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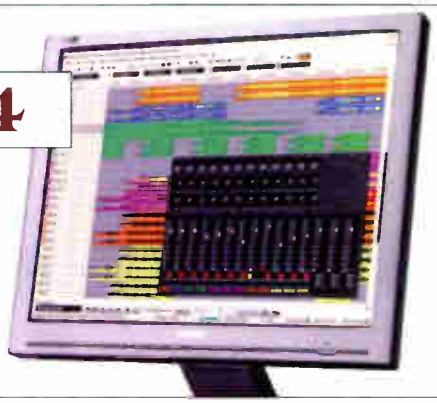

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ON THE COVER

For more than three decades, KYW News Radio has shared quarters with its sister television station. Not anymore. Here's to having your own space! Photo courtesy of Bloomfield & Associates. Cover design by Michael J. Knust.

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Currents Online

Selected headlines from the past month.

Graber

Dielectric Hosts Annual Radio Executive Roundtable

During the Aug. 15-17 event, attendees learned about a variety of topics, including filter/RF system theory, RF myths revealed, HD Radio implementation methods, antenna theory and LED tower lighting conversion.

Radiosophy Appoints Graber as President and CEO

William Graber was most recently the marketing director for the commercial division of Corporate Express, an international office supply company.

D&M Holdings Acquires Calrec Audio

D&M Holdings distributes Denon, Marantz, McIntosh Laboratory, Boston Acoustics, Snell Acoustics, Escient, Replay TV, D&M Professional, and D&M Premium Sound Solutions.

Thomas Elected to be SBE President

Barry Thomas of Lincoln Financial Media will take office with the other new officers and board members at the SBE National Meeting in October.

JK Audio Ships Daptor Three

A recipient of the *Radio* magazine NAB2007 Pick Hit Award, this audio interface offers balanced and unbalanced line level audio through a cell phone or portable audio device.

Yellowtec Adds Product Manager

Reinhard Gallos has been hired as Yellowtec's new product manager to assume control of development, manufacture and technical services at the company.

Find the mic and win!

Tell us where you think the mic icon is placed on this issue's cover and you could win a Heil mic courtesy of Transaudio Group.

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FCC Issues NPRM on AM Use of FM Translators

The ruling allows AM stations to license and/or use FM translator stations to retransmit their AM service as a fill-in service to rebroadcast the AM signal, provided that no portion of the 60dBu contour of any such FM translator station extends beyond the smaller of a 25-mile radius from the AM transmitter site, or the 2mV/m daytime contour of the AM station.

Site Features

NAB Radio Update E-mail Newsletter

The NAB Radio Show is just around the corner. This issue is packed with information you need for the convention, but there's more. Subscribe to the NAB Radio Update e-mail newsletter for the latest information.

And Also Subscribe to Digital Radio Update

This twice-monthly newsletter covers all the digital radio news, including HD Radio, DRE, DRM, satellite and more.

Industry Events

The *Radio* magazine Industry Events section lists upcoming conventions and conferences. With so many events taking place this fall, be sure to check the list and make plans to attend a conference near you.

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Our new HRmk2 high-resolution Active studio reference monitors surpass the legendary performance of our classic HRs to bring you even better sound quality, in a stunning new package. Those alluring curves do way more than look good. The precisely engineered contours of the cast aluminum Zero Edge Baffle™ minimize diffraction for a crystal clear image of your mix, and control sound waves so you get detailed lows, full, articulate mids, and shimmering highs—whether you're on axis or off. Working in concert with the baffle's contours, the unique passive radiator design delivers astonishing bass extension that's super-tight and always distortion-free. Add to that the HRmk2's wide, even dispersion and improved depth of field, and your studio's sweet spot is transformed into a full-on sweet zone.

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Convention time

It's September, and the fall convention schedule is in full swing. For radio, the main event is highlighted in this issue: the NAB Radio Show. There are other conventions taking place as well, including one that may not be as obvious on the radio convention schedule, the AES convention. You should note that this year's AES has added more broadcast events as well.

So which conventions did you attend? If you're going to lament that you can't attend any conventions, remember that I have heard all the common complaints from people who don't attend conventions. The usual replies include: I don't have a travel budget. My boss thinks I'm only going to look for a job. My boss thinks that I'll learn too much and then get another job.

Unless there is a genuine financial reason involved, these are weak excuses. That is if you view your work in radio as not just a job but a career. It should be important to you and your employer for you to attend professional meetings and presentations.

I know an engineer who doesn't let any of the excuses prevent him from attending the conventions he wants to attend. He pays his own way to the NAB convention every year. He places a personal and professional value on attending and makes it happen.

With all this in mind, I realize that schedules may not always match. And if the financial outlay to get to Charlotte, New York or Las Vegas isn't practical, there are alternatives: Look for the regional conventions.

I have attended the regional SBE conventions in Syracuse, NY; Madison, WI; and Dallas over the past few years. I'll attend the convention in Pittsburgh next month. I find that these regional events often provide a good alternative to a national event. In many cases, it may be possible to attend a regional convention as a day trip without having to pay for a hotel night, which helps address the budget issue.

If there's no regional convention near you, check with your state broadcast association. Some have engineering program tracks in their annual conferences. If they don't, find out why. You might need to work with some other stations to encourage the association to add technical events to the schedule.

Still not an option? Local SBE chapter meetings are another good source of info. Most chapters do not require SBE membership to attend their meetings (but you should be a member anyway). I will admit that some chapter meeting programs are little more than sales pitches. Some programs even say that they are educational programs, but are nothing more than a paid advertisement. Even at meetings where the program has questionable value, there is value in the interaction with the other attendees.

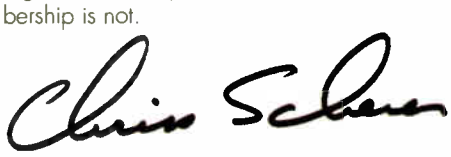
Another argument that I hear as to why someone does not attend a convention? I would rather just attend an online conference.

While online offerings have the benefit of convenience, they have the disadvantage of distraction. It's too easy to turn on the stream and then walk away, or work on something else while it plays. You also lose the interaction with other attendees. Who are you going to discuss the last topic with over lunch? Don't misunderstand me, online seminars are another good alternative, but don't rule out live events.

It's easy to complain that you can't attend a convention and cite someone else's excuse. The better solution is to challenge the excuses, provide answers as to why it is beneficial for you to attend, and finally, figure out your own way to get there if your employer won't send you.

On the road

I will moderate the SBE Engineering Forum at the NAB Radio Show on Sept. 26. Convention registration is required to attend, but SBE membership is not.



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

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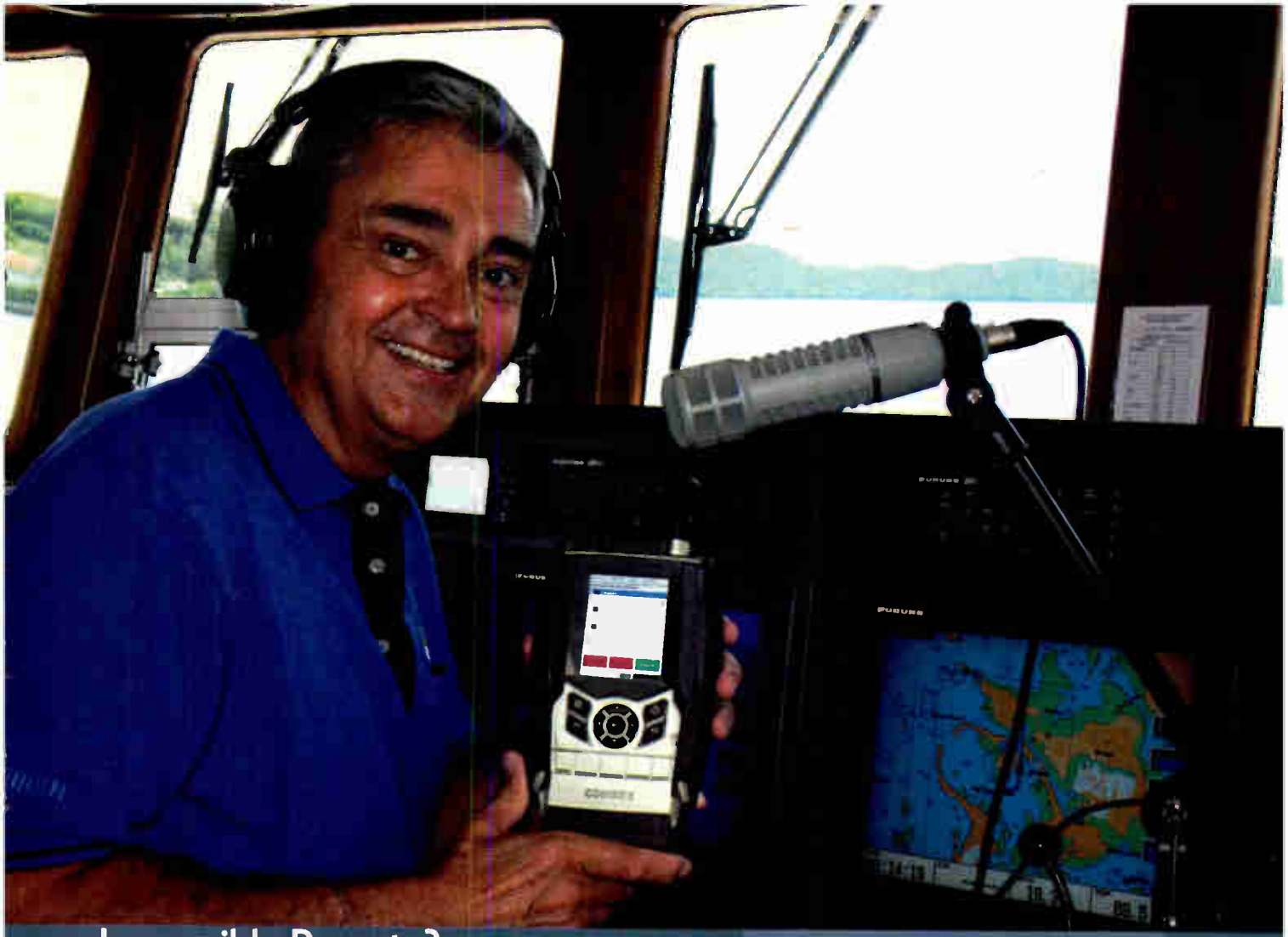

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LED lighting, such as this Farlight side marker, has established itself as a practical means of illuminating towers.

in connection with lighting a 200-foot tower using LEDs compared with incandescent fixtures. These figures involve only the cost of the Austin transformer required to get ac power across the base. Nearly 200 pounds of dead weight (transformer) are taken off the tower loading and $1,700 in each tower cost. Long-term savings in power consumption and earning brownie points from the "green" groups are also additional benefits.

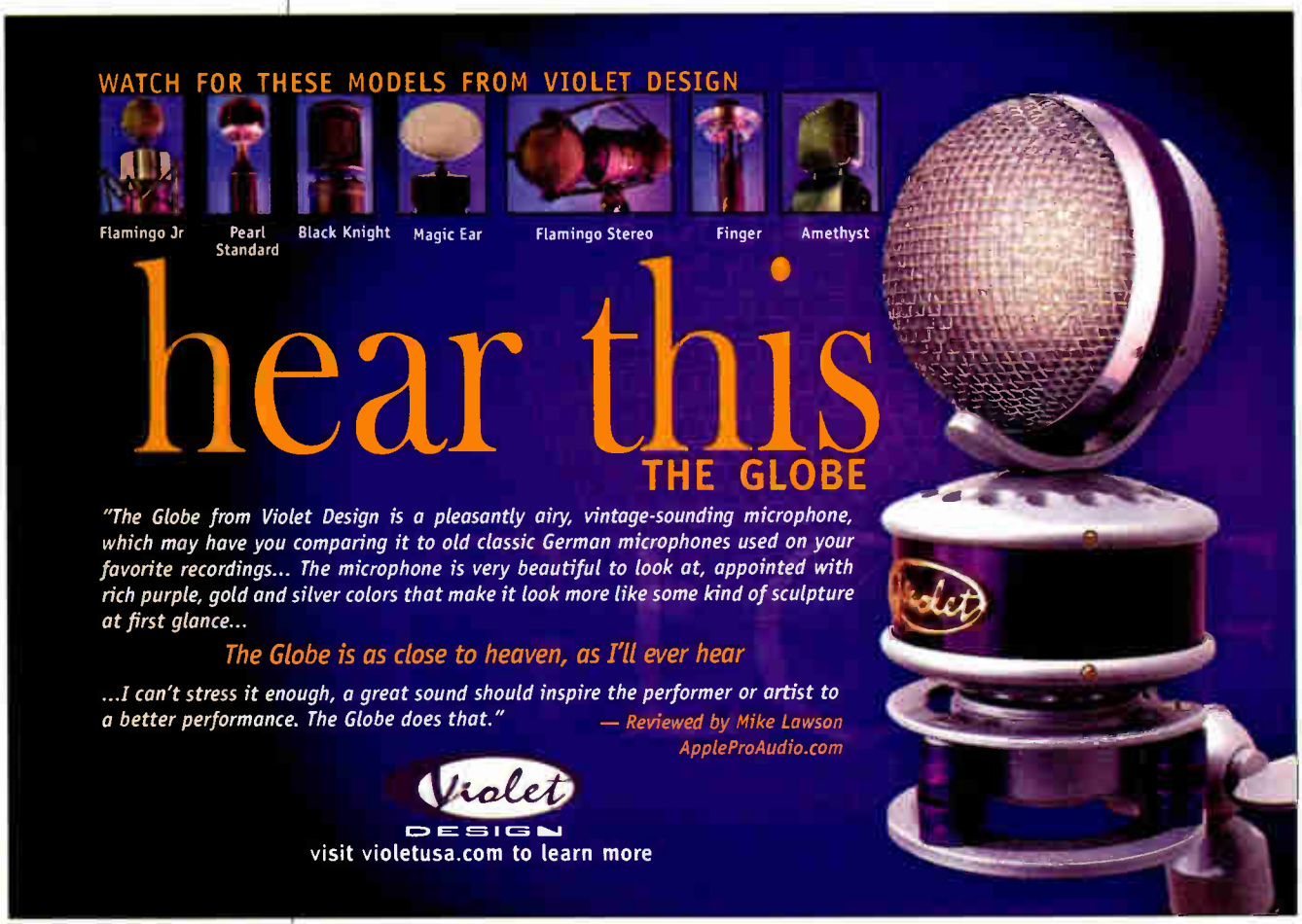
A typical medium-intensity red beacon will draw only 48W in normal operation and require fewer lamp replacement trips up the tower. Power savings are quite dramatic. A standard incandescent medium intensity-type L864 beacon uses only 48W compared to the 1200W required by incandescent lamps.

The load for the combination red and white medium intensity beacon has a nominal mode load of 60W when burning steady in the red, and only 260W nominal for white daytime flashing at the rate of 40 times a minute.

In connection with tower lighting, if you are using a folded unipole type of radiator it is extremely important to be sure the tower lighting wiring is mounted in a metal conduit properly grounded to the tower. If unshielded wiring is used with grounded towers, problems with antenna loading and matching are likely to occur because of variations in base operating impedance. The unshielded wiring can tend to work like an additional length of tower loading and thus affect impedance.

The versatile LED has come a long way from its humble beginning as a very useful, twinkling, panel indicator light with very low power consumption and minimum heat radiation. I wonder how many engineers gave any thought to the possibility of using large numbers of these highly efficient illuminators en masse as a source of bright beacon lighting hundreds of feet in the air in a hostile environment? Certainly the humble solid-state diode has come a long way from its roots as a simple half-wave rectifier.

E-mail Battison at batcom@ohio.net.



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Is the Fairness Doctrine returning?

By Harry Martin

The FCC is not likely to re-impose the Fairness Doctrine, but Congress might still act to re-impose such a regulatory scheme. The Fairness Doctrine, introduced in 1949, required broadcasters to cover controversial issues of public importance and to provide balanced views on such issues even if that meant giving access to diverse groups.

Broadcasters had considerable latitude in presenting contrasting views. Material did not have to be presented in any particular context and there was no right of equal time afforded. The broadcaster only had to cover contrasting viewpoints somewhere in the station's overall programming. The doctrine was abandoned two decades ago when the need for it was considered moot as a result of the emergence of a multiplicity of media outlets—not only additional radio and TV stations, but also cable channels and other video distribution methods.

Early this year Presidential candidate Dennis Kucinich (D-OH) introduced legislation in the House to codify the doctrine. Then, during the summer, Republican legislation was introduced in both houses of Congress aimed at preventing the FCC from reinstating the Fairness Doctrine. With this issue so joined, Democrats on the Hill have been looking at how the Fairness Doctrine, if resurrected in some form, might provide a way to counteract the conservative talk radio that has been so critical of them since Rush Limbaugh began his radio show in 1988.

Specifically, Democratic senators Dick Durbin (IL), Byron Dorgan (ND) and John Kerry (MA) have all openly discussed the idea of restoring the Fairness Doctrine, possibly even including it in the Communications Act. Rep. Kucinich has continued his campaign as well. Although these initiatives appear to be dead for the remainder of this congressional session, they are likely to resurface next year and beyond. As everyone knows, there are multiple issues before Congress that are of more importance to the nation than the Fairness Doctrine, but there are few more controversial from the standpoint of partisan politics. The debate is not over and it can be expected to take on new life if a Democrat is elected president in 2008.

The practical and unavoidable problems with the Fairness Doctrine were and remain two-fold. First, it subjected independent programming judgments to second-guessing by the government. And second, that potential for second-guessing discouraged broadcasters from covering controversial issues. This effect is the opposite of what the original Fairness Doctrine advocates intended. Moreover, constitutional values would be jeopardized and the range of issues presented would be decreased, not increased, as a result of re-imposition of the Fairness Doctrine.

Dateline

On or before October 1, radio stations in Alaska, Hawaii, Oregon, Washington and the Pacific Islands must file their biennial ownership reports with the FCC.

Also on or before October 1, radio stations in the following states and territories must place their annual EEO reports in their public files and post them on their websites: Alaska, Florida, Hawaii, Iowa, Missouri, Oregon, Puerto Rico, Virgin Islands, Washington and the Pacific Islands.

FM translators and AM stations

On Aug. 15 the FCC issued its long-awaited Notice of Proposed Rule Making dealing with AM station use of FM translators. Up to this time the agency had been permitting AM stations to use FM translators as "fill-in" facilities, but only under special temporary authorizations. Under the proposed rules, AM broadcasters, including daytime-only stations, can obtain licenses for FM translators to supplement service within their 2mV/m daytime contours, both day and night, in areas that are within 25 miles of their transmitter sites.

Martin is a past president of the Federal Communications Bar Association and a member of Fletcher, Heald & Hildreth, Arlington, VA. E-mail martin@fhhlaw.com.

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IT for Radio Engineers

By Kevin McNamara, CNE

As engineers, part of your role is to find creative methods to achieve a certain result. You do this for the most part because there is not a commercially viable solution available, or maybe there is a solution but the budget doesn't allow it. For myself, and most of the engineers I knew back in the day, this was the stuff we lived for, making the impossible happen and actually having it work. Give us the roll of solder, a few components, wire, a metal box and voilà: a fix for a problem!

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IT for Radio Engineers

We have all been in the situation where you start working for a new station and come across the myriad of home-made devices that seem out of place, but obviously address a particular problem. We have always had a toolbox of tricks and solutions that could be whipped together. Today, many of the clunky boxes that served us so well in the past have been replaced by networked hardware and software systems, which, while providing a far more powerful and compact platform to fill the operational needs of a facility, now take the form of black-boxes and software files. (The tools you use no longer came from a metal cabinet.)

There are libraries of software designed to address many situations, most of it free or for a small charge. You can also write your own applications, but before you take on such a task, it might be helpful to have a better understanding of how data is transported in a networked environment, what to expect in the future, a more reliable way to connect over the network, and maybe throw in a few tips and tools along the way.

In many ways, transporting digital audio around the station, or anywhere else for that matter, has been made much simpler through Ethernet networking. I will discuss a new protocol (IPv6) that plays an important role in the

Ethernet testers, such as the the Net Tool Series II from Fluke, are the modern handheld test tool in an IT-based facility.

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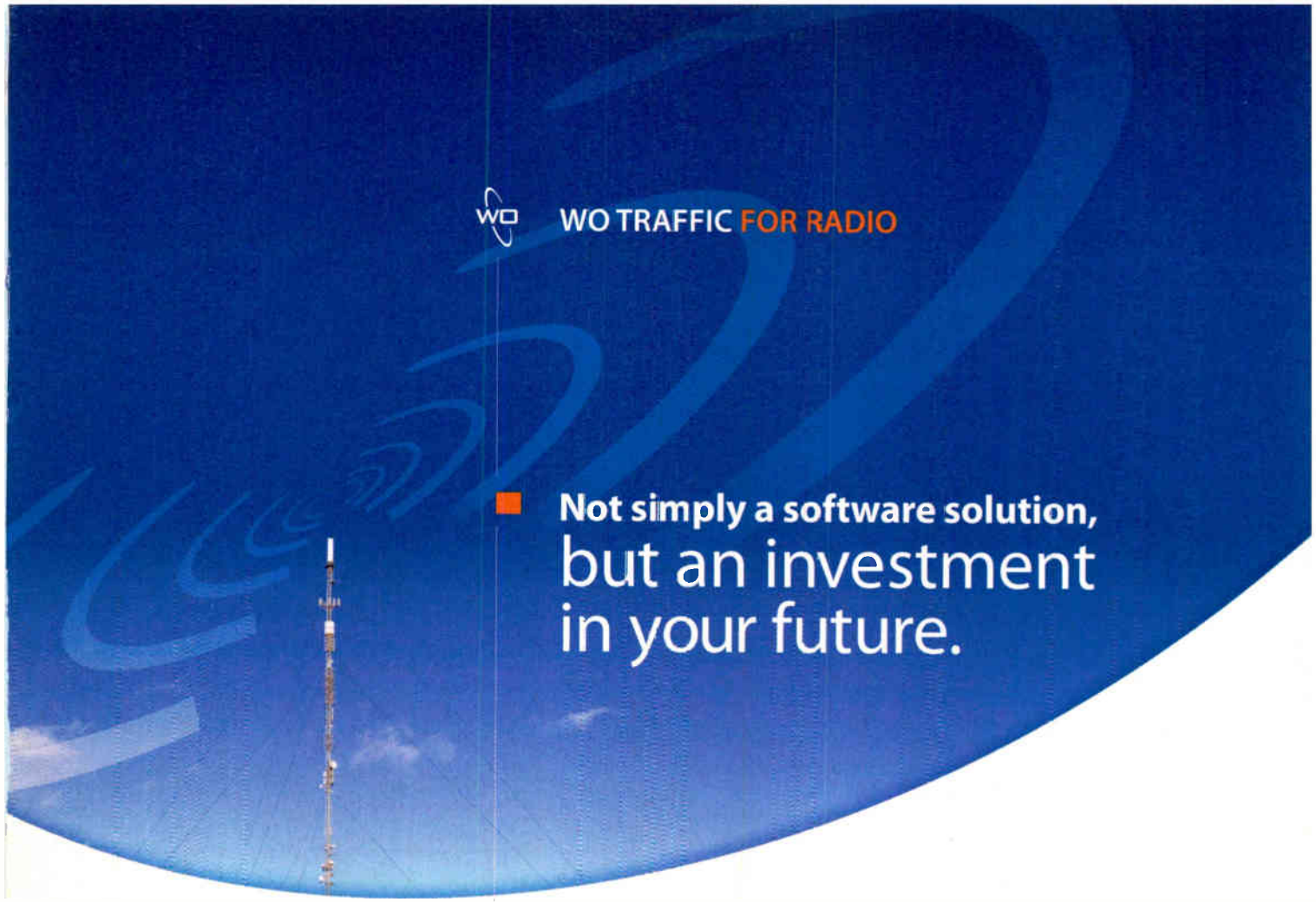

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World Radio History

transport of streaming data and a relatively old protocol (IP Tunneling) that perhaps could be one of the most useful tools in terms of creating both reliable and secure IP connections between devices. But first, a review of IP.

IP review: The basics

Internet protocol (IP) is the reason we can transport any type of data file through a local network or even the Internet. The IP establishes the method by which data is packaged and identified on the network; Transport Control Protocol (TCP) defines the method used to transport the IP from one point to another. Hence the acronym TCP/IP that describes how data gets packaged *and* routed through a network. As with most protocols in networking, these (and other) protocols are based on a set of layers that define the physical connection, transport methods, data packaging and error correction aspects of the protocol. These layers each have a specific job and are designed to work with the other layers above or below it. Layering also gives us a great deal of flexibility to upgrade to new standards while preserving compatibility with other protocols.

The IP address is a unique 32-bit sequence divided into four separate four-byte numbers or octets separated by periods. Each four-byte number ranges from 0 to 255 (aaa.bbb.ccc.ddd).

An organization called Internic is responsible for assigning these addresses with the intention of making sure every terminal device on the Internet has a unique address. The available addresses are further categorized into classes based on the amount of users needing a contiguous address, i.e. a cable provider serving thousands of users needs a large block of addresses to assign to users. The three classes are:

Class A - Addresses assigned to the first octet "aaa" in the range of 0-126. For example, an address beginning with 110.xxx.xxx.xxx is considered a class A address. This class can accommodate 126 different networks with up to 16 million separate hosts.

Class B - Utilizes the first two octets for the network ID and the last two for the host ID. The first two octets will always have an address between 128.000.xxx.xxx and 191.255.xxx.xxx yielding 16 thousand possible networks, each with 16 thousand possible hosts.

Class C - Uses the first three octets for the network ID and the last for host ID. The first three octets with always have addresses between

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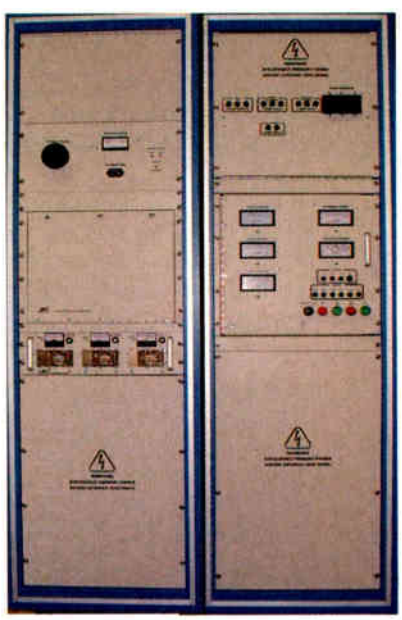

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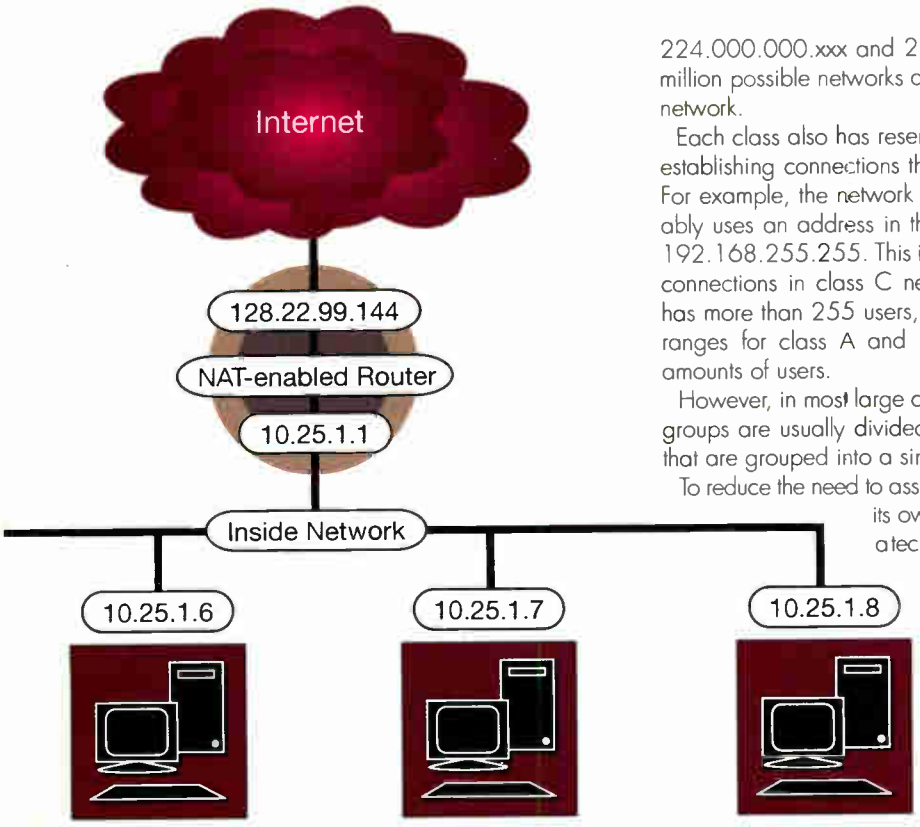

224.000.000.xxx and 239.255.255.xxx yielding 2 million possible networks and up to 254 hosts for each network.

Each class also has reserved addresses used only for establishing connections that do not go to the Internet. For example, the network in your office or home probably uses an address in the range 192.168.0.0 and 192.168.255.255. This is the range reserved for local connections in class C networks. If the local network has more than 255 users, then there are also reserved ranges for class A and B that accommodate larger amounts of users.

However, in most large company networks the smaller groups are usually divided into individual subnetworks that are grouped into a single larger network.

To reduce the need to assign every device on a network its own IP address, most routers use a technique called Network Address Translation (NAT). Let's say

A NAT router allows internal network devices to access hosts outside the network. From the outside, it appears that all outbound traffic originates from the NAT router's single IP address.

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you send an e-mail message from your company computer to a computer in another company's office: from an IP perspective, the data leaves your PC on a local IP address. When it goes through the router, the data is sent on the IP address assigned to the specific office. When it arrives at the destination office, the router reassigns the data to the IP address of the intended recipient. NAT is the protocol that gives routers the ability to recognize IP data packets intended for a specific device and route them properly.

IPv6 is coming

Based on current usage levels, it is anticipated that the current blocks of available addresses under the current system, also called IPv4, will be exhausted in approximately three years. To head this off, a new proposal is in the final stages of approval. Known as IPv6, it will probably provide the most benefit to broadcasters and multicasters, due to enhancements to how IP handles audio and video streams.

The major improvement IPv6 provides is its ability to serve 3.4 × 1038 addresses using 128-bit addressing contrasted to the measly 4 billion currently supported by IPv4 using 32-bit addressing. In theory, IPv6 will provide enough addresses for every person on the planet and still have room to grow almost infinitely. Routing IPv6 data will be made simpler due to the elimination of the NAT protocol since each device will have a unique address and address translation will no longer be necessary. The virtually limitless availability of unique IP addresses opens up the possibility of a wide variety of devices, not just PCs or printers. It is expected that even common items, such as appliances or automobiles, can now have their own IP addresses.

There are interesting possibilities for our industry as well. Imagine transmitters, processing equipment and other peripheral equipment all having IP addresses that could be interconnected from anywhere in the world. Take this a step further and consider a transmitter that takes all of its control and audio streaming information through an Ethernet connection connected to a remote control and audio processor in a different state. Do you see where this could go?

IPv6 addresses are 128 bits long. There are 64 bits for the network address and 64 bits for the host address. The host address is derived from the unique MAC address given to the network interface device. Optionally, they can also be generated sequentially. In practice, the IPv6 address is written in a hexadecimal formal consisting of eight groups with four hex digits.

IPv6 is ideal for streaming because the protocol defines three specific types of addresses:

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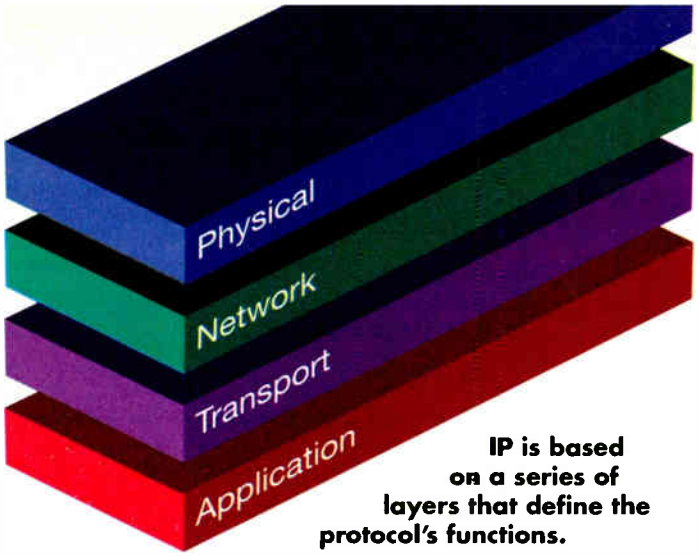

IP is based on a series of layers that define the protocol's functions.

- Unicast – Basically point-to-point, typical of most applications.
- Multicast – One-to-many recipients.
- Anycast – A variation of multicast, only delivered to a single node than routed to other nodes until it reaches the recipient(s).

A detailed discussion of IPv6 would fill volumes, but you need to be aware that many governments and large organizations are starting the transition process. Newer equipment might be software upgradeable but some will need to be changed. Start identifying compatibility issues now. Many manufacturers have information on their websites. Be aware that only Windows Vista and Mac OS X 10.3 and above have native support for IPv6.

IP Tunneling

When it comes to establishing a hard connection between one or more points, IP tunneling is the ultimate tool. Why should you care about tunneling? Consider for example that you are trying to set up a remote broadcast in another county, state or country. Using a dedicated IP address might create problems with latency or possible loss of connection. Utilizing an IP tunnel would establish a dedicated virtual connection between the remote user and host, similar to any local device and typically with improved performance.

The concept of tunneling is based on a process that packages the primary IP packet inside another packet. The purpose of the outer packet is to create a virtual physical connection between two networks that encapsulates the real data packet.

Like everything in the IT world, there is a protocol (or set of protocols) that make implementation possible. There are two primary protocols that can be used to create an IP tunnel:

Point-to-point tunneling protocol (PPTP) may seem familiar from back in the days of dial-up connections. Originally developed by Cisco and later licensed to Microsoft, this became a standard communications protocol to be included standard with later versions of MS Windows and as such, became a popular protocol with dial-up hosting providers.

PPTP requires two separate connections – one connection maintains the data path using another protocol called Generic Routing Encapsulation (GRE). GRE manages the encapsulation process and subsequently strips the encapsulation at the other end. The second connection is used to initiate and maintain the GRE session.

Layer 2 Tunneling Protocol (L2TP) is a newer and more feature-packed version created from a combination of PPTP and another old protocol called Layer 2 Forwarding (L2F). The use of Layer 2 here is deceiving in that it actually operates at the application layer (Layer 5). It works by encapsulating the packet, payload (original data) and header within a UDP (Universal Data Protocol) datagram. Datagrams are basically a package containing a short message. For example, a series

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of datagrams form the basis for streaming audio and video technologies. The current version is L2TPv3 which provides improved performance and compatibly with other transport services.

One more protocol you should know is called IPsec, which is short for IP security. This is typically used in conjunction with a tunneling protocol, particularly L2TP as a means to provide secure authentication and encryption services. When the two protocols are used together the protocol is called L2TP/IPsec.

In practice, the tunneling process begins by establishing the virtual connection between the client and host systems.

In practice, the tunneling process begins by establishing the virtual connection between the client and host systems. The implementation of creating the VPN is typically done through software and/or hardware applications. A popular example of IP tunneling is the Virtual Private Network (VPN), which provides remote users the ability to gain access to their internal network (Intranet) and network resources (printers, etc.) as if they were connected in their offices. The remote user initiates a typical VPN session with a software client that requires you log in with your username, password, etc. The host end of the VPN manages the task of accepting requests to establish the connection and verifying the user login and security information. Once the user information has been accepted the tunneled connected is established and remains connected until either the user (or administrator) chooses to stop it or the host system has provisions to drop the connection when not in use for a preset amount of time.

While tunneling provides a better experience for the remote user, it also offers a much higher level of security for the host network since the connection can't be established without going through some level of security check.

Creating a tunneled connection is easy or cheap (even free) with the use of software applications easily downloaded from the Web. Some of the more popular ones include Zebedee, Nest and Barracuda. A Web search for "IP tunneling software" will direct you to these and a host of other solutions you can use to create your own custom IP tunnel. Most of these also have detailed user guides to help you achieve your goal and make a handy addition to your new toolbox.

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

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World Radio History

By Erich Steinnagel

Something new for news radio

Moving a radio station that's been in one place for three and a half decades is one challenge, moving the only all-news station in Philadelphia is quite another. The entire process had the potential of inducing culture shock across every department in the station.

For 35 years CBS Radio's KYW Newsradio, Philadelphia, shared space with sister television station, KYW-TV, CBS 3. KYW Newsradio enjoyed the benefits of the TV infrastructure in a building purpose-built as a TV broadcast facility. Even with several rebuilds and technology upgrades along the way, the analog backbone of the facility remained basically the same. The move was an opportunity to update the facility, upgrade the infrastructure to a digital, router-based system and have an individual identity in the marketplace.

Building selection was handled from the corporate real estate section of the company and this allowed us to concentrate on layout and technical planning. Fortunately, the chosen building was on the same city block and physically connected to the building we were exiting. Additionally, the STLs and other antennas for the station were actually located on the roof of the new building. This of course saved much time and many dollars in establishing microwave links to the transmitter site.

World Radio History

World Radio History

Something new for news radio

Design objectives

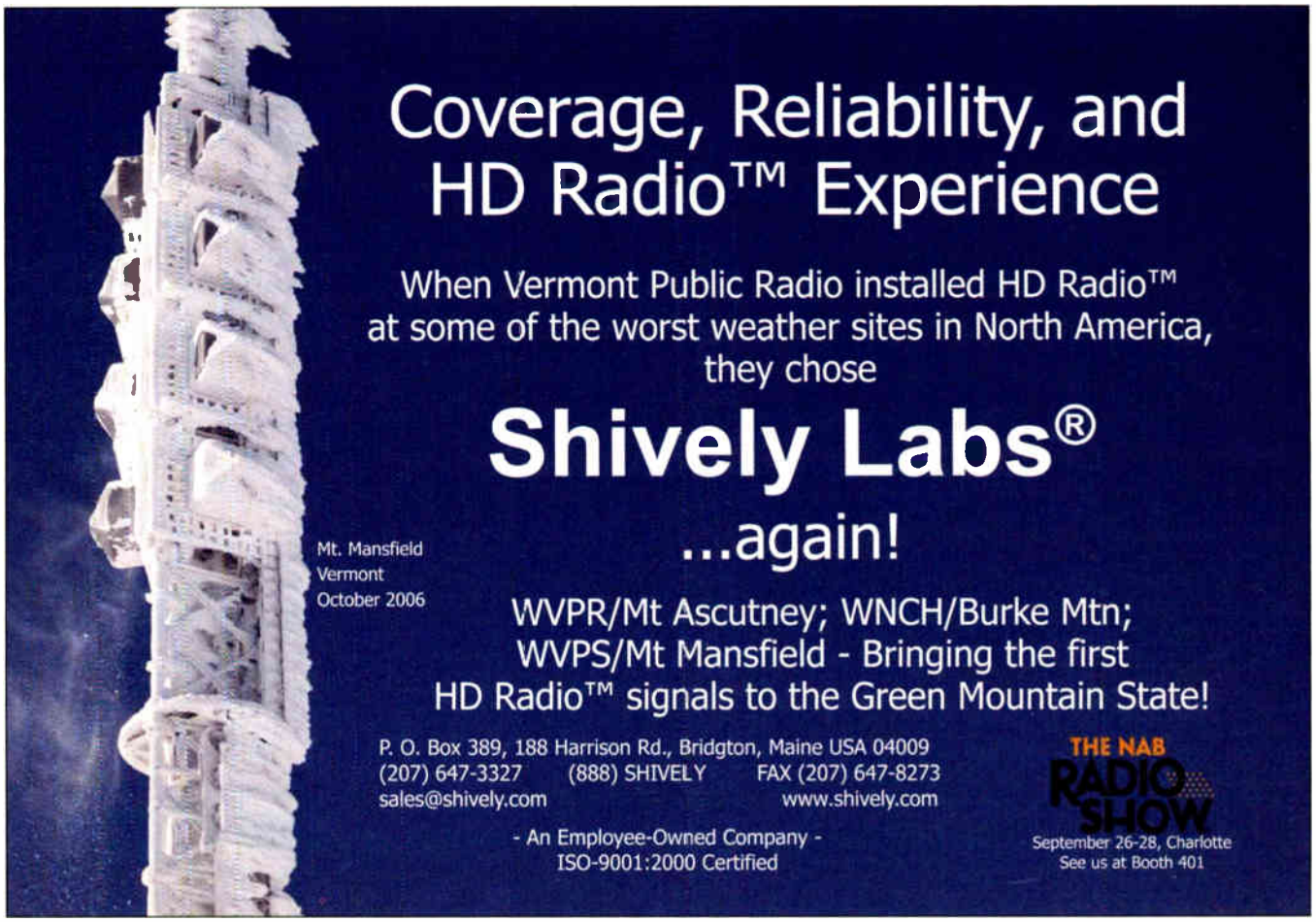
The goal of the design for the new facility was to be versatile, redundant, reliable and easy to use. We used Peter Bloomfield and Associates for the design process. We have worked with the firm before, which has an extensive broadcast design resume. The firm fully understands the function and flow of broadcast facilities. We not only needed a functional design but a look that was consistent with KYW's position in the Philadelphia marketplace.

Air Studio A, which is a mirror image of Air Studio B, has a corner view of the Philadelphia skyline.

The newsroom and studios were to be very open with clear site lines from the news desk to all critical areas of the operation. Studio windows and glass were strategically placed and approved by the news director and staff. Two air studios, both identical in function, were also part of the design. Both air studios accommodate an anchor/co-anchor arrangement. The redundant studios allowed for preventative maintenance that was not easily handled at the old facility. Console layout and equipment placement involved the input from the staff. The end-users of the space were involved in the process along the way.

The technical objectives of the design were to be as flexible and repetitious as the physical layout. A digital infrastructure was the only choice. The need for rapid changes in the technical environment with the limited personnel resources of today is one of the major benefits of a digital platform.

Legacy equipment was limited to the digital audio storage system and the Burli newsroom system, in addition to select pieces of peripheral audio gear. Everything else was to be replaced due to age, obsoleteness, or the fact that it was shared with the television station.



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Something new for news radio

Hardware selection

SAS was selected for the console and routing system. The system met all of the technical and operational requirements of the KYW newsroom. Additionally, SAS was employed at our other sister stations in the market. Uniformity in system selection also provided the benefit of familiarity and support for all of our stations in the market.

One of the problems in configuring a digital system after so many years of analog habits is convincing the staff that they will actually have more functionality and flexibility in a system that appears to have less control and a physically smaller foot-print. It wasn't until the system was operational that everyone could see the benefits. Accessing audio sources and making changes to the system layout were now normal operating procedure or a simple programming task. No changes to wiring; no patch cords.

Next, we decided on furniture for the studios, newsroom and news desk. We used Studio Technologies for the studio furniture. Located in Philadelphia, the company was willing to work with us on a very tight installation and integration schedule. We specified Corian tops on the air-studio furniture since they receive the most wear and tear. We were planning ahead for the wear of another 35 years. Traditional laminate with T-edge molding was used on all of the other studio work surfaces.

Systems furniture was used for the Writer's stations in the newsroom. We were able to configure the systems for the needed visibility from the news desk and achieve the custom look we wanted at an off-the-rack price. The custom requirements for the news desk and its physical size made it an architectural feature of the newsroom and became part of the custom mill work scope.

Power needs

A single 30kVA UPS is used to hold all critical equipment up during any change from utility power to emergency generator power. A 180kW diesel generator available from within the company was used to supply emergency

KYW Equipment List

Air Tools 6100
Belar LP-1a AM
CBT Classic On-Air Light
Circuitwerkes AC-1, AC-12
Crown D-75
Digidesign Mbox 2
Digigram VX222 v2
Electro-Voice 309A, RE-16, RE-20
Enberg BA12CTL, BA12WL, FN3
ESE LA12F, ES-185U/NTP, ESE HR TOH
Eventide Eclipse
Fostex 6301B, RM-1
Harris Intraplex HD Plus
Henry Engineering Matchbox
HHB CDR-830 Plus
JBL 4408
JK Audio Quick-tap
Microwave Filter FD6367
Middle Atlantic Drift, Gang-10 Kit, Mag-1/2, MRK-4031, MRK-4036, MV-RR40, MW-VT, PD-1220J-IG, RSH4A3S, SPN-40-312, SPN-40-36
O.C. White long and short booms, risers
Omnimount 30.0 CA-PA, MT600
Radio Systems DI-2000, integration services, Studio Hub+
Rainwise MKIII
Rane HC6
SAS Rubicon SL
Sony 7506
Soundcraft EPM-6
Studio Technology furniture
Symetrix 528E
Tascam MD-350
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Something new for news radio

power. This is the first time the station's emergency system has been independent from utility-provided fuel. Utility power is supplied to the building on two independent feeders adding to the reliability of Utility power.

Integration of the entire system was managed through Radio Systems. The company is local to the area and worked with our extraordinarily short schedule for integration brought on by delays and complications with construction. Extending the timeframe of the project was not an option because there was a hard exit date from the existing facility with financial penalties. Plus, it was set to be demolished.

The lighting in the hallway can be set to change color automatically or fixed on a selected color.

With the studio furniture being constructed in Philadelphia, we were able to have it all shipped to Radio Systems to be pre-wired. This allowed integration

The KYW news desk overlooks the newsroom and the air studios.

tasks to occur at a time when the space had not yet been turned over to us. As soon as the studio furniture could be set in place, it was not only quickly installed but studio wiring was nearly complete. In some cases, studio equipment was already mounted in the furniture.

Studio-to-TOC cabling was performed as part of the construction contract. For the most part, the entire facility is wired with CAT-5e multi pair cable. The TOC was released for integration before the rest of the space. Radio Systems worked with a cabling company to speed the installation of the backbone wiring to the TOC. With the use of Studio Hub as the wiring system, the TOC came

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together relatively quickly with few wiring errors. Wiring updates were easily accomplished because in most cases it was only a matter of moving a cable to another RJ-45 connector. Pre-wiring the studios off-site saved both time and money and allowed the facility to be test-ready in less than two weeks from furniture delivery.

Rack layout and documentation was done in advance so chunks of work were delegated and performed almost around the clock. Given the short and diminishing time line, integration occurred around the construction contractor as they finished trim and punch list items.

Move in day

SAS remained on-site after initial programming to insure against operational problems and to cover programming changes for items that may have been missed during the initial configuration, or added as scope changed. The system was tested from microphone to STL and was air-ready. To make the transition seamless, the new facility fed the back-up STL and the handoff could be made via remote control.

When something goes wrong in life, it will often be at the worst possible time. On the night of the switch

One of three rows of racks in the technical operations center.

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June 2007
SCMS acquires assets of Major Broadcast Equipment Supplier

2007*
Orban begins shipping the new Optimod 8000 high-quality, multi-purpose stereo audio processor for digital radio, digital television, netcasts, STL protection, satellite uplink protection, and digital monitoring.

2003
OPTIMOD-FM 8300 is introduced at NAB in Las Vegas. OPTIMOD-PC ships. World's first audio PCI Sound Card with Optimod-class DSP for broadcast signal processing.

1976
SCMS founded by Bob Cauthen

1983
OPTIMOD-TV Model 8182A introduced. Adds Hilbert-Transform clippers and a CBS Loudness Controller to the original 8180A.

1991
Orban leads the transition to digital with the first successful DSP-based FM audio processor, OPTIMOD-FM 8200. Thousands on air around the world.

1987
Orban's first product using micro-processor technology is introduced. The 787A Programmable Mic Processor.

* Go to http://www.orban.com/about/timeline/ for a full look at Orban's timeline

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Something new
for news radio

Looking into Air Studio B from the newsroom. Air Studio A is to the right.

to the new facility, everyone from the engineering staff, the integrator and SAS representatives were on-site to resolve any problems. Then it happened: The new building experienced a power failure. At least response time was immediate. The incident was very revealing and tested all of our back-up systems. We also discovered that some things were on emergency panels that shouldn't have been and vice versa. With that out of the way, there was a new confidence that everything would be right the next time there is a power failure. KYW went on the air from the new facility with very few problems. Most of the issues were operational and resolved when everyone became familiar with the studio layout.

Now that it's finished

There were challenges throughout this project. As I mentioned before, delays related to construction did not give us the time we would have liked for integration and training. Most of the delays were from surprises due to issues that come with a 36-year-old building. These included, but were not limited to ADA compliance, life safety and general changes in the building codes that required updating during construction. Budgets had to

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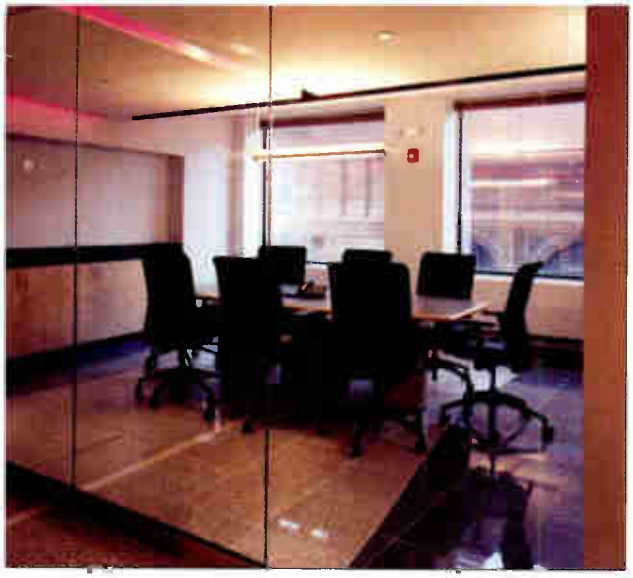

The small conference room is at the end of the hallway.

be modified due to an unprecedented rise in the cost of construction materials.

Although pre-integrating the furniture off-site saved time and the cost of labor, this created another problem in the area of assembling the furniture when it arrived. Some of the wiring devices and equipment were in the way of key fastening points and this slowed the furniture installation.

The HVAC main and supplemental systems were designed around specifications supplied by the building management. Upon completion of construction, building-delivered air did not meet specified parameters. This meant several office areas were not as cool as they should have been. Rebalancing of the system has resolved most of those issues.

After the dust had settled and the moving boxes had been emptied, everyone was proud to be a part of the new facility. There is an intangible benefit to the entire operation when employees feel good about the environment they work in. The new studios for KYW met all of the design goals we set at the beginning of the project and the result is a facility that will be easy to use and manage into the future.

Steinnagel is the Mid-Atlantic director of engineering/mid-Atlantic for CBS Radio.

Facility photos courtesy of Bloomfield and Associates, except TOC, which is courtesy of KYW

More online

More photos of KYW are posted in this article at RadioMagOnline.com.

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The technology behind KYW

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World Radio History

The 2007 NAB Radio show heads to Charlotte

By Erin Shipps

The Queen City is home to this year's NAB Radio show. Charlotte, NC, was also nicknamed The Hornet's Nest after General Cornwallis' description during the Revolutionary War. The show, no doubt, will do that name proud as it brings together a dizzying hub of new products and sessions set on improvement.

The show, running from Sept. 26-28, at the Charlotte Convention Center, will feature products from more than 100 exhibitors. Some may be familiar, some are brand new. Either way, this issue of *Radio* magazine guarantees to be an amazing resource. From audio software to codecs, tuners to transmitters, soundcards to databases, antennas, processors, and so much more, you will not be bored on the exhibit room floor. We have included here a plethora of products from some of the 2007 show's exhibitors.

Sessions this year are focused on reigniting radio. In this year's SBE Radio Engineering Forum, you will hear about topics such as VSWR measurements, of course HD Radio, and have the opportunity to be certified as a digital radio broadcast specialist. And there are plenty more sessions to attend, with topics including the infinite dial, podcasting and the future of radio. For a session overview, turn to page 54.

Perhaps best of all, the NAB Radio Show is a great place to meet new people and reconnect with old friends. The show is offering a variety of meet and greet sessions, most of which include food, which can never be a bad thing.

So get to the show early and stay late because this year promises to be a mecca of new products, education and networking.

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Suprima

IP DUAL AUDIO CODEC

- **Includes LAN, ISDN U & S/T, and X.21 interfaces standard**
- **Auto backup to ISDN from IP or X.21**
- **Built-in Web server for control and monitor from remote locations**
- **Includes SIP protocol over IP, MPEG2, MPEG3, MP2/4 AAC, apt-X, G.722, G.711 & PCM**
- **Portable and Decoder Only versions also available**

SupriMAX

MULTIPLE IP CODEC

- **Up to 14 full-featured IP codecs housed in one unit**
- **Each module is hot-swappable**
- **Ideal for multicast applications**
- **Redundant Power Supplies**
- **Comes fully loaded with every available algorithm included**
- **Monitor large systems with SNMP management**

Visit our website to view the MUSICAM USA Product Portfolio and contact MUSICAM USA, the IP technology leader, for more information about how easily our products can help you master the "audio over IP" direction for your station(s). We are already shipping products to major groups and small stations alike. Check our references and let's go!

CCS

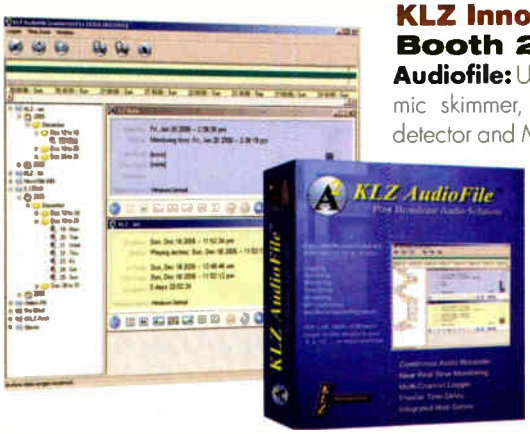
MUSICAM USA

670 North Beers Street, Bldg. #4
Holmdel, NJ 07733 USA
phone: 732-739-5600 - fax: 732-739-1818
email: sales@musicamusa.com
web: www.musicamusa.com

World Radio History

Audio software suite

KLZ Innovations
Booth 210



Audiofile: Use the GPI delay system, mic skimmer, audio logger, silence detector and MP3 streamer/extractor simultaneously on all eight channels with this post-broadcast audio suite. Users can choose from two, four, six or eight channels, each pair configured as stereo or dual mono. MP3-archiving, skimming and streaming is built in. Remote access is also included via KLZ Webserver technology. Audio is linear 48kHz PCM. GPI delay requires a GPI interface that includes four opto-coupled inputs, eight relay outputs. The interface features a timeline, channel/date tree, skim segments and three players.

800-334-9640; www.klz.com; Info@klz.com

IP audio codec

APT
Booth 615

Worldcast Eclipse: The Worldcast Eclipse is a multi-interface, multi-algorithm audio codec that offers Ethernet, X.21/V.35 and ISDN ports providing access to a wide range of networks such as IP, leased line, satellite, microwave and dial-up. Broadcasters can also choose from coding algorithms such as standard and enhanced Apt-x, MPEG 1/2 Layer II/III, MPEG 4 AAC, G.711 and G.722. The codec is designed with a DSP-based architecture. Enhanced 16- and 24-bit Apt-x are standard.

800-955-APTX; www.aptx.com; info@aptx.com

BWF music libraries

Firstcom Music
Booth 600

Music Libraries: Firstcom Music has released its 15 libraries in the Broadcast Wave (BWF) file format. More than 2,000 CDs containing about 40,000 compositions are included in this update.

800-858-8880; www.firstcom.com; info@firstcom.com

OMNIRAX BROADCAST FURNITURE

What people are saying about Omnirax...

"Within a short amount of time Omnirax was able to come up with a beautiful concept for our new studios."

"The Omnirax design makes these studios incredible for talent and operators on both sides of the console."

"Our furniture from you not only fit into our budget and timeline, it was very well constructed and looked beautiful. I expect to be outfitting many more facilities with Omnirax..."

"I was impressed with the exceptional care given packaging for shipment. A few very large and potentially fragile components made it cross-country completely unscathed"

"I wholeheartedly recommend Omnirax to everyone."

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WDNC, Raleigh, NC

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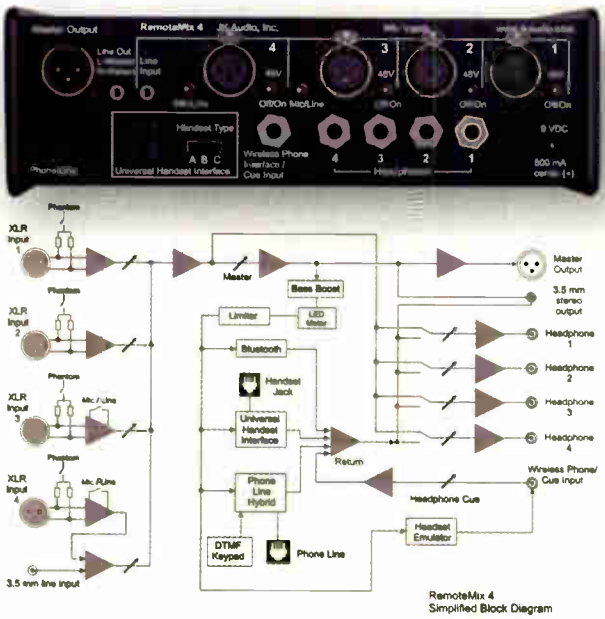
Westwood One, Culver City, CA

The Engineer's Choice!

World Radio History

RemoteMix 4

Introducing A Field Mixer That's Outstanding In Its...um...Field



RemoteMix 4
Simplified Block Diagram

Combining a four-channel field mixer with a four-channel headphone amplifier, a phone-line hybrid, a universal PBX handset interface, a wireless phone interface and Bluetooth® Wireless Technology to connect to cell phones and portables, the RemoteMix 4 is ready to work just about anywhere you are.

Use it as a phone-line hybrid, calling into your studio talk show hybrid. Use it as a front end mixer for your POTS, ISDN or IP codec. Or use it as a combination broadcast/IFB mixer. No matter how you use it, you'll find that it's an incredibly versatile mixer.

Plus... IT SOUNDS GREAT! A soft limiter prevents overdriving the phone line interfaces, while the mixer XLR output is pre-limiter (full range), meaning you have a feed for every need. Bass boost adds a bit of low end before sending the signal down the phone line to provide that "how'd you get it to sound THAT good over POTS lines" nudge. There are convenient 3.5 mm send and receive jacks for recording the show or mixing in your MP3 player.

The RemoteMix 4 can be powered by batteries or the included AC adapter, so you'll never lose a connection – even during a loss in power!

We think we've done our homework with RemoteMix 4. And it'll be in your hands in plenty of time for the fall sports season.

JK Audio

TOOLS FOR SUCCESSFUL RADIO

JK Audio, Inc. Sandwich, IL 60548 USA • Toll Free: 800-552-8346 • Tel: 815-786-2929 • Fax: 815-786-8502 • www.jkaudio.com • info@jkaudio.com

World Radio History

2007 NAB Radio show Charlotte

Upgrade
Logitek
Booth 611

Mosaic: The Mosaic has been upgraded with a pop-up fader display with associated EQ and dynamics information that will place selected information on a user's VGA screen. It also has Vsnapshot, a scene capture and recall feature, provides a pop-up graphical user interface that will run on a user's VGA screen. Fifty scene captures are available per control surface, with data saved in user-editable text files. For live radio applications such as location broadcasting or multi-microphone talk show applications, automatic mixing/ducking capability has been added to Logitek consoles. This ramp-up/ramp-down feature allows for smooth transitions between live microphones, reducing background noise and improving intelligibility. Logitek cites Sirius Satellite Radio's use of this feature for airing Nascar events, where a driver's radio feed will smoothly duck other race audio while the driver speaks, then will smoothly ramp the race audio back up when the driver stops speaking.

800-231-5870; www.logitekaudio.com
info@logitekaudio.com

HD Radio tuner
Day Sequerra
Booth 112

M4.2R: Based on the M4.0, the M4.2R provides additional tools to monitor HD Radio broadcast transmissions. This tuner includes six programmable dry, floating alarm relays, RBDS, RF multipath and signal strength displays, an Ethernet interface for streaming PAD data or remote control and the company's Remote Dashboard software, which lets broadcasters remotely tune the unit, alarm key signal parameters and log their data. The tuner also features full time digital audio output, even when tuned to an analog station.

856-719-9900; www.daysequerra.com
info@daysequerra.com

Streaming service
Jetcast
Booth 204

Streaming service: A new streaming technology, Jetcasting allows each station to have unlimited bandwidth at a fraction of the cost. All streams are scalable and secure. Stations retain 100 percent control of their streams and ad revenue. Users can even design a station player skin to add a logo and color scheme.

917-338-1487; www.jetcast.com; team@jetcast.com

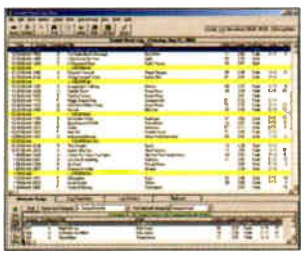
World Radio History

FM transmitter
Rohde & Schwarz
Booth 529

SR8000: This transmitter is equipped with a digital exciter, provides output power from 100W to 1kW. The digital exciter combines the specs of the analog exciters from the company with the reliability of modern digital signal processing. Due to their compact design, the transmitter occupies a maximum of four height units. All functions are integrated in one box; single frequency network operation is possible.

410-910-7800; www.rohde-schwarz.com; info@rsa.rohde-schwarz.com

Music scheduling software
Broadcast Software International
Booth 121



Natural Music: Natural Music maintains music library databases, generates daily music logs according to pre-set rules and includes interfaces for most computer automation systems. Natural Music features a virtually unlimited number of songs in the library, 1,225 different music categories, drag-and-drop music-log editing, day part and hour circulation rules, including horizontal separation, and an audit log for troubleshooting.

888-BSI-USA1; www.bsiusa.com; info@bsiusa.com

Dummy loads
Coaxial Dynamics
Booth 637

4000 Series: Coaxial Dynamics' series of low VSWR, high peak power terminations range from 5W to 150W with a frequency range to 4GHz. The VSWR is 1.05:1 maximum to 1GHz and 1.10:1 maximum to 4GHz. The peak power handling capabilities are from 5kW to 25kW with a 1-microsecond pulse width, depending on the model selected. These terminations come with a standard two-year warranty and detachable N Female connectors. There are 26 different Quick Match connector types for this series including male or female SMA, BNC, LC, TNC, SMA, 7/16 and many others.

800-COAXIAL; www.coaxial.com; sales@coaxial.com

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HD READY

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World Radio History

2007 NAB Radio show Charlotte

Networked audio system
Wheatstone
Booth 510

Evolution 6: The E-6 Surface, the E-series Studio Satellite and the E-series Network Switch combine to achieve a cost effective networked audio system. Each studio operates independently yet can share all the sources and mixes through the E-series Network. Switch without traffic limitations, audio latency, or machine control delays. The E-6 Surface features event recall, bus-minus and mix-minus and four aux mixes-all with dedicated talkback systems. The E-6 also has four monitor outputs and standard EQ, dynamics, panning and mic processing on all channels (simultaneously). It supports multiple arrays of programmable input channel and master panel switches for customized functions like phone, intercom, salvos or machine commands.

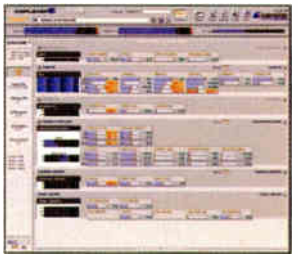
252-638-7000; www.wheatstone.com
sales@wheatstone.com

Serial LAN extender
Burk Technology
Booth 403

SL-1: Connect two LANs via an existing serial connection, allowing remote IP access without a separate ISP or VPN, with this device. Use it at remote sites where traditional IP connectivity is limited or not feasible. The LAN extender enables wide-scale deployment of IP-based technologies. The unit also brings Web-based setup and diagnostic applications within the reach of studio staff. Personnel at remote sites benefit by gaining access to otherwise unavailable network resources, including email, PDF manuals and wiring documentation. Because the system operates on the same subnet as the local and remote networks, devices integrate seamlessly over any distance, with minimal security obstacles, at speeds anywhere from 4.8kb/s to 115.2kb/s.

800-255-8090; www.burk.com; sales@burk.com

Audio processor
Audemat-Aztec
Booth 226



Digiplexer 2/4: This processor is also a full RDS encoder, a digital and a stereo encoder. It allows I/O remote control and backup audio. The processor uses high-speed DSP to create a stereo signal and radio data messages. With the Ethernet connection and the PC software, configuration is possible from anywhere in the world. The processor features real-time clock for RDS scheduling, two-band audio processing, 2 giga-flops of DSP power, clippers that run at 1.5MHz, LCD screen and Ethernet, USB and RS-232 ports, all in 1RU.

305-249-3110; www.audemat-aztec.com
contact@audemat-aztec.com

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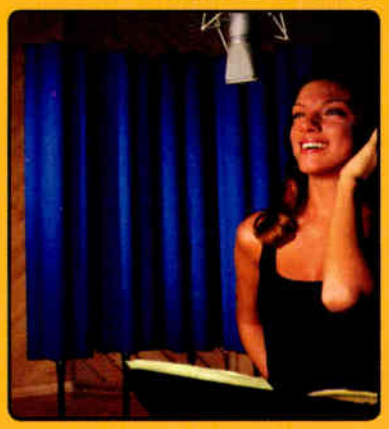

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Toll Free **1-888-765-2900**
Web: http://www.acousticsfirst.com

Sound card
Audio Science
Booth 619

ASI6514: The ASI6514 is a professional PCI sound card designed for use in radio broadcast automation. Providing up to 12 play streams mixed to four balanced stereo outputs and up to two record streams fed from one balanced stereo input, the ASI6514 features anything to anywhere mixing and routing. The ASI6514 provides both balanced analog and AES/EBU inputs and outputs. The maximum analog input and output level is +24dBu. A choice of uncompressed PCM, MPEG layer 2 and MP3 is available for both recording and playback. All compression is handled by an on-board floating point DSP, allowing the host computer to focus on other tasks.

302-324-5333; www.audioscience.com
sales@audioscience.com

World Radio History

Upgrade to remote control system
Davicom/Comlab Telecommunications
Booth 632

Next Generation Mini-Mac: This unit shares many features with its big brother, the MAC, but has a limited number of inputs/outputs (eight metering inputs, 16 status inputs, two audio inputs, eight physical relays and one reach-through serial port), and cannot be expanded. Version 5 of the firmware is Daylight Saving Time-ready for North America, offers bilingual voice and screen capability (supporting Unicode character sets), multiple alarm-call lists (for day/night workshifts, weekends or specific events) abd a user-defined log. Configuration and control of Mini-Mac and Mac units is ensured by the included Mac Comm software version 5, which allows customized view screens for each user and site.

418-682-3380; www.davicom.com; info@davicom.com

Broadcast media database
BIA Financial Network
Booth 405

Media Acces Pro v4.2: The improvements in Media Access Pro include information on HD Radio, greater functionality and flexibility in the mapping program, expanded technical information on CP data, the addition of low-power FMs, more detailed information on radio station audience levels, and user requested custom reports and searches to create customized reports at the click of a button. Version 4.2 also includes predefined searches for CPs and move-ins so the user can quickly know the number of CPs in a market, identify overlapping signals from competing stations and determine when a CP will be a new move-in to a local market.

703-818-2425; www.bia.com; info@bia.com

Inventory sales tool
Bid4spots.com
Booth 429

Powerbidder: This program is scalable so that general sales managers with multiple stations can enter their rates on one bidding screen and apply them to multiple stations. Advertisers create auctions early in the week for ads they would like to run the following week. Radio stations bid against each other to win an advertiser's spots. The more auctions in which stations compete, the better their chances of winning auctions and selling last-minute airtime. With Powerbidder, sales managers enter the total number of radio spots they wish to sell across any number of stations, along with gross dollars per spot for each daypart. Powerbidder automatically determines which ads the stations should bid for to sell the most inventory.

866-326-7788; www.bid4spots.com
CustomerService@Bid4Spots.com

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Model 702
"Mini Encoder"

Our low-cost "Mini Encoder" supports simultaneous Scrolling-PS and RadioText messages for station IDs, promos and advertising, plus all the housekeeping IDs and flags. Quickly installed and easily programmed with Windows® / USB interface.

Model 702 $420

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Model 712
Dynamic Encoder

The RS-232 serial port ties directly to station automation to scroll song artist/title info and promos or advertising. The PS and RadioText fields are simultaneously available for greatest messaging capability. Static housekeeping data is easily programmed with the supplied Windows® software.

Model 712 - $1250

Model 713
TCP/IP Dynamic Encoder

All the messaging functionality of the Model 712, but with direct LAN/Internet connectivity. 3-way addressability: TCP / IP network, serial RS-232, USB. Supplied with Windows® software for network setup and static register programming.

Model 713 - $1690

Model 510
Decoder/Reader

Monitor, decode and log all the RDS data groups. Read the data from the front panel or use the supplied Windows® software for further analysis and logging.

Model 510 - $1700

For full technical details, visit
www.inovon.com

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www.inovon.com • e-mail: info@inovon.com

World Radio History

AM audio processor
Orban
Booth 230

Optimod-AM 9300: Useful for AM shortwave, medium wave and long wave broadcasts, all processing is performed by high-speed mathematical calculations within Motorola DSP56367 digital signal processing chips. The processor's quick setup wizard walks the user through the setup process. A less/more knob customizes the processor's factory presets. Most of peak modulation control is performed within the five-band limiter, using multiband distortion-canceling clipping. An all-pass phase scrambler makes peaks more symmetrical to reduce clipping distortion and to allow better control of loudness. The analog input is buffered and immediately followed by an analog-to-digital converter. All processing takes place in the digital domain. The automatic gain controller compensates for operator gain-riding errors.

480-403-8300; www.orban.com; sales@orban.com

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Newsroom production
RCS
Booth 217

Prophet Newsgen 1.6: This standalone newsroom software enables reporters to write newscasts, receive and manipulate wire copy and digitally record, edit and playback audio. This upgraded version includes the added ability to ingest wire services via IP, flexibility to run the News Feeder service on multiple CPUs, moving a media file or story to a new category will update the erase date to reflect the new category's settings, added created date, created user, length and media length columns to the story library, modified e-mail format to send as blind carbon copy, and time and date are now displayed based on regional settings.

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

AM antenna
Kintronic Labs
Booth 110

Kinstar: The radiation pattern and efficiency of this antenna provide operation equivalent to that of a standard quarter-wave monopole, but at approximately 20 to 25 percent of the height. The low profile antenna consists of four electrically short, vertical, closely spaced elements each of which is terminated in a horizontal top load element. Each vertical element is fed via a phase-matched section of 50Ω transmission line.

423-878-3141; www.kintronic.com
ktl@kintronic.com

World Radio History

Cellular remote software module
Tieline Technology
Booth 206

3G: A software upgrade for current users, the Commander G3 and I-mix G3 platforms now deliver live nroadcast-quality remotes to the studio via emerging 3G wireless broadband technology. Broadcasters with 3G broadband enabled cell phones can connect from anywhere they can get reliable wireless 3G coverage and deliver FM-quality mono and stereo audio for remote broadcasts. A 3G broadband connection enables data transfer at download speeds of up to 384kb/s and upload speeds of up to 128kb/s.

888-211-6989; www.tieline.com
sales@tieline.com

Guy anchor rod
ERI-Electronics Research
Booth 310

Ultra Guy Anchor Rod: This guy anchor features a port to allow non-destructive ultra-sonic testing of guy anchor integrity, without soil excavation. It's noninvasive because there is no digging and nondestructive because there is no surface damage. No temporary anchors are required. The equipment provides more detail than visual a inspection, including detection of stress cracks and internal flaws. The rod is Polyethylene sealed and anticorrsive.

812-925-6000; www.ERIinc.com
sales@ERIinc.com

Amplifier, exciter
Energy-Onix
Booth 427

SST-1000C: This system includes the SST-30FS, frequency agile, 30W exciter, broadband SSA-1000C, 1kW amplifier, ac line surge protector and polyphasor lightning protector. SST-30FS includes built-in stereo generator. All chassis are 19" rack mountable and, when including exciter, amplifier and ac line protector, occupies 11RU of rack space. It includes the SST-30FS limiter. The ac line surge protector has additional ac outlets that can provide line surge protection for processor and STL receiver.

888-324-6649; www.energy-onix.com
energy-onix@energy-onix.com

World Radio History

2007 NAB Radio show Charlotte

Inline surge protector
LEA International
Booth 200

SL: LEA's SL is a high performance, inline surge protector ideal for safeguarding UPS and critical loads from damaging transients. The SL is available in single-phase 120V and 240V configurations and is rated for system exposure per IEEE C62.41 Category A.

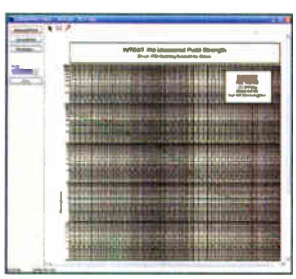
800-654-8087; www.leaintl.com; lea@leainternational.com

Data delivery program
Enco Systems
Booth 508

Padapult VS: PADapult was introduced in 2005 as a vehicle to enable broadcasters a means of fully automated or manual delivery of program metadata such as artist and title information as HD Radio Program Service Data, RBDS encoders and other information displays. Along with HD Radio's digital audio signal, or main audio program, there's also a text stream embedded in the carrier wave. This Program Service Data (PSD) consists of metadata and gives land-based stations capabilities similar to satellite radio services. Text scrolls across the front of the receiver's LCD panel. Song and artist information and station ID are standard content, but the PSD can also include traffic and weather updates or other information the station provides - even commercials.

800-362-6797; www.enco.com; sales@enco.com

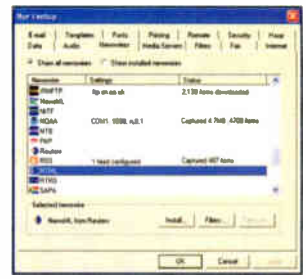
AM conductivity software
V-Soft Communications
Booth 605



AM Conductivity v1.0: Version 1.0 of Conductivity for AM radio will automatically identify the correct ground curves to be used based on the field strength measurements it is provided along a specific radial. Breaks in the conductivity will be plotted on the radial's graph. The program can handle up to five data sets per each radial allowing comparatives. Once given the measurements, Conductivity can construct the actual pattern the station is radiating. Conductivity is a standalone program, or it can be used in tandem with V-Soft Communications' AM-Pro, which will accept direct file input of the ground conductivity break files.

800-743-3684; www.v-soft.com; info@v-soft.com

Radio newsroom system
Burli Software
Booth 610



News Data Ingest: Burli ingests and manages a huge range of data in traditional and emerging formats. More than 50 serial data wires are supported in a variety of formats, languages and character sets. The system provides automatic ingest from FTP sites as well as LAN or WAN locations. The system automatically records from multiple analog or digital audio sources. Clock, threshold and GPI recording triggers are available. Record and manage telephone recordings remotely with DTMF tones. Support for PCM, MP2, BWAV, Cart Chunk and MP3 formats in a variety of sample and bit rates.Built-in RSS reader treats RSS feeds like newswires.

604-684-3140; www.burli.com; info@burli.com

Water-cooled tetrode
Thales Components & Subsystems
Booth 127

TH 594: The new water-cooled tetrode is designed for the high-power digital FM radio broadcast market. It is especially suited to the new IBOC technology, and in general to high-definition radio broadcasting technologies. Thales' TH 594 tetrode has 40kW anode dissipation and delivers 35kW of continuous wave power, or 60kW peak power. The tetrode incorporates the technologies that have earned Thales tetrodes a reputation for performance and reliability: pyrolytic graphite grids for very high mechanical stability, ensuring optimum high-power performance, and a water-cooled anode (hypervapotron technology) for a high power dissipation rating. At the same time Thales developed a common grid cavity, which is compact, easy to use, and does not require adjustments to the neutralization circuit. Used with the TH 594 tetrode, this cavity enables peak power of 60 kW with a gain of 15.5 dB. The TH 594 tetrode offers the high linearity, long life and ease of installation and operation expected by users.

+33 1 30 70 36 40
www.thalesgroup.com/electrondevices

Network audio decoder
Barix Technology
Booth 113

Extreamer 1000: The Extreamer 1000 combines Instreamer and Exstreamer technology into a single device, and adds several new features including a host of inputs and outputs not available on previous models, designed specifically for the professional radio broadcaster. Eight contact closures allow broadcasters to transport data information with the audio to trigger and control local announcements, such as station identification, an EAS signal or even local studio cut-ins to a national feed.

866-815-0866; www.barix.com; info@barix.com

World Radio History

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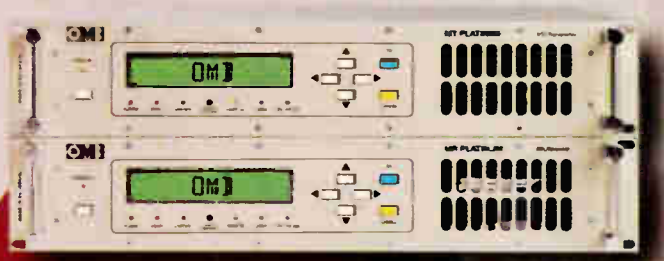
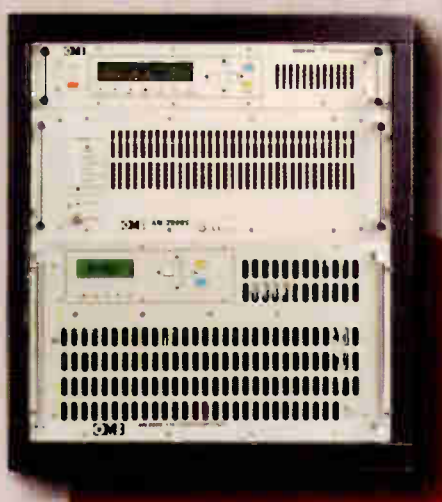


MT/MR PLATINUM

>1GHz

is a high-performance Studio-to-Transmitter Link. It is made up of the 5W MT transmitter externally synthesized in 10MHz sub-bands with a step of 100KHz, and the MR double conversion receiver, that is externally synthesized, too. The MT is microprocessor controlled, and includes LCD display for the visualization of the most relevant transmission parameters (frequency (6-digit), forward and reflected power, modulation level, balanced Mono, Stereo (MPX). The MR receiver has the same visualization system as the transmitter. It includes balanced Mono and Stereo (MPX) outputs. Furthermore, the MT/MR Platinum ST includes a jumper in order to get a proper operation with digital signals.



EM 2000

is a 2000W FM transmitter made up of the EM 25 DIG exciter (or EM 20x30 exciter) and the AM 2000 FM amplifier. AM 2000 includes eight 300W high-efficiency MOSFET technology amplifying modules, fed by 2 independent switching power supplies, which are made to withstand the working conditions. The amplifying modules work independently thanks to a power combining structure that provides high isolation between them.

EM 10000

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

www.omb.com

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(305) 477-0974
fax. (305) 477-0611
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MIAMI, Florida 33122 USA

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50410 Zaragoza, ESPAÑA

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teléfono. 902-187878
fax. 902-187878
Pol. Ind. Centrovía C/Paraguay, 6
LA MUELA
50196 Zaragoza, ESPAÑA

World Radio History

Play-out and production software

Airshift
Booth 105

Airshift Studio 2.0: Airshift Studio 2.0 builds on the first version, which is a complete radio production tool covering all main tasks related to radio production. It also allows for production tasks like audio editing, text writing and RSS and podcast publishing in the studio. Version 1.0 runs on Windows, Linux and Mac OSX, and plays MPEG1L2, MP3, OGG, WMA and linear audio formats. The upgrade to this software now features an advanced playlist manager, and serves both cartstack and playlist approach to program production. It also features a new music clock and scheduling feature, and a significant expansion on the range of keyboards and console interfacing possibilities. Airshift Radio 2.0 integrates with the industry standard Ericsson IPX brokerage system.

+35 8 50 365 0577; www.airshift.tv; sales@airshift.tv

Condition monitoring

Dielectric
Booth 117

M2M: Flash Technology will introduce additions to its line of M2M products. The product can monitor and manage non-IT-based assets such as HVAC units, back-up generators, security access instruments, exterior lamps and cooling towers. The monitor can help with predictive maintenance, which can streamline operations. The units in the M2M product line are simple enough to monitor lights at a tower site or complex enough to manage and control a an entire facility's functions.

800-341-9678; www.dielectric.com
dcsales@dielectric.com

Interdigital bandpass filters

Shively Labs
Booth 401

2604, 2612: These interdigital bandpass filters provide filtering in a footprint less than half the size of conventional bandpass filters. The 2604 is designed for use with transmitters up to 2.5kW and the 2612 for transmitters up to 10kW. Both are manufactured for use in HD Radio applications.

888-SHIVELY; www.shively.com
sales@shively.com

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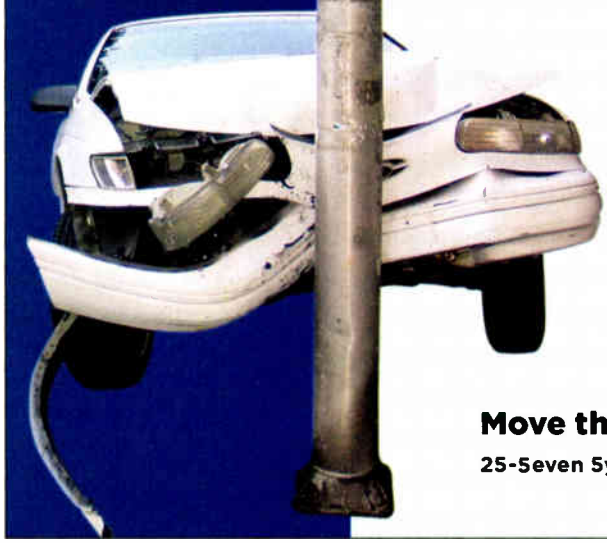

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World Radio History

Conditional access
NDS Limited
Booth 122

Radioguard: The technology enables pay-per-listen, opt-in and public service on the HD Radio platform. Broadcasters can offer more choices to their listeners, a broader selection of content and more segmentation opportunities for advertisers, all of which provide additional revenue-generating possibilities. The technology will improve radio reading services for the blind, private channels for emergency operators and opt-in events sponsored by advertisers. The technology will encrypt content before it is transmitted over the airwaves, then decrypt it once the radio has received it and verified the entitlement rules.

949-725-2500; www.nds.com

Analog, digital translator
Armstrong Transmitter
Booth 513

TRX-HD series: Designed to transition a translator station from analog-only broadcasting to digital, the TRX-HD receives an FM station's entire signal payload over the air, including its HD Radio digital component. The signal content is transferred to the TRX-HD transmit side for retransmission on the translator frequency. The TRX-HD10 provides 10W in the hybrid digital mode, the TRX-HD50 provides 50W hybrid digital, and the TRX-HD100 is a 100W hybrid digital translator. Higher hybrid power levels are achieved by adding an Armstrong solid-state amplifier.

315-673-1269; www.armstrongtx.com
sales@armstrongtx.com

Podcast creation software
D.A.V.I.D.
Booth 203

One-Click Podcasting: Routine podcast conversions, such as turning an entire talk show into a podcast format, can be configured to happen completely in the background without daily human intervention. When a program specifically produced for podcast is finished, the user clicks the mouse to create the checkmark. When the production is saved, the podcast is automatically created. Whether listeners access the podcast from Itunes or the station's website, all of the RSS data, ID3 tags and Metadata are automatically created and attached to the file.

888-374-3040; www.davidsystems.us; info@davidsystems.us

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Nautel's integrated digital solutions make your move to HD Radio easy and economical.
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XR Family of AM Transmitters for Digital and Analog. See the latest members of the industry's most depended-on AM transmitters at the NAB Radio Show.

V1, Nautel's new 1kW FM Transmitter: Complete FM HD Radio transmitter site solution in just 6RU.

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THE NAB RADIO SHOW
Booth 221

HD Radio

Making Digital Radio Work.

Phone: (207) 947-8200 | Fax: (207) 947-3693 | info@nautel.com | www.nautel.com
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World Radio History

LPFM antenna
Jampro Antennas
Booth 409

JLCP: This stainless steel, omni-directional antenna is easy to install with a supplied 2" pole mount. A helix design makes it useful for LPFM broadcasters wanting flexibility. The antenna offers higher V-pol field than similar designs providing better car reception and building penetration. A stacking harness is included when multiple bay arrays are ordered. The antenna features a VSWR 1.5:1 or better ±150kHz.

916-383-1177; www.jampro.com; jampro@jampro.com

Music library
Westar Music
Booth 336

Star Trax: Star Trax contains broadcast-length tracks (60s, 30s and stingers) from the Westar Music Library, plus all of the collection's Tags, Bridges, Production Elements and Segues, published in 16-bit/44.1kHz .BWF format. A complete set of metadata is embedded in the files, ready for use with asset management software. This production music collection is available on 10 DVD ROM discs, and it currently offers more than 5,300 tracks (26.5GB) of professional music and transitions.

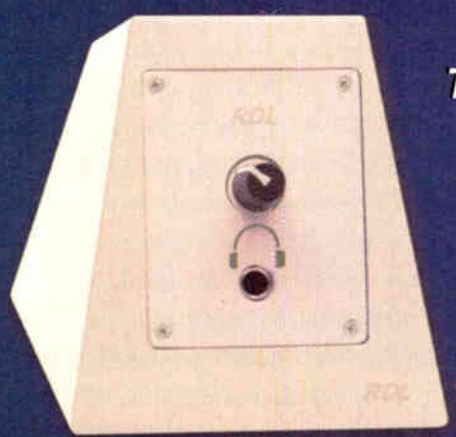
866-463-0100; www.westarmusic.com
info@westarmusic.com

Digital transmitter
Booth 417

FMI 50T: The transmitter offers 50kW FM+HD Radio output with better than 55 percent overall efficiency. It includes the FXI FM+HD Radio exciter and ESP correction technology throughout the RF chain. The transmitter features patented, folded half-wave cavity for better performance and efficiency. It provides low-level combined power levels of 28kW or less.

217-224-9600; www.bdcast.com; bdcast@bdcast.com

STEREO HEADPHONE AMPLIFIER



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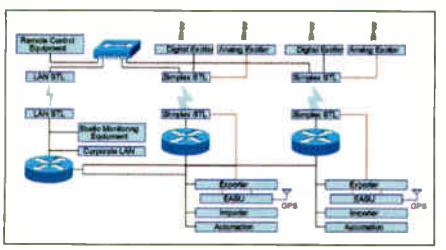
RDL Radio Design Labs

World Radio History

Satellite receiver
X-Digital
Booth 533

XDS-Pro 4: Designed for networks with up to four audio outputs with 32 relays, each live stream can be routed to any of the balanced outputs. Media files can be transmitted into local flash, a local hard disk or onto a mounted network file server (NFS) device. Audio files residing on the mounted device can be inserted into a live or recorded media being output via the MPEG decoder, providing localization into live and stored programming. The XDS-PRO is capable of recording and playing back any broadcast channel. All XDS-PRO4s are equipped with up to 32 programmable form-A relays that can be actuated via network control or ancillary data channels, providing a legacy interface for many existing radio station automation systems.

858-452-2010; www.xdigital.com; sales@xdigital.com

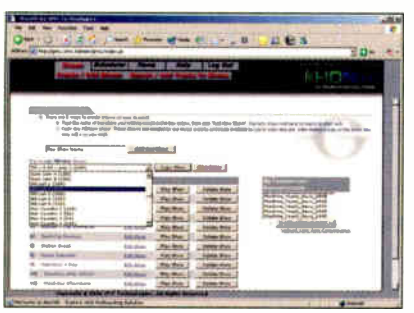


HD Radio STL
Nautel
Booth 221

Reliable HD Transport: This system features clock packet tunneling that arranges clock packets to be sent during times when no data packets are using the STL bandwidth, facilitating a more accurate measurement of the STL throughput delay. Data rebalancing ensures continuous operation without dropout by creating a constant bit-rate stream, reducing instantaneous STL bandwidth requirements. Its automatic E2X start-up sends the initial control packet only once.

207-947-8200; www.nautel.com; info@nautel.com

Multicast programming
OMT Technologies
Booth 501



HD Now: This service provides HD Radio multicast broadcasters with a way to handle their programming and content needs. With one workstation, stations can create multicast programs by accessing a music library with more than 150,000 music titles or 100 professionally programmed channels in various music formats. Multiple HD Radio channels can be managed remotely from a central location to include customizable music, liner and commercial content that is relevant to each market.

888-665-0501
www.omt.net; omt@omt.net

FM scanning receiver
Inovonics
Booth 504

Band Scanner: The Band Scanner is a tool to evaluate FM broadcast band congestion and to log station identification parameters. The system is powered by the USB port of any Windows PC. Using it with a laptop is useful for gathering data from multiple points in the field. The Band Scanner generates a graph showing RF level vs. frequency for every station in the market. It then analyzes each carrier and creates a station list. Stations with an RBDS presence are further refined to show all the radio data groups being transmitted. Its interface is like a portable radio: It may be tuned manually through the receiver screen or by double-clicking a point on the spectrum plot or an entry on the station list. Spectrum plots may be saved as JPG or BMP files. The RBDS data error level is graphed in a separate window on the receiver screen. The program can be monitored with headphones plugged into a standard 1/8" jack.

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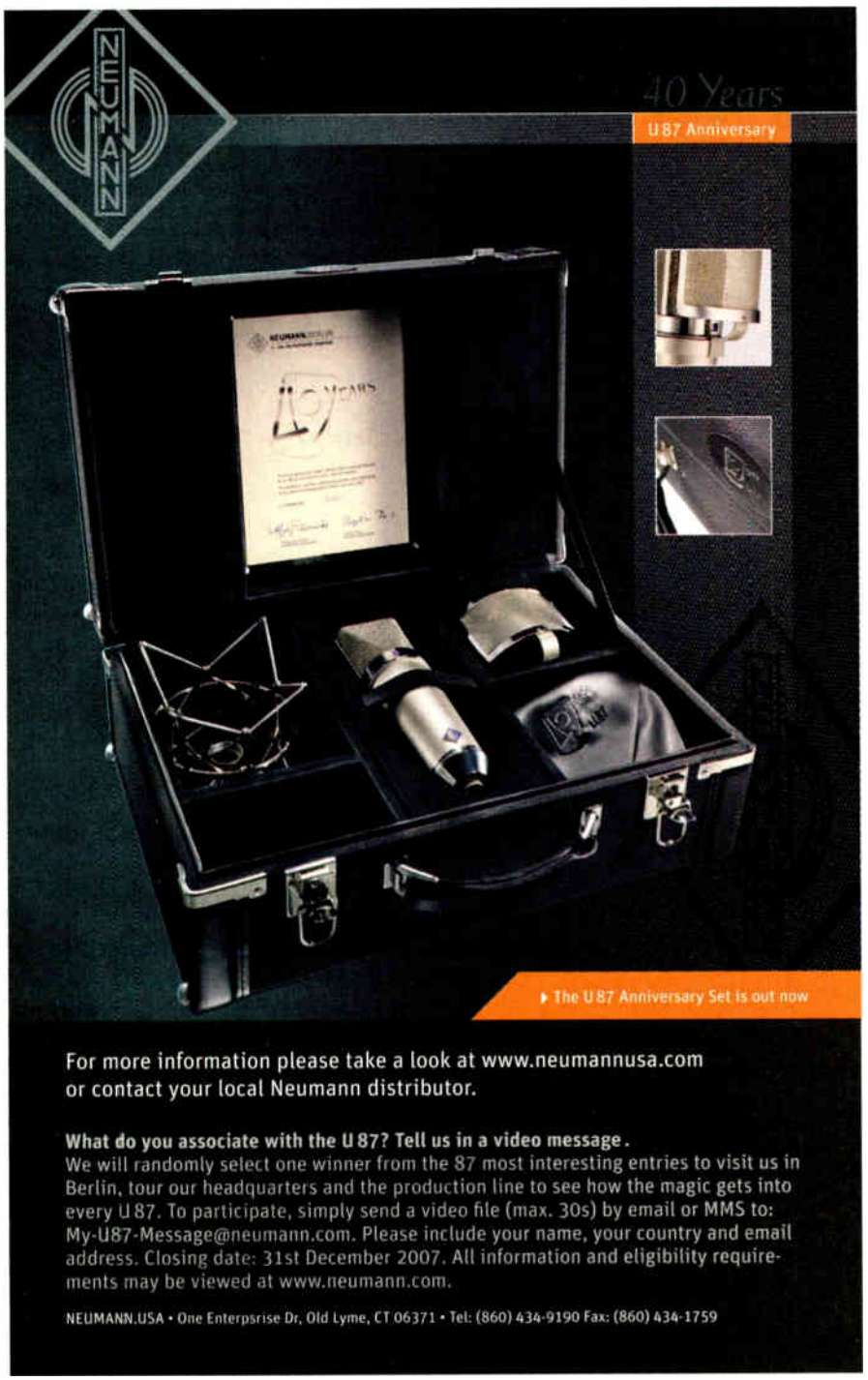
World Radio History

Intercom monitor, talk panel
Sierra Automated Systems
Booth 506

ICM-32: Designed for a variety of broadcast communications, the monitor features 32 separate talk/listen channels, each with a two-line/eight-character VFD display; dial-up listen and talk of any router system source or destination; and mixing of multiple sources for listen with independent volume control adjustment. Connectivity is via Internet, local LAN or directly to the SAS 32KD.

818-840-6749; www.sasaudio.com; sales@sasaudio.com



UPS
Superior Electric
Booth 212

Stabiline SLF: All SLF series UPS are equipped with a front-panel LCD status display. More than 20 UPS statuses and conditions can be displayed. The system produces a true sine wave output voltage waveform. All models are microprocessor controlled and feature a two-stage automatic voltage regulation capability. All models have surge suppression and EMI/RFI filtering circuitry to prevent damaging power line transients and noise from reaching your equipment. RF11 telephone jacks are provided on the UPS rear panel for fax/modem use. A RS-232 port is also provided. Other features include 120Vac, 50/60Hz operation, and 500VA, 700VA and 1kVA models.

800-787-3532; www.superiorelectric.com
info@superiorelectric.com

Personal alert, messaging system
Global Security Systems
Booth 421

Alert FM: Alert FM messages are delivered via GSS Net, a digital network of existing FM transmitters around the United States, to multiple receiving devices equipped with a standard FM chip. This targeted alert and messaging system uses existing FM technology to send mass or personalized alerts about an unfolding emergency to specially-designed receivers or any device equipped with a standard FM chip, such as cell phones, USB drives, smoke detectors, home alarms, clocks or any mobile communication device.

228-255-7220; www.gssnet.us
info@gssnet.us

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www.arrakis-systems.com
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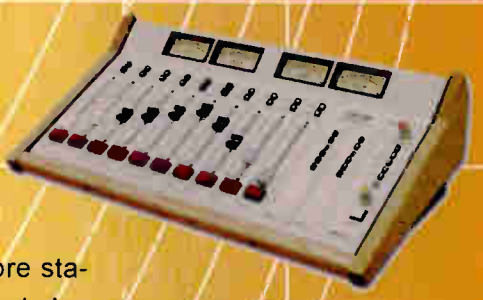

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$4,795 msrp (15 ch)

Digital Consoles

X-Mixer
digital console
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Analog Consoles

12,000 series
analog console
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2007 NAB Radio Hall Map

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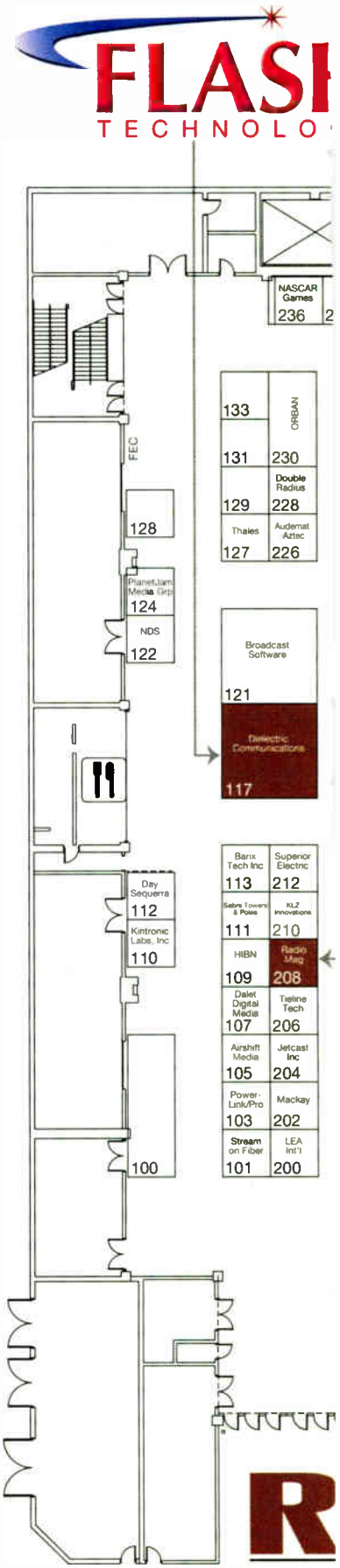

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2007 NAB Radio show Technical Sessions

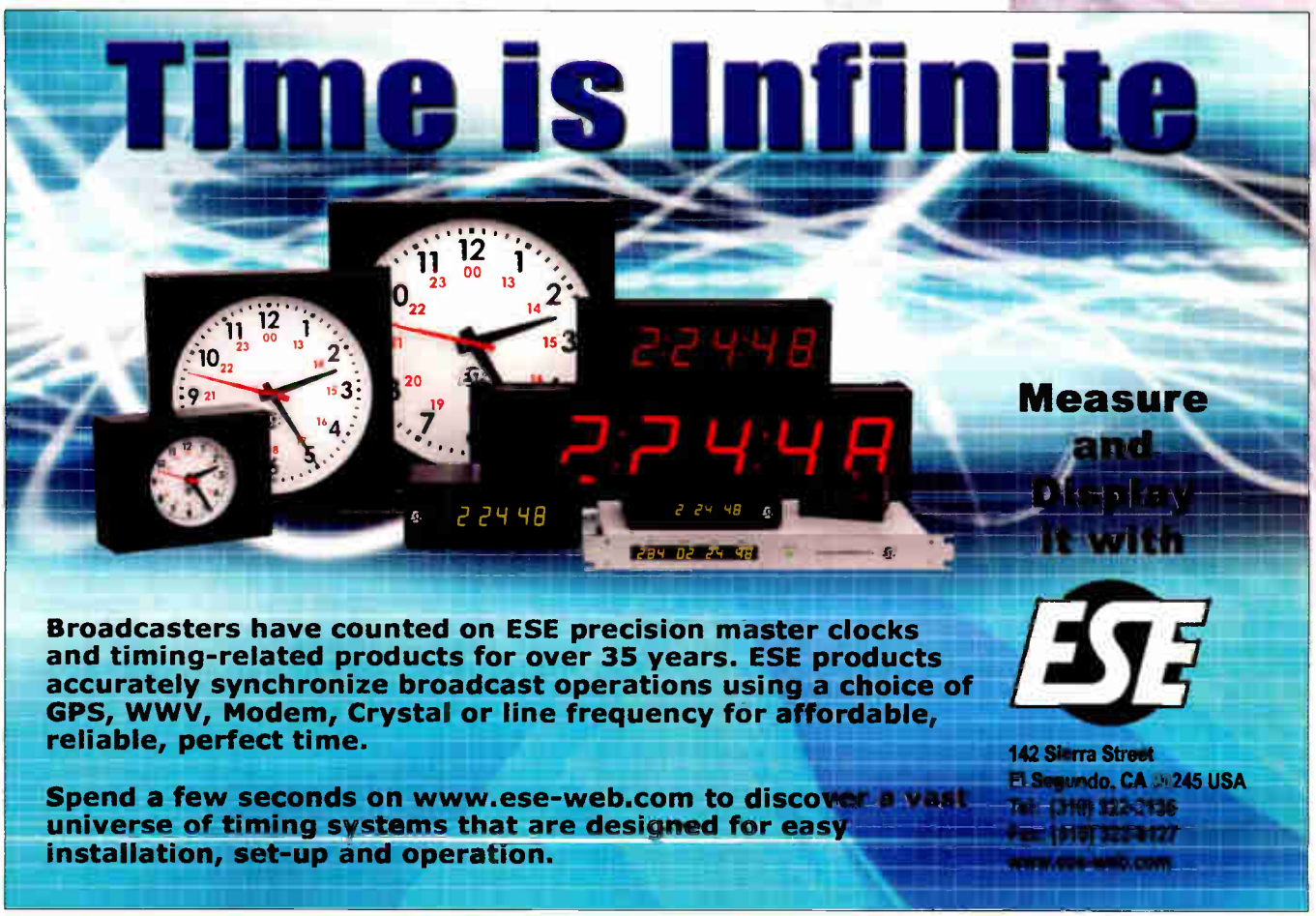
By Erin Shipps

To help you plan your time at the NAB Radio Show, we have pulled this list of sessions with a technical interest from the NAB Radio session list. Check the convention guide on-site for locations and updates.

Tuesday, Sept. 25	
3 p.m.-6 p.m.	***Meet & Greet Reception***
Wednesday, Sept. 26	
8 a.m.-12 p.m.	***SBE Radio Engineering Forum*** - *Moderated by Chriss Scherer* 8 a.m.: HD Radio Technology Update - *Raymond Miklius* 8:30 a.m.: VSWR Measurements in Broadcast Systems - *Tim Holt* 9 a.m.: The Pitfalls and Procedures of HD Radio Measurements - *Ben Brinitzer* 9:30 a.m.: The SBE Digital Radio Broadcast Specialist Certification - *Ralph Hogan & Chriss Scherer* 10 a.m.: Audio Processing for HD Radio - *Frank Foti & Greg Ogonowski* 11 a.m.: STL Considerations for HD Radio - *Kevin Campbell* 11:30 a.m.: Practical Implementation of PAD (PSD)
9 a.m.-1 p.m.	***Career Fair***
2 p.m.-5 p.m.	***NRSC Meeting***
2:15 p.m.-3:30 p.m.	***The Infinite Dial*** - *Larry Rosin* In the AM radio days, there were about a half-dozen radio choices for most consumers. With the advent of FM, the number expanded to perhaps 20 or 30 options. Today, with satellite radio, streaming and podcasts, the options are nearly infinite. The consumer will soon see an "Infinite Dial," where any kind of radio, for any kind of taste, will be available at any time.
2:15 p.m.-3:30 p.m.	***Podcasting: Downloading Content, Upload Dollars*** - *Daniel Anstandig & Holland Cooke* Podcasting. Everybody's doing it - but who's doing it right? Who's making money and who's using technology effectively to enhance their key talent's image and the station's overall ratings?
3:45 p.m.-5 p.m.	***Super Session-The Bedroom Project: How Young Americans Use, Consume and Interact with Technology and Media*** - *Fred Jacobs* "The Bedroom Project" will present the industry with a new look at how young adults use digital media in their everyday lives. The project surveyed 30 young adults, ages 18-28, on their use of digital media devices in their natural surroundings.
5 p.m.-8 p.m.	***Opening Reception on Exhibit Floor/Exhibit Halls Open***
Thursday, Sept. 27	
7:30 a.m.-8:45 a.m.	***FCC Breakfast*** Hear from top FCC regulator(s) about the agency's agenda and what's in store for radio broadcasters. Hot issues such as digital radio, media ownership, satellite radio merger and AM on FM translators are bound to be on the agenda.
9 a.m.-10:30 a.m.	***State of the Industry*** - *David Rehr* The state of the radio industry address will cover the NAB's efforts to reposition the industry's role in America and find the right messages to fully describe free, local radio's value to listeners and communities. Also, for the first time ever, the HD Radio Multicast Award will be presented to recognize unique and groundbreaking programming on multicast stations.
	Keynote Address - *Frank Luntz* Dr. Luntz will expound on his book Words that Work: It's Not What You Say, It's What People Hear, offering insight into how word choice can positively impact station's messaging. The book delves deeply into the art and science of language creation, examining how the simple choice of words can change the course of history.

World Radio History

10 a.m.-3 p.m.	***Exhibit Halls Open***
10:30 a.m.-11:45 a.m.	***HD Radio for Managers: Stages of Implementation*** *Jeff Detweiler, Geoff Mendenhall, Dan Mettler & Jim Watkins* Attendees will take home updates on licensing, the equipment needed for conversion, where to buy it and how to budget/finance the deal.
10:30 a.m.-11:45 a.m.	***Technology: What's Next*** - *Steve Goldstein & James McQuivey* A discussion of the current trends in media use and how radio can avoid being marginalized in the future.
10:30 a.m.-12 p.m.	***RF Safety Course - Part 1*** - *Richard Strickland* This course is specifically tailored to the work environment and covers the following: Overview of RF radiation issues for broadcasters; biological effects of RF radiation and the distinct differences between RF radiation and ionizing radiation; FCC and OSHA regulations—what they are and what you need to do to comply; Workplace hazards: Transmitter Sites; The unique issues at AM stations; Remote operations (where news personnel can find problems such as on rooftops); RF hazard protection equipment—you may not need it but your contractors probably will Signs—what they mean and what you need; FCC enforcement activities—the instructor has been personally involved in two landmark cases; Recent overexposure incidents that may provide food for thought.
2 p.m.-5 p.m.	***RF Safety Course - Part 2*** - *Richard Strickland* RF safety violations can be dangerous and expensive. A must-attend if you are responsible for the operation of a transmitter site.
3 p.m.-4:15 p.m.	***We've Got it Covered: Radio's Hottest Legal Issues Discussed*** *John Garziglia, Esq. & Frank Jazzo, Esq.* From digital radio, to AM on FM translators, to satellite radio merger fever, experts will weigh in on the challenges facing broadcasters every day and the issues that will impact future business.



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3 p.m.-4:15 p.m.	***HD Programming: The New Frontier*** *Michael Albl, Charlie Cook, Don Kelly, Cynthia Morgan & Andy Mussaw* When it comes to programming, HD multicasting opens up a whole new age of experimentation. Whether it's extending the main channel's brand or striking out in a completely new direction, these programmers are taking full advantage of this new technology.
Friday, Sept. 28	
8 a.m.-12 p.m.	***Exhibit Halls Open*** 8 a.m.-9:30 a.m.: Breakfast on the exhibit floor
8 a.m.-12 p.m.	***AM/FM Transmitter Workshop & Breakfast*** - *John Bisset* How well do you understand your transmitter site? This session offers an in-depth look at transmitter troubleshooting. If your background is computers or studios, and you feel like the transmitter site is a black hole, shed some light on the subject at the Radio Show's Transmitter Workshop. Even if you are an old pro, the tips and tricks learned here will help you hone your troubleshooting skills. In addition to explaining basic AM and FM theory, routine maintenance techniques for engineers managing multiple sites will be discussed. A section on troubleshooting transmitters is included, along with a fun time of audience participation troubleshooting real world problems. A discussion of potential HD installation problems will be included for those planning a future HD upgrade.
10:30 a.m.-11:45 a.m.	***HD Radio: RIFF2's Road to Success*** *Bob Bloom, John Long, Mark Pennington & Milford Smith* The blank canvas HD Radio has provided has many broadcasters faced with the challenge of juggling more stations and filling them with compelling content. This session will give you a real world example of a station that has put a HD-2 station on the air, are branding and marketing it and are generating revenue. Staff from one the leading edge HD-2 stations, RIFF2, will be walking you through their process from start to finish, including 20 things you need to do (or not do) when you implement HD-2.
12 p.m.-1:30 p.m.	***Radio Luncheon: National Radio Award Presentation and Speaker*** - *Jerry Lee*

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World Radio History

Tips, tricks, hints and more

By John Landry, CSRE

Bench power and more

Many problems with logic, data and even audio don't have an off-the-shelf solution, which means that some device must be built from scratch as a solution. Many of these devices, whether a simple OR gate made from diodes or a more complex audio IFB interface, will require a voltage source to test or develop. The bench power supply is ideal for this purpose.

Preferably, a bench supply should have a variable voltage output (from 2V to 25V) and deliver at least 1A if not 2A. There should be metering for voltage and current, and the output should float (neither side should be tied to ground). Many commercial supplies are available from test equipment dealers. They can cost several hundred dollars new, but look for them at hamfests and flea markets for a bargain. If you do any audio circuit work you should find a bench supply with a bipolar output (plus and minus voltages).

I would be lost without my bench supply (an HP 6227B). It has been most helpful in finding

short-circuited components in audio amplifiers and console modules.

If you're lucky enough to have an engineering intern or someone interested in radio engineering, have him build one for you as a project.

Old laptop? Think EAS

A recent post on a radio technical e-mail list reminded me that sometimes an old and outdated piece of equipment is not necessarily a useless one. The thread was discussing the Hollyanne HU-961 EAS decoder unit, which is one of the only units that provides a straight RS-232 serial output of the EAS alert text. This was designed to feed a dot matrix printer of the user's choosing.

Randy Henry from WPIO-FM posted a link to a simple freeware program that will run on any functioning old laptop at noncomradio.net/dl/c/wscap.exe.

Using the laptop's RS-232 port, this software will capture any EAS alerts from the HU-961 and add a date/time stamp from the laptop (which can be quickly understood as opposed to the HU's Julian Date). The software will count up to nine events each week before resetting. The log can then be printed or stored as a file.

I have seen others use basic terminal software to also capture the RS-232 stream, although it's getting harder to find terminal programs any more.

Fix the module (from a console you don't have)

I was recently given several broken modules from a console at our Washington, DC, studio. Because they are used in a custom-built console, I don't have any documentation or even a chassis to test them in.

Armed with my bench supply, I identified basic elements of the board, including the power supply connections. I planned to tack solder leads to the module to access the various connections when I remembered that I had a stash of no-longer-used extender boards. I found one with the same edge connector, so I then tacked leads to the extender board instead. Within an hour I had the voltages and audio connections all doped out, and cables attached for the initial turn-on. The meters on my HP 6227B jumped and settled at 20mA. The module was on and working.

I followed the audio flow with a scope and found the trouble: a dried electrolytic capacitor. The next four modules were plugged into the makeshift test jig and repaired the same problem much quicker than if I had to tack leads on every board.

The Washington guys were happy. So was the boss. A well-known repair firm quoted $200 per module just to look at them.

Landry is an audio maintenance engineer at CBS Radio/Westwood One, New York.

Do you have a tech tip? Send it to us at radio@RadioMagOnline.com.

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World Radio History

Netia Radio-Assist

By Rajesh Kapur and Torleiv Ringer

In 1995, Minnesota Public Radio (MPR) implemented a DCart system that upgraded us from analog tape to a digital audio environment, including implementing ENPS and ProTools. DCart has served MPR well for nearly 12 years and users love its simplicity and reliability. However, digital audio production and automation systems have advanced significantly in the interim years and pack significantly more features than systems of the past. As new systems came on the horizon, the administrators started wishing for non-proprietary hardware and operating systems with more features and ease of integration, and users started asking for more functionality to improve their efficiency.

In late 2006, after extensive user interviews, we identified 108 requirements within the following 14 categories: Play Audio, Navigate Audio, Record Audio, Edit Audio, Remote Work, Workflow, Playlists, Automation, Integration, File Movement, RBDS and Web Display, Audio Encode, Audio Decode and Technical Requirements.

Along with key users of MPR's four radio services, the engineering and operations departments rated the importance of each of the requirements to their areas. These users and technical staff attended vendor presentations and scored each piece of functionality relevant to the user's area. Netia was the clear choice of the users based on the weighted scores and anecdotal feedback on the overall perceptions of the systems.

MPR completed implementation of Netia's Radio-Assist and Air-DDO systems in January 2007 for our newest program acquisition, *Performance Today*, a nationally distributed classical music program. We had a very strict deadline as the program was moving from National Public Radio in Washington to Minnesota Public Radio headquarters in Saint Paul. New studios had to be built, audio workstations and servers had to be installed, and users had to be trained on two systems they had never used: AXIA consoles and the play-to-air and production software. Although the implementation team had to work long hours to achieve a successful install, there were no technical issues impacting the studio functionality or on-air sound. The Netia consultants were very responsive during the implementation and worked with us to ensure that the show was a success.

The next project was to implement Netia for "Weekend America," when half of its staff moved from California to Saint Paul. Adding this additional load to the Netia system was as easy as adding new users into a new group, and new audio tables. The system showed no signs of stress, and we have been very impressed in how simple it was to add additional field types and reuse database fields to suit different groups of users.

Our Netia system has been very stable since its implementation. We have had two instances of the Air-DDO software crashing, but these have been traced back to the DDO110 serial control interface used for playlist transport control and element start/stop. The power supply had come unplugged from the unit, freezing the Air-DDO software.

Plans are underway to roll out the system to The Current, MPR's eclectic music station in the fall of 2007, our News service in the winter of 2007 and to our Classical Music services in the spring of 2008.

Our current implementation is comprised of two redundant database and file servers, using DBShare, where each client is accessing and writing to each database at the same time. Also, each Air-DDO client (Netia's play-to-air software) caches audio contained in the loaded/planned playlist. This scheme allows for automatic failover to the secondary database server and playing audio from the local hard drive. We have tested this by playing audio from an Air-DDO station,

Performance at a glance

- Supports redundant servers
- Reads and writes multiple audio formats
- Separated production and play-to-air software
- Simple user management and multiple groups
- Unlimited architecture; just add more servers
- On-air workstations cache audio in case of network or server failure
- Includes help documentation with screen shots

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and then shutting down the server. There was no perceptible dropout in the audio.

We have also installed three application support servers running ingest, export and monitoring services. The import module is very extensible and allows direct import of audio residing on an FTP server, allowing field reporters to file from anywhere in the world. We use the import module to automatically ingest audio from Dalet (using XML) and ProTools (using BWF headers).

The export module has worked wonders, allowing us to make MP3 versions of subsets of our audio library available on the intranet, and reducing the number of production licenses for staff only needing to preview audio.

Our database and file servers are single-processor HP DL380 G4s, with local disks to provide storage for the MSSQL 2000 server, but the audio resides on our Hitachi AMS500 SAN, attached to the servers via fiber. Each server has a dedicated LUN for audio storage, so we have two copies of all audio at all times. In our initial implementation we have 2TB available for audio.

Netia

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Our three application servers are HP DL360G5s with local storage. Each server has two Xeon 3.2GHz processors and 4GB RAM, along with 172GB SAS drives.

We have three Air-DDO workstations that are HP XW4400 with Digigram PCX442 for primary playback and PCX924 cards for PFL output and recording. Air-DDO is configured to have one output dedicated to the playlist, and a separate output dedicated to a cart stack. We have purchased, but not installed, a PCX822v2 card to allow for two outputs for the playlist and two cartstacks. It was recommended by Netia to use a secondary card for recording into Air-DDO, thus the PCX924.

We also have four studio production workstations with Radio-Assist, on a mix of HP and whitebox machines. Netia has recommended a 3GHz processor, 1GB RAM and at least a 40GB HD. These workstations use either a PCX924 audio card or AXIA's 1x1 IP Audio Driver.

Radio-Assist is also installed on six existing workstations, happily coexisting with Outlook, ENPS and other office applications. This is used for everything from playlist editing to CD ripping and single and four-track editing.

Pros

In addition to the functionality, reliability, simple pricing structure and knowldegeable Netia staff, the ease of administration of this system is amazing. Adding new users, new groups and new audio tabs is a cinch, and reusing the underlying database fields for other purposes in each tab is really flexible.

Administrators can restrict which tools each group can see when they log into a workstation, as well as only having a subset of the tools installed on each station. This allows for presenting only the tools needed for a user, and really makes the software a lot easier to use, as the users do not feel overwhelmed.

Users have picked up the software very quickly, and the only comments to the contrary are that if you are a ProTools user you will have to unlearn a few things.

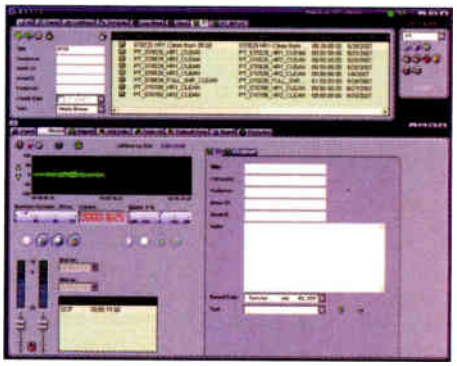
Cons

The users have reported occasional sightings of French in the English version of the Netia product. Netia has asked us to inform them of any occurrences of French so it can be corrected. On a lighter note, it is not necessary to learn French or even pick up a French-English dictionary to work with the Netia system.

Frequently, technical matters are referred back to France for resolution. Although the staff in France is very generous and flexible with its time, particularly for urgent matters, the time difference can work for or against you depending on the time of day.

Watching the users when they are in the midst of a show is really impressive. The speed in creating new audio, exporting audio and doing edits is on par to our DCart system. We often hear the users comment that they could not do without the Netia system, especially editing audio as it is being recorded. We look forward to utilizing and benefiting from the full capabilities of the Netia system when we install a larger system for the remaining radio services at MPR.

The Snippet single-track editor is used to segment feeds for Content Depot segments.



The Record tool can also edit audio files while they are being recorded.

Kapur is the project manager for the Netia installation, and Ringer is formerly the broadcast systems administrator for MPR.

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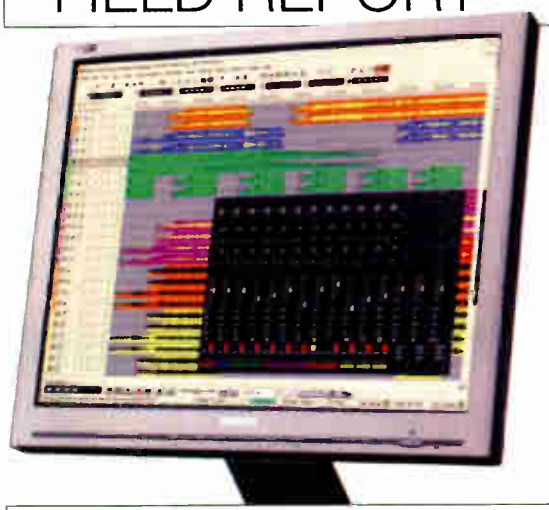

Merging Technologies
Pyramix Native 5

By Chris Wygal

Radio production is the heart and soul of the on-air side of the station. While programming and live air talent comprise the personality and tempo of the format, the production folks are busy making sure the imaging, promotional items, commercials and voice-over audio files effectively represent the station image. The production room is a busy place, and occasionally a simple mixing console, good mics and a digital audio workstation (DAW) are sufficient for good production in spite of the simplicity. And let's be honest: How many of us have installed a computer and used the "already-installed-from-the-factory" sound card? We can sometimes get by with it.

On the other hand, some radio facilities are involved in very complex multi-tracking projects. I recently heard of an AM station that makes a habit of bringing in bluegrass groups to perform live each week, and then produces a fully mixed and mastered recording of the live show. In that case, a simple mixer plugged into a simple stereo sound card probably won't suffice. What happens when a radio station takes audio recording to the next level? The people at Merging Technologies have the answer: Pyramix Native 5.

Performance at a glance

Multitrack DAW with full effects

Real-time editing

Groupable tracks

Supports up to 48kHz sample rate

Supports Direct-X and VST plug-ins

Reads/writes multiple audio file formats

VS or Native: the difference?

Pyramix Native is a software-only version of Merging Technologies' Pyramix Virtual Studio, a very powerful and sophisticated DAW designed to run on Windows XP and 2000. Pyramix VS appears to look very much like a familiar non-linear editing platform. It is actually suited better, however, in hefty recording scenarios. Pyramix VS can record up to 128 simultaneous inputs using the proprietary Mykerinos high performance PCI DSP card. The routing, real-time processing, and I/O configurations available in Pyramix VS are nearly endless, especially when using the Mykerinos PCI hardware. Put simply, Mykerinos is Merging's line of sound cards and DSPs that offer powerful I/O flexibility across several formats including ADAT, SDIF, TDIF, AES3 and/or MADI formats within a single half length PCI slot (more about Mykerinos later). The formats can even be configured and used interchangeably.

Fortunately, nearly all of the VS capabilities are included in the Pyramix Native package. The Native Media Bundle software however is limited to eight simultaneous recording and playback inputs and outputs with 24 editable audio tracks. Pyramix Native does not require the Mykerinos DSP technology, making it usable on a standard PC or laptop. The Native software is a cost-effective alternative to Pyramix VS and is more suitable to scaled-down recording and multi-tracking projects, much like the multi-tracking needs of most radio production houses. Pyramix Native also co-exists well with the existing sound card configuration already installed on your PC. Merging Technologies plans to continue production of Pyramix Virtual Studio and Native for the PC platform only, but Pyramix can play SD2 directly in the system and can also import OMF files from Pro-tools and many other audio and video systems.

As with any non-linear or PC-based editing, the workspace on a computer monitor can get very crowded. Merging suggests installing dual-head graphics when using the Pyramix software. The timeline onto which audio files are recorded or imported should be dedicated to one screen. The on-screen mixing console and other active plug-ins or windows should be docked on the other

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screen. I've been experimenting with Native using only a 17" monitor, and it is very hectic. To work efficiently, two screens are a must.

What's inside

Pyramix Native allows the user to record and edit in several different formats. Editing Project is for typical recording tasks. Digitizing Session is for batch and background recording. DXD Mixing Project is for recording, editing, mixing and mastering DSD/SACD in DXD format (direct stream digital or super audio CD using Digital Extreme Definition. DXD was developed for Pyramix's DSD). With sampling rates (available at 16-, 24- or 32-bit) up to 48kHz, recording sessions are very flexible.

Pyramix is a real-time audio editing and processing software. Utilizing envelope editing, changes can be made as audio is playing and/or recording. If for example a program is being recorded live from satellite, the user can edit the front end of the file while the end of the show is still being recorded. Or if the file is playing to air, the user can insert a fade in or out envelope and the change will be performed live.

Pyramix Native uses an virtual mixer surface for its real-time mixing.

Upon starting a new recording project, the user is taken through several steps that allow for customizing the session. Sampling and bit rates are named, along with the project title, plus the type of mixing interface is selected. Several preset or user-defined mixer selections are the backbone of each project. For example, if the user is recording eight simultaneous tracks, the "Record 08 × 02 (stereo)" mixer can be selected. If it's a CD mastering project, select "Mastering CD 01 (st) × 02." Each mixer selection will dock specific tools needed. In the case of the CD mastering project, Strip Tools, Bus Tools, a phase oscilloscope and the VU meters are displayed. The user can build his own combination of dockable Pyramix tools and save it as a mixer preset, saving much needed editing set-up time.

Pyramix requires media files on the PC be mounted, making them usable in the Pyramix platform. When the on-screen mixing console is docked it lets the user change mix, automation, in/out/effect/bus routing and other global presets. Strips, Strip Tools and Bus Tools (or channels and buses on a mixing board) are docked as well with familiar adjustments such as pan, EQ, mute, volume faders and bus routing. The strips make direct changes to sound card or Mykerinos settings. The purpose of Pyramix is to not only give users a platform for simply recording audio files, but also allow for shaping and controlling everything from reverb effects to final mastering, all on the PC. With enough PC desktop space (with the use of two larger screens of course) an entire studio is a click away.

Merging Technologies

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Plug it in

While Pyramix offers endless in and out configurations and mixing setup options, third-party effects and mastering plug-ins are plentiful. Flux, Cedar, VB Audio, Algorithmix, Minnetonka, and Direct-X are in the arsenal, along with Merging's own plug-in features. With that many choices, processes such as noise reduction, hard limiting, frequency analyzing and multi-tap delay (to name only a few) are plug-ins that make Pyramix pack a huge punch when it comes to competitive, professional audio.

What does Pyramix Native have that stands out as a premium non-linear editing software package? First, Mykerinos DSP and I/O technology transforms the PC into a virtual real-time editing machine. The daughter card configurations available through Mykerinos can handle most digital and analog formats in conjunction with each other. Also, the vast mixer selections allow for individual customization of each project. The right tools are on screen at the right time making the workspace easy to set up and use. Pyramix Native is priced competitively and the Media Bundle is fine-tuned and ready to roll when radio production is ready to take the next step.

Wygal is the programmer, engineer and Web designer for WRVL in Lynchburg, VA.

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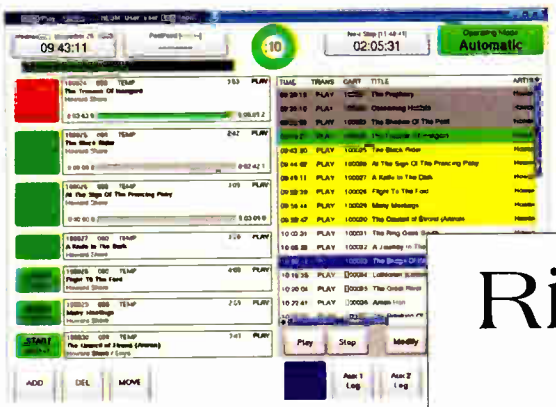

Rivendell automation

By William Harrison

When it comes to radio, automation systems tend to be one of the more expensive line items in the budget. The cost of computers, audio cards, GPIO cards, custom conversion boxes to integrate with RDS and routing switchers, the application software, and custom adaptations to import logs from the station's traffic system or push playlists to a website can add up extremely quickly, and that's before factoring the monthly maintenance cost.

Wouldn't it be nice if the radio industry had alternatives to high-priced proprietary software? Rivendell is such an alternative for all your automation system needs.

Formerly a product of Salem Radio Labs (a division of Salem Communications), Rivendell is now available to the general public under the GNU General Public License. Roughly speaking, this means the software is available free of charge, you can do anything you want with it and the source code must be made available to anyone using the program. This also means there isn't formal support for it.

Performance at a glance

Supports PCM16 Linear, FLAC, MPEG2, MP3, Ogg formats

AudioScience cards recommended, but not strictly required

Play while record (and record while play)

GPIO support

Supports many audio switchers

Runs up to three different logs from a single machine

Source code available for alterations as needed

The Rivendell software is available as precompiled binaries for numerous releases of SuSE linux, or as source code for those who wish to build it themselves to run on a different flavor of Linux, such as Fedora. As of this writing, the 0.9.80 version is available on the Rivendell website. For testing we'll be running it on a Dell machine running a newly installed version of SuSE 10.2, with an Audio Science ASI6044 card installed. Rivendell strongly recommends the use of the Audio Science cards for production use, but installations running with JACK and ALSA are know to function as well.

Setting up

Installation was very straightforward, with little time spent solving dependency issues. The user should spend a few extra minutes tracking down precompiled binaries to satisfy dependencies rather than building software themselves. In the long run, more time will be spent building than searching for a pre-built one. Once installed, Rivendell consists of a few separate components: RD Admin, RD Library, RD Catch, RD Airplay, RD Logedit and RD Log Manager, plus some utilities for monitoring, batch importing audio with metadata and changing which user is currently logged into the software.

As you've probably guessed, RD Admin is the utility used to set up and configure the other programs. From here, one can create users, give or revoke permissions, manage "services" that Rivendell will run (such as Production, Streaming, FM, AM, etc.), create templates for reporting (including the ASCAP/BMI Electronic Music Report), configure the import of music and traffic data from either a Windows or Linux machine, and manage groups of carts and machine parameters (audio ports, serial ports, GPIO, switchers, etc). It also provides a means of backing up or restoring the Rivendell database.

Much like Linux, where everything is treated as a file, Rivendell treats everything as a cart. A cart can contain single or multiple pieces of audio, macros or any combination thereof.

The RD Library is where you'll find the production audio interface, containing all carts (audio and macro). Provisions exist to add, edit and delete carts, complete with a built-in recorder for new cuts, and an audio editor which allows you to set various markers on a cut of audio, such as cue, segue, and trim starts and ends. Simple editing is accomplished by dragging the appropriate marker to the appropriate area. You'll also notice the built-in ability to rip an entire CD or a single track to carts.

Other features

The basic scheduler is known as RD Catch, which allows events of almost any kind to be executed as needed. Recordings with hard start times, or GPIO starts within a time window are possible, as well as autotrim and auto normalize functions. Basic playout can occur in a similar way, though it is expected that a stations' playout would be generated via the traffic log. Downloads and uploads can also be scheduled, so no more waiting around until something gets posted on a

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website before being able to grab it for use, and since Rivendell can export as an MP3 (or Real Audio if the encoder is also installed), automating podcast uploads has never been simpler.

RD Airplay is possibly the most important element of the Rivendell suite. This on-air playout application has all the features you'd expect to find in an expensive automation system. The screen is split in two, with the left side always displaying the next seven carts to be played. All the basics are provided for each cart, such as the title, artist, time played/remaining, etc. The right screen is user swappable to many different options, such as the soundpanel (25 button instant fire audio screen). The number of pages is completely user configurable. Additionally, the running log file may be viewed, modified, etc., as well as two Aux log files (which presumably are running other audio streams from the same hardware).

To create basic air logs without the use of a traffic program, RD Logedit is available. It enables you to create new log files and events, firing off carts as required. When assigning a new cart to play, you even get options as to what to do if the previous cart is still playing (start immediately, make next item – but wait only up to XX minutes before playing anyway), as well as what to do if the previous cart has stopped (play next, segue to next, stop completely). Finally, when your log is created and saved, you can click the Check Log for Errors button to see what problems it anticipates, as well as any carts that are missing.

RD Log Manager goes a few steps further, allowing you to automatically generate new logs as needed, based on templates you create. Events (carts) are contained in one-hour clocks, assigned to a grid – basically a one hour block of time on a given day of the week. Log files are then created based on this master template in perpetuity until such time as the template is altered.

Benefits and hitches

Rivendell Open Source Radio Automation is a very complete, well-thought-out, free alternative to many commercial automation systems. It will happily run on older, slower machines (P3 800MHz with 256meg ram are the minimum specs), and the price can't be beat.

There are, however, drawbacks: Audio Science cards are exceedingly expensive; often times the user interface is inconsistent (with one screen allowing keyboard shortcuts and the next not); the program can be less than intuitive (users need to click within an empty cart in the appropriate place before clicking the button to add audio.); the final configuration may be too much for some users to deal with (although anyone who's installed an automation system in the past should have some idea of what to expect); and it needs to run on Linux, preferably SuSE, so if that's a deal breaker, don't bother.

For the brave or just curious, Rivendell now has a downloadable Demo CD available. Pop it into any machine and reboot to get an idea of what the system is capable of without building a Linux machine of any kind.

Rivendell

W www.rivendellaudio.org

Harrison is a radio broadcast engineer at WETA-FM, Washington, DC

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

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

It is the responsibility of *Radio* magazine to publish the results of any device tested, positive or negative. No report should be considered an endorsement or disapproval by *Radio* magazine.

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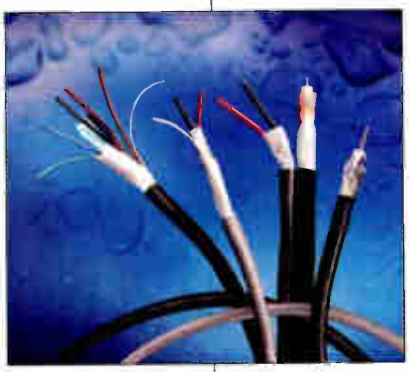
World Radio History

by Erin Shipps, associate editor

Water-resistant cables
Belden



Waterdog: This cable series includes paired, multiconductor and coaxial cables that meet the water-resistant standards set by UL 444, UL 13, and the TIA 455-82B Water Filtration Test. The ruggedly constructed cables can be installed indoors or out, above or below ground, making them practical for building management systems to be connected seamlessly – from building to building or from outdoor sites to indoor monitors. The Waterdog cables are also ideal for deployment in standard indoor/outdoor building management installations.

800-BELDEN1; www.belden.com
info@belden.com

Clock
Broadcast Tools

Intelliclock: The Intelliclock provides GPS or NTP referenced master clock. It features 0.56" six-digit red LED displays, a viewing distance up to 20 feet, automatic daylight-saving time, serial time code output in ESE TC89 or TC90 format with active high output driver, DPST relay time sync outputs, selectable 12- and 24-hour format display with LED indicator, and desktop or optional rackmount.

877-250-5575; www.broadcasttools.com
bti@broadcasttools.com

AES-3 audio monitor
Videoquip

DM-1: A portable monitoring system for AES-3 digital audio signals, the unit provides a digital-to-analog converter, headphone amplifier and LED display of the incoming sampling frequency (32kHz, 44.1kHz, or 48kHz). Plugging a valid AES-3 signal into the back of the DM-1 allows headphone monitoring of the signal, with visual status. Any standard headphone from 8 to 600 ohm impedance may be used. A front-panel level control adjusts the headphone volume.

888-293-1071; www.videoquip.com; vrl@videoquip.com

Fall suspension trauma device
French Creek Productions

U-Step: The U-step is designed to help alleviate suspension trauma in the event of a fall. It comes with two compact, lightweight packs that attach to the sides (left and right) of a full body harness by choking around the harness. In the event of a fall, a worker can immediately pull the webbing from the packs and connect the locking clasps, creating a loop that the suspended worker can step on to alleviate harness pressure and reduce the risk of suspension trauma. The webbing/loop adjusts to varying lengths to accommodate different body sizes and allows for continuous adjustment during suspension. The U-step is to be used in conjunction with a full body harness.

814.437.1808
www.frenchcreekproductions.com

Hinged connector cover
Neutrik

SCDX: This hinged cover is compatible with all of Neutrik's D-Sized chassis connectors and receptacles to protect the unmated connector from water, dust and dirt. The cover snaps over the connector to protect it. The cover also features label space for quick identification.

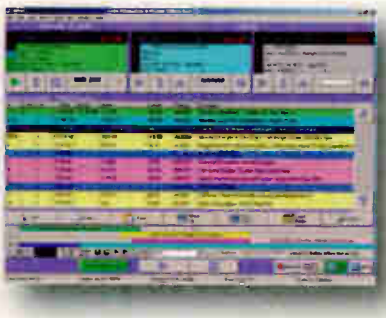
732-901-9488; www.neutrik.com
info@neutrikusa.com

World Radio History

Broadcast Software

1-888-274-2721
www.bsiusa.com

Radio Automation



Simian - radio automation and digital play out system

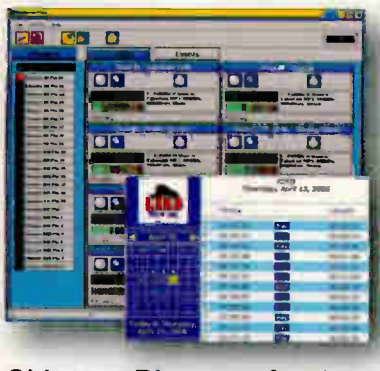
Instant Audio

Stinger- instant acess to 288 'rapid fire' audio files

Digital Cart Player

WaveCart - the original on-screen cart machine

Audio Logging



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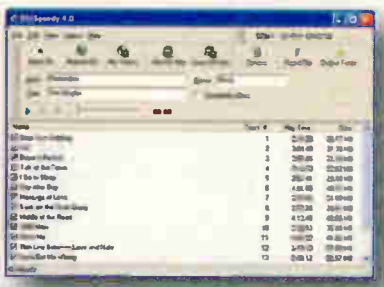
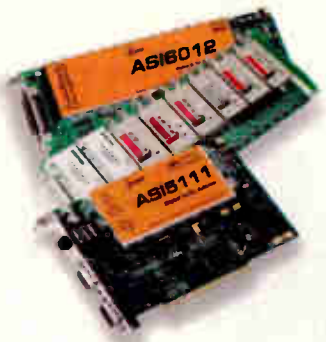
MusicStore - over 55,000 ready to play (tagged) songs

CD Ripping



Speedy- professional CD to PC ripping and file tagging

Sound Cards



AudioScience - built for broadcast, pro sound cards

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Trigger & Relay Devices - for GPI/O & remote control

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Direct: 541-338-8588
Fax: 541-338-8656
www.bsiusa.com sales@bsiusa.com

BSI

World Radio History

Power protection
MGE UPS Systems

Pulsar MX Frame: This UPS frame accommodates MGE's Pulsar MX 5000 RT power and battery modules for a modular and scalable power protection system. When the Pulsar MX online double-conversion power modules are connected in parallel within the Pulsar MX Frame, the power can be scaled from 5kVA to 10-, 15- or 20kVA power levels within the unit's 16RU frame. The same power and battery sub-modules from MGE standalone UPS units can be used in the frame. Units feature hot-swappable battery and power sub-modules, auto battery-test, switched outlets, multilingual LCD display and power management software. For extended backup time, redundant external battery modules can be added.

800-523-0142; www.mgeups.com
info@mgeups.com

PAD interface software
Modulation Index

PAD Bridge: Interfacing automation systems and databases to RBDS and digital radio data encoders is a challenge for many stations, and this software provides a bridge between those systems. It can be used to display dynamic program information via RBDS, HD Radio PAD MPS/SPS, Internet streaming players and large-format display signs. One instance of PAD Bridge is used for each program source, and is configured to send data to several different devices or computers. As many as eight instances of PAD Bridge may run on a single computer. PAD Bridge 1.0 runs entirely on the user network without any external server requirements or subscriptions. The software has a one-time license fee per source. The software will parse information directly from most automation systems.

909-860-6760; www.indexcom.com
info@indexcom.com

Announcer's Consoles for Live Events

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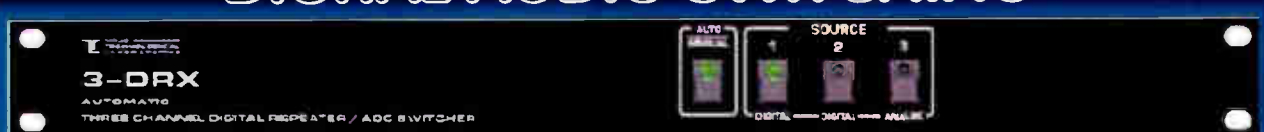

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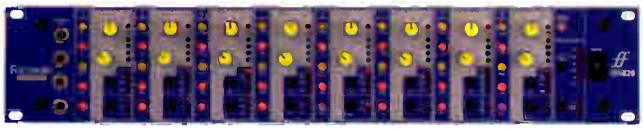
World Radio History

Stereo condenser microphone
Marshall Electronics

MXL 990 USB: The MXL 990 USB stereo condenser microphone features two gold diaphragm capsules in an X/Y stereo configuration. The MXL 990 connects directly to a computer without the need for external mic preamps. The microphone features twin gold sputtered capsules (20mm each) and this pressure-gradient stereo condenser microphone features a 20Hz to 20kHz frequency response. The digital section of the microphone features a 16-bit Delta Sigma A/D converter with sampling rates of 44.1kHz and 48kHz.

800-800-6608; www.mxlmics.com; sales@mxlmics.com

Microphone preamp
Focusrite Audio Engineering



ISA 828: The ISA 828 eight-channel microphone preamplifier features eight original ISA transformer-based preamps in a single 2RU chassis. The preamps feature the same vintage microphone preamplifier design as the original ISA 110 module from Focusrite's Forte console. The ISA 828 has eight line inputs, four instrument inputs and an optional eight channel 192kHz ADC. The microphone input stage includes a variable impedance circuit, allowing the user to switch between four carefully selected input impedance settings.

516-249-1399; www.focusrite.com

UPGRADES and UPDATES

Airshift Media will release an upgrade to the Airshift Radio suite at the NAB Radio Show. The Airshift Studio 2.0 advanced playlist manager now serves cartstack and playlist approach to program production. A new music clock and scheduling feature, and an expansion on the range of keyboards and console interfacing possibilities enhance Airshift's functionality. (www.airshift.tv)... *Axia* Element consoles can now be ordered in three color combinations: silver on charcoal, bronze on charcoal, and the original gray on silver combo. (www.axiaaudio.com)...*Prism Sound* has released the Dscope Series III audio analyzer software version 1.21. New features include tools for acoustic measurements, PC audio and 192kHz sampling on digital audio interfaces. (www.prismsound.com) ■

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Livewire is a registered trademark of TLS Corp.

World Radio History

Wireless mic transmitters
Lectrosonics

UM400, UM450: The UM450 is a digital hybrid wireless belt-pack transmitter with a current-servo input and 250mW RF output. The UM400a, a new version of Lectrosonics' most popular transmitter, is also gaining the current-servo input circuit originally developed for the SM Series. The new input enables a wider range of microphone sensitivities and provides a straightforward microphone wiring method.

800-821-1121; www.lectrosonics.com
sales@lectrosonics.com

Noise reduction enclosure
Gizmac

Xrack Pro 4U: The Xrack Pro 4U noise reduction enclosure rackmount cabinet is about one-third the height and slightly more than half the weight of the 12RU rackmount cabinet. The shorter height and lighter weight of the 4RU rackmount cabinet make it more practical to position the Xrack Pro off the ground and onto a desk, counter top, table, etc. To add extra stability to the 4RU Xrack Pro when it is off the ground, this cabinet will come with heavy duty and adjustable-height legs with a protective material to help avoid leaving any marks on furniture. For those who need mobility of the rackmount cabinet, carpet safe superior strength casters are optional.

800-475-1677; www.gizmac.com
Sales@Gizmac.com

Offset pyramidal diffuser
Acoustics First

QuadraPyramid: The Quadra Pyramid presents a low profile with four pyramids creating sixteen angles of reflection on the surface of a single 2' x 2' panel. Mounting is designed for wall or ceiling grid. Fire rating is Class 1 (A).

888-765-2900; www.acousticsfirst.com
info@acousticsfirst.com

model RFC-1/B
remote facilities controller

features

- transmitter status readings and control
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- operates over standard telephone line
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- programmable control by date and time
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- model MA-2 modem adapter
- model PA-2 parallel printer adapter
- model RAK-1 intelligent rack adapter
- model RS-232 serial data adapter
- model SP-8 surge protector
- model SIP-8 status input panel *new!*

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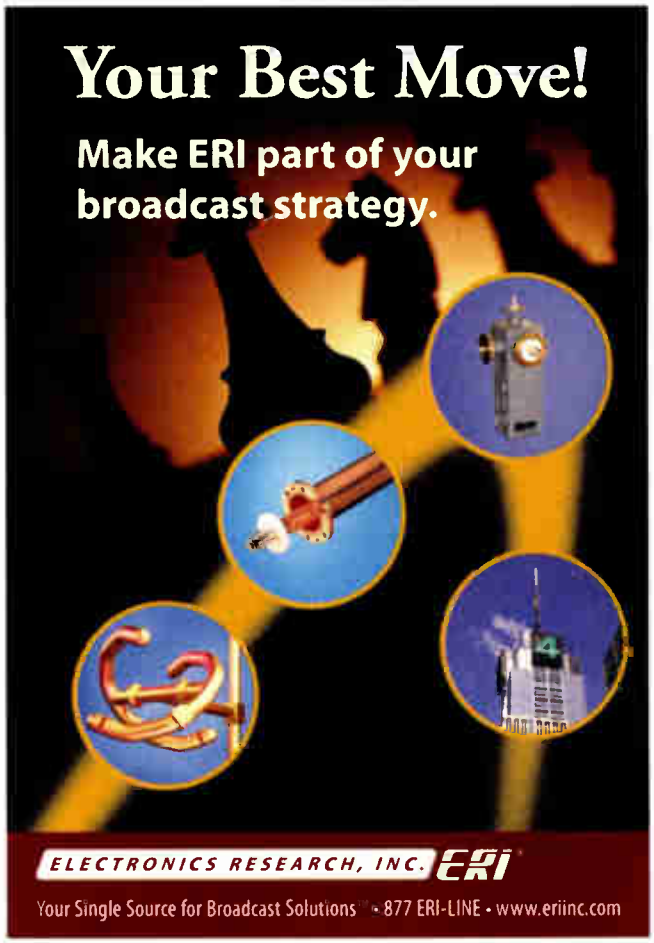
615.228.3500
more information: www.sinesystems.com



World Radio History

Four-channel line mixer
Behringer

MX400: This four-channel line mixer uses ultra low-noise 4580 operational amplifiers. It has the same op amps found in its much bigger units, and is well suited as a sub-mixer. Connect the unit's output to a single input on the main mixer. The mixer features 1/4" TS connectors and input level controls for each channel.

877-672-0816; www.behringer.com; support@behringer.de

Plug-on recording transmitter
Zaxcom

TRX700: The TRX700 is designed for quick and easy integration with the shotgun-type microphones typically used in boom-pole applications. The TRX700 records up to 12 hours of timecode-referenced audio on a removable Mini SD card, a patent-pending feature that provides an automatic backup of the system's RF transmission. The TRX700 uses 100 percent digital modulation.

973-835-5000; www.zaxcom.com; info@zaxcom.com

Find the mic winner
July issue

Congratulations to

Scott Dunbar

of CBS Radio Baltimore.
His name was drawn from the correct entries for the July issue. He won a Heil Sound PR-30 from Transaudio Group.

The mic icon was in the toolbar section of the DAW screen. It is lying on its side.

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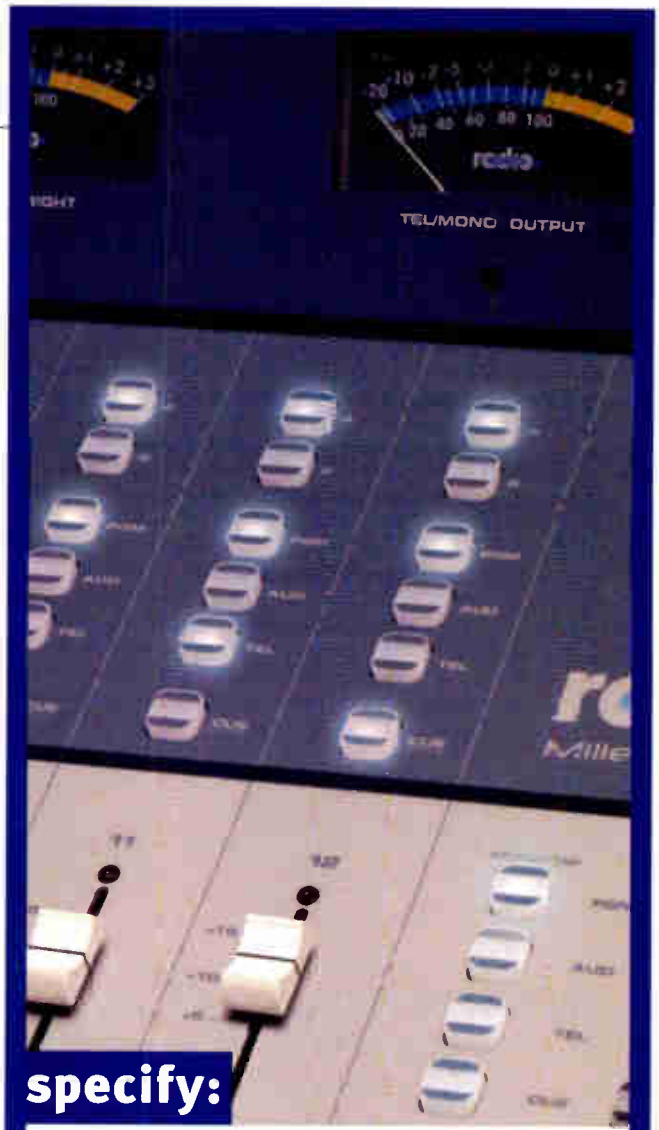
No purchase necessary. For complete rules, go to RadioMagOnline.com.



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World Radio History

Cables
Pulizzi Engineering

Power cables: These power cables are available in a variety of plug types and lengths. There are more than 30 stock versions, including NEMA 5-15P to IEC C19, NEMA L6-20P to IEC C19, and European Shucko to IEC C19 cord sets. Standard configurations include 120, 208 and 230V, available in both 15 amp and 20 amp current ratings. Plug options include both straight blade or twist lock connector types. The standard cable length starts at eight feet, with cables up to 15 feet available. For international installation, there are a variety of country-specific plug types available.

800-870-2248; www.pulizzi.com
sales@pulizzi.com

Digital audio console
AEQ

Arena: This console can monitor all the signals present in the system, as well use the configuration presets in relation to the Swap Page. The dedicated controls for dynamic, EQ, routing and select located above the faders have dual function. In the other mode of operation, these controls turn into send buttons that route the signals to buses, such as master 1, master 2, aux 1 and aux 2. The user may request the on and off controls on top or below the faders. To facilitate easy maintenance, each console offers changeable modules.

800-728-0536; www.aeqbroadcast.com
sales@aeqbroadcast.com

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World Radio History

Professional USB Converter
Yellowtec

PUC: PUC is a two-channel self-contained audio interface for use with USB-enabled PCs. The unit is powered through the USB, so no external power supply is needed. PUC requires no installation of drivers other than those automatically loaded by the host operating system. With the exception of a 1/8" headphone jack, audio connections are made via an optional breakout cable, which attaches securely to the PUC via DB25 connector. Electronically balanced analog audio I/O (0dBFS=+18dBu) is provided through stereo pairs of Neutrik XLRs.

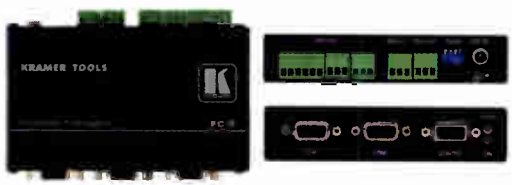
+49 2173 967 336; www.yellowtec.com; info@thummahr.de

Audio processor
Audemat-Aztec

Silver Audio Processor: This line of four- and six-band FM DSP audio processors includes dual paths to allow simultaneous processing of analog and digital radio. HD versions, using look-ahead limiters, are also available and dedicated to the process of audio signals that are being fed off into codecs using bit rate reduction technics. The six-band FM and HD versions include as a standard the Ariane RMS leveller. This AGC corrects input level variations and also improves consistency. The block can provide stereo enhancement with its matrix mode of operation. The Silver Audio Processor line is provided with many factory and users presets for all music styles and applications. The A/B switching enables instant comparison between current settings and the presets.

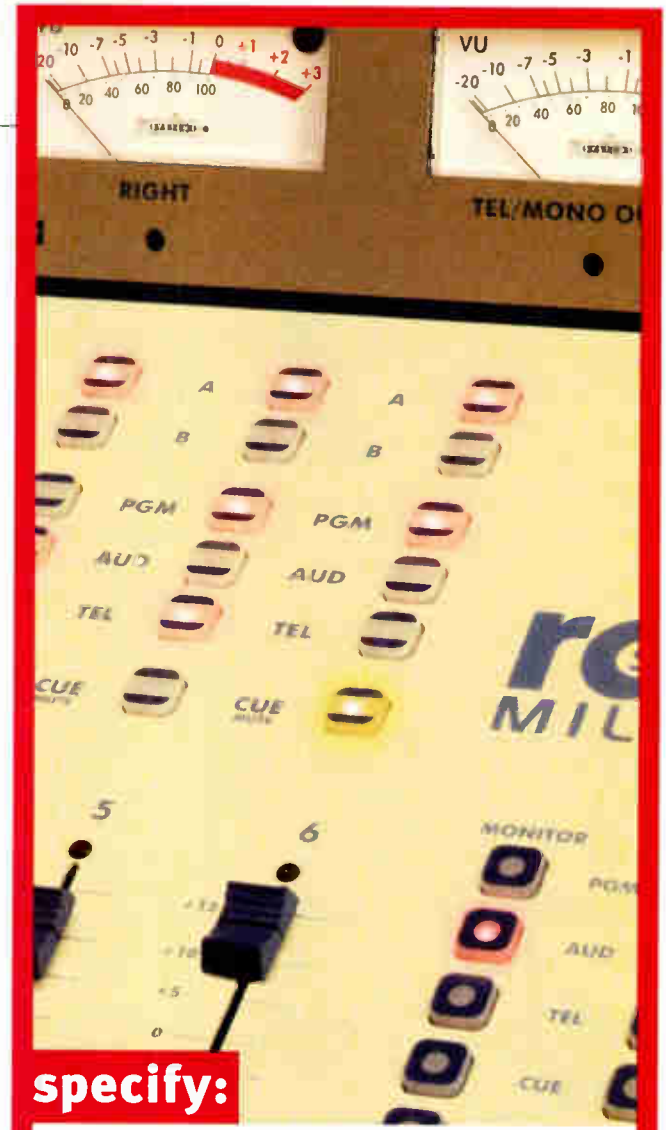
305-249-3110; www.audemat-aztec.com
contact@audemat-aztec.com

Protocol translator, controller
Kramer Electronics



FC-5: The FC-5 is a protocol translator designed to make an RS-232-controlled machine compatible with other RS-232-based protocols. Because the FC-5 will work with any RS-232 controllable product and can convert RS-232 commands to contact closure and relay control signals, it will also simplify make system integration. The translator comes pre-configured with two serial translation tables, a generic serial switcher control protocol to Kramer's Protocol 2000 and the Sierra Video Systems' serial protocol to Kramer's Protocol 2000. The FC-5 can be programmed to work with up to four translation tables, each with up to 256 commands.

888-275-6311; www.kramerelectronics.com
info@kramerelectronics.com



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World Radio History

Hand-held, motorized cable coiler
Kaltman Creations

Cable Coiler: The Cable Coiler offers a fast way to preserve microphone cables, speaker cables, coax, Cat-5, telephone, fiber optic cable or rope. The high-torque motor coils the cable. Once coiled, the cable slips off of the spool for instant storage.

678-714-2000
www.kaltmancreationsllc.com
sales@kaltmancreationsllc.com

Mic for female voice
AKG

Elle C: Custom-designed for female performers, the Elle C features an XLR connector module with 24-carat gold plated pins for optimized connectivity, as well as resistance to corrosion and humidity. Additionally, the mic features a spring steel wire-mesh grill for extreme ruggedness offering reliable control of pops and wind noise. The Elle C features a frequency range of 60Hz to 20kHz.

818-920-3212
www.akgusa.com
akgusa@harman.com

Door system
Industrial Acoustics

Sound Control Doors: Each door system, complete with leaf, split-frame seals, hinges and latching hardware, is factory assembled and laboratory tested for performance, alignment, fit and ease of operation prior to shipment. All design changes or material substitutions are fully tested in the lab prior to incorporation. Optional finishes include choices from among 62 types of wood veneers along with paint and metal.

718-931-8000; www.industrialacoustics.com; info@industrialacoustics.com

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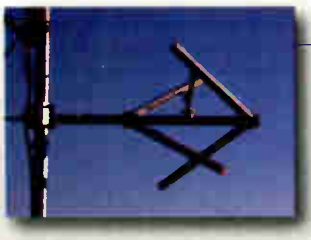
Full Line of FM Products



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Sat merger debate continues

I've lived in Washington, DC, for more than two decades and pass the NAB headquarters several times a month. Recently, I observed a huge banner hanging from the building encouraging me to join the fight against the XM/Sirius merger. My thoughts went to Chriss Scherer's two most recent Viewpoint columns, "Radio's Real Fix" in June and "Satellite Radio Merger? Why Not?" in July.

In the latter, Chriss points to the fallacies of the NAB's arguments against the merger. What seems to be forgotten is that the consequences of the merger succeeding are the same as if it were to fail. Should the merger not be approved, one or the other of the satellite radio systems will go dark after running out of money. No matter what the FCC rules, there will be only one satellite system in just a few short years.

The NAB is spending significant time, money and political capital distracting its membership and the general public, rather than investing more deeply in our industry's fundamental needs. Oh, but were those resources invested in helping stations resolve the programming malaise Chriss describes that currently (and needlessly) exists on many HD Radio multicast channels? What if every radio session at NAB Radio 2007 and NAB 2008 was about HD Radio? How many thousands of HD Radio receivers could be "gifted" to help increase the public's awareness in lieu of the anti-satellite fight?

Though well intentioned, the NAB's anti-satellite radio campaign is unfortunately giving satellite more credibility. Equal vigor in evangelizing HD Radio to our own industry, much less the public, would provide a much better ROI.

Name and address withheld by request

Chriss,

I couldn't agree more on your Viewpoint piece (July 2007).

Christopher Tobin
chief engineer/broadcast IT
1010 WINS-AM
New York, NY

Chriss:

I just read your July Viewpoint, "Satellite radio merger? Why not?" You could have taken the easy way out by avoiding the issue entirely or just sided with the big guys, but you didn't. Considering the massive broadcast lobby forces involved, I congratulate you on a courageous and common sense editorial. Your choice to use logic, history and current marketplace analysis to make the point was very well thought out.

Sadly I can remember back when terrestrial radio markets had some true diversity. The very idea of a single company (or two) owning almost all of commercial radio in a single market was abhorrent (even to the FCC). With those days long gone, technology has at least allowed the American public other listening alternatives. If the public chooses not to pay for it, that's their choice.

Your question, "What is the NAB afraid of?" is a good one. I think we all know the answer.

Bill Weisinger
Weisinger Engineering Services
Streetsboro, OH

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The real authority

Chriss:

I'll admit I was confused when I read your comment about the Harry Reid letter in your March Viewpoint. I'm not sure there was any political re-election campaigning going on in the senator's response to Larry Fuss. Re-election, if he runs, would not take place until 2010 anyway.

In case all of us might have forgotten, LPFM was created by public pressure on Congress and implemented by the reluctant FCC after much political pressure. That same political process intervened and removed second-adjacent "interference" from the group of tools allowed for use by the FCC staff. It's all political, and not a matter of rules and regulations. The rules were created by political pressure and modified from time to time by (surprise) Congress! Remember 1996 and the Telecommunications Act?

LPFM was created by public pressure on Congress and implemented by the reluctant FCC after much political pressure.

The FCC has authority to enforce the rules, propose rules, and Congress is the ultimate authority. Otherwise, why would those Senators (just today) propose to create rules for the FCC to follow and enforce language restrictions?

It's all political, and Harry Reid was not campaigning, he was just doing what every other elected political official does: They get letters from home, and take action to appease the public or corporate pressure, as it appears in front of them.

It isn't the FCC, but Congress that has the final say. Rules? If they can make them, they can take them away, obviously.

Don Mussell
consulting engineer, Broadcast Engineering Services of Bonny Doon
Boony Doon, CA

Don:

Thanks for the letter. My concern is that the FCC has lost its muscle when it comes to enforcing its own rules. Then again, some may argue that the FCC never really had the muscle anyway.

—Chriss Scherer

We receive lots of letters, and can't possibly print them all. Here's a preview of one that you can read online at RadioMagOnline.com. Select the September issue contents.

Are you addicted?

Someone was asking me about the hours I keep at the station. I said they were rather flexible because I am on call 24/7. I then looked up the history in my cell phone.

I want to be clear about what I have set up so that you know: I have many devices and people that can call me. The door of the transmitter site is alarmed and there is a motion sensor inside. There is a silence sensor at the transmitter that calls my cell phone as well if there is no audio coming from the modulation monitor. There are also connections to the emergency power generator and main transmitter plate off. In other words there are many alarms that can call my cell phone from the transmitter.

We also have a studio. Folks can call me about equipment problems from about 4:30 a.m. until someone arrives at 9 a.m. during the week, and at any hour all weekend.

Back to my cell phone. The call history was mostly calls from my family. The last missed call from the station was about two months ago.

Continued at RadioMagOnline.com

GALLERY

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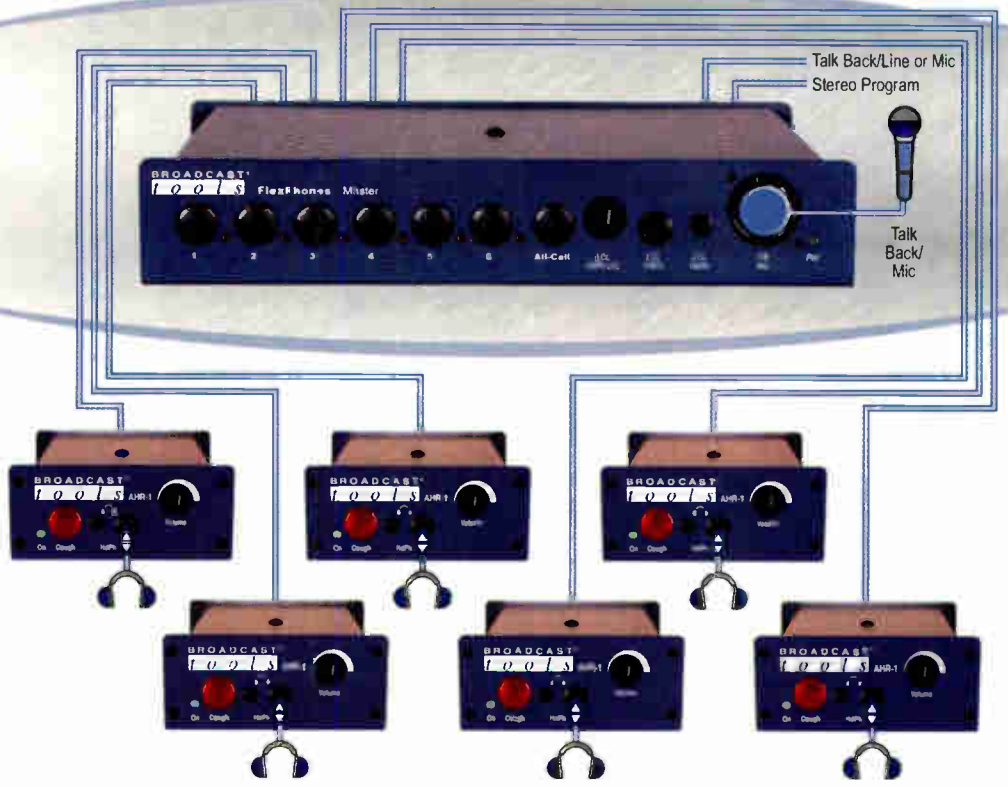
Independent Talkback

A Headphone System with Selectable Talkback for Each User



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The Active Headphone Remote (AHR-1) contains a stereo amplifier designed to work with any combination of high-efficiency headphones with impedances between 24 and 600 ohms. The AHR-1 is equipped with 1/8" and 1/4" headphone jacks, level control, user-configured utility momentary pushbutton and LED indicator. Two rear panel RJ45 jacks are provided for connection via CAT5 cable to the FlexPhones Master. The AHR-1 may be desktop mounted, under counter or with the optional HR-1/MP or HR-1/MP-XLR mounting plates, which may be turret or counter-top mounted.

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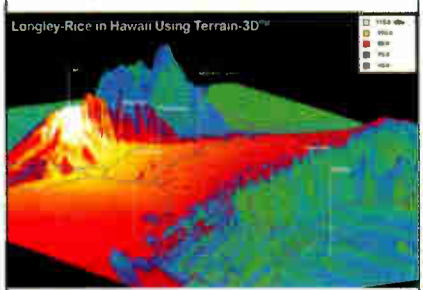

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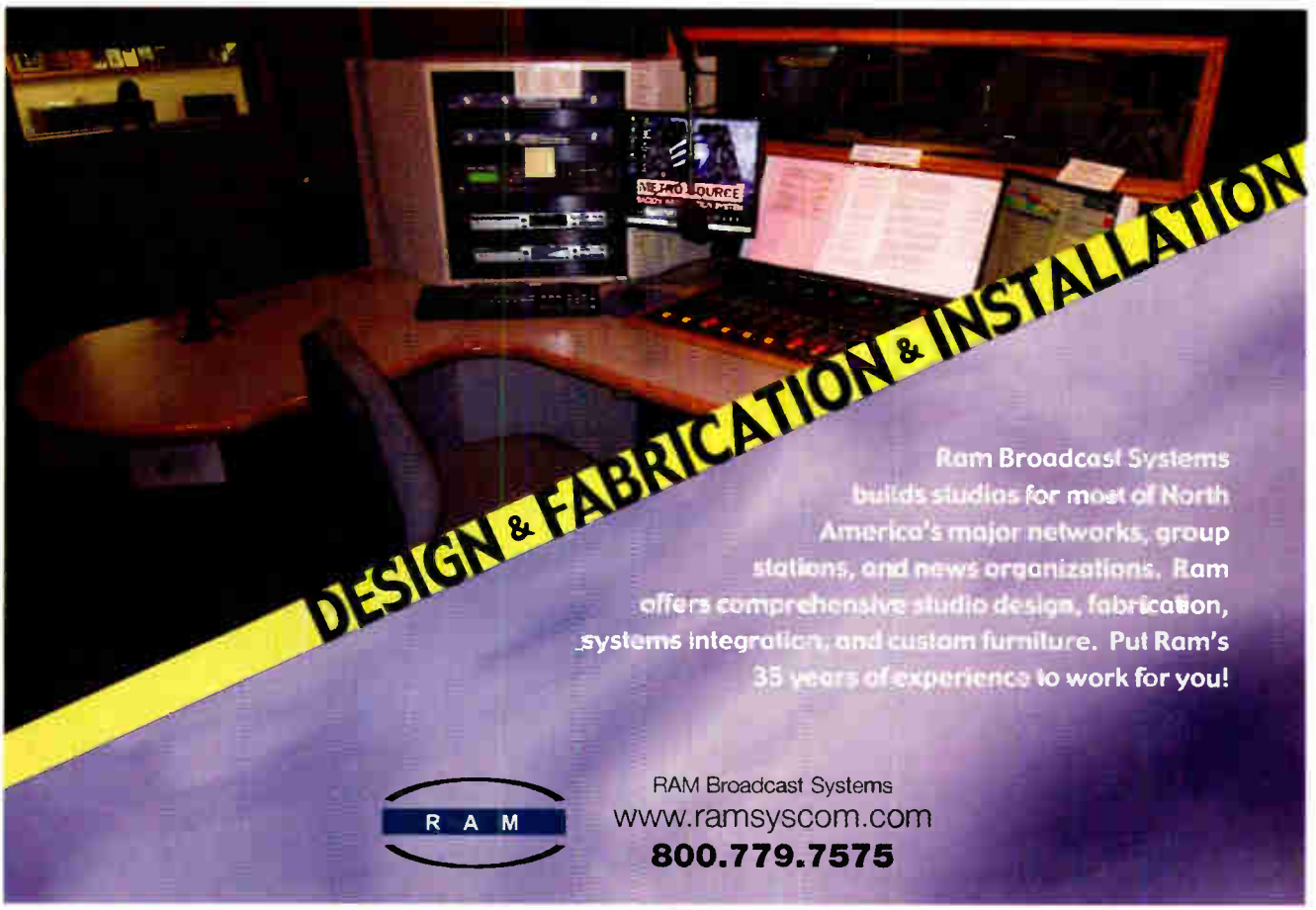

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Contributor Profile

Meet the professionals who write for *Radio* magazine. This month: Field Report, page 62.

Rajesh Kapur
Project Mgr.
Minnesota Public Radio

Kapur obtained his bachelors degree in electrical engineering in 1982 and his masters degree in electrical engineering in 1984 from the Indian Institute of Technology. His 23 years of experience in IT and radio spans systems development, database administration and project management in India, Hong Kong, the UK and the USA. He joined MPR in 2007.

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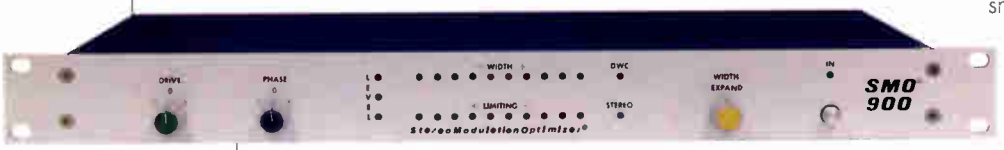
ESE	57	310-322-2136	www.ese-web.com
Eventide	31	201-641-1200	www.eventide.com
Fanfare FM	81	800-26-TUNER	www.fanfare.com
Flash Technology	21	888-31FLASH	www.flashtechnology.com
Full Compass	12	800-356-5844	www.fullcompass.com
Google	1	888-438-7268	www.google.com/ads/asaudio
Graham Studios	58	866-481-6696	www.graham-studios.com
Harris Corp. Broadcast Div.	3	800-622-0022	www.broadcast.harris.com
Heil Sound	11	618-257-3000	www.heilsound.com
Inovonics	43	831-458-0552	www.inovon.com
Int'l Radio & Electronic	32	866-262-8919	www.crownbroadcast.com
Jampro	41	866-452-6770	www.jampro.com
JK Audio	39	800-552-8346	www.jkaudio.com
Kay Industries	35	800-348-5257	www.kayind.com
Kintronic Labs	40	423-878-3141	www.kintronic.com
LBA Technology	83	800-522-4464	www.lbagroup.com
Liquid Compass	17	303-839-9400	www.liquidcompass.net
Loud Technologies, Inc	7	800-898-3211	www.mackie.com/vlz3
Mediatouch	23	888-665-0501	www.omt.net
Mediatron	80	800-779-7575	www.mediatron.com
Micro Communications, Inc.	76	800-545-0608	www.mcibroadcast.com
Mooretronix	81	800-300-0733	www.mooretronix.com
Moseley Associates	13	805-968-9621	www.moseleysb.com
Musicam USA	37	732-739-5600	www.musicamusa.com
NAB	59	202-429-5336	www.nab.org
Nautel Electronics	49	902-823-2233	www.nautel.com
Nott Ltd.	83	505-327-5646	www.nottltd.com
OMB America	47	305-477-0973	www.omb.com
Omnirax	38	415-332-3392	www.omnirax.com
QEI Corporation	20	800-334-9154	www.qei-broadcast.com
Radio Design Labs	50	217-352-3498	www.rdinet.com
Radio Systems	71, 73, 75	856-467-8000	www.radiosystems.com
RAM Broadcast Systems	81	847-487-7575	www.ramsyscom.com
Ramsey Electronics	80	800-446-2295	www.ramseyelectronics.com
RCS	25	914-428-4600	www.rcsworks.com
RF Parts	83	800-737-2787	www.rfparts.com
RSI	76	888-830-5648	www.rsicorp.com
Sabre Communications	22	800-369-6690	www.sabrecom.com
SCMS, Inc	33	800-438-6040	www.scmsinc.com
Sennheiser Electronic Corp	44, 52	860-434-9190	www.sennheiserusa.com
Shively Labs	28	888-SHIVELY	www.shively.com
Sierra Automated Systems	15	818-840-6749	www.sasaudio.com
Sine Systems	72	615-228-3500	www.sinesystems.com
Studio Technologies	70	847-676-9177	www.studio-tech.com
Studio Technology	35	610-925-2785	www.studiotechnology.com
Telos Systems	61	216-241-7225	www.telos-systems.com
TieLine Technology	5	888-211-6989	www.tieline.com
Titus Technological Labs	70	800-806-8851	www.tituslabs.com
Transcom Corp.	82	800-441-8454	www.fmamtv.com
Transector Systems	24	800-882-9110	www.transtector.com
Via Radio	82	321-242-0001	www.viaradio.com
V-Soft Communications	80	800-743-3684	www.v-soft.com
Wheatstone	2, 87, 88	252-638-7000	www.wheatstone.com
Wide Orbit	19	404-378-3381	www.wideorbit.com
WireReady	82	800-833-4459	www.wireready.com
Yellowtec	34	+49 2173-967-315	www.yellowtec.com
Zaxcom	45	973-835-5000	www.zaxcom.com

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

World Radio History

by Erin Shipps and Chriss Scherer

Do you remember?



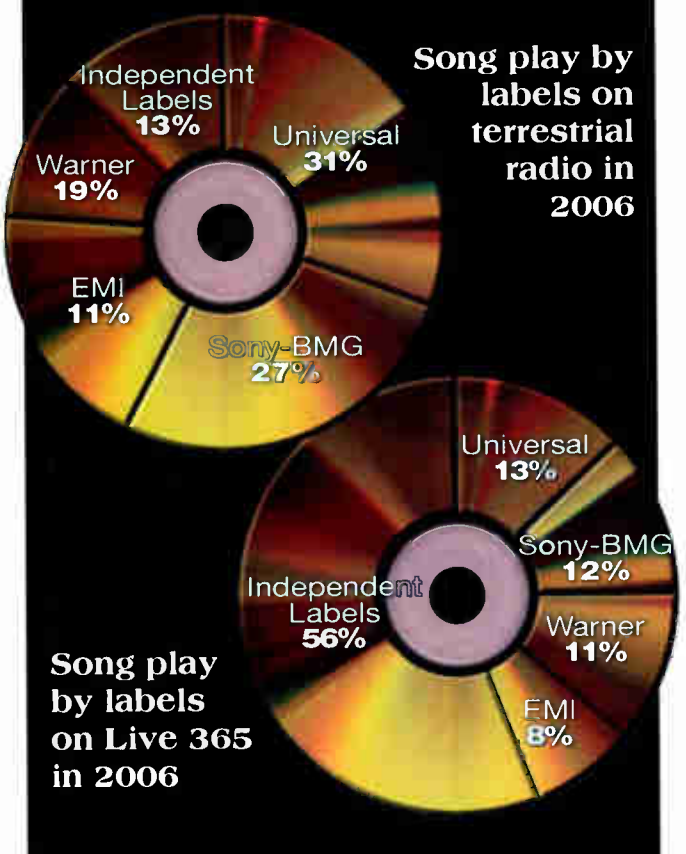
Designed to compete with the Stereomaxx and Orban 222A, Jeff Keith built the first SMO900 and put it on the air at 100kW WKZL-FM in August 1987. By Spring 1988, he had worked an agreement with Broadcaster's General Store to manufacture and sell the unit exclusively. The first units made by Keith and many of the production units had the gray panel, like the unit shown here. The later BGS units were made under BGS's Hit Design label and were black.

Keith's original plan was to create the unit for his own stations and not market it. Through word of mouth, the unit saw success, which led to the commercial distribution.

Want to know more about the SMO and its creator Jeff Keith? Access this article at RadioMagOnline.com

Sample and Hold

Indie Artists Find Haven on Internet Radio



Source: Nielsen BDS. Based on one week of broadcasts on 1,450 stations.

That was then

Transistor radios hit the market on Oct. 18, 1954, with the Regency TR-1. Although Intermetall introduced one in 1953, the TR-1 was the first to be commercially produced. It cost $49.95 in 1954, which by today's standards would be about $375. Comparably, the General Electric All-Transistor Pocket Radio in the 1957 ad seen here would cost about $360 alone or $467 with rechargeable batteries and charging case. GE spared no expense touting the radio's 10,000-hour capacity. Why with its "handsome" recharger and two "glamorous" colors, full-range sound volume and jewelry finish, who wouldn't want this 20oz wonder? Well, the wonder of transistor radios met its peak in the early 1960s and slowly declined in price from there.

More online

To see another ad for GE radios, visit: www.radiomagonline.com. For more information on transistor radios, visit: www.transistor.org, www.childhoodradios.com, or www.tabiwallah.com/radiowalla

World Radio History

This Little Unit

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SETTING UP FOR HD RADIO?

The Vorsis AP-3 digital processor is the ideal tool to shape your sound exactly the way you want it —cleanly and efficiently.

Built around a multi-band compressor with complementary AGC, the AP-3 replaces a whole *rack* of dedicated units. VORSIS pre-conditions your signal (HPF, LPF, notch filter, de-esser, expander), then let's you apply 3-band AGC/compression *and* 4-band parametric EQ (signal chain reversible) before going through a final stage zero-overshoot peak limiter.

With real-time spectrum density readouts and full metering, our included PC graphic interface software makes operation of the AP-3 direct and easy, offering complete control of all audio parameters, presets, monitor functions, system settings and security—all through a single RJ-45 ethernet connection that lets you control one or many AP-3 units.

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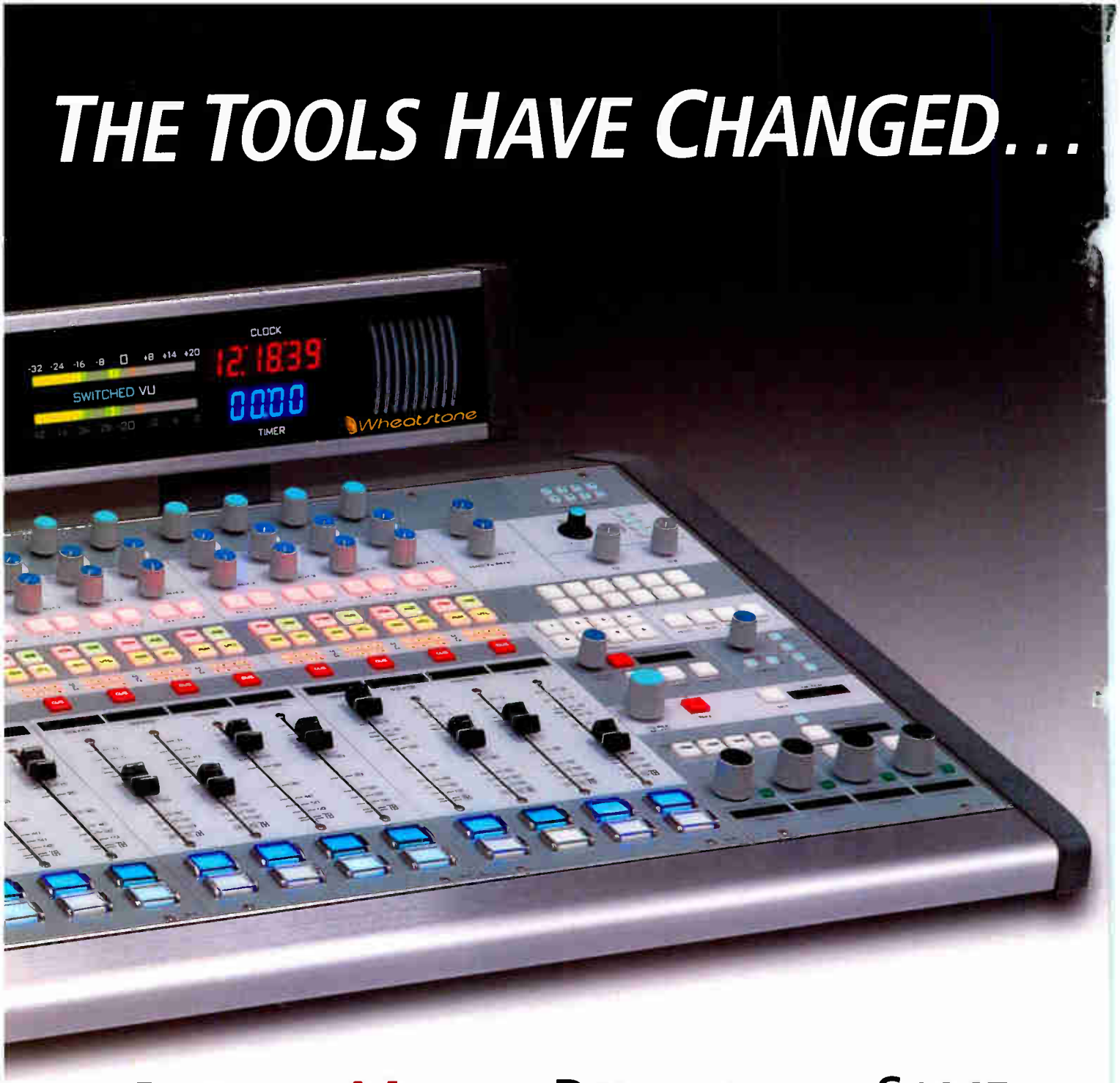
World Radio History

THE TOOLS HAVE CHANGED...



BUT THE *MISSION* REMAINS THE SAME

Today's audio control surface has evolved to a very high degree. Yesterday's wish list is today's feature set: total router integration, routable audio and logic, total show recall, and a complete set of DSP audio processing are under the hood of this G7...

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