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IBC2022
Broadcasters return to RAI Amsterdam

Fundamentals of I.T.
Let's talk about the Ethernet switch

Mono on FM?
Glynn Walden says "hang on a sec"

The FCC weighs network resiliency

Broadcasters wonder what it means for them

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Well done, Jim and Ben

Jim Wood hands over the ownership of Inovonics

Paul McLane
Editor in Chief

"There's a new sheriff at Inovonics, though the old one promises he isn't going away."

I wrote that sentence in 2012 when I reported that COO Ben Barber had been elevated to president/CEO and that its founder Jim Wood, while still involved as chairman, would be easing back on his duties.

That article now has a sequel. Inovonics announced in August that Wood has formally retired and that Barber is now the owner.

"Ben has evolved into a much better manager and planner than I ever was," Wood said in the announcement, "and under Ben's guidance the company has dramatically increased its presence, market share and prestige within our industry."

Barber said he expects to run the company with little change. "We have a good name, and it is my goal to continue to carry on [Jim's] legacy," he said.

It couldn't happen to nicer folks.

Jim Wood, now 80 and having devoted 50 years to the company, is widely respected for his technical and business accomplishments as well as his quiet integrity. He has also been a longtime supporter of what we do at Radio World.

Walking in his footsteps, Barber has been a good friend to broadcasters and a faithful guardian of the Inovonics approach to doing business that Wood established. He said the company plans to continue to "build great gear, sell it worldwide, and provide a stable and sustainable work environment."

Ben and Jim are shown below at this year's NAB Show. Our contributor Tom Vernon wrote a super article about Jim's career in 2018 titled "Jim Wood Focuses on the Basics." Type that into the search field at *radioworld.com* to read it.

Congrats to everyone on the Inovonics team.

THIS ISSUE

ALERTING: State Emergency Communications Committees started to receive word of FCC approval of their newly submitted EAS and alerting plans. Illinois was first, followed by Nevada.

Separately, the Federal Emergency Management Agency issued a public alert about "certain vulnerabilities" in EAS encoder/decoder devices. It said these might allow outside actors to issue emergency alerts, whether it be via TV, radio or cable network. The warning was prompted by a report that the topic was going to be discussed publicly at a hacker's conference. FEMA and the FCC encouraged all EAS participants to make sure their devices are running the current software, are protected by a firewall and are not using default passwords.

ACQUISITIONS: Thomson Broadcast completed its acquisition of GatesAir from an affiliate of The Gores Group.

The pending purchase had been announced in April. Thomson said then that the acquisition will help it meet its goal to establish itself in the U.S. market, a goal it set out four years ago when Thomson itself was acquired by Group Sipromad of Madagascar.

GatesAir is headquartered in Mason, Ohio, with manufacturing in Quincy, Ill. Thomson Broadcast is based in Paris, France, with operations in West Palm Beach, Fla.

In 2012 Gores purchased Harris Broadcast Communications from Harris Corp. for $225 million. In 2014 Harris Broadcast then was split into Imagine Communications and GatesAir.

Terms of the Thomson acquisition were not announced.

LPFM: The FCC imposed a $25,000 penalty on a Florida low-power FM station for rule violations. It is believed to be the largest fine against an LPFM since the service was created more than 20 years ago.

Jupiter Community Radio Inc., licensee of WJUP(LP) in Jupiter, Fla., was penalized for alleged violations including operating over its licensed power, failing to permit an inspection and failing to maintain Emergency Alert System equipment.

Among other things, the FCC said the station was operating at an ERP of 177 watts instead of its licensed 20 watts, using a two-bay antenna instead of its licensed one bay, and transmitting from a spot about 1/3 of a mile from its licensed location.

Writer
Paul McLane
Editor in Chief

IBC returns IRL

Having endured starts and stops in 2021, the show is ready to go on

"We are moving forward, we are here for our industry, and together we are a community."

That's the message to attendees from organizers of IBC2022 as they prepare for their first in-person show in three years.

The show was cancelled in 2020 in the face of the pandemic. In 2021 the organizers at first postponed the event for a couple of months but then were obliged to cancel less than two weeks before opening.

IBC2022 will take place Sept. 9–12 at the RAI Amsterdam Convention Center in the Netherlands.

Chief Executive Michael Crimp said, "We've already seen how the return of live events is reinvigorating the industry and, at IBC2022, we will enable everyone on our show floor to get back to business in the face-to-face way they love."

Organizers aren't projecting an attendance number publicly, though as at other recent events, turnout is likely to be well off pre-pandemic levels. The show drew around 56,400 in 2019. Attendance at the spring NAB Show in Las Vegas was down about 43% compared to 2019.

The IBC show is shorter than in years past. At one time, IBC events spread over six days. It was cut to five in 2019, and this year it is four.

At last report about 850 companies were signed on to exhibit. As of mid-August, the list of names familiar to Radio World readers included AEQ, Broadcast Bionics, Comrex, ENCO Systems, GatesAir, Jampro, Lawo, Nautel, Orban Europe, Prodys, RCS, Rohde & Schwarz, SixArms, Telos Alliance, Thimeo, Tieline, Veritone, Wheatstone, winMedia, WorldCast Group, Xperi and Yellowtec.

There is a Sunday session on the topic of small-scale DAB, put on by WorldDAB. Otherwise the official conference agenda does not include much that's explicitly about radio, though broadly relevant topics on the program include energy efficiency, personalization, the impact of the cloud on media operations, media rights management, immersive technology and artificial intelligence.

As for COVID considerations, IBC and the venue will follow the Dutch government's regulations and guidelines. Masks and social distancing are optional. At press time there were no entry restrictions into the Netherlands for travelers from within the EU/Schengen area. An EU entry

> **As broadcasting moves toward a cloud and virtualized playout environment, facility-based backups will take on a different form.**

rule still applied to residents of other countries, who would need to be fully vaccinated or qualify under an exempt category (see *show.ibc.org/safety-covid-19*).

"There truly is no substitute"

"A lot has changed in the last two years," said Dee McVicker, a marketing manager for Wheatstone, which will exhibit. "We see the merging of IT with broadcast really taking off this year as a way to streamline and mobilize broadcasting like never before. We're excited to be back at the IBC."

"We're really looking forward to rekindling many face-to-face relationships with existing customers, resellers, partners and friends," said John Whyte, head of marketing for Nautel, which will exhibit its new line of compact, rack-mount FM transmitters.

"IBC is unique in character as broadcast shows go, and our team is excited to return to Europe's premier broadcasting event. What we like about IBC compared to many other shows is the moderate pace that allows us to really dig in and listen to broadcasters. The industry has faced a lot of challenges in the last couple of years and we'll be listening carefully to understand how we can best serve the industry."

For the first time Nautel will have representatives on hand from Digidia, which it acquired in 2021 and which makes synchronized FM, DRM and DAB+ solutions.

Telos Alliance will have a meeting/conference booth focusing on "direct, consultative engagements with customers," according to Co-CEO Scott Stiefel.

"During the past two years, we've really missed our personal relationships with our customers. Certainly, we've kept in close contact and conducted business over Zoom calls ... And while it was functional, there truly is no substitute for the personal, one-on-one communication you get when you're face-to-face."

Stiefel sees a great need for disaster recovery and flexible contingency planning for radio and broadcast facilities. "As broadcasting moves toward a cloud and virtualized playout environment, facility-based backups will take on a different form." IBC, he said, provides a venue to showcase the company's work in real-time and file-based media workflows, including virtualization.

Detlef Wiese said the most pressing challenges in radio today involve security for content transport and remote work capabilities. The company he co-founded, Ferncast, will exhibit and promote its Audio Codec Servers with aixtream Compact software.

He said Ferncast will be looking for international distributors and "to reconnect personally with people we have not seen for a long time due to the pandemic situation."

"IBC is a very useful gathering point for the industry globally," said Nick Piggott, project director of RadioDNS. He'll be talking about the importance of supporting broadcast radio with metadata and content delivered over IP.

"RadioDNS' open standards help broadcasters and manufacturers do that. We'll also be talking to people about the new hybrid radio functionality we've defined, and hearing from people on what functionality they'd like from hybrid radio."

Piggott said radio broadcasters are challenged to find the right mix of technologies. "It's increasingly complex to work out how to reach audiences in the ways they want to listen, on the devices they want to listen on, in the places they want to listen. A 'one-size-fits-all' approach relying entirely on IP throughout the entire chain from microphone to listener needs careful analysis."

Focus on language

The European Broadcasting Union, an alliance of public service broadcast organizations, will exhibit once again.

"We will be showcasing some of the work of the EBU and its members, across 5G distribution and production, DVB-I, metadata and serverless computing, HDR workflows," said Ben Poor, senior project manager, EBU Technology and

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Innovation, "as well as a look at the 'European Perspective' project, now providing trusted news to audiences across Europe from EBU members, delivered in their own native language."

Poor said the rate of change is a challenge for radio organizations, as elsewhere, one that has only been accelerated by COVID.

"In many ways radio is well placed to adapt, as it always has done, but there are significant challenges to audiences, especially in the declining hours of listening due to a competition for share of ear," Poor said.

"Many of our members have led the way, along with their commercial cousins, in helping to provide a new radio experience. In many ways the content has remained the same, but there are so many new distribution channels and ways of listening. Radio perhaps needs to transform how it measures engagement, away from traditional methods and something that represents better how younger audiences see established things like brands and personalities."

Among other topics, Poor is interested to see what is being done with language technologies.

"Leading on from the EBU's EuroVOX project, I'm keen to find out what different vendors are doing for transcriptions and translations," Poor said.

EuroVOX is an open toolbox intended to reduce the cost and complexity of transcription and translation. It consists of an API to allow integration with production systems and a user-facing tool for navigating, transcribing and translating multilingual content.

"The era of multilingual and fully accessible content across both TV and radio is arriving, and broadcasters should be preparing themselves," he said.

If You Go

What:
IBC2022

When:
Sept. 9–12

How:
https://show.ibc.org

> **"The industry has faced a lot of challenges in the last couple of years and we'll be listening carefully to understand how we can best serve the industry."**

Digital radio

The WorldDAB Project Office team will meet with members that exhibit and offer services to assist with DAB deployment, said Communications Manager Will Jackson. They'll also see stakeholders such as regulators, broadcasters and network operators from various countries.

"WorldDAB brings people together to work on key projects for DAB+ digital radio, such as metadata and logo display," he said. "It's vital we present one united voice to the big tech players, to ensure radio remains at the heart of the audio experience and that listeners can continue to enjoy the stations they love."

He noted that in Amsterdam, attendees can hear a new national multiplex that launched earlier this year, which added 13 commercial stations on DAB+.

WorldDAB will facilitate a Sunday workshop that will explore how broadcasters are taking advantage of DAB+ features.

"We'll hear how metadata allows radio broadcasters to stay at the forefront of today's booming audio market, especially in the highly competitive space of the connected car dash," he said.

"We'll also feature the exciting innovation of small-scale DAB, which makes use of open-source software along with broadcast hardware to provide affordable access to broadcast digital radio for smaller radio stations, including grass-roots community services, specialist music stations and services aimed at minority groups and other under-served audiences."

That session will include speakers from BBC, DAB Italia, Digris, Radioplayer UK and Xperi as well as organizations that use small-scale multiplexes.

Meanwhile, Digital Radio Mondiale will hold three events connected to the show, all with the theme "DRM for FM and AM —The Radio Platform for All."

In addition to a virtual presentation on Sept. 6, it will host a meet-and-greet with DRM members and specialists at the Fraunhofer IIS stand on the show Saturday, followed the same afternoon with an event in the Nautel booth about the trials of DRM on FM in India and other topics.

"The messages are simple," said Chairman Ruxandra Obreja. "DRM is the best all-band digital broadcasting system for all your needs and for all listeners ... The owners of over 5 million cars with DRM in India cannot be wrong, as DRM has been embraced by the automotive industry there in such a short period of time."

Obreja said new DRM receivers and receiver solutions will be shown. And she will be on the lookout for partnerships. "Every company or person involved in our industry has a nugget of information, something new to share, a gem that has been hidden by the hideous COVID these last 30 months. I want to uncover as many of these gems as I can."

Joe D'Angelo, SVP global radio and digital audio at Xperi, said that for him, the most pressing issue in radio technology is "without doubt, the pace of innovation and how quickly alternative audio services can gain access to platforms and audience. Now, more than ever, radio needs to go on the offensive, enhancing services and technology to not only defend their strongholds, but gain new ground in the digital world."

Xperi will exhibit and is promoting its DTS AutoStage

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technology, which D'Angelo said is "still the only global hybrid infotainment platform," free to broadcasters and offering them editorial control and insights into listener habits while enhancing the user experience in the dash.

"Big Tech is extremely well funded and focused on radio's audience and platforms. Radio must be strategic and pragmatic in formulating a response that deliver real results on a global scale to stave-off the competition and continue to delight its audience."

The company will also talk about its DTS Play-Fi home wireless ecosystem, which supports TVs, AVRs, speakers, sound bars and other devices, as well as the benefits of its recent acquisition of Vewd.

"The combination of our TiVo video service platform and Vewd's suite of streaming media solutions establishes Xperi as a leading independent media platform for smart TVs, connected cars and Pay-TV operators," D'Angelo said.

Designing the future

Radio consultant James Cridland is based in Australia and won't visit IBC this year. "I will miss the Amsterdam pubs. But probably not the cost of the hotel rooms." Still, he's keeping an eye on the show and the trends it reveals.

"For me, the most exciting technology is cloud-based and available to anyone, anywhere."

The theme of IBC2022 is "What's next? Designing the future together." The show will include a dedicated Content Everywhere area in an expanded Hall 5, where exhibitors will feature emerging technologies for multiplatform delivery, OTT streaming and content monetization.

Headline speakers include executives from Marvel Studios, Paramount Global, Warner Bros. Discovery, Universal Pictures and Globo.

Also Notable

The IBC2022 International Honor for Excellence will be presented to the BBC as part of the latter's centenary celebrations.

BBC 100 YEARS OF OUR BBC

"The world's first public broadcaster went on air in 1922, and BBC 100 is a celebration of everything that has come since," IBC stated.

"IBC recognizes that pioneering moment as the catalyst that sparked the whole content and technology industry it serves."

Michael Crimp, CEO of IBC, said, "Our industry, of course, has been driven forward by innovators and creators from all around the world. But all of us trace the source back to those cramped rooms in Savoy Hill in London in 1922."

John Bisset
CPBE

The author has spent over 50 years in broadcasting and is in his 32nd year writing Workbench. He handles western U.S. radio sales for the Telos Alliance and is a past recipient of the SBE's Educator of the Year Award.

Tips Please

Workbench submissions are encouraged and qualify for SBE recertification credit. Email *johnpbisset@gmail.com.*

Here's a circuit to snub those surges

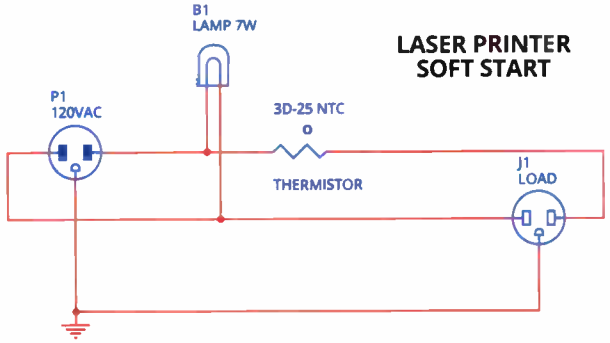
Also, an unexpected application of your 9-inch Kleins

Former Summit Director of Engineering Dennis Sloatman, now retired, encountered an annoying issue familiar to any of us who have home offices. Whenever he sent a job to his Brother laser printer, he had problems: monitors blanking, UPS units beeping and lights flickering.

Dennis found the cause. When the printer comes out of sleep mode, a fairly large current spike (some 11 amps) is generated.

His solution involved an NTC Thermistor #3D-25. This thermistor is rated for 9 Amps continuous.

"NTC" stands for Negative Temperature Coefficient. So the resistance drops as temperature (caused by the current) goes up.



Right
At right is Dennis' completed project. His circuit, shown above, provides a soft start to the current-hungry printer.

The thermistor chosen has a quiescent resistance at 25 degrees C of 5 Ohms, so, when the 11-amp surge rises, it drops 55 volts to the laser printer, but only for a millisecond or so, and gradually allows the normal 120VAC through (or nearly so).

He fixed the issue as depicted in the accompanying schematic. Dennis envisions many applications for a circuit of this type; and of course, there are a range of thermistors available for various applications.

Dennis built his circuit in a quad electrical box with a duplex outlet and extension cable. Let me and your fellow Workbench readers know if you come up with other applications for this circuit.

Don't get screwed again

From Malaysia, Workbench regular Paul Sagi sends a link to a professional-grade kit for extracting broken bolt and stripped screws, and it costs under $30.

The Alden 8440P Grabit Pro Broken Bolt & Damaged Screw Extractor 4 Piece Kit is made in the USA of high-quality tool steel. The extractors are designed to fit into a variable reversible drill but can also be used with a 1/4-inch hex screwdriver.

Bolts and screws as small as No. 10 can be removed easily. The bits are designed to work with not only slotted and Phillips heads, but also Hex, Torx, Tri-Wing, Pozidriv, Fearson and most tamper-resistant screws.

The standard Grabit has been advertised on television for years, but the Pro model is tempered twice to provide multiple uses per tool. The 8440P has four bits; you can also buy packages of one (shown) to three bits.

Find out more at *www.thegrabitstore.com.*

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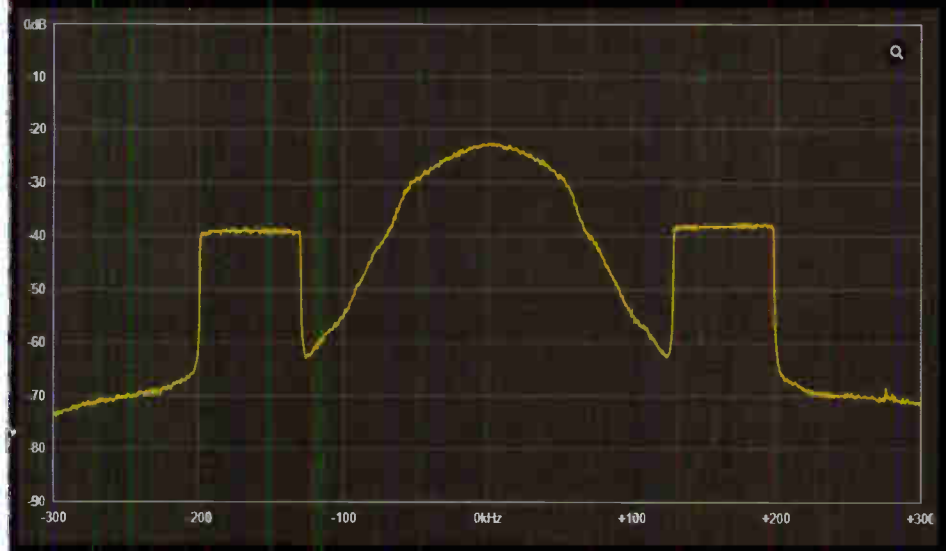

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Cool over the collar

If you wear a hard hat or safety helmet regularly, you may want to consider Klein Tools' Cooling Fan for Hard Hats and Safety Helmets like the one above.

I stumbled across this as I was researching Bob Clinton's Klein signal tracer suggestion. Model 60155 is a dual-fan design for efficient airflow on the head, neck or face, providing up to six hours of continuous runtime. It uses a modular rechargeable battery. The easy mount design permits either front or back mounting. Find out more at *www.kleintools.com*.

Testing, testing

In a previous column I lamented the demise of the Fox and Hound audio signal tracer.

Bob Clinton of technical consulting firm Cavell Mertz & Associates (*www.cavellmertz.com*) tells us that Fluke manufactures at least three versions of a similar signal tracer.

If all you need is tones, the Fluke Networks Pro3000 Tone Generator will fit the bill. If you need a generator and signal sniffer, the Pro3000 line also includes a kit that includes the tone generator and a filtered receiving probe. See various options by searching Pro3000 at *www.fluke.com*. And for more advanced signal tracing, look at Fluke's MT-8200-60, shown.

Klein Tools has an advanced circuit tracer that can be used on both energized and non-energized circuits. Search ET450 in the search block at *www.kleintools.com*. There are YouTube videos showing the ET450 in action — tracing wiring that's underground and even behind walls in conduit.

Bob adds that if you are troubleshooting AES signals, check out the Whirlwind Qbox-AES. This test instrument includes a microphone, a speaker, a test-tone generator and outputs for standard headphones.

Finally, NTi has a Minirator, model MR-PRO, that provides a range of audio test signals.

Thanks to Bob for these choices. Cavell Mertz & Associates maintains the free and useful website FCCInfo.com, which provides searchable information on AM, FM, TV and even Auxiliary Services like RPU and STL channels. Radio World uses it all the time. Find it at *www.fccinfo.com*.

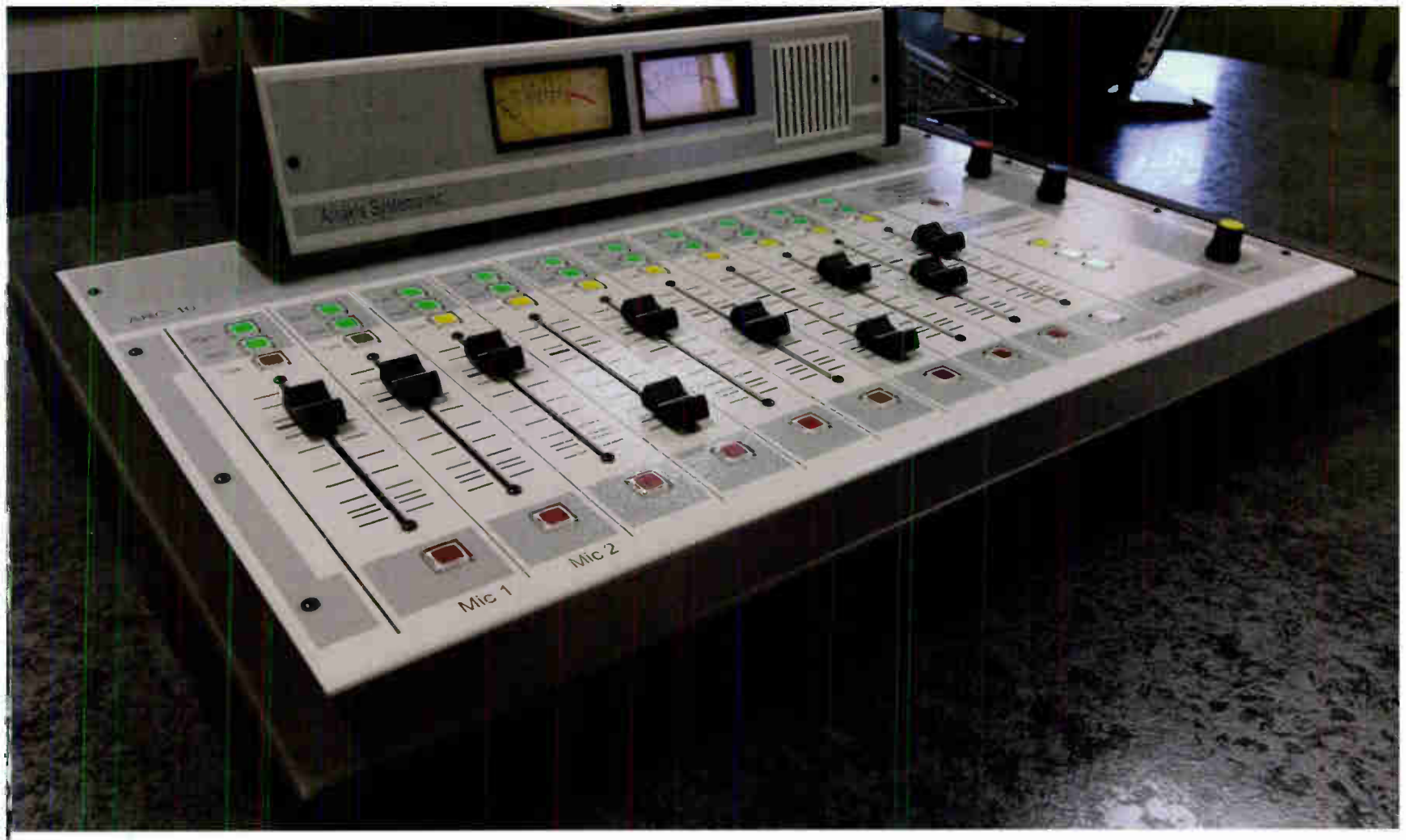
A tale with a twist

Before we wrap, I have to tell you my Klein story.

Many engineers own a pair of 9-inch Klein Journeyman pliers like the ones in the photo below. They are big and beefy — as the Klein website describes them, they have "a precision-hardened plier head, for on-the-job toughness." They're a must-have for electrical work.

Well, a former business associate told me about the time a co-worker was accosted. But the victim used that "precision-hardened plier head" to grab a bit of the accoster's abdominal flesh, pinching and twisting it and bringing the troublemaker to his knees. Talk about "concealed-carry."

From then on, my associate keeps his own "Kleins" in his back pocket more often.



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Writer

Wayne M. Pecena

CPBE, 8-VSB, AMD, ATSC3, DRB, CBNE

Member, SBE Education Committee

Got a Question?

The author welcomes emails at *wpecena@sbe.org.*

Let's talk about the Ethernet switch

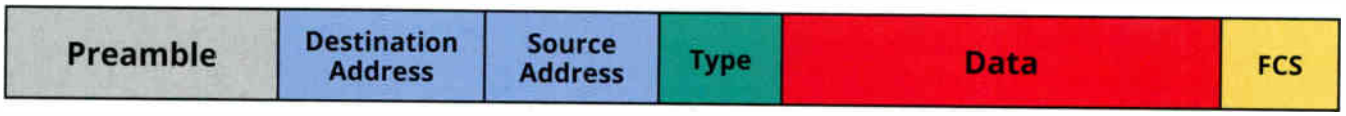
It is the fundamental building block of your network

This is Part 2 of a series that began in the Aug. 17 issue. You can read Part 1 on page 18 of the Aug. 17 issue at *http://radioworld.com/digital-editions*.

The Ethernet switch is one of the most important equipment purchase decisions the broadcast IT engineer will make.

Ethernet switches can be found for little as $10.99 on Amazon (Tenda SG105) to models that might cost just shy of $10,000 (Cisco Catalyst C930L).

Often called simply the network switch, the Ethernet switch, deployed correctly, can enhance network performance by providing contention-free host connectivity to the network, isolating hosts from each other, decreasing network errors and increasing overall network security.



Above
The Ethernet II Frame Structure

What it does

Regardless of price and features, the layer 2 switch performs three basic functions: address learning, frame filtering and transparent frame forwarding.

The switch learns what host device is connected to a switch port by reading the source MAC address when a frame is received. The source MAC address is placed in an internal memory table with the associated port number. The memory table can vary in size depending upon the switch model and is referred to as the MAC address table or Content Addressable Memory (CAM) table.

Entries in the table remain for a limited time before they are deleted and must be relearned. Five minutes is a common default aging time for most switch manufactures.

The switch filters frames by looking up the incoming frame destination MAC address in the memory table. If the MAC address is found, the frame is forwarded only to the associated switch port in a transparent manner, by not changing the payload data contained within the frame. The switch becomes transparent in the overall network view. If the frame is not found, the frame is forwarded to all ports except the incoming port. When the host responds, the source MAC address is captured and added to be table.

Frames are also filtered when error conditions exist by verification of the Cyclic Redundancy Check (CRC) checksum contained in each frame. If an error exists, the frame is dropped, thus not forwarding an errored frame onto the network.

The broadcast IT network has needs beyond what is considered the lower cost "plug-and-play" switch and relies on the enhanced feature capability found in the higher cost managed switch. Features found often include switch and port configuration and monitoring, the ability to create Virtual Area Networks (VLAN), port security features, multicast, Quality of Service (QoS) and Power over Ethernet (PoE).

The use of the VLAN in the network architecture

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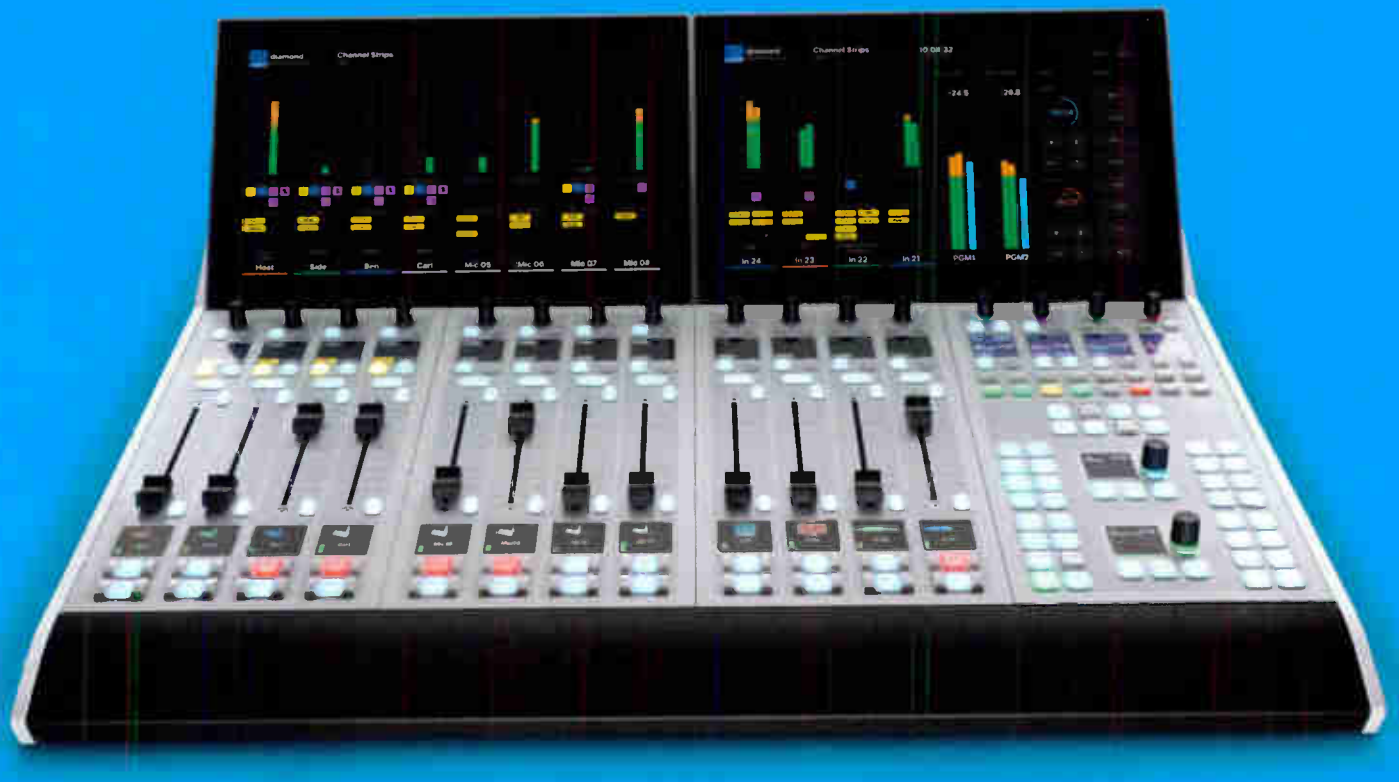

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brings significant flexibility, performance and security improvements. The common physical Ethernet medium whether twisted-pair copper, fiber or wireless can be used to transport multiple isolated sub-networks or broadcast domains.

Traffic in each broadcast domain is isolated from the other domains. The isolation improves performance as unnecessary traffic is eliminated and security is improved by the isolation. The architecture of the network is also flexible with networks arranged by geography, function, policy or function.

Other considerations

The use of switch port security can be used to control what host device is connected to the network. Options are available to limit the number of host devices that can be connected to a single switch port as well as what specific hosts. The recommended best practice is to limit hosts to one per switch port and specifying what host can be connected. The MAC address of the host device is programmed into the switch port configuration to implement. If a foreign device is connected, the switch will drop the incoming frame, shutdown the port and send a security violation notification.

Multicast and QoS are enhanced features that can be essential for the broadcast IT network. Industry-standard audio over internet protocol (AoIP) schemes such as LiveWire, WheatNet, Dante and others require that the network support these features in order to provision for use in their systems. Each of these manufacturers will state "approved" Ethernet switches for use with their AOIP systems. In addition to have worked out the specific configuration, these switch models are chosen that provide the necessary switch CPU, memory and software options to implement multicast and perform QoS functions.

Ethernet switch specifications can be overwhelming in detail when you're making equipment selection, as many options exist. Considerations can be given to a standalone switch with fixed port capacity or expandability provided by a chassis-based switch with port interface cards, redundant power supplies and redundant processing. Ethernet ports are commonly found offering 10/100/1000 mbit "wire" speeds up to 10/25/40 or 100 GigE. When PoE is utilized, consideration must be given to the overall power required to be delivered by the switch as PoE standards such as the IEEE 802.3bt standard allow supplying a powered device up to 100 watts of 48 vdc power.

Use the switch monitoring capability of the managed Ethernet switch to know what is going on within your network as "normal" and the individual port monitoring can aid in troubleshooting to ensure reliable operation of what is the critical building block of the broadcast IT system.

About This Series

This article is based on an excerpt from the Society of Broadcast Engineers CBNT/CBNE Study Topics webinar series, designed to assist those seeking SBE certification and to provide others a broad overview of IT as used in broadcast engineering. This webinar and many others are available to anyone for a modest fee, with members receiving a discounted rate and free to those with the SBE MemberPlus upgrade. Consider joining if you are not a member at *sbe.org*.

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Broadcasters monitor "resilient networks" proceeding

FCC orders mandatory participation for wireless carriers in new initiative

Writer

Randy J. Stine

RW's lead news contributor wrote about synthetic voices in the Aug. 3 issue.

Broadcasters have been watching developments in the FCC Resilient Networks rulemaking proceeding, which could eventually lead to more requirements for their participation in disaster recovery procedures.

The commission updated its rules in July, making resiliency cooperation mandatory for wireless carriers in the United States. They could do something similar for broadcasters.

The FCC introduced the Mandatory Disaster Response Initiative (MDRI), which largely codifies and builds upon an industry-developed Wireless Network Resiliency Framework.

That framework, which does not include broadcasters, was developed by a group of facilities-based mobile wireless service providers and had been endorsed by the FCC. The action extends the reach of the provisions to all mobile wireless providers to test their roaming capabilities and report on the performance of their implementation of the new MDRI.

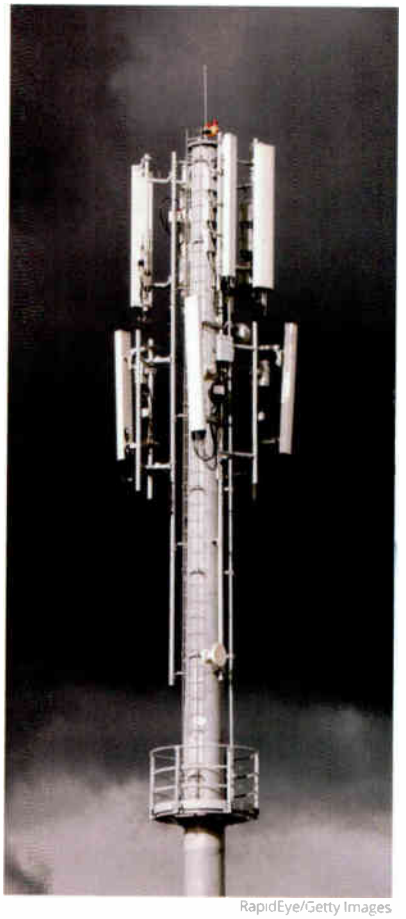
DIRS and backup power

The Resilient Networks Report and Order adopted in late June seeks to improve the reliability and resiliency of wireless communications networks during emergencies. The FCC's goal is to keep cell phones working and people connected when disasters like hurricanes and wildfires strike, the commission says.

"We've seen that the mutual aid and other provisions of this framework can be effective at speeding recovery and ensuring responders have all the information they need, and it's time that these practices be implemented on an industry-wide basis," said Chairwoman Jessica Rosenworcel.

However, the accompanying Further Notice of Proposed Rulemaking (FNPRM) examines broadcaster resiliency and any gaps that might need to be filled in the Disaster Information Reporting System (DIRS).

The original Resiliency Networks proposal considered changes to DIRS, which is a voluntary web-based system used by broadcasters since 2007 to report broadcast service outages to the FCC. The FCC proposal considered the possibility of mandatory DIRS reporting of outages for participants following a disaster.



RapidEye/Getty Images

The commission in July also renewed its inquiry examining the backup power status for communications facilities. The NPRM asked about ways to mitigate the effects of power outages on communications networks in the aftermath of disasters. The FCC in the proposal asked detailed questions about how backup power can be

deployed to reduce the frequency of power-related service disruptions.

The FCC at least discussed adopting backup power requirements for participants in DIRS and NORS, the Network Outage Reporting System, in the original proposal.

"To the extent that the commission were to adopt backup power requirements, providers subject to them, potentially including cable providers, Direct Broadcast Satellite providers, Satellite Digital Audio Radio Service, TV and radio broadcasters, Commercial Mobile Radio Service and other wireless service providers, could potentially be required to take steps to make their networks more resilient to power outages," states the FCC notice proposal, released in 2021.

And as recently as this summer when the latest rulemaking affecting wireless carriers was released, Rosenworcel indicated the FCC is still moving forward and looking at additional changes that will speed recovery efforts of communication networks following disasters.

"These changes will help restore service faster, help speed response coordination, and keep more people connected in disaster. But we can't stop here. In the rulemaking we adopted last year, we looked at several other ways our disaster response playbook could be updated," Rosenworcel wrote in a letter accompanying the rulemaking.

She continued: "We sought comment on where there are gaps that need to be filled in our Disaster Information Reporting System. We also renewed our inquiry into backup power for communications facilities as well as the essential intersection between modern communications and the electrical grid. We will continue to assess the record and work on these issues."

Prioritize broadcast infrastructure

The National Association of Broadcasters and state broadcasters' associations have been active filing comments in the current proceeding and looking for any signs the FCC could be considering mandates on radio broadcasters.

NAB said that mandatory participation in DIRS for broadcasters is unnecessary, and that there's no need for additional rules regarding fuel backup for times of crisis.

"Broadcasters already participate in DIRS to the best of their ability and depending on their individual circumstances, have no objections to further voluntary coordination with other telecommunications providers during emergencies, and already install generators and maintain fuel reserves commensurate with their financial resources and likelihood of experiencing a prolonged power failure," NAB wrote.

The FCC says DIRS participation increases its situational awareness following a disaster and gives it the ability to share status information with government partners.

If the FCC still believes that DIRS should be mandatory, NAB commented, perhaps the onus should be on government to create and fund an automated system that identifies which broadcast stations are operating during a disaster.

The broadcast advocacy group says the reliable nature of broadcast architecture allows it to continue service during a disaster

even when the electrical grid, cellular service and the internet go down.

"For example, radio broadcast transmission facilities are designed with redundant systems and backups, auxiliary transmission sites, emergency power, and more, all with the goal of keeping stations on the air in all circumstances," NAB says.

The association used the comment opportunity to ask the FCC to work with its government partners to prioritize the restoration of electricity to broadcasters, or alternatively, the delivery of fuel for generators.

"After local public safety and medical service providers, service to communications providers should be considered among the most critical functions as an electrical grid is repaired," NAB declared. "The FCC should also consider ways to foster access by broadcasters to their studios and transmitters during times of crisis in a safe manner that does not impede emergency public safety and medical services."

> **"After local public safety and medical service providers, service to communications providers should be considered among the most critical functions as an electrical grid is repaired."**

"All good here"

A number of state broadcast associations in joint comments reiterated many of NAB's arguments against a mandate but went a step further in claiming that requiring DIRS reporting from broadcasters would actually undercut the system and divert critical broadcast resources.

"Where a station is operational but running with a skeleton staff in a disaster area, stepping back from keeping the station operational, gathering news and emergency information, and getting that information to the public, merely in order to file a DIRS report saying 'all good here' diverts station resources with no upside for the public and a limited informational benefit to the FCC," the broadcast associations told the FCC.

Meanwhile, National Public Radio went so far as to downplay the importance of DIRS in its comments to the FCC.

"Although public radio stations may be aware of DIRS, it does not appear to have been widely used by stations, if at all. Most stations do not experience extended service outages, primarily because of the extraordinary measures they take to maintain broadcast operations in the wake of a disaster," NPR wrote.

Smaller radio broadcasters may also find DIRS difficult to use, according to comments by REC Networks, an LPFM advocacy consultancy. REC commented that small broadcasters are likely to only have access to smart phones with narrow screens if they need to access DIRS during an outage following a natural disaster of some sort.

"The current DIRS system is built on the commission's legacy architecture and substantially uses tables and requests entries such as geographic coordinates in decimal format.

"Because of the fact that the current DIRS system is not mobile-friendly and requires a significant number of entries to make a report, including information where accessing a different website may be necessary, this will make it difficult or in some cases, impossible for small radio broadcast stations to participate, voluntarily or mandatorily in DIRS," REC told the FCC.

Still other viewpoints expressed in the resiliency proceeding discuss establishing cooperative efforts for mutual aid between local broadcasters, which could increase overall broadcaster resiliency through the sharing of backup power resources such as generators and fuel supplies.

Gary Timm, a public warning expert from Wisconsin, told the FCC much of that sort of contingency planning has been completed already.

"If the commission is truly interested in fostering this mutual aid among broadcasters, the FCC can rely on work done by its past Federal Advisory Committees and the Media Security and Reliability Council (MSRC). The MSRC priorities were developing plans for mutual aid among broadcasters (e.g., routing programming from Station A's studio to Station B's transmitter to keep programming on the air for the public) and second, to develop communications channels from emergency management agencies to local broadcasters to keep the official information flowing when normal communications are disrupted," he wrote.

He concluded his comments: "The FCC relaunching the MSRC recommendations would support many aspects of Broadcast Resiliency raised in the NPRM."

A comment period on the FNPRM (PS Docket 21-346) will commence following publication in the Federal Register.

BUYER'S GUIDE

Furniture, Mics & Accessories

About Buyer's Guide

The Buyer's Guide section appears in every other issue, focusing on a particular category of equipment and services. It is intended to help buyers know what's on the market and gain insight into how their peers are using such products.

Tech Updates

Custom Is No Problem for **Studio Technology**

Studio Technology designs, constructs, delivers and installs technical furniture for radio and television.

"We provide true custom furniture that is price-competitive with modular furniture, not a cookie-cutter solution that is customized," says owner Vince Fiola.

"We can also provide and warranty higher-end furniture using solid surface materials because we are certified fabricators."

Shown is a custom project in a WeWork facility. Studio Technology furniture is found in broadcast facilities of all sizes around the United States.

"We will work with your architect, systems integrator and local staff and offer complete delivery and installation using our own employees."

Info: www.studiotechnology.com

"A New Look for a Legend"

The RE20-Black is a new color option for the classic Electro-Voice RE20. It has an elegant, low-reflection dark charcoal finish but retains the acoustic, electrical and mechanical characteristics of the iconic original.

"Beyond providing the industry-standard sound of FM radio voices, the RE20's popularity has surged in recent years with the rapid growth of podcasting and home recording/production," EV says. "It also remains a trusted tool in professional recording studios, and a mainstay mic on live-performance stages everywhere."

Variable-D design minimizes proximity effect, helping talent to work naturally around the mic at varying distances. Features include a mid-bass tone-shaping switch, integrated pop filter and a humbucking coil.

Info: https://products.electrovoice.com/na/en/re20-black

Just Add Your Phone

A USB microphone of petite size, the MV88+ can record in mono or stereo. It is designed for smartphone use, providing an upgrade in audio performance. It features Lightning and 1/8-inch/3.5 mm connectors on the rear.

Shure says that the free ShurePlus Motiv audio and video apps can control the MV88+'s multiple pick-up patterns, as well as set gain and control the limiter, compression, EQ and monitor mix.

The MV88+ is available alone or in a video kit with a Manfrotto PIXI tripod, phone clamp and mount, as well as iOS and USB-C cables.

Price: $199 for the mic alone, or $249 with the video kit. Shure says, "The MV88+ Video Kit transforms any smartphone into a professional-level mobile audio and video rig."

Info: www.shure.com

Tech Update

Audio-Technica's AT2040 Hypercardioid Dynamic Podcast Mic

Audio-Technica offers its AT2040 Hypercardioid Dynamic Podcast Microphone, which it says was inspired by the performance of its BP40 Large-Diaphragm Dynamic Broadcast Mic.

"The AT2040 brings professional broadcast-quality sound with exceptional vocal reproduction to podcasters and other content creators at an affordable price point." The U.S. MAP is $99.

Features include rugged metal construction and rejection of room noise due to its tight hypercardioid polar pattern. A-T says the mic excels at isolated/up-close vocal reproduction, providing a smooth, warm and natural sound.

A multistage windscreen combines a nonwoven filter with foam mesh to provide internal pop filtering; the integrated shock mount prevents unwanted noise by attenuating vibration from a boom or stand.

The AT2040's XLR output connects to a conventional analog microphone input, suitable for use with USB audio interfaces and professional mixing consoles. The mic comes with a pivoting stand mount, 5/8"-27 to 3/8"-16 threaded adapter and soft protective pouch.

Info: www.audio-technica.com

Tech Update

Economical Time Distribution From **RAM**

RAM Systems announced the introduction of its model CLK-100 to the broadcast market. It is designed to offer broadcast facilities an economical way to distribute accurate time and switching.

Balanced SMPTE serial time code is output on regular two-conductor shielded cable, with NTP output on an RJ-45 connector.

The local display uses large, bright digits viewable up to 25 feet. The display can be switched between 12- and 24-hour modes.

The CLK-100 is designed for installations where only digital time displays are needed. It is a desktop unit that also can be mounted onto a rack shelf.

Features include three Opto outputs, four form "C" relay outputs, GPS lock display, time and date display, and programmed date and time Relay/ Opto switching.

The CLK-100 is 5-3/4 inches wide, 6-1/4 inches deep and 1-5/8 inches high. It has a sale price of $1,399.

Info: www.ram68.com

Tech Update

Get a Leg Up on Your Station's Branding

"The trend in today's radio studios is towards less equipment, fewer racks, more monitors and increasingly cameras," says Omnirax.

Great-looking legs can now be much more than support for the countertops; they become an ideal branding opportunity. Omnirax has partnered with Notabotyet to create custom laser-cut backlit Logo Legs. The furniture legs can feature a station's logos or other thematic images.

"Our legs create pride of ownership for station owners, engineers and talent alike," says Omnirax.

Info: https://omnirax.com

BROADCAST EQUIPMENT EXCHANGE

Mono on FM? Hang on a Moment

Your streaming and radio competitors are delivering stereo to their audiences

The author is a consultant and is the retired senior VP of engineering at CBS Radio. He responds to the commentary "Let's Talk About Mono," in which David Bialik laid out an argument for FM talk stations to broadcast in mono rather than stereo.

Writer
E. Glynn Walden

Comment on this or any story. *Email radioworld@futurenet.com* with "Letter to the Editor" in the subject field.

I don't wish to enter into a disagreement with my good friend David Bialik, but there is an argument that modern car radio algorithms essentially eliminate the disadvantages of stereo FM transmissions.

In order to understand how stereo operation impacts the reception of FM, we need to look at the technology behind FM stereo transmission and reception.

The FM stereo transmission system transmits the monoaural signal, L+R in the spectrum between the carrier frequency and 15 kHz, the stereo pilot at 19 kHz, and the stereo information L–R between 23 kHz and 53 kHz. The audio is low-pass filtered to prevent the monaural audio from interfering with the 19 kHz pilot. The L–R signal is transmitted with a double sideband signal centered about a suppressed 38 kHz subcarrier as can be seen in Fig. 1.

Inherent in the FM reception is the mathematical mechanism that causes the noise floor to increase exponentially as the information departs from the carrier frequency. The figure of 10 dB is generally cited as the noise induced by the stereo subcarrier, under fixed conditions. That is why the SNR of a stereo transmission is generally less than 50 dB except in locations close transmitter.

The receiver process, in Fig. 2, shows the FM composite (L+R), (L–R), and the 19 kHz pilot being split into three signal paths: (1) a low-pass filter for the L+R, (2) a bandpass filter for the L–R, and (3) a second bandpass filter to isolate the 19 kHz pilot.

The L–R signal, a double sideband suppressed carrier transmission, needs its carrier reinserted to recover the audio without distortion. Following the 19 kHz pilot filter is a frequency multiplier that doubles the pilot frequency to 38 kHz for insertion into the synchronous demodulator. Following the synchronous detector, the demodulated L–R signal feeds one input to a matrix with the second input being fed by the L+R signal. The math shows (L+R) + (L–R) on the upper output terminal leaving 2 L and the lower output terminal being (L+R) – (L–R) yielding 2R or the right channel.

Car radios since the middle 1980s had an additional block, a continuously variable subcarrier insertion level that varies, in real time, the injection from the synchronous detector to the matrix. Additionally, there were variable high-frequency (lowpass) filters on the L and R outputs to mask the noise. When the receiver detected the presence of noise and/or multipath, the level of L–R audio injected

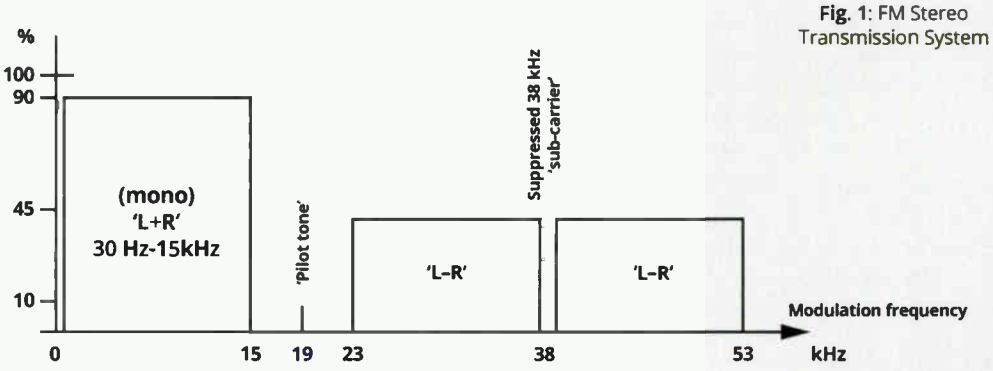


Fig. 1: FM Stereo Transmission System

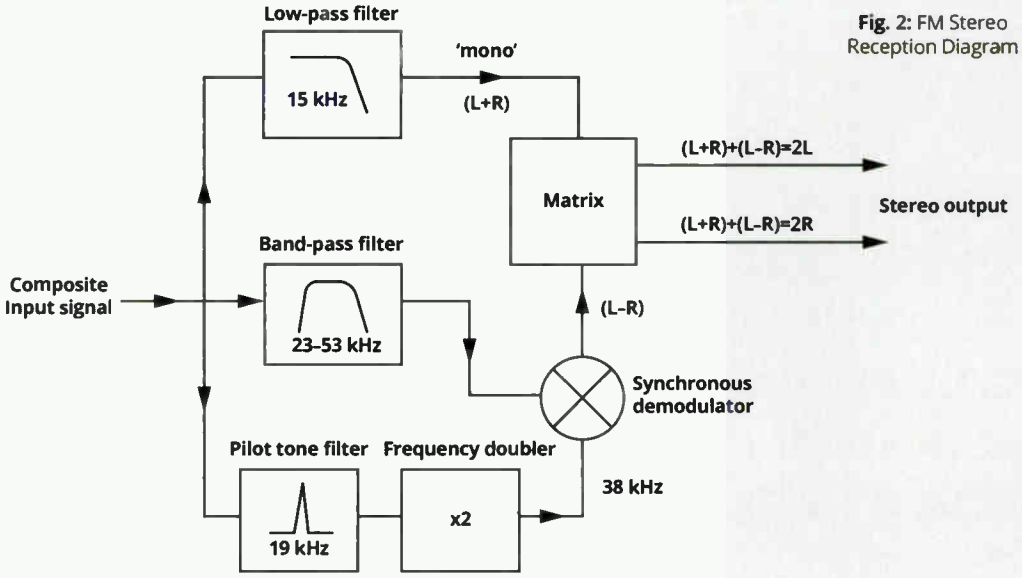


Fig. 2: FM Stereo Reception Diagram

into the matrix was reduced. The blend to monoaural circuitry essentially eliminated the disadvantage of stereo by reducing the level L–R channel injection at a rate commensurate with fading. By the time the radio transitioned near or beyond the 60 dBu contour, radios were generally in full monoaural with the high frequencies rolled off to about 8 kHz.

At stronger signal levels i.e., greater than 60 dBu, these radios experienced "breathing" between full stereo and degrees of mono while the high-frequency response was simultaneously changing in response to noise and multipath. Those in the receiver industry viewed these artifacts as acceptable, whereas broadcast personnel had a different opinion.

Today's modern DSP radios are referred to as software-defined radios or SDRs. In these radios, the only analog components are the RF amplifier, the mixer and the audio amplifier. The mixer stage is followed by an analog-to-digital converter, AD, where the signal is transformed into the digital domain for further processing. The digitization of the signal provides (1) better adjacent channel interference rejection (the digital FFT IF filters can be adjusted in real-time to address adjacent channel interference), (2) better demodulation algorithms with lower distortion than analog implementations, and (3) digital noise reduction that just wasn't possible with analog designs. With a digitally processed signal, it is possible to manipulate the multipath in ways that produce a more listenable signal that is free of the artifacts that were associated with an analog blend to monaural circuitry.

While developing the HD Radio system, I had the opportunity to study the GM, Ford and similar radios of the day. I had the chance to observe the benefits and disadvantages of the blend to monoaural with high-cut circuitry.

With those radios, the observed differences between monaural and stereo transmissions were more in the lack of blending artifacts than the elimination of noise. I have not personally field-tested the current generation of SDR radios with mono and stereo transmissions. I have discussed these designs with those who have had the experience and believe with a DSP-based radio it is more difficult to hear the differences between monaural and stereo transmissions. When you broadcast in monaural, the sponsor would not have its spots, produced in stereo, delivered in stereo, and the audience would miss the ambiance of the actualities or natural sound, jingles and music in its original stereo format.

Your streaming and radio competitors are delivering stereo to their audiences.

When you broadcast in monaural, the sponsor would not have its spots, produced in stereo, delivered in stereo; and the audience would miss the ambiance of the actualities or natural sound, jingles and music in its original stereo format.

Readers' Forum

I Know How This Ends

Regarding "Veritone Synthetic Voice Gets an Audition" (RW Aug. 3):

I know how broadcasters work, I've seen so many of the spot firings and see how broadcast companies pay their talent. It won't be long until AI voices will be doing most if not all radio.

Broadcasters' urge to consolidate everything has given us a vanilla, sterile-sounding radio product with no resemblance of anything that sounds local except in some small-market, family-owned radio outlets that have escaped what I call the "empty-office equipment rack" syndrome.

Wow, I wonder why most people only listen to radio on their way to or from somewhere, a number that is dwindling faster than broadcasters want to admit?

But it's not just radio. Now, when listening to a station on TuneIn, I not only get to hear a TuneIn-generated spot for Florida concerns, even though I live in Ohio; but when the station joins, I get to hear their intro web spot also.

And guess what happens if the connection drops for only a nanosecond? You're correct, I hear two or more spots again. And like a sucker, I pay for premium.

Chuck Adkins

IBC2022

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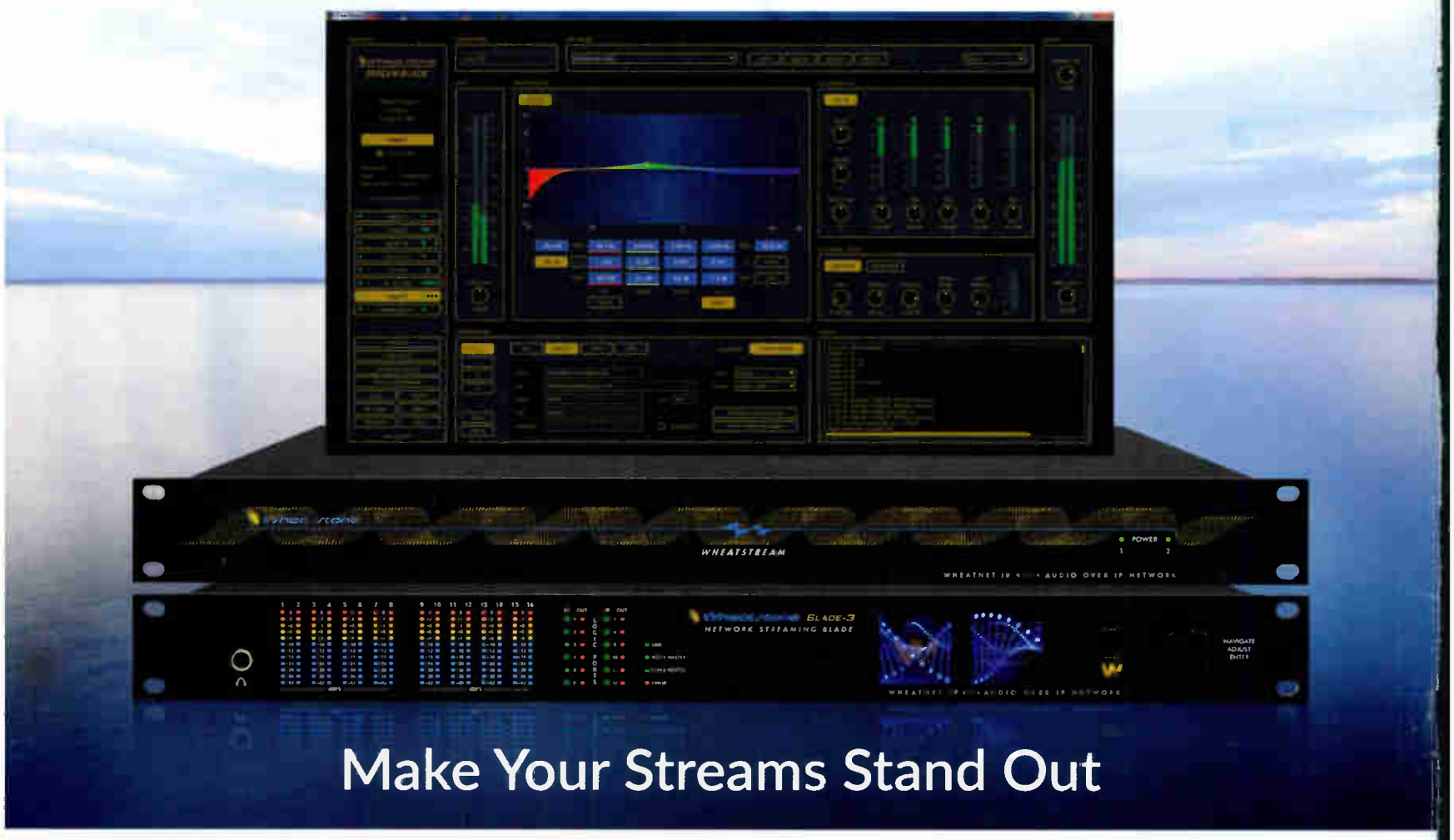

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