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Ryvicker


Dickey


Smulyan


Schwartz


Valle


Paper

2012 Radio Show Leadership Breakfast Explores Radio's Future

The Radio Advertising Bureau (RAB) and the National Association of Broadcasters (NAB) announced the panelists for a 2012 Radio Show event titled "Leadership Breakfast: Preserving Radio's Value in a Changing World." The event will be held Sept. 20, 7:30-9:15 a.m. at the Hilton Anatole Dallas with a full breakfast.

Marci Ryvicker, a managing director with Wells Fargo Securities, will provide opening remarks. The Leadership Breakfast will revolve around a panel discussion with Lew Dickey, CEO of Cumulus Media; Jeff Smulyan, chairman of the board of Emmis Communications; Joe Schwartz, president and CEO of Cherry Creek Radio; and Jose Valle, president of Univision Radio. The panel will be moderated by Lew Paper, a partner at Pillsbury Winthrop Shaw Pittman.

Ryvicker joined Wachovia Securities (now Wells Fargo Securities) as an equity analyst in June 2002. As managing director, Senior Equity analyst, she continues to monitor developments in broadcasting as well as other media industries.

Dickey co-founded Cumulus Media in 1997 and became CEO in 2000. Cumulus now manages more than 350 radio stations throughout the country, the second largest number of radio stations for a single U.S. broadcasting company.

Smulyan serves as chairman of the board of Emmis Communications Corporation, a radio and magazine publishing company that operates in 12 U.S. markets and Slovakia and Bulgaria.

Schwartz is president and CEO of small-market radio company Cherry Creek Radio, which operates 45 stations in California, Arizona, Washington, Montana, North Dakota, Texas, Colorado, New York and Utah.

Valle, as president of Univision Radio, oversees the expanding portfolio of the leading Spanish-language broadcaster in the U.S. Univision Radio currently owns and operates 70 radio stations in 16 of the top U.S. Hispanic markets and five stations in Puerto Rico.

Paper is with the Pillsbury office in Washington, DC, and a part of the firm's communications practice. He previously served as Associate General Counsel at the FCC and Legislative Counsel to United States Senator Gaylord Nelson.

Comrex's STAC VIP passed Skype certification. Skype support means stations that use STAC VIP for their call-ins can take wideband calls from anyone who has Skype installed on their PC or smartphone.

Lincoln Financial Media's Benson is Elected NAB Radio Board Chairman

The National Association of Broadcasters Board of Directors met for its regularly scheduled summer board meeting.

In the radio board of directors meeting, Don Benson, president and CEO of Lincoln Financial Media, was elected to be the radio board chair by unanimous vote. John Beck, senior vice president and market manager, Emmis Communications St. Louis, was elected radio board first vice chairman by unanimous vote, Caroline Beasley, executive vice president and CFO of Beasley Broadcast Group, was elected radio board second vice chairman by unanimous vote, and Jose Valle,president, Univision Radio, was elected to be the radio board's major group representative seat by unanimous vote.

HD Radio
Pure Digital. Clear Radio.

A total of 28 automakers have now publicly announced their plans to incorporate HD Radio in 140+ models by the end of 2013.

AUDIO A ES

New additions to the 133rd AES Convention include a project studio clinic, a networked audio track and a special movie screening.

The FAA has adopted new tower lighting guidelines. Depending on the height of the tower, the FAA will require the upgrade of the medium-intensity lights for communications towers between 500' and 2,000'.

KJAC-FM Denver Returns to Air After Forest Fire

More than 1,700 firefighters, National Guardsman and volunteers work around the clock saving structures and lives while trying to contain the most destructive blaze in Colorado history. Meanwhile a local radio station, Jack-FM 105.5 (KJAC-FM), has been off the air since June 11 when the fire interrupted the station's STL to its transmitter site near Bellvue, CO. The transmitter site is in the middle of the fire zone west of Fort Collins. The station lost its T1 lines and electrical feed.

Clear Channel Satellite (CCS) provided an emergency STL link via the CCS uplink located in Englewood, CO. With the new satellite uplink equipment and a generator, the station is back on the air. The Clear Channel Satellite system, XtremeSat Media, is an expandable satellite audio platform available exclusively through CCS. The XtremeSat Media Content Receivers (MCR) can expand from SCPC to MCPC; delay broadcast of satellite programs with cues; regionalize spot insertion; and deliver macro/playlist files, content and commercials over satellite or via network FTP server.

FIND THE MIC AND WIN!

Tell us where you think the mic icon is placed on this issue's cover and you could win Hosa HDC-800 headphones. Send your entry to radio@RadioMagOnline.com by Aug. 10. Be sure to include your guess, name, job title, company name, mailing address and phone number. No purchase necessary. For complete rules, go to RadioMagOnline.com

ROC YOUR WORLD

The new ROC console from Logitek

When Logitek introduced its first ROC console back in the 1990s, it marked a revolution in audio console design. One of the industry's first router-based digital consoles, the original ROC boasted simple wiring and access to multiple sources at each fader.

Over the years, the router-plus-console Networked Audio concept has become the standard in console architecture. Although the original ROC was retired years ago, Logitek has continued to develop systems for both TDM and AoIP audio networking. The new ROC takes the best of the original design and pairs it with the latest technology and styling.

Available in multiples of 6 faders (up to 24), the ROC is housed in an attractive tabletop enclosure. Durable Penny & Giles faders, OLED source indication and intuitive controls make the ROC a natural for on-air, production rooms or even in temporary studio setups. Two monitor feeds, front panel headphone connection and user-assignable softkeys will please even your fussiest operators.

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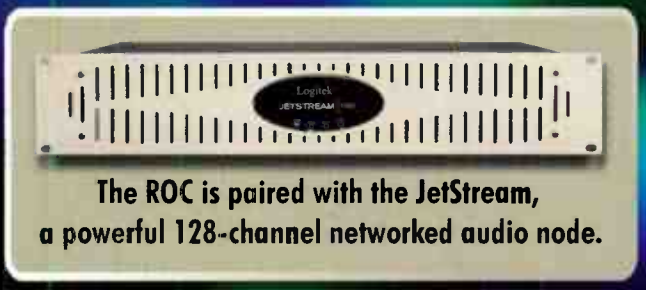

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VIEWPOINT

The SBE Plans for the Future ... Again

On June 23, the Society of Broadcast Engineers held a strategic planning meeting in Indianapolis. This is the fourth such meeting that I recall the SBE holding. I attended my first in the late 1990s when I worked in Cleveland. The SBE held its last such meeting in July 2006 when I was president of the organization.

This day-long meeting included the SBE officers, board of directors, national staff, several national committee chairmen, and some SBE members, many of whom represented their local chapters. In all, nearly 40 people met for the day to review where the society currently stands and determine some direction for the organization's future.

I was not able to attend the meeting myself this time, but I spoke with Ralph Hogan, CPBE DRB CBNT, the president of the SBE, about the event. He tells me that 28 SBE chapters were represented at the meeting, which is a good showing.

The results of these meetings are often subtle adjustments rather than sweeping changes. Some results from past meetings include an increase in frequency of *The SBE Signal* newsletter and establishing the roots of the SBE's current educational programs.

Now that the meeting has concluded, the real work for the SBE begins.

Hogan told me that from the session, six areas of opportunity and challenges were identified. One point covered programmatic efforts, such as increasing support to chapters, a reinvigorated effort to attract youth to broadcast engineering and revamping the SBE awards program to encourage involvement.

SBE chapters are the heart of the society. The individual members and their local or regional gatherings are the most direct outlet for SBE activities. The idea of attracting younger people to become broadcast engineers is not a new concern. I heard this since joining the SBE in the 1980s. I am interested to see what plans the SBE might set for this goal, however. While the SBE can talk to the potential broadcast and media engineers' interests, broadcasting in general needs to be more involved in attracting and retaining the new talent. Broadcasting today does not have the career luster it had 20 years ago. There's plenty of competition from (and often better pay in) other industries.

Another point made at the session was to identify an audience for membership outreach efforts. The SBE has made efforts in this area in the past, and the SBE Program of Certification reflects this. The Certified Broadcast Networking Technologist, and the new Certified Broadcast Networking Engineer certification evaluate an individual's knowledge with IT in the broadcast environment. Through these, those involved with IT outside of broadcast may see a career path within broadcast.

The Certified Audio Engineer and Certified Video Engineer certifications were also created to gauge the knowledge of those who work in broadcast and media but do not work on the RF side. Audio and video production professionals are a potential audience for these certifications, and a source of new members for the SBE.

The meeting facilitators are preparing their report for the SBE board of directors. Like past reports, I look forward to reading the details of the meeting and the suggestions of the facilitators in setting the next goals for the society. The SBE board will then review and discuss the ideas and begin their efforts to implement them.

And by the way, in 2013, the Society of Broadcast Engineers will celebrate the 50th anniversary of its founding by John Battison in 1963.

Chriss Scherer | Editor

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Update on LPFM Rules

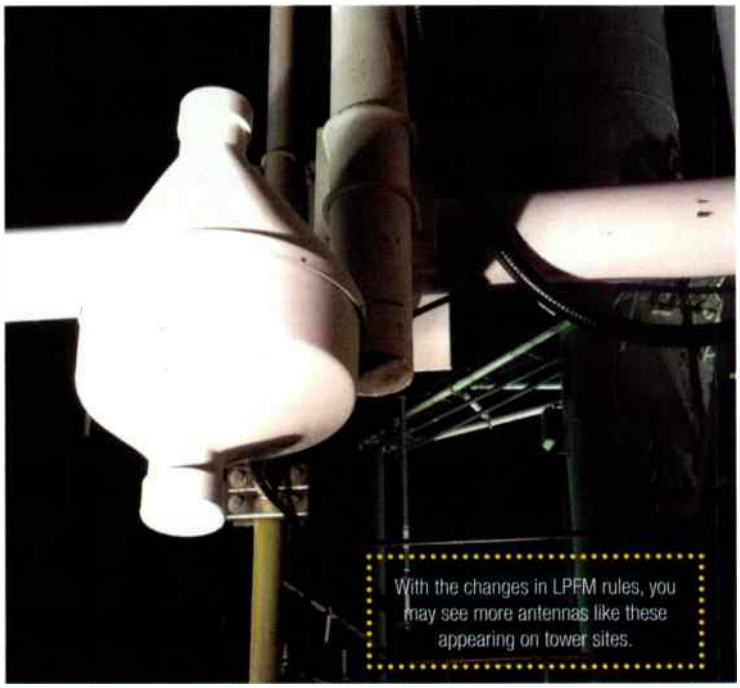
by Jeremy Ruck, PE

When we last discussed LPFM facilities, the primary focus was on the elimination of the third adjacent protection requirements to full-service facilities. Now almost two years later and a couple of translator articles in between, we find that LPFM and translators are inextricably linked. The connection between these two services is a result of the necessary implementation of certain provisions of the Local Community Radio Act of 2010 (LCRA). I have always likened the FM allocation situation somewhat akin to the movement of electrons and "holes" in a semiconductor, and it is an undeniable fact that the demand for limited spectrum space has certainly decreased the number of "holes" in the substrate.

The first big ticket item in the LCRA, signed into law by the president in January 2011, is the removal of the third-adjacent protection requirements. The elimination of the third-adjacent requirement is a fairly simple concept, and is one that has been bantered about for many years, but was finally changed. In a nutshell LPFM applicants and licensees will no longer be required to maintain the third-adjacent spacing requirements to other LPFM, full-service FM, FM translator, and FM booster stations. There is a caveat to that provision, however.

FACILITY PROTECTION

Facilities that provide radio reading services via subcarrier must continue to be protected. When the LPFM service was established in 2000, the Commission did not implement additional provisions to reading services facilities reasoning that the subcarrier was transmitted within the assigned frequency, and was therefore receiving the same protection received by the main broadcast station. Shortly thereafter this decision was reconsidered due to concerns about the greater vulnerability of the specialized service receivers to third adjacent interference. Their designs caused them to be somewhat more susceptible to such interference than general consumer radios. Because of this, and the valuable service provided, the LCRA maintains the existing spacing table to facilities broadcasting reading services.



With the changes in LPFM rules, you may see more antennas like these appearing on tower sites.

The other big item of note was the requirement ensuring the availability of spectrum for LPFM stations. The broad provisions of the act require that the Commission, when licensing translators, boosters, and LPFM stations. ensures that licenses are available for all three services, that the licensing decisions made are based on local community needs, and that all three services will remain equal in status and secondary to existing and modified full-service FM stations. The end result of this will ultimately be that a number of the pending translator applications from 2003 will have to be dismissed. Although the quantity to be dismissed will not be as large as it would have been had the ten-application cap been implemented, it still will likely be a fair number.

These two, however, are not the only provisions that follow from the implementation of the Act. The LCRA explicitly grants the Commission the authority to waive second-adjacent spacing requirements. Under the relevant section of the Act, this waiver is permissible in instances where an LPFM station establishes that no interference is predicted to occur to any authorized service by taking into account all relevant factors including terrain-sensitive propagation models. On the translator side the Commission has routinely allowed specific studies demonstrating that zero population would be affected by an interference area although an interference area may nevertheless exist. The wording of the statute is such that the Commission has sought additional comment on how to implement this portion of it.

In addition, the Commission is also required to modify the current rules to address predicted interference to FM translator input signals on third-adjacent channels. This requirement makes sense. In many cases translators are employed to provide reception of full power FM facilities when not technically feasible As a result, the signals received by the translator, tend to be somewhat weak, and become usable through amplification either by antennas or active device. It is plausible that a

co-located LPFM could desensitize the receiver of an FM translator receiving its material off-air. At present the Commission requires LPFM stations to remediate actual interference to FM translator input signals, but had not codified spacing requirements or other measures. Because of the statute language requiring the Commission to address predicted interference, it has been concluded that the subjective provision must be more strongly established.

FOLLOWING STANDARDS

The current proposal is to track the Mitre standard. Under this proposal, the Commission is proposing that any application for a new or modified LPFM station not use a transmitter site within a potential interference area. This potential area is defined as any location within 2km of the translator site or any area within 10km of the translator site within azimuth of 30 degrees either side of the direct bearing between the translator and the source of the received signal.

If a proposed LPFM were to be located in one of those areas, then the Commission is proposing that a demonstration of lack of interference be made through one of two methods. First the applicant may show that the ratio of the signal strength of the LPFM signal to the translator signal is below 34dB at all locations. Alternately the equation in the Mitre report may be used. This equation computes a separation distance based on the ERP of the LPFM station, the gains of the translator antenna in the direction of the received signal and in the direction of the LPFM signal, and the predicted field strength of the desired signal at the translator site.

Moving out of the technical realm the Commission is considering eliminating the LP10 class of service, and implementing an LP250 class. To date there have been no LP10 facilities authorized, thus the elimination likely makes sense. The 250W class also seems to make sense, especially in rural areas. LPFM facilities in such an environment are plagued with viability concerns due to the population density.

Other proposed changes would correct rule wording to ensure that an LPFM applicant is community based, expand the commitment to serve Native Nations, relax the cross-ownership requirements, and permit Native Nations multiple ownership. Each of these proposed changes would likely serve to further foster the growth and continued viability of the LPFM service.

The upcoming LPFM window, which is likely still a year or two out, may represent one of the last opportunities for expansion of this service due to the finite nature of available spectrum. The proposed changes in the rules and procedures mandated by Congress, and implemented by the Commission, will seek to ensure that all secondary services get a shot at serving the local community.

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

The MADness of the Digimedia Patent Claim

by Lee Petro

For the radio industry, the recent actions by Mission Abstract Data has led to intense anger, and the fear of the assured destruction of the financial health of many licensees. Those who avoided receiving a letter regarding the patent claims should count themselves lucky.

The company called Mission Abstract Data (MAD) began contacting radio stations last year, claiming that radio stations were using technology for which MAD held a patent. The company offered to enter into a license agreement with stations for the use of the technology. The underlying technology was the storage of "at least several hundred different selections of music" that was stored in a single database and played over a radio station, and the ability to bridge different databases for use by the station.

Of course, this came as a shock to many radio stations, since in most cases, they had not created the computerized databases, but had purchased equipment from vendors. Most broadcasters had not considered possible patent claims and began looking very closely at their vendor agreements and insurance policies.

At the same time, MAD filed a patent infringement suit against six large broadcast companies, Beasley, CBS, Cumulus, Cox, Greater Media and Entercom. The parties exchanged complaints, and counter-claims, and then, immediately before a scheduling conference between the parties, a third-party vendor, Broadcast Electronics, filed a request with the Patent Office seeking reexamination of the underlying patents in question, which led to a stay in the court proceedings while the Patent Office conducted its review.

The Patent Office sought information from the parties, and issued its decisions in April and May 2012. While this author is not a patent attorney, and this article is not intended to serve as legal advice, it does appear that some of the claims that could affect broadcasters were upheld by the Patent Office.

At least that is what the new owner of the patents, Digimedia Holdings Group believes, as it began sending new letters, trumpeting the Patent Office's actions and telling broadcasters that the failure to negotiate in good faith "is not a realistic option at this point." The letters claim that Digimedia's patents are now stronger, and include offers to license the patents at rates set out in eight tiers based on the size of the station's market.

On June 6, 2012, Digimedia asked the District Court to lift the stay imposed last year, since the Patent Office has now issued the results of its reexamination. However, as noted by Digimedia, Broadcast Electronics has filed a request for a second reexamination of at least one of the patents. The Broadcaster defendants filed an opposition to the request for lifting the stay on June 25, 2012, noting that a second reexamination will be filed regarding the other patent. Thus, it is possible that the stay will remain in place in the near term.

In light of the uncertainty regarding the pending infringement suit before the District Court of Delaware, and the chance that the Patent Office will undertake additional study on the underlying validity of the patents, what should a broadcaster do at this point?

As noted before, this article is not intended to provide legal advice, but some of the possible considerations for broadcasters are:

1. Does the purchase agreement with the equipment vendor have an indemnity clause that protects the station from subsequent claims regarding the vendor's right to use the technology?

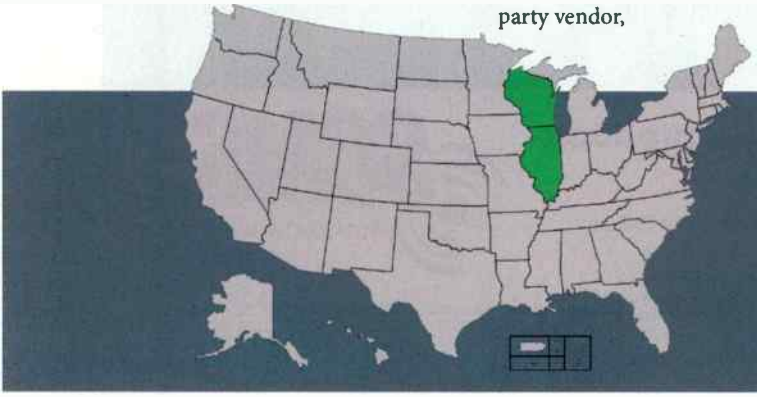
2. Does the station have insurance that would protect it from patent infringement suits? If so, does the station have to notify the insurance company when it receives the letter, or should it wait until it is actually sued for infringement?

3. If the requested license is relatively inexpensive, is it better to just pay Digimedia rather than have the potential for a future (and possibly expensive) lawsuit?

There are any number of other considerations and factors for broadcasters to take into account when dealing with this matter. However, broadcasters should take steps to make themselves aware of the case, so that they are not caught off guard if they are contacted.

Update — In the June FCC Update article, it was noted that the new ASR rules would become effective when they were published in the Federal Register. The notice was published, and the new rules became effective on June 18, 2012.

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



DATELINE

July 10: Stations place their Quarterly Issues/Programs List in their public file, covering the period from April 1, 2012 through June 30, 2012.

Aug. 1: Stations in Illinois and Wisconsin file the License Renewal applications and EEO Reports, and commence running License Renewal Post-Filing Announcements, continuing on Aug. 16, Sept. 1 and 16. Noncommercial radio stations in Illinois and Wisconsin file their Biennial Ownership Report (FCC 323-E). Stations in Iowa and Missouri commence running License Renewal Pre-Filing Announcements, continuing on Aug. 16, Sept. 1 and 16.

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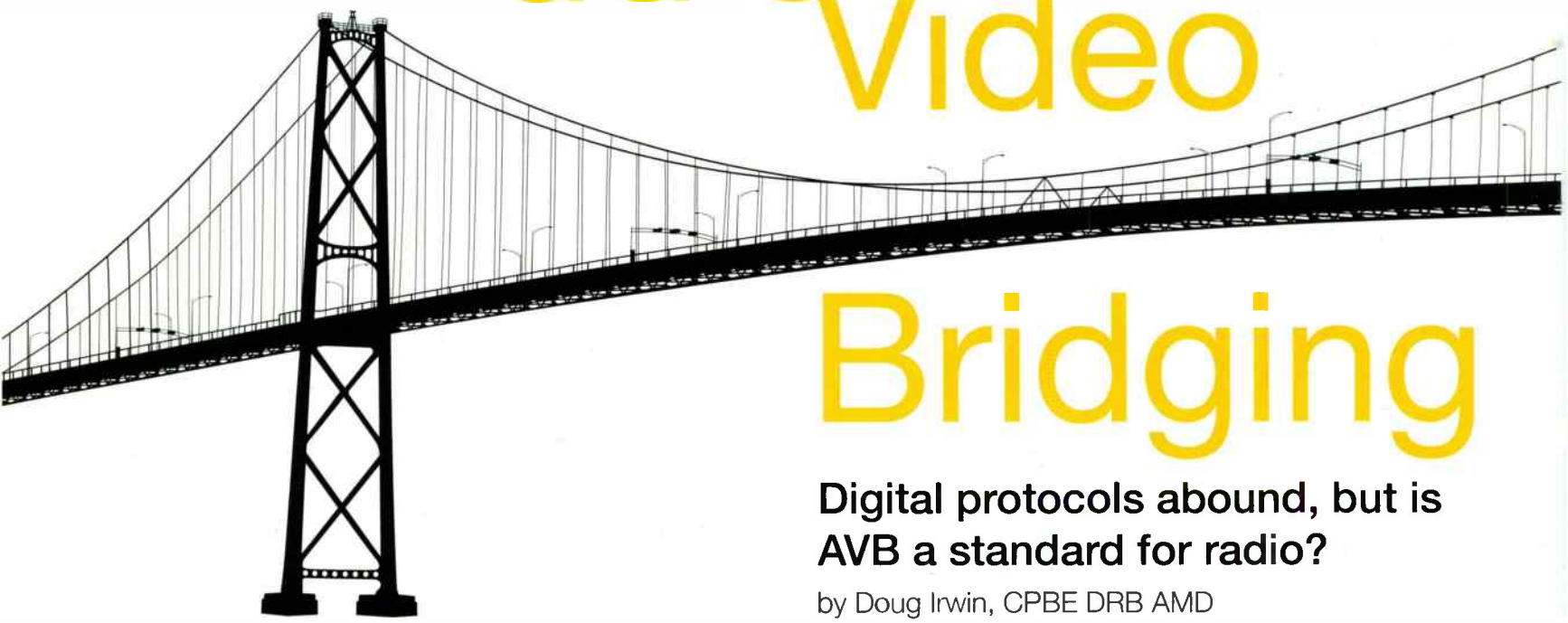

Digital protocols abound, but is AVB a standard for radio?

by Doug Irwin, CPBE DRB AMD

If you have worked with AoIP or other digital audio transmission schemes you may have heard the acronym AVB bandied around. Just what is AVB, and how might it come in to play in broadcasting? That's our topic this time around.

We're all familiar with the big console/router manufacturer's systems — whether AoIP- or TDM-based. To a very large degree (although not completely) those systems remain proprietary. Audio Video Bridging (AVB) is the name given to the implementation of four protocols developed by the IEEE. One of the primary purposes behind all the work done was the development of a non-proprietary means by which different manufactures' products could communicate with one another over Layer-2 (Ethernet) networks for purposes of media streaming. (The AVnu Alliance is a group of manufacturers that has formed with the express purpose of ensuring interoperability.) Another primary purpose behind AVB is to ensure multiple, related streams can be streamed across a network, with precision synchronization, and very low transit time.

To learn a little more about AVB we're going to look at its four facets in detail: IEEE 802.1BA *Identification of Participating Devices*; IEEE 802.1Qat *Admission Controls*; IEEE 802.1Qav *Traffic Shaping for AV Streams*; and IEEE 802.1AS *Precise Synchronization.*

As with any transmission scheme, there is a source and a destination. In the context of AVB the source is known as the talker and the destination is known as the listener. For the benefits of AVB to be realized all the intermediate points must be AVB capable. The intermediate points are ports on a Layer-2 switch that in this context will be known as AVB bridges.

Whether or not an AVB link can be established between a talker and listener is determined during the establishment of the Layer-2 connections — in other words when a port on an AVB bridge is brought up. Four specific (802.1BA) requirements are:

- The link is a full-duplex, 100baseT connection (or faster)
- 802.1AS protocol (which we'll discuss below) discovers exactly one peer on the port
- The maximum round-trip delay time from the port to the AVB peer meets requirements specified in 802.1AS
- An 802.1Qat "Stream Reservation Protocol" (SRP) request or acknowledgment is received on the port

Once it's established that a device is an AVB talker, and that the port used to connect that to the rest of the network is AVB-capable, it's necessary to know if an AVB listener can be reached. The listener might be on another port on the same AVB bridge (Layer-2 switch) or it might be separated by two (or more) switches. This is where 802.1Qat comes in to play — it's the process by which the participating devices determine whether or not AVB connections can be made all the way from talker to listener. Stream Reservation Protocol (SRP) is used for this. A talker will send a "talker advertise" message, which includes QoS requirements (we'll talk about those a little later), a stream ID made up of the talker's MAC address, a talker-specific 16-bit ID, the MAC address of the listener (which implies that the talker knows all potential listeners before streams are established), and accumulated latency (how long it takes for messages to propagate between the talker and the bridge).

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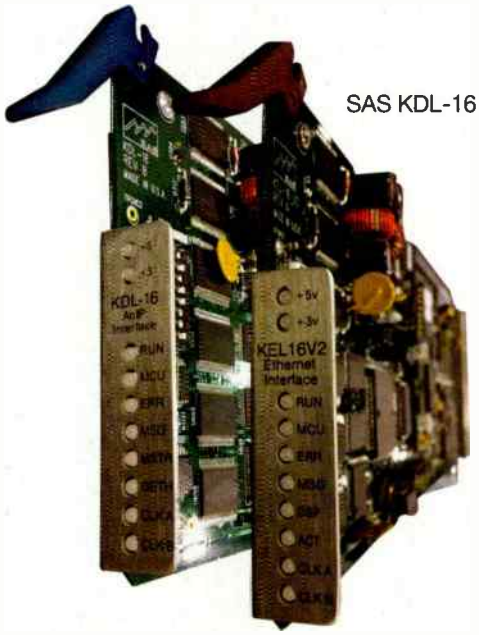
When an AVB bridge receives this advertisement, it checks to see whether or not the necessary requirements for the proposed stream are in fact available. If they are, then the talker advertisement is propagated outbound on the appropriate port. If they are not available, then a "talker fail" message is sent back toward the originator. Included in that message will be a failure code along with an AVB bridge ID that will allow the higher-layer applications (that are using AVB to talk between devices) to know where the issue is.

When a listener receives a talker-advertisement, it is known then that the intermediate points (AVB bridge ports) are ready for the stream to pass through. It will then send an acknowledgment message back toward the talker. As the intermediate bridges receive this message, they reserve the appropriate resources for the passage of this stream by making entries in their forwarding databases. (In other words, as they receive a particular stream, they will guarantee its priority and bandwidth.) When the talker finally receives the message back from the listener, the stream can start.



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While the stream is being sent, both the talker and listener will send periodic messages indicating to the intermediate bridges that the resources are still needed. When they are no longer needed (for whatever reason, the stream has ended) both ends will send a specific de-register message that will allow the intermediate bridges to release the resources. If the bridges don't hear the periodic messages, they'll "age-out" the resources themselves.

THE BENEFITS

Let's get in to the advantages that AVB provides: quality of service, and precision timing.

802.1Qav for AVB provides for what I think can best be described as an automatic, dynamic QoS mechanism that is hidden from the end-user. This QoS is ensured by traffic shaping, and admission controls (described above). Traffic shaping is a method by which the frames of the particular stream are regulated in the sense that they are being sent on a smooth basis (as opposed to bunches) very purposefully. Additionally the frames are tagged with a high-priority and as such will receive the necessary consideration from the forwarding database in the AVB bridge. All the best-effort traffic will essentially take a back-seat to the streaming traffic.

In a non-AVB system, the bridges (or Layer-2 switches) would have to be configured and support QoS all the way through the network, and this takes a certain amount of expertise that not everyone has.

Traffic shaping is important because it allows for a predictable amount of time for the stream to pass through a system. Think about it: A set of devices that use the public Internet for transmission have to make use of a buffer so that they don't run out of data to convert to the actual stream output, while waiting for packets to arrive from the far end. Since the packets can arrive in bunches, followed by none for a time, the buffer has to be fairly deep.

However, if you can manipulate (or "shape") the traffic so that it comes through consistently, you can make the buffer very short — and you can effectively speed up the time it takes for frames to propagate through the system.

The last aspect of AVB is that of precision timing (802.1AS). This is probably more important in video applications than radio. For example, if you have two streams, one for video, and one for its associated audio, then they have to be synchronized, otherwise anyone watching could notice a lip-sync problem. That's always annoying. AVB works to solve this problem. In an AVB network, one of the participating devices will become the grandmaster time source. (All other devices will be slaves.) The various devices that make up the AVB network periodically exchange time information. And, as I have mentioned previously, a talker knows how long frames take to propagate from end to end; so by adding that latency information to the frames themselves, along with a time stamp, the listener is able to synchronize the stream outputs by taking in to account the network latency. Differences in time between two associated media streams, caused by propagation delays through different paths, can be mitigated.

BROADCAST USE

So now that we've learned something about AVB, who is using it in our field? SAS offers a module for its 32KD system that allows the user

Netgear GS716T

Netgear GS724T

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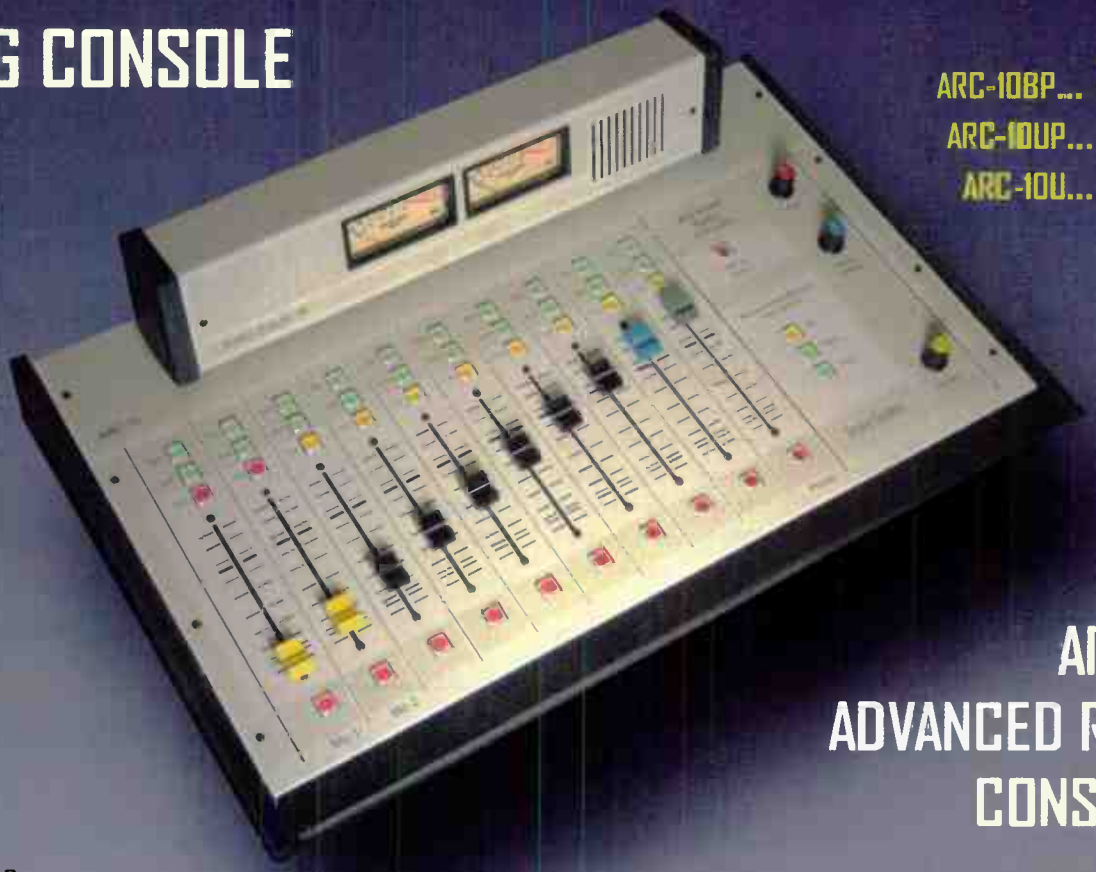

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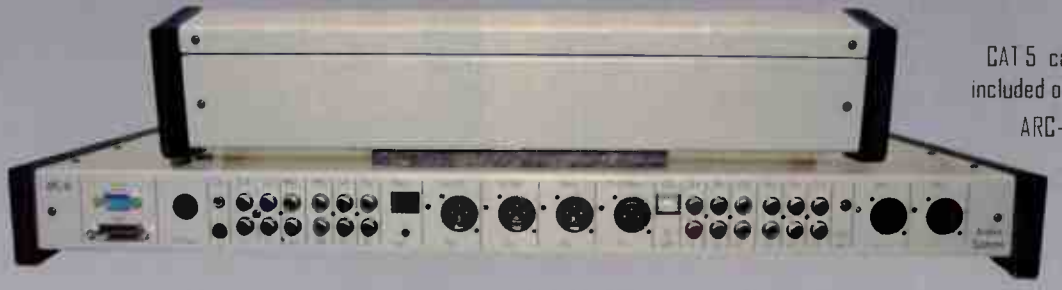

CAT 5 cables included on the ARC-10BP

The ARC-10UP with unbalanced inputs and PC sound card built in is displayed above. The ARC-10U has unbalanced inputs without a sound card. The ARC-10BP has balanced inputs with the PC USB sound card

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LabX Titanium 411

to interface AoIP to the system, making use of the AVB standards. The KDL-16 offers 32 channels in, and 32 channels out of a 32KD network. Obviously, when connected to an AVB-capable LAN, any other device using AVB will have access to the 32KD system.

One of the devices you would certainly communicate with (from the 32KD for example) would be a computer — and not surprisingly Audio-Science is developing products that use the AVB standards. The company is currently working on an AVB audio driver for Windows, along with new versions of its Hono interfaces that use the AVB standards (as opposed to CobraNet).

While Avid is well known for ProTools, is also makes consoles and one particular system makes of use AVB: the Venue SC48. This system is made up of an SC48 digital console, with an AVB interface plug-in, that connects (via Ethernet) to the Venue Stage 48, a large I/O box that allows the system user to place the inputs and outputs of the system close to the performers. Up to 48 inputs and 16 outputs can run between the two ends, over the AVB snake.

But what about the AVB bridges themselves? You have at least a couple of choices: the Netgear GS716T or GS724T, and the Titanium 411, a six-port gigabit Ethernet bridge from LabX.

AVB is a non-proprietary means by which different audio (and video) devices can communicate with one another, for the purposes of media streaming, over the ubiquitous Ethernet LAN. It's an implementation of four protocols developed by IEEE, allowing interoperability, and ensuring that multiple, related streams can be streamed across a network, with precision synchronization, and very low transit time, and guaranteed QoS.

RESOURCES

Audio Science
audioscience.com

Avid
avid.com

LabX
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Irwin is transmission systems supervisor for Clear Channel NYC and chief engineer of WKTU, New York. Contact him at doug@dougirwin.net.

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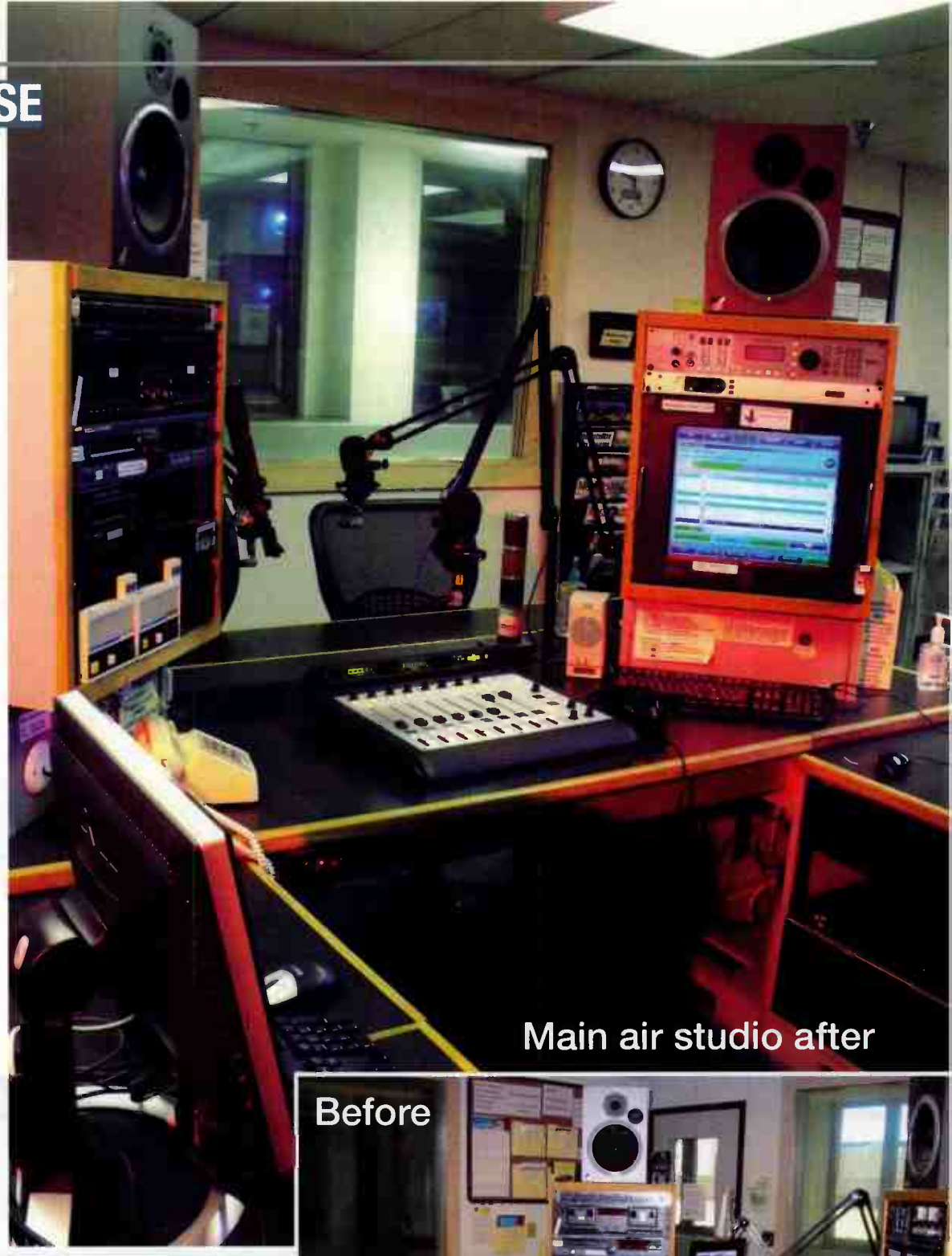
On the Right Track

WZIP-FM at the University of Akron upgrades to give students a look at real-world technology.

by Blake Thompson, CBNT



Main air studio after

Before

WZIP-FM started life as WAUP in 1962 at the University of Akron campus, and was run primarily as a student club for the next 17 years. In 1979 a new general manager, Tom Beck, was hired and proceeded to make major changes at the station. One of which was to hire additional engineering help, and in 1980 I was added to the staff. The changes started moving even faster after that; the focus changed to become a professional broadcast training program. I was named chief engineer in 1982 just as we were beginning to look for more power and height. We began with a move from 80' on campus to 800' on a new tower built by the public TV consortium for Northeast Ohio. We originally transmitted at

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330W, but soon upgraded to a directional antenna system and an increase in power to 3.3kW ERP in 1985. This really kick started the program as we could now be heard over most of the area from which the University draws students. We had one more upgrade in 1997 as other stations changed frequency so we could increase to 7.5kW ERP.

We are a different kind of college station than most. There are three full-time employees: the GM, the secretary and me. Everything else is done by the students, all underwriting sales, promotions, music directors, news, sports, and of course the announcers. Tom Beck is a tremendous motivational speaker and teacher; it is his leadership and drive that has

Far left: The new backup air studio/production 2 is centered around an Axia iQ and Enco DAD system. Left: The training/production studio 1 has an Audioarts R-60 and Adobe Audition. Right: The interview studio with an Allen & Heath XB-14 console has custom-built furniture.

made WZIP the highest-rated student-run station in the country. The administration sees the promotional value of the work the student announcers talking to our 120,000 plus weekly listeners about the great opportunities at the University of Akron during every shift, so much so that they found $175,000 for infrastructure upgrades for WZIP and the companion Z-TV program. To accomplish all we wanted to do we also used money raised from underwriting. The idea was to replace most of the big equipment installed in our last major upgrade when we moved to our current 3,100-square-foot space in 1997/1998.

START IN THE STUDIOS

First up came the Axia iQ consoles to replace the analog Airwaves that, while still working well, are looking all of their 14 years old. I wanted an audio-over-IP system, and with my proximity to Cleveland and seeing the Axia consoles evolve at various SBE meetings and conferences over the years they were an easy choice. If you're planning an installation such as this, take time ensure you have the StudioHub adapters and ancillary outboard equipment to get the job done.

I was able to run the initial setup through the Axia Web control quite quickly with the only challenge being the hybrid/codec foldback and

Livewire settings. One of the big advantages of all the IP consoles are the Profiles, which allow different settings based on which show is going on. We use all four profiles in the iQ: one for the standard broadcast with mics, phones, and the Enco automation system we've been working with since 1995. Then we have a sports profile for the games and talk shows we run. We also have a profile for our weekend Polka show. (Don't laugh — it has the highest AQH shares of any show we broadcast.) That uses two CD players, a feed from a laptop and the occasional track from vinyl. My fourth profile is set up with carts and CDs as sources with only the main automation output, just in case we have Windows issues.

The iQs were installed in our main on-air studio and the backup on-air 2 studio. I actually configured on-air 2 first so I could train the announcers in a low-stress environment. I have the same profiles in both except the last one in on-air 2 is geared for use as a production studio.

The main production training room has an Audioarts R-60 console and enough space for six to eight students and their student teacher. In our program our best current students train the next wave. We also have a small production studio with an Allen & Heath XB-14 console. All the studios have an Enco workstation on a KVM, Adobe Audition, Audio-Technica mics, CD players and recorder, and a few lesser-used items like turntables and carts.

The installation went smoothly and much quicker than the last console installs. The StudioHub adapters, Krone blocks, and CAT-5 patch assemblies are the only way to go in today's market. I had limited student help but it was still all done in about a week. The training process went well too; even our mature Polka show volunteers liked the new setup.

The computer and wiring interconnect room houses the Enco workstations, Buffalo and Netgear NAS servers, Telos Profiler and Invonics modulation monitor.

EQUIPMENT LIST

Audemat FMB80
Audio-Technica AT2035
Axia iQ, Core, analog nodes
Enco DAD, Rama
Harris HD Link
Mosley LanLink HS 900
Nautel NV-5
Omnia One
Radio Systems StudioHub+
Telos HX-1

I had a few holes to fill in the tabletop since the iQ footprint is quite a bit smaller than the old consoles. The only complaint I had was from the graduating class who didn't get a chance to use the new equipment.

STL CONNECTIONS

I wanted a Harris HD Link to be a drop-in replacement for our old CD Link, but I also wanted full IP network capability at the transmitter site since I can't seem to even get DSL there. I decided a set of Mosley Lanlinks, with diplexers to add the full-duplex IP traffic onto the 950MHz signal, would fit the bill. The HD Link came in first, so I started to bench test it into a 20W load. While moving the receive unit to the bench I heard something rolling around in the case. This usually is not good news, and it wasn't. The culprit was a small, stray nut, but there was no screw to be found. On power up I could set the frequency/bandwidth, but the unit would not lock onto a good signal. It was stuck in the acquiring mode. A call to Harris tech support and a new unit fixed the issue, but I'm sure glad I did the bench test. I was able to get them set up in just a few minutes using the on-screen menus and the Web access pages to check errors etc. One thing I really like is the ability to set levels inside the units, something the older units couldn't do.

When I received the Mosley Lanlinks I went through the serial port setup. I was able to set the power level and static IP and pop them in the rack. For the final install I had to wait for some help from my friend Rick Kent, who handles the School of Communication engineering. Once we were set at both ends I switched the program feed to the Tielines and traded out the cables. On power up they both booted and worked fine. I still had to get some settings right for the RBDS system, but the audio was great.

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At the transmitter site, the main transmitter is a Nautel NV-5 with a Harris Z5CD backup.

The LanLink's speed was good enough for email at the transmitter site but seemed a little slow loading Web pages. I ran a speed test from my laptop and it came up with 550kb/s for download speed and 375kb/s for uploads. That is comparable to low-grade DSL service and quite acceptable for my needs.

TO THE TRANSMITTER

The transmitter required a full bid process, and we sent them to the three largest manufacturers. The Nautel NV-5 came back as the low bidder, which was my first choice anyway. I scheduled the removal of the old QEI backup to be placed on the roof for later use as an aux site. The crew arrived with a forklift on a second truck and the QEI was moved without much trouble at all. The Nautel came in crated, and the crew had a lift gate and pallet truck to move the crate. I was fortunate to have Gary Liebisch of Nautel on hand to assist with the uncrating and installation.

I had the ac power lines ready to go, but had to change some of the RF plumbing to get to the NV-5 outlet. At the end, Liebisch and I were both pushing with all we had to get that last nut past the flange and tightened down. We connected the composite from the Omnia One and powered it into the dummy load while I had my training. The touchscreen interface is really great, and I see why it won awards when introduced a few years ago. We run a radio reading service on 67 kHz and I could see just where the insertion level was relative to the pilot and RDS.

When I switched the NV on to the Shively directional antenna system the reflected power actually dropped to 8W from the 16W it had on the load. Obviously the antenna is well tuned but I know the more than 800' of transmission line helps some too. One quirk in the NV AUI is when you log in through the Web and enter your user name it pops up a touch keyboard on the screen, but you can hit esc and it's back to normal.

Now I'm able to access all of the equipment at the remote site through the Net, and the new transmitter logs look great with a screen cap of the main Nautel display page. The only drawback was the delay in the audio from adding the STL link and Axia IP audio path. It wasn't too much in each unit, but add that to the slight delay in the Omnia and it was just enough to throw the announcers off.

I handled this by changing the source for the headphone feed to an analog processed feed before the STLs and all was well. It was a busy month or so but very well worth it and I'm now back to having the same type of equipment as the stations our graduates may be working on in their future jobs.

Thompson is chief engineer of WZIP, Akron, OH.

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» **SLIM DOWN YOUR SNAKE.** Connect two analog or AES xNodes with a single Ethernet cable for an instant 8x8 bi-directional snake and bid the multi-pair bundle goodbye. Add a few more xNodes on each end for a 16x16, 32x32 or 64x64 snake. Use off-the-shelf media converters for long-haul fiber connections.

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Remote Equipment Reset Without an IP Connection

by Jerry Olson, CSRE

We've all had experience with a piece of equipment that ceases to function. In the past, this meant a trip to the mountain, perhaps to merely power cycle the offending unit. More than once, I've had to reboot a digital receiver that sounded like an engine running at 2500 RPM.

Power strips have been developed that allow power cycling of individual outlets via an Ethernet connection. But what do you do when an IP connection is not available?

Many remote control units use either a control tone or a DTMF code to activate relays at the remote site. The units I've worked with specifically warn against switching 120Vac through the on-board relays mainly due to the danger of exposed line voltage at the connection points. This then requires the use of an external relay (in an enclosure) and a power supply to drive it.

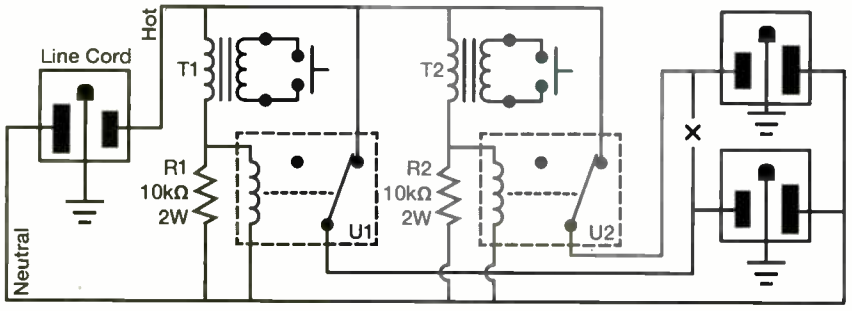
This outlines how to construct a simple self-contained remote control relay interface that will allow you to remotely power cycle your recalcitrant equipment with an external relay closure of less than 20Vac at 35mA.

The unit pictured is a dual reset box with two sets of transformers and relays. The shorting link on the hot side of the duplex outlet was removed to allow the two outlets to operate independently. The tab on the neutral side was left in place. If only one reset is desired, omit the second transformer and relay.

The operation of the reset box relies on the fact that the impedance of the primary winding of an unloaded transformer is very high. This is especially true for current-limited doorbell transformers that are meant to be energized 24/7/365. An added advantage of the doorbell transformer is that it is UL listed.

The theory of operation is simple: The primary of the doorbell transformer is wired in series with the relay coil. The tiny bit of current flowing in this circuit is not enough to pull in the relay. If the transformer secondary is shorted (say through your remote control) the impedance drop is reflected in the transformer's primary and the relay closes. An outlet mounted in the box is wired so the power to the outlet is interrupted by the normally closed contacts of the relay when activated.

When the short is removed on the secondary, the primary impedance rises and the relay drops out. A 10kΩ shunt resistor across the relay coil will insure that the relay will drop out once the short on the secondary is removed. The dissipation in this resistor should be less than 1W, but the use of a 2W resistor would cover the unlikely occurrence of the relay coil going open.



Construction is fairly straightforward. Most importantly, build this reset box in a tall 4 × 4 box. The use of a raised cover to mount the duplex outlet will allow extra clearance for the relays and wiring below. The doorbell transformers will mount directly into ½" knockouts on the box. Plan ahead so that the correct size knockouts

are where you want them. Be sure that all of the green wires are bonded to the box. The NEC requires the duplex outlet to be grounded to the box with a jumper. Securely attach the relays to the box somewhere off to the side. I used a quick-setting epoxy for this purpose. Connect the source black wire to the normally closed contact on each relay. Connect the wiper contact of each relay to its respective outlet. This will remove the source ac from the outlet without it appearing on the unused normally open contact. It's a small point, but it might prevent an unexpected short. The only other weird thing about the wiring is that the white leads of the transformers will not be connected to the neutral but will, instead, connect to the hot side of the relay coil.

Parts list:

- (1 or 2) Radio Shack 275-0217 DPDT relay. Contacts rated 10A
- (1 or 2) IQ America DT-1610A 16V/10W transformer
- (1 or 2) 10kΩ resistor 2W
- 4 × 4 tall electrical box
- 4 × 4 raised duplex cover plate
- Duplex outlet
- Power cord
- Cable clamp suitable for the power cord used

You may find many of these items in your junk box. Most of us have a few salvaged power cords cluttering up the bench. I happened to have a box of 5W resistors, so I used those. The dual reset box as shown was built for under $50 using transformers bought at a local home center. Much better pricing can be found online.

Olson is chief engineer of Spokane Public Radio, Spokane, WA.

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iPad app Features

- Live show real-time control from almost anywhere
- A powerful tool for remotes or voice tracking
- Take a show on the road
- Start, stop, copy and paste functions from the log
- Insert audio items into the log
- Initiate audio playback from hot buttons
- Run macro command from hot buttons
- Secure access to your system

Broadcasters General Store
352-622-7700
www.bgs.cc

Audio-Technica AT2005USB

by Gil T. Wilson

As technology progresses, I'm happy to see that broadcasting equipment progresses right along if not faster than consumer technology, especially in the remote broadcast/production field. Mainly what I'm talking about is the true portability of broadcast and production tools. A laptop or netbook can be taken out in the field and easily be turned into a full-blown production studio or even remote site. With some great software that is already out there the only thing needed is a good microphone.

For the longest time, the only way to connect to a computer was with a cheap 1/8" plug mics or a handful of adapters on a dynamic mic. We're now seeing a boost in really nice USB mics that allow for true plug-and-play use in nearly all the production software choices available. What I like is that some of the USB mics are built for dual-use to plug directly into a computer via USB or connect to a sound system with an XLR connector.

AUDIO-TECHNICA
330-686-2600
audio-technica.com
sales@atus.com

This time around I got the pleasure of trying out one such microphone, the Audio-Technica AT2005USB mic. While the name says USB it also has an XLR connection. This microphone is definitely one I'll be putting in my bag the versatility to connect to a computer or a mixing board by just plugging it in makes it the perfect go to mic for remotes. It's as if this mic were its own backup, in case you were planning a VOIP broadcast and things get switched around where you need a full mixing board this mic will be there.

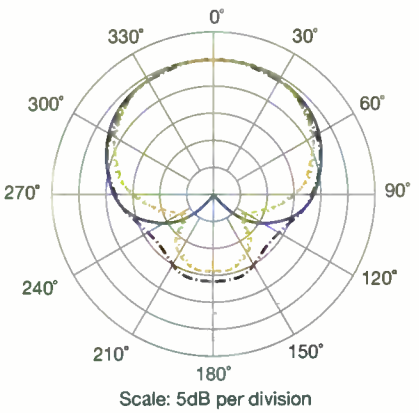
OUT OF THE BOX

The first thing to note is the bottom of the mic where the connectors are. There are three jacks to use, the XLR for normal use, the mini-USB for connecting to the computer (cable provided) and a headphone jack (with volume control). This mic, when used in the USB mode, be used as a headphone amp to directly monitor the audio going into the mic. The mic also has an on/off slide switch. When used with a USB connection it has a blue LED that indicates it is connected. The on/off switch in either USB or XLR mode does not affect the LED.

Also included are a 2m (6.6') USB cable (as mentioned above), a 3m (9.8') XLR cable, a desktop tri-pod stand (with folding legs), a mic stand clamp (which is threaded for standard mic stands), and a zippered bag for safe storage. The bag will hold the mic/stand/USB cable and mount, albeit a tight fit. The mic has a mesh grill to help prevent the plosive sounds, however, I still recommend a foam windscreen cover for the mic if it's used outside.

PUTTING THE MIC TO USE

My first test was the USB connection. I connected it with my netbook running Windows 7 and immediately the mic was

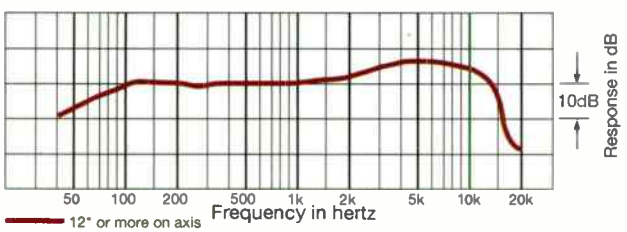


found and ready to use. I tried the mic with three different recording programs (Audacity, Adobe Audition and ProTools) and as I expected had no problem getting the mic to work. In Audition and Pro-tools had to configure the software to use that input, but every time I use those programs I'm always changing the hardware settings, so I'm used to it. The plug-and-play aspect is perfect. I also tried the mic on a Windows Vista computer and it had no problems connecting there as well. The A/D converter in this mic when connected to a computer is a 16-bit, 44.1/48kHz sampling rate.

Moving on to the XLR or simple Dynamic mic use, the AT2005USB worked perfectly. I've seen and used other USB/XLR mics. Some are condensers and require phantom power in XLR mode. This mic is a dynamic and requires no phantom power.

The mic's durable metal construction not only gives it a good look but also a feeling that you have a mic that will be around for awhile. While I mostly used the mic in a stand, it is a hand-held microphone and I used it as such a few times and it responded and felt like a dynamic hand-held mic. I was afraid that being a USB mic it might have some sensitivity issues, such as handling noise, but I noticed no such problem. The mic surpassed expectations in that use as well. The cardioid pickup pattern is also suitable for typical voice use and can help eliminate some background noise.

With the affordable price this mic should be added to anyone's audio grab bag whether as a remote broadcast engineer, or portable production studio. The immediate uses I have found ranged from podcasting to home voice recording to a live remote broadcast.



Wilson is an announcer, producer, webmaster and promotions guy at WAKO-AM/FM, Lawrenceville, IL, and an independent producer/voice talent.

Inovonics DAVID IV

by Jeff Smith, CBRE

I can't count the number of times I have needed a simple workhorse of a processor to use on streams or HD Radio multicast channels. Recently, I was able to try the DAVID IV from Inovonics, which received a 2012 *Radio* magazine Pick Hit award at the NAB Show, and thought it would be ideal for just such a use. The DAVID IV is a five-band processor that has lots of bells and whistles, and includes composite, AES3 and analog ins and outs as well as inputs for RDS.

The unit itself is very simple to setup. All configurations can be done via two different methods: the front panel or online using the provided software. Both methods allow the user to adjust AGC, high-pass filters, stereo enhancement, the five-band processor and many more options. The five-band processor is really where most of the DAVID IV's work is done. It allows each band to run independently or with a varying degree of coupling, which can create some very unique sounds for the station. Add that to the compression and equalization that is available to the five bands and you can get something that sounds really nice.

Limiting is also configurable in the unit. The DAVID IV uses broadband limiting as well as "adaptive pre-emphasis." Both allow users to control the program peaks however they see fit. The broadband limiting works on any of the DAVID IV's outputs, no matter what the audio may be; 20Hz tone, talk or music.

TAKE CONTROL

As stated before, all these adjustments are available using the front-panel display and dial next to it. Also on the front panel are meters displaying the input level, AGC, five-band, output level and MPX level. The bright, clear display gives a concise indication of what the unit is doing. In addition to the front panel, you have the option of accessing the unit via an Ethernet connection to configure it with the provided software.

When hooking the unit up to your network, you have the option of assigning it a static IP address or using DHCP. After the Inovonics software is installed on a computer, connect to the IP address of the DAVID IV and all the functionality of the unit is on the PC. I like this option, as I find it much simpler to configure the unit this way, as opposed to using the front-panel display. The software can also save unit settings to restore them or transfer them to another processor. The software is included on a CD with the unit. The processor can save up to 20 user presets.

THE PROCESS

The five-band processor splits the program into five frequency bands. Each band imparts both dynamic compression and adjustable static gain to apply fixed equalization and other control of the program audio. Sub-bass program frequencies undergo independent dynamic compression, expansion, selective clipping and filtering for control over both static rumble and dynamic punch of the bottom-end components. Fast high-frequency limiting

and distortion-cancelled clipping are utilized to provide independent amplitude control of program frequencies subjected to the FM pre-emphasis. The idea is to help preserve program brightness and clarity despite power bandwidth constraints inherent in FM broadcasting.

A user-programmable high-pass filter attenuates sub-audible noise that could compromise modulation efficiency. The filter is adjustable between 20Hz and 65Hz. The AGC is quasi-average-responding with a capture/correction range of ±18dB. Positive AGC gain may be truncated to any value between 0dB and +18dB, and the correction rate of the AGC is programmable.

The stereo enhancement effectively broadens the soundstage for the stereo program and the center-channel component independently. Up to 3dB of clipping may be applied to the composite/baseband signal. Clipping is performed before the injection of the stereo pilot and RDS subcarrier.

FACTORY PRESETS

Adult Cont.	Jazz
Alternative	Latin/Salsa
Bollywood	New Age
Cont. Christian	Oldies
Classic Hits	Pop
Classic Rock	Reggae/Island
Classical	Rock
Country	Samba/Brazilian
Easy Listening	Talk
Electronic / Dance	Top 40
Exitos	Urban
Hip Hop / Rap	Variety
Flat	

The unit includes the Inovonics exclusive Polarity-Independent Peak Processor (PIPP). With PIPP, the program audio waveform is split into positive-going and negative-going components. Each of these signals is then independently limited to a peak value that corresponds to 100 percent carrier modulation (in their respective directions), and the components then recombined. The purpose of this somewhat roundabout exercise is to optimize carrier modulation regardless of waveform asymmetry. The PIPP limiter can be disabled if desired.

Overall, I found the DAVID IV to be a very functional processor. I really liked the fact that it starts passing audio almost immediately after booting up. That is a feature not seen in many other processors. I used the DAVID IV on a country-formatted HD2 channel and it performed very well. It let me build the sound I wanted and did not color the audio at all. I'm sure many people will find a good use for the DAVID IV in their audio facilities.

Smith is the chief engineer of WEMP 101.9, New York.

IP Codecs

Radio has always had a connection with listeners and the public. In a way it's the original social media outlet. And radio stations still connect to their audiences through public appearances.

Like all technology, radio remote equipment has moved forward with the times. Establishing a direct RF link is nearly a forgotten practice in larger markets. Even ISDN, once touted as the future of all telephony, has come and gone as a common connection option with many telephone companies dropping the service.

But we are a connected society. It's rare to be anywhere in the U.S. without some kind of Internet access. IP connectivity has gained importance as a practical means of audio contribution delivery.

In this column we try to present several products in an equal setting so you can see an apples-to-apples comparison of features and specifications. We have done that here as usual, but we have noticed that each manufacturer has its own view of important features. Like any data product, while one unit may shine in a specific situation where another one just gets by, changing the variables can just as quickly shift the application curve to another product.





Model	AEQ Phoenix	Comrex Access Rack and Portable 2USB	Telos Z/IP One	Tieline Genie	Worldcast Horizon NextGen
Audio I/O	XLR (line analog in/out), DB15 (dual AES3 in/out), 1/4" headphone	Rack (R): XLR (analog line in/out), XLR (AES3 in.out) Portable (P): XLR (mic/line in), 3.5mm TRS (line in/out), 3.5mm headphone, 3.5mm mobile in/out	XLR (mic or line analog in, line out), Livewire, 1/4" headphone	XLR (line analog in/out or AES3 in/out), 1/4" (mic/line in), 1/4" headphone, DB25 (4x analog mic/line in/out or 4x AES3 in/out)	XLR (line analog in/out, AES3 in.out)
Data path	-	RS-232	RS-232	RS-232	RS-232
Connectivity -standard	Ethernet x 2	Ethernet, POTS	Ethernet	Ethernet, USB	Ethernet x 2
Connectivity -options	ISDN module x 2	Dual USB for 3G/4G	-	-	-
Algorithms	G.711, G.722, AEQ LD, Layer 2, PCM (optional: Layer 3, AAC LC, AAC LD)	G.711, G.722, BRIC-HQ1, BRIC-HQ2, BRIC-ULB, PCM, FLAC, AAC, HE AAC, HE AAC v2, AAC LD, AAC ELD	G.711, G.722, Layer 2, AAC, MPEG4 AAC LC, MPEG2 AAC LC, PCM, AAC ELD, HE AAC	G.711, G.722, Tieline Music, Tieline MusicPLUS, Layer 2, AAC LE, AAC HE, Enhanced Apt-x, PCM	Enhanced Apt-x, Layer 2, PCM. Pending: Layer 3, AAC HE
Other I/O	USB, serial	Both: Ethernet, USB, keyboard, mouse, VGA monitor. P: SD card slot, Cardbus slot	Ethernet, USB	BNC wordclock	SD card slot
Tech3326 Compatible?	✓	✓	✓	✓	✓*
Traversal Server	AEQ server	BRIC-TS	Z/IP Server	Uses IPv6	In development
Contact Closures	2	4	8	4	4
Power	90 - 250 Vac	R: 90 - 264 Vac, P: 100 - 240 Vac/15Vdc/internal battery	110 - 240 Vac	dual 100 - 240 Vac	100 - 250 Vac
Size	1RU x 11"	R: 1RU x 9.75" P: 4.75" x 8.25" x 2.5"	1RU x 13.8"	1RU x 13.5"	1RU x 6.3"
Accessories	Multi-codec remote control	P: USB Wi-Fi modem	USB Wi-Fi stick, USB to RS-232 adapter	Tieline Codec Management	-
Options	-	P: expansion mixer	-	-	-
Weight (lbs.)	7.7	R: 8.6 P: 2.2	7	6	3.3
MSRP	$2,995	R: $3,000 P: $3,800	$2,195	$4,995	$1,900
URL	aeqbroadcast.com	comrex.com	telos-systems.com	tieline.com	aptcodecs.com

*With the algorithms pending, Tech3326 is also pending.

ARRAKIS SYSTEMS INC.

ARC-8X COMPACT RADIO CONSOLE

$799

Eight channels
Stereo Program output
2 mic, 4 stereo line, PC, & Phone in
USB interface for play and record from a PC
Mix minus in-out for an external Telephone hybrid
BOTH balanced and unbalanced inputs and output for flexibility

All ARC consoles have conductive plastic faders and long life switches for reliability & Socketed ICs for fast on site repair.

ARC-10 ADVANCED RADIO CONSOLES

Ten mixing channels
Two Stereo Program outputs
2 mic, 6 stereo line, PC, & Phone in
USB PC sound card on ARC-10UP & ARC-10BP
Mix minus in-out for an external Telephone hybrid
Multimillion operation switches with long life LED lamps

ARC-10U... $1,599
ARC-10UP... $1,999
ARC-10BP... $2,495

The ARC-10UP with unbalanced inputs and PC sound card is displayed. The ARC-10U has unbalanced inputs without a sound card. The ARC-10BP has balanced inputs with the PC USB sound card

CAT 5 cables included on the ARC-10BP

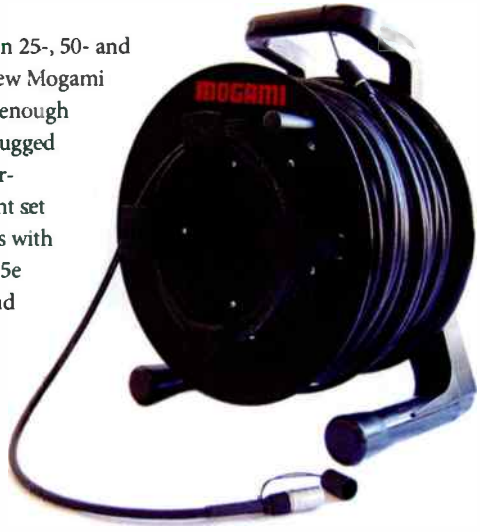
www.arrakis-systems.com

DJ headphones | Allen & Heath

XD2-53: XD2-53s have several new features, including a detachable coiled cable with 3.5mm connector and 1/4" jack adaptor, and also sport a stylish gunmetal finish. They retain a circumaural design providing high-level isolation from ambient noise. Containing 53mm diameter drivers with high power neodymium magnet design, 3500mW of power handling, and high SPL capacity, the XD2-53 headphones deliver excellent sound reproduction. They also have rotating earpieces for easy one-ear monitoring, an adjustable metal reinforced headband, and folding design for compact portability.

allen-heath.com

Ethernet cable | HHB



Mogami 3306: Available in 25-, 50- and 100-meter lengths, the new Mogami Ethernet cable is flexible enough to lay flat on a floor, yet rugged enough for reliable performance, even with frequent set ups. And it fully complies with TIA/EIA-568B Category 5e termination standards and performance characteristics. The cable is meticulously constructed to ensure that its four twisted pairs remain separated from each other, which helps to ensure consistent data rates, even under extreme conditions. Its durable construction also means that it can withstand being run over by a truck without loss of bandwidth. Supplied on a professional Schill cable drum, the cables feature Neutrik RJ-45 etherCON connectors finished with protective rubber caps.

hhb.co.uk

Mixers | Cerwin-Vega

CV Mixers: Available in 10-, 12- or 16-channel versions, this new mixer range offers digital sound effects processing and USB input/output for laptop computer playback and recording. Built using premium-grade components that deliver precision audio performance, the mixers feature a commercial-grade metal housing for reliability and longevity. The mixers' clear markings and color-coordinated knobs also allow for intuitive operation, including fast adjustment and easy operation in low-light situations. With professional studio quality microphone inputs, dedicated gain controls and switchable phantom power, the new CV Mixers accommodate virtually any microphone. The insert, aux and efx sends allow connection to external dynamics, equalization and effects units giving a high level of customization. The peak LED indicator allows a user to check on the signal input of each channel. The mixers also feature tape in and rec out RCA jacks, which enable users to directly connect to a CD/MP3 player or an audio recorder.

cerwin-vega.com

Hot news scanner | Listener Driven Radio

LDR.TopicPulse: LDR.TopicPulse gives valuable real-time information to show producers and hosts which topics and news stories are "getting buzz" in their market on social media. The system scans all available news sources, local blogs, Facebook posts, Tweets, and other social media. Then, producers can see a report – which is updated to the second – on the hottest trending topics and their shelf life. Are they hot, trending up, flat or dead? With LDR.TopicPulse, stations can determine which stories and topics are ratings boosters or killers. In addition to a real-time TopicPulse on local market stories, LDRalso provides tracking on national news, entertainment/celebrity related news, sports, political and Spanish news.

listenerdrivenradio.com

Broadcast headset | Shure

BRH Headset: The BRH Headsets are designed specifically for broadcast and media production applications. They provide exceptional audio quality, comfort, and durability to meet the increasing demands of field production professionals. The BRH31M single-sided lightweight broadcast headset - for interchangeable wear on the left or right side - is a closed-back, supra-aural headset with an ultra-lightweight design. The BRH440M dual-sided broadcast headset is a closed-back, circumaural headset that offers sound isolation from background noise. The BRH441M single-sided broadcast headset – versatile for wear on the left or right side – also offers sound isolation from background noise, while keeping one ear open to the surrounding environment.

shure.com

Storage cabinet | Middle Atlantic Products

ViewPoint: Matching the look and style of the ViewPoint system, the new ViewPoint Free Standing Storage Cabinet provides additional storage space for supplies and personal items. The cabinet includes two adjustable shelves, smoked glass doors and comes fully assembled. The new ViewPoint Radial Binder Storage Cabinet is designed to store essential reference materials and keep them close at hand. Also matching the system in appearance and style, the cabinet's compact rounded shape holds binders and books on two shelves, comes fully assembled and easily attaches to ViewPoint consoles. The console consists of fully welded Uni-Frame workstation bays that simplify installation and can be configured for individual project needs.
middleatlantic.com

LED-based medium-intensity red beacon | Dialight

Vigilant L-864: The first product of its kind incorporating both red and IR LEDs in a single unit, Vigilant L-864 has been FAA certified to 150/5345-43F. The IR integration ensures better visibility for aircraft pilots using Night Vision Goggles and Aviator's Night Vision Imaging Systems. NVGs and ANVIS typically employ Class A, B and C filters that can reduce visibility of LED light sources. The Vigilant IR beacon incorporates night-vision-friendly IR LEDs and red LEDs in the same unit, making a small and lightweight flash head. This smaller footprint significantly reduces wind load.
dialight.com

USSmartphone app | Jacobs Media

jacAPPS V3: The V3 app is designed with large screen space for a station to display images it controls remotely, with unlimited navigation based on horizontal scrolling. As stations decide to add features such as video, on-demand, news, events and blogs, the app can quickly and seamlessly be updated. The app offers social sharing so content from the app can immediately be posted on Facebook, shared on Twitter or sent via email. It provides an optional revenue sharing program via Verve Wireless, and push messaging via Urban Airship. The app also displays album art featured on the front page of the app.
jacobsmedia.com

NEW PRODUCTS

Microphone preamp | IK Multimedia

iRig PRE: Connect any type of microphone – from regular stage microphones to expensive studio models – to any iPhone, iPhone Touch or iPad providing access to the widest range of recording applications. iRig PRE is a high-quality microphone preamp designed specifically for iOS devices that allows musicians to use their favorite high-quality stage or studio mics with their iOS device. The microphone plugs directly into the standard XLR connector of iRig PRE with no need for extra cables or adapters. Its adjustable thumbwheel gain control allows the user to easily make precise level settings. The onboard 9V battery provides the necessary voltage for phantom-powered studio condenser microphones for at least for 15 hours of continuous use. The 3.5mm (1/8") standard stereo headphone output allows monitoring while recording. The lightweight housing sports a convenient cable for iOS device connection and also includes a Velcro strip slot for easy mounting on a mic stand or other stage locations.

ikmultimedia.com

Live broadcast dynamic microphone | MXL Microphones

BCD-1: The MXL BCD-1 is an end-address dynamic microphone with warm, rich tones designed to make vocals stand out. It features side rejection for noisy rooms, a tuned grill that eliminates internal reflections and a built-in shock mount. The built-in swivel mount allows for perfect positioning when combined with the optional MXL BCD-Stand.

mxlmics.com

Digital book | Society of Broadcast Engineers

SBE Handbook for Radio Operators: The "SBE Handbook for Radio Operators" can now be purchased through Amazon.com and BarnesAndNoble.com. They can be read using Kindle- and Nook-capable devices and apps. Purchase of the digital version of either book does not include the corresponding SBE operator certification exam, which can be purchased separately through the SBE website. The combined cost of the digital book and the separate exam is the same as the cost for the traditional paper book that includes the exam. The "SBE Handbook for TV Operators" is also available.

sbe.org

Which is better for streaming: hardware or software?

Telos ProSTREAM:
Internet streaming in a box.

Everyone knows the answer is *hardware* — like a Zephyr! Introducing Telos ProSTREAM, the professional netcoder for Internet streaming, with Omnia multi-band processing built right in.

ProSTREAM makes sending programming to the Net easier than ever. Simple and bulletproof: analog or digital audio goes in, compressed audio streams out. Just hook up your input, select a bit rate and Omnia processing preset, send the output to your Shoutcast or Wowza server, and *Shazam!* Streaming audio, simple as 1, 2, 3.

And such audio...amazing. Thanks to our partnership with Fraunhofer (FhG), we were able to build a processing architecture that's specially optimized for MP3 and MPEG-AAC encoding algorithms. The result: detailed, commanding, blow-you-out-of-your-office-chair streaming audio, even at aggressive bit rates.

Telos

Telos-Systems.com/ProStream/

Omnia A/XE:
Internet streaming in a server.

Obviously, the correct answer is *software*, with the power to stream multiple channels from a single PC. Meet Omnia A/XE, the professional all-in-one software solution for Internet streaming.

Omnia A/XE can turn a couple of lonely servers into a supercharged streaming network. It runs in the background as a Windows service and can process and encode multiple streams in various formats simultaneously. Just hook up your audio, choose a bit rate and processing preset, select your Shoutcast or Wowza server, and *Voila!* Streaming audio, simple as A, B, C.

And that audio packs the clean, clear competition-crushing punch Omnia is famous for. Each stream is sweetened with its own adjustable wide-band AGC with three-band compressor/limiter, EQ and low-pass filter, and precision look-ahead final limiter. The result: clean, clear streams with more presence and character than you ever thought possible.

Omnia

OmniaAudio.com/AXE/

Studio monitor | Event Electronics

2030: Event Electronics' first three-way studio monitoring system, the 2030 combines three discrete drivers to allow for accurate reproduction of the entire audio spectrum. Rather than simply adding a mid-range driver to the 20/20BAS configuration, which could have been easily achieved, Event's engineers took the three-way and designed a new wave guide assembly to house the speaker's mid-range and high frequency drivers as well as optimize audio dispersion and power response characteristics. For the critical mid-range application a 3.5" cone transducer was engineered using a pressed pulp and polypropylene cone, combined with an optimized magnetic circuit. The driver is loaded onto a shallow wave guide that results in increased sensitivity and output while generating very low distortion artifacts, giving the 2030 speaker system a defined, upfront vocal character. A key design feature of the 2030 amplifier is use of a proprietary, soft clipping power amplifier design topology that never allows the amplifier's output waveform to become jagged or harsh.

event1.com

Radio automation | Skyview Networks

F.A.S.T. Web Automation: F.A.S.T. Web Automation debuts break-specific commands, in place of relay technology, and utilizes a Web interface. This Web version increases network broadcast success and allows affiliates access to game logs from anywhere an Internet connection is available, with no software to install. Each advertisement break (local, ID or network) has a break-specific command. This new model keeps network stations on format, decreasing the possibility of missed breaks, covered breaks or late rejoins. It eliminates the need to hire and train board operators and integrates seamlessly with Skyview Networks' next generation satellite receivers. Schedules and audio are automatically updated to the satellite receiver through the automation Web portal, easing workload and widening the window for schedule updates. For stations, going Web-based provides immediate real-time access to logs and as-played reporting. For franchises, the automation offsets station costs associated with broadcasting its play-by-play programming.

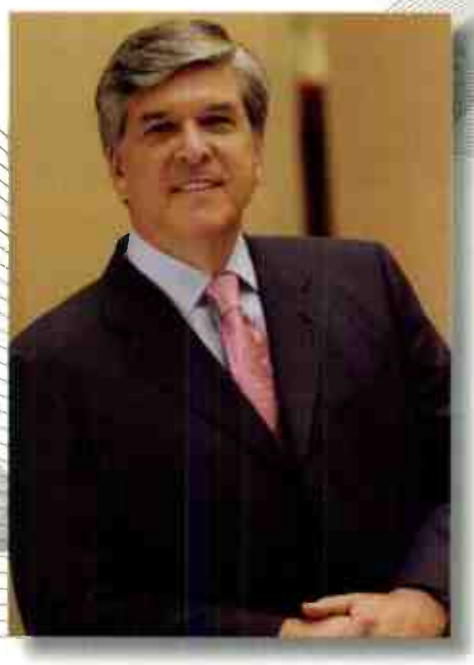
skyviewnetworks.com

RADIO SHOW

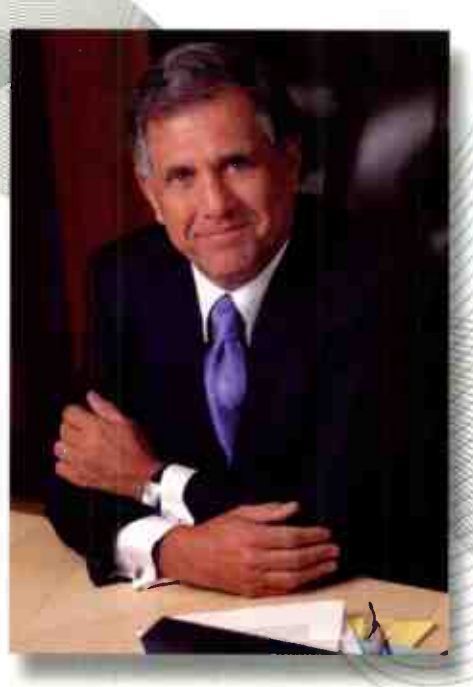
Produced by RAB and NAB

Hear What's on the Horizon for Radio

CBS Corporation President and CEO Leslie Moonves will join NAB President and CEO Gordon Smith for an in-depth discussion about radio's future during the opening session of the Radio Show.



Gordon Smith
NAB President and CEO



Leslie Moonves
CBS Corporation President and CEO

Join us to discuss new opportunities for revenue and growth in the changing media landscape.

Opening Session sponsored by: vcreative™

September 19–21/Hilton Anatole/Dallas, Texas

Visit www.RadioShowWeb.com to learn more about the Radio Show and register today!

www.facebook.com/radioshowweb www.twitter.com/radioshowweb

Commentator unit | Sonifex

CM-CU1: The CM-CU1 provides a fully featured commentator position and a line-level input. It has an individual commentator output, with an additional output providing a mix of commentator and line input audio. The line input can be configured to remain present at the mix output even if the commentator is off air, making it useful for routing crowd effects or pre-recorded material to the program feed. Its presence in the commentator's headphones is also configurable to suit the application. Four talkback output channels, with a built-in limiter, are available to the commentator and they can be linked to provide simultaneous operation. Activation of one or more talkback channels removes the commentator audio from the main output until all talkback channels are deactivated.

sonifex.co.uk

VGA video splitters | L-com Global Connectivity

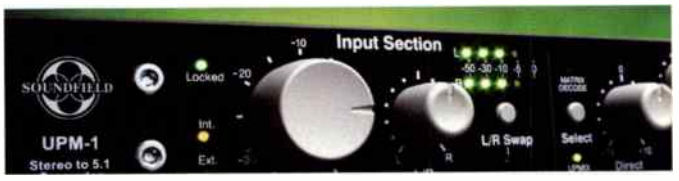
LCVS Series: These VGA video splitters are ideal for distributing VGA video signals from one source to multiple displays. These plug and play video splitters can be installed in seconds and provide crisp, clear images. Split analog video signals from one source (PC) to multiple displays (monitors); plug and play in seconds; durable metal case; signal bandwidth: 350MHz.

l-com.com

Microphone cables | Hosa Technology

Elite Series v2: Now available with Neutrik XX-Series connectors plus a new nylon webbing over the cable's PVC jacket, the Elite Series takes advantage of the latest technological advances and state-of-the-art manufacturing processes. Available in both Lo-Z (XLR3F to XLR3M) and Hi-Z (XLR3F to 1/4" TS) configurations, the cable used in the Hosa Elite Series is important to overall audio performance. These cables use 20 AWG oxygen-free copper (OFC) conductors that reduce resistance in order to facilitate maximum signal transfer. Polyethylene dielectrics reduce capacitance for crystal-clear high-frequency transmission while conductive PVC reduces handling noise. Further, a 95 percent OFC braided shield is employed for noise-free signal transmission.

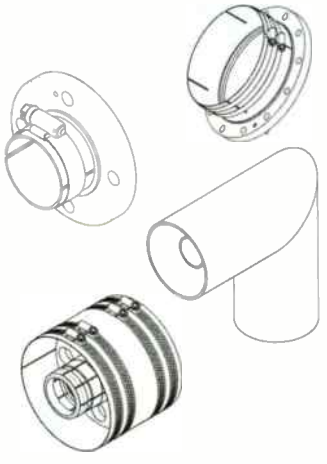
hosatech.com



Stereo-to-5.1 upmix processor | Soundfield Research

UPM-1 v2: Improvements to this processor include superior 5.1 channel separation and lower-latency processing. The new v2 software upgrade is available free to existing UPM-1 owners. TheUPM-1 converts stereo audio to 5.1 surround sound and is popular among digital broadcasters who frequently need to transmit legacy stereo program material in 5.1 surround. Processing latency in the original version of the upmixer was set to one video frame at the request of the broadcast industry, but the version 2 software sees the introduction of a new low-latency mode in which the time taken for upmixing is reduced to 9ms. All new UPM-1s are shipping set to this low-latency mode and with the v2 software pre-installed, although the latency can still be set either to 40ms (one frame in the USA), or 33ms (one frame in Europe) if required.

soundfield.com



Additions to 1329 Line | ERI-Electronics Research

Unflanged Components: ERI now has unflanged components for its 1329 Line aluminum outer conductor rigid transmission line. The new components include unflanged line sections, elbows, unflanged couplings, and clamp-on field flanges for indoor use. 1329 Line is a cost effective and reliable alternative to traditional, unpressurized, copper outer conductor rigid line components. In addition to being lower cost, theindividual components weigh less, which contributes to easier installation and faster project completion. Unflanged 1329 Line components are available in 1 5/8", 3 1/8", 4 1/16", and 6 1/8" (50 ohm) sizes.

ERIinc.com

UPGRADES AND UPDATES

The **Comrex** STAC VIP has received Skype certification, which means stations using the phone system can take wideband calls from anyone who has Skype installed on his PC or smartphone. (comrex.com) ... The Best Buy **Insignia** Narrator radio is the company's first talking HD Radio. It was developed in partnership with the International Association of Audio Information Services. (bestbuy.com, iaais.org, hdradio.com) ■

GALLERY

This advertiser index is a service to readers. Every effort is made to ensure accuracy, but *Radio* magazine cannot assume responsibility for errors or omissions.

by Erin Shipps, senior associate editor

CBS Radio's WFAN Celebrates 25 years

On July 1, 1987, the radio landscape changed forever and history was made as WFAN-AM signed on-air in New York City, providing Tri-state area sports fans with the first and only outlet to hear and talk about sports 24 hours a day, seven days a week. The station has been broadcasting play-by-play, opinions from hosts and listeners, interviews with the biggest sports stars and breaking news ever since Suzyn Waldman's memorable sports update nearly 25 years ago.

Mike Francesa, Yogi Berra, and Chris (Mad Dog) Russo at Yogi Berra's Golf Classic at Montclair Country Club, Montclair, NJ, in 2006.

Mike Francesa, Don Imus, and Chris (Mad Dog) Russo at the Don Imus Tee'd Off Challenge Golf event at the Fiddler's Elbow Country Club in Bedminster, NJ, in 2006.

Since then, the station has gone on to become the gold standard in sports radio, with many stations across the country looking to duplicate the undeniable success of the nation's biggest and most popular sports station. The station is anchored by marquee personalities such as Mike Francesa and Boomer & Carton, whose must-listen-to programs consistently rank No. 1 with men 25–54 in the top radio market. WFAN is heard by more than 1.5 million people each week, making it the most listened to sports radio station in America.

IN THE MONEY

BIA Kelsey released its list of top radio stations in the U.S. based on advertising revenue.

Calls	Format	Market Name	Market Rank	Owner	Revenue 2011
WTOP-FM	News	Washington	8	Hubbard Radio	$64,000,000
KIIS-FM	CHR	Los Angeles	2	Clear Channel	$57,000,000
KFI-AM	News/Talk	Los Angeles	2	Clear Channel	$48,000,000
WBBM-AM	News	Chicago	3	CBS Radio	$48,000,000
WCBS- AM	News	New York	1	CBS Radio	$47,500,000
WHTZ-FM	CHR	New York	1	Clear Channel	$46,000,000
KROQ-FM	Alternative	Los Angeles	2	CBS Radio	$42,000,000
WINS-AM	News	New York	1	CBS Radio	$42,000,000
WLTW-FM	Lite AC	New York	1	Clear Channel	$42,000,000
WFAN-AM	Sports/Talk	New York	1	CBS Radio	$40,500,000

Source: BIA Kelsey

WFAN FUN FACTS

Suzyn Waldman, the first voice heard on WFAN in 1987, still works for CBS RADIO New York, as Yankees announcer for sister station WCBS 880.

Morning show co-host Craig Carton interned for WFAN in 1988.

Morning show co-host Boomer Esiason was a frequent guest on WFAN's Mike and the Mad Dog program.

Midday co-host Evan Roberts got his start in radio broadcasting doing updates on WFAN at the age of 10.

Midday co-host Joe Benigno was a frequent caller to the station prior to being on-air and initially won a fan contest in 1994 to guest host a show on WFAN.

Afternoon host Mike Francesa worked for CBS Sports prior to joining WFAN.

Evening show host Steve Somers has been with WFAN in different timeslots since its launch in 1987 and John Minko and Ed Coleman were also part of the original on-air staff at the station.

Lead Mets announcer and WFAN's original 7 p.m. – 12 a.m. host, Howie Rose's daughter Alyssa Rose is an actress who has appeared on the soap opera "One Life to Live."

Boomer and Carton have twice appeared as guest judges on Iron Chef.

WFAN was originally heard at 1050AM before moving to 660AM on the dial.

WFAN's original morning show was hosted by Greg Gumbel, who still works for CBS.

CBS 2 Sports Anchor Otis Livingston also anchors WFAN's 11 p.m. weeknight sportscast and CBS 2 Sports Anchor Lisa Kenney anchors the 5:40AM sports update.

Boomer has hosted the "Miss America Pageant," in addition to co-hosting a weekly WFAN football show called "In the Huddle" along with former host Chris "Mad Dog" Russo.

Long Island native Jerry Seinfeld is a staunch supporter and friend of Steve Somers and WFAN. They met in the cereal aisle of a bodega.

Until 2009, WFAN broadcast from the basement of the historic Kaufman Astoria Studios in Queens, home to television shows and movies such as Sesame Street, Hair and The Wiz.

Steve Somers won a San Francisco Press Club Award for his work at KPIX-TV.

Producer Dov Kramer, who's been with the station since 1987 is an ordained Rabbi.

Roberts was in the film Private Parts starring Howard Stern.

Francesa can be heard on the radio in Woody Allen's Mighty Aphrodite.

ARRAKIS SYSTEMS INC.

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PC USB , and Phone input
both balanced & unbalanced IO

15 channel modular console
supports two phone hybrids
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ARC-10
three models

ARC-15
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both balanced & unbalanced IO

ARC-10U: $1,599 unbalanced
ARC-10UF: $1,999 unbal w USB
ARC-10BF: $2,495 balanced w USB

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PC USB , and Phone inputs.
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all ARC consoles
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'Pre-End of the World Sale'
the Mayan calendar predicts the end of
the world in 2012.. so Accent Furniture
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ACCENT is a contemporary blend of brushed metals, pleasing colors, and interesting textures. The metal structure is artfully integrated into the visible design decor of the cabinetry. Cabinetry and electronic equipment complement each other to create a bold visual environment for talent, guests, and clients alike.

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WHEATNET

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"Wow, Wow!"

Rick Hunt, Vice President & Director of Radio Engineering, Entravision Communications Corporation

"Considering the LX-24's attractive good looks, modularity, traditional console layout and functionality, I can't wait to get my hands on one!"

Greg Landgraf, Senior Engineering Manager, Corus Radio Western Canada

"A high performance, reasonably priced, great looking console integrating common sense features such as overload indicators for meters and ergonomic controls. Very impressive and well thought out."

Benjamin Brinitzer, Regional VP Engineering Clear Channel Media & Entertainment

"By far the most elegant and feature rich control surface on the market. The attention to detail and functionality is remarkable. Its architecture, such as "hot swappable" modular design, is a winner. A traditional meter bridge is appreciated by users and your millwork guy will appreciate the fact that it's a table-top design."

Kris Rodts, Director of Engineering, IT & Facilities, CKUA Radio Network

"Wheatstone's innovation continues to make AoIP a viable product for professional broadcasting facilities. Just a few things that make the LX-24 stand out to me are the clear and decisive metering, individual fader modules, and "out of the box" thinking with faders for the headphone and monitor volume controls instead of rotary knobs."

Phillip Vaughan, Chief Engineer KFROG, CBS Radio

"Leave it to the exquisite design talents of Gary Snow and the Wheatstone team to really hit the nail on the head. The LX-24 is not only the most functional, feature-laden IP based console for radio, it also raises the bar for the finest ergonomic radio command center on the planet."

Tim Schwieger, President / CEO, BSW- Broadcast Supply Worldwide

"I didn't think Wheatstone could improve upon the E-Series of consoles, but they have done it with the new LX-24. This is a beautiful, well designed console and the individual faders, integrated meters with overload indicators and low profile table-top design make this a must have for our facilities."

Michael Cooney, Vice President of Engineering & CTO, Beasley Broadcast Group, Inc.

"Cool and sexy (I sound like Bruno from Dancing with the Stars). A great addition to the WheatNet-IP family."

Norman Philips, Vice President of Engineering, Townsquare Media

"I am very impressed with the sleek new design that incorporates single channel-strip architecture, integrated metering and stereo cue speakers in a thin, sloping chassis that needs no cabinetry cut out. Well done."

Erik Kuhlmann, Senior Vice President of Engineering, Clear Channel Media + Entertainment

"Wheatstone continues to hit balls out of the park and this year they did so again with the LX-24 control surface. This new product marries the best of the old (modular design architecture) with the new (Audio-over-IP). Continuing in that theme was a Wheatstone module that marries their bridge router system to the new "BLADE" audio-over-IP system. This has the potential to extend the life of bridge router facilities indefinitely."

W.C. Alexander, CPBE, AMD, DRB, Director of Engineering, Crawford Broadcasting Company

"The LX caught my attention on the NAB Show floor. The look, form and function are unlike any other IP console available today. The easy-to-read buttons and displays are just second to none, not to mention the most bang for the buck. I can't wait 'til I have the opportunity to deploy my first LX."

Anthony A. Gervasi, Jr., Sr. Vice President Engineering & Technology, Nassau Broadcasting

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