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Dig into the digital library

Here's how to browse v past editions of RW

Paul McLane
Editor in chief

Reader Ron Nelson, who does contract engineering work in California, writes: "I subscribe to Radio World and have read both hard-copy and digital versions.

"Love the magazine and all the features. How can I find a back issue? Specifically the Sept. 24, 2019 article on building an EAS loop antenna."

Many readers are aware that the four or five most recent issues are available in digital edition form at *radioworld.com* under the Resources tab.

But most may not realize that they can browse much farther back by clicking on the blue "Digital Editions" header tab, or using the small pulldown menu to access the sub-category "Digital Editions." Then just scroll down to find the right cover date.

Or save the following URL, which will take you directly to that page: *www.radioworld.com/resource-center/digital-editions*.

Ron no doubt saw our cover story in the March 2 issue about making your own EAS antenna; that story referred back to the 2019 article and the original tip by Ken Beckwith. So one more way of accessing the earlier piece is to search "Beckwith" in the website's search tool, then scroll down to the right headline.

While I'm on the subject of the website, we recently added the OneSignal notification tool.

At lower right of the home page you should see an orange bell icon. Click it to "subscribe to notifications." Once or twice a week we'll ping you on your desktop or mobile device to let you know about stories of particular interest. Several thousand readers currently use this free tool.

And here comes the NAB Show! Last issue we previewed the themes and sessions for business execs. In this issue it's all about the technical conferences. Will you attend the convention? I'm interested in hearing about your experience. As always you can reach me at *radioworld@futurenet.com*. I hope to see you on the show floor.

THIS ISSUE

Foreign Sponsor ID Is Now in Effect

Over broadcasters' strong objections, U.S. radio and TV stations now are required by the Federal Communications Commission to disclose when foreign governments or their representatives lease time on their airwaves.

"This action was adopted unanimously by the FCC in April 2021 and increases transparency, ensuring audiences are aware when a foreign government, or its representatives, uses the airwaves to persuade the American public," the commission wrote in an announcement on March 15.

"These rules are effective immediately for new leasing agreements and will need to be implemented within 6 months from the Federal Register publication date for existing agreements."

It quoted Chairwoman Jessica Rosenworcel saying it's all about transparency on public airwaves.

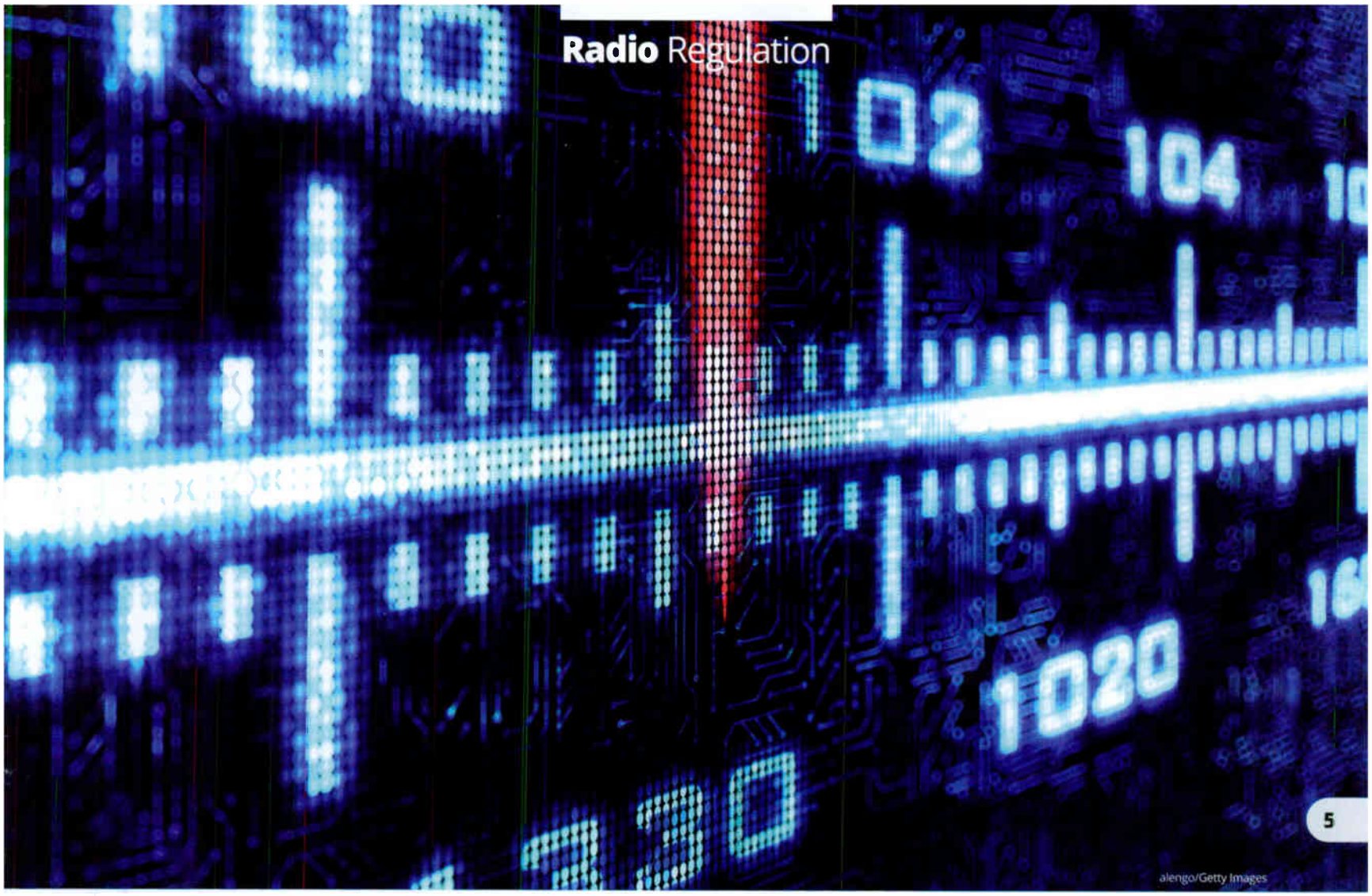
"It is essential that audiences know when a broadcast station has been compensated to air content coming from a foreign government."

The rules now require on-air disclosure for broadcast programming aired through a leased airtime agreement sponsored by any entity or individual that is a foreign government, a foreign political party, an agent acting on behalf of such entities, or a U.S.-based foreign media outlet based on definitions drawn from the Foreign Agents Registration Act of 1938 and the Communications Act of 1934.

metamorworks/Getty Images

In addition, if a station is airing foreign government-provided programming pursuant to a lease agreement, it is now required to include such disclosures in its Online Public Inspection File.

Several leading U.S. media organizations brought suit against the commission for this requirement. The National Association of Broadcasters, the Multicultural Media, Telecom and Internet Council and the National Association of Black Owned Broadcasters last summer filed a petition for review with the U.S. Court of Appeals for the District of Columbia Circuit. They say the FCC rule is illegal and onerous, and that the problem it seeks to address isn't in fact a problem.



alengo/Getty Images

Next-generation "Franken FMs" take to the U.S. airwaves

Creative RF engineering allows LPTV licensees to retain analog audio services

This is the first in a series of articles about the future of FM stations on TV Channel 6.

It's been more than a decade since the first so-called "Franken FM" radio stations — licensed as Ch. 6 TV operations but using their 87.75 MHz audio carrier to create a standalone FM broadcast service receivable by most FM radios — took to the air.

"Frankens" have long been a thorn in the side of legitimate FM operators, and during their existence, the FCC has heard plenty about them. However, as the commission has been preoccupied with more pressing matters such as spectrum auctions and repacks, little if any action has been directed at these "mongrel" FMs, with regulators perhaps hoping that they would vanish last year when all LPTVs were forced to either "go digital or go dark." However, just like the Hydra in Greek mythology, cutting off the head proved not to be the answer in eradicating the beast — others soon grew back, or in the case of Franken FMs, some creative RF engineering work allowed LPTV Ch. 6 licensees to retain analog audio services despite their move to digital broadcasting.

The first of the "next-generation" Franken stations — KBKF(LD), a Venture Technologies property in San Jose, Calif. — took to the air in the spring of 2021, with an FCC-issued STA to operate an ATSC 3.0 TV channel with a "tagalong" FM carrier.

In applying for the STA, the station opined that such

hybrid digital/analog fashion was covered by the ATSC A/322 standard, with its 3.0 signal "pulled in" to occupy 5.509 MHz of its 6-MHz berth and the rest given over to an FM carrier.

Reaction to "Next-Gen Frankens"

In early 2022 there were at least a half-dozen of these "second-generation" Frankens, and given the FCC's apparent willingness to grant STAs coupled with the number of Ch. 6 TV authorizations, others may soon appear.

As such hybridized use of a U.S. DTV channel was not on the table when the NextGen TV standard was being drafted, the arrival of this new wave of Frankens has raised some eyebrows — and questions, just as when the first of the quasi-legal 87.75 FMs popped up back in analog Ch. 6 days.

Several individuals who have been involved with the ATSC 3.0 standard were polled for their opinions on this new wave.

"During development of ATSC 3.0, a number of use cases were discussed; many were documented," said ATSC President Madeleine Noland. "I can't recall this being one of them. ATSC 3.0 was designed to be flexible and to accommodate a wide variety of use cases and business plans. Beyond that, we cannot say whether this use case falls within the intent of ATSC 3.0, as authorized by the FCC for the U.S."

Richard Chernock, a long-time contributor to the ATSC 3.0 initiative, stated that "the assumption going forward in the design of ATSC in the U.S. was to establish a full 6 MHz channel. Anything less would reduce 3.0's capabilities. In my opinion, to use 3.0 for the Franken FMs is to actually lower spectral efficiency."

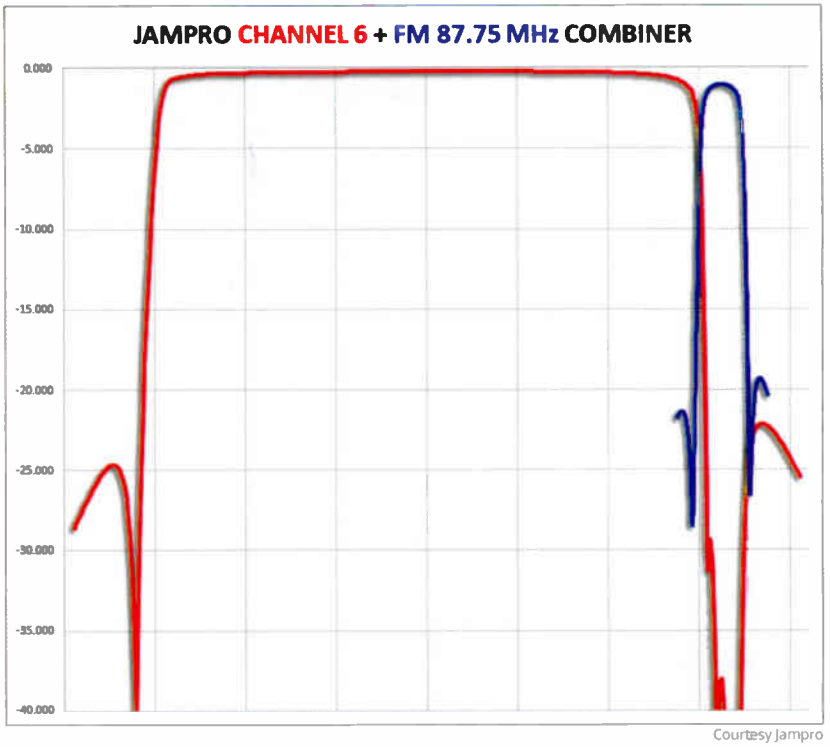
However, Chernock added, "Using ATSC 3.0 technology to carry radio audio is a lot more efficient than to use FM. You could go into any big city with a lot of FMs and you could put them all into one 3.0 channel."

Chernock said that he would have to do the math to get a precise figure of the number of discrete audio program streams that could be digitally transmitted within an ATSC 3.0 6-MHz channel, but he speculated that it could easily approach 1,000 given the efficiency of today's codecs.

S. Merrill Weiss, who has been deeply involved in both ATSC 1.0 and 3.0 standards work, feels that the jury is still out regarding hybrid DTV/FM transmissions.

"After reviewing all the publicly available technical material that I could obtain on the proposal to combine ATSC digital signals with FM analog signals in a single Ch. 6 emission, I found a dearth of information on either practical operating parameters and systems, or testing of equipment beyond very rudimentary prototypes," said Weiss.

He expressed several concerns, one of them being the possible impact on 3.0 reception associated with the necessary "squeezing in" of DTV transmission bandwidth to accommodate an FM carrier.



Courtesy Jampro

Above
This spectrum plot depicts the relative positions of digital television and analog FM radio signals within a 6-MHz TV broadcast channel.

"The center frequency of the digital signal would be about 160 kHz below the channel center, and it is not known to me whether consumer receivers being sold can be pulled that far," said Weiss.

"The system may work and be useful, but the information is not available yet to prove it. Once this is released, a judgement on the practicality and utility of such a system may become possible."

Mark Aitken, ATSC 3.0 "evangelist" and Sinclair Broadcast Group's senior vice president of advanced technology, remarked that he was not surprised at all about the "second coming" of Franken FMs after last July's mandatory shutoff of remaining analog LPTVs.

"Actually, I think I played a role in getting them in business with 3.0," said Aitken, explaining that his own involvement into "stretching" a TV channel's utility "came about quite some time ago" when he was asked if it were possible to accommodate multiple services within a single television channel's spectrum allocation.

"The question posed to me several years ago was, 'If I had 6 MHz of spectrum and wanted to offer a narrowband 5G service, could I do that in conjunction with ATSC 3.0?'" reflected Aitken. "I thought about it and said 'Yeah.' I demonstrated it later. This was with a narrowband Internet of Things service. I showed that we could carry two separate RF services within a single channel. I probably should have taken out a patent!"

Putting spectrum to "good use"?

Asked whether he thought a Franken FM was a legitimate application of the ATSC 3.0 or a misuse, Aitken took a neutral stance.

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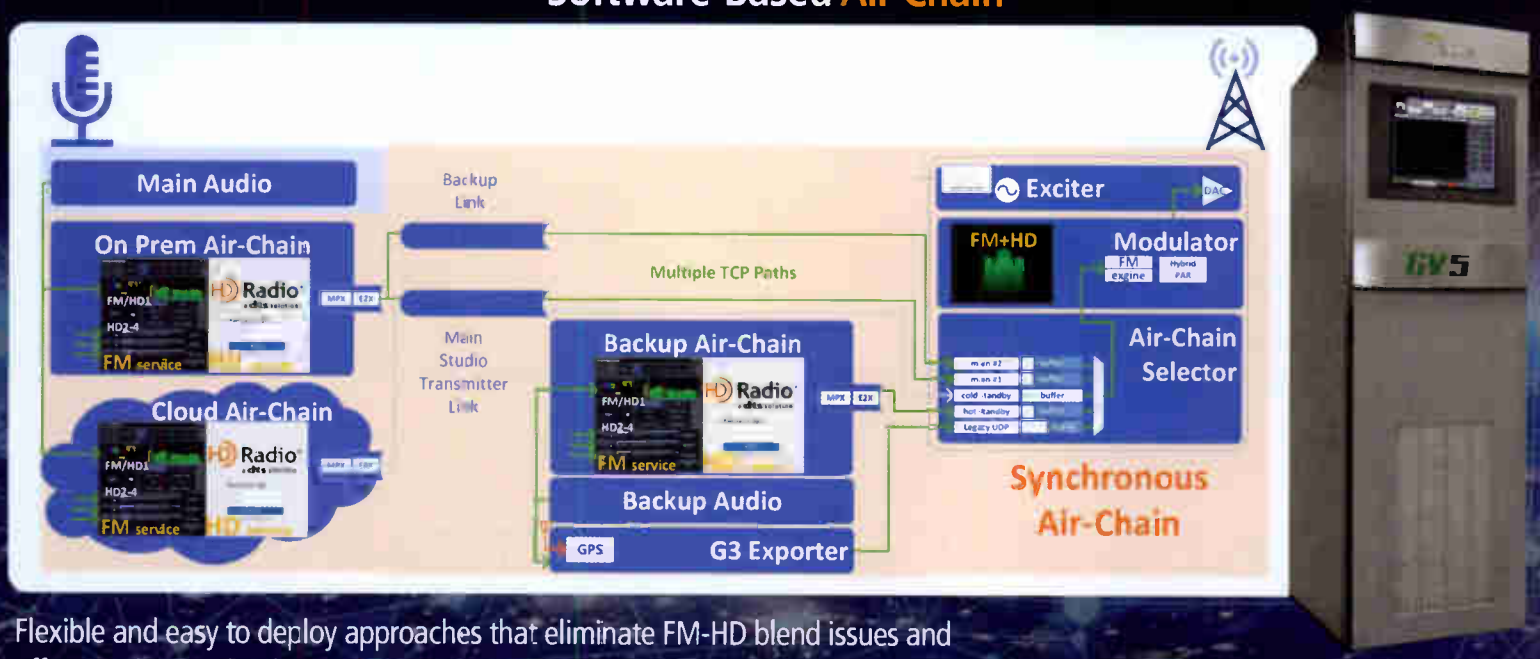

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"I'm not going to argue against folks who want to use technology to their advantage," he said. "The large number of Franken FMs that existed are from people who are not in the TV business. With the limitations of FM spectrum, they are making use of the FCC rules and channel segmentation philosophy. They're putting it to good use."

He explained that by its very nature, ATSC 3.0 is designed to be extremely flexible and extensible.

"Numerically — and this is not understood by most folks with regard to ATSC 3.0 — you can get to any number of bandwidths," said Aitken. "This is the reason that the [3.0] bootstrap itself is only 4.5 MHz wide. We wanted to make sure that in the future 5 MHz raster spectrum could be used by others by using the 3.0 standard.

"This is not ensconced or codified in the standard, as it was feared that the FCC might do an 'about face' and reduce [U.S.] TV channel bandwidth to 5 MHz, so this was dropped out of the specification," Aitken added. "A channel bandwidth of 8 MHz is, in fact, codified within the ATSC 3.0 standard and is being tried in India."

As Sinclair owns a number of Ch. 6 TV stations that could potentially become Franken FMs, Aitken — when asked about such a possibility — said that he didn't see this happening anytime soon, although the possibility of gaining more utility from television broadcast spectrum is always intriguing.

"I would think there's no current interest [in Franken FMs]," he said. "Sinclair is not really interested in radio, as its core business is video. I don't want to preclude this possibility in the future, but right now we're focused on rolling out ATSC 3.0."

"In early 2022 there were at least a half-dozen of these 'second-generation' Frankens, and given the FCC's apparent willingness to grant STAs coupled with the number of Ch. 6 TV authorizations, others may soon appear."

Upcoming articles will report reaction in radio to these stations and describe the technology necessary for creating a "next-generation Franken FM."

Ember+, and options like WheatNet-IP. The Gateway supports up to 16 mono or 8 stereo channels with AES3 and analog supported. Plus, you can multi-unicast, multicast, stream up to 8 channels of phase-aligned audio for surround sound solutions, plus HTTP streaming is included as well.

Tieline Delivers AoIP Integration

Tieline's Gateway and Gateway 4 codecs are often 'edge' devices in IP networks bridging between the AoIP broadcast plant, other studios (inter-studio links), production facilities and live events. Interoperability with multiple AoIP protocols delivers greater flexibility when integrating IP audio streams into the broadcast plant from a range of sources. Gateway and Gateway 4 codecs embrace both proprietary and open standards and protocols across LANs, WANs and the public internet, with simple monitoring and control.

With innovative and wide-ranging standards-based technology, it's no surprise Tieline is at the heart of major global broadcast networks. Contact us today to take your network to the next level.

Tieline Gateway

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Discover today how the Cloud Codec Controller allows you to manage an entire fleet of Tieline codecs and Report-IT Enterprise from the studio, at home, or anywhere with an internet connection.

The latest cloud computing technologies deliver secure, real-time monitoring and remote control of all ViA, Gateway and Gateway 4 codecs, as well as smartphones using Report-IT Enterprise. As soon as a device connects to the internet, the Controller delivers:

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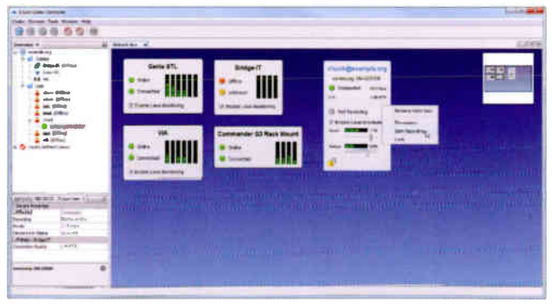
Monitor and control your entire network of IP codecs, select and load programs, and view and manage alarms. Plus, launch the HTML Toolbox web-GUI to access all codec controls, mixer and router settings, program editing and creation, and more.



Cloud Codec Controller software interface.

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INSIDER
NAB SPECIAL EDITION APRIL / MAY 2022

What's Inside?

University of Delaware Use Gateway 4 & ViA for Remotes

Tieline
The Codec Company

By David Mackenzie, Chief Engineer 91.3 WVUD at the University of Delaware.

I first worked at the University of Delaware as a student broadcaster and Assistant Chief Engineer in the 1970s. Later I was Chief Engineer at WJBR for 15 years, then Director of Engineering at CRB Broadcasting, before returning to take up the position of Chief Engineer at WVUD in 1996.

WVUD is a non-commercial broadcast operation operating on a limited budget and we prioritize selecting new equipment that works reliably and efficiently. A Wheatstone LX 24 is central to routing audio between our 3 studios and we rely heavily on Tieline Gateway 4, Bridge-IT and ViA codecs to produce sports remotes for athletics, football, basketball, ice hockey, baseball, lacrosse, field hockey, softball, and other music remotes annually.

We installed the Gateway 4 codec at our studio to expand our remote capability over IP. The Gateway 4 supports two simultaneous live stereo remotes and we also have a Tieline Bridge-IT, so we can theoretically run three stereo remotes at a time, which is useful when teams travel away.

We have two Tieline ViA remote codecs which work wonderfully. All of our announcers are students, so simple and trouble-free connections are important. We have preconfigured the ViAs with programs that allow students to connect to any of our 3 studios at the touch of a button. They find the ViA is very simple to use and it sounds much better than the POTS lines of old and our Martis, which still get used occasionally on campus when both the ViAs are in use, or we are following teams playing away.

Using the LX 24 we can easily route high quality mix-minus feeds to the ViA codecs which provide studio quality audio IP feeds in both directions very easily. This is quite a step up from our older Martis, which

(Continued on Page 2)

Sophomore Konner Metz (left) and senior Gideon Berman visit Rutgers with a Tieline ViA for Delaware's matchup with The Big Ten's Rutgers

David Mackenzie with the Gateway 4 codec

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feed return mix-minus audio over the SCA 67kHz subcarrier signal for monitoring. This requires an SCA radio receiver to demodulate the audio signal. The quality can be poor and in the past had issues with the signal not penetrating buildings.

We encode using Tieline's Music algorithm which sounds great at low bitrates. When sports are on our campus we can connect easily over Ethernet and use Wi-Fi from time-to-time if required. We occasionally encounter issues trying to connect over Ethernet and Wi-Fi at other Universities because firewalls can be problematic.

"Since being configured the Gateway 4 has been set and forget and works 100% of the time."

Configurations are pretty standard and we don't require remote monitoring of connections, even though it's available if required. Our goal is to cover around 100 live games this year and our Gateway 4 and ViA codecs will be crucial in delivering high quality live play-by-play coverage to our listeners.

ViA Brings Wireless Freedom to Eastern Shore Radio

By Will Russell, Program Director with Eastern Shore Radio, VA

I have been with Eastern Shore Radio for 12 years and we used to use a Marti and then a DR-10 for remotes, mainly for high school football. When we learned about the features of the ViA like redundant streaming, as well the many options for inputs and outputs, we knew it was the right codec for our needs.

Tieline's SmartStream PLUS redundant streaming technology is crucial for us. Wireless technology is improving, but it still has its issues on the Eastern Shore. Knowing we have two signals and one can replace packets if required, really makes live remotes less stressful.

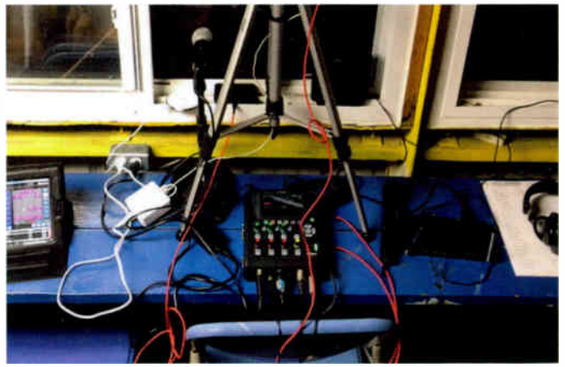
We mostly cover high school sports and broadcasted all the area graduations during COVID. Recently, we covered a political debate on the radio and provided video with Facebook Live. For sports, I use 1-2 headsets for the play-by-play and color commentator, and then add a third mic for crowd effects.

We connect to a Bridge-IT codec at the studio. Most sports broadcasts are 2-3 hours; graduations and debates are approximately 1 hour.

"The ViA makes the entire remote experience better and we're very pleased with its performance."

You can't top the peace of mind wired connections deliver over wireless, but with cellular wireless connections there is less equipment to carry and the audio quality is amazing.

Will Russell covering the ESVA Chamber's Candidates Forum using the ViA



Tieline ViA set up for live coverage of a football game

Full story at:
https://tieline.com/testimonials/via-delivers-wireless-freedom/

Tieline Gateway Speaks More Languages...

Livewire+ Now Available

Tieline believes in IP interoperability within the broadcast plant, to expand options and simplify workflows when integrating software and hardware from vendors supporting different protocols.

Tieline now supports native Livewire+ AoIP networking to Gateway and Gateway 4 codecs. Seamless interoperability with Livewire+ networks delivers simpler routing and easier control of networked IP audio streams.

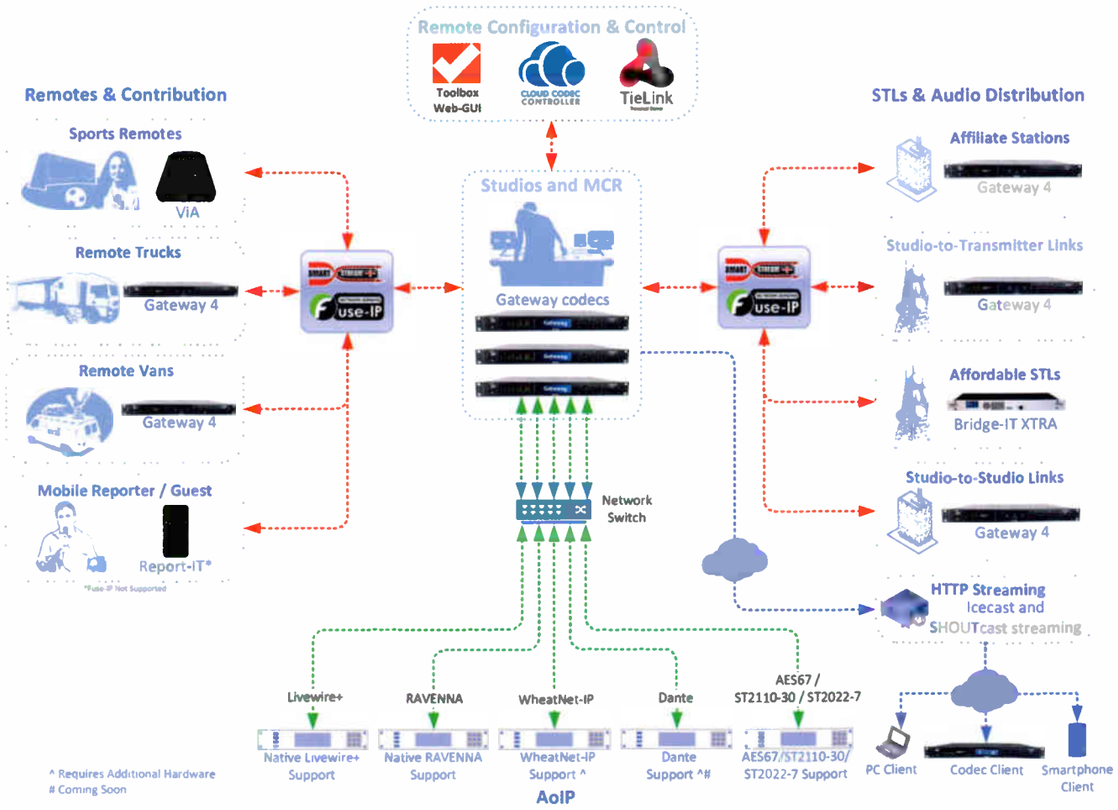
Dante Coming Soon

Gateway and Gateway 4 codecs already natively support RAVENNA and an optional WheatNet-IP card is available at purchase. Support for Dante AoIP networking will also be added to the codecs in coming months.

We Speak Your Language...

When planning your next AoIP project, remember Tieline talks the language of AES67, ST2110-30, ST 2022-7, RAVENNA, Livewire+, NMOS IS-04 and IS-05,

(Continued on Page 4)



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

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

ViA

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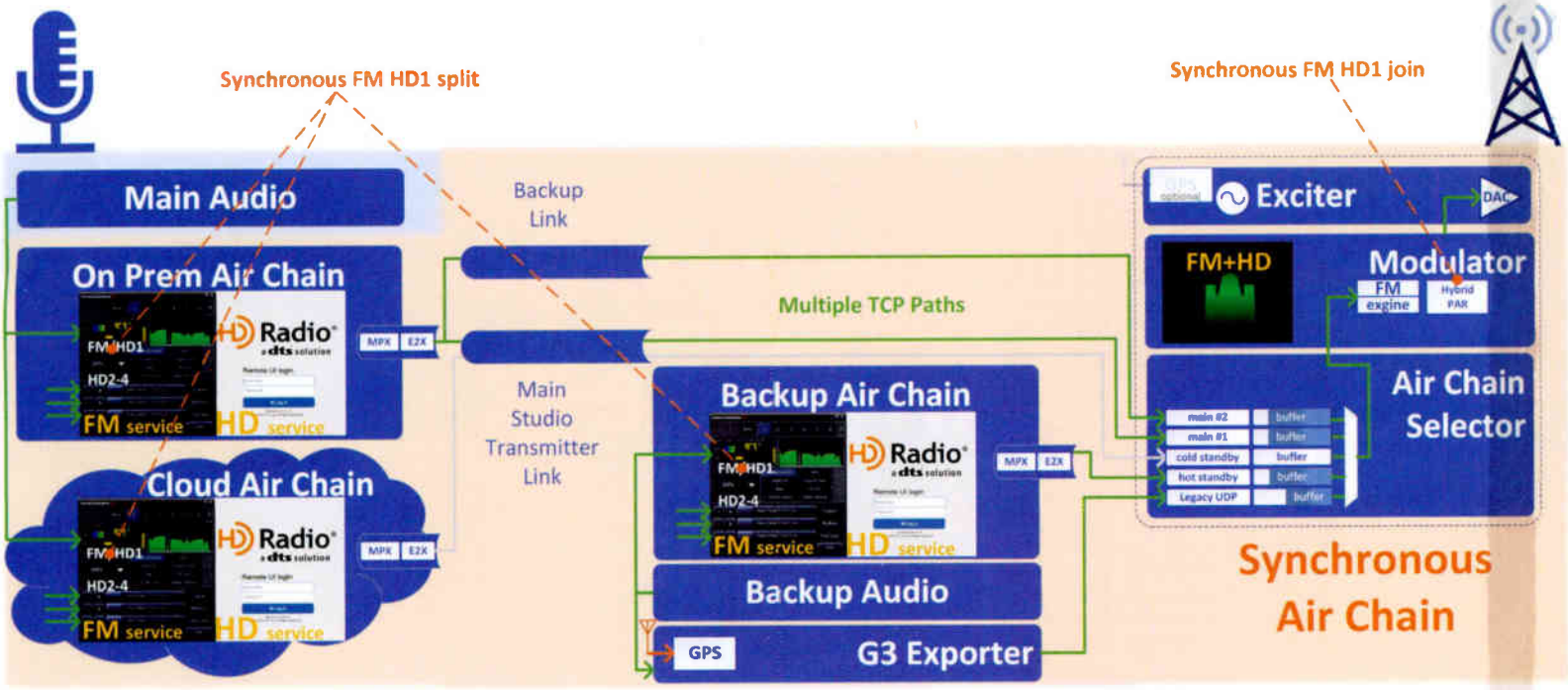

Nautel's Schmid talks transport

A cloud-capable synchronized transport architecture for FM and HD Radio

At the NAB Show, Nautel's Chief Technology Officer Philipp Schmid will present "A Cloud-Capable Synchronized Transport Architecture for FM and HD Radio Broadcasting" on Tuesday April 26.

What is the premise?
Philipp Schmid: I will be presenting and demonstrating an integrated FM and HD Radio transport architecture that allows for a location- and platform-agnostic air chain architecture bonding all broadcast services into a single transport stream that ends at the transmitter exciter and originates from software-based air chains.

Software-based air chain services, or ACS, can be virtualized or containerized, allowing for a common implementation regardless of the underlying host platform, whether this is a physical on-site server, an on-premises data center or even cloud services like Amazon Web Services.

To maintain consistent timing across the entire air chain, we synchronize all air chain services to the high-quality crystal in the broadcast transmitter all the way back to the air chain ingest in the cloud or other server, without the need for GPS or other synchronization.

Critical to the architecture is a network protocol, based on MPX and E2X industry standards, and a buffer management algorithm that allows for multiple concurrent synchronous backup air chains that always keep the transmitter on-air.

Briefly what are the obstacles you've needed to overcome to design this?
Schmid: Since the main HD Radio channel is a simulcast of the FM, the FM and HD1 audio must be very closely aligned for a receiver blending between FM and HD to sound good.

While off-air receivers exist that reactively align the FM to HD1 within the broadcast chain, any correction must be done very carefully to minimally impact a new class of HD Radio receivers that themselves attempt to correct the alignment; these may disable your HD broadcast entirely if proper alignment cannot be found.

Industry best practice for the latest fourth-generation HD Radio broadcast architecture is to install all components from FM/HD1 split to FM/HD1 join at the transmitter site, to synchronize everything with GPS and minimize differences in the FM and HD1 audio paths. This is only a partial solution, complexifies the transmitter site and prevents the air chain from moving into the cloud.

All HD Radio generations including the latest have maintained the

Philipp Schmid

At the Show
"A Cloud-Capable Synchronized Transport Architecture for FM and HD Radio Broadcasting" will be presented on April 26 at 12:55 p.m. in W307-W309 of the LVCC.

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same feed-forward synchronization architecture from exporter to transmitter, splitting the FM and HD1 audio paths over synchronous and asynchronous air chain portions, leading to potential FM-to-HD1 time misalignment. I will show that a synchronous air chain from split to join is the definitive solution that makes the transmitter crystal the heart of the broadcast system, rather than the exporter.

This keeps everything in lockstep from the transmitter branching out toward the air chain ingest. With a single clock lead, feed back synchronization can now synchronize multiple air chains and keep them all in lockstep for hot standby fail-over.

Radio engineers and managers may be afraid of the cloud, having heard stories about security and reliability. What would you want them to know?

Schmid: Through software ACS, we can offer an unprecedented level of studio-transmitter link redundancy and network path redundancy, and now we can also make the entire air chain redundant by cloning it.

We can use multiple TCP/IP paths to harden the STL or any intermediate network path; we also introduce both hot and cold standby air chains that allow us to switch over to another instance of the air chain should any portion of the air chain fail or require maintenance. Switchover can be near hitless, unlike an exciter change over requiring an RF cycle.

We have demonstrated the ability to switch to globally distributed air chains without affecting FM/HD1 alignment; we demonstrated failover between Ohio, Oregon, Brazil and Nautel headquarters.

The internet has never gone down globally, with the last partial global outage affecting only DNS servers in 1997 lasting four hours while still providing direct connectivity; a minimum of five 9s of reliability and internet infrastructure has improved since.

The global internet is a self-healing organism. The last mile, namely the STL, has been and will continue to be the weak link. A local backup air chain can serve as a last line of defense even for emergency broadcasting and alerting.

Security is a valid concern and it is a reality for all radio stations unless they are willing to air gap the entire operation regardless of cloud connectivity.

We are proposing to reverse the TCP/IP server/client relationship in today's HD Radio network architecture.

> **A synchronous air chain from split to join is the definitive solution that makes the transmitter crystal the heart of the broadcast system, rather than the exporter.**

The TCP server ought to be upstream in the cloud or data center to follow the typical internet paradigm and make use of common security practices. By reaching out to an air chain server, the transmitter can easily traverse a firewall, without compromising the firewall by opening any port redirects or dropping other security guards.

Using Network Address Translation (NAT) and IP Masquerading, the IP address of the transmitter is never revealed outside the firewall, eliminating a potential attack vector. No longer does the downstream transmitter have to trust that the incoming connection is valid; the transmitter reaches out. We can authenticate with the upstream air chain using private/public key authentication to ensure we can trust it, as well. VPNs can also be used to further enhance security.

A software air chain has a tremendous advantage in that should it become compromised by a bad actor, like ransomware, delete the air chain, eliminate the attack vector, restore the air chain to its last good image and go back on-air.

Maybe we are fooling ourselves into thinking that an embedded hardware-based air chain is inherently more secure. Embedded devices come with both proprietary and increasingly open-source software stacks, a leading security concern — think log4j. Embedded devices often do not come with a complete software bill of materials, making a security audit difficult. You may already be compromised and not even know it with the limited system view that embedded devices provide.

What else should we know?

Schmid: Broadcasters tell us that their HD rack, often at the transmitter site, is their most complicated installation and proves to be error-prone. We are acting on our vision to provide a transmitter that takes one or a few simple IP addresses or URIs for all its content needs and push all the intricacies and station personalization into a better-managed software environment, where remote assistance can be provided.

Looking beyond the easier technical HD upgrade, the software approach also provides a more cost-effective way of upgrading to HD Radio by converting your typical cap-ex into an op-ex. Why not give HD Radio a try?

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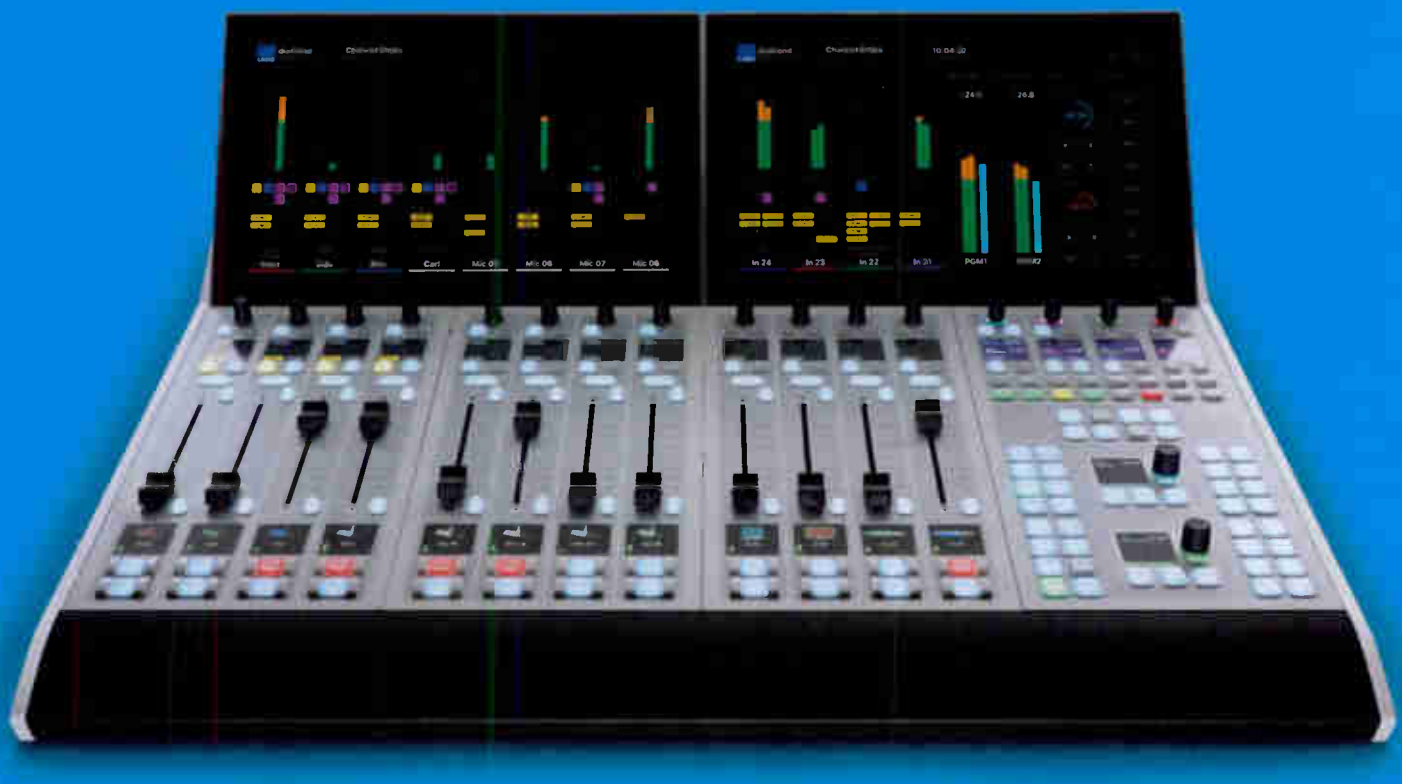

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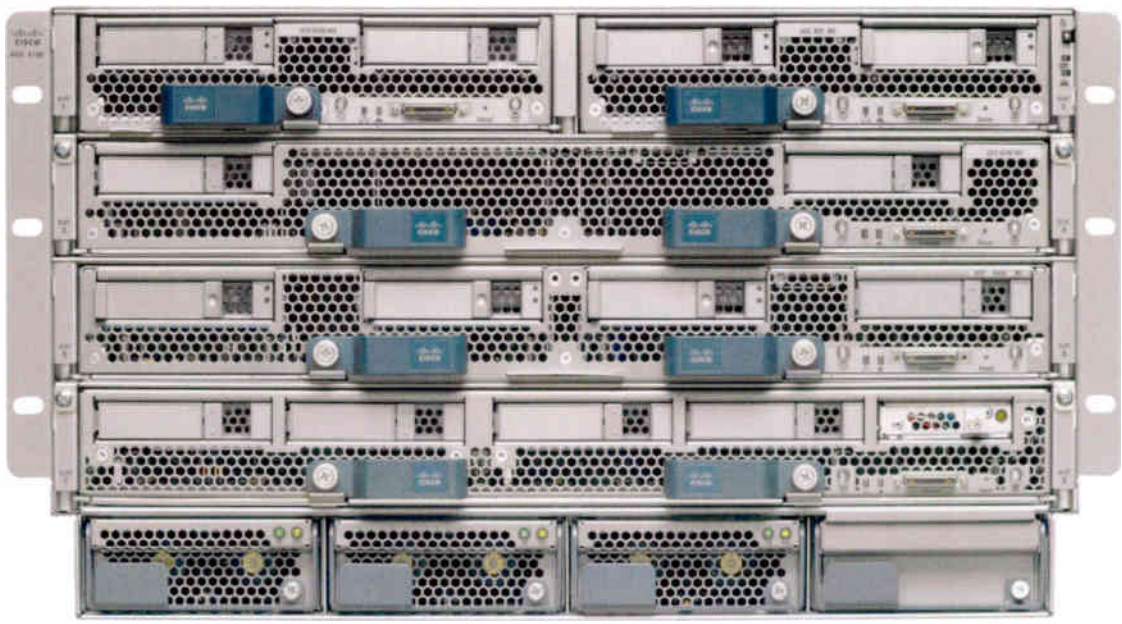
Onsite or cloud: Strategies for mixing it up

Practical ways to step into a more cloud-like operation without going all in

Dominic Giambo is manager of technology at Wheatstone, responsible for its WheatNet-IP audio network and routing applications. He has been involved in industry AES67 plugfests as the lead engineer responsible for AES67 implementation in the Wheatstone AoIP network. He'll speak on Sunday of the NAB Show in the session "Onsite or Cloud: Strategies for Mixing It Up."



Above
Example of a Cisco server blade stack, which can be managed by a hypervisor and output to a fabric interconnect that hooks to an AoIP switch.

What is the theme of your talk?

Dominic Giambo: There are some very practical ways to step into a more cloud-like operation without going all in and having to entrust your entire broadcast chain to a public cloud provider.

For example, commodity hardware like servers continue to get faster and less expensive, and we can use these to run program instances of applications in place of discrete hardware. The benefits can be significant, from not having to maintain specialized hardware and all the costs associated with that -- like electrical, AC and space — plus there's a certain adaptability with software that you just can't get with hardware alone.

The next step might be to go to a container model with the use of Docker or similar containerization platform. Containerization doesn't have the large overhead that you find with virtualization per se, because you can run a number of different containers that share the same operating system. For example, one container could host WheatNet-IP audio processing tools, while another could host the station automation system, each totally isolated yet run off the same OS kernel.

Should you decide to move onto a public cloud provider like Amazon or Microsoft, these containers can then be moved to that platform. Containers work well on just about all the cloud providers and instance types. Most providers even offer tools to make it easy to manage and coordinate your containers running on their cloud.

Software as a Service applications that consolidate functions and don't have critical live broadcast timing requirements are replacing rows of desktop computers and racks of processing boxes.

Streaming and processing are good examples. Migrating these to a cloud environment is straightforward if you already have them running on your servers. The hard work is already done, plus you'll still have the servers for redundancy or testing and trying new ideas.

Please expand why this is important.

Giambo: If you have a server, for example, you already have the beginnings of virtualization in the sense that you can offload some of the functions performed on hardware with instances of software.

There is really no need to invest in a big architecture migration plan. Just about every modern station has a server or two in their rack room that has some room to run a virtual mixer or instances of audio processing to the transmitter site or out to a stream. The work is simply moved onto a server CPU instead of having that work performed on a dedicated hardware unit, and as commodity hardware, servers tend to get more powerful quicker than a dedicated piece of hardware that might be updated less frequently.

What pieces of the broadcast airchain are moving to the cloud?

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Giambo: Playout systems. And that makes a good case for the mix engine to also be in the cloud.

Latency is always going to be an issue with programming going into and out of a server (or cloud) if it's far away, but there are effective ways to deal with this. For example, I can see how a local talk show might still be mixed locally in order to preserve that low latency needed for mic feeds into that mix, but it might be mixed using client software that is based in the cloud or regional server for general distribution.

All kinds of processing could be done in the cloud, as well as encoding/streaming tasks for content delivery.

What are the main arguments for doing so?

Giambo: Cloud, and software generally, buys you greater flexibility for adding on studios, sharing resources between regional locations, and even for supply chain interruptions that might occur with hardware only. We can use commodity hardware to do what we might have done with specialized hardware in the past, and that is only going to get more flexible and affordable as time goes on.

We saw headlines in late 2021 when Amazon Web Services had several technical failures. What lesson should broadcasters take from that in planning their infrastructures?

At the Show

"Onsite or Cloud: Strategies for Mixing It Up" will be presented on April 24 at 2:35 p.m. in Rooms W307-W309.

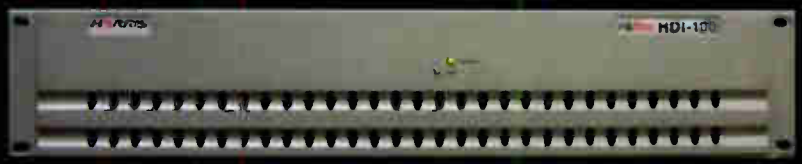
Giambo: That is something that must be considered in any cloud deployment, for anyone using the cloud. Clearly these platforms are in the bad guys' crosshairs. There are many points of failure. Some industries can be more tolerant of interruption, but live broadcast is not one of them.

We need to take this in steps. We may be able to get many of the benefits of cloud by moving towards a software-based approach first, such as running this software on servers with ever increasing power and then distributing the control of that equipment remotely using virtual consoles. In a later step these same servers could be re-tasked to use in redundant backup scenarios alongside cloud resources to mitigate the security risks of a cloud-based approach.

Yes, cloud services purport redundancy, but as we've seen, it doesn't always work that way.

What else should we know?

Giambo: For most broadcasters, virtualization or cloud isn't the goal any more than adding a new codec or AoIP system is the goal. The great thing about software virtualization is that it uses enterprise commodities, which will inevitably find their way into studios and rack rooms. In that sense, the planning has already been done, so now it's just a matter of taking advantage of what you can do with what you have already.



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Writer
Paul McLane
Editor in Chief

Dielectric introduces a pylon FM antenna line

Says benefits include low windload, simplicity, and azimuth and elevation pattern flexibility

At the Show
"Changing the Landscape of FM Broadcast Antenna Technology" will be presented on April 26 at 1:55 p.m. in Rooms W307-W309.

Dielectric recently announced that it is offering a new line of pylon antennas for use by FM radio stations.

Vice President of Engineering John Schadler will give a talk at the NAB Show about it.

He says the FM Pylon is ideal in broadband applications where antenna loading is an issue such as a panel solution would require significant tower modifications.

"Pylon-style antennas have been used in the vast majority of UHF antenna design for decades and more recently high band VHF," Schadler said.

"In most applications, the use of slotted coaxial antennas has been limited to single-channel television operation due to the inherently narrow bandwidth. Dielectric has found these limitations can be overcome resulting in a truly innovative game changing antenna design for full band FM operation."

The company has big hopes for the FMP line; Schadler's presentation is titled "Changing the Landscape of FM Broadcast Antenna Technology."

"FM broadcasters can now take advantage of the many benefits that pylon technology has provided to the UHF and VHF broadcast community," he said.

"They include much less windload; simplicity, which translates into increased reliability; and azimuth and elevation pattern flexibility. From a commercial aspect, it can provide a more economical solution as well. The new design could only be accomplished through advanced broadbanding techniques developed by Dielectric through years of experience and knowledge of pylon technology."

The single four-bay module that is the basic building block of the Dielectric product can be used in numerous configurations similar to panel antennas. "This leads to full azimuth and elevation pattern control to optimize coverage," Schadler said.

"And reliability is key. The FM Pylon has 60% fewer parts and connections than a traditional ring-style FM antenna and 90% less parts than an equivalent panel antenna. This also leads to easier and faster installation."

In its product announcement, Dielectric wrote: "The engineering breakthroughs include reducing the antenna Q factor, which provides 20 percent bandwidth; and stabilizing the H:V ratio across the band. The 20 percent bandwidth translates to full FM band operation, which is a key goal of the FMP antenna's design. It said the pylon design also provides broadcasters and tower crews with top-mounting options, in addition to the traditional side-mounted configurations of ring antennas. "This is ideal for high-power FM stations that want a true top-mounted omnidirectional antenna. The FMP can handle input powers of 100 kW and higher, which also makes the antenna excellent for combined operation of multiple stations."

Above
A Dielectric FMP FM Antenna is prepared for the field.

Right
John Schadler

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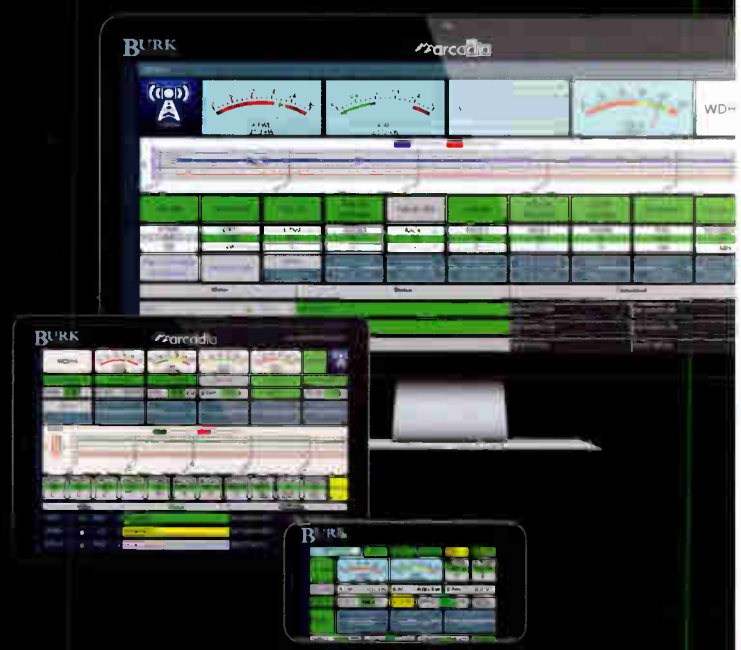

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John Bisset
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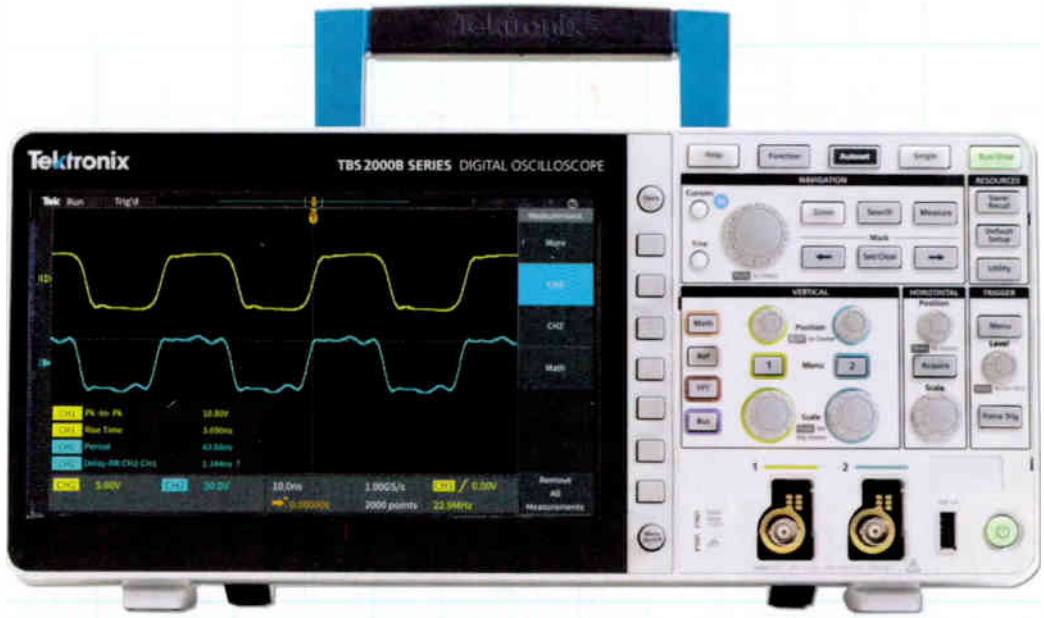
With more than 50 years in broadcasting, the author is in his 31st year writing Workbench. He handles western U.S. radio sales for the Telos Alliance and is a past recipient of the SBE's Educator of the Year Award.



Tips for setting up that 'scope

Also, how to remove an RF bullet without damaging it

Jose Rodriguez is a technical manager at Tektronix, which makes a variety of test equipment but is probably best known for their oscilloscopes. His team has prepared a great video explaining how to display an electronic signal properly once it's captured.

Seasoned engineers will know that the secret is in proper adjustment of the horizontal, vertical and trigger controls on the 'scope. The five-minute video will help entry-level engineers alleviate the mystery of how to set one up. The video is a refresher for us seasoned engineers, too.

Go to *https://tinyurl.com/rw-scope*; the video is at the top right. An Oscilloscope Fundamentals paper and other resources are also available.

Above
Tektronix, which makes oscilloscopes like this one, has a short helpful video online about setting one up.

Grout with muscle

Longtime Radio World contributor Charles "Buc" Fitch, P.E., enjoyed the DexPan tip that we shared back in April 2021. You'll recall that the material can be used to break up old tower piers or concrete pads chemically.

Buc notes the difference between cement/concrete and grout. The former shrinks as it dries. Grout, on the other hand, expands. That's why it is used between bathroom tiles; it fills the voids.

The DexPan compound essentially is grout with an extreme expansion coefficient. That property is why you can grout anchors into rock but you cannot cement them. The grout swells around the bolt, rod or rebar, pinning it inside the rock void. You can watch the process at *www.dexpan.com/pages/how-to-use-dexpan-break-concrete-rocks-easily*.

Also in that column we shared an observation about cable pulling out of their connectors with built-in restraints. Buc reminds engineers that the National Electrical Code is specific about cable types, connector types, appropriate applications and installation details for running wires vertically, such as up a tower.

An area of broadcasting subject to this section are tower lighting wires that can run great distances up a tower in conduit. The rough rule of thumb is that no wire installed vertically can travel more than 100 feet before being supported.

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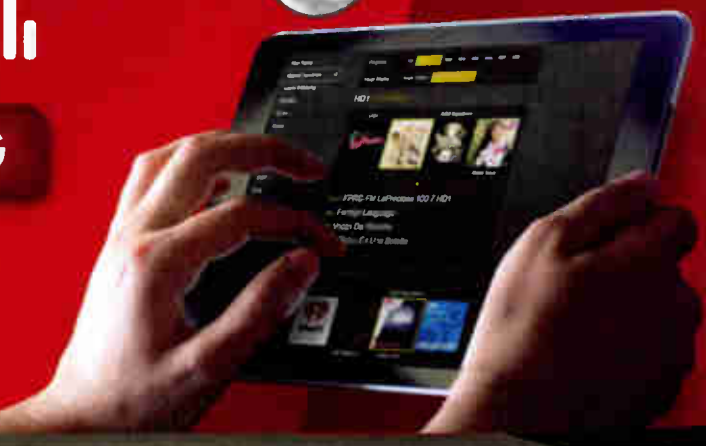

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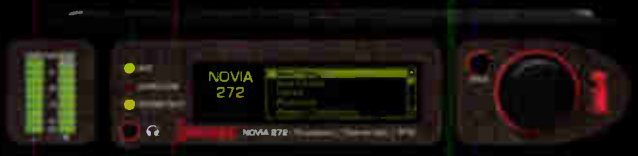

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Above left
Several layers of electrical tape protect the "bullet" from the jaws of the pliers.

Above right
Make sure you wrap the tape and connect the hose clamp at the base of the bullet, so as not to deform its spring "fingers."

Buc was called into a station where electrical metallic tubing (EMT) conduit was run up a dozen or so floors to connect to a rooftop generator. To save money, this had been a do-it-yourself job; but the work all had to be done over because the wire was not supported properly and there were no fire stops installed as the conduit passed each floor landing.

In the wire sizes commonly used in broadcast applications such as tower lighting (18 to 8 AWG), the maximum spacing allowed between supports is 100 feet. Also, the individual wires have to be supported at the top of the run, or as near the top as is possible. Specific support spacing information for other wire sizes is addressed in an associated NEC table.

Buc cautions that the NEC codebook is not a design manual. The "designer" of an electrical system is directed to support the wires wherever needed to avoid stretch, which can affect the integrity of the insulation and companion connections.

The NEC also has pages dedicated to "flexible cabling" — think extension cords. Generally you are not allowed to use a flexible cord in place of permanent wiring. That rack of terminal gear that you use only during football season at your local college pressbox can plug into an outlet with a short flexible cable. But you can't go out the door and down the hall into the janitor's closet for months at a time to get power; that requires permanent wiring.

Keep in mind that every extension cord used in your engineering efforts is a flexible cord and subject to the 12 AWG minimum sizing. Definitely no splicing is allowed on any flexible cord.

To protect yourself, if a flexible cord — including any extension cord — is damaged, replace it.

High-caliber advice

Scott Todd is a field technician for Educational Media Foundation, handling stations in Minnesota and Wisconsin.

He needed to remove a "bullet" from an RF elbow and found that it was stuck.

Not wanting to put the jaws of the pliers directly onto it, he wrapped the base of the bullet in four layers of electrical tape, then tightened a small hose clamp around the bullet. This permitted Scott to grab onto the bullet with the pliers, wiggling it free with no damage.

> **"Every extension cord used in your engineering efforts is a flexible cord, subject to the 12 AWG minimum sizing."**

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Why well-dressed towers may wear flared skirts

Cox, Dawson explore the benefits of umbrella-spoke feed for MW towers

Ben Dawson and Bobby Cox will talk about flared skirts at the NAB Show.

"A flared skirt is a set of symmetrically spaced cables around the tower, which attach electrically near the top of the tower, extend outward from the tower along a path similar to the top guy cables, and then turn back in toward the tower base at a point roughly halfway down the tower," said Cox, senior staff engineer at Kintronic Labs.

"Insulators at this midpoint insulate the cables from ground. The cables terminate on an insulated feed ring encircling the tower base above ground level, similarly to a conventional skirt feed. The antenna is driven between this feed ring and RF ground. The resulting flared skirt takes the shape of a diamond, looking rather like umbrella spokes."

These systems are used to provide a feed arrangement for grounded towers that is mechanically simple but has certain attractive aspects.

"The wide bandwidth characteristics of the flared skirt make these antenna designs extremely useful for multiplexing several AM stations onto a common antenna," said Dawson, consultant engineer at Hatfield & Dawson.

"Many such systems are in use outside the United States for high-power AM broadcast, both in non-directional and in directional stations. Many of these operations are also multiplexed and are fully compatible with digital modulation, such as DRM," he said.

"When the flared skirt design is also used to function as the uppermost guy cables of the tower, the antenna can be built at relatively low cost, saving the need for the base insulator of a series-fed tower and the multiple standoff insulators of a traditional skirt-fed or 'folded unipole' tower."

At the Show

"The Flared-Skirt or Umbrella-Spoke Feed for Grounded Medium-Wave Antenna Towers" will be presented on April 26 at 2:35 p.m. in Rooms W307-W309.

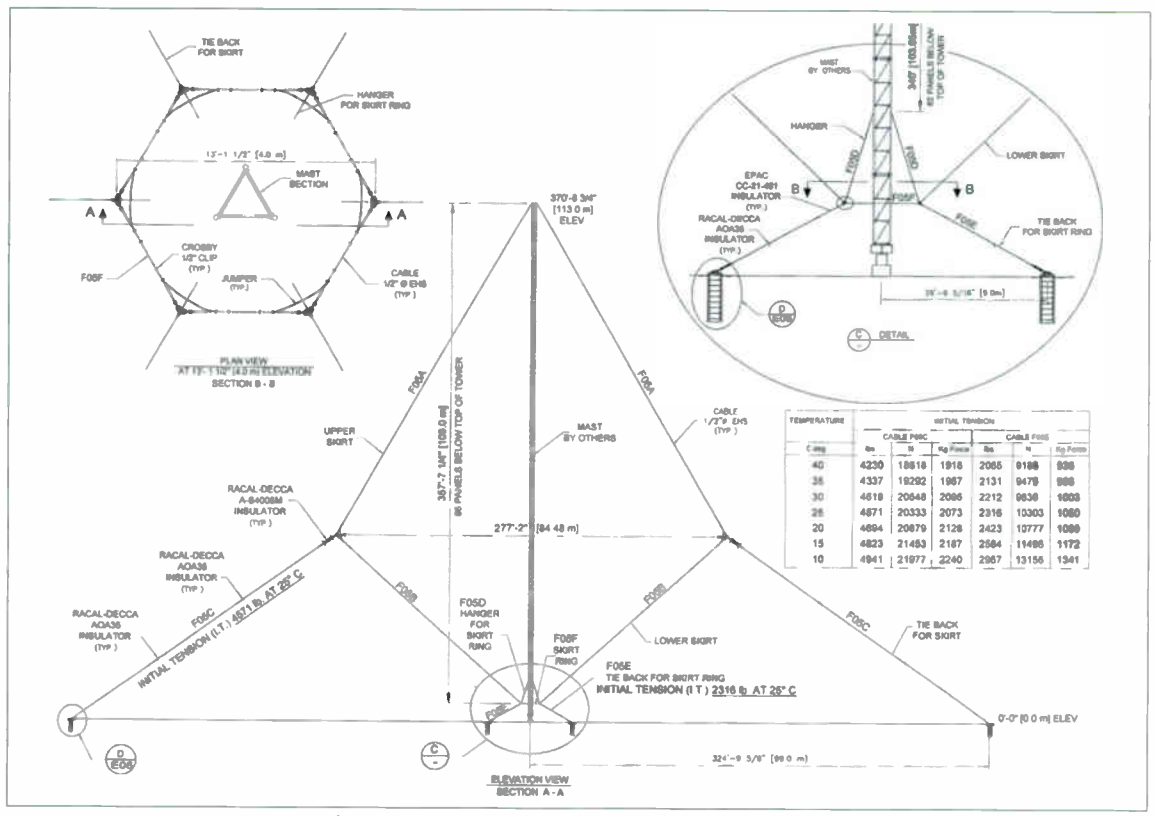
Cox said the result is a simple and low-cost antenna design that lends itself well to multiplexed operations, digital operations or both.

"It has been used widely at international sites for many years. With the growing demand for AM multiplexing in the United States and for placing various other antennas onto AM towers, the flared skirt antenna is a tool that can be useful to broadcasters in the U.S. as well."

Grounded antenna towers, Cox and Dawson note, are economical and attractive for mounting other antennas.

"Any installation where there is multiple use of towers — other antennas or other AM frequencies — may benefit from the use of flared skirts," Dawson said. "Multiplexed stations are particularly well-suited for flared skirt antennas. Often in multiplexed scenarios the tower height is shorter than desirable for the lowest frequency station involved. A flared skirt can deliver usable bandwidth to the lowest frequency station when traditional series fed or conventional skirt fed configurations can't."

He added that a skirt should never be installed on a tower without a structural analysis. Some older towers or very lightweight towers can't support a skirt safely.



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Containers are not just for shipping

A new form of virtualization is here, it's called software containerization

Kirk Harnack is senior solutions consultant at Telos Alliance.

You'll give a talk at the NAB Show about containerization, a term we've been hearing a lot but that is still relatively new to many people.

Kirk Harnack: Shipping containers revolutionized the shipping industry; "software containers" are revolutionizing software processes.

Containerized software powers audio mixing, processing and distribution. "Virtualization" has been a buzzword and a partial solution for broadcasters wishing to back up their physical studios and transmitter links. But virtualization can itself introduce extra maintenance and upkeep, as well as some inefficiencies, that have led to hesitation among broadcasters in implementation.

A new form of virtualization is here and proven by nearly a decade of experience. It's called "software containerization."

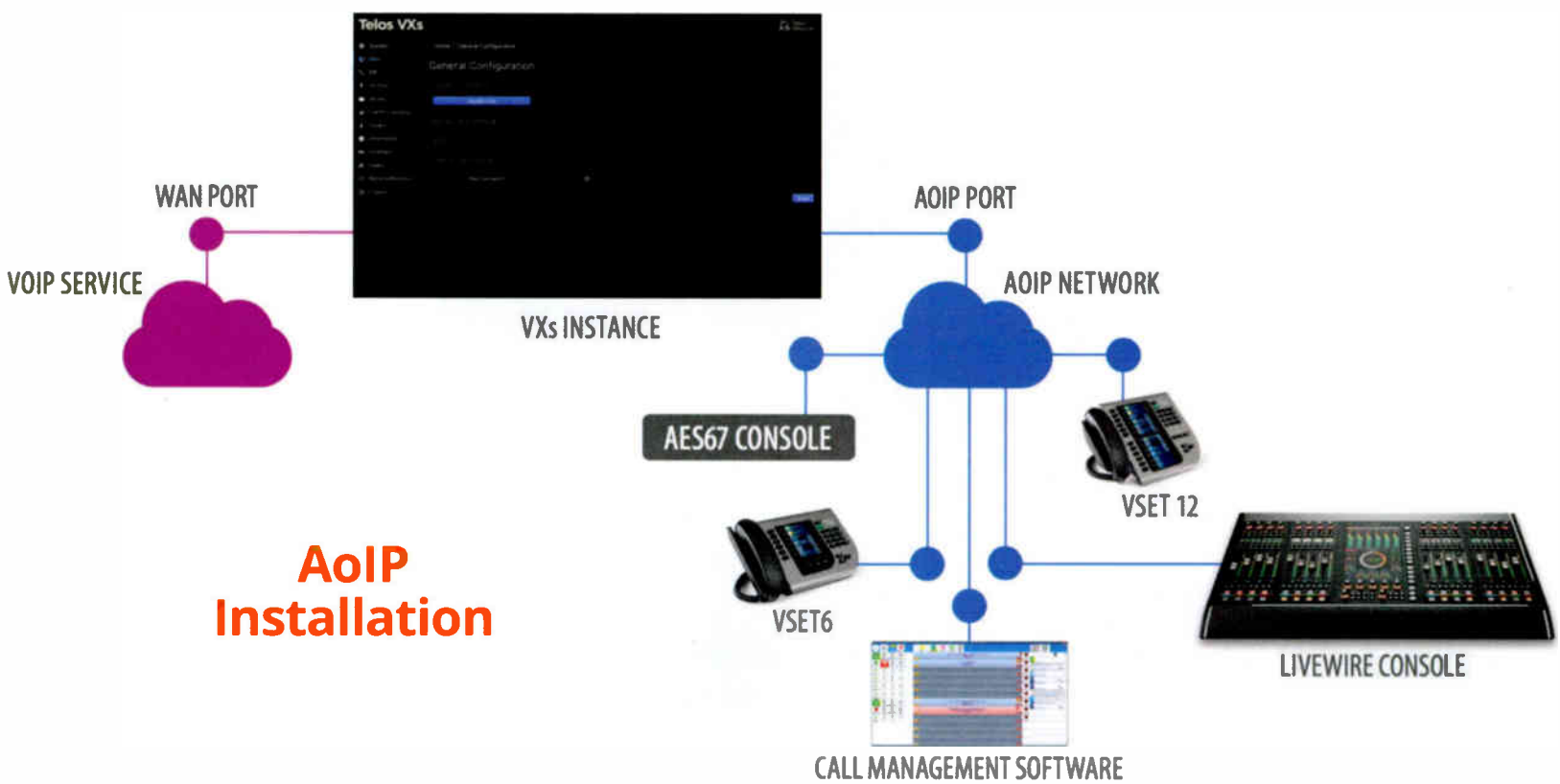
Containerized software is performing the most critical and time-sensitive functions at large organizations like Google, Amazon, Visa, PayPal and MetLife, to name a few. Now, broadcasters are getting the same IT efficiencies from containerized infrastructure such as audio mixing consoles, on-air phone systems, audio processing and virtual broadcast intercoms.

These can be "turned up" quickly, licensed only as needed, and installed with diversity and redundancy without redundant costs.

It looks like Telos Alliance is going all in on this topic, making a big investment of resources to launch an online educational program about it. Why is it worth such effort?

Harnack: We believe that moving business workflow infrastructure to virtualized environments is absolutely inevitable. Most other industries are already well into this transition, some 100 percent so.

> **We believe that moving business workflow infrastructure to virtualized environments is absolutely inevitable.**



AoIP Installation

Broadcasting has reasons to step carefully in this direction, but also reasons to move ahead. Telos Alliance will continue to make hardware for broadcasters and put innovation into these products. But there is additional flexibility and opportunity for innovation in the virtualized context. We're offering broadcasters a choice of platforms as they invest in their content creation and infrastructure systems.

Looking forward five years, how will radio workflows be different because of the concepts you're discussing in this talk?

Harnack: For most broadcasters workflows will be similar to what they're doing right now, except for this: Some broadcasters will be using the same hardware platforms they've been using while others will be accomplishing their work using completely virtualized systems. And these virtual systems will be either on-premise or in the cloud.

So, the workflows for creative minds making good radio and television will be fairly similar. The differences will be behind the scenes. Are audio signals being mixed and processed in boxes labeled with the broadcast manufacturers' names? Or will those boxes have names like "Dell," "HP" or "SuperMicro"?

In the latter case, the broadcast functions are taking place in software containers or in virtual machines that are doing the same work found in the manufacturers' own boxes.

At the Show

"Containers: Not Just for Shipping Anymore — How Containerized Software Justifies Virtual Broadcast Infrastructure" will be presented April 24 at 2:15 p.m. in Rooms W307-W309.

Can you give an example of a misconception or little-known fact about containerization and its role in broadcasting?

Harnack: Other industries think of containerized software as performing "microservices," and so can broadcasters. In our case, a "microservice" is actually a full-fledged audio console, with 24 faders, mic processing, auto mix-minus and full EQ on every channel. Another microservice would be an FM audio processor, or a scalable intercom system which may be configured for worldwide use over the public internet. The computer code running our broadcast workflow "microservices" is already well-proven in our own compute platforms. Now this code is running on commodity, off-the-shelf servers.

Final thoughts?

Harnack: An extra benefit of performing broadcast functions on commodity hardware is that users can license just the functionality they need. Buy or subscribe to as many or as few telephone hybrids as you need. It's no longer dictated by the size and cost of rear-panel connectors. All audio is AoIP, typically AES67. A very custom-fit world awaits broadcast engineers and other stakeholders.

In all-digital AM, the antenna matters

"There is more to a digital conversion than converting or buying a new transmitter"

The performance of all-digital AM HD Radio signals will be in the spotlight with a presentation on "The Effects of Directional Antenna Pattern Bandwidth Upon MA3 Transmissions."

Mike Raide is senior manager, broadcast technologies at Xperi Corp., and David Kolesar is senior broadcast engineer with Hubbard Radio, which has been operating WWFD(AM) in Frederick, Md., in all-digital since 2018.

alengo/Getty Images

At the Show

"Exploring the Effects of Directional Antenna Pattern Bandwidth Upon MA3 Transmissions" will be presented on April 26 at 1:15 p.m. in Rooms W307-W309.

RW Presumably you've been testing for this at WWFD. Describe the test process.

Mike Raide: We outfitted the Xperi test van with a reference antenna, spectrum analyzer and an HD Radio test receiver. We drove through WWFD's null, taking measurements along the way: field strength, spectrum analyzer plots and digital signal constellations. We then plotted the points on a map and overlaid the station's directional antenna pattern on top of it.

RW What are your main conclusions?

Dave Kolesar: They are twofold. One, the MA3 transmission system is remarkably durable with regards to dealing with nonlinearities in the null. We saw an amplitude ripple of up to 4 dB in each set of the core carriers, and the receiver still locked. However, because of these types of nonlinearities in the antenna system, a price is paid in the robustness of reception: The error correction and equalization in the receiver that normally would go to combatting channel noise is being used up correcting the poorer formation of the signal in the null.

That leads us the second point: It is really important for a station to pay attention to its antenna system, particularly if it's a directional array. Null-fill and pattern bandwidth are important.

RW Why are these findings important?

Raide: They emphasize that there is more to a digital conversion than simply converting or buying a new

> **"It is really important for a station to pay attention to its antenna system, particularly if it's a directional array. Null-fill and pattern bandwidth are important."**

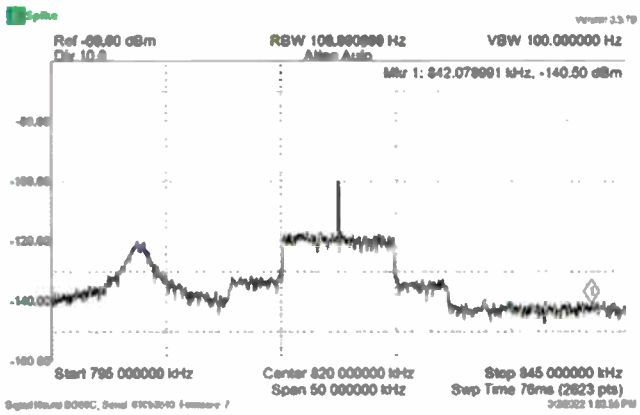
transmitter. You must linearize the antenna system to get the maximum benefit of going digital. Even if a station is non-directional, a broader antenna bandwidth provides a better signal over your service area.

Is the AM radio industry any closer to accepting all-digital than it was a year or two ago? Only a small handful of stations seem to have been trying it.

Kolesar: I'd say that absolutely, the industry is closer to accepting all-digital than it was even a year or two ago. There are more receivers out there, with a few markets approaching or exceeding 50% penetration in vehicles. The benefits of all-digital are becoming more widely known as other station owners and engineers are able to listen to the stations that have now turned on MA3.

Some forward-thinking AM station operators are now realizing that in order to participate in the next-generation connected-car platforms — DTS AutoStage, RadioDNS, etc. — you must transmit an HD signal, be it hybrid or MA3.

While we can't speak to the specific numbers of inquiries to manufacturers, we can say that there has been markedly increased interest in both MA1 and MA3 over the past year. After COVID-19, as capital budgets refocus from remote operations to transmitter plant improvements, stations now have the breathing room to dedicate resources to staying relevant in the future, such as going digital and the rich possibilities of metadata, data services and audio fidelity that that provides.



Above
This screenshot is the reference by which Kolesar and Raide judged data points when driving through WWFD's null.

What else should we know about your tests or this topic?

Raide: There are still some refinements to the MA3 system that we are exploring, namely the possible benefits of adjusting power of the reference carriers, as well as the enhanced carriers. Such adjustments could enhance the performance and range of things like Artist Experience as well as HD2 channels.

The latter, of course, is relevant in that broadcasters are always looking for more ways to distribute content, and FM translators may factor in this approach. We would like to make sure that these things are implemented in an optimum way.

Radio exhibits will be spread out

This is a sampling of exhibits of interest to Radio World readers. Find a complete list at *nabshow.com*. There is no official "radio area" of the show floor this year. N means North Hall, C is Central and W is the new West Hall.

Exhibit Hours

Sunday
April 24
10 a.m.–6 p.m.

Monday
April 25
9 a.m.–6 p.m.

Tuesday
April 26
9 a.m.–6 p.m.

Wednesday
April 27
9 a.m.–2 p.m.

AccuWeather Inc. N4506
AEQ S.A. C3205
Aldena Telecomunicazioni s.r.l. W7723
Altronic Research Inc. W6126
Arrakis Systems N2338
Associated Press AP ENPS C1714
Atech Flash Technology N7107
Audinate Inc. C7416
AudioScience Inc. N4031
Audio-Technica U.S. Inc. C5826
AVT Audio Video Technologies GmbH C6632
Axel Technology N4631
Broadcast Bionics N3935
Broadcasters General Store C2628
Burk Technology W6014
Calrec Audio Ltd. C8008
Clark Wire & Cable C6425
Coast to Coast Tower Service Inc. W5926
COAX Connectors Ltd C3020
Comrex C3024
Continental Electronics W4322
CP Cases Inc. C6415
CPI W7009
Dalet C4423
Davicom, a division of Comlab Inc W6125
DB Elettronica Telecomunicazioni S.P.A. N3931
Delta Meccanica s.r.l W5209
Dielectric W7017
Digigram Digital N2238
Digital Alert Systems W8527
DJB Software Inc dba DJBRadio N3231
DPA Microphones C8609
Electro-Voice C6108
ENCO Systems Inc. N5625
ERI-Electronics Research Inc. W6505
Eventide Inc. N1515
FEMA Integrated Public Alert & Warning (IPAWS) N7106
Flash Technology W5317
Fraunhofer-Gesellschaft C3926
G&D North America Inc. N7010
GatesAir W7426
Glensound (UK) C6709
IABM N116LMR
Independent Audio Inc. 4421
Inovonics Inc. W4622
Intelsat US LLC W5807
International Tower Lighting C3638
Jampro Antennas Inc. C3015
Kathrein Broadcast USA Inc. W4230
Kintronic Laboratories. W6226
Lawo AG C6932
Live365 ..... W8524
Logitek Electronic Systems C3019
Marketron ..... Encore
Marshall Electronics Inc. C1307
Masterclock Inc. C4211
MaxxKonnect / Bohn Broadcast Services W8525
Moseley Associates Inc. W6711
MusicMaster N7008
Myat Inc. W7703
NATE: Communications Infrastructure Contractors W7811
Nautel W7022
Neutrik Americas Inc. C6628
OMB Sistemas Electrónicos S.A. W8616
On-Hertz C7629
Orban Labs Inc. W7826
Radio World C1119
Radio.Cloud N7307
RCS W5222
RDL C7706
RF Specialties W5208
Riverside.fm N7320
Rohde & Schwarz N3625
RVR / Broadcast Depot N4633
Sabre Towers & Poles W5316
Sennheiser C6715
Shively Labs W7010
Shure Incorporated C9612
Sonifex Ltd. C4420
Staco Energy Products W5319
Stainless W6122
Superior Electric W7722
SWR LP W6222
Synthax - RME Ferrofish MyMix Appsys C6708
Thermo Bond Buildings W6611
Tieline C1707
TWR Lighting Inc. W8200
Veritone Inc. W4716
Vertical Bridge ..... Wynn
Wheatstone Corporation N2631
WideOrbit N7006
WorldCast Group W7413
Yellowtec GmbH N4636

This group was celebrating the organization's 70th anniversary in 2002. They're atop Table Mountain in South Africa.

BBC World Service turns 90 this year

Organization seeks to reach more people while staying meaningful

Writer
James Careless

It began in 1932 as the "BBC Empire Service" — making radio broadcasts via globe-girdling shortwave to the far-flung territories ruled under the British Crown.

Subsequently, what is now the BBC World Service served as a wartime inspiration and a conduit of coded messages to Nazi-occupied Europe, and a trusted voice of news to Soviet-dominated states. Today, it is once again serving war-torn Europe with English news broadcasts targeted at Ukraine and Russia.

"Created 10 years after the BBC itself was founded, the BBC World Service was there to send 'voices out of the air,' which sounds like a poem by Keats but are actually the

Above Canadian journalist Lyse Doucet is chief international correspondent and senior presenter for BBC World News television and BBC World Service Radio.

Right Winston Churchill on the air in 1942.

words of King George V," said Stephen Titherington, senior head of content for BBC World Service English.

"Since the collapse of the Berlin Wall it has had a different relevancy to people in terms of sharing what is happening within the world, with also a chance for people to add their voice to what needs to be heard."

After the Berlin Wall's fall in 1989 and the rise of satellite television and then the web, the BBCWS struggled with its role before refocusing on local broadcasts and streaming media — and cutting back on shortwave, including ending shortwave service to North America — in 2001.

But despite all these changes, "one thing that has been consistent over the years is the BBC's commitment to independent news," said Dr. Kim Andrew Elliott, retired Voice of America audience research analyst/radio host and now producer/presenter of "Shortwave Radiogram," heard on shortwave stations WINB and WRMI.

"To be sure, the BBC European services had partisan commentaries during World War II, but the news remained factual, mostly. Since World II, BBC World Service has been the de facto standard for comprehensive and objective news."

New reality

The BBCWS's 2001 reinvention came at a time when the Cold War raison d'etre for international shortwave radio had long subsided.

"What had seemed like a very static sense of the world changed, and many long-term conflicts ended, and societies changed," Titherington said.

"But then new complexities emerged, and there was a huge amount of accelerated globalisation and much changed socially as well as politically. At the same time, access to people and their own access to the world's media changed immensely."

In fact, this retrenchment began soon after the Soviet Union fell in 1991.

"The World Service stopped shortwave broadcasting to many areas of the world starting in the early '90s," said Andy Reid, owner of canadianradiodirectory.com, co-host of "The Two Wallies" satire program and a shortwave listener/expert for 50-plus years.

"Before then World Service could be easily heard on any modest shortwave radio."

To keep the BBCWS relevant to global audiences and the U.K. governments that fund it, the World Service updated its presentation style in 2001 while revamping its programming, choice of target audiences and distribution platforms. (And in 2012, the BBCWS left Bush House, the iconic London building from which it had broadcast since 1941.)

"We massively increased the range, depth and nature of our news programming — creating the 24/7 spine of News Bulletins and long-form program like 'Newshour' and 'Newsday,'" said Titherington.

Above "WorkLifeIndia," launched in 2018, broadcasts from the BBC's Delhi Bureau and airs on radio and TV. It is presented by Divya Arya and Devina Gupta.

"But of course the audience expect more than news, and so we have grown a wide range of programs that include music, debate, food and many more programs that look at how we live, how things work, how we can learn about things.

"Our programs are much more conversational, and we have many more series — such as 'The Inquiry,' 'The Assassination' and 'A Wish for Afghanistan' — which we also release as podcasts — that tell a story over time so we can really explain the intricacies and the drama of world events."

In terms of target audiences, the U.K. government's shift away from Cold War priorities, combined with funding cuts, compelled the BBCWS to temporarily reduce its non-English programming.

"But I am glad to say we are now back to more than 40 [as of late 2021]. These include a wide range of African and Indian languages including Amharic, Gujarati, Igbo, Korean, Marathi, Pidgin, Punjabi, Serbian, Telugu, Tigrinya, and Yoruba.

"So there are less European languages than 20 years ago, but important new languages for us which have brought strong audiences and new and exciting people to work with." (This being said, the BBCWS has not restored Ukrainian or Russian language broadcasts.)

Finally, the advent of the web combined with government funding cuts motivated the BBCWS to add new distribution channels alongside costlier shortwave to get its content to listeners.

One major change has been the retransmission of BBCWS programming by various means.

"We now have built up 200 FM relays, which are a great way of making sure our entire output is heard in quality," said Titherington. "And more people are listening via the internet: We have our own app, which has had more than a million downloads, and listening via streaming or DAB has been a major growth area in developed markets like Europe." (To circumvent Russian online censorship, the BBWS is encouraging listeners to use VPNs and Tor browsers, which access the Dark Web.)

In North America, "BBC World Service has been able to tap into the substantial audiences to U.S. public broadcasters," said Kim Andrew Elliott.

> **"We have to show that we are brave — and that we will tackle the issues that really matter to people."**

He noted that in early 2021, "Nielsen Audio ratings for Chicago showed public radio station WBEZ number one Monday through Friday 6 to 10 am. WBEZ's content during that time slot is NPR's 'Morning Edition' and BBC's 'Newshour.' In the car, BBCWS is available to Sirius XM satellite radio subscribers."

"A benefit for the BBC is that placement on U.S. public radio stations is a revenue source: Those stations all pay for BBC World Service content," he added.

"There was no way for BBC to monetize shortwave, except maybe through advertising — which would be a difficult business plan given the paucity of precise audience data on the U.S. shortwave audience."

The payoff: "Our audiences have grown since the end of the Cold War," Titherington said.

"There is also a new audience listening on air and online — a young audience who have grown in very different times — and there are huge amounts of new stories that people want to know about and share in new ways."

Shortwave retreat

The BBCWS' decision to cut back on its shortwave footprint — especially in North America, where reliable, easy-to-receive daily broadcasts have ceased — has generated much listener unhappiness over the years.

"The BBCWS's effective shortwave reach has greatly diminished to the point of the word 'World' in its name becoming an exaggeration," said Glenn Hauser.

He is a shortwave writer/editor and producer/presenter of "World of Radio," an authoritative weekly shortwave news/information program broadcast globally on many shortwave stations since 1982.

"BBCWS used to have many shortwave transmission 'plants' in U.K. and abroad," Hauser said. "The only one remaining in the U.K. is Woofferton, which also relays other stations. Lots

> **"There is also a new audience listening on-air and online ... and there are huge amounts of new stories that people want to know about and share in new ways."**

of BBCWS transmissions still go out from Ascension Island toward Africa, and from Singapore for Asia."

The BBC World Performance Review 2016–2020 stated, "There were significant declines in the BBCWS' reach via shortwave radio, with further rapid declines expected over the coming years. Nevertheless, despite this trend, shortwave radio has remained important in some regions during this period, particularly in regions that are challenging for the BBC due to media regulation, geography, pandemic or strife. Consequently, new shortwave services have been launched in Korean (September 2017) — a daily 30-minute program also broadcast to North Korea — and for the Horn of Africa (April 2018)."

"Shortwave remains vital for reaching regions that are hostile to BBC broadcasts for reasons of media regulation, geography, the pandemic or unrest," said Titherington.

"For instance, many services are now focused on Africa, where the BBCWS continues to serve large audiences, and across Asia. These international broadcasts reach across borders providing trusted news and information to people unable to access the same locally."

Although many North American listeners regularly express regret that the BBCWS cut shortwave transmissions to this region, the logic behind the decision has been borne out by results.

"In retrospect, I ruefully have to admit that the BBCWS made the correct move," said John Figliozzi, author/editor of The Worldwide Listening Guide and member of the 2000–2001 Save BBC World Service campaign to retain the BBCWS shortwave transmissions to North America.

"It is more ubiquitously available today via the multi-platform approach than it was before via shortwave alone."

Above
"The Lazarus Heist" is a true-crime podcast that investigated the 2014 hack of Sony Pictures. It is hosted by Geoff White and Jean Lee.

Elliott said, "Except for us shortwave enthusiasts, the shortwave audience has migrated to the newer media.

"Nevertheless, we have seen, in more and more countries, censorship and blocking of the internet. Shortwave can deliver information across national boundaries independent of the internet. Satellite television also sidesteps the internet, but satellite dishes are conspicuous. Shortwave reception is simpler, cheaper ... and more discreet. (And) my 'Shortwave Radiogram' project shows that text and images can be transmitted by old analog shortwave transmitters, and received on any shortwave radio, with decoding by an app on a PC or mobile device."

Looking ahead

The launch of the BBC World Service in December of 1932 was not greeted as a world-changing event. In fact, at the time BBC Director-General John Reith predicted that, "The programs will neither be very interesting nor very good."

Ninety years later, the BBCWS has proven Reith to have been very, very wrong.

As for the future? "We want the BBC World Service to reach more people, but we want that connection to be meaningful: We are not wallpaper," Titherington said. "We also want to be making things that have a value for people, and we want our audience to feel valued by us. We have to show that we are brave — and that we will tackle the issues that really matter to people."

Writer
Randy J. Stine

NAB voices concerns about EAS changes

But it supports improving clarity and accessibility of nationwide tests

RFStock/Getty Images

The National Association of Broadcasters expressed a couple of concerns about proposals from the FCC that are intended to improve the clarity and accessibility of the Emergency Alert System for the hearing impaired.

The proposed rule changes deal mostly with visual EAS messages for video services and requiring "triggered" Common Alerting Protocol (CAP) polling.

The association commented on several facets of the notice of proposed rulemaking.

"NAB has no significant objections to the proposals intended to improve the clarity and accessibility of nationwide EAS tests," it began.

But it says stations would need sufficient lead time to implement the changes, and it asked for clarity on how video-oriented changes would affect radio stations.

Uniform messaging

Regarding proposals for modifying the text associated with national EAS tests, such as the use of pre-stored templates for NPT messages, NAB says using a predetermined script would provide a clearer description of the test than a strict translation of header code elements.

"This approach will also allow for a uniform visual message across different EAS devices and facilitate the ability of the national test message originator to ensure the audio component of the message matches the visual component," the association wrote in comments to the FCC.

NAB also in general supports increasing the use of CAP for video services, such as television stations. But it said EAS participants will require sufficient lead time to implement an expanded use of CAP, and that this will depend on the availability of software upgrades to allow broadcasters to poll the Integrated Public Alert and Warning System (IPAWS) automatically for a CAP version of legacy alerts.

CAP-based alerts are transmitted over internet protocol links and can convey more information than legacy alerts, such as picture and URL links.

The trade association seeks confirmation from the FCC that a mandate for video services to check for and process CAP alerts can be effectuated through a software upgrade that is "simple and seamless" in all devices and at no cost to EAS participants.

It also asks the commission not to adopt a date when all EAS participants must implement the change.

"The more efficient approach is for the FCC to establish a long enough runway to allow EAS participants to implement the change through a regularly scheduled software upgrade from the device manufacturer," NAB commented.

NAB also urged the commission to confirm that none of the latest proposals will lead to reduced government commitment to legacy EAS alerting.

"Legacy EAS is more robust and survivable in the event of a significant national emergency," NAB continued, "because, unlike CAP alerting, legacy EAS is not dependent of internet access or affected by the loss or congestion of cellular and IP services during a storm."

Last, the NAB said it assumes the proposed obligation to poll for a CAP version of a legacy alert is not intended to apply to audio service EAS participants such as radio stations: "There seems to be no reason to force radio stations to upgrade equipment or otherwise change their current practices, given the FCC's purpose."

The NAB continued: "Nonetheless, if the FCC can justify why the forced CAP polling mandate should also cover radio stations, NAB urges the FCC to extend radio broadcasters a lengthier period for implementation, such as two years from the effective date of a final order in this proceeding."

> **"There seems to be no reason to force radio stations to upgrade equipment or otherwise change their current practices, given the FCC's purpose."**

The association said this will allow radio broadcasters sufficient time to consider methods for compliance suitable to their specific equipment and processes.

Comments were filed in FCC Docket 15-94. Reply comments were due March 28.

The FCC is also taking comments in a companion Notice of Inquiry that asks about broader future changes to improve the functionality of EAS. Comments on the NOI are due April 11 and replies by May 10.

Mark Lapidus
is a veteran multi-platform media and marketing executive.

NFTs: Are they relevant for radio?

While there is no simple answer, it is a fun subject to explore

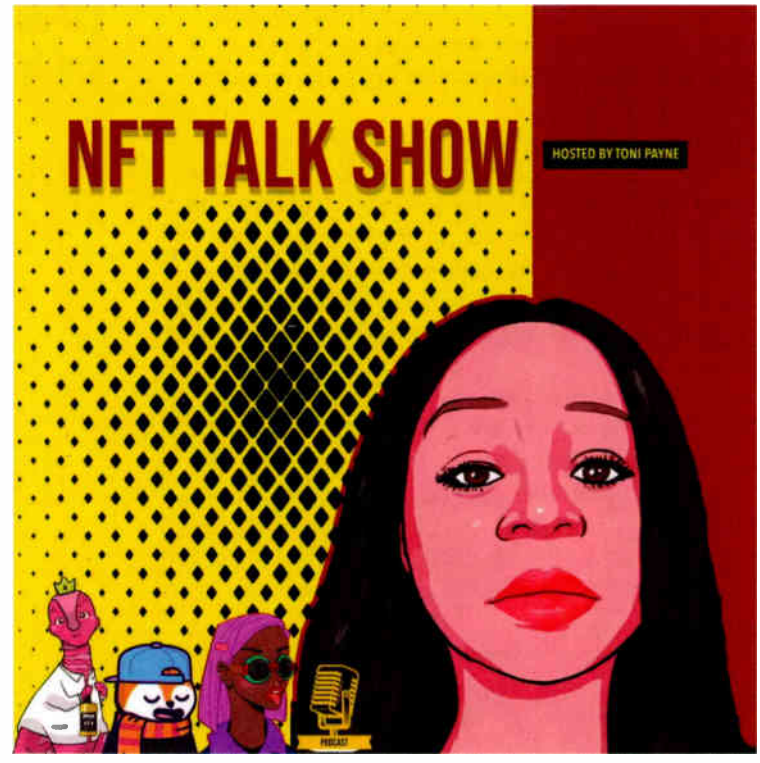
I rarely purchase art. But an original Chuck Jones animation cell of Bugs Bunny promoting MTV's launch — complete with its original hand-drawn sketch — seemed like a great investment.

I plunked down $400, a lot of money for me at the time, figuring a massive payoff would follow. While I continue to enjoy the art, I'm still waiting to make bank. If only Bugs had been digital and NFTs had existed, I might be living large today!

You've no doubt heard about NFTs and perhaps even wondered if there's an application for radio. While there is no simple answer, it is a fun subject to explore.

"NFT" stands for non-fungible token. Essentially, it's a unique digital token of authenticity, stored in blockchain. NFTs can be anything digital: art, poems/lyrics, music, spoken word, even tweets or posts.

NFTs prove "ownership" of a specific work. That ownership may or may not convey copyright or reproduction rights. The strangest part is that while you may own the NFT, that same piece may, for example, appear for free download elsewhere.



Right
The NFT Talk Show Podcast is hosted by artist and collector Toni Payne.

> **"NFTs can be anything digital: art, poems/lyrics, music, spoken word, even tweets or posts."**

The value is in the NFT itself because it creates scarcity of that product. As NFTs sell, they display a list of previous owners. The advantage to music artists is that they can potentially sell directly to fans. NFT platforms could offer artists a share in the sales of their songs, art, etc.

Amazing sums have already been scored. A year ago, edgy Canadian musician Grimes auctioned off digital art that garnered nearly $6 million. Graphic designer Beeple famously made over $10 million on just two crypto-art pieces and then one of his pieces was auctioned off by Christie's for $69 million. YouTuber Logan Paul has also sold clips for up to twenty grand — yep, the same ones you can watch for free.

iHeartMedia has begun experimenting with NFTs. Last fall, it utilized NFTs for contesting around the iHeart Radio Music Festival. The company is now touting their partnership with NFT platform OneOf, to sell NFTs for their nationally syndicated show "The Breakfast Club."

"OneOf and 'The Breakfast Club,' including both the on-air broadcast and digital

podcast, have teamed up for an exclusive partnership to bring the accessibility of NFT's to a mass audience, give diverse artists a platform in this emerging space, and create six drops of digital NFT collectibles inspired by the morning show and its legendary hosts," iHeartMedia wrote in a press release in February.

OneOf has also partnered with Warner Music Group and The Grammy Awards and brought in a cool million for a never-released song by Whitney Houston.

I did stumble onto one international streaming NFT radio station on Sound Cloud. It's impossible to tell if they're having success. They claim to be a non-profit platform for independent musicians, clubs and festivals. Likely the attempt is aspirational, but you gotta give 'em credit for trying.

If nothing else, the subjects surrounding NFTs are generating a lot of talk on radio and as fodder for podcasts. Many podcasts are dedicated solely to the subject, while many more are full-length episodes.

Would I invest time and money in NFTs or advise station to jump in? As a stunt, sure. As real business, I don't see it yet.

I did collect classic radios for a time, but soon ran out of room, money and interest, so clearly I'm not the guy who takes big risks on even collectable earthly assets, let alone digital bytes. There may be something in NFTs that works for selling music directly to audiences, but that's a long putt as well and works against the established order — which, unless involved, will neither endorse nor enable.

So if you're interested in NFTs, I say: Best of luck! Let me know how it goes. And if it doesn't work out, I do have a classic Bugs Bunny animation cell that may be of interest ...

The author can be reached at marklapidus1@gmail.com.

Right
The NFT platform OneOf, which is backed by Quincy Jones, was named "the official collectible NFT partner for the 2021 iHeartRadio Music Festival." Digital festival posters were created by artist Cory Van Lew and signed by artists and talent who attended the festival in Las Vegas.

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Burk Arcadia24 Is Web-Based Remote Control

Burk Technology has introduced the Arcadia24 Hosted Subscription Service, which it says is intended to make secure web-based remote control accessible to small groups and individual stations.

Building on the company's Arcadia system, Arcadia24 delivers remote facility control to station engineers and managers via their mobile devices.

"Hosted by Burk Technology on AWS, each customer's Arcadia24 service is installed, configured, managed and maintained by Burk remote control experts," the company says.

Web links from mobile devices to

the Arcadia24 server are locked down and encrypted using the latest generation of Transport Layer Security (TLS), ensuring that only authorized users can access and control each remote facility. Encrypted VPN tunnels and firewall protection guard communications between Arcadia24 and each remote site.

The cloud-based Arcadia24 communicates with each remote site at its optimum rate, accommodating variations in communications speed and performance. The most current data from all sites is then made available for display on authorized mobile devices.

Burk says users are authenticated via Microsoft AD LDS, with each user's access restricted to specified channels, sites and station groups. Control of critical site functions can be strictly limited to key personnel while overall site performance may be made visible to a wider group of authorized users.

Burk provides customized graphical control screens for each site connected to Arcadia24. Sites can be grouped based regional hierarchy, engineering responsibility or other criteria, with drill-down to display performance summaries. The Arcadia24 user interface supports smartphones, tablets and PCs.

Arcadia24 manages remote sites equipped with Burk Technology v5 ARC Plus or ARC Solo remote control systems.

Info: www.burk.com

BROADCAST EQUIPMENT EXCHANGE

BROADCAST EQUIPMENT EXCHANGE

Writer

Thierry Mars

Radio Director, egta

About egta

Based in Brussels, egta is a non-profit association that represents the interests of radio and television sales houses, a European trade body for marketers of advertising solutions across screens and audio platforms.

The World Radio Alliance: Radio's own, global voice

14 trade associations join forces to highlight radio's power

Few if any current developments have moved faster than the digital evolution. The pace of digital change, only accelerated as a result of the COVID crisis, is unprecedented and has disrupted the entire media industry. The audio landscape was equally impacted and is now in constant flux.

Radio has always been a mobile medium and a trusted companion. But technological advances have amplified *ATAWAD* listening — available anytime, anywhere and on any device. The development of new delivery technologies (5G, Wi-Fi, DAB+), connected devices (smart speakers, hearables) and an increase in sound quality (3D audio, noise cancellation), combined with the arrival of new players investing in the audio sphere, have resulted in a gigantic offering of audio content and formats.

Audio has become ubiquitous in our lives.

In this increasingly fragmented and complex media landscape, radio companies face challenges in various advertising markets, demonstrated by the significant gap between the volume of radio consumption and advertising investment.

While all the evidence proves the strong performance of radio when delivering real business growth, there is a disparity between the evidence and the general market perception.

WORLD RADIO ALLIANCE

Radio marketing problem?

It is in this environment that the World Radio Alliance has been created.

During the 25 years I've worked in the advertising industry, I have often heard that radio has become obsolete — more often than hearing its strengths highlighted. But even if radio consumption has eroded since its peak, the research consistently shows that radio is key in the media mix to boost brands' business and is the centerpiece in the evolving audio ecosystem.

Every day, radio reaches 70% of the population, enabling advertisers to rapidly touch many potential consumers, in a safe and trusted environment. There are an immeasurable number of studies and cases proving the effectiveness of radio advertising.

Right
A graphic from the World Radio Alliance lays out the benefits of radio for business success.

Long live radio

Since its birth over 100 years ago, the death of radio has been proclaimed many times. Didn't The Buggles sing in 1979 that video killed the radio star?

The time has come for radio to stop being shy, to get out of its cave and loudly and widely promote its power. We have to remind advertisers, journalists, media gurus, agencies and industry peers about the strength, effectiveness and popularity of radio.

On the occasion of World Radio Day 2021 came the idea of creating a grouping of trade bodies representing radio companies and sales houses from different parts of the world to join forces and speak with a unified voice and narrative, to inspire each other by exchanging ideas, research cases and best practices.

> **"The time has come for radio to stop being shy, to get out of its cave and loudly and widely promote its power."**

The concept of the World Radio Alliance was born. A year later, after plenty of fruitful discussions between egta and radio associations around the world, this collaboration across continents became a reality. We are currently 16 members, representing 14 markets, with the intention to grow, prosper and welcome more members.

Radio is not dead. Radio is ubiquitous, a trusted companion for listeners and a business partner for brands. It is the centrepiece in the grand audio ecosystem, as it has always been. And as of now, you can count on the World Radio Alliance to remind the world.

Learn more at *www.worldradioalliance.com*.

Who's in

The founding members of the World Radio Alliance are Radiocentre (UK), Radiozentrale (Germany), Audify (Netherlands), the Radio Advertising Bureau (U.S.), RadioMedia (Finland), the Bureau de la Radio (France), VIA—Association of AV Media (Belgium), ACR—the Associaciò Catalana de Ràdio (Spain), Radiocentre Ireland, FCP AssoRadio (Italy), Radio Connects (Canada), the Association of Austrian Commercial Broadcasters (VÖP), Commercial Radio Australia, and egta, the international association of TV and radio sales houses. Lucy Barrett, client director at Radiocentre UK, is the first president.

AMs in Electric Vehicles

Regarding Pooja Nair's commentary "Control EMI, Don't Dump AM Receivers" (Radio World, Feb. 16 issue):

I don't see a reversal of the trend unless the FCC demands Part 15 compliance of EVs.

It's cheaper to omit an AM unit than to design and install filters.

Filters, although not very heavy, do add weight, and adding weight reduces range.

On second thought, SDR might rescue AM in EVs, by allowing algorithmic filters tuned to reject the particular EMI spectrum of each model of EV, instead of physical filters on noise-generating sections of EVs.

There's a cost though to EV manufacturers. They would initially need a spectrum analyzer and someone to program filters, after which firmware would be updated on a production line.

Is there enough consumer demand for AM radios in EVs that car manufacturers would be willing to accept the costs?

Paul Sagi
Malaysia

Let's Be Realistic

As Tom Taggart pointed out in his commentary "A Genset Mandate? Only if Uncle Sam Pays" (Dec. 22 issue), financial obstacles will prevent many smaller-market broadcasters from meeting any FCC genset mandate.

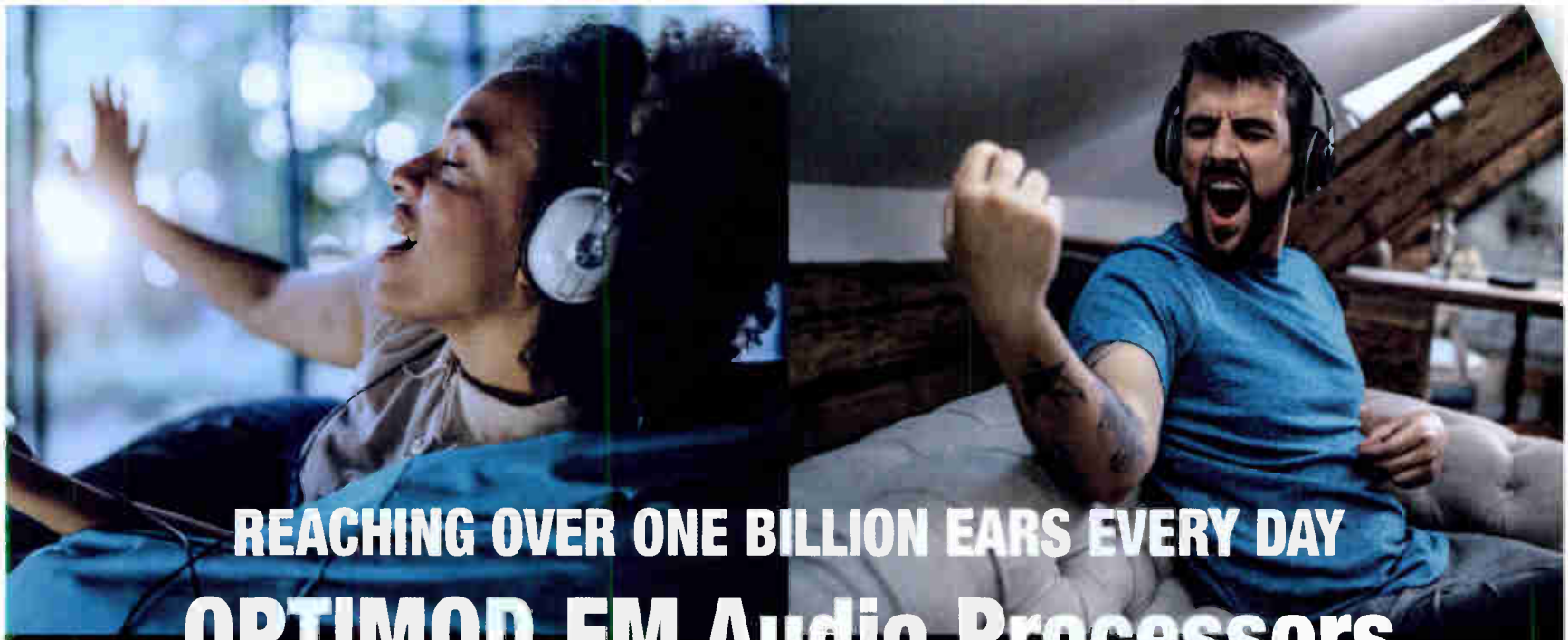
I might add that local and state planning and air quality authorities will also get in the way.

In California, anti-fossil fuel zealots have been able to enact rules administratively precluding new installations of permanent gasoline and diesel generators.

In my county of Monterey, you cannot get an operating permit for those kinds of generators from our local air pollution control district. And now we see there's a move to ban the use of natural gas and propane in many areas of this state.

The only two ways a genset requirement from the FCC will work in smaller markets is, one, for the feds to pick up the tab for the equipment and installation, and two, issue a mandate that can trump any and all state or local laws against the installation and operation of this equipment.

Mark Carbonaro
Monterey, Calif.



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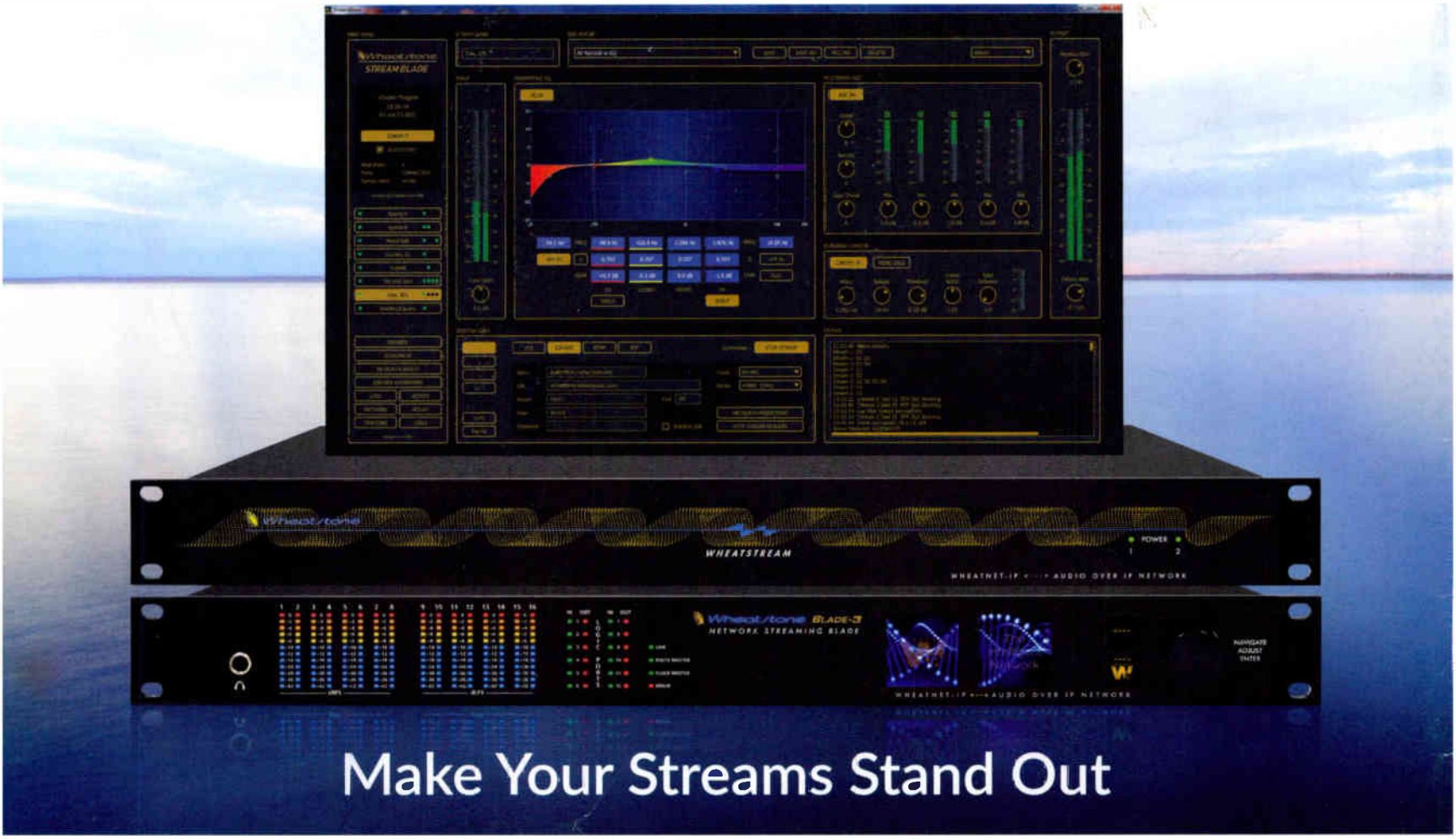

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