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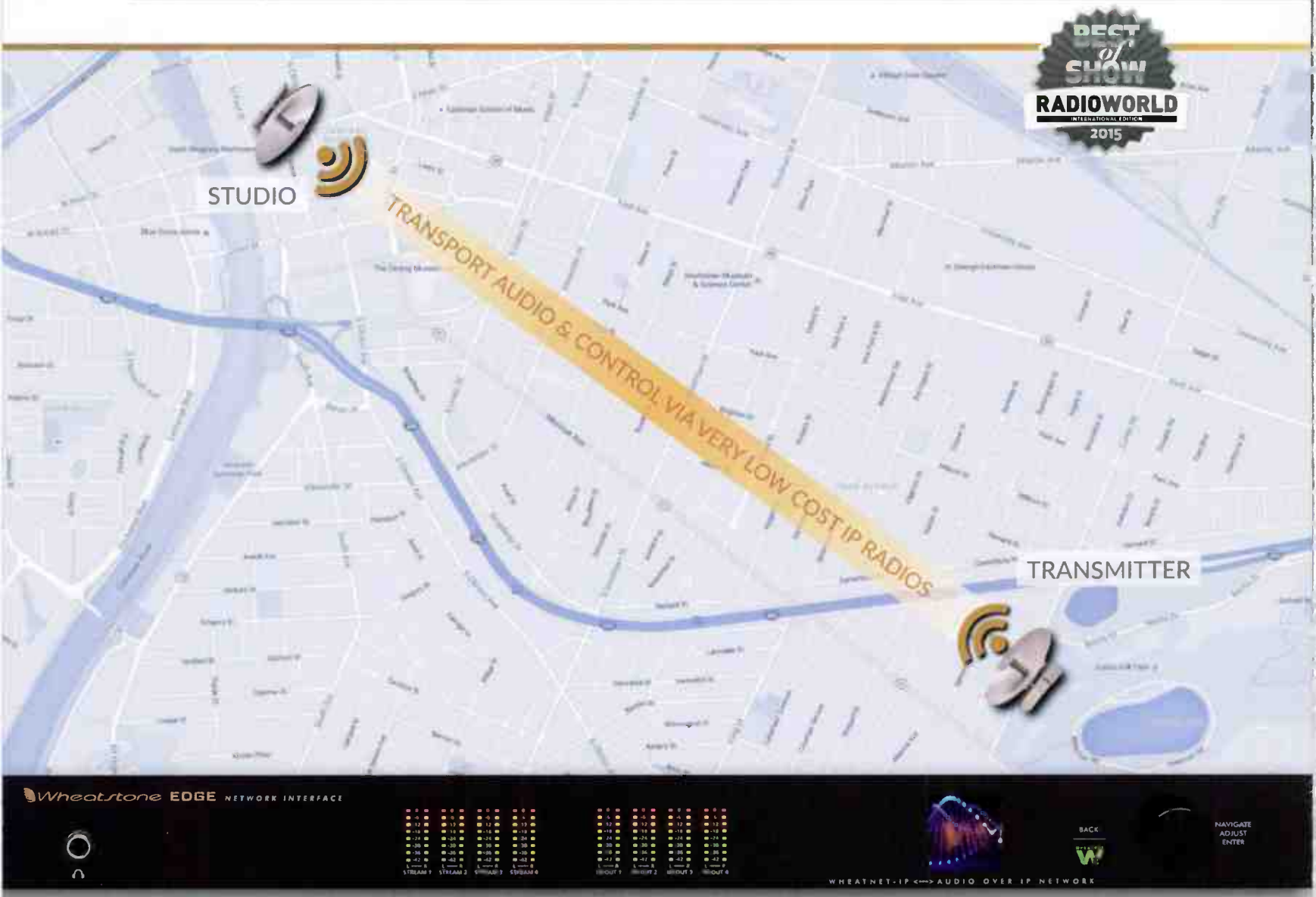

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Ben Blevins, the engineer in charge, tells us they've literally moved an entire sports broadcast into a different studio while it was live, on the air. And, not one fan noticed.

That's an impressive display of studio athleticism, and brave too, considering that sports fans can get rather vocal about even minor disruptions in the game.

For the entire story... INN30.wheatstone.com

Screen Builder At IMG World

This is the screen that Ben Blevins built using Screen Builder, a new app for WheatNet-IP. He designed this customized interface to help his producers navigate over a dozen sports games, often in real-time and on the fly, for a new "Red Zone" channel called IMG College Football Blitz that features highlights from college football coast to coast. "There's a production assistant that moves around the building and coordinates with the producer to acquire post-game, post-coach comments or other highlights from any of the games being produced (anywhere in IMG's 48-studio complex)," explains Blevins. "We built this little all-in-one access panel so they can have access to everybody at once as a sort of intercom, complete with their own headphone mix to monitor all that is going on and to drive the show where it's going next."

Ben gives a guided video tour of his Screen Builder project... INN30.wheatstone.com

Yours. Mine. Ours. WGN Gets It.

How IP audio networking can make sharing audio between two studios five miles apart so much easier.

Sharing seems to work as long as what's mine is mine and what's yours is mine. So that's how we set it up for WGN-AM and WGN-TV, which are able to share audio and resources for traffic, sports and televised events across five miles through WheatNet-IP audio networking.

WGN-TV shares live weather, sports, and traffic reports with WGN-AM, even though their studios are more than five miles apart. The WGN-TV studio on Bradley Place in Chicago and the WGN-AM studio facility five at the Tribune Tower are interconnected through a metro Ethernet LAN circuit and WheatNet-IP audio networking.

A single audio interface BLADE connects a WheatNet-IP audio network at each location, providing the live audio go-between for the AM's morning simulcasts with WGN-TV anchors.

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FIND THE MIC AND WIN!

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VIEWPOINT

What's on Your List for 2016?

We've started another year. I'm sure you have many projects left over from 2015 and more than a few already added in 2016. The beginning of the year is a good time to take stock and to examine that list. Which items have been completed? Which have become irrelevant? And most importantly, what do you want to accomplish this year?

I need to see improvement from year to year. Systems should be in better shape this January than they were last January. The job of the broadcast engineer is not simply to sit in the office and fix problems as they are pointed out by others; the job is also to improve the facility so that fewer and fewer problems occur over time.

Your colleagues will take notice when you have the entire place working like a well-oiled machine. You become the guy; the guru. You're elevated on an imaginary platform. At Radio, we're working to help you with those goals. I hope you've noticed this magazine isn't just about the gear; it's also about the job. Like you, I do this work every day, and I know what it's all about.

We are featuring some cool gear this month, however. For example, we've got an article designed to update you on on-air audio processors. (Try to look beyond your brand loyalty and check out some of the other guys' boxes.) We're also not suggesting that an on-air processor is a panacea to fix all of a station's ills; there is other work that must be done.

In last November's edition, we talked all about site control; this month we have a field report about the application of new remote control gear in the wide open spaces of the Canadian provinces. If this article doesn't make you want to go fishing, I don't know what will.

Fardau van Neerden is back this month, having investigated the BBC's complete overhaul of their streaming media delivery systems. You probably deal with streaming servers in your own facility — if so I think you'll find this article of particular interest. Are the days of local streaming servers numbered?

AM revitalization has been in the news for several months. This month Jeremy Ruck covers the topic — and brings up some important points that have been missed in much of the coverage. If you have an AM station under your care I suggest you read this article; changes in the rules could negatively affect your station, if you're not paying attention to them.

"The discussion concerning local radio ownership is one that maintains a steady murmur when it comes down to the question of how best to serve the community," writes Chris Wygal in his article about Roser Communications of Utica, N.Y. Can a new facility be constructed to maximize a station's potential to serve the community? And is that really important in this day and age? I say it is. After reading this article, see if you agree with me that they've accomplished something great in upstate New York.

All of our regulars (all of whom work in this field every day too, I might add) are back this month. Lee Petro reminds you of the obligations of political advertising. This season is upon us for that. We're continuing a multi-part series on rehabilitating old transmitters. (See our prior two editions go get caught up on demand.) And, at the final page, where the Wandering Engineer is happy to espouse his thoughts and opinions — you'll find Sign Off. Is the Earth becoming radio silent? I'm afraid so. It's doubtful we'll be a bright radio beacon in the galaxy much longer.

Thanks again for picking up Radio.

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Doug Irwin, CPBE AMD DRB | Technical Editor

Radio
THE RADIO TECHNOLOGY LEADER

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RADIO AUTOMATION SOFTWARE

Golden West Radio Embraces The Burk Plus-X Units

by Laverne Siemens, Director of Engineering, Golden West Radio

As radio networks grow through new builds and acquisitions it is easy to find oneself taking care of a wide mix of transmitter sites and their associated control systems. While keeping a variety of remote control systems clearly and properly understood in the light of day is doable, it becomes a different situation in the middle of the night when you get woken from a deep sleep. This is where standardization and simplicity become the keys to efficient and timely responses to an off air situation.

Burk Plus-X 300

Golden West Radio has a chain of 41 stations in primarily rural, smaller markets scattered over the Canadian prairies.

We have been a Burk shop since the mid-1980s starting with the TC-8 and then for many years using the ARC-16SAs. Most of them were connected just by a dial up phone line. As we have acquired existing transmitter sites, we have replaced a variety of other remote control systems with the Burk units.

I have always liked the Burk philosophy of being able to do local raise/lower functions and have status indications at the transmitter site without needing external button or lamp panels, like you have to do with most other remote control systems. At the sites where we now have IP available we have moved to the ARC Plus, ARC Plus Touch and the Plus-X units. The prime considerations for moving in this direction were economy of scale, functionality and reliability.


Burk Plus-X 600

Our roll out to the newer units gained real traction when Burk released the ARC Plus-X 300s. We could not justify placing ARC Plus units at our smaller and simpler transmitter sites, but the Plus-X units were certainly cost effective enough to make that move; and they provided all the control and monitoring we needed, albeit without the local controls.

The key to the implementation of these units was their ability to connect to a central ARC Plus unit via public IP. Our current configuration is to have one central ARC Plus unit in each of the three Canadian Prairie Provinces.

In Alberta we have the ARC Plus unit at our largest AM/FM site and then have a total of six Plus-X 300s and one Plus-X 600 located at seven separate sites spread out across the province.

In Saskatchewan we have a new ARC Plus Touch at one AM/FM site, which has two external Plus-X 300s that tie into it.

In Manitoba we have an ARC Plus located at the company head office with a total of eight external ARC Plus-X 300s linking to it. We also have an ARC-16 at one of the older transmitter sites tied into it via serial to IP converters over a VPN.

Some of the sites are co-located at towers belonging to wireless IP companies so we get IP service from them. At other sites we have DSL service and at others we have installed our own wireless IP links from our studios to the transmitter sites. At sites where we have more than one ARC Plus-X unit running on the same local subnet we have had to change the port on one unit to something else than the default 45000.

Tying back to a central ARC Plus allows us to use one Web page to view the all the units within that province. We have not yet implemented Auto Pilot but we do use the macro feature in the ARC Plus to control backup transmitters, AM pattern change and off site transmitters. A failure of the main transmitter at a given site will initiate a macro which will control an off-premise transmitter with the ARC Plus-X at that site. We also use the email function within the macros to let us know when a standby transmitter is on the air and when it returns to normal.


One of many of Golden West's Plus-X 300 installations

IP BENEFITS AND CHALLENGES

One of the real benefits of moving more and more to an integrated IP solution for

transmitter control is the ability to do so much with our smartphones. I have restored more than a few sites to normal activity with one hand on my fishing rod and the other on my smartphone!

The caveat on all of this is that we are at the mercy of the ISP quality of service. The links that tend to be the most robust are the IP radio links we have installed ourselves or the sites where we are fortunate enough to have access to a fiber link. We have had good success with

Plus-X unit connected via wireless Internet

the Ubiquity Nano Beam for our own IP links.

The Burk Plus-X units will send an email when any given Plus-X unit drops off of the network. An option we are waiting for from Burk would be a way of configuring that failure alarm delay. Another good option to have would be to get an email when the link is back up again.

A thing to watch for when using the Plus-X units is that when the link does drop out it doesn't always clearly show that on the ARC Plus Web interface. The last meter and status readings will continue to show as if all is normal but the control buttons will either disappear or grey out. If the raise/lower buttons don't appear as normal — don't trust the meter readings or status indications.

Even with some of those limitations, we still feel we have moved in the right direction in going with the Plus-X units. The price point and vital functionality make it a no brainer when adding it to the budget for a new transmitter site, even if it is just a low power translator.

Burk continues to work closely with us and is quick to respond to issues or potential upgrades. Their products are constantly being improved, and they rely heavily on user feedback.

Laverne Siemens is the director of engineering for Canada's Golden West Radio.

Political Season Is Upon Us

by Lee Petro

Everywhere you look, there are signs of the impending political season.

For commercial broadcasters, the acceptance of political ads, either by the candidate or other organization, can mean substantial income. With this enormous potential financial benefit is the equally significant potential for Federal Communications Committee enforcement action for noncompliance with the FCC's rules governing political broadcasting.

Because the primary season is just around the corner, it is imperative that broadcasters refresh their memories.

LOWEST UNIT CHARGE

The Lowest Unit Charge obligations attaches 45 days before the state primary, and 60 days before the general election (Sept. 9, 2016). During these periods, a legally qualified candidate is only obligated to pay the lowest unit rate charged for the same class and amount of time during the same period.

For periods before the LUC windows, political candidates can only be charged comparable rates, i.e., not excessively higher than other commercial advertisers. The right to the LUC applies to federal, state and local candidates.

LEGALLY QUALIFIED CANDIDATE

A legally qualified candidate is a person that has publicly announced that he or she is running for elective office, and has met all of the qualifications for the office that he or she seeks. With the possibility of a third-party candidate in the presidential election this year, broadcasters should remember that if a presidential candidate is qualified in 10 states, than he or she is a legally qualified candidate in all states.

EQUAL OPPORTUNITIES

Whenever a candidate "uses" a broadcast station, its opponents are entitled to the "equal opportunity" to use the station at the same cost in a comparable time period. The right attaches to all legally qualified candidates, and is applicable both during the LUC periods discussed above, and at any other time when a legally qualified candidate uses the station.

In this context, a "use" is any positive broadcast of a candidate's voice or image, which is not aired during a (i) bona fide newscast, (ii) bona fide news interview (iii) bona fide news documentary where candidate's appearance is incidental, and (iv) on-the-spot coverage of bona fide news events.

One thing to remember is that even an appearance of a candidate on an entertainment program (DJ running for mayor, Terminator running for governor) will result in a use. Also, while a station is not obligated to notify the opposing candidates of a "use," the station must place this information in the station's political file on a timely basis, and opposing candidates have seven days to make the demand for equal opportunity.

REASONABLE ACCESS

Reasonable access is a special right afforded only to federal candidates and applies to all classes and dayparts of commercial time. In general, this means that a federal candidate has the right to demand access to the station to purchase advertisements, while a state or local candidate cannot make a similar demand.

A station must make a reasonable amount of time (both spot and program-length) available to federal candidates, but it does not have to make all of its inventory available. If a station does make time available for a state or local candidate, than it must make available similar time for its opposing candidate(s), but it can decline to offer access to other state or local elections (i.e., make time available for mayoral candidates, but not treasurer).

BRCA REQUIREMENTS

Federal candidates have an additional requirement that is not applicable to state and local candidates. The Bipartisan Campaign Reform Act requires candidates to supply a certificate to broadcast station in order to be eligible for the station's lowest unit charge.

The candidate must certify that it will not directly reference its opposing candidates, unless it also states that the spot was approved by the candidate, and that it was paid for by his/her campaign or authorized committee. For television, the advertisement must also contain an image of the candidate, and the written statement indicating the approval of the candidate and the name of the sponsor.

This discussion is certainly not intended to address all of the issues that broadcasters will face in the upcoming season. If you have questions, you should contact your communications counsel for further discussion before the election season starts in earnest. 0

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

STATE PRIMARY LUC WINDOWS:

Jan. 16, 2016: Alabama, Arkansas, Georgia, Massachusetts, Oklahoma, Tennessee, Texas, Vermont, Virginia

Jan. 23, 2016: Hawaii, Idaho, Michigan, Mississippi, Ohio

Jan. 28, 2016: Puerto Rico

Jan. 30, 2016: Florida, Illinois, Missouri, North Carolina

Feb. 6, 2016: Arizona

Feb. 25, 2016: Wisconsin

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Small-market radio is alive and well in upstate New York: RCN's WUTQ, WSKS and WBUG

Radio Is Alive and Well In Utica

by Chris Wygal

The discussion concerning local radio ownership is one that maintains a steady murmur when it comes down to the question of "how best to serve the community." Is it important? Station owners both large and small grapple with how best to keep a watchful eye on what is relevant in their service area. Rarely does an opportunity arise from a studio relocation project that lends itself to serving the community in a unique way.

Since 1991, Roser Communications Network in Utica, N.Y., has served a sizeable geographical swath of upstate New York. After a few years of ownership gymnastics, Roser was able to drill down on developing formats for Utica and hiring plenty of staff to do so. With 21 employees working under one roof for five stations, owner and founder Ken Roser began taking steps to relocate the AC, Country and Top 40 formats into a more usable space. The Roser group was on the 15th floor of an office building in downtown Utica. As the operation grew, more space was simply a must.,

GET ME TO THE CHURCH ON TIME

In September of 2014 an attractive 10-acre piece of land situated between the Erie Canal and Mohawk River was put up for sale. It had previously been owned by a church.

Part of the 6,000-square-foot space, formerly used by a church, being made ready for RCN's Utica stations

The building itself and the 10-acre lot piqued Ken Roser's interest for two key reasons. The 6,000-square-foot empty building could provide a veritable blank slate for potential studio and business office space.

Plus the flat 10 acres could make for endless opportunities to serve the community. Ken's mind began racing at this point with visions of concerts and numerous other events where his radio outlets could engage with the Utica community on Roser's own property. Foregoing venue rental for station events would reap considerable financial and logistical benefits. By early 2015, Roser closed on the purchase of the church property and plans to move Bug Country, KISS FM and WUTQ to the new location began.

THE AMBIANCE

Roser's chief engineer Ken Ruhland and IT specialist Spencer Roser began meeting with the four-station staff to consider options pertaining to layout and aesthetic design. Ken Roser considered it vital that the 21-member staff speak into what would be their new home in the coming months.

The goal of the group was to take advantage of the unique attributes of the church and fill it with studios and offices that represented a light, fun and energetic atmosphere. Ken Roser handed aesthetics to his wife, Lisa. Her eye for color and her close relationship with the staff

GatesAir Oasis console in use for WUTQ

afforded her the opportunity to choose studio and office paint colors in addition to decorations that were inviting. The décor provides an energy that is inspiring to the staff and it communicates a feeling of life when Utica listeners visit the facility. The "alive and well" portion of the Roser slogan is demonstrated in the facility atmosphere.

THE BUILD

Ruhland went to work designing studios that occupied what was once the platform in the church sanctuary.

The raised floor space served two functions. First, the angles and position in the building left virtually no place for 90-degree corners, a bonus as far as acoustics were concerned. Ruhland used Netwell Noise Control sound proofing panels throughout the studios to provide proper absorption and reflection control. The double-studded studio walls with two drywall sheets (per side) and insulated double-glass windows

RCN News Director Samantha Lamanca and WUTQ hosts Dave Coombs and Jason Aiello are shown in the studio.

provided excellent isolation.

Second, the wiring for the entire broadcast plant was easily routed under the studios in the underside of the platform. This eliminated the need to trench the floors or install raceways above the ceilings for wiring passages. From an HVAC perspective, the ducting had plenty of room above the studios, given the nature of the high roof from the original church design. Excessive air handling noise was not a factor.

All in all, the platform gave Ruhland 2,500 square feet on which to build three main control rooms, one production room, a producer's booth and engineering space. The remaining 3,500 square feet of regular floor space was allocated to business and sales staff.

Roser decided to move most of the existing broadcast gear from the downtown studios. WUTQ received a new Gates Air Flexiva Oasis 12-channel console, WSKS kept its Audioarts R-60 and WBUG kept its Arrakis 12,000 Series console. The central production room was also given an Audioarts R-60. A producer's booth for WUTQ is home to a small-format Mackie console. The morning show producer uses the Mackie for his own microphone, talent talkback and monitoring. The GatesAir purchase is the forerunner for an upcoming Vistamax system install that will convert the existing analog infrastructure to audio-over-IP. Each studio is cross-connected with Belden multi-pair snakes terminated on 66-blocks that live under the consoles. A fleet of Radio Systems 4X4b distribution amps help with routing. Moving forward, Krone blocks are being installed and Cat-6 cabling is making way for the AOIP infrastructure. Designcraft from Grand Rapids, Mich., built the studio furniture for WUTQ in order to handle on-air talent and the steady rotation of guests who compliment the news and talk format. WUTQ and WSKS studios use Telos HX6 Talkshow Systems. WBUG utilizes the Telos 1X6.

Roser Communication's commitment to community service is shown here, as volunteers help to "Stuff the Bus."

Spencer Roser is the in-house IT guru who utilized Windows Small Business Server 2011 in concert with Cisco SG300 switchers. Windows 7.0 is deployed across the entire plant. The editing machines use Adobe Audition on Digigram VX222 sound cards while automation systems use AudioScience. WUTQ and WSKS are automated by NexGen and WBUG by Westwood One's Storq platform.

A FOCUS ON SOUND

The Roser studios are outfitted with RE20 microphones using dbx 286s processors. While simple to operate and cost-effective, the dbx processors offer robust mic preamps and unique compression/gating with signature transparency and saturation. A wide range of voice talent can step up to the mic and hit the air with punch and clarity. The RE20/dbx combination is foolproof and, at the same time, competitive.

As far as the air chain is concerned, WBUG "Bug Country" is processed by an Inovonics 716 DAVID II. Omnia 6 processes WUTQ whose "news-talk-music" format introduces an engineering challenge, to say the least. All-in-all, the Omnia 6 delivers consistent performance across all the WUTQ dayparts. WSKS "Kiss FM" uses a legacy Orban 8200 to drive its adult contemporary format.

THE BACK ROOM

Each station uses Sage ENDEC EAS encoders and Rolls RS81 FM receivers for EAS and off-air studio monitoring. GSelector, also an RCS product, provides scheduling for the RCS

EQUIPMENT LIST

- Belden cable
- Netwell Noise Control
- Gates Air Flexiva Oasis
- Designcraft studio furniture
- Digigram and AudioScience sound cards
- RCS NexGen
- Westwood One Storq
- Broadcast Tools Silence Sentinel & VAD-4
- Electro-Voice RE20
- dbx 286s
- Radio Systems 4X4b
- O.C. White arms
- Telos HX6 Talkshow Systems

The finished waiting area is cheery and colorful.

NexGen automation systems. WBUG and WSKS are simulcast on other FM properties in the Utica area. From the new Roser facility, five Class-A FM stations are programmed, using an arsenal of digital and analog STL gear from Armstrong, Moseley and Marti.

All the stations use the Broadcast Tools Silence Sentinel and VAD-4 to provide silence monitoring and alarm notification.

AN UNFORESEEN SETBACK

Ken Ruhland had served as chief engineer for Roser Communications for more than 20 years and spearheaded the move from downtown to the church property.

On March 31, by way of a well-orchestrated and skillful plan of attack, Ruhland successfully moved the three stations overnight.

A month later, Ruhland died unexpectedly to the shock of family, friends and the Roser Communications team. While everyone who knew Ken Ruhland grieved his passing, construction was finalized with the new engineering expertise of Keith Kinney. A picture of Mr. Ruhland is kept on the wall of the new facility to remind everyone of his dedication and professionalism.

PRESSING FORWARD

Roser Communications continues to invest in its Utica properties and its relationship with the community. Keith Kinney is now the primary engineer for the facilities. He is preparing the studio space for the GatesAir overhaul and he foresees installing Omnia 11 processors across the entire plant over time.

Ken Roser has already forged relationships with the city of Utica. While Roser Communications is, after all, a broadcast outlet, Roser hopes his 10-acre space will be a place for families, music lovers and the Utica community as a whole can enjoy. Through making connections with listeners and giving them a place to enjoy their city, Roser plans to live up to its mantra. "Radio is alive and well in Utica!"

There's an Art to On-Air Processing

by Doug Irwin, CPBE AMD DRB

I have written about the evolution of broadcast technology in this column for quite a few years.

Whereas the need for tape machines, turntables, and to a large degree, vacuum tubes has long since disappeared, the need for audio processing and all its associated benefits is as strong as ever.

We all know the circuitry inside a typical audio processor is nothing like it was 25 years ago — but its function, and the results desired, remain unchanged. That's the topic this time: Over-the-air audio processing for AM and FM.

CONSISTENCY IS KEY

It is often said that on-air processing is used to generate a signature sound for a radio station. What that really means is the station should always be recognizable to any listener at any time, simply by what they hear coming out of speakers. In order to do that, all the elements heard by a listener should be consistent in their loudness and tonal quality (meaning roughly how each element is EQ'd).

Those of you who are old hands at audio processing know that what I'm saying is much easier said than done.

The motto "we'll fix it in the mix" is sometimes applied in this case: Let the on-air processor fix whatever issues are evident in the program audio content.

In my experience this is not a good approach. While adjustments to an audio processor can give a station consistency, along with some other characteristic that makes it sound recognizable, in the end better results are achieved if effort is put into having each element that makes up the program content sound as consistent as possible, before they go in to an over-the-air processor.

In a future article on audio processing around the station, we'll get in to details on achieving those goals. Separately, we'll talk about processing for streaming media.

ON-AIR PROCESSING: FM

Standard features for an FM on-air processor include wideband AGC, multiband AGC, multiband limiting, HF limiting and built-in stereo generator with limiting.

Audio processing presets are standard, as well; the end-user is given access to many (if not all) of the processing parameters, so that he or she can modify then to suit the taste and requirements of programming and/or engineering. These presets are designed to work right out of the box but do afford the end-user the opportunity to give the sound of the station some sort of quality or characteristic that is recognizable.

A relatively new feature for many is an AES output, sampled at 192 kHz, that represents the composite audio feed that heretofore has only been made accessible via an unbalanced, low-z source, on a BNC connector. Many will also have a parallel processing chain, with a wider audio bandwidth, and no HF limiting, that ultimately is used for streaming media or digital radio. Devices such as this all either support HTTP or use a proprietary GUI accessed via IP.

Inovonics' fourth-generation FM processor is the DAVID IV.

Like transmitters and console/routing systems, there is a huge amount of brand loyalty among radio engineers when it comes to choosing on-air processing. I think you're doing your station a disservice if you do not give an audition to a different brand of processors, at least every couple of years.

WHAT'S ON THE MARKET?

One manufacturer offering FM/HD processing is BW Broadcast. Their DSPXTRA-FM is another single rack unit device, with a built-in Ariane RMS leveler, parametric and shelf bass management, multi-band

program-dependent limiting, and multi-band look-ahead limiting. It features a DSP-based stereo generator with composite clipping control and a pilot protection filter. Analog and AES inputs/outputs standard.

The DSPEXTRA comes with a set of presets, a real-time clock to switch between said presets as necessary (day-parting) and an A/B preset swapping function that allows the user to determine which preset he or she likes best.

Control is done via the front-panel interface, an RS-232 interface on the rear panel or via IP, of course.

Inovonics is active in the FM/HD audio processor space. The DAVID IV is the fourth-generation processor in the DAVID series. Just one rack unit, of closed-box design (no fans or heat-sinks needed) it's 100 percent DSP-based, with AGC, five bands of dynamics compression and equalization, bass and stereo field enhancements, and Inovonics' proprietary PIPP (Polarity Independent Peak Processing) limiter. Included also is a stereo generator (with two composite outs) with internal metering and a summing input for adding an RDS subcarrier to the composite output.

The 8600MXP is Orban's flagship FM audio processor.

One interesting characteristic to note is that DAVID IV will pass audio in less than a second after a boot.

With an optional drop-in board, DAVID IV can provide up to 9.999 seconds of delay for HD radio broadcasting purposes. It also comes with 25 factory presets, and has room for 20 custom, shareable user presets. Audio inputs/outputs are available as balanced line level or AES-3. Remote control and access are accomplished via IP; the supplied software allows remote setup and operation of the DAVID IV using any Windows PC (XP or later). A front-panel graphic display and jog wheel allows for menu-guided in situ setup and operation. LED-bar displays indicate in/out levels and audio processing action.

Omnia (part of the Telos Alliance) has an extensive line of on-air audio processors.


Wheatstone's flagship FM processor is the AirAura X3.

The Omnia.9 makes use of multi-stage wideband AGC with side-chain equalization for gain riding over a 36 dB range, along with a separate bass processor. It uses from 2 to 7 bands of multiband AGC and limiting. It has a feature Omnia is calling "Auto Pilot", which "suppresses the 19 kHz stereo pilot during mono material for a radical 12 dB signal-to-noise improvement." Omnia.9 has onboard Omnia Direct, the feature allowing MPX composite base- band over AES.

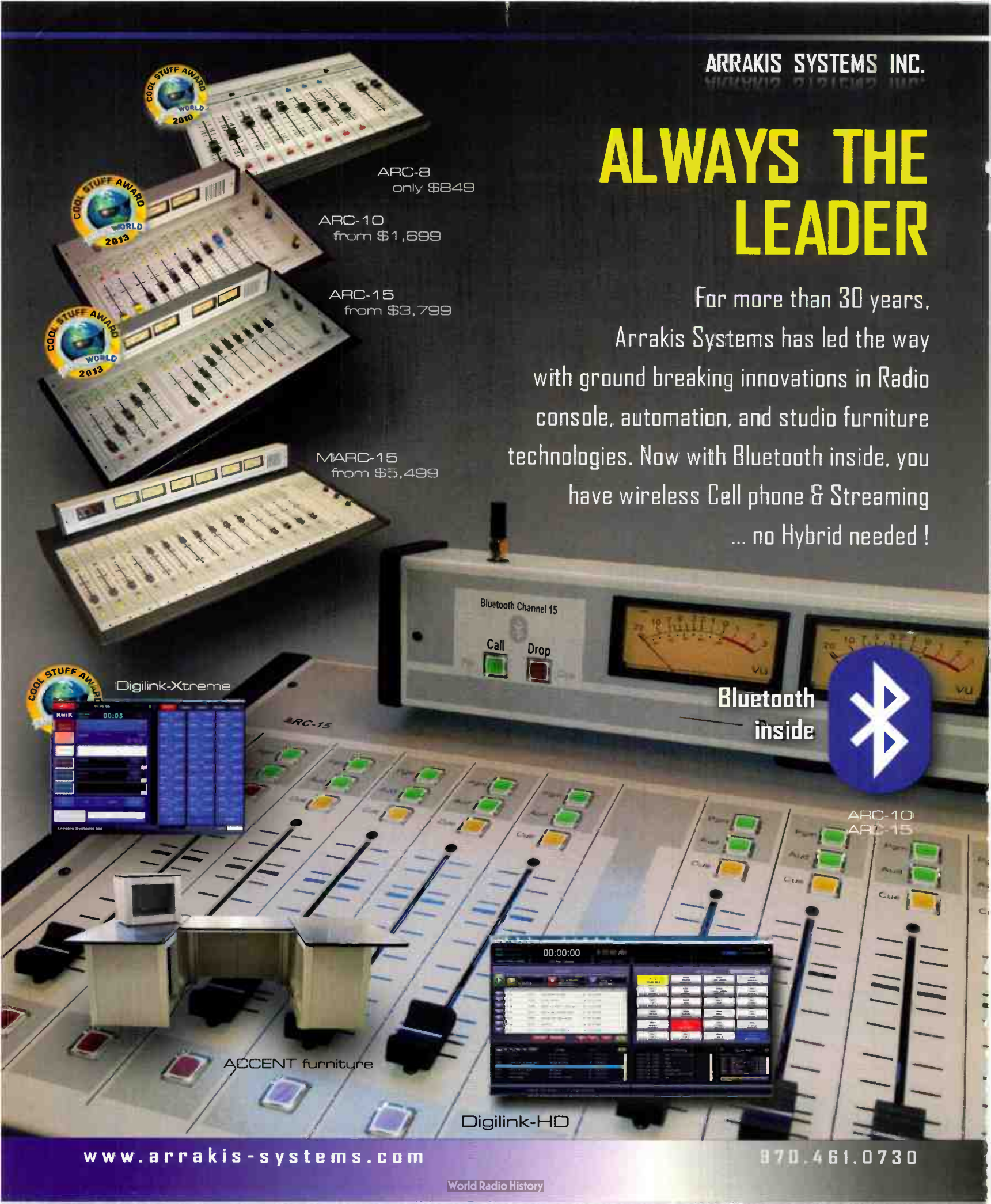
Omnia .9 has a feature known as "undo" which corrects over-processed source material. It features a low-latency independent studio output for talent monitoring, and patch points within the signal path allow monitoring of audio as it passes through various input, output, and processing stages. These patch points are also available on the built-in oscilloscopes, spectrum analyzers and RTA instrumentation to provide a corresponding visual reference. Patch points can be monitored locally or streamed through the included remote software, all without affecting any on-air output. A built-in speaker calibration feature simplifies creating a reference environment to ensure accurate processing adjustments.

Omnia.9 can be upgraded to include separate processing cores for HD-1, HD-2 and HD-3 audio and IP-stream encoding with independent processing for each source.

It should also be noted that the Omnia .9 is designed to work as an AM on-air processor as well.

Orban's Optimod-FM 8600 Digital MPX provides a digital composite output using a 192 kHz AES3 connection.

This output appears on a male XLR-type



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list price $1,099

*USB sound card supports USB HID compatible PCs

connector on the breakout cable supplied with the Optimod. This output is compatible with and interoperable with the de facto industry standard digital connection in use by transmitter manufacturers. Processing for digital media, like streaming and HD Radio, is supplied standard. The FM and digital media processing paths split after the 8600's stereo enhancer and AGC. There are two equalizers, multiband compressors and peak limiters, allowing the analog FM and digital media processing to be optimized separately. 8600MPX features up to16 seconds built-in delay for HD radio broadcast purposes. It has two SCA inputs and two independent composite outputs, analog and AES inputs and outputs, along with its front-panel headphone jack. The 8600MXP comes standard with presets from Bob Orban and Greg Ogonowski that take advantage of the processing power available.

Like all modern processors, the 8600 has Ethernet connectivity and uses a PC remote control application that runs on Windows 2000, XP, Vista, 7, 8 and 8.1. Programmable contact-closure (GPI) control gives the end-user a means by which the 8600 can be interfaced with a facility's remote control infrastructure.

BW Broadcast DSPX-AM

The SNMP feature allows for monitoring of the Optimod's status; alarm notifications are sent via the Optimod's IP network connection.

Wheatstone's flagship FM/HD processor is the AirAura X3. Two separate 31-band limiters (selected according to ISO standard 1/3 octave center frequencies) are in use for FM and HD. The unit has a new bass management system. AirAura X3 has what Wheatstone is calling Sweet Spot Technology, which manages the behavior of the multiband AGC as program content density changes.

Another feature is the Multipath Limiter; it helps to mitigate the audible effects of multipath, as well as helping to reduce receiver-induced stereo blend, by limiting the amount of L-R as a percentage of L+R. Both the standard DSB and two SSB stereo generator modes are available, and like the other processors mentioned, AirAura X3 also comes with an AES out (192 kHz sampling) that represents the composite signal.

AirAura X3 includes analysis features that can be used to display internal and external signals: Available are a 1024-point FFT (fast-Fourier transform); an oscilloscope; graphs showing energy vs. frequency, a three-dimensional plot of spectral content vs. time; spectral dynamic range, and a display of clipper distortion masking activity.

Remote access to the GUI, which affords the user processor parameter tuning capabilities, is available via wired Ethernet or integrated Wi-Fi. Comprehensive security features are included so that the device can live in mixed-use sites.

Audio inputs include analog, AES and Wheatnet IP, with configurable automatic fallback. Preset storage can accommodate up to160 presets.

ON-AIR PROCESSING: AM

The AM radio channel (from AM transmitter, through antenna, through the extremely noisy RF environment) probably needs the benefits of audio processing more than FM, HD or streaming. Fortunately there are quite a few choices for AM processors from familiar manufacturers.

BW Broadcast offers an AM processor in its line. The DSPX-AM includes wideband AGC, followed by a four-band AGC, followed by a four-band limiter stage. Parametric bass EQ, asymmetrical clipping, tilt EQ, and low pass filter round out its basic feature set. Both analog and AES inputs are available and the unit can be configured to switch between inputs as necessary.

Omnia.9 by Leif Claesson

The device comes standard with processing pre-sets, local and remote control interfaces (serial and IP) and front-panel controls, so that it can be setup right out of the box. DSPX-AM also comes with a real-time clock to switch between presets as necessary (day-parting) and an A/B preset swapping function that allows the user to determine which preset he or she likes best.

Inovonics' AM processor is the 235. It's a single-rack unit box, with AGC, a three-band compression and equalization section, peak limiting and low pass filtering. It's NRSC-compliant but also offers other cut-off frequencies: 9 kHz, 6.4 kHz, or 5 kHz.

Control of the 235 can be accomplished by rs-232, meaning use of a local PC (which of course can give you remote access assuming your transmitter site has IP access).

Omnia's AM processor is the Omnia One, which is available for FM, streaming, or AM applications. (As noted above, the .9 also works for AM radio). The application needed is

changed (or set up initially) with the particular software running inside the box. Omnia One features wideband AGC; time-aligned crossovers driving its four-band AGC, which in turn drive its four-band peak limiters (using feed-back limiters for the lower two bands, and feed-forward limiters for the upper two bands). It also features a pre-emphasized final limiter/clipper stage, and selectable low-pass filters, for NRSC or ITU standards.

IP access to the Omnia One gives the user remote access via a built-in browser, along with Livewire+ connectivity.

Orban is a well-known manufacturer of AM audio processors. The 9300 is a single-rack unit device with an input AGC (with 25 dB of range) followed by multiband compression, limiting, and clipping. The 9300 compensates for the high- and low-frequency roll-offs of typical AM receivers with a program equalizer that can provide up to 20 dB of high-frequency boost (at 5 kHz).

The one-knob LESS-MORE control lets the end-user customize the 9300's factory presets, but others will make user of Advanced Control parameters (accessible from 9300 PC Remote software) that allow customization of the 9300's sound. The device includes a built-in line-up tone generator that offers sine, square and triangle waves, facilitating accurate level setting in any system. (Be careful if the overhead fluorescents start to flash!)

The 9300 PC Remote software runs under Windows 2000, XP, 7 and 8. It communicates with a given 9300 via TCP/IP over modem, direct serial, and Ethernet connections.

Wheatstone offers the AM-55, a single rack-unit processor for AM. It features a multi-band AGC; a bass management system optimized for AM; a four-band parametric EQ section; and a variable high-pass filter and voice phase rotator. Like any modern processor it offers complete control by way of IP, so the end-user can, using the Wheatstone GUI, make changes to his or her heart's content. The device comes with factory presets though, giving the "adjuster" a head start.

Set-up of the AM-55 can be done from the front panel; a PC is not a requirement. With the network access, though, the AM-55 is Wheatnet-IP compatible.

There is a certain art to broadcast engineering, and it's never more evident than when audio processing is in use. On-air processing is used to provide an overall consistency to listeners; but don't forget that consistency of all the program audio elements going into the processor is of vital importance as well. And it's not just the music elements that are important: Speech elements make up a large fraction of the entire presentation.

If you want that consistent, major-market sound, you must be mindful of that. You can't necessarily "fix it in the mix," no matter how good your on-air processor is.

The High Points of the AM Revitalization Order

by Jeremy Ruck, PE

Perhaps no proceeding issued by the Federal Communications Commission this year has garnered as much interest as the AM Revitalization document released in late October.

Although there seems to be substantial interest in the translator portion of the order, several other items of interest were changed, or are expected to be changed. This month we look at some of the high points of MB Docket 13-249.

First, the long awaited translator filing window for AM stations is now on the horizon and is no longer speculation. However, instead of a single window, the commission will open a series of four windows. The first two windows would allow additional flexibility in the relocation of authorized translators, while the second two windows would be for new authorizations.

The first two windows in 2016 will essentially waive the minor change definition and allow the relocation of an authorized translator up to 250 miles. The authorization to be relocated must be on a commercial channel, and any rule-compliant commercial channel may be specified at the final location. The first of these windows, which will run for six months, will be for Class C and D AM stations only. A second three-month period afterwards will allow for all classes, including Class C and D facilities that did not file in the first window. In order to accommodate as many stations as possible, one and only one application per AM station may be submitted during these windows.

The second windows, slated for 2017, will permit the submission of applications for new translators. As with the 2016 windows, Class C and D facilities will initially be able to file, with all classes filing later. If a station has participated in the 2016 windows, it will not be afforded an opportunity to double-dip and file in 2017.

THINGS TO CONSIDER

With these windows in mind, one of the questions a broadcaster contemplating a translator should consider is the availability of channels in your market. If you are located in a rural area where there are more available FM channels than AM stations in the vicinity, it may make sense to roll the dice and wait for the latter windows rather than pay for an extant authorization. However, if you find yourself in a spectrally congested area, having a deal worked out for an existing translator may be the smart way to go. Contact your consulting engineer to examine the possibilities, and risk.

To aid in the relocation of stations, the commission also relaxed the community of coverage requirements in the order. For daytime operations, existing stations are now required to cover either 50 percent of the land or population with the predicted or measured 5 mV/m contour. New stations, or those proposing a change in license, are still required to meet the 80 percent threshold. The rationale here is that existing stations have a more difficult time in relocating, whereas new stations or those making community changes will likely have greater flexibility in site acquisition.

On the nighttime side, similar changes have been made. The nighttime coverage requirement for existing facilities has been dropped. New stations, and those proposing a change in the community of license, have a 50 percent threshold to meet. The 50 percent threshold, which can be met by either area or population, requires service by the greater of 5 mV/m or the calculated nighttime interference-free field strength.

Chuck Dabl

WNNZ(AM) tower

While on the subject of nighttime, the "Ratchet Rule" has also finally been repealed. The original concept behind this rule was that Class A or B stations modifying their nighttime facilities had to reduce their skywave contribution to certain stations. The thought being this would eventually reduce the level of interference on the band at night. In reality, it was waived most of the time, and caused extra burdens on those that had to relocate for some reason. While some comments supported its retention, the commission noted that these comments continue the "disproven rationale" that created the rule in the first place.

OTHER CHANGES

The other two items actually implemented in this order are wider implementation of modulation dependent carrier level control technologies, and a modification to AM antenna efficiency standards. Under the latter, the

commission is reducing the existing antenna efficiency standards by 25 percent. Although some proposals were made to eliminate them, the commission decided against this due to potential interference considerations. That being said, the staff is directed to entertain waivers for antennas not meeting the standards as long as interference is not increased.

The second and third portions of the release deal with a further notice of proposed rulemaking, and a notice of inquiry. Topics in the former include modifications to the AM protection standards, changes to the AM translator site requirements, modifications of the partial proof and moment method proof rules, and the surrender of the licenses of those running expanded band and standard band simultaneously. Under the NOI portion, the commission discusses utilization of AM expanded band and a relaxation of the main studio requirements. Of these topics, it seems that the proposed changes to the protection standards and the translator site rules are the most crucial at this time.

For example, under the proposed changes, Class A stations would be protected day and night to the 0.1 mV/m contour groundwave contour from co-channel stations, and to the 0.5 mV/m groundwave contour day and night on first adjacent channels. Additionally the critical-hours protections for Class A facilities would be eliminated altogether. This continues the incremental reduction in the dominance of the "clears." For other classes of stations, it is proposed that the nighttime interference calculation methods be rolled back to pre-1991 methods. In 1991 the method of nighttime interference calculations was changed to include adjacent channel signals with a tiered approach. The thought was this would decrease interference on the band, but in reality what it did was preclude changes to facilities, and in the end never really did reduce interference as was originally envisioned. The return to the pre-1991 methods means that only co-channel signals are to be considered.

On the daytime side of things, for Class B, C and D stations we see substantial changes. Currently the protected daytime contour for these classes of stations is the 0.5 mV/m in co-channel and first-adjacent channel situations. If the rules are implemented as proposed, this value would increase to 2 mV/m. For co-channel considerations the current 26 dB protection ratio would remain, however, the interfering contour would increase to 0.1 mV/m from 0.025 mV/m. In first-adjacent situations, the 1991 change to a 6 dB ratio would be rolled back to a 0 dB ratio. Prior to the 1991 order, the interfering and protected contours were equal at 0.5 mV/m. After 1991 the interfering contour was dropped to 0.25 mV/m, while maintaining the protected value at 0.5 mV/m. This created substantial areas of grandfathered contour overlap. It is proposed now that the values should be changed such that prohibited overlap will occur with overlap of the 2.0 mV/m contours. And finally, the third adjacent protections are eliminated entirely, and the second adjacent protections change to a 0 dB ratio at 25 mV/m.

The proposed site change rules would allow the translator contour to be contained within the greater of either the 2 mV/m daytime contour or a 25-mile radius, but in no event extend beyond 40 miles from the AM site. This is a contrast from the current situation where the translator contour must be within both the 2 mV/m daytime contour and a 25-mile radius.

All AM licensees should be looking now at what these changes will potentially do to their coverage and interference. If your neighbors upgrade their facilities to take advantage of these changes, and you remain status quo, the result could be an effective loss of coverage by your facility.

In the end, the commission has implemented some welcome changes, and made some interesting proposals in this most recent order. They still, however, have not taken the bold step of proposing a transition to all-digital. Perhaps that will happen someday, and the current movements are a first step towards priming that pump.

Ruck is the principal engineer of Jeremy Ruck and Associates, Canton, Ill.

Troubleshoot a Control Ladder From the Bottom Up

by Doug Irwin, CPBE AMD DRB

In the first two installments of this series, we discussed whether or not an old transmitter was even worth fixing, followed by some techniques I've used to repair high-voltage power supplies. This time, we'll talk about control circuitry.

As I wrote last time, working with transmitters that use any kind of high-voltage (whether AC or DC) is inherently dangerous. Never work on transmitters when alone or tired. Take every precaution, and then take every precaution again.

Control circuitry was designed to accommodate vacuum tubes.

For the purposes of this article, "old" means the transmitter uses vacuum tubes. You could also be restoring an early solid-state transmitter; some of what I'm writing will apply to that sort of project as well.

To operate the transmitter, and especially to accommodate the vacuum-tube amplifier, older transmitters use relay logic, more typically known in broadcast engineering as a "control ladder." Essentially what you have is a string of relay contacts, each of which must be closed in order for the transmitter to come up (meaning that the HV power supply will be energized).

Logically, you could consider the control ladder to be a multi-input AND gate: Each and every input must be high, and only then will the output go high, thus "turning on" the transmitter, causing it to generate RF.

The "ladder" notion comes in to play because the various logic states occur in order, and as one 'rung' is completed, the next one is examined. With each correct logic state, the ladder is climbed, the end result being that the transmitter comes up. A typical sequence would be as follows:

Blower is energized. Once the blower is energized, an air pressure switch is closed. This is the bottom rung of the ladder.

Filament/heater is energized. The relay logic allows the filament (or heater) to be energized with appropriate cooling, as determined by the air pressure switch.

Filament delay. Some sort of time delay will be used to prevent the application of HV prior to a warm-up period. This is the next rung up.

Bias power supply. The vacuum-tube amplifier will be biased with a control-grid power supply so that the static current drawn through the tube (without any kind of RF amplification) is at a safe level for the tube. This power supply must be present.

Overloads are not set. Overload relays are rudimentary current detectors designed to prevent over-current conditions in the transmitter. When overload relays energize, they open the interlock chain, de-energizing the HV power supplies.

Interlocks are closed. The relay logic is designed to prevent the application of any HV power supplies if it detects that the interlock string is open. The interlock string will include

all doors and the external interlock, which is used to determine that an antenna or dummy load is connected to the output of the amplifier. This is the top of the ladder.

Not every single vacuum-tube design is the same, but you'll find, after examining the schematic (which you must have) that they all work in a very similar fashion. If all those conditions are met, the transmitter is ready to be turned-on (i.e., the HV power supplies can be energized).

PROBLEMS ENCOUNTERED

Ninety percent of the problems encountered with the control ladder will be related to the following items that wear out over time:

Pushbuttons. As I mentioned in the first of this series, make sure you can find a suitable replacement. That doesn't necessarily mean an exact replica of the original.

Bad relay contacts in control ladder. One thing to look for with relays that don't "latch" is for pitted "latching" contacts. Make sure replacement relays, if not identical, can withstand the open contact voltage, as well as the current expected to pass through the contacts.

Look for open wires within bundles (using an ohmmeter); burn marks; or other modifications ("kludges") that may represent changes in the circuitry.

Blower is ineffective. Make sure squirrel-cage blades are clean, and free of dirt. Replace bearings in the blower motor, or perhaps the entire motor, as warranted.

Air pressure switch. Make certain this works correctly. Low, or no air pressure, must keep it from closing. You could test this by very carefully blocking the airway in to the blower with a piece of cardboard as it is running (HV power supplies OFF, of course).

Interlock contacts are open. Interlocks can be open, thus keeping the logic from turning on the HV power supplies. Also look for interlocks that are stuck closed; this can be a very dangerous situation, potentially keeping the HV power supplies energized, even when a door is opened.

Overload relays are too sensitive. Likely you would discover this once other aspects of the control ladder are made operational.

Always trouble-shoot a control ladder from the bottom up. The other 10 percent of possible problems may require more of your trouble-shooting skills: Look for open wires within bundles (using an ohmmeter); burn marks; or other modifications ("kludges") that may represent changes in the circuitry. I recommend removing modifications and restoring the original circuits.

Next time: the RF amplifier deck.

BBC Overhauls, Unifies Streaming Platform

by Fardau van Neerden

This article continues a series on the evolution of streaming technology as it applies to broadcasting. Previous articles on the same topic appeared in the August and October 2015 issues.

The British Broadcasting Company is one of the first media organizations to undergo a major overhaul of their streaming platform, and they're using many of the technologies addressed previously, including some key products from Unified Streaming and Telos.

For this article I spoke with Jim Simmons, senior product manager for Audio Services at the BBC, and I posed the following questions regarding the new way of streaming at the BBC.

FvN: What is the main reason for moving to Adaptive streaming?

JS: The BBC is a large organization across a number of sites and different divisions serving the different nations and regions. All these stations had developed their Internet streaming differently over the years. This had led to strange discrepancies such as programs from some stations not being available on some devices due to the formats they were encoded in. The hardware we were using was expensive to run and has reached end of life.

The BBC also had a project to refresh its video streaming infrastructure, and it was clear that many components could be shared, if the new chunked HTTP streaming formats were

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adopted. With chunked HTTP streams, the chunks of audio are distributed using the common HTTP protocol that is used for delivering most Internet content. This means we don't need specialized serving infrastructure, and so we don't have to rely on specific hardware, servers or content distribution networks to get our content to our audiences. This greatly increases our choices of partners.

We also went for a cloud-based solution. This means we effectively rent our computing power from a cloud provider such as Amazon AWS or Microsoft Azure. We send our digitized audio to remote data centres where we have our encoding and packaging software running on rented computing power in the data center. Not relying on hardware on our own premises allows us to scale our solution depending on demand. We can add capacity for new stations and remove it as required. This is very useful, as we do a lot of event-based Web streams.

We are now able to offer a range of bit rates best suited to the audience and its location and device at any time — from 320 kb/s for audiophiles on high end equipment down to 48 kb/s for mobile devices.

BBC uses Telos xNodes to move program content to the cloud.

We can also offer the best delivery method for each platform by re-packaging the streams that we create. This makes it simple to support a wide range of devices well.

FvN: Did you build and develop from scratch or was there a ready-to-use solution?

JS: We used a combination of third-party products and our own software where there is no good commercial alternative.

Our audio is captured in multiple locations for resilience and converted to IP by Axia xNodes. This is then transferred to the cloud platform using our own software.

Once in the cloud, we use the Omnia Z/IPStream software product for encoding. The Z/IPStream software, which runs on generic cloud compute nodes, produces a chunked HTTP stream at four bit rates in the Microsoft Smooth format. The Smooth format is designed for multi bitrate video where an encoder will generate multiple bitrates which is pushed as a single stream. We only publish multi bitrate audio without any video, in some cases this does not work out of the box with some encoders and origin servers.

With the help from Omnia for the Z/IPStream encoder side and Unified Streaming Platform for the server packaging side, we were able to use their software and apply it for our specific needs. The multi-bitrate Smooth stream is re-packaged into the different delivery formats for all the different clients by the Unified Streaming Platform packagers. This means that the four bit rates in the Smooth stream is made available re-packaged as HTTP Dynamic Streaming, HTTP Live Streaming and in the MPEG-DASH. This all came from the single Smooth stream generated by the Omnia Z/IPStream encoders. We use various traffic management and cache layers to get in and out of the cloud to ensure resilience.

FvN: What kind of issues did you run into

during your development and deployment?
JS: There was quite a long period of development ensuring that all versions of software interacted correctly and were configured correctly. This is still on-going as different updates from different vendors keep us on our toes.

Also, the scale of our operation means that getting a system that supports the number of channels and amount of material we produce can be challenging. We currently run 11 national networks; seven networks for the nations of the UK, 41 services for the local regions, 31 networks for the BBC World Service and 24 webcast streams for sporting events. The majority of these services are streaming 24 hours a day, not including the webcast streams. We also run occasional specialist pop up services for example, Eurovision and the London Jazz Festival.

FvN: *You say you went for cloud-based solutions for flexibility reasons. How do costs compare?*
JS: Yes, we deploy as much as possible in the cloud. This allows us to scale up and down and make changes very quickly. We have often changed the size of our "compute instances" up or down to provide the most cost-effective result for the quality and speed we want to achieve.

We can do this several times in a week, if we want to, without having to buy any metal boxes. We do have to make allowances for the cloud, though, in terms of how we build resilience, and it is not always cheaper. The flexibility is incredible though. We also use a continuous delivery model so that we can have many software releases in a week which can all be deployed very quickly.

FvN: *You mentioned a couple of packaging formats. What is the reach in terms of platforms (iOS/Android/desktop browsers, legacy Internet radios)?*
JS: We aim to support all the major device types and browsers. We have Apple HTTP Live Streaming for iOS and also now used by some internet radio manufacturers, Adobe HTTP Dynamic Streaming on the desktop for flash players and for some Android implementations.

We are just rolling out MPEG-DASH. MPEG-DASH is a new, open standard, adaptive and chunked streaming format. It is vendor independent and offers cross platform support for both video and audio. It also introduces DRM in the form of Common Encryption that allows to encrypt content once and support multiple decryption schemes depending on client capabilities. MPEG-DASH will be used by some internet radio manufacturers and will be used on the Android platform.

We also currently provide a Shoutcast stream of each station for older devices.

FvN: *Do you use Digital Rights Management for content protection?*
JS: We don't currently use a proprietary DRM for streams, but we do for our download offer, where rights require it.

FvN: *How do performance and costs compare between the new adaptive streaming vs. the older Shoutcast streaming?*
JS: We struggle to produce good quality Shoutcast compared to our chunked protocols. It has a very high cost in terms of support time and effort. Not in terms of the protocol. This is a very real cost as it is the cost of people being diverted from other work.

FvN: *How does Adaptive Streaming compare to Shoutcast in terms of listener satisfaction (QoS)?*

JS: Like I said before, we struggle to produce good quality Shoutcast streams. Nearly all our negative customer feedback is around Shoutcast and was even before we began audio factory.

FvN: What is your expectation for the future?
JS: Shoutcast will last for a few more years. There are many devices in the market and people do not want to replace their internet streaming devices as quickly as their mobile phones even though they are cheaper and do effectively the same thing. We will see more innovation but it will be based around the MPEG-DASH delivery method. For example, more multi-channel for our classical station Radio 3 over MPEG-DASH. I think more stations will move to adaptive streaming and more will move in to the cloud. Then something will happen that none of us have thought of yet.

FvN: Will Adaptive Streaming (IP-based services in general) replace traditional one-to-many type of broadcasts?
JS: Yes, I think IP will reach parity with broadcast in the next five to ten years, but broadcast will be around as a means of delivery for a long time.

There are massive economies of scale for broadcast. Each extra listener doesn't cost you more but IP gives you incredible targeting for things like ad sales and for niche genres.

So maybe when Google wants to get all its self-driving cars communicating with each other, it will plant thousands of mini-transmitters along the highways and the cost of IP distribution will dwindle to nothing, or maybe an IP/broadcasting hybrid will be the next big thing. I think a two-way interaction between user devices and broadcasters will be much more commonplace. It is worth too much to be ignored.

CONCLUSION

Thanks to the overhaul of BBC's streaming platform they are more flexible by using cloud-based solutions and can adopt existing infrastructure by using the new adaptive and chunked http livestreaming standard. Furthermore this increases their choice of partners greatly and are able offer cross platform support keeping them future ready.

MORE INFORMATION

Unified Streaming Platform:
http://www.unified-streaming.com/products/streaming/

Apple HLS:
https://developer.apple.com/streaming/

Axia xNodes:
https://www.telosalliance.com/Axia/xNodes

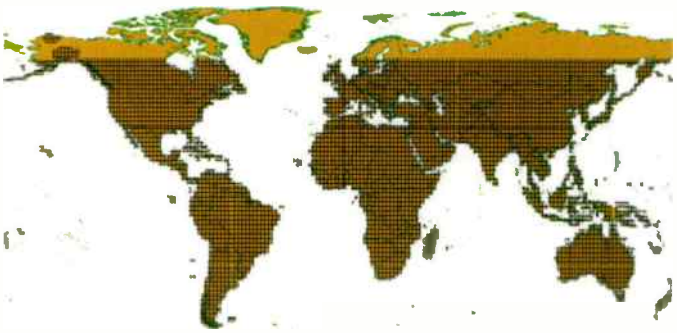
Adobe HDS:
http://www.adobe.com/devnet/hds.html

Telos Z/IPStream:
https://www.telosalliance.com/Omnia/ZIPStream-9X2-

MPEG-DASH:
http://dashif.org/

Firmware | Sound Devices

Sound Devices has updated the firmware v.2.20 for all of its rack-mount recording devices. Among the advances with this new firmware update are improvements to audio features, file transfer and playback and the PIXNET Web interface. New audio features include an updated visual identifier for disarmed racks, which makes audio metering appear grey when a track is disarmed. Peak hold time is now customizable from one to five seconds, or the feature can be shut down entirely. In addition, the update includes noise reduction for incoming video signals and fast track arming.
www.sounddevices.com

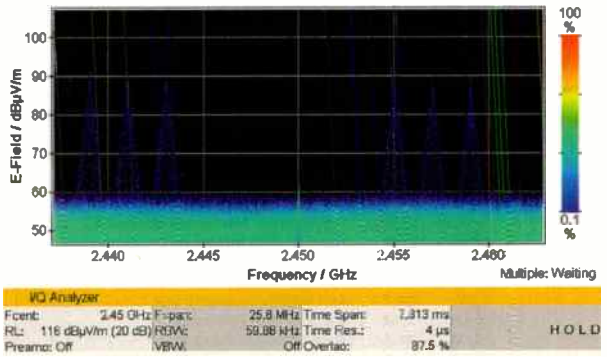


Terrain analysis | Softwright

Softwright has premiered a new data set, which measures in 1 arc-second, or 30 meter grid step size. With 1 arcsecond measurements, the topo elevation grid is now nine times greater point density. This higher resolution is set to improve result accuracy.
softwright.com

Reverb plug-in | Acon Digital

Acon Digital has announced DeVerberate 1.6 reverb reduction plug-in, which separates the direct sound from the reverberation, allowing users to attenuate or boost the reverberation already present in audio recordings. The updated version features improved algorithms for direct sound and the reduction of unwanted effects, as well as automatic estimation of the reverberation time based on incoming audio.
acondigital.com



Database | Narda Safety Test Solutions

Narda Safety Test Solutions has released its Signal Guide database, which contains typical measurement result images for many RF signals, free of charge. This will allow users to compare their own results with the database images to distinguish pure signals from interference and impairments.

www.narda-sts.us

Radio PRODUCT INNOVATION Awards 2015

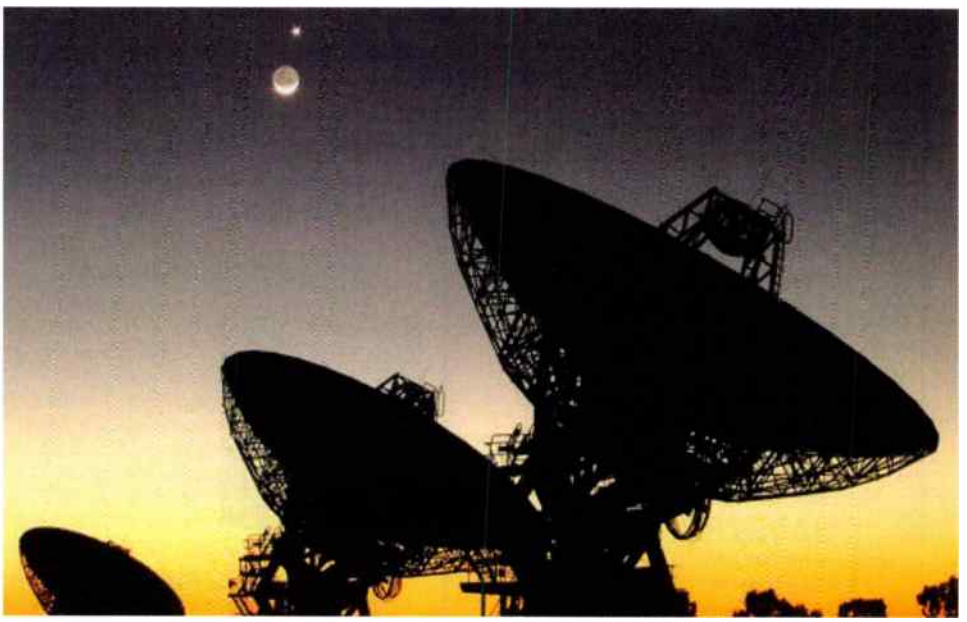
Congratulations to recipients of NewBay Media's Product Innovation Awards for 2015

For Radio, the winner is the MV51 Digital Large-Diaphragm Condenser Microphone, shown; winners were also named by our sister publications Radio World, TV Technology, Digital Video, Video Edge and Government Video. All nominated products are featured in the PIA Program Guide available at ***radiomagonline.com***.

Now in its third year, the PIA program recognizes excellence in manufacturing of products to serve the TV/pro video and radio/online audio industries. Companies pay a fee to nominate; winners are selected by a panel of professional users based on the description provided by the companies. Evaluation criteria include innovation of concept and design, creative use of technology, price value and suitability for use in a broadcast TV/pro video or broadcast/online radio environment.

The Earth Is Radio Silent

by The Wandering Engineer



The Earth is heading steadily toward radio silence.

Though SETI Institute programs and science fiction writers often presume that the way to find an extraterrestrial civilization is to receive their broadcasts, there's a problem: If other worlds are like ours, their time as radiators of coherent RF signals that can be received light-years away is short indeed. As technology advances, and data rates go up, spectrum reuse increases; RF communication becomes millions of tiny cells running megabits of digitized data at milliwatts of power.

Digital signals mixed with lots of other digital signals are indistinguishable from noise. While AM, FM and analog TV signals are easily decodable, a digital signal involves so many arbitrary variables in the form of compression and protocols, that even if the bit stream is recovered, it could be very difficult — nigh, impossible — to decode it.

Back on Earth, the amount of information and the number of broadcast services are growing. Short-range wireless IP is rapidly replacing high power broadcasting as the means of delivery.

URBANIZATION

AM was perfect for the first electronic media as it covered large areas for a population that was largely rural. VHF might not have the sky wave or ground wave reach of AM, but for FM and early television, it reached rural rooftop and silo mounted "fringe" TV/FM antennas. It brought FM stereo to those console entertainment centers of the 1960s, even 100 to 150 miles from the big city. Radio stations that could do so moved closer to the urban centers where the audience resides. The 2010 Census figures found 260 million people living in cities, out of a population of 320 million.

Urban settings have become very unfriendly to MW through VHF. They suffer from clumsy big wavelengths where the aperture effect kicks in. One needs an RF hole larger than a wavelength to allow the RF to shine in. That's why overpasses block AM but not FM or sunlight. Metal studs, narrow windows (sometimes with leaded glass) and rebar do a number on VHF, so much so that public safety radio long ago moved to UHF in cities.

UHF became the beachfront property of broadcasting as rural access became less important and UHF became easier to use and reached farther from the city.

Putting AM radio in a cell phone is absurd. Putting VHF radio or TV in a cell phone is borderline. A 50 or 100 kW FM ERP will light up a cell phone sized device for only a few miles in dense metropolis. If you want to reach urban and suburban neighborhoods with RF, it really has to be UHF.

SHF TECHNOLOGY

But if you want to reach smaller cells of people with big bandwidth, you want to use Super High Frequencies — in the range between 3 GHz and 30 GHz. The combination of small cells, connected via fiber, at SHF, is arguably carrying the bulk of wireless traffic now and will certainly dwarf all other modes in the near future. SHF technology functions at street level and indoors.

To get the same coverage as a UHF system takes an inconceivable number of cells. Thus the high dollar interest in "carpet bombing" the conurbation with a UHF wireless radio access network and offloading as much traffic as practical to a high capacity, but limited coverage, "small cell" system.

In spite of the continual evolution of technology, there will always be a case for free-to-air, highly penetrating, universally-available public service broadcast transmissions, separate from and far more robust than the commercial wireless radio access networks, even if, several decades hence, the only listeners to it are SETI scientists on other worlds.

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

ARRAKIS SYSTEMS INC.

ALWAYS THE LEADER

MARC series modular 'Advanced Radio Consoles' lead the way with a hybrid analog-digital design that combines the ease of analog with the power of USB digital. The USB play-record sound card modules interface directly in digital with your PC automation & production software.

Easy to install with RJ45 connectors

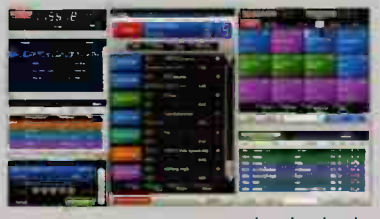
Low profile tabletop design

Spring Promotion, a $995 value Music Library Free with MARC

features...

- Fifteen channel mainframe
- Three stereo Output buses
- Up to thirty (30) source inputs
- Studio monitoring module optional
- USB play record sound card module
- Built in cue speaker for fast monitoring
- Meter panel hinges up and back for wiring
- Conductive plastic slide faders & LED lamps
- Supports two Phone hyrbdis with conferencing
- Modular design for ease of repair and expansion

Digilink-HD-Live



included

MARC consoles start at $5,499

www.arrakis-systems.com

970.461.0730

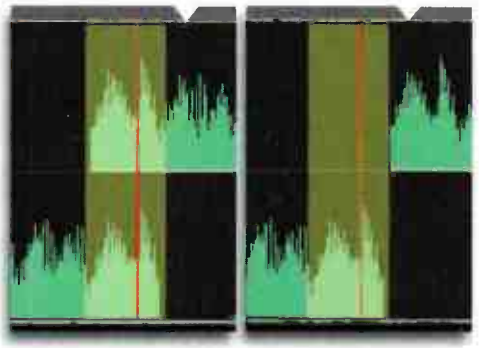
What does VoxPro do?
Basically, this kind of stuff...

You're doing your morning show when there's a caller on the line.

It turns out to be THIS guy and he wants to talk.

You're ready to go.
Hit RECORD on your VoxPro.

VoxPro saves your work and starts a new clip with you on one track and the caller on another. If you talk over each other, fixing it is easy.

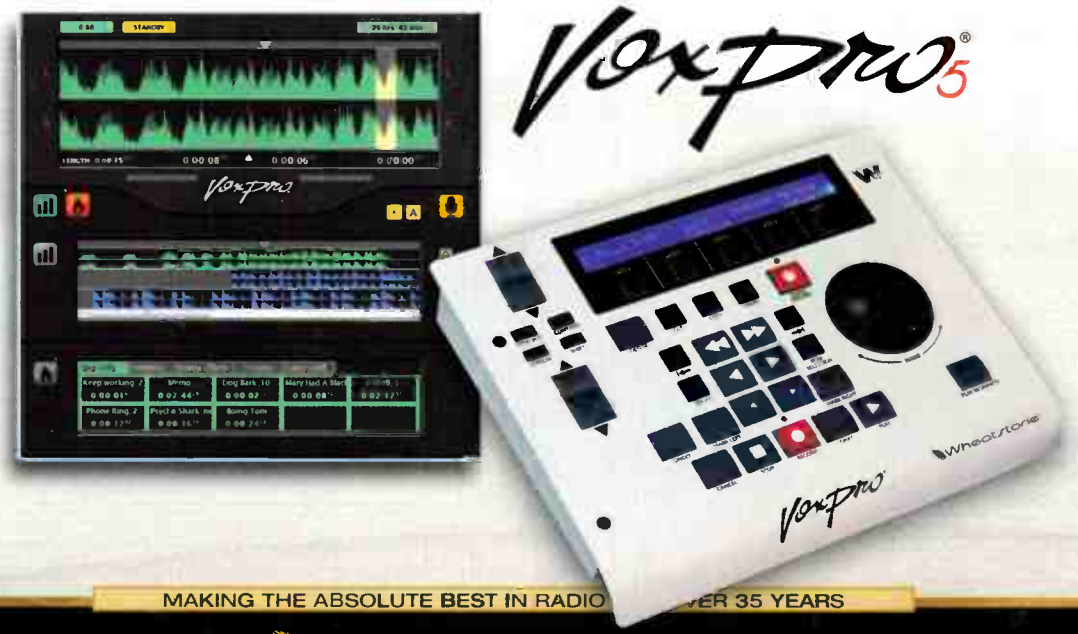


How easy? Just mark to highlight what you want to edit and push a couple buttons. Instantly, one channel of audio is shifted and ready to air.

While airing the edited audio of the first guy, the phone rings. It's THIS guy and HE wants to talk! Here we go again, you're ready with VoxPro...

RECORD>EDIT>AIR...IN SECONDS

LIVE RADIO BROADCAST PRODUCTION SYSTEM



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