

prosound NEWS

June 2009
volume 31
no. 6

Nashville's Got the Blues

The recently renamed House of Blues Studios Nashville (formerly



East Iris) is expanding, with the move of an HOB Memphis room to Nashville. —page 18

Big Apple Ripe For AES Confab

The countdown begins for the 127th AES Convention, scheduled for October 9-12 at NYC's Jacob Javits Convention Center. Convention



Chair Agnieszka Roginska is pictured. —page 12

Pro Audio Jumps Into Social Networking

by Clive Young

NEW YORK, NY—Social networking has taken the world by storm over the last few years with no sign of letting up. While it was originally created to help people interact online, social media has increasingly become a promotional tool, used by industries and businesses, including pro audio, to develop relationships with existing clients and potential customers.

According to Nielsen Online, the amount of time spent in the U.S. on social media sites has climbed 83 percent from a year ago: In April, people spent 13.9 billion minutes on Facebook, 4.9 billion minutes on MySpace and 300 million minutes on Twitter.

With numbers like those, it's clear that merely having a website is no longer enough to ensure a company is reaching its customers. At the same time, however, for service-oriented businesses like live sound providers, recording studios and pro audio dealers, tangible results are hard to measure,

particularly because much of what constitutes social networking feels like "social not-working." Much of the process boils down to hanging out online—opining on topics sometimes far removed from pro audio, passing along web links of interest and so forth—in order to engage clients.

Numerous audio pros that use Facebook and other services were interviewed for this article; while few had gained business specifically due to social networking, they unanimously felt it was an important way to maintain contact with pre-existing customers.

"It's the most direct form of effective marketing I've yet come across," said Paul Henry of Minneapolis audio dealer Paul Henry Pro Audio (@ph_pa on Twitter). "The combination of Facebook and Twitter allows the client to stay in his 'comfort zone'; I notice that a high percentage prefer to correspond via those outlets over the option of conventional e-mail or phone."

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OOPS, SHE TOURED AGAIN: Britney Spears spent the spring crossing the U.S. supporting her latest album, *Circus*. In tow were 30 trucks, a staff of 200 and a slew of Meyer Sound loudspeakers supplied by Solotech. For more on the tour, see *Live Sound Showcase* on page 46.

Spotting 5.1 on HDTV

by Steve Harvey

It's been a long time coming, but digital television is finally here. The ATSC digital format replaces the longstanding analog transmission standard on June 12, just one month short of the 13th anniversary of WRAL-HD going on-air with the first public HDTV broadcast in Raleigh, NC.

Advertising agencies and their clients were relatively slow to adopt the ATSC's 5.1-channel audio format, generally reserving surround sound presentation for commercial rollouts during special events such as Super Bowl. But now that a good percentage of viewers across the country have in-

stalled 5.1-capable home systems, are commercial spots any more likely to be posted in the surround format?

"I'd say at least 50 percent of our jobs are in 5.1," reports Jeff Fuller, a mixer at Eleven Sound in Santa Monica, CA, where the bulk of the work is national campaigns. Fuller believes that 5.1 projects will only become more frequent from this point forward. "I haven't looked at the numbers lately, but with the digital broadcast switchover and everybody getting their hi-def systems hooked up, it's only going to increase," he says.

But there are a number of factors

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N8000-1500

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New EVA (Expandable Vertical Array) series loudspeakers from Electro-Voice are easily assembled into full-bandwidth line arrays with well-defined coverage – all without the rigging and drive complexities of conventional concert line array products.

EVA is a modular system, with four two-way models available to provide a range of directivities from 90° x 6° to 120° x 20°. Modules may be combined in various configurations to precisely provide the required coverage for many applications. And clean lines and unique internal rigging hardware mean EVA arrays look as good as they sound.

EVA uses advanced transducer and crossover technologies to provide impressive low-frequency response without compromising mid-range quality. Passive crossovers and 16-ohm impedance allow two EVA arrays to be driven by a single two-channel amplifier of sufficient output power.

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soundtechnology

soundInnovations: the manufacturer's view

A Better Way to Drive

Electro-Voice FIR-Drive

by Ethan Wetzell

Electro-Voice has recently launched a program we refer to as FIR-Drive. As I discuss this with folks and the FIR-Drive logo pops up more and more, the questions come up "What is it? Is it a thing? When do I get one?" Great questions—ones I hope to answer here.

To get to the answer, we first need to step back and look at what we, as audio professionals, design and operate to make our livings—namely, audio systems. That's an important word there:

"systems"—a collection of individual components and devices that act together to perform a specific task—namely, audio reproduction. Each component is dependent on the others to be able to perform its task properly. In our case, we are talking about the signal processing, the amplification, the transducers and the complete loudspeaker configuration all working together.

FIR Filtering

In signal processing, filters play a critical component in what we

do. Everything from our crossovers to our EQ is ruled by filters, and in the digital audio world, there are two ways to implement a "filter": IIR and FIR. FIR stands for Finite Impulse Response; IIR stands for Infinite Impulse response. All that we are talking about here is math and a method of changing the 1s and 0s that make up our digital audio signal in a discrete way. Both FIR and IIR filters can be described in mathematical terms using formulas that are too complex to delve into for this article; however, it is fairly easy to characterize the dif-

ferences and advantages of one over the other.

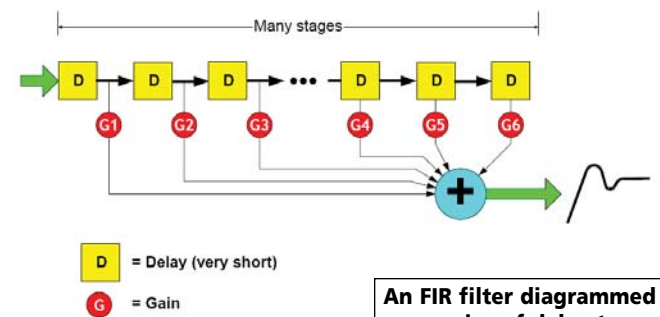
IIR filters are DSP filters that simulate analog circuits. When we adjust parametric EQs, Linkwitz-Riley filters, etc. inside our DSP, we are working with IIR filters that behave the same way as their analog brethren. IIR filters consume rela-

tively little processing power, and are familiar to work with for most engineers. However, they have the same limitations as analog circuits in that there are restrictions in filter shapes, slopes and phase responses. A target response curve using IIR filters requires a combination of

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FIR Filtering - How Does It Work?

- Inside an FIR filter



An FIR filter diagrammed as a series of delay taps

Aviom Pro64 Series Digital Audio Network

by Karl Bader for *Pro Audio Review*

For this demo, I received two Aviom 6416m mic input modules (\$7,500 each), three 6416Y2 Yamaha interface modules (\$3,275 each), an RCI module (\$1,365), and the MCS Remote (\$885). The signal and control lines, all via Cat-5e cables, made it really easy to plug and play-out B on one unit, in A on another, and so on. For the demo, I put the cards into our Yamaha M7CL and only had to configure the inputs from the slots, then change the clocking.

Although small, the remote was very easy to get around; with it, you can access most options that are accessible on the faces of the 6416m units. The only major exception is the Link function, a minor inconvenience. One issue did really bother me; engineers like to use their own settings off their cards/USB sticks. If this system were used in a festival or a one-stop-through tour, it would be nice to store all the various head-amp settings, which is not possible through the remote.

Aviom has released a firmware up-

grade that I think everyone was looking for: the ability to control the preamps from a Yamaha console without needing to use the external remote. As a result, this upgrade fixed what would have been my number-one problem with the Pro64 system.

I preferred the sound of the Aviom preamps over the sound of the Yamaha M7CL's onboard amps. Personally, I think they have a much "warmer" sound in direct comparison to the M7CL amps, and they stay a bit smoother in high frequency ranges. Having a digital snake as part of the system was an added bonus, al-

though it is recommended that it be limited to a length of 400 feet.

The units offer significant flexibility in configuration. For example, if I had racked two units of two 16-channel mic pres, and one output module, the system could be split for small shows or combined for large shows. Combining the racks require only a single Cat-5e cable. It's worth mentioning that there is no option to run communications with this system.

The Aviom Pro64 Series is an afford-

able option in a digital snake and networking system, and, in my use, it proved itself as a worthwhile upgrade

to the Yamaha M7CL.

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Innovations

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several stages, often requiring compromises in filter slopes, bandpass overlap and overall phase response.

An FIR filter is a whole different animal. Using discrete mathematics, an FIR filter allows a programmer to create virtually any desired frequency and phase response. A single filter can provide extremely detailed and intricate frequency and phase adjust-

ment. Such a filter may be thought of as a series of weighted delay taps.

FIR Products

When comparing FIR filter products offered by a number of manufacturers, it is important to understand exactly how the FIR coefficients are created and just what is done with the filter itself. A vast majority of FIR-based processors are simply using FIR filters to provide brick-wall filters for crossover applications, while still using IIR filters for in-band processing and correction.

EV takes things substantially further by

utilizing FIR filters for both crossover and EQ correction—within a single filter-to achieve a linear phase, highly optimized response for an EV loudspeaker system across its entire bandwidth. We start with anechoic measurements of the loudspeakers, then put the measured data through a series of patent-pending engineering tools that calculate the FIR coefficients. These coefficients are exported into a custom “speaker setting” file that is specific to the particular loudspeaker being used. Today, EV offers custom FIR preset files for all of its concert-grade loudspeaker systems and for various other EV models.

What Is FIR-Drive?

We can now answer the question posed at the beginning:

FIR-Drive is the name that EV gives to its entire range of FIR offerings, including FIR-capable processing hardware, custom FIR speaker setting files and related software.

FIR-Drive systems provide a flat, smooth frequency and phase response, uniform directivity at crossover frequencies, smoother total output power, better overall sound quality and require less equalization and tweaking during set up and tuning.

FIR filters are not new in and of themselves; new are the methods for their development and implementation. Modern hardware is finally able to deliver the computing power and performance required to perform FIR processing, a significantly higher order of computing power than IIR processing. EV's new generation of FIR-Drive hardware is up to the task, including the RCM-26 Remote Control Module for the Tour Grade Series of amplifiers, and the new NetMax N8000-1500 Digital Matrix Processor.

The N8000-1500 has at its core two single-core and three dual-core processors to deliver a total of 1500 MIPS of processing power. Additionally, each added I/O card brings an additional 100 MIPS to the pool. Fully loaded, that's up to 32 channels of FIR-based processing, including delays, gain stages, supplemental IIR filters, and EV's advanced Peak Anticipation limiters.

FIR-Drive Array Controller

EV has recently released the FIR-Drive Array Controller for IRIS-Net and the N8000-1500, which takes the approach of creating a ready-made IRIS-Net project file with the complete DSP path and configuration already set up. The Array Controller provides a detailed, optimized and preconfigured DSP structure for operation of sound systems based around EV line array loudspeakers. A single-layer, high density GUI is provided for full access to all needed tuning and control parameters, and provides a ready-to-go, tablet-friendly interface.

The current version of the Array Controller, FIR.1, running on a fully loaded N8000-1500, provides eight analog inputs and 24 analog outputs, 50 3-, 6- and 10-band equalizers (260 bands total), 18 channels of conventional crossover filters (21 bands total), 12 512-sample FIR crossover filters, 24 peak anticipation limiters, 28 100 mSec delays and 16 10 mSec delays, 80 mixing matrix crosspoints, 576 switching matrix crosspoints and two channels of signal generation—a complete “drive subsystem in a box” for small to medium-sized sound systems.

The Secret Is the System

The system concept is critical in creating a superior audio solution. The way a component interacts with the system as a whole is critical for achieving the best performance possible, and with FIR-Drive hardware, software and development tools, EV is aiming to move sound reinforcement to the next level.

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Ethan Wetzell is product manager, Electro-Voice Signal Processing.

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