

RADIOWORLD

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ENGINEERING

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Office Network:
19 Packets per Second



VoIP Network:
26,550 Packets per Second

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• FM installations are not all alike, and Jerry Burling has a good 10-watt example to prove it. — Page 37

They'll Address the Floor

NAB & RAB Call Show a Success But Plan Tweaks for Chicago

BY LESLIE STIMSON

WASHINGTON — Last year in Philadelphia, convention organizers promised the industry that the format of this year's Radio Show would be different, and they weren't kidding.

The hotel approach for the show in Washington in 2010 was an effort to keep the event alive through difficult economic times; it also became a way to combine the Radio Advertising Bureau's annual meeting with the NAB Radio Show.

While the combined format and hotel setting worked on several levels — sessions were packed, and attendees visibly embraced the idea of central areas to meet and network — the exhibit aspect needs changes. And while organizers haven't made final decisions, they say they plan changes to the exhibit hall at next year's Radio Show in Chicago (see story, page 3).

The dual nature of the convention was apparent. National Association of

Broadcasters President/CEO Gordon Smith and Radio Advertising Bureau President/CEO Jeff Haley were visible in sessions and the exhibit area. Meanwhile, politics took prominence, with lots of discussions about radio's efforts to get in cell phones and some

regarding performance rights.

The latest in emergency alerting was a big technical topic, and the advent of asymmetrical sideband transmission was big news for HD Radio, coinciding with iBiquity Digital showing the next-gen Insignia HD portable (see other story, this page.) Radio leaders sounded cautiously upbeat about the revenue

(continued on page 5)

HD Radio on the Side

Asymmetrical Approach, Audio/Images Are Radio's Focus of Interest

BY LESLIE STIMSON

WASHINGTON — The next-generation Insignia HD, the first HD Radio tuner to include new features such as images, live pause and data bookmarking, is now available and

iBiquity Digital expects more HD portables as well as HD auto receivers that incorporate the new features to come out in 2011.

The technology company debuted Artist Experience, formerly called

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FCC Audio Division Chief Peter Doyle displays his first-generation Insignia HD during a panel discussion regarding the increasing availability and affordability of HD Radio receivers. For details, see page 26.

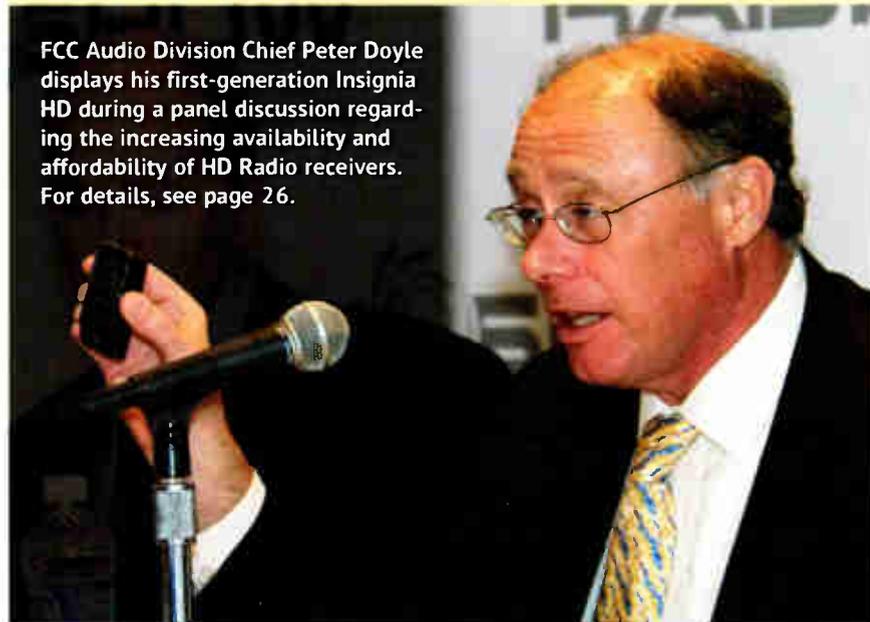


Photo by Jim Peck

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Entravision currently has Wheatstone TDM systems in 5 of their markets – including Los Angeles where 27 surfaces provide programming for their eight Los Angeles area transmitter sites and seven satellite uplink networks.

Rick Hunt, Vice President and Director of Radio Engineering at Entravision Communications Corporation knows that taking chances with unproven or ad-hoc technology simply isn't feasible – that the ultimate cost of using less than the best can be detrimental not only to day-to-day operations but to their overall success.

"Entravision prides itself on delivering the highest quality content and programming to our loyal base of radio and television audiences, and we rely on the Wheatstone system as an important piece of our broadcast equipment. The system is versatile, easy to manage and one of the most advanced pieces of technology on the market. It also delivers an unmatched level of consistency, ensuring that our systems operate the same way regardless of size or location."

You do your best to create and maintain a successful business. Wheatstone designs and builds its networking systems, whether TDM or IP based, right here in the USA. Wheatstone knows that your programming, network and content are mission-critical, and that failure is not an option. Don't leave it to chance - choosing Wheatstone can only ensure your efforts are rewarded... continuously.

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*Rick Hunt, Vice President
and Director of Radio Engineering at
Entravision Communications Corporation,
with one of their Wheatstone G5 consoles.*

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Vendors Unhappy; Exhibits To Change Next Year

BY LESLIE STIMSON

Radio Show convention exhibitors expressed various complaints about the venue for the displays, most of which were in a room on the bottom floor of three hotel levels used for the convention.

Organizers met with vendors even before the show was over to get feedback; NAB and RAB said they heard the concerns and that the exhibit situation will be different when the show goes to Chicago next Sept. 14-16.

The exhibit space this year had dim lighting and tabletops were small. Companies didn't like that the tables were arranged closely, making it difficult for vendors to use signs without blocking sightlines or the view of another exhibit.

The aisles between booths were narrow, making it hard to talk with potential or current customers without



Photo by Jim Peck

The exhibits were on tables in a room at the lowest level of the Grand Hyatt.

represented nearly every type of product category found on the show floor.

The meeting "was held to get feedback, because this was such a radi-

Another vendor who attended the meeting said organizers confirmed their commitment to maintaining a Radio Show in the future.

Indeed, an NAB spokesman said: "We remain absolutely committed to putting on a Radio Show that best serves the interests of the entire radio community. As we prepare for the 2011 Radio Show in Chicago, we'll continue to seek open

Photo by Leslie Stimson

One vendor used his own packing tape to secure an electrical cord for his booth.

and honest feedback from exhibiting representatives so that we may make the appropriate adjustments to ensure they have a successful show."

An exhibitor survey form went out shortly after the show, offering exhibitors a chance to weigh in. Another e-mail survey asked attendees for show reaction, and among its questions was one about

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blocking traffic.

One disgruntled exhibitor said the tabletop arrangement "made it almost impossible" to show his product. He said he has exhibited at regional broadcast shows with tabletops arranged in rows, which was better for companies and attendees. Presumably this couldn't be done in "The Marketplace" exhibit space, with its 70 or so companies.

Another complaint was that the electrical setup to each booth consisted of power strips and extension cords daisy-chained over several booths. One vendor complained he had to use his own company packing tape to secure a cord, after the hotel staff wouldn't.

However, Tim Bealor of Broadcast Electronics said whenever there was a problem, show organizers were "very responsive."

Two vendors who attended the debriefing meeting said show organizers listened to their concerns and indicated there would be changes. Vendors who attended

cal departure from what had been done before," Bealor said.

Another big point of contention was the lack of an exhibits-only pass that companies could offer to customers, or some similar mechanism to encourage floor traffic. This, several sources said, discouraged many local and regional engineers from attending.

The organizers, according to one vendor, acknowledged this issue: "They know they need to fix that and to provide better access for people who just want to come and talk to equipment suppliers."

Lack of booth traffic was a common complaint; show organizers held food-related events on the floor to try to drive traffic to the booths; but there just weren't a lot of engineers in attendance.

The organizers received feedback that suggests exhibitors may be best served with an exhibit floor that provides more flexibility, including traditional exhibit space, meeting space and tabletops, an NAB spokesman told Radio World.

the best format for the exhibit floor, i.e. tables, booths or some combo approach.

Among positives at the show, one attorney said the hotel's central locations offered a natural way for attendees to see each other and catch up or to meet for the first time. Top-level industry people attended or participated on panels.

RAB and NAB said they were happy with turnout at sessions. An RAB spokeswoman they haven't released "specific data because of partner agreements and the nature of combining two major events for the first time," but she termed the Radio Show a "tremendous success," pointing to the more than 1,800 people who registered and saying the headquarters hotel and another hotel were sold out more than six weeks before the event.

"More important than attendance, the overall mood of the attendees at the RAB/NAB Radio Show was arguably the most upbeat we've seen in years. The partnership has exceeded expectations on all levels," she said.

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NEWS

FROM THE EDITOR

Paul McLane



Here's a flavor from the fall Radio Show in Washington. All photos are by RW's eagle-eye photographer Jim Peck.



CJ Knowles, Rachel Field and Matt Jacobson promote PromoSuite, which makes radio software and interactive tools including e-mail, contest and web creation tools.



If these guys can't design one, no one can. Gary Kline of Cumulus, left, moderates a panel on building a station, with, from left, Bud Aiello of NPR, Antonio Argibay of Meridian Design Associates, John Bisset of Tieline/Radio World, David Gilson of Guild Partners and Andy Laird of Journal Broadcast.



Broadcast Connection's John George and Dielectric's Matt Leland try the theory that model FM antennas can be used as ball gaps. Guys, it's FM, not AM!



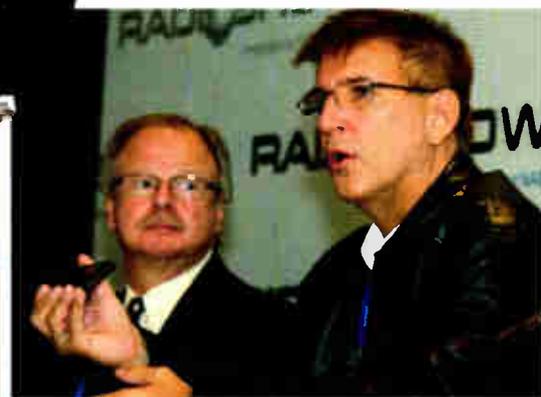
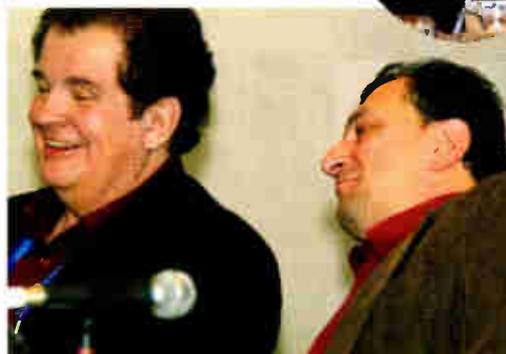
Laura Mizrahi asks a question.



Audio processing wizards talked about creative competitive audio processing. (And boy are they competitive.) From lower left: Glen Clark, Frank Foti, Jim Loupas (top), Jeff Keith and Greg Ogonowski.



Charles Warfield, left, president and chief operating officer of ICBC Broadcast Holdings, received the National Radio Award. He's talking with Joel Hollander.



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outlook for commercial operators. What follows is a sampling of news from the convention.

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During his opening remarks, Haley said that in 2008 at an RAB event in Atlanta, "We set a two-year goal to get radio in more devices. Radio is now in

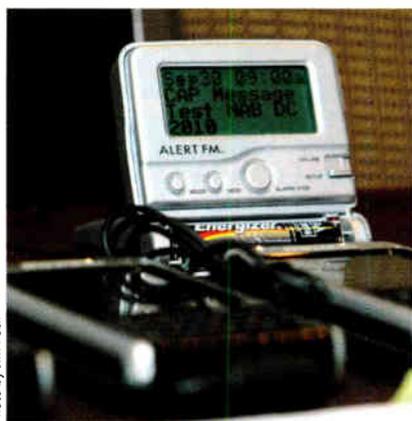


Photo by Jim Peck

This device is receiving a CAP-enabled emergency alert. The NAB FASTROAD display highlighted technologies from companies like GSS, which makes the Alert FM system, and emphasized the importance of FM capability in mobile devices.

more than 70 percent of all media players and we're on our way with cell phones."

Smith sought to dispel what he called myths about radio in cell phones: that there is no consumer demand; that radio capability would hurt battery life; that adding radio is expensive for manufacturers; that the chip would be too big and heavy.

Most users charge their phones every day or every other day, making the battery life argument moot, according to Smith.

"Luckily for cell phone users, a radio chip is smaller than the head of a nail and weighs less than a tic tac."

Further: "I'm told that HD Radio technology in a cell phone will be practical within about a year, creating additional services and revenue streams that become possible with a digital platform."

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NEWS



Photo by Leslie Simson

NAB provided prominent space to highlight FM functionality in a cell phone, including those who make embedded antennas.

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MultiPort to the rescue! It provides a central place to connect just about anything to your studio. Easily plug in professional or consumer gear, analog or digital, without needing converter boxes, adaptors, patch cords, or last-minute wires strung from the back of your rack. There's even a USB jack for easy access to your studio PC, and mono Mic outputs for videocams.

Install a MultiPort in your studio, and eliminate one more hassle in your day. Whatever, indeed!

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FEATURES

RADIOWORLD November 3, 2010

Flooded Equipment? Try the Car Wash

You Can Clean Your Transmitter In the Do-It-Yourself Bay

Broadcast engineering veteran Lincoln Hubbard tells us of the value of a car wash should you ever have to clean up in the wake of a flood.

After one of his station's transmitter sites underwent the Noah thing, he took his gear down to a do-it-yourself facility to remove the mud and gunk left over. Although I've heard of this technique, I've never spoken to an engineer who used it.

WORKBENCH

by John Bisset

Read more Workbench articles online at radioworld.com

He took the transmitter to the car wash bay and cleaned it thoroughly with a hand-held nozzle. He removed all of the mud and tilted the transmitter to remove standing water. He let it dry for several days before re-installing.

Lincoln also cleaned the telco line equalizer, the Burk remote control, two AC line surge protectors and two chassis' worth of relays that interfaced the remote control with pattern change controller. All had been under the floodwaters; all were cleaned at the car wash, allowed to dry thoroughly and restored to service.

Lincoln also salvaged two vacuum cleaners and a floor fan that were thrown out. Everything worked after cleaning. His only added procedure was to coat the dried relay coils and motor coils with polyurethane sealer.

Lincoln has also cleaned TVs this way ... even car radios that had been under salt water. Of course, the important step is thorough drying before you apply power.

Lincoln sums the technique up by saying the engineering part was no more than washing a pair of BVDs! Lincoln Hubbard, N1ATU, can be reached at lwhubbard@cox.net.

Pricing three-phase power installation for a remote or mountaintop transmitter site used to mean



Fig. 1: A solid-state phase converter means extremely stable three-phase power.

investing in less costly motorized rotary phase converters.

These devices solved the single-phase problem by generating three-phase power; but they required maintenance. Sometimes stability was a problem, as were over- and under-voltage conditions.

Contract Engineer Jon Bennett in Richmond, Va., reports great results with a recently installed Phase Perfect solid-state phase converter.

The folks at Phase Technologies offer a patented solution. Their system has no moving parts except for



Fig. 2: The Phase Perfect converter, mounted and ready for service.

time delay contactors. See Fig. 1.

The result is extremely stable three-phase power, with a power factor correction to near unity (0.99) under all load conditions. The efficiency is 97 percent, and the system protects equipment from over-voltage, under-voltage and single-phasing conditions. Jon says Harris is selling these for use with higher-power, three-phase transmitters at stations with only single-phase power sources.

You can find out more by heading to Phase Tech-
(continued on page 14)

Model 730 Inovonics' Flagship RDS/RBDS Encoder

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Featuring a front-panel LCD screen and jog wheel for instant on-site setup, the 730 may also be programmed easily through any of its data ports using the included Windows® software. USB, TCP(x2), UDP and serial ports can accept both ASCII and UECP command sets.

The 730 connects directly to, or can be networked with virtually any playout system and offers full support for RT+ 'tagging,' TMC traffic updates and other ad-

vanced applications. An Internet connection will assure accurate Clock Time and Date (CT) timekeeping.

Internal data diagnostics and transmission safeguards guarantee foolproof installation and operation, and field-upgradable firmware ensures compatibility with any forthcoming RDS/RBDS applications.

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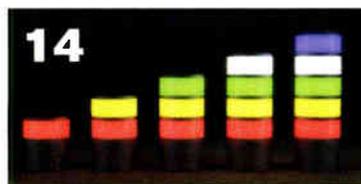
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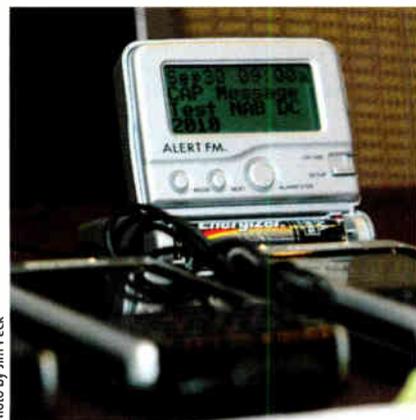


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RADIO SHOW

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wireless carriers and cell phone manufacturers to include FM chips in cell phones. The group became the first organization from outside radio to back the industry's effort.

The IAAIS called for congressional support, saying that having radio-enabled cell phones would be particularly useful in emergencies. Because local radio stations are free, a disabled person, who typically earns less than his or her non-disabled peers, won't have to buy a smartphone and add an expensive monthly data plan, said IAAIS Government Relations Committee Chair Dave Noble.

NAB LAUNCHES RADIOROCKSMYPHONE.COM

The NAB launched a consumer-oriented website, *RadioRocksMyPhone.com*, promoting radio-capable mobile phones.

It details what NAB says are the benefits of radio-enabled cell phones, argues that the U.S. lags behind other countries with regard to the integrated technology and encourages visitors to write Congress expressing support for



NAB President/CEO Gordon Smith listens to Republican Sen. Bob Bennett of Utah. Bennett doesn't believe performance rights will see action when lawmakers return to Washington after the fall elections.

the technology.

Cell phone models that are radio-enabled and available in the United States are highlighted on the website and also were displayed in a prominent booth during the show.

The site references a poll commissioned by NAB and conducted by Harris Interactive, which shows that 76 percent of American cell phone owners would consider paying a one-time additional fee to gain over-the-air access to free and local radio stations through their mobile phone. The Consumer Electronics Association disputed those results, saying that its polls show Americans are not clamoring to have radio in their cell phones.

'FRANKEN FMS' ARE DISSED

The radio industry presumes that Channel 6 low-power television stations operating as pseudo radio stations on 87.7 MHz eventually will go away. Comments by FCC Audio Division Chief Peter Doyle at the show indicate he hopes the commission may settle the "Franken FM" issue even before the LPTV analog sunset makes it a moot point.

A noncommercial broadcaster attending a regulatory session asked Doyle when noncoms might get relief from interference from these audio signals just below the regular FM dial.

With the signals being over-modulated on these stations, Doyle replied, "they can't possibly be operating" according to the television technical rules. He also questioned whether they're complying with public interest considerations such as EAS.

"We are aware of the problem," he said, which "hopefully we'll solve before we sunset all the analog LPTVs."

The FCC hasn't set such a deadline, but attorneys contacted by Radio World believe it could be in 2012. The commission has said new LPTV facilities must now be digital.

BENNETT PREDICTS NO PRA ACTION THIS YEAR

Shortly after the convention, MusicFirst was hoping it could refocus lawmakers' attention on passage of a performance rights bill this year, after Congress returns to Washington following the elections.

However Sen. Bob Bennett doesn't believe there will be action this year.

Bennett, who is leaving Congress after not being selected to stand for office again by Utah Republicans, said in a show session that the only bill that really needed to pass was a continuing resolu-

Remote Up in the Air? Get it ON the Air with ACCESS!

"We were invited to ride along in a hot air balloon to help promote the Grove City Balloons and Tunes Festival near Columbus," says Matt Bruning of WTVN in Columbus, OH. "When I asked about doing a live shot from 2,000 feet up, our engineering department went straight to the shelf with our Comrex ACCESS on it. The unit did a great job...as we expected. Thanks so much for making a GREAT product like the Comrex Access - so easy even a news person can use it!"

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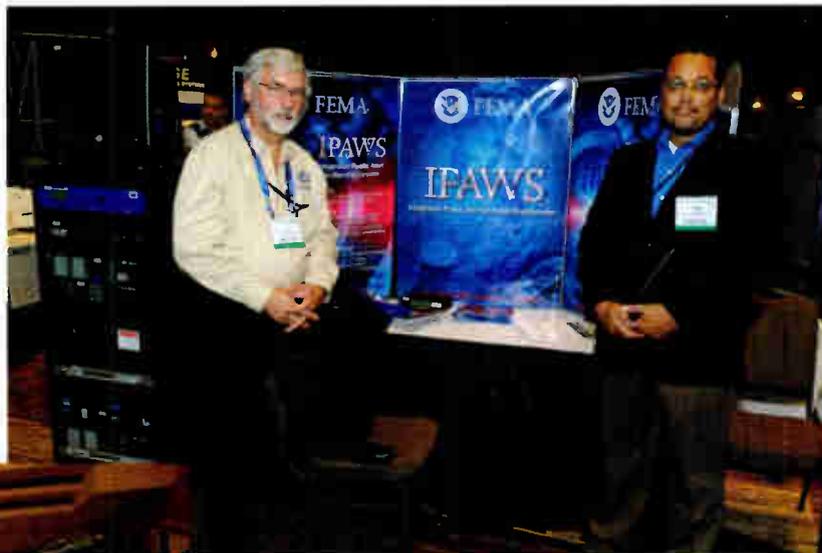
tion or "CR" to keep the government running. (It did.)

NAB President/CEO Gordon Smith, himself a former U.S. senator, said that if the elections see Republicans take back one or both houses of Congress, a new Senate majority leader or House speaker "may insist on a clean CR" so when they take office in January they can have a clean slate.

Bennett warned that if either Speaker Nancy Pelosi or Majority Leader Harry Reid loses her or his position, "They're going to have a different agenda" when they return in November. "It's going to get really ugly."

Smith added, "Ugly is good for our purposes," meaning their focus would change and performance rights would get overlooked in the shuffle.

Photos by Jim Peck



Al Kenyon, left, project manager, and Manny Centeno, program manager, represented FEMA's IPAWS Program Office, National Continuity Programs. FEMA approved the latest CAP standard before the Radio Show ended, triggering the compliance clock

At the same session, Michigan Democrat Bart Stupak, who's retiring from the House, spoke about NAB's efforts to persuade wireless companies and cell phone makers to put FM chips in their devices. He said this makes sense. But when questioned by an attendee about whether FM chips in cellphones

should be mandated, Stupak predicted Congress would tell the parties to try to work out their issues before it gets to that point.

FEMA ADOPTS CAP; SHOT CLOCK BEGINS

The Department of Homeland Security's Federal Emergency Management Agency adopted the latest version of the Common Alerting Protocol, a digital message format for the Integrated Public Alert and Warning System, the next-generation emergency alert and warning network.

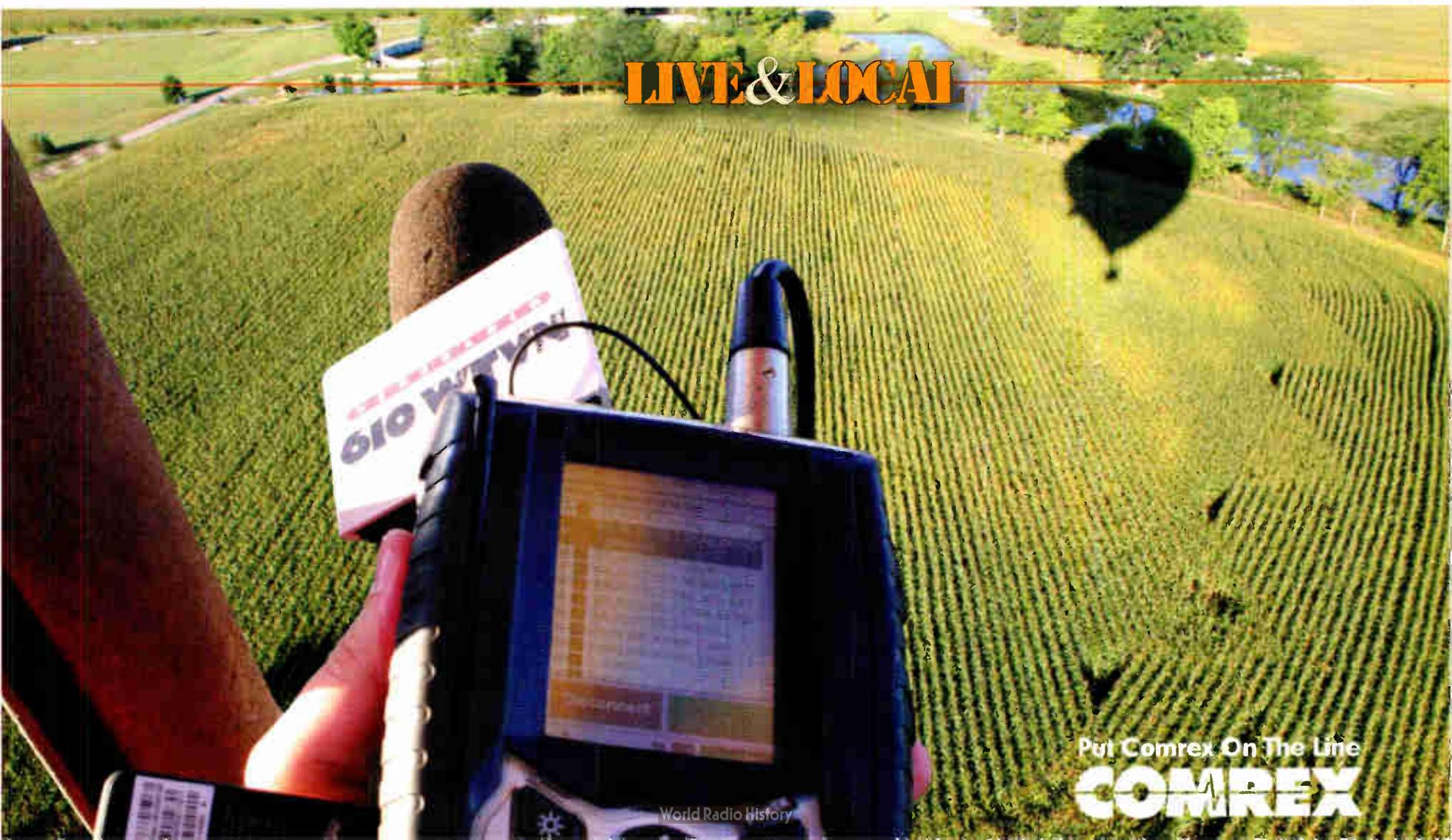
IPAWS incorporates and expands the EAS. Using the new CAP v1.2 standard, emergency management officials can more easily compose alerts to be sent over more devices. FEMA has an assessment program to ensure new EAS products can encode, decode and pass on new CAP EAS messages.

The adoptions means that the so-called 180-day shot clock for broadcasters to have CAP-compliant equipment in place has begun, though at deadline, an industry advisory group to the FCC had recommended the deadline be delayed. Look for more about EAS in our next issue.



BSI's Marie Summers talks to attendees at the company's tabletop display.

LIVE & LOCAL



Put Comrex On The Line
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HD RADIO

(continued from page 1)

Album Art, at the Radio Show convention. Now this feature includes several kinds of images, hence the name change. Also, a new HD Radio ad campaign is underway; and iBiquity added another automaker, Subaru, to its OEM partners. Subaru will offer the digital radio receivers for the first time when it launches HD Radio receivers as part of a premium radio package in the 2011 Forrester, due in dealerships this month. The HD Radio receivers will include iTunes Tagging capability.

To spur facility conversions in medium and small markets, iBiquity and Citadel Media introduced a barter program; there was much talk about that program at the show. On the engineering front, the first station began using asymmetrical sideband transmission; and the National Radio Systems Committee adopted what members say is an easy way for engineers and IBOC transmission gear manufacturers to determine digital sideband power level.

Here are some of the more significant HD Radio stories coming out of the show.

NEW INSIGNIA HD DEBUTS IMAGES, PAUSE

The FM-only Insignia HD Radio portable, which includes images and live pause that can cache up to 15 minutes of live radio, was due to arrive in Best Buy stores in late October.

The Insignia NS-HD02 lists at \$69,

those expectations.”

Advertiser art in particular can make radio ads more “sticky” and responsive, potentially leading to more revenue for stations, he said. For example, someone listening to an ad for their local Ford dealership might see an image of the new Ford Mustang on their HD Radio display.

Stations can charge more for spots that include some visual call to action, said Director of U.S. Broadcast Sales Rick Greenhut. Or those ads with a visual element can be part of a digital bundle that includes a Web banner ad and on-air mentions.

Stations in 10 to 20 markets were expected to transmit the images in the data portion of their HD Radio signal by the time the Insignia NS-HD02 was released. Multiple stations in each of those markets will support the feature, with more markets added in the future.

The images can be synchronized to the audio but they must be transmitted 30 seconds or more in advance of that particular audio, so that the receiver can store them for viewing. Once viewed, the images are purged to make room for future downloads.

Senior Vice President, Broadcast Programs and Advanced Services Joe D'Angelo told Radio World the company is working with Gracenote so that broadcasters can secure licenses for the album art. Sony-owned Gracenote maintains and licenses a database of music and video metadata such as liner notes and album art.

Synching the audio to the images is the big challenge, said D'Angelo, and iBiquity is working with automation vendors to be able to do that.

Speaking at iBiquity's HD Radio ses-



Nautel displayed this sign about WAMU using asymmetrical sideband transmission using Nautel's HD PowerBoost.

WAMU DEBUTS ASYMMETRICAL SIDEBANDS

Lots of notice buzz centered around American University licensee WAMU(FM) in Washington, the first station to transmit its HD Radio signal implementing asymmetrical sidebands to accommodate elevated carriers.

WAMU is believed to be the first station using asymmetrical sidebands and began this type of transmission right before the show.

IBOC proponents believe an approach using unequal HD Radio sidebands will help maximize coverage for stations that cannot implement a full digital power increase on both sidebands.

WAMU has an experimental authorization from the FCC for its asymmetrical sideband trial. WAMU Engineering Director John Holt told Radio World the station's lower sideband is operating at -14 dBc and the upper sideband power level is -10 dBc. The station is using an NV40 transmitter.

Nautel says the trial shows that its software maximizes digital coverage while avoiding interference to the station's own analog signal and those of neighbor stations. Nautel demoed this PowerBoost at the show. As part of the NPR Labs engineering study, prepared to determine WAMU's options for IBOC sideband power, NPR Labs John Kean wrote: "The ITM (Longley-Rice) overlay supports a request for the maximum -13 dBc sideband power on the upper sideband on a long-term basis; the technical showing does not support maximum power on the lower sideband (-13 dBc, for a total of -10 dBc in combination with the upper sideband). However, this low-channel station will not be on the air for some time, permitting up to -10 dBc symmetrical power in the interim."

PERMISSION FOR UNEQUAL SIDEBANDS COULD BECOME ROUTINE

The FCC is watching how the industry handles FM HD asymmetrical sideband trials with interest.

If the data behind the trials supports it, permission to use asymmetrical sideband transmission could become more routine.

Proponents see asymmetrical sideband HD transmission as a way for more stations to accomplish an FM digital power increase while protecting a neighbor station at the same time from possible interference to its analog signal. Some 150 stations transmitting their digital signal on symmetrical sidebands have implemented a digital power increase.

During a regulatory session, Greater Media VP Radio Engineering Milford Smith said his company has applied for an STA to operate an HD Radio station in Boston using asymmetrical sideband transmission. Stations need an STA from the commission because the FM power increase approved earlier this year is only for IBOC transmission using symmetrical sidebands.

FCC Audio Division Chief Peter Doyle said the commission would like to see more data on asymmetrical sideband transmission. "We're interested in test results."

Once the agency sees what it needs to make a decision, the agency is prepared to make digital asymmetrical sideband transmission routine with a notification process, said Doyle.

iBiquity SVP/General Counsel Al Shuldiner said during a technical session that the technology developer is conducting internal tests on asymmetrical sideband transmission and also on

(continued on page 10)

"Consumers now expect to see album covers when they're listening to music,"

— President/CEO Bob Struble

some \$20 more than the previous model. The unit has eight hours of battery life and a 2.5-inch by three-inch LCD color touchscreen, larger than the 1.5-inch dimension of its predecessor.

The larger screen will show off images iBiquity is calling the Artist Experience. This can consist of content such as album art, candid artist photos, station branding and logos, weather or news as well as advertising art.

"Consumers now expect to see album covers when they're listening to music," President/CEO Bob Struble told Radio World. "We need to bring the industry into the 21st century and deliver on

sion, Ashruf El-Dinary, vice president of commercial applications, said the visual images will make the receiver experience dynamic.

"When you first tune to a station you'll see a logo. Once a song starts playing then a reloaded image will come up on the receiver — or a commercial image would be displayed. The user will always get an image first."

Live pause allows the digital audio on the main channel or a multicast channel to pause for up to 15 minutes. Bookmarking is similar to tagging and allows the listener to store music information within the receiver to retrieve later.

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World Radio History

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HD RADIO

(continued from page 8)

digital boosters; it hopes to have results to the FCC by the end of the year.

NO FM HD INTERFERENCE COMPLAINTS BEFORE THE FCC

In the regulatory session, FCC Audio Division Chief Peter Doyle said the commission has no complaints before it regarding FM HD interference as a result of the power increases.

Without mentioning the call letters or the specifics involved, he referenced the complaint from KATY(FM), Idyllwild, Calif. about the HD signal from KRTH(FM), Los Angeles, saying this type of complaint hasn't met the commission's criteria, which only apply to those FMs that have implemented the power increase.

That case, he said, involves a claim of interference from a "superpower" Class B under the original power levels for IBOC. Complicating the issue is that the stations are short-spaced, as we've reported.

To clarify, Doyle said the FCC's interference complaint procedures set out at the time of the power increase approval earlier this year are in fact intended only in cases of FMs that have implemented a digital power increase. There are no similar complaint procedures for stations operating at the original 1 percent of their allowed digital power, according to Doyle. Regular interference complaint procedures apply for those.

The AM IBOC interference remediation procedures predate the FM digital power increase and interference remediation procedures by several years. They were put in place in the First Report and Order in 2002 and incorporated into the Rules as Section 73.404(b) in the Second Report and Order in 2007.

AUTHORIZED DIGITAL POWER NOW EASIER TO DETERMINE

The National Radio Systems Committee adopted a new guideline aimed at giving engineers an easy way to determine the total digital sideband power level for their stations when transmitting HD Radio signals.

The NRSC is a technical standards-setting body co-sponsored by the National Association of Broadcasters and the Consumer Electronics Association.

Using a root-mean-square power meter, engineers can use the guideline to determine an FM IBOC station's authorized total digital sideband power level, whether they're transmitting using symmetrical or asymmetrical sidebands, NRSC Chairman Milford Smith told Radio World.

The guideline is meant to help those responsible for or involved with FM IBOC facility design, operation and compliance monitoring. Smith called it a "useful tool for those charged with implementing IBOC correctly."

The NRSC designed a companion Web-based total digital signal power calculator tool with the help of Cavell, Mertz & Associates Inc.

The Digital Radio Broadcasting Subcommittee of the NRSC adopted NRSC-G202, FM IBOC Total Digital Sideband Power for Various Configurations; the guideline is now final.

Andy Laird, vice president and chief technology officer, Journal Broadcast Group, co-chairs the subcommittee with Mike Bergman, vice president of new digital technologies, Kenwood USA. The subcommittee's IBOC Standards Development Working Group, chaired by Dom Bordonaro, chief engineer, Cox Broadcasting's Connecticut cluster, developed the guideline. While the web-based calculator had been posted, the guideline had yet to be posted at www.nrscstandards.org as of mid-October.

LET'S BARTER FOR HD, SHALL WE?

iBiquity officials said they've received interest from several stations about a new barter deal between the technology developer and Citadel Media. It is aimed at helping radio owners convert to HD Radio or upgrade IBOC gear without a cash outlay.

Radio group owner Citadel Broadcasting, which owns about 240 stations and is part of the HD Radio Alliance, is the parent company of content distributor Citadel Media, which claims some 4,000 affiliates for content like Rick Dees, ESPN Radio and Michael Baisden. It incorporates much of what used to be the ABC Radio Networks. The arrangement is open to all radio owners.

Under the plan, stations would provide on-air avails to Citadel Media, which in turn would pay for the user's HD Radio licensing fees and equipment from Broadcast Electronics, Continental, Harris or Nautel.

iBiquity Director of U.S. Broadcast Sales Rick Greenhut said deals between stations or clusters and Citadel Media can be structured in several ways.

"The station doesn't write a check. It runs commercials. We've taken barter to the next step." In some cases, a station may choose to use a finance company to pay the equipment supplier so

an HD Radio transmitter can be built and shipped quickly.

As long as the ads air, Citadel will pay the equipment manufacturers and iBiquity the necessary hardware and licensing costs to convert or upgrade the stations involved, even if they're not the stations where the ads aired. Citadel Media handles the paperwork necessary for the ad agencies to prove the spots aired per the contract.

Greenhut said the arrangement should be a boon for any broadcast business that's short on cash and has a lot of spot availability.

The typical one-time iBiquity licensing is now about \$11,000, he said.

RECEIVER PENETRATION CONCERNS TRANSMITTER MANUFACTURERS

Several transmitter manufacturers said during a technical panel that getting more HD Radio receivers into cars as standard equipment is the key to the success of HD Radio.

But even if the radio industry were to pay for that to happen quickly, iBiquity says car makers just can't move that fast because of their design process.

Harris VP of Transmission Research and Technology Geoff Mendenhall said

(continued on page 26)

NEWSROUNDUP

ALERTING 1: An advisory group to the FCC prepared a report with more than 30 recommendations about upgrading EAS with the revised Common Alerting Protocol standard, with which radio stations now must comply. The group is chaired by Pat Roberts, head of the Florida Association of Broadcasters, and co-chaired by Damon Penn of the Federal Emergency Management Agency. It is part of the larger Communications Security, Reliability and Interoperability Council. Among the recommendations, presented in October at FCC headquarters by Penn, are to extend the 180-day clock to no less than one year and to clarify how "Governor Must Carry" messages will be implemented.

ALERTING 2: GSS says its FM RBDS-based alerting system is viable for distributing FEMA/IPAWS alerts; the company has the results of a study — funded by the government — to support its pitch. Global Security Systems said research by Northrop Grumman Corp., paid for with \$2 million from FEMA, "confirms the effectiveness of FM radio-based alerts and warnings provided by Alert FM." That GSS system uses RBDS FM-subcarrier technology to deliver texts to electronic devices that have Alert FM software and an enabled FM radio receiver chip. Several state broadcast associations and radio groups currently support Alert FM, and the company hopes to expand its use.

TRANSLATORS: Some commercial broadcasters who have FM translator applications pending from the 2003

translator window made a counter-proposal to one from Educational Media Foundation and the Prometheus Radio Project. Womble Carlyle attorney John F. Garziglia told Radio World: "Our government is being asked by EMF and Prometheus to change its rules by a results-oriented fiat on small and medium-size commercial broadcasters that only benefits EMF, Prometheus and other similarly situated non-commercial broadcasters." Rather than favoring only one constituency, the FCC should largely follow its established Auction No. 83 auction procedures, he stated.

FM IN MS: Microsoft has included FM radio in its new Windows Phone 7 series, due to hit stores in November. At an unveiling at a mobile phone show in Barcelona, Spain, Microsoft said its partners have started building the phones. The FM radio is included in what the developer is calling the music and video hub, which Microsoft says "brings the best of Zune, including content from a user's PC, online music services and a built-in FM radio into one simple place that is all about music and video."

CONTENTDEPOT: Public radio's PRSS distribution network launched a new messaging system for ContentDepot. The Public Radio Satellite System says some 25 public radio stations took part in a beta launch of the messaging system in August. ContentDepot is an IP-based platform used to distribute programming and data services to radio stations. "The primary feature of the new messaging system is that it delivers e-mail messages directly to users in the way they specify, whether that be via cell phone, pager or other handheld communications device," PRSS stated.

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Flooded Equipment? Try the Car Wash

You Can Clean Your Transmitter In the Do-It-Yourself Bay

Broadcast engineering veteran Lincoln Hubbard tells us of the value of a car wash should you ever have to clean up in the wake of a flood.

After one of his station's transmitter sites underwent the Noah thing, he took his gear down to a do-it-yourself facility to remove the mud and gunk left over. Although I've heard of this technique, I've never spoken to an engineer who used it.

WORKBENCH

by John Bisset

Read more Workbench articles online at radioworld.com

He took the transmitter to the car wash bay and cleaned it thoroughly with a hand-held nozzle. He removed all of the mud and tilted the transmitter to remove standing water. He let it dry for several days before re-installing.

Lincoln also cleaned the telco line equalizer, the Burk remote control, two AC line surge protectors and two chassis' worth of relays that interfaced the remote control with pattern change controller. All had been under the floodwaters; all were cleaned at the car wash, allowed to dry thoroughly and restored to service.

Lincoln also salvaged two vacuum cleaners and a floor fan that were thrown out. Everything worked after cleaning. His only added procedure was to coat the dried relay coils and motor coils with polyurethane sealer.

Lincoln has also cleaned TVs this way ... even car radios that had been under salt water. Of course, the important step is thorough drying before you apply power.

Lincoln sums the technique up by saying the engineering part was no more than washing a pair of BVDs! Lincoln Hubbard, NIATU, can be reached at lhubbard@cox.net.

Pricing three-phase power installation for a remote or mountaintop transmitter site used to mean



Fig. 1: A solid-state phase converter means extremely stable three-phase power.

investing in less costly motorized rotary phase converters.

These devices solved the single-phase problem by generating three-phase power; but they required maintenance. Sometimes stability was a problem, as were over- and under-voltage conditions.

Contract Engineer Jon Bennett in Richmond, Va., reports great results with a recently installed Phase Perfect solid-state phase converter.

The folks at Phase Technologies offer a patented solution. Their system has no moving parts except for



Fig. 2: The Phase Perfect converter, mounted and ready for service.

time delay contactors. See Fig. 1.

The result is extremely stable three-phase power, with a power factor correction to near unity (0.99) under all load conditions. The efficiency is 97 percent, and the system protects equipment from over-voltage, under-voltage and single-phasing conditions. Jon says Harris is selling these for use with higher-power, three-phase transmitters at stations with only single-phase power sources.

You can find out more by heading to Phase Tech-
(continued on page 14)

Model 730 Inovonics' Flagship RDS/RBDS Encoder

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vanced applications. An Internet connection will assure accurate Clock Time and Date (CT) timekeeping.

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Watch Out for That Pothole!

Avoid These Common Mistakes When Building an IP Audio Network

TECHTIPS

BY PAUL PICARD

The author is an AoIP network troubleshooter for Wheatstone Corp. who says most problems come when users

don't understand how different the office LAN and the AoIP network are from one another.

Leveraging current Ethernet standards and technologies, professional audio system manufacturers are able

to offer broadcasters a modular digital audio routing and mixing platform that tightly integrates with automation, processing and STLs. Looking forward, emerging IEEE AVB standards, now in the final draft stages, portend to further the goal of tying all of the broadcast plant's audio equipment into an IP audio network based on open standards.

If you are about to embark on the road to building an Ethernet audio LAN, you can gain a clear advantage by avoiding a few common potholes.

PLANNING

A general misconception posits that you simply connect your new networked audio devices to your office LAN.

In a broadcast plant, the need to deliver audio in an orderly, non-inter-

rupted, deterministic stream is priority one and differs significantly from the mission of an office LAN. Moving large quantities of linear audio data over an Ethernet network is a bandwidth-intensive, real-time operation that does not tolerate disruption well.

based system that is compatible with current hardware solutions and leaves you bandwidth headroom for growth and future technologies. Purchase quality-managed Ethernet switches, category cable, connectors and ancillary components from reputable manufacturers; this will provide the performance foundation your audio network needs and give you peace of mind.

The old adage that "you get what you pay for" certainly holds true when building an audio network. No engineer wants to tell the GM they lost revenue because of a bargain-bin patch cable.

INSTALLATION

Anyone who can crimp an RJ-45 can install a network, right?

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COMMUNICATIONS

AoIP Network vs. Office LAN
How many packets of information typically go down an ethernet cable in one second?

Office Network: 19 Packets per Second

AoIP Network: 26,550 Packets per Second

Do you think the same cable used for your office network will work on an AoIP network? AoIP troubleshooter Paul Picard identifies five potholes to avoid.

Wheatstone Corp.

rupted, deterministic stream is priority one and differs significantly from the mission of an office LAN. Moving large quantities of linear audio data over an Ethernet network is a bandwidth-intensive, real-time operation that does not tolerate disruption well.

On a conventional office LAN, disruptions of file transfers, poky printing and Internet connections, etc. are irritating. Productivity may suffer, but life goes on.

Traffic problems on an audio LAN, however, are simply unacceptable. Remember that in an IP audio system, the LAN replaces the punch-block wall of audio distribution in your facility. Keep it secure and speedy by building a dedicated audio highway and limiting access only to necessary devices.

PURCHASING

Some mistakes are made before the first RJ-45 connector is crimped.

When raising a modern audio network, it makes both technical and financial sense to install a Gigabit Cat-6

nature of the electrical signals that traverse the network require a faultless signal path if they are to be transmitted and received cleanly and reliably.

Problems stem from almost every aspect of the installation: poorly crimped connectors, wrong cable type, inferior components, mixed wire maps, split pairs, broken conductors, exceeding distance limits, stretched, bent or crushed cables — you get the picture.

Installing a network cabling infrastructure is not rocket science. By following some basic rules and guidelines you can rest assured that your network will pass muster.

The TIA-568-C.0 standards document covers cabling and component requirements, structure, topologies, distances, installation, performance and testing.

TESTING

Troubleshooting Ethernet networks can be a bit mysterious to the uninitiated. Maybe that is why so many networks are never fully tested.

In an analog device you can signal trace a problem with a pair of headphones and some clip leads. While you will not be able to signal trace your audio LAN with headphones or multimeter, a variety of network test tools allow you to probe and poke the infrastructure to eliminate network segments and devices. The test tools are different; but the old divide-and-conquer approach still applies.

There are three levels of testing in the professional data communications cable installation world: Certification, Qualification and Verification.

Each level provides a higher degree of parameter testing, with Verification being the lowest and Certification being the highest. As one might expect, the complexity of tests and the cost of required test equipment become progressively higher with each level of testing.

Every audio LAN installation should use some combination of these test methods to help get the job done quickly and correctly.

Certification testing will guarantee that the cabling system is in compliance with the TIA/EIA 568x and other industry standards. Any broadcast engineer who installs an Ethernet audio network should plan on certifying the network infrastructure prior to bringing the hardware online.

Certification testing erases a huge unknown: Does the network I just installed meet the 100 or 1000BASE-T specifications? You simply don't know until it is certified.

Qualification testing is a relatively new class of testing brought on by the availability of an innovative series of lower-cost but powerful test tools.

A step lower than Certification, Qualification can be used on new or existing installations to see if certain classes or types of services will run on the installed cabling and Ethernet switches. Qualification analyzers bring bandwidth, port configuration, cable fault, length and wiremap testing together but do not run the full series of crosstalk tests that certification tools do. Qualification testers can be purchased for about \$1,000.

Verification tools are essential for pre-testing all wall outlets, patch cables, horizontal runs between patch panels and equipment racks.

These low-cost tools help make sure that the basic wire maps are correct before you attempt certification testing. Other tests may include shorts, opens and wire length. An integral tone generator is useful in tracing lost cables ala the "fox and hound" method. This type of tester is useful for routine testing during the initial termination phase of the build-out but by no means should this be the end of the wiring plant testing.

Remember, the network you are building is the backbone of the entire IP audio system.

DOCUMENTATION

Often overlooked, documentation is a fundamental step in the process of building any network. Many systems lack thorough documentation or may be poorly documented.

A well-labeled and documented Ethernet network is your best friend in a calamity. Take the time to label each cable and create a comprehensive spreadsheet with columns for wire

number, source end equipment, destination end equipment, Ethernet switch port maps and IP address tables. This information is invaluable when testing, troubleshooting or adding and moving devices and cables.

Certification test equipment typically provide a means for generating compliance testing reports, usually by downloading test data collected onsite to a PC for formatting, storage and printing. Collect this data when you first install the wiring infrastructure so you have a set of data points to refer to when troubleshooting down the road.

With careful planning, the task of building a rock-solid Ethernet network for audio distribution becomes less mysterious and painful. By selecting quality components, following well-documented installation guidelines and doing rigorous testing before commissioning, you will ensure that your system speeds along, giving you more time to solve the crisis of the day.

A longer discussion, "The Role of Wiring Integrity on WheatNet-IP Network Reliability," is available on the Wheatstone website at www.wheatstone.com/whitepapers.html.

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On the Market



WideOrbit photo by Jim Peck

Here's a sampling of product offerings from companies that participated in the Radio Show convention this fall in Washington.

WHEATSTONE SETS THE SIDEBOARD

Wheatstone Corp. introduced its new Sideboard control surface.

The small countertop unit gives hands-on access to one of the two eight-channel



utility mixers built into the WheatNet-IP Blade. Each Blade can support two Sideboards.

Every Sideboard input channel can access any source on a WheatNet-IP network, and has an eight-character source name display. Each channel has Program and Audition bus assignment switches, and a programmable switch that is typically used for talkback. The Sideboard's output busses become new sources on the network.

Rounding out the front panel are a pair of 20-segment LED bargraph meters, a programmable six-source monitor selector and a headphone jack with amplifier and level control; its signal is streamed via Ethernet from the Blade to the Sideboard.

Info: E-mail Jay Tyler at jay@wheatstone.com.

INOVONICS 730 FIRMWARE SUPPORTS SAGE

Inovonics 730 RDS encoders are shipping with updated firmware (version 2.8), providing support for the Sage Digital Endec so that when a Common Alerting Protocol alert comes along it is forwarded automatically to all RDS receivers in the station's network.



This enhances the listener experience by scrolling Emergency Alert System messages across RDS-enabled radios and mobile devices. The company says this ensures greater penetration and awareness when it comes to public safety, weather information, natural disasters, and other important emergency information.

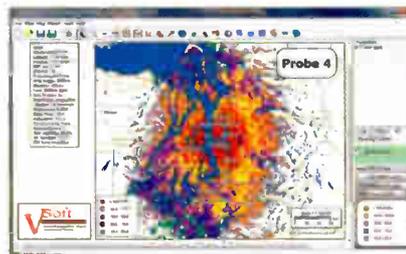
If you are running an older version of the 730 firmware, the update is available as a free download at www.inovon.com.

Info: E-mail Lukas Hurwitz at lukas@inovon.com.

V-SOFT UPDATES PROBE 4

V-Soft's latest is an update to the Probe 4 signal propagation software.

The program update includes several new tools and program enhancements. A new Calculation Engine takes advantage of multiple computing cores for faster calculation times.



The updated Profile Tool can display terrain profiles broken into multiple line-of-sight paths, plot multiple Fresnel zones and edit the hard copy output to add custom user labels, arrows, legends and logos.

Probe's time delay module has been enhanced to consider user-definable equalizer masks to compute self-interference zones for DTS. A new KML export feature has been added for exporting coverage and contour data for use with Google Earth.

Other updates include display enhancements, improved search functions, IBOC interference tools and expanded plotting and contour displays.

Info: E-mail Doug Vernier at consulting@v-soft.com.

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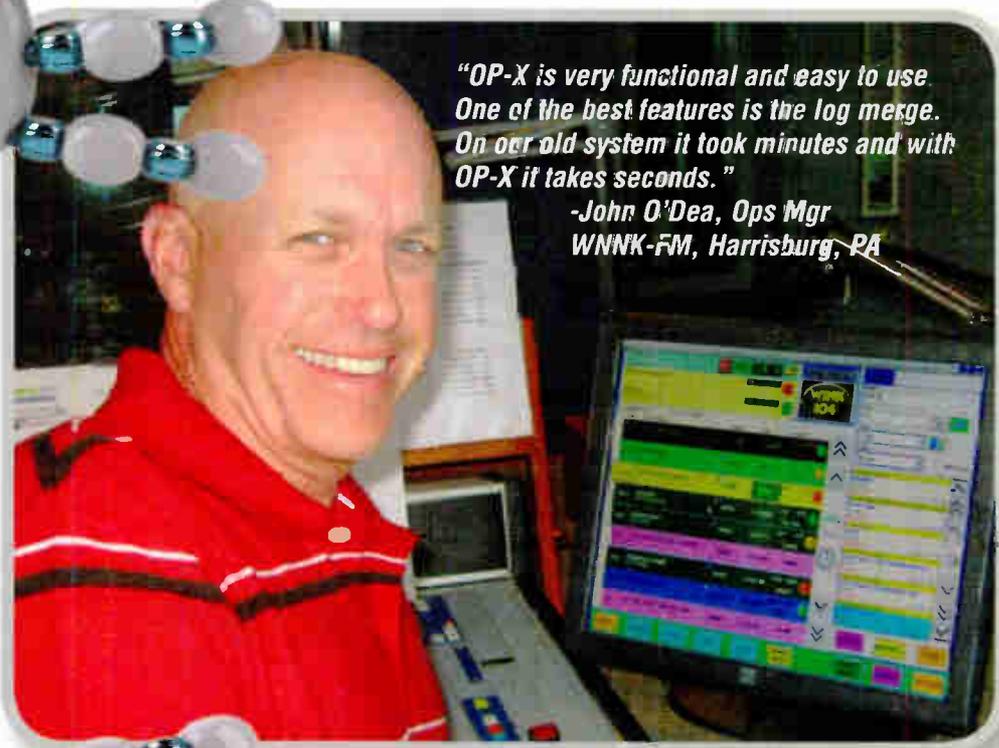


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"OP-X is very functional and easy to use. One of the best features is the log merge. On our old system it took minutes and with OP-X it takes seconds."
 -John O'Dea, Ops Mgr
 WNNK-FM, Harrisburg, PA

- Modular Operation in Op-X allows for a tiered system at a fraction of the cost of it's competitors.
- Each studio client is capable of accessing all Audio Server modules on the network.
- Remote voice-tracking allows for creation of content for remote studios also running Op-X.
- The revolutionary design of Op-X's clock builder turns the previous task of scheduling satellite programming into a few simple clicks.
- Share serial devices from any machine using the Op-X Serial Server.
- Importing logs now gets its own module that takes confusion out of the process.
- Engineers will enjoy Op-X because it's easy to install, maintain, and has automatic backup features.



AUTOMATION

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Not since Axia audio-over-IP was introduced to the broadcast industry have we at BGS been so excited! It is with great enthusiasm we'd like to invite you to take a look at the new Op-X Radio Automation delivery system for any single or multi-station cluster. Op-X's versatility allows it to operate seamlessly with either Axia IP-Audio networks or legacy audio consoles.



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

PLM MANAGES PROGRAM LENGTH

25-Seven Systems continued its focus on time delay and time compression/expansion with Program Length Manager.



PLM allows stations seamlessly to stretch under-length programs or shrink long programs to fit precise time slots without sacrificing content.

"A simple two-button interface allows operators to pause a live feed, insert additional material, then resume playback and catch up to real time," the firm says. "Like its sibling product Audio Time Manager, PLM can be used to back-time to the network perfectly, every time."

Analog/AES I/O is standard, or PLM can run on Livewire IP audio networks.

Info: E-mail Rick Sawyer at rsawyer@25-seven.com.

A LIVE ON-AIR DEMO FOR NAUTEL HD POWERBOOST

Nautel featured solutions for increased HD Radio coverage.

At the spring NAB the manufacturer had showed its HD PowerBoost technology running live. At the fall Radio

HD PowerBoost

show the company offered a live on-air demonstration of HD PowerBoost and asymmetrical sidebands at local station WAMU(FM).

"NPR data has suggested that as many as 4,000 stations in the U.S. might benefit from asymmetrical sideband technology to maximize their digital signal reception," it states.

Info: E-mail Chuck Kelly at ckelly@nautel.com.

SUNRISE ON THE OASIS

Harris introduced PR&E Oasis, a standalone on-air and production console that enables radio broadcast operations to convert to digital easily and affordably.



Oasis is an eight- or 12-channel analog model, though it supports digital studio operations. Harris says the design avoids relying on PC engines and assem-

blies to ensure reliable, consistent operations with minimal maintenance.

The board has digital as well as analog outputs and provides connections for microphones, CD players, monitors and a direct PC automation channel, with no sound card required.

"Key differentiators include two assignable telco channels to any fader, a modular design featuring swappable input cards and USB playback and recording functionality — with playback available on any channel with any operating system," Harris states.

Info: www.broadcast.harris.com.

RDS IS FOCUS FOR ARCTIC PALM

Arctic Palm Technology highlighted Center Stage Live with CSRDS.

"The new scheduling features offering the opportunity for additional revenue attracted a lot of attention," said the company's Stu Buck.



"Our ability to schedule, trigger or time a message to the RDS/RBDS display on a variety of FM receivers including MP3 players and cell phones, websites, streaming players and HD systems offers the station's clients even more exposure."

Several scheduling options are available, making sponsored events popular. "During a sponsored event, why limit the display to your station ID or worse, the last song, when you could show a sponsor's credit?" Buck said. "We could display 'Classic Rock FM' or 'Sonny's Auto Classic Rock News Update' as a potential revenue source. A few seconds on the front end could mean extra dollars where none existed."

Info: E-mail Stu Buck at csbuck@arcticpalm.com.

DIGITAL ALERT SYSTEMS AND EAS

EAS hardware specialist Digital Alert Systems demoed its boxes, notably with WideOrbit automation. The DAS IP-based DASDEC-II was shown



with its latest fully FCC-compliant EAS/CAP firmware upgrades. Using the company's EAS-Net software, the DASDEC-II can handle five EAS channel feeds. The company's MultiStation software adds the ability to generate sophisticated message schedules.

Info: www.digitalalertsystems.com.

ENCO EMPHASIZES PRESENTER'S FLEXIBILITY

Presenter is a new live-assist automation and studio delivery system from ENCO Systems.

Based on the DAD audio and control engine, Presenter combines a flexible architecture with a simple, single-screen interface. The system is targeted at broadcasters who are using systems that are no longer supported or that don't provide enough flexibility.



PADapult is a cross-platform meta-data distribution tool for HD Radio, RDS and the web; it is useful for providing data and messagecasting tools that stations need without requiring monthly fees to maintain the service.

Info: E-mail Don Backus at backus@enco.com.

HDFMVEE OFFERS WIDE BANDWIDTH

Dielectric's HDFMVEe antenna covers 20 MHz bandwidth with power ratings up to 10 Class C stations.

The antenna, designed for -10 dB IBOC signals, is constructed with stainless steel elements for reliability. It offers antenna isolation >40 dB for analog and IBOC and low downward radiation.

The HDFMVEe is suitable for FM stations that want the advantages of top-

mounting and combined station operation. The antenna is designed for digital, analog or both types of service. When operating in dual (IBOC/analog) mode, the antenna is designed for space combining with superior antenna isolation, Dielectric said.

"Multi-station FM operation where two or more stations share the same antenna has increased in popularity due to the inherent cost savings that can be realized," the company states. "Multi-station operation with excellent pattern circularity can be achieved with the wide bandwidth characteristics the HDFMVEe antenna offers."

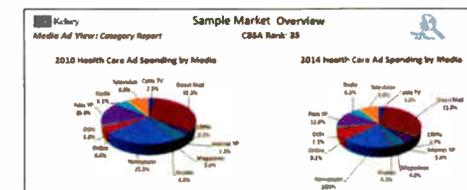
Info: E-mail Matt Leland at matt.leland@spx.com.



MEDIA AD VIEW: CATEGORY REPORT

BIA/Kelsey's "Media Ad View: Category Report" provides a picture of advertising trends in a local market; the company says this offers market intelligence and a competitive advantage in the "share shift environment."

The report provides a five-year projection of advertising revenues across 12 media categories: radio, television, cable TV, direct mail, e-mail reputation and



presence management, Internet Yellow Pages, magazines, mobile, newspapers, online, out-of-home and print Yellow Pages, as well as the top 12 advertising categories: automotive, educational, finance/insurance, general services, government/religion, health care, leisure/recreation, media, real estate, restaurants, retail and technology.

Those ad categories constitute nearly 95 percent of local media advertising revenues.

"Media Ad View: Category Report" offers a picture of what is going on within a local market and projections for future activity. Markets are organized by the 362 Core Based Statistical Areas (CBSAs) or TV/radio markets.

Info: www.bia.com/mediaadview.

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SAGE SUPPORTS FEMA

The Digital Endec Model 3644 from Sage Alerting Systems supports the EAS/CAP protocols just announced by FEMA.



A free software download is available on www.sagealertingsystems.com with CAP support. Sage expects to supply additional free upgrades as CAP access methods are further defined.

Sage continues to expand the list of devices supported by its coder/decoder and recently announced the ability to receive satellite-delivered CAP messages via GSSNET.

Info: E-mail Harold Price at hprice@sagealertingsystems.com.

*LINK TRIMS DOWN

Digigram highlighted its range of stereo IP audio codecs for studio-to-transmitter and studio-to-studio links:

PYKO is an affordable, reliable pair of in/out IP audio devices. Iqoya *Link is a full-featured, high-end stereo IP codec; the company recently introduced a cost-effective sibling, the Iqoya *Link/LE, which is a trimmed-down version of the Iqoya *Link targeted at unattended transmitter sites.

"We dropped the LCD display and other goodies, and focused on decode-only features," said a company spokesman. "In addition to the usual set of audio formats, the decode-only AAC codec



package is included for a total base-price below \$2,700."

The Iqoya *Link/LE relies on the principles of stream robustness, integrity and QoS optimization shared by Digigram's other IP audio codecs, he said. "They are all designed to bring peace of mind to broadcasters moving to IP."

Info: E-mail Remi Oudinot at Oudinot@digigram.com.

WIDEORBIT INTEGRATES

According to WideOrbit, it is bringing increased efficiencies to radio with integration between traffic and automation.

At the Radio Show, the company



demonstrated WideOrbit Traffic and WO Automation for Radio 2.1, showing the benefits of an integrated traffic and automation solution.

WO Traffic is a scalable, enterprise-wide sales, traffic and billing solution that enables radio broadcasters to manage multiple stations, markets and groups from one system. WO Automation for Radio 2.1 is a modern radio automation system.

Together, WO Traffic and WO Automation for Radio 2.1 deliver an integrated solution that delivers live log editing between traffic and automation; real-time reconciliation and notifications when a spot plays or is missed; streamlined dubbing process and automatic run date synchronization and remote access.

Shortly after the convention WideOrbit announced its intent to acquire the Orion Business System assets of VCI Solutions, a provider of sales and traffic software solutions to broadcast and cable.

Info: www.wideorbit.com.

WORLDCAST SEEKS VALUE

Christophe Poulain, president of WorldCast Systems, said: "From speaking with customers at the Radio Show in Washington, D.C., it was patently clear that radio broadcasters are still under considerable pressure to be conservative with purchasing and pricing is a big concern."

He said the company is responding by optimizing the value of its products.

"We are developing new products that are affordable even for the smallest station while preserving quality, reliability



and innovation."

As an example he pointed to Audemat's Mini Control Silver, a "deceptively powerful" remote control unit that uses the intuitive Scripteasy software application in a compact form factor.

APT's WorldCast Astral is another example; Poulain said it offers "a solid, IP audio codec platform with a wealth of available algorithms and features such as dual IP ports, redundant power supplies, embedded Web server, facility control and a sophisticated audio backup options."

Info: www.worldcastsystems.com.

EMMIS BRINGS MORE TO THE WEB

Emmis Interactive was in a show suite and highlighted two products.



TagStation is a Web-based application that empowers broadcasters with a platform to manage song matching. This summer the company announced a partnership with Broadcast Electronics to offer the iTunes song tagging solution.

Listeners can tag songs played over the air, on FM RDS and HD Radio receivers. The proprietary tag management system integrates with BE's TRE on-air software and builds on Emmis Interactive's digital products including BaseStation and iTunes Storefront.

Guidable is a Web platform that allows a station to create enhanced business listings around an unlimited number of themes such as dining guides, best of guides, retail deals, etc.

Info: www.emmisinteractive.com.

DIGITAL HYBRIDS RING FOR TELOS

Telos believes that harnessing and taming the random nature of analog phone lines is easier with its new Hx1 and Hx2 digital hybrids.

They use Telos' processing technologies to perform hybrid functions, gain control and filtering in the digital domain, without regard to telephone line characteristics.

GR

Gorman Redlich Mfg. Co.
Is CAP-able

The CAP-DEC1, Gorman-Redlich is a stand-alone CAP-to-EAS converter for use with your existing emergency alerting equipment. This cost-effective device allows broadcasters to easily meet Common Alerting Protocol (CAP) compliance requirements mandated by the FCC without requiring the purchase of an additional encoder/decoder system or other costly

equipment. The CAP-DEC1 is CAP 1.2 compliant and requires only one unit of rack space. Trust the experts with over 35+ years experience in the emergency alerting industry to help you meet your broadcasting needs. Visit our website or contact us today for more information about the Gorman-Redlich CAP-DEC1. We continue to support equipment we made 35 years ago.



PRICE
\$1350

- Compatible with any existing EAS encoder/decoder made by any manufacturer
- Powerful 1.6GHz dual core processor and 1GB of memory
- Built-in text-to-speech conversion functionality
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- Options to print, store or email logs via built-in email server
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- Nearly limitless storage capacity for logs and audio messages
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- Software can be updated via LAN or USB
- Print alert reports to USB or network printer

Gorman-Redlich Mfg. Co.
www.gorman-redlich.com

257 W. Union Street, Athens, OH 45701
Phone: 740-593-3150

Fast, precise and automatic digital nulling allows smooth, natural, simultaneous conversation, according to Telos.



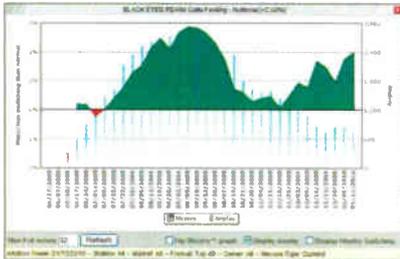
Speaker phone clipping, voice distortion and level-matching problems are eliminated, it says.

Hx hybrids ship with features such as auto-answer, caller disconnect detection, sophisticated audio-leveling and anti-feedback routines for enhanced open speaker applications, call screening and line-hold features, and front-panel send and receive audio metering.

Info: www.telos-systems.com.

RCS BRINGS MSCORE TO PPM

RCS says that in PPM markets, stations have reaped the rewards of its Mscore offering. By better understanding the impact of switching that takes place during each song's airplay, programmers can fine-tune their sound to the ratings panelists. Mscore helps programmers respond quickly to the preferences of their audiences.



With its GUI, Mscore shows the extent of switching behavior of Arbitron PPM panelists when songs play. Stations download the Mscore of songs into GSelector to enhance their music scheduling. Preliminary PPM data is available within five days after the measured week, exclusively for subscribers of Audience Reaction, Mscore and PPM.

Info: www.rcsworks.com.

V4 ADDS FEATURES TO IMEDIATOUCH

OMT's iMediaTouch V4 contains a set of features that the company says grew out of collaboration with its users and technology partners.

In addition to a new on-air graphical user interface, iMediaTouch now contains features such as a quick-scroll "next hour button"; ability to change the colors of the hot keys; color-coded



display in Full Log; more dynamic on-the-fly adjustable segue editor; ability to add a station logo; enhanced library search using a "contains" methodol-

ogy; drag-n-drop from the library onto the hot keys page; and Wheatstone and Axia interfaces for AoIP GPIO and routing. A video preview is at www.imediatouch.com.

Info: E-mail sales@imediatouch.com.

SCOTT BEEFS UP OFFERINGS

Dave Scott brought to the show the latest for his RadioTraffic.com traffic and billing system:



avails, proposals and order entry on an iPad.

New is RadioTexter.com, an inexpensive text message blaster for \$150 per month with no charge per message.

Another new offering is SongPlaying.com, wherein listeners can text in and get an automatic reply that lists title and artist of song playing and 20 prior songs.

UnattendedWeather.com provides night and weekend weather when nobody's at the station.

Info: E-mail Dave Scott at dave@radiotraffic.com.

PDM is Program Delay Reinvented...





"PDM is a beautiful design with features I never knew I could get in a delay unit. It performs as good as it looks, and is backed by some of the smartest guys in the business."

-BILL TRAUE
Chief Engineer
Riverbend Communications
Blackfoot ID

"We use PDM at Radio Free Europe/Radio Liberty for listener call-in programs on our Radio Azadi (Afghani) and Radio Farda (Persian) language services. The device is easily programmed through a browser interface, and the front panel controls are intuitive. PDM's Livewire option let us quickly and seamlessly integrate the devices in our Axia IP based audio distribution system."

-BILL CLINE
Director of Broadcast Engineering
Radio Free Europe
Radio Liberty Prague

"Talk about peace of mind. On the rare occasions that our "red button" gets pushed, PD-Alert emails me two pieces of audio. I can instantly hear the "raw" version of what didn't make it to air, and the "clean" version that did. 25-Seven's PDM system with PD-Alert is the decent way to make sure your license is protected"

-GRACE BLAZER
Program Director
WTKK Boston

PD-Alert™ e-mails audio files so you know what happened when material is "dumped". With 90 seconds of profanity delay and transparent audio expansion/compression, the user-friendly PDM is for stations serious about protecting their licenses.



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Visit us on the web: www.25-seven.com



COMREX HAS FREE APP

The Access Reporter Codec for Android — or ARC — has enjoyed several thousand downloads on the Android Market since June, according to Comrex.

Access and BRIC-Link owners can use ARC to enable program contributors and reporters to make a bi-directional wideband voice call from an Android phone using the device's Wi-Fi or 3G data connection.

The app can be downloaded for free from the Android Market and used on Comrex-approved devices.

At the Radio Show, attendees also could demo the Access Portable, STAC Telephone Talk Show system and BRIC-Link.

Info: E-mail Chris Crump at ccrump@comrex.com.



SDS CONDUCTS SYMPHONY

Symphony, from Specialty Data Systems (SDS), brings a different perspective to broadcasters. Rather than

SDS
clarity | control | results

separate sales, traffic and billing systems, SDS Symphony centralizes traffic, sales and programming into a single software solution, eliminating data re-entry and reducing costs. For single stations or multimarket deployments efficiency gains through SDS should be noticeable. SDS Symphony communicates traffic revisions instantly to sales. Sales reps have real-time access to avails and a robust proposal system. Bookings are automatically confirmed. Credit rules are enforced in real time. Enterprise-wide reports are available anytime. The SDS Symphony programming module is fully unified with traffic and sales.

Info: www.sds.ca.

RINCON REDUX

If you missed the debut of the Moseley Broadcast Rincon at the spring NAB Show, it continued its tour at the Radio Show.

According to Moseley the Rincon is a "software-defined audio transport product optimized to deliver multichannel



digital audio over IP, T1/E1 and Radio links and networks simultaneously."

Rincon carries up to eight stereo audio channels over multiple network choices. Built in backup solutions such as failover inputs, redundant outputs, and automatic switchover in case of audio loss are included and it even inserts a backup audio file to keep audio on the air in case of total link failures. Rincon offers linear uncompressed audio or any of several common advanced audio compression algorithms. Management and configuration can be handled via Web browser and SNMP interface and can even be accessed via a smartphone.

Moseley's Bill Gould said, "Rincon's ability to operate on these low cost network choices simultaneously gives excellent return on investment."

Info: www.moseleysb.com.

BROADVIEW BRINGS FAMILIARITY

The BroadView Software table featured familiar faces demonstrating a new version of the company's traffic/billing/broadcast management suite.



Bunk Robinson and Jerry Katz, former co-workers at Wicks/CBSI/Datacount, showed BroadView v7. Robinson, who launched the U.S. radio effort two years ago, is now partnered up with Jerry Katz, the new radio sales director.

Katz, a radio software veteran of nearly 13 years, said the show was a good time to connect with former friends and customers. "BroadView is a powerful tool and ready for radio now," said Katz.

Katz noted that new features include an improved Quick Search and Favorites Area. The new Fluent User Interface streamlines client requests for improvements and added features from BroadView's development team. The look and feel should be immediately familiar to those working in Microsoft Office 2007 or 2010 according to the

company.

Info: www.broadviewsoftware.com.

MARKETRON BUYS MSNAP

Marketron, which provides business software solutions and services for media companies, has acquired mSnap, a broadcast-based mobile advertising network.



"The mSnap solution is being delivered via the Marketron Exchange platform, providing clients with a mobile solution that includes audience engagement tools, mobile content and an advertising network that will help media companies grow both audiences and revenues," Marketron stated.

It said the acquisition allows it to offer an integrated software solution, advertising network and "vast" distribution channel. "In addition, Marketron mobile will become the 'go to' network that both mobile publishers and advertisers will use to offer and buy mobile ad inventory." Marketron is an affiliate of the Wicks Group, which also is parent of Radio World publisher NewBay Media.

Info: E-mail sales@marketron.com.

AUDIOVAULT FLEX FLEXES NEW MUSCLES

To celebrate the Radio Show, Broadcast Electronics showed attendees the latest version of the AudioVAULT Flex automation system.

New to the platform is a simplified segue editor for easing song-to-song transitions. Also new is an upgraded voice track module with more tools for smoother gain control for overlays and transitions.

Another new tool is an editor for marking song sections for use as a segment.

The GUI is the recipient of some tweaking to allow for gadgets and apps docking.

Ray Miklius, VP of Studio Operations at BE said: "Overall, we are continuing to fill out our strategy for a studio system that is responsive and customizable. We are filling out the AudioVAULT Flex with several new functions to make it easier for talent to respond to on-air situations similar to a club DJ, and we're adding layout features that make it possible to jump between applications."

Info: www.bdcast.com.

GORMAN-REDLICH OFFERS CAP-TO-EAS CONVERTER

Gorman-Redlich emphasizes its 35+ years experience in the emergency alerting industry. New is the CAP-DEC1, a standalone CAP-to-EAS converter for use with existing emergency alerting equipment.



"This cost-effective device allows broadcasters to easily meet Common Alerting Protocol compliance requirements mandated by the FCC without requiring the purchase of an additional encoder/decoder system or other costly equipment."

The CAP-DEC1 is CAP 1.2 compliant and requires only 1 rack space. Retail price is \$1,350.

Info: www.gorman-redlich.com.

ERI INTRODUCES FM BAND-PASS FILTER

Electronics Research introduced a low-power FM band-pass filter at the Radio Show.



The new filter is rated for 1.5 kilowatts convection cooled (4 kW with optional forced air cooling).

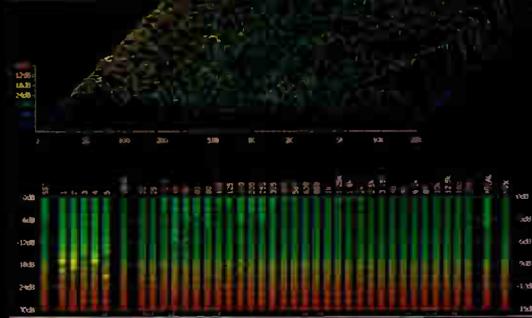
The filter is a compact design that is 5 inches (127 mm) wide and 20 inches (508 mm) deep; it weighs only 50 pounds.

The 935 Series FM band-pass filters can be used to provide protection from intermodulation products or configured as a combiner for two or more FM stations sharing a multiplexed FM antenna. The filters also are available with optional non-adjacent coupling loops, to improve performance in applications with closely spaced frequencies.

Info: E-mail Bill Harland at sales@eriinc.com.

AIRAURA TAKES FLIGHT!

VORSIS AIRAURA DIGITAL SPECTRAL PROCESSOR



The new AirAura™ audio processor features proprietary “AirAura” final clipper technology for cleaner, clearer, more natural mid and high end detail without smearing, dulling and other artifacts commonly associated with managing the IFM pre-emphasis curve. Its advanced multiband AGC/SST (Sweet Spot Technology) delivers incredibly smooth and unobtrusive gain and spectral control during widely varying incoming program levels, and the AGC boasts separately adjustable low and high inter-band coupling algorithms for serious sonic sculpting. AirAura also offers the latest Vorsis Bass Management System (VBMS) with new Texture control for fine-tuning on-air bass. Dual front panel ‘widescreen’ displays show extensive detail about the processor’s operation. In addition to real-time measurement of input, output, and RMS (loudness) output levels, its comprehensive metering also shows all gain reduction activity. Specialized analysis functions exclusive to Vorsis offer an astonishing overview of input or processed audio. And for ultimate flexibility, AirAura gives you remote processor control via wired Ethernet or integrated WiFi connectivity. Completely made in the USA and available TODAY!

- New proprietary “AirAura” final clipper technology
- Advanced multiband AGC/SST (Sweet Spot Technology)
- Latest Vorsis Bass Management System (VBMS)
- Dual front panel ‘widescreen’ displays
- Remote processor control via wired Ethernet or integrated WiFi connectivity
- Specialized audio analysis functions, including FFT and oscilloscope analysis of input or processed audio, Energy vs Frequency display of input or processed audio, 3-D plotting of audio spectral content vs. time, Spectral Dynamic Range metering, and activity display of clipper’s distortion masking algorithm

MORE BRAND NEW STUFF FROM VORSIS! AVAILABLE TODAY!



VP-8 PLUS

The new VP-8 PLUS takes our popular and acclaimed VP-8 and adds a slew of new features for even greater performance. Advanced processing for greater audio consistency, clarity and overall loudness with lower distortion. Includes Vorsis GUI-LITE software for taking the VP-3 PLUS anywhere you want to go.



FM-4

The new FM-4 is a no-frills FM-only audio processor that gives you those great presets Vorsis is famous for. Plus, it comes with Vorsis GUI-LITE for tweaking those presets to get your signature sound.

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john.george@broadcastconnection.com

KEN PERKINS, Evergreen, CO
303.674.6566
ken.perkins@broadcastconnection.com

JOHN SHIDELER, Mesa, AZ
970.227.1405
john@broadcastconnection.com

ERIC WANDEL, Newburgh, IN
812.490.7947
eric@broadcastconnection.com

HD RADIO

(continued from page 10)

he's shopping for a new car and wants one with an HD Radio receiver in the dash. "It's hard to find one with an HD Radio in it," he said, adding he'd rather not have to purchase an aftermarket HD Radio and have it installed.

Satellite radio is prevalent in new cars, he observed. "The point is there's a business model there that satellite people had years ago to get [their] radios in cars; it has to do with subsidies and revenue-sharing." He added: "Broadcasters need to take a hard look at this. That's what we need for HD Radio. But, what does it take and what incentives are required for auto manufacturers to put an HD Radio in every car?"

Broadcast Electronics VP Sales Tim Bealor said it's hard for stations to go all-digital without more receivers in the market and without a business model that works for stations to get revenue. "We will be in hybrid mode until we get [more] receiver penetration in cars."

At another technical session, Radio World asked iBiquity officials about whether it has pushed its radio investor groups to offer more than unsold ad inventory — as in real cash — as incentive for automakers to speed up HD Radio receiver introduction into the dash.

iBiquity SVP Marketing Stephen Baldacci said "Broadcasters won't subsidize the radios. That's not going to happen."

What would help, he said, is "clarity from on-air DJs about what consumers need to do to get an HD Radio," just as stations have been driving people to their website.

Alliance stations need to air the HD spots and iBiquity spends a lot of time training consumer electronics salespeople about the products, he said.

ABOUT THE COVER PHOTO

During a regulatory session, FCC Audio Division Chief Peter Doyle noted that after seeing an iBiquity promotional brochure that included a "special broadcaster" offer of \$36 per unit at the 2010 NAB show, he decided to offer Media Bureau staff and others at the commission the opportunity to buy one at the promotional price. He coordinated the purchase of about 40 units from Best Buy. No public funds were used; everyone paid for their own devices. Doyle told Radio World he thought it would be a great and inexpensive way to introduce to HD Radio to potential first adopters and policy makers.

COO Jeff Jury said even if broadcasters said they'd give a hypothetical amount of dollars in a year to car companies, it wouldn't make a difference because automakers can't get things done that fast.

"Most automakers want to know whether broadcasters are serious about HD Radio," he said. "Their big fear is returns. As long as HD Radio sounds good," automakers will accelerate deployment, he said.

It takes three to four years to get onto a car platform, said Jury. The tech developer hopes that within about two to three years, the market will see an HD Radio as standard OEM equipment in at least one model of each automaker's vehicles, and standard on most models of all automakers within about eight years.

EMMIS INTERACTIVE, BE DEBUT TAGSTATION

Emmis Interactive and Broadcast Electronics conducted live demos of TagStation, a jointly developed song



NPR Labs Rich Rarey, left, and John Kean, far right, demo the Personalized Audio Information Service to allow blind and low-vision listeners of radio reading services to capture individual stories by topic for on-demand listening.

tagging solution that enables listeners to tag songs played over the air by FM RDS and HD Radio receivers.

TagStation is a Web-based application that helps stations manage song matching, which the companies say is important to providing consumers with a good song-tagging experience whether it's through their iPod nano, Zune HD or other FM or HD Radio receiver.

TagStation was designed to integrate with Broadcast Electronics' TRE on-air software and builds on the Emmis Interactive suite of digital products.

BE Vice President of Studio Systems Ray Miklius says the companies hope industry use of TagStation will result in broader adoption and market penetration of song tagging.

Emmis Interactive Co-President Rey Mena characterized TagStation as software-based, rather than a hardware-based tagging solution. Paul Brenner, Emmis Communications senior vice president and chief technology officer as well as



Photos by Jim Peck

president of the Broadcaster Traffic Consortium, says the product can work with any on-air playlist system.

NPR LABS DEMOS PERSONALIZED AUDIO INFORMATION SERVICE

NPR Labs demonstrated its Personalized Audio Information Service that would allow blind and low-vision listeners of radio reading services to capture individual stories by topic for on-demand listening.

The technology uses XML tags containing program information that are transmitted within the program associated data/program service data (PAD/PSD) comment field of a standard HD Radio channel.

"A PAIS-enabled HD Radio receiver recognizes the received PAIS tag, com-

pares it against a list of programs the listener has selected, and if there's a match, begins recording the program," said Rich Rarey of NPR Labs.

For the NAB demo, NPR Labs sent PAIS tags over the public Internet to WETA(FM), Washington, D.C., which then transmitted the PAIS tags on its HD3 channel; those tags were received by a special HD Radio receiver that had PAIS functionality coded into it. The receiver's PAIS setup menu displays the various program categories available to the listener, and allows the listener to choose a single category, like the reading of the financial pages of a local newspaper, or a broad category, such as all programs read from a local newspaper.

The PAIS tags can also command HD receivers to alert the listener to emergency messages, such as tornado and hurricane warnings.

The PAIS initiative is funded by the National Institute on Disability and Rehabilitation Research.

Bridge-IT Codec Keeps Connections

IP Codec's Error Correction Algorithms and Menu of Compression Choices Shine

PRODUCT EVALUATION

BY LAURA MIR

Sometimes simple is all you need and want. Add in reliable and robust and you've stumbled onto the Bridge-IT codec.

Packed in this little blue and white box is everything most broadcasters will ever really need to get audio anywhere. From simple remotes to STLs and studio links, the Bridge-IT uses one Cat-5 to do it all.

HARDWARE FEATURES

The Bridge-IT from codec maker Tieline Technology has a compact design and enables users to rack two units in a 1RU bracket. The chassis is lightweight yet rugged and would easily pack away for a remote.

The rear panel features a rich selection of inputs and outputs.

Input 1 serves as either a mic/line or AES3 input. Input 2 is a balanced XLR line input. There are two XLR line outputs, and a separate AES3 XLR output.

The rear interface also includes 12V DC power, LAN (RJ-45 port), 1/4-inch headphone out, USB, RS-232 serial control and a control port (two opto-isolated/relay outs).

I appreciated the considerable amount of I/O the Bridge-IT provides for such a small footprint. There is no wasted space on the rear, yet there is also enough room to comfortably move cables and access the headphone jack.

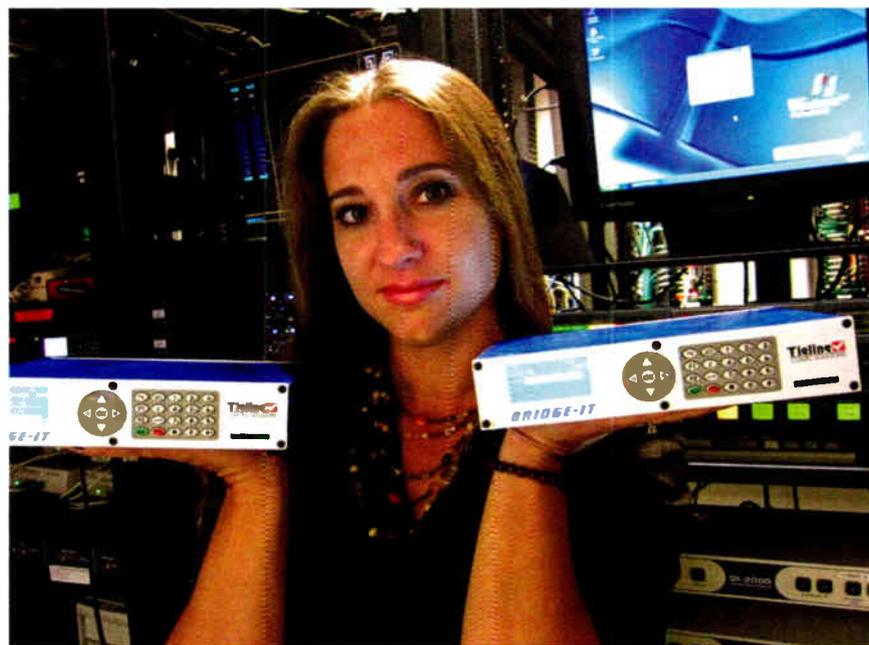
My concerns with the rear-panel design are that the 12V power connector is not a twist-lock style connector and that the power supply comprises two separate segments. I generally dislike power supplies that add in another point of failure. It is just too easy to knock a power supply off a desk, or have it fall behind a rack, and with the design of this power supply, one would likely lose power to the device.

The front controls are sleek and easy to navigate. The full hardware control on the panel includes menu navigation buttons and dialing keypad. The buttons are arranged nicely, with convenience shortcuts to home, information, configure and dial/hangup. I appreciated the design of the dialing keypad, with the addition of the * key to efficiently enter in the IP addresses.

Since this is an IP-only appliance it was obvious that there was much thought put into the way addressing would need to be configured. The front also includes

will appreciate that text and button labels are readable without having to be right on top of the box.

Rounding out the front is an SDHC card slot. This is designed for program failover to a recorded file. The Bridge-IT is configured automatically to play out the card's content in loop mode within 3



a small LCD display, clean and uncluttered. From the home screen there are only four main menus to choose among. Navigation buttons make these selections in order to drill down to submenus. Users

seconds when the connection to a remote codec is lost. By placing this slot on the front of the device, it is easy to keep music or promo content current.

I would have liked to see a USB Type

PRODUCT CAPSULE

TIELINE BRIDGE-IT IP Codec

Thumbs Up

- + Music and MusicPlus algorithms
- + Help button (really helpful)
- + Web GUI
- + Intelligent gain control
- + Automatic failover via SDHC slot

Thumbs Down

- Lacking LED with colors for easy visuals on levels
- No headphone jack on the front
- No USB Type A port on front
- No wireless, Wi-Max, 3G
- Twist-lock power cable or strain relief for power cable

Retail: \$1,395

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

A jack on the front as an alternative or addition to the SDHC slot. USB flash drives are so common and universal that I think this addition would be a nice feature.

Users will be pleased with the inside software offerings of the Bridge-IT.

Beginning with the available algorithms, it comes with Tieline Music, Tieline MusicPlus, G.711, G.722, MPEG Layer II and Linear PCM16 (uncompressed). Enhanced aptX has just been introduced as an optional upgrade. Users can choose to

(continued on page 28)



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TIELINE*(continued from page 27)*

add on AAC-LC and AAC-HE and AAC-HE v2.

The Tieline proprietary algorithms Tieline Music and MusicPlus deliver high-quality low-bit-rate connections for remotes and STLs with minimal delay. While these two algorithms are not compatible with SIP connections or non-Tieline codecs, AAC or MPEG algorithms can be used. In addition to the algorithms, users must select jitter, FEC and delay settings.

As with any IP codec, users need to have a good handle on the abilities of the network to which they are connecting. The choices of algorithm, jitter buffer, FEC (forward error correction) all act together to determine the final output of data and how it is perceived at the remote destination. In the case of jitter buffer, users can choose to use the automatic adaptive buffer or a fixed buffer setting depending on the robustness of the network.

Within the connection configuration menu, users can select various aspects of these options. For those who choose auto adaptive, there is a further priority setting that will attempt to automate the jitter and delay settings as tailored to the connection's need. Users can program Least Delay, Highest Quality, Best Compromise, Good Quality and Less Delay.

For simplicity in this review, it will suffice to say that users are encouraged to try out each of these settings to best determine what sounds good for their applications.

In testing, I found that in order for the adaptive jitter to perform its best, I needed to have the connection established for a few minutes. This allows the automatic jitter control time to assess the network conditions and negotiate the best conditions. I found that the recommended



time of 5 minutes appropriate for ensuring a reliable connection. In my remote studio-to-studio setup between two Bridge-IT codecs, I found the automatic adaptive setting with the selection of Least Delay and Best Compromise to work well, with little to no noticeable delay. I generally appreciated the commonsense approach to achieving optimal settings on the Bridge-IT. I could tell that Tieline's design was tailored to get this device connected and streaming high-quality audio in a short timeframe.

The next aspect to consider when setting up a connection is forward error correction. Where the jitter buffer acts to smooth out the audio stream (packets) during network congestion, FEC introduces a second stream of packets should those first packets get lost in transmission. The FEC can be applied to either the local or remote locations or both. Within the FEC menu, users can choose from 20 percent, 33 percent, 50 percent and 100 percent values depending on how many packets are getting lost in the IP connection.

I had a robust network for my testing purposes and chose to leave the FEC off. There is no need to enable

FEC until the codec actually is showing dropped packets; otherwise you are just using up bandwidth for no benefit.

I recommend walking through Tieline's setup instructions for connecting to the IP test number. By taking this gradual stepped up approach it is easy to find the sweet spot for the connection. This approach also is helpful for users new to Tieline's proprietary codecs, Music and MusicPlus.

The Bridge-IT also features a built-in DSP limiter. This intelligent gain control automatically takes care of any instantaneous audio peaks that occur in demanding broadcast situations. The IGC is enabled by default, and it does a nice job rescuing audio that would otherwise be clipped.

I tested this feature leaving the IGC recovery set to auto, and the audio reference scale set to G5. The IGC consistently kicked around +20 dBu and nicely handled the hard rock/metal music I threw at it. The IGC auto reset the levels, with no audible detection.

The Bridge-IT also provides a Web-GUI for programming via the Web. There is nothing to set up, just enter the Bridge-IT IP address and go. The same menus that are accessible on the unit are available through the Java applet. This feature comes in handy when an engineer chooses to collocate codecs, perhaps in the TOC, and still allow the talent and producers to connect and monitor the codec from the studio. No additional software is needed, and the GUI provides real-time monitoring and configuration.

Last, I tested the automatic failover function of the Bridge-IT. I preloaded an SD card with an emergency music MP3 file, and disconnected network connection on my remote device. The failover worked flawlessly and began to play out my file. Once I reconnected

(continued on page 30)

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World Radio History

Skype Gets Interviews on the Cheap

Broadcasters Find It Brings Them Access to More Guests, More Effectively

BY JAMES CARELESS

Like most broadcasters, the Canadian public-service broadcaster CBC Radio is trying to exploit new technologies to do its work better ... and possibly cheaper.

One solution has been to conduct audio interviews via the Web using Skype, the voice-over-IP telephone service.

By using Skype, programs such as the national technology and culture show "Spark" are able to make free calls within Canada, and pay just pennies per minute to go international. The calls are conducted using computer-connected microphones and headsets, which take the place of conventional telephones. The audio can be played live to air, but is usually recorded for editing and later playback.

Better yet, "Skype-to-Skype calls" — which is how "Spark" usually uses Skype — "are free, regardless of geography," said "Spark" producer Dan Misener. "No 'pennies per minute to go international' when it's computer-to-computer." He added that, as far as "Spark" is concerned, the main reason for using Skype is to access more guests, more effectively.

ACCESS TO GUESTS

"Skype gives us access to guests we might not otherwise be able to reach," said Misener. "It's much easier to book guests in their own homes or offices via Skype, rather than sending them to an ISDN studio."

This said, Skype is not quite as reliable as plain old telephone service —

although it can have better quality audio — or ISDN. However, for radio stations looking to cut phone costs for prerecorded interviews, Skype can be a real money-saver.

"When it's working right, Skype can sound great," said Misener. "The big disadvantage, for us anyway, is the unpredictable audio quality."

The Conversations Network, a California-based nonprofit that records and collects audio for free replay on the Web, also has embraced Skype for recording far-flung events.

"Our concept is to capture all of the speeches, lectures and other audio content that disappears once they are done live," said Doug Kaye, executive director for The Conversations Network. "Until 2007, we didn't use Skype for recording interviews as the quality was too poor. But improvements since then have resulted in Skype providing excellent quality audio for radio and the Web."

The process of using Skype begins by downloading the Skype client program from www.skype.com. Once this is installed on a broadband-connected PC (dialup is too slow), just connect a headset with microphone.

"Although you can use a studio microphone, a standard USB headset with microphone works fine," said Kaye. "The critically important part is the USB connection. This option doesn't run into



the level-balancing problems that analog-connected mics do."

The next step is to install a program for capturing both audio channels of the call. The Conversations Network uses Audio Hijack Pro and CallBurner to do this on a PC.

It is also possible simply to patch the local voice into Channel 1 of a mixer and the distant audio into Channel 2. The audio can then be recorded directly to a digital recorder or hard drive.

Once the local studio is ready to Skype, it is necessary to make sure the person being called has a similar Skype setup. If not, the studio can use the "Skype Out" service to call a regular telephone.

"Even if you have to use Skype Out, which does have a cost attached to it, you will still pay less than if you were using a standard telephone to telephone connection," Kaye said.

"On the CBC's end, we run Skype on a PC in our radio studio," said Dan Misener. "The ins and outs are fed through the studio console, which allows us to record directly into the CBC's recording/editing/playback software, DaletPlus. On the interviewee's end, we always aim for headsets that provide nice, tight miking and headphone isolation."

LIMITS, ASSESSMENTS

Thus Skype offers a cheaper way for radio stations to conduct telephone interviews.

"This said, there are always lots of variables at play whenever we do Skype interviews," said Misener. These include "the quality and speed of the Internet connection, the quality of a guest's microphone, the speed of their computer and the distance between us and them. For

any number of reasons, Skype can sound great or it can be finicky."

As a result, "We primarily use Skype for research and taped radio interviews," said Misener. "Our show is mostly pre-taped, so we always try to have a backup method of recording the interview (usually telephone). If Skype is acting up, we go to the backup. Personally, I wouldn't want to rely exclusively on Skype in a live on-air radio situation."

Doug Kaye noted that while dial-up connections are too slow to handle broadcast-quality Skype calls, a wired broadband connection isn't always necessary. They have used satellite, Wi-Fi and 3G broadband connections with varying results.

"Satellite [transmission] is always a problem due to the quarter-second delay in each direction," said Kaye. "It's that problem of stepping on one another. It's not something unique to Skype. Wi-Fi is okay, if the connection is good. 3G depends entirely on the connection. It can be great or awful ... no safe rules to go by."

"We've been quite successful linking to Africa and India, but not using 3G and certainly not using anything that goes via satellite."

Doug Kaye doesn't pretend that Skype is the perfect replacement for telephone-connected interviews. "But when it works — which it usually does — Skype provides an amazing audio product at very little cost," he said. "For broadcasters trying to cut their budgets while maintaining or improving their audio quality, Skype is a very useful tool for them to have."

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Marconi Would Be Proud

Here are the recipients of the 2010 National Association of Broadcasters Marconi Radio Awards, given at the Radio Show in Washington this fall.

Legendary Station of the Year:
WBZ(AM) Boston

Network/Syndicated Personality of the Year:
Scott Shannon, Citadel Broadcasting

Station of the Year by Market:
Major Market: WTOP(FM) Washington
Large Market: KSTP(FM) Minneapolis
Medium Market: KKOB(AM) Albuquerque, N.M.
Small Market: KFGO(AM) Fargo, N.D.

Station of the Year by Format:
AC: WMJX(FM) Boston
CHR: KIIS(FM) Los Angeles
Country: WFMS(FM) Indianapolis
News/Talk: WTOP(FM) Washington
Oldies: WCBS(FM) New York
Religious: WMIT(FM) Black Mountain, N.C.
Rock: WMMR(FM) Philadelphia
Spanish: WOJO(FM) Chicago
Sports: WFAN(AM) New York
Urban: WVEE(FM) Atlanta

Personality of the Year:
Major Market: Ronn Owens, KGO(AM) San Francisco
Large Market: Doug Wright, KSL(AM) Salt Lake City



© NAB

Medium Market: Kelly Mac, WJMZ(FM) Greenville, S.C.
Small Market: Leo Greco, WMT(AM) Cedar Rapids, Iowa
Spanish Format: Eddie "Piolin" Sotelo, KSCA(FM) Los Angeles

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Let's see ... I've got 6 minutes and 20 seconds until the top of the hour, at which point I have to talk for between 30 and 15 seconds before a live network newscast begins.

If I mess it up, I'll sound like an idiot. I only have three songs of various lengths from which to choose. The song I'm playing is nearly over, so I've got to decide what I'm going to do within the next 45 seconds.

During my early on-air adventures, I constantly faced this scenario, as many face it routinely today. Not until years later did I realize that understanding and

PLANNING

In music radio, the time allotted to speech is highly regulated; therefore it's all the more important to plan appropriately.

If a talent has three significant chances to speak each hour and does a four-hour show, she only needs to plan content for a maximum of 12 breaks. If four of those breaks are occupied mainly by promotional content, even less planning is required.

Whatever the number of breaks, it's clear that advance daily preparation isn't difficult. So why do so many

In music radio, the time allotted to speech is highly regulated; therefore it's all the more important to plan appropriately.

manipulating the construct of time relative to radio content is vital to success.

Show prep at its most basic level is about understanding time. As elementary as this sounds, many on-air talents, and even the occasional program director, can't — or don't want to — embrace the significance of the construct.

personalities wing it? One DJ recently revealed to me that she enjoys being spontaneous. The secret not always shared is that the great ones always know where they're going and



PROMO POWER



Mark Lapidus

to say "tomorrow" the day before the deadline and "this afternoon at 5 p.m." the day of the end. Too often, a lazy producer will make one promo and let it run with a date right up until a contest is finished.

2) Sometimes we tell callers how much time they have to talk (either on- or off-air). This forces callers to condense their stories or points and makes for improved content. It may also help keep someone listening if they know someone really annoying has 60 seconds to make their view known before they're off the air.

3) Appointment listening has gone in and out of vogue. I am a fan of the concept when a promotion is done with a lot of frequency the day of the activity.

Example: Sports stations that focus on an NFL coach's press conference time after a big game can drive a result.

4) Seemingly slow down the clock by producing pre-recorded radio shows with amazing content. Have you listened to any of the BBC's rock documentaries on 6 Music (Channel 6 online)? Find a band you enjoy, listen to an hour-long show and you'll have to admit that you didn't realize an hour had passed.

5) Do you do something different every day at the same time? With the exception of scheduled features — like traffic, weather, news, etc. — make sure your talent is not doing the same bit over and over until the audience is fleeing for relief.

Example: Amateur talent can take a long time to say hello in their very first break and a long time to say goodbye in their last break. They don't realize that the same people tire of hearing it daily because they happen to be in the car at that time.

6) Finally: Make fun of time when you can: "We guarantee 60 minutes this hour!"

The author is president of Lapidus Media. Write to him at marklapidus@verizon.net.

they've learned how to act spontaneous even when a break is planned and well rehearsed.

For talk and information-based shows, the clock requires an actual "road map" due to complexity of material. No question that this approach, unlike music radio, requires much more effort. The benefit typically comes with a superior show, better ratings and hopefully a significantly higher salary.

TIPS

How else do we use time to our advantage and how can we improve the effort?

I advise making your own list, but here are a few to get you started:

1) We give people limited time to enter contests, thereby driving demand. Make sure your talent communicates deadlines clearly, using days instead of dates whenever possible.

For example, rather than saying "You must enter by Oct. 15," insist: "You gotta get it done by this Friday at 5 p.m." This will have more impact.

Remember to update recorded promos

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2" plastic "spot" reels 6.5 or 8" diameter, as used for quad video. Wayne, Audio Village, 760-320-0728 or audiovlg@gte.net.

Equipment Wanted: obsolete, or out of service broadcast and recording gear, amplifiers, processing, radio or mixing consoles, microphones, etc. Large lots preferred. Pickup or shipping can be discussed. 443-854-0725 or ajkivi@gmail.com.

I'm looking for San Francisco radio recordings from the 1920's through the 1980's. For example newscast, talk shows, music shows, live band remotes, etc. Stations like KGO, KFRC, KSFO, KTAB, KDIA, KWBR, KSF, KQW, KRE, KTIM, KYA, etc. I will pay for copies... Feel free to call me at 925-284-5428 or you can email me at ronwtamm@yahoo.com.

Looking for a broadcast excerpt of a San Francisco Giant's taped off of KSFO radio from 1959, interviews with Willie Mays, Dusty Rhodes & some play by play excerpts, also features a homerun by Willie Mays and Felipe Alou stealing second base, running time is 18:02, also looking for SF Giants games and/or highlights from 1958-1978 also taped off

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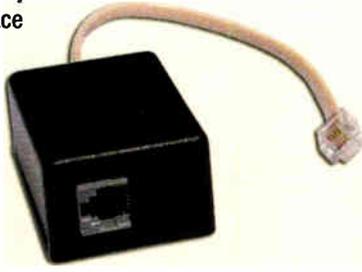
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FM Installations Are Not All Alike

10-Watt Project Demonstrates Value of Proper Antenna Installation and Grounding

COMMENTARY

BY JERRY D. BURLING

Lee Granlund wrote in the Sept. 1 issue of Radio World on "Common Misconceptions About FM Antennas."

In May of 1973, Bellevue Community College, Bellevue, Wash., expressed a desire to construct a 10-watt, low-power FM radio station for the benefit of its students and the surrounding community. The college applied for, and was granted, a license for educational station KBCS (BCS meaning Bellevue College Station) on 91.3 MHz. Hearing of the plan, I offered to donate my services.

The college's budget for this project was low to nonexistent. It did have enough funds to purchase and construct a 100-foot tower and some other basic equipment, such as an audio mixing board, microphones, LP turntables and audio tape machines, but it did not have the money for the necessary RF equipment.

PEANUT POWER

At the time I was employed as a studio engineer for KING-TV, Channel 5, Seattle. I happened to mention that I was looking for an FM 10-watt transmitter to

Lee Mudgett, the KING-TV and KING-FM transmitter supervisor. He said the station might donate its old RCA vacuum tube FM exciter to the cause.

After hearing of the idea, Dorothy Bullitt, the owner of KING-FM, was enthusiastic and gave the green light for the donation transfer.

communications department as a backup in case the first one failed or disappeared.

During the week, I let the unit cook to check its stability. I even fed some 1940s network radio programs from my collection and other audio sources through it to check for audio quality.

It sounded as good as it did when it was on the air at KING-FM. Even though it was feeding a dummy load, it could still be heard for about 100 feet, well within the FCC 100 milliwatt

Pay close attention to grounding methods and how the RF energy is transferred from the transmitter to your listeners.

I took the exciter to my shop. After checking the condition of its vacuum tubes and installing one of the two 91.3 heated crystals from RCA, I connected the unit to a Bird Wattmeter, a low-pass RF filter and a dummy load.

After I tuned it to its new frequency, it demonstrated a solid 10 watts of RF output. The crystals were checked for frequency accuracy and both were well within FCC tolerances. Two crystals were ordered, one for the transmitter, a second one to be placed in the desk of the chairman of the college's communi-

limited radiational limits. The neighbors were amazed when they heard old-time radio shows on 91.3 FM.

The college recently had purchased two homes located adjacent to the campus; now the radio station was installed in the daylight basement of one of these houses. I donated an old vacuum tube Altec audio limiter to prevent over-modulation. Unlike today, in the startup days the station was strictly monophonic.

The antenna consisted of two horizontally polarized dipole units, spaced vertically on the side of the tower, near

the top. The antennas were pretuned to 91.3 and the package came complete with wiring harness and connectors. They were mounted in such a way that the main RF lobes were pointing toward downtown Bellevue. The transmission line was 1 inch flexible foam Heliax.

After final tuning, the standing wave ratio was 1.1 to 1, demonstrating an efficient, acceptable antenna match.

The transmitter and tower were grounded properly by driving a 2-inch copper rod 10 feet into the ground. This was not only to provide protection against lightning strikes, static charges and shock protection, but also to provide a solid earth ground counterpoise for the entire RF system.

BOOMING IN

While some people might say that this was FM and so proper grounding of the RF system would not be necessary, I have come to the conclusion that it is very important.

A solid, low grounding impedance for the RF potential to reflect against is just as important as having the proper transmitter and antenna.

At that time, my son lived near Everett, a city located about 40 miles north of Seattle. KBCS(FM) came booming in at his home as well as when we drove around Everett listening to the station on my car radio. The station was heard easily in all parts of downtown Seattle, a distance of about 12 miles. The coverage was unbelievable, and with only 10 watts. It was amazing.

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Our readers have something to say

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READER'S FORUM**TRANSLATOR NETWORKS
HAVE TO GO**

I've decided to chime in with a realistic answer to solving the AM noise and coverage problem.

The solution is really very simple. FCC rule 307(b) essentially says service to the community is paramount.

So-called NCE translators should be removed immediately in favor of local service for an associated AM.

— Larry Tighe

OK, from there we go to large networks of translators not associated with a legitimate FM or AM station. They have to go.

Many are satellite-fed by some nonprofit/educational headquarters. They have nothing to do with the local populace. They are taking up valuable space that denies local service to communities with AMs that could put them to good use within their 2 mV contours.

At present, FM translators are approved for AMs if they can operate totally inside the AM's 2 mV contour. Any of these so-called NCE translators should be removed immediately in favor of local service for an associated AM that chooses to operate them.

The idea that these "distant" translators serve any purpose beyond extending some NCE's monetary gain is obsolete. The plethora of media these days ends any legitimate purpose for them if, in fact, there ever was one.

It took the FCC endless years to wake up to the idea that AMs should use translators to serve the local community. Let's hope it doesn't take that long again.

Larry Tighe
WRNJ Radio
Owner
Hackettstown, N.J.

BURLING

(continued from page 37)

It was concluded that this signal efficiency was due to a number of factors: (1) employing the proper antenna and transmission line, (2) being located on the top of a hill, (3) maintaining a solid connection to the earth, and (4) good ground conductivity.

While all of this may not be solid engineering data, it still demonstrated to me the value of employing proper antenna installation and grounding techniques.

In my opinion, Mr. Granlund is absolutely correct in stating that commercial FM antennas are not all alike. I would go further: FM installations are not all alike. Pay close attention to grounding methods and how the RF energy is transferred from the transmitter to your listeners. This can make or break any FM operation.

Jerry D. Burling, CSTE, is a contract engineer in Long Beach, Calif.

TRANSLATOR POLICY A JOKE

I continue to read with interest the various views on AM power, EAS and HD.

I have a 1 kW stand alone AM that suffers because the inept guidance at the FCC and the lobbying power of the manufacturers at the commission.

I am a supporter of the FCC but sometimes I believe they get so caught up in politics that they can't see the forest for the trees.

The new policy concerning translators for AMs is a joke. There aren't any translators available where they are really needed.

I fail to understand why I can't stay at 1 kW 24/7. It has been proven over and over again that the interference is minimal if any. This was evident during the hurricanes on the Gulf Coast when stations stayed on at full power to disseminate emergency information. The interference argument is a myth at best.

I predicted many months before HD that it would be a problem; it is. The corporate giants and the FCC bought the theory from the manufacturers hook line and sinker, and now buyers are whining because of signal and power loss.

The next boondoggle is EAS. It fails because of people, not equipment. A near-perfect EAS is already in place. It's called the National Weather Service. It covers almost all of the U.S. and is unbelievably reliable. The NWS could be incorporated into the EAS and a receiver might cost me \$30, not several thousands of dollars.

Someday I hope the FCC will start looking out for us little guys and quit pandering to the corporate giants who can't seem to make ends meet and complain when they get special treatment.

My little station, even with the power restraint, still does quite well because of good management, loyal listeners and fiscal responsibility. I will stack our station up against the big guys any day. Throughout this economic snafu we have maintained a 32 percent profitability and have zero debt service.

Harry Hoyle
General Manager/Partner
KKAY(AM)
White Castle, La.

WHO INVENTED FM?

Regarding James O'Neal's great article about Gary L. Frost's book on the invention and inventor of FM ("Armstrong Wasn't the Only One," Sept. 8):

I learned long ago that the history of great inventions and discoveries is replete with silent or uncredited inventors and discoverers. It's the nature of human culture to want to single out an individual. Why that is, of course, I do not know.

Maxwell probably was not the only one, nor the first, to describe electromagnetic radiation. The same can be said of Einstein and his findings (though to his credit he did acknowledge some others on whose work he expanded).

Often, deserved credit goes to those who are willing to give light to unproven theories. Timing and luck (and, often, capitalistic chutzpah) also are factors.

Congratulations on a great article putting history in proper perspective.

George Woodard
Mckinney, Texas

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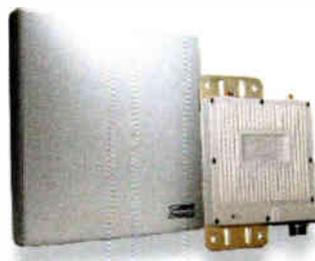
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But SOUNDS Like This



AirAura 31-Band Fine Grain Processing

The Beatles, The Rolling Stones, The Who, The Beach Boys, Jimi Hendrix, Metallica, Pearl Jam, Nirvana, Bruce Springsteen & The E-Street Band, Led Zeppelin, Van Halen, Queen, The Eagles, U2, Rush, Genesis, Steely Dan, The Allman Brothers, ZZ Top, Cream, Dire Straits, The Grateful Dead, Red Hot Chili Peppers, Talking Heads, The Clash, Tool, Korn, Alice In Chains, Little Feat, Spinal Tap, R.E.M. That's 31 bands who will sound better on the air with our 31-Band Fine Grain Processing. But the truth is EVERY band will sound better. And solo acts, too. AirAura's final limiters perform precision spectral energy control without generating the artifacts you're used to trying to squash with your old processors. Bottom line, your music sounds like music rather than a bad cell phone call (YOU know what we're talking about...)



AirAura Sweet-Spot Technology

When you think about the 'sweet-spot' you need to think about this: Every song or album (yes, a CD IS an album) is mastered differently. Record companies are having their own loudness wars. Of course, this can play havoc with your on-air processor, which essentially is 'mastering' the signal you broadcast. Sweet Spot Technology (SST) has been uniquely designed by Vorsis to manage the behavior of the multi-band AGC as program content density changes, something a typical broadband AGC simply cannot do. It effortlessly handles transitions between the hyper-compressed recordings of today and those of the past that have considerably more dynamic range. SST achieves uncannily natural-sounding consistency in both on-air loudness and spectral balance regardless of density variations in the incoming source material.



Vorsis Bass Management System - v2.0

Want to make a good, impactful impression? Nothing does that better than perfectly tight bass that isn't walking all over your music. Or should we say swishing through. From the sound of things, the other guys got bass (rhymes with ace) confused with bass (rhymes with donkey). We take care of that - VBMS enhances bass impact without affecting the clarity of mid and high frequency program. In fact, bass detail and the clarity of higher frequency audio are actually enhanced by this powerful, innovative algorithm. With VBMS operating in conjunction with our 'Fine Grain' limiters, on-air bass has never sounded so good and so natural.



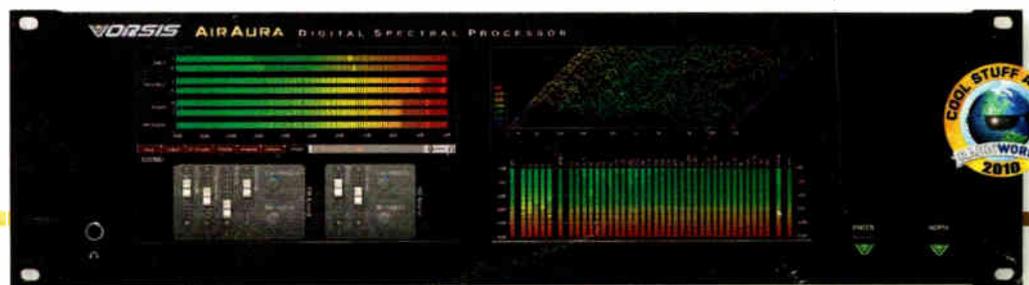
Vorsis Smart Stereo Enhancement

Sure your email box is overflowing with offers of enhancement. But how many are offering Smart Stereo Enhancement? Hmm? With THIS kind of enhancement, your music sounds more natural than ever. It provides a smooth, natural, wide listening experience without triggering multipath effects, delivering an extremely stable 'on-air' stereo image that's exciting to listen to. This, alone, is responsible for a lot of people going back to their drawing boards.



AIRAURA SUPER DIGITAL AUDIO SPECTRAL PROCESSOR

The BEST reason to switch processors is to make YOUR station stand out by sounding better than the competition. The Vorsis AirAura lets you do exactly that, in exactly the way you want. Don't take our word for it... try it risk-free and see. No pressure from us. It's your ears that'll have you running for your wallet. And then your sponsors running for theirs...



W H E A T S T O N E
VORSIS

IT'S TIME YOU WON THE RATINGS WAR.™

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