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INSIDE

ENGINEERING

• The Eimac 4CX300A has been discontinued. What are your options? — Page 10

NEW MEDIA

• James Careless tries out the Grace Solo Wi-Fi Receiver, part of our series about consumer devices that are expanding the definition of radio. — Page 12



MAKE THE CONNECTION

• Buyer's Guide explores audio transport and STL systems. — Page 18



Chris Serani

OPINION

• Goonie Boxes, First Phones and Mary Day Lee. — Reader's Forum

Public Radio/TV Think 'New Media'

Participants Plan a Technology Backbone to Exchange Content, Enhance Websites

BY RANDY J. STINE

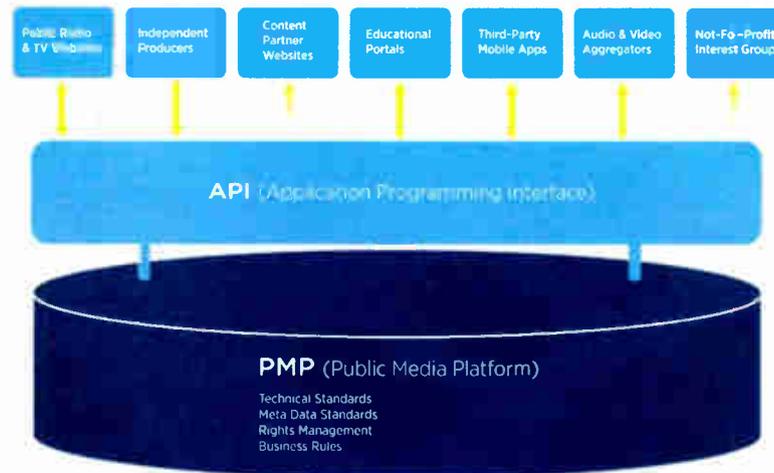
Public radio and television broadcasters and public media producers have begun an effort to develop a seamless interface to share and distribute online and mobile content. The proposed digital distribution network is called the Public Media Platform.

Planners say demand for digital content is increasing as radio and TV stations launch additional interactive platforms and add enhanced content to their websites. PMP, they hope, will give stations and producers a low-cost means to distribute their online content; it also will serve as a technology backbone to enable systems that are now incompatible to connect and allow for access and flow of content.

Program producers and distributors American Public Media, NPR, Public Radio International and PBS are spearheading this effort. Public Radio Exchange, public media's digital network allowing stations to share files for over-the-air broadcasting, is part of the group. The Corporation for Public Broadcasting is providing about \$800,000 for the first six-month devel-

(continued on page 3)

PUBLIC MEDIA PLATFORM: Draft Concept



BTC Senses Renewed Interest in Radio

Paul Brenner Makes His Data Pitch To Carmakers and Data Providers



Paul Brenner

Members of the Broadcaster Traffic Consortium — pitching their aggregated signals as a data delivery platform, in

NEWSMAKER

competition with Clear Channel — are now putting more emphasis on building out the HD Radio infrastructure.

According to BTC President Paul Brenner, the consortium is receiving another look from carmakers and data service providers who believe HD Radio is the most economical way to get data into cars — a better alternative than mobile broadband

(continued on page 6)

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DIGITAL PLATFORM

(continued from page 1)

opment stage. The six partners, which announced the plan in June, together kicked in another \$200,000.

"The point is to create an infrastructure to allow all public broadcasters to create websites to meet their audience's needs," said Kinsey Wilson, senior vice president and general manager for NPR Digital Media.

"This will be a way for public media to share content, like audio, text, photos and video, across digital platforms in the digital space."

'HUGE' POTENTIAL

PMP is based on public broadcasting's Application Programming Interface that simplifies the task of sharing and combining content, Wilson explained. Stations would be able to direct content into PMP from their existing content management systems and retrieve content via API over Internet connections. Stations will have access to published protocols that allow

common interconnection system.

"Broadcasters are making investments in digital media. The challenge has been to pull information off one system and load it to another. People build websites with different code that limits compatibility. Content winds up being locked up in individual systems," Wilson said.

"PMP creates that interface to allow public media to combine their content in a shared platform and make it more widely available."

Tim Olson, vice president digital media and education at KQED public radio and TV in San Francisco, said PMP will give individual broadcast stations the ability to deliver more diverse media content to websites and listeners' mobile devices.

"Just as satellite infrastructure allows us to share broadcast content, [PMP] is for the Internet age. We will be able to pull content from PMP and present it on KQED Interactive," Olson said.

KQED Interactive develops content and applications for digital platforms

(continued on page 5)

PMP ADVISORY COUNCIL

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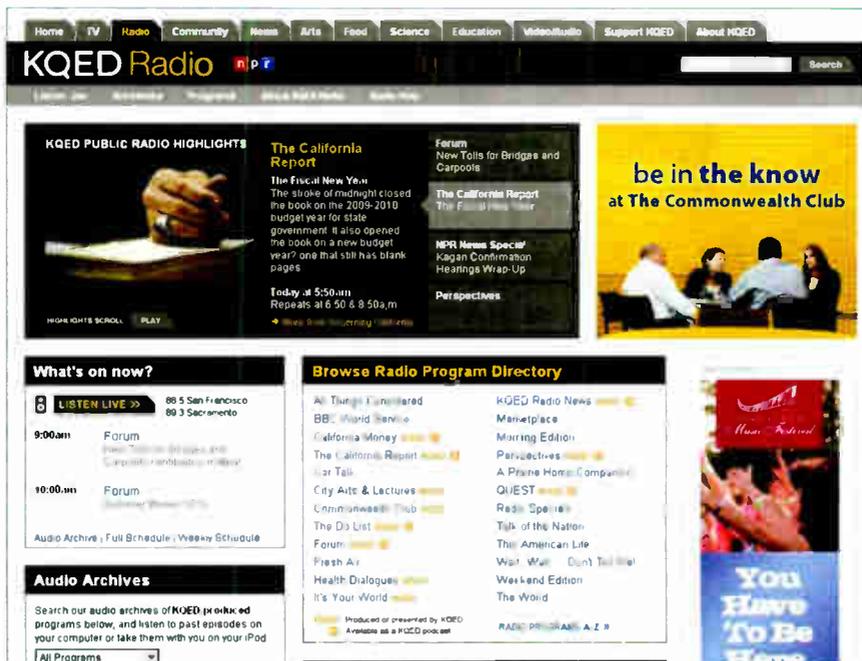
computer programmers to connect one system to another easily.

"This is not a brand-new idea. We've talked about similar things in the past," Wilson said.

"However, the level of interest from our broadcast partners is new. The level of attention radio and TV stations are paying to their digital space has grown tremendously. The potential is huge."

PMP is not designed to serve a station's distribution needs of over-the-air broadcast materials, planners said. The Public Radio Satellite System and its content management program, ContentDepot, will still serve as public radio's content management and distribution system, just as the Next-Generation Interconnection System will continue to be used in the public TV arena.

NPR, which is managing the grant money, has been searching for ways to connect producers and public stations to share online content. Wilson said that chore was made more difficult without a



This website is produced by KQED Interactive, the station's third media platform.

'This Really Doesn't Pass the Smell Test'

You Can Voice Your Opinion on Our Website; These Readers Did

I love getting feedback about stories. Increasingly popular is the Comment function at radioworld.com:

Regarding a Workbench item about using old WE11C repeat coils: "I discovered these great transformers years ago. Usually left behind by telco when used for broadcast audio over phone lines. I used one for a 200-yard audio run at a remote broadcast. I currently use one to isolate my Moseley 1600 remote controller from the phone line on a mountaintop. A couple MOVs on the transformer input and output has saved me a lot of problems."

To a news story, "Court Sides With FCC in Ownership Form Dispute": "So this is what's important to the FCC nowadays ... ensuring it has [Social Security numbers] for all commercial station owners so it can keep better track of race and gender, under pain of enforcement action and potential loss of license. Oh yes, that and grabbing UHF spectrum from broadcasters and maybe even the U.S. military to auction off to ... whom?"

About a Leslie Report item commenting on an iBiquity official saying HD Radio had reached "critical mass" in the aftermarket auto sector: "Aftermarket junk comes and goes. Closets are full of the stuff. To even think it's a benchmark to judge a product is ludicrous — but iBiquity and RW will do it anyway."

"BMW and Jag are the only two manufacturers to include HD Radio as standard equipment. The remaining suspects have made HD an option as an add-on. So how many new car buyers are demanding their HD? Not many. I have more fans on Facebook."

In response to a Leslie Report item on a BIA study documenting the uptake and subsequent plateau of the HD Radio rollout: "iBiquity pegs the number of HD radios sold as 2.5 million, since 2002. How many iPhones/smartphones have been sold in just months? Millions, not to mention iPads. ... Even though you're a part of the ra-ra HD crowd, this technology is a complete failure."

"...[P]ublic radio stations ... have

been subsidized tens of millions of taxpayer dollars to install [HD Radio]. Public airwaves controlled by a monopoly interest, subsidized in large part by public dollars — this really doesn't pass the smell test."

About a news analysis by T. Carter Ross, "Signs of Traction for Global Digital Radio": "If there exists a better audio broadcasting system than analog FM, I haven't seen/heard it yet."

"HD is proprietary and therefore must not succeed. DRM would be nice to have here, especially on a new band such as 76 to 88 MHz."

"Welcome to 2010! Digital radio is here, and it's not going anywhere."

To a news item about the fall Radio Show: "If no free exhibit pass ability, expect an engineering attendance dud."

Responding to a Ford official interviewed in RW: "I completely agree with [Julius] Marchwicki's point that in-car Internet radio is not the 'death' of ter-

**FROM THE
EDITOR**

Paul McLane



restrial radio. In fact just the opposite — in-car Internet radio can only contribute to the growing success of local radio broadcasters."

On a commentary by Candace Clements on "Why We Need a New Public Media": "I believe Ms. Clement and her co-authors' proposed remedy of more government intervention, regulation and taxation is the wrong tactic to promote more intense local and investigative journalism. ... If traditional news outlets can't supply the product their audience seeks, let them fail."

About a news item, "NAB Calls for 'Modest' Ownership Reform": "The only thing that will save radio is if it gets back in the hands of local, creative, caring people. More consolidation will just hasten radio's death spiral."

To a Leslie Report item about boomboxes: "What a blast from the past — and might explain my middle-age hearing loss!"

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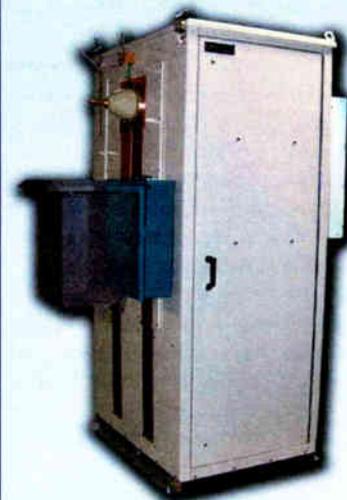
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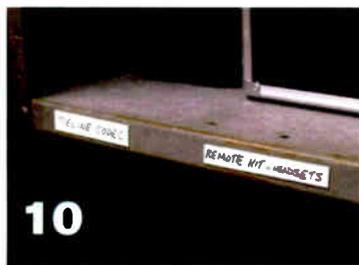
AUGUST 1, 2010

NEWS

| | |
|--|---|
| Public Radio/TV Think 'New Media' | 1 |
| BTC Senses Renewed Interest in Radio | 1 |
| 'This Really Doesn't Pass the Smell Test' | 4 |
| News Roundup | 5 |
| Who's in the BTC, How It Works | 8 |

FEATURES

| | |
|--|----|
| Workbench: When Your Tube Goes Down the Tubes | 10 |
| Radio Goes Solo With Grace | 12 |
| Marketplace | 16 |

**BUYER'S GUIDE**

| | |
|---|----|
| Bridge-IT Solves T1 Problems | 18 |
| AVC-Group Jumps on the PungaNet | 20 |
| Comrex Delivers From Amsterdam | 22 |
| APT Oslo Scores for KRKO | 23 |
| Go Radio Goes With Harris | 24 |
| BlueKeeper Keeps Users 'Out of the Blue' | 24 |
| Antenne Bayern Chooses Zwcom | 29 |
| Barix Enables Land/Air Union for Skyview | 30 |

**OPINION**

| | |
|---|----|
| EMF, Prometheus Reach an Understanding | 33 |
| Reader's Forum | 34 |

DIGITAL PLATFORM*(continued from page 3)*

and mobile devices. It hosts online polls, podcasts, blogs and other items of interest, functioning as KQED's third media platform — delivering content specifically acquired and produced for the Web.

"This will provide us a robust system to share material online," Olson said. "We view digital and new media as a parallel to our air. We envision presenting a mix of local and national content seamlessly via the website. It will also allow us to upload locally produced content for other public media to share."

GETTING A WIDER AUDIENCE

Public media producers like "Prairie Home Companion" distributor American Public Media see PMP as a means to leverage their content to a wider audience, said spokesman Bill Gray.

"PMP will allow us to further our mission to expand perspectives and engage communities across the country through our programming," he said. It will likely result in some cost savings for par-

NEWS

ticipants, but more importantly serve as a tool to fuel broader access to public broadcasting content, he said.

"As we invest in digital media we need figure out how to drive more audience engagement with our websites and interactive outlets. PMP will be the bus that drives the content," Gray added.

Jason Seiken, senior vice president of interactive, product development and innovation for PBS, said, "The idea is to link various new media publishing systems across public radio and television stations."

PBS already has a video platform that allows 156 local PBS stations to integrate national video with local video on station websites, said Seiken. PMP extends the concept. "PMP will integrate radio and TV public broadcasters and give them a low-cost way to share online content."

The PMP leadership team, consisting of the six founding partners plus an advisory council, will focus this year on three specific pieces.

"We will have to work through the business rules regarding sharing of content," Wilson said. The leadership team must evaluate costs and scale of the

system. "We also want a very tangible prototype capable of showing what PMP is capable of. It will be a public demonstration, so that anyone from CPB to stations to the general public can observe results in action. It will provide CPB with a more detailed look at the mechanics of the system 'under the hood.'"

Wilson described a multi-year process. "Rather than building it end-to-end and launch it, we want to build it incrementally. This will likely be a two- to three-year undertaking. Realistically, we will have some aspect of PMP up and running in the first year."

He expects PMP to help foster innovation spurring others to approach developers with ideas for mobile apps.

"The availability of API [Application Programming Interface] is what caused Google to come to us and develop an Android app." Android is Google's operating system for mobile devices. "We hope to encourage more of this. We now have a road map in place for computer programmers and others to easily write code to easily pull information from our digital platform — a public protocol if you will."

NEWS ROUNDUP**NAB SUPPORTS 'MODEST'**

OWNERSHIP REFORM: The NAB supports what it calls "modest" reform of media ownership rules, including elimination of cross-ownership rules and reform of the television duopoly rule. NAB also supports relaxation of local radio restrictions "in light of the increasingly fragmented audio marketplace and the financial challenges facing local stations," said the trade group in comments filed with the FCC.

CLEAR CHANNEL SEEKS RELIEF:

Clear Channel pushed to eliminate local radio ownership limits, telling the commission the agency can't demonstrate their necessity. At the very least, says Clear Channel, the agency should modify current limits to create two new "tiers" increasing from the current eight to 12 the number of stations a single entity can own in the largest markets, and from eight to 10 in markets that have 55 to 64 stations.

OPPONENTS SAY 'NO': Seven public interest groups including Media Alliance, Common Cause and the Prometheus Radio Project say local radio ownership limits should be more stringent to foster the diversity of viewpoints available to the public and improve local service.

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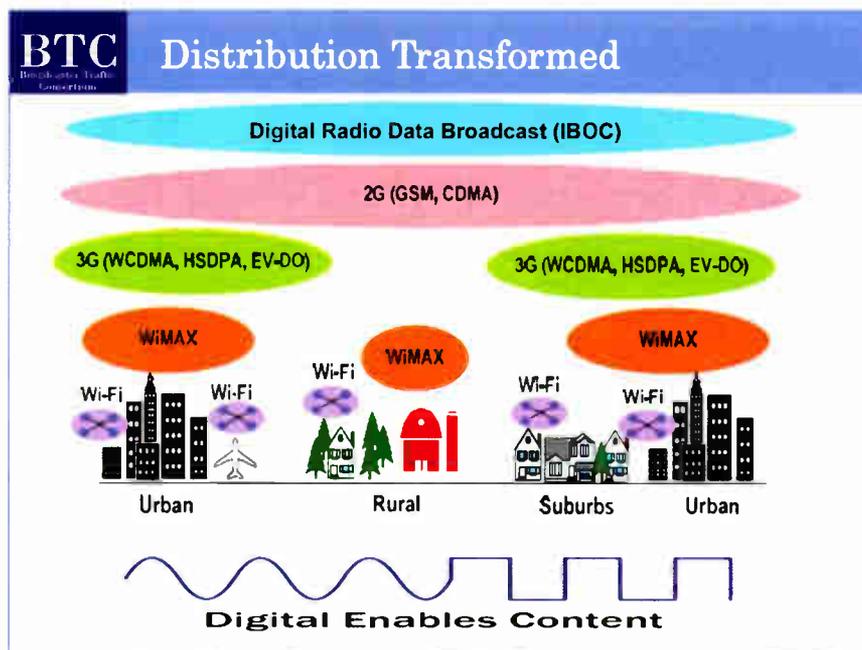
(continued from page 1)

better alternative than mobile broadband services that don't fully exist yet. Brenner is also senior vice president/chief technology officer for Emmis Communications, one of the group's members.

He says financial models support the conclusion that HD Radio data is the cheapest way to get data into vehicles, so he's lobbying stations to adopt the HD platform.

The 16 BTC radio broadcast members represent 1,500 stations. They cover 92 U.S. markets with traffic data using RDS and 75 with HD Radio. BTC also covers seven Canadian metros. In addition to traffic, some BTC stations are transmitting location-based advertising using RDS; other BTC stations are transmitting local and national weather, local fuel prices as well as location-based advertising using HD Radio.

The BTC has a partnership with Navteq — owned by Nokia — to distribute real-time traffic and other map-related data. Member stations embed Navteq data in their broadcasts, allowing Navteq to sell navigation products and supporting data subscriptions. The members share revenue according to a formula based on Arbitron population coverage; with a higher level of bandwidth commit-



This slide captures the thrust of BTC's argument that IBOC offers a much broader platform for data distribution than other technologies.

ment, a member's level of revenue rises.

Brenner said BTC members are making a profit from this shared revenue and that BTC is forecasting continued growth; he declined to disclose revenue figures.

BTC also is working on a handful of additional arrangements and says it

has attracted the attention of several companies — undisclosed at this time — looking for a single nationwide company to provide low-cost digital data distribution.

The consortium's largest competitor for traffic is Clear Channel Radio's Total Traffic Network, which distributes traffic

data to more than 125 metropolitan markets in four countries, including the U.S., Canada, Mexico and New Zealand. TTN has more than 500 FM signals transmitting traffic information with RDS-TMC. Of those, 353 also are transmitting traffic data with an HD Radio signal, according to the broadcaster.

Brenner spoke with Radio World News Editor/Washington Bureau Chief Leslie Stimson. While he declined to discuss certain specifics citing confidentially agreements, he talked about what the BTC is up to as the economy shifts and automakers take another look at radio-based data delivery systems.

RW: What are broadcasters doing to compete with mobile broadband, streaming and satellite radio in the car?

Brenner: It has to be the same listener experience that we get from satellite radio, mobile broadband and streaming [with] album art, artist and title, and data services like traffic, weather and fuel. That's what everyone else is developing towards.

So we're just FM analog radio. How do we get to that place where we provide that same experience in the dashboard?

RW: Are enough stations transitioning to HD Radio so the BTC has enough coverage footprint to send navigation data?

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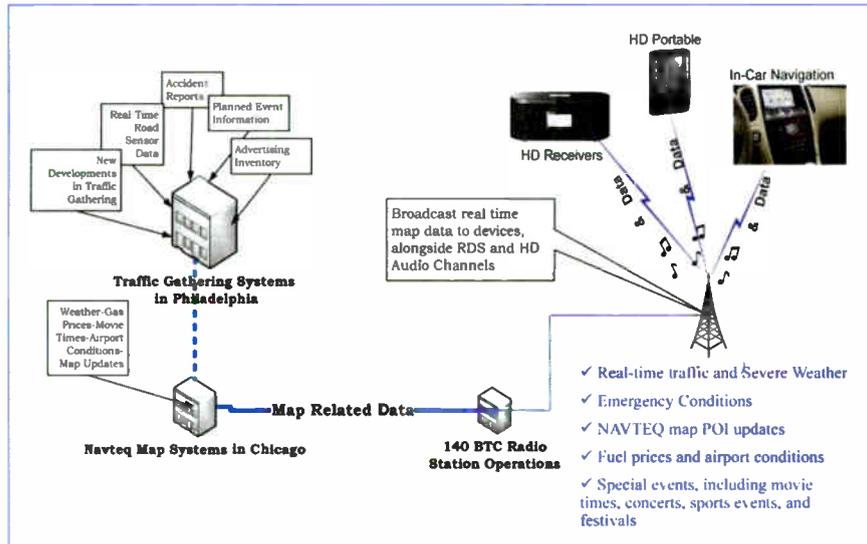
Brenner: There are enough HD stations on the air to serve as representative of a digital radio product. At 2,000 on the air, plus multicasting, it's enough for the manufacturing community to say, "There are stations available in digital." The other half is your question about the BTC, are there enough digital stations for that? Absolutely. We have well over 1,000 stations in the BTC that are HD Radio-capable.

RW: I was talking to an engineer who said his group has cut back so much he doesn't have enough engineering help, and when they get capital again, HD Radio isn't the first thing they'll spend on for upgrades. They'll spend money on replacing basics things like computers.

Brenner: Sure, the capital planning that slowed down in the recession has definitely hurt our ability to have more stations, but we still have enough stations today to represent a product to the automaker community. That's there.

Now, the hurdle that's going to come around is the power increase and the reinvestment that you'll have to make in capital to get to that -14 dB, -10 dB, whatever range you fall into.

I guess the strategy I am taking with it is: You have to have an incentive to spend that money. Capital goes to



A BTC diagram of how its system works.

the priority where there's a return on investment.

So if I look at what the BTC does, if I land deals with automakers that generate revenue for a station, then it's a moot point, right? You say to a station, "Here's how much money you're going to make by participating, with the caveat that you represent that market accurately — make the investment in HD Radio."

By "represent the market accurately," I mean stations must make an ongoing

investment in digital that provides full market coverage, e.g. the HD power increase implementation. HD Radio must also be treated with the same level of service and uptime commitment as their analog signals.

RW: I asked [iBiquity Digital President/CEO] Bob Struble how they're going to get mid-level stations to transition to digital. He said they're trying to convince them that they can make money at HD Radio. He said right now, the

receiver story is better, they're selling more radios. But to me, it seems like the top-level stations have transitioned but the rollout still hasn't permeated down to the smaller stations.

Brenner: Its markets 75 and up. From my experience, that's where you have enough listenership and you can do something with it that makes revenue. I'm in 82 markets now with the HD BTC and 92 with RDS; and I'll go much further than that if [the stations] have an incentive. Market expansion planning is ongoing. BTC could easily represent 100 markets and beyond with the right business opportunity.

To support Bob's comment, after you get that 80 mark, the incentive to get people up to 90, 100, 110 to participate — they need a revenue return on it, a clear one, a very clear one, and that's what I'm trying to represent with the BTC.

RW: What turned automakers around? You said suddenly they're more interested in HD Radio.

Brenner: The downturn of satellite, the risk of Sirius XM financial problems has definitely caused some of them to reevaluate their all-in strategy with satellite being the only digital data delivery service. Many automakers just rolled the

(continued on page 8)



LIVE & LOCAL

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BTC*(continued from page 7)*

dice with that. They were getting subsidies from satellite. That was a revenue stream for them.

But that's their dashboard, and I have heard directly automakers fear [that satellite's] financial problems could put them in a bad situation, so they need to have alternatives. That's caused them to come back to us.

Mobile broadband has a lot of sizzle right now — a lot of two-way talk in the car. Probably 2013 is when you'll see the first real heavy discussion about mobile broadband, at least in my meetings.

RW: *In the car?*

Brenner: Yes, in the car. Not all cars, just some. That's where you'll see a heavier effort to get in. It's a very expensive proposition. We show a financial model that says HD Radio data is the cheapest way to get data into that vehicle.

By comparison, HD Radio, where you might pay a set amount to get data into a car, over a year, is equivalent to about a month of mobile broadband in the car. We can do that same service for more than one year — of equivalent service for the same cost. It's a very different economic model.

RW: *It sounds similar to the argument that iBiquity's giving to the cell phone companies, why they should use HD Radio.*

Brenner: It's consistent.

RW: *HD Radio can help with their bandwidth issues.*

Brenner: It helps with their bandwidth issues and that's another argument. This is just directly by cost, by cost-per-bit, to get into that dash, the data that you can to help that consumer. That's a big one.

I think one of the primary things that have brought them back to us is we've come up with some pretty innovative products, between Navteq and BTC. My goal when I went out and got Navteq was to bring in some capital infusion into our industry.

Navteq, literally, represents HD as

the best way to get data into the vehicle. We make that pitch to the automakers — by cost, by efficiency, by differentiating product. In 2013 I think you'll see some automakers, with every class of vehicle that they produce, will have a screen. You will not be able to buy a car from some automakers without at least a 4-inch screen in the dashboard. And they want to do something with that screen to make, not just a good experience. They want it to be a selling point, like Ford Sync.

RW: *To help them sell the car?*

Brenner: To help them sell the car. Ford Sync ate GM's lunch with this simple little technology — a phone that also gives somebody a little bit of entertainment. And I think folks underestimated that value.

The collective effort of BTC technology members, Navteq and iBiquity have come up with some really cool things that I can't talk about that actually make the HD application services do something for people [manufacturers and consumers], beyond multicasting and great audio, but some imagery and information and some things that actually could make the lowest socioeconomic automobile have a dashboard that has information on it.

RW: *You mean album art?*

Brenner: Beyond that. Album art. I could talk all day with you about — that's a totally different conversation — about how radio broadcasters need to make investments in the experience, and make that listening experience include everything that it should normally be attributed to, tagging, artist, title, album art, EPG — all the things that make HD Radio look and feel just like every other medium that somebody can get access to.

Pandora is putting stuff in the dashboard. Broadcasters need to work towards that total car experience.

RW: *Pandora was all over CES this year with announcements from Ford, Pioneer and Alpine.*

Brenner: They're everywhere, and now you've got RadioTime that's integrating with BMW MiniCooper. They've done their EPG and streaming search guide built into the dashboard for BMW; they announced that around CES.

That's my Emmis side, where I try to forge ahead with trying to find ways to get broadcasters to — It's not good enough to just say HD's on the air. It's just not good enough. You have to say — and these aren't big investments. You have to say, "Here's HD. We have tagging, we have album art, with artist and title."

RW: *And all the other stuff.*

Brenner: Right, and all of the things worked towards that. I know there's a

WHO'S IN THE BTC, HOW IT WORKS

The Broadcaster Traffic Consortium was formed in 2008 to build a nationwide terrestrial broadcasting network to distribute local traffic and other map-related data via radio technology.

Founding members are Beasley Broadcast Group, Bonneville International Corp., Cox Radio Inc., Emmis Communications, Entercom Communications Corp., Greater Media, NPR and Radio One.

Subsequent members include Cobalt Media, Corus Entertainment, Cumulus Media, Hubbard broadcasting, Journal Broadcasting, Lincoln Financial, Regent Communications and Saga Communications.

BTC would like to expand membership and is in negotiations with several other commercial broadcast groups.

The organization has a board represented by legal, business and marketing leaders from the founding members as well as a technical standards committee with engineers from the founding members.

The build-out for BTC's current level of coverage took about 18 months from design to live commercial product.

The infrastructure used for BTC distribution of Navteq content was designed by a team of radio engineers, IT experts and software engineers from Navteq. "Our system requirements were specifically written to address any challenges we might face with diverse HD systems [from different vendors], diverse broadcast environments and use of the public Internet for distribution," said Paul Brenner.

Navteq maintains a processing and feeder system that provides data for Verizon VZcast, Sirius/XM data services and other large organiza-

tions; BTC is one output from that data center. BTC stations are linked into the Navteq data center for real-time content streaming and monitoring, he said.

How does the data system work?

The RDS data rate for BTC content is 27 percent of capacity. HD data service allocations are initially set to 13 kbps with the potential to expand that number by nearly 100 percent, according to Brenner, who added that RDS traffic and location-based advertising reaches millions of devices and that figure is growing rapidly. Large-scale HD data products continue to be in development with manufacturers; their potential could be larger than the RDS value, Brenner believes.

To participate in the BTC, a station must be able to cover its market with both its FM and its HD Radio signals. The required equipment consists of an Audemat-Aztec FMB80 encoder for RDS as well as an HD Importer and Exporter running BTC-approved software versions, and Internet access.

A station must meet the BTC's infrastructure stability guidelines for factors such as HD software versions, IT readiness, up-time, power redundancy, bandwidth capability, ISP, etc. Typical costs a new station might expect are small if a station is already multicasting and has implemented IT properly its engineering operations.

"Aside from the typical costs a member station will spend for implementing and supporting the current requirements of an IT-enabled broadcast facility (RDS, artist/title, HD Radio, systems support and controls), the incremental cost has been negligible. Each member has been accountable for their own infrastructure costs if needed," said Brenner.

— Leslie Stimson

lot of people behind the scenes working hard at it. BIA's EPG project and those kinds of things. I think people are trying to move that forward. I'm not sure broadcasters, in whole, are embracing that yet.

RW: *Clear Channel Radio's Total Traffic Network announced an expanded partnership with Inrix for predictive traffic data. TTN makes the claim that their traffic services are faster than other broadcast and satellite radio solutions. Do you have a reaction to that?*

Brenner: This announcement from CC/Inrix is good for competition but primarily draws attention from people who are not frequently exposed to the navigation and traffic-gathering industry. In other

words, they had to support predictive in order to keep pace with demand and competition.

In regard to the "faster" comment, automakers perform scientific and intensive real-world tests to assess the speed and accuracy of our [BTC/Navteq] data processing and transmission speed. I am not sure of the source of the CC data, but automaker reports provided to me indicate BTC/Navteq fares very well in the testing of our speed and accuracy.

Navteq is the dominant provider of real-time traffic and has offered predictive traffic for some time now. They are the automobile industry's traffic supplier of choice, powering 90 percent of full-screen, in-vehicle systems in North America.



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When Your Tube Goes Down the Tubes

Offer Your Tips for Users of the Discontinued Eimac 4CX300A

Time marches on. The most recent casualty it has tropped under its boots is the Eimac 4CX300A tube, used as a driver in a number of transmitters made in the 1970s and '80s.

WORKBENCH

by John Bisset

Read more Workbench articles online at radioworld.com

I confirmed with Eimac that manufacture of this tube has been discontinued and that it cannot be rebuilt economically; the rebuild would cost more than the tube is worth.

There is a chance Eimac will build a "lifetime buy" quantity for the federal government and that some may be available for U.S. broadcast purposes; but that decision rests on the government's requirements and cannot be confirmed at this time.

As quantities of the tube on the surplus market are sold, you can expect the cost of remaining stock to increase. Other manufacturers are another solution, but with them go the risks of a tube that is not up to the Eimac standard. What kind of luck have you had?

Among common uses for this tube are Harris 10 kW FM transmitters manufactured from about 1964 until the HT series was introduced in the early '80s, including FM10G, FM10H, FM10H2, FM10H3 and FM10K. The tube was also used as a driver in certain models of the older Sparta transmitters.

Even though these transmitters may no longer be supported by the factory, many are still on the air or used as back-

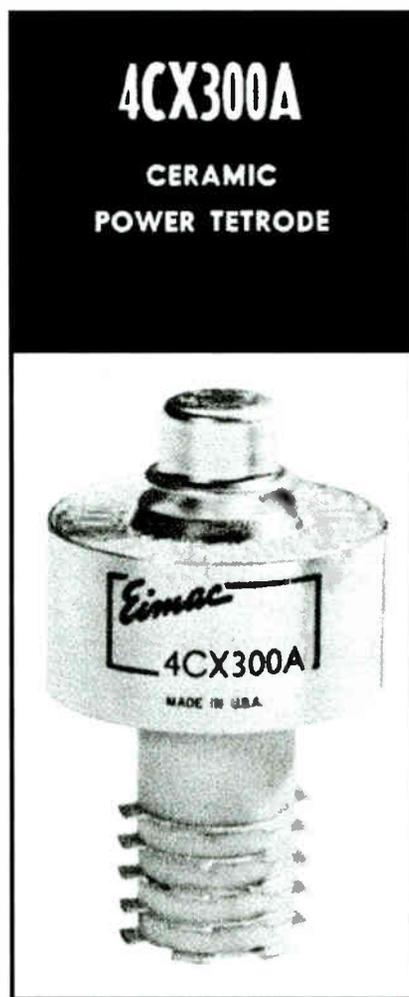


Fig. 1: The Eimac 4CX300A tube, used in a number of transmitters made in the 1970s and '80s, has been discontinued. (Image courtesy Roy J. Tellason, www.classiccmp.org/rtellason.)

ups. So what can you do?

I've talked to a few contract engineers who were investigating the wholesale replacement of this driver stage with a solid-state "brick" or low-power exciter/PA equivalent.

The drawback is that the inter-stage coupling between the driver plate to the final tube grid is not 50 ohms. There is also a DC blocking voltage issue.

Jerry Mathis handles engineering for Clear Channel/Urban Radio Broadcasting in Tupelo and Meridian, Miss. Among his stations, he maintains an FM10K. He's used the surplus tubes but in most cases gets only six months out of them; it becomes an expensive proposition.

He recommends not trying to substitute a more common tube, such as the 4CX250B, in the circuit. The plate voltage for the IPA is from the center tap of the HV supply. This puts the plate at about half of the PA plate voltage, which for the 4CX10,000 is about 6600 volts. Three thousand volts is too high for the 4CX250B plate and can cause flashovers under the right circumstances.

Jerry adds that the 4CX300Y will not work in the circuit, either. In this case, the tube capacitances are radically different from the A version.

Thoughts or ideas? Send them to me at johnpbisset@gmail.com.

Reach Jerry Mathis at thebeaver32@gmail.com.

Engineer Ira Wilner writes in response to Buc Fitch's home-brew RPU antenna project: "You get what you pay for."

Ira raises several concerns. First and foremost, threaded rod stock is not flexible. If accidentally bowed it most likely will shear through the threads and break in half. There is a reason commercial whips are made of spring steel and cost more.

From an electronic standpoint, Ira reminds readers that matching a new antenna to an RPU transmitter, without stressing the radio in the process, can be tricky. Some transmitters display a variable output impedance, rarely is it exactly 50 ohms. At resonance, a 1/4-wave whip is around 38 ohms impedance, not 50. This could cause a transmitter to put out higher power than optimal, especially if its own source impedance is less than 50 ohms.

The best way to tune and match an antenna is to use a vector network analyzer (two-port) or its less expensive smaller brother, the vector impedance analyzer (single-port).

With a VIA you can tune for 50 ohms rather than for resonance. Or you can tune for resonance if the transmitter originally was set up to match into a non-50 ohm load. Either way you'll have a better picture of what's going on with your antenna.

Here is where you reach into your ham shack and pull out a device you can use commercially too. Ira owns an Array Solutions AIM 4170C. It is basically the front end of a single-port vector impedance analyzer, to which you add a host computer and Array Solutions' software to create a high-quality instrument at a bargain price. See www.arraysolutions.com.

This isn't cheap compared to a RadioShack SWR bridge, but you get precision that approaches laboratory-

(continued on page 12)

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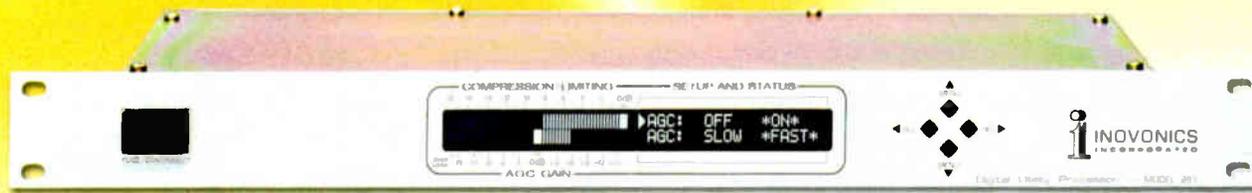
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Radio Goes Solo With Grace



Wi-Fi Receiver Is a Welcome Though Hampered Addition to a Home Stereo System

BY JAMES CARELESS

One in a series of occasional reviews of consumer devices that are expanding the definition of radio.

The Grace Solo Wi-Fi Receiver brings the benefits of a standalone Reciva-based Wi-Fi radio to your home

NEWMEDIA

stereo system. Unfortunately, it brings the limits of the Reciva system and Internet-based radio as well.

The good news: If you want the functionality of a Wi-Fi receiver in your living room, with the results pumped through your top-end amplifier and speakers, the Grace Solo is a worthy — if hobbled — addition.

FEATURES AND SETUP

The Grace Solo Wi-Fi Radio Receiver, a wireless radio and media streamer, is made by Grace Digital Audio of San Diego. It offers a range of quality Internet radios in portable, tabletop, iPod-dockable and receiver-only models.

Listed at \$124.95, the Solo is a Wi-Fi radio receiver, nothing else. It doesn't have speakers or inputs, and it only outputs to a pair of female RCA jacks and a miniature headphone jack.

Physically, the Solo is about the size of a cube of butter with a bit more height (6 inches wide, 3-1/4 inches high, 3 deep). Its front panel has a four-line backlit LCD screen, flanked by a Volume knob on the left and a Menu/push-in Select knob on the right.

The unit has eight buttons on its lower angled face. These are variously used for On-Off; 10 programmable presets; digital media controls (Play, Pause, Stop, Forward, Shuffle) and overall system controls for the Solo's Reciva software (Retrieve, Back and Menu).

Features include a clock (sync'd to the Internet), five individual alarms,

a sleep timer, backlight brightness settings and a 12-language menu.

Supported audio formats include AIFF, AIFC, WAVE, CAF, NeXT, ADTS, MP3, AAC, Ogg Vorbis, FLAC and WMA. It works with playlist formats ASX, M3U, PLS, and supports streaming protocols HTTP, HTTPS, RTSP, WSMP and Shoutcast.

The built-in media player lets you stream audio files from your PC or

Mac. As to networking, the Solo offers 802.11g wireless connectivity and works with all 802.11b/g/n routers; it also supports WPA Personal, WPA2-AES and 64/128-bit WEP encryption.

The Solo comes with a small remote control that can navigate its many Reciva menus, RCA stereo patch cords and an AC adaptor.

The Grace Solo can access Internet radio stations either through Reciva's website (www.reciva.com) or Grace's customized site (www.grace.reciva.com), which accesses the Pandora personal radio service, where you can have a say in what you hear.

This unit can also log onto www.live365.com, plus access podcasts and music stored on your own local home network (Media Player). Add clock radio functions, and the Grace Solo offers all of the standard Reciva Internet

radio features — all ported through your home stereo.

It took little time for me to connect the Grace Solo into the back of my venerable Yamaha RX-V670 amplifier and listen via my large Bose loudspeakers.

Entering the password for my home Wi-Fi network was a bit of a pain, because I had to use the Menu dial and push functions to scan manually for and then select each letter/number. But once the WEP password was in, the Solo wasted no time in logging onto the network and getting down to work.

PROS AND CONS

The Grace Solo is a stylish little glossy black unit that fits well with most home stereo components. The front-panel buttons were responsive. However, the remote has to be pointed directly at the front for its buttons to work.

In general, the Solo does what it promises, adding Internet radio functionality to a home entertainment system, allowing you to use your existing amplifier and speakers for the best sound quality rather than relying on a standalone Internet radio's own components.

(continued on page 14)

WORKBENCH

(continued from page 10)

grade, and a ton of data displayed on nice color graphs, including a Smith chart if desired. Furthermore, the latest software includes a talking SWR meter so you can keep your eyes and hands on the antenna adjustments while the software talks you in.



Fig. 2: Ask a sign shop for their scrap magnetic material before it's thrown away ...

Ira says that in a pinch he has used this to tune an AM broadcast antenna matching network. Array Solutions makes a much more costly professional model with a more powerful test signal and tighter front-end tracking filter to reduce broadcast band interference, especially for AM antenna work.

Ira's points are well taken, though Buc had offered this "roll your own" RPU antenna as an inexpensive way of

adding a spare or emergency antenna to your remote arsenal at a time when equipment budgets have shrunk.

Ira Wilner can be reached at bdc.st@vermontel.net.

Mark Voris is, like so many engineers, a resourceful guy.

The SBE-certified chief engineer for the Spirit Catholic Radio Network in Omaha, Neb., came up with a no-

on metal shelves and racks.

Use a permanent marker or label maker to create a removable label that can be moved if needed. Mark says these no-cost labels are really handy when you need to label something temporarily in a steel equipment rack.

Got another idea for using this magnetic strip material? E-mail the suggestion with a high-resolution picture to johnpbisset@gmail.com.



Fig. 3: ... and turn it into removable labels for metal racks and bookshelves.

cost labeling solution:

Take a couple of station T-shirts to a local sign shop and swap them for some scraps or trimmings from a magnetic sign. This is the material sign shops use to print magnetic-backed banner signs that you see on the sides of trucks or cars promoting their businesses.

Mark cuts these scraps to size, as seen in Fig. 1, and uses them as labels

Mark Voris can be reached at mark@kvss.com.

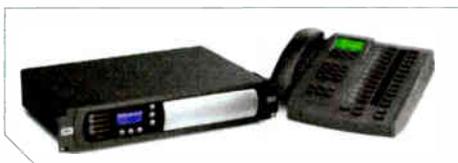
John Bisset celebrated 40 years in broadcasting in 2009. He has worked as a chief engineer, contract engineer and broadcast equipment sales executive, and is a past recipient of the SBE's Educator of the Year Award. Submissions for this column are encouraged. Write to johnpbisset@gmail.com.



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SOLO*(continued from page 12)*

This said, the quality of the Internet audio depends on the size of the station data stream you are tuned to. At 32 kbps, Beethoven Radio (www.beethoven.com) didn't sound that impressive compared to a local off-air FM station received on the Yamaha's own radio. In contrast, 001 Canada Classical (www.001Radio.com), which streams at 128 kbps, sounded much more suited to my stereo's sonic capabilities.

In fairness, the problem here is not

the Solo or Internet radio in general. It is that data stream size really matters when you are hearing the stream through a good audio system. The same is true of the MP3s that I accessed through my home PC. Although they sound excellent, CDs still sound better, as they should.

This receiver became irritating during the use of the Reciva's page-based menu system. To find Beethoven Radio, you have to select "Internet Radio," then "Genre," then specify what country you want; then download its available stations, and then scroll the menu to select

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**GRACE BRINGS 'HEART' TO THE HOME**

Among content available for at-home listening on the Grace Solo is audio from CBS Radio, NPR, Pandora, Sirius (with subscription) and NOAA, as well as thousands of independent online stations.

The company also recently announced the addition of iheartradio, Clear Channel's music and entertainment portal, to all of its Internet radios and wireless media players.

"Grace adds iheartradio's 750+ radio stations to its current line of radio shows, podcasts and on-demand programs," the company stated. "iheartradio delivers America's favorite radio stations online at iheartradio.com and as an application on your iPod Touch, iPhone, BlackBerry and Android phones. Grace Digital customers can now connect Grace Internet radios to their broadband Internet connection and instantly access iheartradio's premier station lineup."

It said that with the successful iheartradio mobile app, Internet radio users "were looking for a convenient way to bring first-class radio content into their home radio devices, and our partnership with iheartradio has provided that."



the exact station you want. (Finding and then playing audio files on one's home PC is even more time-consuming.)

I do not have an alternative to the Reciva-based system to offer, but this approach is clunky, time-consuming and due for improvement. In fairness to Reciva, once you have entered your favorite stations into the presets, getting to them is easy. (Grace points out that you can search and save stations on their website and they'll show up in the My Stuff folder; or use their iPhone app to save as presets or in My Stuff.)

For the money, the Grace Solo

delivers what it promises and then some. If you make sure to tune to stations with decent data streams, the sound quality is substantial and listenable through decent speakers. Just be prepared to struggle through the Reciva menus to program the stations you want and you'll be fine.

Grace products are sold on its website and at retailers like Best Buy, Sears and J&R Music. The company publishes a chart comparing features of its half-dozen Internet radios: www.gracedigitalaudio.com/compare_internet_radios.php.

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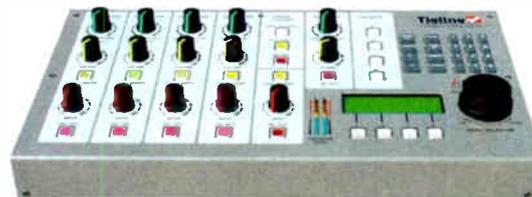
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MARKETPLACE

BETTIN' ON BETA: One of Shure's most popular offerings is the Beta line of microphones, particularly for stage use. The latest in that line is the Beta 27, a side-address microphone with a supercardioid pattern. Features include a 15 dB pad, low-frequency roll-off filter, internal pop filter and a 1-inch gold-coated Mylar diaphragm. MSRP is \$499 but expected retail is around \$399.

Chad Wiggins, category manager for wired products at Shure said:



"Stage and studio are converging ... Many acts nowadays are recording their live shows, and they want to put studio condensers on their stage. But other microphones that are currently available pick up more splash and stage wash than the engineer might want."

Info: www.shure.com

FM COMES TO ANALYZER:

German transmitter and test/measurement equipment maker Rohde & Schwarz has announced an optional package for the ETL TV analyzer that will allow it to be used for FM analog transmitters as well.

The overall system is described as "the universal multi-standard platform for the analysis of TV and mobile TV signals."

Several available options allow for it to be used for installation, maintenance and quality testing of FM audio broadcasting transmitters. The system's



design, based in both software and hardware, means it is capable of handling analog TV standards, DVB-T/H, ATSC/8VSB, DTMB (China), ISDB-T, T-DMB/DAB, J.83/B and DVB-C (J.83/A/C) as well as FM radio.

Info: www.rohde-schwarz.com

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LynxTWO and L22 PCI cards offer analog and digital I/O with high quality AD and DA converters on-board. These cards, starting at \$749 US suggested retail, have proven that computer cards can indeed provide world-class audio. The AES16 (PCI) and AES16e (PCI Express) digital audio cards offer 16 channels of pristine AES/EBU input and output at sample rates from 44.1 to 192 kHz. Sample rate conversion and AES50 connectivity are optional, with prices starting at \$695 US suggested retail.

This is why Lynx products have been the choice for Dalet, Harris Broadcast, Sirius/XM Radio, National Public Radio, HBO, CBC (Canada), TSA Telefonica (Spain) and many, many others. Lynx audio cards' sound quality, driver stability and rock-solid reliability are the crucial elements for all of our discriminating customers.



SOUND LIKE THE BBC:

One can imagine that after being in the international broadcast business for decades, both in TV and radio, the BBC has collected quite a large library of interesting sound effects.

Sound effects distributor Pro Sound Effects now offers the BBC Complete Sound Effects Library. Measuring more than 33,000 effects across more than 600 GB, in almost every imaginable subject or category, organic and inorganic, animals, transportation, humans ... the whopping big library comes on a single 1 TB outboard FireWire/USB disk drive. Files are 16-bit/44.1 kHz Broadcast WAV format. We dabbled and found a stock exchange, small country streets, trees falling, metal squeaks, rivers, hurricanes, mallards, grass warblers ... well, you get the idea.

If the \$4,999 price tag is a bit much, smaller offerings are available, including a customized option. Packages start at \$599. Various packages focus on animal and nature sounds or "historic" sounds such as battles, transportation, industrial and people.

Info: www.prosoundeffects.com



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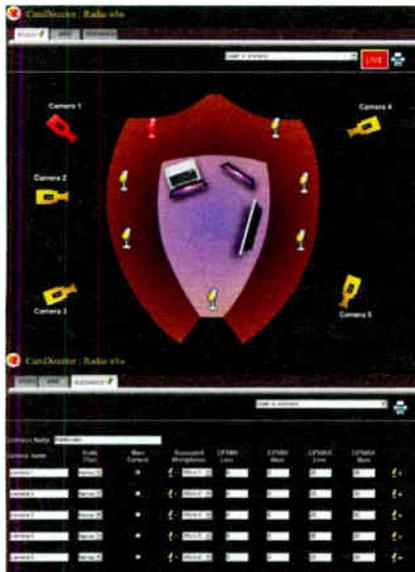
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Points may be redeemed for goods and services inside the RadioLoyalty store. This offers revenue and promotional opportunities for a broadcaster.

Jetcast also offers streaming services on a zero cash cost to the broadcaster, in exchange for barter spots on the Web stream. Listeners can buy songs, videos, albums and ringtones from a station's page. Now-playing title and artist information is displayed along with social network links. The station can send SMS and MMS messages to some 19,000 types of mobile handsets as well as e-mails to a listener's in-box.
Info: www.jetcast.com

NETIA UPGRADES: Netia has debuted the latest version of its modular Radio Assist package, with various modules to accommodate all aspects of broadcasting.



Cam Director (shown) can switch studio cameras to each guest or host, depending on which microphone is active, giving impressive web video coverage of a radio show interview.

In *Acquisition*, audio may be manually or automatically recorded or imported from sources such as CD, DVD, PCM Linear, MPEG, FLAC and AAC formats. User-selected files may be automatically downloaded and stored. Field reporters may call in and store audio using a keypad and ID code.

Look Up permits searching and viewing files in a single or multiple databases. Intranet access permits FTP file transfers, playlist/log consultation, modification and remote working.

Production supports snippet and multitrack editing with tools such as audio compression, equalization, reverb and noise reduction. Editing from a Web interface also is supported.

Script is used for acquisition of wire feeds from satellite or modem from news agencies such as AP, Bloomberg and Reuters. Simultaneous feeds are

supported, as are user-defined filters that are applied to all feeds. *Planning* schedules events and items for broadcast such as jingles, spots and music.

On Air employs two video screens and has four audio channels. Drag & drop may be used and simultaneous recording, production, playback and cueing are possible. Playlist changes are automatically updated. Automated, semi-automated and manual modes of operation are supported.

Publication controls content for Web page, mobile phone and podcasts.
Info: www.netia.com

NOT AN APP YET:

DAW software developer Steinberg has announced a new "whole number" version of the digital audio editing and mastering program WaveLab.

The first thing that jumps out at version 7 of the traditionally Windows program is a Mac OS X porting. The next noticeable thing should be the new GUI, centered on a "completely customizable" window, according to a press release.

Special goodies for those working



in production and post production include the package of Sonnox restoration and noise reduction plug-ins. As with any major release there are plenty of other fun new plug-ins, analysis tools and processors added. WaveLab tops out at a 384 kHz sample rate.

WaveLab has long been known as a mastering and CD/DVD-A disc burning program. These tools have been reworked for version 7.

Info: www.steinberg.net

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Bridge-IT Solves T1 Problems

Tieline Codec Helps Bring T1 Reliability to Hope Stations

USERREPORT

BY BILL LUEBKEMANN
Chief Engineer
WVBV(FM), WWFP(FM)
Hope FM

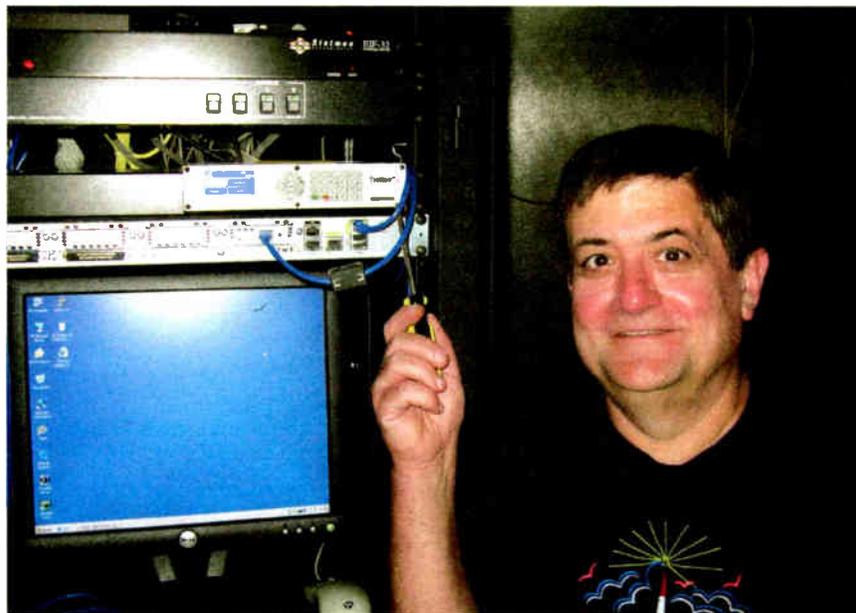
MARLTON, N.J. — “We’re seeing too many unanswered seconds,” the Verizon technician told me. As I hung up the phone in disgust, wondering what in the world an “unanswered second” was, I knew there had to be a better way to troubleshoot our T1 STL.

Every time our WVBV(FM) T1 line would go down, it was a battle just to get Verizon to agree that it wasn’t working. Getting them to come out and fix it was even harder.

Really knowing what was going on with our line seemed impossible, as our T1 line multiplexer was reliable but lacked any kind of a browser interface and had limited diagnostic capabilities. A call to the vendor confirmed that diagnostics were only going to be available with a separate router and a lot of expense.

COMMON NETWORK

For that amount of trouble, why not go with all standard networking components? At least that way we could log in and see exactly what was going on with our line.



‘This is radio in the computer age, using readily available computer hardware and techniques to achieve the same goal, and doing so easier and better.’
Bill Luebkekmann points to his Tieline Bridge-IT.

Thus began our search for a way to transport our STL audio over a T1 line using standard networking components, something I had wanted to do for quite some time.

We have a lot of experience streaming audio over the Internet, and the boxes we have for that application work extremely well; but this would be differ-

ent. For starters, a private point-to-point T1 line allows full-bandwidth, uncompressed PCM audio to be sent with virtually no latency or delay, so compression was not necessary. What was needed was a reliable way to convert our AES/EBU digital audio to UDP (User Datagram Protocol) packets for network transmission through standard network-

ing components. Since our engineering department has a lot of Cisco experience we settled on Cisco 2900 routers with built-in WIC (WAN Interface Card) cards for each end of the line.

Cisco equipment is easily obtainable; it is easy to use and has excellent diagnostics and programming through a browser interface.

With strong computer backgrounds we found the networking to be easy, but what could be used to handle the digital audio to UDP conversion?

We needed to determine our requirements, and there were several.

First was that we use all digital audio, so any solution to our problem would have to connect to a digital source and provide digital audio at the far end. Since our existing legacy system was fully bidirectional, we wanted our new system to also have that capability. Not that we ever used it, but we do have lots of ideas for how we might in the future.

Of course our final solution would also need a good browser interface with the ability to diagnose problems remotely and start or stop the stream. Last, we wanted a device with professional XLR connectors and available in rackmount packaging.

After searching the literature we found a number of vendors who could provide such a device, and we tested three of the most promising alternatives.

One unit would only send audio in one direction at a time, even though it was advertised as bidirectional. After many communications with tech support they admitted that, yes, it would only work in one direction when using linear PCM audio. Just a small, minor detail they seem to have overlooked.

Another unit that we tested had a poor browser interface and the XLR connector actually was a 1/4-inch phone plug-to-XLR adaptor. I would like to have a chat with whoever dreamed up that idea, and we judged the connection not sufficiently reliable enough for critical use.

That left us with the Tieline Bridge-IT, the only unit that met every one of our requirements. The fact that it actually worked really well was also nice.

The Bridge-IT handled linear PCM uncompressed audio in both directions simultaneously, but it also has numerous types of compression for lower-bandwidth applications. It has a nice browser interface that allows individual connections to be configured as well as turned on and off, and a sturdy case with display screen and a rackmount option.

Setup was a snap, and only required

(continued on page 21)



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AVC-Group Jumps on the PungaNet

New Zealand Broadcaster Replaces Outdated System Using Telos iPort

USERREPORT

BY IGOR ZUKINA
Engineering Director
AVC-Group

AUCKLAND, NEW ZEALAND — AVC-Group operates a large, national, audio contribution/distribution network for 23 radio stations in New Zealand, called "PungaNet." This service allows the 23 indigenous Maori radio stations to share and distribute content in real time. It's very different from your standard one-way distribution network.

Four years ago each station used an ISDN codec connecting over 128 kbps, x.25 synchronous circuits to a native MPEG router of our own design. Then Telecom NZ announced the end of x.25 circuits, and a fortuitous chat with Steve Church of Telos Systems saw the genesis of the Telos Zephyr iPort MPEG Gateway.

GENESIS

The Zephyr iPort is a 2RU box with eight IP codecs inside. Studio-side audio

I/O is via Axia's Livewire IP audio.

For convenience, there are two RJ-45 Ethernet connections on the rear, one for Livewire and the other for the Wide-Area Network (WAN) connection for the encoded audio streams. Each internal IP codec can be configured separately at different bitrates, sample rates, even different algorithms including AAC, HE-AAC, AAC-LD, MP3, apt-X, MPEG Layer II and uncompressed PCM. Each can provide point-to-point or point-to-multipoint (using multicast) studio connections, act as an STL link or provide an encoder for in-house audio distribution and Internet streaming.

In New Zealand's PungaNet, iPort codecs have replaced the old, single-channel ISDN codecs. WAN IP circuits of 2 Mbps have replaced the 128 kbps x.25 links. And where before there was one feed per station, now there are eight bidirectional stereo codecs that can operate simultaneously. PungaNet's 25 iPorts have been operating continuously for just over two years and haven't missed a beat.

Conveniently, all stations had previously upgraded to Axia studio systems,

so adding an iPort to each station's Axia network was simple. We plugged each iPort to the Axia Livewire network using a Cat-5e Ethernet cable, then plugged each iPort's WAN connection into a Cisco router.

The iPort also offers mixing capabilities through the built-in V-mixer and V-mode functions. Familiar to Axia Livewire users, these are virtual mixing and audio mode configuration tools. Eight of each are inside the iPort with each V-mixer capable of controlling levels and mixing five inputs to a single stereo output, or provide five independent gain controls.

For Axia users, control of levels and channel on/off is provided remotely following an Element mixing control surface. This allows talent in a booth miles from the studio to hear a clean-feed in their headphones, as if they were connected directly to the console.

V-mode provides manipulation of audio channels including down-mix, up-mix left to right, right+left to left, surround to left and right, and other combinations. If you want to create a talkback source that would go only



Igor Zukina and several Telos Zephyr iPorts

to the left channel of the host's headphones, V-mode will do it.

Any of the sources in an Axia studio, or the iPort's own sources such as the decoder outputs, V-mix and V-mode outputs, can be routed to any encoder input or any V-mixer input. This creates a fully controllable and functional audio router.

The Zephyr iPort is straightforward

(continued on page 21)



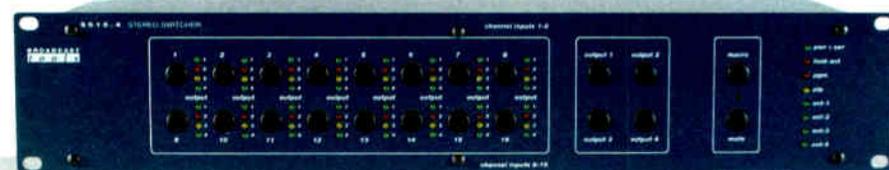
ACS 8.2 Plus Audio Control Switcher



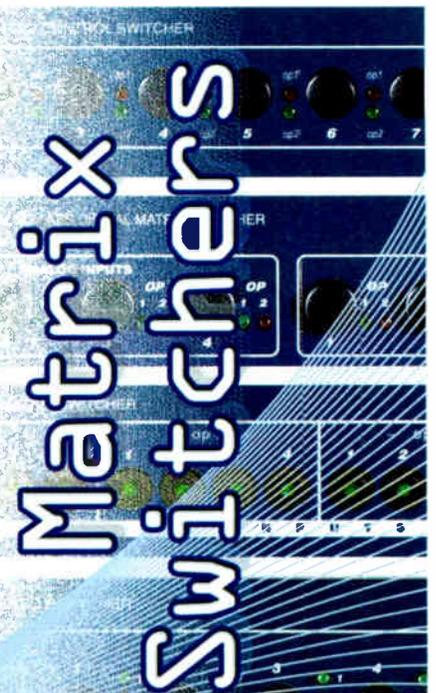
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HOPE

(continued from page 18)

that we establish an IP address and answer a few questions about the connection requirements. Of course it was a big help that we had plenty of Cisco experience, as setting up a router can be trying if you haven't done it before.

RELIABLE

We tested the entire arrangement on the workbench thoroughly, sending audio out one channel and looping it back through the other channel with no issues. After a few days of trouble-free operation, and given that our other choices were less desirable, we issued a PO to purchase the demo units Tieline had sent us.

We have now been using the Bridge-IT on our T1 STL line for about half a year with no significant issues. They

PUNGANET

(continued from page 20)

to install. It's configured primarily by its Web interface. Set an IP address on the front panel, then connect with your browser from anywhere on your LAN. Once set up, you can remotely back up and restore configurations via the Web interface. The iPort will write its entire setup into one file; restoring an iPort from a backup to a configured and working state takes less than a minute, including reboot time.

The iPort is designed to be connected over a managed IP network that provides Quality of Service (QoS) protocol. It's not intended for use over the public Internet; the Telos Z/IP codec is the tool for that job.

Multicast protocol can provide distribution of a single audio source to multiple receiving codecs. Be careful here because MPLS (a QoS implementation) does not support dynamic multicast routing using IGMP (Internet Group Management Protocol). It is technically possible but expensive for the telco, so usually only static multicast is supported.

At a cost of around \$650 per codec I believe the Telos iPort is an amazingly good buy. If you already have Axia studios, choosing the iPort is obvious. If you don't there is still a good option: a single Axia node (analog or AES/EBU) connected directly to the Livewire port will provide an interface for typical broadcast I/O.

For information, contact Telos in Ohio at (216) 241-7225 or visit www.telos-systems.com.

simply work all the time.

When our T1 line goes down we are able to log in to either of the Bridge-IT units as well as our routers and see what is happening. We have our own error statistics, and we are no longer at the mercy of Verizon. We can tell them what kind of error we are experiencing and what end of the line it is on; we can tell when it has been fixed.

This is radio in the computer age, using readily available computer hardware and techniques to achieve the same goal, and doing so easier and better.

A word of caution about quality of

service: If you are also using your T1 line for data, you will need to handle QoS priorities in the router configuration. This means being sure that the Bridge-IT always has priority and that the UDP packets are never delayed.

We found this out the hard way when we went to transfer a few big files through the line and it really garbled our audio. We were aware of this ahead of time but never got around to doing what was required to assure that the Bridge-IT always got what it needed for our uncompressed stream. Our older legacy system handled this in the hardware, so you

could be assured your audio was uninterrupted, and data transfers were only accomplished with the little bit of extra bandwidth. Using standard routers and any type of audio to network converter box is going to require you to consider QoS when you set up your system.

In conclusion, we couldn't be happier. We have the real-time statistics and access that we need in a reliable device that gets the job done. Did I mention the price is real reasonable?

For information, contact Mary Ann Seidler at Tieline in Indiana at (317) 845-8000 or visit www.tieline.com.

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Comrex Delivers From Amsterdam

Clear Channel Orlando Takes the Show on the Road With Access

USERREPORT

BY MIKE SPRYSENSKI
Director of Engineering
Clear Channel Radio Orlando

ORLANDO, FLA. — “You want to do a remote from where?”

These were the first words out of my mouth when one of our stations came to me with a promotion for a new client. I had never been out of the country, and getting ISDN lines are expensive enough here in Florida. So when one of our top stations asked about doing several days of broadcasts from Amsterdam last fall, the only answer was to do it over IP.

DOUBLE-DUTY

Fortunately we had gotten a Comrex Access the year before because I wanted to try to eliminate the high cost of ISDN lines if broadband was available.

It seemed that when we asked clients if they had a dedicated POTS or ISDN line the standard response was, “We have a DSL line, will that work?”

The Comrex Access is available in two configurations, a portable and rackmount version. It can also double as a POTS codec. Setup is pretty easy on the portable unit using the built-in screen. The portable comes with Wi-Fi and modem PCMCIA cards. It is important to insert the card you want to use in the side PCMCIA slot or USB port before powering it up.

Depending on the type of connection you use (RJ-45 Ethernet, Wi-Fi, POTS



The beneficiaries of Mike Sprysenski's work in Amsterdam — Jayde, Brian and Johnny Magic of the 'XL Morning Show' at a hotel remote with the Comrex Access codec.

or 3G), you configure the parameters needed under the network tab. Then you set up the remote connection by supplying the appropriate IP address or phone number back at the studio along with the codec parameters. You can name and save the connections for future use.

For the rackmount unit it is best to hook up a VGA monitor, keyboard and mouse the first time you configure it, then you can do future configurations using a Web browser. Updates are also easy via a program that comes with the firmware updates. Updates are free and can be downloaded off the Comrex website.

The Access units come standard with various mono and stereo codecs, which sound great. For those that want more, you can buy the AAC encoding option (\$425). All of the Access units can receive (decode) AAC connections at no extra charge.

Connections in and out of the rack unit are standard balanced analog or

AES XLR connectors. On the portable unit you have a choice of a mono balanced XLR input or 1/8-inch TRS unbalanced line in and out connectors. There is also a 1/8-inch stereo headphone output. You can configure the line output to be either the send audio, receive audio or combination of both.

Normally we leave the line out configured for the IFB audio coming from the studio so we can mix it into the headphones with the local audio at the remote site.

If you really want to have a full remote kit setup in one small package, you can buy the optional mixer for the portable Access. This gives you a five-channel mic or line mixer with headphone amps in one unit that attaches to the side of the portable Access.

Just make sure to have a few batteries charged if you are going to be “off the grid.” The side mixer does use up the batteries about three times faster as not

having the mixer attached. The batteries are standard lithium camcorder batteries. My experience so far has been one battery will last about 3 to 4 hours if you just are using the portable Access main unit. If you add the side mixer and three to four headsets, a battery will last about 75 minutes, give or take. I have three batteries that I charge up before each remote where we will not have access to electricity at the site.

AT THE BAR

So what happened in Amsterdam?

To make a long story short we did two days of broadcasts, one on late Saturday afternoon and one on Sunday night (Amsterdam is six hours ahead of Orlando). Each broadcast lasted about 4.5 hours.

The morning show did their special two-hour show each day, then other jocks prerecorded their weekend shifts. The first day we set up on a sidewalk outside of a restaurant about a mile from the hotel where we were staying and used an open Wi-Fi connection that we'd stumbled upon. The second day we set up in the hotel bar because it was raining and 45 degrees outside.

Both days we did the entire broadcasts using battery-powered equipment. Fortunately the battery chargers for the equipment I brought would work using 220V outlets, I just needed to have the appropriate adapters for the sockets used in Europe.

I was happy with the performance of the Comrex Access equipment. The cost of these units is about that of a typical ISDN box. We use a rackmounted unit to send audio from one of our talk stations to XM Radio. We also have rackmount units set up as backup STL paths to some of our transmitter sites. Using it over the RJ-45 Ethernet connections seems to be solid.

Wi-Fi is more susceptible to interference than a hardwired connection but works fine with a strong signal. If you have a choice always go with a hardwired connection. The use of 3G will depend on your cell coverage. We have had good and bad experiences but that is a wireless carrier issue (and you know how that works).

If Comrex would add ISDN capability to the Access I could see just having the one box in our remote arsenal, but we are already seeing ISDN slowly fade away as broadband connections become easily available, and no doubt using an existing broadband connection out in the field will be more cost-effective in the long run than traditional ISDN lines. And if you can swing a 3G card with a carrier that provides reliable service, doing a remote from anywhere becomes a reality.

For information, contact Chris Crump at Comrex in Massachusetts at (978) 784-1776 or visit www.comrex.com.

MORE ONLINE

The online version of this story includes a diagram showing Mike Sprysenski's equipment setup for the remote. See radioworld.com, keyword Sprysenski.

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APT Oslo Scores for KRKO

Seattle-Area Sports Station Chooses Multi-Duty WorldNet Codec

USERREPORT

BY BUZZ ANDERSON
Contract Engineer
Anderson & Associates

EVERETT, WASH. — I am a contract engineer for KRKO(AM), a sports station located on the northern edge of the Seattle metropolitan area.

In 2008 KRKO purchased an APT WorldNet Oslo system to communicate with its new 50 kW transmitter site (there is also an application filed for an additional 50 kW station to be collocated here).

Set in a rural area, the site is 11 miles from the main studio building and presents some STL challenges.

As a result, several options for delivering audio and communicating with the site were explored: point-to-point 10 kHz copper pair audio circuit(s) from the local telco provider, Verizon, at a cost of \$775/month; 1.5 Mbps T1 data circuit from a third-party provider at a cost of \$649/month; wide-area network connection provided by a private Internet carrier with a final 2 GHz microwave hop direct to the transmitter building; and a no-monthly-cost trade-out for the station and extension of our local-area network via an 11 GHz private microwave hop from our studio building to the transmitter site via a dish mounted at the top of the main radiator, a receiver located at the antenna tuning unit (ATU) and a 700-foot fiber optic link back to the transmitter building.

DECISIONS

Because most of the 11-mile path from studio to transmitter is located in an annual flood plain, the options based on telco copper were ruled out.

Ideally, we preferred equipment that would deliver multiple bidirectional audio paths (analog and AES-EBU), extend our station phone system to the site and function well over LAN or WAN. Due to permitting delays, we're currently using the WAN link and plan to move to the LAN/microwave system in the next year.

The APT WorldNet Oslo system provides the flexibility and functionality we need. Our current system has two duplex AES-EBU modules, one duplex analog audio module and a four-line off-premise phone module. Setting up for use over the WAN required some assistance from the APT tech support people, but the system's great management software allowed us to access and configure both ends of the link for optimum stability and minimum latency.

The Oslo management software provides instant monitoring/logging of system parameters and has a flexible alarm matrix that allows us to choose the alarms we want to receive and the method we want to receive them. There are also built-in status circuits from site-to-site, with eight opto-coupled inputs and eight relay outputs, available at each unit.

When we move to the microwave/LAN, the additional bandwidth will allow us more program audio paths to the transmitters and return audio from RPU receivers at the transmitter site as well as from over-the-air receivers allowing us to backhaul clean audio from other radio stations for monitoring and EAS.

(continued on page 25)



APT Oslo tops the rack.

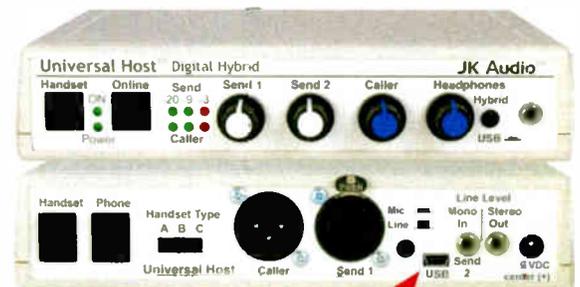


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Go Radio Goes With Harris

Intraplex HD Link Enables Uncompressed STL Audio for North Dakota Broadcaster

USERREPORT

BY **MARK BORCHERT**
Chief Engineer
Go Radio Broadcasting

FARGO, N.D. — The road to digital in the radio broadcast industry is rarely an all-at-once endeavor. More often there is a strategic plan based on gradual upgrades in the studio and at the transmission site.

The studio-to-transmitter link is one area that is discussed less frequently. There is the perception that the STL unit is simply transporting program audio, whether AM/FM analog or digital. This may be technically true, but the STL unit has come a long way in 20 years, the time that has elapsed since Go Radio last installed a new STL for two of its stations.

STL UPGRADE

Go Radio Broadcasting owns six stations in the Fargo market. The company recently decided to upgrade its STL system for country station KVOX(FM) and active rock station KQWB(FM).

The goal was to find a more feature-rich digital STL unit to replace a 20-year-old system. Doug Tharp from equipment dealer SCMS suggested an evaluation of the new Harris Intraplex HD Link system and provided initial insight on the feature set.

The decision to purchase the HD Link came quickly. Go Radio is in the process of moving to digital uncompressed audio throughout the air chain. The process began with re-ingesting existing music, commercials and promos into a central OMT iMediaTouch automation system. The HD Link has plenty of bandwidth and power to transport uncompressed audio over long distances. It's also designed to support HD Radio alongside FM, providing a future-proof installation.

The HD Link is a 950 MHz fixed microwave STL, which means Go Radio could continue to take advantage of its STL license at a time when few new frequencies exist. The HD Link replaced a system that had served both stations well but lacked some of the modern and forward-looking features that KVOX and KQWB require.

The transmitting unit at the studio feeds HD Link receivers at two locations: the KVOX transmitter is three miles from the studio; at 11 miles away, the KQWB hop is nearly four times the distance. The HD Link, with its built-in



Mark Borchert is satisfied with the Harris HD Link.

W digital power amplifier, operates over the same clear sightlines our previous unit used to ensure the signal can reach both sites and withstand noise along the way, while a built-in circulator on the transmitter ensures safe operation.

Setup was simple. The clarity of the sightlines meant that the dishes, coax and related components remained in their configurations. Both stations were on the air in a matter of hours. Downtime was limited and mainly related to travel between

two transmitter sites.

The uncompressed digital audio was the biggest immediate benefit for both stations. The sampling rate was set to 44.1 kHz (other choices were 32 and 48 kHz) to provide excellent audio quality. Front-panel headphone jacks on the receiving units allow the engineering staff to monitor and enjoy the noticeably enhanced audio fidelity. The difference in audio quality compared to our old unit is eye-opening.

The HD Link offers several monitoring options. The units are monitored almost exclusively from the front panel. This allows the staff to track signal levels and notice changes over time that may affect on-air quality.

Go Radio has taken advantage of the front-panel monitoring to troubleshoot interference. Interfering signals recently entered the licensed spectrum for both stations, which was partially determined from signal level fluctuations on the HD Link front panel. The engineering staff connected inline band-pass filters from the antennae to the HD Link receivers to filter out the intruding noise.

The system can also be monitored via IP connections, and each HD Link unit has a unique security-equipped Web address for engineers to pull up using a browser. Here, engineers can view the configuration of the unit and make necessary adjustments to various settings.

It is also possible to monitor the

health and operation of the unit from this Web address. In the future, Go Radio expects to take better advantage of the IP connections for simultaneous off-site monitoring of all three units.

Another feature of the HD Link is the inclusion of two 7 kHz auxiliary audio channels as standard. Go Radio is transmitting four channels of main program audio (two stereo pair) and RDS data for both stations. The stations plan to use the auxiliary audio channels to transport program audio for an AM station that is using equalized phone lines for part of the journey.

The phone lines transport the audio to an older studio, where the signal jumps to an STL unit for delivery to the AM transmitter. The HD Link would instead carry that audio to one of the FM sites, where the AM signal would then break off for last-mile transport.

The HD Link is the most recent part of Go Radio's audio chain to go digital. Along with other HD-ready products Go Radio has installed (including Harris digital transmitters), the HD Link provides a clear upgrade path to HD Radio. There are no plans to move beyond analog AM and FM at this point, but having the right components in place will help if and when the time comes.

For information, contact **Scott Grueninger** at Harris Broadcast in Ohio at (513) 459-3400 or visit www.harris.com.

BlueKeeper Keeps Users 'Out of the Blue'

School Station Uses Bluetooth Technology and Cell Phones for Remotes

USERREPORT

BY **BRETT M. LYONS**
General Manager
WLRA(FM)
Lewis University

ROMEDEVILLE, ILL. — After experimenting with JK Audio's BlueKeeper device, I see how this piece of equipment would make a significant impact in the world of radio broadcasts.

The most important thing in broadcasting is versatility. Given how technology is reducing the size and amount of equipment needed to put on broadcasts, the more functions one piece can perform, the better, making it that much more valuable.

WLRA(FM) runs a special program in the fall, "Friday Night Lights." Our station's most successful program goes on location every Friday night for 14 weeks broadcasting a local high school football game. The program showcases great local talent and helps develop a more intimate connection with our surrounding cities. It is unique because it helps establish such a strong personal feeling with our listenership.

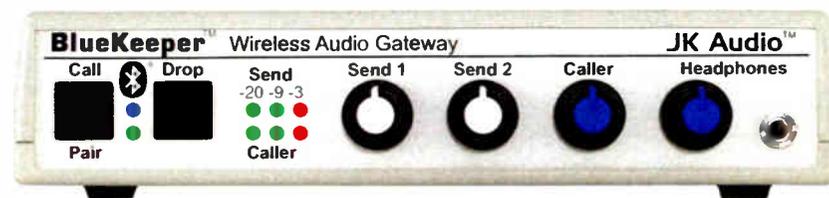
The BlueKeeper is a wonderful tool for "Friday Night Lights." During the week of preparation, I can use it to record interviews from the studio with coaches, players and

beat reporters. I can also take it with me to the venues and use it in the press boxes. There are many functions that can be harnessed in one device.

Perhaps the best function is the ability to record interviews from my cell phone using a microphone headset. I used the Bluetooth technology of my LG enV3 phone and connected my headphones and input devices directly into the BlueKeeper. If need be, I also could use JK Audio's RemoteMix Sport device to add additional headsets.

The sound quality is wonderful with the BlueKeeper. There are stereo inputs and outputs on the back of the unit, so MP3 recordings can be managed on location. The small, compact unit makes everything involved in remote broadcasting and recording interviews much simpler. It will make my job in the fall easier and improve the quality of our shows.

For information, contact **Joe Klinger** at JK Audio in Illinois at (815) 786-2929 or visit www.jkaudio.com.



TECHUPDATES**DAWNCO ZAPS LIGHTNING**

Satellite equipment and accessories maker Dawnco announced the availability of the LNB-Zap-Stop.

The LNB-Zap-Stop is designed to prevent lightning strikes near a satellite antenna damage the LNB (low noise block) or equipment at the other end of the cable run. The LNB-Zap-Stop surge suppressor is placed in a coaxial cable line that runs from antenna-mounted LNB to a satellite receiver. The device has F female in and out, with suppressing circuitry designed to stop electrical surges.

The unit uses TSD Transient Suppressing Diode technology to block high-voltage surges, and protect devices connected to the coax. It offers optimum protection through its use of three technologies for high-voltage protection: filter, gas tube, TSD.

According to Dawnco, the LNB-Zap-Stop protection units can take multiple strikes, with no need for resetting or replacing, when units are grounded and installed properly and surge is within the units rated capability shown on the spec page.

After a strike, when the satellite receivers are operating properly, the user will know that the lightning protection unit is working properly. If the satellite downlink has a direct lightning hit, or a very close hit, it is possible to damage the surge protection unit. Under these rare conditions, the unit will fail in the open position with no signal passage, to provide continued electrical protection to connected devices.

For information, contact Dawnco in Michigan at (248) 391-9200 or visit www.dawnco.com.

KRKO

(continued from page 23)

With the addition of another APT stereo codec unit (e.g., APT Horizon), this system will allow us to link to our auxiliary transmitter site, delivering all of our STL audio to all of our sites with one system.

The APT WorldNet Oslo system has exceeded our requirements for KRKO(AM) and will support our needs into the future as we add another station.

For information, contact Chris Poulain at APT/WorldCast Systems in Florida at (305) 249-3110 or visit www.aprcodecs.com.

MAYAH HAS NEW HALF-RACK CODEC

The latest in Mayah Technology's C11 codec series is the C1131N, priced at \$1,995 retail. It has hardware identical to the C1131, which sells at \$3,979, and can be upgraded.

The C1131N has only basic audio codecs vs. the full range with the C1131. Provided with the C1131N is G.711, G.722, MPEG I, II and MP3 formats. Extra codecs, when needed, can be installed by the user after purchase, upgrading to a full C1131.

The C1131 full version supports G.711 via Eapt-X (optional) and linear to AAC ELD via IP to ASI. Mayah highlights the C11 product line's compact dimensions, low



power consumption and "no-noise" hardware architecture. The C1131 series uses less than 8 W at 12 VDC power and fits a half-rack, allowing two units side-by-side in a single RU1 rack space.

C11 models offer a range of redundancy and monitoring/control concepts and are in compliance to EBU N/ACIP including Mayah's enhanced IP features and SIP support.

For information, contact Mayah Technologies in Washington state at (360) 616-1474 or visit www.mayah.com.

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BUYER'S GUIDE

TECHUPDATES

MOSELEY RINCON TRANSPORTS AUDIO

Moseley says the Rincon is the first audio transport device of its kind to offer multichannel audio over different types of transport networks simultaneously. That means the user can send one to four programs over a mixture of T1 networks, IP connections of various bandwidths or radio links.

Rincon works in a number of sta-

tion topologies, point-to-point unidirectional, point-to-point bidirectional, and point-to-multipoint multicast.

Audio handling features include programmable failover to a backup audio source and an SD card slot or USB memory stick for 100 hours of emergency audio playout in case of a catastrophic interruption.

Choices of audio formats include linear uncompressed, MPEG Layer II and MP3, AAC-LC, AAC-LD, G.711, G.722. Rincon auto-negotiates between units to enable connection.



An example of Rincon's flexibility is the ability to program main and backup streams over different types of networks. Users can send the main program stream uncompressed over a full-bandwidth IP or T1 network and back it up with an AAC duplicate over DSL. In case of interruption of the main, Rincon's receiver will sense and

switch automatically to the backup.

Rincon contains an Ethernet switch for QoS, allowing packet priority, VLANs, bandwidth manage-

ment and rate limiting. Robustness is achieved with user-programmable forward error correction, adaptive jitter buffers and error concealment.

Controlling Rincon is by GUI on browser and smartphone. It is housed in a 1RU chassis with standard 19-inch rack mount.

Rincon's ability to leverage low-cost network choices and its low purchase price gives broadcasters excellent return on investment, the manufacturer says.

For information, contact Moseley Broadcast in California at (805) 968-9621 or visit www.moseleysb.com.

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PULSECOM HAS ARMORED MONOBLOCK T1 STL

Pulsecom says it has combined technology used to protect cell tower electronics with professional audio quality and high-volume U.S. production to create the Armored PCAU-Suite, a tool for network optimization and security.



PCAU-Suite provides a solution to threats such as lightning, hackers, malicious viruses, power outages, bit error corruption of uncompressed HD or FM program material or failure of analog links when digital links and their backups fail.

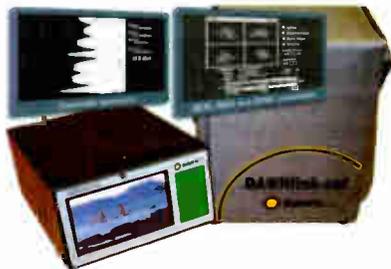
The PCAU features include Enhanced apt-X, 24-bit AES/EBU, analog, Ethernet-over-T1 for HD2 and HD3 and remote LAN, RS-232 for RBDS and e-Radio and now "drop" and "continue" capability.

According to the manufacturer, telecom competition has driven down the cost of T1 circuits, enabling new hybrid architectures to leverage studio IP content management with the resiliency, security and quality of T1 for program transport. Some 6 million Pulsecom circuits have been deployed, according to the company, providing steadfast operation despite exposure to AC induction, temperature extremes, airborne contaminants, earthquakes and especially lightning.

For information, contact Pulsecom in Virginia at (800) 381-1997 or visit www.pulse.com.

DAWNlink SATELLITE CHANNEL IDENTIFIER, WITH LCD DISPLAY

Satellite users report that with DAWNlink in hand, they can navigate through a maze of digital channels, to quickly identify any satellite. Users are now able to perfectly peak their dish to maximum performance. Start by using the full-screen SPECTRUM ANALYZER to aim the dish for the



best carrier-to-noise ratio. Confirm that you are on the proper satellite with the built-in MPEG2 SATELLITE RECEIVER, to view unencrypted sat channels on the DAWNlink's color 4.5 inch LCD display. Perfectly peak when precise dish adjustments show up clearly, in the CONSTELLATION VIEW dot pattern display of a digital channel. Watch for text that comes directly from the digital channel data stream, which will identify the satellite name and channel. The satellite user's job is made simpler, with the convenient carrying case and neck strap, plus LNB powering directly from the DAWNlink. Greatly improved operation and storage time is made possible, with the rechargeable lithium ion battery. There are two different models to choose from, but most users get the "sat" model that measures the 920-2150 MHz satellite L band. Some users pay a little more, to get the "sat plus terrestrial" model, which adds measurement of the 5-900 Mhz band.

DAWNco "L SERIES" LNB AMPLIFIERS ARE NEEDED FOR NEW SAT CHANNELS

Several networks have made the switch to DAWNco's new "L series" of C and Ku band LNB amplifiers, to accommodate the "finicky" nature of new digital satellite receivers. This new generation of LNB has improved specs that can make a real difference in the reception of digital satellite channels. These new LNBs feature best-in-industry specs for "1dB compression point" and "phase noise." Internal circuitry has been



completely redesigned for reduced power draw, so that indoor receivers and power supplies will never be overtaxed. In order to prevent audio drop-outs and signal outages, when outdoor temperatures fluctuate, DAWNco's best LNBs feature a highly stable +/- 5 KHz rating. Make sure to upgrade to the new DAWNco "L series" LNBs, and watch for improved EbNo readings on your digital satellite receivers.

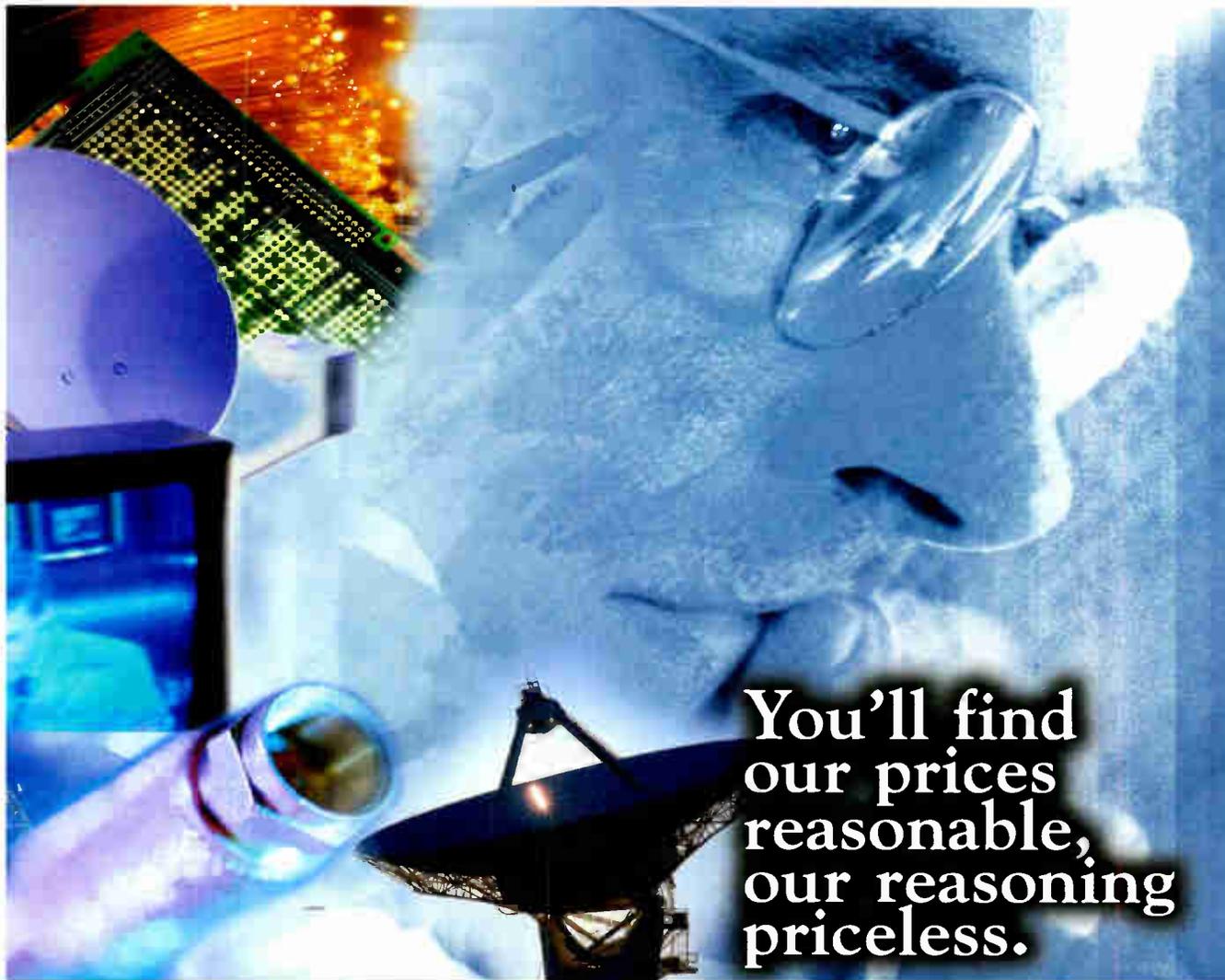
TI INTERFERENCE FILTER BLOCKS RADAR FROM AIRPORTS & MILITARY TO IMPROVE SATELLITE RECEPTION

Many satellite users find that their interference problems go away, when they install the DAWNco TI Filter between the feedhorn and LNB. Airport and marine radar frequently wipe out satellite reception, when the dish is located close to military bases and airports. The TI filters suppress strong out-of-band interference caused by radar. The #C-BANDPASS-6LIGHT model is best for USA reception of C band satellites. There is also a "Wimax" version and "International" model filter, for use outside the USA.



DAWNco 4.2 METER SATELLITE ANTENNA FOR BEST RECEPTION

Finicky new digital satellite channels can be received perfectly, using DAWNco's high-gain 4.2 meter satellite antenna. Satellite users are noticing that this antenna doesn't cost more than competing 3.7 meter dishes on the market, yet has 2.6 dB more C band gain. Seasoned engineers realize that accuracy-of-installation has a big impact on performance, and prefer DAWNco's 1-piece spun aluminum reflector, because it always installs perfectly. When compared to multi-panel dishes, the DAWNco antenna has 90% fewer parts. Fewer parts makes for a faster, and more precise installation, with resulting gain that actually matches published specs. The single piece reflector design has inherent structural strength and parabolic shape retention. Customers receive their new 4.2 meter satellite antenna, delivered on a factory truck in perfect condition. When satellite users are short handed, they can ask DAWNco about installation by an experienced technician. The knowledgeable people at DAWNco will help each satellite user plan for installation of their new satellite antenna, with advice on site selection choices, pad preparation details, and low loss cable solutions.



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Keeping track of all the satellite and fiber optic communications products out there is a full time job.

That's why so many people come to **DAWNco**. They count on us for everything from satellite antennas, receivers, LNBs, and position controllers to fiber optic broadband links, satellite links and data links.

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DSR01 Receiver's Feature Set Appeals to German Broadcaster

USERREPORT

BY THOMAS ERL
Audio Engineer
Antenne Bayern

MUNICH, GERMANY — Antenne Bayern is Germany's most listened to radio station, with more than 3.8 million listeners a day and an average of over 1.2 million listeners per hour. It transmits its programs using 42 FM transmitters. The signal is supplied via the Astra 3A through satellite links.

In 2009 the replacement of Comstream satellite equipment was to be carried out by our partner Media Broadcast. After detailed testing it was decided to opt for a professional satellite transmission system concept with complete redundancy. This system is maintained and operated by

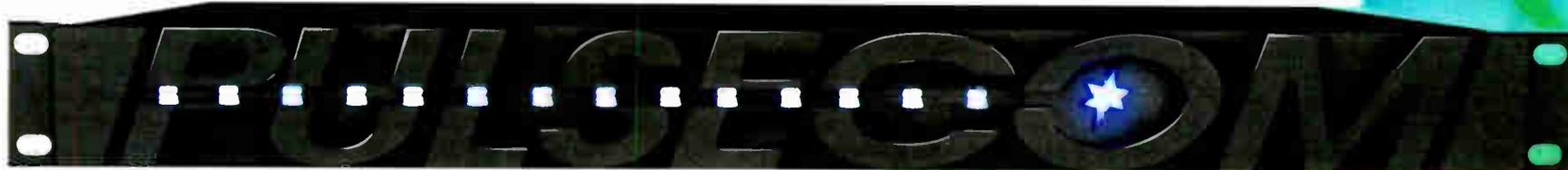


The 2wcom DSR01 at work in the rack at Antenne Bayern.

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Media Broadcast.

Using satellites for distribution requires reliable integrated satellite receivers and decoders (IRD). For our application, the focus was placed on the following features: absolute time synchronized receiver, ideally fitted with PCR time stamp to avoid time delays during RDS switch-over of overlapping FM transmitters; excellent sound qual-

A helpful feature is the ability to use definable SNMP traps that can be triggered and forwarded at predefined conditions.

ity, with AAC-LC and MPEG Layer II option for encoding of DVB-S signals; outstanding error correction to guarantee reception even in bad weather conditions; and noncritical power supply components with long-term stability.

Another consideration was the need for dynamic transmission of RDS data because Antenne Bayern sends out dynamic data, i.e., radio text and TMC services.

Using these guidelines we opted for the DSR01 IRD from 2wcom in Germany. In addition to the aforementioned features, the DSR01 receives DVB-S2, an option for tasks in the future based on the DVB-S standard.

The configuration of the DSR01 can be carried out via Web interface conveniently. This enables new configurations as well as copying existing configurations to a receiver of the same type without complications.

The complete system is being integrated in the network management control system of Media Broadcast and is to be monitored 24/7/365.

Another useful feature of the 2wcom DSR01 is the ability to use definable SNMP traps (alarms) that can be triggered and forwarded at predefined conditions, e.g., loss of signal in adverse weather conditions, loss of auxiliary RDS data, audio errors and more. Notification of these conditions can be forwarded via SNMP or via relay contacts. Apart from predefined switching thresholds it is possible to access different presets via input control (GPI) in order to switch over to a certain carrier or satellite if necessary.

We have also been happy with the customer support of 2wcom, listening and corresponding to our demands as well as carrying out improvements promptly and integrating those into updates quickly.

For information, contact Bill Marriot at 2wcom/ viaRadio in Florida at (321) 242-0001 or visit www.2wcom.com.

The new PCAU-SUITE T1 Codec/
Studio-to Transmitter-Link does it all - and protects against Hackers, Malicious viruses, Power outages and Uncompressed HD bit error corruption. Even automatic and instant switching to analog links if digital links fail.

All with a new hybrid IP-T1 "Best of Both Worlds" architecture to leverage studio IP with the Armored T1 PCAU-SUITE for real world resiliency, security and quality. That fact is, T1s cost less today, so you can have it all. Secure HD, FM and AM with Enhanced apt-X™ 24-bit clarity, Ethernet-over-T1, RS232 and telemetry.

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Barix Enables Land/Air Union for Skyview

Audio Over IP Complements Satellite Delivery of Sports Programming

USERREPORT

BY DAVID DICKSON
Vice President of Engineering
Skyview Networks

SCOTTSDALE, ARIZ. — The broadcast industry increasingly views satellite and IP as competing signal delivery platforms. There rarely is press about how the cross-compatibility of the two platforms actually can enhance the way network programming is processed and distributed.

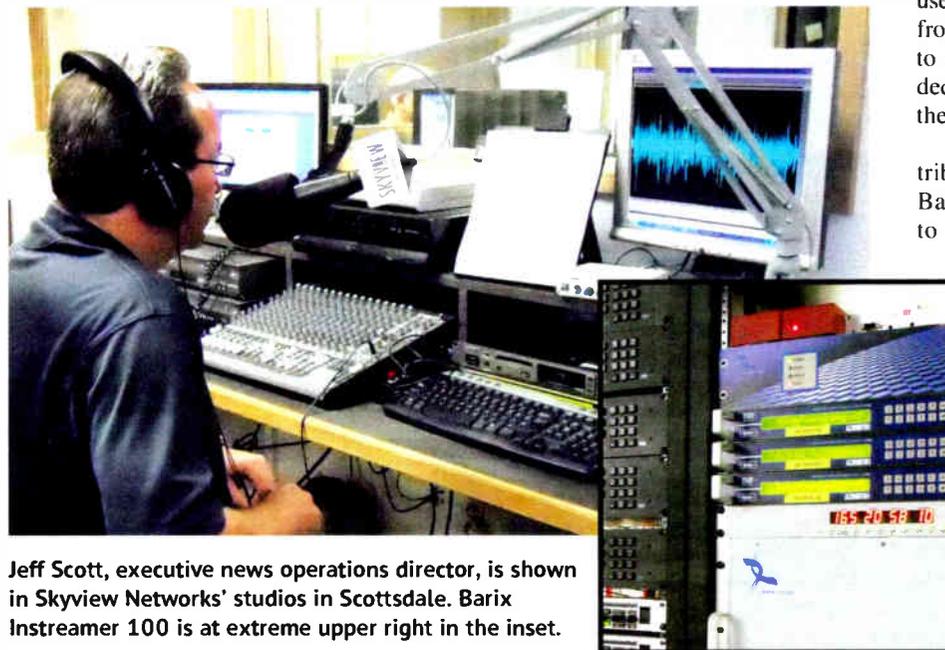
Skyview Networks specializes in news and sports program distribution for the radio industry, typically serving radio networks with multiple stations and affiliates. The satellite advantage allows Skyview to distribute program audio through the open air to stations across the United States, directly uplinking to SES World Skies AMC-8.

PLAY BALL

Skyview increasingly has turned to IP for audio backhaul and confidence monitoring. The company has more than 20 ISDN lines that gradually will disappear in favor of IP. That will reduce monthly expenses vastly and offer nearly universal availability.

Much of the company's confidence in IP is based on experience with Barix audio-over-IP equipment. Skyview has used Barix devices since 2004, relying on them more frequently as the many benefits became clear.

Software-based IP solutions have their value, especially when free of cost, but lack the stability and simplicity of Barix hardware. Skyview has found Barix encoding and decoding devices



Jeff Scott, executive news operations director, is shown in Skyview Networks' studios in Scottsdale. Barix Instreamer 100 is at extreme upper right in the inset.

to be far more reliable with impressive features and functionality. The price point of the Instreamer encoders and Exstreamer decoders compared to other IP hardware devices clearly beats the competition, usually by two-to-one.

Recent success stories include the Caribbean World Series, a championship baseball series affiliated with the Winter League programs of Major League Baseball. Skyview distributed the 2009 and 2010 Series (Mexico and Venezuela, respectively) to several U.S. stations. In addition to being a dual-country or cross-continental success story, the project also serves as an ideal case study for the compatibility of satellite and IP technologies.

The indeterminate availability of ISDN and engineering assistance in

both regions forced a change in strategy for signal acquisition. It was decided that IP would be an ideal distribution method following confirmation and evaluation of network connectivity.

Skyview configured a Barix Instreamer 100 to support 96 kbps audio

challenge. Rather than install expensive dishes (approximately \$2K) and receivers (approximately \$1K), a preconfigured Exstreamer was shipped to each station to receive the signal. Skyview used Instreamers to re-encode the audio from the console and deliver the signal to each station. There, the Exstreamers decoded the audio and sent it directly to the on-air consoles.

In a similar situation, Skyview distributes live Chicago Bulls National Basketball Association broadcasts to multiple stations. One station, WLTH(AM) in Merrillville, Ind., is incapable of adding a C Band dish at its site. A point-to-point Instreamer>Exstreamer pair was configured for this station so they can receive and broadcast each game.

The Barix devices are nothing if not versatile. Skyview is responsible for recording and logging the occurrence of live reads during play-by-play broadcasts for the San Diego Padres, Cleveland Indians, Pittsburgh Pirates and Los Angeles Clippers

professional sports teams. These stations have online streams, but do not have the rights to stream these live professional sports events. Live read monitoring is accomplished using Barix Instreamers.

Skyview ships a preconfigured

Cross-compatibility of satellite and IP actually can enhance the way network programming is processed and distributed.

(MPEG Layer III) at the encode point. The device was also preconfigured for firewall compatibility and set for DHCP address assignment, essentially creating a plug-and-play situation at the origination point.

The Instreamer encoded the audio for streaming to the Skyview facility in Scottsdale, Ariz., where an Exstreamer 100 received and decoded the signal. The Exstreamer was connected to a mixing console, the output of which was sent through a final audio processing stage before hitting the uplink.

The Instreamer and Exstreamer 100 units are designed with unbalanced audio inputs and outputs, so an audio interface was used at each end to convert to balanced audio to maintain quality throughout the audio chain. (We expect soon to test the Exstreamer 500, which has balanced inputs and outputs.)

Two stations in the network did not have satellite dishes, presenting a final

Instreamer to each station where the devices are connected to a console and the office network. The Instreamer encodes and streams the live feed to the Internet and Skyview technicians listen to the broadcasts from desktops in Scottsdale (or laptops from anywhere) using Winamp. The use of free software to monitor broadcasts further minimizes costs.

The continued reliability and versatility of Barix devices has been instrumental in Skyview's increasing reliance on IP for audio backhaul, distribution and monitoring. It also makes a solid case for cross-compatibility with satellite networks.

Scott Boddicker, director of operations at Skyview Networks, also contributed to this article.

For information, contact Andy Stadheim at Barix in Minnesota at (866) 815-0866 or visit www.barix.com.

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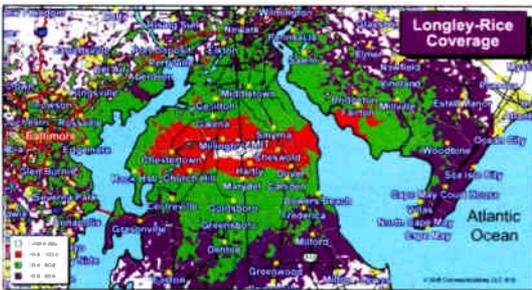


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(3) SMC automation tape transports, re-badged Otori, 10" reels, 3.75/7.5 IPS, heads excellent, all need capstan belts, all have preamps, with separating circuitry to trap and send on 25 Hz, 35 Hz, etc, BO, you ship. Randy, 520-744-1150.

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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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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

Seeking historic recordings of Twin Cities (Minneapolis/St. Paul) radio stations for www.radiotapes.com. Please contact Tom at radiotapes@aol.com.

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 recording gear, amplifiers, preamps, outboard, radio or mixing consoles, microphones, etc. Large lots acceptable. 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 San Francisco 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.

RECORDING & PLAYBACK HARDWARE

WANT TO SELL

(2) Harris/Gates CB-1200 turntables, good rubber, motor suspension & drive pucks, Microtrack (wooden) arm, with a 500 Series Stanton cartridge, no styli, 1 will clear 16" rdg's, tracking angle is correct, RCA BQ2, 16" turntable, 3 speed, rim drive, weathers arm, no pickup, includes an old Gray Research passive equalizer, floor cabinet, large RCA meatball on the front. All BO, you ship, Randy, 520-744-1150.



WANT TO BUY

Large or small collections of 16" transcriptions or 12" transcriptions, not commercial LPs. Bill Cook, 719-687-6357.

Schnader telecriptions 16 mm musical films produced in the early 50 s. Bill Cook, 719-687-6357.

Standard Short-tune series. Bill Cook, 719-687-6357.

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FM CP's: sell, trade, or lease: Athens, GA, Greensboro, GA, San Antonio area, Robbins, NC, C2: Placerville, CA. CPRradio@bellsouth.net.

Soperton/Vidalia, Georgia Non-Com FM CP (12,000 watts) with tower site included \$79,500. Call 1-866-568-8780.

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EMF, Prometheus Reach an Understanding

Excerpts From Their Memo of Agreement Regarding Translator and LPFM Priorities

In July, the Educational Media Foundation and Prometheus Radio Project submitted a "memorandum of agreement" to the FCC, laying out a proposed

IN THE NEWS

resolution of issues raised by the 2003 translator window and about LPFM vs. FM translator priorities in general.

EMF is a station owner and operator of the K-Love and Air 1 networks; Prometheus is an advocate for community low-power FM stations. The agreement was noteworthy in part because the organizations are seen as coming from divergent viewpoints on the translator/LPFM issue.

They noted "the fits and starts that marked the commission's obvious struggle over how to satisfy both LPFM and FM translator interests, including its conflicted, evolving views regarding whether to give LPFM service priority over translators, and the range of alternatives for handling Auction 83 proposals, some of which were haltingly implemented then put off."

Here they ask the commission to abandon its 2007 decision capping FM translator applicants from the earlier window at 10. They call for the FCC to hold the applications in abeyance and to

open an LPFM filing window, in which LPFMs would have a preference; after which the remaining translator applications would be considered.

The organizations believe the FCC could adopt their proposal without a further Notice of Proposed Rulemaking. They also offered several other suggestions, including allowing LPFM stations to operate on 87.5, 87.7 and 87.9 MHz. Excerpts:

First, as to the pending applications for FM translators filed during the 2003 FM translator window, the parties recognize that, for purposes of this agreement, a limit of 10 protected FM translator applications from that window may not serve the interests of either the translator or the LPFM communities.

A limit of 10 protected FM translator applications identified before an LPFM window may result in the preclusion of many new LPFM stations in larger markets through the grants of new FM translator applications, while also resulting in rural populations and other underserved areas not receiving any radio service because FM translator applicants forego protection of these applications when selecting the 10 applications to protect.

Thus, the parties urge the commission to act as follows:

- 1) Keep all of the pending FM translator applications from the 2003 FM translator window on file, but to continue to defer the processing of all of these applications until after the LPFM window described below.
- 2) Open an LPFM window allowing for the filing of applications for new LPFM stations nationwide. Applications filed in this window would receive a preference over applications pending from the 2003 FM translator window.
- 3) Once the applications that have been identified from the LPFM window sufficiently so that the commission can determine which of these applications preclude applications in the 2003 FM translator window, the commission should resume processing of all of the remaining FM translator applications not precluded by an LPFM application. At that point the FCC should open a settlement window for the remaining 2003 applications, and thereafter grant applications that can be granted following the settlement window, and use the established selection process to resolve all of the remaining pending FM translator applications. ...

ESTABLISH PRIORITIES

The parties also urge the commission to look at other issues in the future to

firmly establish the priorities between LPFM and FM translator stations. Some of the following proposals can be resolved in the context of the existing Docket 99-25 Further Notice of Proposed Rulemaking, while other proposals may need further notice and comment.

The suggestions are as follows:

- 1) The parties agree that LPFM stations should not be given any priority over existing FM translators and granted construction permits for FM translators. The investments made in FM translators and the existing listening habits of the audience of FM translators should not be disturbed.
- 2) The FCC should recognize that, in future proceedings, LPFM applicants providing a local service should be given a preference over FM translator applicants. The parties urge the commission to adopt an application process that would include the following elements:
 - A. Regular filing windows for both LPFM stations and FM translators.
 - B. Unified windows in which both LPFM applications and those for FM translators can be filed, with LPFM applicants being allowed to file using FM translator contour protection standards, but subject to FM translator interference remediation requirements as set forth in Part 74 of the FCC rules.

(continued on page 34)

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READER'S FORUM

MARY DAY LEE

This is just a note of appreciation for the article about Mary Day Lee by James O'Neal in the May 5 issue of Radio World. I thoroughly enjoyed it, since I do have an interest in women's "firsts" from the 19th and 20th centuries. It was well written and researched.

I appreciate the efforts of people like Mr. O'Neal who take pains to preserve what may seem to be obscure stories but are actually quite valuable for lay historians like myself.

Rev. J. Beth S. Goss
Pastor

Church of the Covenant Presbyterian
Arlington Va.

AN INCREDIBLE LADY

I really enjoyed "Mary Day Lee, Radio Pioneer." What an incredible lady; great to see her recognized for her leadership with kids and in broadcast engineering. The article was well written and the postscript really completed the story.

It would be nice to see the local SBE chapter near White Plains visit her grave site on a regular basis to clean it up and pay respects on all of our behalf; it would be wonderful to see a scholarship for women in broadcast engineering in Ms. Lee's name.

Daniel Slentz
Vice President of Technology &
Broadcast Operations
KERA(FM), KXT(FM) and
KERA(TV)
Dallas

LOVED THE GOONIE BOXES

That was a fascinating article about Bob Gonsett and his father Faust Gonsett, who helped to create the excitement on the VHF amateur airwaves ("Gonsett, Born to RF Engineering," May 5).

Many of us learned so much from those early days of VHF experimenting and operating with those loveable little "Goonie Boxes." I still have several. I hope you kept yours and are using them!

Bob Heil, K9EID
Founder
Heil Sound
Fairview Heights, Ill.



FEMALE FIRST PHONE

Musing on a 2006 story by Buc Fitch, "The Demise of the First Phone" (radioworld.com, keyword "First Phone"), I regret not having transitioned to a General license before my First Class expired in the early 1980s, if only for my ego wall at home.

I can't find any information on exactly how many women held First Phones, but I was one of them, from 1969 on. My name was Patricia Anne Hamlin, later Collins. I was assistant chief engineer at WLBJ(AM/FM) for a good amount of time and a halfway decent broadcast engineer thanks to the continuing mentoring of the late Dean Maggard.

I've tinkered with computers as a hobby and the Internet as a profession through the years; but nothing will ever compare to the feeling of absolute awe in harnessing and directing radio frequency. It's a quiet pride that lingers with our little club.

I'll always thank the boys who let a 17-year-old girl into the treehouse long before it was the legally required thing to do.

Rachel Rosenfeld, formerly
Pat Hamlin Collins
Boston

TRANSLATORS

(continued from page 33)

C. A priority system that would favor stations providing local service over remote FM translators — establishing the priorities between LPFM stations, translators providing fill-in service for AM stations and other FM translators.

D. A limitation on the number of FM translators that could be filed in any window. The FCC could consider a number of options in establishing a limit, which need not be based on a hard and fast nationwide limitation (i.e., no cap of 10 applications nationwide).

For example, the FCC could consider a more limited geographically based limit tied to the need for a translator, e.g., a limit on the number of translator applications that can be filed by any applicant

within an Arbitron Metro or, for areas outside a Metro, per primary station (e.g., no more than two translators per window per applicant inside a Metro or, outside a Metro, no more than two applications for translators that would be rebroadcasting the same primary station).

Other viable options should also be considered; any limit would allow FM translators to serve the needs of broadcasters and listeners in rural as well as more urban areas without flooding the commission's processing channels.

Note that the numbers provided here are for illustration purposes only, and do not necessarily reflect limits to which the parties would agree; but the parties are agreed on the concept of a market-based limit as opposed to a national limit, if tied in with a unified LPFM/translator window as described above.

3) Allowing LPFM stations to operate on 87.5, 87.7 and 87.9 on the basis that they do not interfere with existing television, low-power television or FM radio services.

4) The exploration of allowing FM translator stations to be converted to LPFM uses (such uses to be subject to all limitations on LPFM operations) if a local group can reach an agreement with a translator licensee for the sale or donation of the translator.

5) The parties agree that new LPFM applications, while having a priority over applications for new translators in any subsequent unified window, will not have any priority or other ability to involuntarily preempt existing or authorized FM translators.

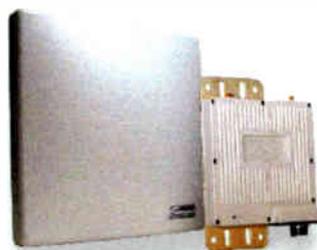
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**Rick Hunt, Vice President
and Director of Radio Engineering at
Entravision Communications Corporation,
with one of their Wheatstone G5 consoles.**

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