



RADIO WORLD

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The Hub @NPRSS Distributes Content

Oklahoma's KOSU is first to sign up for service

DISTRIBUTION

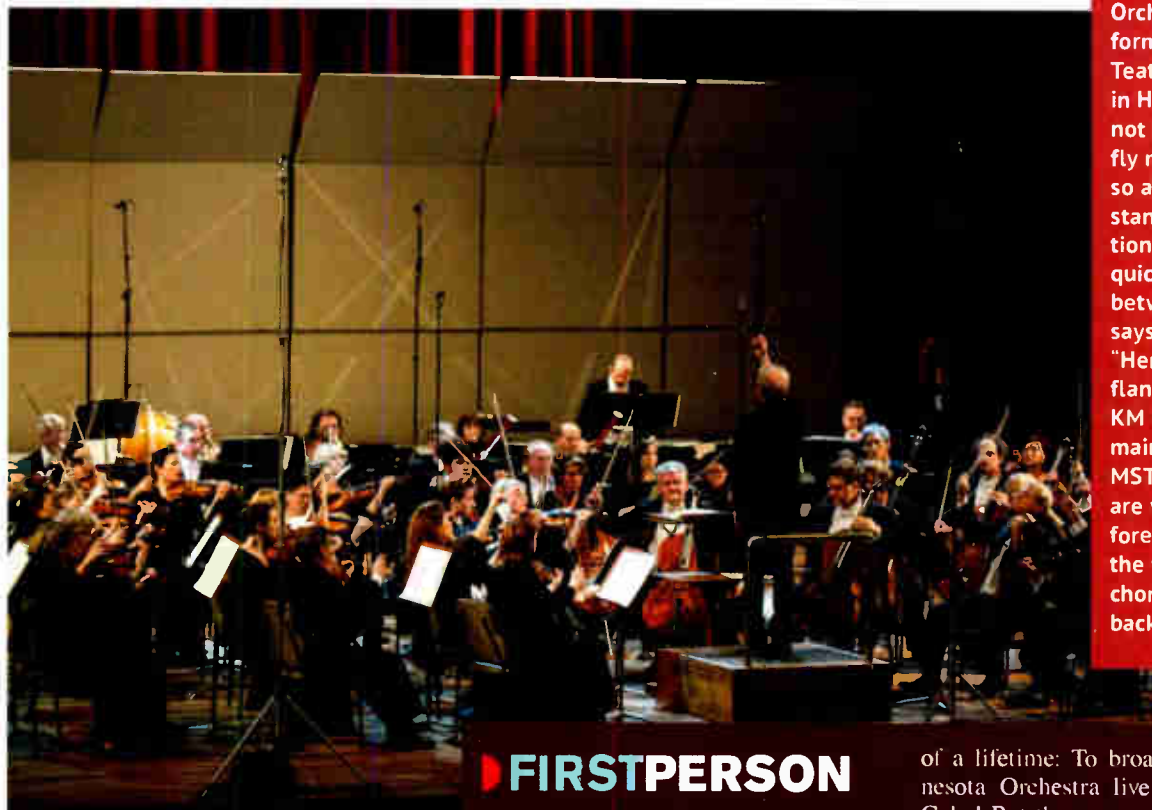
BY EMILY REIGART

In June, NPR Satellite Services launched a content distribution service that allows networks to send programming to stations without the need or expense of operating a local head-end. KOSU, a member-supported public radio network serving Oklahoma, signed on as the first customer for The Hub @NPRSS.

Broadcasters send their audio to the Network Operations Center located at
(continued on page 16)

Live From Havana: Minnesota Public Radio

MPR broadcasts the Minnesota Orchestra; here's how the TechOps team handled the job



The Minnesota Orchestra performs at the Teatro Nacional in Havana. "It was not possible to fly microphones, so all were on stands and positioned to allow for quick stage moves between pieces," says Rob Byers. "Here the left flank (Neumann KM 143) and the main pair (Schoeps MSTC 64g GRTF) are visible in the foreground, with the woodwind and choral spots in the back."

FIRSTPERSON

BY ROB BYERS

The author is technical coordinator, broadcast & media operations for Minnesota Public Radio and American Public Media.

In May, the Minnesota Public Radio/American Public Media TechOps team received the chance

of a lifetime: To broadcast the Minnesota Orchestra live from Havana, Cuba! But there were many technical and logistical questions to answer to ensure a successful broadcast.

The biggest obstacle: Transmitting the broadcast off of the island. Were this a domestic broadcast, we'd contract ISDN or AoIP service with the appropriate telephone company and all would be well. Broadcasting from Cuba, however, was not business as usual.

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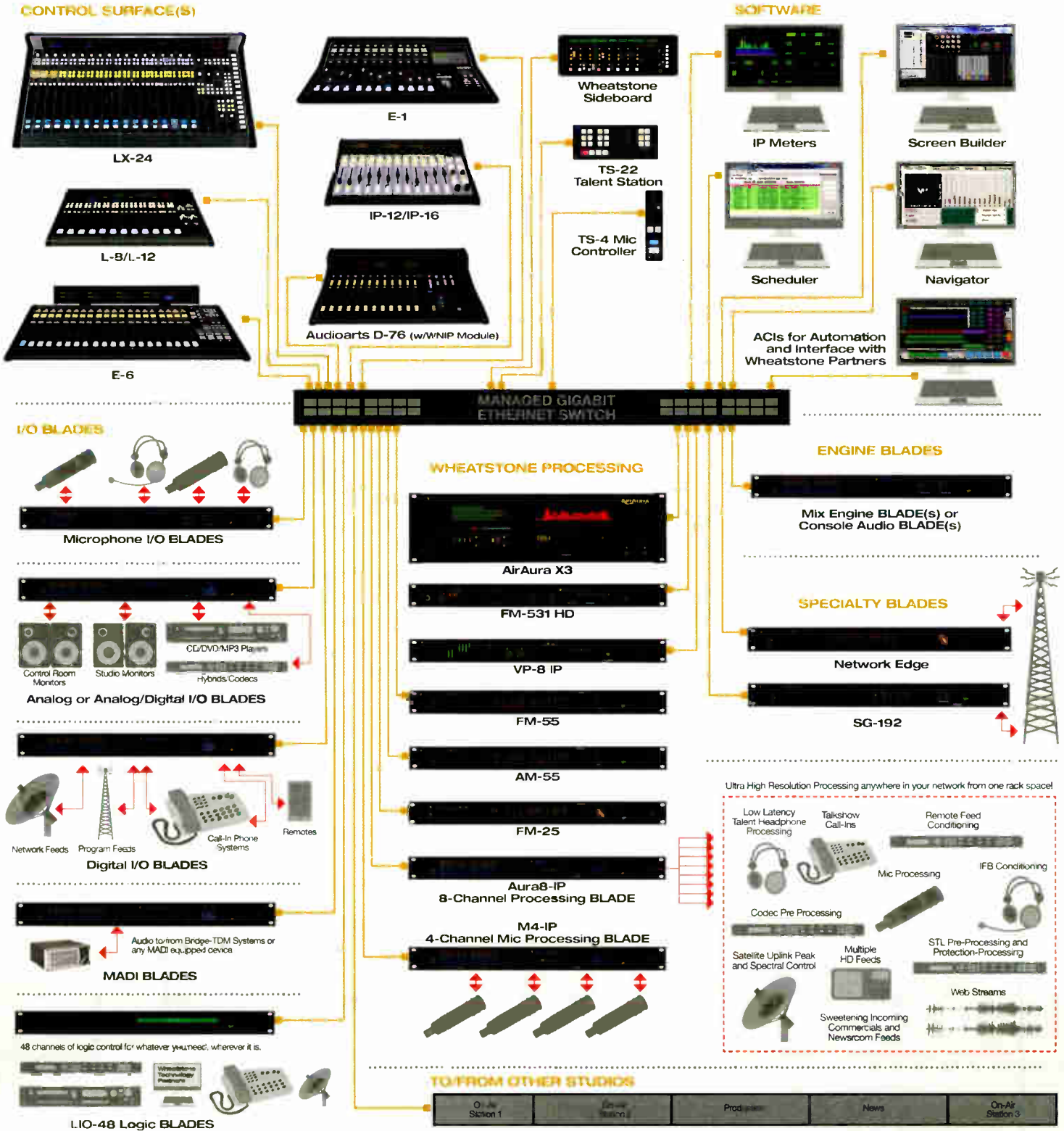
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EDITORIAL STAFF

EDITOR IN CHIEF, U.S. Paul J. McLane
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CIRCULATION

GROUP DIRECTOR, AUDIENCE DEVELOPMENT Meg Estevez
CIRCULATION MANAGER Kwentin Keenan
ASSOCIATE CIRCULATION MANAGER Michele Fonville

SUBSCRIPTIONS

Radio World, P.O. Box 282, Lowell, MA 01853
TELEPHONE: 888-266-5828 (USA only 8:30 a.m. - 5 p.m. EST)
978-667-0352 (Outside the US) FAX: 978-671-0460
WEBSITE: www.myRWNews.com
EMAIL: newbay@computerfulfillment.com

CORPORATE

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PRESIDENT AND CEO Steve Palm
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ADVERTISING SALES REPRESENTATIVES

US REGIONAL & CANADA: John Casey, jcasey@nbmedia.com
T: 212-378-0400, ext. 512 | F: 330-247-1288
US REGIONAL: Michele Inderrieden, minderrieden@nbmedia.com
T: 212-378-0400, ext. 523 | F: 301-234-6303
EUROPE, AFRICA & MIDDLE EAST:
Raffaella Calabrese, rcalabrese@nbmedia.com
T: +39-320-891-1938 | F: +39-02-700-436-999
LATIN AMERICA: Susana Saibene, susana.saibene@gmail.com
T: +34-607-31-40-71
JAPAN: Eiji Yoshikawa, callem@world.odn.ne.jp
T: +81-3-3327-5759 | F: +81-3-3322-7933
ASIA-PACIFIC: Wengong Wang, wwg@imaschina.com
T: +86-755-83862930/40/50 | F: +86-755-83862920
CLASSIFIEDS: Michele Inderrieden, minderrieden@nbmedia.com
T: 212-378-0400, ext. 523 | F: 301-234-6303
LIST RENTAL: 914-925-2449, danny.grubert@lakegroupmedia.com

Radio World Founded by Stevan B. Dana

Radio World (ISSN: 0274-8541) is published bi-weekly with additional issues in February, April, June, August, October and December by NewBay Media, LLC, 28 East 28th Street, 12th Floor, New York, NY 10016. Phone: (703) 852-4600, Fax: (703) 852-4582. Periodicals postage rates are paid at New York, NY 10079 and additional mailing offices. POSTMASTER: Send address changes to Radio World, P.O. Box 282, Lowell, MA 01853.

For custom reprints & eprints please contact our reprints coordinator at Wright's Media: 877-652-5295 or NewBay@wrightsmedia.com

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Printed in the USA



RDS Can Help Earthquake Warnings

Straeb emphasizes the potential benefits of FM-distributed data in quake warnings

BY TOM VERNON

Emergency alerts have come a long way since the days of the two-tone EAS signal. Today's warnings come a lot faster, through multiple channels and in several languages. But as good as the current system is, there's always room for improvement.

One event that has been missing from the alert pallet is earthquakes. That's changing.

Matthew Straeb, executive vice president of Global Security Systems/AlertFM, spoke at this year's spring

countless lives.

A system called ShakeAlert (www.shakealert.org) is being developed and tested for the West Coast by the U.S. Geological Survey, part of the Department of the Interior, with a group of university partners. The state of California is involved, as are entities like GSS, Bay Area Rapid Transit, Universal Studios/NBC, UC Berkeley OEP and Southern California Edison.

Straeb says ShakeAlert relies on a system of seismic sensors dug deep into the ground and placed across a wide area. This network sends data to a cen-

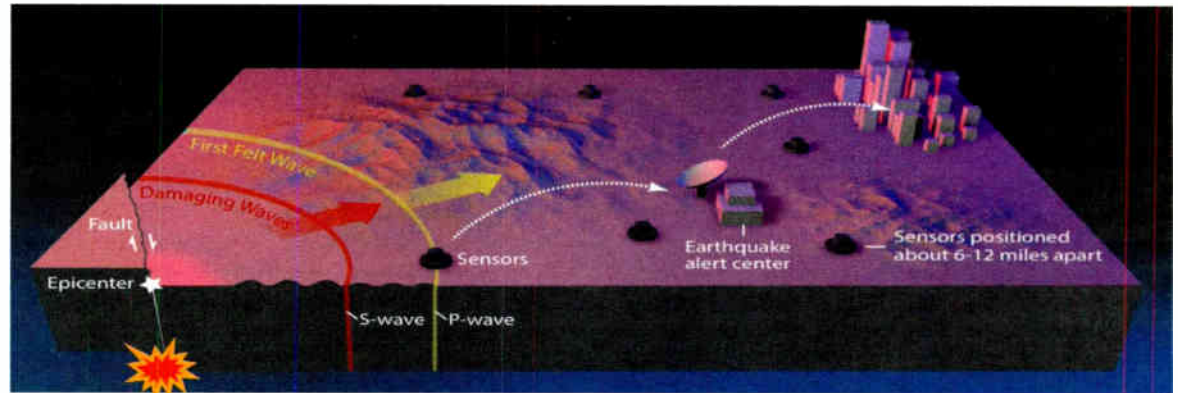
the seismic stations and streamline the algorithms to provide faster and accurate shaking intensity and location data.

ADVANCES

GSS/Alert FM, he said, provides "dedicated, purpose-built dissemination," using a satellite delivery backbone, of earthquake early warning information to end users including citizens and public/private entities. It offers RDS-based alert services to government emergency managers; it installs encoding gear at partner FM radio stations (currently some 585 in the country); and it sells alert receivers to institutions and consumers.

Straeb argues that existing, traditional mass messaging technologies are too

EEW Concept Network Based Alerts



P-wave ~ 3.5 mi/sec (felt waves)
S-wave ~ 2.0 mi/sec (damaging waves)
Alert ~ 186,000 mi/sec

Global Security Systems

EEW sensor data can outrace earthquake motion, giving emergency managers precious seconds. Earthquake losses tend to be highest in the American west and northwest, but other regions including the Midwest are also vulnerable.

NAB Show. He gave a progress report on efforts to implement an early warning alert system on the West Coast of the United States, and why GSS believes the FM-based Radio Data System, used with a satellite backbone, can play an important role.

SHAKEALERT

Early earthquake warning or EEW systems have been used for several years. Mexico City has had one since 1991. Japan has had a nationwide public warning system since 2007. There are systems in Istanbul, Turkey, Bucharest, Romania, China, Italy, and Taiwan. Earthquake effects travel through the ground slowly enough to provide some warning, if installed sensors can pick up the activity; warnings of even a few seconds to a minute could help save

trials where ground motion signals are analyzed, earthquakes are detected and warnings are issued. ShakeAlert can give an alert 20 seconds prior to the arrival of a destructive wave — by sensing the p-wave or felt seismic waves, which arrive prior to the s-wave or damaging seismic wave.

Work began on that project in 2006, when initial research studies were done. January of 2012 saw a live demonstration, and a production prototype recently was released. This year, the ShakeAlert network rolled out on a limited basis with 400 seismic stations. Additional investment in sensors, communications infrastructure, software development and operations personnel will be required to create a robust public system.

Straeb said there are several federal funding initiatives to continue building

slow to take full advantage of EEW.

Although convenient and useful, neither the cellular industry's Wireless Emergency System nor the familiar Emergency Alert System is "purpose built;" they use Internet delivery as their backbone, he says. Their underlying platforms were created for commercial purposes to generate revenue and, although provided as a generous benefit to the U.S. government and citizens, the alerts piggyback on those networks. Thus typical WEA alert messages are delayed until a user finishes a wireless phone call, and EAS rules allow typical alert messages to be delayed if a song or commercial is playing.

"To meet the minimum requirements of the FCC, broadcasters have to do the following: Send a weekly test, relay the

(continued on page 5)

BWWG Pushes FCC to Keep Improving

Now that the FCC has issued its Sixth Report and Order on EAS, what next?

What should the FCC's priorities for the Emergency Alert System be, now that the commission has issued its Sixth Report and Order on EAS?

One interested party is the Broadcast Warning Working Group, whose members include several leaders of the U.S. broadcast alerting community. The group has submitted specific suggestions to the FCC Public Safety and Homeland Security Bureau.

"We believe there is time for all of us to work with the FCC and other federal partners to build on not only what the FCC has announced in the current Report and Order, but to act forthwith on many open EAS issues — some dating back more than a decade," the group states on its website.

The purpose of the BWWG is to "provide information, answer questions and otherwise assist broadcasters and emergency management personnel in understanding and implementing EAS technology, FCC rules and operating procedures." Its core members are Adrienne Abbott, chair, Nevada SECC; Clay Freinwald, chair, Washington SECC; Suzanne Goucher, president,



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FROM THE EDITOR



Paul McLane

Maine Association of Broadcasters; Barry Mishkind, editor, Broadcasters Desktop Resource; David Ostmo, director of engineering, KABB/KMYS-TV; Richard Rudman, vice chair, California SECC; Gary Timm, broadcast chair, Wisconsin SECC; and Sharon Tinsley, president, Alabama Broadcasters' Association.

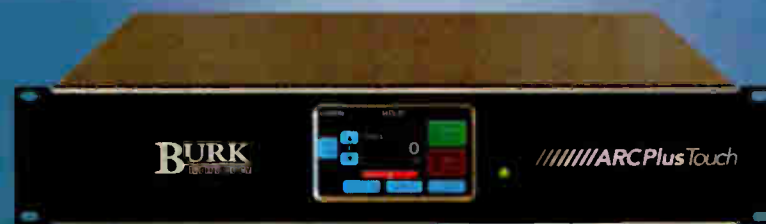
I emailed with the group's leadership to learn more, for an item on the Radio World website. I wanted to share their answers here as well.

RW: What is BWWG's overall reaction to the FCC's R&O on EAS?

BWWG: The implementation of the "all zeros" national location code and parameters for the National Periodic Test event code are welcome steps toward standardizing how all EAS devices should respond to the Federal level of the EAS. Expansion of the Electronic Test Reporting System to include EAS monitoring assignments was supported by the FCC's Communications Security,

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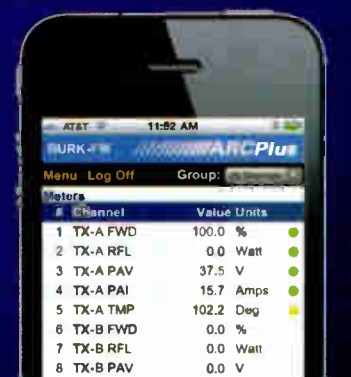
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Courtesy Dan Slentz

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monthly test and relay the presidential messages," he said. "The majority of radio broadcasters are committed to working with the emergency management officials to deliver other life-saving EAS messages in a timely manner; but it can be uneven from state to state."

By contrast, the broadcast-based RDS network is a dedicated, "purpose-built" network that reaches most Americans, and can deliver alerts with the speed needed in earthquake situations.

A dedicated RDS text can deliver a rapid alert EEW text message in less than six seconds as tested by USGS in the L.A. Basin, he said. That would provide roughly 14 seconds of notice, and possibly more, based on ShakeAlert's promise of 20 seconds total warning.

Straeb said the rapid response time of a dedicated RDS system also can enable alerts for other natural disasters such as tsunamis and tornadoes. So RDS, he argues, should play a key role as emergency managers build infrastructure around the new ShakeAlert sensor data.

Tornadoes are another time-sensitive alert; prediction by weather companies has improved dramatically with the advent of lightning detection networks that play a role in tornado detection. Sensor networks and prediction models are improving, Straeb said, driving the need for purpose-built alert networks whose only job is to delivery time-committed alerts. But the cost is prohibitive unless planners leverage existing communication assets, such as the radio broadcast-based platform using RDS or other data channels, he said.

INTERNET OF THINGS

EEW alerts are distributed to two user categories. The first, a local population, is informed through channels such as RDS, mobile devices and sirens. The second is the "Internet of things," which includes automated, situation-aware decision-making devices. This category would include building automation systems, which could stop elevators and disconnect non-essential electrical circuits before the shock wave arrives.

"The development of such systems represents a large growth opportunity, and private partners can develop these user-specific applications," Straeb said. In the case of his company's product AlertFM, code is made available license-free to consumer electronics manufacturers who want to have RDS-based EEW alerts embedded in their products.

What can be done with a few seconds' warning? People can move away from hazardous areas, drop, cover and hold on. Trains can be slowed or stopped, delicate medical procedures can be

NEWS

secured, as can vulnerable machinery. First responders in the field can be alerted to retreat temporarily to safe spaces. Takeoffs and landings can be delayed at airports. Pipelines can be closed to reduce the chance of spills, and emergency generators can be started. Fire

and maps.

In his NAB presentation he described a pilot project involving GSS AlertFM, KQED San Francisco and Univision in Los Angeles. He said that a research and development project with the U.S. Geological Survey confirmed the ability

RDS, he argues, should play a key role as emergency managers build infrastructure around the new ShakeAlert sensor data.

stations can make sure their bay doors are open before a quake damages them.

PILOT

While about 98 percent of alert messages are automated, there needs to be a way for emergency managers to send messages as well, particularly after a disaster. GSS offers a system that provides a checkbox-based interface with contact paths, alert options, attachments

of RDS to provide rapid delivery via the GSS network.

The GSS system offers unique features, he continued. "When the system receives an EEW alert, it sends a lightweight CAP message, and along with the alert payload, it sends nine geocoded pairs of latitude-longitude data. On the receive end, these data points can be decoded to produce a polygon-based

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HAVANA

(continued from page 1)

We asked our international radio partners (with whose help we could easily secure transmission services in most Western countries) for some advice on broadcasting from Cuba; they simply wished us good luck. They avoid anything of this type due to the difficulty and expense involved. Infrastructure is notoriously lacking, Internet service is practically non-existent compared to U.S. standards, and it is illegal to transport satellite equipment into the country.

A quick look at an online submarine telecommunications cable map (www.submarinecablemap.com/) reinforced the poor connection to the outside world, as most cables bypass the island all together.

Pablo García, veteran broadcast engineer at APM's Los Angeles bureau, discovered an article in AdWeek about CBS Evening News and anchor Scott Pelley transmitting a live satellite uplink last December when the U.S. and Cuban governments announced that the two countries would begin to normalize relations. That story is interesting on its own, but to us it revealed a path to a transmission solution.

Mr. Pelley's producer's Twitter feed led us to clues about the origination of the broadcast: the EuroVision studios at the Habana Libre Hotel. MPR | APM is a member of the European Broadcasting Union, of which EuroVision is the television component, and shortly, we were in touch with the right folks at EuroVision Americas to explore the idea of using their satellite infrastructure. This relationship was key, not only because they provided the technology, but they also handled coordination with the Cuban broadcast authorities. One major hurdle overcome.

ADVANCE WORK

In addition to the live broadcast, MPR News planned to send an arts reporter

WARNING

(continued from page 5)

alert that combines with applications such as Google Maps to display the location of an alert on tablets and cell phones."

In sum, the broadcast RDS system has many advantages for delivering timely emergency alerts, he said. "It piggybacks on the existing FM radio network; it provides nationwide coverage with no message fee; and the combination of satellite and Internet delivery to stations ensures the message can be delivered within six seconds."

For broadcasters, there are advantages to partnering with a rapid alerting RDS system.

"It does not impede the regular flow of RDS messages such as artist and song title, or disrupt traffic data, as proven with dozens of radio stations operating with multiple RDS services and maintaining contractual agreements to provide percentage of the RDS bandwidth at any given time," he said. "Alerts are infrequent; and since the RDS data groups are



Working the broadcast, from left, are Brian Newhouse, Rob Byers, Brad Althoff and Michael Osborne.

down to Cuba to report from the field. We needed to file audio multiple times a day for MPR News programs, but for this purpose wanted to avoid the expense associated with multiple satellite uplinks. Colleagues at other organizations warned us that Internet speeds were incredibly slow, unreliable and expensive. We learned that some organizations avoid filing from the island altogether, opting instead to leave with audio in hand and file outside the country.

During an advance trip to Havana in April, I tested a couple of different Internet options, and our intel proved true: All slow and unreliable. A partner organization has ISDN capability, but tests proved that we would need to make some large international hops in order to connect with our headquarters in Minnesota — we were unable to make a direct connection work. It was possible,

but would be a pain to coordinate, given our unpredictable filing times.

The final solution came in the form of high-bandwidth satellite Internet service provided by ETECSA, the Telecommunications Company of Cuba. The Minnesota Orchestra and the tour company Classical Movements coordinated this service with all of the media on the trip, and we set up a small press room in the Meliá Cohiba hotel.

That advance trip proved the importance of having good partners in both Classical Movements and the Minnesota Orchestra. Because of our long-standing relationship and the trust between the two organizations (MPR and the Minnesota Orchestra hold one of the longest continuous broadcast partnerships in the country, more than 40 years), the orchestra positioned MPR | APM as the only organization allowed to record the concerts.

dynamically changed, a disruption of other RDS service does not occur. It provides a competitive advantage, as stations can promote that they're on the cutting edge of emergency notification. And it solidly demonstrates to the FCC that the station has a commitment to serving the public."

There are many ways to distribute alerts for normal day-to-day events such as Amber, weather and locally generated messages. However, technology now allows earthquake and lightning/tornado sensor networks to predict events in seconds. This, he says, offers broadcasters a unique opportunity to save lives with rapid alerts, which should fit well with the philosophy of local stations that wish to emphasize their role as "first informers."

"Radio broadcasters strongly support EAS and RDS delivery of alerts on purpose-built system such as AlertFM," Straeb said. "We appreciate the support and encouragement of the NAB, FEMA IPAWS office, the National Alliance of State Broadcast Associations and FM radio broadcasters to support and participate with the RDS delivery of alerts by offering their stations to be part of this nationwide network."

The Minnesota Orchestra remains one of a handful of major orchestras whose concerts can still be heard on the radio, thanks to the strong partnership between MPR and the orchestra.

The advance trip also helped to establish a positive relationship between MPR | APM and Classical Movements. The tour company was critical in negotiating many of the meetings and decisions needed to coordinate the broadcasts. They also arranged for a direct charter flight from Minneapolis, handled transport of our gear once on the ground, and ensured we were well-fed and taken care of throughout the trip.

AUDIO CAPTURE

In addition to the logistics behind transmission, filing, and all of the coordination needed for broadcasting from a remote site like Cuba, we also had to create a high-quality capture of the orchestra.

Though I was able to see the space during the advance visit, the sound of the hall was still a variable. We knew a small amount of amplification would be necessary due to the lack of reverberation in the space, but we had not yet heard an orchestra in the hall. This is where Michael "Ozzie" Osborne, MPR | APM's technical director for Minnesota Orchestra broadcasts for 15 years, brought expertise.

He knows the sound of the orchestra well and is a trusted face amongst the musicians and staff. Osborne and Terry Tilley, the orchestra's longtime live audio engineer, now retired, also have a wonderful relationship as they've worked together for years, understand each other's needs and are both trusted

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HAVANA

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by the orchestra.

“Terry wanted to use cardioid microphones where possible so he had plenty of level before feedback,” says Osborne. The only constraint was that anything we took needed to be easily replaceable, as security and humidity were both a concern — in other words, we were not going to take the standard Neumann M50s flanks or the original AKG C24 woodwind spot!

Osborne continues: “We ended up using a Schoeps MSTC 64g ORTF microphone in the center with two

“We chose microphones that we knew very well and could be replaced if damaged by humidity or transport.”

Neumann KM143’s for the outriggers. On the woodwinds we used two Neumann KM184’s. We also had a choir so we used four Audio-technica Pro37’s on them. We chose microphones that we knew very well and could be replaced if damaged by humidity or transport.”

The audio console was a Yamaha DM1000. Though it’s an older console by today’s standards everyone on the team knows it well, and it is a flexible workhorse. Osborne is very familiar with the DM1000 since he uses its bigger brother, the DM2000, for the live weekly Minnesota Orchestra broadcasts from Orchestra Hall. We used 16 channels of ATI outboard microphone preamps into an Apogee AD16X analog to digital converter straight into the console. The ATI microphone preamps are extremely good sounding, have very low noise, and they combine eight channels into one rack space.

“Rob discovered on his advance trip that the Teatro Nacional had a fairly short reverb tail when the hall was

empty, so I knew I would need to enhance the sound with some reverb, so we used a Bricasti M7, a wonderful-sounding unit,” said Osborne.

Power for the entire broadcast rig ran through the venue’s Furman power conditioners. The staff informed us that the voltage coming in to the building would be fairly consistent during the day but would swing at night, and these units kept that in check. Though power outages are not generally a concern in the city, we brought along a small uninterruptible power supply to backup the key gear just in case.

FIELD WORK

In addition to the wonderful performances from the Minnesota Orchestra, the broadcasts included many interview clips and stereo field recordings from the streets of Havana.

For this, Technical Director Johnny Vince Evans and I took along a Sound Devices 788T recorder with a 722 recording the 2-mix as a backup. We used a Schoeps MK8 and MK41 mid-

side pair as well as a Schoeps CMIT 5U shotgun microphone, both rigs in Rycote windshields. We also used the Remote Audio HN7506 headphones when in the field, which allowed us to keep monitoring levels low and protect our ears. We used this robust rig to record the aforementioned interviews, pre-produced voice tracks in a hotel room, audio for video features, and it was put to the test for a four-minute field audio recording feature in the second night’s broadcast.

We knew that supplies would be hard to find in Cuba, so we packed more than the usual allotment of the typical miscellaneous items. Extra batteries, memory cards, power adapters, gaffe tape, even over-the-counter medicines — we packed what we felt comfortable with and then added just a little more. It turned out to be exactly the right balance.

The two broadcasts were a success, and though the logistics and technology are ear-candy to folks who might read an article such as this, it must be said that the real reason for the success were

the people involved.

The broadcast and production teams from MPR | APM worked together extremely well, supporting and trusting each other throughout the high-stress trip. The Minnesota Orchestra, its crew and Classical Movements allowed us the flexibility to approach the job how we thought best. And the crew at the Teatro Nacional really went the extra mile, answering our needs large and small.

These broadcasts, historic unto themselves, also contained a bit of unexpected history-making. The second night’s concert began with the Minnesota Orchestra playing the Cuban national anthem, immediately followed by the United States’ national anthem. The audience — including those of us in the broadcast booth — sang along, overcome with emotion as this special moment unfolded before us. We are incredibly proud to have been part of the team responsible for sharing this moment with the rest of the world.

For more, including a video recap, see www.classicalmpr.org/topic/cuba.

NEWSROUNDUP

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FIELD OFFICES: The FCC adopted a plan to modernize field operations of its Enforcement Bureau, and will require all field agents to be electrical engineers. Offices that will close are in Anchorage, Buffalo, Detroit, Houston, Kansas City, Norfolk, Philadelphia, San Diego, San Juan, Seattle and Tampa. Rapid deployment “tiger” teams will be stationed in Columbia, Md., and Denver.

VOLTAIR: After conducting tests, Nielsen Audio “reiterated its non-support” for the controversial Voltair product in a webinar with clients. Nielsen did find that in certain situations where background noise is equal or greater than the audio content, the PPM could pick up more codes with Voltair; but Nielsen doesn’t know whether this is “true listening.” And it said the only situations in which Voltair seemed to help were “boundary conditions.” But the company also announced planned technical tweaks to its system, intended to help assure reliable PPM performance in difficult listening conditions, including a new station monitor that will be distributed to all radio stations later this year, and a comprehensive review of its crediting rules.

IPAWS TEST: FEMA will conduct an IPAWS test in the New England states in September, and it scheduled three planning webinars. The test will be conducted on Sept. 16 in cooperation with state broadcast associations of Maine, New Hampshire, Vermont, Massachusetts, Connecticut and Rhode Island. Broadcast and cable operators in those states will receive a National Periodic Test (NPT) message via IPAWS. To participate in the voluntary test, stations need to configure their EAS device to forward an incoming NPT message immediately.

EAS: The commission proposed changes related to extreme weather event alerts and geographic definitions,

and seeks feedback. The notice of proposed rulemaking was prompted by a request from the National Weather Service, which asked for an Extreme Wind Warning code, EWW, as well as event codes covering storm surges, Storm Surge Watch (SSA) and Storm Surge Warning (SSW). The NPRM also proposes to redefine two geographic codes to provide a more accurate description of offshore marine areas they cover. Several EAS manufacturers told the FCC that these changes generally can be addressed by firmware or software updates.

TRANSACTIONS: Alpha Media took the top three slots in a list of most expensive U.S. radio ownership transactions of the first half of this year, according to data from BIA/Kelsey. The top deal of the first half was the sale of 33 stations by MCC Radio to Alpha Media for \$38.2 million. According to the research firm, 322 radio stations were sold in the first six months compared to 524 in that time last year. In terms of value of those deals, radio saw a drop from \$622 million at the midpoint of last year to \$217 million this year.

THE HILL: NAB promoted Senior Vice President of Public Policy Curtis LeGeyt to executive vice president of government relations. He replaces Kelly Cole, who decided to leave NAB as of mid-August to launch an independent consulting firm.

Curtis LeGeyt



SETTLEMENT: Entercom Communications settled with the Justice Department regarding the acquisition of Lincoln Financial Media. Entercom agreed with Bonneville International to exchange four Denver stations — KOSI(FM) and current LFM stations KYGO(FM), KKFN(FM) and KEPN(AM) — for KSWD(FM) “The Sound” in Los Angeles and \$5 million. Entercom received FCC approval for the LFM acquisition pending a waiting period. That purchase price was \$105 million, including \$77.5 million cash. The deal gives Entercom a new presence in L.A. and several other major markets.

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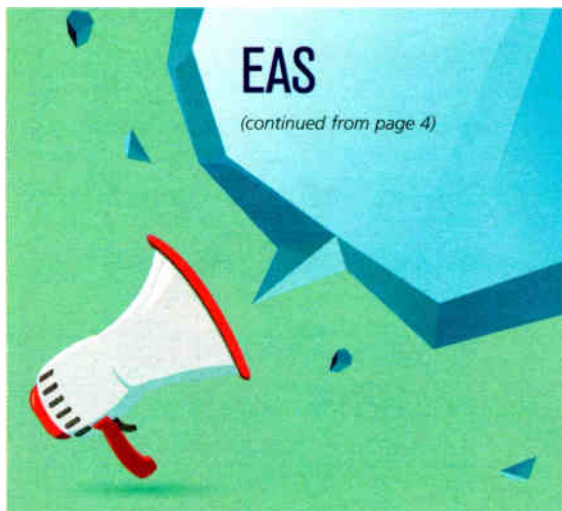
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World Radio History



Reliability and Interoperability Council and will be of value to State Emergency Communication Committees as well as the commission. We also have high hopes for the opportunity to provide input at the FCC workshop which the R&O stipulates must be held by Sept. 1, 2015.

RW: *The immediate question from radio managers is: "What do I need to do with my EAS gear, and when?"*

BWWG: The first deadline is Jan. 30, 2016, when new visual display rules will be in effect regarding the size, color, contrast, location and speed of EAS text displays. While most of these rules are subjective and left up to EAS participants to adjust for best readability, stations will need to check with their communications counsel for interpretation of compliance with these new rules.

Secondly, by July 30, 2016, all EAS participants must have the "all zeros" national location code programmed into their EAS unit to react with the NPT and Emergency Action Notification event codes. In addition, by that date, EAS units must be programmed to immediately forward alerts coded with the NPT event code. Timelines regarding compliance with EAS participant data entry into ETRS will be announced when that database launches.

RW: *BWWG followed up the FCC order by asking the*

commission to prioritize certain issues. What is at the top of your list and why?

BWWG: We have two priority issues that we would like to see the commission address immediately. First, a deadline recently occurred on June 30, 2015 for Intermediary Devices to be compliant with certain EAS rules adopted in the 2012 Fifth EAS R&O. We feel the FCC should issue a Public Notice as to which of these devices it now deems compliant. Secondly, we are requesting that the commission include SECC members in the design, or at least Beta testing, of the new ETRS. This was also a CSRIC recommendation.

RW: *What further priorities?*

BWWG: In our second set of top priorities, we are focusing on issues where the FCC has already promised action. In priority order, we identify those as:

Several influential EAS leaders offer the commission a roadmap for further action.

updating the EAS Operating Handbook, considering the CSRIC State EAS Plan recommendations, considering the authority and responsibility of SECCs, and standardizing the "live code" test waiver process.

While those are our top priorities, we have also outlined five other issues requiring action that the FCC has previously committed to addressing, as well as five new issues that BWWG feels should be part of the ongoing EAS rule revisions. Those latter ten items are described in detail in a document on the EAS Forum website, including relevant Part 11 Rules citations (see <http://tinyurl.com/BWWG-RW>).

RW: *The order creates a new FCC electronic filing system for stations and other EAS participants to report certain information about the outcome of national tests, and to help the FCC build an EAS*

"mapbook." What are your thoughts or concerns about this aspect of the order?

BWWG: Transitioning the ETRS to also serve as a repository for EAS monitoring assignments will make good use of this existing FCC database. Collecting these monitoring assignments in the ETRS will enable the FCC to develop its "mapbook" showing the flow of the EAN throughout each state and in some cases adjacent states. Given that this database integrates closely with the State EAS Plans, we again echo CSRIC's call for SECC members to be involved in the development of the new ETRS. While the R&O denies direct access by the SECCs to this database, we strongly suggest that the commission work with SECCs on the content of ETRS reports that the R&O states will be supplied to SECCs on request.

The BWWG sees the need for the commission to consult with the SECC's as to what specific information might be most valuable to aid the state committees to improve their Operational Area structures. After results of national EAS tests (using either the NPT or the EAN code) are entered into the ETRS, the commission should automatically provide each SECC with the results. This partnership will lead to further improvements for the propagation of the live code EAN.

RW: *What else should station engineers and managers know or be watching for, in coming months?*

BWWG: The commission has promised further actions on the EAS proceeding, 04-296.

They have also promised to open up a dialog with a wide range of EAS subject experts and stakeholders.

EAS Participants should not read the proposal to reduce the number of FCC field offices as a reduction in their compliance with Part 11, the FCC's EAS rules.

The following BWWG-identified issues will be socialized within the EAS community: a proposal to insert a "Virtual Red Envelope" code into all EAN and NPT messages to confirm authenticity, a proposal to match text crawl speed to spoken word cadence, and proposed solutions to ensure that the broadcast of the enhanced CAP alert text is not circumvented by the reception of legacy EAS alerts.

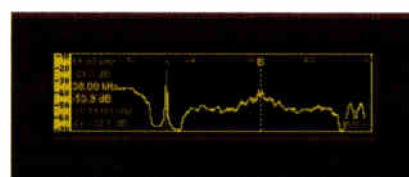
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Software Helps You Design Panels

Front Panel Designer provides the option of exporting your drawings as DXF files

WORKBENCH

by John Bisset

Read more Workbench articles online at radioworld.com

Some time back, Frank Hertel of Newman-Kees RF Measurements sent us a tip on making a front panel for home-built equipment. He subsequently found an interesting and relevant website, www.frontpanelexpress.com.

The company's software is free and might lend itself to personal projects. The software certainly will facilitate fabricating a custom panel for your project(s). In addition, Front Panel Designer software has the option of exporting its drawings and engravings as DXF files.

Many CNC software programs can use DXF drawings to generate "G" code, a simple text type of file that a CNC machine uses to move and position a spindle cutter head in the "X", "Y" and "Z" axis and thus, in this case, fabricate the front panel and its engravings.

Further, the DXF files can be converted to JPG files, which are used by other photo and drawing software programs. This expands the possible uses for the software.

If you take advantage of this site, send us a photo of your finished product!

We have a lot of experimenters reading this column. Thanks, Frank, for the useful software tip.

This is a good time to start planning for colder weather.

There's nothing as frustrating as responding to an emergency call to a transmitter site only to find the lock on the gate frozen. It's far worse when your station is off the air.

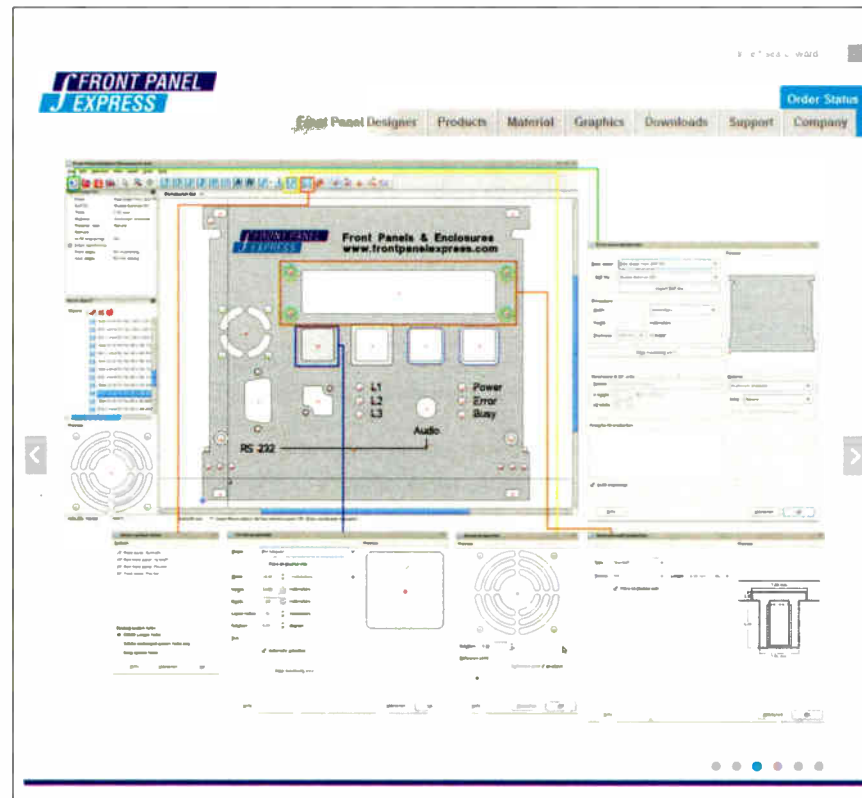


Fig. 1: An image from the Front Panel Express website.

Rick Sewell, engineering manager of Crawford Broadcasting Chicago, has more than once held a lock in sub-freezing temperatures and used the heat from his hands to thaw it, though he would not recommend the method unless you don't mind frostbitten fingers!

He has tried a lot of other tricks to thaw locks; one is a torch, but if you have wind, you may have a fight trying to get the torch lit.

Rick now favors renewable hand warmers. He discovered one of these in his Christmas stocking. He put it in the car, so that he had it handy for when he was working outside and needed some heat. Not too long after, he was con-

There's nothing as frustrating as getting an emergency call to a transmitter site and then finding the gate lock frozen.

fronted with a frozen lock at a transmitter site gate. The light bulb went off. Rather than risking his fingers, he got the hand warmer, activated it and put it in his glove to cover the lock. Rick let it do its work for about five minutes. The lock snapped open, and no frozen fingers.

Since then, Rick has upgraded his procedure to using an insulated sock rather than his glove.

Renewable hand warmers use a liquid mix of water and sodium acetate. To activate the warmer, you simply snap the metal disc inside the warmer and the liquid begins to turn solid, with the resulting chemical reaction putting out heat. The temperature is between 120 to 130 degrees. This is warm enough to thaw a lock inside a sock.

The renewal process for the hand warmers isn't difficult. You just need to boil the hand warmer for about 10 minutes. Boiling returns it to its liquid state, ready for the next frozen lock.

It is a lot better than frozen fingers or fumbling around with a torch. You can find these renewable hand warmers at sources of camping supplies like REI or Amazon.

Terry Skelton is a senior account executive for Clear-Com LLC and covers military, aerospace and the

(continued on page 14)

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– Paul Shulins, Greater Media Boston.

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WORKBENCH*(continued from page 12)*

government. Terry sends in an idea that can spare you frustration, especially in low-light situations. He uses a white Sharpie-brand paint pen to put a white dot on the “up” side of all his USB plugs so he can tell at a glance which side is which.

The raised USB symbol on the black connector can be hard to see. The dot lets you orient the connector properly, as shown in Fig. 2.

This little tip will save you time and



prevent you from forcing the plug when it's upside-down.

The following is just one of many responses to our mention of the Allied Catalogs website (July 15, 2015 issue). One engineer went online to check out the catalogs and looked over the 1954 catalog. He remembers all the items on his wish list — including the TV camera on the last page. The pages included all the things he wanted but that were way too expensive for him with his paper route income.

On page 217, Fig. D shows the Knight

Wireless AM Broadcasters Kit. This is what this engineer, and many others, used for their pirate stations, hooking up a 1/4-wavelength “long-wire” antenna to provide coverage of at least several blocks.

The website is www.alliedcatalogs.com.

Once, I worked at a station that aired “kickers,” feature stories about the lighter side of the news. Fig. 3 is our “kicker” for this column, and I hope it brings a laugh.



Fig. 3: Here's a novel method of cooling down a dummy load.

So, this engineer was having trouble keeping a dummy load from overheating. His solution? Stick it in the freezer! Contributed anonymously.

Contribute to Workbench. You'll help your fellow engineers and qualify for SBE recertification credit. Send Workbench tips to johnpbisset@gmail.com. Fax to (603) 472-4944.

Author John Bisset has spent 46 years in the broadcasting industry and is still learning. He handles West Coast sales for the Telos Alliance. He is SBE certified and a past recipient of the SBE's Educator of the Year Award.

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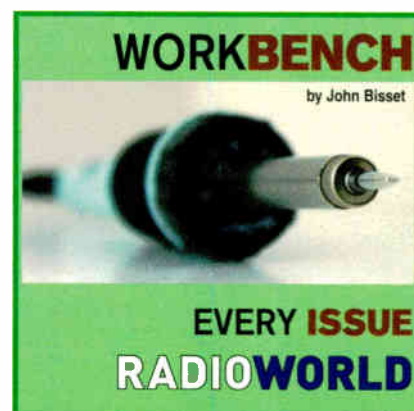
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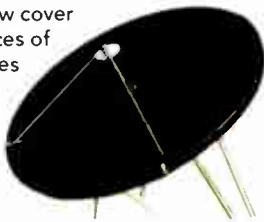
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HD GRADE LNB AMPLIFIERS ARE NEEDED FOR NEW SAT CHANNELS

Several networks have made the switch to DAWNco's new "L series" of C and Ku band LNB amplifiers, to accommodate the "finicky" nature of new HD satellite receivers. This new generation of LNB has improved specs that can make a real difference in the reception of high-definition and 8PSK satellite channels. These new LNBs feature best-in-industry specs for "1dB gain compression point" and "phase noise." Internal circuitry has been completely redesigned for reduced power draw, so that indoor receivers and power supplies will never be overtaxed. In order to prevent video picture tiling and signal outages, when outdoor temperatures fluctuate, DAWNco's best LNBs feature a highly stable +/- 2 KHz rating. Make sure to upgrade to the new DAWNco "L series" LNBs, and watch for improved EbNo readings on your digital satellite receivers.



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DAWNco

NPRSS

(continued from page 1)

National Public Radio's headquarters in Washington. The Hub @NPRSS clients are issued a website that they manage; with it, they can determine where and when their content plays, either through satellite uplinks or terrestrial IP streaming.

CONTENT DELIVERY

Director of NPRSS Darlene Holmes said that The Hub @NPRSS provides an "efficient way to deliver content without the upfront uplinking costs to build and maintain at their facility. Particularly for stations, it provides new revenue opportunities via spot insertions and localized IDs, plus it cuts costs."

"This is a system that is directly designed with group operators and operational budgets in mind," says NPRSS Operations Architect Matt Walther, who handles day-to-day engineering and operations of the satellite services.

"If an operator has a show that they would like to air on some, but not all, of their stations, they can feed that show to us through either a dedicated secondary stream or as a file delivery. That show can then be scheduled on a receiver-by-receiver basis. If they choose to use file delivery, the file can be scheduled and played directly from the receiver itself or if needed, saved to their own playout system," said Walther.

"Taking this to the next level, if that operator wants to resell their own programming, they can now do that. Suppose this operator runs a talk format with a popular garden or sports talk show. The Hub allows them control over their own content."

Holmes adds, "With stations losing engineers and funding being cut, The Hub is a great alternative to keep stations thriving and growing revenues."

The Hub @NPRSS was created by NPR Satellite Services in partnership with San Diego, Calif.-based international telecommunications equipment maker XDS Pico Digital.

"About a year ago, we started looking at systems to be able to help clients who have older head-ends that are reaching the end of life. This system had to be proven, reliable and flexible enough

that we could scale to any potential client who wanted to come onboard," says Walther. "During this process, we reviewed IP codecs and satellite head-ends from several vendors and settled on the GatesAir IP codecs and Pico Digital's X-Digital XDS headend.

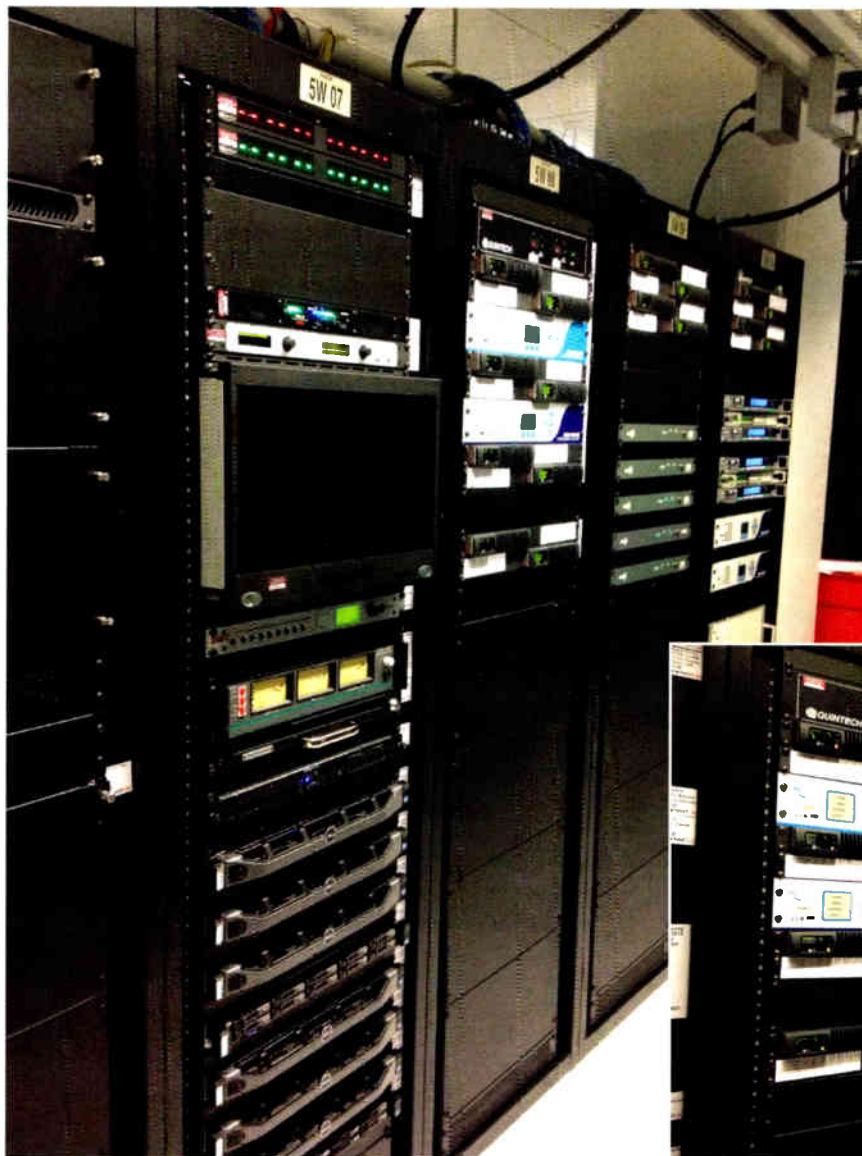
"Once we got the equipment, we spent quite a bit of time verifying, torture-testing really, every component and aspect," Walther says. "We have redundant modulators, XDS chassis and servers — even IP networks into our building. We also kept a focus on

what the customer experience would be like regarding how clients manage their own network programs and receivers. This led to some system design changes for better workflows. Both GatesAir and Pico have been great to work with and were quick to respond in helping us achieve these goals."

Holmes says the origin of the service's name came because it is "the place where the heartbeat of radio flows from and comes together."

"One important item to remember is that content management goes beyond station scheduling. For example, we are setting up active back-up systems that can feed content from a secondary location when something happens to the primary," says Walther. "KOSU is an example of this. They have two sites set up and are actively connected to the Hub. If there is a problem with one site, they can disconnect those streams and have their secondary site streaming content within seconds."

Holmes concludes: "Stations need to think about the longevity of their equipment, resources and ongoing support in the future."



INSIDE THE HUB @NPRSS

Here is a list of the equipment powering The Hub @NPRSS, shown above.

Rack 5W 07

(Top to Bottom) — Clocks (red/green, not currently hooked up); Fostex monitor feed off of the Axia Audio XY router node (directly below) to monitor all Hub feeds; KVM monitor; Axia button selector; VU monitoring; Engineering utility server; Hub Application Primary; Hub Streaming Primary; Hub Web Primary; Hub Database Primary; Hub Application Secondary; Hub Streaming Secondary; Hub Web Secondary; Hub Database Secondary

Rack 5W 08

Quintech RF splitter to feed Ku and C Bands to receivers; Axia Analog node (outputs from receivers); Axia GPIO node (outputs from receivers); XDS Pro-4Q receiver for Ku Band; Axia Analog node (outputs from receivers); Axia GPIO node (outputs from receivers); XDS Pro-1Q receiver

for C Band; Axia Analog node (outputs from receivers); Axia GPIO node (outputs from receivers); Axia Analog node (outputs from receivers); Axia GPIO node (outputs from receivers)

Rack 5W 09

Axia Analog node (outputs from IP codecs); Axia GPIO node (outputs from IP codecs); Axia Analog node (outputs from IP codecs); Axia GPIO node (outputs from IP codecs); GatesAir Intraplex IP Link 100 (5x = 4 active with 1 spare)

Rack 5W 10

Quintech active splitter; Axia Analog node; Axia GPIO node; Axia Analog node; Axia GPIO node; NewTec Modulation Primary (Ku Band); NewTec Modulation Switch; NewTec Modulation Secondary; NewTec Modulation Primary (C Band); NewTec Modulation Switch; NewTec Modulation Secondary; XDS Pro-1Q receiver for Ku Band; XDS Pro-1Q receiver for C Band; XDS X-Digital System Chassis Primary; XDS X-Digital System Chassis Secondary



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Use as a world-class mastering processor for production and mastering applications. Nothing is louder or cleaner.



AoIP Applies to Small Stations, Too

Entry-level options exist for radio stations that are ready to take the plunge

NETWORKING

BY HAL KNELLER

IP and networked radio studios are all around, as seen and heard at the recent spring NAB Show. But are smaller radio stations (without in-house engineers or IT people) ready for this evolution and is it affordable?

The key technical advantages are:

- Massive wiring and labor cost reduction at installation
- Audio/sources easily routed without adding wiring; quick/easy to add/configure new sources
- Remote access via Internet for diagnostics or reconfiguration
- Special effects (mike processing, EQ, profanity delay) often built-in
- No wiring changes for source reconfiguration

Numerous manufacturers employ AES67 (AoIP) or individual proprietary standards with each touting his protocol advantages. The purpose of this article is not to compare and contrast all systems but to expose smaller stations to entry-level possibilities and price points.

The architectures are either a traditional audio console with standard or optional network interface, or a "control surface" with no audio that rather connects to and controls an "engine" interfaced to audio sources and a network. Either approach offers studio control and availability of local/remote sources shared across the network.

Recognizing smaller stations' budget is paramount, a transition can be accomplished one room at a time by replacing an old analog console with a networked system. Commence one studio and install a replacement console or control surface with engine. With additional budget, add a "node" or whatever it is called in your system in the rack room. Now that one studio is connected with a couple of Category 5 or 6 cables and then connected to rack room sources, studio sources in the local room are also tied to the network. Once you have budget to do a second room, tied to the node in the rack room, sources in each studio can also share as desired. Miles of old audio wiring can be removed.

Depending on the system, you may also avoid the expense of sound cards, bypassed by an AoIP network that uses software to route audio.

We asked several manufacturers about entry-level options in AoIP.



WHEATSTONE

Wheatstone says that its IP-12/IP-16 digital audio console is popular as an entry-level IP network system for small to medium-sized radio operations, due to its price and scale.

The layout is traditional, with 12 or 16 input faders and control room/studio/headphone monitor functions, but its rack-mount I/O engine allows full interface to the WheatNet-IP network, a "distributed intelligence audio network" with integrated control layer and audio tool kits for mixing and processing at each I/O access point.

With one IP-12 studio in place, additional studios expand the network, allowing sharing of sources and mixes. Price is around \$8,000. Additional rack-mount units (which Wheatstone calls Blades) can add specialized multi-channel processing and I/O options, available for sharing throughout interconnected studios.

LOGITEK

The company offers a combination of AoIP with TDM technologies in its networked consoles and emphasizes the use of high-density audio nodes to "simplify wiring, use fewer network switches and eliminate latency issues." Two models of AoIP engines are available:

the JetStream Mini, which handles up to 128 digital or analog inputs/outputs in a 2 RU chassis, and the JetStream Plus, a 4 RU engine with 240 channels of I/O. The company also offers a range of control surfaces, which have the appearance of standard consoles but which have completely assignable faders, busses, softkeys, etc.

Tag Borland, president of Logitek, says 30 to 50 percent of its systems sold are implemented as single studio console replacements that have no IP cable plugged into the network jacks but are used as traditional "boards" with future network capability.

The most basic system is a Pilot control surface paired with a JetStream Mini dense node engine. For features, users have EQ, profanity delay, store/recall of presets, etc. and reap many advantages sans network. Entry point is just north of \$5,000.

TELOS

At the Telos Alliance, Axia Product Manager Milos Nemic said the Radius control surface is intended for entry-level and smaller studios. Axia uses standard Cisco managed Ethernet switches and Category 6 wiring for inter-studio trunking (Category 5e for in-room connections). He said as few as one or two

Ethernet cables from the tech core to the studio are all that is needed.

How difficult is setup and configuration? Compared to 10 years ago, when you had to write scripts and INI files with text editors, today it is all managed by user-friendly GUI. The company also says Radius doesn't use a third-party switch that needs setup; there's a pre-configured switch built into the mixing engine.

Axia xNodes can be placed anywhere in a facility for ingestion or output, even outside using their Livewire standard. Basic studio entry is \$6,000 and add \$1,600 for rack room node; and systems can be built for less with Axia DESQ or RAQ mixers.

GATESAIR

Paul Barzizza, manager of Business Development at GatesAir, says he likes consoles such as the NetWave or Oasis for entry level. Both are standard digital consoles with the ability to add VistaNet (GatesAir's proprietary networking system). He said these have the feel of a traditional console, and from an

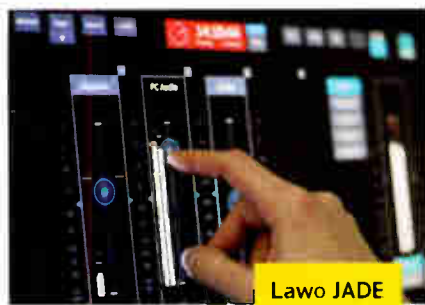


installation standpoint, plug in the analog or AES3 sources and outputs as conventional analog boards with VistaNet proprietary interface optional.

Either of these may install in the traditional environment and later more studios and rack room can be networked. Paul says engineers feel very comfortable with this approach, as it is so traditional yet offers the future-proofing of networked audio. Entry cost would be about \$5,500 for the basic Oasis console, add \$4,000 to bring the rack



room into the console via VMConnect networking.



Lawo JADE

LAWO

At the spring NAB Show, Lawo Commercial Director Mike Dosch showed JADE, a software-based system running on a PC i5/i7 platform under Windows.

JADE is middleware performing radio console functions such as mixing, routing, processing, mix-minus and more. Using a touch screen, the virtual mixers appear with slider faders, on/off and remote control functions all tied in. Audio input and output is via AES67 AoIP. Just plug an AES67-compliant



GatesAir NetWave

I/O device into the Ethernet port on the computer and you have a standalone console. Or connect it to a network and share audio across multiple workstations. This product is probably the minimum price point for a real-radio console. It interfaces to most automation without sound cards.

JADE Engine/Studio software runs about \$2,000 (plus computer and AoIP audio interface).

ARRAKIS SYSTEMS

The company says its AARC-NET networking solutions allow for integration and distribution of many analog or digital sources via standard IP audio networking.

"The core of the AARC-NET network is based on are Cobranet products from AudioScience," it states. It is compatible with Arrakis ARC, MARC and X-Mixer consoles as well as most other analog or digital audio devices. The company emphasizes both affordability as well as ease of installation and setup. "No more punch blocks or multi-pair cables. Changing a wiring connection is a simple software choice. Wiring kits are available to simplify the install and transition. Most importantly, AARC-

NET is world standard Cobranet, not a custom one-of-a-kind network." Price ranges from \$1,969 to \$3,951.

The company's Ben Palmer also reminds us that to utilize IP doesn't necessarily require you to have to purchase all IP consoles. "Each protocol has an analog node that allows any analog console to connect to an IP network. This is a nice thing to know since most people are intimidated about purchasing all new consoles, along with the IP switches. For instance, our AARCNET switches will connect to any analog or digital source."

(continued on page 22)



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IP Codec

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Time to Align: Belar and Wheatstone

We went live in New York and Detroit with a Wheat processor and Belar's ADC algorithm to determine the success of HD radio and analog signal alignment in bler ded areas.

Tests so far look promising, indicating a consistent and seamless HD blend to analog whenever HD Radio coverage is less than rooust.

"We've had the system on since the beginning of May and the delay between the analog and HD has been within one sample. It was pretty close before, but now it's spot on," said engineer Brian Kerklan with WMUZ-FM in Detroit, a market chosen for its ties with the auto industry. Belar's FMHD-1 continuously measures FM/HD time alignment and transmits closed-loop diversity delay corrections back to the Wheatstone on-air processor via our ACI interface.

For the entire story... INN25.wheatstone.com

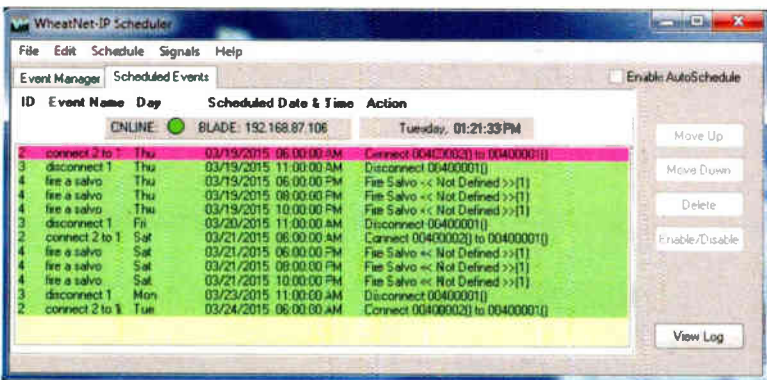
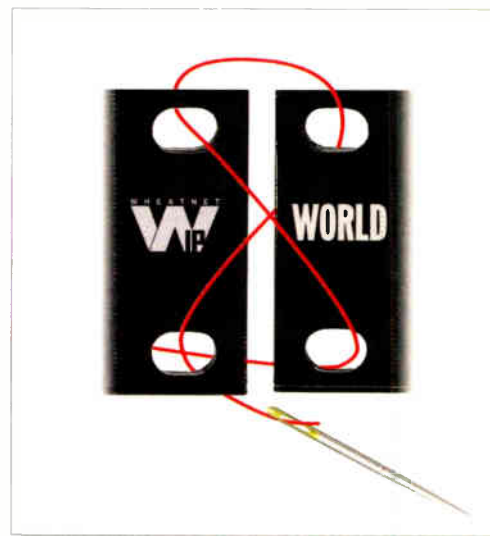


ACI: It's Wheatstone's DNA Needle and Thread

We have built into all of our audio processors a control protocol we call ACI, for Automation Control Interface.

ACI is how Belar's FMHD-1 with new ADC algorithm tells our audio processors what corrections need to be made for a consistent and seamless HD blend to analog whenever HD Radio coverage is less than robust.

ACI operates over the locally connected network via TCP/IP and can touch any parameter on the processor, whether it's a setting for the diversity delay, recalling a preset, changing input sources, modifying output levels, or even lowering just the AGC band three threshold by 1.62dB during some externally triggered event. Most of the program automation systems can also talk ACI, as can our console surfaces, so ACI brings new possibilities to our audio processors as well as the WheatNet-IP system.



Add Scheduler To Your IP Audio Network

SCHEDULER tells your WheatNet-IP system when to switch between live and automated programming, turn microphones on and off and perform other events at predetermined times.

The WheatNet-IP SCHEDULER program triggers events at predetermined times by connecting or disconnecting signal routing. It fires off commands to send a satellite feed direct to air or to turn on mic feeds for the morning show at regularly scheduled times, for example, and so much more...

Learn all about Scheduler at... INN25.wheatstone.com

Life on the EDGE: STL via IP Microwave

Any wireless IP microwave system will work as an STL, just as any camera (or phone) can take a picture. But as to how far and how robust, and for how much, that's when the picture starts to get a little fuzzy.

Wireless IP radios connect directly into the WheatNet-IP audio network for a straight hop out to the transmitter site as a main or backup STL, or as a VoIP communication link (in lieu of expensive cell service). When you put up an IP link from the studio to the transmitter, your transmitter site immediately becomes part of your Ethernet network. Audio from a WheatNet-IP audio network I/O BLADE or EDGE unit connects directly into the IP wireless radio through RJ-45 connectors, and because it's all IP, that means you can carry audio, video, voice-over-IP, and data of all kinds. Back and forth. Both ways.

For the entire story... INN25.wheatstone.com





THE INTELLIGENT NETWORK



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Long-Range Planning for Low-Power

Small budgets shouldn't keep LPFMs from thinking ahead

LPFM REGULATION

BY PETER GUTMANN

This is the final article in a series about low-power FM. In the first three installments, we focused on considerations for building, preparing to launch and operating an LPFM facility; read them at www.radioworld.com/lpfmregulation. Now let's look to the future for some long-range planning.

STREAMING

Although LPFMs are noncommercial, locally-based operations, you still need to be where your audiences are.

Nowadays that increasingly could involve streaming your programming to mobile devices. Streaming can also enable LPFM stations to supplement their broadcasts with an extra channel of program material and to attract listeners beyond their limited on-air service areas.

Your tech folks can advise with arranging for posting your stream to directories and either setting up your own server or paying a streaming audio server to host your webcast signal.

Legal requirements include two types of licenses for music. The compositions themselves are licensed through ASCAP, BMI and SESAC, which currently charge a total of approximately \$800 per year for LPFM streaming

licenses. Recordings are licensed separately through SoundExchange, which charges most LPFM stations \$500 per year for streaming plus an additional \$100 per year to waive its requirement of submitting monthly reports of every song played (well worth it!). Even for talk formats you may still need music licenses, although certain brief uses of music can qualify as fair use and be exempt from licensing.

These licenses pertain only to streams of your broadcast signal. Music contained in independent programming streams and podcasts (audio streams that can be downloaded at the listener's convenience) requires separate licenses for reproduction and distribution.

UPGRADES AND MOVES

Certain technical modifications may be made without prior FCC authorization but are subject to filing for a modified license within 10 days of completion. These include replacement of a tower with a new tower of identical height and geographic coordinates, replacement of an antenna at the same approximate height and replacement of the transmission line

while preserving the same effective radiated power.

Certain other modifications are classified as minor changes and require a construction permit but can be filed at any time. These include changes in channel to adjacent or IF frequencies (or any frequency upon a showing of



This studio serves LPFM station WDPE in Dover/New Philadelphia, Ohio, which went live in July.

OWNERSHIP CHANGES

A mere construction permit for an LPFM station cannot be sold, or even donated, to other entities. In addition, before its license can be transferred, an LPFM station must be operated by the original applicant for three years. After that, it may be sold, but only to an entity that satisfies all the eligibility criteria required for the LPFM service. Even then, the total consideration cannot exceed the depreciated fair market value of the physical equipment and facilities.

The FCC recognizes that boards of directors of LPFM licensees are bound to change over time, whether suddenly or through gradual evolution. Transfers of control arising through replacement of a majority of board members are permitted, but subject to filing a *pro forma* application on FCC Form 316. Even so, no new board member may have an attributable interest in any other medium subject to FCC ownership restrictions (including radio, TV, translators and most nearby local newspapers). At least 80 percent of board members must be U.S. citizens.

LICENSE REFERRAL

It seems like a long way off, but when the current term ends, your license will have to be renewed. Applications for the next eight-year term will be due from 2020 to 2022, depending on your state. The form mostly requires certifications of legal operation during the past term. Generally, in the absence of relevant objections or a pattern of serious FCC rule violations a successful renewal can be assumed.

Prior to its birth and during its infancy, LPFM encountered hostility from much of the established radio industry. But hopefully LPFM is becoming a valuable ally to augment full-service stations with outlets for community groups and local programming.

Peter Gutmann is attorney with Womble Carlyle Sandridge & Rice LLP. He can be reached at pgutmann@wcsr.com.

AOIP

(continued from page 19)

CONCLUSIONS

Peter Femal, president of Public Media Engineering LLC in Chicago, contracts with large and small public and commercial stations. He offered his opinion regarding installation/configuration complexity and long-term reliability.

In his view, a primary advantage is the ability to access equipment remotely for troubleshooting or re-configuration; the accessibility saves a trip. He sees savings through minimal wiring and quick configuration. He discourages clients from tinkering with configurations because he can do it quickly and easily (remotely) and there's no risk of a client creating unintended consequences. As to budget, Peter believes a station needs to be in the \$8,000 range to obtain and install a basic entry-level system

including studio and rack room interface.

I also asked whether, if a small station's contractor seemed to be steering his client away from this technology, the owner should go out and get a second opinion. "Yes, definitely, there's still some 'scare factor' out there [but] the whole world is headed in this direction," said Femal.

My take on all this: If someone can handle accurately crimping an RJ-45 connector, they can implement these systems. The manufacturers I spoke with feature GUI setup/configuration and no-charge remote factory tech support via Internet. These are far easier to install than punching down wires as in the "good old days."

Hal Kneller has been in broadcasting for 50 years as an equipment sales rep, a broadcast engineer and radio station owner/operator. He consults and serves on the SBE Certification committee, holding CPBE, DRB, AMD and CBNE certifications.

reduced interference), most site moves up to 5.6 km, corrections of geographic coordinates and changes in antenna height more than two meters above or four meters below the authorized value.

Such minor changes must meet all applicable separation requirements. Other changes that do not qualify as minor can only be filed in a window opened for new and major change applications.

If circumstances require, an LPFM station may go dark, provided that the FCC is notified within 10 days and authority is sought within 30 days. However, with few exceptions, a license will automatically expire after 12 continuous months of failing to broadcast.

TRANSLATORS

Another way of extending coverage is through an FM translator. LPFM licensees may own one translator (Tribal Applicants may own two) subject to strict technical limitations — the 60 dBu contours of the LPFM and translator must overlap; their antennas must be within 20 miles of each other (10 miles in the top 50 urban markets); and the translator must synchronously rebroadcast the primary analog or HD-1 digital signal of the LPFM which must be received by the translator directly over the air.

Of course, all of this assumes that translators are available and affordable. Applications for new translators are

HIGH CAPACITY EVENT STUDIO TRANSMITTER LINKS



outdoor unit



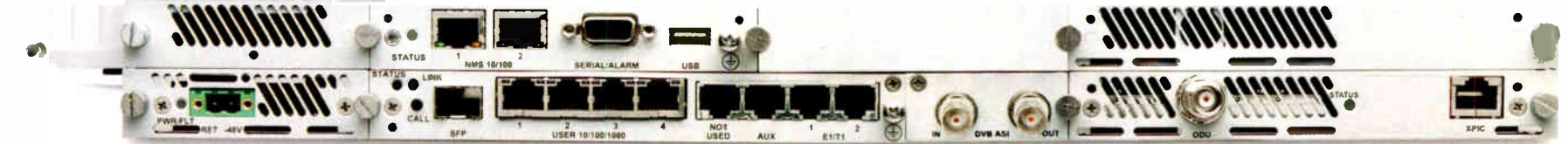
TAKE ADVANTAGE OF WIRELESS HIGH PAYLOAD STL/TSL CAPACITY

Moseley EVENT STL/TSL systems provide up to 155 Mbps combined IP, T1/E1 payloads. Multi-station clusters can convey multiple linear uncompressed audio pairs for a truly cost-effective STL/TSL link. Connect your existing T1/IP audio hardware directly into the EVENT system, or use Moseley Rincon for your audio payloads. An optional DVB-ASI module is available for full duplex video.

EVENT systems are fully bi-directional including a Software Defined Indoor Unit (SDIDU) and Outdoor Unit (ODU), eliminating the need for costly waveguide hardware. The ODU is available in the license free 5.8 GHz band, or licensed 11, 18, or 23 GHz bands. Appropriate external antennas are selected based on path length.



indoor unit



INTELLIGENT SYSTEM DESIGN

Spectrum-scalable digital radios with user-selectable data rates enable broadcasters to have greater flexibility in STL planning and future growth. The integrated T1/E1 and Ethernet interfaces allow for a combination of T1/E1 and IP packet data.



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Saves engineers time accessing manuals or technical support from manufacturers during maintenance sessions.

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SYMETRIX CALLS ON VOIP

The Symetrix name used to be a familiar sight in radio stations across the land. Its blue boxes, especially its voice processors, were common in radio studio equipment racks, but a push into the contracting and installation markets sent the company in another direction.

So it's nice to see a Symetrix product that could be of value to broadcasters, a VoIP card.

The new 2 Line VoIP Interface card fits into the company's



modular SymNet digital audio network hardware and SymNet controller software. It says, "The 2 Line VoIP Interface card natively integrates with SIP-based call platforms and unified communications environments.

Developed for maximum flexibility, the card supports both narrowband and wideband audio, and is capable of a broad range of telephony features." It adds that the card "is ideal for conferencing, paging, remote monitoring and broadcast applications."

For specifics, a release said, "Validated with class-leading Cisco and Asterisk SIP-compatible call management platforms, the 2 Line VoIP card delivers low-delay audio packet transmission, adaptive jitter buffers, country-specific tone compatibility, and independent level adjustments for call progress, DTMF and ring tones."

Info: www.symetrix.co

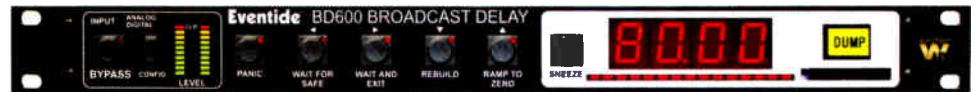


8 of the **TOP 10** U.S. radio stations are Nautel customers.

nautel.com **nautel**

EVENTIDE DELAY ADDS WHEATNET-IP

Wheatstone and Eventide have worked together to make Eventide's well-known BD600 broadcast delay compatible with WheatNet-IP and other AES67 networks in the form of a dedicated unit, the BD600W.



The magic is courtesy of a built-in WheatNet card. The addition of WheatNet-IP networking allows for the BD600W to function in a WheatNet-IP environment and be remote controlled via IP as well.

The BD600W follows the stock BD600 in features: up to 80 seconds of profanity protection or 10 seconds of MicroPrecision Delay that can be finely measured in microseconds or video frames. There is also a "Panic" feature wherein a prerecorded WAV file can play while the profanity buffer rebuilds. Analog and AES/EBU digital I/O are included.

For current owners of the BD600 there will be factory-installed retrofitting and field upgrade options.

Info: www.eventideaudio.com

RCS ADDS TO ZETTA FEATURES



RCS' Zetta radio automation program is mature yet the company says it regularly adds features and tweaks aspects based on both research and feedback from customers.



A multitrack editor, segue editor and a media player are included along with hot keys, a sequencer, library, log functions, satellite interfacing and WANcasting capabilities. Much operation is drag-and-drop. Audio files can be auto-normaled on import.

Zetta can also work with other RCS programs such as the music scheduler GSelector4, RCSnews and the Acquire traffic system. Zetta can also go mobile with Zetta2Go, a mobile device app for controlling Zetta remotely via a smartphone or tablet.

Info: www.rcsworks.com

GLENSOUND HIDES HEADPHONE AMP UNDER TABLE

"Keeping it simple" looks to be Glensound's motto for the GS-HA014 headphone amplifier.

The amp is in a small case designed to be fixed under a guest table. Audio connections into the GS-HA014

are on two balanced 6.35 mm jack sockets (unbalanced optional). The front of the unit has two headphone sockets for the user, a 3.5 mm and a 6.35 mm, giving the user a choice. The front has a full-size volume pot.

In addition, the GS-HA014 has two RJ-45 sockets for standard Cat-5 network cable connections for looping between units. That connection can carry line-level stereo audio and power.

Power is from an external 9V DC power supply. One power supply powers up to eight connected units, more than enough for most radio studio guest situations, the company says.

Info: www.glensound.co.uk



SHURE IS LOCO ABOUT THE MOTIV LINE

Microphone maker Shure might have a long history of making mics but that doesn't mean it can't adapt to the times. Witness its new Motiv line of microphones for mobile devices.

The plug-and-play Motiv line features retro design with modern features. The family includes the Motiv MV5 digital condenser microphone, Motiv MV88 iOS digital stereo condenser microphone, Motiv MV51 digital large-diaphragm condenser microphone, Motiv MVi digital audio interface and an iOS app, the ShurePlus Motiv Mobile Recording App.

All are based around 24-bit/48 kHz-capable conversion and a Lightning digital audio connector. Several of the models have built-in DSP settings and ship with USB adapter cables.

The MV88 connects directly to any Apple iPhone, iPod or iPad equipped with a Lightning connector. With dual heads it can operate as a stereo microphone. The MV5 is a desktop mic with a tripod mount. The MV51 is also a desktop mic with a built-in stand. The MVi interface box has XLR and 1/4-inch inputs.

The ShurePlus Motiv Mobile Recording App includes selectable DSP preset modes, microphone gain adjustment, and a stereo width control that adjusts the microphone pick-up pattern for the MV88.

Info: www.shure.com



THE IP GATEWAY

— The VMXpress IP —

An audio over IP gateway for GatesAir networked consoles.

Fully compatible with any other manufacturers' Ravenna- and AES67-compatible devices.

Works with other GatesAir IP-compatible devices such as Intraplex IP Link codecs.

- ▲ 16 or 32 audio inputs and outputs for integration with the Flexiva VistaMax digital studio network. Analog models and AES/EBU models
- ▲ Plug-and-play, bidirectional audio interface to any audio device
- ▲ Interfacing Flexiva VMXpress to the network is enabled via Cat-5 connection using the Flexiva VistaLink protocol
- ▲ A Flexiva VistaLink "cascade" connection allows two Flexiva VMXpress devices to connect to a Flexiva VistaMax frame via a single cable run



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SONIFEX SAYS CANCEL THAT ECHO

A recent addition to the Sonifex Redbox line of broadcast problem-solvers is the RB-AEC, an acoustic echo canceller for snuffing out annoying echoes in earpieces.

According to the company, "When a studio presenter's microphone signal is played out through a monitor speaker in the control room, it can be picked up by the control room microphone(s) and returned to the presenter's earpiece as an undesirable echo."

Sonifex says that the AEC "is used to remove the entire control room monitor speaker output from the presenter's feed by adapting to the environment in which the control room microphones are placed. Although acoustic echo cancellation is more commonly implemented in telephony systems, the Sonifex RB-AEC is designed to produce broadcast quality cancellation."

The RB-AEC's onboard digital signal processing can adapt to shifting situations, such as personnel moving around, to keep the echo tamped down.

Info: www.sonifex.co.uk

ZWCOM FM02 RECEIVER HANDLES MULTIPLE JOBS



The FM02 FM receiver from 2wcom can take on multiple roles such as demodulation, source-switching for FM backup and FM/RDS parameter monitoring.



Dual-channel capability allows the unit to receive one FM signal for rebroadcasting, while monitoring a second FM signal with the second tuner. It can also receive the same signal on both tuners with one serving as backup.

For source switching in a backup solution, the FM02 receives an MPX signal and loops it through directly to the output. In case of failure the FM02 uses its tuner as a back-up solution to receive the MPX signal off the air. It is also able to loop through the signal in the event of a power failure. Furthermore, the FM02 can be used as part of a monitoring solution for both FM and RDS parameters.

With remote control via IP and SNMP, the 19-inch FM02, with dual tuners and dual antenna inputs, offers remote audio quality monitoring through its built-in MP3 streaming capability, the firm explains.

Info: www.2wcom.com

NEUTRIK UPGRADES CONNECTORS TO USB 3.0

Connection hardware specialist Neutrik announced that USB 3.0 connectors will be available in Q3.

The USB 3.0 Feedthrough Adapters (NAUSB3) feature reversible Type A/Type B connection hardware for properly orienting the connectors at installation. The flange will be available in nickel or black chrome.

Neutrik USA President Peter Milbery said, "The new USB 3.0 Feedthrough Adapters are a new option allowing our customers to dramatically increase data transfer rates while using the industry-standard D size cutout ... The USB 3.0 Feedthrough Adapter is one of the most common new product requests we have received."

Info: www.neutrik.us



OMNIA HIGHLIGHTS NEW PROCESSOR



Omnia Audio has released a new FM radio on-air signal processor, the Omnia.7. According to the company it includes features and technology previously available only in more expensive processors.



Features include "Undo" technology, which Omnia says recreates audio peaks and adds dynamic range to mastered tracks, along with a Psychoacoustic Controlled Distortion Masking Clipper that removes most distortion from frequencies detectable by the human ear and produces audio that the company described as "both cleaner and louder."

Omnia Toolbox, included with the processor, provides instrumentation such as oscilloscopes, noise generators, RTAs and FFTs.

The Omnia.7 can be operated remotely via IP. Optional features include simultaneous processing and encoding for streaming, HD/DAB processing and RDS encoding.

Info: www.telosalliance.com

NEW MICS FROM DPA

Denmark-based microphone maker DPA has announced the availability of two new broadcast mics set in its d: line.

The d:facto (shown) is a traditional handheld interview microphone. According to DPA the d:facto has

"voice clarity, linearity and low handling and wind noise." The omnidirectional mic utilizes the 2006V capsule, which has been toned down a little to minimize handling noise. An internal rubber suspension aids in noise suppression.

The d:fine is an in-ear-based headset. Using a slim design, thin cables are paired together for efficiency. Two earpads are provided to help in noise isolation. The ear assembly is designed for ease of adjustment.

Info: www.dpamicrophones.com



**More Summer of Products
in our next issue!**

PRO SOUND EFFECTS SHIPS MASTER LIBRARY 2.0

SFX specialist Pro Sound Effects has released an upgrade to its Master Library effects package. According to Pro Sound Effects, Master Library 2.0 has some 30,000 new sound effects, an online access feature, free annual updates and new subscription pricing options.

The centerpiece of the package is a USB 3.0 drive containing 175,000 effects or 2.1 TB of data. The company says effects categories span "ambiances, audiences, cities, combat, Foley, nature, sports, transportation, weather and beyond."

The library is compatible with Pro Tools, Soundminer, NetMix, iTunes and other popular audio asset management systems and sound library software.

Pricing plans range from individuals to group use, subscription or buyout.

Info: www.prosoundeffects.com



O.C. WHITE "LOW PROFILE" SERIES MIC BOOM

O.C. White says that the new Ultima LP Mic Boom brings quality and reliability.

It features a 0–6-pound (2.7 kg) weight rating, so it can handle any popular broadcast microphone. The specialized counterbalance design allows for quick adjustments to the holding force, so microphone movement is easy.

The Ultima LP Mic Boom features a low-profile, table top-hugging design, which allows for the on-air talent to perform without facial obstruction from traditional microphone arms. There is integrated wire channeling down the sides of the arm for an uncluttered area.

The series features a new, specialized internal spring design. The main articulating mic boom section features more than 10 inches of height adjustment, as well as a specialized mic stud swivel which allows for 180 degrees, left-right, and 180 degrees up-down. For those broadcasters who integrate live video into the production, this allows for a clean view of the talent.

Additional horizontal arms can be added for extending a reach without moving the base. A 12-inch Vertical Modular Clamp/Riser Assembly allows mounting of up to four Ultima LP arms from a single pole.

Info: www.ocwhite.com

ROC-Solid Performance for Any Studio



- Cost-effective solution for on-air or production
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NYPR Turns to WorldCast

When termination of ISDN service was announced, New York broadcaster turned to APT IP

USERREPORT

BY JOE CURCIO
Assistant Director,
Engineering Operations
WNYC(FM)

NEW YORK — When you receive a letter from your telco or other service provider that begins with “Dear Valued Customer,” there’s a good chance these days that something is changing ... again.

In the case of Verizon’s announcement concerning the demise of radio lines and ISDN service, strongly encouraging you to immediately consider other product options, it means the end of an era of primary broadcast connectivity technology as we know it.

At WNYC(FM)/WQXR(FM) and their combined group stations — with more than 20 dedicated connections from multiple transmitter sites and prominent live broadcast performance venues like Carnegie Hall and Lincoln Center — the announcement certainly was a cue for ISDN and radio lines to exit stage left and for IP connectivity to step into the broadcast spotlight.

SOLUTIONS

Over the years, WNYC has implemented a number of AoIP box solutions including different flavors from Tieline and Barix, and certainly has dabbled with the occasional Skype or Google Hangout software sessions. However, the dominant IP connectivity solutions at their multiple facilities are provided by APT/WorldCast.

To replace their 15 kHz stereo pairs to and from WNET(TV) and the NPR New York bureau, WNYC recently implemented an AT&T-managed MPLS network using a combination of APT IP (Horizon NextGen) and Silver codecs.

Other than a few initial configuration misunderstandings regarding TX/RX ports, and a pop-up or two about SureStream settings (not being used for this application) the box lit up on both ends on the first try. Configured for apt-X, 16-bit, 384 kbps, stereo, 48 kHz, the audio quality was excellent, and the tech support was just as good. Their tech guys took the time to call in during the MPLS network design phase with

AT&T to help clarify the port forwarding and translations required for the AT&T MPLS configuration.



Joe Curcio

Don’t worry, there are no access control list tables or NAT configurations inside the APT gear, but you may need to know a thing or two about port settings between devices.

WNYC is in the really low serial number category when it comes to its long history with APT/WorldCast (when mea-



sured in IT/IP years, that is) — especially when it comes to STL installations. According to WorldCast, WNYC was the first in the U.S. to deploy AoIP over a T1 and DSL pair using their products. The combination of APT/WorldCast gear deployed at WNYC includes an older-generation version of their 3U Oslo mainframe hardware populated with their T1 and AoIP cards — all reliable, set-it and forget-it, and rock-solid, according to my colleague Anton Mittag, director of engineering at WNYC.

In the category of dual IP codecs for STL, the WNYC installation includes a number of APT Horizon NextGen IP codec boxes connected via a Verizon-managed MPLS network and a Cablevision public Internet drop. We’ve actually pulled the plug on the secondary Cablevision connection and the codec audio never missed a beat utilizing the APT SureStream technology in that instance.

CONTINUITY

The audio quality is exceptional, and the boxes stay up and running 24/7. Overall, the APT/WorldCast AoIP solutions are what they claim to be. Audio quality, uptime, seamless IP transport using their SureStream technology are

all on the money.

As with most progressing technology, interpreting configurations and related lingo against the provided (or not) documentation can be somewhat of a challenge at times. However APT’s quick and knowledgeable tech support response more than makes up for it.

Because of the high network security and firewall restrictions in place at WNYC there were a few problems using some of the devices’ nonbrowser-based GUIs. But after some port and protocol

tweaking with the IT group, most of the issues were resolved. There does seem to be a bit of a lingering, and vendor known issue regarding their Horizon Next Gen codec occasionally reverting back to its factory setting configuration on reboot. We’re currently working with tech support on the stability of versions 1.5.2 and 1.3 and so far, so good.

Surprisingly, a big perk in the STL-related APT/WorldCast products is the SNMP features. WNYC has a mixed selection of SNMP MOMs (including Harris Navigator, Burke, etc.) and the APT products work great with those systems and provide really useful metrics and real-time device status.

WNYC certainly has taken the advice of its telco to immediately consider other product options for the primary broadcast connectivity technology. They are trying to steer clear of

SIP server voodoo and the vapor of mixed-vendor IP codec product interoperability — even sometimes having to count sheep at night over the number of 9’s availability of packet versus the old switched-based connectivity. But so far we’re not losing any sleep over the decisions on the choice of APT/WorldCast AoIP product solutions.

For information, contact Tony Peterle at APT/WorldCast Systems in Florida at (305) 249-3110 or visit www.worldcastsystems.com.

TECHUPDATE

NEW 3.7-METER DISH FROM DAWNCO

An often-overlooked segment of the radio broadcast signal chain, Dawnco says, is the satellite dish. Many radio stations took advantage of the explosion in availability of satellite communications equipment that took place decades ago. Dishes installed at that time are still around but may be decayed; flimsy fiberglass and mesh make them inefficient and require costly maintenance.

Dawnco offers a 3.7-meter aluminum satellite dish. The budget-oriented P48 is a commercial-grade satellite antenna for excellent C Band reception. It says the four-petal “fast-ship” design keeps costs as low as possible.

This stationary antenna features Precise-Align reflector-joining flanges to simplify installation and transport. The antenna can be mounted onto an in-ground 5.5-inch OD pipe, or Dawnco can provide a non-penetrating roof mount. C Band gain is 42.3 dBi with Ku Band gain being 51.5 dBi. Feedhorn, LNB and pipe are sold separately.

For information, contact Dawnco in Michigan at (248) 391-9200 or visit www.dawnco.com.



Tieline Genie STL Unites Communities

Solid connections keep signals alive in remote North Dakota reservations

USERREPORT

BY ALEX LOOKINGELK

Lookingelk Broadcast Engineering

SOLEN, N.D. — During my U.S. military service I trained and worked extensively in RF and then supplemented that with IT education. I established Lookingelk Broadcast Engineering, a contract engineering firm, in 1990.

These days I contract independent RF engineering services to several rural and remote Native American Indian FM radio stations in North Dakota, South Dakota, Wyoming and Montana. My primary role is to upgrade and transition aging infrastructure into IP technologies. These states each have Indian reservations that range in size from 0.5 to 2 million acres and target audiences of approximately 5,000 to 40,000 listeners respectively.

I recently upgraded the aging studio-to-transmitter link for KLND(FM) in Little Eagle, S.D., mainly because of the deteriorating state of the infrastructure and wiring at the FM transmitter facility.



In particular, the weather had taken its toll on the physical wires between the studio and FM transmitter site.

I spoke to Tieline America's representative, John Lackness, and he introduced me to the Genie STL codecs. These seemed fit for purpose and he informed me that Tieline offered a trial

period during which I could install a pair of codecs at our station, to demonstrate how they performed.

John shipped two Genie STL units, which we installed, configured and tested between the studio and transmitter sites. I found the front panel controls allow for easy setup and/or access while

on-air, and a Web-GUI browser interface is available for control and configuration via a LAN.

The codecs were used to establish a 128 kbps stereo STL link using Tieline's MusicPlus algorithm. John also strongly suggested and made arrangements to ship a Ubiquiti airMax fixed wireless STL setup. To avoid any cabling I installed the Ubiquiti airMax M series links. These act as a carrier between the studio and transmitter sites with the Genie codecs interfacing via the Ubiquiti PoE units. The codec output at the transmitter is fed into an Orban Optimod audio processor and this is then fed into a 100 kW transmitter.

Testing proved successful and we subsequently purchased the two Genie STL units that had been sent to us. They have performed flawlessly over many months and the best part about broadcasting over IP is the sound quality; it's always noise-free.

Reliability and robustness of the equipment are paramount because I face numerous challenges on a daily basis. Broadcast facilities are often in extremely remote locations and utility service troubles can wreak havoc at times, e.g. electric power, telecommunications and tech support may be delayed for hours if not days. At this site a UPS battery back-

(continued on page 30)



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KCLU Transitions to AoIP With GatesAir

IP Link's security, signal quality, error correction please college broadcaster

USERREPORT

BY TIMOTHY SCHULTZ

Chief Engineer
KCLU(AM/FM)
California Lutheran University

THOUSAND OAKS, CALIF. — KCLU(AM/FM) is a community service of California Lutheran University, delivering comprehensive local news and National Public Radio programming to listeners in Ventura, Santa Barbara and San Luis Obispo counties in California via five transmitter sites.

Our flagship station, serving Ventura County, is KCLU(FM), Thousand Oaks. Southern Santa Barbara County is served by KCLU(AM) and its companion FM translator.

KCLU extended its coverage into northern Santa Barbara County and San Luis Obispo in 2013 through the acquisition of KCLM(FM), Santa Maria, Calif. Having long used T1 services to transport audio to our Santa Barbara transmitter sites, we were looking to avoid the recurring costs of expensive point-to-point circuits. Upon evaluating options on the market, we set our sights on the Intraplex IP Link codec from GatesAir.

CHANGES

Adopting the IP Link for KCLM helped us to prepare for an unexpected change in our transport architecture. Around the time we received our codecs for KCLM, our telephone service pro-



vider informed us that our 45-mile T1 contract into Santa Barbara would not be renewed. We decided to invest in additional codecs to replace those T1 circuits, laying the foundation for a reliable, bidirectional IP transport architecture to all of our remote transmitter locations.

From our studios in Thousand Oaks, we use an IP Link 100 to feed KCLM and an IP Link 200 to feed KCLU(AM) and its translator. Since the codecs are bidirectional, we use the return channels for off-air confidence monitoring.

Transporting IP audio across the open Internet has its own set of challenges. Couple that along with limited band-

width at a remote transmitter site and you have a perfect candidate for QoS issues. However, with IP Link, GatesAir has delivered on the same promise of its legacy Intraplex STL systems: rock-solid reliability.

Much of this reliability comes from IP Link's optional stream splicing feature. Though we use two different ISPs that will hopefully not drop the same packet, the IP Link has a collection of tools, such as time diversity, packet interleaving and forward error correction, to allow the user to optimize the streams for best overall performance. On the rare occasion when both ISPs lose the same uncorrectable

packet, listeners rarely notice because of IP Link's error concealment techniques.

The IP Link keeps track of every packet received, lost, early, late and corrected with full reporting and numerical statistics available from its Web-based GUI. We are also evaluating Intraplex LiveLook, a new software program that presents this and other network quality information in a graphical format.

One of my early concerns of placing a critical appliance like this on the open Internet was the threat of it being hacked. Thus far, the IP Link has proven to be very resilient to DoS and hack attacks with settings available to make itself invisible to unauthorized users or bots.

The quality of the audio has been exceptional. Despite limited bandwidth to our transmitter sites, the 192 kbps AAC-LC algorithm we chose consistently delivers crisp, clean audio that is the hallmark of NPR member stations.

The biggest benefit to our operation may be the overall long-term cost savings. We have cut our distribution costs by more than half by eliminating point-to-point T1s, paying only for local ISP loops. The ROI translated to an 18-month payback looking at the hardware and networking costs.

The IP Link has delivered the freedom of reliable, network-based audio transport without the high monthly costs associated with traditional transport solutions.

For information, contact GatesAir in Ohio at (513) 459-3400 or visit www.gatesair.com.

TIELINE

(continued from page 29)

up is installed, so only major electrical power-outages have contributed to rare broadcast interruptions.

Everyone is happy with the Tieline Genie STL codecs and we still do POTS remotes from cultural and sporting events using Tieline Commander G3 codecs. In fact our listeners describe how we stand out from other regional stations because of our remote broadcast quality. "It's like being in the crowd" onsite. That says it all.

I have also recently designed a new FM radio facility incorporating Wheatstone products for each studio. The on-air control room has a Wheatstone LX-24 control surface and associated WheatNet-IP Blades. A Tieline Merlin Plus will be used for remote broadcasts from up to six nodes and was selected as it is "WheatNet-ready" out of the box.

For information, contact Tieline USA in Indiana at (317) 845-8000 or visit www.tieline.com.

TECHUPDATE

DIGIGRAM IQOYA *SERV/LINK GETS AN UPGRADE

Digigram has upgraded its Iqoya *Serv/Link multichannel IP audio codec, citing demand for robust multichannel encoding and decoding capabilities in space-limited facilities and applications.

Housed in a new 1 RU design that supports up to 64 stereo channels — an industry first, the firm says — the Iqoya *Serv/Link is a more compact and more powerful single-box AoIP solution. It's intended for establishing multichannel studio-to-transmitter links, multichannel studio-to-studio links and multiple four-wire commentary connections over IP, as well as the delivery of multiple audio programs to DVB/cable operators.

On the decoding side, it enables the decoding of multiple audio programs, giving users the option of defining three decoding priorities for each program, including Icecast/Shoutcast decoding and playback of local playlists and files.

The unit is available with analog, AES/EBU, and MADI I/O configuration options. It features up to 16 RS-232 ports and 16 GPIOs for auxiliary data tunneling, and offers Ravenna/AES67 connectivity. For each input, the Iqoya *Serv/Link facilitates multi-format encoding and multiprotocol streaming (RTP, UDP, HTTP, MPEG-TS SPTS, and MPTS encapsulation). Equipped to support SNMP ("set," "get" and "traps"), the Iqoya *Serv/Link can be managed remotely with standard supervisors.

For information, contact Digigram/Point Source Audio in California at (415) 226-1122 or visit www.digigram.com.



Insertel Canarias Trusts AEQ

Island contractor finds the company's Phoenix codec family meets demands

USERREPORT

BY HENRY REYES
Technical Director
Insertel Canarias

SANTA CRUZ DE TENERIFE, CANARY ISLANDS — Insertel is a telecommunications company located and operating in Spain's Canary Islands archipelago. The company provides broadcast telecommunication services for radio and TV stations, including the hosting of communications and IT systems for third-party transmission centers.

Both Project Engineer Carlos Medina and I have relied heavily on AEQ technology as part of our services for radio broadcasters. These services consist in transporting their program and contribution audio over IP networks, especially over the Internet.

The equipment that we have selected for our project needs consists mostly of AEQ's Phoenix family of audio codecs, specifically the Phoenix Studio and Phoenix Mercury. The units are installed depending on the type of connection that the customer needs and also the type of link available. We provide services both for point-to-point and point-to-multipoint.

For our point-to-point connections or STLs, most originate in a studio and end in a transmitter center.



Henry Reyes and Carlos Medina in Insertel's Master Control Room

The point-to-multi-point are normally run from one studio to several transmitter centers (other destinations are, of course, possible) by way of the multi-unicast system that is available by default with AEQ's IP audio codecs.

Due to the large number of codecs that are connected to our network and the wide geographical dispersal of them throughout the Canary Islands, the centralized management of the codecs is paramount. AEQ's ControlPhoenix provides us with the necessary tools to manage our network of codecs.

With the ControlPhoenix we can supervise the status of all the audio codecs. Alarms and events and even input and output audio levels can be verified for each piece of equipment thanks to the real-time on-screen precision VU meters. Any connection can be established or modified quickly and intuitively.

Due to the nature of our network and our customers' requirements, our Insertel network normally uses RTP communications for our point-to-point connections. However, the AEQ Phoenix audio codecs allow us to use any other common protocols to establish the connections such as SIP, either with or without an associate proxy server.

For connections requiring SIP server, note that AEQ provides the use of their dedicated SIP server free of charge. This service is included with each of the audio codecs that AEQ delivers and allows us to connect two codecs without the need for fixed IP addresses.

Also, the AEQ audio codecs allow us to configure and modify the buffer to enable the correction of communication errors.

At Insertel we decided to trust the technology from AEQ, mainly because it is a manufacturer of prestige and has devoted resources to IP technology research to make better and reliable equipment. We are as of whole very satisfied with the result that the AEQ solution has provided for our installation.

For information, contact Peter Howarth at AEQ in Florida at (800) 728-0536 or visit www.aeqbroadcast.com.

Barix STL System Reliably Moves IP Audio

Saves costs for WUOH in Orlando

USERREPORT

BY EFRAIN GONZALEZ
General Manager
WUOH(LP)

ORLANDO, Fla. — As a startup broadcaster, there's a tricky balance between sounding professional and keeping costs manageable. That balance intensifies for a low-power broadcaster focused on serving quality programming to local communities.

We know this all too well at WUOH(LP) in Orlando, Fla., a college music-oriented, low-power station that launched services on April 1.

We looked to IP audio for our STL system as one means of keeping costs low. We found an array of products on the market that varied widely in price and feature set. Our evaluation led us to the Barix STL solution in the end, using an Instreamer IP encoder and Exstreamer IP decoder to move audio from studio to transmitter with a minimal investment.

Procured through U.S. Barix distributor LineQ, the Barix STL system was simple to set up, and has streamed broadcast-quality audio reliably since going online. During configuration, we

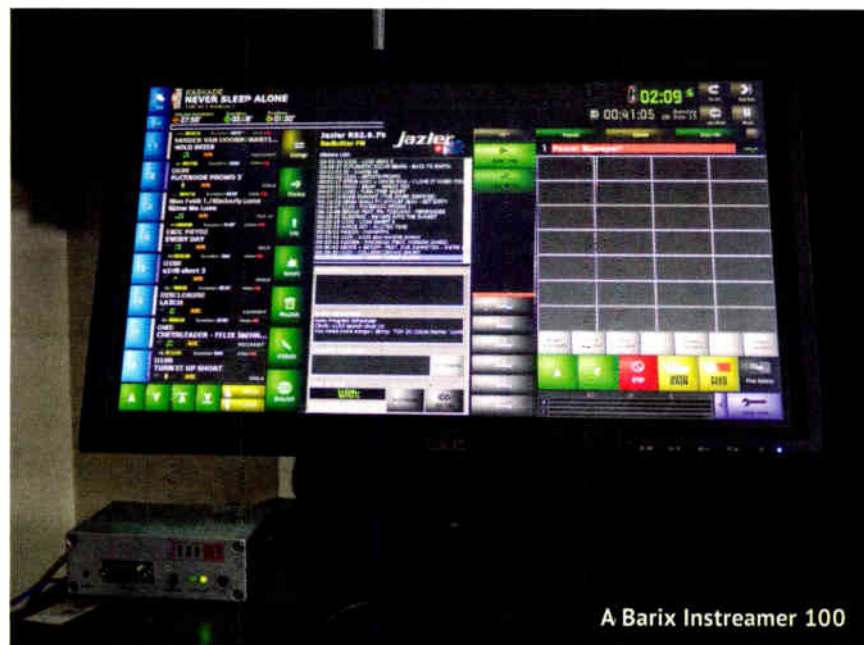
easily navigated the process of establishing IP addresses for each box, and opening the correct firewall ports to enable continuous audio transport.

We fine-tuned the settings for 128 kbps (48 kHz) MP3 coming out of the studio-based Instreamer, and for 192

kbps at the Exstreamer, which hands the higher bitrate audio off to a software-based stereo processor in preparation for transmission. Upon connecting the Instreamer to a router and computer via built-in optical connections, we were live on the air and broadcasting to 150,000 students across 20 local college campuses — not to mention the surrounding population. The audio is crisp and clean, with no low frequency, hums or dropouts from lost packets.

While the audio sounds great, reliability is perhaps the biggest benefit. The state of Florida is the lightning capital of the world, and the Orlando region gets its share of electrifying storms. The power often goes dark as a result, but the Barix Exstreamer immediately picks up the slack to keep us on the air.

The Exstreamer is equipped with a USB port and built-in automatic switching. With a 1GB dongle and 200 songs, the Exstreamer keeps us on the air for any reasonable power outage duration. With only a seconds-long blip upon the power returning, the transition from USB play to live broadcast is barely discernible. The Exstreamer at the transmitter site ultimately saves us a lot of money, eliminating computers and expensive components typically required to keep



A Barix Instreamer 100

(continued on page 32)

Impact Influences Investors With Comrex

BRIC-Link package makes it easy for clients to get on the air

USERREPORT

BY E.C. HAMILTON
Studio Engineer
Impact Partnership

KENNESAW, GA. — Impact Partnership is the fastest-growing company in the investment insurance and annuities industry. We're a key distribution partner for 14 leading U.S. insurance and investment annuity companies — we inform advisors and agents about financial products, and through comprehensive marketing, we help them reach and educate people who are looking to retire.

Radio is one of our primary offerings. We give our clients — financial advisors with little to no media experience — the ability to host a radio show. This means we do the legwork for them. We'll script the show, we'll work the clocks out, we'll record the show and edit it, and we'll do all the media buying.

In the past, our advisors would need to go to a radio station to record and produce the show. This would take hours — not only of the advisor's time, but of ours as well.

To streamline the process, we needed some sort of codec that we could send in the field — something that could



connect to our partners that we already worked with and that we could engineer in such a way to cut out the facility. After trying multiple options, we found Comrex.

Audio quality is of the utmost importance to us. Even though our advisors are often halfway across the country, we want their audience to feel like everybody they're hearing on the show is in the same room. Of the codecs and hybrids we tried, Comrex was the

only one that gave us the true, dynamic sound we wanted. We outfitted our studios with Comrex Access, and developed a BRIC-Link kit for the field.

Our clients have no technical background, and often have no engineering assistance available. We needed to engineer a plug-and-play solution that they could set up themselves, with little intervention and limited possibility for error. BRIC-Link is simple and reliable enough to form the basis of our remote kit.

The kit we've built is about 9 inches tall, 11 inches wide and 10 inches deep. The kit is shipped in a custom Pelican case, the interior of which is molded to fit the equipment. Inside of the rack, we've got the BRIC-Link, which is hooked up to a Mackie 402 mixer. All

of the custom cabling between the two pieces is wired together; when one of our clients receives their kit, all they need to do is take it out of the

Pelican, plug in the two Electro-Voice RE 320 microphones and two Sony 7506 headphones that we supply, plug the BRIC-Link into the Internet and to a power source, and they're finished. It's simple, it's easy and it requires no savvy — all together, it has saved days' worth of time, both for our customers and for our engineers.

When we introduced radio as an option, approximately 20 percent of our business came from that segment of our business. In under a year, with the help of our custom BRIC-Link kits and our talented staff, radio now makes up closer to 50 percent of our business, and we've gone from doing 15 shows to more than 100 shows a week in 50 or more markets. It's ramped up very quickly. The portability of the BRIC-Link contributes a gigantic portion of that.

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

BARIX

(continued from page 31)

stations on the air during power outages and disaster situations.

The Barix IP STL system also offers flexible streaming options that allow us to simultaneously feed a Shoutcast server for our online stream. This translates to another cost savings by reducing the hardware required to move streams across two broadcast platforms.

Speaking of reductions, the compact size of both units — no larger than a pill box — returns valuable rack for other applications at both ends. The long-term cost savings add up quickly. With only a monthly Internet service charge, we're saving up to \$5,000 a year compared to ISDN; and potentially more than that compared to T1. The investment in IP audio is paying off in dividends, with Barix delivering the reliability, flexibility and broadcast-quality audio we need to succeed.

For information, contact Brenda Stadheim at LineQ/Barix at (866) 815-0866 or visit www.barix.com.

TECHUPDATE

NEW AVT MAGIC IP CODEC RELEASED

AVT's latest codec is the Magic ACip3. It provides three LAN interfaces that can be used for audio over IP transmissions, for system control via the Windows PC Management Software or for the integration into a network management system via SNMP.

The line interfaces can be also configured as a main or backup connection. With the Secure Streaming feature, an audio transmission can be delivered via two independent IP connections. The unit is DSP-based, which the company says assures highest availability and low power consumption.

It supports standard codec algorithms G.711, G.722, MPEG Layer 2 and PCM. Optionally, it can be extended with the apt-X Enhanced 16/24-bit, AAC-LD and AAC-LC+V1/V2 algorithms.

Using the new Magic THipPro ACconnect feature the Magic ACip3 audio codec and AVT's Talkshow System MAGIC THipPro can be paired and controlled by a computer. In this configuration, the Magic ACip3 will be displayed as an additional "caller line" in the Magic THipPro Windows PC user interface. In this way, incoming calls to the codec can be accepted as well as outgoing connections can be established via the hybrid's control software.

Options include adding a second stereo encoder. An external backup power supply is available.

For information, contact AVT in Germany at +49-911-5271-0 or visit www.avt-nbg.de.



Telos Zephyr iPort Plus Links Australian Stations

Codec forms key part of Southern Cross Austereo's new continental program distribution network

USERREPORT

BY STEVE ADLER
National Radio Engineering Manager
AND MATT STEADMAN
Southern Cross Austereo

ADELAIDE, SOUTH AUSTRALIA — Southern Cross Austereo is Australia's largest commercial radio broadcaster, with 78 analog and 35 digital radio stations located throughout the country. SCA recently completed a rollout of a new live audio distribution system called SCAsat.

Australia is similar in physical size to the United States, and reliable distribution of live audio to stations across the country is critical to SCA's business performance. The SCAsat project implemented world-first distribution technologies, and is based around the Telos Zephyr iPort Plus audio codec.

SCA deployed a primary and backup Telos Zephyr iPort codec at each radio station. Each 2RU iPort device contains 16 encoders and decoders, which can send and receive live audio streams in all popular compression formats. The power of the iPort is due to its ability to receive encoded audio streams simultaneously from different network segments, providing seamless redundancy to SCA's radio network.

After considering various alternatives, SCA decided to use satellite technology as one distribution medium, and a telecommunication provider's wide area network as the alternate distribution platform. Live audio is sent from the originating radio station simultaneously across both satellite and WAN to all receiving radio stations.

The Telos iPort audio codec receives these multiple copies of the same audio, and will simply feed the first available IP audio packet to the audio decoder regardless of whether it arrived from the satellite or WAN. This means that if one of those paths became lossy — for example due to satellite "rain fade" — there is no impact on listener audio; the iPort will use the packet received on the other path.

This "hitless" redundancy model is key to the reliability of the SCAsat system, and has not been used for a large radio network anywhere else in the world.

As well as guaranteed delivery of live audio streams across SCA's radio network, the Telos Zephyr iPort Plus multiplexes Axia Livewire GPIO signals as well as three independent UDP data ports into the encoded transport stream. This means commands that start stop sets/commercial breaks or play station IDs and jingles are time-aligned with the source audio. The UDP data ports allow for distribution of any program-related data such as "now playing" information and album art for DAB+ transmission. Because the iPort places this ancillary data into a single transport stream with the audio, they are equally protected by SCAsat's dual-path distribution technology, guaranteeing that they will arrive at all of SCA's radio stations.

As SCA's radio network operates across many time



Steve Adler (left) and Matt Steadman

zones, the iPort has an optional feature that allows for each individual audio stream to be delayed locally by a fixed time delay before being fed to the audio decoder. This means that all SCAsat programs are sent across the system once, and delayed at the receive site (if required) to ensure the correct broadcast time.

SCAsat is configured to allow 17 audio channels to be distributed across SCA's radio network. Each receiving site can pick which programs on any SCAsat channel is received and sent for broadcast on the local radio station. The deployment of the Telos Zephyr iPort Plus as the SCAsat codec solution has given SCA's on-air teams much greater flexibility, reliability and improved the audio quality for millions of listeners each day.

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

TECHUPDATE

ORBAN RELEASES OPTIMOD SOFTWARE PROCESSOR

Orban says its Optimod-PCn 1600 is broadcast-quality audio processing software for Windows 7 (and higher) computers with Intel i-series CPUs. It is suited for mastering, netcasts and digital radio broadcasting, and for both live streaming and on-demand programming. It uses standard Windows WASAPI audio I/O.

The company says Optimod-PCn's setup, metering and subjective loudness control incorporate contemporary concepts of "target loudness" based on the ITU-R BS.1770 loudness measurement algorithm. Users can easily set and verify the target loudness of the output.

It has several features not previously available in Optimod processors for "flat" transmission channels:

MX peak limiter technology offers "true peak" control to prevent clipping in a playback device's

analog signal path, and achieves a favorable tradeoff between loudness, transient punch and distortion artifacts

Defeatable mono bass processing maximizes bass punch

A program-adaptive subharmonic synthesizer creates energy one octave below program energy in the range of 50–90 Hz. It modernizes the bass sound of older, bass-shy material

Phase skew correction eliminates comb filtering of the mono sum caused by phase errors between the left and right channels of source material. It can also correct comb filtering caused by multiple microphones picking up the same instrument in the recording studio

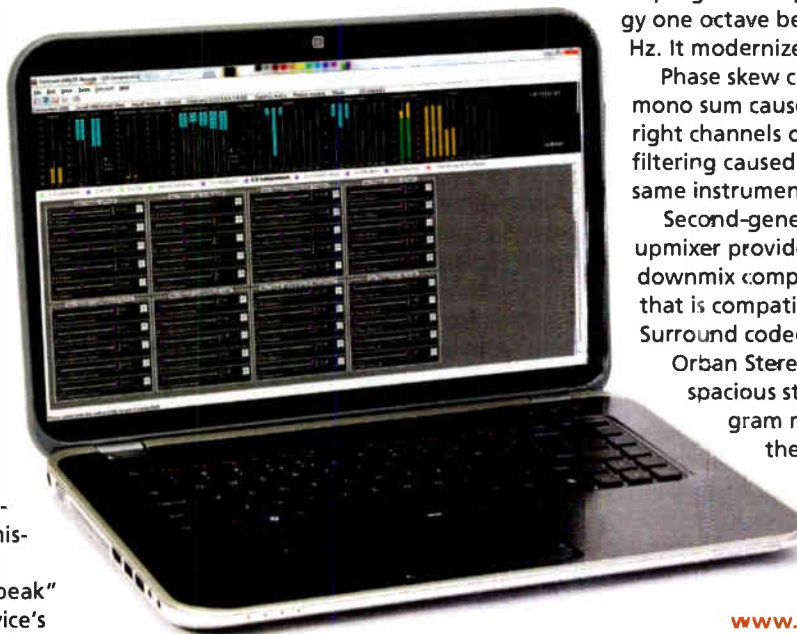
Second-generation Optimix stereo to 5.1 surround upmixer provides uncolored automatic upmixing with downmix compatibility. It creates "instant surround" that is compatible with the MPEG4 HE-AAC Parametric Surround codec

Orban Stereo Synthesizer can create an attractively spacious stereo or surround output from mono program material. Excellent downmix compatibility:

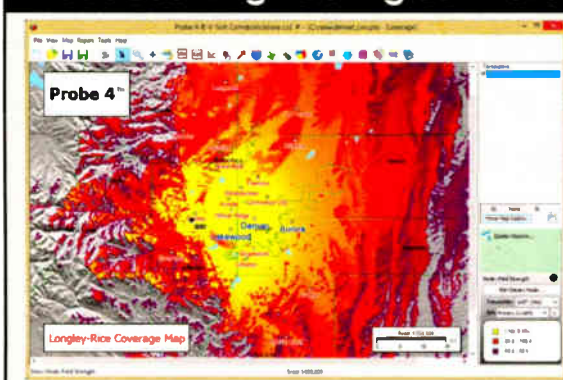
the mono downmix sum is equal to the mono input. Synthesis can be invoked manually, or activated automatically by sensing silence in the right channel input.

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

www.orban.com.



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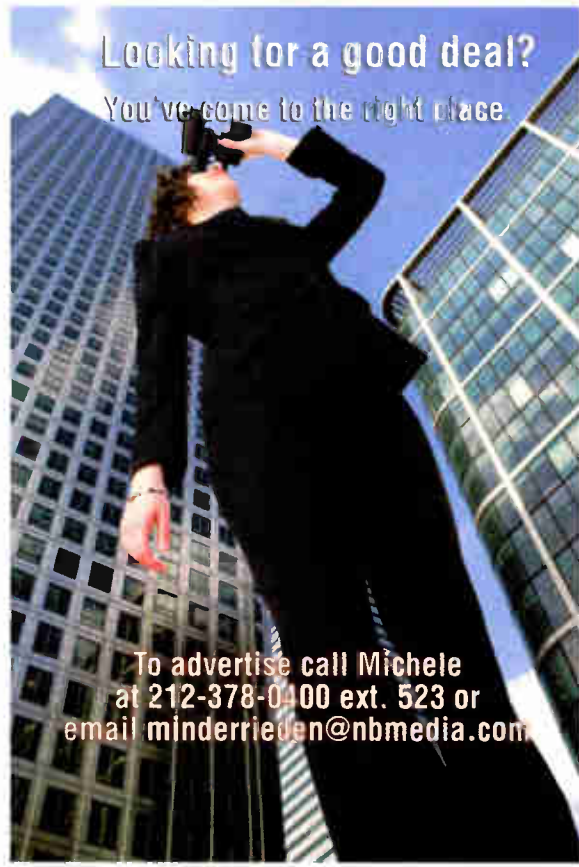
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Live-and-Local LPAM Is One Answer

How to cure the sick man of media?

COMMENTARY

BY JIM POTTER

The AM Revitalization NPRM of 2013 provoked a torrent of debate among broadcast insiders and publications as to the causes and cures of AM's woes.

The FCC received hundreds of first- and second-round replies, including two from me. Chairman Wheeler promised results soon, but we long ago turned blue holding our breath. There is consensus on many topics, but the big sore points are: What, if anything, to do about Class A protection, IBOC and FM translators (friend or foe of AM?). Those are the loud squabbles of the vested interests, but AM's chronic problems are more deeply rooted.

Most agree AM is on life support and slipping under for at least three reasons: (1) listener apathy to canned radio billboard programming; (2) market dilution caused by competition from new media; (3) poor reception caused by spectrum noise pollution, deteriorated coverage and cheaply executed AM radios.

AM radio was once king because it was the only game in town. No longer. AM started as "live and local" — a reliable friend and good neighbor to listeners for entertainment and information about their communities. But the switch to homogenized automated programming streamed from miles away using voice tracks and syndication alienated many listeners to the point of today's near-total indifference to AM. Short-sighted greed killed the golden goose.

CONTRIBUTING FACTORS

New and hugely popular wireless technologies and content sources offer listeners whatever music they want on their terms, without commercials, and continue to whittle the AM audience and thus the advertising appeal, diminishing station revenues and triggering the death spiral. AM's turn from music to news, sports and politics further narrowed AM's appeal. Today's sophisticated ad buyers see a rich array of "channel" choices, leaving AM in the also-ran category among better performing alternatives. Both AM and FM radio are nondescript passengers in economy class living on the free peanuts.

AM spectrum noise pollution (unintentional radiators and IBOC digital hash) corrodes the AM listening experience, made even worse by reduced effec-

tive AM field strengths blamed on the drying-out of the earth causing reduced ground conductivity. Cheap designs of AM radios with poor sensitivity and selectivity also cause listener frustration — leading to deserting AM in droves to full-quieted, noise-free FM, wireless and satellite options. One can hardly

the Class A stations with which I agree, but for different reasons.

Many Class A stations are owned by consolidators who have gambled millions on IBOC digital transmission systems, and are pressing the FCC to convert the AM band to digital to force acceptance of IBOC (see "Littlejohn: Retain Class A Protections" by Paul McLane, also in July 1). But they have



blame them. On the face of it, the AM dial as we know it is clearly inferior.

But the game isn't over yet; there's still time on the clock.

AM suffers from multiple maladies. Spectrum pollution derives mainly from tens of billions of noise-producing electronic products; leaky, high-voltage transmission lines; and IBOC hash. AM IBOC may disappear on its own, owing to public indifference. Shrinking AM footprints due to the earth drying-out is the province of the Almighty. No immediate relief is in sight from any of these, so we are stuck with impaired medium- to long-distance AM reception and noisy channels. However, short-distance — local — reception is still viable. That point is key to AM's rebirth.

But first, consider the argument made by Carl Como Tutera in his Radio World commentary in the July 1 issue titled "Embrace Local Service and Remain Viable." Amen!

Mr. Tutera decries the dominance of

made strategic blunders including perpetuating yesteryear's premise that homogeneous demographic programming over a wide geographic area will succeed into the future.

NO MORE MASS APPEAL

This is problematic because the once-monolithic white, English-speaking American national culture is quickly fractionating. America is not a melting pot (if it ever truly was); it's an increasingly bubbling caldron of dissimilar cultures, religions, wealth (or lack thereof) and political alignments. Each of those demographic slices wants its own media voice and spurns media outlets not to its liking. Thus, the Class A blowtorches are doomed to wither because large mass-appeal stations cannot serve the ever-increasing diversity of large urban populations, and IBOC is a clear flop. The Class As will quietly go dark for lack of audience and advertisers, as both groups head to the doors for refreshment.

As to the cure for AM's blues: It's old-fashioned. It involves making lemonade from lemons. Bad medium- and long-distance AM reception presents golden opportunities for local stations to fill the programming vacuum. Since AM audio/signal quality becomes unacceptable to the masses beyond about the 2 mV/m contour, AM fidelity within the 2 mV/m contour is good enough to override the spectral grunge.

Many communities would love to have what they had decades ago: Their own local radio station to satisfy their own local needs, including radio swap shop; city council and school board meetings; ask the mayor call-in shows; high school ballgame remotes; community calendar, school lunch menus, local news and views and inexpensive spots read live by the local announcer. In other words, live and local content, reasons for folks to dust off their kitchen AM radios and find the new station in town. Fancy that!

HOMETOWN PROGRAMMING

I am promoting the cause of LPAM — hundreds of new 250- to 500-watt full-time AM stations featuring live-and-local home-town programming meeting the needs of the local communities they serve.

What about co-channel interference? Given the apparently insurmountable obstacles to noise-free distant reception, I contend that many relatively low-power stations can be stacked on channels without negative consequence to either incumbents or upstarts. Modern transmitter designs possess frequency-determining components of sufficient stability to avoid carrier beat frequencies resultant of many signals occupying the same channel. A local AM transmitter of modest power featuring well-processed, consistently high modulation can effectively obliterate co-channel signals to provide satisfactory local reception with negligible realized interference.

Why AM radio over other media distribution channels, e.g., Wi-Fi or cable? Consider the stats:

- Ninety-nine percent of American households in 1999 had at least one radio; the average is five per household. There are approximately 115 million households in the U.S. as of 2010. Therefore, there are more than one-half billion radios in the U.S., according to various estimates. This is an impressive "installed base" for any consumer appliance, and outranks the number of cellphones estimated to be 328 million in 2011.
- There are 4,781 AM stations in the U.S. as of this writing.

(continued on page 37)

Let's Set the Facts Straight About LPFM

Volunteer wants to clarify low-power challenges, goals

LOW-POWER

BY KEVIN FODOR

I am a 40-plus-year veteran of commercial radio and still work in it; I also volunteer as an adviser to a couple of low-power FM groups and do some volunteer work for their stations.

I appreciate the opinions of Mr. Robert E. Lee (June 17 issue), at least the part of his letter in which he recognized that some LPFMs are trying to serve segments of local communities.

I could appreciate them more if not for a few facts.

Let's take for example one new LPFM operator in Ohio.

There are two full-power stations in its town: a daytime, 1 kW commercial AM station, and a Class A 3 kW FM operator on a commercial frequency running today as a noncom repeating the programming of K-Love.

You can't see the management of either station in town, because there is no traditional "office" for either. (I haven't been in the FM's studio building since I took an FCC inspector through it in 1975). The FM is essentially a satellite dish at the tower site.

The AM studio building is not manned. That station's programming comes from the home office in a city 20 miles or so away. Its programming is geared toward rural communities near and around the medium metro market which its home community sits next to.

Neither station provides even 5 minutes of programming per week to either the local community of which I speak, or the community that contains another commercial daytime AM owned by

this broadcaster. It's all about the original station's hometown and the nearby metro market.

Local businessmen with whom I have talked are irate about the situation, and have been for years now. One told me not long ago that the only time they

interest, convenience and necessity — something that some, though certainly not all, commercial operators have forgotten or deliberately ignore.

Now LPFMs are asking for some help from the commission on a number of things in two proposals from two

The FCC must be aware that there are some commercial operations are being run like this, or they wouldn't have established LPFM service in the first place.

see someone from the AM station is when a salesperson comes through hitting them up for advertising on their summer broadcasts from the weeklong county fair.

The county emergency management services must not be too thrilled with that FM or AM station, either. That's why when the LPFM made a plea, the operators agreed to purchase the EAS equipment for the station. And though LPFMs are not obligated to do this, this station has installed their equipment in such a manner that it will interrupt programming in the event of an emergency.

So, these commercial stations *must* be owned by a big consolidator, right? Nope. They're both small owners.

Apparently, the FCC must be aware that there are some commercial operations are being run like this, or they wouldn't have established LPFM service in the first place. They didn't establish them to be overblown Part 15s. They didn't establish them to be toys. They were established to serve public

separate groups. REC Networks and the LPFM AG group. Each of the two has at least some valid points in their proposals, whether either side can get all it wants or not.

PROPOSAL ONE

First, power increase.

The original LPFM proposal was for (as I recall reading in the pages of this magazine) 1,000 W and commercial operation. This was killed by lobbying from big broadcasters and the NAB. LPFMs were limited to 100 W ERP at 100 feet HAAT.

Let's do some engineering here. This power and tower height, with favorable terrain on a good propagation day, will get your signal 3 to 5 miles on a car radio. Inside a building, you're lucky to get more than a mile or so on a typical table radio without an antenna installed. With extremely favorable terrain, you "might" get a little more distance in-car (just like my 10 W high school station could be heard on hilltops in car eight

miles away).

A 3 kW commercial Class A can reach (according to the textbook for the college radio classes I teach) 15 to 20 miles, assuming favorable terrain and lack of interference from co-channel spacing issues. And the penetration is generally good for a distance of some miles from the transmitter.

The engineering adage is: Double the power and half the distance. The current proposal of 250 watts would extend the signal range in-car up to about another 2.5 miles and would allow for better building penetration close to the transmitter.

Two hundred and fifty watts is the power level for a translator. But I don't see a request or suggestion that LPFMs should be allowed the same tower height of translators. (An 80 W translator at 500 feet can cover an entire county.) In fact, 100-foot tower height is still what's proposed.

Yes, LPFMs would like to be given "primary" service status. Why? Do the math: It costs about \$25,000 to get one of these stations through the licensing process and on the air. If you operate frugally, your annual operating budget is around \$15,000 to \$25,000. (Some stations get deals on studio space and/or electricity, which can help.) That means you have to hope to get a *lot* of underwriting donations to cover that nut and, hopefully, have a little money left over at the end to put back in the business.

These stations get no help at all from government grants or organizations such as the Corporation for Public Broadcasting. They're largely on their own, and have to make it on their own.

And yet, as a "secondary" service, if a big broadcaster wants the frequency, they can terminate years and years of hard work, blood, sweat and tears with a phone call. And I'm not talking about one to the FCC. I'm talking about the

(continued on page 38)

CURE

(continued from page 36)

- There are approximately 65,000 "small towns" in America with populations ranging from 10,000 to 25,000 people. (These figures derive from various sources and are not precisely synchronized as to year, but I nevertheless believe they reasonably overlap.) The 65,000 small towns cited exceed the number of licensed AM stations by about 14:1, meaning approximately 60,000 small American towns are not served by their own radio station. A huge vacuum waiting to be filled!

What about big city urban neighborhoods, like south Philly or east L.A. that want their own station? I agreed in writing with the Minority Media Telecommunications Council's AM NPRM reply

comment: "... to provide service to an under-served interest group. To allow a station to align itself for service to a particular unserved, or under-served community of interest, the commission must realize that in an otherwise well-served geographic area, it is more important to facilitate coverage of the demographic community in need of a voice than to assure additional broader coverage defined only by the politically boundaries established for many other reasons ..."

Boiled down, that requires changing the FCC rules to permit licensure of stations rendering service to only a portion of a large community of license, e.g., South Side Chicago rather than all of Chicago. Current rules require stations to serve the entire COL. Here is where LPAM would shine in the interest of urban American diversity by giving voice to demographic slices otherwise ignored by the big stations. Of necessity, the channels occupied by the local blowtorch

Class As would need to be avoided in the urban case.

Live-and-local home-style AM radio — urban, suburban and rural — will, like the phoenix, rise again from the ashes under this scenario. Yes, it will take many FCC rule changes and battles with existing AM licensees seeking to protect their precious but imaginary exaggerated signal contours. No matter, yesterday's game is over and the stadium is empty. But salvation of the AM band is at hand.

Jim Potter runs radio commercial production service Little Spot Shop and provides contract engineering services in the Branson and Springfield, Mo., areas. He has over 50 years experience in broadcasting, beginning with ham radio as a kid in Philly working at major stations. He has worked in all phases of radio, including engineering, DJ, sales, GM — and janitor. His broadcast career has been split with electronics manufacturing as director of marketing and product engineering.

OPINION**LPFM***(continued from page 37)*

one that says, "We want your frequency for a translator. Nice to know you. Goodbye." Why would a business sign an underwriting donation agreement for a year knowing this? The challenge for many LPFMs at first is explain to businesses what underwriting *is* ... and to make them understand the language restrictions that go into underwriting. This alone scares many potential underwriters off.

Commercials on LPFM? It was originally the suggestion. And I wouldn't object to a potential compromise that would at least allow the stations to run a small number of ads to allow them to barter services. But this may, in the end, be a non-starter. The LPFMs I work with are prepared to deal with the situation either way.

PROPOSAL TWO

What we — the three LPFMs with which I am associated, WRPO/WOHP in Russells Point and Huntsville, Ohio, and WALH in Wilmington, Ohio — *would* like to see is some clarification with the underwriting rules.

Let's face it. If you only bill \$15,000 or so annually, you can't afford a communications lawyer. "Go read the rules," we're told. We do. Yet, it seems like every so often somebody "clarifies" a rule in a way that raises more questions than it answers.

Recently, a station was fined for having too many

"items" in an underwriting announcement. Yet the announcement fit the 30-seconds-or-less standard and contained no promotional or comparative language. What makes an announcement with eight items in a 30 or less message illegal, and an announcement with seven legal? No answer there.

Slogans. They're allowed if the language in them is not promotional and if a business has been using them for six months or more. Okay, define promotional. How about "Subway ... eat fresh!" Ask that question and you get 100 different answers. Go to the FCC and all they will say is: "If the business has been using the slogan for six months or longer, it is probably OK." They won't go further than that. I know that for a fact based on personal experience.

Are you aware that an LPFM cannot run a PSA that says "The (name) High School Dare Program is holding a car wash this Saturday from 11 a.m. to 3 p.m. to help the family of (student) pay for a funeral marker for him after he died at the hand of a drunk driver"? Not legal. An LPFM cannot promote the activities of another nonprofit. Please tell me who would be hurt allowing this type of message.

At least one of the two proposals petitions the FCC to allow this type of announcement on LPFM stations.

Now I better understand the pain of commercial broadcasters over the indecency laws.

Anything else in either proposal would be icing on

the cake to the LPFMs I work with.

FARM TEAM

Bottom line, commercial broadcasters: Most LPFMs that I know have no intention of doing anything other than serve their communities, operate as the nonprofits they are, but hopefully make enough that they can grow their businesses ... and maybe, someday, even be able to afford to pay a part time employee or two. Or at least pay a stipend.

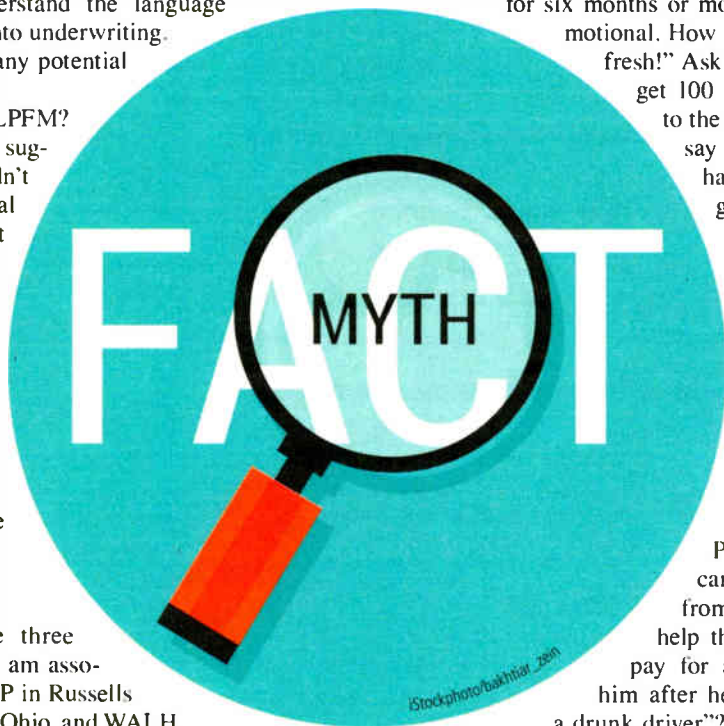
But if a commercial broadcaster abdicates its responsibilities to serve the public interest, convenience and necessity such as the case of the community in Ohio, LPFMs are prepared to fill that void. And if one of you guys eventually loses out, if a full-power commercial station is ever actually beaten by a 100- or 250-watt noncom, then if you want to find the villain just go look in a mirror.


One last point: The LPFM in that Ohio community had its license application challenged twice during the licensing process by a Class A commercial operator over 90 miles away in another state claiming its "fringe" coverage would suffer interference from the LPFM. The FCC laughed it out of the docket eventually, but the LPFM had to pay a lawyer twice to represent them.

So who's really looking for special favors? Or, perhaps the question is, who's looking for government-granted protection from the most remote of potential competition?

Broadcasters lament the loss of the "farm team" for up-and-coming talent because commercial radio no longer has those entry-level jobs on its budget lines. An LPFM can fulfill its "educational" mission by training potential broadcasters of tomorrow. As some of us look toward our retirement years, a vibrant LPFM service — one that *helps* commercial broadcasters find talent who can create compelling content — would be a great legacy to broadcasters of my generation. That's why I got involved with this service.

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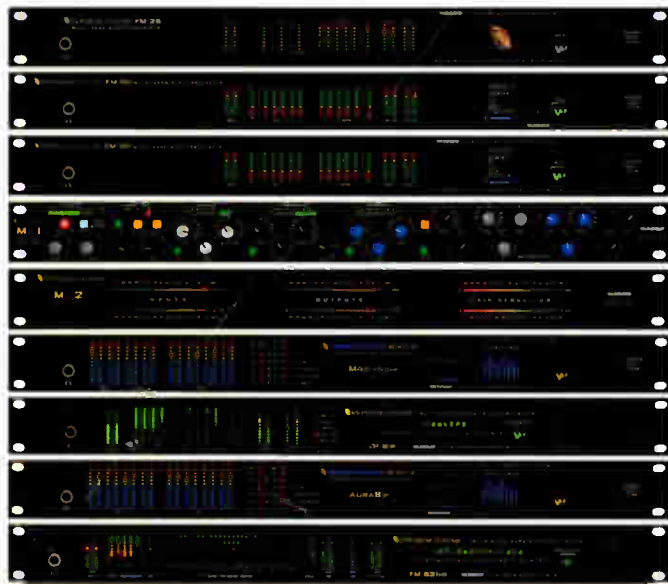
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