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September 2001  
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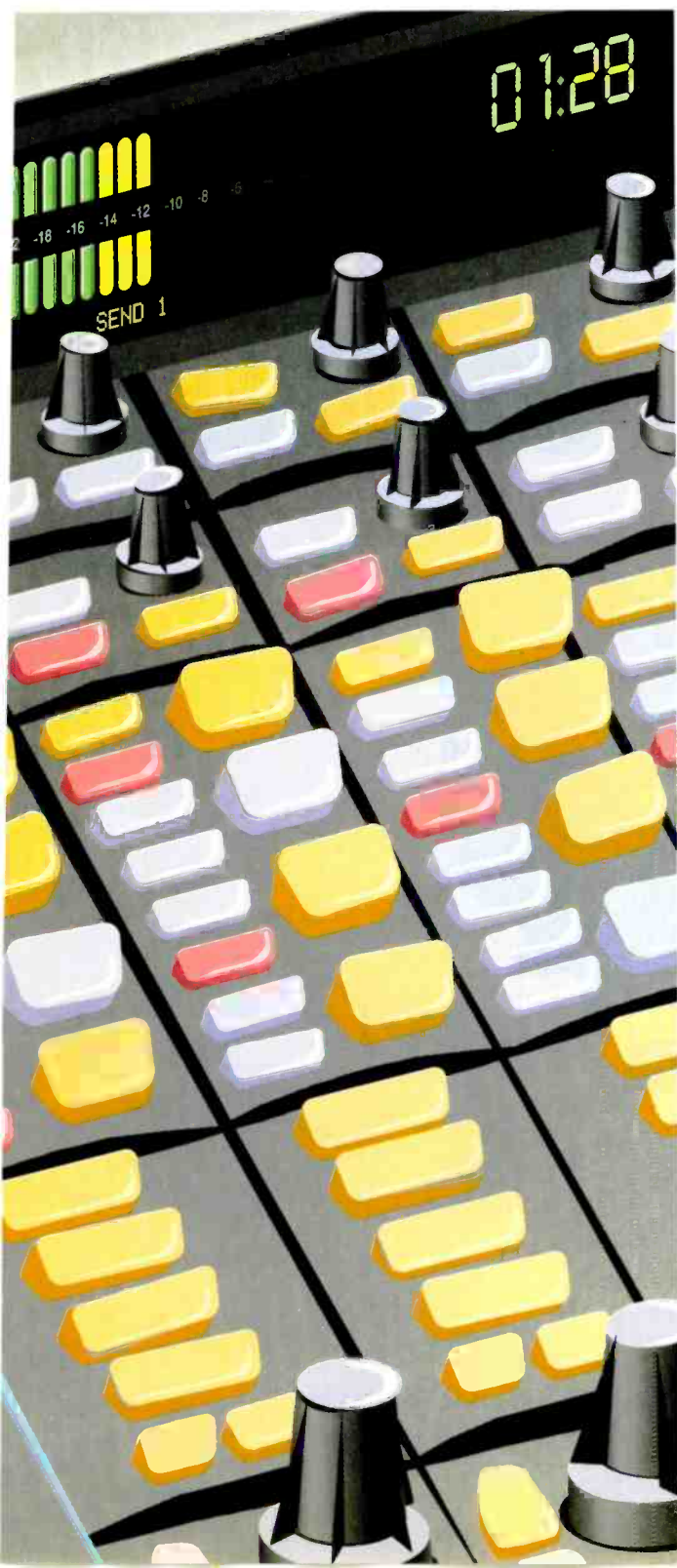
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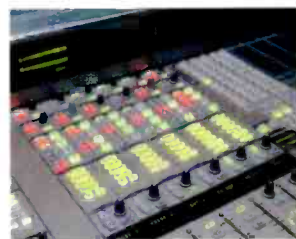
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**ON THE COVER:** The production studio is the heart of behind-the-scenes radio. Photo by Andrew Rosenberg and courtesy of Creative Studio Solutions. Cover design by Michael J. Knust.

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IBiquity announced that it has supplied its final FM test data to the NRSC... ▶

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## Tuning in satellite radio

From when the satellite radio licenses were first issued, I have been asked repeatedly if satellite radio will succeed. My answer then was a resounding maybe because the two main arguments had equal strengths, which can generally be brought down to two basic points:

- No one will pay for something that can be had for free; and
- Cable and satellite TV are successful and profitable, so the same model can be applied to an audio service.

An additional point is also usually made about the programming content itself. To borrow from the movies, if you play it, they will listen—and pay for it.



I wanted to see what the general public knew about the services. I started by visiting two home electronics franchises, Circuit City and Best Buy. I asked the salespeople questions, acting as a consumer with a little knowledge of the services. I was surprised that the salespeople knew quite a bit about the services. While the knowledge they shared was general and most likely learned in training or from a brochure, the information was accurate. There

were some uncertainties about the actual monthly cost. Three of the four salespeople told me "about \$10 a month" but would not get any more specific. (XM charges \$9.95 per month and Sirius charges \$12.95 per month.)

What surprised me more was the lack of obvious signage that satellite radio was coming and that hardware was available at this store. Though the actual receivers are not yet available, both stores had radios that are *XM Ready*, meaning that an additional unit and antenna are installed when you want to receive the service. Neither had any hardware for Sirius, but told me that they expected to be getting some soon.

The only signage indicating the upcoming service was a display at Best Buy that included an interactive video monitor showing promo videos and playing programming samples. Strangely, this monitor was placed at shin-level. Also, the audio was so low it could barely be heard over the background noise of the store. This display also had tri-fold brochures on the service. I had to ask for a brochure from Circuit City, and they could only find one on XM. I was told to check back later to see if any for Sirius would be available.

When I said I wanted to subscribe to a service, both stores weren't sure what to do. One salesperson told me

to go to the provider's website. The other said that he thought he could process a subscription, but he needed to write the hardware sales order first.

When I asked each salesperson if he would subscribe to the service, each replied with a considered yes. At this point, I revealed that I was very familiar with the services, and that I was observing what the word on the street was concerning satellite radio. After showing my hand, I again asked if that salesperson would subscribe to satellite radio. Their answers did not change.

The hardware cost was not a major concern to them, which started at \$400 for a complete system, nor was the monthly fee. All of my test subjects liked the idea that they could receive something new and different, and some of it without commercials.

So this leads me back to the original question as to whether or not satellite radio will succeed. While it seems that public awareness is still not very high, the people that are familiar with it (including one of my coworkers), all have expressed an interest in it. It's safe to say that once the services are active, interest will rise.

Despite the lackluster showing I experienced, I think the services will succeed, at least for a while. The longevity of the services is still open for discussion. ☞

*Chriss Scherer*

**Chriss Scherer, editor**  
[cscherer@primediabusiness.com](mailto:cscherer@primediabusiness.com)

### On the road

Chriss will participate in the Radio Roundtable at the 2001 Central New York Regional Convention in Verona, NY on September 13. The event is organized by SBE chapter 22.



**READER RESPONSE**

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# COMREX

## Billing and collections

By Mark Krieger, CBT

A few issues back we talked about bookkeeping basics and how a variety of inexpensive software packages will keep track of your business' receivables and generate invoices and statements. Most of these packages also provide features for flagging accounts past due and for generating customized reports. While these programs are great labor savers, they are designed around some basic rules that apply to the use of palm pilots and ledger books.

First, establish a regular billing cycle and stick to it. How often you choose to generate invoices and review receivables is up to you. All hours, materials and expenses should be recorded on a daily basis, as memories tend to fog, and receipts have a habit of getting misplaced. At the end of

each billing cycle, it's time to review the books, generate invoices and get them out promptly. Statements should be handled on a monthly basis. In many cases, this means using snail mail, although some businesses will accept fax or email invoices by prior arrangement. In any case, it is imperative that all billing and statements go out as quickly as possible.

Second, be sure to record all payments the day they're received. You may also want to record postmark dates, and

refer back to them if a payment appears to be past due. This is one way to ensure fairness to all clients and to avoid embarrassment or ill feelings resulting from record errors.

### Payment terms

The issue of payment terms is interesting. Over the years, I've heard some independent contractors tell stories of how they would leave an invoice at the jobsite after performing their services and that their terms specified they were payable at time of receipt. I remember one tower contractor telling me that if payment in full wasn't presented to him on site at the completion of work, he'd send his crew back up to begin dismantling the structure.

Whether or not you believe such anecdotes, the inescapable fact is that we live in an easy-credit world in which most clients have come to expect net 30-day

payment terms. Of course, where written contracts are involved, you have the right to explicitly specify payment policies, thus rendering them legally enforceable. Even so, you are the one who needs to negotiate these matters directly with your clients, and you risk losing return business if your terms seem too restrictive.

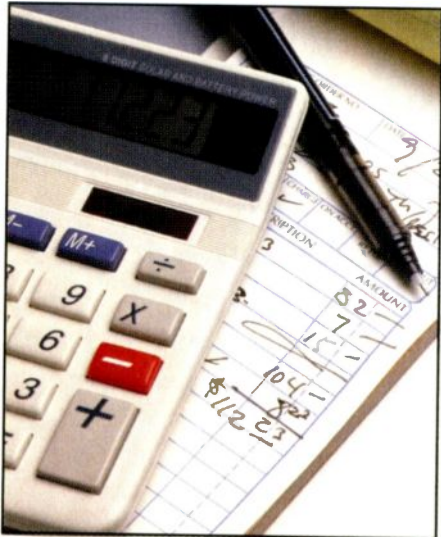
One way of dealing with the 30-day dilemma is to divide scheduled projects that involve substantial time and materials from routine maintenance or emergency calls. Allow the regular or emergency billings to proceed on a net 30-day basis, but set up a specific payment schedule on project contracts. Such an arrangement might specify one third of the total quotation up front (after the contract is executed and work is to begin), another third when work is approximately 50 percent completed, with the balance payable upon completion of the work. This provides for only one third of the receivable to be carried beyond the project completion.

### Past due accounts and collections

Inevitably, every small business has to deal with the occasional client that fails to pay his bill in a timely fashion. To begin with, be sure to issue statements to all clients with an outstanding balance at the end of each billing statement. If the account is past due, add a neutral statement to that effect along with a request to contact you regarding any questions about the account balance. If an account goes one billing cycle beyond the past due statement, call the client with notebook in hand. Ask if there was a problem with your services or if there were any other issues the client needed to discuss. Be friendly but firm, and try to get some sort of payment commitment. Record the time, date and contact information as well as the disposition of the call. You may need these records later. Follow up on these contacts on a regular basis (no less than weekly) until all issues are resolved.

If, after all your best efforts, a client fails to meet his obligations, you have several options. First, you can have an attorney draft a simple letter relating the account history and requesting payment. Expect to pay a modest fee for this service ranging up to about \$100. Another route is to retain a collection service. These agencies usually work on a commission based on a percentage of the total collection, but most have a minimum limit for the collection amount. In cases where the debt is small, you might consider filing personally for a judgment in small claims court. Rules on the upper limit of such claims will vary from state to state. Of course, a lawyer can handle this as well.

These are drastic measures, to be sure, and are generally



By setting up a regular billing cycle and establishing payment terms up front, problem collections should be minimized.





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## Try to control yourself...

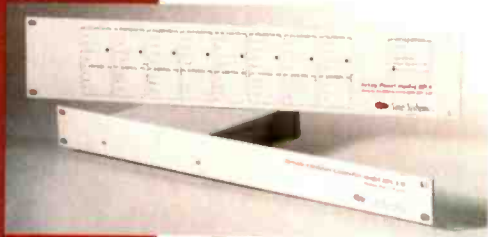
## Contract Engineering

considered as a last resort when no further business relationship is anticipated or desired. In those cases where you wish to preserve a relationship with a problem client, you may elect to carry his balance at a fixed monthly interest rate, or you may simply write off the unpaid balance as bad debt.

Occasionally, you may find a cash-poor client who wishes to barter or trade with you for services rendered. While taking trade is better than no payment at all, approach such deals with caution.

Finally, treat all your clients with dignity and consistency. Remember that checks do get misplaced, invoices misfiled, and that sometimes the till is just empty at the end of the month. By being flexible, professional and persistent, you'll frequently collect both payments and respect.

Mark Krieger, BE Radio's consultant on contract engineering, is based in Cleveland.



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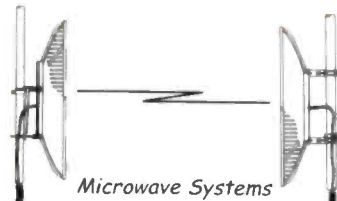
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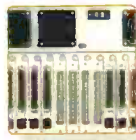
Introducing the new 32KD Digital Audio Network from Sierra Automated Systems.

This modular, digital-core routing system processes more audio, routes more signals, and provides more user control than any other system in its class.

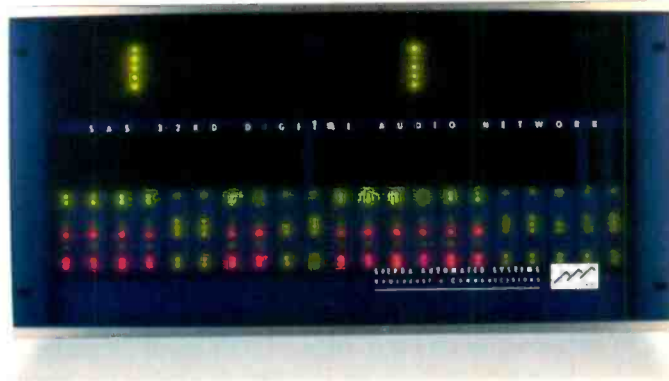
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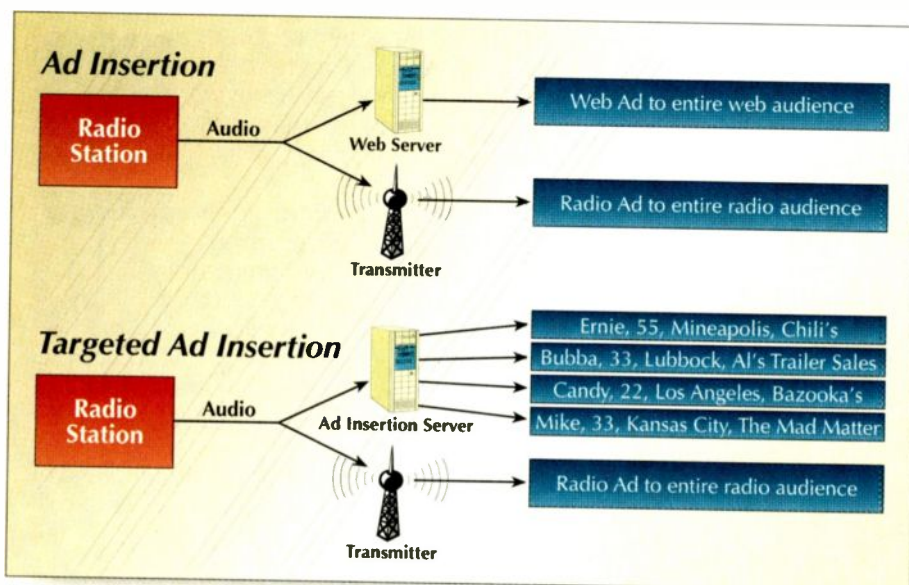
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## Targeted ad insertion

By Ken Nosé

**A** recent collective bargaining agreement by AFTRA, the American Federation of Television and Radio Artists, now requires that union talent are paid additional fees when their on-air ad spots are also broadcast on the Web. These fees can increase the cost of a single ad by up to 300 percent, so the original question of "How can I make money Webcasting?" has taken on the new twist of "How can I afford it?" Ad insertion systems, which were originally an evolutionary

inherently anonymous, and while this is good for privacy, it means the only way to get meaningful information about your listeners is to have them give it to you. The IP address of their network connection and the browser they are using are the only things a Web server knows for certain about a listener. While websites commonly use cookies to track browsing habits, cookies only store information on what someone does when they visit that site.



**Targeted ad insertion delivers specific ads to individual listeners.**

step toward creating new revenue sources, are now in the spotlight as a means to manage these new fees.

Many vendors sell ad insertion systems, and each one works differently. The basic principal of operation is that advertisements from your on-air signal are replaced with a separate set of ads for your webcast audience. Targeted ad insertion systems take ad replacement one step further, in that a separate set of ads can be sent to each individual listener. The ads are tailored to each listener based on their demographic. Because the system has information on each listener, both the broadcaster and advertisers have more detailed feedback on listening habits, which isn't available with non-targeted ad insertion systems. Also, because the advertisements are tailored to each listener's specific demographic, they are more effective.

Unfortunately, targeted ad insertion systems require more effort on the part of the listener. The Web is

normally some dead air while the ad file is buffered and before it starts playing. To address this problem, some vendor's systems include client software that pre-buffers ads while the live station audio is playing. In some systems, all the ads are downloaded and stored on the listener's computer entirely in advance. When the ad insertion system instructs the player to disconnect from the live stream and play the ad, the locally cached or pre-buffered ad starts playing immediately. In this way, the user suffers no interruption in audio when the inserted ad plays.

*Ken Nosé is chief software architect of NeoSonic Industries, Cleveland.*

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# The Simplest Internet Spot Substitution: Scott Sub

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## Mark Spots "No Net" in Production and They Won't Play on the Internet!



Many radio stations have been in a dilemma about their Internet streams since AFTRA started charging fees for commercials on the web. Stations want an easy way to substitute other material for AFTRA commercials.

### Simply Mark a Spot "No Internet"

Scott Studios has the *best* answer for stations using Scott digital systems: Simply mark "Do Not Play on Internet" on any commercial in your production studio. This check box on the label ensures that this spot will not be fed to the web. Any Scott SS32 or AXS3 (and most older Scott Studios systems with a low cost software upgrade) can connect the Scott system to our Scott Sub.



### Timing is Perfect

When any recording plays that is tagged "No Internet", the Scott Sub system's switcher cuts the net feed away from the on-air feed and substitutes approved material of the exact same length, then rejoins the air signal.

### Spot Substitution is Automatic

These promos and other generic time fillers can be selected from your on-air inventory of spots and promos without extra production, recorded especially for webcasts, or any combination. To minimize work and eliminate errors, Scott Sub rotates up to 100 cuts under cut numbers that match the lengths of the "No Internet" recordings. Scott Sub honors start/end dates and times, ensuring that all material is timely, fresh and appropriate. Scott Sub easily handles complex rotation changes with no redubbing required. It never plays out of date spots. Program length subs are also handled easily.

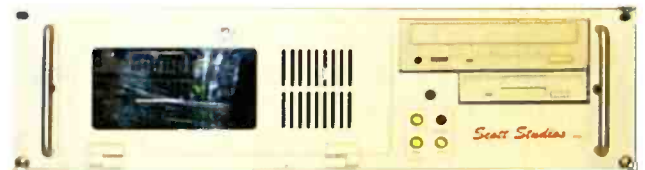
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## Computerized planning and station engineering

By John Battison, P.E., technical editor, RF

In the early days of radio engineering, it was necessary to calculate every value used in determining coverage and antenna design manually. Slide rules were the norm, and many engineers carried one in a hip holster—well, almost. My slide-rule case certainly had a belt slot in it.

Today the computer and the calculator have replaced the slide rule. Forty years ago many engineers rented a Burroughs or similar machine to perform the iterations needed to design a directional AM antenna. It was left to Andy Ring, P.E., former FCC chief engineer and legendary consulting engineer, to develop and offer a calculating/

computerized service. He named it Dataworld, and in addition to calculating services it offered a trustworthy database.

### From the beginning

Over time, DataWorld's offerings grew from simple AM directional antenna design calculations and a

pattern book of all U.S. AM stations, to complete services in all branches of radio, TV and most RF work. I have found the DataWorld station database to generally be more accurate than the FCC's database.

DataWorld's CD database of all US stations includes pertinent station details. The data also extends into cell and wireless, and all microwave. The scope is worldwide, and topographic data is available on many countries.

### Map bits

RadioSoft's ComStudy 2.2 is a complete engineering package for performing AM, FM and TV propagation studies. Also included are groundwave, skywave 50%, skywave 10%, Region 2 skywave 50% and Region 2 skywave 10% contours. It will also perform ground conductivity studies.

The FM program is full featured for all types of FM studies including low power. Propagation models such as Longley-Rice, Bullington, Okumura and Epstein-Peterson are available. Contour capabilities include F (50,50), F (50,10) and Point-to-Point (PTP) service and interfering contours.

The program can also download the latest FCC license data and then assist the user in searching for possible new frequencies or locations by use of the frequency finder and allocation program. It will then rank these possibilities for the best possible chances of being available.

### Lots of data

REALcoverage from CMBE offers several services. The type of station and the necessary technical parameters, such as location, height above ground, power, gain, losses and antenna patterns, are input into the system; all the stations of the network appear instantaneously on the map and are integrated in databases for further studies.

The system integrates several propagation models including FCC 98, Longley-Rice, Fresnel, Deygout 94, Okumura-Hata, ITU-R.P.370, ITU-R.P.525/526 and NBS 101, as well as several customized propagation models. The calculation incorporates free space propagation, diffraction, refraction and reflection. Physical interactions, like earth curvature, climate attenuation and ground occupancy linear attenuation are also considered.

Coverage is calculated for each point of the terrain and displayed on two-dimensional or three-dimensional maps. Composite and best server coverage, overlap and hand-over between stations, and other detailed studies are all available with automatic frequency assignment and optimum spectrum occupancy, re-using frequencies when possible to minimize interference.

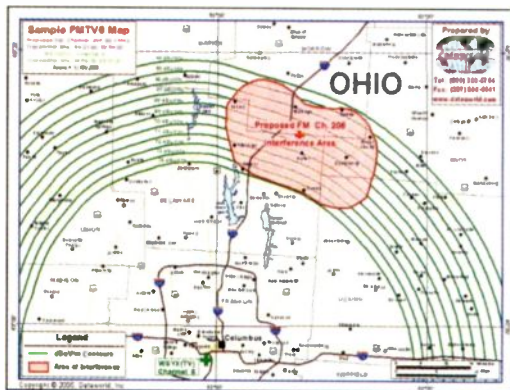
For microwave link projects, terrain profiles can be instantaneously extracted between two stations and complete path budget calculations generated for analogue or digital stations.

This service uses internal databases that allow instant managing of as many sites as necessary. It can also integrate as standard the possibility to connect to external sources through an existing local or distant network (import and re-using of existing databases and share of technical information on a large scale).

Comprehensive link path analysis is standard within REALcoverage, showing a full and detailed cross section of the terrain and path geometry.

### Running interference

V-Soft Communications offers allocation and coverage mapping for the AM standard band. Its maps will plot AM coverage signal contours and contour overlap based on the FCC AM rules. The maps apply the M3 or R2 ground conductivity curves, depending on which is needed.



This DataWorld map shows the area where a new FM transmitter can be located and still meet all FCC Rule requirements.



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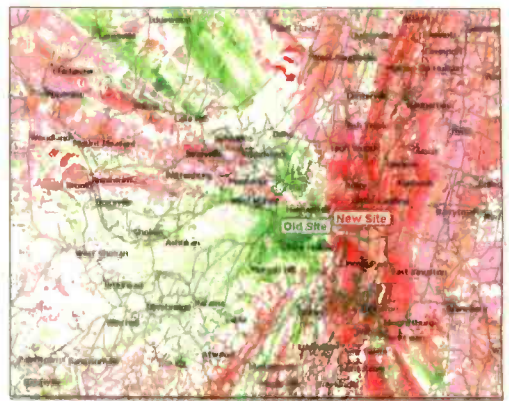
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Using the same software developed for its long list of broadcast technical consultants and engineering clients, V-Soft Communications can provide custom mapping and engineering studies for just about every engineering purpose.

V-Soft maps can incorporate Longley-Rice, TIREM, Okamura/Hata/Davidson, Cost-231/Hata, PTP and the more common FCC standard contour method. The atlas-quality maps use

advanced polygon shaping. V-Soft can produce representations of coverage from street level to statewide coverage. Multiple stations can be plotted on the same maps to show group coverage. Demographic information is included with each coverage map, and zip codes, FCC-registered towers and individual U.S. Census year 2000 centroids can be



Computer modeling, like this from RadioSoft, can make planning a site change much easier.

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plotted on maps.

Other mapping options for the V-Soft client include incoming or outgoing interference studies. The studies automatically identify the stations to which interference is caused as well as those stations that cause interference to the client's reference station facilities. Types of interference map studies include FM, TV and DTV. NCE to channel-six TV interference maps and analysis are also performed.

V-Soft Communications also gives you the option to make your own maps on your own computer because all of the software it uses to prepare its maps and studies is available for purchase.

A newer entry into the field of engineering software is [rfEngineers.com](http://rfEngineers.com). Its product, *rfDetective-FM*, helps FMs change class or power or locate frequencies for new FM stations. It also displays antenna height, location and channel of existing broadcasting stations. Four editions of *rfDetective-FM* are available. The Pro and Standard editions can create and modify jobs. The Pro edition can also create its own database directly from raw FCC data that can be downloaded from the FCC website. The Light edition can read and modify jobs created with the Pro or Standard editions, but cannot create a new job. A Reader edition is also available.

E-mail John at [batcom@bright.net](mailto:batcom@bright.net).

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# On The Air

A Monthly Newsletter from Broadcast Software International

Issue 7

## Quote of the Month

"You have a great product that seems to only be limited in use by a person's imagination."

Alan Burton, WKLV-  
Paintsville, KY

### News

## A Letter from BSI's President



This is one of the most exciting times in BSI's history. In the next month, we will be releasing three new innovative products that will give incredible capabilities to broadcasters at all levels.

Our new automation software package, **Simian**, redefines power, reliability and affordability. This new program has the capability of automatically healing itself of errors and even notifying us here at BSI if something isn't

right. We are able to remotely correct or repair an installation before our client is even aware that there's a problem.

**Skimmer** is a wonderful new tool for PDs and air talent to air check themselves and the competition. It will also undoubtedly be popular with media tracking services.

Perhaps the most exciting new offering is **TimeShift**. This ground-breaking application is capable of storing a year's worth of network programming, including all cue tones. West Coast stations can permanently delay an East Coast feed. Stations can effortlessly and instantly create "best of" programs. Never again will anyone need to "dub the network feeds" for sports, business or other features.

In true BSI tradition, despite the products' amazing capabilities, all three of these new offerings are priced affordably like major brand software, not "black box" broadcast products.

The real software can be downloaded to test and try from our web site at [www.bsiusa.com](http://www.bsiusa.com). I encourage you to visit the web site, try the software and ask us any questions you may have. Our open approach and dedication to our customers are the reasons we have thrived when others have fallen by the wayside. We look forward to hearing from you.

Sincerely,

Ron Burley - BSI President

## Calendar

Sept 5, BSI on the Bayou-  
Riverboat cruise and demo of  
new products at the NAB. Call  
for an invitation.

Birthdays:

Sept 25 1944, Michael Douglas

Sept 25 1969, Catherine Zeta-  
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### Tip

## Easy Air Checking

Skimmer, one of our newest products, is a great tool for air checking. It was specifically designed to record, play-back and cut-out air checks. When you set it to record, you can stop/start using the microphone button. Triggers are another way to control Skimmer externally. Using the software is a reliable and affordable way to record your broadcast. Skimmer also makes this a lot easier to do than tape decks or in-house "hack" software.

### User File

## Radio Wanaka - W. Johnson

Wayne Johnson works at Radio Wanaka 92.2 FM in beautiful Lake Wanaka, New Zealand. He says, "Our station has been on air for about 8 months. We have a full and part time staff of 5 very dedicated people. The heart of our system is, of course, WaveStation. I loved the way that you guys let me download a working system. I had it running within the hour."



"Some of the other companies made you send, by email, all of your details before they would let you look at their systems. Bit like the secret service," Wayne says, "I got the feeling that you guys had nothing to hide and that anyone in the market could check it and see how it works without any obligation."

"In the end we got WaveStation and also purchased 1000 titles through the Music Store (Now there's another great thing), loaded it up and went to air. It was pretty much as easy as that. I can honestly say that WaveStation has NEVER let us down."

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## Cabling for the next five years

By Kevin McNamara, CNE

As the demand for faster networks increases, so does the need to provide the best and most efficient medium for the data to travel. Not long ago, terms like “thin” and “fat” cable described networks using coaxial cable as the primary medium to connect computers. Twisted-pair cable has been around since the early days of the telephone, but was only considered a viable medium to carry voice or very low-speed data. Topologies dictated the type of data protocol to be used on a particular network. For example, arc net networks connected computers in series across a thin coaxial cable,

while Ethernet topologies used coaxial cable terminated to a central *hub*. Fortunately, there are fewer network protocols to worry about now.

Ethernet has the greatest installed user base. Ethernet technology permits data throughputs in excess of 1Gb/s. There are also

fewer topologies to concern ourselves with as the majority of Ethernet networks in place use the classic *star*, where each device is connected to a central hub, or the *ring* which uses two concentric data paths connected to form a ring to which individual network devices can be inserted. The increased throughput of Ethernet over simple and easy-to-install twisted-pair cable has all but eliminated the Ring's twin-ax network. The ring topology is far from gone, however, because all *fiber*-based networks use a ring topology.

### Transmission media

There are also fewer types of transmission media. Coaxial cable is almost never used as cabling in modern networks. We now have three choices: twisted-pair, fiber or wireless. Wireless networks are gaining in popularity due to recently implemented standards, which permit seamless and reasonably secure transfer of data between devices of different manufacturers. The technology is still in its infancy and hindered by relatively low data throughput performance; however, with pricing of wireless networking dropping to levels near that of wired, and the ability to deploy a large network quickly without the added

expense of cable installation, a lot of attention is now being drawn by network administrators.

*Fiber.* In terms of raw data speed capabilities, fiber cabling is still the best choice. You may ask how this can be possible since we can now pass 1Gb/s data over a twisted pair. This is a misconception shared by many network administrators. It is true that Ethernet networks can conceivably pass data at this rate for a short interval; however, in reality, Ethernet inherently limits the amount of data traffic permitted over the medium. For example, you may expect a 10baseT Ethernet network to pass data at 10Mb/s; however, if you were to measure the actual throughput with a proper analysis tool, it is unlikely that you would measure more than approximately 3Mb/s. The high-speed varieties of Ethernet boast better performance, mainly due to full-duplex transmission, but still suffer performance degradation. In contrast, data communications protocols such as DS1 (T1) or higher represent full *always on* bandwidth; for example, a DS3 connection requires and uses a bandwidth of about 45Mb/s whether data is present or not.

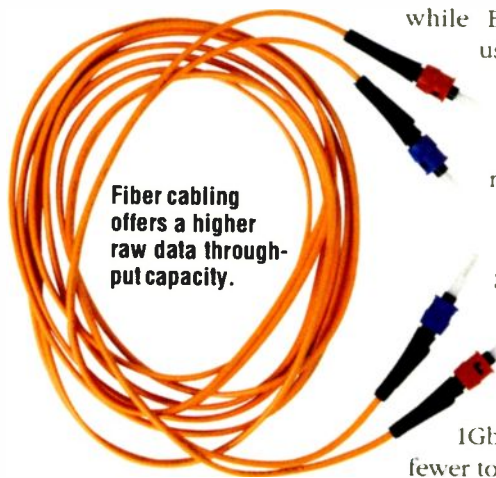
I make this comparison to illustrate the basic reason why fiber cabling is the superior choice for large bandwidth requirements—fiber can easily carry a DS3 (or several DS3s) signal several miles. Twisted pair cable would require a series of *repeaters* to maintain reliable communications for long distances.

### Fiber-rich diet

The technology behind fiber cabling hasn't changed a great deal. There are two types of fiber cabling: *single-mode* and *multi-mode*. Single-mode fiber is more efficient at passing lightwave signals, thus making it well suited for long-haul applications. Single-mode cable is fragile and, thus, difficult to work with. Multi-mode fiber was created as a more bendable, rugged and cost-effective alternative to single-mode, albeit at the expense of efficiency. Multi-mode fiber has become the standard type of cabling used with LANs. Both types of fiber cabling are rated to carry more than 1Gb/s.

Although the cabling itself hasn't changed, connectors used for fiber cabling have seen a great deal of improvement in the area of size, ease of installation and durability.

As with wireless, the price of fiber cabling and the associated hardware is dropping. In most cases, fiber may not be a practical substitute to twisted-pair cable, but it should be considered as a backbone between servers and hubs. Since fiber cables do not conduct electricity, one major benefit to using them in a broad-



Fiber cabling offers a higher raw data throughput capacity.



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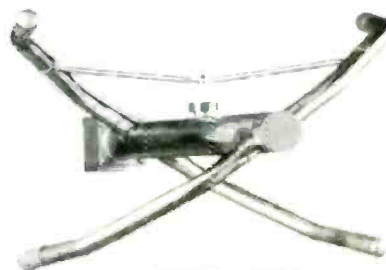
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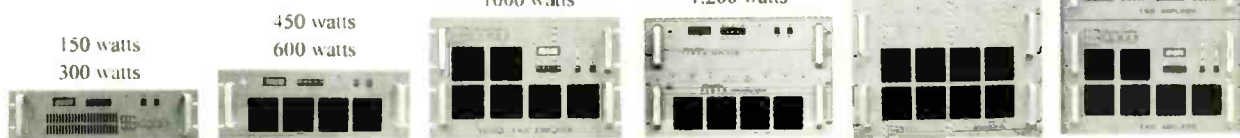


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## Networks

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**Twisted-Pair Cables.** Unshielded twisted-pair (UTP) cabling used for LANs comprises four pairs of wires, each pair twisted together wrapped within a common sheath. As the name implies, UTP cable does not contain any shielding, which is not a problem in most areas. Shielded twisted-pair (STP) is available for locations such as

those with transmitter sites.

There have been significant advances in UTP cable design over the past few years. Building upon the technological advances of networking hardware, standards have been developed not only for the manufacture of the cable, but also for the methods and criteria used in its installation.

UTP and STP cables are manufactured and certified to meet minimum performance criteria. The rating sys-

**Twisted-pair cables are categorized to evaluate their data-handling capabilities.**

tem, which defines those criteria, is established and maintained by the Telecommunications Industry Association/Electronic Industries Association (TIA/EIA). Cables are classified in a specific category. The category (CAT) system is as follows:

**CAT1:** basic telephone wire rated less than 1Mb/s

**CAT2:** used with Token-Ring networks rated 4Mb/s

**CAT3:** used for 10baseT Ethernet networks rated 16Mb/s

**CAT4:** used for 16Mb/s Token-Ring  
**CAT5:** used with 100baseT Ethernet networks rated 100Mb/s

**CAT5 level 5:** expanded specification of CAT5 rated for 200MHz

**CAT5+level 6:** expanded specification of CAT5 rated for 350MHz

**CAT5 level 7:** expanded specification of CAT5 rated for 400MHz

As you will note, CAT5 cable specifications are also broken into *levels*, reflecting a more stringent performance criteria. Although not officially a standard, some manufacturers are producing cabling that they call CAT6. As the performance criteria differs between manufacturers, you must be careful to compare specifications. New standards are already in the works. In fact, CAT7 is presently in discussion and will most likely define an STP cable.

One of the few sure things we can expect with networking—networks will get faster. Given the speed with which all things technological grow, the medium that the data will travel upon should be selected and installed to accommodate that growth.

*Kevin McNamara, BE Radio's consultant on computer technology, is president of Applied Wireless Inc., New Market, MD.*

*All of the Networks articles have been approved by the SBE Certification Committee as material that may assist your preparation for the SBE Certified Broadcast Networking Technologist. Contact the SBE at (317) 846-9000 or go to [www.sbe.org](http://www.sbe.org) for more information on SBE Certification.*

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## Noncommercial applicants to avoid auctions

By Harry Martin

Concluding that “inartful drafting is not the same as ambiguity,” the U.S. Court of Appeals for the District of Columbia Circuit found in favor of National Public Radio in an appeal from the Commission’s prior determination that noncommercial educational (NCE) stations would be required to take part in an auction if they decided to file for non-reserved (commercial) frequencies.

The Commission, in response to questions previously raised by NPR, conducted a limited rulemaking and issued its determination that its view of the Balanced Budget Act did not exempt NCE stations from auctions involving commercial allocations. The Commission took the position that if an NCE applicant filed for a commercial channel, then it would be subject to an auction like any other applicant. The Court’s conclusion was that the language in the Balanced Budget Act was clear enough that NCE applicants were not required to submit to an auction.

The Court’s decision places a cloud over the FCC’s planned December FM channel auctions. The Commission most likely will come up with a hybrid point system to cover comparisons among NCE and commercial applicants. However, a full-blown rulemaking will be required to effect such a plan. This time-consuming process will be completed next year at the earliest.

Another alternative is to ask Congress for a legislative remedy. The general thought is that the Hill might not be sympathetic to NPR since NPR’s position could cost the government auction fees.

This raises a question as to whether the December FM auctions will go forward as scheduled. If auction applications are invited in September as planned, the FCC would have to postpone the bidding for any channel that attracts even one NCE applicant.

### EEO rules down but not out

The U.S. Court of Appeals in Washington has struck down the FCC’s 2000 version of the EEO rules for a second time. In 1998, the Court found an earlier version of the EEO rules unconstitutional, stating that those rules pressured stations to grant preferences to minority applicants by requiring them to compare the percentages of minorities on their staffs with the local labor force.

In 2000 the FCC adopted completely new EEO rules. The new rules offered two options. Option A was a complex set of recruitment requirements, which did not specifically reference minorities. Option B allowed licensees to design their own recruitment plans, but required record keeping on minority applicants and hires.

In January of this year, the U.S. Court of Appeals found Option B unconstitutional because it focused more on results than efforts by requiring stations to report a job applicant’s race. The Court held Option B was not narrowly tailored to further a compelling governmental interest in preventing discrimination and was, therefore, unconstitutional. The Court also stated that it was impossible to sever Option B from Option A in order to allow Option A to remain in place, stating that the reason the FCC adopted Option B was too intertwined with that for Option A.

In February, in response, FCC Chairman Powell, with support from a majority of the FCC Commissioners, asked the Court as a whole, i.e., a panel of all judges on the Court rather than the normal three-judge panel, to reconsider the decision and the Court agreed. On reconsideration, however, the Court again held the EEO rules unconstitutional.

The only option for further appeal would be the U.S. Supreme Court. The FCC has not indicated an interest in fighting that battle. Instead, Chairman Powell has stated publicly he would like the other Commissioners to join him in proposing rules more likely to be found constitutional. A new proposal could surface by early next year.

Shortly after the first decision, the FCC suspended its EEO rules while awaiting the Court’s reconsideration. Assuming no U.S. Supreme Court appeal is taken, the EEO rules will officially terminate when the U.S. Appeals Court’s second decision becomes final. In light of the possibility of new EEO rules, however, it may be advisable for stations not to dismantle their EEO record-keeping systems. While no penalties could be imposed for suspending record-keeping during the time no rules are in effect, it may be administratively more difficult to restart than to keep systems in place pending the outcome of any future deliberations.

*Harry Martin is an attorney with Fletcher, Heald & Hildreth, PLC., Arlington, VA. E-mail martin@fhh-telcomlaw.com.*

### Dateline

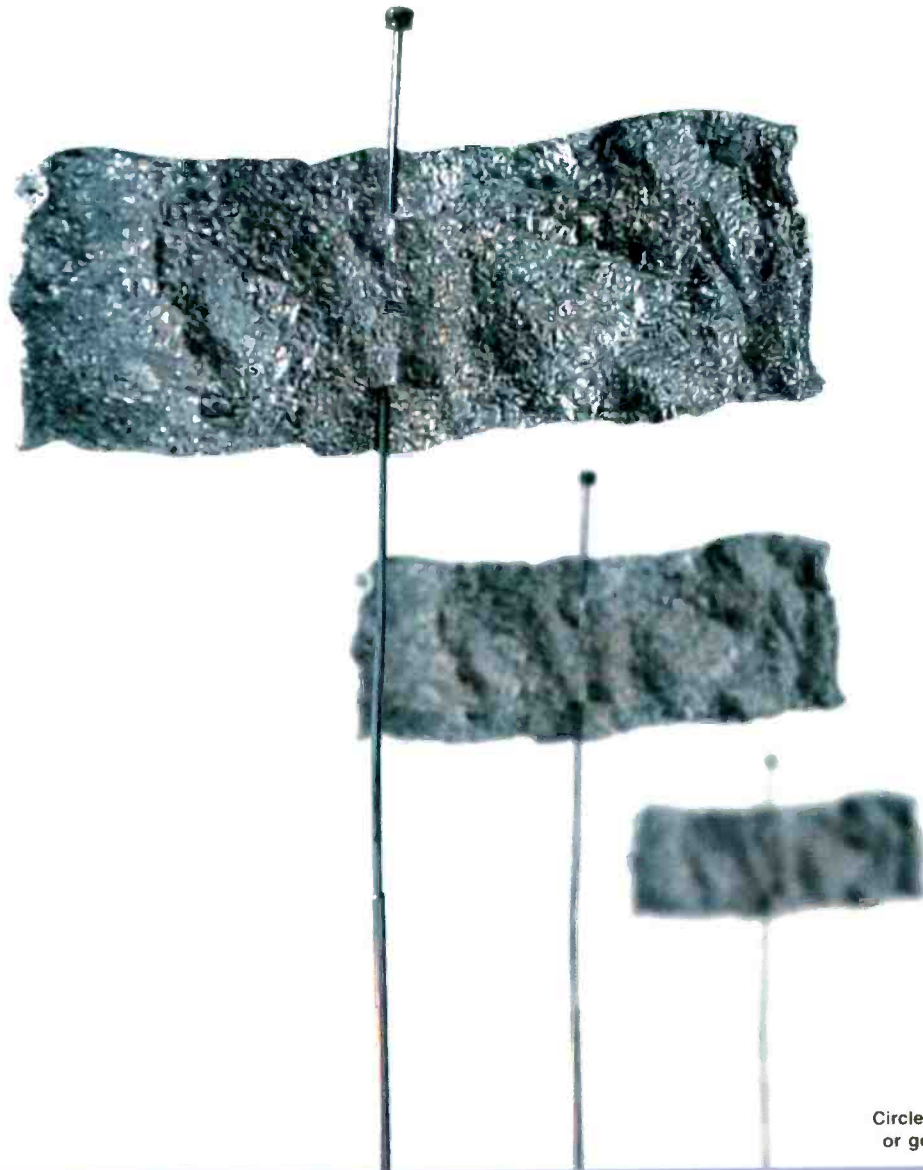
Annual regulatory fees are due for commercial radio stations between September 10–21, 2001. Fee payments are made to Mellon Bank in Pittsburgh and must be accompanied by a signed FCC Form 159.

October 1 is the filing deadline for biennial ownership reports for stations in the following states and territories: Alaska, Florida, Guam, Hawaii, Iowa, Mariannas, Oregon, Puerto Rico, Samoa and Virgin Islands.

October 10 is the deadline for placing July–September issues/programs lists in stations’ public files.



# ...still running THIS???



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# Get into the

# PRODUCTION GROOVE

By **Chriss Scherer**,  
editor

What happens behind the scenes can set the stage for highly creative sounds.

**T**he phrase "radio production" is a catch-all phrase used to describe any event that is not created live on the air. This simple description covers several very different areas. The description that comes to mind first is commercial production. This is certainly an important area to consider, since this allows the radio business model to function. But production reaches farther and includes non-commercial production work such as sta-

tion imaging and promotion, and feature program origination.

While digital systems have been adopted slowly into the transmission side of radio, the production studio has em-

braced digital technology and advanced quickly forward with it. It is difficult to witness any kind of editing without the use of a digital editor or digital audio workstation (DAW). The art of cutting tape is nearly lost.

## Studio layout

Classically, the production studio has been designed to mimic the on-air studio. The advantage to this idea is that the studio was always available to serve as a back-up air studio. It also made the room easier for the on-air talent to use with minimal training. These are valid design ideas, especially if space is at a premium and the on-air studio requires a great amount of down time for maintenance. With the reliability of most modern equipment, however, this con-

cern is hard to justify.

In most cases, the production studio can be designed to serve its primary function first and fulfill other uses secondarily. If space allows for more than one production studio, each room should be designed to maximize its efficiency for regular use.

With this efficiency of design in mind, the center focus of most production facilities has shifted to the editing system instead of the console. For most short-form radio production—commercial and station imaging—the DAW can likely serve most of the room's equipment needs. Long-form work, such as feature programs, and extensive mixing may dictate that the console remain at the center of the studio.

Regardless of the studio's primary function and subsequent layout, in most cases, the studio can still function as a back-up air studio. It may not be the easiest to use for this purpose, but the inconvenience should be easily outweighed by the studio's greater efficiency and higher quality of work from daily use.

## Specialized space

Some production work may require even more specialized space. If a variety of voices are used in your



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# PRODUCTION GROOVE

facility, consider a voice-over booth in your plans. This allows the producer to maintain his work space flow without interruption from the additional traffic. A second mic placed in the corner of the room can serve the same purpose, but the producer will need to monitor through headphones, which can cause listening fatigue. Headphone listening also may not provide an accurate listening environment. A separate booth will allow the producer to continue working while the script is read, without worry of additional noise being picked up during the production.

Perhaps a voice booth may not be enough. If interviews are regularly conducted, a larger voice booth or even a full interview booth with several microphones may be needed. This space can also be made available for on-air use by routing the microphones to more than one destination. Automatic mic mixers simplify this routing task and may aid the interviewer who must also record his own interview.

Some production studios have even

greater specialized needs. In-house music production may require a full performance studio. Music bed production may require a smaller performance space for a keyboard and drum machine. A club-mix show requires space for a turntable setup. Regardless of the use, the production studio is a creative center, and its design should allow the creative process to flourish without being hindered by the physical space.

## Get equipped

The main function of the studio will determine what type of console should be installed. If the DAW will be the main source for all audio and will handle the mixing, then the console needs to be little more than an input level controller to the DAW. A small console with audio selectors or an audio router controller may suffice. If your facility is built



For basic voice-overs and simple dubs, a small space can be very efficient for its workload.

around a router/mixing system, the console could be a single fader panel with access to all the facility's audio sources. If the console is used for the primary mixing, then it will need to

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# PRODUCTION GROOVE

have enough inputs to support the number of audio sources used at any time. The use of external processing effects may also dictate a larger console and may require several audio buses or send/return feeds.

On-air consoles can be used in production. They may not offer the flexibility that is needed, but they do offer a faster learning curve for most operators. Many broadcast console manufacturers also offer consoles that are designed for production use and

include multiple send, return and mix buses in addition to equalization. Live-sound and recording console manufacturers also provide inexpensive alternatives that can be used for radio production. Keep in mind that these consoles typically do not provide console starts or monitor muting like the broadcast versions do. An add-on may be required to provide the desired results.

Digital audio workstations have significantly changed how audio is manipulated. You rarely see anyone splicing tape anymore thanks to these computer-based systems. Ranging from basic stereo editors to full-blown multitrack powerhouses, you can likely find a system that fits your budget and your operator's skill. The basic systems rely solely on the computer interface for control. Some editors are built around custom hardware to emulate traditional tape machine controls. Still, some systems add hardware interfaces to enhance their function.

To extend the capabilities of DAWs, many systems also support *plug-ins*. These add features, typically effects processing, to a DAW, eliminating the need for external effects units. There are a few plug-in standards that are used. Most manufacturers support at least one standard if not several. DirectX and VST are two of the more common third-party plug-in formats.

Integration of DAWs with a station's on-air playback system has been a stumbling block for many facilities. At one time, the only way to transfer audio between these systems was to play the audio file in real time and record it into the other system. The new file then required manual intervention to add the appropriate labeling and traffic information. This is no longer the case, since many DAWs and most automation systems support standards that allow this data to be entered once and remain with the audio file as it is transferred from the system. One unifying system, called the Cart Chunk, was introduced a few years ago. This system has now been recognized by the AES as an established standard.



The production space should accommodate the work being done and not the other way around.

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## A little sweetness

While it should be used sparingly, equalization can enhance the final mix. An effective mix will have many layers, and equalization can be used to create sonic space for another source. If a voice track is not cutting through the mix, reduce the level of the frequencies from other sources that are getting in the way. The ability to adjust equalization quickly is preferable to having to open an effects window, make an

adjustment, allow the software to process the change and then listen to the result. The same is true for any other effect. Choose the method that works best for you.

If external effects are used, you must determine how you will route these effects into their needed use. As mentioned earlier, if a console is the center of the studio, you may be able to take advantage of sends and returns or additional mix buses. Patch

bays, once the staple of any audio facility, are also effective at routing audio. The drawback is the time for installation and ongoing maintenance. Switch banks, like those used for input selectors, also offer a simple way to route effects, but still rely on moving, mechanical connections. Both are available in analog and digital audio versions.

Microphone selection can be a hotly debated issue. Typically, the discussion revolves around choosing a single mic for the entire facility or providing specific mic selections to individual producers. This question can usually be answered by identifying the primary users. If the air staff regularly voices pieces and you want their voices to be recognized, the mic selection should be consistent. A mic processor can allow for some variations, but the difference between a budget mic and a studio condenser is too much to ask.

A mic processor should be set for general use if several people are using it. If the mic is primarily used by one person or the station voice, then adjust the processor for that person. The midday announcer should sound like the midday announcer, while the station image voice should sound like the station image voice.

Some studios may call for specialized equipment for unique purposes. One example is a piano keyboard or a turntable used for live mixes. To an engineer, these are just pieces of equipment. To the performer, these are instruments. Be sure to have input from the final user as to the equipment selection. Keyboard weighting and motor torque have a unique feel. If the performer is not comfortable on the instrument, he will not provide the best possible performance. Some may argue that microphones have a similar importance, but their effect is sonic, not physical. If your facility plan can accommodate everyone on the staff, everyone will be happier, and the quality of production will excel. This can still be the case when the proper compromises are made.

*Photos by Andrew Rosenberg and courtesy of Creative Studio Solutions.*



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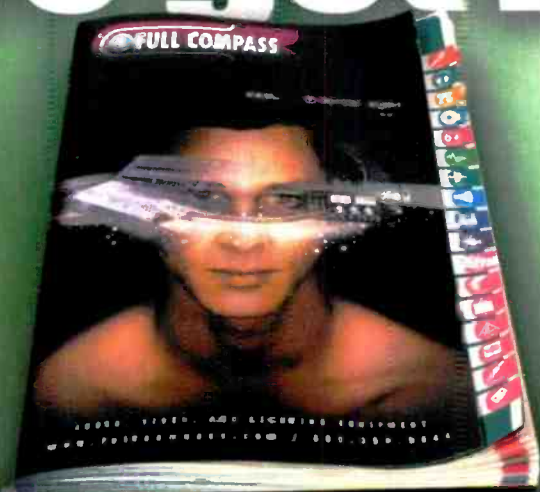
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## Choosing, caring for and feeding them



By Allan Soifer

If you ask most jocks/announcers what type of loudspeakers they would like in the control room, you might hear a response like "lots of power so I can feel the music." If you put this query to the station engineer, you're just as likely to get a different response with specs on sensitivity and power handling. It's more a question of personal tastes and desires, than the attributes of any given loudspeaker.

Since we are mostly concerned with monitoring the quality of our on-air signal, it stands to reason that a clear and reasonably loud sound field be maintained at the operator's position. Given the less than perfect dispersion fields of many speaker units, and no standard placement in the control room, the clarity of the signal may be muddled by the acoustics of the room, reflections from various angular surfaces of the console and nearby equipment, and the quality of the amplifier driving the system.

Many radio studios, and most recording studios, are moving to nearfield monitors. For a talk-show

studio with multiple host and guest positions, the high-on-the-wall-looking-down position is better. For voice monitoring, positioning is not so critical as it is for qualitative listening to the mix of music, jingles, stingers, announcer voice-overs, etc. Cue speakers are another critical need in the studio. It is often advisable to place the cue speaker on the floor, behind the operator or in a position away from the main monitors so that a busy operator can identify and focus on different sounds during a lively show.

The usual desires of announcers range from loud to bleeding ears. Running speakers too loud can cause acoustic leakage to other studios and danger to hearing health as well. Scale down the type and style of booth speakers to something reasonable. Judicious attention to amplifier output rating and possible input signal

limiting may be advisable for booth use. You can also reduce the overall level by moving the speakers as close to the operator as possible.

### Not a plumber's leak

Speaking of acoustic leakage, this has always been an engineer's nightmare. Concrete blocks, bricks, lead sheeting and pads, rubber feet and absorbers are among the common materials used to minimize acoustic leakage. One of the more interesting absorptive mountings that I have seen had the speakers sitting in box-like enclosures filled with fine sand; somewhat like indoor planters. It looked strange but did the job well.

Acoustic leakage can be attributed to a monitor level that is too loud in the adjacent studio. While solid architectural and acoustic designs can minimize airborne sound leakage, a direct physical connection can nullify any efforts and expense that have already been made. A mounting bracket or suspension scheme that



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does not rely on wall studs or common ceiling joists may be part of the solution.

Well-managed remotes need quality loudspeakers too. The sound quality of playback direct from air is critical in maintaining good client relations at the remote site. Self-amped speakers made for PA and music playback, mounted on heavy-

duty tripods, are perfect for smart-looking remote operations. Since each speaker assembly carries its own amplifier, proper volume levels can be achieved.

### Caring for loudspeakers

Speakers tend to be forgotten once they are installed and operational. Proper maintenance is important, however. Monthly dusting of the speaker cone using a soft vacuum brush applied gently is a good idea. The other threats to speaker longevity are over-powering and excessive continuous distortion. The first one is simple—do not install an amplifier with more power than the speaker can handle. Peak watts, the maximum amount of power that a speaker can

safely dissipate for a fraction of time, are roughly double the RMS value.

Distortion damage can occur even when safe power levels are never exceeded. The speaker is an electromagnetic device that wants its voice coil to move longitudinally over the magnet. When the amplifier doing its work is driven into distortion by too high an input, or some other defect, the percentage of square waves delivered to the speaker drastically increases, causing the voice coil to attempt to move laterally—sideways rather than in and out. Excessive dis-



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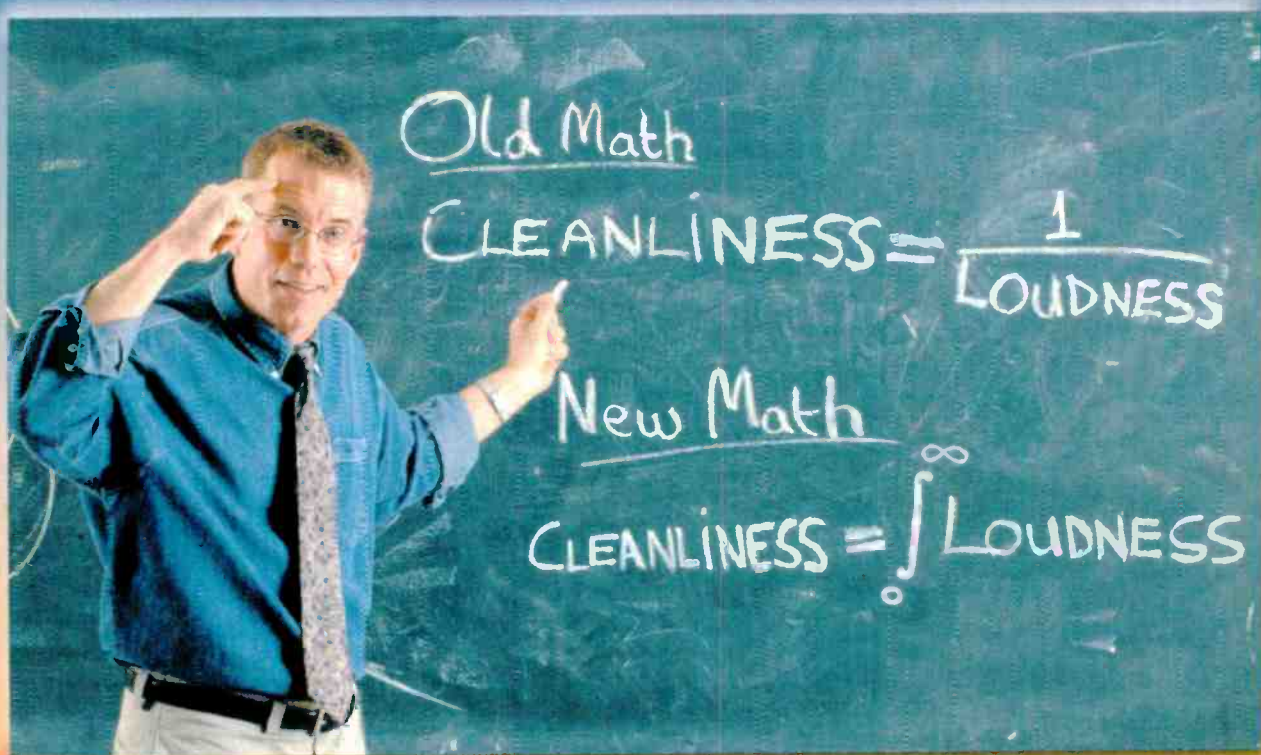


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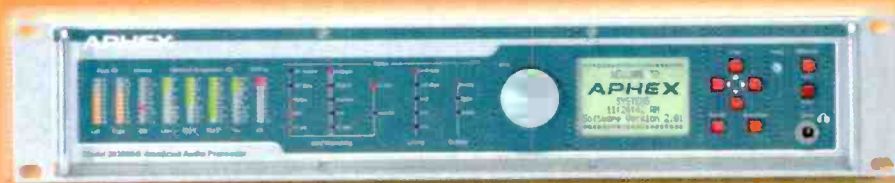


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tortion delivered to the speaker causes overheating of the coil, since it cannot self-ventilate as it would in normal longitudinal motion. The end result is a burned voice coil.

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When used near video monitors, nearfield monitors must be properly shielded to avoid magnetic video distortion.



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Some speakers provide digital audio inputs in addition to a self-contained power amplifier.



room. It is vital that the "+" terminal on the amp be connected to the "+" terminal on the loudspeaker. A way to determine the correct phasing if a phase meter is not part of your instrument collection is to drive the set of speakers with a mono source. If the speakers are in phase (both cones moving outward at the same moment) and aimed properly, the sound field will appear to originate from a phantom center position.

Phase coherence between channels is important, but absolute phase is just as critical. The speaker pair in question may be in phase with each other, but the waveform may be reproduced in reverse. When a bass drum sound is produced, the speaker cone should move outward and push air. It should not move inward and pull air.

Generally, speakers are divided into powered and non-powered classes. Non-powered speakers require a power amplifier. Powered speakers have a self-contained amplifier within. With non-powered monitors, an amp failure can be corrected without removing the speaker. Likewise, a power amp can be placed in a more favorable position to allow for physical space limitations. Powered monitors can be much heavier than non-powered versions. Also, powered monitors require an electrical power source. For longer cable runs, it is better to run a line-level signal than a speaker-level signal. Finally, a powered monitor will also free some valuable rack space and remove a large heat generator from the confines of the rack.

Many models are also available in shielded models, which reduce the magnetic field outside the enclosure. This is important when a speaker is placed near a video monitor because the magnetic field can cause an undesired effect to the color display.

With the extremely wide and var-

ied assortment of speaker systems, and the many discrete loudspeaker components and plans/specs for building one's own enclosures, the broadcast engineer has the daunting task of choosing an appropriate sound re-

producer, and possibly the right mounting system as well.

Allan Soifer is an audio recordist and production consultant in Eastern Canada.

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# 2001 Salary Survey

By Cindy Holst,  
associate editor

## Are you getting enough?

***As the face of radio broadcasting evolves, industry professionals are faced with many decisions, including determining a fair salary. The annual BE Radio Salary Survey can help make this decision an easier one.***

In this rapidly changing environment, many in the radio industry are concerned about such issues as the transition to digital, consolidation, and the increasing use of the Internet and computers. Another area of concern, especially in light of the current economy, is salary. With all the changes, and the consequent new demands and responsibilities, how are salaries changing, and how is that reflected among readers of *BE Radio* magazine?

In an effort to answer this question, *BE Radio* provides its readers with the annual Salary Survey. Each year, research is conducted exclusively for *BE Radio* to determine the latest salary trends. Primedia Business Corporate Research performs the data collection and analysis. This year's data was gathered from June through July. The main objectives of the survey were to determine salary levels among *BE Radio* readers for select title groups,

to examine salary trends over time and to consider broadcast salaries in terms of professional certification.

### Greasing the pig

This year's survey, conducted through letters sent via e-mail to 4,000 *BE Radio* subscribers selected on an *mb* name basis among radio station and network subscribers, resulted in 446 usable surveys, translating into an effective response rate of 11.2 percent.

The results of this study are presented by job title group and market rank (top 50 and below top 50). Response sub-categories are delineated as follows: 130 station managers (39 top 50, 91 below top 50); 214 staff engineers (117 top 50, 97 below top 50); and 35 contract engineers (14 top 50, 21 below top 50).

Eighty percent of station management and 57 percent of staff engineers



work for a radio station or multiple stations. However, most of the contract engineers (65 percent) work independently or for contract engineering firms.

The information gathered in the survey is intended to illustrate broad trends in the radio industry and is not meant to be used as the sole source for determining salaries. Treat the data as a starting point for salary ranges. Factors like cost of living and the demand for a particular job are also important in determining salary range.

### Money in the bank

The median salaries among responding station managers have increased in 2001 in large and small markets. The estimated median salary for station management is \$57,498 for the top 50 market, compared with \$51,000 for this market in 2000, an increase of 13 percent. The below top 50 market also saw an increase, though a modest one. This group's median salary rose 3 percent, from \$43,749 in 2000 to \$44,998 in 2001. (See Figure 1.)

The reported salaries of staff engineers tell a different story. In 2001, as in 2000, staff engineers in the top 50 market have seen a decrease in pay. The salaries for this market have fallen to \$54,999 in 2001. This is a five percent decrease from \$57,894 in 2000. In the below top 50 market, however, staff engineers have fared better. After a 7.7 percent decrease in 2000, salaries have jumped 11.8 percent to \$43,844, surpassing a previous high of \$42,500 (1999). This increase marks a dramatic change for below top 50 staff engineers, who haven't seen a pay increase greater than 3.9 percent since 1997. (See Figure 2.)

Due to a small number of respondents in the contract engineer category, we have combined responses in the top 50 market and the below top 50 market to come up with an average salary among all contract engineers. The median salary among all responding contract engineers for 2001 is \$49,999, an 11% increase over the \$44,999 median for 2000. Due to the small sample pool, however, this

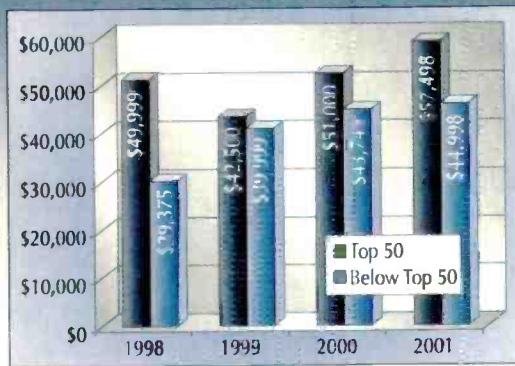


Figure 1. Estimated median salaries for station management

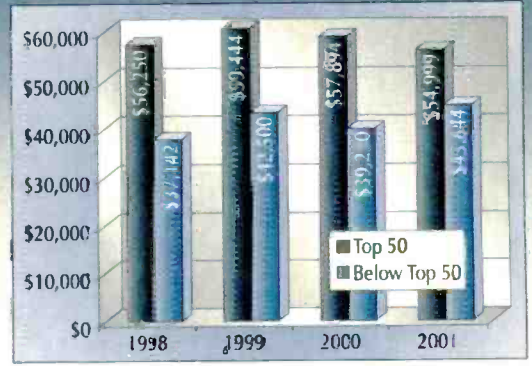


Figure 2. Estimated median salaries for staff engineers

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# 2001 Salary Survey

increase is not likely to be reflective of the industry as a whole. The survey revealed that 1/3 of responding contract engineers receive 75% or more of their income from radio broadcast work. To further gauge salaries of contract engineers, *BE Radio* asked contract engineers to provide an average hourly rate. Again taking all responding contract engineers to-

gether, an average hourly rate of \$44 per hour was reported. (See Figures 3 and 4.)

## Upping the ante

We now ask: Does it pay to hold SBE (or any other) certification? According to our respondents, the answer is yes. Though salaries for non-SBE certified engineers

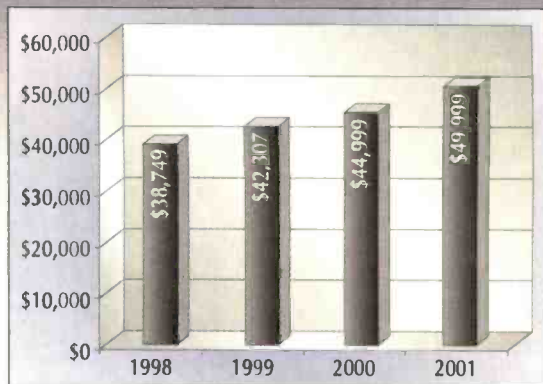


Figure 3. Estimated median salaries for contract engineers

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have increased, while salaries for SBE-certified engineers have decreased slightly, engineers with SBE certification still bring in a higher salary than those without. Figure 5 illustrates this finding. Respondents with SBE certification have reported greater salaries than those without since 1998.

While SBE certification has increased overall in 2001, the number of responding engineers who are SBE certified has decreased. Of our survey participants, 32 percent of all engi-

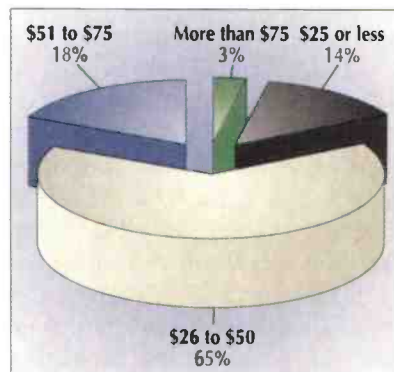


Figure 4. Contract engineers' average hourly rate

neers are SBE certified, a 13 percent decrease from 2000. However, SBE certification for contract engineers has increased from 38 percent in 2000 to 43 percent in 2001. Responding staff engineers that are SBE certified has decreased from 36 percent in 2000 to 30 percent in 2001.

In this year's survey, we also looked at three other types of certification: NARTE, Microsoft and Novell. Station management certification is as follows: 8 percent possess NARTE certification; 4.6 percent are Microsoft certified and 1.5 percent have Novell certification. Staff engineers report a 2.8 percent certification rate for both NARTE and Microsoft certification; and



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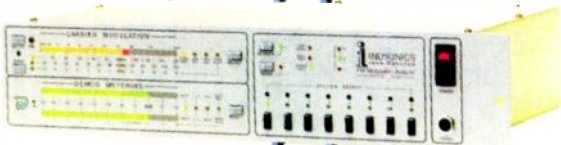
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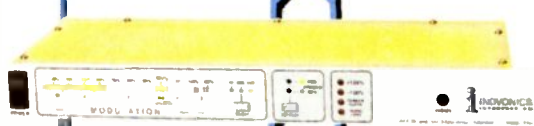
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# 2001 Salary Survey

4.2 percent are Novell certified. Contract engineers report the following: 2.9 percent have NARTE certification; 11.4 percent are Microsoft certified and 2.9 percent are Novell certified.

## Lining your pockets

Many participants reported an increase in salary in the last 12 months. For both station management and staff engineers, the median salary increase in 2001 was 4 percent. Though a

median salary was unavailable for contract engineers, those responding did report a salary increase.

More respondents in the top 50 markets received a salary increase within the last year than did those in smaller markets. Seventy-seven percent of station management in the top 50 market reported a salary increase, while 65 percent of those in the below top 50 market reported an increase. Staff engineers in both markets were nearly even (76 percent in the top 50 market and 75 percent in the below top 50 market). A lower percentage of contract engineers reported an increase. This may be due to the small number of respondents. Forty-three percent of contract engineers in the top 50 market reported an increase in salary, and 24 percent of those in the below top 50 market received a raise. (See Figure 6.)

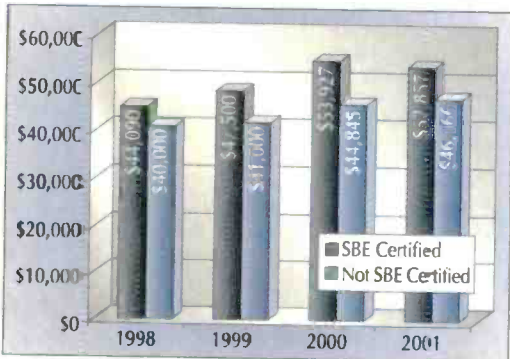


Figure 5. Estimated median salaries by SBE Certification

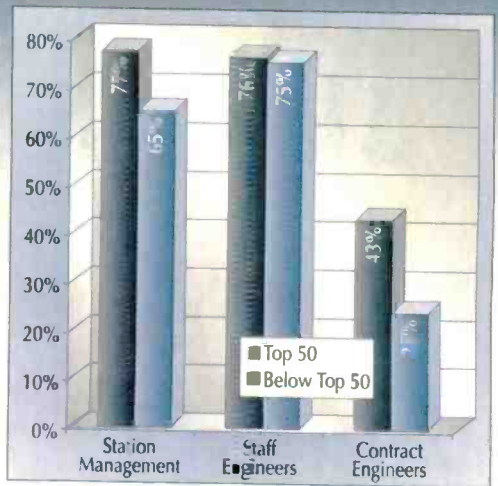


Figure 6. Respondents receiving salary increases

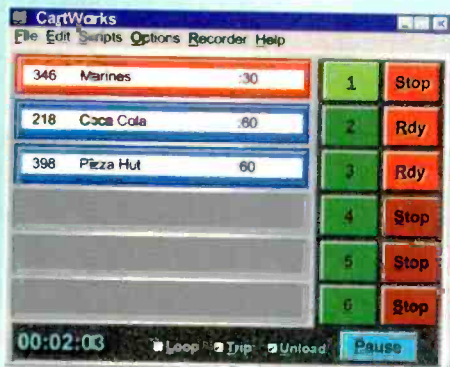


## More info online

Survey respondents were also asked for feedback as to the changes that have most affected their careers, their thoughts on the suitability of IBOC for use in the U.S., and if IT functions are considered part of the duties of engineering. Read some of the responses at [www.beradio.com](http://www.beradio.com).

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own zapper of up to 8 seconds of audio, which is stored in nonvolatile memory (NVRAM). In addition to the new recording feature, the BD960 sports improvements in several areas, notably audio quality (full 24-bit/48KHz sampling) and convenience features such as a universal (100-240V) power supply and remote control capabilities.

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◀ **BD960:** This unit replaces the earlier BD941/942 units, provides a delay and replaces objectionable words with a station's own recording feature, the BD960 sports improvements in several areas, notably audio quality (full 24-bit/48KHz sampling) and convenience features such as a universal (100-240V) power supply and remote control capabilities.

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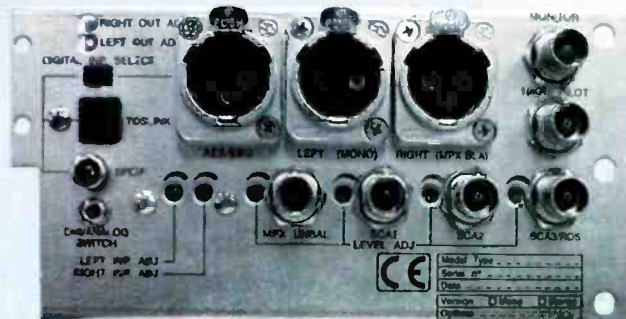
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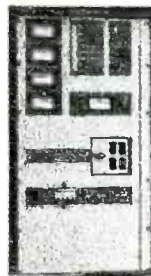
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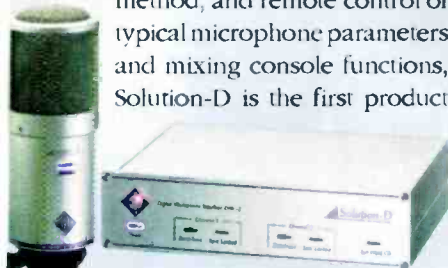


## New Products

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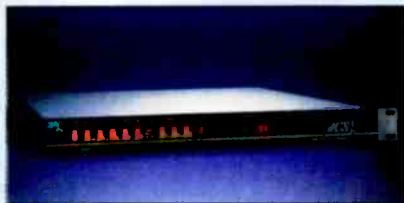
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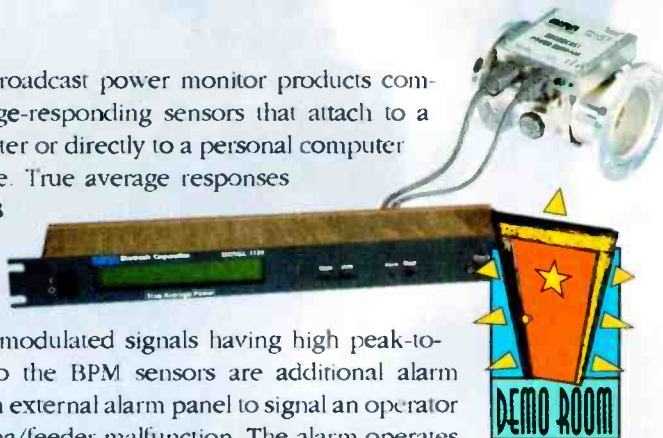
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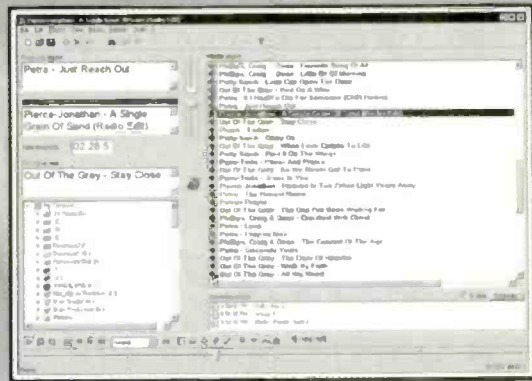


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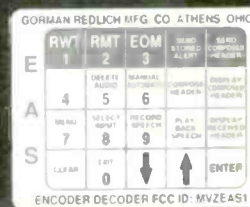
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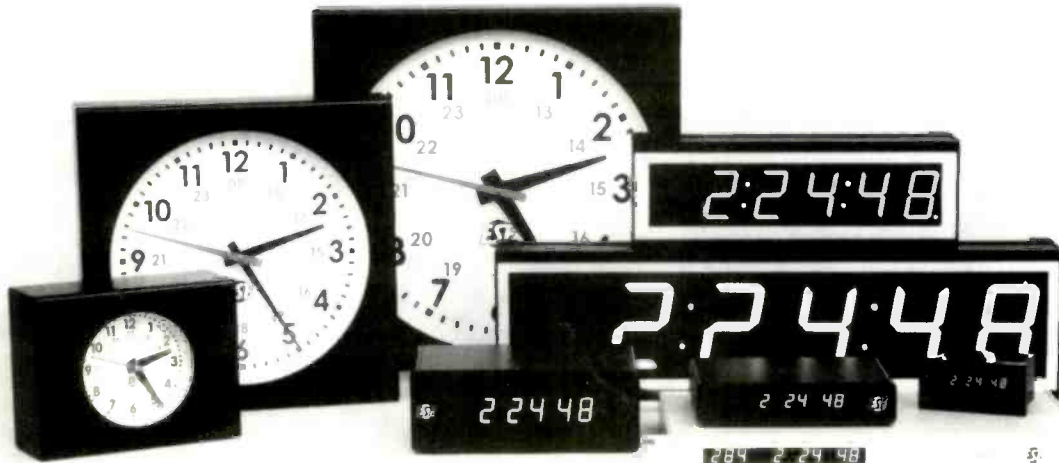
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## Class reunion

By Skip Pizzi, contributing editor

**O**ne of the most powerful personal impacts that the new age of connectivity has brought us is the ability to reconnect with long lost friends.

This kind of seeking and connecting power is, on balance, a valuable benefit of today's computer networking and database technology and is probably only beginning to make its presence felt. It will eventually allow families to know more about their ancestry than the limits of spoken memories and family documents can tell us today. The ultimate impact will make tomorrow's human race more connected,

and perhaps even make the world a safer place for future generations. Such lofty visions aside, the value of these person-to-person contacts can have some direct, business-related impacts for broadcasters today.

### Private enterprise

Radio has always worked on the premise of mass appeal, with emphasis on programming style (and more recently, on formatics) to maximize its audience potential. But over time, as

the size of the overall radio audience increased, the average size of the group listening to each radio has decreased. Radio began as a group-listening exercise. It has largely evolved into a solitary listening experience. Radio was the first, and perhaps is still the only, truly "personal" medium, nearly always experienced by many separate, simultaneous audiences of one. Unlike television, radio is rarely time-shifted, so these individuals are almost always sharing a uniquely communal, yet isolated, event.

This argues that radio, perhaps above all other media, should exploit the new opportunities to make (or renew) personal contacts with audiences. The attachments are often already there, and new connection methods can allow these relationships to be mightily strengthened.

The power of such personalized communication can be easily abused. These levels of access to individuals must be managed carefully. Consumer privacy has never been more threatened, and people take this extremely seriously. Here's where radio broadcasters have an advantage: They can encourage their listeners to *initiate* the conversation, rather than risking the intrusiveness of the opposite approach. The latter method, used on the Internet by non-broadcasters, can result in consumer annoyance and worse.

### Building a bridge

Broadcasters who understand this process make frequent on-air references to their website, driving as much traffic as possible there. The attraction of special content is generally more effective than just a simple announcement of the station's website's existence, however. Contests or further information about artists and the like are proving most effective in this re-

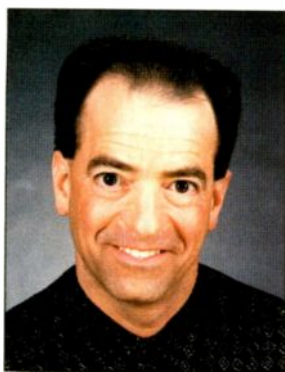
**Radio is the only truly "personal" medium, nearly always experienced by many separate, simultaneous audiences of one.**

spect. This is not as simple as clicking an on-screen link. For the typical (over-the-air) listener, there must be sufficient motivation to go to the computer, log on and manually enter the station's URL—or, at best, click an existing favorite/bookmark—before this communication channel can be opened.

Once this has happened, adding personalized content for listeners using automated server processes can tap into the real power of the connection. This can be done by using scripts and cookies, after inviting listeners to enter a profile of personal preferences. For example, if a listener enters "Dave Matthews Band" as a favorite music group, and the station's concert calendar shows an upcoming appearance by the band in the market, the station's Web server can send an e-mail message to that listener with the concert details. Favorite sports teams and their appearances can be handled in the same way. URL links for ticket purchases can also be inserted in these messages. Similar notifications could be issued for new album release dates, book signings and other events, with links to the appropriate stores or on-line retailers.

Much of the information on the station's website can come from third-party dynamic sources (weather, stock quotes, etc.), but it can be seamlessly integrated on a page, and made to appear as if originally generated by the station. Once the listener is browsing the site, chats and collateral sales offerings might also be explored. Of course, plenty of opt-out opportunities should be offered whenever follow-up e-mail notification is involved.

Uniting the listener with the identity of the station in this way creates a strong brand impression and good will, while also expanding market reach. This can keep the listener coming back, even while out of town, or as an expatriate after moving out of market. Like a close schoolmate, it's a relationship that can withstand the test of time—with a little help from our new connectivity. 📻





# Our Secret is Behind the Scenes!



- Integrated platform concept
- Fiber optic networking
- Any audio source, anywhere

KLOTZ DIGITAL's unique VADIS Platform provides the perfect solution for facilities searching for the ultimate in digital audio integration. From single studio build-outs to new mega-facility operations, KLOTZ DIGITAL provides a cost effective and time saving option to traditional analog and digital facility installations. *Our secret is behind the scenes.* Fiber optic based, the VADIS Platform integrates all audio functions, combining operator tasks, reducing the need for

traditional wiring, and paving the way for effortless future expansion. And, the elimination of a central router means distribution of "any audio source anywhere at any time!"

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DIGITAL



# Wheatstone

## DIGITAL AUDIO NETWORK ROUTER

- *BI-DIRECTIONAL FIBEROPTIC OR CAT-5 INTERLOCATION CONNECTIVITY*
- *ALL DIGITAL DOMAIN AES SWITCHING*
- *ANALOG OR DIGITAL (AES SAMPLE RATE) INPUTS*
- *BOTH ANALOG AND AES DIGITAL OUTPUTS*
- *SERIAL CONTROL AND DISPLAY WITH WHEATSTONE CONSOLES*

THE 2001 MAKES AUDIO NETWORKING PRACTICAL. It's simple to install, easy to learn, and certain to reduce system costs. Compact enough for small applications, yet stackable for tremendous growth potential, it's design consists of 7" rackmount digital routing cages, each capable of handling 512 simultaneous audio channels on its backplane.

Units can be stacked to suit particular card complements (analog or digital input and output cards or optical network cards) but more significantly cages can be separated by great distances and network their audio through either bidirectional fiberoptic links or a single CAT-5 wire. **ONE INTERCONNECT DOES IT ALL:** 64 channels of simultaneous bidirectional digital audio, intercage communication, X-Y controller commands plus auxiliary RS-232 data streams. This single interconnect between your studio and central rackroom can save you tens if not hundreds of thousands of feet of wire in a typical installation.

The 2001's graphic based setup software is intuitive and easy to use, with all the authorization and security levels you could want. And of course we have a full

complement of control panels and PC applications to choose from—all designed for straightforward operation and a rapid learning curve.

With 25 years of experience, Wheatstone has the infrastructure in place to help you build your OWN infrastructure. Contact us for answers.



**MIXED SIGNAL SWITCHING** is easily accomplished with a choice of AES digital or ANALOG 24-bit A>D input cards, and of course 24-bit digital or 24-bit D>A ANALOG output cards, all of which can be serviced from the front of the cage. All signals are routed entirely in the digital domain.


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