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October 2009
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# Salary Survey

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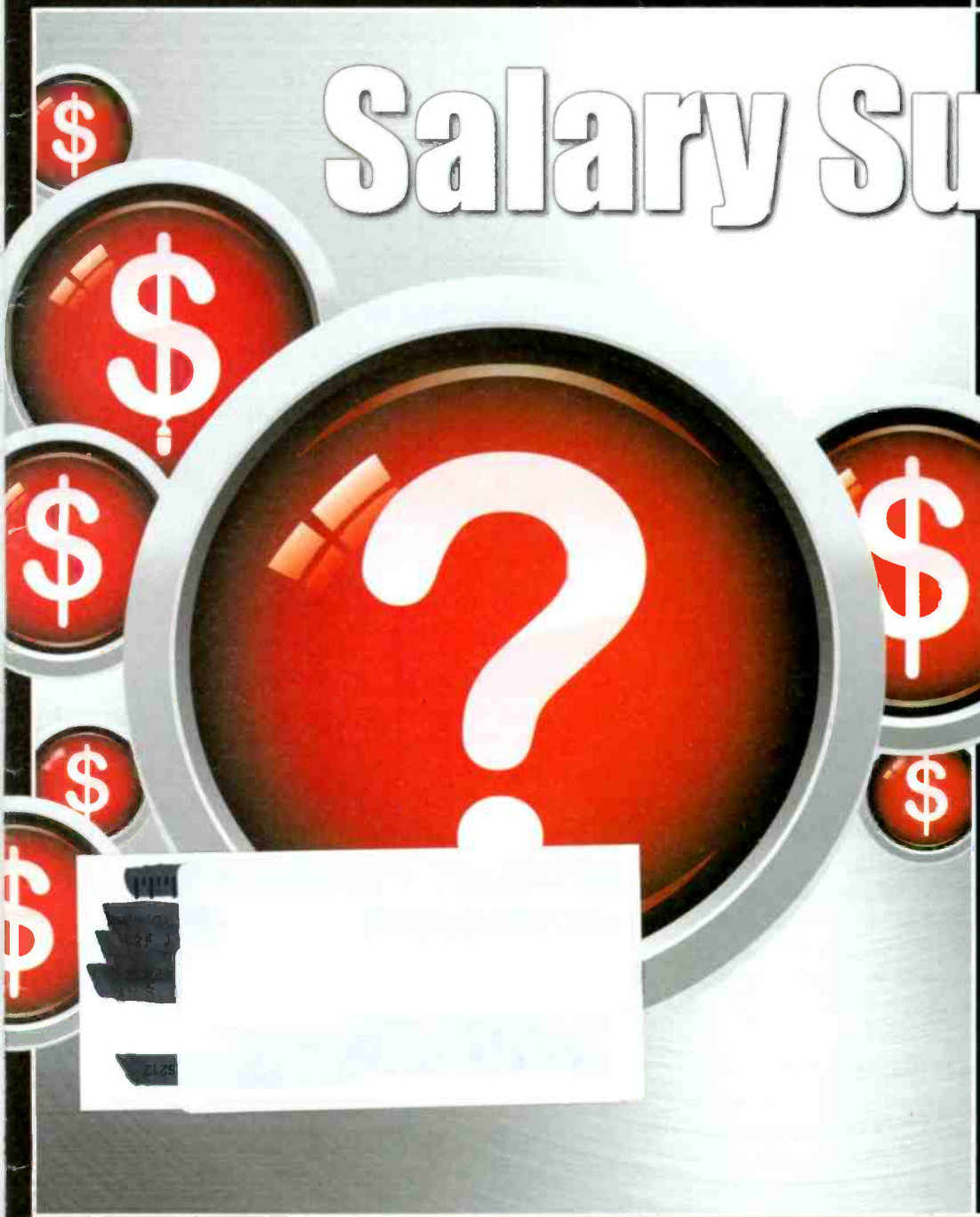

## TRENDS IN TECHNOLOGY

Update on IP audio delivery

## FIELD REPORTS

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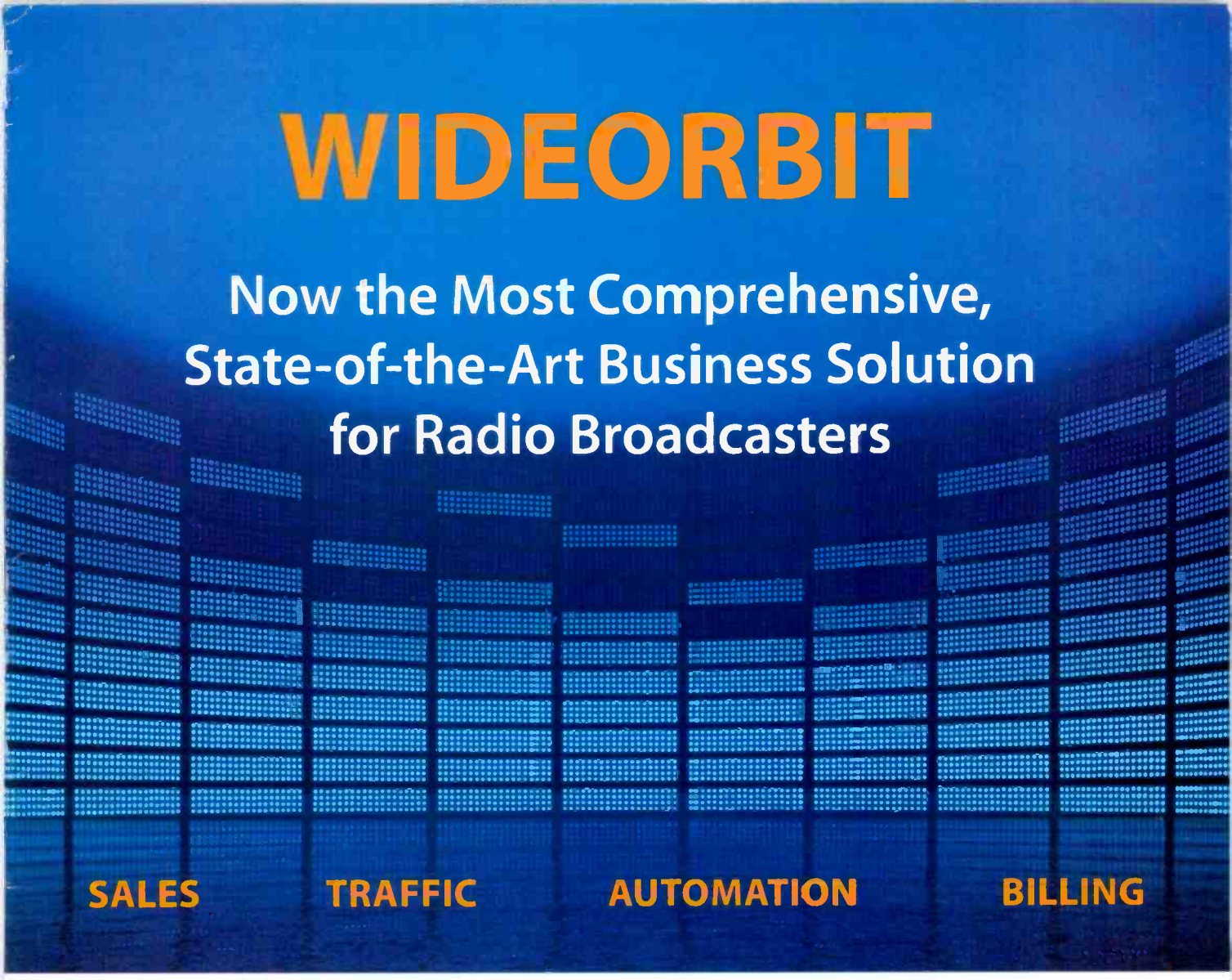


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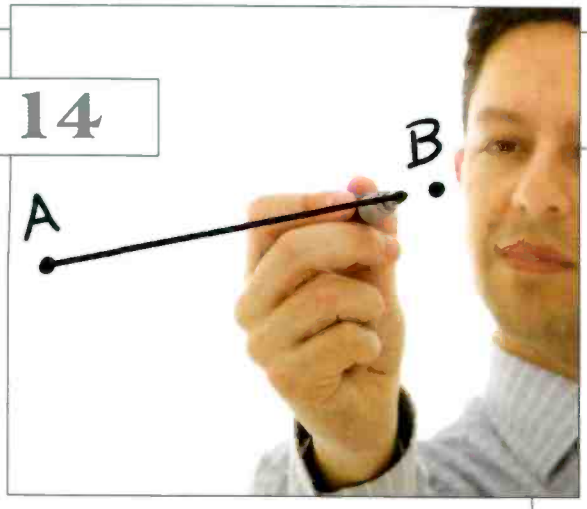


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## ON THE COVER

In this down economy, how do you stack up against those in your field? Find out in our annual Salary Survey on page 26. Cover design by Michael J. Knust.

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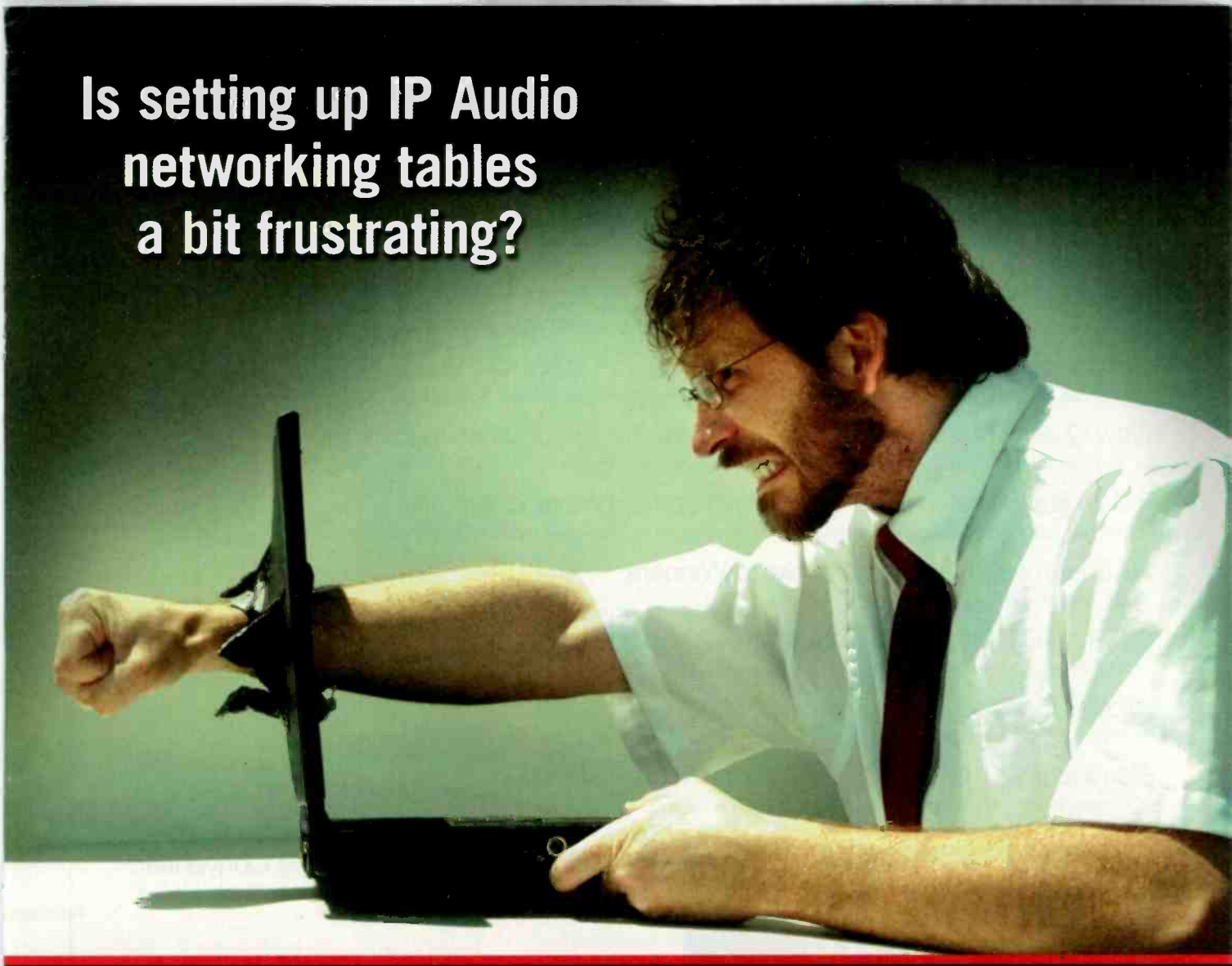

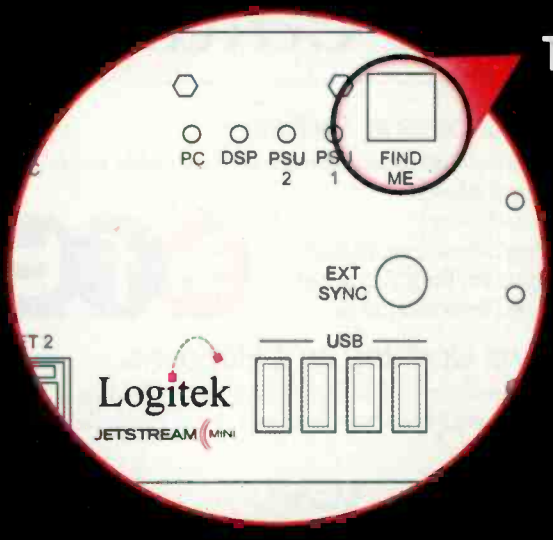


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# Currents Online

Selected headlines from the past month.


## 2009 NAB Radio Show Photo Blog Index
See the 2009 NAB Radio Show through the camera lenses of the *Radio* magazine editorial team.

## Gordon Smith Named New President/CEO of NAB
Gordon H. Smith of Covington and Burling is a former two-term U.S. Senator from Oregon.

## New Quality Measurement Technique for FM IBOC Developed
The Ibiquity reference document and details were submitted to the NRSC at the 2009 NAB Radio Show.

## FM Digital Booster Technology Development Advances
Ibiquity and NAB Fastroad co-funding project is designed to bring new technology to broadcasters.

## NAB Names 2009 Marconi Award Winners
KKOB-AM wins Legendary Station of the Year.

## 2009 NAB Radio Show Attendance: 2,507
Attendance was only slightly down from last year.

## Ibiquity Certifies Audio Science ASI8914
The quad-channel HD Radio tuner is housed on a PCI card.

## Reminder: 2010 NAB Show Calls for Technical Papers
Proposals are due to the NAB by Oct. 23, 2009.

**Smith**


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## Pittsburgh SBE Cancels 2009 Convention
Convention organizers say the current economy has forced the cancellation.


# Site Features

## RSS, Facebook and Twitter
All the content at RadioMagOnline.com is available as an RSS feed, and through Facebook and Twitter.

- RadioMagOnline.com/rssfeeds
- facebook.com/RadioMagazine
- twitter.com/Radiomagazine

## Radio News Updated as it Happens
What's happening in radio? Turn to us to find out. Daily news and industry information is posted in the Radio Currents throughout the day.

## Podcasts Bring You More
The Radio Currents Podcast is updated every week, and special podcasts bring you more directly.

## Industry Events
The *Radio* magazine Industry Events section lists upcoming conventions and conferences.

# AM Antenna Solutions

Directional Antenna Systems

Diplexer/Triplexer Systems

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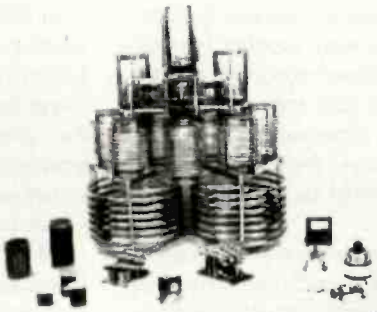

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SINCE 1963

# The spirit of coopetition

My former publisher used (and possibly coined) the phrase coopetition. That's a merger of the word cooperation and competition. In a way it's a variation of the phrase if you can't beat 'em join 'em, but does it in a way that benefits all those involved. The beat or join approach often shows that one party yielded to another. Not so with coopetition.

As the rules of business are bent and retooled to ensure success, coopetition is a way for two or more typical competitors to work together for their mutual benefit. Have you ever thought that the cross-town station rival could be your partner? It sounds like an impossibility. You're both competing for the same listeners and the same ad revenues. So while that may not change, there are elements of doing business that could be the basis for a cooperative effort.

In a way, many stations already engage in some coopetition. It's usually informal and most often not put in the spotlight. Engineers from competing stations have often worked together during emergencies. When a station is off the air, it's not uncommon for one engineer to loan something to another. Have you heard a station manager tell an engineer not to talk to any other engineers in town? I laugh when I hear that summary ruling, because the secret cooperation is often running rampant.

A crisis isn't always the source of competitive cooperation. News and special events often require stations to work together. In reality, coopetition isn't a new idea for radio.

That is until you put it in writing.

Recently, Cumulus and Gap Broadcasting created an agreement to share the engineering teams at several stations in Texas and Louisiana. The idea came about when Gary Kline of Cumulus and Norm Phillips of Gap realized they both had certain engineering needs in shared markets. It worked out that where Cumulus needed some assistance in one market, Gap had it covered. The converse was true in another market.

So rather than struggle in one market while the other flourished, Kline and Phillips compared resources and found a comfortable and complementary fit.

So how does it work? In a given market, Gap may have had an engineering staff and Cumulus had a contract engineer. The agreement allows the Gap staff to handle the engineering needs of the Cumulus stations a few days a week. Similar and complementary agreements exist in other markets.

I'm told that no one lost a job in the process. Some contract engineers lost some client work, but staff engineers stayed employed.

And the engineers are being compensated for their work. They still draw their regular salaries from their existing employer, but they also receive something extra – sort of like a commission check – from the other licensee.

In the end, it seems everyone wins. Each group owner receives the engineering attention it needs, and the individuals are compensated for their work.

There's some accounting to track time worked for each station, and that's reconciled each month. The entire process is being reviewed and watched to ensure that everything remains fair and equitable.

And while there are days that a Cumulus engineer would report for duty at a Gap station, if there's an emergency at the Cumulus station, the resources are devoted as needed.

So far, everything is working out.

It's an interesting situation. So far it works for Gap and Cumulus in the markets they share. Are there other markets and groups that could apply this idea? Probably. And as the pool of radio broadcast engineers continues to shrink, this has helped Gap and Cumulus obtain the support they need.

Coopetition seems to work.

Chris Scherer

*What's your opinion? Send it to radio@RadioMagOnline.com*

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# Taking the career beyond the hobby

By Kevin McNamara

Here we are in late 2009, and like every other business sector, the media companies are feeling the effects of reduced revenue and subsequently looking to reduce workforce. Historically, engineering departments seem to come under the most scrutiny when budget cuts are mandated. Instead of completely turning over the engineering duties to an outside contractor, some are now entering into "sharing" agreements for personnel with other stations. This is a real contrast from the past when many station managers/owners were skeptical about engineers sharing there "scary" formulas for success with other engineers in a market.

The point here is that good broadcast engineering jobs will be scarcer than trying to land an NFL quarterback position. Even the suppliers and manufacturers are cutting back due to reduced capital spending. It is probably time to start thinking about how to morph this hobby and the experience you gained on the job, to something perhaps completely different, maybe another industry?

## What fulfills you?

There is no cookie cutter answer to the question of "how do I move my career to the next level?" as we all have different backgrounds, educational levels and experience. Perhaps the most important initial decision you should make is what is most interesting, fulfilling and pleasurable about your current job? I find that very few people really give this any thought at all, possibly because they get wrapped up in day-to-day tasks and do not allow themselves the time to think about it. What is perhaps more interesting is that many workers are feeling extremely stressed by the economy and the possibility of a layoff. It is easy to understand that anxiety, but consider this is largely a result from having little control over an uncertain future. Essentially these people have lost control over their destiny. Jack Welch, former CEO for GE once stated, "If you don't control your destiny, someone else will." Taking control of your destiny should be high on everyone's priority list. The time to start taking control is not when you get your pink slip; now is the time to create your "plan B" and maybe "Plan C."

## Outsourcing yourself

Outsourcing broadcast engineering services is not new, many markets, particularly the smaller of them, have been using contract engineering services for years. I would expect the trend to continue. I think there is still tremendous opportunity to create multifaceted service companies that can handle not only broadcast engineering functions, but perhaps take those skill sets into other public and private sector projects. If you are willing to take some risk, outsourcing could be an excellent path to your next level.

There tends to be a correlation between bad economies and an increase in outsourced labor. We have all heard about or experienced companies that moved certain business processes offshore for cost savings. This is referred to as Business Process Outsourcing (BPO). tatistics indicate that the use of offshore outsourcing has grown nearly 11 percent each year since 2004. While this represents a large amount of job losses, keep in mind that the bulk of these positions were typically handled by less-skilled workers. The point here is not to minimize the impact BPO has had on the affected employees and their families but to consider that most of the specific skill sets you have in your current position would be subject to some type of BPO. I say most because you should expect that any IT-related management/operations could be easily outsourced offshore.

You should also be aware of another trend called Knowledge Process Outsourcing (KPO), as you would gather from the title, this model provides higher-level services to be performed from offshore entities, these services could include Web development, server hosting, certain engineering/scientific/medical support, etc.

On a smaller scale, there is no rule that outsourcing is done exclusively from an offshore company; in fact, there is a great deal of opportunity to tap into that market.

## Getting involved

There are three different approaches one can take to realizing outsourced opportunities. They each have specific benefits and risk levels. The great thing about the outsourcing path is that you can control your involvement. In my opinion, getting involved with outsourcing is the best way to

enter a new industry, if that is your desire. It allows you to gain recognition, experience and most importantly, contacts in a particular field.

The first and least risky approach is to find a vendor who has job requisitions for specific projects. Many of these positions are marketed and managed by specialized recruitment companies. In some cases, they will hire you as a temporary employee (contractor) to work on their clients' project, typically at the clients' specified location. Pretty much like a real job, but they have a limited assignment timeframe, typically a year or two. Some of these include certain expenses and sometimes offer benefit packages and vacation.

The second approach is to work with a recruiter as a subcontractor. In this arrangement, you could be subcontracting for the recruitment firm, but working with the client directly. Recruiters call this arrangement a "C to C" or company to company. Generally you will need to form a legal entity (corporation, LLC, etc.) maintain required insurances and provide the equipment needed to perform the task you are contracted for. This arrangement typically only covers your services, but some contracts allow you to include other employees (yours) if necessary. The advantage of taking this route is that these recruiters are typically large companies with established relationships that open opportunities you would otherwise not have.

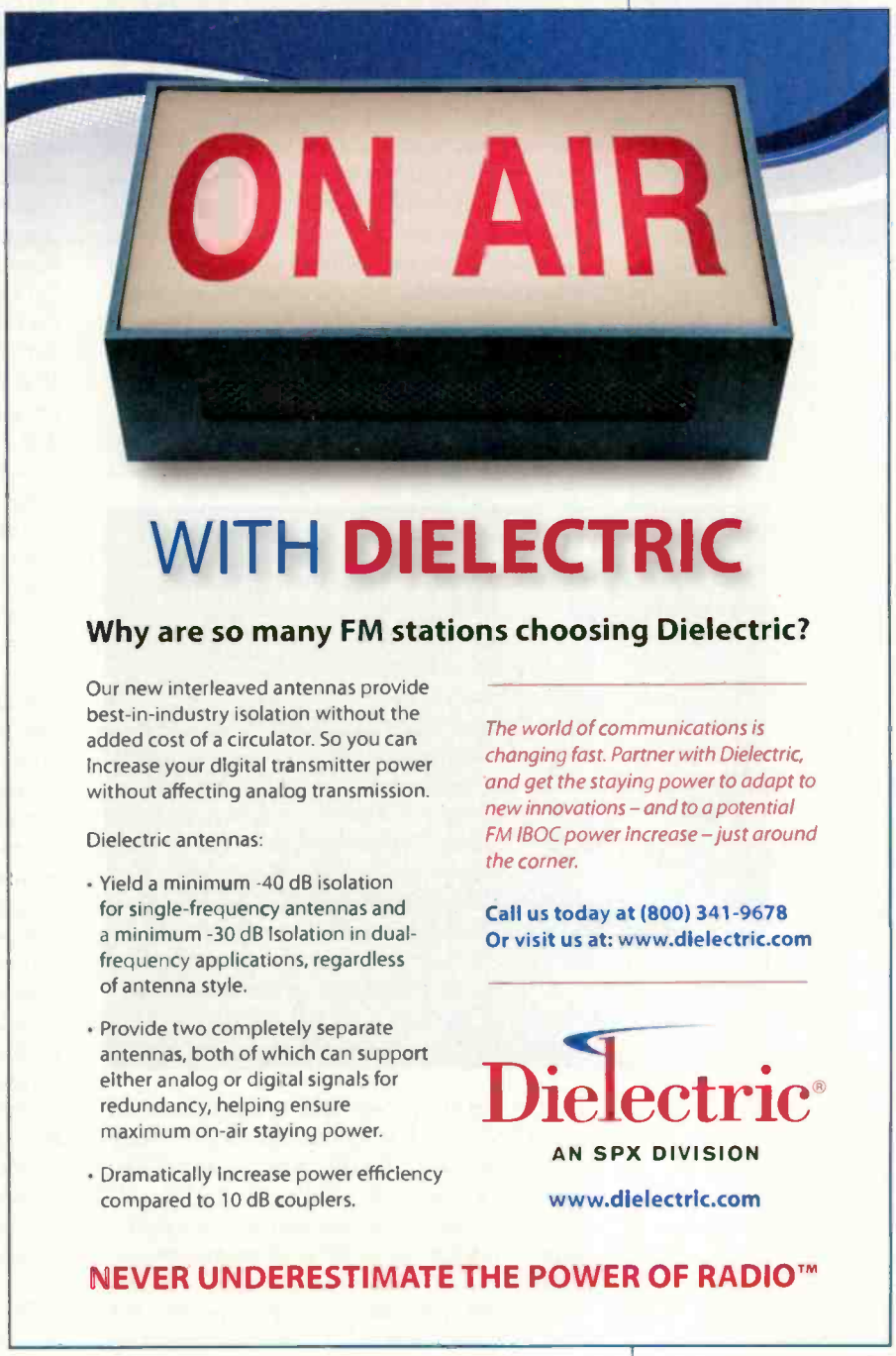
The final option is to subcontract directly for a client. In my experience, you will likely be working with a prime contractor who was brought into a company for the purpose of completing a specific job(s). These projects can last several years. Again you would need to form a legal company and obtain all the necessary insurances, etc.

In general, this type of on-site outsourcing is becoming more prevalent. Largely these are project-based assignments, but we are seeing more of a trend toward outsourcing entire operations. For example, Sprint recently entered into an outsourcing contract with Ericsson to manage its cell network operations nationally. Many local, state and federal government agencies are taking the same approach to handling specific projects or certain portions of their infrastructure.

As a starting point, search the Internet for contract positions. There are dozens of sites that market these opportunities, including Monster and Career Builder. Many sites are targeted at particular industries; find the ones that cater to technology sectors. Make sure you join as many of these site as possible and post a resume and specifically note you are looking for contract positions.

Hopefully this gave you some motivation to perhaps take your hobby to the next level.

*McNamara is president of Applied Wireless, Cape Coral, FL.*



# New Form 323
## to require multiple FRNs

By Harry Martin

In May the FCC ordered changes in the ownership reporting procedures for commercial radio and TV stations, expanded the reach of its reporting rules and ordered its Media Bureau to come up with a Form 323 for broadcasters to use beginning Nov. 1, 2009, the date all commercial stations must file their biennial reports. A copy of the Bureau's proposed form can be found on the on the Fletcher, Heald & Hildreth blog at www.commlawblog.com/2009/08/articles/broadcast/revised-form-323-revealed.

The most striking proposed change – a change not mentioned by the FCC in any of its notices – is that the new Form 323 requires *every* person or entity holding an attributable interest must have his/her/its own FRN which must in turn be reported in the new form. Those with attributable interests include officers, directors, LLC managers or members, general partners in limited partnerships, 5 percent or greater shareholders and individuals or entities whose interests exceed certain levels under the equity-debt-plus standards.

This means that by Nov. 1, if the new form is adopted in time, a whole new universe of people and entities will have to sign up for their own FRNs, which in turn means they will have to provide the FCC with their social security numbers, employer ID numbers or taxpayer ID numbers – which are required by the CORES system in assigning an FRN. Of course, this assumes that the OMB will approve the new form by the Nov. 1 deadline. It is possible that the new FRN requirement, or other new reporting requirements, could be rejected by the OMB. If this happens, or if there is a substantial delay, the FCC either will require the filing of biennial reports on Nov. 1 using the existing Form 323, or will postpone the universal biennial report filing deadline until it can come up with an acceptable form.

If and when the new form is approved, the number of FRNs applied for and issued by the Commission is likely to balloon beyond the agency's processing capabilities. At this point a Form 323 generally requires only a single FRN – the licensee's. If the proposed form is approved, the FCC will suddenly become a repository of a vast trove of sensitive information – SSNs, EINs, TINs for tens of thousands of individuals and other attributable owners. In view of the ever-present and increasing threat of identity theft, one would think that Federal agencies would be reluctant to collect such data. Additionally, reporting entities – licensees and their various officers, directors, stockholders and others – will have to keep track of the multiple FRNs they are required to include in their reports.

Plus, the new form requires all FRN information to be consistent among all reports, i.e., if an individual or entity listed in one report reports a particular FRN, then that same FRN should be used in all other reports in which that individual or entity happens to be listed. The unstated problem here is that, historically, the FCC has not limited FRNs on a one-to-a-customer basis. As a result, any individual or entity might have several different FRNs. In order to achieve the consistency mandated by the new form, respondents will have to take pains to use the correct FRNs, and will have to hope that all other respondents do likewise.

The Commission appears not to have recognized the likely impact of this change. In its defense of its new form, as presented to the OMB, nothing is said about the new requirement to report FRNs for every attributable interest holder. In fact, the FCC summarily concludes that "[t]here is no need for confidentiality with [the revised Form 323]" and the revised form "does not address any private matters of a sensitive nature."

*Martin is a member of Fletcher, Heald & Hildreth, PLC, Arlington, Virginia. E-mail: martin@fhhlaw.com*

## Dateline

As of this writing, Nov. 1 is the deadline for submission of biennial ownership reports for *commercial* radio stations in *all* states and territories.

For *noncommercial* radio stations in Alabama, Connecticut, Georgia, Massachusetts, Maine, New Hampshire, Vermont and Rhode Island, their biennial ownership report deadline is Dec. 1.

Dec. 1 is the deadline for radio stations in Connecticut, Massachusetts, Maine, New Hampshire, Vermont and Rhode Island to electronically file their Broadcast EEO Mid-Term Reports (Form 397) with the FCC.

Dec. 1 is the deadline for radio stations licensed in the following states to place their annual EEO Reports in their public files: Alabama, Connecticut, Georgia, Massachusetts, Maine, New Hampshire, Vermont and Rhode Island.

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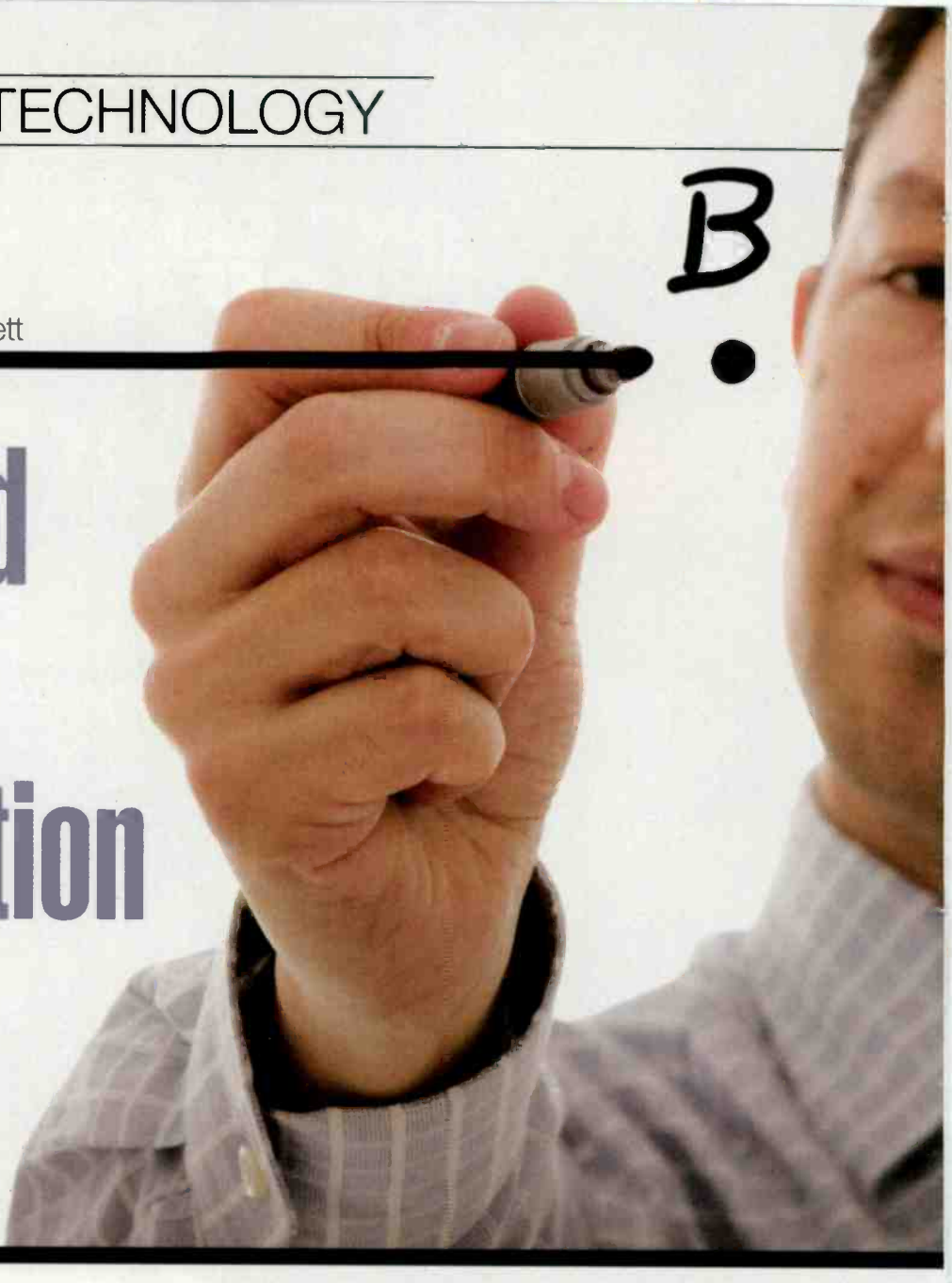
By Tom Hartnett

# IP-based Audio Distribution

## Save money by keeping an eye on this changing market




By now it's pretty well understood that the growth and excitement for moving "broadcast-able" audio from point-to-point (POTS, ISDN, etc.) centers around IP transmission. It's a good time to take a look at the state of this technology and where it's headed.

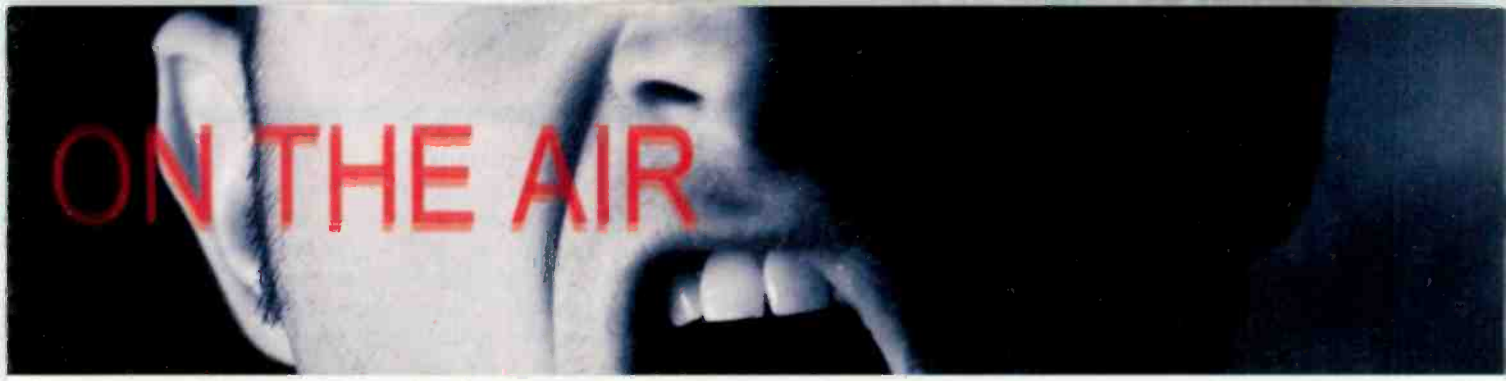
### Here in the wired world

Good IP codecs now have ultra-low delay coding like AAC-ELD and dynamic buffer managers, so when utilizing an Ethernet connection on a reasonable-bandwidth IP link, these now rival the reliability and delay factors previously experienced with ISDN. This is good because many users are reporting reluctance of telcos to continue to provide and support ISDN, especially for short-term use. And IP of some flavor is now universally easier to obtain than a POTS connection (especially one guaranteed to support a POTS codec). The main pitfalls with wired IP concern fire-walling, dynamic IPs and breaking through commercial login screens.

If you're connecting an IP codec to a heavily secured network (like at a corporation) there are likely to be ports and protocols blocked. While you can experiment with varying port settings and protocols on your codec, it's usually safer to work with the IT department to achieve some kind of demilitarization of the connection to your codec.

### Commercially available IP connections

Most publicly available IP connections rely on assigning *dynamic* or varying IP addresses to computers connected to them. This can complicate incoming connections to codecs. The simplest way around this problem is to be sure the studio IP codec is plainly visible from the Internet (by means of a public, *static* IP address), and all connections are initiated from the field. In environments where this is not practical, better codecs have a Traversal Server function, which provides some network intelligence in helping

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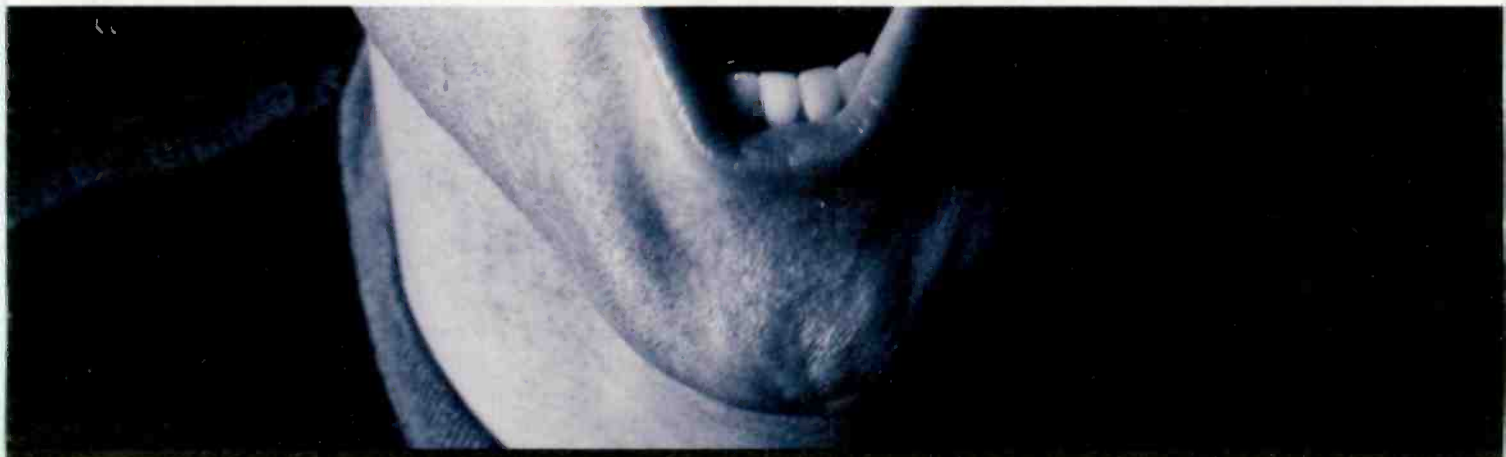

## SOME WORDS SHOULD BE OBSCENE AND NOT HEARD

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The BD600 offers two different methods of delay buildup and reduction: Eventide's catch-up and catch-down system, and an exclusive fast-entry-and-exit feature which allows starting a broadcast with the delay already built up to a safe amount and ending it with a rapid reduction of delay.

For HD, the BD600 offers MicroPrecision Delay™ mode which allows up to 10 seconds of delay to be adjusted in real time in 100 nanosecond increments. This is useful for synchronizing analog and digital signals while on-air, without audible artifacts, to maintain a seamless user experience.

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make these connections. A Traversal Server subscription (provided by the codec vendor) has the added benefit of providing a dynamic directory of all affiliated codecs that appears on the codec itself much like a buddy list. This way, the user is completely removed from having to know anything about IP addresses on either end of the link, removing the dynamic IP problem as well.

If you've ever connected to the Internet at an airport, hotel or coffee shop, you know that they always redirect new users to a login page, regardless of whether the access is free or paid. Many IP codecs connected directly to this type of link have no way of allowing the user to click through this login page. It's possible to utilize a laptop ahead of the codec to spoof the system into thinking it's a laptop connection, and using the laptop browser to do the login. But this arrangement is burdensome and complex, so it makes more sense to have a portable IP codec with an integrated browser for these locations. Of course, a codec that easily talks Wi-fi will help here as well.

**A dynamic buddy list on the Access portable display**

## Caveat emptor

The low price of wired IP connections make them tempting replacements for nailed-up data circuits like DDS, satellite channels and T1s. The best advice I can offer here is that you get what you pay for. Don't expect a DSL line at $40/month to come with any form of service level agreement (SLA) or guarantee of up-time. But this is certainly being done in environments where the cost of pro links is prohibitive, and the less-than-100-percent reliability factor is acceptable, like feeding transmitters in sparse rural locations. But even users with reasonable budgets can often manage to convert dedicated expensive synchronous links to IP links with some SLA and QoS specified.

The promise of delivering remotes over 3G wireless services has been realized, but with limitations. In many areas, an IP codec coupled with a 3G data card will get you on-air with remarkable quality and low cost. But in other areas, 3G has become a victim of its own success, with network over-subscription and under-deployment being the main culprits.

Those who deploy a 3G remote system as a replacement for ISDN for long-term programming like sports broadcasts are often disappointed by the network's ability to be robust for hours at a time. And the ability of specific networks to carry reliable real-time streams (like IP codecs require) varies dramatically even between cities. Figure 2a shows a snapshot of a statistics display

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**Fig. 2A**

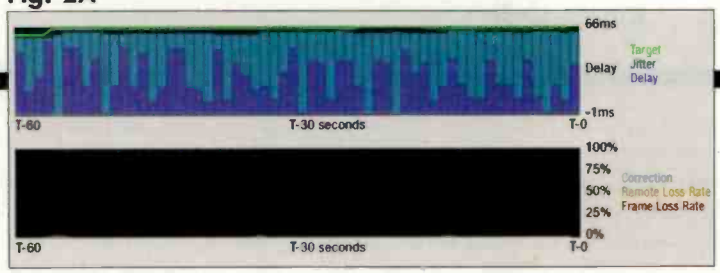



**Fig. 2B**

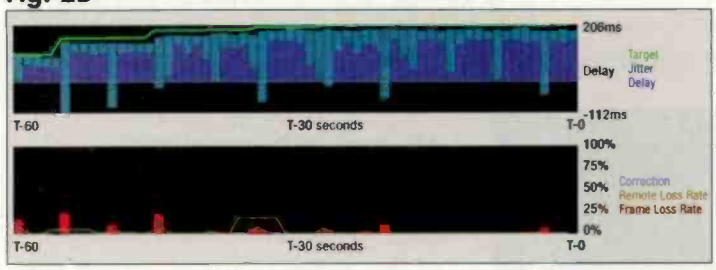
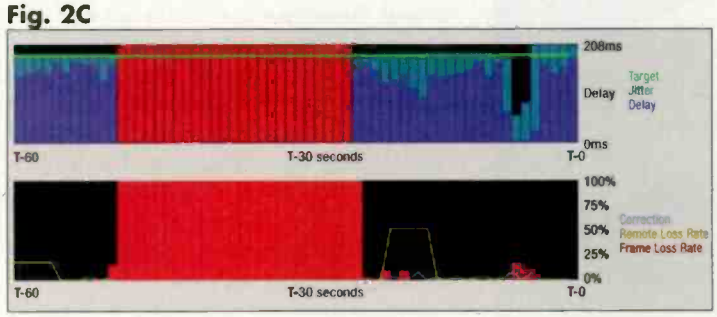



**Fig. 2C**

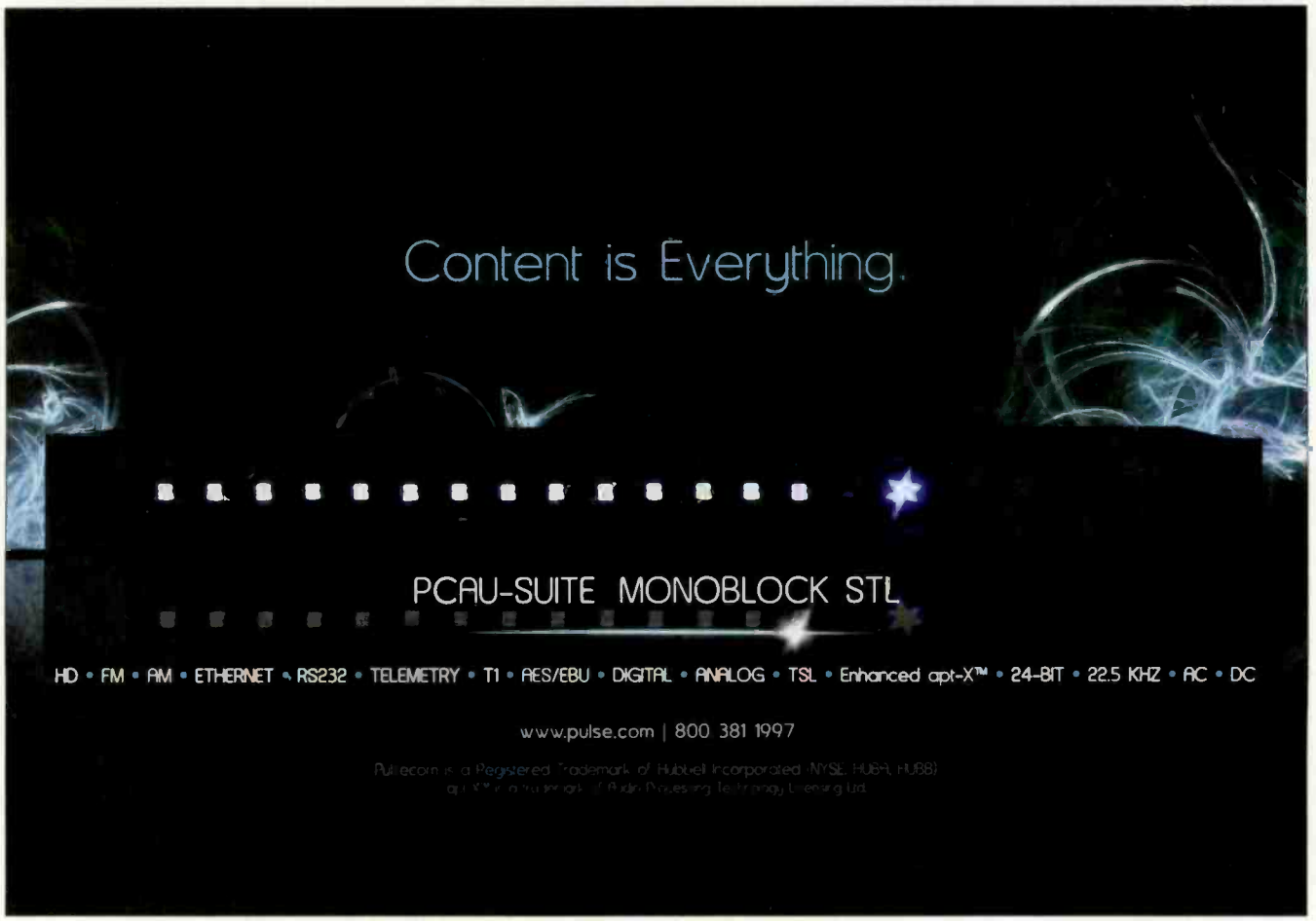



**Comparison of IP codec stats on different links**

using the AT&T wireless network. The top part of the graph shows a 60-second window of time with low network jitter (light blue). In the bottom window, packet loss is indicated by red bars (2a has no red and therefore 0 percent packet loss). Figure 2b shows a connection from the same location using the Verizon wireless network. The red in the graph indicates packet loss, and this connection will exhibit audible drop-outs and artifacts of this loss. To be fair to Verizon, there are other locations where this situation is reversed. Figure 2c shows an even worse connection, this one from a 3G network utilized on a high-speed train, with multi-second intervals of 100 percent packet loss.

## Fixing bad wireless

No technology can fix a channel as corrupted as Figure 2c, but there is hope for enhancing the stability of moderately poor channels. Some attempts have been made to apply forward error correction (FEC) or to switch from the snappy-but-fragile UDP transport (favored by real-time Internet devices) to the bulky-but-robust

TCP transport. But both of these methods involve dramatically *increasing* the amount of data sent and received. About the worst thing you can do to a congested channel is switch to a data transport that requires *more* data, as that usually increases overall congestion and makes the situation worse.

New firmware for Comrex codecs utilizes an intelligent UDP reliability layer called BRUTE (BRIC UDP Transmission Enhancement). Essentially, while data transmission takes place via UDP in the lowest layer, an additional layer checks whether packets have been received and decides whether it's worth it to request a resend. In addition, this congestion manager has license to reduce codec overhead and step down to modes with lower network utilization dynamically, in essence riding the gain of the data output. Tests show this can allow reasonable operation on networks with moderately high packet loss, without gumming up the works with a lot of overhead data.

**Comrex Access (center) with Wimax modem (left) Inmarsat terminal (right) and a variety of 3G and Wi-fi modems (front)**

**Andy Denoncour of the Comrex engineering team specs out a 3-mile 5.8GHz IP radio link.**

## 4G and other options

A few stations are lucky enough to be located in cities chosen for early deployment of 4G Wimax services, and are having good success on these networks. Wimax offers higher throughput and lower latency and jitter than 3G networks, providing a "wire-like" experience to users. Deployment has slowed during the economic rough patch, but some of the cities on the roadmap for 2009 include Chicago, Dallas and Philadelphia. Verizon is leading the charge with deploying the main 4G competitor to Wimax, called LTE, and plans to have a handful of cities online by the end of 2009.

Another attractive network for IP codecs is the Inmarsat BGAN network, which utilizes portable satellite terminals that are ever decreasing in cost and size. The BGAN network also sports a per-minute cost for a codec-capable IP channel that is a fraction of what previous generation satellite networks charged. With BGAN, worries about coverage are non-existent, as long as a reasonable view of the sky in the direction of the nearest satellite is achieved. And the terminals can be set up in minutes by non-technical users.

Some manufacturers have introduced simple, low-cost versions of their IP codecs, and these products mate well with the new breed of inexpensive IP point-to-point radios. Many of these work in the relatively uncongested 5.8GHz unlicensed band, and carry enough bandwidth to provide full-duplex uncompressed audio links. Several brands are available in weather-proof packages with built-in directional antennas and cost less than $500 per end. These make an attractive alternative for cross-city links, or even for extending IP access to non-wired locations.

Migration to IP audio can save money as well as offer new choices in the way audio is shipped for remotes, STLs and other real-time links. As the demand for mobile data increases, so will these choices. It's wise to keep an eye on this changing market when considering solutions.

*Hartnett is technical director of Comrex.*

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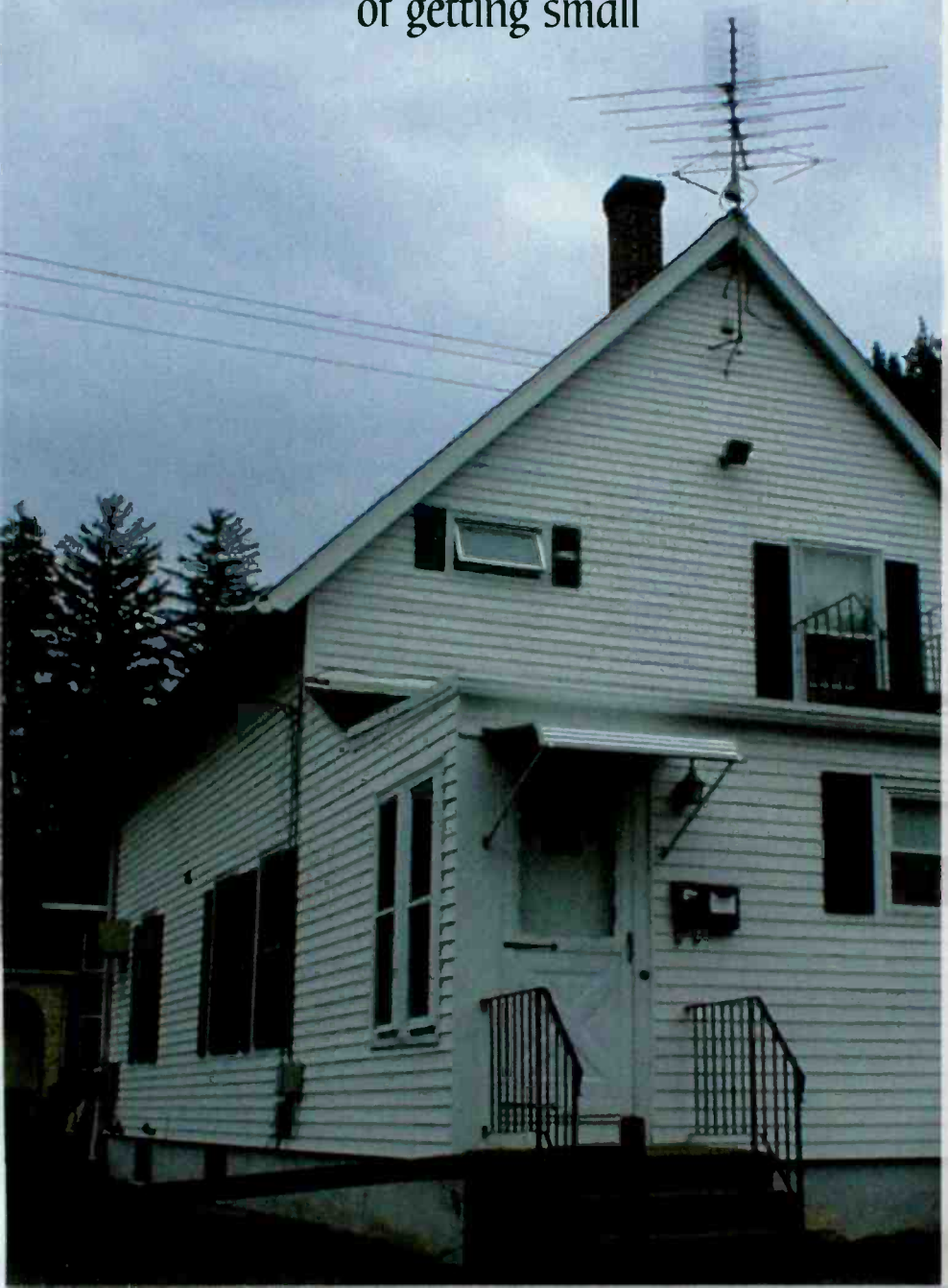
# Little House *on the* Corner

By Dave Richards

## WOON explores the science of getting small



WOON-AM, serving Woonsocket, RI, near the Rhode Island/Massachusetts border, is focused on serving its local market. As part of its community presence, the station leased 2,000 square feet of office space on the first floor of an office building with big store-front windows. It occupied this space for almost 20 years. While the space was nice, it was not inexpensive, and parking was sometimes a problem. The building also changed hands between three landlords in two years, and with that came a 255 percent rent increase accompanied by new fees and assessments.

It was time to move.

I was lucky enough to see a cute little house on a corner lot of one of the busiest streets in town. What's more, there was already a two-room office in it with 14 parking spaces and a residential apartment upstairs. All we had to do was expand the commercial use to the whole first floor and a portion of the basement, make a four-room apartment into new studios, move in and start broadcasting from there. We needed to do it in 12 weeks and this would not be a turnkey operation. Business was off in the summer of 2008, cash was tight (and about to get tighter across the nation, though we didn't know it yet), so we'd be moving the same equipment we were using every day to the new location.

Our goal was to stay on the air with zero down time. No trouble. The difficult part? Squeezing the radio, TV and Internet operations and offices into less than 1,200 square feet on two levels without moving any load bearing walls.

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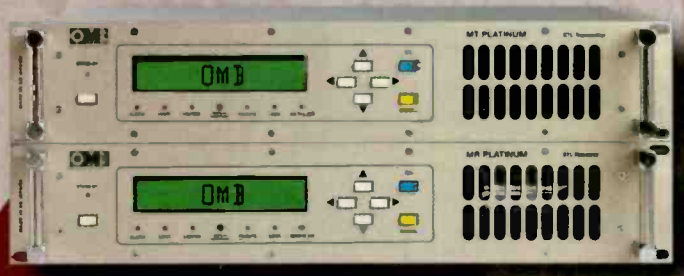
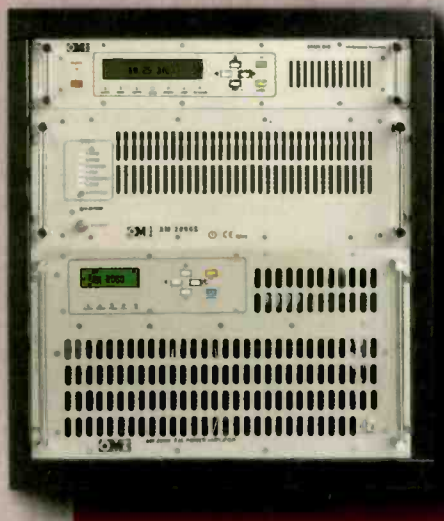


## MT/MR PLATINUM

> GHz is a high-performance Studio-to-Transmitter Link. It is made up of the 5W MT transmitter externally synthesized in 1MHz sub-bands with a step of 100KHz, and the MR double conversion receiver, that is externally synthesized, too. The MT is microprocessor controled, and includes LCD display for the visualization of the most relevant transmission parameters (frequency (6-digit), forward and reflected power, modulation level), balanced Mono, Stereo (MPX). The MR receiver has the same visualization system as the transmitter. It includes balanced Mono and Stereo (MPX) outputs. Furthermore, the MT/MR Platinum STL incluces a jumper in order to get a proper operation with digital signals.



## EM 2000

is a 2000W FM transmitter made up of the EM 25 DIG exciter (or EM 20/30 exciter) and the AM 2000 FM amplifier. AM 2000 includes eight 300W high-efficiency MOSFET technology amplifying modules, fed by 2 independent switching power supplies, which are made to withstand the working conditions. The amplifiying modules work independently thanks to a power combining structure that provides high isolation between them.

## EM 10000

is a 10000W FM transmitter made up of the EM 250 COMPACT DIG exciter and three control units which combine the power of six AM 2000 FM amplifiers. AM 2000 includes eight 300W high-efficiency MOSFET technology amplifying modules, fed by 2 independent switching power supplies, which are made to withstand the working conditions. The amplifiying modules works independently thanks to a power combining structure that provides high isolation between them.

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# Little House on the Corner

**The basement is utilized as the equipment room, which made for short cable runs.**

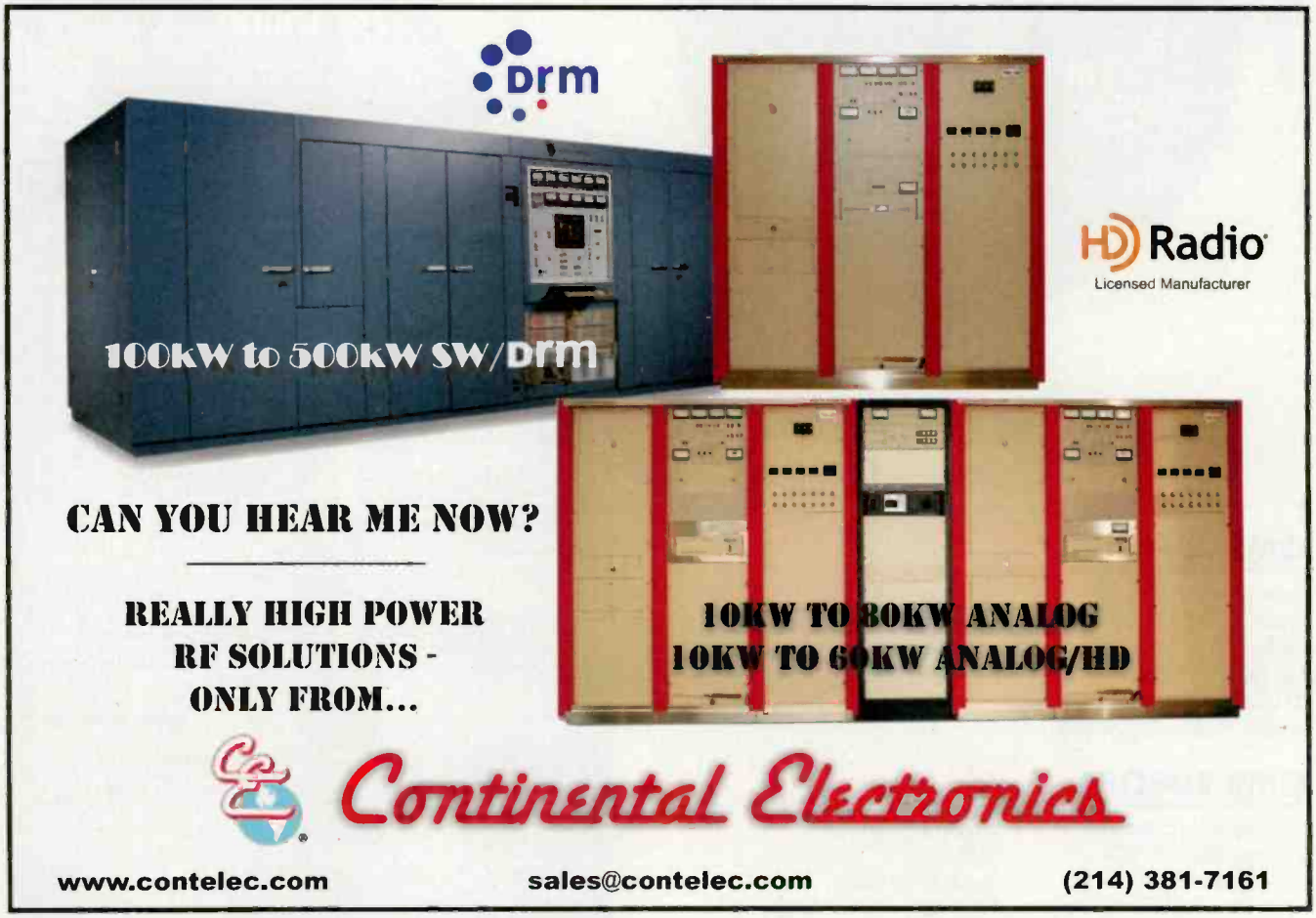
**The upstairs portion of the house used to be an apartment. The kitchen was gutted for the main studio.**

## A good neighbor

The new location required us to expand the commercial zoning use. When working with zoning issues, I cannot over emphasize the care that should be taken to communicate in a plain and honest way with your new neighbors. Most neighborhoods have one or two key residents who are very active and will ask a lot of questions. Give them all the time they want to help them feel good about your plans. Time invested here in engaging their support will reap dividends down the road as they talk to the other neighbors.

We have all heard and read about ugly NIMBY (not in my back yard) fights over the years. When we went to the zoning meeting, I had a plan that the residents were comfortable with because I answered every question before the meeting. As it turned out, only two attended and only one spoke. And that one spoke in favor or our proposal.

This method also served us well in a previous zoning

**During construction, walls were built, as seen from this view from the former kitchen into the living room.**

issue when we moved our transmitter and tower into a neighborhood which never had one. While we sweated on the process, we put the time and care into each resident's concerns and addressed them all so well in both cases that we saved time and money in the long run. Trust and honesty are key in these situations. If they ask, "Will there be any interference on my phone, TV or radio?" Tell them the truth, that there may be, but follow up quickly with, "But government regulations require me to address every complaint of interference promptly and to install filters at my own expense if they are required."

## Project challenges

Downtown, we had an imperfect 950MHz STL path to the transmitter that lacked appropriate fresnel clearance during the summer, so we used it as an auxiliary path. Our primary path was a balanced and equalized broadcast audio loop. It was expensive but reliable. Our new location would be farther away, behind a hill and had no hope at all of an RF path. Worse, our legacy telco company really wanted to get out of the M-20 leased audio circuit business. They didn't want to move our STL audio loop to the new studio location. So I spent about two weeks testing STL-over-IP systems. I looked into three manufacturers and tested two. Both failed in my case.

I keep hearing that this is the way of the future and I wanted to embrace the technology. But even though New England has the fastest and most reliable broadband Internet service of any place in the country except the mid-Atlantic, the packet loss simply couldn't be overcome, even though we were using the same Internet backbone. I worked with the factory reps and techs to rectify the problems of dropped audio and other artifacts, including a $55 telephone call to Ireland one night for setup help, to no avail.

# Little House on the Corner

**WOON's main studio features four guest microphones and cameras for live Internet streaming TV. It is a drastic change from the previous interior design.**

**WOON's production room**

My advice for anyone looking into this method is to take the time and trouble to ask for an evaluation unit. They work well in some places but not in all places. Try before you buy. After a really convincing sob story to the telco, it relented and agreed to move the line and continue service.

In addition to the radio station and offices, we also had to move our live Internet streaming TV and production operations as well. In converting a kitchen into the main studio, for instance, a major concern was sight lines for the cameras and lights. We have a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daily morning show that needs to have a minimum of five people sitting around the table talking and each voice needed a dedicated camera. We used two 3/4" finished sheets of plywood (4'x8'), glued and screwed them together, and made a big countertop table for all to sit. It works and looks great, is less microphonic than laminated tables, and is standing up remarkably well to the day-to-day abuse any main studio surface will get.

## What went wrong

Like any project, some things just don't go according to plan. I already noted that we completely remodeled the interior without touching any structural walls. When we started, the previous owner provided a set of blueprints for the house. We quickly found out that the blueprints did not accurately show everything, including the path of the chimney through the walls from the basement. We found the correct path the hard way.

We also had to modify the plan for a 5' studio window. As a wall was taken down we found a hidden rear door that was not shown on the plans. The planned 5' window is now 3' wide.

We wanted a low maintenance floor in the main studio, so we chose VCT self-adhesive flooring squares. This was a bad idea. We ended up carpeting over it for acoustic reasons.

Placing the equipment racks in the basement directly below the studio was a good idea, but not good enough. The cable runs were really short. But what we didn't know was that most inexpensive keyboard, video and mouse extenders (to the automation playout computer) caused erratic operation. We had to go with one of the $200 models, which thwarted our cost-saving plans.

All in all, I'm proud to say we pulled of the entire project in less than three months, and I was able to do it with the assistance of three part-time engineers.

**The main level of the house features the lobby and two offices, which were already in place.**

*Richards is president, general manager and chief engineer of WOON, Woonsocket, RI.*

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# 2009 Salary Survey

By Erin Shipps

It's a tough year to talk about money. Many people in the U.S. have been affected by soaring unemployment rates, either in their own career or someone they know. Many more have seen reduced hours, changes in titles and responsibilities, and pay cuts. So, yes it is a difficult to talk about, but maybe it's also encouraging to know you're not alone and that overall, there were no enormous changes when we compared this year's survey with last year's results.

Reflective of the economy this year, more respondents are concerned with job security and benefits, not to mention pay. Take a look at the benefits chart on page 32 and see how your job stacks up. As far as job security goes, take heart; according to Fast Company, IT/engineering is one of the top jobs for 2009. And as we found out from last year's survey, your job description becomes more IT-related every day. Nearly everyone is suffering in the salary category this year; take a look at our engineer's salary chart on page 30.

The good news is, you probably still care about your job. While some people have become desensitized to their responsibilities because of pay cuts and a lack of appreciation, many respondents to our survey put just as much emphasis on a new equipment budget as they did on their own salary. Others are frustrated with everything from management and communication to training, hours and office conditions. Second in line to salary is the need for help and a great deal of respondents expressed how crucial it is to have more hands on deck in engineering. However, a good number had nothing to complain about, and that is always good news.

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Jessie Walker, Program Director

**DMS Broadcasting, San Francisco, CA**

*" When we started, we were jumping into something we knew nothing about! We called your tech support & within a day they had a solution. It was miraculous. They helped us get wired up & set up. (Tech Support) had a positive & upbeat attitude. They went above & beyond!"*

David Trudrung, General Manager & Co-owner

**WDHC, Berkley Springs, WV**

*" We are absolutely pleased. I especially like the game scheduling feature, it works great for Mountaineer West Virgnia University games. I rate it a 9 ½ because we can schedule 2 games simultaneously & flip flop when there are rain delays. It works great for sports talk!'*

Mike Hurst, Engineer

**KSVL, Yerington, NV**

*" I love (Xtreme)! We've been running (Xtreme) for a year & a half every single day & we give it a 10! It's easy to learn & use. Good support & it's dependable!"*

George Lemait, Station Manager

**KSMZ, Alexander, AR**

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Scott Gray

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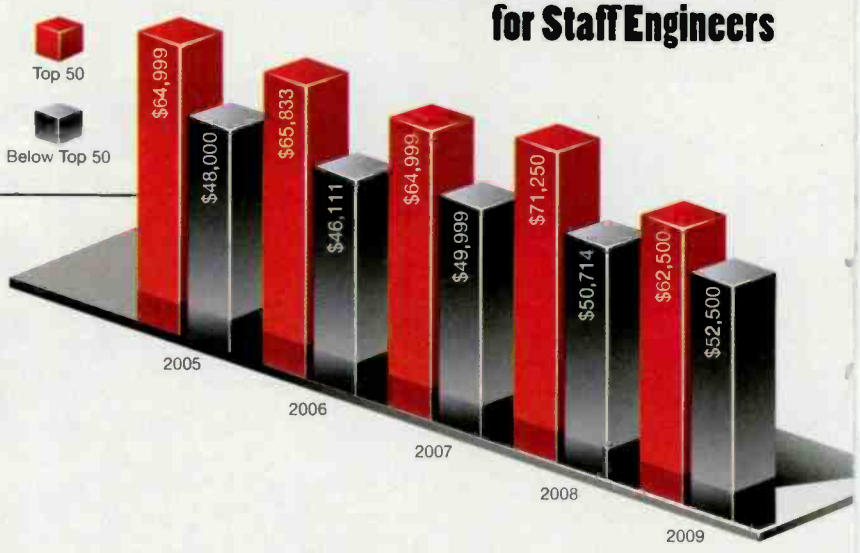
## Salaries

Let's start with salary. The typical respondent to our survey earns and estimated median income of $52,500. Regardless of job title, salaries in larger markets are higher. Only 27 percent of respondents received a salary increase during the past 12 months (last year it was 62 percent) and the average salary increase was 7.2 percent. Compared with last year, it seems that regional directors of engineering, station chief engineers, and station/staff engineers/tech titles generally went up in salary, while the others fell.

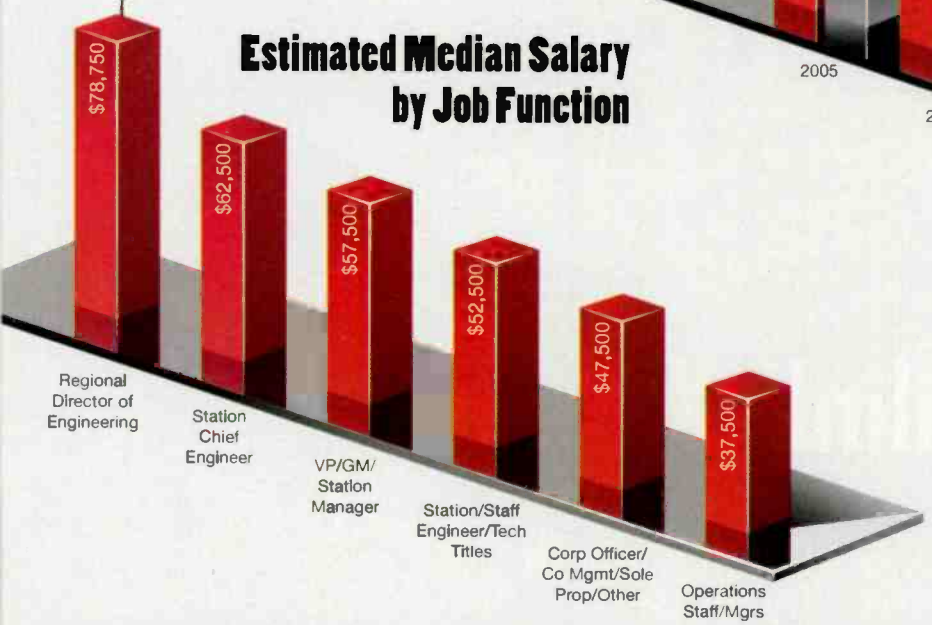
The estimated median salary for staff engineers below Top 50 jumped up a couple thousand dollars from last year and Top 50 engineers are actually earning less than they have in the past four years.

Contract engineers in general are charging more. Last year 77 percent of contractors were charging less than $69 per hour. This year only 63 percent are under $74. Now, 23 percent are charging $75 to $99 per hour.

### Estimated Median Salaries for Staff Engineers




### Estimated Median Salary by Job Function




## Methodology

On Aug. 25, 2009, Penton Media e-mailed invitations to participate in an online survey to a total of 3,583 subscribers of *Radio* selected on an nth name basis from the category "Radio Station/Network." To encourage prompt response and increase the response rate overall, the following marketing research techniques were used: A drawing was held for one of four $50 Amazon.com gift certificates. A link was included on the invitation to route respondents directly to the questionnaire. The magazine name was used on the invitation to tie the study effort to *Radio* magazine. A follow-up e-mail was sent to non-respondents on Sept. 2, 2009.

pictured: Modulux Standard

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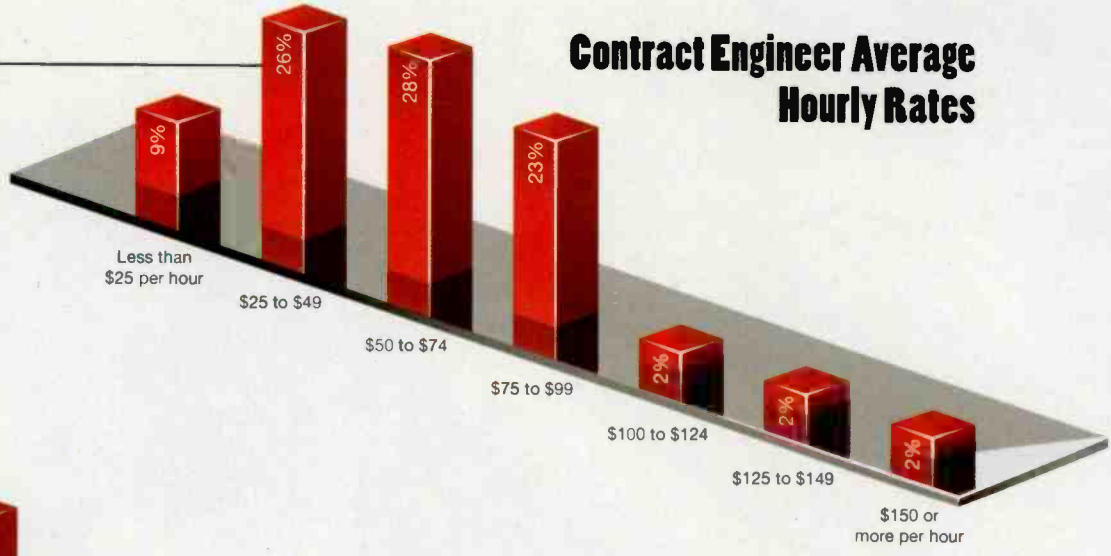
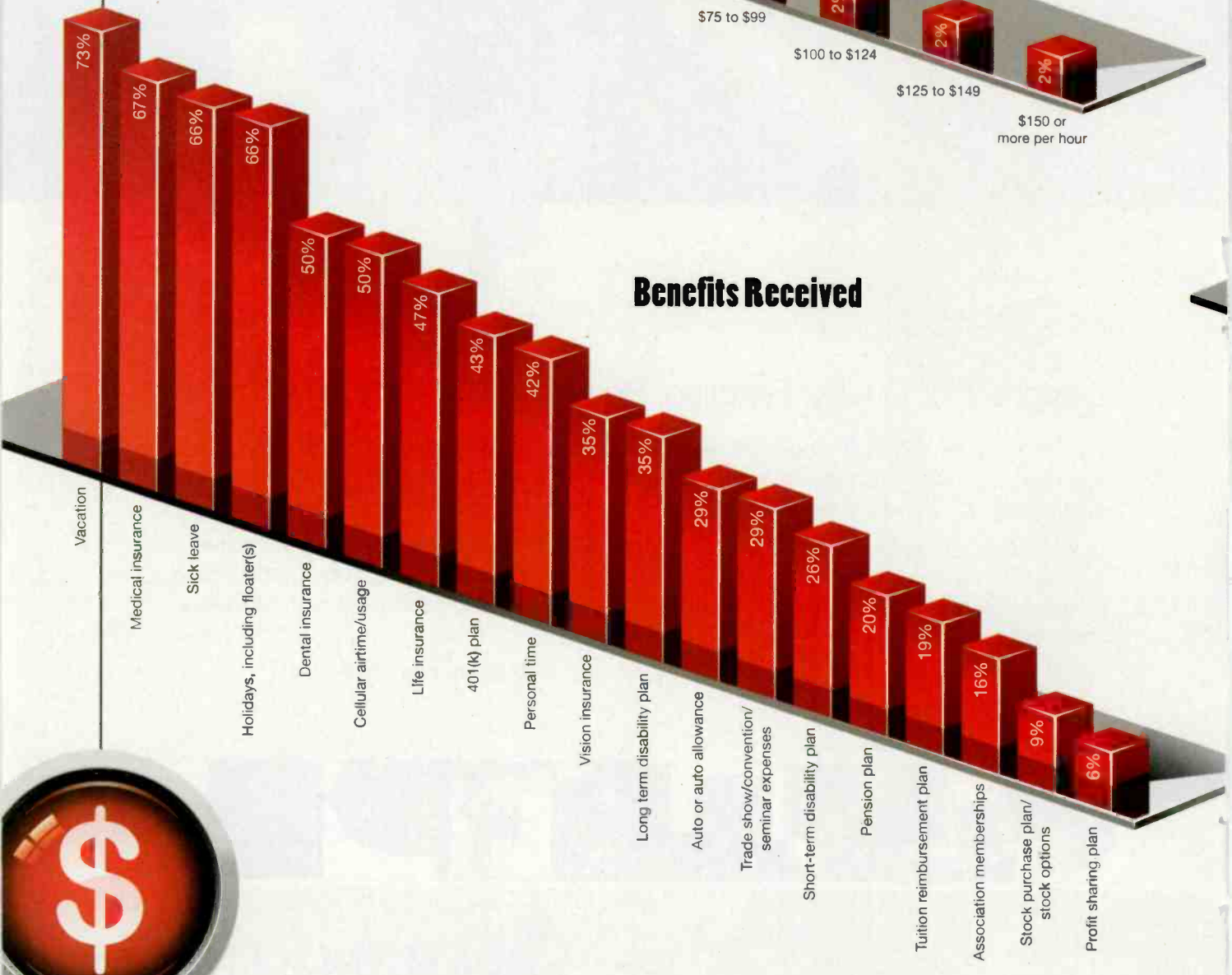


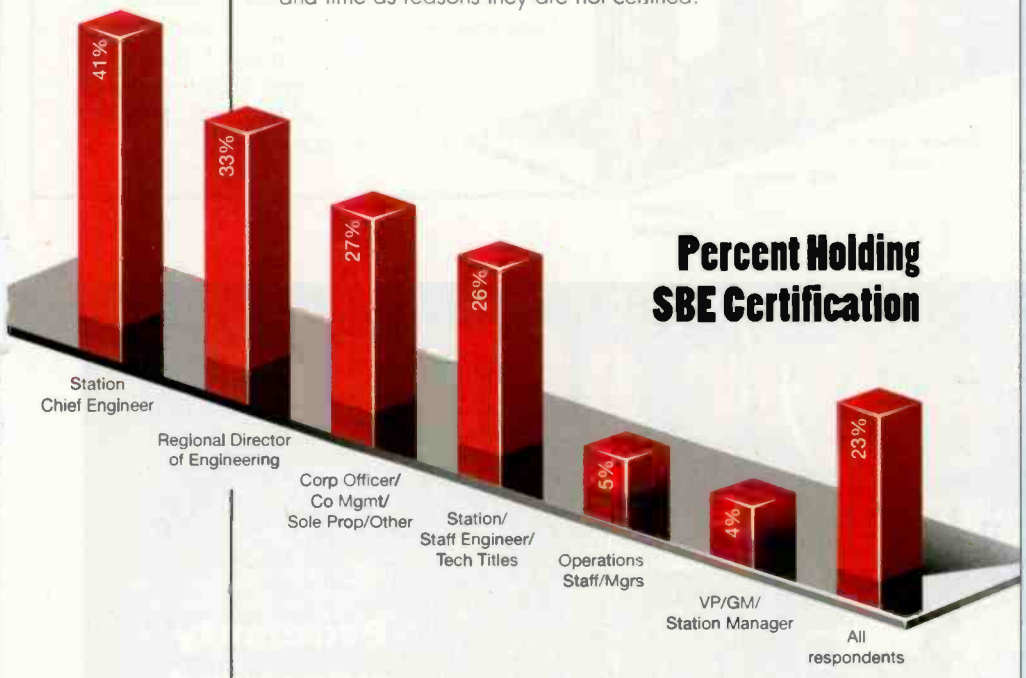

## Benefits Received

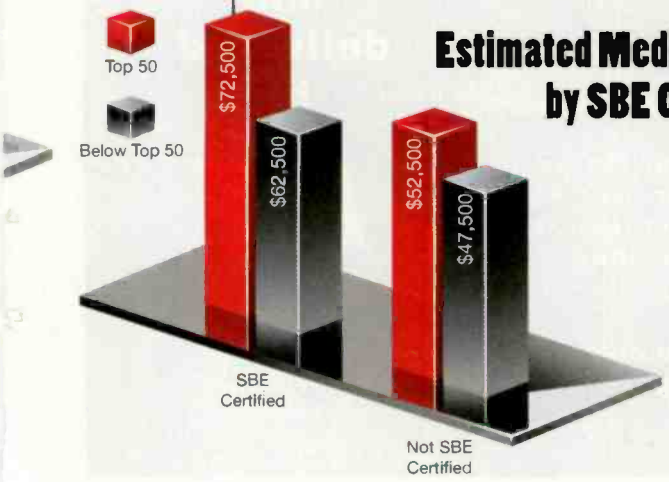


## Certification

Certification is always a touchy subject in the radio engineering community. SBE certification is up this year among station chief engineers, and other titles, but down among regional directors of engineering and station/staff engineers/tech titles. Overall however, all respondents still average 23 percent certified, the same as last year.

And even though it is proven statistically that SBE certified engineers earn more salary ($20K more for Top 50 and $15K more below Top 50), some respondents still don't find it necessary. In fact, 49 people specifically stated they saw no need for certification in our write-in answer portion. Others mostly cited money and time as reasons they are not certified.





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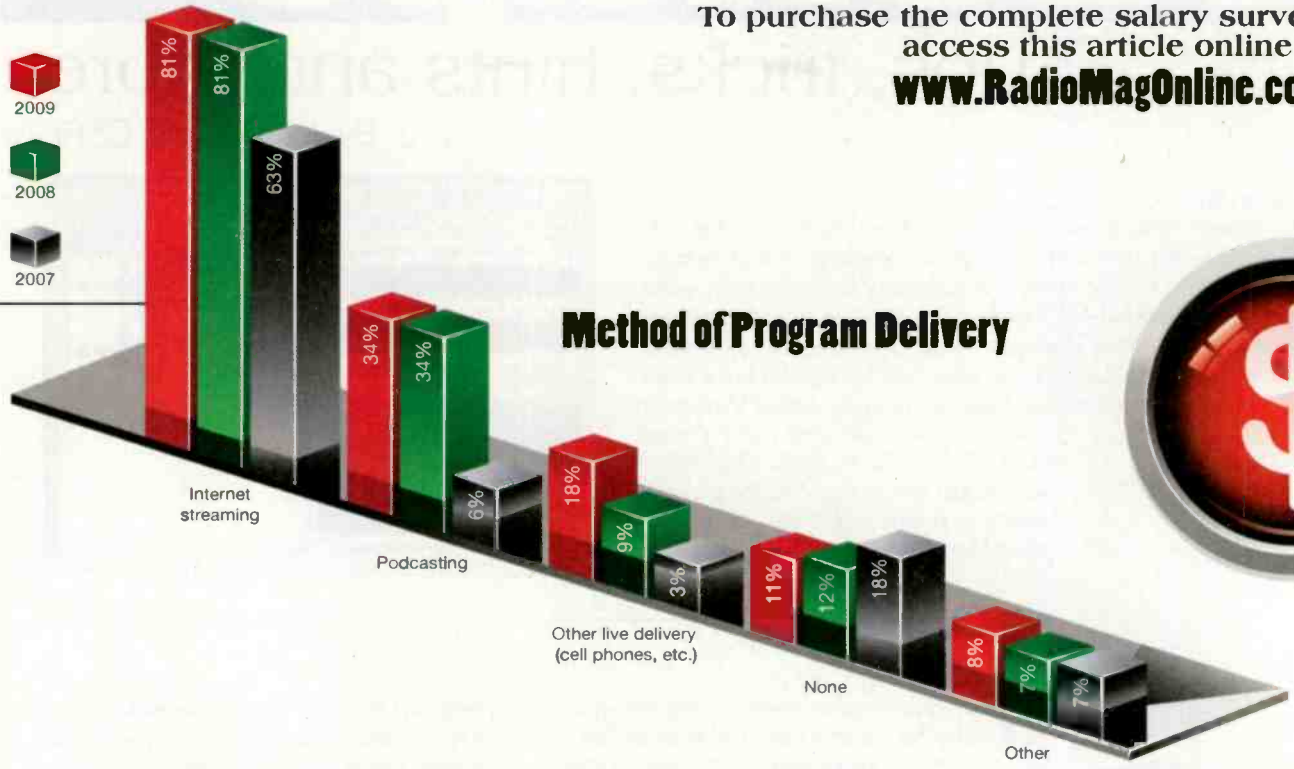
## Training and program delivery

When it comes to training, most respondents prefer taking online courses/seminars, reading trade publications and books. However, probably due to the economy, fewer are able to attend regional/local conventions, SBE meetings and national conventions. Still, 43 percent of you have not attended a broadcasting and/or educational seminar in the past two years.

For the most part, respondents would like more training in IT and networking, RF, HD Radio, automation, streaming and new technology in general. *Radio* magazine will try to help with these topics in the upcoming year.

As for new methods of program delivery, the use of both Internet streaming and podcasting has stabilized after the dramatic growth seen between 2007 and 2008. An emerging technology, doubling in usage since last year, is the use of cell phones for delivering live information.

To purchase the complete salary survey, access this article online at **www.RadioMagOnline.com**





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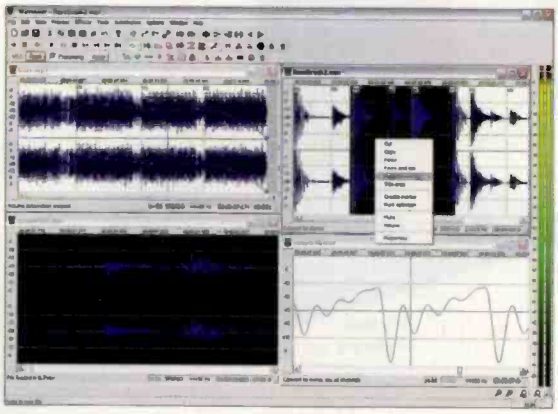
# Tips, tricks, hints and more

By John Landry, CSRE

## Freeware

Sometimes replacement is the only option. This is often true with software. But when the software is something critical such as an audio editor, it might become a budgetary issue. Recently, when Adobe Audition added ASIO support, the ability to record something while editing something else went away. Several users had noticed it, but there was no simple solution other than to upgrade to the latest version. A simple solution is a freeware program called Wavosaur 1.0.5. (download.cnet.com/Wavosaur/3000-2170_4-10632135.html)

Wavosaur will multitask like the previous version of Adobe and is compatible with most older Windows operating systems.

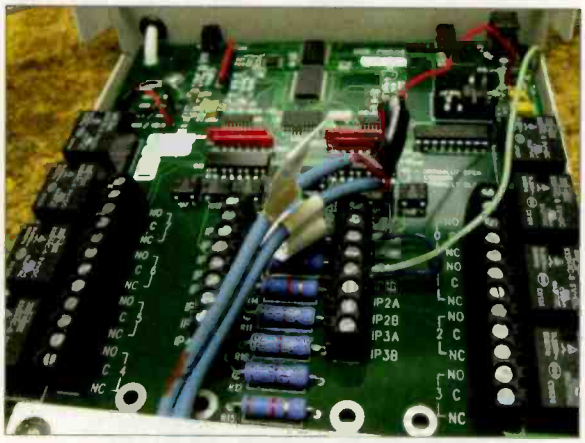


## Go wireless

Great radio requires several computers in a studio, but that also means several monitors, keyboards and mice. KVM switches are a big help, but in many cases we need to access more than one computer at the same time. When you must have more than one keyboard and mouse, one way to make things neater is to use a wireless keyboard/mouse combination. The Logitech EX 100 cordless desktop is an excellent option. It operates reliably up to 20 feet away from the workstation transmitter and two can be used side-by-side on the same desktop. The keyboard has a sleek design and the mouse will work in both left-handed and right-handed modes. It appears this model has been replaced. A current unit is the S520.

## Switch N Sense

Many automation systems utilize the Measurement Computing Systems Switch N Sense-8 USB converter box for cue closure inputs. The Switch N Sense is an instrumentation interface with differential isolated inputs designed to handle up to 500Vac or dc. Its use for broadcast automation requires an external power supply, which means another wall-wart to clutter up the dc strip or a 9V battery to be replaced regularly. However, the unit has a 5V regulator on the circuit board, and with the addition of two tack-soldered leads this can be made to provide the voltage to operate the inputs. Simply lift open the cover, and solder wires to both ends of capacitor C2. Connect the positive lead of the capacitor to switch and bring it back to the A sides of the inputs. Then connect the negative lead from C2 to the B sides of the inputs. If desired, a small picofuse can be added to the positive lead to protect the power supply.




***We need your tips!***
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*Landry is an audio maintenance engineer at CBS Radio/ Westwood One, New York.*

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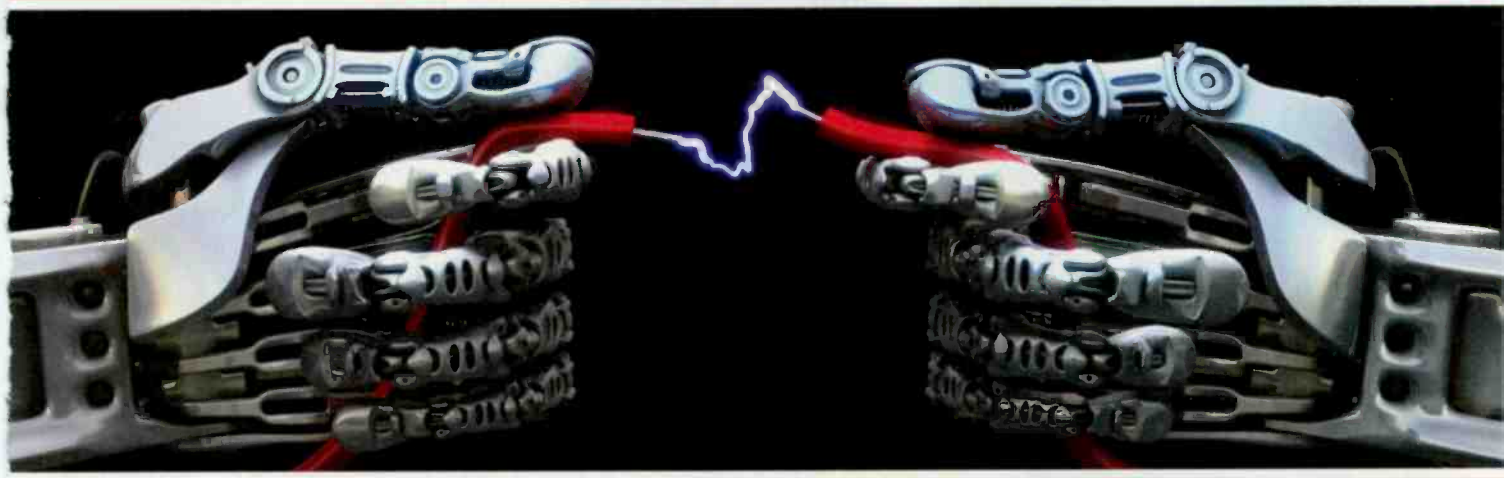

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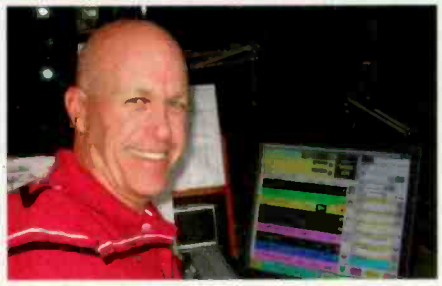
*~ Jim Franklin, Program Director*
*WVBO, Appleton/Oshkosh - Wisconsin*



*"Opx is very functional and easy to use. One the best features is the log merge. On our old system it took minutes and with Opx it takes only seconds"*

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# JBL Control 2P

By Chris Wygal, CBRE

Inasmuch as we try to monitor and tweak our audio mixes, feeds and production pieces, sometimes situations arise where we must evaluate audio on the run. Voice-over booths, production trucks and engineering room monitoring are all environments where precise evaluation of audio is critical, and 20Hz to 20kHz is not absolutely necessary. In addition, many times these scenarios are made difficult by oversized speakers and the need for an amplifier. The JBL Control 2P compact powered reference monitors are the perfect solution for high-quality audio referencing where space is limited and accurate monitoring is vital.

The Control 2P stereo pair is designed to allow for installation nearly anywhere, especially where space is tight. The speakers are shipped with two snap-on pedestals that optimize the listening angle when the speakers are set on a desktop. The master speaker (which houses the amplifiers for both speakers) weighs only 5.5 pounds and the extension speaker weighs 4.5 pounds making both simple to wall mount. Each speaker stands approximately 9" high, 6" deep and 6" wide and is equipped with a 5.25" low frequency driver and 0.75" dome tweeter. The crossover point is at 4.2kHz. Both speakers combined will produce an SPL of 115dB with a frequency response of 80Hz to 20kHz. All inputs to the Control 2P connect at the master speaker via balanced Neutrik combo XLR-1/4" TRS jacks or unbalanced RCA jacks. The system has an internal peak limiter, which serves as overload protection.

An added feature on the Control 2P speaker pair is a 3.5mm headphone jack located on the side of the master speaker. The speakers mute when headphones are plugged in, allowing for private listening. A dial is situated next to the headphone jack for volume control of the speakers and headphones.

## Performance at a glance

80Hz - 20kHz frequency response

35W powered speakers

0.75" tweeter, 5.25" woofer

Shielded transducers

Wall-mount capable

## Get connected

All connections and controls are located on the back of the master speaker. Power for both speaker amplifiers and dc power input are located on the master speaker as is a high frequency adjustment. The HF adjustment provides -2dB or +2dB high frequency roll off. Unbalanced and balanced inputs make the Control 2P handy in every audio system setup. The mounting bracket attachment points on both speakers are compatible with 1/4-20 TPI fittings and allow for the attachment of the optional MTC-2P wall mounting bracket. Each speaker has a safety bar for an optional safety cable or lanyard, which provides added safety when mounting the speakers overhead. The extension speaker (which serves as the "left" speaker in the system) connects to the master speaker via a 1/4" to bare terminal cable (the extension speaker has red and black spring loaded bare wire connectors).

Both speakers are covered by a black metal grill

that protects the LF and HF drivers, port tube and two LEDS. The red LED will flash if the system is overdriven and nearing thermal protection mode. When the LED is on continuously, the system should be turned off and allowed to cool. This feature is an added bonus that warns the user when he is misusing the speakers. The white LED is simply an indicator that the system is powered on.

The JBL Control 2P compact speaker system put simply is loud. Generating an SPL well past 100dB, the pair provides excellent stereo monitoring where ambient noise is present and acoustics are less than perfect. Tight spaces, small recording rooms, trucks and engineering spaces are ideal environments for the Control 2P pair, and users will find the performance and sound reproduction the system provides to be the right solution.

**JBL**
P 800-852-5776
W www.jblpro.com
E info@jblpro.com

*Wygal is the station engineer at Liberty University, Lynchburg, VA.*

Editor's note: Field Reports are an exclusive *Radio* magazine feature for radio broadcasters. Each report is prepared by well-qualified staff at a radio station, production facility or consulting company.

These reports are performed by the industry, for the industry. Manufacturer support is limited to providing loan equipment and to aiding the author if requested.

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# Harris HPX

By Bruce Roberts

In June 2009 we took delivery of what has become my favorite transmitter. After 30+ years in broadcasting, most transmitters don't get me excited. You hook them up and then go back to what you were doing before you installed it. The HPX series from Harris right off the truck is just sexy (please don't tell my wife I said this!)

It appears Harris did some serious homework on this transmitter. It really does look good. It came in two cabinets: one for the power supply and the other for the exciter, IPA, PA and controls. I understand there is a kit to separate these boxes; however, my configuration is side-by-side. The combined measurements are 64" wide, 35" deep by 78" high. For a 40kW transmitter, this is a pretty small footprint. I was glad to see a slightly higher box that made for a smaller amount of floor space used up by one transmitter.

## Performance at a glance

- Integrated RF and control interface
- Separate high voltage power supply
- VGA GUI for advanced control and diagnostics
- 1/4-wave grounded cathode design
- Analog and/or HD Radio operation
- Two cabinets in 64"W x 35"D x 72"H

Installation time on the HPX is very short. In fact, this was the easiest high power FM I have ever installed. This is because all the control connections between the two cabinets are plug-in connectors, and the three phase wires are on a WAGO connector. The high voltage connection between the two cabinets is about 1' long. Remote control connections are also on a WAGO connector behind a front panel. They are easy to get to even with the power on. The entire component layout just makes sense because parts are clearly marked and located in a logical location, as well as easily accessible. Primary power is connected behind a panel on the front ... again a convenient location.

The 4CX 20,000C PA tube installation was quick and easy. There was plenty of room to get my hands in the cavity and install the tube. Harris has continued the Flex Patch to allow making quick changes to bypass defective stages should a problem arise.

### Get inside

The controller is like nothing I have ever seen before. Software updates are done via a CF flash card. There is no battery backup to remember the last mode but it appears this is written to the CF card. The CF is located behind the control panel door that hinges down. We recently received a software update that just required removing the

> I would buy this transmitter again and hope in the near future to see more of these at our facility.

old CF and installing the new one. Down time was only about 3 seconds.

It took only a few hours to get this box ready to test into a dummy load. When you apply filament voltage, the shorting solenoid energizing will get your attention; however, when the high voltage is applied there is a soft-start sequence that is quiet and easy on the nerves: No loud clang of a relay, no light dimming, just a nice gradual increase in power.

I got a chance to test the VSWR protection circuit. It seems in the process of cleaning a section of 3 1/8" rigid line for the inside building, a rag was left in a section of line. The HPX said no thanks, I don't like this load and shut down. After a few tries, we swept the line and found the rag and all was well.

My decision to wait for the release of the HPX was based on the thought that not only is this an efficient transmitter, but this was a transmitter designed for IBOC, not a transmitter modified to pass IBOC. Also, this being the new kid, it is going to get the full support and attention that I wanted for this station. I currently am responsible for more than 10 transmitters made by several excellent companies, but this one is papa's new baby.

I worked with SCMS, the Harris channel partner, when I bought the transmitter, and I would buy this transmitter again. I hope in the near future to see more of these at our facility.

*Roberts is the chief engineer of Apex Broadcasting, Charleston, SC.*

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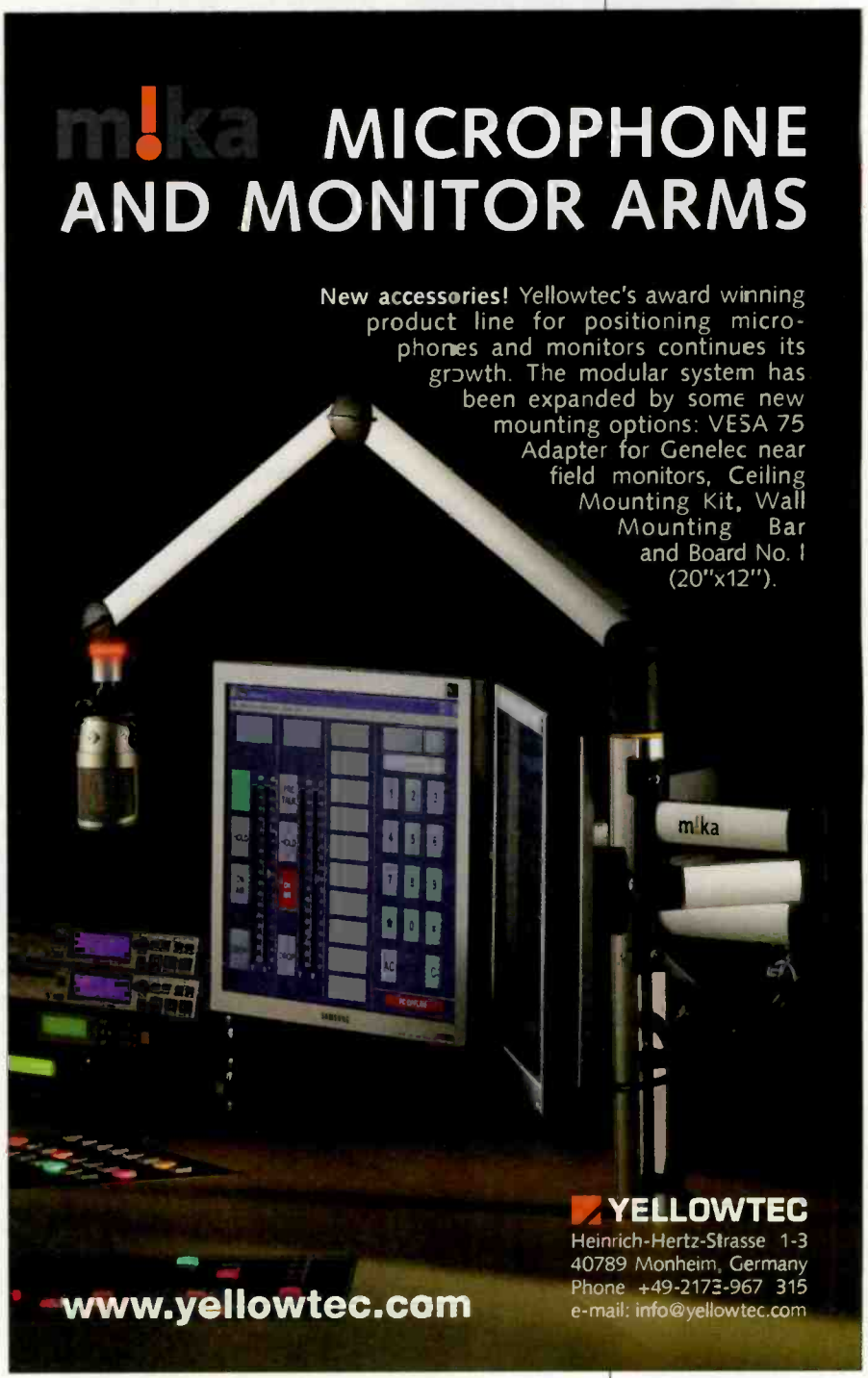

by Erin Shipps, associate editor

## Digital audio devices
### Olympus

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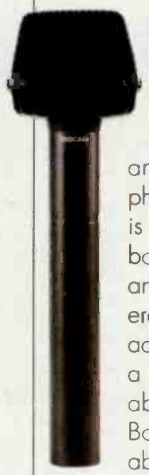
## X/Y stereo microphones
### Tascam



**TM-ST2, TM-ST Pro:** Tascam has premiered the TM-ST2 and TM-STPRO X/Y stereo microphones. The unbalanced TM-ST2 is an affordable microphone with both a 10' cable for live recording and an 18" cable for video camera connection. The TM-STPRO adds a balanced output, includes a 16' stereo XLR cable and has the ability to run on phantom power. Both microphones feature a switchable low cut filter and come with a mic clip, battery, wind screen and protective carry bag.

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## Console accessories
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**Router Control Panels:** Axia's X1 router control panel lets operators instantly route any source on their Axia Livewire network to a specified destination. The X2 panel provides the routing functionality of two X1 panels in a single chassis; each separate control routes any available network source to an individually specified destination. All Axia Router Control panels connect to the network via a single Ethernet connection and occupy 1RU. The XY panel lets operators route any source to any destination within the Livewire network. Axia router panels make use of custom button functions programmed using Axia's popular Pathfinder PC and Pathfinder Pro router control software.

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480-998-7140; www.arxamerica.com

## Music scheduling software
### RCS

**G Selector Version 3.12:** G Selector 3.12 adds several new enhancements to the first patented goal scheduler including: multiple database access, hour and depth search, interactive history maps and user defined support in the web service. You can now add additional multi-station databases to your system via data exchange or the restore function. All history maps in G Selector now provide access to the editor when double-clicking a date and time cell.

914-428-4600; www.rcsworks.com
info@rcsworks.com

## Wattmeter
### Schomandl

**FIT-70:** The FIT 70's separate test head lets an operator easily connect to hard-to-reach cables. As quickly as it is connected, the functional values are brightly displayed on a high-contrast LCD screen. The site's VSWR output is read out, as are the forward and reverse power readings, measured in watts or dBm. The FIT-70 covers a range from 70MHz to 1000MHz. The device works for tests at remote antenna sites and at links between studios and transmitters. The wattmeter is carried in a fitted case that protects it in transit to an outlying antenna location.

+49 8641-403 140; www.schomandl.de/en; info@schomandl.de


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### Safety unit
### Towermast

**D-TEC II:** The D-TEC II safety unit provides overhead power line and obstacle detection and above-the-mast illumination. The anti-collision system automatically stops mast extension, providing added protection from overhead hazards for the operator and equipment. Features include look-up light illumination directly above telescoping mast, high-voltage sensor to aid the operator in detecting overhead power lines, anti-collision sensor to automatically stop mast extension and a factory pre-set sensitivity setting.

**330-684-4000; towermast.willburt.com**

### DVR lockbox
### Middle Atlantic Products

**DLBX Series:** The DLBX Series is optimized to handle the active or passive thermal management needs of digital video recorders and other digital equipment. It mounts vertically or horizontally to the wall, and can be used as a monitoring shelf. A configurable thermal management system including a fan and two filters can be set up to accommodate the needs of any DVR. An optional proportional speed thermostatic fan control ensures the fan only runs when needed, reducing maintenance requirements and noise. Extensive cable management includes tie points, EKOs and cable pass-throughs. A mechanically interlocking top provides added security yet removes easily for equipment servicing, and a standard keylocked solid hinging front door allows easy equipment access.

**973-839-1011; www.middleatlantic.com**
**sales@middleatlantic.com**

### Audio/EAS monitor
### Intrinsic Net

**Studio Hawk.8:** The Studio Hawk.8 monitors audio and EAS receivers at a studio and communicates problems via e-mail, text messaging and signaling devices. The base system includes Studio Hawk software and hardware to monitor eight status channels, analog channels and relays. It records EAS data (transmitted and received), and can be expanded to monitor up to a total of six EAS receivers. Users will also receive multiple contacts for each alarm with delays between messages, a daily dead air report PDF by e-mail and filtered EAS alerts.

**662-324-2769; www.plussine.com**
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## UPGRADES and UPDATES

**Audio Science** has received certification from **Ibiquity** for its ASI8914 four-channel HD Radio tuner adapter. (www.audioscience.com)... **Sennheiser Electronics**, the U.S. distributor for **HHB**, is shipping the HHB CDR-882 Dualburn professional CD recorder. (www.sennheiserusa.com, www.hhb.co.uk)...**Sennheiser** has released high-end wireless headphones with Bluetooth connectivity that incorporate Apt-x audio codec technology under license agreement with **APTX**. (www.sennheiser.com, www.aptx.com)...**Sound Devices** has released firmware update 1.75 for its 788T digital recorder. (www.sounddevices.com) ■


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## Touchscreen GUI
### Intracom Systems

**VCOM Touchpanel:** Designed using a tablet PC core that can readily be removed and used as a stand-alone desktop intercom station, the 3RU intercom panel features a high-resolution touch-screen selector to create multi-channel intercom systems. It works interchangeably with VCOM Control Panels on PCs, tablet PCs and handhelds. VCOM Touchpanel's 7", touch-screen GUI supports a virtually unlimited number of channels configurable for point-to-points, group calls, party lines, and program audio listens. Moreover, the entire VCOM Matrix System can be dynamically configured and monitored from any VCOM Touchpanel on the network. The modular unit supports a gooseneck microphone and has dual integrated speakers. It can also be used with a USB headset (XLR connector optional) or wirelessly with Bluetooth.

**518-827-8502; www.intracomsystem.com**
**info@intracomsystem.com**

## IP addressable power conditioners
### SurgeX

**SX1120iP:** SX1120iP is the first in a series of IP addressable power conditioners. Designed as a 20-amp, 1RU unit with eight individually controllable outlets, it can be configured and managed via a Web browser to control and monitor individual outlets online. It monitors outlet status, current draw, power consumption and rack temperature. E-mail notifications can be sent based on certain conditions and thresholds. The SX1120iP features Advanced Series Mode surge elimination, Impedance Tolerant EMI/RFI filtering, SurgeX ICE Inrush Current Elimination and COUVS Catastrophic Over/Under Voltage Shutdown.

**215-766-1240; www.surgex.com**
**anew@frontierelec.com**

## Paperless production order system
### Vcreative

**Vcreative Radio:** This is a Web-based paperless production order system designed to help expedite the production process and streamline communication between a station's sales, traffic and production departments. Account executives submit production orders or schedule traffic changes from any Internet-ready computer or Internet-capable mobile phone. Traffic and production departments receive all requests simultaneously so orders do not bottleneck and all work and communication is time stamped for accountability. All scripts and final spots are saved in the system so account executives can track all ads in progress, listen to and approve ads, track what's on-air and expiring soon as well as search archives of all past ads. For the production department, features like a customizable Hot List and sortable views keep hundreds of requests in a logical, neat order. Vcreative Radio can also pool together corporate voice talents.

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The mic icon was disguised as a crack in the block wall.

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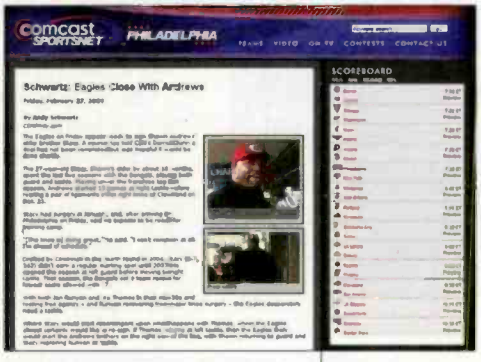


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## Handheld RF spectrum analyzer
### Kaltman Creations

**Spectran HF60100:** The Spectran HF60100 is a handheld RF analyzer that features a frequency range of 1MHz to 9.4GHz, sensitivity at -130dBm, bandwidth resolution of 1kHz, stability of 0.5PPM and accuracy at ±1dB. It is sold as a complete analysis kit that includes the HF60100 RF analyzer, optional internal pre-amp, an SMA stick antenna, a precision handheld log periodic antenna, ac charger/adaptor, aluminum carrying case, mini-tripod stand, 6' USB cable, PC software and documentation.

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## DSP-based analog FM tuners
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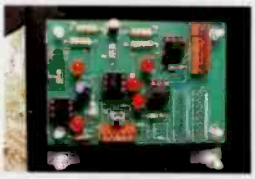

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| 5 KW | 1991 | Harris HT5 |
| 14+5 KW | 2005 | BE Fmi1405 (IBOC) HD, solid state |
| 20 KW | 2005 | BE FM20S, solid state |
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| 27.5 KW | 1984 | Continental 816R-4B |
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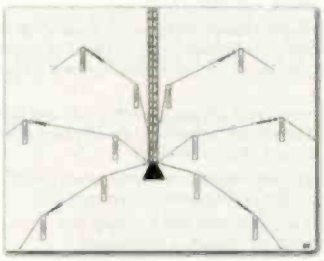

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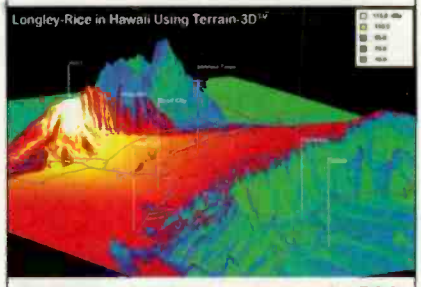


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# Contributor Pro-file

**Meet the professionals who write for *Radio* magazine.**
**This month:**
**Field Report, page 40**

***Bruce Roberts***
***Chief Engineer***
***Apex Broadcasting***
***Charleston, SC***

Roberts got the radio bug when he was 8 years old and ran the PA for a church broadcast on the radio. When he turned 18 he took a part-time weekend job at WEZL Charleston helping the contract engineer. He left radio for a short time but stayed in electronics. He returned to WEZL where he was encouraged to get his First Class FCC License (required at the time) which led to him becoming the chief engineer. By 1982 he owned a class A FM in Charleston. Today he owns and operates a recording studio.

Radio
THE RADIO TECHNOLOGY LEADER

**Written by radio professionals**
**Written for radio professionals**


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

by Erin Shipps, associate editor

# Do you remember?

Supreme 85C

In August we ran a few photos of Steve Johnson's excellent collection of radios. This month, we're tuning in on his tube testers. All information courtesy of Steve's website.

First, the antique Supreme 85C tube tester is the Great Granddaddy of all corner drug store tube testers. This was made for radio shops front counters. It's an early Supreme 85C Tube Tester designed to allow customers to test their own vacuum tubes. The tube chart and operating instructions pull out on a wooden slide from the front bottom.

Next, is a Confidence Special tube tester. When Supreme Instruments founder Jewell R. Williams left Supreme Instruments in the 1930s, he started the Apparatus Design Company in Little Rock Arkansas and manufactured these "Confidence" and other model tube testers.

Confidence Special

Triplett Model 1310

Finally, the Triplett Model 1310 tube tester tests early 4- and 5-pin tubes from the 1920s and 1930s. It is a Triplett 1210 tester in the Triplett 1211-A case, which was also available separately. This is a working tester that uses an 01A tube. The tube settings are listed on the metal plates on each side of the case.

Check out more antique radio equipment at www.stevenjohnson.com.

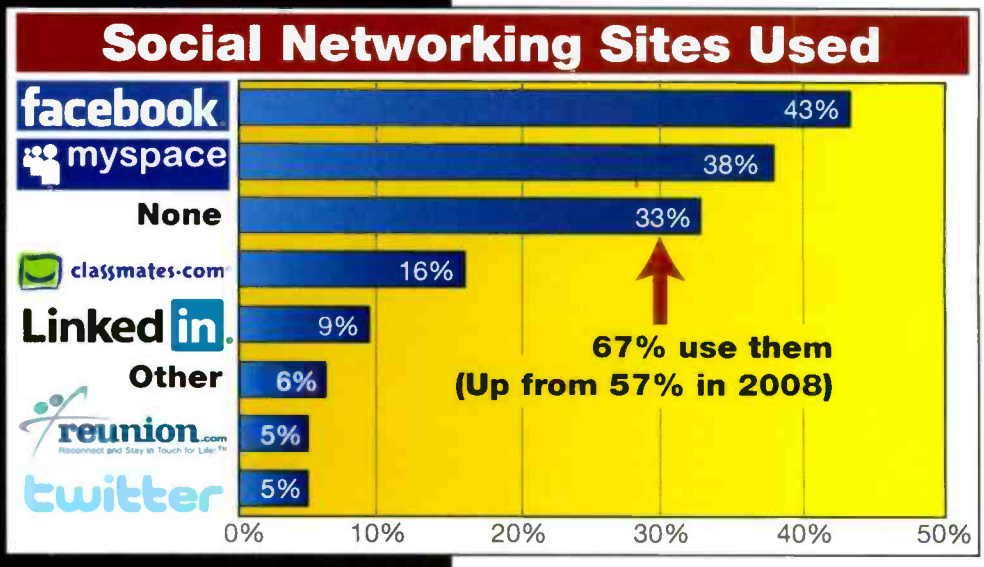
# Sample and Hold

## Don't be anti-social

Social networking. Huge buzzwords, everyone's doing it. Well, 67 percent are doing it anyway. According to Jacobs Media's Tech Survey V for 2009, two-thirds of people surveyed visit and/or have profiles on social networking sites, up from 57 percent in last year's poll. Women, fans of alternative and active/mainstream rock, and 18-34-year-olds are the most avid social networkers. In fact, 82 percent of alternative partisans use sites like MySpace and Facebook.

But a key finding in this study is how social networking has caught on among older demographics and classic rockers. More than half of those who listen to stations that specialize in the Rolling Stones, Led Zeppelin and Pink Floyd spend time on these social networking outlets.

Another big story in this research is Facebook. Among all respondents, 43 percent now visit or have built a profile on Facebook, compared to 38 percent for the long-time pioneer, MySpace. In fact, Facebook holds its lead among both genders, as well as the various age groups.




Source: Jacobs Media, Tech Survey V 2009.

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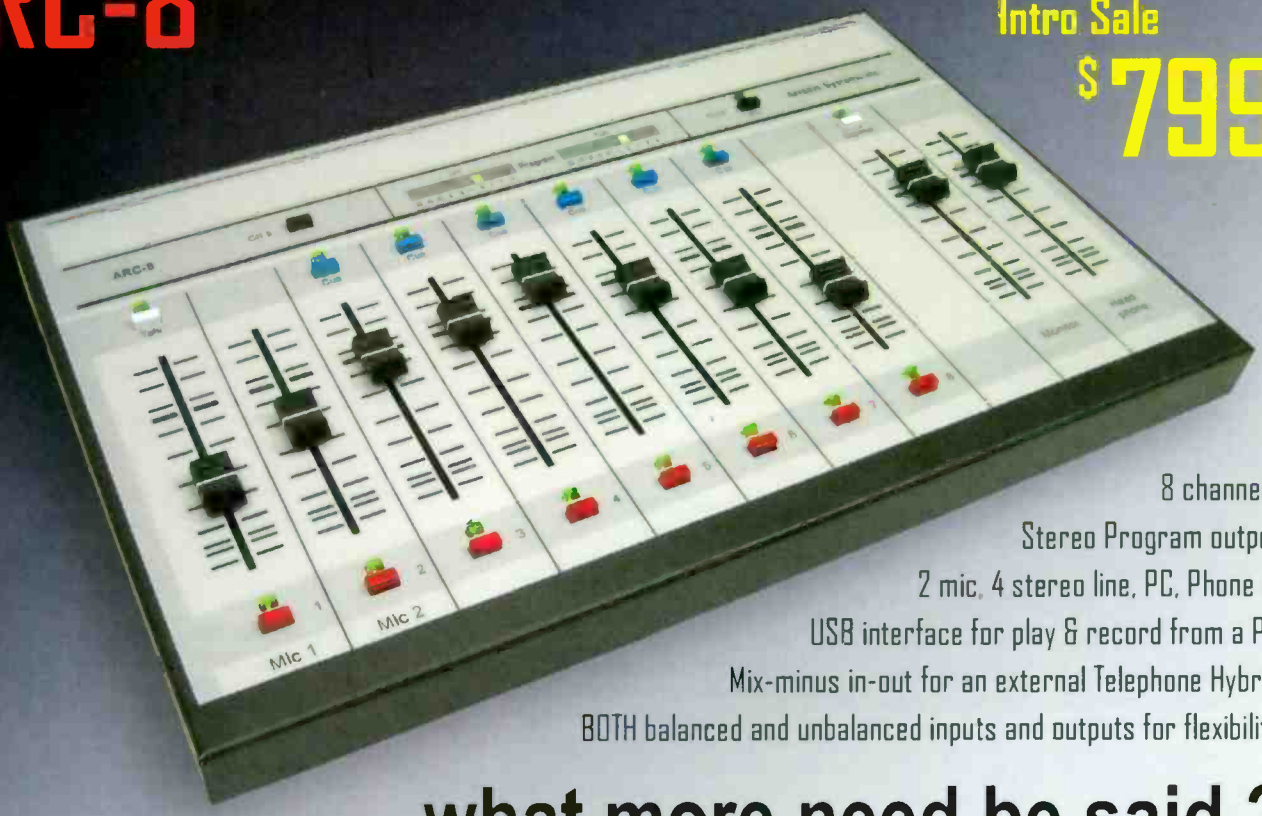


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**1. WheatNet-IP is easiest for a station to implement and configure.** It is, hands down,the easiest in the industry. No need for Wheatstone to provide factory on-site assistance unless you really WANT us there. The manual and app notes will have you up, running and stable in less time than any other system.

**2. WheatNet-IP is a natural for large facility multi-station networking (and for smaller facilities too!).** It uses the IGMP features of Ethernet Layer 3 switches to identify a multicast packet, see which ports are requesting that packet, and send it only to those ports. Traffic control is maintained and system bandwidth is optimized.

**3. Redundancy is critical.** A typical WheatNet-IP installation has multiple levels of redundancy. Each BLADE holds the complete map of the entire system within its onboard memory – we call it distributed intelligence – a system with 50 BLADEs has 49 backups with failover in the event of a failure. Cisco Stackwise technology provides redundancy in the central core TOC switch. A WheatNet-IP/E-Series console studio complex can stand alone, even if the TOC goes down, with backup analog or digital program audio feeding a back end router independent of the core Gigabit infrastructure.

**4. Modular is better**. Why would you want to combine your switch, mix engine and I/O into one box? Beats us. With WheatNet-IP, you install only what you need, where you need it. We believe in not overselling.

**5. Manufacturing quality is very important.** Wheatstone is proud to have the best track record in the business for build-quality, reliability and intelligent functionality. With far more up-and-running installations than anyone else, this is where we really shine. An investment in WheatNet-IP and E-Series control surfaces today will reward you with a future-proof, failsafe networking/control environment that's infinitely updatable and in for the long run.

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**7. Wheatstone is local.** WheatNet-IP and the E-Series, just like ALL Wheatstone products, are designed, engineered and built from start to finish in our New Bern NC USA facility. Everyone who works on our products is 100% knowledgeable and immediately available. You can relax – like the famous insurance company, you actually ARE in good hands.

With WheatNet-IP, we think we've done our homework. In fact, we know we have. And we're happy to say that we've got the best product on the market. To learn more, and there's a LOT more, get us on the phone or visit us on the web. We'll be happy to meet with you and get you everything you need.

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