RALPH HOGAN ON SBE STRATEGIES — Page 22

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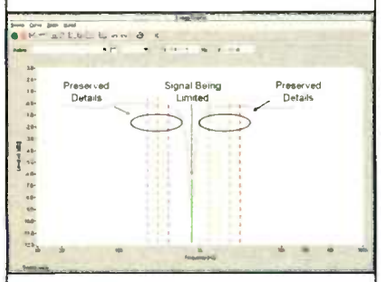
INSIDE



TECH GUY BUILDS A BRICK HOUSE

Leo Laporte's goal is to build 'The CNN of Tech Broadcasting.'

— PAGE 18

Pirate Fines Often Are Tough to Collect

Is the FCC Really Just a 'Paper Tiger'?

BY RANDY J. STINE

WASHINGTON — While the FCC Enforcement Bureau tally of fines against "pirate" operators has grown steadily this year, it is hard to know how many of those fines will ever be collected.

In fact, broadcast industry people familiar with commission practices believe the FCC likely fails to collect a majority of pirate fines.

Once the commission starts to go after an alleged illegal operator, things get complicated. It's not easy to collect money from what often turn out to be fly-by-night operations. And in tight economic times, when federal agencies face budget constraints, authorities must decide how far to go to collect a relative pittance.

One problem lies in the fact that the

(continued on page 6)

Automation Battle May Not Be Over Quite Yet

Examiner Overturned Key Claims, But Appeal Process Can Be Lengthy

BY RANDY J. STINE

A U.S. Patent and Trademark patent examiner has rejected many of the key claims made by Mission Abstract Data that lie at the heart of the patent dispute involving hard-disk automation systems.

Many observers figured the October move would bolster the defense of the broadcasters named in an associated federal lawsuit.

In an "office action" — a letter from a trademark examining attorney setting forth the legal status of a trademark application — PTO Examiner Jason Proctor overturned 15 of the 29 challenged claims in the first patent and five of the 10 claims in the second.

Overall, broadcast industry sources reacted positively to the new developments. However at least one patent attorney believes the patent reexamination and litigation will continue.

Bill Ragland, a patent attorney with Womble Carlyle Sandridge & Rice, said Mission Abstract Data has several appeals remaining and that they could

(continued on page 3)

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The flagship of our E-Series consoles, the E-6 does it all. Its intuitive interface gives you all the power you need for an on-air or production studio.

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AUTOMATION SUIT

(continued from page 1)

take years to exhaust.

Mission Abstract Data had until early December to respond to the decision by the patent examiner to overturn several of the claims. Pending any changes, the response period would end Dec. 6.

"There is no doubt that Mission Abstract Data will respond and it is conceivable that the patent examiner could be persuaded by the arguments of the patent holder and change his or her mind to the status of the claim rejection," Ragland said.

"Even if there is an upholding of the initial rejections, there is the possibility that the patent holder could appeal to the Patent and Trademark Board of Appeals. And then they have the right to appeal that to the U.S. Court of Appeals for the Federal Circuit.

"The case is far from over."

PROCESS CAN BE LENGTHY

Examiner's decisions often are reversed on appeal, Ragland said.

Tier	Markets	2012	2013	2014
#1	1-20	$ 20,000	$ 13,000	$ 6,000
#2	21-50	$ 15,000	$ 9,750	$ 4,500
#3	51-100	$ 10,000	$ 6,500	$ 3,000
#4	101-150	$ 7,000	$ 4,500	$ 2,000
#5	151-200	$ 3,500	$ 2,250	$ 1,000
#6	201-250	$ 2,000	$ 1,250	$ 550
#7	251 -290	$ 800	$ 500	$ 225
#8	Unranked	$ 400	$ 250	$ 100

Some small and standalone station owners have received letters urging them to sign one-time license agreements. This rate chart was included with the introductory letter.

infringed to have infringement liability."

In the claim, Mission Abstract Data states: "wherein said disk array storage comprises a dual-port RAID disk array." The examiner decided that none of the "prior art" submitted by broadcasting companies supported a rejection of that claim.

While the patent claims may take years to settle, the USPTO did seem to expedite its initial reexamination process, Ragland said. "I would say quicker than normal."

Broadcast Electronics, a radio automation supplier but not a defendant in the patent infringement lawsuit, had requested the ex-parte patent reexamination earlier this year.

Among the prior art that the patent examiner cited was a manual for an Arrakis Digilink digital audio workstation in 1992, a Dalet manual from that same year and a Dalet advertisement that appeared in Radio World in the fall of 1993.

"The claims that have been rejected by the USPTO are those that define a basic automation system with music on hard drive as is typically used in radio today," said Arrakis Systems President/CEO Mike Palmer. "The rejection was based on the features of the Arrakis Digilink automation system that was first shown at the April, 1991 NAB show, well before the 1994 patent filing. This is definitely a major win for the entire radio industry, not just those who have been named in the lawsuit."

Palmer credited Broadcast Electronics with bearing the financial cost of the patent reexamination process.

"They searched out everyone, collected the data and crafted the challenge to the patents. It is a good thing that they were so thorough, as it turned out that Arrakis Digilink was the only indisputable prior art. The industry owes BE a great debt of gratitude for their personal and corporate sacrifice on all of our behalf," Palmer said.

(See related story, page 5.)

"The appeal process takes a lot of time. The length of time for this case to resolve eventually could be literally three or four years to settle rejected claims."

The claims Proctor upheld have to do with how music is accessed over a phone network or a cable TV network, and configuration of storage. The claims to application of key concepts such as "standard PC networks with central storage" and "shared audio files database" were rejected.

However, Mission Abstract Data specifically mentions Claim Number 5 of patent 5,629,867 in a letter to some broadcasters urging them to sign license agreements. The examiner upheld Claim 5 in that patent.

"If Claim 5 is the one being asserted and describes something that happens on a widespread basis at radio stations, this still could be a problem for the industry," said Ragland. "Remember, it only takes one claim of these patents to be

The case is far from over.

– Bill Ragland, Womble Carlyle Sandridge & Rice

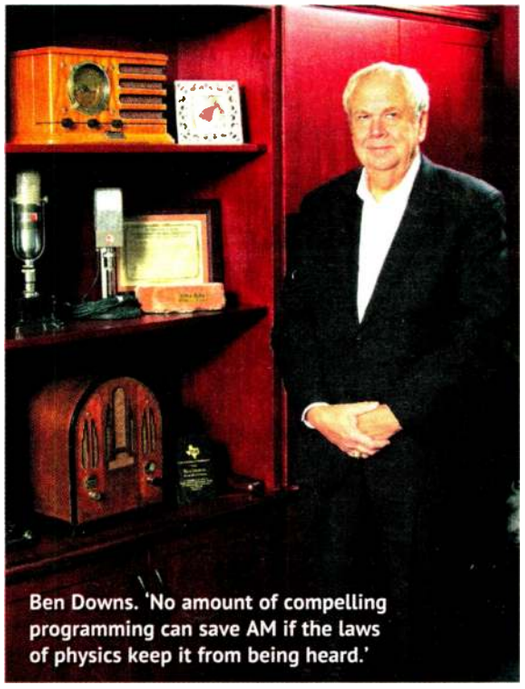
Downs Advocates for AM Solutions

He Hopes NAB Can Help Stations Overcome Noise and Handset Problems

Here's a question: If you sat in your office at 11 a.m. and turned on an AM radio, would the audio be listenable? What if you tried at home at 8 p.m. in the middle of your living room?

For many readers, both answers will be no.

Ben Downs and his business partner Bill Hicks own five radio stations in Bryan/College Station, Texas, four of which operate on AM frequencies (including a grandfathered "W" call sign that turns 90 next year). Both men live in the community. All of the stations' announcers are live and local. Their news and sports departments employ nine people.



Ben Downs. 'No amount of compelling programming can save AM if the laws of physics keep it from being heard.'

Bryan Broadcasting is *local* — indeed, Downs says, it is the only locally owned commercial medium of any kind left in the Brazos Valley.

But thanks to problems of mounting noise, plus the proliferation of mobile devices that lack AM reception entirely, Downs fears his AM stations and many others are threatened with extinction.

DRAMATIC SOLUTIONS?

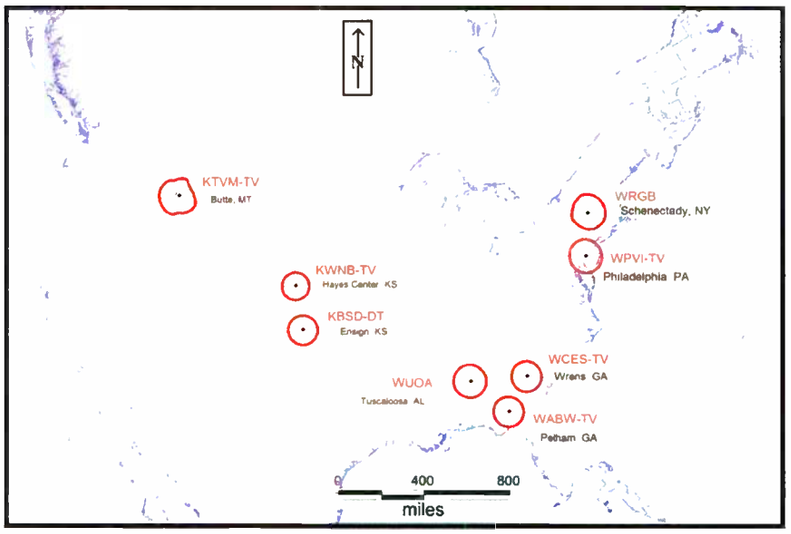
That's why Downs, who has been in radio since age 14 and is now a second-term member of the radio board of the National Association of Broadcasters, has pushed NAB to explore ways to help AM operators.

There are some 4,800 AM radio stations in the United States; roughly 2,000 of them are members of NAB.

In October the Radio Board gave Kevin Gage, NAB's new executive VP and chief technology officer, permission to spend money on a study to explore "options for AM broadcasters from an engineering perspective." The results are likely to be among the most scrutinized of any report out of NAB in recent years.

At stake, Downs thinks, is nothing less than the future of radio's senior service. "I truly believe if we do nothing, we'll have no AM band in five to 10 years. We have very little of one now."

The marketplace, Downs thinks, already is doing what it can. Talk and sports formats in big markets increasingly have moved to FM. Some 500 AMs are using FM translators, anxious for any footing on the FM band. But, Downs said, "a lot of us don't have access to a spare FM or a translator."



PREDICTED 28 DBU, F(50,90) COVERAGE CONTOURS
FOR FULL-SERVICE CHANNEL 6 DTV STATIONS IN THE UNITED STATES

Could AMs move onto FM Channels 5 and 6, sharing that space with the few full-power TVs that remain there? This map by du Treil, Lundin & Rackley demonstrates how much space exists on Channel 6, though Class A and LPTV stations are not shown. 'They would be foolish to stay in the low VHF band after the problems their full-power brethren have had there,' Downs said.

FROM THE EDITOR

Paul McLane

As authorized by the board, the NAB plans to look into options involving the technology of content delivery, regulation and frequency band rules.

What kind of answers might it develop? Expect the authors to explore options like converting the AM band to all-digital; moving AMs to those low VHF TV channels; allowing AMs to make more use of translators and FM IBOC multicasts; and taking advantage of less-discussed ideas like mobile DTV.

Ideas such as going all-digital would be contentious; and Downs acknowledges "a thousand reasons why any of these won't work." But just deciding to study the question, he said, is a "page-turning moment" for NAB.

Downs himself favors using Channels 5 and 6, where a small number of full-power TV stations remain (the map shows Channel 6), along with Class A and LPTV stations. He says radio manufacturers likely would go along because most FM receivers already have this capability because they're built

(continued on page 16)

NOVEMBER 16, 2011

Photo from the Detroit News Archives

Patent Holder Targets Smaller Stations

BY RANDY STINE

WILMINGTON, DEL. — As several large broadcast groups face down Mission Abstract Data and its patent infringement lawsuit in U.S. District Court in Delaware, some small and standalone station owners have received letters urging them to sign one-time license agreements with the company.

Mission Abstract Data sued in U.S. District Court for the District of Delaware in March 2011, alleging patent infringement by broadcast groups including CBS Radio, Beasley Broadcasting, Cox Radio, Greater Media and Cumulus. A hearing on a stay request by the defendants was held in late October. The presiding judge was still considering the stay request in early November.

Separately, Mission Abstract Data has continued to attempt to license and collect fees from other stations, citing the two patents.

Some of those broadcasters agreed to discuss the correspondence on the condition of anonymity, preferring to stay out of the "cross hairs of Mission Abstract Data," as one general manager described it.

Mission Abstract Data sent letters to some broadcasters in spring. A second and a third round were sent in late summer and early fall.

Just how the company is deciding which stations to contact is unknown, according to one person familiar with the situation, adding that Mission Abstract Data "appears to be picking stations at random and there's no way of telling how many broadcasters have received the letters" so far.

'MONEY GRAB'

The letter details the patents and asks broadcasters to contact a Mission Abstract Data representative to discuss a "one-time, fully paid-up licensing fee for a non-exclusive, company-wide right" to use Mission Abstract Data's technology.

RW's phone calls to the company's representative, identified in the letter as Michael Davis, were not returned.

A rate chart was included with the introductory letter, according to one person familiar with the correspondence. *(See chart, page 3.)*

"On the advice of our FCC attorney, we acknowledged receipt of the letter in early September and referred the Mission Abstract Data people to contact our Washington attorney," one station representative said. "To the best of my knowledge [Mission Abstract Data] never followed up. We thought it was odd that they were looking for licensing for us and our small market."

That station's community is small, ranked in the 200s. Management was surprised to be targeted and assumed Mission Abstract Data was looking for some quick licensing money. "Looks like they haven't been able to get agreements with larger markets," this source said.

An owner of a seven-station cluster in a mid-sized market took a different approach with the letter. "I skimmed it and threw it away. I didn't spend any extra time or effort on it," said the general manager, characterizing Mission Abstract Data's approach as similar to an "extortion letter" and a "money grab."

Attorney Kevin Goldberg at Fletcher Heald & Hildreth, updating broadcast clients after a U.S. patent examiner overturned some of MAD's key patent claims *(see page 1)*, reiterated prior advice:

"Smaller broadcasters who have not been sued would be well-advised to take any communication from MAD seriously, but obviously now it should also be taken with a grain of salt. Anyone contacted by MAD should do their due diligence: Have an attorney thoroughly review any licensing agreement they receive; dig out any potential indemnification clause that might be invoked to require their software provider to cover legal costs and/or damages; and check to see whether their own insurance policies will cover damages if they have no indemnification."

Anyone contacted by Mission Abstract Data should do their due diligence.

– Kevin Goldberg, Fletcher Heald & Hildreth

NEWS ROUNDUP

FCC: President Obama named two nominees to the commission; Ajit Varadaraj Pai and Jessica Rosenworcel would succeed Meredith Attwell Baker and Michael Copps. Their confirmations would return the panel to its full five members. Pai, a Republican, is a partner in the litigation department of Jenner & Block; he has worked in the Office of the General Counsel at the FCC, where he was deputy general counsel, associate general counsel and special advisor to the general counsel. Democrat Rosenworcel is senior communications counsel for the Senate Commerce Committee, working for Sen. Jay Rockefeller, D-W.Va., since 2009, and previously for Sen. Daniel Inouye, D-Hawaii. She worked at the FCC for eight years in several roles including senior legal advisor to Copps.

PIRATE FINES

(continued from page 1)

FCC needs outside agency help to get an enforcement action to stick, observers said. The commission can assess fines on an unlicensed broadcaster, but it must engage the services of the United States Department of Justice to file a civil claim for the judgment rendered, according to the Communications Act of 1934.

RISK/REWARD

An FCC official, speaking on condition of anonymity, said data to determine how much has been collected are not readily available.

"Fines are a tool, not a goal of the commission. We are not a collection agency and we don't track specific figures. Our goal is to limit interference and enforce licensing."

The commission declined to disclose collection figures for this story but said that in FY 2011, which ended in September, it issued 17 notices of apparent liability proposing $257,000 in forfeitures against operators of unlicensed stations or people exercising a substantial amount of control over such stations.

According to its statistics, FCC agents shut down 97 unlicensed broadcast operations over that period. The Enforcement Bureau issued 154 warnings and 93 notices of unlicensed operation.

According to the Enforcement Bureau's page on the FCC website, base forfeiture amounts for illegal broadcast operators are $10,000 for operation without an instrument of authorization of service, $7,000 for alleged interference and $4,000 for each unauthorized emission using an unauthorized frequency. Fines for pirates may be cumulative if a given case is considered egregious.

Cases of pirate broadcasters who don't pay the monetary forfeitures eventually are turned over to the U.S. Department of Justice. DOJ, in turn, determines whether pursuing the pirates through civil litigation is worth the effort, presumably based on a combination of time, money and manpower.

The Justice Department did not respond to Radio World questions regarding its criteria for prosecuting pirates and how many cases the FCC had referred to it.

The FCC doesn't keep the money collected as a result of fines, according to an agency official. Those amounts, like anything paid to the commission, are deposited into the U.S. Treasury.

"In some cases the fines are paid, but many times a lesser fine is negotiated in terms of a settlement," according to the commission official. "Sometimes the DOJ decides not to go after [pirate broadcasters] for the money because of an obvious inability to pay. They'll weigh the cost of the litigation and getting anything from them."

INABILITY TO PAY

Fletcher, Heald & Hildreth attorney Howard Weiss assessed the situation this way: "You have a government agency that is faced with a lot of other high priorities ... drugs, crimes of violence and who knows what else." Going after "deadbeat" pirate broadcasters likely isn't a high priority for the Justice Department, he said.

Weiss also believes the FCC has trouble collecting fines because of the disparate messages sent to offenders.

"You have one jurisdiction [the FCC] saying you are liable, and then the DOJ coming after you to collect the fines. It is an inherent weakness in how to do things."

The reasons fines go unpaid are numerous.

"Quite honestly, some of these pirate station operators are fly-by-night operations," said an FCC official, who, like others in this article, spoke on the condition of anonymity.

"They move around and disappear. We often get default judgments when [pirates] fail to appear in court. Then many times they don't have any assets under which we can collect."

When the FCC issues a notice of apparent liability against a pirate station operator, the alleged offender has 30 days to pay the fine or argue his or her case. In an ensuing forfeiture order, the FCC affirms the fine or responds to arguments made in response to the NAL.

The commission can reduce the amount of monetary penalties against radio pirates.

In July 2011, for example, it reduced a forfeiture order against Christopher Myers from $10,000 to $5,000 following a petition for reconsideration in which he said he couldn't afford the fine. He had been accused of operating an unlicensed radio transmitter on 95.9 MHz in Lauderhill, Fla., in 2010.

In another instance, the FCC recently reduced a monetary forfeiture against Fritzner Lindor of Orange Park, Fla., for unlicensed operation of a radio station; the fine was cut from $15,000 to $300 because Lindor documented an inability to pay.

NOT A NEW PROBLEM

The collection question was discussed more than a decade ago in a 2000 report from the Office of Inspector General, which audited the FCC's Civil Monetary Penalty Program. That assessment looked at all monetary forfeitures and found success in less than a quarter of them.

The report found a lack of coherent policy among the agency's bureaus on matters involving forfeitures, as well as institutional resistance from the Department of Justice to pursue such cases.

According to the report, "the commission has not established an effective program for managing civil monetary penalty actions."

While the research data are over a decade old, many agency observers say a disconnect remains between issuing fines and collecting the money. It's not clear whether the Office of Inspector General has revisited the issue since.

"I think the general perception among radio broadcasters is that the FCC, at best, does a sporadic job at chasing after pirate radio broadcasters" to collect fines, said Womble Carlyle attorney John Garziglia. "You have long-term pirates broadcasting with impunity without fear of paying much."

Another communications attorney familiar with FCC procedures suspects that "lots of fines never get paid, largely because there is no downside to non-payment."

Stephen Provizer, a former pirate who now blogs about music at *bit.ly/cdFfdn*, believes most pirate radio station operators have little to fear when it comes to paying fines.

"I believe [the FCC) hardly ever collects anything. It's a fairly empty threat to pirates," said Provizer, who founded former pirate station Radio Free Allston.

"For one thing many pirates are from countries where punishments for radio piracy are much more serious. Secondly, the FCC has shown little effort to mobilize the legal machinery necessary to collect fines."

'PAPER TIGER'?

John Anderson at DIYMedia.net, a blogger who follows microradio and radio piracy, believes it's clear that some radio pirates are aware that few fines are actually collected. "The FCC is a paper tiger when it comes to enforcement. Those who engage in pirate radio as an act of electronic civil disobedience are likely to school themselves on the nuts and bolts of

(continued on page 8)

San Francisco Liberation Radio is now an Internet stream. It ceased operation in October 2003 after a raid by the FCC and San Francisco Police Department.

Wired magazine's website includes a wiki on 'How to Set Up a Pirate Radio Station.' (While the article states that the authors 'wouldn't condone illegal conduct of this type,' it also offers tips to avoiding detection and location.)

THIS CODEC HAS BEEN THROUGH TWO WARS, MULTIPLE ELECTIONS, FLOODS, FAMINE, EARTHQUAKES, HURRICANES, MARATHONS, CHAMPIONSHIP GAMES, REGATTAS, LOTS OF CONCERTS AND WAY TOO MANY CLUB EVENTS TO ADMIT.

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Selected content from Radio World's "The Leslie Report" by News Editor/Washington Bureau Chief Leslie Stimson.

FCC: SHOULD WE ALLOW ASYMMETRIC FM IBOC?

The FCC appears closer to allowing more FM digital HD Radio stations to use asymmetric sideband operation. It's taking comments on whether it should do so, and has tentatively decided to ease the permission process involved.

IBOC proponents asked the FCC to authorize voluntary asymmetric digital sideband power for FM stations.

Right now, stations that want to raise digital power levels unevenly need to apply for a waiver of the FCC's rules. Proponents would like a more routine permission process.

The agency seeks comment about asymmetrical sideband operation in a public notice in which it said that "a significant number of FMs" can't increase their HD power levels by a full 10 dB because of potential interference to nearby stations on first-adjacent channels. "If asymmetric digital sideband operation is permitted, such stations presumably could increase their digital power on the sideband away from the limiting station."

Comments to MM Docket 99-325 were due 21 days and replies 35 days after DA 11-1832 was published in the Federal Register.

Asymmetrical sideband transmission is a method to allow FMs to raise HD Radio power while minimizing interference to adjacent-channel stations.

In January 2010, the FCC allowed most FM HD stations to increase digital power voluntarily by as much as 6 dB, to –14 dBc. Some FMs can go further, increasing digital up to 10 dB below carrier, if they meet certain criteria. Since May 2010, stations hiking power may simply inform the commission via a notification letter.

However, stations that want to operate at higher digital power using asymmetrical sidebands must apply for a waiver.

The National Radio Systems Committee updated IBOC standards in September to accommodate the FM power increase and asymmetrical sideband transmission. The NRSC-5 standard and reference documents now have been published at *www.nrscstandards.org*.

NAB's FASTROAD program helped fund asymmetrical sideband testing on Greater Media's WKLB(FM), Waltham, Mass., in February. The drive tests were detailed in a meeting with FCC officials in October; iBiquity and NPR representatives asked for the more routine permission process. According to proponents, higher FM digital power is important, particularly for stations that want to use the data capabilities of HD Radio.

At an IEEE Broadcast Technology Society event in October, Greater Media's Paul Shulins said initial field testing showed that unequal digital sidebands offer stations an option to increase HD power beyond –14 dBc in some cases, where power increases would not be possible using traditional symmetrical digital carrier levels.

PIRATE FINES

(continued from page 6)

FCC policy in this area.

"The more you know about the somewhat byzantine administrative procedure that is FCC enforcement, the easier it is to assess the relative risk of going on the air," he said. "For many, the informed relative risk is actually quite small. When a fine gets knocked down from $10,000 to $500 or even $250, it really isn't a painful punishment to take."

Making it yet more difficult to collect outstanding fines is a federal law that requires lawsuits seeking to enforce a civil fine or forfeiture to be initiated within five years of the infraction taking place, said Harry Cole, attorney at Fletcher Heald and a Radio World columnist.

"The statute of limitations in essence could shield the pirate from the financial penalties even if it is determined they violated FCC rules," Cole said.

And while the commission can levy fines, its Enforcement Bureau can't arrest a pirate broadcaster or send them to jail.

The FCC "has no authority to make arrests, obviously. We do have the right to inspect broadcast equipment without a search warrant, but we cannot confiscate broadcast equipment," said an agency official, adding that the Justice Department has the power to seize equipment with assistance from the U.S. Marshals Service.

In a high-profile raid this year in Boston, the Justice Department seized radio equipment used by a pirate broadcaster. Datz Hits Radio 99.7FM had been warned by the FCC to stop transmitting after interference complaints were received from a licensed broadcaster and from the Federal Aviation Administration. The latter complained of interference with radio communications at Boston's Logan Airport.

While the FCC steers spectrum enforcement on a national scope, there are now three states that have criminalized unlicensed broadcasting: New York, Florida and New Jersey.

In New York, which passed anti-pirate legislation this summer and begins enforcement in January 2012, unlicensed broadcasting is a Class A misdemeanor punishable by fines and up to a year in jail.

Observers said it's unclear how any jurisdictional issues between the commission and the three states would be settled. An FCC official said there have been no such conflicts so far. "We have, in fact, coordinated efforts during several [pirate] proceedings."

David Donovan, president of the New York Broadcasters Association, said he's confident the state's new anti-piracy laws will be a deterrent to those considering illegal broadcasting.

DIYMedia's Anderson blogged this summer that in Florida, which criminalized unlicensed broadcasting in 2004, some pirates have been arrested but no one has ever been convicted under the state law. "New Jersey's anti-pirate statute," he wrote, "has snagged a whopping zero broadcasters in five years."

NEWSROUNDUP

PUBLIC FILE CHANGES: The FCC is considering requiring TV stations to keep their public files online; experts say radio may be next. The commission is taking comments on a Notice of Proposed Rulemaking suggesting new rules under which all TV stations would submit their public-inspection details to an online file hosted by the agency.

CLEAR CHANNEL: The broadcaster launched a programming strategy for smaller markets that will involve using assets and resources it says will make some 600 stations sound more localized. The New York Times reported the changes were accompanied by the dismissal of "dozens of local DJs" and reported that other estimates pegged the layoffs in the hundreds.

NAB TECH LAB: Chief Technology Officer Kevin Gage won approval from NAB's board to develop and host a new "NAB Lab." The existing NAB FASTROAD program will become part of the lab. NAB said organizational structure and funding decisions will be forthcoming.

PERFORMANCE RIGHTS: Maria Pallante, the register of copyrights for the U.S. Copyright Office, issued a list of priorities for her office for the next two years. Among them, she reiterated the office's support for a public performance right in sound recordings. She noted that bills were introduced in the 110th and 111th sessions of Congress, "but there were strenuous objections from traditional broadcasters."

TRANSLATOR ORDERED OFF: The FCC ordered Radio Power to take W284BQ in Detroit off the air because of interference to co-channel WIOT(FM), in Toledo, Ohio. WIOT licensee Clear Channel identified some 30 reception complaints from listeners in the Ypsilanti, Belleville and Taylor, Mich., areas. In July the FCC gave Radio Power 30 days to resolve the complaints or suspend operation. Radio Power tried to do so with an antenna modification and offered listeners smartphones with an iHeartRadio application installed, to receive WIOT programming over the Internet. That satisfied some but not all listeners. The phones require a paid data plan to run the iHeartRadio app, which Clear Channel argued made the solution unworkable and did not solve the interference. The FCC agreed. The agency also was unimpressed that Radio Power put the names of those who complained on its website, which the FCC said would discourage future complaint filing.

CHIPS IN PHONES: Multiple cellphone carriers are sampling HD Radio chips. Best Buy is revising its Insignia HD portable radio and plans to make a touch screen version available in the spring. That's according to iBiquity Digital. The tech developer anticipates cellphones from several carriers will be available in 2012 with integrated FM HD Radio chips, thanks to smaller, more power efficient chips from SiPort, now part of Intel. More than 5 million HD Radio receivers are in consumers' hands, according to iBiquity.

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First, if your dish is located in a snowy or icy climate, consider investing in a dish cover, as seen in Fig. 1. These are worth the expense. They help prevent buildup of snow or ice. In addition to attenuating the signal, heavy snow can cause a dish to lose its parabolic shape, moving the focal point so the satellite signal no longer is focused into the feed horn assembly.

If your satellite performance is critical, you might want to invest in a satellite rock cover. DishCamo has been manufacturing such covers for 25 years. The sturdy material completely envelopes the dish and mount, which ends up looking instead like a 10-foot boulder. (See *www.dishcamo.com*, click on RockCover). The company also provides camouflage dish covers.

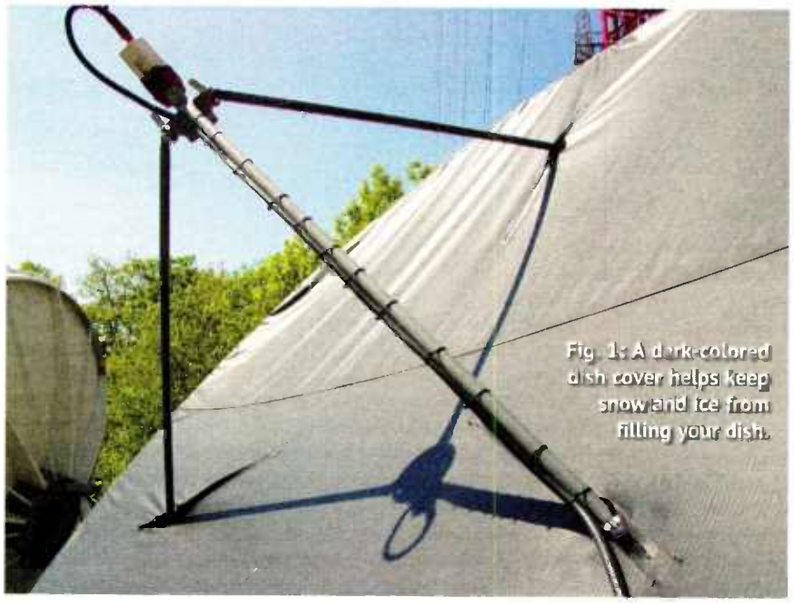

Fig. 1: A dark-colored dish cover helps keep snow and ice from filling your dish.

Basic C-Band dish covers are offered by several companies. Google "C-Band dish covers" for listings.

Covers come in a variety of colors. Dark ones will absorb the sun's rays, helping to melt the snow or ice. In the case of stubborn buildups, a gentle drumming of the fabric cover should dislodge the cold stuff. If you've ever aligned a satellite dish, you know how sensitive the adjustment can be. Just keep that in mind and try not to use a heavy hand.

A dish cover has another benefit: Heat from the sun is no longer focused by the dish into the LNB. If you've ever touched an LNB on a sunny day, you know what I mean.

If your budget won't permit a cover, consider using an extended mop to spread car wax over the dish surface. You don't need much. The waxy film will prevent snow from sticking and make the dish easier to sweep out. The wax does not seem to affect the reflective surface.

"Sweep out"? Absolutely. Resist the temptation to shovel the snow or bang the dish from behind. Especially on screen mesh dishes, even gentle strikes can deform the parabola; away goes your signal. A push broom on a long extension, even a squeegee will work well to remove the accumulation, especially if the dish was waxed beforehand.

(continued on page 12)

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WORKBENCH

(continued from page 10)

While you're at the dish, here are a couple of other tips that take only a few seconds but could pay dividends should vandals tamper with your hardware.

Use a Sharpie or similar brand of indelible marker to scribe the dish settings. I like the Sharpie because of its fine point and the ability to get into the threads of the adjustment nut, shown in Fig. 2. This doesn't have to be anything fancy.

Should someone tamper with the adjustment nut later, your black "score" marks will at least get you in the ball park for readjustment. Use the same marking procedure for the dish mount.

Of course, before setting these markers, ensure that the dish is giving you the best signal from proper alignment. Fig. 3 shows how you can mark the dish mount.

It's not a bad idea also to mark the LNB mounting and polarity, though this probably is not as common because a step ladder would be needed.

I've seen engineers wrap several layers of white tape around the adjusting threads, as seen in Fig. 4. This will work; but if someone is really set on spoiling your day, they can remove the tape in seconds. Indelible marker is much harder to remove.

Contract engineers can offer this as a service to clients. The process takes only a few minutes. It can be billed as an additional service to the station and it is great insurance against a catastrophe, especially for stations employing all-satellite formats.

Of course, check that all bolts and fittings are secure. Secure conduit, as seen in Fig. 5, to keep it from moving in the wind and to discourage tampering.

These preventive maintenance tips don't require a big investment of time, and will offer you some peace of mind.

Contribute to Workbench. You'll help your fellow engineers and qualify for SBE recertification credit. Send tips to johnpbisset@gmail.com. *Fax to (603) 472-4944.*

Author John Bisset has spent 43 years in the broadcasting industry, and is still learning! He is SBE Certified and is a past recipient of the SBE's Educator of the Year Award.

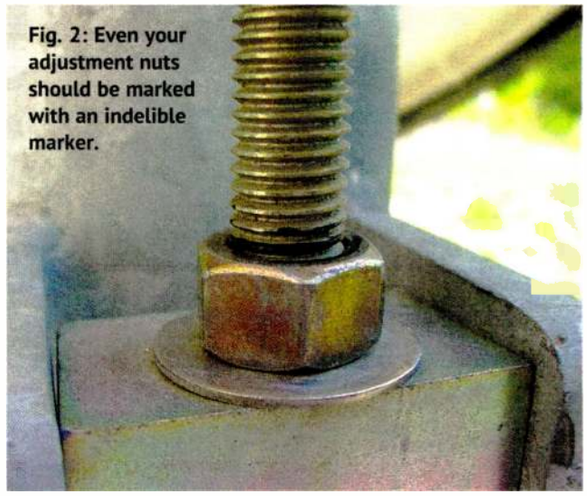


Fig. 2: Even your adjustment nuts should be marked with an indelible marker.

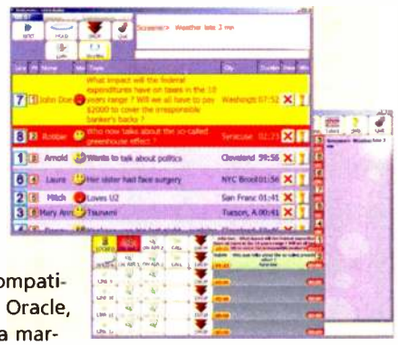
Fig. 4: Wrapping electrical tape around the threads will work, but it can be easily removed.

Fig. 3: Mark the rotating pedestal.

Fig. 5: Secure conduit is less of a temptation to vandals.

MARKETPLACE

TELEPHONY: France-based software developer NeoGroupe announced upgrades to a number of its radio and TV telephony and contest management software products.



NeoScreener for Telos VX is a version of the NeoScreener call management application designed for use on Telos' VX VoIP-based broadcast phone hardware system. A noted feature is full caller ID. NeoWinners is a contest management software suite for use with radio and TV stations. According to NeoGroupe it is compatible with major databases such as Microsoft SQL, Oracle, MySQL, DB2, Informix and AS/400. NeoAgent is a marketing management package that includes contest and event modules and interfaces with other NeoGroupe programs.

Info: www.neogroupe.com/index_en.htm

LIQUID COMPASS PRO 2.0: Audio streaming platform developer Liquid Compass debuted Liquid Compass Pro 2.0. Top of the features list is an ad insertion component. Other improvements include social media tools as well as crowdsourcing and audience input. LC Pro 2.0 has iTunes tagging and Internet/mobile device integration. Marketing and news modules have been expanded. There are additional audience statistics research tools.

Other news from Liquid Compass focuses on the availability of an Android platform version of its LC Pro-M streaming app. The app will be made available to Liquid Compass customers. Station, network or advertiser/sponsor-customized versions can be created. The basic version offers five skins, social media features such as "rate" and "like" along with text-to-studio, song-tagging for purchase and access to Twitter and Facebook. "Now playing" info is provided in addition to "favorites," "on demand," programming schedules and histories.

Info: www.liquidcompass.net

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Netcasts You Love From People You Trust

Laporte's Goal Is to Be Nothing Less Than 'The CNN of Tech Broadcasting'

BY JAMES CARELESS

Once upon a time — in a proto-Internet Age when the first-generation Pentium CPU was under development inside Intel's labs — Leo Laporte was a weekday talk radio host at KNBR(AM) in San Francisco.

"Then this guy named Rush Limbaugh came along and put me and about 550 other midday broadcasters out of work," Laporte deadpans. "So I ended up working weekends, doing a call-in show about technology."

From those humble roots, Laporte has grown to become a "tech broadcast" guru.

His weekend radio show, "Leo Laporte: The Tech Guy," is syndicated by Premiere Radio Networks to about 160 U.S. stations and Sirius XM. Meanwhile,

Leo Laporte, center, is flanked virtually by 'Ham Nation' hosts Gordon West and Bob Heil in a Skype conference.

> **Leo makes** technology accessible without dumbing it down.
>
> – Kirk Harnack

Laporte's weekly podcast "This Week in Technology" — aka TWiT — has become the flagship podcast/program of TWiT.tv. If you saw Laporte visiting the Ham Reception at this spring's NAB Show, you know how well regarded he is among the techie crowd.

Operating out of the new "TWiT Brick House" studios in Petaluma, Calif., TWiT.tv now offers a range of technology-focused streaming video/audio shows. Thanks to Laporte's innovative approach to advertising, TWiT.tv cleared $4 million last year and is on the road to making $6 million this year.

"We're profitable, even though we have a staff of 16," says Laporte. "That's no small achievement for an Internet broadcaster."

RISE OF A TWiT

Leo Laporte's ascension to tech guru fame was boosted by his television shows on TechTV, a turn-of-the millennium cable network dedicated to technology programs.

"Unfortunately, it cost about $50 million annually to keep TechTV going," he says. "So when Paul Allen sold it in 2004, I focused on my weekend radio gig. Eventually I turned that into a syndicated show, but I still had five days a week to deal with. I needed something to fill my time."

That "something" was to produce "This Week in Technology," which started as a weekly podcast. The popularity of TWiT motivated him to offer other podcasts at *www.TWiT.tv*, which moved him inexorably towards live streaming video — shot and available live, or accessible afterwards on demand.

"Compared to broadcast or cable television, streaming video is extremely inexpensive," Laporte says. "I can produce an hour's worth of content for $1,000 all in, as compared to the $5,000–$7,000 an hour demanded by conventional TV production. One saving is that we go live; there's no money spent in post-production editing."

Add a menu of tech-centric shows such as Bob Heil's "Ham Nation," "Windows Weekly With Paul Thurrott" and "iPad Today" with Laporte and co-host Sarah Lane — and there are lots of reasons for people to log on and watch for free.

"Leo has truly figured out how to make Internet broadcasting work," says Heil, founder and CEO of Heil Sound.

Says Kirk Harnack, who co-hosts TWiT.tv's "This Week in Radio Tech," "Leo makes technology accessible without dumbing it down. He is the right person in the right place for this kind of innovative programming." Harnack's full-time job is executive director of sales and marketing for the Telos Alliance.

This view shows the techie feel and multi-set layout of the Brick House.

The facility uses Canon VIXIA HF G10 HD camcorders.

The TWiT Brick House opened this summer.

HOW HE DOES IT

TWiT.tv defies conventional wisdom about the Internet, because it makes money while offering free content. How does Laporte do it?

First, when it comes to advertisers, "I only have three sponsors per show — one per half hour — and the ad is restricted to a single, longer-form

(continued on page 18)

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VX uses standard Ethernet to connect all the phones, hybrids and consoles around your facility, transporting caller audio, mix minus, POH and control logic on one skinny cable. Connect to POTS, ISDN PRI, or even BRI telco lines via standard gateways, and *voila*, they're available for use anywhere in your facility. And if you decide you want to use VoIP services, VX can do that too.

VX is so scalable, it can manage multiple simultaneous talkshows in the largest facilities. Yet it's cost effective even for a few studios. Audio is clean and consistent, because dedicated, third generation Telos hybrids manage each individual call. Even conferences are crystal clear. You can deploy VX "virtual phones" in production rooms, news workstations, or anywhere there's a PC with a USB mic and headset. Got a hot talkshow that suddenly demands more lines in a certain studio? Just a few keystrokes at a computer and you're set.

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DOWNS

(continued from page 4)

to accommodate consumers in Japan, where radio stations do use the 5/6 frequencies. "The hardware is already there. The receivers are already built."

Using Channels 5 and 6 will be one of the options explored in the study, though Downs makes clear NAB has not endorsed this or any other specific strategy. In fact, in 2008 NAB opted not to support the AM migration proposal put forward by the Broadcast Maximization Committee. That would have required AMs to go all-digital, and it didn't protect full-power TV stations left behind on 5 and 6 after the DTV transition.

"Since some of the TV people cannot move, it seemed that was a big roadblock. But maybe we could convince the FCC through regulatory changes that this could be shared — both FM and DTV could share these frequencies."

Board members pondered the idea for the past year or so; and at the fall Radio Show, the Joint Executive Committee asked NAB's technical staff to instigate a study that might help AM owners. Joint Board Chair Paul Karpowicz and Radio Chair Caroline Beasley made the motion.

UNLISTENABLE

"The noise kicked up by digital and solid-state devices is basically rendering the AM band unlistenable," Downs said.

"Get a clock radio and put it in your house and try to listen at night sometime. You're lucky to get one station." AM radio, he believes, has lost in-home and in-office listening, and soon will lose in-car, too, thanks to LED traffic lights, meter reader systems and other noise sources.

Downs said that research in other countries, while limited, shows that AMs would have to increase power dramatically to match coverage they had 10 years ago to overcome the noise problem. Anecdotally, that appears to be true here in the United States too.

Another big problem is lack of availability of mobile devices that can receive AM in the first place.

"That little thing in your pocket, the handset, has replaced watches, pocket cameras ... we all know what it's done to landlines. Young people are even using it as a flashlight. It'll ultimately replace the $20 clock radio. Both of my kids use their iPhones as their alarm clock in the morning."

But the laws of physics dictate that AM reception antennas must be long, which is a problem. Further, the handset itself is likely to be a noisy place. "As it stands today, there's not a really good pathway into mobile devices if you're going to stay on the AM band."

Pandora will not have a food drive in Bryan, Texas.

– Ben Downs

Downs said he'll favor any solution that fixes the interference and gets AM radio into handsets in the next five to 10 years.

"I'm just hoping that the people who have power to make these decisions understand the value that licensed AM broadcasters bring to the table," he concluded. He says many good strong AM stations remain in business. However, "If we don't do something, all of those licensees are going to be marginalized. ... If we don't find a way to preserve them, then we lose a huge amount of community voices."

Radio World will have more on this effort as it develops. About two years ago we explored whether AM was still relevant and where it might go in a series of articles. Some readers were offended by our premise. But overall reaction made clear that the future of AM is of concern to many people. I told Downs that every point he raised has been discussed at one time or another within Radio World and in other venues, and I welcome the NAB's effort to focus the debate.

"There is nobody who talks about my little Bryan/College Station [community] like our AM stations do," he told me. "We are very local. We *serve* the community. That word is overused; I wish I had a better word for it. Pandora will not have a food drive in Bryan, Texas."

The World's First Factory-Built Transmitters

ROOTS OF RADIO

BY JOHN SCHNEIDER

The station is WWJ in Detroit, a contemporary to KDKA as one of the country's first radio stations. We are in the transmitter room in the Detroit News Building in early 1922. The broadcast studio is located in a separate room.

The rig seen beyond the operator's desk is actually the station's second transmitter; it replaced a primitive DeForest 50 Watt transmitter that the Detroit News used beginning in August of 1920 under the call letters 8MK. (The station was re-licensed as WBL in 1921 and became WWJ in March of 1922.)

The model of transmitter seen here, installed in February 1922, was the world's first factory-built transmitter line, the Western Electric 1-A.

This mighty 500-Watt unit consisted of two panels: the RF section and modulator on the left, and the power control panel on the right, which controlled the two motor generators that provided the DC energy, located in another room because of their constant noise.

The two big knobs on the front of the transmitter are marked "Oscillator Tuning" and "Frequency." Crystal controlled oscillators were still in the future; these early transmitters were just free-running high-power oscillators. The antenna capacity was a part of the oscillator circuit, and so the station's frequency tended to drift as the wind blew the hammock-style wire antennas around. Static buildup on the antennas during wind storms also caused frequent transmitter failures.

The result later that year was the introduction of the 1-B transmitter, which added a third big "Antenna" knob to control an output coupling transformer.

On the operator's desk, we see a wavemeter with its loop antenna, used by the operator to zero-beat the transmitter to the station's assigned frequency (360 meters, or 833 kHz). To its right is a Grebe CR5 receiver and audio amplifier, used for program monitoring and for the required listening for maritime distress signals during five minutes each hour.

Receiver batteries and antenna knife switches are to the operator's right. Just out of view outside the window is a large loop antenna that fed the receiver. In addition to operating the transmitter and making station announcements, the

Photo from the Detroit News Archives

operator's main job was to ride gain on the studio microphone to keep the transmitter from overmodulating.

Later photos from WWJ show this room gradually filling up with more equipment, more operators and a more powerful transmitter. It continued to be used by the station for the next decade.

John Schneider is a lifelong radio history researcher. Write the author at jschneid93@gmail.com. *This is one in a series of photo features from his collection. Find more under the Columns/Roots of Radio tabs at* radioworld.com.

LAPORTE

(continued from page 14)

commercial read by the host," he says.

"I knew that Internet users would not tolerate a stack of nine spots back-to-back, and I also knew that host endorsements have real power. So we have adopted this approach, which hearkens back to radio's earliest days, and it works.

"Our sponsors, which include Ford, GE and tech companies like Citrix and Audible.com, are willing to pay $80 CPM for this kind of exposure."

Second, TWiT.tv's studio consists of four sets centered on a single "operator console" that includes all of the network's production controls.

"We take video from 30 consumer camcorders mounted throughout the studio, plus a few pan-and-tilt cameras," Laporte says. "The video is switched using a Tricaster, and the audio is handled by a Telos Axia Element, which that company provided as part of its work with us." Laporte also has purchased a smaller Axia Radius for use in his own studio.

All production is handled by a single operator, which keeps costs way down. Guests in distant locations are brought in via video Skype, their images shown on large LCDs located beside the on-air host.

"The switcher is part of the show, just like a board operator on a radio station," he says. "They add to the show, which is why they have a camera and lights on them."

TWiT.tv also keeps its bandwidth costs down to a bare minimum, by having bandwidth providers such as AOL, Cachefly, Ustream.tv, Justin.tv, YouTube and bit gravity distribute its shows. "They carry our shows using their own bandwidth, which makes this model work for us."

By combining the best parts of TV, radio and the Web, and figuring out how to attract advertisers to buying time on streamed media, Leo Laporte appears to have cracked the challenge of making Internet broadcasting pay.

However, he's not resting on any laurels. "We still have more time slots to fill out in our schedule, to make it truly 24/7," Laporte says. "My goal is to be the CNN of tech broadcasting. We're not there yet, but by building a studio that looks good to our viewers and adding more shows, we are well on our way."

Looking out from TWiT.tv's 'operator console' position.

EQUIPMENT LIST FOR THE TWIT BRICK HOUSE

Internet Connections:
Sonic.net Flexlink "Ethernet in the First Mile" (EFM, also known as IEEE 802.3ah). This connection is 35 Mbps symmetrical. It is used for most of the Skype calls during the netcasts and to stream out the BitGravity, Ustream and Justin.tv video. The studio has two EFM connections, one for the streams and video calls, the other as the studio LAN. Also: ISDN line from AT&T is used to stream studio audio to and from the Premiere Radio Networks studios for "The Tech Guy" show. A Comcast fiber optic cable connection is coming soon and will provide a 100 Mbit symmetrical connection in conjunction with the EFM.

Audio Mixing:
Telos Axia Element control console and Powerstation processing unit (main mixer); Telos Axia Radius console (Laporte's mixer)

Microphones:
Heil Sound PR40 dynamic table mics with BSW RE27POP filters;

Laporte with Heil mic

Countryman headset mics; Heil Sound PL2T Boom Mount

Headphones
AKG K240 DF; Ultimate Ears 4 Pro in-ear-monitors

TWiT.am Audio Stream:
Barix Instreamer 100

Video Cameras:
Canon VIXIA HF G10 Full HD Camcorder with Blackmagic Design HDMI to SDI Mini converters

Televisions:
Vizio HDTVs
Blackmagic Design SmartView Duo SDI displays

Video Switcher:
Tricaster 8500 Extreme with 850CS control surface

Router:
Blackmagic Design Broadcast Videohub 72x144

Computers and Monitors:
Many TWiT hosts use various models of MacBook Air or MacBook Pro, with exceptions like Brian Brushwood, often seen with a 17-inch Windows-based notebook PC.

Lights:
140 lighting fixtures purchased, installed and configured by Brent Bye of Ocean Studio, Santa Monica.

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AUDIOARTS

SBE to Renew Strategic Planning in June

New President Ralph Hogan Says It's All About 'Member Benefit'

BY RALPH HOGAN

The author is president of the Society of Broadcast Engineers.

Strategic planning at the Society of Broadcast Engineers provides direction and vision for three to five years and

SBENEWS

should end with objectives and a roadmap of ways to achieve them.

The Society of Broadcast Engineers accomplished most of the strategic goals it identified in 2006. Last year as vice president of the SBE and chair of the strategic planning committee, I approached the board of directors to provide funding and authorize the convening of a new strategic planning meeting, which will be held in 2012.

The meeting in 2006 resulted in many services members now enjoy as a part of society membership. The SBE hired an experienced meeting facilitator to manage that meeting; 34 members attended and represented 24 chapters. The meeting included 11 of the 17 SBE board members, all national officers and three members of the national office staff.

The attendees represented the wide scope of opinions, geographic origins and backgrounds that comprise the SBE membership. Many chapters sponsored the travel for their representatives and held their own discussions to prepare. The time commitment was significant since the session was scheduled from 9 a.m. to 5 p.m., including a short break for lunch.

The result was a lively and productive discourse and a strong consensus on the focus of the SBE for the next three to five years.

INDIANAPOLIS

In order to plan, promote and execute another strategic planning session properly, the SBE is planning for the next event in June of 2012.

As with the last several such sessions, the SBE leadership recommends that chapter chairs or their representatives attend, as well as all members of the board, national committee chairs and a number of the staff. The planning meeting will again be held in conjunction with the June Executive Committee Meeting in Indianapolis. Held in the middle of the country, the planning session is more likely to attract chapter representatives who do not have to travel completely from one coast to another.

A facilitator will lead us through the strategic planning session. This is a most effective way to develop an objective result.

One difference from previous strategic planning events is that a portion of the time be spent with the group developing specific recommendations by the end of the day. In the past, due at least partly to time constraints, specific recommendations were left to the Strategic Planning Committee to do as a followup to the meeting.

I encourage anyone interested to work with your chapters to start discussions now on what direction and initiatives the society should focus on in the next five years.

The enhanced education program of the SBE is an outgrowth of one of the 2006 planning goals and has become a much-valued resource to the member community.

In an education survey conducted to find out members interest, 96.6 percent of respondents said that continuing education is important to them.

The SBE is raising the bar by providing relevant, affordable education to its members using various instructional methods. These programs are designed to help broadcast engineers keep up with the ever-changing demands of the job and the industry.

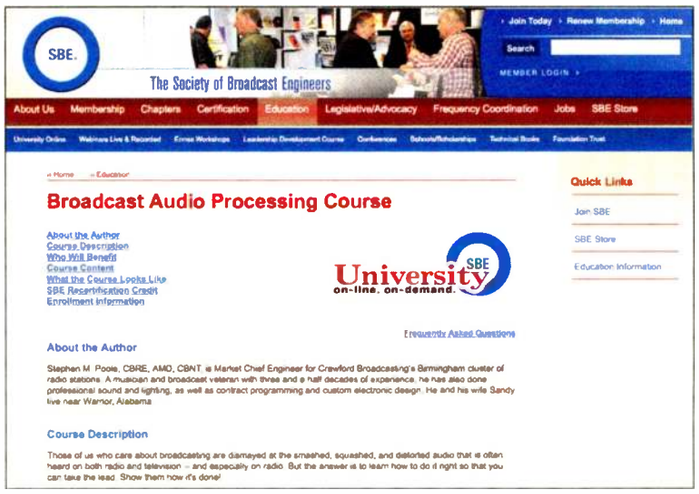
The SBE University provides online, on-demand courses. Over a dozen live and online webinars are provided through the Webinars by SBE program. The Leadership Development course provides a three-day challenge that helps you to refine your leadership skills as you better understand and improve how you interact with others. Ennes workshops bring affordable education to members and allow topics of interest be delivered locally through one-day events.

The newest educational category is the society's Technical Presenters Group. At the cost of a reasonable fee plus travel expenses, state broadcasters associations, broadcasting companies, SBE chapters and others have the opportunity to include one of these speakers in their engineering conferences or as a trainer for their engineering staffs. Speakers from the SBE Technical Presenters Group generally are available to speak across the country.

The idea of member benefit has been the focus of the board for the past few years; everything the SBE does is held against the member benefit test. The Society of Broadcast Engineers exists to serve the membership. If you are concerned with the direction and viability of the society, stay tuned for further information about the June 2012 strategic planning meeting.

Ralph Hogan, CPBE, DRB, CBNT, is director of engineering for KJZZ(FM), KBAQ(FM) and SunSounds of Arizona, in Tempe, Ariz., and was recently elected SBE president.

Radio World provides space to SBE several times a year for updates on its activities. We welcome comments on this or any article to radioworld@nbmedia.com.



SBE University now provides online, on-demand courses in topics such as broadcast audio processing, AM antenna computer modeling and FM transmission systems.

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KPRS Uses Mobile to Tap Revenue

Broadcaster Works With Kickanotch; App Is Downloaded All Over the World

USERREPORT

BY STEVE WILSON
Interactive Marketing Executive
Carter Broadcast Group

KANSAS CITY, Mo. — It's no secret that radio and the entire broadcast industry are looking for new ways to increase revenue and engage listeners. With mobile advertising slated to hit $20 billion in revenues by 2015, radio stations are tapping marketing channels to attract and monetize their listener community.

The Carter Broadcast Group is one of the oldest African-American-owned and operated radio groups in the country, with more than 300,000 listeners a week across the Kansas City metro. Its two radio stations, KPRS(FM) and KPRT(AM), realized the need to expand beyond traditional marketing channels.

The organization recognized mass monetization potential in serving mobile content, from radio feeds to daily deals, to its mobile audience, within Kansas City and abroad.

Aiming to create an "addictive" user experience for the listener community, CBG partnered with Kickanotch Mobile, a mobile application and advertising software (REVkick) startup based in Kansas City.

GOAL

CBG set out with several objectives: get mobile; track user preferences; grow mobile (increase brand exposure and consumer engagement) and monetize mobile (develop a strategy to add a new revenue channel).

Together, the companies designed custom iPhone, BlackBerry and Android mobile applications, which included mobile advertising software to increase the stations' mobile presence.

Once mobile, CBG provided deal alerts, social media connectivity, an SMS text "VIP" club and a bar code/QR code scanner, allowing app users to scan products, receive information, view product reviews and compare product prices.

It also implemented mobile app features that enabled the stations to serve mobile advertising, daily deals video ads and sponsored push alerts, and to monitor real-time analytics and lead generation.

CBG's mobile marketing used "call to actions" like promotions, "meet and

(continued on page 28)

TECHUPDATES

PROSTREAM IS DEDICATED TO INTERNET STREAMING

The ProStream is a dedicated Internet streaming solution from Telos Systems. Users don't need separate devices for audio processing, encoding and streaming. These functions are included in one slim, 1RU device. ProStream, Telos says, also eliminates the need for crash-prone PC hardware and operating systems.

ProStream uses MPEG encoding algorithms from Fraunhofer, inventors of MP3, to provide artifact-free sound quality at whatever bit rate is chosen.

Users can encode directly to MP3 or AAC and feed any Shoutcast-compatible media server, or a Wowza server for streaming to Flash clients.

The system includes audio processing by Omnia Audio. Processing functions include wideband AGC, a three-band combined compressor/limiter, high-frequency equalization, an adjustable-bandwidth low-pass filter and a final look-ahead limiter.

An Web interface provides remote control of all functions including creation and editing of processing presets with the built-in preset editor. Users can access these functions from any browser-equipped computer on a network, with no other software required.

ProStream comes with studio-grade analog I/O, which can be changed to AES/EBU with an optional card. It also works with Livewire IP-Audio systems, so you can feed it audio directly from your network. Network connectivity is provided via two Ethernet jacks, one for the LAN (including Livewire), the other for WAN and streaming. There's a built-in headphone amp with 1/4-inch jack and volume control for monitoring input or output audio.

For information, contact Telos Systems in Ohio at (216) 920-1813 or visit www.telos-systems.com for information.

TRITON INAUGURATES CAMPAIGN MANAGER 3

Triton Digital soon will release a new version of its Campaign Manager platform.

Campaign Manager 3, Triton says, will include multidimensional audience targeting, more robust management of creative assets, universally compatible ad formats, ad serving and yield management, and enhanced reporting and analytics for desktop and mobile platforms.

Triton serves billions of ads to online listeners monthly. The ad platform, aimed at online radio, promises new features for digital advertisers to help make radio more competitive with other digital media.

Campaign Manager 3 allows publishers to take control of a campaign's lifecycle, from generating proposals for advertisers and creating insertion orders to proof of performance and integration of billing data into financial systems.

It promises to improve workflow efficiencies by eliminating duplicate data entry, using creative libraries for advertisers and easy spot scheduling.

Campaign Manager 3, Triton says, should maximize the yield of streaming air time with new ad formats and options to combine multiple targeting criteria, with prioritized delivery of the highest value ads first.

For information, contact Triton Digital in Quebec at (888) 448-4037 or visit www.tritondigital.com.

Vorsis VP-8 Enhances Web Streams

Web Streaming Demands Processing Attention As It Becomes More Important to Stations

USERREPORT

BY DANNY TEUNISSEN
Owner
MRZ Broadcast

AMSTERDAM, NETHERLANDS — MRZ Broadcast is a broadcast systems integrator in the Benelux region. With the ever-increasing importance of Web streaming in the radio industry, there has been an evolution in audio processing. Here in northern Europe, as in many parts of the world, it's essential for stations to provide a Web stream. To keep the stream sounding as clean and powerful as the on-air signal, processing is needed. This job demands a versatile and flexible processor.

Many of our customers have discovered that the multimode VP-8 Plus from Vorsis is the answer to this and many other processing issues. We've found it to be the most flexible processor in its price range. Various modes allow the VP-8 to fill roles including AM and FM analog, AM and FM HD, television, streaming, and even music mastering.

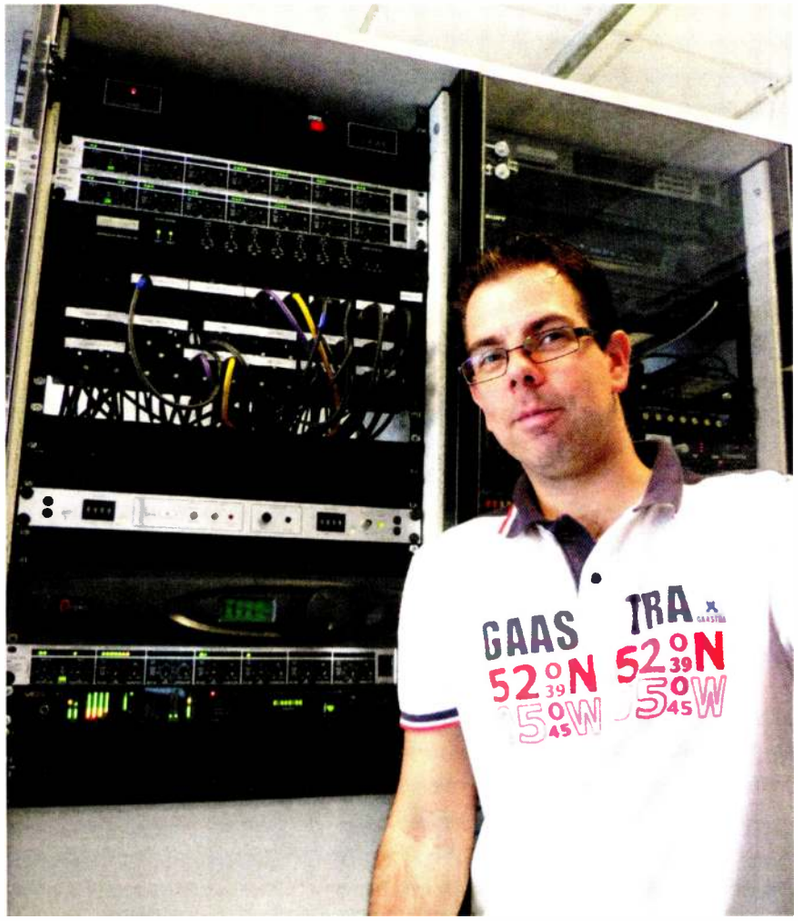
MULTIPROCESSING

At some client stations, the VP-8 handles both the on-air processing and stream processing simultaneously. This is possible by using the composite output to feed the transmission chain and connecting the processor's AES output to the streamer's input.

One station is using the VP-8's high-quality, low-impedance headphone output to drive his streamer. Internal routing allows the engineer to tap this output to one of several points in the processor's audio chain to get the sound he needs.

In other cases, when the on-air signal is being processed by another unit, the VP-8 can be dedicated entirely to stream processing. In these cases, the engineer can select the type of processing that best suits his needs. Some prefer to use the FM-HD processing mode because it's open and clean and has a lot of dynamics. Others, like stations with a hits format, find this mode to be too clean and prefer to use the FM analog output with its more aggressive clipping.

One of our most recent VP-8 customers is Unique FM in Amsterdam. Engineer Marc Klomp recently chose



Unique FM Engineer Marc Klomp and His Vorsis VP-8

The ability to select the position of the VP-8's eight-band limiter (before or after the pre-emphasis), as well as the ability to choose from three clipping styles (hard, firm or round) give the engineer choices that result in a range of sounds.

When a customer in the Benelux region purchases a VP-8, we provide him with a package of more than 180 presets we've collected. Some of these are designed to make the VP-8 perform as a "sound-alike" of other popular processors; others take advantage of capabilities only the VP-8 can offer. This gives customers an idea of just how many setups are possible, and provides them with good starting points for their own adjustments.

Two graphical user interface programs give the engineer access to the VP-8's parameters. GUI Lite, included with the unit, provides simplified controls that make setting up the unit a breeze, while still allowing fine control over the sound. For those who need access to every single processing parameter, Vorsis provides GUI Pro, which is available free by request from the Vorsis website.

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One of our most recent VP-8 customers is Unique FM in Amsterdam. Engineer Marc Klomp recently chose the VP-8 over other processors in its price range due to its ability to deliver loud, clean audio to their station with great flexibility, at an affordable price.

For information, contact Jay Tyler at Wheatstone in North Carolina at (252) 638-7000 or visit www.wheatstone.com.

ABOUT BUYER'S GUIDE

Radio World publishes User Reports on products in various equipment classes throughout the year to help potential buyers understand why colleagues chose the equipment they did. A User Report is an unpaid testimonial by a user who has already purchased the gear. A Radio World Product Evaluation, by contrast, is a freelance article by a paid reviewer who typically receives a demo loaner. Do you have a story to tell? Write to **bmoss@nbmedia.com**.

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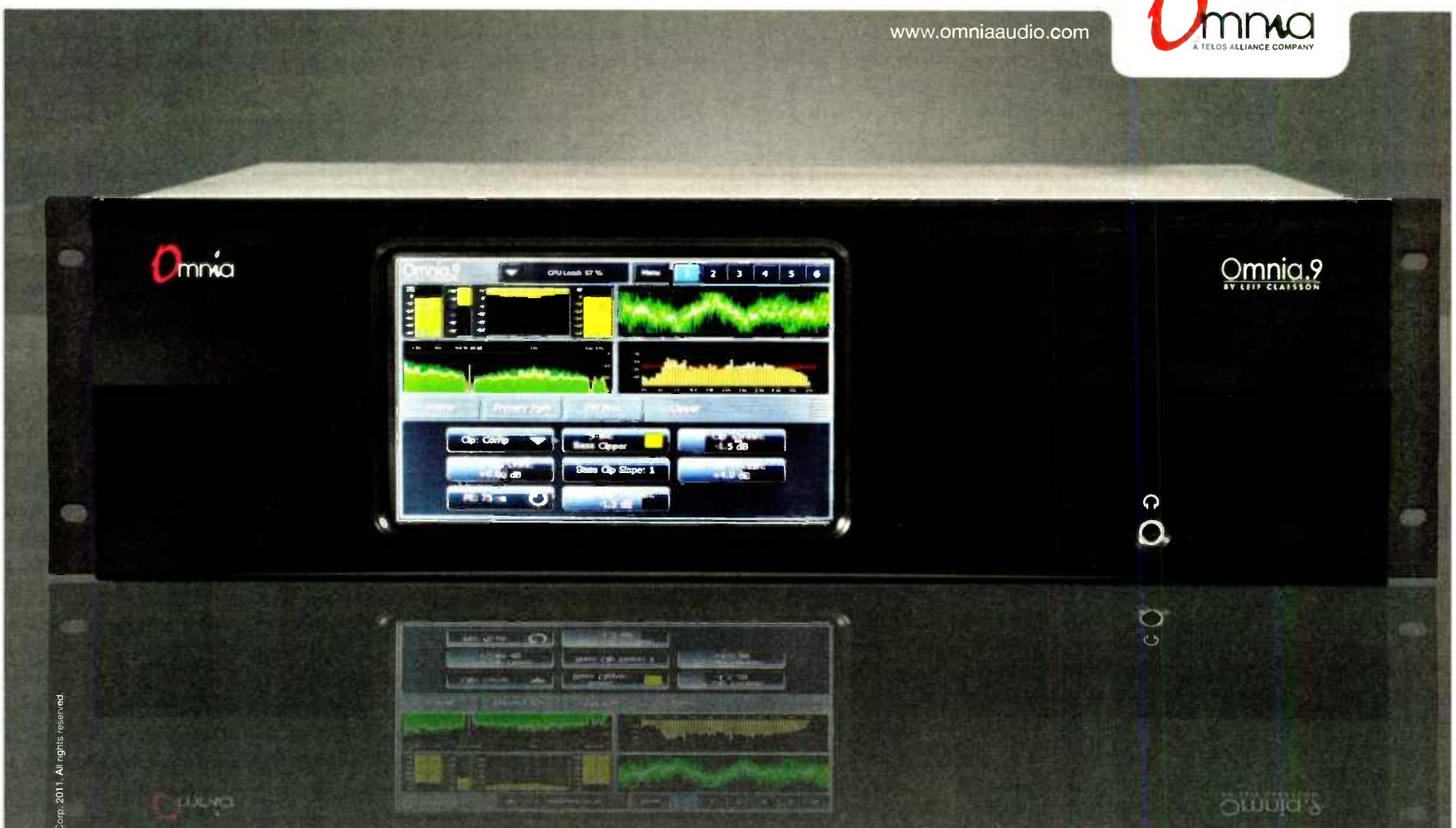

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Monterey Jazz Grooves for KUSP

StreamGuys Delivers Festival Concerts to Three Websites Including KUSP's

USERREPORT

BY TIMOTHY ORR
Marketing Associate
Monterey Jazz Festival

STEVE LAUFER
Director of New Media
KUSP(FM)

The Robert Glasper Experiment at the Monterey Jazz Festival. The event was streamed by KUSP(FM).

MONTEREY, CALIF. — The three-day 54th Monterey Jazz Festival in mid-September brought 38,000 fans to the Monterey County Fairgrounds to witness a variety of performances from newcomers and internationally-renowned artists. This year, select live performances were made available online for the first time to those unable to attend, using the power of streaming media.

Monterey Jazz Festival, in alliance with two media partners, broadcast all night-time performances from The Night Club/Bill Berry Stage via streaming media. StreamGuys, a content delivery network and streaming media provider, supported the live streams, delivering H.264 video and AAC+ audio of the live performances to viewers over three websites.

STREAMING

The live streams were viewable at the websites of Monterey Jazz Festival, NPR member station KUSP(FM) of Santa Cruz, Calif., and NPR jazz music blog "A Blog Supreme."

StreamGuys provided the Internet broadcast services from their scalable, virtualized streaming infrastructure and added tune-in widgets to the three sites. These provided direct, simple access to the live streams.

The success was almost instantly recognizable. Montereyjazzfestival.org confirmed more than 3,000 visitors from 59 countries, including approximately 350 simultaneous viewers for the Sunday night headline performance by the Robert Glasper Experiment.

KUSP has presented live Monterey Jazz Festival broadcasts to its terrestrial radio listeners for 31 years, delivering afternoon and evening performances from the Jimmy Lyons Stage, the festival's largest venue.

The Monterey Jazz Festival organization first experimented with video streaming at its Next Generation Jazz Festival, an annual event that brings top student musicians from around the United States to Monterey. The initial project comprised a single video camera focused on the stage, with a direct soundboard feed to the camera. The live signal was streamed successfully to a small online audience, and set the stage to expand for the September festival.

The main attraction in streaming media is to bring more attention to the Monterey Jazz Festival, and build larger audiences for future events. This aligns with the festival's vision of introducing jazz to younger audiences — a vision shared by KUSP.

Two key decisions were made to ensure a quality streaming experience for the September event: working with McCune Audio, the festival's long-time on-site production partner, to produce the video and audio for the live streams; and retaining the services of StreamGuys to support robust, reliable delivery of a live, synchronized video and audio stream.

KUSP's experiences with StreamGuys for on-demand Flash audio streaming gave all parties the confidence required to forge ahead.

McCune Audio set up the cameras and microphones to capture the live video and audio, ultimately delivering a synchronized feed via Wi-Fi to a Telestream Wirecast encoder. This encoder broadcasts the stream at multiple bitrates (including AAC+ audio at 300 kbps, 800 kbps and 1,500 kbps) to the StreamGuys global delivery infrastructure.

StreamGuys ingested the source signal and rewrapped the original H.264 video stream for delivery to Apple iOS systems, Android mobile devices and embedded JW Players for web streaming. The multiple audio bit rates supported adaptive bit rate streaming in iOS and Web-based platforms — ensuring that virtually anyone with a broadband or Wi-Fi connection could stream the performances.

McCune Audio's on-site production work was integral, sending a synchronized signal to the encoding point that enabled StreamGuys to deliver a smooth, even stream for online and mobile viewers. The raw video signals from three cameras were fed into a video switcher, which sent the desired camera feed to the encoder — along with the synchronized audio feed from the front-of-house mixer.

StreamGuys provided monitoring services and technical support during the broadcasts, with special focus on encoder stability, signal acquisition and Internet connectivity. General support included monitoring the incoming signal and maintaining the health of the server cluster that distributed the content. StreamGuys also provided real-time viewer statistics, allowing all three media partners to confirm the number of viewers at each site at any time.

The overall success of the event is a result of the synergy among a media company, a content delivery company and an entertainment company. Monterey Jazz Festival expects to evolve the nature of the streaming platform at future events, exploring potential subscription-based models and other services with the assistance of StreamGuys.

For information, contact Jonathan Speaker at StreamGuys in California at (707) 667-9479 or visit www.streamguys.com.

KICKANOTCH

(continued from page 24)

greets" with radio and entertainment celebrities and exclusive sponsorships.

In 120 days, our mobile app was downloaded on six continents and received approximately 35,000 downloads. Within two months of hitting the app market, CBG's mobile app brought in about $12,000 in advertising revenue and reached consumers in some 50 countries.

We at Carter Broadcast describe our mobile app and Kickanotch as the lifeline for connecting with our mobile listeners and our advertisers' consumers. Mobile tools and features create a fun and addictive experience for listeners, providing users with engaging mobile features, while delivering new revenue sources and loyal consumers.

Our applications are listened for over two hours per day per user; we have some 1,000 users per day tuning in to our app and 15,000 monthly on a regular basis.

While the future of the radio and broadcast industry remains uncertain, some things are for sure: Consumers love mobile; advertisers can engage on a whole new level with users; and Carter Broadcast Group is proving that this marketing channel is one that will be taken seriously.

For information, contact at Kickanotch Mobile at (888) 910-7226 or visit www.kickanotch.com.

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So, it's time to upgrade your studio. Hey, let's be real - it's way past time. You knew those analog consoles were only good for 10 years when you bought them... 15 years ago. They need resuscitation so often, you keep a defibrillator in your tool kit.

Still, your GM says it'll cost too much to replace them. That's when you make like MacGyver and whip out your secret weapon: Radius, the new IP console from Axia. You show him the pictures. You tell him what Radius can do, with its 4 program buses, automatic mix-minus, instant-recall console snapshots, one-touch Record Mode, convenient talkback and rugged machined-aluminum construction. You show him the built-in Ethernet ports you'll use to eliminate the miles of expensive cable in your ceilings, and you can tell he's already counting the money he'll save.

Then you hit him with the haymaker: at just $5,990, Radius costs less than you'd expect to pay for some flimsy, stripped-down, feature-free board with less brainpower than your wireless mouse. After he picks his jaw up off the floor, you get to tell the jocks about their cool new Axia consoles. And go home a bonafide money-saving, airstaff-pleasing Engineering hero, smiling with the knowledge of the envious looks you'll get at the next SBE meeting...

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AdsWizz Serves Internet Radio Service

Internet Broadcaster 'Digitally Imported' Likes Ad Insertion, Marketing Capabilities

USERREPORT

BY ARI SHOHAT
CEO
Digitally Imported, Inc.

PALO ALTO, CALIF. — Digitally Imported Inc. is one of the largest independent multichannel Internet radio services. We operate three online stations: DI.fm for electronic music, JazzRadio.com and Sky.fm, which consists of reggae, jazz, alternative and classic rock. Since 2000, we have been providing music to our online listening base around the world.

Ad placement is how we make our revenues; we selected AdsWizz as one of our ad serving platforms, due to their flexibility, exceptional support services and the momentum they are generating.

Many of our customers are viewing content online as well as listening, and it was important for our profit center to be able to insert banner ads as well as audio Web player ads easily. AdsWizz supports pre-roll as well as mid-roll video advertising, so that ads can be inserted anytime into the stream, and at differing sizes.

STREAMLINED TECH

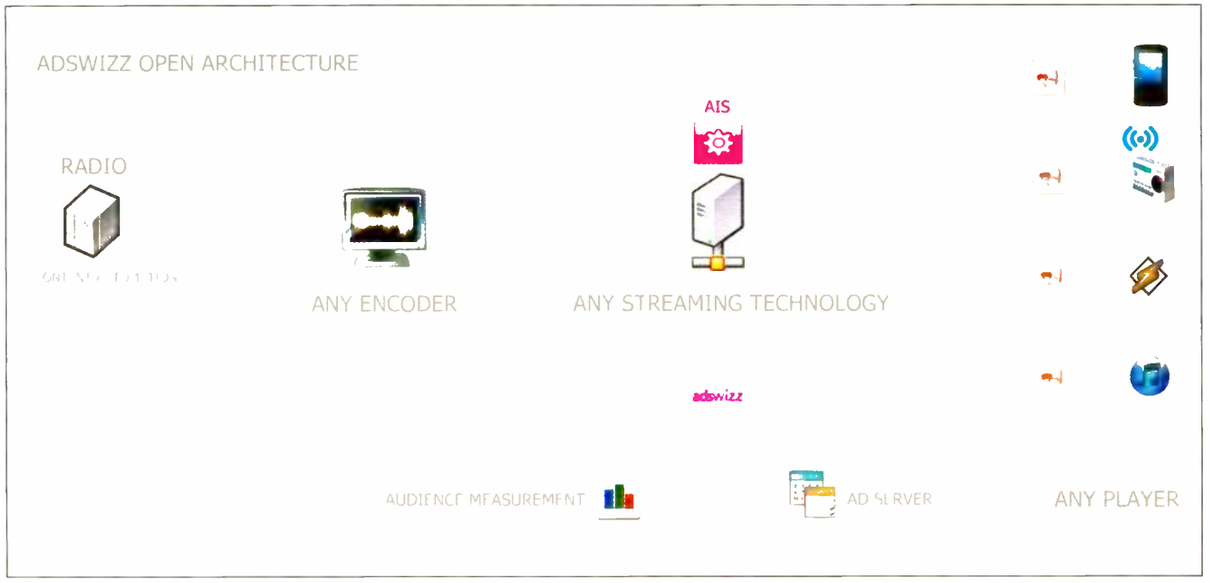
The AdsWizz system comprises several key subsystems, which optionally can combine. We enlisted the Audio Injector for Streamers (AIS) offering, working with one of our servers to communicate back to AdsWizz's server and hosted offering. Our Linux platform favors a flexible server to be able to insert ads as needed. The AIS is a hyperfast, multithreaded C/C++/Java-based system and runs easily on our Linux system, as it is platform-independent.

Because the AIS works with streaming servers that manage one-to-one connections to end-listeners, the AIS is able to inject different ads to different listeners, unlike broadcast FM, and takes advantage of one-to-one marketing. We are able to access the ad server at our dedicated site. We especially like the compatibility with multiple listening formats, including MP3 streams and AAC Plus.

It was key for us to be able to target ads to geographic regions. Our audience is located around the world and we wanted to be able to hypertarget ads based on market and other demographics. Advertisers wanted to know which markets their ads were reaching; AdsWizz provided us with demographics on browser language, operating system, bandwidth and time of day/day of week listening information. Targeting information is provided in real time in a centralized report, which includes specialized audio and video reporting metrics.

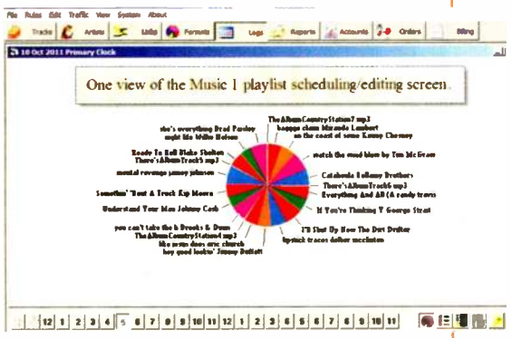
In addition, AdsWizz was able to provide us with an intermediary service of ad campaigns to occupy all available advertising slots in multiple markets. This was a key advantage as it serves to monetize our revenue for streaming media ads.

For information, contact Alexis Van De Wyer at AdsWizz in California at 408-674-4355 or visit www.adswizz.com.



TECHUPDATE

MUSIC 1 OFFERS SPECIAL FOR INTERNET RADIO



Music 1 offers professional-grade music scheduling software to Internet radio stations.

There are three packages available; Music 1 SE and Music 1 LE are buy-out software, Music 1 Version 7/Professional is offered as a lease. The company says rates are discounted deeply for Internet-only stations.

Music 1 produces music schedule files (playlists) that are compatible with playout systems commonly used by Internet webcasters.

According to Music 1, its selections schedule everything including jingles, liners, links, voice tracks, long-form programs and automation system commands. The nonmusic scheduling functions are incorporated into M1. Additional software or plug-ins are not required.

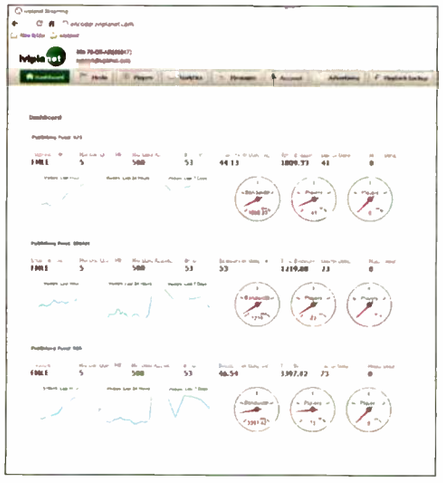
Version 7/Professional now includes the Traffecta module for traffic and billing.

Music 1 says that its software is easy to master even for novice users.

For information, contact Music 1 in Texas at (512) 392-2415 or visit www.gomusic1.com.

TECHUPDATES

IVIPLANET ANNOUNCES STREAMING PLATFORM



Iviplanet announced an upgrade to its services by launching a new streaming platform based in AAC audio and H.264 video format.

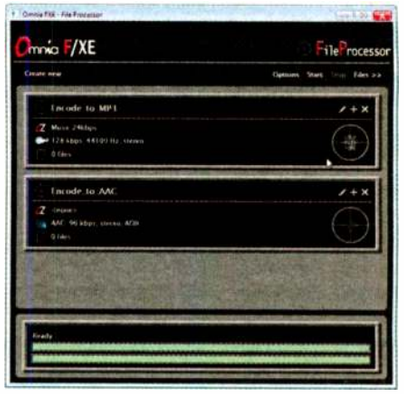
According to iviplanet the platform improves the access and redundancy to the streaming signal by implementing CDN technology and global hardware load balancers.

To process and encode the audio stream, iviplanet provides integration with Omnia A/XE software that features adjustable wideband AGC with a three-band compressor/limiter, IIF EQ and low-pass filter, and a look-ahead final limiter to prevent clipping. Resulting streams are cleaner and clearer and with more presence and detail.

The new admin user interface is developed in HTML5 for desktop and mobile access. It provides tools to give station owners total streaming control including statistics minute-by-minute with geographic location, multiple custom player creation, pre-roll advertisement support and other features. The platform also provides new mobile compatibility to stream live radio and TV to iOS devices with a custom application available in the App Store.

For information, contact iviplanet in Florida at (866) 706-6247 (70-ON-AIR) or visit www.iviplanet.com.

OMNIA SOFTWARE APP ENGINEERED FOR PODCASTING, MORE



The Omnia F/XE is a Windows file-based audio processor and encoder application. It combines Omnia audio processing with Fraunhofer MP3 and AAC codecs for file prep for podcasting or file-based streaming.

Omnia F/XE uses Omnia processing to improve audio levels, loudness and perceived quality. It is software-only, with no special interface cards are required. It is able to read PCM WAV files, MPEG Layer II and MPEG Layer III source files. Omnia F/XE can send the output file to an FTP server automatically. It also will notify the user by email if problems are detected. Logs are kept during processing so you can find the source of the problem.

Omnia F/XE will read metadata from external files and embed the information as id3 tags in the output files. The core processing and encoding uses a high-performance, low-memory footprint, native application.

You can use drop files on FileProcessor for on-demand processing and encoding, or automate work using FolderBot to watch folders for new files and automatically process them as they arrive. Multiple configurations may be defined in FileProcessor. Each configuration can process and encode the files with a different set of parameters or send the output to different locations. According to the company, this makes it easy to define and reuse project-specific configurations.

For information, contact Omnia Audio in Ohio at (216) 241-7225 or visit www.omniaaudio.com.

TECHUPDATES

BROADCAST MATRIX RELEASES NEW STREAMING FEATURES

Broadcast Matrix, a streaming and radio content consulting company in Seattle, rolled out a number of features in its streaming tools.

The new player system uses a Shoutcast-to-Flash conversion system allowing a single MP3 Shoutcast/open source stream feed to power its redesigned player as well as feed other alternate listening sources including direct playback on mobile Apple and Android devices, Windows Media, Real Media, WinAmp, iTunes and Quicktime players and Internet radios.

The player system includes social media integration for Facebook and Twitter, including a live Twitter stream feed, current song plus last 10 played with Amazon affiliate click-thru on each song so clients can create revenues from song purchases using a free Amazon affiliate account.

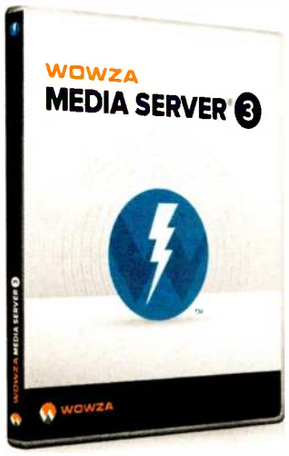
The system also features webcam and live stream video feed options, for a studio webcam or live video streams from remotes or events. Audio and video pre-roll advertisements are managed with a few clicks. Broadcast Matrix says it does not share revenue, or put national ads on the players or in pre-roll ads, so clients can sell and keep 100 percent of the revenue.

A separate on-demand player is available for station websites with its own built-in audio and video pre-rolls and banner ad capability. On-demand can be used to place streaming audio or video content on stations' websites to complement the live stream player and generate more local sales opportunities.

These features can be activated or deactivated with a few clicks from a new, Web-based station control panel.

For information, contact Broadcast Matrix in Washington state at (206) 774-9196 or visit www.broadcastmatrix.com.

WOWZA INTRODUCES MEDIA SERVER 3



Wowza Media Server 3 is the next generation of the company's software platform for streaming live and on-demand audio or video simultaneously to multiple clients and devices.

According to Wowza the platform simplifies media streaming while being more cost-effective, and with a variety of what the company calls AddOn components. It also helps stations and other media enterprises implement revenue-enhancing features such as time-shifted live playback and content protection for premium services.

New capabilities include an integrated live adaptive bitrate (ABR) transcoding enabled by the Wowza Transcoder AddOn that eliminates provisioning complexity typical of adaptive bitrate streaming, reduces needed access bandwidth by up to 80 percent and enables better use of network resources such as routers and switches.

Wowza Transcoder takes advantage of standard hardware to convert incoming live streams from encoders, IP cameras, IPTV headends and other live sources into multistream sets for Flash RTMP and HTTP Dynamic Streaming (HDS), HLS, smooth streaming and non-adaptive delivery for RTSP/RTP and MPEG-TS.

Also included is delivery of live linear streams as time-shifted services with the Wowza nDVR AddOn. This enables Wowza licensees to increase revenues and viewer engagement. Wowza nDVR reduces costs by minimizing network storage requirements and simplifying the delivery workflow for all screens.

Media Server 3 support for multiple studio-approved DRM platforms provides content owners and delivery networks with robust, secure streaming with on-the-fly encryption for both live and on-demand content to any device with a choice of digital rights management platforms, including Verimatrix VCAS and Microsoft PlayReady.

Wowza says its unconstrained per-server capacity with no CPU core limitations means media publishers can take advantage of the highly-threaded multicore hardware for higher streaming efficiency and cost-effectiveness. It promises flexible licensing choices for any application and budget, including monthly, perpetual and daily subscriptions.

For information, contact Wowza Media Systems in Colorado at (720) 222-4744 or visit www.wowza.com.

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It's free and it has been expanded. The only cost is to keep us informed as to how the system is performing and let us know how you are using it. DIY-DJ, is a Linux based radio automation system and now sports a record scheduler (DIY-DJ-RECORDER) which allows you to schedule the recording of a network or any other program for replay later as well as a basic logging system. Beside these additions the system schedules music, does voice tracking (ALWAYS hit the vocal), create a shell, live assist, exact time events, join satellite feeds, automated temperature announce, do unattended remote events and more. Call (406) 679-0527 or email krws@digitaldevelopment.net for a copy today.

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Wanted: old analog automation equip, filters and EQ, tube amps, reel to reel, cart machines and parts. Pacific NW area. 503-493-2983.

CONSOLES/MIXERS/ ROUTERS

WANT TO BUY

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WANT TO BUY

RCA 77-DX's & 44-BX's, any other RCA ribbon mics, on-air lights, call after 3PM CST, 214 738-7873 or sixtiesradio@yahoo.com.

RADIOWORLD
Equipment Exchange

MISCELLANEOUS

WANT TO SELL

Engineers, Inventors, have an idea for a new product for radio and tv and web broadcasting? Established broadcast equipment company with a good track record and reputation wants to help you develop your product. Send your resumes to NewBay Media, 5285 Shawnee Rd, Ste 100, Alexandria, VA 22312. Attention: Caroline Freeland

Radio broadcasts of Major League Baseball, NFL, and some college football games that are on cassette tapes, approx 100 to 125 games, time period of entire collection os from the 1950's – 1970's, BO. Must purchase entire collection. Contact Ron, 925-284-5428 or ronwtamm@yahoo.com

ROTRON BLOWERS AND PLATE BLOCKERS, new & rebuilt for Elcom, Harris, CCA, CSI, McMartin. Goodrich Ent. 11435 Manderson St. Omaha, NE 68164 402-493-1886 Email: CGoodrich@tconl.com

WANT TO BUY

Collector wants to buy: old vintage pro gears, compressor/limiter, microphone, mixing consoles, amplifiers, mic preamps, speakers, turntables, EQ working or not, working transformers (UTC Western Electric), Fairchild, Western Electric, Langevin, RCA, Gates, Urei, Altec, Pultec, Collins. Cash - pick up 773-339-9035.

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

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

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

Looking for a broadcast excerpt of a SanFrancisco Giant's taped off of KSFO radio from 1959, interviews with Willie Mays, Dusty Rhodes & some play by play excerpts, also features a homerun by Willie Mays and Felipe Alou stealing second base, running time is 18:02, also looking for SF Giants games and/or highlights from 1958-1978 also taped off KSFO Radio. Ron, 925-284-5428 or ronwtamm@yahoo.com.

Looking for KFRC signoff radio broadcast from 1930 Andy Potter, running time is 0:22 & also the KLX kitchen the program guest is Susanne Caygill, a discussion of women's affairs with a long promotion for Caygill's appearance at a local store. Anne Truax, Susanne Caygill, running time is 13:44. Ron, 925-284-5428 or email ronwtamm@yahoo.com.

Looking for KTIM FM radio shows from 1981-1984 if possible unscoped. R Tamm, 925-284-5428 or ronwtamm@yahoo.com.

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WANT TO SELL

Caterpillar Generator Set, 1.12 megawatts, Sales Model 3512 & Piller UB 1000R, 1000KVA UPS, incl Piller UPS Output Breaker, Maintenance Bypass Breaker, Control Cabinet, xlnt cond, located in Homstead, FL, pick up or owner will ship units, items avail separately or as a pkg. Photos and additional info avail. Please submit offer for consideration. billelliott@3dsj.com.

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TRANSMITTERS/ EXCITERS/ TRANSLATORS

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Triple Crown! Sports guy with vast knowledge of teams/games, including PBP/stats and analyst. Strong work ethics/great attitude. Trustworthy, dependable and punctual. Chase, 469-396-6915 or lynchc03@hotmail.com.

Extremely knowledgeable and articulate racing writer/talk show host Adam Amick is available for shows, correspondent, features, etc. Check out www.bleacherreport.com for samples. Call 214-384-5812 or email: adam@rubbinsracingshow.com.

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Demystifying the Vorsis 31-Band Limiter

The Subtle Audio Details Being Revealed By The Limiter Have Always Been There

COMMENTARY

BY JEFF KEITH

In 2007 Wheatstone Corp. created our Vorsis development team and asked us to create new audio processing technology that could bridge the gap between loud and clean. One of our team's inventions was the world's first 31-band limiter.

THE AGC COMES FIRST

Our philosophy is that the on-air processor's multiband AGC has one job to do: keep the radio station's signal consistent in volume and spectral balance as source material changes. The Vorsis SST-enabled AGC deftly accomplishes that task with its invisible level and spectral management. With that now out of the way, the following peak limiter has only one thing left to do: control peak energy.

Wondering if it was possible to make a peak limiter just as clean and invisible as the SST-enabled AGC, we decided to find out.

PERCEPTION VS. REALITY

One surprise in human hearing research was that weaknesses of our auditory system can be leveraged to fool the ear into thinking it hears better sound than technically exists (aka, "how can it measure so bad and sound so good?").

In fact, one need only look to the complex technologies behind perceptual codecs like AAC and MP3 for hints on how to hide things from our ears. One of codec technology's better-known secrets is managing the audio spectrum in slices, or frequency bands, that are simply too narrow for our brains to dissect.

Audio researchers tell us that our auditory system can be modeled as a filter bank with 25 overlapping bandpass filters; the 25 "bands" are known as "critical bands." What is important to remember about them is that our ears can't tell that there are separate signals inside a band whenever they occur simultaneously (see Fig. 1).

It gets even stranger than that.

When there are audio signals present in different critical bands each signal is heard independently, as long as the signals are loud enough and far enough apart in frequency to stay above and away from an adjacent band's asymmetrical masking threshold (Fig. 2).

If an audio signal is soft enough in level or close enough in frequency to sneak under the masking threshold of an adjacent band, that signal is masked. It is rendered inaudible. Even "Golden Ears" can't hear it (Fig. 3).

The ability of audio signals to mask each other under certain conditions reveals important human psychoacoustic behaviors that we were able to tap into for creating our high-performance audio limiter.

SLICING THE PIZZA

When audio is divided up into numerous frequency bands, the energy within

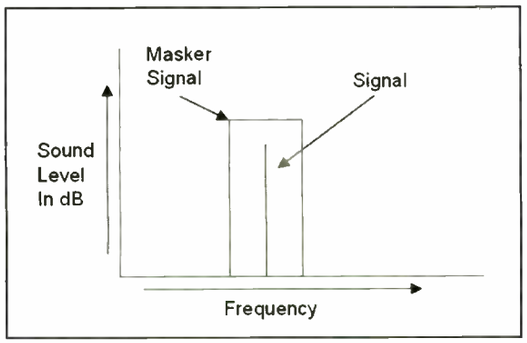

Fig. 1

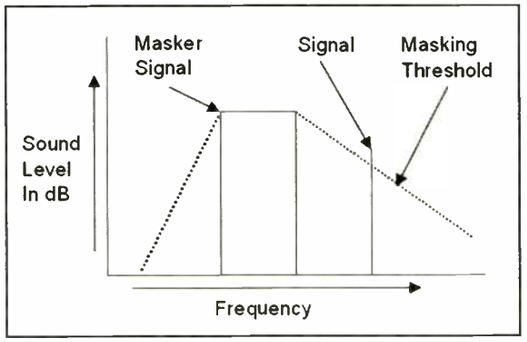

Fig. 2

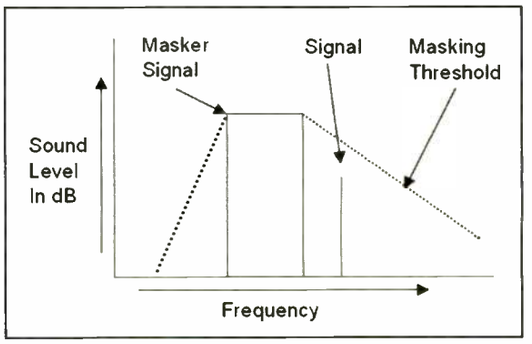

Fig. 3

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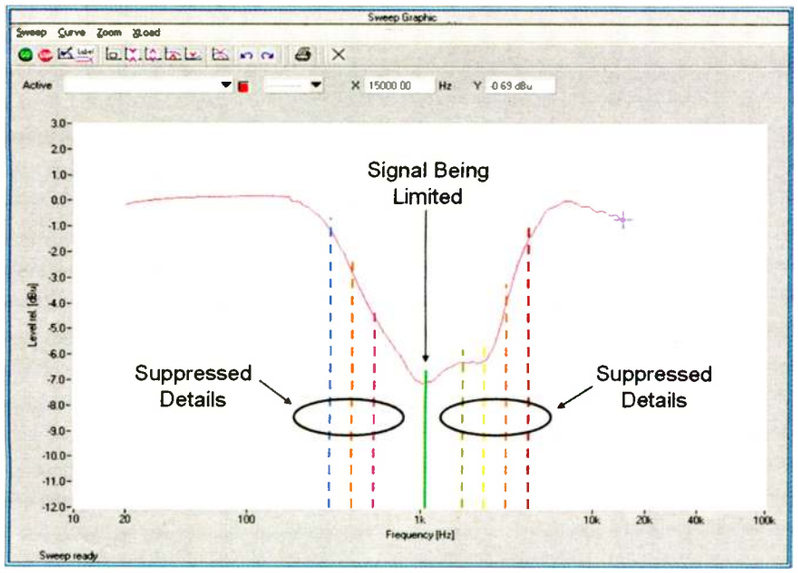


Fig. 4

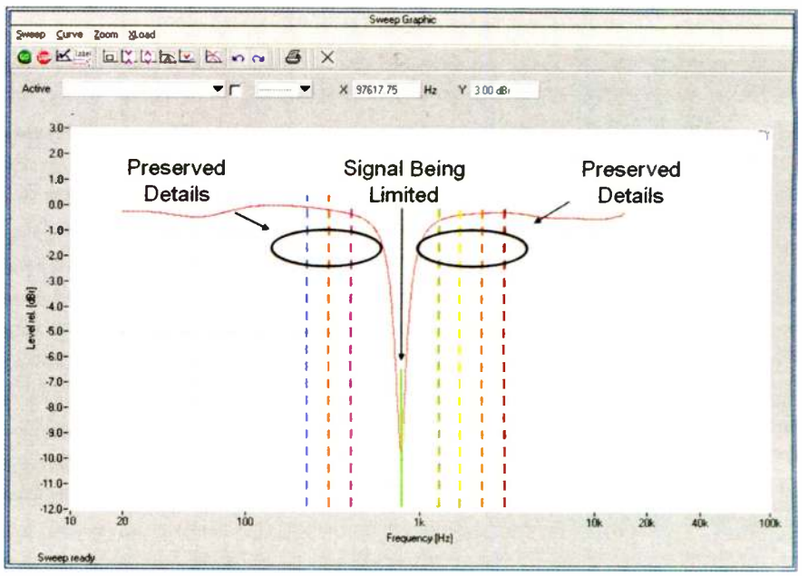


Fig. 5

in each band is reduced according to how many bands the audio is divided into. The more bands there are, the less audio there is in each band.

Probably not intuitive in Fig. 1 is another subtle clue: When there are 25 bands or more, the "sound of processing" within an individual band is also inaudible because it can't break the "in-band, multi-stimulus" masking rule. We decided that 31 limiter bands centered on ISO standard 1/3 octave frequencies would be a good place to start for building our limiter.

MORE LIMITER BANDS: BETTER?

Limiters with only a few bands are often seen with more than 10 dB of limiting depth. With 31 limiter bands, there is no longer a need to drive the limiters deep into gain reduction to create consistency and loudness. In fact, with 31 bands, only light limiting, perhaps 2 dB to 4 dB per band, is all that's required. Such shallow limiting makes it *impossible* for the limiters to create a smashed and fatiguing on-air sound.

A BETTER LISTENING EXPERIENCE, AND A SURPRISE ...

When implemented correctly, a 31-band limiter can manage the energy of electrical signals without our ears noticing that any work has been done. But there is another secret to reveal, and it's the one everyone notices first: how the limiter uncloaks fragile audio details often turned into incomprehensible mush by other processors' limiters.

In a conventional multiband limiter, the broadness of each limiter band (see Fig. 4) allows the act of limiting to affect a large portion of the audio spectrum, reducing signals that likely have no need to be reduced. In those limiters, quieter details coexisting in the band but below its limit threshold are pulled down along with the stronger signals, often to below audibility. Many users find themselves driving the multiband limiter even harder trying to get the lost detail back.

Conversely, as Fig. 5 shows, each band of a 31-band limiter is quite narrow. Note how little audio spectrum is affected by one limiter band. There is something even more important to notice: how the high selectivity of the limiter's crossover allows nearby audio detail to be completely untouched. It is all still there. This is completely different behavior from the way multiband broadcast limiters with only a few bands work. It sounds different too.

HOW DOES A 31-BAND LIMITER SOUND?

When a band of a 31-band limiter reduces its gain, two things happen — one expected, and one a surprise.

The expected thing is that the signal being limited's level has been restricted to the band's limit threshold, just as in any limiter.

The surprise is more interesting. The act of limiting a signal in one narrow band psychoacoustically (not electrically) raises the level of subtle audio details residing near to, but not inside of the band in limiting and its masking threshold.

The mechanism for this effect may need an explanation.

Even though the audio signals in the bands adjacent to the one in limiting have not undergone any modification, our brain has decoded it very differently and hears subtle details in the program material not often heard through other broadcast audio processors. Exactly why this effect is heard could be open to speculation. However we've come to the conclusion that the mechanism for it is probably quite simple:

The audio in the band undergoing limiting and the audio in nearby limiter bands not being limited have undergone a change in their relative gains. Our brain doesn't notice the effect of limiting because it is constrained to such a narrow band. But there's a perceived increase in the level of the signals in the "non-limited" bands, even though their electrical amplitudes have not been changed. This is entirely opposite behavior from what limiters with only a few bands do to the audio when they carve up huge chunks of the audio spectrum just to limit a single isolated signal.

The magic is that there is no magic, only science. The subtle audio details being revealed by the 31-band limiter have always been there; they are "part of the song," if you will. The first time people hear a Vorsis processor with a 31-band limiter, the openness of the audio and its vivid detail catch them off guard, just as the effortless and clean acoustical loudness gained by the 31-band limiter does, without having to drive either it, or the final clipper, "hard."

SUMMARY

In the beginning our goal was to return the lowly peak limiter, a device intended to manage peak energy and then get the heck out of the way, back to its roots. Believing that an audio limiter should be seen and not heard, we went about creating the world's first 31-band limiter. People can't believe that they won't hear it until they don't hear it.

Jeff Keith, CPBE NCE, is Vorsis senior product development engineer for Wheatstone Corp.

READER'SFORUM

FORGETTING WHAT'S IMPORTANT

Regarding Buc Fitch's blog post about emergency planning, "If and When It Gets Really Bad" (radioworld.com, keyword tsunami):

I was reminded of a previous outfit for which I worked. I was involved in planning contingencies for whatever disaster might wipe out the studios, containing five FM stations. We called it a Business Recovery Plan, or BRP.

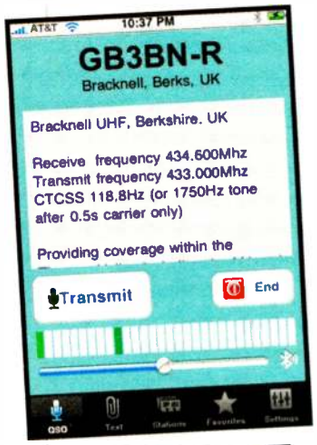
I noted that a large portion of our listeners and clients were line-of-sight to a particular tall building. This structure is on an area of land somewhat raised about the surrounding river valleys. So I suggested situating our emergency studio, or at least a transmitter, in the building, with our antennas on top of it.

Upper-level management was furious and rudely shunned me. Why? In addition to five FMs, the firm owned a cellphone company. The building I had suggested as a BRP site was owned by the owner of a rival cellphone company.

Epilogue: About a year ago, the owner of that tall building sold off their cellphone business.

Paul Sagi
Kuala Lumpur, Malaysia

READER'SFORUM



Apps, from top: Audio Tool, EchoLink, RadarScope and SPLnFFT.

APPS FOR THE RADIO ENGINEER

Great article ("Engineer, Apply Thyself," July 13). I appreciate the time Laura Mir took to get together that bunch of apps.

Here is one you might look at. It is called Audio Tool by Performance Audio. It has a decibel meter and converts your phone into a mic. Really neat if you are doing sound and need a quick talkback. There are other features including an audio atlas, especially helpful when the boss needs an explanation of what you are really doing.

Randall F. Miller Jr.
Broadcast Computer Technician
Commonwealth Media Services
Harrisburg, Pa.

HAM AND MOCHA

For virtual network computing there are several apps. I use Mocha VNC Lite; I know some people use VNC Viewer by RealVNC. It's helpful to log in to our Burk AutoPilot computer and check on sites or troubleshoot problems as needed.

There is also EchoLink by Synergenics, for licensed hams. I noticed Ham Helper and Echolink allow you to log in to other EchoLink repeaters around the world and talk to people.

For those of us who have to drive long distances to our transmitter sites, there is an app called GasBuddy. It finds my location and tells me where the closest gas is, or I can sort it by cheapest gas.

Amanda Alexander, CBT
Chief Engineer
Crawford Broadcasting
Denver

WEATHER IS FUN

Laura, it was a pleasant surprise to see your iPhone apps article. I've recently returned to the world of radio broadcast engineering after a hiatus; during that time, I've become an iPhone user and always thought of the wonderful applications the device would serve to the broadcast engineer.

Two apps I really enjoy, as they pertain to weather:

RadarScope by Base Velocity: A great weather radar app for keeping track of precipitation wet or icy, and dangerous storms. Shows your location on the radar. The weather geek can also purchase supplementary information from AllisonHouse for even greater information and details.

Weather Alert USA by Softpeas: Another great weather app; it provides current weather information and more importantly pushes National Weather Service alerts to the phone. Great for an engineer who would like to get the "heads up" before the storm arrives. Can be configured in "silent mode," allowing tired engineers to get a good nights rest. It is highly configurable and can be used as a troubleshooting diagnostic for EAS alerts.

Mike Friedman
Richmond, Va.

APP FOR AUDIO METERING

One my go-to tools is SPLnFFT, an audio metering app for iOS by Fabien Lefebvre. It combines real-time spectral analysis, multidimensional amplitude measurement and data export with an easy-to-use UI and a nice price.

In the same issue, you published Curt Yengst's "Audio Software on the Cheap." One of my preferred DAWs is Fast Edit, which is indeed fast, inexpensive and thankfully lacks the crowded UI and feature bloat of many similar products.

Oliver A. Masciarotte
Principal
Seneschal
San Francisco

CAP DELAY? NO PROBLEM

Unlike some of the sentiments reported by Leslie Stimson about the rolled-back EAS CAP compliance deadline, I have no complaint with having installed equipment within the confines of the old September deadline.

First, a summer thunderstorm took out one of my units necessitating it be replaced. So I actually bought replacement Endecs for my entire cluster before the rush and was able to take delivery within a week.

Second, the ability to receive email reports from the new digital Endecs whenever they've handled an event means I have continuous proof of their proper operation and station compliance. I can even keep track of the Endecs that are not colocated under the same roof.

Third, when changes need to be made, I can do so for all of the units in my cluster from the comfort of my office desk.

And finally, I disagree that the November test, combined with setting up for CAP compliance, was going to be a problem requiring a further delay in the rollout of the new boxes. It was more important to get the new hardware out there installed with levels adjusted for reliable operation, easy to do before the November nationwide EAN test, than to worry about the final form of the CAP network. That can be phased in over time as long as the new hardware is already in place.

If anything, the new features of devices like the Sage Digital Endec have made it easier to set up for and monitor the results of the November test. I could have emails with MP3 audio files from all of my stations waiting in my in box immediately after the test. How neat is that?

Ira A. Wilner
Monadnock Radio Group
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The author is a contributor to Radio World.

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"A fast paced station needs a system that can keep up and is easy to use. Op-X gives us the tools we need to deliver the sound Houstonians have come to expect from KRBE."
-Leslie Whittle, Program Director
KRBE, Houston, TX

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

AUTOMATION

SIMPLE • POWERFUL • REDUNDANT

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

Op-X
RADIO AUTOMATION

Broadcasters General Store
352-622-7700
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CLEANUP
YOUR ON-AIR SOUND & IN THE RATINGS

AirAura's **31-Band Limiter** Delivers FAR More Clean Sound Detail than ANY Other Limiter on the Market. Here's Why This Is Important...

In a traditional processor with 5-band limiting, selecting 3 bands results in 60% of the audio being affected. It's clear to see how such a coarse adjustment can adversely affect the overall audio.

In the AirAura, with 31-band limiting, only the narrow bands that need limiting are affected (just 9.5% of the audio spectrum). This allows MUCH more natural sound and the ability to tune-in your audio with near surgical precision.

In a side-by-side listening comparison, you'll hear that this difference is HUGE. 31-Band Limiting is also relevant because it's a natural division – each band represents one third-octave of the audio spectrum. This makes processing more natural and more musical.

AirAura has a lot of other tricks up its sleeve, all of which reduce or refine the amount of processing to reduce distortion, artifacts and overblown sound. All we ask is that you listen...we know you'll be blown away.

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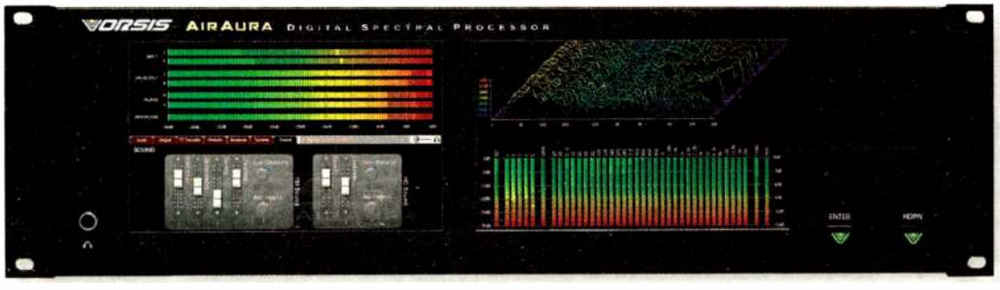

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