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On the cover: The former home of the Louisville Electric company — now the home of Louisville Public Media.

FIND THE MIC AND WIN!

Tell us where you think the mic icon is placed on this issue's cover and you could win a **IBT-300 Drive Bluetooth Audio Receiver**. Send your entry to radio@RadioMagOnline.com by **Jan. 10.** Be sure to include your guess, name, job title, company name, mailing address and phone number. No purchase necessary. For complete rules, go to *RadioMagOnline.com*.

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VIEWPOINT

Is Your Station in the Holiday Spirit?

This time of year I try not to take on many big or complex projects. Some staff members are away on vacation, and those of us remaining behind are at least somewhat distracted by the season. My advice is to put your plant on "auto-pilot" to the extent possible.

I often do three things this time of the year: Compile a list of projects to be done heading into the New Year — and I review last year's list, as well. It's important to know what's been scratched off over the last 12 months. Aside from that, I clean up my workspace and get caught up on filing. None of this takes much in the way of brain power, and such projects can be started/stopped/interrupted at any time without causing stress.

Louisville Pubic Media recently completed a $7 million infrastructure renovation, and it's our Facility Showcase this month. LPM started with one 10 Watt FM station in 1950 — 20 years before the creation of NPR and 17 years before the Public Broadcasting Act. Today, they have three FM stations. It's a great story, told by Judy Bandstra.

In this month's Trends in Technology column, we follow up on a recent article about streaming with one focusing on "on-demand radio," also known as podcasting. This isn't meant to be a primer (it's not a complicated topic anyway). But if the topic is new to you, hopefully, this article will give you enough information to get started.

Chris Cottingham has contributed a series of articles about how to use Linux around the radio station, and he's not done yet. This time around, the topic is virtualization of Windows machines, running on top of Linux.

We've covered the difficulties associated with matching delays between over-the-air analog and HD audio — but what about matching OTA audio with that of streaming media? James Cridland tackles that topic this month. It's coming sooner than later, colleagues.

Many of us are using smartphone apps that "talk" to AoIP codecs back at the radio station in order to carry out remotes, live news breaks, etc. This month, we're presenting a different service, known as QGoLive, in our Field Report. It's by an author new to our pages: Brian Oliger of WTOP in Washington.

In Tech Tips, Dennis Sloatman imparts more of his wisdom, gained over a lifetime in our field. Are there hidden single points of failure lurking in your facility? Of course there are. Here are more ideas on what to look for. And try not to get too stressed over them, please.

This issue is rounded out with Lee Petro's update on recent changes the commission is making to the cross-ownership rules.

And not to be forgotten, the Wandering Engineer offers comments this month on the gift that keeps on giving — a career in broadcast engineering. Yes, there are people — new people — joining our ranks.

Merry Christmas, happy holidays, happy New Year!

Doug Irwin, CPBE AMD DRB | Technical Editor

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EDITORIAL
Technical Editor: Doug Irwin, CPBE DRB AMD
Managing Editor: Emily Reigart
Web Editor: Michael Balderston

CONTRIBUTORS
Fred Baumgartner, Chris Cottingham, Dennis Sloatman, Jason Omellas, Lee Petro, Jeremy Ruck, The Wandering Engineer, Chris Wygal

CORPORATE
President and CEO: Steve Palm
Chief Financial Officer: Paul Mastronardi
Chief Content Officer: Joe Territo
Controller: Rick Ng
Vice President of Web Development: Robert Ames

VIDEO/BROADCAST GROUP
EVP, Content & Business Operations: Carmel King
Vice President of Sales/Group Publisher: Eric Trabb

ADMINISTRATION AND PRODUCTION
Publisher: John Casey
Editorial Director: Paul J. McLane
Production Manager: Lisa McIntosh
Advertising Coordinator: Caroline Freeland

AUDIENCE DEVELOPMENT
VP/Corporate Director, Audience Development: Meg Estevez
Circulation Manager: Kwentin Keenan
Circulation Coordinator: Michele Fonville

ADVERTISING SALES REPRESENTATIVES
U.S. Regional and Canada: John Casey
jcasey@nbmedia.com | 212-378-0400 x512

U.S. Regional: Michele Inderrieden
minderrieden@nbmedia.com | 212-378-0400 x523

International Sales Manager: Rafaella Calabrese
rcalabrese@nbmedia.com | +39 320 8911938

Japan: Eiji Yoshikawa
callems@world.odn.ne.jp | +81 3 3327 5759

Asia-Pacific: Wengong Wang
wwg@imaschina.com | +86 755 83862930/40/50

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28 East 28th Street, 12th floor
New York, NY 10016

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jganis@meritdirect.com

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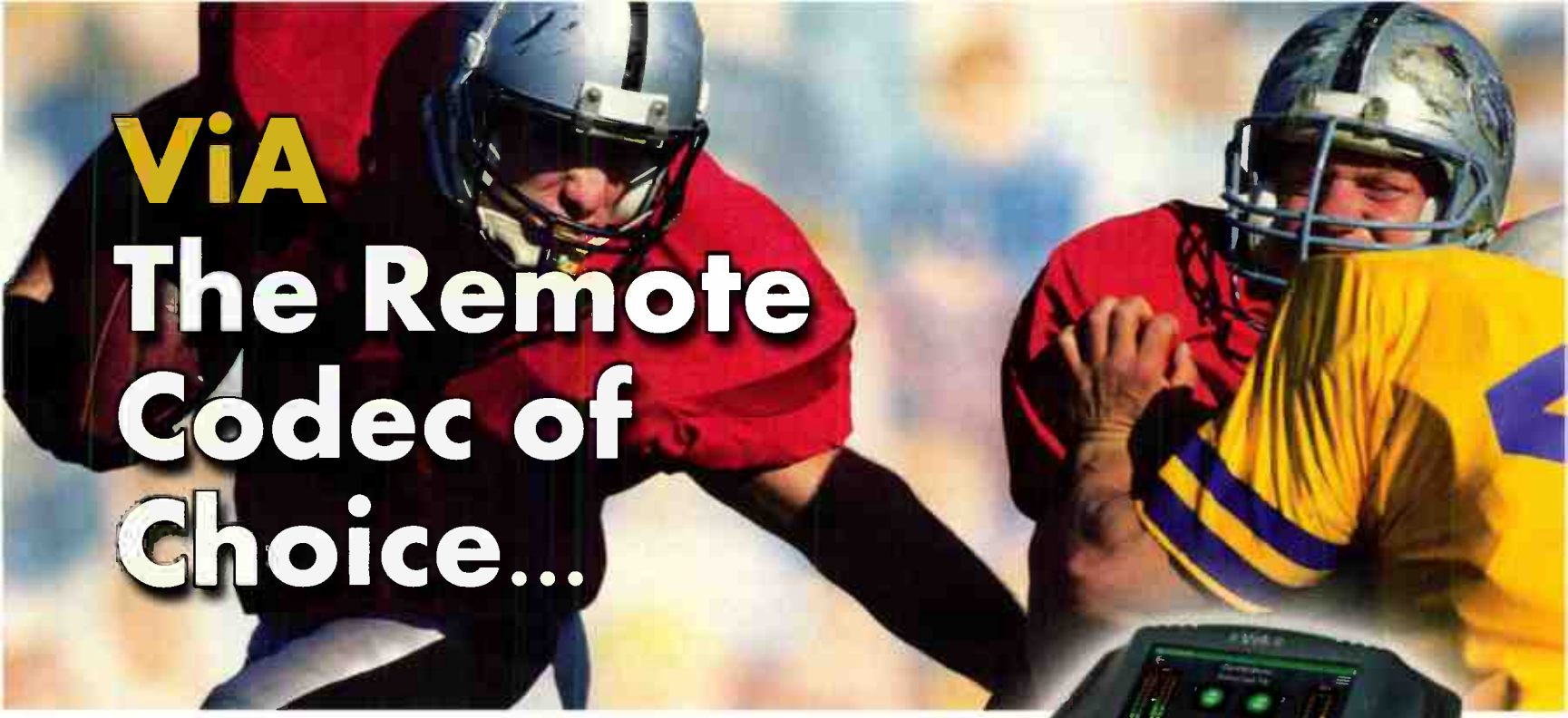

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QGoLive for Remotes in the Smartphone Era

by Brian Oliger

For generations, the trusty VoiceAct was the radio field reporter's best friend.

Ever since the days of the VoiceAct, getting high-quality audio from radio news reporters in the field has been the Holy Grail of newsroom engineers and reporters themselves.

At all-news WTOP and Federal News Radio in Washington, we've been working to achieve better quality field audio for a long, long time, with varying degrees of success (like many all-news, news-talk and sports stations across the country).

The arrival of cellphones in the '90s, while allowing reporters to be more mobile while filing or going live, was a step backward for audio quality, unfortunately, because of the more limited bandwidth.

That bandwidth got squeezed again when the carriers converted from analog to digital cell technology (2G) in the early 2000s.

Around this time, we began to look at broadband solutions from companies like Comrex and Tieline. The Comrex Matrix, with its GSM interface, and later the Access with its superb audio codecs and ease of use were revolutionary, but tough for a radio reporter on-the-go to lug around and set up quickly when a producer asked, "Can you go live in 30 seconds?"

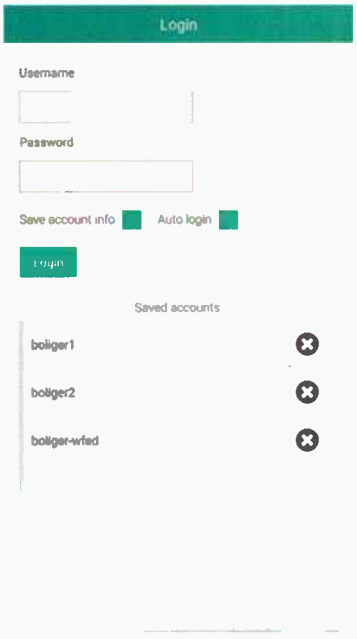
When the iPhone and other smartphones burst on the scene a decade ago, and with them apps that could be built for almost any purpose, engineers began to see possibilities for radio reporters that had the potential to finally deliver broadcast-quality audio from a handheld telephone.

3G and then LTE broadband technology made apps like Skype, Luci and others somewhat popular with radio reporters, but they all lacked some of the features that reporters considered critical: the ability to quickly connect without entering a lot of arcane configuration data or setting up contacts; the ability to play prerecorded and edited sound bites during a live report; and the ability to connect as easily as making a phone call, with the push of one button.

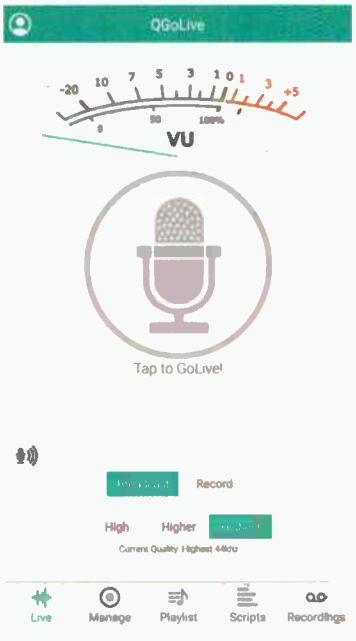
ENTER QGOLIVE

Over the past year or so, the solution we at WTOP have been employing is QGoLive, an app and receiver combination that delivers broadcast-quality live audio and includes features that are essential for a radio reporter in the field.

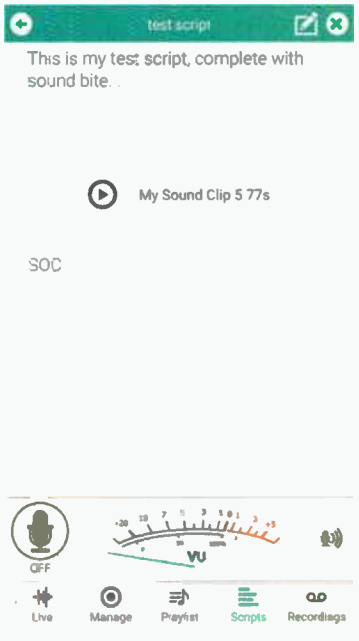
The app is available for iOS and Android smartphones and tablets, and there is a desktop version that runs on the Adobe Air platform. This means it can be used easily by a reporter keeping up with a protest march, sitting in a car with a tablet or laptop, or working at home or in a remote bureau on a Mac or Windows desktop computer.



The QGoLive Login Screen gives the user the option to save credentials for multiple QGL receivers and to auto-login, speeding up the process of getting connected.



Once logged in, the user can connect to the newsroom or studio with the press of a single button, which is just as easy as making a phone call but with much higher quality.



The Script tab allows the user to write a script and insert multiple audio clips to play back during either a live or pre-recorded radio report.

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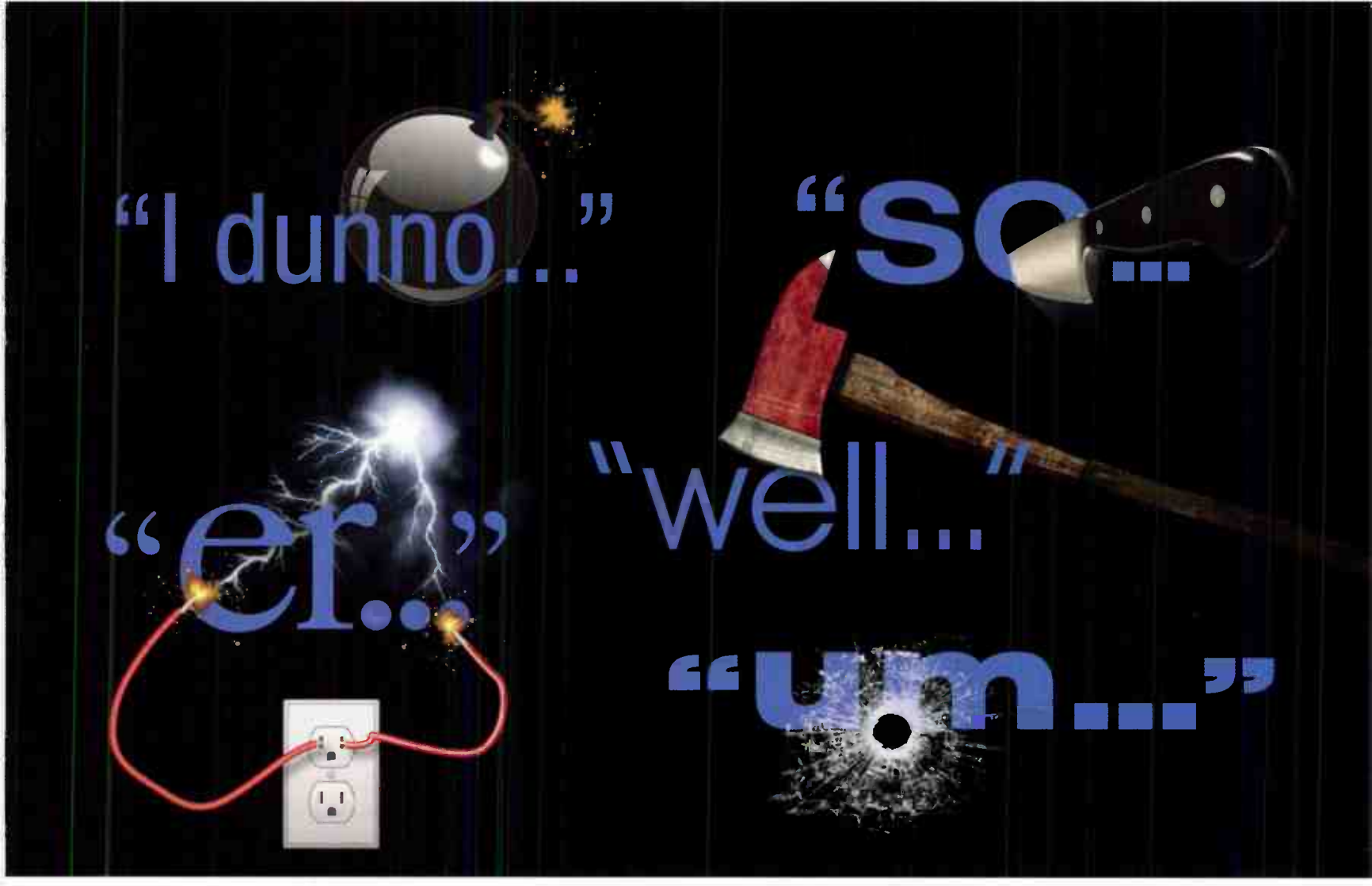

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The receiver is a small Android-based box with an XLR fanout cable that can be easily tucked in an equipment cabinet in a studio, or can sit comfortably on a 1-RU shelf in a rack room (a rackmount version with built-in XLR connectors is in production as I write this). There's also a small Remote Control app that allows a producer to see who's connected, and manage who's actually on the air at a given time.

Communication between the client and the receiver is handled through a central QGoLive server (one of several located around the country). To set up the receiver all you need to do is put it on your internal network and assign at an IP address or let it grab one from your DHCP server. No need to hang it out on the public Internet or set up any port forwarding.

QGoLive's features differentiate it from the other solutions not specifically designed for radio broadcasting.

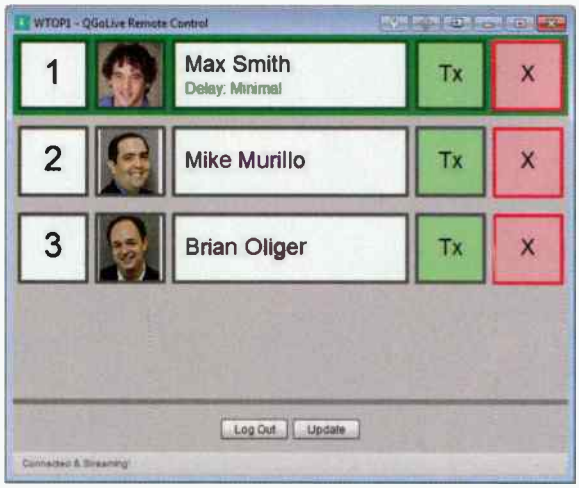
For instance, one drawback of using dedicated hardware codecs is the time required to pull them out of a go-bag or equipment case, plug them in, boot them up, connect to the Internet, then finally make a connection back to the studio or newsroom. This can be especially difficult to do while juggling other gear or without a nice flat surface to work from. This cumbersome routine often led our reporters to leave the dedicated hardware in their bag and simply call the studio line on their smartphone. They're on the air quickly and easily, but the quality is lousy.

With QGoLive, the user launches the app on their phone and presses one button, and they're connected with broadcast-quality audio...just as easily as making a phone call.

Like any Internet-based live broadcast solution, the quality of the Internet connection in the field will determine how robust the connection back to the studio is, and how much latency will be introduced. This is why QGoLive now offers the user the option to record a report "as-live," then feed it back to the newsroom when Internet conditions aren't ideal to go live.

One of QGL's best radio-only features is the ability to edit an interview or natural (ambient) sound in the third party app of your choice. (Twisted Wave is the recommended choice, but any audio editor that can export MP3 files to another app will do), export edited clips to QGL, insert them in a script you've written within the app, then play them in a live or recorded report with just a button-press.

Another radio-specific feature is the Remote Control screen, which gives a producer the ability to queue up multiple reporters. Each person in the queue can hear the reporter who is on the air, without the need for additional mix minuses or receiver units, or arranging a complicated conference call. The producer can see and manage who's on the air and who's lined up to go next — great for quick hand-offs at a breaking story covered by multiple reporters.



The Remote Control app lets the producer see who's connected to QGoLive, and manage who's on the air. All connected users hear the reporter currently on-air.

So, how's the audio quality compared to other solutions? Without question, a dedicated hardware codec like a Comrex Access (especially on a robust, wired Internet connection) will always give you the best quality. But compared to other app-based solutions, QGoLive is among the best we've heard.

It has three quality settings, the highest of which employs the Nellymoser (ASAO) codec at 44.1 kHz at about 88 kbps, which sounds very good. The middle setting drops that down to 22.5 kHz at 44 kbps, which is a noticeable step below the highest setting but still perfectly adequate, and the lowest setting uses the Speex codec (often used in VoIP applications) at 16 kHz and about 20 kbps.

This worst-case setting obviously sacrifices audio quality in exchange for tolerating more sketchy Internet connectivity, but it still easily beats a phone call. At its best audio setting, QGoLive easily sounds better than Skype; there are no "flangy"-sounding artifacts that are the dead giveaway of a Skype connection. (As a bonus, you can skip the obligatory Skype mention on the air!)

At its best audio setting, QGoLive easily sounds better than Skype. As a bonus, you can skip the obligatory Skype mention on the air!

We use QGoLive for reporters in the field, and even for regular live guests — have them download the free app, log in with a guest account you've previously set up and push the button to connect.

Other uses cases in which QGL is actively being employed include live remote broadcasts, play-by-play sports and even full talk shows. Walter Sterling's weekly show on Westwood One uses QGoLive for the backhaul from the flagship station to his home studio.

There are many app-based broadband solutions for radio reporters in the field these days, and more appear on the scene all the time, but I feel the audio quality and the reporter-specific features make QGoLive stand head-and-shoulders above the rest.

Brian Oliger is the manager of technology at WTOP Radio, Washington, D.C.

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Redesign Lights Up Louisville Public Media

by Judy Bandstra

Built before the birth of radio, the historic home of a public radio pioneer now has a cutting-edge core: This summer, Louisville Public Media completed a $7 million infrastructure upgrade and put a fresh face on their storied station.

In 1950, the mayor of Louisville Kentucky and the director of the Louisville Free Public Library launched the city's first public radio outlet, 89.3 WFPL, as a single 10-watt FM station. The launch predated the first National Public Radio broadcast by 20 years and the Public Broadcasting Act by 17 years.

In 1993, the station made history by becoming the first public broadcasting entity to have three stations under the same management. Their current lineup includes 89.3 WFPL News, 91.9 WFPK triple-A/indie and 90.5 WUOL, the city's only classical music radio station.

In 2008, the organization changed its name from the Public Radio Partnership to Louisville Public Media, and in 2013, LPM launched the Kentucky Center for Investigative Reporting.

LPM moved to its current home in 2000. Though the exterior of the building has endured for more than 200 years, this was the second interior renovation the building has undergone since LPM relocated to the site.

The first renovation happened after a fire broke out in the building immediately prior to LPM's scheduled move, gutting the interior. All that remained was the charred shell of what was once the Louisville Electric Company.

In fact, the front of the building is still adorned with hundreds of light sockets, according to Luckett & Farley Senior Architect Paul Sirek, who served as the project architect for the building's most recent renovation.

"Once you start seeing [the light sockets], you're like, 'holy cow,'" Sirek says.

The station is situated only a few blocks from the historic main street of the city and only steps away from an old theater. Sirek, whose office at Luckett and Farley is only two blocks from LPM, knows the area well.

LPM's music library does double duty as its green room.

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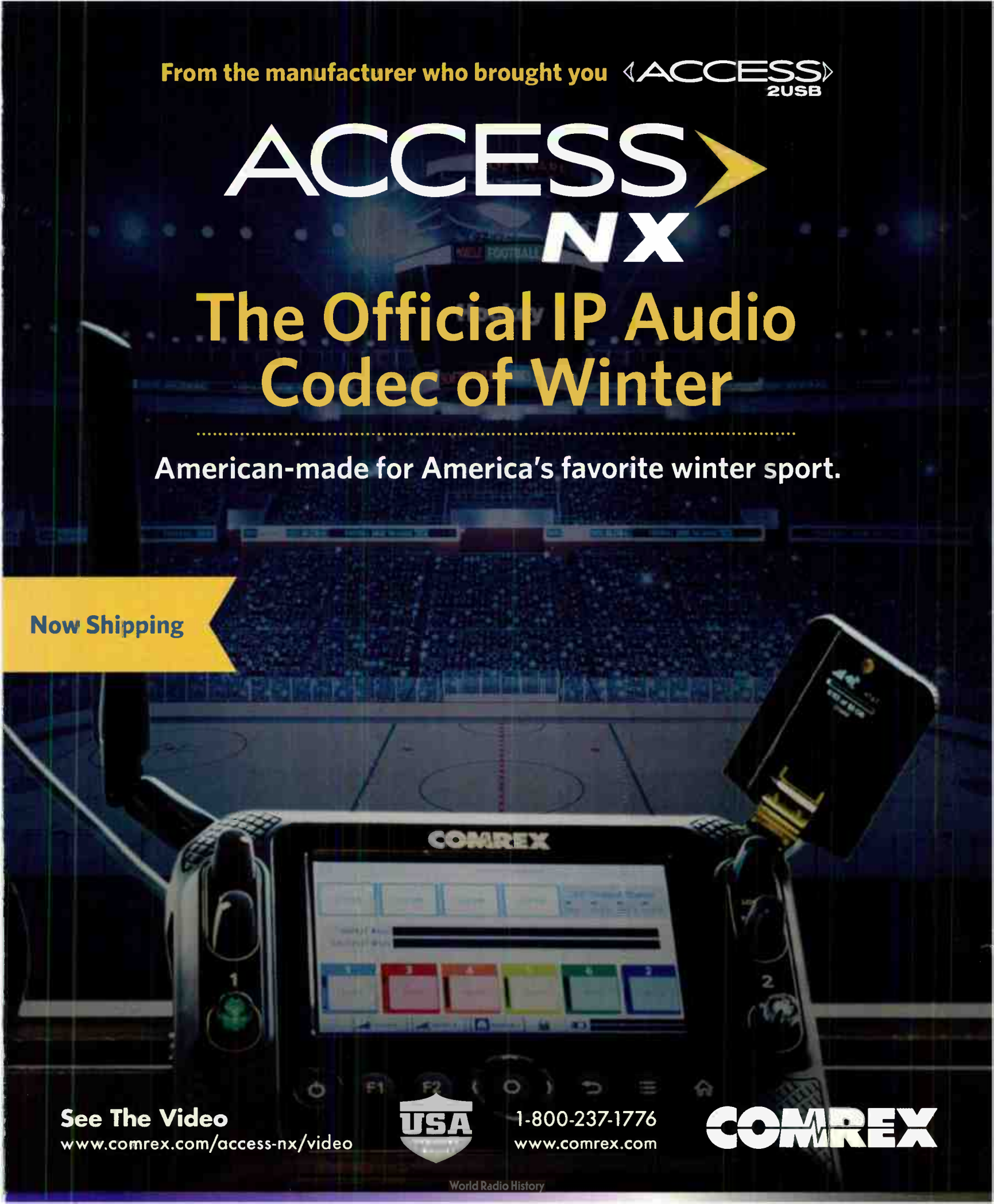

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WFPK Studio 1 with Wheatstone LX-24 and VX drop-in and ENCO DAD.

DIGITAL UPGRADES

Rigsbee directed the removal of the existing analog broadcast system, as well as the installation of new equipment and network infrastructure, an in-house background music system and conference room AV systems.

CRT Engineer Mark Cohea worked with Wheatstone Sales Engineer Phil Owens to create design documents for the project.

LPM was already running Wheatstone D500 consoles in the studios, some of the first of that series to go into operation, according to Owens. "I believe they had serial numbers 3, 4, 5 and 6."

They stayed with Wheatstone, in part because of familiarity of operation and ease of transition for the operators.

Wells told them, "It's like a rental car." When you first get in "some things are a little different, but you know how to drive it. Don't worry about what's under the hood."

They upgraded to a Wheatstone Blade-3 network with 37 blades accommodating 192 digital and 148 analog inputs and outputs. The new system utilizes LX24 consoles in the air studios and in one production room. The other two production rooms use L12 boards.

The talk studio has an L8 board, and the edit bays are using Sideboards. Wells kept the legacy Denon 635 CD players for the classical station because he needed a unit with the ability to program track order. That studio uses CDs during locally hosted programming. He installed a Stanton C.402 CD player in the WFPK studio. The VOIP phone system is a Telos VX, and the air studios have drop-in hybrids designed for the Wheatstone consoles. They also have one Telos Zephyr ISDN codec, one Comrex Access and six Barix Instreamers, two per station, for streaming. The final system Blade-3 AES output is sample rate

The performance studio control room features a Midas M32 and Equator D5 monitor speakers.

World Radio History

converted from 44.1 khz to 48 khz prior to transmission.

LPM runs a dedicated fiber loop for all three stations to an STL transmit point, at the top of a building about a block south of the station, for microwave radio shots to their transmitter site on top of Floyds Knobs in Indiana. The STLs are tried and true Moseley PCL 6000s. The three main transmitters, upgraded in 2015, are all Nautels: A GV15 for News; a GV10 for Classical; and a GV3.5 for the AAA station. They have one legacy Harris transmitter that they use as a single backup for the three mains.

Kathi Lincoln in the WFPL studio. Custom furniture by Studio Technology.

The old system included an SAS 64000 routing system interconnected through a punch down wall, and an ENCO automation system that was running on Windows XP. LPM upgraded the automation to ENCO DAD.

However, because LPM does not have an engineer on staff, once the installation was complete, the task of configuring the new system fell to Russell Wells.

"I had to rewrite every command cut to control Wheatstone," he said. He had very little programming experience before the upgrade, so he relied heavily on help from Wheatstone.

Wells was the board operator when WFPL went live for their first pledge drive after the upgrade. Everything went smoothly, but he wanted to be there to witness the start of this new chapter in the annals of Louisville radio history.

Sirek, a sustaining member, was surely listening.

"They are always on my radio. I listen to them all the time," Sirek said. And he's hopeful that the lights on LPM's historic facade will come back on someday. "I'd love to see it lit back up."

Judy Barndstra is a broadcast engineer with nearly 20 years of experience in radio and TV.

World Radio History

Hybrid Radio: Switching From Broadcast to IP

by James Cridland

Hybrid radio, which combines broadcast radio and additional data from the internet, offers multi-platform service following, the capability to switch listeners between IP and broadcast, where available, among other features.

A typical use-case for this technology might be in-car, enabling listeners to drive, for example, between Berlin and Munich — but enjoying a local Berlin station throughout the journey. Listeners might start with a signal from FM, switching to DAB+ where available, and as they leave the broadcast area, the vehicle's in-car system would switch to internet-delivered audio.

Internet broadcasts are often delayed in comparison to FM, and DAB+ can also add a delay to the audio, making it harder to switch cleanly between different platforms. The very nature of IP broadcast also means that these delays may not always be predictable.

There are a number of different methods to lessen, or completely avoid, the timing differences between platforms when switching.

In the UK and some other territories, Radioplayer produces a hybrid radio app for the LG Stylus 2 mobile phone, which has an addressable DAB+ chip inside. To lessen data use, the app automatically prefers DAB+ broadcasts if available.

Radioplayer's switching algorithm will instantly switch to IP if the DAB+ signal is unavailable. While connected to IP, it will still monitor the available DAB+ signal: If it is available error-free for a period of around two minutes, it is judged acceptable to switch back. This minimizes the amount of switches, although a user will still hear a jump in audio. As a pragmatic solution, lessening the number of switches is a simple way to reduce, if not remove, the jarring effect of a switch.

AUDI

Audi has a hybrid radio receiver in the new Audi A8. For this product, Audi worked with Fraunhofer IIS to create the Sonamic TimeScaling algorithm. This has audio waveform matching, which adds a progressive delay to the broadcast audio (via FM or DAB+) to align it to the audio on the IP stream. It also adjusts the audio level to match.

In this way, a switch between IP and broadcast should be imperceptible. Fraunhofer call it "seamless."

There are a number of different methods to lessen, or completely avoid, the timing differences between platforms when switching.

Depending on where a listener starts listening via broadcast radio, it might be unrealistic to buffer the broadcast audio to align with the audio delivered by IP, since a listener is used to being able to listen to broadcast radio immediately.

Radio receivers may choose to slowly add a delay, as the Fraunhofer solution does, by adding near-inaudible amounts of silence in the same way as a profanity delay unit. In many use cases, it may be simpler to only make the effort to align broadcast audio once a listener is tuned to IP — since IP will almost always be delayed when compared to broadcast.

Delays and waveform matching can also be useful when switching between FM and DAB+, or in some cases between AM and FM HD signals, since these platforms often have an inherent delay caused by encoding and different distribution paths.

James Cridland

Much of the metadata that enables switching is detailed in the RadioDNS specifications.

"Automatic switching between broadcast radio and IP streaming can make radio so much easier for listeners," RadioDNS Project Director Nick Piggott. "We're here to help both broadcasters and manufacturers implement the standardized functionality so it works brilliantly every time."

Best practices for radio broadcasters include avoiding excessive delays in their IP stream. In particular, pre-roll audio, played before the live stream, can significantly exaggerate the delay and may make audio waveform matching unreliable. Some methods of online ad replacement may also introduce additional delays, and can defeat waveform matching algorithms.

Ideally stations should also have similar dynamic processing on their IP and terrestrial signals, to make the switches between different sources inaudible.

James Cridland is a speaker, author and consultant. He runs media.info and helps organize the Next Radio conference.

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Uncover Your Station's SPOF And, Maybe, Save the Day

by Dennis L Sloatman

SPOF is a four-letter acronym in common use today.

"SPOF" refers to a single point of failure and can be applied to almost system. Some examples where you can have sneaky SPOFs hide are: audio chain paths, transmitters, towers, backup power systems, cooling systems, pressurization, internet circuits and well, almost anything.

In spite of your best efforts and well-crafted systems, some strange problems can arise, particularly when your systems are under stress. When I say "under stress," I mean to indicate those times when your facility is operating at less than nominal conditions — as would be the case during a hurricane, wildfires, extended power outages and the like.

At one facility in a major market, my team uncovered a serious SPOF. Now, understand this was a well-equipped facility with redundant audio chains, redundant PPM encoders, redundant STL systems and studios. But with all of that, this facility was hanging by a very thin thread. It turns out that two of the AM stations shared a distribution amplifier — one of those two sets of eight outputs style units — and both air chains of both stations were fed by this one DA. This meant that, if the unit's power supply fuse opened, both stations would be instantly off-air, with no way to bypass this failure (without a long drive to the studio facility).

SPOFs can sometimes be found in the most seemingly redundant systems. Careful analysis is required to eliminate all of them.

In spite of your best efforts and well-crafted systems, some strange problems can arise, particularly when your systems are under stress.

This oversight was by no means limited to this facility.

Across the country on the other coast, I found a similar situation, in which the station had two exciters, two transmitters, two antennas, two audio processors and emergency power and yet, was hanging by an equally thin thread. The engineers had installed an AES DA for both audio chains powered by a single wall wart (not even secured to the power strip — it could easily have fallen out). So with all this equipment, that wall wart's potential failure spelled big trouble.

These two examples likely seem obvious to the reader and may leave you scratching your head, wondering what the engineers were thinking. (Answer: They weren't.)

But let's dig deeper and discuss more hidden, insidious SPOFs, which may not manifest themselves until times of stress emerge.

MORE EXAMPLES

Recently, a widespread and extended power outage occurred in a large market in which a circuit breaker tripped — which happened to feed the generator block heater. (Recall a previous Tech Tip column which discussed generator systems monitoring, including block heater, battery float voltage, etc.)

That in and of itself wasn't the real issue. The major concern is that the generator day tank fuel pump was on the selfsame circuit breaker as the block heater, so when the block heater

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breaker tripped, the circuit to the day tank fuel pump went down with it. I believe you can figure what happened next.

Our job is more complex and intricate than most people will ever understand.

In another market where I was the CE, Hurricane Irene caused widespread power outages that lasted for days. Our studio generator and those at our transmitter sites worked well (happily), and all seemed fine until…we suddenly had a great deal of water falling in our break room — not from the hurricane rain but from one of the studio AC units in the ceiling. The drain pan pump was on the non-generator supported electrical circuit and had not been operational since we switched to generator power.

This is the sort of thing the engineer may not be aware of (unless the engineer installed the unit with his/her own two hands). But it's certainly something you may wish to check during your next AC inspection.

SPOFs can be even more subtle than those I discussed above. One last example I'll share is also derived from the Hurricane Irene experience — which I promise you'll agree is a "gotcha" or even just plain bad luck.

At one of my transmitter sites, my generator is an LP unit. I won't get into fuel system advantages/disadvantages here, but I prefer diesel, if only based upon what happened at this site during the storm. So power is out and has been for several days, and the LP generator was running smoothly, but the fuel level was beginning to be a concern. This fact, coupled with the utility estimate of "several days" before restoration of utility power was quite worrisome. I couldn't reach the LP vendor because, well, they were also without power and were not operational. I reached another LP vendor only to learn that by law, they were not permitted to fill another vendor's tank!

Fortunately, I have a lower-power backup site for this station and the LP vendor showed up as if by magic when the tank gauge indicated 15 percent fuel remaining. Take this under advisement, if you have an LP-fueled generator.

Our job is more complex and intricate than most people (including ourselves) will ever understand, and there's a great deal to consider. But remember: The time to fix your AC is when the snow is falling — or some variation of that saying.

Dennis Sloatman is the VP of engineering for SummitMedia Corp.

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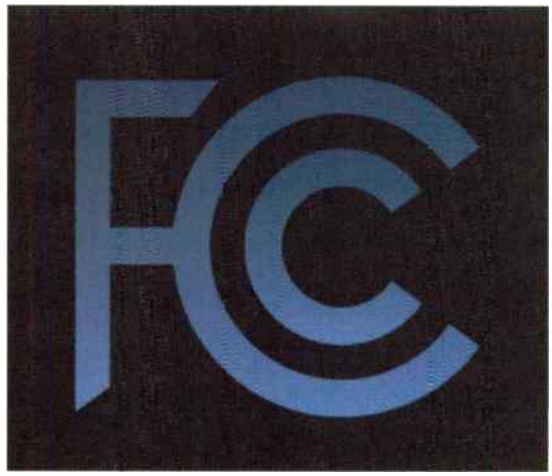
Liberalizing the Ownership Rules

by Lee G. Petro

Anyone involved in the broadcasting industry for a significant number of years has witnessed the Federal Communications Commission's repeated efforts to modify the local and national ownership rules.

On Nov. 16, the FCC adopted new rules that will significantly liberalize the ownership restrictions, with a special focus on modifying the cross-ownership restrictions among radio and television broadcasters, and eliminating the cross-ownership restrictions on newspaper and broadcast properties.

As a newly-minted attorney, this author cut his teeth on the implementation of the local radio ownership changes in the wake of the Telecommunications Act of 1996. Rapid consolidation among radio broadcasters was followed by more than a decade of the commission attempting to craft rules to address the cross-ownership and local television ownership rules. While the FCC adopted a Second Report and Order in August 2016 (which did not make significant changes to the ownership rules), in light of the 2016 election, the change in the FCC's leadership led to reconsideration by that order last month.



First, the FCC granted petitions for reconsideration of the Wheeler FCC's decision to not eliminate the newspaper-broadcast cross-ownership rule. The rule, originally adopted in 1975, prohibited the ownership of a newspaper and a radio or television station that served substantially the same area.

The commission noted that much has changed in the local media marketplace between 1975 and 2017, and it concluded that the original purpose of the rule — to promote viewpoint diversity — was being served by the substantial increase in the number of viewpoint platforms, including more radio and television stations in the local community. Moreover, the FCC noted that digital-only and Internet platforms should have been considered by the Wheeler FCC when determining if the rule was still necessary.

The FCC also took into consideration the relative decline of the newspaper industry and determined that the elimination of the rule may encourage more investment in the local markets by permitting broadcasters and newspapers to jointly serve the local community. The FCC also noted that the National Association of Black-Owned Broadcasters had recently reversed its opposition to relaxing the rule, concluding that its elimination would not affect minority-owned broadcasters.

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DATELINE

Jan. 10, 2018 — Issues/programs list must be placed in stations' public inspection file.

March 1, 2018 — All radio broadcast stations, including noncommercial educational FM stations, commercial radio broadcast stations in the top 50 Nielsen Audio markets with fewer than five full-time employees, and all commercial radio broadcast stations in markets below the top 50 or outside all markets, must complete the transition of their public file to the FCC's online public file system.

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ADÍOS, RADIO-TV CROSS-OWNERSHIP BAN

Next, the FCC granted the NAB's request for reconsideration of the decision not to eliminate the radio-television cross-ownership ban. That rule substantially limited the common ownership of television and radio stations in the same market in order to encourage more viewpoint diversity in the local market. In the largest markets, one entity could own one television station and seven radio stations, or two television stations and six radio stations. On the other hand, in those same markets, an entity could own up to eight radio stations — if they had no television interests in that market.

The FCC determined that the contribution of local radio stations to local viewpoint diversity was not significant enough to maintain the radio-TV cross-ownership ban.

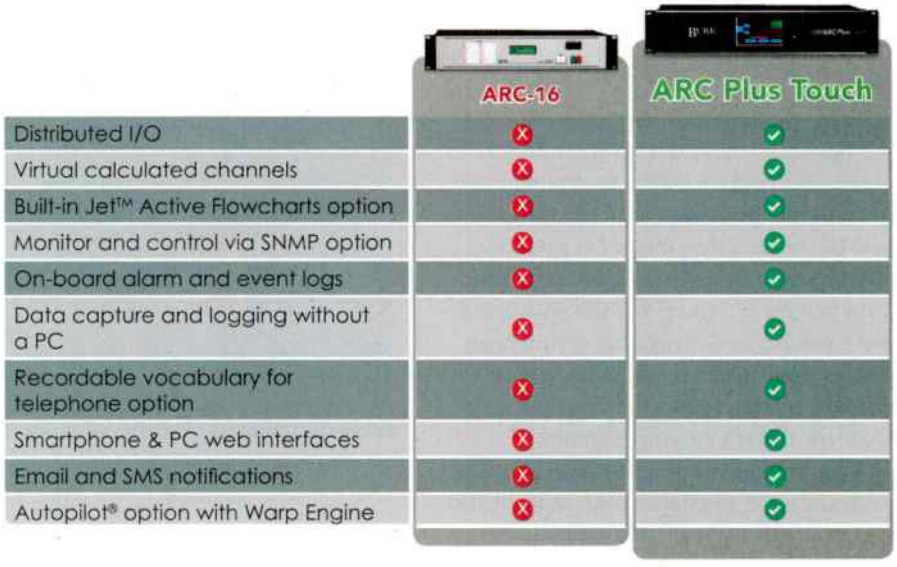
In granting NAB's request, the FCC focused on the existing radio local ownership rule, which it decided to retain. In particular, the FCC determined that the contribution of local radio stations to local viewpoint diversity was not significant enough to maintain the ban.

Because the overall number of radio stations in a local radio market will remain in place, the commission determined that cross-ownership ban was not necessary. Instead, the FCC concluded that there was a relatively small difference between the six or seven stations owned by a television broadcaster and the eight stations that could be owned by a non-television broadcaster.

The FCC also eliminated the local TV ownership rule; eliminated the attribution of joint sales agreements for television broadcasters, but will continue to require parties to shared services agreements to disclose their existence.

Finally, the FCC is seeking comment on the development of rules associated with an incubator program to encourage access to capital and technical expertise for new entrants and small businesses. The FCC requested comments on all facets of the proposed program, including eligibility, evaluation of available resources and the costs associated with running the program.

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



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Podcasting: Radio's Answer to On-Demand Programming

by Doug Irwin, CPBE AMD DRB

Though podcasting isn't new, it's become the rage.

According to Triton Digital and Edison Research's Infinite Dial Study for 2017, 40 percent of Americans aged 12+ say they have listened to a podcast, while 24 percent say they have listened to one in the past month. This is a 21 percent increase over a year before. Sixty percent of Americans are now familiar with the term "podcasting" — a number that has risen 22 percent over the last two years. This is a growing medium.

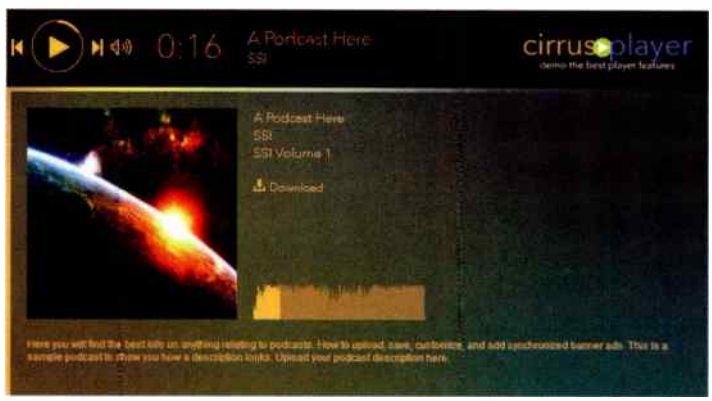
If these numbers have gotten your attention, and you want to join the ever-increasing ranks of those producing radio's version of on-demand programming, then read on.

BASIC ASPECTS OF THE PODCAST

Clearly, you begin the generation of a podcast by recording the program. Every radio station has the capacity to do that, and many people have the ability to do that at home as well.

The next step is the uploading of the file of the program just recorded to a location from which is can be accessed by potential listeners. As a producer of the podcast, your choice in service provider is an important one. In this article we'll look at several companies that provide this service.

Your listeners and potential listeners need to be made aware that your program (now a podcast, ready to download and listen to) is available, and of course, it should be easy to retrieve. This is another key feature provided by whichever company you chose.



An example of Securenet's Cirrus player custom podcast skin.

And finally, you'll want to know who is downloading and listening to your podcast. Everyone is curious as to whether or not the show is popular. But from a more practical standpoint, if you want to monetize the show in some fashion, it's necessary you have information about the audience.

There are innumerable podcast hosts and sites — we can't look at every one. However, we can look at some of the more well-known ones, hopefully to help get you started.

Liberated Syndication (libsyn) is one of many podcast hosting services. Their network has (according to their website) delivered over 1.4 billion downloads since 2009. They host both audio and video podcasts; and they offer "unmetered bandwidth and flexible storage space that grows over time."

Libsyn provides users with the means to publish their podcast, along with an associated website that facilitates cross-promotion through social media — including Facebook, Twitter, Blogger and WordPress. Libsyn also offers up custom smartphone apps for Apple and Android.

StreamGuys provides a service known as SGrecast, which enables broadcasters to record live streams into archives of any length, making them available as on-demand content or as iTunes compatible podcasts. It includes a full suite of tools for scheduling and

An example of SGrecast podcast player skin.

World Radio History

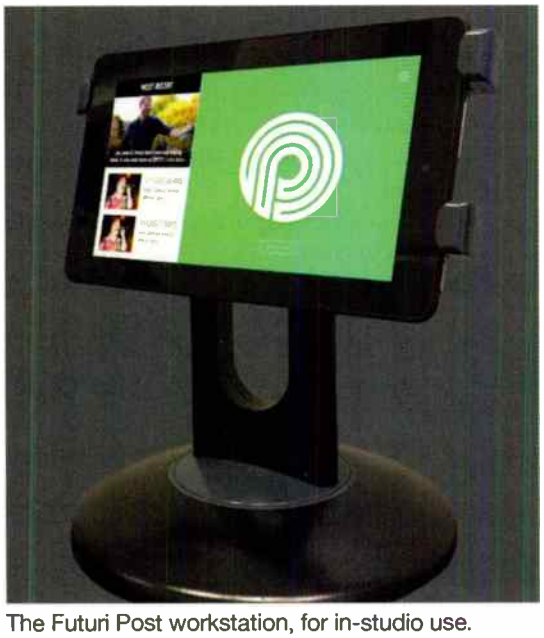
automated delivery.

SGrecast is a hardware-free, software-as-a-service that is available to any number of users, from any networked location. Some of its salient features are:

- Single event and recurring schedule, with dashboard calendar for review
- 24/7 recording and segmentation of live content
- Automated generation of iTunes compliant podcast feeds from recorded content
- Customizable audio podcast player for embedding into web pages

SGrecast also supports the recording and repurposing of HLS and RTMP video feeds. You can publish your video podcasts using the same platform as used for on-demand audio.

Embedded within the SGrecast system for podcast creation are AdsWizz-enabled, server-side ad insertion tools that enable publishers to deliver dynamic advertising to listeners across a wide array of playback platforms. "The service takes advantage of ongoing improvements in location accuracy, such as the latitude and longitude now available through mobile apps and modern web browsers, to target ads by country, state, metropolitan area or even more granularly," according to StreamGuys.



The Futuri Post workstation, for in-studio use.

Tunein is a bit more of a hands-on podcasting site geared to the convenience of the podcast listener. If you were to browse this page: *http://tinyurl.com/ychhucmp* you would immediately take note of what is effectively an invitation to promote your podcast on their podcast portal. After you've done so, the presumption is that it will be accessible through their podcast portal.

Tunein has apps available for a very wide range of devices: naturally, Apple and Android mobile phones. However, in addition, they have apps for Kindle; Samsung and Panasonic TVs; Roku; Sonos; and Xbox One.

Listeners should be compelled to tune in to a "morning show" just because it airs in the morning.

Futuri has a system they call Post, which is a means by which a radio station's content can be converted to on-demand programming. Using Post, you can access all of your station's broadcast audio, edit it and add an image from Futuri's fully-licensed library, before deploying it across Facebook, Twitter, the station's website, iTunes and more, with a rapid turnaround. Original content can run through the same system. The nature of Post allows for a rapid "speed to publish" and that, in turn, can give a station extra PPM credit (assuming it's in the top-50 markets) when listeners use it within 24 hours. Post also features a planner function that allows the station to automatically add sponsorships to on-demand audio.

Podbean is another podcasting host you might consider. Their "user-friendly interface" allows you to upload, publish, manage and promote your podcasts with just "a few clicks of your mouse." For a flat rate, you get "unlimited" bandwidth and storage, and according to their literature, you never pay more no matter how much you publish.

Perhaps the most interesting feature offered by Podbean is an app that runs on your mobile phone allowing you to record and edit (and even add background music should you like), then followed by "one click" publishing of the recorded audio as a podcast.

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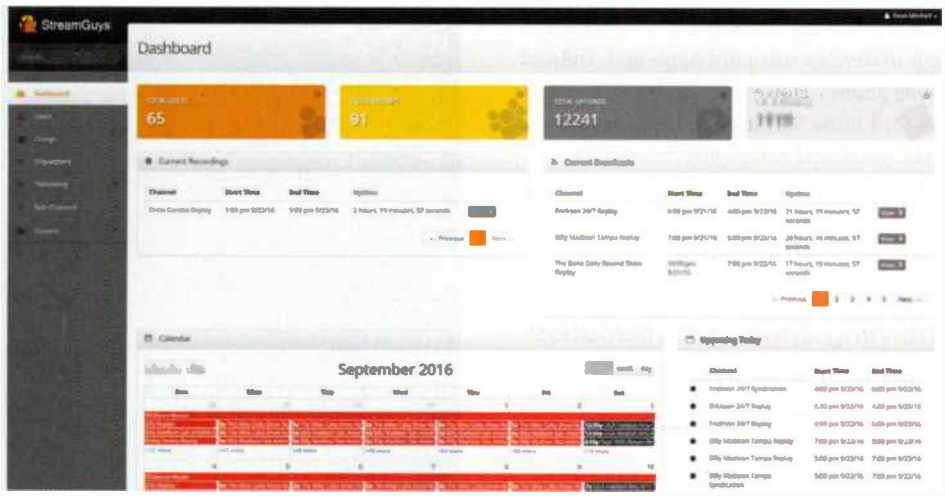
Users can listen to your podcast via iTunes, Google Play, the Podbean podcast app and many other podcast apps or their web browsers. Like other podcasts hosts, Podbean facilitates the sharing of your podcast to social networks because of its automatic Facebook and Twitter publishing.



The scheduling dashboard associated with SGrecast.

WideOrbit On Demand provides the technical infrastructure to manage, monetize and measure the reach of on-demand audio content, like podcasts. Their solution "includes everything audio publishers need to distribute podcast files on any device and drive revenue," according to their literature.

Using WO On Demand, publishers can update podcast intros, promos and sponsorships across files with a single command; and they can syndicate content automatically to multiple distribution sources with unique profiles. They can also generate ad and podcast content metrics that adhere to IAB Podcast Measurement guidelines, and produce reports by time period, network, channel or episode. Ultimately this allows publishers to deliver advertising to targeted audiences across episodes and devices.

For ad-insertion in podcasts, you can automatically stitch pre-roll, mid-roll and post-roll ads into content. "...Instead of having to redo an entire podcast, let's say you have a podcast from the summer and you have a beach theme type ad going on or an opening monologue," said WideOrbit Dana Murphy said in a brief interview at the Radio Show last September. "At Christmas time, you can just change out that one sponsorship instead of recreating the whole file and have it be a Christmas theme," she said. "Just the ability to have a template and not be stuck with the same content or the same sound in old ads all the time and easily switch them in and out has become really important."

Triton Digital has partnered with Omny Studio, creators of an on-demand audio publishing platform, to provide radio broadcasters with an end-to-end podcast solution. The Omny Studio platform facilitates the recording, editing, distribution, monetization analysis of podcast content "on the fly, allowing you to spend less time on the mechanics of podcasting, and more time creating engaging, meaningful content" according to their literature. Utilizing the drag-and-drop audio editor, you can record and archive audio content to the cloud, or repurpose over-the-air content. You can then deploy episodes and playlists using Omny's native web player with sharing links optimized for both Twitter and Facebook.

In conjunction with Triton's server-side advertising technology, Tap Podcast, the Omny Studio platform enables publishers to replace static ads with dynamically inserted, targeted ads while automating key aspects of campaign management such as industry separation, frequency capping and volume normalization.

Cirrus streaming is a service of **Securenet**, and the company offers a podcast hosting service with a lot of features of interest to broadcasters. They offer an "easy-to-use" dashboard for uploading podcast files; and they host files in the cloud. As a publisher, you can upload an unlimited number of podcast files. Cirrus offers a dedicated podcast player in HTML5; customizable skins; and the Cirrus Wave embeddable player that allows you to feature your podcasts right on your website. You can choose to either embed one podcast or a series of them.

Publishers have control over the advertising associated with the podcasts; for example, banner ads can be synchronized to specific podcasts. Cirrus also features full advertising analytics and custom audience targeting.

Cirrus also offers a custom podcast XML feed so that search engines can easily find your program. It's iTunes Podcasts-Connect format compliant, and Podcatchers compatible — meaning other podcast sites and/or directories automatically pull the XML feed from iTunes Podcast.

Radio is following in the steps of television: On-demand programming in TV has become at least as important as shows that are scheduled. Giving viewers the option of when to watch their favorite program has been a boon to the medium.

Tunein makes it easy for potential listeners to find podcasts of interest.

Radio is now catching up, using the same idea, but for audio: Listeners shouldn't be compelled to enjoy a "morning show" just because it's on in the morning. Podcasting technology is changing audio, just as on-demand has changed TV. It presents a new way to super-serve listeners while providing a new revenue stream, and that's a benefit for our industry.

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Choose Between These Kinds of Windows

by Chris Cottingham

Linux is a great operating system to use daily, but what do you do if you actually need to run a Windows application? Well, you can go grab a Windows PC and complete the task, or you can utilize your Linux machine to run the Windows application in some fashion.

There are multiple ways to use Windows applications on a Linux based laptop. The two ways I want to explore in this article are Virtualizing Windows and Emulating Windows. Both have advantages and disadvantages. The biggest issues between these two options are machine resource utilization and licensing.

Running two machines at the same time comes with a cost in performance.

VIRTUALIZATION

Virtualization is the process of running operating systems in an emulated environment more commonly referred to as a "Virtual Machine" on top of a host machine. Linux can be used as a virtual machine host. All you need is the software.

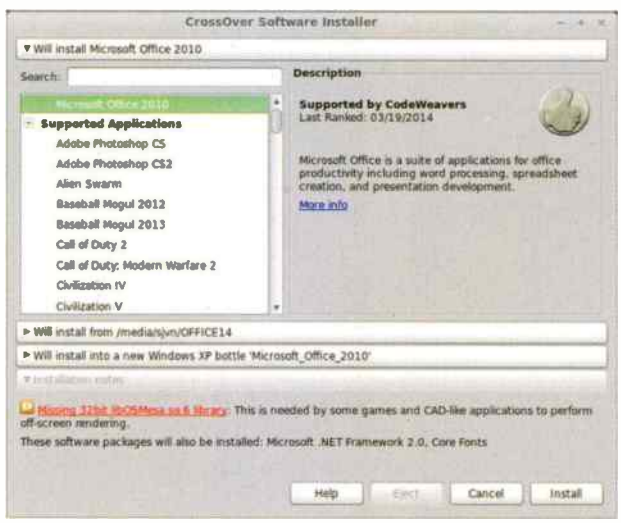
The most popular software for this on Ubuntu is VirtualBox. VirtualBox is a free open source program that can be installed via the command line installer. Simply type "sudo apt-get install virtualbox" from the command line and you are ready to go!

Once VirtualBox is installed it allows the end user to actually install Windows in a virtualized environment. A windows installer and license key are required. Once installed, Windows has no clue that it is running on top of a Linux machine. Essentially you now have two machines running on one piece of hardware.

Running two machines at the same time comes with a cost in performance. Both operating systems are contending for resources, such as CPU cycles and hard drive access. This has the tendency to slow down the host Linux machine and the virtualized Windows machine. Depending on your hardware and hard drive access speed, this can be a significant performance drain. If you are going to utilize Virtualization I would recommend a machine that has a lot of RAM and a separate hard drive for the virtual machine files to minimize the performance issues.

Hardware and software resources can be shared between the Linux host machine OS and the Windows virtualized OS. VirtualBox takes care of certain items such as sharing USB drives, local file sharing and sharing network adaptors. The network card of the host machine, the Linux box in this case, can be shared so that the Windows machine appears to have its own network interface. When viewed from the network, it appears that two separate machines now reside on the network. USB devices are also shared either automatically or manually.

Crossover is not free but it works very well for most Windows applications.



With Crossover, you do not need a copy of Windows nor a Windows license to run Windows applications.

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VirtualBox is a free open source program that can be installed via the command line installer.

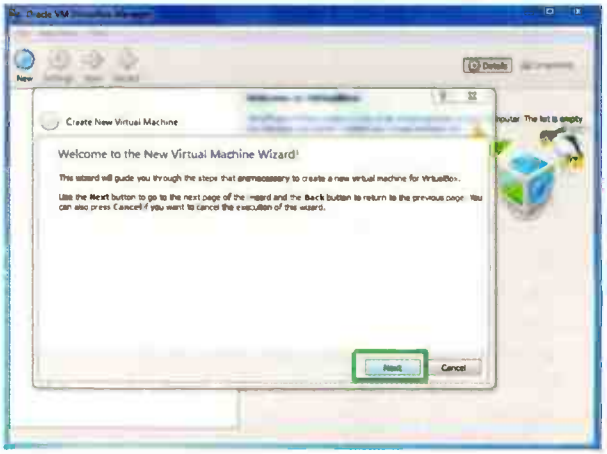
Remember, as far as the computer operating systems are concerned there are two machines: one Linux and one Windows.

A licensed copy of Windows is required when installing a virtual machine utilizing VirtualBox. Once a licensed copy of your choice Windows OS has been obtained, simply open VirtualBox and click on the "New" icon. The "New Virtual machine Wizard" will make installing your Windows OS easy! Once this is done, simply click on the icon for the machine you just installed to start it up. You will be presented with the familiar Windows loading screens and eventually a desktop. It is that easy.

EMULATION

Emulating Windows is the process of catching function calls made by Windows applications and translating them to and from the Linux operating system. The software that I use for this is called Crossover by Codeweavers. It is not free like VirtualBox but it works very well for most Windows applications.

There are two main benefits of utilizing this



The "New Virtual machine Wizard" will make installing your Windows OS easy!

CONTINUED ON PAGE 31

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StreamGuys Dynamic Ad Insertion

StreamGuys are touting new dynamic ad insertion technology for broadcasters to help them with the relevance and effectiveness of ads for on-demand content like podcasts. The on-demand functions complement StreamGuys' pre-roll and mid-roll advertising capabilities by using targeting technologies to deliver relevant and timely ads.

The StreamGuys dynamic ad capabilities only insert ads into the on-demand files at the time the content is requested allowing it to use available information about the listener to select campaigns that best align with them.

The service, which features SGrecast and AdsWizz technology, uses location accuracy through mobile apps and web browsers to target ads by country, state, metropolitan area or even more granularly. Support for third-party ad network integration in the underlying technology enables content providers to fill spots outside of their primary target area with ads relevant to those geographies. There is also fast file access and waveform generation to enable users to load on-demand assets, mark the points ad-insertion should take place and re-save the file.

https://www.streamguys.com/ | (877)287-2938

GatesAir Maxiva VAXTE

DAB/DAB+ radio is getting some support from GatesAir, as the company's Maxiva VAXTE transmitter now works with all DAB radio modulations.

The VAXTE is available in 2RU and 4RU single-chassis models to drive power levels from 15 W to 1.2 kW, with larger configurations available for single-rack DAB systems up to 9.2 kW. The transmitter offers input connections to accommodate EDI and ETI protocols, which support IP and legacy audio contribution and distribution across DAB networks.

All VAXTE transmitters integrate the software-defined Maxiva XTE exciter platform, enabling support of all DAB radio modulations. The XTE also improves digital signal processing power and features GatesAir RTAC software for digital signal correction at the amplification stage. IP-based monitoring and control is also available with the VAXTE transmitter.

The VAXTE is built on GatesAir's latest power amplifiers to increase peak power capacity of OFDM and ATSC waveforms. Redundant, front-access power supplies are integrated separately. PA modules and dedicated power supplies are hot-swappable.

GatesAir will feature the VAXTE transmitter with DAB support at IBC 2017.

www.gatesair.com | (800)622-0022

Rohde & Schwarz THR9 FM/HD Transmitter

Transmitter, test and measurement, and studio equipment manufacturer Rohde & Schwarz exhibited their THR9 high-power transmitter at the 2017 Radio Show in Austin. It's an FM or FM + HD transmitter with 100% liquid cooling, and obtains up to 75% efficiency (in analog FM mode).

The THR9 supports Generation 4 HD Radio technology as well as purely digital standards in band II (for DAB). New exporter and importer functions, now in a 1RU form factor, simplify the system architecture of HD Radio transmitters. The THR9 HDR900 hardware is based on FPGA signal processing instead of PC-based solutions, and, according to R&S "delivers better performance and greater accuracy, which is important for consistent set diversity delay."

With its redundant liquid cooling technology, the R&S THR9 eliminates the need for high-performance air conditioning systems. All transmitter components are liquid cooled, including power supplies and couplers, and the pump and heat exchanger are matched to the transmitter to optimize efficiency with low service costs.

The R&S THR9 has a power density per rack of up to 40 kW in analog FM mode (or 24 kW in hybrid mode). Other components and transmitters can be installed in the rack as well, which further reduces space requirements. The R&S THR9 includes support for asymmetrical sidebands for HD Radio, as well.

https://www.rohde-schwarz.com/ | (410) 910-7800

World Radio History

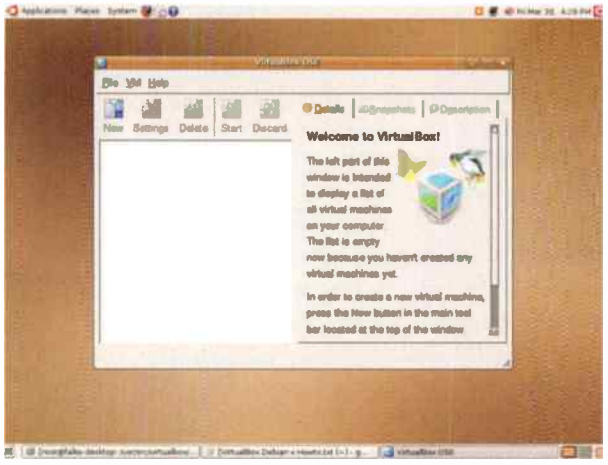
CONTINUED FROM PAGE 29

software: The first is that you do not need a copy of Windows nor a Windows license to run Windows applications. The second benefit is that the computer is not taking a performance hit, like it does with virtualization. There is not another OS contending for resources so the Linux host machine is not slowing down.

Simply place the Windows CD into the CD drive and Crossover will install it. It is that easy.

The main issue with Crossover is that it does not run all Windows applications. I have had great luck with running a lot of industry applications, such as WheatNet navigator and Microsoft Office.

The WheatNet applications are unknown to the Crossover software, so they are installed as "unsupported applications." Microsoft Office and other applications that are supported have installer scripts and support to ensure that they work properly. Just because a Windows application is unsupported does not mean that it will not work. Crossover does a fantastic job of keeping programs separate and working flawlessly. It works great for most of the applications that I run and I highly recommend it.



VirtualBox takes care of certain items such as sharing USB drives, local file sharing and sharing network adaptors.

Between these two types of software, I have been able to run just about any piece of Windows software that I need. I do run both because I want to have the ability to run anything at a moment's notice. There is nothing more frustrating than being at a transmitter site and not being able to run the software you need to use.

Take a look at these software packages and do some research. Linux is a great operating system and stable. Adding Windows functionality makes the transition to Linux as an everyday desktop work machine a reality.

Cottingham is a former radio chief engineer, now working in streaming media.

World Radio History

NEWPRODUCTS

Logitek JetLink

Logitek Electronic Systems and R&D partner Logitek Australia introduced a new line of remote audio products for radio at the Radio Show in September.

JetLink sends and receives broadcast quality audio from point to point. According to Logitek, "using a high bit rate Opus stereo software codec, JetLink keeps a solid, low latency connection on corporate LAN connections, DSL lines, Wi-Fi and 4G LTE connections."

A free beta version of JetLink linking two computers over a LAN, WAN or public Internet will soon be released to the public. Interested broadcasters can sign up for the program online. After the program concludes, the company plans to add additional paid features based feedback received.

The company "has been testing JetLink connections between Australia and the US for some time now," according to Logitek President Tag Borland, who added that its Radio Show booth also featured a demo of the connected between Austin and the company's Houston office.

https://logitekaudio.com/ | (713) 664-4470

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Congratulations to
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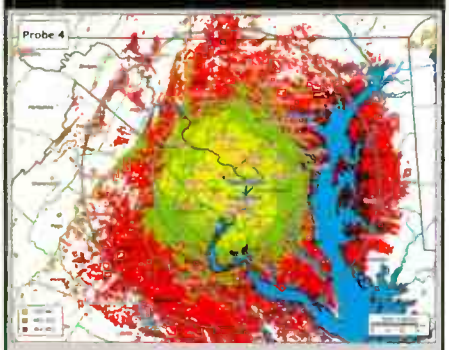

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World Radio History

Gifts for Engineers

by the Wandering Engineer

In December 2012, this CBS Radio studio in Dallas looked quite festive.

We all like to think that this life is all about merit and effort. Somewhere, some higher power gives us all some level of something that eventually translates into everything, including our careers. That's why it's not unusual for broadcast engineers to cherish this profession that is also their passion. Engineers love formulaic encounters: Mix the right ingredients and get the right results.

But this career is never and nothing like that. Other careers seem a lot more predictable.

There is an unusual amount of serendipity in this broadcast thing. You may attribute this to that higher power, or random luck, but it's probably not right to see where you are as a deterministic product of who you are and what you did to get here. If you are a broadcast engineer, your life has been a pin-ball game of rapid and random events that happen in a blink of the eye.

Today, I have been given guardianship of two younger folks who have only the vaguest idea that life has taken them into broadcasting. I remember that feeling. (Mom is still waiting for me to get a real job, and I wasn't and will likely never be a decent on-air personality.)

For me, it was a day-timer, and my Christmas gift was the trickle-down of a recently granted few Watts of "pre-sunrise authority." The transmitter would kick back to 250 Watts, and the dummy load put almost all of that into the studio — thankfully, during that time of year.

The station was walking distance; I didn't have a driver's license yet, but I did have an FCC ticket. The PSA hours didn't produce any measurable revenue, but for me, it was a real radio job, minimum wage, and all I had to do was get there at 4 a.m. I had time to stack my carts and records and the next hour's stuff so that when the real morning guy arrived at FCC sunrise, all would be ready to go.

One thing lead to another. The highs were high and the lows not so enjoyable, but I'd never trade this ride for any other career.

I recently got an email from a friend who publishes a newsletter for his group of engineers. He's bemoaning the graying of broadcast engineers. He just came from an SBE national event, and of course its attendees were the men and women who have accomplished much and been involved. It took some work and time in grade to get there. The universe has a time for everything, and that was all about senior members of the profession. You earn that seat.

The new folks don't look like broadcast engineers, and the skillsets that got them their jobs are gleaned from a list of what the SBE teaches as ongoing education. My company responded to the laws of supply and demand. We need people to do these things; there is a limited number of people with the pedigree, and that demands a price. It's better than minimum wage.

I'll do my best to spin them up on Gantt charts and network design. They'll learn just enough about Smith charts. In the end, there will be enough of the right people doing the things that make broadcast work.

They are a half-century of intense technological evolution removed from the morning I first got to read the sign-on and the required "mechanical reproduction announcement" from the continuity book. I would drop the shift handle on that 18-inch turntable into gear and pot that vinyl recording up as I got used to wearing headphones and learned to judge the mix, in a small studio I left lit with only the Christmas decorations' filaments. I wish they could feel like I felt — feel that magic and adrenaline as I glanced at my license on the wall with all the others and wondered if I could really do this.

It's a silly wish. This is their Christmas. I hope their gift is that their career can also be their passion.

The Wandering Engineer is an industry stalwart who has been in broadcasting since the days of Marconi and Tesla. He gives his thoughts on the current state of broadcast engineering and the broadcast engineer.

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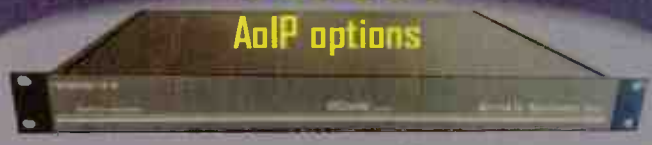

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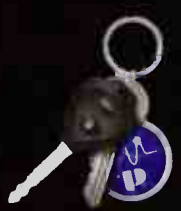

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