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World Radio History

HRS150
15" Active Subwoofer

HRS120
12" Active Subwoofer

HRS150 — Twice the output of the HRS120. Perfect for hip hop mixes or extra-large control rooms. Ideal for bass management apps.

HRS120 — a fine choice to be the ".1" in surround mixing applications.

HR624
6.7" Active Studio Monitor

The 6.7-inch, 2-way nearfield monitor that's more than just a smaller version of the HR824. The perfect monitor for those who need incredible midrange accuracy for lead vocal placement within the mix and for dialog replacement in post.

HR824
8.75" Active Studio Monitor

As the industry-standard studio monitor, the 8.75-inch 2-way nearfield HR824 is ideal for those who need lots of bottom end, as well as comfortable high end for long sessions of general mixing.

HR626
Dual 6.7" Active Studio Monitor

The new HR626 has Phase-accurate D'Appolito driver alignment design with bi-amplification. Superb bass and midrange accuracy for mixing and vocal placement. Also an ideal choice for horizontal placement in center channel applications.

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With the new HRS150 and HR626, there are now 5 ways to have Mackie studio accuracy.

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Our new HR626 has ten more square inches of active cone area than the HR824 for even mo' bass extension, yet is as tight and fast as the compact HR624. It makes a great main stereo monitor *or* center channel for surround mixing.

And speaking of mo' bass, the new HRS150 uses a 15-inch active driver, *two* 12-inch passive radiators and 950 watts of FR Series power to achieve frequency response that's only 0.5dB down at 10Hz. Yes, you read that right. Ten Hertz!

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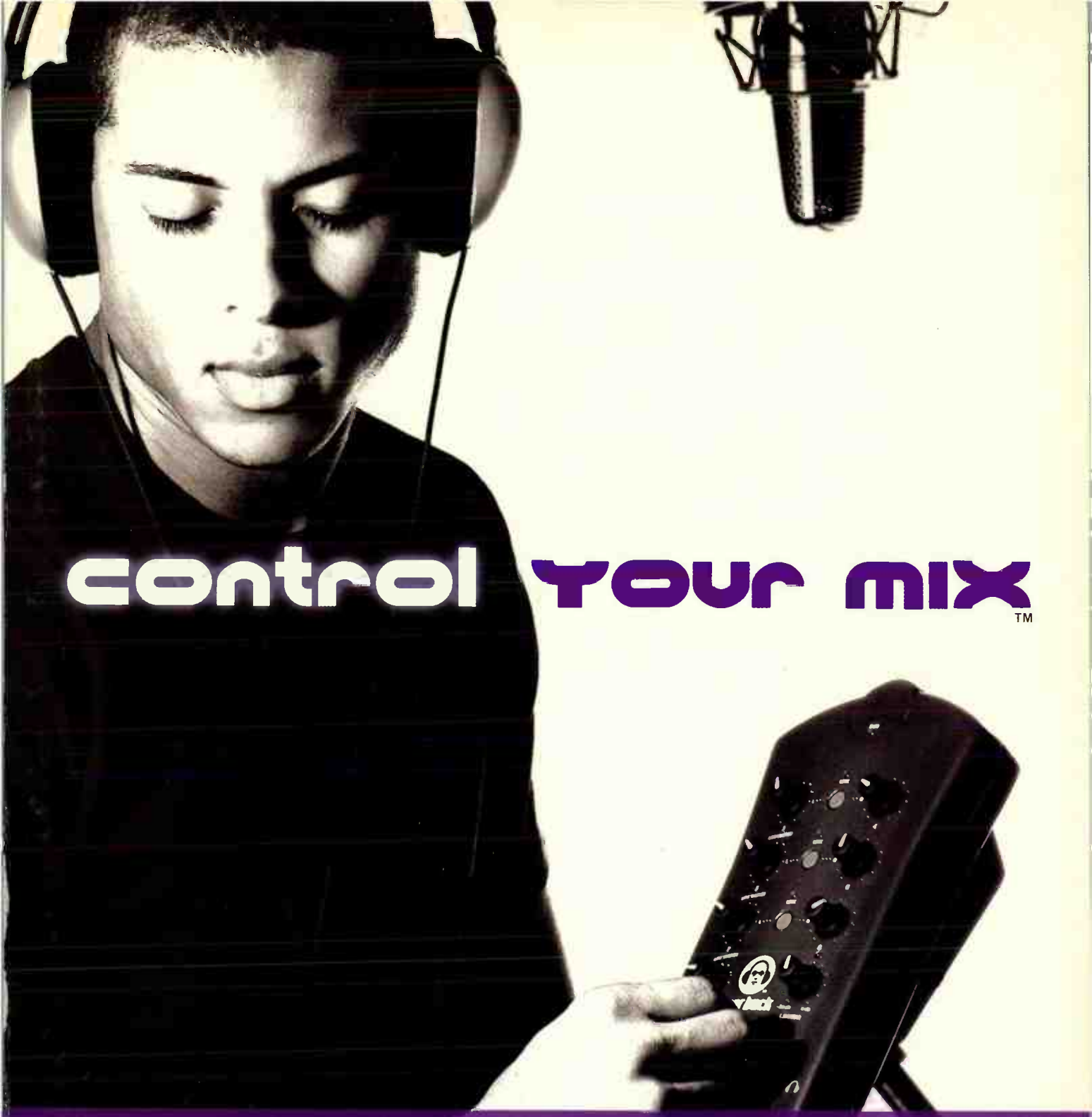

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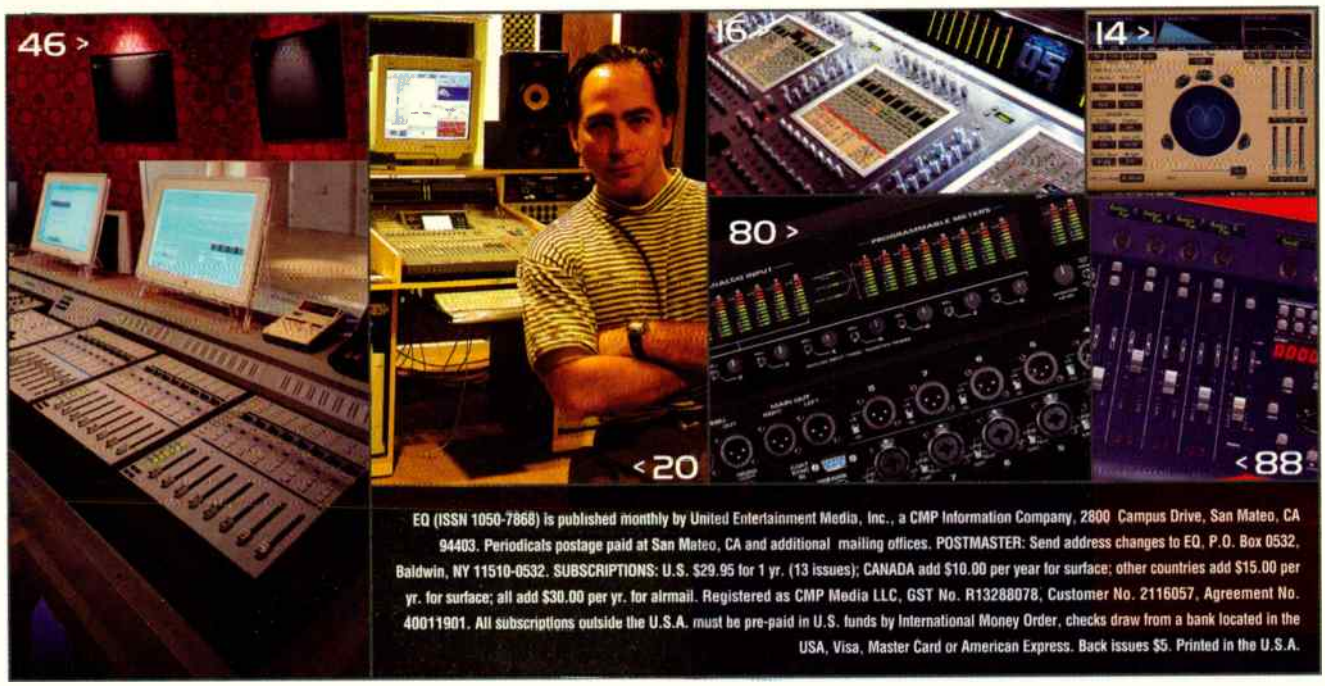

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Pro Audio Review, Ed Forke, May 2002

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EDITORIAL

EQ

Vol. 14, No. 2
FEBRUARY 2003

Zengineering

Leave it to Don Was. Not only is he a multi-faceted musician and a hit-making producer, but the guy has a way with words. Having had the good fortune of interviewing Don live on stage at last year's Music Technology Day L.A. at Hollywood's Musicians Institute, I can personally vouch for the latter fact.

But it was at his keynote address for the recent Surround Conference 2002 in Beverly Hills where Don again caught my ear: In discussing the responsibilities of engineers and producers when re-working classic mono and stereo recordings for surround release, he used the term "zengineering." He wasn't directly talking about any purported "religious" aspect of engineering — although we've probably all experienced some mighty dogmatic and certainly overzealous engineers and producers. Rather, he was referring to the balance required to craft a new surround mix while remaining true to the intent, emotion, and meaning of the artist, engineer, and producer in creating the original tracks. He was pointing out how easy it is to get carried away with the medium and lose the point of the message.

This is something that all of us could probably stand to reflect on; in today's high-speed, high-pressure studio environments, it's easy to lose sight of what the art and craft we practice is really all about. It's not units sold, dollars in the coffers, or even new audio toys. (Although none of those things is necessarily bad; we all need money to survive and thrive, and what would life be without cool new audio toys?) Rather, it's about the craft that we engineers and producers practice and the musical art that craft allows us to produce.

Far be it from me to preach (oh what the heck, what good is a pulpit like this if you don't preach a bit every once in a while?), but I can't help but think that the music industry (and by association our pro audio industry) would be in a healthier place if there was more focus on the craft and the art, more *balance* in the way we think about and do things.

I'm writing this at the dawn of the New Year. Personally, I don't make New Year's resolutions, that way I don't have to be bothered to break them later on. But in this case, I'll make an exception and put forth a resolve: To practice focused zengineering at every opportunity, and to bring balance to the art that's created.

—Mitch Gallagher
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Version 2.0 adds over 20 exciting new features to the DM-24, including 60 inputs at mixdown, new 5.1 surround panning, nearly unlimited signal routing, and much more. For all the info on the world's most powerful small-format console, visit your TASCAM dealer or www.tascam.com.

*MU-24 Meter Bridge optional

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HARDWARE

BBE Sound. The **BBE 482i** and **882i Sonic Maximizer** signal processors were designed to offer greater strength for demanding applications (*e.g.*, sound reinforcement and touring), as well as improved graphics for better readability in poorly lit environments. Knurled aluminium knobs provide ease of control and a more positive feel to allow making fine adjustments in mid-performance. Both models employ 1% metal film resistors, military spec circuit boards, and extra thick traces. www.bbesound.com

Behringer. The **XM1800S** vocal/instrument dynamic mic features an on/off switch, midrange presence emphasis, and includes a foam-lined impact-resistant carrying case as well as mic stand adapters...The **Ultramatch Pro SRC2496** ($249.99) provides format conversion between AES/EBU and S/PDIF with both coaxial and optical connectors, as well as conversion of 30-100 kHz sample rates into 32, 44.1, 48, 88.2, or 96 kHz with selectable 16-, 20-, or 24-bit output resolution. In addition, it provides for easy jitter removal, correction of unstable sample rates, and direct manipulation of emphasis and copy-protection bits...The **Ultra-DI DI20** ($24.50) is an active two-channel DI-box/splitter. It features switchable input attenuation, a ground lift switch, and 18 to 48 V phantom or 9 V battery power supply option. www.behringer.com

BEHRINGER 1800MS

Brian Moore Guitars. The **i1000** Series of MIDI guitars ranges from $595 to $1,195; each features the RMC 13-pin system for compatibility with Roland 13-pin guitar products, such as the GR-33 and VG-88. They also feature the RMC piezo system for acoustic tones. www.brianmooreguitars.com

Mackie. **d8b Version 5.0 software** ($299, free for units purchased after 11/15/02) is a major software upgrade for the Digital 8·Bus (d8b) recording console. It includes a completely updated graphical user interface for improved navigation, HUI emulation layer, surround monitoring control, updated dynamics algorithms, and plug-in chaining capability for "daisy-chaining" up to four plug-ins per send. www.mackie.com

Planet Waves. Push a button on the **Circuit Breaker** cable, and it mutes incoming audio by shorting the signal to ground. The cable can then be transferred to another guitar with no hum, noise, or pops; push the button a second time, and the cable is active again. www.daddario.com

Randall. The **RM50** modular 50W, 1 x 12-inch combo amp for guitar allows plugging in any one of 12 preamp modules, thus making it easy for session guitarists to obtain different sounds from a single setup. Modules include high-gain distortion, dual rectifier, emulations of classic amps, etc. All modules include two 12AX7 preamp tubes, three-band EQ w/bright switch, and level control. www.usmusiccorp.com

BEHRINGER ULTRA-DI D120

RØDE Microphones. The **NT2000** is a large diaphragm condenser mic featuring continuously variable polar pattern, continuously variable pad, and continuously variable high pass filter, along with very low self-noise <10 dB)...The **RØDE K2,** developed from the NTK, offers even lower noise than the NTK and a continuously variable polar pattern. www.rodemic.com

Sennheiser. The **E 609 Silver** ($199.95) features a re-engineered capsule from the E 609 so that the tonal character more closely matches that of the original MD 409; cosmetically, the new mic sports a silver front grille. This also helps orient the microphone correctly, even in dim stage lighting. The E 609 Silver's physical construction and side-address configuration is identical to its predecessors. www.sennheiserusa.com

Soundcraft. The multi-format E Series, the latest addition to the

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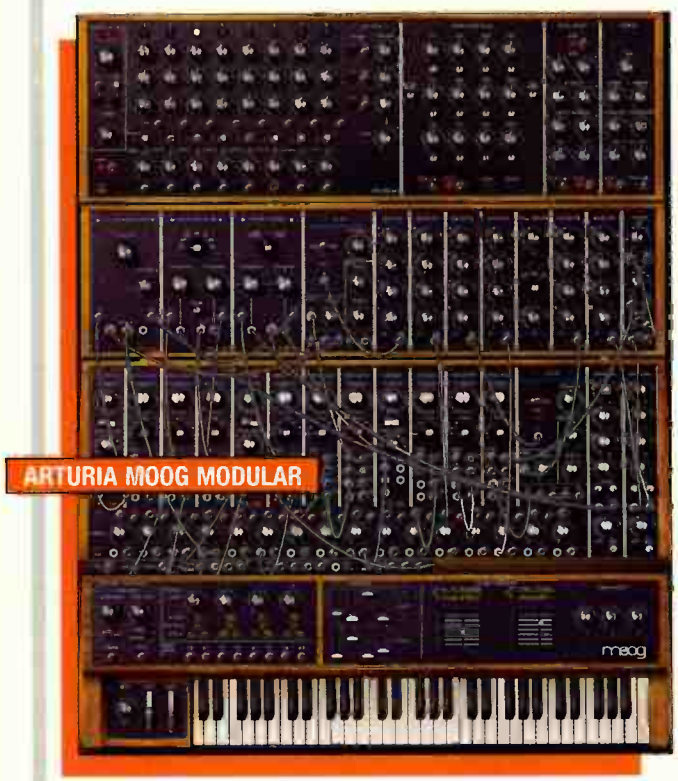
Spirit range, is available in four standard models: six (**E6,** $354.95), eight (**E8,** $399.95) and twelve (**E12,** $489.95) mono inputs (each model features two stereo inputs) and a unique model, the **ES** ($599.95). The ES caters to setups with multiple stereo sources that require simultaneous connection, such as keyboards, samplers and computers, and has ten stereo ins and four mono ins for mics and other mono sources. Two of these stereo inputs are equipped with RIAA-equalized turntable inputs, using RCA phono connectors, for DJ music production. All models have two aux buses, each individually pre/post switchable, and all main connectors are XLR-type and 1/4-inch metal jack sockets. **www.soundcraft.com**

Turbosound. The **LMS-D4** digital loudspeaker management system ($1,076), designed for use with Turbosound loudspeakers, is a compact DSP-based audio processing unit that provides tailored equalization and crossover functions specific to QLight, HiLight, TCS Series, and TFM Series loudspeaker systems. It ships with factory presets for front-of-house and floor monitor applications. Main features include FIR and IIR filters for optimal audio quality, limiters, and up to 42 ms of delay per output for precise alignment of drivers and external subwoofers. **www.turbosound.com**

SOFTWARE AND DAWS

Ableton. The **Sonomic Library Card** is now bundled with Live 2.0, allowing users to search, audition, and download 10 samples or five sound effects from the Sonomic Online Library. Currently over 200,000 sounds large, the Sonomic Online Library features the most-up-to-date collections from Zero G, Sound Ideas, Sampleheads, Q Up Arts, BBC, Universal SoundBank, and many more. **www.ableton.com**, **www.sonomic.com**



ARTURIA MOOG MODULAR

Arturia. A cross-platform (Mac/PC) software emulation of the legendary **Moog Modular** synth works as a stand-alone application but is also compatible with VST, HTDM/RTAS, MAS, and DXI. The emulation is based on a new set of algorithms that eliminate aliasing, and can also emulate the typical instability of analog hardware oscillators. **www.arturia.com**

BBE Sound. The latest version of the Sonic Maximizer plug-in now supports both Mac and PC VST platforms, as well as Direct X. It allows unlimited user-definable presets, real-time preset changes, and MIDI control. The unit's GUI recalls the graphics of the 482i and 882i models, on which the plug-in is based. **www.bbesound.com**

Bitshift Audio. The **pHATfactory I 001 Virtual Instrument** ($149) combines the pHATmatik PRO loop resynthesis engine with hundreds of synth loops in a new standards-based loop file format, pHATfiles. Unlike a standard loop library, pHATfactory loops can play back at any tempo, with perfect sync in any VST 2.0 compliant host software. Loops can also be processed with included DSP and synthesis tools (delay, distortion, ADSR envelopes, mod matrix, and more). **www.bitshiftaudio.com**

Cakewalk. **Sonar** will now support Digidesign audio hardware, including the Digi 001, 002, Mbox, and Pro ToolsIHD products, using Digidesign's recently announced **ASIO drivers** for Windows XP. A free driver update will be available to all registered Sonar 2.x customers. **www.cakewalk.com**

CreamWare. **Six-String** ($249), a virtual instrument for CreamWare's Luna, PowerSampler, Pulsar, Pulsar XTC, or SCOPE/SP DSP systems, focuses on producing realistic acoustic and electric guitar sounds but can also emulate harps, dulcimers, sitars, and various ethnic instruments. Multiple factors — string diameter and tension, rigidity, etc. — are editable, and influence the sound in the same way as a real string. An effects section includes a guitar amp, chorus, and delay. **www.creamware.com**

Digidesign. The **Pro Tools LE**

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5.3.3 software release brings Windows XP support to Mbox, including all the functionality of Pro Tools LE 5.3.1 software. The new software also includes the Digidesign ASIO driver for Mbox, a multichannel sound driver that allows third-party audio programs supporting the ASIO standard to record and play back through Mbox...The **5.3.3 Digidesign Plug-Ins CD** for Pro Tools 5.3.x and 5.1.x (which supports Windows XP- and Mac-based Pro Tools systems) includes the Access Virus, Bruno/Reso, DINR BNR, Reverb One, D-Fi, D-fx, D-Verb, DPP-1, Maxim, SoundReplacer, SurroundScope, Drawmer Dynamics, and Focusrite d2/d3. These plug-ins support both floppy disk and iLok USB Key authorization methods. **www.digidesign.com**

GMEDIA Music. The **Oddity,** a monophonic/duophonic synth based on the legendary ARP Odyssey, adds several enhancements such as the ability to "morph" between presets, and a unique "flyable fader" feature that allows you to throw sliders around at different speeds. There's also a syncable LFO, and user-definable VCA and VCF velocity parameters. **www.gmediamusic.com**

IK Multimedia. RT Player LE, a stand-alone ASIO host developed jointly by IK Multimedia and DSound, provides real-time control for SampleTank VST's sound parameters and effects (particularly for live performance). It runs under Windows 95/98/ME/2K/XP and needs only a 440 kHz P-II (or better) with 128 MB RAM. RT Player LE is free to registered

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SampleTank users only. **www.sampletank.com**

M-Audio. Revolution 7.1 ($99.99) is a high-definition, consumer-oriented surround-sound PCI card that delivers up to eight channels of 24-bit/192 kHz audio. Revolution 7.1 also supports stereo, 4.1, 5.1, and 6.1 formats, and Microsoft Windows Media Audio 9 Pro. Those without a 5.1 or 7.1 speaker system can take advantage of the built-in SRS TruSurround XT technology; this virtual surround sound process simulates the multi-channel audio experience over standard stereo speakers or even headphones. Also included: the Dolby Digital EX DVD player…**Sonica Theater** ($99.99), which offers similar capabilities but installs via USB, is well-suited for laptop-based applications. **www.m-audio.com**

Sonic Foundry. The **5.1 Surround Plug-In Pack** ($399) for Acid Pro 4.0 encodes surround Acid Pro 4.0 mixes to Dolby Digital AC-3 multi-channel files, and can also burn these songs to DVD for playback on most 5.1 audio systems. **www.sonicfoundry.com**

Steinberg. Nuendo 2.0 offers built-in encoding/decoding of Microsoft's new WMA9 Pro technology for fast web streaming, multi-channel audio, and uncompressed HD audio and video. Users can encrypt their content directly from Nuendo using Windows Media digital rights management (DRM), which allows secure content delivery via the web. Nuendo also supports WMA advanced encoding modes, which enable authors to specify quality levels and bit rates. **www.steinberg.net**

Universal Audio. The Smartcode Pro TDM software encoder plug-ins — **SmartCode Pro DTS-DVD** ($1,495), **SmartCode Pro DTS-CD** ($495), and **SmartCode Dolby** ($795) — have all been upgraded for compatibility with Digidesign's Pro Tools HD format. Existing plug-in users can upgrade for $99. **www.uaudio.com**

Wave Arts. The **Power Couple** Mac/Windows plug-in bundle ($199) for VST and Direct X formats includes the **TrackPlug** (channel strip with equalizer/dynamics) and **MasterVerb** plug-ins. Registered TrackPlug users can upgrade to the Power Couple for $70, while registered MasterVerb users can upgrade for $50. **www.wavearts.com**

SOUNDS AND SAMPLES

Big Fish Audio. The **Performance Loops Acoustic Guitars** sample CD (two-CD set, audio and Acidized WAV, $99.95) is designed for "load and go" construction of tracks from individual elements. Each guitar performance is organized by chords or root key, and designed to be used in constructing an entire song. Over 1,000 loops are included (folk/rock, rock/pop, acoustic singer/songwriter, with some jazz, funk, and a touch of country), played by a variety of six- and 12-string guitars. **www.bigfishaudio.com**

IK Multimedia. New SampleTank-compatible sound collections, created in collaboration with Sonic Reality, include **Bass Collection** (multi-sampled playable basses) and **Acoustic Drum** (multi-sampled acoustic drums). The **SampleTank LE** VST plug-in is included so the sounds can be used by anyone within a VST-compatible host. **www.ikmultimedia.com**

Sonic Foundry. New loop CDs include **The Songwriter's Acoustic Guitar Companion** (by Leo Cavallo; 24-bit, double-disc collection of essential chord patterns), **Nu Groove Pop** (by Bunker 8; radio-friendly R&B-flavored dance music construction kit), and **Bug Report** (by Vir Unis; contemporary minimal electronica construction kit). **www.sonicfoundry.com**

OTHER NEWS

Analog Devices. At a 300 MHz clock rate, The ADSP-TS101S "TigerSHARC" DSP Processor (under $199) operates at 2.4 billion multiply accumulates per second (GMACS) and 1.8 billion floating-point operations per second (GFLOPS), the highest floating-point and fixed-point DSP performance available. It offers 16-bit fixed-point performance as well as a 32-bit floating-point 1,024 complex FFT time of 32.9 microseconds. On-chip features include 6 Mbit internal memory, 14-channel zero-overhead DMA engine, and 1.8 Gbyte I/O throughput. **www.analog.com**

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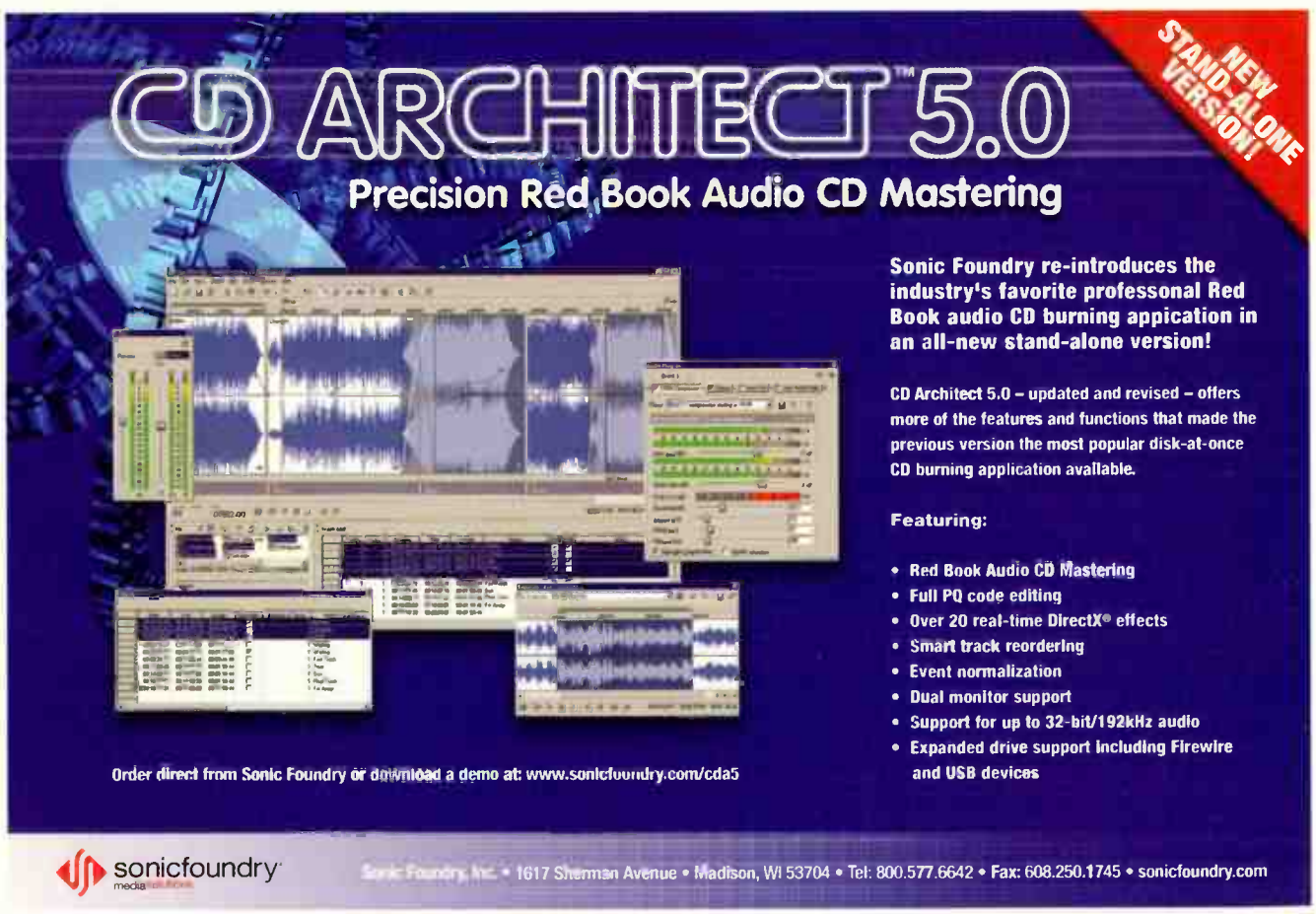
digidesign

Cool School Interactive. **CSi vol. 7** ($79.95) is a cross-platform CD-ROM that covers Cubase SX's key operational techniques. The CSi movie tutorials include not only basic functionality, but production techniques, short cuts, key commands, and before and after audio examples. In addition to the hours of movie tutorials, CSi vol. 7 includes a digital audio workstation-related glossary and a quizzing feature…**Csi mt1** covers basic concepts and production techniques to help illustrate the effective use of common audio plug-ins (EQ, delay, reverb, dynamics, and various special effects). **www.coolbreezesys.com**

Microsoft. The **Windows Media 9 Series Hosting Provider Certification Program** is intended to help content providers identify the most reliable networks to deliver Windows Media 9 Series content. In order to be certified, hosting providers must successfully meet a comprehensive set of requirements, including a full implementation of Windows Media 9 Series. This is verified by third-party testing at initial certification, ongoing six month checkpoints, and periodic random checks for as long as the hosting provider wants to remain certified. **www.microsoft.com/windowsmedia**

Sennheiser. A new website offers tools and resources for finding available frequency bandwidth anywhere in the United States (go to **www.sennheiserusa.com** and select "RF Frequency Finder" from the "Quick Links" listing). The site includes recommended tunings for Sennheiser Evolution Wireless and 3000 and 5000 RF Series systems for situations that require the re-tuning of factory presets, or where multi-channel requirements exceed the system's factory presets. A 50-state grid provides links to PDF downloads with comprehensive listings of the current analog and DTV frequencies in use in the major cities, including bandwidth allocations for future DTV transmission. ■



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The **Mogami Edition Valve Microphone** is a culmination of years of research into what people look for in a Tube Microphone. What do they like about the "vintage" German Mics and moreover what do they dislike about them? It seems universal that "Tube Noise" is the greatest concern, especially when recording digitally. We took care of that by individually selecting, time proven 12AT7 tubes and coupling to a newly designed FET output stage. Many dislike the "dark" sonic characteristics inherent in some of those older designs. Our capsule exhibits a brighter characteristic with an airy quality. Also, most agree 4-figures for a microphone is a bit "over the top". The V69 Mogami Edition microphone is reasonably priced in the low 3-figure range. And finally, to insure all of these qualities, end up on the track, the V69 is internally wired with Mogami and is supplied with a Mogami Tube cable and Mogami Microphone cable.

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World Radio History

By Steve La Cerra

DiGiCo D5 Live

Wouldn't it be great if you could tour with a console that had total recall and didn't require hundreds of feet of audio snake cable or mic splitters? DiGiCo has created just that with their D5 Live digital mixing system. Consisting of a console work surface, audio interface "DiGiracks," and 100 meters of fiber-optic cable, the D5 Live converts analog audio to digital at the source (the stage) and uses fiber-optics to route signals between stage, FOH, and monitor consoles. By locating the DiGiracks near the source, analog cabling is kept to a minimum, reducing the likelihood of RFI and signal degradation.

The D5 Live 56 (64 channels) uses one remote Stage DiGirack containing A/D and D/A converters (24-bit/44.1 or 48 kHz), and connects to the console via fiber-optic cable. A second Local DiGirack sits next to the console, providing external analog I/O for inserts and effect sends and returns. A D5 Live 56 may be upgraded to a D5 Live 96 (96 channels) by adding a second Stage DiGirack and adding a DSP card to the console. The D5 Live can lock to any external clock source with a sample rate from 30 to 50 kHz.

Inside the D5 console is DSP providing every input channel with full processing capability regardless of how many channels are in use at any time. Each channel has a gate, compressor, high- and low-pass filtering, phase reverse, 240 millisecond delay, and four-band EQ. High- and low-mid bands are fully parametric, while the high and low EQ bands are multimode (they can be switched between bell, shelf, and high- or low-pass). An on-screen display shows the EQ curve for each channel.

The D5 Live console surface is organized into four sections of eight channels each, and blends traditional with new technology. Every section has an LCD touchscreen displaying parameters for the eight respective channels (the touchscreens are pressure-sensitive, helping prevent accidental changes). Underneath each screen is a bank of rotary encoders for real-time EQ and dynamics control. In addition to the fader, trim control, and rotary encoders provided for every channel, the center of the D5 Live incorporates a "selected channel" section with dedicated hardware for control over all channel parameters. Through a combination of touchscreen buttons and "real" controls, all channel functions may be accessed simultaneously for quick response. DiGiCo has wisely provided each touchscreen with a dedicated VGA monitor output, augmented by an additional "overview" VGA output.

Two master banks provide 16 faders that function as matrix, group, or aux out masters. The D5 Live offers grouping "VCA-style" or digital group-style. One of the interesting functions of the D5 Live is called Fader Ganging. This allows a set of channels to be locked together in a gang so that single adjustment in (for example) EQ or dynamics is applied to every channel. After the adjustment is made, the channels may be de-ganged, restoring individual control.

▶ continued on page 100

DIGICO D5 LIVE

WHAT IS IT? A digital production console with remote I/O and a work surface combining analog-style and touchscreen control.

WHO NEEDS IT? Touring sound companies, broadcast and TV production studios

WHY IS IT A BIG DEAL? The D5 Live system uses fiber-optics to link digital audio between stage, front-of-house, and monitor consoles, and may be expanded with the addition of a DSP card and Stage DiGiRack.

CONTACT: For more information contact DiGiCo UK Ltd. at 44-0-1372-845600 or visit www.digiconsoles.com.

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NUENDO

frank filipetti

nuendo...

untouchable sound.

To capture the sound of their new release ***Untouchables***, heavy-hitting band ***Korn*** turned to digital recording pioneer Frank Filipetti and producer Michael Beinhorn. After painstaking comparisons, the group was unhappy with the way their tracks sounded using other popular DAWs, and found that they could edit and process tracks to their heart's content in NUENDO with absolutely no decrease in fidelity.

"I knew going in that the band was going to be especially vigilant about the sound of their instruments. That's why it was so important for me to find the right digital gear. Nowadays, everyone is accustomed to the manipulations we can perform on a digital platform. But the feature set has to be secondary to the fidelity set. And on that score we found NUENDO second to none."

One might even say.... untouchable.

phil ramone
rory kaplan
chuck ainlay
david tickle
frank filipetti
rob hill
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Brooklyn Recording Studios

By Steve La Cerra

Converting an office building into a studio

STUDIO NAME: Brooklyn Recording Studios
LOCATION: Brooklyn, NY
KEY CREW: Andy Taub, Suzanne Kapa, John Storyk, Scott Yates, Matt Marinelli, Andrew Roberts
CONSOLE: 60-channel custom Neve 8058 with 52 Flying Faders
RECORDERS: Studer A800 Mk II 24-track, two-inch with 24 channels of Dolby SR and spare 16-track head stack; Ampex ATR104 half-inch two-track
MONITORS: Genelec 1039A, Dynaudio BM7A, Yamaha NS10M, Tannoy PBM8
MICROPHONES: Neumann M269c [2], TLM170 [2], U67, KM54, SM2, SM69; Telefunken U47 [2], AKG C28, C24, C12a [2], C61 [2], D25, D12e, D112; Sennheiser MD409 [4], MD421 [3]; Shure SM7 [2], SM56/57 [6], Schoeps 55, CM64; RCA BK5 [2], 44 [2]; Electro-Voice RE20, 666 [2], 408 [3]; Beyer M160 [2], Coles 4038 [2], Altec 21B [2], Bang and Olufsen ribbon mics [2], Tannoy ribbon mics [2]
OUTBOARD: UREI 1176 [2], 546 parametric EQ; Purple Audio MC77 compressors [2], Universal Audio 175 [4], Gates SA-39, Klangfilm mastering EQ [2], Lang PEQ2 [2], dbx 160VU [2], 160X [4], 165 [2], 165a [2], 902 de-essers [4]; Neve 32264 compressors [2], Avalon AD2044, API 550a, 560 EQ [8], 525; Sontec 202 compressor, Aphex Dominator, TimeLine Lynx Synchronizer [2], Millenia Media NSEQ-2,
Manley/Langevin Limiter, Alan Smart compressor
EFFECTS: Quantec QRS, TC Electronic M3000, EMT 140 stereo plate, Eventide Instant Flanger, H3000; MXR Flanger/Doubler [2], Ibanez 202 Analog Delay [2], Korg SDD-3000, Roland SDE-3000 delay [2], Lexicon PCM41 [2], ADR PanScan
MICROPHONE PREAMPS: Siemens V76 tube pre [4], API 312 [6]
KEYBOARDS: Moog MiniMoog, Mellotron, Wurlitzer electric pianos [2; one tube, one solid-state], Hohner Clavinet D6, Farfisa Organ, 1905 Steinway Model B, Hammond B3 w/Leslie 122
COMPUTER: Apple Dual G4/1 GHz w/Gefen KBM extension, 1.5 GB RAM, 36 GB [2] and 75 GB hot swap drives, with 22-inch Apple Cinema Display
DAW: Digidesign Pro Tools v5.3, 192 [2], HD3 core system
INSTRUMENTS: Deagan Vibrophone, Saito Marimba, Fibes five-piece drum kit, Leedy four-piece drum kit
INSTRUMENT AMPLIFIERS: Fender Deluxe [2], tweed Champ, tweed Bassman, white-knob Bassman heads, Vibro-Champ; Marshall Super Bass 100, 50-watt, 4x12 w/greenback Celestions [2]; Ampeg B15, B215, B12x; Magnetone 262, 280; DeArmond Master

STUDIO NOTES: When designers John Storyk and Scott Yates of Walters-Storyk Design Group were asked by Andy Taub to evaluate the space intended for Brooklyn Recording Studios, one of their early concerns was making the project work within a row of structural columns in the center of the building. "At the time it was being used as an office space," reveals Storyk, "so it was difficult to imagine what was happening structurally. Obviously there had to be supports but it was

WEBLINK
Visit Brooklyn Recording Studios at www.brooklynrecording.com

World Radio History

questionable as to what it would look like when the old rooms were taken out (since it's an older building there were no original drawings available). The biggest challenge was positioning a large control room, two iso booths, and a studio around these structural support columns and at the same time creating as many natural daylight opportunities for the scheme as possible.

"The genesis of the design is the central location of the large control room, which allowed us to tuck away two of the supports behind the control room speakers. The Genelecs are mounted in a rigid wall (not uncommon in control rooms), which helps eliminate speaker boundary interference (SBIR), or rear speaker radiation comb filtering — in other words the tendency for energy to come from the rear of a speaker, hit a wall and bounce back to the listening position a few milliseconds later. This will almost always result in a comb filter that causes a substantial low-frequency notch. A classic way to solve that problem is acoustically eliminating the back of the speaker, as was done here."

"If you look at the floor plan," elaborates Scott Yates, "you can see that the alcoves housing the left and right speakers are completely in the plane of the front control room wall, so there really aren't any speaker boundary issues. In a lot of control rooms, soffits are built out in front of the wall, but here they are completely flush with the rest of the construction. In addition to increasing the visibility between the mix position, the live room and the iso booths, this reduces diffraction. The spaces behind the speakers are not quite as hollow as they appear on the drawing. We notched into them to create an area for mounting microphone panels in each iso booth, so from inside the booth, the panels appear flush with the walls."

"One of the interesting features of the live room is that the acoustics can be modified," continues Andy. "Scott and John came up with the idea of hanging variable acoustic panels along the side walls, allowing us to change the reverb characteristics of the live room. The absorptive panels are fabric-wrapped with 4-pound density, semi-rigid insulation. They're alternated with wood panels made of two layers of 3/4-inch plywood with hardwood veneer. These panels are hung from the ceiling on a track that allows them to be slid back and forth."

"The ceiling of the live room is sloped," Storyk elaborates, "and most of the ceiling panels are primarily for broadband absorption. The air space behind them provides increased low-frequency absorption. Smaller ceiling panels near the windows are also on a track and can easily be moved. When the smaller panels are slid behind the fixed panels, the ceiling is more reflective. Pulling them out makes the ceiling more absorptive. The panels allow the mid-frequency reverb time to be varied by a factor of two, from approximately 0.4 seconds to 0.8 seconds at 1 kHz. If Andy needs to record acoustic instruments such as horns or strings, he can expose the hard surfaces for reflection. If he needs more separation and a tighter sound, he can use the absorptive panels to reduce reflection in the room."

EQUIPMENT NOTES: According to engineer Andy Taub, "The Neve 8058 is actually constructed from two separate consoles that were joined together for a total of 52 microphone channels (84 line inputs on mix). The work was done by Fred Hill of FC Hill and Associates (TN) who specializes in Neve refurbishment. Fred rewired the two desks with a common master section. Each side of the console (left and right) retains its original 16 group and eight aux send buses. Fred's master section allows me to use them separately or - through a set of 'tie' switches in the center section - link any bus or aux between the two sides. I have the option of 16 buses and eight auxes across the entire console, or 16 buses and eight auxes for each side of the console. There's also a mod that allows me to have either a group out or direct out from each channel. You can hook up two desks and pass audio from one to the other, but this really functions as one desk."

Fred Hill explains, "When you tie two single-ended (unbalanced) desks together, it can be an invitation for RF interference, instability, and hum. By electronically balancing the mix buses, bus noise is reduced by 6 dB and the common-mode rejection ratio is increased. The desks are electrically isolated with independent ground, power distribution, and mix bus amps. The mix bus amps are passively linked, and the entire monitor section is new, providing a cleaner monitor path with modern switching options." ■

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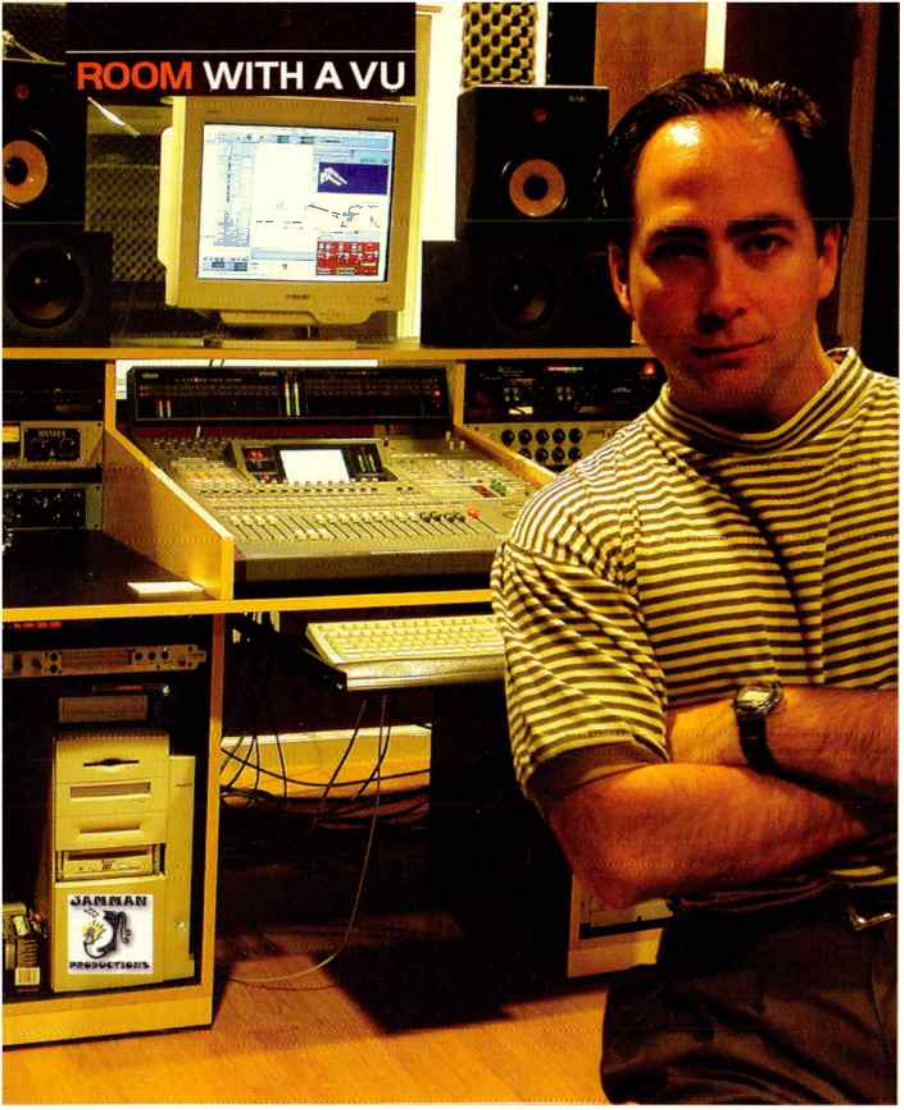

Jamman Productions

Jammin' in Jersey

By Steve La Cerra

STUDIO NAME: JAMMAN Productions Recording Studio
LOCATION: Morris County, New Jersey
KEY CREW: James A. Manno, owner/producer/engineer
CREDITS: *The Garbage Man*, George Lamond, Kenya, *Music Alive! Magazine* (Cherry Lane Publishing), *Teen Date Rape* (HBO/Time Warner), Jon Camano, VBL, *Artist 2 Artist TV*, Enrico Granafei (Trumpets Jazz Club), CableVision, Harry Mavromichalis Modern Dance Company, The HazMats, Juba, Deborah Thurlow, Stephen Shiman, Margret De Jesus (New Jersey Opera), Haven Clayborne, St. Andrew's Church Music Ministry, PHTV Inc.
CONSOLE: Yamaha 02R V2, Mackie 1604 VLZ
MONITORS: KRK 7000, Alesis Monitor 1, Sony headphones
AMPLIFIERS: Crown K2, Samson Q5 headphone amplifier
RECORDERS: Panasonic SV3700, TASCAM CDRW 402, Sony TC-WE635 dual cassette, Yamaha KS-393 cassette
OUTBOARD: Avalon 737sp, Manley ELOP, Summit Audio DCL-200, Furman SRM-80 Signal Router
EFFECTS: Sony HR-MP5 multi-effects processor
MICROPHONES: AKG 414 B-ULS, D190E [3], TLII, D112; Audio-Technica AT835ST, Brauner Valvet, Neumann TLM170 [2], U67
MICROPHONE PREAMPS: Avalon 737sp, Universal Audio 610-2, Studio Technologies Mic Pre-Eminence
KEYBOARDS /SAMPLERS/MIDI: Alesis DM-PRO, Korg M1, Triton Rack; Kurzweil K2000R, MOTU MIDI TimePiece, Roland D-70, Yamaha DX7
COMPUTER: Apple PowerMac 9600 with 512 MB RAM, 18 GB Seagate Barracuda external drive, Sony Spressa 4x CDRW, Sony 20-inch Monitor, Adaptec 2940UW SCSI Accelerator
DAW: Digidesign Pro Tools Mix Plus, 888|24
SOFTWARE: Digidesign Pro Tools 5.3.1, Masterlist CD 2.0.1; MOTU Digital Performer 2.4.3
POWER CONDITIONING: Furman PL-Plus
ACOUSTIC TREATMENT: Custom foam and bass traps
STUDIO NOTES: "When I began designing the new JAMMAN Productions Recording Studio," say James Manno, "I wanted to capture the feel of a high-end recording facility with the charm and comforts of home. The first step was connecting with studio builder Chris Taussi who could 'nail down' my vision. We talked a lot about design and materials that would be acoustically advantageous. The space for the two rooms uses double-wall construction, including the wall dividing the control room and studio. I came across a manufacturer of acoustic foam here in New Jersey, where I was able to design my own wall treatment and bass traps."
EQUIPMENT NOTES: "Having a mix of vintage and new synthesizers is one aspect I really love about the studio, and with the

▶ continued on page 100

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In The Trenches

By Rich Tozzoli

On the road and in the studio with Robert Frazza

Occasionally, in our line of work, the term "in the trenches" pops up in conversation. It usually signifies people who work on the road as much as in the studio, swiftly handling technical issues and more responsibilities than one person is supposed to. Usually short on time and budgets, they make due with what they have and get results that keep them constantly on call. Robert Frazza is one of these guys. From mixing and tour-managing live shows for such artists as Bill Bruford, Jack DeJohnette, and David Sancious to taking Tony Levin, Vinnie Colaiuta, and David Torn into the studio, he's out there doing it every day. On a break from a recent mixing session, Frazza talked with *EQ* about his exploits in and out of the sonic trenches.

EQ: What are you working on currently?

ROBERT FRAZZA: I'm tracking Tony Levin's upcoming release featuring Jerry Marotta, Larry Fast, and Jesse Gress. I'm also mixing Bill Bruford's Earthworks project, which we recorded live in New York. As we speak, I'm remixing *Blue Nights* with Bruford, Levin, Torn, and Chris Botti for multichannel release up at the Clubhouse in Rhinebeck, New York.

How do you handle such a busy studio/road schedule?

I work throughout the year, generally starting with the tracking of an album, followed by the tour to promote it. Take Tony Levin for instance. We will spend a couple of months tracking, then spend a year or two touring. The tours are usually on for two or three weeks, then off for a month or so. That allows me to do many different projects at the same time. Over the past two years, I've been out live with Bruford/Levins, Upper Extremities, the Tony Levin Band, Bill Bruford's Earthworks, Jimmy Weider, and various incarnations of David Torn projects, either as Splattercell or David Torn with Will Calhoun or Carter Burwell

Do you record most of your live shows with these bands?

Yes, if time allows and it's possible. I'm usually alone, so I have to do front of house and record. I have a rack with three ADATs in it, and I usually tap the front of house board for my feeds, and use a few audience mics when I can. I don't monitor the recordings, because I'm working! Most of the shows are tracked for archiving purposes and for release when we capture magic. Now that I'm working in surround, these recordings have a whole new life.

How do you feel about multichannel mixing?

It's brilliant. I'm excited because of the options it provides. With the project I'm mixing now, I want to see what it's like being on the stage with Bruford, Levin, Torn, and Botti. I may even take the perspective from Bill's [Bruford's] seat. Since I've done all the shows in the audience, I know what that sounds like, and may mix it that way. I'm working with 333 Entertainment in New York on a lot of these projects for DVD and possibly SACD release.

What gear are you currently digging for your live and studio work?

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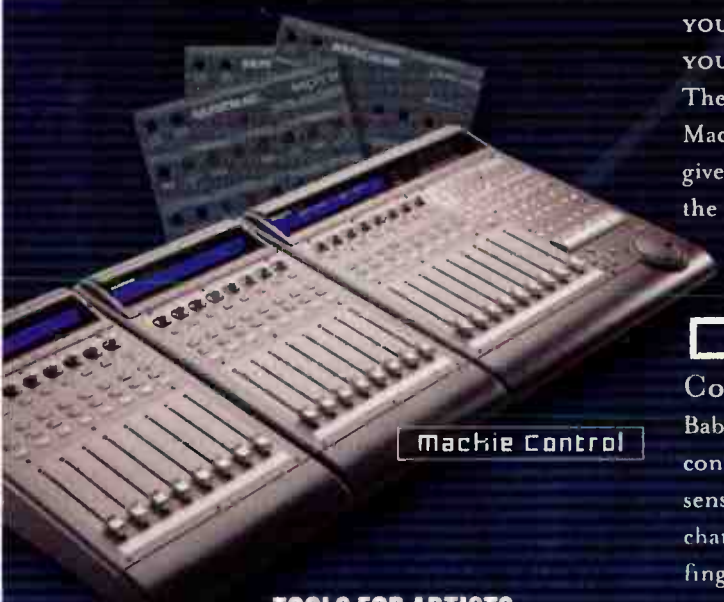

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MACKIE.

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I love the Sony DMX-R100 board for studio multichannel mixes. I also really love my Shure mics, in both situations. I use the Beta 98s and KSM 44s for drums, but I can work with whatever is around and often have to.

How, for example, do you typically record Tony Levin's bass and/or Stick in the studio?

Tony also plays the cello, upright, and fretless, of which I typically take three channels. The center channel is the main output, with left and right

consisting of effects material. That could include anything from delays, massive distortion, chorusing, or sub-bass info. I take three direct signals from his Aguilar DB 680 preamps out to three Trace Elliot amps,

"[MULTICHANNEL MIXING] IS BRILLIANT. I'M EXCITED BECAUSE OF THE OPTIONS IT PROVIDES."

consisting of a 1,000-watt AH1000 amp and two 1210H combo amps. I mic them with Shure Beta 52s, and usually use a little compression.

What do you prefer, live or studio?

Well, I like both, but in live there is no second take. That could be a pro or a con. With this caliber of musicians, a second take is usually not needed. Having mixed and tracked these records certainly helps me know the material better when we're on the road. One of the problems with live work is that half the systems in this country are not up to par, but with these bands and a good PA, live shows can be unbelievable. However, working in the studio with all these guys is just amazing, too. ■

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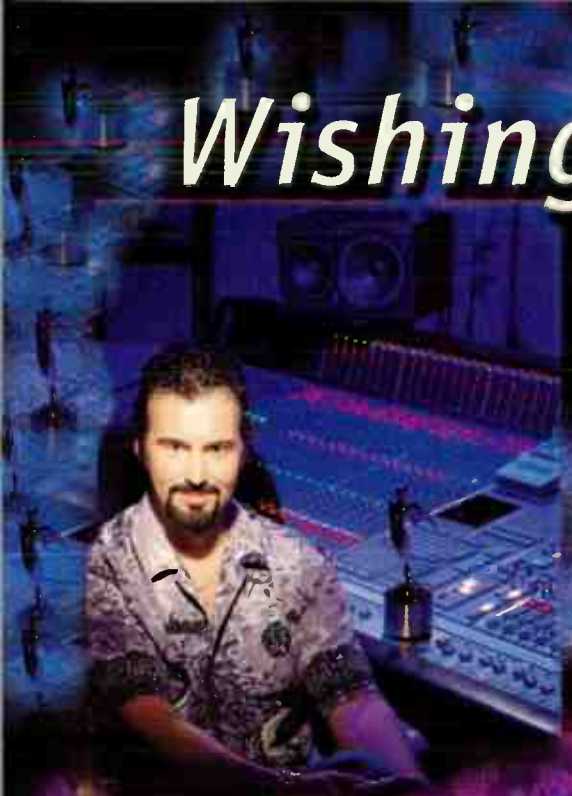

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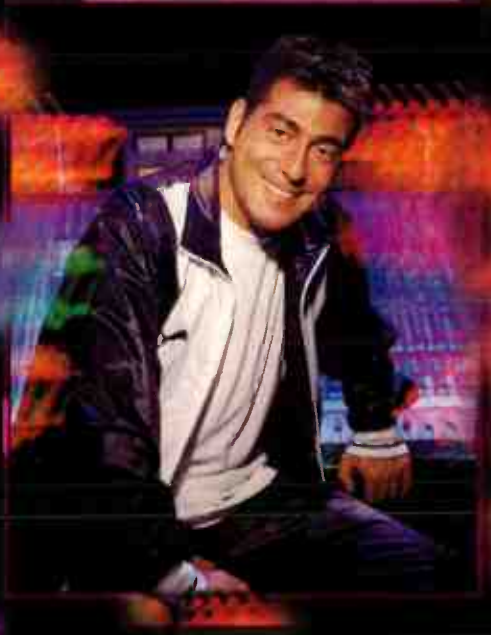

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By Lisa Roy

Arturo Sandoval, Trumpet

Modern technology captures a trumpet tribute the old-fashioned way

"The idea of a tribute to the trumpet greats over the past 80 years was at least a 20-year plan of Arturo's. For a musician of any instrument, re-creating 19 different artists, especially stylistically, is a rare display of great talent," states Gary Grant who not only plays a masterful trumpet on the project but also handled the roles of musical consultant and co-producer.

With over 25 years studio experience with the Jerry Hey horn section, Grant knew the sound they needed to achieve was important. "We decided to use the technology of today while maintaining the essence and flavor of the older recordings. Arturo played several different horns to portray the different artists sounds, some were even the original trumpet played by that artist. We recorded to Pro Tools HD at an 88.2 kHz sample rate."

"I've recorded many projects with Al Schmitt and Armin Steiner and knew what great engineers and people they are," brags Grant on his engineers of choice. "The sound of this recording is embracing to the ear. It's like a trip through history. *Trumpet Evolution* was so cool to witness and be a part of...from the high level of musicianship to the high level of engineers, studios and management."

DATE: November 20, 21, 2002
STUDIO: Capitol Studios, Studio A
LOCATION: Hollywood, CA
ARTIST: Arturo Sandoval
PROJECT: *Trumpet Evolution*
TRACK: Arturo playing trumpet and the Jerry Hey horn section
PRODUCER: Gary Grant, co-producer; Quincy Jones, executive producer
ENGINEER: Al Schmitt (other engineers include Eric Schilling in Miami and Armin Steiner)
ASSISTANT ENGINEER: Charlie Paakkari

SIGNAL PATH

"Eric Schilling started Arturo's album in Miami where he did a few tracks and then they came to Los Angeles and did a couple of big orchestral tracks with Armin Steiner. Then I did eight songs with a big band," explains 11-time Grammy-winning engineer, Al Schmitt. "We did a small group horn section and then moved on to the big band tunes that went back to King Oliver times. As a matter of fact Arturo used a trumpet that Dizzy Gillespie had given him for one of Dizzy's songs.

"For Arturo's trumpet I used the new Royer R-122, a phantom-powered ribbon microphone, which I ran through a Martec MS-10 tube pre-amp and right to Pro Tools HD. There were four trombones and four trumpets — in some cases five because Arturo would play with the section. I used Royer's on all the trombones and trumpets. On the saxophones I used Neumann U67's. I ran them through the Neve VR console pre-amps and then directly to Pro Tools HD."

MIC POSITION

"Arturo puts out a lot of pressure when playing his trumpet, so I put the Royer R-122 microphone back about four feet," shares Schmitt. "I had it up slightly above the trumpet but facing down toward the bell, so the air didn't blow right into the microphone. It blew just below the microphone, but I was able to capture everything.

"I've worked with a lot of great trumpet players like Harry James, so just from experience you pick up all these little tips of where to put the mics. You know the trumpet players who put out a lot of pressure and a lot of wind and you know where to put the mic. There are other trumpet players I've worked with, like Chet Baker, who didn't put out that kind of wind and sound, so you position a mic differently.

"In the horn section I had Royer R-121's on each of the four trombone players about three feet from each trombone. I also had an over-

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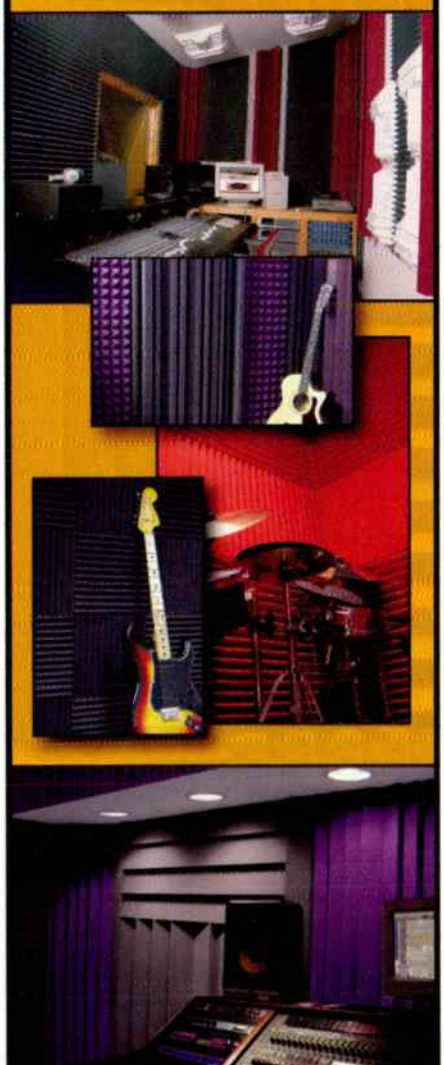
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The setup at Capitol Studios. Inset: Quincy Jones.

all microphone for the whole section, which was a Neumann M149. The trumpets were sitting directly behind the trombones up on the riser and I had two Royer R-121's and two Royer SF-1 microphones, one for each trumpet, three feet from each player. I picked up some of the room with the M149 so I got the overall sound plus the indlvidual sound."

PROCESSING

"There was no EQ at all," confirms Schmitt. "The only echo we used was for monitoring. For that I used my TC Electronic M6000 and a Lexicon 480L. I also used one of Capitol's live chambers. I just love the way they sound. It gives you an overall great sound, I put It on the ambience mics and it just sounded great.

"I didn't use any EQ on anything. It's all just microphones and knowing where to put them. When you put them in the right spot you don't need EQ."

TRACK NOTES

"When the musicians come in the control room to listen to all the playbacks you know you're doing something right in there and that there's something right with the music...it was really a lot of fun," concludes Schmitt.

"One of the great things about this project is they did the original arrangements that were done on the original recordings but with modern technology. Also everything was done live; there were no overdubs. It was just the way we recorded years ago and I'm sure it was the way they did things in the '20s, although I wasn't around for that.

"One thing you've got to be careful of when recording trumpet is distortion. You want to be sure you're not overloading the microphone or the preamp. Placement of the mic is really important. Especially with someone who plays like Arturo does. He really plays loud. You could stand 15 feet in front of him and your ears will shut down after a while. I always make it a point of being in the tracking room on the rundowns. I stood right next to Jerry Hey on the rundown so I could hear exactly what things are sounding like in the room and then go into the control room to capture that. I didn't want Arturo to come in and say 'Geez, that's not what I sound like,' so we were successful in that.

"We did eight songs in two days. The sad part was when it was over. Nobody wanted it to end. It was just one of the more enjoyable sessions I've had in a long time. Arturo is special and his playing was just unbelievable. When you're working with artists and musicians of the quality of these guys, it's a joy." ■

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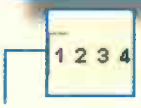

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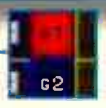

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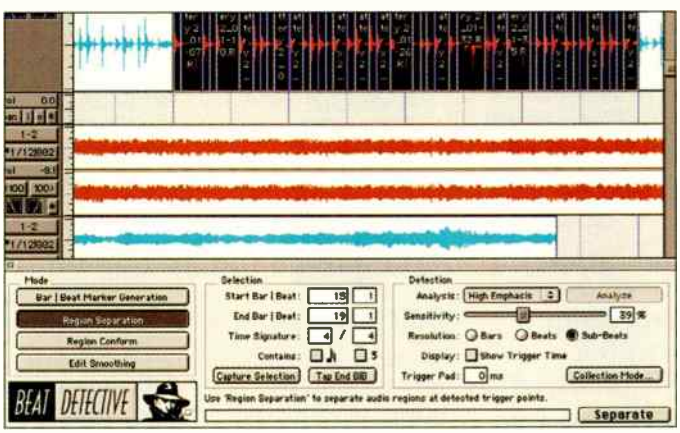
Mapping and quantizing audio and MIDI tracks

Time Is Of The Essence

By Tal Herzberg

Working with any type of sound always involves two main elements: pitch and time. Pitch elements define melodic and harmonic characteristics of musical compositions, set the mood of spoken segments, and enhance the intensity of different sounds. Presenting these elements over a timeline creates a linear listening experience — a series of pitched events spaced in pre-defined and measurable intervals.

While random time intervals between pitched events may apply to post-production situations (spotting effects to picture, dialog work), more restricted time-based considerations are involved in most music writing and producing. Using mathematically-based time divisions (whole, half, quarter, eighth notes, etc.), and a measured tempo in beats per minute (BPM), sets a predictable pace to any type of musical experience. Smaller sub-divisions of these time intervals, and the way they are spaced, create different rhythms and grooves — building blocks that are equally important as pitch-based events. Let's examine some of these elements and ways to manipulate them in our DAWs.



Digidesign's Beat Detective is an example of an automatic transient detection, region separation, variable quantization, and cross-fading program.

MAPPING THE GROUND

Since most of us are working on contemporary musical materials, it's safe to assume that almost every situation will involve a tempo (speed). Regardless of the song's tempo, it's good practice to set up a tempo map before recording anything.

Find the tempo control in the DAW software and set it to the desired speed. Sometimes the tempo will change among various sections of the song, such as speeding up a bit for a chorus (say from 90 to 91.5 BPM), and bringing it back down for the next verse, etc. To create the map, set the song's beginning tempo at bar 1, count the bars until the chorus occurs (often 16 bars), and at that point (bar 17), set a tempo change. The chorus section will now play slightly faster than the verse, making it a bit more exciting. When coming out of the chorus into the next verse (bar 25), set another tempo change, bringing the tempo back down to its initial setting.

Another part of the mapping procedure is setting up meter changes, if any. If the basic meter is 4/4, but isolated bars are 3/4 or 2/4 in meter, set up these changes similarly to the way you set the tempo changes. It will make navigating and editing much easier tasks.

Finally, with some programs that handle time/pitch stretched loops (*e.g.*, Cakewalk Sonar or Sonic Foundry Acid), you will also want to set up a map of key changes so that any pitched loops can follow along during the course of the song.

CLICK

Creating a tempo map makes it possible to generate a perfect click track (metronomic pulse), to which we reference new recorded parts. How close or far performances are to the click track will determine their tightness or looseness, respectively.

Sometimes we may choose not to constrain certain performances to a click track, and record them free of tempo reference (often the normal thing to do up until the era of drum machines started in the early '80s). Not following a click track may yield more lively performances that "breathe," but this makes it difficult to regulate the beat and groove to a fixed tempo, which seems to be the acceptable means of delivery nowadays. However, using a DAW, we can constrain any performance to fixed tempo and groove *after* it has been recorded, either with or without a click track. This process is called *quantization.*

QUANTIZE

The Merriam-Webster dictionary points to the Latin word *quantus* (how much) as the origin of "quantize," and translates it as, "to subdivide (as energy) into small but measurable increments." What this means to us is that there are further subdivisions than the basic bars and quarter notes, which we can use to regulate performances. In most of the music we deal with, the inner pulse will be either a division of two (straight) or three (shuffle, swing).

DAW software offers a special method of time mapping, called the PPQ system (Pulses-Per-Quarter Note). The maximum resolution offered by most DAWs is 960 PPQ,

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where 960 clock pulses represent one quarter-note value. From there we keep dividing: 480 pulses for an eighth-note, 240 for a 16th, 120 for a 32nd, and 60 for a 64th. When applying some types of swing, we're dealing with triplets, and the numbers change accordingly: 640 for a quarter-note triplet, 320 for a eighth triplet, 160 for a 16th triplet, 80 for a 32nd triplet, and 40 for a 64th triplet. These numbers represent a grid of time divisions, which serve as a reference for manipulating performances.

MIDI QUANTIZATION

Quantizing a MIDI track strictly to a grid can sound "stiff" and mechanical. There are a few workarounds: First, try setting the quantize strength control to a number lower than 100%, which will bring notes closer to the grid rather than exactly on grid points. It's also possible to first quantize to a rigid grid, and then apply a variable random control. When working with triplets, try using the swing/shuffle control, which varies the location of triplet quantization points. Doing either will make any MIDI performance sound nice and tight, but also a bit more human.

AUDIO QUANTIZATION

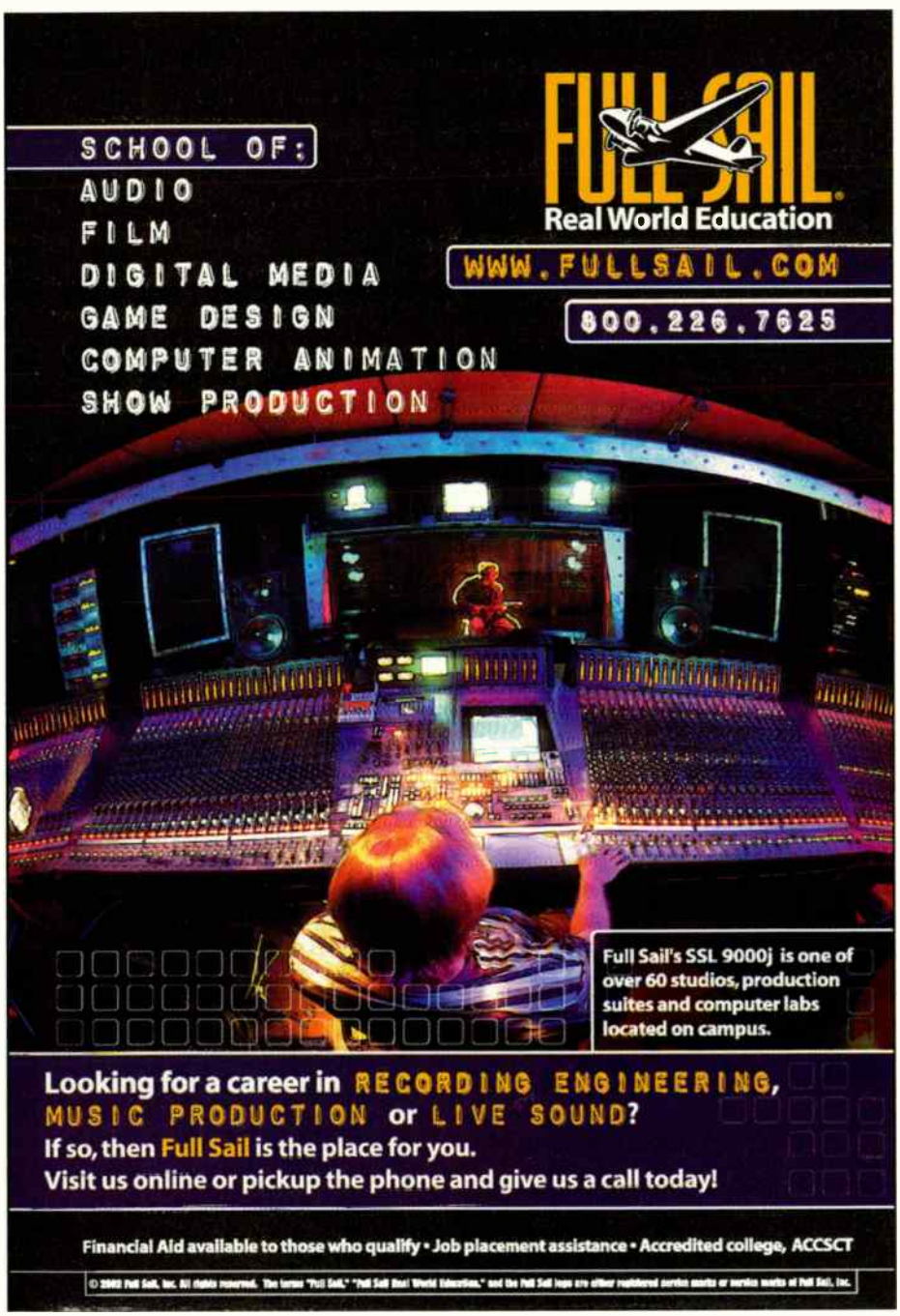
The same concepts can apply to quantizing audio, but unlike MIDI, which is a series of individually addressable events, audio has to be cut into individual segments (regions), which are then quantized to a grid. This process can be done manually by identifying transients (attacks) on an audio track and then defining regions around them, or by using special software programs that do this automatically. After the separated regions have been quantized, it's necessary to fill the time gaps that may have been created in between, and crossfade them. This can be done by dragging time back from the start of a latter region into the end of an earlier one (exposing more of the sustained portion of a previous transient), or by time-stretching attacks or decays, as appropriate, to fill enough space until the next region is playing.

GROOVE TEMPLATES

Although available from within many DAW programs, try creating your own "groove templates" to which audio and MIDI tracks can be quantized. One of the coolest tricks for doing this is "groove extraction": Find a rhythmic source you like (some kind of a loop, either programmed or from a record), cut one or two bars of it, match its speed to the song you're working on, and then analyze it and identify its transients. Each transient you find corresponds to one of the PPQ values, but will most likely be slightly off of a rigid grid, giving it a unique "pocket" or rhythmic feel. Now you can re-map the identified transients to correspond with particular PPQ values.

For example, if the snare on bar 1 beat 2 of the loop falls a bit late (01/02/012 instead of 01/02/000), re-map the 01/02/000 point to it, and in the same way, if the upbeat hi-hat on bar 1 beat 3 falls a bit earlier (01/03/469 instead of 01/03/480), re-map it to 01/03/480. After re-mapping the entire loop and creating a groove template that's based on it, paste the template over and over again to cover the duration of the song. Quantization applied to any MIDI and audio tracks can now groove just like the reference rhythm.

▶ continued on page 102



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Use virtual patch cords to grow your DAW

Getting (Re)Wired

By Craig Anderton

In the middle ages, studios routed their signals through *patch bays* — rack panels with enough 1/4-inch or TT jacks so that casual observers often confused the typical studio with a telephone switching office. If you wanted an instrument to go into a recorder, an aux send to feed a reverb, or bring tape outs back into a mixer, the patch bay (along with its Medusa-like collection of patch cables, which of course were never quite the right length) made it all possible.

Virtual studios are obsoleting the giant patch bay — plug-ins become part of the signal path with "virtual" patch cords, while digital audio outs appear in virtual mixers. But the most ambitious example of large-scale virtual patching, the ReWire software technology developed by Propellerhead Software, tightly integrates two (or sometimes more) complete *programs* to work together.

There's usually a "host" or "mixer" program such as Steinberg Cubase SX, Ableton Live, Cakewalk Sonar, etc., and a "client" or "synthesizer" program (*e.g.*, Propellerhead Software Reason or ReBirth, Cakewalk Project5, or Arturia Storm). Note that some programs, such as Storm and Live, can be either a host or client. When you ReWire a client into a host, the client's outputs go into the host's mixer, and show up as individual digital audio tracks (Fig. 1).

For example, if you have MIDI tracks recorded in Reason's sequencer and want to add vocals, guitar, piano, etc. (remember, Reason doesn't do digital audio recording), ReWire it into a host that can record digital audio. With ReWire2-compatible applications (the second generation ReWire spec), MIDI data recorded in the host can also flow to the client, allowing for client parameter automation via MIDI controllers.

ReWired programs also share transport and sync functions, with single-sample accuracy. Furthermore, any of the client's synchable instruments or processors will respond to the host's tempo.

MORE POWER, SCOTTY!

There's a misconception that ReWire uses considerable computer resources, but it's just an interconnection protocol. However, by definition, you'll be using at least two programs together, each of which is generally processor-intensive. Most modern Windows and Mac machines can handle this if you have sufficient RAM and a relatively fast processor. To save CPU power, it's common to convert ReWired instrument tracks to digital audio tracks in the host so that the ReWired device is no longer necessary during mixdown.

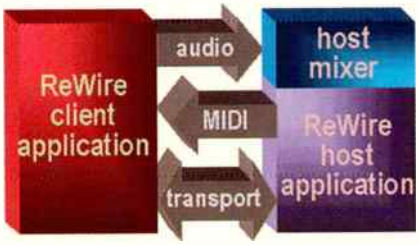

FIGURE 1: ReWire provides inter-application communications.

LOAD AND GO

You typically open the host first, then the client; close in the reverse order. How a host gets ReWired varies. With Cubase SX, you select a ReWire application under Devices, activate the desired number of channels, then open the client program. In Sonar, you go *Insert > ReWire Device*, specify the device (Fig. 2), then set up operating parameters, such as the desired number of channels. In either case, these channels appear automatically in the host's mixer.

There may be other considerations. For example, in Sonar's *Options > Audio > Advanced* tab under "Playback and Recording," uncheck "Share Drivers with Other Programs" so the two programs don't fight over driver access. Because ReWire takes care of audio and MIDI integration, it's better to just let the host handle the I/O.

YOUR NEW SYNTH RACK

Thanks to ReWire, virtual studio programs can become flexible "synth racks" for your host. For example, neither Sonar nor Cubase SX ships with an integrated sampler or REX file player (although Cubase can recognize and play back REX files). Rewiring in Reason 2.0 provides either program with two excellent samplers, the Dr. Rex file player, the Malström graintable synthesizer, SubTractor analog synth, and ReDrum drum machine. Of course, you can open up multiple instances of these within Reason to expand the palette even further.

LIVE PERFORMANCE OPTIONS

The synth duo group Function (consisting of Thee Joker and Chase), located in Tampa, Florida, has experimented with a very interesting ReWire technique for live performance. They create grooves and loops using Reason in the studio; when performing, Reason is ReWired into Ableton's Live, so they can mix in previously prepared loops, as well as any loops loaded into Live. As both programs respond to MIDI controllers, it's also easy to add an element of real-time improvisational control.

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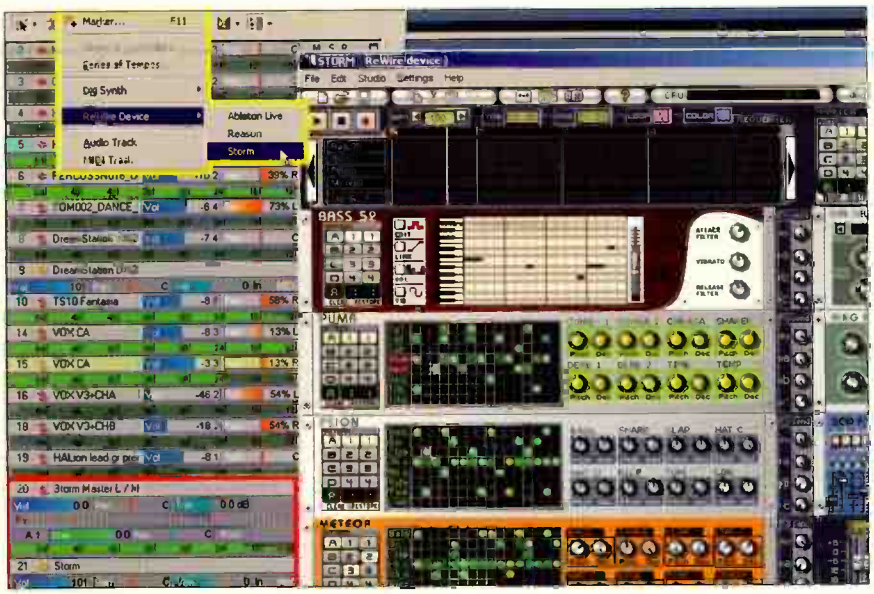

FIGURE 2: Arturia's Storm is ReWired into Cakewalk Sonar to provide additional percussion. Upon inserting the ReWire device (outlined in yellow for clarity), tracks show up in Sonar for audio outs and MIDI ins (outlined in red).

considerably in terms of giving a good "feel" to synthesized music. Fortunately, ReWire 2 hosts can receive MIDI data and pass it along to compatible clients.

For example, suppose in Reason you want to tweak SubTractor's Amp Env Decay parameter via MIDI (or for that matter, any parameter listed in Reason's MIDI implementation chart). According to the chart, this parameter responds to MIDI Controller #9. So, assign the controller you plan to use so that it transmits data over Controller #9. Assuming your MIDI channels, ports, assignments, and thrus are set up correctly, test the connection by putting the focus on Reason and varying the controller. The Amp Env Decay slider should follow your motions.

Record the controller motions in the host, and after stopping, verify that they're recorded. When you go back to the beginning and press Play, the controller changes should affect Reason.

ARE YOU (RE)WIRED YET?

The ability to add a rack of virtual instruments to your DAW, or digital audio tracks to your "virtual studio" programs, allows a degree of flexibility that recalls a monster patch bay — without the wiring hassles or patch cords. If you haven't experimented yet with the ReWire protocol, you're missing out on a very clever and useful tool. ■

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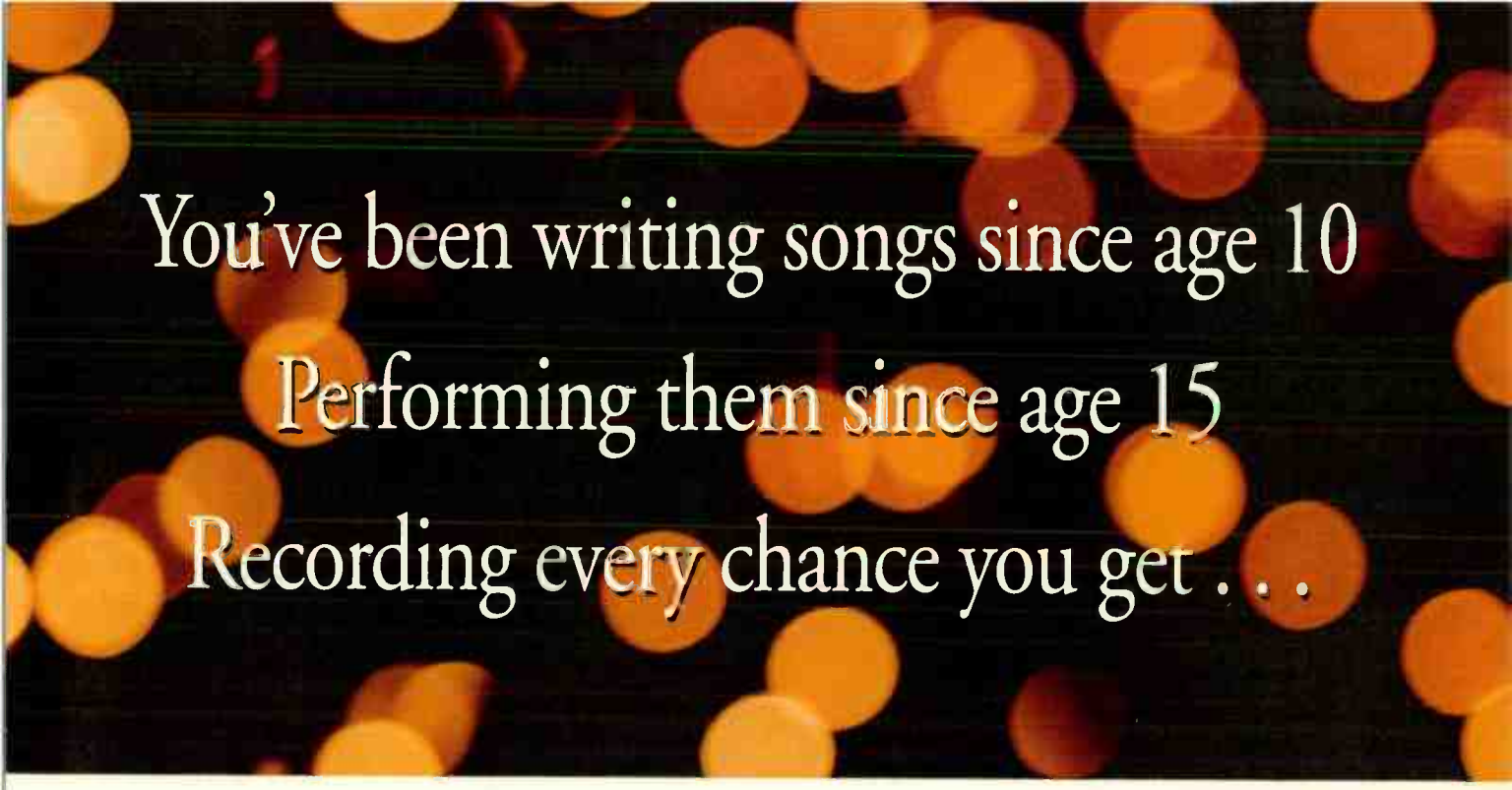

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World Radio History

The facts about mic splitters

Split Decision

By Steve La Cerra

Any engineer who works a show with separate monitor and FOH consoles will have to deal with routing microphone signals to both desks. Although some monitor desks contain built-in mic splitters, the vast majority of situations require outboard splitters ranging from simple passive units to elaborate, rackmount splitters with active circuitry. Here's what you need to know about choosing and using mic splitters.

The concept behind a mic splitter is very simple: split the source and send it to FOH, monitor, and possibly recording and broadcast desks. You could do that with a simple "Y" cable but a Y cable presents several problems. Output level from the mic drops, high-frequency response suffers, distortion increases, and there's no way to lift the ground if you experience a ground loop. Add the possibility of multiple feeds and it's easy to see why using Y cables is a recipe for disaster.

A microphone splitter avoids these problems. Most mic splitters are transformer-isolated, meaning that the mic is wired to a main "direct out" as well as to the input of a transformer; the output of the transformer is the second, "isolated" output. Transformers allow audio to pass, but block DC such as phantom power. For this reason, the direct out should be connected to the console providing phantom power. Transformer-isolated splitters usually increase Common-Mode Rejection (CMR), thus decreasing RF interference. The sound quality of a transformer-isolated split is critically dependent upon the quality of the transformer — cheap transformers provide inferior audio performance.

Single-channel passive, transformer-isolated splitters are available from many manufacturers including ProCo (MS-2, MS-3) and Rolls (MS-20). Most live sound situations require multichannel splits such as the Radial Engineering 8 x 8-channel passive splitter, which uses Jensen transformers and provides isolated, direct, and ground-lift outputs. Sescom's MS-17 is an eight-channel rack unit with one direct and two transformer-isolated outputs.

Packing four channels into a single rack space are ProCo's MS-42 and MS-43 and Whirlwind's MLTSP1X2 and MLTSP1X3, all with front-panel input, direct out, and one or two iso outs. Whirlwind also manufactures the SB Series of multichannel microphone splitters, an interesting solution incorporating the split into the stage box.

In situations requiring long cable runs or a larger number of outputs, an active splitter can be more effective than a passive split. The input to an active splitter is basically a microphone preamp with constant input impedance designed to get the most out of your microphones. Most active splitters provide phantom power (avoiding phantom power issues) and some provide gain adjustment for bumping up weak signals before they go through a long snake (thus maintaining a high signal-to-noise ratio). The signal from the preamp is fed to additional amplifiers, each connected to an output. Usually the output amps are "buffered" (electronically isolated from each other) to eliminate interaction. Since none of the outputs needs to pass phantom, all outputs can be transformer-isolated, improving CMR and reducing RFI. Furthermore, the output amps can be engineered with very low impedance, reducing noise and improving low-frequency response.

Most active splitters come in multichannel flavors such as the Klark Teknik DN1248 Plus Active Signal Splitter, a 12-channel rackmount unit boasting Midas Heritage preamps, with each input feeding two electronically balanced and two transformer-isolated outputs. LA Audio offers two active splitters, the MSR824 (eight-channel) and the MS1224 (12-channel), both with phantom power, 20 dB pad, four outputs, and a 'listen' switch for monitoring a signal via headphone jack. The MSR-604 II from BSS Audio is a four-channel unit that can be configured for four, eight, 12, or 16 outputsfrom a single input, making it especially useful for press distribution applications.

Don't forget that equally important as any design feature is how a splitter is used. Splitters (and mic cables in general, for that matter) should be kept as far as possible from magnetic fields such as those produced by motors, power transformers, lighting dimmers, video monitors, or AC wiring. Remember: if you let noise in the mic cable before the split, it's there to stay.

Steve La Cerra is splitting hairs with Blue Oyster Cult on their annual West coast run.

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To find your new desert (or Galapagos) island mixer, checkout the new MDR Series at www.samsontech.com

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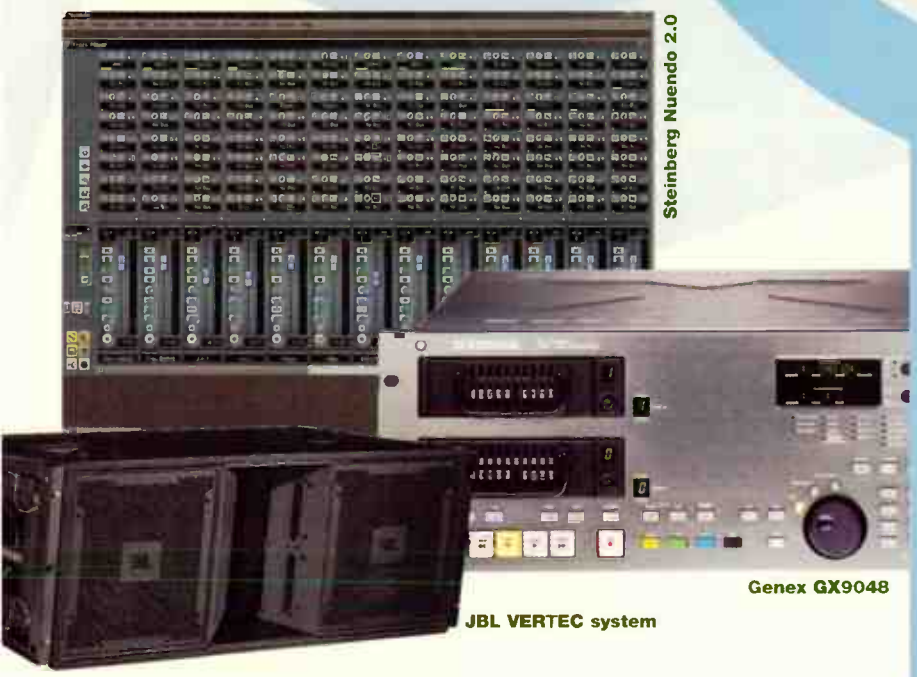
12th Annual blue ribbon awards



Steinberg Nuendo 2.0

Genex GX9048

JBL VERTEC system

EQ's editors choose this year's hottest new products

The aisles of the fall AES (Audio Engineering Society) tradeshow are like Mecca to the pro audio faithful — booth after booth featuring exciting new product releases from manufacturers in virtually every category. As you may have noted in our AES report in the December 2002 issue, last year's show was no different — there were a tremendous number of product introductions in evidence.

After the show, *EQ*'s editors and select contributors combed through the mountain of new gear announcements, looking for the hottest and the coolest products — the tools that would have the most impact in the coming year — the products that were most deserving to receive our coveted Blue Ribbon Awards. This year 22 categories were awarded; in virtually every one, the decision was tough to make. Often only a single slim vote separated the winner from the rest of the pack.

Here then are our choices — the products that we feel will be the most important in 2003. Our congratulations to the winners!

—Mitch Gallagher

Best Live Sound Speaker

JBL VERTEC system — new additions to the popular line array series offer smaller size with improved performance.

Best Software

Steinberg Nuendo 2.0 — enhanced media-production power with support for OS X and Windows XP.

Yamaha DM1000

Best Recorder

Genex GX9048 — 48 tracks of 24-bit/192 kHz or DSD recording plus PCM to DSD conversion.

Best Recording Console

Yamaha DM1000 — 48 channels of 24/96 audio mixing and processing in a compact, high-powered package.

World Radio History

12th Annual blue ribbon awards

Best Studio Monitor
ADAM Audio MP-1 — over-the-top powered monitors aimed at the audio mastering elite.

Best Microphone Preamp
Grace Design Lunatec V3 — two-channel portable mic preamp with built-in 24-bit/192 kHz analog-to-digital conversion.

Best Synths/Sampling/MIDI
Vienna Symphonic Library — supremely massive orchestral sample library (over 100,000 samples!) captured at 24-bit/96 kHz resolution.

Best Live Sound Amplifier
Yamaha PC Series — networkable power amplifiers interfacing via Cobranet.

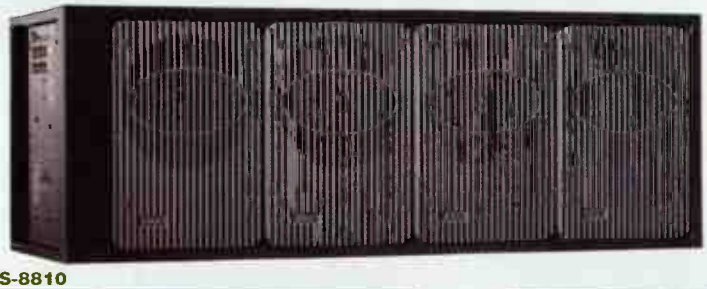
Best Studio Subwoofer
Genelec 7073A — If this 4x12-inch sub can't thump your world, you have bigger problems than a lack of low end.

Best Studio Processor
Lexicon 960LS — stereo version of the top-of-the-line 960L multi-channel processor.

Best Live Microphone
Sennheiser/Neumann KK 105-S — two microphone giants join forces; Neumann provides the capsule, Sennheiser makes the mic.

Best Plug-In
Waves 360° Surround Toolkit — designed from the ground-up for surround processing using a 360° soundstage rather than X/Y axis for positioning.

Best Live Sound Processor
BSS ProSys PS-8810 — 8x10 digital signal processing power.



World Radio History

SPIRIT

Recording

E Series

Got loads of stereo sources to record? The Spirit E Series is the answer.

Just because you only need a small mixer, it doesn't mean you don't need a great mixer. The new Spirit E Series packs legendary Soundcraft know-how into a compact format to deliver pristine sound quality and all the features you need for a wide variety of recording applications. A choice of 6, 8 and 12 channel models is complemented by the unique ES, with 10 dedicated stereo channels for mixing sources from samplers, sound modules, keyboards etc.

- 6, 8 and 12 mono channels with 2 stereo inputs
- ES model with 10 stereo channels and 4 mono inputs
- ES – a massive 40 inputs can be fed to the mix outputs
- High resolution, wide gain stages with masses of headroom
- 100mm high accuracy faders
- Integral switched mode low noise PSU design with universal input
- Professional insert points for external processing
- Intuitive solo system
- True professional +48v phantom power for condenser microphones
- Multi point signal channel status monitoring on all channels
- Built in extensive metering for mix and control room/solo system
- Precision 3-band EQ with swept mid
- Easy conversion to rack mounting (option)

SPIRIT E SERIES

Pictured: Spirit ES with 10 stereo and 4 mono input channels

NEW

JUST A FEW EXAMPLES OF THE MANY DEVICES YOU CAN PLUG INTO THE ES

Pictured left: The ES stereo input channel

SPIRIT M SERIES

4, 8 and 12 mono input frame sizes with integral rack mount ing. Features 3-band EQ with swept mid, 4 aux sends, 4 stereo returns, 4 stereo inputs, 100mm faders, internal power supply and an integrated S/PDIF output.

SPIRIT FX16

Perfect for 16-track recording with 16 Ultimic inputs, 4 stereo returns, +48v phantom power, built-in Lexicon effects, 3-band EQ with swept mid, 4-bus architecture with sub-group routable to mix, 3 mixes and direct outputs.

E 12

12 mono input channels, ultra linear mic preamps, 3-band EQ with swept mid, +48v phantom power, 100mm faders, easy conversion to rack mounting.

SPIRIT Notepad

4 mono/2 stereo inputs, high quality mic preamps, 2-band EQ on all mono channels, post-fade aux sends, selectable phantom power, turntable inputs, 2-track tape returns, mix and monitor out puts, and headphone socket.

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World Radio History

12th Annual blue ribbon awards

Best Live Sound Console
DiGiCo D5 Live — digital production console with remote I/O and analog-style user interface

Best Computer Audio Interface
Metric Halo Labs Mobile I/O ULN-2 — FireWire audio interfacing goes portable.

Best Duplicator
Disc Makers Elite Pro1 — affordable turnkey solution for CD and DVD replication and printing.

Best Channel Strip
Universal Audio 6176 — two classics, the 610 preamp and 1176LN limiter, in one box. The whole is greater than the sum of the parts.

Best Converter
Universal Audio 2192 — dual A/D and D/A conversion with Class A analog circuitry.

Best DAW
Digidesign Pro Tools 6.0 — Pro Tools makes the move to OS X. Can the rest of the world be far behind?

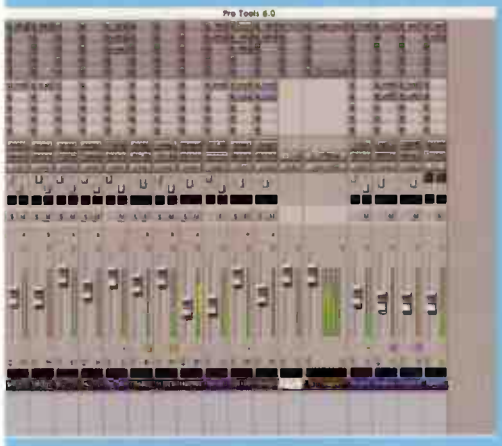
Best Studio Microphone
Soundelux iFET7 — dual architecture microphone with two vintage sonic flavors.

Storage Device
Studio Network Solutions FibreDrive — high-speed hard drive storage for DAW applications.

Studio Accessory
Millenia Media Twin Direct — Twin Topology (switchable tube or solid state) active direct box offers variable impedance.

Universal Audio 2192

Digidesign Pro Tools 6.0



Soundelux iFET7

Millenia Media Twin Direct

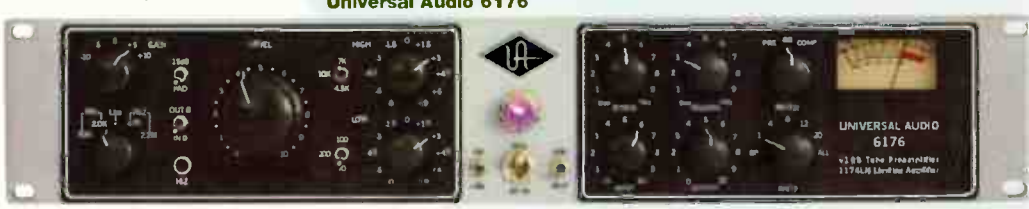
Studio Network Solutions FibreDrive

Metric Halo Labs Mobile I/O ULN-2

DiGiCo D5 Live

Disc Makers Elite Pro1

Universal Audio 6176



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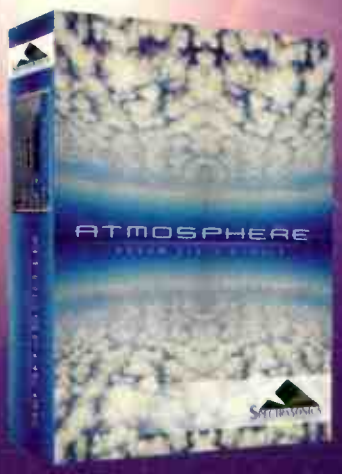

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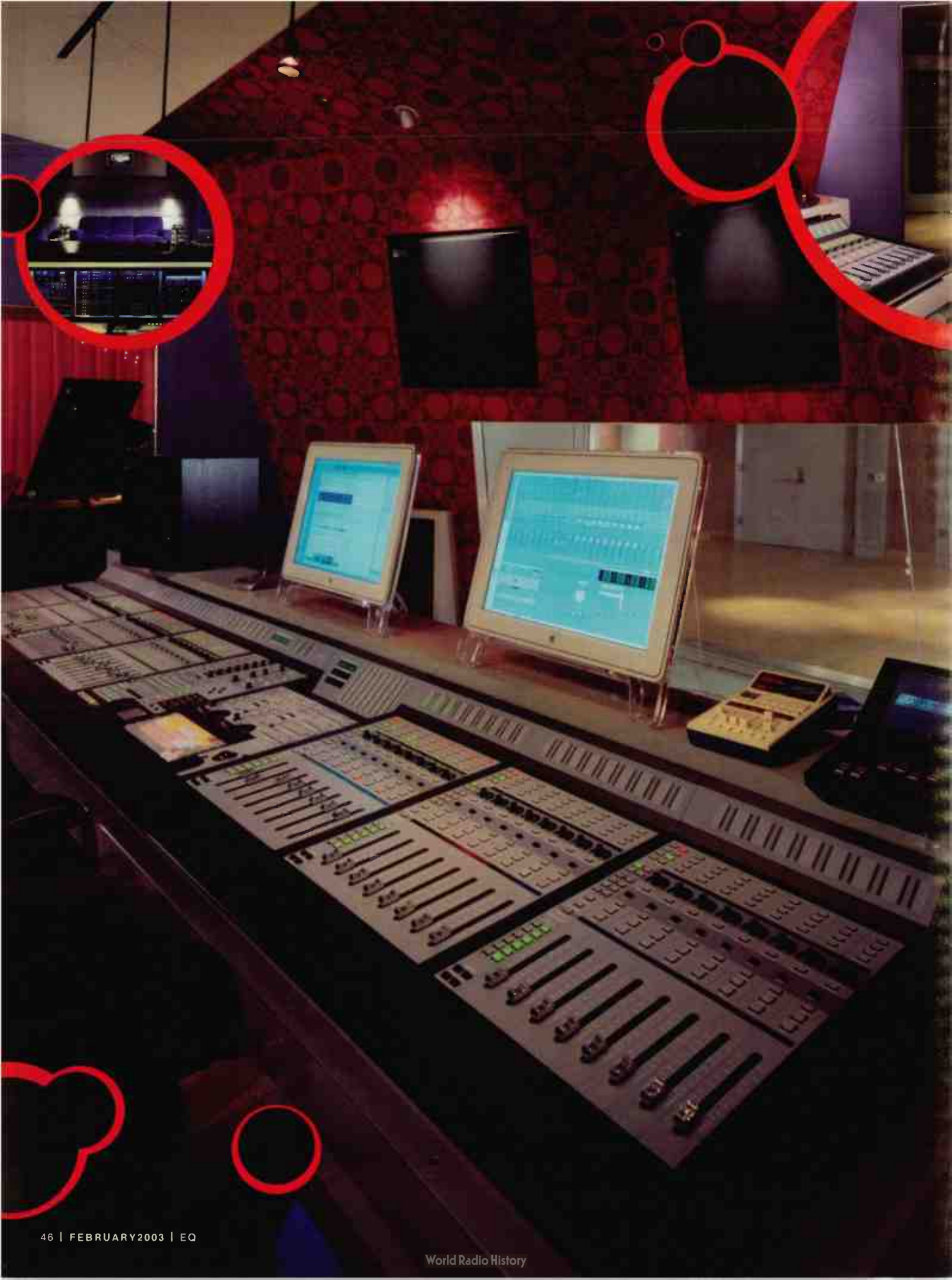

World Radio History

Lighting a fire under post and music recording

by Mel Lambert

Firehouse Recording Studios

Yes, it's a dream come true. Some of the biggest Digidesign Pro Tools rigs this side of Digi HQ, wrapped in one of the finest Studio 440 creations, with enough 7.1-channel Meyer X-10/UPA monitoring to waken the dead. Hardware to salivate over. But fold into the equation an owner with a unique creative sensibility and a staff that's attuned to the needs of music and post customers, and the result is Firehouse Recording Studios, an all-new complex constructed in the livery of Pasadena's 1889 firehouse, just 10 minutes from downtown Los Angeles.

"Firehouse was constructed from the ground up to offer the best of digital and analog recording capabilities," says its proud owner, Tena Clark, CEO of Disc Marketing, a production company that specializes in a wide range of in-flight entertainment, jingles, and related offerings. "The three-room complex was designed with an extraordinary amount of flexibility," Clark says, and will cater to the film, recording, commercial, and television industries. The studio also offers complete concierge services, including access to local hotels, restaurants and spas. Located in the heart of historic Pasadena, Firehouse is within walking distance of some of Southern California's finest restaurants and shops.

Hailing from Meridian, Mississippi, Tena Clark is an atypical Southern Belle. An 18-year industry veteran, her film and TV credits include *Where The Heart Is*, *Hope Floats*, *My Best Friend's Wedding*, *French Kiss*, *Twins*, *CBS This Morning*, and *Entertainment Tonight*. She was also commissioned in 2001 to write the theme song for NASA's International Space Station and Centennial of Flight, sung by Patti Labelle, and has penned gold/platinum-selling

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songs for Gladys Knight, Dionne Warwick, Patti LaBelle, Olivia Newton-John, CeCe Winans, and others. It was songs she created for such household brands as 7-Up, Pillsbury and McDonalds — "Have You Had Your Break Today" — that helped spark the idea for Disc Marketing. Since 1997, companies such as Toyota, Target, Coca-Cola, Victoria's Secret, Kellogg's, Johnson & Johnson, Sears, Betty Crocker, and Princess Cruises have enlisted Disc Marketing's services.

Having moved her production company to downtown Pasadena some five years ago, Clark soon realized that she needed a facility that would accommodate her and her colleague's growing ambitions. "We built a small studio in the house we were using in Pasadena," she recalls, "but it was compact and really only designed to handle the onboard audio programming we were producing for United Airlines plus Air Force One and Two, as well as other productions for our Fortune-100 clients. Since that original room was in-use 24/7, I wanted to develop a multi-room facility that would offer more space for our clients, and also house a scoring and tracking room. So, earlier this year we built my dream facility." (As if that wasn't enough, this summer Disc Marketing launched 5 Alarm Music, as a source of production music and services for the film and TV markets.)

Staying close to home, Clark enlisted leading acousticians and designers Studio 440 to help renovate an adjacent building to create the multi-room Firehouse. "Studio A is centered around a Digidesign ProControl with Edit Pack and 48 on-surface faders, 80 inputs, and 64 outputs," explains studio manager Melanie Mullens Hoyson, "while Studios B and C are fully 5.1-channel capable and offer more modest Pro Tools systems with a choice of control surfaces." But digital technology is only half the equation, Hoyson stresses. "In Studio A, our flagship, we have added a stunning collection of analog pre-amps, equalizers, compressors, and other outboard. Clients have access to Neve 1073 pre-amps, API 550A/B EQs, Calrec mic pre/EQs, Avalon pre-amps, and other brands to get that 'classic' analog sound, while still taking advantage of the reset capabilities and power of digital editing and mixing." Also available is an enviable collection of vintage mics and guitar amps.

"The creative environment is very important to any producer," Clark emphasizes. "Being very familiar with Pro Tools from our original facility, we made the decision early on that everything in the new complex would be based on the new 24-bit Pro Tools HD, and ProControls. This way, we can freely shift hard drives between rooms, and be up and running within seconds. That feature alone saves us a great deal of time between sessions; we need to be able to re-configure the rooms between music recording, remixing, and mix-to-picture, as necessary, and cannot wait while a second engineer

Left to right: Engineer Gabe Moffat, Firehouse studio manager Melanie Mullens Hoyson, assistant engineer Ed Woolley.

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"The mic sounds closer to our C 451 EB + CK 1 microphones than anything else I have heard. I would both specify and purchase this microphone. Nice mic."
Chris Dietze, Clear Sound

"After extensive listening tests with the new C 451 B, it's clear that this has the ability to capture sounds with all of the crispness and detail that made us love the original mic in the first place."
Dave Cline, Seventeen Grand

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The C 451 B excels at capturing transient rich signals such as drums, nylon and steel-string guitars and many other instruments. Like its famous predecessor, this microphone will perform flawlessly on stage and in studios.

The new C 451 B.
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resets the console — ProControl is up and running instantly, with all of our sound files and plug-ins. It's a major advantage for a busy studio like ours. And with our analog outboard, we can offer the best of the old and new — I like to refer to the combination as 'Technology with a Soul'...or maybe 'L.A. Meets Mississippi'!"

The hardware doesn't stop at Firehouse's mixing and editing systems. Studios A's control room features a 7.1-channel monitoring system comprising three Meyer X-10 self-powered left, center, and right cabinets up front, plus an array of four Meyer UPA-1Ps for side and rear surround channels and a pair of X-800 subwoofers. The array was installed and tuned by veteran acoustician Bob Hodas, using a Meyer Sound Laboratories' SIM System II.

"Firehouse's requirements for Control Room A were quite specific," Hodas recalls. "They wanted a system that was extremely accurate, yet musical, and would translate properly to the outside world. And to accommodate a variety of clients, the system had to be linear with respect to amplitude so that it sounded full-range whether played loudly or softly. It also was important that the system sound good throughout the control room, not just at the mixer's sweet spot — Studio A's control room is large with several work areas."

"These requirements were easy to meet with the X-10, because its near-perfect impulse response means that the speaker sounds very much like a live instrument, where all frequencies arrive at the ear at the same time; flat phase and linear frequency response are part of the X-10's design parameters. And a single X-10 cabinet will output 136 dB, peak at one meter. A servo circuit that is extremely fast and accurate controls the X-10's low-frequency driver, resulting in

Studio A is large enough to accommodate a good-sized string section — 38 x 21 feet, with a 14-foot ceiling.

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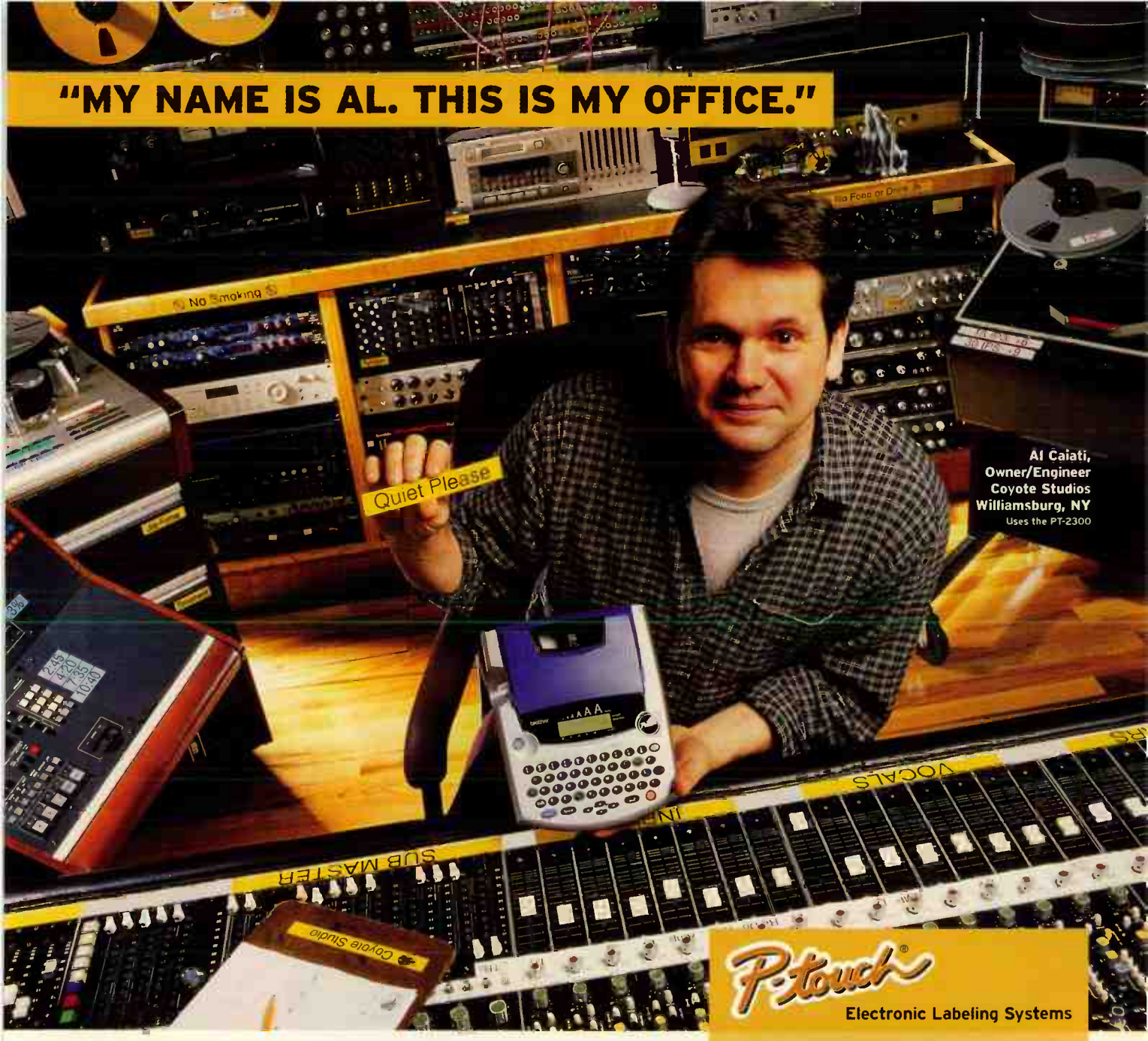
"MY NAME IS AL. THIS IS MY OFFICE."



Al Caiati,
Owner/Engineer
Coyote Studios
Williamsburg, NY
Uses the PT-2300

In my office, a simple mistake can cost me plenty–in both time and money. With all the equipment I've got, I can't waste time searching for the right cable or the last master tape.

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extremely low distortion. The high-frequency driver's waveguide exhibits no lobing throughout its coverage pattern and frequency range, even when measured at 1/12th-octave resolution, and so creates a huge listening area that is consistent.

Several Meyer installations — including Abbey Road Studios, England — have been up and running for a couple of years with no failures; the X-10 has proven very reliable."

Because Firehouse's client base leans more toward film, Hodas recalls, "The decision was made to use split surrounds, instead of five of the same speaker — a configuration that is more typical for a 5.1-channel music configuration. The X-10s are used for L/C/R plus self-powered Meyer UPA-1P surrounds that can be configured as sides and surrounds, or split rears. The two Meyer X-800 subwoofers feature double 18-inch drivers, and integrate with the Meyer X-01 crossover. The X-01 allows the system to run the X-800s as LFE or integrate them into the L/R system, adding another 5 dB to the X-10's headroom."

Firehouse combines the latest in technology with time-tested vintage gear.

The Meyer SIM System II used to tune the rooms provided Hodas with 24th-octave resolution while simultaneously displaying phase, frequency, and coherence in real time. "The unit's memory functions allowed me to overlay the speaker traces to achieve ultra-precise response matching," he points out. "This results in improved imaging and a signal that does not change when panned between speakers. I try to use this scientific system to achieve a musical room that is accurate but still fun to work in." Meyer CP-10S Parametric Equalizers handle speaker/room interface normalization. "Because I worked with Studio 440 throughout the construction process, minimal amounts of EQ were needed, since most of the problems were solved acoustically."

Incorporating THX acoustic specifications, Studio A's control room includes a large DLP cinema projector and perforated screen, plus flat-panel plasma displays. Two room-equalization curves were developed for Firehouse, Hodas says. "One is used with the film screen raised, and the other to compensate for high frequency loss with the screen down."

Staff engineers floating between the three rooms at Firehouse include Gabe Moffat and Ed Woolley. A graduate of Berklee College of Music, Moffat was a staffer at Trivers/Myers Music and has worked freelance with Admusic, Glen Ballard, Sheena Easton, EKO, Michael Franks, Paul Hoffman, and Dave Koz. Woolley has worked at Media Concepts and Rick Nowels Productions.

Studio A's tracking area features a large 38-foot by 21-foot wide primary space, with a 14-foot ceiling, as well as a pair isolation/vocal booths located to the left and right of the control room. "The rooms were constructed using triple walls with double drop ceilings," offers Hoyson. "The floors are isolated from the sub-floor by spring isolators, which provide superior low-frequency

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damping. And, to top it all off, the room features a wonderful sounding 7-foot 4-inch Bösendorfer grand piano."

Studio B features a 24-channel Pro ToolsIHD3/ProControl combination with dual Apple Cinema Displays plus Meyer HD-1s for L/C/R and UPM-1Ps for surround monitoring, while Studio C is equipped with a Pro Tools Mix rig linked to a Digidesign/ Focusrite Control 24 with dual 20-inch video monitors. Tie lines between each area allow Studio A's tracking area to be used by either room; a curtained window looks into the space from Studio B's control room. Composer Mark Mancina uses the fourth room at Firehouse as a satellite studio; his area features a Pro ToolsIHD with 24-fader ProControl that matches a similar rig at his Lake Arrowhead studio.

Clark and Hoyson predict that Studio A will be used 20% of the time for in-house projects, and the remainder for paying customers; Studio B will be available exclusively for outside bookings while Studio C is pretty much focused on in-house audio programming. "If the room is so successful that I cannot get back in myself," Clark concludes, "I'll build another Studio A. Although everybody said 'Don't do it!' I wouldn't have built Firehouse if I didn't believe in this business." There are also plans to build a bed-and-breakfast facility at Firehouse with three or four bedrooms for long-term clients.

Earlier this year, the L.A. Children's Choir recorded a 12-CD music library with voice-overs for interactive media at Firehouse. Tracks composed by Clark for Victoria Secret stores and fashion shows were tracked and mixed in Studios A, B, and C. Other recent clients include: Yellowjackets, who recorded and mixed a new album; Patti Labelle tracking Clark's song for the NASA Celebrations; a music score for Disney's *Eight Simple Rules;* a 5.1 surround tracking session and remix for violinist David Wilson; and actor Stephen Collins, star of WB's *7th Heaven*. Collins has been recording tracks for a new album, tentatively titled *Cover to Cover,* which features songs

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Bob Katz - Mastering Engineer - Digital Domain, Orlando, FL

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from the '60s, and is scheduled for release in February. As Collins confesses, "The world isn't exactly clamoring for an album by a boomer TV star, but we're covering great songs that seem to give people real pleasure, and that's good enough for me."

"To be in a great studio, recording the best musicians, is a dream I've had since high school," Collins says. "Michael [Jochum] and I wanted to record digitally with Pro Tools, and Firehouse is the most up-to-date studio we could find. Most of the songs were recorded and mixed in Studio A, but I also did a few at my home studio, then added tracks and overdubbed at Firehouse. I love that I can take the songs home every day on a hard drive, and tweak them on my own time. The engineers at Firehouse love music and they speak fluent Pro Tools. When word gets around about this place, they'll be turning people away. We had a blast on this project."

An expanded digidesign procontrol serves as the centerpiece of studio A.

David Tickle also used Studio A recently to record a Tracy Amos vocal track for Paramount's new film, *The Wild Thornberries*. Tickle has a Pro ToolsIHD-equipped in his Kauai studio; "plug-and-play compatibility was essential." the producer considers. "Studio A is cool, hip, and a brilliant place to work. The control room is a decent size, and I love the analog outboard. We set up Tracy in one of the isolation booths with a Soundelux E47 tube mic coupled to an Avalon VT-737SP preamp. The tracks sounded great."

Hoyson summarizes; "It's about what the client needs to do their job. At Firehouse we have taken inspiration, added creativity and everybody's wish list, and run away with the concept. Striking a balance between analog and digital, and remaining as versatile as possible. Any configuration — analog, digital or a combination of the two — whatever it takes to be as flexible as possible."

Mel Lambert heads up Media& Marketing, a full-service consulting service for pro-audio firms and facilities. www.mel-lambert.com.

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Edited by Mitch Gallagher, Editor of EQ

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All models feature a built-in MIDI interface that communicates directly with your computer without any extra devices. (Some can be powered by USB or batteries for ultimate flexibility.) The new Ozone even includes a USB combo audio/MIDI interface complete with mic/instrument preamp, monitor/headphone outs and more for an all-in-one mobile recording solution. And weighing in at only 7 lbs., even the 61-key Radium redefines the very idea of mobility for keyboards.

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THE REVOLUTION WILL NOT BE TELEVISED

It's being streamed... in surround

Why should you care about new media, compressed files, downloadable surround sound, Windows Media, and all those other delivery systems? Because the studio business depends on the music business, and like it or not, the future of that business doesn't lie exclusively with the standard Red Book audio CD. Not only does the music business need to figure out how to exploit new means of distribution, we have to figure out how to make it sound good, and what will work best for a particular type of music.

The public embraced MP3-based file-sharing certainly not because of sound quality, and frankly, I'm not even sure the issue is about getting something for free. What file-sharing offers is *access*. There's an explosion of choices, and people want exposure to those choices to find the music that's right for *them*.

Dissing the record companies misses the point. Sure, they're mired in the past. But they do deliver hits and sell millions of CDs. I think the problem is that they're slaves to the concept of putting music on little pieces of plastic in huge quantities, placing them on trucks that require fossil fuels to move, and having them land in some midtown location with major rent. There's a limit to how much music you can shove through that bottleneck. It limits the *access*.

Think about Napster. No one ever said to me, "Hey, I was just able to download the new Britney Spears single for free! Cool!" No, it was always something about finding an alternate mix or live version of a favorite artist's song, discovering back catalog that's out of print, and so on.

What will make music valuable in the future is the ability to access what you want, when you want it. Case in point: I posted in my forum at www.musicplayer.com about a local radio station that changed formats, leaving me with no source for DJ mixes other than buying CDs or going to clubs. Someone suggested http://live.basic.ch, a site in Switzerland that streams DJ mixes, and it's *great* (in fact, I'm listening to it now).

I would gladly pay to download a better quality version than what comes over my modem, or buy CDs from them. Why? Because I got turned on to music that I like, and I want it. Alternate media gave me the *access* I couldn't get any other way. This wouldn't have happened browsing in the CD section at Wal-Mart. (To think that I may soon be able to listen to streaming surround music *really* gets me going!)

Our studios are going virtual. Our typewriters already have. Movies are made in computers as much as they are in sound stages. Some DJs take laptops to gigs instead of lugging records. People find information on the net virtually rather than pore through catalogs. Nothing will exempt music from joining this trend.

For that to happen, we'll need new media, new means of distribution and yes, new types of digital rights management and copyright protection. We can only scratch the surface in *EQ's* first-ever special section on new media, but expect more - much more - in the future. We're taking baby steps now, so get up to speed while you can: In years, maybe even months, we won't just be thinking about creating content, but also, about the way to make it work best with the right distribution medium. Stay tuned to these pages as the revolution unfolds.

Craig Anderton

READ ON

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THE REVOLUTION WILL NOT BE TELEVISED

STATE OF THE ART

by Rich Tozzoli

High-resolution audio and surround sound in 2003

The "state" of surround sound and high-resolution audio is a continually evolving and often debatable subject. Some say it's the inevitable evolution of sound beyond the 30-year-old stereo Red Book 16-bit/44.1kHz audio platform. Some love surround of any type, some don't care for surround, but prefer 24-bit/192 kHz stereo. Some prefer the 2.8 MHz Super Audio CD and of course, some won't give up their good ol' analog tape. As can be expected in this day and age, technology marches on at a breathtaking pace. But it finally appears as if multi-channel audio and resolutions beyond 16-bit are here to stay.

The "state" of surround sound and high-resolution audio is a continually evolving and often debatable subject. Some say it's the inevitable evolution of sound beyond the 30-year-old stereo Red Book 16-bit/44.1kHz audio platform. Some love surround of any type, some don't care for surround, but prefer 24-bit/192 kHz stereo. Some prefer the 2.8 MHz Super Audio CD and of course, some won't give up their good ol' analog tape. As can be expected in this day and age, technology marches on at a breathtaking pace. But it finally appears as if multi-channel audio and resolutions beyond 16-bit are here to stay.

Below, you'll find a list of gear that's high-resolution- or multi-channel-oriented, minus software plug-ins and soundcards (don't worry, we'll get to those in upcoming articles). In researching this list, it quickly became apparent that a good number of *EQ* readers already work with hi-rez audio (beyond 16-bit/44.1 kHz), a growing number are working with multi-channel, and manufacturers are providing us with enormous amounts of new gear to use. But most of us still have to hand in that Red Book PCM stereo master for the public to consume. Slowly, but surely, that's changing.

With the explosive growth of DVD, a new platform for higher resolution and surround audio has been delivered to our doorsteps. DVD-V, or DVD-Video, can carry up to eight channels of audio, with a six-channel surround mix and a separate stereo mix (including full video content, menus, etc.). However, these must be encoded for playback through decoders in consumer receivers, or sometimes, directly out of the DVD players themselves. Dolby Digital, or AC-3, is a standard for DVD-V, encoded at up to 448 kbps. Another option for DVD-V is DTS, which can be encoded at up to 1536 kbps and up to 24-bit/96 kHz. Note that both DTS and Dolby also have encode capabilities beyond six channels.

Next up is DVD-A, or DVD-Audio.

SURROUND CONFERENCE 2002

Surround 2002, the fourth annual Surround Conference & Technology Showcase, was held December 13-14 at the Beverly Hilton Hotel in posh Beverly Hills, California. Attendees took in the latest surround technology, networking with manufacturers and other hi-level professionals.

This years' show featured presentations on DVD-Video, DVD-Audio, SACD, Broadcast, Theatrical and Broadband formats, as well as series of master classes and hands-on sessions. Presenters such as Bob Ludwig, Elliot Scheiner, Alan Parsons, Bobby Owinski, and Dweezil Zappa informed eager listeners of the latest technologies and techniques. One of the best features of these Surround Conferences is the ability to listen to others' work in a relaxed, professional atmosphere, then have your questions directly answered. Try that at an AES show!

Manufacturers such as Microsoft, DTS, Waves, Dolby, Denon, Digidesign, Genelec, Yamaha, and TC Electronic displayed their high-resolution and multi-channel goods. The show also featured the first annual Surround Music Awards, with a special Surround Pioneer Award going to Elliot Scheiner. Awards were given out honoring and recognizing the best in the business, noting such features as Best Menu Design and Most Adventurous Mix, as well as Listener's Choice Award and Top Surround Artist of the Year. The talented Graham Nash won the Artist of the Year Award, and to the surprise of a startled audience, was joined onstage by David Crosby, where the duo played stirring renditions of "Guinevere" and "Teach Your Children." One can only imagine what next years' show will bring!

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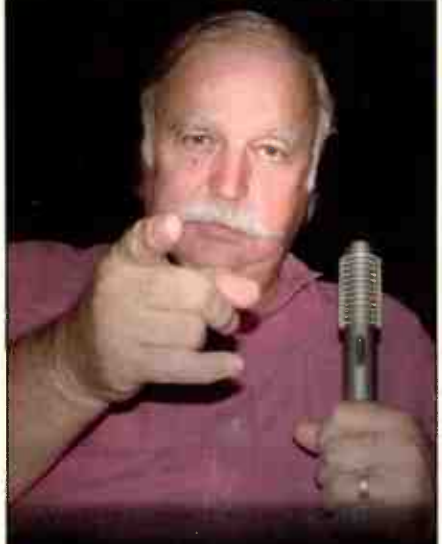
Bruce says



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Bruce Swedien
(Grammy winner, Jennifer Lopez, Michael Jackson, Quincy Jones, Duke Ellington, Count Basie)

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Now the resolutions get higher, with two-channel PCM delivery up to 192 kHz. As for surround with DVD-A, you can have six channels of 24-bit/96 kHz linear PCM audio. Those six channels of hi-rez audio have a data rate of 13.82 Mbps, yet the data throughput for DVD-A is only 9.6 Mbps. This is where MLP, or Meridian Lossless Packing comes to play, reducing the audio data rate to squeeze through that aforementioned pipeline. DVD-A also allows content delivery with an additional Dolby Digital and/or DTS layer, so encoded playback on standard DVD-Video players is possible.

But wait, there's more! There's also Sony/Phillips' SACD, or Super Audio Compact Disc. With Direct Stream Digital (DSD) technology and a 1-bit, 2.8224 MHz sampling rate, SACD's can be "hybrid" dual-layer discs: a six-channel (or two-channel) DSD hi-resolution layer and a 16-bit/44.1 kHz stereo layer, both on the same disc. This allows for any CD player in the world to play back at least the standard CD mix, whereas the DSD layer will be read if you have an SACD player. Some audio professionals have begun using DSD to capture their stereo mixes in the studio, replacing DAT machines and sometimes even analog tape. As with DVD-Audio, authoring and recording can be a bit complex, but like all the formats mentioned, time and experience are easing our paths.

Does this all sound confusing? It's really not that bad. Think of it as simply three different high-resolution and surround/stereo formats, with DVD-Video being the most common in consumer's homes. There are a growing number of inexpensive players that will play back any of these formats, and without question, that's what the future will bring to us. A quick browse through any consumer electronic store shows DVD-V, DVD-A, and SACD gear, as well as the receivers, TV's, and speakers to connect to them all. It's a very exciting time to be in our business. Don't forget, not too long ago we had cassettes, eight-tracks, 33, 45, and 78 rpm records, and 1/4-inch reel-to reel tapes to deal with. Try playing all those on one player! ■

HIGH-RESOLUTION AND MULTI-CHANNEL GEAR GUIDE

The following is a sampling of hi-rez and surround-capable products.

CONVERTERS

APOGEE ELECTRONICS

- AD-16 - 16 channels 24-bit/96 kHz A/D, four TosLink outputs
- DA-16 - 16 channels 24-bit/96 kHz D/A, AES/EBU, TDIF, ADAT input
- PSX-100 - two channels D/A, A/D, 24-bit/96 kHz, AES/EBU, S/PDIF I/O
- Rosetta - two channels 24-bit A/D, upgradeable to 96 kHz
- AD-8000 - eight channels of 24-bit/48 kHz A/D, Full digital I/O, AMBus cards.

ART

- DIO - 24-bit/96 kHz A/D, D/A, ART Tube processing, two channels.

BENCHMARK MEDIA SYSTEMS

- DAC1 - two channels, 24-bit/96 kHz, 1/2-rack unit, headphone amplifier output, AES/EBU S/PDIF Inputs

DCS

- 902 - A/D, 96 kHz
- 904 - A/D, 192 kHz, DSD
- 952 - D/A, 96 kHz
- 954 - 192 kHz, DSD
- 972 - D/D, 192 kHz, DSD
- 974 - D/D, 192 kHz, DSD, DSD Quad.

DRAWMER

- M-CLOCK - Multiple output master clock/sample rate converter, up to 192 kHz, AES/EBU, S/PDIF input, AES/EBU, S/PDIF, TOSLINK output
- DC 2496 A/D converter - AES/EBU, S/PDIF, ADAT, TDIF I/O, 24-bit/96 kHz.

EMM LABS

- Meitner Designs ADC8 - eight-channel DSD A/D converter
- DAC8 - eight-channel DSD

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D/A converter
- Switchman 2 - Multichannel audio switch and level controller, four 6-channel inputs.

EUPHONIX
- AM713 - analog to MADI, 26 channels
- MA703 - MADI to analog converter, 26 channels
- DM 714 - AES/EBU to MADI converter, 24 channels
- MA704 - MADI to AES/EBU converter, 24 channels

GENEX
- GXA8 A/D - eight-channel, 24-bit/192 kHz units, DSD-compatible
- GXD8 A/D - eight-channel, 24-bit/192 kHz units, DSD-compatible

GML
- Model 9300 A/D

LUCID
- AD9624
- DA9624
- SRC9624

MERGING TECHNOLOGIES
- Sphynx Modular High-Resolution Audio Interface converter - eight channels of 24-bit/96 kHz A/D, D/A

MYTEK DIGITAL
- 8X96 Series - 24-bit/96 kHz, ADC and DAC's, AES/EBU I/O, optional TDIF, ADAT, AES/EBU, Sonic HDSP/USP Interface cards.

PRISM MEDIA
- ADA-8 - eight channels of 24-bit/96 kHz, DRE encoding, SNS noise shaping
- AD-2, DA-2 - 24-bit/96 kHz. AD-2 A/D outputs 24/96 and 16-bit/44.1 kHz on a dual output

SWISSONIC
- AD96 MK2 - four-channel A/D converter, up to 24-bit/96 kHz, AES/EBU output, lightpipe output can be used to record S/MUX and/or B/MUX (bit-packing) hi-res audio to MDM's , BNC I/O

TEXAS INSTRUMENTS
- DSD1608 - eight-channel enhanced D/A (DAC) converter, supports DSD and PCM audio formats up to 192 kHz.

UNIVERSAL AUDIO
- 2192 Dual DA/AD Converter - up to 192 kHz input, AES/EBU (single or dual wire), SPDIF and ADAT output

WEISS ENGINEERING
- DAC1-mk2 - 24-bit/192 kHz capable. two-channel, AES/EBU, TOSLINK digital interface, discrete Class A outputs

Z-SYSTEMS
- z-3src 24/96 sample rate converter - I/O up to 24-

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- Digi 001 - 24-bit/48 kHz, ADAT, S/PDIF digital I/O
- Mbox - 24-bit/48 kHz, S/PDIF I/O

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- Gina 24 - two-in/eight-out, 24-bit/96 kHz, ADAT, S/PDIF coaxial, S/PDIF optical

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- DAW 9624 - 24-bit/96 kHz, AES/EBU I/O, ADAT interface, Hammerfall 9652 or Sonorus STUDI/O PCI card, 8X96 ADC, 8X96 DAC

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- DA-45HR - 24-bit, two-channel DAT recorder.

PROCESSORS

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DRAWMER
- DC 2476 Masterflow Digital Processor - 24-bit/96 kHz, AES/EBU, S/PDIF I/O, 24-bit A/D, D/A
- Six Pack - dynamics processor for surround mixing, mono to 5.1, channel linking

DOLBY
- DP564 Multichannel Audio Decoder - Dolby Headphone processing, LTC output for A/V sync, decodes Dolby Digital, Surround Pro Logic, Pro Logic II, Surround EX.

EVENTIDE
- Orville - multichannel effects, reverbs, delays, sampling, 96 kHz/24-bit, four AES/EBU I/O, four XLR analog I/O
- Eclipse - 96 kHz, two AES/EBU, two S/PDIF I/O, ADAT lightpipe support
- DSP 7500, DSP 7000 and DSP 4000B+ - 96 kHz, 2 AES/EBU, S/PDIF I/O, Sampling

KURZWEIL
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WAVES
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- EQ1-MK2 - 24-bit/96 kHz, four dynamic bands, de-esser, AES/EBU I/O

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- SLAM - mic pre/limiter, optional 24-bit/96 kHz A/D, 24-bit/192 kHz D/A

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- TAMPA - variable impedance, Class A, S/PDIF, AES/EBU I/O, optical servo compressor/limiter, 24-bit/96 kHz

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- DigiMAX LT - eight-channel preamp, 24-bit/48kHz, ADAT optical output
- DigiTUBE - tube preamp, 24-bit S/PDIF output, EQ onboard

ROLAND
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TL AUDIO
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World Radio History

I WANT MY MP3

by Craig Anderton

Are MP3s of any use in pro studios? You might be surprised.

As engineers and/or musicians, we want the best-sounding recordings possible. Okay...but then the MP3 format came along, which some call data compression, but is actually data omission. All those nuances we slaved over have vanished, trampled by a mercilessly efficient coding algorithm. What's more, the reduced file size has encouraged the downloading phenomenon that is re-shaping the record industry - whether for better or worse remains to be seen.

But does the MP3 format have anything to offer those involved in professional recording? Read on....

MUSIC TO GO: THE REALITY TEST

We've all heard of the musicians who don't sign off on a recording until they've heard it through a car radio. This makes sense: not only does it test a mix's real-world transportability, but road noise obscures any subtleties, so that you find out what truly stands out in the mix. For example, you may find out that the guitar figure you could hear perfectly over the studio monitors needs to come up a bit in level to compete with other instruments in the mix.

MP3s exhibit a similar phenomenon at low bit rates. Below 96 kbps in particular, if your mix can survive the MP3 torture test, it can probably survive anything. There seems to be a correlation between mixes that can hold up at low bit rates, and their ability to sound good over a variety of systems; although Fig. 1 shows the main difference as related to high frequencies, low-level information also takes a hit with MP3.

ARE YOUR SONGS IN ORDER?

Portable MP3 players provide a great way to test out song orders. When you're assembling an album, do a rough assembly into a portable MP3 player, and listen to it when walking around, doing yard work, exercising, food shopping (added bonus: it can drown out the muzak in your local supermarket), or whatever. Repeated listenings can reveal flaws in song orders that you might not catch otherwise.

CREATING MP3 FILES

Programs that can "rip" Red Book Audio files to MP3 are cheap and plentiful - but converting WAV or AIF files can be more problematic. Fortunately, you likely have software that can

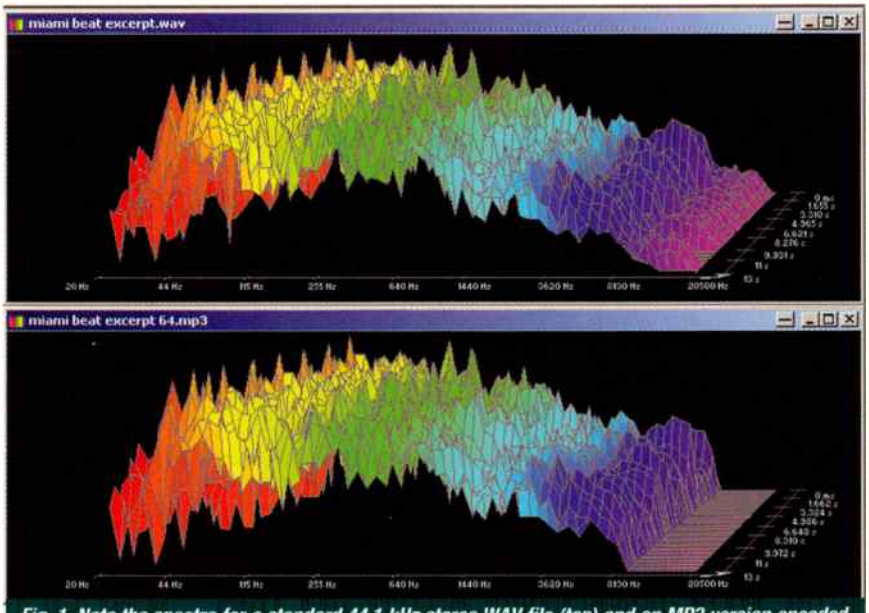

Fig. 1. Note the spectra for a standard 44.1 kHz stereo WAV file (top) and an MP3 version encoded to 64 kbps stereo (bottom). Above 8 kHz or so, response in the MP3 file falls off a cliff.

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already do this. Digital audio editors such as Cool Edit Pro, Wavelab, BIAS Peak, Spark, etc., can save WAV or AIF files in a variety of MP3 formats, at a choice of bit rates (Fig. 2).

Furthermore, many DAWs and music-making programs can export audio in MP3 format. While intended for converting multitrack recordings into something you can send over the web or load into an MP3 player, no law says you can't just load in a WAV or AIF file and convert away. However, because the industry-standard Fraunhofer MP3 algorithm needs to be licensed, MP3 export capability may be optional at extra cost.

MP3 RECORDERS: NOT JUST TOYS

The MP3 format has even worked its way into recording, with devices such as the TASCAM PocketStudio 5 and Korg PXR4. These perform no-moving-parts recording to CompactFlash and SmartMedia cards respectively, and offer decent sound quality. These types of recorders have several possible applications:

Field recording. With a quality mic, the results can be usable even in pro situations. Sound effects are usually layered sufficiently in the background so that the data omission isn't as problematic as it would be for critical musical recording.

Notepad. Because of their compact size, these small recorders are easy to carry around for capturing any inspiration you might have. For some instruments, the quality is good enough that if you capture something really incredible, it can be brought over to your DAW and used. Most people probably won't realize you've slipped an MP3 into the mix.

A "record everything" box. These recorders are so easy to set up and use that it's a no-brainer to just hook the thing up to your mixer's stereo outs and then record rehearsals, jam sessions, the songwriting process, whatever (see sidebar, "Recording Rehearsals with the PocketStudio 5"). A PocketStudio 5 loaded with a 128 MB CompactFlash card can record about 2.2 hours of stereo music, or nearly 4.5 hours in mono! Yes, you really can record everything that goes on during a session if you're so inclined.

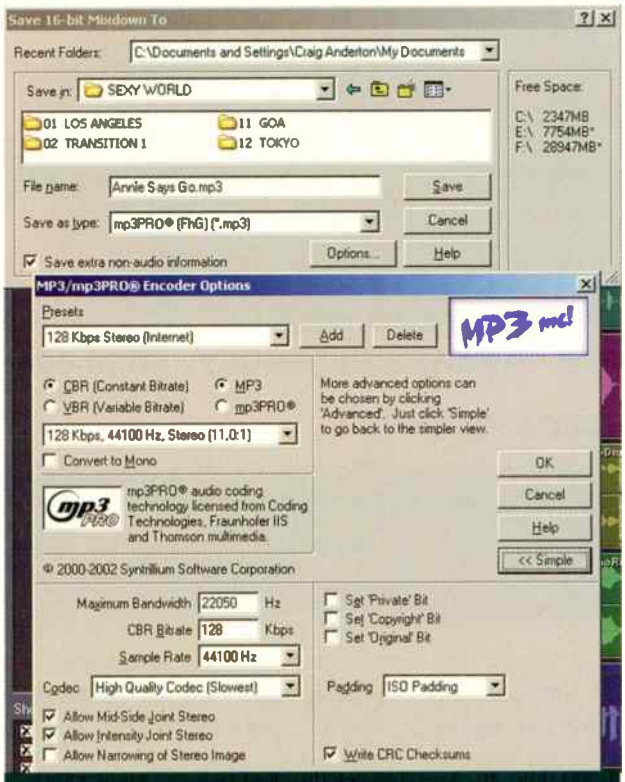

Fig. 2. Despite its relatively low cost, Cool Edit Pro 2.0 has plentiful export options, including MP3. Saving as MP3 brings up a basic save menu (with the option to use mp3PRO, which delivers a better high end), although more advanced options are also available.

An accessory when playing live. Any MP3 playback device can store long samples — pads, sound effects, spoken word sections, drones, etc. —

SO YOU WANT AN MP3 PLAYER

Even though data-compressed files don't sound all that great, you can improve matters with the right earphones. So far, the Sony MDR-EX70 in-ear models are my favorites. As to the player, at the high end there's Apple's brilliant iPod, but it uses a hard drive so it weighs more than the memory-only types. Of the latter, probably the most useful one for engineers and musicians is the Nomad MuVo by Creative Labs. It's basically a USB Flash RAM stick that shows up as a removable drive on Windows machines (too bad there's no Mac support); the stick itself fits in a "caddy" that contains the battery, controls, and an earphone jack.

A 64 MB models goes for around $100, but spend the extra $50 for the 128 MB version - you'll use up 64 MB quickly. There are two other cool features: the Nomad MuVo can play back Windows Media files, and it works as general-purpose memory so you can store any kind of data on the USB stick, not just MP3s.

In low-rent land, I'm getting by with a Classic MP6410 MP3 player (I paid $30) that accepts a 128 MB SmartMedia card, thus bringing its total internal memory to 192 MB. This is enough for some serious storage — I often load it up with altemate mixes to get a sense of which one I like best.

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1957 - UM57 capsule.

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(Left to Right) Tube mics: Original UM57 (1957), UM57 V.E.B. (1972), and today's Gefell UM92.1S

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which can be played back and mixed into the set at strategic times. This is particularly good for "groove" type applications where you can mix what's playing in and out of a tune, although of course, the material has to be something that doesn't require synchronization.

I used to cart around a sampler for this sort of thing, then I downsized to Minidisc, and now I use an MP3 player. One big advantage of MP3 for the type of gigs I play is that even the anti-shock memory in a CD player or Minidisc has a hard time coping with the constant vibration of subwoofers woofing and people dancing, but the MP3 player has been trouble-free.

THE RODNEY DANGERFIELD OF PRO AUDIO?

MP3s and other data compressed formats don't get much respect from pro audio types,

WHAT ABOUT WINDOWS MEDIA

You gotta give Microsoft credit for persistence. When they introduced their Windows Media Audio format, they were up against not only MP3 but RealAudio. WMA files initially sounded pretty awful, and Microsoft had a lot of ground to make up compared to established formats. But WMA has grown up, and a lot of portable MP3 players can now play back WMA files too.

Does WMA really sound better than MP3 for a given bit rate? Yes and no. At really low bit rates, such as 24 or 32 kbps, WMA doesn't have MP3's annoying "underwater" sound, but the tradeoff is a *very* artificial-sounding high end. At 64 kbps, WMA is clearly superior to MP3; at 96 kbps, the difference is less dramatic, but I'd definitely give WMA the edge. At 128 kbps and above, differences in sound quality tend to be more quantitative than qualitative.

However, Windows Media 9, which is just getting into the release candidate phase, ups the ante considerably. With this, Microsoft has committed to a format that embraces downloadable surround files. Of course, whenever Microsoft is involved there will be naysayers, but it appears they've done their homework, and so far the results regarding sound quality are very encouraging.

Will WMA9 take over the compressed audio world? Microsoft is certainly trying to make it into a standard. When you "rip" a file from audio CD with Windows XP, it ends up as a WMA file...and you don't have the choice to do an MP3 version, although of course a multitude of third-party options can do this. Short term, MP3 and WMA will at least co-exist; long-term, WMA might gain favor with the music business because of the flexible digital rights management options. But as long as MPEG exists, MP3 (or MP4, or whatever the next step might be) will continue to be viable.

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because...well, because they simply aren't "CD-quality," despite what the marketing weasels would like you to believe. Yet, in the pre-CD-R days, studios routinely ran off cassette copies for band members to carry around with them and play in their portable players. Data-compressed files are just the latest version of that concept, and if you make peace with their limitations, they do indeed have some surprising uses in today's hi-rez world. ■

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RECORDING REHEARSALS WITH THE POCKETSTUDIO 5

The TASCAM PS5 records using a proprietary MP3 variation that can't be read by conventional MP3 software. You can mix down internally to a standard MP3 file, but that halves the total recording time because you still need enough memory to hold the mixdown.

However, you can record your input signals directly as a mixdown to standard MP3 file format. The downside is the buses are summed with direct recording, so there won't be stereo imaging; but this usually doesn't matter for rehearsals or songwriting sessions. Here's how to record to MP3 using tracks 1 and 2:

1. Turn down all faders except the Master, which sets the playback level.
2. Patch your mixer's outputs into the Guitar/Line and Mic/Line inputs.
3. Set the Guitar/Line switch and Built In/Mic/Line switch on the right side of the PS5 case to Line.
4. Push and hold both Source buttons (Input A Guitar and Input B Mic) simultaneously. If the track 1 and 2 Record Ready buttons are flashing, fine. If not, press one of them so they do; then release the Source buttons.
5. Press the Record Ready buttons for tracks 1 and 2 *simultaneously* to record on these two tracks, then release the buttons.
6. Set the proper recording levels with the rotary input level controls.
7. Press the MP3 button so it flashes red.
8. Scroll to STMIX and press Enter/Yes. The MP3 button glows solid red.
9. Press Play and Record simultaneously to start recording. When you're done, press Stop. After a few moments, the MP3 button will glow green. You can now use the transport controls to play back the file.

You will want to rename this file, because every time you record a new MP3, it is first recorded into the STMIX file buffer. Exit MP3 mode by pressing and holding the MP3 button until its green light goes out. Hit Menu, navigate to CARD, and press Enter/Yes. Scroll to MP3 Name, hit Enter/Yes, use the data wheel and cursor buttons to name the file, then, press Enter/Yes.

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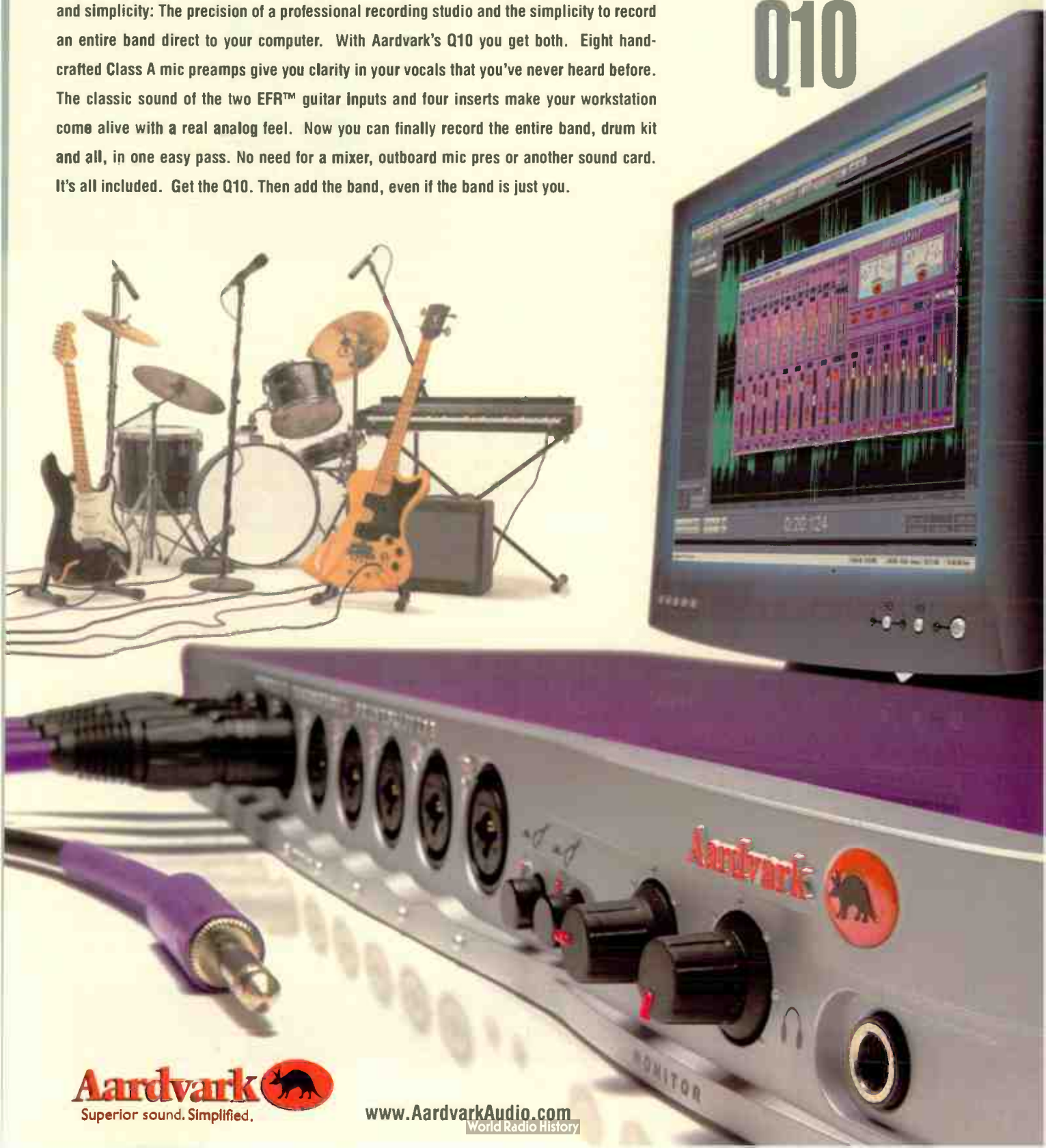

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by Barry Rudolph • barry@barryrudolph.com

Chandler Limited TG2 Vintage-Style Mic Preamp

The magic behind the sound of Abbey Road and Dark Side of the Moon?

The single rackspace TG2 microphone preamp uses the same circuit design and components of the TG12428 amplifier from EMI's TG Series mixing and mastering consoles. The 1970s TG Series was EMI's first transistorized equipment designed to replace their tube gear in use since the 1950s. Although the TG desk is noted for being used for The Beatles' *Abbey Road*, many seminal records of the '70s and early '80s were recorded on TGs, including Pink Floyds' *Dark Side of the Moon*.

The two-channel Chandler Limited TG2 is hand-made in the USA and features an all-discrete Class-AB circuit with balanced transformer inputs and outputs. The Carnhill/St. Ives microphone input and output transformers, like most of the TG2's components, are made in England. Typical of the entire Chandler Limited product line, the TG2 is beautifully crafted in a rugged nickel-plated steel box ready for the road or studio. The hand-soldered Elma controls and switches are mounted to an internal frame (not directly on the front panel) and handsomely wired to two, solidly mounted circuit boards. The half-rack space PSU-1 external power supply powers up to two TG2 units.

UNIQUE SOUND QUALITY

As "homage" to a bygone era, the two-channel TG2 doesn't disappoint with a wide-open sound mostly due to the same "tailored" frequency response found on original TG Series gear. A kind of "personality," the preamplifier's frequency response curve is flat from 20 Hz to 3 kHz and then slowly begins rising for a very subtle boost of 1.5 dB by 16 kHz. I found the preamp's sound quality somewhere between an API 512 mic preamp and Neve's 1272 amplifier as used in the 1073/1084 modules. You'll find a whole new sonic world here: higher dynamic range than the Neve combined with API's "harder, punchier" sound character. The TG2 has a more desirable gain selection range than either Neve or API with a fifteen-position gain switch starting at 5 dB and going up to 75 dB in 5 dB steps. This update of the original TG circuit is perfect for accommodating modern condensers that have higher output levels than older mics. Vintage preamps (generally) start with more gain at their lowest setting (both Neve and API modules start with 20 dB of gain) sometimes necessitating use of the mic's pad when close-miking loud sources.

The Output control is before the final output stage circuit and acts as a fine gain adjust. Both the Gain and Output knobs are old-fashioned black radio pointer knobs that suit the vintage British battleship-gray front panel. The TG2's mic input is able to accept line levels allowing for interesting overloading and coloration treatments by cranking up the Gain control and turning down the Output - like using a guitar amp with a master volume control. All fun, this effect on a vocal track sounds a little like John Lennon singing "Polythene Pam" with loads of third harmonic fizz.

Microphone input impedance is 1,200 ohms and the review unit had an additional

▶ continued on page 100

SPECIFICATIONS

INPUT GAIN SELECTION:	5 to 75 dB
INPUT IMPEDANCE:	1,200 ohms/300 ohms (optional)
OUTPUT IMPEDANCE:	600 ohms
MAXIMUM OUTPUT:	+28 dB
FREQUENCY RESPONSE:	Flat from 20 Hz to 3 kHz, Rising to +1.8 dB @ 16 kHz
NOISE:	-85 dBm

CHANDLER LIMITED TG2 MIC-PREAMP

MANUFACTURER: Chandler Limited, 100 East Bremer Ave. Waverly, Iowa 50677. Tel: 319-352-2587. Web: www.chandlerlimited.com. Dist by Wave Distribution, 1170 Greenwood Lake Turnpike, Ringwood, NJ 07456. Tel: 973-728-2425. Web: www.wavedistribution.com.

SUMMARY: Clean, accurate preamplification using an updated classic design.

STRENGTHS: Good dynamic range. Repeatable gain settings starting at 5 dB. Open sound. DI input.

LIMITATIONS: No LED peak indicators. Price doesn't include external power supply.

PRICE: $1,849; PSU-1, $125.

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World Radio History

By Mitch Gallagher • mgallagher@musicplayer.com

Garritan Orchestral Strings Sample Library

The closest thing to real players?

Eighteen CDs or two DVDs. Eight gigabytes of data. Thousands upon thousands of samples. Over 500 instrument patches. Over 150 pages of printed documentation. Virtuoso musicians performing on instruments made by some of the most renowned string makers, such as Stradivarius. Recording sessions at New York's famed Lincoln Center. Samples captured at 24-bit/88.2 kHz resolution using top-notch equipment. If you're thinking that all this sounds just a *bit* more over the top than your usual sample library, you're correct. The library sporting those stats is Gary Garritan's Orchestral Strings (hereafter referred to as "GOS"), a massive sample collection for TASCAM's GigaStudio and GigaSampler, and Akai-compatible samplers and soft-samplers. (Support for other sampler platforms is under development.)

The library contains samples of the string sections in the standard orchestra: 1st violins (12 players), 2nd violins (10 players), violas (10 players), cellos (eight players), and basses (seven players). There's also "All Violin Section" patches, which feature all 22 violin players performing in unison.

Each section is sampled playing in a wide array of articulations, such as long notes, short notes, with vibrato, half- and whole-step trills, tremolo, *pizzicato,* up and down bowing, with mutes, with crescendos, *détaché, staccato, marcato, sforzando, spiccato, sautille, portato,* and more. The selection is pretty mind-blowing. Plus, most of those articulations are sampled with four levels of dynamics.

As mentioned, GOS comes with a 150 page "Maestro" manual, which does a great job of spelling out what's available in the library and how to control it. There's also background information on how the samples were recorded, the musicians and their instruments, educational materials on stringed instruments and orchestral performance (such as definitions for all those articulation terms in the last paragraph!), and tips for how to pan and process the samples for the most realistic results.

In addition to the manual, the GOS website (www.garritan.com) features a broad array of support materials and tutorials, as well as an active discussion forum.

GARRITAN ORCHESTRAL LIBRARY

MANUFACTURER: Gary Garritan, P.O. Box 400, Orcas Island, WA 98280. Tel: 360-376-5766. Web: www.garritan.com.

SUMMARY: An amazing sample library offering realistic sounds, comprehensive articulations, and outstanding programming/performance features.

STRENGTHS: Excellent sound quality. Great programming. Useful performance features. MaestroTools. Strong user support. Free updates. Outstanding documentation.

LIMITATIONS: None to speak of.

PRICE: 18-CD (2-DVD) GigaStudio Advanced, $995; 3-CD GigaSampler Lite, $299; 3-CD Akai, $299; Advanced with GigaStudio 160, $1,249. Both Lite and Akai versions can be upgraded to Advanced.

TAKING CONTROL

GOS offers a broad range of control capabilities for increasing the realism of your string parts. Not every patch includes every type of control, but you can usually find an articulation that has the control features you want. A partial list of the control options includes:

EXP — "Expression," which uses crossfaded samples under control of the mod wheel to simulate changes in volume, timbre, and vibrato.

LEG — "Legato," see the section on MaestroTools below for more on this, but Legato simulates a player producing multiple notes with one bow stroke.

ALT — "Alternating," which accesses different samples for "up" and "down" bow strokes. This can greatly increase the realism of passages, and helps prevent the static sound of the same sample being triggered consecutively.

VAR — "Variability," which provides the user with control over intonation, brightness, and other note parameters via MIDI controllers. The idea is to make the samples each sound slightly different, the way they would if a real player were playing them.

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REL — "Release," which triggers an event when a MIDI note is released. The triggered event might be the sound of the end of a bow stroke, or it might be the addition of room ambience.

WARM — "Warm" provides low-pass filtering; essentially it's a brightness control. You can set it with an onscreen slider, or use MIDI to control it.

KEY SWITCHING — This feature lets you use some of the keys on your MIDI controller as "switches" for selecting various articulations. This is a godsend if you're playing GOS parts "live," as you can easily call up the articulations you want in real time, without interrupting your playing.

MAESTROTOOLS

Included with GOS is MaestroTools, which comes in two flavors: a stand-alone application, and an Environment for Emagic's Logic digital audio sequencer (for both Mac and PC). The stand-alone version runs under Windows 95/98/98SE/98ME, as well as Windows XP. Windows 2000 isn't officially supported, but I had no problems running MaestroTools with that operating system. Both the stand-alone and the Logic version do the same thing: intercept MIDI data headed for GigaStudio and convert it to take advantage of some of GOS' special performance features. MaestroTools allows you to automatically use alternating up/down bow samples, as well as Legato mode, which simulates the way a string player plays multiple notes with one stroke of his bow, rather than each note being played with a separate up or down stroke. GOS does this by using "masking" samples, which cover up the attacks of legato notes, and gives the impression that they're all being played by one continuous bow stroke. In practice, this works quite well — the passages I tried sounded much more realistic when using Legato mode. The effect is even better when using MaestroTools' Mono Mode, which constrains the MIDI data to one note at a time and ensures that there are no breaks in a Legato passage.

MaestroTools' features can be applied or bypassed on a per-channel and per-port basis. It works whether you are using a sequencer on the same computer as GigaStudio or MIDI coming in from an external source.

IN USE

Putting GOS through its paces takes a bit of work. Even installing it takes some doing — just copying 18 CDs worth of data onto your computer's hard drive easily burns up some minutes. Once you've got the data copied over, and the sounds loaded into GigaStudio, you're faced with learning to use them. Yes, you can just load up the string patches and start playing or sequencing them — and it will sound as good as, if not better than, most other string libraries out there. But to get the most out of Orchestral Strings, you're going to have to dive into the manual and learn what's available and how to best control it. Once you've learned your way around the controls and familiarized yourself with the sounds, the challenge is to organize things effectively in GigaStudio; what sounds and articulations do you need for a given piece of music? Do you need trills? Do you need control over vibrato? Do you need legato passages? How about avant garde special effects and noise? The list of options is pretty staggering, and made even more so when you spread it across 1st violins, 2nd violins, violas, cellos, and basses. Once you've decided what you need and organized it across GigaStudio's Ports and MIDI Channels, you can get down to work.

If you're an accomplished keyboardist, you can play the parts in that you need, perhaps even manipulate some controls, such as Expression settings, while you're playing. But to get the most detailed performance, you're probably going to end up getting into a sequencer and tweaking MIDI controllers. Doing so can be quite tedious, but the results can be worth it.

I had several of my compositions and arrangements for string orchestra on hand, a few of which I had the good fortune of having had played and recorded by a "real" orchestra. This allowed me to settle in with my scores, re-create them using Orchestral Strings, and compare the results to the recordings of the real string players. I won't tell you how many hours I spent, but after referencing back and forth numerous times, I was able to create what I felt were pretty believable duplications of the real performance. The original orchestral recordings weren't all that stellar, so in fact I'd have to say that sound quality-wise, the GOS versions were *better* than the originals.

The Garritan Orchestral Strings library was sampled at Lincoln Center from priceless vintage instruments played by virtuoso performers.

CODA

I have to admit to being very impressed with Gary Garritan's Orchestral Strings — even after doing this review I feel like I've just started scratching the surface of its capabilties. The amount of time and energy that must have gone into creating it had to be mind-boggling, but the end results are worth it. Not that the library has really reached an "end"; free upgrades, which include new samples, programming, and articulations, continue to be released on a regular basis, and user contributions to the library also are posted regularly.

There's only one drawback to this

▶ continued on page 102

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Boston-based MOTU has been cranking out some impressive offerings of late, both software and hardware. Their flagship Digital Performer program continues to improve with each release (see sidebar, DP 3.11, for more), and the company produces a broad array of powerful computer audio interfaces with seeming ease. The first to offer FireWire audio interfaces to the industry, MOTU recently expanded its FireWire offerings with the 896, a higher-end interface intended to serve as the centerpiece for a computer-based studio. The 896 builds on the company's earlier 828 interface, by adding more mic inputs, support for recording and playback at up to 24-bit/96 kHz resolution, and greatly enhanced metering.

A BRIEF TOUR

The 896 is a two rackspace unit — and pretty much every bit of front- and back-panel space is put to good use. I heaved a sigh of relief when I checked out the back panel and saw that there were "real" jacks there — no need to purchase optional breakout cables to make audio connections. Like the earlier 828 interface, the 896 provides up to 18 simultaneous inputs and outputs. If you need more I/O, you can daisy-chain any combination of 896's and 828's to your computer — up to a total of four interfaces can be active on a FireWire bus at once.

The 896 back panel has eight XLR analog outputs, which are switchable from –10 to +4 operation. An additional pair of XLR outs are provided; they duplicated outputs 1 and 2. These are intended as "main" or monitor stereo outs, and can be controlled by the volume knob on the front panel. There are also eight analog inputs, which are on 1/4-inch/XLR Neutrik combo connectors. The inputs can be switched among mic, line (–10 to +4), and "+4 fixed" levels. (The +4 fixed setting bypasses the front-panel trim control, and allows for maximum levels up to +18 dB. If you're connecting external +4 gear such as dynamics processors, effects, and mic preamps to the 896, the fixed level setting is the way to go.

Digital I/O is provided on eight-channel ADAT optical and stereo XLR AES/EBU formats. The ADAT I/O is limited to 44.1 or 48 kHz operation, while the AES/EBU I/O can handle up to 24-bit/96 kHz. The AES/EBU inputs feature sample rate conversion, which is handy. For external clock, the 896 can sync to a nine-pin ADAT Sync input or word clock. (A word clock out is also provided.) Rounding out the back panel are two FireWire connectors; one goes to your computer, the other is for daisy-chaining additional gear, such as more interfaces, hard drives, or whatever.

The front panel of the 896 is dominated by 20 ten-segment LED meters. The first eight display

MOTU 895

MANUFACTURER: MOTU, 1280 Massachusetts Ave., Cambridge, MA 02138. Tel: 617-576-2760. Web: www.motu.com.

SUMMARY: An extremely powerful audio interface offering easy FireWire connectivity and extensive analog and digital I/O — plus eight mic preamps and latency-free monitoring.

STRENGTHS: Tons of connectivity. Real connectors — no need for breakout cables. Hardware (latency-free) monitoring. Easy FireWire hookup to computer. Good sounding analog I/O. Eight mic preamps with phantom power. Support for resolutions up to 24-bit/96 kHz. Multiple interfaces can be connected to one computer for more I/O. Includes AudioDesk software (Mac only).

LIMITATIONS: Can only monitor two channels at once without latency. Can't independently control volume of headphones and main outputs using front panel knobs.

MINIMUM SYSTEM REQUIREMENTS: *Mac:* G3/300 Power Macintosh with FireWire port, 64 MB RAM (128 MB or more recommended), Mac OS 8.6 or higher, FireWire Enabler and FireWire Support system extensions v2.4 or higher. *Windows:* 300 MHz/Pentium (Pentium III recommended) with FireWire port or FireWire expansion card, 32 MB RAM (64 MB or recommended), Windows Me, 2000, or XP.

PRICE: $1 295

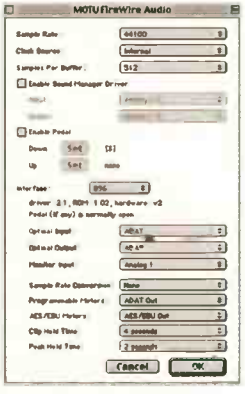

Fig. 1 (left): The FireWire Audio Control Panel (Mac) gives access to all the 896's parameters. The FireWire Audio Console on Windows doe the same thing.

Fig. 2: On the Mac, a control strip module lets you easily change the interface settings.

World Radio History

If We Had To Pick One Word To Describe KRK's New E8T Monitor, It Would Be...

"More"

You're looking at a monitor that takes your mixes as seriously as you do. With its impeccable accuracy, technical superiority and remarkable imaging, the new E8T has all of the heart and soul of the legendary E8, only now, there's even more to get excited about. Like KRK's new Titanium Oxide dome tweeter for extraordinary high frequency detail and clarity. The high temperature voice coil and optimized venting alignment of the woofer gives you incredible bass extension and dynamics without compression. And, as far as power goes, the E8T has a 260 watt Class A A/B discreet bi-amp design with separate 24dB/octave filters and a delay for seamless driver integration and dispersion.

More you say? Okay, the E8T's high frequency attenuation control allows for perfect integration into a wide array of listening environments. An inert MDF enclosure with optimized geometry virtually eliminates diffraction and resonances. We even matched the driver and systems to within 1dB for imaging that is simply unparalleled.

More performance, more power, more of what you're looking for in a monitor. So, if you're serious about your mix, the E8T is seriously worth your investigation.

Still want more? Then visit us on the web at www.krksys.com or see your local KRK dealer.

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DP 3.11

MOTU's Digital Performer v3 was a major upgrade to the program, giving it a completely new look and feel. Version 3.1 followed soon after, and added a pile of new features, including enhanced loop and crossfade functions, as well as a bunch of handy "behind the scenes" auto features that took care of converting audio formats, bit-depth, sample rate, and tempo. Other v3.1 enhancements included DigiTranslater and Pro Tools 5.1.3 OMF import/export, a new scissors tool for audio region splitting, rectified waveform display, new drum kit presets, unlimited Timeline Undo with branching, FireWire video playback, REX file import, and much more.

Digital Performer v3.11 offers a number of enhancements over earlier releases, including a timeline-based unlimited undo feature that allows branching. The Undo History window even tells you how much memory and disk storage you're burning with each move you make.

Now version 3.11 of Digital Performer has hit the streets (both v3.1 and v3.11 updates are free to registered users). The latest version is more than just a bug-fix release; 3.11 improves some editing and track ordering functions, adds PAL video output in the movie window, allows for video output without mirroring the movie window, and more.

One of my favorite features in the new Digital Performer version is Track Grouping — something I've been whining at MOTU about for some time. You can now group tracks for mixing and for editing — a godsend for those who use multiple tracks to record various instruments. For me, that feature alone is worth the download!

the analog input levels. The second bank of eight can be switched to show analog output, ADAT input, or ADAT output level. The next two meters show the Main Out left and right level; the final pair of meters can show either AES/EBU stereo in or out level. Next to the meters are 12 status LEDs showing sample rate and other clock settings.

Below the meters are eight analog input trim knobs with companion 48-volt phantom power on/off switches. It's handy to be able to switch phantom power on a per-channel basis. To the right of the trims and phantom switches are two knobs and a switch. The left knob allows you to set the level of channels that are being monitored through the 896's latency-free CueMix system (more on this below). The right knob sets the output level for the main outs and/or the headphone out, which is adjacent to the level knobs. Two other items complete the front panel complement: a 1/4-inch punch in/out footswitch jack, and a power switch.

INSTALLATION

The beauty of FireWire gear like the 896 is its ease of installation — no need to open your computer up and install a PCI card, just plug in the FireWire cable and turn it on. Okay, there's one more step:

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you have to install a bit of software. For Windows. the 896 supports ASIO, WDM, and GSIF drivers. On the Mac, MAS, Sound Manager (stereo operation only), and ASIO are offered, as is OS X support. Windows users also install a FireWire Audio Console, which provides control over the 896's various settings. On the Mac, there's a FireWire Audio Control Panel that serves the same purpose (see Figure 1), or there's a control strip module that does the same thing (Figure 2).

Mac users can get to work right away as they also receive a free copy of MOTU's AudioDesk software bundled with the 896. (AudioDesk is a slightly scaled down audio-only version of the company's flagship Digital Performer audio/MIDI DAW program.) Windows users will have to provide their own audio software.

CUEMIX AND LATENCY

One of the biggest problems with computer-based audio recording is latency — the time required for audio that's being recorded to enter the interface, pass through the software, and come back out. MOTU sidesteps this problem by offering hardware-based monitoring. It works this way: The signal coming in a pair of input channels can be directly mixed — via hardware, so there's no delay — into the signal coming out of the 896's main analog or headphone outs. The front-panel Monitor knob sets the mix level of the input channels, while the overall output level is set by the Volume control.

You select which pair of inputs is being monitored from the FireWire Audio control panel or console. If you're using AudioDesk or Digital Performer on a Mac, you can have the software automatically change CueMix to monitor the channels that are record-enabled, a feature that you'll greatly appreciate in the heat of a tracking session.

In practice, CueMix works great. For large tracking sessions you may wish for more channels of simultaneous latency-free monitoring, but for most applications, two channels are fine. If you do need more channels of latency-free monitoring, I'm sure MOTU will happily sell you a 2408 mk3 interface....

IN USE

I put the 896 through its paces using a dual-1 GHz Mac with 1.5 GB of RAM. Test applications included AudioDesk, Digital Performer, Emagic Logic Audio, Steinberg Nuendo, and a variety of other audio applications including editors, and soft synths and samplers. In all cases, the software worked exactly as expected.

For much of the review period I used the 896 daisy-chained with a MOTU 828 FireWire interface. I encountered no problems; the second interface showed up automatically in whatever software I was using as well as in the FireWire Audio control panel. Naturally, chaining an 828 to an 896 won't let the 828 operate at high resolutions. But in just about every other way, multiple interfaces function as if they're one big interface connected to the computer.

I interfaced the 896 with a variety of digital hardware; recorders and mixers via lightpipe, stereo recorders via AES/EBU, and external analog-to-digital and digital-to-analog converters.

▶ continued on page 102

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By Mitch Gallagher • mgallagher@musicplayer.com

MXL Mics V69 Mogami Edition Cardioid Tube Microphone

Big mic, little bucks

Marshall Electronics has been successfully serving those who are looking for high-quality, low-cost mics for some time now. Among the company's latest offerings is the V69, a tube-based large-diaphragm cardioid microphone.

I was sent the V69 Mogami Edition, which includes Mogami cables for connecting the mic to its remote power supply and the power supply to your mic preamp or mixer. The mic comes packed in a road-style case that's divided into compartments to hold the cables and mic (in a leatherette pouch), as well as the included foam windscreen and shock-mount. The mic itself looks awesome, and feels solid in your hand. It's physically big enough to make vocalists respect it, and its gold-plated grille provides a rich touch.

As far as mics go, it doesn't get any more straight-ahead than this: there are no controls or switches at all. Plug the mic into the power supply, and the supply into your preamp, and you're good to go (after the mic warms up).

In use, the V69 has a full, round sound. I used it before I checked out its frequency response graph, and my ears predicted what I saw there: A bit of a roll-off on the very low end, and more important, a smooth rise above 10 kHz. This gives the microphone an open, detailed top end that works well on vocals, as well as on instruments such as steel-string acoustic guitar. While the mic exhibits some proximity effect, the low end boost isn't as prominent as you might expect. However, when you get close, the mic can get a bit thumpy — this was especially apparent when I had my monitor system's subwoofer turned on. A low-cut filter on the mic would be a nice addition for taming this problem, but in the real world it was no problem to filter any spurious thumps out after the fact.

I was especially pleased with the V69 on my vocals. The sound was rich and smooth, with plenty of midrange punch and nice definition on top. As I've noticed with a number of recent mics, the V69 has an almost pre-EQ'd quality to it. It seems to sit well in the track without much processing required. It's not quite as dynamic as some other mics, but for many vocal tracks, this translates to less compression being required later.

Anyone who's flipped through the pages of a mail-order catalog or visited a pro audio retailer recently is well aware that there's a veritable bonanza of microphones at just about any given price point. But if you're looking for a bargain-priced mic that performs like it costs a bunch more, give the MXL Microphones V69 Mogami Edition a very close look. You'll be thrilled at how little money you have to shell out, and you'll be even happier at how well it does its job. ■

MXL MICS V69 MOGAMI EDITION

MANUFACTURER: Marshall Electronics, 1910 E Maple Ave., El Segunda, CA 90245. Tel: 310-333-0606. Web: www.mxlmics.

SUMMARY: A large diaphragm cardioid tube mic whose performance far exceeds its price point.

STRENGTHS: Solid punchy sound. Open top end. Amazing bang for the buck. Includes shockmount.

WEAKNESSES: No pad. No lowcut filter.

PRICE: $399

SPECIFICATIONS

FREQUENCY RESPONSE	20 Hz to 20 kHz
DIAPHRAGM	1-inch, 5-micron
POLAR PATTERN	Cardioid
MAX SPL	140 dB (0.5% THD)
SENSITIVITY	38 MV/pa
OUTPUT IMPEDANCE	200 ohms
NOISE	14 dB (A-weighted)
TUBE	12AT7

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- Chuck Ainlay

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World Radio History

By Steve La Cerra • slacerra@musicplayer.com

Focusrite OctoPre Eight-Channel Microphone Preamplifier

Eight channels of Class A preamp in one rackspace

FOCUSRITE OCTOPRE MIC PREAMP

Manufacturer: Focusrite Audio Engineering Ltd., Lincoln Road, High Wycombe Bucks, HP12 3 FX, England. Tel: +44-0-1494-462246. Web: www.focusrite.com.

Summary: Eight-channel, Class A microphone preamplifier with comp/limiter on each channel

Strengths: Clean, quiet audio path. Eight channels in one rackspace. Upgradable to digital output with 24/96 capability.

Limitations: Analog output requires DB25 breakout cable. External sync and AES/SPDIF switches are on rear panel (digital card option only).

Price: $1,169. Option One (Dual-port ADAT A/D): $250; Option Two (AES-EBU, ADAT, S/PDIF): $350; 9-pin to RCA or 9-pin to XLR cable: $50

As its name suggests, the OctoPre from Focusrite is an eight-channel microphone preamp built into a single-space rack chassis. Each preamp features the same Class A circuit used in Focusrite's VoiceMaster Pro, as well as a compressor/limiter with a deceptively simple one-knob interface. A "stock" OctoPre provides analog audio output for right channels on a single rear-panel DB25 connector. Two different interface cards are available for adding digital audio output to the OctoPre. Option One provides word clock input and digital audio output via two lightpipe connectors. Option Two augments these capabilities with a DB9 connector for eight channels of AES/EBU or S/PDIF output. Both Option cards are capable of up to 24-bit/96 kHz resolution.

The front panel of the OctoPre packs a lot of control while maintaining an uncluttered appearance. Each channel has a knob for gain and dynamics and switches for 48-volt phantom power, high-pass filter, and line input. The first two channels also feature switched 1/4-inch instrument inputs and polarity reverse. Focusrite engineers have smartly designed these channels so that mic, line, and instrument inputs may remain connected at all times and may be switched from the front panel, facilitating rack installation. Rear-panel analog mic inputs are (non-locking) XLR jacks; a second DB25 connector accepts line input. These connectors conform to the common DB25 analog wiring protocol (incorrectly referred to in the OctoPre manual as TDIF), allowing the OctoPre to be connected to many popular digital multitracks using a single cable.

EQ's review unit was shipped along with the Option Two card in a separate box. Installing the card takes 15 to 20 minutes and may scare the less-technically inclined, but Focusrite provides clear instructions. Installation requires removal of the top cover and a rear panel, and laying the circuit board into the chassis. Five plastic posts (supplied) must be snapped into the main circuit board at the bottom of the OctoPre chassis. This is the scary part because you must gently apply pressure to the posts until they snap into the circuit boards. After the five posts are snapped in, the digital board is laid into position, snapped down to the tops of the five posts, and secured using a nut for the BNC word clock jack and two screws for the DB9 connector. After two ribbon connectors are plugged into the existing circuitry, the top cover may be replaced. During installation it became evident that once the new board is installed, access to the mains fuse will be difficult.

On my first session with the OctoPre, I used the analog outputs to record a live drum kit with Audio-Technica AT4050 overheads and the new AE2500 dual-element kick mic (review coming soon). The most notable characteristic of the OctoPre was the bottom-end extension, giving the kick drum plenty of slam. For overheads I initially set the OctoPre compression knobs at 3 o'clock, only to find they pumped — probably due to a short release time. I would have preferred a faster attack time because cymbal crashes came through with explosive transients, and then the comps clamped down — a cool effect but not quite what I was looking for (though it prevented the cymbals from being dulled). With the comps at 12 o'clock, compression sounded smoother, and detail was excellent, especially on the ride cymbal bell. Tracking between the two channels was very good (little or no image shifting) though it'd be nice if at least one pair of comps could be stereo-linked.

Next I used the OctoPre as the front end for MOTU Digital Performer with a 2408 interface. Connecting the two units required a BNC cable for word clock and an optical cable for audio (when running 24-bit/96 kHz audio, each optical output from the

World Radio History

OctoPre carries four channels of hi-res audio, so you'll need two optical cables). A minor inconvenience is the fact that the switch for internal or external sync is on the rear panel. Much more annoying is the fact that — regardless of internal or external sync, or the state of the unit at the last shut-down — the OctoPre starts up at 24-bit/88.2 kHz. Every time you power up, bit-depth and sample rate must manually be set to the desired rate. If the rest of the audio system is running at another sample rate or bit depth, you could get rude digital noises through your monitors during power up (even when the OctoPre is set for external sync). The work-around is to not monitor the OctoPre output until you've reset the bit depth and sample rate. Once the bit and sample rate matched, I never heard a pop or audio dropout of any kind. If your application includes use of the AES/SPDIF output, you'll need to purchase or make a breakout cable that adapts the DB9 to XLR (AES) or phono (S/PDIF) connectors (available through Focusrite dealers for $50). A pin-out diagram for configuration of this connector is sorely missing in the otherwise complete owner's manual.

Used with eight channels/mics on the kit, the OctoPre was clean and clear. In addition to the close mics, I placed a Neumann U87 about one foot from the floor, six feet in front of the kit, and let the comp squash it down for that cool, rubbery room sound, which was excellent.

On a vocal using the Neumann U87, the limiter's fast attack kept transients from creating a digital over in Digital Performer, and with the vocalist right on the mic, a bit of compression (I'd guess 3 to 4 dB, though it's tough to tell accurately) was reasonably transparent.

The OctoPre also captured the transparency and character of an RCA 44BX mic without adding noise. Level to disk was good but I could have used another few dB of gain — a typical problem with this mic. Ditto for the 44BX/OctoPre on a fingerpicked acoustic guitar, which sounded very realistic. When used as a guitar DI, the OctoPre had plenty of headroom and plenty of gain.

With the OctoPre, Focusrite has created a useful tool that works equally well for DAWs as well as for analog and remote recording. Paired with an MDM, it's a no-brainer for ease of connection and sound quality. When you calculate the price per channel, it's practically a bargain. Definitely a unit to test-drive. ■

SPECIFICATIONS

FREQUENCY RESPONSE:	0 Hz to 200 kHz, -1 dB
THD:	0.001% @ 20 dBu input, mic and line at 0 dB gain
MIC EIN:	-128 dBu @ 6 dB gain with 150 ohm termination

MultiMAX EX
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By Craig Anderton • canderton@musicplayer.com

Radikal Technologies SAC-2.2 Control Surface

Let's give our favorite software a hand

I like hardware controllers for hard disk recorders, because to me a mixer is an *instrument* that you *play*. Sure, you can use a mouse and draw curves for automation — I do it myself when editing. But I'm happier when I can slam some faders, move a track's level rhythmically, and boost a snare's midrange on the spur of the moment.

The SAC-2.2 (Software Assigned Controller) lives in the upper echelon of controller-land. It has a substantial feel, three 2 line x 40 character LCDs that show info (*e.g.,* track names, parameters being controlled, etc.), and illuminated buttons. Drivers are available for Mac (including OS X) or Windows, using USB or MIDI connections. However, USB is a lot faster, so it can accommodate massive amounts of automation moves without choking. Thoughtfully, there's a built-in four-port USB hub, and when using USB, the unit's MIDI ports become a MIDI interface.

Controls include nine touch-sensitive 100-mm motorized faders, 12 rotary encoders with 31-LED "rings" (you can also push on the knobs for pushbutton-type functions, *e.g.,* return control to nominal), five-button transport section with jog/scrub wheel, 67 illuminated buttons, and eight-digit, seven-segment LED display to show current temporal position.

The SAC-2.2 has a pro vibe; even the most ham-fisted will have a hard time inflicting damage. It's on the large side, but size is part of why it's easy to use — you won't brush against the wrong fader while adjusting something.

SOFTWARE SUPPORT

Ultimately, a controller is just a pile of parts unless it works with your software. You can choose several modes: one that just sends MIDI data (ideal for devices that don't support the SAC-2.2 but have a "learn" mode for MIDI control), slave mode for use with devices that support the SAC-2.2, special modes for Pulsar and Reason control, and emulations for Houston, Logic Control, Mackie Control, and HUI (used for Pro Tools and other programs that recognize HUI). In some cases, the emulations improve on the originals; for example, you can zoom in Logic with the rotary encoder instead of having to do repeated button presses.

There's significant native software support (see sidebar), but also, manufacturers can support the SAC-2.2. For example, Sonar has an SAC-2.2 plug-in, and I was impressed with the integration. If you move tracks around or even change their names, the SAC-2.2 follows right along. And although LCD track names are limited to nine characters, longer ones undergo intelligent abbreviation — for example, "Weird Rhythm Guitar" ended up as "WrdRhythG," which was clear enough for me.

Furthermore, a small PC application, SacRoute, routes control out the SAC's MIDI ports to another MIDI interface connected to another computer, even a Mac. Couple this with the ability to switch among 10 different programs running at the same time, and you can switch among programs as well as control software on different platforms — pretty amazing, actually.

The touch-sensitive fader automation was great; I'd just let the tracks roll along with automation armed, and grab faders to make changes. Although there are only eight automatable channels, moving among groups of eight was not problematic. Also note that the SAC's equally at home controlling MIDI tracks as audio ones.

The 10 function buttons ("shiftable" for 20

RADIKAL TECHNOLOGIES SAC-2.2

MANUFACTURER: Radikal Technologies, 696 Palisade Ave., Teaneck, NJ 07666. Tel. 201-836-5116. Web: www.radikaltechnologies.com.

SUMMARY: Classy, high-quality hands-on control for DAWs and virtual instruments.

STRENGTHS: Motorized, touch-sensitive faders. Works via USB as well as MIDI. Sturdy construction. Cross-platform. Good templates for software. Can work with multiple programs simultaneously on Mac and/or PC and switch among them. Includes USB hub and integral MIDI interface.

LIMITATIONS: Secondary function labels in dark red are very difficult to read against the black background. Relatively large footprint may be problematic for some desktop setups.

PRICE: $1,649

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Mini-Me
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- "So we got the first one in and checked it out... we were all seriously impressed. The mic pre is very open, and very clear sounding... but not sterile, boring, nor unexciting... The mix functions are pretty cool, as is the ability to go to pretty much any digital format... including a USB connection to your laptop or desktop computer! What really knocked my socks off was the Soft Limit functions.... This thing should be a serious winner with home enthusiasts, die hard professionals and 'Deadhead show tapers'. Rarely have I been more impressed with a new product."
  —*Fletcher, Mercenary Audio*

- "The **Mini-Me** is the way to go for high end sound... we now have a world class ADC to use in the field!"
  —*Doug Oade*

- "Nice sounding pre amp... sounds really sweet on my acoustic guitar w/bridge pickup..."
  —*TJP*

- "The **Mini-Me** is fuller, incredible on lows and mids... detail and fullness, not just clarity. I just ordered one, if that tells you anything..."
  —*Scott Brown*

FEATURES

- **Two channels of Apogee 24-bit, 96 kHz A/D conversion**
- **Top-quality 2-ch mic/instrument preamps and line-level in**
- **True Apogee professional audio performance**
- **USB I/O connects direct to almost any computer**
- **AES/EBU and S/PDIF digital outputs**
- **Headphone output with Level & Direct/USB Return Mix**
- **Apogee Soft Limit plus a unique new multi-curve comp/limiter**
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possible functions) worked with any of Sonar's standard key bindings, and call up specific functions with supported software. There are also separate modes for Track and Bus control, as well as an option for "channel strip mode," where the controls affect individual parameters of a single channel (this was not implemented for Sonar).

I also checked the Houston emulation with Cubase SX. The interface was a bit more developed, as Cubase implements channel strips with EQ. The rotary encoders were pre-mapped to functions such as EQ, sends, etc. Selecting a new channel brought its associated VST window to the front, and tweaking knobs would affect its parameters.

INSTRUMENT EDITING

I was able to edit several instruments in both stand-alone mode and when used as VST plug-ins (but not under a VST wrapper). Here, the SAC-2.2 presents you with multiple pages, and the encoders are mapped to various parameters on the different pages.

SUPPORTED SOFTWARE

DAWS AND EDITORS: MOTU Digital Performer, Digidesign Pro Tools, Steinberg Cubase and Nuendo, Emagic Logic Audio and SoundDiver, Magix Samplitude, Sek'D Sequoia, Soundscape, Creamware Scope/Pulsar, Propellerheads Reason, Cakewalk Sonar, Ableton Live, Merging Technologies Pyramix.

VIRTUAL INSTRUMENTS: PPG Wave 2.V, Steinberg Model E, Pro Five/52, TC Works Mercury One, Emagic EXS-24 and ES-1, Native Instruments B4 (and four from the NI Premium Library), Pulsar EDS8i/EZ Synth/Inferno/Miniscope/BlueSynth/Vocoder/U-Know 007/Vectron, Zarg Orion and Dark Star.

VERY NICE....

Of course, there's a lot of competition for those seeking a human interface. If you just want to control a favorite program and that's it, you likely could get by with less than the SAC-2.2. Where this unit really shines is in its ability to be part of a network, and switch seamlessly among multiple programs. Add that to the substantial construction and overall quality, and if you have the bucks, the SAC-2.2 will make you a happy mixer.

But reviewing a product like this is difficult, because of the variations among implementations, and the rate at which they can change as software revisions mutate. Any complaints tend to be true of this entire class of device (if they're general-purpose, then of necessity parameters might not seemed mapped in logical ways), as are benefits — such as the virtues of motorized faders.

Yet here is a unit that I could use as a pseudo-Houston with Cubase SX, a general purpose controller for Sonar, and an instrument editor for soft synths. And even if a particular device doesn't support the SAC-2.2, as long as it can learn MIDI commands you're good to go. The SAC-2.2 isn't the cheapest way to add human control, but it is certainly one of the deepest. ■

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- **Check or money order for $30.00 per song (U.S. currency only) payable to John Lennon Songwriting Contest. If paying by credit card, $30.00 per song will be charged to your account.**

Entries must be postmarked no later than September 28, 2003.

Please read all rules carefully, and then sign your name in the space provided. If entrant is under 18 years old, the signature of a parent or guardian is required.

1. Each song submitted must be contestant's original work. Songs may not exceed five (5) minutes in length. No song previously recorded and released through major national distribution in any country will be eligible. Entries may have multiple co-writers, but please designate one name only on the application. **Contestant may submit as many songs in as many categories as he/she wishes, but each entry requires a separate CD/cassette, entry form, lyric sheet, and entrance fee. One check or money order for multiple entries/categories is permitted.** (Entrance fee is non-refundable. JLSC is not responsible for late, lost, damaged, misdirected, postage due, stolen, or misappropriated entries.)
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5. Winners will be notified by mail and must sign and return an affidavit of eligibility/recording rights/publicity release within 14 days of notification date. The affidavit will state that winner's song is original work and he/she holds all rights to song. Failure to sign and return such affidavit within 14 days or provision of false/inaccurate information therein will result in immediate disqualification and an alternate winner will be selected. Affidavits of winners under 18 years of age at time of award must be countersigned by parent or legal guardian. Affidavits subject to verification by JLSC and its agents. Entry constitutes permission to use winners names, likenesses, and voices for future advertising and publicity purposes without additional compensation.
6. CD's, cassettes and lyrics will not be returned. Winners will be announced on January 15, 2004 on the contest's website **www.jlsc.com**.

I have read and understand the rules of the John Lennon Songwriting Contest and I accept the terms and conditions of participation. (If entrant is under 18 years old, the signature of a parent or guardian is required.)

SIGNATURE DATE

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World Radio History

By Craig Anderton • canderton@musicplayer.com

Radial JDV Mk3 Direct Box

Direct boxes don't have to be boring

Shhhh...are we alone? Good. Most people saw "direct box," yawned, and flipped the page. But you know better. You know that if I'm going to spend my time reviewing something, it has to have some element that tickles my fancy — and the JDV Mk3 certainly does.

THE BASICS

First, kudos on the documentation — 16 densely-packed pages, with a minimum of hype. Second, kudos on the construction. The JDV Mk3 weighs almost three pounds, has a non-slip bottom pad, and a 14-gauge steel case with lips on the top and bottom that protect the switches and jacks. In fact, at AES, when asked whether it was rugged, a Radial representative threw it up in the air about four feet, at which point it curved out and landed about 12 feet away in an aisle. The corner was dented, but the thing still worked. I respect any product that can survive the dreaded "convention hurl" test.

Of major interest is the JDV Mk3's "zone" concept. The box accepts two instruments, and routes them to two zones: the "engineer's" zone (intended for going into a mixer input via a 600 ohm balanced out with polarity reverse, 15 dB pad, and ground lift switch), and the "musician's" zone. This provides a thru out (typically for feeding a guitar amp), two active aux outs for feeding effects or other amps, and a tuner out that's buffered from the signal path.

The JDV Mk3 uses Class A circuitry; instruments such as electric guitar sound clean, transparent, and full. This isn't a subtle difference in sound quality — it's obvious, significant, and one of the unit's strongest points. You may find, after plugging in an electric guitar, that it's the first time you've heard its true character.

Also, given that this is a unity-gain box, the 30 V power supply rail translates into a huge amount of headroom. However, note that the external power supply is large and non-standard (plus and minus 21 V outs). You won't find one at your local Radio Shack, so you might want to check with Radial about buying a backup.

RADIAL JDV MK3 DIRECT BOX

MANUFACTURER: Radial Engineering, 1638 Kebet Way, Port Coquitlam, BC, V3C 5W9, Canada. Tel: 604-942-1001. Web: www.radialeng.com.

SUMMARY: This overachieving direct box is a guitarist's delight, and incorporates several novel features.

STRENGTHS: Built like a tank. Variable input impedance. Clever "zone" concept accommodates mixer and instrument setups. Remarkable sound quality. Switchable dual instrument inputs. Can tap off speaker-level signals with switchable 30 dB pad. Switchable high- and low-pass filters.

LIMITATIONS: Non-standard AC adapter. May hear slight click if you switch instruments while they're playing.

PRICE: $450

DRAG QUEEN?

Another unique element is the "drag" control. The JDV Mk3 has a maximum 3.9 megohm input impedance (high enough to accommodate piezo pickups) for virtually zero loading on your guitar's pickups. This gives the best possible high frequency response and fidelity, but some guitarists prefer the high frequency "dulling" that occurs when the guitar is loaded down by an amp (particularly solid state types). This can produce a smoother sound when distorted, as the sound is "rounder" and bassier. The Drag control varies the input impedance from a lowly 10k ohms up to the maximum 3.9 megs.

THE BOTTOM LINE

Other features include power, signal, and clip LEDs, low-cut (–3 dB @ 175 Hz) and high-cut filters (–3 dB @ 8 kHz), and a –30 dB pad for tapping off of a loudspeaker signal (this isn't a "power soak" box, though; the speaker should remain connected to the amp being tapped).

This is clearly a high-end unit, and at $450, the JDV Mk3 isn't cheap. But neither is it overpriced: this box is as good as it gets when you need an accurate, solidly engineered, great-sounding direct box for stage or studio. ■

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By Craig Anderton • canderton@musicplayer.com

Roland Studio Package Pro Audio Interface/Control Surface

Accessorize your Mac/PC with I/O, moving faders, and software

Roland's "all-in-one" studios have become a hit thanks to simplicity — take one out of the box, plug in, and record. Computer-based systems, although more flexible, can scare technophobes because of their "assembly required" nature.

The Studio Package Pro (SPP) applies the all-in-one concept to computers by integrating a sound card, audio interfacing, and control surface with moving faders, and software. While not as "plug-and-play" as an all-in-one box, it eliminates most of the variables in turning a computer into a digital audio workstation. It's not picky about OS; Windows 98/ME/2000/XP (Home or Professional) are supported, and Mac OS 8.6 or later (except OS X; drivers are under development). Also supported: ASIO 2.0, as well as MME and SoundManager. I tested the SPP under Windows 98.

THE POWER TRIO

There are three main SPP elements:

SI-24 interface. This offers eight XLR/TRS ins (one is a hi-Z guitar input) with phantom power and level trims, S/PDIF and R-Bus digital I/O, six analog outs (master and two stereo auxes, although these can also be outs for 5.1 surround), 13 motorized faders, 12 rotary knobs, a joystick for 5.1 surround panning, 1 x 1 MIDI interface (MIDI channel 1 is reserved for the SI-24), and various control buttons that can tie in with the Logic RPC Pro software.

RPC-1 card. This PCI card provides a single R-Bus connector that carries up to eight buses of 24/96 audio and interfaces with the SI-24. A mixer/router applet is also included.

ROLAND STUDIO PACKAGE PRO

MANUFACTURER: Roland, 5100 S. Eastern Ave., Los Angeles, CA 90040. Tel: 323-890-3700. Web: www.rolandus.com.

SUMMARY: Takes the hassles out of integrating a computer-based system.

STRENGTHS: Motorized faders. Cross-platform, and supports multiple operating systems. 24/96 resolution. Handles 5.1 surround sound. Cost-effective. Easy setup and good documentation. Logic RPC Pro is powerful software with lots of plug-ins. Accepts plug-ins and soft synths.

LIMITATIONS: Based on sequencer that eventually will have no Windows support. Limited number of sequencer templates available. SI-24 not usable as stand-alone mixer. No separate word clock I/O.

PRICE: $1,495

Logic RPC Pro software. This specialized version of Logic Audio 5 provides multitrack recording and playback with automation for level, pan, EQ, effects, soft synths, etc. (Limitations are 24 tracks max, two plug-ins per track, and eight simultaneous record channels.)

Other software is compatible; SI-24 templates are included for Pro Tools LE and Cubase VST. Hopefully more will become available but if not, you can use the "learn mode" to create two custom templates for tying MIDI messages to knobs and buttons. Unfortunately, there's no LCD to identify assignments — unless you have a great memory, you'll need to fashion an overlay with legends, or take good notes.

SETUP AND USE

The SPP breaks no new ground in computer-based recording, so if you've played with DAWs, everything makes sense. If not, the SPP doesn't throw any curve balls. Latency works as expected: monitor the inputs through the SI-24 for zero-latency monitoring, or monitor through the system, which adds delay due to system latency but allows hearing the effect of plug-ins.

The printed Roland manuals are quite good (Logic's, also good, is a PDF file), and the RPC-1 driver, by M-Audio, worked perfectly — I'm glad the days of installing a card and having your PC blow up are pretty much behind us. Within minutes, I was ready to go. There was one glitch: Logic would crash when initializing Direct Show plug-ins if a VST-to-DX "wrapper" was running. As a wrapper isn't needed (Logic RPC Pro recognizes both VST and DX plug-ins), I turned it off and all was well. One "problem-that-wasn't-a-problem" occurred if I pushed automation moves to an absurd degree.

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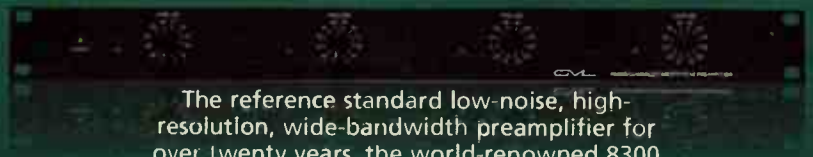

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* 2002 *Mix Magazine* Tec Award, 2001 *Pro Audio Review* Excellence Award, 2000 *EQ Magazine* Blue Ribbon Editor's Choice Award.

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There would be MIDI error messages, yet nothing seemed amiss on playback. Increasing latency a bit caused the messages to go away.

For complete info on Logic 5, see the September 2002 issue of *EQ*. Short form: it's a pro-level audio+MIDI sequencer that hosts plug-ins and soft synths. It's also ReWire-compatible. The program includes several signal processor plug-ins (three delays, four distortion, two dynamics, seven EQ, five modulation, three reverb, de-noiser, pitch shifter, and two gain control modules) and three soft synths (ES M, ES P, and ES E). A more complex effect, the EVOC 20 filter bank/vocoder/synth, as well as the ES1 and ES2 synths, EXS24 sampler, and EVP88 electric piano, are included as full-function demos that time out after a month. As copy protection uses Emagic's USB XSKey, you can pay to "unlock" any demo version to a fully functioning instrument.

IS IT FOR YOU?

If you have a good audio interface and software, it's likely that a dedicated controller already exists for your software, so it would probably be less expensive to add that than pay for the entire SPP system. Similarly, if you already have a controller and software, it would be cheaper to add a quality audio interface.

Where the SPP hits an unqualified bulls-eye is for those who want a pro-level computer-based system disguised as something far less intimidating. (The system's ultimate longevity on the Mac will depend on Emagic's degree of support, and for Windows, on support for programs other than Logic RPC Pro. Fortunately, Emagic is contractually obligated to support Logic RPC Pro for 2.5 years on both platforms, which is a comparatively long time given how fast technology changes.) The price is certainly right: sound card, software, 24/96 resolution, 5.1 surround capabilities, and motorized faders for under $1,500 definitely gets one's attention. Further, unlike all-in-one boxes, you can add plug-ins, soft synths, etc.

An obvious competitor, Digi's 002, costs $1,000 more and offers 32 instead of 24 audio tracks, eight analog outs (balanced) instead of six unbalanced, ADAT I/O, FireWire connectivity (no need to open up the computer), and the ability to run as a stand-alone mixer with onboard EQ, reverb, delay, dynamics, and snapshot recall. However, there's no Windows 98/ME/2000/XP Professional compatibility (the 002 does XP Home only), there are four instead of eight mic pres and eight instead of 13 motorized faders, and no surround panner. Clearly, paying more gets you more on some levels, but the SPP holds its own in terms of both functionality and value.

It's an interesting bottom line: Roland has created a simple, yet not simplistic, system that can produce pro results on an amateur's budget. If all-in-one boxes seem limiting and a computer-based systems daunting, the SPP takes the hassles out of setting up a pro-level DAW — at a righteous price. ■

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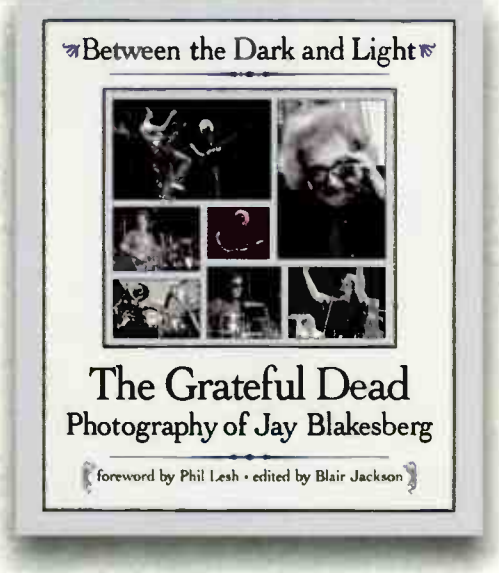

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Big Fish Audio

(www.bigfishaudio.com)

"Yeah baby, coming you to on smooth jazz/R&B 103.2 FM..." Well, that's what I expect to hear at the head of these loops. OTH2 features 32 "construction kits." Each has a mixed demo file, and an average of around 10 elements that make up the demo. Longer elements are looped and acidized, but typically, there are also several one-shots.

An additional drum loop folder has 16 loops that are excellent for layering, and eight folders of guitar loops. The latter are a particular treat, as there are some wonderful rhythm elements that work for far more than just down-tempo R&B.

Speaking of which, tempos are in the hip-hop zone (mostly 70-100 BPM, with a few slower); only three break 100 BPM. However, cranking some of these up to locked groove range (133.33 BPM) sounded great layered with DJ tracks. In fact, many of the loops work well at typical house/progressive house tempos of 120-130 BPM.

The quality of acidization is reasonably good, but if you plan to use some of these files at tempos slower than the file's original tempo, you'll likely need to tweak the markers further to reduce flamming. This is a problem only with fairly major tempo changes, but still, with a little more attention these loops could have stretched over a much wider range.

As to overall sound quality, it's fresh and present, but without being overbearing. "Solid" is the adjective that comes to mind; the parts have a carefully recorded, authoritative vibe. They punch through a track, but with a fist that's wearing a velvet glove. Rhythmically, the feel is great — laying back in the right places, pushing ever-so-slightly in others. There's no filler in this CD, and if you need that kind of late-night, down-tempo R&B, this one hits on all cylinders. Ohhhh, baby! (two audio CDs, two Acidized/WAV CDs, $99.95)

FLUID: ELECTRIC GUITARS

Fluid Fonts

(www.fluidfonts.com)

Although SoundFonts are often dismissed as "that stuff for SoundBlasters," with many pro soft samplers now able to read SF2 format files (I tested this CD with HALion), SoundFonts are yet another potential sonic resource for pro musicians.

Fluid: Electric Guitars has about 240 MB of SoundFont2 patches covering a variety of guitar sounds: clean, distorted, chords, stacks, harmonics, etc. These aren't loops or riffs, but individual samples suitable for playing on a keyboard. However, because the individual elements that make up the patches are WAV files, and HALion imports them into their own folders, I could drag sounds like individual chords into programs as one-shots. In fact, I liked keeping the clean Strat chords folder open so I could drag them into place as a sort of "chord chart" while developing tunes.

Anyone who's tried to sample guitars knows how hard it is, and if you plan to replace a session guitarist with these samples...you won't. Several folders include up and down stroke samples, which helps (especially if you can set up your sampler so playing one cuts off the other). But I found these samples useful more as another set of interesting timbres. One of my favorite applications was not trying to emulate guitar, but playing the sounds like a keyboard part, and rearranging the samples into new patches. Cool, and different.

The samples are recorded at 22.050 kHz - not uncommon for Sound Fonts. Fortunately, guitar is one of the few instruments that can get away with this. Surprisingly, there's no significant aliasing, and the samples are generally well-trimmed and, where appropriate, looped.

This modest CD won't replace something like Steinberg's Virtual Guitarist for realistic-sounding rhythm

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guitar parts (although the leads can be convincing if played idiomatically). But the price is right; in return, you get some useful, refreshing tonal resources that you likely won't find elsewhere. (CD, SoundFont2 format, $30)

UP-BEAT DANCE GROOVES

Zero-G

(www.soundsonline.com)

Yawn, another drum loop CD...well, wait just a minute. True, there are three folders of different drum loops (135, 140, and 150 BPM - almost half the CD's 700 MB of content), but there are also additional folders for Atmospheres, Synth Loops, and FX so you can assemble grooves with more than just drums.

The rhythms, which are indeed upbeat, are more rhythmically developed than most (in some cases, almost "busy," but not necessarily in a bad way). Thankfully, they don't rely on standard drum machine sounds and cover a broad, enticing timbral spectrum. Many of them seem designed more for layering than as "stand-alone" loops; mixing them with "four on the floor" beats often created *extremely* danceable, vibrant rhythms. The acidization quality is also better than average, despite the occasional misplaced slice and missed transients. (Sample CD companies should really be more tuned in to tweaking acidization markers, as it would allow their products to work with a wider range of musical styles.)

The forty Atmospheres files are spacey, long samples that work well for ambient situations and transitions, as well as to add a legato element over busy rhythms. Many are evocative and even beautiful. The fifty FX files are shorter, and tend to be what you'd throw in to add interest at strategic moments rather than loop.

Synth Loops consists of seven folders, arranged by tempo from 138 to 150 BPM. These are arpeggiation/TB-303 acid-type lines — utilitarian rather than inspiring, but a handy counterpart to the drum loops.

Although this type of CD isn't exactly novel, *Up-Beat Dance Grooves* distinguishes itself from the pack by pushing the boundaries, and contributing something new to the genre. If your dance loop CDs are sounding too ordinary these days, here's a forward-looking alternative. (one audio CD, one WAV/acidized CD, $69.95) ■

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CHANDLER LIMITED TG2

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unmarked switch that changes the input impedance to 300 ohms — a $150 option I recommend ordering. Front-panel locking Neutrik 1/4-inch, 100k impedance input jacks are provided for direct instrument recording. I liked that the DI switch toggles between the rear-panel mic XLR and front-panel DI jack. If you don't use the DI, then the switch works as a mute button — good idea! The unit also has phase reverse and +48 volt phantom on/off switches. I'd like to see an output clip LED and phantom power on/off indicator on the front panel.

IN THE STUDIO

I first tried the TG2 for recording acoustic guitars for both strumming and fingerpicked parts. I used a Swedish Milab DC 96B cardioid condenser, an API 550B equalizer (also Class-AB design) followed by an 1176LN limiter. This signal chain produces an aggressive acoustic rock sound, and I found the TG2 very quiet with more than enough gain. I also ended up not using the equalizer because proper mic positioning and the open sound of the TG2 was all I required. For an inveterate knob tweaker like me, I loved that rotating the gain switch produce no clicks or pops — even with audio present. I did discover that the PSU-1 power supply (as well as some other gear) must be located well away from the preamp chassis or noise and hum was introduced into the audio.

Next came vocals with the TG2 again providing clear and accurate-sounding preamplification. Unlike the Neve 1084 module I had used the night before, there was no "collapse" or preamplifier compression or distortion on peaks when my vocalist sang loudly into an Røde NTK condenser mic. I also didn't feel a big need to equalize and the smooth output control was perfect for riding down loud vocal moments to avoid over-squashing by the following TubeTech CL-1A compressor.

Finally, I tried the high-impedance input for recording direct bass guitar. Plenty of gain for the passive pickups of the Fender P-Bass and there was no hum or noise. I was concerned that the 100 kohm impedance might load the pickups but the sound was great — exactly the way that particular bass sounds.

An extremely useful and versatile unit that's easy to get great sounds instantly, the two-channel TG2 sells for $1,849 while the PSU-1 power supply is $125.

Barry Rudolph is an L.A.-based recording engineer. You can visit online at www.barrurudolph.com.

WAVES 360°

▶ continued from page 14

not affect the other channels). L360° and C360° can each have up to three separate sidechains, and a Link Mode selector defines which channels are coupled to which sidechain.

The M360° Surround Manager facilitates calibration of a studio setup to the ITU standard, and includes flexible bass management to ensure accurate translation on other 5.1 playback systems. The Toolkit also includes the LFE360° Low-Pass Filter (a 7th-order filter that can be used as a mono or 5.1 multichannel insert) as well as IDR360° Bit Requantizer (an Increased Digital Resolution Dither and noise-shaping plug-in for use in situations where word length must be reduced from 24 to 20 or 16 bits). The Waves 360° Surround Toolkit runs on Mac OS and supports Pro ToolsIHD TDM 5.3.1 or higher and Pro Tools Mix TDM 5.1.3. ■

DIGICO D5

▶ continued from page 16

Additional features of the D5 Live include rear-panel expansion slots for an additional DSP engine and optional effects processor, snapshot recall, MADI port for multitrack recording, integral dual-redundant power supply (hot-swappable and auto-switching), and a modem port for diagnostics and software updates. In the event of a power supply problem, the D5 Live automatically switches power supplies without loss of audio or control status. ■

JAMMAN

▶ continued from page 20

power of Pro Tools, no vintage piece is ever outdated. We've run the DX7 and M1 through plugs like Bruno, Virus, Sci-Fi, Vari-fi, etc., and blended them with patches from the Triton to transform retro into contempo. I've also made it a point to acquire a variety of microphones because I believe it's valuable to have a wide spectrum of colors available on my 'painter's palate.' Finally, Manley's ELOP is so smooth, transparent, and efficient in leveling signals that sometimes I wonder if it was made to replace engineers (just kidding)."

PRODUCTION NOTES: "My Pro Tools 24 Mix Plus system is the center of production, integrating with the Yamaha 02R for a sonically clean path that's efficient to use. I generally send all MIDI gear into the 02R and then to Pro Tools for added EQ and dynamic control. MOTU's Digital Performer is my sequencing tool and on occasion I'll use it to track reference or rehearsal vocals. All live microphones go through my tube pre's and limiters/compressors to maintain the warm analog tones. I've had great success recording oboe, acoustic guitar, harmonica, saxophone, horns and various vocals (rap to opera) using tube gear tracked and mixed in Pro Tools. I've found that the Brauner Valvet and Neumann U67 make a nice combo when recording woodwinds; the AKG 414 or TLII combined with the Brauner worked great on acoustic guitar and harmonica during the Enrico Granafei session. On a recent rap session, with artist VBL, I recorded the lead vocal with my Neumann TLM170 and then doubled it using the Neumann U67 for a warm, full effect.

"With bands like The HazMats I like to record bass and drums together to get a solid rhythm track. I've found that with proper gain structure, good mic placement, and minimal baffling, even a small room can provide a powerful drum sound with little bleed. Then of course with 'Strip Silence' in Pro Tools 5.3.1, any unwanted intermittent noise is 'zapped' in seconds." ■

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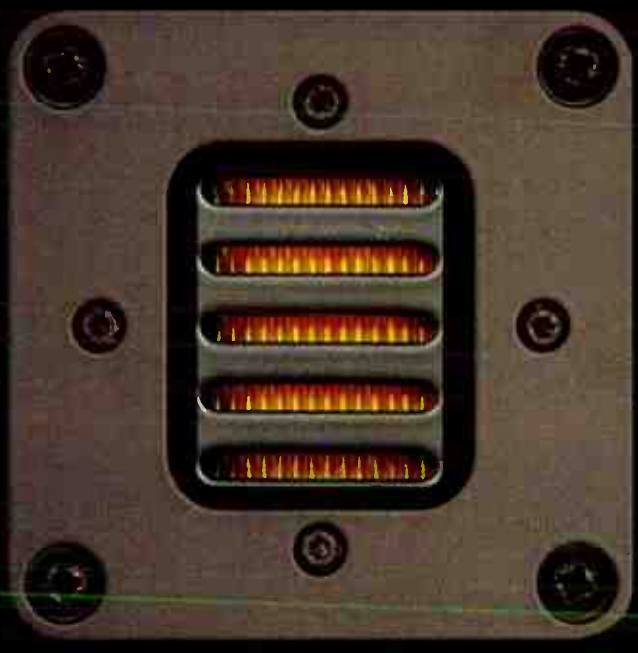
So,



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MOTU 896

▶ continued from page 83

Everything worked fine, and it was a simple matter to change the 896 settings as needed using either the control panel or control strip. The 896 was perfectly happy as either the clock source or as a slave to word clock.

Likewise, in the analog domain, the 896 interfaced perfectly with everything from keyboards to mixers to microphones to power monitors. Having the extra set of XLR main outputs with volume control means that you can use the 896 as the centerpiece for your studio; there's no need to have a mixer just to set your monitor levels and to provide headphone jacks. And, as mentioned above, CueMix solves the latency problem that plagues many audio interfaces.

SONICS

I was quite pleased with the sound of the 896. Its converters are as neutral sounding as you could want; I compared them to the I/O in high-end digital mixers, recorders, and external A/D and D/A converters and found them to stack up admirably well. The mic preamps were likewise neutral sounding. For heavy "color," you're going to have to rely on external mic preamps. But for crisp, clean, detailed, accurate tracking, the preamps in the 896 do the job. I wouldn't hesitate to use the 896 to track or handle I/O for a critical project.

ON FIRE

The 896 is another in a long string of impressive interfaces from MOTU. It's well set up for most applications, with 18 simultaneous channels of I/O, high-rez support, and eight mic preamps — if you need more, just chain up another 896. For tracking, the CueMix feature provides much-needed latency-free input monitoring. FireWire connection means that the unit is plug-and-play simple to use. Volume control means that no mixer is required for setting monitor levels. And the 896 is small enough that you can throw it in a bag along with a laptop and do easy location recording — nothing else is required except microphones and headphones or powered monitors. Another homerun for MOTU! ■

GARRITAN STRING LIBRARY

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library: The sheer depth of articulations and features means that you can spend many hours tweaking your sequenced string parts to perfection. But, as I said above, the end results are worth it. If you just treat GOS as a standard sample library, you'll get good sounding results. But if you're willing to invest the time, you can create amazingly realistic orchestral string parts for your recordings — even expert listeners will be hard-pressed to detect that they're hearing samples — and that's a certain hallmark of an excellent library. Simply outstanding. ■

DAW WORLD

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FREE WHEELY

Things can get very tricky when trying to quantize a performance that was recorded without a click track. First, count the number of bars in the performance, then map only the first and last bars to determine the average tempo (the program will usually have a way to figure it out automatically). You can then attempt to quantize the performance to that tempo. This works most times, although it can require more manipulation of regions and crossfades. If you like the performance as is, try extracting its continuous tempo map, thus creating a long groove template, to which other elements can quantize.

WHO NEEDS IT?

Not every musical style and situation calls for quantization, but it sure is nice when musical elements are playing at the same time, not flamming against each other, and not rushing or dragging. It also makes any mixing job much easier. Listen carefully when quantizing performances and try avoiding creating overly robotic-sounding performances, unless that's part of the musical style (*e.g.*, some types of dance music, like electro and techno).

Tal Herzberg is a Los Angeles-based programmer and engineer. His credits include the Counting Crows, Grammy-nominated Vanessa Carlton, Christina Aguilera, and the Grammy-awarded "Lady Marmalade" remake.

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▶ continued from page 112

in a six-channel audio track. I placed all of the songs in the correct order and adjusted the space between them to be exactly what I wanted. I then bounced the entire album to disc at one time. After the bounce was complete, I copied the six files over to the PC for encoding. The files were successfully encoded into one long DTS stream as a WAV file.

Wait. I can't import the file into Toast for the burn because I need to have start IDs for each song. Toast would only burn one 45-minute long song. I needed to be able to find and play a single song if I (or the client) wanted to. But Jam will do it; you just have to cheat a little bit because you can't listen to the DTS stream to figure out where to make the edits. The way around this is to go back and open the session I used to connect all of the 5.1 mixes together. If you highlight each song region, and the timeline is set to hours:minutes:seconds, you can write down the start and stop time of each song.

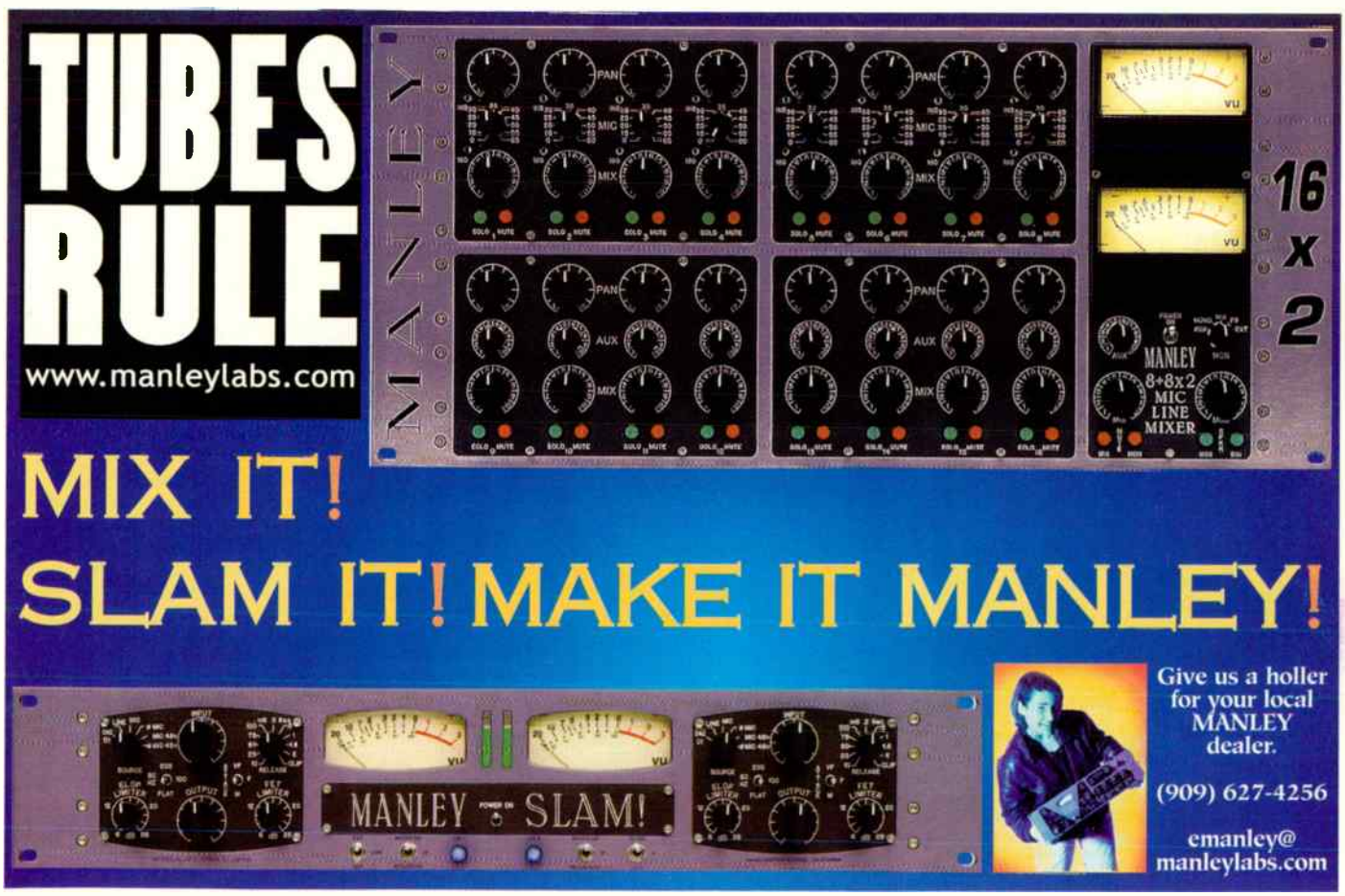
Now, open Jam. Remember the long DTS encoded file? In this case the album had nine songs, so I drag the same long DTS encoded file into Jam nine times. At first glance it looks like the CD will be 540 minutes long, but that will soon be fixed. In Jam, if you click on the song length, you're given the option to change the start and end times of the track within the file, just like making region markers in an external editing program. The first song will be set to start at 00:00:00 and end at 2:27:28. The next song will start at 2:27:28 into the file and end at 5:32:98 (the frame size is set to 100 frames per second) and so on down the line. Each song comes from the same file, but at different positions. It's very important to set the space between cuts to "0," except for the space before the first song, which is two seconds. Also re-check that the end time of each song is exactly the same as the start time of the next song.

This is exactly like flying on instruments. You have to trust (until you hear playback later) that the numbers will line up correctly. You can't play back the DTS stream to check your entries.

The next step is to burn a disc and see how it plays back in the DVD player. In this case everything turned out perfect. There was the noise at the start of the disc, but the transitions between cuts were perfect. Because the DTS stream was continuous, there were no clicks or noises. If you skip around from cut to cut you'll hear a noise as the DTS decoder syncs up, but if you play through the entire album there will be nothing but the program material you intended to be there, nothing more.

FINALLY

Some older DVD players like the Toshiba don't like CD-R, but it turns out that CD-RW has about the same reflectivity as a DVD. In most cases the Toshiba and other troubled players will do just fine with a CD-RW. In my client's player, the CD-RW worked perfectly. He never even knew that it took three days to figure this all out. Oops! I guess he will after he reads this.... ■



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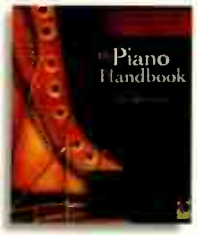

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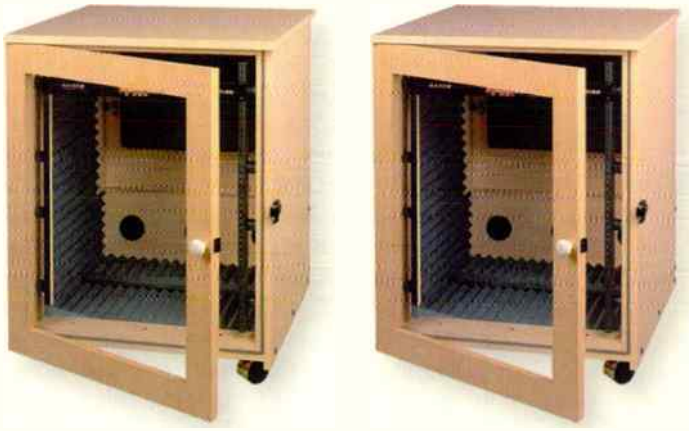

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Taking the long road to encoded discs

DVD-DTS-CD-RW-PDQ

I've been mixing some 5.1 versions of albums that I had previously mixed in stereo. The original mixes were done completely in Pro Tools. I opened up a copy of the stereo session document, and changed the output assignment to the 5.1 output instead of the stereo output. From there it was a simple task to change the position of some of the instruments and spiff up the reverbs.

The mixes were finished and bounced to disc as 5.1 split audio WAV files. The producer wanted copies so that he could listen on his home surround system. The problem was that he didn't have a DVD-A audio player, he only had a Toshiba DVD player that was three or four years old. "No problem, I'll make a disc you can play — I'll get it to you tomorrow." Famous last words.

DTS-CD...ALMOST

I knew from experience that the Toshiba player hates DVD-R discs, so making a DVD with AC-3 or DTS surround was out of the question. My best bet was to make a 44.1 kHz DTS-CD. If it wouldn't play in the Toshiba, then he could play it in his CD player, which was also connected, digitally to his receiver.

My surround mixes were done on a Mac. I needed to move them over the network to the PC that ran Minnetonka Audio's SurCode DVD-DTS. This is where the split 5.1 (6 mono files) gets encoded into a DTS stream for the CD. Encoding went fine, and the output WAV files were moved back over to the Mac.

I use Toast with Jam to burn all of my CDs. Toast in Disc-At-Once mode would work fine for this little job. I imported the files into Toast, which immediately changed them into AIF files. That's all right because the audio data stays the same; only the header information changes. I set the spacing between cuts to "0" and burned the CD.

After the burn, I placed the CD into my DVD player and pressed play. When you play a DTS-CD, the player expects the audio stream to be PCM digital audio so there's no muting. When the initial burst of the DTS stream hits the receiver (in my case, the Lexicon MC-1 preamp) some of the stream gets through before the DTS decoder kicks in. This results in a rather loud digital tearing sound for about 1/4 of a second. Everyone is warned, and the volume is lowered for this unwelcome transient. Volume back to normal, the music starts, and all is perfect. That is, until you come to the splice between the songs. Since each song is from a different mix and encoded separately, there's a glitch in the DTS packet data at the transition between the two songs. There could be anything from a small click to another digital noise burst because of the transition.

"SINCE EACH SONG IS FROM A DIFFERENT MIX AND ENCODED SEPARATELY, THERE'S A GLITCH IN THE DTS PACKET DATA AT THE TRANSITION BETWEEN THE TWO SONGS."

PLAN-B

There was only one way to avoid the digital glitches. The whole album had to be encoded as one long file so that there would be no noises between cuts. I started a new session in Pro Tools and imported all eight songs. Each song was contained

▶ continued on page 103

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Todd Thibaud Band ©Thomas.Neuhuber@t-online.de

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