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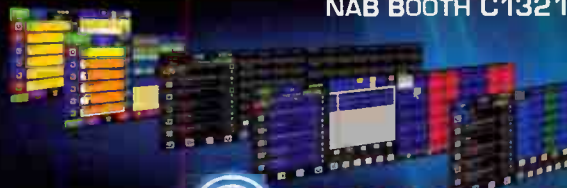
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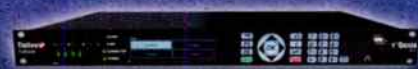


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## Genachowski Resigns From FCC



Federal Communications Commission Chairman Julius Genachowski will step down from his post this month. Genachowski was nominated by President Obama and confirmed by the Senate in 2009. He made his announcement in remarks to the FCC staff.

From his remarks:

"Over the past four years, we've focused the FCC on broadband, wired and wireless, working to drive economic growth and improve the

lives of all Americans. And thanks to you, the Commission's employees, we've taken big steps to build a future where broadband is ubiquitous and bandwidth is abundant, where innovation and investment are flourishing.

"To connect all Americans to broadband, we adopted a landmark overhaul of multi-billion dollar universal service programs, modernizing them from telephone to broadband and creating the Connect America Fund and the Mobility Fund, an unprecedented commitment to broadband infrastructure."

*Read more at RadioMagOnline.com.*

## Commissioner McDowell Also Announces FCC Departure

FCC Commissioner Robert M. McDowell announced his plans to step down from his post at the agency. From his statement:

"After nearly seven years of carrying out the incredibly high honor of serving the American people at the FCC, it is time to turn more of my energies towards an even higher calling: serving my family. After a great deal of deliberation, I have decided that I will step down as a commissioner of the Federal Communications Commission in a few weeks."

McDowell was first appointed to a seat on the FCC by President George W. Bush and unanimously confirmed by the Senate in 2006. He was reappointed to the Commission on June 2, 2009, by President Barack Obama. His current term ends June 2014.

*Read more of his farewell statement at RadioMagOnline.com.*



## NABSHOW NEWS

### Charles Bolden to Keynote NAB Show Tech Luncheon

The annual NAB Technology Luncheon will be held at the 2013 NAB Show in Las Vegas on April 10, 2013, from 12:30 to 2:00 p.m., in the Paradise Ballroom of the Las Vegas Hotel. This year's keynote speaker will be NASA Administrator Charles Bolden, who will make his presentation to the luncheon live via satellite from Washington.



Bolden became the 12th administrator of NASA in July 2009, following a 34-year career with the U.S. Marine Corps, from which he retired with the rank of Major General. Selected as an astronaut by NASA in 1980, Bolden was aboard the space shuttle for four missions between 1986 and 1994, commanding two of the missions. His flights included several historic elements, including deployment of the Hubble Space Telescope and the first joint U.S.-Russian shuttle mission.

### FCC's Pai and Rosenworcel to Speak at Show

Federal Communications Commissioners Jessica Rosenworcel and Ajit V. Pai will be featured in the session "Straight Talk From the Top - America's Communication Regulators" on April 9 at 10:30 a.m. During the session, NAB COO Chris Ornelas will lead a discussion with the commissioners on various regulatory issues currently facing broadcasters.

Rosenworcel joined the Commission in May 2012. Rosenworcel previously served as a legal advisor to former FCC Commissioner Michael J. Copps.

Pai joined the FCC as commissioner in May 2012 and focuses on creating a regulatory environment in which competition and innovation can flourish for the benefit of American consumers.

Commissioner Pai will also lead a session on AM radio revitalization at NAB Show on April 8 at 3 p.m.

Congress is weighing performance royalties on local radio: The Local Radio Freedom Act is now currently co-sponsored by 105 members of the House and four Senators.



BIA/Kelsey reported that U.S. local media ad revenues will grow by \$16 billion in 2017. National brands accounted for nearly one-third of total U.S. local media ad spending in 2012.

RTW has appointed Christopher Spahr as U.S. director of sales and operations. Spahr joins RTW from Sennheiser.

### FIND THE MIC AND WIN!

Tell us where you think the mic icon is placed on this issue's cover and you could win Hosa HDC-800 headphones. Send your entry to [radio@RadioMagOnline.com](mailto:radio@RadioMagOnline.com) by May 10, 2013. Be sure to include your guess, name, job title, company name, mailing address and phone number. No purchase necessary. For complete rules, go to [RadioMagOnline.com](http://RadioMagOnline.com)

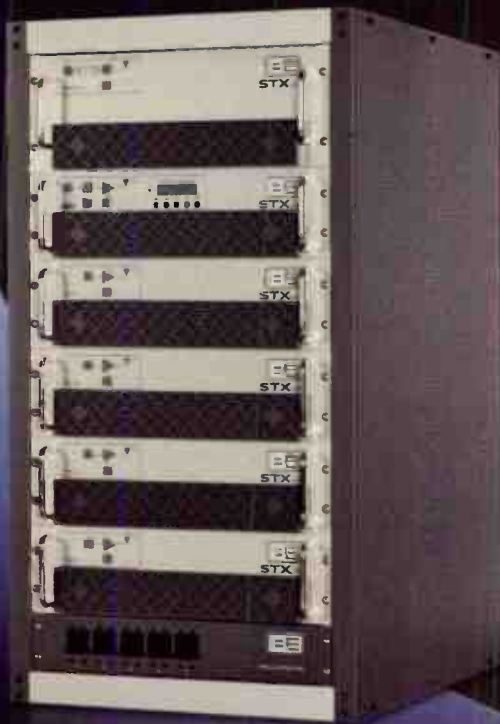


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# The Next Radio Listener



**W**orking in radio, we are constantly aware of consumer listening habits. When a study is released showing how consumers listen to or discover new music, we take note.

Last summer I saw a Nielsen Music 360 study that said radio is still the dominant way people discover new music (48 percent). This was followed by tips from friends and relatives (10 percent) and YouTube (7 percent). That sounds good for radio. We're still on top.

But looking into the survey closer, it was noted that teens listen to music most via YouTube (64 percent), followed by radio (56 percent), iTunes (53 percent) and CDs (50 percent).

Again, radio is doing well, but it's not on top. And it's not on top with teens. The established audience—adults—still listens to the radio. We grew up with it. Teens are the next wave of listener. If we don't capture them early, we won't keep them listening all their lives.

This is the ongoing challenge we face in radio: Keeping our audience despite the ever-increasing competition of other audio entertainment and information sources.

The NAB is pushing to have FM radio in all smartphones. To those outside radio this seems like a pointless pursuit to push what some consider a legacy distribution system in a modern device. But it keeps radio in front of the consumer in the most ubiquitous personal device available.

And more important, if a radio is active in every phone handset, it's no longer a feature consumers have to choose. If it's included, they will likely use it to some degree. If they have to think about getting a phone with a radio, they probably won't make the effort.

But there's more to a smartphone than talking on the phone or listening to the radio. A Pew Research study released in March says a high percentage of American teens (12 to 17) use their smartphones to access the Internet rather than a computer. And stats for other age groups are increasing in the likelihood of getting online with a smartphone.

The trend is (not surprisingly) that consumers are using their smartphones more and more. It makes sense to have a radio tuner in the phone.

And speaking of smartphone access, do you have a mobile-friendly version of your station's website? Mobile versions of websites are easy to establish with most content management systems.

And of course, you should have your station app available, too. And make it a real app and not just a link to the station's website.

Without needing a study, we all know that smartphone usage will continue to increase as time passes. But teens are embracing it much quicker. And again, it's teens (when they get a little older) who will be the next target listener.

Our established terrestrial transmission has a long life ahead, but its longevity will be aided by catering to the needs of the listener. Listening habits evolved slowly for the first 60 to 80 years. They are changing much faster as consumer technology evolves. And consumer use of the technology is changing, too.

Let's look ahead to engaging tomorrow's listeners today. 

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on-air feed as the trio traversed the winding roads of Perth. How did it all work out? Absolutely flawlessly – the show went on without as much as a speed bump!

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World Radio History



# Site Security in a Post 9/11 World

by Kevin McNamara

**T**he security at broadcast facilities has always been a concern, but after the events of Sept. 11, 2001, it took on a whole new meaning. Physical threats to a facility may be minor when compared to the damage that could occur if a cyber attack hit your network and disabled critical infrastructure. In 2002, the Homeland Security Act was enacted. Part of the act called for the formation of the Department of Homeland Security (DHS). In 2003 the DHS was formed as a result of the reorganization of several government agencies, including the Federal Emergency Management Agency and the Federal Communications Commission. The stated responsibilities of the DHS include:

- Emergency preparedness and response (for both terrorism and natural disasters), including volunteer medical, police, emergency management, and fire personnel;
- Domestic and International intelligence activities, largely today within the FBI;
- Critical infrastructure and perimeter protection;
- Border security including both land, maritime and country borders;
- Transportation security, including aviation and maritime transportation;
- Biodefense;
- Detection of radioactive and radiological materials;
- Research on next-generation security technologies.

The FCC subsequently formed the Public Safety and Homeland Security Bureau (PSHSB), whose mission is “Ensuring public safety and homeland security by advancing state-of-the-art communications that are accessible, reliable, resilient, and secure, in coordination with public and private partners.” The PSHSB is primarily dealing with the security of our overall communications

infrastructure including wired and wireless communications systems as well as the myriad cyber-security issues we face daily. The PSHSB tends to focus on public safety related infrastructure vulnerabilities as opposed to traditional broadcast services.

The Media Security and Reliability Council (MSRC) is a “Federal advisory committee that was formed to study, develop and report on communications and coordination designed to assure the optimal reliability, robustness and security of the broadcast and multichannel video programming distribution industries in emergency situations.” Its members consist primarily of representatives from broadcast groups, networks and other organizations related to the industry. In 2004, the MSRC produced the “Local Radio Station Model Vulnerability Assessment Checklist,” which you have probably seen and likely used the assessment. In 2005, they also produced a detailed document called the “Local Radio Station Model Disaster Recovery Plan and Incident Response Manual,” which was produced as a tool that can help broadcasters recover from short-term disaster situations and assists with creating an incident response manual that would guide the staff to ensuring an efficient recovery. It also included the vulnerability checklist noted above.

In general, the document specifies certain guidelines that should be followed, such as:

- Radio broadcasters should have appropriate physical security, augmented by security personnel and/or video surveillance at their key facilities, including studios/newsrooms, satellite transmit and receive sites and antenna/transmitter sites.
- Radio broadcasters should employ diverse power grid sources wherever feasible.
- Radio broadcasters should take appropriate measures to provide backup power capabilities for their key facilities, including



studios/newsrooms, satellite communications and transmitters.

- Radio broadcasters with local news origination should ensure that they have robust and redundant ways to communicate with external news services and remote news teams, such as the use of mobile radio and Internet to augment cell phones.
- Radio broadcasters should have backup signal feeds to their primary satellite transmit and receive sites.
- Radio broadcasters should have redundant signal paths to their primary and backup transmission facilities.
- Radio broadcasters with local news origination should plan to have emergency origination capability at a separate location from their primary studio (e.g., backup studio, transmitter site, remote van, another station, etc).
- Radio broadcasters with local news origination should have a remote vehicle, or some means of delivering live news and information from a remote site.
- Radio broadcasters should have the capability of receiving a remote feed at an additional site from their primary studio (e.g., directly at their tower sites, at backup studios, etc).

- Radio broadcasters should have a backup satellite transmitter and receiver, or an alternate means (e.g., a satellite radio receiver, a dedicated phone line or a streaming audio Internet connection) to send and receive signals from and to national news services in emergency situations.
- Radio broadcasters should have a backup transmitter, and should attempt to make practical arrangements for geographic diversity where possible (e.g., provisions for emergency use of other backup transmitter/antenna facilities in the community or other means).
- With the cooperation of federal and local policy makers, all radio broadcasters in a market should collaborate to increase their collective site diversity and redundancy, including their collective news studios, operations, satellite transmit and receive facilities and transmitter and antenna sites.

**CYBER ATTACKS: THE REAL THREAT?**

While there is always the threat of disaster, natural or man-made, to the physical infrastructure of your facility, perhaps the most likely threat will be through some form of cyber attack to PCs, networks and even mobile devices. The majority of these attacks are reportedly originating from countries such as China, Russia, Iran and North Korea to name a few. The rates of attacks have escalated dramatically over the past three years. While many of the attacks occurring in the United States are targeting federal, state and local governments, banks and other large corporations, the reality is that any device connected to the Internet are vulnerable. Cyber security has become a big enough problem that new positions or even whole departments have been created to deal with the situation.

Radio facilities might be particularly vulnerable as they tend to utilize network(s) to handle different functions (i.e. back office, traffic, news, sales and streaming) within the same facility. While they may utilize different servers to perform specific functions, it is important they are isolated with appropriately configured firewalls. I would be careful to assume that because particular functions operate on a local or corporate wide intranet, that there is no chance of attack. Consider that any desktop PC that could access to one of these private networks, either directly or through a VPN becomes an opportunity to infect that private network if, for example, it is also connected to the Internet. The fact is that the same PC doesn't need to have access to the Internet; it could get infected through the exchange of an infected thumb drive. Anti-virus programs do a great job to stop most potential infections, but not necessarily all of them. Keeping the programs virus library up to date certainly is good practice, but does not guarantee something will not slip through.

One client, a large municipality, recently experienced an attack that was the result of a few employees responding to an email, requiring them to change their password. The link sent them to a rogue site, which looked official. Although it was an innocent (and rookie) mistake, it cause their servers to send about 300,000 spam emails per day and took about two weeks to contain. While this is just one example, there are hundreds of different types of attacks occurring each day around the world. It is not hard to find stories and statistics on the Internet. Some examples include energy company BP who says it suffers

**LINKS**

"Local Radio Station Model Vulnerability Assessment Checklist"  
[transition.fcc.gov/MSRC/documents/RadioVulnerabilityChecklist.pdf](http://transition.fcc.gov/MSRC/documents/RadioVulnerabilityChecklist.pdf)

"Local Radio Station Model Disaster Recovery Plan and Incident Response Manual"  
[mediasecurity.org/documents/Radio\\_DRP\\_v1\\_0\\_Final\\_Release.pdf](http://mediasecurity.org/documents/Radio_DRP_v1_0_Final_Release.pdf)

50,000 attempts of cyber intrusion a day; the Pentagon reports getting 10 million attempts a day; the National Nuclear Security Administration, an arm of the Energy Department, records 10 million hacks a day; and the United Kingdom reports 120,000 cyber incidents a day.

It is a different world, and as a station engineer/manager, you need to be aware, not only of the steps needed to ensure the physical security of the property, but to the vulnerabilities of your network infrastructure. 0

*McNamara is president of McNamara Associates, Cape Coral, FL.*

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by Lee Petro

# LPFM Window On the Horizon

**T**he FCC is moving swiftly to clear out and grant the FM translators that will not preclude future low-power FM (LPFM) stations.

While many were skeptical the FCC would meet its aspirational goal of having an LPFM window by Oct. 15, it is likely this might be more than a pipedream. Since LPFM stations must comply with certain eligibility criteria to receive a construction permit, there is no time like now for these applicants to get their paperwork in order.

**Eligibility.** Only nonprofit educational organizations and tribal applicants who show that the proposed station will be used for the advancement of a non-commercial, educational program will be eligible to obtain an LPFM license. An applicant must be local in order to submit an application, and must certify that it will continue to remain local in the event it receives a license.

The FCC defines local in two different ways, depending upon the size of the community. For those communities within the top 50 urban markets in the U.S., an applicant is considered local if: the applicant's local chapter or branch is headquartered or has a campus within 10 miles of the site of the proposed transmitting antenna; or 75 percent of the applicant's board members reside within 10 miles of the proposed antenna site.

For communities outside of the top 50 urban markets, an applicant is considered local if: the applicant's local

chapter or branch is headquartered or has a campus within 20 miles of the site of the proposed transmitting antenna; or 75 percent of the applicant's board members reside within 20 miles of the proposed antenna site.

**Ownership Limits.** The FCC's rules prohibit attributable interests in more than one LPFM station. However, to create incentives for tribal entities to obtain LPFM licenses, the FCC will permit a tribal applicant to file for two LPFM facilities. In addition, eligible applicants that propose public safety purposes for the service will be permitted to file two applications, but one will need to be identified as the priority application, and the other application may not be mutually-exclusive with any another LPFM application.

**Point System Determinations.** Assuming that more than one application is filed for the same geographic area, the Commission developed a point system to compare the mutually exclusive applicants. The FCC will grant one point for each of the following criteria it meets. The applicant with the highest point total becomes the tentative selectee to receive the LPFM license.

(1) **Established Community Presence.** An applicant must submit documentation with its application to verify that, for a period of two years prior to filing an application it qualified as a local applicant, as described above.

(2) **Local Program Origination.** An applicant must pledge to originate locally produced programming at least eight hours a day. Local origination is the production of programming, by the licensee, within 10 miles of the proposed transmitting antenna.

(3) **Main Studio.** An applicant must certify that it will maintain a main studio with program production capability, and have a staff at least 20 hours per week between 7 a.m. and 10 p.m., within 10 miles of the transmitter site for top 50 markets, and within 20 miles for markets outside the top 50.

(4) **Bonus Point.** An applicant demonstrating that it is entitled to local program origination and main studio credit receives an additional point for making both certifications.

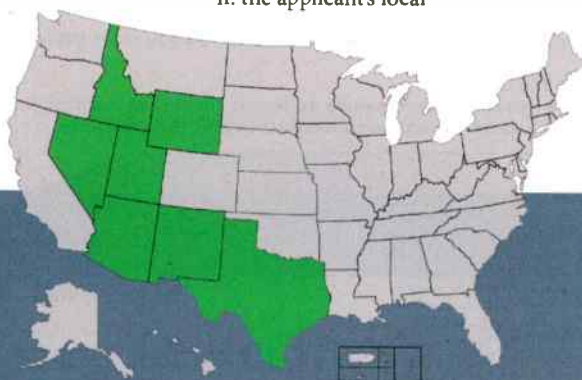
(5) **Diversity of Ownership.** An applicant having no attributable interest in any other broadcast station.

(6) **Tribal Applicants Serving Tribal Lands.** An eligible tribal applicant, certifying service to a defined-tribal land.

**Tie Break.** Two or more tied applicants may submit a time-sharing proposal. If a proposal includes all of the tied applications, all of the tied applicants will be treated as tentative selectees. Otherwise, the FCC will aggregate the points of time-share proponents to determine the tentative selectees. If applicants do not resolve a tie through voluntary time-sharing, the FCC awards each tied and grantable applicant an equal, concurrent, and non-renewable license terms.

As noted above, the FCC is swiftly moving through the FM translator backlog. Since there hasn't been an LPFM window for more than 10 years, it is likely that there will be a large number of applications filed during the window. To ensure that applicants aren't dismissed for solvable problems, now is the time to prepare. **0**

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



## **DATELINE**

Stations in Texas run License Renewal Post-Filing Announcements on April 16, May 1 and 16. Stations in Arizona, Idaho, Nevada, New Mexico, Utah, and Wyoming run License Renewal Pre-Filing Announcements on April 16, May 1 and 16. April 10: Stations place Issues/Programs Lists for 1Q2013 in public inspection file.



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# Remote Site Access and Connectivity via Wireline

It's all about good connections.

By Doug Irwin, CPBE DRB AMD

**T**he minute I leave a transmitter site I have a concern about remaining in contact with all the equipment that is running there. Having remote access to the site is very important for my peace of mind. There's nothing worse (in our line of work) than having something bad happen at the transmitter site, and not being able to see exactly what it is. The ability to take action remotely is clearly just as important.

The business continues to evolve: I used to have one transmitter site to worry about. Now it's a half-dozen. We all know that studios used to be occupied all the time—and that's no longer the case. For that reason, having remote access to the studio site has become important as well. As the number of sites a typical Broadcast Engineer has to deal with increases, it's plain to see that remote access has become an absolute necessity. That's our topic this time around—specifically, via “wireline”. (Next month we'll talk about wireless access to a site.)

When I say “wireline” access I mean more than just the ability to call up a site on the phone. For many years that was good enough—but it just isn't any more. Sure, it's great to be able to talk on the phone—and dial-up access can provide for a great backup for more complicated systems. (“More complicated” means they need to be booted occasionally.) Dial-up only access is very, very limiting though.

The nature of remote sites sometimes precludes them from easy wireline access, but for purposes of this article we need to assume that some sort of connectivity to the local telephone (or cable TV) company exists.

*T1 Connectivity.* If you know you can get a T1 from your local telco than more likely than not you are already using one for an STL. The question then becomes one of capacity.

What data rate do you need up to the site? Are there any spare timeslots available on the current link, and if so, can they accommodate the data rate needed?

The most common T1 STL in use is probably the Harris/Intraplex STL HD. This system was designed to accommodate IP transport for HD radio. At bare minimum, the transport

for HD uses two timeslots (128kb/s) and as such won't accommodate any other uses for data at the far end. On the other hand, if you find yourself with an Intraplex system, with spare timeslot capacity, you might want to consider a LAN extension by way of a pair of Harris DS64NC cards and a pair of MA427 interface cards. Each available timeslot adds 64kb/s to the total available across the link.

A pair of DS64NC cards makes up a LAN bridge, which is a simple means of making a Layer-2 (Ethernet) connection between two isolated locations. The network number will be the same on both sides of the bridge. Another advantage of the LAN bridge (aside from ease of setup) is that a certain amount of traffic regulation is afforded to your system; the bridge only passes frames from location to location if they truly need to pass.

Another option is the Moseley SL9003T1. This device also allows the



Moseley SL9003T1

user to make use of part of the T1 bandwidth for the transmission of data via IP. Each end has an Ethernet interface and the system acts as a LAN bridge. There is, of course, a tradeoff between how much data

you can use for audio transport and how much you can use for data transport, since the sum total is limited. As an example, with the SL9003T1 you can go up to 512kb/ps while passing an uncompressed audio pair at a 32kHz sample rate.

An alternate way to use a T1 to connect two ends together via IP is to obtain a pair of routers with T1 interfaces. You can purchase new ones, of course;



Harris Intraplex STL HD

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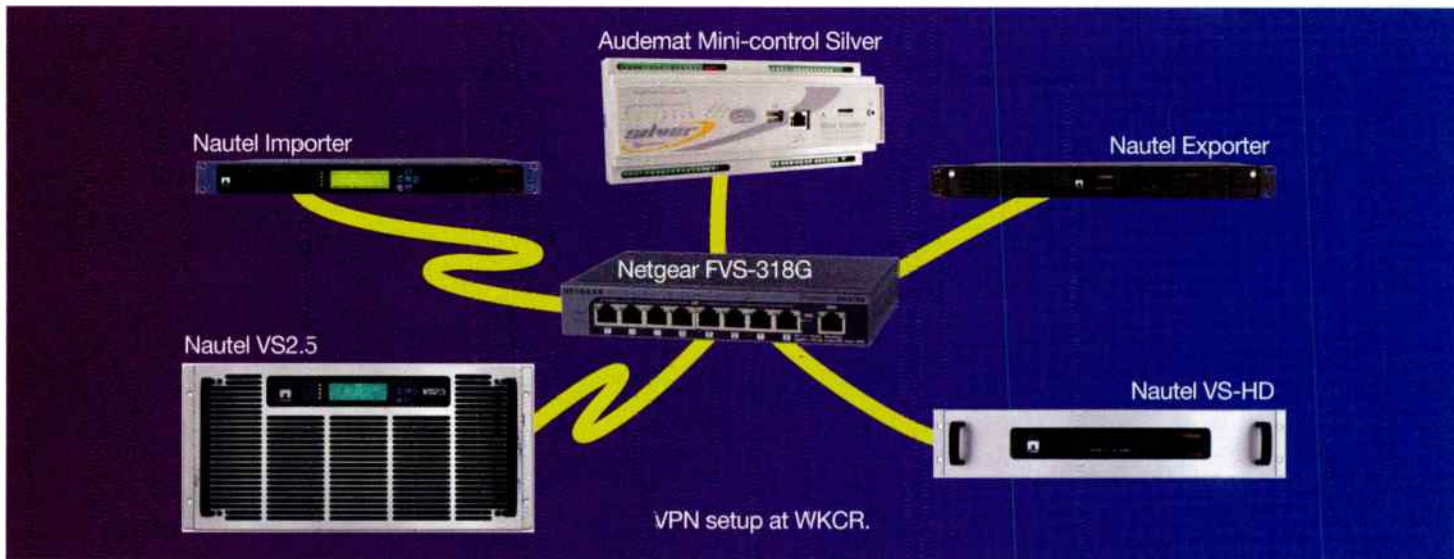
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but there is a very active after-market for devices such as this. (Search for Cisco 2600s on eBay, and make sure they have T1 WIC. This will allow direct connection to telco.) In this case, you'll be making a Layer-3 connection to the remote site, so the network numbers will be different on both ends. At the near end, you'll use an Ethernet interface for the router. At the far end, you will also use the router's Ethernet interface, but in that case (unlike your headquarters end) you'll use that router as the gateway. Add a static route to the configuration of your gateway router back at headquarters, as well as the far-end router, so that IP traffic will flow in both directions.

**DSL connectivity.** Fortunately, DSL circuits have become available at more and more locations, and hopefully your remote location is one of those. There are several ways to make use of DSL, mainly to be discussed later in this article. Suffice it to say that you can often obtain download speeds nearly that (or greater) than T1 speeds in many cases. If symmetrical upload/download speed is an option from the provider, order that option. If you can order multiple IP addresses with the DSL access, you may want to consider that as well; as you will see later in this article, that isn't really necessary.

**Cable Modem.** If the local cable TV company happens to provide service at your remote location, this can be a good option. Again, if there is an option for upload/download speed symmetry, order it. Multiple IP addresses may be an option; likely it isn't worth the extra expense.

**Metro Ethernet.** If your near end and far end both have access to metro Ethernet, this could be a great option. Metro Ethernet will provide you with a Layer-2 connection between ends—just as if you had an Ethernet cable “running between” the two sites. This will facilitate much greater speeds than the other methods discussed, and you'll be able to do things like add remote backup file servers. The far end will have a lot more capability than was previously possible; this capability may very well allow you to justify the extra expense involved.

The way in which you gain access to the transmitter site (or any remote site for that matter) depends upon whether or not a LAN extension is in use (via a point-to-point data circuit, or metroethernet) or alternatively the public Internet is in use (DSL or cable modem). In the case of the LAN extension, you'll use either a remote desktop application, or VPN.

On the other hand, if you use the public Internet then you must deal with

accessing multiple hosts and of course security issues that are necessitated by the public Internet. Earlier I mentioned the idea of getting multiple IP addresses from the service provider. Since public IP addresses are a finite commodity, your ISP is going to charge you for the privilege of having them. If you obtain (as an example) five IP addresses on your remote connection, you could simply place one device at each IP address. This simplifies the system in that, from your remote location, you'll simply open a browser, looking at that IP. Naturally the device in question will require credentials so that there is at least a modicum of security. The downside is that your network size is limited on the far end. All is well till you go to add the sixth device.

There are two other approaches to accessing your new remote network. First, you could use a router on the far end, and configure port forwarding, so that multiple devices on the LAN side of the network can all be accessed remotely; secondly, you could set up VPN access, with the same goal. The advantages to these methods is that you only need one IP address at the far end, and your LAN size (though not unlimited) is going to be larger than you're going to need in the foreseeable future. Let's look at both approaches.

I set up a remote transmitter site network for WKCR last year, using an inexpensive VPN router from Netgear known as the FVS-318G. At first this may sound a little difficult; but in reality, it wasn't hard at all. If you opt for this method, by all means read the manual first (at least once) and have the VPN router in front of you the first time to configure it. The reason is probably pretty obvious—if you make a mistake you can always “boot” the router to get back to the factory defaults. (If at first you don't succeed ... try, try again. You know how that goes.)

Now in the example I'm pointing out, the network has seven hosts:

- > The VPN router itself, as the gateway
- > A Nautel Exporter
- > A Nautel Importer
- > A Nautel VS2.5
- > A Nautel VS-HD
- > An Audemat Mini-control Silver (remote control)
- > An IP codec, which is the HD2 source.

The FVS318G is set up with a VPN policy that lets you connect



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remotely assuming you have the VPN client with the correct configuration. Without the VPN client, you won't be able to see the network. There are two ways to connect to this router: Via the public interface; or, if you are at the remote site, by plugging in to the remaining port and setting the local computer for dhcp. (No VPN client needed in this case.)

There are several configurations on the VPN router to be done. Like any device that faces the Internet, you'll need the IP address given by the ISP, along with the gateway and subnet mask. Once you set that, you'll need to configure the LAN network number and subnet mask and the gateway address. Since this is a VPN router, you have two other configs to do: the IKE Policy and the VPN policy. In configuring



Figure 1



Figure 2

this router, I used a lot of defaults for the IKE policy as well as the VPN policy, which makes the configuration pretty easy. Look at Figure 1. This is the IKE policy configuration page. There were only three things to configure: the remote and local identifiers, and the



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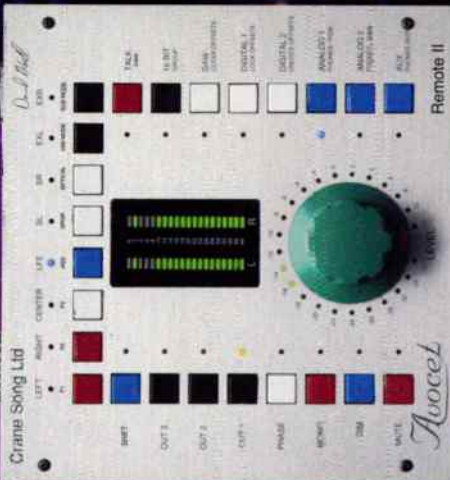
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## TRENDS IN TECHNOLOGY

pre-shared key. I used factory defaults for the rest. See Figure 2 now (previous page). I had two things to enter—one in the “general” window, and one in the ‘traffic selection’ window.

Of course that’s only half of the story. You have to have the VPN client from Netgear on your remote computer, and when you get that, it needs to be configured correctly.

There are five separate places for configurations, though some are left blank. I’m including them anyway.

- Phase 1 (authentication)
- P1 Advanced
- Phase 2 (IPSec configuration)
- P2 advanced
- Scripts

I would recommend for starters configuring your VPN client exactly as I describe to get going. This isn’t meant to be a primer, but I do want to demonstrate that the configurations aren’t hard.

For phase 1 (authentication) see Figure 3. You need the address of the public interface of the remote VPN router, obviously. You also need the pre-shared key. The other settings match the factory defaults described earlier. For P1 advanced, see Figure 4; you’ll need the remote and local identifiers. For Phase 2 (IPSec), see Figure 5. Here you need to know the remote LAN network number and subnet mask. Other configurations remained as the factory defaults.

After the configurations are done, you’ll tell the client software to open the VPN tunnel. Once you have it working, you’ll then connect to hosts on the far end by referring to them with their remote network addresses. Say for example my Nautel VS2.5 was given an address on the remote LAN of 192.168.1.100. When I open a browser on my client machine, I would use that address.

There is another approach to the same problem of having multiple hosts on the private side of a DSL or cable modem, and that’s by using port translation. (Thanks to Dennis Sloatman of CCLA for showing me this one.) In this example we’ll look at a simple D-Link EBR 2310, using its feature called “virtual server”.

First though let’s review the problem at hand. Say you have a remote Internet connection with a cable or DSL modem (with router functions). Your ISP has given you one IP address. You, of course, have more than one device to install on the private side of that router; and, to make matter worse, each of those devices expects to see requests

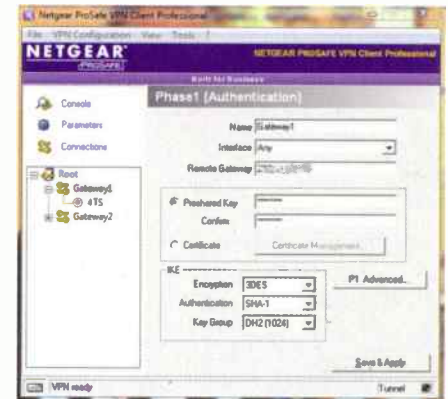


Figure 3



Figure 4



Figure 5

coming in for port 80. You can use the VPN approach that I described already, or you can use port translation, to be described below.

After the device is attached to its Internet connection, you of course have a little bit of configuring to take care of. You'll select the "advanced" tab next. See Figure 6. This shows a typical configuration for "virtual server" on this D-Link. Here are the instructions previously given to this router:

The KVVS Wi-fi modem is accessed remotely by sending messages to the public IP, requesting port 9066. When the router receives these packets, they translated for the private side, and sent to the host at address 192.168.252.50, port 80.

The KVVS webcam is accessed remotely by sending messages to the public IP, requesting port 1024. When the router receives these packets, they're translated for the private side, sent to the host at address 192.168.252.40, port 80 (again).

There is a Barix Exstreamer that can be accessed remotely by sending messages to the public IP, requesting port 9152. The D-link recognizes




Figure 6

these packets, and translates them for the private side, sending them to the host at address 192.168.252.60, using port 80 yet again.

You can go on and on with this, adding practically as many hosts as you want. The limit likely has more to do with the link's connection speed than anything else. I should note that the port numbers configured for the public side are random.

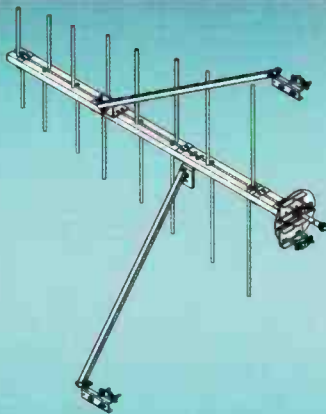
Often times I feel like I need to be in more than one place at the same time.

Clearly I can only stand in front of one rack at a time; but with reliable, fast remote access, I can virtually be in many places at the same time. It makes my job easier, as it will yours. Knowing what is going on at all those remote sites—or at least being able to figure it out fast, does give me some peace of mind, and some satisfaction in that I feel everything is under control. 

*Irwin is RF engineer/project manager for Clear Channel Los Angeles. Contact him at doug@dougirwin.net.*

NEW

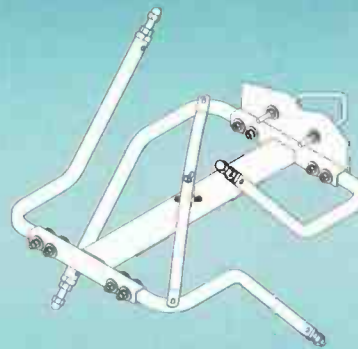
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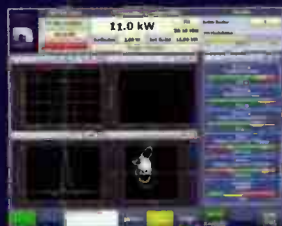
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# Fresh Digs

Emmis starts a new history in Terre Haute

By Chriss Scherer, editor



**E**mmis Communications became a station owner in Terre Haute, IN, in 1998 when it bought WTHI and WWVR. At the time, the stations were co-owned with and housed in the same building as WTHI-TV. The TV station signed on in 1954 from a facility in the heart of downtown Terre Haute. The original TV tower, which supports WTHI-FM, still stands on the site.

After more than 50 years, this original studio facility was due for an upgrade. Emmis began selling its TV stations in the mid-2000s, so the radio stations were looking for a home of their own by 2012.

A local developer had plans to build a new office building next to the former studio building. With one FM using the tower as its main transmitter site, the new office building was an ideal location. Emmis made plans for the move.

## THE NEW AND THE OLD

The WTHI-FM transmitter was installed on the third floor of the former studio building. With the pending move, the first step was to build a new transmitter building at the base of the tower. This was completed while the new office building was being built.



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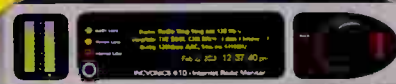
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TOC

On the air

To relocate the transmission facilities, one transmitter was moved to the new transmitter building, and the coax feeding the antenna was pulled out of one building, rerouted down the tower and attached to the newly installed transmitter switch. Then the second transmitter was moved into place. Axia Nodes were installed in the new transmitter building and in the old studio to handle the audio. Once the new studios were complete, an audio switch from the old studios to the new studios was seamless.

Once the new studio building was complete, Kendall Myers, chief engineer of the Emmis stations, got to work building the new studios. Equipment had been ordered, and some prewiring had been completed to speed the installation process. Myers also selected an Axia audio system for the facility.

From the time Myers was given access to the new facility, it took two weeks to



complete the installation of the new equipment. The two stations moved into their new homes in August 2012. Shortly after, Emmis closed on the purchase of two more stations: WFNF-AM and WFNB-FM. The construction plans included these stations,

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When WFNB and WFNF came in, their STLs were mounted on the tower and audio was fed from the fiber optic cable.

There are six 6" conduits run between the rack room and the



WWVR air studio

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Voice over studio

transmitter building. There's plenty of future capacity; all the connections between the two rooms is via a single, 12-strand fiber optic cable. Even the satellite connects to the fiber. The L-band LNB output is converted to a digital signal and multiplexed on the fiber. The feed is demuxed in the rack room to feed the satellite receivers. This places the satellite receivers within the studio area, but not at the expense of running several hundred feet of coax, and without the resulting RF losses.

There are four studios in addition to the rack room. Three of the studios are nearly identical, with two of them (WWVR and production) being mirror images. The studio for WTHI has an additional space for a cohost or visiting guests. These three studios have Axia iQ consoles. The fourth studio is a smaller voice-tracking room, which uses an Axia Radius console.

WFNB and WFNF are currently fully automated and run in the background from TOC.

Myers was impressed by the process to order the Omnirax furniture. He supplied CAD drawings of the facility to Omnirax, who then virtually placed the furniture within. Myers had an idea as to what the studios would look like before the furniture was even manufactured.

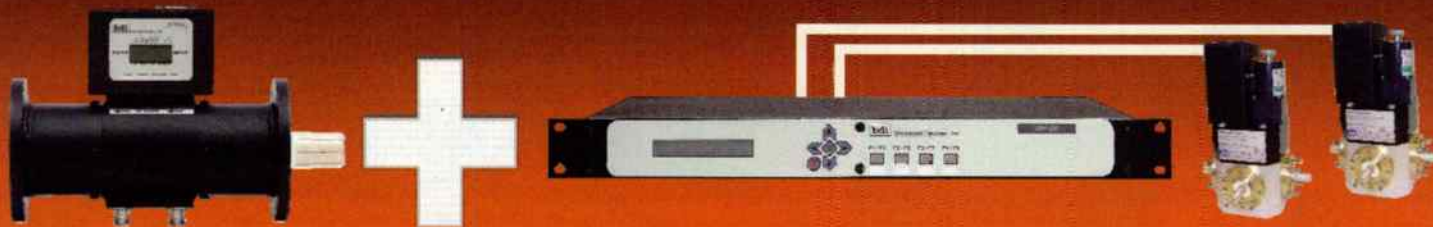
The stations use WideOrbit for its audio storage and playback. For mic processing, Wheatstone Vorsis M-2 mic processors are installed in the rack room. Because the mic processors are controlled remotely, it's easy to get in



and make changes as needed. Installing the mic processors in the rack room also made it easy to tie them into the audio network.

All four stations send audio to the transmitter building via the fiber

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The 1950s tower



New building from the street

equipment. The CAT-5 and CAT-6 cabling used throughout the facility is color-coded for easier identification. Blue is used for the audio network. Black is used for analog audio.

After more than 50 years in one studio building, the Emmis stations have started writing a new history in a new facility. 

optic run and the Axia network. From there, the three off-site transmitters are fed via RF-based STLs with Moseley PCL-6000 and Marti STLs. A Comrex Access and Bric, Moseley Rincon and Telos Z/IP are available as backups if needed.

The rack room is adjacent to the studios, although accessed via the common hallway. While it was not the ideal setup to have the rack room accessible from outside the studio area, the floor layout dictated it be that way. As an added surprise, once the plans were set it was realized there was a structural support beam

in the rack room, which dictated the L configuration of the racks.

There are five racks in the rack room. Two support the office network and phone system. Three support the audio network and audio

### EQUIPMENT LIST

Axia IQ, Radius, QOR32, various nodes  
Blonder-Tongue FILR S4A-3000  
Broadcast Tools ACS 8.2 Plus  
Broadcasters General Store  
(primary equipment dealer)  
Cisco Catalyst 3560G  
Comrex Access, Bric  
ESE ES-185U  
EV RE27N/D  
General Wire and Cable  
Mika mic and monitor stands  
Moseley Lanlink  
Moseley PCL-6000, Rincon  
Omnirax Phoenix  
Quintech LS series  
Telos One, Z/IP One  
Titus Labs on-air lights  
TrippLite Smartpro UPS, KVM extenders  
Videotek APM-200  
Wheatstone Versis M-2  
WideOrbit automation  
Yamaha HS80M

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Omnirax is proud to have been a partner on Emmis Communication's recent upgrade to its Terre Haute, IN, facility. We worked closely with Chief Engineer Ken Meyers to take advantage of Omnirax' unique collaborative design process to outfit four studios in the newly built office building. Omnirax had previously placed custom Innova furniture in five studios at Emmis' KPWR, Los Angeles location. In Terre Haute, the dimensions favored using the Phoenix line's stock configurations, but dressed up with custom laminate and molding to match the color scheme throughout the building. The Phoenix line is built with the same rugged materials and constructed with the same exacting techniques as the Innova line, but at a significantly lower price point. Just one more reason why Omnirax is "The Engineer's Choice."  
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by Doug Irwin  
CPBE DRB AMD

# Corian Tips, Handy Tools

**T**he question was put to me: “What’s the best way to work with Corian?” It’s a very common material for studio furniture—countertops mainly. Even the best furniture designs require modifications as time goes on, so it makes sense to learn how.

Mic stands are the most likely item to add to Corian countertops. Drilling the hole all the way through, and then putting bolts in, with washers and nuts on the bottom is the usual route. But what if circumstances prevent that? Can you just drill in to the Corian, without relying on going all the way through? Corian is plastic, after all. It is recommended not to use wood screws or sheet metal screws, because the material cannot expand around the screw, like wood or metal. It can easily crack if you try that. Emhart Teknologies ([emhart.com/brands/heli-coil](http://emhart.com/brands/heli-coil)) makes the Heli-Coil, which is



Emhart Teknologies  
Heli-Coil

an insert that is installed in a tapped hole. To install a Heli-Coil in Corian, you would drill out a pilot hole for a tap; tap the hole; and then install the Heli-coil in to the newly tapped hole. The Heli-coil then provides very strong threads that can effectively hold items.

What about drilling holes to pass cables through? Larry Parr ([ehow.com/how\\_6208519\\_drill-hole-through-corian.html](http://ehow.com/how_6208519_drill-hole-through-corian.html)) recommends cutting holes in Corian in the following manner:

Use masking tape or blue painter’s tape to mark the location of the hole. Measure twice, of course.

Drill a hole just smaller than the pilot hole of the hole saw you plan to use.

Insert the hole saw’s pilot bit in to the hole you just drilled. Use a sharp (perhaps brand new) hole saw for the work. Use slow speed, and don’t use excessive pressure.

Sand the edges of the hole when complete.

## TOOL BOX

Occasionally I talk about very handy and/or clever tools to have while working at transmitter sites. Recently I was made aware of a few of products from Sensible Products ([sensibleproducts.com](http://sensibleproducts.com)). Inspection mirrors are always good to have if you are working on transmitters. Like any mirror though, the image is reversed, right? Well, not if you get the Rite Site mirror, because it corrects the image. The Ultimate Puller is good to have if you find yourself changing out blower motors. Often you can obtain a new motor, but getting the squirrel cage apart is sometimes hard to do. Ultimate Puller addresses that part of the problem.



Sensible Products  
Ultimate Puller

The company also makes the extendable magnetic flashlight that has an inspection mirror on it (no image correction though). The Magnetic Stick Light could come in very hand while you have your head stuck in some kind of cabinet, whether a transmitter or studio furniture (as long as a piece of steel is nearby). If you’re like me and you occasionally drop a screw then having the lighted pickup

tool would be very good. All these tools would be great to have on-hand at the transmitter site. Plan ahead, have them in place and make your job just a little bit easier. ☺



Sensible Products  
Magnetic Stick Light

*Irwin is RF engineer/project manager for Clear Channel Los Angeles. Contact him at [doug@dougirwin.net](mailto:doug@dougirwin.net). Thanks to Dennis Sloatman for the Sensible Products tip.*

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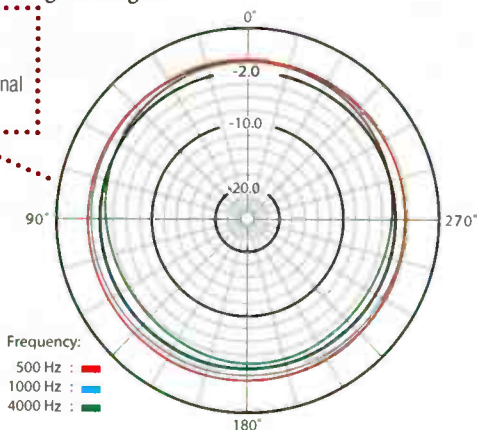
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## RØde Reporter

by Chris Wygal, CBRE

**R**adio news reporting is fast-paced. Upon arrival at the scene of the interview, news gatherers generally have no clue as to what auditory challenges he or she will face. In addition, reporters certainly have no time to choose a microphone, nor do they want to carry several of them. RØde Microphones has spent more than 20 years at the drawing board considering the specific audio needs of the media world. As a result, the aptly named RØde “Reporter” is a handheld microphone created for news gathering on the go.

Dynamic element, omnidirectional pattern



### CONSTRUCTION

Out of the box, the first noticeable feature of Reporter is its 10.7” length. Designed with a one-on-one interview in mind the extended length keeps waving the mic to and fro to a minimum. It also allows for some comfortable distance between the interviewer and interviewee. The Reporter has a dynamic omnidi-

rectional element; a feature that bolsters performance in several ways. The polar

pattern is perfectly omnidirectional at all frequencies. Essentially, both the interviewer and his subject can stand centered anywhere around the Reporter without concern for off-axis coloration or other annoying proximity differences. The dynamic element is less sensitive to ambient noise and very tolerant of wind noise and plosives. However, it is important to note that Reporter need not be held at close proximity to a speaker’s mouth unless necessary. Reporter has plenty of output. While any vocal placement is acceptable, when Reporter is held at chest level, optimal performance is obtained. Problematic environmental noises and wind are reduced due to frequency response and an internal plosives screen design. Reporter’s internal shock mounted capsule and die cast aluminum body help keep handling noise at a minimum while protecting the element inside from the bangs and bumps of field reporting.

The mic’s frequency response is tailor-made for optimized speech intelligibility. 20Hz to 30Hz is rolled off significantly (-14dB) with a gradual slope and 0dB leveling at a little more than 100Hz. This design is brilliant for several reasons: Plosive reduction, wind noise reduction and a minimalizing of unnecessary low frequencies that all-to-often “muddy up” field audio. Speech clarity is key, which is why a slight 2dB

notch at 1.5kHz helps accentuate vocals. Then from 4-15 kHz a 4dB slope with a moderate Q provides a touch of brightness and clarity to the response curve with a smooth roll-off afterward to prevent too much sibilance.

The polar response is effectively a perfect circle at 500, 1,000 and 4,000 hertz. This characteristic makes it a consummate omnidirectional microphone and perfect in situations where the interviewer has folks from all directions providing commentary. As previously mentioned off-axis coloration goes unnoticed.

### PRACTICAL USE

I took the mic on an interview with a college music professor. Environmentally speaking, the location was ok. A moderately reflective room, a big-voiced professor, students chatting outside the door, HVAC noise and instruments in adjacent rooms embodied the location. At the start of the interview, I noticed right away that the professor and I did not need to be miked closely. Again, at chest level and evenly spaced between us, the mic performed smoothly. I didn’t need to wave the mic back and forth. The resulting audio was a natural, clear sound of the two voices. No booming low frequencies and no unwanted ambient sound was recorded. Reporter produced a

Internal wind and plosives screen

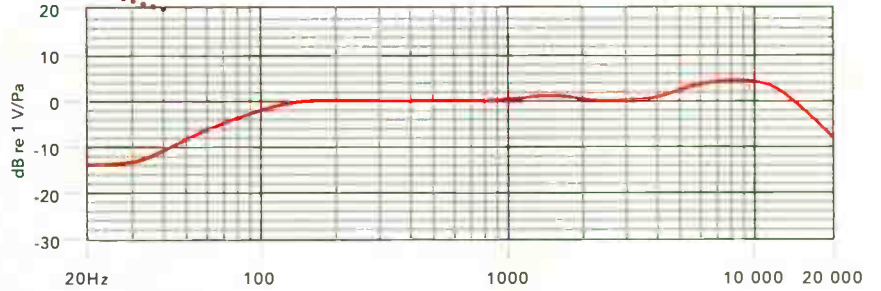
Rugged matte finish aluminum body

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natural-sounding audio. Vocal characteristics were punchy and clear.

The Reporter ships with a black double-sided flag that can be screen printed with an organization's logo. The flag is a flat surface that is clipped above the capsule and of is course, removable. The mic has a black, matte finish and has an XLR jack. It also comes with a leather pouch.

In a world where audio is most often needed

immediately, having tools that are ready "now" is key. No time can be spent on looking for the right microphone. With the Rode Reporter in a news-gathering arsenal, clear and professional audio is a guaranteed result. 0

*Wygal is the programmer and engineer for Victory FM at Liberty University, Lynchburg, VA.*

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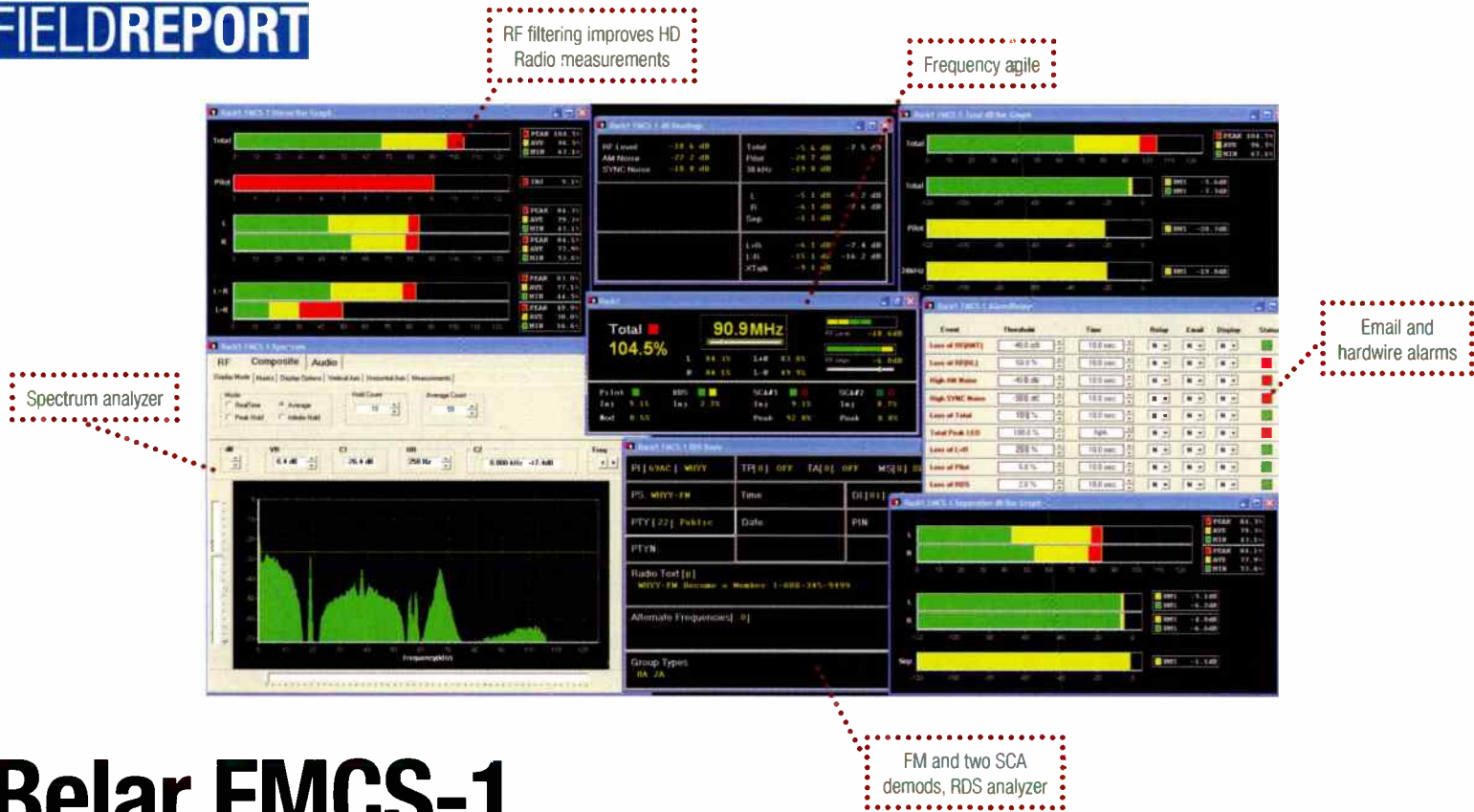
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## Belar FMCS-1

by Mike Kernen

**S**ince 1964 Belar has produced professional broadcast equipment and today, broadcast engineers are universally familiar with Belar. From the moment I started in broadcasting I used Belar modulation monitors to evaluate my stations' modulation and other important parameters. As rudimentary as those old units now seem, I knew I could trust and rely on them. Our FMM-1 and the FMS-1 units were directly wired to the studio monitors and I'd make many a DJ panic when I'd fail to remember this and press one of the CAL buttons—ppfff!!!!

My high expectation for Belar products was certainly upheld when their Wizard line was introduced. These are professional quality monitors with extremely high reliability and accuracy. No longer did we have to send the units in for calibration, DSP did that job right from the front panel. Usually using the auto-cal function wasn't even necessary because the Wizards don't really ever drift. So solid are these, that in the 15 or so years I've been using them, I can count only two failures. Both on FMSA-1 stereo monitors and both were quickly and

economically repaired by Belar factory service. Ultimately, the time comes when one looks for improvement and even the most dependable instrument gets cast aside for whatever the next generation brings. The Belar FMCS-1 is that next generation tool. Beautifully engineered, well executed, and solid as any that Belar have placed before it.

The FMCS-1 is more than just the next generation in modulation monitoring. Along with improving on what the Wizard system does, it combines several Wizard boxes into one DSP based component. Along with the obvious FM modulation and stereo monitoring and demod capability, the FMCS-1 incorporates an RDS monitor, two SCA monitors, and a spectrum analyzer. This obviously saves space and installation time, but also allows an engineer to have on hand monitoring devices he'd not necessarily have bought separately. Where the Wizard system required options such as the DC4 or OPT2 down converter for direct connection to a transmission line sample or the RFA-4 RF amplifier for off-the-air measurements, the FMCS-1 does not. All of these inputs are supported directly.

The FMCS-1 is HDRadio aware and includes filtering options to improve analog

measurement accuracy when used in the company of HD carriers – a feature that will be of increasing importance as we move to higher power HD signals. Add the FMHD-1 for detailed HD Radio monitoring and measurement.

Where the Wizard system features a respectable software and RS-232 remote control interface it only has a few simple contact closures for peak indicators and a "general" alarm. The FMCS-1 adds full IP connectivity but can also be used with a modem or direct connected via RS-232 if needed. Discrete alarms are reported by email via an SMTP mail service and a complete replication of the front panel is by way of Belar's WizWin software. There are also four user-assignable relay-isolated outputs for direct connection to virtually any facility remote control system.

The WizWin software included with the unit can support up to eight devices including the legacy Wizard system and the CSA-1 spectrum analyzer. I have Belar equipment spread around throughout my cluster so I simply have a nicely labeled tab assigned to each device on the connections page of the software. Data logging can be configured too.

Using the WizWin software to interact with the unit remotely is intuitive and

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straightforward. Operating the unit directly isn't difficult either but I may have chosen to add enter, menu, and back keys to the front panel rather than limiting all user input to the jog wheel; but that's a minor issue. The full color display is well laid out and super sharp. All available data is divided into 12 pages with access and interaction via the jog wheel. Rotating the jog wheel steps through pages or menu selections, pressing or holding the wheel in makes a selection or invokes a menu display; it's responsive but takes a bit of time to get familiar with.

Naturally the best part of the FMCS-1 is the very accurate and detailed information it provides about what's being broadcast. In fact,

the unit provides nearly every bit of essential modulation data and more. Information about RF modulation and stereo multiplex are provided in both summary and detail views with bargraph meters. A surprisingly good and very handy three-page spectrum analyzer allows for close inspection of the composite spectrum and gives the user ability to confirm radiated energy is within limits. The unit incorporates two SCA monitors and an RDS monitor with a full page dedicated to basic RDS data, too.

Six balanced and two unbalanced analog outputs as well as four AES unbalanced digital outputs are provided. All are user assignable to output any combination of audio from each demod as well as the pilot tone, stereo matrix,

and a test tone. Alarms can be setup to close one of four user-configurable contacts, send an email, display on the front panel, or any combination of the three. Thresholds and timeouts are fully user adjustable. All network I/O is handled by the Lantronix XPort AR embedded device server that now supports SMTP mail relays. Analog and LVDS digital composite outputs round out the rear panel.

Normally I prefer discrete components to an all-in-one box because rarely do combo units make a positive impression on me. The combination AM/FM/cassette recorder/turntable I had as a teenager did everything I wanted it to do; just none of it well. This Belar and its sibling, the FMHD-1, are notable exceptions and are more than worthy of a few rack units in your transmitter room rack. **Q**

*Kernen is chief engineer of Greater Media Detroit.*

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*pictured: Wheatstone LX-24*



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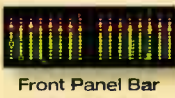


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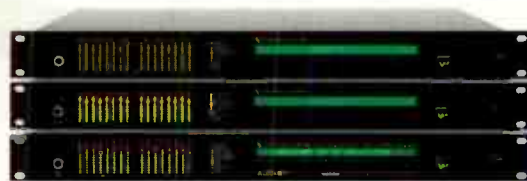
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Take a look and consider how you'd put all that to work in YOUR WheatNet-IP system.



**WHEATNET-IP: THE INTELLIGENT NETWORK**



# On-air Audio Processors

by Chriss Scherer, editor

**A**udio processing: It's what gives a station its signature sound. Because of that, a station's processor setup is often the super secret of a station and protected like the gold in Ft. Knox. In the analog days, everyone had that little processor key and you might be tempted to sneak a peak, although the knob settings were only a small part of the secret process.

With digital signal processing, there's no need to open the box and make the ultra-secret tweaks of capacitors and resistors. For the most part, all that control is now available through the unit's control interface. Levels, thresholds, signal routing, crossover frequencies and more can be adjusted to minute levels.

But the current wave of processors has also overcome the problem of achieving loudness at the cost of losing quality. Advances in limiting and compression techniques allow some of the musicality to be preserved. With so much source material using data-reducing algorithms, there's less audio stuff to squeeze. Even the transmission paths for online and HD Radio use data-compressed encoding.

The flagship processors of these manufacturers also provide dual processing paths to feed an analog and digital transmission path. This simplifies setting the two chains to sound similar and preserve that signature sound. **0**

## **BW Broadcast DSPXtra-FM**

With a six-band limiter, an integrated Ariane RMS leveler and look-ahead final limiting, the DSPXtra-HD uses 22 DSPs for processing power. The processing core includes parametric and shelf bass enhancement, along with composite clipping with pilot protection. Dual processing paths (analog and digital) make the DSPXtra-FM two processors in one. The FM analog path has a multi-band distortion-controlled clipper, while the second path, tapped via analog and AES digital output connectors, incorporates a bit rate optimized, look-ahead limiter. Front panel LED audio metering and front panel USB interface aid setup and operation. Several versions of the DSPX are available with varying features. [audio-processor.com](http://www.audio-processor.com)



## **Inovonics David IV**

This FM and FM/HD Radio processor features an all-digital, DSP-based design. Gain-riding AGC, five bands of dynamics compression and equalization, stereo enhancement and sub-bass augmentation, plus the Inovonics PIPP limiter are included. A high-performance stereo generator includes active and metered RDS combining. The David IV can accept analog and AES digital inputs, and has two separate composite/MPX outputs in addition to analog and AES line outputs. The line outputs can be configured for either FM or digital radio transmission characteristics. Control is via the front-panel graphic display and jog wheel, or by TCP/IP control over all parameters with a PC and supplied software. [www.inovonicsbroadcast.com](http://www.inovonicsbroadcast.com)



## **Omnia.11 FM**

The Omnia.11 was created to provide a solution to distorted audio processing, while still delivering a competitive, loud signal. The Density Detector enables the system to properly handle hyper-compressed content. The ultra-low IMD multiband limiter system, coupled with smart gain reduction algorithms, enables the limiters to sound transparent and natural. All AGC and limiting algorithms employ an auto-acceleration/deceleration mechanism, which tunes out perceptible inter-modulation distortion. [www.omniaaudio.com](http://www.omniaaudio.com)



## **Urban Optimod 8600 FM**

The 8600's dramatically improved peak limiter technology decreases distortion while increasing transient punch and high-frequency power handling capacity. The main goal is to make FM analog broadcasts more competitive with the cleanliness, punch and open high frequencies of the digital media against which FM analog transmissions now battle. In addition to the new clipper, the 8600 offers the same extensive feature set as the 8500. Except for the AGC, the analog and digital chains are independent and separately adjustable. The digital radio channel features a new peak limiter. [urban.com](http://urban.com)



## **Wheatstone AirAura X3**

The third-generation AirAura X3 spectral audio processor offers improved bass tools, an improved sweet-spot technology algorithm, more EQ options, and a newly developed FM clipper technology resulting in truly impressive sound quality and loudness. New features include backoff controls for each band of the AGC, new analysis features, and enhanced security functions. AirAura X3 also has improved 31-band limiters, new analog output routing features, and a standard WheatNet-IP audio interface for seamless integration into the Intelligent Network. [wheatstone-processing.com](http://wheatstone-processing.com)



# Compact Radio Console...

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## ARC-8

- Balanced & unbalanced in & out
- Cat5 cabling for today's infrastructure
- Analog & digital with USB sound card built in
- Ideal for professional Radio broadcast applications



conductive plastic faders and long life switches for reliability. Socketed ICs for fast on site repair.

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fully connectorized for ease of installation:

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- USB interface for play and record from a PC
- Mix minus in-out for an external Telephone hybrid
- BOTH balanced and unbalanced inputs and output for flexibility

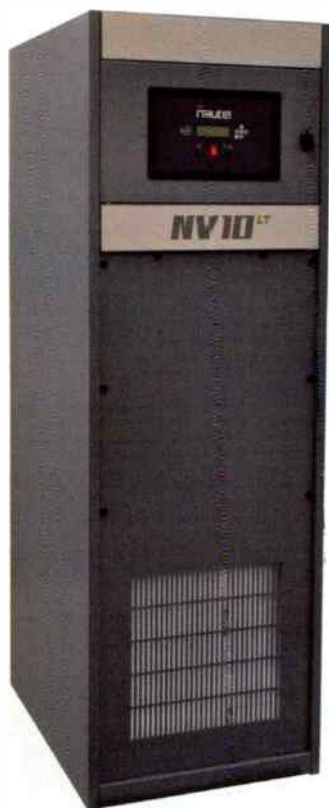
The BEST of both analog and digital, the ARC-8 features a built in USB sound card to play and record in digital directly from both Windows & Apple \*PCs. With BOTH balanced and unbalanced inputs and outputs, the ARC-8 works out of the box in any Radio application.

list price **\$795**

\*USB sound card supports USB HID compatible PCs

[www.arrakis-systems.com](http://www.arrakis-systems.com)

970.461.0730



### Transmitters | Nautel

**NVLT:** These transmitters marry the architecture of the NV Series with the features of the VS Series. The analog-only transmitters complement the digital capable NV Series. Operational capabilities include analog or AES digital input; PushRadio; Livewire IP Audio I/O; Shoutcast or IceCast streaming input; local content storage; USB audio backup; dynamic RDS, dual SCA and stereo coders; scheduler and playlists. An Orban Inside option with full Advanced User Interface (AUI) integration is also available. Control capabilities include full local or remote access via Nautel's Web based AUI with onboard audio spectrum analyzer, modulation monitor and more. The advanced remote capabilities of Nautel's AUI can help engineers save time, trips and money.

[nautel.com](http://nautel.com)



### EAS encoder/decoder | TFT

**EAS911+:** The EAS911+ is an EAS encoder/decoder with CAP receiving capabilities that will eventually replace the present TFT EAS911. The new model has all the features of the EAS911 but with a touchscreen user interface for operation and setup. It also incorporates a CAP decoder, analog and AES/EBU audio switcher, and interface to an auxiliary video overlay device to put EAS information on four or more video streams. The EAS911+ has also completed FEMA compliance testing for CAP decoding. It will feature greater logging and recording capabilities, text-to-speech conversion and will still interface to existing TFT EAS peripherals. With an external Video Overlay Device, it can place EAS text on up to four SDI/HDI streams or four ASI streams. Multiple external units may be cascaded to handle any number of video streams.

[tftinc.com](http://tftinc.com)

### Media management | Actus Digital

**ActusRemote:** ActusRemote lets broadcasters record and log channels broadcast from remote locations to a central location, reducing the need for multiple systems, servers and databases. Because content is adapted to specific regions, languages and markets more frequently, there are increasing demands for radio channels to be monitored and measured for legal compliance purposes and quality control. With ActusRemote, broadcasters can access all channel recordings and data from one central location, simplifying the infrastructure for managing multiple locations, languages, etc. ActusRemote Probes connect to the main system and record, even when there are problems and/or fluctuations in bandwidth. The Actus module incorporates protocols to manage disconnections and line quality issues. Actus transfers all encoded chunks (short video files) from the ActusRemote Probe into the ActusRemote central server via FTP, maximizing speeds against available bandwidth.

[actusdigital.com](http://actusdigital.com)

### Spectral audio processor | Wheatstone

**AirAura X3:** The third-generation AirAura X3 spectral audio processor offers improved bass tools, an improved sweet-spot technology algorithm, more EQ options, and a newly developed FM clipper



technology resulting in truly impressive sound quality and loudness. New features include backoff controls for each band of the AGC, new analysis features, and enhanced security

[wheatstone.com](http://wheatstone.com)

### Vertical dipole FM broadcast antenna | Alan Dick Broadcast

**ADB-VP:** This antenna, meant for HD Radio and analog broadcasting, is a vertically polarized broadband FM side-mount antenna consisting of a balun-fed vertical dipole, power divider, coaxial feed lines and featuring symmetrical band base. Constructed of stainless steel with a brass inner conductor, all associated brackets and hardware are made of hot dipped, galvanized steel to furnish many years of dependable service. The unit is completely assembled full size and factory tuned on an electrically similar tower structure to insure proper impedance match and low VSWR.

[alandickbroadcast.com](http://alandickbroadcast.com)

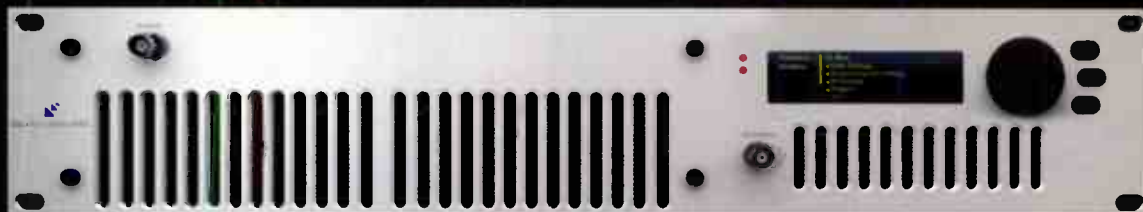
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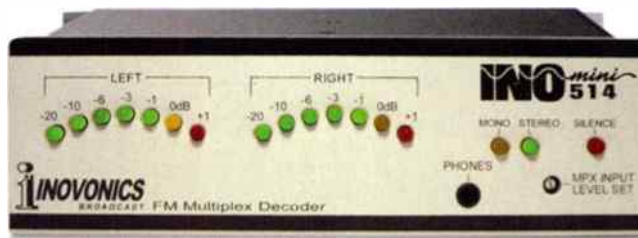
  
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## FM multiplex decoder | Inovonics

**INOmini 514:** This stand-alone decoder for FM-stereo multiplex signals accepts a demodulated FM-baseband input and decodes the signal to discrete left- and right-channel audio. The recovered stereo program is available as a professional line-level balanced output, and also as an AES digital audio signal. It demodulates MPX to balanced L/R audio, and features digital AES output and alarms for audio and pilot loss.

[inovonicsbroadcast.com](http://inovonicsbroadcast.com)



## Transmitter programming automation | Enco Systems

**Push Radio Interface for Nautel:** Push Radio is a program distribution model where content is stored in the transmitter with playlists executed at the same point. Because this model does not rely on real-time audio delivery, content can be delivered via low-cost Internet connections. Different content may be delivered to each transmitter, allowing each site to have local content in its programming. The Enco Push Radio interface provides audio delivery via the Enco DAD Automation platform. The system automatically updates files and playlists on each transmitter. It also pulls back "as played" logs and reconciles the logs with music and traffic schedulers. The interface will operate on any VS Series or new NVLT Series transmitter.

[enco.com](http://enco.com)

## Newsroom computer system | Associated Press

**ENPS v7:** This new multiplatform version of ENPS is a dramatic overhaul, featuring a new look, interface and tools to further enhance existing capabilities. Its story-centric workflow was designed to meet the needs of integrated broadcast and digital newsrooms. A modern interface gives users increased flexibility to configure the ENPS desktop for the tasks done most often. Customize the display of content to meet needs and still have access to enterprise-wide content. Users can more easily create content for broadcast, online and social media all in one place. Integrated, calendar-based planning makes managing coverage simpler. Users can see what's going on locally and globally in one, familiar interface. The ENPS Dashboard lets every user create a custom, real-time view of wires, media, assignments and more. Users can upload media from the field with a simple drag-and-drop into ENPS. The new detached Alert Bar keeps users on top of breaking news and incoming messages, even while working in other programs.

[enps.com](http://enps.com)

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# MEET AXIA'S NEW, SMALLER IP CONSOLES. THEY'RE BIG WHERE IT COUNTS.

Plastic labels? Not on these consoles. High-res OLED displays on each channel tell talent exactly what source is assigned.

Just a push on the Options knob lets board ops assign new sources, adjust gain trim, source EQ and more.

Razor-sharp OLED Program meter with over-load warning, VU or PPM ballistics? The choice is yours.

Inside this 2RU chassis beats the heart of a giant, with power to run two RAQ or DESQ consoles. Or maybe one of each? It's okay, we don't judge.

QOR.16 console engine doesn't just look cool - it stays cool thanks to beefy heat-sinks and fanless design.

Built-in Ethernet switch lets you easily network devices and studios. Plenty of professional, balanced analog, AES and Livewire I/O, too.

Rugged, built-in, auto-ranging power supply. No line lumps or wall-warts on Axia gear.

Four Show Profiles for instant recall of console configurations. Try that on a PA mixer.

Event timer has manual and auto-reset options.

Time-of-day clock can slave to your NTP server.

Onboard headphone control with Preview option. Cheesy outboard amps need not apply.

Four-position monitor selector lets you switch between Program or External monitor feeds on the fly.

OLED channel displays have an audio confidence meter, too.

Machined-aluminum work surfaces are made tough, to stand up to what jocks dish out.

Smooth 100mm, premium faders are side-loading to foil dirt and debris.

Avionics-grade switches with LED lighting.

Can a super-duty, high-performance rotary gain control still be called a fader? Just don't call it a "pot" - that's old tech.

The more you saw, the more convinced you were that IP consoles made sense for your station. Problem was, you had small spaces to work in. Some behemoth board that looks like a '78 Oldsmobile just wouldn't fit. But there was no way you'd settle for some cheap plastic PA mixer that looked like a refugee from the church basement. "Wouldn't it be great," you thought, "if someone made an IP console that didn't take up a whole room?"

Then you saw the new RAQ and DESQ consoles from Axia, and your problems were solved. With the power and features of a big console, but minus the ginormous space requirements. RAQ will drop right into those turrets in your news station's bullpen -

the reporters can send their finished stories right to the studio. And DESQ is perfect for the auxiliary production rooms.

But what sealed the deal was finding out you could run two RAQ or DESQ consoles with just one Axia QOR.16 mixing engine — you know, the one with all of the audio I/O, the power supply and the Ethernet switch built in. That brought the cost down so low that when you told your GM the price, he actually didn't swear at you (for once). Make another decision like this, and you might just be changing the sign on your door from "Chief Engineer" to "Genius."

Available in the U.S. from BGS: (352) 622-7700

AXIA AUDIO CORPORATION

[AxiaAudio.com/RAQ](http://AxiaAudio.com/RAQ) | [AxiaAudio.com/DESQ](http://AxiaAudio.com/DESQ)





## Recorder/mixer | Roland

**R-88:** The Roland R-88 extends professional portable recording by providing seamless integration of a recorder, mixer and a multi-channel audio interface. With eight channels of audio recording plus a stereo mix, the R-88 includes a full on-board mixer, various timecode modes and slate tone/mic for memos. The stereo mix output is for location sound recording applications enabling a stereo mix while simultaneously recording individual tracks. It also features professional AES/EBU digital I/O to digitally record from or send to a mixing console or other digital source. The R-88's built-in mixer is equipped with a three-band EQ. The large touchscreen display enables clear and intuitive device setup and control. [rolandus.com](http://rolandus.com)

## Streaming service | StreamOn

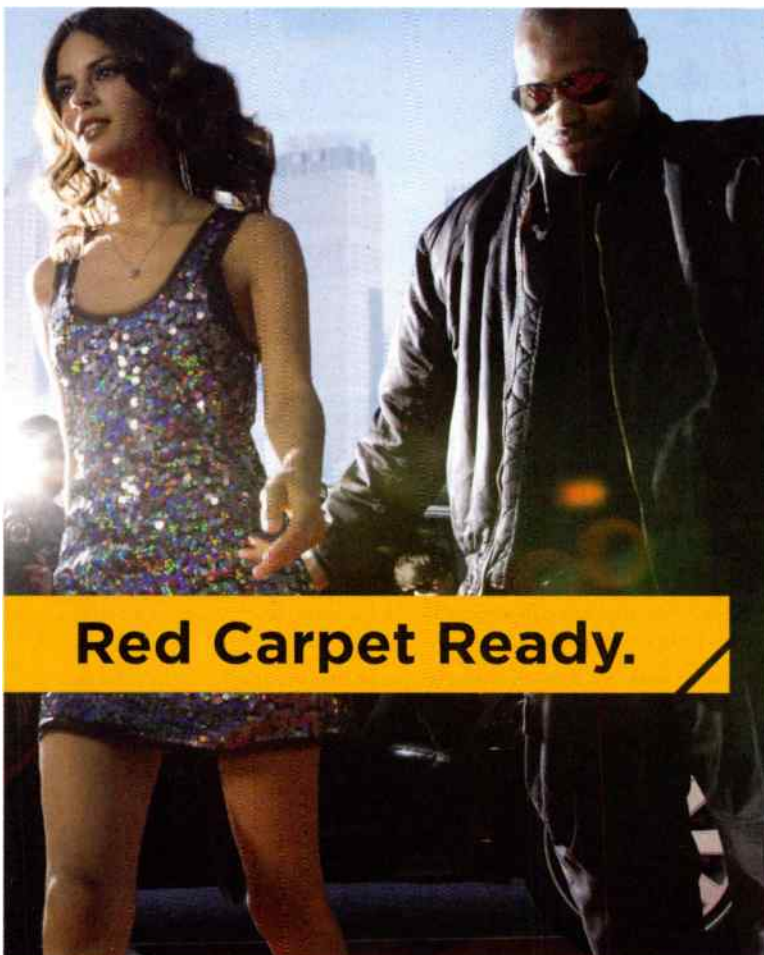
**ListenLater:** This cloud-based solution enables radio broadcasters to automatically upload all of their live audio content in real-time for immediate or delayed rebroadcasting; expedite or automate podcast creation; or tag and share select audio streams via social media channels. ListenLater provides radio stations with the ability to upload and archive all of their content to StreamOn's private Internet cloud—automatically and in real-time while broadcasts are taking place. Through simple, Web-based tools, DJs and program directors are then able to tag and select specific “moments of interest” in real-time and redistribute this content—when they want—digitally across multiple channels much faster than via traditional means. DJs and broadcasters can encourage listeners to revisit songs or programs provided by the station by simply clicking on the “ListenLater” link on the station's Website. There, listeners will be able to enjoy “DVR-like” capabilities such as replay, pause, rewind and fast forward a station's chosen live audio content within moments of its original broadcast.

[streamon.fm](http://streamon.fm)

## Acoustic panels | Acoustics First

**Sonora Ceiling Tiles:** The legacy line of Sonora ceiling tiles includes fabric faced ceiling tiles in either the standard square edge or a tegular edge that reveals below the grid. These tiles are available in a multitude of fabric colors and can be utilized in a wide range of applications. For the absence of color, there are now two white options: The Sonora UltraWHITE facing provides a basic smooth white finish while the Sonora Nubby tile provides a texture white appearance. A black scrim version is also available. Additionally, choose from either a PVC faced or encapsulated ceiling tile.

[acousticsfirst.com](http://acousticsfirst.com)



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[www.yellowtec.com](http://www.yellowtec.com)





## Multi-channel audio codec | WorldCast Systems APT

**1U Oslo:** The 1U Oslo chassis offers channel density, supporting 16 channels of audio within a single unit of rack space. Fully DSP-based with dual power supplies and hot-swappable modules, the 1RU Oslo provides a solid and reliable base for mission-critical studio-to-studio and studio-to-transmitter links. Up to four audio-over-IP modules can be added. It can also deliver independently clocked IP audio streams, eliminating the issues of clock drift associated with streaming multiple channels over IP to a single decoder. The card can therefore decode any channel, in any audio format, from anywhere. The AoIP module can also generate many more streams per stereo or mono signal using multiple unicast or multicast technology.

[aptcodecs.com](http://aptcodecs.com)

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## Broadcast engineering software | V-Soft Communications

**Intermod:** This program is designed to do detailed intermodulation analysis at a specific site. It also includes an advanced study to identify and map possible intermodulation issues within a station's coverage area. The standard intermodulation study allows the user to enter any number of transmitters to be considered at a location. FM databases can be searched to locate facilities that are near a defined location. The receive frequencies to be protected at the site are also identified by the user. Once these inputs are defined, the program will compute all possible intermodulation products (up

to a maximum order specified by the user) and display the results in a table and in graphical form. The program also produces a map showing the areas where possible interference may exist due to intermodulation products within the reference station's coverage area.

[v-soft.com](http://v-soft.com)



### Remote mini console | Henry Engineering

**Sports Pod:** Sports Pod is a talent mic and headphone mini console. Its duplex talkback (intercom) function allows communication with a producer or engineer. Pressing the talkback button automatically mutes mic audio from air, and sends it to an isolated talkback (off-air) output. Sports Pod's remote mic control allows an engineer to remotely turn the talent's mic on or off, in case the talent forgets to do it himself. Like Talent Pod, Sports Pod gives an announcer control of his headphone audio. It lets the announcer create a custom mix of local and return (IFB) audio in his headphones. It is designed for error-free use, even by non-technical personnel. [henryeng.com](http://henryeng.com)

### EAS and CAP decoder and encoder | Digital Alert Systems

**DASEOC M Series:** These FCC-certified and FEMA IPAWS-conformant devices are fully integrated EAS/CAP equipment capable of simultaneously providing all four EAS and CAP functions: CAP Message origination, EAS encoding, CAP monitoring, and EAS decoding. Simultaneous alert origination to both EAS and CAP servers avoids message duplication, and the single-unit, single-interface approach means emergency managers won't need to purchase separate and disparate systems. The DASEOC also promotes interoperability with a wide range of third-party applications and services, and it provides emergency managers with advanced text-to-speech capabilities. [digitalalertsystems.com](http://digitalalertsystems.com)

### Broadcast headset | Shure

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



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[www.audioscience.com](http://www.audioscience.com)

## FM radio modulation analyzer | Deva Broadcast

**DB4004:** DB4004 is

a second-generation digital FM radio modulation analyzer with an easy-to-read, high-resolution

OLED graphical display and ultra-bright bar graph LED 60-segment indicators that allow reading the main signal parameters at a glance. The processing power of the device enables all measurements to be refreshed simultaneously and synchronously, thereby allowing for detailed readings of all the multiplex FM signal components. It supports USB and LAN communication interfaces, allowing flexibility of the remote connection and control of the unit. The built-in FTP system manages the files by an assigned schedule and all the collected information is centralized in a database and can be revised, played back, and sent automatically to the qualified staff if need be. The band analyzer function of the DB4004 presents an overview of all FM signals available, plus the RF signal strength of these stations.

[devabroadcast.com](http://devabroadcast.com)



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The mic icon was (somewhat obviously) on the fourth solar panel



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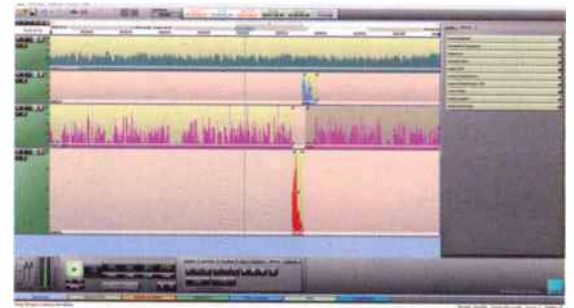


## Video monitor wall system | Middle Atlantic Products

**VisionFrame Mounting Panels:** The VisionFrame Vertical Multi-Mount Panel and Vertical Panel Mount are designed to provide additional flexibility and enhanced usability for the VisionFrame Video Monitor Mounting Wall while saving rack space in a variety of environments including control rooms, digital signage and surveillance. The Vertical Multi-Mount Panel allows users to quickly and easily mount HDMI extenders, video switchers and other small components to the back of monitor walls. The panel saves space in local racks and allows easy access for servicing and cabling

changes. The Vertical Panel Mount allows fast, easy installation of components such as UPS, codecs, power supplies and other rackmount equipment to the back of monitor walls without adding to the depth of wall systems.

[middleatlantic.com](http://middleatlantic.com)



## Radio production software | Lawo

**Edit:** Whether reporting, interviews, or the creation and continuous updating of recurring pieces, Edit offers a dedicated toolkit for each task. With its system of user guidance and variety of working modes, it ensures production tasks proceed swiftly and efficiently. Edit features Reporter Box for voice-over production and the simultaneous use of multiple data formats in the same project. Native integrated sound processors from the mc $\leq$  mixing console series assure reference quality audio signal processing. Also included is a loudness function in accordance with EBU R128 and ATSC A/85 not only for real-time metering, but for the loudness analysis of archive material.

[lawo.de](http://lawo.de)

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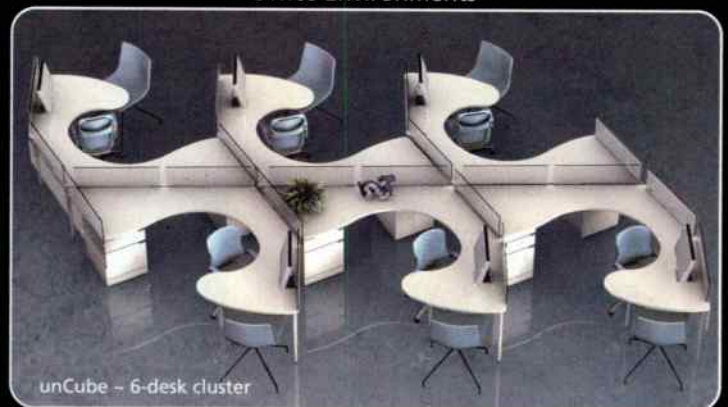
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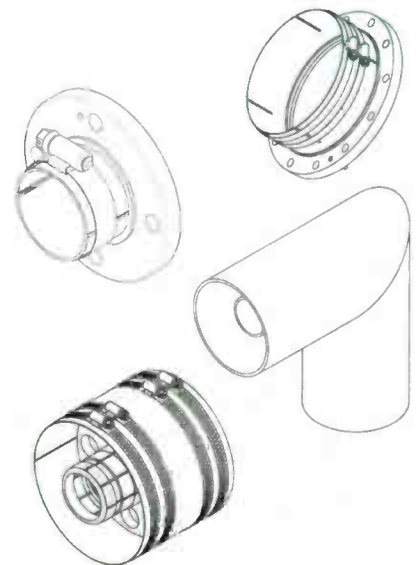
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**NEW PRODUCTS**



**Additions to 1329 Line |  
ERI-Electronics Research**

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



**Audio AD/DA/DD converter | NTP Technology**

**AX32:** Housed in a compact 2RU chassis, the AX32 accommodates large multi-microphone arrays without a second processor. All 32 microphone feeds can be connected back to the control room along a single Cat-5 cable via fully transparent and uncompressed IP Ethernet. The AX32 is designed to integrate closely with Avid's ProTools|HDX multitrack capture/editing/mixing system. A versatile interface structure allows the AX32's processors to be assigned to any digital interface or patched between the interfaces on a channel-to-channel basis.  
**ntp.dk**

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### FM transmitters | BW Broadcast

**V2:** V2 transmitters include multi-band DSPX audio processing, so stations without a dedicated processor work right out of the box. Those who already have external processing benefit from unique dual-loop virtual VFO exciter and ultra-low distortion. "Gold clamp" transistors can be changed in minutes with only a screwdriver and without needing a soldering iron. Slide-in universal power supplies make replacement easy and heatsink design ensures ultra-long life thanks to ingenious airflow. Carefully chosen fans are rated with more than 10-years life at 120 degrees F. An Ethernet connection is on every V2 with smart phone apps for remote management. Features include alarms and email alerts, a real time clock, comprehensive logging, and a high resolution OLED display for metering processing. Models are available from 5W-1500W.  
bwbroadcast.com

### Audio advertising exchange | Triton Digital Media

**a2x:** a2x is an audio advertising exchange that enables advertisers to programmatically buy targeted online and mobile audio inventory in real-time. The solution provides a system for managing, buying and selling third party advertising campaigns. In addition, a2x facilitates the execution of digital advertising trades between third parties, providing an information database featuring lists of advertising bid and offer values. The automated, exchange-driven method of buying and selling ad impressions facilitates increased efficiency, eliminating waste and resulting in the highest price for publishers and the greatest efficiency for advertisers. To deliver the most personal, targeted ads, the a2x solution integrates consumer data from partner eXelate which provides data and insight on online purchase intent, household demographics and behavioral propensities that enable digital advertisers to make optimal marketing decisions.  
tritondigitalmedia.com

### 5-channel cable protector | Checkers Industrial Products

**Grip Guard:** These cable protectors feature easy hand-conforming grips, and weigh just 12.75lbs. They also have a snap fit patent-pending hinged lid; no fiberglass rod is required to replace the lid; a patented five-bar tread pattern allows maximum traction; they protect cables and hoses up to 1.25" outside diameter, feature a safety green and yellow color, and are made from high impact absorbing, non conductive polyurethane.  
checkersindustrial.com

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# NABSHOW NEWPRODUCTS



## 8-channel talkback control unit | Sonifex

**CM-TB8:** The CM-TB8 is a powerful and highly flexible self-contained communications unit allowing multiple 4-wires and IFBs within a single 1RU. It offers easy connection to any industry standard talkback system including the Sonifex CM-TLL line listen unit plus the CM-CU1 and CM-CU21 commutator units. The unit has individual connections for both a headset on 5-pin XLR and microphone/headphones on XLR/stereo TRS jack, with the current selection indicated on the front panel. The gain setting for each input type can be individually set between +6dB and +68dB allowing for a wide range of microphone types and +48V phantom power is also available. Small talk level adjustments can be made quickly, using the front panel rotary control with a maximum adjustment range of  $\pm 12$ dB.

[sonifex.co.uk](http://sonifex.co.uk)

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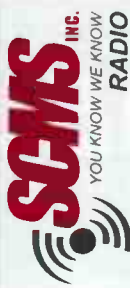
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## NABSHOW NEWPRODUCTS



### Broadcast field mixer | JK Audio

**RemoteMix 2:** This two-channel field mixer/headphone amplifier is built for the remote broadcast environment.

More than just a field mixer, RemoteMix 2 provides a communications interface for remote broadcast, IFB, or a backup audio path. The integrated headphone amplifier provides sidetone to monitor all inputs plus an external feed. RemoteMix 2 features a phone line hybrid with keypad along with a wired notebook/cell phone headset interface. All sections are designed to work together, saving setup time and wiring in the field. Use it as a phone line hybrid, calling in to a studio talk show hybrid. Use it as a front-end mixer for POTS, ISDN, IP or smart phone codec.

[jkaudio.com](http://jkaudio.com)

### Broadcast automation | OMT Technologies

**iMediaTouch 4.3:** Key features of this new version include: MusicMaster, Nexus server interface providing real-time interaction with MusicMaster music scheduling; integration of a live read affidavit in the as-run (OUT) log for Arctic Palm Live Copy; several fault tolerance improvements to Automatic Failover including a log priority scan for immediate backup of today's content, enhanced store forward transfer speed improvement of 200 percent and users can now perform a manual failover from primary network to secondary local storage; implementation of an EAS closure feed feature. Enhanced rejoin liner feature where satellite programming is scheduled; new Auto Liner EOM Adjust feature to allow for unrestricted EOM's (non overlap); and enhancements to the Remote Voice Tracking Portal software.



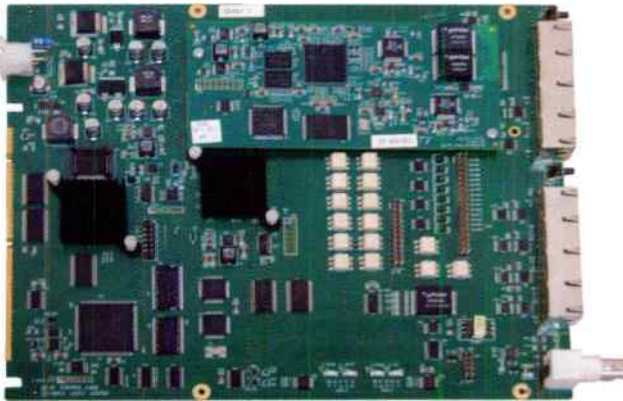
[omt.net](http://omt.net)



### Booth ventilation system improvements | VocalBooth.com

**Ventilation Systems:** The standard ventilation system that is included with every VocalBooth now features a quieter fan unit with an acoustically treated duct hose and larger baffle boxes. The new design has reduced fan noise so a vent silencer unit is not required. Also, with the addition of a new product, the High Capacity Output Unit (HCOU), an increased airflow option is available. Ideal for long periods of booth use, in booths with heat-generating equipment, or a booth located in a warmer climate location, the HCOU can process nearly 100cfm of airflow with a minimum of increased fan noise.

[vocalbooth.com](http://vocalbooth.com)



**Audio engine enhancement | Logitek**

**AE-IP:** The AE-IP card enables networking of the AE-32 with JetStream AoIP systems and also allows the AE-32 to communicate with hard disk systems using Logitek's JetNet network conduit. The AE-IP upgrade card replaces the existing AE-C2 or AE-C6 Controller Card, the NetA TDM Network Card and any Sharc DSP cards with the JetStream AoIP Network

platform. Networking capacity is increased to 128 x 128 in a single chassis, thereby creating a dense 256-channel AoIP node. An embedded PC in the AE-IP card replaces the external supervisor computer that had been required with the AE-32, reducing hardware requirements. The AE-IP card also expands the console capacity of the AE-32 to four consoles with a total capacity of 36 faders. All consoles on the system have access to input meters on every fader and profanity delays as well as effects processing on all input faders and program output buses.  
[logitekaudio.com](http://logitekaudio.com)



**Vocal microphone | DPA Microphones**

**d:facto II:** With a true studio sound, the d:facto line offers natural sound with high separation and extreme SPL handling. In addition to use with the new DPA wired handle, the d:facto II provides a state-of-the-art adapter system, which allows for seamless integration with many professional wireless systems. It provides improved audio performance with linear frequency and phase, both on- and off-axis, while its definition and accuracy accurately reproduces a singer's voice.  
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## Multichannel streaming processor | Sound4

**Sound4 x8 card:** Sound4 x8 features eight independent channels and a powerful sound processor. Its streaming engine can deliver five different streams per channel (40 streams total). High quality level coding includes MP3, AAC, HE-AAS, and HE-AACv2. Predictive HQSound algorithm offers sound unification with all codec types. It is ready for all delivering standard (Darwin, Flash, Helix, Icecast, Shoutcast, Wonza, etc.) It also features advanced metadata management and is Livewire and Ravenna compatible.

[sound4.biz](http://sound4.biz)

## UPGRADES AND UPDATES

Logitek Electronic Systems and Enco have added Enco Inside within the JetStream AoIP platform. The Enco DAD audio payout and automation platform incorporated within the JetStream router gives users full operational Enco capabilities married with the AoIP routing and mixing capabilities of the JetStream platform. ([logitekaudio.com](http://logitekaudio.com), [enco.com](http://enco.com)) ... **Ecreso/WorldCast Systems** has extended the warranty on its Helios FM transmitters to 10 years. Ecreso notes that most transmitter warranties typically cover a maximum of five years. Also, Ecreso FM transmitters have been certified by the FCC for operation by low-power FM (LPFM) stations in the United States. The company's transmitter range has also been accredited by Indus-

try Canada. ([ecreso.com](http://ecreso.com)) ... The **Digital Alert Systems DASDEC** emergency messaging platform is supporting Canada's National Alert Aggregation and Dissemination (NAAD) system requirements. This option includes full support for Canada's unique Common Alerting Protocol messaging profile that incorporates multilingual messaging with English and French-Canadian text-to-speech capabilities. ([digitalalertsystems.com](http://digitalalertsystems.com)) ... The FCC granted type-certification to the TFT EAS911+ EAS/CAP combined device with the identifier of BIOEAS911PLUS. The new EAS911+ is an EAS encoder/decoder with CAP receiving capabilities that will eventually replace the present TFT EAS911. ([tftinc.com](http://tftinc.com)) ■

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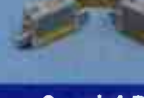
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| 500 W  | 2000 | BE FM 500C  |
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| 10 KW  | 1991 | Harris HT10   |
| 20 KW  | 2000 | Harris HT20CD   |
| 27.5KW |      | Continental 816R4, SS IPA & all factory upgrades      |
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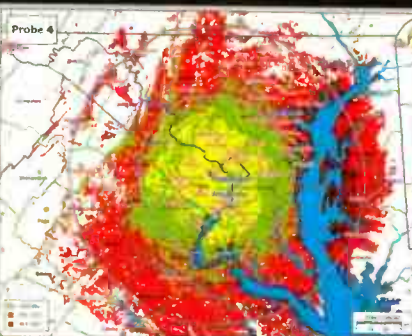
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# 20 years of *Radio* magazine

by Chriss Scherer, editor

**T**he first issue of *Radio* magazine (originally titled *BE Radio*) was published in January 1994, but its roots go back much farther.

In 1959, *Broadcast Engineering* magazine was launched to cover the technology of radio and television. By 1994, it was realized that while the two services are related broadcast efforts, the needs of their specific audiences warranted splitting the content into two publications.

*Radio* magazine, now part of the NewBay Media group of publications, continues to cover the technology of radio broadcasting. Now in our 20th year, we'll look back at the first year of publication, which had six issues.

Features of the March 1994 issue:

- The editorial discussed the more than \$1.25 million in FCC fines racked up by Infinity Broadcasting because of the Howard Stern Show. That was before satellite radio.
- The news highlighted NPR's move to a new satellite delivery system from Comstream. This was the first major radio network to use a system with Layer II encoding. SEDAT was still the primary encoding system of the day.
- The cover story previewed the radio

highlights of the 1994 NAB Convention. Session topics included high-speed subcarriers for wrist-worn pagers; ISDN and T1 transmission; AM and FM improvement, with tips on extending tube life and anti-skywave antennas; and a discussion of the new EBS (EAS rules took effect in 1997). Our March issue is still the convention preview issue today.

- We profiled the Dallas Cowboys radio broadcasts via the KVIL Cowboys Radio Network.
- We showed a side-by-side comparison of various forms of audio playback systems, which included carts, 3.5" floppy, Bernoulli disks, 3.5" magneto-optical disks, CD, mini-disc and DAT. And none of those formats is used today.
- The EIA was set to begin testing various digital radio systems at the NASA Lewis Research Center in Cleveland. The 10 systems to be evaluated (including the variations)

- were provided by AT&T (in-band adjacent channel), AT&T/Amati (IBOC), Thomson Consumer Electronics (Eureka 147) USA Digital Radio (two forms of FM IBOC and an AM IBOC), and the Voice of America/Jet Propulsion Lab (direct satellite).
- New product advertisements included the Roland DM-80, ITC DigiCenter Plus, the Orban DSE 7000, the Denon MD Cart, and the Wheatstone A-6000. **Q**



## Cisco Publishes World-Wide Mobile Web Stats for 2012

Cisco has analyzed the data and released facts about mobile data traffic during 2012. The findings have been published in the Cisco Visual Networking Index Global Mobile Data Forecast update for 2012 to 2017. Here are the salient points.

- Global mobile data traffic grew 70 percent.
- Mobile data traffic was nearly 12 times the size of the entire global Internet in 2000.
- Mobile video traffic exceeded 50 percent for the first time.

- Mobile network connection speeds more than doubled.
- A fourth-generation (4G) connection generated 19 times more traffic on average than a non-4G connection.
- The top 1 percent of mobile data subscribers generate 16 percent of mobile data traffic, down from 52 percent at the beginning of 2010.
- Average smartphone usage grew 81 percent.
- Smartphones represented only 18 percent of total global handsets in use in 2012, but repre-

- sented 92 percent of total global handset traffic.
- Globally, 33 percent of total mobile data traffic was offloaded onto the fixed network through Wi-Fi or femtocell.
- Android data use is now higher than iPhone data use.
- The number of mobile-connected tablets increased 2.5-fold to 36 million, and each tablet generated 2.4 times more traffic than the average smartphone.

Source: [cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white\\_paper\\_c11-520862.pdf](http://cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.pdf)

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