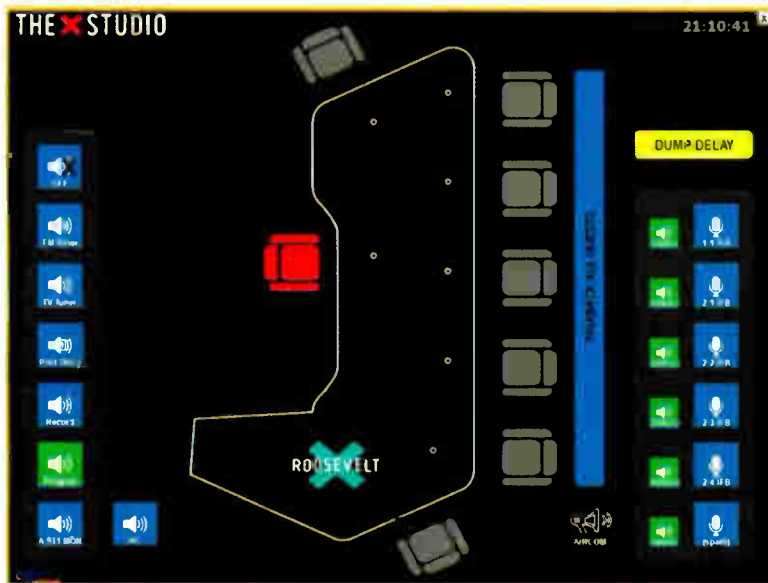


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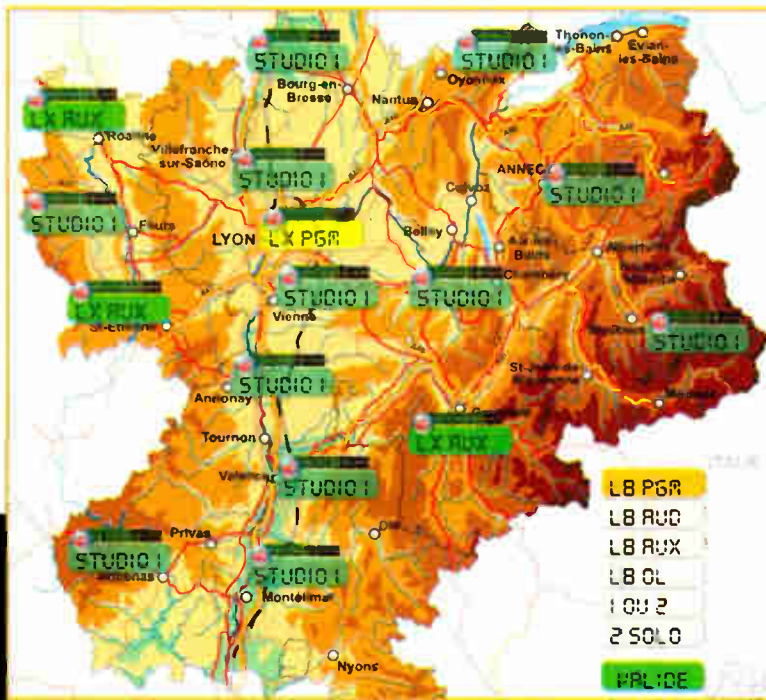
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The above producer control screen was built by our friends Agile Broadcast in Australia to control the room pictured on the right. Using Screen Builder's drag, drop and script interface, this screen is incredibly powerful and was completed in record time.



The screens at the left and above were created by our friends Save Diffusion in France. The map of France indicates radio stations around the country and their current status. The screen above delivers specific data about various transmitter sites. These screens were created with Screen Builder.

got an idea?
drag it, drop it, draw it, script it,
and make it come alive with

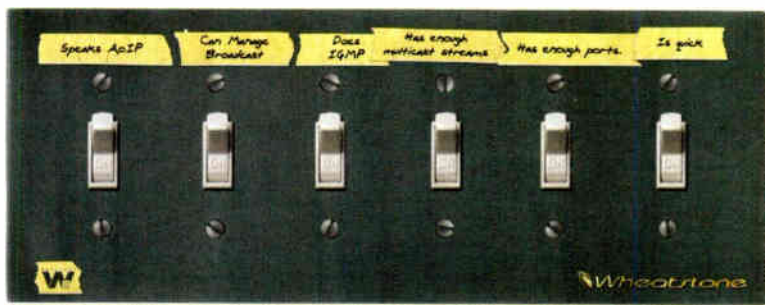
W H E A T S T O N E
Screen Builder



Screen Builder's environment comes with a slew of predefined widgets like faders, knobs, buttons, switches, clocks, timers, alarms, events, salvos. Import your own graphics. Create custom control panels that work with touchscreens to do anything you can script a system to do. Make crosspoints, fire salvos, turn routes on and off, change connections, do wholesale studio switching – whatever you can think of.



THE INTELLIGENT NETWORK



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You've selected the perfect control surfaces and the audio network is almost laid out for your new studios. Everyone and everything speaks broadcast and, so far, you haven't had to take up IT as a second language. But now you're about to drop a couple of network switches into the middle of it all and you're worried that things could erupt into a civil war between this newer IT world and the radio cavalry.

Discover the three most important characteristics Wheatstone engineers look for in a network switch...

Go to: INN16.wheatstone.com

What the #@& is Cable Certification?

We often use the term "certification testing" when referring to cable used in audio networks.

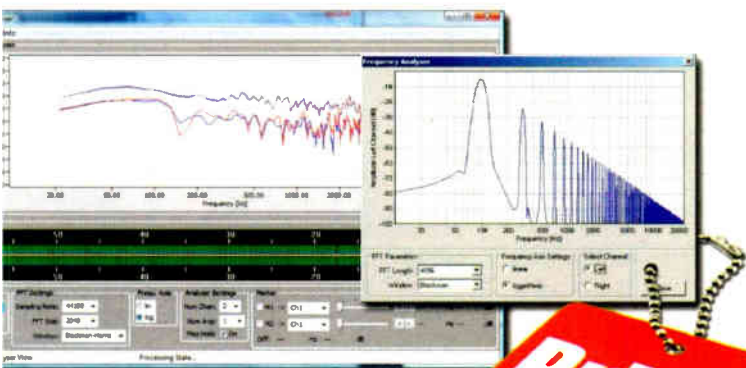


But if a person didn't know better, they'd think we were talking about guys in white lab coats running around with clipboards.

Hardly. This is just another way of saying that you should test your cables to make sure they're within manufacturer spec. Unlike the BNC and XLR world, Ethernet cable actually comes specified by The Telecommunications Industry Association (TIA) and the Electronic Industries Association (EIA) according to a "category," as measured every 100 meters (328 feet). The current standard is the TIA/EIA-568.

Here's what to test for and how...

Go to: INN16.wheatstone.com



Audio Performance Testing on the Cheap

by Wheatstone's Jeff Keith

There's nothing like a little audio performance testing to cap off a hectic week at the station, especially if you don't have to haul out the heavy (read "expensive") equipment to do it.

There are two main things I like to test: the flatness of the frequency response and the distortion added by equipment in the air chain. For this, you'll need clean test signals, and a way to measure those signals after they've passed through the air chain.

Here are some suggested tools and tricks:

Go to: INN16.wheatstone.com

When Radio Is Your Hobby

After talking with radio hobbyist Bill DeFellece, we're convinced that deep down inside all of us is a radio station wanting to get out.

Maybe that's why we jack up our stereo systems, have tuning forks for ears, and, for some of us anyway, make broadcast equipment.

Most of us fell in love with radio at a young age. For Bill, it started with his school's 330 watt FM (WMNR-FM, 88.1 MHz), where he ended up being the CE most of his high school years. He then went on to engineer a variety of stations, from a 1000 watt AM daytimer to a 50 kW FM blowtorch, before his current gig as IT support technologist for the Norwalk Connecticut Public Schools, where he was recruited to build a Part 15 AM and FM station as part of a high school renovation project.

Read more: INN16.wheatstone.com



AKAMAI

(continued from page 12)

somewhere between the average and peak metrics indicated in SOTI. While there have been modest changes over the last quarter in broadband adoption, both up and down, once again, every state saw more than half of its connections to Akamai occur at speeds over 4 Mbps.

There are a number of reasons for the differences in connection speeds between states. Population density and geography play a part. It might be easier to bring broadband the final mile in Connecticut, for example, than Idaho.

Google Fiber is a new player that changes the competitive landscape in some states.

"Google will announce that they're bringing fiber to an urban area," said Belson. "And then the local providers will often launch their own fiber program to customers ahead of Google Fiber's rollout to get a jump on the market."

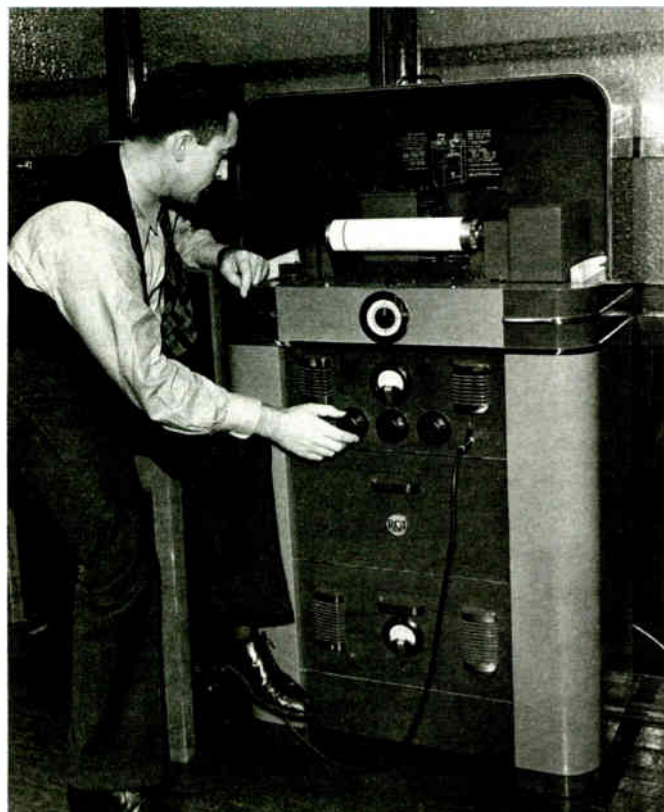
Marketing strategy is also a factor. "Google Fiber and other providers are still very targeted in the areas where they will deliver broadband," said Belson. "Pricing for delivery to the final mile is also a variable. At \$40 per month, it might be attractive, while \$400 would price it out of range for most consumers."

INVESTMENT

State investment in infrastructure, either directly or indirectly, can account for some of the differences, although Belson adds that most states are not making the investment. The majority of capital investment is being made by providers, although this again varies by

NEWSPAPER

(continued from page 15)



An engineer at W9XZY in St. Louis prepares an RCA scanner for the transmission of a news bulletin in 1938 in this photo from the author's collection.

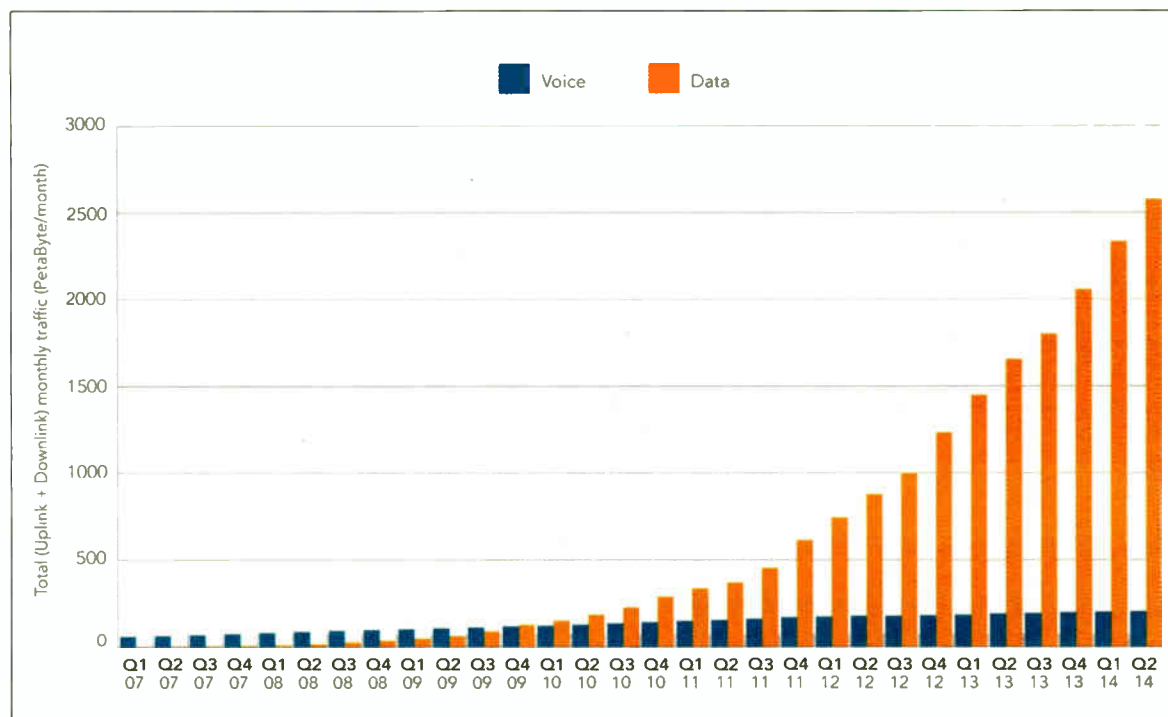


Fig. 4: Total Monthly Mobile Voice and Data as Measured by Ericsson

state. Differences in spending depend on a number of factors, although many decisions hinge on connection sharing and content profiles.

As broadcasters contemplate investment areas for online services, the speed data in SOTI can give some perspective.

"The speed for most wired connections in the United States is not a problem," said Belson. "What is interesting is the speed for mobile connections, and again, that can vary by location." He adds that mobile speeds are generally trending upwards nationwide. In those locations where mobile growth has stagnated, however, heavy investments that target smart phone users may not be warranted.

Another consideration (not published in SOTI) is insights into changing usage of fixed and mobile broadband for entertainment.

"We're seeing a trend for mobile carriers to zero rate music streaming services," said Belson. "And if more consumers are listening to music on mobile devices, that may indicate less listenership of satellite and terrestrial radio."

SOTI also tracks mobile browser usage on cellular networks, as shown in Fig. 3 on page 12, which focuses on the usage of Android Webkit and Apple Mobile Safari, with other browsers designated as "Others" in the graph. Note that Mobile Safari pulled ahead with 4-5 percent lead. This is significant because it is the first quarter where Safari essentially led Webkit on cellular networks across the full 90-day observation period.

SOTI also reports data gathered by Ericsson, as shown in Fig. 4. It depicts a strong increase in data traffic growth with moderating rate of growth and flat voice traffic development. The number of mobile data subscriptions is increasing rapidly, and driving growth in data traffic along with a continuous increase in the average data volume per subscription. Data traffic grew around 10 percent between the first and second quarters of 2014. This information may be of interest to radio broadcasters, as research from Strategy Analytics suggests that audio accounts for more than ten percent of bandwidth on many mobile networks.

Akamai has recently launched a State of the Internet website, www.stateoftheinternet.com, where past and current editions of this report are available for download, as well as a related Internet security report.

Tom Vernon is a longtime contributor to *Radio World*. Find more of his articles by searching keyword "Vernon" on radioworld.com.

including the Milwaukee Journal station WTMJ, which transmitted over W9XAF.

Nonetheless, it soon became clear that radio facsimile was a technological dead end.

Despite all the promotion and hype, the public had neither asked for, nor cared about, the technology.

Receivers were expensive, suffered from frequent paper jams and outages, and were subject to content loss due to static.

To make matters worse, there were two incompatible standards fighting for market dominance.

Further, advertisers didn't want to risk their money on the new medium, preferring the safety of traditional media.

The World War II paper shortages caused most facsimile stations to cease operations, and when the war was over, it was all but forgotten in the rush to build the new television industry. An attempt to bring it back on the FM band found no takers.

William Finch's company went into bankruptcy in 1952, and RCA eventually took over many of his patents. Finch died in Florida in 1990 at the age of 93.

John Schneider is a lifelong radio history researcher. Write the author at jschneid93@gmail.com. See other photos from his collection. Click on the *Roots of Radio* tab at radioworld.com under Columns.

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BRIC-Link Puts KBYS on the Web

Comrex equipment generates link to Shoutcast server for Web streaming

USERREPORT

BY PATRICK EUSTIS
Creative Director
KBYS(FM)

LAKE CHARLES, LA. — KBYS 88.3 FM McNeese Radio is a volunteer-run community radio station at McNeese State University in Lake Charles, La. We have the distinction of being Louisiana's first community/university radio station. The purpose of our station is to serve the public interest by providing local news, traffic and weather reports as well as interesting and unique music and entertainment programming. The station depends on our community volunteers to function as well as the generosity of community members to fund the operation of our facility. We always strive to operate a state-of-the-art facility within the constraints of our funding.

One recent challenge presented itself as we observed that the costs of ISDN lines as well as traditional RF solutions for STLs had become somewhat prohibitive. We needed to find a more economical yet dependable method for getting our signal to the transmitter.

From the PubTech listserv, we learned of several options available. The Comrex BRIC-Link was one of the solutions that stood out. Many of us were familiar with Comrex gear, and the low cost of the BRIC-Link certainly made it attractive. But we also learned that the device was also capable of providing additional capabilities.

CRITICAL STREAMING

Like most stations, a webstream is critical for our listeners, who increasingly are listening on mobile devices such as smartphones, tablets and laptops as well as desktop computers at home and in the workplace. We were pleased to learn that BRIC-Link was capable of simultaneously providing a source feed to our Shoutcast server that feeds



our online content. We would no longer continually have to reboot the Windows PC assigned to this task. The reported reliability of the BRIC-Link based on our research made it a simple choice.

This May, we completed installation of a new transmitter located at the L'Auberge Casino Resort in Lake Charles. We made the decision to employ an IP-based STL solution given that we had a fiber optic link between our studios and our transmitter.

Because the BRIC-Link is capable

of generating multiple encoded streams, we were able to create two separate profiles in the device's Web interface. The first profile defined the coding algorithm and parameters necessary to send our station's program audio from our studios to our transmitter. We used the HE-AAC 64 kbps algorithm using the BRIC's Normal channel settings which provides high-quality audio with minimal delay. For the source feed for Shoutcast, we created an HTTP streaming profile and used the same

HE-AAC 64 kbps algorithm to send to the Shoutcast server. We needed to specify a few additional parameters for the Shoutcast server to recognize our incoming stream (such as port address, passwords, stream ID, etc.); the tech support personnel at Comrex were able to assist us in making sure the correct settings were in place.

By creating these two separate connection profiles, we are able to send audio to both of our main transmission sources from this one BRIC-Link.

Overall, we are pleased with the Comrex BRIC-Link. The performance has been outstanding and the audio quality is superb. We had thought the lack of front-panel controls was going to be an impediment, but we realized that the ability to configure the devices through its Web browser interface significantly cut down on a lot of walking back and forth and allows us to configure the device from anywhere. We would have liked to see XLR connectors on the back of the device; but the balanced TRS 1/4-inch connectors are fine and Comrex provides 1/4-inch-to-XLR adapters in the box with the BRIC-Link. Most importantly, BRIC-Link's ability to provide a single point for our transmission for both terrestrial and Web streaming was a win for us. We've found the units to be as reliable as reported by our research.

For information, contact Chris Crump at Comrex in Massachusetts at (978) 784-1776 or visit www.comrex.com.

TECHUPDATE

NEWTEK SHRINKS TRICASTER

NewTek highlights the utility of its compact TriCaster Mini to stations' on-air personalities and promotions departments.

The company says the portable system allows users who don't speak or understand the technical language of video production to create network TV-quality multimedia content that engages a station's website visitors and social media followers. With a couple of cameras and Internet connection, TriCaster Mini can stream a station live.

The TriCaster Mini supports most cameras. A large toolset makes it easy to create and share content, with multiple live video camera angles, graphics, video clips, audio, titles and special effects.

An integrated and configurable video screen on the side of the system serves as a monitor for displaying a range of content selected by the user.

TriCaster Mini also gives video producers of all skill levels the ability to mix different visual sources; overlay logos, presentations, charts, titles, media files, animations; and import branding elements and have them appear in transitions and animations.

Users also can incorporate slideshows and Web pages from another computer; replace solid backgrounds with a simulated environment; webcast programs on a live video stream; and perform other specialized functions.

For information, contact NewTek in Texas at (210) 370-8000 or visit www.newtek.com.

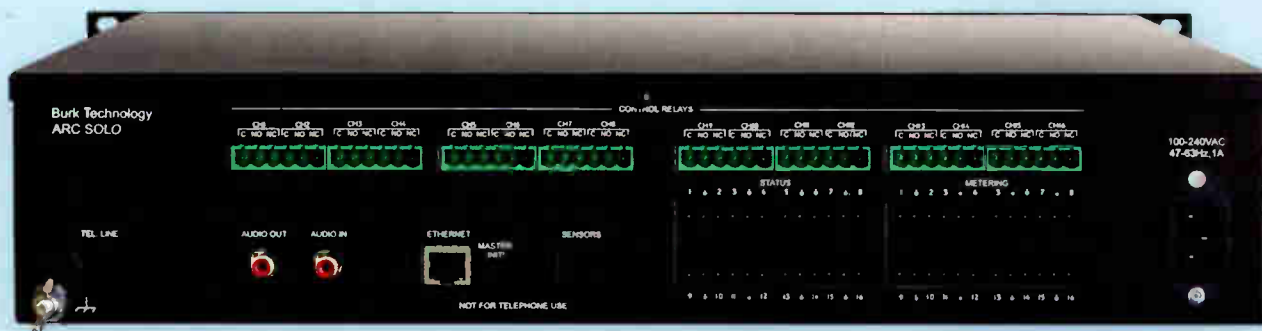


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World Radio History

Boston Baroque: Online With StreamGuys

Audience analytics and business software sweeten the score for the orchestra

USERREPORT

BY MIGUEL A. RODRIGUEZ

Executive Director

Boston Baroque

BOSTON — The beauty of Internet radio is that anyone can be a broadcaster. Of course, a great deal of planning and partnerships is required to deliver a professional streaming experience.

Boston Baroque was the first permanent Baroque orchestra in North America upon its establishment in 1973. Renowned for lively, emotionally-charged performances that reflect the eras in which the music was composed (1610–1820), the orchestra enjoys an international following that appreciates its recorded output as much as its concerts.

ANALYSIS SOFTWARE

Global fan interest in the orchestra's recordings was a driving influence in the launch of Boston Baroque Radio earlier this month, a 24/7 stream now live on at www.bostonbaroque.com. Working with StreamGuys, the online radio station allows us to reach tens of thousands of listeners worldwide on a regular basis, entertaining the current fan base outside of the concert hall while developing a new outlet for audience building.

StreamGuys' experience with profes-



Boston Baroque

sional radio broadcasters was instrumental in our decision. Our focus was on launching a pure-play stream that sounded like a true radio station, with introductions and conclusions at the end of every piece. With great care given to the programming element, we needed to deliver that content with the same reliability of an over-the-air station.

We had conversations with several engineers in the broadcast space, many of whom confirmed StreamGuys offers a reliable service with exceptional audio quality.

The audio quality coming from the

StreamGuys content delivery network architecture has been outstanding. With three Grammy nominations to our name, Boston Baroque's 24 commercially available recordings have been produced at the highest definition possible. Therefore, it was crucial to translate that quality to the streaming experience. To date, feedback on the streaming quality from the board of directors, our music director and listeners has been positive.

Certainly, many CDNs can deliver quality and reliability in audio streams. However, StreamGuys offers an HTML5

multimedia player — called SGplayer — that delivers a richer consumer experience. The player, which is embedded within our website, connects listeners to Amazon and other sales outlets via live links, allowing fans of specific pieces to purchase the music from these sites.

Our listeners can also access and enjoy the player from the platform of their choice, which is a substantial benefit of SGplayer. Importantly, listeners can stream the station on a variety of mobile devices — a necessity for audience-building. This ensures that Boston Baroque remains relevant with younger listeners who consume music through nontraditional means, including Android and iOS devices.

StreamGuys additionally is supporting our outreach in the streaming universe through listings on iHeartRadio and TuneIn, two streaming aggregation services that expand our visibility online. StreamGuys remains one of the few CDNs whose clients' hosted streams are recognized and supported on the iHeartRadio platform, which offers another advantage for audience expansion.

Understanding our audience is important for growth, and Boston Baroque Radio is using a comprehensive suite of business software from StreamGuys. Specifically, the SGmon service provides us with real-time analytics to monitor peak usage time, helping us make informed decisions in regards to scaling streams and associated concurrent user limits. Additionally, SGreports software will offer a deeper dive into audience analytics, with detailed metrics on content usage tied to hits, visitors, streaming platforms and play duration.

The software package includes SGalerts, which triggers email alerts in the event of a service interruption. We're immediately notified if an encoder or hardware component associated with the streaming architecture fails. This is a value-added service that supplements StreamGuys' exceptional technical support.

Moving forward, we expect to explore advanced services made possible through StreamGuys' SGplayer. This includes revenue generation through dynamic ad insertion, which would allow our sponsors to become part of our online presence. We will soon begin streaming live concert performances on Boston Baroque Radio, which could potentially drive a subscription service protected by StreamGuys' SGpasskey system. In the meantime, we're looking forward to listener feedback to determine how we evolve the service in the future.

For information, contact Jonathan Speaker at StreamGuys in California at (707) 667-9479 or visit www.streamguys.com.

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TECHUPDATES STREAM MY STATION SELLS STREAMING PACKAGES

Stream My Station says it can stream Shoutcast and Icecast stations for less.

According to the company, its decade of streaming experience gives it the knowledge and expertise needed to stream hundreds of stations.

Stream My Station has sports streaming packages, private streaming packages and standard streaming for Shoutcast and Icecast with or without AutoDJ.

It also can create mobile apps for iPhones, Androids, Blackberry, Windows Phone, Amazon Kindle and the Fire Phone, promising fast turn-around and competitive prices.

For information, contact Stream My Station in Ohio at (740) 314-8040 or visit www.StreamMyStation.com.

DJB OFFERS WEBSTREAM LOGGER

As radio broadcasters become more comfortable with their presence on the Web, tools are needed to monitor it. The DJB WebStream Logger is a multi-channel URL and analog audio logger, competition monitor, mic skimmer, stream silence detector and recorder.



Digital Jukebox says that the software was designed to support a range of users. It can provide radio networks, groups, clusters, combos and standalones with the ability to monitor URL Web streams from a single Windows 7/8 PC.

It can record MP2, MP3, MP4,WAV, OGG, FLAC and AAC files in a variety of bitrates and sample rates.

In addition, each channel provides DJB Silent Treatment audio monitoring and email warning should any channel detect loss of audio. It is available in one-, two-, four- and eight-channel versions.

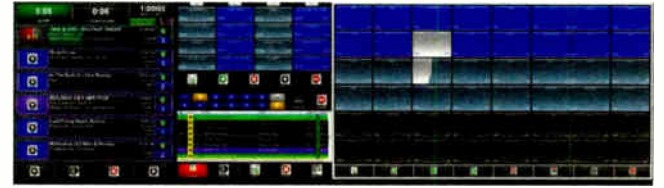
For information, contact Digital JukeBox in Nevada at (702) 487-3336 or visit store.digitaljukebox.com.

ENCO UPDATES DAD, EXPANDS STREAMING OPTIONS

ENCO Systems says it has introduced new radio automation packages for Web streaming.

The automation and playout company now offers an integrated streaming service plus DAD automation in a package that includes customized mobile apps, all at an affordable price.

It says stations can utilize the power and functionality of the DAD radio automation suite, which allows for up to 17 independent playlists streaming simultaneously from one machine. For stations that already have a service



provider, DAD now has the ability to feed an automated playlist directly to Shoutcast, Icecast or Wowza without the need for audio cards or drivers.

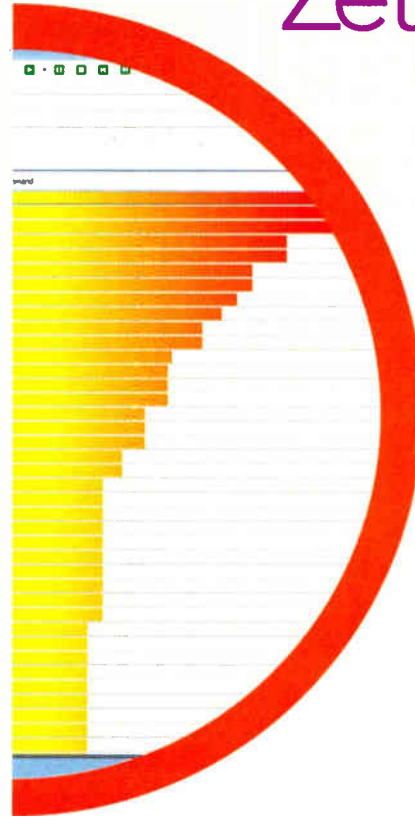
As Web streamers become more sophisticated, the company says, a radio automation package like DAD will prove more useful.

For information, contact ENCO Systems in Michigan at (248) 827-4440 or visit www.enco.com.

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GSelector is the latest music scheduling system from the company that invented music scheduling. Zetta is the latest automation playback system from the people who have more automation systems on air in the world than any other company.

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TECHUPDATES

ORBAN OFFERS STREAMING SUPPORT FOR RADIO BROADCASTERS

Orban Opticodec 1511EXP is a package that contains a high-performance version of the 1511, the 1511e, a multicore Intel processor based CPU in a 1RU Windows 7 Professional appliance with horsepower to handle a large number of encoders. This is matched to the OptiEXP (8X) expansion chassis that can hold eight Optimod PC 1101e cards (shown).

The package contains one Optimod PC 1101e and one Opticodec 1010PE; additional cards and codecs are sold separately. Dual redundant switching power supplies are optional. The Optimod PC 1101/1101e CBLXLR breakout cable is not included in packages.

Orban's Opticodec-PC family of streaming and file encoders uses standards-based Coding Technologies AAC/aacPlus v2 codecs. The Opticodec-PC family is versatile, allowing users to stream or download to a variety of available free players like Winamp (5.05 and higher) and RealPlayer (version 10 or higher). Opticodec-PC 1010 PE (Professional Edition) supports 3GPP streaming to mobile devices. All versions of Opticodec-PC support both HTTP and RTP-based servers, including the free Apple Darwin server, Real/Helix, Shoutcast/Icecast2 and Ultravox 3. All versions of the 1010 streaming encoder feature auto-reconnect in case of network interruption and feature implementation of metadata (like artist and title information).

The Opticodec-PC family is professional software that Orban says suits applications from an individual's desktop netcast to a major organization's multiple streaming to thousands of client players.

For information, contact Orban in Arizona at (480) 403-8300 or visit www.orban.com.



TELOS DEBUTS PROSTREAM X/2

The Telos Alliance says that its ProStream X/2 streaming software/encoder, built on the Omnia A/ XE platform, adds features designed for modern and future needs of audio encoding.

One is ProStream X/2's adaptive streaming, which allows for media players to adapt automatically to changing network conditions. ProStream X/2 encodes the same stream

at multiple bitrates, and keeps the audio packets sample-aligned to enable media players to switch between bitrates, to avoid buffering delays and glitches. Adaptive streaming supports Microsoft's Smooth Streaming and Apple's HLS formats. MPEG-DASH is planned in a future version.



Audio spot replacement allows restricted streaming material to be replaced with content from either another source or designated prerecorded audio files. Stream synchronization across multiple encoders provides enhanced stream reliability. If one encoder goes down or is taken offline for maintenance, another will continue to generate the stream without listeners knowing. In addition to email notifications, SNMP alarms are valuable for large deployments and can detect and inform relevant designated personnel of problems with the streams.

In addition to Omnia A/XE's three-band audio processor, ProStream X/2 can add optional Omnia.9 audio processing, including new "Undo" reprocessing/restoration technology and six-band parametric EQ. The three-band audio processing can provide value when stream density is of primary importance.

ProStream X/2 is cloud-ready, and can be monitored and configured remotely from PCs, Macs, tablets and smartphones. In addition to the HTML5 Web interface, X/2 implements a REST API for programmatic control, useful for configuration, monitoring or dynamic control from a variety of third-party tools and programming languages.

For information, contact theTelos Alliance in Ohio at (216) 241-7225 or visit www.telosalliance.com.

BSI SIMIAN SIMPLIFIES WEB STREAMING

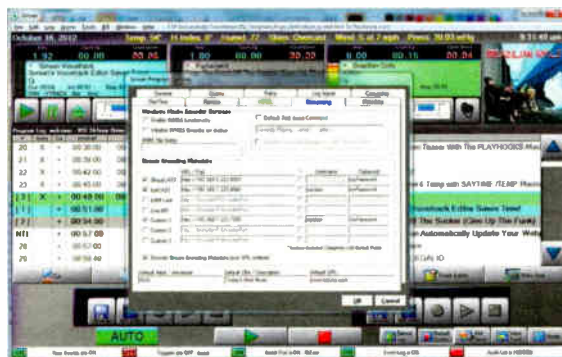
Broadcast Software International says its Simian Pro and Simian Lite make streaming over the Internet easier.

Web-based stations can use their favorite stream encoding packages — Shoutcast, Icecast, Live365, SAMcast or others — to encode their station, while Simian simplifies the output of metadata with prebuilt templates so that listeners can see the artist and title information for currently playing artists.

Simian Pro and Lite have an affidavit generator that analyzes the daily as-run logs, giving users a report suited for Sound Exchange. Simian 2.3 Pro also has optional remote clients for PC, iPad and iPhone, which allow talent to connect to the studio and record voice tracks, create logs and perform other tasks.

For stations that run a Web stream as a simulcast, Simian 2.3 Pro now has the ability to send software triggers to another Simian Pro 2.3 system via TCP/IP, so a secondary Simian system can replace terrestrial spots with Internet-only spots, perfect for generating extra revenue with Web spot packages for clients.

For information, contact Broadcast Software International in Oregon at (888) 274-8721 or visit www.bsiusa.com.



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RADIONOMY OFFERS TOTAL INTERNET PACKAGE

Online radio network Radionomy offers no-cost Internet radio broadcasting solutions including hosting, automation, streaming, music licensing, and distribution via Web, mobile, social media and other directories.

radionomy

The company says it covers the fees associated with a stream for a primary station or online-only secondary stations (including music licensing).

Radionomy also offers professional broadcasters tools to monetize an online audience, understand listener behavior and achieve high-quality performance from their online stream.

The Radionomy Group also includes TargetSpot, Shoutcast and WinAmp.

For information, contact Radionomy in California at (415) 484-9550 or visit www.radionomy.com.

BACKBONE RADIO USES THE CLOUD

Backbone Networks Corp. offers a turnkey software service suite enabling the launch of specialized streaming sports, news and talk stations, promising all the familiar elements of traditional talk stations.

The company says individual broadcast personalities and non-traditional entities, such as newspapers, thus can launch 24/7 online stations without the burden of excess capital equipment or government regulations.

With streaming automation and listener connections in the cloud, the broadcast studio is wherever the host sets up his/her gear: a Mac laptop, a mixer and a couple mics, plus an Internet connection. This enables live coverage of events anywhere one can access reliable Wi-Fi or 4G.

An optional feature set, Backbone Talk, enables professional talk radio, with multiline call screening, distributed host conferencing and automatic podcast generation. Station streaming is compatible with hundreds of devices through major players including TuneIn, iHeartRadio and DAR.fm.

For information, contact Backbone Networks Corp. in Massachusetts at (617) 848-1176 or at backbone.com.

WHO'S BUYING WHAT

RADIO KERRY SELECTS MIRROR IMAGE

Irish broadcaster Radio Kerry has chosen Mirror Image as its streaming service provider to reach audiences outside of Ireland.

Mirror Image's Dynamic Delivery Network provides live audio streams at the supported bitrates anywhere in the world using the HTTP protocol. Listeners everywhere can connect to its MP3 streams with popular media players

including Windows Media Player, iTunes and Winamp. Mirror Image also delivers the audio streaming for Radio Kerry's iPhone app available on the Apple App Store.

Radio Kerry's engineering and IT manager is Trevor Galvin. He told the supplier its traffic demands from 84,000 daily listeners recently surpassed 5.5 terabytes. Radio Kerry uses Mirror Image to audio distribution and ad insertion capabilities for delivering live music and news broadcasts to a variety of mobile devices and tablets.

For information, contact Mirror Image in Massachusetts at (781) 376-1100 or visit www.mirror-image.com.

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OPTICODEC-PC 1511e

1RU appliance with both Optimod PC 1101 and Opticodec 1010PE installed. It offers SSD storage and a Dell R210 II and Intel I3 processor, and runs Windows® 7 Professional. Provides both front panel and PC Remote control for easy setup and operation. Uses a 2x40-line LCD display for basic setup functions, create custom presets via the 8600S's included PC Remote software and Ethernet connection.



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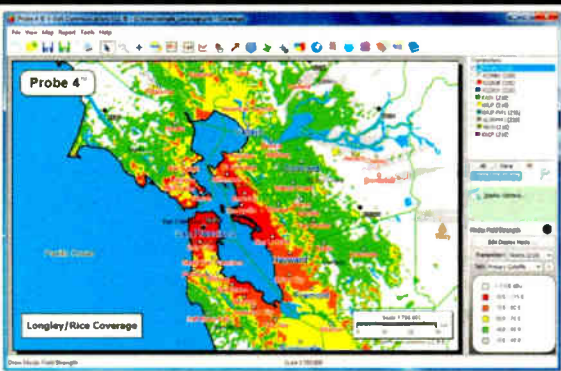
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allows you to schedule the recording of a network or any other program for replay later as well as a basic logging system. Beside these additions the system schedules music, does voice tracking (ALWAYS hit the vocal), create a shell, live assist, exact time events, join satellite feeds, automated temperature announce, do unattended remote events and more. Call (406) 679-0527 or email krws@digitaldevelopment.net for a copy today.

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approx 100 to 125 games, time period of entire collection os from the 1950's - 1970's, BO. Must purchase entire collection. Contact Ron, 925-284-5428 or ronwtamm@yahoo.com

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2" plastic "spot" reels 6.5 or 8" diameter, as used for quad video. Wayne, Audio Village, 760-320-0728 or audiolvlg@gte.net.

Equipment Wanted: obsolete, or out of service broadcast and recording gear, amplifiers, processing, radio or mixing consoles, microphones, etc. Large lots preferred. Pickup or shipping can be discussed. 443-854-0725 or ajkivi@gmail.com.

I'm looking for San Francisco radio recordings from the 1920's through the 1980's. For example newscast, talk shows, music shows, live band remotes, etc. Stations like KGO, KFRC, KSFO, KTAB, KDIA, KWBR, KSF, KOB, KCBS, KQW, KRE, KTIM, KYA, etc. I will pay for copies... Feel free to call me at 925-284-5428 or you can email me at ronwtamm@yahoo.com.

Looking for a broadcast excerpt of a San Francisco Giant's taped off of KSFO radio from 1959, interviews with Willie Mays, Dusty Rhodes & some play by play excerpts, also features a homerun by Willie Mays and Felipe Alou stealing second base, running time is 18:02, also looking for SF Giants games and/or highlights from 1958-1978 also taped off KSFO Radio. Ron, 925-284-5428 or ronwtamm@yahoo.com.

Looking for KFRC signoff radio broadcast from 1930 Andy Potter, running time is 0:22 & also the KLX kitchen the program guest is Susanne Caygill, a discussion of women's affairs with a long promotion for Caygill's appearance at a local store. Anne Truax, Susanne Caygill, running time is 13:44. Ron, 925-284-5428 or email ronwtamm@yahoo.com.

Looking for KTIM FM radio shows from 1981-1984 if possible unscoped. R Tamm, 925-284-5428 or ronwtamm@yahoo.com.

WANTED: Expired/cancelled FCC Third Class Radiotelephone license with Broadcast Endorsement. Kentverbeck1@yahoo.com.

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No, Really; This Is Not a Test

Instead of playing the EAS blame game, fix the system

ALERTING

BY SCOTT FYBUSH

It happens every time something goes wrong with EAS: The blame game starts up right away, all over the engineering mailing lists and beyond.

In October, when syndicated morning host Bobby Bones, or at least one of his producers, played audio of the 2011 national EAS test — to help illustrate Bones' frustration at having his World Series viewing interrupted by an EAS test the night before — it touched off yet another perfect storm.

In some markets, the local Bones affiliate happened to be an EAS primary station; so that audio was heard by EAS receivers all over the market (including, yes, at the local AT&T U-Verse headend, which prompted an initial flush of misleading media reports calling the whole thing a "U-Verse glitch").

Depending on how each receiver was set, the result was either nothing (if the box saw the timestamp on the alert and was programmed to ignore "stale" alerts) or a further retransmission of the message (if the box was programmed to assume that even an EAN with a stale date should still be relayed, as some have interpreted the rules to require).

Should Bones or his producer have known better than to have played that audio clip, especially on a national show? Of course — and yes, there will be extra training for a while at stations all over the country, and yes, there will almost inevitably be FCC fines against Bones' flagship, iHeartMedia's WSIX(FM) in Nashville, and perhaps other stations that carried the show, which is syndicated by iHeart's Premiere Radio Networks.

UNINTENDED CONSEQUENCES

Will Bones lose his show over this? No, and he shouldn't.

Because as much as on-air talent and producers need to be constantly reminded that they can't use EAS audio, or even anything that sounds like EAS audio on the air, the Bones incident really exposed some much deeper underlying flaws in the way the EAS system is designed — flaws that almost guarantee that we'll have another "Bones moment" sooner rather than later.

This was, after all, hardly the first time an errant bit of EAS audio has caused problems.

We've had incidents in recent years in which EAS data bursts (or noises that sound like them) have been included in movie trailers and even public service announcements. With millions of hours of audio content being created every week all over the country, we'll have more such incidents in the future, too.

IDENTIFY THE CAUSE

The root of this particular problem is in the in-band nature of EAS data transmission.

The EAS decoders at the U-Verse headends, and



Scott Fybus

everywhere else downstream from the nation's EAS LP-1 and LP-2 stations, have no way right now to know whether the data bursts they're getting are coming from the primary station's EAS encoder or whether they're simply random audio being played by some morning show producer who has no way of knowing that the audio they've just grabbed from YouTube could shut down some poor viewer's cable box half a continent away.

If EAS must include in-band data signaling — and for now, that's unfortunately something that's deeply entrenched in the system — those audio bursts of data shouldn't be able to reach the transmitter from any source other than the station's own EAS encoder.

FIX THE PROBLEM

Here's my modest proposal.

Any audio coming through the program chain that can erroneously trip a decoder somewhere downstream from the transmitter would also, pretty much by definition, be able to trip a decoder upstream from the transmitter. With a little bit of extra delay in the audio chain (no big deal these days, when so little radio is truly "live"), that extra decoder could, in turn, dump that



Promotional image from the Bobby Bones website

audio source out of the chain before it ever reaches the transmitter to wreak havoc out in the world.

For stations that could be facing hundreds of thousands of dollars in fines for erroneous EAS transmissions, or for the syndicators who shouldn't have any EAS noises coming down the satellite to their affiliates, the expense of a fail-safe system like this should be relatively small by comparison.

(And no, this system wouldn't catch the sort of similar-to-EAS noises that have also triggered fines, but that's what a good traffic department should be alert to, right?)



iStockphoto/gdags

As the next generation of EAS is developed, isn't it time to break completely from the entire idea of in-band audio?

That 2011 national test that Bones accidentally aired demonstrated that daisy-chaining audio from station to station doesn't work well, even ignoring the telephone-link feedback problem that messed up the audio of the test in the first place. All those weekly and monthly bursts of barely-explained data noises probably do more to desensitize listeners to the system than to prepare them to hear actual alerts when they're issued.

We have the capability to securely deliver audio and data directly — and in a more securely authenticated manner — to individual stations and to cable headends via networks that are at least as hardened as our broadcast system. Why are we still depending on delivering that audio and data over the same programming stream that brings us Bobby Bones in the morning?

Veteran broadcaster Scott Fybus is editor of NorthEast Radio Watch (www.fybush.com) and has written for Radio World since 1999. Opinions are his own.

Comment on this or any article. Email radioworld@nbmedia.com.

READER'S FORUM

LATE TO THE PARTY

The problem with NextRadio and iHeartRadio ("Coleman Says Demand 'Strong' for NextRadio," *radioworld.com*, Aug. 1) is that they are a few years too late to the party.

All of the college kids I know (and I work for a college radio station) use the free app from TuneIn Radio. If you're not on represented on TuneIn, you're not really streaming anyway.

Students don't like to have a separate app for every station they listen to. That just causes clutter on their device ... and TuneIn even has some AM stations represented.

*Bart Jones
Chief Engineer
KFKX(FM)
Hastings College
Hastings, Neb.*

How to Save HD Radio (If Someone Wants to Try)

Matt Sammon considers the high-definition dilemma

HD RADIO

BY MATT SAMMON

Several months ago, I heard two sides of a story at virtually the same time. One side, General Motors, announced it would not include HD Radio in the 2015 Chevy Silverado and Impala, nor the Buick Enclave and Regal, opting for 4G LTE and Wi-Fi capability. This implies, at least temporarily, that GM feels it was time to phase out HD Radio. The other side, mostly from iBiquity (the driving force behind HD Radio), stated that despite the challenges of GM scaling back on factory HD Radio installation things were pretty good and the platform would be fine.

So which side is right?

The debate got me thinking, and writing. I pontificated about the subject on a Tumblr blog post. As the story went viral, the responses were interesting and — much like the initial argument—split right down the middle.

Some people said “good riddance” to HD Radio, citing it as a wasted money grab by both terrestrial broadcasters and iBiquity. Others praised the idea of retooling HD Radio, seeing it as a valued part of the broadcast spectrum, even if it is maligned right now.

We all knew HD Radio’s promise when it launched earlier this century, as well as its shortcomings. In summary, five things have held HD Radio from advancing to a platform like iTunes, streaming, and even satellite radio:

1. Confusion About What HD Radio Is — As opposed to HDTV, HD Radio isn’t really “HD.” True, an AM signal on an HD frequency will sound crisper, but HD Radio totally lacks the “wow” factor of the actual technical superiority of HDTV to SDTV. In fact, the “HD Radio” name is misleading. Truth is, it’s simply additional content wedged in between current FM signals, and while us radio types love that stuff, clearly the general public doesn’t.

2. A Lack of Serious Promotion to Raise Awareness — It’s hard to get people to follow along if you don’t aggressively sell what you have. While iTunes, mobile devices and even financially hemorrhaging satellite radio went crazy on promotions and advertising about 10 years ago, HD Radio pretty much waited on the sidelines. Whatever ads were created were vague and often stuck in the middle of six-minute spot breaks on FM radio.

3. The Emergence of Apple as the Leader of Innovative Technology — While HD Radio was idly sitting by, waiting for customers to roll in, Apple was *everywhere* when promoting iTunes, the iPod and later the iPhone and iPad. Complain if you will about how Apple products are made, work or how pricey they are; but the fact is they left the rest of the competition in the dust. Those who adjusted are still in the race; those who didn’t have been left for dead (e.g. BlackBerry).

4. The Economy and Its Timing With Apple Taking the Lead — HD Radio wasn’t attracting



Matt Sammon, shown here with the Stanley cup.

attention when the economy was good, so when the bottom dropped out in 2008, it was nearly impossible for people to part with their dollars for something that didn’t move the needle. The economy has since improved, the consumer is looking for value, and they perceive it in products and services other than HD Radio, even if it means spending a little more for something they know and like.

5. The Entertainment Tastes of the Consumer — Call it the eye of the perfect storm of the economy and Apple. What was cool 10 or 15 years ago is not now. If it’s not streaming, on-demand and at your fingertips, it’s a dinosaur. HD Radio is still part of the “old school” dashboard. As long as it’s not part of the connected car or on mobile devices, HD Radio will continue to be phased out.

These are the well-known problems that have plagued HD Radio since its existence, but for most people, that’s *all* they know. We radio people do like to complain and to talk about the “good old days” without offering solutions, don’t we?

Instead, here are five things that can be done to get HD Radio headed in the right —or at the least, a better — direction:

1. Rebrand the Whole Concept, From Top to Bottom — In my blog I used the example of ValuJet airlines, which is doing just fine now, 18 years after the airline was nearly wiped off the map following a crash in the Florida Everglades. By merging with tiny Airtran Airways and rebranding its entire operations, Airtran was actually bought by its former competition, Southwest Airlines, so that SWA could get valuable gates and connections in Atlanta. If that’s too hard to understand, just look at what Clear Channel did with its iHeartMedia rebrand. Clear Channel was “old” and “corporate,” while iHeartMedia speaks to the consumer and their needs (even if little within iHeartMedia has changed).

2. Get Mobile and Get Streaming — As stated, technology and consumer tastes have moved beyond what HD Radio initially was, and amazingly, still is: a car stereo tuner with a few more options than traditional AM/FM radio. If HD Radio itself cannot create an easy-to-use mobile streaming service, negotiations need to be made with current content providers to carry their stream on an HD Radio streaming platform. Yes, it’s duplication in many instances, but some consumers may not know what they’re listening to on HD Radio’s platform is available elsewhere.

3. Challenge the Current Content Providers to Be More Innovative and Helpful — Speaking of current content providers, what have they done to help HD Radio’s plight? From my view, not a whole lot, as budget cuts have killed HD broadcasts and promotion. The bigger issue at hand is broadcasters investing in their own platforms that are in direct competition to what HD Radio should be doing. The bottom line is, broadcasters are not following HD Radio’s own best practices. That’s not a partnership, that’s a sham.

4. Find Common Ground — Although I admit it’s a stretch, I suggest HD Radio reach out to competitors such as Pandora and see if there’s common ground to team up on. Pandora is looking to get into car dashboards, while HD Radio (for now) is already there. While it’s not the perfect connected car scenario for either side, it helps both in the short term — Pandora provides established content through the HD Radio delivery method. Again, it’s a stretch, but it’s better than doing nothing at all.

5. Don’t Pretend the Window Is Closing — And speaking of doing nothing at all, doing that leads to nowhere. iBiquity can (and should) publicly say that everything’s going to be fine, at least to ease and perhaps court more investors. But if things are not aggressively happening behind the scenes to change what HD Radio is and will be, it will join every other form of obsolete electronic entertainment by the end of this decade.

While my suggestions may not be the best out there, it’s good to throw some ideas out in the open because HD Radio still has some value. Unlike a start-up platform, HD Radio is here and it is operational; but in its current state, it won’t be for long. If HD Radio is to be saved while serving the consumer, it is up to the brand’s higher echelon all the way down to the consumer to demand changes be made — sooner than later.

Matt Sammon is director of broadcasting and programming for the National Hockey League’s Tampa Bay Lightning and has 19 years of radio broadcasting experience. Read his original Tumblr post at <http://tinyurl.com/of4k2xp>.

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READER'S FORUM

USE DTV SPECTRUM

I thought you should know that the FCC has just licensed a digital TV station with an ancillary service in the form of an analog FM radio station. This new service can create thousands of powerful FM radio stations, which can be leased to current AM radio stations now struggling with broadcast difficulties.

Recent studies have shown that the 0.62 MHz now unused by DTV stations can be efficiently employed for other services, with no interference to or from either the DTV reception or, for example, FM radio reception. No new spectrum, or change in current spectrum use, is required. FM receivers, which can receive all VHF and UHF TV stations' analog audio, were readily available since the 1980s from many manufacturers, and could easily be again.

The first DTV station licensed to broadcast this added analog FM is W26DC-D in New York. No interference of any kind has been observed. It uses the upper 200 kHz of the digital channel for monaural analog FM, and is well received by the older FM radios mentioned above. (Stereo FM analog, and digital radio, could also be broadcast.)

The FCC had previously shown concern that this added ancillary service might adversely affect new cochannels, but this has been disproved for the specific conditions employed.

This extended use of DTV spectrum could solve the problems of current AM radio stations by allowing them all to migrate to this new FM band, with no need to disturb any existing service. All that is needed is an FM transmitter output injected into the antenna line of a full- or low-power digital television station.

I hope advantage can be taken by the radio and television industry of this novel spectrum use.

Richard D. Bogner
Retired, Former President and Owner
Island Broadcasting Co.
Roslyn, N.Y.

ENFORCE THE RULES

As a major player in the world of AM radio and as one who is vested deeply, I am continually amazed at people who are not invested trying to tell us how to live.

AM radio in itself needs no improvement!! It works just fine. The problem is simple: The FCC has dropped the ball and fails to recognize the problem is the environment surrounding it. It is man-made interference that has caused the problem, and if the commission had enforced the incidental radiation rules, we would not be compromised as we are today.

All these hearings and meetings always attack the AM spectrum itself. *It is just plain wrong!* Enforce the rules and make sure radio manufacturers build good radios.

I listen to AM with my Icom Ham Radio with its digital noise blanker and love every moment of it.


Tom King's article ("King Lays Out 'Critical Steps'") in the Sept. 24 Radio World was right on — except for C-Quam, which was a disaster.

Just because the inventor of the best stereo for AM was a eccentric old man and didn't have a ton of money to spread around in the propaganda war The Commission selected C Quam. They said it was in the public interest... The Washington bureaucrats wouldn't know public interest if it hit them in the backside. Face it — AM broadcasters, we have been screwed by the government. Maybe if some of these highest consultants would get their heads out of their backsides we could salvage AM.

God bless you, Mr. King, but the Kahn system rules.

Ed De La Hunt
Owner
De La Hunt Broadcasting
Kelliher, Minn.

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Streaming Made Simple! With Simian 2.2 Pro & Lite

By Paul Anderson & David Bowman of KOUU



Paul Anderson at KOUU in Pocatello, Idaho

Idaho Wireless Corp is a small market group in Pocatello, Idaho, and we're the only independently owned and managed radio group left in our market. As technology evolves we evaluate the costs and benefits of each change, and streaming was one of those projects.

When we changed the format January 1st on our 50,000 watt AM KOUU to Country Classics the response was immediately positive, but our audience wanted to listen in their offices and on their smart phones. We had considered streaming KOUU in the past, but the expense and complexity meant it was always a project that got pushed back to "later".

In 2009 we installed our first Simian system, replacing a beloved but tired Scott Studios system. We were ready for the benefits of a Windows based system that had more features, and we found that Simian is easy to use, powerful, and installation was a breeze. Since then we've converted all of our stations from Scott to Simian.

Simian offers many options to set up streaming. Country KOUU audio streaming is being outsourced to a third party (Crystal Media Networks) using data provided by Simian. Using the Metadata tab in Program options is where all the set up takes place. Crystal Media Networks required certain parameters to interface with their streaming player. The majority of the setup is all contained in an .xml file.

To create an .xml file, use Notepad and type in the syntax for each parameter required by the streamer (Syntax for Artist is <artist><![CDATA[%ARTIST%]]></artist>). Simian support can help with this, or a template is pictured in the Simian Pro Manual. In the case of KOUU, Artist, Title, Filename, Category, and Length of each piece of audio was provided to Crystal Media Networks. This file becomes the Template File.

Some final setup is required. The template file is loaded in the Metadata tab in Program Options in Simian. The IP Address corresponds to the computer that will be accessed by the streaming software. This computer needs to be networked to the on air Simian computer. The port and TCP/UDP address is set up with information provided by the streaming company (in the case of KOUU, Crystal Media provided this information).

All of the programming for KOUU is played by the Simian Pro system. In order to stream with more than one source (i.e. switching from local audio to network audio like a satellite receiver) Data Repeater-available from BSI-can handle multiple metadata sources and destinations.

Our streaming project for KOUU was easier than we imagined. The support team from BSI and the streaming features of Simian made it simple.

Paul Anderson is the General Manager of KOUU, KZBQ and KORR. David Bowman is the Operations Manager. KOUU uses Simian Pro, though the metadata output features of Simian Pro are also available in Simian Lite. Simian Pro & Lite contain built in metadata output templates for Windows Media Encoder, ShoutCast, IceCast, SAM Cast, Live365, Orba, Optimod, and Omnia A/XE. Metadata output in Simian Pro & Lite is template based, so most stream encoders not listed are compatible.

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