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C-Band migration moves ahead

But worries about the filter supply and potential 5G interference lend a note of urgency

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Radio World (ISSN 0274-8541) is published bi-weekly with additional issues in February, April, June, August, October and December by Future US, Inc., 11 West 42nd Street, 15th Floor, New York, NY 10036 8002. Phone (703) 852-4600. Fax: (703) 852-4583. Periodicals postage rates are paid at New York, NY and additional mailing offices. POSTMASTER: Send address changes to Radio World, P.O. Box 282, Lowell, MA 01853

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Time for biking

Dennis Sloatman steps away after 51 years



Paul McLane
Editor in Chief

"No longer am I more nervous than a long-tailed cat in a room full o' rockin' chairs!" So said Dennis Sloatman on social media as people congratulated him on retiring as VP of engineering at SummitMedia.

We did a Q&A with Dennis and I found it refreshing to get his frank comments about less pleasant aspects

of radio engineering.

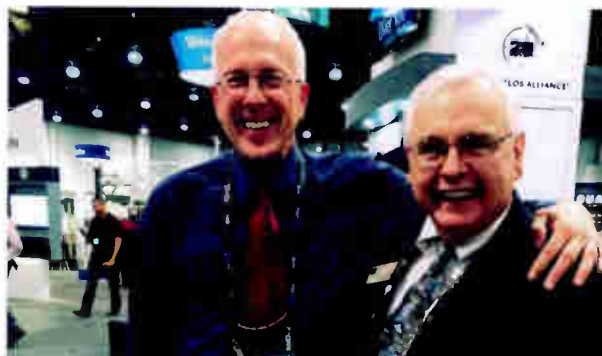
"I have always had a problem for what I perceive as a lack of appreciation by some managers for the vast knowledge and experience required of the modern broadcast engineer — electronics, RF, audio, FCC rules, control systems, computer and network technology, etc.," Dennis told me.

"I didn't devote my career and my engineering degree to be a handyman or anything less than a professional."

It tells you something that an engineer with his level of experience and talent would even have to worry about that.

But to be clear, Dennis (shown at bottom with John Bisset) expressed plenty of warmth, not bitterness, about his 51 years in radio; and he said the most enjoyable and rewarding part was managing a staff of 10 "fantastic people" in the IT and Engineering department in Los Angeles and, later, the market engineers of SummitMedia.

You can learn more about his career as a teen "radio nerd," overnight DJ, cluster chief, field service engineer for Harris Corp., a technical teacher and VP of engineering for several companies by reading the Q&A at radioworld.com, keyword Sloatman.



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FCC approves foreign government ID rule change



The FCC unanimously established new sponsorship ID rules that require U.S. radio and TV stations to disclose when foreign governments lease air time.

Now, whenever a broadcaster leases time, they will need to ask the "lessee" if they or their programming are from a foreign governmental entity.

"If the answer is yes, a sponsorship identification will need to be placed on air and documented in the station's public file," said Acting Chairwoman Jessica Rosenworcel in April.

"If the answer is no, a broadcaster will need to independently verify the lessee using the Foreign Agent Registration Act website from the Department of Justice and the FCC's semi-annual foreign media outlet reports."

The NAB said that while the change was well-intended, it would put a new substantial burden on broadcasters who enter into lease agreements with all program sources "to determine whether they are dealing with a foreign government in the first place." It saw no evidence of a "groundswell of foreign propaganda" on U.S. airwaves.

But Rosenworcel said, "We know that foreign entities are purchasing time on broadcast stations in markets across the country, including Chinese government-sponsored programming and Russian government-sponsored programming right here in our nation's capital."



Spotify aims for more in-car listening

Competition in the dash will intensify further with Spotify announcing an aftermarket streaming device called Car Thing.



The gadget will allow Spotify diehards to find their fave playlists and podcasts. Spotify says the streaming device will help accelerate its push into live audio, including a feature that will allow podcast hosts to have interactions with listeners.

The Spotify-only Car Thing was available on an invitation-only basis in the United States as of April so most will have to wait. However, Spotify users can join a waiting list.

The device requires a paid Spotify Premium subscription and a smartphone with Wi-Fi or aux cable to connect to the vehicle. Its anticipated retail price is \$79.99 plus monthly Premium subscription for ad-free music playlists.

— Randy J. Stine

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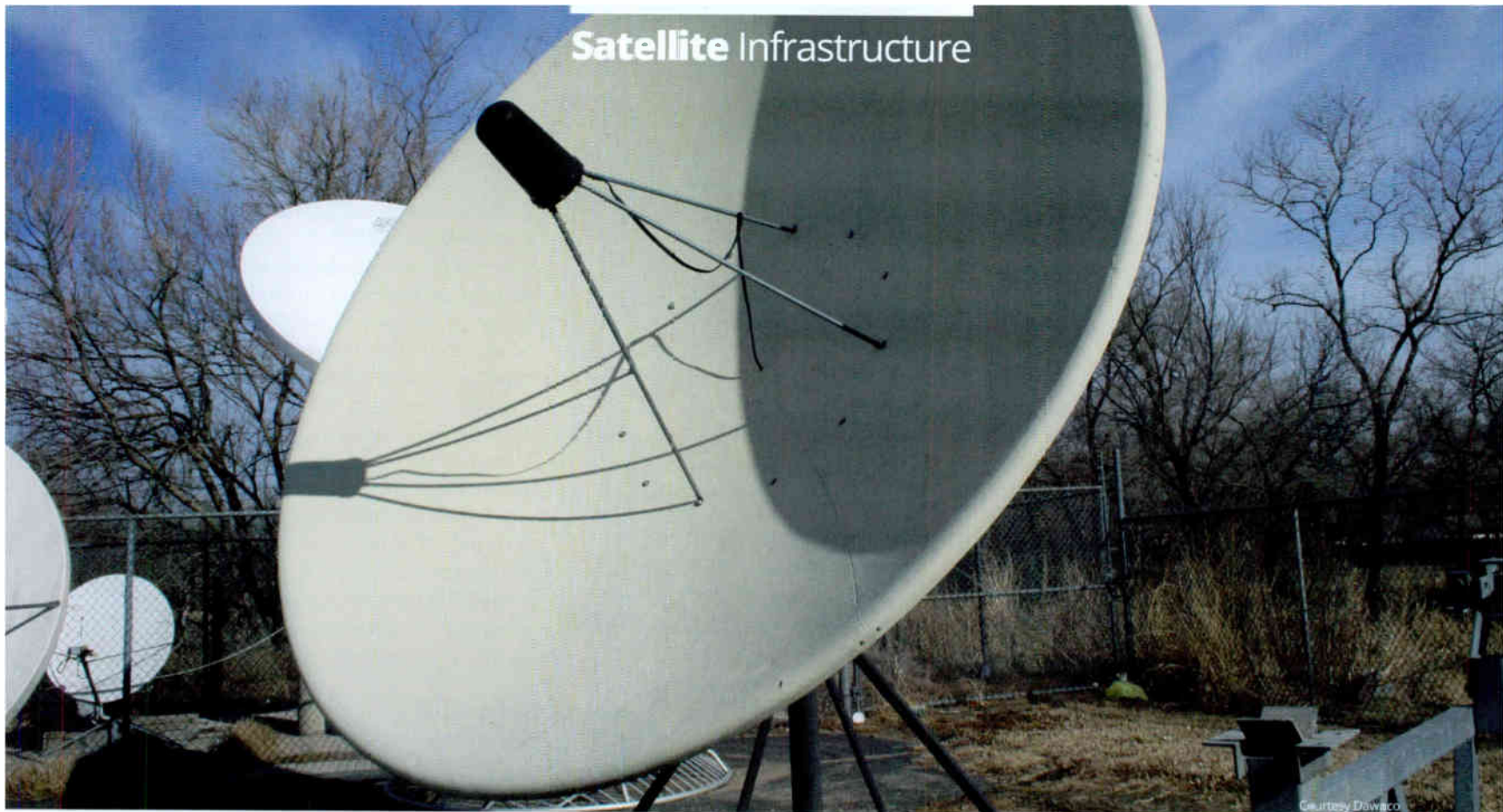
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Courtesy Dawnc

Writer
Randy J.
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Longtime
Radio World
contributor. He
wrote about
emergency
alerting in the
April 14 issue.

C-Band migration underway for dish owners

Some in satellite sector worry about filter shortage

The complicated process of repacking C-band earth stations is underway in the United States, and radio broadcasters with receive dishes are managing the logistics and timing of their moves to mitigate possible interference.

As the country shifts C-band spectrum as part of a move toward national expansion of 5G, some satellite industry experts said a sense of urgency is developing and they urged broadcasters to order bandpass filters quickly to minimize disruptions.

C-band refers to frequencies in the 3.7 GHz to 4.2 GHz range. The spectrum has been used extensively for satellite downlinks, but those services are being repacked to the upper portion (4.0–4.2 GHz) of the band.

Observers say that if earth station licensees do not add the necessary filters — and replace small dishes where necessary — by the end of this year, 5G interference to satellite reception could start to be an issue in larger cities.

That's because Phase 1 of the satellite repack involves clearing satellite programming out of the lower 100 MHz of the band, 3.7–3.8 GHz, throughout 2021. After Dec. 5 of

this year, 5G cellular transmitters will start to come online in that slice of spectrum in the most populous parts of the country. Satellite downlinks that aren't equipped with appropriate filters could see their reception wiped out.

Phase 2 involves clearing satellite programming out of the lower 300 MHz of the band (3.7–4.0 GHz) throughout 2022 and 2023; and again 5G cellular transmitters will then turn on in that spectrum.

"Most radio stations can go straight to installing Phase 2 filters now, and at that point they will be done with the repack," said John Joslin, director of sales and marketing at satellite hardware supplier Dawnc.

"The reason they can act now is that popular programs from Westwood One, Premiere, Learfield, NPR and Skyview are already above 4000 MHz and are within the bandpass of the Phase 2 filters. Stations should install the Phase 2 filter after the repack moves their programming above 4000 MHz, and thereby protect their downlinks from the coming 5G cellular interference."

He said stations must also replace mesh dishes, as well as dishes with a diameter of less than 3.7 meters.

“The new Phase 2 filters have significant attenuation, which will reduce EbNo numbers on satellite receivers,” he said. “Make an assessment to see if all of your sat antennas have 2 to 3 dB of signal quality margin, and replace those that do not with a larger dish.”

Taking their lumps

The FCC proceeding for C-band reallocation includes monies to reimburse earth station licensees for expenses to reconfigure earth stations to receive programming from the upper portion of the band. That could include modification and reconfiguration of dishes or possible relocation to prevent interference from new 5G cellular operating below 3980 MHz after December 2021 and below 4000 MHz after December 2023.

Approximately 1,500 earth station operators, some with multiple licenses, took the “lump sum” election, according to the latest data from the FCC. Those licensees that did not accept that option can work with their satellite provider or recoup justifiable filter, dish and labor expenses direct from the Relocation Payment Clearinghouse, for expenses associated with the transition or relocation.

As of the end of April, the clearinghouse was expected soon to begin accepting applications for reimbursement on its website for registered downlink sites that did not file for the lump sum payment. One source indicated that would happen in mid-May, but the FCC declined to comment on that.

The commission spokesperson said the clearinghouse has been working to set the procedures for processing reimbursement claims and for sending payments to entities that made lump sum elections.

“More details on this front will be announced as soon as possible,” the spokesperson said in April.

The clearinghouse is administered by accounting firm CohnReznick and law firm Squire Patton Boggs LLP. The



Above
Comtech dish
on roof of
WUWM Radio in
Milwaukee.

FCC worked with RKF Engineering Solutions to develop its spectrum transition cost catalog, which sets reimbursement values for the work and hardware involved.

Across all users including the radio industry, there are approximately 20,000 registered earth stations in the contiguous U.S. that are classified as incumbents for purposes of the C-band transition, according to the commission.

Satellite operators including SES and Intelsat have separate transition plans for their earth station customers. Those operators and others are eligible for billions of dollars in accelerated relocation incentive payments from the FCC to move services quickly to different frequencies.

An SES spokesperson said about 40% of all of its earth station customers will be affected by the Phase 1 deadline in December.

Hardware concerns

One infrastructure insider told Radio World he anticipates there will be a bandpass filter shortage for earth station operators this year as the lump sum payments begin to arrive and orders for filters begin to flow.

“The two filter factories in the United States combined produce only 200 to 300 filters per week, and a last-minute burst of demand from hundreds of stations will cause high prices and long lead times,” the observer said.

“Large-market sites will stress when they are stuck in line waiting for their filter to arrive knowing that the interference begins in December. These new 5G services will cause interference for earth station operators who are not prepared.”

Radio broadcasters with downlink sites in major markets should begin planning for the transition if they haven't already started, several experts said.

Public radio leases one C-band transponder on Intelsat's Galaxy 16 satellite. National Public Radio was already working with satellite bandwidth provider Intelsat to designate a new transponder above 4 GHz for downlinks even before the repack process began, according to Michael Beach, vice president of distribution for NPR.

“Most of that work has been completed, which means some network infrastructure has already been updated in the past two years,” he said. “All the new PRSS receivers are now in place at every interconnected public radio station and the PRSS migration to new C-band frequencies is complete.”

Meanwhile, earth station filter installation is underway at many public radio stations across the country, Beach said. Each public station within the Public Radio Satellite System (PRSS) owns its own downlink equipment, according to NPR.

“This means that if they had a registered antenna on the FCC approved list, they were eligible to have Intelsat

“Large-market sites will stress when they are stuck in line waiting for their filter to arrive knowing that the interference begins in December.”

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Satellite Infrastructure

complete their filter installation, or opt out and receive the onetime payment from the FCC. Many of these stations told us that they have purchased a filter and installed it, had Intelsat install it for them, or have set up an appointment to have the work done," Beach said.

Based on information from Intelsat, roughly 55% of eligible PRSS earth stations opted for Intelsat to install filters for them, and 45% selected the one-time lump sum payment option and will install the filters themselves, Beach said.

Beach said so far no repointing of antennas has been required of any public radio station since the PRSS remains on the same satellite using a transponder on the same polarity as its old signal.

Networks prepare

Premiere Networks, a subsidiary of iHeartMedia, does not expect to have its operations disrupted by the C-band repack, according to Jeff Littlejohn, EVP of engineering for iHeartMedia. Premiere Networks operates in the portion of C-band spectrum that is not affected.

iHeartMedia radio stations, Littlejohn said, have a project underway to install filtering on all C-band dishes used by the broadcaster. "We expect the project to be completed in Q3 of this year," he said.

iHeartMedia, the largest radio group in the United States, accepted the FCC's lump sum option as reimbursement for expenses connected to reconfiguring its network of receive earth stations. It holds approximately 175 such licenses, according to the company.

Westwood One, which is owned by Cumulus Media, has worked for two years with the satellite providers to ensure a seamless change, according to Eric Wiler, senior vice president of network technology and operations.

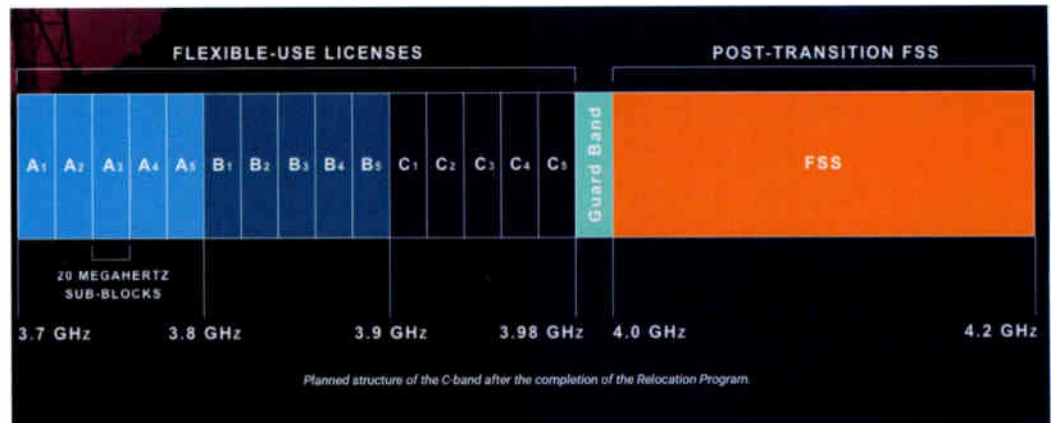
"Westwood One was already located above the 4000 MHz cutoff, so our transponders were always compatible with the new frequency allocation for satellite," Wiler said.

"Overall, if an earth station is using a 3.8 meter (2 degree compliant) dish, with a current LNB, the Phase 2 (blue) filters should mitigate the impact of 5G in most situations."

Wiler said his biggest concern is with downlinks in the top 46 Partial Economic Areas that do not install new filters to shield from 5G interference by December.

"While not every area will be saturated with 5G immediately in the first few days, ensuring filters are in place is the best proactive response stations may take," he said.

"The C-Band Alliance did a lot of testing, including live-range testing, of these filter designs, demonstrating the



Above
An image from the website of the Relocation Payment Clearinghouse at <https://cbandrpc.com/>.

effectiveness at preventing 5G signals from saturating the LNBS on earth-stations.

"Westwood One is working with our Cumulus radio stations to install filters in advance of the December deadline. Rather than focusing on only the top 46 PEAs, we're filtering all of our downlink with the Phase 2 (blue) filters, as the major networks on SES-11 have already transitioned to our permanent frequencies."

Unregistered users

There is still concern among some observers that a substantial number of small rural radio and television stations and private networks that rely on C-band programming may not have submitted registration filings for their downlink sites with the FCC and therefore are ineligible for compensation.

"We estimate that 20% of our broadcast and cable downlink customers did not register their dishes back in 2017 and 2018," said Joslin of Dawnco.

"They didn't hear about the registration drive, or they didn't think it was important enough to pay the filing fee."

While filters are appropriate for some users, there are stations that may have to spend \$5,000 to \$15,000 to replace their old dish if it is susceptible to interference after the repack, he said.

The FCC has said there will not be another opportunity for earth station registration.

"As detailed in the C-band Report and Order, to qualify for cost reimbursement, an earth station must have met all relevant criteria to be considered incumbent for purposes of the C-band transition, including registration," according to a commission spokesperson.

The redistribution of coveted C-band spectrum for next-gen 5G services has proven valuable for the United States. The FCC earlier this year announced final bid totals in Auction 107 of the C-band yielding nearly \$81 billion. Cellco Partnership (Verizon) alone bid over \$45 billion for approximately 3,500 licenses, according to FCC data. An AT&T led consortium paid over \$23 billion for around 1,600 spectrum licenses.

It was the FCC's most lucrative spectrum auction ever. 

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* The Gateway-4 codec supports 4 channels only and is not upgradable to support more channels.



Boy_Anupong/Getty Images

Some things we learned at WBUR during the pandemic

Reflecting on what we've learned

Writer
Michael
LeClair

Chief engineer
of WBUR
Boston and
former tech
editor of RW
Engineering
Extra



About this article

It is an excerpt of a special commentary about lessons learned during the pandemic, prepared for the Radio World ebook "Remote Radio Phase II."

Personally, I was a bit surprised at the average low performance of typical home ISP connections.

In recent years more attention has been devoted to telephone type devices for consumers and the state of the art for home computers in many households seems to have ossified somewhere around 2010. With this change in demand has come a huge emphasis on wireless routers for all data connections (who puts their phone into a wired connection, right?).

As our WBUR deployments grew, we identified common problems that were experienced by all of our users by studying the statistical data plots of their connections to our studios.

It wasn't necessary to run audio over these connections; the host

could go about their business as long as they dialed in and left the connection up for an hour or so. These data plots revealed that most of our host connections performed in a mediocre fashion initially.

The most common problem was the use of a consumer wireless router that was more than a year or two old. These older routers operating in overused frequency bands initially

deployed for home Wifi no longer can keep up.

The best solution was to locate the router and plug directly into it with a wired connection. For some locations, this meant a 50 to 100 foot Ethernet cable and not the most attractive arrangements in how it connects to equipment (in at least one case a wire was initially run up a staircase, with temporary attachments to the wall).

“ Personally, I was a bit surprised at the average low performance of typical home ISP connections. ”

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It also affects the choice of room to work in. In households with small children it can be a considerable problem to locate within wired distance of the router while still being able to keep a private space for broadcasting without interruption.

The second most common problem was low bandwidth, especially on *upload*. Most users forget that residential ISPs will provide a very fast burst for download speeds, but the corresponding upload speed is typically 20% or lower. We found sites where the "100 Mbps" upgraded service only provided 5–10 Mbps on upload.

This is important. Under these conditions we would get fairly reliable mix-minus returns to the

for these were typically borne by the station.

Finally, we found some homes still using ISP connections (like DSL) which simply didn't work reliably at all. To provide technical support for these locations we had to separately purchase a business class service for the home, if it was available. Since we were paying for it, we requested these services be used exclusively for broadcasting and generally they provided excellent results.

"Home sound"

One other comment on hosts from home.

Residences are not typically designed with acoustics in mind, and indeed this was a consideration for



Read more

You can read the full version of this article at radioworld.com/columns-and-views/guest-commentaries under the headline "Coronavirus Experiences at WBUR."

between the microphone and their mouths it can create audible cancellation effects.

For those mathematically inclined, think of sound pressure waves as radiating in a circle of equal amplitude, where the intensity will decrease by the square of the radius. The intensity translates directly to the voltage generated by the microphone element.

Converting this into decibels, an increase in distance of 3 times will reduce the pickup by just about 20 dB. It's impossible to get comb-filter effects by summing reflections that are 20 dB reduced from the main incident sounds. I like to aim for a ratio of 4 or 5 to 1.

For example, if the mic is placed

“ We slowly learned there are differences between delivering a short debrief from a news event for insertion into a news program, and setting up a host with a continuous connection to do a multi-hour show. ”

host but the host audio destined for air would drop out at lower levels of utilization.

In households with more than one working adult at home (pretty typical) the demand on the ISP was continuous and spiky. Add in children doing multiple Zoom sessions from home for school and there were parts of the day when a good connection degraded into something unworkable. To the degree possible we had hosts limit simultaneous users, but in some cases we had to upgrade their internet service to something much more powerful. Fortunately, in our region Comcast took the pandemic very seriously and was offering rapid service upgrades. The costs

our plans. One of the reasons we went with headset microphones was that mic placement was controllable with some training and attention. Another reason was that headsets designed for use in very loud venues like stadiums are actually quite good at controlling external noise just by their design. Keeping the microphone close to the talent helps minimize acoustic interaction with walls and windows.

We used simple techniques such as having people stay away from room corners, large plate glass windows, and mirrors.

It's worthwhile to mention the 3:1 rule of microphone placement. If a reflective surface is within a distance up to 3 times the distance

two inches from the mouth of the announcer, then a distance of 10 inches from any reflective surfaces should provide sufficient attenuation to eliminate audible phase cancellation, a requirement that should be easily met.

This in no way means that keeping the TV on in the back of the room while announcing won't be heard (it will!) but it removes some of the black art of getting a voice to sound clean and clear. In comparison, think about the use of a tabletop microphone on the desk at a distance of 8 inches from the mouth and it's easy to see how walls, windows, and even a laptop computer can cause audible effects. 🎧



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John Bisset

CPBE

has spent over 50 years in broadcasting and is in his 31st year of Workbench. He handles western U.S. radio sales for the Telos Alliance. He is a past recipient of the SBE's Educator of the Year Award.



How to get a peek into hard-to-see places

Also, a tip for shedding more light on your workbench



Send your stories

Workbench thrives on your snake stories and tech tips, which count toward SBE recertification.

Email johnpbisset@gmail.com.

O

ccasionally we query Workbench readers as to the most useful piece of test equipment; the cellphone camera usually wins out.

Dan Gunter is the owner and principal broadcast engineer of Alabama Broadcast Services LLC. He shares photographic proof

of the immense value of a phone camera, not only for documentation purposes but as a tool in troubleshooting.

One of Dan's client stations recently experience a mysterious trip of the 100 amp AC circuit breaker that fed the high-voltage power supply (HVPS) on a Harris HT25FM transmitter. Unfortunately Dan was out of town that day, as was his backup colleague Terry Harper.

Thus it was the station's chief operator/assistant GM who wound up running over to the site. With instructions from Dan he reset the tripped breaker, which got the transmitter back on the air without a breaker re-trip.

Dan had experienced a similar off-air trip with another of that client's transmitters, a problem that kept occurring sporadically. This was resolved by giving the arc gap in the HVPS some much needed attention — cleaning and re-spacing the gap per the manufacturer's specifications.

Because that had worked earlier, Dan decided to do a "wee hours of the morning" shutdown on the trouble transmitter and check the arc gap. He found that it was at 0.3745 inches, nearly twice the recommended setting of 0.1875.

As pictured in Fig. 1, Dan noticed that the HVPS had a considerable amount of



Above right Fig 1: Only the camera knows what's hiding behind these power supply components.

Below right Fig 2: Surprise!



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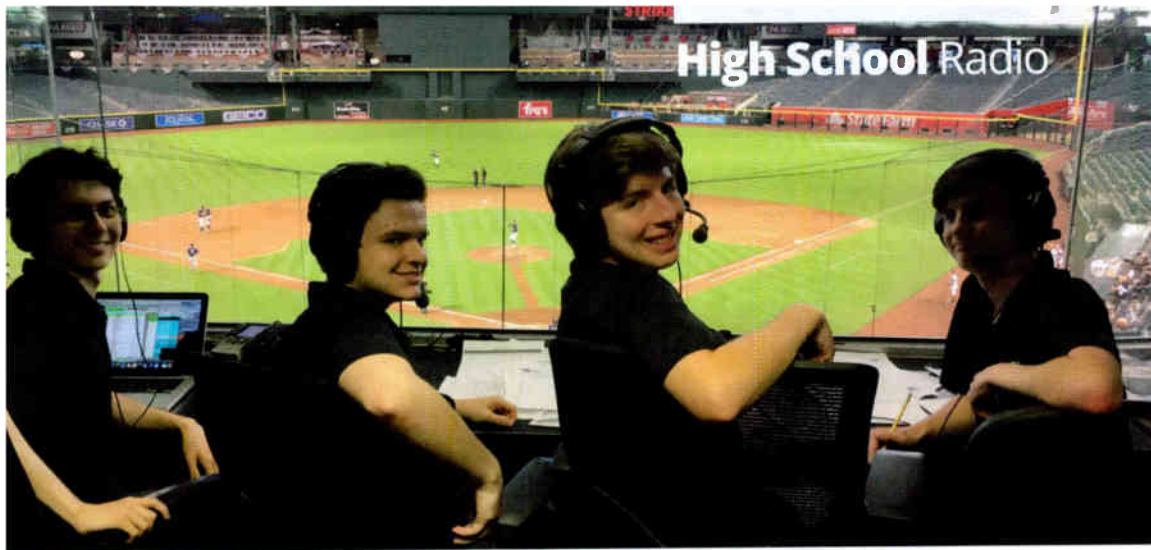
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World Radio History





Thomas worked for his station on the air before reaching his current position.

"High school stations are not that common, especially FCC-licensed stations," he said. "More and more schools are adding streaming operations, which is great, and some were even able to grab an LPFM license, but overall it's a small percentage of stations out there. I don't have a precise number, but we were able to find about 180 high school stations including FM, AM, LPFM and online, that are student-run."

How does one go about funding this type of station? Thomas gets some money from his administration but also holds an annual on-air pledge drive.

"The school is generous enough to ensure we have what we need in personnel, studio space and basic equipment," he said. "But our fundraiser allows us to give the students what they will see elsewhere when they leave WLTL. For example, we purchased Axia iQ control boards, Comrex Access units and other equipment such as laptops, Electro-Voice RE20 microphones, Zoom H4n handheld recorders and Shure SM57 microphones. On average we'll pull in about \$25,000 from community members and businesses."

Thomas, like DeWitz, sees radio interests shifting in young people.

"Podcasting and creating online content are huge areas right now," said Thomas. "The students are also interested in audio production and we're happy to help them."

"The other thing I see is more interest in news, especially in light of what has been happening over the last few years. I see more students interested in how news works, which is encouraging."

Thomas does not agree with the oft-expressed opinion that radio is dying.

"Anyone who feels that way is invited to tune in to not only WLTL, but any high school or college station and hear what today's students are doing with the medium. It may not be the radio we grew up on, because how we create content will continue to evolve and adapt. It's a blessing to be part of it and watch the next generation of broadcasters."

A little of this, a little of that

Dave Juday is a radio/audio production instructor at East Valley Institute of Technology in Mesa, Ariz. The student station at this Career and Technical Education high school is KPNG(FM), "The Pulse."

"Our students are juniors and seniors who spend half their day with us and the other half tackling regular high school core classes," he said.

"Our station is 15,000 watts and covers most of the Phoenix metro area, and we have a state-of-the-art digital recording studio here. While the



Top left

Evan Dean, Josh Simon, Spencer Cihak and Zach Larson of KPFG(FM) at Chase Field in Phoenix.

Top right

Zach DeWitz


Above

Sam Corbett, left, and Jake Salzbrunn in Studio A of WONC(FM) at North Central College in Naperville, Ill.

students are with us, they are trained in commercial, promo, PSA and show production as well as music creation. The course also covers broadcast journalism, sports play-by-play and even engineering for live events."

Juday said that many of his students are not necessarily interested in being on the air.

"Because our program covers so many aspects of radio and broadcast production the students have a lot of opportunities within 'The Pulse.' We have had several students go on to work in promotions, production and on-air positions in the Phoenix market, and we had one student who is the broadcasting and media content coordinator for the Oakland Athletics baseball team," he said.

"The more versatile our students are, the more employable they are when they leave us. It's possible that their first job in radio won't be exactly what they were looking for, but chances are it could eventually lead to a position they are passionate about." 

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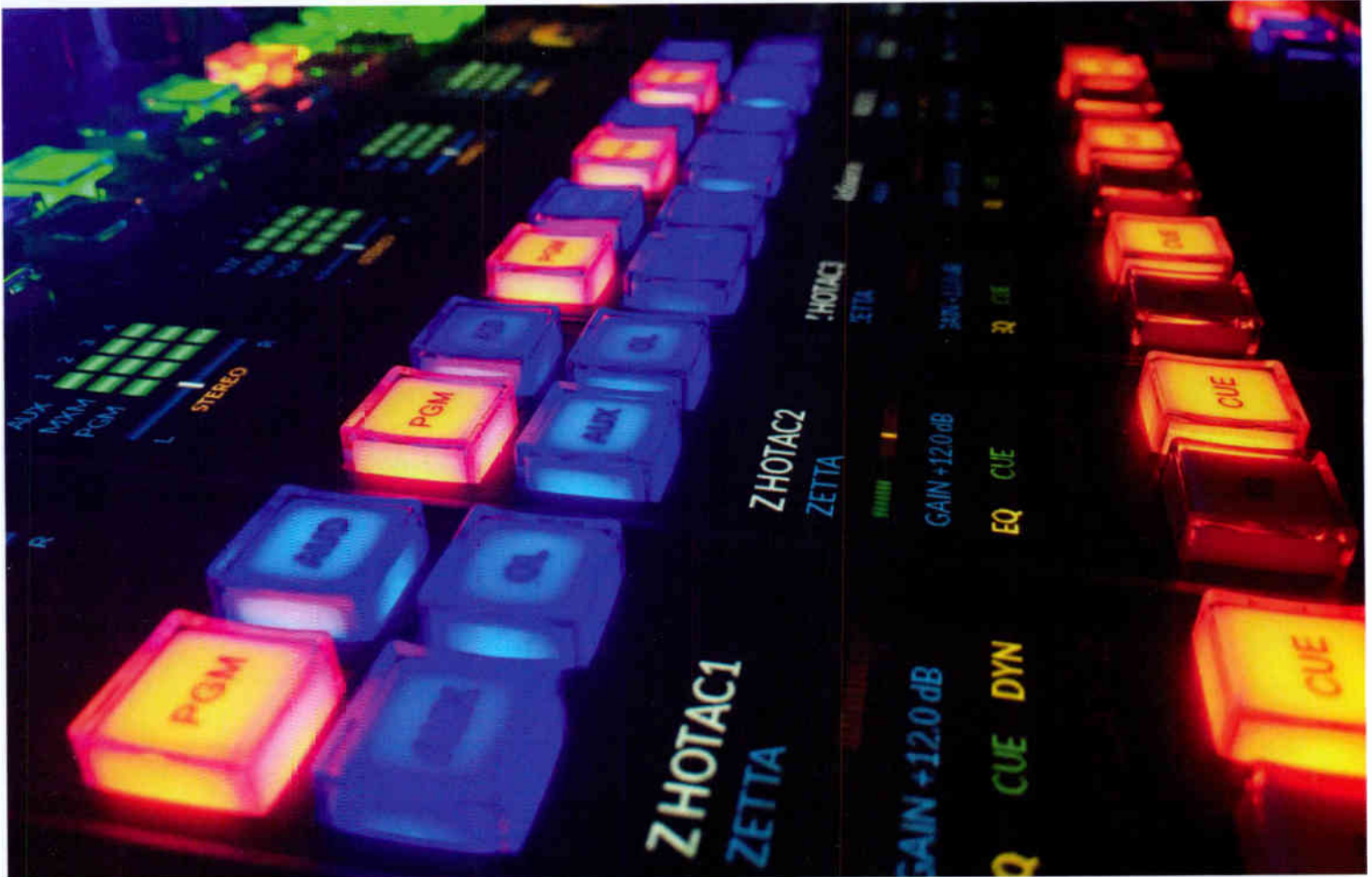
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I.T. is the platform on which we broadcast

It's no longer a backend function, you need to learn the language

Planning a new studio system based on audio over internet protocol begins with what we have always done. First, the number of rooms is settled on, then the capabilities of each room are defined by their function.

While many new studio builds now include cameras and more large video screens than in the past, for the most part studio rooms are built to perform similar functions. There the similarities end.

Broadcast integrators and equipment installers have always been the last in the project timeline and often crashed in the past because of their requirement for point-to-point, "single channel per wire" topology. Studios had all the audio gear and needed huge cable bundles to a tech core with an under-utilized and massive infrastructure. No longer!

Packet switched networks using IP encapsulation and centralized digital storage controlled remotely mean studios have little equipment in them, and the entire audio system has moved to an IT core where single boxes do multiple things.

This centralization is enabled by audio signals that are controlled and distributed as streams combined on a single cable between two points, where many, even thousands,

of signals are carried on just four pairs. The efficiency of data technology developed by the information technology industry for personal computers has been repurposed to make the installation of audio systems less wire-intensive, less expensive and more flexible at the same time.

Welcome to AoIP.

Speak the local language

To best take advantage of the world of IT, you must blend in with its practitioners. The IT team can be of great assistance in building out your state-of-the-art studio complex, or it can be one of your greatest hindrances. You want to keep them on your side as much as possible.

Learn proper use of IT terms, because those with an IT background usually have no idea of ours.

Modern networks run on switches and routers according to the OSI model. Hubs are not used. There are no such things as "network switchers" or "switching hubs."

Their routers are not the same as what we term an audio router. Nodes are items that create the network. This includes routers to guide packet traffic between networks, and switches that provide a connection point to the network. Endpoints are purpose-specific devices. For example, an audio console/video production switcher



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is a Human Interface Device (HID) and an endpoint. You should translate broadcast systems into that construct to talk to an IT professional.

IT is no longer a backend function, it is the platform on which we broadcast. Media networks use certain IGMP or Multicast protocols, featuring a “querier” that not all IT will know about.

AoIP is networked audio. AES67 is a protocol for use in AoIP. Neither is the same as AES3, which is point-to-point serial digital audio signal. Both use XLRs and RJ45s. And then there is AES50.

These various wiring and signal standards have been developed by the Audio Engineering Society in conjunction with audio industry manufacturers, but don't get carried away with these terms in the IT world. The confusion in the use of terms with “AES” as a reference can lead to very expensive mistakes.

PTP for IT means Precision Time Protocol, a network standard aka IEEE-1588. This standard is the key to making media function at low latency on an IP network. Learn about PTP. Nothing else works if the PTP does not. The current standard is PTPv2 and was updated recently. Every network has a PTP Master Clock, which may be associated with more than one piece of hardware.

AoIP requires some different tools for troubleshooting and test that come from the IT industry. Learn about WireShark/pcap, PTP Track Hound, VLC, subnet calculators and other free but very useful tools for network admin. IT Command Line tools such as Ping, Arp -a and Netsh are useful in troubleshooting and testing.

There is much cooperation behind the scenes with some vendors. The network is becoming agnostic and ubiquitous,



Above
This article is from the ebook “The Real World of AoIP.” Find it at radioworld.com/ebooks.

which will support competing product endpoints among different manufacturers.

Know where you're going

AoIP moves along networks based on Internet Protocol addressing schemes. A typical AoIP network is often isolated from other networks and uses protected subnetworks (subnets) that allow only the audio streams and broadcast signaling to travel between them.

This is a critical part of network design, which is often done early in the design and then handed off to the audio team. It's important to understand how these networks are described.

IP addressing is not magic and it is very logically structured.

IP addressing since 1996 uses a technique called CIDR (the /x after IP address). The smaller the x that comes after the slash, the larger number of IP addresses are available. In an IPv4 address there are four groups of binary octets, zeroes or ones, representing a number between 0 and 255. There can be a total of 256 addresses in each octet.

I suggest building AoIP networks on a Class B or CIDR /18 structure, which allows 16,382 total addresses and uses a netmask of 255.255.192.0.

For example, the above netmask would allow a range of addresses from 172.20.192.xxx to 172.20.255.xxx, or 64 x 256 addresses (255-191 = 64). Follow a pattern such as 172.20.X.Y/ where X= studio or rack and Y= device in the rack.

Media networks should use Static addresses on a private network. DHCP should be avoided. Instead of DHCP, AoIP may use automatic private number addressing. In an enterprise network, ask the administrator to use DHCP reserve, which requires you provide the MAC address in exchange for an address reserved in DHCP. This provides static address behavior while preserving the net admin's control.

When doing network changes, patience is a virtue. Not all network changes are instant. Many timers run to 15, 30 or 60 seconds. Always wait to see the effect of change! And backup, backup, backup.

Keep track of everything

A useful organizational system before installing anything is to copy all Media Access Controller (MAC) addresses and Serial Numbers (S/N) to a spreadsheet with their assigned room location and IP addresses.

“Modern networks run on switches and routers according to the OSI model. Hubs are not used. There are no such things as ‘network switchers’ or ‘switching hubs.’”

”

While everything has a MAC address and serial number, you can't always fit that label on the back of a device that's one rack unit high and only a half rack unit; the sticker ends up on the bottom cover plate, invisible after installation. Assign an asset tag number and place that number on the equipment front panel to allow easy location of a particular device.

In studios, custom software programs are essential to setup and operation of the equipment. They are often delivered by email or download from a company site. Be sure purchasing forwards confirmation emails so that you have the license or directions on how to download! Keep a separate spreadsheet of license keys that are specific to individual devices (e.g Pro Tools editing software).

When doing the system configuration for the first time, keep in mind that every signal is both a source and a destination depending on your perspective. It becomes important to structure the names of signal sources and other ID criteria so that you do not have 12 items called MIC_1 or Console PGM and no idea of Source/From or Destination /To.

Recent AoIP systems now allow both short and long signal names to assist with this organization. The short name is what will appear on the console channel display, for example, and is often limited to eight characters. The associated long name allows more information to be included, such as the signal location, to help locate the

correct signal when troubleshooting or doing system configuration.

Plan for growth. A plant will have more, not fewer networked items in the future. If your count is 20 devices don't use a 24-port switch, go to the next size!

Spend a few extra dollars and purchase a dedicated PC for the tech core to hold system management tools and documentation. This computer should be able to access all the secure subnets for the audio systems equipment (consider making this computer available to offsite via a remote control program for remote troubleshooting).

Get a printer/scanner that handles 11x17 and scan to PDF everything that you may need to share with the installation team, such as system diagrams. Create a set of configuration backups or default settings on the PC that are clearly marked with the date in the file name.

Final tips

Build ahead of install to reduce the time of install. Almost the entire system can be put together in an office, programmed and put back in the box until final installation.

As noted earlier, the broadcast installers are at the very end of the project timeline, after everyone else has run into problems and the schedule has slipped perilously close to the move-in date. If you've got the space to do this pre-installation work, then do it early and be the hero who gets the job in on time. 🙌

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About the EBU

The European Broadcasting Union is "the world's leading alliance of public service media." It has 115 member organizations in 56 countries operating ~2,000 TV, radio and online channels and services.

EBU's new head of radio sees opportunity, peril

Kudláčová says the world needs trustworthy public service radio more than ever

Edita Kudláčová recently started her new job as the European Broadcasting Union's head of radio.

In an address to the EBU's online Radio Assembly, she said that public radio is faced with a one-in-a-lifetime opportunity as well as extreme competition in the audio market.

Prior to assuming her new role, Kudláčová spent more than 12 years at Czech Radio, rising from senior international relations specialist to chief creative producer. She has won many award including first prize for Best European Online Project and the Journalism Award at the 2019 Prix Europa for "1968 Project."

Kudláčová has been a member of the EBU's New Radio Group and, prior to that, the International Relations Radio Group.

COVID-19 and public radio

Kudláčová told Radio World that, confronted with a pandemic, the world's citizens have been eager for information to get them through this difficult time. In Europe, a large number turned to public broadcasters for help.

"As a result, we have seen an increase in listeners to many public radio stations/networks during the past 12 to 13 months," she said.

"The first increase occurred during the first lockdown in March and April last year. The second increase took place last autumn due to a second wave of lockdowns in European countries."

According to the EBU's audience research, listeners tuned to European public radio for a variety of reasons during the pandemic. The first area of audience growth was news.

"People choose radio because it is able to deliver trustworthy information quite quickly," Kudláčová said. "The second increase that we saw was in entertainment content, which was for music streaming and music listening on air and FM."

Radio also gained listenership among young people, in part because "lots of parents were looking for some sort of 'visual detox' to keep their children from staring at screens all the time," she told Radio World.

All told, up to 26% of young people in Europe have been tuning into radio during the pandemic. This is a high

level of listenership "which we have not seen in previous years, driven by public radio's formats for these age groups."

Opportunity and peril

Pandemic-driven growth in public radio listenership comes at a time when the medium is facing an increasing number of fierce competitors, on air and online. Public radio is faced with a "one-in-a-lifetime opportunity as well as extreme competition in the audio market," said Kudláčová. This is why European public radio has to act now to retain and grow its percentage of listeners in the multi-platform universe.

Achieving this means applying EBU members' considerable expertise in producing high-quality audio content to create compelling content in music, sports, the arts and children's programming, she said. Moreover, this content has to grab the attention of 21st century listeners who now enjoy an unprecedented degree of content choice.

"A lot of our member countries are already faced with increased competition in the audio market, because many digital platforms that previously only distributed audio content are now producing it as well," Kudláčová noted.

"The degree of extreme competition that is emerging for listeners will force us to innovate quite quickly in order to survive."

Kudláčová plans to make this kind of innovation a priority for the EBU's members and working groups, "to see where we can cooperate and progress with all of this together."

Since her duties extend to the EBU's Music Unit, Kudláčová is also working closely with musicians and music

“My division will continue to support the growth of DAB+ broadcasting across EBU member countries and to secure the position of public service radio in the digital market.”

”

producers to survive COVID-caused concert cancellations.

"The EBU is already running a series of seminars together with the music creation industry on how best we can support the whole music scene and what needs to be done when the pandemic is over."

Advancing digital and hybrid radio

The progress of digital radio, specifically DAB+, and the deployment of hybrid radio in vehicles to retain radio's share of the vital mobile market are priorities for Kudláčová.

"My division will continue to support the growth of DAB+ broadcasting across EBU member countries and to secure the position of public service radio in the digital market," she said.

"The world needs independent, trustworthy public service radio now more than ever."

As well, the EBU's radio division will continue to work with EBU Technology & Innovation and the EBU's Connected Cars and Devices working group.

"We'll need to be looking at this year so that public radio stays relevant on 'connected dashboards,'" Kudláčová said.

"I think this is a very big priority for public radio, because we need to cooperate on the international level in order to succeed — both in




Photo by Khalil Baalbaki

Above
Edita
Kudláčová

terms of the technology being used and the content being produced. We have to ensure that the content we distribute online makes sense for the online environment. We can do only if the EBU has an international strategy that is shared and endorsed by our members."

Kudláčová has an ambitious agenda as the EBU's Head of Radio.

"It's important that our EBU members are involved in this process, so that we really do this together," she said. "I take it as a top priority to make sure that everyone involved in our radio efforts are well-connected and well-informed about what is going on, and that our agenda is clear and open to input from all of them." 

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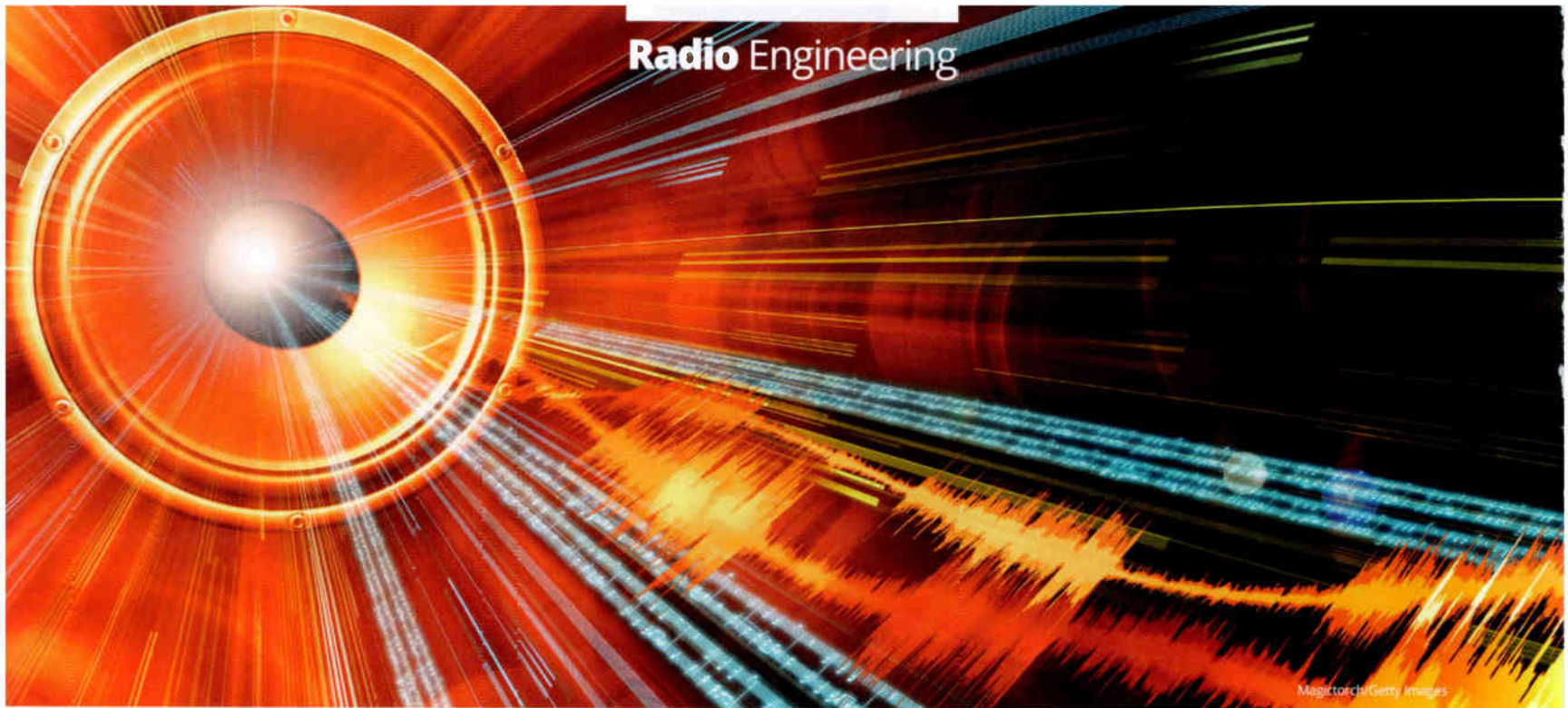
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21

Analog veterans in the digital world

Contract engineers reflect on their experiences during the digital evolution

Radio broadcast engineering was easy when I started full-time back in the 1960s. Everything was analog, and audio transformers were real problem-solvers when it came to hum from ground loops.

Then came active balanced circuits, which did not have audio artifacts created by iron-core audio transformers. That change cleaned up audio a bit, but it was all still analog. There was no such thing as digital anything back then!

The big problems in that era were cartridge tape machines that needed constant maintenance to keep the tape heads clean. Tape head alignment was important to keep high-frequency audio response as good as the mechanics could allow for moving magnetic tape through a machine. Advances on how to do that were the stuff of NAB presentations, with each manufacturer trying to outdo the others.

Reel-to-reel tape machines had similar problems. It was analog technology. All of that went by the wayside when storing audio moved over to digital in the 1980s.

Now we are converting analog studios with digital audio storage into fully digital studios. Stations have one by one converted and haven't looked back.

I asked a couple of my industry colleagues to share their reflections about "A" and "D."

"Just mouse clicks"

Contract engineer Jim Offerdahl of Offerdahl Broadcast Service in Fosston, Minn., told me, "I grew up in a world with analog telephones, radios and televisions. My earliest experiences in radio broadcast facilities were analog. As time marched on, more and more equipment became digital. First it was satellite receivers, then audio storage."

Offerdahl says there are many analog-only facilities still being used, and he'll continue to maintain them as long as they are serving their users.

"New facilities today are a mix of analog and digital. A client that is only adding a small studio for production or is replacing an analog console usually remains analog. A client that is doing a total redo from top to bottom will likely build an all-digital facility."

He remembers working with wiring earlier in his career. "Cables were either cloth- or lead-wrapped. I recently rebuilt a transmitter facility that was constructed in the 1930s. The original wiring was a mix of both. Wire lacing was an art back then using waxed string."

When Offerdahl entered the business a couple of decades ago, the standard was to terminate wires in each studio on either terminal strips or punch blocks. "I rebuilt several facilities that were all-analog using punch blocks with cross connects," he recalls.



Comment

What do you see as the major benefits of "working with digital"?

Write to radioworld@futurenet.com with "Letter to the Editor" in the subject field.

"Then in the late 2000s, I helped complete a build utilizing an AES3 audio distribution system that was a hybrid analog/digital facility. That told me digital audio distribution was the next big thing."

As the years progressed, he constructed more digital facilities.

"Recently I embraced the StudioHub standard of wiring using Cat-5 cables and StudioHub adapters. I now wonder why I was not doing that earlier.

"Even more recently I constructed some new all-digital facilities using Livewire AoIP architecture. No more punch blocks, just patch panels with Keystone jacks. No more cross connects, just mouse clicks."

Offerdahl suspects that for as long as he is in the industry there will still be analog work to do. "But more and more of it is moving to the digital world."

"I think it is obvious"

Doug Thompson is a contract engineer with Intellitech Engineering Services in Osceola, Wis.

"If I were asked to build an analog studio today, I would have to recommend the client reconsider that decision," he said.

"Analog certainly presents some apparent advantages over digital, especially if the client is familiar and comfortable with analog equipment. They may have a station that uses many types of analog equipment (consoles, switchers, distribution amplifiers and such) and may not want to change what they have invested many hours in learning how to operate and maintain.

"But if they would stop and consider how much of their plant is already 'digital,' it may actually surprise them. The satellite receiver, possibly their STL link, their telephone system, then certainly the internet and automation systems are all digital now."

He notes that digital systems are efficient to install and operate, and can offer greater flexibility.

"I installed an analog system into two studios a few years ago. The client wanted to re-use their consoles, distribution amplifiers and switchers. It made sense to them not to buy new equipment to replace what they already had that was still serviceable," he said.

"Well, it took me about three weeks to lay out, design the wiring charts, install and wire the many equipment connectors, work the RF out of the system — there was a co-located AM transmitter — and test everything. I even had the help of another engineer for a week of that time."

The system worked well and sounded good afterward, he said; the client was happy with the result.

"A few weeks later they asked if I could add some inputs to the automation system. I did so, which required modifying the wiring charts, pulling a few more pairs of wire, adding connectors and setting the levels. It all worked fine and only took me about eight hours of work. A few weeks later they wanted me to add another



Top
Jim
Offerdahl



Above
Doug
Thompson

satellite receiver. Same process and it took maybe 6 hours this time."

Two months later, Thompson was hired by another station to replace a talk studio by installing a digital IP-based system.

"Another engineer and I began at 5 p.m. on Friday tearing out the furniture, carpet and wall covering. New carpet and furniture were installed. We wired the IP-based console and peripheral equipment including microphones with arms, headphone amplifiers, PCs and installed an IP-based phone system."

They had the system operating by 3 p.m. on Sunday by working 10-hour days.

"We did take a few hours beforehand to prep the digital system software. The project worked. Later, when asked to add another source to a console, it took about 15 minutes via the PC-based tools provided by the manufacturer."

He notes that the digital option cost more up front. "But the labor costs for the installation and ongoing changes, which always happen, were far less than the analog."

Also, some changes and upgrades can be done on a digital system from off-site, which came in handy during recent COVID shutdowns.

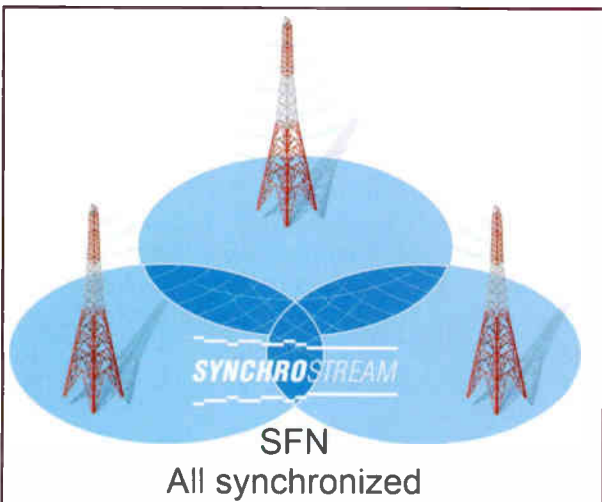
"I think it is obvious why I would recommend a digital system over analog today," Thompsons aid. "It is less costly overall, as well as being easier to maintain and upgrade.

"Digital is very flexible because there are far more features for the operators that are usually built right into the base product. It can be operated remotely for voice tracking from home, allows single operator broadcasting from sporting events or remotes and integrates well with other related systems such as automation, phones and the internet."

Sure, he said, the users must learn a new system; but the consoles look and work a lot like the old analog consoles, plus they offer many features to make things simpler for the user. "In addition, digital systems are much easier to maintain and expand, from my perspective."

Thompson said he doesn't expect to build any more analog studios in the future — unless, he said, he decides to volunteer at a broadcasting museum. 📻

“If I were asked to build an analog studio today, I would have to recommend the client reconsider that decision.”



WorldCast Systems SynchroStream Technology

WorldCast Systems launched SynchroStream technology for the APT codec range with the release of SR 4.0.

The company says it is now a one-stop shop for single-frequency network deployment, given that it offers transport (APT codecs), transmission (Ecreso transmitters), measurement (Audemat FMMC5) and monitoring (Kybio Software) in its family of products.

SynchroStream simplifies the setup, configuration and maintenance of a stable SFN network. It is compatible with baseband audio coding and existing MPX/composite linear coding schemes as well as the new APTmpX algorithm, "the first nondestructive MPX/composite algorithm," also part of the new SR 4.0.

SynchroStream uses an external 10 MHz clock and 1 pps GPS signal as time reference.

The company says beta network deployments in New Zealand and the United States have verified its bench test results, calculating that the granularity offered in allowing fixed line adjustments down to an eighth of a microsecond (125 nanoseconds) would allow highly accurate (<50 meters) manipulation of the "mush zone."

According to WorldCast, this means engineers can push that tiny zone away from populated areas or transport corridors. This translates to better coverage within the SFN FM area, consisting of main FM transmitter and FM boosters, meaning potentially

more listeners for a station.

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Wheatstone Rolls Out the Blade 4



Wheatstone says its newest WheatNet-IP Blade "clears out the rack room," with integrated routing, control, codecs, processing, mixing, operating system and NMOS/AES67 interoperability all in one rack space.

The new model offers interoperability with other manufacturers and network environments through SMPTE ST 2110 audio support and AES67 compliance. "Blade 4 supports NMOS [Networked Media Open Specifications] device discovery, AES67 multichannel support and packet timing adaptability," it said in the announcement.

Each Blade 4 has its own OS. "No tablet, laptop or desktop PC needed. Run select broadcast applications and scripting routines direct from the network I/O interface, including IP meter, PC XY routing control, Screenbuilder, Navigator and LIO viewer."

Opus, MP3 and AAC codecs are added to the AoIP network for remotes and home studios. Codecs are routable in native AoIP, with no additional hardware required.

Other features include easy resource sharing. Integrate audio codecs, processing, mixing and operating system into one native AoIP environment. Like other Blades it has two 8x2 stereo utility mixers, routable stereo processor and other Blade features.

Dual Ethernet ports are provided and dual power supplies are available.

Wheatstone says that because this unit includes codecs, software apps, mixing and audio processing, plus AoIP networking, control and interoperability, users will save on rack room space, cooling and cabling.

The Blade 4 can be integrated into new or existing WheatNet-IP networks.

Info: wheatstone.com

Orban Processors Get PPM Certification

Orban Labs said three more of its on-air processors have received certification from Nielsen for the integrated PPM encoding option.

"The company's Optimod-FM 5500i, 5700i and 8600Si processors have received Nielsen certification and are now available with onboard PPM encoding," the company said.

"These three products join Orban's XPN-AM, which was the industry's first processor to receive Nielsen certification and has been shipping with internal PPM encoding since last fall."

PPM encoding is available as an option on the FM processors.

Orban President David Day said in the announcement, "We're pleased to report that this encoding is now taking place via Orban processors at stations in New York, Atlanta, Seattle, Denver, Phoenix, as well as other significant U.S. markets nationwide."

Info: orban.com





Jutel RadioMan gets new architecture

Jutel is highlighting new technical architecture for its RadioMan platform, a virtual browser-based production and playout system in the cloud.

The company said its web-native technologies and architecture enable more flexible deployment models. "RadioMan users can move freely in between different locations, as laptops and tablets are used as a thin clients to access RadioMan virtually through a web browser," it states on its website.

The system can deploy in a cloud environment, on physical hardware or as a hybrid.

"Every radio station can benefit from taking out expensive on-site hardware and moving to virtual environments, especially small, pop-up, temporary and web-only radio stations. Instead of having expensive on-site infrastructure throughout many locations, RadioMan allows for the infrastructure to move to one centralized location."

It said RadioMan also allows the user to access it using any browser on any thin client. "With older systems, users tried to access one machine, which created a bottleneck that slows processes down considerably," it said.

"RadioMan's built-in load balancer allows the user to redirect HTTP traffic across the load-balanced back-end infrastructure. The back end itself is run on Apache web servers and the messaging between



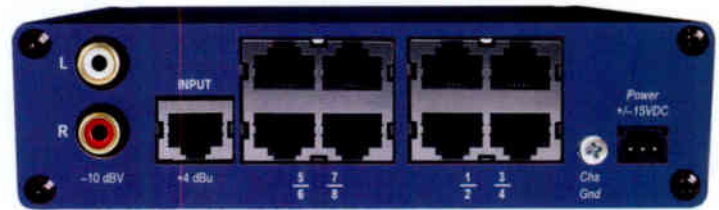
the front and back-end infrastructure is controlled via web-native ActiveMQ messaging."

The company deployed PostgreSQL database with RadioMan 6 to make it more affordable and easier to deploy.

The HTML interface runs inside the RadioMan deployment and there is no need for third-party plug-ins. The REST API allows a user to build interactivity so that MAM, traffic and newsroom systems can be integrated with RadioMan.

Info: jutel.fi

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K-Wave broadens audience with video

Comrex LiveShot enables our host to work from across the country

Writer
Marcos O'Rourke
Chief engineer,
KWVE(FM)

KWVE(FM)/K-Wave in San Clemente, Calif., is a religious talk and teachings station. We produce original programming, and also feature syndicated talk shows about biblical teachings for our audience in Southern California. We also stream our

programming online on our website (www.kwve.com), as well as on our app.

As chief engineer, I manage all the technical elements for our studio, plus anything else that might come up.

"Pastor's Perspective" is a live call-in show that we produce every weekday in the afternoon and syndicate

to other stations. For the last 10 years, we've also been streaming live video of the show on YouTube.

Having a visual element has given us another outlet for the program to reach an audience that isn't necessarily listening to the radio.

We've found that a large portion of our audience is enthusiastic about viewing our programming on YouTube. There's a dedicated group of people who will consistently converse with members of our team in the live chat, which gives the show a semi-interactive element we wouldn't have otherwise.

Video has helped us find a different audience that isn't in our local coverage area. People who used to live here and

Above
Live from North Carolina! Co-host Billy Conway, in the Tar Heel state, joins in-studio host Brian Perez via Comrex's LiveShot.

“ Our host ran a cable straight between LiveShot and his router. The feed is great — it looks as good as it would if he were here in the studio. ”

moved away, as well as nonlocal people who heard about it from a friend can enjoy the program from afar.

One of our hosts recently moved from California to North Carolina. We wanted to keep him on the show and maintain the video aspect, even though he now lives across the country.

We purchased a Comrex LiveShot system, set up the rackmount unit in our studio and sent him the portable unit, and he's been using it to connect with us nearly every day for the last several months.



More info

For information, contact Chris Crump at Comrex in Massachusetts at 1-978-784-1776 or visit www.comrex.com.

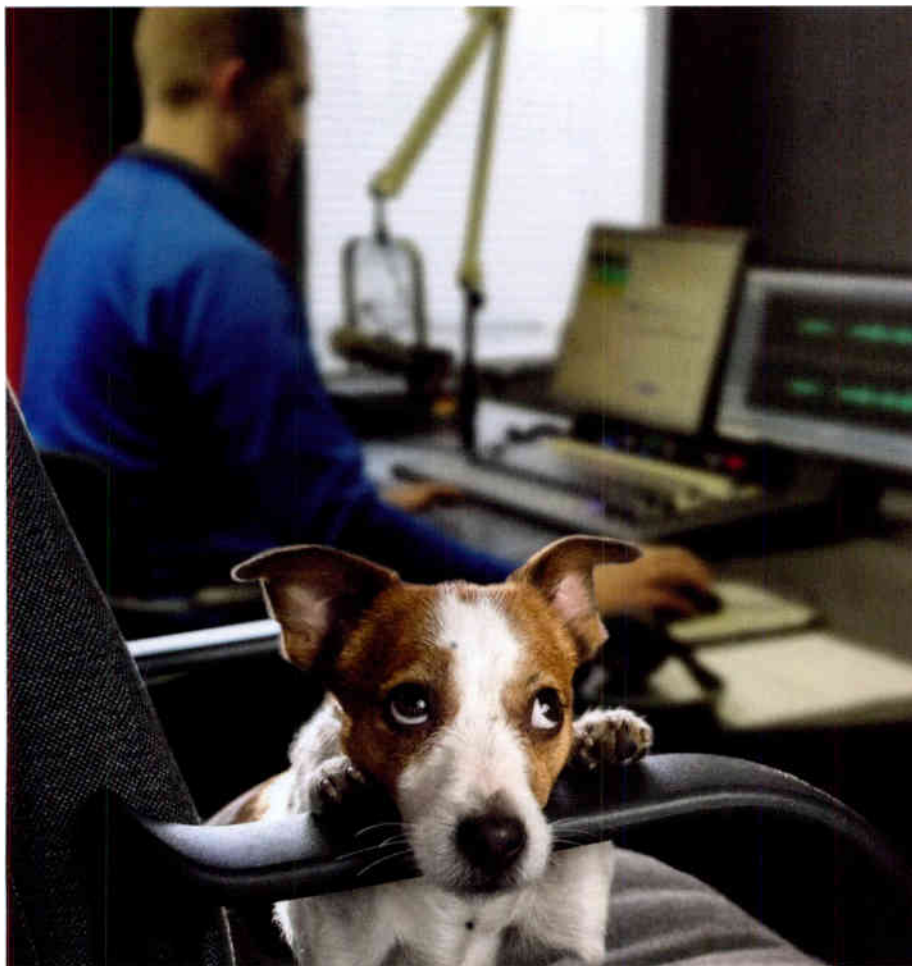
We chose LiveShot because we've been using Comrex for years on the audio end of things. Our Comrex Access codecs have been solid compared to other solutions we've tried, and the company has a great reputation in the industry.

We had demoed LiveShot a while ago for a different project and felt like it was a solid product, so we thought it would be the right solution for us.

Installing LiveShot was more complicated than the installations of Comrex audio-only products I've done, but the Comrex tech support team was helpful in assisting me with the entire configuration process. The support team was willing to collaborate with me directly and log into our box on both ends. They helped me adjust the settings so that we could get the lowest delay with the highest video quality.

Our host is using LiveShot over regular home internet. He initially tried to use a Wi-Fi extender to a cable; we found that caused delay (and frustration) to build up. But since he ran a cable straight between his LiveShot unit and his router, the connection has been solid. The feed is great — it looks as good as it would if he were here in the studio.

I would recommend LiveShot. Occasionally, we've had to fall back to Skype or Zoom, and both the audio and video quality were significantly worse. With LiveShot and the same exact camera, same lighting, and same set design, no one would know that our host wasn't in the studio. The quality is amazing, and we're pretty happy with it. 🎧



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Tech Update

Get Started With MultiCam Airbridge+

Visual radio system developer MultiCam says that its Airbridge+ entry-level visual radio system is an all-in-one hardware- and software-based system. It comes with what a station needs to create professional, engaging video programming, including a video controller, call-in manager, character generator and streaming engine.

According to MultiCam it can handle four live feeds and manage up to 12 guests in the waiting queue. Programming can be live or recorded for later use.

Airbridge+ provides operators scale and picture position controls of guests along with mix-minus and audio delay. There are also PTZ camera remote controls.

Would-be participants are sent an exclusive link for entering the system. MultiCam visual radio systems are compatible with audio consoles made by Axia, DHD, Lawo and Wheatstone and software automation from companies such as ENCO, RCS, WideOrbit and WinMedia. It works with video platforms and social media such as Twitch, Facebook, Instagram and YouTube.

For information, contact MultiCam Systems in Maine at 1-207-352-1784 or for international queries +33-9-72-58-67-28 or visit www.multicam-systems.com.

Who's Buying What

NRJ Chooses StudioCast for Video Content

StudioCast said NRJ Group has added to its digital presence by acquiring new video production tools from the company.

The acquisition is for the "Manu in the 6-10" morning show. It includes automated video control equipment for the morning show.

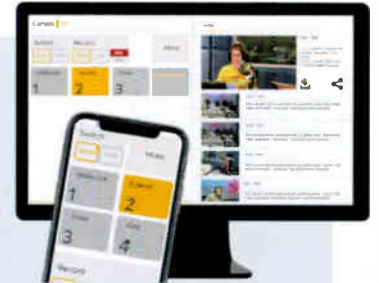
The StudioCast solution makes it possible to provide a high-definition video stream without the need of an operator. In addition it supports the creation of video on demand services or for TV broadcasting.



For information, contact StudioCast in France at +33-1-60-64-21-21 or visit <http://studiocast.fr>.

Tech Update

Camera One Aims at Affordability and Simplicity



Broadcast Bionics Camera One is a visualization system that the company says will enable radio stations to quickly and easily create live video streams and shareable video clips at an affordable price.

Camera One uses an HTML5 browser interface for setup and operation It offers automated camera switching, graphic generation, recording, streaming and sharing. Automated camera switching is governed with an algorithm that follows conversation.

Graphics can be created automatically from social media messages, album art and RSS feeds for news, travel and weather. Live streaming can be provided to YouTube Live and Facebook Live.

The Camera One application runs on a PC or virtual machine and is easy to install and maintain, the company says. It is compatible with Blackmagic ATEM Mini (four cameras) and ATEM Television Studio (eight cameras) switchers.

For information, contact Broadcast Bionics in England at +44-1444-473999 or visit www.bionics.co.uk.

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STUDIO ITEMS INC. www.studioitems.com (847)-487-7575

Tech Update

Broadcast Pix Promises All-in-One Package

Broadcast Pix says its RadioPix systems offer a complete automated live production solution for stations looking to create and stream visual programming.

In addition, according to the company it is easy to use and ready to go out of the box.

RadioPix comes with two RoboPix PTZ IP cameras with 20x optical zoom and integrated control; PC hardware; a royalty-free library of clips, stills and graphic templates; one-touch streaming and recording; and a software control interface designed for setup and operation for automated video-follow-audio.

The company says that by analyzing microphone audio levels, RadioPix's behavioral intelligence software triggers "visually aware" macros to automatically switch the system's robotic cameras to whoever is talking. Add moving titles, roll clips and ads, and execute sophisticated compositions.

RadioPix is compatible with radio automation software and with Axia, AEQ and Wheatstone consoles. Stations can stream and record simultaneously or multi-stream to up to five online destinations through native integration to Switchboards' Cloud platform. That multicasting platform enables users to take one video stream and deliver it simultaneously across YouTube, Facebook Live, Vimeo and Livestream or any RTMP CDNs.

Users can also stream and accept RTMP sources such as Zoom, GoToMeeting, Skype and other videoconferencing

feeds as well as social media through the Castus Stream platform, without complex firewall configurations or port forwarding.

New enhancements include support of MIDI interfaces for macro control from any MIDI device, and automation and control of RoboPix and PTZoptics cameras through a serial or IP connection and other enhancements.

For information, contact **Broadcast Pix** in Massachusetts at 1-978-600-1100 or visit www.broadcastpix.com.



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(Long Island),
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Does college radio matter to college students?

More young people listen than you think

The Voice of Nassau Community College, 90.3 WHPC, was named by the Intercollegiate Broadcasting System as the 2021 Abraham & Borst Best Overall College Radio Station and 2021 Best Community College Radio Station in the Nation.

As director, I was asked by Radio World to comment on what makes “college radio relevant in 2021,” especially given how younger people consume media.

I think that to be a successful college station today, you need to focus on the people volunteering their time to help make your station successful, which helps lead them on their own path to success.

Unless you are lucky enough to have a budget to pay student managers, the vast majority (if not everyone) is working for free — and sometimes, you get what you pay for.

This is why you need to make joining the station competitive and worth their time investment once they successfully join in.

WHPC has over 50 extremely talented, wonderful “Community Volunteers” to help make the station sound great — but all of them, along with my staff of six part-time professionals, know that

the focus is our educational mission: to provide professional broadcast training to qualified Nassau Community College students.

Professional training

It’s important not to just welcome someone who expresses interest in joining the station, throw them in a studio and let them play around.

At my two-year community college, my training program to be an on-air host lasts, on average, three to four hour-long sessions in studio, one-on-one, with me, learning how to use our equipment, learning the proper way to speak into a microphone and deciding what to talk about. The students get better and better over time.

Bottom line: Don’t just throw students on air and expect other students to do the training. You won’t get that professional sound you are looking for, and they won’t get the training they are looking for.

Qualified students

Don’t fall into the “warm bodies” trap and hire everyone who walks through the station’s main door. Have them fill out an application, interview those who take the time to completely fill it out, and be sure to

ask them what their career goals are.

Don’t accept only communications majors (but give them a little preferential treatment), as you need people of all backgrounds and interests to make the station operate successfully. The students will also appreciate the interview experience for future job applications.

Be honest with everyone up front: Not everyone who applies gets the opportunity to join the station. Decide how many people you have space for and pick the students whom you feel will be best suited to fit in to your current schedule and who have the most potential to grow both at the station and in their own careers. It’s exciting to me how much interest there is.

While younger people are consuming more of their music and information online, they still know that radio works, and more of them listen than you think!

The people are what make your college station successful. I am thankful to my staff, volunteers and all the students who have stepped through the doors at WHPC over the past 49 years, even though I have only been here about five of them myself.

Without them, WHPC would not be the proud success I am proud to say it is. 🎧

Above
Nassau
Community
College President
Dr. Jermaine F.
Williams, third
from left, and
Station Director
Shawn Novatt,
center in suit, are
shown with WHPC
students and
volunteers in 2019.



happening as owners actually discourage AM listenership by pretending it is an albatross.

I don't know who is feeding you this bad advice, but please stop listening to it.

*Bob Hawkins
Contract Engineer
Edinburgh, Ind.*

A mic under fire

Re the article "In Appreciation of the EV635A" in the Feb. 3 issue:

My appreciation for the 635A was on Feb. 12, 1974. A Delaware & Hudson freight train that had left Binghamton, N.Y. earlier that afternoon derailed four miles north of Oneonta. It had been traveling at 32 mph when the brakes were applied. Eight bulk propane tank cars were involved in the derailment.

I ran into my station in town, grabbed an EV635A to which I had added a coiled cord and cassette tape deck, and bolted to the site.

Shortly after 4 p.m., a propane car buried underneath the others blew. I was doing a take when the force of the explosion threw me into the air, dislodging the 635 from the cassette deck.

My clothes were burned and I was semi-conscious. The tape deck rolled until the cassette ran out.

The EV? It stayed wrapped around my arm, its coil burned into my coat. It was unharmed, if a bit soot covered!

A copy of the tape exists today and is still somewhat chilling to hear.

*Timothy Braddock
Oneonta, N.Y.*

 **How to submit**
Comment on any Radio World content by emailing radioworld@futurenet.com with "Letter to the Editor" in the subject field.

Below
A photo of the train wreck, post-explosion.



Show some trust

Kudos to Chris Imlay's commentary in the Feb. 3 issue, "The Integrity & Ethics of Broadcast Engineers."

His letter seems apropos given the description of the case. Shouldn't the FCC itself have made measurements?

Might I add a note to the FCC: If you insist on concluding all broadcast engineer interference investigations are inherently biased, why did you scale back the FCC field offices?

It sounds like the commission wants to have it both ways: no engineering presence but rejecting consulting engineers' findings.

*Rolf Taylor
Rocket Engineering and Consulting*

AM is no albatross

I'm sure many of us have witnessed the practice of branding an FM translator as "Big 93 FM" or some such while pretending the supporting AM signal does not exist.

Ponder this: Your FM translator has a serious failure and you are off for three days (or longer, if you have an overseas sourced transmitter or an antenna failure in winter).

If you had continued to mention your AM frequency, at least your more alert listeners would know they could still find you on AM. The opportunity to promote the AM as having a wider listening area is another value-added tool.

Adding "... and on 1090 AM" costs nothing.

The goal of AM revitalization is to strengthen and invigorate AM, but it appears that just the opposite is

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